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Automated Report

Technical Report for

AECOM, INC.

N6274223F0104 RH Fire Suppression System

60697810

SGS Job Number: FC11101

Sampling Date: 11/08/23



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Total number of pages in report: 1195



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Norm Farmer
Technical Director

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Test results relate only to samples analyzed.

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Sample Summary

AECOM, INC.

Job No: FC11101

N6274223F0104 RH Fire Suppression System
Project No: 60697810

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC11101-1	11/08/23	09:05	CPLW 11/09/23	AQ	Ground Water	AF-RHMW17-WGN01LF-2311
FC11101-2	11/08/23	11:35	GALW11/09/23	AQ	Ground Water	AF-RHMW17D-WGN01LF-2311
FC11101-3	11/08/23	10:05	GALW11/09/23	AQ	Field Blank Water	AF-RHMW17D-WQFB01-2311
FC11101-4	11/08/23	12:35	GACP 11/09/23	AQ	Ground Water	AF-RHMW17S-WGN01LF-2311
FC11101-5	11/08/23	11:20	GACP 11/09/23	AQ	Equipment Blank	AF-RHMW17S-WQEB01-2311

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, INC.

Job No: FC11101

Site: N6274223F0104 RH Fire Suppression System

Report Date: 11/19/2023 10:19:03 A

On 11/09/2023, 3 Sample(s), 0 Trip Blank(s), 1 Equip. Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC11101 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA DRAFT 1633

Matrix: AQ	Batch ID: OP164
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- OP164-BS: Insufficient sample for MS/MSD.
- FC11101-2: Sample re-extracted due to EIS failure in the original run.

Matrix: AQ	Batch ID: OP58
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) FC11101-1MS, FC11101-2DUP were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 3:3 Fluorotelomer carboxylate are outside control limits.
- RPD(s) for Duplicate for 6:2 Fluorotelomer sulfonate are outside control limits for sample OP58-DUP. Probable cause is due to sample non-homogeneity.
- Sample(s) FC11101-2 have surrogates outside control limits.
- FC11101-2 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND. Associated ID Standard outside control limits.
- FC11101-1 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND.
- FC11101-5 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND.
- FC11101-2 for 13C4-PFBA: Outside control limits.
- FC11101-2 for PFMPA: Associated ID Standard outside control limits.
- FC11101-2 for PFMBA: Associated ID Standard outside control limits.
- FC11101-3 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND.
- FC11101-4 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND.
- FC11101-2 for 13C5-PFPeA: Outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Summary of Hits

Job Number: FC11101
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 11/08/23



Lab Sample ID	Client Sample ID	Result/ Analyte	LOQ	LOD	Units	Method
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FC11101-1 AF-RHMW17-WGN01LF-2311

No hits reported in this sample.

FC11101-2 AF-RHMW17D-WGN01LF-2311

6:2 Fluorotelomer sulfonate	3.7 J	18	7.3	ng/l	EPA DRAFT 1633
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FC11101-3 AF-RHMW17D-WQFB01-2311

No hits reported in this sample.

FC11101-4 AF-RHMW17S-WGN01LF-2311

Perfluorooctanoic acid	0.53 J	3.8	0.94	ng/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid	0.96 J	3.8	1.9	ng/l	EPA DRAFT 1633

FC11101-5 AF-RHMW17S-WQEB01-2311

No hits reported in this sample.

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW17-WGN01LF-2311		
Lab Sample ID:	FC11101-1	Date Sampled:	11/08/23
Matrix:	AQ - Ground Water	Date Received:	11/09/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q53881.D	1	11/15/23 14:23	AL	11/13/23 11:10	OP58	S4Q786
Run #2							

Run #	Initial Volume	Final Volume
Run #1	525 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	3.8 U	15	3.8	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.9 U	7.6	1.9	0.90	ng/l	
307-24-4	Perfluorohexanoic acid	1.9 U	3.8	1.9	0.48	ng/l	
375-85-9	Perfluoroheptanoic acid	1.9 U	3.8	1.9	0.48	ng/l	
335-67-1	Perfluorooctanoic acid	0.95 U	3.8	0.95	0.48	ng/l	
375-95-1	Perfluorononanoic acid	1.9 U	3.8	1.9	0.58	ng/l	
335-76-2	Perfluorodecanoic acid	1.9 U	3.8	1.9	0.48	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	3.8	1.9	0.57	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	3.8	1.9	0.57	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.8	1.9	0.80	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.9 U	3.8	1.9	0.48	ng/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	1.9 U	3.8	1.9	0.48	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.8 U	4.8	3.8	1.1	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.9 U	3.8	1.9	0.67	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.9 U	3.8	1.9	0.48	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.9 U	3.8	1.9	0.51	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.8	1.9	0.54	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.8	1.9	0.61	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.8 U	4.8	3.8	1.1	ng/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	7.6 U	19	7.6	3.1	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.6 U	19	7.6	3.3	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.6 U	19	7.6	3.9	ng/l	

PERFLUOROOCCTANE SULFONAMIDES

754-91-6	PFOSA	1.9 U	3.8	1.9	0.64	ng/l	
31506-32-8	MeFOSA	3.8 U	7.6	3.8	0.95	ng/l	
4151-50-2	EtFOSA	3.8 U	7.6	3.8	0.95	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17-WGN01LF-2311	
Lab Sample ID:	FC11101-1	Date Sampled: 11/08/23
Matrix:	AQ - Ground Water	Date Received: 11/09/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids: n/a
Project:	N6274223F0104 RH Fire Suppression System	

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	3.8 U	4.8	3.8	0.95	ng/l	
2991-50-6	EtFOSAA	3.8 U	4.8	3.8	1.3	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	19 U	38	19	4.2	ng/l	
1691-99-2	EtFOSE	19 U	38	19	7.1	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.9 U	3.8	1.9	0.95	ng/l	
919005-14-4	ADONA	3.8 U	7.6	3.8	1.8	ng/l	
377-73-1	PFMPA	1.9 U	7.6	1.9	0.95	ng/l	
863090-89-5	PFMBA	3.8 U	7.6	3.8	1.1	ng/l	
151772-58-6	NFDHA	3.8 U	7.6	3.8	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.8 U	7.6	3.8	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.8 U	7.6	3.8	1.7	ng/l	
113507-82-7	PFEESA	1.9 U	7.6	1.9	0.74	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylat ^a	9.5 U	19	9.5	4.3	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	95	19	8.3	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	95	19	7.5	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	93%		20-150%
	13C5-PFPeA	95%		20-150%
	13C5-PFHxA	95%		20-150%
	13C4-PFHpA	94%		20-150%
	13C8-PFOA	93%		20-150%
	13C9-PFNA	96%		20-150%
	13C6-PFDA	85%		20-150%
	13C7-PFUnDA	78%		20-150%
	13C2-PFDoDA	65%		20-150%
	13C2-PFTeDA	58%		20-150%
	13C3-PFBS	91%		20-150%
	13C3-PFHxS	91%		20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17-WGN01LF-2311	
Lab Sample ID:	FC11101-1	Date Sampled: 11/08/23
Matrix:	AQ - Ground Water	Date Received: 11/09/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids: n/a
Project:	N6274223F0104 RH Fire Suppression System	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	88%		20-150%
	13C8-FOSA	90%		20-150%
	d3-MeFOSA	63%		20-150%
	d5-EtFOSA	70%		20-150%
	d3-MeFOSAA	103%		20-150%
	d5-EtFOSAA	86%		20-150%
	d7-MeFOSE	66%		20-150%
	d9-EtFOSE	66%		20-150%
	13C2-4:2FTS	107%		20-180%
	13C2-6:2FTS	111%		20-180%
	13C2-8:2FTS	108%		20-180%
	13C3-HFPO-DA	90%		20-150%

(a) Associated BS outside control limits high, sample was ND.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW17D-WGN01LF-2311		
Lab Sample ID:	FC11101-2	Date Sampled:	11/08/23
Matrix:	AQ - Ground Water	Date Received:	11/09/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q53883.D	1	11/15/23 14:52	AL	11/13/23 11:10	OP58	S4Q786
Run #2 ^a	4Q54054.D	1	11/17/23 23:41	AL	11/16/23 15:00	OP164	S4Q788

	Initial Volume	Final Volume
Run #1	545 ml	5.0 ml
Run #2	65.0 ml	5.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	31 U ^b	120	31	15	ng/l	
2706-90-3	Perfluoropentanoic acid	15 U ^b	62	15	7.2	ng/l	
307-24-4	Perfluorohexanoic acid	1.8 U	3.7	1.8	0.46	ng/l	
375-85-9	Perfluoroheptanoic acid	1.8 U	3.7	1.8	0.46	ng/l	
335-67-1	Perfluorooctanoic acid	0.92 U	3.7	0.92	0.46	ng/l	
375-95-1	Perfluorononanoic acid	1.8 U	3.7	1.8	0.56	ng/l	
335-76-2	Perfluorodecanoic acid	1.8 U	3.7	1.8	0.46	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	3.7	1.8	0.55	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	3.7	1.8	0.55	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	3.7	1.8	0.77	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.8 U	3.7	1.8	0.46	ng/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	1.8 U	3.7	1.8	0.46	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.7 U	4.6	3.7	1.0	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.8 U	3.7	1.8	0.64	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.8 U	3.7	1.8	0.46	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.8 U	3.7	1.8	0.50	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.8 U	3.7	1.8	0.52	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	3.7	1.8	0.59	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.7 U	4.6	3.7	1.0	ng/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	7.3 U	18	7.3	3.0	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	3.7	18	7.3	3.2	ng/l	J
39108-34-4	8:2 Fluorotelomer sulfonate	7.3 U	18	7.3	3.8	ng/l	

PERFLUOROOCCTANE SULFONAMIDES

754-91-6	PFOSA	1.8 U	3.7	1.8	0.61	ng/l	
31506-32-8	MeFOSA	3.7 U	7.3	3.7	0.92	ng/l	
4151-50-2	EtFOSA	3.7 U	7.3	3.7	0.92	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17D-WGN01LF-2311	
Lab Sample ID:	FC11101-2	Date Sampled: 11/08/23
Matrix:	AQ - Ground Water	Date Received: 11/09/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids: n/a
Project:	N6274223F0104 RH Fire Suppression System	

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	3.7 U	4.6	3.7	0.92	ng/l	
2991-50-6	EtFOSAA	3.7 U	4.6	3.7	1.2	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	18 U	37	18	4.0	ng/l	
1691-99-2	EtFOSE	18 U	37	18	6.8	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.8 U	3.7	1.8	0.92	ng/l	
919005-14-4	ADONA	3.7 U	7.3	3.7	1.7	ng/l	
377-73-1	PFMPA ^c	1.8 U	7.3	1.8	0.92	ng/l	
863090-89-5	PFMBA ^c	3.7 U	7.3	3.7	1.0	ng/l	
151772-58-6	NFDHA	3.7 U	7.3	3.7	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.7 U	7.3	3.7	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.7 U	7.3	3.7	1.6	ng/l	
113507-82-7	PFEESA	1.8 U	7.3	1.8	0.72	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylat ^d	9.2 U	18	9.2	4.1	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	18 U	92	18	8.0	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	18 U	92	18	7.2	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
13C4-PFBA		2% ^e	22%	20-150%
13C5-PFPeA		11% ^e	80%	20-150%
13C5-PFHxA		84%	98%	20-150%
13C4-PFHpA		102%	99%	20-150%
13C8-PFOA		101%	98%	20-150%
13C9-PFNA		101%	91%	20-150%
13C6-PFDA		91%	87%	20-150%
13C7-PFUnDA		90%	91%	20-150%
13C2-PFDoDA		78%	83%	20-150%
13C2-PFTeDA		65%	74%	20-150%
13C3-PFBS		103%	97%	20-150%
13C3-PFHxS		108%	101%	20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.2
4

Report of Analysis

Client Sample ID: AF-RHMW17D-WGN01LF-2311		Date Sampled: 11/08/23
Lab Sample ID: FC11101-2		Date Received: 11/09/23
Matrix: AQ - Ground Water		Percent Solids: n/a
Method: EPA DRAFT 1633 EPA 1633 DRAFT		
Project: N6274223F0104 RH Fire Suppression System		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	102%	83%	20-150%
	13C8-FOSA	111%	88%	20-150%
	d3-MeFOSA	99%	80%	20-150%
	d5-EtFOSA	104%	80%	20-150%
	d3-MeFOSAA	123%	97%	20-150%
	d5-EtFOSAA	131%	94%	20-150%
	d7-MeFOSE	83%	74%	20-150%
	d9-EtFOSE	84%	79%	20-150%
	13C2-4:2FTS	162%	114%	20-180%
	13C2-6:2FTS	151%	104%	20-180%
	13C2-8:2FTS	135%	102%	20-180%
	13C3-HFPO-DA	73%	95%	20-150%

- (a) Sample re-extracted due to EIS failure in the original run.
- (b) Result is from Run# 2
- (c) Associated ID Standard outside control limits.
- (d) Associated BS outside control limits high, sample was ND. Associated ID Standard outside control limits.
- (e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW17D-WQFB01-2311		
Lab Sample ID:	FC11101-3	Date Sampled:	11/08/23
Matrix:	AQ - Field Blank Water	Date Received:	11/09/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q53885.D	1	11/15/23 15:22	AL	11/13/23 11:10	OP58	S4Q786
Run #2							

Run #	Initial Volume	Final Volume
Run #1	530 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.8 U	15	3.8	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.9 U	7.5	1.9	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	1.9 U	3.8	1.9	0.47	ng/l	
375-85-9	Perfluoroheptanoic acid	1.9 U	3.8	1.9	0.47	ng/l	
335-67-1	Perfluorooctanoic acid	0.94 U	3.8	0.94	0.47	ng/l	
375-95-1	Perfluorononanoic acid	1.9 U	3.8	1.9	0.58	ng/l	
335-76-2	Perfluorodecanoic acid	1.9 U	3.8	1.9	0.47	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	3.8	1.9	0.57	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	3.8	1.9	0.57	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.8	1.9	0.79	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.9 U	3.8	1.9	0.47	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	1.9 U	3.8	1.9	0.47	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.8 U	4.7	3.8	1.1	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.9 U	3.8	1.9	0.66	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.9 U	3.8	1.9	0.47	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.9 U	3.8	1.9	0.51	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.8	1.9	0.54	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.8	1.9	0.60	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.8 U	4.7	3.8	1.1	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.0	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.3	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.9	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.9 U	3.8	1.9	0.63	ng/l	
31506-32-8	MeFOSA	3.8 U	7.5	3.8	0.94	ng/l	
4151-50-2	EtFOSA	3.8 U	7.5	3.8	0.94	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17D-WQFB01-2311		
Lab Sample ID:	FC11101-3	Date Sampled:	11/08/23
Matrix:	AQ - Field Blank Water	Date Received:	11/09/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	3.8 U	4.7	3.8	0.94	ng/l	
2991-50-6	EtFOSAA	3.8 U	4.7	3.8	1.3	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	19 U	38	19	4.1	ng/l	
1691-99-2	EtFOSE	19 U	38	19	7.0	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.9 U	3.8	1.9	0.94	ng/l	
919005-14-4	ADONA	3.8 U	7.5	3.8	1.8	ng/l	
377-73-1	PFMPA	1.9 U	7.5	1.9	0.94	ng/l	
863090-89-5	PFMBA	3.8 U	7.5	3.8	1.1	ng/l	
151772-58-6	NFDHA	3.8 U	7.5	3.8	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.8 U	7.5	3.8	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.8 U	7.5	3.8	1.7	ng/l	
113507-82-7	PFEESA	1.9 U	7.5	1.9	0.74	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylat ^a	9.4 U	19	9.4	4.3	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	94	19	8.2	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	94	19	7.4	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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	13C4-PFBA	94%		20-150%
	13C5-PFPeA	93%		20-150%
	13C5-PFHxA	91%		20-150%
	13C4-PFHpA	95%		20-150%
	13C8-PFOA	91%		20-150%
	13C9-PFNA	81%		20-150%
	13C6-PFDA	85%		20-150%
	13C7-PFUnDA	80%		20-150%
	13C2-PFDoDA	66%		20-150%
	13C2-PFTeDA	66%		20-150%
	13C3-PFBS	91%		20-150%
	13C3-PFHxS	92%		20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17D-WQFB01-2311		
Lab Sample ID:	FC11101-3	Date Sampled:	11/08/23
Matrix:	AQ - Field Blank Water	Date Received:	11/09/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	81%		20-150%
	13C8-FOSA	76%		20-150%
	d3-MeFOSA	55%		20-150%
	d5-EtFOSA	62%		20-150%
	d3-MeFOSAA	85%		20-150%
	d5-EtFOSAA	80%		20-150%
	d7-MeFOSE	64%		20-150%
	d9-EtFOSE	67%		20-150%
	13C2-4:2FTS	109%		20-180%
	13C2-6:2FTS	112%		20-180%
	13C2-8:2FTS	94%		20-180%
	13C3-HFPO-DA	90%		20-150%

(a) Associated BS outside control limits high, sample was ND.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW17S-WGN01LF-2311		
Lab Sample ID:	FC11101-4	Date Sampled:	11/08/23
Matrix:	AQ - Ground Water	Date Received:	11/09/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q53886.D	1	11/15/23 15:37	AL	11/13/23 11:10	OP58	S4Q786
Run #2							

Run #	Initial Volume	Final Volume
Run #1	530 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.8 U	15	3.8	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.9 U	7.5	1.9	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	1.9 U	3.8	1.9	0.47	ng/l	
375-85-9	Perfluoroheptanoic acid	1.9 U	3.8	1.9	0.47	ng/l	
335-67-1	Perfluorooctanoic acid	0.53	3.8	0.94	0.47	ng/l	J
375-95-1	Perfluorononanoic acid	1.9 U	3.8	1.9	0.58	ng/l	
335-76-2	Perfluorodecanoic acid	1.9 U	3.8	1.9	0.47	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	3.8	1.9	0.57	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	3.8	1.9	0.57	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.8	1.9	0.79	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.9 U	3.8	1.9	0.47	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	1.9 U	3.8	1.9	0.47	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.8 U	4.7	3.8	1.1	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.9 U	3.8	1.9	0.66	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.9 U	3.8	1.9	0.47	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	0.96	3.8	1.9	0.51	ng/l	J
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.8	1.9	0.54	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.8	1.9	0.60	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.8 U	4.7	3.8	1.1	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.0	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.3	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.9	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.9 U	3.8	1.9	0.63	ng/l	
31506-32-8	MeFOSA	3.8 U	7.5	3.8	0.94	ng/l	
4151-50-2	EtFOSA	3.8 U	7.5	3.8	0.94	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17S-WGN01LF-2311		
Lab Sample ID:	FC11101-4	Date Sampled:	11/08/23
Matrix:	AQ - Ground Water	Date Received:	11/09/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	3.8 U	4.7	3.8	0.94	ng/l	
2991-50-6	EtFOSAA	3.8 U	4.7	3.8	1.3	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	19 U	38	19	4.1	ng/l	
1691-99-2	EtFOSE	19 U	38	19	7.0	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.9 U	3.8	1.9	0.94	ng/l	
919005-14-4	ADONA	3.8 U	7.5	3.8	1.8	ng/l	
377-73-1	PFMPA	1.9 U	7.5	1.9	0.94	ng/l	
863090-89-5	PFMBA	3.8 U	7.5	3.8	1.1	ng/l	
151772-58-6	NFDHA	3.8 U	7.5	3.8	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.8 U	7.5	3.8	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.8 U	7.5	3.8	1.7	ng/l	
113507-82-7	PFEESA	1.9 U	7.5	1.9	0.74	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylat ^a	9.4 U	19	9.4	4.3	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	94	19	8.2	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	94	19	7.4	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	64%		20-150%
	13C5-PFPeA	106%		20-150%
	13C5-PFHxA	100%		20-150%
	13C4-PFHpA	107%		20-150%
	13C8-PFOA	106%		20-150%
	13C9-PFNA	103%		20-150%
	13C6-PFDA	96%		20-150%
	13C7-PFUnDA	103%		20-150%
	13C2-PFDoDA	84%		20-150%
	13C2-PFTeDA	74%		20-150%
	13C3-PFBS	102%		20-150%
	13C3-PFHxS	105%		20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17S-WGN01LF-2311	
Lab Sample ID:	FC11101-4	Date Sampled: 11/08/23
Matrix:	AQ - Ground Water	Date Received: 11/09/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids: n/a
Project:	N6274223F0104 RH Fire Suppression System	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	93%		20-150%
	13C8-FOSA	99%		20-150%
	d3-MeFOSA	68%		20-150%
	d5-EtFOSA	72%		20-150%
	d3-MeFOSAA	114%		20-150%
	d5-EtFOSAA	114%		20-150%
	d7-MeFOSE	75%		20-150%
	d9-EtFOSE	74%		20-150%
	13C2-4:2FTS	125%		20-180%
	13C2-6:2FTS	106%		20-180%
	13C2-8:2FTS	93%		20-180%
	13C3-HFPO-DA	92%		20-150%

(a) Associated BS outside control limits high, sample was ND.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW17S-WQEB01-2311		
Lab Sample ID:	FC11101-5	Date Sampled:	11/08/23
Matrix:	AQ - Equipment Blank	Date Received:	11/09/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q53887.D	1	11/15/23 15:51	AL	11/13/23 11:10	OP58	S4Q786
Run #2							

Run #	Initial Volume	Final Volume
Run #1	525 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.8 U	15	3.8	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.9 U	7.6	1.9	0.90	ng/l	
307-24-4	Perfluorohexanoic acid	1.9 U	3.8	1.9	0.48	ng/l	
375-85-9	Perfluoroheptanoic acid	1.9 U	3.8	1.9	0.48	ng/l	
335-67-1	Perfluorooctanoic acid	0.95 U	3.8	0.95	0.48	ng/l	
375-95-1	Perfluorononanoic acid	1.9 U	3.8	1.9	0.58	ng/l	
335-76-2	Perfluorodecanoic acid	1.9 U	3.8	1.9	0.48	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	3.8	1.9	0.57	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	3.8	1.9	0.57	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.8	1.9	0.80	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.9 U	3.8	1.9	0.48	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	1.9 U	3.8	1.9	0.48	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.8 U	4.8	3.8	1.1	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.9 U	3.8	1.9	0.67	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.9 U	3.8	1.9	0.48	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.9 U	3.8	1.9	0.51	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.8	1.9	0.54	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.8	1.9	0.61	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.8 U	4.8	3.8	1.1	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.6 U	19	7.6	3.1	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.6 U	19	7.6	3.3	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.6 U	19	7.6	3.9	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.9 U	3.8	1.9	0.64	ng/l	
31506-32-8	MeFOSA	3.8 U	7.6	3.8	0.95	ng/l	
4151-50-2	EtFOSA	3.8 U	7.6	3.8	0.95	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17S-WQEB01-2311		
Lab Sample ID:	FC11101-5	Date Sampled:	11/08/23
Matrix:	AQ - Equipment Blank	Date Received:	11/09/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	3.8 U	4.8	3.8	0.95	ng/l	
2991-50-6	EtFOSAA	3.8 U	4.8	3.8	1.3	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	19 U	38	19	4.2	ng/l	
1691-99-2	EtFOSE	19 U	38	19	7.1	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.9 U	3.8	1.9	0.95	ng/l	
919005-14-4	ADONA	3.8 U	7.6	3.8	1.8	ng/l	
377-73-1	PFMPA	1.9 U	7.6	1.9	0.95	ng/l	
863090-89-5	PFMBA	3.8 U	7.6	3.8	1.1	ng/l	
151772-58-6	NFDHA	3.8 U	7.6	3.8	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.8 U	7.6	3.8	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.8 U	7.6	3.8	1.7	ng/l	
113507-82-7	PFEESA	1.9 U	7.6	1.9	0.74	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylat ^a	9.5 U	19	9.5	4.3	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	95	19	8.3	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	95	19	7.5	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
---------	------------------------	--------	--------	--------

	13C4-PFBA	97%		20-150%
	13C5-PFPeA	98%		20-150%
	13C5-PFHxA	93%		20-150%
	13C4-PFHpA	99%		20-150%
	13C8-PFOA	91%		20-150%
	13C9-PFNA	86%		20-150%
	13C6-PFDA	87%		20-150%
	13C7-PFUnDA	89%		20-150%
	13C2-PFDoDA	76%		20-150%
	13C2-PFTeDA	78%		20-150%
	13C3-PFBS	97%		20-150%
	13C3-PFHxS	92%		20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.5
4

Report of Analysis

Client Sample ID:	AF-RHMW17S-WQEB01-2311		
Lab Sample ID:	FC11101-5	Date Sampled:	11/08/23
Matrix:	AQ - Equipment Blank	Date Received:	11/09/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	87%		20-150%
	13C8-FOSA	84%		20-150%
	d3-MeFOSA	68%		20-150%
	d5-EtFOSA	74%		20-150%
	d3-MeFOSAA	97%		20-150%
	d5-EtFOSAA	90%		20-150%
	d7-MeFOSE	75%		20-150%
	d9-EtFOSE	77%		20-150%
	13C2-4:2FTS	114%		20-180%
	13C2-6:2FTS	109%		20-180%
	13C2-8:2FTS	101%		20-180%
	13C3-HFPO-DA	95%		20-150%

(a) Associated BS outside control limits high, sample was ND.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits



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Chain of Custody

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FC11101

Client / Reporting Information		Project Information					Analytical Information										Matrix Codes													
Company Name: AECOM		Project Name: N6274223F0104 RH Fire Suppression System															DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe													
Address: 1001 Bishop St. ste 1600		Street																												
City: Honolulu State: HI Zip: 96813		City Honolulu State Hawaii																												
Project Contact: Katie Abbott Email: katie.abbott@aecom.com Project Manager: Watson Tanji Email: watson.tanji@aecom.com		Project # 23F0104 - 60697810																												
Phone #: 303-796-4624 / 808-954-4512		Fax #					PFAS EPA Draft 1633																							
Sampler(s) Name(s) (Printed) Sampler 1: <i>Cristian Perez</i> Sampler 2: <i>Liz Walker</i>		Client Purchase Order # 151253																												
SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	CONTAINER INFORMATION												LAB USE ONLY											
							OTHER	MONO	HCl	HNO3	H2SO4	HAZARDOUS	DIWATER	MESH																
1	AF-RHMW17-WGN01LF-2311	11/8/23	0905	CP/W	GW	3		X																						
										INITIAL ASSESSMENT										SP										
										LABEL VERIFICATION										LD										
										Turnaround Time (Business days)										Data Deliverable Information										Comments / Remarks
										10 Day (Business) Approved By: / Date: _____ 7 Day _____ <input type="checkbox"/> 5 Day 3 Day RUSH _____ 2 Day RUSH _____ 1 Day RUSH _____ Other _____ Rush T/A Data Available VIA Email or Lablink										<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S										EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW United AWB: 010 - 97593920 4.2 FRH/1
Relinquished by Sampler/Affiliation										Sample Custody must be documented below each time samples change possession, including courier delivery.																				
1 <i>Cristian Perez</i> / AECOM		Date Time: 11/8/23 1145		Received By/Affiliation			2 <i>Ellie Shimatsu</i> AECOM			Relinquished By/Affiliation			Date Time: 11/8/23 1420			Received By/Affiliation			4 <i>UC</i>											
5 <i>UC</i>		Date Time:		6 <i>[Signature]</i> 11/09/23			7 1730			Relinquished By/Affiliation			Date Time:			8														

5.1
5

FC11101: Chain of Custody

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www.sgs.com

COC #: 2311AFSG11

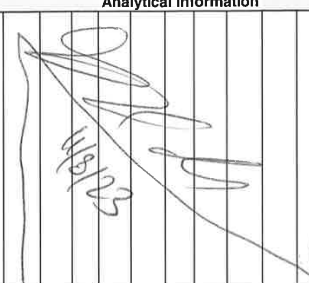
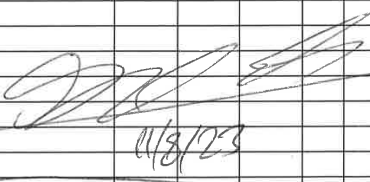
PAGE 1 OF 1

SGS - ORLANDO JOB # :

FC11101

SGS - ORLANDO Quote #

Staff #

Client / Reporting Information			Project Information										Analytical Information										Matrix Codes			
Company Name: AECOM			Project Name: N6274223F0104 RH Fire Suppression System																				DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe			
Address: 1001 Bishop St. ste 1600			Street																							
City: Honolulu State: HI Zip: 96813			City Honolulu State Hawaii																							
Project Contact: Katie Abbott Email: katie.abbott@aecom.com Project Manager: Watson Tanji Email: watson.tanji@aecom.com Phone #: 303-796-4624 / 808-954-4512			Project # CTO CVI23F0104 Fax #																							
Sampler(s) Name(s) (Printed) Sampler 1: <i>Caroline Allen</i> Sampler 2: <i>Uz Walker</i>			Client Purchase Order # 151253										*PFAS EPA Draft 1633 LAB USE ONLY													
SGS Orlando Sample #	Field ID / Point of Collection		COLLECTION			CONTAINER INFORMATION																				
	DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NADH	HNO3	H2SO4	NACHLZNAAC											DI WATER	MESH		
2	AF-RHMW17D-WGN01LF-2311	11/8/23	1135	LW	GW	3		X																		X
3	AF-RHMW17D-WQFB01-2311	11/8/23	1005	GA	WW	3		X																		X
																										
Turnaround Time (Business days)			Data Deliverable Information																				Comments / Remarks			
10 Day (Business) Approved By / Date: 7 Day <input checked="" type="checkbox"/> 5 Day 3 Day RUSH 2 Day RUSH 1 Day RUSH Other			<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S																				EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW *Extra bottleware is to be used for an MS/MSD - ES 11/8/23 United AWB: C16 - 97593924			
Rush T/A Data Available VIA Email or Lablink																										
Sample Custody must be documented below each time samples change possession, including courier delivery.																										
Relinquished by Sampler/Affiliation		Date Time:		Received By/Affiliation		Date Time:		Relinquished By/Affiliation		Date Time:		Received By/Affiliation														
1 <i>Caroline Allen/AECOM</i>		11/8/23 1430		2 <i>Ellie Shimatsu AECOM</i>		11/8/23 1430		3 <i>Ellie Shimatsu AECOM</i>		11/8/23 1430		4 <i>UC</i>														
5 <i>UC</i>		11/09/23 1730		6 <i>UC</i>		11/09/23 1730		7				8														
Lab Use Only : Cooler Temperature (s) Celsius (corrected):																										
http://www.sgs.com/en/terms-and-conditions																										

PFAS_COCs_ALL_10022023.xls Rev 031318





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COC #: 2311AFSG12


SGS - ORLANDO JOB # :

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FC11101

SGS - ORLANDO Quote #

Sheet #

Client / Reporting Information		Project Information		Analytical Information		Matrix Codes											
Company Name: AECOM		Project Name: N6274223F0104 RH Fire Suppression System				DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe											
Address: 1001 Bishop St. ste 1600		Street															
City: Honolulu State: HI Zip: 96813		City Honolulu State Hawaii															
Project Contact: Katie Abbott Email: katie.abbott@aecom.com		Project # CTO CVI23F0104															
Project Manager: Watson Tanji Email: watson.tanji@aecom.com		Fax #															
Phone #: 303-796-4624 / 808-954-4512		Client Purchase Order # 151253		PFAS EPA Draft 1633		LAB USE ONLY											
Sampler(s) Name(s) (Printed) Sampler 1: <i>Carolee Muenz</i> Sampler 2: <i>CECILIA ROLOZ</i>																	
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION		CONTAINER INFORMATION										PFAS EPA Draft 1633	LAB USE ONLY		
		DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	PCB	NIOSH	IN03	MS04	NAOH/ZNAC			DI WATER	RECH
4	AF-RHMW17S-WGN01LF-2311	11/8/23	1235	GA CP	GW	3		X									X
5	AF-RHMW17S-WQEB01-2311	11/8/23	1120	GA CP	WW	3		X									X
Turnaround Time (Business days)		Data Deliverable Information				Comments / Remarks											
10 Day (Business) 7 Day <input checked="" type="checkbox"/> 5 Day 3 Day RUSH 2 Day RUSH 1 Day RUSH Other		Approved By: / Date:		<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S				EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW United AWB: 016-94593926									
Rush T/A Data Available VIA Email or Lablink		Sample Custody must be documented below each time samples change possession, including courier delivery.															
Reinquired by Sampler/Affiliation 1 <i>Carolee Muenz AECOM</i>		Date Time: 11/8/23 1335		Received By/Affiliation 2 <i>Ellie Shimatsu AECOM</i>				Reinquired By/Affiliation 3 <i>Ellie Shimatsu AECOM</i>		Date Time: 11/8/23 1430		Received By/Affiliation 4 <i>UC</i>					
Reinquired by/Affiliation 5 <i>UC</i>		Date Time:		Received By/Affiliation 6 <i>UC 11/09/23</i>				Reinquired By/Affiliation 7		Date Time:		Received By/Affiliation 8					
Lab Use Only: Cooler Temperature (s) Celsius (corrected):		http://www.sgs.com/en/terms-and-conditions															

PFAS_COCs_ALL_10022023.xls Rev 031318

FC11101: Chain of Custody

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SGS Sample Receipt Summary

Job Number: fc11101

Client: AECOM

Project: N6274223F0104 RH Fire Suppression Syst

Date / Time Received: 11/9/2023 5:30:00 PM

Delivery Method: United Cargo/Airspace

Airbill #'s: United Cargo AWB #: 016-97593926

Cooler Temps (Raw Measured) °C: Cooler 1: (4.2);

Cooler Temps (Corrected) °C: Cooler 1: (4.6);

Cooler Informatio

	Y	or	N
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
4. Cooler temp verification:	IR Gun		
5. Cooler media:	Ice (Bag)		

Trip Blank Information

	Y	or	N	N/A
1. Trip Blank present / cooler:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	W	or	S	N/A
3. Type of TB Received	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Sample Information

	Y	or	N	N/A
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Samples presented properly	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
3. Suffiient volume/containers recv'd for analysi	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Condition of sample:	Intact			
5. Sample recv'd within HT	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
6. Dates/Times/IDs on COC match sample labe	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
7. VOCs have headspace	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
9. Compositing instructions clear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Voa Soil Kits/Jars received past 48hrs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. % Solids Jar Received?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12. Residual Chlorine Present?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Misc Information

Number of Encores: 25 Gram	5 Gram	Number of Lab Filtered Metals	
Test Strip Lot #s: pH 0-3: 226422		pH 10-12:	Other: (Specify) pH 1.0 - 12.0 222221
Residual Chlorine Test Strip Lot			

Comments

SM001

Rev. Date 05/04/17

Technician: SHAYLAP

Date: 11/09/2023 5:30:00 AM

Reviewer: ZD

Date: 11/09/2023

FC11101: Chain of Custody

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5.1
5

QC Evaluation: DOD QSM5.x Limits

Job Number: FC11101
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 11/08/23

QC Sample ID	CAS#	Analyte	Sample Result Type	Result Type	Units	Limits
--------------	------	---------	--------------------	-------------	-------	--------

No DOD QSM5.x Limits found for methods in this job.

* Sample used for QC is not from job FC11101

5.2
5

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Injection Standard Area Summaries
- TDCA Retention Time Checks
- Ion Ratio Summaries
- Isotope Dilution Standard Recovery Summaries
- Initial and Continuing Calibration Summaries
- Run Sequence Reports

Instrument Blank

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q788-IBLK	4Q54014.D	1	11/17/23	AL	n/a	n/a	S4Q788

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101%
	13C5-PFPeA	101%
	13C5-PFHxA	98%
	13C4-PFHpA	103%
	13C8-PFOA	99%
	13C9-PFNA	98%
	13C6-PFDA	104%
	13C7-PFUnDA	107%
	13C2-PFDoDA	101%
	13C2-PFTeDA	96%
	13C3-PFBS	95%
	13C3-PFHxS	96%
	13C8-PFOS	99%
	13C8-FOSA	104%
	d3-MeFOSA	95%
	d5-EtFOSA	102%
	d3-MeFOSAA	115%
	d5-EtFOSAA	111%
	d7-MeFOSE	104%
	d9-EtFOSE	104%
	13C2-4:2FTS	110%
	13C2-6:2FTS	104%
	13C2-8:2FTS	107%
	13C3-HFPO-DA	99%

Continuing Calibration Blank

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q788-ICCB	4Q54048.D	1	11/17/23	AL	n/a	n/a	S4Q788

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.0080	0.0040	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0040	0.0010	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101%
	13C5-PFPeA	99%
	13C5-PFHxA	102%
	13C4-PFHpA	102%
	13C8-PFOA	100%
	13C9-PFNA	103%
	13C6-PFDA	104%
	13C7-PFUnDA	102%
	13C2-PFDoDA	97%
	13C2-PFTeDA	96%
	13C3-PFBS	102%
	13C3-PFHxS	100%
	13C8-PFOS	97%
	13C8-FOSA	94%
	d3-MeFOSA	93%
	d5-EtFOSA	97%
	d3-MeFOSAA	105%
	d5-EtFOSAA	108%
	d7-MeFOSE	95%
	d9-EtFOSE	96%
	13C2-4:2FTS	132%
	13C2-6:2FTS	116%
	13C2-8:2FTS	121%
	13C3-HFPO-DA	96%

Instrument Blank

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q786-IBLK	4Q53867.D	1	11/15/23	AL	n/a	n/a	S4Q786

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-1, FC11101-2, FC11101-3, FC11101-4, FC11101-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	0.0018	0.0080	0.0010	ug/l	J
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	0.0049	0.040	0.0044	ug/l	J
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

Instrument Blank

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q786-IBLK	4Q53867.D	1	11/15/23	AL	n/a	n/a	S4Q786

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-1, FC11101-2, FC11101-3, FC11101-4, FC11101-5

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	103% 20-150%
	13C5-PFHxA	102% 20-150%
	13C4-PFHpA	107% 20-150%
	13C8-PFOA	102% 20-150%
	13C9-PFNA	105% 20-150%
	13C6-PFDA	102% 20-150%
	13C7-PFUnDA	114% 20-150%
	13C2-PFDoDA	101% 20-150%
	13C2-PFTeDA	99% 20-150%
	13C3-PFBS	117% 20-150%
	13C3-PFHxS	114% 20-150%
	13C8-PFOS	102% 20-150%
	13C8-FOSA	110% 20-150%
	d3-MeFOSAA	127% 20-150%
	d5-EtFOSAA	115% 20-150%
	13C2-4:2FTS	177% 20-180%
	13C2-6:2FTS	162% 20-180%
	13C2-8:2FTS	158% 20-180%

6.1.3
6

Continuing Calibration Blank

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q786-ICCB	4Q53880.D	1	11/15/23	AL	n/a	n/a	S4Q786

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-1, FC11101-2, FC11101-3, FC11101-4, FC11101-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

Continuing Calibration Blank

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q786-ICCB	4Q53880.D	1	11/15/23	AL	n/a	n/a	S4Q786

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-1, FC11101-2, FC11101-3, FC11101-4, FC11101-5

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101% 20-150%
	13C5-PFPeA	102% 20-150%
	13C5-PFHxA	99% 20-150%
	13C4-PFHpA	101% 20-150%
	13C8-PFOA	99% 20-150%
	13C9-PFNA	105% 20-150%
	13C6-PFDA	99% 20-150%
	13C7-PFUnDA	103% 20-150%
	13C2-PFDoDA	95% 20-150%
	13C2-PFTeDA	97% 20-150%
	13C3-PFBS	94% 20-150%
	13C3-PFHxS	101% 20-150%
	13C8-PFOS	100% 20-150%
	13C8-FOSA	97% 20-150%
	d3-MeFOSAA	114% 20-150%
	d5-EtFOSAA	99% 20-150%
	13C2-4:2FTS	148% 20-180%
	13C2-6:2FTS	131% 20-180%
	13C2-8:2FTS	145% 20-180%

Method Blank Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP58-MB	4Q53873.D	1	11/15/23	AL	11/13/23	OP58	S4Q786

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-1, FC11101-2, FC11101-3, FC11101-4, FC11101-5

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

Method Blank Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP58-MB	4Q53873.D	1	11/15/23	AL	11/13/23	OP58	S4Q786

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-1, FC11101-2, FC11101-3, FC11101-4, FC11101-5

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	103% 20-150%
	13C5-PFPeA	98% 20-150%
	13C5-PFHxA	96% 20-150%
	13C4-PFHpA	102% 20-150%
	13C8-PFOA	103% 20-150%
	13C9-PFNA	98% 20-150%
	13C6-PFDA	98% 20-150%
	13C7-PFUnDA	100% 20-150%
	13C2-PFDoDA	87% 20-150%
	13C2-PFTeDA	76% 20-150%
	13C3-PFBS	100% 20-150%
	13C3-PFHxS	106% 20-150%
	13C8-PFOS	94% 20-150%
	13C8-FOSA	81% 20-150%
	d3-MeFOSA	62% 20-150%
	d5-EtFOSA	65% 20-150%
	d3-MeFOSAA	106% 20-150%
	d5-EtFOSAA	97% 20-150%
	d7-MeFOSE	68% 20-150%
	d9-EtFOSE	73% 20-150%
	13C2-4:2FTS	151% 20-180%
	13C2-6:2FTS	157% 20-180%
	13C2-8:2FTS	145% 20-180%
	13C3-HFPO-DA	97% 20-150%

Method Blank Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP164-MB	4Q54051.D	1	11/17/23	AL	11/17/23	OP164	S4Q788

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	97% 20-150%
	13C5-PFPeA	98% 20-150%
	13C5-PFHxA	96% 20-150%
	13C4-PFHpA	97% 20-150%
	13C8-PFOA	90% 20-150%
	13C9-PFNA	89% 20-150%
	13C6-PFDA	103% 20-150%
	13C7-PFUnDA	104% 20-150%
	13C2-PFDoDA	90% 20-150%
	13C2-PFTeDA	87% 20-150%
	13C3-PFBS	91% 20-150%
	13C3-PFHxS	99% 20-150%
	13C8-PFOS	86% 20-150%
	13C8-FOSA	86% 20-150%
	d3-MeFOSA	72% 20-150%
	d5-EtFOSA	78% 20-150%
	d3-MeFOSAA	93% 20-150%
	d5-EtFOSAA	90% 20-150%
	d7-MeFOSE	77% 20-150%
	d9-EtFOSE	83% 20-150%
	13C2-4:2FTS	132% 20-180%
	13C2-6:2FTS	131% 20-180%
	13C2-8:2FTS	125% 20-180%
	13C3-HFPO-DA	91% 20-150%

Blank Spike Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP58-LLBS	4Q53872.D	1	11/15/23	AL	11/13/23	OP58	S4Q786

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-1, FC11101-2, FC11101-3, FC11101-4, FC11101-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.03	0.0285	95	40-150
2706-90-3	Perfluoropentanoic acid	0.015	0.0136	91	40-150
307-24-4	Perfluorohexanoic acid	0.0075	0.0070	93	40-150
375-85-9	Perfluoroheptanoic acid	0.0075	0.0068	91	40-150
335-67-1	Perfluorooctanoic acid	0.0075	0.0068	91	40-150
375-95-1	Perfluorononanoic acid	0.0075	0.0076	101	40-150
335-76-2	Perfluorodecanoic acid	0.0075	0.0071	95	40-150
2058-94-8	Perfluoroundecanoic acid	0.0075	0.0068	91	40-150
307-55-1	Perfluorododecanoic acid	0.0075	0.0077	103	40-150
72629-94-8	Perfluorotridecanoic acid	0.0075	0.0074	99	40-150
376-06-7	Perfluorotetradecanoic acid	0.0075	0.0082	109	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00665	0.0054	81	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00706	0.0071	101	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00686	0.0066	96	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00715	0.0075	105	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00696	0.0070	101	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00722	0.0077	107	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00724	0.0077	106	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.00728	0.0063	87	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0281	0.0286	102	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0285	0.0285	100	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0288	0.0312	108	40-150
754-91-6	PFOSA	0.0075	0.0071	95	40-150
31506-32-8	MeFOSA	0.015	0.0144	96	40-150
4151-50-2	EtFOSA	0.015	0.0138	92	40-150
2355-31-9	MeFOSAA	0.0075	0.0063	84	40-150
2991-50-6	EtFOSAA	0.0075	0.0076	101	40-150
24448-09-7	MeFOSE	0.0375	0.0337	90	40-150
1691-99-2	EtFOSE	0.0375	0.0389	104	40-150
13252-13-6	HFPO-DA (GenX)	0.015	0.0138	92	40-150
919005-14-4	ADONA	0.0142	0.0158	111	40-150
377-73-1	PFMPA	0.015	0.0162	108	40-150
863090-89-5	PFMBA	0.015	0.0155	103	40-150
151772-58-6	NFDHA	0.015	0.0192	128	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.014	0.0143	102	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0142	0.0127	90	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP58-LLBS	4Q53872.D	1	11/15/23	AL	11/13/23	OP58	S4Q786

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-1, FC11101-2, FC11101-3, FC11101-4, FC11101-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0134	0.0149	112	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.0375	0.0342	91	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.188	0.171	91	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.188	0.180	96	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	97%	20-150%
	13C5-PFPeA	96%	20-150%
	13C5-PFHxA	94%	20-150%
	13C4-PFHpA	96%	20-150%
	13C8-PFOA	98%	20-150%
	13C9-PFNA	101%	20-150%
	13C6-PFDA	105%	20-150%
	13C7-PFUnDA	101%	20-150%
	13C2-PFDoDA	95%	20-150%
	13C2-PFTeDA	81%	20-150%
	13C3-PFBS	98%	20-150%
	13C3-PFHxS	98%	20-150%
	13C8-PFOS	88%	20-150%
	13C8-FOSA	97%	20-150%
	d3-MeFOSA	78%	20-150%
	d5-EtFOSA	84%	20-150%
	d3-MeFOSAA	116%	20-150%
	d5-EtFOSAA	108%	20-150%
	d7-MeFOSE	83%	20-150%
	d9-EtFOSE	86%	20-150%
	13C2-4:2FTS	122%	20-180%
	13C2-6:2FTS	143%	20-180%
	13C2-8:2FTS	134%	20-180%
	13C3-HFPO-DA	92%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP164-LLBS	4Q54050.D	1	11/17/23	AL	11/17/23	OP164	S4Q788

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.03	0.0298	99	40-150
2706-90-3	Perfluoropentanoic acid	0.015	0.0154	103	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	100%	20-150%
	13C5-PFPeA	101%	20-150%
	13C5-PFHxA	98%	20-150%
	13C4-PFHpA	102%	20-150%
	13C8-PFOA	100%	20-150%
	13C9-PFNA	96%	20-150%
	13C6-PFDA	90%	20-150%
	13C7-PFUnDA	89%	20-150%
	13C2-PFDoDA	78%	20-150%
	13C2-PFTeDA	75%	20-150%
	13C3-PFBS	93%	20-150%
	13C3-PFHxS	95%	20-150%
	13C8-PFOS	87%	20-150%
	13C8-FOSA	85%	20-150%
	d3-MeFOSA	71%	20-150%
	d5-EtFOSA	76%	20-150%
	d3-MeFOSAA	103%	20-150%
	d5-EtFOSAA	94%	20-150%
	d7-MeFOSE	67%	20-150%
	d9-EtFOSE	73%	20-150%
	13C2-4:2FTS	114%	20-180%
	13C2-6:2FTS	121%	20-180%
	13C2-8:2FTS	109%	20-180%
	13C3-HFPO-DA	95%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample OP58-BS	File ID 4Q53871.D	DF 1	Analyzed 11/15/23	By AL	Prep Date 11/13/23	Prep Batch OP58	Analytical Batch S4Q786
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The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-1, FC11101-2, FC11101-3, FC11101-4, FC11101-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.0959	96	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0466	93	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0230	92	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0238	95	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0235	94	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0236	94	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0238	95	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0243	97	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0261	104	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0259	104	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0242	97	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0190	86	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0228	97	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0219	96	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0219	92	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0215	93	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0237	99	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0218	90	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0218	90	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.0927	99	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.103	108	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.0983	102	40-150
754-91-6	PFOSA	0.025	0.0228	91	40-150
31506-32-8	MeFOSA	0.05	0.0501	100	40-150
4151-50-2	EtFOSA	0.05	0.0481	96	40-150
2355-31-9	MeFOSAA	0.025	0.0238	95	40-150
2991-50-6	EtFOSAA	0.025	0.0258	103	40-150
24448-09-7	MeFOSE	0.125	0.111	89	40-150
1691-99-2	EtFOSE	0.125	0.122	98	40-150
13252-13-6	HFPO-DA (GenX)	0.05	0.0460	92	40-150
919005-14-4	ADONA	0.0473	0.0545	115	40-150
377-73-1	PFMPA	0.05	0.0392	78	40-150
863090-89-5	PFMBA	0.05	0.0534	107	40-150
151772-58-6	NFDHA	0.05	0.0593	119	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0459	98	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0443	94	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP58-BS	4Q53871.D	1	11/15/23	AL	11/13/23	OP58	S4Q786

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-1, FC11101-2, FC11101-3, FC11101-4, FC11101-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0501	113	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.225	180*	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.609	97	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.609	97	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	36%	20-150%
	13C5-PFPeA	87%	20-150%
	13C5-PFHxA	85%	20-150%
	13C4-PFHpA	87%	20-150%
	13C8-PFOA	86%	20-150%
	13C9-PFNA	86%	20-150%
	13C6-PFDA	85%	20-150%
	13C7-PFUnDA	85%	20-150%
	13C2-PFDoDA	76%	20-150%
	13C2-PFTeDA	74%	20-150%
	13C3-PFBS	91%	20-150%
	13C3-PFHxS	90%	20-150%
	13C8-PFOS	89%	20-150%
	13C8-FOSA	93%	20-150%
	d3-MeFOSA	78%	20-150%
	d5-EtFOSA	80%	20-150%
	d3-MeFOSAA	105%	20-150%
	d5-EtFOSAA	96%	20-150%
	d7-MeFOSE	80%	20-150%
	d9-EtFOSE	83%	20-150%
	13C2-4:2FTS	122%	20-180%
	13C2-6:2FTS	122%	20-180%
	13C2-8:2FTS	130%	20-180%
	13C3-HFPO-DA	83%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP164-BS ^a	4Q54049.D	1	11/17/23	AL	11/17/23	OP164	S4Q788

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.103	103	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0524	105	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	51%	20-150%
	13C5-PFPeA	87%	20-150%
	13C5-PFHxA	87%	20-150%
	13C4-PFHpA	87%	20-150%
	13C8-PFOA	86%	20-150%
	13C9-PFNA	83%	20-150%
	13C6-PFDA	88%	20-150%
	13C7-PFUnDA	89%	20-150%
	13C2-PFDoDA	80%	20-150%
	13C2-PFTeDA	73%	20-150%
	13C3-PFBS	83%	20-150%
	13C3-PFHxS	89%	20-150%
	13C8-PFOS	80%	20-150%
	13C8-FOSA	84%	20-150%
	d3-MeFOSA	74%	20-150%
	d5-EtFOSA	65%	20-150%
	d3-MeFOSAA	95%	20-150%
	d5-EtFOSAA	91%	20-150%
	d7-MeFOSE	68%	20-150%
	d9-EtFOSE	68%	20-150%
	13C2-4:2FTS	105%	20-180%
	13C2-6:2FTS	110%	20-180%
	13C2-8:2FTS	108%	20-180%
	13C3-HFPO-DA	83%	20-150%

(a) Insufficient sample for MS/MSD.

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP58-MS	4Q53882.D	1	11/15/23	AL	11/13/23	OP58	S4Q786
FC11101-1	4Q53881.D	1	11/15/23	AL	11/13/23	OP58	S4Q786

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-1, FC11101-2, FC11101-3, FC11101-4, FC11101-5

CAS No.	Compound	FC11101-1 ug/l	Spike Q	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.015 U	0.0935	0.0899	96	40-150
2706-90-3	Perfluoropentanoic acid	0.0076 U	0.0467	0.0445	95	40-150
307-24-4	Perfluorohexanoic acid	0.0038 U	0.0234	0.0222	95	40-150
375-85-9	Perfluoroheptanoic acid	0.0038 U	0.0234	0.0222	95	40-150
335-67-1	Perfluorooctanoic acid	0.0038 U	0.0234	0.0220	94	40-150
375-95-1	Perfluorononanoic acid	0.0038 U	0.0234	0.0216	92	40-150
335-76-2	Perfluorodecanoic acid	0.0038 U	0.0234	0.0203	87	40-150
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.0234	0.0227	97	40-150
307-55-1	Perfluorododecanoic acid	0.0038 U	0.0234	0.0233	100	40-150
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.0234	0.0218	93	40-150
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.0234	0.0233	100	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0038 U	0.0207	0.0194	94	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0048 U	0.022	0.0207	94	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0038 U	0.0214	0.0209	98	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0223	0.0213	96	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	0.0217	0.0214	99	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0225	0.0217	97	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0225	0.0197	87	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0048 U	0.0227	0.0193	85	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.019 U	0.0876	0.0788	90	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.019 U	0.0888	0.0982	111	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.019 U	0.0897	0.0943	105	40-150
754-91-6	PFOSA	0.0038 U	0.0234	0.0211	90	40-150
31506-32-8	MeFOSA	0.0076 U	0.0467	0.0498	107	40-150
4151-50-2	EtFOSA	0.0076 U	0.0467	0.0469	100	40-150
2355-31-9	MeFOSAA	0.0048 U	0.0234	0.0205	88	40-150
2991-50-6	EtFOSAA	0.0048 U	0.0234	0.0274	117	40-150
24448-09-7	MeFOSE	0.038 U	0.117	0.108	92	40-150
1691-99-2	EtFOSE	0.038 U	0.117	0.113	97	40-150
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0467	0.0451	97	40-150
919005-14-4	ADONA	0.0076 U	0.0442	0.0501	113	40-150
377-73-1	PFMPA	0.0076 U	0.0467	0.0514	110	40-150
863090-89-5	PFMBA	0.0076 U	0.0467	0.0505	108	40-150
151772-58-6	NFDHA	0.0076 U	0.0467	0.0533	114	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0076 U	0.0437	0.0386	88	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0076 U	0.0442	0.0363	82	40-150

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP58-MS	4Q53882.D	1	11/15/23	AL	11/13/23	OP58	S4Q786
FC11101-1	4Q53881.D	1	11/15/23	AL	11/13/23	OP58	S4Q786

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-1, FC11101-2, FC11101-3, FC11101-4, FC11101-5

CAS No.	Compound	FC11101-1 ug/l	Spike Q	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0076 U	0.0416	0.0468	113	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.019 U	0.117	0.124	106	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.095 U	0.584	0.568	97	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.095 U	0.584	0.586	100	40-150

CAS No.	ID Standard Recoveries	MS	FC11101-1	Limits
	13C4-PFBA	84%	93%	20-150%
	13C5-PFPeA	98%	95%	20-150%
	13C5-PFHxA	98%	95%	20-150%
	13C4-PFHpA	100%	94%	20-150%
	13C8-PFOA	95%	93%	20-150%
	13C9-PFNA	101%	96%	20-150%
	13C6-PFDA	93%	85%	20-150%
	13C7-PFUnDA	90%	78%	20-150%
	13C2-PFDoDA	82%	65%	20-150%
	13C2-PFTeDA	73%	58%	20-150%
	13C3-PFBS	97%	91%	20-150%
	13C3-PFHxS	100%	91%	20-150%
	13C8-PFOS	87%	88%	20-150%
	13C8-FOSA	98%	90%	20-150%
	d3-MeFOSA	63%	63%	20-150%
	d5-EtFOSA	66%	70%	20-150%
	d3-MeFOSAA	103%	103%	20-150%
	d5-EtFOSAA	89%	86%	20-150%
	d7-MeFOSE	76%	66%	20-150%
	d9-EtFOSE	79%	66%	20-150%
	13C2-4:2FTS	119%	107%	20-180%
	13C2-6:2FTS	111%	111%	20-180%
	13C2-8:2FTS	114%	108%	20-180%
	13C3-HFPO-DA	95%	90%	20-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP58-DUP	4Q53884.D	1	11/15/23	AL	11/13/23	OP58	S4Q786
FC11101-2	4Q53883.D	1	11/15/23	AL	11/13/23	OP58	S4Q786

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-1, FC11101-2, FC11101-3, FC11101-4, FC11101-5

CAS No.	Compound	FC11101-2 ug/l	DUP Q	ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.015 U	ND		nc		30
2706-90-3	Perfluoropentanoic acid	0.0073 U	ND		nc		30
307-24-4	Perfluorohexanoic acid	0.0037 U	ND		nc		30
375-85-9	Perfluoroheptanoic acid	0.0037 U	ND		nc		30
335-67-1	Perfluorooctanoic acid	0.0037 U	ND		nc		30
375-95-1	Perfluorononanoic acid	0.0037 U	ND		nc		30
335-76-2	Perfluorodecanoic acid	0.0037 U	ND		nc		30
2058-94-8	Perfluoroundecanoic acid	0.0037 U	ND		nc		30
307-55-1	Perfluorododecanoic acid	0.0037 U	ND		nc		30
72629-94-8	Perfluorotridecanoic acid	0.0037 U	ND		nc		30
376-06-7	Perfluorotetradecanoic acid	0.0037 U	ND		nc		30
375-73-5	Perfluorobutanesulfonic acid	0.0037 U	ND		nc		30
2706-91-4	Perfluoropentanesulfonic acid	0.0046 U	ND		nc		30
355-46-4	Perfluorohexanesulfonic acid	0.0037 U	ND		nc		30
375-92-8	Perfluoroheptanesulfonic acid	0.0037 U	ND		nc		30
1763-23-1	Perfluorooctanesulfonic acid	0.0037 U	ND		nc		30
68259-12-1	Perfluorononanesulfonic acid	0.0037 U	ND		nc		30
335-77-3	Perfluorodecanesulfonic acid	0.0037 U	ND		nc		30
79780-39-5	Perfluorododecanesulfonic aci	0.0046 U	ND		nc		30
757124-72-44:2	Fluorotelomer sulfonate	0.018 U	ND		nc		30
27619-97-2	6:2 Fluorotelomer sulfonate	0.0037 U	J	0.0076 U	J	69*	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.018 U	ND		nc		30
754-91-6	PFOSA	0.0037 U	ND		nc		30
31506-32-8	MeFOSA	0.0073 U	ND		nc		30
4151-50-2	EtFOSA	0.0073 U	ND		nc		30
2355-31-9	MeFOSAA	0.0046 U	ND		nc		30
2991-50-6	EtFOSAA	0.0046 U	ND		nc		30
24448-09-7	MeFOSE	0.037 U	ND		nc		30
1691-99-2	EtFOSE	0.037 U	ND		nc		30
13252-13-6	HFPO-DA (GenX)	0.0037 U	ND		nc		30
919005-14-4	ADONA	0.0073 U	ND		nc		30
377-73-1	PFMPA	0.0073 U	ND		nc		30
863090-89-5	PFMBA	0.0073 U	ND		nc		30
151772-58-6	NFDHA	0.0073 U	ND		nc		30
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0073 U	ND		nc		30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0073 U	ND		nc		30

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP58-DUP	4Q53884.D	1	11/15/23	AL	11/13/23	OP58	S4Q786
FC11101-2	4Q53883.D	1	11/15/23	AL	11/13/23	OP58	S4Q786

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11101-1, FC11101-2, FC11101-3, FC11101-4, FC11101-5

CAS No.	Compound	FC11101-2 ug/l	DUP Q ug/l	Q	RPD	Limits
113507-82-7	PFEESA	0.0073 U	ND		nc	30
356-02-5	3:3 Fluorotelomer carboxylate	0.018 U	ND		nc	30
914637-49-35:3	Fluorotelomer carboxylate	0.092 U	ND		nc	30
812-70-4	7:3 Fluorotelomer carboxylate	0.092 U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC11101-2	Limits
	13C4-PFBA	3%* a	2%* a	20-150%
	13C5-PFPeA	20%	11%* a	20-150%
	13C5-PFHxA	92%	84%	20-150%
	13C4-PFHpA	98%	102%	20-150%
	13C8-PFOA	94%	101%	20-150%
	13C9-PFNA	93%	101%	20-150%
	13C6-PFDA	104%	91%	20-150%
	13C7-PFUnDA	103%	90%	20-150%
	13C2-PFDoDA	92%	78%	20-150%
	13C2-PFTeDA	74%	65%	20-150%
	13C3-PFBS	96%	103%	20-150%
	13C3-PFHxS	101%	108%	20-150%
	13C8-PFOS	98%	102%	20-150%
	13C8-FOSA	109%	111%	20-150%
	d3-MeFOSA	100%	99%	20-150%
	d5-EtFOSA	103%	104%	20-150%
	d3-MeFOSAA	130%	123%	20-150%
	d5-EtFOSAA	132%	131%	20-150%
	d7-MeFOSE	86%	83%	20-150%
	d9-EtFOSE	88%	84%	20-150%
	13C2-4:2FTS	214%* a	162%	20-180%
	13C2-6:2FTS	143%	151%	20-180%
	13C2-8:2FTS	137%	135%	20-180%
	13C3-HFPO-DA	79%	73%	20-150%

(a) Outside control limits.

* = Outside of Control Limits.

Injection Standard Area Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q786-CC785	Injection Date:	11/15/23
Lab File ID:	4Q53868.D	Injection Time:	11:00
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Initial Cal ^b	40824	2.70	30080	5.35	33492	6.99	12987	7.53	9519	8.03
Check Std ^c	44587	2.63	32831	5.30	39721	6.96	15273	7.51	11103	7.99
Upper Limit ^d	81648	3.03	60160	5.70	66984	7.36	25974	7.91	19038	8.39
Lower Limit ^e	16330	2.23	12032	4.90	13397	6.56	5195	7.11	3808	7.59

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	DF ^a
ZZZZZZ	45734	2.70	31744	5.33	35710	6.99	13356	7.53	10000	8.02	2
OP58-BS	48899	2.68	34145	5.31	40575	6.96	14829	7.51	11321	8.00	1
OP58-LLBS	47502	2.70	33523	5.31	38448	6.96	13812	7.51	10342	8.00	1
OP58-MB	44528	2.69	31676	5.31	36161	6.96	13845	7.51	10397	8.00	1
ZZZZZZ	44190	2.70	34252	5.31	38989	6.96	14467	7.51	11190	8.00	1
ZZZZZZ	42387	2.67	31486	5.31	36584	6.96	13157	7.52	10261	8.00	1
ZZZZZZ	39774	2.65	29704	5.31	34079	6.98	12727	7.52	9717	8.00	1

- IS 1 = 13C3-PFBA
- IS 2 = 13C2-PFHxA
- IS 3 = 13C4-PFOA
- IS 4 = 13C5-PFNA
- IS 5 = 13C2-PFDA

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q785-ICC785 4Q53734.D 11/13/23 16:43. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 to +100% of initial cal area.
- (d) Upper Limit = +100% of initial standard area; Retention time +0.4 minutes of check standard.
- (e) Lower Limit = -60% of initial standard area; Retention time -0.4 minutes of check standard.

6.5.1
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Injection Standard Area Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q786-CC785	Injection Date:	11/15/23
Lab File ID:	4Q53868.D	Injection Time:	11:00
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	4232	7.05	5952	8.14
Check Std ^c	4185	7.02	6650	8.12
Upper Limit ^d	8464	7.42	11904	8.52
Lower Limit ^e	1693	6.62	2381	7.72

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
ZZZZZZ	4288	7.04	5940	8.13	2
OP58-BS	4484	7.02	6652	8.12	1
OP58-LLBS	4535	7.03	6547	8.12	1
OP58-MB	4281	7.03	6788	8.12	1
ZZZZZZ	4544	7.03	6691	8.12	1
ZZZZZZ	4446	7.03	6180	8.13	1
ZZZZZZ	4154	7.03	5792	8.13	1

IS 6 = 18O2-PFHXS
 IS 7 = 13C4-PFOS

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q785-ICC785 4Q53734.D 11/13/23 16:43. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 to +100% of initial cal area.
- (d) Upper Limit = +100% of initial standard area; Retention time +0.4 minutes of check standard.
- (e) Lower Limit = -60% of initial standard area; Retention time -0.4 minutes of check standard.

6.5.1
6

Injection Standard Area Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q786-CC785	Injection Date:	11/15/23
Lab File ID:	4Q53879.D	Injection Time:	13:53
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Initial Cal ^b	40824	2.70	30080	5.35	33492	6.99	12987	7.53	9519	8.03
Check Std ^c	44679	2.63	33710	5.31	38495	6.96	14995	7.51	10461	8.00
Upper Limit ^d	81648	3.03	60160	5.71	66984	7.36	25974	7.91	19038	8.40
Lower Limit ^e	16330	2.23	12032	4.91	13397	6.56	5195	7.11	3808	7.60

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	DF ^a
S4Q786-ICCB	41838	2.63	30392	5.31	36209	6.98	13476	7.52	10530	8.00	1
FC11101-1	44022	2.69	31324	5.31	37402	6.96	13106	7.52	10510	8.00	1
OP58-MS	43679	2.70	30307	5.31	36012	6.98	12959	7.52	10016	8.00	1
FC11101-2	41454	2.69	30207	5.31	33545	6.98	12504	7.52	10257	8.00	1
OP58-DUP	41246	2.69	30213	5.31	34832	6.96	12925	7.51	9449	8.00	1
FC11101-3	44457	2.69	30878	5.32	36597	6.98	14064	7.52	9862	8.02	1
FC11101-4	39897	2.67	30326	5.31	33741	6.96	13056	7.52	9914	8.00	1
FC11101-5	43528	2.70	30648	5.32	36629	6.98	13990	7.52	9965	8.00	1
ZZZZZZ	42478	2.70	30128	5.32	36982	6.98	13579	7.52	9729	8.02	1
ZZZZZZ	44057	2.70	30825	5.32	37149	6.98	13460	7.52	9555	8.00	1

IS 1 = 13C3-PFBA
 IS 2 = 13C2-PFHxA
 IS 3 = 13C4-PFOA
 IS 4 = 13C5-PFNA
 IS 5 = 13C2-PFDA

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q785-ICC785 4Q53734.D 11/13/23 16:43. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 to +100% of initial cal area.
- (d) Upper Limit = +100% of initial standard area; Retention time +0.4 minutes of check standard.
- (e) Lower Limit = -60% of initial standard area; Retention time -0.4 minutes of check standard.

6.5.2
6

Injection Standard Area Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q786-CC785	Injection Date:	11/15/23
Lab File ID:	4Q53879.D	Injection Time:	13:53
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	4232	7.05	5952	8.14
Check Std ^c	4635	7.03	6237	8.12
Upper Limit ^d	8464	7.43	11904	8.52
Lower Limit ^e	1693	6.63	2381	7.72

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
S4Q786-ICCB	4409	7.03	6435	8.13	1
FC11101-1	4498	7.03	5965	8.13	1
OP58-MS	4326	7.03	6190	8.13	1
FC11101-2	3759	7.03	5286	8.12	1
OP58-DUP	3905	7.03	5278	8.12	1
FC11101-3	4390	7.04	6334	8.13	1
FC11101-4	4121	7.03	6113	8.13	1
FC11101-5	4418	7.04	5987	8.13	1
<u>ZZZZZZ</u>	4408	7.04	6135	8.13	1
<u>ZZZZZZ</u>	4428	7.04	6257	8.13	1

IS 6 = 18O2-PFHXS
 IS 7 = 13C4-PFOS

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q785-ICC785 4Q53734.D 11/13/23 16:43. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 to +100% of initial cal area.
- (d) Upper Limit = +100% of initial standard area; Retention time +0.4 minutes of check standard.
- (e) Lower Limit = -60% of initial standard area; Retention time -0.4 minutes of check standard.

Injection Standard Area Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q788-CC788	Injection Date:	11/17/23
Lab File ID:	4Q54047.D	Injection Time:	21:58
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Initial Cal ^b	38460	2.59	28455	5.26	32969	6.93	12610	7.47	9289	7.97
Check Std ^c	40794	2.60	30816	5.27	33930	6.94	13488	7.48	9657	7.98
Upper Limit ^d	76920	3.00	56910	5.67	65938	7.34	25220	7.88	18578	8.38
Lower Limit ^e	15384	2.20	11382	4.87	13188	6.54	5044	7.08	3716	7.58

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	DF ^a
S4Q788-ICCB	39028	2.59	28529	5.27	32090	6.94	12498	7.48	9624	7.98	1
S4Q788-ICCB	39028	2.59	28529	5.27	32090	6.94	12498	7.48	9624	7.98	1
OP164-BS ^f	44343	2.68	31782	5.29	36405	6.94	14369	7.48	10730	7.98	1
OP164-LLBS	42339	2.69	28659	5.29	32756	6.94	13042	7.50	10021	7.98	1
OP164-MB	43752	2.67	29651	5.27	34942	6.94	14031	7.50	9476	7.98	1
ZZZZZZ	40299	2.67	28268	5.27	31707	6.94	12380	7.48	9127	7.98	1
ZZZZZZ	40614	2.68	27877	5.27	31341	6.94	12552	7.48	9919	7.98	1
FC11101-2 ^g	39037	2.65	27464	5.27	30923	6.94	12525	7.48	9237	7.98	1
OP99994-BS	41851	2.68	29541	5.27	34059	6.94	13078	7.48	9704	7.98	1
OP99994-LLBS	42912	2.68	30600	5.27	34736	6.94	13807	7.48	9972	7.98	1
OP99994-MB	41038	2.67	28297	5.27	32985	6.94	13004	7.50	9926	7.98	1

- IS 1 = 13C3-PFBA
- IS 2 = 13C2-PFHxA
- IS 3 = 13C4-PFOA
- IS 4 = 13C5-PFNA
- IS 5 = 13C2-PFDA

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q788-ICC788 4Q54009.D 11/17/23 12:09. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 to +100% of initial cal area.
- (d) Upper Limit = +100% of initial standard area; Retention time +0.4 minutes of check standard.
- (e) Lower Limit = -60% of initial standard area; Retention time -0.4 minutes of check standard.
- (f) Insufficient sample for MS/MSD.
- (g) Sample re-extracted due to EIS failure in the original run.

6.5.3
6

Injection Standard Area Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q788-CC788	Injection Date:	11/17/23
Lab File ID:	4Q54047.D	Injection Time:	21:58
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	4065	6.98	5710	8.08
Check Std ^c	4302	7.00	6082	8.09
Upper Limit ^d	8130	7.40	11420	8.49
Lower Limit ^e	1626	6.60	2284	7.69

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
S4Q788-ICCB	4075	7.00	5943	8.09	1
S4Q788-ICCB	4075	7.00	5943	8.09	1
OP164-BS ^f	4546	7.00	6516	8.09	1
OP164-LLBS	4235	7.00	5960	8.11	1
OP164-MB	4156	7.00	6450	8.09	1
ZZZZZZ	4030	7.00	5645	8.11	1
ZZZZZZ	3904	7.00	5935	8.09	1
FC11101-2 ^g	3954	7.00	6077	8.09	1
OP99994-BS	4073	7.00	6172	8.11	1
OP99994-LLBS	4226	7.00	6485	8.09	1
OP99994-MB	4189	7.00	6403	8.11	1

IS 6 = 18O2-PFHXS
 IS 7 = 13C4-PFOS

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q788-ICC788 4Q54009.D 11/17/23 12:09. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 to + 100% of initial cal area.
- (d) Upper Limit = + 100% of initial standard area; Retention time + 0.4 minutes of check standard.
- (e) Lower Limit = -60% of initial standard area; Retention time -0.4 minutes of check standard.
- (f) Insufficient sample for MS/MSD.
- (g) Sample re-extracted due to EIS failure in the original run.

6.5.3
6

TDCA Retention Time Check

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q785-RT	Injection Date:	11/13/23
Lab File ID:	4Q53728.D	Injection Time:	14:55
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.119	--	--
TDCA	6.747	1.372	1.000
TCDCA	6.597	1.522	1.000
TUDCA	5.741	2.378	1.000

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q785-IC785	4Q53730.D	11/13/23	15:25	00:30	Mass Calibration Verification
S4Q785-IC785	4Q53731.D	11/13/23	15:40	00:45	Initial cal 1
S4Q785-IC785	4Q53732.D	11/13/23	15:55	01:00	Initial cal 2
S4Q785-IC785	4Q53733.D	11/13/23	16:09	01:14	Initial cal 3
S4Q785-ICC785	4Q53734.D	11/13/23	16:43	01:48	Initial cal 4
S4Q785-IC785	4Q53735.D	11/13/23	16:58	02:03	Initial cal 5
S4Q785-IC785	4Q53736.D	11/13/23	17:13	02:18	Initial cal 6
S4Q785-IC785	4Q53737.D	11/13/23	17:28	02:33	Initial cal 7
S4Q785-IC785	4Q53738.D	11/13/23	17:42	02:47	Initial cal 8
S4Q785-IBLK	4Q53739.D	11/13/23	17:57	03:02	Instrument Blank
S4Q785-IBLK	4Q53739.D	11/13/23	17:57	03:02	Instrument Blank
S4Q785-ICV785	4Q53740.D	11/13/23	18:12	03:17	Initial cal verification 4
S4Q785-ICV785	4Q53741.D	11/13/23	18:27	03:32	Initial cal verification 20
S4Q785-CC785	4Q53742.D	11/13/23	18:41	03:46	Continuing cal 4
S4Q785-CC785	4Q53743.D	11/13/23	18:56	04:01	Continuing cal 1.0LL
OP99997-BS	4Q53744.D	11/13/23	19:11	04:16	Blank Spike
OP99997-LLBS	4Q53745.D	11/13/23	19:26	04:31	Blank Spike
OP99997-MB	4Q53746.D	11/13/23	19:40	04:45	Method Blank
ZZZZZZ	4Q53747.D	11/13/23	19:55	05:00	(unrelated sample)
ZZZZZZ	4Q53748.D	11/13/23	20:10	05:15	(unrelated sample)
FC11062-2	4Q53749.D	11/13/23	20:25	05:30	(used for QC only; not part of job FC11101)
OP99997-MS	4Q53750.D	11/13/23	20:39	05:44	Matrix Spike
FC11062-3	4Q53751.D	11/13/23	20:54	05:59	(used for QC only; not part of job FC11101)
OP99997-DUP	4Q53752.D	11/13/23	21:09	06:14	Duplicate
ZZZZZZ	4Q53753.D	11/13/23	21:24	06:29	(unrelated sample)
S4Q785-CC785	4Q53754.D	11/13/23	21:38	06:43	Continuing cal 4
S4Q785-ICCB	4Q53755.D	11/13/23	21:53	06:58	Continuing Calibration Blank
ZZZZZZ	4Q53756.D	11/13/23	22:08	07:13	(unrelated sample)
ZZZZZZ	4Q53757.D	11/13/23	22:23	07:28	(unrelated sample)
OP99956-BS	4Q53758.D	11/13/23	22:37	07:42	Blank Spike
OP99956-LLBS	4Q53759.D	11/13/23	22:52	07:57	Blank Spike
OP99956-MB	4Q53760.D	11/13/23	23:07	08:12	Method Blank
ZZZZZZ	4Q53761.D	11/13/23	23:22	08:27	(unrelated sample)
ZZZZZZ	4Q53762.D	11/13/23	23:36	08:41	(unrelated sample)

TDCA Retention Time Check

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q785-RT	Injection Date:	11/13/23
Lab File ID:	4Q53728.D	Injection Time:	14:55
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	4Q53763.D	11/13/23	23:51	08:56	(unrelated sample)
ZZZZZZ	4Q53764.D	11/14/23	00:06	09:11	(unrelated sample)
ZZZZZZ	4Q53765.D	11/14/23	00:21	09:26	(unrelated sample)
S4Q785-CC785	4Q53766.D	11/14/23	00:35	09:40	Continuing cal 4
S4Q785-ICCB	4Q53767.D	11/14/23	00:50	09:55	Continuing Calibration Blank
ZZZZZZ	4Q53768.D	11/14/23	01:05	10:10	(unrelated sample)
ZZZZZZ	4Q53769.D	11/14/23	01:20	10:25	(unrelated sample)
ZZZZZZ	4Q53770.D	11/14/23	01:34	10:39	(unrelated sample)
ZZZZZZ	4Q53771.D	11/14/23	01:49	10:54	(unrelated sample)
ZZZZZZ	4Q53772.D	11/14/23	02:04	11:09	(unrelated sample)
ZZZZZZ	4Q53773.D	11/14/23	02:19	11:24	(unrelated sample)
ZZZZZZ	4Q53774.D	11/14/23	02:33	11:38	(unrelated sample)
ZZZZZZ	4Q53775.D	11/14/23	02:48	11:53	(unrelated sample)
ZZZZZZ	4Q53776.D	11/14/23	03:03	12:08	(unrelated sample)
S4Q785-CC785	4Q53777.D	11/14/23	03:18	12:23	Continuing cal 4
S4Q785-ICCB	4Q53778.D	11/14/23	03:32	12:37	Continuing Calibration Blank
FC10708-15	4Q53779.D	11/14/23	03:47	12:52	(used for QC only; not part of job FC11101)
OP99956-MS	4Q53780.D	11/14/23	04:02	13:07	Matrix Spike
OP99956-MSD	4Q53781.D	11/14/23	04:17	13:22	Matrix Spike Duplicate
ZZZZZZ	4Q53782.D	11/14/23	04:31	13:36	(unrelated sample)
ZZZZZZ	4Q53783.D	11/14/23	04:46	13:51	(unrelated sample)
OP99926-BS	4Q53784.D	11/14/23	05:01	14:06	Blank Spike
OP99926-LLBS	4Q53785.D	11/14/23	05:16	14:21	Blank Spike
OP99926-MB	4Q53786.D	11/14/23	05:30	14:35	Method Blank
ZZZZZZ	4Q53787.D	11/14/23	05:45	14:50	(unrelated sample)
ZZZZZZ	4Q53788.D	11/14/23	06:00	15:05	(unrelated sample)
S4Q785-CC785	4Q53789.D	11/14/23	06:15	15:20	Continuing cal 4
S4Q785-ICCB	4Q53790.D	11/14/23	06:29	15:34	Continuing Calibration Blank
FC10703-1	4Q53791.D	11/14/23	06:44	15:49	(used for QC only; not part of job FC11101)
OP99926-MS	4Q53792.D	11/14/23	06:59	16:04	Matrix Spike
FC10703-2	4Q53793.D	11/14/23	07:14	16:19	(used for QC only; not part of job FC11101)
OP99926-DUP	4Q53794.D	11/14/23	07:28	16:33	Duplicate
ZZZZZZ	4Q53795.D	11/14/23	07:43	16:48	(unrelated sample)
ZZZZZZ	4Q53796.D	11/14/23	07:58	17:03	(unrelated sample)
ZZZZZZ	4Q53797.D	11/14/23	08:13	17:18	(unrelated sample)
ZZZZZZ	4Q53798.D	11/14/23	08:28	17:33	(unrelated sample)
ZZZZZZ	4Q53799.D	11/14/23	08:42	17:47	(unrelated sample)
ZZZZZZ	4Q53800.D	11/14/23	08:57	18:02	(unrelated sample)
S4Q785-CC785	4Q53801.D	11/14/23	09:12	18:17	Continuing cal 4
S4Q785-ICCB	4Q53802.D	11/14/23	09:27	18:32	Continuing Calibration Blank
ZZZZZZ	4Q53803.D	11/14/23	09:41	18:46	(unrelated sample)
ZZZZZZ	4Q53804.D	11/14/23	09:56	19:01	(unrelated sample)
ZZZZZZ	4Q53805.D	11/14/23	10:11	19:16	(unrelated sample)
ZZZZZZ	4Q53806.D	11/14/23	10:26	19:31	(unrelated sample)

6.6.1

6

TDCA Retention Time Check

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q785-RT	Injection Date:	11/13/23
Lab File ID:	4Q53728.D	Injection Time:	14:55
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	4Q53807.D	11/14/23	10:40	19:45	(unrelated sample)
FC10636-32	4Q53808.D	11/14/23	10:55	20:00	(used for QC only; not part of job FC11101)
ZZZZZZ	4Q53809.D	11/14/23	11:10	20:15	(unrelated sample)
ZZZZZZ	4Q53810.D	11/14/23	11:25	20:30	(unrelated sample)
ZZZZZZ	4Q53811.D	11/14/23	11:39	20:44	(unrelated sample)
S4Q785-ECC785	4Q53812.D	11/14/23	11:54	20:59	Ending cal 4
S4Q785-ICCB	4Q53813.D	11/14/23	12:09	21:14	Continuing Calibration Blank

6.6.1

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TDCA Retention Time Check

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q786-RT	Injection Date:	11/15/23
Lab File ID:	4Q53864.D	Injection Time:	10:01
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.119	--	--
TDCA	6.747	1.372	1.000
TCDCA	6.597	1.522	1.000
TUDCA	5.741	2.378	1.000

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q786-IBLK	4Q53867.D	11/15/23	10:45	00:44	Instrument Blank
S4Q786-IBLK	4Q53867.D	11/15/23	10:45	00:44	Instrument Blank
S4Q786-CC785	4Q53868.D	11/15/23	11:00	00:59	Continuing cal 4
S4Q786-CC785	4Q53869.D	11/15/23	11:14	01:13	Continuing cal 1.0LL
ZZZZZZ	4Q53870.D	11/15/23	11:41	01:40	(unrelated sample)
OP58-BS	4Q53871.D	11/15/23	11:55	01:54	Blank Spike
OP58-LLBS	4Q53872.D	11/15/23	12:10	02:09	Blank Spike
OP58-MB	4Q53873.D	11/15/23	12:25	02:24	Method Blank
ZZZZZZ	4Q53874.D	11/15/23	12:40	02:39	(unrelated sample)
ZZZZZZ	4Q53875.D	11/15/23	12:54	02:53	(unrelated sample)
ZZZZZZ	4Q53877.D	11/15/23	13:24	03:23	(unrelated sample)
S4Q786-CC785	4Q53879.D	11/15/23	13:53	03:52	Continuing cal 4
S4Q786-ICCB	4Q53880.D	11/15/23	14:08	04:07	Continuing Calibration Blank
FC11101-1	4Q53881.D	11/15/23	14:23	04:22	AF-RHMW17-WGN01LF-2311
OP58-MS	4Q53882.D	11/15/23	14:38	04:37	Matrix Spike
FC11101-2	4Q53883.D	11/15/23	14:52	04:51	AF-RHMW17D-WGN01LF-2311
OP58-DUP	4Q53884.D	11/15/23	15:07	05:06	Duplicate
FC11101-3	4Q53885.D	11/15/23	15:22	05:21	AF-RHMW17D-WQFB01-2311
FC11101-4	4Q53886.D	11/15/23	15:37	05:36	AF-RHMW17S-WGN01LF-2311
FC11101-5	4Q53887.D	11/15/23	15:51	05:50	AF-RHMW17S-WQEB01-2311
ZZZZZZ	4Q53888.D	11/15/23	16:06	06:05	(unrelated sample)
ZZZZZZ	4Q53889.D	11/15/23	16:21	06:20	(unrelated sample)
S4Q786-CC785	4Q53890.D	11/15/23	16:36	06:35	Continuing cal 4
S4Q786-ICCB	4Q53891.D	11/15/23	16:50	06:49	Continuing Calibration Blank
OP99927-BS	4Q53892.D	11/15/23	17:05	07:04	Blank Spike
OP99927-LLBS	4Q53893.D	11/15/23	17:20	07:19	Blank Spike
OP99927-MB	4Q53894.D	11/15/23	17:35	07:34	Method Blank
ZZZZZZ	4Q53895.D	11/15/23	17:50	07:49	(unrelated sample)
ZZZZZZ	4Q53896.D	11/15/23	18:04	08:03	(unrelated sample)
ZZZZZZ	4Q53897.D	11/15/23	18:19	08:18	(unrelated sample)
ZZZZZZ	4Q53898.D	11/15/23	18:34	08:33	(unrelated sample)
ZZZZZZ	4Q53899.D	11/15/23	18:49	08:48	(unrelated sample)
ZZZZZZ	4Q53900.D	11/15/23	19:03	09:02	(unrelated sample)
S4Q786-CC785	4Q53901.D	11/15/23	19:18	09:17	Continuing cal 4

TDCA Retention Time Check

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q786-RT	Injection Date:	11/15/23
Lab File ID:	4Q53864.D	Injection Time:	10:01
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q786-ICCB	4Q53902.D	11/15/23	19:33	09:32	Continuing Calibration Blank
ZZZZZZ	4Q53903.D	11/15/23	19:48	09:47	(unrelated sample)
ZZZZZZ	4Q53904.D	11/15/23	20:02	10:01	(unrelated sample)
ZZZZZZ	4Q53905.D	11/15/23	20:17	10:16	(unrelated sample)
ZZZZZZ	4Q53906.D	11/15/23	20:32	10:31	(unrelated sample)
ZZZZZZ	4Q53907.D	11/15/23	20:47	10:46	(unrelated sample)
ZZZZZZ	4Q53908.D	11/15/23	21:01	11:00	(unrelated sample)
ZZZZZZ	4Q53909.D	11/15/23	21:16	11:15	(unrelated sample)
ZZZZZZ	4Q53910.D	11/15/23	21:31	11:30	(unrelated sample)
S4Q786-CC785	4Q53913.D	11/15/23	22:15	12:14	Continuing cal 4
S4Q786-ICCB	4Q53914.D	11/15/23	22:30	12:29	Continuing Calibration Blank
OP80-BS	4Q53915.D	11/15/23	22:45	12:44	Blank Spike
OP80-LLBS	4Q53916.D	11/15/23	22:59	12:58	Blank Spike
OP80-MB	4Q53917.D	11/15/23	23:14	13:13	Method Blank
ZZZZZZ	4Q53918.D	11/15/23	23:29	13:28	(unrelated sample)
ZZZZZZ	4Q53919.D	11/15/23	23:44	13:43	(unrelated sample)
ZZZZZZ	4Q53920.D	11/15/23	23:58	13:57	(unrelated sample)
ZZZZZZ	4Q53921.D	11/16/23	00:13	14:12	(unrelated sample)
ZZZZZZ	4Q53922.D	11/16/23	00:28	14:27	(unrelated sample)
ZZZZZZ	4Q53923.D	11/16/23	00:43	14:42	(unrelated sample)
ZZZZZZ	4Q53924.D	11/16/23	00:57	14:56	(unrelated sample)
S4Q786-CC785	4Q53925.D	11/16/23	01:12	15:11	Continuing cal 4
S4Q786-ICCB	4Q53926.D	11/16/23	01:27	15:26	Continuing Calibration Blank
ZZZZZZ	4Q53927.D	11/16/23	01:42	15:41	(unrelated sample)
OP80-MS	4Q53929.D	11/16/23	02:11	16:10	Matrix Spike
OP80-MSD	4Q53930.D	11/16/23	02:26	16:25	Matrix Spike Duplicate
ZZZZZZ	4Q53931.D	11/16/23	02:41	16:40	(unrelated sample)
ZZZZZZ	4Q53932.D	11/16/23	02:55	16:54	(unrelated sample)
ZZZZZZ	4Q53933.D	11/16/23	03:10	17:09	(unrelated sample)
ZZZZZZ	4Q53934.D	11/16/23	03:25	17:24	(unrelated sample)
ZZZZZZ	4Q53935.D	11/16/23	03:40	17:39	(unrelated sample)
S4Q786-ECC785	4Q53936.D	11/16/23	03:54	17:53	Ending cal 4
S4Q786-ICCB	4Q53937.D	11/16/23	04:09	18:08	Continuing Calibration Blank

6.6.2

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TDCA Retention Time Check

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q788-RT	Injection Date:	11/17/23
Lab File ID:	4Q54003.D	Injection Time:	10:41
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.069	--	--
TDCA	6.697	1.372	1.000
TCDCA	6.697	1.372	1.000
TUDCA	5.692	2.377	1.000

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q788-IC788	4Q54005.D	11/17/23	11:10	00:29	Mass Calibration Verification
S4Q788-IC788	4Q54006.D	11/17/23	11:25	00:44	Initial cal 1
S4Q788-IC788	4Q54007.D	11/17/23	11:40	00:59	Initial cal 2
S4Q788-IC788	4Q54008.D	11/17/23	11:55	01:14	Initial cal 3
S4Q788-ICC788	4Q54009.D	11/17/23	12:09	01:28	Initial cal 4
S4Q788-IC788	4Q54010.D	11/17/23	12:24	01:43	Initial cal 5
S4Q788-IC788	4Q54011.D	11/17/23	12:39	01:58	Initial cal 6
S4Q788-IC788	4Q54012.D	11/17/23	12:54	02:13	Initial cal 7
S4Q788-IC788	4Q54013.D	11/17/23	13:08	02:27	Initial cal 8
S4Q788-IBLK	4Q54014.D	11/17/23	13:23	02:42	Instrument Blank
S4Q788-IBLK	4Q54014.D	11/17/23	13:23	02:42	Instrument Blank
S4Q788-ICV788	4Q54015.D	11/17/23	13:38	02:57	Initial cal verification 4
S4Q788-ICV788	4Q54016.D	11/17/23	13:53	03:12	Initial cal verification 20
S4Q788-CC788	4Q54017.D	11/17/23	14:07	03:26	Continuing cal 4
S4Q788-CC788	4Q54018.D	11/17/23	14:22	03:41	Continuing cal 1.0LL
ZZZZZZ	4Q54019.D	11/17/23	14:37	03:56	(unrelated sample)
ZZZZZZ	4Q54020.D	11/17/23	14:52	04:11	(unrelated sample)
OP134-BS	4Q54021.D	11/17/23	15:07	04:26	Blank Spike
OP134-LLBS	4Q54022.D	11/17/23	15:30	04:49	Blank Spike
OP134-MB	4Q54023.D	11/17/23	15:44	05:03	Method Blank
ZZZZZZ	4Q54024.D	11/17/23	15:59	05:18	(unrelated sample)
ZZZZZZ	4Q54025.D	11/17/23	16:14	05:33	(unrelated sample)
ZZZZZZ	4Q54026.D	11/17/23	16:29	05:48	(unrelated sample)
ZZZZZZ	4Q54027.D	11/17/23	16:53	06:12	(unrelated sample)
S4Q788-CC788	4Q54028.D	11/17/23	17:18	06:37	Continuing cal 4
S4Q788-ICCB	4Q54029.D	11/17/23	17:32	06:51	Continuing Calibration Blank
ZZZZZZ	4Q54030.D	11/17/23	17:47	07:06	(unrelated sample)
ZZZZZZ	4Q54031.D	11/17/23	18:02	07:21	(unrelated sample)
FC10719-1	4Q54032.D	11/17/23	18:17	07:36	(used for QC only; not part of job FC11101)
OP59-DUP	4Q54033.D	11/17/23	18:31	07:50	Duplicate
ZZZZZZ	4Q54034.D	11/17/23	18:46	08:05	(unrelated sample)
ZZZZZZ	4Q54035.D	11/17/23	19:01	08:20	(unrelated sample)
S4Q788-CC788	4Q54036.D	11/17/23	19:16	08:35	Continuing cal 4
S4Q788-ICCB	4Q54037.D	11/17/23	19:30	08:49	Continuing Calibration Blank

TDCA Retention Time Check

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q788-RT	Injection Date:	11/17/23
Lab File ID:	4Q54003.D	Injection Time:	10:41
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q788-ICCB	4Q54037.D	11/17/23	19:30	08:49	Continuing Calibration Blank
OP137-BS	4Q54038.D	11/17/23	19:45	09:04	Blank Spike
OP137-LLBS	4Q54039.D	11/17/23	20:00	09:19	Blank Spike
OP137-MB	4Q54040.D	11/17/23	20:15	09:34	Method Blank
FC10963-2	4Q54041.D	11/17/23	20:29	09:48	(used for QC only; not part of job FC11101)
FC10963-2	4Q54042.D	11/17/23	20:44	10:03	(used for QC only; not part of job FC11101)
OP137-MS	4Q54043.D	11/17/23	20:59	10:18	Matrix Spike
OP137-MSD	4Q54044.D	11/17/23	21:14	10:33	Matrix Spike Duplicate
ZZZZZZ	4Q54045.D	11/17/23	21:28	10:47	(unrelated sample)
ZZZZZZ	4Q54046.D	11/17/23	21:43	11:02	(unrelated sample)
S4Q788-CC788	4Q54047.D	11/17/23	21:58	11:17	Continuing cal 4
S4Q788-ICCB	4Q54048.D	11/17/23	22:13	11:32	Continuing Calibration Blank
S4Q788-ICCB	4Q54048.D	11/17/23	22:13	11:32	Continuing Calibration Blank
OP164-BS	4Q54049.D	11/17/23	22:27	11:46	Blank Spike
OP164-LLBS	4Q54050.D	11/17/23	22:42	12:01	Blank Spike
OP164-MB	4Q54051.D	11/17/23	22:57	12:16	Method Blank
ZZZZZZ	4Q54052.D	11/17/23	23:12	12:31	(unrelated sample)
ZZZZZZ	4Q54053.D	11/17/23	23:26	12:45	(unrelated sample)
FC11101-2	4Q54054.D	11/17/23	23:41	13:00	AF-RHMW17D-WGN01LF-2311
OP99994-BS	4Q54056.D	11/18/23	00:11	13:30	Blank Spike
OP99994-LLBS	4Q54057.D	11/18/23	00:26	13:45	Blank Spike
OP99994-MB	4Q54058.D	11/18/23	00:40	13:59	Method Blank
S4Q788-CC788	4Q54059.D	11/18/23	00:55	14:14	Continuing cal 4
S4Q788-ICCB	4Q54060.D	11/18/23	01:10	14:29	Continuing Calibration Blank

6.6.3

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Ion Ratio Summary

Job Number: FC11101
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q786	Method: EPA DRAFT 1633
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Lab Sample ID	Lab File ID	Ion Ratios		
		PFOA	PFOS	6:2FTS
S4Q785-ICC785	4Q53734.D	20.4	49.9	38.4
FC11101-1	4Q53881.D			
FC11101-2	4Q53883.D			47.5
FC11101-3	4Q53885.D			
FC11101-4	4Q53886.D	19.8	26.7	
FC11101-5	4Q53887.D			

6.7.1

6

Isotope Dilution Standard Recovery Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Method: EPA DRAFT 1633	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6	S7	S8
FC11101-1	4Q53881.D	93	95	95	94	93	96	85	78
FC11101-2	4Q53883.D	2* a	11* a	84	102	101	101	91	90
FC11101-2	4Q54054.D	22	80	98	99	98	91	87	91
FC11101-3	4Q53885.D	94	93	91	95	91	81	85	80
FC11101-4	4Q53886.D	64	106	100	107	106	103	96	103
FC11101-5	4Q53887.D	97	98	93	99	91	86	87	89
OP164-BS	4Q54049.D	51	87	87	87	86	83	88	89
OP164-LLBS	4Q54050.D	100	101	98	102	100	96	90	89
OP164-MB	4Q54051.D	97	98	96	97	90	89	103	104
OP58-BS	4Q53871.D	36	87	85	87	86	86	85	85
OP58-DUP	4Q53884.D	3* a	20	92	98	94	93	104	103
OP58-LLBS	4Q53872.D	97	96	94	96	98	101	105	101
OP58-MB	4Q53873.D	103	98	96	102	103	98	98	100
OP58-MS	4Q53882.D	84	98	98	100	95	101	93	90
S4Q786-IBLK	4Q53867.D	100	103	102	107	102	105	102	114
S4Q786-ICCB	4Q53880.D	101	102	99	101	99	105	99	103

Isotope Dilution Standards **Recovery Limits**

S1 = 13C4-PFBA	20-150%
S2 = 13C5-PFPeA	20-150%
S3 = 13C5-PFHxA	20-150%
S4 = 13C4-PFHpA	20-150%
S5 = 13C8-PFOA	20-150%
S6 = 13C9-PFNA	20-150%
S7 = 13C6-PFDA	20-150%
S8 = 13C7-PFUnDA	20-150%

(a) Outside control limits.

Isotope Dilution Standard Recovery Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Method: EPA DRAFT 1633	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S9	S10	S11	S12	S13	S14	S15	S16
FC11101-1	4Q53881.D	65	58	91	91	88	90	63	70
FC11101-2	4Q53883.D	78	65	103	108	102	111	99	104
FC11101-2	4Q54054.D	83	74	97	101	83	88	80	80
FC11101-3	4Q53885.D	66	66	91	92	81	76	55	62
FC11101-4	4Q53886.D	84	74	102	105	93	99	68	72
FC11101-5	4Q53887.D	76	78	97	92	87	84	68	74
OP164-BS	4Q54049.D	80	73	83	89	80	84	74	65
OP164-LLBS	4Q54050.D	78	75	93	95	87	85	71	76
OP164-MB	4Q54051.D	90	87	91	99	86	86	72	78
OP58-BS	4Q53871.D	76	74	91	90	89	93	78	80
OP58-DUP	4Q53884.D	92	74	96	101	98	109	100	103
OP58-LLBS	4Q53872.D	95	81	98	98	88	97	78	84
OP58-MB	4Q53873.D	87	76	100	106	94	81	62	65
OP58-MS	4Q53882.D	82	73	97	100	87	98	63	66
S4Q786-IBLK	4Q53867.D	101	99	117	114	102	110		
S4Q786-ICCB	4Q53880.D	95	97	94	101	100	97		

Isotope Dilution Standards **Recovery Limits**

S9 = 13C2-PFDoDA	20-150%
S10 = 13C2-PFTeDA	20-150%
S11 = 13C3-PFBS	20-150%
S12 = 13C3-PFHxS	20-150%
S13 = 13C8-PFOS	20-150%
S14 = 13C8-FOSA	20-150%
S15 = d3-MeFOSA	20-150%
S16 = d5-EtFOSA	20-150%

6.8.1

6

Isotope Dilution Standard Recovery Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Method: EPA DRAFT 1633	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S17	S18	S19	S20	S21	S22	S23	S24
FC11101-1	4Q53881.D	103	86	66	66	107	111	108	90
FC11101-2	4Q53883.D	123	131	83	84	162	151	135	73
FC11101-2	4Q54054.D	97	94	74	79	114	104	102	95
FC11101-3	4Q53885.D	85	80	64	67	109	112	94	90
FC11101-4	4Q53886.D	114	114	75	74	125	106	93	92
FC11101-5	4Q53887.D	97	90	75	77	114	109	101	95
OP164-BS	4Q54049.D	95	91	68	68	105	110	108	83
OP164-LLBS	4Q54050.D	103	94	67	73	114	121	109	95
OP164-MB	4Q54051.D	93	90	77	83	132	131	125	91
OP58-BS	4Q53871.D	105	96	80	83	122	122	130	83
OP58-DUP	4Q53884.D	130	132	86	88	214* a	143	137	79
OP58-LLBS	4Q53872.D	116	108	83	86	122	143	134	92
OP58-MB	4Q53873.D	106	97	68	73	151	157	145	97
OP58-MS	4Q53882.D	103	89	76	79	119	111	114	95
S4Q786-IBLK	4Q53867.D	127	115			177	162	158	
S4Q786-ICCB	4Q53880.D	114	99			148	131	145	

Isotope Dilution Standards	Recovery Limits
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S17 = d3-MeFOSAA	20-150%
S18 = d5-EtFOSAA	20-150%
S19 = d7-MeFOSE	20-150%
S20 = d9-EtFOSE	20-150%
S21 = 13C2-4:2FTS	20-180%
S22 = 13C2-6:2FTS	20-180%
S23 = 13C2-8:2FTS	20-180%
S24 = 13C3-HFPO-DA	20-150%

(a) Outside control limits.

Initial Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-ICC785
 Lab FileID: 4Q53734.D

Initial Calibration Report

Method Path	Method File	Batch Name	Last Calib Update	Calibration Files	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD	Level Last Update Time
D:\MassHunter\methods	1633_111323_S4Q785.quantmethod.xml	D:\MassHunter\Data\111323_1633_S4Q785	11/14/2023 10:06:38 AM	D:\MassHunter\Data\111323_1633_S4Q785\4Q53731.d												11/13/2023 3:40:26 PM
D:\MassHunter\methods	1633_111323_S4Q785.quantmethod.xml	D:\MassHunter\Data\111323_1633_S4Q785	11/14/2023 10:06:38 AM	D:\MassHunter\Data\111323_1633_S4Q785\4Q53732.d												11/14/2023 10:06:38 AM
D:\MassHunter\methods	1633_111323_S4Q785.quantmethod.xml	D:\MassHunter\Data\111323_1633_S4Q785	11/14/2023 10:06:38 AM	D:\MassHunter\Data\111323_1633_S4Q785\4Q53733.d												11/13/2023 3:55:10 PM
D:\MassHunter\methods	1633_111323_S4Q785.quantmethod.xml	D:\MassHunter\Data\111323_1633_S4Q785	11/14/2023 10:06:38 AM	D:\MassHunter\Data\111323_1633_S4Q785\4Q53734.d												11/13/2023 4:09:55 PM
D:\MassHunter\methods	1633_111323_S4Q785.quantmethod.xml	D:\MassHunter\Data\111323_1633_S4Q785	11/14/2023 10:06:38 AM	D:\MassHunter\Data\111323_1633_S4Q785\4Q53735.d												11/13/2023 4:43:47 PM
D:\MassHunter\methods	1633_111323_S4Q785.quantmethod.xml	D:\MassHunter\Data\111323_1633_S4Q785	11/14/2023 10:06:38 AM	D:\MassHunter\Data\111323_1633_S4Q785\4Q53736.d												11/13/2023 4:58:34 PM
D:\MassHunter\methods	1633_111323_S4Q785.quantmethod.xml	D:\MassHunter\Data\111323_1633_S4Q785	11/14/2023 10:06:38 AM	D:\MassHunter\Data\111323_1633_S4Q785\4Q53737.d												11/13/2023 5:13:19 PM
D:\MassHunter\methods	1633_111323_S4Q785.quantmethod.xml	D:\MassHunter\Data\111323_1633_S4Q785	11/14/2023 10:06:38 AM	D:\MassHunter\Data\111323_1633_S4Q785\4Q53738.d												11/13/2023 5:28:03 PM
D:\MassHunter\methods	1633_111323_S4Q785.quantmethod.xml	D:\MassHunter\Data\111323_1633_S4Q785	11/14/2023 10:06:38 AM	D:\MassHunter\Data\111323_1633_S4Q785\4Q53739.d												11/13/2023 5:42:50 PM
Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD	Level Last Update Time				
I M4-PFBA	Avg RF	0.3212	0.3363	0.3495	0.3619	0.3947	0.3230	0.4101	0.4128	0.3637	10.359	11/14/2023 10:06:38 AM				
T PFBA	Avg RF	0.0459	0.0540	0.0532	0.0552	0.0583	0.0496	0.0654	0.0717	0.0567	14.778	11/14/2023 10:06:38 AM				
T 3:3FTCA																
I M5-PFPeA	Avg RF	0.5911	0.6630	0.6874	0.6861	0.7485	0.6221	0.7714	0.8032	0.6966	10.528	11/14/2023 10:06:38 AM				
T PFMPA	Avg RF	0.9576	1.0279	1.0583	1.0819	1.1577	0.9779	1.2096	1.2310	1.0877	9.436	11/14/2023 10:06:38 AM				
T PFPeA	Avg RF	0.5565	0.6011	0.6143	0.6175	0.6685	0.5564	0.6880	0.7093	0.6265	9.168	11/14/2023 10:06:38 AM				
T PFMBA																
I M5-PFHxA	Avg RF	0.0504	0.0711	0.0574	0.0612	0.0651	0.0534	0.0635	0.0606	0.0603	10.935	11/14/2023 10:06:38 AM				
T NFDHA	Avg RF	0.7916	0.7823	0.8322	0.9150	0.9243	0.7454	0.9865	1.0102	0.8734	11.361	11/14/2023 10:06:38 AM				
T PFHxA	Avg RF	0.5714	0.6822	0.6892	0.6772	0.7560	0.6035	0.7887	0.7619	0.6912	11.074	11/14/2023 10:06:38 AM				
T PFEEA	Avg RF	0.1345	0.1413	0.1468	0.1544	0.1673	0.1340	0.1738	0.1775	0.1537	11.308	11/14/2023 10:06:38 AM				
T 5:3FTCA	Avg RF	0.0589	0.0699	0.0685	0.0629	0.0754	0.0594	0.0772	0.0794	0.0690	11.592	11/14/2023 10:06:38 AM				
T 7:3FTCA																
I M4-PFHpA	Avg RF	1.4319	1.4048	1.5368	1.5423	1.6493	1.3594	1.8173	1.8015	1.5679	11.142	11/14/2023 10:06:38 AM				
T PFHpA																
I M8-PFOA	Avg RF	1.2032	1.1979	1.1570	1.2281	1.2296	1.0137	1.3424	1.3101	1.2103	8.250	11/14/2023 10:06:38 AM				
T PFOA																
I M9-PFNA	Avg RF	0.6769	0.7970	0.7469	0.7624	0.9091	0.6492	0.9013	0.9335	0.7970	13.586	11/14/2023 10:06:38 AM				
T PFNA																
I M6-PFDA	Avg RF	1.1193	0.9355	0.9509	1.0048	1.0328	0.7826	1.1147	1.2386	1.0224	13.594	11/14/2023 10:06:38 AM				
T PFDA																
I M7-PFUnDA	Avg RF	0.8756	0.8431	1.0606	1.0264	1.2320	0.8201	1.1229	1.1973	1.0223	15.718	11/14/2023 10:06:38 AM				
T PFUnDA																
I M2-PFDdA																

Generated at 10:06 AM on 11/14/2023

Page 1 of 3



Initial Calibration Summary

Job Number: FC11101
 Account: AECOM AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-ICC785
 Lab FileID: 4Q53734.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T PFDoDA	Avg RF	1.0423	0.9231	0.9860	1.0568	1.1103	0.7883	1.1342	1.1149	1.0195	11.502
T PFTfDA	Avg RF	0.8416	1.0138	1.1847	1.2151	1.2822	0.9036	1.2600	1.1743	1.1094	15.114
I M2-PFTeDA	Avg RF	0.8463	0.9338	0.9192	0.9200	1.0566	0.8006	1.0600	1.0553	0.9490	10.514
T PFTeDA	Avg RF	1.0877	1.2381	1.1639	1.1850	1.3131	1.0297	1.3727	1.3577	1.2185	10.258
I M8-FOSA	Avg RF	0.8670	0.8902	0.8904	0.8901	0.9456	0.7484	0.9281	0.9383	0.8873	7.049
T PFBs	Avg RF	0.7144	0.8139	0.7777	0.8125	0.8470	0.6716	0.9602	0.9754	0.8216	12.977
I M3-PFHxS	Avg RF	0.6928	0.7380	0.7916	0.7076	0.7982	0.6380	0.8618	0.8049	0.7541	9.664
T PPFs	Avg RF	1.0097	0.7936	0.9702	1.0402	1.0842	0.7622	1.1114	1.1363	0.9885	14.244
T PPFs	Avg RF	1.3444	0.9274	1.0997	1.1471	1.2551	0.8001	1.2574	1.2448	1.1345	16.388
T PPNs	Avg RF	0.3657	0.5180	0.4986	0.5265	0.5221	0.3759	0.5127	0.4973	0.4771	13.932
T PFDs	Avg RF	0.6198	0.5820	0.6020	0.6866	0.7157	0.4987	0.7206	0.7509	0.6470	13.251
T PFDods	Avg RF	0.5190	0.4227	0.5076	0.5540	0.5588	0.3853	0.5607	0.5734	0.5102	13.692
I M2-4:2FTS	Avg RF	10.07	10.15	10.03	10.19	10.18	8.0207	10.42	9.9954	9.8811	7.720
T 4:2FTS	Avg RF	5.6330	5.1601	5.1163	5.5790	5.7824	4.3417	6.0644	5.6080	5.4106	9.816
I M2-6:2FTS	Avg RF	2.8578	2.3640	2.6869	3.1273	3.1783	1.9346	3.3753	2.7402	2.7830	16.840
T 6:2FTS	Avg RF	1.0951	0.6578	0.8185	0.8520	0.9019	0.7725	1.0135	0.9982	0.8887	16.107
I M2-8:2FTS	Avg RF	0.9501	1.0816	0.9916	1.0859	1.1283	0.9062	1.1833	1.1449	1.0590	9.349
T 8:2FTS	Avg RF	6.7850	7.6601	7.8322	4.7210	8.7850	7.0515	8.9514	8.6521	7.5548	18.472
I M3-MeFOSAA	Avg RF	3.0972	3.0308	3.1760	3.3640	3.4855	2.7666	3.3461	2.9515	3.1522	7.591
T MeFOSAA	Avg RF	2.8715	2.8705	2.9253	3.2807	3.4521	2.7464	3.5272	3.3029	3.1221	9.661
I M3-HFO-DA	Avg RF	0.6917	0.7597	0.9351	0.9429	0.9090	0.7719	1.0944	1.0587	0.8954	16.098
T HFO-DA	Avg RF	0.9807	1.1489	1.1447	0.9589	1.2792	0.9755	1.2770	1.3476	1.1391	13.545
I M7-MeFOSE	Avg RF	0.9376	0.8795	0.8783	0.9464	1.0177	0.7571	1.0368	1.0191	0.9341	10.105
T MeFOSE	Avg RF	0.9376	0.8795	0.8783	0.9464	1.0177	0.7571	1.0368	1.0191	0.9341	10.105

Generated at 10:06 AM on 11/14/2023

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Initial Calibration Summary

Job Number: FC11101
 Account: AECOM AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-ICC785
 Lab FileID: 4Q53734.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M5-EFOSA	Avg RF	0.9355	1.1365	1.0873	1.1348	1.2959	0.9240	1.2041	1.3016	1.1275	12.746
T EtFOSA						ISTD					
I M3-MeFOSA	Avg RF	0.8577	0.8915	0.8861	0.9802	0.9910	0.7547	0.9343	0.9634	0.9074	8.600
T MeFOSA						ISTD					
I 13C4-PFOS						ISTD					
S d3-MeFOSAA	Avg RF	0.8834	1.0055	0.9696	0.9846	0.9596	0.9096	0.9339	0.9385	0.9481	4.215
S 13C8-PFOS	Avg RF	1.1337	1.2301	1.1786	1.2290	1.1145	1.2860	1.1736	1.2036	1.1936	4.664
S d5-EFOSAA	Avg RF	0.8139	0.8662	0.8035	0.8600	0.8321	0.8442	0.7962	0.8265	0.8303	3.067
S 13C8-FOSA	Avg RF	1.1495	1.2034	1.1755	1.4545	1.1401	1.1500	1.1055	1.1813	1.1950	9.117
S d7-MeFOSE	Avg RF	0.5036	0.5335	0.5038	0.5838	0.4905	0.4949	0.4943	0.5155	0.5150	6.040
S d3-MeFOSA	Avg RF	0.7585	0.8270	0.8013	0.8951	0.7762	0.8132	0.8688	0.9324	0.8341	7.195
S d9-EFOSE	Avg RF	0.5634	0.6600	0.5925	0.6573	0.5368	0.5943	0.5669	0.6010	0.5965	7.309
S d5-EFOSA	Avg RF	0.9600	0.9887	1.0077	1.0696	0.8841	0.9945	1.0090	1.0036	0.9896	5.312
I 13C3-PFBA						ISTD					
S 13C4-PFBA	Avg RF	1.0658	1.0505	1.0189	1.0484	1.0463	1.0515	1.0312	1.0222	1.0418	1.552
I 1802-PFHxS						ISTD					
S 13C2-4:2FTS	Avg RF	0.0828	0.0903	0.0811	0.0846	0.0890	0.0859	0.0895	0.0813	0.0856	4.334
S 13C3-PBBS	Avg RF	1.7799	1.9184	1.7386	1.8928	1.8301	1.7982	2.0567	1.9870	1.8752	5.817
S 13C2-6:2FTS	Avg RF	0.1767	0.1875	0.1775	0.1711	0.1837	0.1889	0.1832	0.1734	0.1803	3.630
S 13C3-PFHxS	Avg RF	1.5305	1.5950	1.4125	1.5639	1.5712	1.5413	1.6107	1.5714	1.5496	3.945
S 13C2-8:2FTS	Avg RF	0.2495	0.2897	0.2402	0.2110	0.2487	0.2986	0.2378	0.2577	0.2541	11.156
I 13C4-PFOA						ISTD					
S 13C8-PFOA	Avg RF	0.8645	0.9014	0.8942	0.9104	0.9197	0.8728	0.8783	0.8988	0.8925	2.142
I 13C2-PFDA						ISTD					
S 13C6-PFDA	Avg RF	0.9421	1.0175	0.9056	0.9093	0.9480	0.9243	0.9190	0.7924	0.9198	6.805
S 13C7-PFUnDA	Avg RF	1.1528	1.1912	1.0349	1.1644	1.0162	1.0360	1.0474	0.8612	1.0630	10.024
S 13C2-PFDODA	Avg RF	1.1120	1.1541	1.0401	1.1304	1.1175	1.1398	1.1658	1.1643	1.1280	3.619
S 13C2-PFTeDA	Avg RF	1.1032	1.1159	1.0975	1.2527	1.1252	1.0508	1.1678	1.1684	1.1352	5.370
I 13C5-PFNA						ISTD					
S 13C9-PFNA	Avg RF	1.0242	1.0323	0.9930	0.9913	0.9173	0.9973	0.9977	0.9329	0.9858	4.109
I 13C2-PFHxA						ISTD					
S 13C5-PPeA	Avg RF	0.6169	0.6185	0.5974	0.6505	0.6239	0.5791	0.6055	0.5868	0.6098	3.735
S 13C5-PFHxA	Avg RF	0.9489	0.9451	0.9182	0.9629	0.9456	0.9168	0.9189	0.9034	0.9325	2.224
S 13C3-HPOD-A	Avg RF	0.2107	0.2169	0.2144	0.2067	0.2146	0.2095	0.2126	0.2167	0.2127	1.691
S 13C4-PFHpA	Avg RF	0.9012	0.9034	0.8680	0.8662	0.8993	0.8654	0.8421	0.8317	0.8722	3.122

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

Initial Calibration Verification

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-ICV785
 Lab FileID: 4Q53740.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111323_1633_S4Q785\s4q785.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\111323_1633_S4Q785\4Q53731.d
 2:D:\MassHunter\Data\111323_1633_S4Q785\4Q53732.d
 3:D:\MassHunter\Data\111323_1633_S4Q785\4Q53733.d
 4:D:\MassHunter\Data\111323_1633_S4Q785\4Q53734.d
 5:D:\MassHunter\Data\111323_1633_S4Q785\4Q53735.d
 6:D:\MassHunter\Data\111323_1633_S4Q785\4Q53736.d
 7:D:\MassHunter\Data\111323_1633_S4Q785\4Q53737.d
 8:D:\MassHunter\Data\111323_1633_S4Q785\4Q53738.d

Data File: 4Q53740
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.050	21.0	121.0
13C2-6:2FTS	5.000	5.070	1.4	101.4
13C2-8:2FTS	5.000	5.127	2.5	102.5
13C2-PFDoDA	1.250	1.230	-1.6	98.4
13C2-PFTeDA	1.250	1.233	-1.3	98.7
13C3-PFBS	2.500	2.551	2.0	102.0
13C3-PFHxS	2.500	2.373	-5.1	94.9
13C4-PFBA	10.000	10.107	1.1	101.1
13C4-PFHpA	2.500	2.523	0.9	100.9
13C5-PFHxA	2.500	2.550	2.0	102.0
13C5-PFPeA	5.000	4.958	-0.8	99.2
13C6-PFDA	1.250	1.282	2.6	102.6
13C7-PFUnDA	1.250	1.329	6.4	106.4
13C8-FOSA	2.500	2.488	-0.5	99.5
13C8-PFOA	2.500	2.445	-2.2	97.8
13C8-PFOS	2.500	2.462	-1.5	98.5
13C9-PFNA	1.250	1.326	6.1	106.1
4:2FTS	9.375	8.525	-9.1	90.9
6:2FTS	9.500	10.344	8.9	108.9
8:2FTS	9.600	10.599	10.4	110.4
d3-MeFOSAA	5.000	5.381	7.6	107.6
EtFOSAA	2.500	2.899	16.0	116.0
FOSA	2.500	2.412	-3.5	96.5
MeFOSAA	2.500	2.368	-5.3	94.7
PFBA	10.000	9.791	-2.1	97.9
PFBS	2.218	2.034	-8.3	91.7
PFDA	2.500	2.323	-7.1	92.9
PFDoDA	2.500	2.420	-3.2	96.8
PFDS	2.413	2.327	-3.6	96.4
PFHpA	2.500	2.477	-0.9	99.1
PFHpS	2.383	2.486	4.3	104.3
PFHxA	2.500	2.315	-7.4	92.6
PFHxS	2.285	2.550	11.6	111.6
PFNA	2.500	2.441	-2.3	97.7
PFNS	2.405	2.382	-1.0	99.0
PFOA	2.500	2.364	-5.5	94.5
PFOS	2.320	2.150	-7.3	92.7

Initial Calibration Verification

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-ICV785
 Lab FileID: 4Q53740.D

PFPeA	5.000	4.917	-1.7	98.3
PFPeS	2.353	2.294	-2.5	97.5
PFTeDA	2.500	2.392	-4.3	95.7
PFTTrDA	2.500	2.618	4.7	104.7
PFUnDA	2.500	2.494	-0.2	99.8
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.705	-0.4	99.6
13C3-HFPO-DA	10.000	9.822	-1.8	98.2
9C1-PF3ONS	4.675	4.754	1.7	101.7
ADONA	4.725	5.557	17.6	117.6
HFPO-DA	5.000	4.839	-3.2	96.8
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.921	-4.5	95.5
5:3FTCA	62.400	59.282	-5.0	95.0
7:3FTCA	62.400	59.658	-4.4	95.6
d3-MeFOSA	2.500	2.253	-9.9	90.1
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.131	2.6	102.6
EtFOSE	12.500	12.788	2.3	102.3
MeFOSA	5.000	5.482	9.6	109.6
MeFOSE	12.500	12.664	1.3	101.3
PFDoDS	2.425	2.408	-0.7	99.3
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.725	-5.5	94.5
d7-MeFOSE	25.000	23.728	-5.1	94.9
d9-EtFOSE	25.000	23.660	-5.4	94.6
d5-EtFOSA	2.500	2.373	-5.1	94.9
NFDHA	5.000	5.143	2.9	102.9
PFMBA	5.000	4.888	-2.2	97.8
PFMPA	5.000	4.905	-1.9	98.1
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.324	-2.8	97.2

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-ICV785
 Lab FileID: 4Q53741.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111323_1633_S4Q785\s4q785.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\111323_1633_S4Q785\4Q53731.d
 2:D:\MassHunter\Data\111323_1633_S4Q785\4Q53732.d
 3:D:\MassHunter\Data\111323_1633_S4Q785\4Q53733.d
 4:D:\MassHunter\Data\111323_1633_S4Q785\4Q53734.d
 5:D:\MassHunter\Data\111323_1633_S4Q785\4Q53735.d
 6:D:\MassHunter\Data\111323_1633_S4Q785\4Q53736.d
 7:D:\MassHunter\Data\111323_1633_S4Q785\4Q53737.d
 8:D:\MassHunter\Data\111323_1633_S4Q785\4Q53738.d

Data File: 4Q53741
 Type : QC
 Level : 20

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.435	8.7	108.7
13C2-6:2FTS	5.000	5.014	0.3	100.3
13C2-8:2FTS	5.000	5.403	8.1	108.1
13C2-PFDoDA	1.250	1.316	5.3	105.3
13C2-PFTeDA	1.250	1.311	4.9	104.9
13C3-PFBS	2.500	2.602	4.1	104.1
13C3-PFHxS	2.500	2.571	2.8	102.8
13C4-PFBA	10.000	10.033	0.3	100.3
13C4-PFHpA	2.500	2.427	-2.9	97.1
13C5-PFHxA	2.500	2.457	-1.7	98.3
13C5-PFPeA	5.000	5.009	0.2	100.2
13C6-PFDA	1.250	1.236	-1.1	98.9
13C7-PFUnDA	1.250	1.252	0.2	100.2
13C8-FOSA	2.500	2.374	-5.0	95.0
13C8-PFOA	2.500	2.611	4.4	104.4
13C8-PFOS	2.500	2.480	-0.8	99.2
13C9-PFNA	1.250	1.213	-3.0	97.0
4:2FTS	20.000	19.646	-1.8	98.2
6:2FTS	20.000	21.892	9.5	109.5
8:2FTS	20.000	19.867	-0.7	99.3
d3-MeFOSAA	5.000	5.035	0.7	100.7
EtFOSAA	20.000	20.515	2.6	102.6
FOSA	20.000	18.174	-9.1	90.9
MeFOSAA	20.000	18.514	-7.4	92.6
PFBA	20.000	17.928	-10.4	89.6
PFBS	20.000	18.061	-9.7	90.3
PFDA	20.000	19.562	-2.2	97.8
PFDoDA	20.000	17.285	-13.6	86.4
PFDS	20.000	18.766	-6.2	93.8
PFHpA	20.000	19.196	-4.0	96.0
PFHpS	20.000	17.928	-10.4	89.6
PFHxA	20.000	19.978	-0.1	99.9
PFHxS	20.000	20.353	1.8	101.8
PFNA	20.000	21.035	5.2	105.2
PFNS	20.000	18.010	-9.9	90.1
PFOA	20.000	17.674	-11.6	88.4
PFOS	20.000	17.255	-13.7	86.3

Initial Calibration Verification

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-ICV785
 Lab FileID: 4Q53741.D

PFPeA	20.000	18.964	-5.2	94.8
PFPeS	20.000	19.336	-3.3	96.7
PFTeDA	20.000	19.779	-1.1	98.9
PFTrDA	20.000	17.770	-11.2	88.8
PFUnDA	20.000	18.896	-5.5	94.5
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	20.000	19.196	-4.0	96.0
13C3-HFPO-DA	10.000	9.972	-0.3	99.7
9C1-PF3ONS	20.000	18.686	-6.6	93.4
ADONA	20.000	21.352	6.8	106.8
HFPO-DA	20.000	18.824	-5.9	94.1
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	20.000	18.017	-9.9	90.1
5:3FTCA	20.000	19.638	-1.8	98.2
7:3FTCA	20.000	17.581	-12.1	87.9
d3-MeFOSA	2.500	2.360	-5.6	94.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	20.000	17.439	-12.8	87.2
EtFOSE	100.000	97.488	-2.5	97.5
MeFOSA	20.000	17.960	-10.2	89.8
MeFOSE	100.000	98.007	-2.0	98.0
PFDoDS	20.000	17.694	-11.5	88.5
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.847	-3.1	96.9
d7-MeFOSE	25.000	22.372	-10.5	89.5
d9-EtFOSE	25.000	23.905	-4.4	95.6
d5-EtFOSA	2.500	2.360	-5.6	94.4
NFDHA	20.000	20.301	1.5	101.5
PFMBA	20.000	18.066	-9.7	90.3
PFMPA	20.000	18.289	-8.6	91.4
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	20.000	17.505	-12.5	87.5

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q786-CC785
 Lab FileID: 4Q53868.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111523_1633_S4Q786\s4q786.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\111323_1633_S4Q785\4Q53731.d
 2:D:\MassHunter\Data\111323_1633_S4Q785\4Q53732.d
 3:D:\MassHunter\Data\111323_1633_S4Q785\4Q53733.d
 4:D:\MassHunter\Data\111323_1633_S4Q785\4Q53734.d
 5:D:\MassHunter\Data\111323_1633_S4Q785\4Q53735.d
 6:D:\MassHunter\Data\111323_1633_S4Q785\4Q53736.d
 7:D:\MassHunter\Data\111323_1633_S4Q785\4Q53737.d
 8:D:\MassHunter\Data\111323_1633_S4Q785\4Q53738.d

Data File: 4Q53868
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	8.180	# 63.6	163.6
13C2-6:2FTS	5.000	7.928	# 58.6	158.6
13C2-8:2FTS	5.000	7.448	# 49.0	149.0
13C2-PFDoDA	1.250	1.211	-3.1	96.9
13C2-PFTeDA	1.250	1.203	-3.8	96.2
13C3-PFBS	2.500	2.738	9.5	109.5
13C3-PFHxS	2.500	2.727	9.1	109.1
13C4-PFBA	10.000	9.881	-1.2	98.8
13C4-PFHpA	2.500	2.546	1.9	101.9
13C5-PFHxA	2.500	2.399	-4.1	95.9
13C5-PFPeA	5.000	4.930	-1.4	98.6
13C6-PFDA	1.250	1.224	-2.0	98.0
13C7-PFUnDA	1.250	1.263	1.1	101.1
13C8-FOSA	2.500	2.352	-5.9	94.1
13C8-PFOA	2.500	2.533	1.3	101.3
13C8-PFOS	2.500	2.501	0.0	100.0
13C9-PFNA	1.250	1.215	-2.8	97.2
4:2FTS	9.375	9.009	-3.9	96.1
6:2FTS	9.500	9.637	1.4	101.4
8:2FTS	9.600	10.254	6.8	106.8
d3-MeFOSAA	5.000	6.121	22.4	122.4
EtFOSAA	2.500	2.554	2.2	102.2
FOSA	2.500	2.559	2.3	102.3
MeFOSAA	2.500	2.214	-11.4	88.6
PFBA	10.000	9.981	-0.2	99.8
PFBS	2.218	2.113	-4.8	95.2
PFDA	2.500	2.412	-3.5	96.5
PFDoDA	2.500	2.569	2.8	102.8
PFDS	2.413	2.465	2.2	102.2
PFHpA	2.500	2.477	-0.9	99.1
PFHpS	2.383	2.265	-5.0	95.0
PFHxA	2.500	2.608	4.3	104.3
PFHxS	2.285	2.522	10.4	110.4
PFNA	2.500	2.592	3.7	103.7
PFNS	2.405	2.392	-0.5	99.5
PFOA	2.500	2.366	-5.4	94.6
PFOS	2.320	2.374	2.3	102.3

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q786-CC785
 Lab FileID: 4Q53868.D

PFPeA	5.000	4.917	-1.7	98.3
PFPeS	2.353	2.436	3.5	103.5
PFTeDA	2.500	2.496	-0.2	99.8
PFTTrDA	2.500	2.547	1.9	101.9
PFUnDA	2.500	2.468	-1.3	98.7
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.766	0.9	100.9
13C3-HFPO-DA	10.000	9.618	-3.8	96.2
9C1-PF3ONS	4.675	4.954	6.0	106.0
ADONA	4.725	5.938	25.7	125.7
HFPO-DA	5.000	5.011	0.2	100.2
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.752	-5.8	94.2
5:3FTCA	62.400	63.708	2.1	102.1
7:3FTCA	62.400	65.711	5.3	105.3
d3-MeFOSA	2.500	2.294	-8.2	91.8
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.921	-1.6	98.4
EtFOSE	12.500	12.366	-1.1	98.9
MeFOSA	5.000	5.288	5.8	105.8
MeFOSE	12.500	12.768	2.1	102.1
PFDoDS	2.425	2.294	-5.4	94.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.697	13.9	113.9
d7-MeFOSE	25.000	23.934	-4.3	95.7
d9-EtFOSE	25.000	25.115	0.5	100.5
d5-EtFOSA	2.500	2.386	-4.6	95.4
NFDHA	5.000	5.516	10.3	110.3
PFMBA	5.000	4.925	-1.5	98.5
PFMPA	5.000	5.003	0.1	100.1
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.632	4.1	104.1

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q786-CC785
 Lab FileID: 4Q53869.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111523_1633_S4Q786\s4q786.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\111323_1633_S4Q785\4Q53731.d
 2:D:\MassHunter\Data\111323_1633_S4Q785\4Q53732.d
 3:D:\MassHunter\Data\111323_1633_S4Q785\4Q53733.d
 4:D:\MassHunter\Data\111323_1633_S4Q785\4Q53734.d
 5:D:\MassHunter\Data\111323_1633_S4Q785\4Q53735.d
 6:D:\MassHunter\Data\111323_1633_S4Q785\4Q53736.d
 7:D:\MassHunter\Data\111323_1633_S4Q785\4Q53737.d
 8:D:\MassHunter\Data\111323_1633_S4Q785\4Q53738.d

Data File: 4Q53869
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	8.068	# 61.4	161.4
13C2-6:2FTS	5.000	7.629	# 52.6	152.6
13C2-8:2FTS	5.000	7.627	# 52.5	152.5
13C2-PFDoDA	1.250	1.301	4.1	104.1
13C2-PFTeDA	1.250	1.216	-2.7	97.3
13C3-PFBS	2.500	2.524	1.0	101.0
13C3-PFHxS	2.500	2.622	4.9	104.9
13C4-PFBA	10.000	9.953	-0.5	99.5
13C4-PFHpA	2.500	2.465	-1.4	98.6
13C5-PFHxA	2.500	2.444	-2.3	97.7
13C5-PFPeA	5.000	4.977	-0.5	99.5
13C6-PFDA	1.250	1.320	5.6	105.6
13C7-PFUnDA	1.250	1.280	2.4	102.4
13C8-FOSA	2.500	2.412	-3.5	96.5
13C8-PFOA	2.500	2.487	-0.5	99.5
13C8-PFOS	2.500	2.428	-2.9	97.1
13C9-PFNA	1.250	1.325	6.0	106.0
4:2FTS	0.750	0.673	-10.2	89.8
6:2FTS	0.760	0.671	-11.6	88.4
8:2FTS	0.768	0.655	-14.7	85.3
d3-MeFOSAA	5.000	6.195	23.9	123.9
EtFOSAA	0.200	0.245	22.5	122.5
FOSA	0.200	0.195	-2.5	97.5
MeFOSAA	0.200	0.157	-21.4	78.6
PFBA	0.800	0.693	-13.3	86.7
PFBS	0.177	0.146	-17.8	82.2
PFDA	0.200	0.152	-24.1	75.9
PFDoDA	0.200	0.162	-19.0	81.0
PFDS	0.193	0.182	-5.5	94.5
PFHpA	0.200	0.183	-8.6	91.4
PFHpS	0.191	0.152	-20.2	79.8
PFHxA	0.200	0.170	-15.0	85.0
PFHxS	0.183	0.195	6.3	106.3
PFNA	0.200	0.163	-18.5	81.5
PFNS	0.192	0.205	6.5	106.5
PFOA	0.200	0.189	-5.5	94.5
PFOS	0.186	0.176	-5.3	94.7

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q786-CC785
 Lab FileID: 4Q53869.D

PFPeA	0.400	0.345	-13.7	86.3
PFPeS	0.188	0.183	-2.5	97.5
PFTeDA	0.200	0.155	-22.6	77.4
PFTrDA	0.200	0.173	-13.6	86.4
PFUnDA	0.200	0.174	-12.8	87.2
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	0.378	0.324	-14.3	85.7
13C3-HFPO-DA	10.000	9.826	-1.7	98.3
9C1-PF3ONS	0.374	0.341	-8.8	91.2
ADONA	0.378	0.396	4.8	104.8
HFPO-DA	0.400	0.329	-17.7	82.3
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.789	-21.0	79.0
5:3FTCA	4.992	4.109	-17.7	82.3
7:3FTCA	4.992	4.024	-19.4	80.6
d3-MeFOSA	2.500	2.330	-6.8	93.2
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.400	0.389	-2.8	97.2
EtFOSE	1.000	0.949	-5.1	94.9
MeFOSA	0.400	0.320	-20.0	80.0
MeFOSE	1.000	0.977	-2.3	97.7
PFDoDS	0.194	0.160	-17.8	82.2
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.639	12.8	112.8
d7-MeFOSE	25.000	24.146	-3.4	96.6
d9-EtFOSE	25.000	24.314	-2.7	97.3
d5-EtFOSA	2.500	2.378	-4.9	95.1
NFDHA	0.400	0.373	-6.6	93.4
PFMBA	0.400	0.333	-16.7	83.3
PFMPA	0.400	0.349	-12.9	87.1
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	0.356	0.310	-13.0	87.0

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q786-CC785
 Lab FileID: 4Q53879.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111523_1633_S4Q786\s4q786.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\111323_1633_S4Q785\4Q53731.d
 2:D:\MassHunter\Data\111323_1633_S4Q785\4Q53732.d
 3:D:\MassHunter\Data\111323_1633_S4Q785\4Q53733.d
 4:D:\MassHunter\Data\111323_1633_S4Q785\4Q53734.d
 5:D:\MassHunter\Data\111323_1633_S4Q785\4Q53735.d
 6:D:\MassHunter\Data\111323_1633_S4Q785\4Q53736.d
 7:D:\MassHunter\Data\111323_1633_S4Q785\4Q53737.d
 8:D:\MassHunter\Data\111323_1633_S4Q785\4Q53738.d

Data File: 4Q53879
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.880	# 37.6	137.6
13C2-6:2FTS	5.000	6.355	27.1	127.1
13C2-8:2FTS	5.000	6.015	20.3	120.3
13C2-PFDoDA	1.250	1.272	1.7	101.7
13C2-PFTeDA	1.250	1.250	0.0	100.0
13C3-PFBS	2.500	2.419	-3.2	96.8
13C3-PFHxS	2.500	2.558	2.3	102.3
13C4-PFBA	10.000	9.915	-0.9	99.1
13C4-PFHpA	2.500	2.441	-2.4	97.6
13C5-PFHxA	2.500	2.362	-5.5	94.5
13C5-PFPeA	5.000	4.866	-2.7	97.3
13C6-PFDA	1.250	1.363	9.0	109.0
13C7-PFUnDA	1.250	1.340	7.2	107.2
13C8-FOSA	2.500	2.634	5.3	105.3
13C8-PFOA	2.500	2.519	0.7	100.7
13C8-PFOS	2.500	2.705	8.2	108.2
13C9-PFNA	1.250	1.221	-2.3	97.7
4:2FTS	9.375	9.127	-2.6	97.4
6:2FTS	9.500	10.250	7.9	107.9
8:2FTS	9.600	10.993	14.5	114.5
d3-MeFOSAA	5.000	6.181	23.6	123.6
EtFOSAA	2.500	2.782	11.3	111.3
FOSA	2.500	2.409	-3.6	96.4
MeFOSAA	2.500	2.525	1.0	101.0
PFBA	10.000	10.094	0.9	100.9
PFBS	2.218	2.205	-0.6	99.4
PFDA	2.500	2.292	-8.3	91.7
PFDoDA	2.500	2.564	2.5	102.5
PFDS	2.413	2.314	-4.1	95.9
PFHpA	2.500	2.527	1.1	101.1
PFHpS	2.383	2.370	-0.5	99.5
PFHxA	2.500	2.505	0.2	100.2
PFHxS	2.285	2.319	1.5	101.5
PFNA	2.500	2.582	3.3	103.3
PFNS	2.405	2.475	2.9	102.9
PFOA	2.500	2.455	-1.8	98.2
PFOS	2.320	2.182	-6.0	94.0

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q786-CC785
 Lab FileID: 4Q53879.D

PFPeA	5.000	4.938	-1.2	98.8
PFPeS	2.353	2.278	-3.2	96.8
PFTeDA	2.500	2.457	-1.7	98.3
PFTTrDA	2.500	2.645	5.8	105.8
PFUnDA	2.500	2.563	2.5	102.5
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.800	1.6	101.6
13C3-HFPO-DA	10.000	9.325	-6.8	93.2
9C1-PF3ONS	4.675	4.949	5.9	105.9
ADONA	4.725	5.853	23.9	123.9
HFPO-DA	5.000	5.252	5.0	105.0
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.874	-4.9	95.1
5:3FTCA	62.400	62.936	0.9	100.9
7:3FTCA	62.400	65.587	5.1	105.1
d3-MeFOSA	2.500	2.352	-5.9	94.1
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.148	3.0	103.0
EtFOSE	12.500	12.678	1.4	101.4
MeFOSA	5.000	5.526	10.5	110.5
MeFOSE	12.500	12.827	2.6	102.6
PFDoDS	2.425	2.288	-5.7	94.3
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.715	14.3	114.3
d7-MeFOSE	25.000	24.774	-0.9	99.1
d9-EtFOSE	25.000	24.159	-3.4	96.6
d5-EtFOSA	2.500	2.414	-3.5	96.5
NFDHA	5.000	5.096	1.9	101.9
PFMBA	5.000	4.890	-2.2	97.8
PFMPA	5.000	4.946	-1.1	98.9
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.549	2.2	102.2

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q786-CC785
 Lab FileID: 4Q53890.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111523_1633_S4Q786\s4q786.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\111323_1633_S4Q785\4Q53731.d
 2:D:\MassHunter\Data\111323_1633_S4Q785\4Q53732.d
 3:D:\MassHunter\Data\111323_1633_S4Q785\4Q53733.d
 4:D:\MassHunter\Data\111323_1633_S4Q785\4Q53734.d
 5:D:\MassHunter\Data\111323_1633_S4Q785\4Q53735.d
 6:D:\MassHunter\Data\111323_1633_S4Q785\4Q53736.d
 7:D:\MassHunter\Data\111323_1633_S4Q785\4Q53737.d
 8:D:\MassHunter\Data\111323_1633_S4Q785\4Q53738.d

Data File: 4Q53890
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.357	27.1	127.1
13C2-6:2FTS	5.000	5.761	15.2	115.2
13C2-8:2FTS	5.000	5.828	16.6	116.6
13C2-PFDoDA	1.250	1.184	-5.3	94.7
13C2-PFTeDA	1.250	1.220	-2.4	97.6
13C3-PFBS	2.500	2.431	-2.8	97.2
13C3-PFHxS	2.500	2.439	-2.4	97.6
13C4-PFBA	10.000	9.996	0.0	100.0
13C4-PFHpA	2.500	2.595	3.8	103.8
13C5-PFHxA	2.500	2.547	1.9	101.9
13C5-PFPeA	5.000	5.047	0.9	100.9
13C6-PFDA	1.250	1.242	-0.6	99.4
13C7-PFUnDA	1.250	1.308	4.7	104.7
13C8-FOSA	2.500	2.654	6.1	106.1
13C8-PFOA	2.500	2.523	0.9	100.9
13C8-PFOS	2.500	2.637	5.5	105.5
13C9-PFNA	1.250	1.322	5.8	105.8
4:2FTS	9.375	9.004	-4.0	96.0
6:2FTS	9.500	10.019	5.5	105.5
8:2FTS	9.600	10.254	6.8	106.8
d3-MeFOSAA	5.000	5.734	14.7	114.7
EtFOSAA	2.500	2.789	11.6	111.6
FOSA	2.500	2.475	-1.0	99.0
MeFOSAA	2.500	2.514	0.6	100.6
PFBA	10.000	10.106	1.1	101.1
PFBS	2.218	2.183	-1.6	98.4
PFDA	2.500	2.519	0.7	100.7
PFDoDA	2.500	2.600	4.0	104.0
PFDS	2.413	2.446	1.4	101.4
PFHpA	2.500	2.483	-0.7	99.3
PFHpS	2.383	2.454	3.0	103.0
PFHxA	2.500	2.403	-3.9	96.1
PFHxS	2.285	2.352	3.0	103.0
PFNA	2.500	2.428	-2.9	97.1
PFNS	2.405	2.613	8.6	108.6
PFOA	2.500	2.309	-7.7	92.3
PFOS	2.320	2.347	1.2	101.2

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q786-CC785
 Lab FileID: 4Q53890.D

PFPeA	5.000	4.930	-1.4	98.6
PFPeS	2.353	2.324	-1.2	98.8
PFTeDA	2.500	2.484	-0.6	99.4
PFTTrDA	2.500	2.730	9.2	109.2
PFUnDA	2.500	2.516	0.6	100.6
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.766	0.9	100.9
13C3-HFPO-DA	10.000	9.877	-1.2	98.8
9C1-PF3ONS	4.675	4.952	5.9	105.9
ADONA	4.725	5.689	20.4	120.4
HFPO-DA	5.000	4.971	-0.6	99.4
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.903	-4.6	95.4
5:3FTCA	62.400	61.193	-1.9	98.1
7:3FTCA	62.400	62.310	-0.1	99.9
d3-MeFOSA	2.500	2.188	-12.5	87.5
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.093	1.9	101.9
EtFOSE	12.500	13.241	5.9	105.9
MeFOSA	5.000	5.711	14.2	114.2
MeFOSE	12.500	13.198	5.6	105.6
PFDoDS	2.425	2.293	-5.4	94.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.503	10.1	110.1
d7-MeFOSE	25.000	24.894	-0.4	99.6
d9-EtFOSE	25.000	24.218	-3.1	96.9
d5-EtFOSA	2.500	2.546	1.8	101.8
NFDHA	5.000	5.024	0.5	100.5
PFMBA	5.000	4.893	-2.1	97.9
PFMPA	5.000	5.053	1.1	101.1
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.495	1.0	101.0

CC Criteria: +/- 30%

Initial Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q788-ICC788
 Lab FileID: 4Q54009.D

Initial Calibration Report

Method Path	D:\MassHunter\methods											
Method File	1633_111723_S4Q788.quantmethod.xml											
Batch Name	D:\MassHunter\Data\111723_1633_S4Q788\QuantResults\4q788.batch.bin											
Last Calib Update	11/17/2023 2:45:29 PM											
Level Name	Calibration Files	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
1	D:\MassHunter\Data\111723_1633_S4Q788\4Q54006.d											
2	D:\MassHunter\Data\111723_1633_S4Q788\4Q54007.d											
3	D:\MassHunter\Data\111723_1633_S4Q788\4Q54008.d											
4	D:\MassHunter\Data\111723_1633_S4Q788\4Q54009.d											
5	D:\MassHunter\Data\111723_1633_S4Q788\4Q54010.d											
6	D:\MassHunter\Data\111723_1633_S4Q788\4Q54011.d											
7	D:\MassHunter\Data\111723_1633_S4Q788\4Q54012.d											
8	D:\MassHunter\Data\111723_1633_S4Q788\4Q54013.d											
Compound												
I M4-PFBA												
T PFBA												
T 3:3FTCA												
I M5-PFPeA												
T PFMPA												
T PFPeA												
T PFMBA												
I M5-PFHxA												
T NFDHA												
T PFHxA												
T PFEEA												
T 5:3FTCA												
T 7:3FTCA												
I M4-PFHpA												
T PFHpA												
I M8-PFOA												
T PFOA												
I M9-PFNA												
T PFNA												
I M6-PFDA												
T PFDA												
I M7-PFUnDA												
T PFUnDA												
I M2-PFDaDA												

Generated at 2:46 PM on 11/17/2023

Initial Calibration Summary

Job Number: FC11101
 Account: AECOM AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q788-ICC788
 Lab FileID: 4Q54009.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T PFDoDA	Avg RF	1.0930	0.9749	1.0214	0.9713	1.0117	0.9811	1.0577	1.0384	1.0187	4.242
T PFTfDA	Avg RF	1.0432	1.0267	1.0854	1.0842	1.1192	1.0841	1.1544	1.0646	1.0827	3.745
I M2-PFTeDA	Avg RF	0.8866	0.8278	0.8798	0.9021	0.9245	0.9213	0.9940	0.9783	0.9143	5.876
T PFTeDA						ISTD					
I M8-FOSA	Avg RF	1.0110	1.0824	1.2091	1.1347	1.1723	1.1647	1.2193	1.2893	1.1604	7.405
T FOSA						ISTD					
I M3-PFBS	Avg RF	0.7183	0.8563	0.7952	0.8219	0.8098	0.8016	0.9239	0.8935	0.8276	7.706
T PFBS						ISTD					
I M3-PFHxS	Avg RF	0.8213	0.7950	0.7650	0.7638	0.7910	0.7755	0.8117	0.8848	0.8010	4.953
T PFPeS	Avg RF	0.6981	0.6525	0.7743	0.6727	0.7014	0.7293	0.6849	0.8025	0.7145	7.184
T PFHxS						ISTD					
I M8-PFOS	Avg RF	0.9292	0.9242	0.9932	0.9019	0.9923	0.9270	1.0409	0.9911	0.9625	5.015
T PFHpS	Avg RF	1.2647	0.9833	1.0953	0.9386	1.0044	0.9999	1.1396	1.0508	1.0596	9.893
T PFOS	Avg RF	0.5911	0.3622	0.5080	0.4217	0.4978	0.4374	0.4875	0.4681	0.4681	14.704
T PFNS	Avg RF	0.7155	0.5986	0.6098	0.6009	0.6365	0.5810	0.6769	0.6562	0.6344	7.229
T PFDS	Avg RF	0.4875	0.3787	0.4621	0.4450	0.4838	0.4507	0.5327	0.4974	0.4672	9.744
T PFDoDS						ISTD					
I M2-4:2FTS	Avg RF	9.7709	8.6496	10.15	8.5120	9.3303	8.9047	9.6757	8.3403	9.1672	7.228
T 4:2FTS						ISTD					
I M2-6:2FTS	Avg RF	4.9513	4.3300	5.4883	5.6574	5.3942	5.3898	5.3371	5.0385	5.1983	8.063
T 6:2FTS						ISTD					
I M2-8:2FTS	Avg RF	2.7448	2.4826	2.6006	2.6538	2.6964	2.4377	2.8142	2.5386	2.6211	4.982
T 8:2FTS						ISTD					
I M3-MeFOSAA	Avg RF	0.8834	0.6218	0.8405	0.7700	0.8599	0.8370	0.8276	0.8732	0.8142	10.458
T MeFOSAA						ISTD					
I M3-HFO-DA	Avg RF	0.8207	0.8870	1.0076	1.0174	1.0049	1.0072	1.0925	1.0988	0.9920	9.575
T HFPO-DA	Avg RF	7.9071	7.2265	8.4051	8.3339	8.4172	8.3347	8.9380	8.8188	8.2977	6.458
T ADONA	Avg RF	3.0929	2.9947	3.2194	3.2462	3.2468	3.1174	3.2161	2.9247	3.1323	3.901
T 9Cl-PF3ONS	Avg RF	3.1340	2.7567	3.0743	3.0302	3.0512	3.1098	3.3065	3.2452	3.0885	5.330
T 11Cl-PF3OUds						ISTD					
I M5-EFOSAA	Avg RF	0.8841	0.9647	0.9696	0.9502	0.9519	0.8684	1.0154	0.9892	0.9467	5.316
T EFOSAA						ISTD					
I M7-MeFOSE	Avg RF	1.0955	0.8964	1.0558	1.0137	1.0377	0.9972	1.1680	1.1637	1.0535	8.545
T MeFOSE						ISTD					
I M9-EFOSE	Avg RF	0.9899	0.9239	0.9402	0.8747	0.9194	0.9212	1.0021	0.9614	0.9416	4.413
T EFOSE						ISTD					

Page 2 of 3

Generated at 2:46 PM on 11/17/2023

Initial Calibration Summary

Job Number: FC11101
 Account: AECOM AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q788-ICC788
 Lab FileID: 4Q54009.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M5-EFOSA	Avg RF	0.9527	0.9035	1.0516	0.9903	1.0575	1.0746	1.1661	1.1679	1.0455	9.029
T EFOSA						ISTD					
I M3-MeFOSA	Avg RF	0.9309	0.7880	0.9744	0.8653	0.8961	0.9259	0.9056	0.8534	0.8925	6.375
T MeFOSA						ISTD					
I 13C4-PFOS						ISTD					
S d3-MeFOSAA	Avg RF	0.9851	0.9230	1.0214	1.0217	1.0058	1.0368	1.0877	1.1108	1.0240	5.695
S 13C8-PFOS	Avg RF	1.1115	1.1352	1.2362	1.2156	1.1995	1.3118	1.2054	1.3890	1.2255	7.338
S d5-EFOSAA	Avg RF	0.8463	0.7871	0.8193	0.8360	0.8537	0.9142	0.8938	0.9203	0.8588	5.476
S 13C8-FOSA	Avg RF	1.1633	1.0771	1.1526	1.1914	1.1629	1.1911	1.1756	1.2284	1.1678	3.737
S d7-MeFOSE	Avg RF	0.4908	0.4756	0.4997	0.4967	0.5034	0.5297	0.4867	0.5237	0.5008	3.632
S d3-MeFOSA	Avg RF	0.7488	0.7372	0.7516	0.7672	0.7891	0.7803	0.8281	1.0162	0.8023	11.344
S d9-EFOSE	Avg RF	0.5486	0.5305	0.5776	0.5699	0.5675	0.5872	0.5632	0.6147	0.5699	4.411
S d5-EFOSA	Avg RF	0.9913	0.9191	0.9759	0.9818	0.9608	0.9618	0.9409	1.0524	0.9730	4.061
I 13C3-PFBA						ISTD					
S 13C4-PFBA	Avg RF	1.0382	1.0237	1.0489	1.0241	1.0346	1.0367	1.0388	1.0113	1.0320	1.133
I 1802-PFHxS						ISTD					
S 13C2-4:2FTS	Avg RF	0.0961	0.0942	0.0897	0.1085	0.0993	0.0969	0.0922	0.0864	0.0954	7.035
S 13C3-PBBS	Avg RF	1.9487	1.8664	1.8958	1.8832	1.9592	1.9122	1.9121	1.7578	1.8919	3.301
S 13C2-6:2FTS	Avg RF	0.2273	0.2239	0.2005	0.2010	0.1988	0.1935	0.2026	0.1723	0.2025	8.524
S 13C3-PFHxS	Avg RF	1.5640	1.5910	1.5647	1.5782	1.5568	1.5530	1.7163	1.4420	1.5707	4.741
S 13C2-8:2FTS	Avg RF	0.2846	0.2803	0.2840	0.2748	0.2904	0.2942	0.2754	0.2473	0.2789	5.168
I 13C4-PFOA						ISTD					
S 13C8-PFOA	Avg RF	0.8963	0.9202	0.9449	0.9241	0.9041	0.9224	0.9047	0.8847	0.9127	2.077
I 13C2-PFDA						ISTD					
S 13C6-PFDA	Avg RF	0.8891	1.0400	0.9048	0.9396	0.9374	0.9108	0.9441	0.8677	0.9292	5.604
S 13C7-PFUnDA	Avg RF	1.0474	1.2579	1.1235	1.0656	1.0754	1.0131	0.9873	0.7751	1.0432	13.066
S 13C2-PFDODA	Avg RF	1.0581	1.1805	1.1024	1.1376	1.1441	1.0845	1.1318	1.1073	1.1183	3.420
S 13C2-PFTeDA	Avg RF	1.1462	1.2042	1.1223	1.1223	1.1005	1.0653	1.1244	1.1058	1.1239	3.570
I 13C5-PFNA						ISTD					
S 13C9-PFNA	Avg RF	1.0130	1.0202	0.9672	1.0155	1.0060	1.0071	1.0350	1.0397	1.0130	2.187
I 13C2-PFHxA						ISTD					
S 13C5-PPeA	Avg RF	0.6338	0.6278	0.6275	0.6400	0.6300	0.6308	0.6272	0.6054	0.6278	1.595
S 13C5-PFHxA	Avg RF	0.9283	0.9218	0.9319	0.9283	0.9376	0.9442	0.9011	0.9172	0.9263	1.429
S 13C3-HPPO-DA	Avg RF	0.2167	0.2055	0.2056	0.2095	0.2102	0.2077	0.2068	0.2066	0.2086	1.779
S 13C4-PFHpA	Avg RF	0.9193	0.8989	0.8768	0.9210	0.8747	0.8837	0.8622	0.8524	0.8861	2.834

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

Initial Calibration Verification

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q788-ICV788
 Lab FileID: 4Q54015.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111723_1633_S4Q788\s4q788.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\111723_1633_S4Q788\4Q54006.d
 2:D:\MassHunter\Data\111723_1633_S4Q788\4Q54007.d
 3:D:\MassHunter\Data\111723_1633_S4Q788\4Q54008.d
 4:D:\MassHunter\Data\111723_1633_S4Q788\4Q54009.d
 5:D:\MassHunter\Data\111723_1633_S4Q788\4Q54010.d
 6:D:\MassHunter\Data\111723_1633_S4Q788\4Q54011.d
 7:D:\MassHunter\Data\111723_1633_S4Q788\4Q54012.d
 8:D:\MassHunter\Data\111723_1633_S4Q788\4Q54013.d

Data File: 4Q54015
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.905	18.1	118.1
13C2-6:2FTS	5.000	5.697	13.9	113.9
13C2-8:2FTS	5.000	5.575	11.5	111.5
13C2-PFDoDA	1.250	1.222	-2.2	97.8
13C2-PFTeDA	1.250	1.215	-2.8	97.2
13C3-PFBS	2.500	2.612	4.5	104.5
13C3-PFHxS	2.500	2.640	5.6	105.6
13C4-PFBA	10.000	10.050	0.5	100.5
13C4-PFHpA	2.500	2.477	-0.9	99.1
13C5-PFHxA	2.500	2.389	-4.4	95.6
13C5-PFPeA	5.000	4.876	-2.5	97.5
13C6-PFDA	1.250	1.267	1.4	101.4
13C7-PFUnDA	1.250	1.347	7.7	107.7
13C8-FOSA	2.500	2.658	6.3	106.3
13C8-PFOA	2.500	2.468	-1.3	98.7
13C8-PFOS	2.500	2.576	3.0	103.0
13C9-PFNA	1.250	1.262	0.9	100.9
4:2FTS	9.375	9.260	-1.2	98.8
6:2FTS	9.500	9.639	1.5	101.5
8:2FTS	9.600	10.044	4.6	104.6
d3-MeFOSAA	5.000	5.163	3.3	103.3
EtFOSAA	2.500	2.600	4.0	104.0
FOSA	2.500	2.564	2.6	102.6
MeFOSAA	2.500	2.745	9.8	109.8
PFBA	10.000	10.139	1.4	101.4
PFBS	2.218	2.317	4.5	104.5
PFDA	2.500	2.362	-5.5	94.5
PFDoDA	2.500	2.501	0.0	100.0
PFDS	2.413	2.275	-5.7	94.3
PFHpA	2.500	2.530	1.2	101.2
PFHpS	2.383	2.372	-0.5	99.5
PFHxA	2.500	2.558	2.3	102.3
PFHxS	2.285	2.224	-2.7	97.3
PFNA	2.500	2.589	3.6	103.6
PFNS	2.405	2.579	7.2	107.2
PFOA	2.500	2.574	3.0	103.0
PFOS	2.320	2.433	4.9	104.9

Initial Calibration Verification

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q788-ICV788
 Lab FileID: 4Q54015.D

PFPeA	5.000	5.082	1.6	101.6
PFPeS	2.353	2.248	-4.5	95.5
PFTeDA	2.500	2.550	2.0	102.0
PFTTrDA	2.500	2.623	4.9	104.9
PFUnDA	2.500	2.388	-4.5	95.5
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.825	2.1	102.1
13C3-HFPO-DA	10.000	9.583	-4.2	95.8
9C1-PF3ONS	4.675	5.026	7.5	107.5
ADONA	4.725	5.299	12.1	112.1
HFPO-DA	5.000	5.275	5.5	105.5
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.186	-2.4	97.6
5:3FTCA	62.400	64.813	3.9	103.9
7:3FTCA	62.400	63.868	2.4	102.4
d3-MeFOSA	2.500	2.470	-1.2	98.8
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.207	4.1	104.1
EtFOSE	12.500	12.258	-1.9	98.1
MeFOSA	5.000	5.279	5.6	105.6
MeFOSE	12.500	12.761	2.1	102.1
PFDoDS	2.425	2.634	8.6	108.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.077	1.5	101.5
d7-MeFOSE	25.000	25.529	2.1	102.1
d9-EtFOSE	25.000	25.848	3.4	103.4
d5-EtFOSA	2.500	2.472	-1.1	98.9
NFDHA	5.000	4.210	-15.8	84.2
PFMBA	5.000	5.038	0.8	100.8
PFMPA	5.000	5.100	2.0	102.0
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.639	4.2	104.2

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q788-ICV788
 Lab FileID: 4Q54016.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111723_1633_S4Q788\s4q788.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\111723_1633_S4Q788\4Q54006.d
 2:D:\MassHunter\Data\111723_1633_S4Q788\4Q54007.d
 3:D:\MassHunter\Data\111723_1633_S4Q788\4Q54008.d
 4:D:\MassHunter\Data\111723_1633_S4Q788\4Q54009.d
 5:D:\MassHunter\Data\111723_1633_S4Q788\4Q54010.d
 6:D:\MassHunter\Data\111723_1633_S4Q788\4Q54011.d
 7:D:\MassHunter\Data\111723_1633_S4Q788\4Q54012.d
 8:D:\MassHunter\Data\111723_1633_S4Q788\4Q54013.d

Data File: 4Q54016
 Type : QC
 Level : 20

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.286	5.7	105.7
13C2-6:2FTS	5.000	5.023	0.5	100.5
13C2-8:2FTS	5.000	5.748	15.0	115.0
13C2-PFDoDA	1.250	1.243	-0.5	99.5
13C2-PFTeDA	1.250	1.224	-2.1	97.9
13C3-PFBS	2.500	2.624	5.0	105.0
13C3-PFHxS	2.500	2.626	5.0	105.0
13C4-PFBA	10.000	9.869	-1.3	98.7
13C4-PFHpA	2.500	2.433	-2.7	97.3
13C5-PFHxA	2.500	2.461	-1.6	98.4
13C5-PFPeA	5.000	4.993	-0.1	99.9
13C6-PFDA	1.250	1.261	0.8	100.8
13C7-PFUnDA	1.250	1.275	2.0	102.0
13C8-FOSA	2.500	2.385	-4.6	95.4
13C8-PFOA	2.500	2.454	-1.8	98.2
13C8-PFOS	2.500	2.406	-3.8	96.2
13C9-PFNA	1.250	1.233	-1.3	98.7
4:2FTS	20.000	20.119	0.6	100.6
6:2FTS	20.000	22.237	11.2	111.2
8:2FTS	20.000	17.400	-13.0	87.0
d3-MeFOSAA	5.000	5.088	1.8	101.8
EtFOSAA	20.000	19.716	-1.4	98.6
FOSA	20.000	19.124	-4.4	95.6
MeFOSAA	20.000	19.611	-1.9	98.1
PFBA	20.000	18.553	-7.2	92.8
PFBS	20.000	18.943	-5.3	94.7
PFDA	20.000	19.385	-3.1	96.9
PFDoDA	20.000	16.701	-16.5	83.5
PFDS	20.000	19.753	-1.2	98.8
PFHpA	20.000	19.747	-1.3	98.7
PFHpS	20.000	18.991	-5.0	95.0
PFHxA	20.000	21.478	7.4	107.4
PFHxS	20.000	20.599	3.0	103.0
PFNA	20.000	20.427	2.1	102.1
PFNS	20.000	19.167	-4.2	95.8
PFOA	20.000	19.234	-3.8	96.2
PFOS	20.000	18.348	-8.3	91.7

Initial Calibration Verification

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q788-ICV788
 Lab FileID: 4Q54016.D

PFPeA	20.000	19.676	-1.6	98.4
PFPeS	20.000	19.846	-0.8	99.2
PFTeDA	20.000	21.397	7.0	107.0
PFTTrDA	20.000	18.176	-9.1	90.9
PFUnDA	20.000	17.614	-11.9	88.1
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	20.000	19.829	-0.9	99.1
13C3-HFPO-DA	10.000	10.014	0.1	100.1
9C1-PF3ONS	20.000	19.474	-2.6	97.4
ADONA	20.000	20.903	4.5	104.5
HFPO-DA	20.000	20.116	0.6	100.6
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	20.000	18.615	-6.9	93.1
5:3FTCA	20.000	19.795	-1.0	99.0
7:3FTCA	20.000	18.157	-9.2	90.8
d3-MeFOSA	2.500	2.484	-0.6	99.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	20.000	18.002	-10.0	90.0
EtFOSE	100.000	99.345	-0.7	99.3
MeFOSA	20.000	18.751	-6.2	93.8
MeFOSE	100.000	103.641	3.6	103.6
PFDoDS	20.000	20.020	0.1	100.1
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.890	-2.2	97.8
d7-MeFOSE	25.000	24.513	-1.9	98.1
d9-EtFOSE	25.000	24.292	-2.8	97.2
d5-EtFOSA	2.500	2.512	0.5	100.5
NFDHA	20.000	16.898	-15.5	84.5
PFMBA	20.000	19.852	-0.7	99.3
PFMPA	20.000	20.136	0.7	100.7
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	20.000	17.837	-10.8	89.2

CC Criteria: +/- 30%

6.9.10
6

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q788-CC788
 Lab FileID: 4Q54017.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111723_1633_S4Q788\s4q788.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\111723_1633_S4Q788\4Q54006.d
 2:D:\MassHunter\Data\111723_1633_S4Q788\4Q54007.d
 3:D:\MassHunter\Data\111723_1633_S4Q788\4Q54008.d
 4:D:\MassHunter\Data\111723_1633_S4Q788\4Q54009.d
 5:D:\MassHunter\Data\111723_1633_S4Q788\4Q54010.d
 6:D:\MassHunter\Data\111723_1633_S4Q788\4Q54011.d
 7:D:\MassHunter\Data\111723_1633_S4Q788\4Q54012.d
 8:D:\MassHunter\Data\111723_1633_S4Q788\4Q54013.d

Data File: 4Q54017
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.277	5.5	105.5
13C2-6:2FTS	5.000	5.161	3.2	103.2
13C2-8:2FTS	5.000	4.724	-5.5	94.5
13C2-PFDoDA	1.250	1.314	5.1	105.1
13C2-PFTeDA	1.250	1.285	2.8	102.8
13C3-PFBS	2.500	2.453	-1.9	98.1
13C3-PFHxS	2.500	2.431	-2.8	97.2
13C4-PFBA	10.000	10.064	0.6	100.6
13C4-PFHpA	2.500	2.498	-0.1	99.9
13C5-PFHxA	2.500	2.598	3.9	103.9
13C5-PFPeA	5.000	5.064	1.3	101.3
13C6-PFDA	1.250	1.304	4.3	104.3
13C7-PFUnDA	1.250	1.344	7.5	107.5
13C8-FOSA	2.500	2.339	-6.4	93.6
13C8-PFOA	2.500	2.509	0.4	100.4
13C8-PFOS	2.500	2.428	-2.9	97.1
13C9-PFNA	1.250	1.276	2.1	102.1
4:2FTS	9.375	9.157	-2.3	97.7
6:2FTS	9.500	9.457	-0.5	99.5
8:2FTS	9.600	10.150	5.7	105.7
d3-MeFOSAA	5.000	4.858	-2.8	97.2
EtFOSAA	2.500	2.617	4.7	104.7
FOSA	2.500	2.645	5.8	105.8
MeFOSAA	2.500	2.777	11.1	111.1
PFBA	10.000	9.845	-1.6	98.4
PFBS	2.218	2.104	-5.1	94.9
PFDA	2.500	2.393	-4.3	95.7
PFDoDA	2.500	2.292	-8.3	91.7
PFDS	2.413	2.354	-2.4	97.6
PFHpA	2.500	2.520	0.8	100.8
PFHpS	2.383	2.246	-5.8	94.2
PFHxA	2.500	2.421	-3.2	96.8
PFHxS	2.285	2.348	2.7	102.7
PFNA	2.500	2.264	-9.4	90.6
PFNS	2.405	2.258	-6.1	93.9
PFOA	2.500	2.366	-5.4	94.6
PFOS	2.320	2.276	-1.9	98.1

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q788-CC788
 Lab FileID: 4Q54017.D

PFPeA	5.000	4.973	-0.5	99.5
PFPeS	2.353	2.262	-3.9	96.1
PFTeDA	2.500	2.464	-1.4	98.6
PFTTrDA	2.500	2.423	-3.1	96.9
PFUnDA	2.500	2.429	-2.9	97.1
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.667	-1.2	98.8
13C3-HFPO-DA	10.000	10.276	2.8	102.8
9C1-PF3ONS	4.675	4.727	1.1	101.1
ADONA	4.725	4.918	4.1	104.1
HFPO-DA	5.000	4.910	-1.8	98.2
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.960	-4.2	95.8
5:3FTCA	62.400	60.751	-2.6	97.4
7:3FTCA	62.400	61.655	-1.2	98.8
d3-MeFOSA	2.500	2.452	-1.9	98.1
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.706	-5.9	94.1
EtFOSE	12.500	12.538	0.3	100.3
MeFOSA	5.000	4.701	-6.0	94.0
MeFOSE	12.500	12.881	3.0	103.0
PFDoDS	2.425	2.480	2.3	102.3
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.749	-5.0	95.0
d7-MeFOSE	25.000	23.560	-5.8	94.2
d9-EtFOSE	25.000	24.086	-3.7	96.3
d5-EtFOSA	2.500	2.495	-0.2	99.8
NFDHA	5.000	4.384	-12.3	87.7
PFMBA	5.000	5.042	0.8	100.8
PFMPA	5.000	4.969	-0.6	99.4
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.440	-0.2	99.8

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q788-CC788
 Lab FileID: 4Q54018.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111723_1633_S4Q788\s4q788.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\111723_1633_S4Q788\4Q54006.d
 2:D:\MassHunter\Data\111723_1633_S4Q788\4Q54007.d
 3:D:\MassHunter\Data\111723_1633_S4Q788\4Q54008.d
 4:D:\MassHunter\Data\111723_1633_S4Q788\4Q54009.d
 5:D:\MassHunter\Data\111723_1633_S4Q788\4Q54010.d
 6:D:\MassHunter\Data\111723_1633_S4Q788\4Q54011.d
 7:D:\MassHunter\Data\111723_1633_S4Q788\4Q54012.d
 8:D:\MassHunter\Data\111723_1633_S4Q788\4Q54013.d

Data File: 4Q54018
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.553	11.1	111.1
13C2-6:2FTS	5.000	5.763	15.3	115.3
13C2-8:2FTS	5.000	5.301	6.0	106.0
13C2-PFDoDA	1.250	1.164	-6.9	93.1
13C2-PFTeDA	1.250	1.158	-7.4	92.6
13C3-PFBS	2.500	2.508	0.3	100.3
13C3-PFHxS	2.500	2.472	-1.1	98.9
13C4-PFBA	10.000	10.159	1.6	101.6
13C4-PFHpA	2.500	2.484	-0.6	99.4
13C5-PFHxA	2.500	2.531	1.2	101.2
13C5-PFPeA	5.000	4.985	-0.3	99.7
13C6-PFDA	1.250	1.165	-6.8	93.2
13C7-PFUnDA	1.250	1.226	-1.9	98.1
13C8-FOSA	2.500	2.469	-1.2	98.8
13C8-PFOA	2.500	2.472	-1.1	98.9
13C8-PFOS	2.500	2.354	-5.8	94.2
13C9-PFNA	1.250	1.179	-5.7	94.3
4:2FTS	0.750	0.695	-7.3	92.7
6:2FTS	0.760	0.700	-7.8	92.2
8:2FTS	0.768	0.803	4.6	104.6
d3-MeFOSAA	5.000	5.195	3.9	103.9
EtFOSAA	0.200	0.242	21.1	121.1
FOSA	0.200	0.202	0.9	100.9
MeFOSAA	0.200	0.181	-9.3	90.7
PFBA	0.800	0.771	-3.6	96.4
PFBS	0.177	0.183	3.5	103.5
PFDA	0.200	0.182	-8.9	91.1
PFDoDA	0.200	0.214	7.2	107.2
PFDS	0.193	0.202	4.6	104.6
PFHpA	0.200	0.190	-5.2	94.8
PFHpS	0.191	0.157	-18.0	82.0
PFHxA	0.200	0.196	-1.9	98.1
PFHxS	0.183	0.196	7.3	107.3
PFNA	0.200	0.219	9.5	109.5
PFNS	0.192	0.221	14.9	114.9
PFOA	0.200	0.183	-8.4	91.6
PFOS	0.186	0.178	-4.2	95.8

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q788-CC788
 Lab FileID: 4Q54018.D

PFPeA	0.400	0.396	-1.1	98.9
PFPeS	0.188	0.189	0.4	100.4
PFTeDA	0.200	0.163	-18.6	81.4
PFTrDA	0.200	0.205	2.3	102.3
PFUnDA	0.200	0.155	-22.5	77.5
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	0.378	0.354	-6.3	93.7
13C3-HFPO-DA	10.000	10.362	3.6	103.6
9C1-PF3ONS	0.374	0.355	-5.0	95.0
ADONA	0.378	0.388	2.6	102.6
HFPO-DA	0.400	0.442	10.4	110.4
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.889	-11.0	89.0
5:3FTCA	4.992	4.880	-2.2	97.8
7:3FTCA	4.992	4.648	-6.9	93.1
d3-MeFOSA	2.500	2.183	-12.7	87.3
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.400	0.427	6.7	106.7
EtFOSE	1.000	1.110	11.0	111.0
MeFOSA	0.400	0.410	2.6	102.6
MeFOSE	1.000	1.007	0.7	100.7
PFDoDS	0.194	0.210	8.5	108.5
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.811	-3.8	96.2
d7-MeFOSE	25.000	24.203	-3.2	96.8
d9-EtFOSE	25.000	24.090	-3.6	96.4
d5-EtFOSA	2.500	2.442	-2.3	97.7
NFDHA	0.400	0.336	-16.0	84.0
PFMBA	0.400	0.413	3.2	103.2
PFMPA	0.400	0.393	-1.7	98.3
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	0.356	0.318	-10.7	89.3

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q788-CC788
 Lab FileID: 4Q54028.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111723_1633_S4Q788\s4q788.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\111723_1633_S4Q788\4Q54006.d
 2:D:\MassHunter\Data\111723_1633_S4Q788\4Q54007.d
 3:D:\MassHunter\Data\111723_1633_S4Q788\4Q54008.d
 4:D:\MassHunter\Data\111723_1633_S4Q788\4Q54009.d
 5:D:\MassHunter\Data\111723_1633_S4Q788\4Q54010.d
 6:D:\MassHunter\Data\111723_1633_S4Q788\4Q54011.d
 7:D:\MassHunter\Data\111723_1633_S4Q788\4Q54012.d
 8:D:\MassHunter\Data\111723_1633_S4Q788\4Q54013.d

Data File: 4Q54028
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.267	5.3	105.3
13C2-6:2FTS	5.000	4.462	-10.8	89.2
13C2-8:2FTS	5.000	4.507	-9.9	90.1
13C2-PFDoDA	1.250	1.152	-7.8	92.2
13C2-PFTeDA	1.250	1.233	-1.4	98.6
13C3-PFBS	2.500	2.464	-1.4	98.6
13C3-PFHxS	2.500	2.437	-2.5	97.5
13C4-PFBA	10.000	10.040	0.4	100.4
13C4-PFHpA	2.500	2.448	-2.1	97.9
13C5-PFHxA	2.500	2.400	-4.0	96.0
13C5-PFPeA	5.000	5.002	0.0	100.0
13C6-PFDA	1.250	1.221	-2.3	97.7
13C7-PFUnDA	1.250	1.239	-0.9	99.1
13C8-FOSA	2.500	2.622	4.9	104.9
13C8-PFOA	2.500	2.487	-0.5	99.5
13C8-PFOS	2.500	2.462	-1.5	98.5
13C9-PFNA	1.250	1.273	1.8	101.8
4:2FTS	9.375	8.075	-13.9	86.1
6:2FTS	9.500	9.336	-1.7	98.3
8:2FTS	9.600	9.675	0.8	100.8
d3-MeFOSAA	5.000	4.618	-7.6	92.4
EtFOSAA	2.500	2.499	-0.1	99.9
FOSA	2.500	2.410	-3.6	96.4
MeFOSAA	2.500	2.614	4.6	104.6
PFBA	10.000	9.803	-2.0	98.0
PFBS	2.218	2.211	-0.3	99.7
PFDA	2.500	2.263	-9.5	90.5
PFDoDA	2.500	2.493	-0.3	99.7
PFDS	2.413	2.356	-2.4	97.6
PFHpA	2.500	2.458	-1.7	98.3
PFHpS	2.383	2.264	-5.0	95.0
PFHxA	2.500	2.558	2.3	102.3
PFHxS	2.285	2.339	2.4	102.4
PFNA	2.500	2.425	-3.0	97.0
PFNS	2.405	2.531	5.2	105.2
PFOA	2.500	2.490	-0.4	99.6
PFOS	2.320	2.213	-4.6	95.4

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q788-CC788
 Lab FileID: 4Q54028.D

PFPeA	5.000	5.033	0.7	100.7
PFPeS	2.353	1.921	-18.3	81.7
PFTeDA	2.500	2.452	-1.9	98.1
PFTTrDA	2.500	2.721	8.8	108.8
PFUnDA	2.500	2.496	-0.2	99.8
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.850	2.6	102.6
13C3-HFPO-DA	10.000	9.456	-5.4	94.6
9C1-PF3ONS	4.675	4.807	2.8	102.8
ADONA	4.725	3.368	-28.7	71.3
HFPO-DA	5.000	4.925	-1.5	98.5
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.946	-4.3	95.7
5:3FTCA	62.400	63.789	2.2	102.2
7:3FTCA	62.400	62.110	-0.5	99.5
d3-MeFOSA	2.500	2.417	-3.3	96.7
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.956	-0.9	99.1
EtFOSE	12.500	12.188	-2.5	97.5
MeFOSA	5.000	5.262	5.2	105.2
MeFOSE	12.500	12.323	-1.4	98.6
PFDoDS	2.425	2.574	6.2	106.2
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.683	-6.3	93.7
d7-MeFOSE	25.000	24.922	-0.3	99.7
d9-EtFOSE	25.000	24.358	-2.6	97.4
d5-EtFOSA	2.500	2.533	1.3	101.3
NFDHA	5.000	4.326	-13.5	86.5
PFMBA	5.000	5.023	0.5	100.5
PFMPA	5.000	4.926	-1.5	98.5
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.386	-1.4	98.6

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q788-CC788
 Lab FileID: 4Q54047.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111723_1633_S4Q788\s4q788.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\111723_1633_S4Q788\4Q54006.d
 2:D:\MassHunter\Data\111723_1633_S4Q788\4Q54007.d
 3:D:\MassHunter\Data\111723_1633_S4Q788\4Q54008.d
 4:D:\MassHunter\Data\111723_1633_S4Q788\4Q54009.d
 5:D:\MassHunter\Data\111723_1633_S4Q788\4Q54010.d
 6:D:\MassHunter\Data\111723_1633_S4Q788\4Q54011.d
 7:D:\MassHunter\Data\111723_1633_S4Q788\4Q54012.d
 8:D:\MassHunter\Data\111723_1633_S4Q788\4Q54013.d

Data File: 4Q54047
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.180	23.6	123.6
13C2-6:2FTS	5.000	5.781	15.6	115.6
13C2-8:2FTS	5.000	6.290	25.8	125.8
13C2-PFDoDA	1.250	1.296	3.7	103.7
13C2-PFTeDA	1.250	1.239	-0.9	99.1
13C3-PFBS	2.500	2.548	1.9	101.9
13C3-PFHxS	2.500	2.542	1.7	101.7
13C4-PFBA	10.000	10.160	1.6	101.6
13C4-PFHpA	2.500	2.504	0.2	100.2
13C5-PFHxA	2.500	2.418	-3.3	96.7
13C5-PFPeA	5.000	4.747	-5.1	94.9
13C6-PFDA	1.250	1.342	7.3	107.3
13C7-PFUnDA	1.250	1.375	10.0	110.0
13C8-FOSA	2.500	2.381	-4.8	95.2
13C8-PFOA	2.500	2.506	0.2	100.2
13C8-PFOS	2.500	2.464	-1.4	98.6
13C9-PFNA	1.250	1.274	1.9	101.9
4:2FTS	9.375	9.138	-2.5	97.5
6:2FTS	9.500	10.079	6.1	106.1
8:2FTS	9.600	9.489	-1.2	98.8
d3-MeFOSAA	5.000	5.470	9.4	109.4
EtFOSAA	2.500	2.423	-3.1	96.9
FOSA	2.500	2.584	3.3	103.3
MeFOSAA	2.500	2.540	1.6	101.6
PFBA	10.000	9.851	-1.5	98.5
PFBS	2.218	2.157	-2.7	97.3
PFDA	2.500	2.437	-2.5	97.5
PFDoDA	2.500	2.348	-6.1	93.9
PFDS	2.413	2.390	-1.0	99.0
PFHpA	2.500	2.363	-5.5	94.5
PFHpS	2.383	2.356	-1.1	98.9
PFHxA	2.500	2.472	-1.1	98.9
PFHxS	2.285	2.204	-3.6	96.4
PFNA	2.500	2.341	-6.4	93.6
PFNS	2.405	2.303	-4.3	95.7
PFOA	2.500	2.383	-4.7	95.3
PFOS	2.320	2.395	3.2	103.2

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q788-CC788
 Lab FileID: 4Q54047.D

PFPeA	5.000	5.058	1.2	101.2
PFPeS	2.353	2.222	-5.6	94.4
PFTeDA	2.500	2.430	-2.8	97.2
PFTTrDA	2.500	2.467	-1.3	98.7
PFUnDA	2.500	2.368	-5.3	94.7
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.835	2.3	102.3
13C3-HFPO-DA	10.000	9.307	-6.9	93.1
9C1-PF3ONS	4.675	4.923	5.3	105.3
ADONA	4.725	5.142	8.8	108.8
HFPO-DA	5.000	5.294	5.9	105.9
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.731	-6.0	94.0
5:3FTCA	62.400	62.058	-0.5	99.5
7:3FTCA	62.400	61.263	-1.8	98.2
d3-MeFOSA	2.500	2.355	-5.8	94.2
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.866	-2.7	97.3
EtFOSE	12.500	12.696	1.6	101.6
MeFOSA	5.000	4.560	-8.8	91.2
MeFOSE	12.500	12.089	-3.3	96.7
PFDoDS	2.425	2.415	-0.4	99.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.357	7.1	107.1
d7-MeFOSE	25.000	23.853	-4.6	95.4
d9-EtFOSE	25.000	23.523	-5.9	94.1
d5-EtFOSA	2.500	2.479	-0.9	99.1
NFDHA	5.000	4.349	-13.0	87.0
PFMBA	5.000	5.087	1.7	101.7
PFMPA	5.000	5.048	1.0	101.0
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.379	-1.6	98.4

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q788-CC788
 Lab FileID: 4Q54059.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\111723_1633_S4Q788\s4q788.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\111723_1633_S4Q788\4Q54006.d
 2:D:\MassHunter\Data\111723_1633_S4Q788\4Q54007.d
 3:D:\MassHunter\Data\111723_1633_S4Q788\4Q54008.d
 4:D:\MassHunter\Data\111723_1633_S4Q788\4Q54009.d
 5:D:\MassHunter\Data\111723_1633_S4Q788\4Q54010.d
 6:D:\MassHunter\Data\111723_1633_S4Q788\4Q54011.d
 7:D:\MassHunter\Data\111723_1633_S4Q788\4Q54012.d
 8:D:\MassHunter\Data\111723_1633_S4Q788\4Q54013.d

Data File: 4Q54059
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.175	23.5	123.5
13C2-6:2FTS	5.000	6.014	20.3	120.3
13C2-8:2FTS	5.000	6.206	24.1	124.1
13C2-PFDoDA	1.250	1.226	-1.9	98.1
13C2-PFTeDA	1.250	1.229	-1.7	98.3
13C3-PFBS	2.500	2.556	2.2	102.2
13C3-PFHxS	2.500	2.561	2.4	102.4
13C4-PFBA	10.000	9.981	-0.2	99.8
13C4-PFHpA	2.500	2.579	3.2	103.2
13C5-PFHxA	2.500	2.598	3.9	103.9
13C5-PFPeA	5.000	5.072	1.4	101.4
13C6-PFDA	1.250	1.250	0.0	100.0
13C7-PFUnDA	1.250	1.296	3.7	103.7
13C8-FOSA	2.500	2.408	-3.7	96.3
13C8-PFOA	2.500	2.403	-3.9	96.1
13C8-PFOS	2.500	2.312	-7.5	92.5
13C9-PFNA	1.250	1.309	4.7	104.7
4:2FTS	9.375	10.072	7.4	107.4
6:2FTS	9.500	10.379	9.3	109.3
8:2FTS	9.600	10.212	6.4	106.4
d3-MeFOSAA	5.000	5.604	12.1	112.1
EtFOSAA	2.500	2.211	-11.6	88.4
FOSA	2.500	2.568	2.7	102.7
MeFOSAA	2.500	2.417	-3.3	96.7
PFBA	10.000	9.791	-2.1	97.9
PFBS	2.218	2.207	-0.5	99.5
PFDA	2.500	2.461	-1.6	98.4
PFDoDA	2.500	2.358	-5.7	94.3
PFDS	2.413	2.444	1.3	101.3
PFHpA	2.500	2.470	-1.2	98.8
PFHpS	2.383	2.277	-4.4	95.6
PFHxA	2.500	2.414	-3.5	96.5
PFHxS	2.285	2.220	-2.8	97.2
PFNA	2.500	2.396	-4.1	95.9
PFNS	2.405	2.298	-4.5	95.5
PFOA	2.500	2.610	4.4	104.4
PFOS	2.320	2.397	3.3	103.3

Continuing Calibration Summary

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q788-CC788
 Lab FileID: 4Q54059.D

PFPeA	5.000	5.062	1.2	101.2
PFPeS	2.353	2.217	-5.8	94.2
PFTeDA	2.500	2.395	-4.2	95.8
PFTTrDA	2.500	2.475	-1.0	99.0
PFUnDA	2.500	2.492	-0.3	99.7
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.772	1.0	101.0
13C3-HFPO-DA	10.000	9.973	-0.3	99.7
9C1-PF3ONS	4.675	4.877	4.3	104.3
ADONA	4.725	5.117	8.3	108.3
HFPO-DA	5.000	4.961	-0.8	99.2
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.824	-5.3	94.7
5:3FTCA	62.400	60.978	-2.3	97.7
7:3FTCA	62.400	61.268	-1.8	98.2
d3-MeFOSA	2.500	2.363	-5.5	94.5
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.894	-2.1	97.9
EtFOSE	12.500	12.216	-2.3	97.7
MeFOSA	5.000	4.880	-2.4	97.6
MeFOSE	12.500	12.199	-2.4	97.6
PFDoDS	2.425	2.519	3.9	103.9
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.741	14.8	114.8
d7-MeFOSE	25.000	24.036	-3.9	96.1
d9-EtFOSE	25.000	24.343	-2.6	97.4
d5-EtFOSA	2.500	2.421	-3.1	96.9
NFDHA	5.000	4.267	-14.7	85.3
PFMBA	5.000	5.048	1.0	101.0
PFMPA	5.000	5.011	0.2	100.2
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.323	-2.9	97.1

CC Criteria: +/- 30%

Run Sequence Report

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q785	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q785-RT	4Q53728.D	11/13/23 14:55	n/a	Retention Time Marker
S4Q785-RT	4Q53729.D	11/13/23 15:10	n/a	Retention Time Marker
S4Q785-IC785	4Q53730.D	11/13/23 15:25	n/a	Mass Calibration Verification
S4Q785-IC785	4Q53731.D	11/13/23 15:40	n/a	Initial cal 1
S4Q785-IC785	4Q53732.D	11/13/23 15:55	n/a	Initial cal 2
S4Q785-IC785	4Q53733.D	11/13/23 16:09	n/a	Initial cal 3
S4Q785-ICC785	4Q53734.D	11/13/23 16:43	n/a	Initial cal 4
S4Q785-IC785	4Q53735.D	11/13/23 16:58	n/a	Initial cal 5
S4Q785-IC785	4Q53736.D	11/13/23 17:13	n/a	Initial cal 6
S4Q785-IC785	4Q53737.D	11/13/23 17:28	n/a	Initial cal 7
S4Q785-IC785	4Q53738.D	11/13/23 17:42	n/a	Initial cal 8
S4Q785-IBLK	4Q53739.D	11/13/23 17:57	n/a	Instrument Blank
S4Q785-IBLK	4Q53739.D	11/13/23 17:57	n/a	Instrument Blank
S4Q785-ICV785	4Q53740.D	11/13/23 18:12	n/a	Initial cal verification 4
S4Q785-ICV785	4Q53741.D	11/13/23 18:27	n/a	Initial cal verification 20
S4Q785-CC785	4Q53742.D	11/13/23 18:41	n/a	Continuing cal 4
S4Q785-CC785	4Q53743.D	11/13/23 18:56	n/a	Continuing cal 1.0LL
OP99997-BS	4Q53744.D	11/13/23 19:11	OP99997	Blank Spike
OP99997-LLBS	4Q53745.D	11/13/23 19:26	OP99997	Blank Spike
OP99997-MB	4Q53746.D	11/13/23 19:40	OP99997	Method Blank
ZZZZZZ	4Q53747.D	11/13/23 19:55	OP99997	(unrelated sample)
ZZZZZZ	4Q53748.D	11/13/23 20:10	OP99997	(unrelated sample)
FC11062-2	4Q53749.D	11/13/23 20:25	OP99997	(used for QC only; not part of job FC11101)
OP99997-MS	4Q53750.D	11/13/23 20:39	OP99997	Matrix Spike
FC11062-3	4Q53751.D	11/13/23 20:54	OP99997	(used for QC only; not part of job FC11101)
OP99997-DUP	4Q53752.D	11/13/23 21:09	OP99997	Duplicate
ZZZZZZ	4Q53753.D	11/13/23 21:24	OP99997	(unrelated sample)
S4Q785-CC785	4Q53754.D	11/13/23 21:38	n/a	Continuing cal 4
S4Q785-ICCB	4Q53755.D	11/13/23 21:53	n/a	Continuing Calibration Blank
ZZZZZZ	4Q53756.D	11/13/23 22:08	OP99997	(unrelated sample)
ZZZZZZ	4Q53757.D	11/13/23 22:23	OP99997	(unrelated sample)
OP99956-BS	4Q53758.D	11/13/23 22:37	OP99956	Blank Spike
OP99956-LLBS	4Q53759.D	11/13/23 22:52	OP99956	Blank Spike
OP99956-MB	4Q53760.D	11/13/23 23:07	OP99956	Method Blank
ZZZZZZ	4Q53761.D	11/13/23 23:22	OP99956	(unrelated sample)
ZZZZZZ	4Q53762.D	11/13/23 23:36	OP99956	(unrelated sample)
ZZZZZZ	4Q53763.D	11/13/23 23:51	OP99956	(unrelated sample)
ZZZZZZ	4Q53764.D	11/14/23 00:06	OP99956	(unrelated sample)
ZZZZZZ	4Q53765.D	11/14/23 00:21	OP99956	(unrelated sample)
S4Q785-CC785	4Q53766.D	11/14/23 00:35	n/a	Continuing cal 4
S4Q785-ICCB	4Q53767.D	11/14/23 00:50	n/a	Continuing Calibration Blank
ZZZZZZ	4Q53768.D	11/14/23 01:05	OP99956	(unrelated sample)
ZZZZZZ	4Q53769.D	11/14/23 01:20	OP99956	(unrelated sample)
ZZZZZZ	4Q53770.D	11/14/23 01:34	OP99956	(unrelated sample)
ZZZZZZ	4Q53771.D	11/14/23 01:49	OP99956	(unrelated sample)
ZZZZZZ	4Q53772.D	11/14/23 02:04	OP99956	(unrelated sample)

Run Sequence Report

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q785	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
ZZZZZZ	4Q53773.D	11/14/23 02:19	OP99956	(unrelated sample)
ZZZZZZ	4Q53774.D	11/14/23 02:33	OP99956	(unrelated sample)
ZZZZZZ	4Q53775.D	11/14/23 02:48	OP99956	(unrelated sample)
ZZZZZZ	4Q53776.D	11/14/23 03:03	OP99956	(unrelated sample)
S4Q785-CC785	4Q53777.D	11/14/23 03:18	n/a	Continuing cal 4
S4Q785-ICCB	4Q53778.D	11/14/23 03:32	n/a	Continuing Calibration Blank
FC10708-15	4Q53779.D	11/14/23 03:47	OP99956	(used for QC only; not part of job FC11101)
OP99956-MS	4Q53780.D	11/14/23 04:02	OP99956	Matrix Spike
OP99956-MSD	4Q53781.D	11/14/23 04:17	OP99956	Matrix Spike Duplicate
ZZZZZZ	4Q53782.D	11/14/23 04:31	OP99956	(unrelated sample)
ZZZZZZ	4Q53783.D	11/14/23 04:46	OP99956	(unrelated sample)
OP99926-BS	4Q53784.D	11/14/23 05:01	OP99926	Blank Spike
OP99926-LLBS	4Q53785.D	11/14/23 05:16	OP99926	Blank Spike
OP99926-MB	4Q53786.D	11/14/23 05:30	OP99926	Method Blank
ZZZZZZ	4Q53787.D	11/14/23 05:45	OP99926	(unrelated sample)
ZZZZZZ	4Q53788.D	11/14/23 06:00	OP99926	(unrelated sample)
S4Q785-CC785	4Q53789.D	11/14/23 06:15	n/a	Continuing cal 4
S4Q785-ICCB	4Q53790.D	11/14/23 06:29	n/a	Continuing Calibration Blank
FC10703-1	4Q53791.D	11/14/23 06:44	OP99926	(used for QC only; not part of job FC11101)
OP99926-MS	4Q53792.D	11/14/23 06:59	OP99926	Matrix Spike
FC10703-2	4Q53793.D	11/14/23 07:14	OP99926	(used for QC only; not part of job FC11101)
OP99926-DUP	4Q53794.D	11/14/23 07:28	OP99926	Duplicate
ZZZZZZ	4Q53795.D	11/14/23 07:43	OP99926	(unrelated sample)
ZZZZZZ	4Q53796.D	11/14/23 07:58	OP99926	(unrelated sample)
ZZZZZZ	4Q53797.D	11/14/23 08:13	OP99926	(unrelated sample)
ZZZZZZ	4Q53798.D	11/14/23 08:28	OP99926	(unrelated sample)
ZZZZZZ	4Q53799.D	11/14/23 08:42	OP99926	(unrelated sample)
ZZZZZZ	4Q53800.D	11/14/23 08:57	OP99926	(unrelated sample)
S4Q785-CC785	4Q53801.D	11/14/23 09:12	n/a	Continuing cal 4
S4Q785-ICCB	4Q53802.D	11/14/23 09:27	n/a	Continuing Calibration Blank
ZZZZZZ	4Q53803.D	11/14/23 09:41	OP99926	(unrelated sample)
ZZZZZZ	4Q53804.D	11/14/23 09:56	OP99926	(unrelated sample)
ZZZZZZ	4Q53805.D	11/14/23 10:11	OP99926	(unrelated sample)
ZZZZZZ	4Q53806.D	11/14/23 10:26	OP99926	(unrelated sample)
ZZZZZZ	4Q53807.D	11/14/23 10:40	OP99926	(unrelated sample)
FC10636-32	4Q53808.D	11/14/23 10:55	OP99872	(used for QC only; not part of job FC11101)
ZZZZZZ	4Q53809.D	11/14/23 11:10	OP99872	(unrelated sample)
ZZZZZZ	4Q53810.D	11/14/23 11:25	OP99872	(unrelated sample)
ZZZZZZ	4Q53811.D	11/14/23 11:39	OP99872	(unrelated sample)
S4Q785-ECC785	4Q53812.D	11/14/23 11:54	n/a	Ending cal 4
S4Q785-ICCB	4Q53813.D	11/14/23 12:09	n/a	Continuing Calibration Blank

Run Sequence Report

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q786	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q		
Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q786-RT	4Q53864.D	11/15/23 10:01	n/a	Retention Time Marker
S4Q786-RT	4Q53865.D	11/15/23 10:15	n/a	Retention Time Marker
S4Q786-IBLK	4Q53867.D	11/15/23 10:45	n/a	Instrument Blank
S4Q786-IBLK	4Q53867.D	11/15/23 10:45	n/a	Instrument Blank
S4Q786-CC785	4Q53868.D	11/15/23 11:00	n/a	Continuing cal 4
S4Q786-CC785	4Q53869.D	11/15/23 11:14	n/a	Continuing cal 1.0LL
ZZZZZZ	4Q53870.D	11/15/23 11:41	OP99926	(unrelated sample)
OP58-BS	4Q53871.D	11/15/23 11:55	OP58	Blank Spike
OP58-LLBS	4Q53872.D	11/15/23 12:10	OP58	Blank Spike
OP58-MB	4Q53873.D	11/15/23 12:25	OP58	Method Blank
ZZZZZZ	4Q53874.D	11/15/23 12:40	OP58	(unrelated sample)
ZZZZZZ	4Q53875.D	11/15/23 12:54	OP58	(unrelated sample)
ZZZZZZ	4Q53877.D	11/15/23 13:24	OP58	(unrelated sample)
S4Q786-CC785	4Q53879.D	11/15/23 13:53	n/a	Continuing cal 4
S4Q786-ICCB	4Q53880.D	11/15/23 14:08	n/a	Continuing Calibration Blank
FC11101-1	4Q53881.D	11/15/23 14:23	OP58	AF-RHMW17-WGN01LF-2311
OP58-MS	4Q53882.D	11/15/23 14:38	OP58	Matrix Spike
FC11101-2	4Q53883.D	11/15/23 14:52	OP58	AF-RHMW17D-WGN01LF-2311
OP58-DUP	4Q53884.D	11/15/23 15:07	OP58	Duplicate
FC11101-3	4Q53885.D	11/15/23 15:22	OP58	AF-RHMW17D-WQFB01-2311
FC11101-4	4Q53886.D	11/15/23 15:37	OP58	AF-RHMW17S-WGN01LF-2311
FC11101-5	4Q53887.D	11/15/23 15:51	OP58	AF-RHMW17S-WQEB01-2311
ZZZZZZ	4Q53888.D	11/15/23 16:06	OP58	(unrelated sample)
ZZZZZZ	4Q53889.D	11/15/23 16:21	OP58	(unrelated sample)
S4Q786-CC785	4Q53890.D	11/15/23 16:36	n/a	Continuing cal 4
S4Q786-ICCB	4Q53891.D	11/15/23 16:50	n/a	Continuing Calibration Blank
OP99927-BS	4Q53892.D	11/15/23 17:05	OP99927	Blank Spike
OP99927-LLBS	4Q53893.D	11/15/23 17:20	OP99927	Blank Spike
OP99927-MB	4Q53894.D	11/15/23 17:35	OP99927	Method Blank
ZZZZZZ	4Q53895.D	11/15/23 17:50	OP99927	(unrelated sample)
ZZZZZZ	4Q53896.D	11/15/23 18:04	OP99927	(unrelated sample)
ZZZZZZ	4Q53897.D	11/15/23 18:19	OP99927	(unrelated sample)
ZZZZZZ	4Q53898.D	11/15/23 18:34	OP99927	(unrelated sample)
ZZZZZZ	4Q53899.D	11/15/23 18:49	OP99927	(unrelated sample)
ZZZZZZ	4Q53900.D	11/15/23 19:03	OP99927	(unrelated sample)
S4Q786-CC785	4Q53901.D	11/15/23 19:18	n/a	Continuing cal 4
S4Q786-ICCB	4Q53902.D	11/15/23 19:33	n/a	Continuing Calibration Blank
ZZZZZZ	4Q53903.D	11/15/23 19:48	OP99927	(unrelated sample)
ZZZZZZ	4Q53904.D	11/15/23 20:02	OP99927	(unrelated sample)
ZZZZZZ	4Q53905.D	11/15/23 20:17	OP99927	(unrelated sample)
ZZZZZZ	4Q53906.D	11/15/23 20:32	OP99927	(unrelated sample)
ZZZZZZ	4Q53907.D	11/15/23 20:47	OP99927	(unrelated sample)
ZZZZZZ	4Q53908.D	11/15/23 21:01	OP99927	(unrelated sample)
ZZZZZZ	4Q53909.D	11/15/23 21:16	OP99927	(unrelated sample)
ZZZZZZ	4Q53910.D	11/15/23 21:31	OP99927	(unrelated sample)
S4Q786-CC785	4Q53913.D	11/15/23 22:15	n/a	Continuing cal 4

Run Sequence Report

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q786	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q786-ICCB	4Q53914.D	11/15/23 22:30	n/a	Continuing Calibration Blank
OP80-BS	4Q53915.D	11/15/23 22:45	OP80	Blank Spike
OP80-LLBS	4Q53916.D	11/15/23 22:59	OP80	Blank Spike
OP80-MB	4Q53917.D	11/15/23 23:14	OP80	Method Blank
ZZZZZZ	4Q53918.D	11/15/23 23:29	OP80	(unrelated sample)
ZZZZZZ	4Q53919.D	11/15/23 23:44	OP80	(unrelated sample)
ZZZZZZ	4Q53920.D	11/15/23 23:58	OP80	(unrelated sample)
ZZZZZZ	4Q53921.D	11/16/23 00:13	OP80	(unrelated sample)
ZZZZZZ	4Q53922.D	11/16/23 00:28	OP80	(unrelated sample)
ZZZZZZ	4Q53923.D	11/16/23 00:43	OP80	(unrelated sample)
ZZZZZZ	4Q53924.D	11/16/23 00:57	OP80	(unrelated sample)
S4Q786-CC785	4Q53925.D	11/16/23 01:12	n/a	Continuing cal 4
S4Q786-ICCB	4Q53926.D	11/16/23 01:27	n/a	Continuing Calibration Blank
ZZZZZZ	4Q53927.D	11/16/23 01:42	OP80	(unrelated sample)
OP80-MS	4Q53929.D	11/16/23 02:11	OP80	Matrix Spike
OP80-MSD	4Q53930.D	11/16/23 02:26	OP80	Matrix Spike Duplicate
ZZZZZZ	4Q53931.D	11/16/23 02:41	OP80	(unrelated sample)
ZZZZZZ	4Q53932.D	11/16/23 02:55	OP80	(unrelated sample)
ZZZZZZ	4Q53933.D	11/16/23 03:10	OP80	(unrelated sample)
ZZZZZZ	4Q53934.D	11/16/23 03:25	OP80	(unrelated sample)
ZZZZZZ	4Q53935.D	11/16/23 03:40	OP80	(unrelated sample)
S4Q786-ECC785	4Q53936.D	11/16/23 03:54	n/a	Ending cal 4
S4Q786-ICCB	4Q53937.D	11/16/23 04:09	n/a	Continuing Calibration Blank

6.10.2
6

Run Sequence Report

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q788	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q		
Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q788-RT	4Q54003.D	11/17/23 10:41	n/a	Retention Time Marker
S4Q788-RT	4Q54004.D	11/17/23 10:55	n/a	Retention Time Marker
S4Q788-IC788	4Q54005.D	11/17/23 11:10	n/a	Mass Calibration Verification
S4Q788-IC788	4Q54006.D	11/17/23 11:25	n/a	Initial cal 1
S4Q788-IC788	4Q54007.D	11/17/23 11:40	n/a	Initial cal 2
S4Q788-IC788	4Q54008.D	11/17/23 11:55	n/a	Initial cal 3
S4Q788-ICC788	4Q54009.D	11/17/23 12:09	n/a	Initial cal 4
S4Q788-IC788	4Q54010.D	11/17/23 12:24	n/a	Initial cal 5
S4Q788-IC788	4Q54011.D	11/17/23 12:39	n/a	Initial cal 6
S4Q788-IC788	4Q54012.D	11/17/23 12:54	n/a	Initial cal 7
S4Q788-IC788	4Q54013.D	11/17/23 13:08	n/a	Initial cal 8
S4Q788-IBLK	4Q54014.D	11/17/23 13:23	n/a	Instrument Blank
S4Q788-IBLK	4Q54014.D	11/17/23 13:23	n/a	Instrument Blank
S4Q788-ICV788	4Q54015.D	11/17/23 13:38	n/a	Initial cal verification 4
S4Q788-ICV788	4Q54016.D	11/17/23 13:53	n/a	Initial cal verification 20
S4Q788-CC788	4Q54017.D	11/17/23 14:07	n/a	Continuing cal 4
S4Q788-CC788	4Q54018.D	11/17/23 14:22	n/a	Continuing cal 1.0LL
ZZZZZZ	4Q54019.D	11/17/23 14:37	OP99927	(unrelated sample)
ZZZZZZ	4Q54020.D	11/17/23 14:52	OP99927	(unrelated sample)
OP134-BS	4Q54021.D	11/17/23 15:07	OP134	Blank Spike
OP134-LLBS	4Q54022.D	11/17/23 15:30	OP134	Blank Spike
OP134-MB	4Q54023.D	11/17/23 15:44	OP134	Method Blank
ZZZZZZ	4Q54024.D	11/17/23 15:59	OP134	(unrelated sample)
ZZZZZZ	4Q54025.D	11/17/23 16:14	OP134	(unrelated sample)
ZZZZZZ	4Q54026.D	11/17/23 16:29	OP134	(unrelated sample)
ZZZZZZ	4Q54027.D	11/17/23 16:53	OP134	(unrelated sample)
S4Q788-CC788	4Q54028.D	11/17/23 17:18	n/a	Continuing cal 4
S4Q788-ICCB	4Q54029.D	11/17/23 17:32	n/a	Continuing Calibration Blank
ZZZZZZ	4Q54030.D	11/17/23 17:47	OP134	(unrelated sample)
ZZZZZZ	4Q54031.D	11/17/23 18:02	OP134	(unrelated sample)
FC10719-1	4Q54032.D	11/17/23 18:17	OP59	(used for QC only; not part of job FC11101)
OP59-DUP	4Q54033.D	11/17/23 18:31	OP59	Duplicate
ZZZZZZ	4Q54034.D	11/17/23 18:46	OP99927	(unrelated sample)
ZZZZZZ	4Q54035.D	11/17/23 19:01	OP99927	(unrelated sample)
S4Q788-CC788	4Q54036.D	11/17/23 19:16	n/a	Continuing cal 4
S4Q788-ICCB	4Q54037.D	11/17/23 19:30	n/a	Continuing Calibration Blank
S4Q788-ICCB	4Q54037.D	11/17/23 19:30	n/a	Continuing Calibration Blank
OP137-BS	4Q54038.D	11/17/23 19:45	OP137	Blank Spike
OP137-LLBS	4Q54039.D	11/17/23 20:00	OP137	Blank Spike
OP137-MB	4Q54040.D	11/17/23 20:15	OP137	Method Blank
FC10963-2	4Q54041.D	11/17/23 20:29	OP137	(used for QC only; not part of job FC11101)
FC10963-2	4Q54042.D	11/17/23 20:44	OP137	(used for QC only; not part of job FC11101)
OP137-MS	4Q54043.D	11/17/23 20:59	OP137	Matrix Spike
OP137-MSD	4Q54044.D	11/17/23 21:14	OP137	Matrix Spike Duplicate
ZZZZZZ	4Q54045.D	11/17/23 21:28	OP137	(unrelated sample)
ZZZZZZ	4Q54046.D	11/17/23 21:43	OP137	(unrelated sample)

Run Sequence Report

Job Number: FC11101
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q788	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q788-CC788	4Q54047.D	11/17/23 21:58	n/a	Continuing cal 4
S4Q788-ICCB	4Q54048.D	11/17/23 22:13	n/a	Continuing Calibration Blank
S4Q788-ICCB	4Q54048.D	11/17/23 22:13	n/a	Continuing Calibration Blank
OP164-BS	4Q54049.D	11/17/23 22:27	OP164	Blank Spike
OP164-LLBS	4Q54050.D	11/17/23 22:42	OP164	Blank Spike
OP164-MB	4Q54051.D	11/17/23 22:57	OP164	Method Blank
ZZZZZZ	4Q54052.D	11/17/23 23:12	OP164	(unrelated sample)
ZZZZZZ	4Q54053.D	11/17/23 23:26	OP164	(unrelated sample)
FC11101-2	4Q54054.D	11/17/23 23:41	OP164	AF-RHMW17D-WGN01LF-2311
OP99994-BS	4Q54056.D	11/18/23 00:11	OP99994	Blank Spike
OP99994-LLBS	4Q54057.D	11/18/23 00:26	OP99994	Blank Spike
OP99994-MB	4Q54058.D	11/18/23 00:40	OP99994	Method Blank
S4Q788-CC788	4Q54059.D	11/18/23 00:55	n/a	Continuing cal 4
S4Q788-ICCB	4Q54060.D	11/18/23 01:10	n/a	Continuing Calibration Blank

6.10.3

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MS Semi-volatiles

Raw Data

Perfluorinated Compounds by LC/MS/MS

```

Data File       : 4Q53881.d
Operator        : annal
Acq. Method     : 1633full_4Q.m
Acq. Date-Time  : 11/15/2023 2:23:21 PM
Sample Name     : fc11101-1
Vial            : P2-A2
DA Method File  : 1633_111323_S4Q785.quantmethod.xml
Batch Name      : s4q786.batch.bin
Sample Information : OP58,S4Q786,525,,,,5.0,1,water
    
```

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	84880	10.00 µg/L	-0.013
M5-PFPeA	4.137	268.3 -> 223.0	36103	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	27719	2.50 µg/L	-0.037
M4-PFHpA	6.280	367.1 -> 322.0	25589	2.50 µg/L	-0.025
M8-PFOA	6.964	421.1 -> 376.0	30972	2.50 µg/L	-0.025
M9-PFNA	7.521	472.1 -> 427.0	12425	1.25 µg/L	-0.012
M6-PFDA	8.004	519.1 -> 474.1	8216	1.25 µg/L	-0.013
M7-PFUnDA	8.461	570.0 -> 525.1	8765	1.25 µg/L	-0.012
M2-PFDoDA	8.880	615.1 -> 570.0	7671	1.25 µg/L	-0.025
M2-PFTeDA	9.662	715.2 -> 670.0	6873	1.25 µg/L	0.000
M8-FOSA	9.806	506.1 -> 77.8	6444	2.50 µg/L	-0.012
M3-PFBS	5.165	302.1 -> 79.9	7658	2.50 µg/L	-0.038
M3-PFHxS	7.029	402.1 -> 79.9	6377	2.50 µg/L	-0.025
M8-PFOS	8.117	507.1 -> 79.9	6286	2.50 µg/L	-0.026
M2-4:2FTS	5.021	329.1 -> 80.9	826	5.00 µg/L	-0.025
M2-6:2FTS	6.748	429.1 -> 80.9	1803	5.00 µg/L	-0.012
M2-8:2FTS	7.804	529.1 -> 80.9	2479	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	11705	5.00 µg/L	-0.012
M3-HFPO-DA	5.677	286.9 -> 168.9	23871	10.00 µg/L	-0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	8509	5.00 µg/L	-0.014
M7-MeFOSE	11.034	623.2 -> 58.9	20174	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	23454	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	4126	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	3139	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	5965	2.50 µg/L	-0.013
13C3-PFBA	2.691	216.0 -> 172.0	44022	5.00 µg/L	-0.013
18O2-PFHxS	7.028	403.0 -> 83.9	4498	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	37402	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	10510	1.25 µg/L	-0.025
13C5-PFNA	7.522	468.0 -> 423.0	13106	1.25 µg/L	-0.012
13C2-PFHxA	5.311	315.1 -> 270.0	31324	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.021	329.1 -> 80.9	826	5.37 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.4%		
13C2-6:2FTS	6.748	429.1 -> 80.9	1803	5.56 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.2%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2479	5.42 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.4%		
13C2-PFDoDA	8.880	615.1 -> 570.0	7671	0.81 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 64.7%		
13C2-PFTeDA	9.662	715.2 -> 670.0	6873	0.72 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 57.6%		
13C3-PFBS	5.165	302.1 -> 79.9	7658	2.27 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.8%		
13C3-PFHxS	7.029	402.1 -> 79.9	6377	2.29 µg/L	-0.025

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.5%	
13C4-PFBA	2.686	216.8 -> 171.9	84880	9.25 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 92.5%	
13C4-PFHpA	6.280	367.1 -> 322.0	25589	2.34 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.7%	
13C5-PFHxA	5.310	318.0 -> 273.0	27719	2.37 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.9%	
13C5-PFPeA	4.137	268.3 -> 223.0	36103	4.72 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.5%	
13C6-PFDA	8.004	519.1 -> 474.1	8216	1.06 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 85.0%	
13C7-PFUnDA	8.461	570.0 -> 525.1	8765	0.98 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 78.5%	
13C8-FOSA	9.806	506.1 -> 77.8	6444	2.26 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.4%	
13C8-PFOA	6.964	421.1 -> 376.0	30972	2.32 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.8%	
13C8-PFOS	8.117	507.1 -> 79.9	6286	2.21 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 88.3%	
13C9-PFNA	7.521	472.1 -> 427.0	12425	1.20 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.2%	
d3-MeFOSAA	8.086	573.2 -> 419.0	11705	5.17 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.5%	
13C3-HFPO-DA	5.677	286.9 -> 168.9	23871	8.96 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 89.6%	
d3-MeFOSA	11.139	515.0 -> 219.0	3139	1.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 63.1%	
d5-EtFOSAA	8.296	589.2 -> 419.0	8509	4.30 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 85.9%	
d7-MeFOSE	11.034	623.2 -> 58.9	20174	16.42 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 65.7%	
d9-EtFOSE	11.319	639.2 -> 58.9	23454	16.48 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 65.9%	
d5-EtFOSA	11.410	531.1 -> 219.0	4126	1.75 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 69.9%	

Target Compounds

Compound	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	6.737	427.1 -> 407.0	518	0.27 µg/L	99
		427.1 -> 80.9	202		
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	5.313	449.0 -> 98.9	0	µg/L	m	1
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	0	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	7.152	548.8 -> 98.9	0	µg/L	m	1
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	0	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed

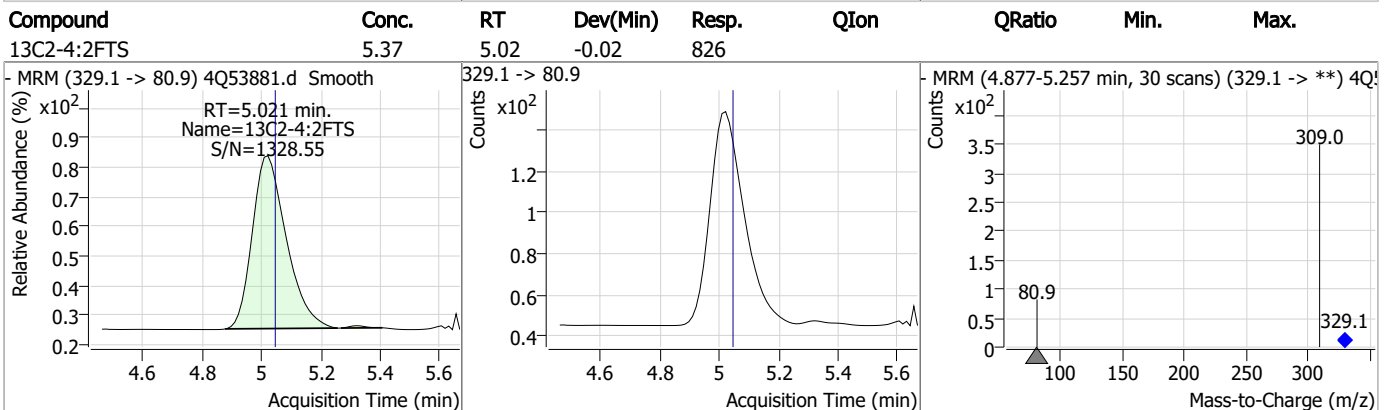
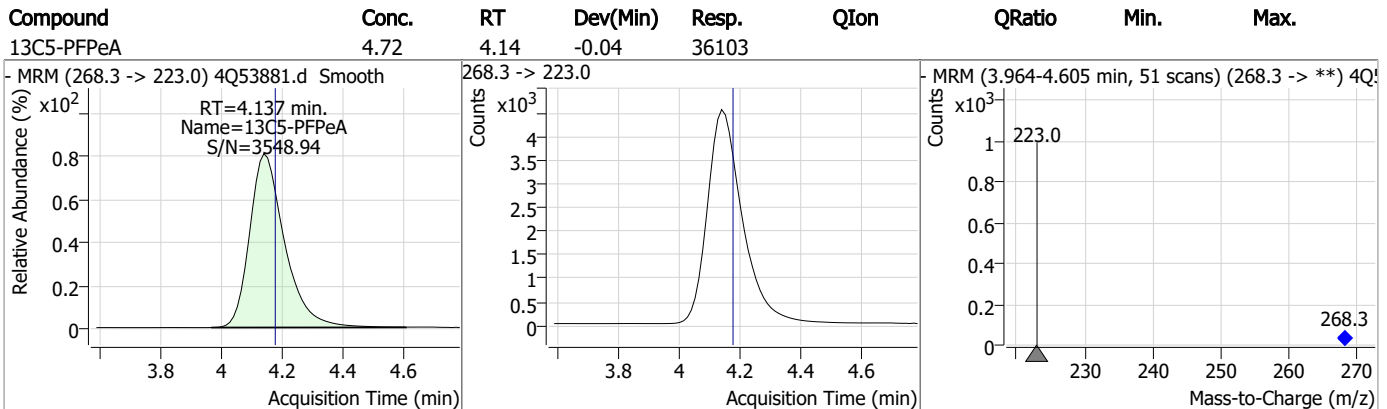
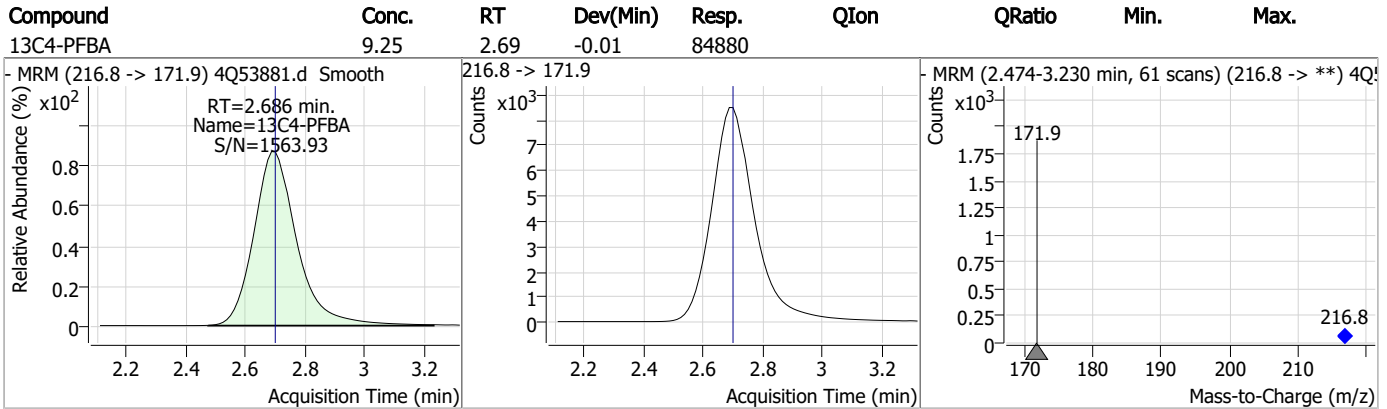
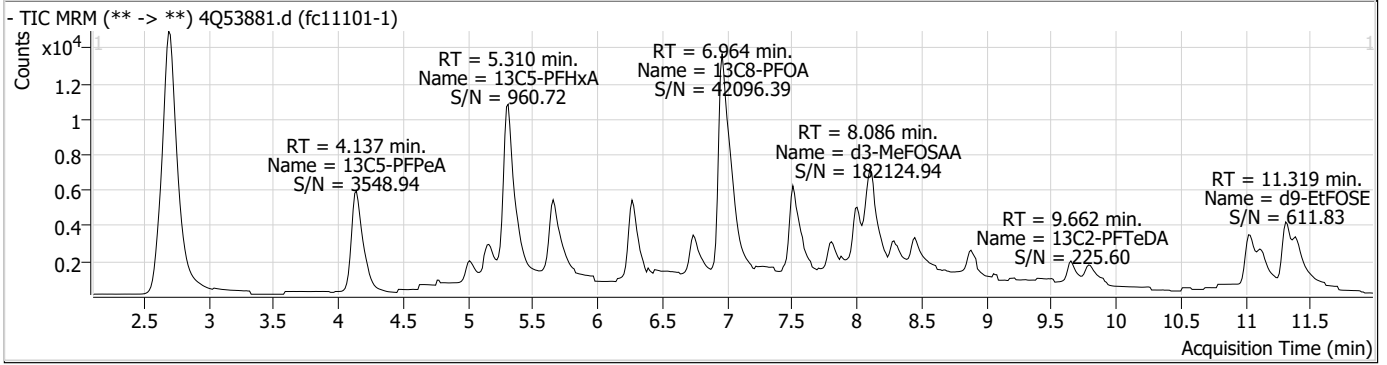
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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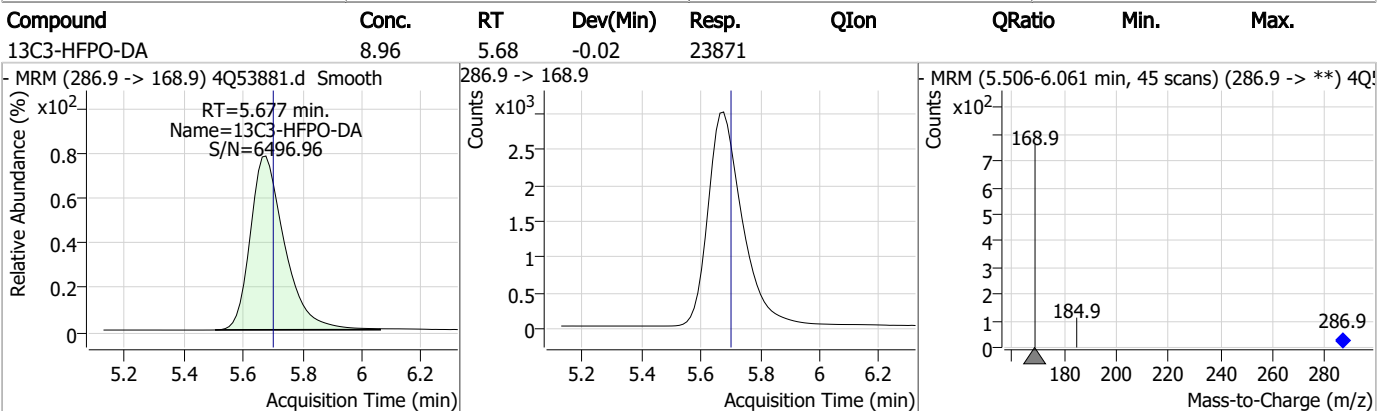
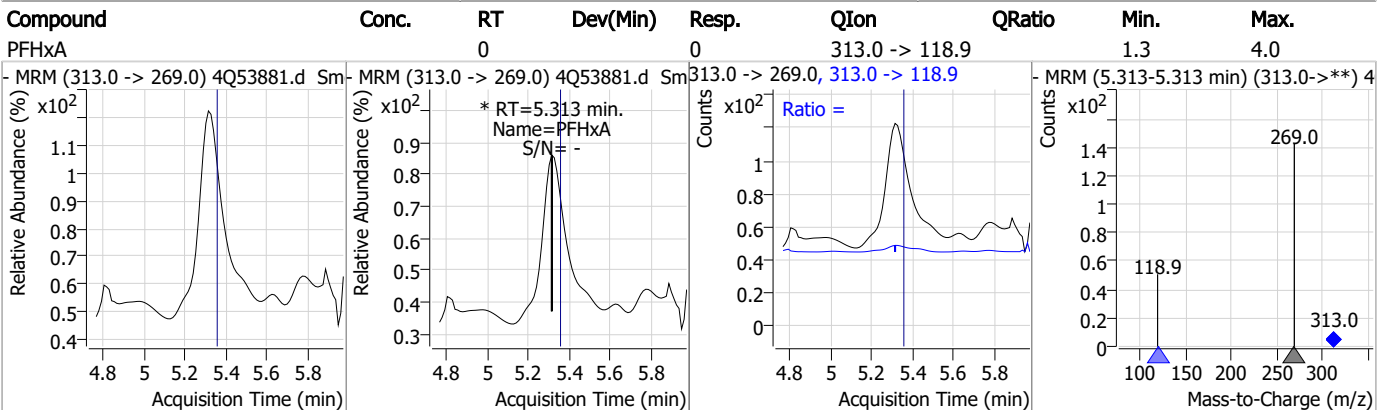
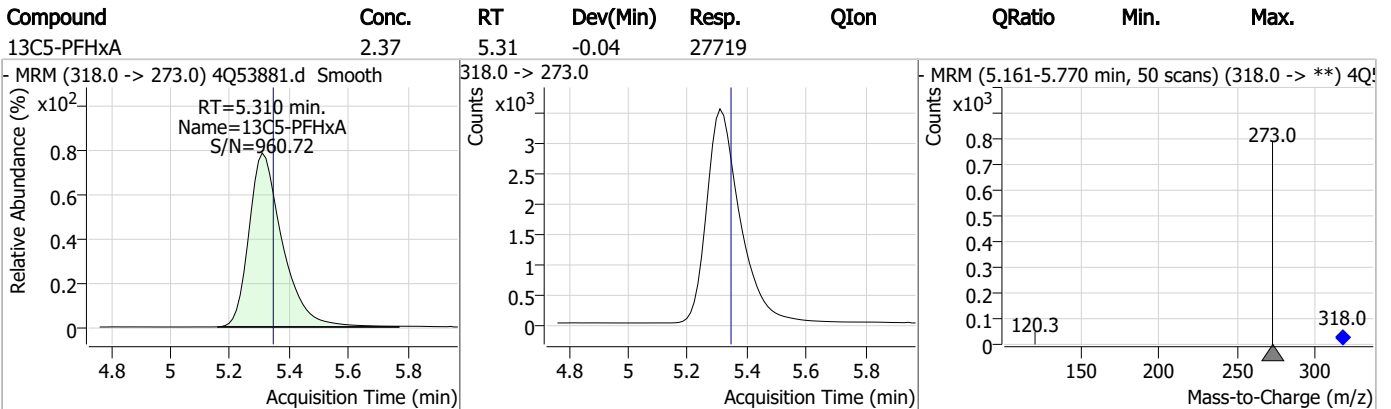
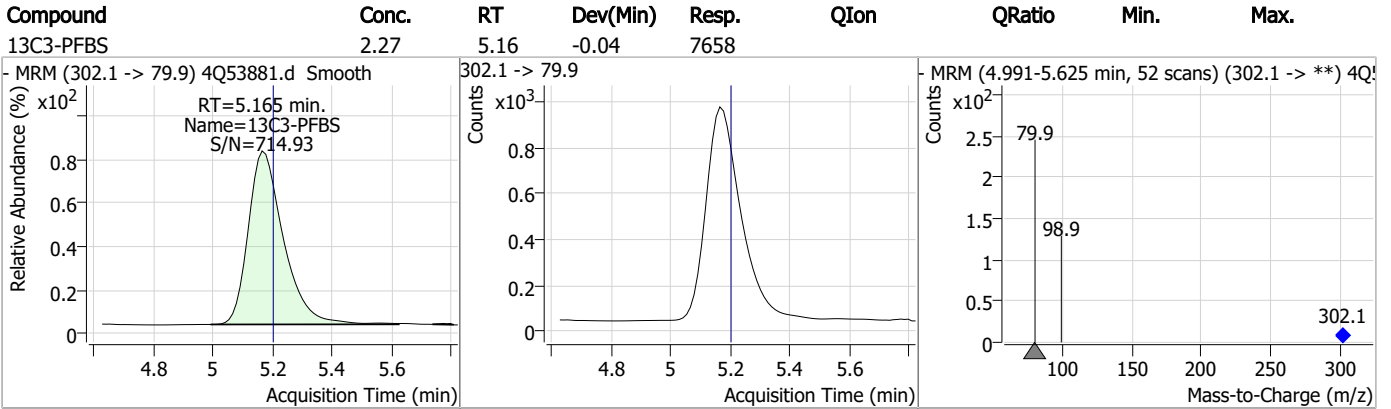
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Perfluorinated Compounds by LC/MS/MS

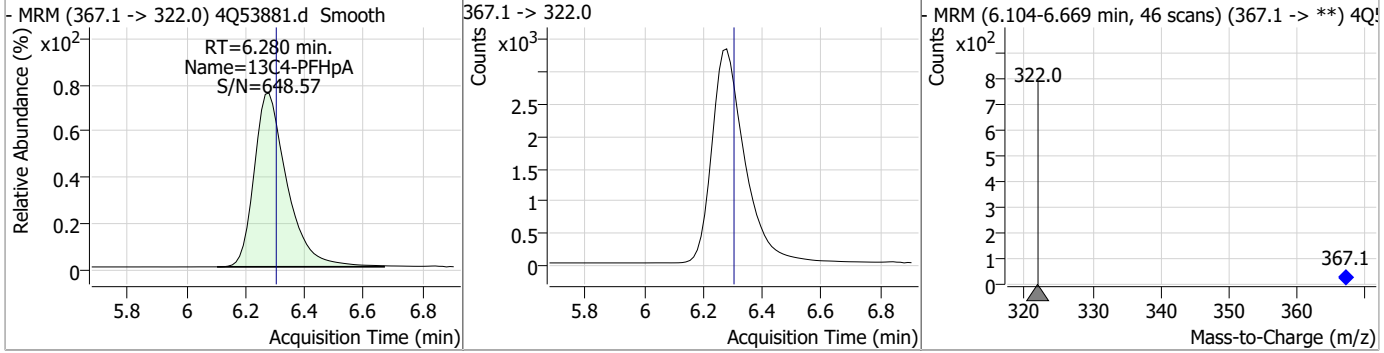


Perfluorinated Compounds by LC/MS/MS

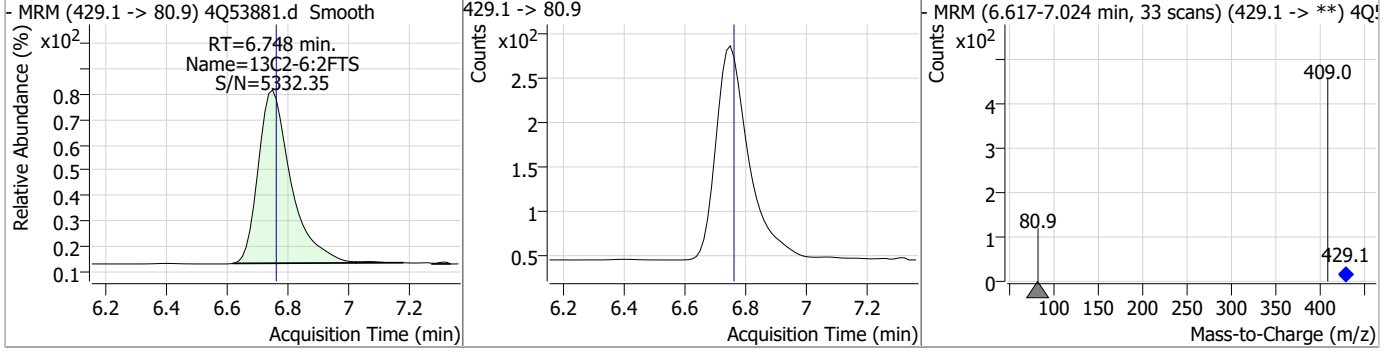


Perfluorinated Compounds by LC/MS/MS

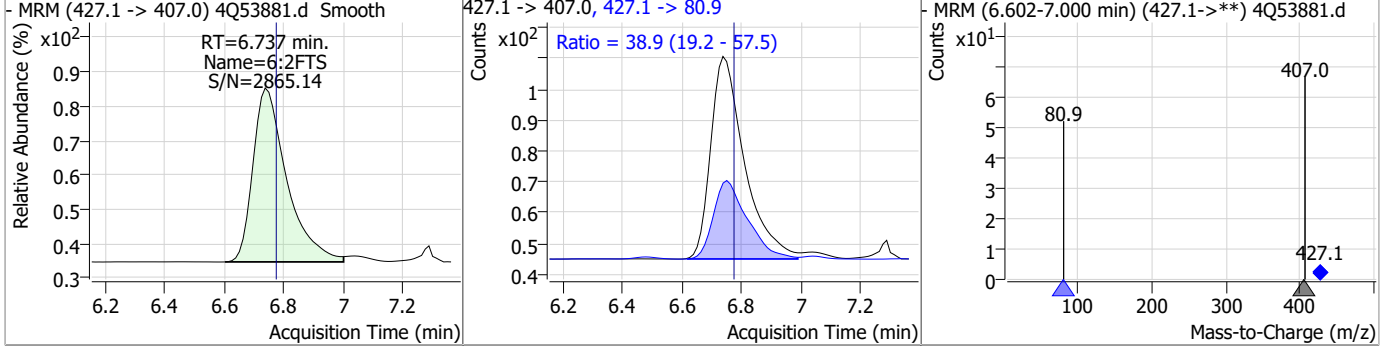
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.34	6.28	-0.02	25589				



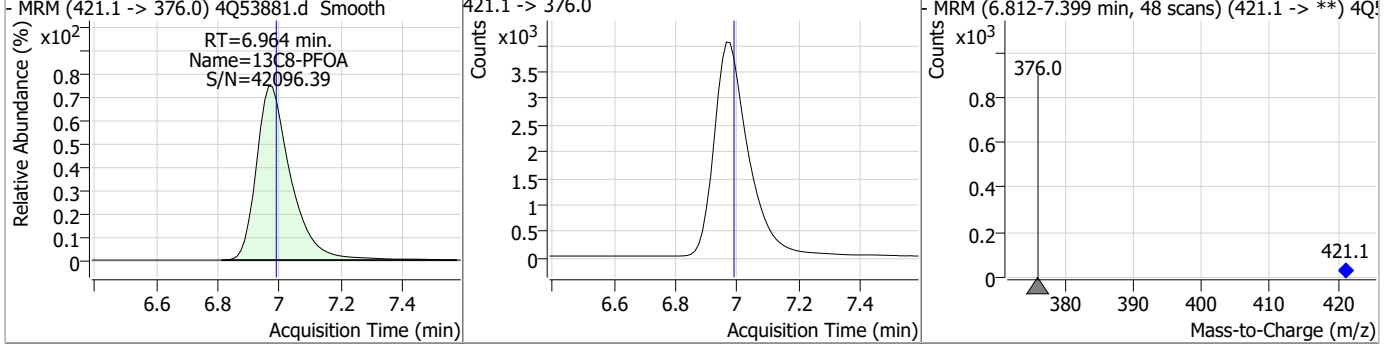
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	5.56	6.75	-0.01	1803				



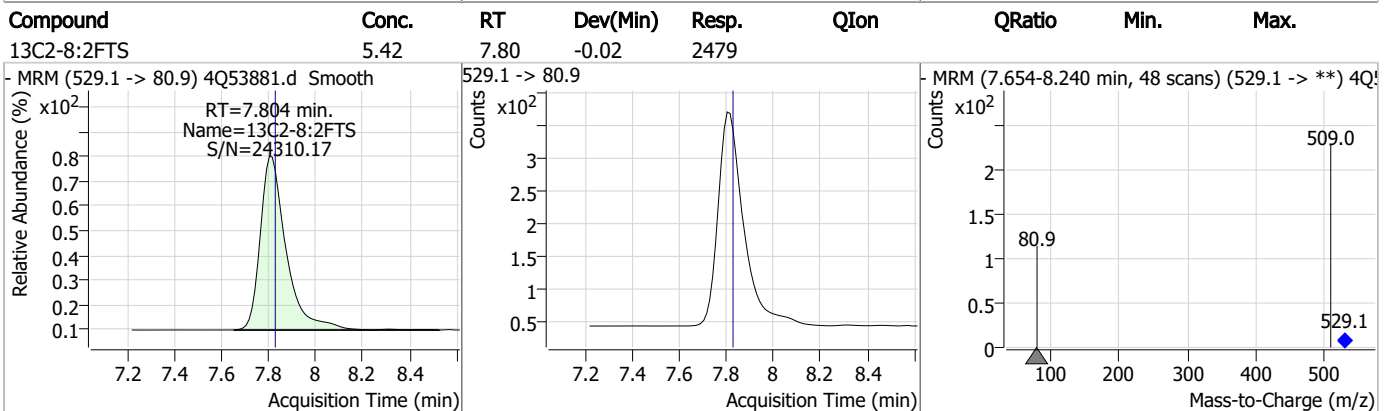
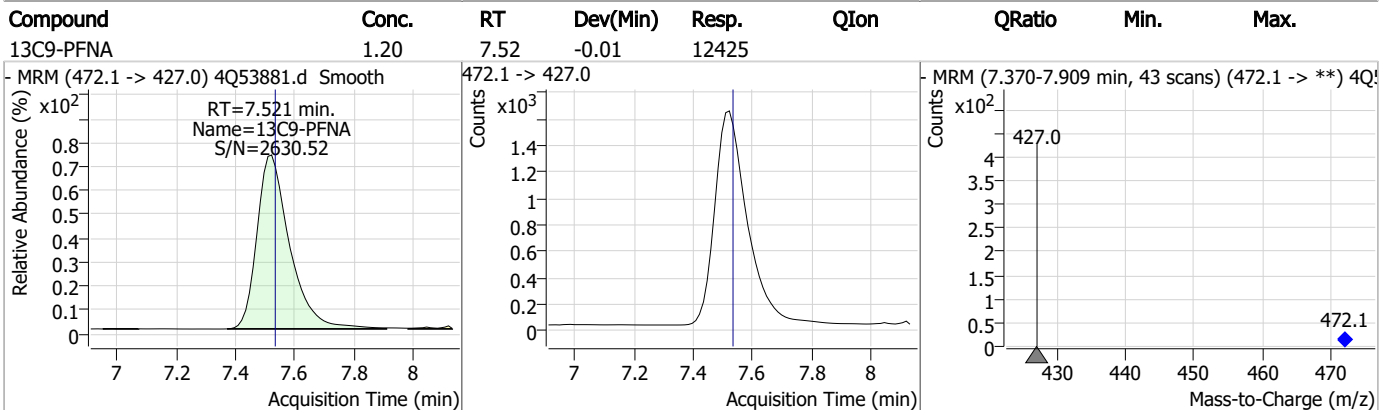
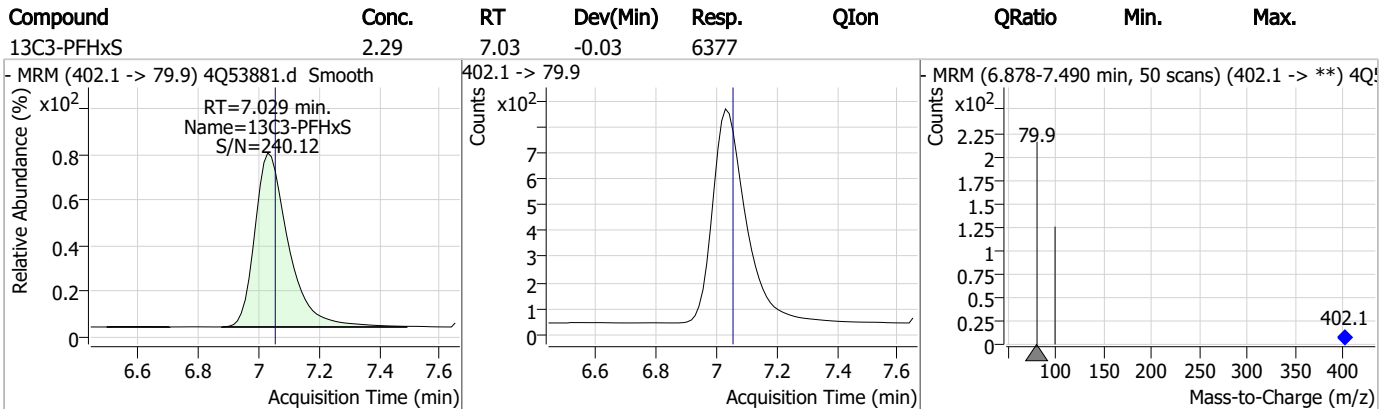
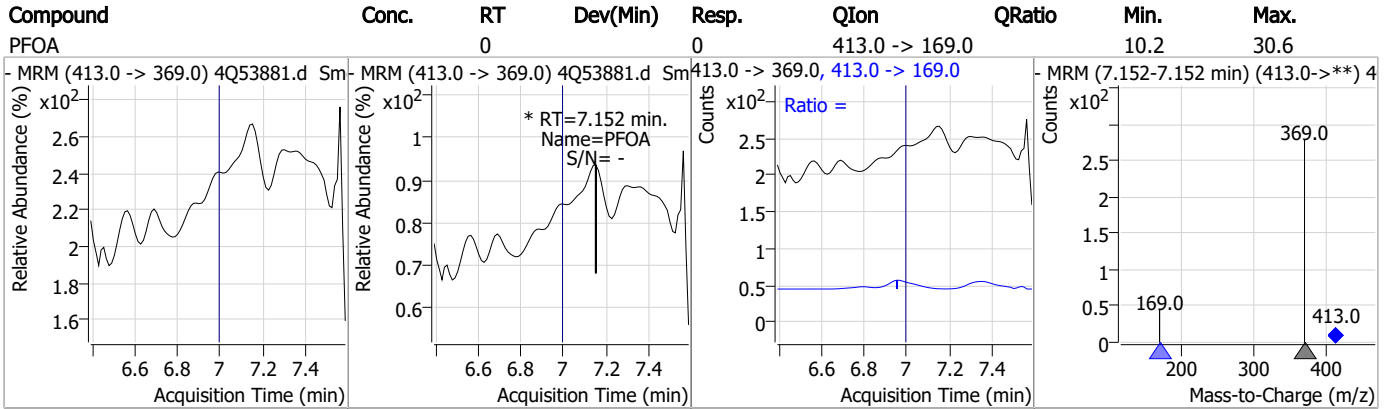
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	0.27	6.74	-0.04	518	427.1 -> 80.9	38.9	19.2	57.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	2.32	6.96	-0.02	30972				



Perfluorinated Compounds by LC/MS/MS



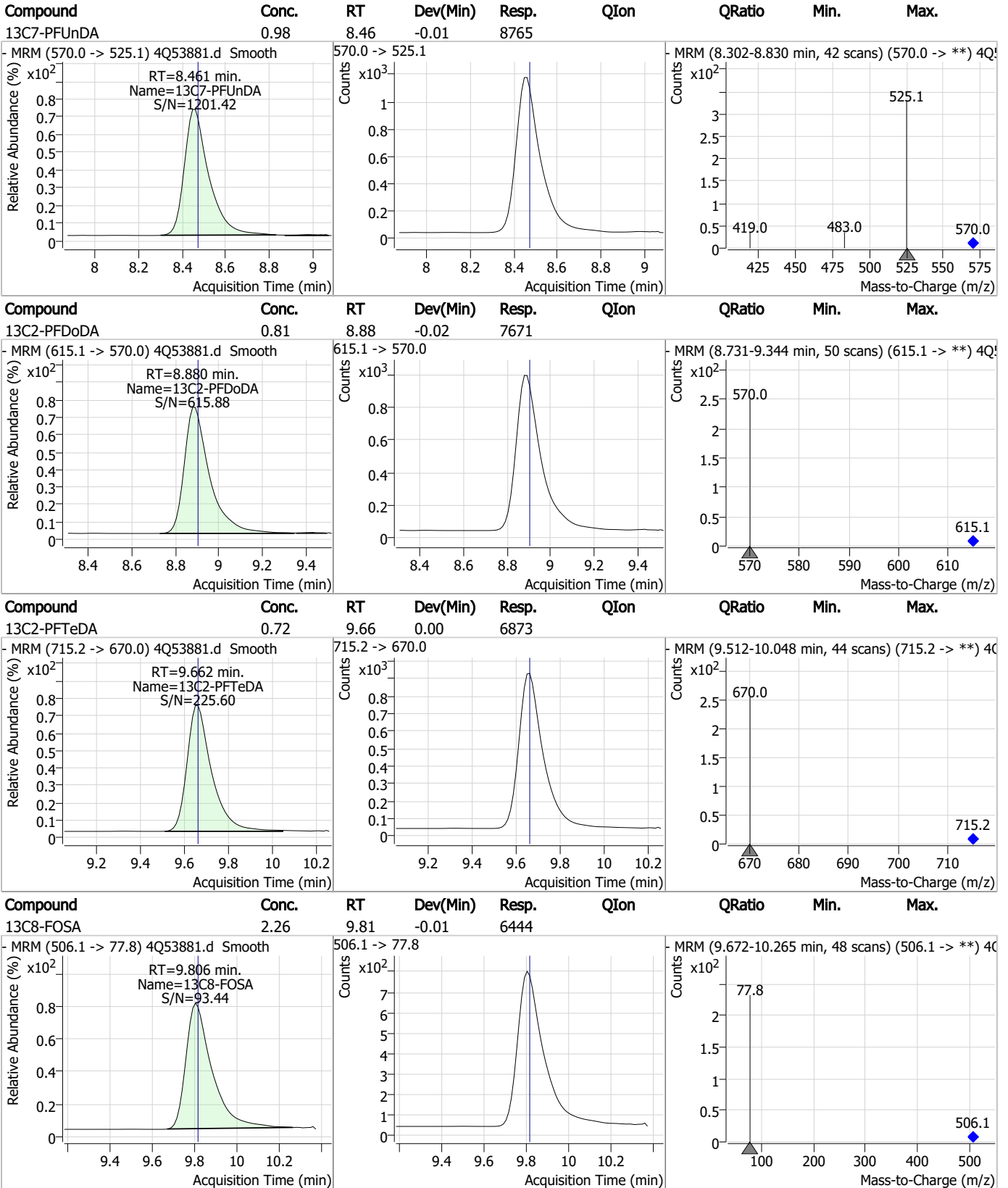
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	1.06	8.00	-0.01	8216				
<p>MRM (519.1 -> 474.1) 4Q53881.d Smooth RT=8.004 min. Name=13C6-PFDA S/N=444.17</p>			<p>519.1 -> 474.1</p>		<p>MRM (7.867-8.365 min, 41 scans) (519.1 -> **) 4Q53881.d Smooth</p>			
d3-MeFOSAA	5.17	8.09	-0.01	11705				
<p>MRM (573.2 -> 419.0) 4Q53881.d Smooth RT=8.086 min. Name=d3-MeFOSAA S/N=182124.94</p>			<p>573.2 -> 419.0</p>		<p>MRM (7.938-8.472 min, 44 scans) (573.2 -> **) 4Q53881.d Smooth</p>			
13C8-PFOS	2.21	8.12	-0.03	6286				
<p>MRM (507.1 -> 79.9) 4Q53881.d Smooth RT=8.117 min. Name=13C8-PFOS S/N=21501.90</p>			<p>507.1 -> 79.9</p>		<p>MRM (7.982-8.528 min, 44 scans) (507.1 -> **) 4Q53881.d Smooth</p>			
d5-EtFOSAA	4.30	8.30	-0.01	8509				
<p>MRM (589.2 -> 419.0) 4Q53881.d Smooth RT=8.296 min. Name=d5-EtFOSAA S/N=26057.26</p>			<p>589.2 -> 419.0</p>		<p>MRM (8.149-8.682 min, 43 scans) (589.2 -> **) 4Q53881.d Smooth</p>			

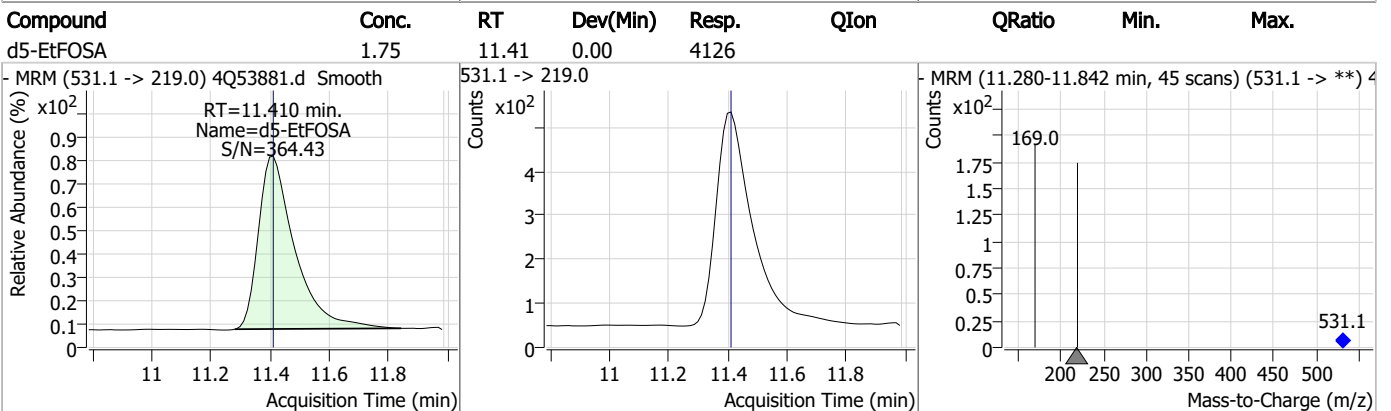
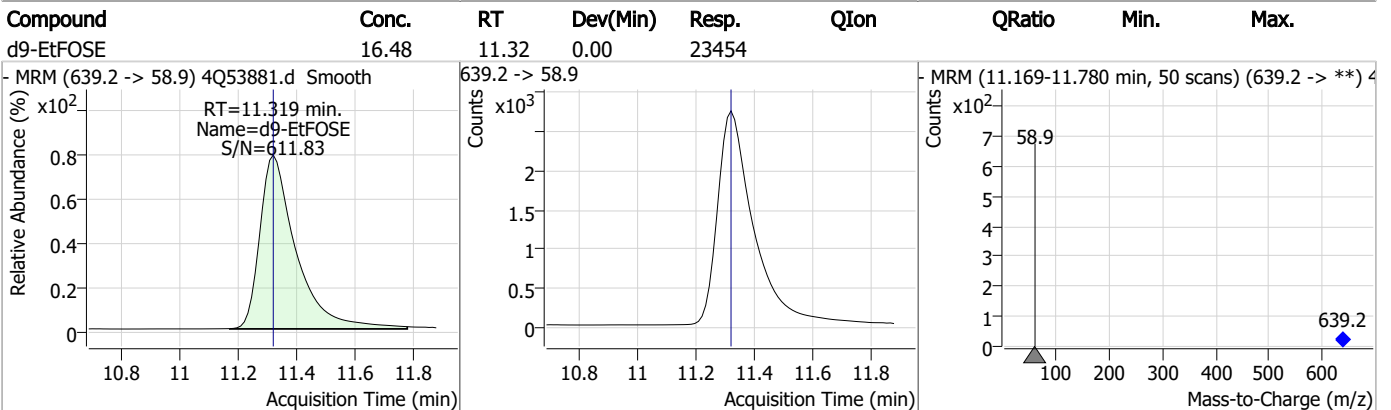
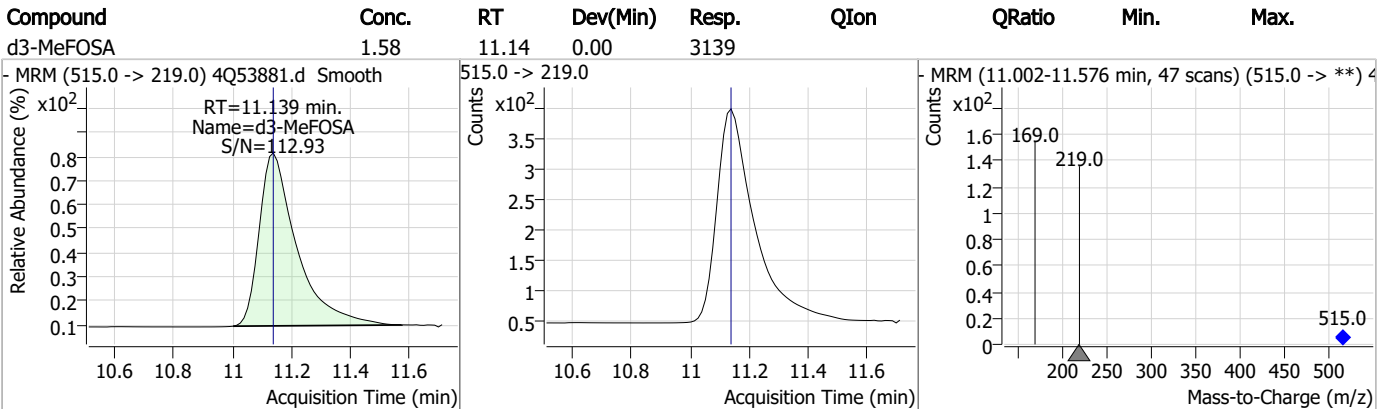
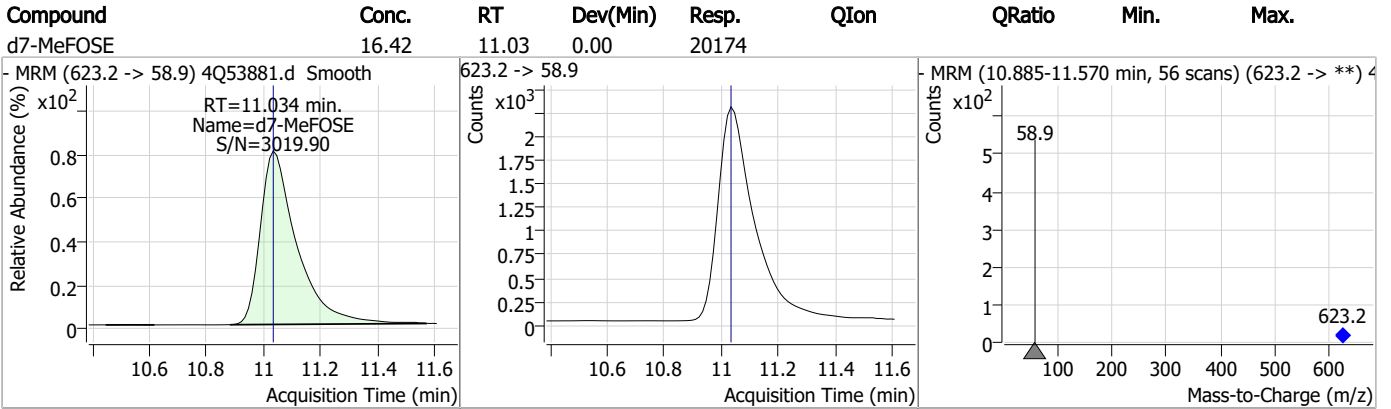
7.1.1
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53883.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/15/2023 2:52:54 PM
 Sample Name : fc11101-2
 Vial : P2-A4
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q786.batch.bin
 Sample Information : OP58,S4Q786,545,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	1361	10.00 µg/L	0.000
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M7-PFUnDA	8.461	570.0 -> 525.1	9864	1.25 µg/L	-0.012
M2-PFDoDA	8.880	615.1 -> 570.0	9074	1.25 µg/L	-0.025
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M3-HFPO-DA	5.677	286.9 -> 168.9	18657	10.00 µg/L	-0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	11514	5.00 µg/L	-0.014
M7-MeFOSE	11.034	623.2 -> 58.9	22714	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	26488	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	5418	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	4367	2.50 µg/L	0.000
13C4-PFOS	8.118	502.8 -> 79.9	5286	2.50 µg/L	-0.026
13C3-PFBA	2.691	216.0 -> 172.0	41454	5.00 µg/L	-0.013
18O2-PFHxS	7.028	403.0 -> 83.9	3759	2.50 µg/L	-0.025
13C4-PFOA	6.977	417.1 -> 372.0	33545	2.50 µg/L	-0.012
13C2-PFDA	8.004	515.1 -> 470.1	10257	1.25 µg/L	-0.025
13C5-PFNA	7.522	468.0 -> 423.0	12504	1.25 µg/L	-0.012
13C2-PFHxA	5.311	315.1 -> 270.0	30207	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.021	329.1 -> 80.9	1039	8.08 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 161.5%		
13C2-6:2FTS	6.748	429.1 -> 80.9	2041	7.53 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 150.6%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2580	6.75 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 135.1%		
13C2-PFDoDA	8.880	615.1 -> 570.0	9074	0.98 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 78.4%		
13C2-PFTeDA	9.649	715.2 -> 670.0	7535	0.81 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 64.7%		
13C3-PFBS	5.165	302.1 -> 79.9	7288	2.58 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.4%		
13C3-PFHxS	7.029	402.1 -> 79.9	6274	2.69 µg/L	-0.025

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.7%		
13C4-PFBA	2.699	216.8 -> 171.9	1361	0.16 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 1.6%		
13C4-PFHpA	6.280	367.1 -> 322.0	26919	2.55 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C5-PFHxA	5.310	318.0 -> 273.0	23709	2.10 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 84.2%		
13C5-PFPeA	4.137	268.3 -> 223.0	4232	0.57 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 11.5%		
13C6-PFDA	8.004	519.1 -> 474.1	8630	1.14 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.5%		
13C7-PFUnDA	8.461	570.0 -> 525.1	9864	1.13 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 90.5%		
13C8-FOSA	9.806	506.1 -> 77.8	7034	2.78 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.3%		
13C8-PFOA	6.976	421.1 -> 376.0	30094	2.51 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C8-PFOS	8.117	507.1 -> 79.9	6439	2.55 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C9-PFNA	7.521	472.1 -> 427.0	12506	1.27 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.5%		
d3-MeFOSAA	8.086	573.2 -> 419.0	12350	6.16 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.2%		
13C3-HFPO-DA	5.677	286.9 -> 168.9	18657	7.26 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 72.6%		
d3-MeFOSA	11.139	515.0 -> 219.0	4367	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.0%		
d5-EtFOSAA	8.296	589.2 -> 419.0	11514	6.56 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 131.2%		
d7-MeFOSE	11.034	623.2 -> 58.9	22714	20.86 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 83.4%		
d9-EtFOSE	11.319	639.2 -> 58.9	26488	21.00 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 84.0%		
d5-EtFOSA	11.410	531.1 -> 219.0	5418	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.6%		

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0 327.1 -> 80.9	-	N.D.	
6:2FTS	6.749	427.1 -> 407.0 427.1 -> 80.9	884 420	0.40 µg/L	85
8:2FTS	-	527.1 -> 507.0 527.1 -> 80.8	-	N.D.	
EtFOSAA	-	584.2 -> 419.1 584.2 -> 526.0	-	N.D.	
FOSA	-	498.1 -> 77.9 498.1 -> 478.0	-	N.D.	
MeFOSAA	-	570.1 -> 419.0 570.1 -> 483.0	-	N.D.	
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9 298.7 -> 98.8	-	N.D.	
PFDA	-	512.9 -> 469.0 512.9 -> 219.0	-	N.D.	
PFDODA	-	613.1 -> 569.0 613.1 -> 319.0	-	N.D.	
PFDS	8.906	599.0 -> 79.9	0	µg/L m	1

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	0			
PFHpA	-	363.1 -> 319.0	-	N.D.		
		363.1 -> 169.0				
PFHpS	7.637	449.0 -> 79.9	0	µg/L	m	1
		449.0 -> 98.9	0			
PFHxA	-	313.0 -> 269.0	-	N.D.		
		313.0 -> 118.9				
PFHxS	-	398.7 -> 79.9	-	N.D.		
		398.7 -> 98.9				
PFNA	-	463.0 -> 419.0	-	N.D.		
		463.0 -> 219.0				
PFNS	8.949	548.8 -> 79.9	0	µg/L	m	1
		548.8 -> 98.9	0			
PFOA	-	413.0 -> 369.0	-	N.D.		
		413.0 -> 169.0				
PFOS	7.621	498.9 -> 79.9	0	µg/L	m	1
		498.9 -> 98.8	0			
PFPeA	-	263.0 -> 219.0	-	N.D.		
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	9.103	713.1 -> 669.0	0	µg/L	m	1
		713.1 -> 168.9	0			
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	8.635	563.1 -> 519.0	0	µg/L	m	1
		563.1 -> 269.1	0			
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed

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7

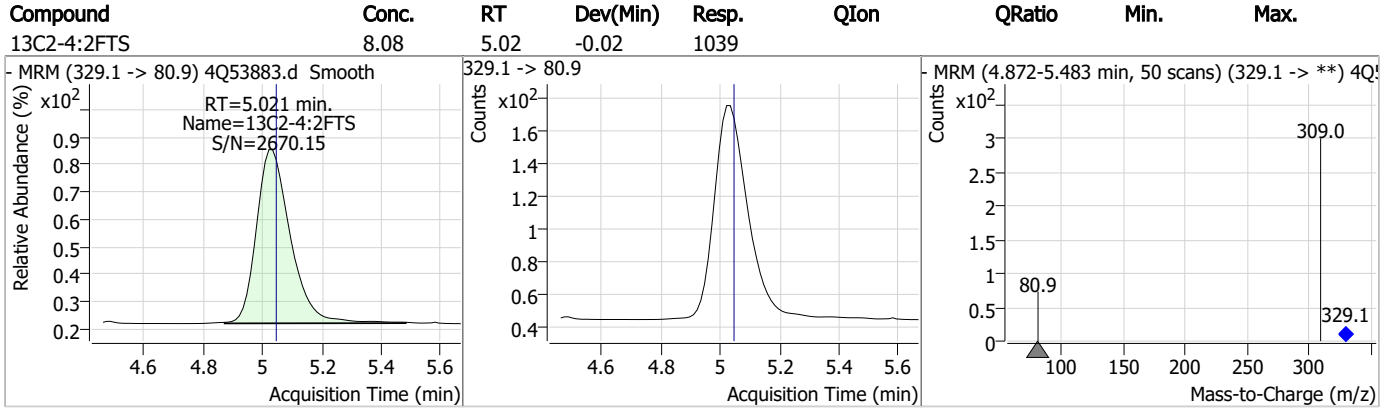
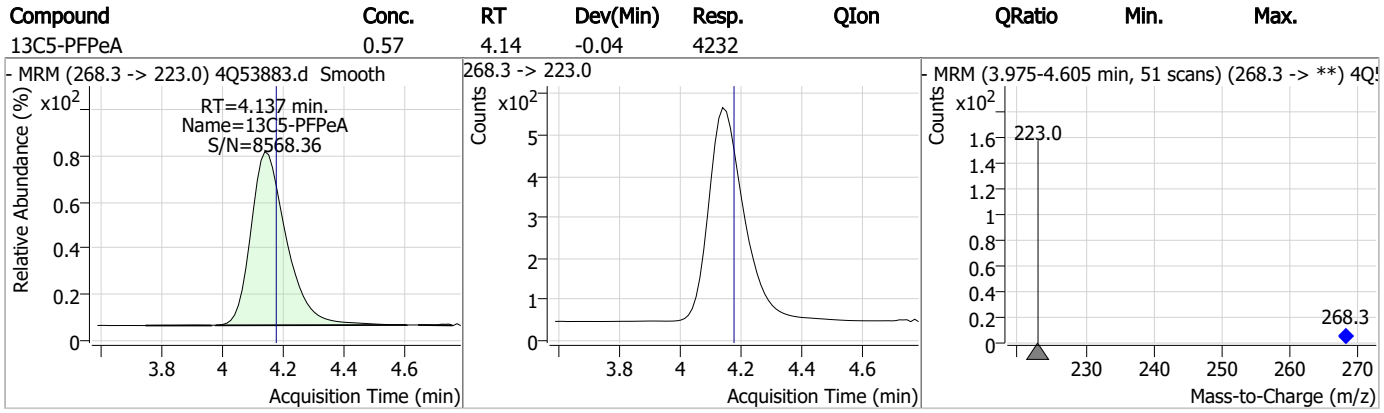
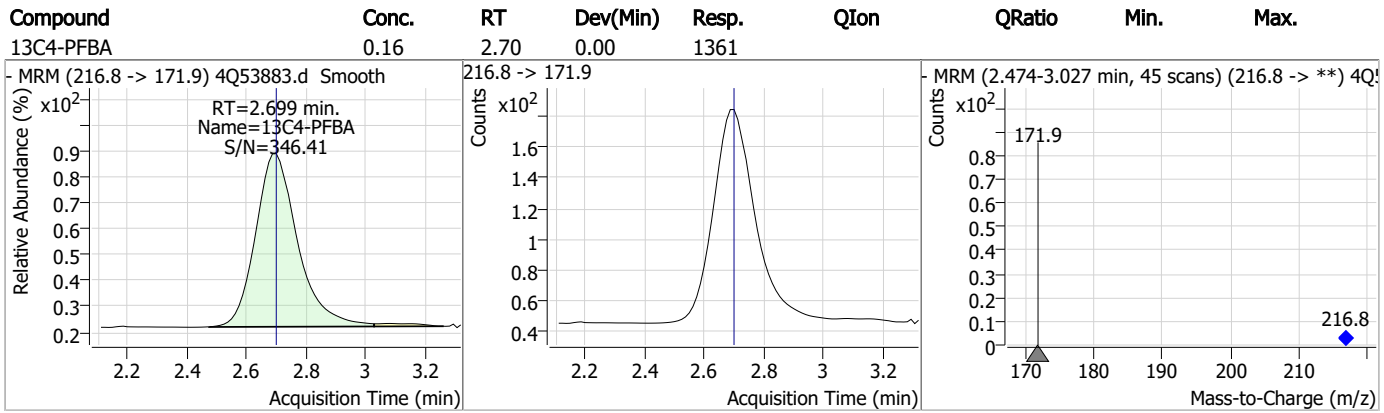
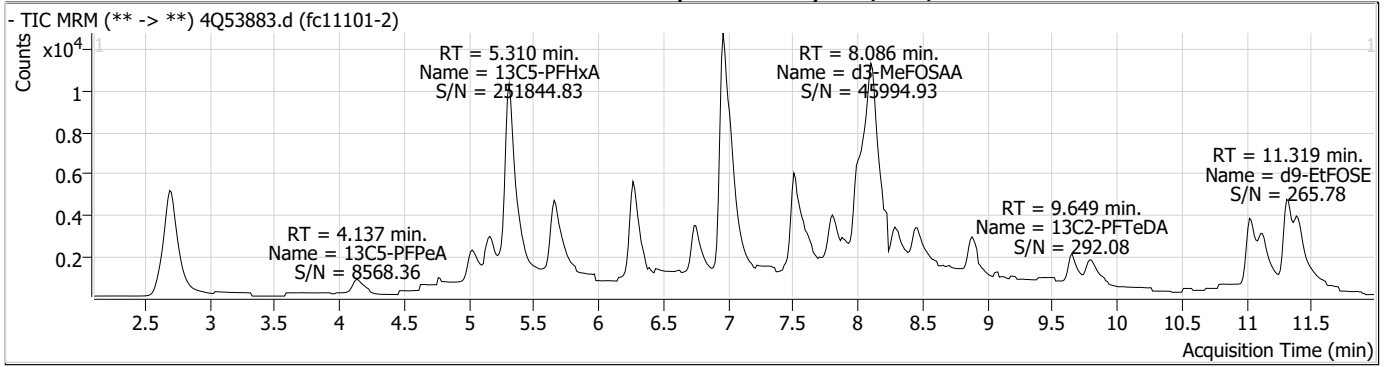
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.1.2
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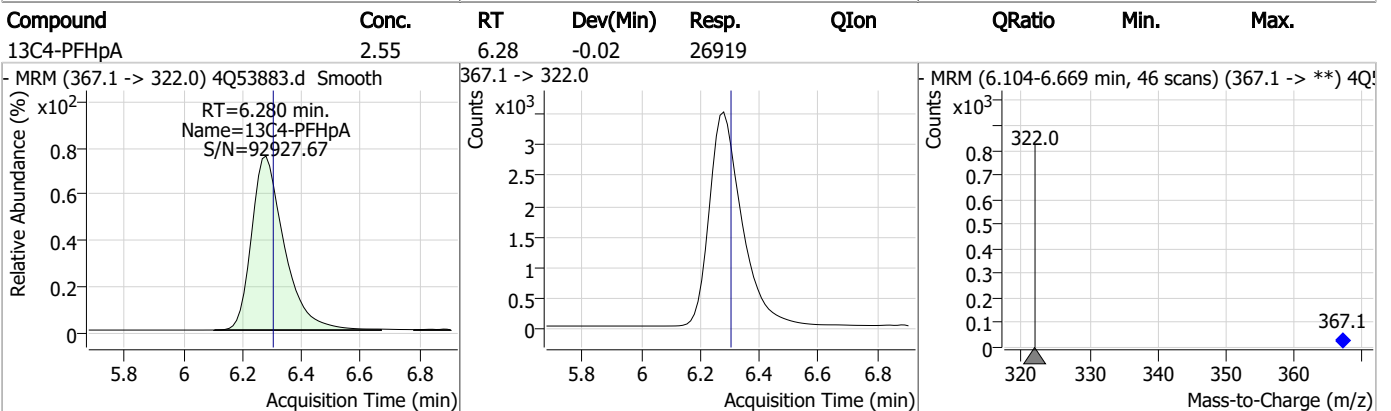
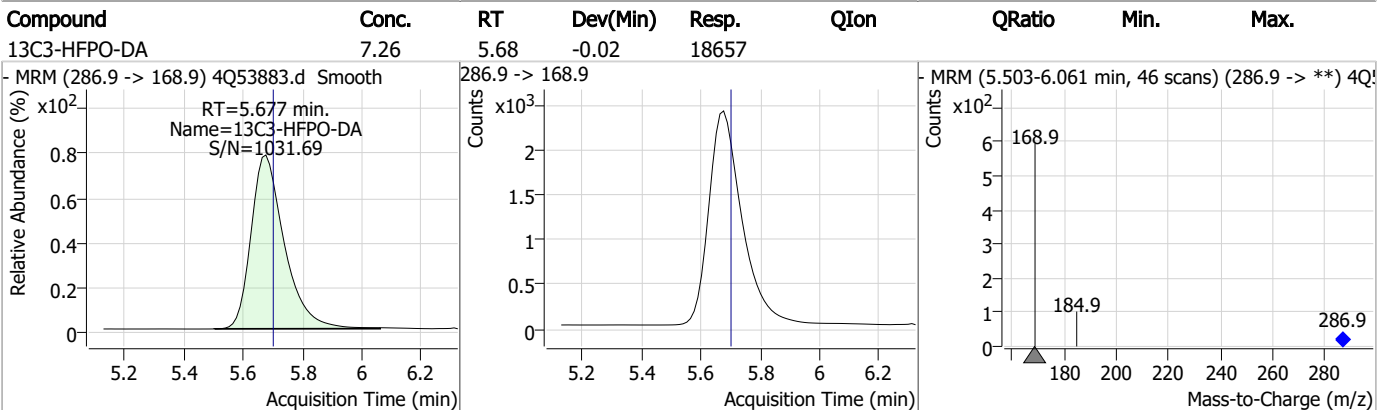
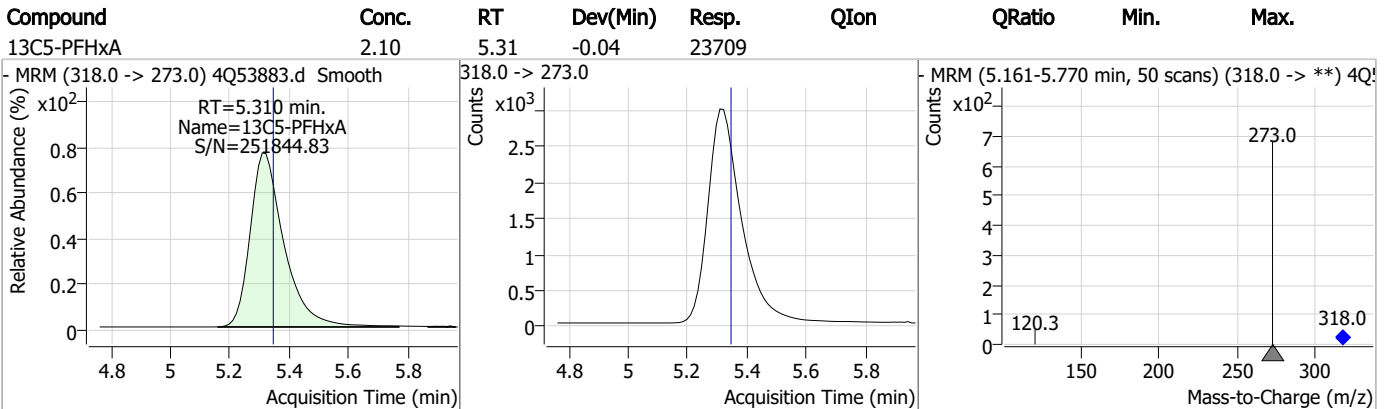
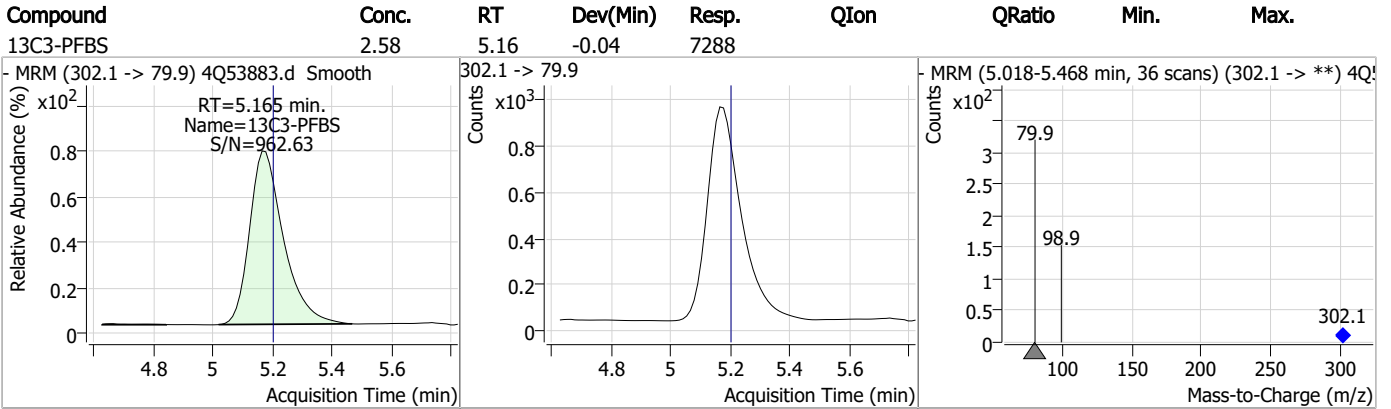


Perfluorinated Compounds by LC/MS/MS

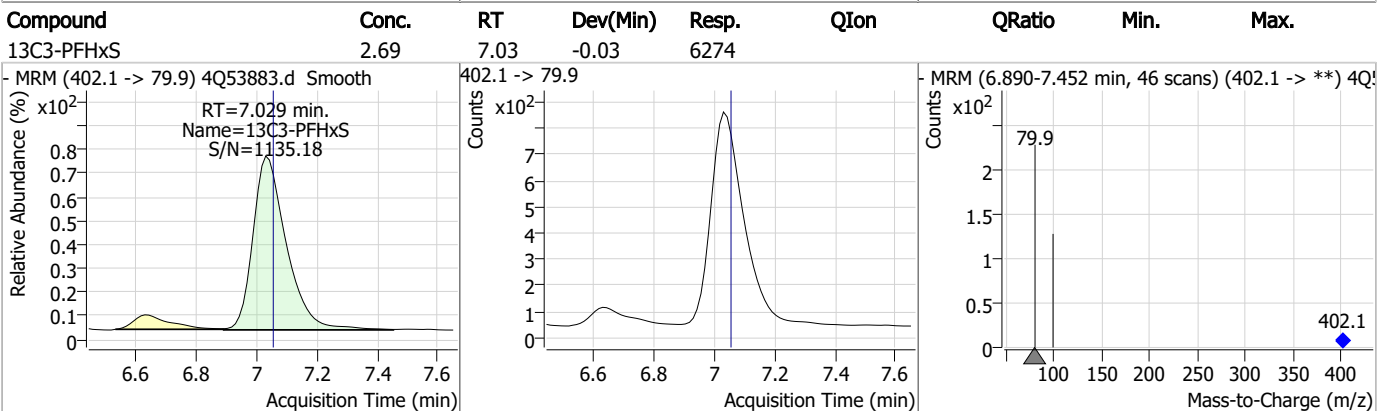
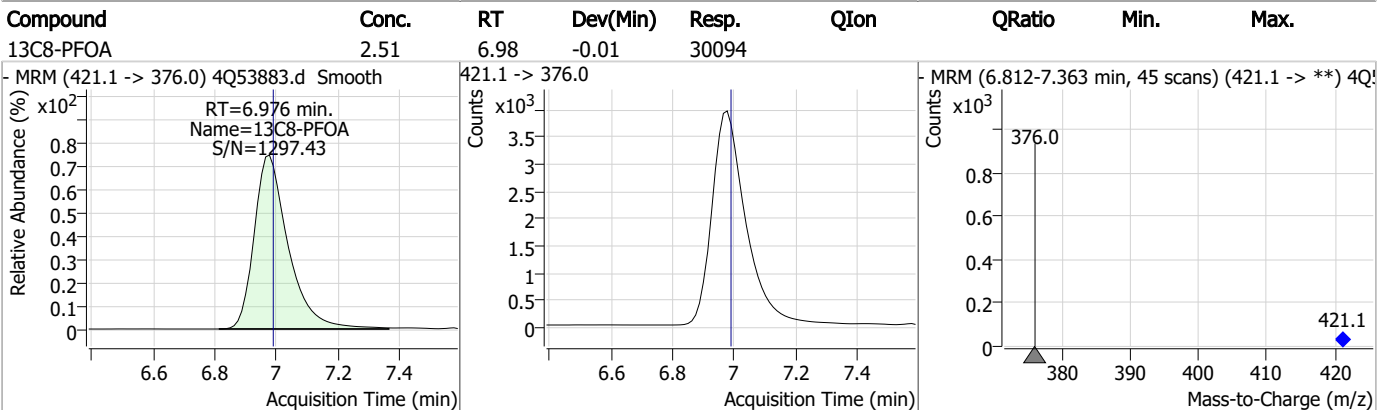
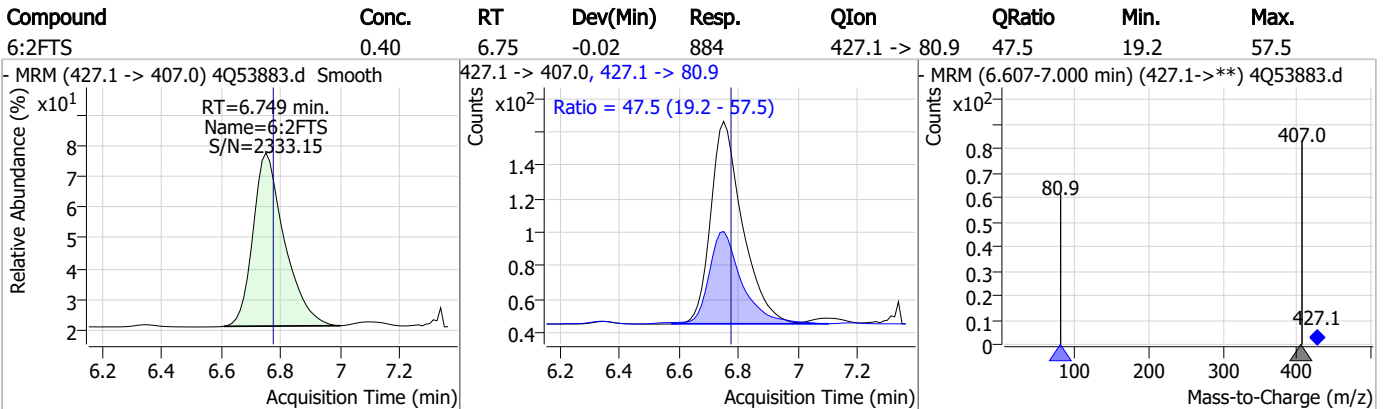
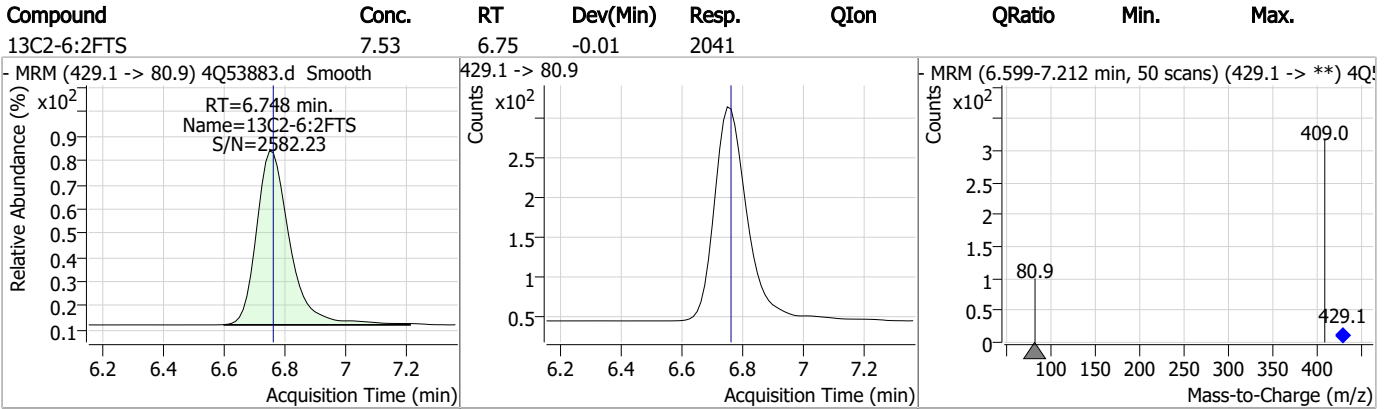


7.1.2
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Perfluorinated Compounds by LC/MS/MS



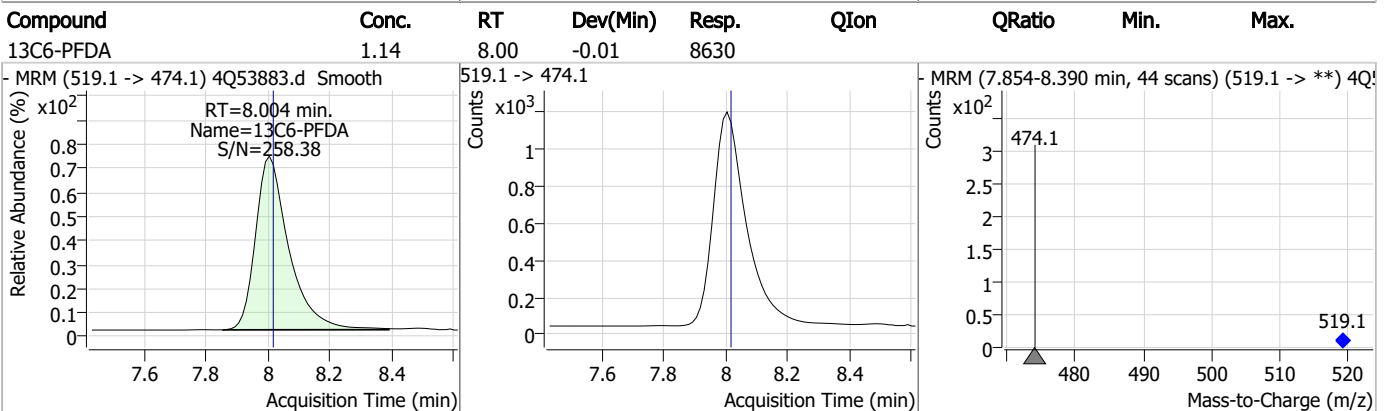
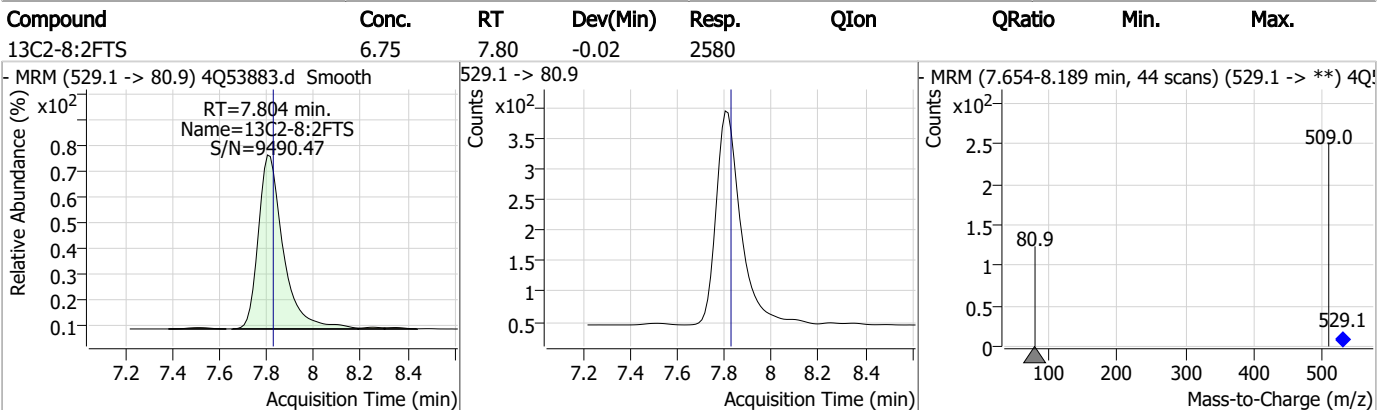
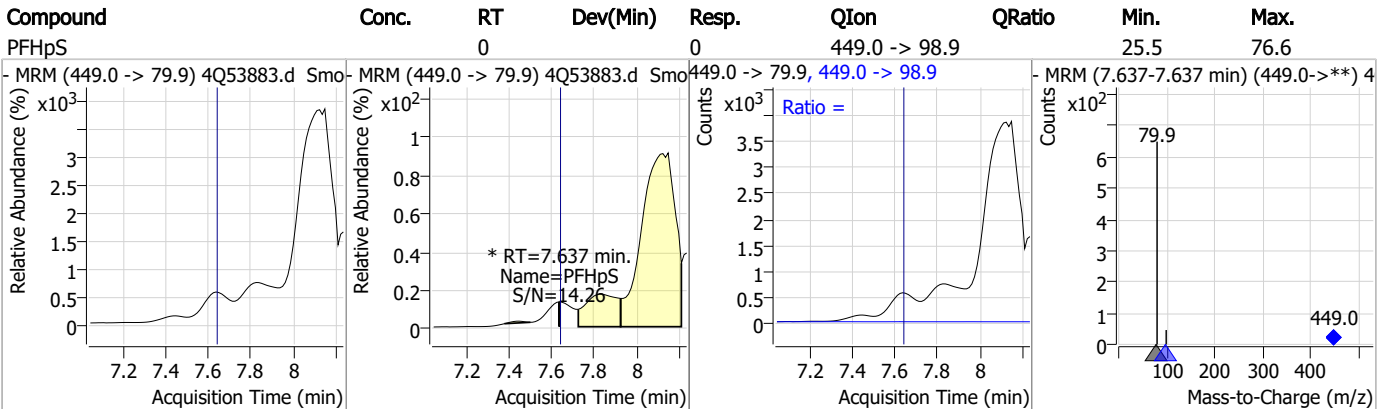
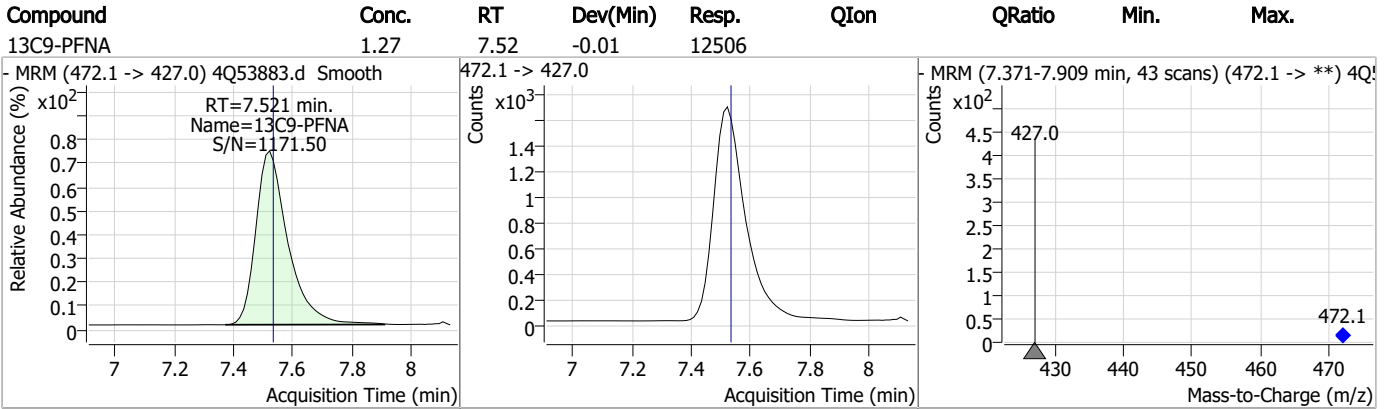
Perfluorinated Compounds by LC/MS/MS



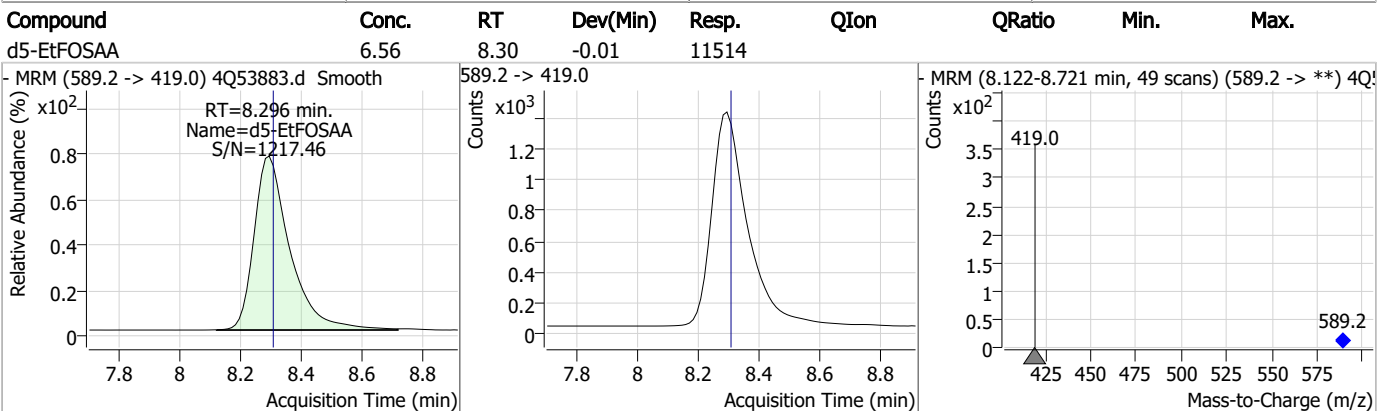
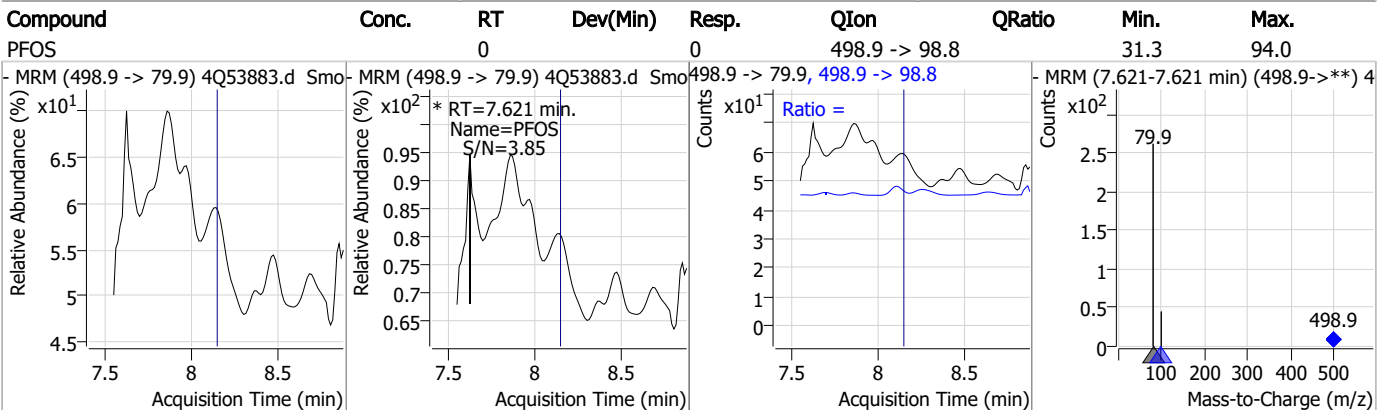
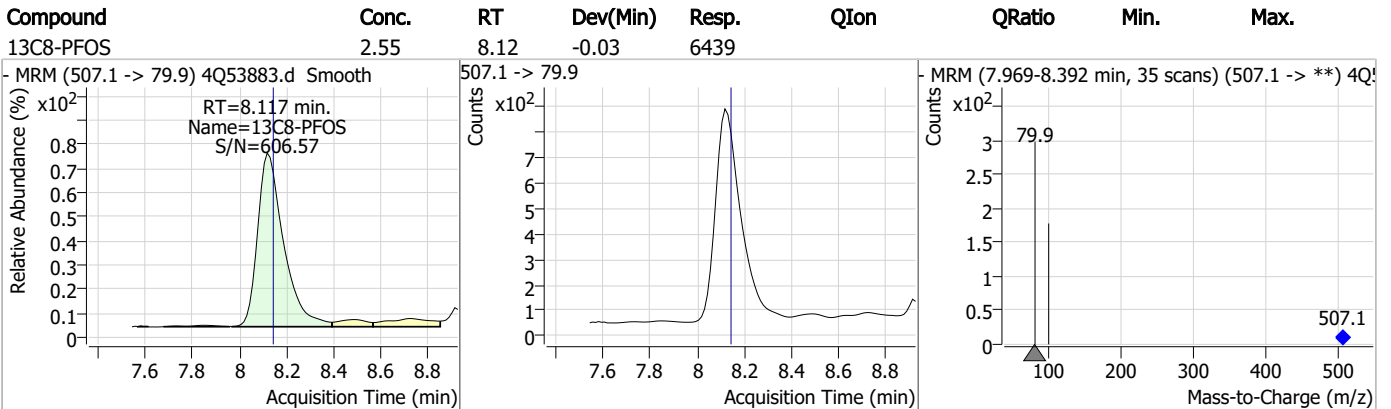
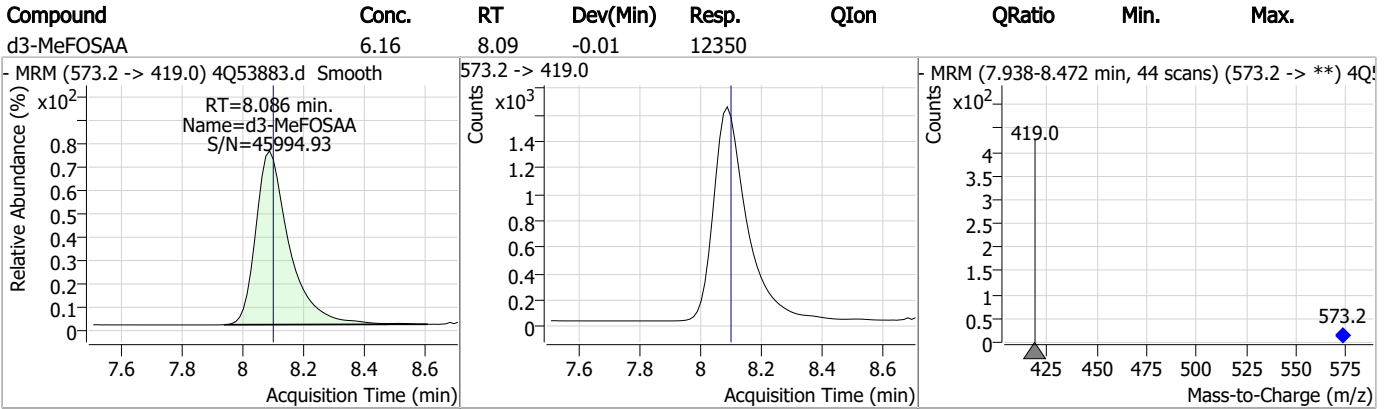
7.1.2

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Perfluorinated Compounds by LC/MS/MS



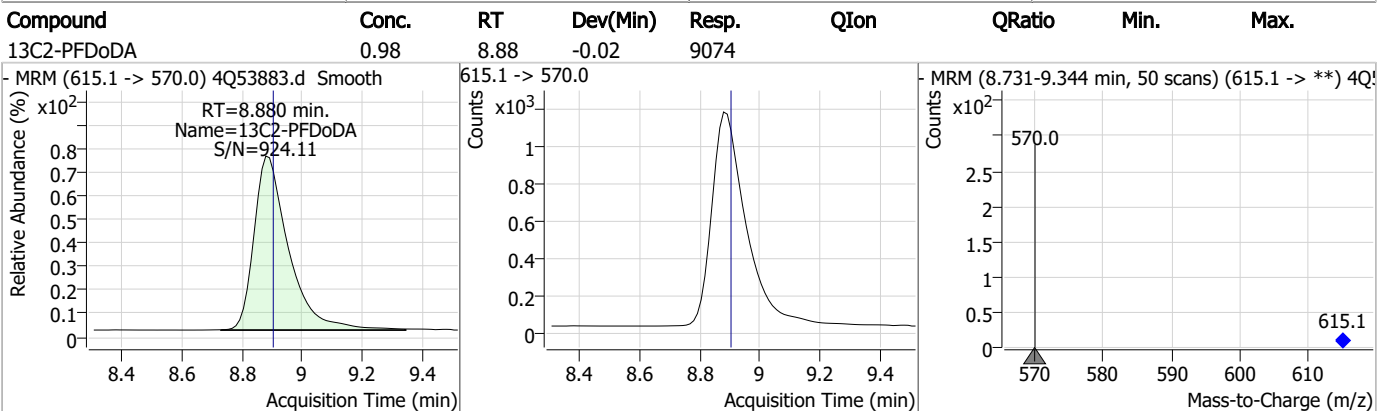
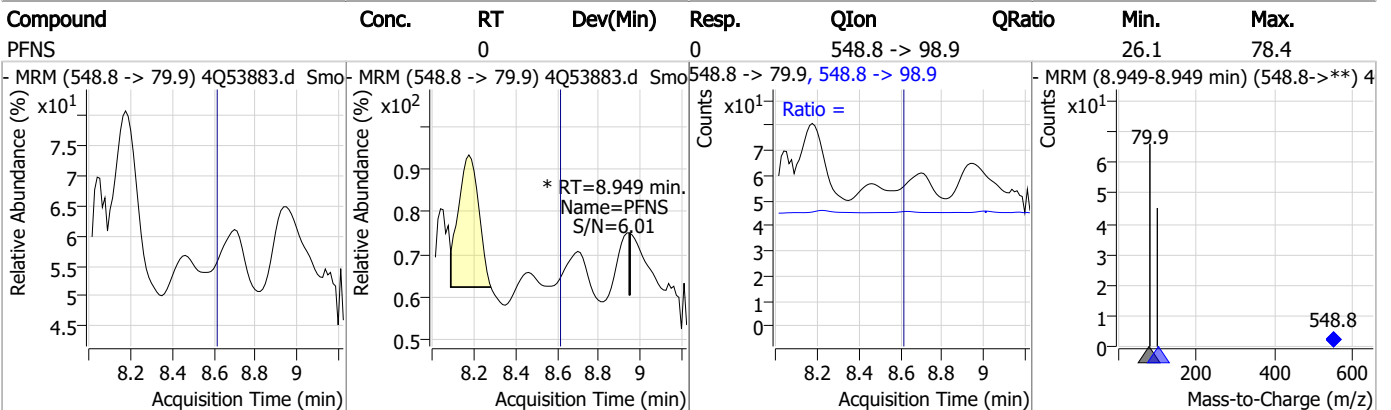
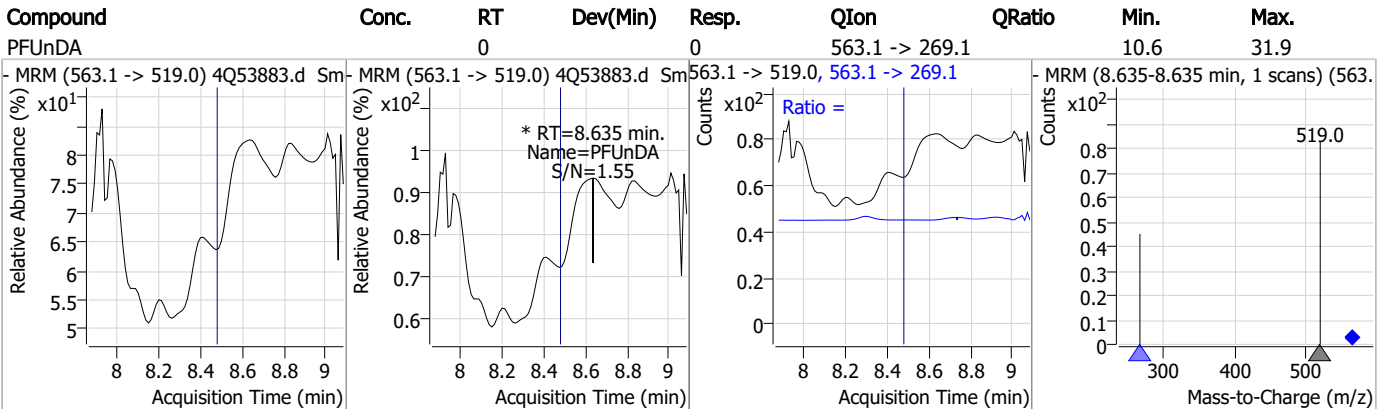
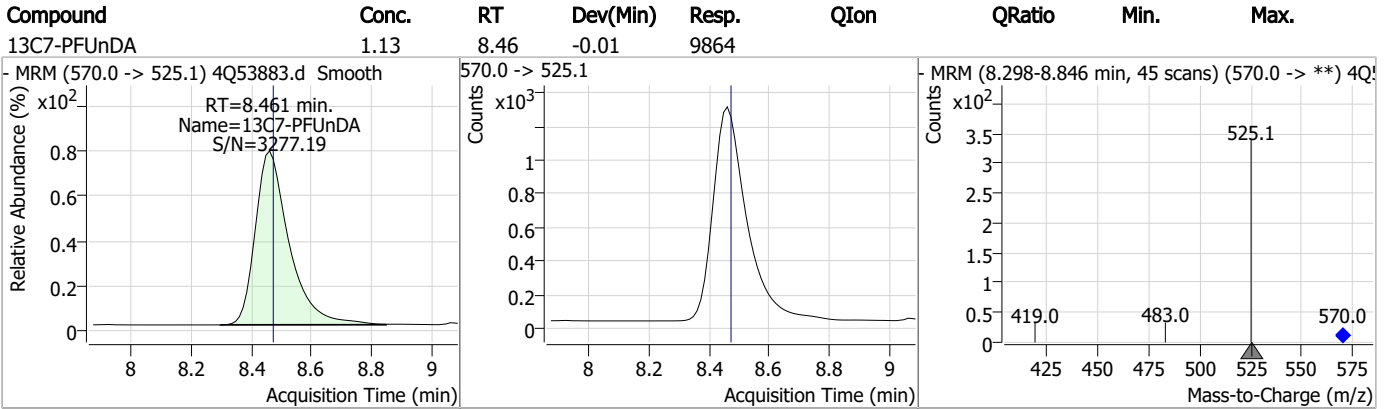
Perfluorinated Compounds by LC/MS/MS



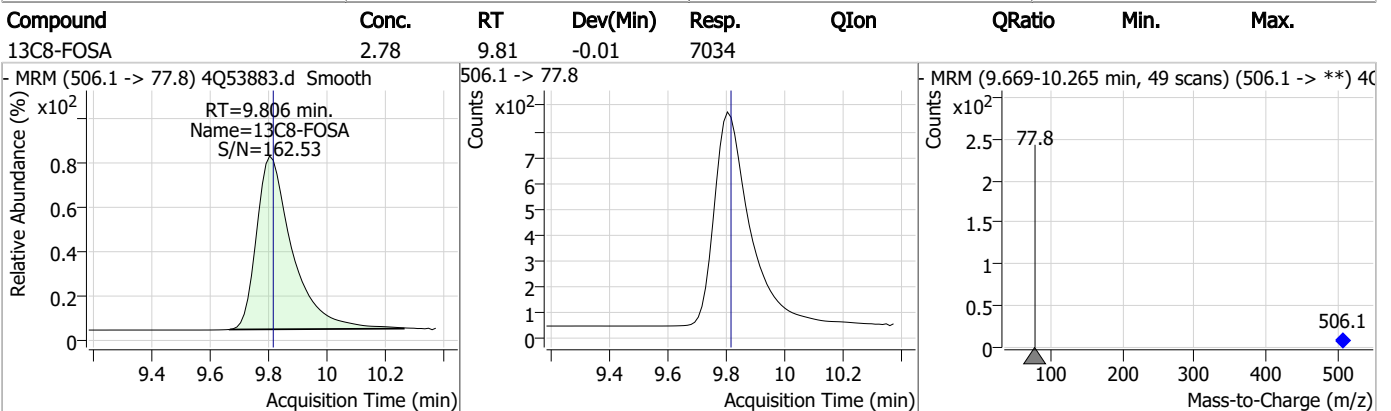
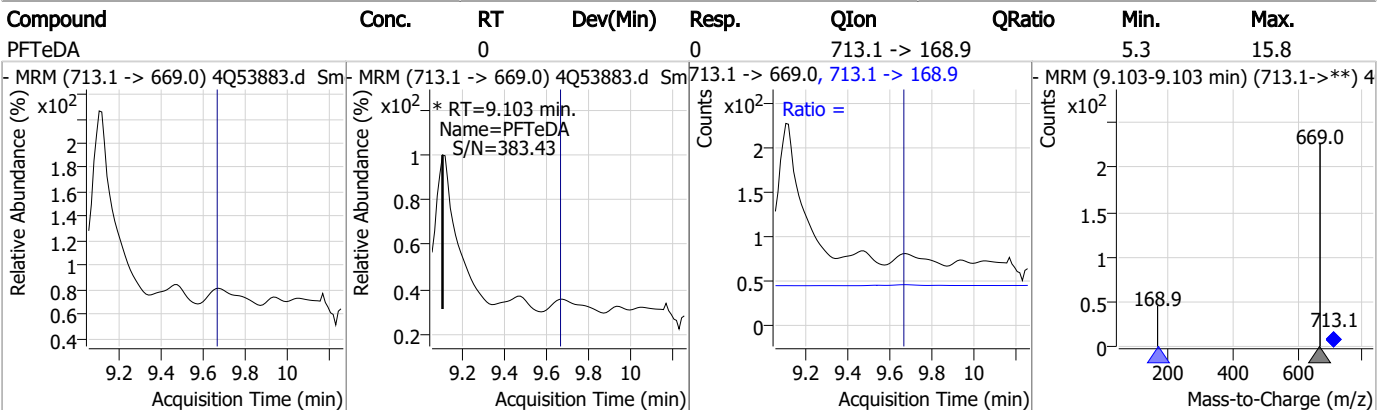
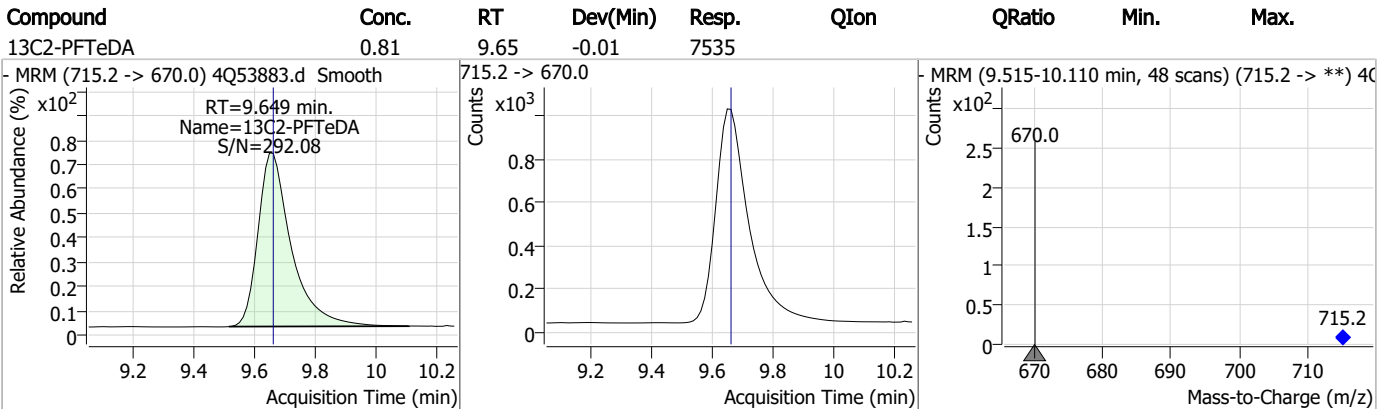
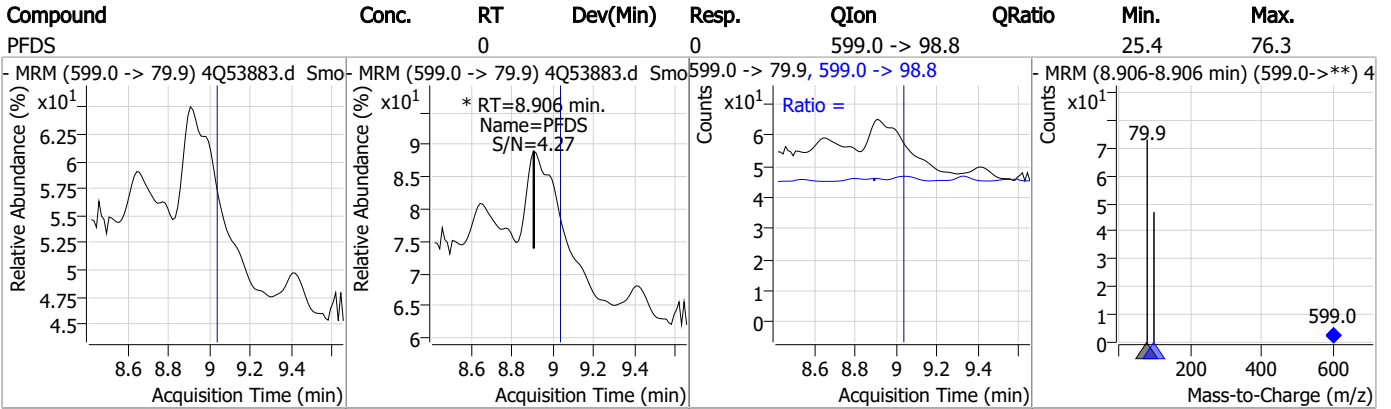
7.1.2

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Perfluorinated Compounds by LC/MS/MS



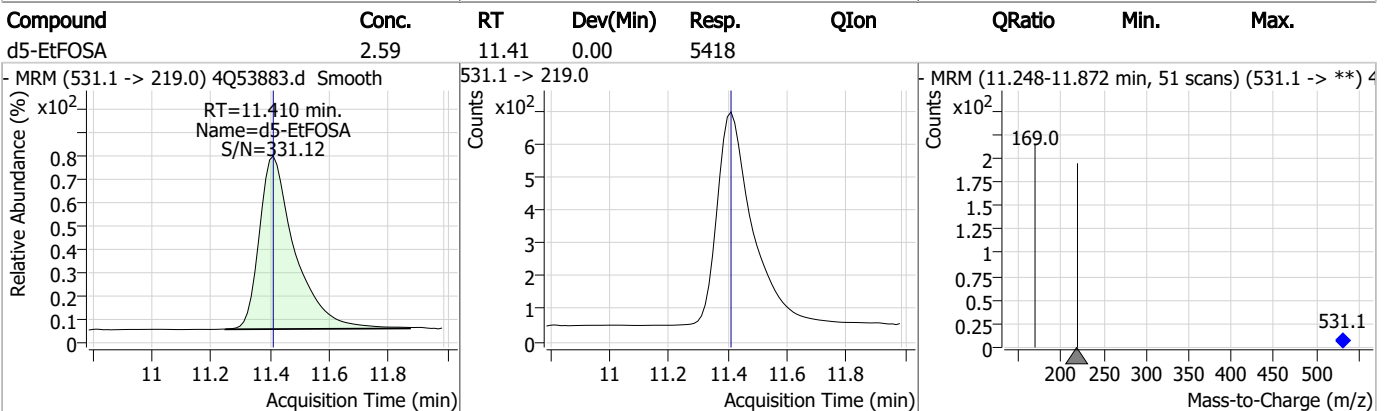
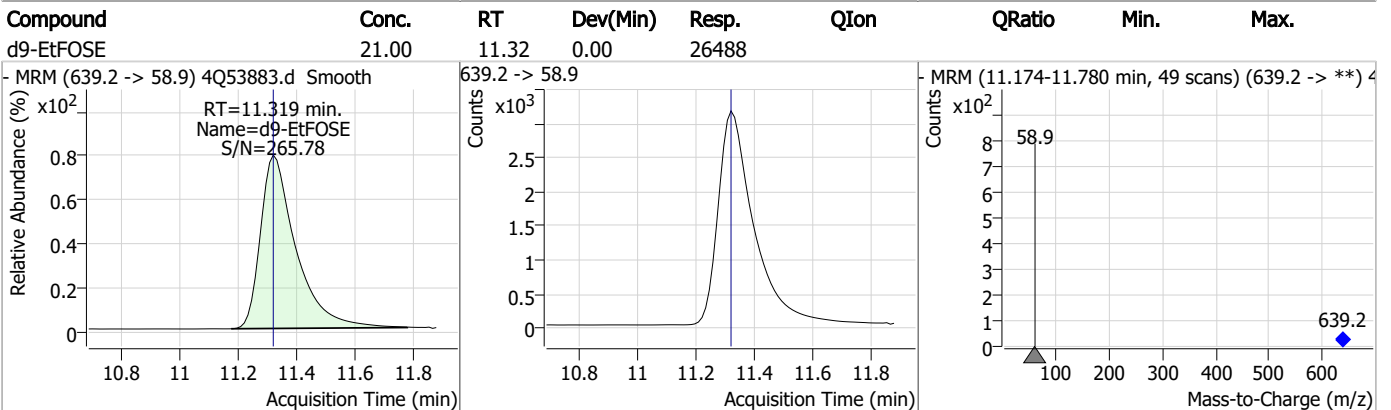
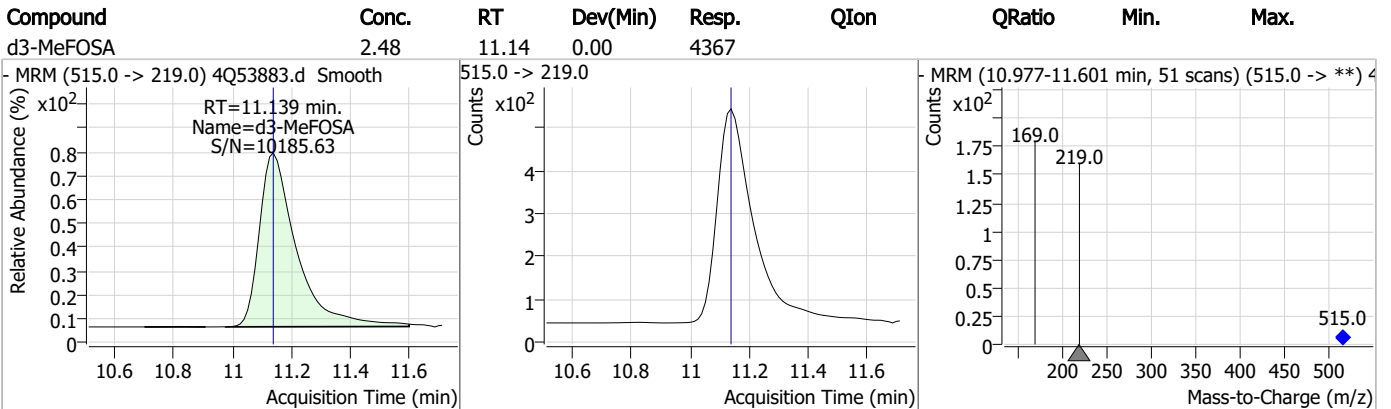
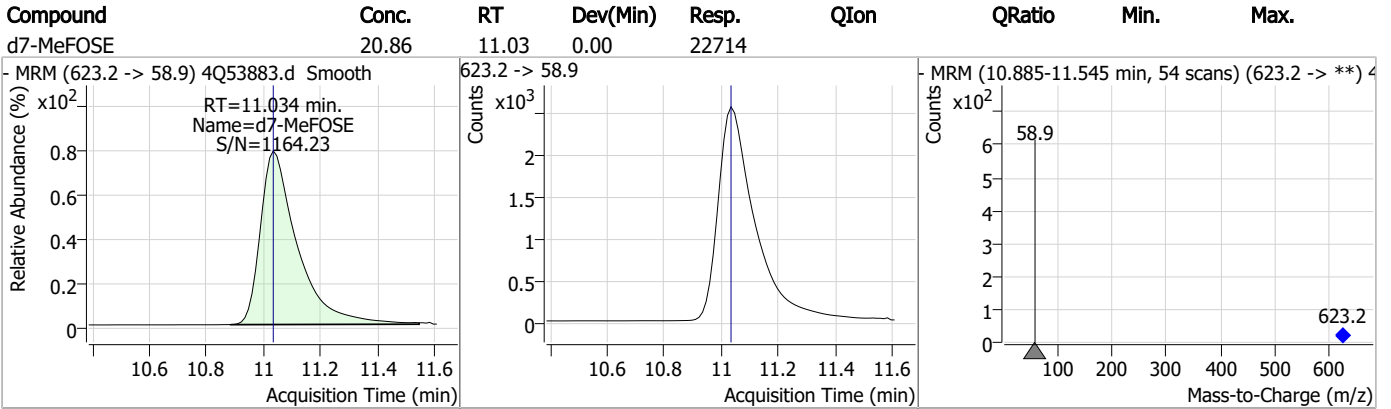
Perfluorinated Compounds by LC/MS/MS



7.1.2

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

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 Acq. Date-Time : 11/17/2023 11:41:44 PM
 Sample Name : fc11101-2
 Vial : P3-B6
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP164,S4Q788,65,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.649	216.8 -> 171.9	17930	10.00 µg/L	0.050
M5-PFPeA	4.100	268.3 -> 223.0	27645	5.00 µg/L	0.012
M5-PFHxA	5.272	318.0 -> 273.0	25039	2.50 µg/L	0.012
M4-PFHpA	6.242	367.1 -> 322.0	24178	2.50 µg/L	0.025
M8-PFOA	6.938	421.1 -> 376.0	27587	2.50 µg/L	0.012
M9-PFNA	7.483	472.1 -> 427.0	11605	1.25 µg/L	0.012
M6-PFDA	7.979	519.1 -> 474.1	7483	1.25 µg/L	0.012
M7-PFUnDA	8.436	570.0 -> 525.1	8764	1.25 µg/L	0.012
M2-PFDoDA	8.855	615.1 -> 570.0	8542	1.25 µg/L	0.012
M2-PFTeDA	9.637	715.2 -> 670.0	7681	1.25 µg/L	0.025
M8-FOSA	9.794	506.1 -> 77.8	6211	2.50 µg/L	0.025
M3-PFBS	5.128	302.1 -> 79.9	7223	2.50 µg/L	0.012
M3-PFHxS	7.005	402.1 -> 79.9	6255	2.50 µg/L	0.025
M8-PFOS	8.093	507.1 -> 79.9	6183	2.50 µg/L	0.012
M2-4:2FTS	4.984	329.1 -> 80.9	860	5.00 µg/L	0.012
M2-6:2FTS	6.711	429.1 -> 80.9	1670	5.00 µg/L	0.012
M2-8:2FTS	7.779	529.1 -> 80.9	2259	5.00 µg/L	0.012
M3-MeFOSAA	8.062	573.2 -> 419.0	12080	5.00 µg/L	0.012
M3-HFPO-DA	5.627	286.9 -> 168.9	21817	10.00 µg/L	0.012
M5-EtFOSAA	8.259	589.2 -> 419.0	9856	5.00 µg/L	0.012
M7-MeFOSE	11.022	623.2 -> 58.9	22406	25.00 µg/L	0.012
M9-EtFOSE	11.306	639.2 -> 58.9	27447	25.00 µg/L	0.012
M5-EtFOSA	11.398	531.1 -> 219.0	4706	2.50 µg/L	0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3891	2.50 µg/L	0.012
13C4-PFOS	8.093	502.8 -> 79.9	6077	2.50 µg/L	0.012
13C3-PFBA	2.653	216.0 -> 172.0	39037	5.00 µg/L	0.062
18O2-PFHxS	7.004	403.0 -> 83.9	3954	2.50 µg/L	0.025
13C4-PFOA	6.939	417.1 -> 372.0	30923	2.50 µg/L	0.012
13C2-PFDA	7.980	515.1 -> 470.1	9237	1.25 µg/L	0.012
13C5-PFNA	7.484	468.0 -> 423.0	12525	1.25 µg/L	0.012
13C2-PFHxA	5.273	315.1 -> 270.0	27464	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	4.984	329.1 -> 80.9	860	5.70 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.9%		
13C2-6:2FTS	6.711	429.1 -> 80.9	1670	5.21 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.3%		
13C2-8:2FTS	7.779	529.1 -> 80.9	2259	5.12 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.4%		
13C2-PFDoDA	8.855	615.1 -> 570.0	8542	1.03 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 82.7%		
13C2-PFTeDA	9.637	715.2 -> 670.0	7681	0.92 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 74.0%		
13C3-PFBS	5.128	302.1 -> 79.9	7223	2.41 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.5%		
13C3-PFHxS	7.005	402.1 -> 79.9	6255	2.52 µg/L	0.025

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%		
13C4-PFBA	2.649	216.8 -> 171.9	17930	2.23	µg/L	0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 22.3%		
13C4-PFHpA	6.242	367.1 -> 322.0	24178	2.48	µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%		
13C5-PFHxA	5.272	318.0 -> 273.0	25039	2.46	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.4%		
13C5-PFPeA	4.100	268.3 -> 223.0	27645	4.01	µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 80.2%		
13C6-PFDA	7.979	519.1 -> 474.1	7483	1.09	µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 87.2%		
13C7-PFUnDA	8.436	570.0 -> 525.1	8764	1.14	µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 91.0%		
13C8-FOSA	9.794	506.1 -> 77.8	6211	2.19	µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 87.5%		
13C8-PFOA	6.938	421.1 -> 376.0	27587	2.44	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%		
13C8-PFOS	8.093	507.1 -> 79.9	6183	2.08	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 83.0%		
13C9-PFNA	7.483	472.1 -> 427.0	11605	1.14	µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 91.5%		
d3-MeFOSAA	8.062	573.2 -> 419.0	12080	4.85	µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.1%		
13C3-HFPO-DA	5.627	286.9 -> 168.9	21817	9.52	µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 95.2%		
d3-MeFOSA	11.126	515.0 -> 219.0	3891	2.00	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 79.8%		
d5-EtFOSAA	8.259	589.2 -> 419.0	9856	4.72	µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.4%		
d7-MeFOSE	11.022	623.2 -> 58.9	22406	18.41	µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 73.6%		
d9-EtFOSE	11.306	639.2 -> 58.9	27447	19.81	µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 79.3%		
d5-EtFOSA	11.398	531.1 -> 219.0	4706	1.99	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 79.6%		

Target Compounds

QValue

4:2FTS	-	327.1 -> 307.0 327.1 -> 80.9	-	N.D.		
6:2FTS	-	427.1 -> 407.0 427.1 -> 80.9	-	N.D.		
8:2FTS	-	527.1 -> 507.0 527.1 -> 80.8	-	N.D.		
EtFOSAA	-	584.2 -> 419.1 584.2 -> 526.0	-	N.D.		
FOSA	-	498.1 -> 77.9 498.1 -> 478.0	-	N.D.		
MeFOSAA	-	570.1 -> 419.0 570.1 -> 483.0	-	N.D.		
PFBA	-	212.8 -> 168.9	-	N.D.		
PFBS	-	298.7 -> 79.9 298.7 -> 98.8	-	N.D.		
PFDA	7.806	512.9 -> 469.0 512.9 -> 219.0	0	0.00	µg/L	m
PFDODA	-	613.1 -> 569.0 613.1 -> 319.0	-	N.D.		
PFDS	8.933	599.0 -> 79.9	0	0.00	µg/L	#m



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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	0			
PFHpA	-	363.1 -> 319.0	-	N.D.		
		363.1 -> 169.0				
PFHpS	7.612	449.0 -> 79.9	0	0.00	µg/L	#m
		449.0 -> 98.9	0			
PFHxA	-	313.0 -> 269.0	-	N.D.		
		313.0 -> 118.9				
PFHxS	-	398.7 -> 79.9	-	N.D.		
		398.7 -> 98.9				
PFNA	7.662	463.0 -> 419.0	0	0.00	µg/L	m
		463.0 -> 219.0				
PFNS	8.089	548.8 -> 79.9	0	0.00	µg/L	#m
		548.8 -> 98.9	0			
PFOA	-	413.0 -> 369.0	-	N.D.		
		413.0 -> 169.0				
PFOS	8.057	498.9 -> 79.9	0	0.00	µg/L	#m
		498.9 -> 98.8	0			
PFPeA	-	263.0 -> 219.0	-	N.D.		
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed

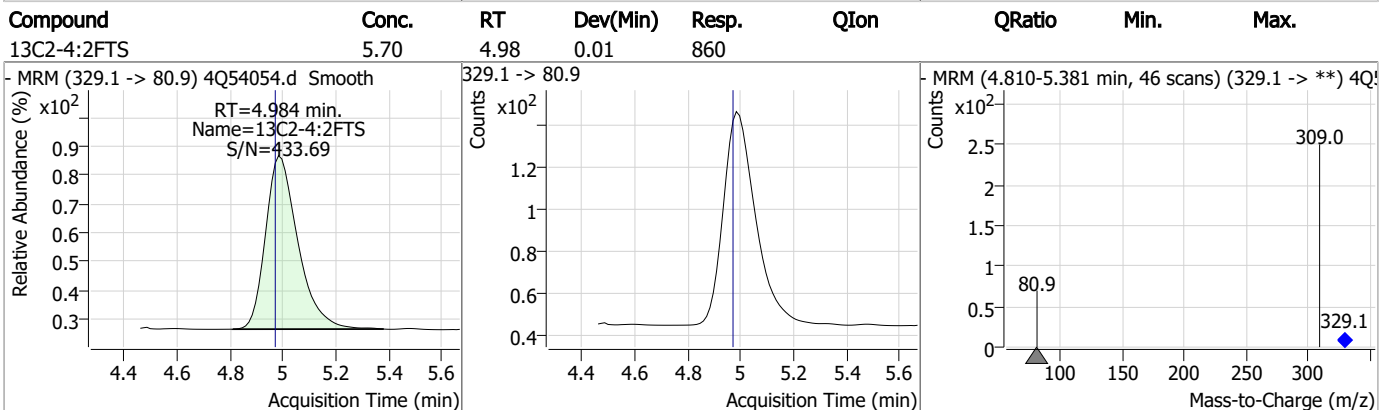
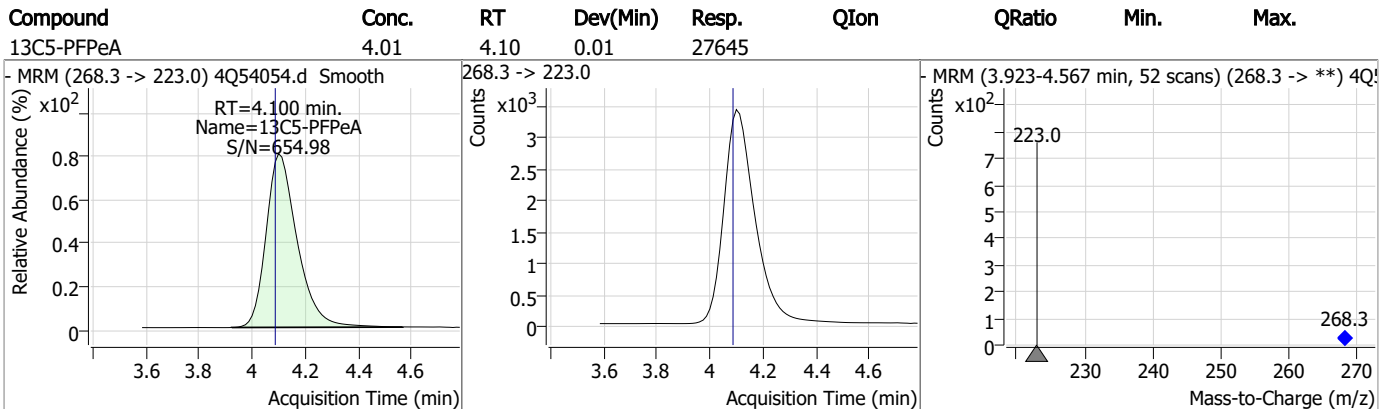
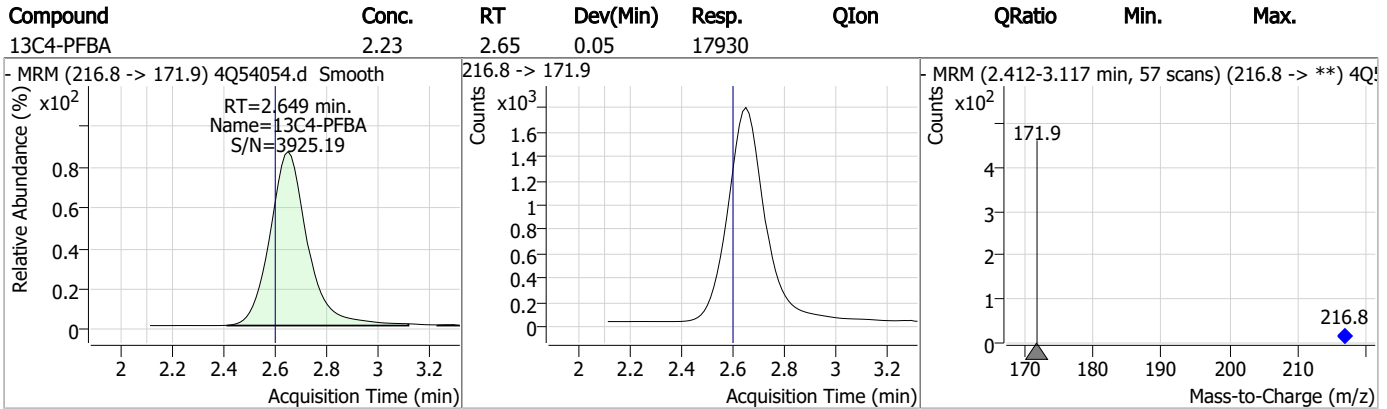
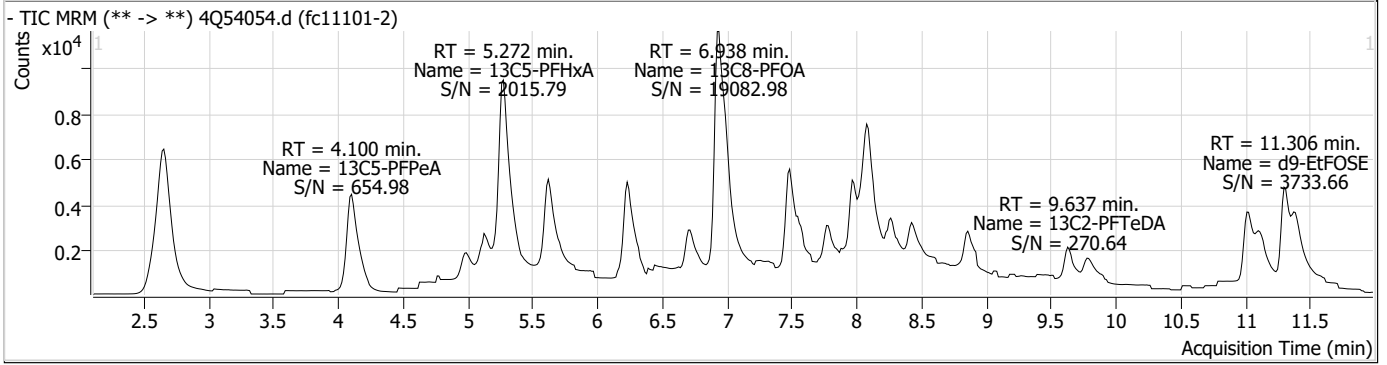
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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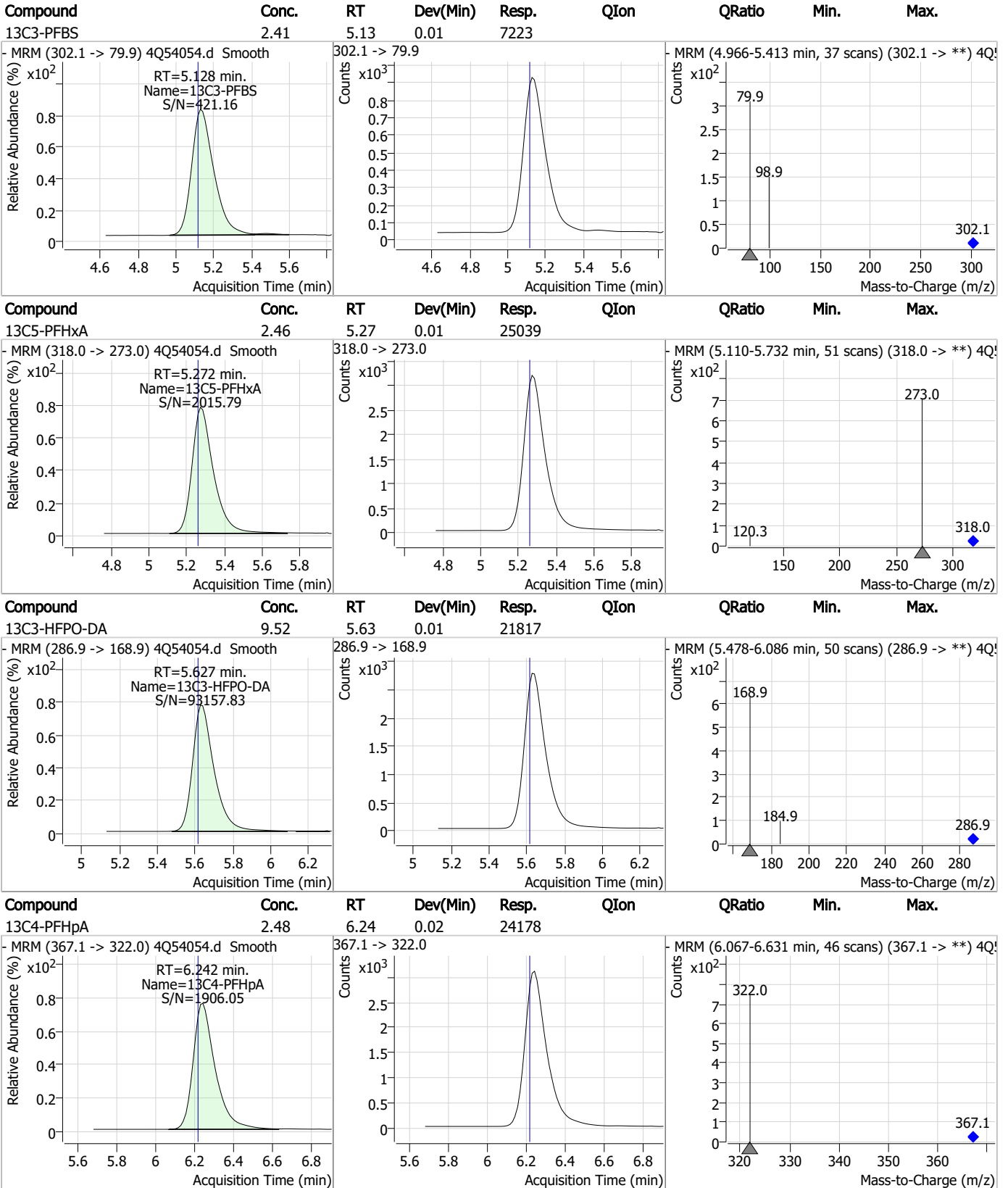
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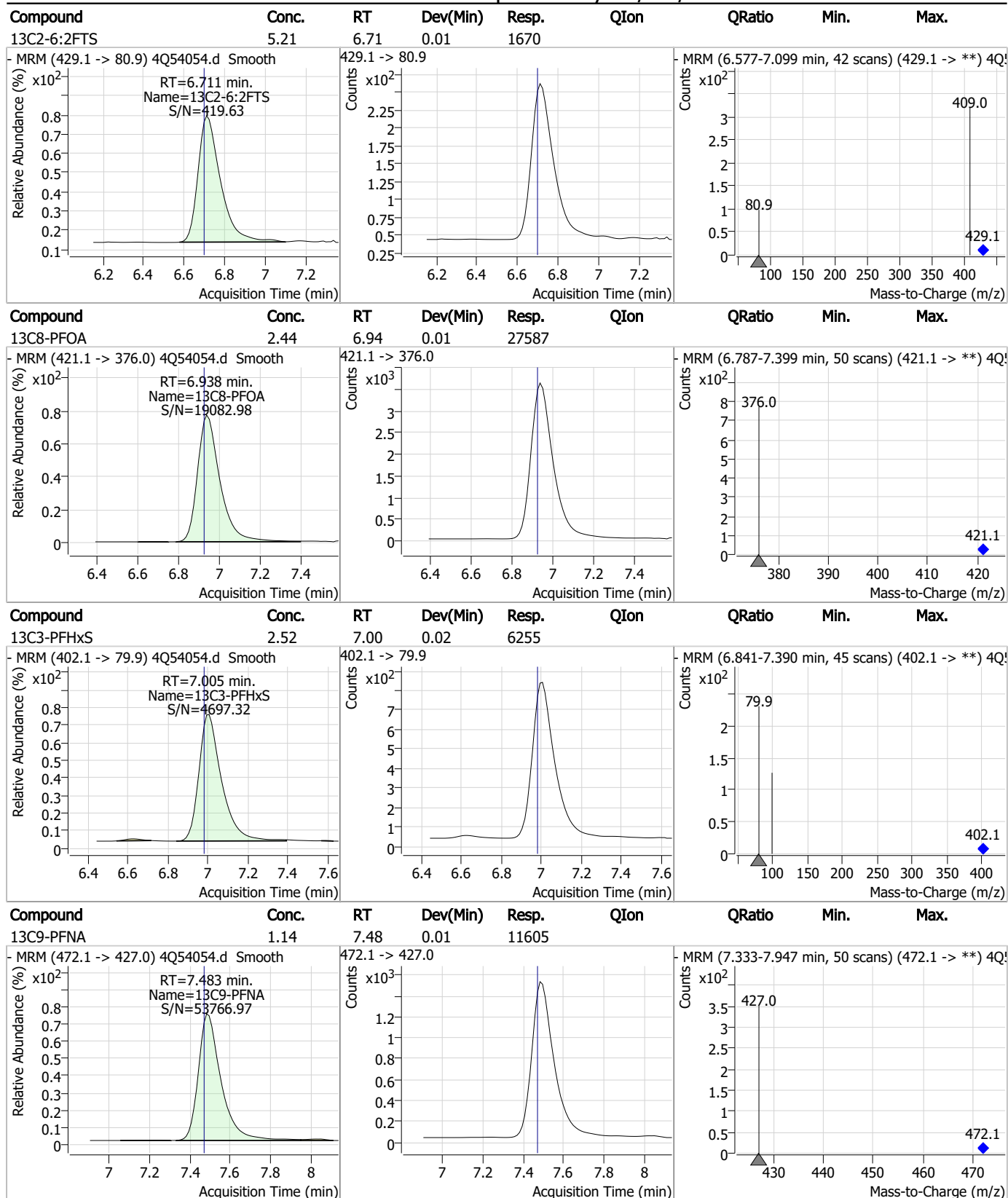
Perfluorinated Compounds by LC/MS/MS



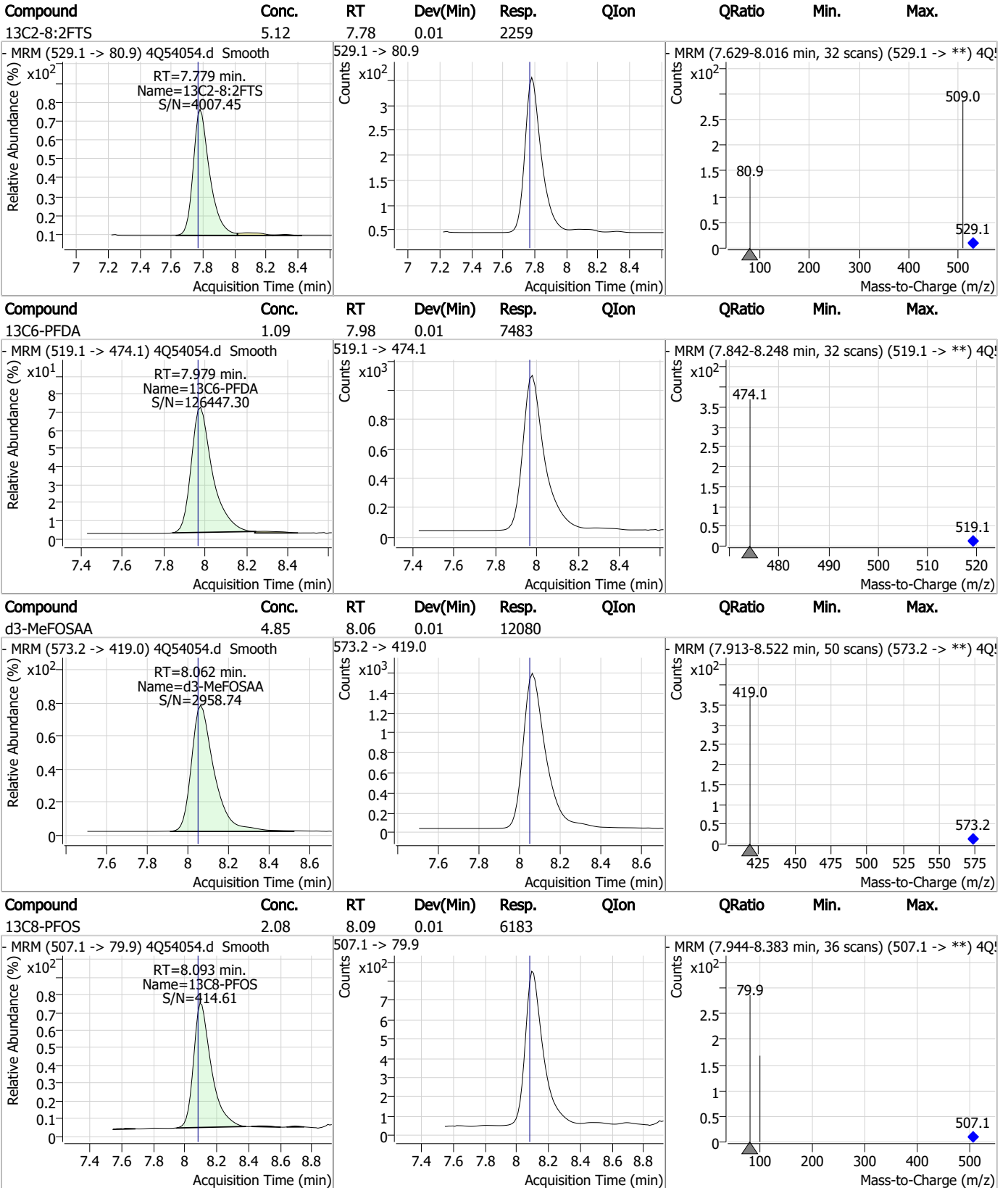
Perfluorinated Compounds by LC/MS/MS



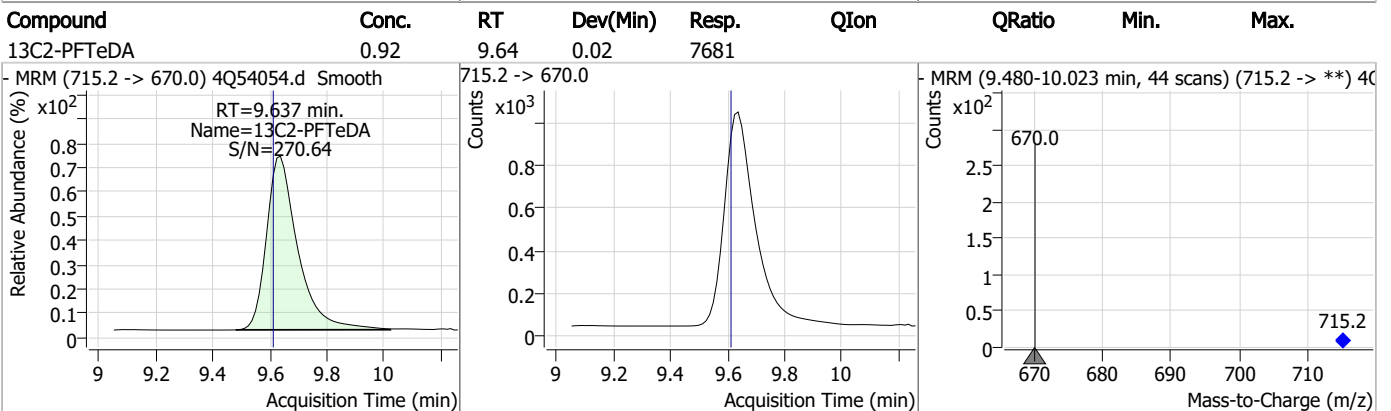
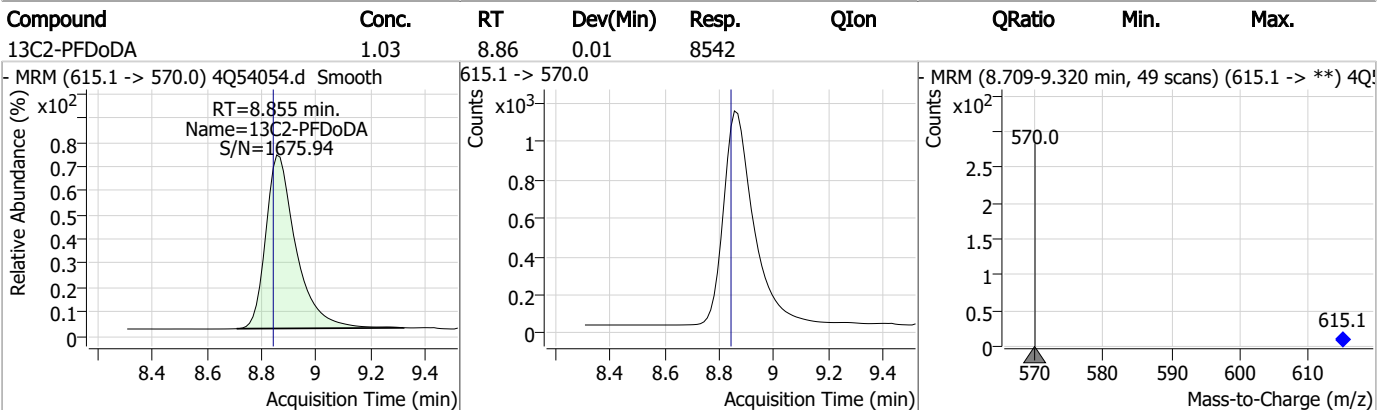
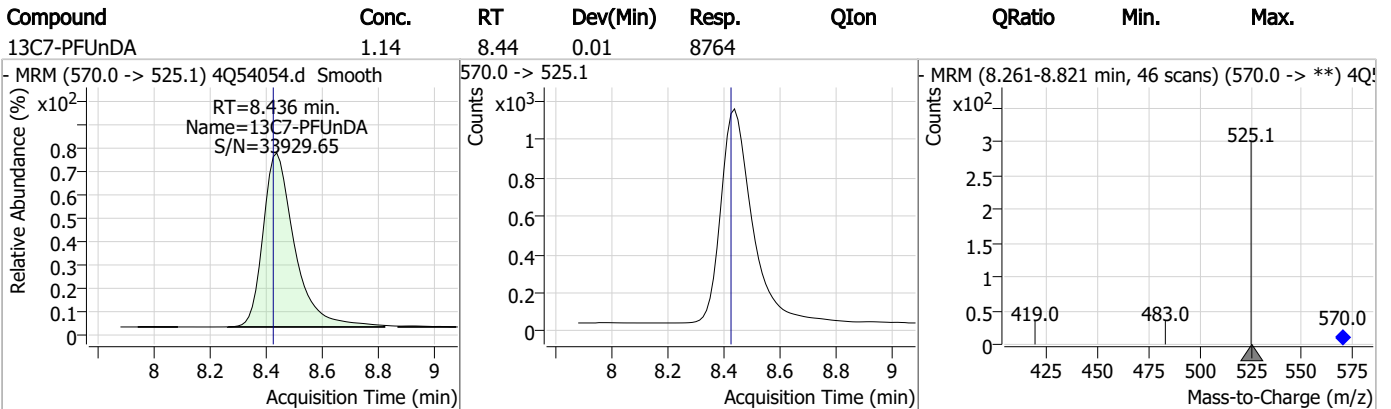
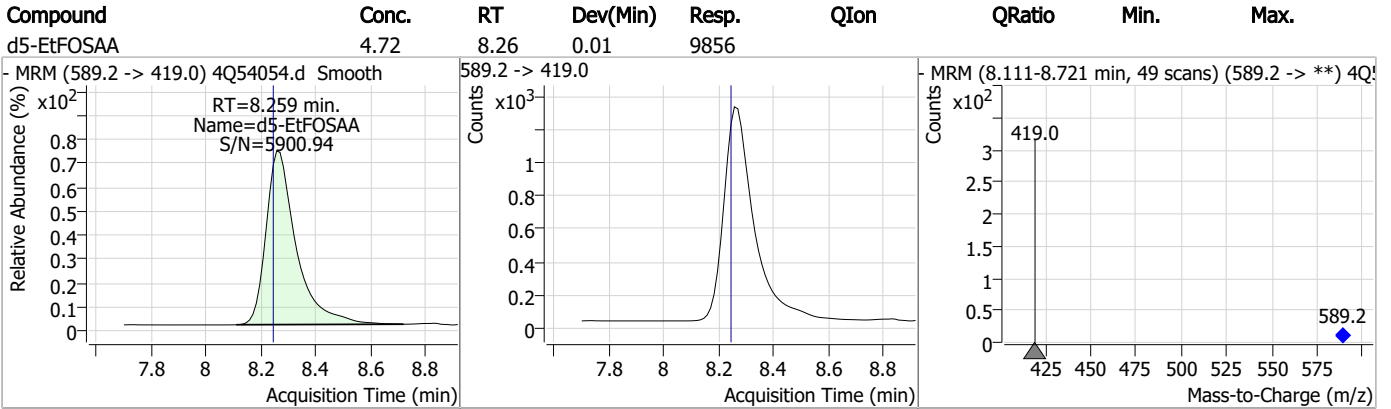
Perfluorinated Compounds by LC/MS/MS



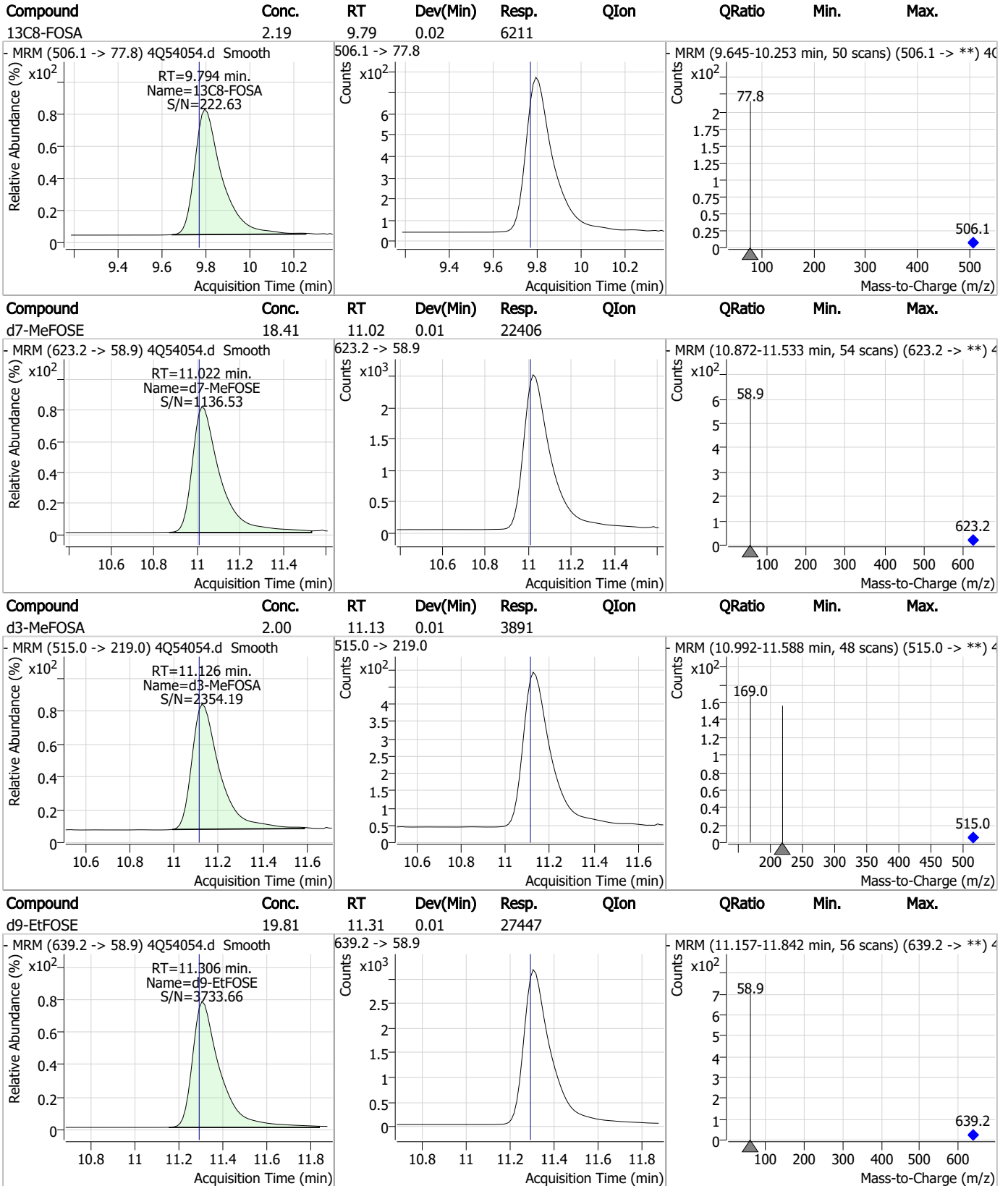
Perfluorinated Compounds by LC/MS/MS



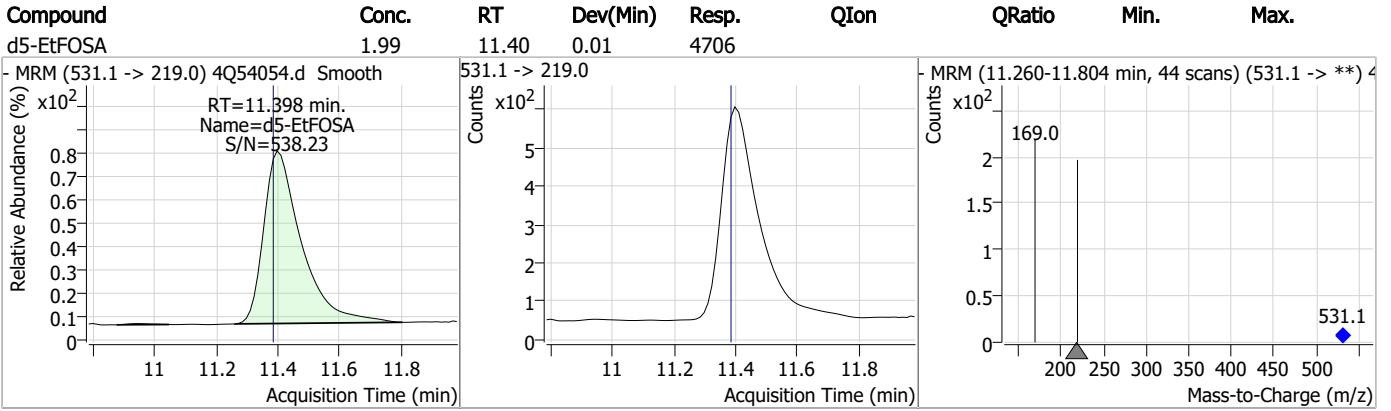
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53885.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/15/2023 3:22:24 PM
 Sample Name : fc11101-3
 Vial : P2-A6
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q786.batch.bin
 Sample Information : OP58,S4Q786,530,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	86936	10.00 µg/L	-0.013
M5-PFPeA	4.137	268.3 -> 223.0	35064	5.00 µg/L	-0.037
M5-PFHxA	5.322	318.0 -> 273.0	26196	2.50 µg/L	-0.025
M4-PFHpA	6.280	367.1 -> 322.0	25698	2.50 µg/L	-0.025
M8-PFOA	6.976	421.1 -> 376.0	29570	2.50 µg/L	-0.012
M9-PFNA	7.521	472.1 -> 427.0	11183	1.25 µg/L	-0.012
M6-PFDA	8.017	519.1 -> 474.1	7673	1.25 µg/L	0.000
M7-PFUnDA	8.461	570.0 -> 525.1	8400	1.25 µg/L	-0.012
M2-PFDoDA	8.892	615.1 -> 570.0	7300	1.25 µg/L	-0.012
M2-PFTeDA	9.662	715.2 -> 670.0	7417	1.25 µg/L	0.000
M8-FOSA	9.818	506.1 -> 77.8	5753	2.50 µg/L	0.000
M3-PFBS	5.177	302.1 -> 79.9	7527	2.50 µg/L	-0.025
M3-PFHxS	7.029	402.1 -> 79.9	6265	2.50 µg/L	-0.025
M8-PFOS	8.130	507.1 -> 79.9	6132	2.50 µg/L	-0.013
M2-4:2FTS	5.021	329.1 -> 80.9	817	5.00 µg/L	-0.025
M2-6:2FTS	6.748	429.1 -> 80.9	1773	5.00 µg/L	-0.012
M2-8:2FTS	7.816	529.1 -> 80.9	2089	5.00 µg/L	-0.012
M3-MeFOSAA	8.099	573.2 -> 419.0	10150	5.00 µg/L	0.000
M3-HFPO-DA	5.677	286.9 -> 168.9	23635	10.00 µg/L	-0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	8392	5.00 µg/L	-0.014
M7-MeFOSE	11.034	623.2 -> 58.9	20845	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	25385	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	3865	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	2889	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	6334	2.50 µg/L	-0.013
13C3-PFBA	2.691	216.0 -> 172.0	44457	5.00 µg/L	-0.013
18O2-PFHxS	7.041	403.0 -> 83.9	4390	2.50 µg/L	-0.013
13C4-PFOA	6.977	417.1 -> 372.0	36597	2.50 µg/L	-0.012
13C2-PFDA	8.017	515.1 -> 470.1	9862	1.25 µg/L	-0.012
13C5-PFNA	7.522	468.0 -> 423.0	14064	1.25 µg/L	-0.012
13C2-PFHxA	5.323	315.1 -> 270.0	30878	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.021	329.1 -> 80.9	817	5.44 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.7%		
13C2-6:2FTS	6.748	429.1 -> 80.9	1773	5.60 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.0%		
13C2-8:2FTS	7.816	529.1 -> 80.9	2089	4.68 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.6%		
13C2-PFDoDA	8.892	615.1 -> 570.0	7300	0.82 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 65.6%		
13C2-PFTeDA	9.662	715.2 -> 670.0	7417	0.83 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 66.2%		
13C3-PFBS	5.177	302.1 -> 79.9	7527	2.29 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.4%		
13C3-PFHxS	7.029	402.1 -> 79.9	6265	2.30 µg/L	-0.025

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.1%	
13C4-PFBA	2.686	216.8 -> 171.9	86936	9.38 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 93.8%	
13C4-PFHpA	6.280	367.1 -> 322.0	25698	2.39 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.4%	
13C5-PFHxA	5.322	318.0 -> 273.0	26196	2.27 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.0%	
13C5-PFPeA	4.137	268.3 -> 223.0	35064	4.66 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.1%	
13C6-PFDA	8.017	519.1 -> 474.1	7673	1.06 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 84.6%	
13C7-PFUnDA	8.461	570.0 -> 525.1	8400	1.00 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 80.1%	
13C8-FOSA	9.818	506.1 -> 77.8	5753	89.0 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 76.0%	
13C8-PFOA	6.976	421.1 -> 376.0	29570	2.26 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.5%	
13C8-PFOS	8.130	507.1 -> 79.9	6132	2.03 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 81.1%	
13C9-PFNA	7.521	472.1 -> 427.0	11183	1.01 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 80.7%	
d3-MeFOSAA	8.099	573.2 -> 419.0	10150	4.23 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 84.5%	
13C3-HFPO-DA	5.677	286.9 -> 168.9	23635	8.99 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 89.9%	
d3-MeFOSA	11.139	515.0 -> 219.0	2889	1.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 54.7%	
d5-EtFOSAA	8.296	589.2 -> 419.0	8392	3.99 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 79.8%	
d7-MeFOSE	11.034	623.2 -> 58.9	20845	15.97 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 63.9%	
d9-EtFOSE	11.319	639.2 -> 58.9	25385	16.80 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 67.2%	
d5-EtFOSA	11.410	531.1 -> 219.0	3865	1.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 61.7%	

Target Compounds

Compound	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	8.341	512.9 -> 469.0	0	µg/L m	1
		512.9 -> 219.0	0		
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	9.066	663.0 -> 619.0	0	µg/L	m	1
		663.0 -> 168.9	0			
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed

7.1.4
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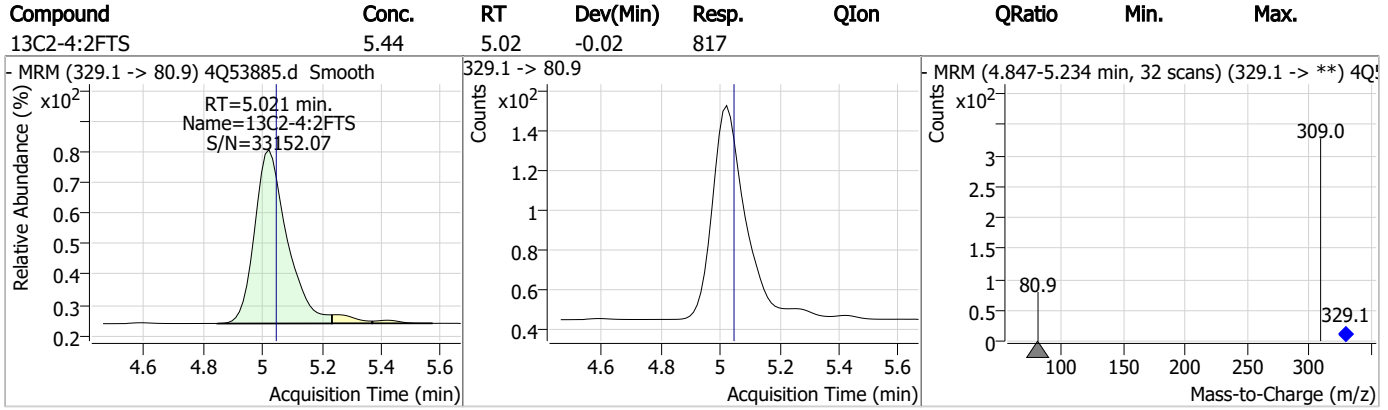
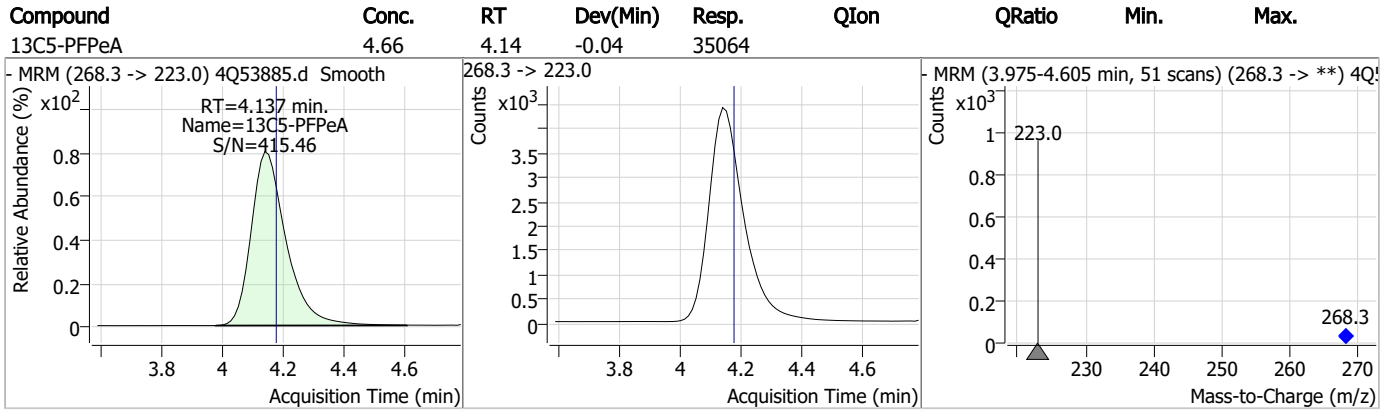
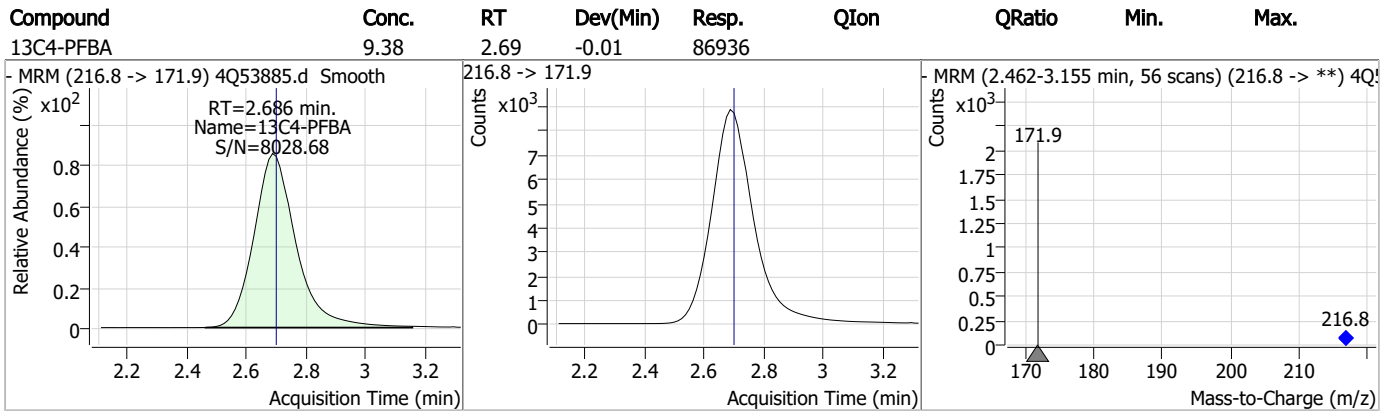
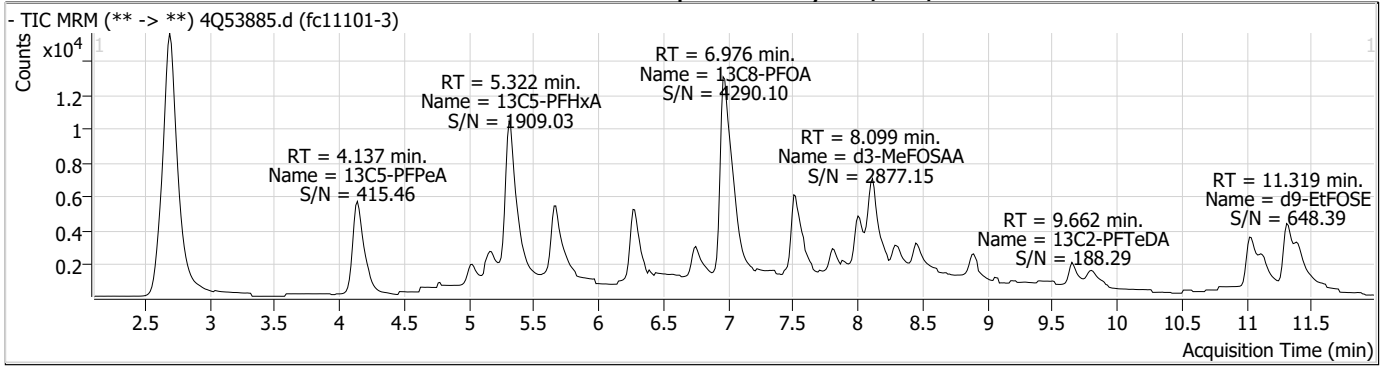
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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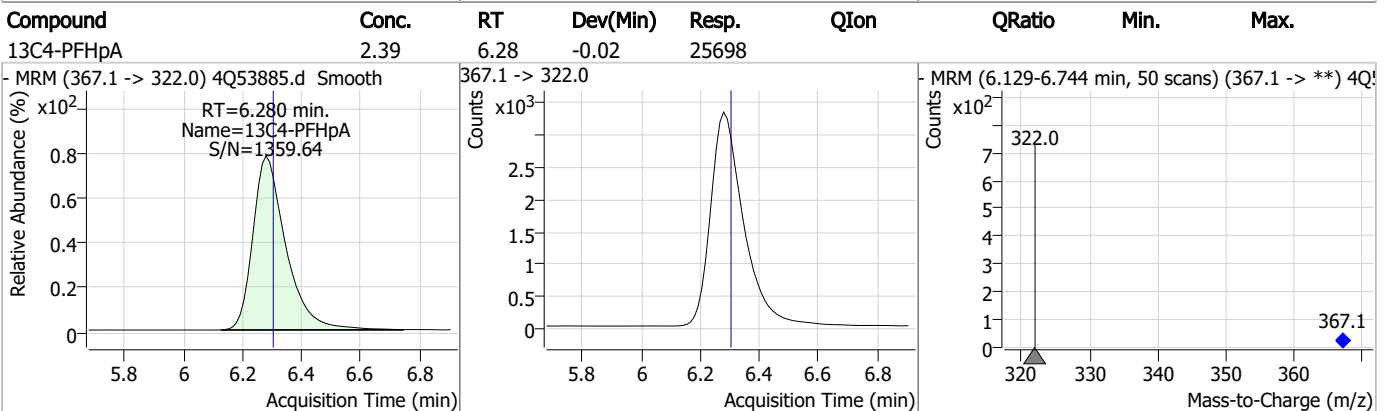
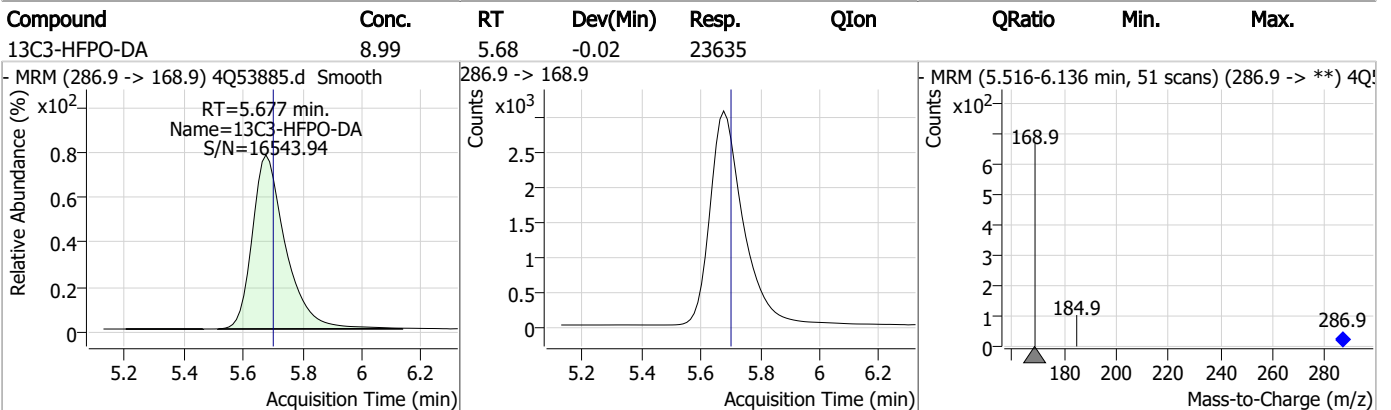
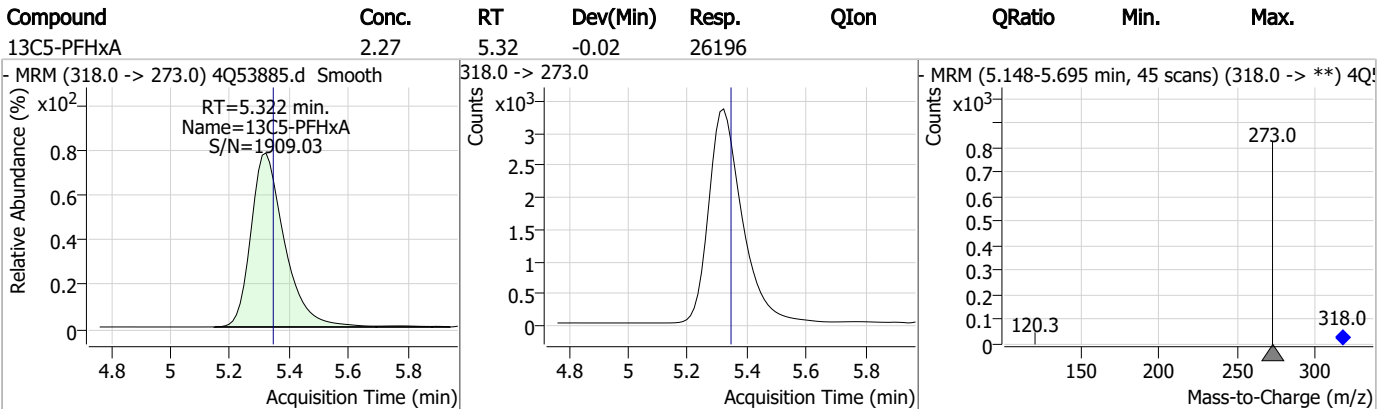
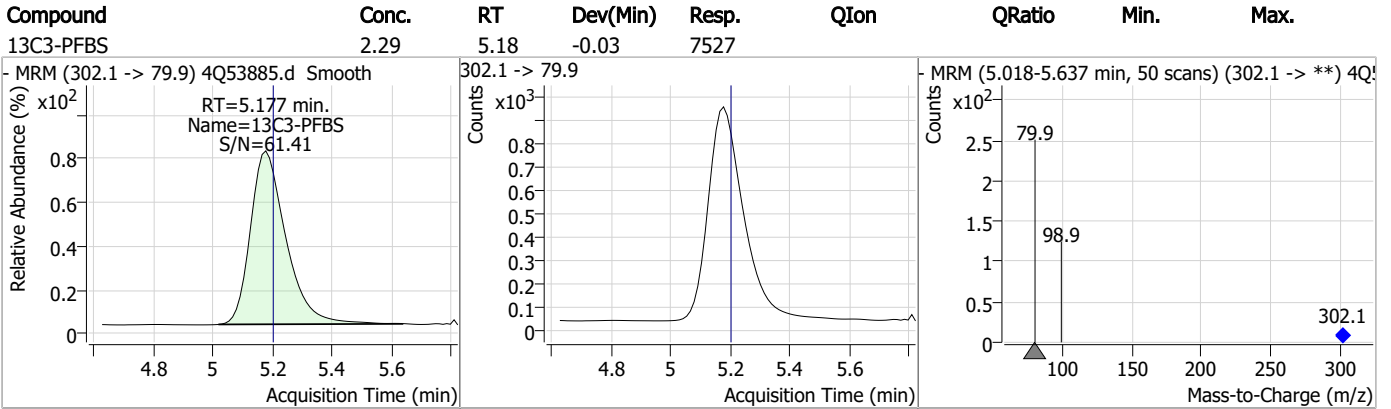
7.1.4
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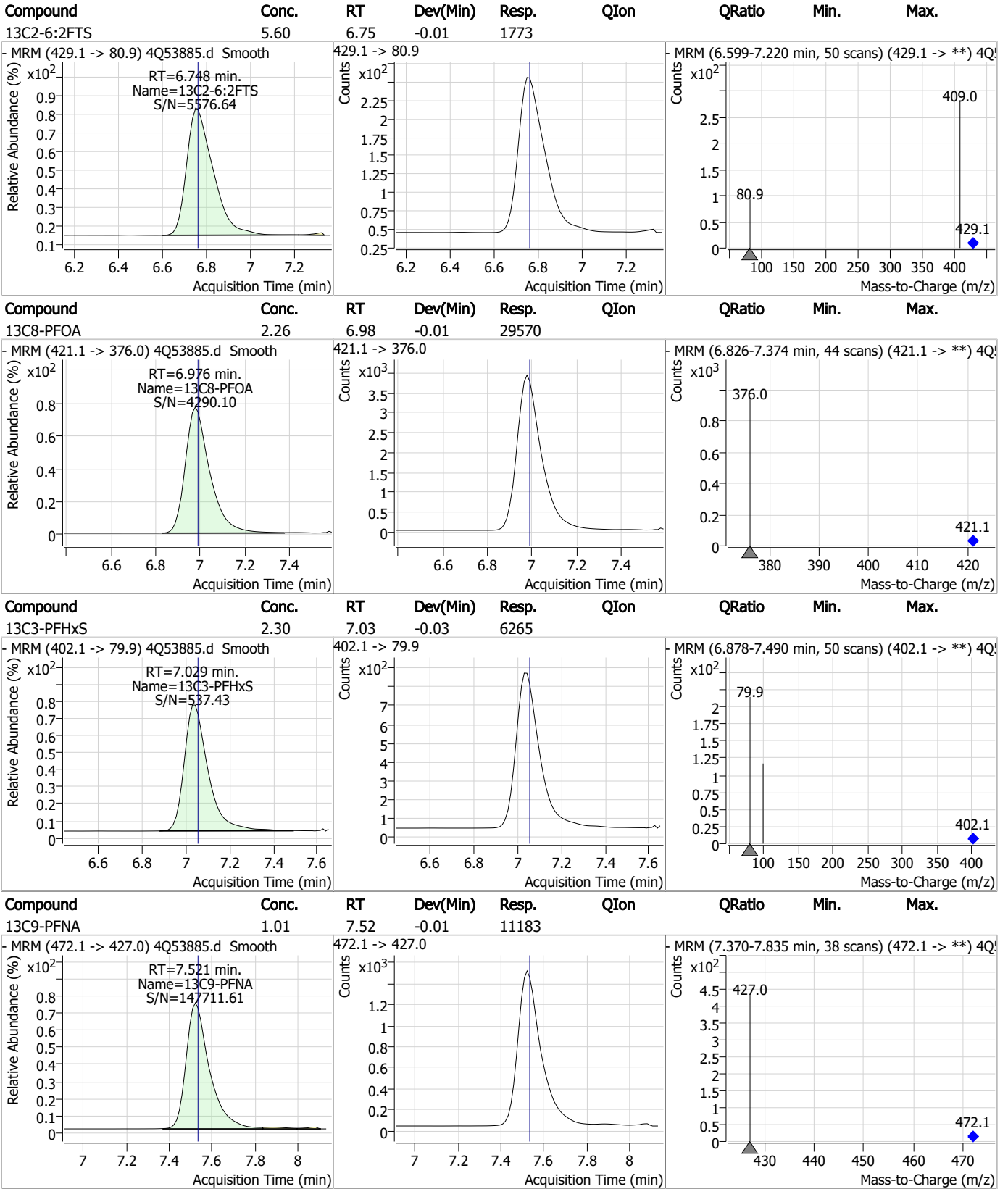
Perfluorinated Compounds by LC/MS/MS



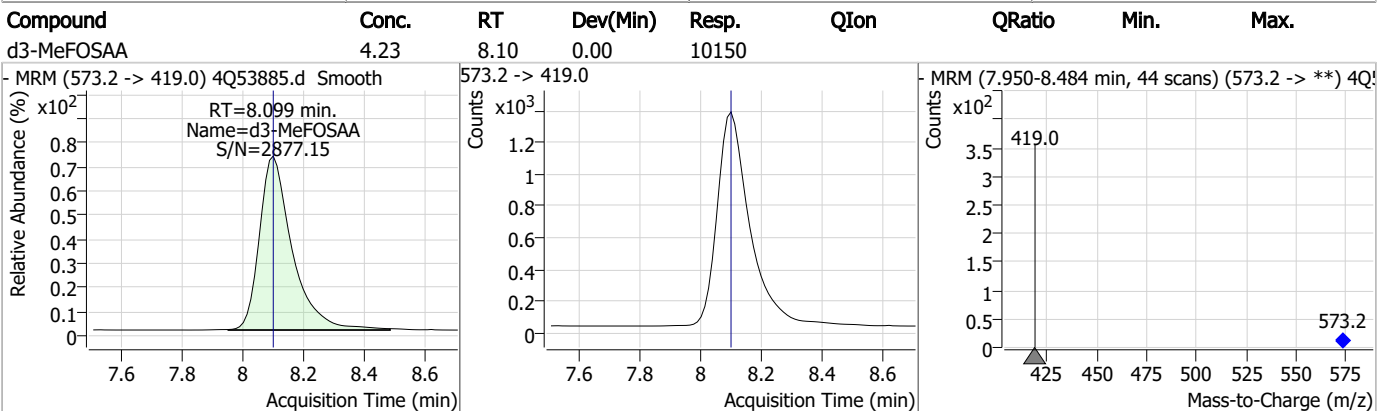
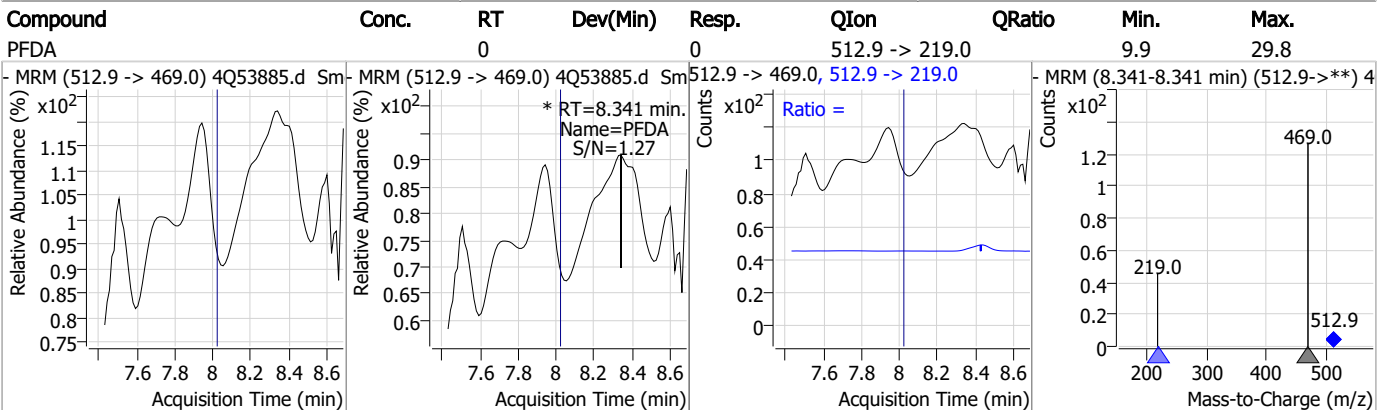
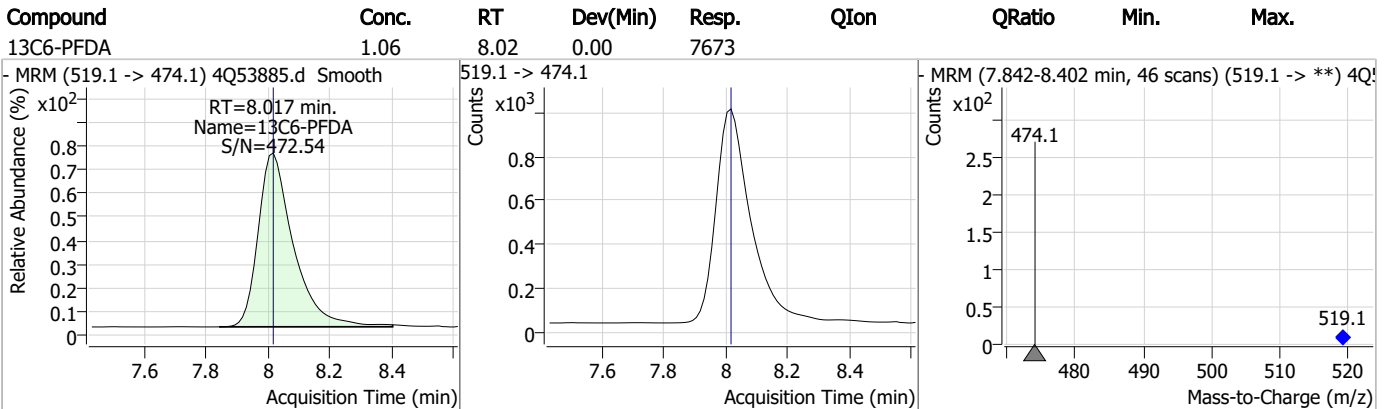
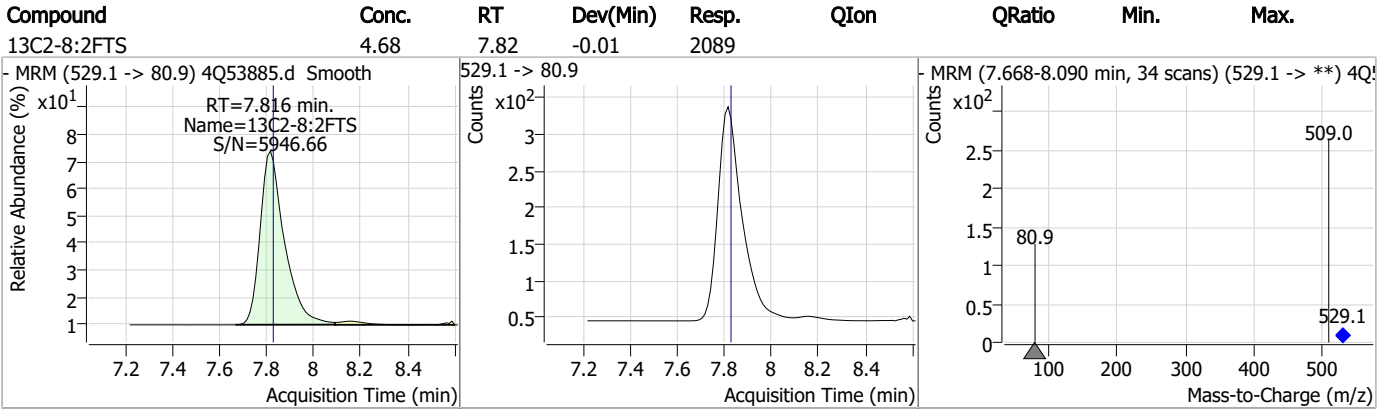
Perfluorinated Compounds by LC/MS/MS



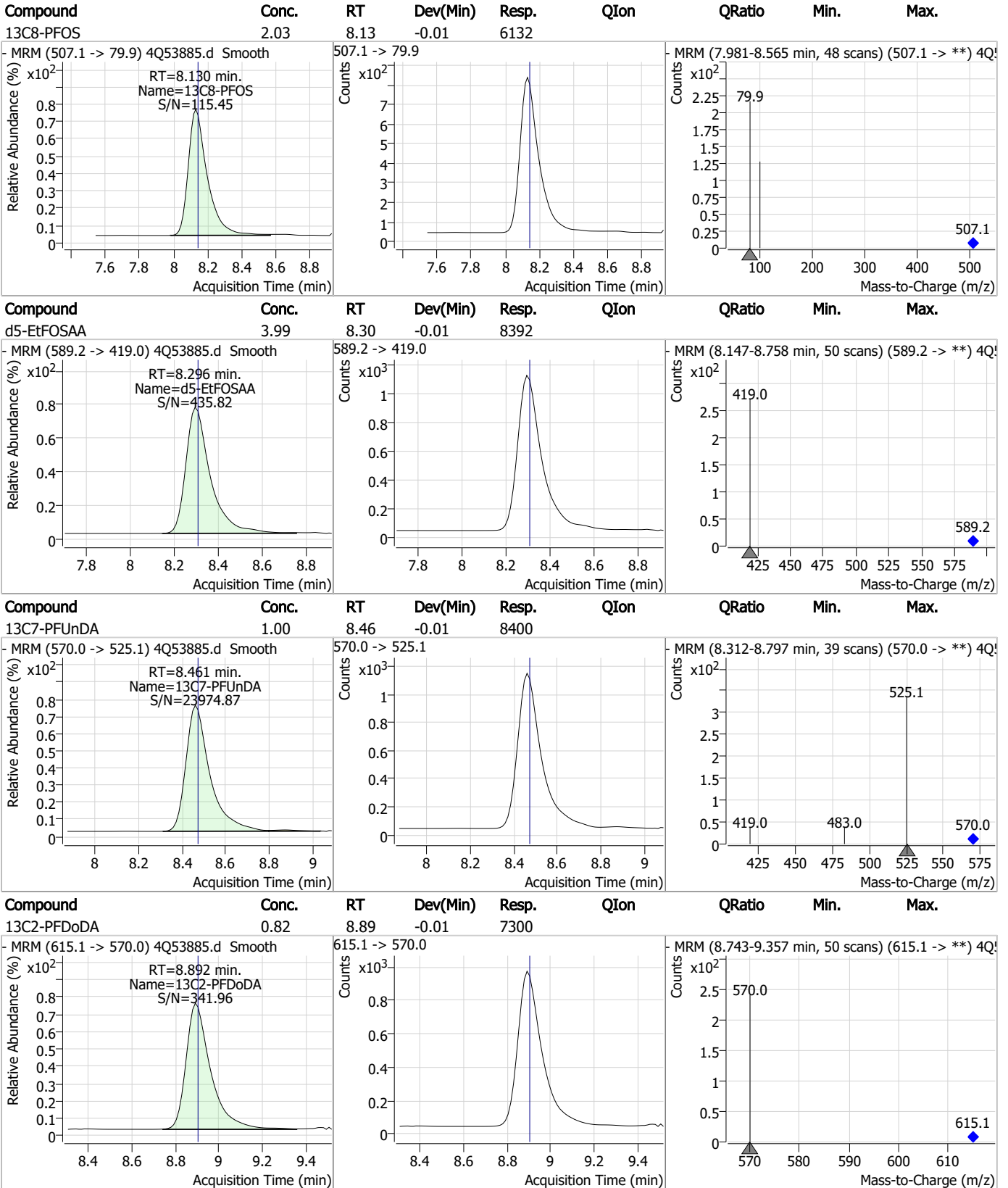
Perfluorinated Compounds by LC/MS/MS



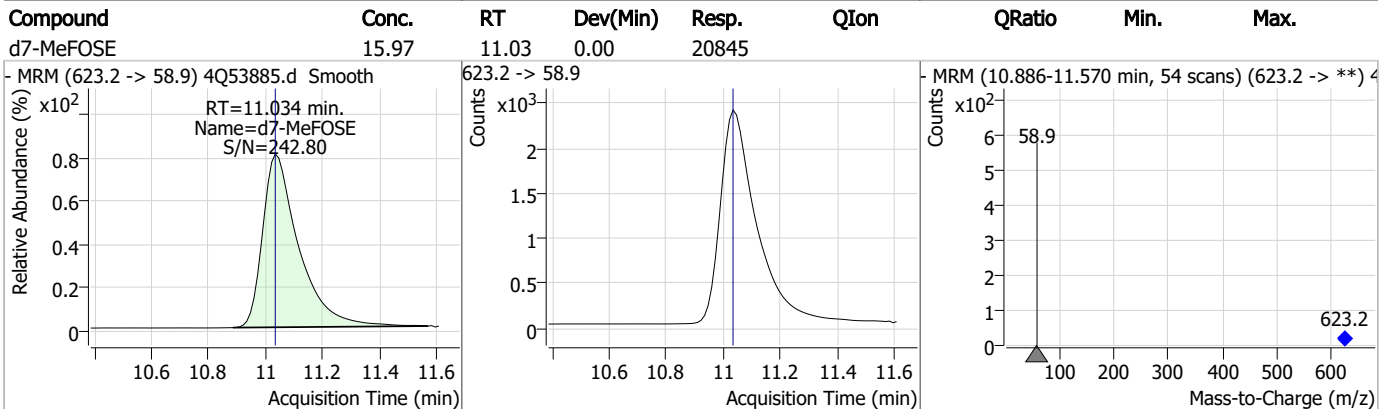
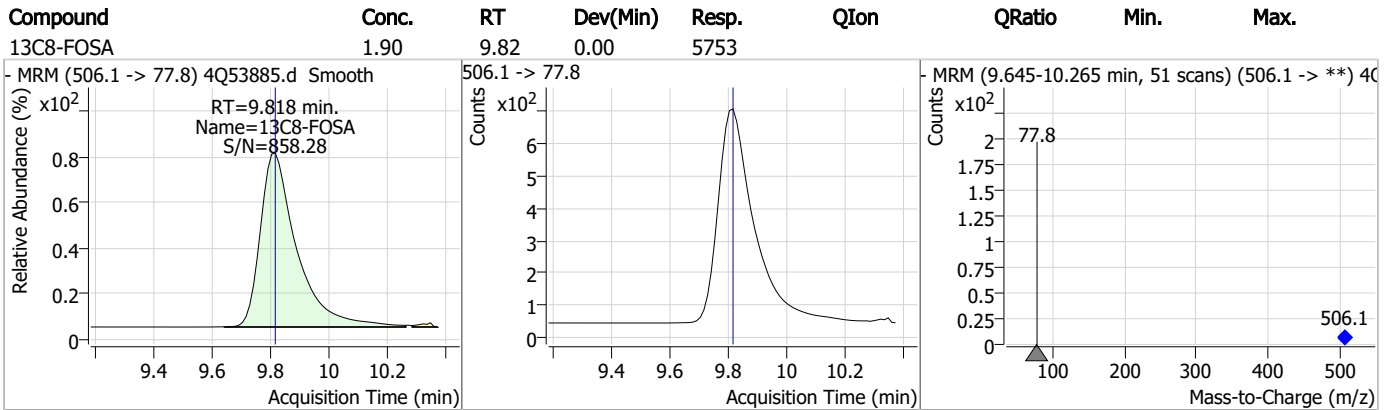
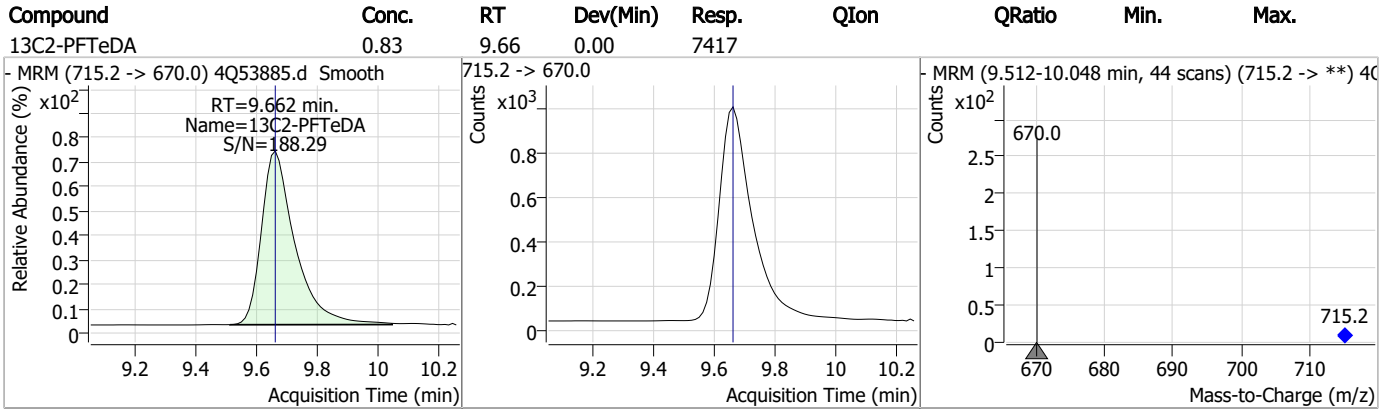
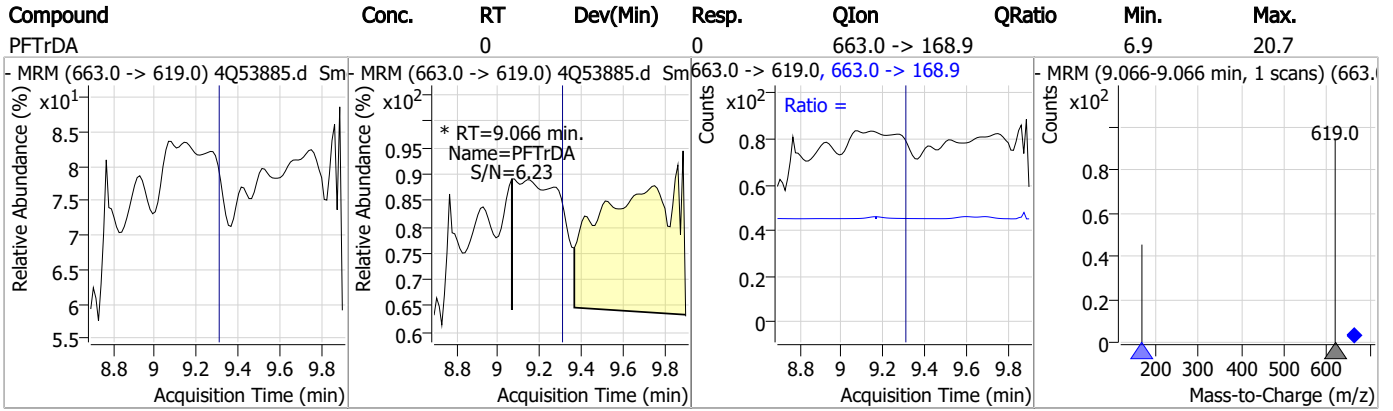
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



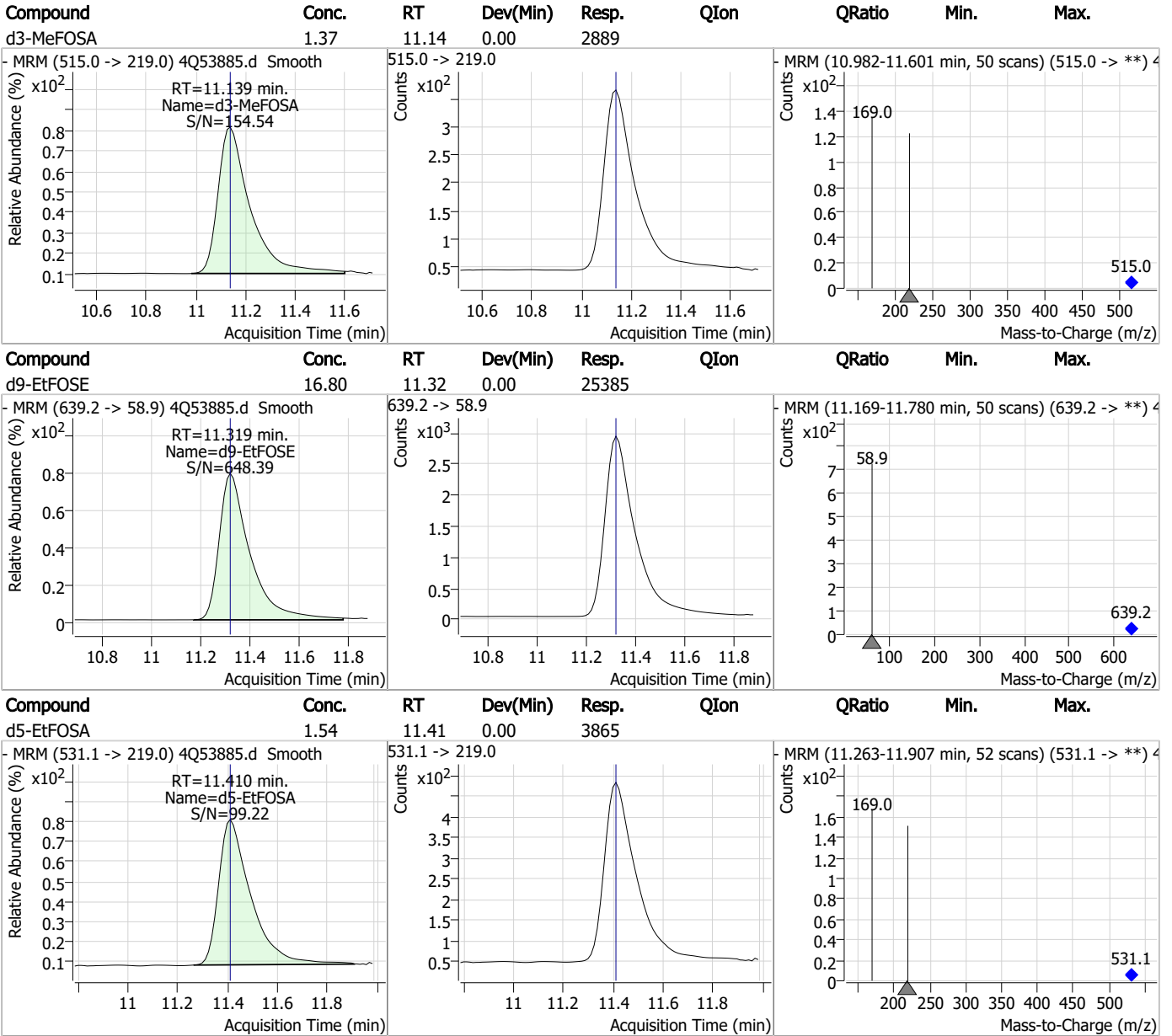
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53886.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/15/2023 3:37:09 PM
 Sample Name : fc11101-4
 Vial : P2-A7
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q786.batch.bin
 Sample Information : OP58,S4Q786,530,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.674	216.8 -> 171.9	53375	10.00 µg/L	-0.025
M5-PFPeA	4.137	268.3 -> 223.0	39167	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	28414	2.50 µg/L	-0.037
M4-PFHpA	6.280	367.1 -> 322.0	28203	2.50 µg/L	-0.025
M8-PFOA	6.964	421.1 -> 376.0	31782	2.50 µg/L	-0.025
M9-PFNA	7.521	472.1 -> 427.0	13224	1.25 µg/L	-0.012
M6-PFDA	8.017	519.1 -> 474.1	8710	1.25 µg/L	0.000
M7-PFUnDA	8.461	570.0 -> 525.1	10851	1.25 µg/L	-0.012
M2-PFDoDA	8.892	615.1 -> 570.0	9433	1.25 µg/L	-0.012
M2-PFTeDA	9.662	715.2 -> 670.0	8379	1.25 µg/L	0.000
M8-FOSA	9.806	506.1 -> 77.8	7209	2.50 µg/L	-0.012
M3-PFBS	5.165	302.1 -> 79.9	7862	2.50 µg/L	-0.038
M3-PFHxS	7.029	402.1 -> 79.9	6715	2.50 µg/L	-0.025
M8-PFOS	8.130	507.1 -> 79.9	6781	2.50 µg/L	-0.013
M2-4:2FTS	5.021	329.1 -> 80.9	885	5.00 µg/L	-0.025
M2-6:2FTS	6.748	429.1 -> 80.9	1572	5.00 µg/L	-0.012
M2-8:2FTS	7.804	529.1 -> 80.9	1951	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	13269	5.00 µg/L	-0.012
M3-HFPO-DA	5.677	286.9 -> 168.9	23693	10.00 µg/L	-0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	11547	5.00 µg/L	-0.014
M7-MeFOSE	11.034	623.2 -> 58.9	23707	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	27123	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	4336	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	3478	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	6113	2.50 µg/L	-0.013
13C3-PFBA	2.666	216.0 -> 172.0	39897	5.00 µg/L	-0.038
18O2-PFHxS	7.028	403.0 -> 83.9	4121	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	33741	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	9914	1.25 µg/L	-0.025
13C5-PFNA	7.522	468.0 -> 423.0	13056	1.25 µg/L	-0.012
13C2-PFHxA	5.311	315.1 -> 270.0	30326	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.021	329.1 -> 80.9	885	6.27 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 125.4%		
13C2-6:2FTS	6.748	429.1 -> 80.9	1572	5.29 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.8%		
13C2-8:2FTS	7.804	529.1 -> 80.9	1951	4.66 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.2%		
13C2-PFDoDA	8.892	615.1 -> 570.0	9433	1.05 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 84.3%		
13C2-PFTeDA	9.662	715.2 -> 670.0	8379	0.93 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 74.4%		
13C3-PFBS	5.165	302.1 -> 79.9	7862	2.54 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.7%		
13C3-PFHxS	7.029	402.1 -> 79.9	6715	2.63 µg/L	-0.025

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.1%		
13C4-PFBA	2.674	216.8 -> 171.9	53375	6.42 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 64.2%		
13C4-PFHpA	6.280	367.1 -> 322.0	28203	2.67 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.6%		
13C5-PFHxA	5.310	318.0 -> 273.0	28414	2.51 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C5-PFPeA	4.137	268.3 -> 223.0	39167	5.29 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.9%		
13C6-PFDA	8.017	519.1 -> 474.1	8710	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.5%		
13C7-PFUnDA	8.461	570.0 -> 525.1	10851	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C8-FOSA	9.806	506.1 -> 77.8	7209	2.47 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C8-PFOA	6.964	421.1 -> 376.0	31782	2.64 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C8-PFOS	8.130	507.1 -> 79.9	6781	2.32 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.9%		
13C9-PFNA	7.521	472.1 -> 427.0	13224	1.28 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.8%		
d3-MeFOSAA	8.086	573.2 -> 419.0	13269	5.72 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.5%		
13C3-HFPO-DA	5.677	286.9 -> 168.9	23693	9.18 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 91.8%		
d3-MeFOSA	11.139	515.0 -> 219.0	3478	1.71 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 68.2%		
d5-EtFOSAA	8.296	589.2 -> 419.0	11547	5.69 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.8%		
d7-MeFOSE	11.034	623.2 -> 58.9	23707	18.83 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 75.3%		
d9-EtFOSE	11.319	639.2 -> 58.9	27123	18.60 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 74.4%		
d5-EtFOSA	11.410	531.1 -> 219.0	4336	1.79 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 71.7%		

Target Compounds

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	6.749	427.1 -> 407.0	486	0.29 µg/L	86
		427.1 -> 80.9	227		
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	2.833	212.8 -> 168.9	0	µg/L m	1
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	8.391	512.9 -> 469.0	0	µg/L m	1
		512.9 -> 219.0	0		
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	5.313	449.0 -> 98.9	0	µg/L	m	1
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	0	N.D.		
		398.7 -> 79.9				
PFNA	7.522	398.7 -> 98.9	0	µg/L	m	1
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	6.965	548.8 -> 98.9	860	0.06 µg/L	m	99
		413.0 -> 369.0				
PFOS	8.131	413.0 -> 169.0	170	0.10 µg/L	#m	54
		498.9 -> 79.9				
PFPeA	4.291	498.9 -> 98.8	83	µg/L	m	1
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed

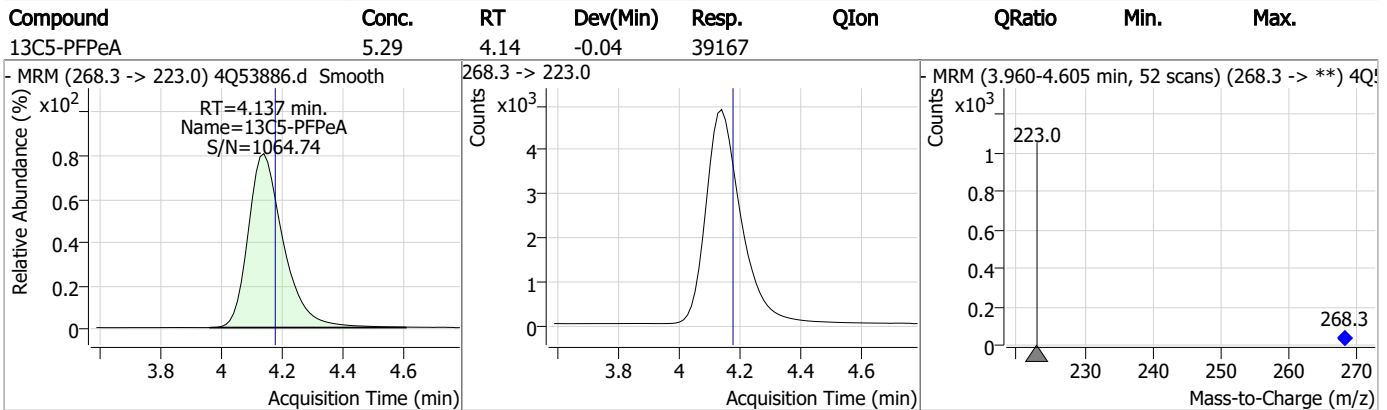
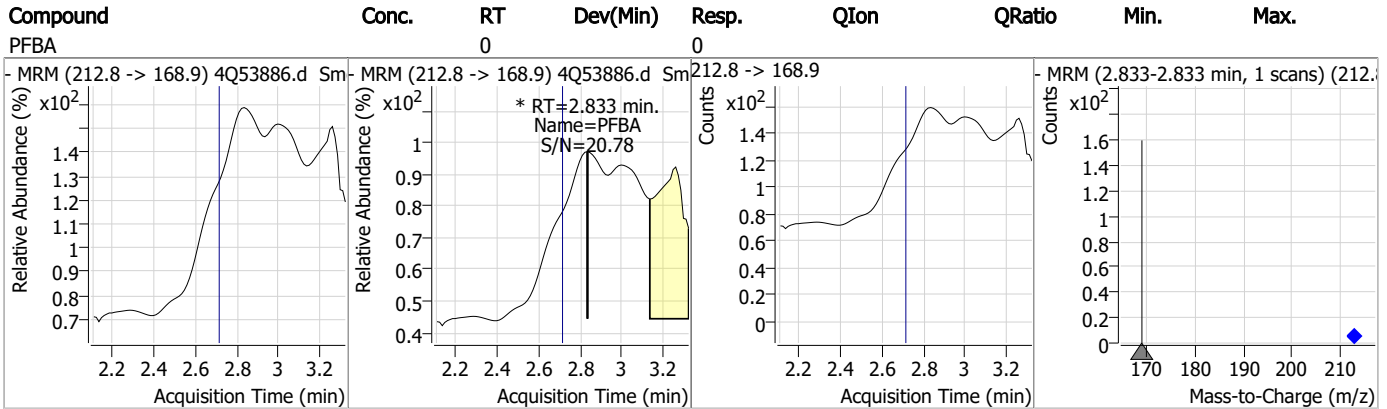
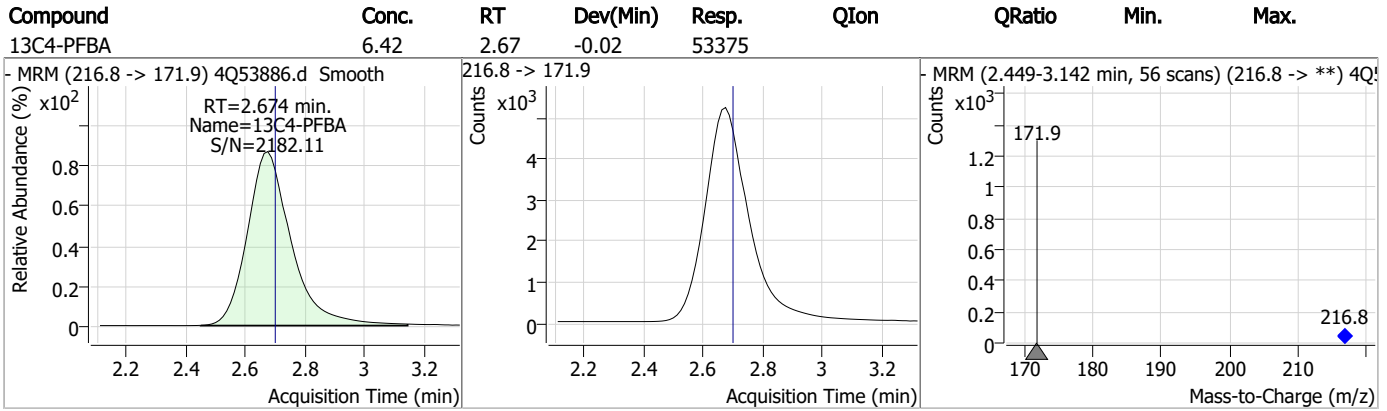
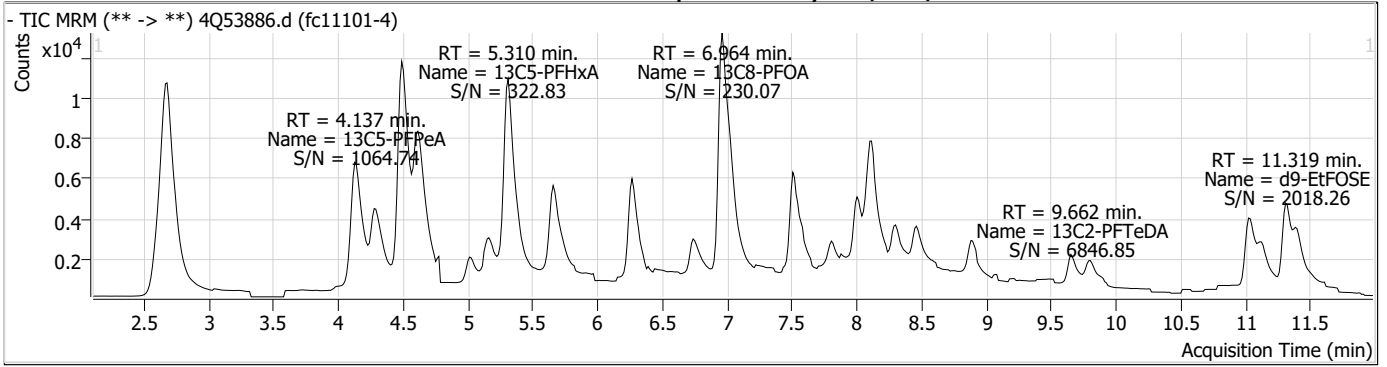
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.1.5
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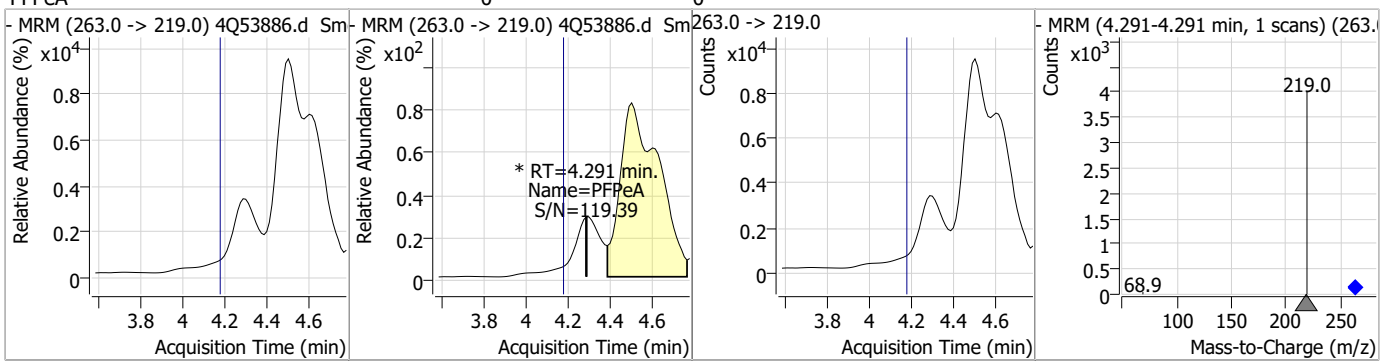


Perfluorinated Compounds by LC/MS/MS

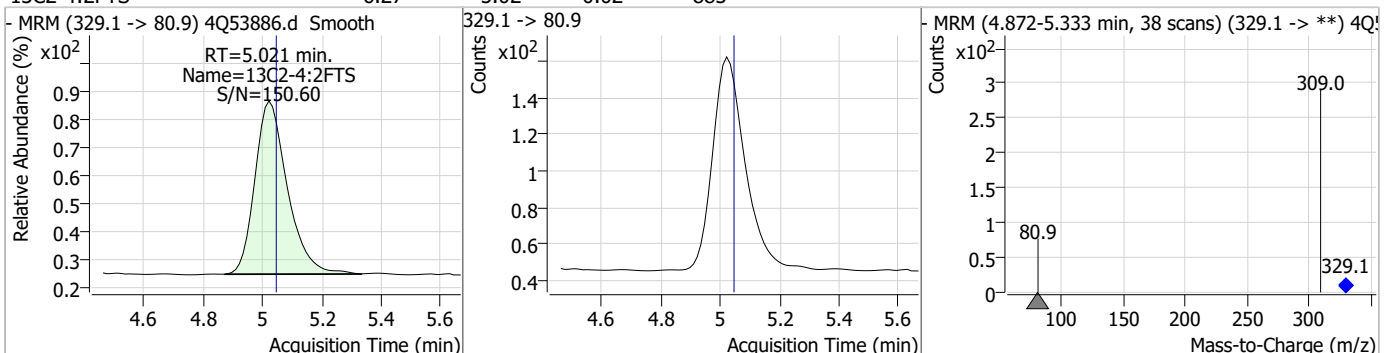


Perfluorinated Compounds by LC/MS/MS

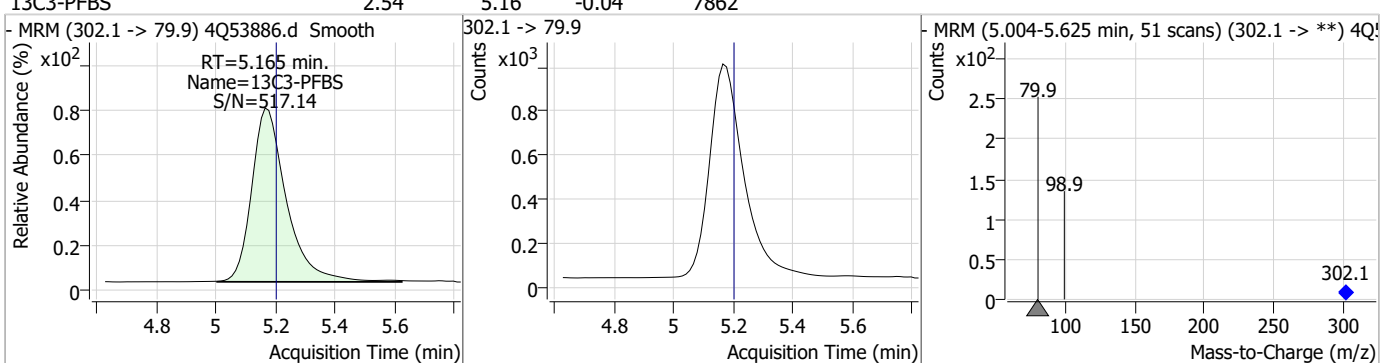
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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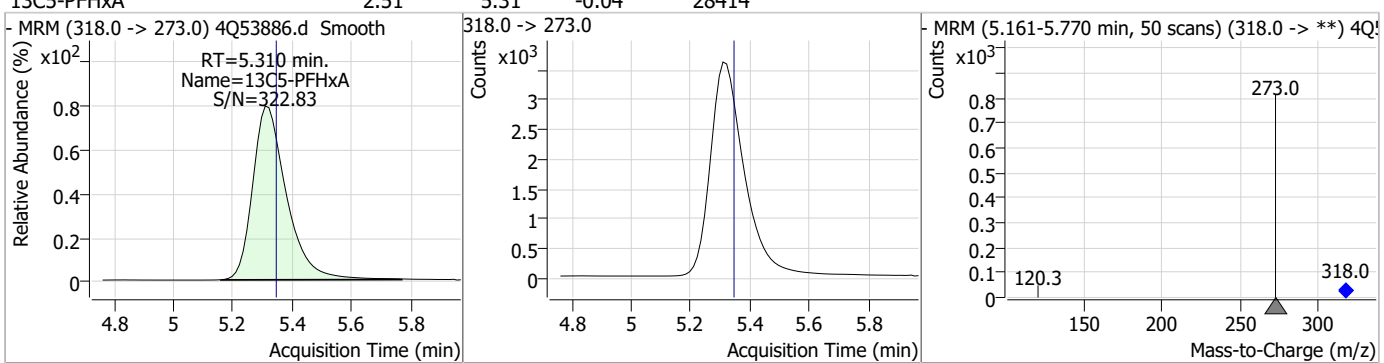
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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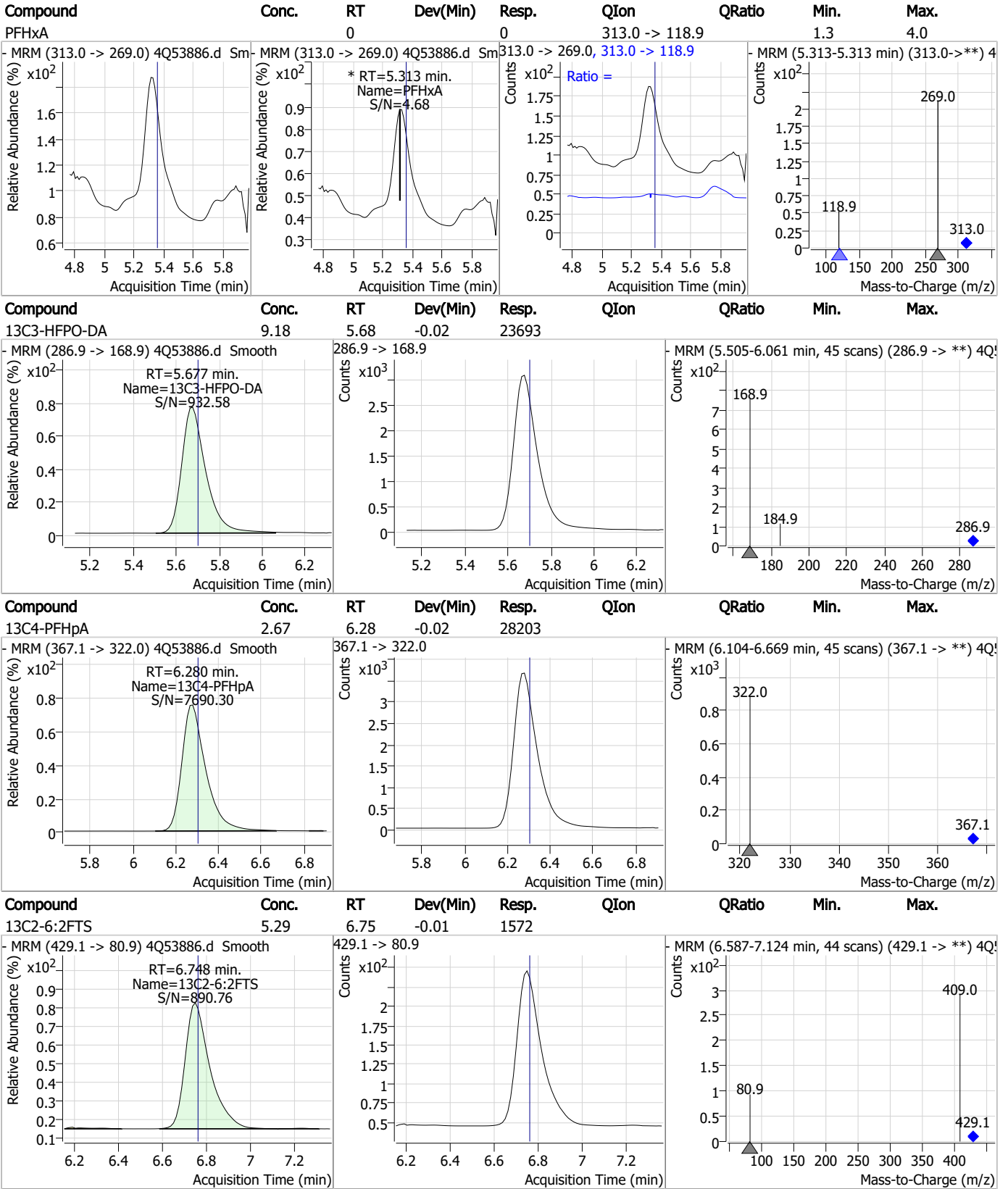


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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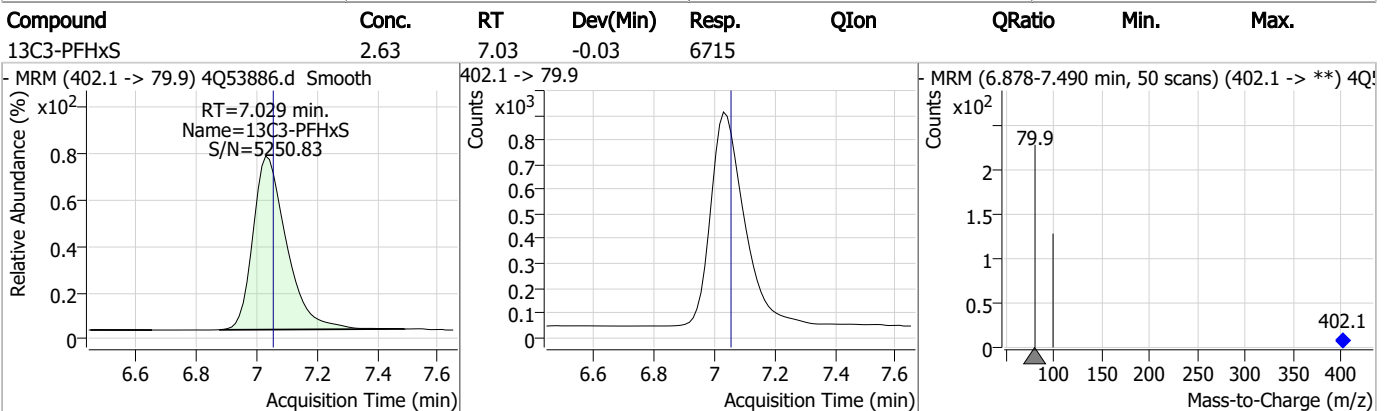
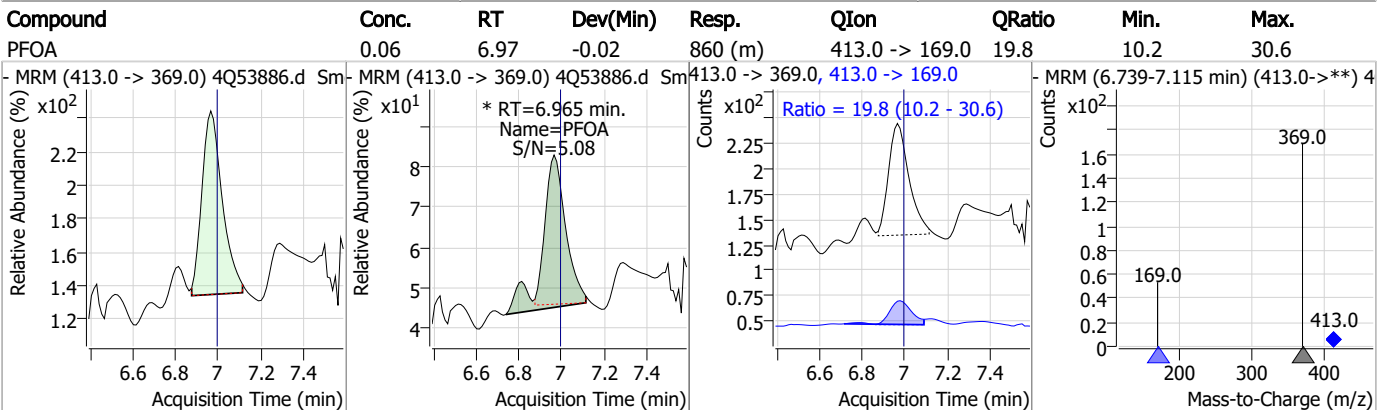
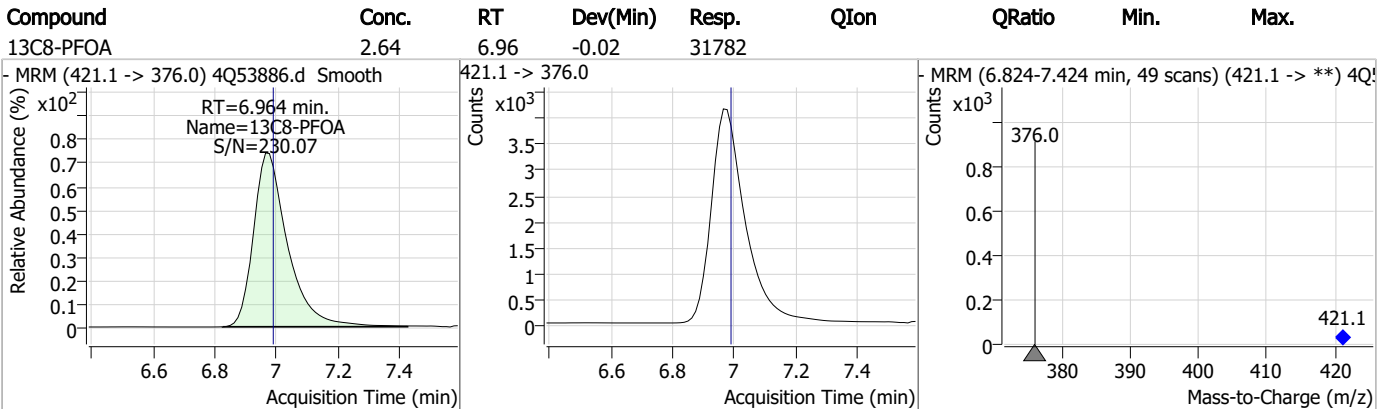
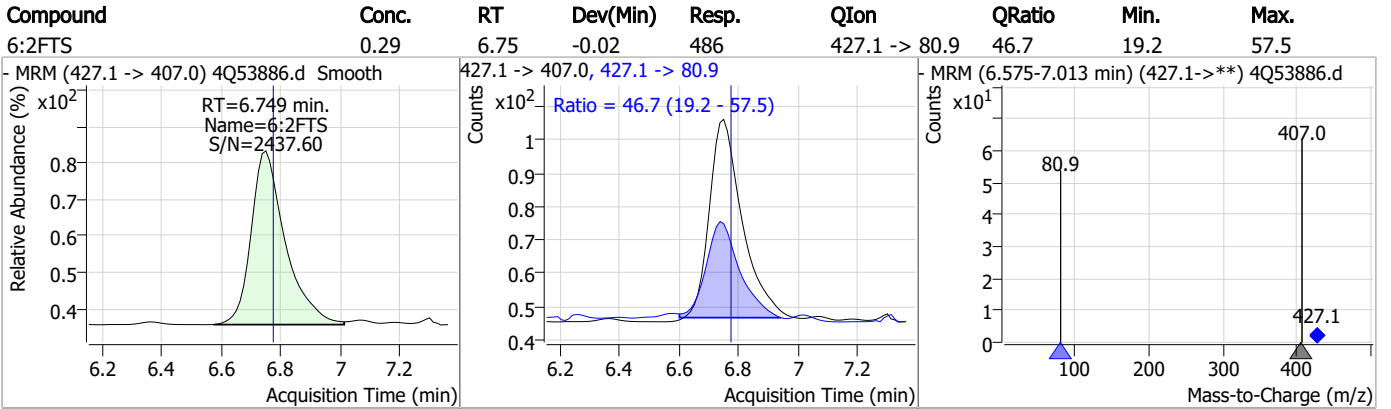


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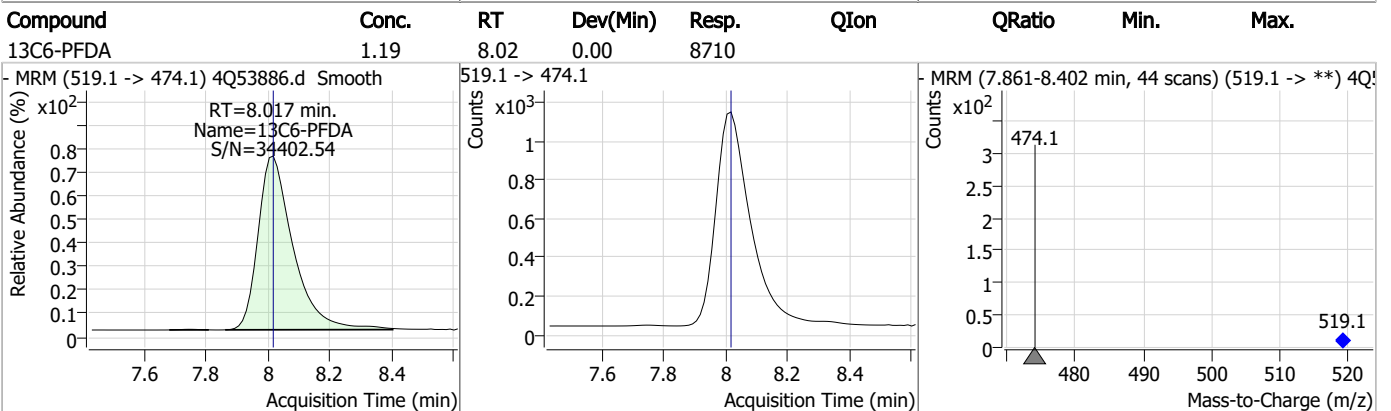
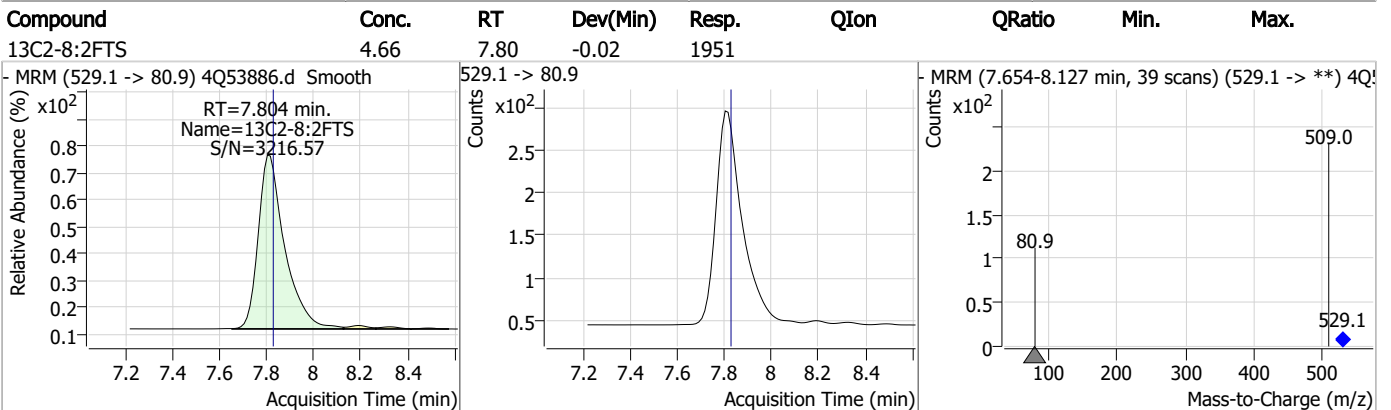
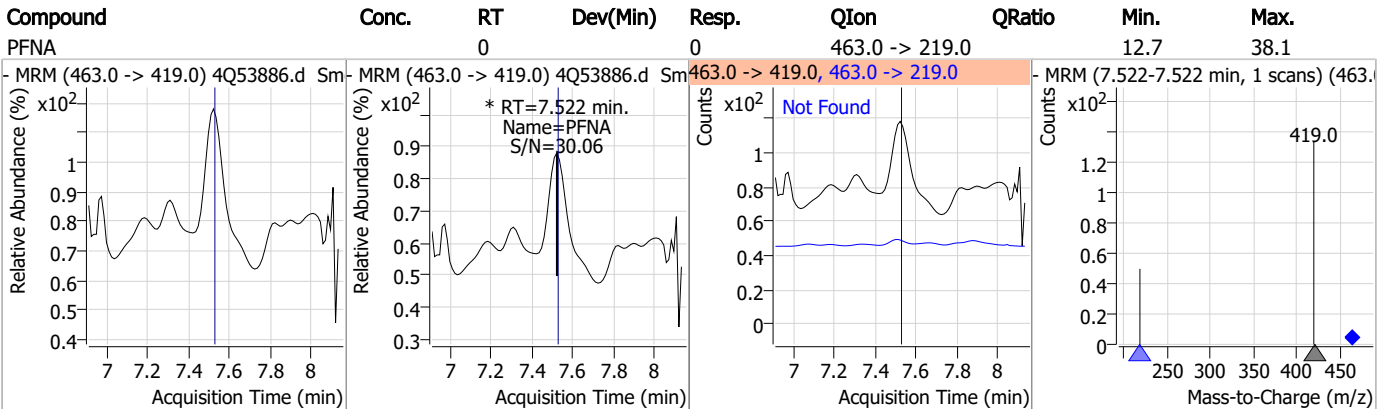
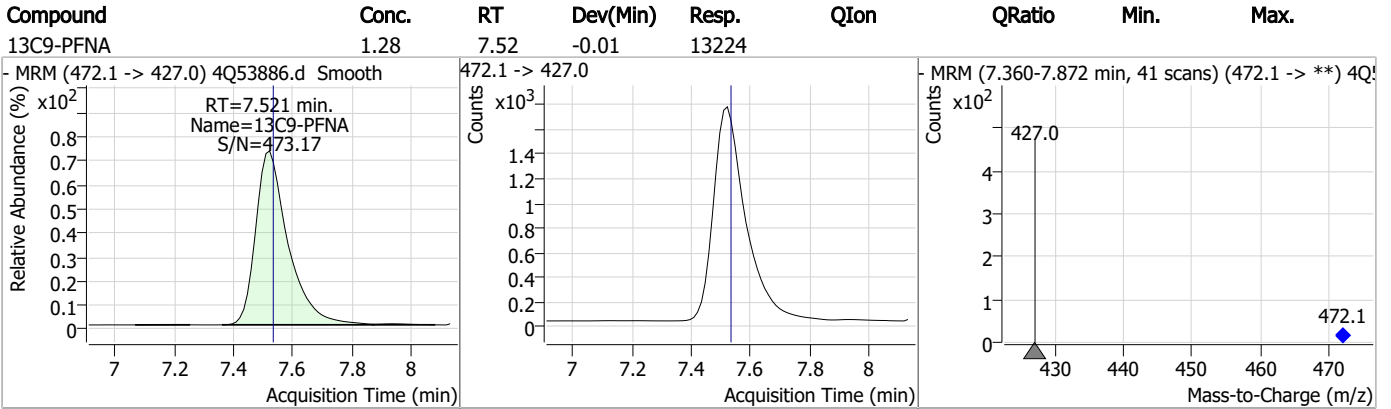
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



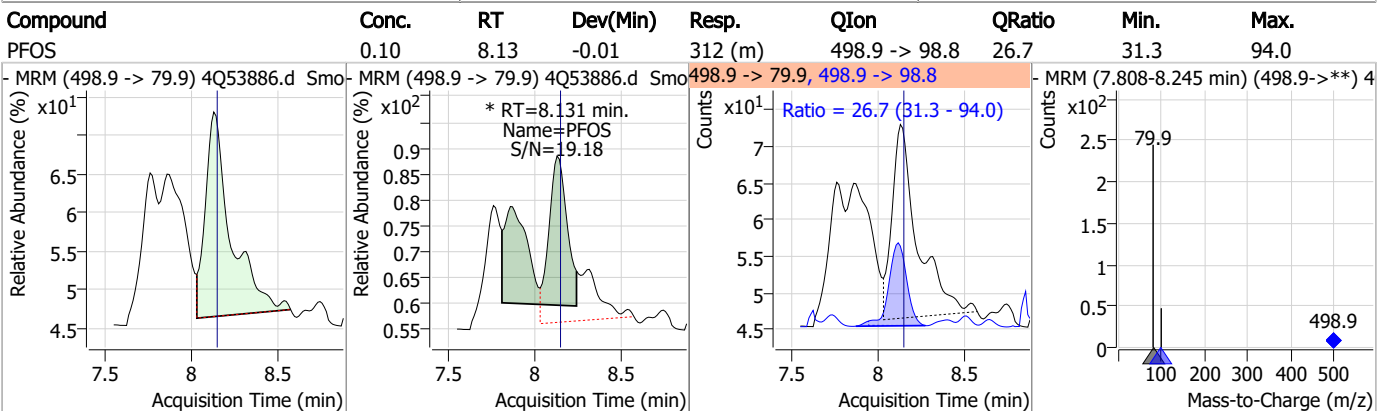
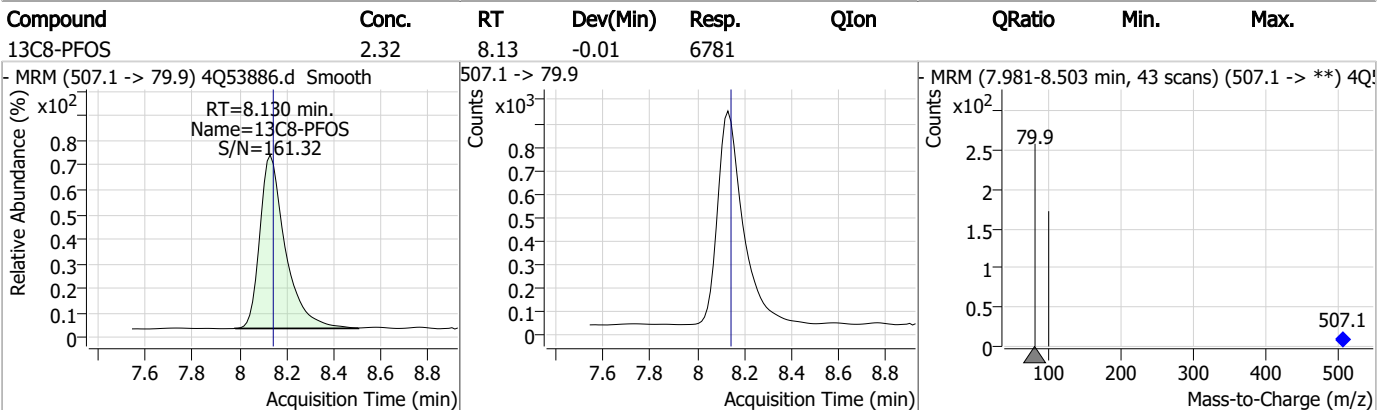
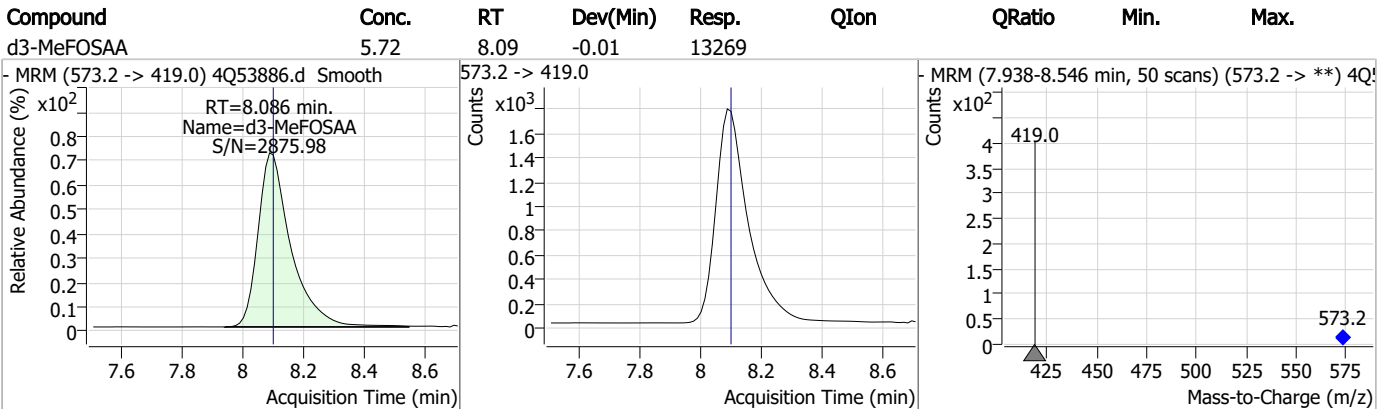
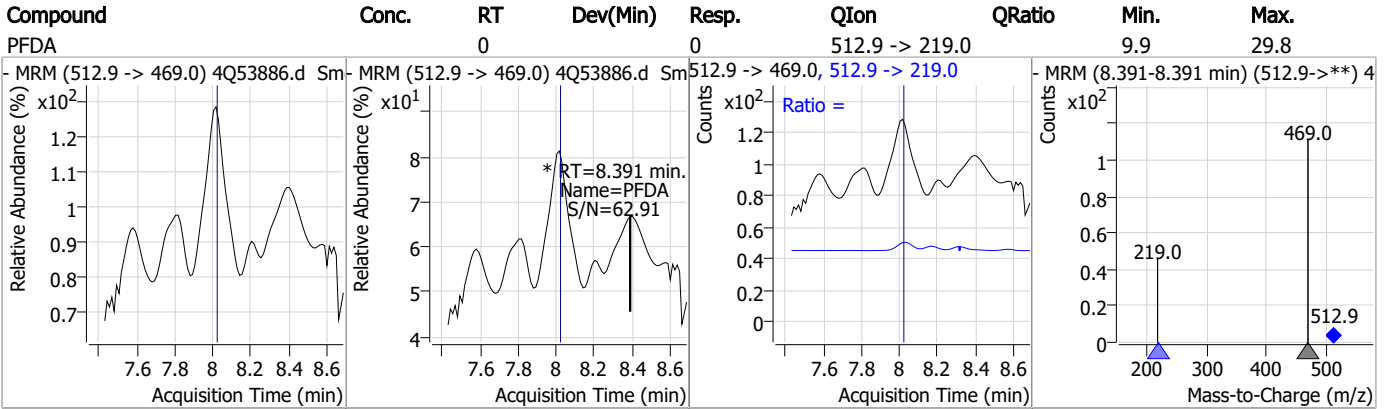
Perfluorinated Compounds by LC/MS/MS



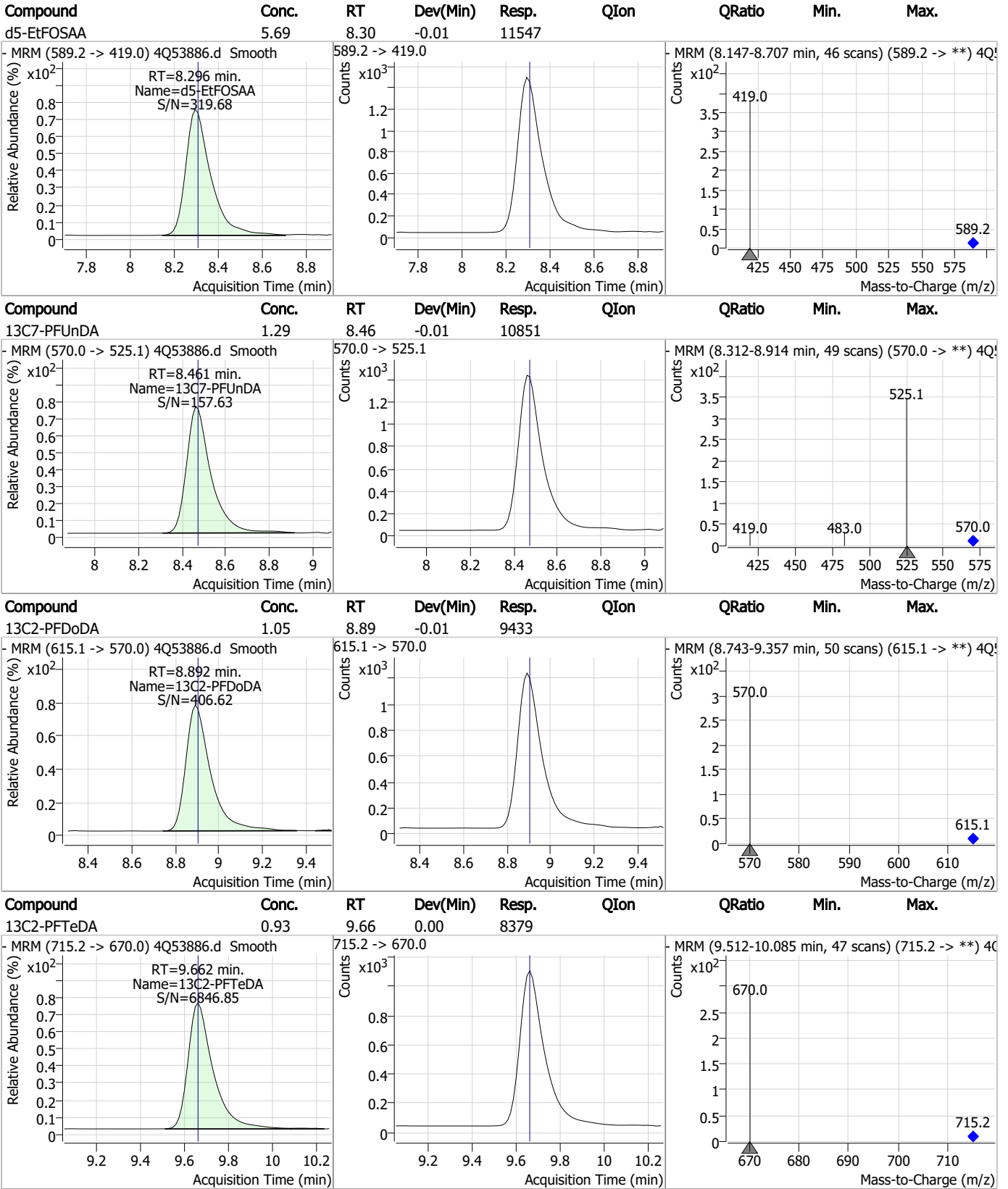
7.15

7

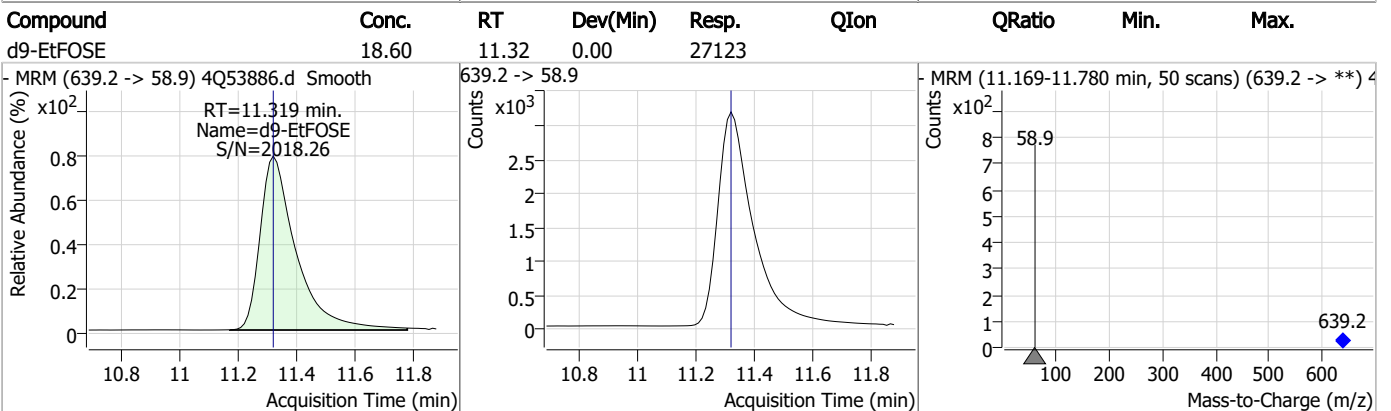
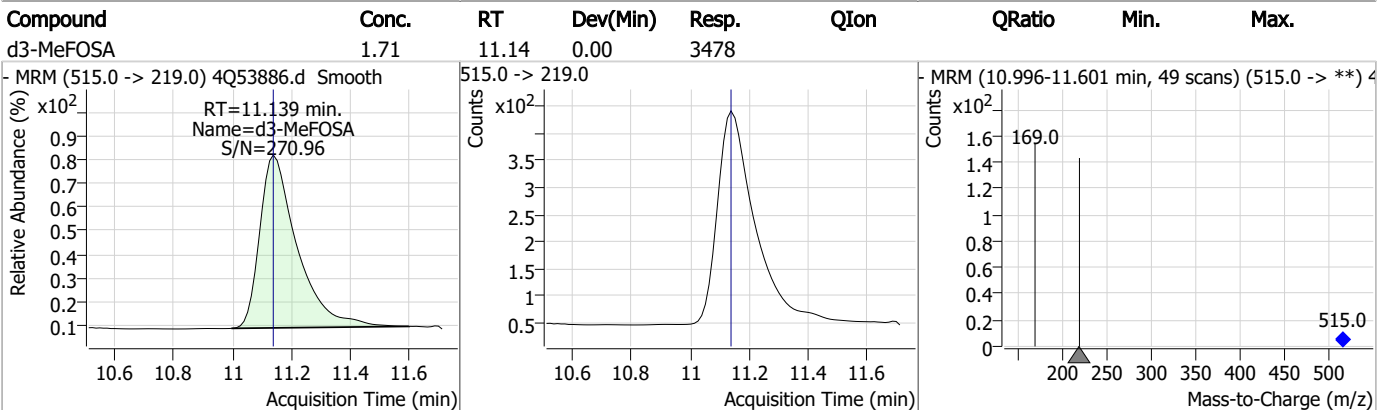
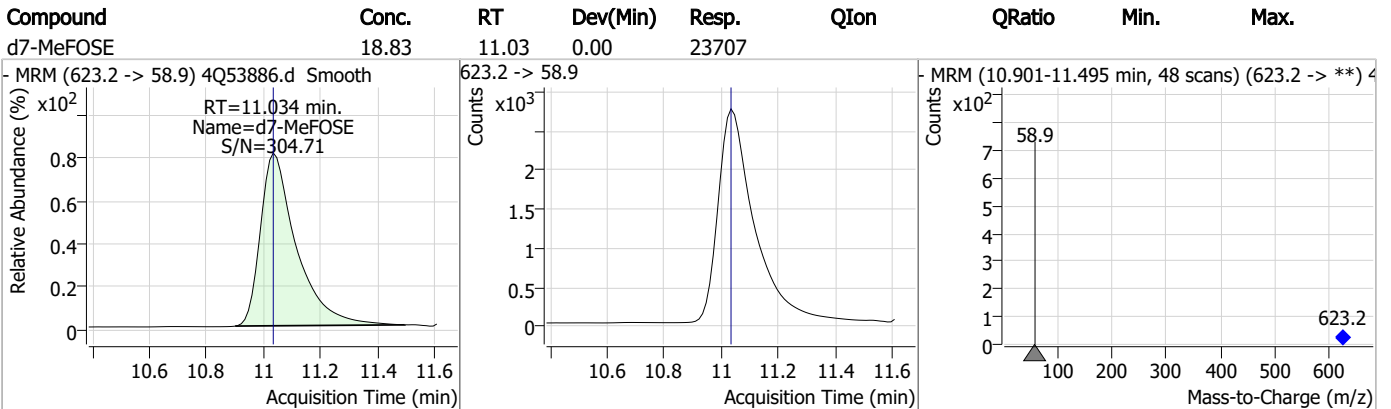
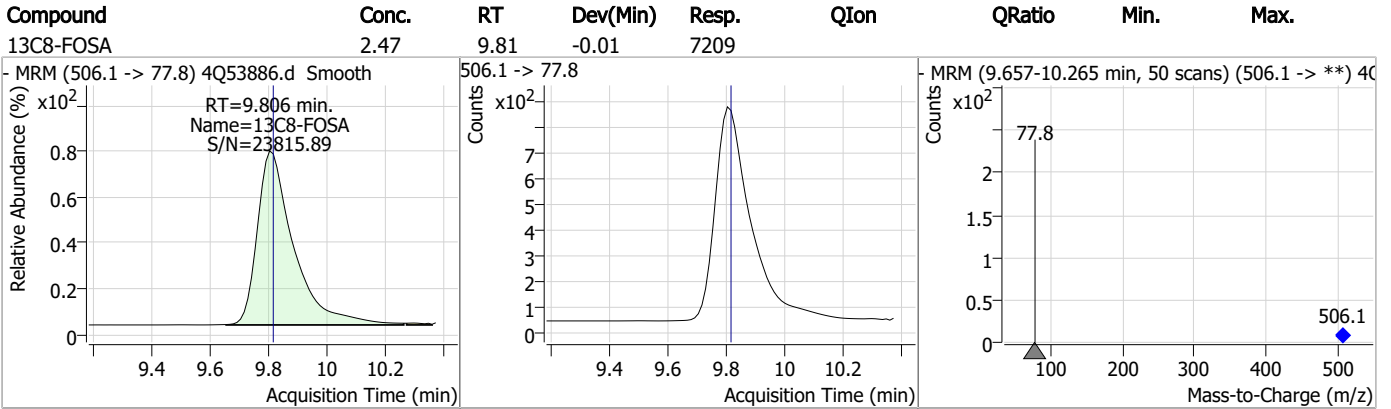
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

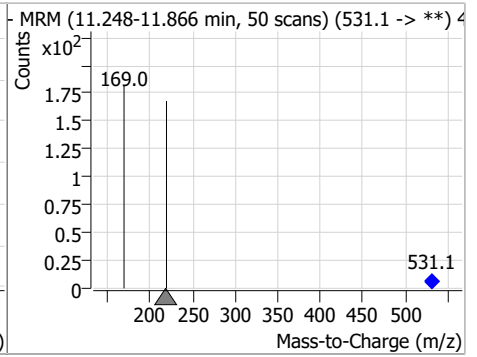
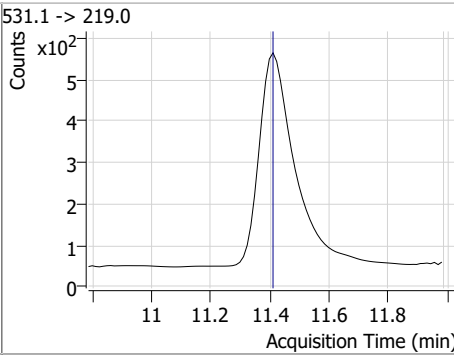
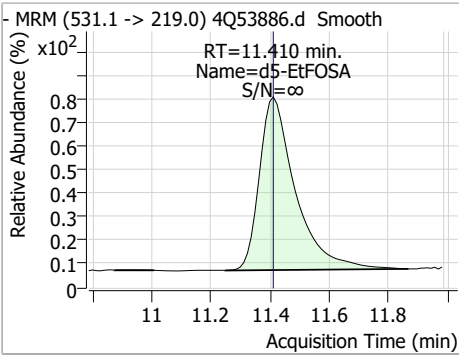


Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	1.79	11.41	0.00	4336				



7.1.5
7

Manual Integration Approval Summary

Sample Number: FC11101-4 Method: EPA DRAFT 1633
Lab FileID: 4Q53886.D Analyst approved: 11/16/23 14:14 Anna Ludwig
Injection Time: 11/15/23 15:37 Supervisor approved: 11/16/23 15:26 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		6.96	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.13	Split peak

7.1.5.1

7

Perfluorinated Compounds by LC/MS/MS

```

Data File       : 4Q53887.d
Operator        : annal
Acq. Method     : 1633full_4Q.m
Acq. Date-Time  : 11/15/2023 3:51:56 PM
Sample Name     : fc11101-5
Vial            : P2-A8
DA Method File  : 1633_111323_S4Q785.quantmethod.xml
Batch Name      : s4q786.batch.bin
Sample Information : OP58,S4Q786,525,,,,5.0,1,water
    
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Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	87613	10.00 µg/L	0.000
M5-PFPeA	4.150	268.3 -> 223.0	36485	5.00 µg/L	-0.025
M5-PFHxA	5.310	318.0 -> 273.0	26696	2.50 µg/L	-0.037
M4-PFHpA	6.280	367.1 -> 322.0	26462	2.50 µg/L	-0.025
M8-PFOA	6.976	421.1 -> 376.0	29912	2.50 µg/L	-0.012
M9-PFNA	7.521	472.1 -> 427.0	11821	1.25 µg/L	-0.012
M6-PFDA	8.004	519.1 -> 474.1	7960	1.25 µg/L	-0.013
M7-PFUnDA	8.461	570.0 -> 525.1	9421	1.25 µg/L	-0.012
M2-PFDoDA	8.892	615.1 -> 570.0	8580	1.25 µg/L	-0.012
M2-PFTeDA	9.662	715.2 -> 670.0	8850	1.25 µg/L	0.000
M8-FOSA	9.806	506.1 -> 77.8	6012	2.50 µg/L	-0.012
M3-PFBS	5.177	302.1 -> 79.9	8005	2.50 µg/L	-0.025
M3-PFHxS	7.029	402.1 -> 79.9	6304	2.50 µg/L	-0.025
M8-PFOS	8.130	507.1 -> 79.9	6182	2.50 µg/L	-0.013
M2-4:2FTS	5.034	329.1 -> 80.9	861	5.00 µg/L	-0.012
M2-6:2FTS	6.748	429.1 -> 80.9	1730	5.00 µg/L	-0.012
M2-8:2FTS	7.816	529.1 -> 80.9	2277	5.00 µg/L	-0.012
M3-MeFOSAA	8.086	573.2 -> 419.0	11033	5.00 µg/L	-0.012
M3-HFPO-DA	5.677	286.9 -> 168.9	24713	10.00 µg/L	-0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	8954	5.00 µg/L	-0.014
M7-MeFOSE	11.034	623.2 -> 58.9	23158	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	27539	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	4387	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	3376	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	5987	2.50 µg/L	-0.013
13C3-PFBA	2.703	216.0 -> 172.0	43528	5.00 µg/L	0.000
18O2-PFHxS	7.041	403.0 -> 83.9	4418	2.50 µg/L	-0.013
13C4-PFOA	6.977	417.1 -> 372.0	36629	2.50 µg/L	-0.012
13C2-PFDA	8.004	515.1 -> 470.1	9965	1.25 µg/L	-0.025
13C5-PFNA	7.522	468.0 -> 423.0	13990	1.25 µg/L	-0.012
13C2-PFHxA	5.323	315.1 -> 270.0	30648	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.034	329.1 -> 80.9	861	5.70 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.9%		
13C2-6:2FTS	6.748	429.1 -> 80.9	1730	5.43 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.6%		
13C2-8:2FTS	7.816	529.1 -> 80.9	2277	5.07 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C2-PFDoDA	8.892	615.1 -> 570.0	8580	0.95 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 76.3%		
13C2-PFTeDA	9.662	715.2 -> 670.0	8850	0.98 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 78.2%		
13C3-PFBS	5.177	302.1 -> 79.9	8005	2.42 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.6%		
13C3-PFHxS	7.029	402.1 -> 79.9	6304	2.30 µg/L	-0.025

7.1.6
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.1%	
13C4-PFBA	2.699	216.8 -> 171.9	87613	9.66 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.6%	
13C4-PFHpA	6.280	367.1 -> 322.0	26462	2.47 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C5-PFHxA	5.310	318.0 -> 273.0	26696	2.34 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.4%	
13C5-PFPeA	4.150	268.3 -> 223.0	36485	4.88 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C6-PFDA	8.004	519.1 -> 474.1	7960	1.09 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 86.8%	
13C7-PFUnDA	8.461	570.0 -> 525.1	9421	1.11 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 88.9%	
13C8-FOSA	9.806	506.1 -> 77.8	6012	2.10 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 84.0%	
13C8-PFOA	6.976	421.1 -> 376.0	29912	2.29 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.5%	
13C8-PFOS	8.130	507.1 -> 79.9	6182	2.16 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 86.5%	
13C9-PFNA	7.521	472.1 -> 427.0	11821	1.07 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 85.7%	
d3-MeFOSAA	8.086	573.2 -> 419.0	11033	4.86 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.2%	
13C3-HFPO-DA	5.677	286.9 -> 168.9	24713	9.48 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.8%	
d3-MeFOSA	11.139	515.0 -> 219.0	3376	1.69 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 67.6%	
d5-EtFOSAA	8.296	589.2 -> 419.0	8954	4.50 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 90.1%	
d7-MeFOSE	11.034	623.2 -> 58.9	23158	18.78 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 75.1%	
d9-EtFOSE	11.319	639.2 -> 58.9	27539	19.28 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 77.1%	
d5-EtFOSA	11.410	531.1 -> 219.0	4387	1.85 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 74.0%	

Target Compounds

QValue

4:2FTS	-	327.1 -> 307.0 327.1 -> 80.9	-	N.D.	
6:2FTS	-	427.1 -> 407.0 427.1 -> 80.9	-	N.D.	
8:2FTS	-	527.1 -> 507.0 527.1 -> 80.8	-	N.D.	
EtFOSAA	-	584.2 -> 419.1 584.2 -> 526.0	-	N.D.	
FOSA	-	498.1 -> 77.9 498.1 -> 478.0	-	N.D.	
MeFOSAA	-	570.1 -> 419.0 570.1 -> 483.0	-	N.D.	
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9 298.7 -> 98.8	-	N.D.	
PFDA	-	512.9 -> 469.0 512.9 -> 219.0	-	N.D.	
PFDODA	-	613.1 -> 569.0 613.1 -> 319.0	-	N.D.	
PFDS	-	599.0 -> 79.9	-	N.D.	



7.16
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	7.687	398.7 -> 98.9	0	µg/L	m	1
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	0	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	4.241	498.9 -> 98.8	0	µg/L	m	1
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	9.152	713.1 -> 669.0	0	µg/L	m	1
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed

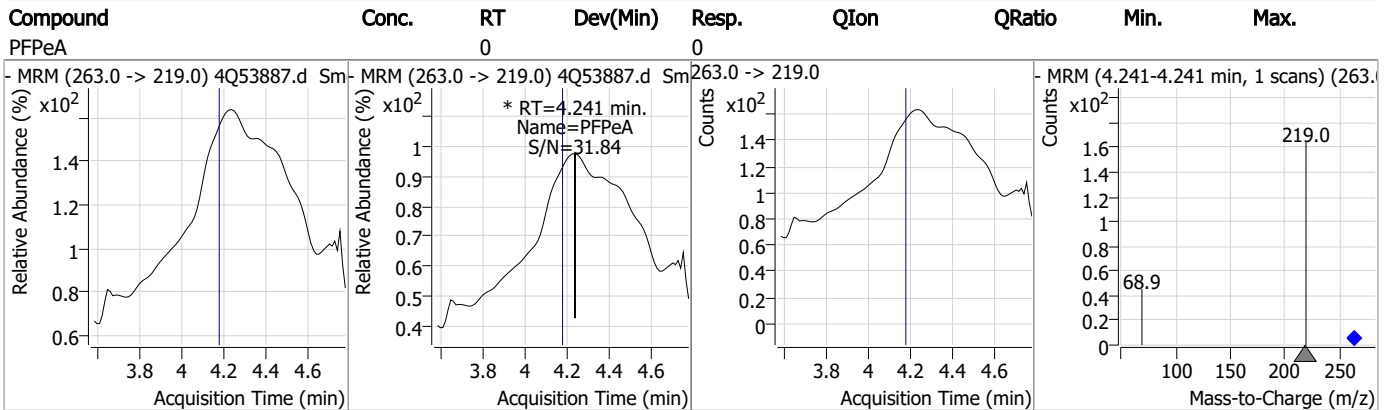
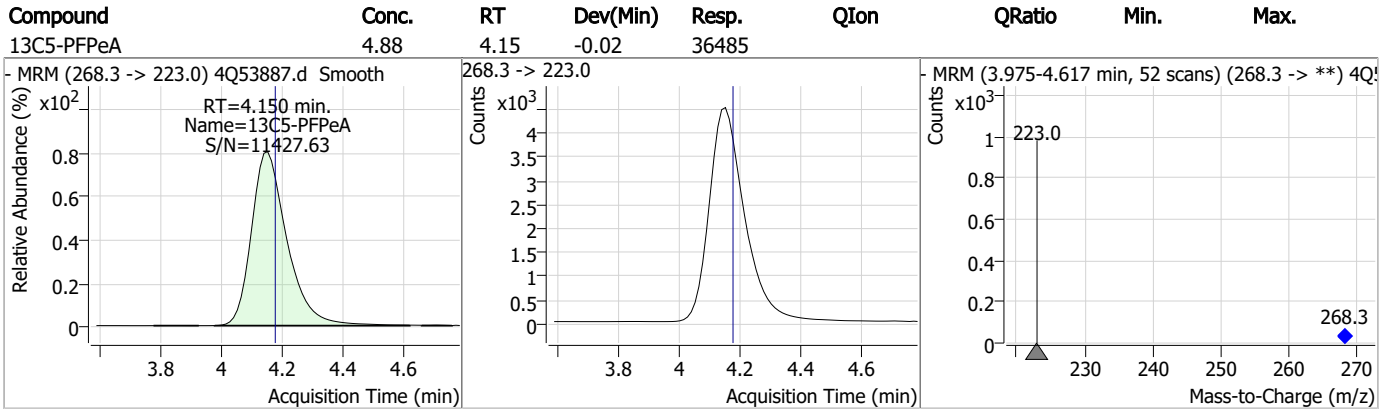
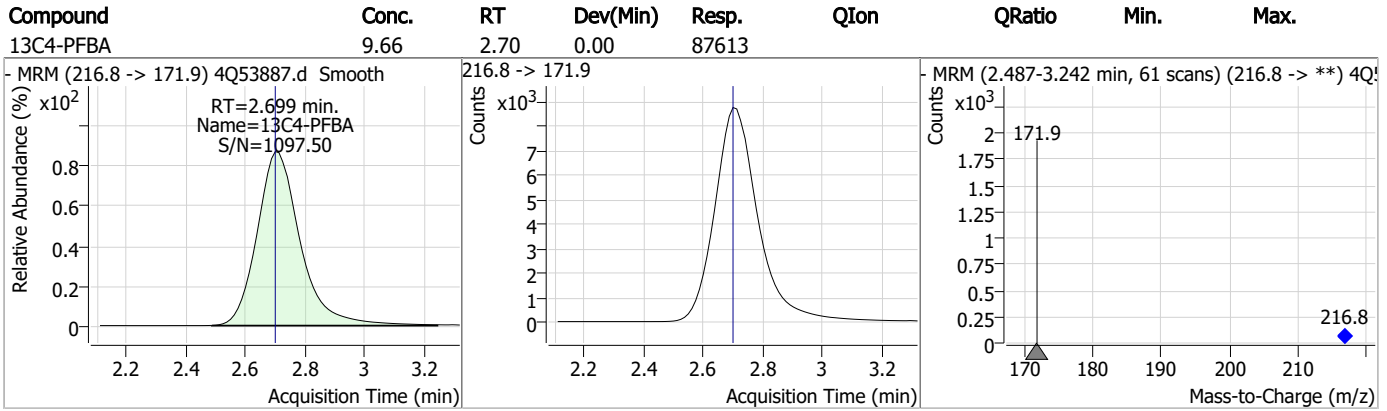
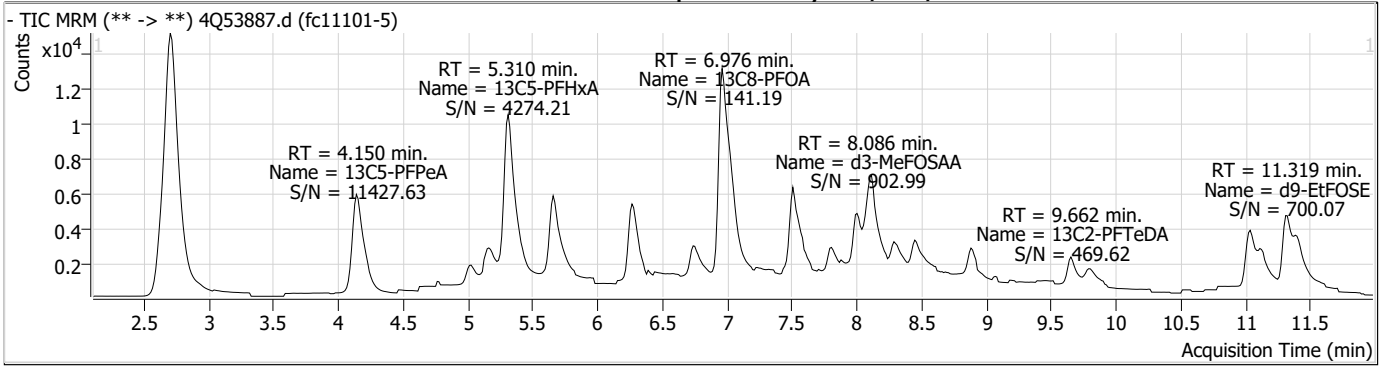
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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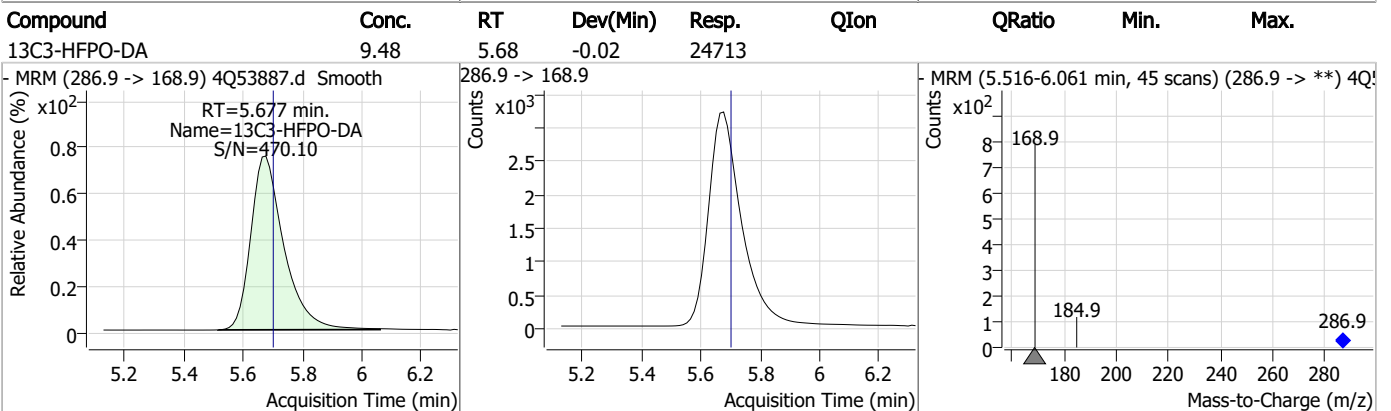
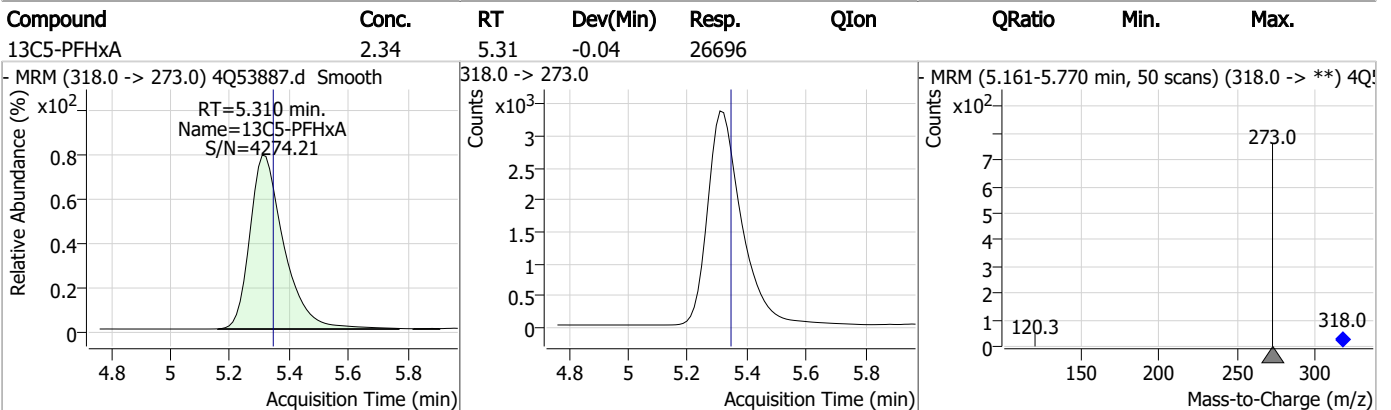
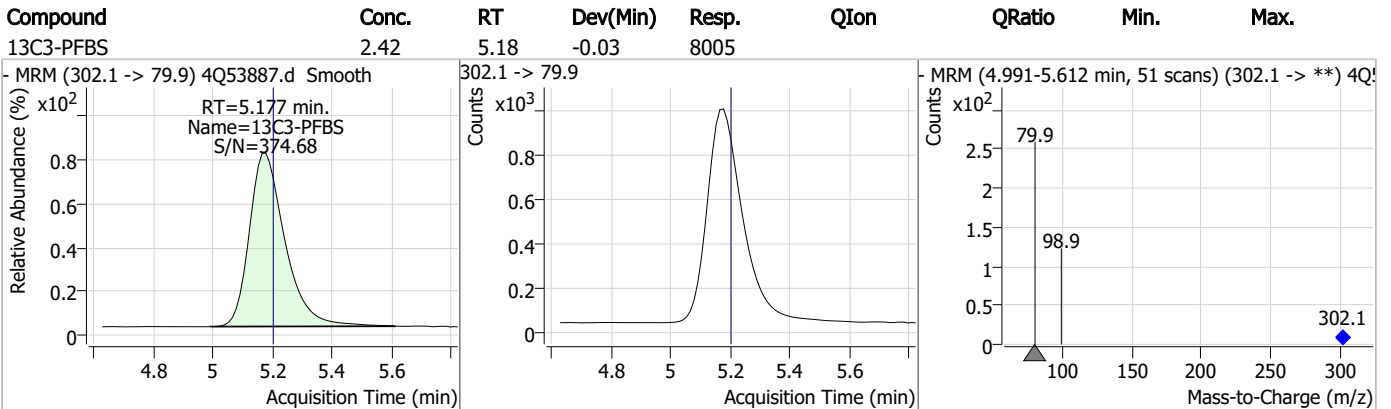
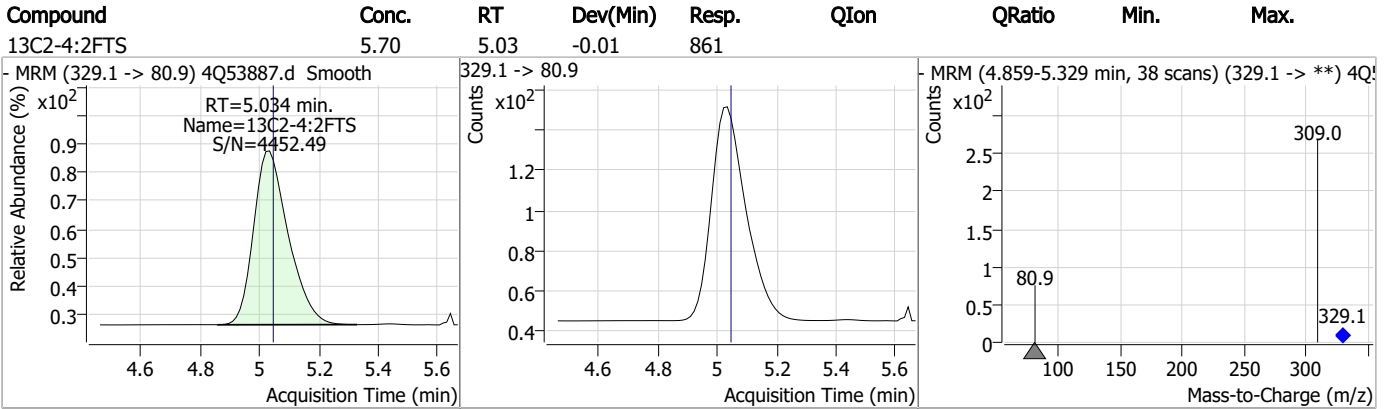
7.1.6
7



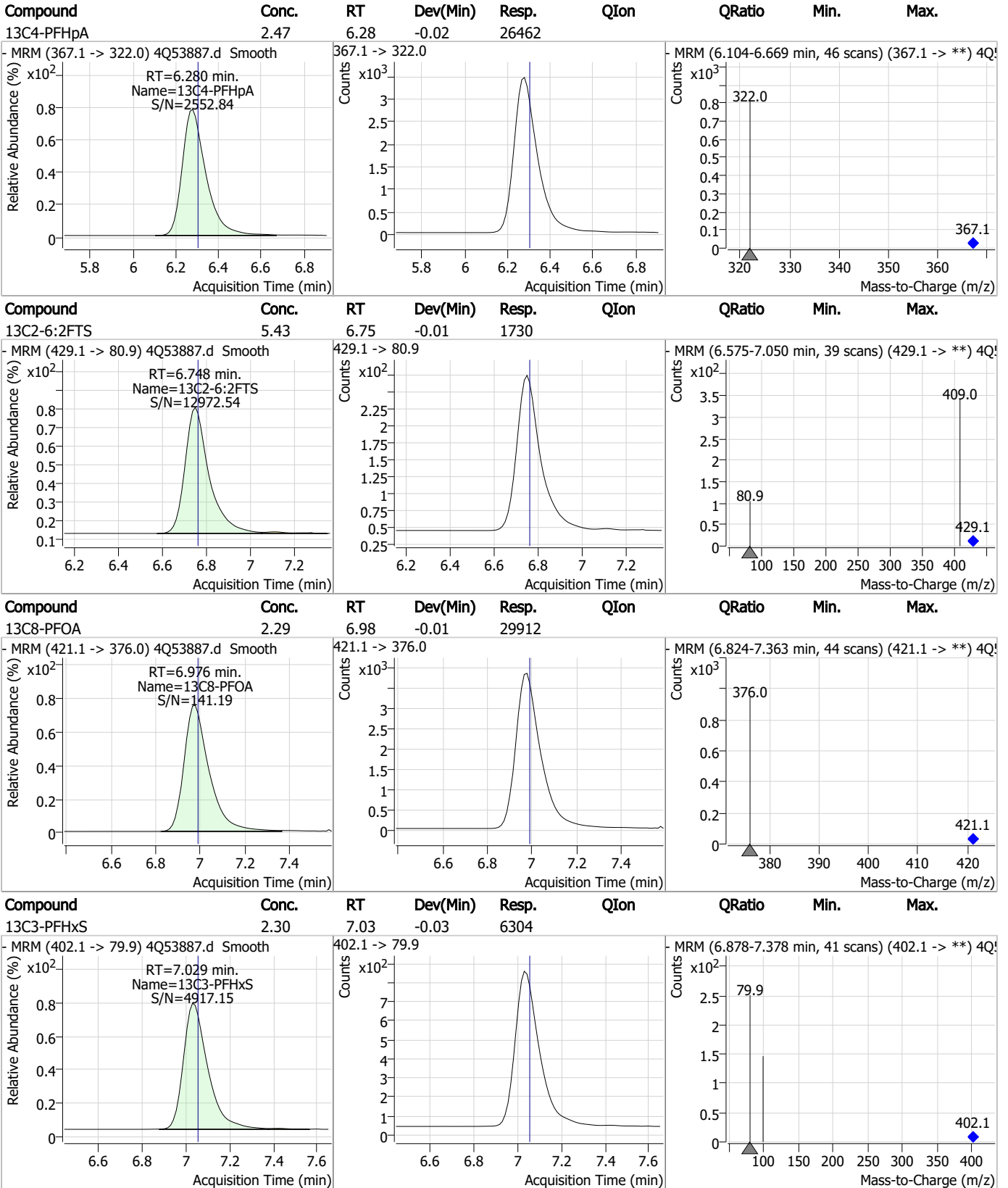
Perfluorinated Compounds by LC/MS/MS



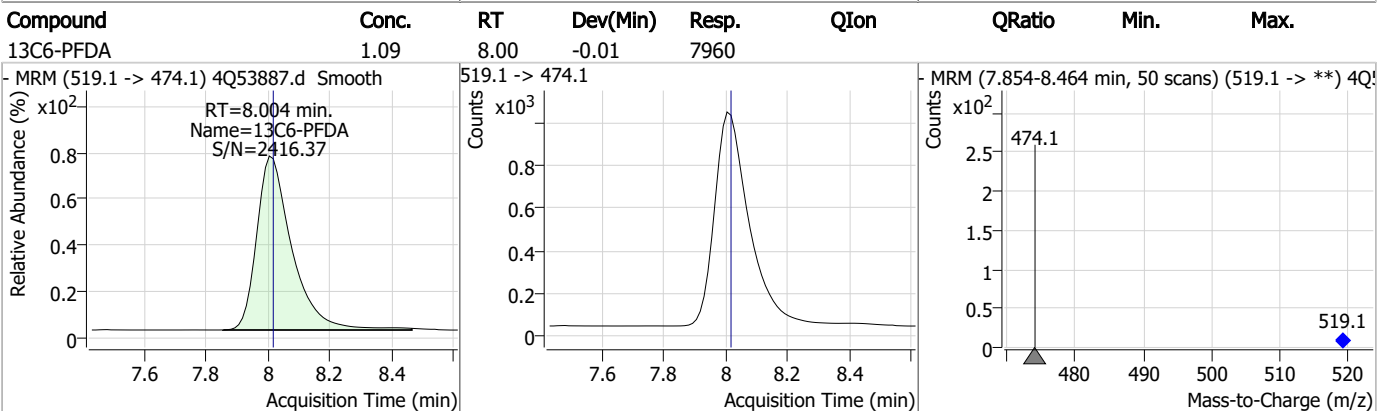
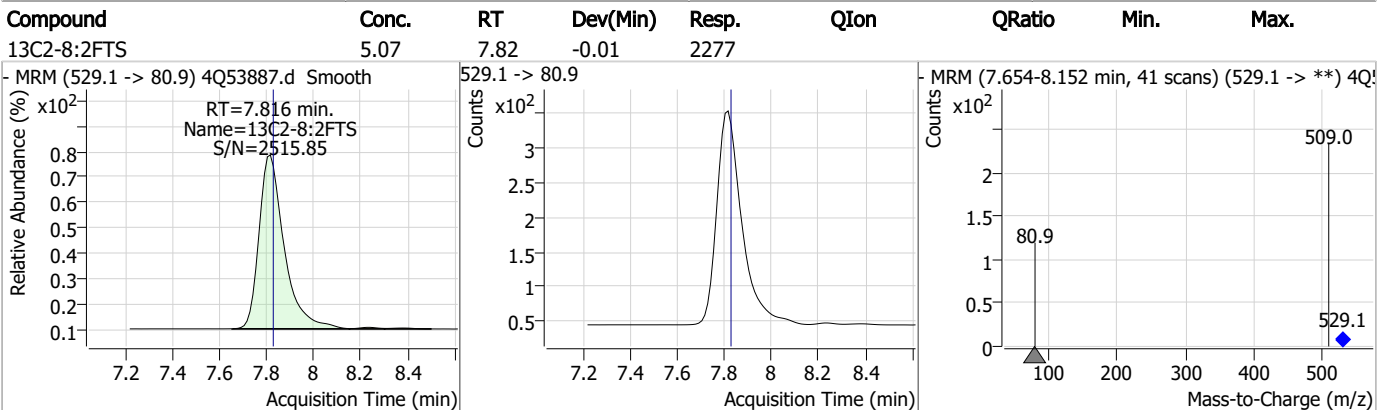
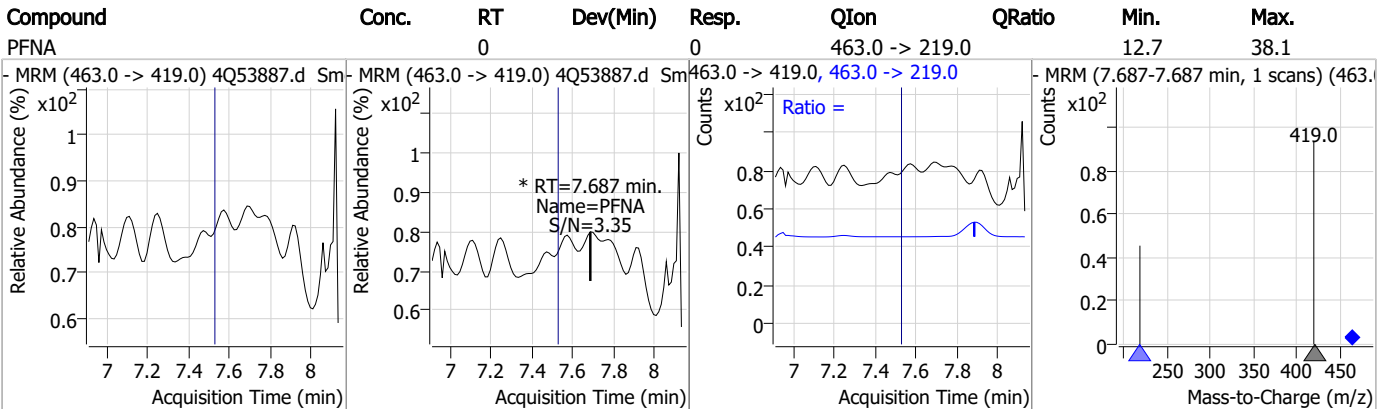
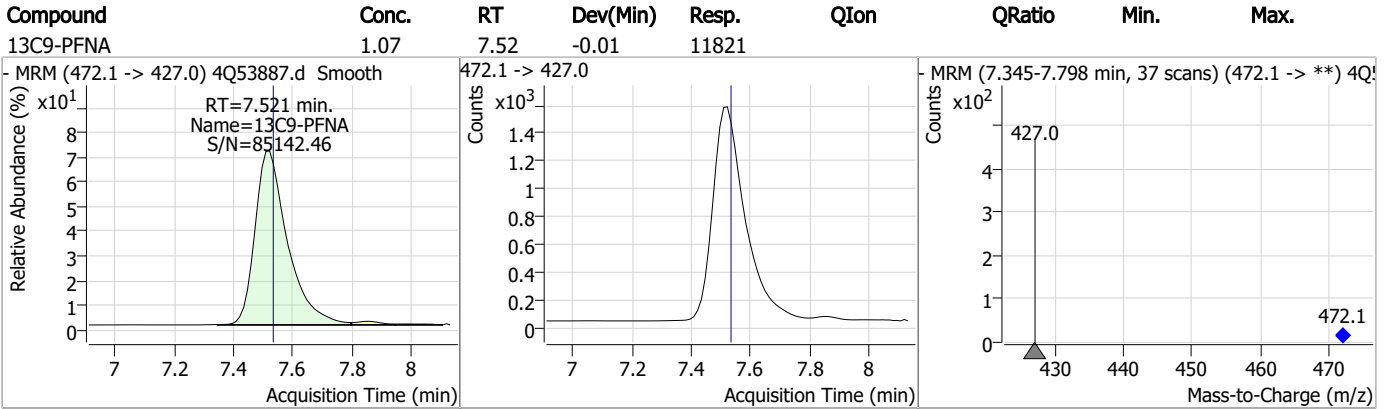
Perfluorinated Compounds by LC/MS/MS



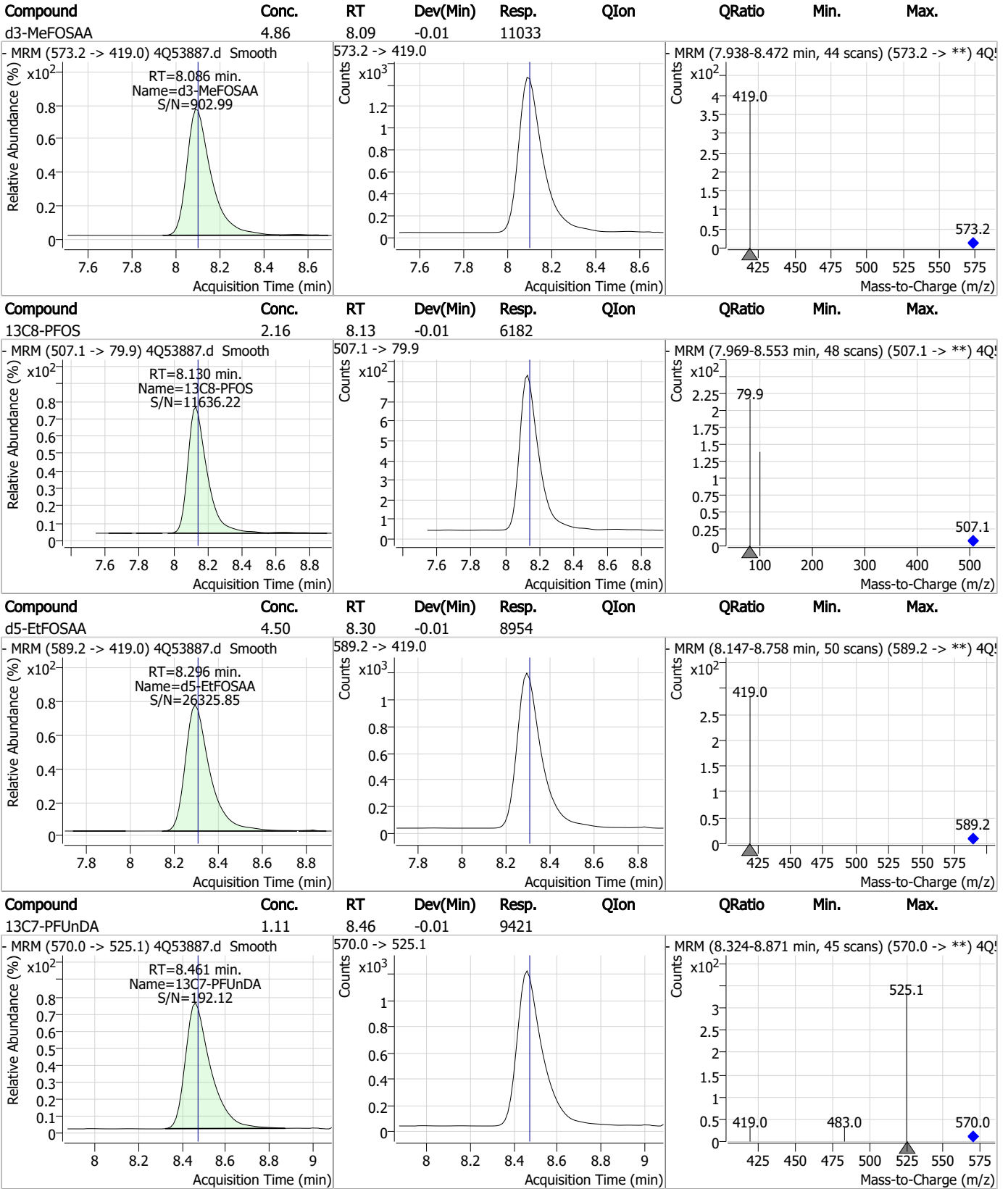
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

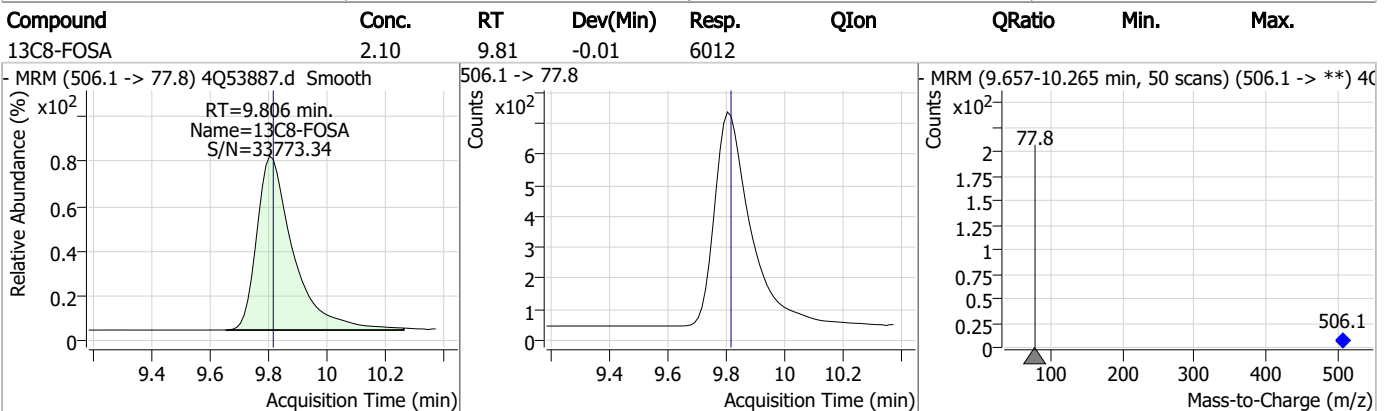
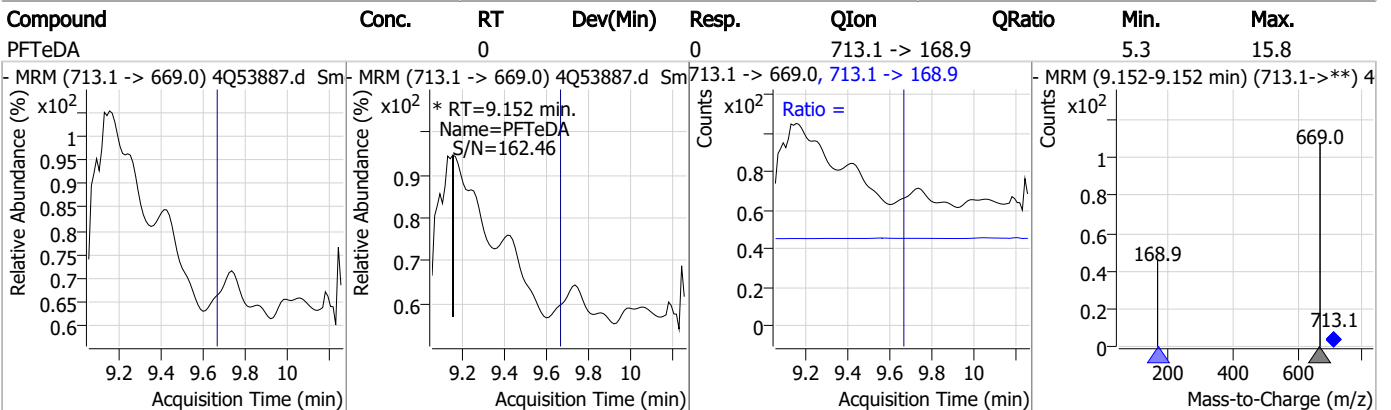
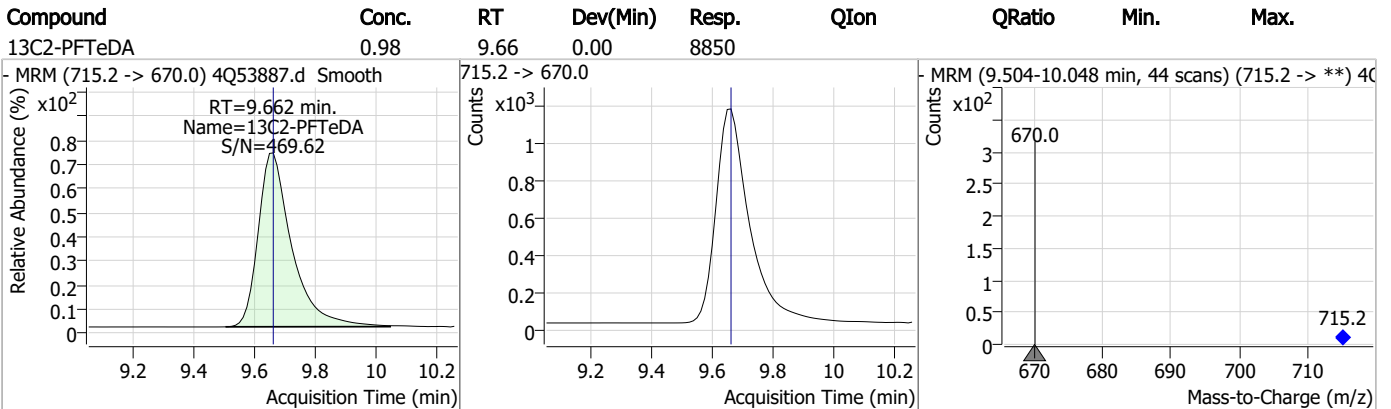
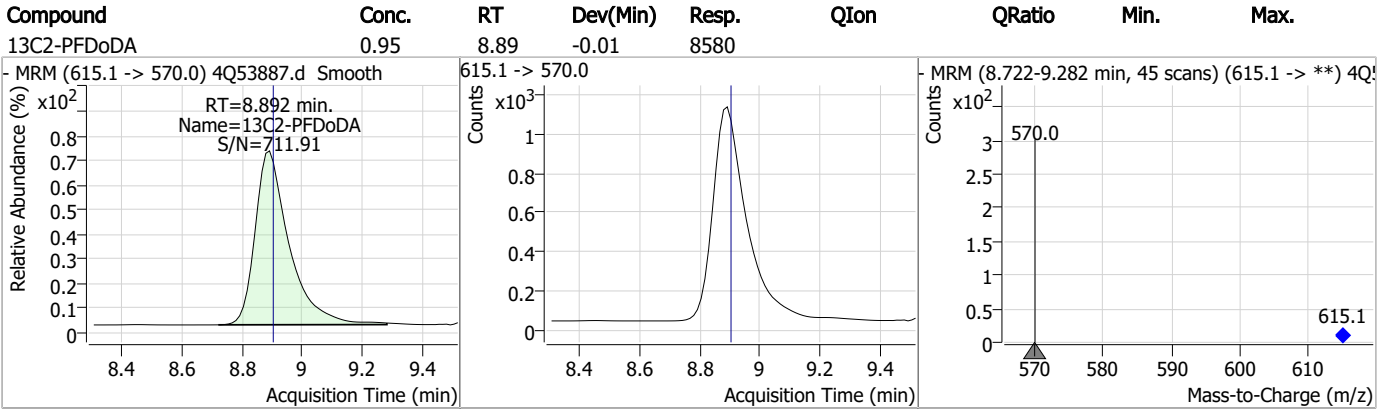


7.1.6

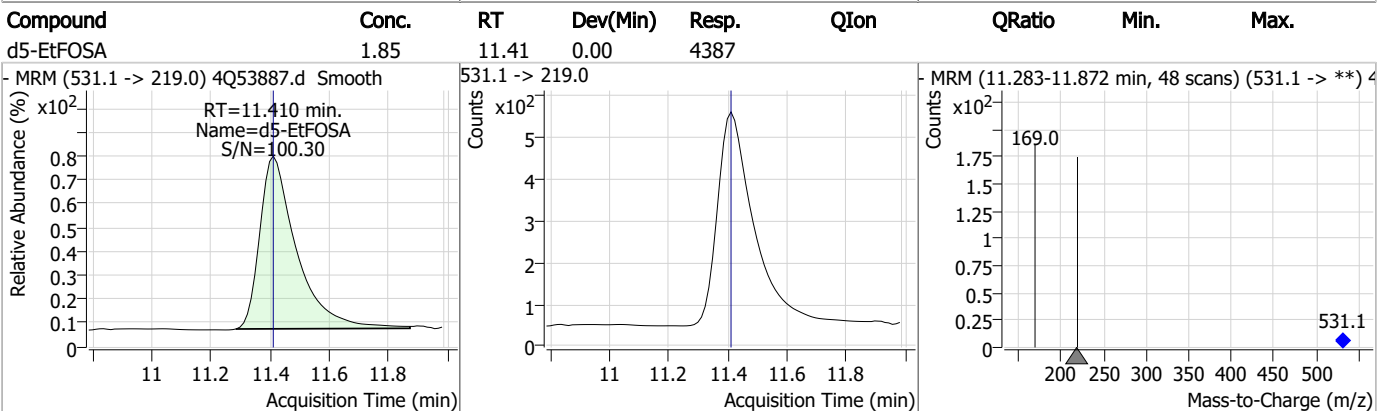
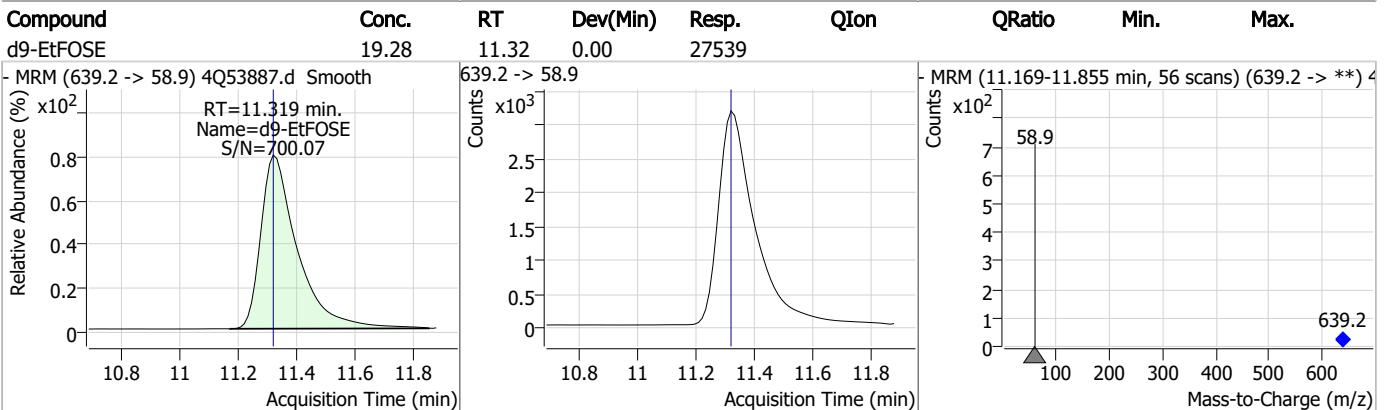
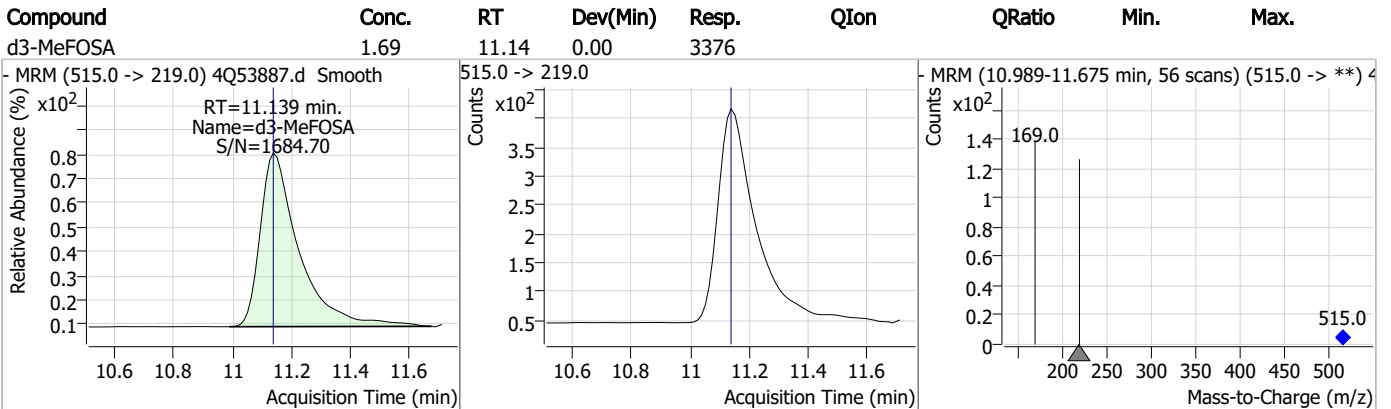
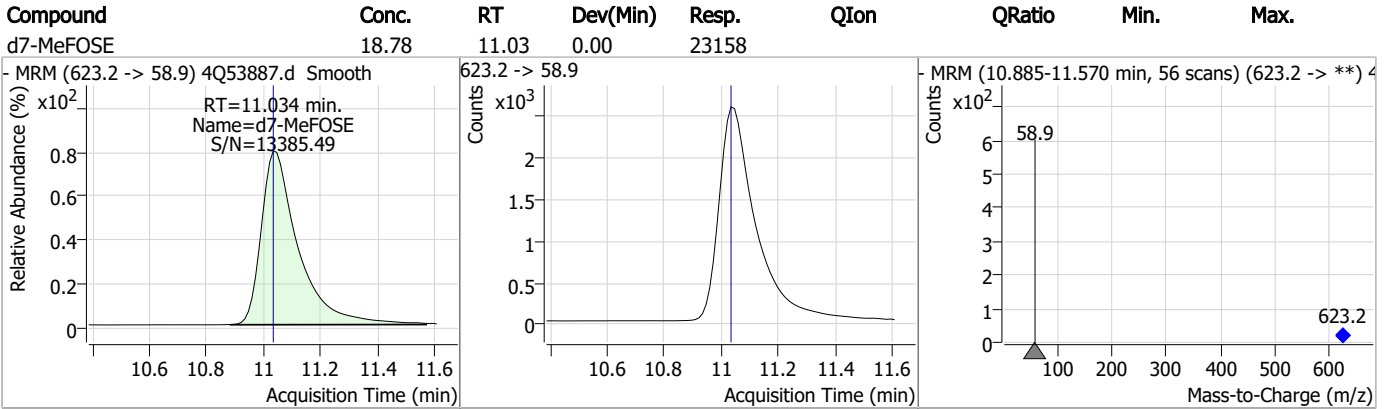
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54014.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 1:23:39 PM
 Sample Name : iblk
 Vial : P1-A1
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.587	216.8 -> 171.9	80416	10.00 µg/L	-0.013
M5-PFPeA	4.087	268.3 -> 223.0	35737	5.00 µg/L	0.000
M5-PFHxA	5.272	318.0 -> 273.0	25743	2.50 µg/L	0.012
M4-PFHpA	6.230	367.1 -> 322.0	25818	2.50 µg/L	0.012
M8-PFOA	6.938	421.1 -> 376.0	30366	2.50 µg/L	0.012
M9-PFNA	7.483	472.1 -> 427.0	12886	1.25 µg/L	0.012
M6-PFDA	7.967	519.1 -> 474.1	9214	1.25 µg/L	0.000
M7-PFUnDA	8.424	570.0 -> 525.1	10677	1.25 µg/L	0.000
M2-PFDoDA	8.855	615.1 -> 570.0	10791	1.25 µg/L	0.012
M2-PFTeDA	9.624	715.2 -> 670.0	10357	1.25 µg/L	0.012
M8-FOSA	9.781	506.1 -> 77.8	6679	2.50 µg/L	0.012
M3-PFBS	5.116	302.1 -> 79.9	7558	2.50 µg/L	0.000
M3-PFHxS	6.992	402.1 -> 79.9	6384	2.50 µg/L	0.012
M8-PFOS	8.093	507.1 -> 79.9	6653	2.50 µg/L	0.012
M2-4:2FTS	4.971	329.1 -> 80.9	885	5.00 µg/L	0.000
M2-6:2FTS	6.711	429.1 -> 80.9	1770	5.00 µg/L	0.012
M2-8:2FTS	7.779	529.1 -> 80.9	2524	5.00 µg/L	0.012
M3-MeFOSAA	8.062	573.2 -> 419.0	12993	5.00 µg/L	0.012
M3-HFPO-DA	5.627	286.9 -> 168.9	23404	10.00 µg/L	0.012
M5-EtFOSAA	8.259	589.2 -> 419.0	10449	5.00 µg/L	0.012
M7-MeFOSE	11.022	623.2 -> 58.9	28701	25.00 µg/L	0.012
M9-EtFOSE	11.306	639.2 -> 58.9	32521	25.00 µg/L	0.012
M5-EtFOSA	11.397	531.1 -> 219.0	5448	2.50 µg/L	0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4190	2.50 µg/L	0.012
13C4-PFOS	8.093	502.8 -> 79.9	5497	2.50 µg/L	0.012
13C3-PFBA	2.591	216.0 -> 172.0	38430	5.00 µg/L	0.000
18O2-PFHxS	6.991	403.0 -> 83.9	4217	2.50 µg/L	0.012
13C4-PFOA	6.939	417.1 -> 372.0	33490	2.50 µg/L	0.012
13C2-PFDA	7.967	515.1 -> 470.1	9574	1.25 µg/L	0.000
13C5-PFNA	7.484	468.0 -> 423.0	13034	1.25 µg/L	0.012
13C2-PFHxA	5.261	315.1 -> 270.0	28257	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	4.971	329.1 -> 80.9	885	5.50 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.0%		
13C2-6:2FTS	6.711	429.1 -> 80.9	1770	5.18 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.7%		
13C2-8:2FTS	7.779	529.1 -> 80.9	2524	5.37 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.3%		
13C2-PFDoDA	8.855	615.1 -> 570.0	10791	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C2-PFTeDA	9.624	715.2 -> 670.0	10357	1.20 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C3-PFBS	5.116	302.1 -> 79.9	7558	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.7%		
13C3-PFHxS	6.992	402.1 -> 79.9	6384	2.41 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.4%	
13C4-PFBA	2.587	216.8 -> 171.9	80416	10.14 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C4-PFHpA	6.230	367.1 -> 322.0	25818	2.58 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C5-PFHxA	5.272	318.0 -> 273.0	25743	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C5-PFPeA	4.087	268.3 -> 223.0	35737	5.04 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C6-PFDA	7.967	519.1 -> 474.1	9214	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C7-PFUnDA	8.424	570.0 -> 525.1	10677	1.34 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.9%	
13C8-FOSA	9.781	506.1 -> 77.8	6679	2.60 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.0%	
13C8-PFOA	6.938	421.1 -> 376.0	30366	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C8-PFOS	8.093	507.1 -> 79.9	6653	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C9-PFNA	7.483	472.1 -> 427.0	12886	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.6%	
d3-MeFOSAA	8.062	573.2 -> 419.0	12993	5.77 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 115.4%	
13C3-HFPO-DA	5.627	286.9 -> 168.9	23404	9.93 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
d3-MeFOSA	11.126	515.0 -> 219.0	4190	2.38 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.0%	
d5-EtFOSAA	8.259	589.2 -> 419.0	10449	5.53 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 110.7%	
d7-MeFOSE	11.022	623.2 -> 58.9	28701	26.06 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 104.3%	
d9-EtFOSE	11.306	639.2 -> 58.9	32521	25.95 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.8%	
d5-EtFOSA	11.397	531.1 -> 219.0	5448	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	

7.2.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	7.563	548.8 -> 98.9	0	µg/L	m	1
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	8.411	563.1 -> 519.0	0	µg/L	m	1
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	11.424	526.0 -> 219.0	704	0.31 µg/L		62
		526.0 -> 169.0	644			
EtFOSE	11.345	630.0 -> 58.9	792	0.65 µg/L		100
MeFOSA	11.140	511.9 -> 219.0	246	0.16 µg/L		94
		511.9 -> 169.0	384			
MeFOSE	11.060	616.1 -> 58.9	547	0.45 µg/L		100
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed

7.2.1
7

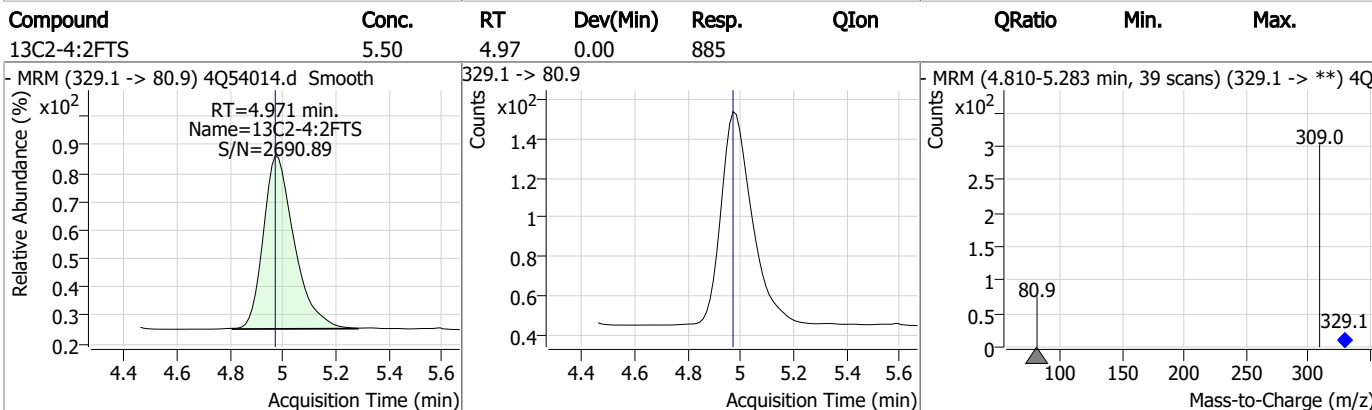
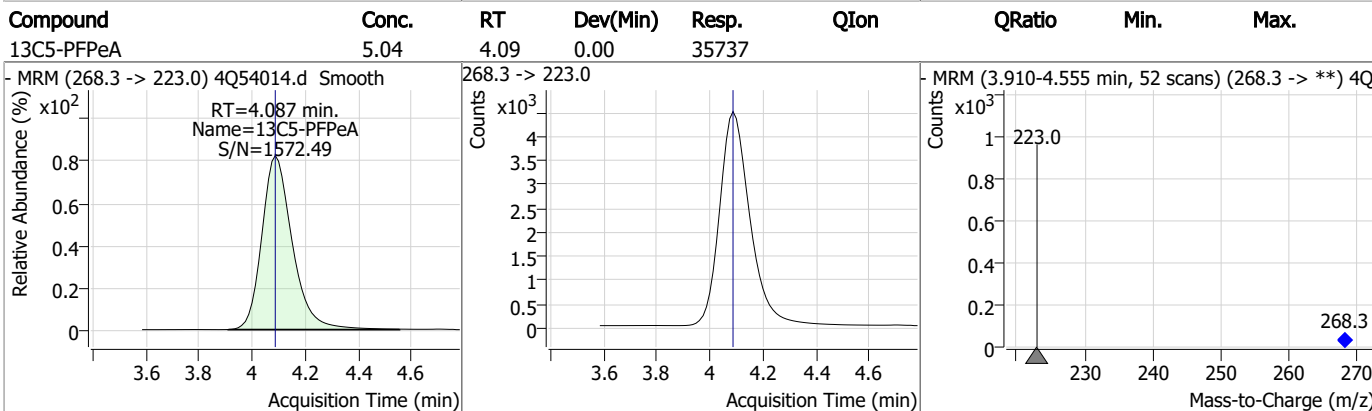
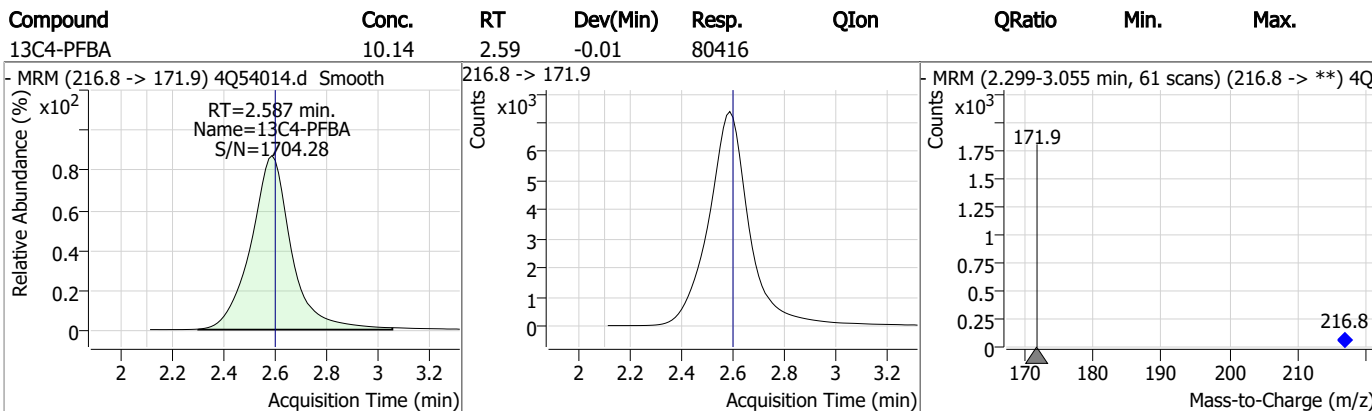
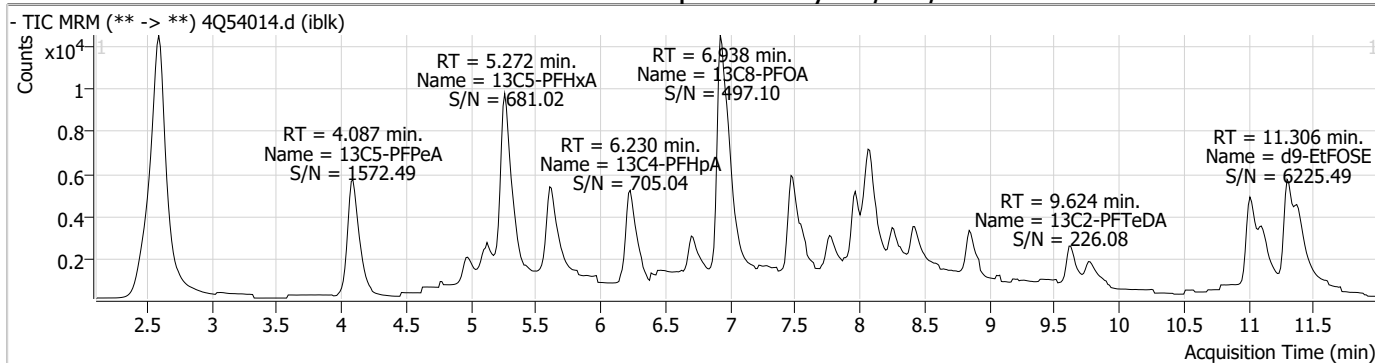
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.2.1

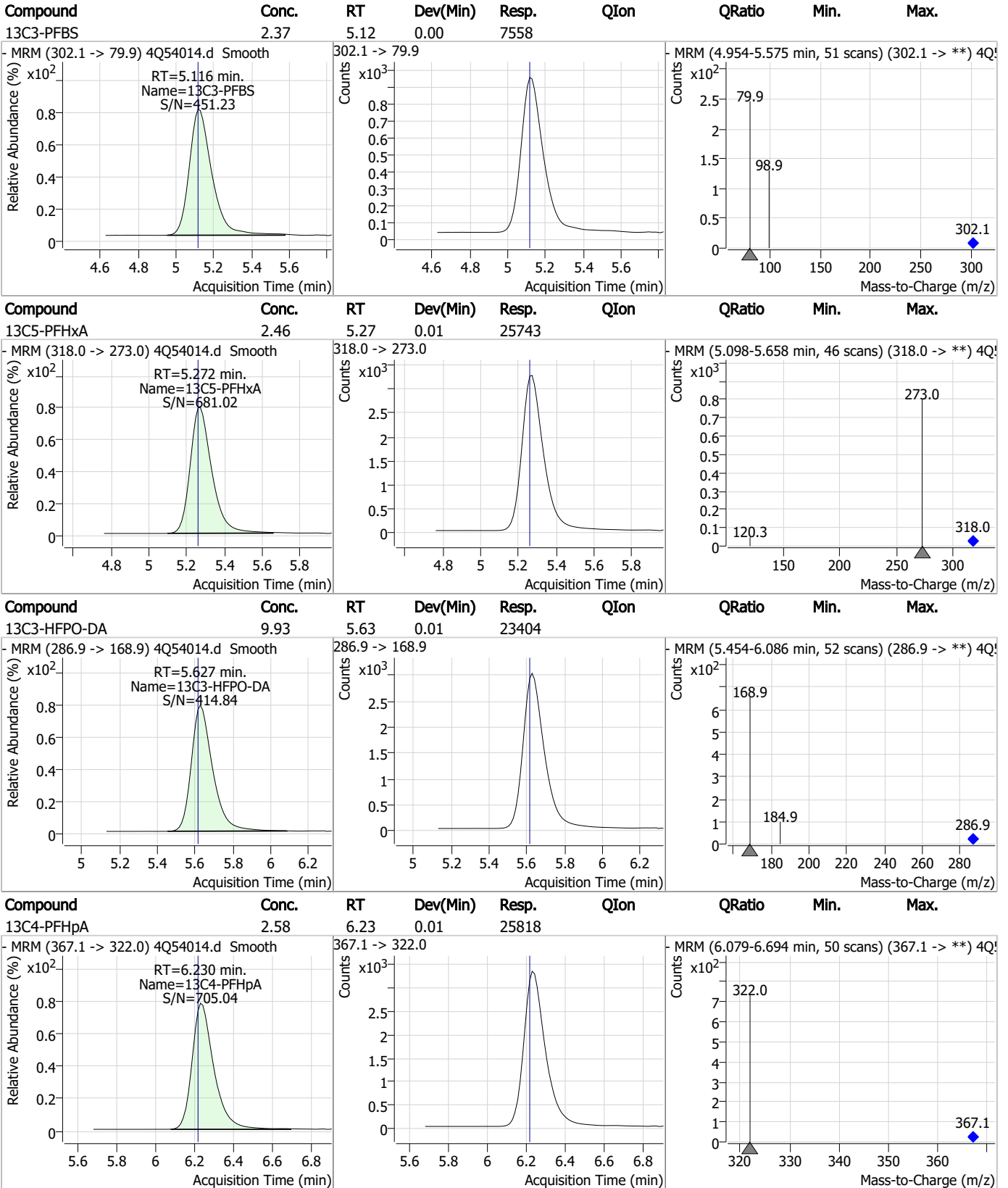
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Perfluorinated Compounds by LC/MS/MS



7.2.1
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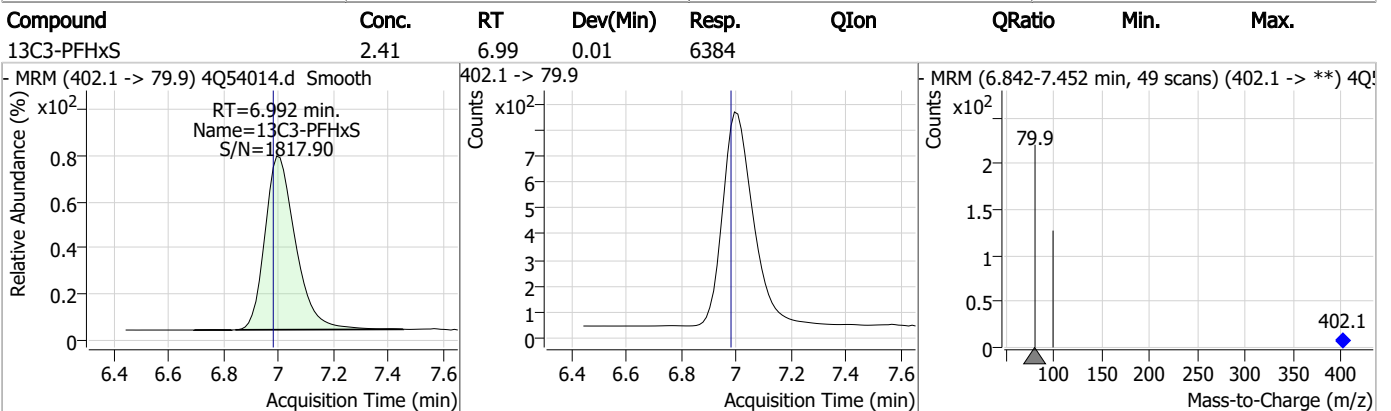
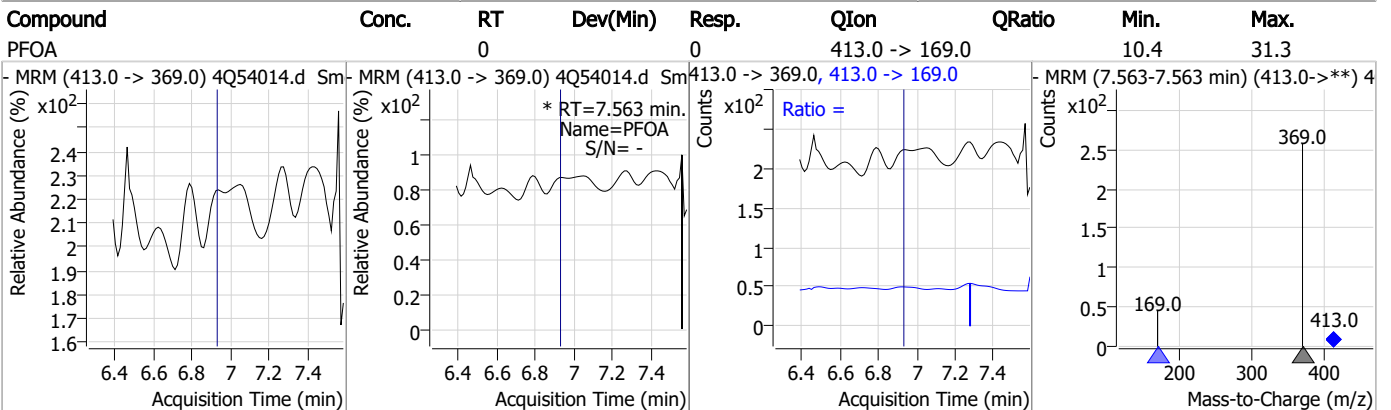
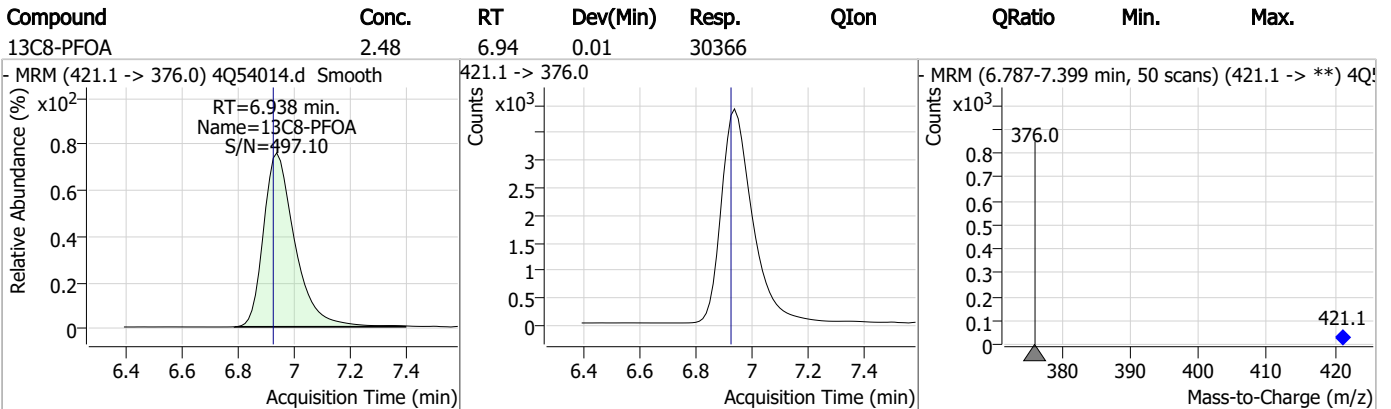
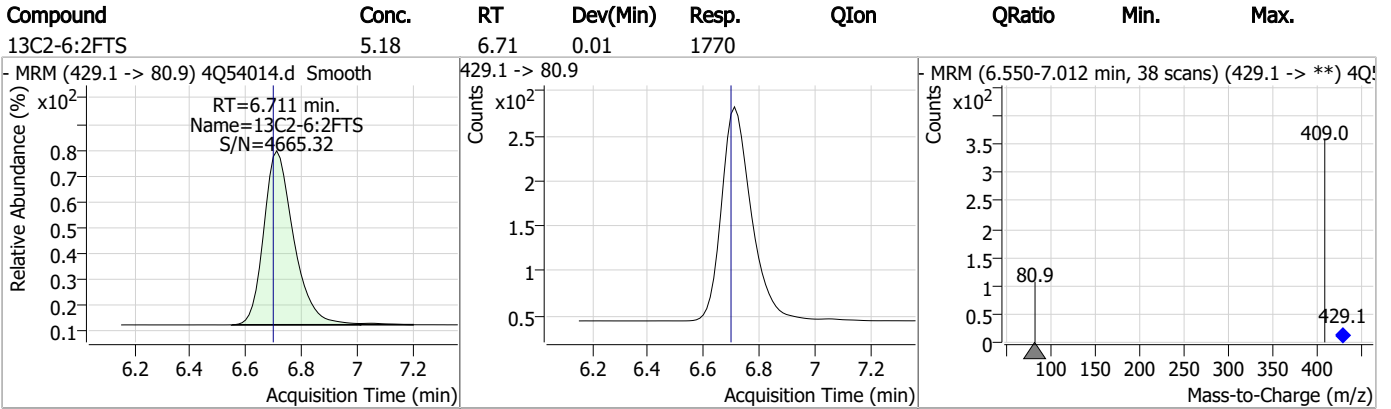
Perfluorinated Compounds by LC/MS/MS



7.2.1

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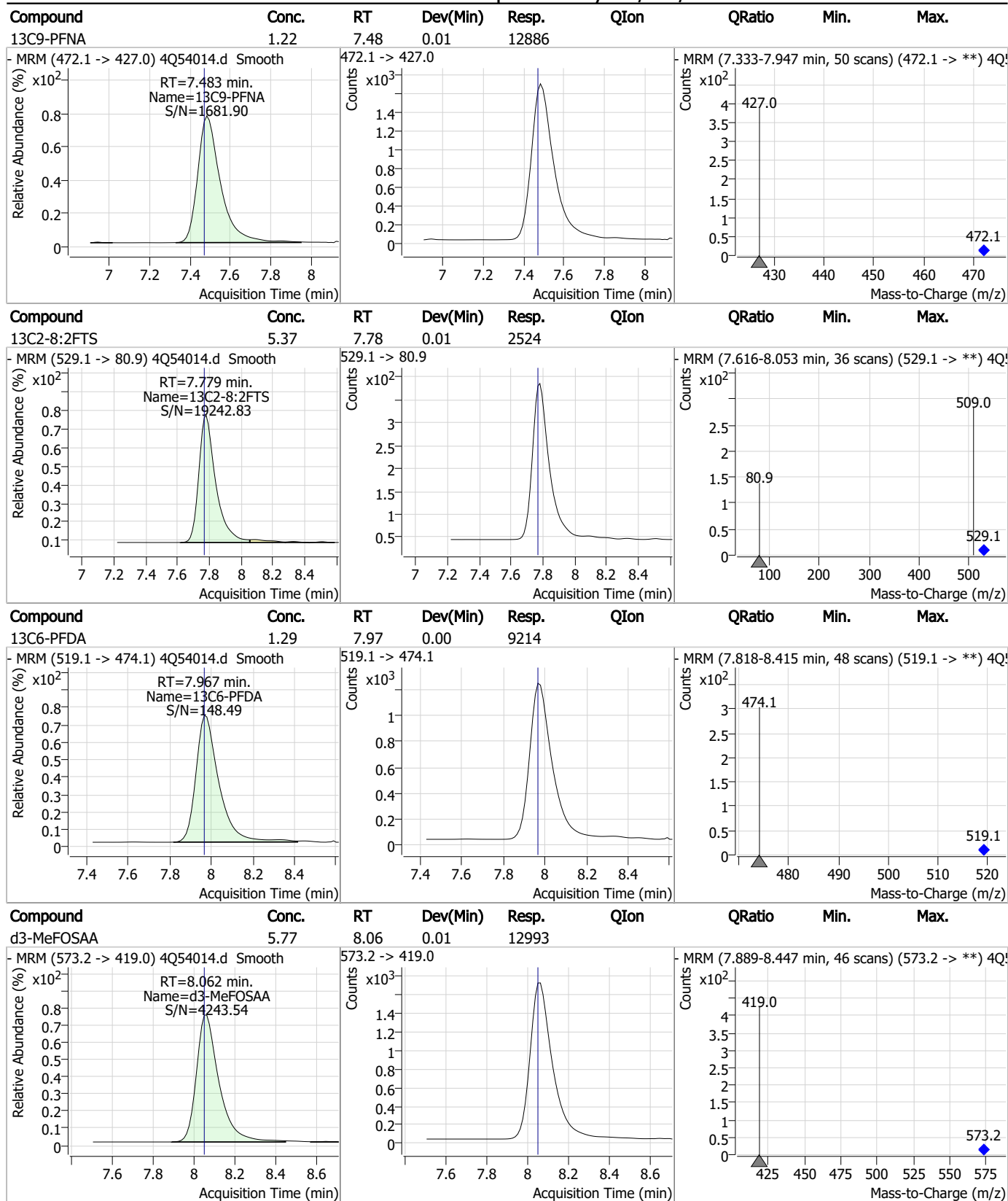
Perfluorinated Compounds by LC/MS/MS



7.2.1

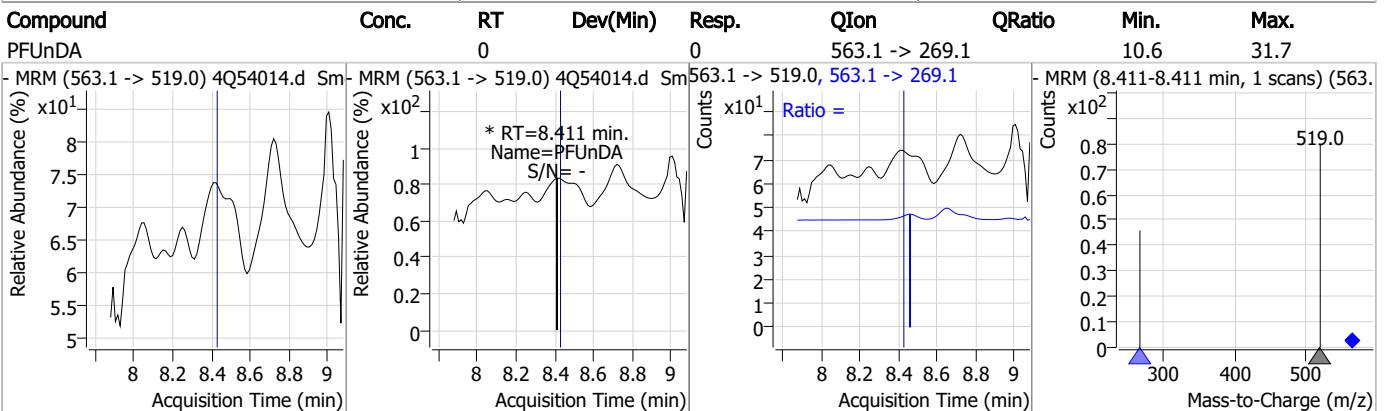
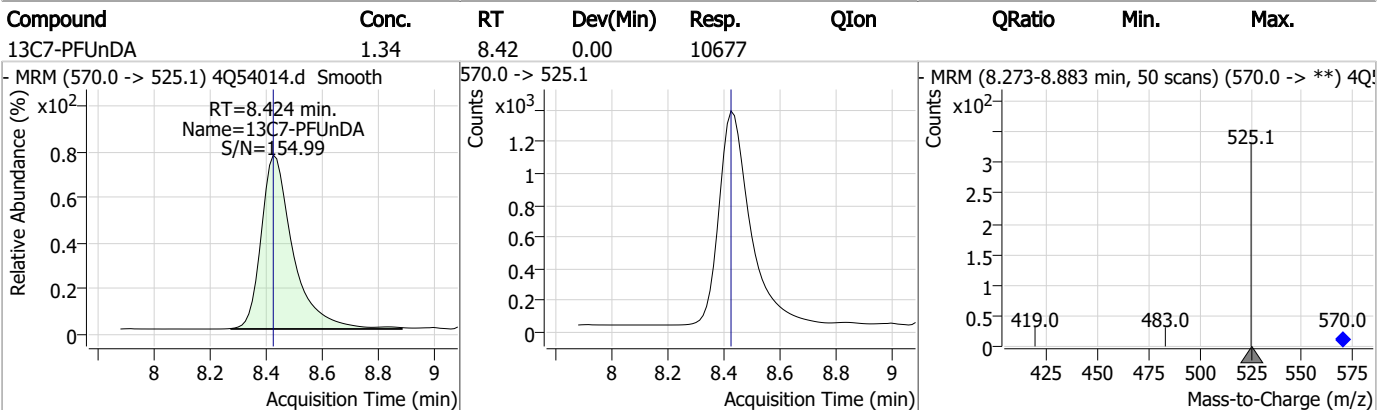
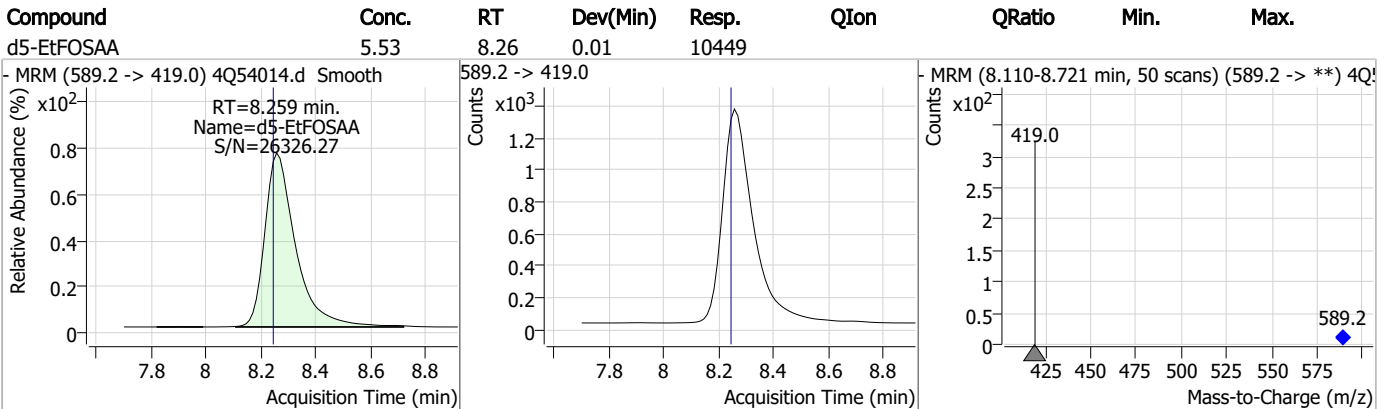
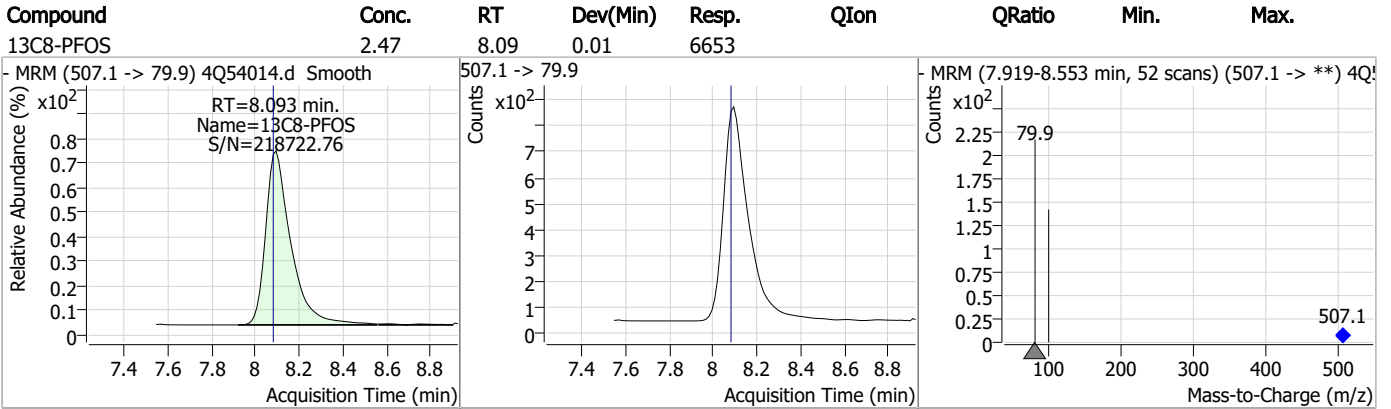
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Perfluorinated Compounds by LC/MS/MS

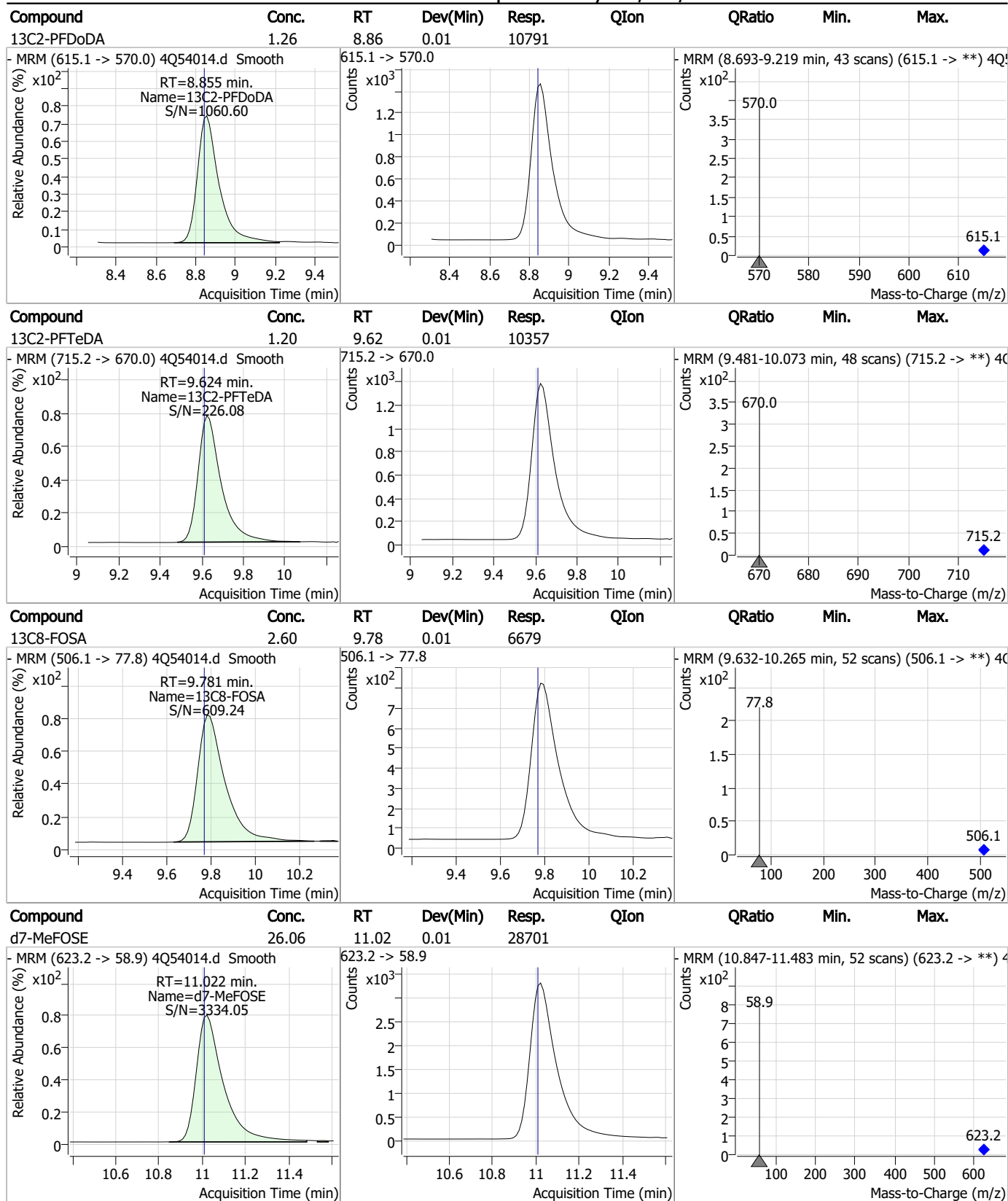


7.2.1
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Perfluorinated Compounds by LC/MS/MS

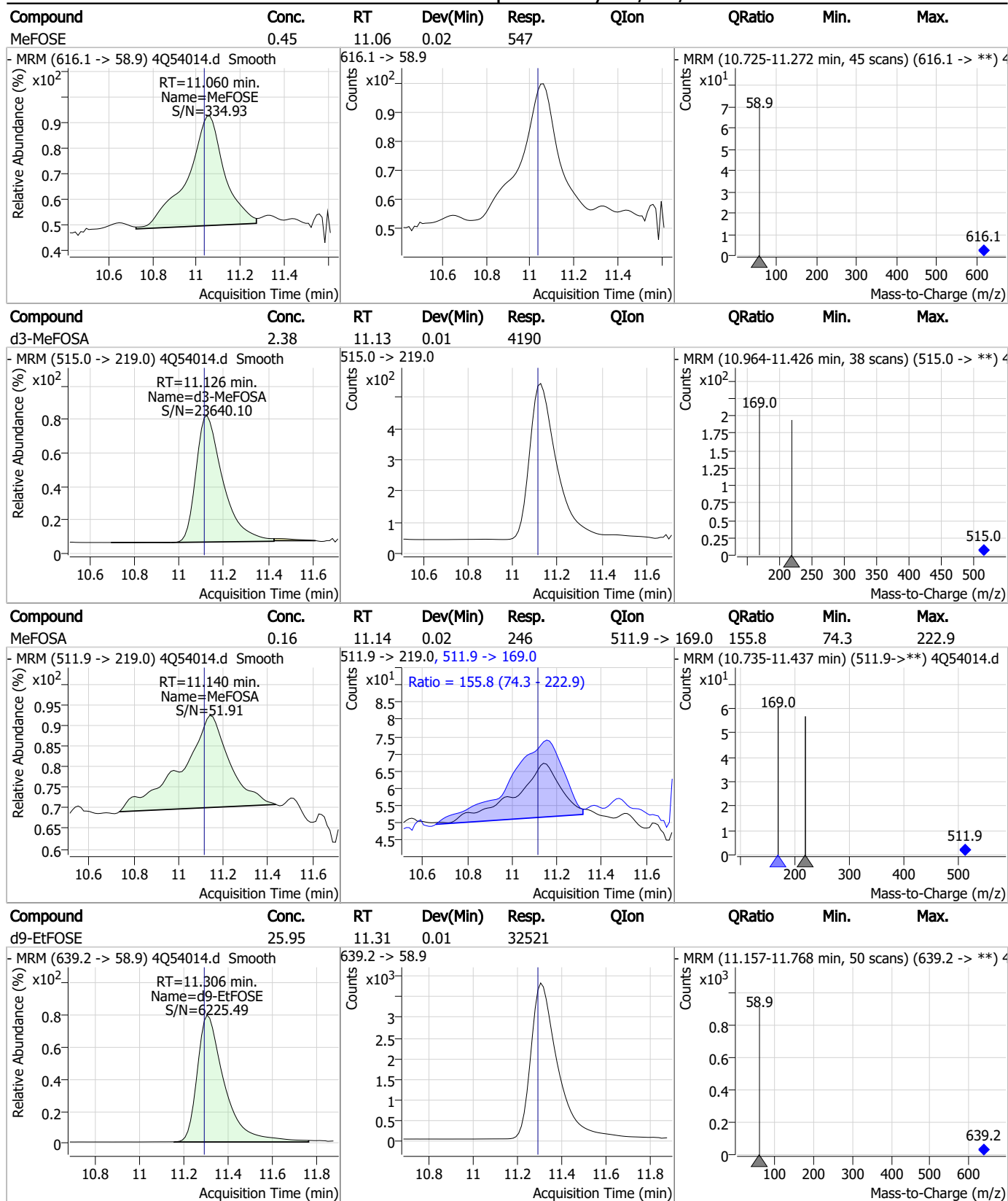


Perfluorinated Compounds by LC/MS/MS



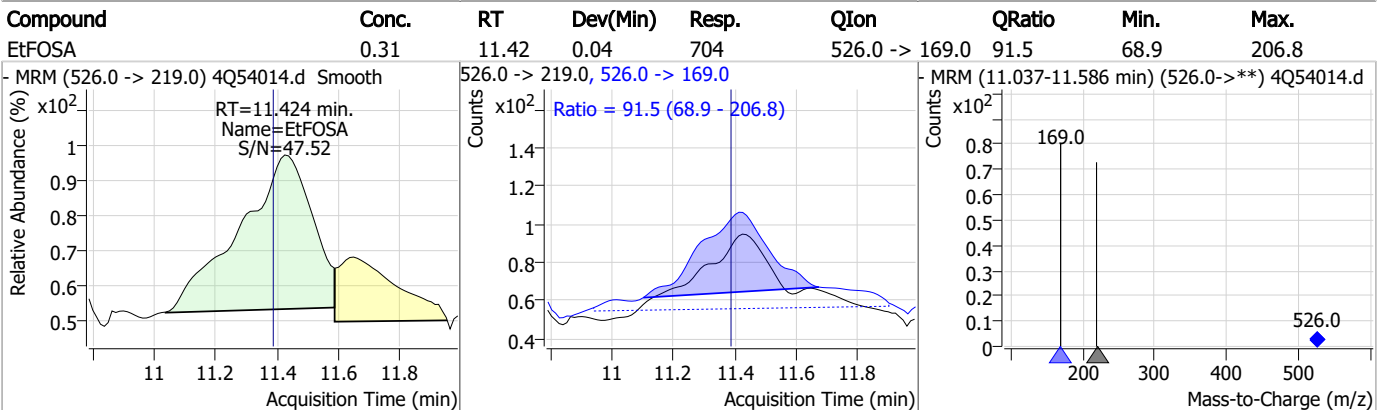
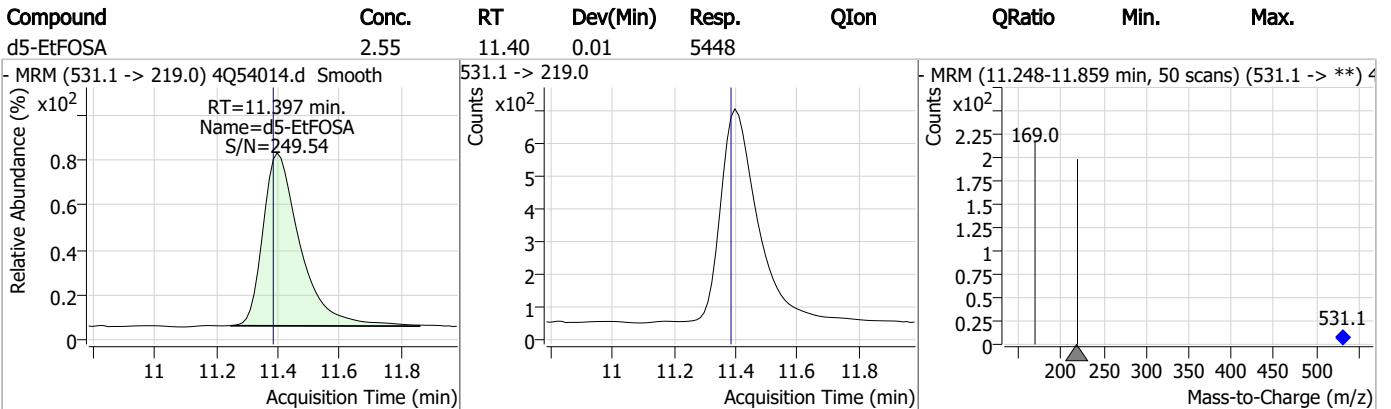
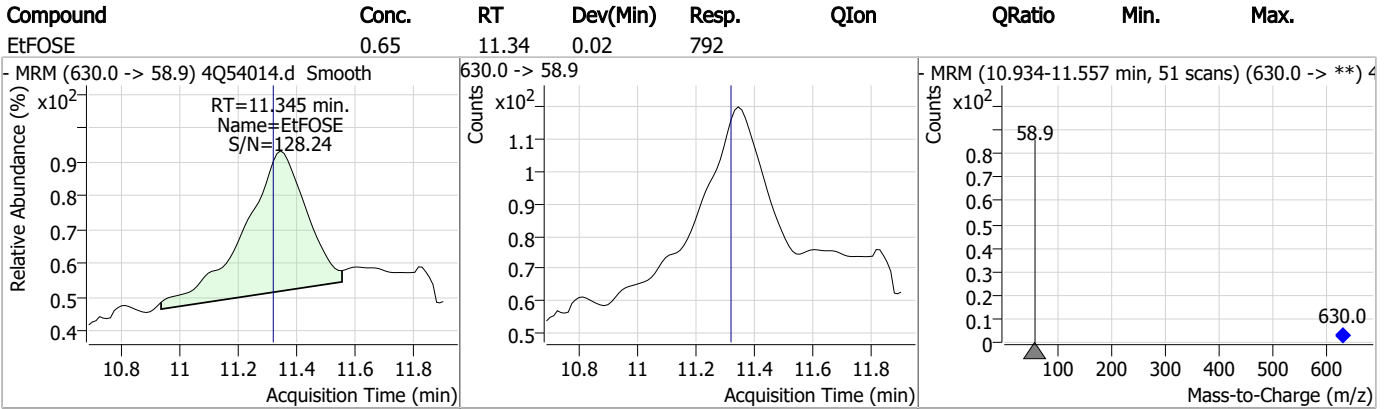
7.2.1
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Perfluorinated Compounds by LC/MS/MS



7.2.1
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Perfluorinated Compounds by LC/MS/MS



7.2.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54048.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 10:13:08 PM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.587	216.8 -> 171.9	81519	10.00 µg/L	-0.013
M5-PFPeA	4.087	268.3 -> 223.0	35572	5.00 µg/L	0.000
M5-PFHxA	5.272	318.0 -> 273.0	26842	2.50 µg/L	0.012
M4-PFHpA	6.230	367.1 -> 322.0	25755	2.50 µg/L	0.012
M8-PFOA	6.938	421.1 -> 376.0	29359	2.50 µg/L	0.012
M9-PFNA	7.483	472.1 -> 427.0	13000	1.25 µg/L	0.012
M6-PFDA	7.979	519.1 -> 474.1	9295	1.25 µg/L	0.012
M7-PFUnDA	8.436	570.0 -> 525.1	10262	1.25 µg/L	0.012
M2-PFDoDA	8.867	615.1 -> 570.0	10467	1.25 µg/L	0.025
M2-PFTeDA	9.637	715.2 -> 670.0	10392	1.25 µg/L	0.025
M8-FOSA	9.794	506.1 -> 77.8	6526	2.50 µg/L	0.025
M3-PFBS	5.128	302.1 -> 79.9	7860	2.50 µg/L	0.012
M3-PFHxS	6.992	402.1 -> 79.9	6400	2.50 µg/L	0.012
M8-PFOS	8.105	507.1 -> 79.9	7081	2.50 µg/L	0.025
M2-4:2FTS	4.971	329.1 -> 80.9	1028	5.00 µg/L	0.000
M2-6:2FTS	6.711	429.1 -> 80.9	1907	5.00 µg/L	0.012
M2-8:2FTS	7.779	529.1 -> 80.9	2754	5.00 µg/L	0.012
M3-MeFOSAA	8.062	573.2 -> 419.0	12839	5.00 µg/L	0.012
M3-HFPO-DA	5.627	286.9 -> 168.9	22826	10.00 µg/L	0.012
M5-EtFOSAA	8.271	589.2 -> 419.0	11027	5.00 µg/L	0.025
M7-MeFOSE	11.022	623.2 -> 58.9	28161	25.00 µg/L	0.012
M9-EtFOSE	11.306	639.2 -> 58.9	32405	25.00 µg/L	0.012
M5-EtFOSA	11.397	531.1 -> 219.0	5635	2.50 µg/L	0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4454	2.50 µg/L	0.012
13C4-PFOS	8.093	502.8 -> 79.9	5943	2.50 µg/L	0.012
13C3-PFBA	2.591	216.0 -> 172.0	39028	5.00 µg/L	0.000
18O2-PFHxS	7.004	403.0 -> 83.9	4075	2.50 µg/L	0.025
13C4-PFOA	6.939	417.1 -> 372.0	32090	2.50 µg/L	0.012
13C2-PFDA	7.980	515.1 -> 470.1	9624	1.25 µg/L	0.012
13C5-PFNA	7.484	468.0 -> 423.0	12498	1.25 µg/L	0.012
13C2-PFHxA	5.273	315.1 -> 270.0	28529	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	4.971	329.1 -> 80.9	1028	6.61 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 132.3%		
13C2-6:2FTS	6.711	429.1 -> 80.9	1907	5.78 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.6%		
13C2-8:2FTS	7.779	529.1 -> 80.9	2754	6.06 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.2%		
13C2-PFDoDA	8.867	615.1 -> 570.0	10467	1.22 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C2-PFTeDA	9.637	715.2 -> 670.0	10392	1.20 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.1%		
13C3-PFBS	5.128	302.1 -> 79.9	7860	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C3-PFHxS	6.992	402.1 -> 79.9	6400	2.50 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C4-PFBA	2.587	216.8 -> 171.9	81519	10.12 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C4-PFHpA	6.230	367.1 -> 322.0	25755	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C5-PFHxA	5.272	318.0 -> 273.0	26842	2.54 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C5-PFPeA	4.087	268.3 -> 223.0	35572	4.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C6-PFDA	7.979	519.1 -> 474.1	9295	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.9%	
13C7-PFUnDA	8.436	570.0 -> 525.1	10262	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C8-FOSA	9.794	506.1 -> 77.8	6526	2.35 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.0%	
13C8-PFOA	6.938	421.1 -> 376.0	29359	2.51 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C8-PFOS	8.105	507.1 -> 79.9	7081	2.43 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.2%	
13C9-PFNA	7.483	472.1 -> 427.0	13000	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.7%	
d3-MeFOSAA	8.062	573.2 -> 419.0	12839	5.27 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.5%	
13C3-HFPO-DA	5.627	286.9 -> 168.9	22826	9.59 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 95.9%	
d3-MeFOSA	11.126	515.0 -> 219.0	4454	2.34 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.4%	
d5-EtFOSAA	8.271	589.2 -> 419.0	11027	5.40 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.0%	
d7-MeFOSE	11.022	623.2 -> 58.9	28161	23.65 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 94.6%	
d9-EtFOSE	11.306	639.2 -> 58.9	32405	23.92 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.7%	
d5-EtFOSA	11.397	531.1 -> 219.0	5635	2.44 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.5%	

7.2.2
7

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8				
PFHpA	-	363.1 -> 319.0	-	N.D.		
		363.1 -> 169.0				
PFHpS	-	449.0 -> 79.9	-	N.D.		
		449.0 -> 98.9				
PFHxA	-	313.0 -> 269.0	-	N.D.		
		313.0 -> 118.9				
PFHxS	-	398.7 -> 79.9	-	N.D.		
		398.7 -> 98.9				
PFNA	-	463.0 -> 419.0	-	N.D.		
		463.0 -> 219.0				
PFNS	-	548.8 -> 79.9	-	N.D.		
		548.8 -> 98.9				
PFOA	-	413.0 -> 369.0	-	N.D.		
		413.0 -> 169.0				
PFOS	-	498.9 -> 79.9	-	N.D.		
		498.9 -> 98.8				
PFPeA	-	263.0 -> 219.0	-	N.D.		
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed



7.2.2
7

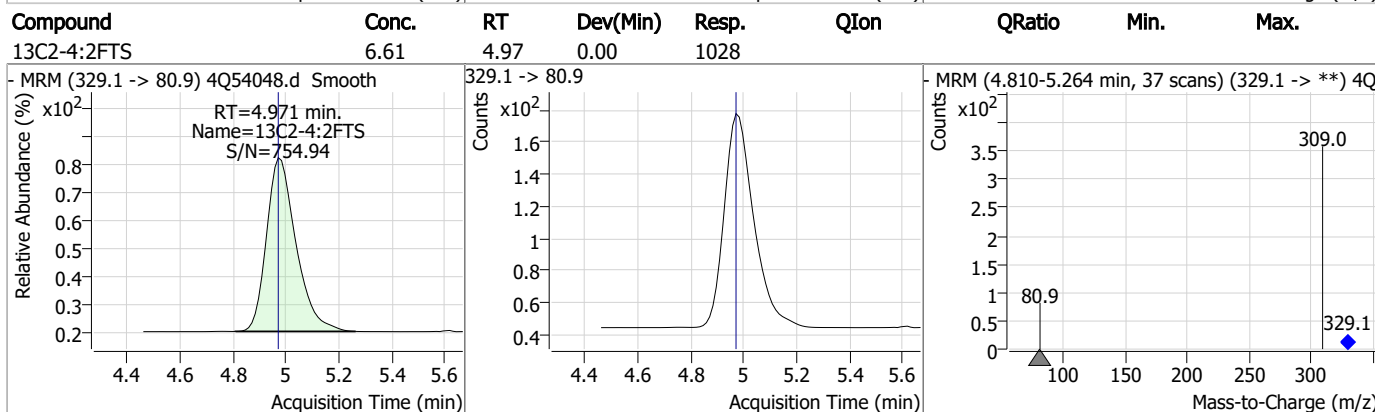
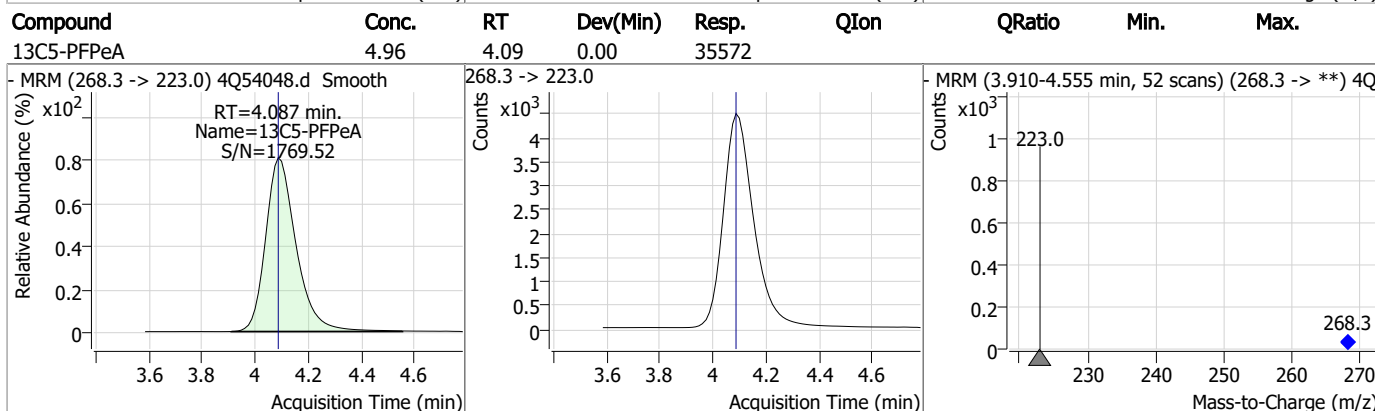
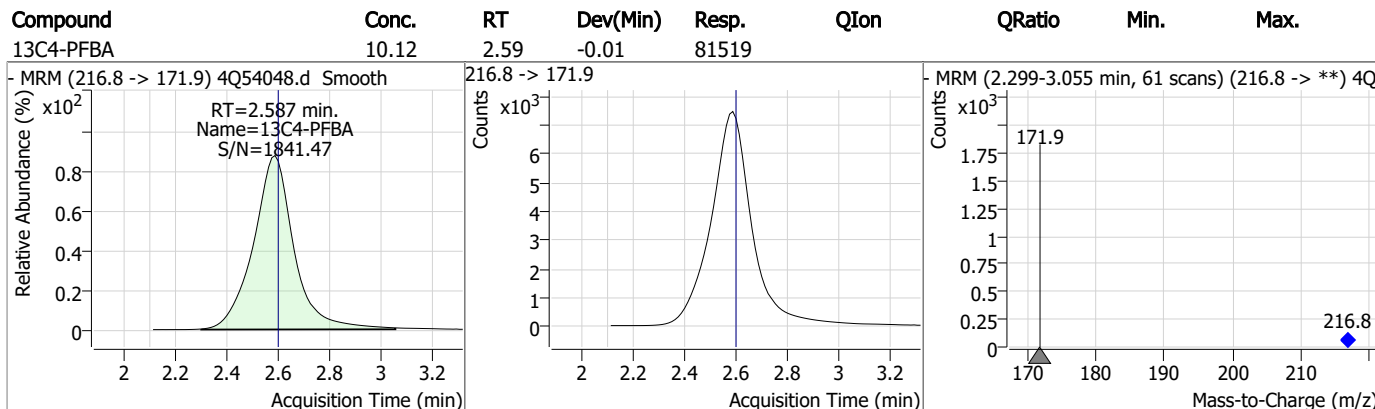
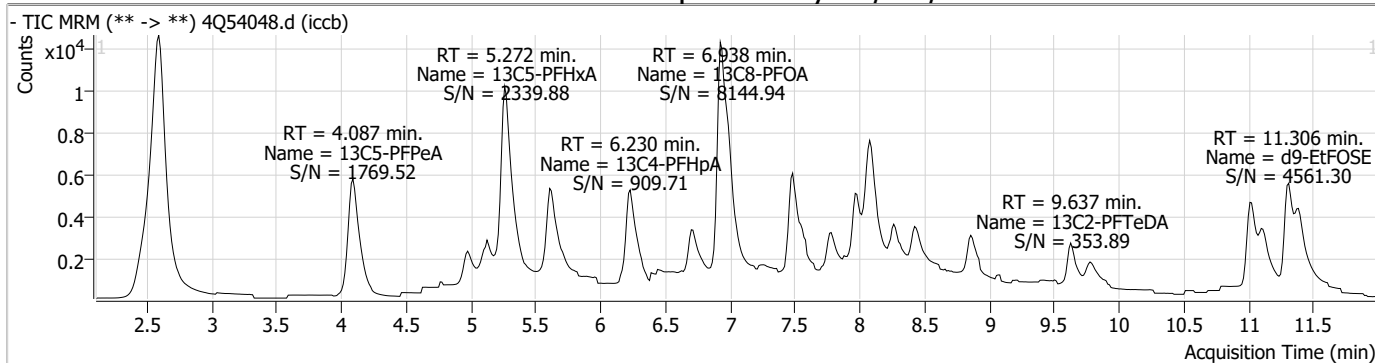
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.2.2

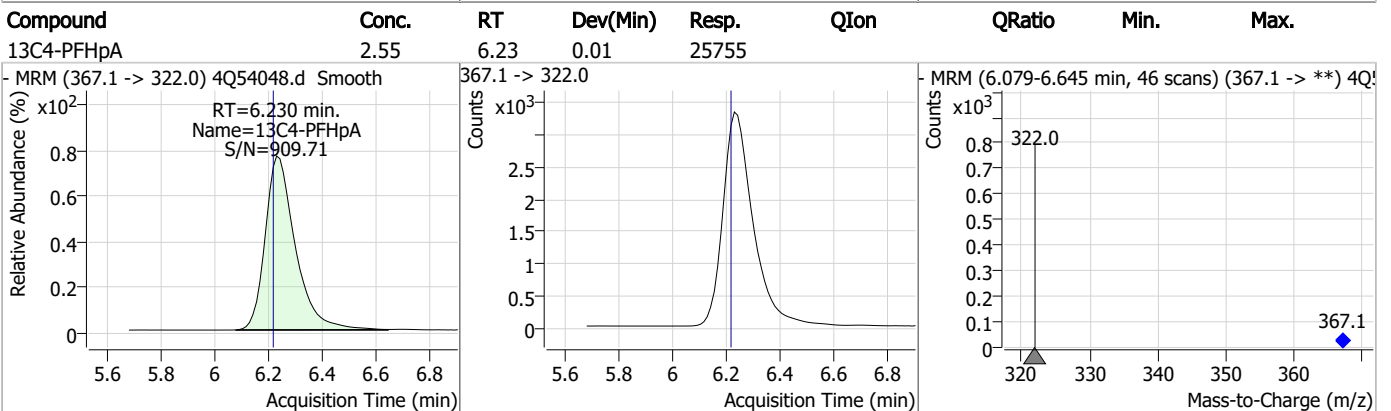
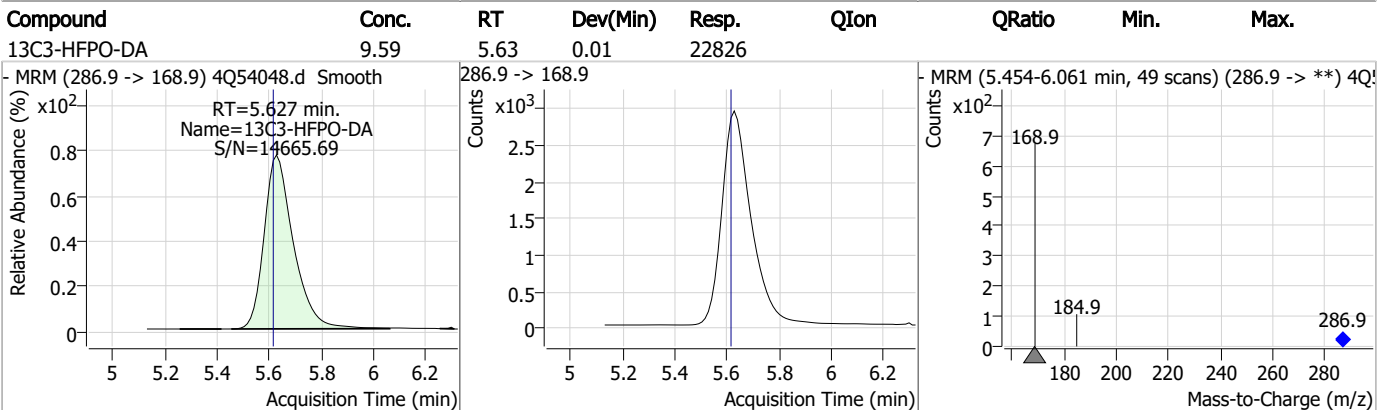
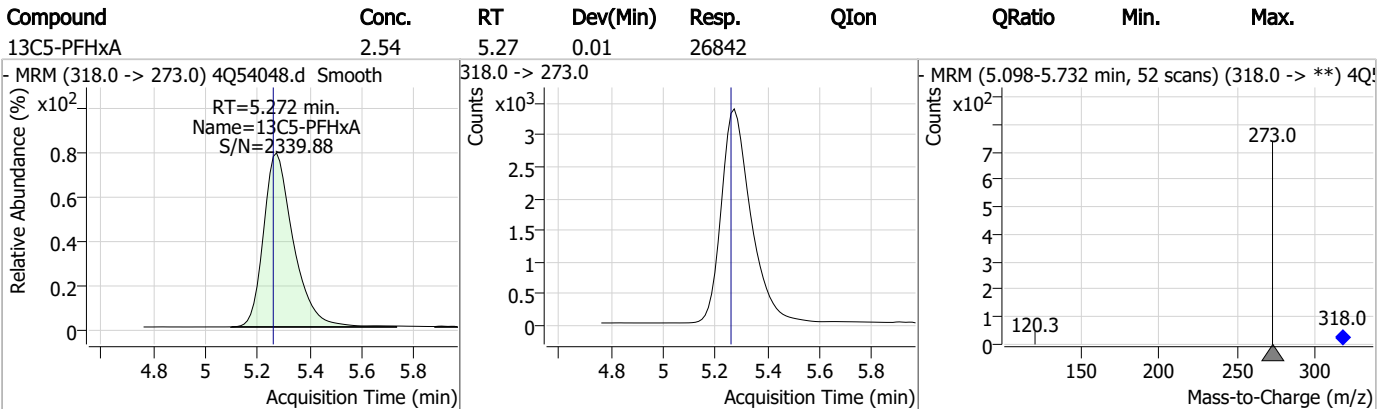
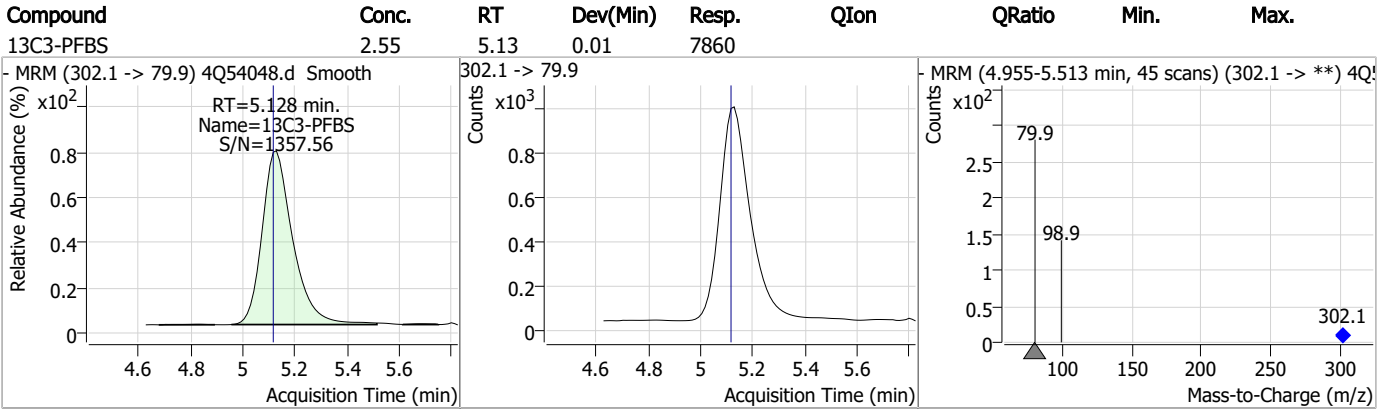
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Perfluorinated Compounds by LC/MS/MS

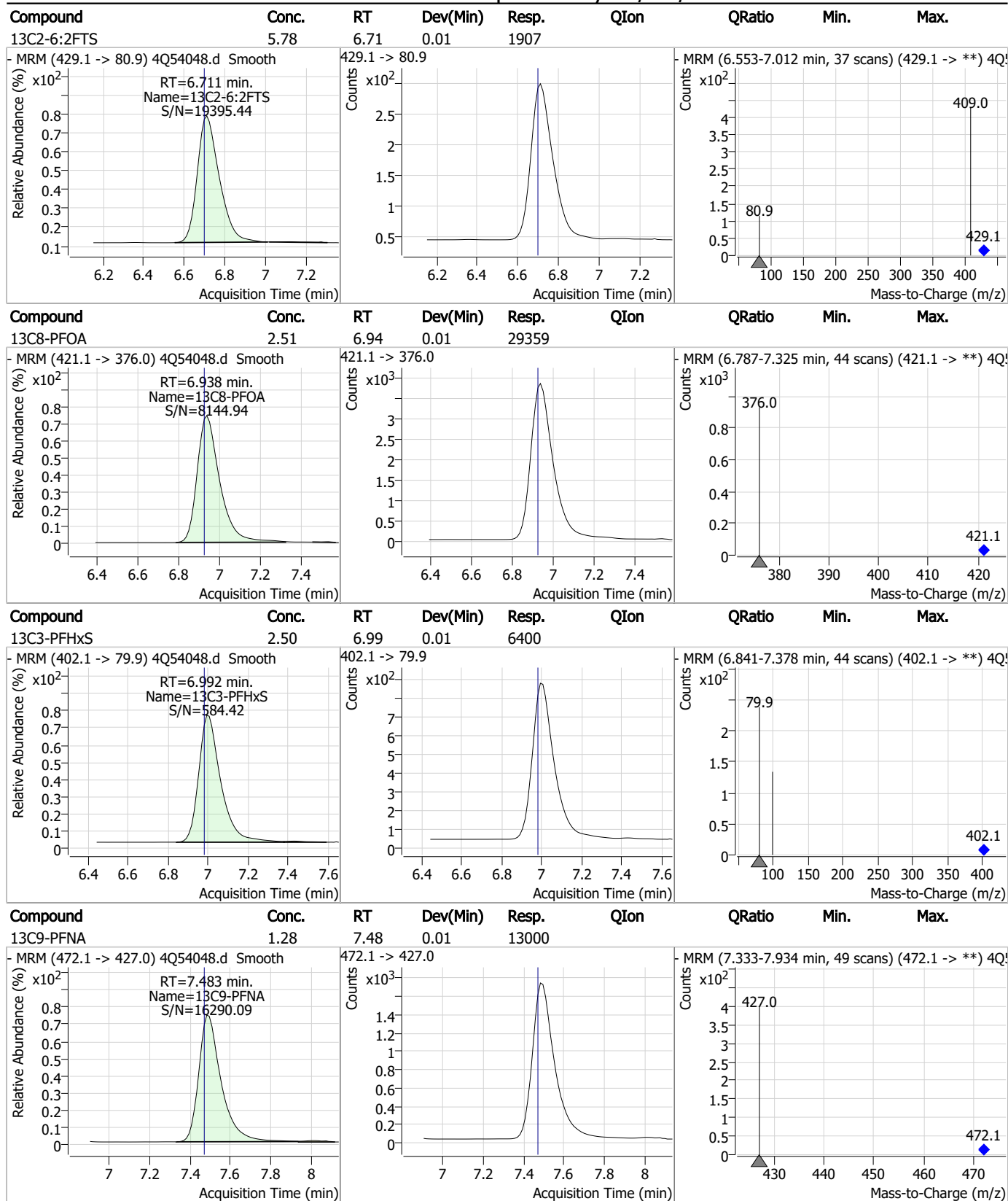


7.2.2
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Perfluorinated Compounds by LC/MS/MS

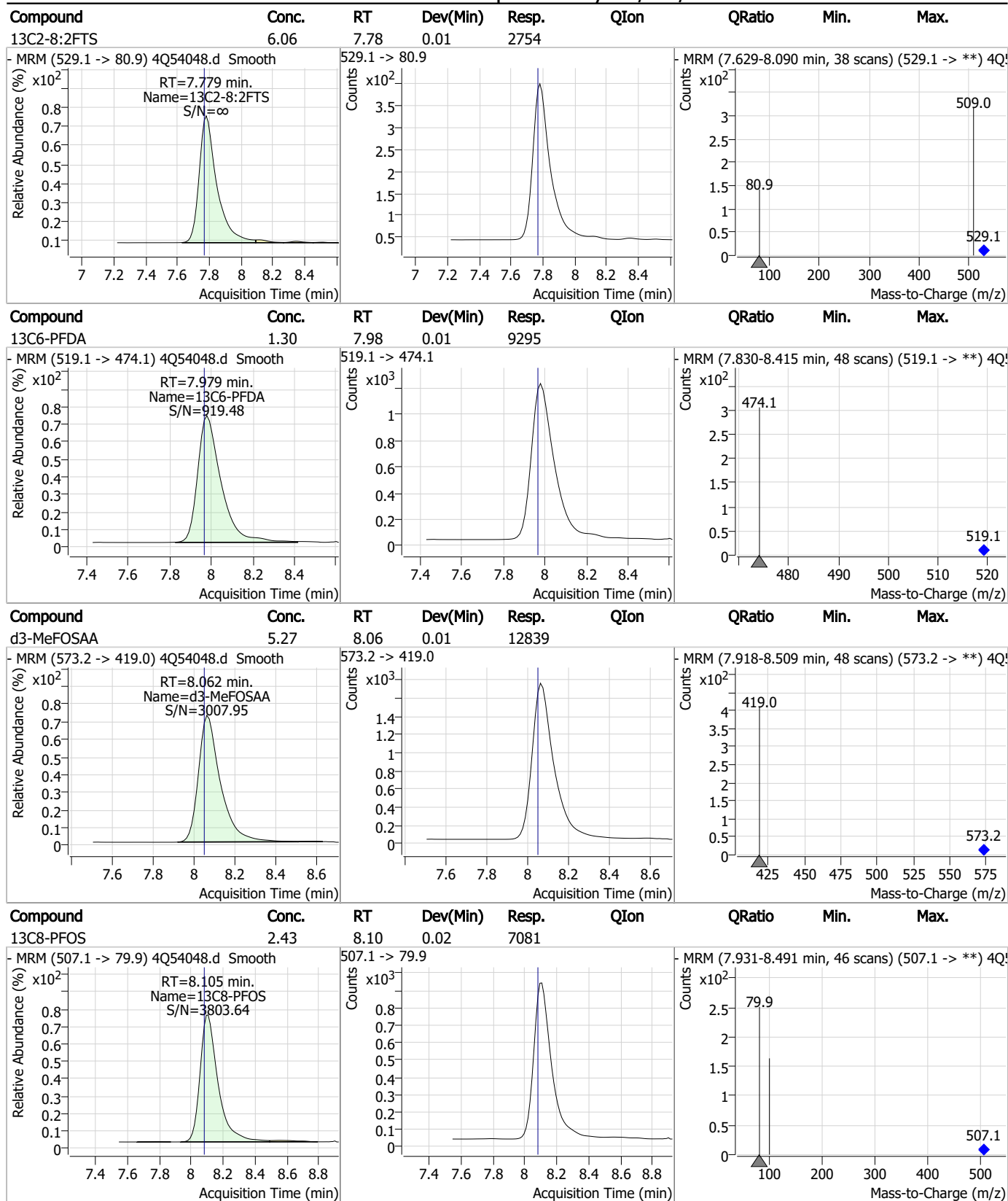


Perfluorinated Compounds by LC/MS/MS



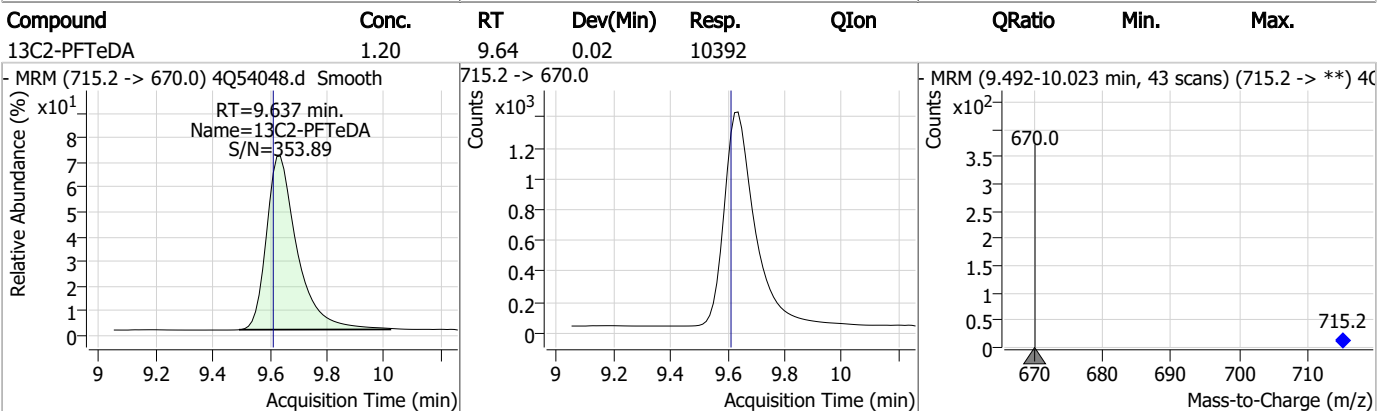
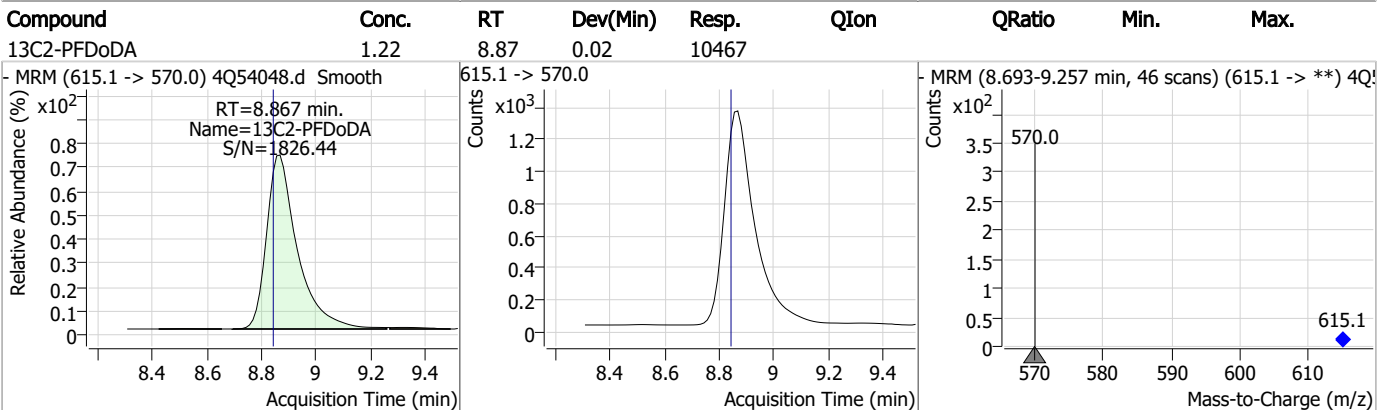
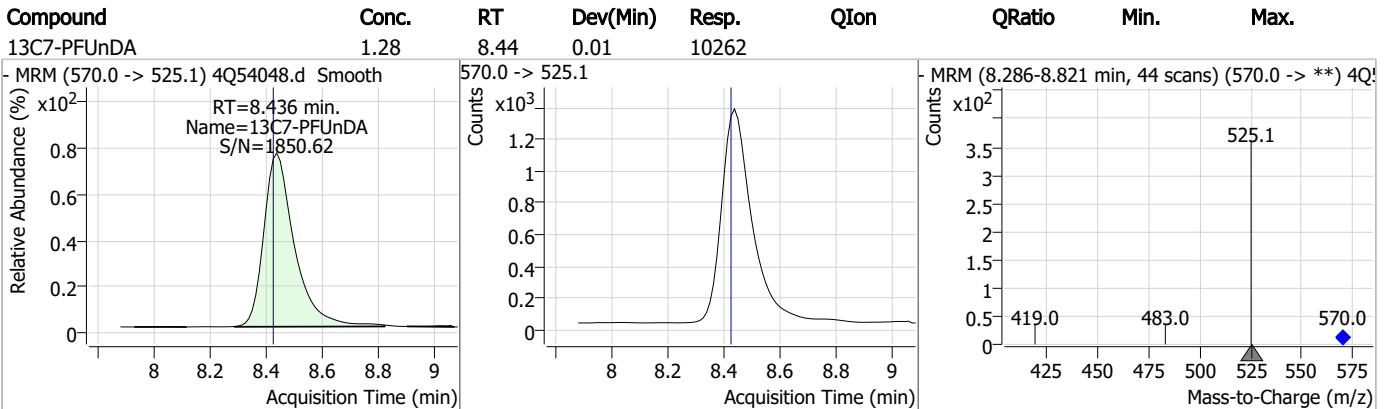
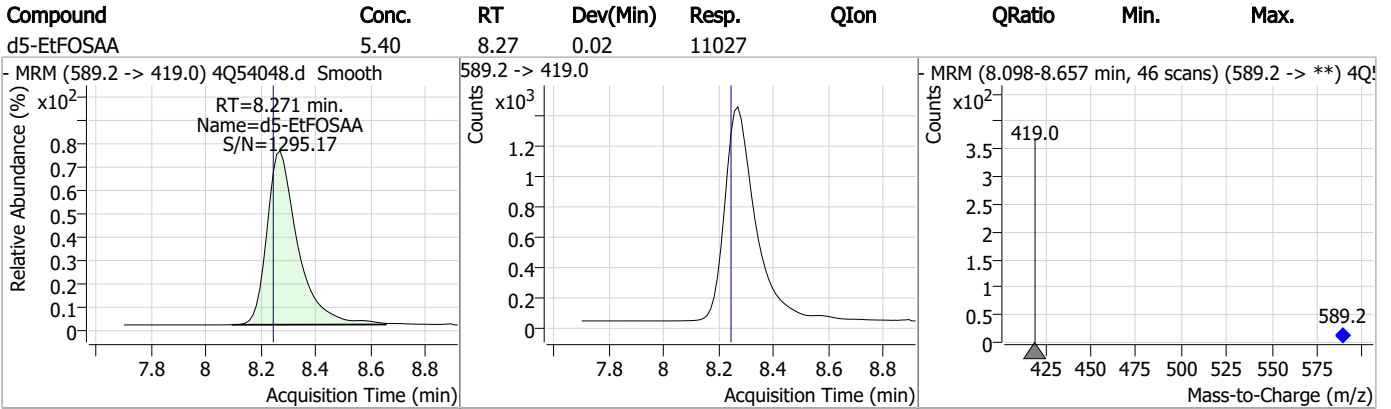
7.2.2
7

Perfluorinated Compounds by LC/MS/MS

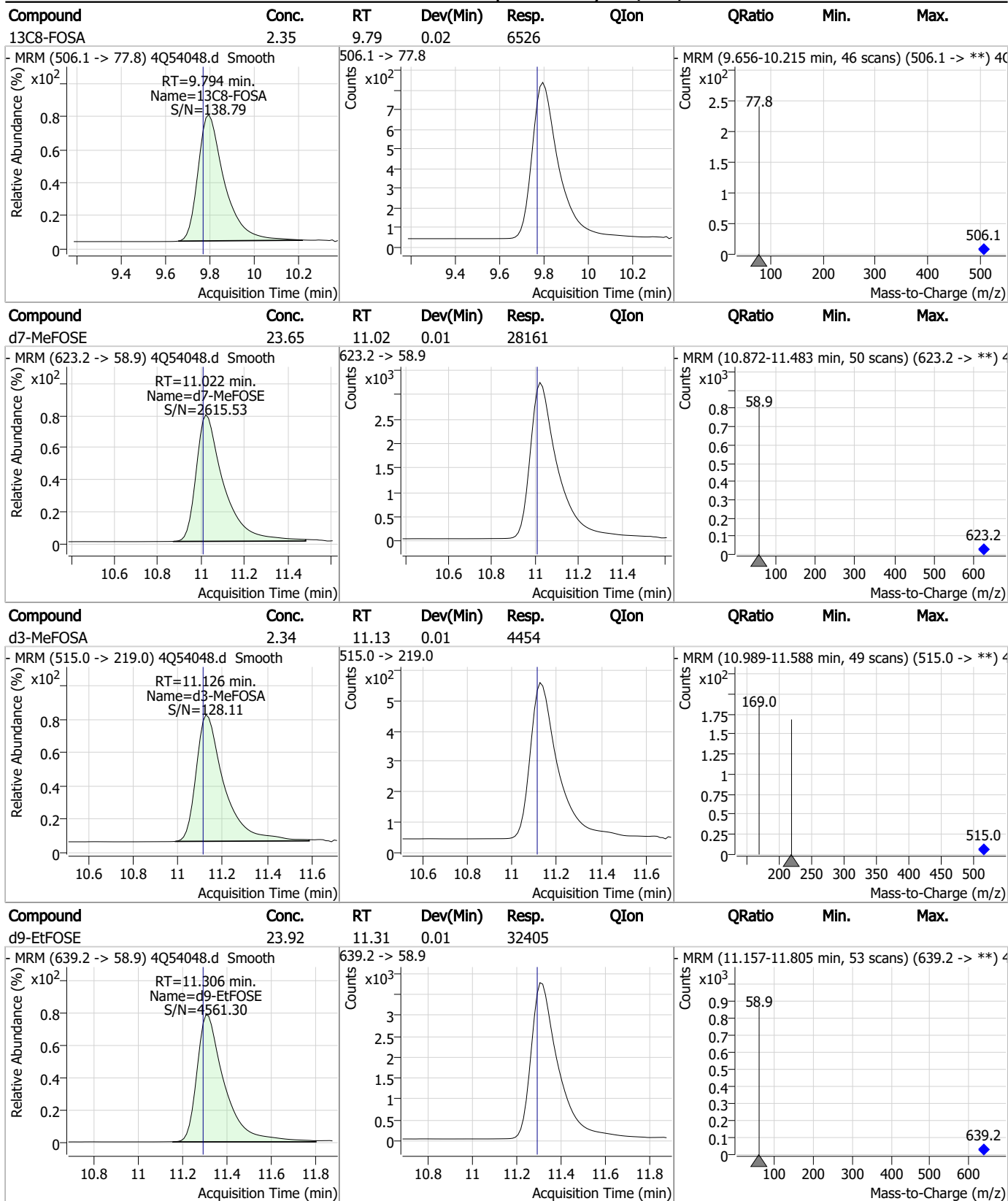


7.2.2
7

Perfluorinated Compounds by LC/MS/MS



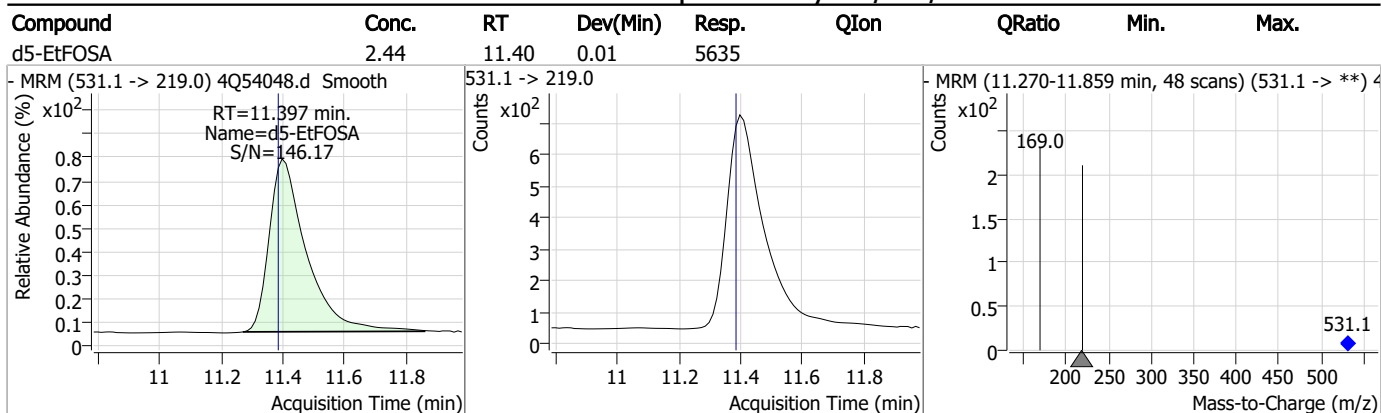
Perfluorinated Compounds by LC/MS/MS



7.2.2
7



Perfluorinated Compounds by LC/MS/MS



7.2.2

7

Perfluorinated Compounds by LC/MS/MS

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 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/15/2023 12:25:22 PM
 Sample Name : op58-mb
 Vial : P1-F5
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q786.batch.bin
 Sample Information : OP58,S4Q786,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	95802	10.00 µg/L	0.000
M5-PFPeA	4.137	268.3 -> 223.0	38040	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	28334	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	28222	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	33140	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	13375	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	9358	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	11055	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	10259	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	8987	1.25 µg/L	-0.012
M8-FOSA	9.806	506.1 -> 77.8	6590	2.50 µg/L	-0.012
M3-PFBS	5.165	302.1 -> 79.9	8053	2.50 µg/L	-0.038
M3-PFHxS	7.029	402.1 -> 79.9	7021	2.50 µg/L	-0.025
M8-PFOS	8.117	507.1 -> 79.9	7642	2.50 µg/L	-0.026
M2-4:2FTS	5.021	329.1 -> 80.9	1107	5.00 µg/L	-0.025
M2-6:2FTS	6.736	429.1 -> 80.9	2418	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	3160	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	13646	5.00 µg/L	-0.012
M3-HFPO-DA	5.664	286.9 -> 168.9	26015	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	10929	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	23695	25.00 µg/L	-0.012
M9-EtFOSE	11.306	639.2 -> 58.9	29484	25.00 µg/L	-0.012
M5-EtFOSA	11.398	531.1 -> 219.0	4381	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3524	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6788	2.50 µg/L	-0.026
13C3-PFBA	2.691	216.0 -> 172.0	44528	5.00 µg/L	-0.013
18O2-PFHxS	7.028	403.0 -> 83.9	4281	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	36161	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	10397	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	13845	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	31676	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.021	329.1 -> 80.9	1107	7.55 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 151.1%		
13C2-6:2FTS	6.736	429.1 -> 80.9	2418	7.83 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 156.7%		
13C2-8:2FTS	7.804	529.1 -> 80.9	3160	7.26 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 145.2%		
13C2-PFDoDA	8.880	615.1 -> 570.0	10259	1.09 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 87.5%		
13C2-PFTeDA	9.649	715.2 -> 670.0	8987	0.95 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 76.1%		
13C3-PFBS	5.165	302.1 -> 79.9	8053	2.51 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C3-PFHxS	7.029	402.1 -> 79.9	7021	2.65 µg/L	-0.025

7.2.3
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.8%	
13C4-PFBA	2.699	216.8 -> 171.9	95802	10.33 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C4-PFHpA	6.267	367.1 -> 322.0	28222	2.55 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C5-PFHxA	5.310	318.0 -> 273.0	28334	2.40 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C5-PFPeA	4.137	268.3 -> 223.0	38040	4.92 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C6-PFDA	8.004	519.1 -> 474.1	9358	1.22 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C7-PFUnDA	8.448	570.0 -> 525.1	11055	1.25 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C8-FOSA	9.806	506.1 -> 77.8	6590	2.03 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 81.2%	
13C8-PFOA	6.964	421.1 -> 376.0	33140	2.57 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C8-PFOS	8.117	507.1 -> 79.9	7642	2.36 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.3%	
13C9-PFNA	7.509	472.1 -> 427.0	13375	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.0%	
d3-MeFOSAA	8.086	573.2 -> 419.0	13646	5.30 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.0%	
13C3-HFPO-DA	5.664	286.9 -> 168.9	26015	9.65 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.5%	
d3-MeFOSA	11.126	515.0 -> 219.0	3524	1.56 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 62.2%	
d5-EtFOSAA	8.283	589.2 -> 419.0	10929	4.85 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.0%	
d7-MeFOSE	11.022	623.2 -> 58.9	23695	16.95 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 67.8%	
d9-EtFOSE	11.306	639.2 -> 58.9	29484	18.20 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 72.8%	
d5-EtFOSA	11.398	531.1 -> 219.0	4381	1.63 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 65.2%	

Target Compounds

Compound	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



7.2.3
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8				
PFHpA	-	363.1 -> 319.0	-	N.D.		
		363.1 -> 169.0				
PFHpS	-	449.0 -> 79.9	-	N.D.		
		449.0 -> 98.9				
PFHxA	-	313.0 -> 269.0	-	N.D.		
		313.0 -> 118.9				
PFHxS	-	398.7 -> 79.9	-	N.D.		
		398.7 -> 98.9				
PFNA	-	463.0 -> 419.0	-	N.D.		
		463.0 -> 219.0				
PFNS	-	548.8 -> 79.9	-	N.D.		
		548.8 -> 98.9				
PFOA	7.327	413.0 -> 369.0	0	µg/L	m	1
		413.0 -> 169.0	0			
PFOS	-	498.9 -> 79.9	-	N.D.		
		498.9 -> 98.8				
PFPeA	-	263.0 -> 219.0	-	N.D.		
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed

7.2.3
7

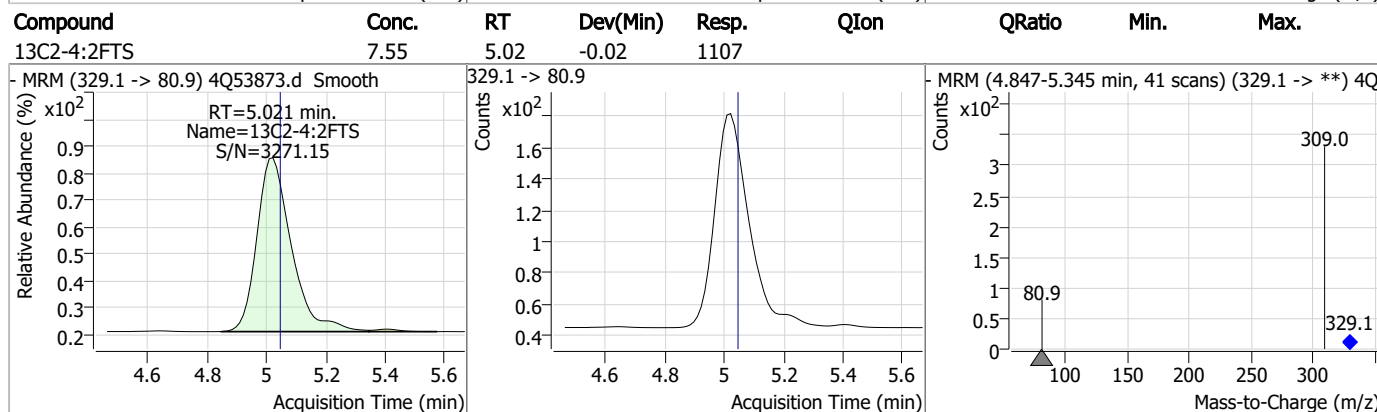
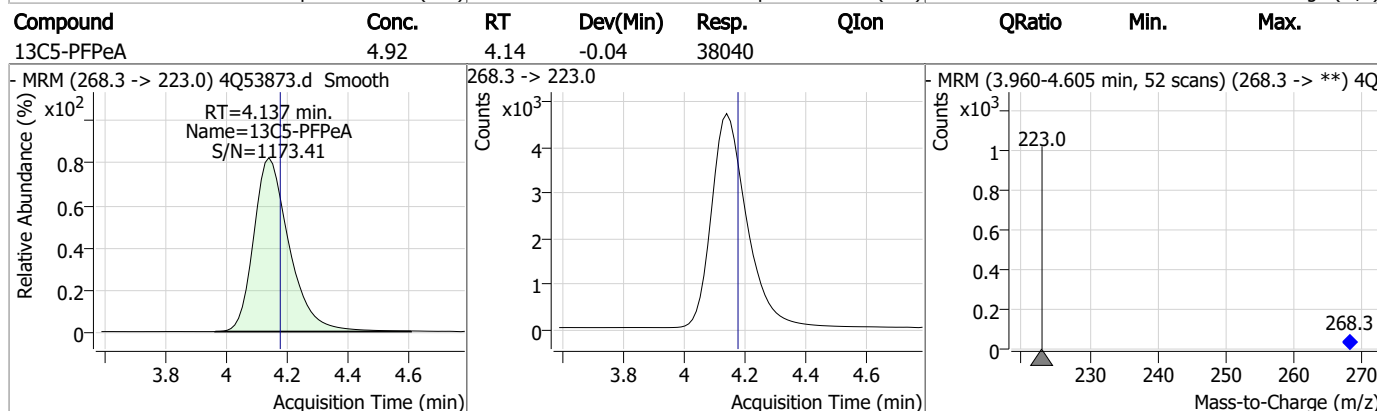
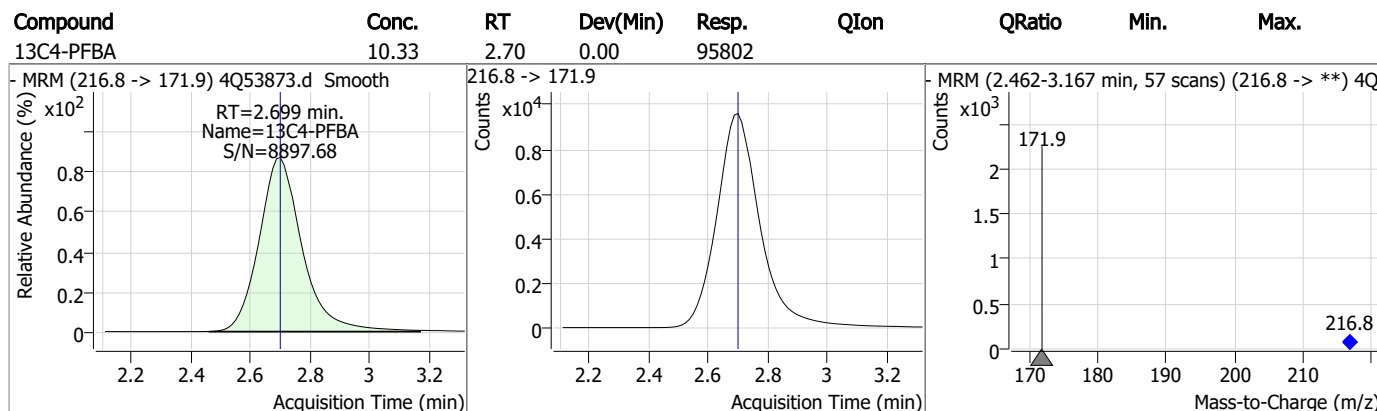
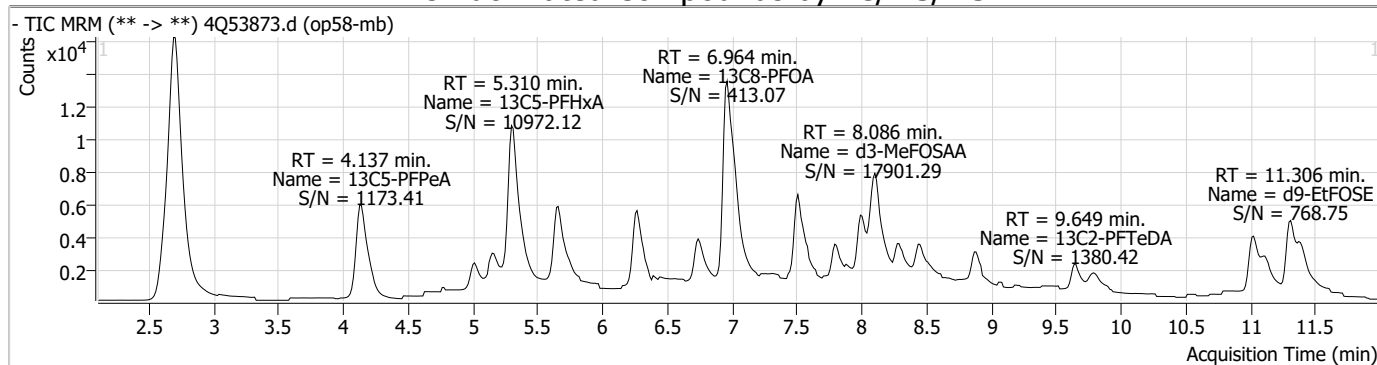
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.2.3

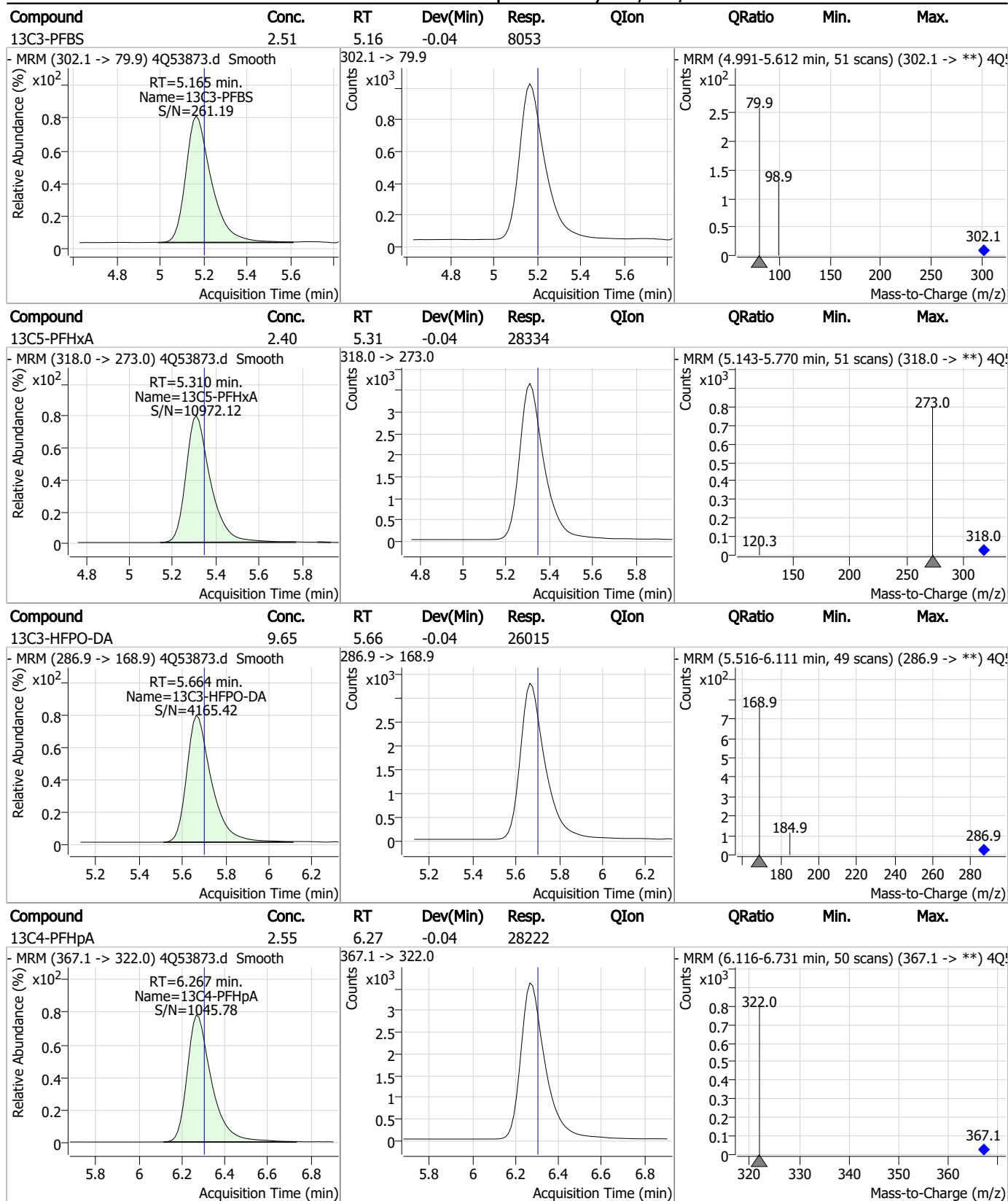
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Perfluorinated Compounds by LC/MS/MS



7.2.3
7

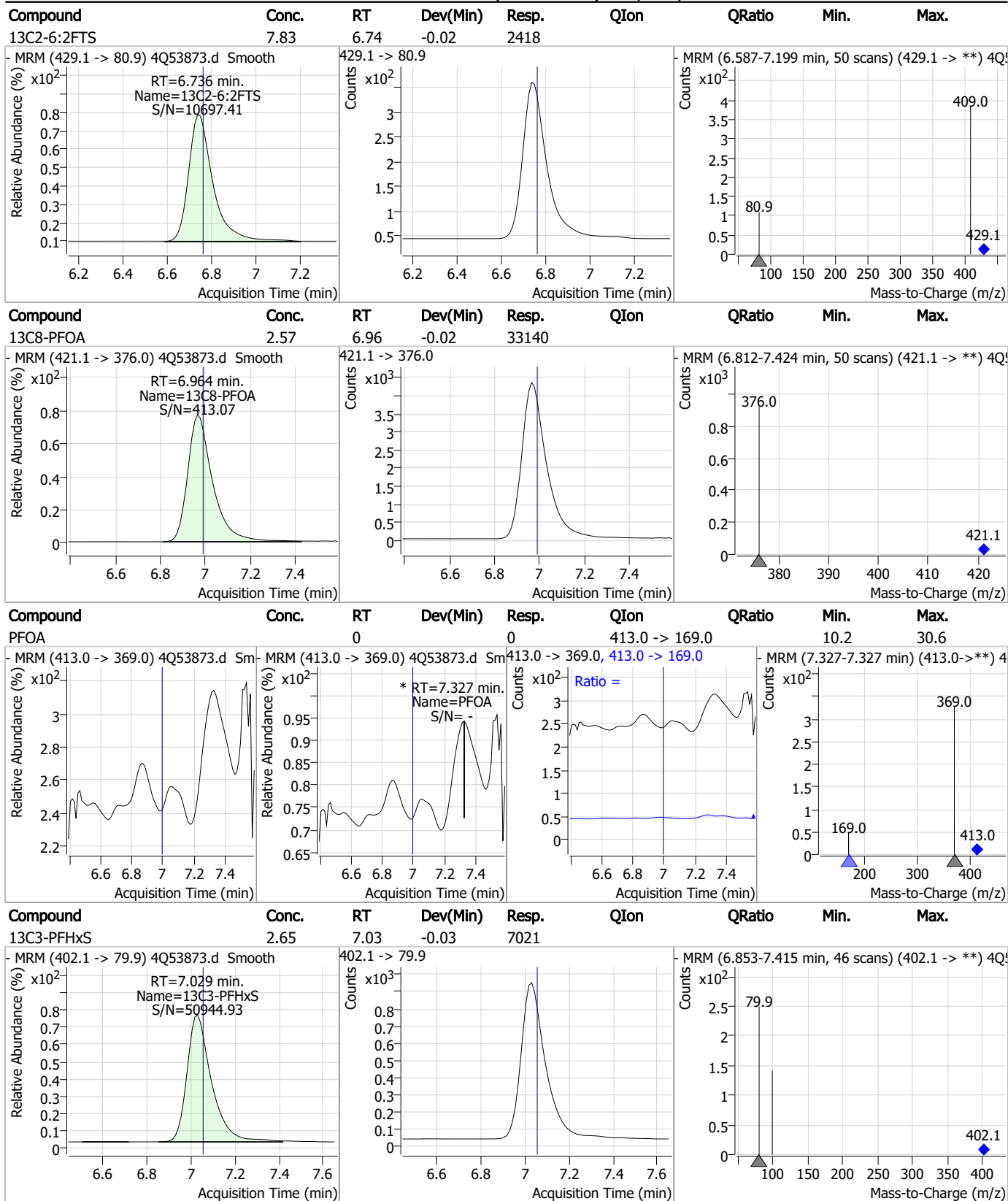
Perfluorinated Compounds by LC/MS/MS



7.2.3

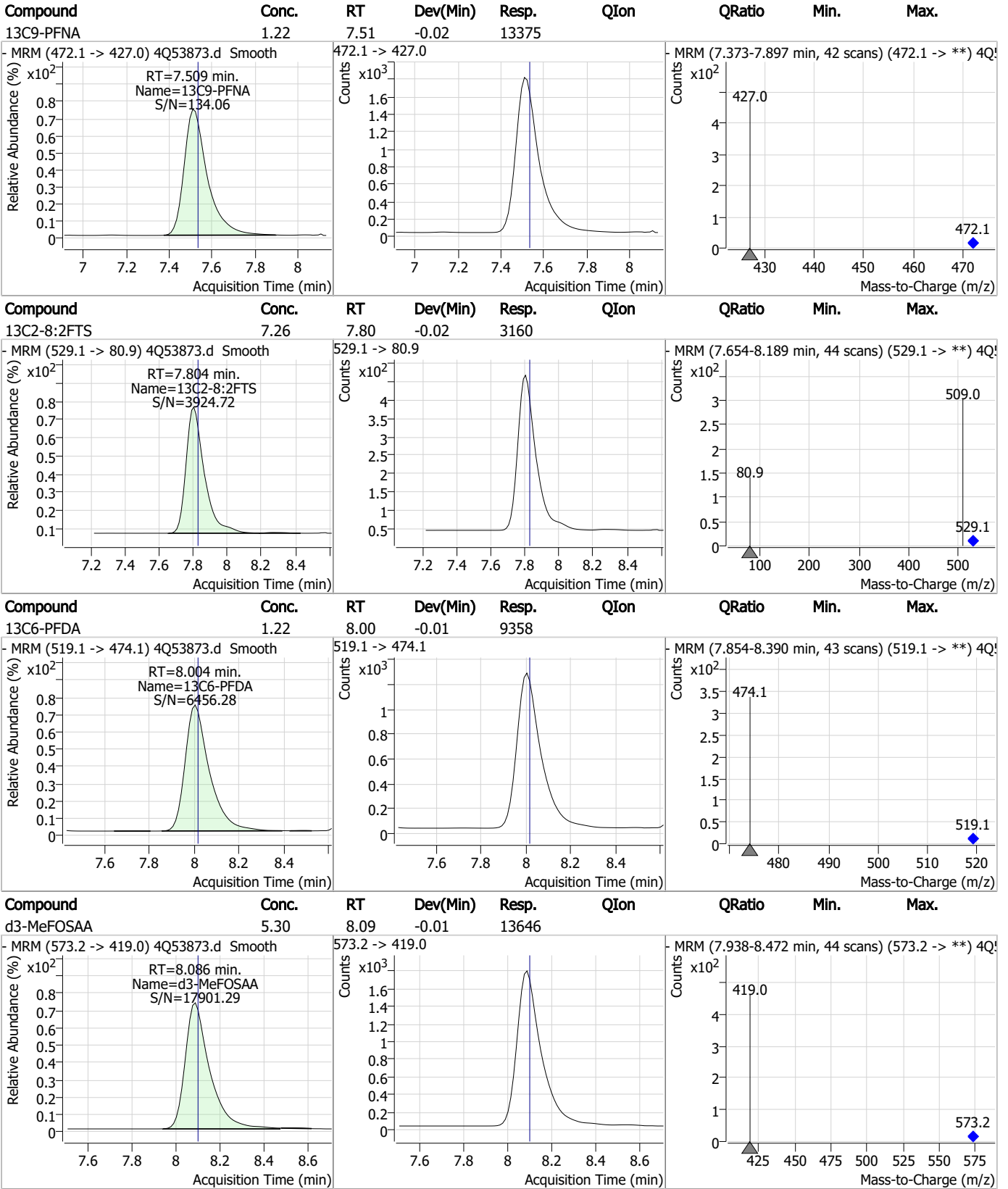
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Perfluorinated Compounds by LC/MS/MS



7.2.3
7

Perfluorinated Compounds by LC/MS/MS

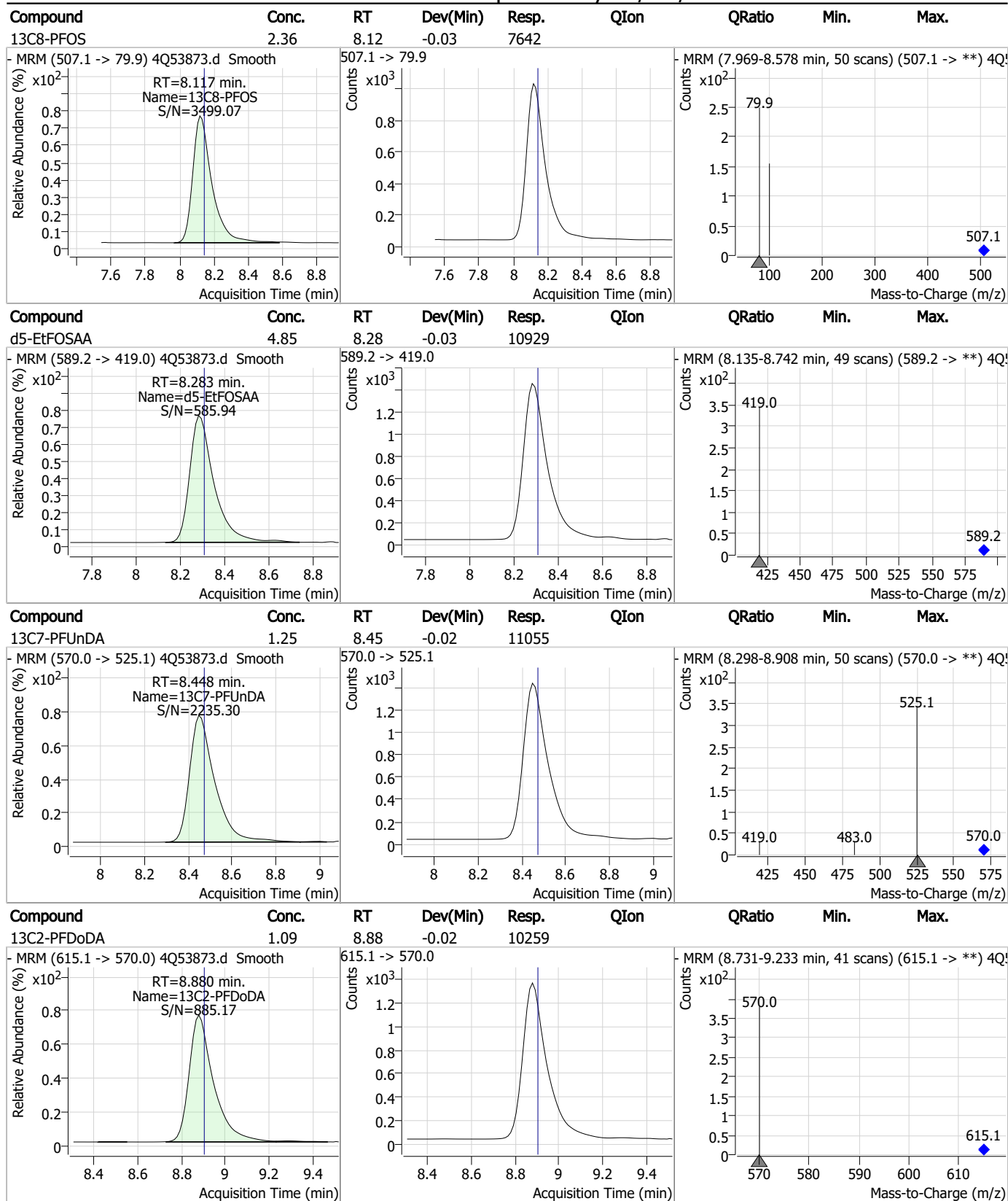


7.2.3

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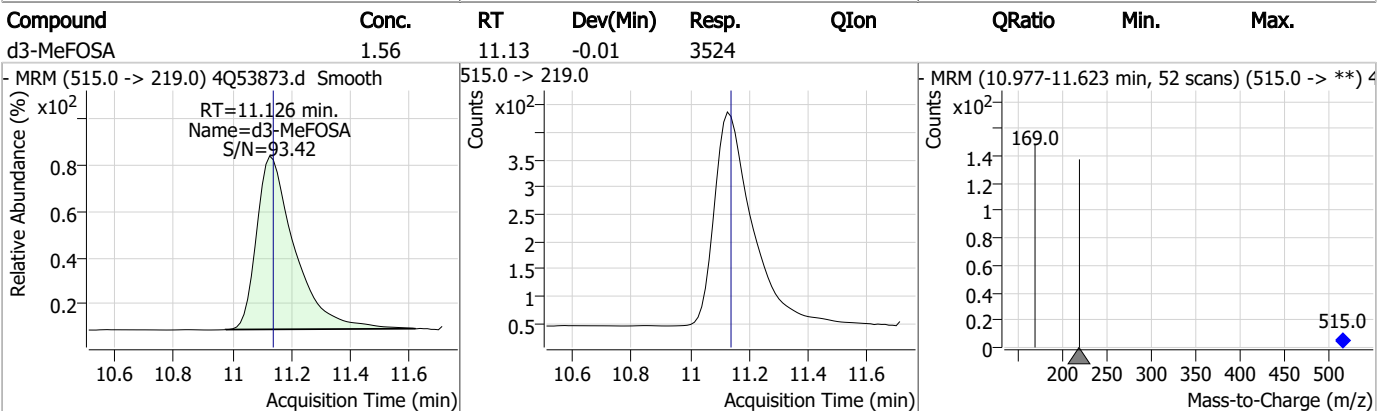
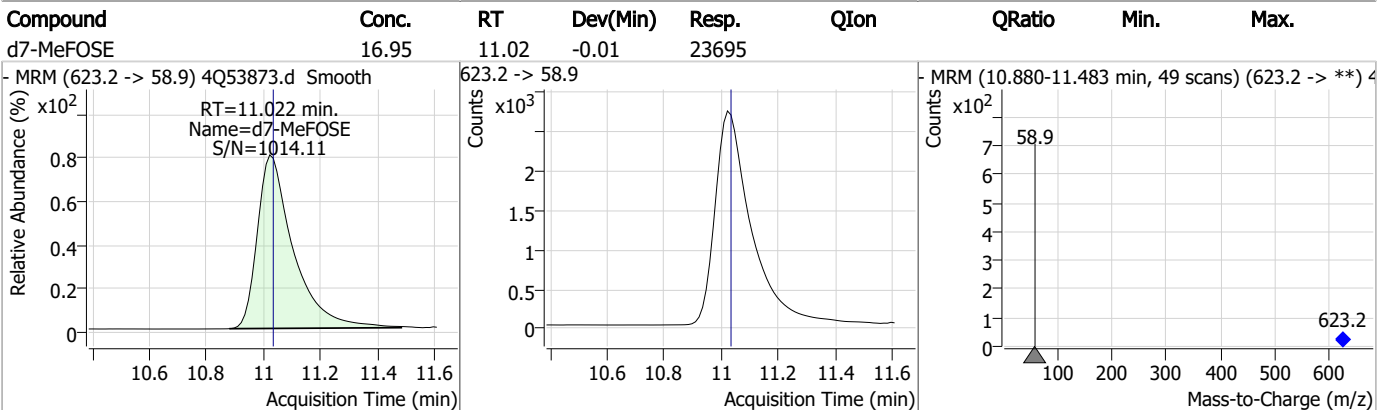
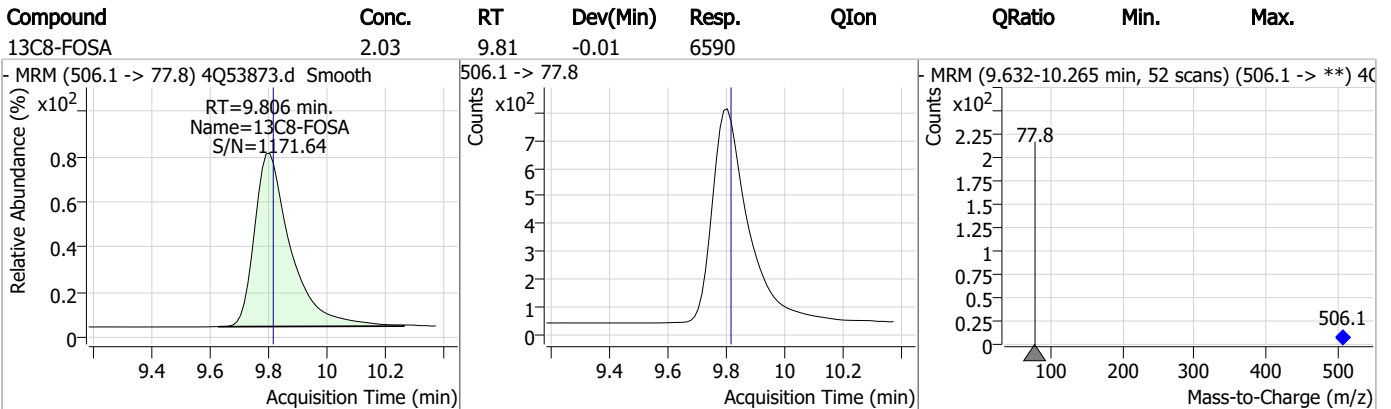
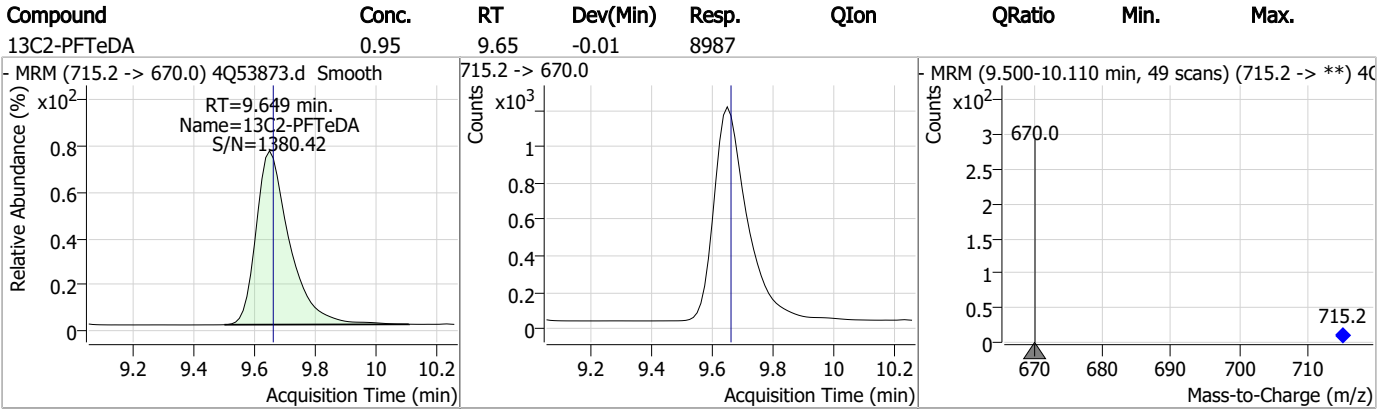


Perfluorinated Compounds by LC/MS/MS



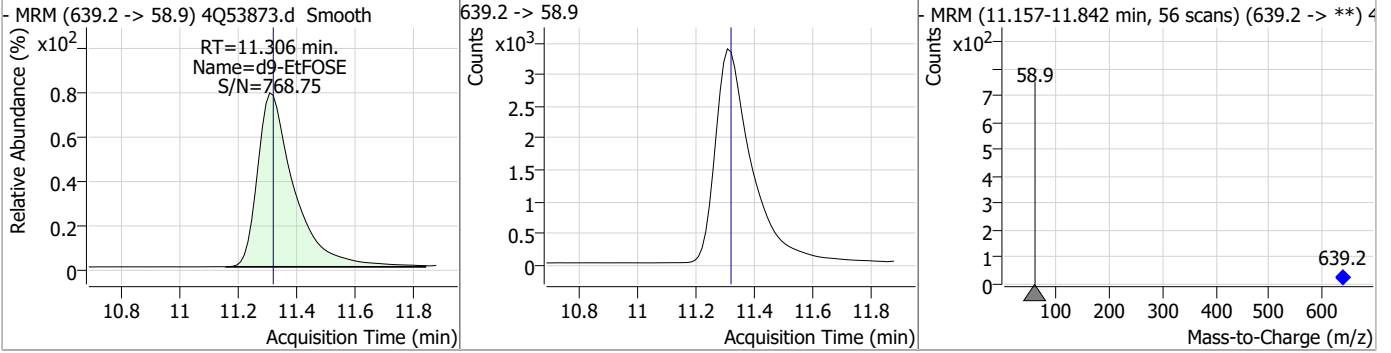
7.2.3
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Perfluorinated Compounds by LC/MS/MS

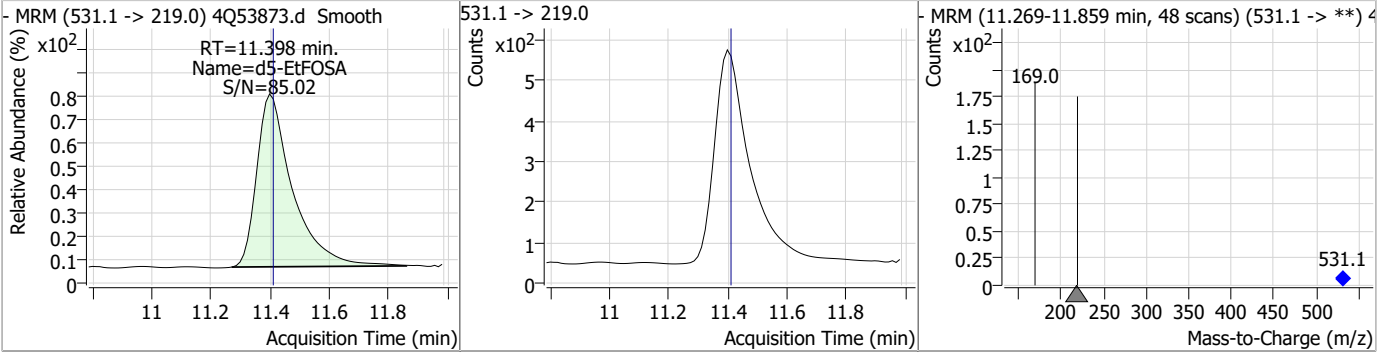


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	18.20	11.31	-0.01	29484				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	1.63	11.40	-0.01	4381				



7.2.3

7



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54051.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 10:57:27 PM
 Sample Name : op164-mb
 Vial : P3-B3
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP164,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.661	216.8 -> 171.9	87267	10.00 µg/L	0.062
M5-PFPeA	4.100	268.3 -> 223.0	36375	5.00 µg/L	0.012
M5-PFHxA	5.272	318.0 -> 273.0	26380	2.50 µg/L	0.012
M4-PFHpA	6.242	367.1 -> 322.0	25557	2.50 µg/L	0.025
M8-PFOA	6.938	421.1 -> 376.0	28790	2.50 µg/L	0.012
M9-PFNA	7.496	472.1 -> 427.0	12702	1.25 µg/L	0.025
M6-PFDA	7.979	519.1 -> 474.1	9069	1.25 µg/L	0.012
M7-PFUnDA	8.436	570.0 -> 525.1	10255	1.25 µg/L	0.012
M2-PFDoDA	8.867	615.1 -> 570.0	9503	1.25 µg/L	0.025
M2-PFTeDA	9.637	715.2 -> 670.0	9259	1.25 µg/L	0.025
M8-FOSA	9.794	506.1 -> 77.8	6469	2.50 µg/L	0.025
M3-PFBS	5.140	302.1 -> 79.9	7179	2.50 µg/L	0.024
M3-PFHxS	7.005	402.1 -> 79.9	6490	2.50 µg/L	0.025
M8-PFOS	8.105	507.1 -> 79.9	6826	2.50 µg/L	0.025
M2-4:2FTS	4.984	329.1 -> 80.9	1050	5.00 µg/L	0.012
M2-6:2FTS	6.724	429.1 -> 80.9	2203	5.00 µg/L	0.025
M2-8:2FTS	7.779	529.1 -> 80.9	2887	5.00 µg/L	0.012
M3-MeFOSAA	8.062	573.2 -> 419.0	12233	5.00 µg/L	0.012
M3-HFPO-DA	5.640	286.9 -> 168.9	22493	10.00 µg/L	0.025
M5-EtFOSAA	8.271	589.2 -> 419.0	10016	5.00 µg/L	0.025
M7-MeFOSE	11.022	623.2 -> 58.9	24914	25.00 µg/L	0.012
M9-EtFOSE	11.306	639.2 -> 58.9	30664	25.00 µg/L	0.012
M5-EtFOSA	11.397	531.1 -> 219.0	4907	2.50 µg/L	0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3726	2.50 µg/L	0.012
13C4-PFOS	8.093	502.8 -> 79.9	6450	2.50 µg/L	0.012
13C3-PFBA	2.666	216.0 -> 172.0	43752	5.00 µg/L	0.075
18O2-PFHxS	7.004	403.0 -> 83.9	4156	2.50 µg/L	0.025
13C4-PFOA	6.939	417.1 -> 372.0	34942	2.50 µg/L	0.012
13C2-PFDA	7.980	515.1 -> 470.1	9476	1.25 µg/L	0.012
13C5-PFNA	7.496	468.0 -> 423.0	14031	1.25 µg/L	0.025
13C2-PFHxA	5.273	315.1 -> 270.0	29651	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	4.984	329.1 -> 80.9	1050	6.62 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 132.3%		
13C2-6:2FTS	6.724	429.1 -> 80.9	2203	6.54 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.9%		
13C2-8:2FTS	7.779	529.1 -> 80.9	2887	6.23 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 124.5%		
13C2-PFDoDA	8.867	615.1 -> 570.0	9503	1.12 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.7%		
13C2-PFTeDA	9.637	715.2 -> 670.0	9259	1.09 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 86.9%		
13C3-PFBS	5.140	302.1 -> 79.9	7179	2.28 µg/L	0.024
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.3%		
13C3-PFHxS	7.005	402.1 -> 79.9	6490	2.49 µg/L	0.025

7.2.4
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C4-PFBA	2.661	216.8 -> 171.9	87267	9.66 µg/L	0.062
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.6%	
13C4-PFHpA	6.242	367.1 -> 322.0	25557	2.43 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C5-PFHxA	5.272	318.0 -> 273.0	26380	2.40 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.0%	
13C5-PFPeA	4.100	268.3 -> 223.0	36375	4.89 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C6-PFDA	7.979	519.1 -> 474.1	9069	1.29 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.0%	
13C7-PFUnDA	8.436	570.0 -> 525.1	10255	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C8-FOSA	9.794	506.1 -> 77.8	6469	2.15 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 85.9%	
13C8-PFOA	6.938	421.1 -> 376.0	28790	2.26 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.3%	
13C8-PFOS	8.105	507.1 -> 79.9	6826	2.16 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 86.3%	
13C9-PFNA	7.496	472.1 -> 427.0	12702	1.12 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 89.4%	
d3-MeFOSAA	8.062	573.2 -> 419.0	12233	4.63 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.6%	
13C3-HFPO-DA	5.640	286.9 -> 168.9	22493	9.09 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 90.9%	
d3-MeFOSA	11.126	515.0 -> 219.0	3726	1.80 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 72.0%	
d5-EtFOSAA	8.271	589.2 -> 419.0	10016	4.52 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 90.4%	
d7-MeFOSE	11.022	623.2 -> 58.9	24914	19.28 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 77.1%	
d9-EtFOSE	11.306	639.2 -> 58.9	30664	20.85 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 83.4%	
d5-EtFOSA	11.397	531.1 -> 219.0	4907	1.95 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 78.2%	

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	8.354	512.9 -> 469.0	0	0.00 µg/L	#m
		512.9 -> 219.0	0		
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	

7.2.4
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	9.127	713.1 -> 669.0	0	0.00	µg/L	m
PFTrDA	-	713.1 -> 168.9	-	N.D.		
		663.0 -> 619.0				
PFUnDA	-	663.0 -> 168.9	-	N.D.		
		563.1 -> 519.0				
11Cl-PF3OUdS	-	563.1 -> 269.1	-	N.D.		
		630.9 -> 450.9				
9Cl-PF3ONS	-	632.9 -> 452.9	-	N.D.		
		530.8 -> 351.0				
ADONA	-	532.8 -> 353.0	-	N.D.		
		376.9 -> 250.9				
HFPO-DA	-	376.9 -> 84.8	-	N.D.		
		284.9 -> 168.9				
3:3FTCA	-	284.9 -> 184.9	-	N.D.		
		241.0 -> 177.0				
5:3FTCA	-	241.0 -> 117.0	-	N.D.		
		341.0 -> 237.1				
7:3FTCA	-	341.0 -> 217.0	-	N.D.		
		441.0 -> 316.9				
EtFOSA	-	441.0 -> 336.9	-	N.D.		
		526.0 -> 219.0				
EtFOSE	-	526.0 -> 169.0	-	N.D.		
		630.0 -> 58.9				
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
		699.1 -> 79.9				
PFDoDS	-	699.1 -> 98.8	-	N.D.		
		295.0 -> 201.0				
NFDHA	-	295.0 -> 84.9	-	N.D.		
		279.0 -> 85.1				
PFMBA	-	229.0 -> 84.9	-	N.D.		
PFMPA	-	314.8 -> 134.9	-	N.D.		
PFEESA	-	314.8 -> 82.9	-	N.D.		

= Qualifier out of range, m = manually integrated, + = Area summed

7.2.4
7

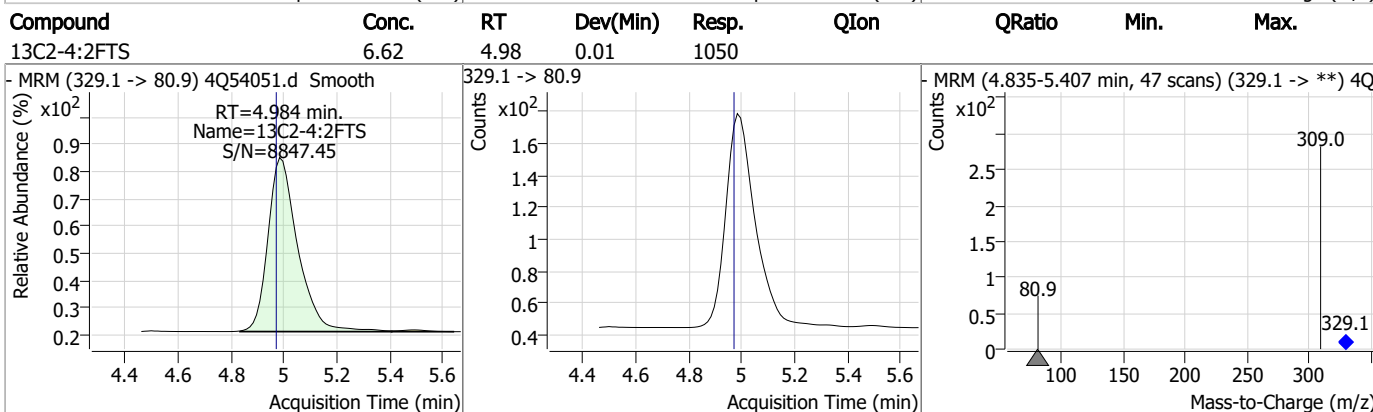
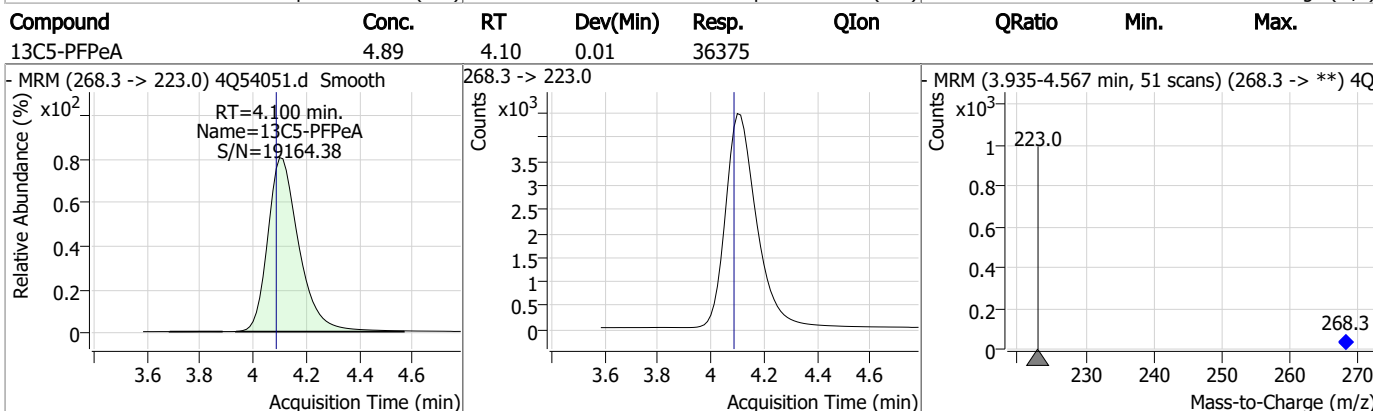
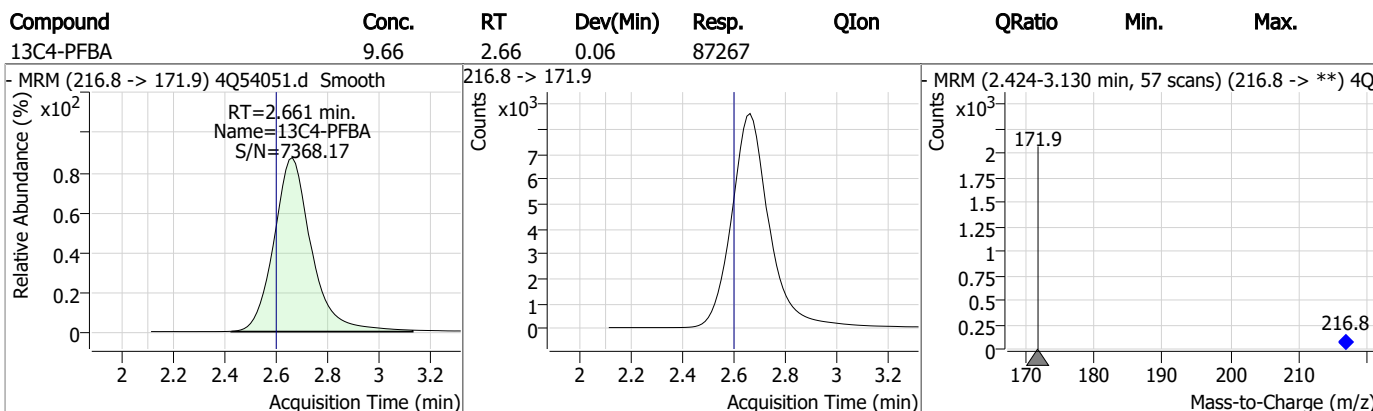
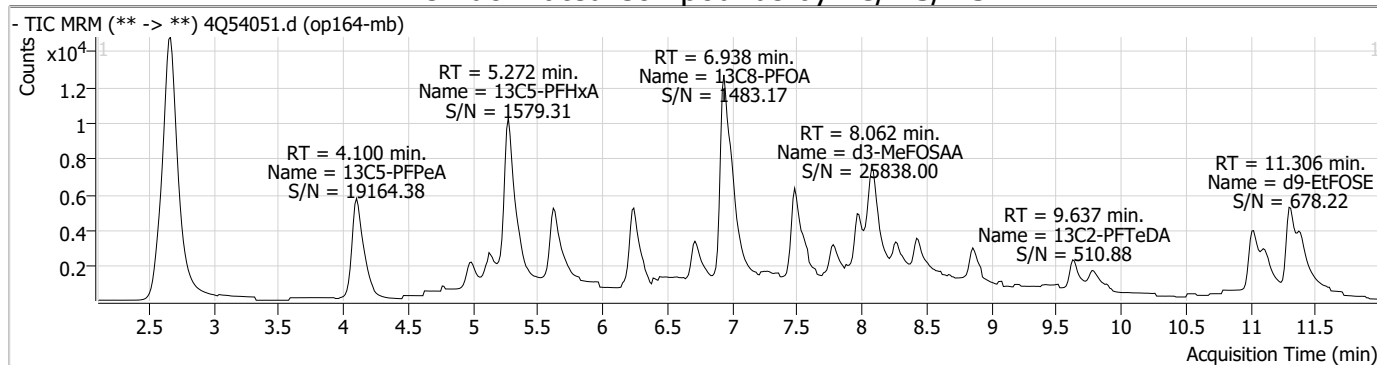
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.2.4

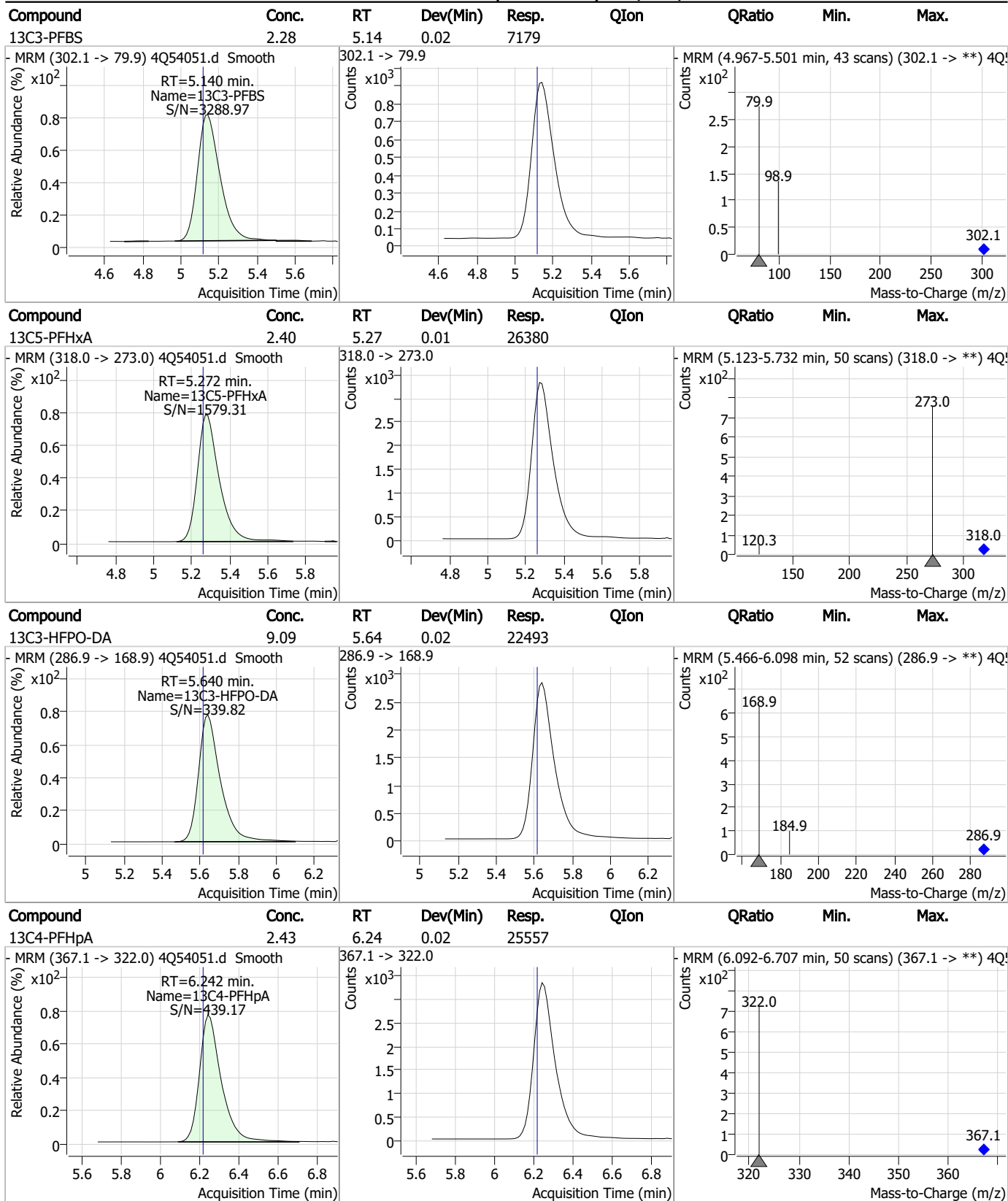
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Perfluorinated Compounds by LC/MS/MS



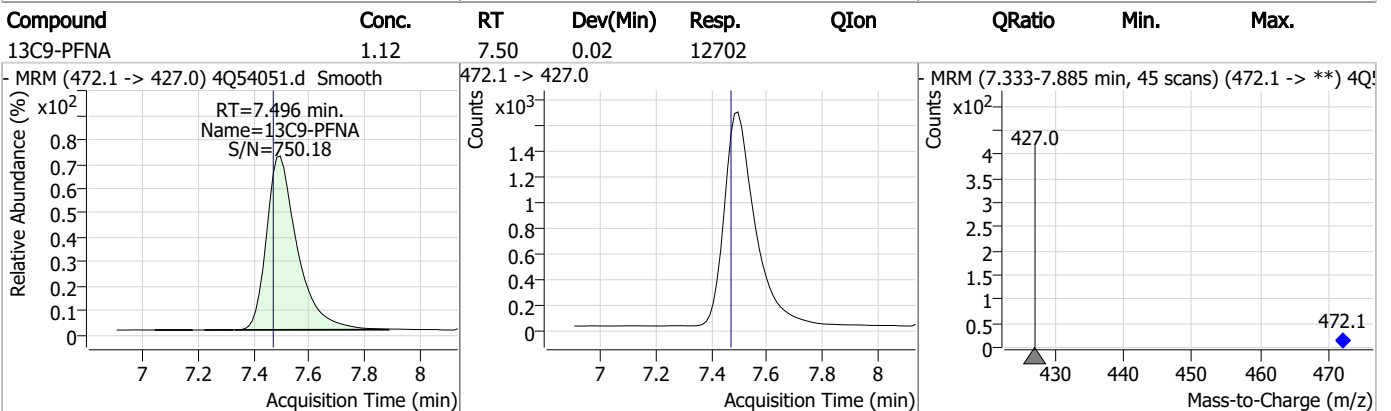
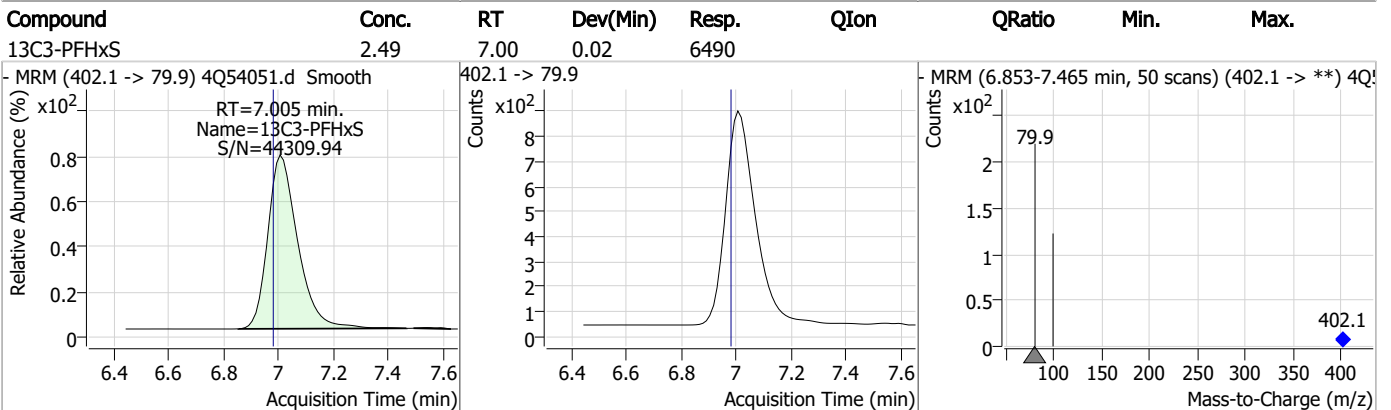
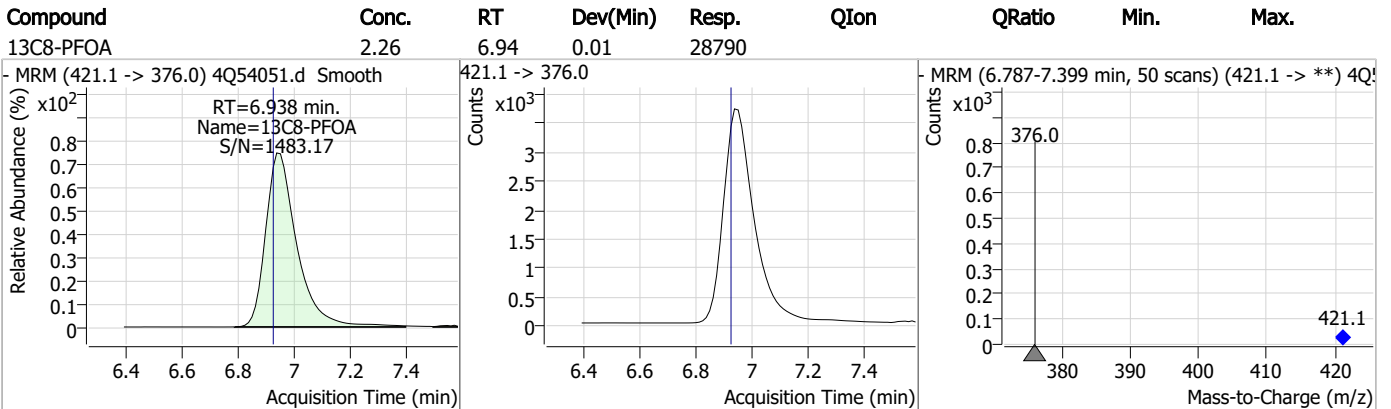
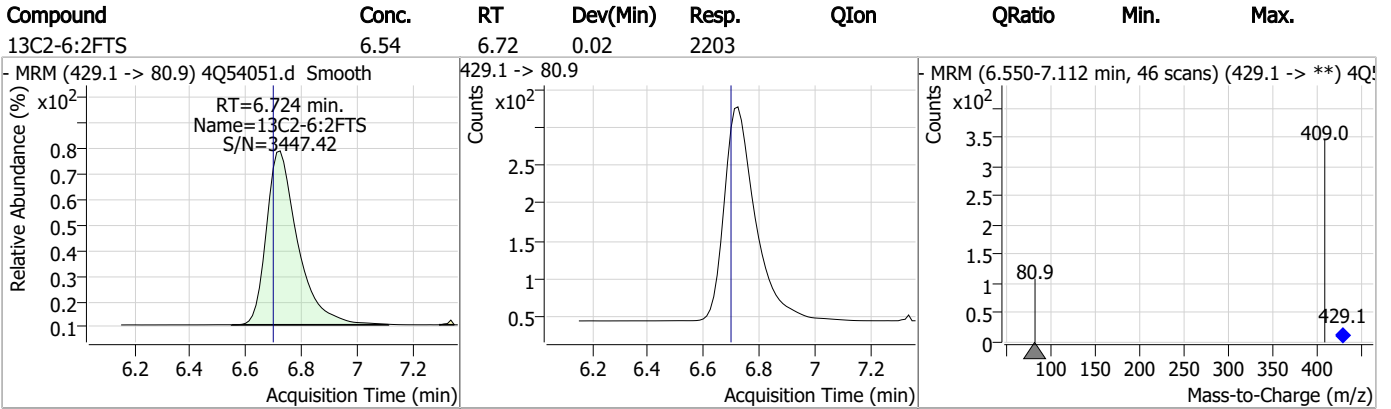
7.2.4
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Perfluorinated Compounds by LC/MS/MS



7.2.4
7

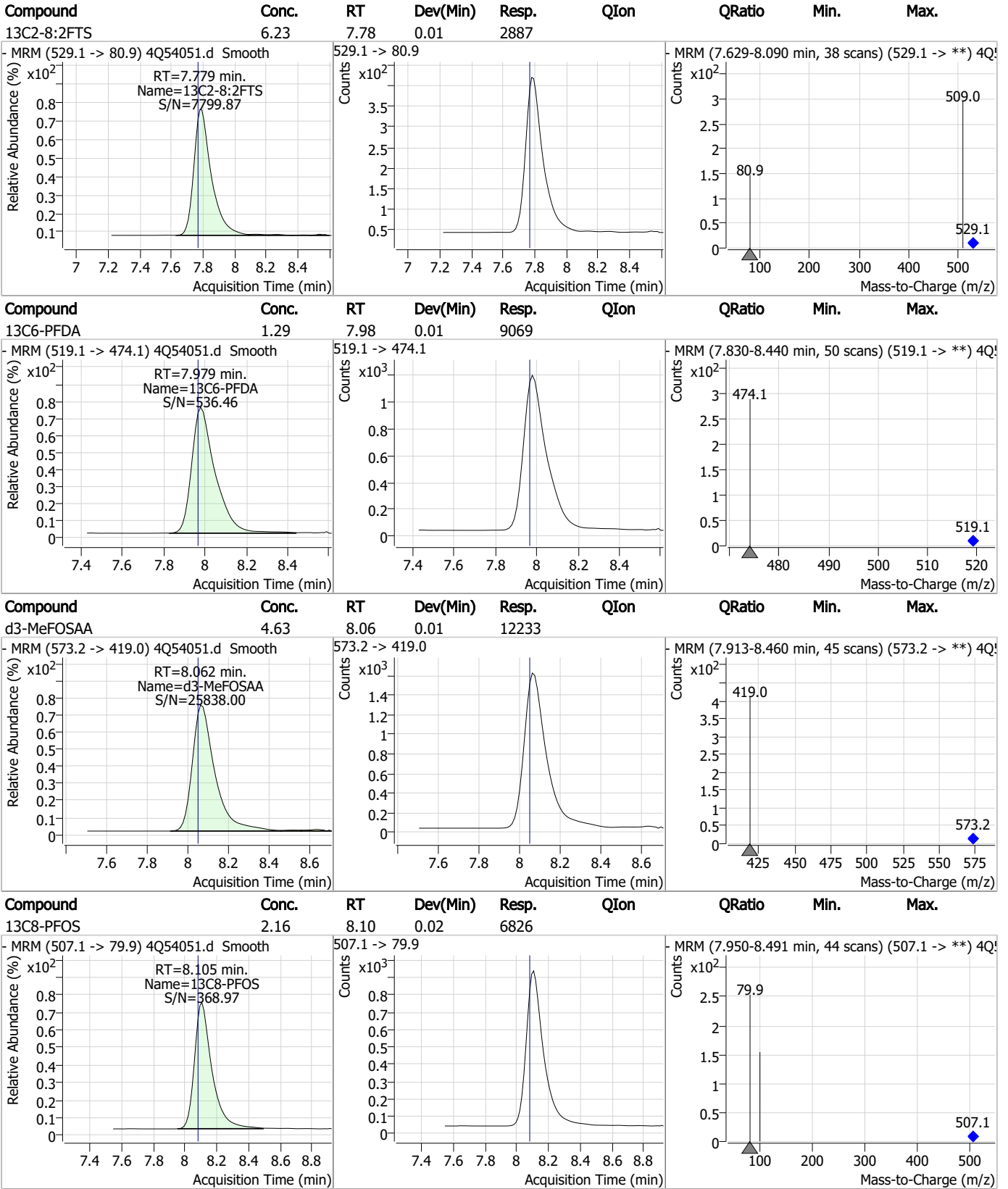
Perfluorinated Compounds by LC/MS/MS



7.2.4

7

Perfluorinated Compounds by LC/MS/MS

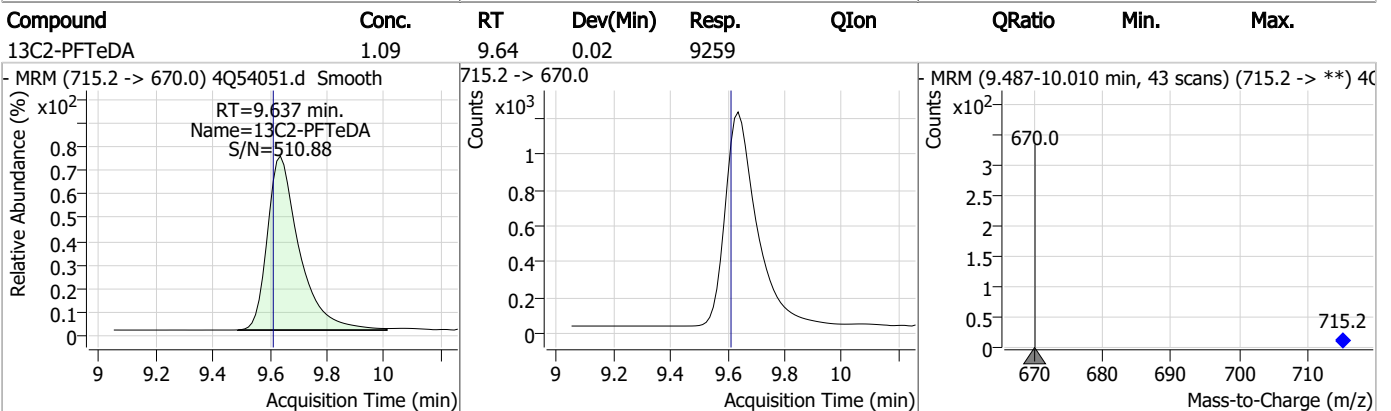
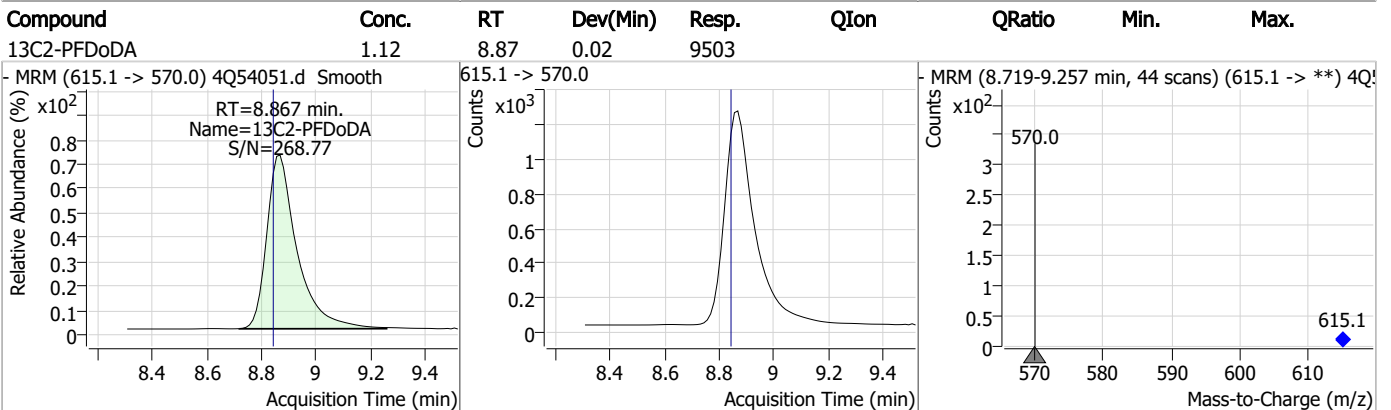
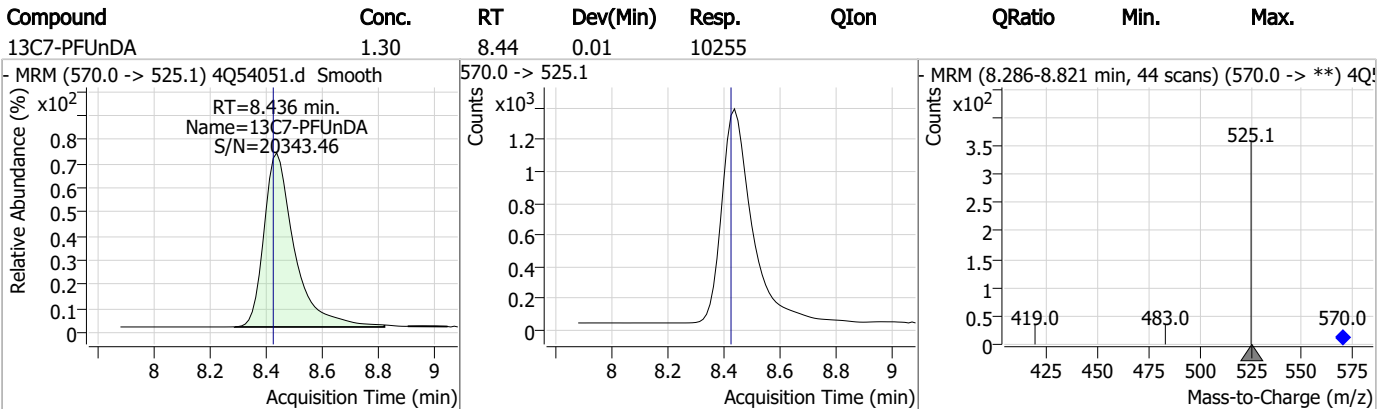
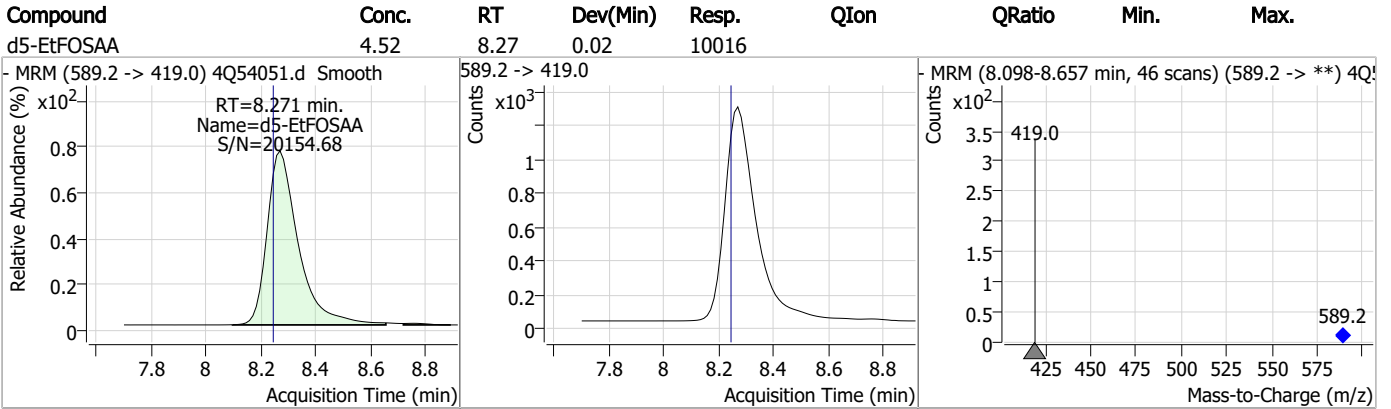


7.2.4

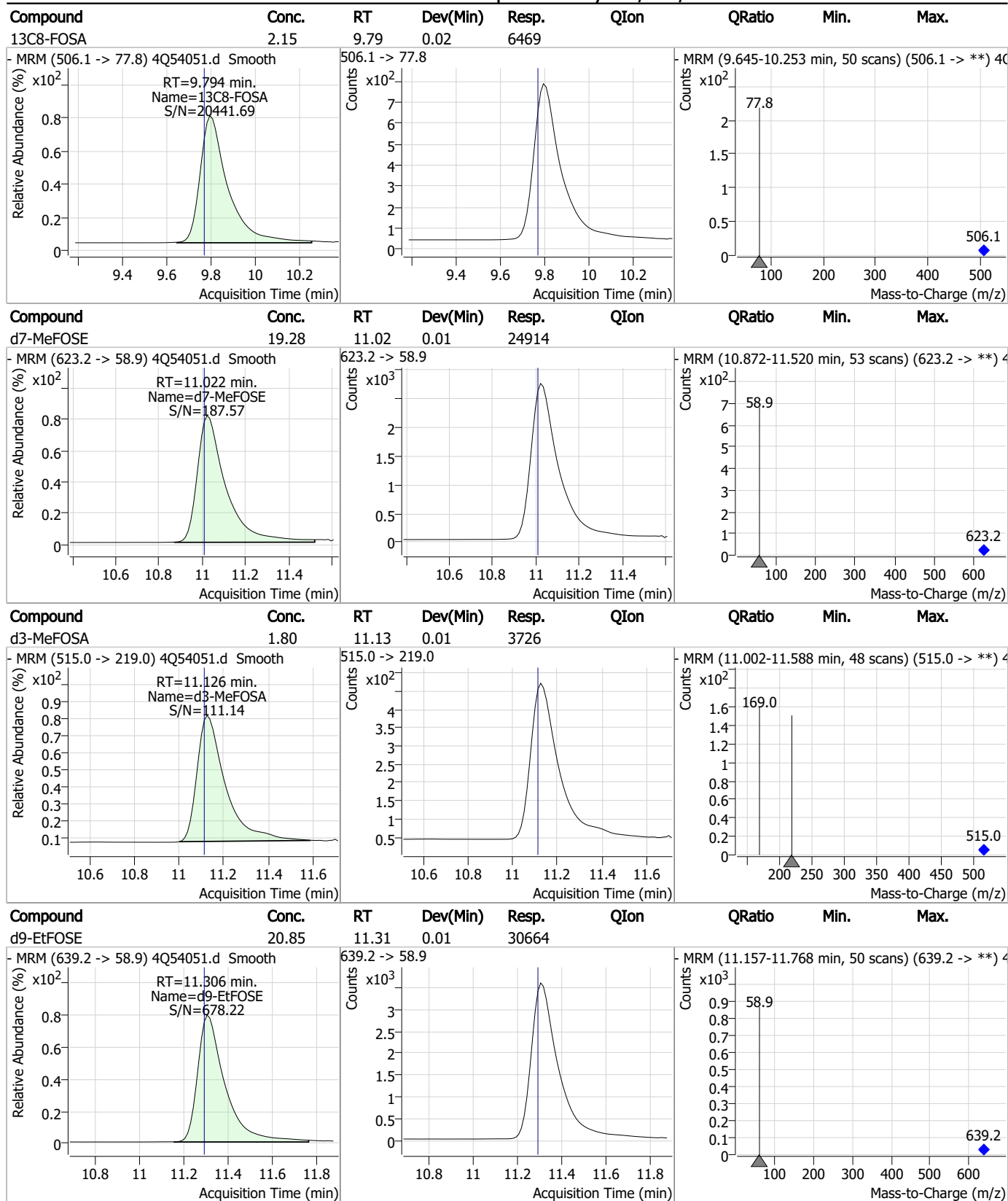
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Perfluorinated Compounds by LC/MS/MS

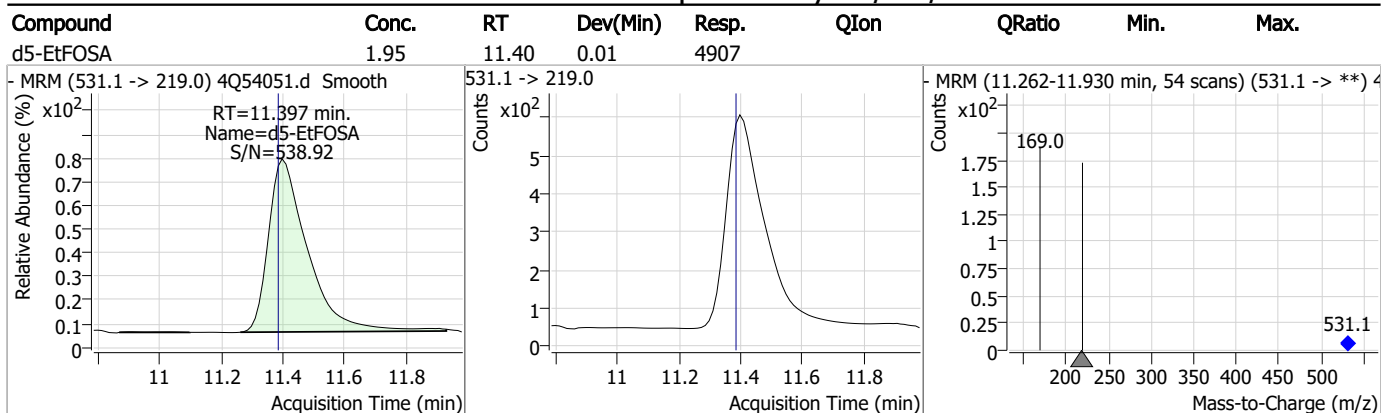


Perfluorinated Compounds by LC/MS/MS



7.2.4
7

Perfluorinated Compounds by LC/MS/MS



7.2.4
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53867.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/15/2023 10:45:23 AM
 Sample Name : iblk
 Vial : P1-A1
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q786.batch.bin
 Sample Information : OP98180,S4Q786,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	87473	10.00 µg/L	-0.075
M5-PFPeA	4.112	268.3 -> 223.0	37930	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	28603	2.50 µg/L	-0.050
M4-PFHpA	6.255	367.1 -> 322.0	27999	2.50 µg/L	-0.050
M8-PFOA	6.952	421.1 -> 376.0	34035	2.50 µg/L	-0.037
M9-PFNA	7.509	472.1 -> 427.0	14568	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	9427	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	12172	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	11478	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	11361	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	7883	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	8241	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6647	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7298	2.50 µg/L	-0.026
M2-4:2FTS	4.996	329.1 -> 80.9	1140	5.00 µg/L	-0.050
M2-6:2FTS	6.724	429.1 -> 80.9	2191	5.00 µg/L	-0.037
M2-8:2FTS	7.791	529.1 -> 80.9	3019	5.00 µg/L	-0.037
M3-MeFOSAA	8.074	573.2 -> 419.0	14468	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	25710	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	11497	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	30857	25.00 µg/L	-0.012
M9-EtFOSE	11.306	639.2 -> 58.9	35979	25.00 µg/L	-0.012
M5-EtFOSA	11.397	531.1 -> 219.0	5847	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4678	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6018	2.50 µg/L	-0.026
13C3-PFBA	2.616	216.0 -> 172.0	41984	5.00 µg/L	-0.087
18O2-PFHxS	7.016	403.0 -> 83.9	3762	2.50 µg/L	-0.038
13C4-PFOA	6.952	417.1 -> 372.0	37415	2.50 µg/L	-0.037
13C2-PFDA	7.992	515.1 -> 470.1	10073	1.25 µg/L	-0.037
13C5-PFNA	7.509	468.0 -> 423.0	14137	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	30138	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	1140	8.85 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 177.1%		
13C2-6:2FTS	6.724	429.1 -> 80.9	2191	8.08 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 161.5%		
13C2-8:2FTS	7.791	529.1 -> 80.9	3019	7.89 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 157.9%		
13C2-PFDoDA	8.880	615.1 -> 570.0	11478	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C2-PFTeDA	9.649	715.2 -> 670.0	11361	1.24 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C3-PFBS	5.152	302.1 -> 79.9	8241	2.92 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 116.8%		
13C3-PFHxS	7.017	402.1 -> 79.9	6647	2.85 µg/L	-0.037

7.25
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 114.0%	
13C4-PFBA	2.624	216.8 -> 171.9	87473	10.00 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C4-PFHpA	6.255	367.1 -> 322.0	27999	2.66 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.5%	
13C5-PFHxA	5.297	318.0 -> 273.0	28603	2.54 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C5-PFPeA	4.112	268.3 -> 223.0	37930	5.16 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.2%	
13C6-PFDA	7.992	519.1 -> 474.1	9427	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C7-PFUnDA	8.448	570.0 -> 525.1	12172	1.42 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 113.7%	
13C8-FOSA	9.794	506.1 -> 77.8	7883	2.74 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.6%	
13C8-PFOA	6.952	421.1 -> 376.0	34035	2.55 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C8-PFOS	8.117	507.1 -> 79.9	7298	2.54 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C9-PFNA	7.509	472.1 -> 427.0	14568	1.31 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.5%	
d3-MeFOSAA	8.074	573.2 -> 419.0	14468	6.34 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 126.8%	
13C3-HFPO-DA	5.652	286.9 -> 168.9	25710	10.02 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
d3-MeFOSA	11.126	515.0 -> 219.0	4678	2.33 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.2%	
d5-EtFOSAA	8.283	589.2 -> 419.0	11497	5.75 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 115.0%	
d7-MeFOSE	11.022	623.2 -> 58.9	30857	24.89 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.6%	
d9-EtFOSE	11.306	639.2 -> 58.9	35979	25.06 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
d5-EtFOSA	11.397	531.1 -> 219.0	5847	2.45 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	

Target Compounds

Compound	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



7.25
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	9.292	663.0 -> 619.0	0	µg/L	m	1
		663.0 -> 168.9	0			
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	11.412	526.0 -> 219.0	463	0.18 µg/L	m	79
		526.0 -> 169.0	536			
EtFOSE	11.332	630.0 -> 58.9	845	0.63 µg/L	m	100
		511.9 -> 219.0	0			
MeFOSA	11.140	511.9 -> 169.0	0	µg/L	m	1
		616.1 -> 58.9	694			
MeFOSE	11.047	616.1 -> 58.9	694	0.49 µg/L		100
		699.1 -> 79.9	-			
PFDoDS	-	699.1 -> 98.8	-	N.D.		
		295.0 -> 201.0				
NFDHA	-	295.0 -> 84.9	-	N.D.		
		279.0 -> 85.1				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed

7.2.5
7

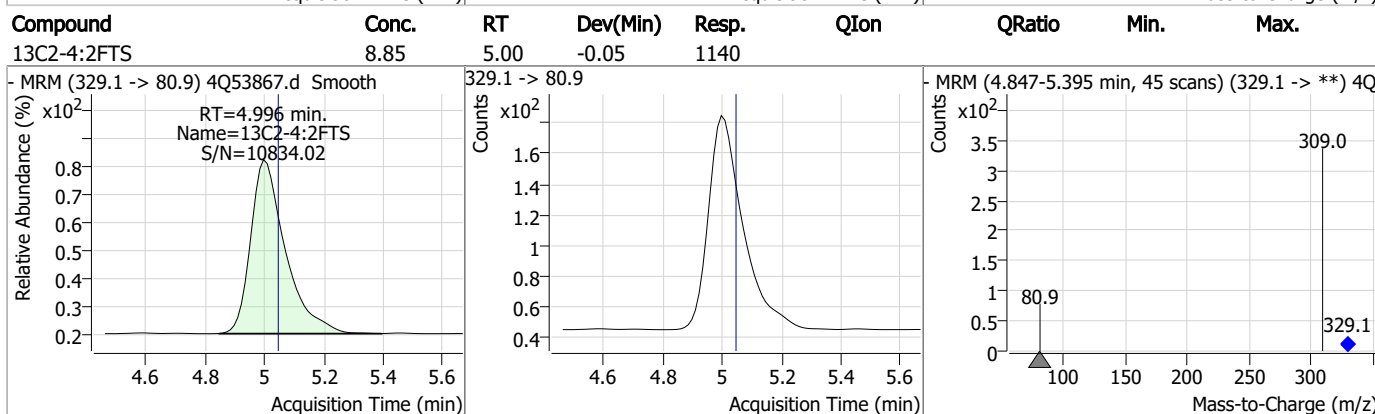
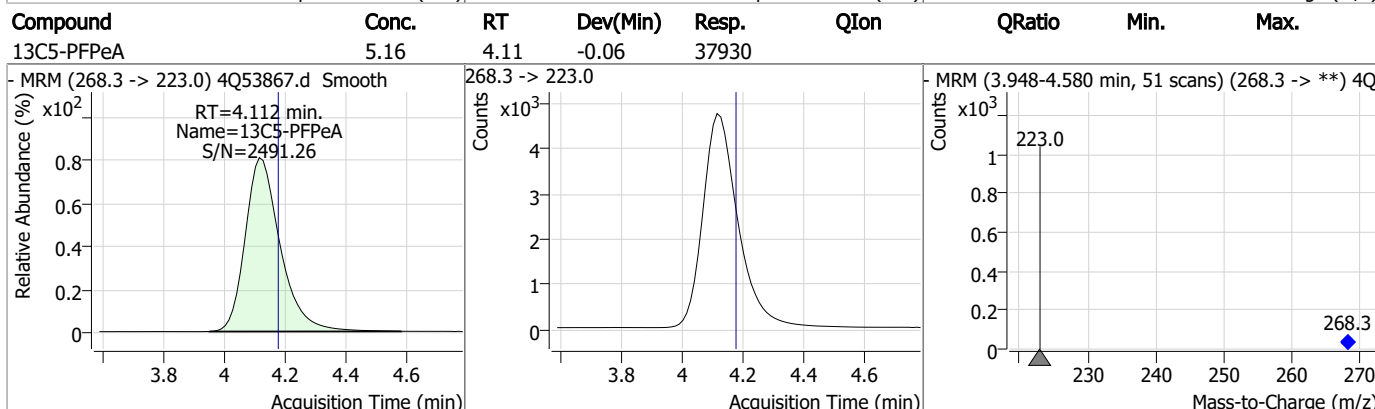
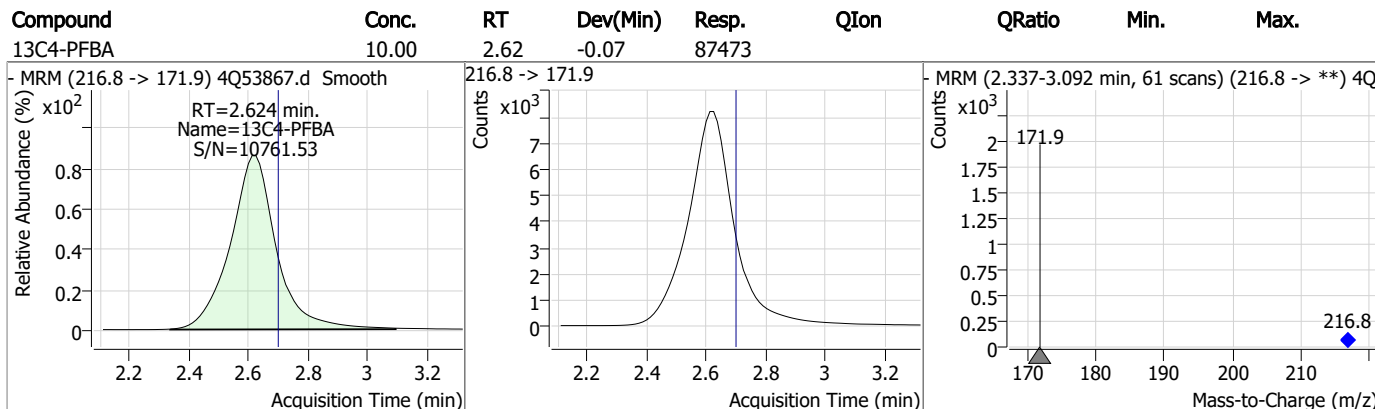
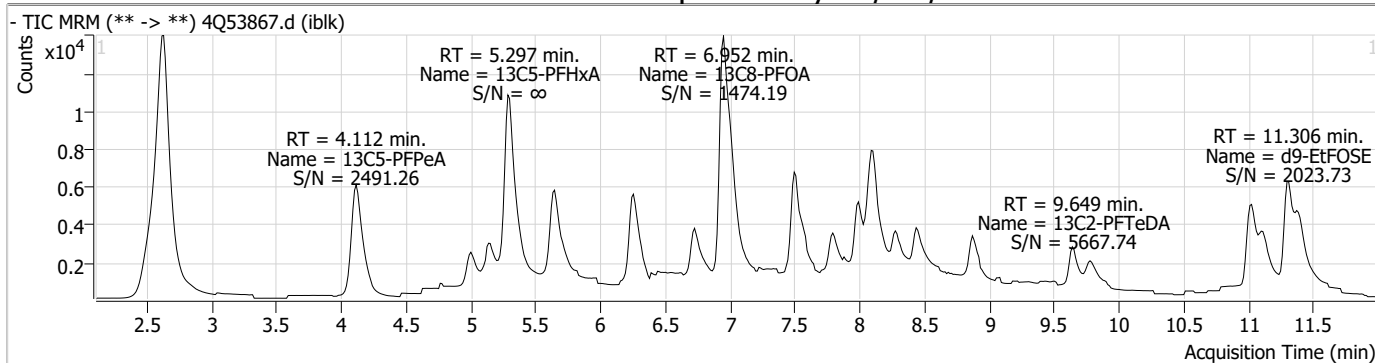
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.2.5

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Perfluorinated Compounds by LC/MS/MS



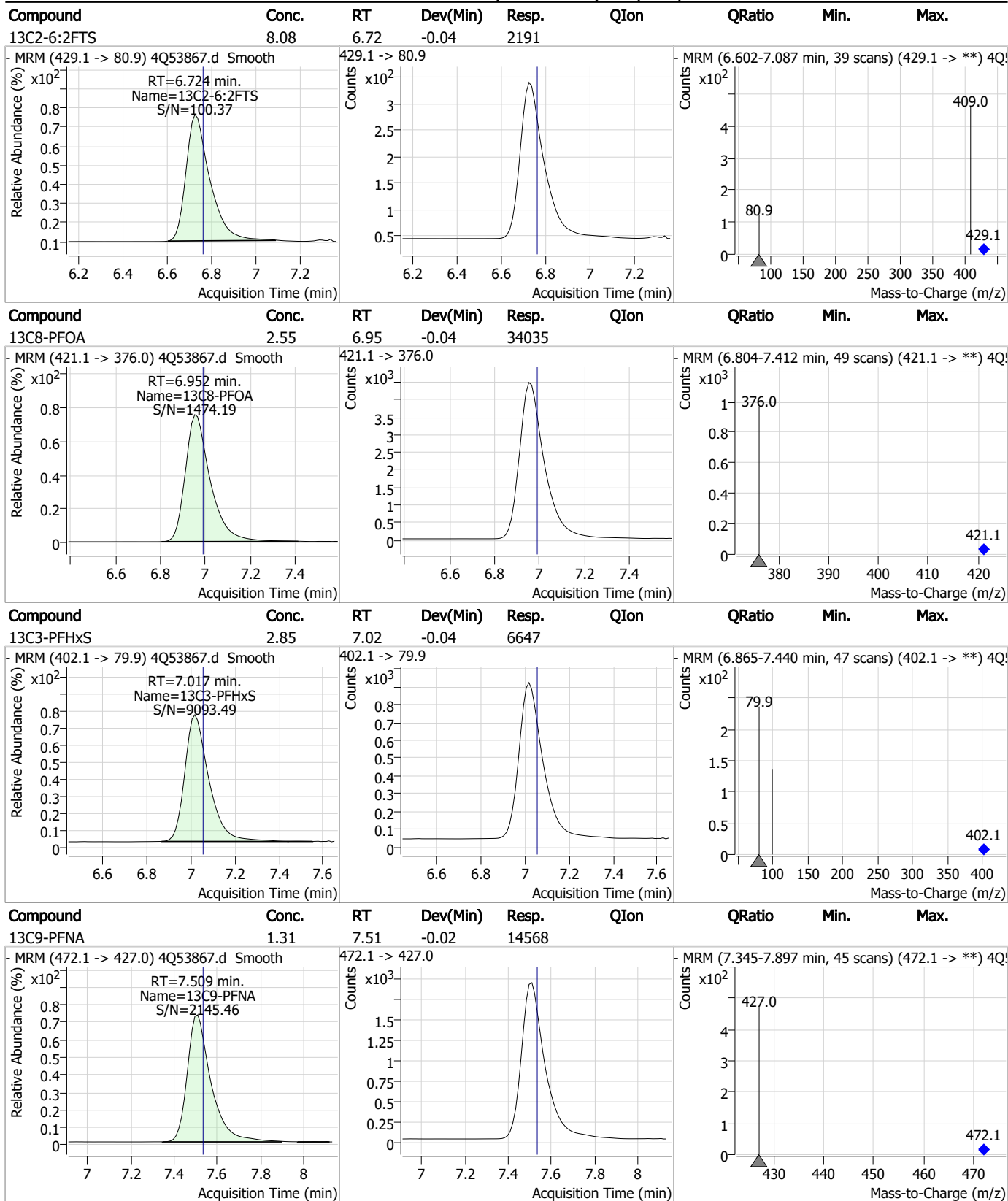
7.2.5
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	2.92	5.15	-0.05	8241				
13C5-PFHxA	2.54	5.30	-0.05	28603				
13C3-HFPO-DA	10.02	5.65	-0.05	25710				
13C4-PFHpA	2.66	6.25	-0.05	27999				

7.2.5
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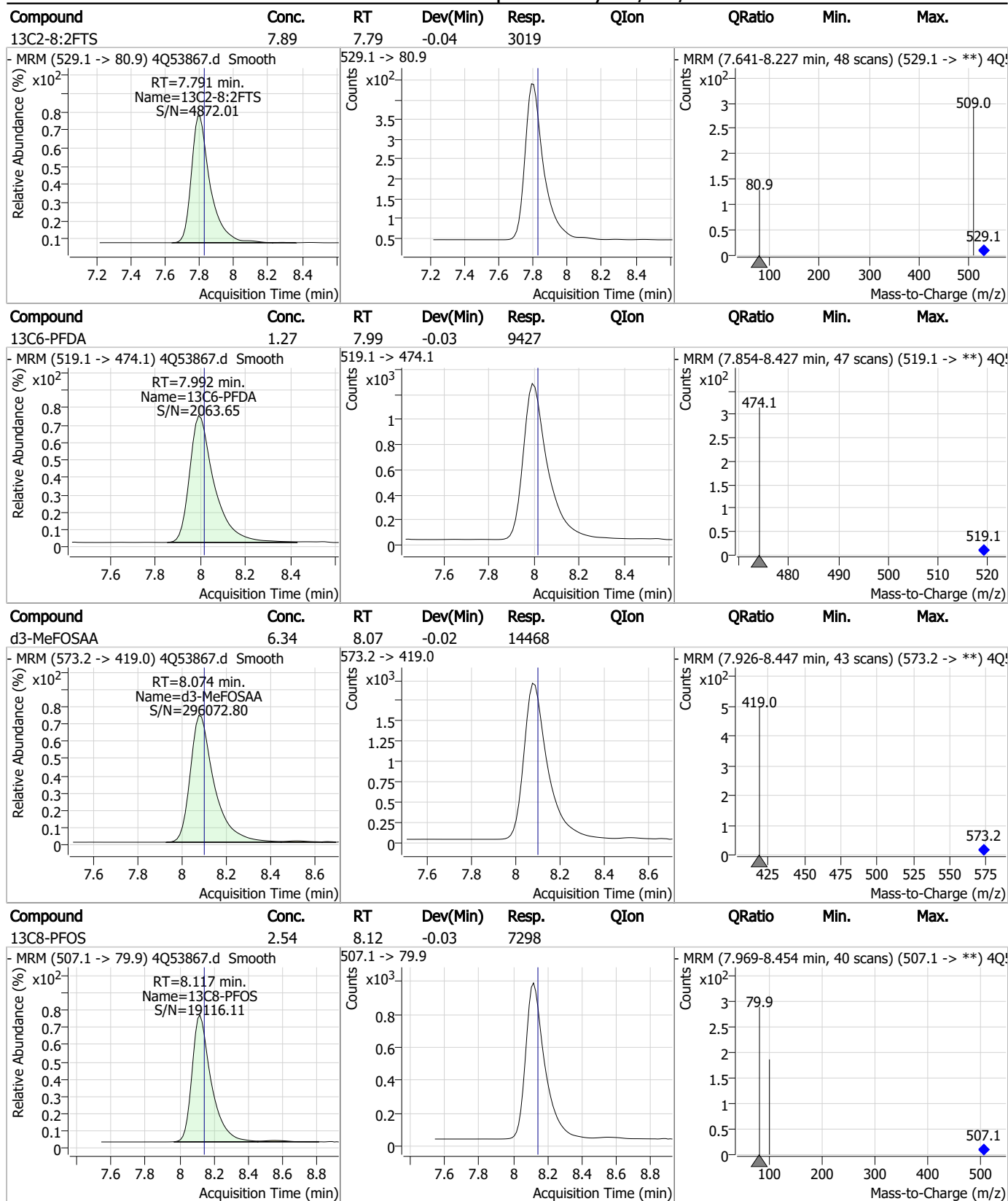
Perfluorinated Compounds by LC/MS/MS



7.25
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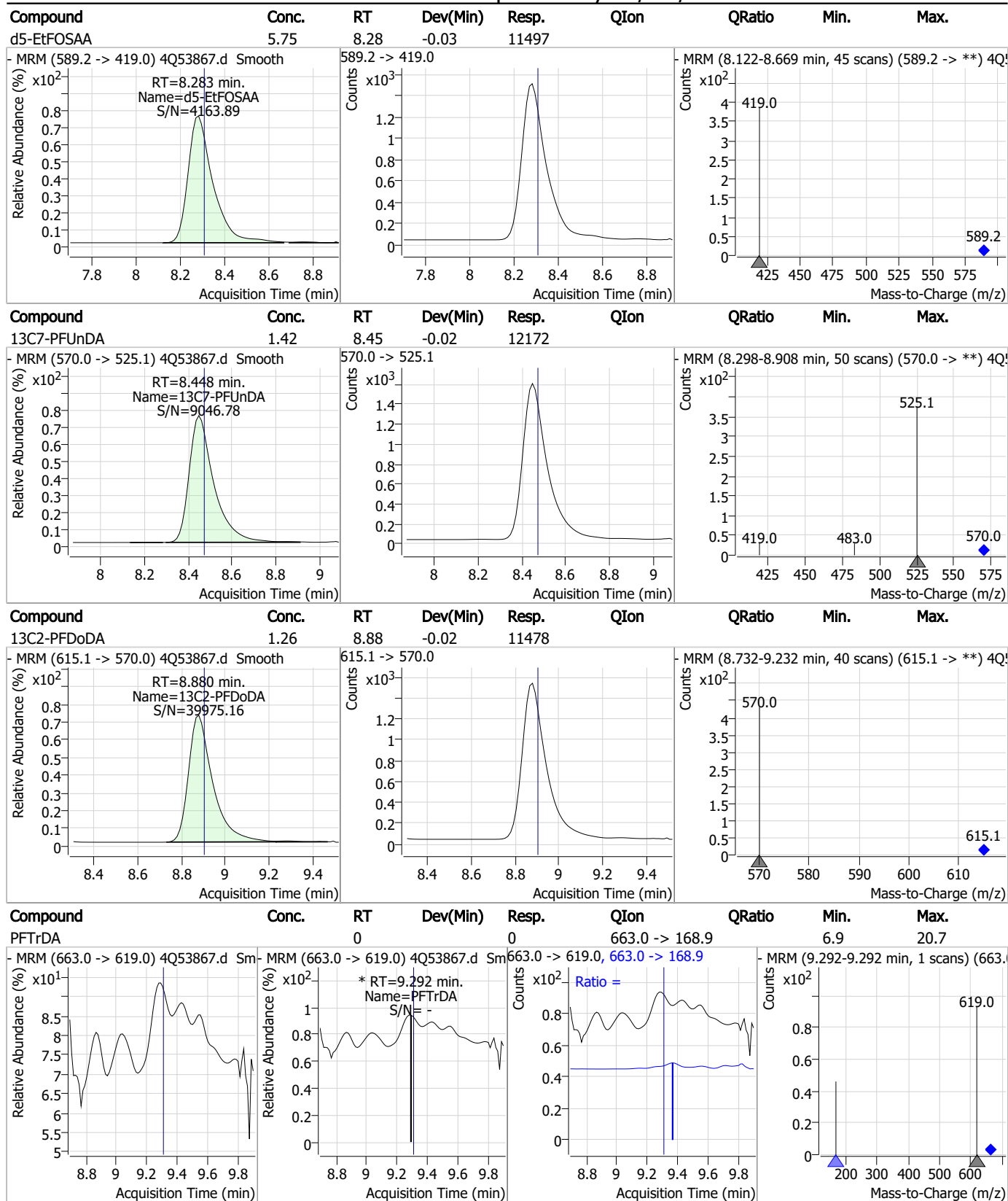
Perfluorinated Compounds by LC/MS/MS



7.25
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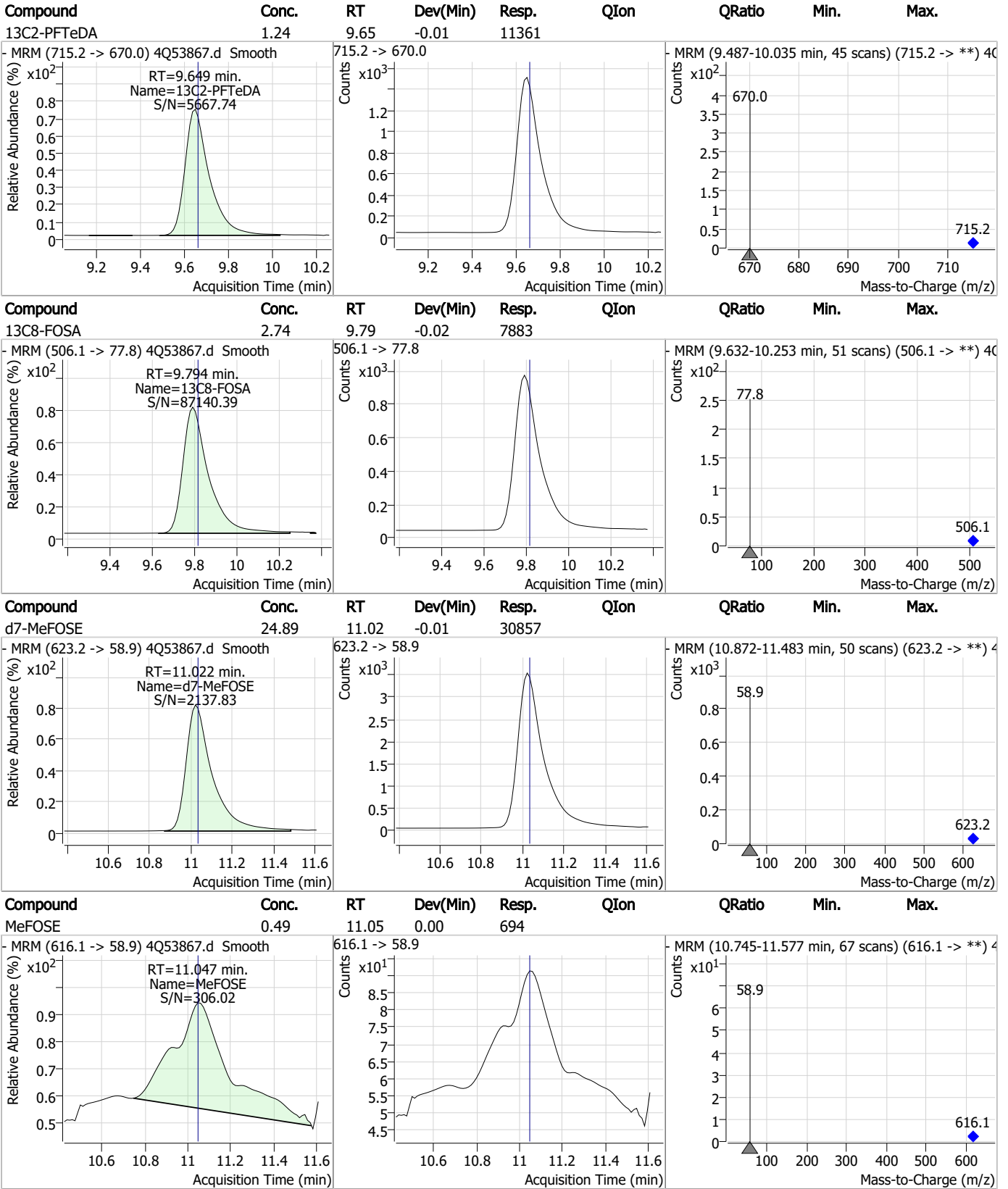


Perfluorinated Compounds by LC/MS/MS



7.25
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Perfluorinated Compounds by LC/MS/MS

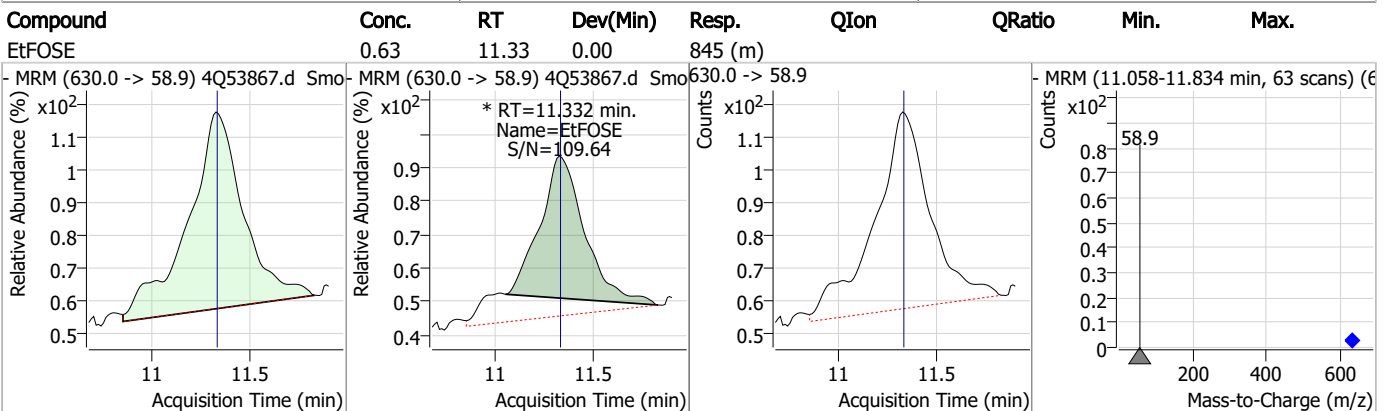
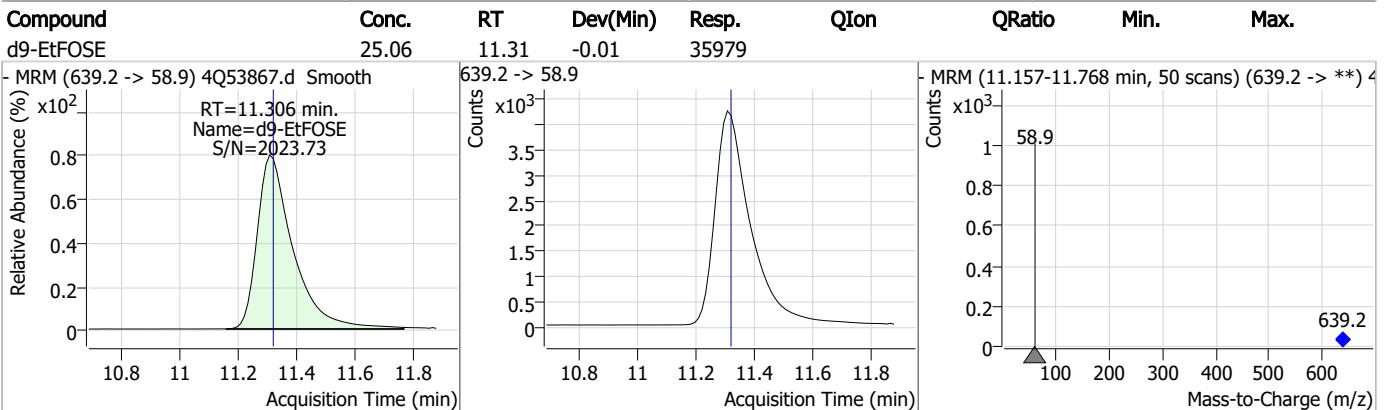
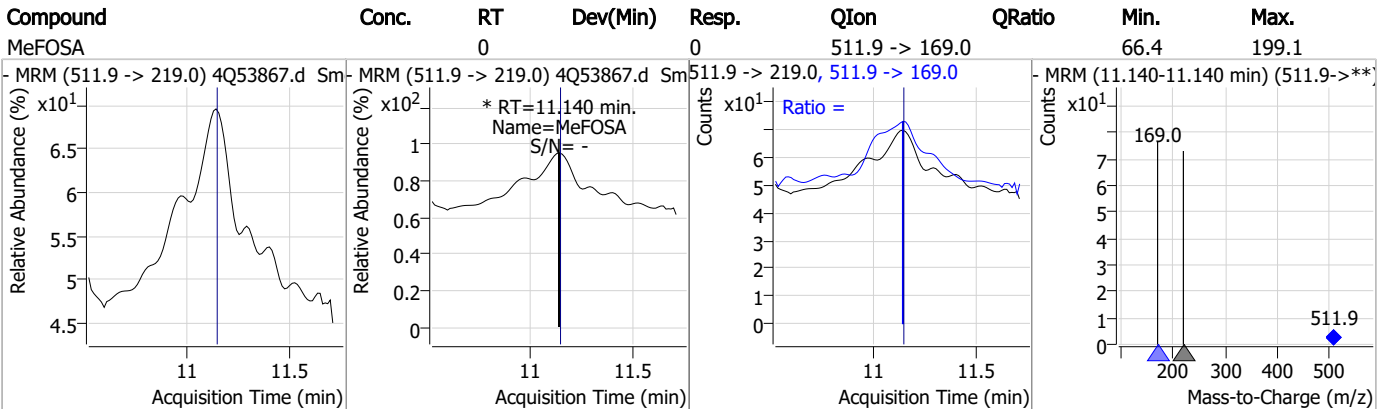
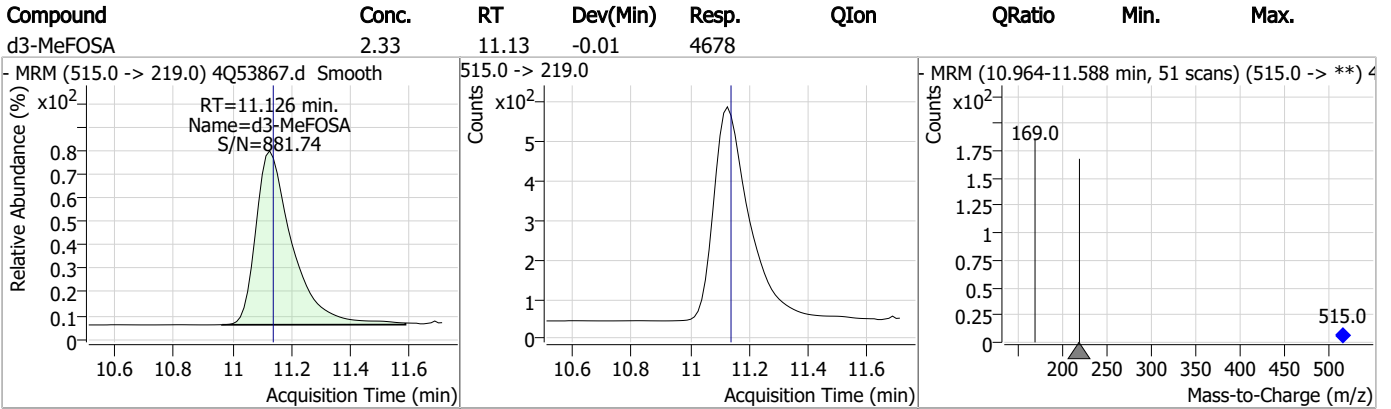


7.2.5

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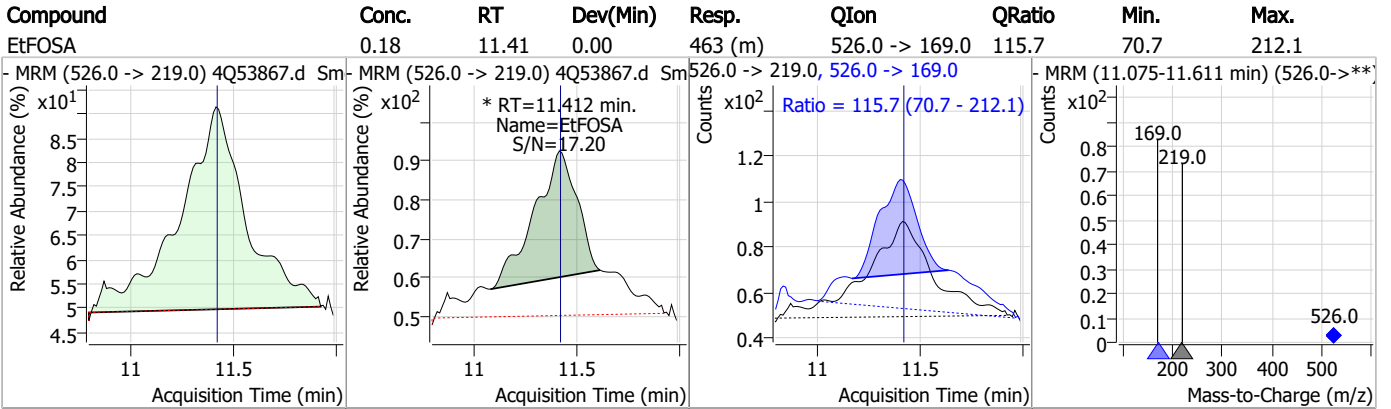
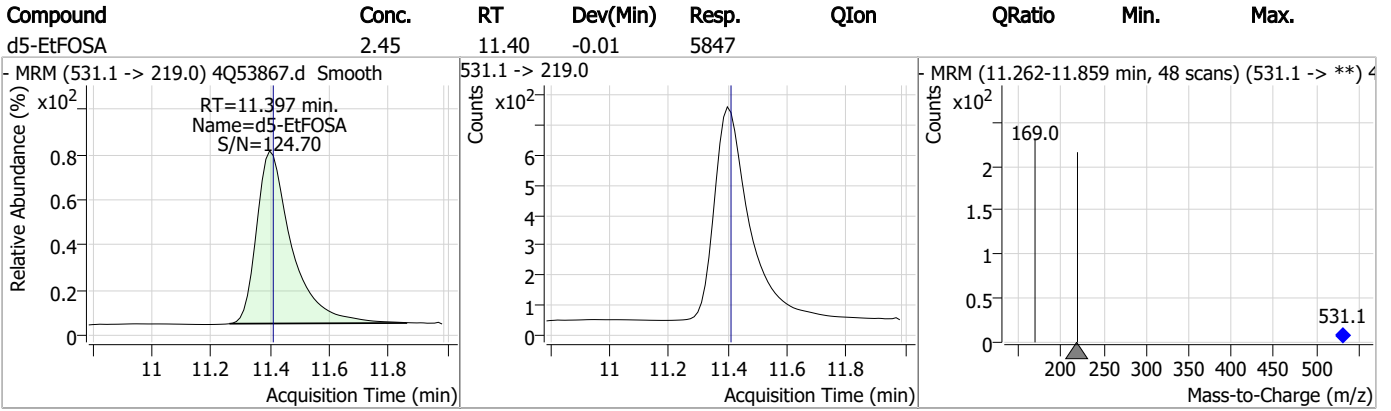
Perfluorinated Compounds by LC/MS/MS



7.25

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Perfluorinated Compounds by LC/MS/MS



7.2.5

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Manual Integration Approval Summary

Sample Number: S4Q786-IBLK Method: EPA DRAFT 1633
Lab FileID: 4Q53867.D Analyst approved: 11/16/23 13:59 Anna Ludwig
Injection Time: 11/15/23 10:45 Supervisor approved: 11/16/23 15:17 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
EiFOSE	1691-99-2		11.33	Poorly defined baseline
EiFOSA	4151-50-2		11.41	Poorly defined baseline

7.2.5.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53880.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/15/2023 2:08:37 PM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q786.batch.bin
 Sample Information : OP98180,S4Q786,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	88029	10.00 µg/L	-0.075
M5-PFPeA	4.125	268.3 -> 223.0	37805	5.00 µg/L	-0.050
M5-PFHxA	5.310	318.0 -> 273.0	27949	2.50 µg/L	-0.037
M4-PFHpA	6.280	367.1 -> 322.0	26866	2.50 µg/L	-0.025
M8-PFOA	6.976	421.1 -> 376.0	31901	2.50 µg/L	-0.012
M9-PFNA	7.521	472.1 -> 427.0	13992	1.25 µg/L	-0.012
M6-PFDA	8.004	519.1 -> 474.1	9566	1.25 µg/L	-0.013
M7-PFUnDA	8.461	570.0 -> 525.1	11525	1.25 µg/L	-0.012
M2-PFDoDA	8.892	615.1 -> 570.0	11242	1.25 µg/L	-0.012
M2-PFTeDA	9.662	715.2 -> 670.0	11563	1.25 µg/L	0.000
M8-FOSA	9.806	506.1 -> 77.8	7421	2.50 µg/L	-0.012
M3-PFBS	5.165	302.1 -> 79.9	7802	2.50 µg/L	-0.038
M3-PFHxS	7.029	402.1 -> 79.9	6917	2.50 µg/L	-0.025
M8-PFOS	8.130	507.1 -> 79.9	7655	2.50 µg/L	-0.013
M2-4:2FTS	5.009	329.1 -> 80.9	1115	5.00 µg/L	-0.037
M2-6:2FTS	6.748	429.1 -> 80.9	2084	5.00 µg/L	-0.012
M2-8:2FTS	7.804	529.1 -> 80.9	3256	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	13925	5.00 µg/L	-0.012
M3-HFPO-DA	5.677	286.9 -> 168.9	25288	10.00 µg/L	-0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	10576	5.00 µg/L	-0.014
M7-MeFOSE	11.034	623.2 -> 58.9	30088	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	34124	25.00 µg/L	0.000
M5-EtFOSA	11.398	531.1 -> 219.0	5871	2.50 µg/L	-0.012
M3-MeFOSA	11.139	515.0 -> 219.0	4711	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	6435	2.50 µg/L	-0.013
13C3-PFBA	2.628	216.0 -> 172.0	41838	5.00 µg/L	-0.075
18O2-PFHxS	7.028	403.0 -> 83.9	4409	2.50 µg/L	-0.025
13C4-PFOA	6.977	417.1 -> 372.0	36209	2.50 µg/L	-0.012
13C2-PFDA	8.004	515.1 -> 470.1	10530	1.25 µg/L	-0.025
13C5-PFNA	7.522	468.0 -> 423.0	13476	1.25 µg/L	-0.012
13C2-PFHxA	5.311	315.1 -> 270.0	30392	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	1115	7.39 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 147.8%		
13C2-6:2FTS	6.748	429.1 -> 80.9	2084	6.55 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 131.1%		
13C2-8:2FTS	7.804	529.1 -> 80.9	3256	7.27 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 145.3%		
13C2-PFDoDA	8.892	615.1 -> 570.0	11242	1.18 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.6%		
13C2-PFTeDA	9.662	715.2 -> 670.0	11563	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.7%		
13C3-PFBS	5.165	302.1 -> 79.9	7802	2.36 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.4%		
13C3-PFHxS	7.029	402.1 -> 79.9	6917	2.53 µg/L	-0.025

7.2.6
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%		
13C4-PFBA	2.624	216.8 -> 171.9	88029	10.10	µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.0%		
13C4-PFHpA	6.280	367.1 -> 322.0	26866	2.53	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%		
13C5-PFHxA	5.310	318.0 -> 273.0	27949	2.47	µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%		
13C5-PFPeA	4.125	268.3 -> 223.0	37805	5.10	µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.0%		
13C6-PFDA	8.004	519.1 -> 474.1	9566	1.23	µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.8%		
13C7-PFUnDA	8.461	570.0 -> 525.1	11525	1.29	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.0%		
13C8-FOSA	9.806	506.1 -> 77.8	7421	2.41	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.5%		
13C8-PFOA	6.976	421.1 -> 376.0	31901	2.47	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%		
13C8-PFOS	8.130	507.1 -> 79.9	7655	2.49	µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%		
13C9-PFNA	7.521	472.1 -> 427.0	13992	1.32	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.3%		
d3-MeFOSAA	8.086	573.2 -> 419.0	13925	5.71	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.1%		
13C3-HFPO-DA	5.677	286.9 -> 168.9	25288	9.78	µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.8%		
d3-MeFOSA	11.139	515.0 -> 219.0	4711	2.19	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 87.8%		
d5-EtFOSAA	8.296	589.2 -> 419.0	10576	4.95	µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.0%		
d7-MeFOSE	11.034	623.2 -> 58.9	30088	22.70	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 90.8%		
d9-EtFOSE	11.319	639.2 -> 58.9	34124	22.23	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 88.9%		
d5-EtFOSA	11.398	531.1 -> 219.0	5871	2.30	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.2%		
Target Compounds						QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.		
		327.1 -> 80.9				
6:2FTS	-	427.1 -> 407.0	-	N.D.		
		427.1 -> 80.9				
8:2FTS	-	527.1 -> 507.0	-	N.D.		
		527.1 -> 80.8				
EtFOSAA	-	584.2 -> 419.1	-	N.D.		
		584.2 -> 526.0				
FOSA	-	498.1 -> 77.9	-	N.D.		
		498.1 -> 478.0				
MeFOSAA	-	570.1 -> 419.0	-	N.D.		
		570.1 -> 483.0				
PFBA	-	212.8 -> 168.9	-	N.D.		
PFBS	-	298.7 -> 79.9	-	N.D.		
		298.7 -> 98.8				
PFDA	-	512.9 -> 469.0	-	N.D.		
		512.9 -> 219.0				
PFDODA	8.868	613.1 -> 569.0	0	µg/L	m	1
		613.1 -> 319.0				
PFDS	-	599.0 -> 79.9	-	N.D.		

7.2.6
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.	
		363.1 -> 319.0			
PFHpS	-	363.1 -> 169.0	-	N.D.	
		449.0 -> 79.9			
PFHxA	-	449.0 -> 98.9	-	N.D.	
		313.0 -> 269.0			
PFHxS	-	313.0 -> 118.9	-	N.D.	
		398.7 -> 79.9			
PFNA	-	398.7 -> 98.9	-	N.D.	
		463.0 -> 419.0			
PFNS	-	463.0 -> 219.0	-	N.D.	
		548.8 -> 79.9			
PFOA	-	548.8 -> 98.9	-	N.D.	
		413.0 -> 369.0			
PFOS	-	413.0 -> 169.0	-	N.D.	
		498.9 -> 79.9			
PFPeA	-	498.9 -> 98.8	-	N.D.	
		263.0 -> 219.0			
PFPeS	-	349.1 -> 79.9	-	N.D.	
		349.1 -> 98.9			
PFTeDA	-	713.1 -> 669.0	-	N.D.	
		713.1 -> 168.9			
PFTrDA	-	663.0 -> 619.0	-	N.D.	
		663.0 -> 168.9			
PFUnDA	-	563.1 -> 519.0	-	N.D.	
		563.1 -> 269.1			
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.	
		632.9 -> 452.9			
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.	
		532.8 -> 353.0			
ADONA	-	376.9 -> 250.9	-	N.D.	
		376.9 -> 84.8			
HFPO-DA	-	284.9 -> 168.9	-	N.D.	
		284.9 -> 184.9			
3:3FTCA	-	241.0 -> 177.0	-	N.D.	
		241.0 -> 117.0			
5:3FTCA	-	341.0 -> 237.1	-	N.D.	
		341.0 -> 217.0			
7:3FTCA	-	441.0 -> 316.9	-	N.D.	
		441.0 -> 336.9			
EtFOSA	-	526.0 -> 219.0	-	N.D.	
		526.0 -> 169.0			
EtFOSE	-	630.0 -> 58.9	-	N.D.	
		511.9 -> 219.0			
MeFOSA	-	511.9 -> 169.0	-	N.D.	
		616.1 -> 58.9			
MeFOSE	-	699.1 -> 79.9	-	N.D.	
		699.1 -> 98.8			
PFDoDS	-	295.0 -> 201.0	-	N.D.	
		295.0 -> 84.9			
NFDHA	-	279.0 -> 85.1	-	N.D.	
		229.0 -> 84.9			
PFMBA	-	314.8 -> 134.9	-	N.D.	
		314.8 -> 82.9			

= Qualifier out of range, m = manually integrated, + = Area summed

7.2.6
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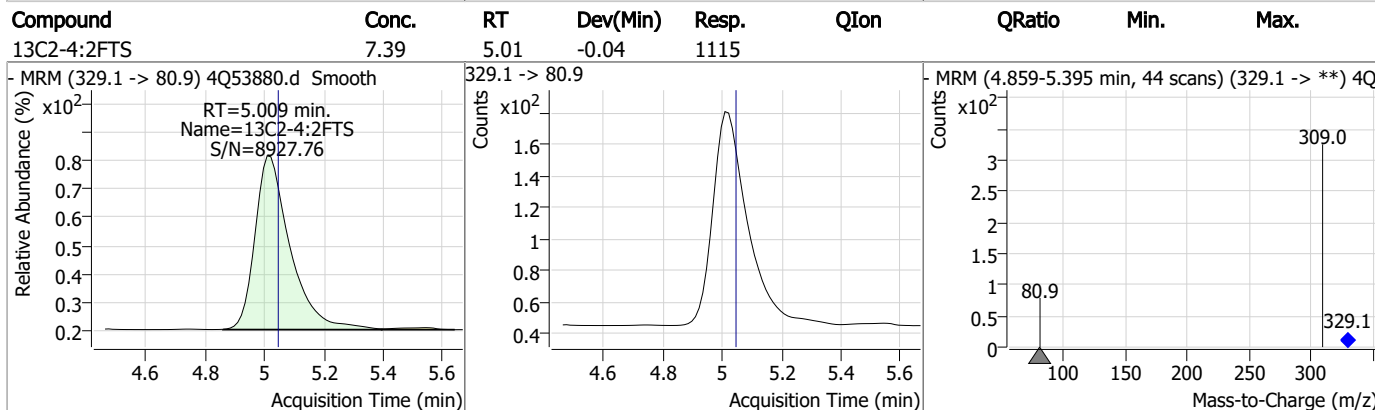
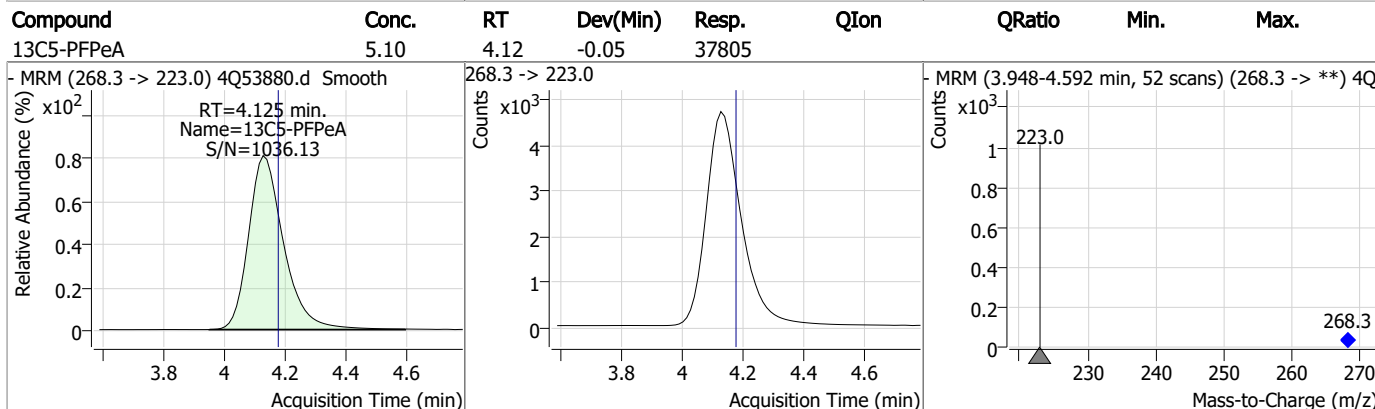
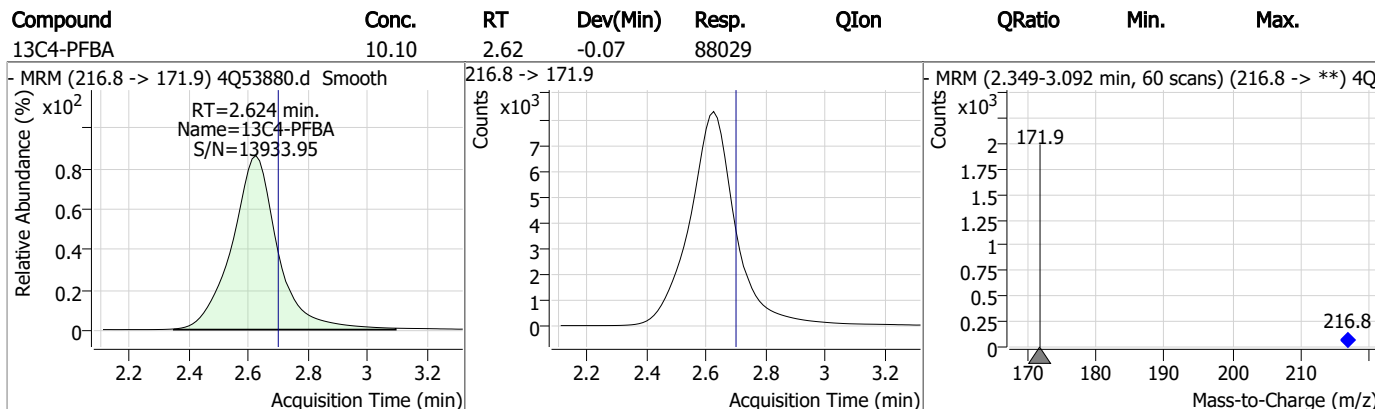
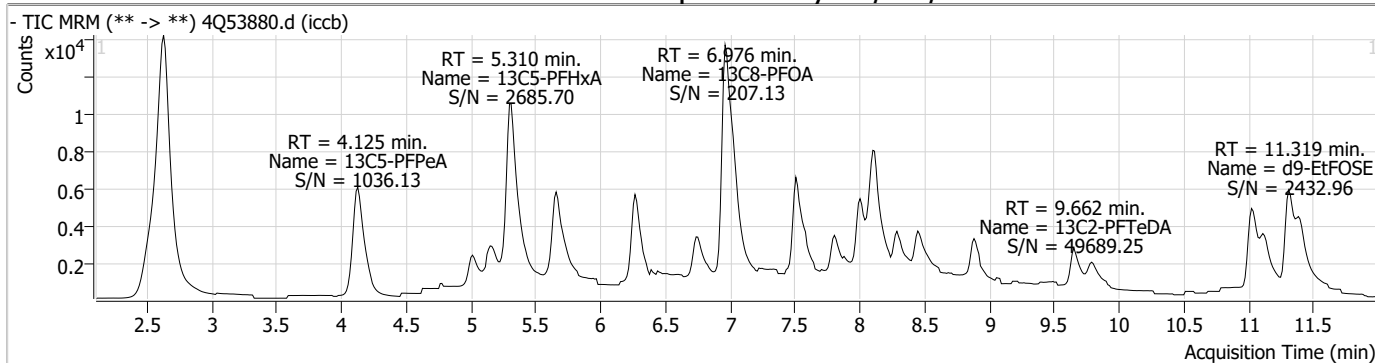
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.2.6

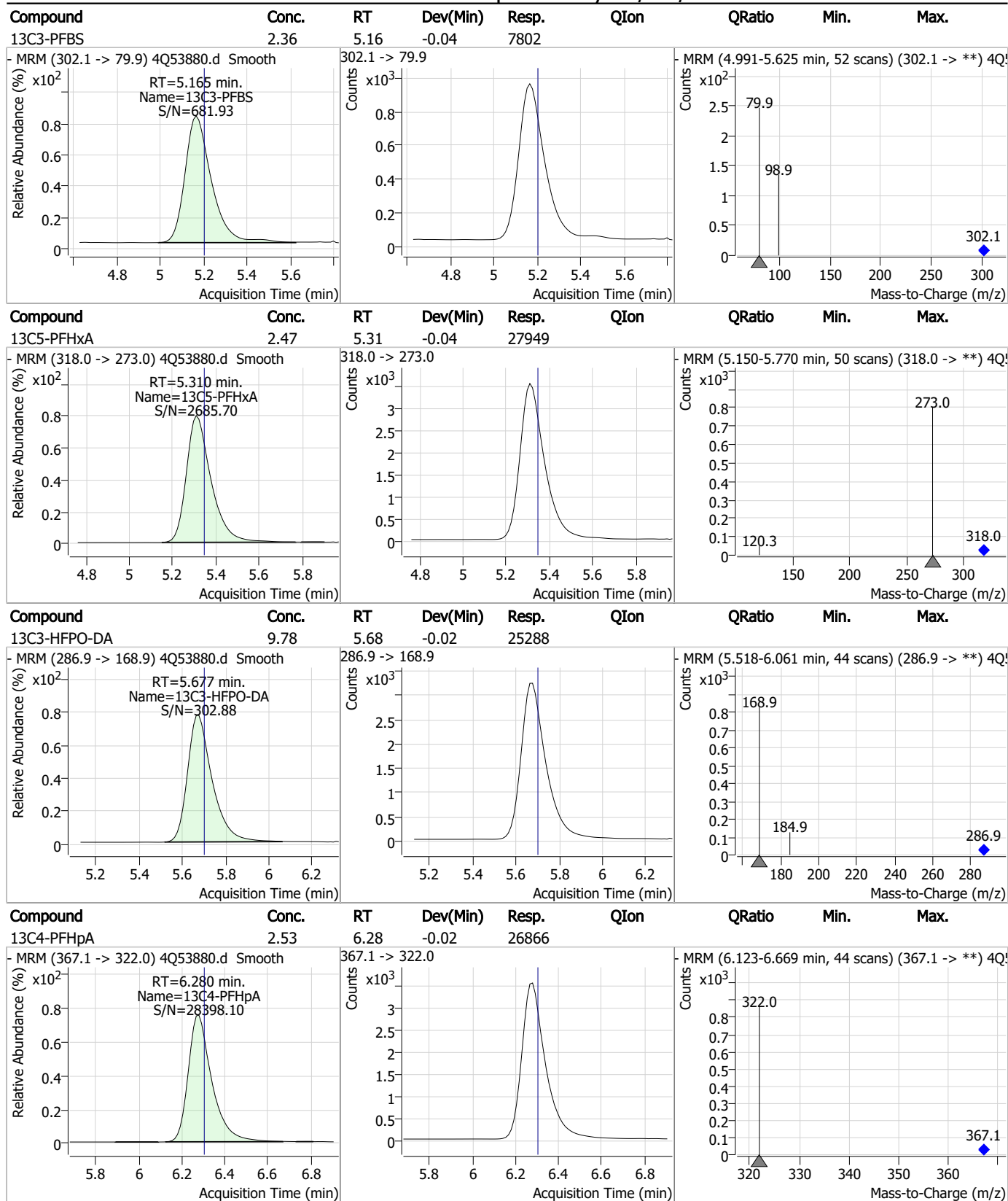
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Perfluorinated Compounds by LC/MS/MS



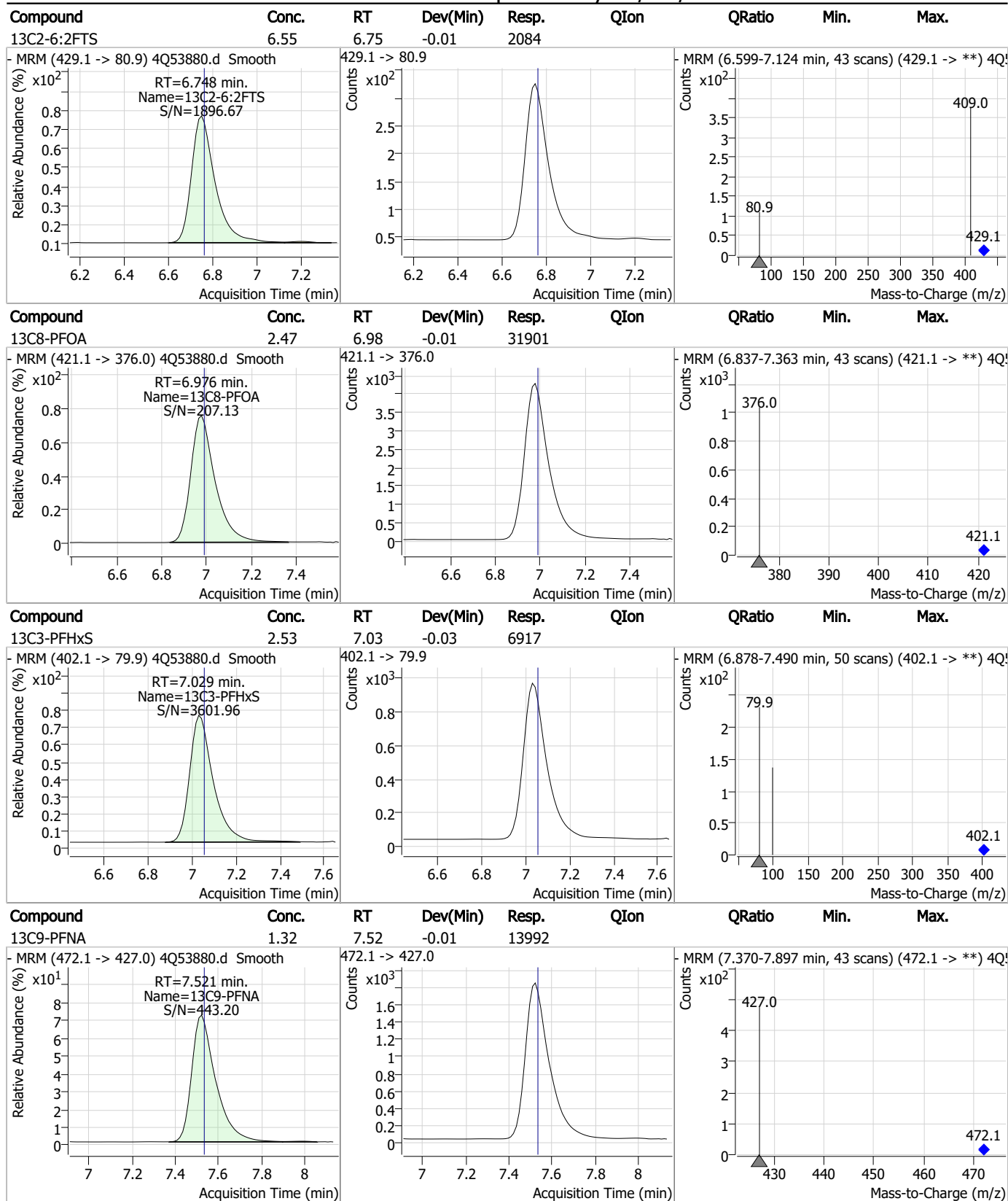
7.2.6
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Perfluorinated Compounds by LC/MS/MS



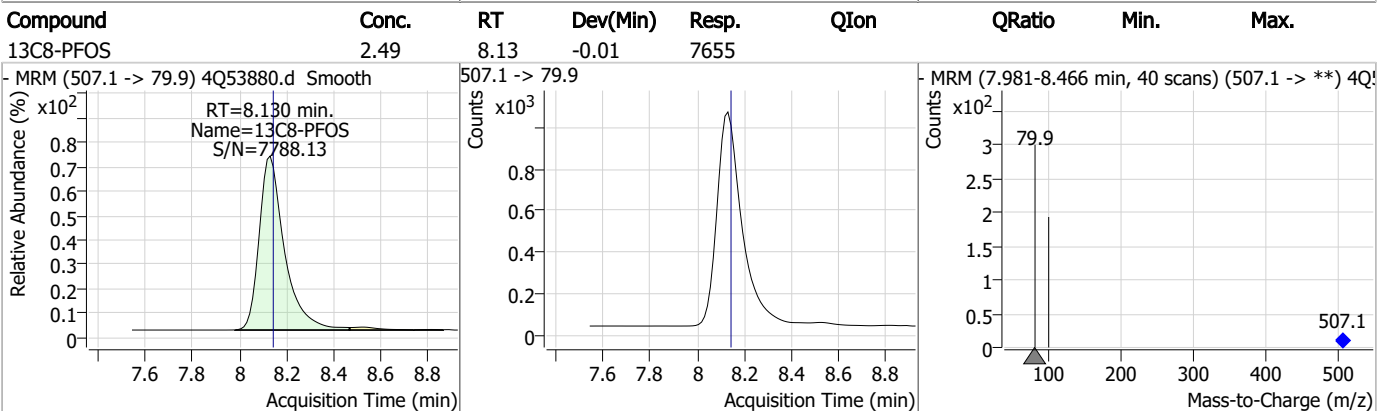
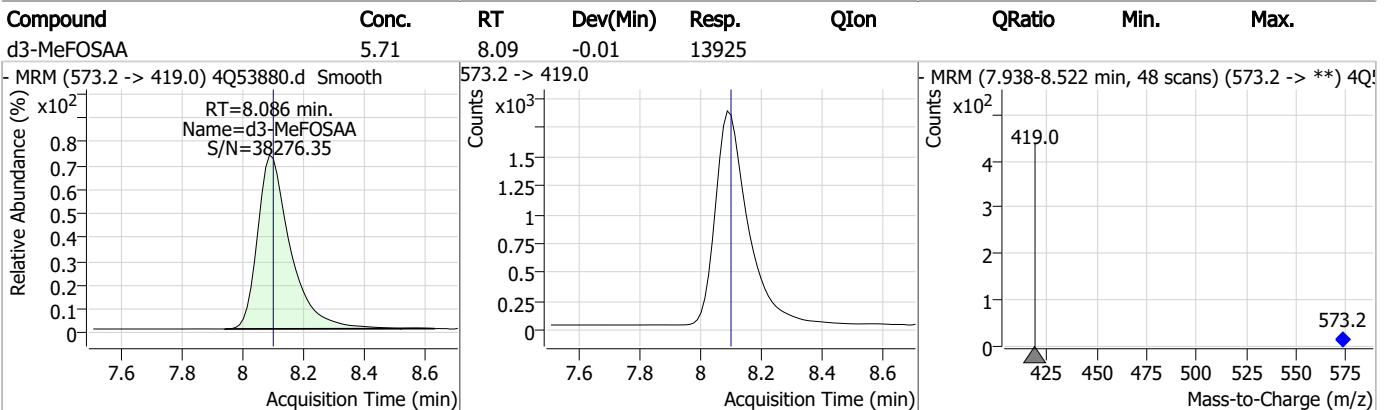
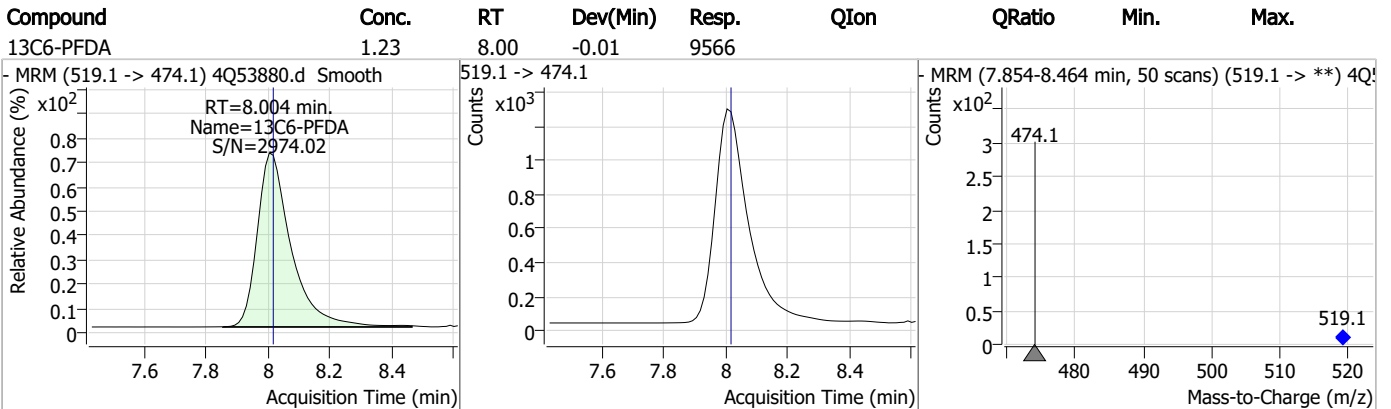
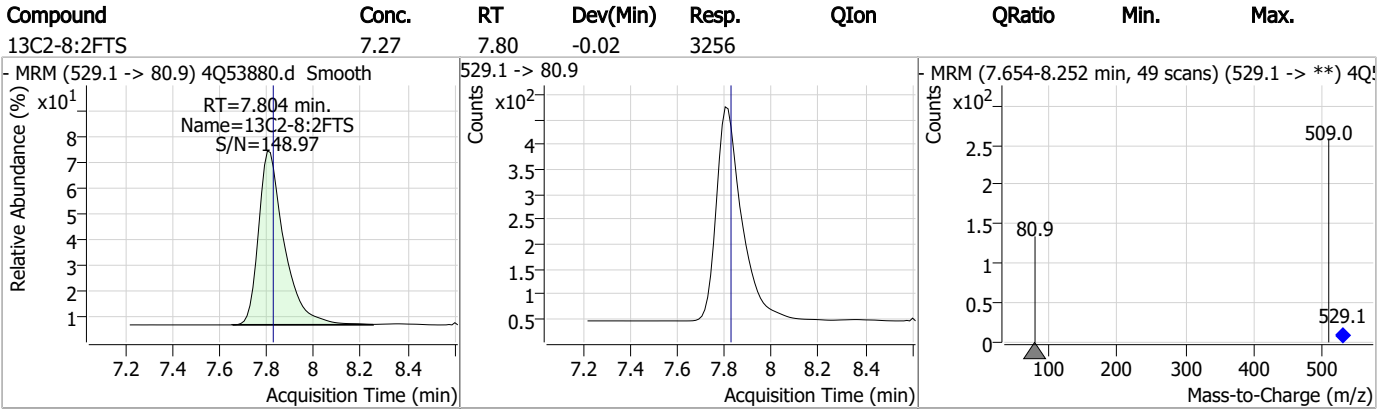
7.2.6
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Perfluorinated Compounds by LC/MS/MS



7.2.6
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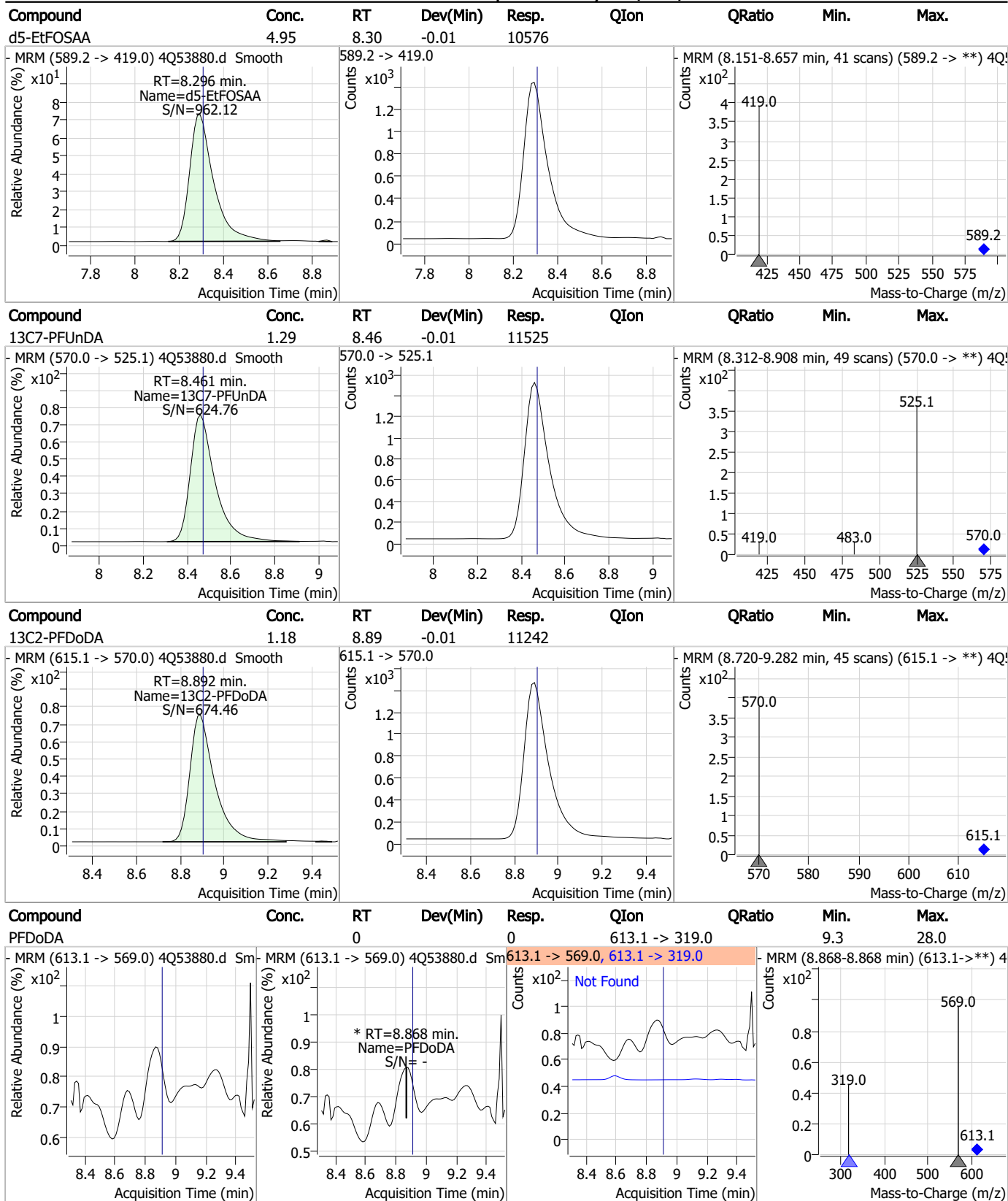
Perfluorinated Compounds by LC/MS/MS



7.2.6

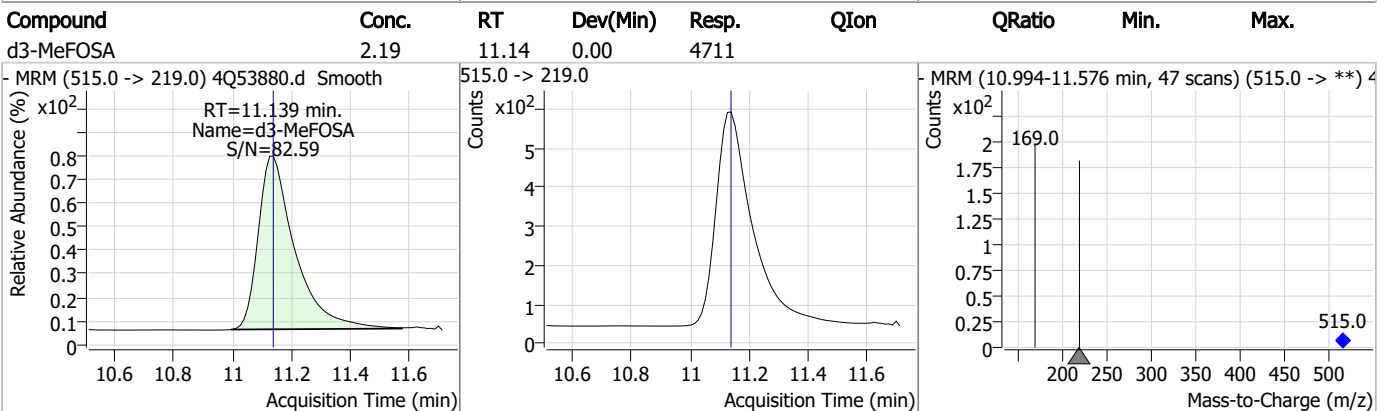
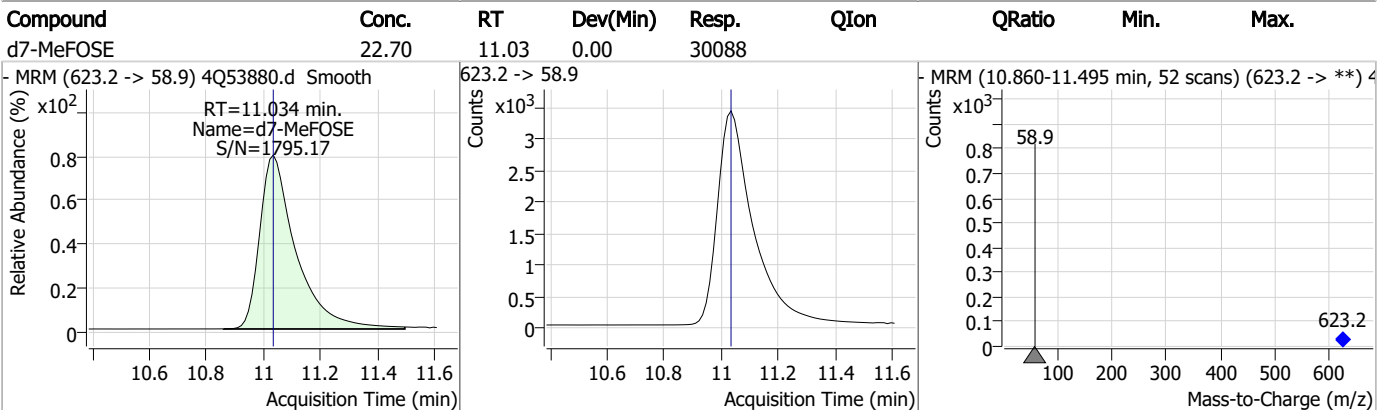
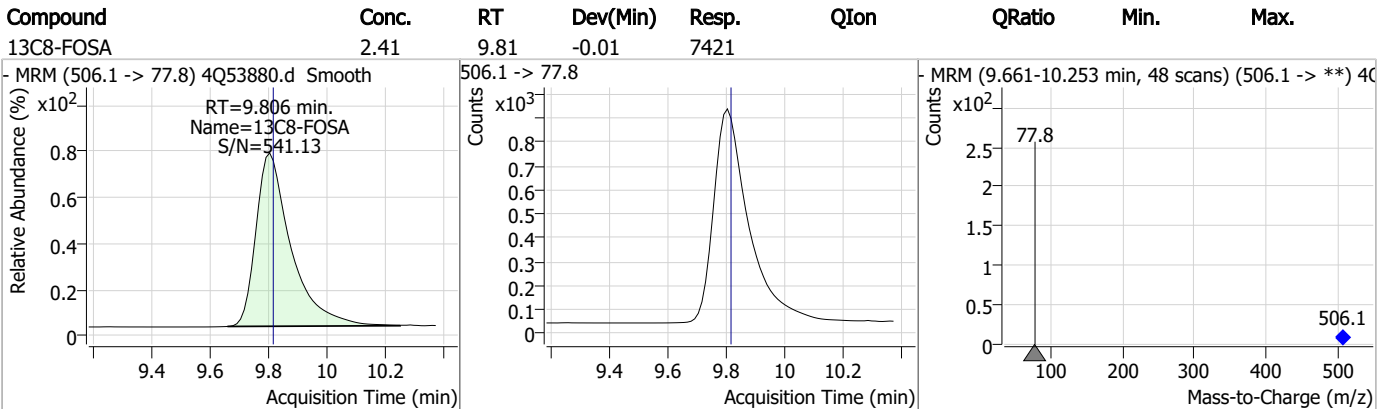
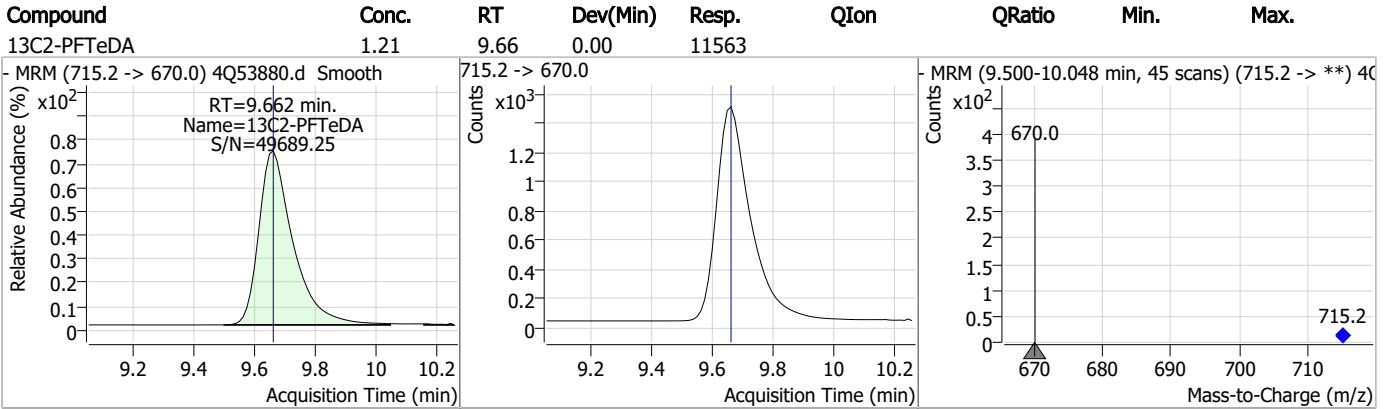
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Perfluorinated Compounds by LC/MS/MS

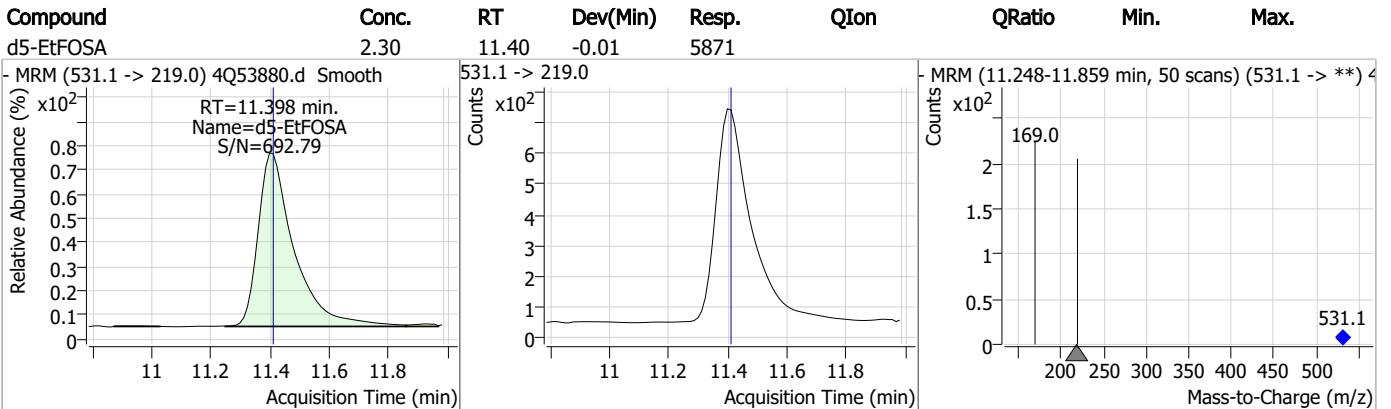
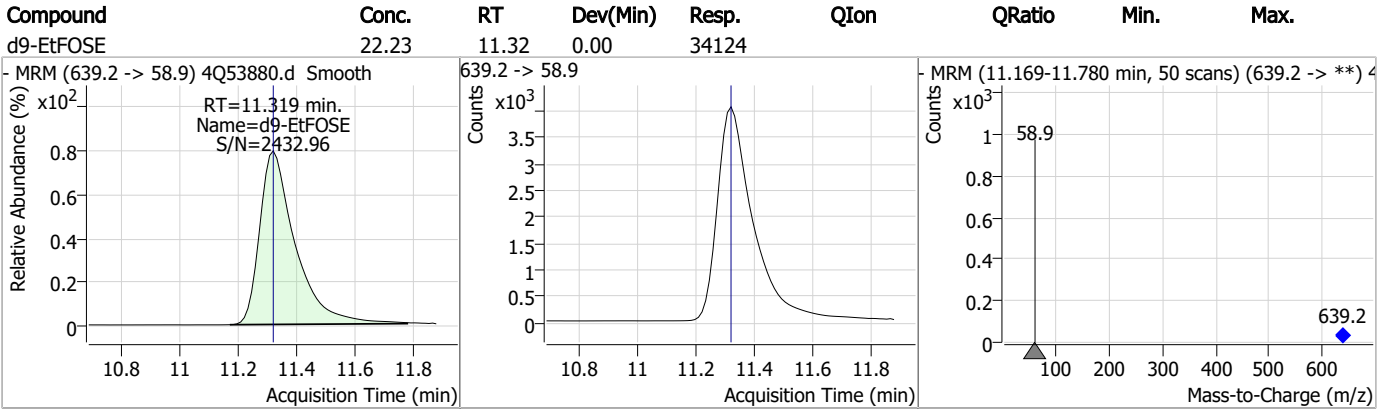


7.26
7

Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.2.6

7

Perfluorinated Compounds by LC/MS/MS

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 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/15/2023 11:55:48 AM
 Sample Name : op58-bs
 Vial : P1-F3
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q786.batch.bin
 Sample Information : OP58,S4Q786,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	36594	10.00 µg/L	-0.013
M5-PFPeA	4.137	268.3 -> 223.0	36067	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	27018	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	25990	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	31217	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	12603	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	8842	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	10279	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	9719	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9475	1.25 µg/L	-0.012
M8-FOSA	9.806	506.1 -> 77.8	7358	2.50 µg/L	-0.012
M3-PFBS	5.165	302.1 -> 79.9	7646	2.50 µg/L	-0.038
M3-PFHxS	7.017	402.1 -> 79.9	6282	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7054	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	939	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1974	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2965	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	13290	5.00 µg/L	-0.012
M3-HFPO-DA	5.664	286.9 -> 168.9	24210	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	10608	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	27282	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	32883	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5279	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4352	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6652	2.50 µg/L	-0.026
13C3-PFBA	2.678	216.0 -> 172.0	48899	5.00 µg/L	-0.025
18O2-PFHxS	7.016	403.0 -> 83.9	4484	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	40575	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	11321	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	14829	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	34145	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	939	6.12 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.3%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1974	6.11 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.2%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2965	6.51 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.1%		
13C2-PFDoDA	8.880	615.1 -> 570.0	9719	0.95 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 76.1%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9475	0.92 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 73.7%		
13C3-PFBS	5.165	302.1 -> 79.9	7646	2.27 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.9%		
13C3-PFHxS	7.017	402.1 -> 79.9	6282	2.26 µg/L	-0.037

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.4%		
13C4-PFBA	2.686	216.8 -> 171.9	36594	3.59 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 35.9%		
13C4-PFHpA	6.267	367.1 -> 322.0	25990	2.18 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 87.3%		
13C5-PFHxA	5.310	318.0 -> 273.0	27018	2.12 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 84.9%		
13C5-PFPeA	4.137	268.3 -> 223.0	36067	4.33 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 86.6%		
13C6-PFDA	7.992	519.1 -> 474.1	8842	1.06 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 84.9%		
13C7-PFUnDA	8.448	570.0 -> 525.1	10279	1.07 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 85.4%		
13C8-FOSA	9.806	506.1 -> 77.8	7358	2.31 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.6%		
13C8-PFOA	6.964	421.1 -> 376.0	31217	2.16 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 86.2%		
13C8-PFOS	8.117	507.1 -> 79.9	7054	2.22 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 88.8%		
13C9-PFNA	7.509	472.1 -> 427.0	12603	1.08 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 86.2%		
d3-MeFOSAA	8.086	573.2 -> 419.0	13290	5.27 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.4%		
13C3-HFPO-DA	5.664	286.9 -> 168.9	24210	8.33 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 83.3%		
d3-MeFOSA	11.126	515.0 -> 219.0	4352	1.96 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 78.4%		
d5-EtFOSAA	8.283	589.2 -> 419.0	10608	4.80 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.0%		
d7-MeFOSE	11.034	623.2 -> 58.9	27282	19.91 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 79.6%		
d9-EtFOSE	11.319	639.2 -> 58.9	32883	20.72 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 82.9%		
d5-EtFOSA	11.397	531.1 -> 219.0	5279	2.00 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 80.2%		
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	17192	9.27 µg/L	100
		327.1 -> 80.9	7257		
6:2FTS	6.737	427.1 -> 407.0	22061	10.33 µg/L	99
		427.1 -> 80.9	8372		
8:2FTS	7.804	527.1 -> 507.0	15855	9.83 µg/L	98
		527.1 -> 80.8	6447		
EtFOSAA	8.284	584.2 -> 419.1	4905	2.58 µg/L	m 89
		584.2 -> 526.0	1836		
FOSA	9.798	498.1 -> 77.9	8186	2.28 µg/L	99
		498.1 -> 478.0	224		
MeFOSAA	8.087	570.1 -> 419.0	5617	2.38 µg/L	95
		570.1 -> 483.0	900		
PFBA	2.682	212.8 -> 168.9	12764	9.59 µg/L	100
PFBS	5.166	298.7 -> 79.9	5167	1.90 µg/L	96
		298.7 -> 98.8	2126		
PFDA	8.005	512.9 -> 469.0	17205	2.38 µg/L	96
		512.9 -> 219.0	3733		
PFDODA	8.880	613.1 -> 569.0	20655	2.61 µg/L	97
		613.1 -> 319.0	3539		
PFDS	9.020	599.0 -> 79.9	3985	2.18 µg/L	100

7.3.1
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2031			
PFHpA	6.268	363.1 -> 319.0	38852	2.38	µg/L	98
		363.1 -> 169.0	7118			
PFHpS	7.612	449.0 -> 79.9	6111	2.19	µg/L	95
		449.0 -> 98.9	3355			
PFHxA	5.313	313.0 -> 269.0	21735	2.30	µg/L	98
		313.0 -> 118.9	766			
PFHxS	7.018	398.7 -> 79.9	4149	2.19	µg/L	m 89
		398.7 -> 98.9	2313			
PFNA	7.510	463.0 -> 419.0	18964	2.36	µg/L	97
		463.0 -> 219.0	5088			
PFNS	8.586	548.8 -> 79.9	3184	2.37	µg/L	99
		548.8 -> 98.9	1653			
PFOA	6.965	413.0 -> 369.0	35576	2.35	µg/L	99
		413.0 -> 169.0	7051			
PFOS	8.119	498.9 -> 79.9	6877	2.15	µg/L	m 75
		498.9 -> 98.8	2981			
PFPeA	4.139	263.0 -> 219.0	36558	4.66	µg/L	100
PFPeS	6.257	349.1 -> 79.9	4706	2.28	µg/L	96
		349.1 -> 98.9	2155			
PFTeDA	9.650	713.1 -> 669.0	17435	2.42	µg/L	98
		713.1 -> 168.9	1942			
PFTrDA	9.279	663.0 -> 619.0	22306	2.59	µg/L	99
		663.0 -> 168.9	2975			
PFUnDA	8.449	563.1 -> 519.0	20463	2.43	µg/L	98
		563.1 -> 269.1	4187			
11CI-PF3OUdS	9.306	630.9 -> 450.9	33466	4.43	µg/L	99
		632.9 -> 452.9	10270			
9CI-PF3ONS	8.451	530.8 -> 351.0	35007	4.59	µg/L	100
		532.8 -> 353.0	10256			
ADONA	6.544	376.9 -> 250.9	91353	5.45	µg/L	99
		376.9 -> 84.8	22832			
HFPO-DA	5.665	284.9 -> 168.9	11803	4.60	µg/L	98
		284.9 -> 184.9	1195			
3:3FTCA	3.605	241.0 -> 177.0	4669	22.52	µg/L	98
		241.0 -> 117.0	393			
5:3FTCA	5.996	341.0 -> 237.1	101101	60.87	µg/L	96
		341.0 -> 217.0	70455			
7:3FTCA	7.536	441.0 -> 316.9	45381	60.90	µg/L	100
		441.0 -> 336.9	110614			
EtFOSA	11.399	526.0 -> 219.0	11453	4.81	µg/L	97
		526.0 -> 169.0	15728			
EtFOSE	11.332	630.0 -> 58.9	14933	12.15	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	7921	5.01	µg/L	m 88
		511.9 -> 169.0	11588			
MeFOSE	11.047	616.1 -> 58.9	13758	11.07	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	3137	2.18	µg/L	94
		699.1 -> 98.8	1813			
NFDHA	5.191	295.0 -> 201.0	3693	5.93	µg/L	96
		295.0 -> 84.9	957			
PFMBA	4.541	279.0 -> 85.1	24115	5.34	µg/L	100
PFMPA	3.290	229.0 -> 84.9	19673	3.92	µg/L	100
PFEESA	5.684	314.8 -> 134.9	37423	5.01	µg/L	98
		314.8 -> 82.9	1315			

= Qualifier out of range, m = manually integrated, + = Area summed



7.3.1
7

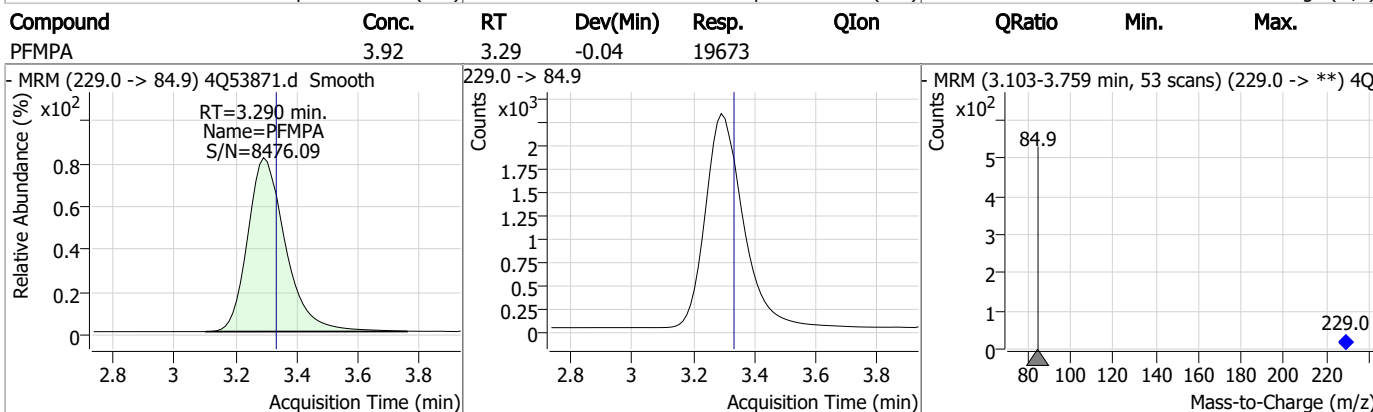
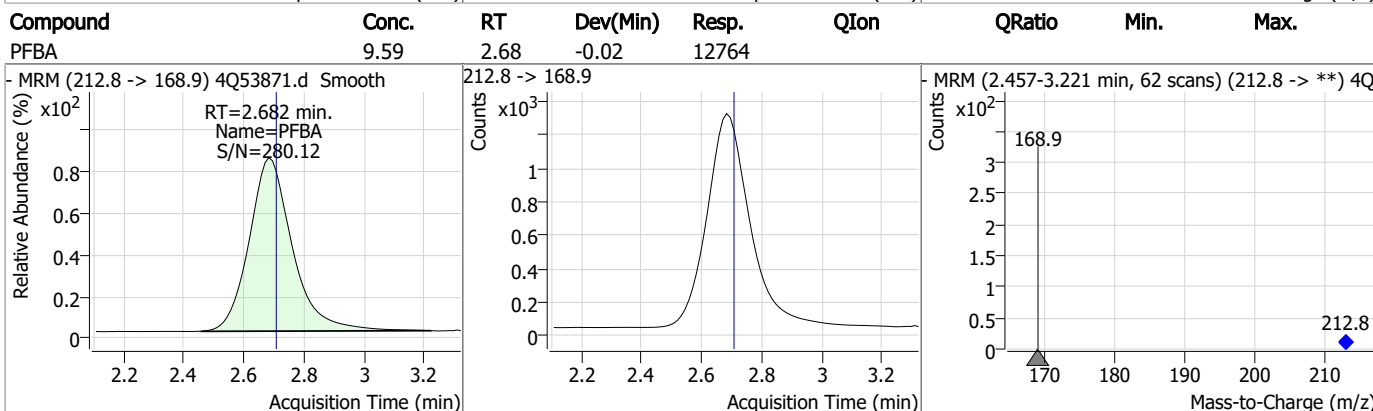
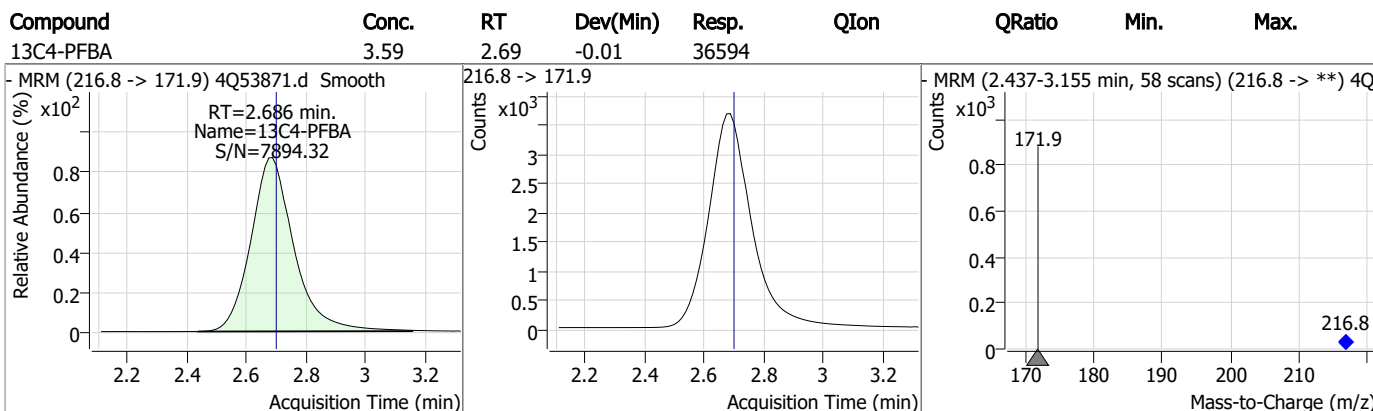
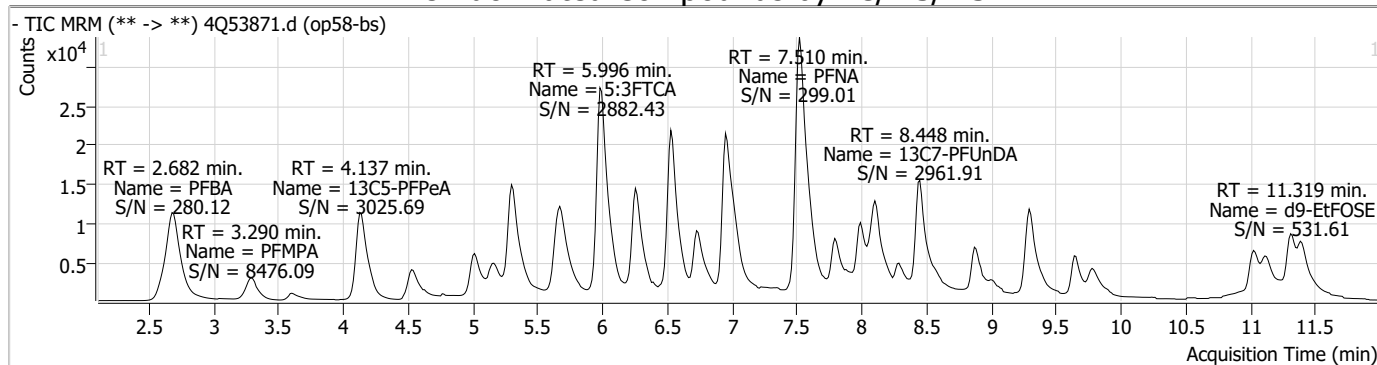
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.3.1

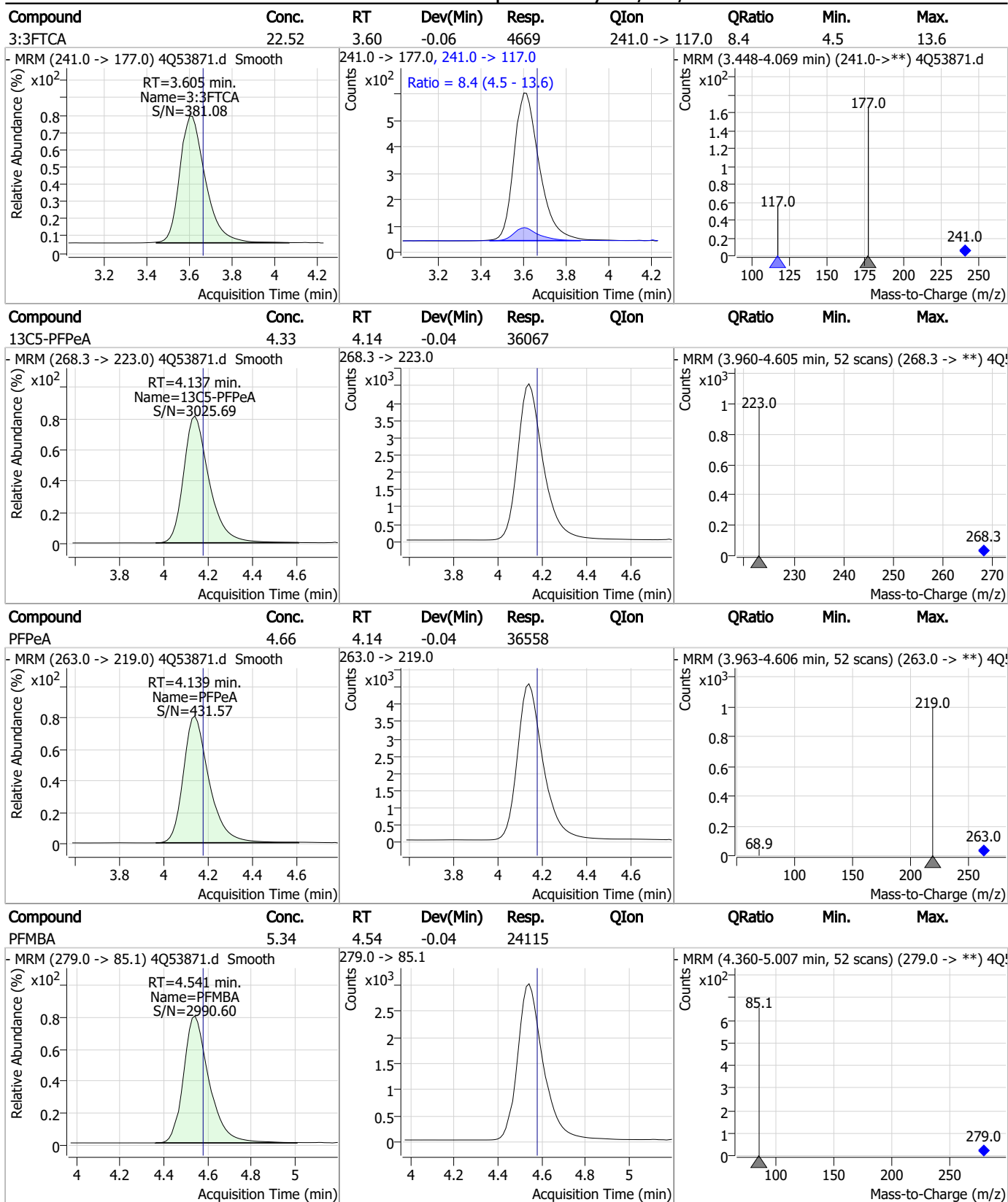
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Perfluorinated Compounds by LC/MS/MS



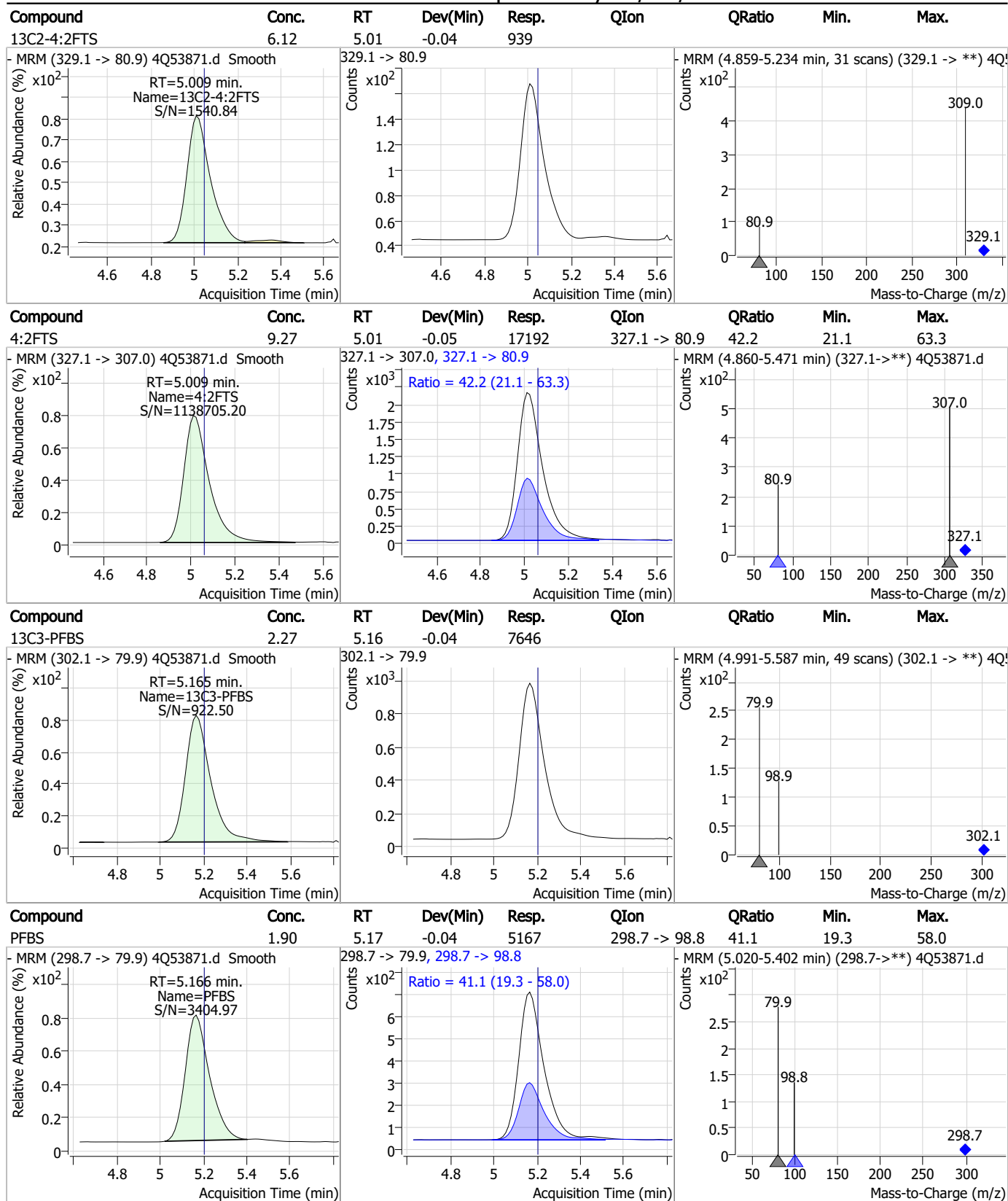
7.3.1
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Perfluorinated Compounds by LC/MS/MS



7.3.1
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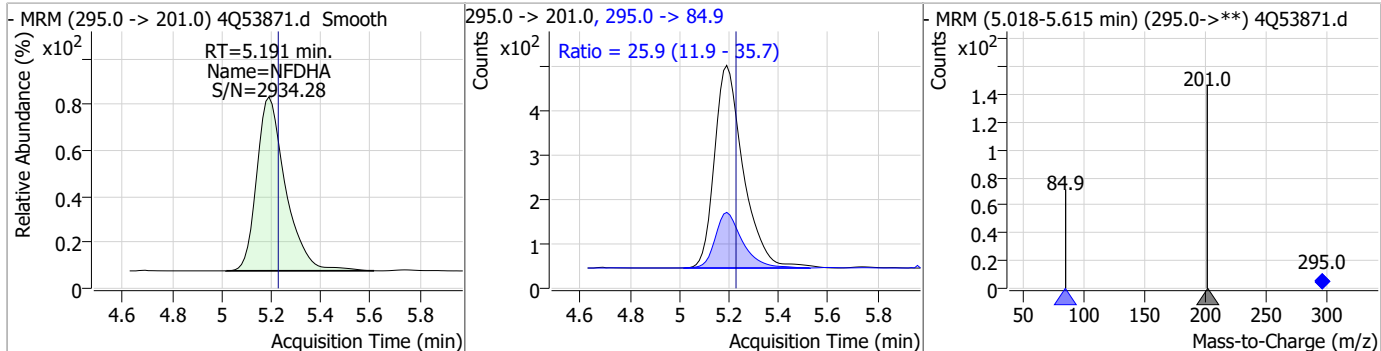
Perfluorinated Compounds by LC/MS/MS



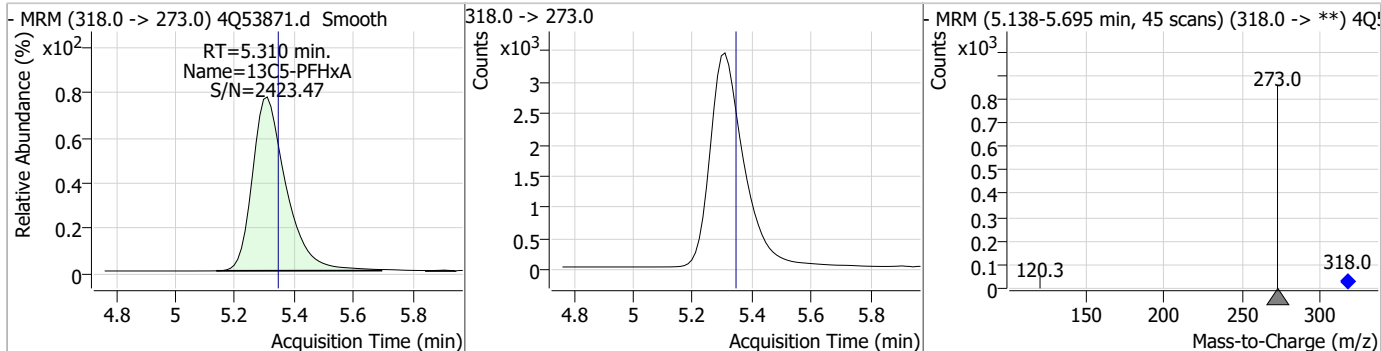
7.3.1
7

Perfluorinated Compounds by LC/MS/MS

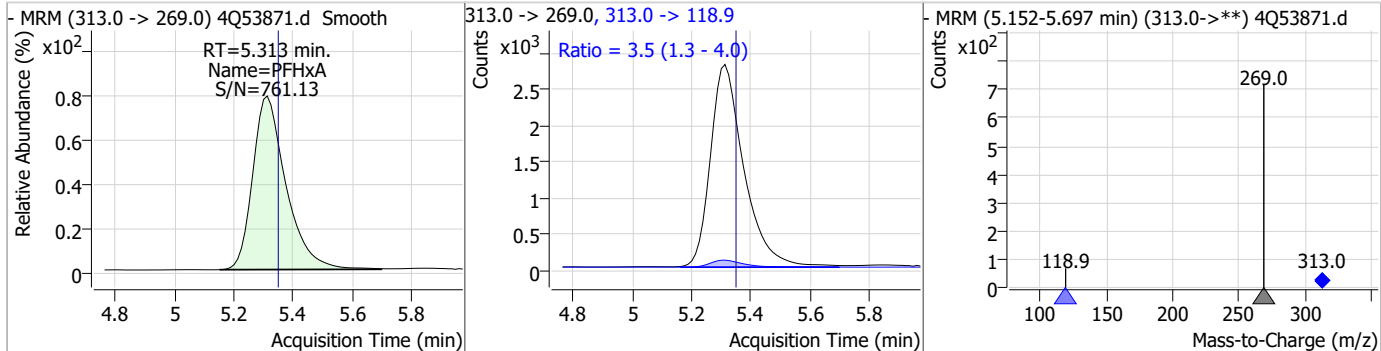
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	5.93	5.19	-0.04	3693	295.0 -> 84.9	25.9	11.9	35.7



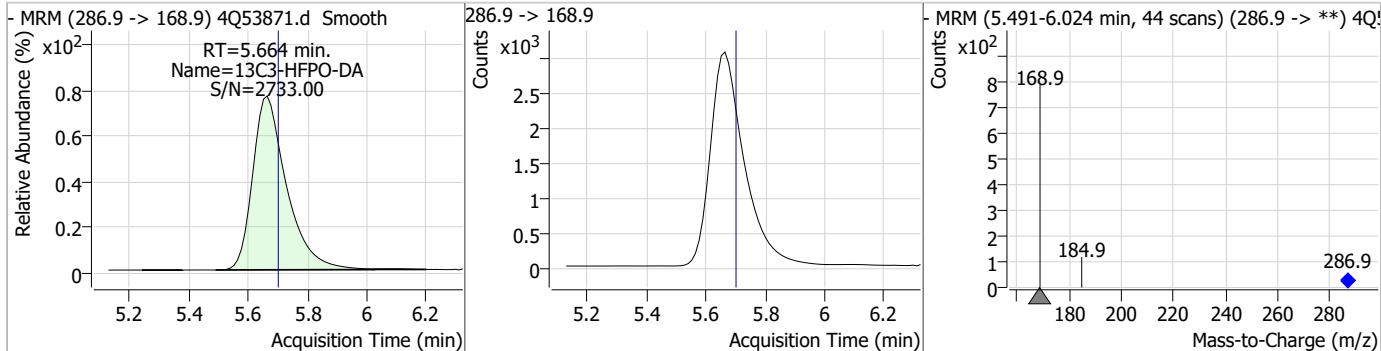
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.12	5.31	-0.04	27018				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.30	5.31	-0.04	21735	313.0 -> 118.9	3.5	1.3	4.0

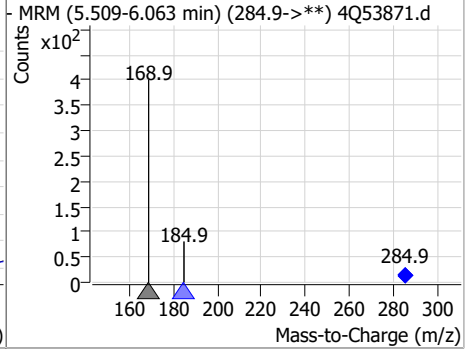
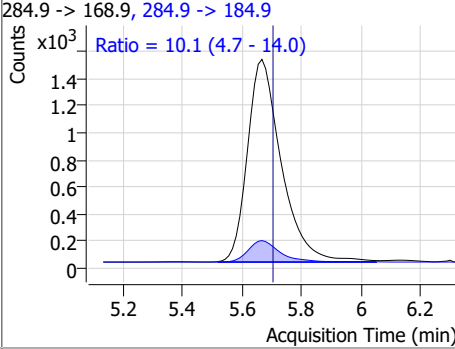
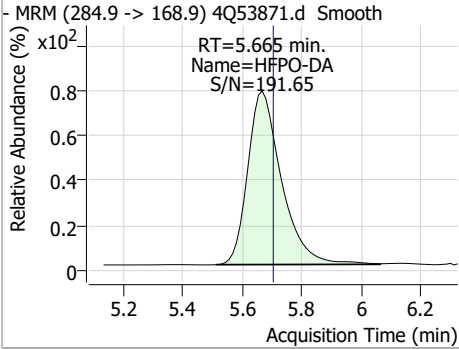


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	8.33	5.66	-0.04	24210				

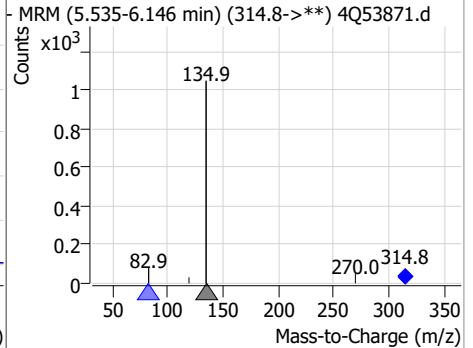
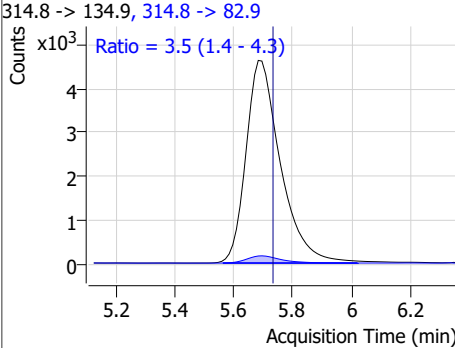
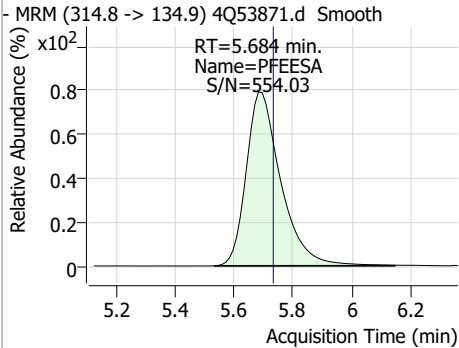


Perfluorinated Compounds by LC/MS/MS

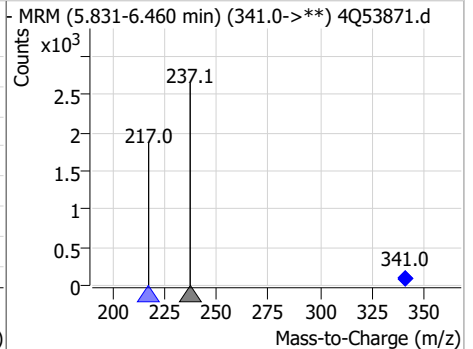
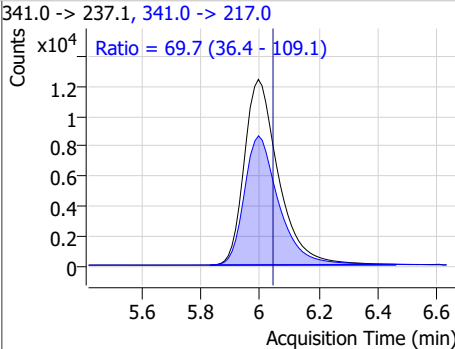
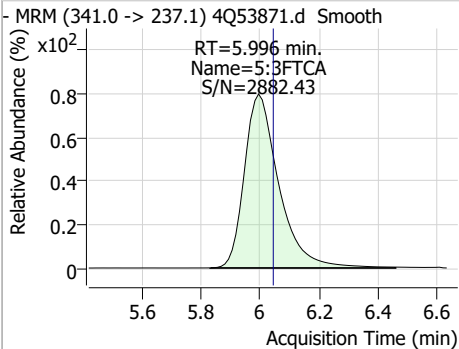
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.60	5.67	-0.04	11803	284.9 -> 184.9	10.1	4.7	14.0



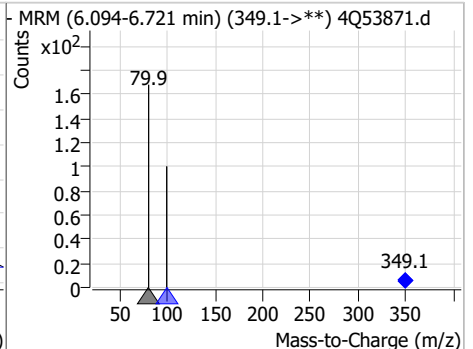
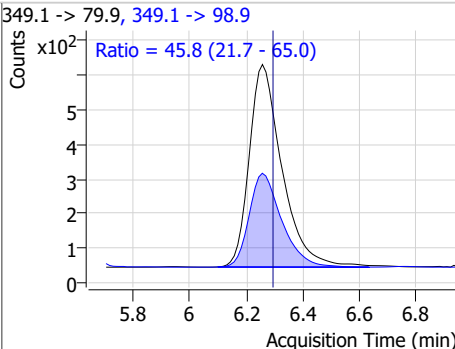
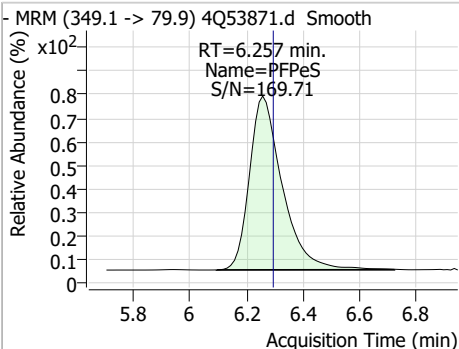
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	5.01	5.68	-0.05	37423	314.8 -> 82.9	3.5	1.4	4.3



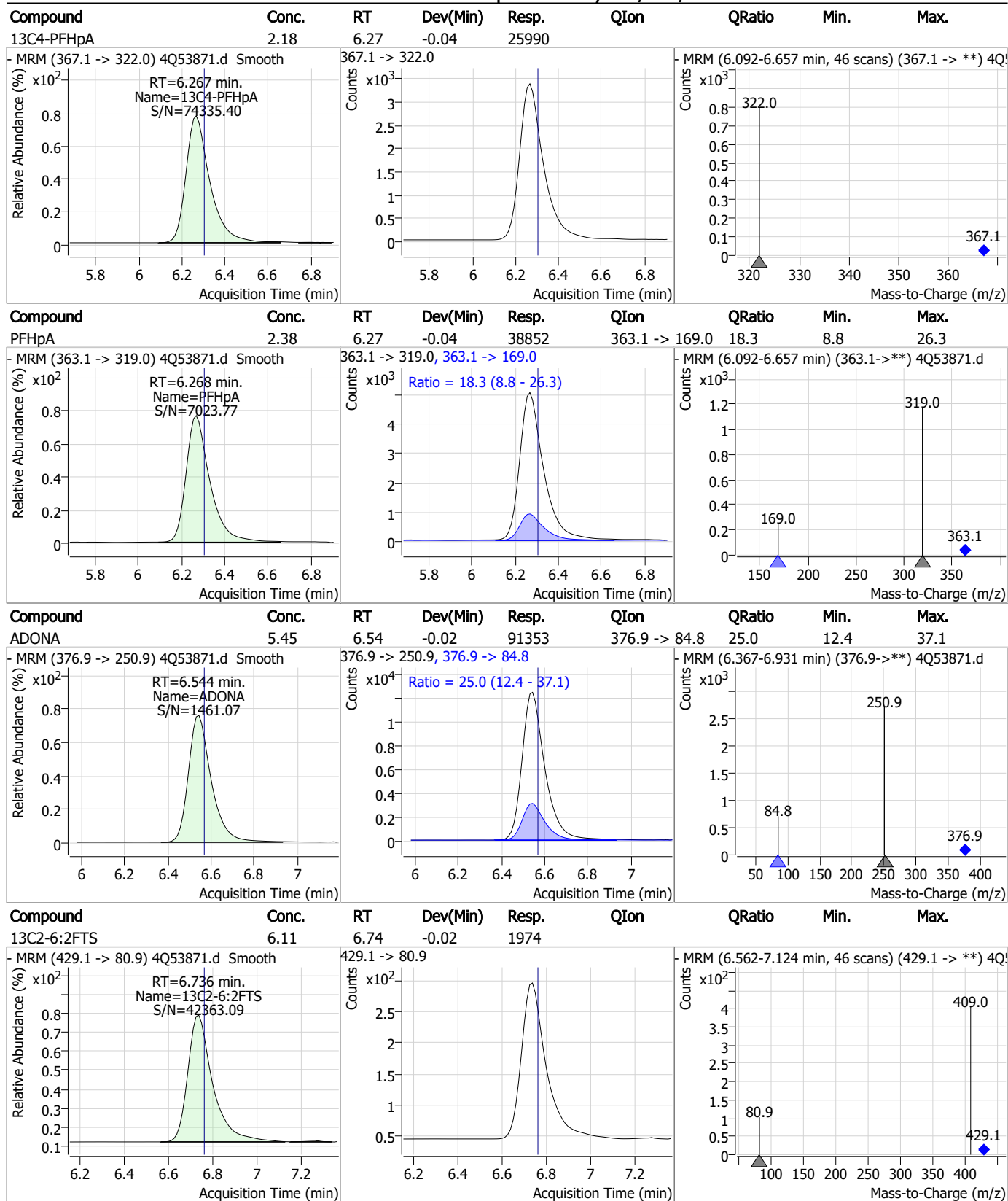
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	60.87	6.00	-0.05	101101	341.0 -> 217.0	69.7	36.4	109.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.28	6.26	-0.04	4706	349.1 -> 98.9	45.8	21.7	65.0

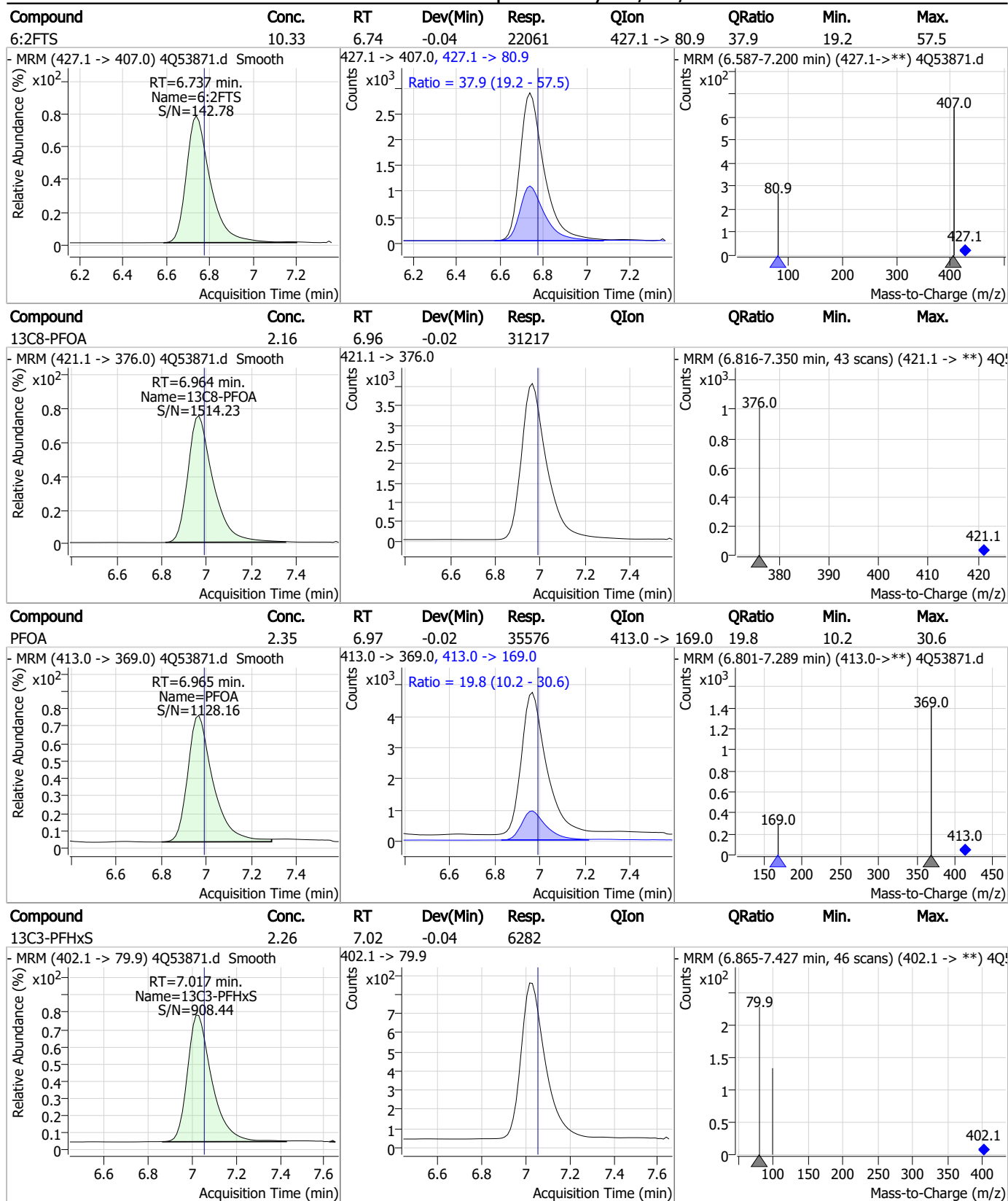


Perfluorinated Compounds by LC/MS/MS



7.3.1
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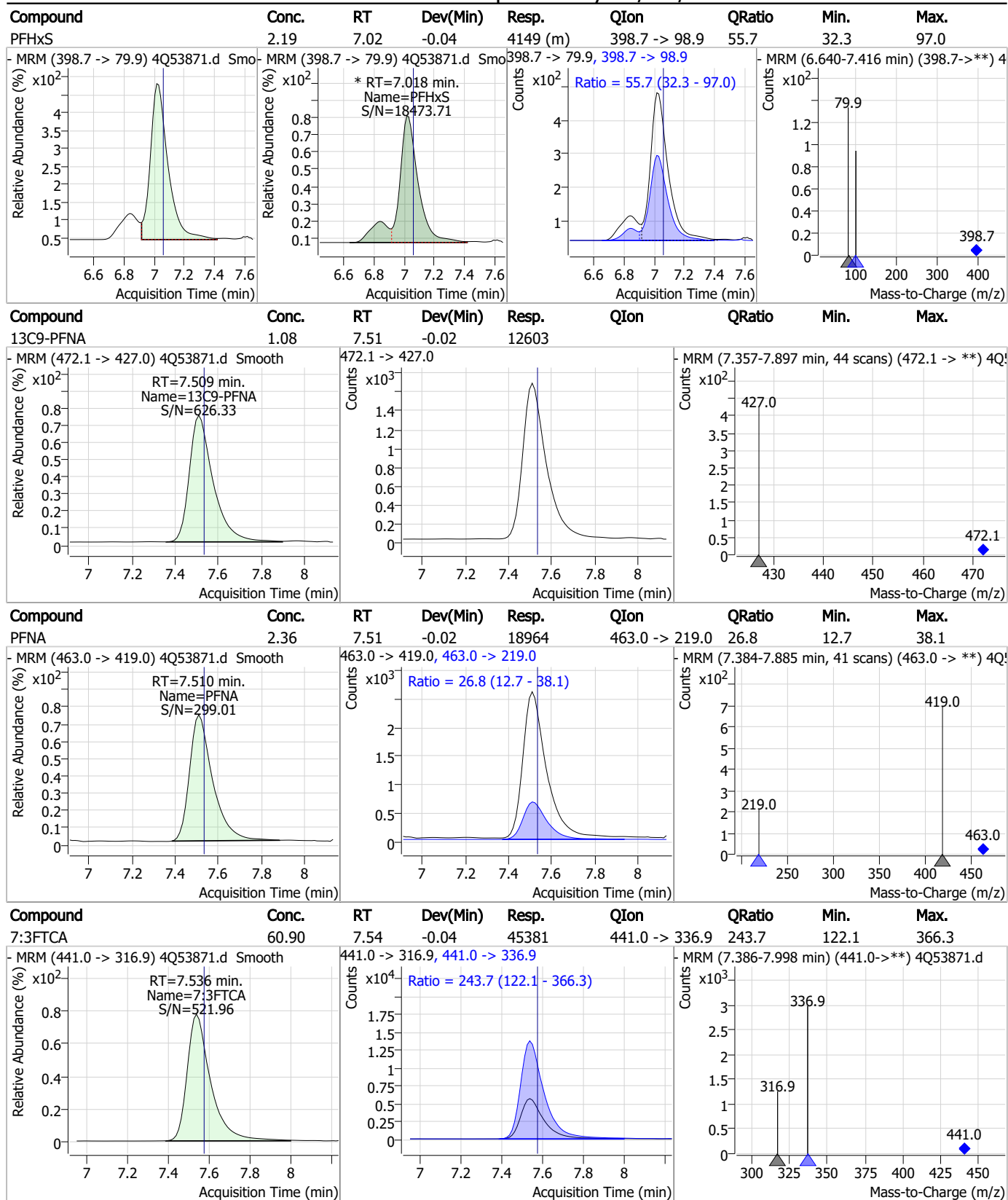
Perfluorinated Compounds by LC/MS/MS



7.3.1
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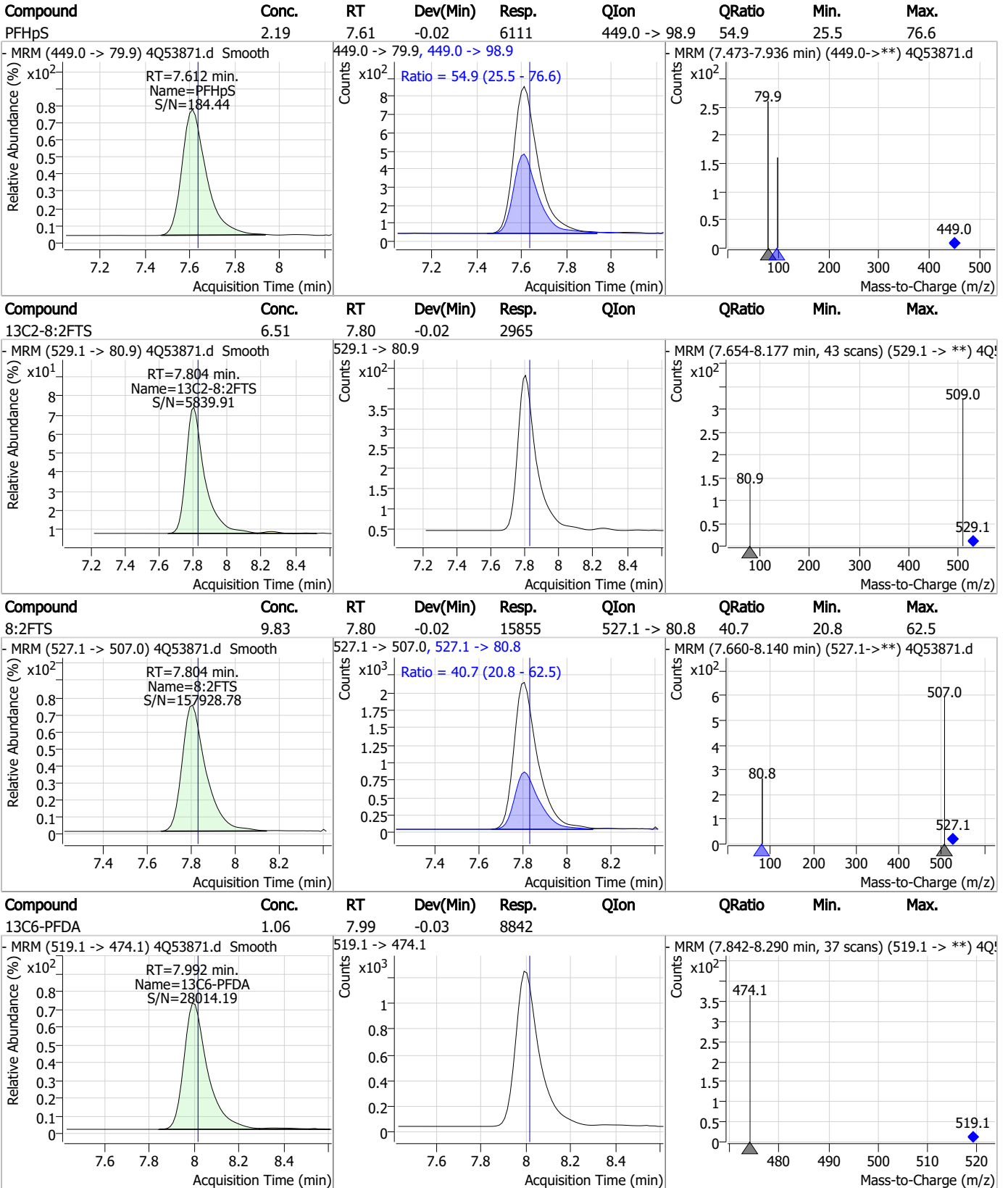


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

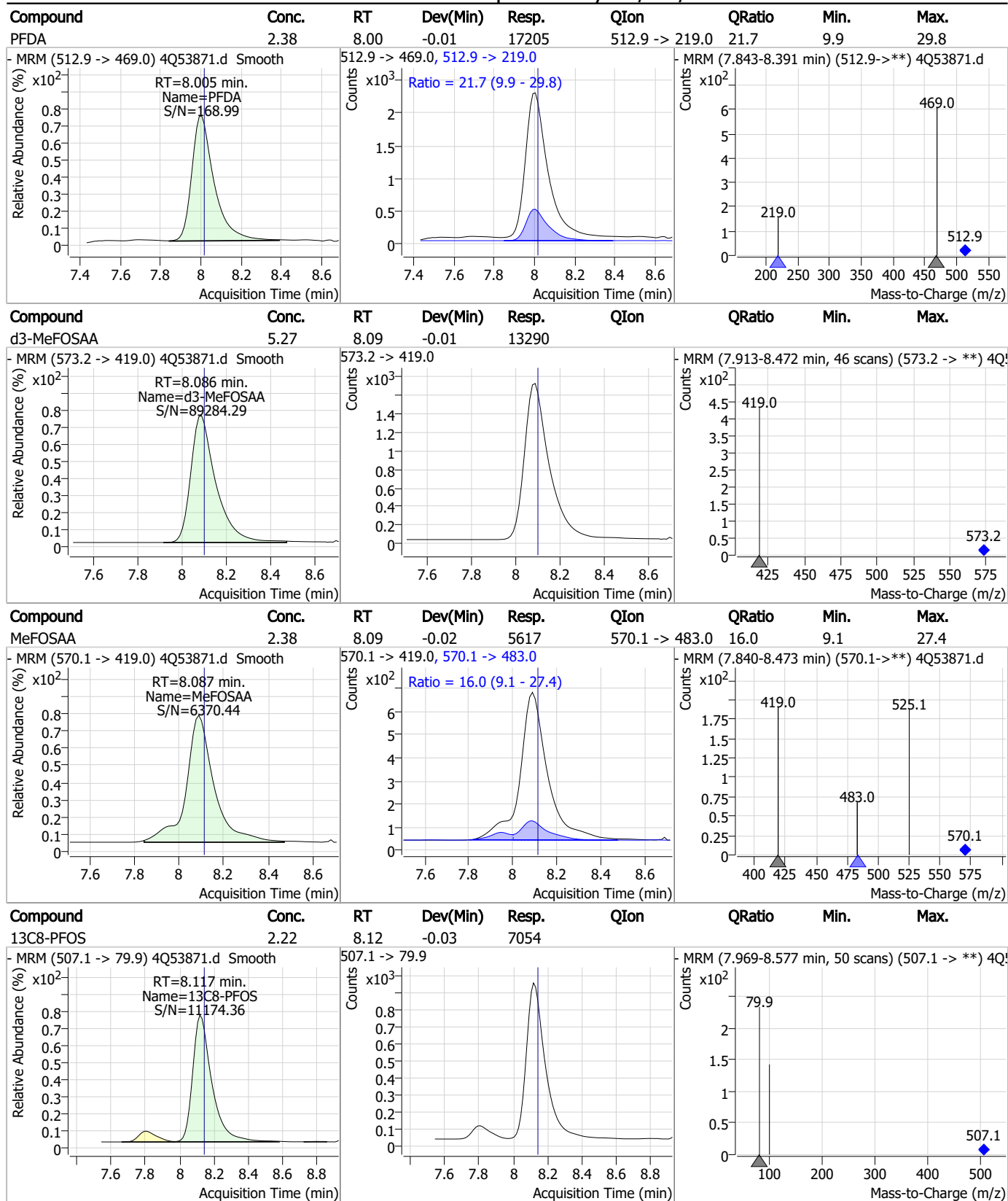


7.3.1

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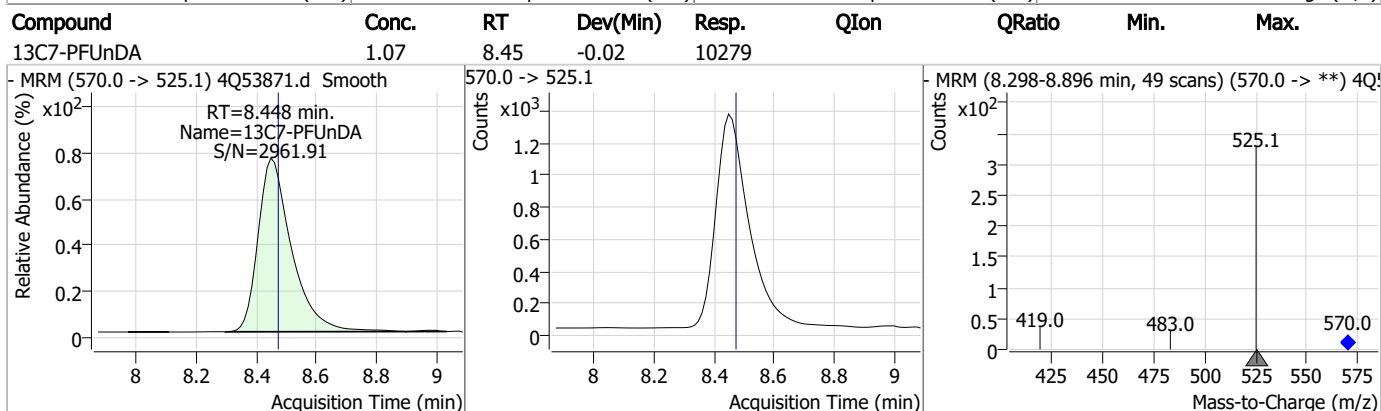
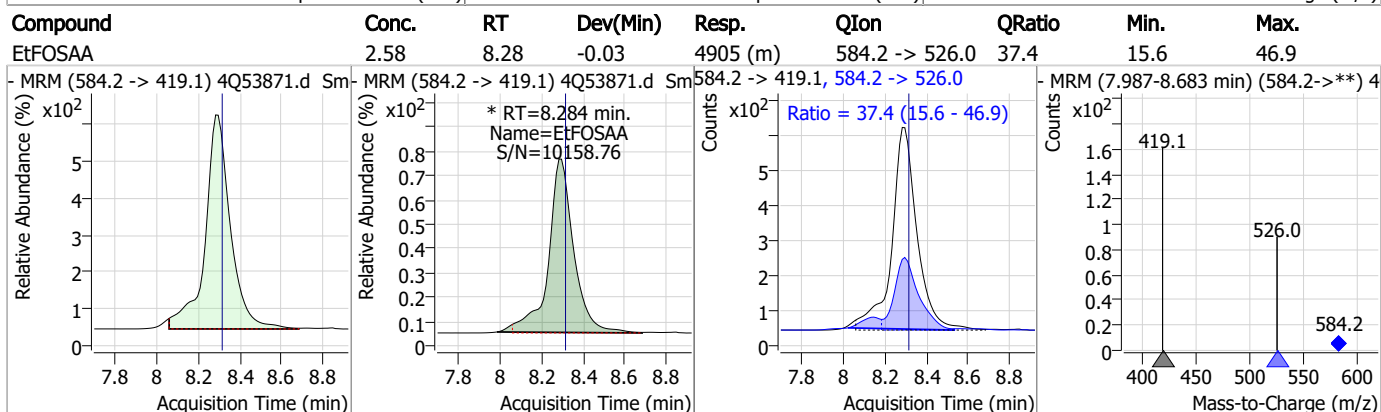
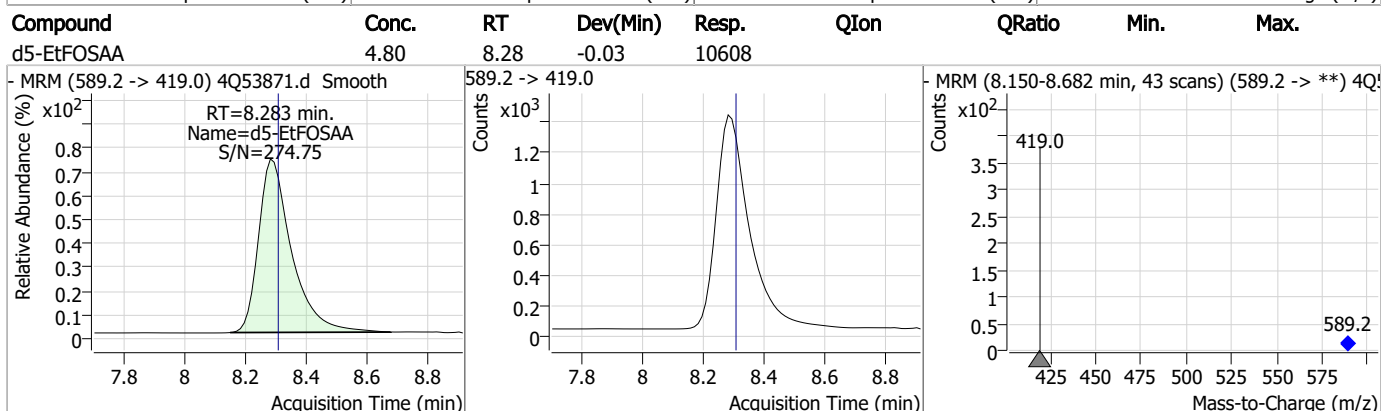
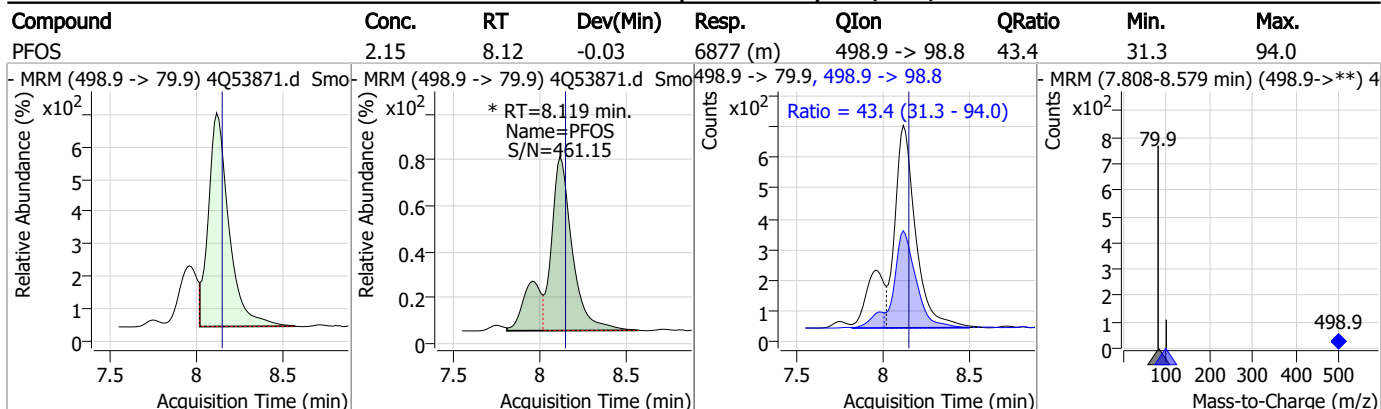
Perfluorinated Compounds by LC/MS/MS



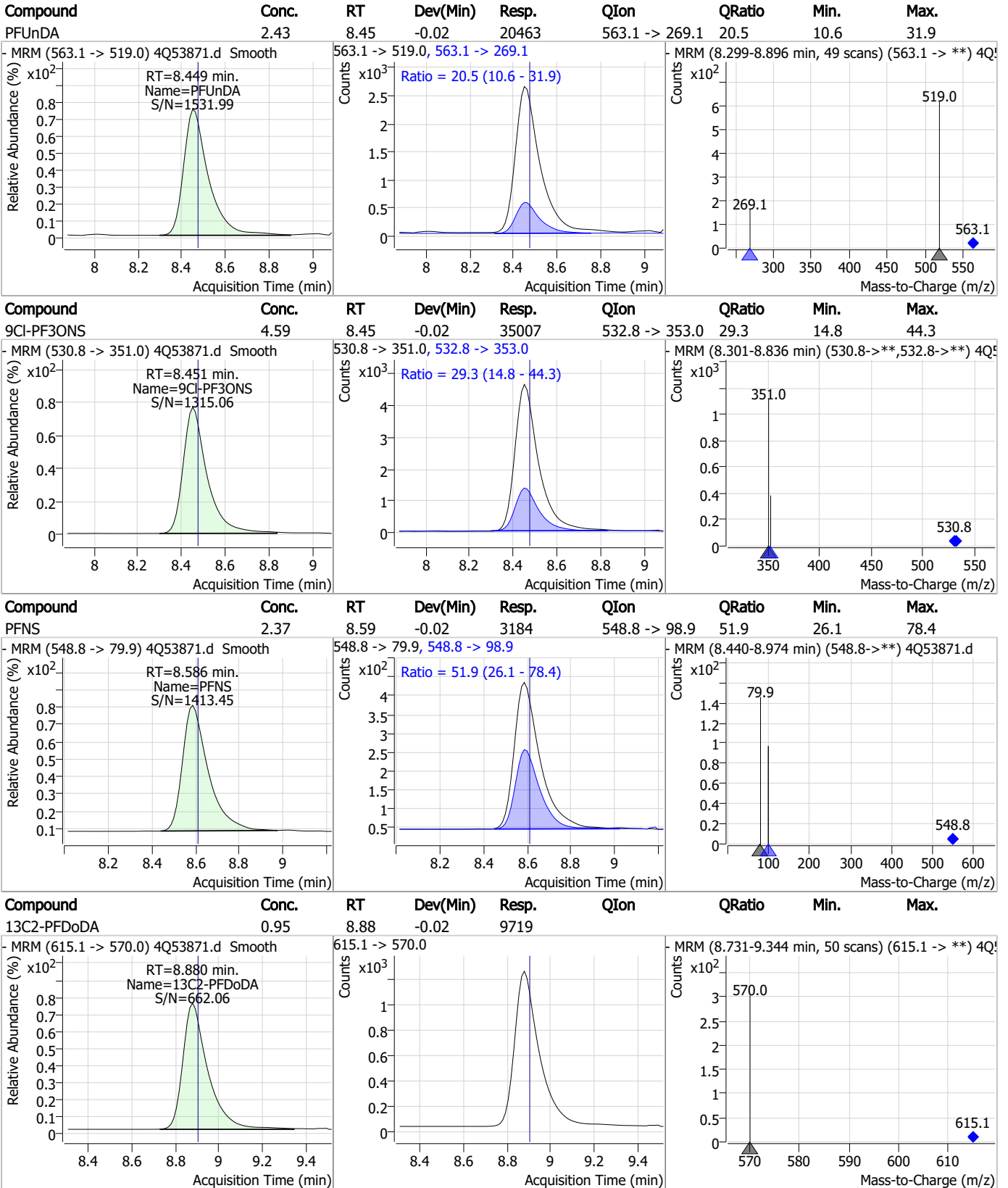
7.3.1
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

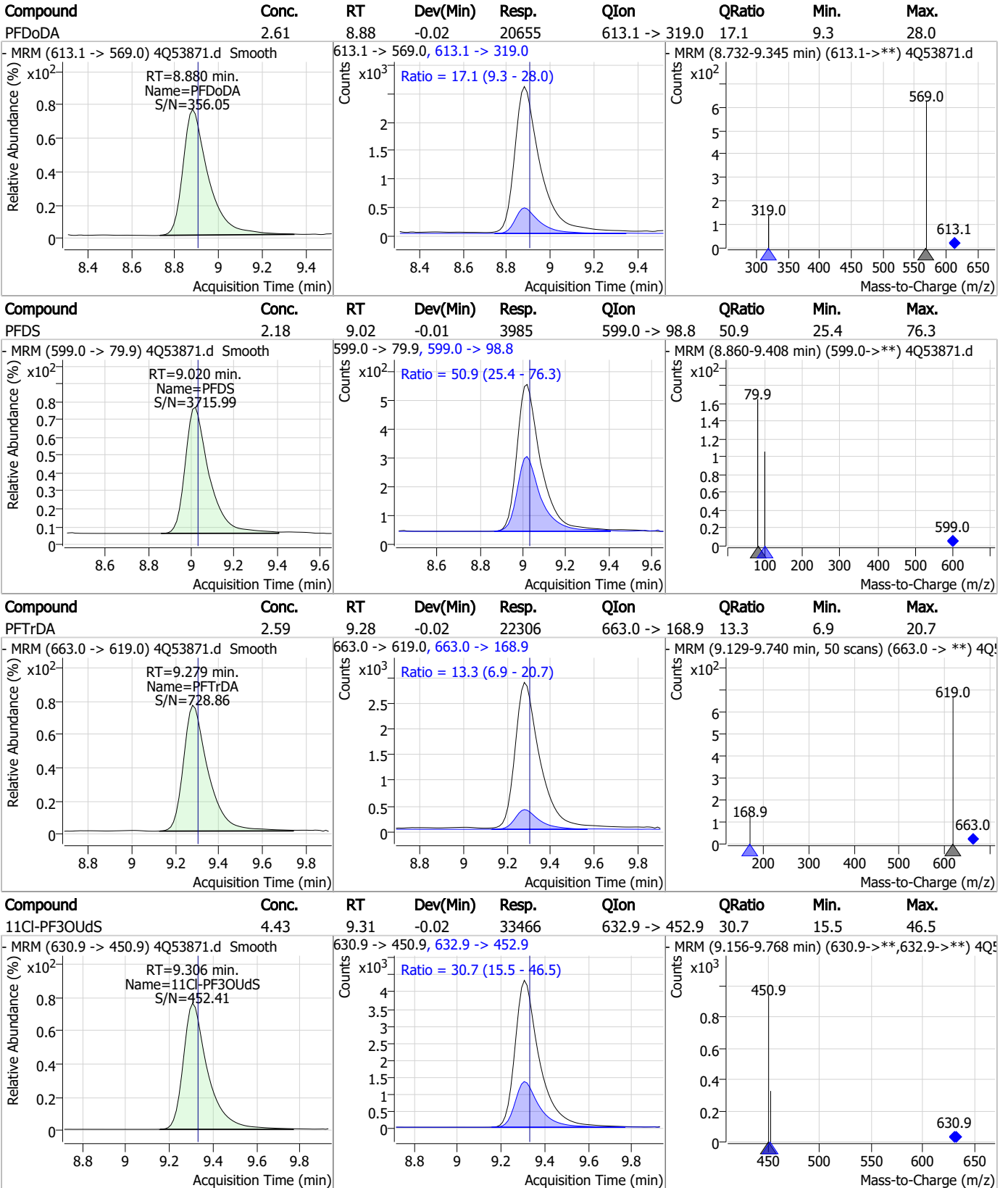


7.3.1

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Perfluorinated Compounds by LC/MS/MS

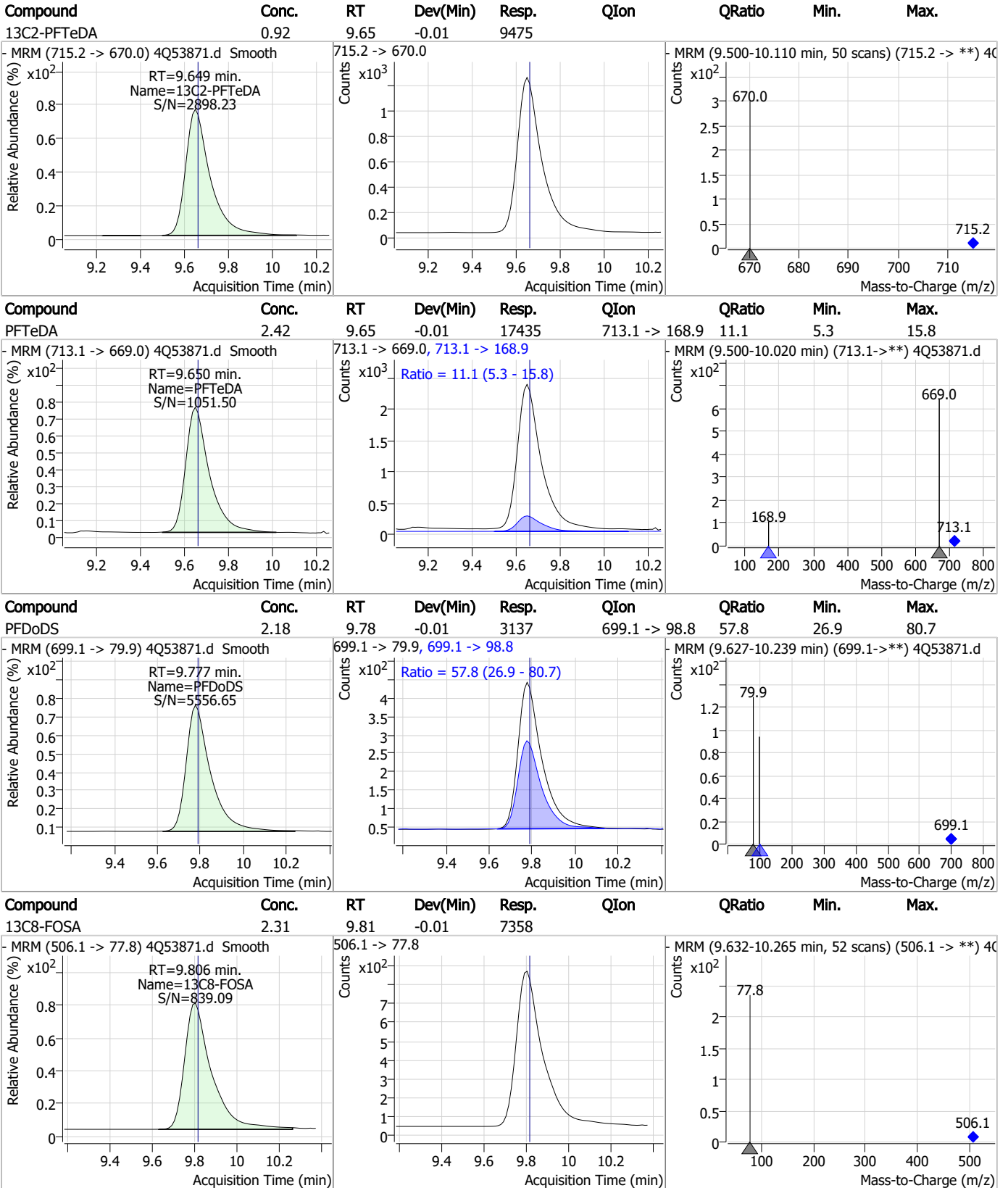


7.3.1

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Perfluorinated Compounds by LC/MS/MS

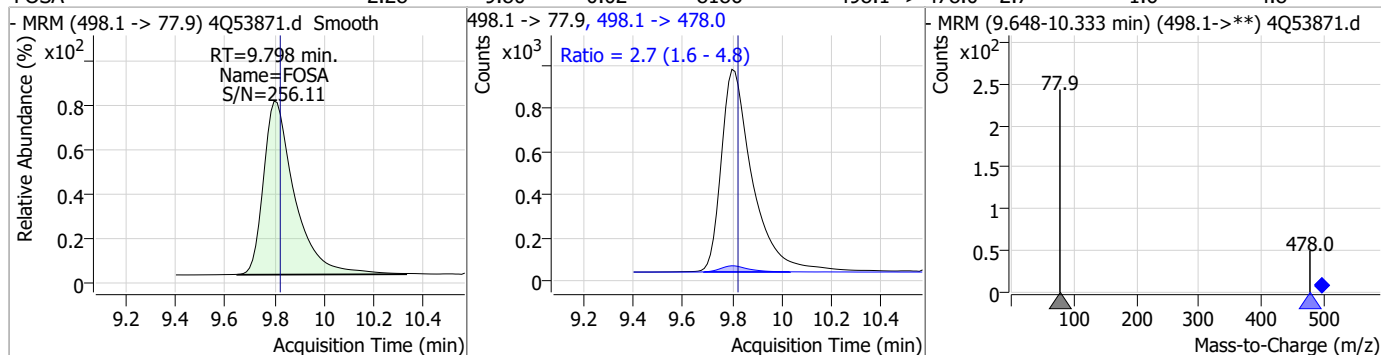


7.3.1

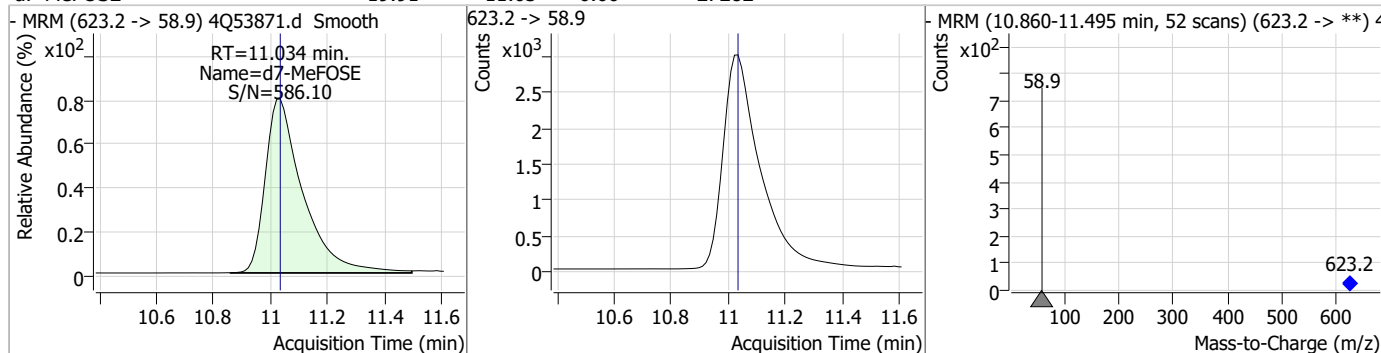
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Perfluorinated Compounds by LC/MS/MS

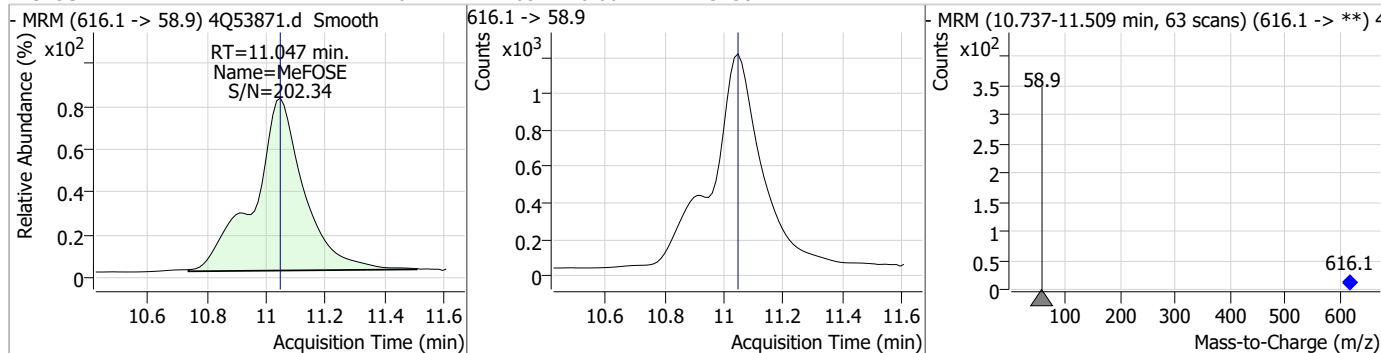
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.28	9.80	-0.02	8186	498.1 -> 478.0	2.7	1.6	4.8



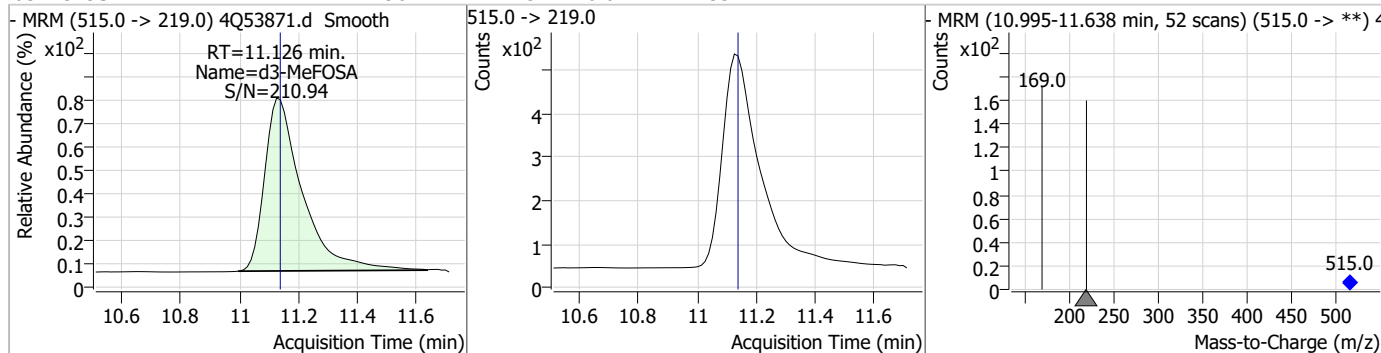
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	19.91	11.03	0.00	27282				



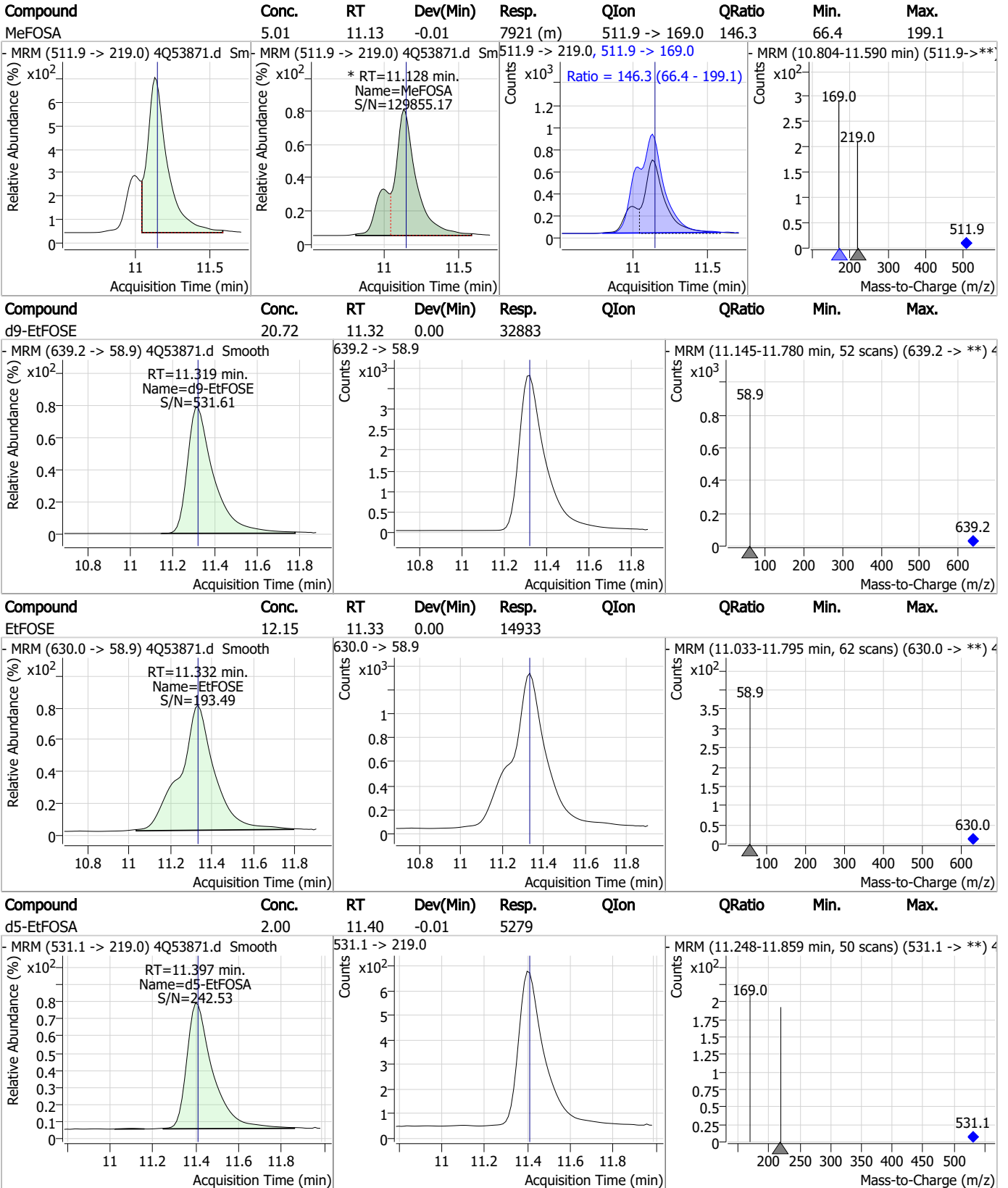
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.07	11.05	0.00	13758				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.96	11.13	-0.01	4352				



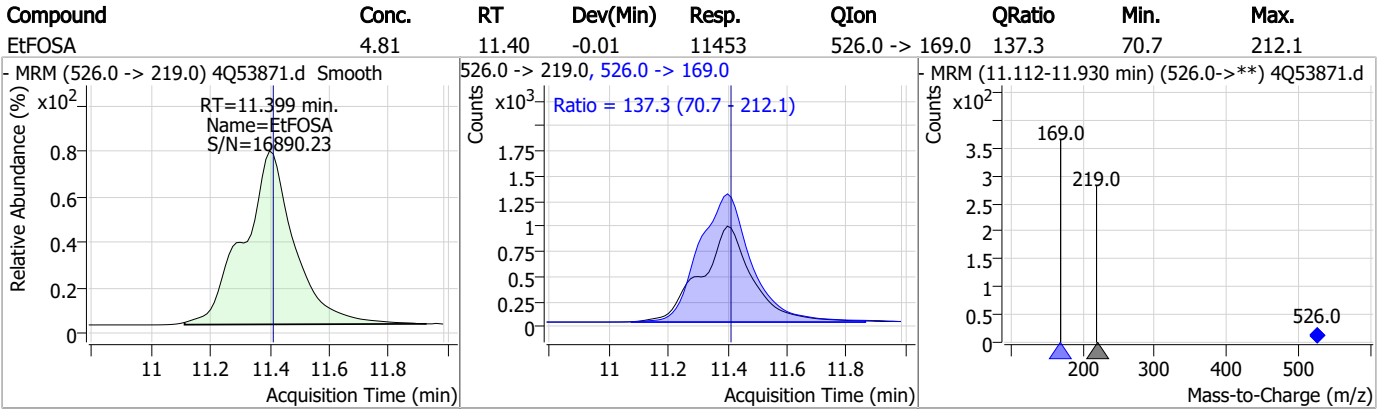
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



7.3.1

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Manual Integration Approval Summary

Sample Number: OP58-BS Method: EPA DRAFT 1633
Lab FileID: 4Q53871.D Analyst approved: 11/16/23 13:59 Anna Ludwig
Injection Time: 11/15/23 11:55 Supervisor approved: 11/16/23 15:26 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.3.1.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53872.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/15/2023 12:10:36 PM
 Sample Name : op58-llbs:3
 Vial : P1-F4
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q786.batch.bin
 Sample Information : OP58,S4Q786,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	95837	10.00 µg/L	0.000
M5-PFPeA	4.137	268.3 -> 223.0	39091	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	29374	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	28172	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	33525	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	13791	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	9954	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	11092	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	11053	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9491	1.25 µg/L	-0.012
M8-FOSA	9.806	506.1 -> 77.8	7586	2.50 µg/L	-0.012
M3-PFBS	5.165	302.1 -> 79.9	8313	2.50 µg/L	-0.038
M3-PFHxS	7.017	402.1 -> 79.9	6900	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6908	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	950	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	2340	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	3078	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	14413	5.00 µg/L	-0.012
M3-HFPO-DA	5.664	286.9 -> 168.9	26328	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	11738	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	27945	25.00 µg/L	0.000
M9-EtFOSE	11.306	639.2 -> 58.9	33768	25.00 µg/L	-0.012
M5-EtFOSA	11.397	531.1 -> 219.0	5422	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4235	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6547	2.50 µg/L	-0.026
13C3-PFBA	2.703	216.0 -> 172.0	47502	5.00 µg/L	0.000
18O2-PFHxS	7.028	403.0 -> 83.9	4535	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	38448	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	10342	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	13812	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	33523	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	950	6.12 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.4%		
13C2-6:2FTS	6.736	429.1 -> 80.9	2340	7.16 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 143.2%		
13C2-8:2FTS	7.804	529.1 -> 80.9	3078	6.68 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 133.6%		
13C2-PFDoDA	8.880	615.1 -> 570.0	11053	1.18 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.7%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9491	1.01 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 80.8%		
13C3-PFBS	5.165	302.1 -> 79.9	8313	2.44 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C3-PFHxS	7.017	402.1 -> 79.9	6900	2.46 µg/L	-0.037

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C4-PFBA	2.699	216.8 -> 171.9	95837	9.68 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 96.8%		
13C4-PFHpA	6.267	367.1 -> 322.0	28172	2.41 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.4%		
13C5-PFHxA	5.310	318.0 -> 273.0	29374	2.35 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.0%		
13C5-PFPeA	4.137	268.3 -> 223.0	39091	4.78 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.6%		
13C6-PFDA	8.004	519.1 -> 474.1	9954	1.31 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.6%		
13C7-PFUnDA	8.448	570.0 -> 525.1	11092	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C8-FOSA	9.806	506.1 -> 77.8	7586	2.42 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.0%		
13C8-PFOA	6.964	421.1 -> 376.0	33525	2.44 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.7%		
13C8-PFOS	8.117	507.1 -> 79.9	6908	2.21 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 88.4%		
13C9-PFNA	7.509	472.1 -> 427.0	13791	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.3%		
d3-MeFOSAA	8.086	573.2 -> 419.0	14413	5.81 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.1%		
13C3-HFPO-DA	5.664	286.9 -> 168.9	26328	9.23 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 92.3%		
d3-MeFOSA	11.126	515.0 -> 219.0	4235	1.94 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 77.6%		
d5-EtFOSAA	8.283	589.2 -> 419.0	11738	5.40 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.0%		
d7-MeFOSE	11.034	623.2 -> 58.9	27945	20.72 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 82.9%		
d9-EtFOSE	11.306	639.2 -> 58.9	33768	21.62 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 86.5%		
d5-EtFOSA	11.397	531.1 -> 219.0	5422	2.09 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 83.7%		
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	5373	2.86 µg/L	96
		327.1 -> 80.9	2127		
6:2FTS	6.737	427.1 -> 407.0	7222	2.85 µg/L	98
		427.1 -> 80.9	2691		
8:2FTS	7.804	527.1 -> 507.0	5219	3.12 µg/L	96
		527.1 -> 80.8	2048		
EtFOSAA	8.297	584.2 -> 419.1	1606	0.76 µg/L	m 88
		584.2 -> 526.0	604		
FOSA	9.798	498.1 -> 77.9	2639	0.71 µg/L	96
		498.1 -> 478.0	45		
MeFOSAA	8.087	570.1 -> 419.0	1605	0.63 µg/L	m 86
		570.1 -> 483.0	393		
PFBA	2.707	212.8 -> 168.9	9943	2.85 µg/L	100
PFBS	5.166	298.7 -> 79.9	1595	0.54 µg/L	98
		298.7 -> 98.8	599		
PFDA	8.005	512.9 -> 469.0	5788	0.71 µg/L	98
		512.9 -> 219.0	1088		
PFDODA	8.880	613.1 -> 569.0	6945	0.77 µg/L	96
		613.1 -> 319.0	1181		
PFDS	9.020	599.0 -> 79.9	1369	0.77 µg/L	92

7.3.2
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	619			
PFHpA	6.268	363.1 -> 319.0	11968	0.68	µg/L	98
		363.1 -> 169.0	2220			
PFHpS	7.612	449.0 -> 79.9	2045	0.75	µg/L	99
		449.0 -> 98.9	1037			
PFHxA	5.300	313.0 -> 269.0	7162	0.70	µg/L	100
		313.0 -> 118.9	200			
PFHxS	7.018	398.7 -> 79.9	1381	0.66	µg/L	m 94
		398.7 -> 98.9	827			
PFNA	7.510	463.0 -> 419.0	6679	0.76	µg/L	89
		463.0 -> 219.0	1337			
PFNS	8.586	548.8 -> 79.9	1017	0.77	µg/L	98
		548.8 -> 98.9	549			
PFOA	6.965	413.0 -> 369.0	11092	0.68	µg/L	99
		413.0 -> 169.0	2212			
PFOS	8.119	498.9 -> 79.9	2198	0.70	µg/L	m 72
		498.9 -> 98.8	896			
PFPeA	4.139	263.0 -> 219.0	11550	1.36	µg/L	100
PFPeS	6.257	349.1 -> 79.9	1614	0.71	µg/L	98
		349.1 -> 98.9	720			
PFTeDA	9.650	713.1 -> 669.0	5880	0.82	µg/L	97
		713.1 -> 168.9	554			
PFTrDA	9.279	663.0 -> 619.0	7292	0.74	µg/L	97
		663.0 -> 168.9	908			
PFUnDA	8.449	563.1 -> 519.0	6141	0.68	µg/L	94
		563.1 -> 269.1	1469			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	10426	1.27	µg/L	98
		632.9 -> 452.9	3331			
9Cl-PF3ONS	8.451	530.8 -> 351.0	11888	1.43	µg/L	98
		532.8 -> 353.0	3610			
ADONA	6.544	376.9 -> 250.9	28854	1.58	µg/L	99
		376.9 -> 84.8	7000			
HFPO-DA	5.665	284.9 -> 168.9	3858	1.38	µg/L	99
		284.9 -> 184.9	353			
3:3FTCA	3.630	241.0 -> 177.0	1857	3.42	µg/L	98
		241.0 -> 117.0	182			
5:3FTCA	6.008	341.0 -> 237.1	30953	17.14	µg/L	100
		341.0 -> 217.0	22500			
7:3FTCA	7.536	441.0 -> 316.9	14578	17.99	µg/L	90
		441.0 -> 336.9	33190			
EtFOSA	11.399	526.0 -> 219.0	3386	1.38	µg/L	96
		526.0 -> 169.0	4603			
EtFOSE	11.332	630.0 -> 58.9	4914	3.89	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	2217	1.44	µg/L	m 88
		511.9 -> 169.0	3255			
MeFOSE	11.047	616.1 -> 58.9	4296	3.37	µg/L	m 100
PFDoDS	9.777	699.1 -> 79.9	888	0.63	µg/L	90
		699.1 -> 98.8	543			
NFDHA	5.191	295.0 -> 201.0	1302	1.92	µg/L	96
		295.0 -> 84.9	333			
PFMBA	4.541	279.0 -> 85.1	7570	1.55	µg/L	100
PFMPA	3.303	229.0 -> 84.9	8804	1.62	µg/L	100
PFEESA	5.696	314.8 -> 134.9	12134	1.49	µg/L	100
		314.8 -> 82.9	364			

= Qualifier out of range, m = manually integrated, + = Area summed

7.3.2
7

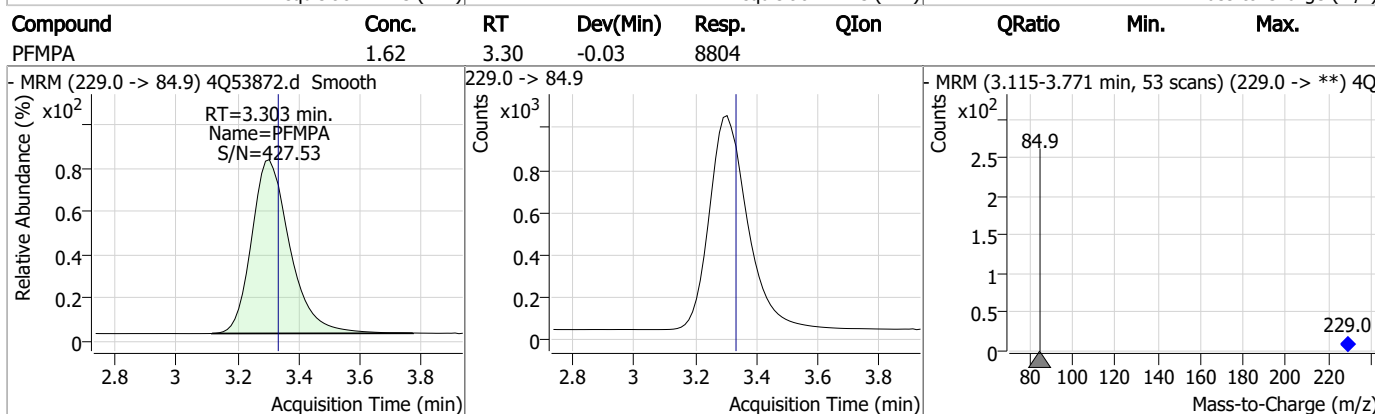
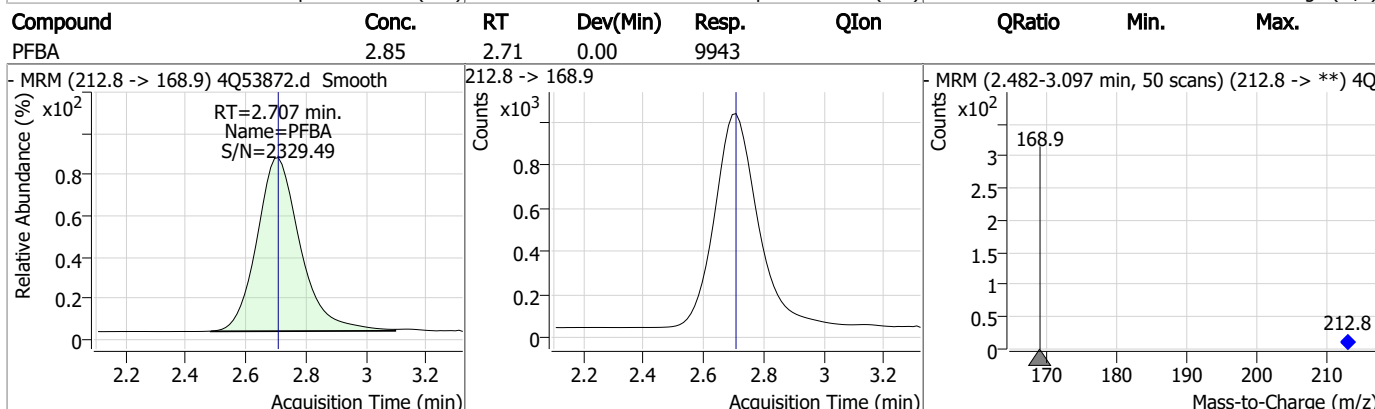
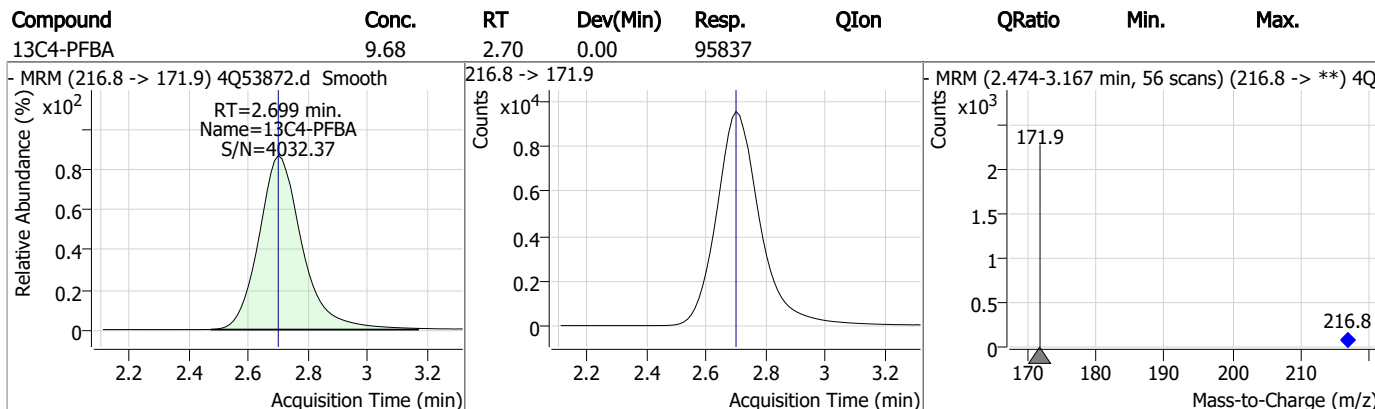
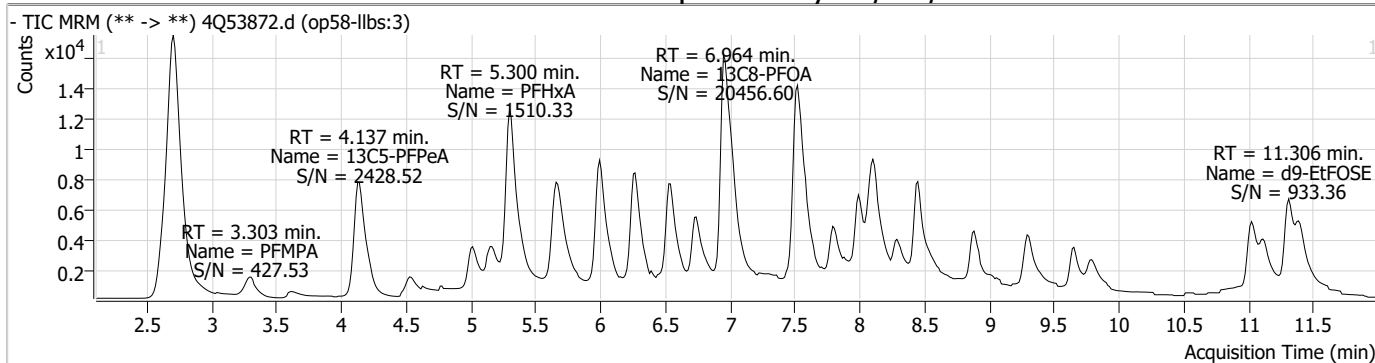
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.3.2

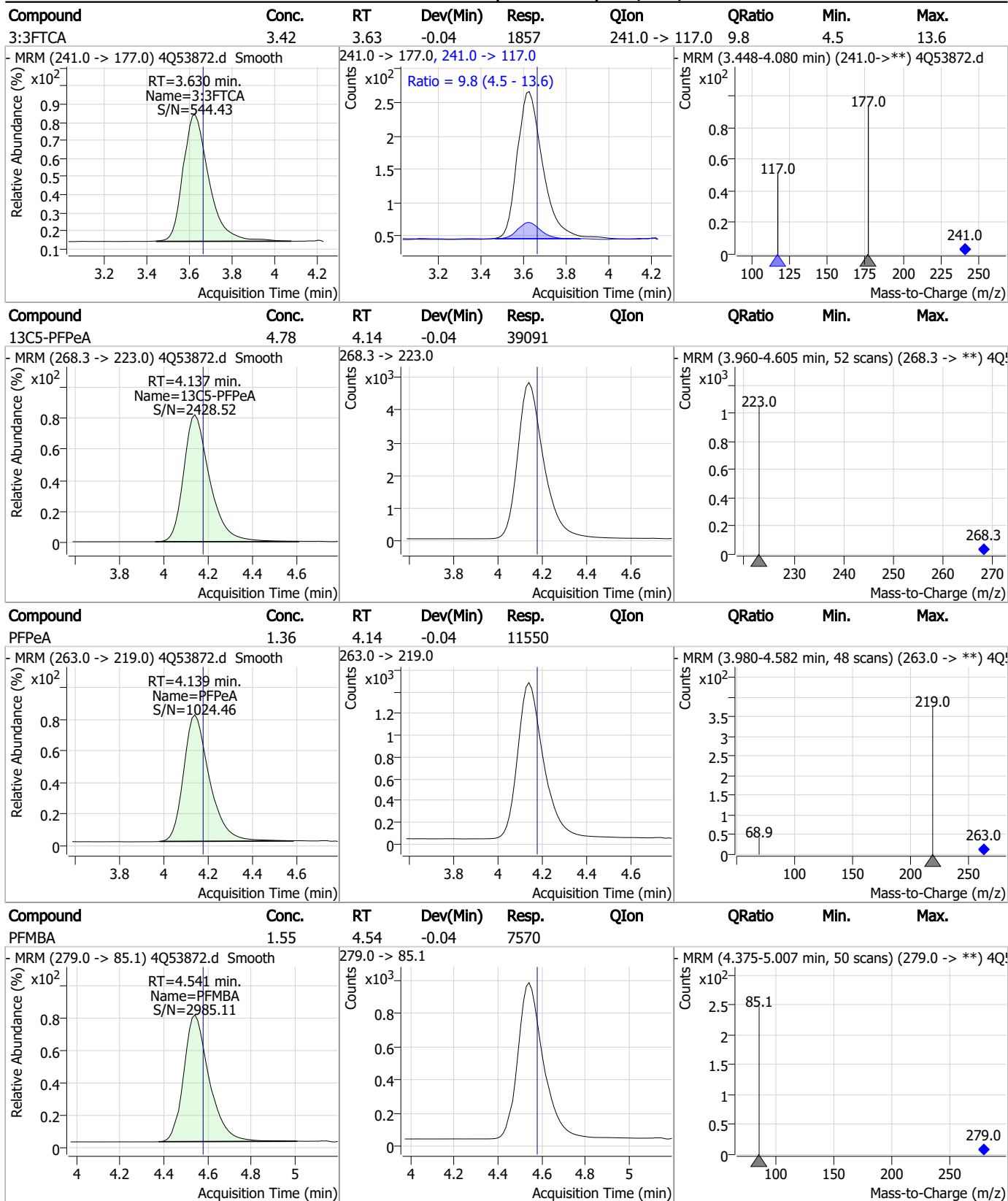
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Perfluorinated Compounds by LC/MS/MS



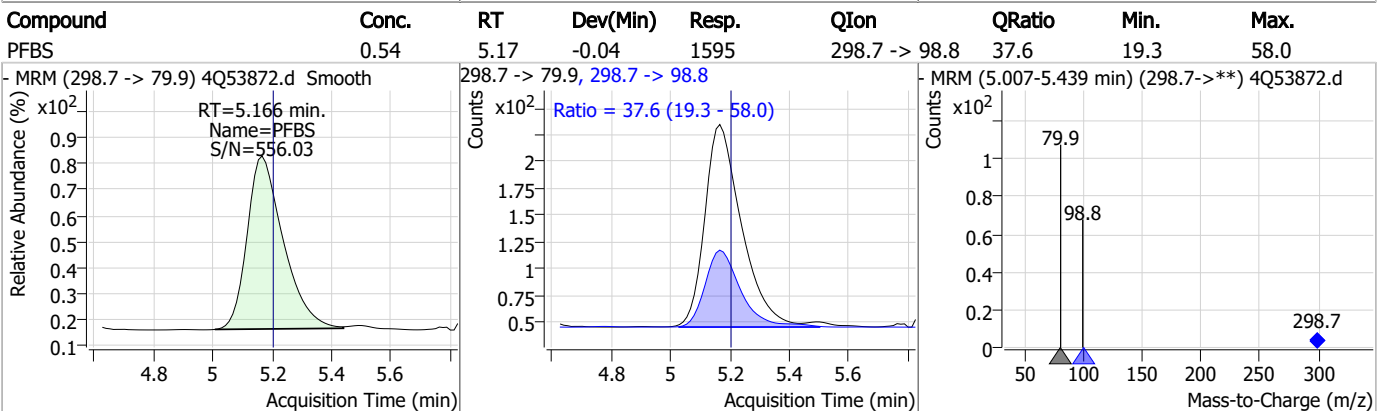
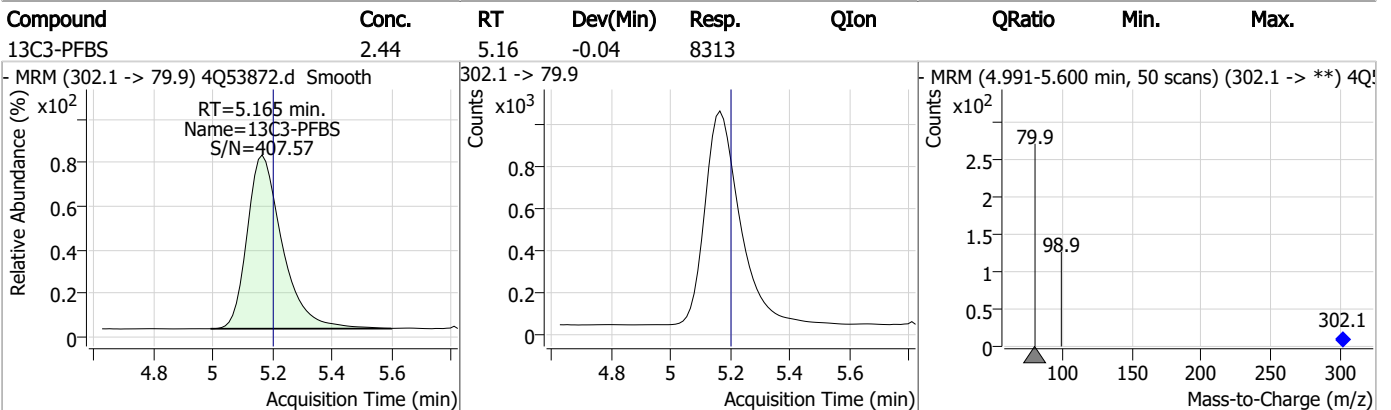
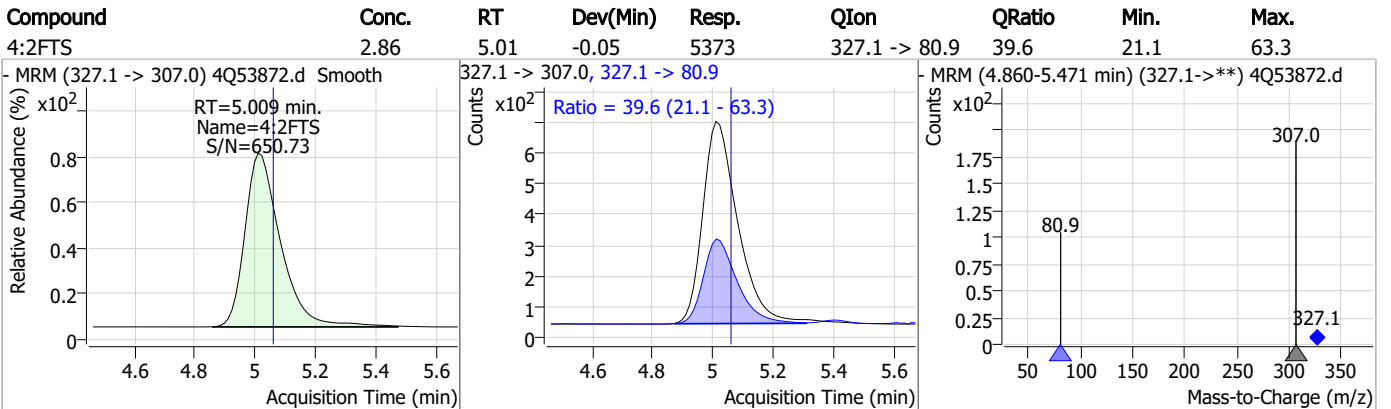
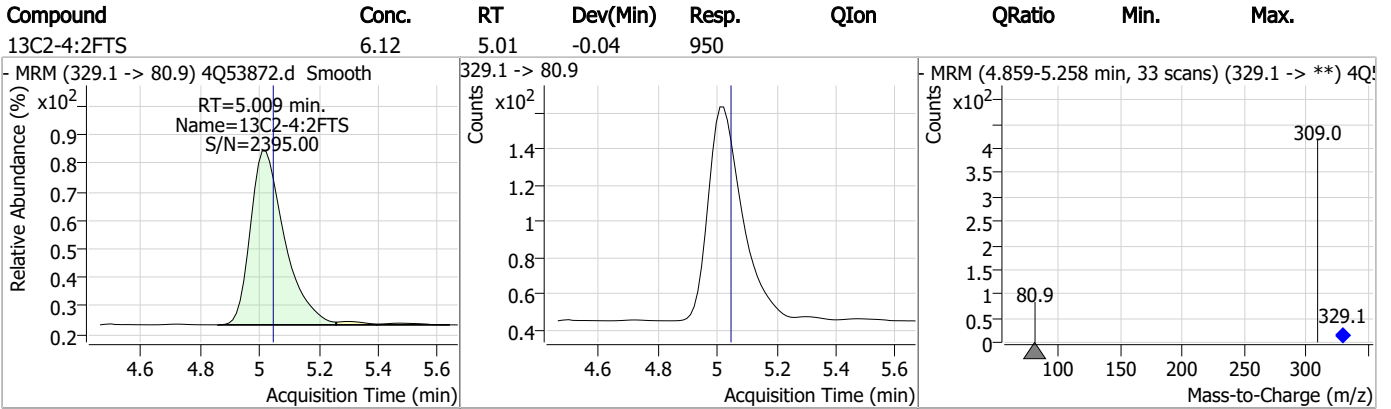
7.3.2
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Perfluorinated Compounds by LC/MS/MS

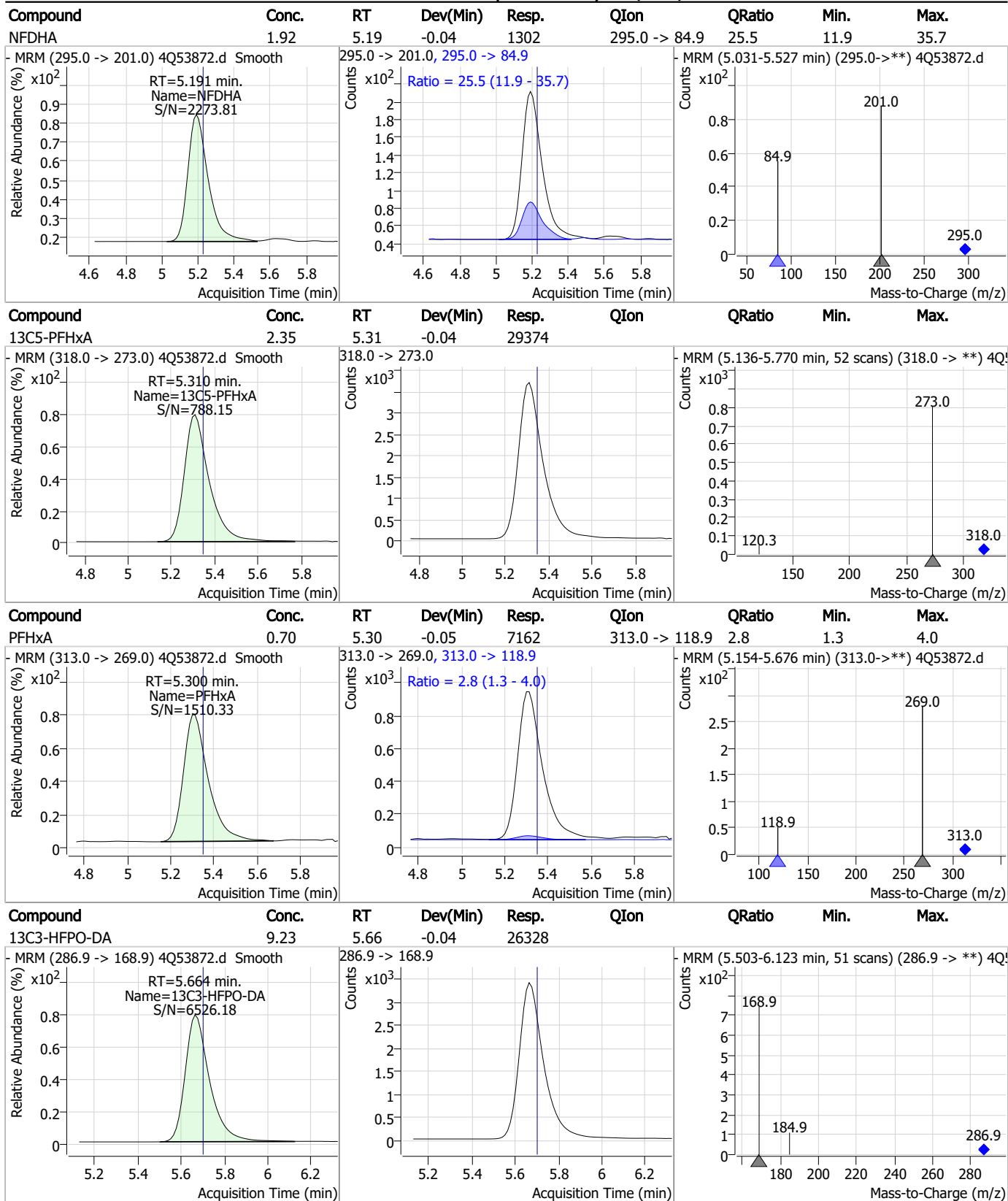


7.3.2
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Perfluorinated Compounds by LC/MS/MS



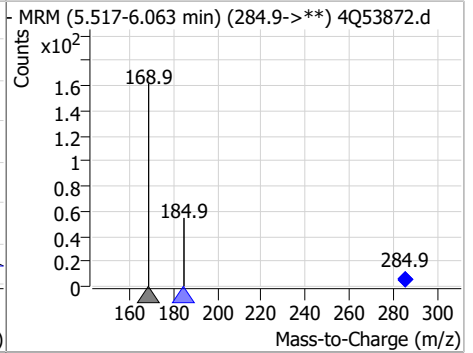
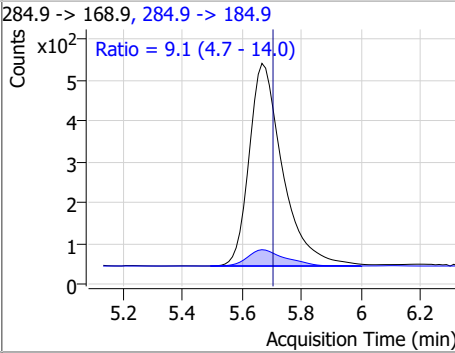
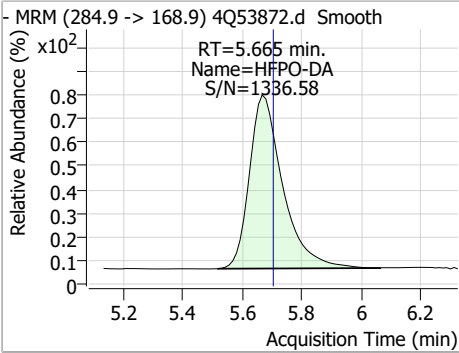
Perfluorinated Compounds by LC/MS/MS



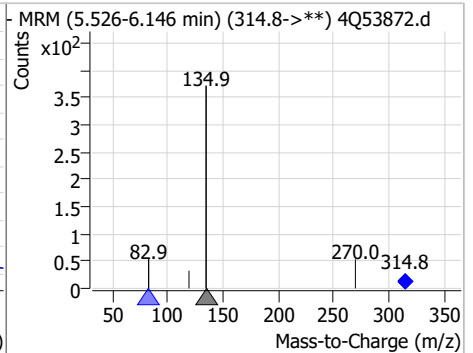
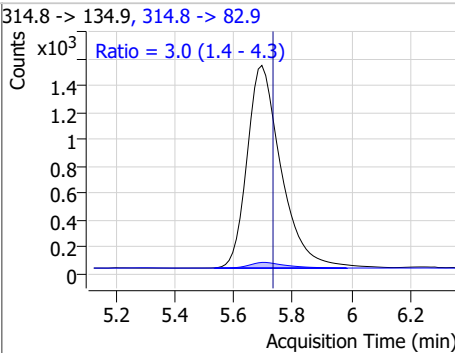
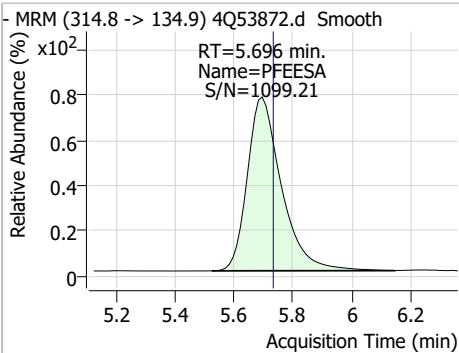
7.3.2
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Perfluorinated Compounds by LC/MS/MS

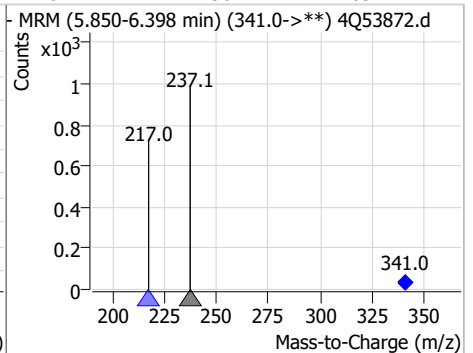
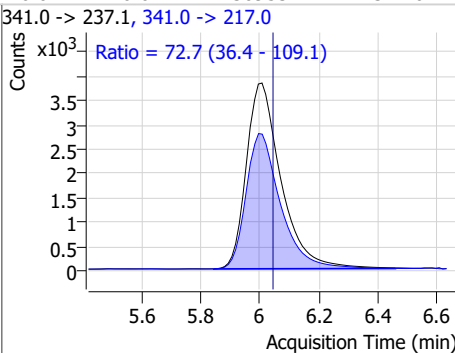
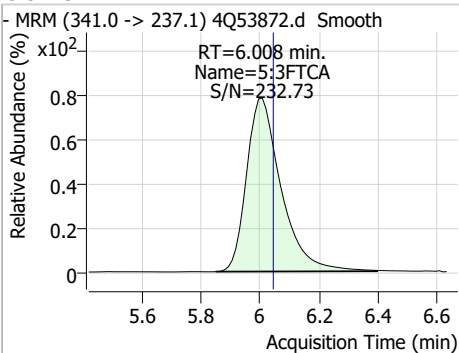
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	1.38	5.67	-0.04	3858	284.9 -> 184.9	9.1	4.7	14.0



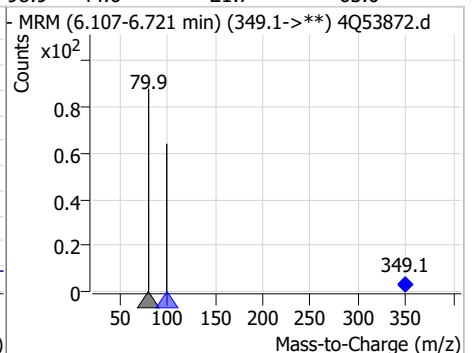
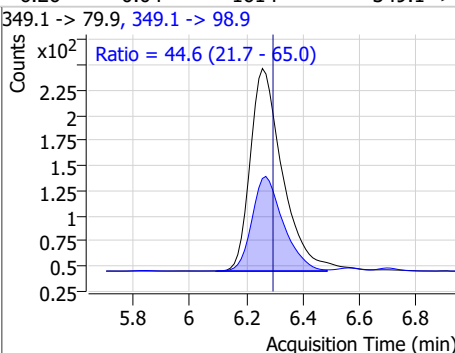
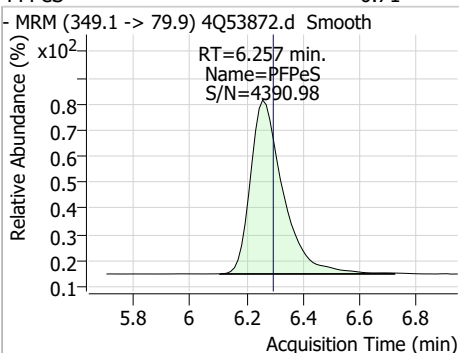
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	1.49	5.70	-0.04	12134	314.8 -> 82.9	3.0	1.4	4.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	17.14	6.01	-0.04	30953	341.0 -> 217.0	72.7	36.4	109.1



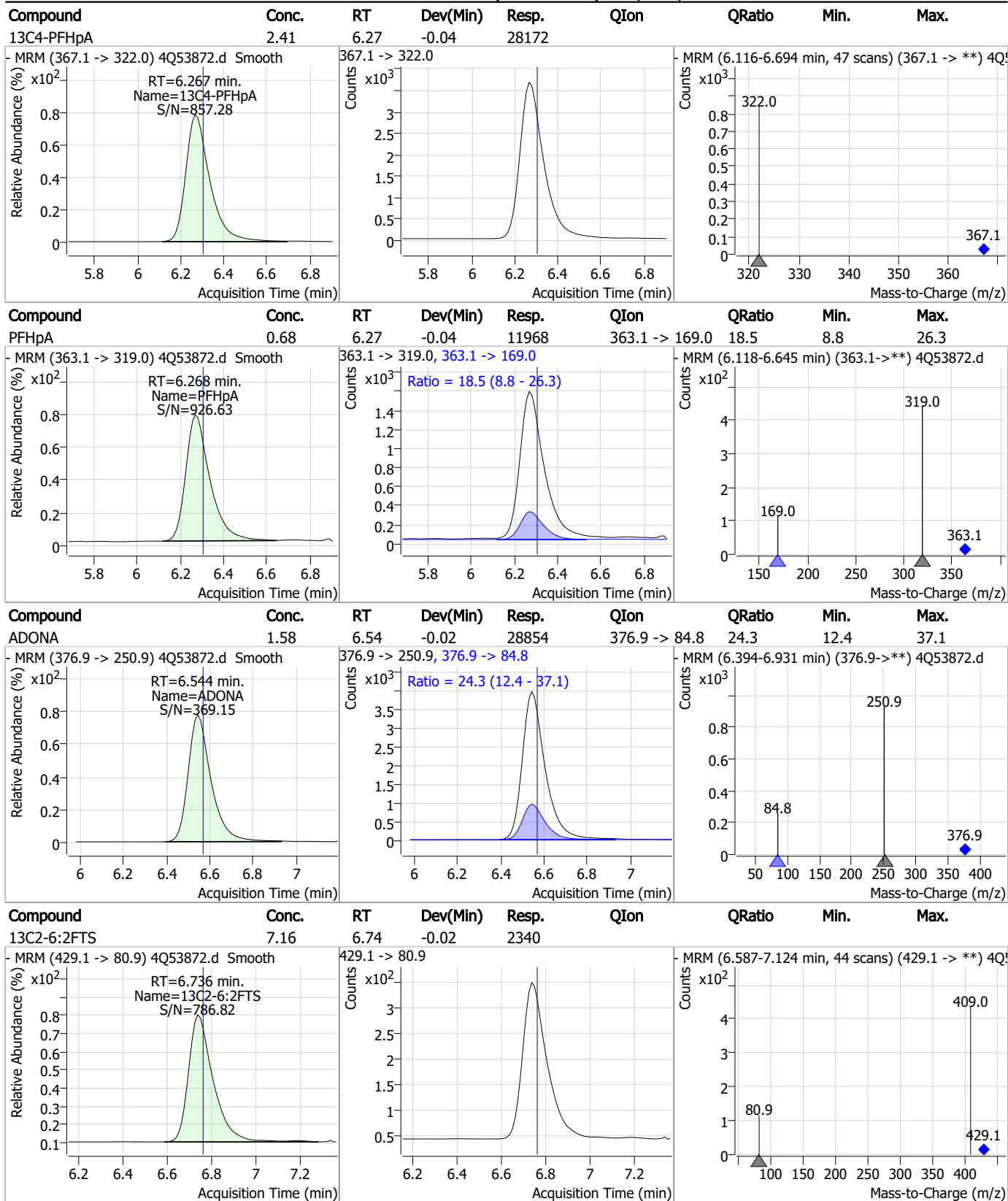
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.71	6.26	-0.04	1614	349.1 -> 98.9	44.6	21.7	65.0



7.3.2

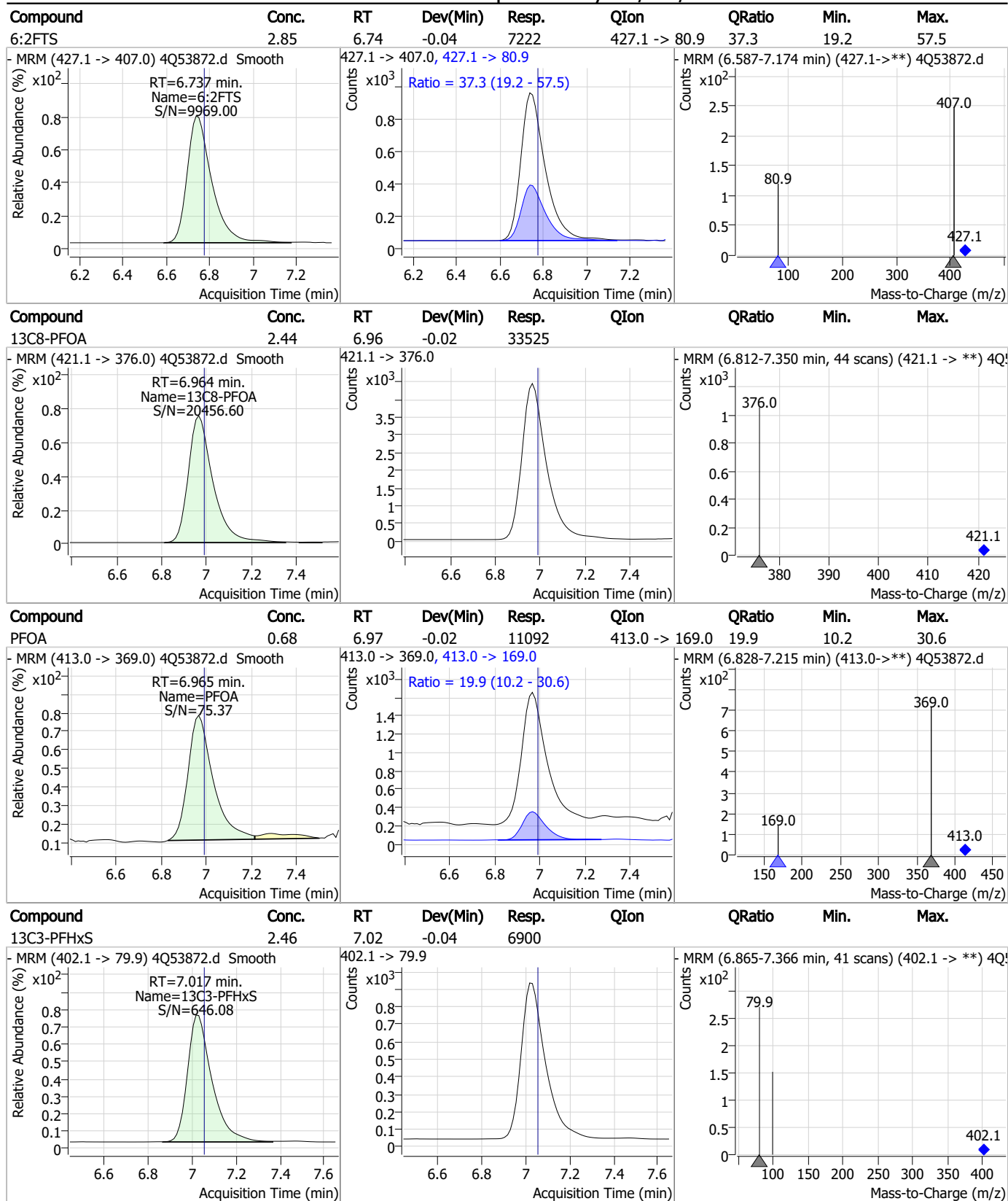
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Perfluorinated Compounds by LC/MS/MS



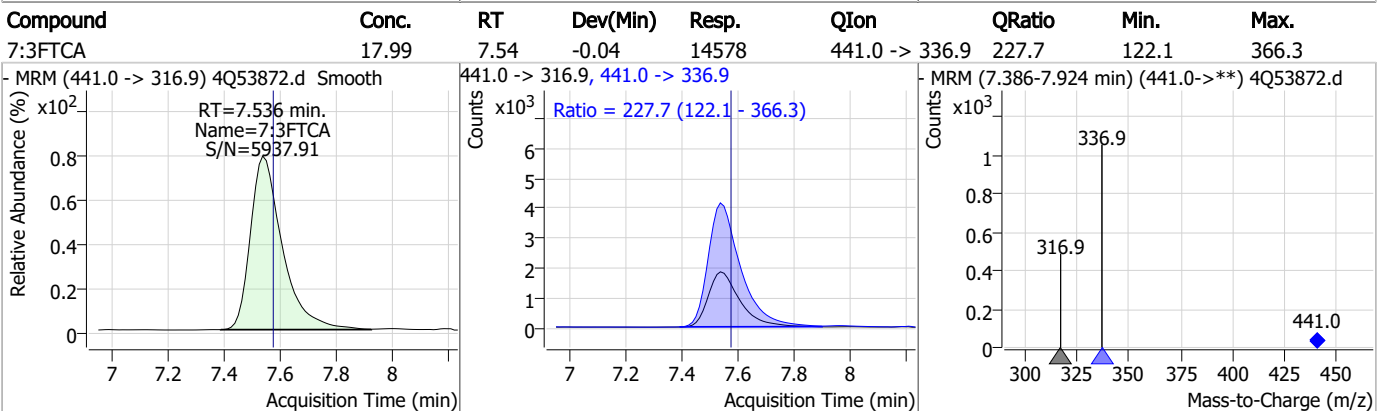
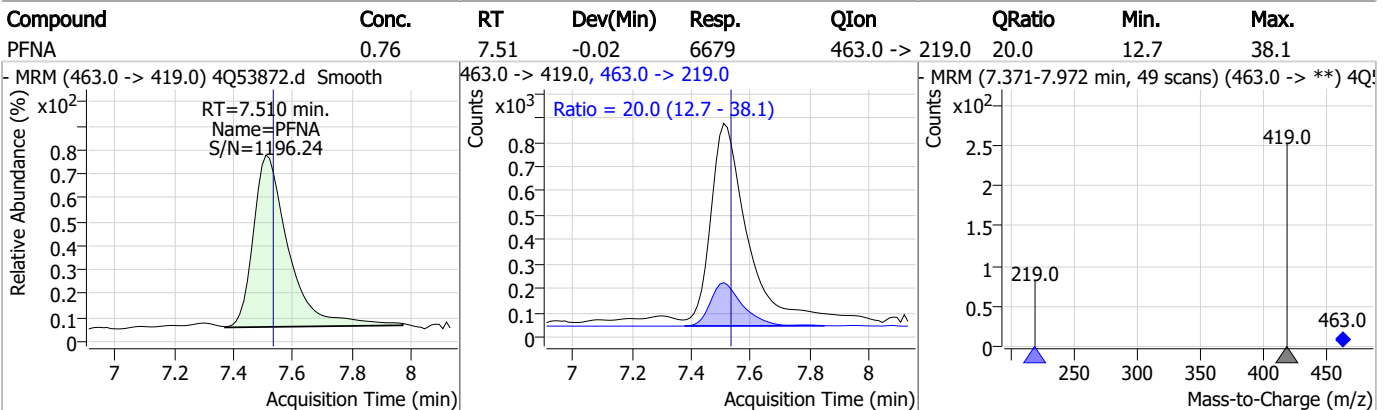
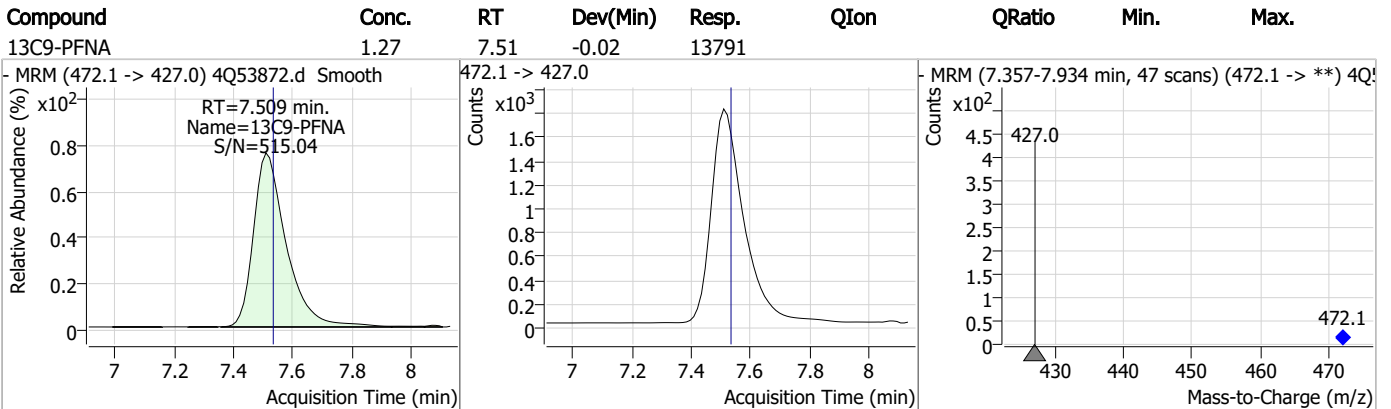
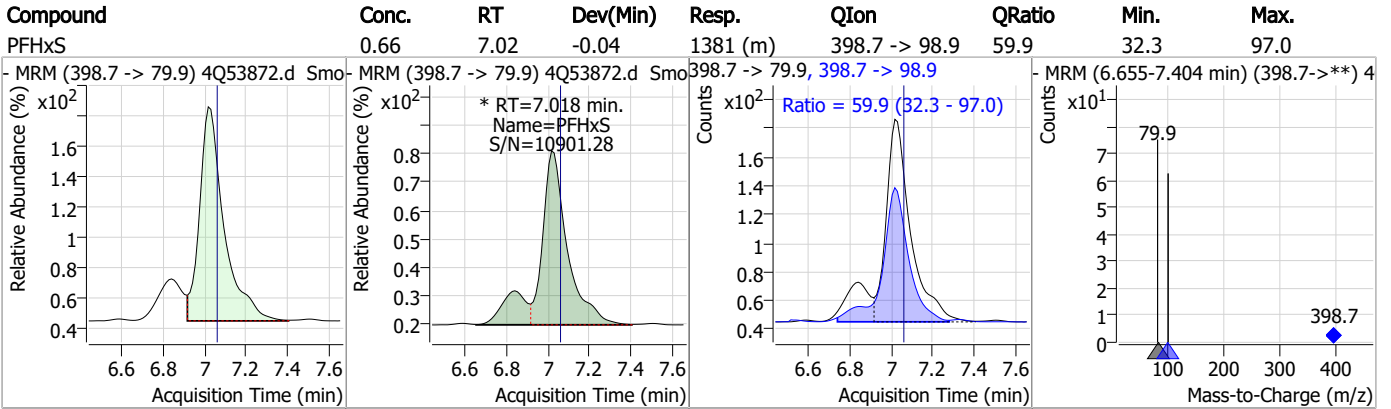
7.3.2
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Perfluorinated Compounds by LC/MS/MS

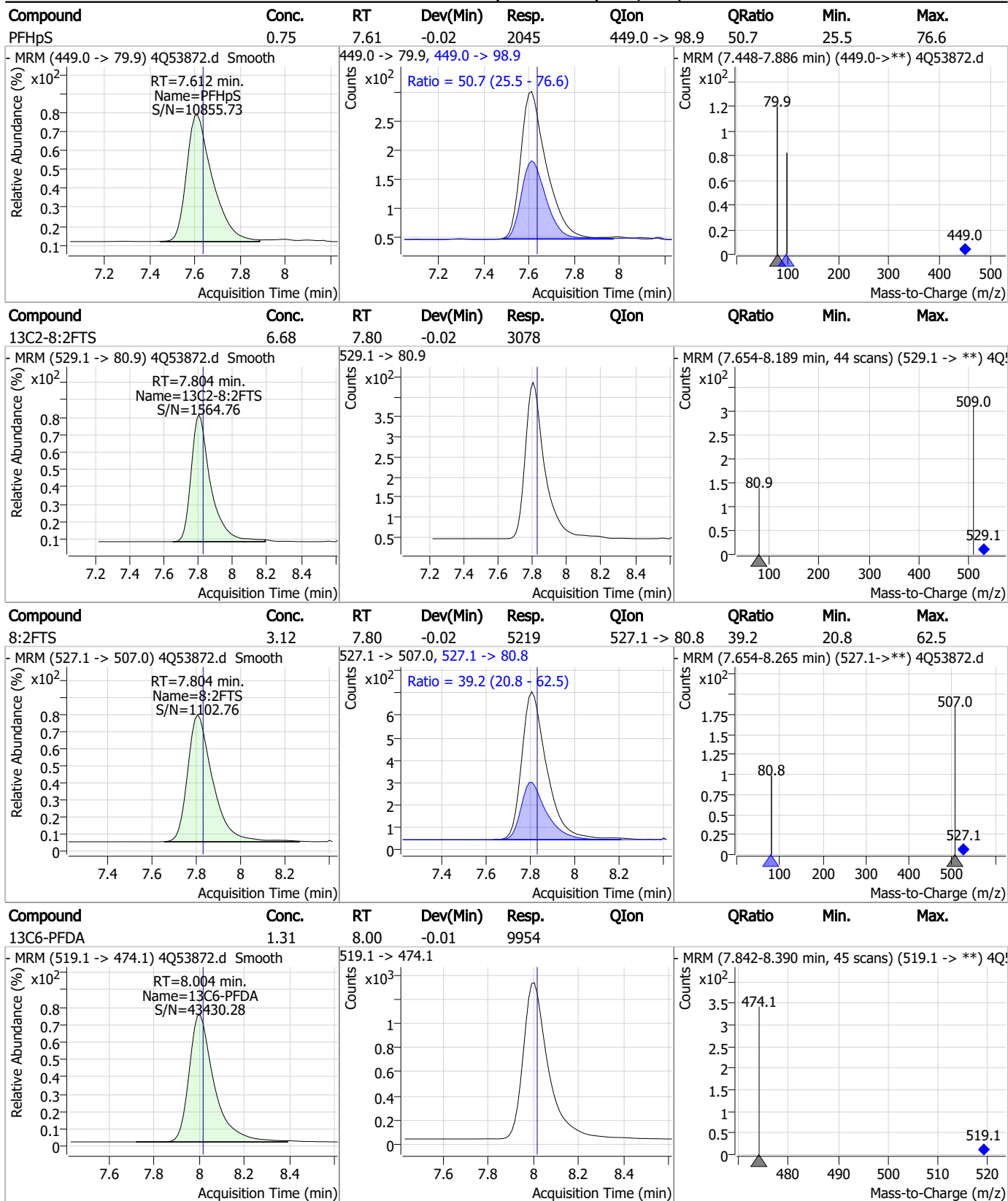


7.3.2
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Perfluorinated Compounds by LC/MS/MS

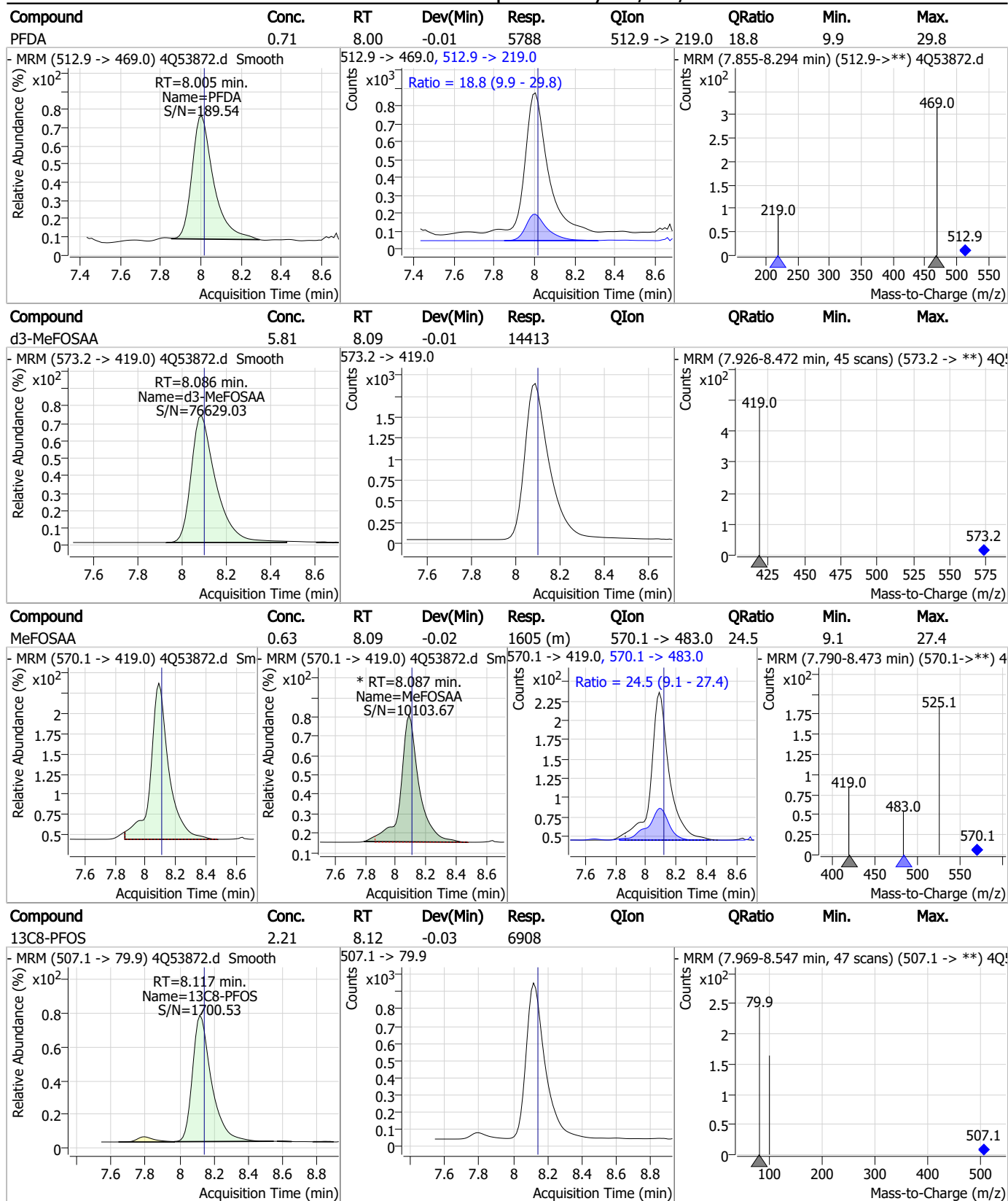


Perfluorinated Compounds by LC/MS/MS



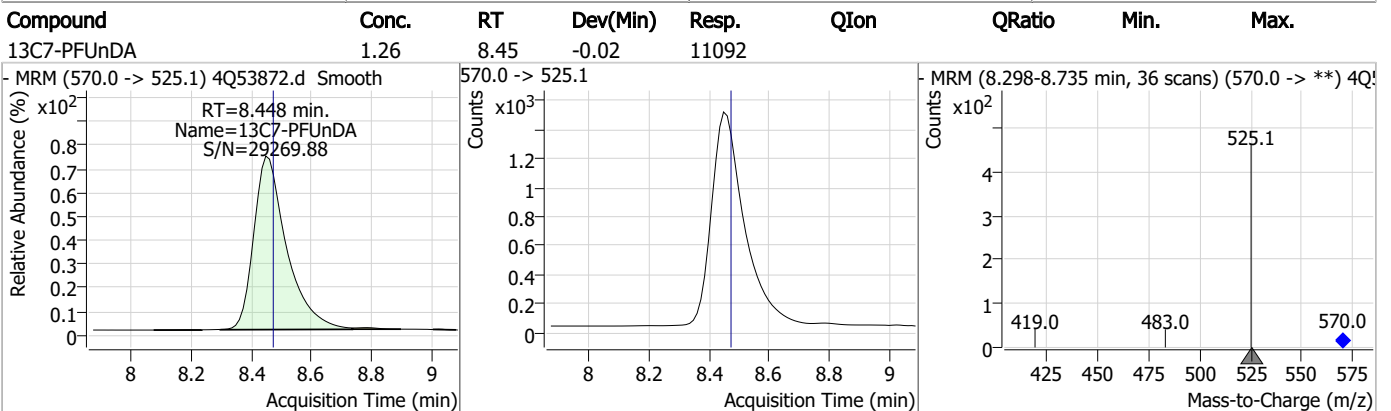
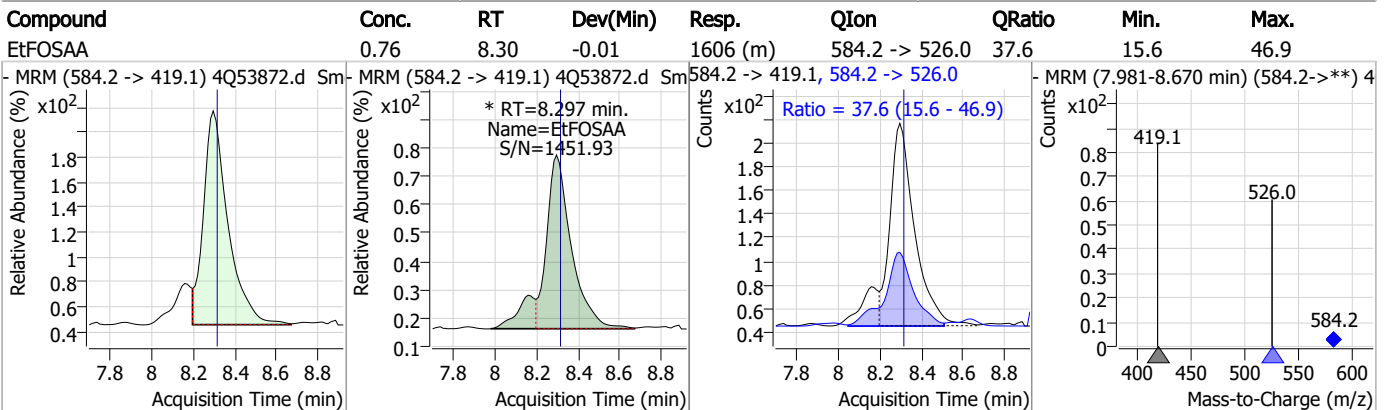
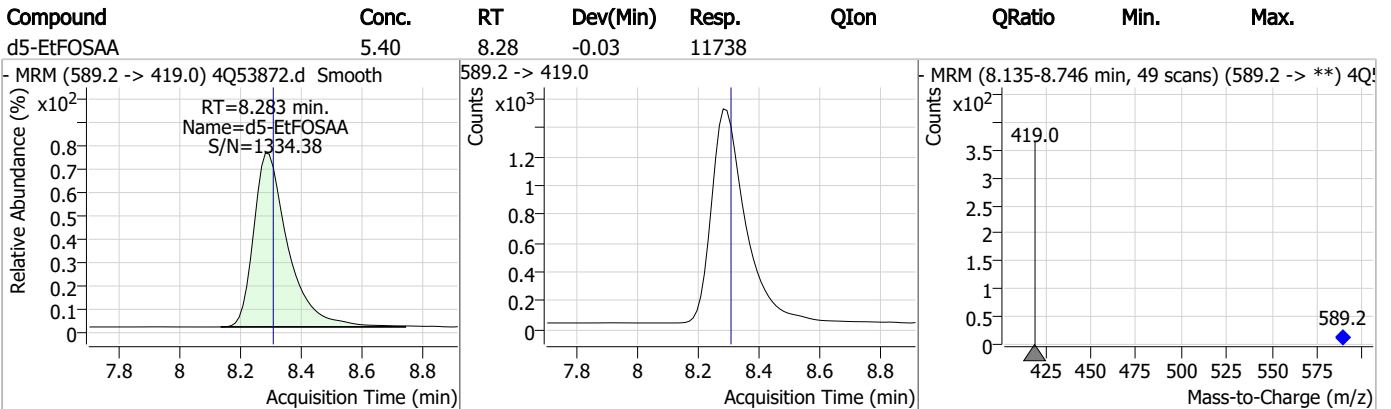
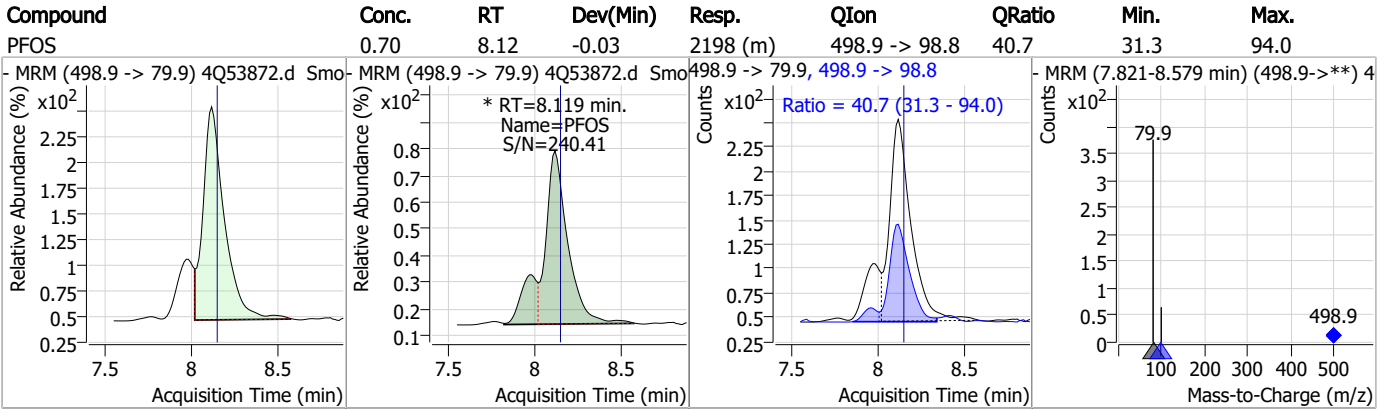
7.3.2
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Perfluorinated Compounds by LC/MS/MS

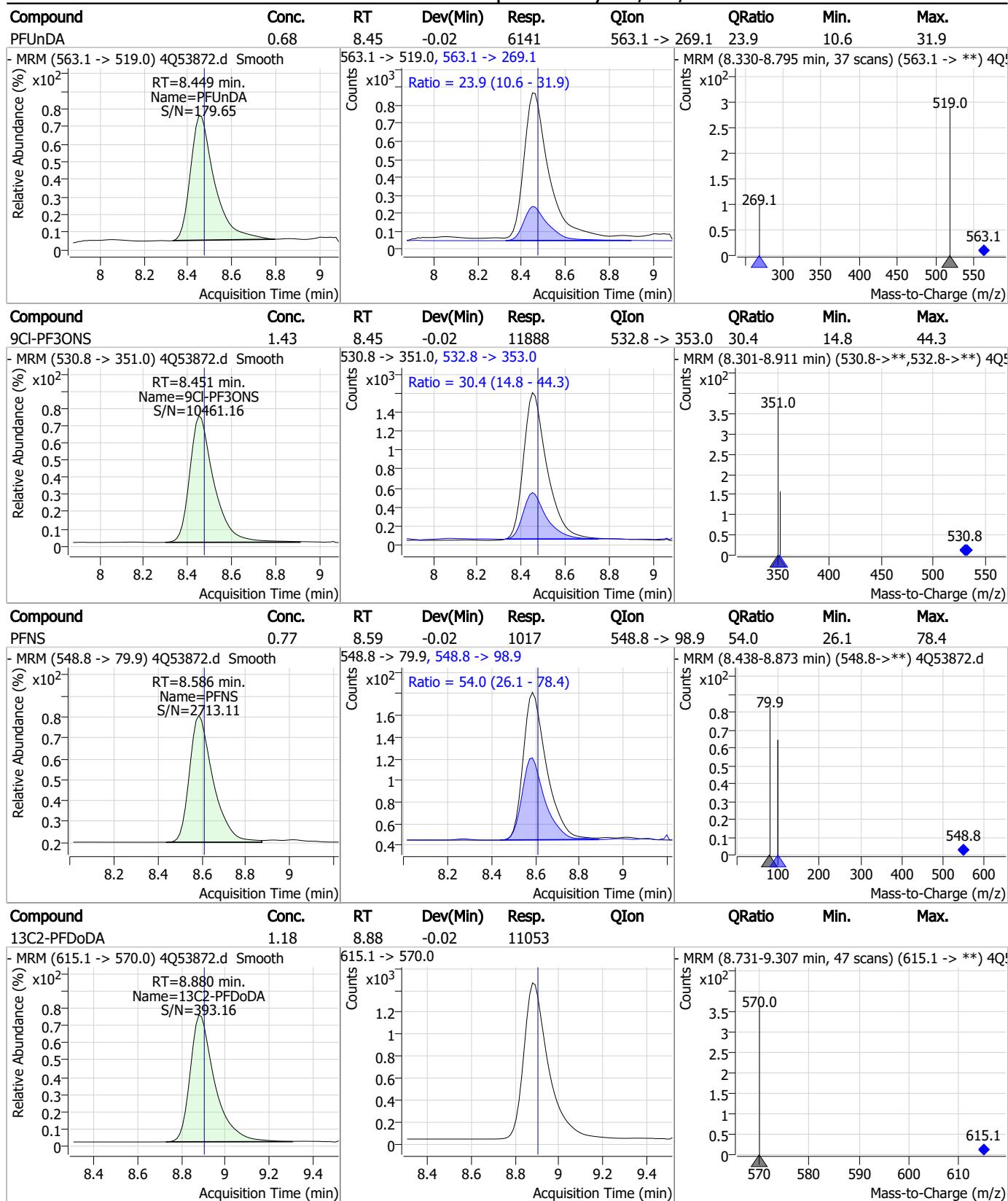


7.3.2
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Perfluorinated Compounds by LC/MS/MS

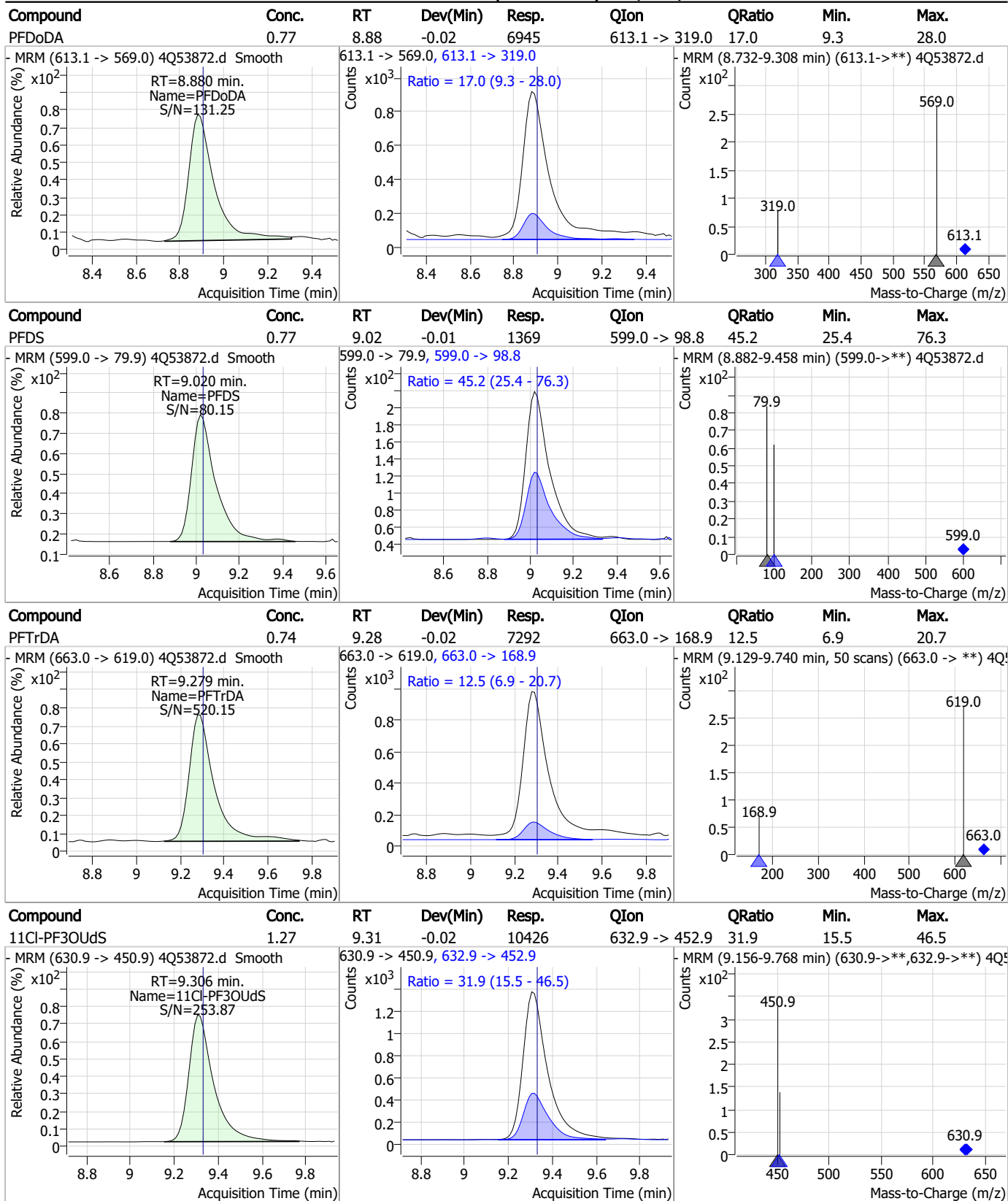


Perfluorinated Compounds by LC/MS/MS



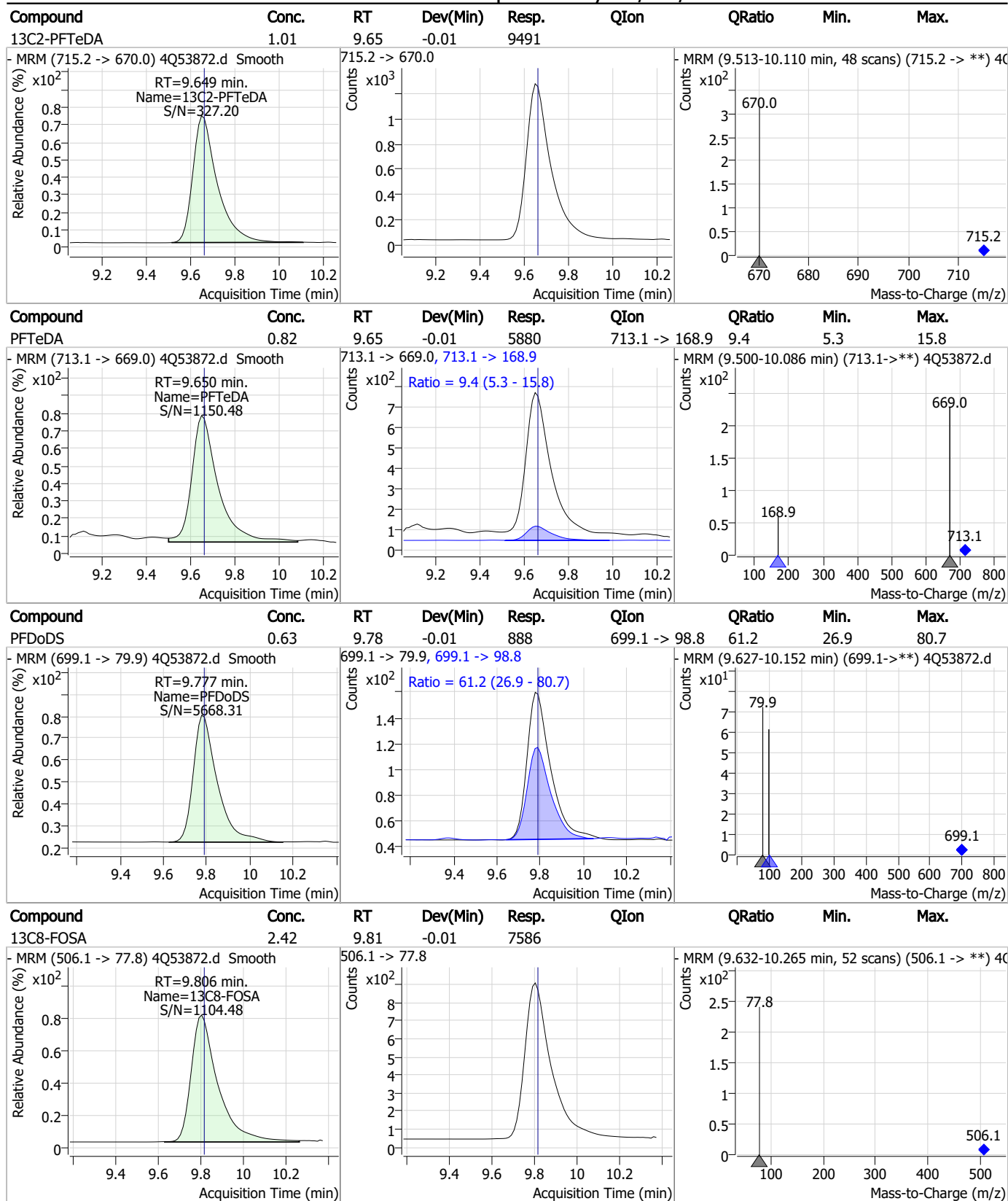
7.3.2
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Perfluorinated Compounds by LC/MS/MS



7.3.2
7

Perfluorinated Compounds by LC/MS/MS

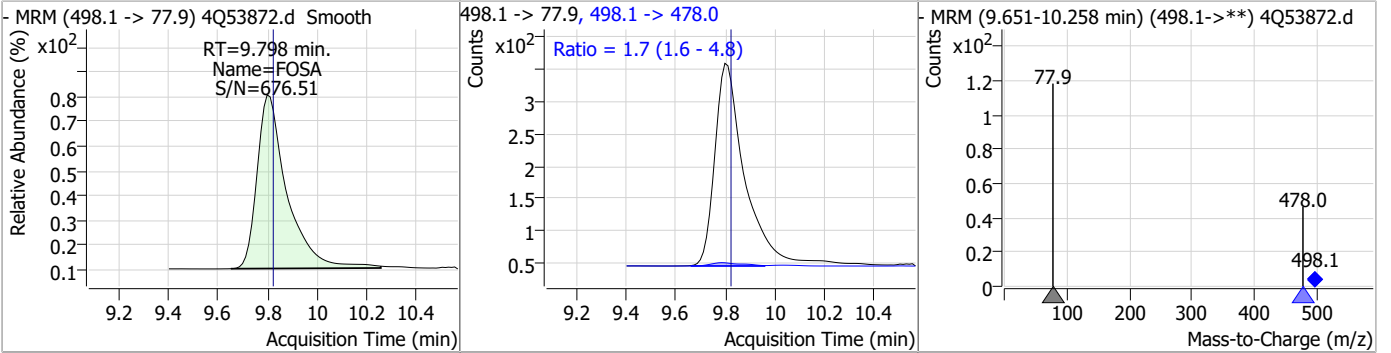


7.3.2
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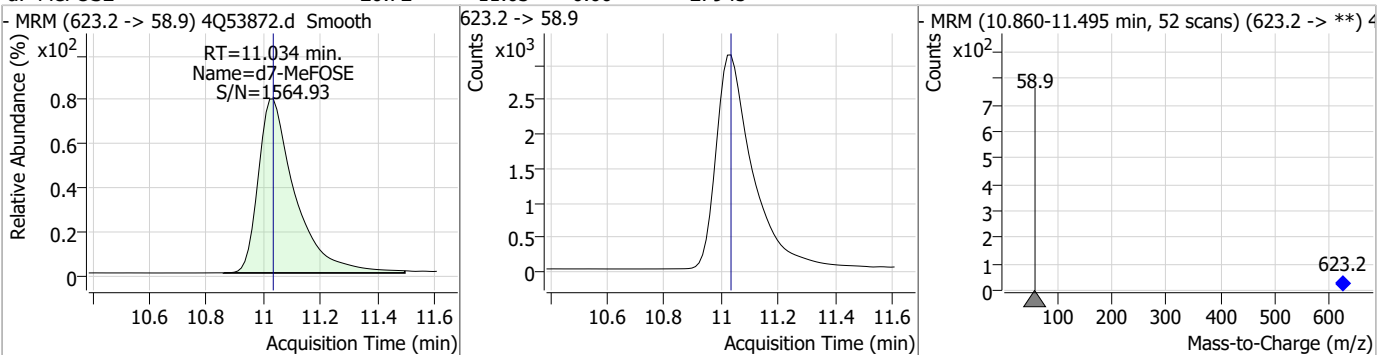


Perfluorinated Compounds by LC/MS/MS

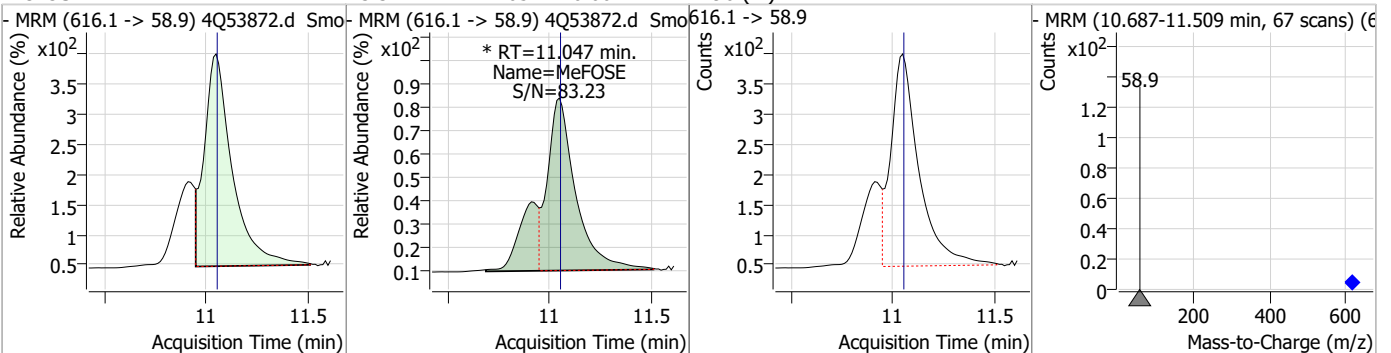
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.71	9.80	-0.02	2639	498.1 -> 478.0	1.7	1.6	4.8



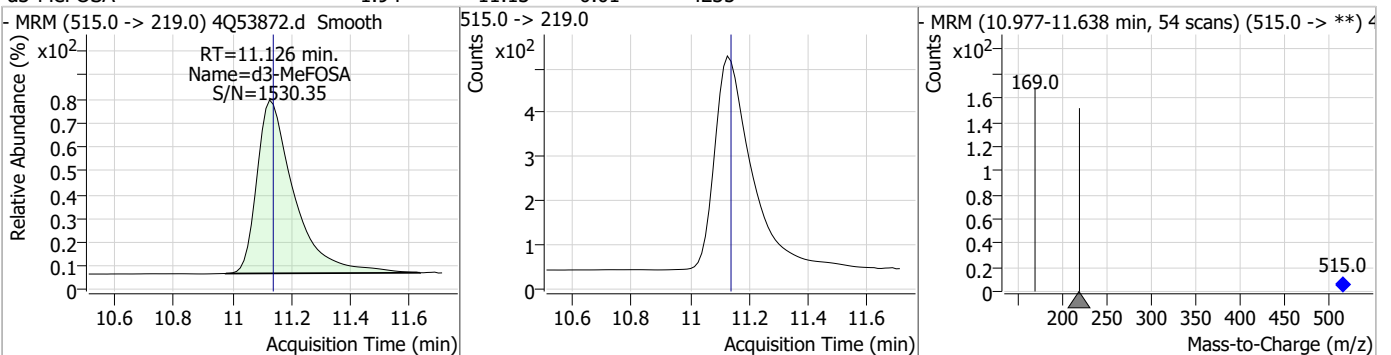
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	20.72	11.03	0.00	27945				



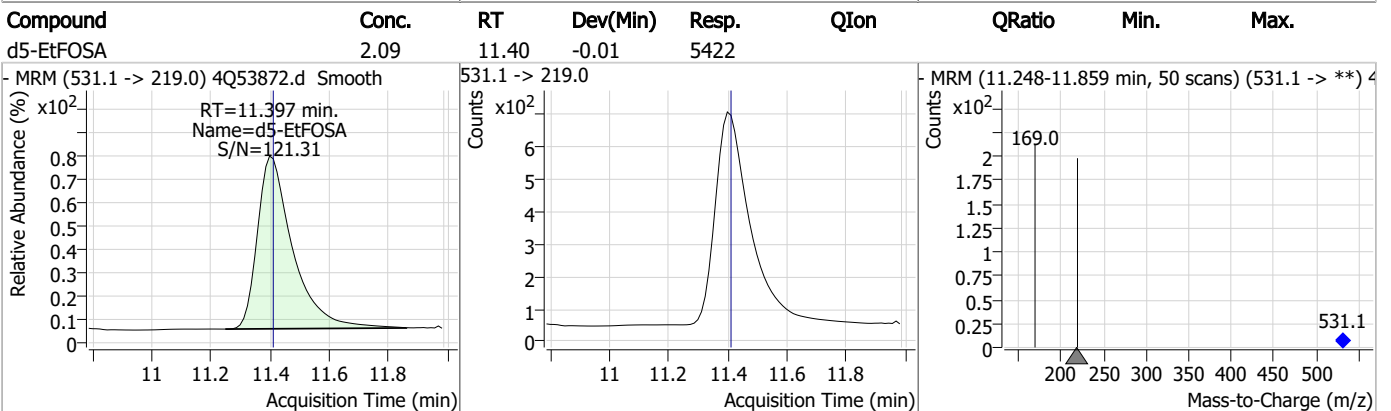
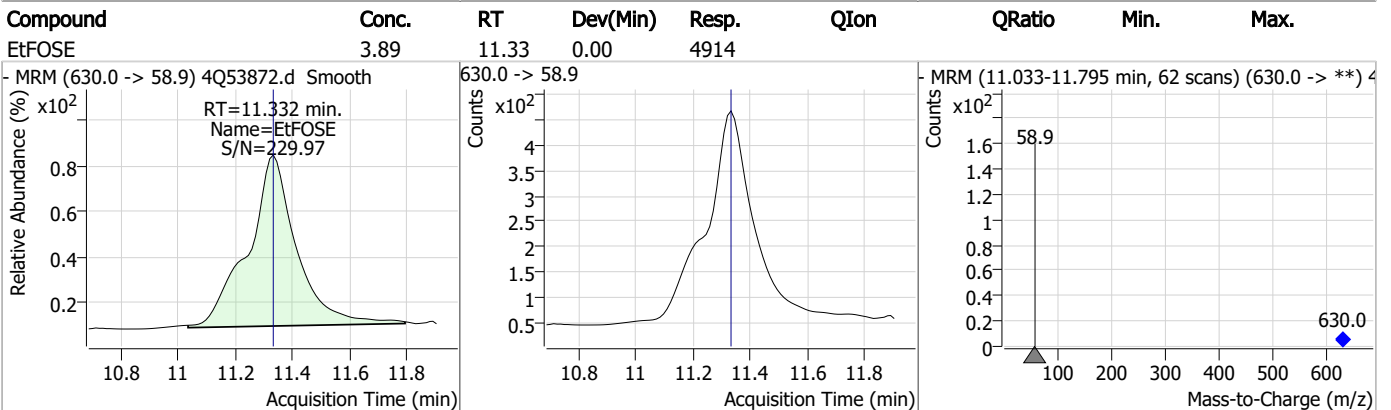
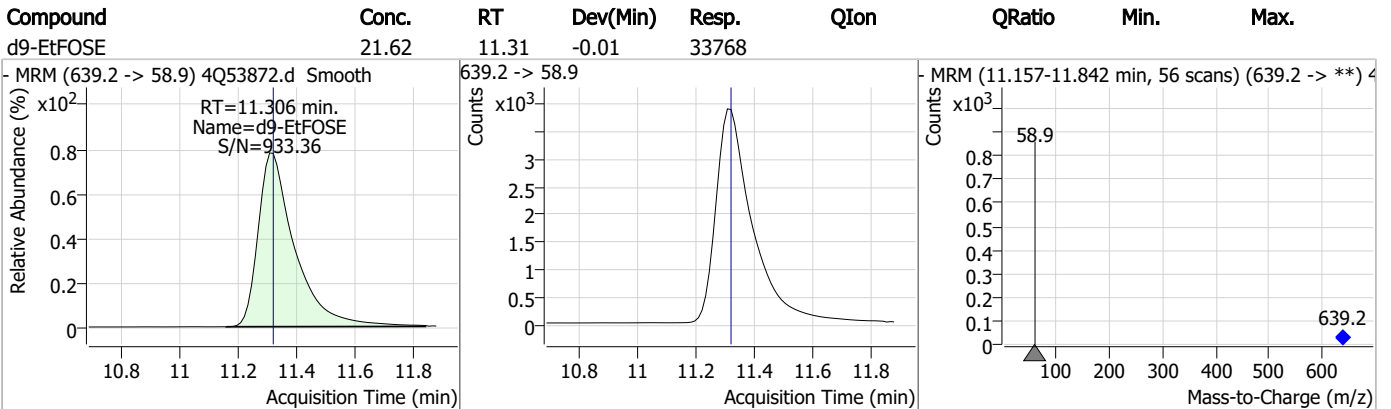
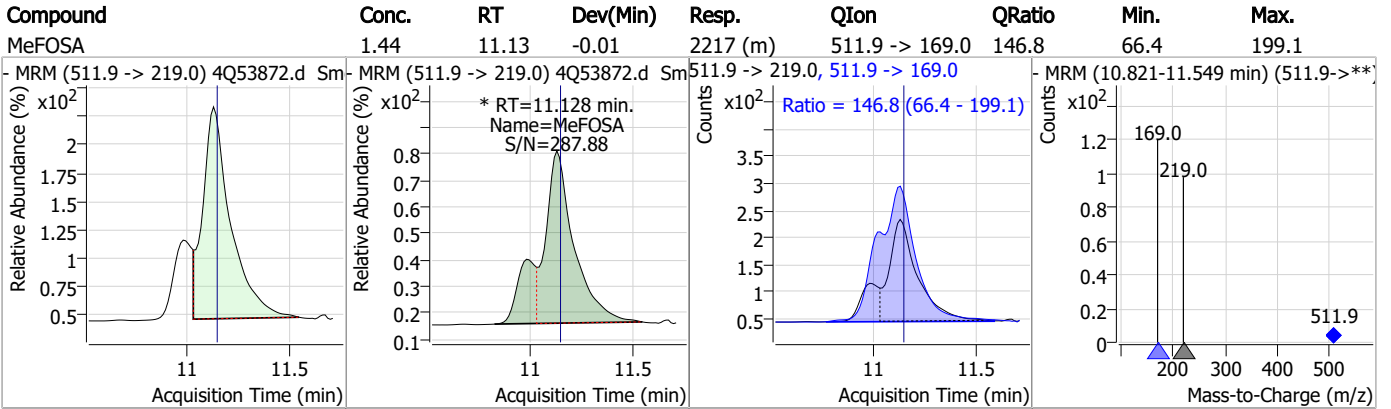
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	3.37	11.05	0.00	4296 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.94	11.13	-0.01	4235				

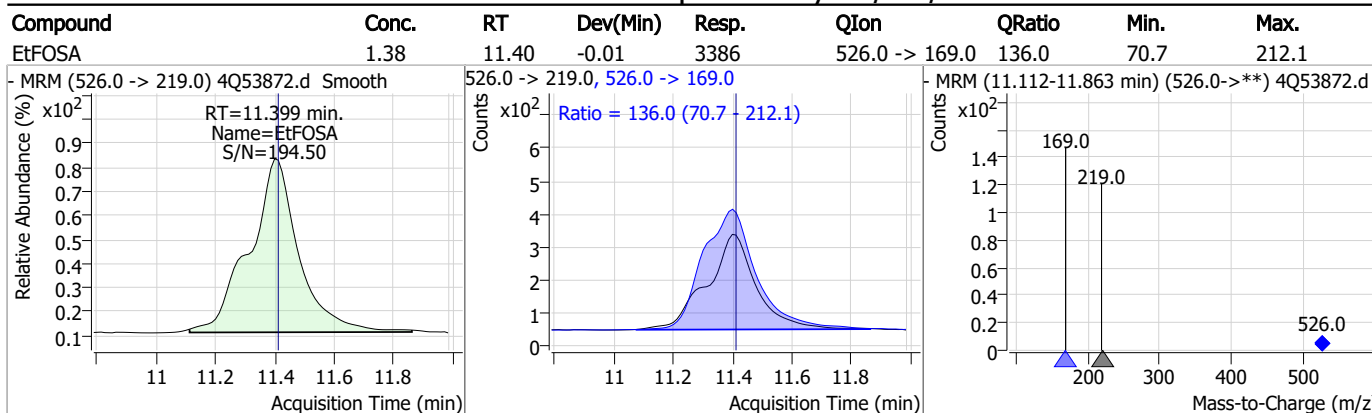


Perfluorinated Compounds by LC/MS/MS



7.3.2
7

Perfluorinated Compounds by LC/MS/MS



7.3.2
7

Manual Integration Approval Summary

Sample Number: OP58-LLBS Method: EPA DRAFT 1633
Lab FileID: 4Q53872.D Analyst approved: 11/16/23 13:59 Anna Ludwig
Injection Time: 11/15/23 12:10 Supervisor approved: 11/16/23 15:26 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
MeFOSAA	2355-31-9		8.09	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
MeFOSE	24448-09-7		11.05	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.3.2.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54049.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 10:27:55 PM
 Sample Name : op164-bs
 Vial : P3-B1
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP164,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.674	216.8 -> 171.9	46374	10.00 µg/L	0.075
M5-PFPeA	4.112	268.3 -> 223.0	34661	5.00 µg/L	0.025
M5-PFHxA	5.285	318.0 -> 273.0	25589	2.50 µg/L	0.025
M4-PFHpA	6.242	367.1 -> 322.0	24419	2.50 µg/L	0.025
M8-PFOA	6.938	421.1 -> 376.0	28688	2.50 µg/L	0.012
M9-PFNA	7.483	472.1 -> 427.0	12028	1.25 µg/L	0.012
M6-PFDA	7.979	519.1 -> 474.1	8748	1.25 µg/L	0.012
M7-PFUnDA	8.436	570.0 -> 525.1	9962	1.25 µg/L	0.012
M2-PFDoDA	8.855	615.1 -> 570.0	9551	1.25 µg/L	0.012
M2-PFTeDA	9.637	715.2 -> 670.0	8819	1.25 µg/L	0.025
M8-FOSA	9.794	506.1 -> 77.8	6398	2.50 µg/L	0.025
M3-PFBS	5.140	302.1 -> 79.9	7153	2.50 µg/L	0.024
M3-PFHxS	7.005	402.1 -> 79.9	6365	2.50 µg/L	0.025
M8-PFOS	8.092	507.1 -> 79.9	6411	2.50 µg/L	0.012
M2-4:2FTS	4.996	329.1 -> 80.9	912	5.00 µg/L	0.025
M2-6:2FTS	6.711	429.1 -> 80.9	2033	5.00 µg/L	0.012
M2-8:2FTS	7.779	529.1 -> 80.9	2738	5.00 µg/L	0.012
M3-MeFOSAA	8.062	573.2 -> 419.0	12614	5.00 µg/L	0.012
M3-HFPO-DA	5.640	286.9 -> 168.9	22129	10.00 µg/L	0.025
M5-EtFOSAA	8.271	589.2 -> 419.0	10231	5.00 µg/L	0.025
M7-MeFOSE	11.022	623.2 -> 58.9	22120	25.00 µg/L	0.012
M9-EtFOSE	11.306	639.2 -> 58.9	25178	25.00 µg/L	0.012
M5-EtFOSA	11.397	531.1 -> 219.0	4114	2.50 µg/L	0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3848	2.50 µg/L	0.012
13C4-PFOS	8.093	502.8 -> 79.9	6516	2.50 µg/L	0.012
13C3-PFBA	2.678	216.0 -> 172.0	44343	5.00 µg/L	0.087
18O2-PFHxS	7.004	403.0 -> 83.9	4546	2.50 µg/L	0.025
13C4-PFOA	6.939	417.1 -> 372.0	36405	2.50 µg/L	0.012
13C2-PFDA	7.980	515.1 -> 470.1	10730	1.25 µg/L	0.012
13C5-PFNA	7.484	468.0 -> 423.0	14369	1.25 µg/L	0.012
13C2-PFHxA	5.286	315.1 -> 270.0	31782	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	912	5.26 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.1%		
13C2-6:2FTS	6.711	429.1 -> 80.9	2033	5.52 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.4%		
13C2-8:2FTS	7.779	529.1 -> 80.9	2738	5.40 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.0%		
13C2-PFDoDA	8.855	615.1 -> 570.0	9551	0.99 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 79.6%		
13C2-PFTeDA	9.637	715.2 -> 670.0	8819	0.91 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 73.1%		
13C3-PFBS	5.140	302.1 -> 79.9	7153	2.08 µg/L	0.024
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 83.2%		
13C3-PFHxS	7.005	402.1 -> 79.9	6365	2.23 µg/L	0.025

7.3.3
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.1%	
13C4-PFBA	2.674	216.8 -> 171.9	46374	5.07 µg/L	0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 50.7%	
13C4-PFHpA	6.242	367.1 -> 322.0	24419	2.17 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 86.7%	
13C5-PFHxA	5.285	318.0 -> 273.0	25589	2.17 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 86.9%	
13C5-PFPeA	4.112	268.3 -> 223.0	34661	4.34 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 86.9%	
13C6-PFDA	7.979	519.1 -> 474.1	8748	1.10 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 87.7%	
13C7-PFUnDA	8.436	570.0 -> 525.1	9962	1.11 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 89.0%	
13C8-FOSA	9.794	506.1 -> 77.8	6398	2.10 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 84.1%	
13C8-PFOA	6.938	421.1 -> 376.0	28688	2.16 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 86.3%	
13C8-PFOS	8.092	507.1 -> 79.9	6411	2.01 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 80.3%	
13C9-PFNA	7.483	472.1 -> 427.0	12028	1.03 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 82.6%	
d3-MeFOSAA	8.062	573.2 -> 419.0	12614	4.73 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.5%	
13C3-HFPO-DA	5.640	286.9 -> 168.9	22129	8.35 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 83.5%	
d3-MeFOSA	11.126	515.0 -> 219.0	3848	1.84 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 73.6%	
d5-EtFOSAA	8.271	589.2 -> 419.0	10231	4.57 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 91.4%	
d7-MeFOSE	11.022	623.2 -> 58.9	22120	16.95 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 67.8%	
d9-EtFOSE	11.306	639.2 -> 58.9	25178	16.95 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 67.8%	
d5-EtFOSA	11.397	531.1 -> 219.0	4114	1.62 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 64.9%	
Target Compounds					QValue
4:2FTS	4.985	327.1 -> 307.0	15126	9.05 µg/L	99
		327.1 -> 80.9	6375		
6:2FTS	6.712	427.1 -> 407.0	21037	9.95 µg/L	97
		427.1 -> 80.9	8035		
8:2FTS	7.779	527.1 -> 507.0	15021	10.34 µg/L	90
		527.1 -> 80.8	6094		
EtFOSAA	8.272	584.2 -> 419.1	4995	2.58 µg/L	95
		584.2 -> 526.0	1784		
FOSA	9.798	498.1 -> 77.9	7740	2.61 µg/L	98
		498.1 -> 478.0	249		
MeFOSAA	8.062	570.1 -> 419.0	5069	2.51 µg/L	95
		570.1 -> 483.0	1210		
PFBA	2.670	212.8 -> 168.9	16372	10.26 µg/L	100
PFBS	5.141	298.7 -> 79.9	5906	2.49 µg/L	99
		298.7 -> 98.8	2258		
PFDA	7.980	512.9 -> 469.0	17475	2.63 µg/L	96
		512.9 -> 219.0	3732		
PFDODA	8.868	613.1 -> 569.0	20428	2.62 µg/L	98
		613.1 -> 319.0	3533		
PFDS	9.008	599.0 -> 79.9	4020	2.47 µg/L	94

7.3.3
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.243	599.0 -> 98.8	2120	2.60	µg/L	98
		363.1 -> 319.0	38375			
PFHpS	7.586	363.1 -> 169.0	7247	2.62	µg/L	95
		449.0 -> 79.9	6475			
PFHxA	5.288	449.0 -> 98.9	3510	2.52	µg/L	99
		313.0 -> 269.0	21585			
PFHxS	7.006	313.0 -> 118.9	710	2.43	µg/L	95
		398.7 -> 79.9	4422			
PFNA	7.484	398.7 -> 98.9	2150	2.68	µg/L	96
		463.0 -> 419.0	19940			
PFNS	8.574	463.0 -> 219.0	4593	2.46	µg/L	97
		548.8 -> 79.9	2948			
PFOA	6.940	548.8 -> 98.9	1680	2.63	µg/L	100
		413.0 -> 369.0	33567			
PFOS	8.094	413.0 -> 169.0	7072	2.35	µg/L	93
		498.9 -> 79.9	6387			
PFPeA	4.114	498.9 -> 98.8	3405	5.24	µg/L	100
		263.0 -> 219.0	36102			
PFPeS	6.232	349.1 -> 79.9	4911	2.41	µg/L	99
		349.1 -> 98.9	2215			
PFTeDA	9.637	713.1 -> 669.0	16044	2.49	µg/L	99
		713.1 -> 168.9	1720			
PFTrDA	9.267	663.0 -> 619.0	21115	2.55	µg/L	99
		663.0 -> 168.9	2868			
PFUnDA	8.436	563.1 -> 519.0	19526	2.43	µg/L	96
		563.1 -> 269.1	4506			
11CI-PF3OUdS	9.294	630.9 -> 450.9	33184	4.86	µg/L	98
		632.9 -> 452.9	9882			
9CI-PF3ONS	8.438	530.8 -> 351.0	35535	5.13	µg/L	94
		532.8 -> 353.0	11404			
ADONA	6.519	376.9 -> 250.9	92794	5.40	µg/L	99
		376.9 -> 84.8	22630			
HFPO-DA	5.641	284.9 -> 168.9	11625	5.30	µg/L	100
		284.9 -> 184.9	1259			
3:3FTCA	3.605	241.0 -> 177.0	5207	20.87	µg/L	99
		241.0 -> 117.0	492			
5:3FTCA	5.983	341.0 -> 237.1	97968	65.98	µg/L	99
		341.0 -> 217.0	69147			
7:3FTCA	7.524	441.0 -> 316.9	43088	64.42	µg/L	96
		441.0 -> 336.9	104225			
EtFOSA	11.399	526.0 -> 219.0	9974	5.80	µg/L	99
		526.0 -> 169.0	13589			
EtFOSE	11.320	630.0 -> 58.9	12391	13.07	µg/L	100
		511.9 -> 219.0	6825			
MeFOSA	11.128	511.9 -> 169.0	9868	4.97	µg/L	97
		616.1 -> 58.9	11742			
MeFOSE	11.035	699.1 -> 79.9	2790	12.60	µg/L	100
		699.1 -> 98.8	1545			
PFDoDS	9.752	295.0 -> 201.0	4104	2.33	µg/L	93
		295.0 -> 84.9	969			
NFDHA	5.166	279.0 -> 85.1	23637	5.57	µg/L	95
		229.0 -> 84.9	23192			
PFMBA	4.516	314.8 -> 134.9	38092	5.66	µg/L	100
		314.8 -> 82.9	1235			

= Qualifier out of range, m = manually integrated, + = Area summed

7.3.3
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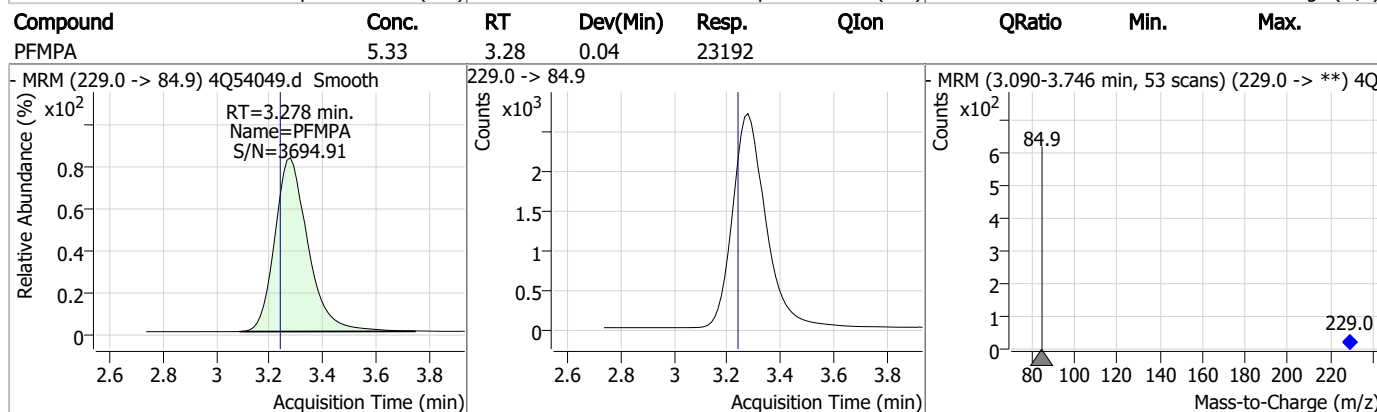
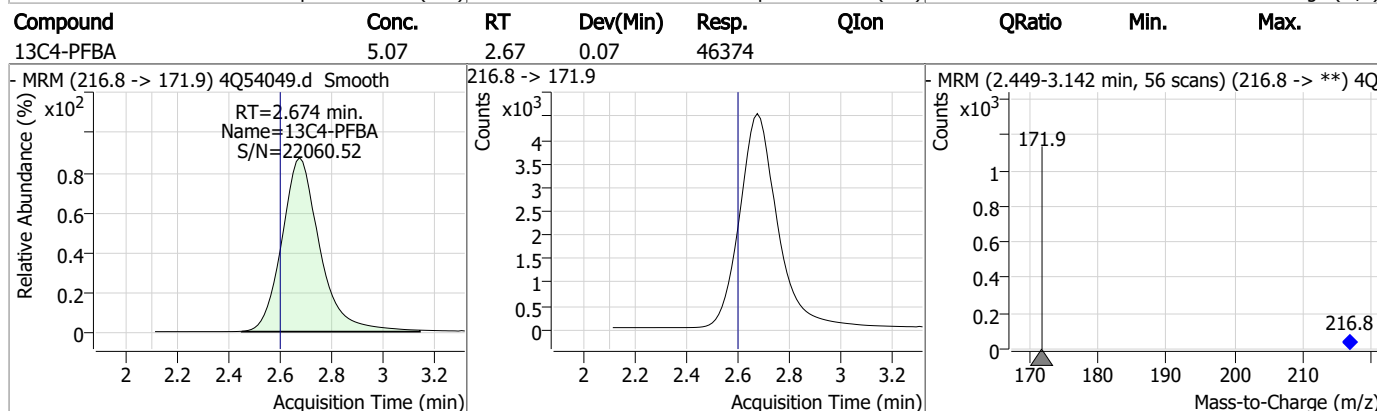
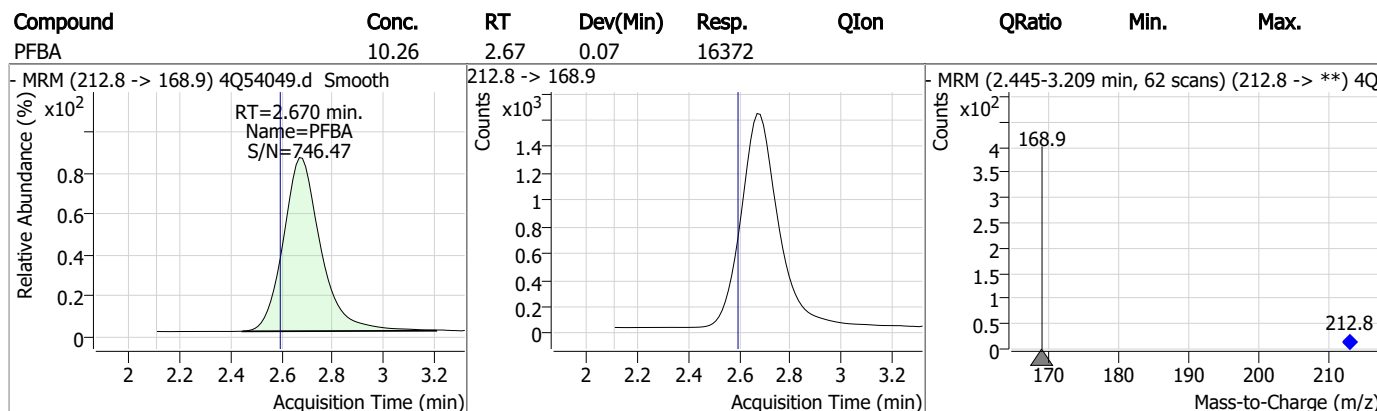
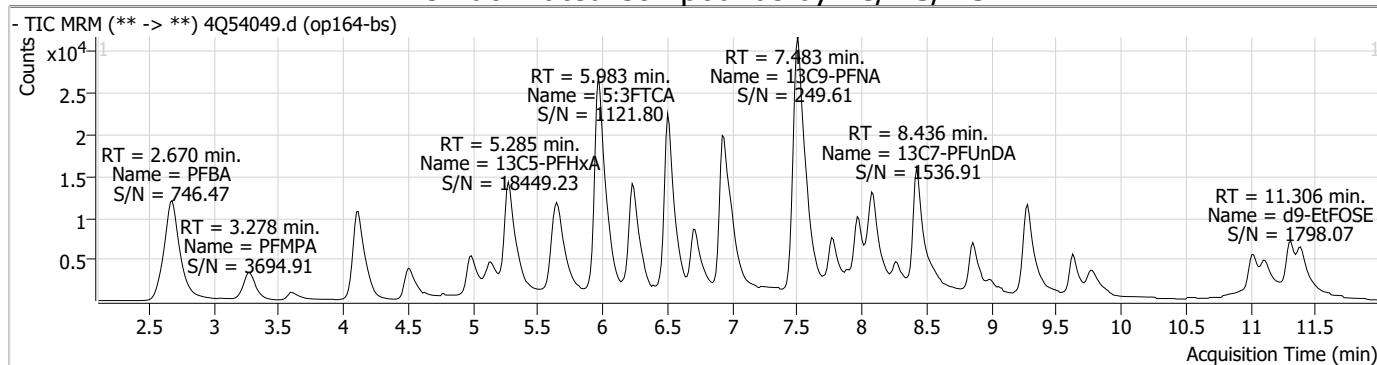
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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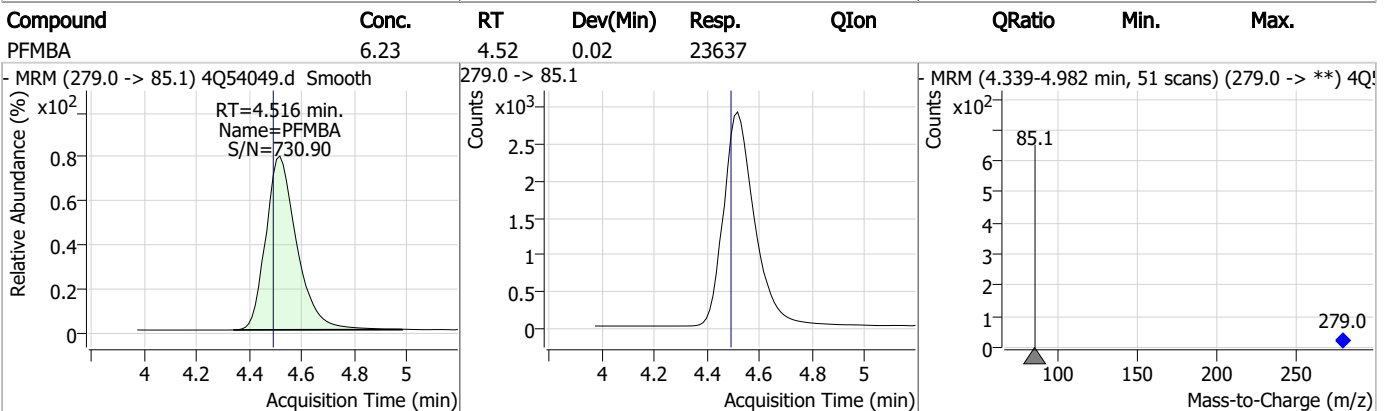
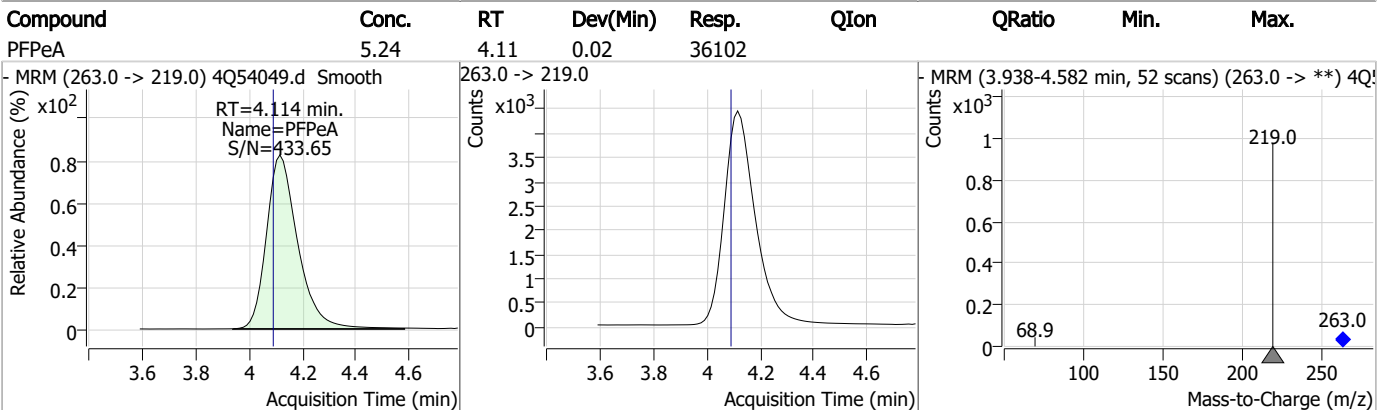
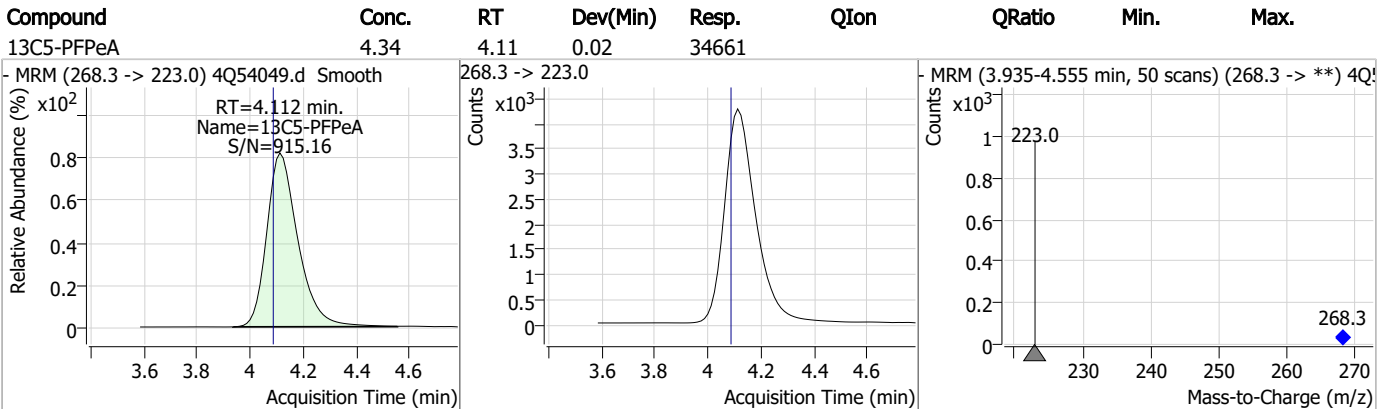
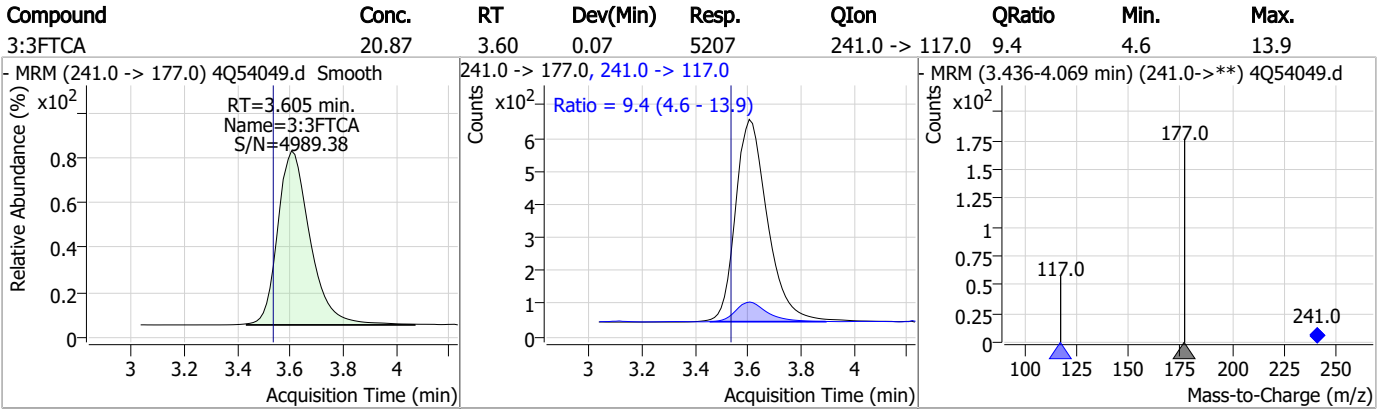
7.3.3

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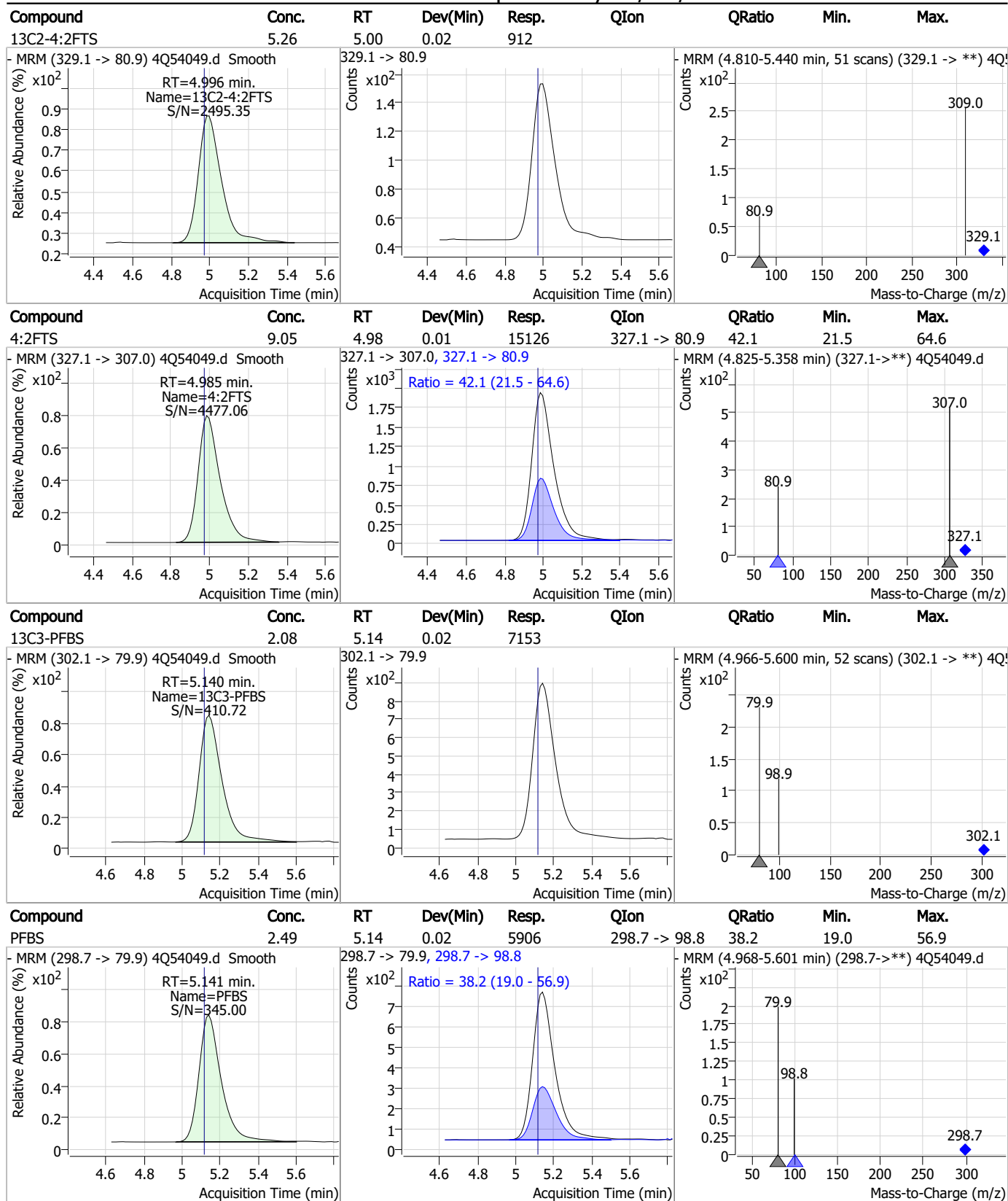
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

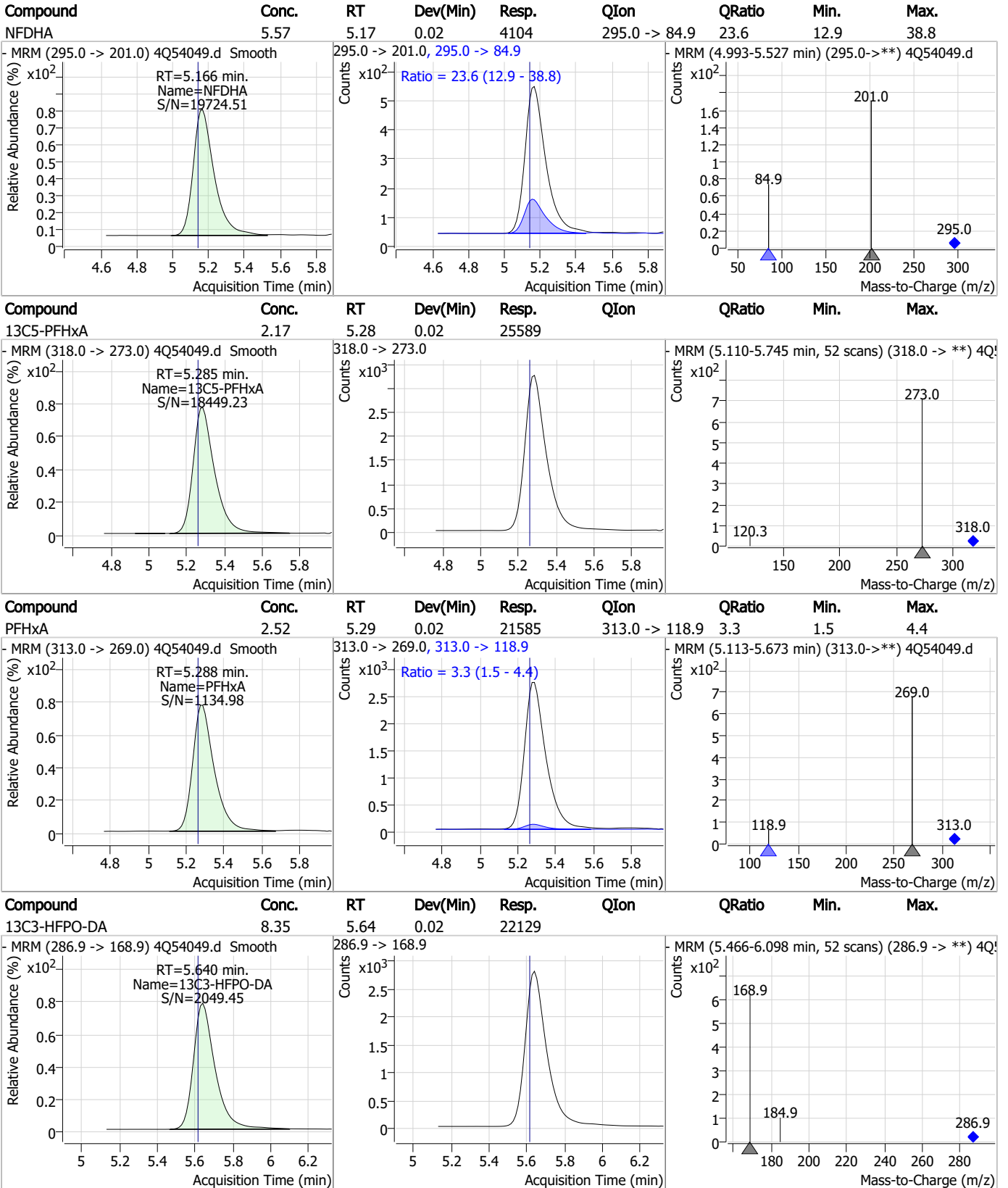


Perfluorinated Compounds by LC/MS/MS



7.3.3
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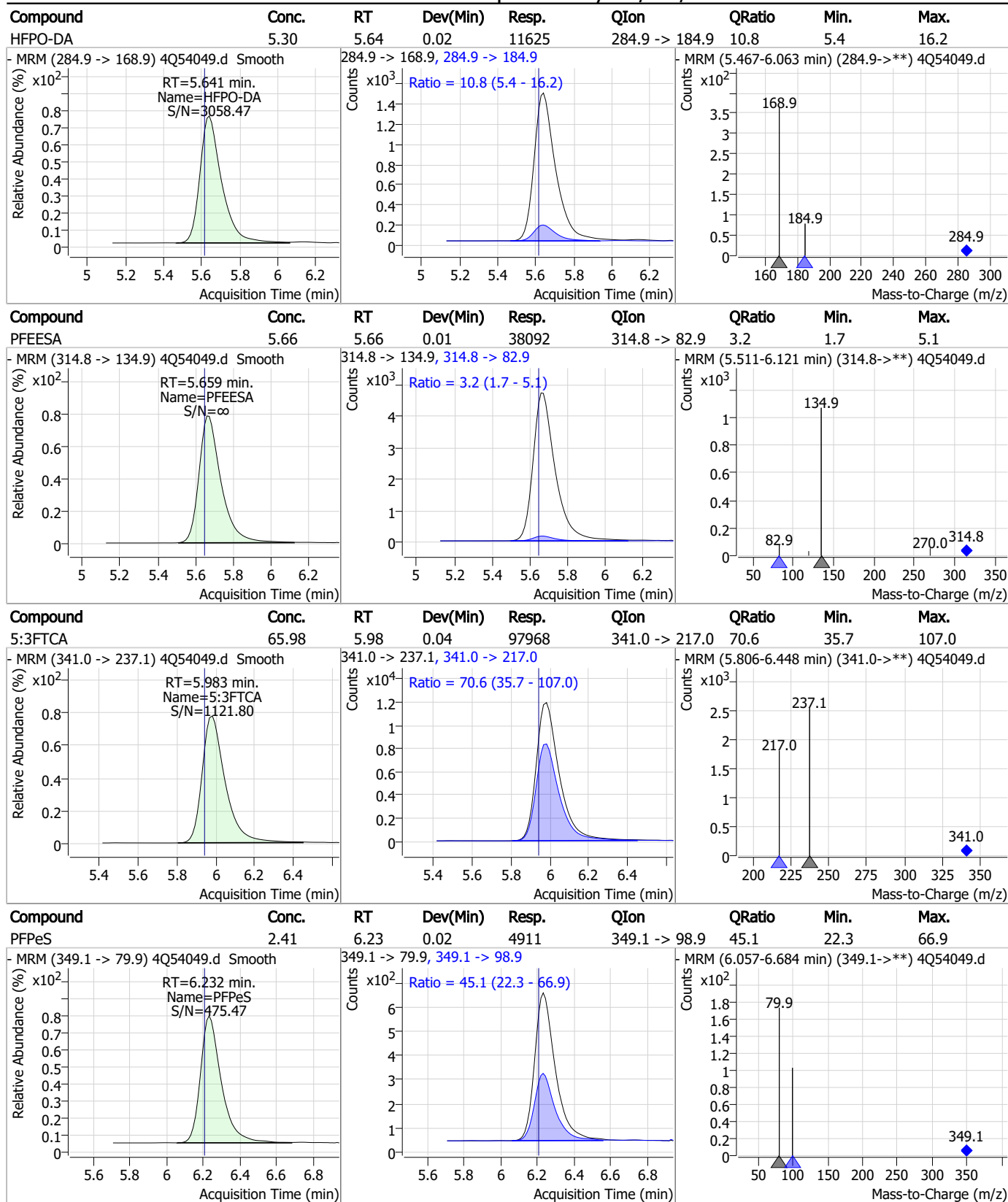
Perfluorinated Compounds by LC/MS/MS



7.3.3

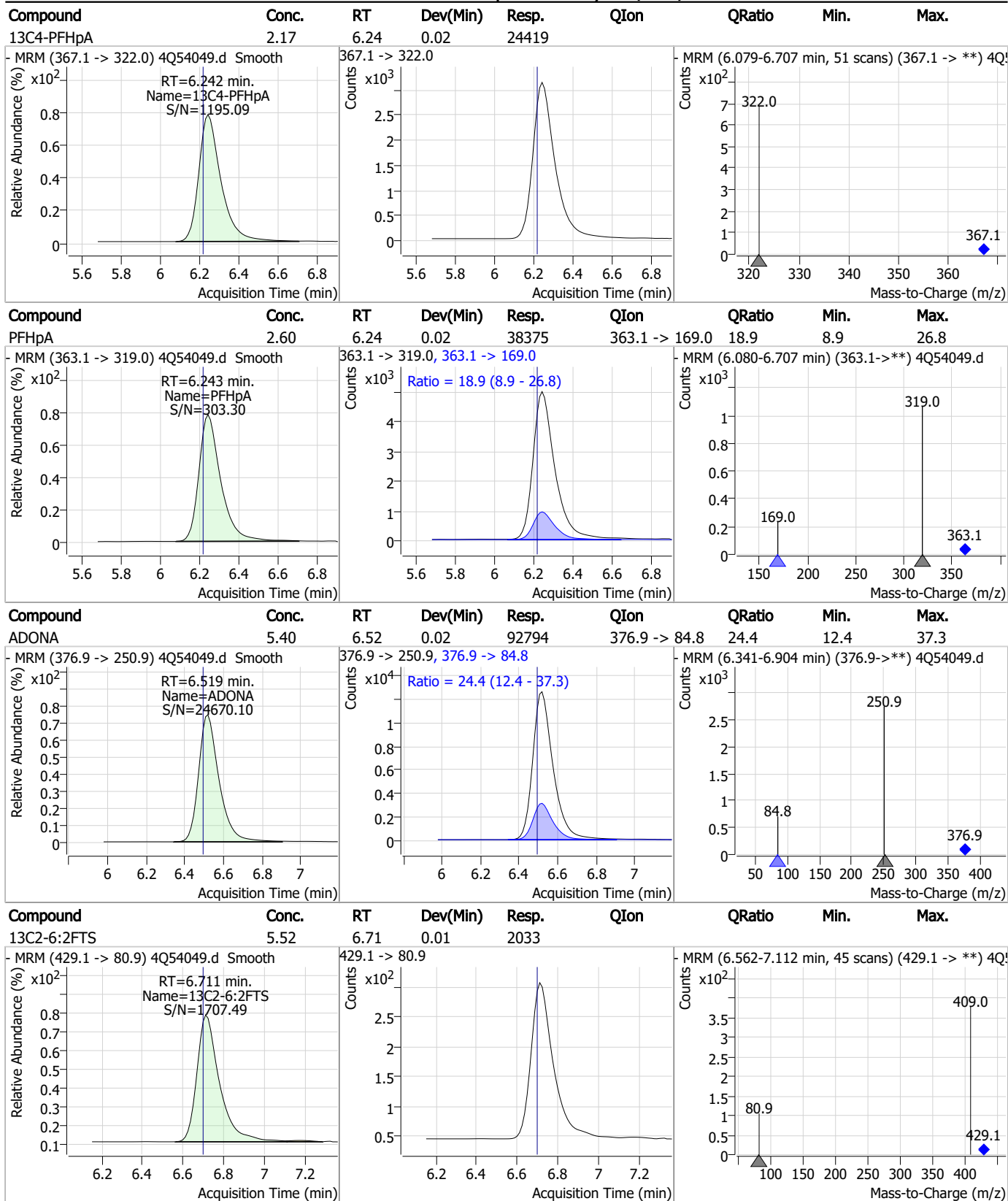
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Perfluorinated Compounds by LC/MS/MS



7.3.3
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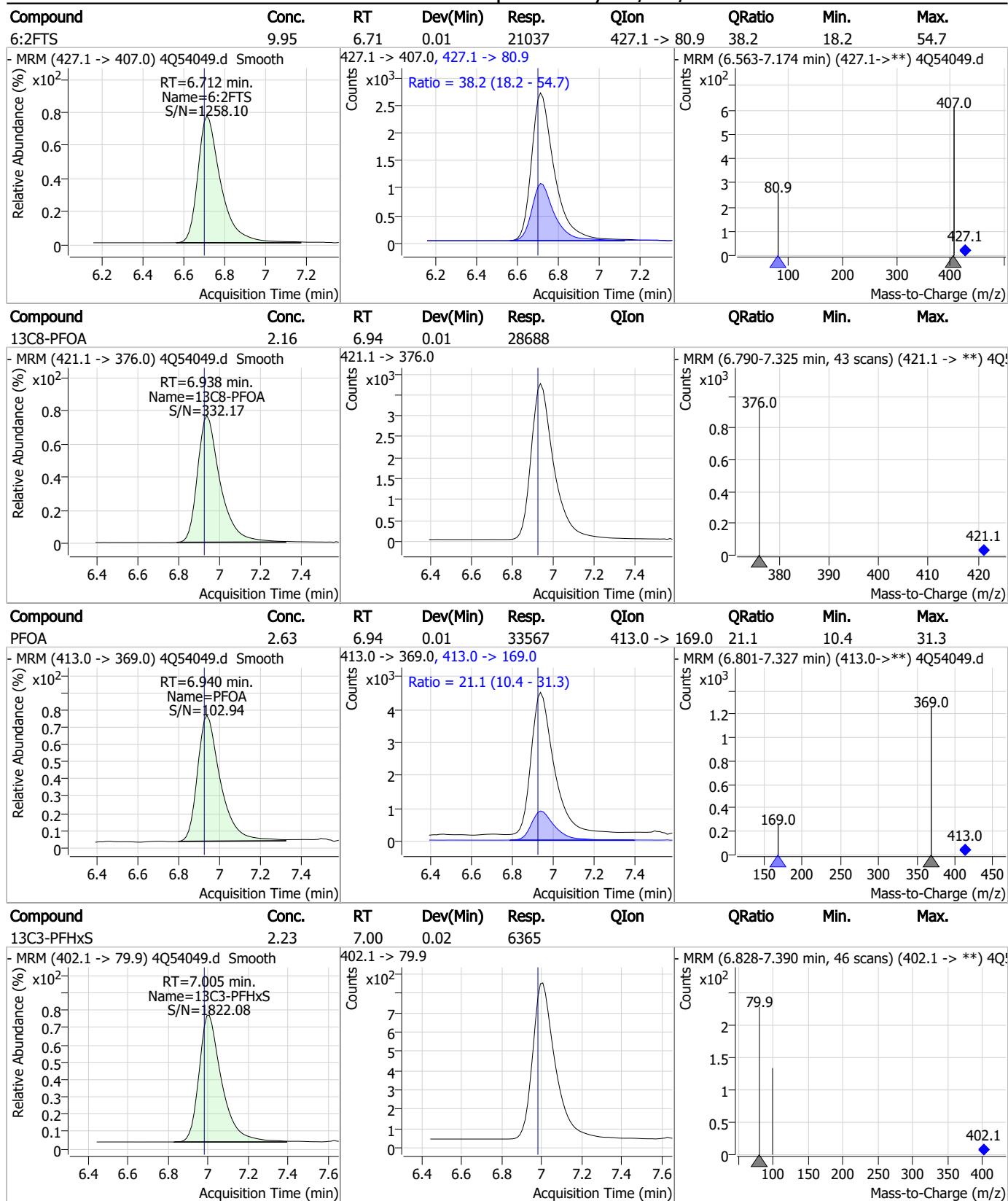
Perfluorinated Compounds by LC/MS/MS



7.3.3
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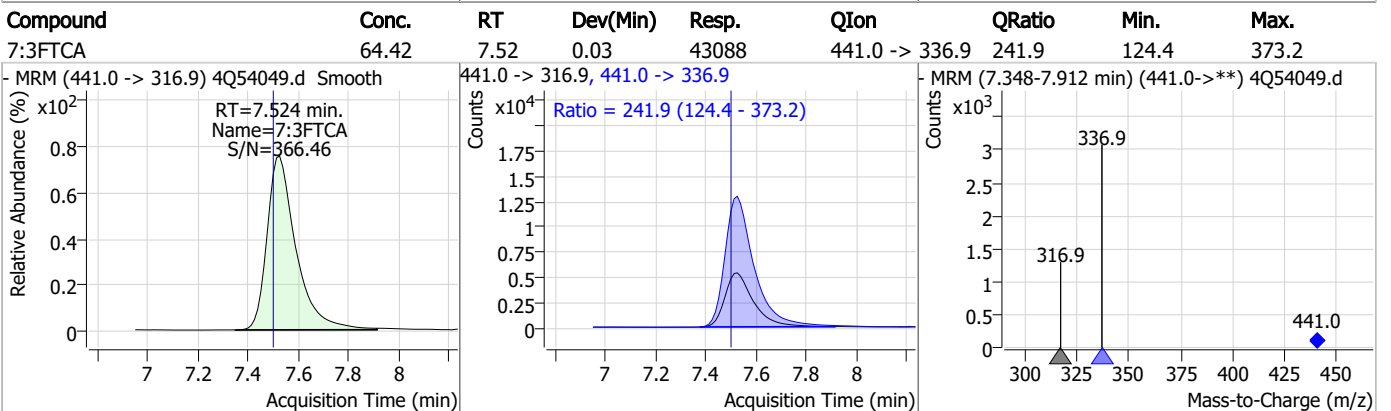
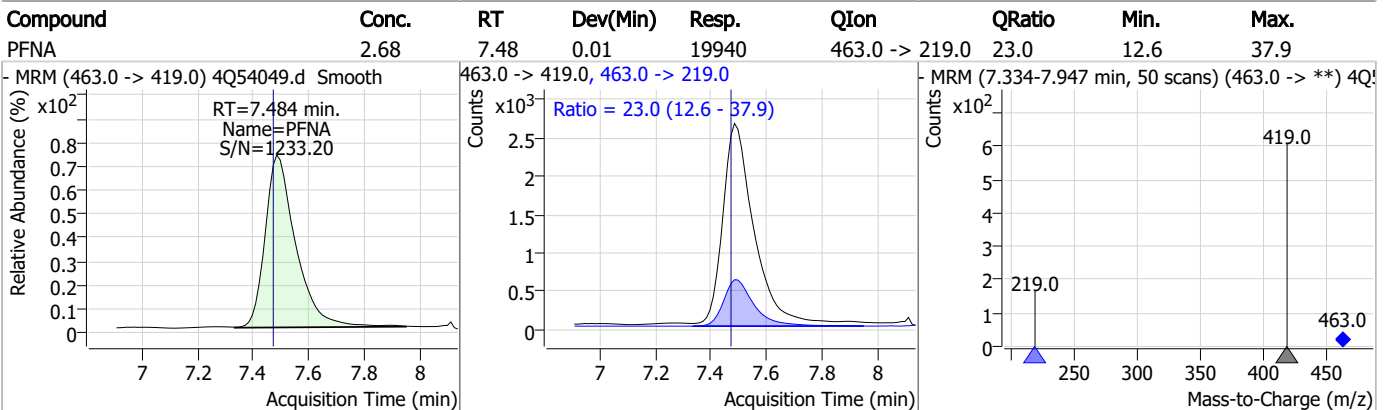
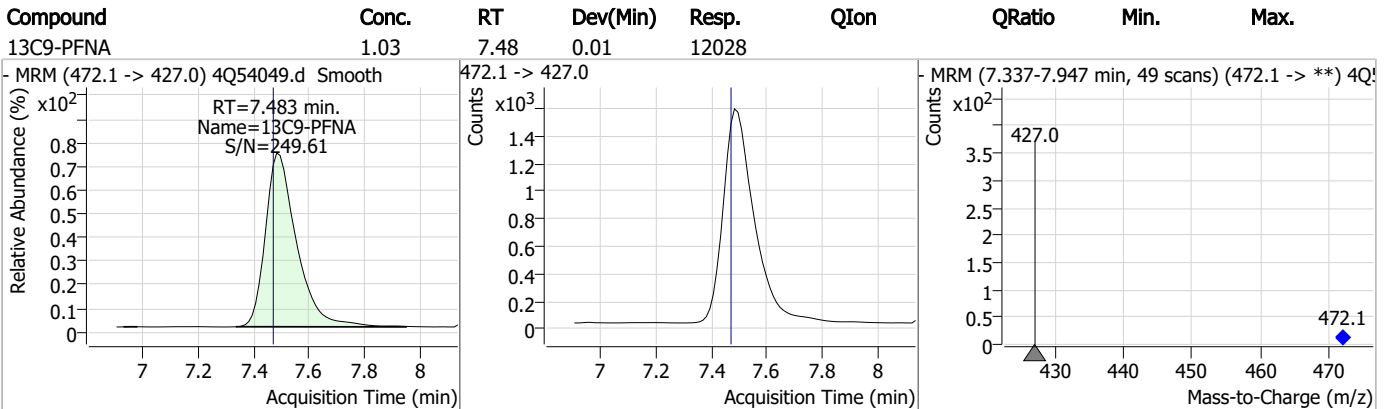
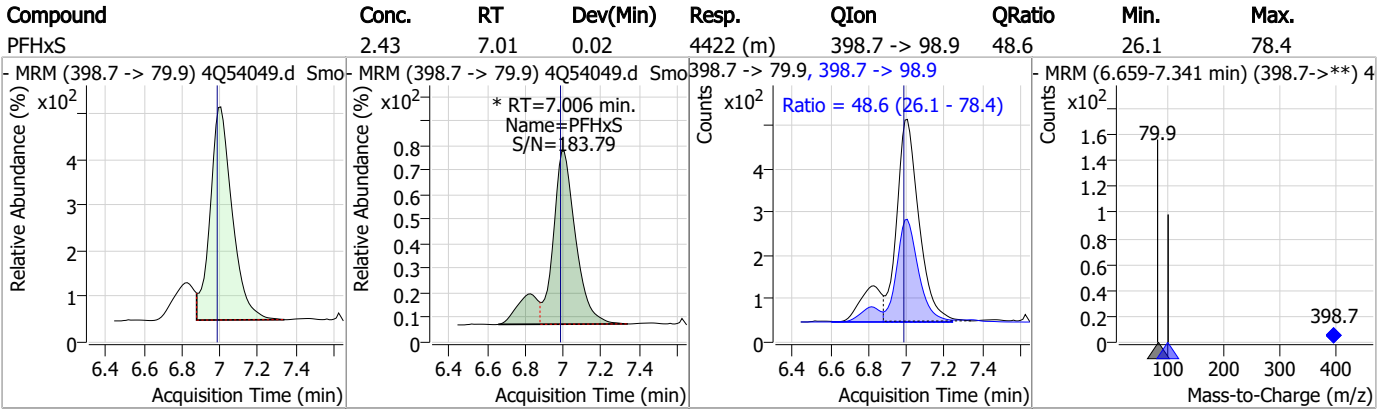


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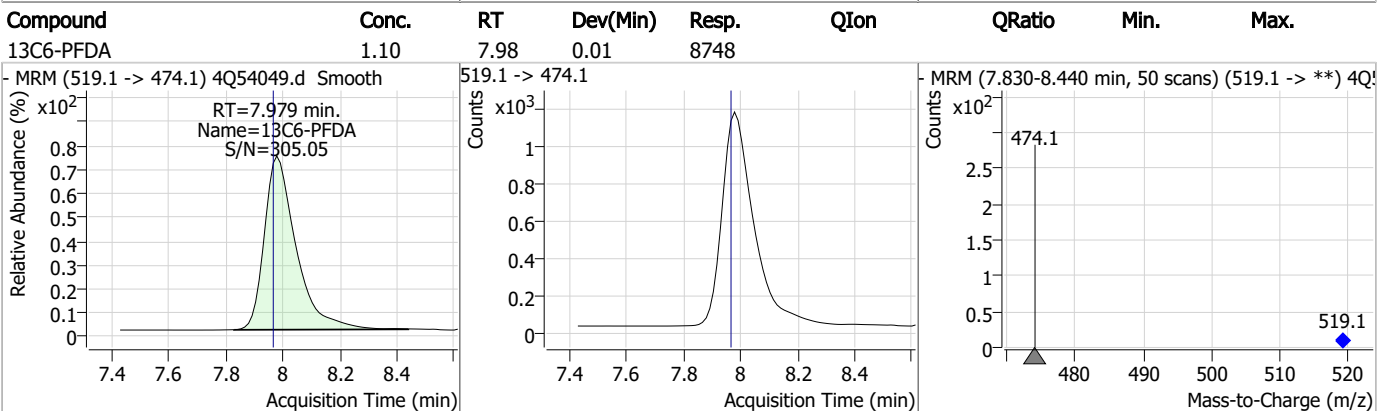
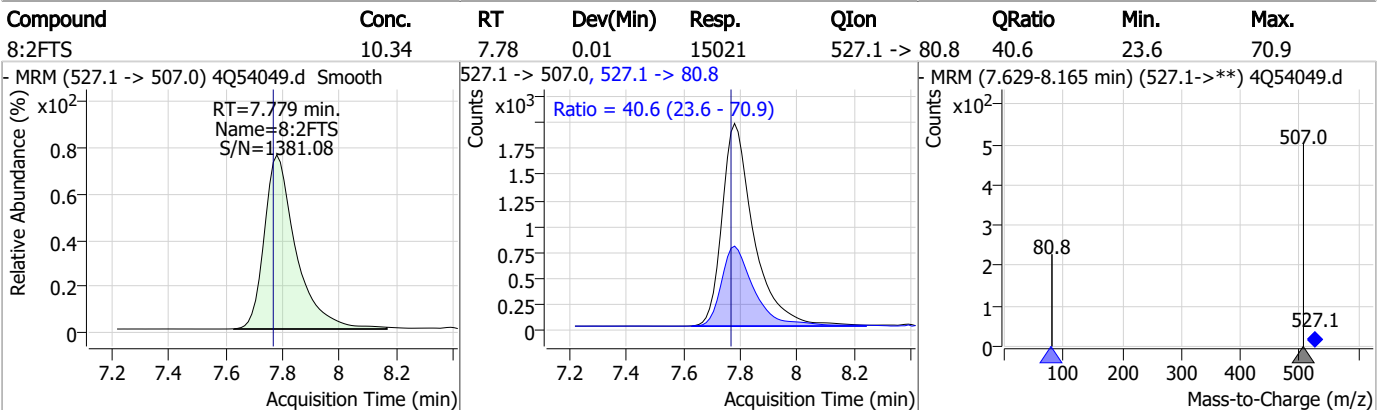
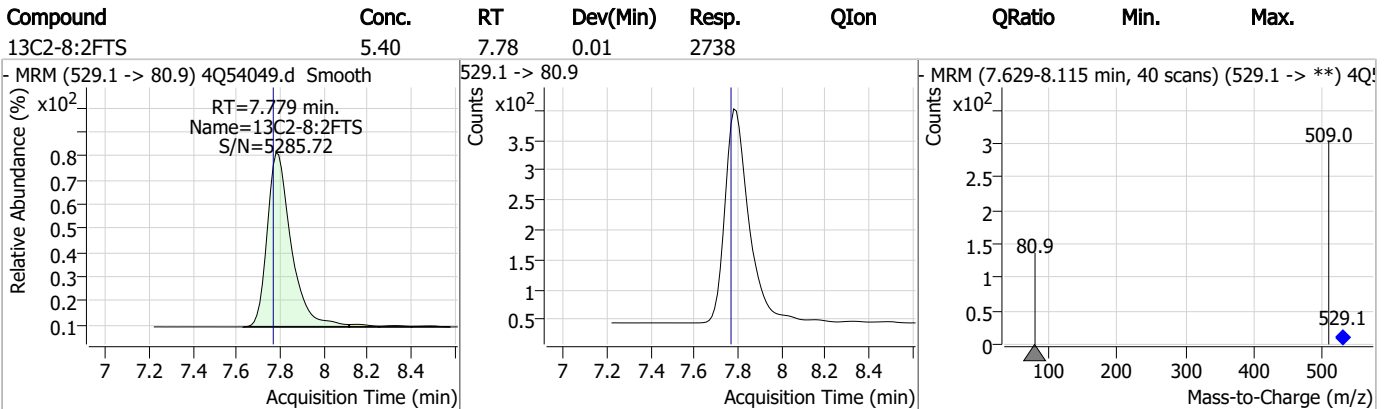
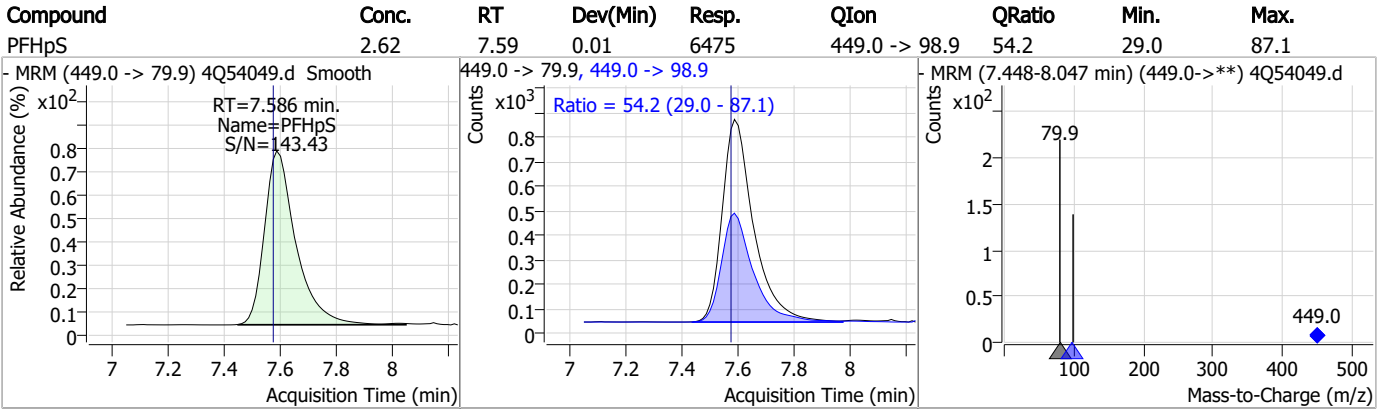


7.3.3
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

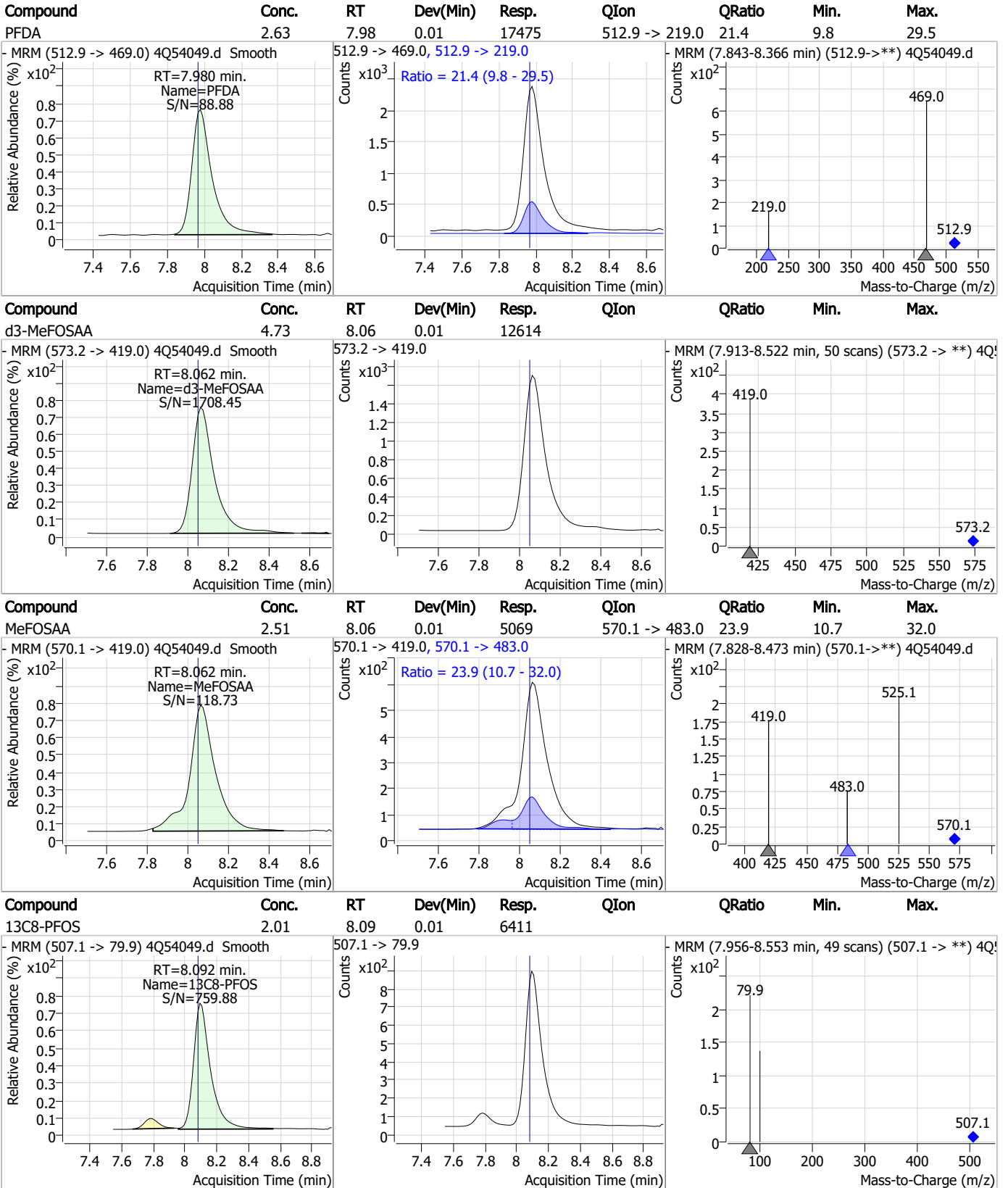


7.3.3

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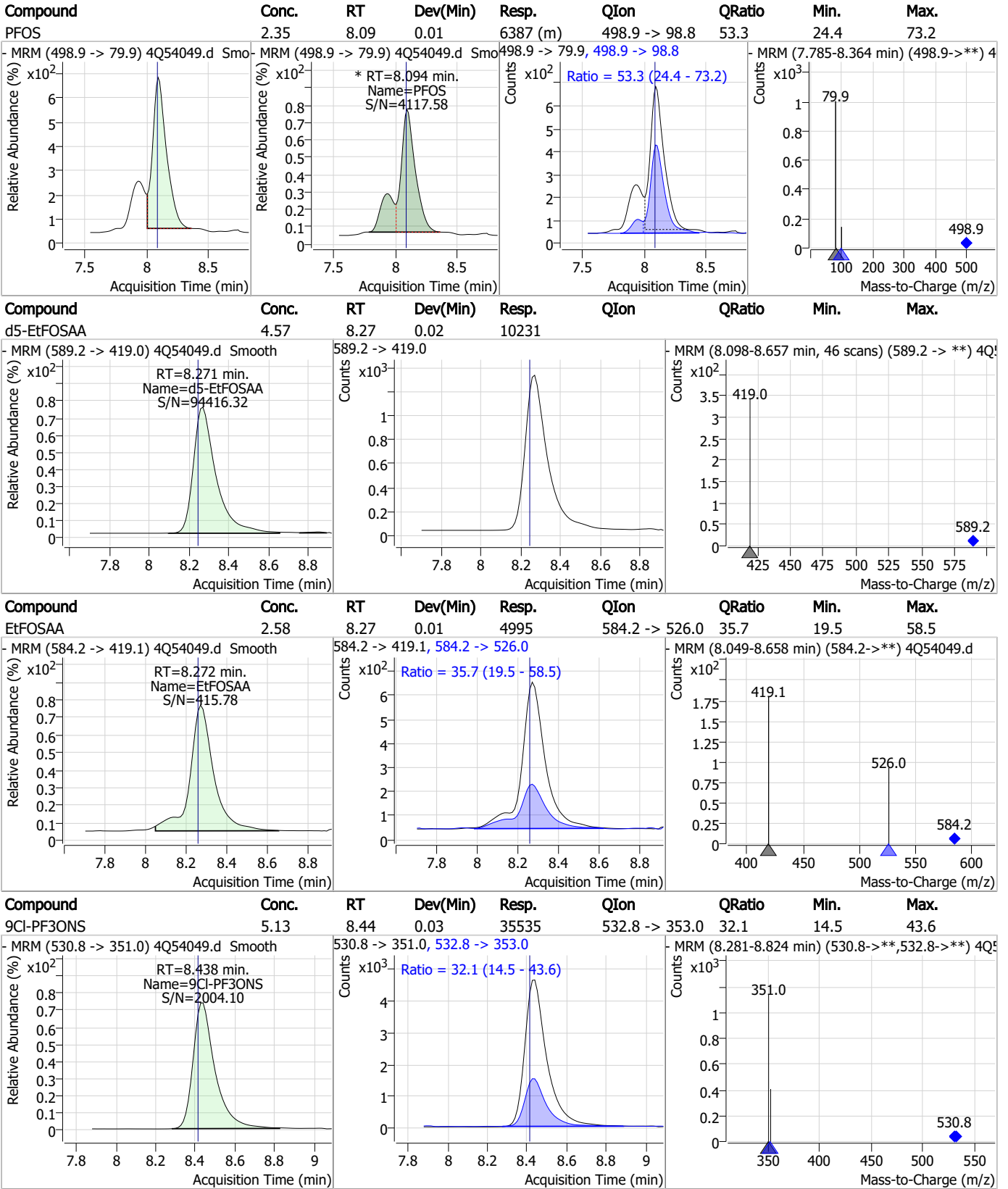
Perfluorinated Compounds by LC/MS/MS



7.3.3

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Perfluorinated Compounds by LC/MS/MS

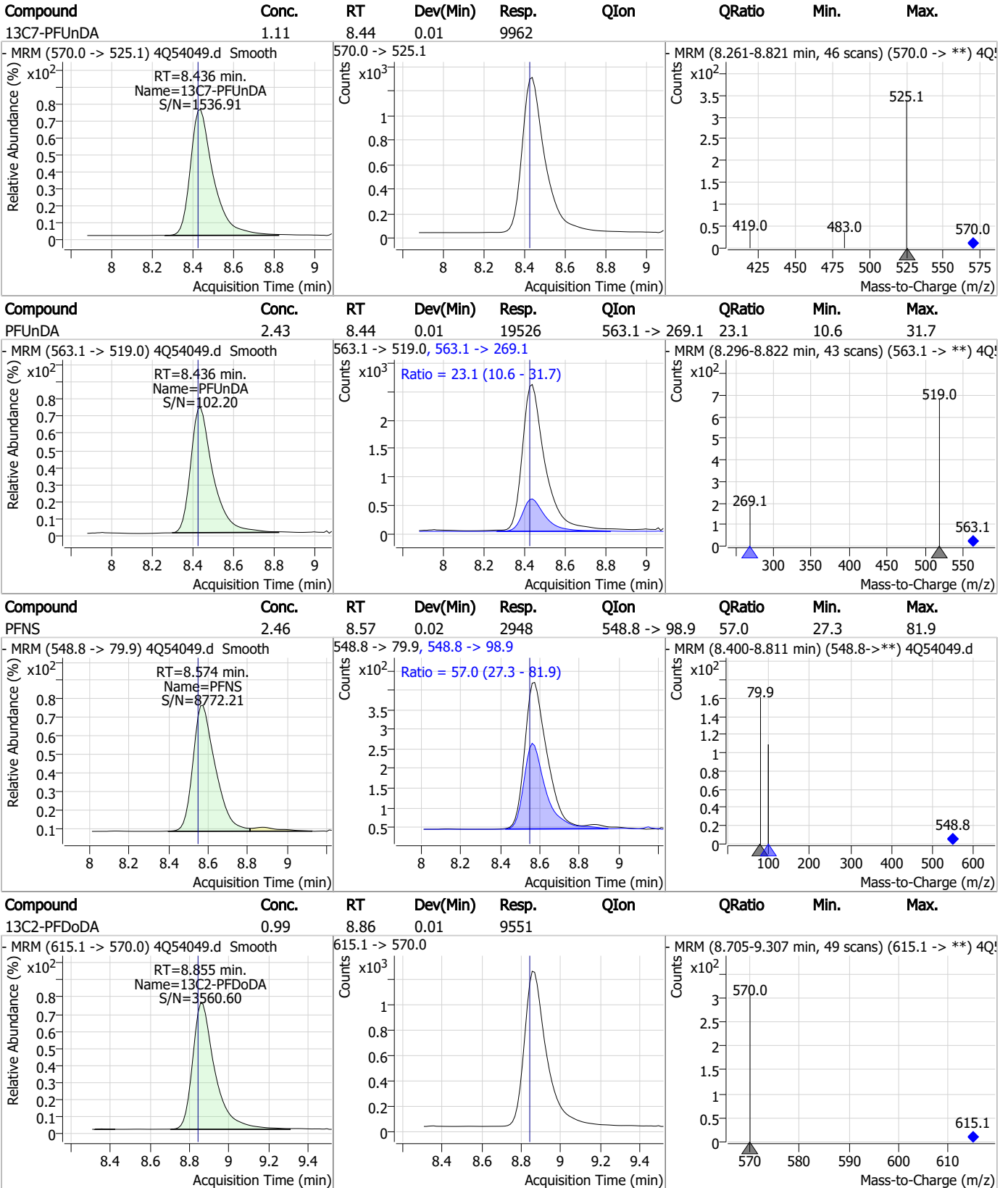


7.3.3

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Perfluorinated Compounds by LC/MS/MS



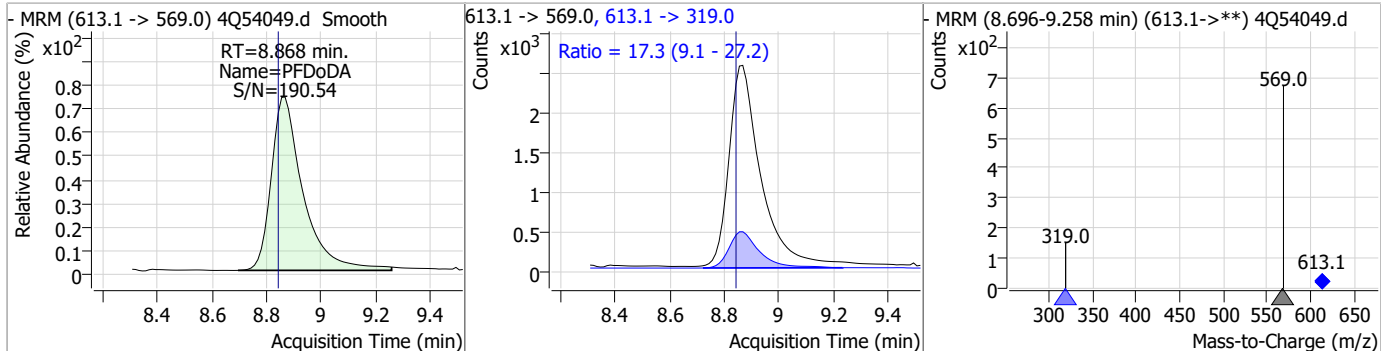
7.3.3

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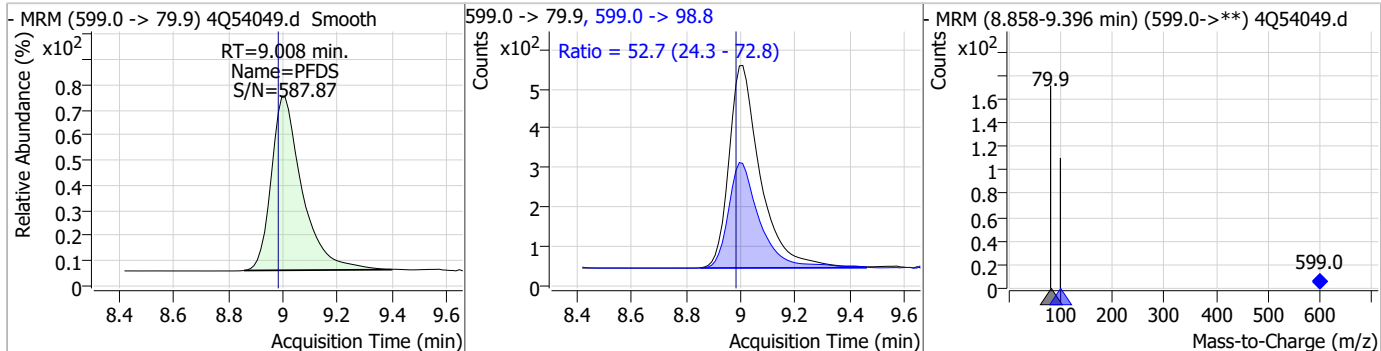


Perfluorinated Compounds by LC/MS/MS

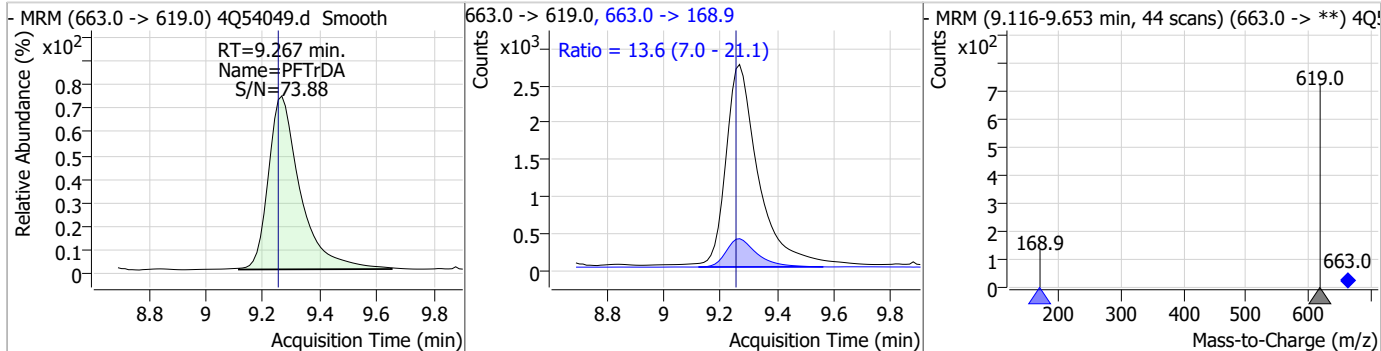
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	2.62	8.87	0.02	20428	613.1 -> 319.0	17.3	9.1	27.2



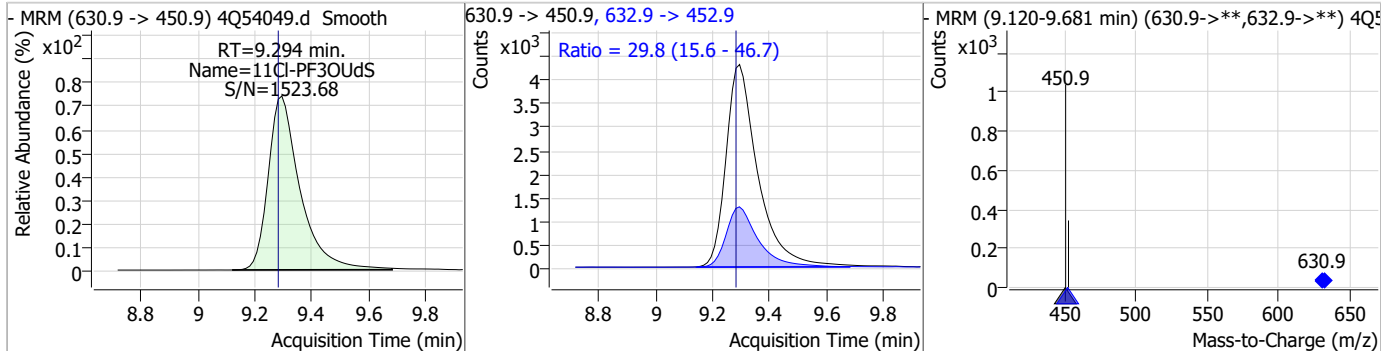
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	2.47	9.01	0.02	4020	599.0 -> 98.8	52.7	24.3	72.8



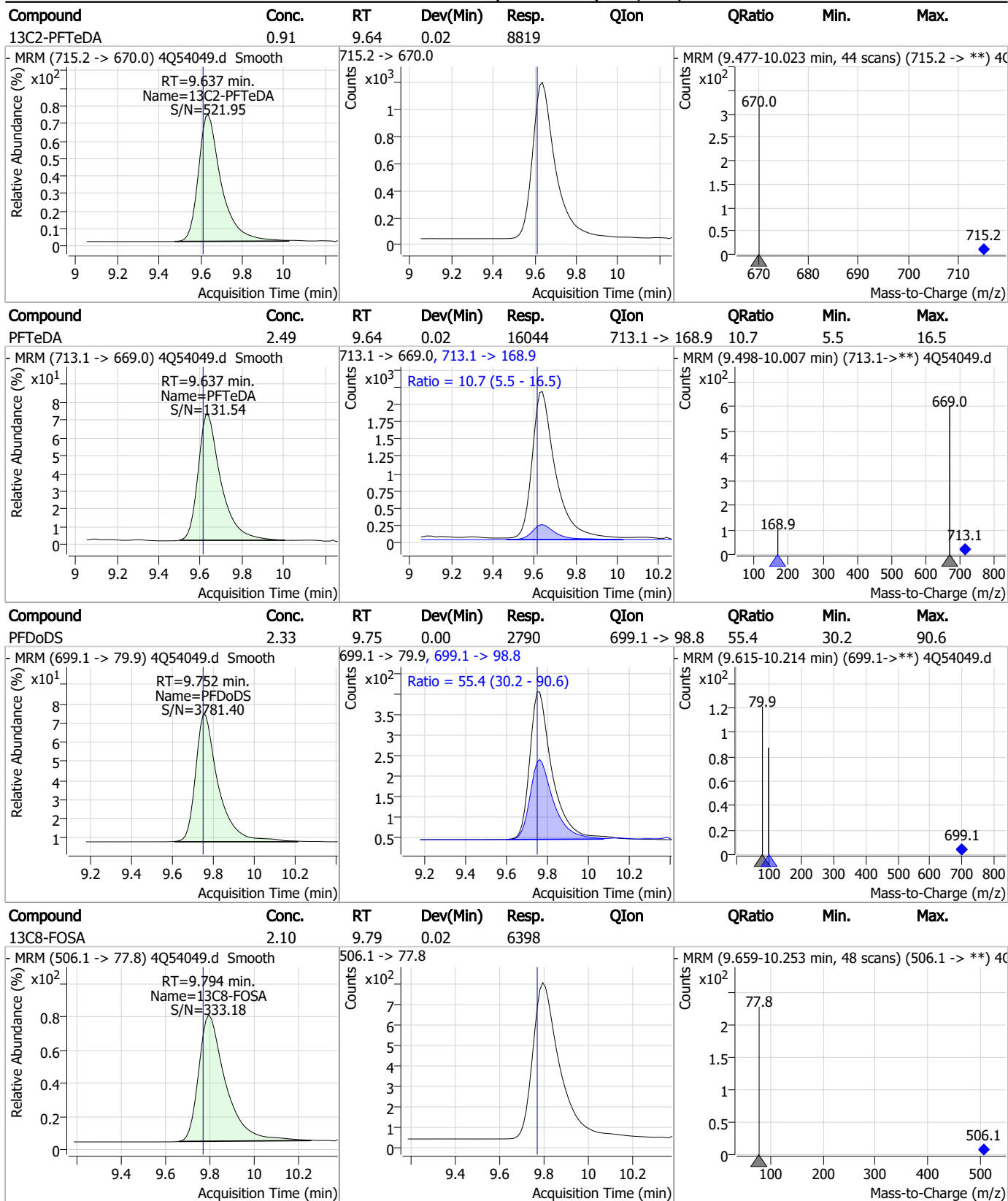
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	2.55	9.27	0.01	21115	663.0 -> 168.9	13.6	7.0	21.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	4.86	9.29	0.01	33184	632.9 -> 452.9	29.8	15.6	46.7



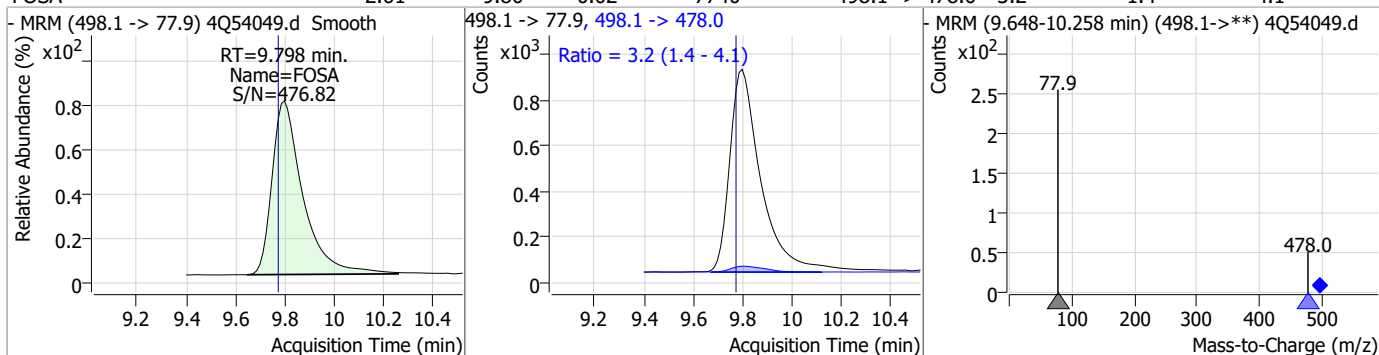
Perfluorinated Compounds by LC/MS/MS



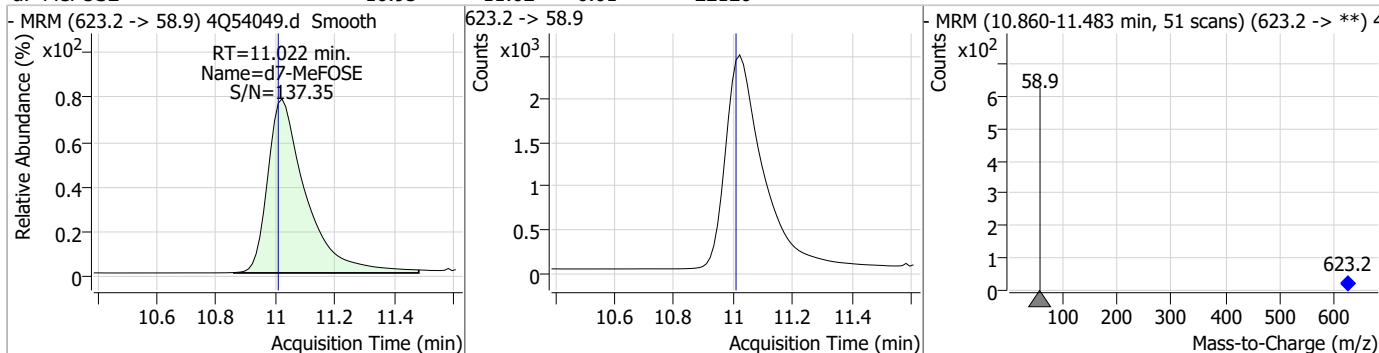
7.3.3
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Perfluorinated Compounds by LC/MS/MS

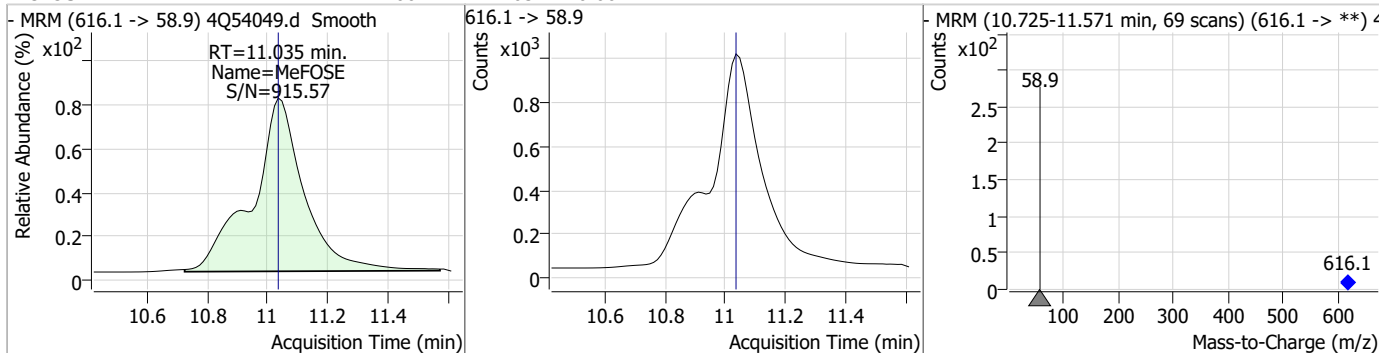
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.61	9.80	0.02	7740	498.1 -> 478.0	3.2	1.4	4.1



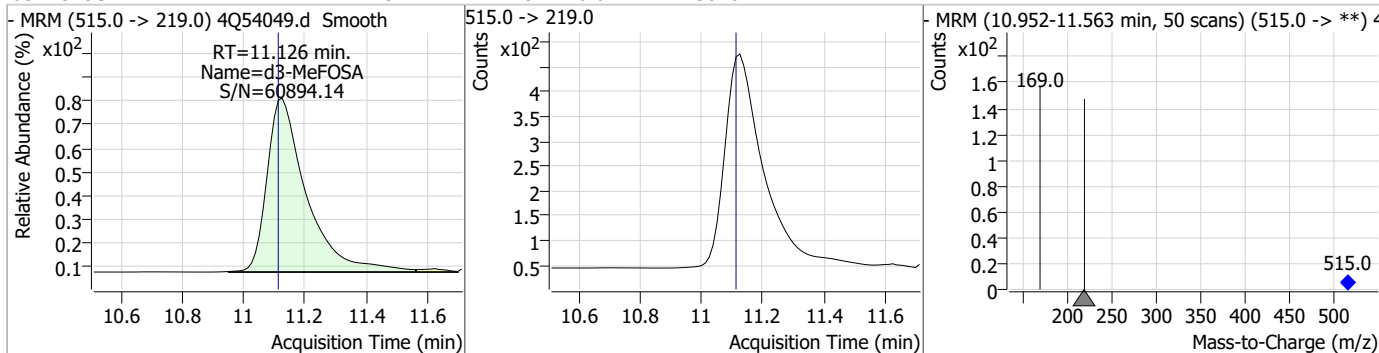
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	16.95	11.02	0.01	22120	623.2 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.60	11.03	0.00	11742	616.1 -> 58.9			

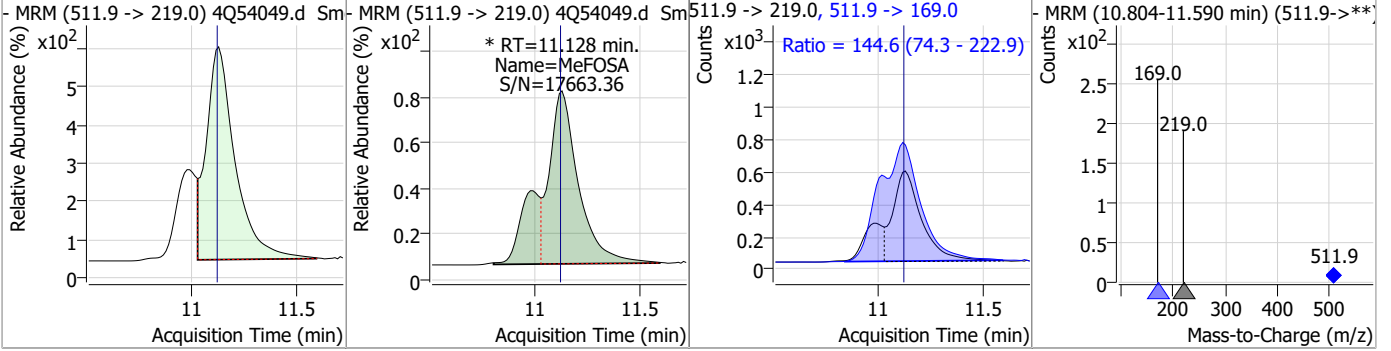


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.84	11.13	0.01	3848	515.0 -> 219.0			

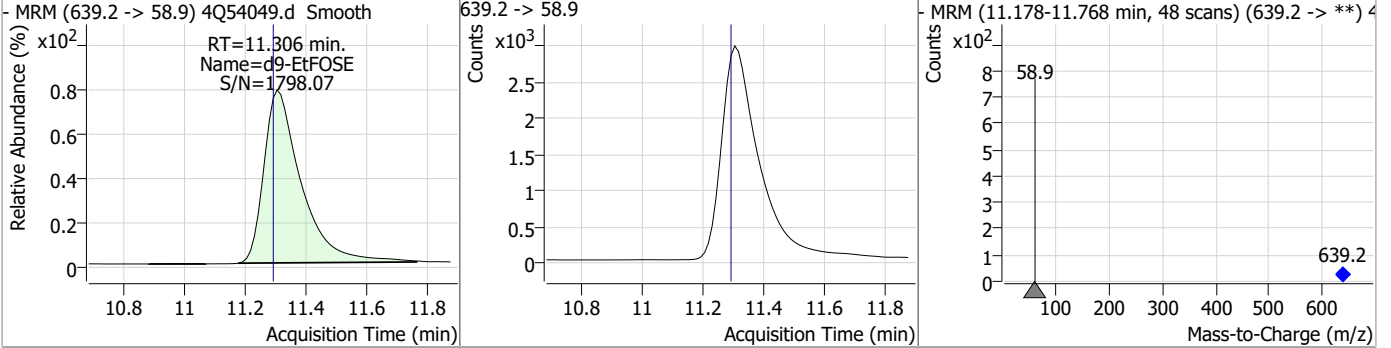


Perfluorinated Compounds by LC/MS/MS

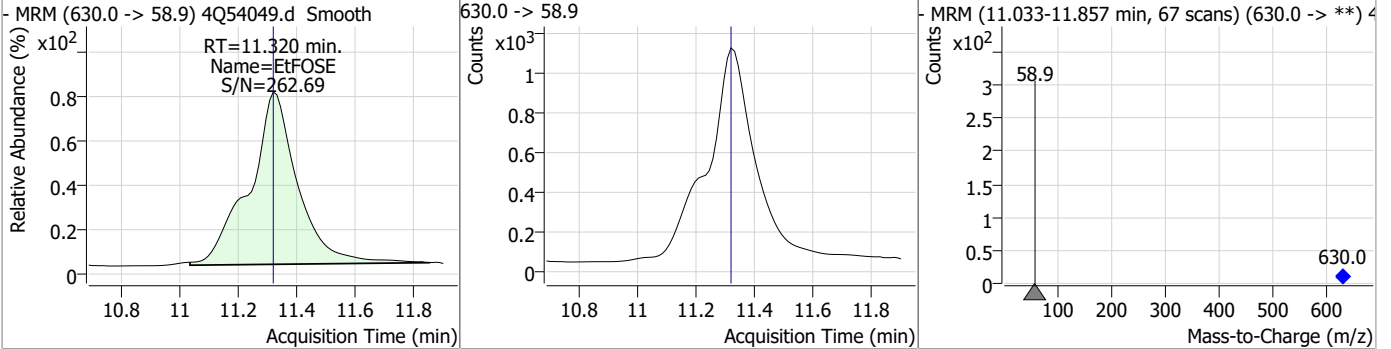
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.97	11.13	0.01	6825 (m)	511.9 -> 169.0	144.6	74.3	222.9



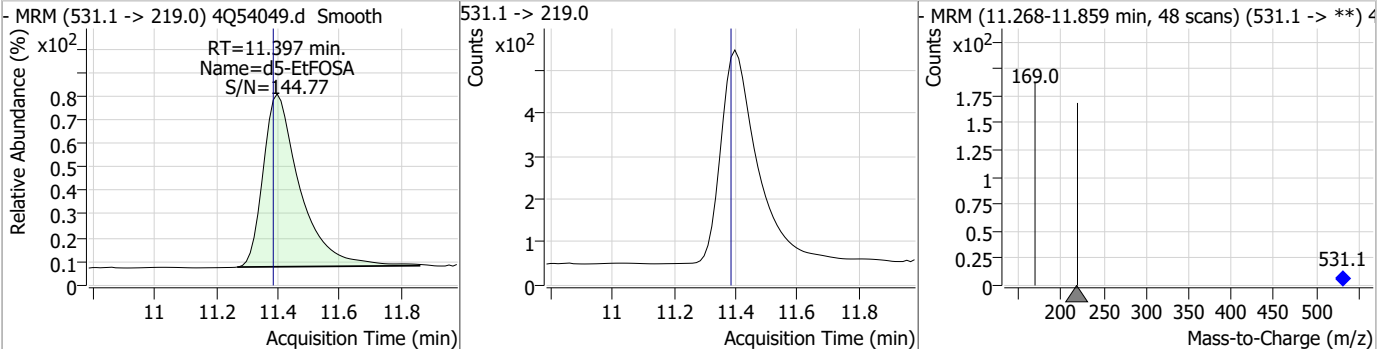
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	16.95	11.31	0.01	25178				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	13.07	11.32	0.00	12391				

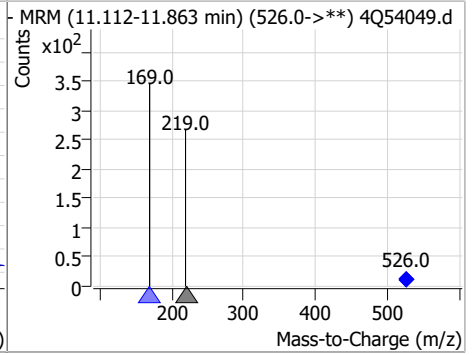
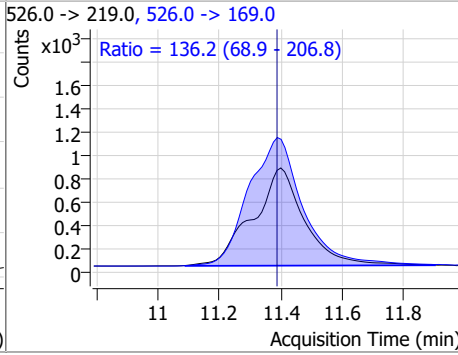
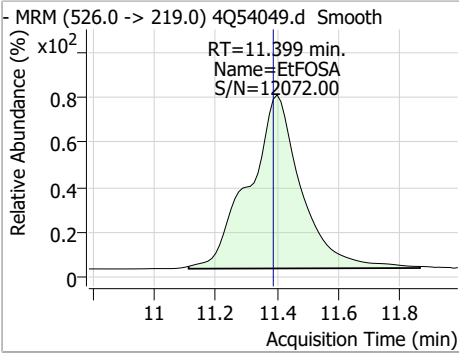


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	1.62	11.40	0.01	4114				



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	5.80	11.40	0.01	9974	526.0 -> 169.0	136.2	68.9	206.8



7.3.3

7

Manual Integration Approval Summary

Sample Number: OP164-BS Method: EPA DRAFT 1633
Lab FileID: 4Q54049.D Analyst approved: 11/18/23 15:04 Mike Eger
Injection Time: 11/17/23 22:27 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.01	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.09	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.3.3.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54050.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 10:42:41 PM
 Sample Name : op164-llbs:3
 Vial : P3-B2
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP164,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	87097	10.00 µg/L	0.087
M5-PFPeA	4.112	268.3 -> 223.0	36492	5.00 µg/L	0.025
M5-PFHxA	5.285	318.0 -> 273.0	25964	2.50 µg/L	0.025
M4-PFHpA	6.242	367.1 -> 322.0	25999	2.50 µg/L	0.025
M8-PFOA	6.938	421.1 -> 376.0	29751	2.50 µg/L	0.012
M9-PFNA	7.496	472.1 -> 427.0	12634	1.25 µg/L	0.025
M6-PFDA	7.979	519.1 -> 474.1	8369	1.25 µg/L	0.012
M7-PFUnDA	8.436	570.0 -> 525.1	9312	1.25 µg/L	0.012
M2-PFDoDA	8.867	615.1 -> 570.0	8779	1.25 µg/L	0.025
M2-PFTeDA	9.637	715.2 -> 670.0	8469	1.25 µg/L	0.025
M8-FOSA	9.794	506.1 -> 77.8	5950	2.50 µg/L	0.025
M3-PFBS	5.140	302.1 -> 79.9	7438	2.50 µg/L	0.024
M3-PFHxS	7.005	402.1 -> 79.9	6300	2.50 µg/L	0.025
M8-PFOS	8.093	507.1 -> 79.9	6321	2.50 µg/L	0.012
M2-4:2FTS	4.984	329.1 -> 80.9	920	5.00 µg/L	0.012
M2-6:2FTS	6.711	429.1 -> 80.9	2070	5.00 µg/L	0.012
M2-8:2FTS	7.779	529.1 -> 80.9	2580	5.00 µg/L	0.012
M3-MeFOSAA	8.062	573.2 -> 419.0	12595	5.00 µg/L	0.012
M3-HFPO-DA	5.640	286.9 -> 168.9	22781	10.00 µg/L	0.025
M5-EtFOSAA	8.271	589.2 -> 419.0	9640	5.00 µg/L	0.025
M7-MeFOSE	11.022	623.2 -> 58.9	20079	25.00 µg/L	0.012
M9-EtFOSE	11.306	639.2 -> 58.9	24782	25.00 µg/L	0.012
M5-EtFOSA	11.398	531.1 -> 219.0	4429	2.50 µg/L	0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3393	2.50 µg/L	0.012
13C4-PFOS	8.106	502.8 -> 79.9	5960	2.50 µg/L	0.025
13C3-PFBA	2.691	216.0 -> 172.0	42339	5.00 µg/L	0.100
18O2-PFHxS	7.004	403.0 -> 83.9	4235	2.50 µg/L	0.025
13C4-PFOA	6.939	417.1 -> 372.0	32756	2.50 µg/L	0.012
13C2-PFDA	7.980	515.1 -> 470.1	10021	1.25 µg/L	0.012
13C5-PFNA	7.496	468.0 -> 423.0	13042	1.25 µg/L	0.025
13C2-PFHxA	5.286	315.1 -> 270.0	28659	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	4.984	329.1 -> 80.9	920	5.69 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.9%		
13C2-6:2FTS	6.711	429.1 -> 80.9	2070	6.03 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 120.7%		
13C2-8:2FTS	7.779	529.1 -> 80.9	2580	5.46 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.2%		
13C2-PFDoDA	8.867	615.1 -> 570.0	8779	0.98 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 78.3%		
13C2-PFTeDA	9.637	715.2 -> 670.0	8469	0.94 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 75.2%		
13C3-PFBS	5.140	302.1 -> 79.9	7438	2.32 µg/L	0.024
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.8%		
13C3-PFHxS	7.005	402.1 -> 79.9	6300	2.37 µg/L	0.025

7.34
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.7%		
13C4-PFBA	2.686	216.8 -> 171.9	87097	9.97 µg/L	0.087
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.7%		
13C4-PFHpA	6.242	367.1 -> 322.0	25999	2.56 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.4%		
13C5-PFHxA	5.285	318.0 -> 273.0	25964	2.44 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C5-PFPeA	4.112	268.3 -> 223.0	36492	5.07 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C6-PFDA	7.979	519.1 -> 474.1	8369	1.12 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.9%		
13C7-PFUnDA	8.436	570.0 -> 525.1	9312	1.11 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.1%		
13C8-FOSA	9.794	506.1 -> 77.8	5950	2.14 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 85.5%		
13C8-PFOA	6.938	421.1 -> 376.0	29751	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C8-PFOS	8.093	507.1 -> 79.9	6321	2.16 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 86.5%		
13C9-PFNA	7.496	472.1 -> 427.0	12634	1.20 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.6%		
d3-MeFOSAA	8.062	573.2 -> 419.0	12595	5.16 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.2%		
13C3-HFPO-DA	5.640	286.9 -> 168.9	22781	9.53 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 95.3%		
d3-MeFOSA	11.126	515.0 -> 219.0	3393	1.77 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 71.0%		
d5-EtFOSAA	8.271	589.2 -> 419.0	9640	4.71 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.2%		
d7-MeFOSE	11.022	623.2 -> 58.9	20079	16.82 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 67.3%		
d9-EtFOSE	11.306	639.2 -> 58.9	24782	18.24 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 73.0%		
d5-EtFOSA	11.398	531.1 -> 219.0	4429	1.91 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 76.4%		
Target Compounds					QValue
4:2FTS	4.985	327.1 -> 307.0	5012	2.97 µg/L	96
		327.1 -> 80.9	2293		
6:2FTS	6.712	427.1 -> 407.0	6966	3.24 µg/L	97
		427.1 -> 80.9	2422		
8:2FTS	7.779	527.1 -> 507.0	4440	3.25 µg/L	91
		527.1 -> 80.8	1826		
EtFOSAA	8.272	584.2 -> 419.1	1356	0.74 µg/L	100
		584.2 -> 526.0	531		
FOSA	9.798	498.1 -> 77.9	2035	0.74 µg/L	99
		498.1 -> 478.0	61		
MeFOSAA	8.062	570.1 -> 419.0	1525	0.76 µg/L	94
		570.1 -> 483.0	279		
PFBA	2.695	212.8 -> 168.9	8938	2.98 µg/L	100
PFBS	5.141	298.7 -> 79.9	1728	0.70 µg/L	94
		298.7 -> 98.8	721		
PFDA	7.980	512.9 -> 469.0	5011	0.79 µg/L	91
		512.9 -> 219.0	1187		
PFDODA	8.868	613.1 -> 569.0	5571	0.78 µg/L	98
		613.1 -> 319.0	961		
PFDS	9.008	599.0 -> 79.9	1025	0.64 µg/L	93

7.3.4
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.243	599.0 -> 98.8	543	0.75	µg/L	98
		363.1 -> 319.0	11720			
PFHpS	7.586	363.1 -> 169.0	1997	0.75	µg/L	92
		449.0 -> 79.9	1818			
PFHxA	5.288	449.0 -> 98.9	945	0.79	µg/L	100
		313.0 -> 269.0	6851			
PFHxS	7.006	313.0 -> 118.9	202	0.77	µg/L	94
		398.7 -> 79.9	1381			
PFNA	7.497	398.7 -> 98.9	663	0.71	µg/L	93
		463.0 -> 419.0	5532			
PFNS	8.561	463.0 -> 219.0	1587	0.67	µg/L	98
		548.8 -> 79.9	795			
PFOA	6.940	548.8 -> 98.9	443	0.74	µg/L	98
		413.0 -> 369.0	9783			
PFOS	8.094	413.0 -> 169.0	2135	0.73	µg/L	86
		498.9 -> 79.9	1964			
PFPeA	4.114	498.9 -> 98.8	1147	1.54	µg/L	100
		263.0 -> 219.0	11135			
PFPeS	6.232	349.1 -> 79.9	1452	0.72	µg/L	95
		349.1 -> 98.9	604			
PFTeDA	9.637	713.1 -> 669.0	4345	0.70	µg/L	95
		713.1 -> 168.9	562			
PFTrDA	9.267	663.0 -> 619.0	5634	0.74	µg/L	100
		663.0 -> 168.9	787			
PFUnDA	8.437	563.1 -> 519.0	5731	0.76	µg/L	99
		563.1 -> 269.1	1255			
11CI-PF3OUdS	9.294	630.9 -> 450.9	8581	1.22	µg/L	96
		632.9 -> 452.9	2864			
9CI-PF3ONS	8.438	530.8 -> 351.0	10134	1.42	µg/L	96
		532.8 -> 353.0	3163			
ADONA	6.519	376.9 -> 250.9	27153	1.53	µg/L	100
		376.9 -> 84.8	6685			
HFPO-DA	5.641	284.9 -> 168.9	3491	1.54	µg/L	95
		284.9 -> 184.9	313			
3:3FTCA	3.630	241.0 -> 177.0	1577	3.37	µg/L	99
		241.0 -> 117.0	139			
5:3FTCA	5.983	341.0 -> 237.1	28569	18.96	µg/L	98
		341.0 -> 217.0	19878			
7:3FTCA	7.524	441.0 -> 316.9	13024	19.19	µg/L	89
		441.0 -> 336.9	29980			
EtFOSA	11.399	526.0 -> 219.0	2718	1.47	µg/L	100
		526.0 -> 169.0	3748			
EtFOSE	11.320	630.0 -> 58.9	3275	3.51	µg/L	100
		511.9 -> 219.0	1583			
MeFOSA	11.128	511.9 -> 169.0	2453	1.31	µg/L	95
		616.1 -> 58.9	2973			
MeFOSE	11.035	699.1 -> 79.9	808	3.51	µg/L	100
		699.1 -> 98.8	452			
PFDoDS	9.764	295.0 -> 201.0	1109	0.68	µg/L	94
		295.0 -> 84.9	329			
NFDHA	5.166	279.0 -> 85.1	7326	1.48	µg/L	93
		229.0 -> 84.9	8285			
PFMBA	4.516	314.8 -> 134.9	11757	1.83	µg/L	100
		314.8 -> 82.9	346			
PFMPA	3.278			1.81	µg/L	100
PFEESA	5.672			1.72	µg/L	99

= Qualifier out of range, m = manually integrated, + = Area summed

7.3.4
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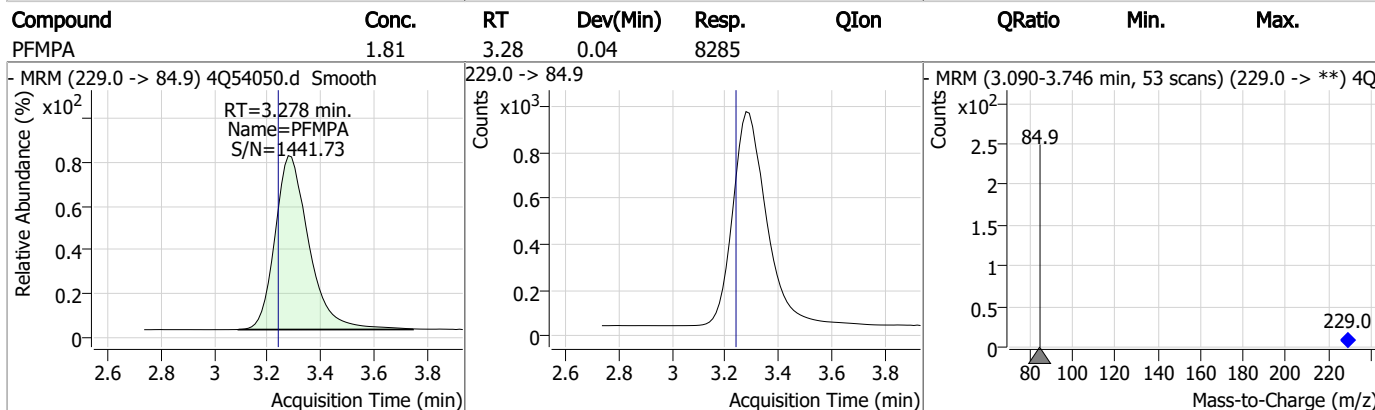
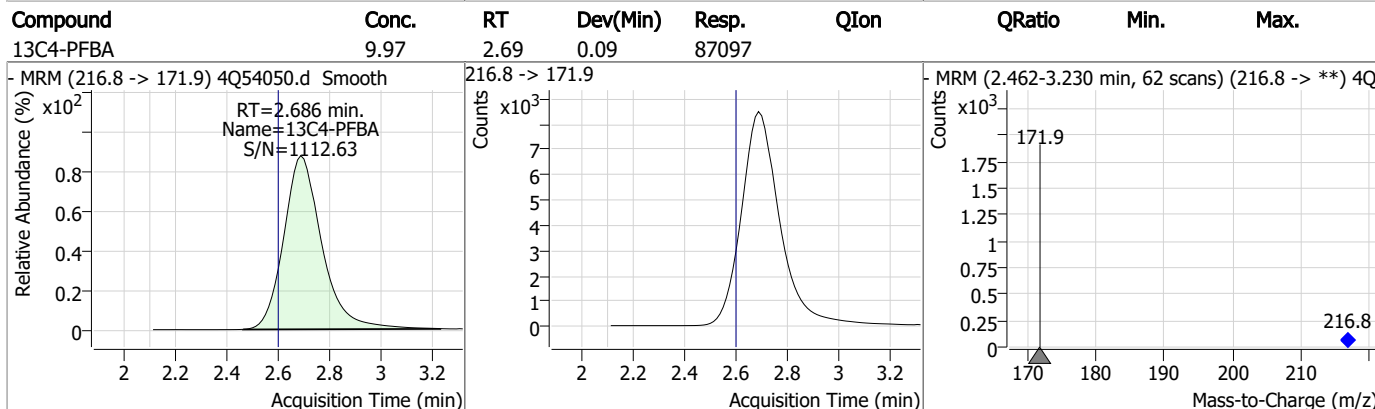
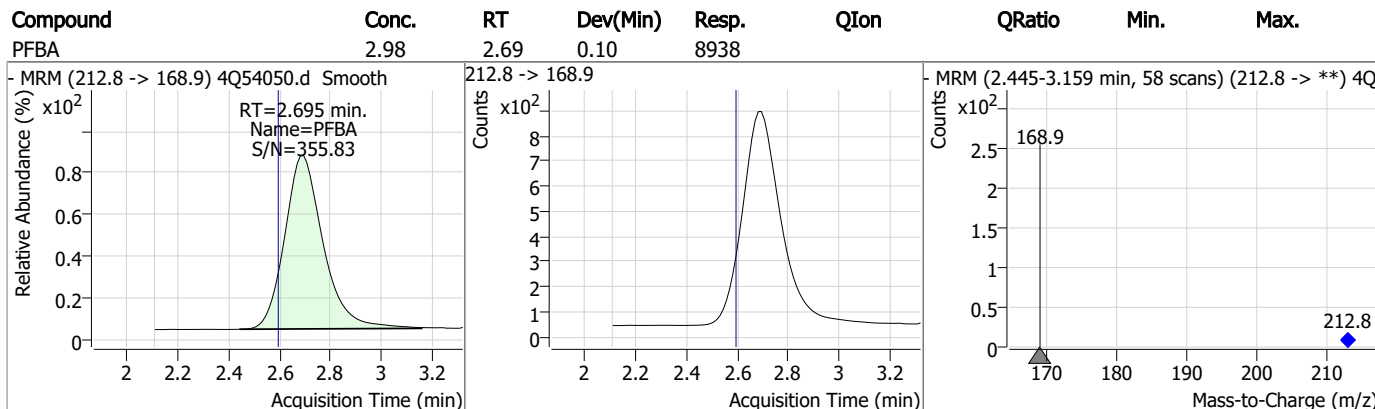
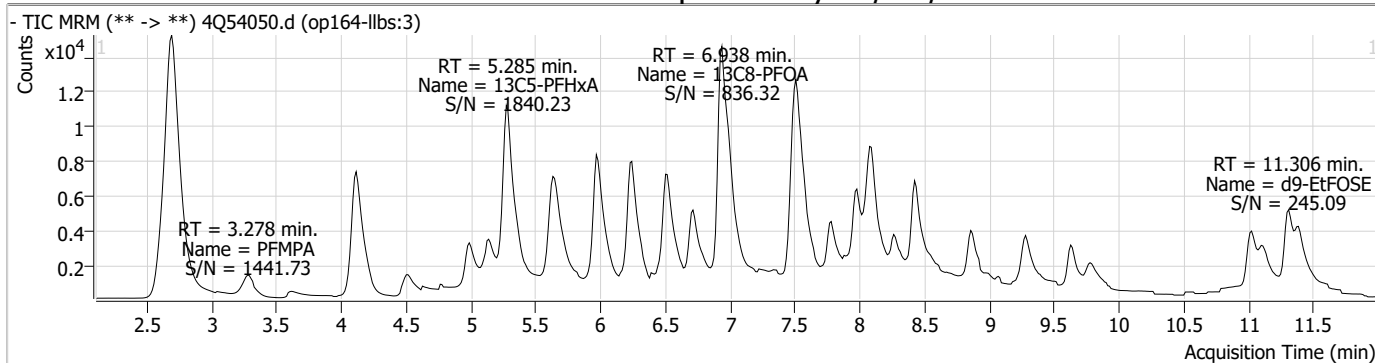
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.3.4

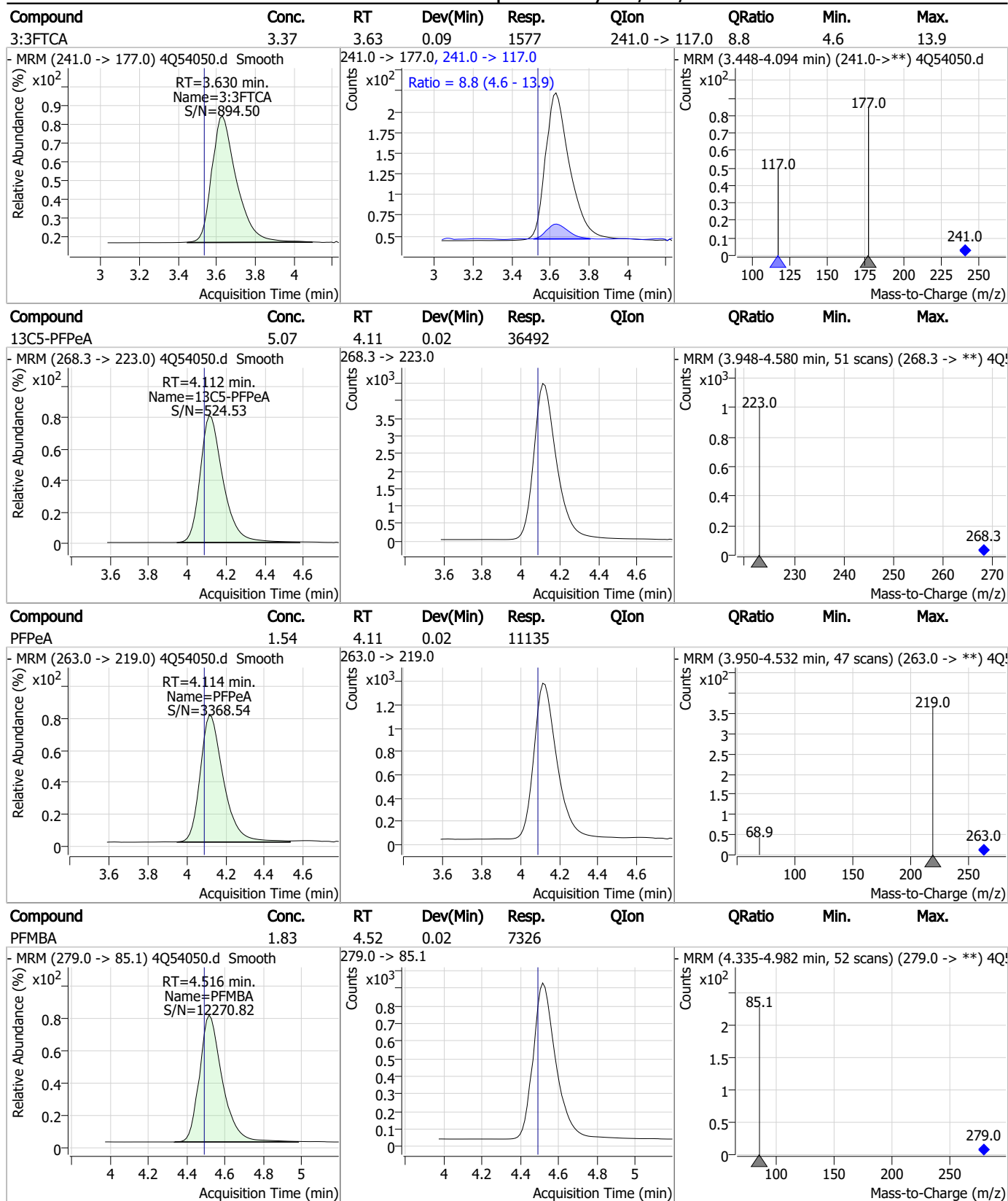
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Perfluorinated Compounds by LC/MS/MS



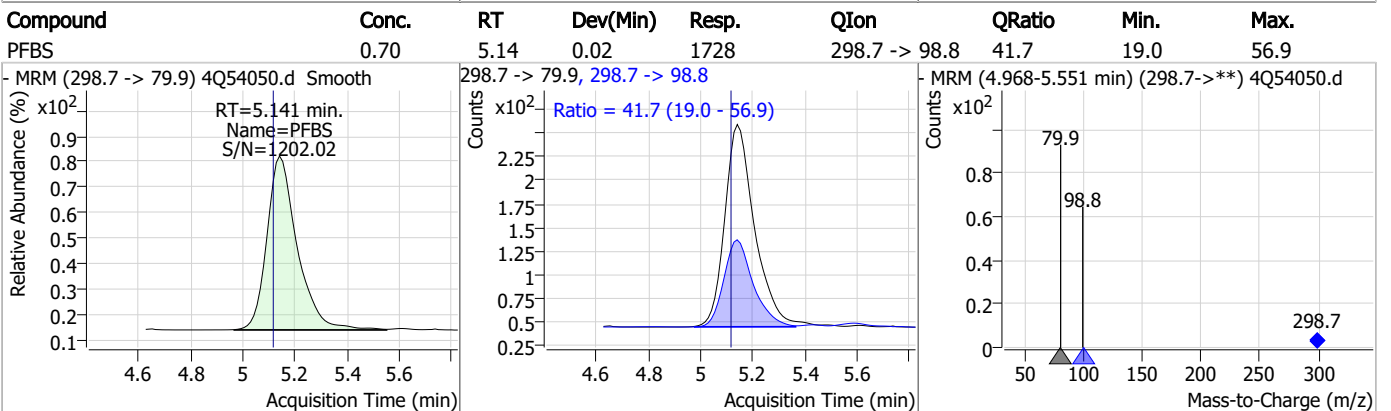
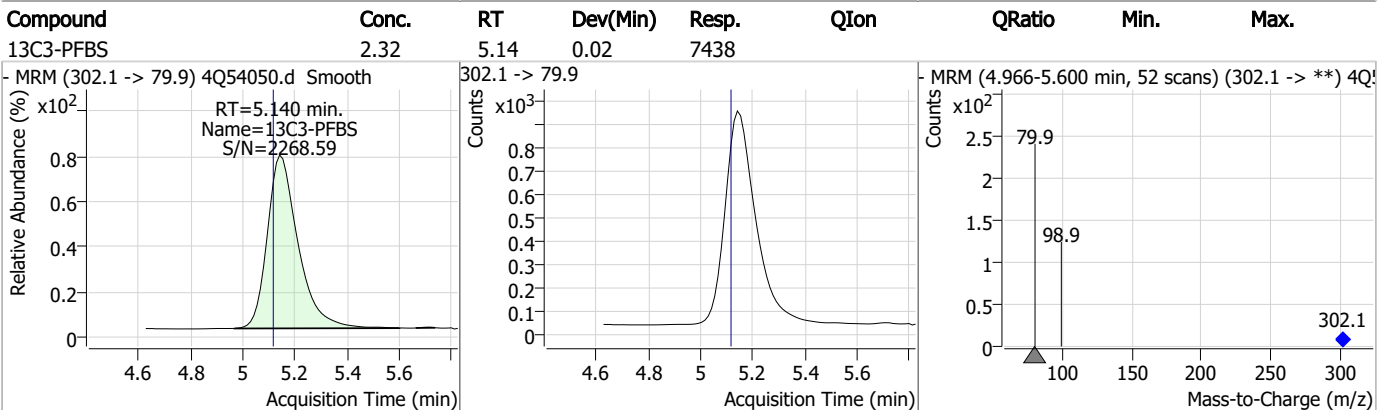
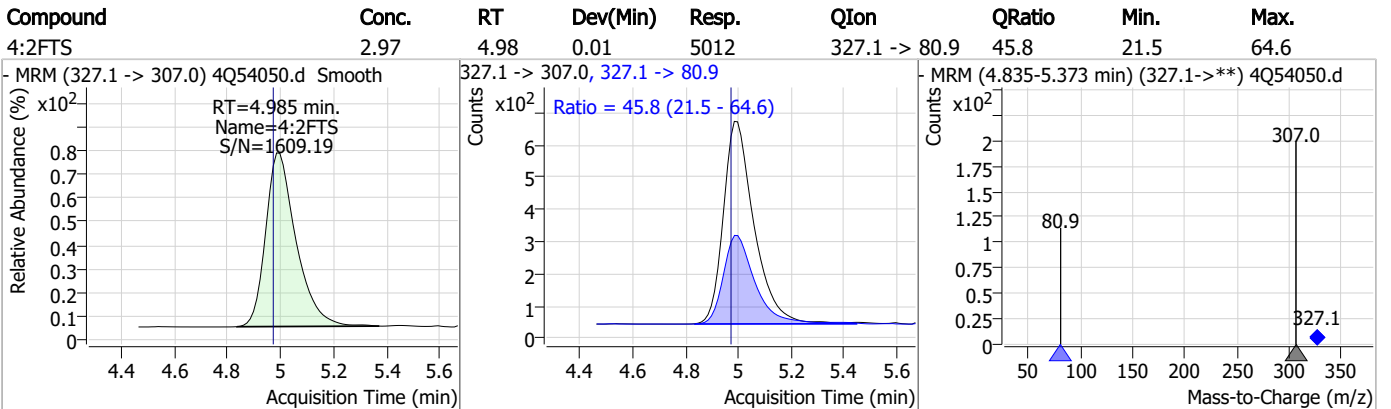
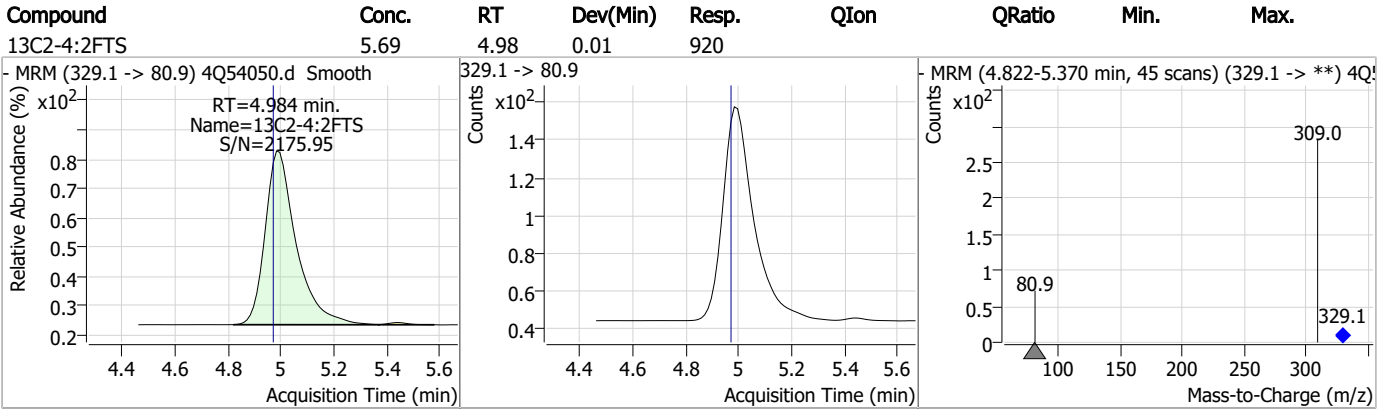
7.3.4
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Perfluorinated Compounds by LC/MS/MS

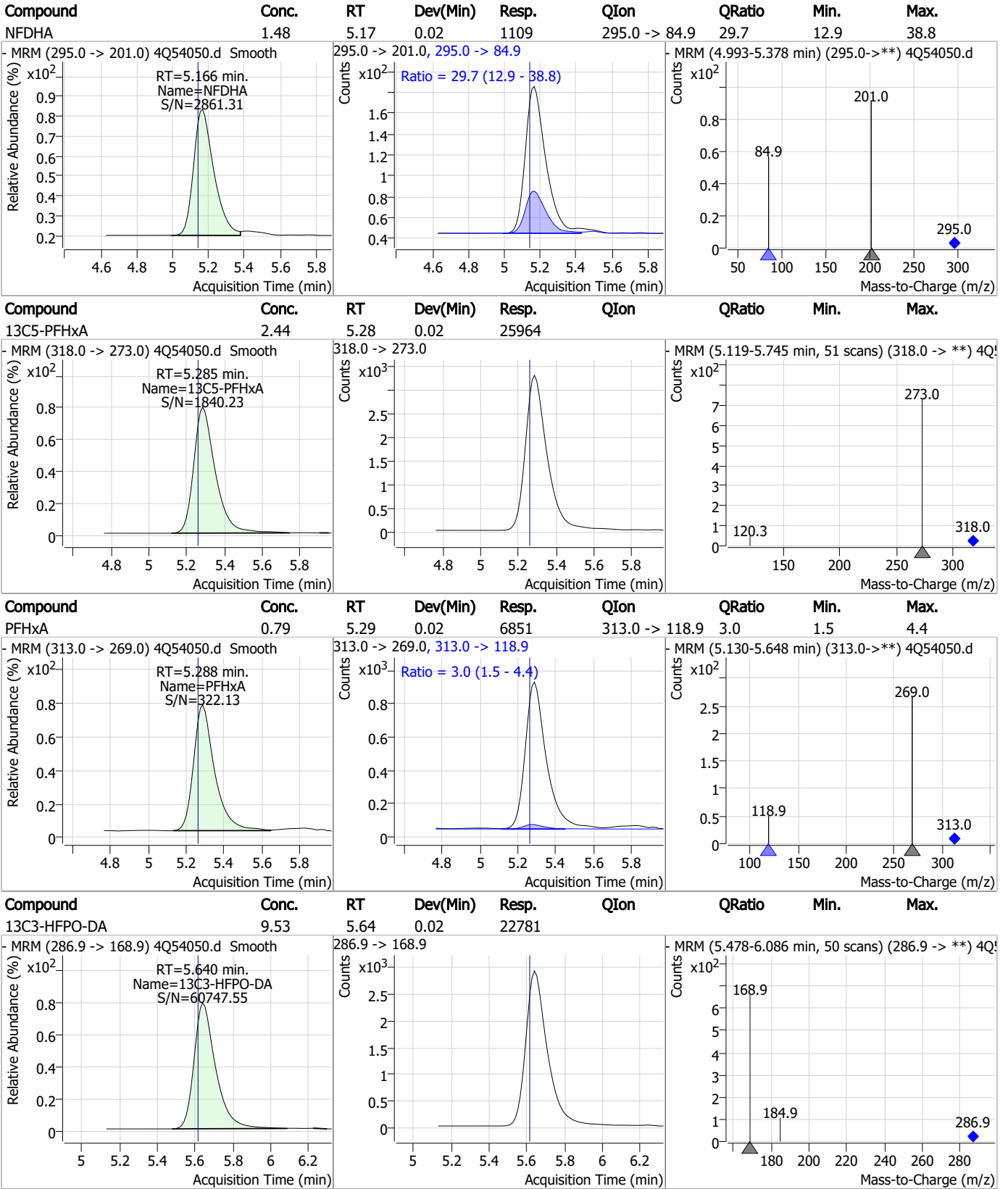


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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

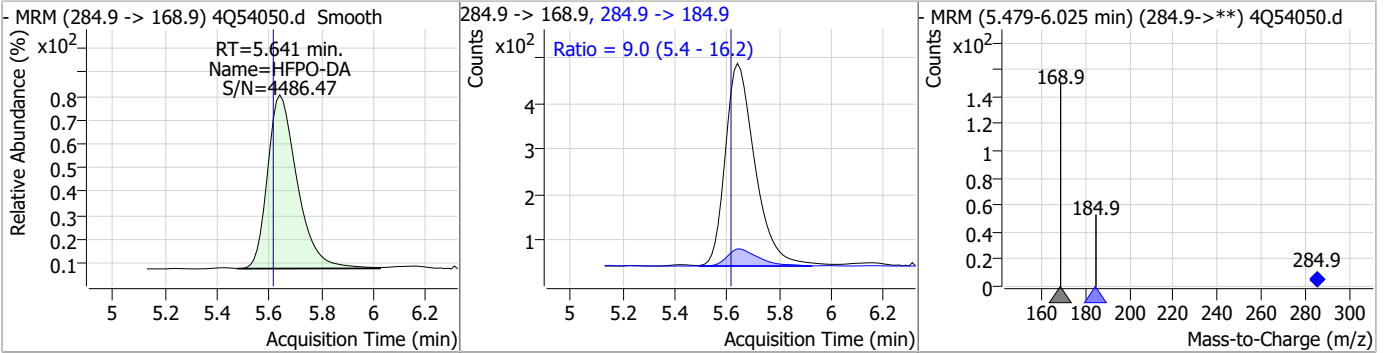


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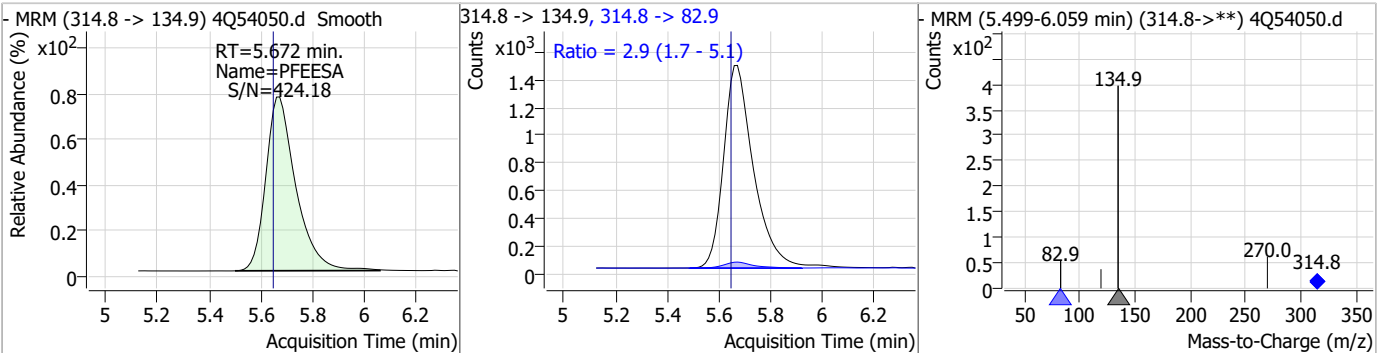
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Perfluorinated Compounds by LC/MS/MS

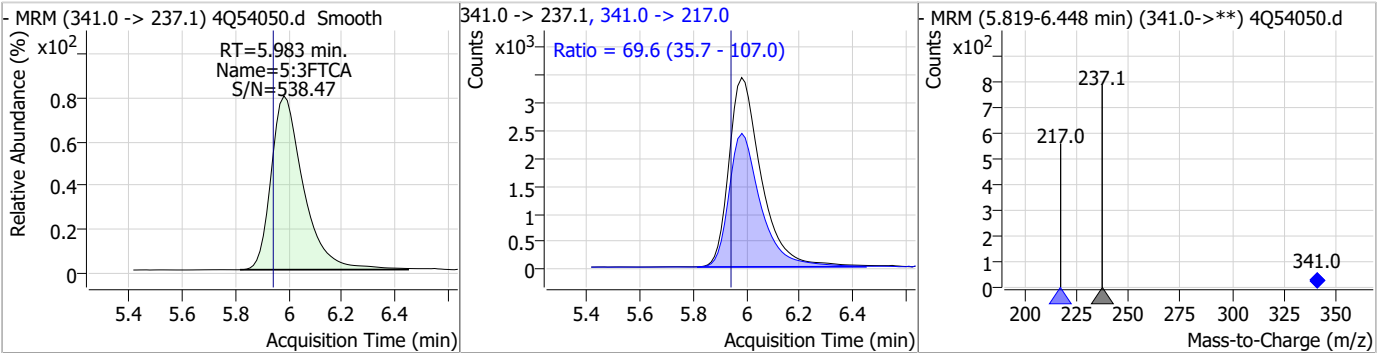
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	1.54	5.64	0.02	3491	284.9 -> 184.9	9.0	5.4	16.2



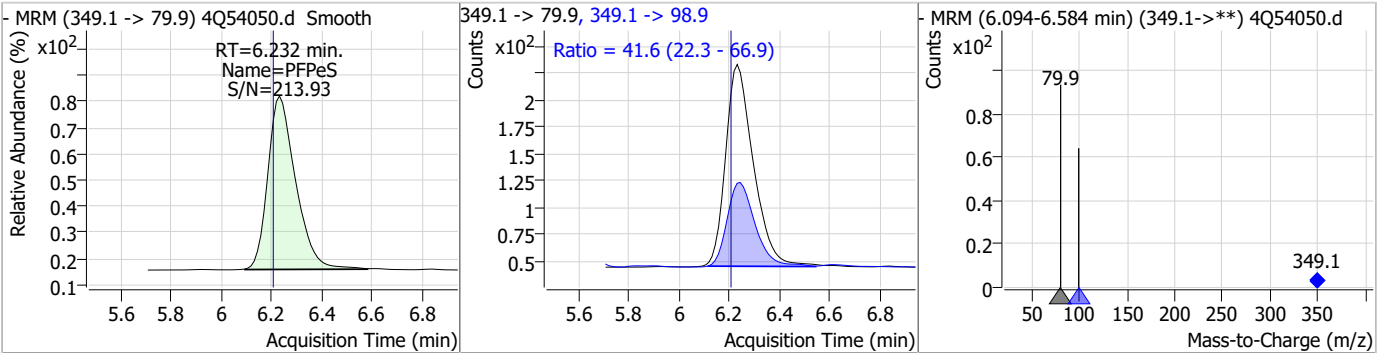
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	1.72	5.67	0.02	11757	314.8 -> 82.9	2.9	1.7	5.1



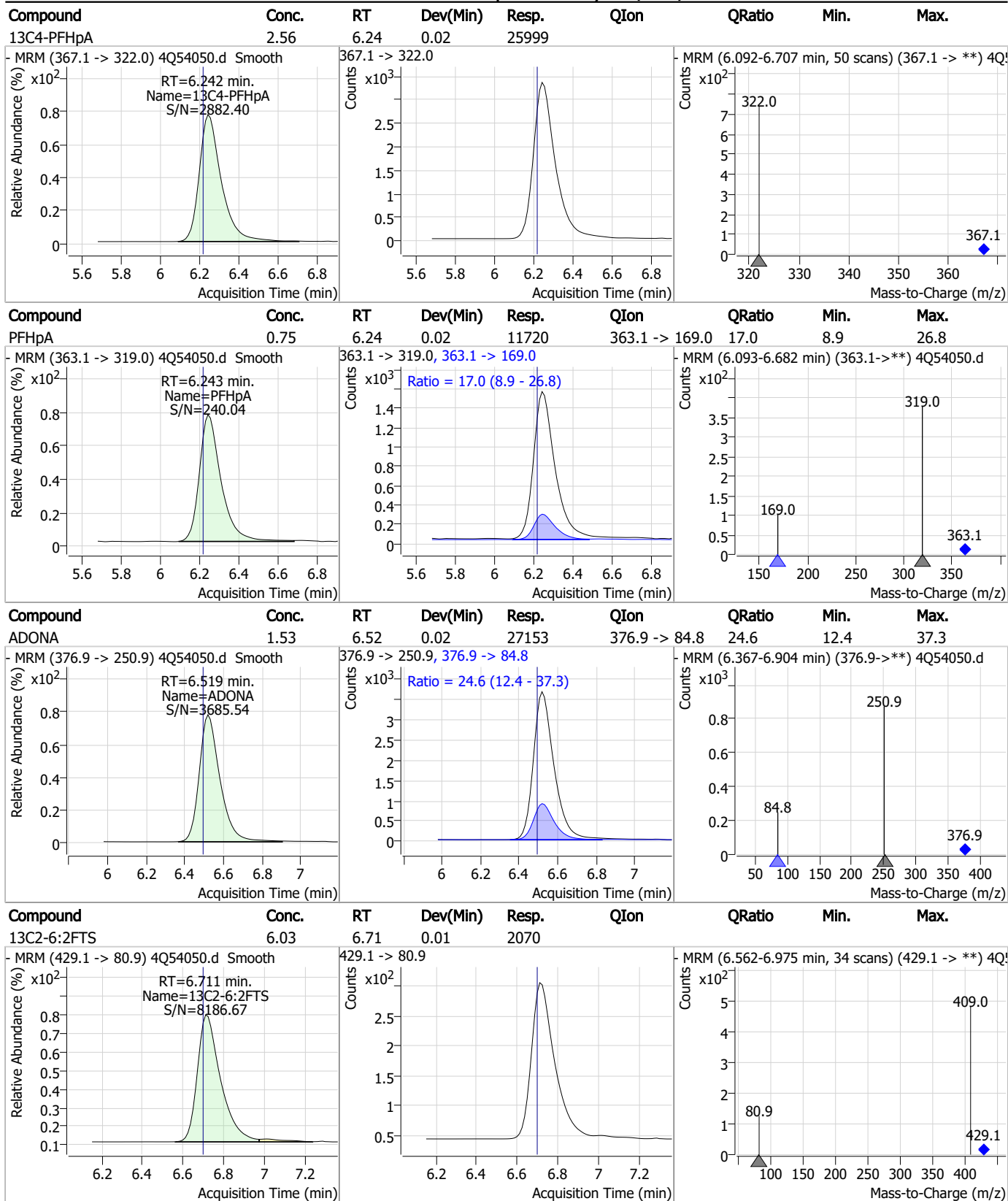
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	18.96	5.98	0.04	28569	341.0 -> 217.0	69.6	35.7	107.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.72	6.23	0.02	1452	349.1 -> 98.9	41.6	22.3	66.9

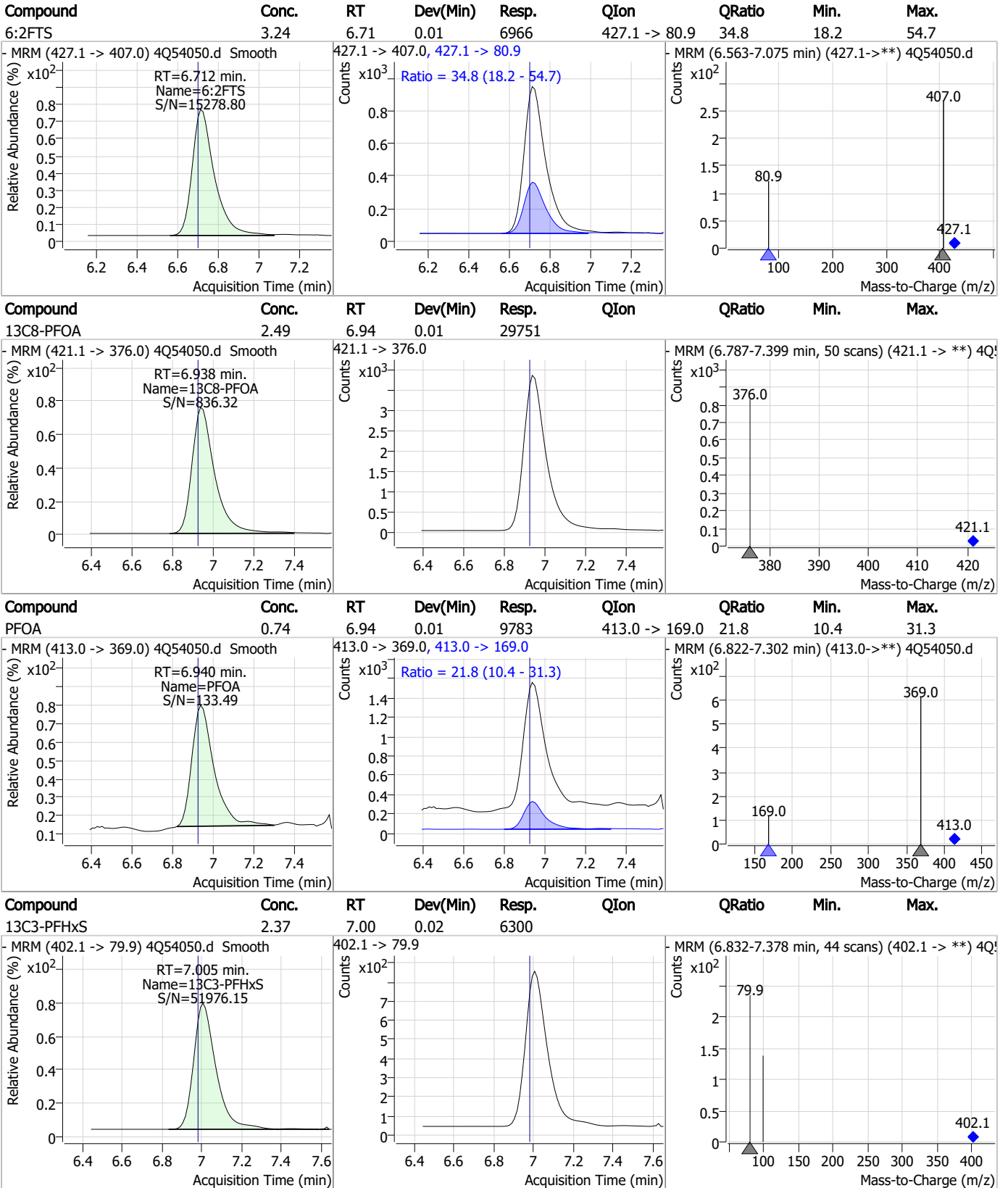


Perfluorinated Compounds by LC/MS/MS



7.3.4
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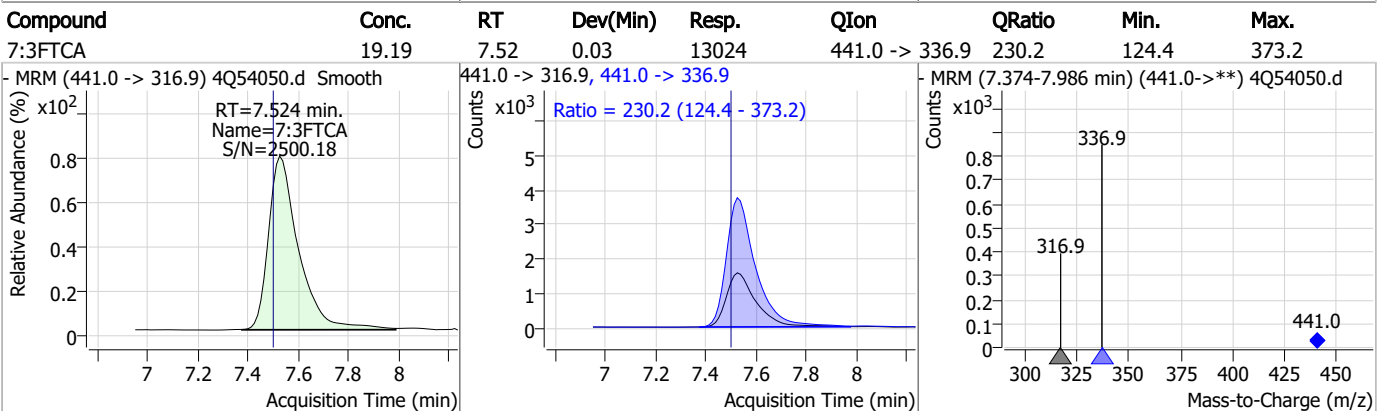
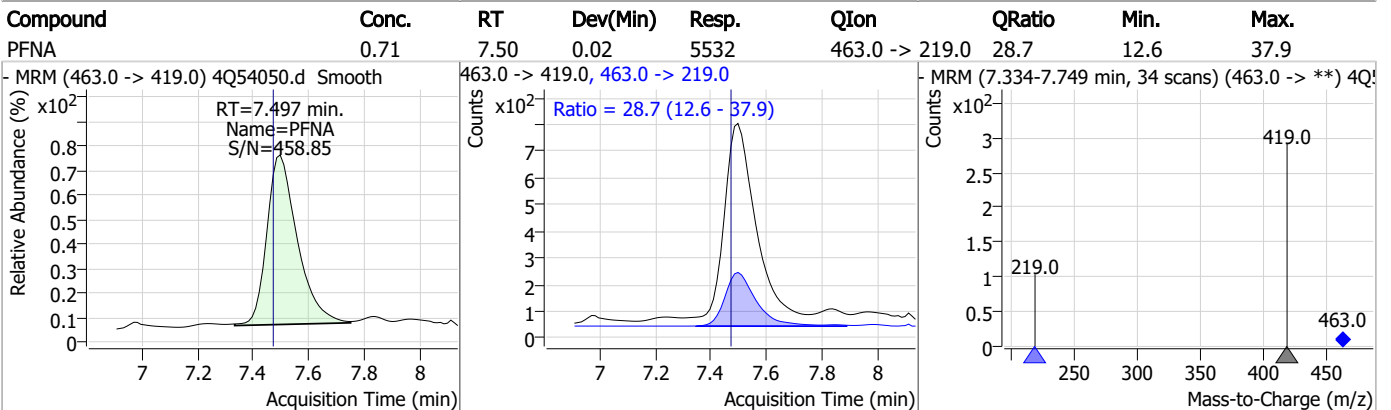
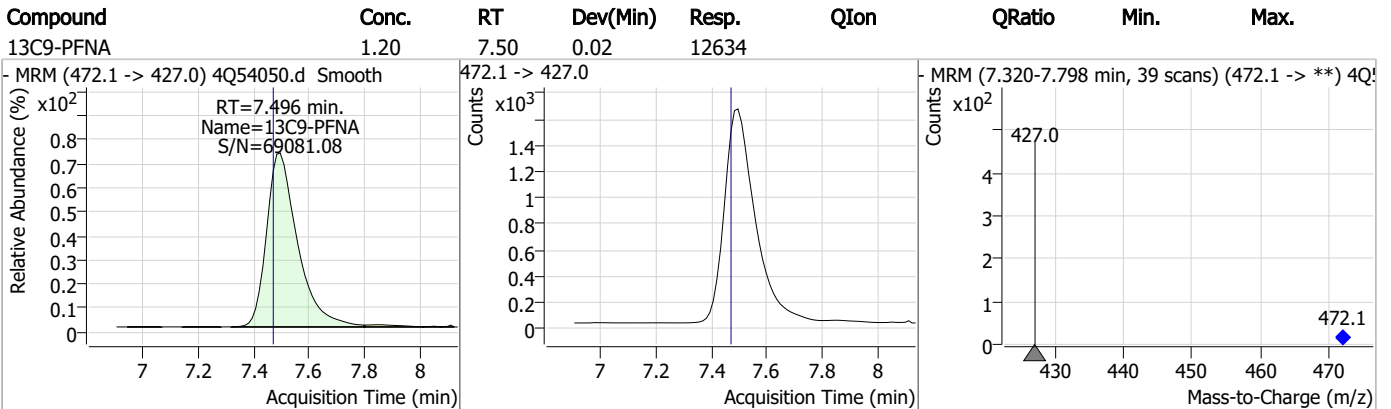
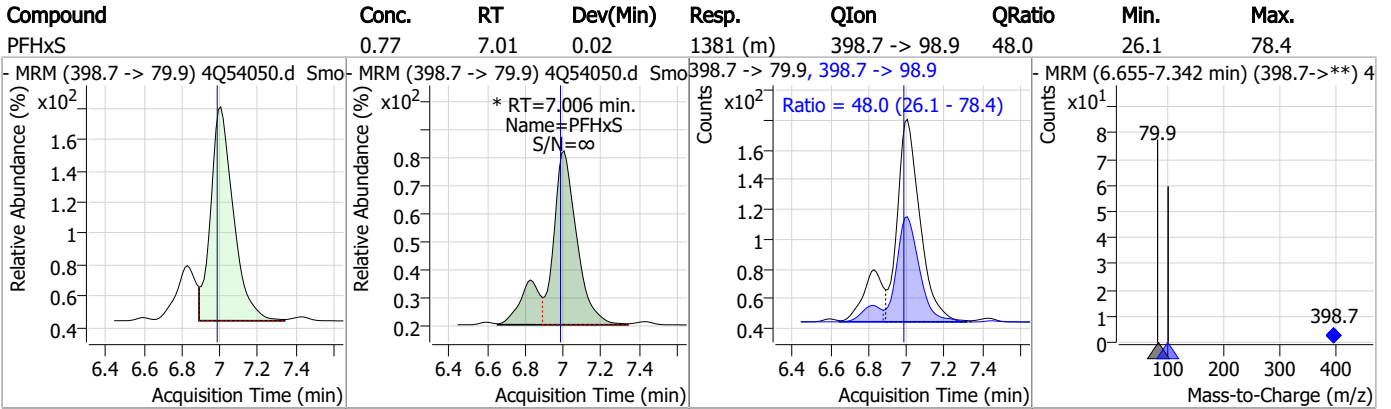
Perfluorinated Compounds by LC/MS/MS



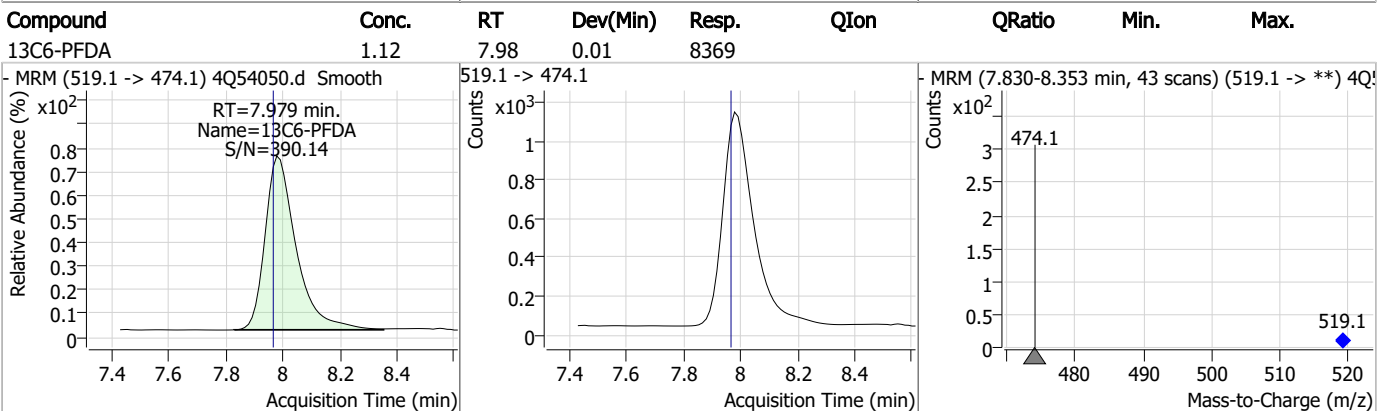
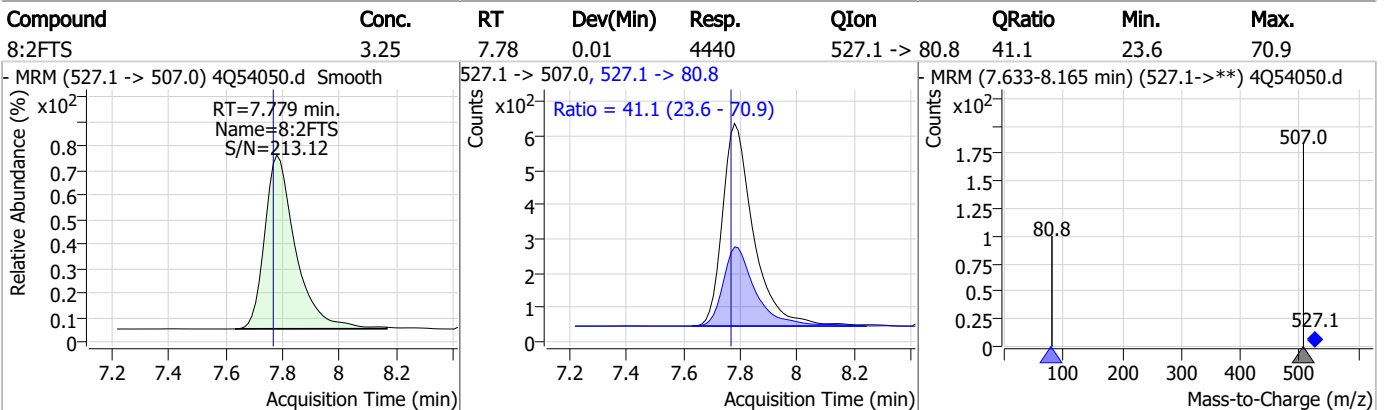
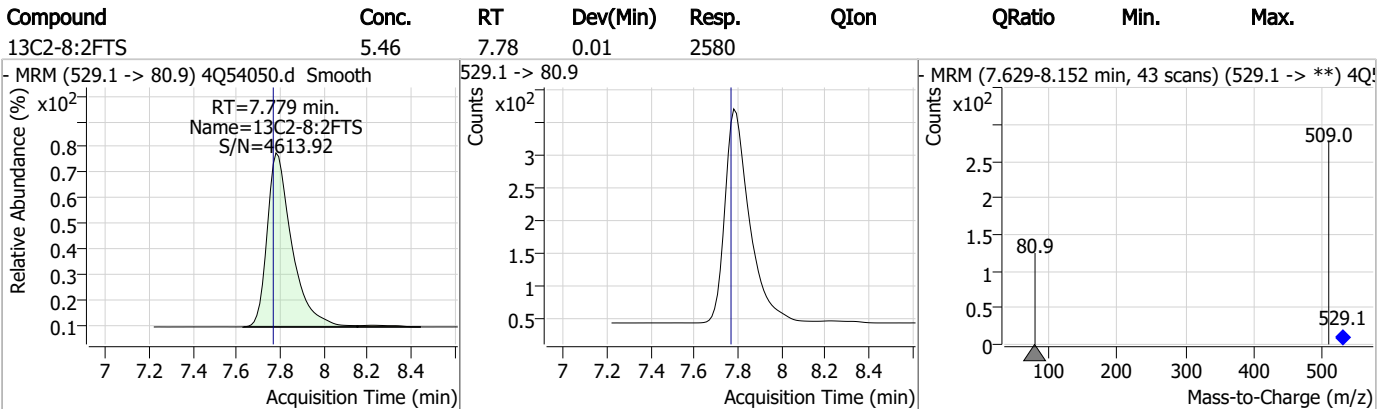
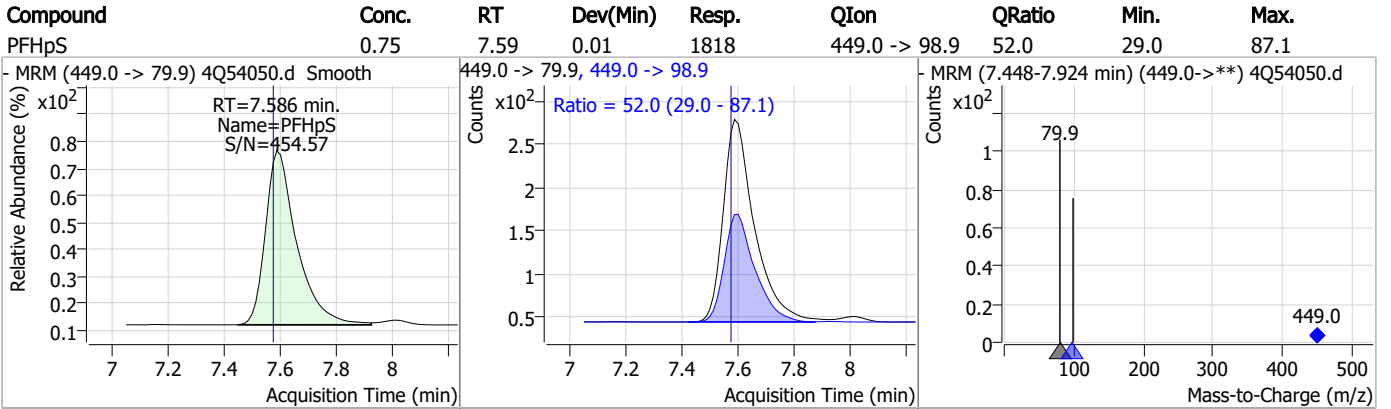
7.3.4

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Perfluorinated Compounds by LC/MS/MS



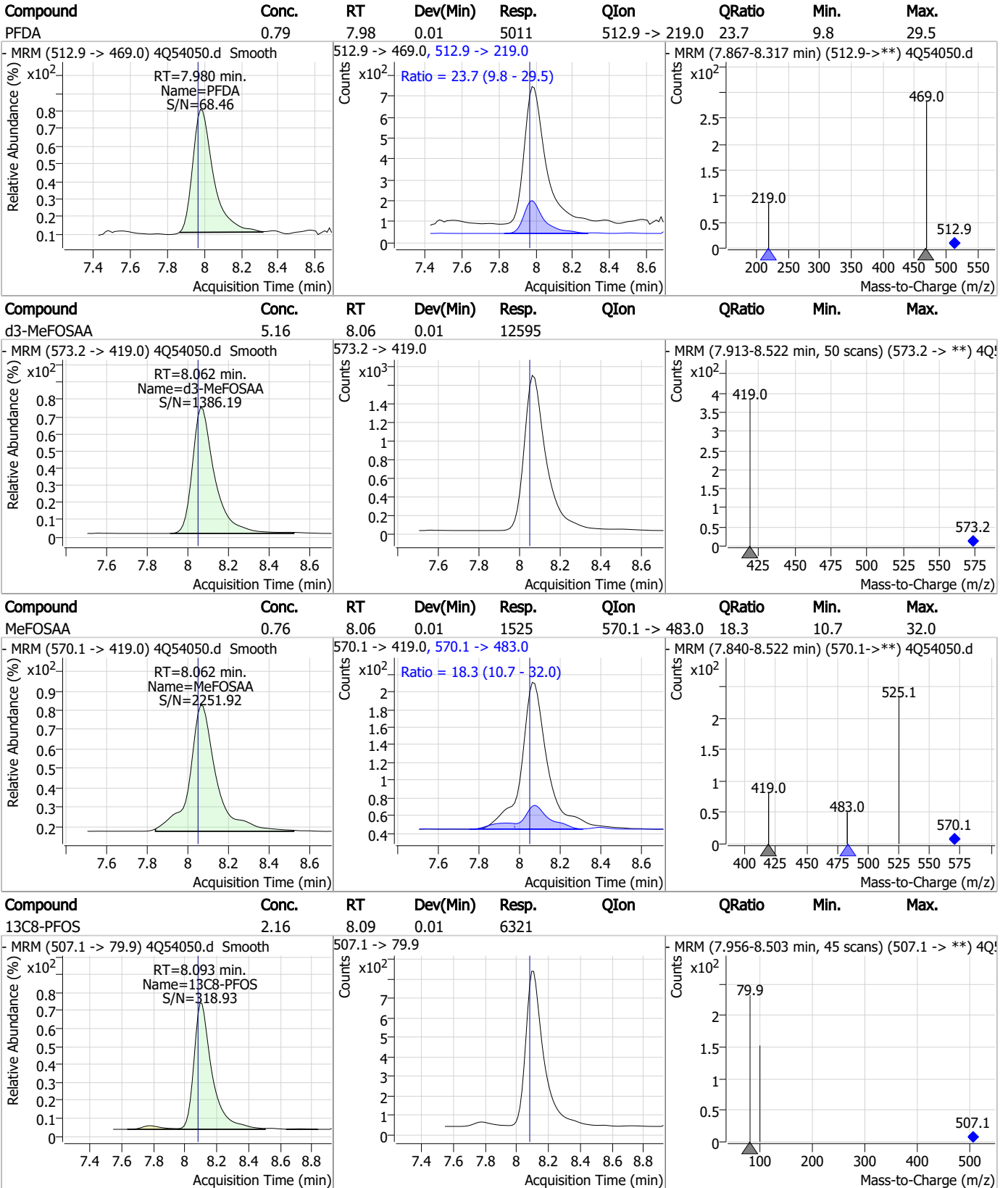
Perfluorinated Compounds by LC/MS/MS



7.3.4

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Perfluorinated Compounds by LC/MS/MS

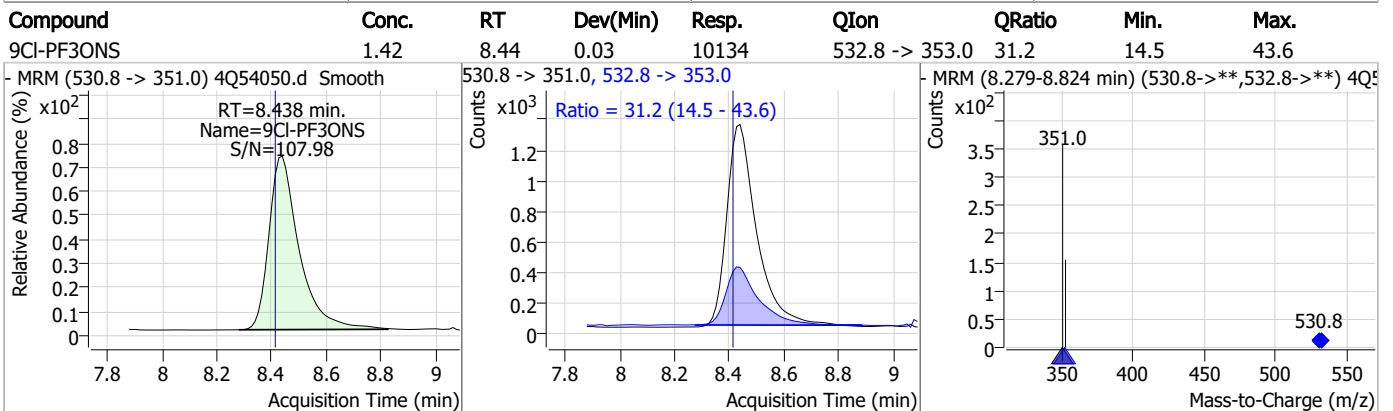
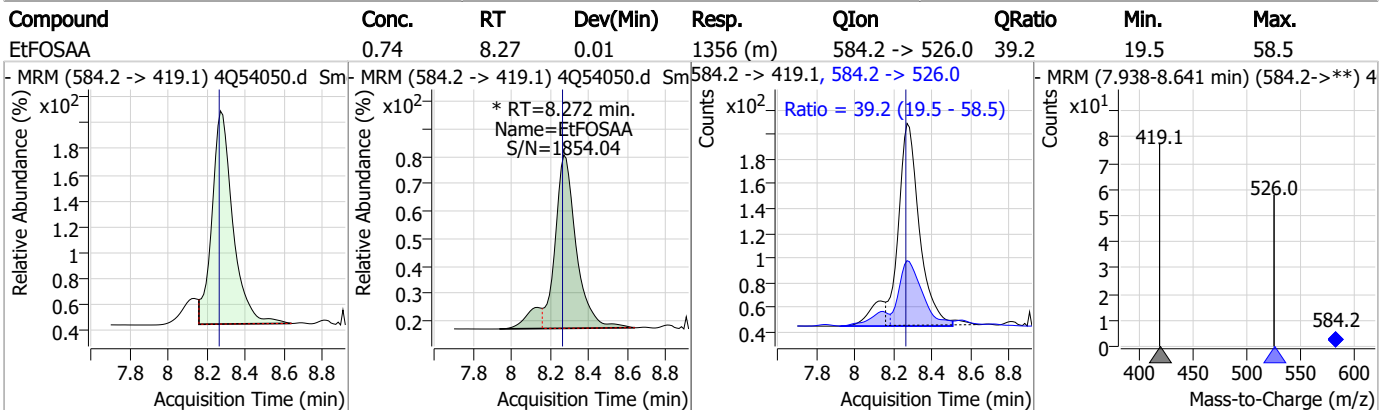
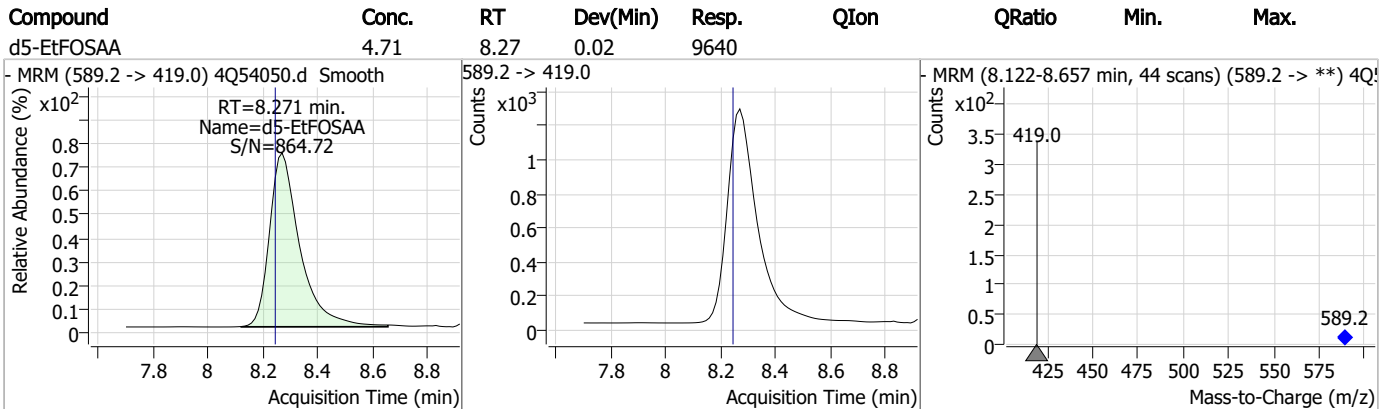
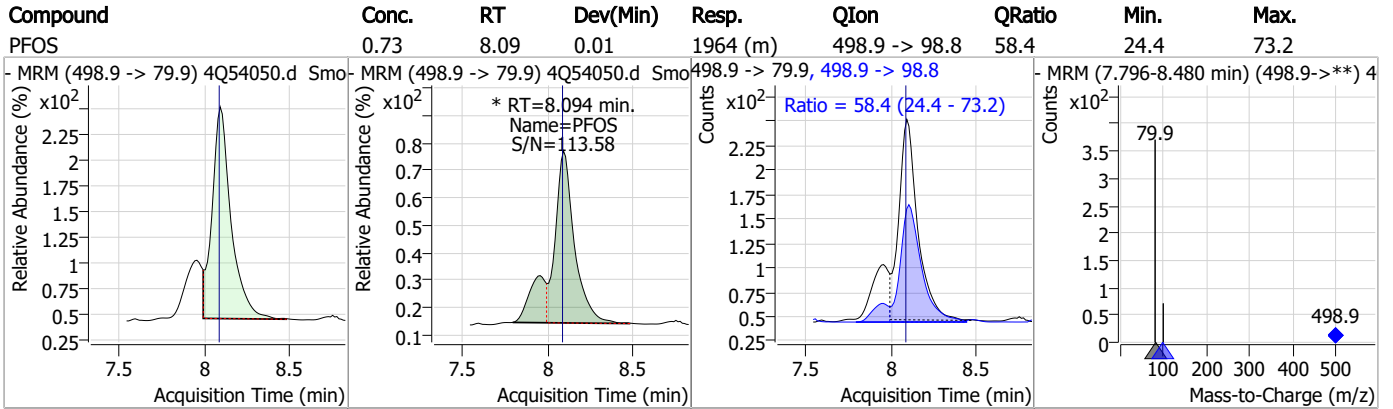


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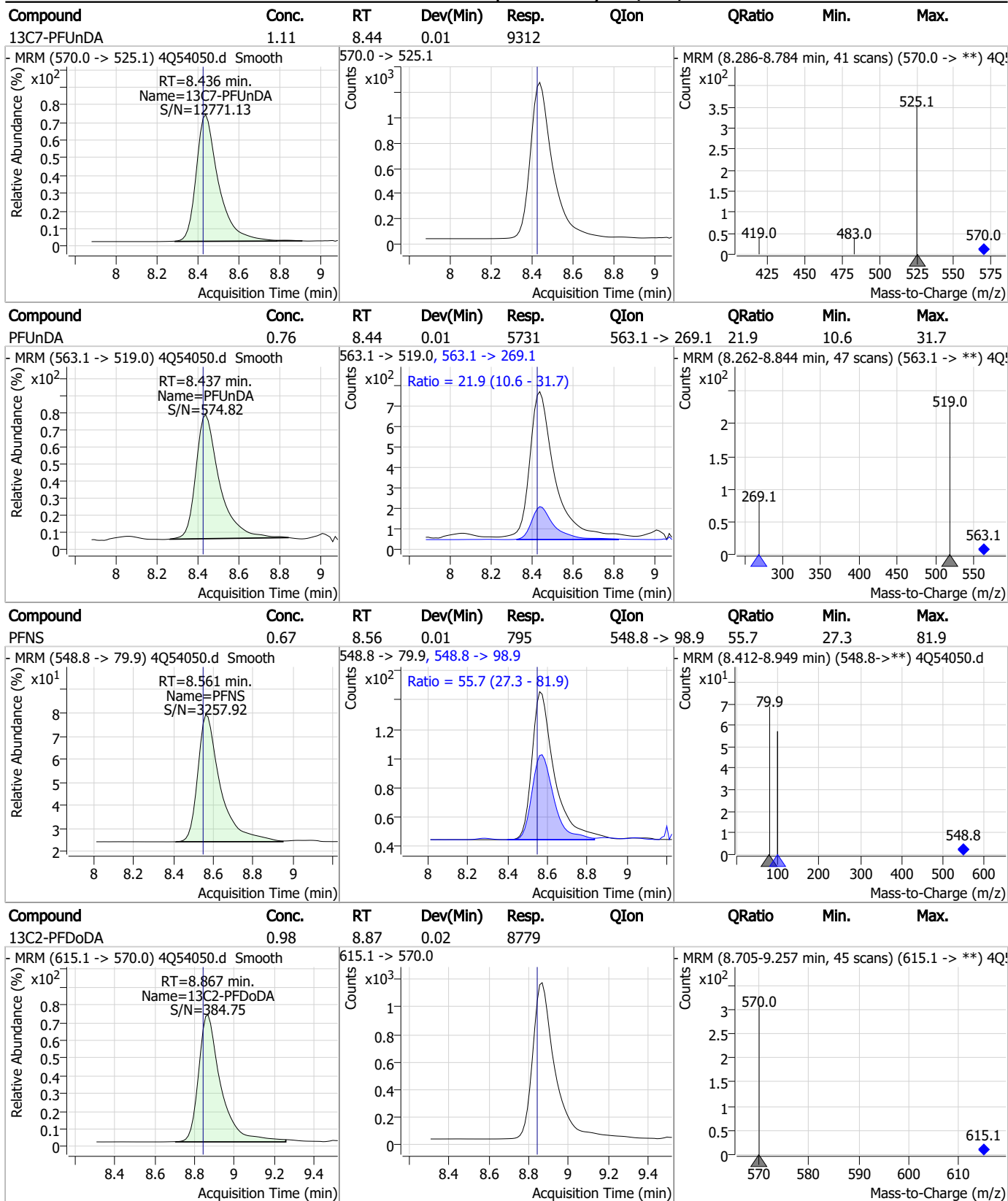
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Perfluorinated Compounds by LC/MS/MS

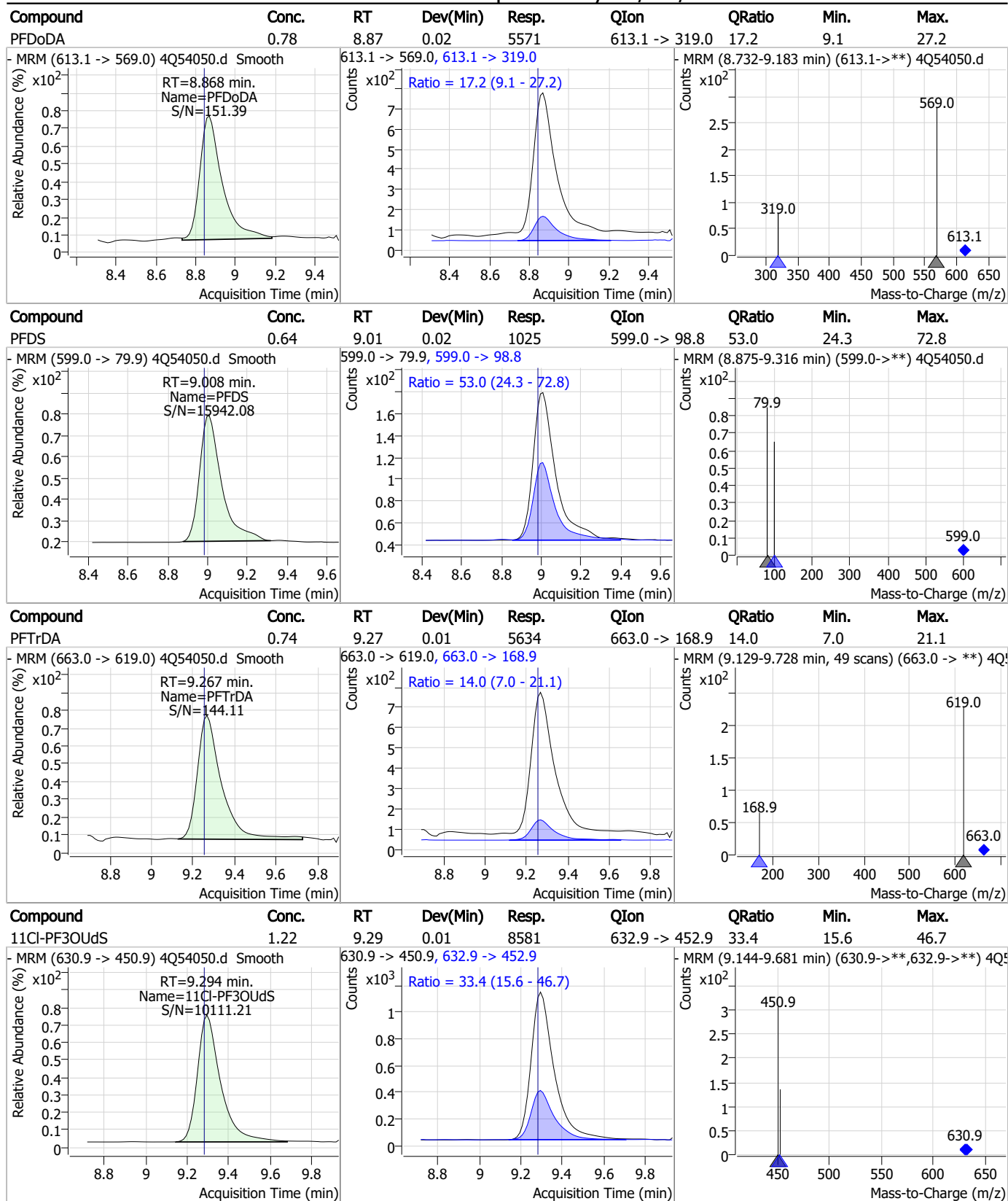


Perfluorinated Compounds by LC/MS/MS



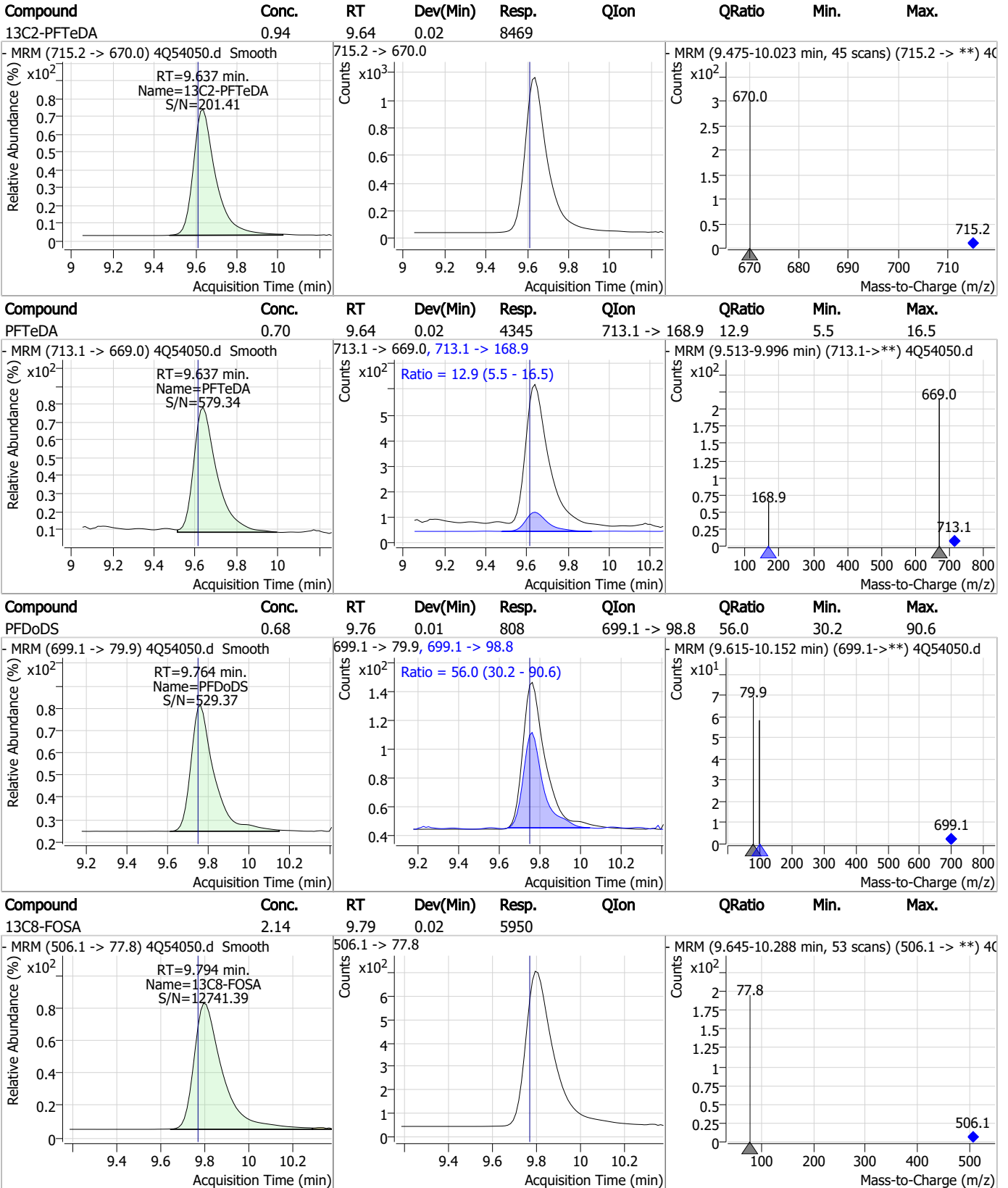
7.3.4
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Perfluorinated Compounds by LC/MS/MS



7.3.4
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Perfluorinated Compounds by LC/MS/MS



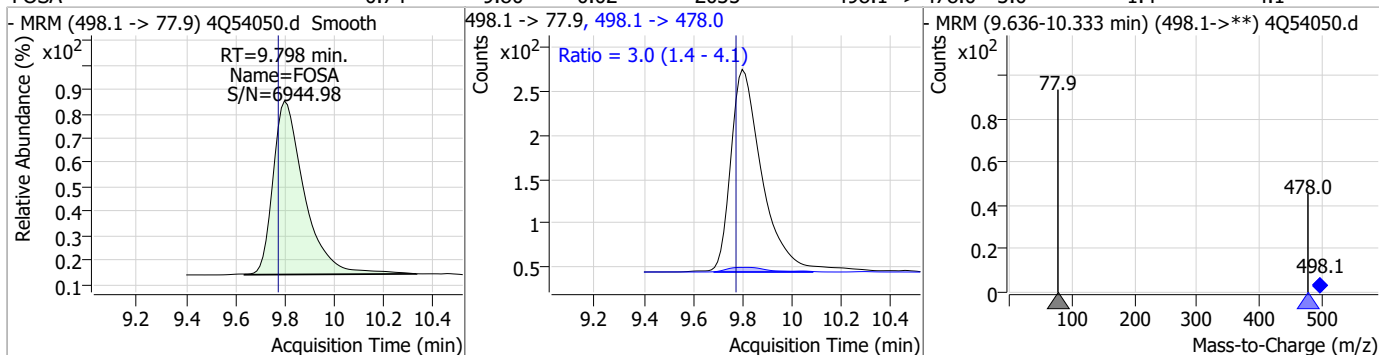
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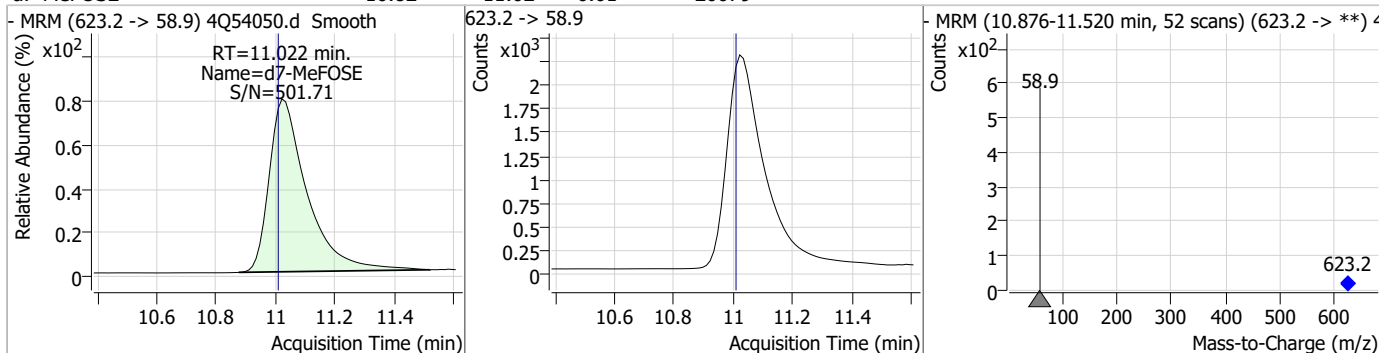


Perfluorinated Compounds by LC/MS/MS

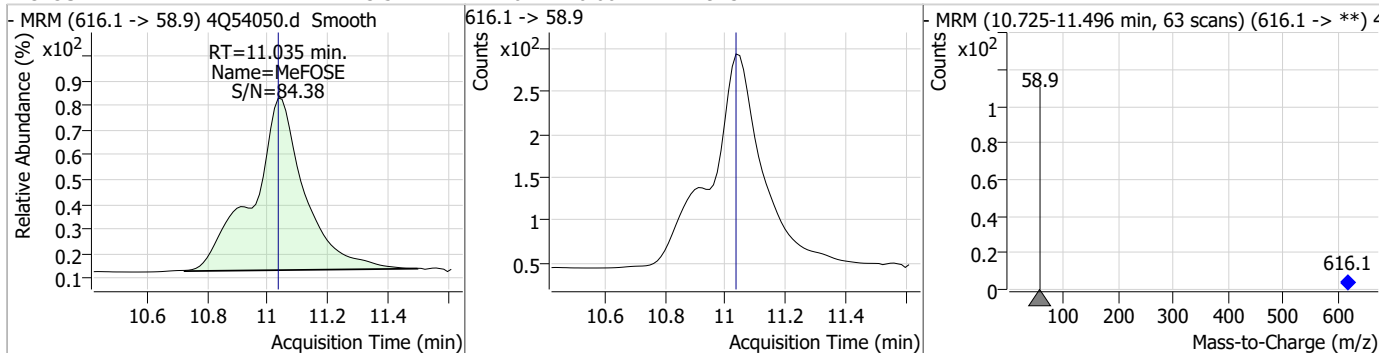
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.74	9.80	0.02	2035	498.1 -> 478.0	3.0	1.4	4.1



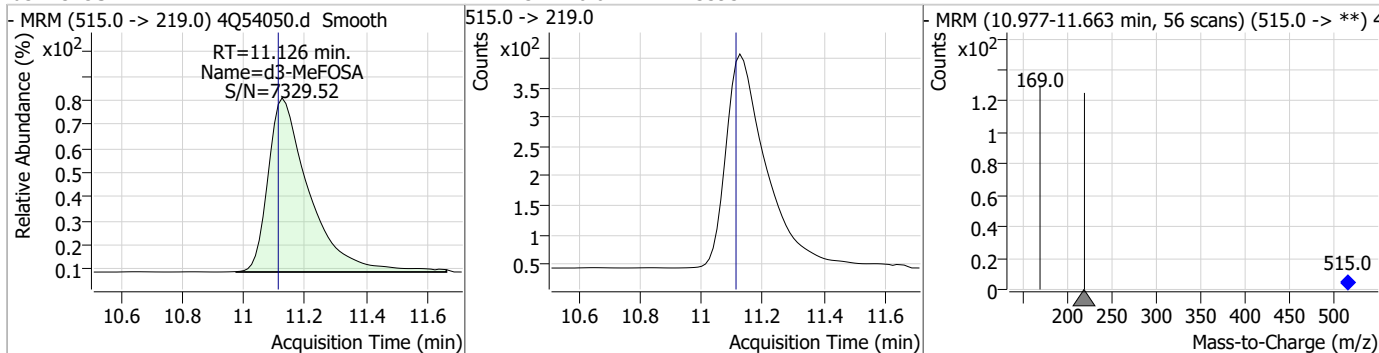
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	16.82	11.02	0.01	20079				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	3.51	11.04	0.00	2973				

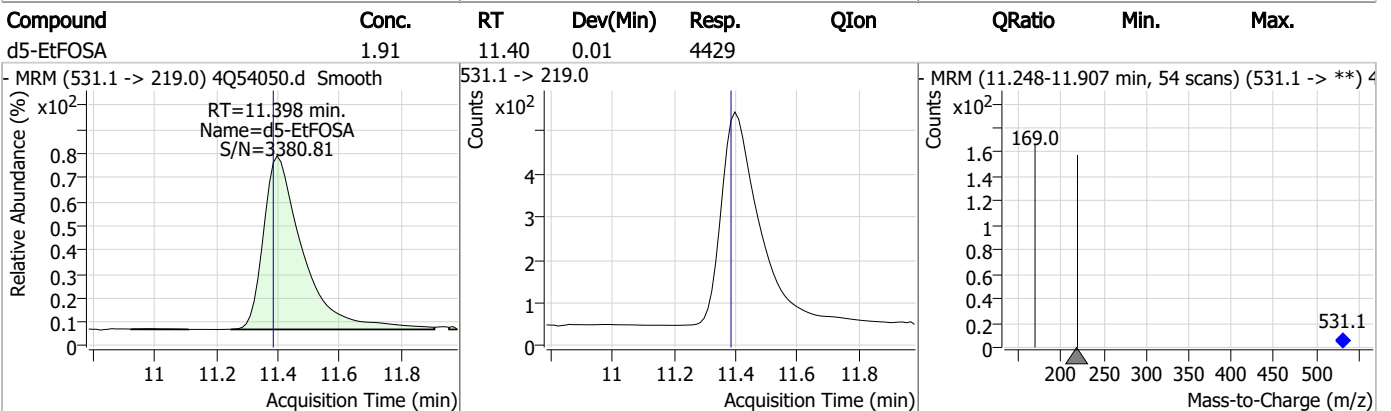
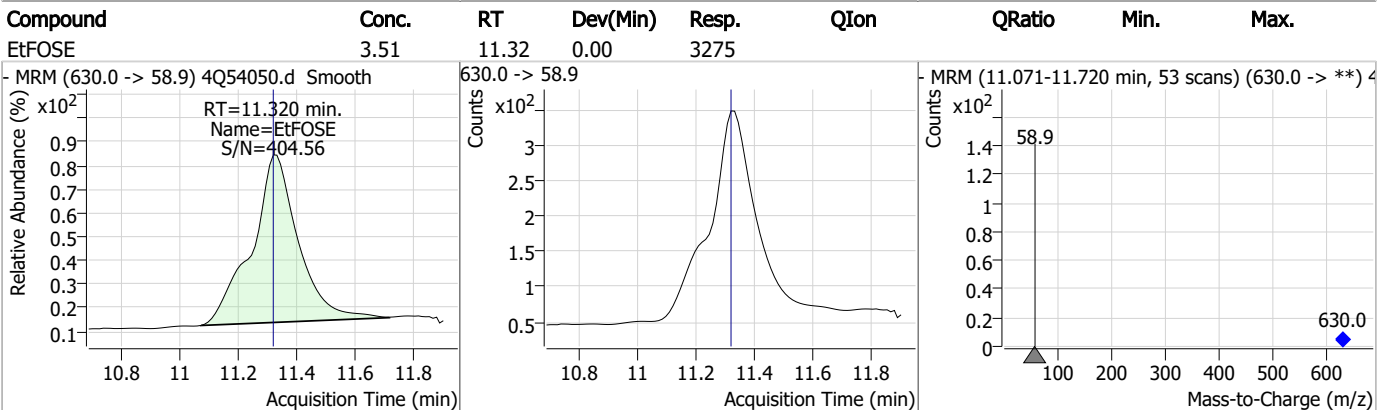
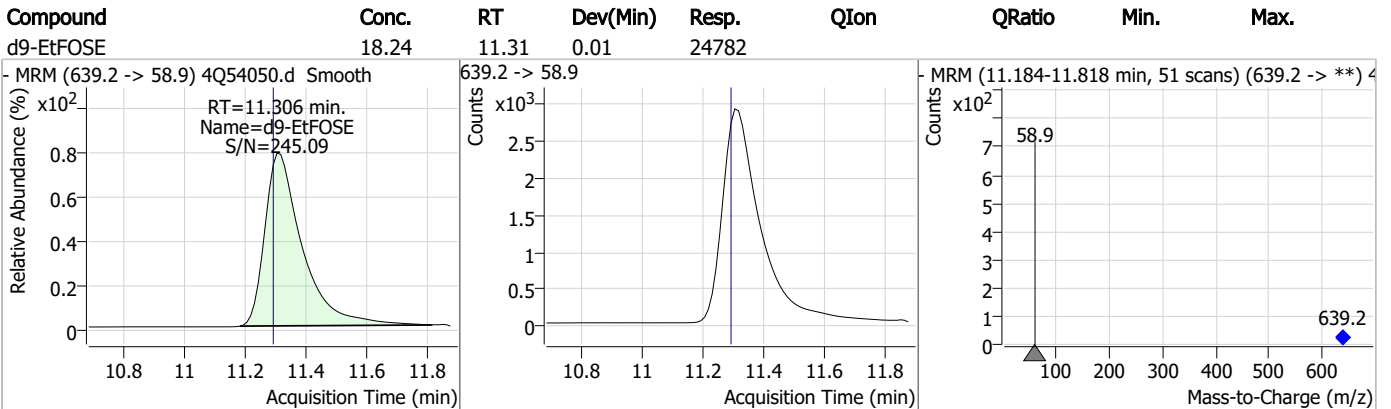
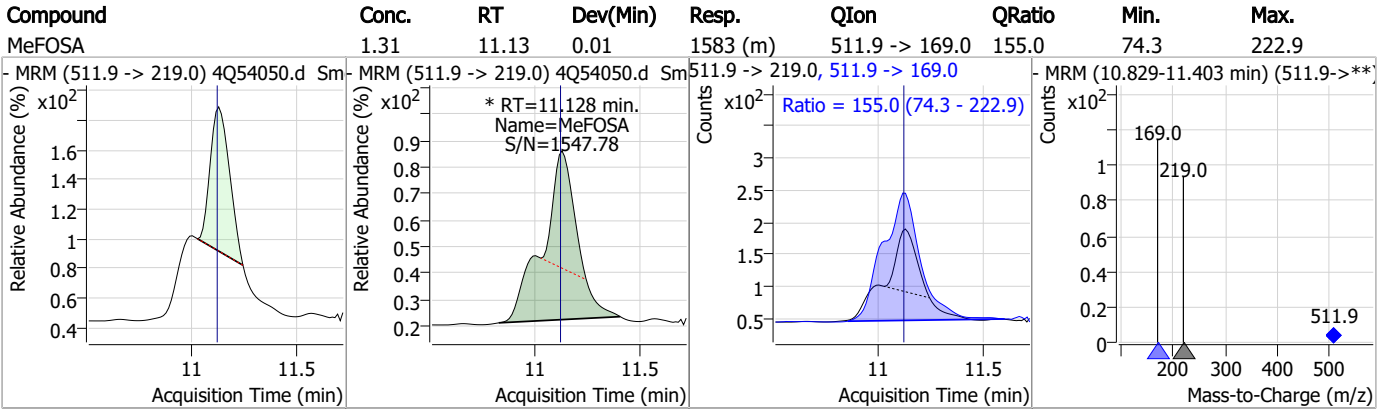


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.77	11.13	0.01	3393				



7.3.4
7

Perfluorinated Compounds by LC/MS/MS

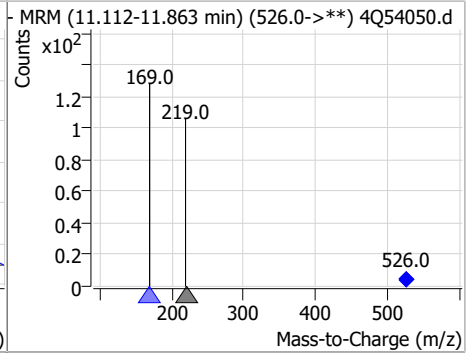
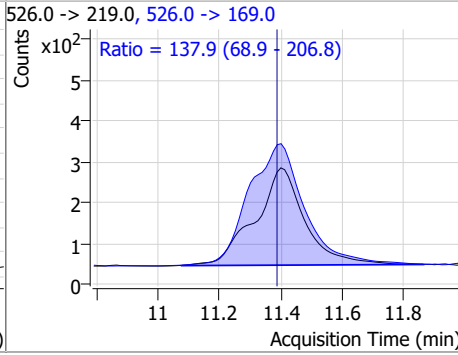
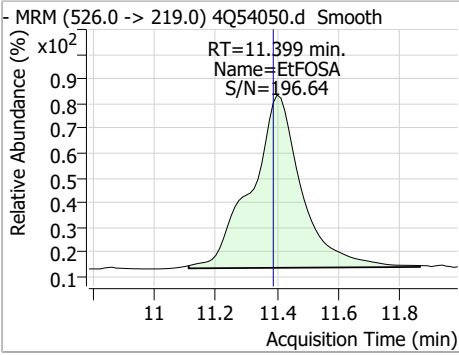


7.3.4

7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	1.47	11.40	0.01	2718	526.0 -> 169.0	137.9	68.9	206.8



7.3.4

7

Manual Integration Approval Summary

Sample Number: OP164-LLBS Method: EPA DRAFT 1633
Lab FileID: 4Q54050.D Analyst approved: 11/18/23 15:04 Mike Eger
Injection Time: 11/17/23 22:42 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.01	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.09	Split peak
EtFOSAA	2991-50-6		8.27	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.3.4.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53882.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/15/2023 2:38:07 PM
 Sample Name : op58-ms
 Vial : P2-A3
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q786.batch.bin
 Sample Information : OP58,S4Q786,535,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	76668	10.00 µg/L	0.000
M5-PFPeA	4.137	268.3 -> 223.0	36077	5.00 µg/L	-0.037
M5-PFHxA	5.322	318.0 -> 273.0	27625	2.50 µg/L	-0.025
M4-PFHpA	6.280	367.1 -> 322.0	26511	2.50 µg/L	-0.025
M8-PFOA	6.976	421.1 -> 376.0	30681	2.50 µg/L	-0.012
M9-PFNA	7.521	472.1 -> 427.0	12917	1.25 µg/L	-0.012
M6-PFDA	8.004	519.1 -> 474.1	8547	1.25 µg/L	-0.013
M7-PFUnDA	8.461	570.0 -> 525.1	9554	1.25 µg/L	-0.012
M2-PFDoDA	8.892	615.1 -> 570.0	9228	1.25 µg/L	-0.012
M2-PFTeDA	9.662	715.2 -> 670.0	8353	1.25 µg/L	0.000
M8-FOSA	9.806	506.1 -> 77.8	7224	2.50 µg/L	-0.012
M3-PFBS	5.177	302.1 -> 79.9	7868	2.50 µg/L	-0.025
M3-PFHxS	7.029	402.1 -> 79.9	6675	2.50 µg/L	-0.025
M8-PFOS	8.130	507.1 -> 79.9	6451	2.50 µg/L	-0.013
M2-4:2FTS	5.021	329.1 -> 80.9	879	5.00 µg/L	-0.025
M2-6:2FTS	6.748	429.1 -> 80.9	1728	5.00 µg/L	-0.012
M2-8:2FTS	7.804	529.1 -> 80.9	2508	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	12034	5.00 µg/L	-0.012
M3-HFPO-DA	5.677	286.9 -> 168.9	24545	10.00 µg/L	-0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	9175	5.00 µg/L	-0.014
M7-MeFOSE	11.034	623.2 -> 58.9	24330	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	29143	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	4045	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	3238	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	6190	2.50 µg/L	-0.013
13C3-PFBA	2.703	216.0 -> 172.0	43679	5.00 µg/L	0.000
18O2-PFHxS	7.028	403.0 -> 83.9	4326	2.50 µg/L	-0.025
13C4-PFOA	6.977	417.1 -> 372.0	36012	2.50 µg/L	-0.012
13C2-PFDA	8.004	515.1 -> 470.1	10016	1.25 µg/L	-0.025
13C5-PFNA	7.522	468.0 -> 423.0	12959	1.25 µg/L	-0.012
13C2-PFHxA	5.311	315.1 -> 270.0	30307	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.021	329.1 -> 80.9	879	5.94 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.7%		
13C2-6:2FTS	6.748	429.1 -> 80.9	1728	5.54 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.8%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2508	5.70 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.1%		
13C2-PFDoDA	8.892	615.1 -> 570.0	9228	1.02 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 81.7%		
13C2-PFTeDA	9.662	715.2 -> 670.0	8353	0.92 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 73.5%		
13C3-PFBS	5.177	302.1 -> 79.9	7868	2.42 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.0%		
13C3-PFHxS	7.029	402.1 -> 79.9	6675	2.49 µg/L	-0.025

7.4.1
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C4-PFBA	2.699	216.8 -> 171.9	76668	8.42 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 84.2%		
13C4-PFHpA	6.280	367.1 -> 322.0	26511	2.51 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C5-PFHxA	5.322	318.0 -> 273.0	27625	2.44 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C5-PFPeA	4.137	268.3 -> 223.0	36077	4.88 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C6-PFDA	8.004	519.1 -> 474.1	8547	1.16 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.8%		
13C7-PFUnDA	8.461	570.0 -> 525.1	9554	1.12 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.7%		
13C8-FOSA	9.806	506.1 -> 77.8	7224	2.44 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.7%		
13C8-PFOA	6.976	421.1 -> 376.0	30681	2.39 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.5%		
13C8-PFOS	8.130	507.1 -> 79.9	6451	2.18 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 87.3%		
13C9-PFNA	7.521	472.1 -> 427.0	12917	1.26 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.1%		
d3-MeFOSAA	8.086	573.2 -> 419.0	12034	5.13 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C3-HFPO-DA	5.677	286.9 -> 168.9	24545	9.52 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 95.2%		
d3-MeFOSA	11.139	515.0 -> 219.0	3238	1.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 62.7%		
d5-EtFOSAA	8.296	589.2 -> 419.0	9175	4.46 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.3%		
d7-MeFOSE	11.034	623.2 -> 58.9	24330	19.08 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 76.3%		
d9-EtFOSE	11.319	639.2 -> 58.9	29143	19.73 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 78.9%		
d5-EtFOSA	11.410	531.1 -> 219.0	4045	1.65 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 66.0%		
Target Compounds					QValue
4:2FTS	5.022	327.1 -> 307.0	14635	8.43 µg/L	99
		327.1 -> 80.9	6098		
6:2FTS	6.749	427.1 -> 407.0	19648	10.51 µg/L	98
		427.1 -> 80.9	7302		
8:2FTS	7.816	527.1 -> 507.0	13769	10.09 µg/L	99
		527.1 -> 80.8	5621		
EtFOSAA	8.297	584.2 -> 419.1	4815	2.93 µg/L	91
		584.2 -> 526.0	1752		
FOSA	9.810	498.1 -> 77.9	7937	2.25 µg/L	99
		498.1 -> 478.0	235		
MeFOSAA	8.099	570.1 -> 419.0	4702	2.20 µg/L	95
		570.1 -> 483.0	963		
PFBA	2.707	212.8 -> 168.9	26833	9.62 µg/L	100
PFBS	5.166	298.7 -> 79.9	5794	2.08 µg/L	97
		298.7 -> 98.8	2145		
PFDA	8.005	512.9 -> 469.0	15162	2.17 µg/L	95
		512.9 -> 219.0	3333		
PFDODA	8.893	613.1 -> 569.0	18803	2.50 µg/L	97
		613.1 -> 319.0	3264		
PFDS	9.032	599.0 -> 79.9	3512	2.10 µg/L	100

7.4.1
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.280	599.0 -> 98.8	1788	2.38	µg/L	99
		363.1 -> 319.0	39576			
PFHpS	7.612	363.1 -> 169.0	6758	2.27	µg/L	95
		449.0 -> 79.9	5800			
PFHxA	5.313	449.0 -> 98.9	3162	2.37	µg/L	100
		313.0 -> 269.0	22917			
PFHxS	7.030	313.0 -> 118.9	592	2.24	µg/L	79
		398.7 -> 79.9	4513			
PFNA	7.522	398.7 -> 98.9	2164	2.31	µg/L	99
		463.0 -> 419.0	19033			
PFNS	8.598	463.0 -> 219.0	4953	2.32	µg/L	92
		548.8 -> 79.9	2861			
PFOA	6.978	548.8 -> 98.9	1667	2.36	µg/L	99
		413.0 -> 369.0	35031			
PFOS	8.119	413.0 -> 169.0	6967	2.29	µg/L	90
		498.9 -> 79.9	6697			
PFPeA	4.139	498.9 -> 98.8	3686	4.77	µg/L	100
		263.0 -> 219.0	37412			
PFPeS	6.269	349.1 -> 79.9	4859	2.21	µg/L	97
		349.1 -> 98.9	2196			
PFTeDA	9.662	713.1 -> 669.0	15796	2.49	µg/L	99
		713.1 -> 168.9	1629			
PFTrDA	9.292	663.0 -> 619.0	19110	2.33	µg/L	99
		663.0 -> 168.9	2742			
PFUnDA	8.461	563.1 -> 519.0	18938	2.42	µg/L	98
		563.1 -> 269.1	4244			
11CI-PF3OUdS	9.319	630.9 -> 450.9	29772	3.89	µg/L	99
		632.9 -> 452.9	9008			
9CI-PF3ONS	8.463	530.8 -> 351.0	31996	4.14	µg/L	94
		532.8 -> 353.0	10543			
ADONA	6.556	376.9 -> 250.9	91134	5.37	µg/L	100
		376.9 -> 84.8	22488			
HFPO-DA	5.678	284.9 -> 168.9	12543	4.83	µg/L	100
		284.9 -> 184.9	1186			
3:3FTCA	3.630	241.0 -> 177.0	5757	13.26	µg/L	100
		241.0 -> 117.0	517			
5:3FTCA	6.008	341.0 -> 237.1	103244	60.79	µg/L	99
		341.0 -> 217.0	73911			
7:3FTCA	7.549	441.0 -> 316.9	47767	62.69	µg/L	92
		441.0 -> 336.9	110333			
EtFOSA	11.412	526.0 -> 219.0	9145	5.01	µg/L	94
		526.0 -> 169.0	12264			
EtFOSE	11.332	630.0 -> 58.9	13119	12.05	µg/L	100
		511.9 -> 219.0	6265			
MeFOSA	11.140	511.9 -> 169.0	9174	5.33	µg/L	88
		616.1 -> 58.9	12814			
MeFOSE	11.060	699.1 -> 79.9	2719	11.56	µg/L	100
		699.1 -> 98.8	1613			
PFDoDS	9.789	295.0 -> 201.0	3635	2.07	µg/L	92
		295.0 -> 84.9	947			
NFDHA	5.191	279.0 -> 85.1	24409	5.71	µg/L	95
		229.0 -> 84.9	27653			
PFMBA	4.541	314.8 -> 134.9	38284	5.50	µg/L	100
		314.8 -> 82.9	1309			
PFMPA	3.303			5.01	µg/L	98
PFEESA	5.696			5.01	µg/L	98

= Qualifier out of range, m = manually integrated, + = Area summed

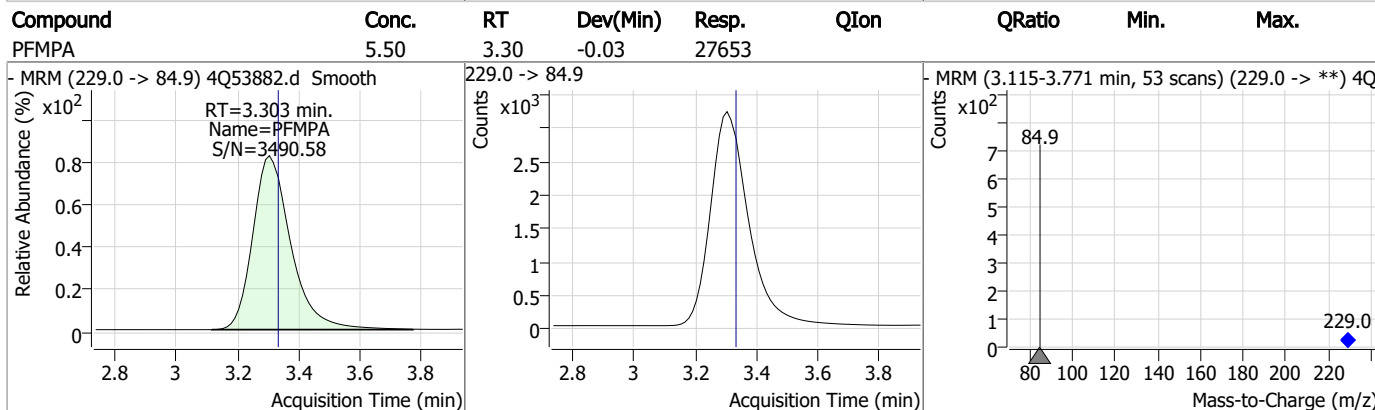
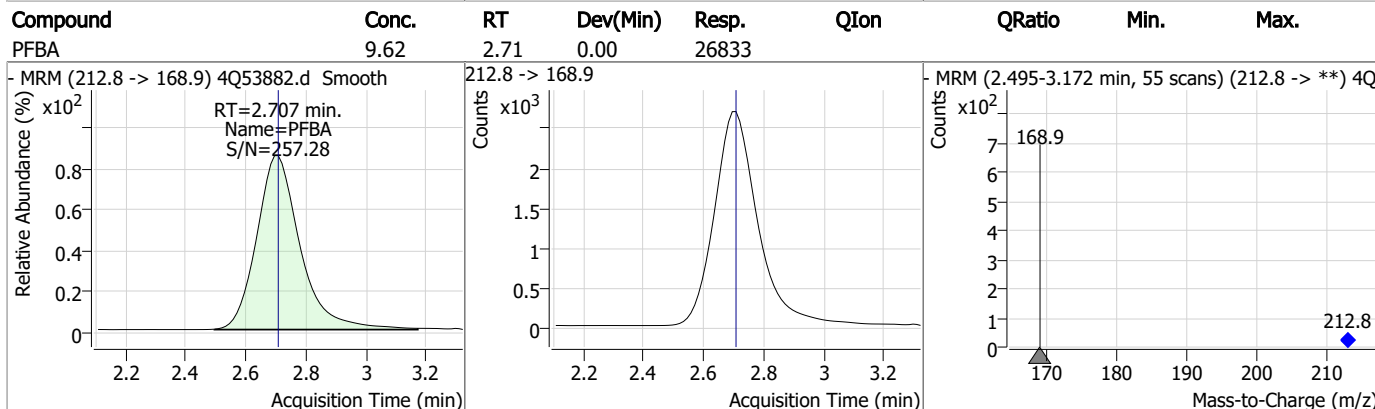
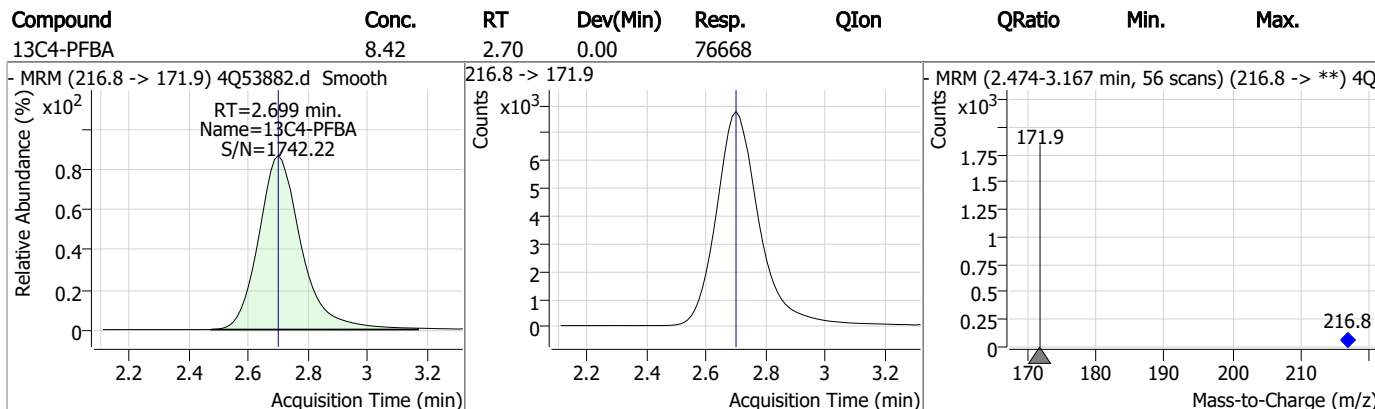
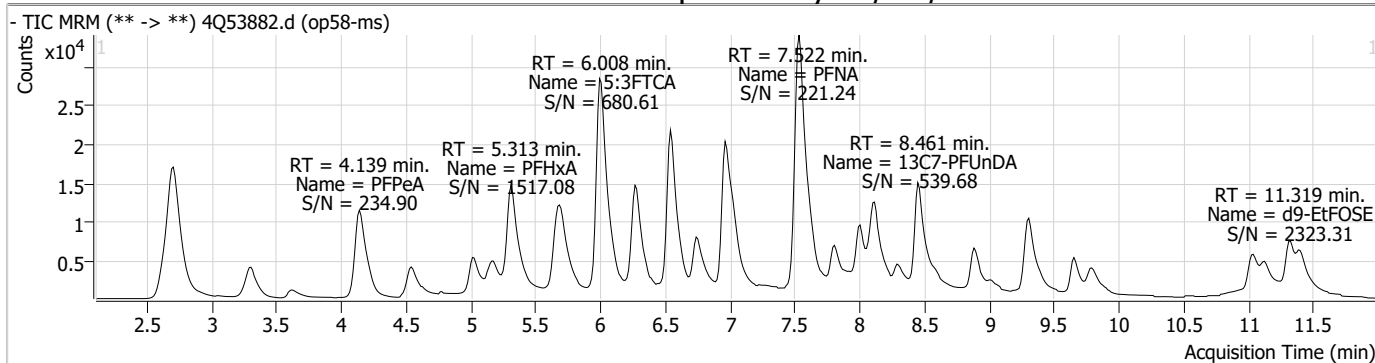
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.4.1

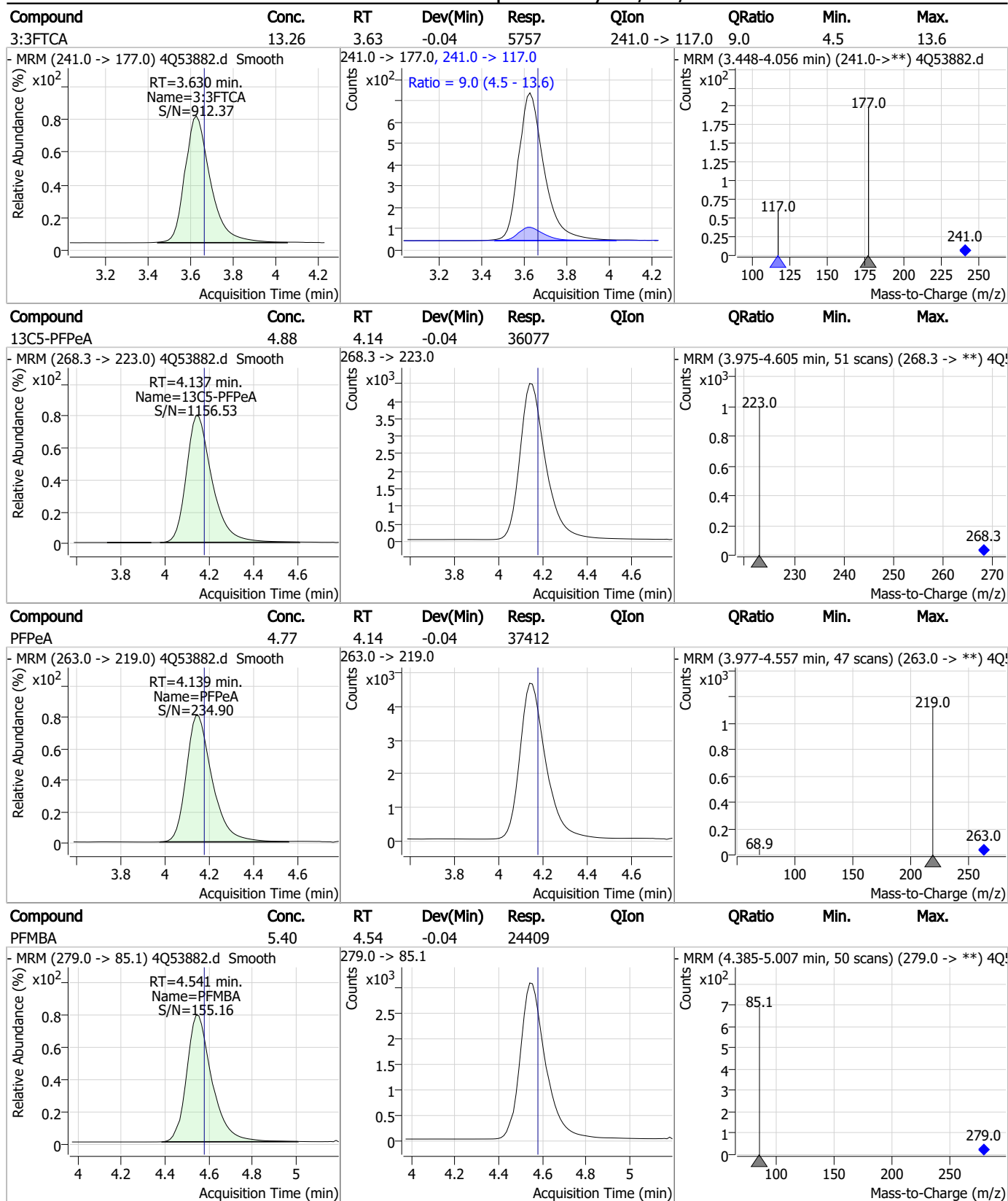
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Perfluorinated Compounds by LC/MS/MS



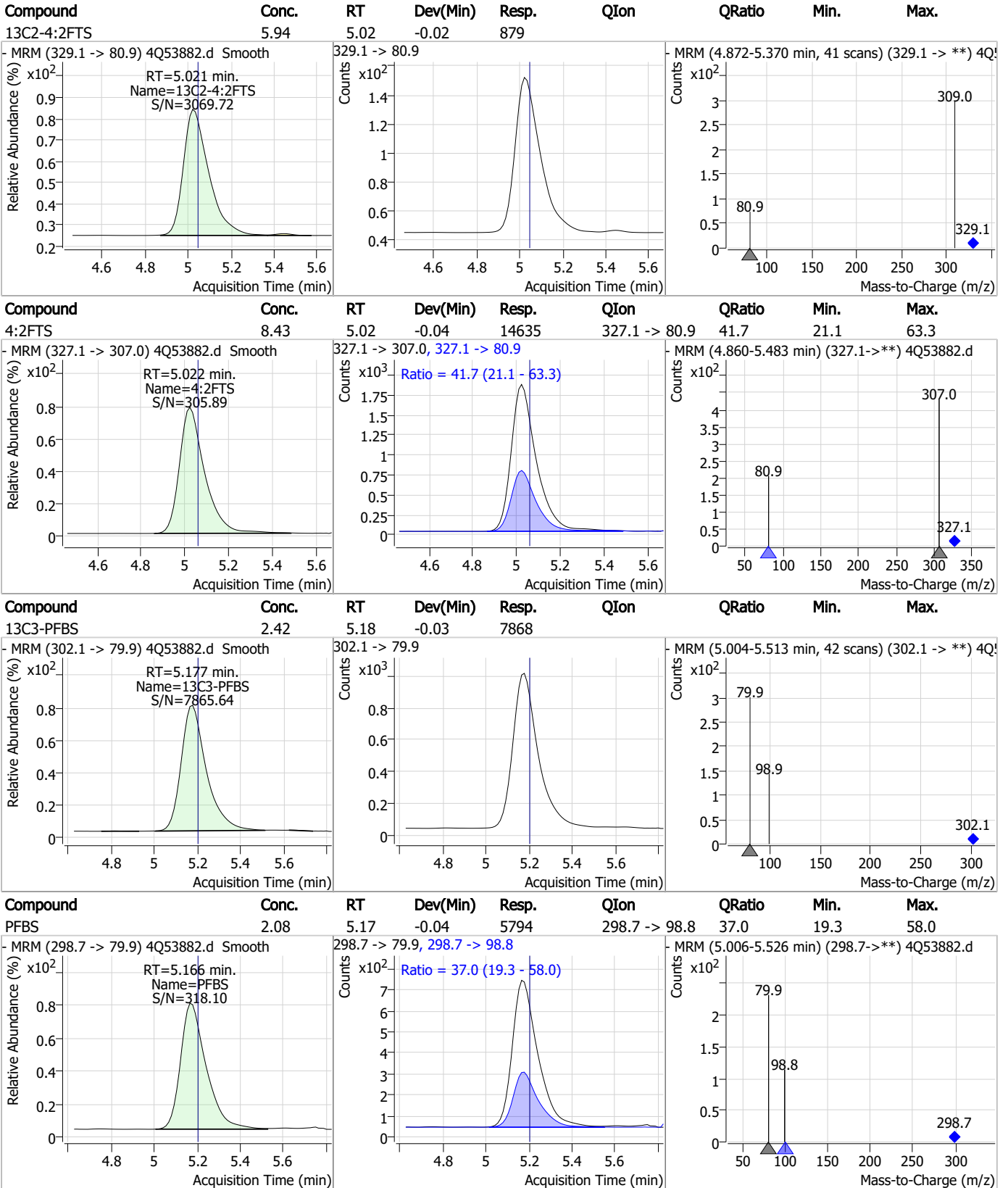
7.4.1
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Perfluorinated Compounds by LC/MS/MS



7.4.1
7

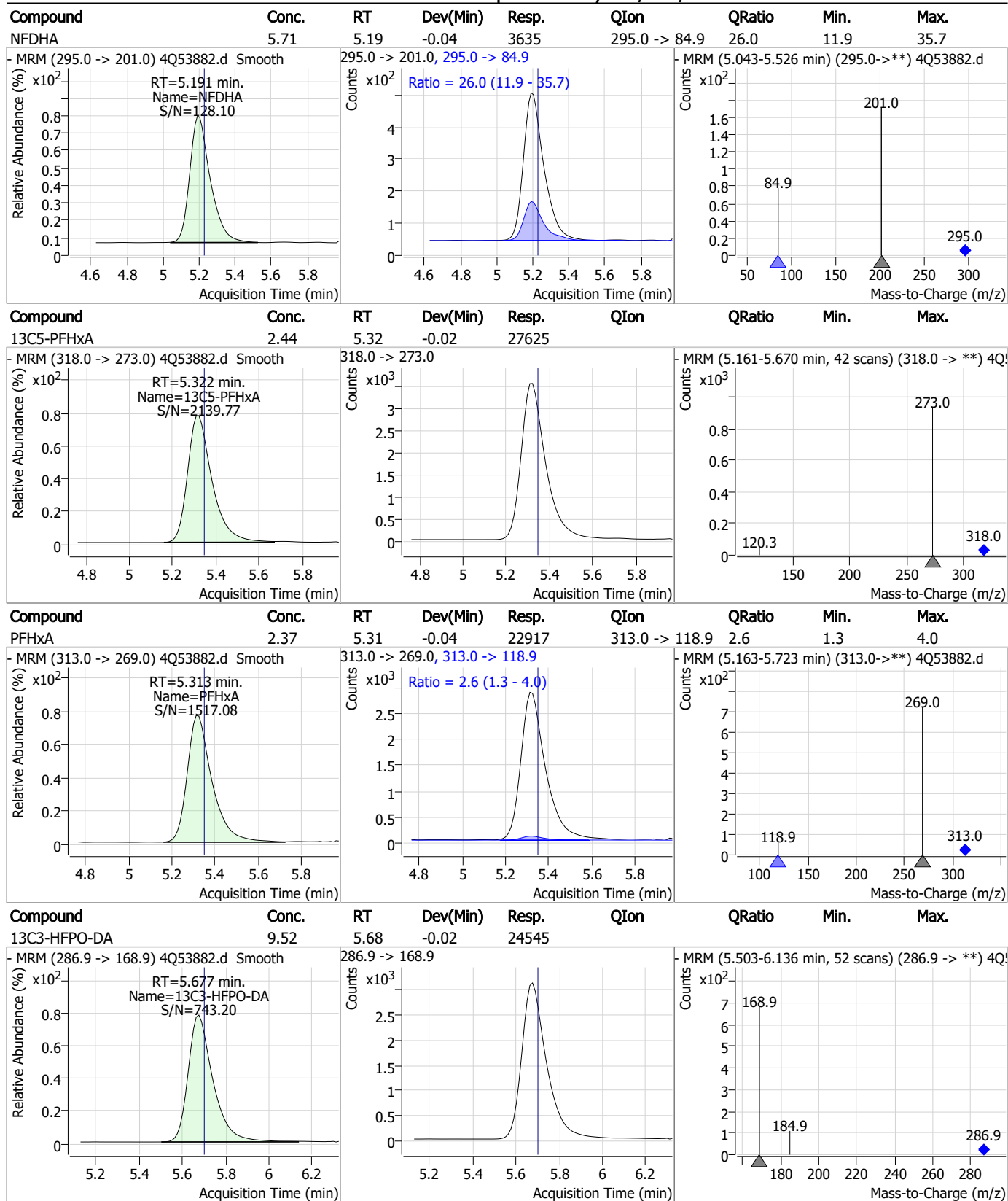
Perfluorinated Compounds by LC/MS/MS



7.4.1

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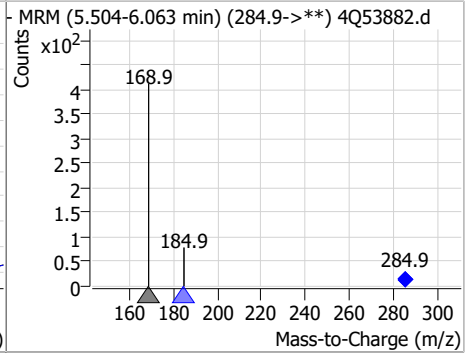
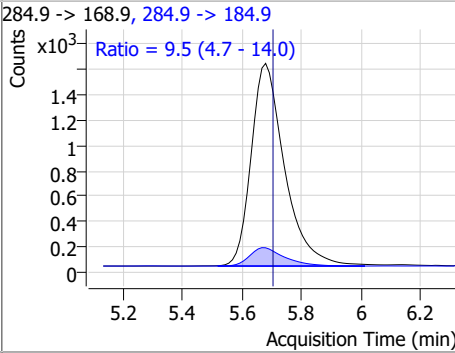
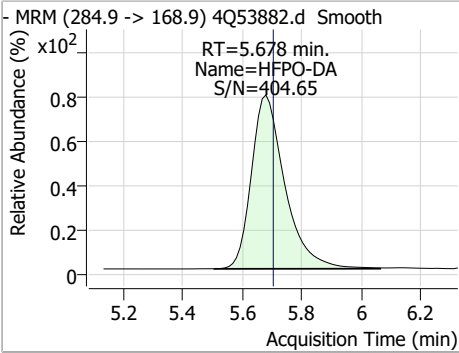
Perfluorinated Compounds by LC/MS/MS



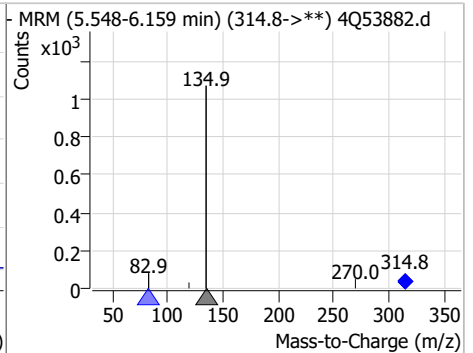
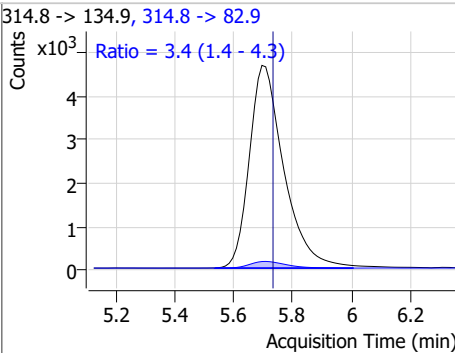
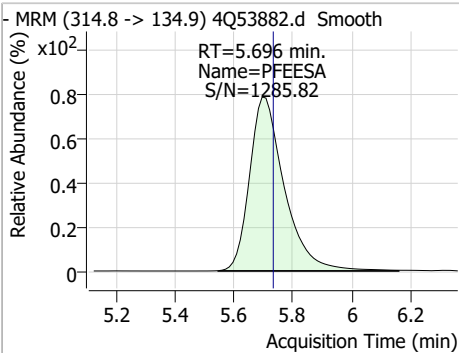
7.4.1
7

Perfluorinated Compounds by LC/MS/MS

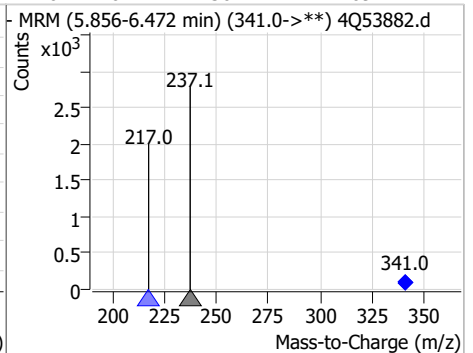
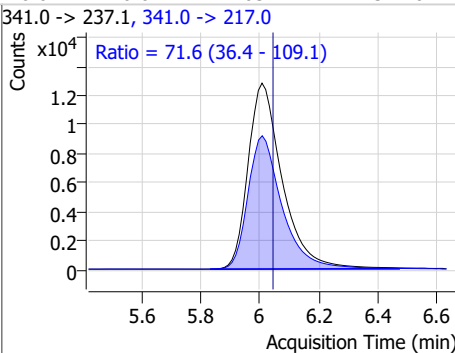
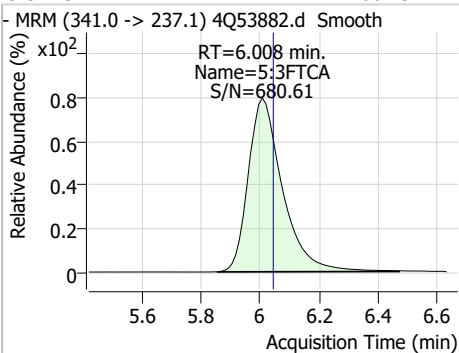
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.83	5.68	-0.02	12543	284.9 -> 184.9	9.5	4.7	14.0



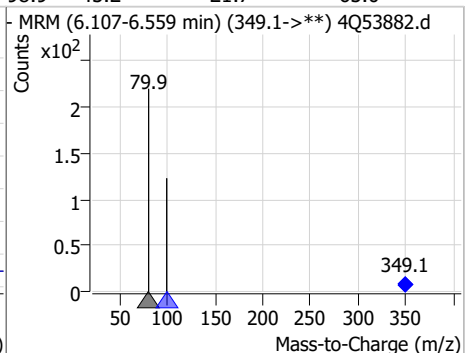
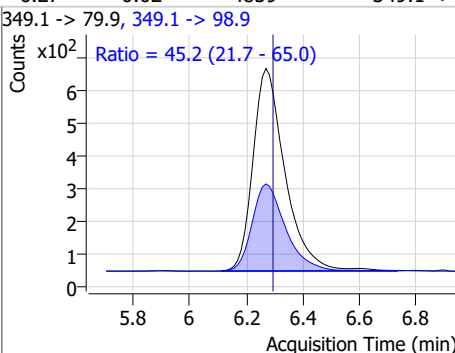
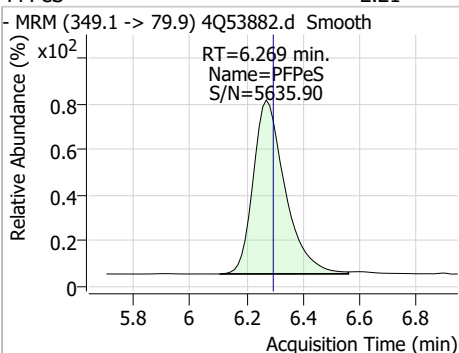
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	5.01	5.70	-0.04	38284	314.8 -> 82.9	3.4	1.4	4.3



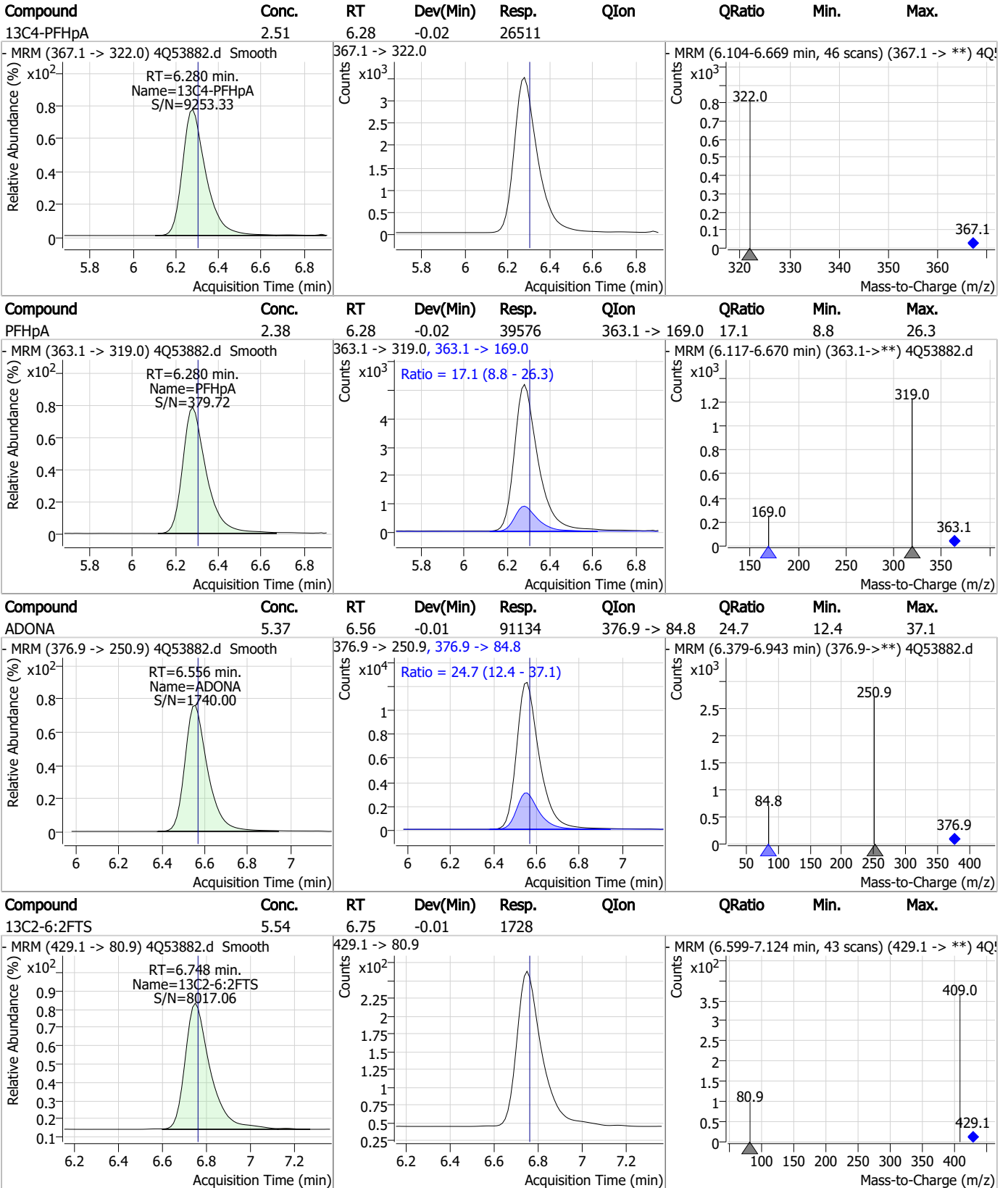
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	60.79	6.01	-0.04	103244	341.0 -> 217.0	71.6	36.4	109.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.21	6.27	-0.02	4859	349.1 -> 98.9	45.2	21.7	65.0



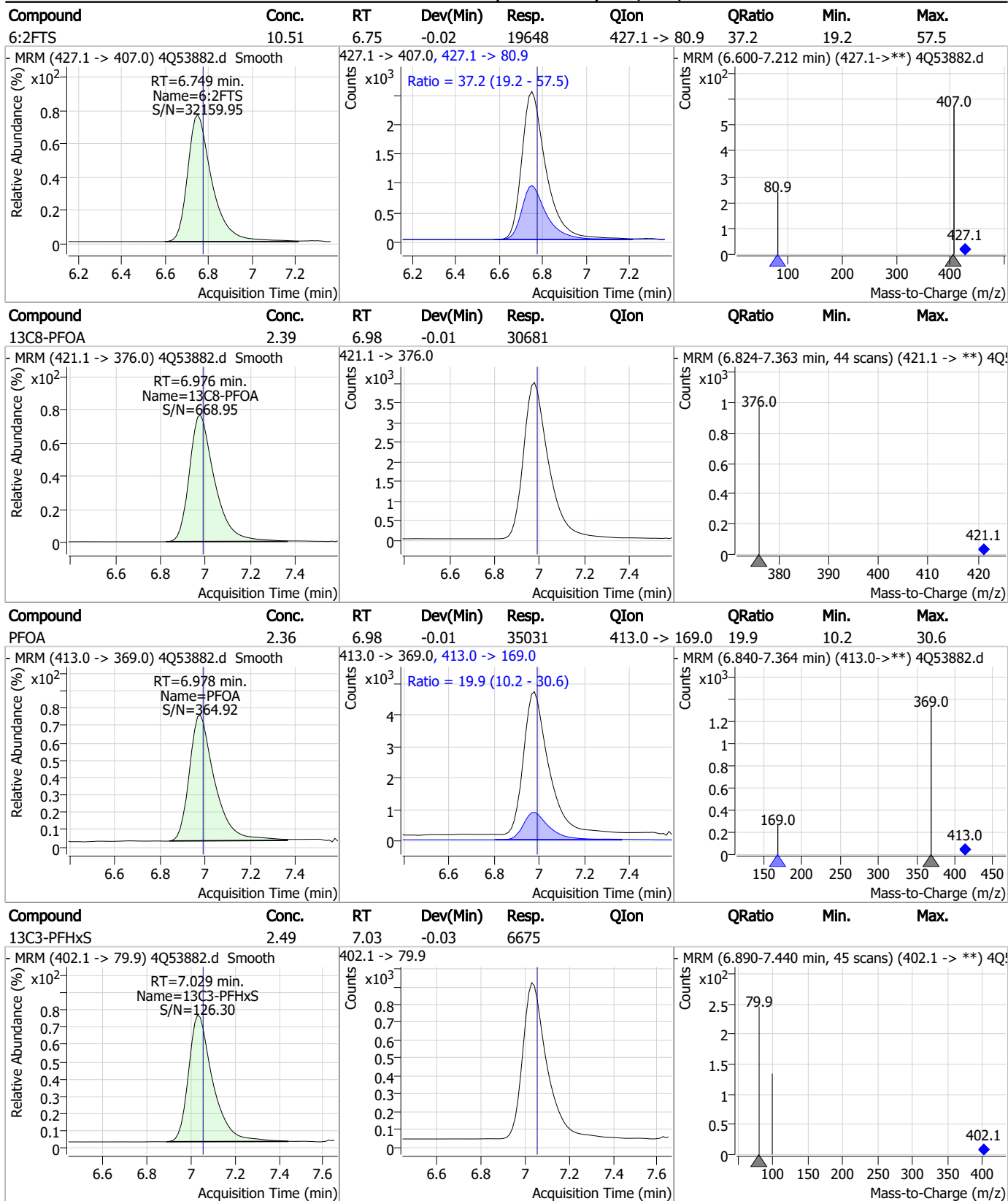
Perfluorinated Compounds by LC/MS/MS



7.4.1

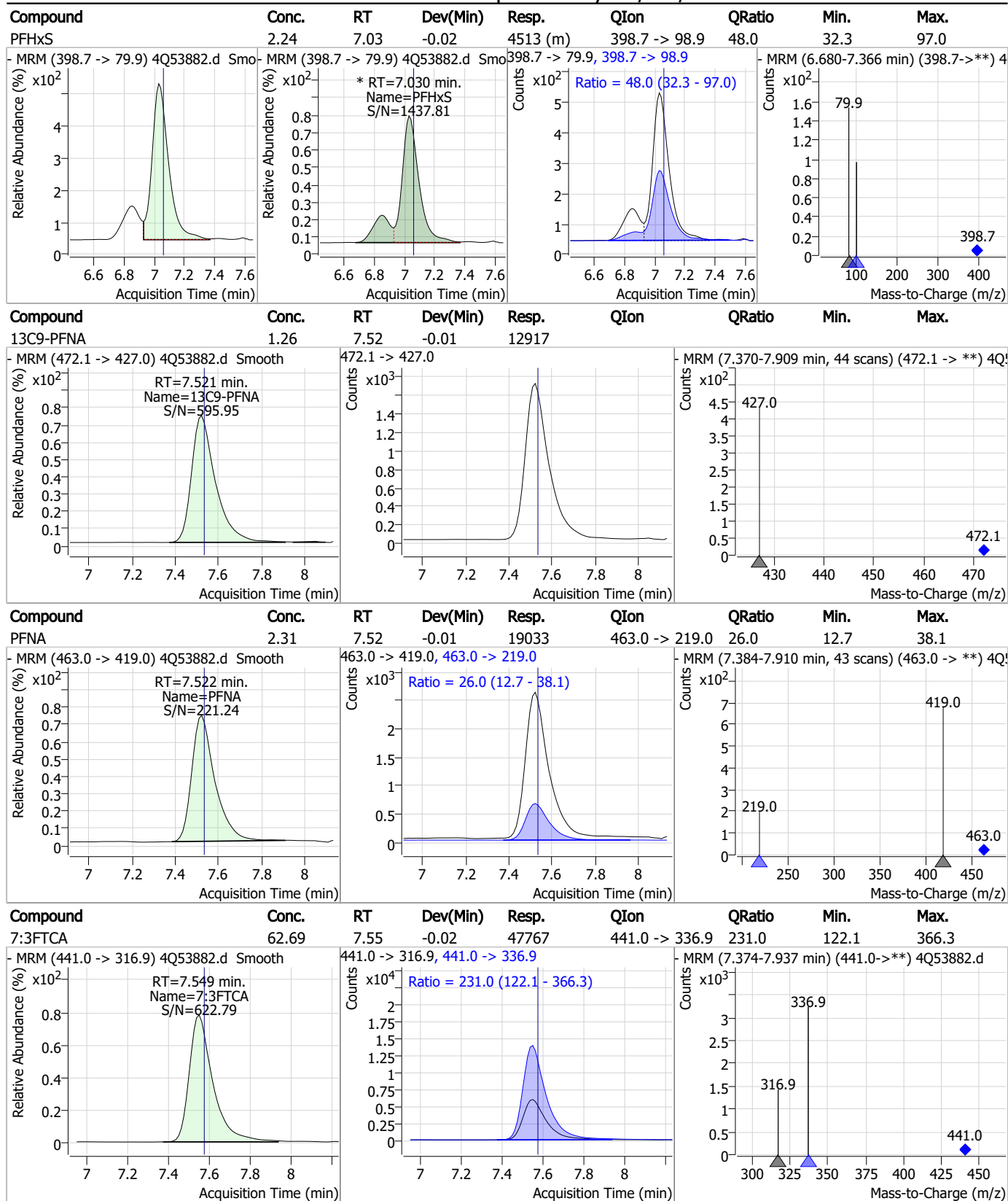
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Perfluorinated Compounds by LC/MS/MS



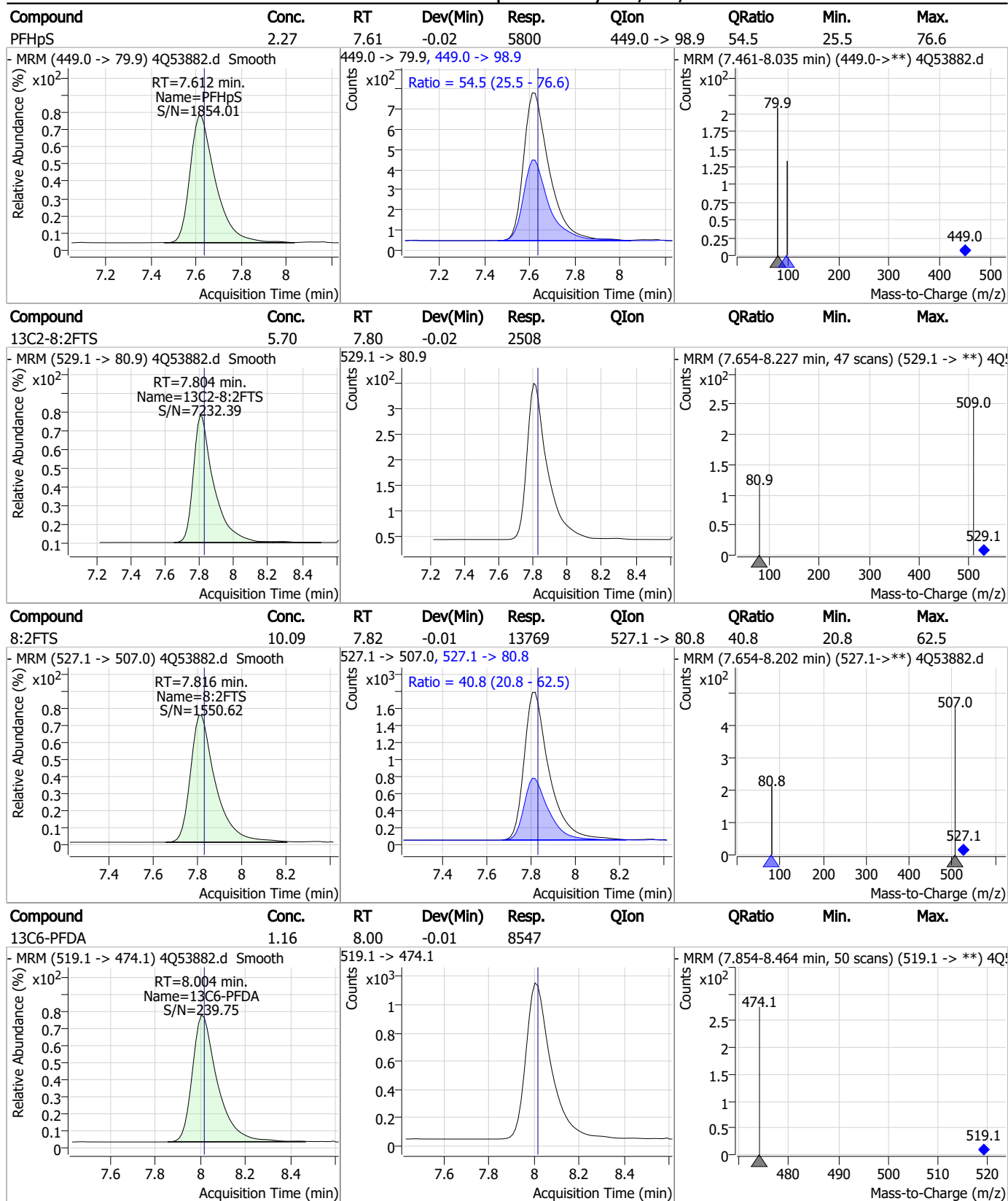
7.4.1
7

Perfluorinated Compounds by LC/MS/MS



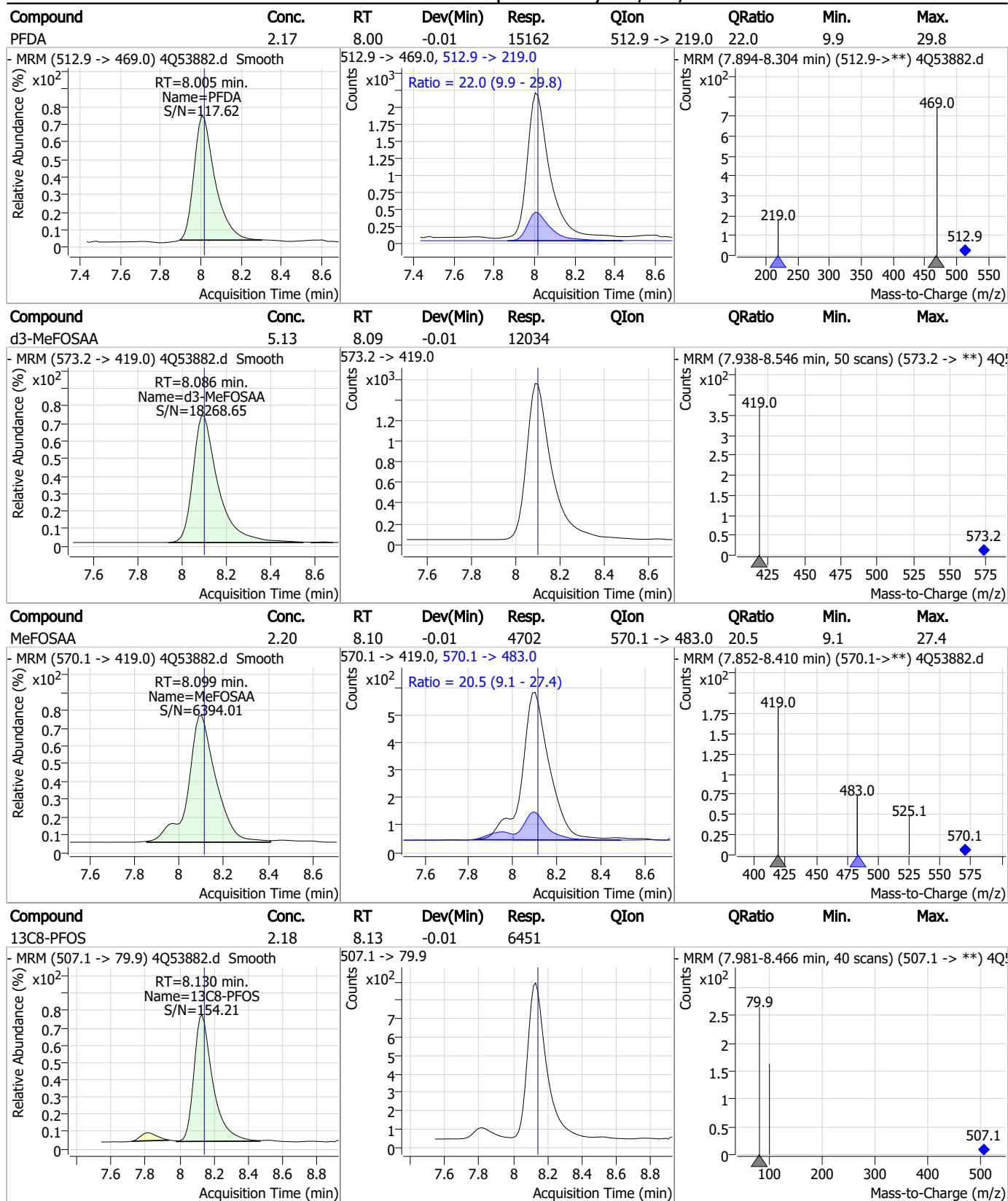
7.4.1
7

Perfluorinated Compounds by LC/MS/MS



7.4.1
7

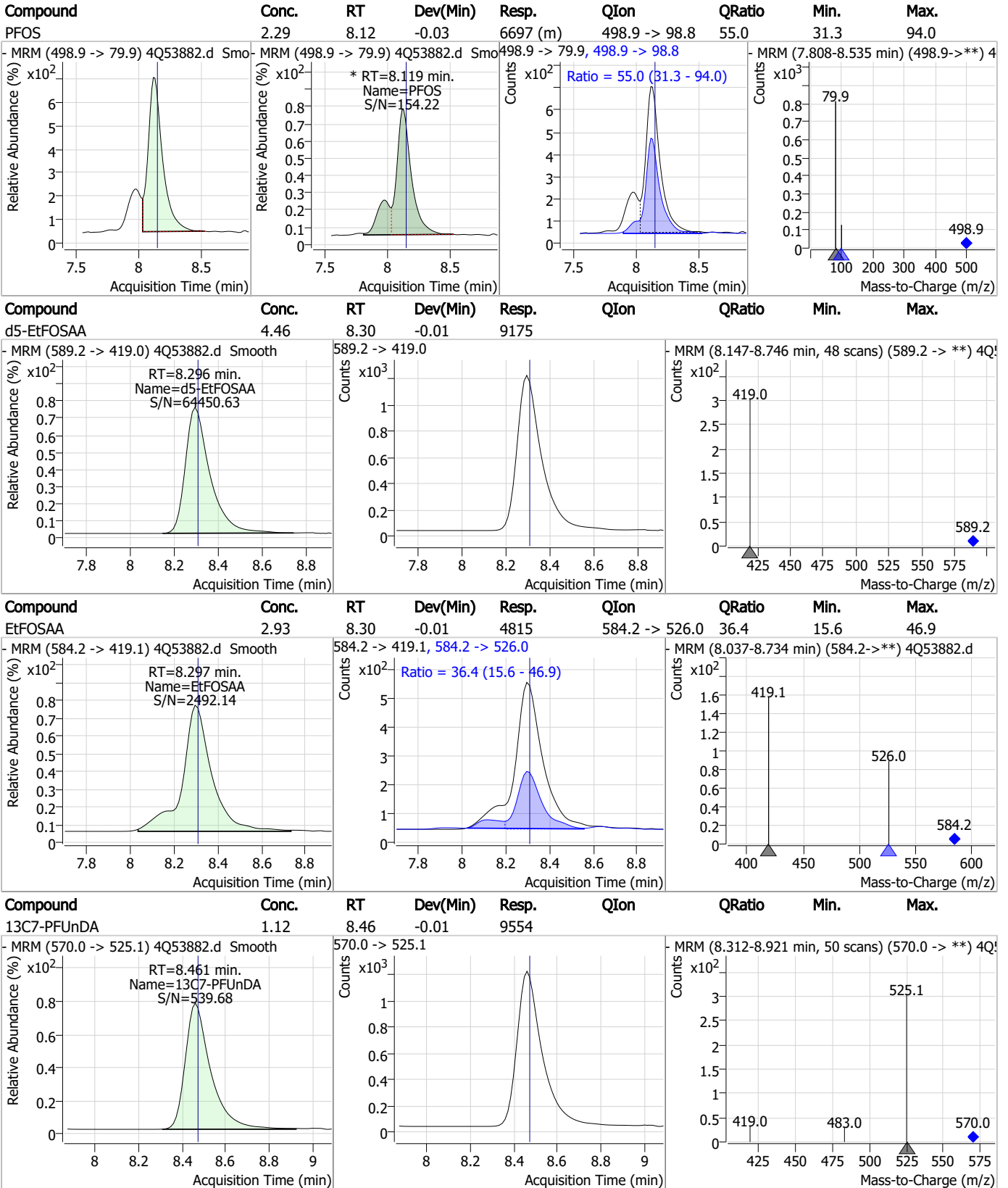
Perfluorinated Compounds by LC/MS/MS



7.4.1
7



Perfluorinated Compounds by LC/MS/MS

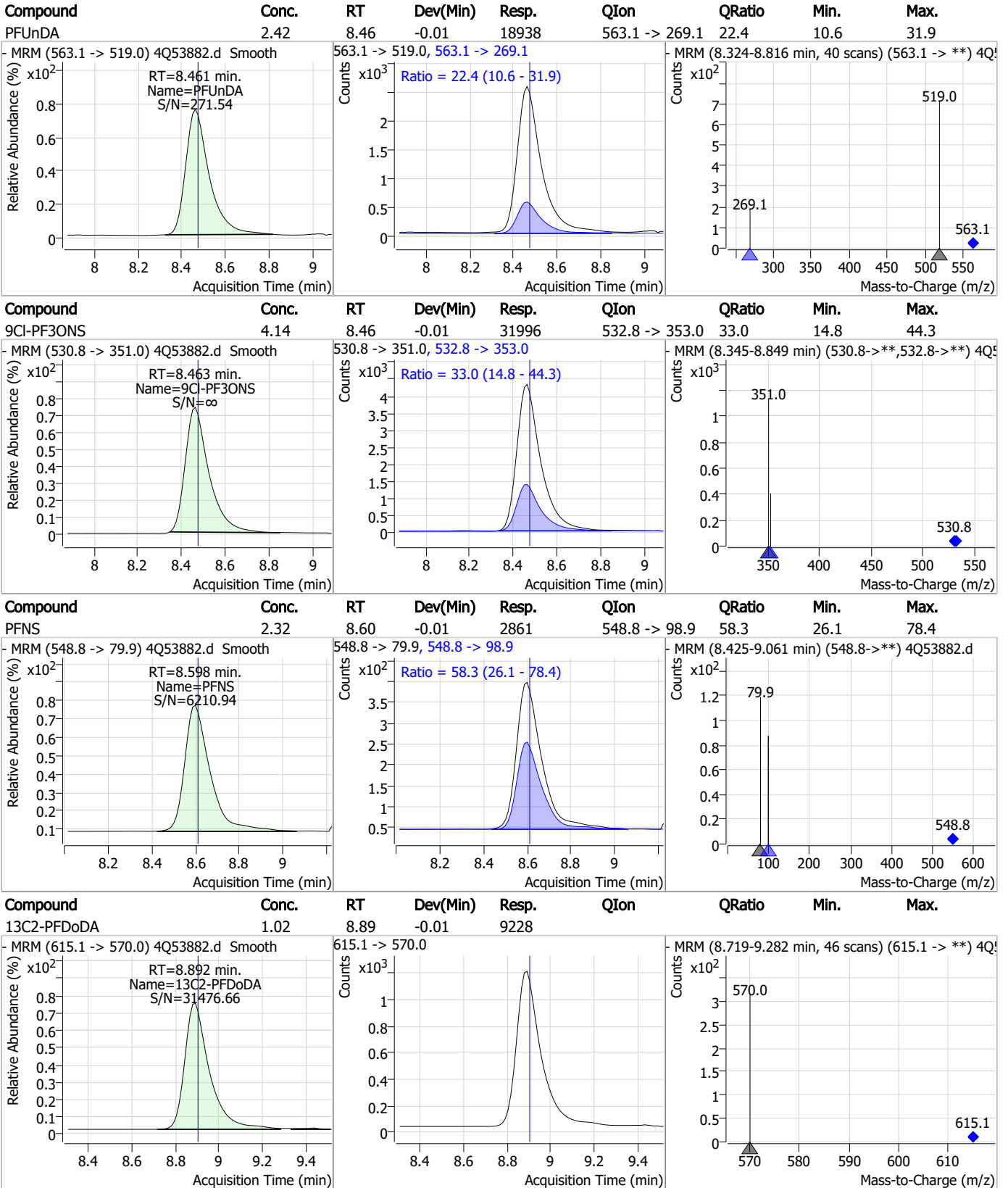


7.4.1

7



Perfluorinated Compounds by LC/MS/MS

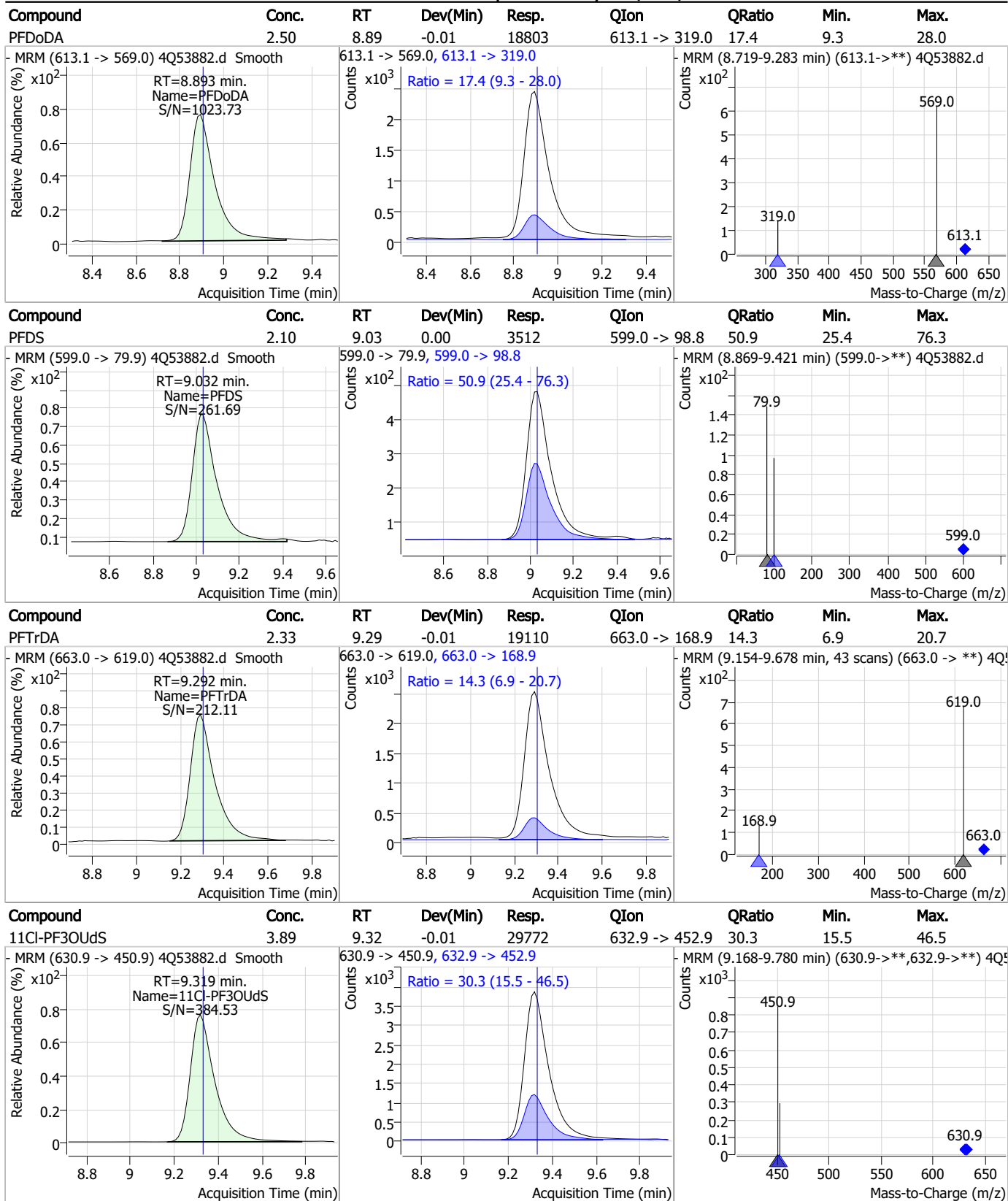


7.4.1

7

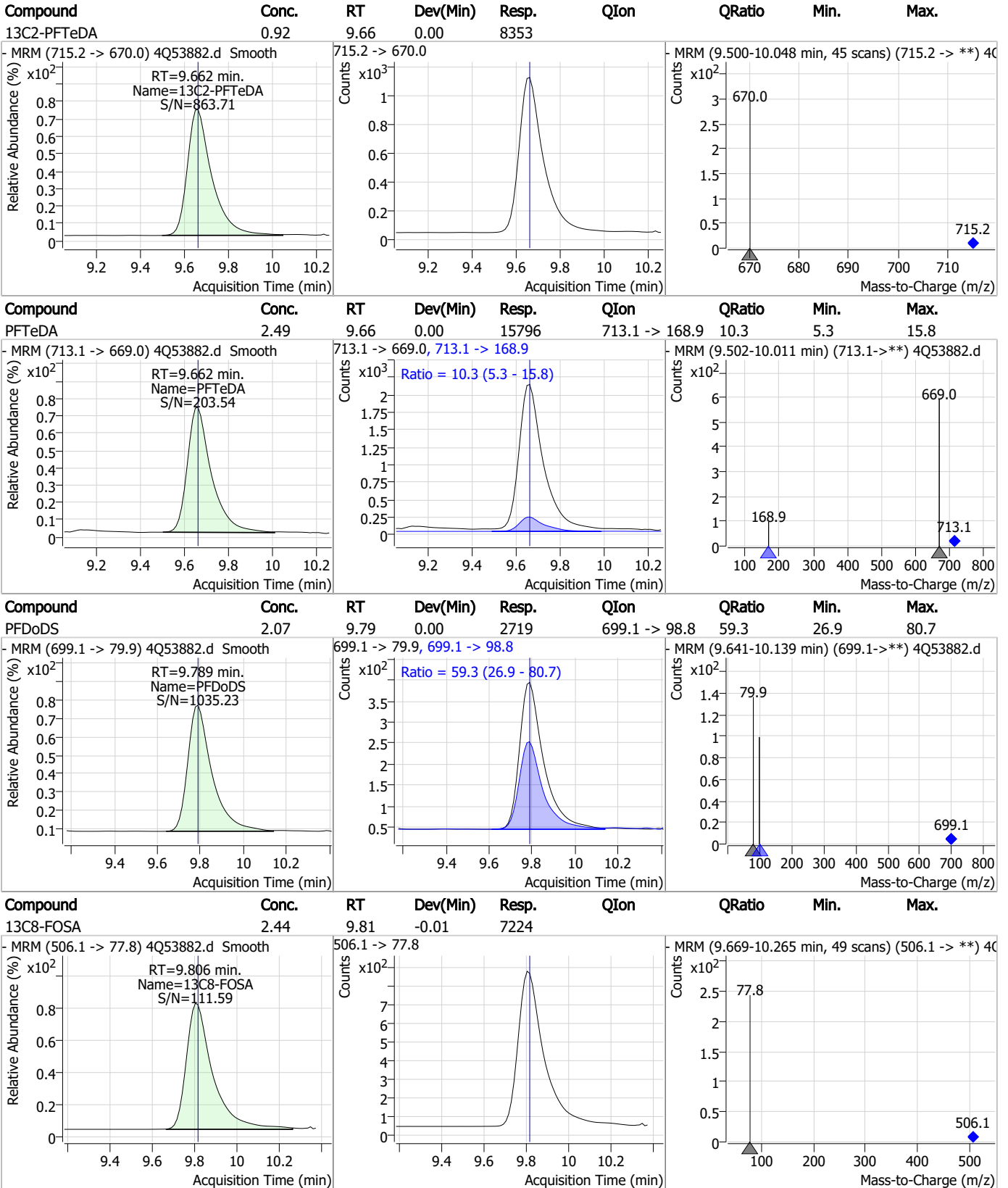


Perfluorinated Compounds by LC/MS/MS



7.4.1
7

Perfluorinated Compounds by LC/MS/MS



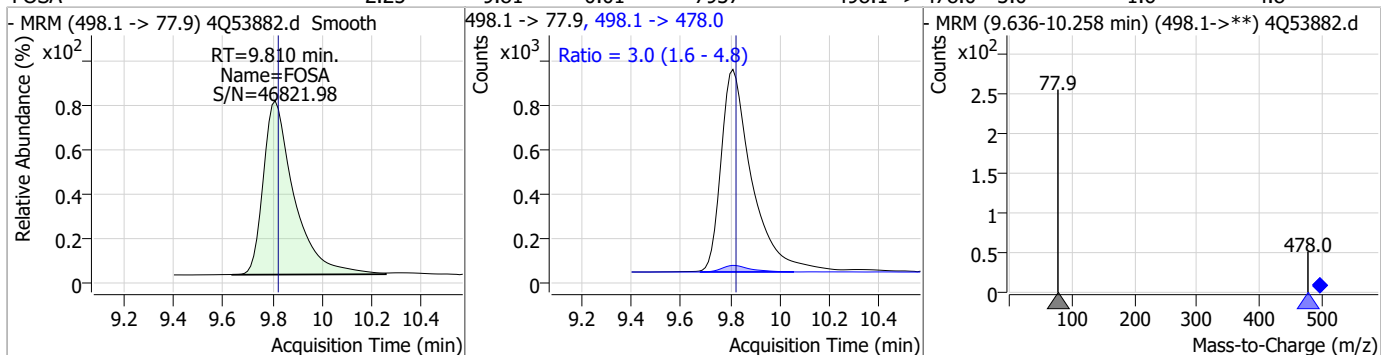
7.4.1

7

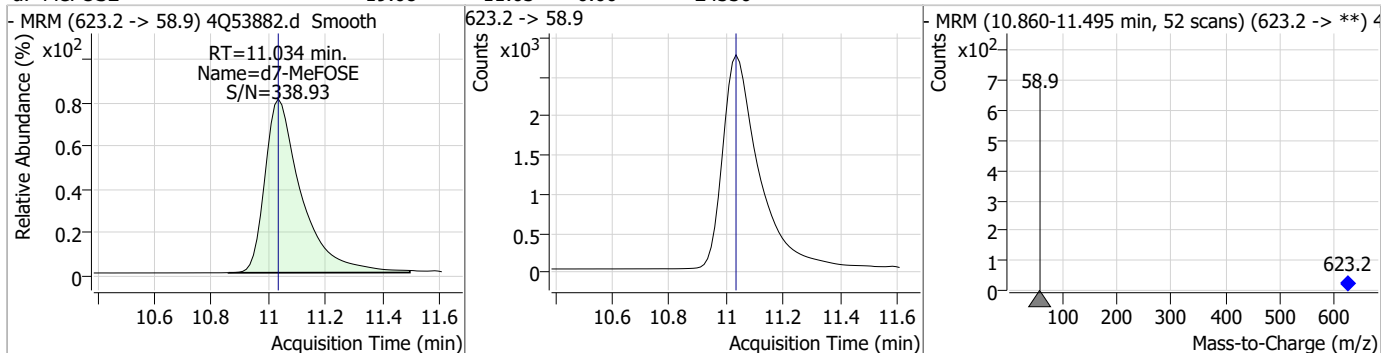


Perfluorinated Compounds by LC/MS/MS

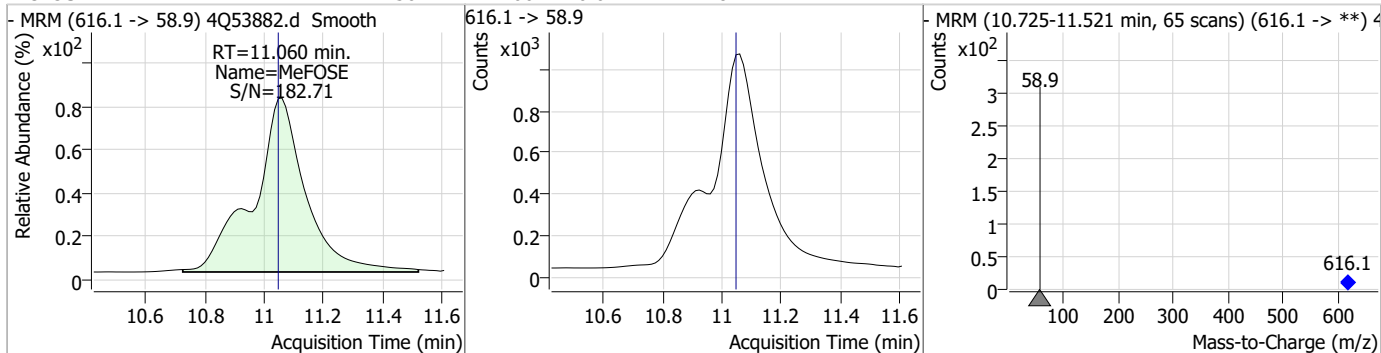
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.25	9.81	-0.01	7937	498.1 -> 478.0	3.0	1.6	4.8



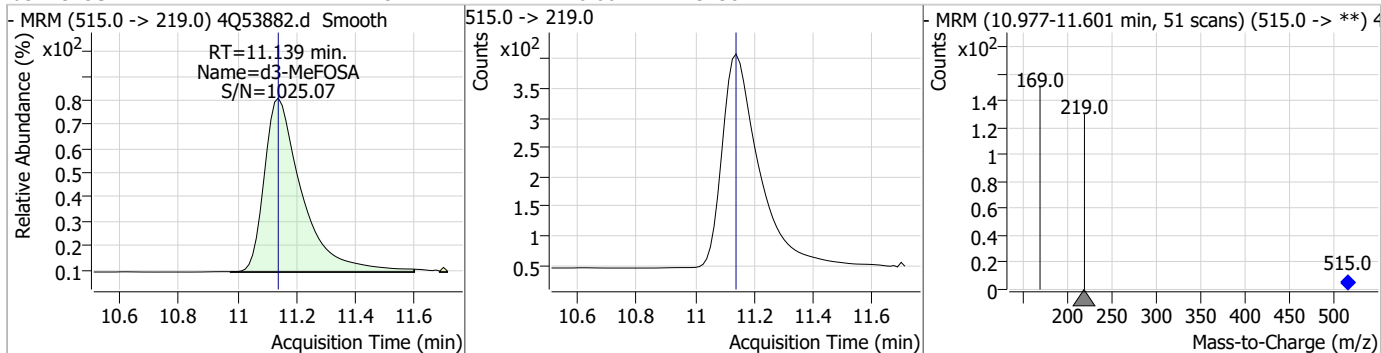
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	19.08	11.03	0.00	24330				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.56	11.06	0.01	12814				

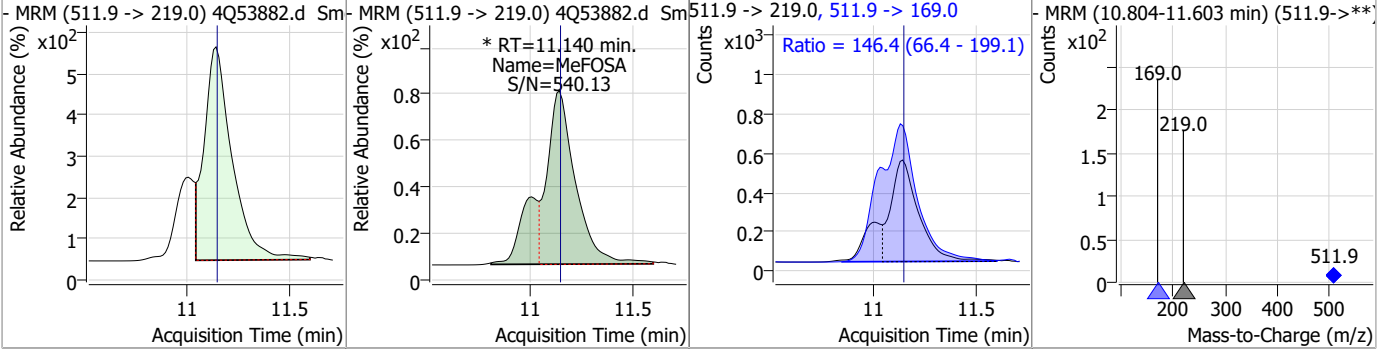


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.57	11.14	0.00	3238				

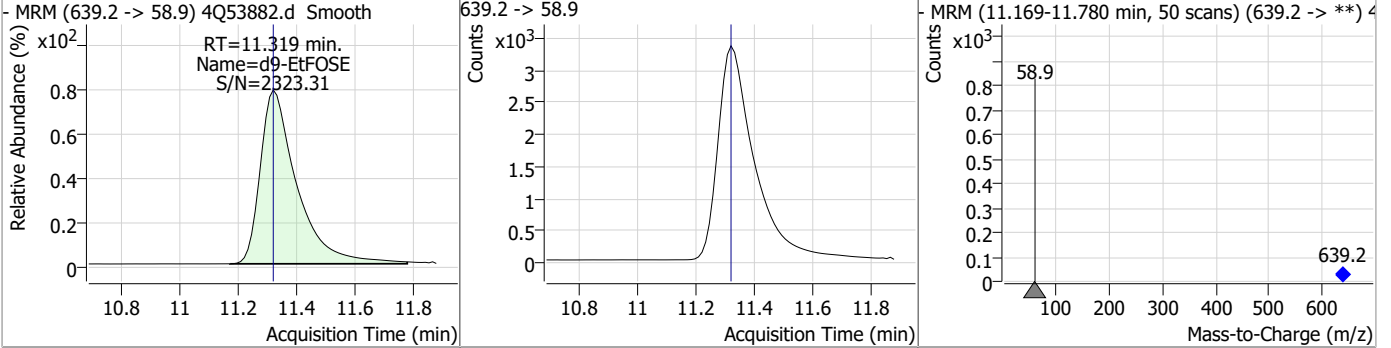


Perfluorinated Compounds by LC/MS/MS

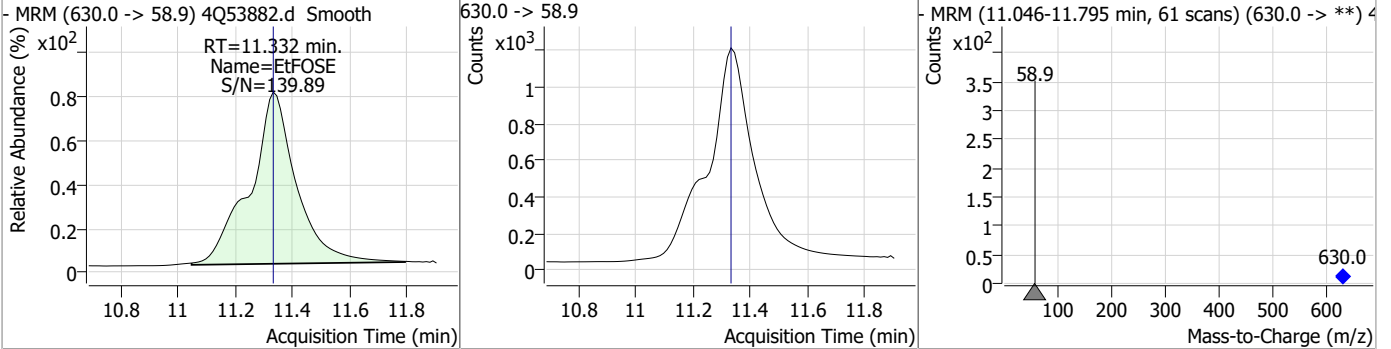
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	5.33	11.14	0.00	6265 (m)	511.9 -> 169.0	146.4	66.4	199.1



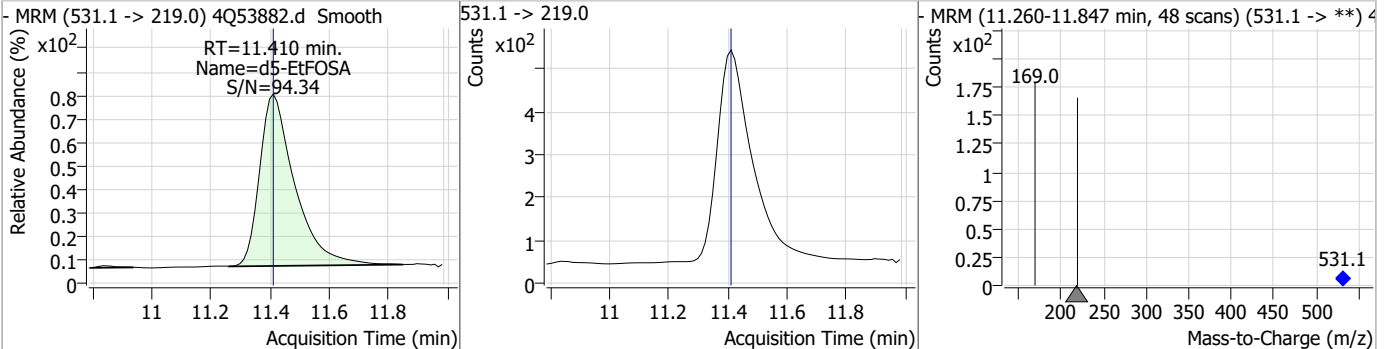
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	19.73	11.32	0.00	29143				



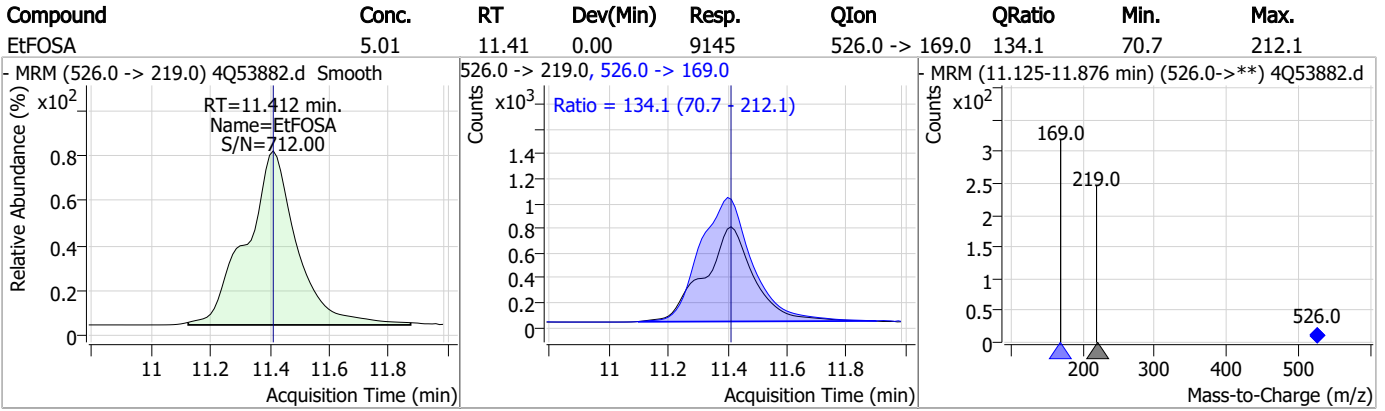
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.05	11.33	0.00	13119				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	1.65	11.41	0.00	4045				



Perfluorinated Compounds by LC/MS/MS



7.4.1

7

Manual Integration Approval Summary

Sample Number: OP58-MS Method: EPA DRAFT 1633
Lab FileID: 4Q53882.D Analyst approved: 11/16/23 14:16 Anna Ludwig
Injection Time: 11/15/23 14:38 Supervisor approved: 11/16/23 15:26 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.03	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
MeFOSA	31506-32-8		11.14	Split peak

7.4.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53884.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/15/2023 3:07:38 PM
 Sample Name : op58-dup
 Vial : P2-A5
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q786.batch.bin
 Sample Information : OP58,S4Q786,540,,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	2322	10.00 µg/L	0.000
M5-PFPeA	4.137	268.3 -> 223.0	7356	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	25980	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	25877	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	29323	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	11788	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	9040	1.25 µg/L	-0.013
M7-PFUnDA	8.461	570.0 -> 525.1	10330	1.25 µg/L	-0.012
M2-PFDoDA	8.892	615.1 -> 570.0	9763	1.25 µg/L	-0.012
M2-PFTeDA	9.662	715.2 -> 670.0	7967	1.25 µg/L	0.000
M8-FOSA	9.806	506.1 -> 77.8	6895	2.50 µg/L	-0.012
M3-PFBS	5.177	302.1 -> 79.9	6996	2.50 µg/L	-0.025
M3-PFHxS	7.029	402.1 -> 79.9	6108	2.50 µg/L	-0.025
M8-PFOS	8.117	507.1 -> 79.9	6186	2.50 µg/L	-0.026
M2-4:2FTS	5.021	329.1 -> 80.9	1432	5.00 µg/L	-0.025
M2-6:2FTS	6.748	429.1 -> 80.9	2018	5.00 µg/L	-0.012
M2-8:2FTS	7.804	529.1 -> 80.9	2718	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	12984	5.00 µg/L	-0.012
M3-HFPO-DA	5.664	286.9 -> 168.9	20410	10.00 µg/L	-0.037
M5-EtFOSAA	8.296	589.2 -> 419.0	11598	5.00 µg/L	-0.014
M7-MeFOSE	11.034	623.2 -> 58.9	23271	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	27723	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	5365	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	4406	2.50 µg/L	0.000
13C4-PFOS	8.118	502.8 -> 79.9	5278	2.50 µg/L	-0.026
13C3-PFBA	2.691	216.0 -> 172.0	41246	5.00 µg/L	-0.013
18O2-PFHxS	7.028	403.0 -> 83.9	3905	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	34832	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	9449	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	12925	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	30213	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.021	329.1 -> 80.9	1432	10.71 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 214.2%		
13C2-6:2FTS	6.748	429.1 -> 80.9	2018	7.17 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 143.3%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2718	6.85 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 136.9%		
13C2-PFDoDA	8.892	615.1 -> 570.0	9763	1.15 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.6%		
13C2-PFTeDA	9.662	715.2 -> 670.0	7967	0.93 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 74.3%		
13C3-PFBS	5.177	302.1 -> 79.9	6996	2.39 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.5%		
13C3-PFHxS	7.029	402.1 -> 79.9	6108	2.52 µg/L	-0.025

7.5.1
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C4-PFBA	2.699	216.8 -> 171.9	2322	0.27 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 2.7%		
13C4-PFHpA	6.267	367.1 -> 322.0	25877	2.46 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C5-PFHxA	5.310	318.0 -> 273.0	25980	2.31 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.2%		
13C5-PFPeA	4.137	268.3 -> 223.0	7356	1.00 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 20.0%		
13C6-PFDA	8.004	519.1 -> 474.1	9040	1.30 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C7-PFUnDA	8.461	570.0 -> 525.1	10330	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.8%		
13C8-FOSA	9.806	506.1 -> 77.8	6895	2.73 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.3%		
13C8-PFOA	6.964	421.1 -> 376.0	29323	2.36 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.3%		
13C8-PFOS	8.117	507.1 -> 79.9	6186	2.45 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C9-PFNA	7.509	472.1 -> 427.0	11788	1.16 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.5%		
d3-MeFOSAA	8.086	573.2 -> 419.0	12984	6.49 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 129.7%		
13C3-HFPO-DA	5.664	286.9 -> 168.9	20410	7.94 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 79.4%		
d3-MeFOSA	11.139	515.0 -> 219.0	4406	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.1%		
d5-EtFOSAA	8.296	589.2 -> 419.0	11598	6.62 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 132.3%		
d7-MeFOSE	11.034	623.2 -> 58.9	23271	21.40 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 85.6%		
d9-EtFOSE	11.319	639.2 -> 58.9	27723	22.01 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 88.1%		
d5-EtFOSA	11.410	531.1 -> 219.0	5365	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.7%		

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	6.749	427.1 -> 407.0	1802	0.83 µg/L	95
		427.1 -> 80.9	635		
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	7.494	512.9 -> 469.0	0	µg/L m	1
		512.9 -> 219.0	0		
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	8.970	599.0 -> 79.9	0	µg/L m	1



7.5.1
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	0			
PFHpA	-	363.1 -> 319.0	-	N.D.		
		363.1 -> 169.0				
PFHpS	7.637	449.0 -> 79.9	0	µg/L	m	1
		449.0 -> 98.9	0			
PFHxA	-	313.0 -> 269.0	-	N.D.		
		313.0 -> 118.9				
PFHxS	-	398.7 -> 79.9	-	N.D.		
		398.7 -> 98.9				
PFNA	-	463.0 -> 419.0	-	N.D.		
		463.0 -> 219.0				
PFNS	8.949	548.8 -> 79.9	0	µg/L	m	1
		548.8 -> 98.9	0			
PFOA	-	413.0 -> 369.0	-	N.D.		
		413.0 -> 169.0				
PFOS	7.945	498.9 -> 79.9	0	µg/L	m	1
		498.9 -> 98.8	0			
PFPeA	-	263.0 -> 219.0	-	N.D.		
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	9.103	713.1 -> 669.0	0	µg/L	m	1
		713.1 -> 168.9	0			
PFTTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

= Qualifier out of range, m = manually integrated, + = Area summed



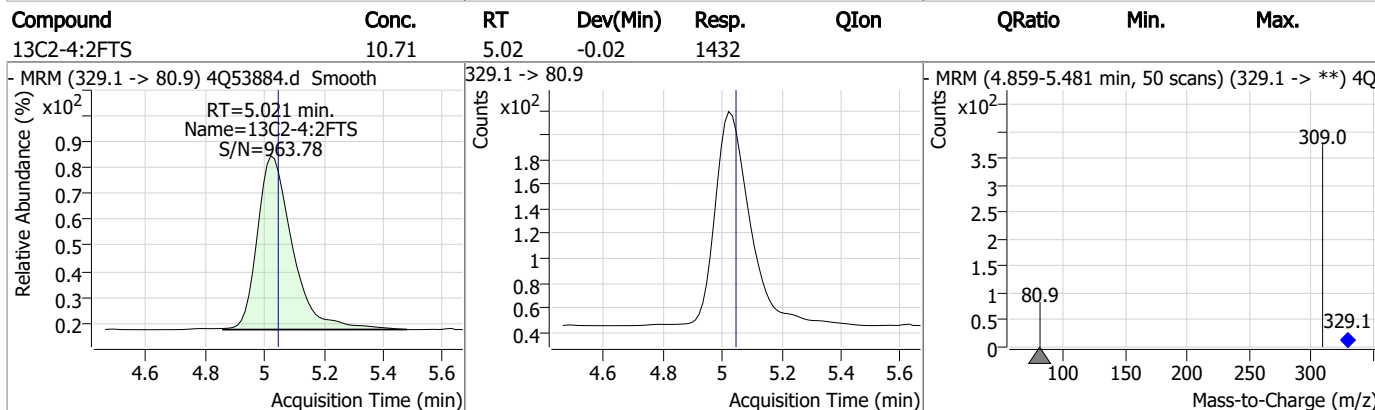
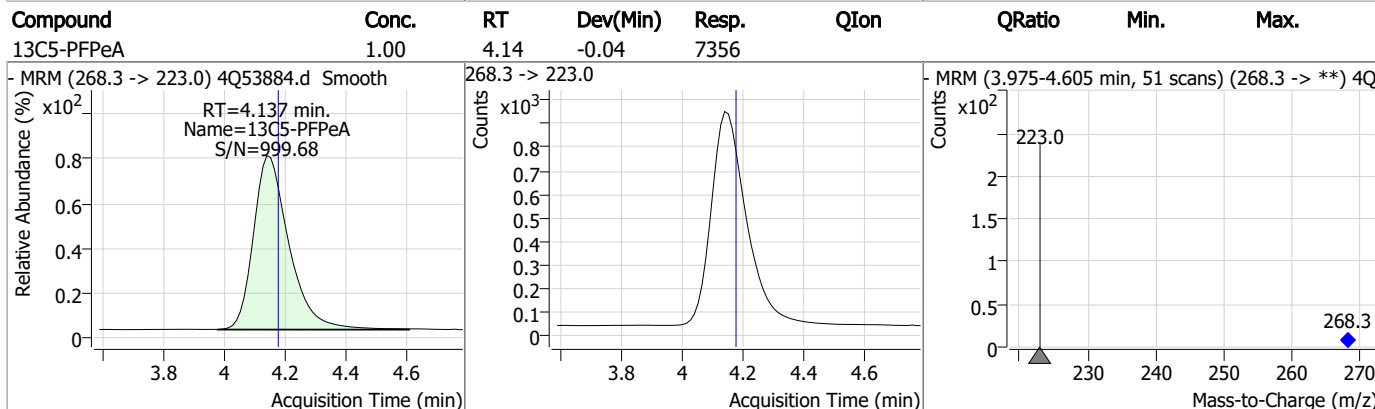
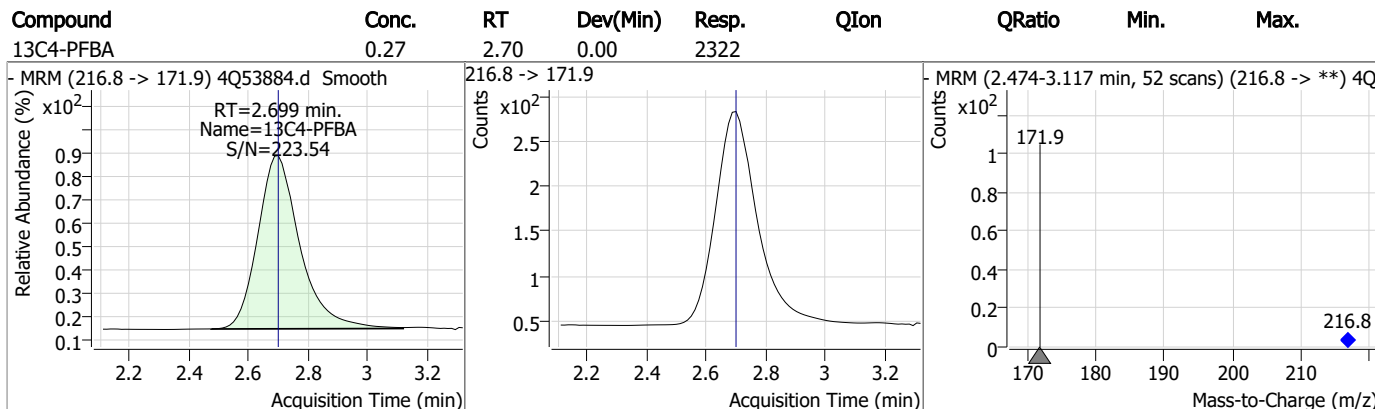
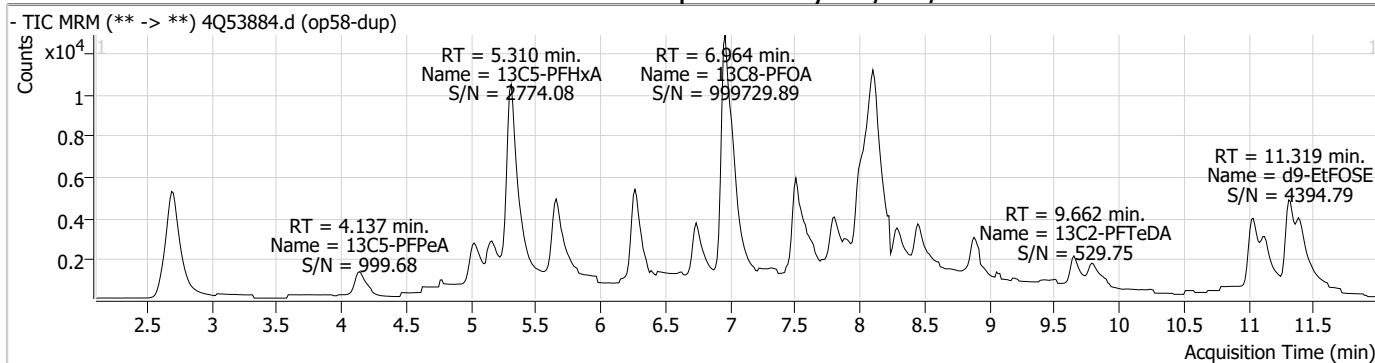
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.5.1

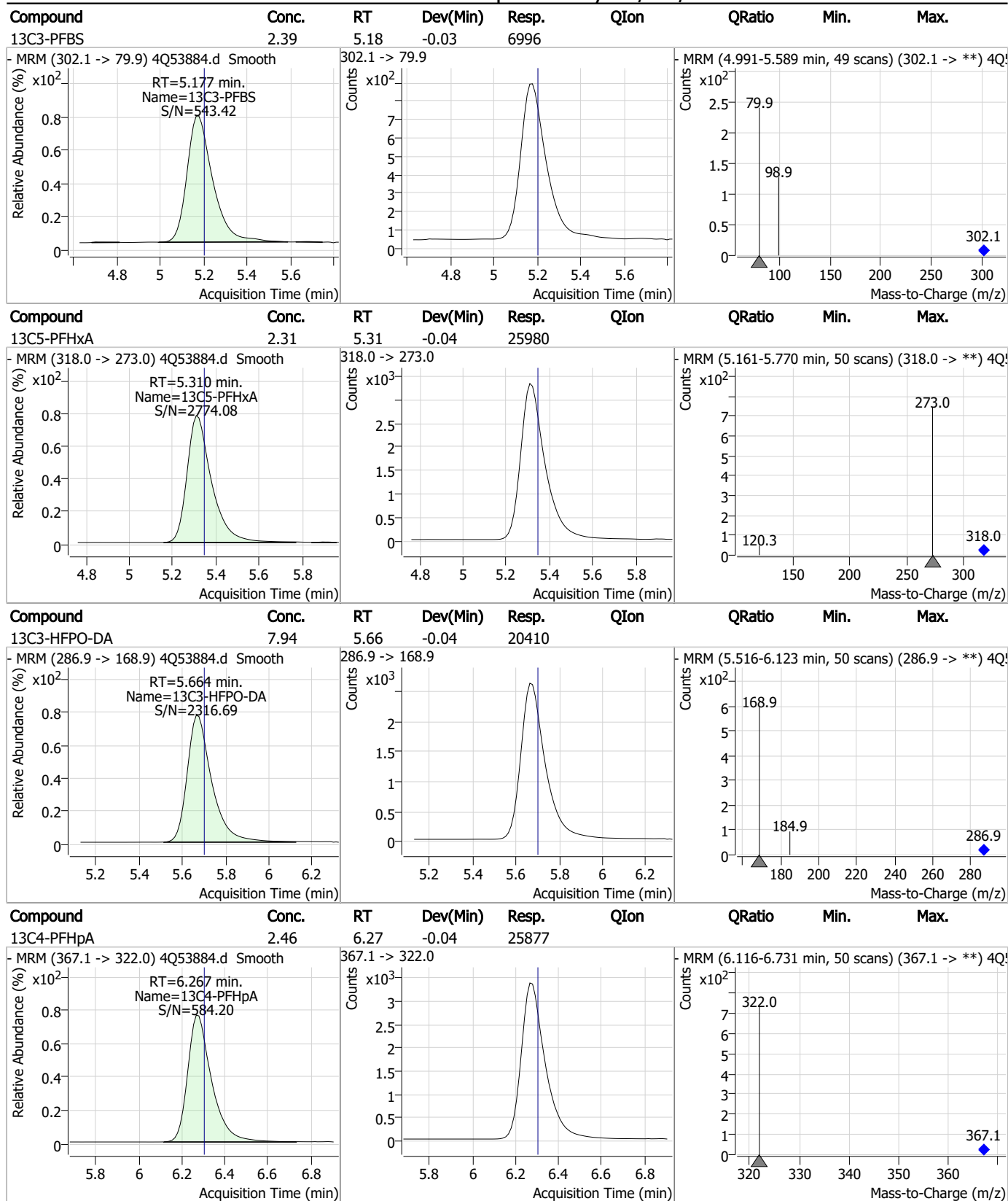
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Perfluorinated Compounds by LC/MS/MS



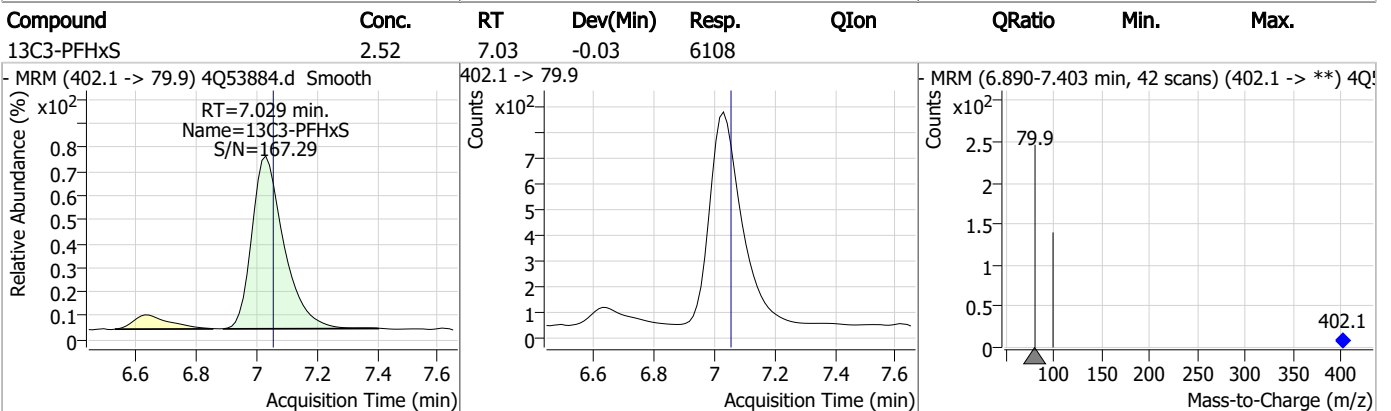
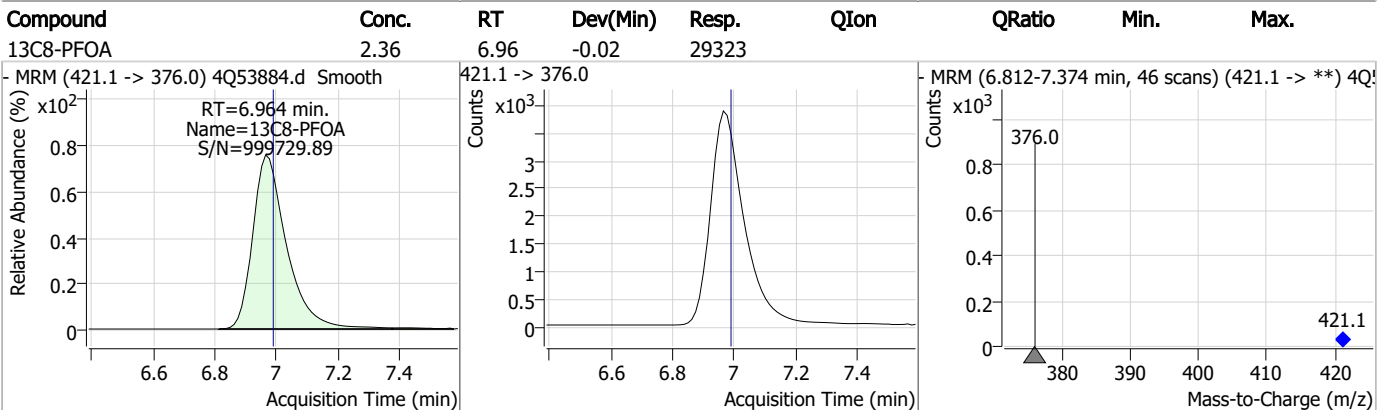
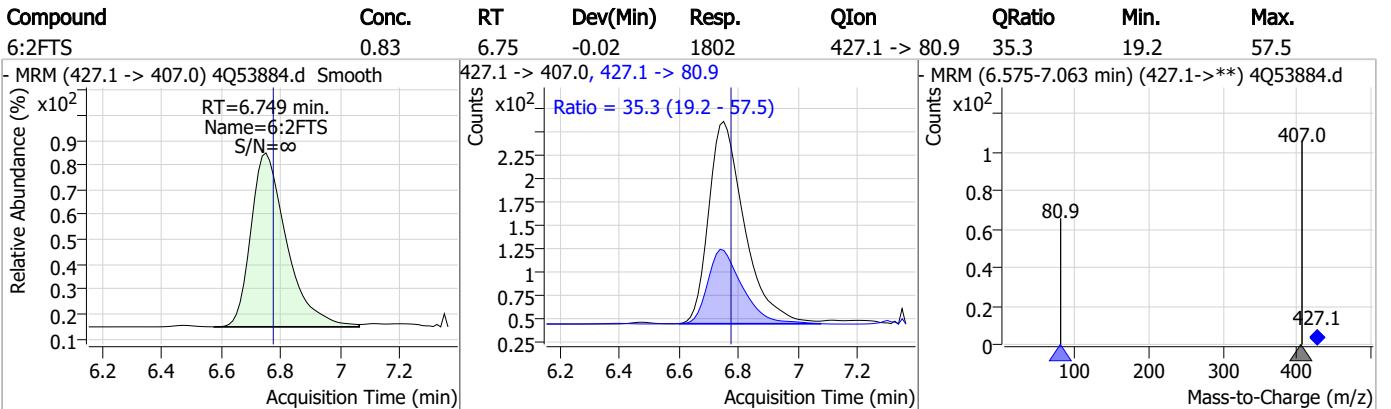
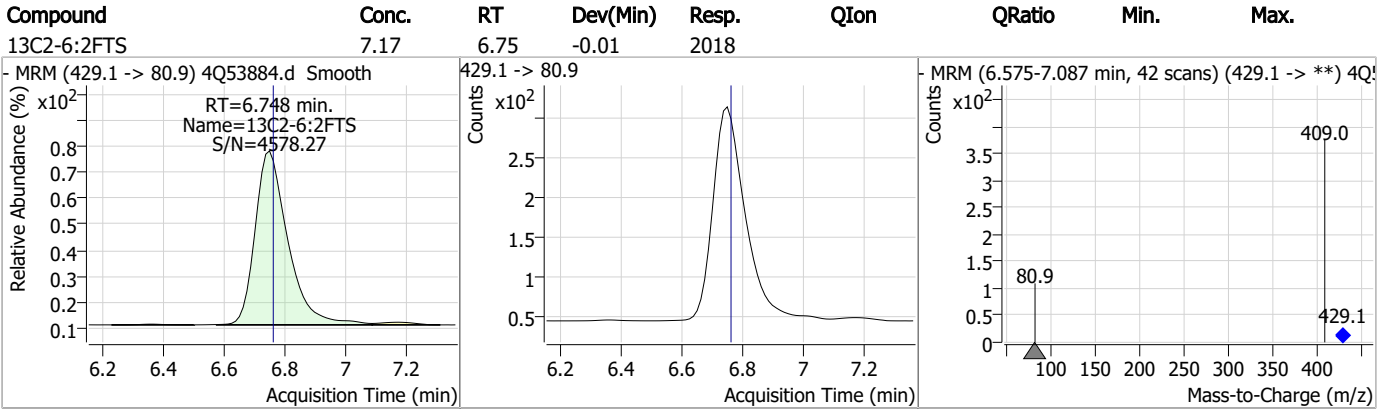
7.5.1
7

Perfluorinated Compounds by LC/MS/MS

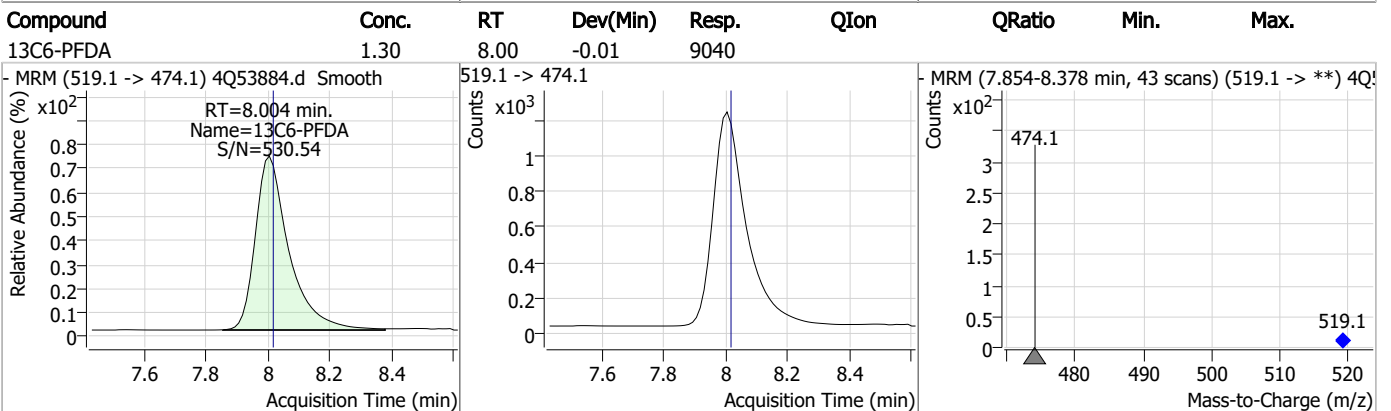
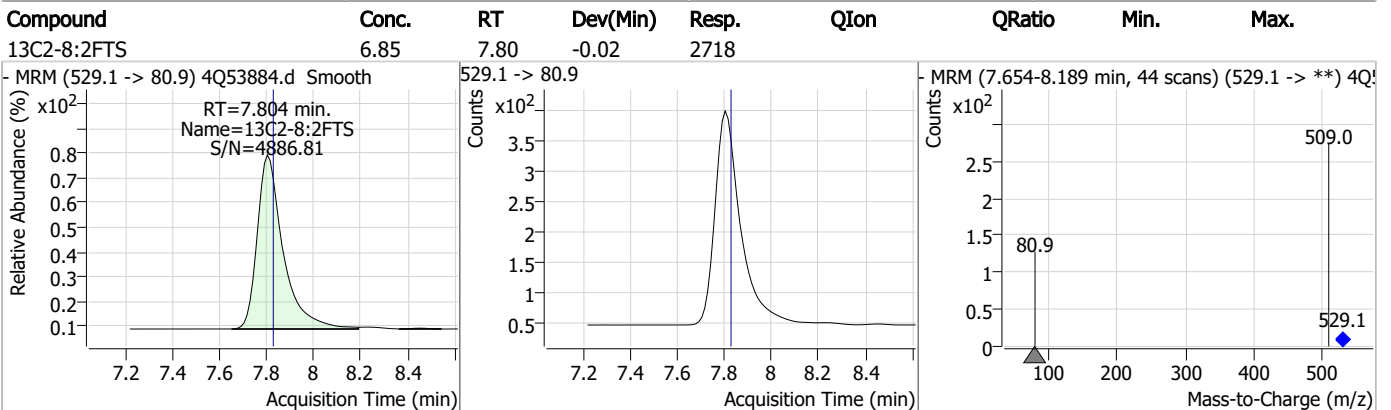
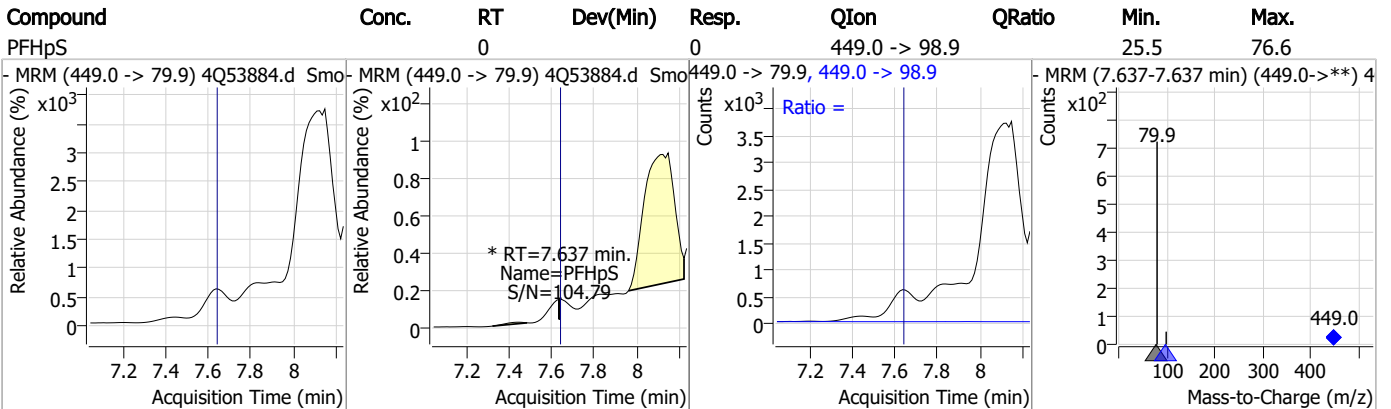
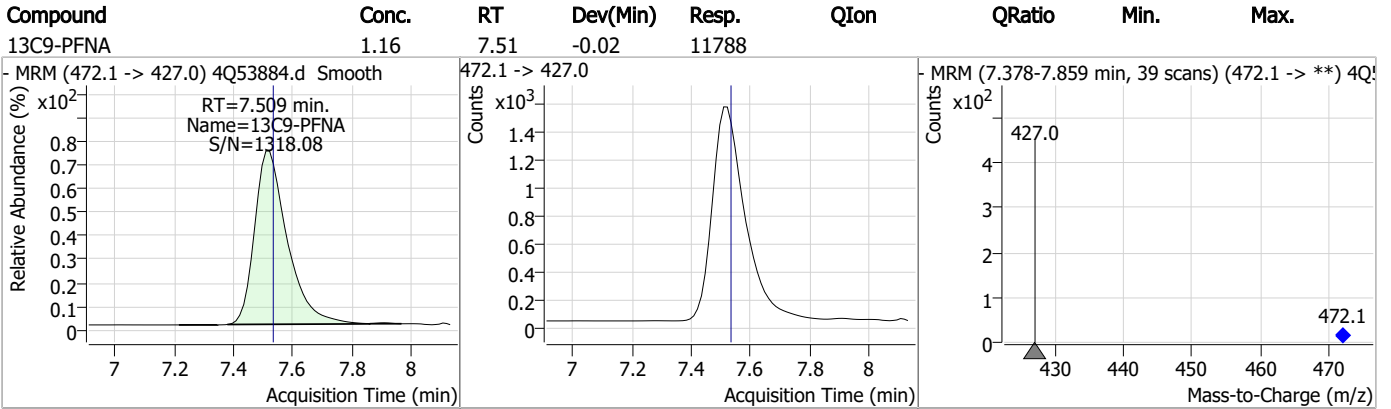


7.5.1
7

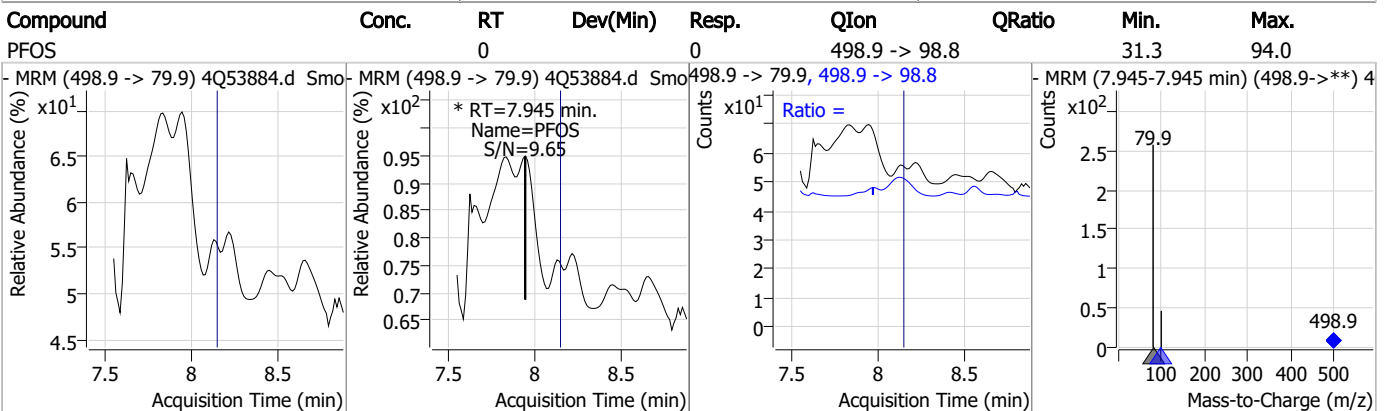
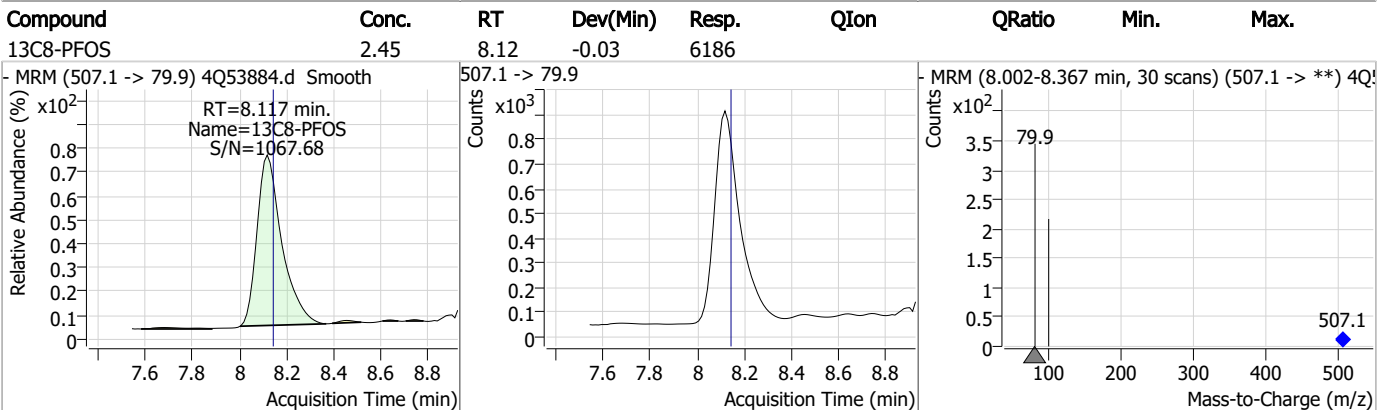
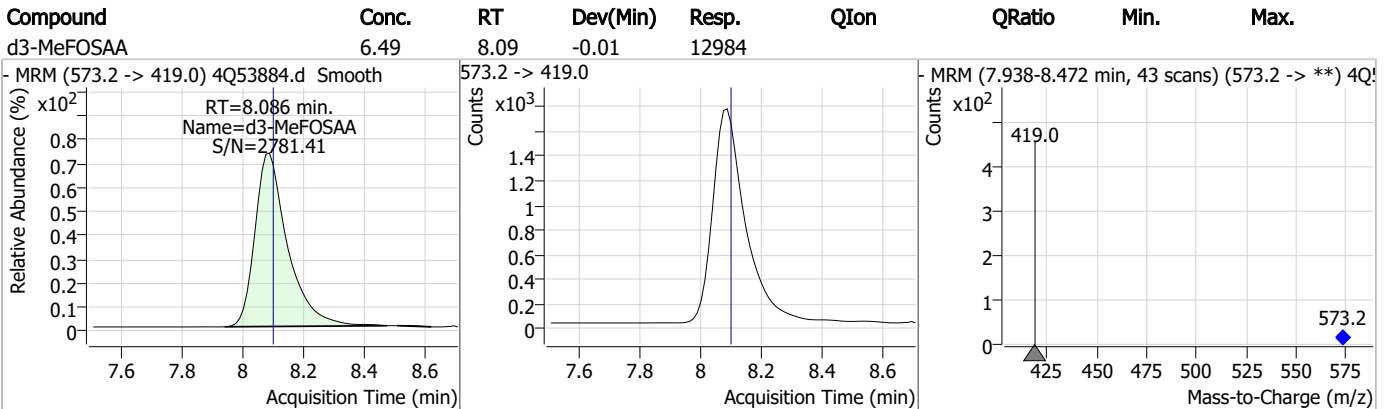
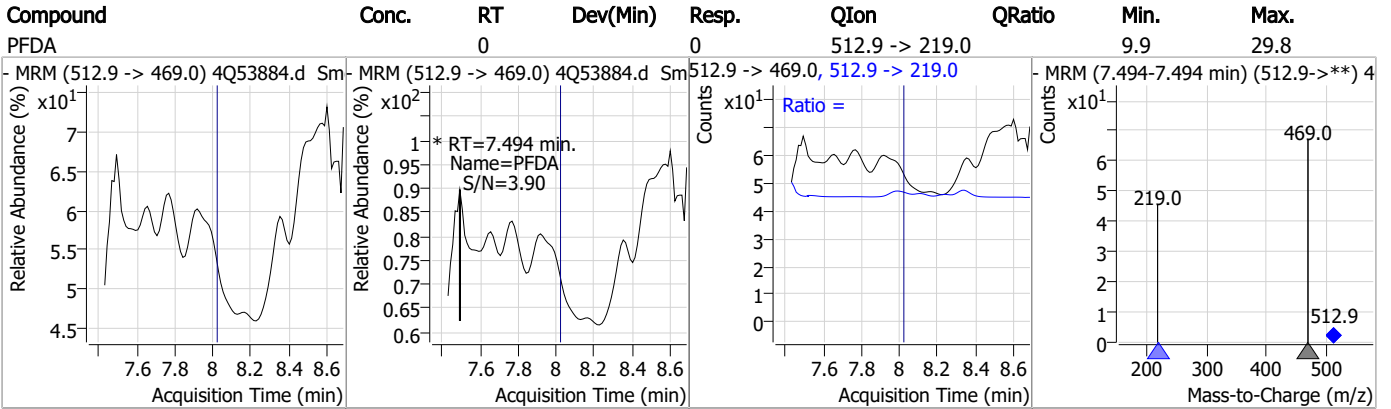
Perfluorinated Compounds by LC/MS/MS



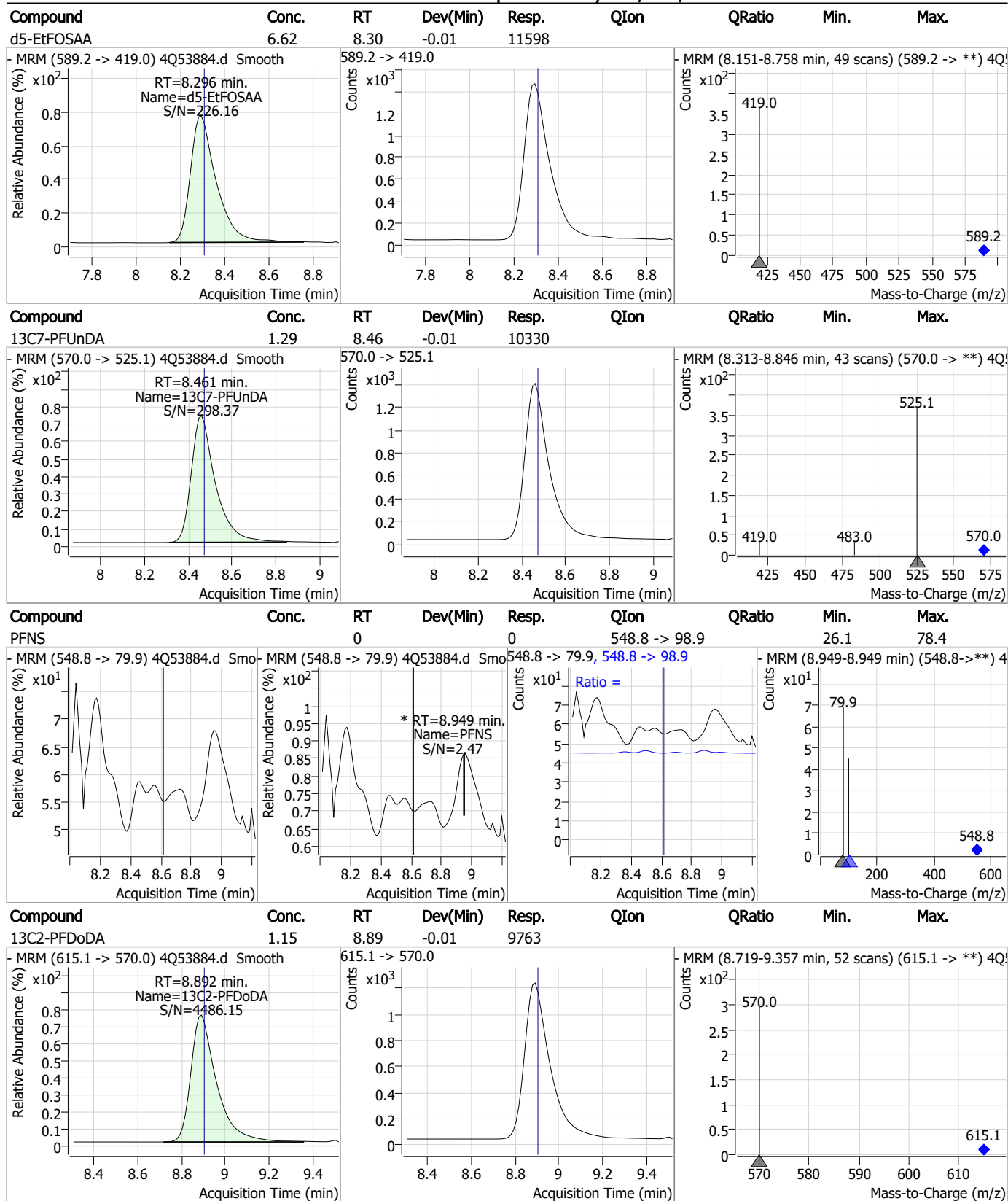
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

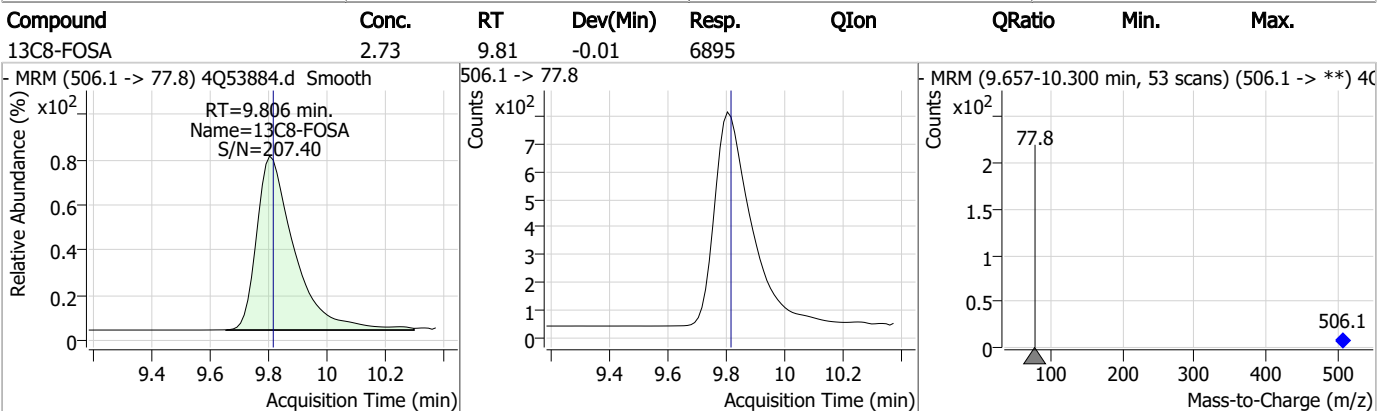
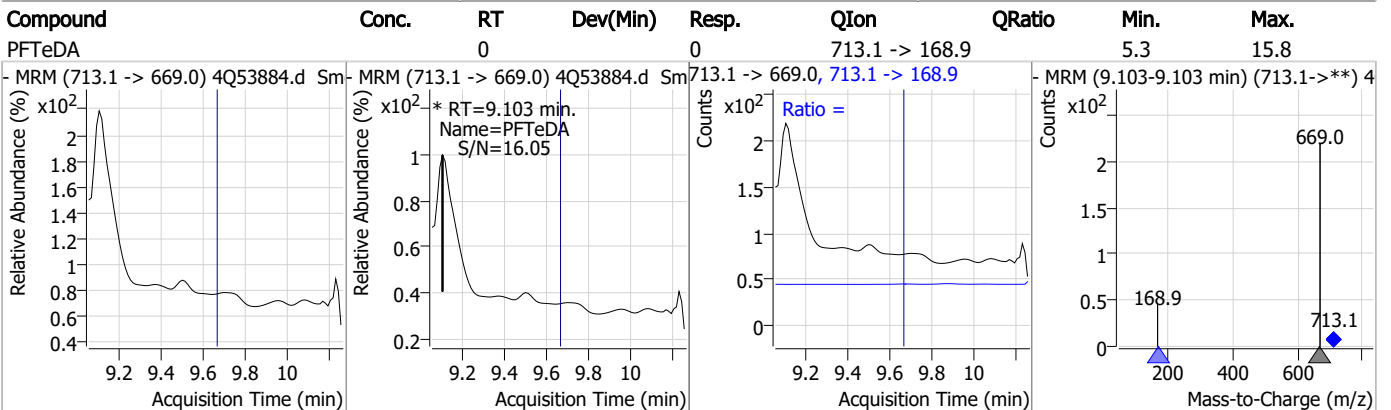
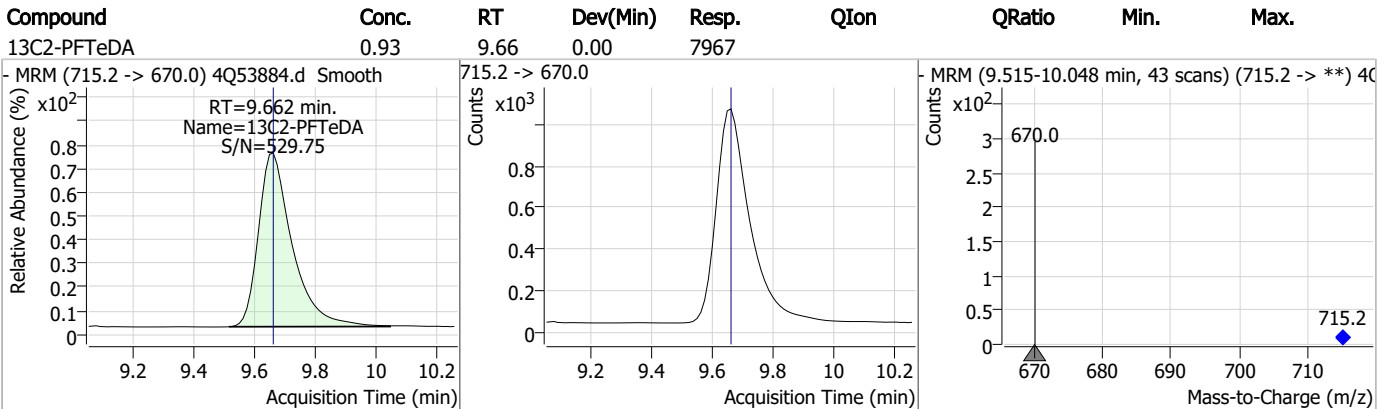
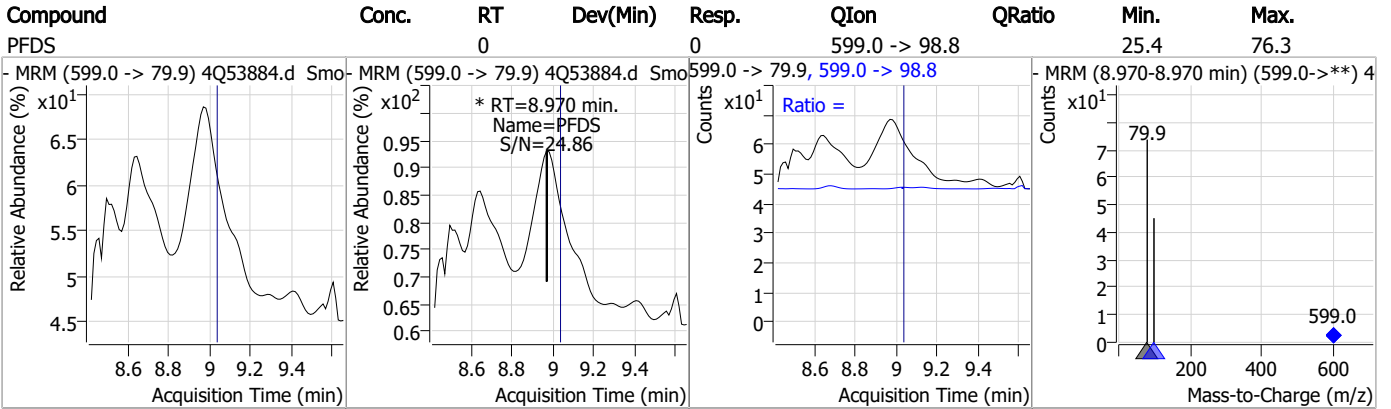


Perfluorinated Compounds by LC/MS/MS



7.5.1
7

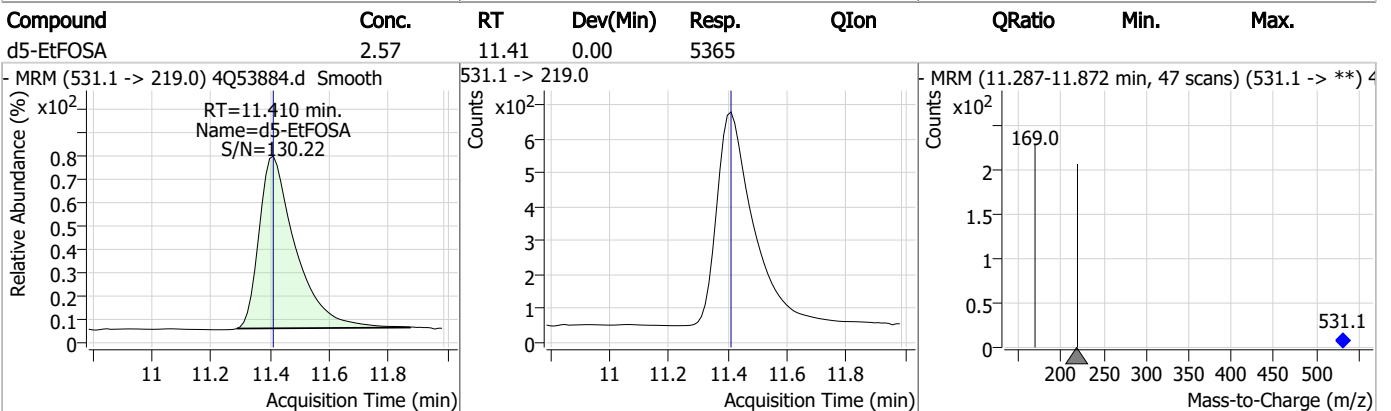
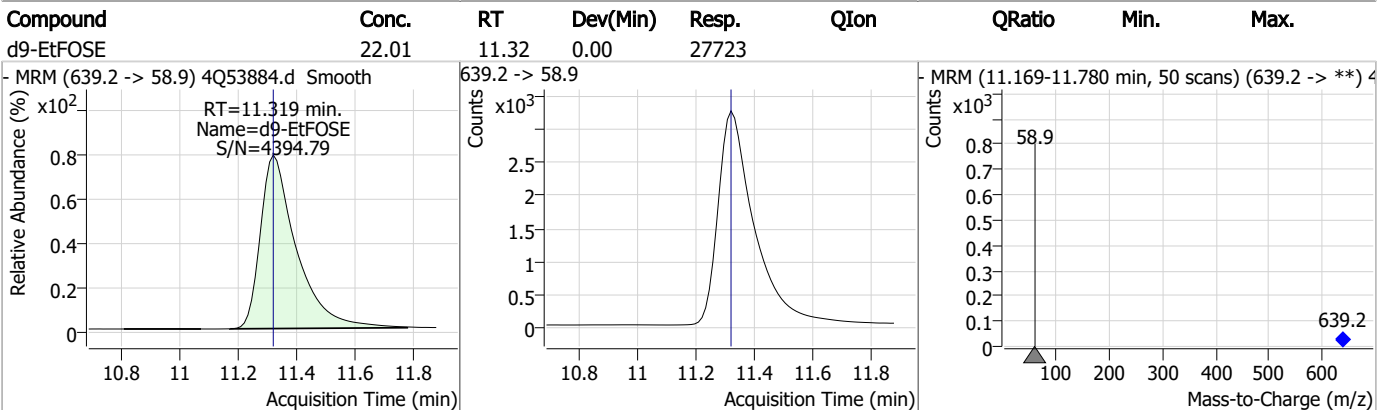
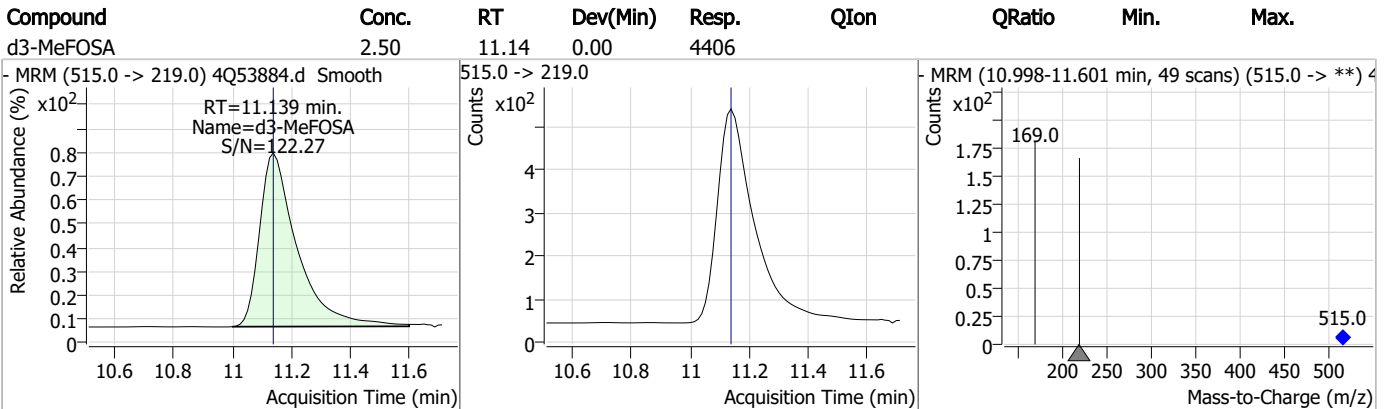
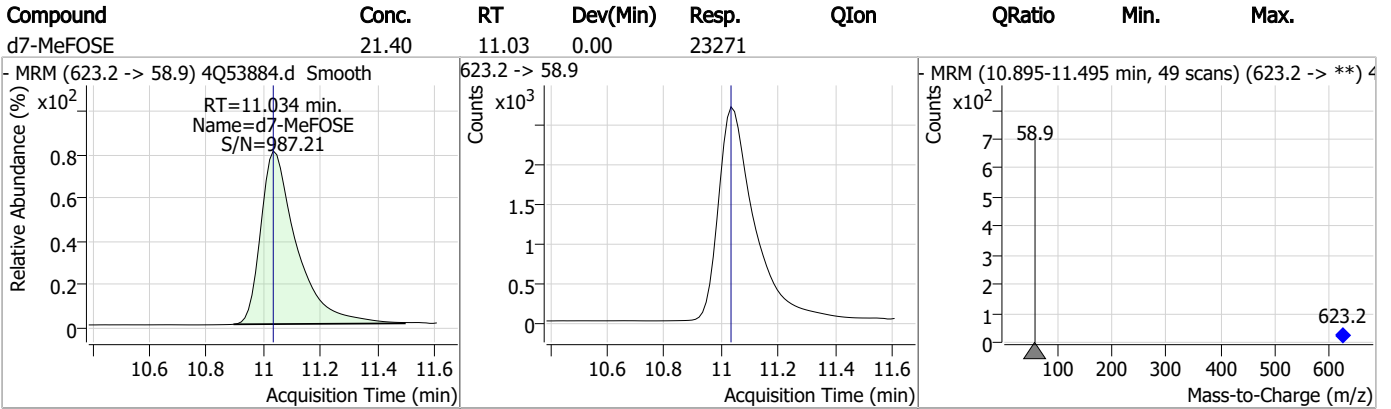
Perfluorinated Compounds by LC/MS/MS



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7

Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

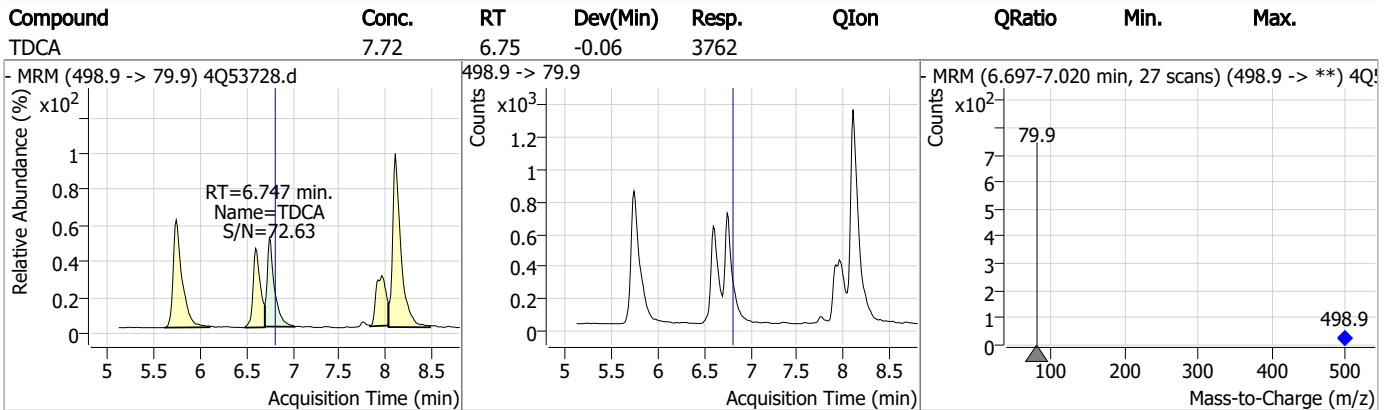
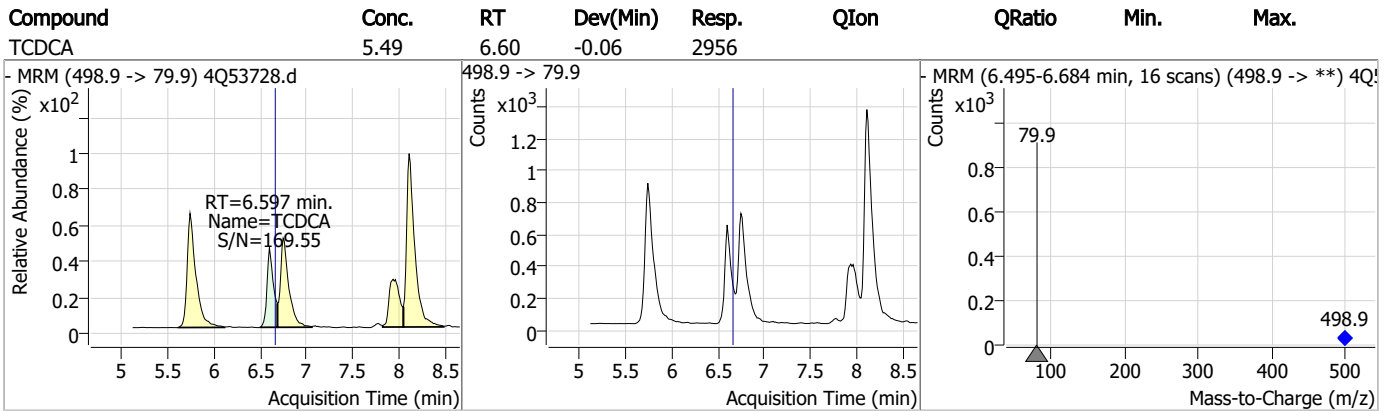
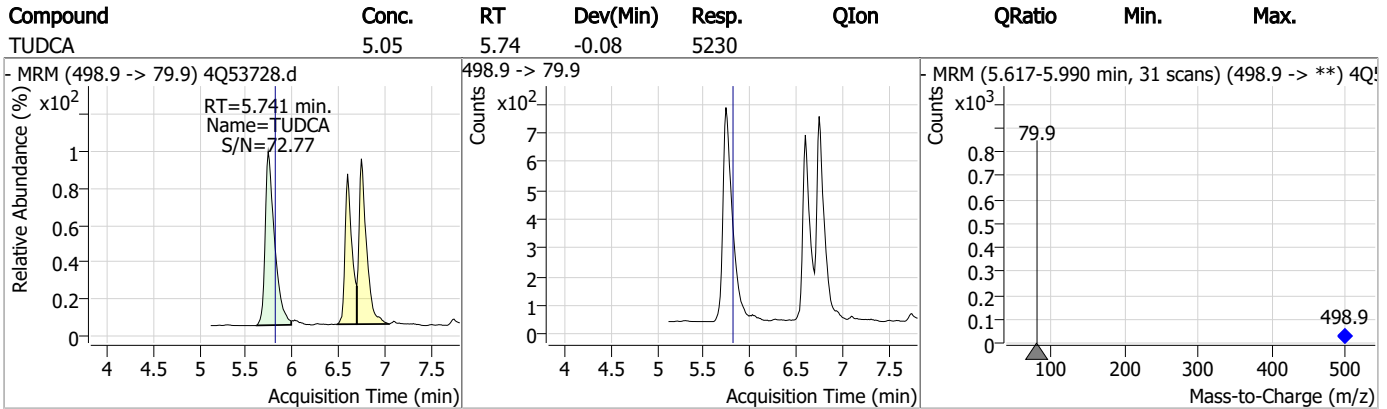
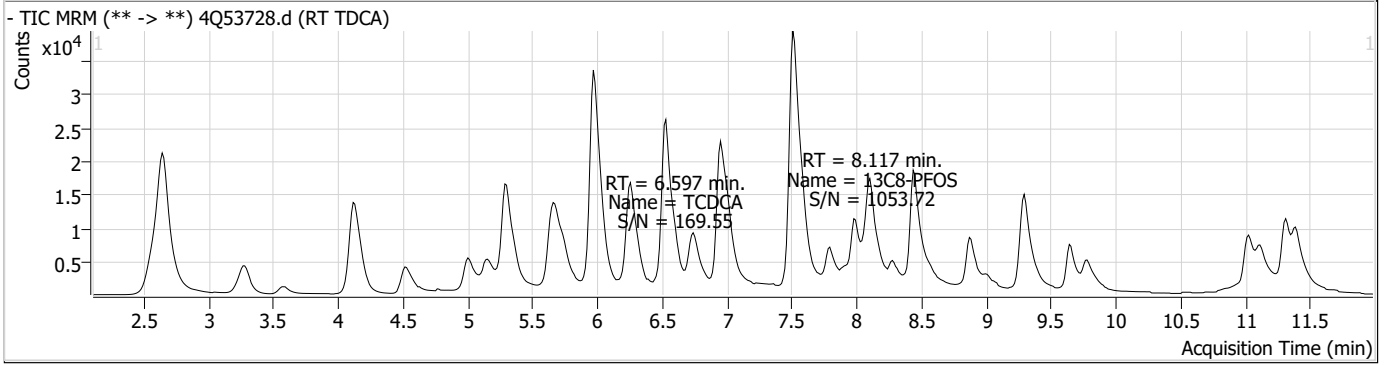
Data File : 4Q53728.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 2:55:58 PM
 Sample Name : RT TDCA
 Vial : P1-B1
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q785_TDCA.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.117	507.1 -> 79.9	11669	2.50	µg/L	-0.076	
13C4-PFOS	8.118	502.8 -> 79.9	9951	2.50	µg/L	-0.076	
System Monitoring Compounds							
13C8-PFOS	8.117	507.1 -> 79.9	11669	2.97	µg/L	-0.076	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 119.0%				
Target Compounds							
PFOS	8.119	498.9 -> 79.9 498.9 -> 98.8	11135 5434	2.79	µg/L m		97
TCDCa	6.597	498.9 -> 79.9	2956	5.49	ng/ml		100
TDCA	6.747	498.9 -> 79.9	3762	7.72	ng/ml		100
TUDCA	5.741	498.9 -> 79.9	5230	5.05	ng/ml		100

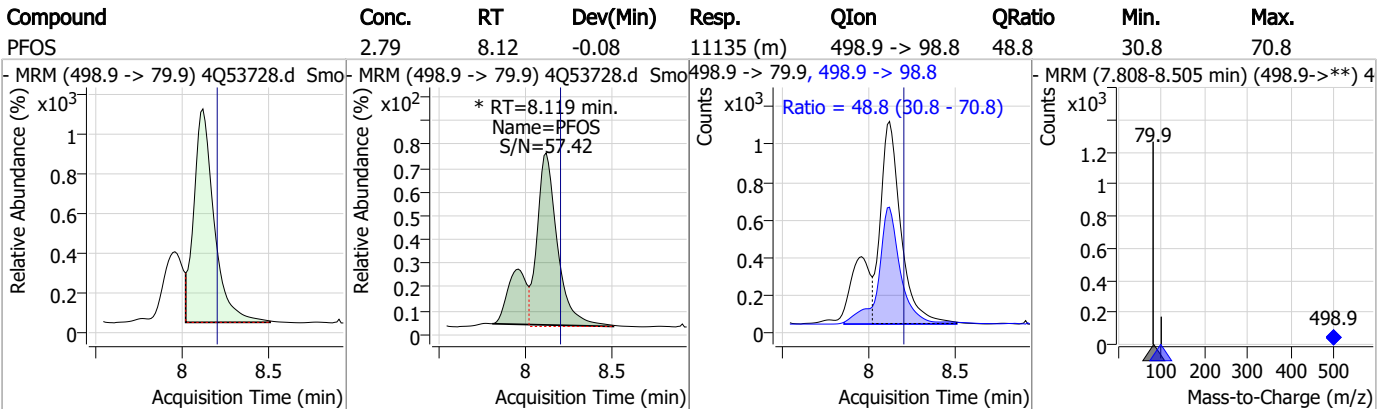
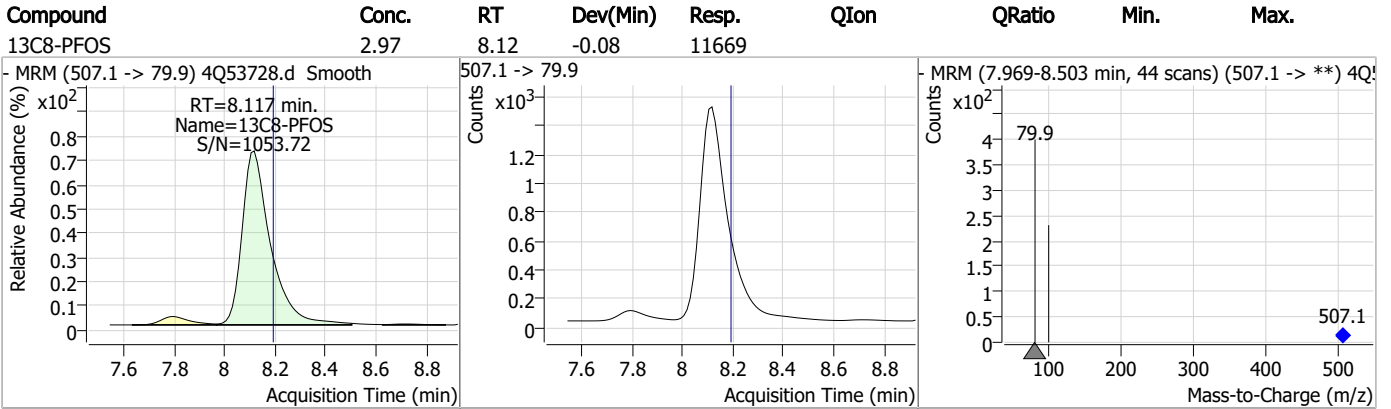
= Qualifier out of range, m = manually integrated, + = Area summed

7.6.1
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.1

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Manual Integration Approval Summary

Sample Number: S4Q785-RT Method: EPA DRAFT 1633
Lab FileID: 4Q53728.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 14:55 Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53729.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 3:10:43 PM
 Sample Name : RT_BR_LN
 Vial : P1-B2
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	104183	10.00 µg/L	-0.075
M5-PFPeA	4.125	268.3 -> 223.0	43528	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	35013	2.50 µg/L	-0.050
M4-PFHpA	6.255	367.1 -> 322.0	33413	2.50 µg/L	-0.050
M8-PFOA	6.964	421.1 -> 376.0	37118	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	15475	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	11432	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	12515	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	12708	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	13444	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	8528	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	9918	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	8191	2.50 µg/L	-0.037
M8-PFOS	8.105	507.1 -> 79.9	8607	2.50 µg/L	-0.038
M2-4:2FTS	4.996	329.1 -> 80.9	844	5.00 µg/L	-0.050
M2-6:2FTS	6.736	429.1 -> 80.9	1714	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2387	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	13674	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	32864	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	11323	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	34785	25.00 µg/L	-0.012
M9-EtFOSE	11.306	639.2 -> 58.9	43421	25.00 µg/L	-0.012
M5-EtFOSA	11.397	531.1 -> 219.0	7180	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	6235	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	7246	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	49500	5.00 µg/L	-0.075
18O2-PFHxS	7.016	403.0 -> 83.9	4883	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	41121	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	11593	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	14874	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	37748	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	844	5.05 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1714	4.87 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.4%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2387	4.81 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C2-PFDoDA	8.880	615.1 -> 570.0	12708	1.21 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C2-PFTeDA	9.649	715.2 -> 670.0	13444	1.28 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C3-PFBS	5.152	302.1 -> 79.9	9918	2.71 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.3%		
13C3-PFHxS	7.017	402.1 -> 79.9	8191	2.71 µg/L	-0.037

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.3%	
13C4-PFBA	2.624	216.8 -> 171.9	104183	10.10 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C4-PFHpA	6.255	367.1 -> 322.0	33413	2.54 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C5-PFHxA	5.297	318.0 -> 273.0	35013	2.49 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C5-PFPeA	4.125	268.3 -> 223.0	43528	4.73 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.5%	
13C6-PFDA	7.992	519.1 -> 474.1	11432	1.34 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.2%	
13C7-PFUnDA	8.448	570.0 -> 525.1	12515	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C8-FOSA	9.794	506.1 -> 77.8	8528	2.46 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C8-PFOA	6.964	421.1 -> 376.0	37118	2.53 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C8-PFOS	8.105	507.1 -> 79.9	8607	2.49 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C9-PFNA	7.509	472.1 -> 427.0	15475	1.32 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.5%	
d3-MeFOSAA	8.074	573.2 -> 419.0	13674	4.98 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C3-HFPO-DA	5.652	286.9 -> 168.9	32864	10.23 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.3%	
d3-MeFOSA	11.126	515.0 -> 219.0	6235	2.58 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.2%	
d5-EtFOSAA	8.283	589.2 -> 419.0	11323	4.70 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.1%	
d7-MeFOSE	11.022	623.2 -> 58.9	34785	23.31 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 93.2%	
d9-EtFOSE	11.306	639.2 -> 58.9	43421	25.12 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
d5-EtFOSA	11.397	531.1 -> 219.0	7180	2.50 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	72391	43.38 µg/L	100
		327.1 -> 80.9	30496		
6:2FTS	6.737	427.1 -> 407.0	87272	47.06 µg/L	97
		427.1 -> 80.9	31972		
8:2FTS	7.804	527.1 -> 507.0	61097	47.08 µg/L	98
		527.1 -> 80.8	26185		
EtFOSAA	8.284	584.2 -> 419.1	27477	13.55 µg/L	m 85
		584.2 -> 526.0	10903		
FOSA	9.798	498.1 -> 77.9	119520	28.75 µg/L	99
		498.1 -> 478.0	3408		
MeFOSAA	8.075	570.1 -> 419.0	29417	12.10 µg/L	95
		570.1 -> 483.0	6055		
PFBA	2.632	212.8 -> 168.9	186639	49.26 µg/L	100
PFBS	5.153	298.7 -> 79.9	37739	10.72 µg/L	97
		298.7 -> 98.8	13887		
PFDA	7.992	512.9 -> 469.0	104340	11.16 µg/L	100
		512.9 -> 219.0	20527		
PFDoDA	8.880	613.1 -> 569.0	134288	12.96 µg/L	96
		613.1 -> 319.0	22833		
PFDS	9.020	599.0 -> 79.9	27081	12.16 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	13329			
PFHpA	6.255	363.1 -> 319.0	256236	12.23	µg/L	98
		363.1 -> 169.0	46679			
PFHpS	7.612	449.0 -> 79.9	40343	11.85	µg/L	100
		449.0 -> 98.9	20559			
PFHxA	5.300	313.0 -> 269.0	151395	12.38	µg/L	99
		313.0 -> 118.9	4588			
PFHxS	7.018	398.7 -> 79.9	28425	11.50	µg/L	m 82
		398.7 -> 98.9	14386			
PFNA	7.496	463.0 -> 419.0	248471	25.18	µg/L	m 100
		463.0 -> 219.0	63483			
PFNS	8.586	548.8 -> 79.9	19716	12.00	µg/L	99
		548.8 -> 98.9	10508			
PFOA	6.965	413.0 -> 369.0	440645	24.52	µg/L	m 99
		413.0 -> 169.0	91734			
PFOS	8.119	498.9 -> 79.9	45777	11.72	µg/L	m 80
		498.9 -> 98.8	21541			
PFPeA	4.127	263.0 -> 219.0	243549	25.72	µg/L	100
PFPeS	6.245	349.1 -> 79.9	30804	11.44	µg/L	97
		349.1 -> 98.9	13866			
PFTeDA	9.650	713.1 -> 669.0	127081	12.45	µg/L	100
		713.1 -> 168.9	13257			
PFTrDA	9.279	663.0 -> 619.0	153070	13.57	µg/L	100
		663.0 -> 168.9	20819			
PFUnDA	8.449	563.1 -> 519.0	124841	12.20	µg/L	100
		563.1 -> 269.1	26869			
11CI-PF3OUdS	9.306	630.9 -> 450.9	232791	22.69	µg/L	99
		632.9 -> 452.9	71213			
9CI-PF3ONS	8.451	530.8 -> 351.0	229794	22.18	µg/L	98
		532.8 -> 353.0	70551			
ADONA	6.531	376.9 -> 250.9	597362	26.27	µg/L	100
		376.9 -> 84.8	148504			
HFPO-DA	5.653	284.9 -> 168.9	82009	23.56	µg/L	100
		284.9 -> 184.9	7826			
3:3FTCA	3.573	241.0 -> 177.0	36107	61.17	µg/L	100
		241.0 -> 117.0	3246			
5:3FTCA	5.983	341.0 -> 237.1	664977	308.91	µg/L	99
		341.0 -> 217.0	480609			
7:3FTCA	7.524	441.0 -> 316.9	298779	309.39	µg/L	95
		441.0 -> 336.9	703887			
EtFOSA	11.399	526.0 -> 219.0	130810	40.40	µg/L	97
		526.0 -> 169.0	180462			
EtFOSE	11.332	630.0 -> 58.9	125429	77.31	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	90224	39.87	µg/L	m 91
		511.9 -> 169.0	129576			
MeFOSE	11.047	616.1 -> 58.9	130471	82.32	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	20997	11.95	µg/L	98
		699.1 -> 98.8	11560			
NFDHA	5.179	295.0 -> 201.0	20644	25.56	µg/L	96
		295.0 -> 84.9	5298			
PFMBA	4.529	279.0 -> 85.1	138577	25.41	µg/L	100
PFMPA	3.265	229.0 -> 84.9	155822	25.70	µg/L	100
PFEESA	5.684	314.8 -> 134.9	216148	22.33	µg/L	99
		314.8 -> 82.9	7290			

= Qualifier out of range, m = manually integrated, + = Area summed

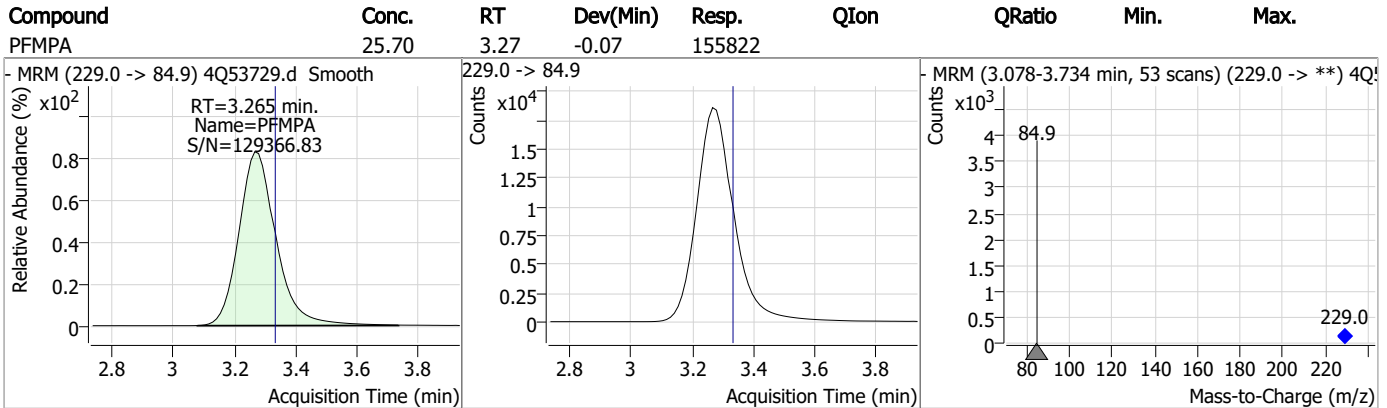
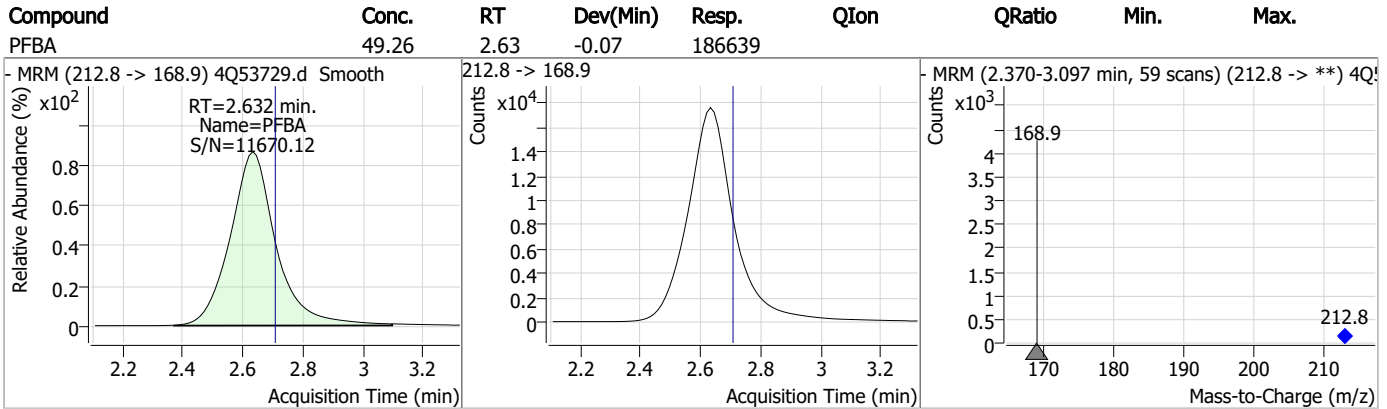
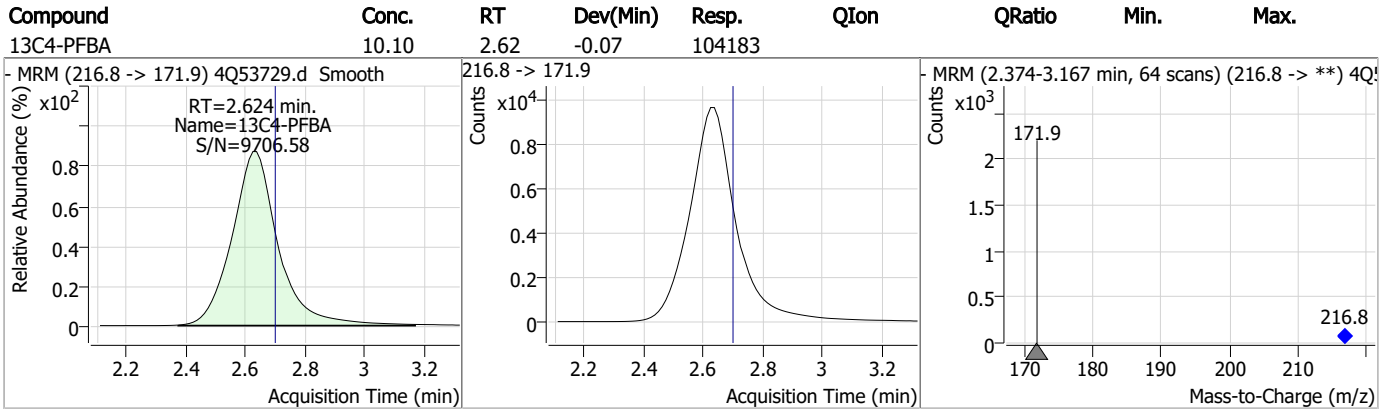
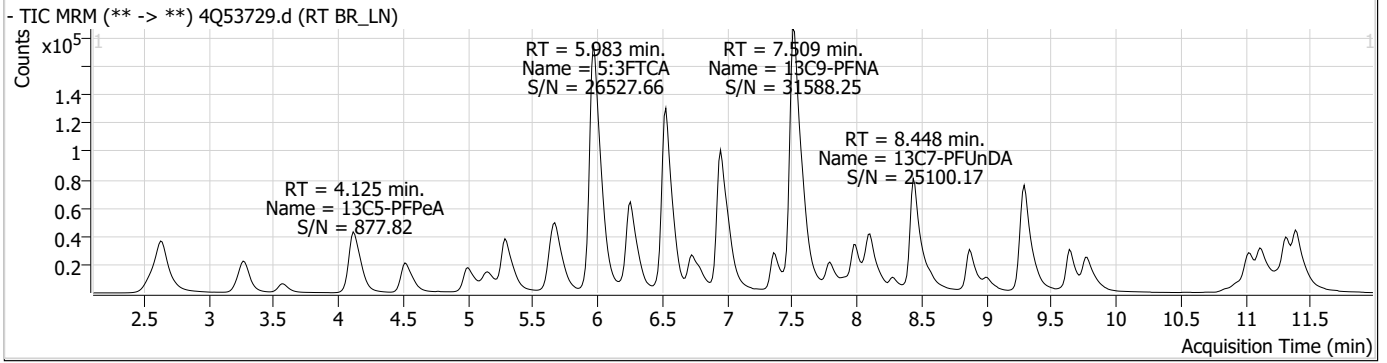
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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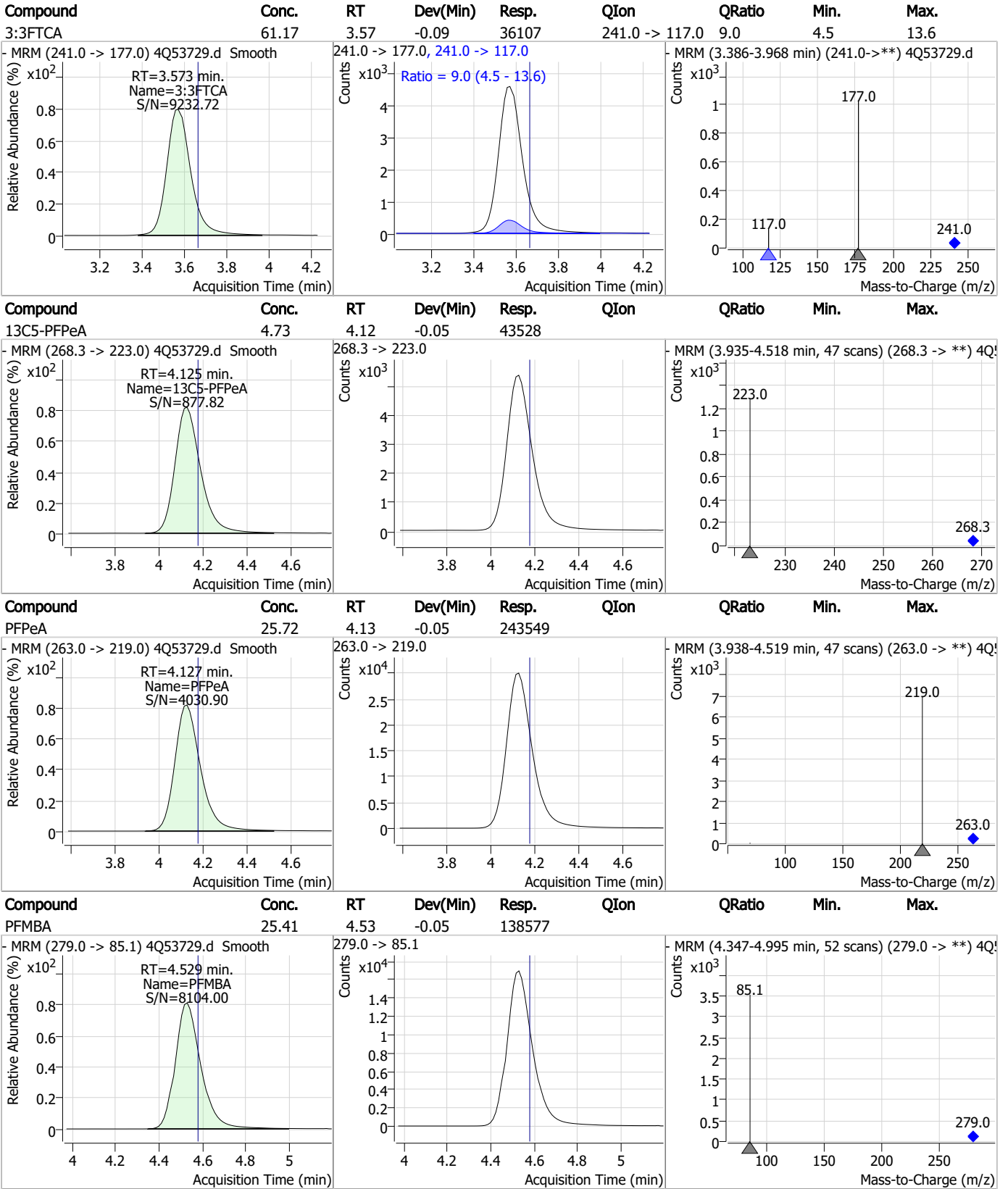
7.6.2

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Perfluorinated Compounds by LC/MS/MS



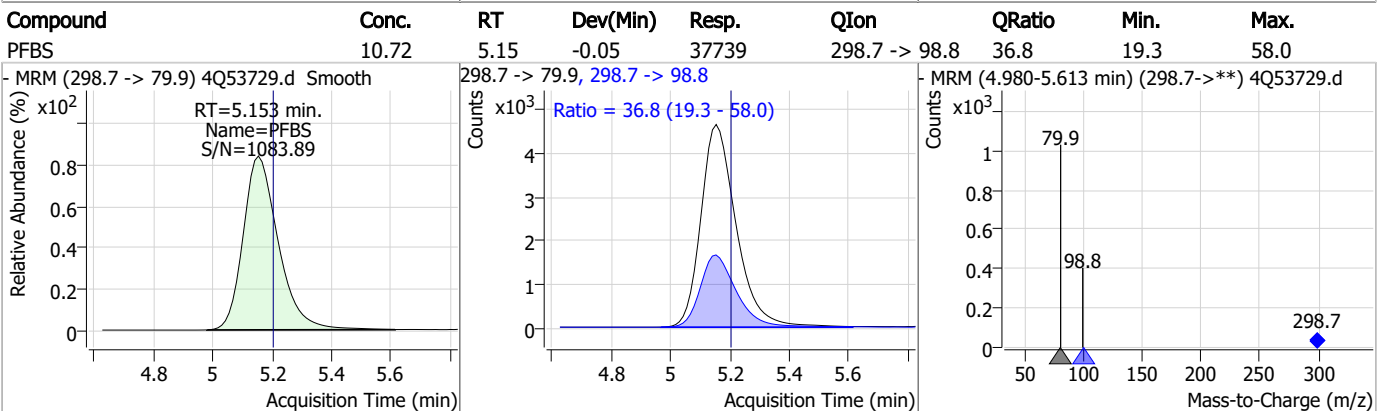
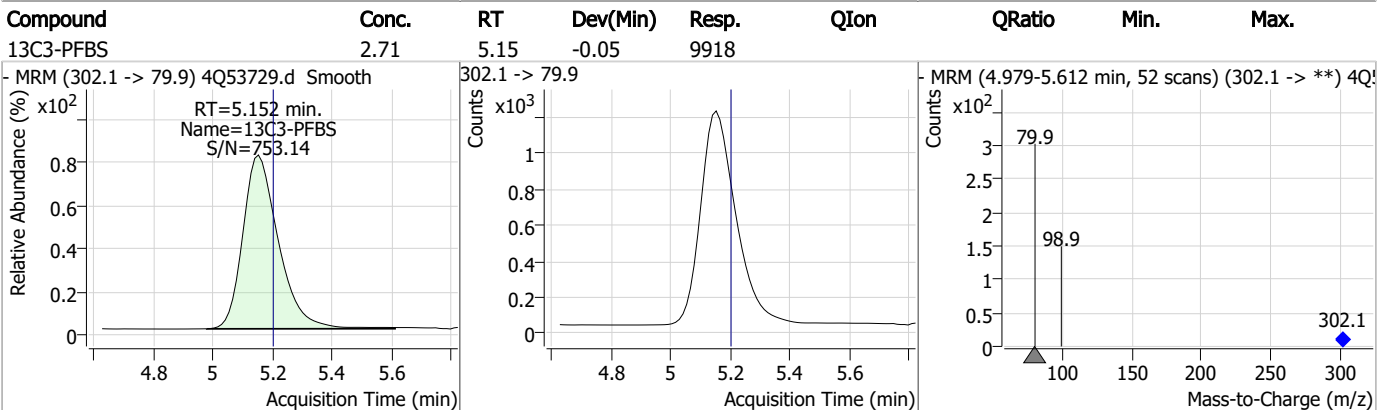
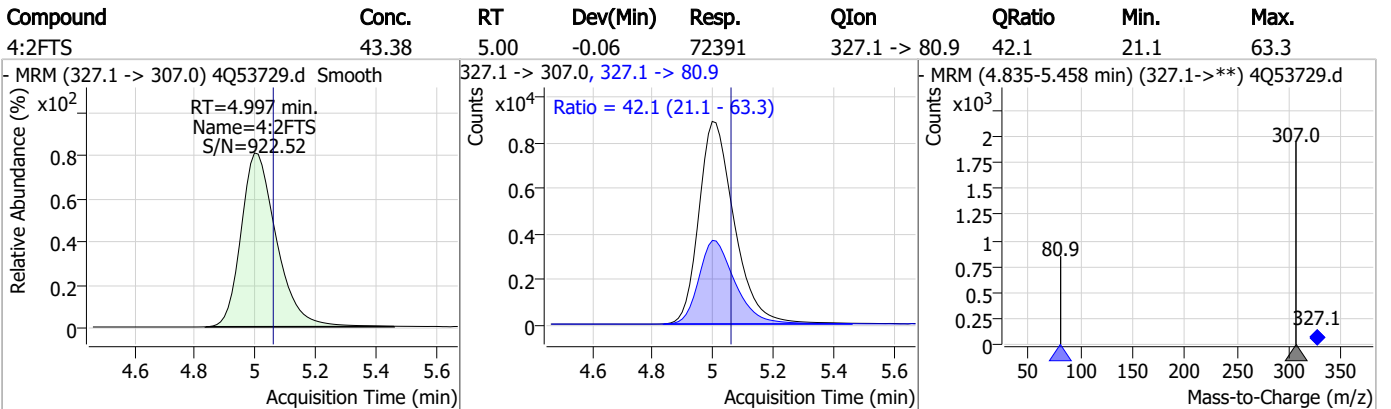
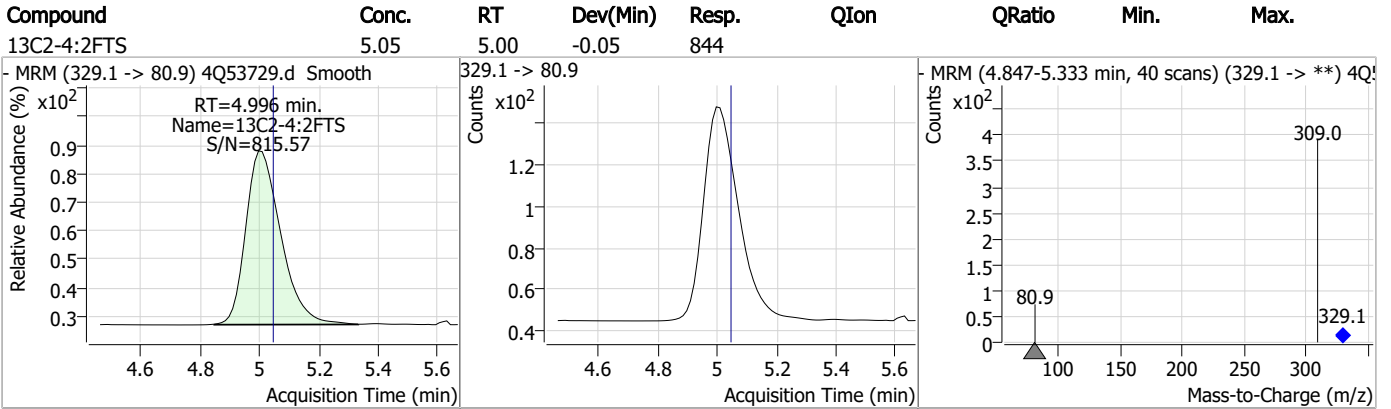
Perfluorinated Compounds by LC/MS/MS



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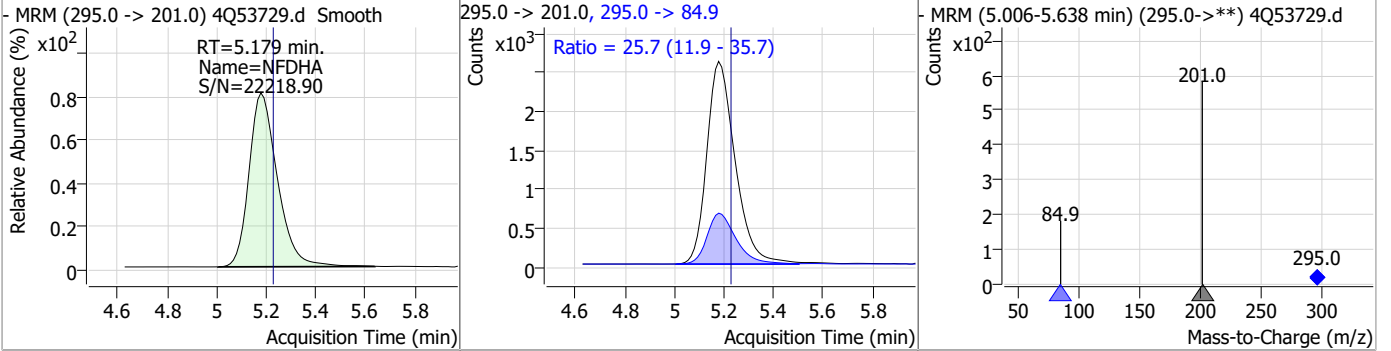
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Perfluorinated Compounds by LC/MS/MS

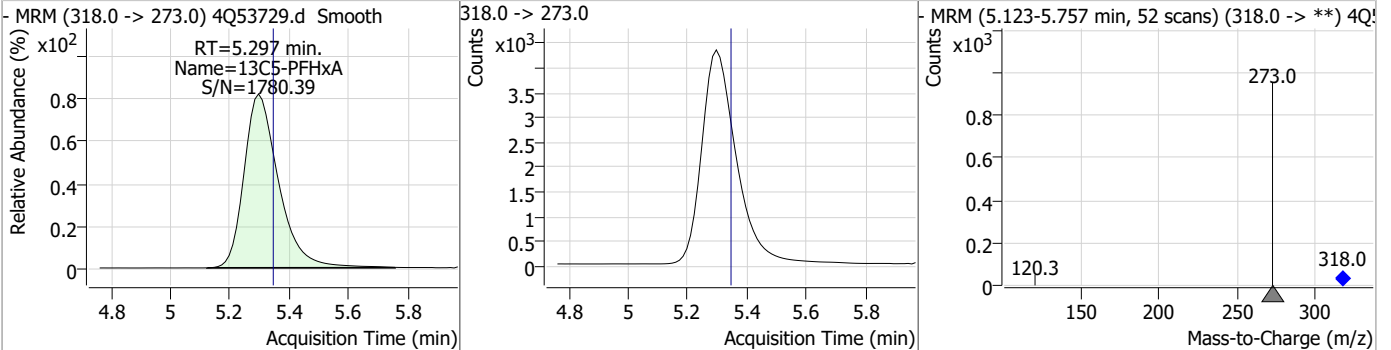


Perfluorinated Compounds by LC/MS/MS

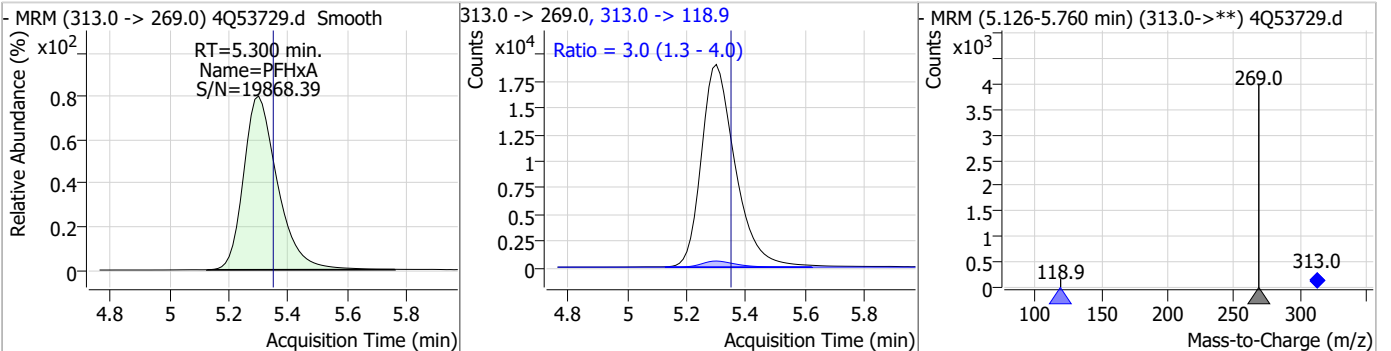
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	25.56	5.18	-0.05	20644	295.0 -> 84.9	25.7	11.9	35.7



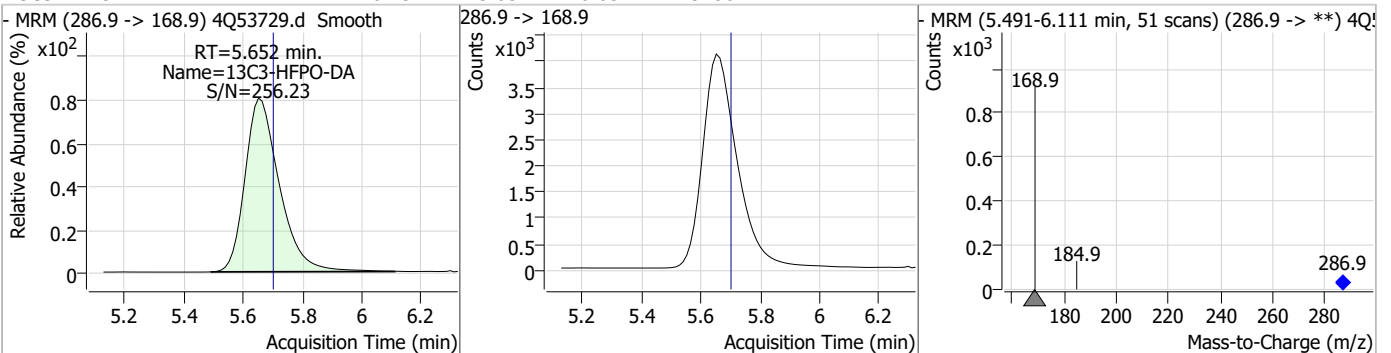
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.49	5.30	-0.05	35013				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	12.38	5.30	-0.05	151395	313.0 -> 118.9	3.0	1.3	4.0

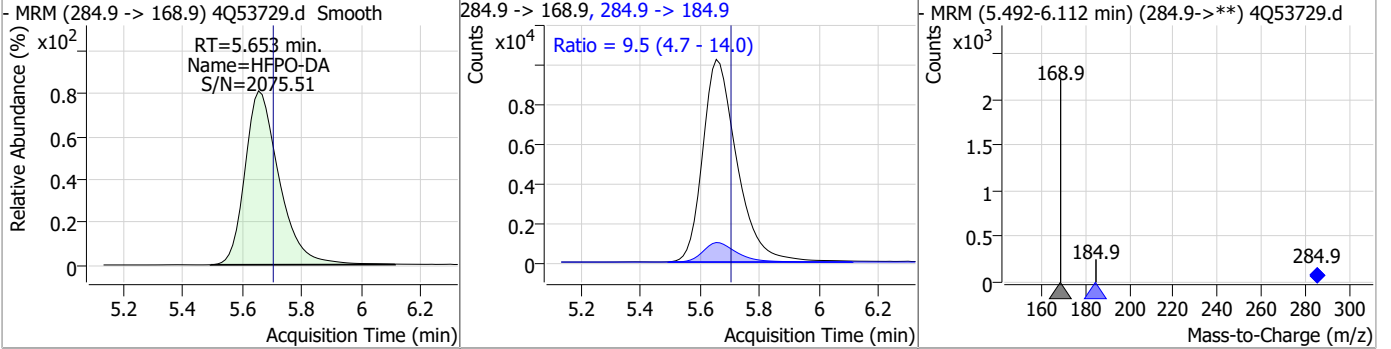


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.23	5.65	-0.05	32864				

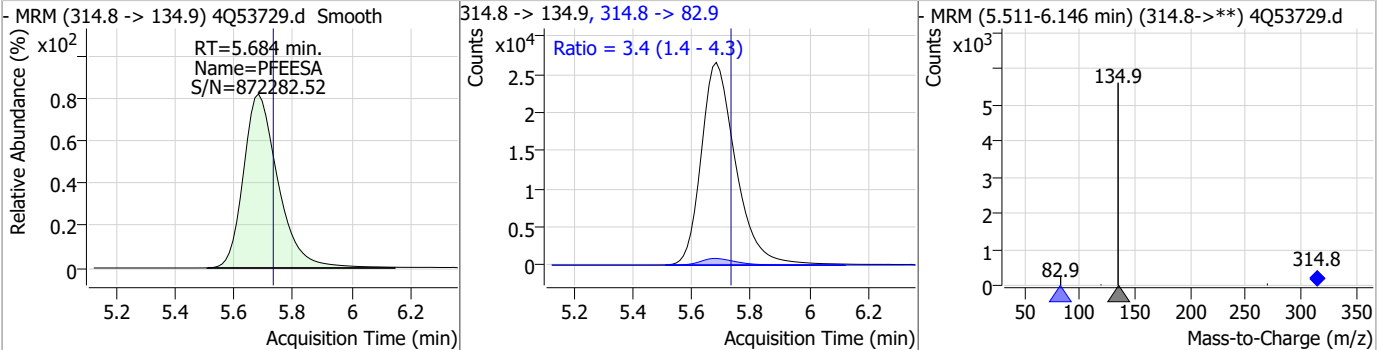


Perfluorinated Compounds by LC/MS/MS

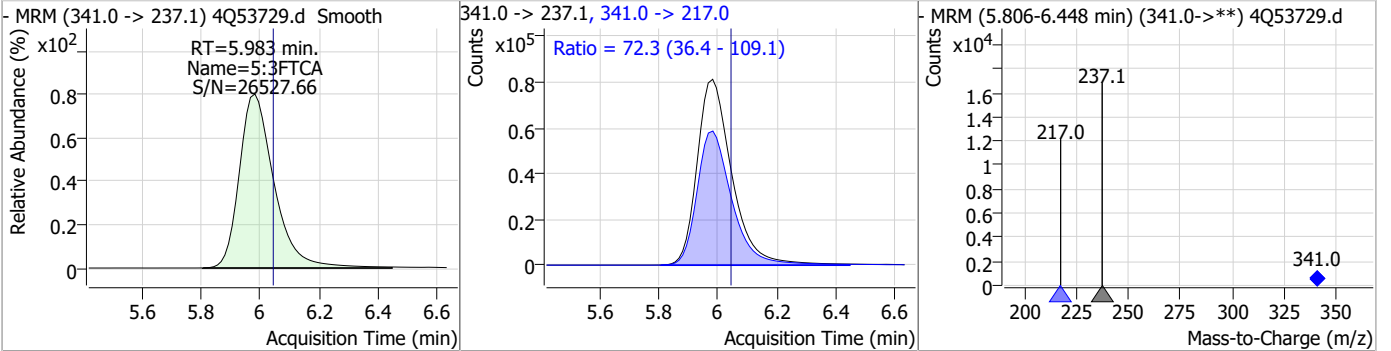
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	23.56	5.65	-0.05	82009	284.9 -> 184.9	9.5	4.7	14.0



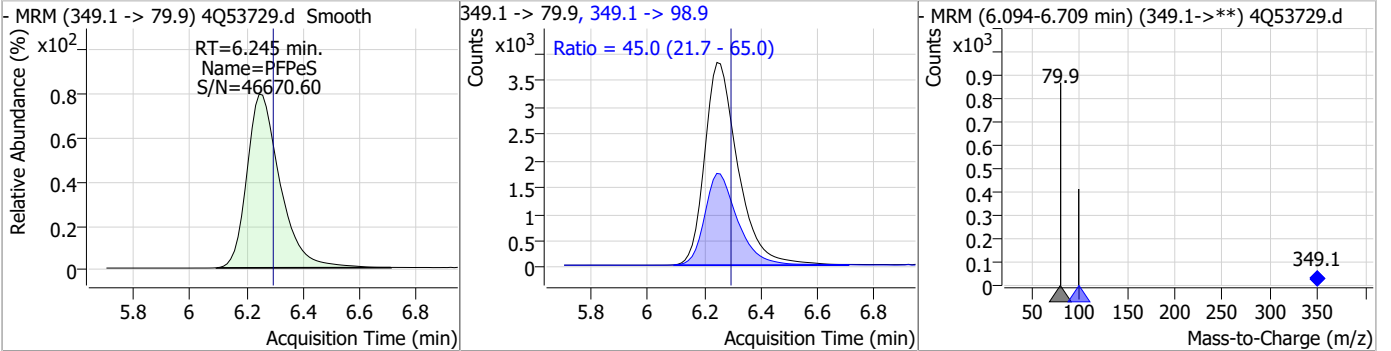
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	22.33	5.68	-0.05	216148	314.8 -> 82.9	3.4	1.4	4.3



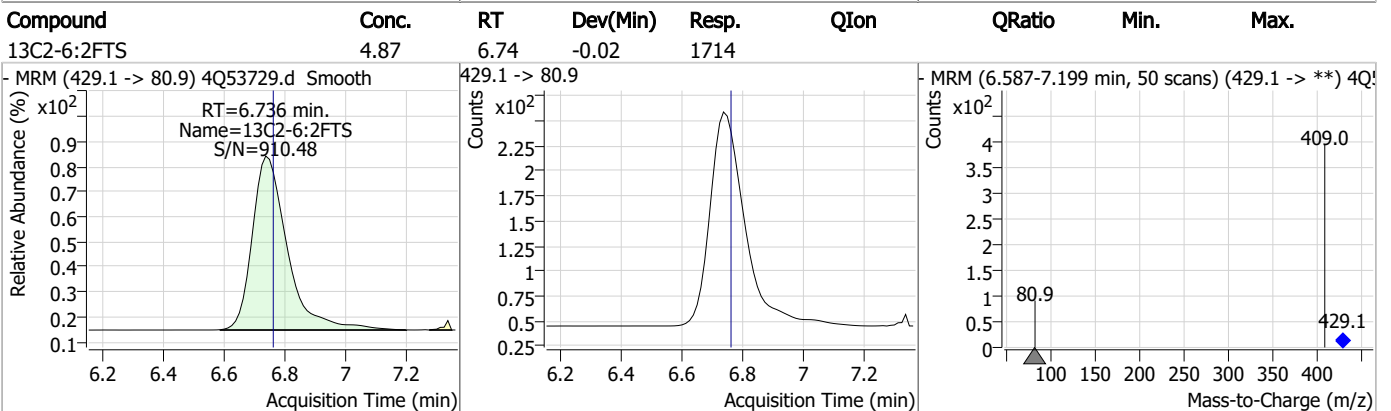
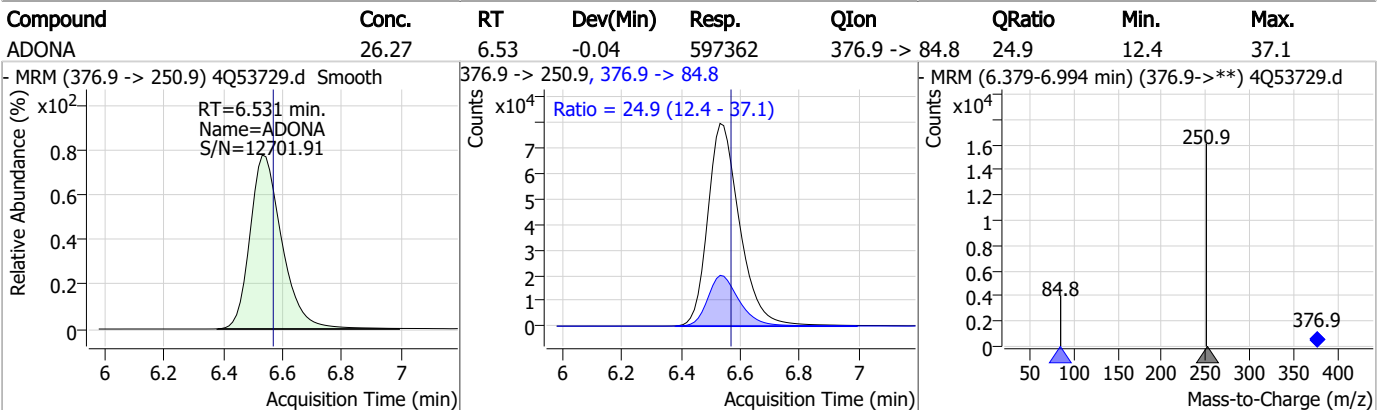
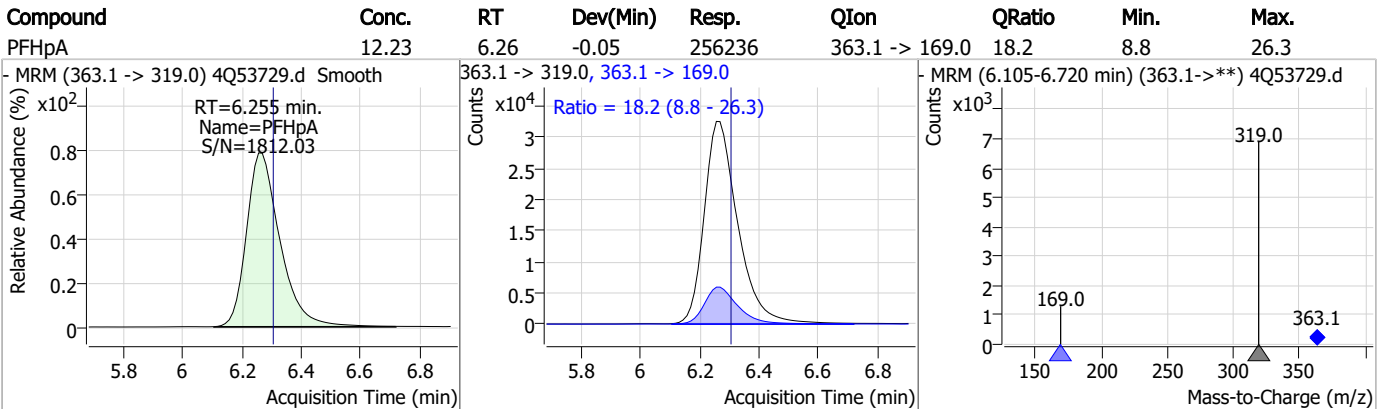
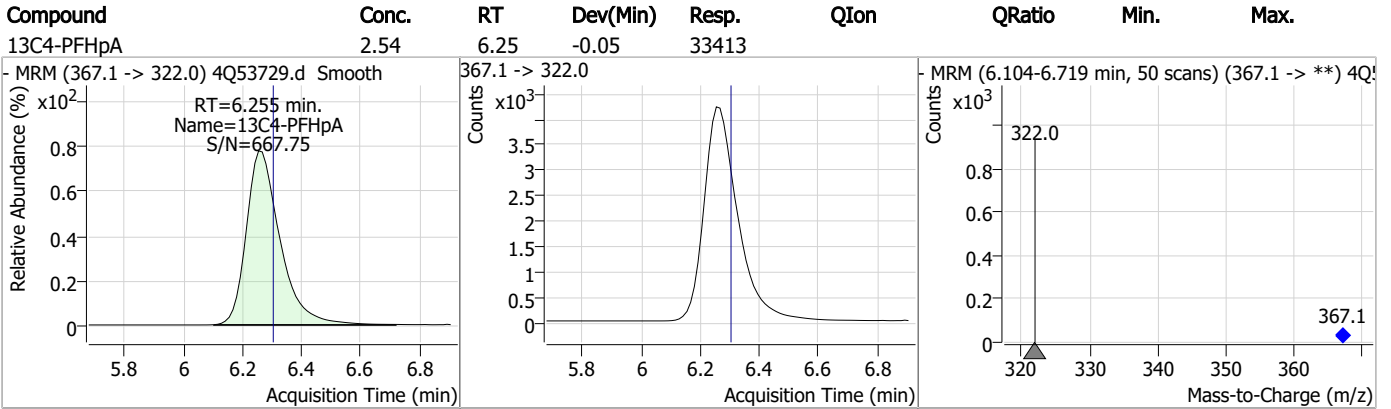
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	308.91	5.98	-0.06	664977	341.0 -> 217.0	72.3	36.4	109.1



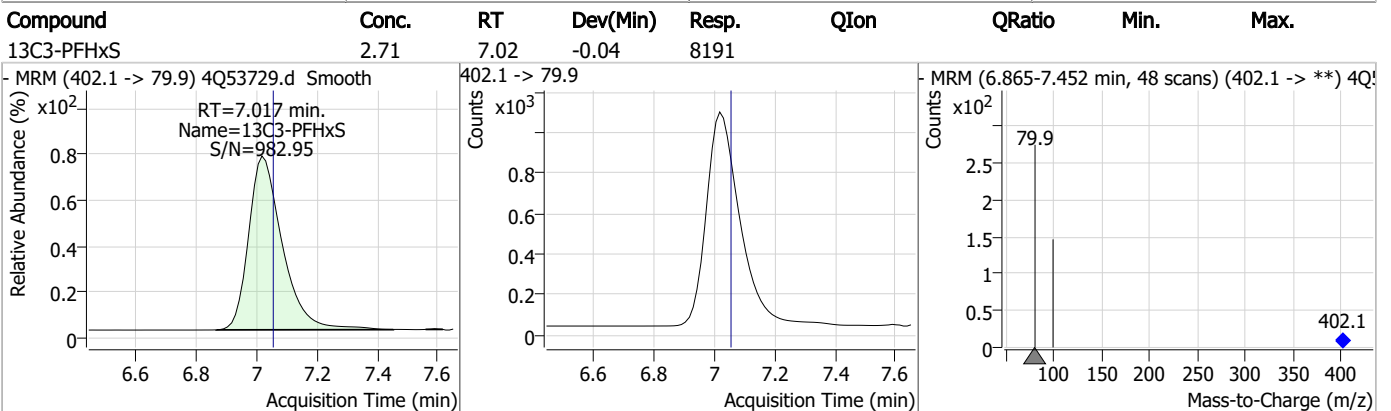
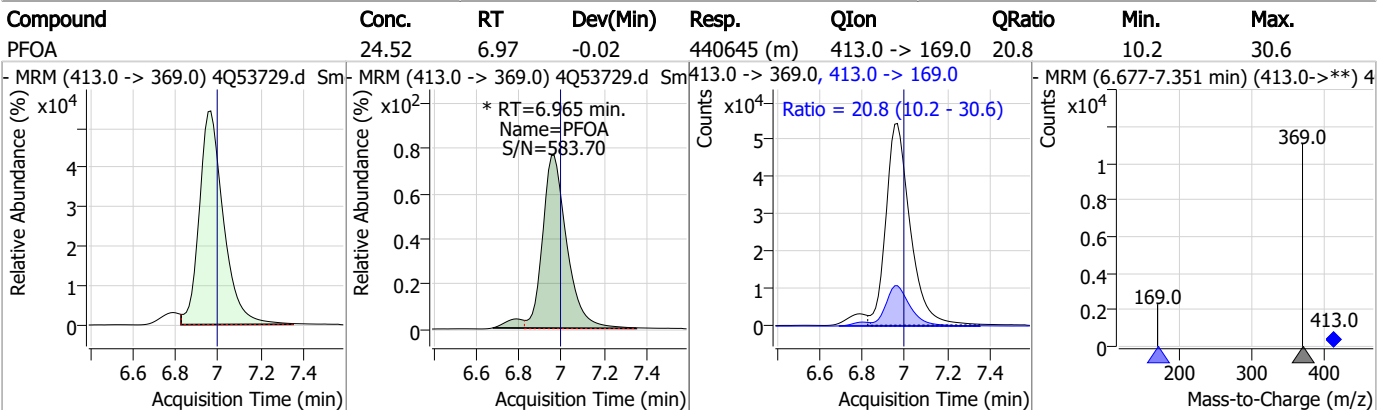
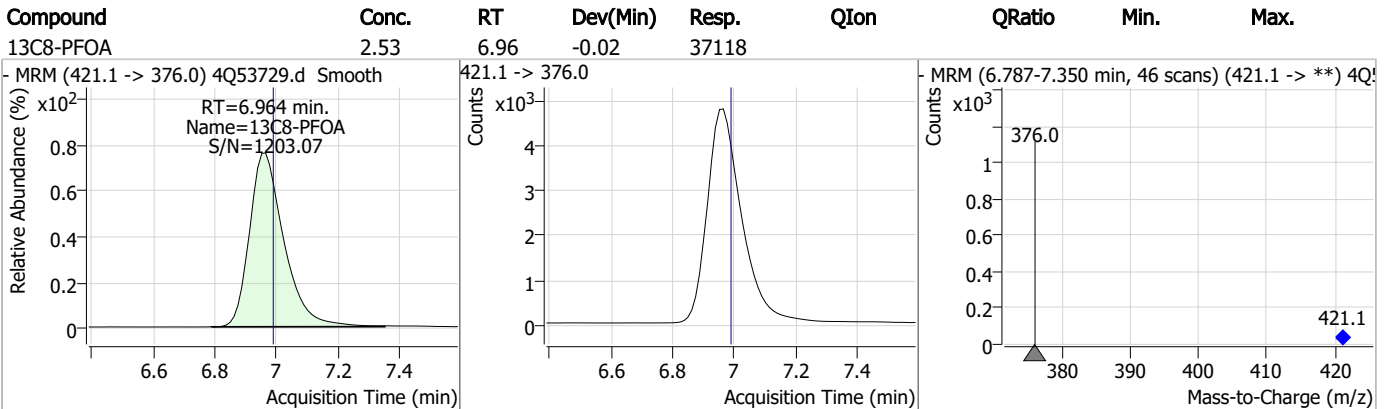
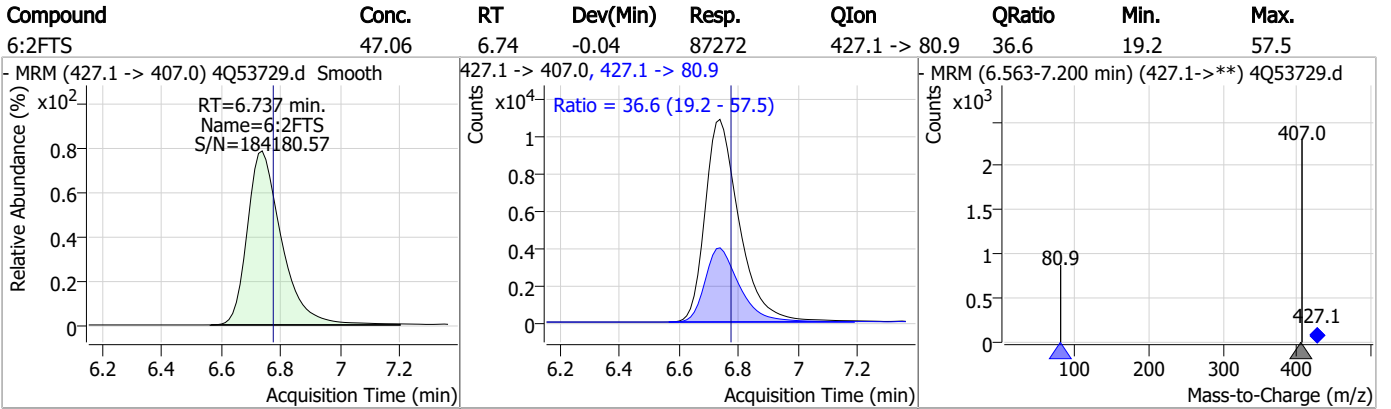
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	11.44	6.24	-0.05	30804	349.1 -> 98.9	45.0	21.7	65.0



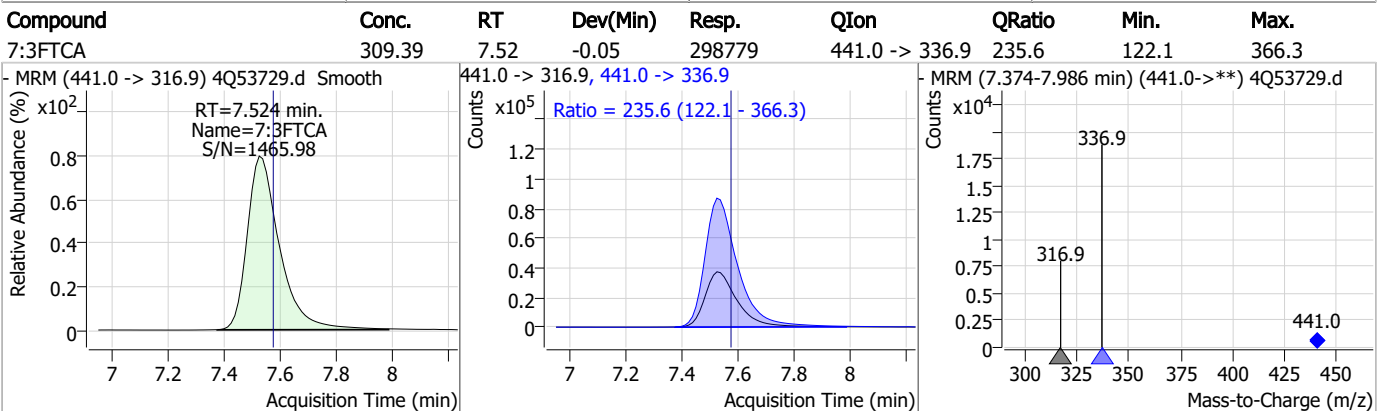
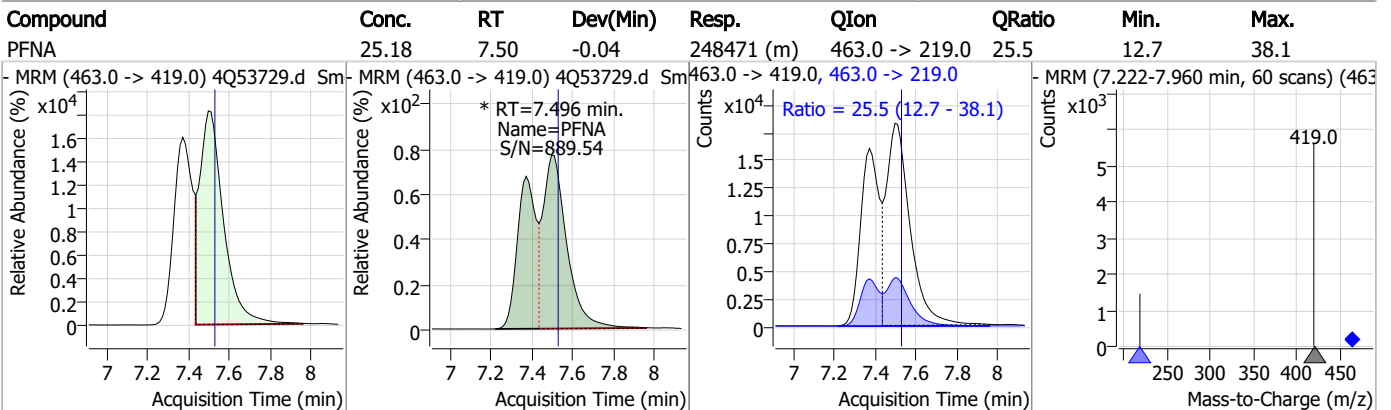
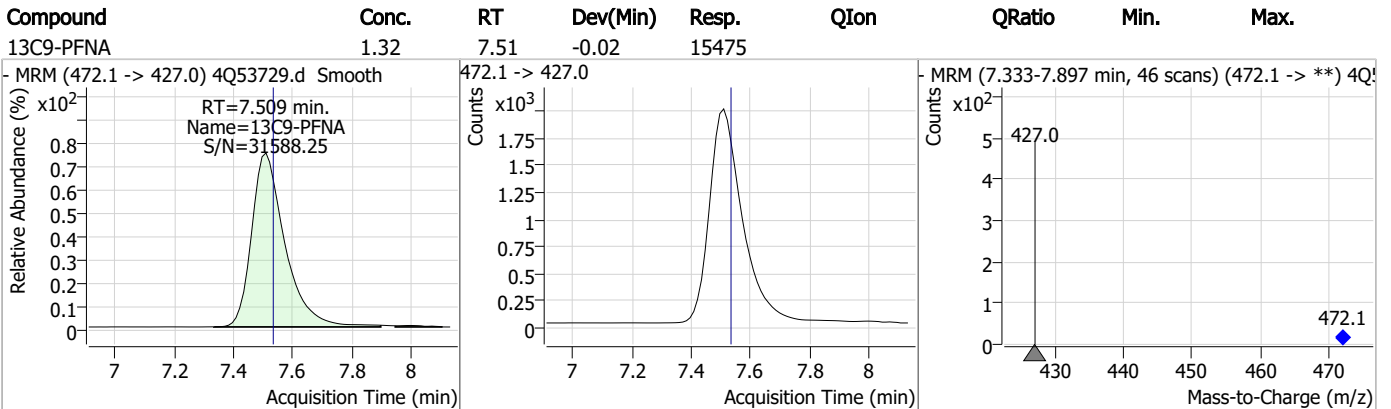
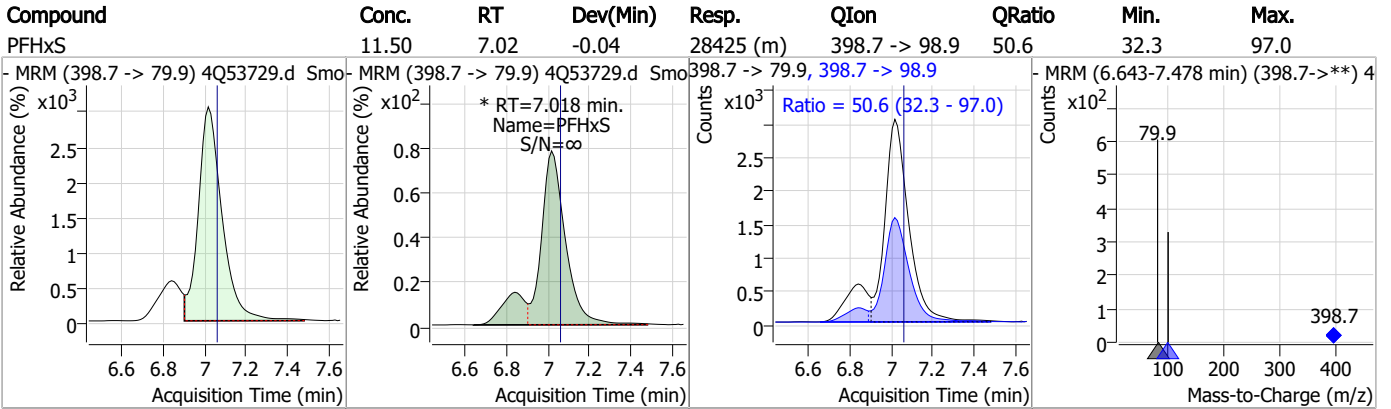
Perfluorinated Compounds by LC/MS/MS



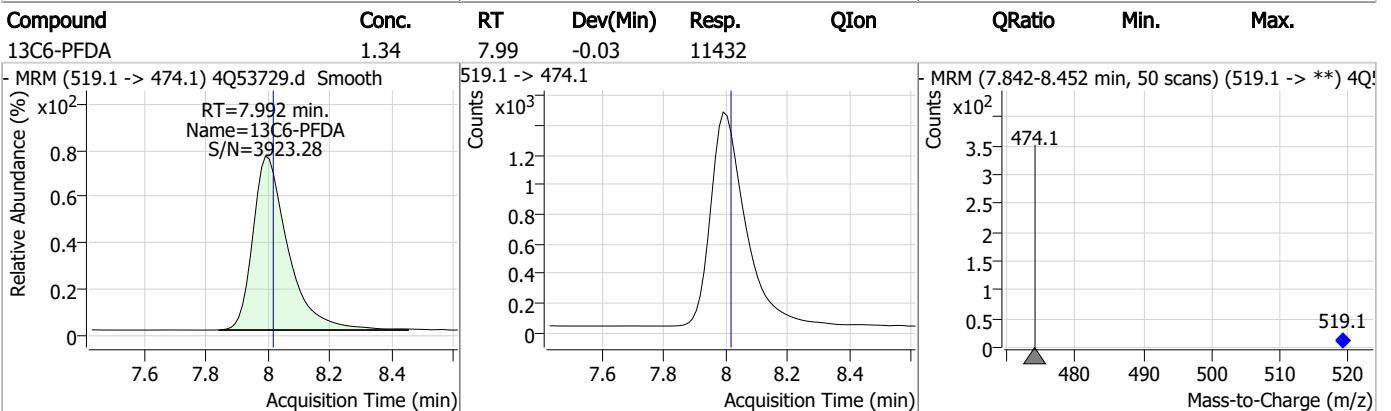
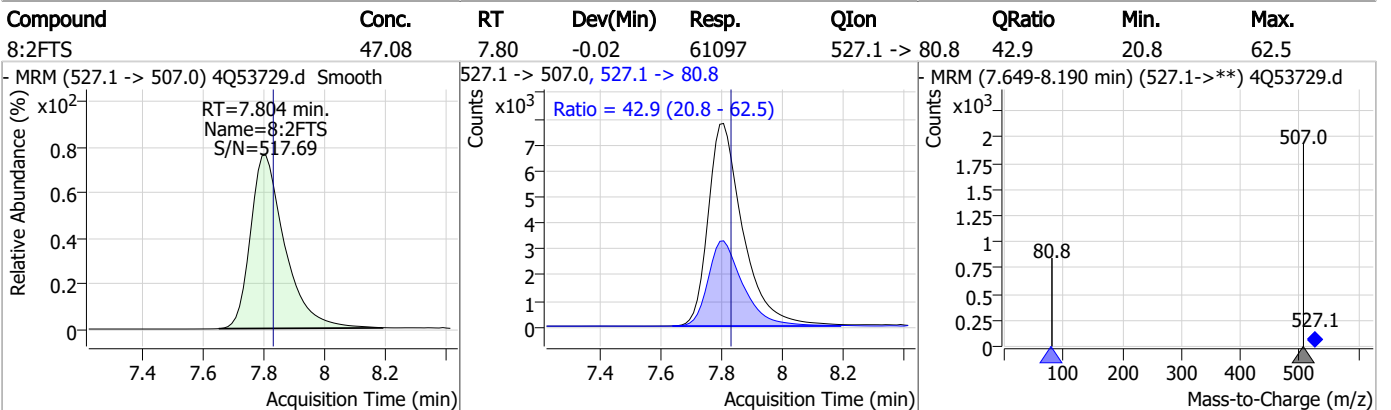
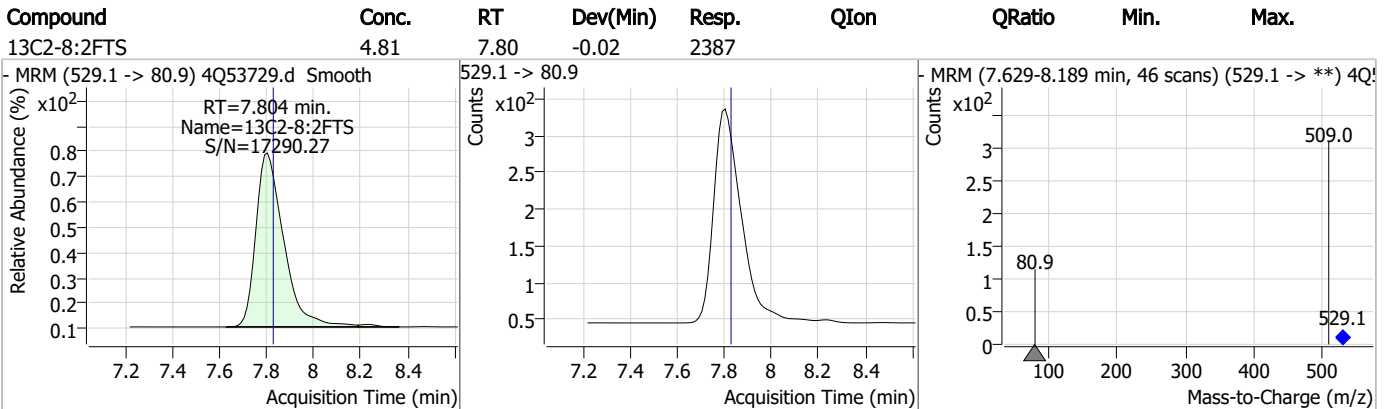
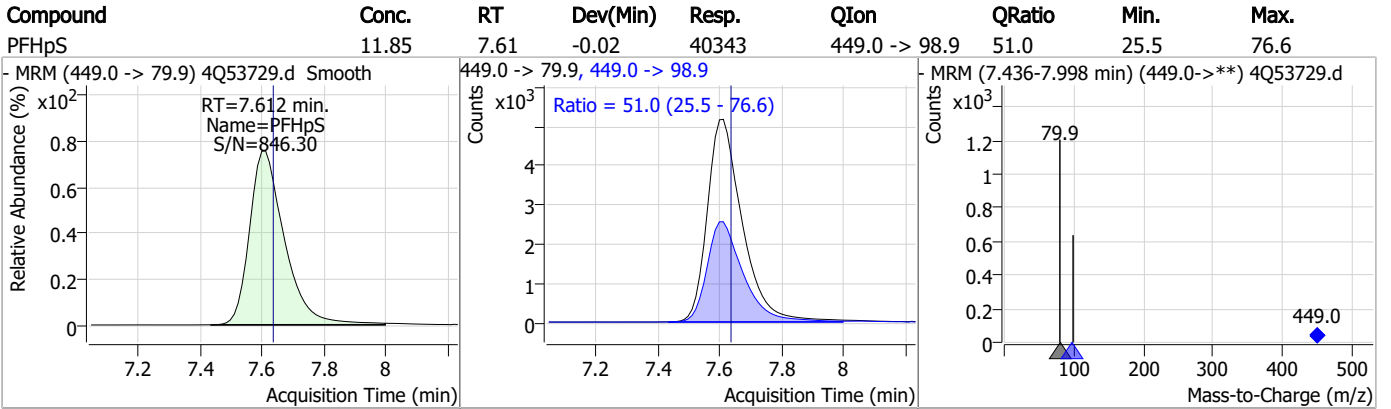
Perfluorinated Compounds by LC/MS/MS



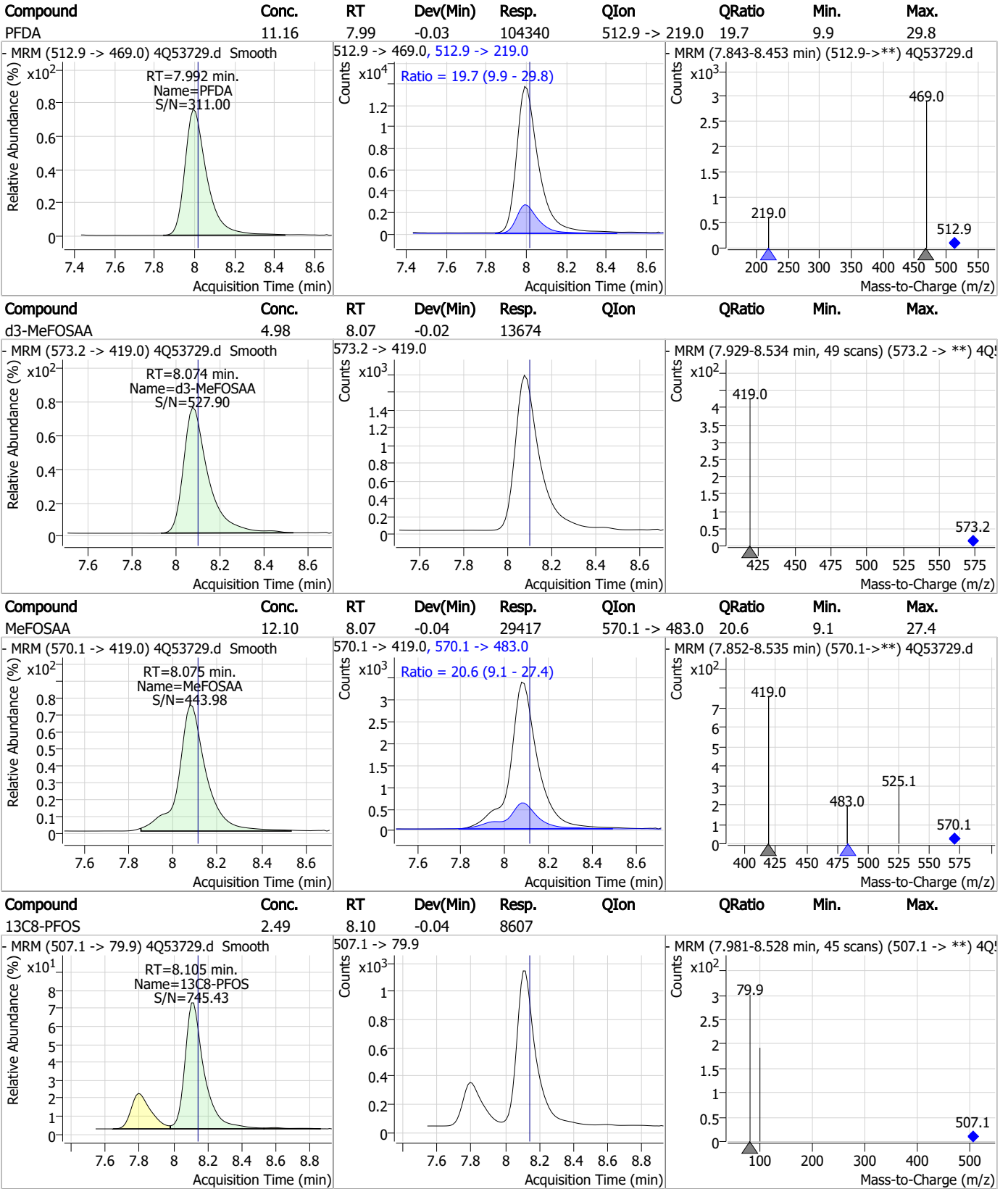
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

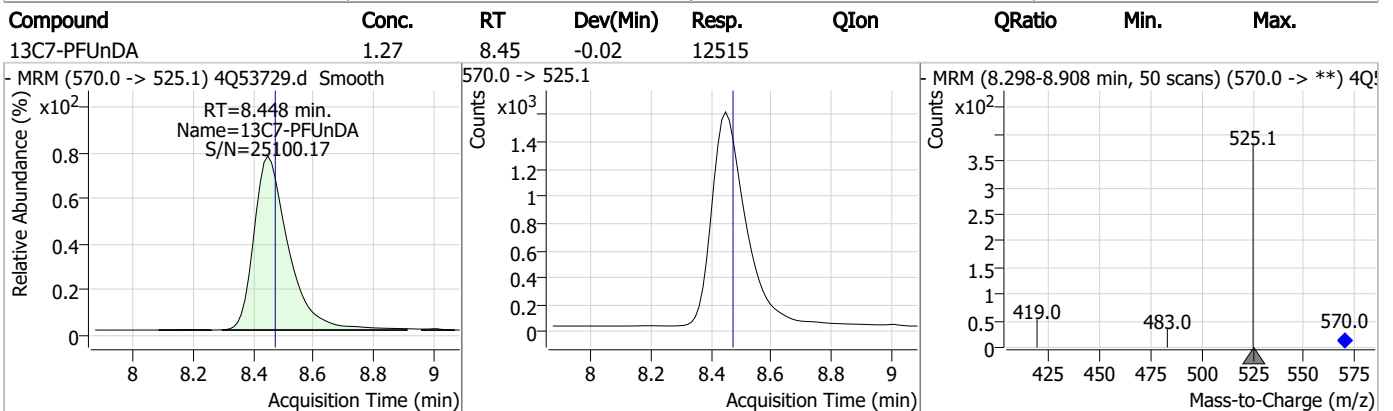
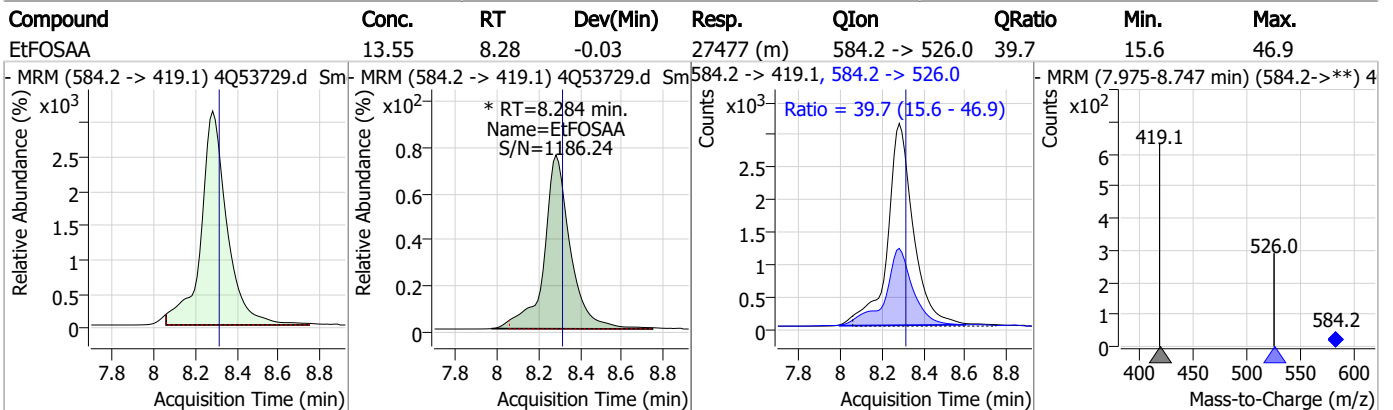
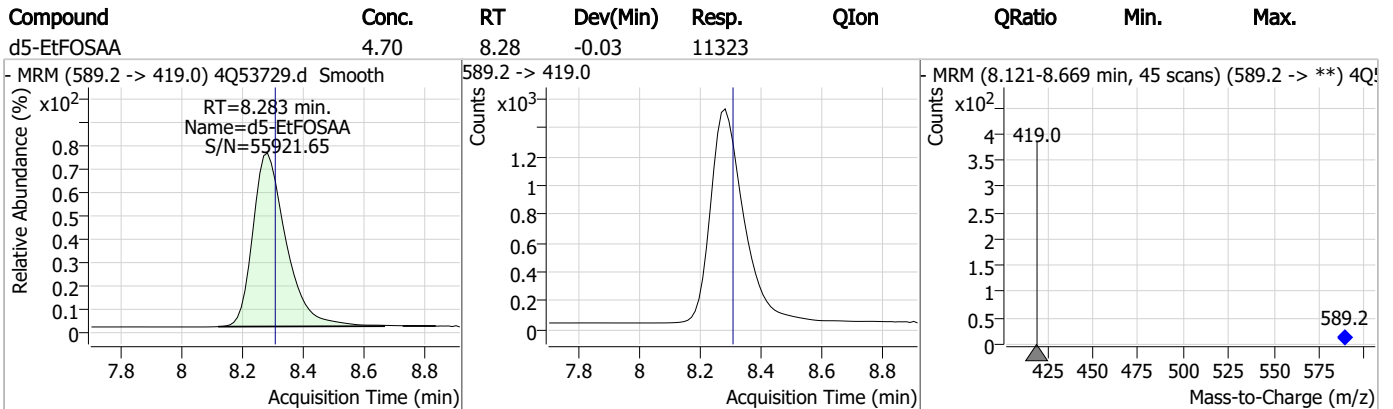
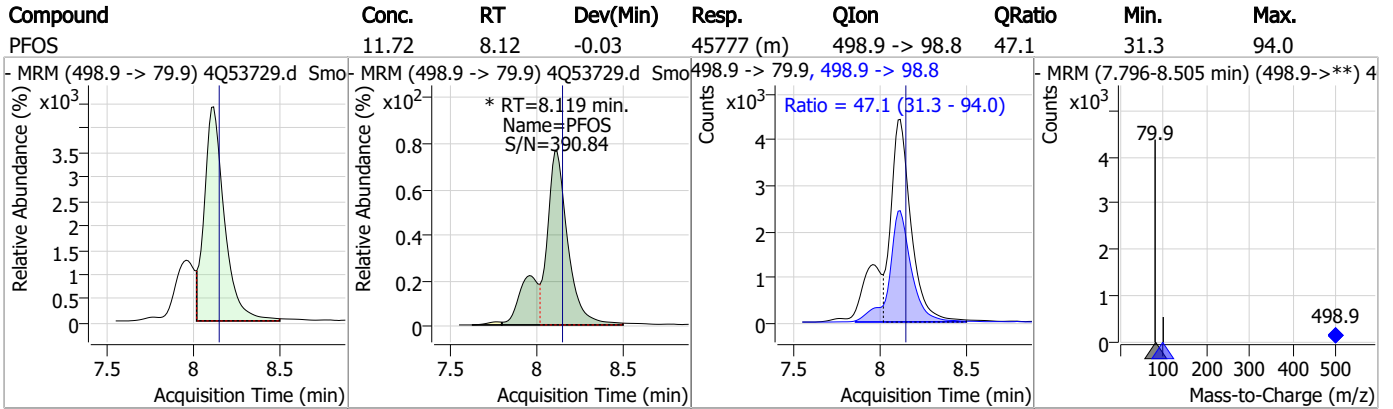


7.6.2

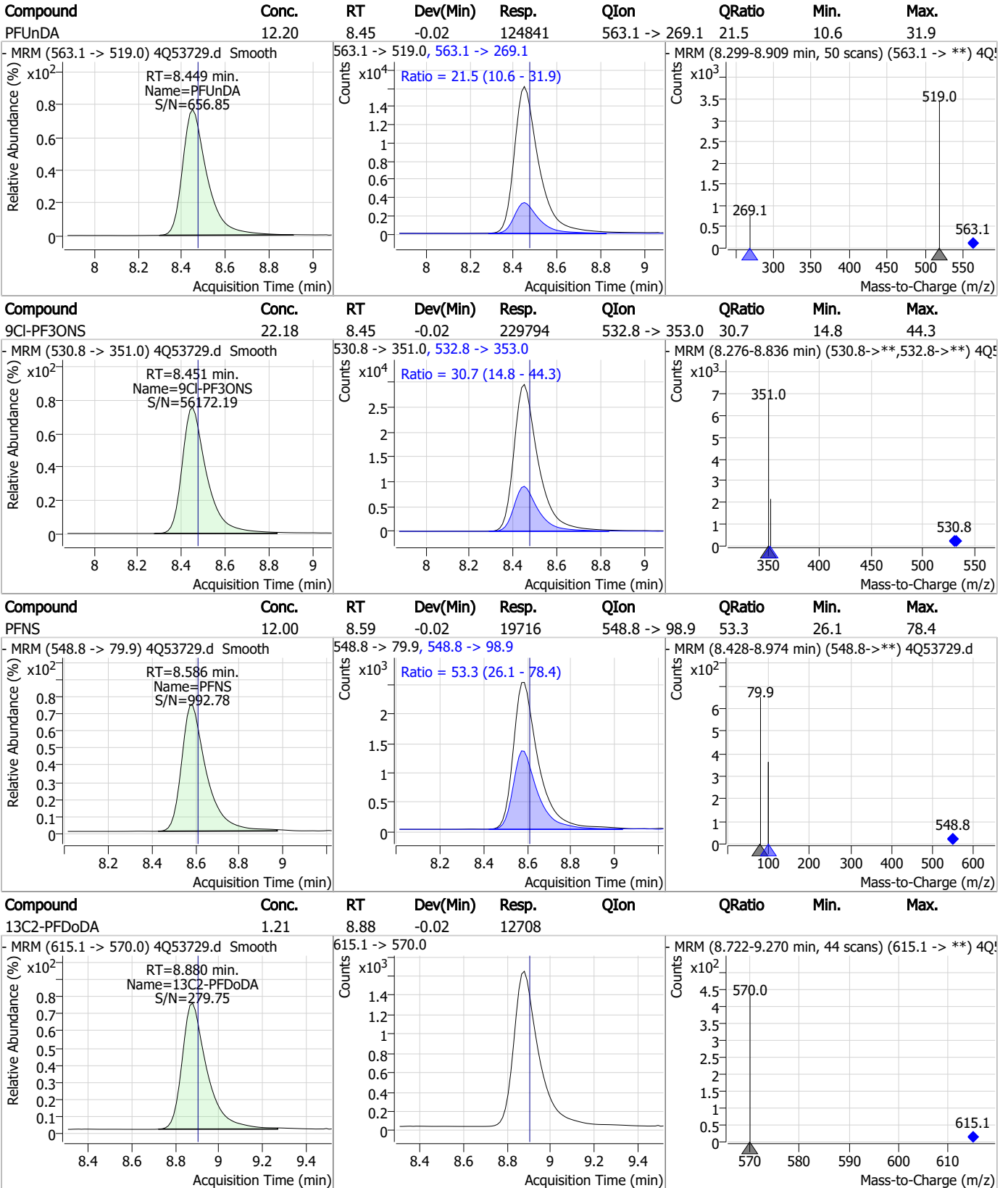
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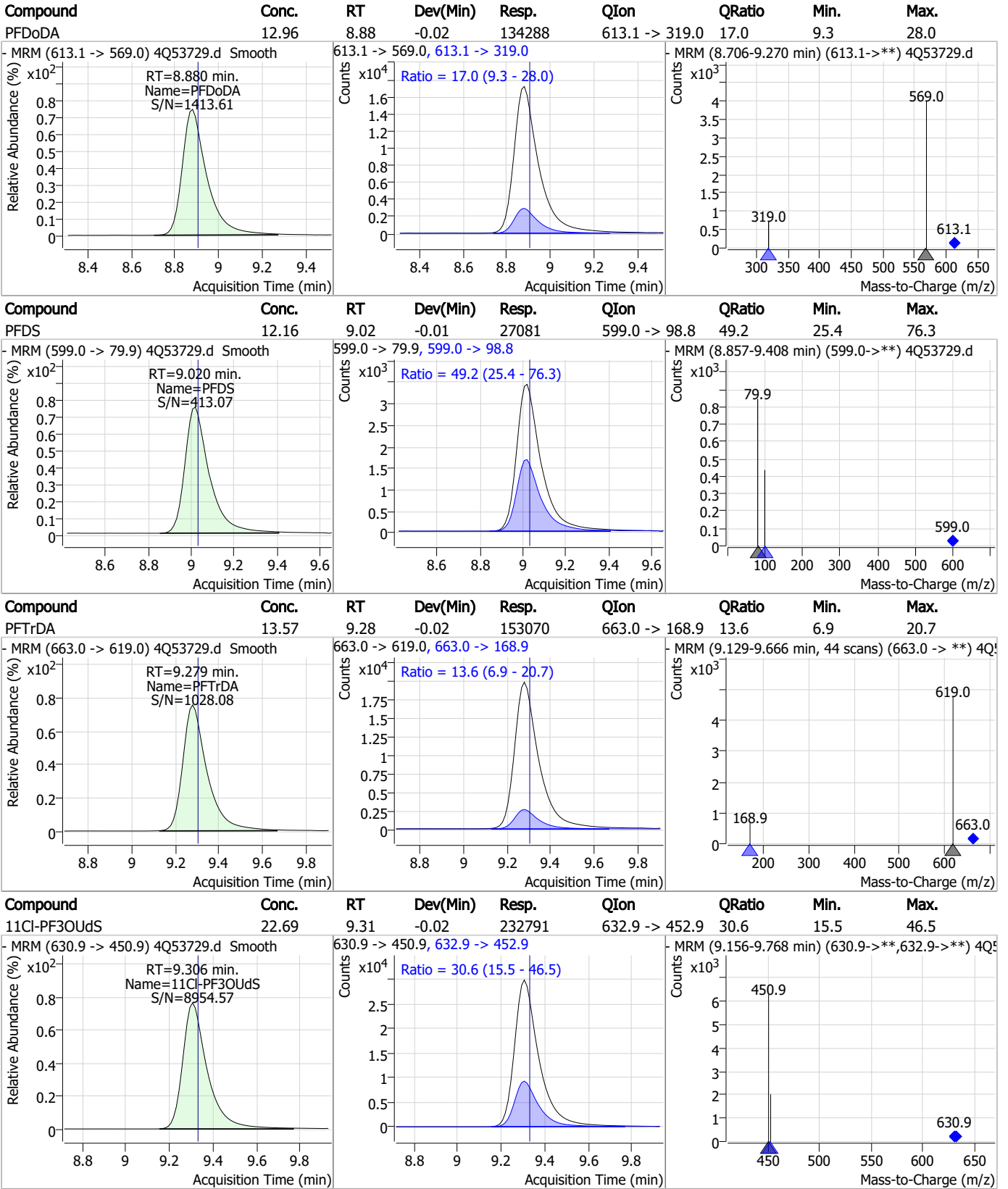
Perfluorinated Compounds by LC/MS/MS



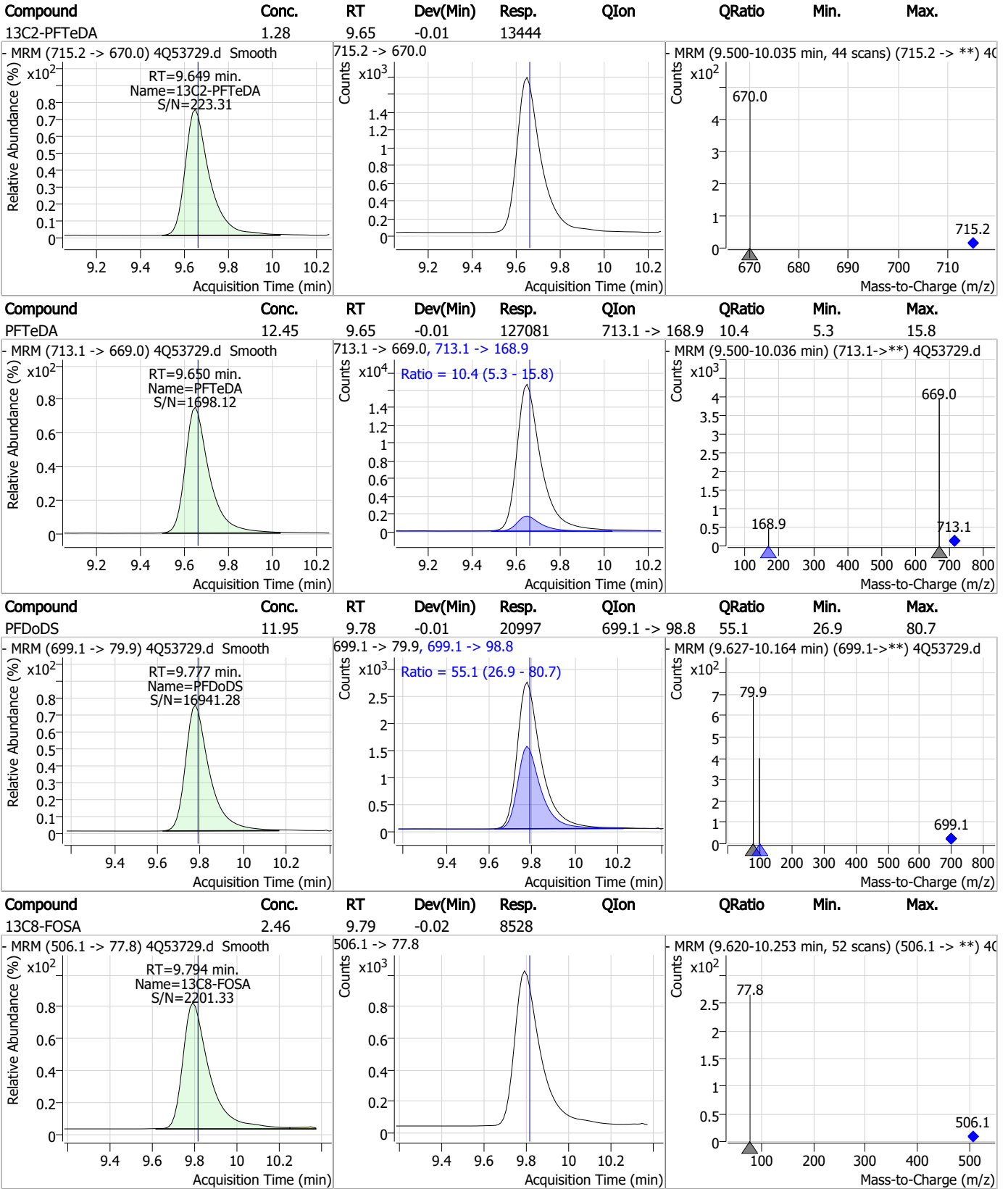
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



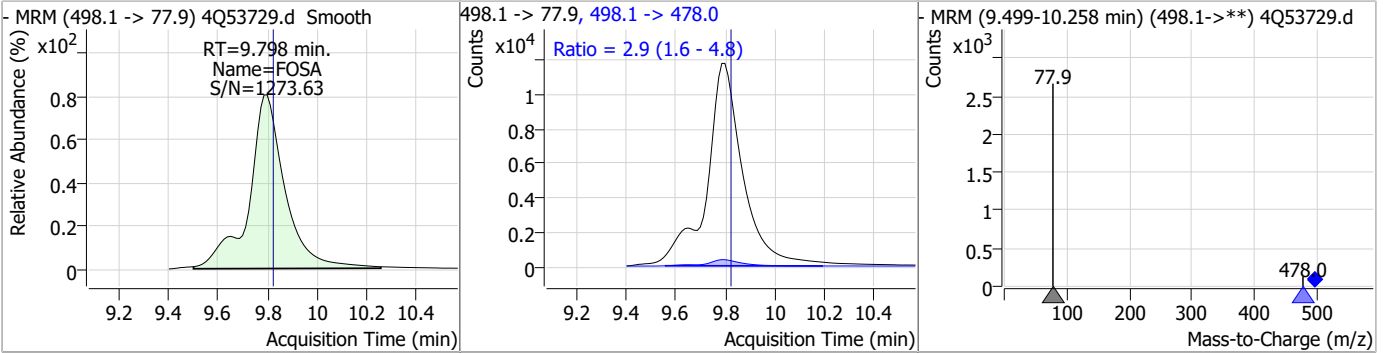
7.6.2

7

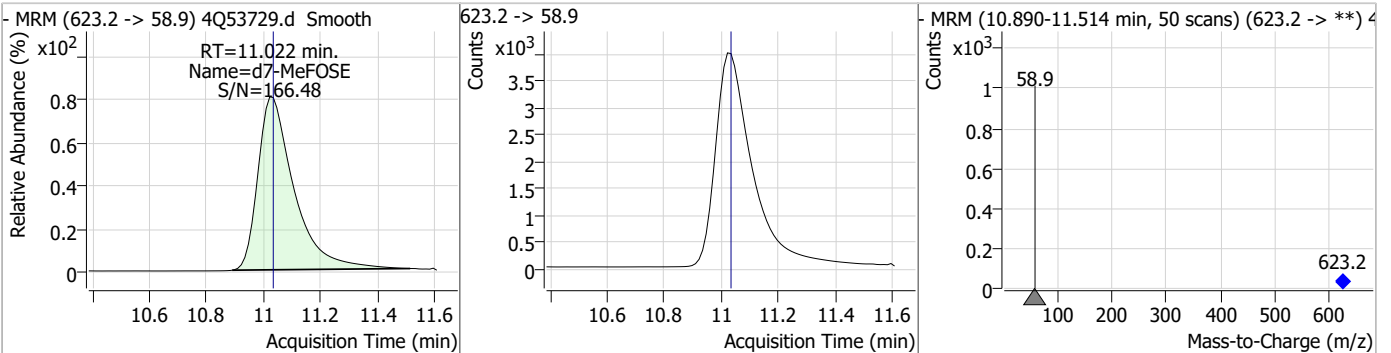


Perfluorinated Compounds by LC/MS/MS

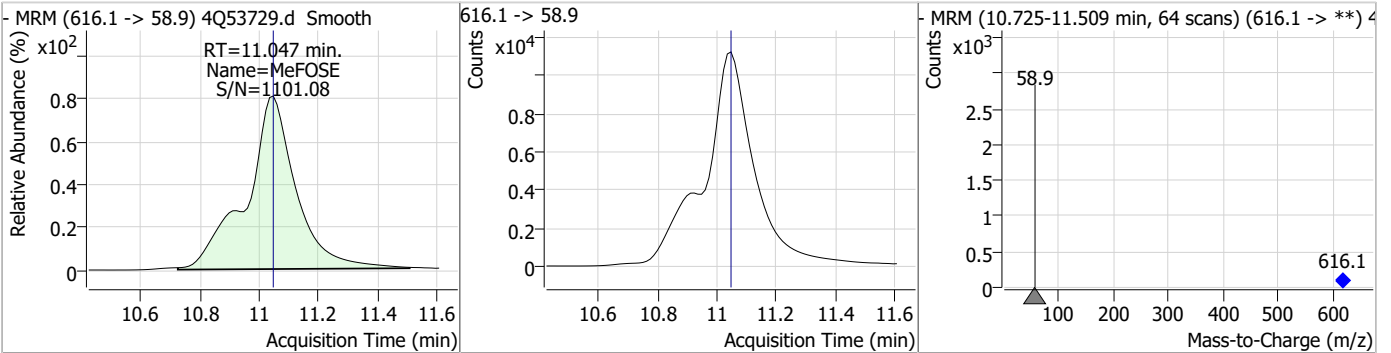
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	28.75	9.80	-0.02	119520	498.1 -> 478.0	2.9	1.6	4.8



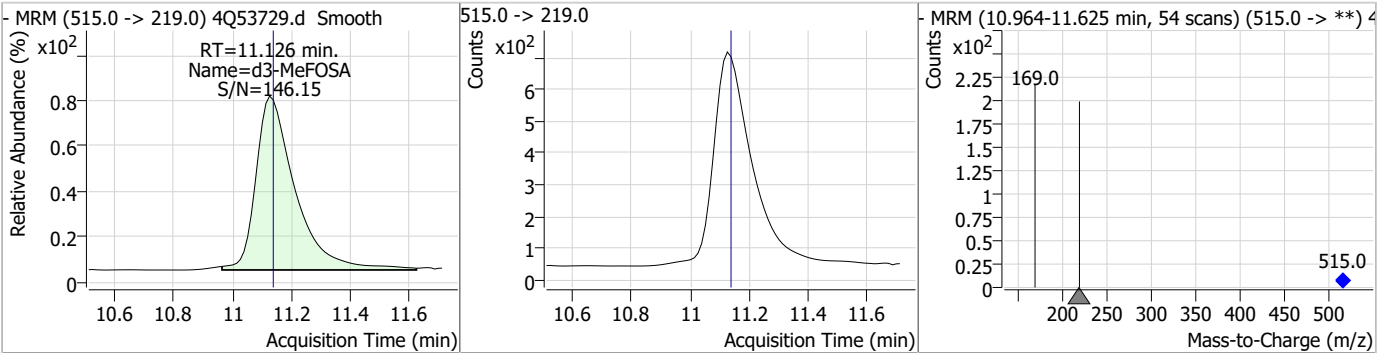
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.31	11.02	-0.01	34785				



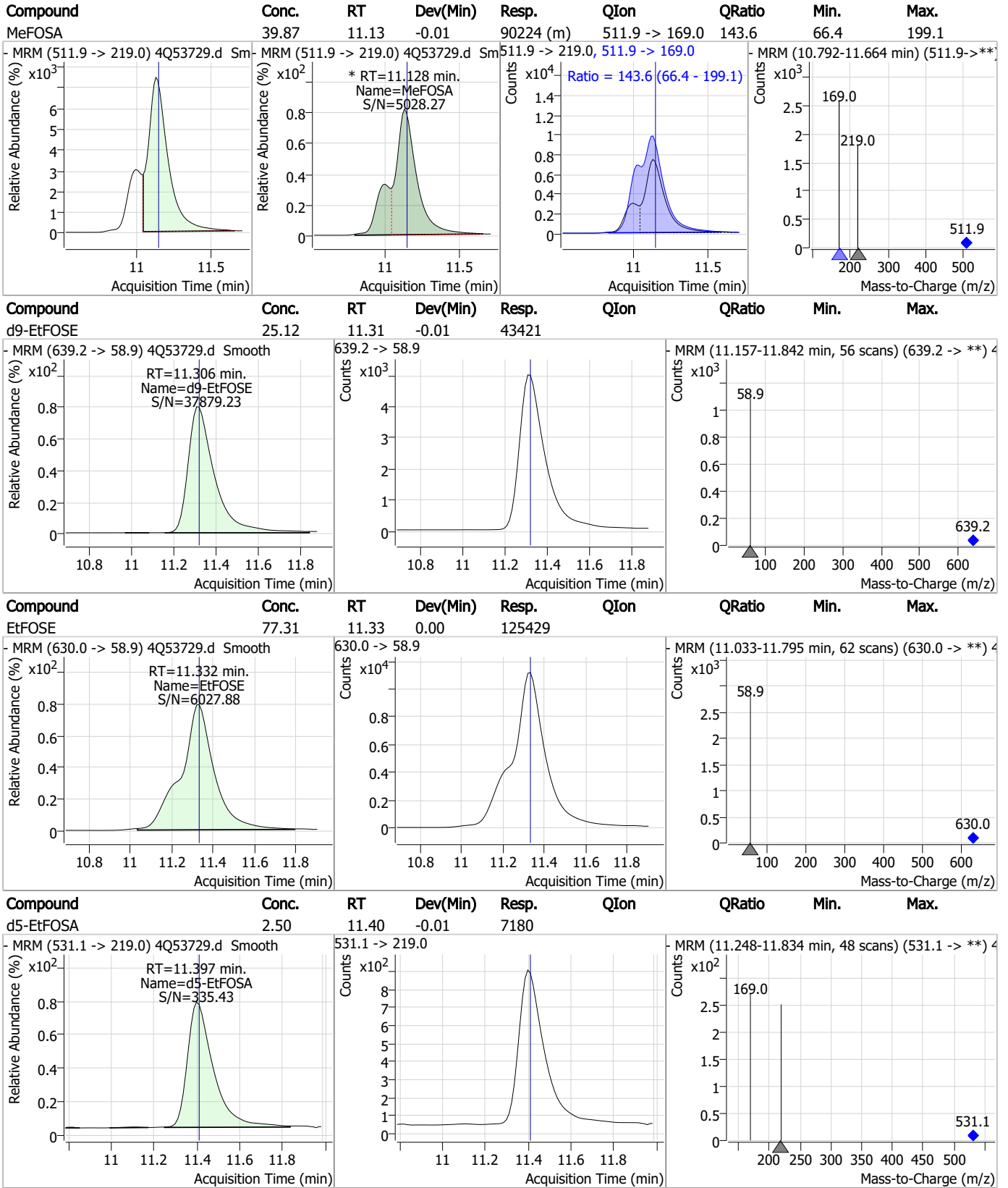
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	82.32	11.05	0.00	130471				



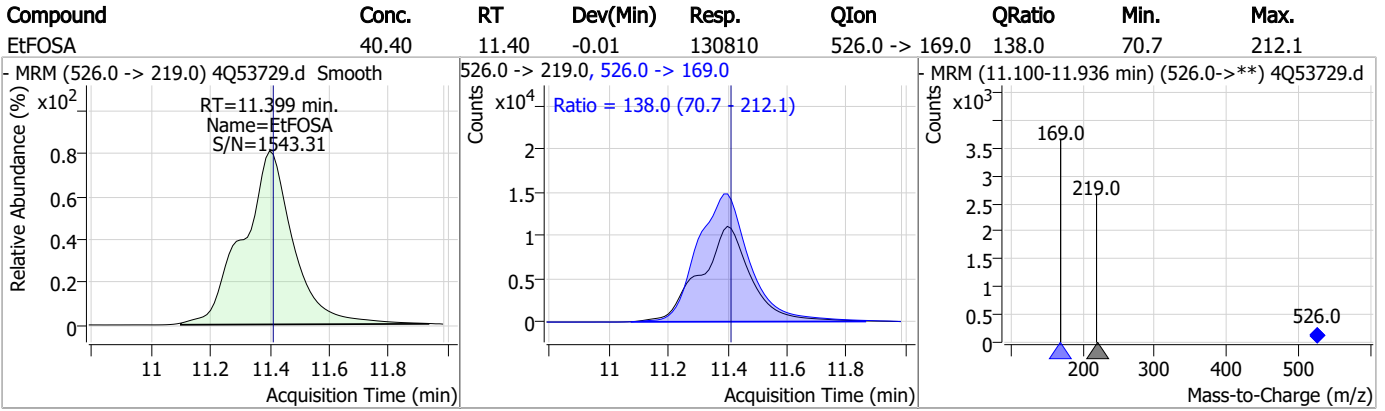
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.58	11.13	-0.01	6235				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.2

7

Manual Integration Approval Summary

Sample Number: S4Q785-RT Method: EPA DRAFT 1633
Lab FileID: 4Q53729.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 15:10 Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		6.96	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorononanoic acid	375-95-1		7.50	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.6.2.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtie
 11/16/23 15:17

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53864.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/15/2023 10:01:07 AM
 Sample Name : RT TDCA
 Vial : P1-B1
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q786_TDCA.batch.bin
 Sample Information : OP98180,S4Q786,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.117	507.1 -> 79.9	12787	2.50	µg/L	-0.076	
13C4-PFOS	8.118	502.8 -> 79.9	11366	2.50	µg/L	-0.076	
System Monitoring Compounds							
13C8-PFOS	8.117	507.1 -> 79.9	12787	2.85	µg/L	-0.076	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 114.1%				
Target Compounds							
PFOS	8.119	498.9 -> 79.9 498.9 -> 98.8	12784 6056	2.93	µg/L	m	95
TCDCa	6.597	498.9 -> 79.9	3989	6.76	ng/ml		100
TDCA	6.747	498.9 -> 79.9	5711	10.69	ng/ml		100
TUDCA	5.741	498.9 -> 79.9	7497	6.61	ng/ml		100

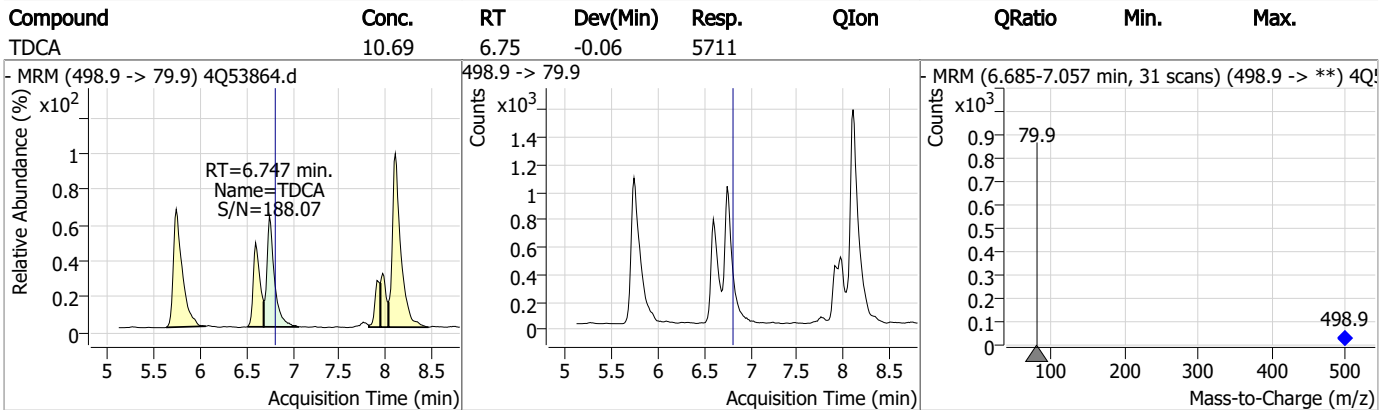
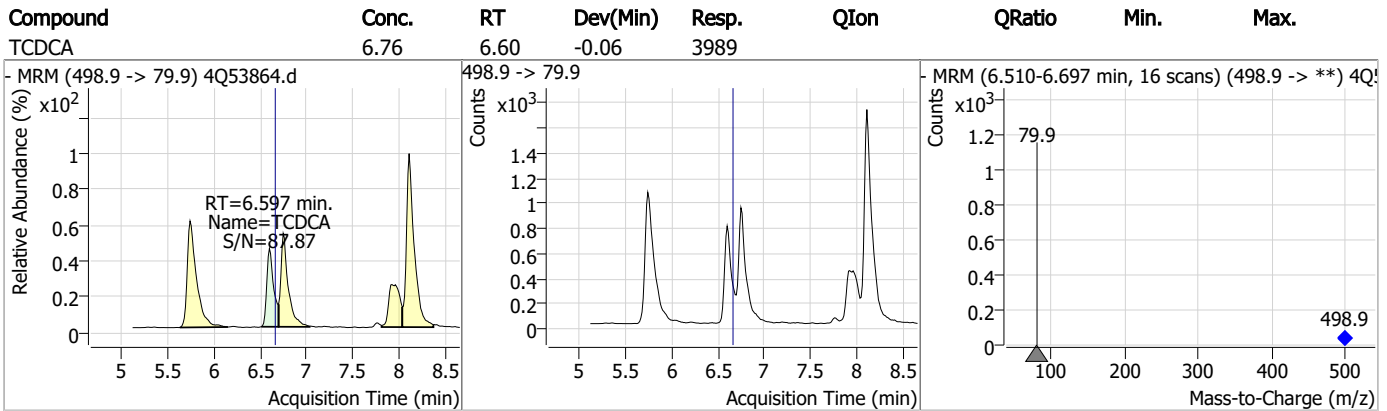
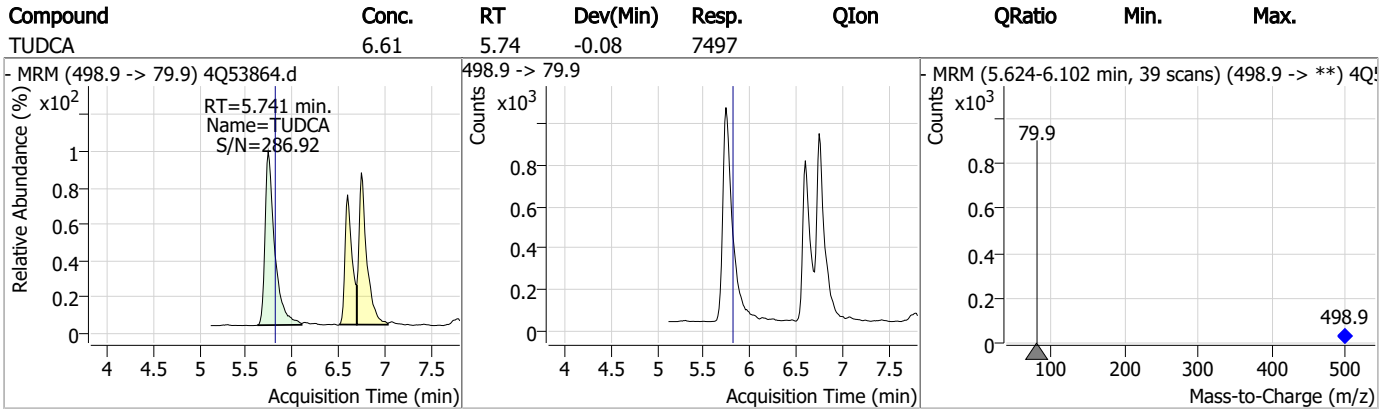
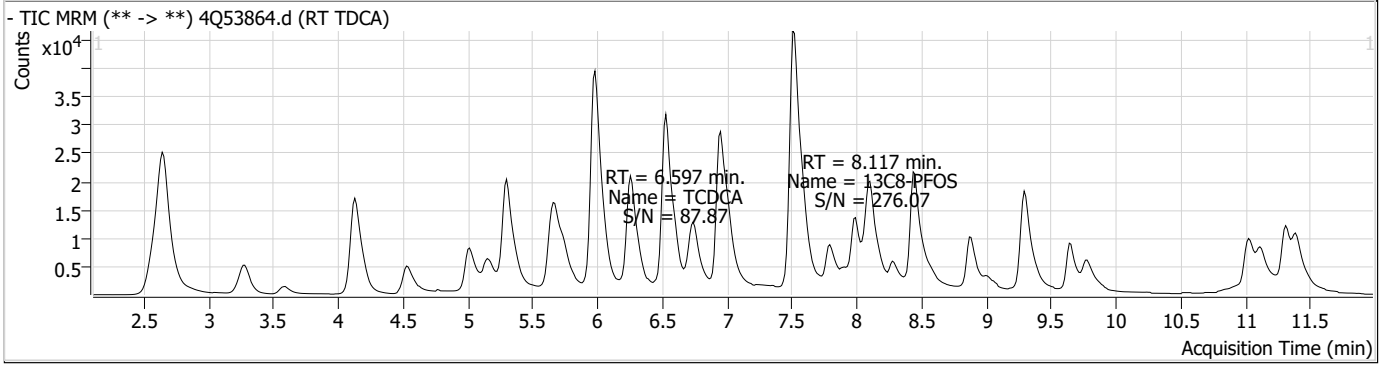
= Qualifier out of range, m = manually integrated, + = Area summed

7.6.3

7

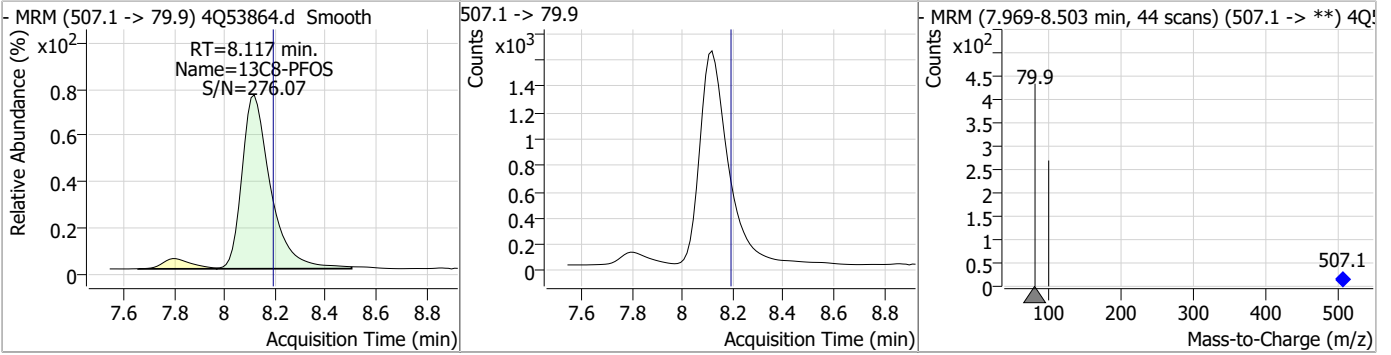


Perfluorinated Compounds by LC/MS/MS

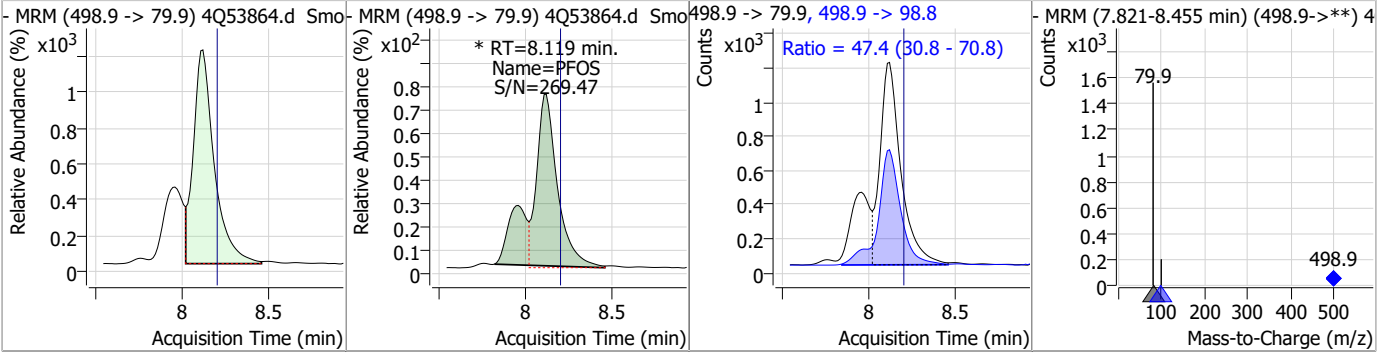


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.85	8.12	-0.08	12787				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.93	8.12	-0.08	12784 (m)	498.9 -> 98.8	47.4	30.8	70.8



7.6.3

7



Manual Integration Approval Summary

Sample Number: S4Q786-RT Method: EPA DRAFT 1633
Lab FileID: 4Q53864.D Analyst approved: 11/16/23 13:59 Anna Ludwig
Injection Time: 11/15/23 10:01 Supervisor approved: 11/16/23 15:17 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak

7.6.3.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53865.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/15/2023 10:15:53 AM
 Sample Name : RT_BR_LN
 Vial : P1-B2
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q786.batch.bin
 Sample Information : OP98180,S4Q786,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	112758	10.00 µg/L	-0.075
M5-PFPeA	4.112	268.3 -> 223.0	49432	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	37463	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	35281	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	42419	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	18009	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	12741	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	14528	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	15494	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	15360	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	9443	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	10347	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	9039	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	9162	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	1241	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	2296	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	3310	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	16891	5.00 µg/L	-0.012
M3-HFPO-DA	5.652	286.9 -> 168.9	33600	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	14674	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	35954	25.00 µg/L	-0.012
M9-EtFOSE	11.306	639.2 -> 58.9	41426	25.00 µg/L	-0.012
M5-EtFOSA	11.397	531.1 -> 219.0	6921	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	6359	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	7616	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	53880	5.00 µg/L	-0.075
18O2-PFHxS	7.016	403.0 -> 83.9	5382	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	46634	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	13235	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	18080	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	41034	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	1241	6.74 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 134.8%		
13C2-6:2FTS	6.736	429.1 -> 80.9	2296	5.92 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.4%		
13C2-8:2FTS	7.804	529.1 -> 80.9	3310	6.05 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.0%		
13C2-PFDoDA	8.880	615.1 -> 570.0	15494	1.30 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.8%		
13C2-PFTeDA	9.649	715.2 -> 670.0	15360	1.28 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C3-PFBS	5.152	302.1 -> 79.9	10347	2.56 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C3-PFHxS	7.017	402.1 -> 79.9	9039	2.71 µg/L	-0.037

7.64
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.4%	
13C4-PFBA	2.624	216.8 -> 171.9	112758	10.04 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C4-PFHpA	6.267	367.1 -> 322.0	35281	2.46 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C5-PFHxA	5.297	318.0 -> 273.0	37463	2.45 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C5-PFPeA	4.112	268.3 -> 223.0	49432	4.94 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C6-PFDA	7.992	519.1 -> 474.1	12741	1.31 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.7%	
13C7-PFUnDA	8.448	570.0 -> 525.1	14528	1.29 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C8-FOSA	9.794	506.1 -> 77.8	9443	2.59 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C8-PFOA	6.964	421.1 -> 376.0	42419	2.55 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C8-PFOS	8.117	507.1 -> 79.9	9162	2.52 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C9-PFNA	7.509	472.1 -> 427.0	18009	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.0%	
d3-MeFOSAA	8.086	573.2 -> 419.0	16891	5.85 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 117.0%	
13C3-HFPO-DA	5.652	286.9 -> 168.9	33600	9.62 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.2%	
d3-MeFOSA	11.126	515.0 -> 219.0	6359	2.50 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
d5-EtFOSAA	8.283	589.2 -> 419.0	14674	5.80 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 116.0%	
d7-MeFOSE	11.022	623.2 -> 58.9	35954	22.92 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 91.7%	
d9-EtFOSE	11.306	639.2 -> 58.9	41426	22.80 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 91.2%	
d5-EtFOSA	11.397	531.1 -> 219.0	6921	2.30 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.8%	
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	102196	41.66 µg/L	97
		327.1 -> 80.9	41500		
6:2FTS	6.737	427.1 -> 407.0	125855	50.65 µg/L	95
		427.1 -> 80.9	44694		
8:2FTS	7.804	527.1 -> 507.0	91056	50.58 µg/L	98
		527.1 -> 80.8	37100		
EtFOSAA	8.284	584.2 -> 419.1	34953	13.30 µg/L	m 85
		584.2 -> 526.0	13776		
FOSA	9.798	498.1 -> 77.9	132764	28.85 µg/L	m 100
		498.1 -> 478.0	4377		
MeFOSAA	8.087	570.1 -> 419.0	36909	12.29 µg/L	100
		570.1 -> 483.0	6723		
PFBA	2.632	212.8 -> 168.9	199877	48.74 µg/L	100
PFBS	5.153	298.7 -> 79.9	39747	10.82 µg/L	99
		298.7 -> 98.8	15600		
PFDA	8.005	512.9 -> 469.0	118797	11.40 µg/L	99
		512.9 -> 219.0	24100		
PFDoDA	8.880	613.1 -> 569.0	153476	12.14 µg/L	97
		613.1 -> 319.0	26734		
PFDS	9.020	599.0 -> 79.9	29383	12.39 µg/L	97

7.6.4
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	14355			
PFHpA	6.268	363.1 -> 319.0	279626	12.64	µg/L	99
		363.1 -> 169.0	49753			
PFHpS	7.612	449.0 -> 79.9	43992	12.14	µg/L	99
		449.0 -> 98.9	22804			
PFHxA	5.300	313.0 -> 269.0	163809	12.52	µg/L	99
		313.0 -> 118.9	5078			
PFHxS	7.018	398.7 -> 79.9	29459	10.80	µg/L	m 84
		398.7 -> 98.9	15447			
PFNA	7.510	463.0 -> 419.0	284279	24.76	µg/L	m 100
		463.0 -> 219.0	72173			
PFNS	8.586	548.8 -> 79.9	21225	12.14	µg/L	99
		548.8 -> 98.9	11201			
PFOA	6.965	413.0 -> 369.0	502356	24.46	µg/L	m 99
		413.0 -> 169.0	104849			
PFOS	8.119	498.9 -> 79.9	48099	11.57	µg/L	m 81
		498.9 -> 98.8	23047			
PFPeA	4.114	263.0 -> 219.0	263644	24.52	µg/L	100
PFPeS	6.257	349.1 -> 79.9	33294	11.21	µg/L	95
		349.1 -> 98.9	15592			
PFTeDA	9.650	713.1 -> 669.0	146938	12.60	µg/L	99
		713.1 -> 168.9	14893			
PFTrDA	9.279	663.0 -> 619.0	174040	12.66	µg/L	99
		663.0 -> 168.9	23513			
PFUnDA	8.449	563.1 -> 519.0	142932	12.03	µg/L	100
		563.1 -> 269.1	30655			
11CI-PF3OUdS	9.306	630.9 -> 450.9	253731	24.19	µg/L	99
		632.9 -> 452.9	76926			
9CI-PF3ONS	8.451	530.8 -> 351.0	244833	23.12	µg/L	98
		532.8 -> 353.0	75261			
ADONA	6.544	376.9 -> 250.9	680629	29.27	µg/L	99
		376.9 -> 84.8	164601			
HFPO-DA	5.653	284.9 -> 168.9	88395	24.84	µg/L	100
		284.9 -> 184.9	8339			
3:3FTCA	3.561	241.0 -> 177.0	38530	60.31	µg/L	100
		241.0 -> 117.0	3555			
5:3FTCA	5.983	341.0 -> 237.1	712323	309.27	µg/L	99
		341.0 -> 217.0	509143			
7:3FTCA	7.536	441.0 -> 316.9	321507	311.16	µg/L	97
		441.0 -> 336.9	767328			
EtFOSA	11.399	526.0 -> 219.0	132732	42.52	µg/L	98
		526.0 -> 169.0	184673			
EtFOSE	11.320	630.0 -> 58.9	121819	78.70	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	95278	41.28	µg/L	m 89
		511.9 -> 169.0	139097			
MeFOSE	11.035	616.1 -> 58.9	117195	71.54	µg/L	m 100
PFDoS	9.777	699.1 -> 79.9	23311	12.47	µg/L	99
		699.1 -> 98.8	12695			
NFDHA	5.179	295.0 -> 201.0	21721	25.14	µg/L	95
		295.0 -> 84.9	5686			
PFMBA	4.529	279.0 -> 85.1	150401	24.28	µg/L	100
PFMPA	3.265	229.0 -> 84.9	169130	24.56	µg/L	100
PFEESA	5.684	314.8 -> 134.9	229534	22.16	µg/L	98
		314.8 -> 82.9	7963			

= Qualifier out of range, m = manually integrated, + = Area summed

7.6.4
7

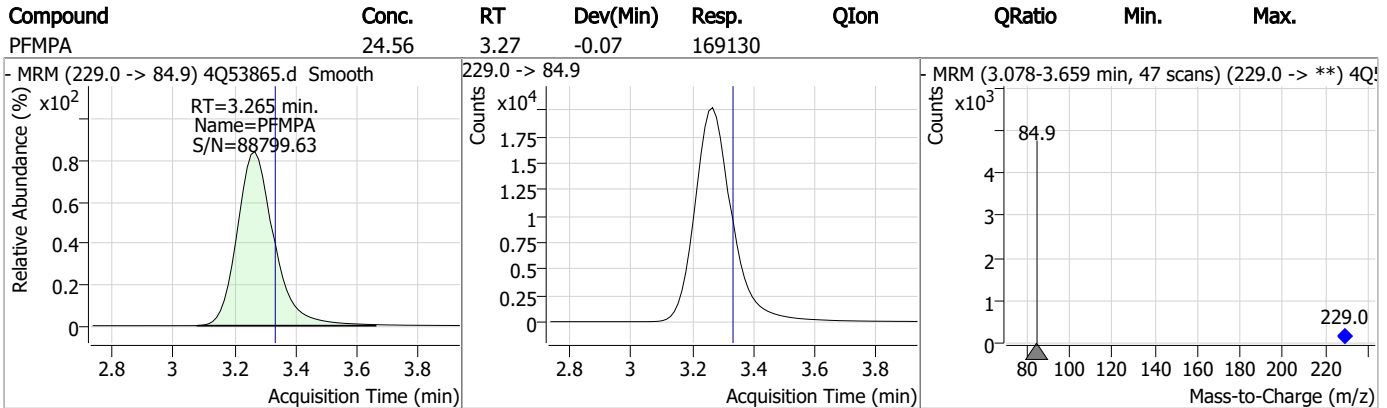
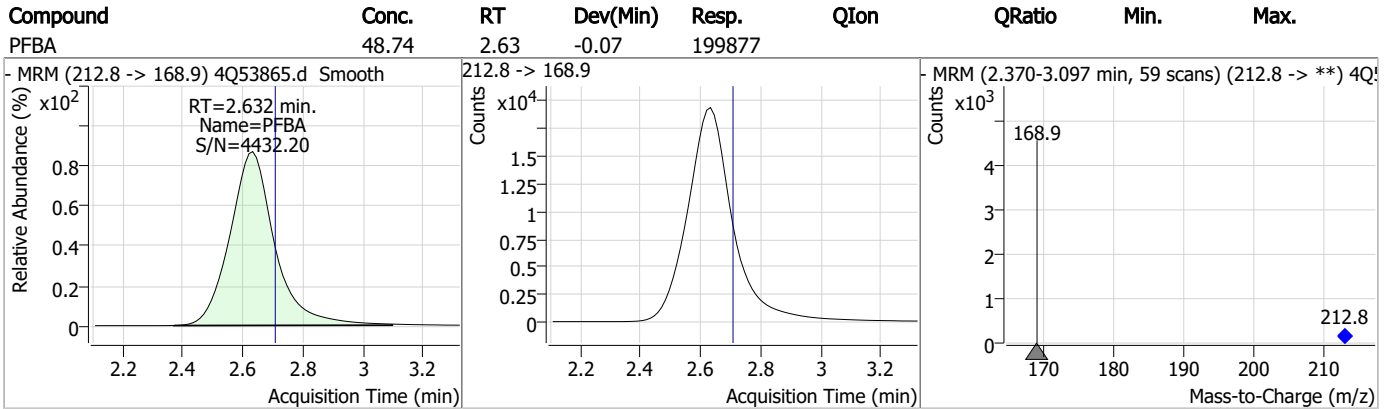
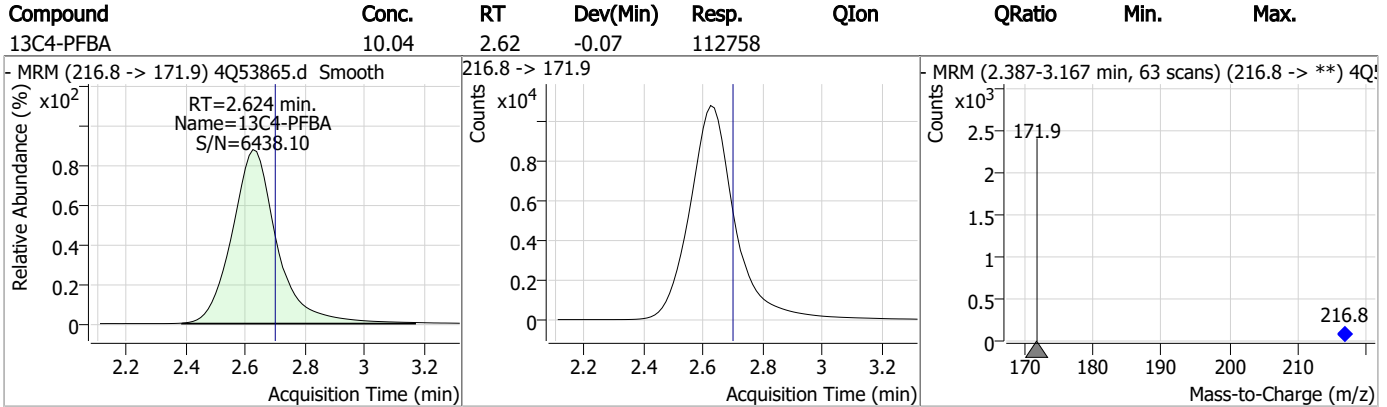
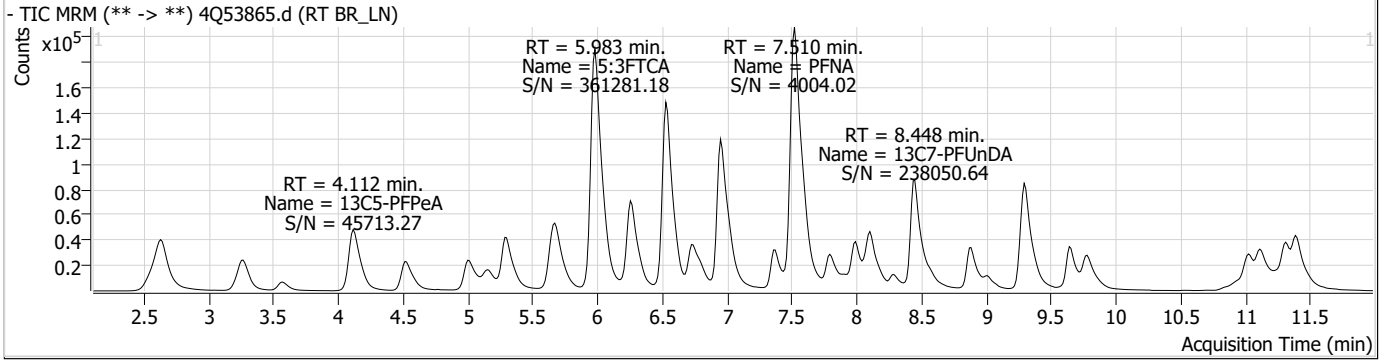
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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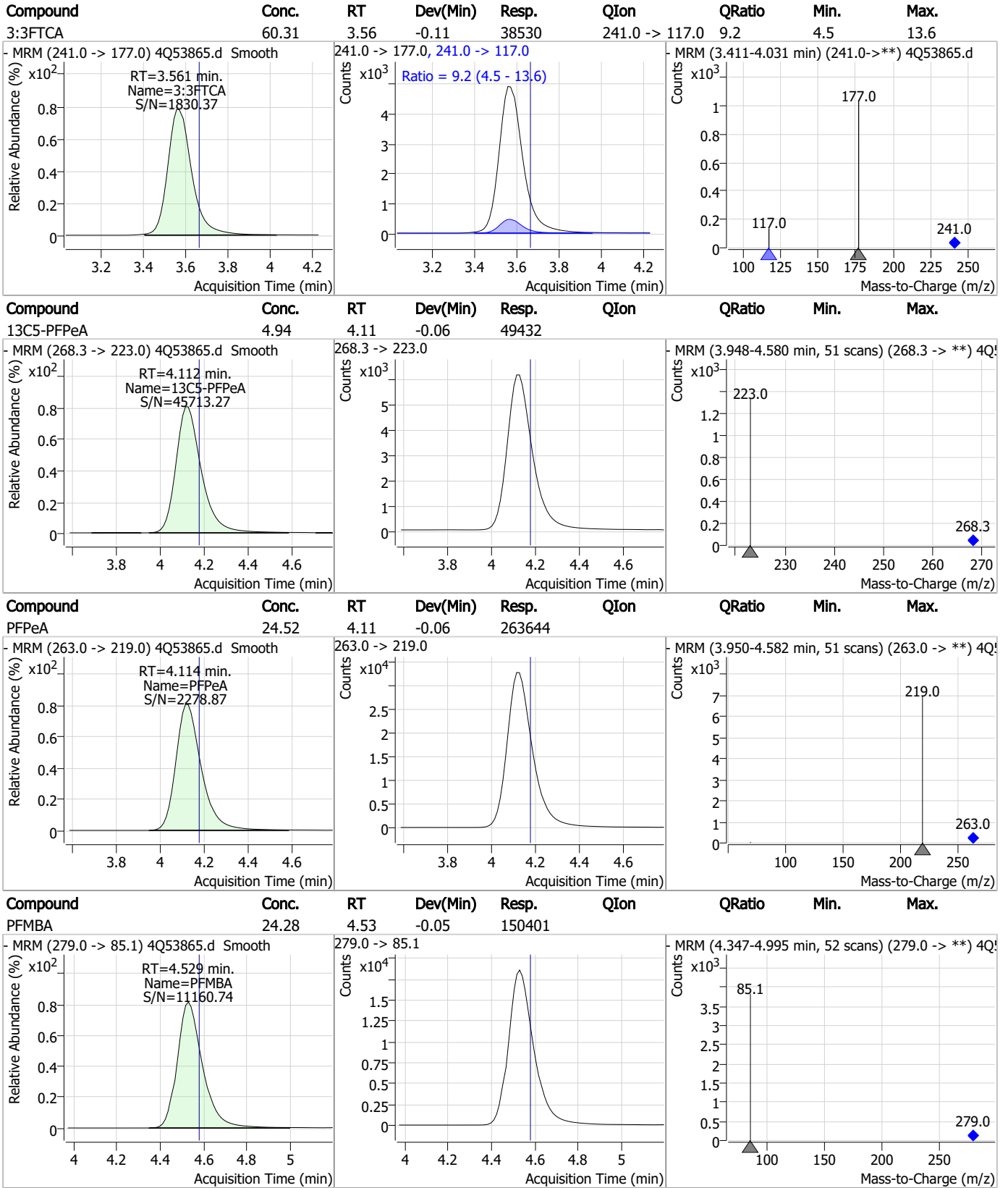
7.6.4

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Perfluorinated Compounds by LC/MS/MS



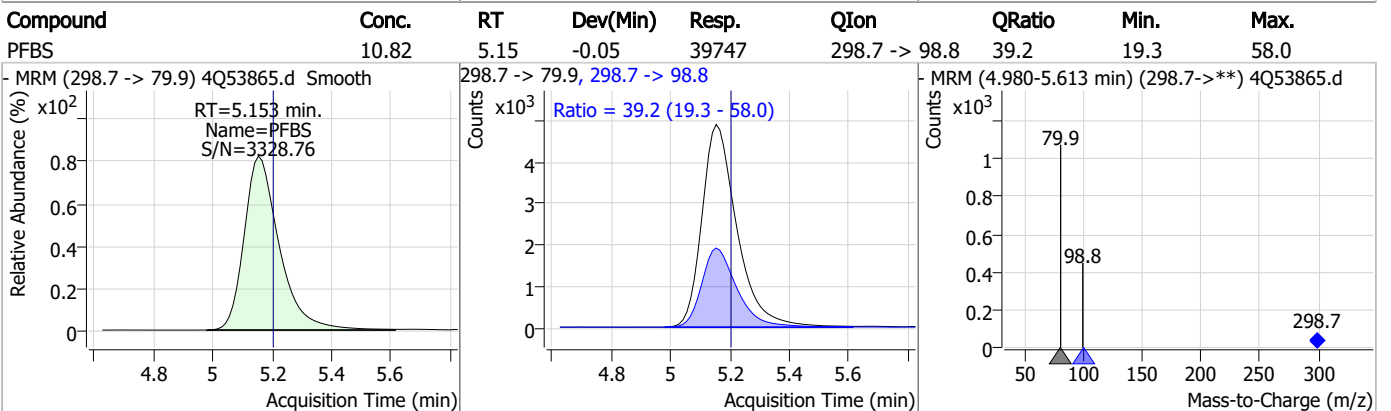
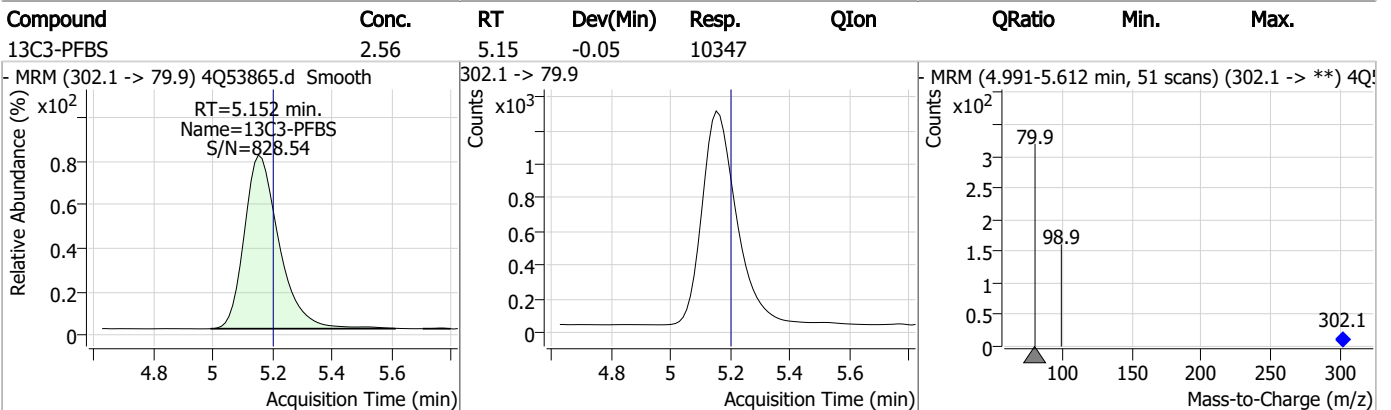
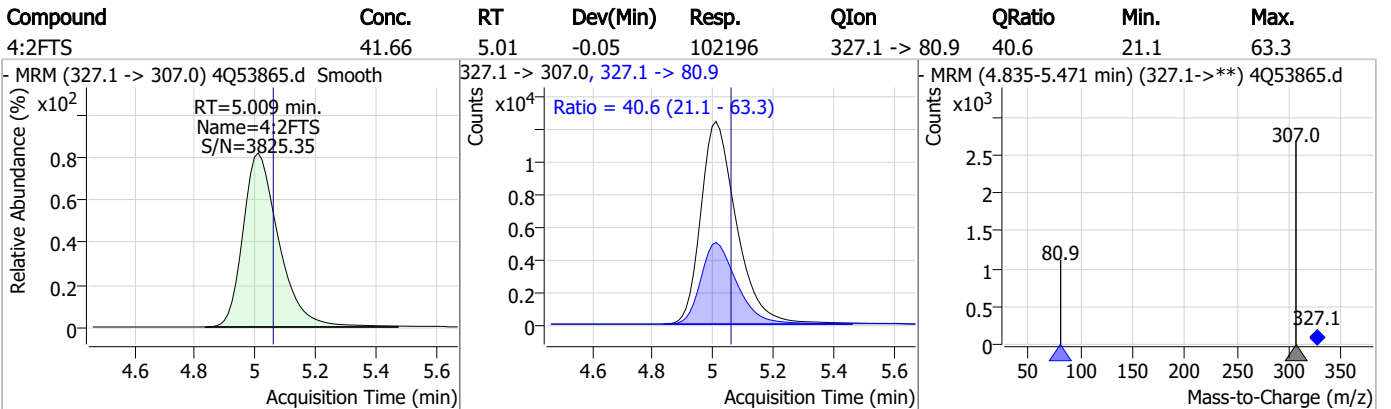
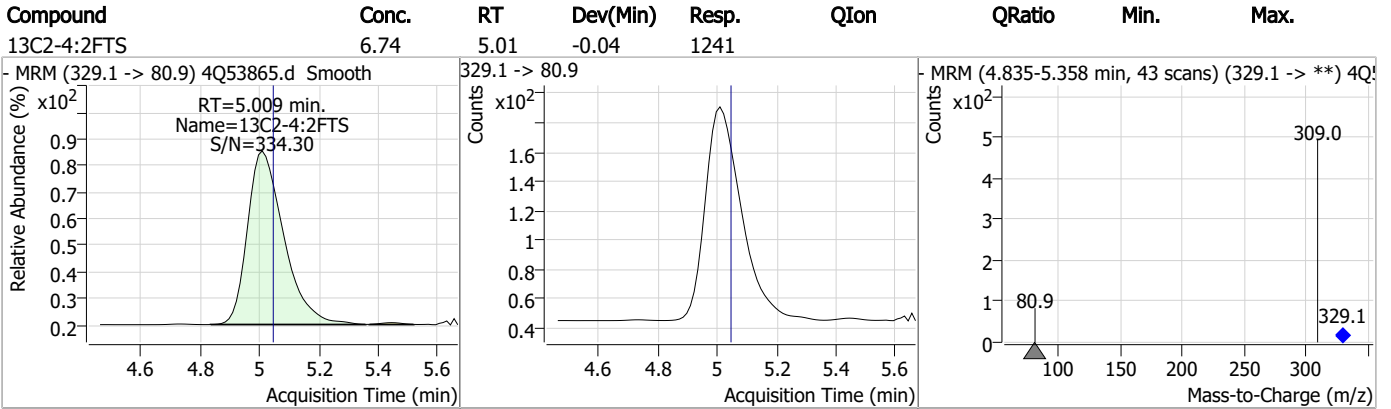
Perfluorinated Compounds by LC/MS/MS



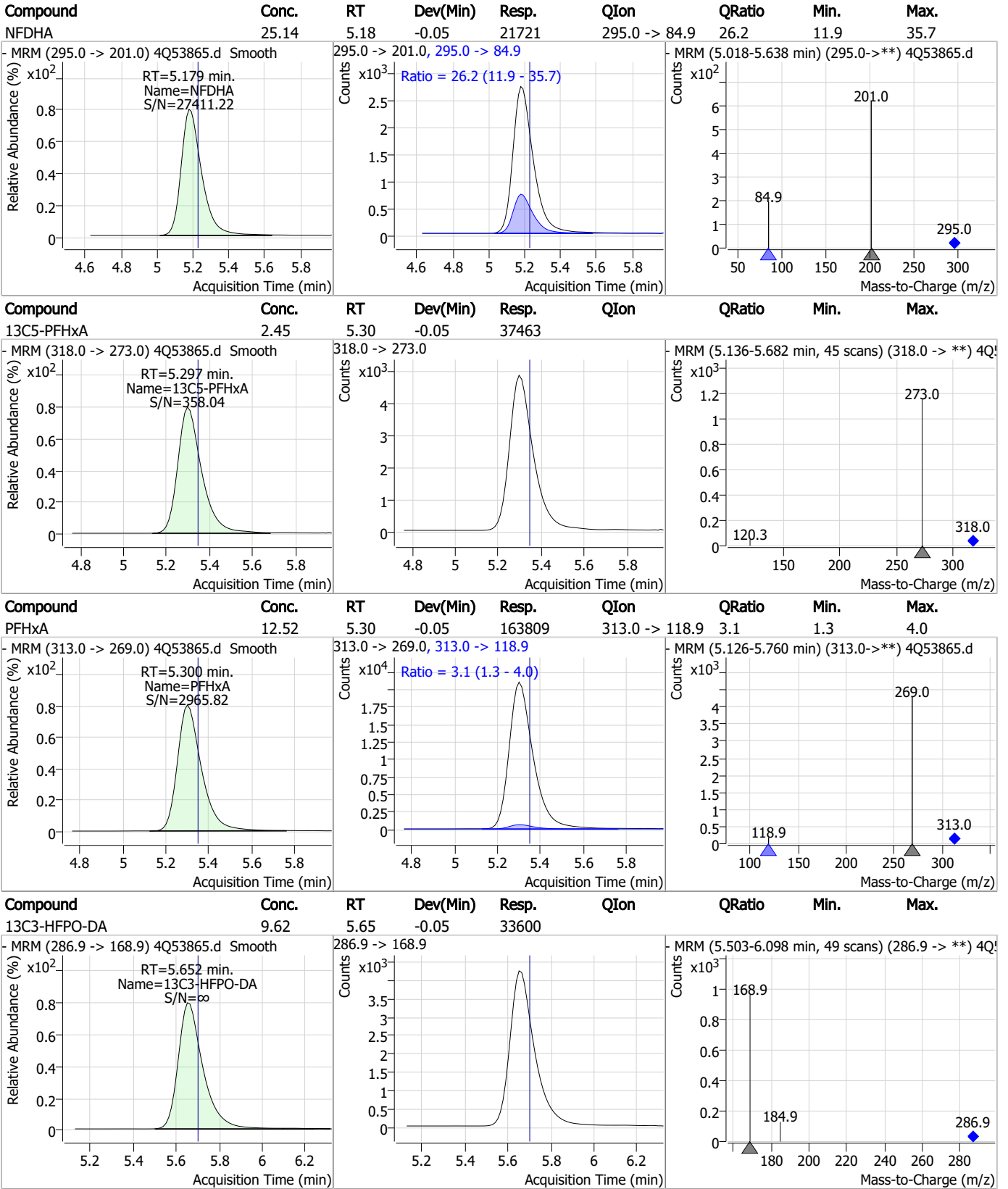
7.6.4

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

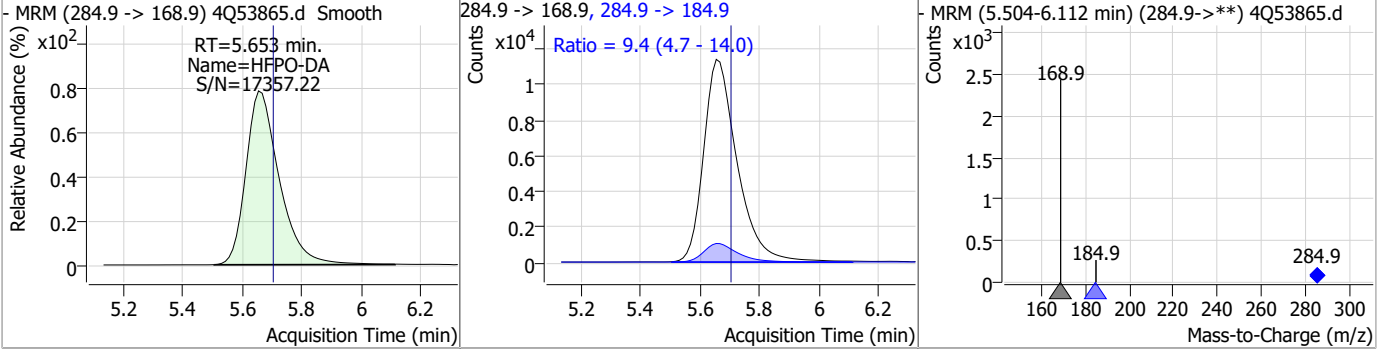


7.6.4

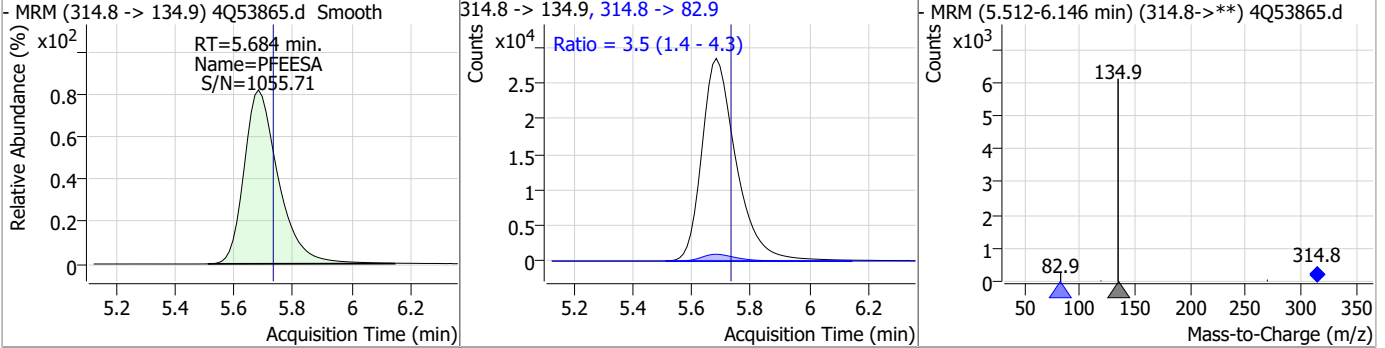
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Perfluorinated Compounds by LC/MS/MS

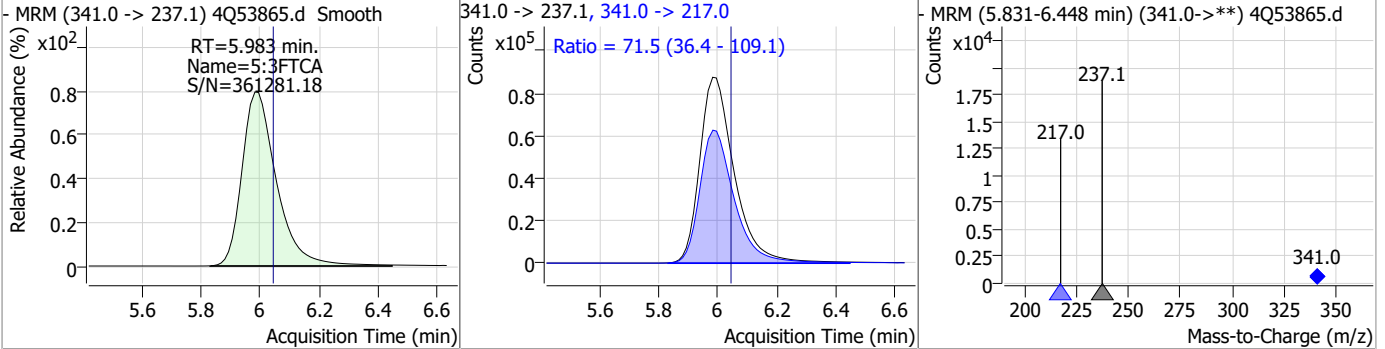
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	24.84	5.65	-0.05	88395	284.9 -> 184.9	9.4	4.7	14.0



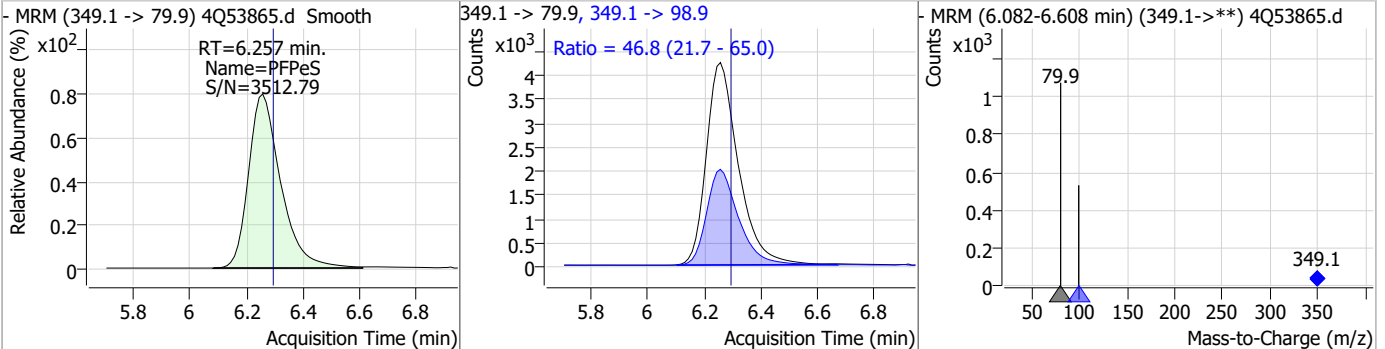
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	22.16	5.68	-0.05	229534	314.8 -> 82.9	3.5	1.4	4.3



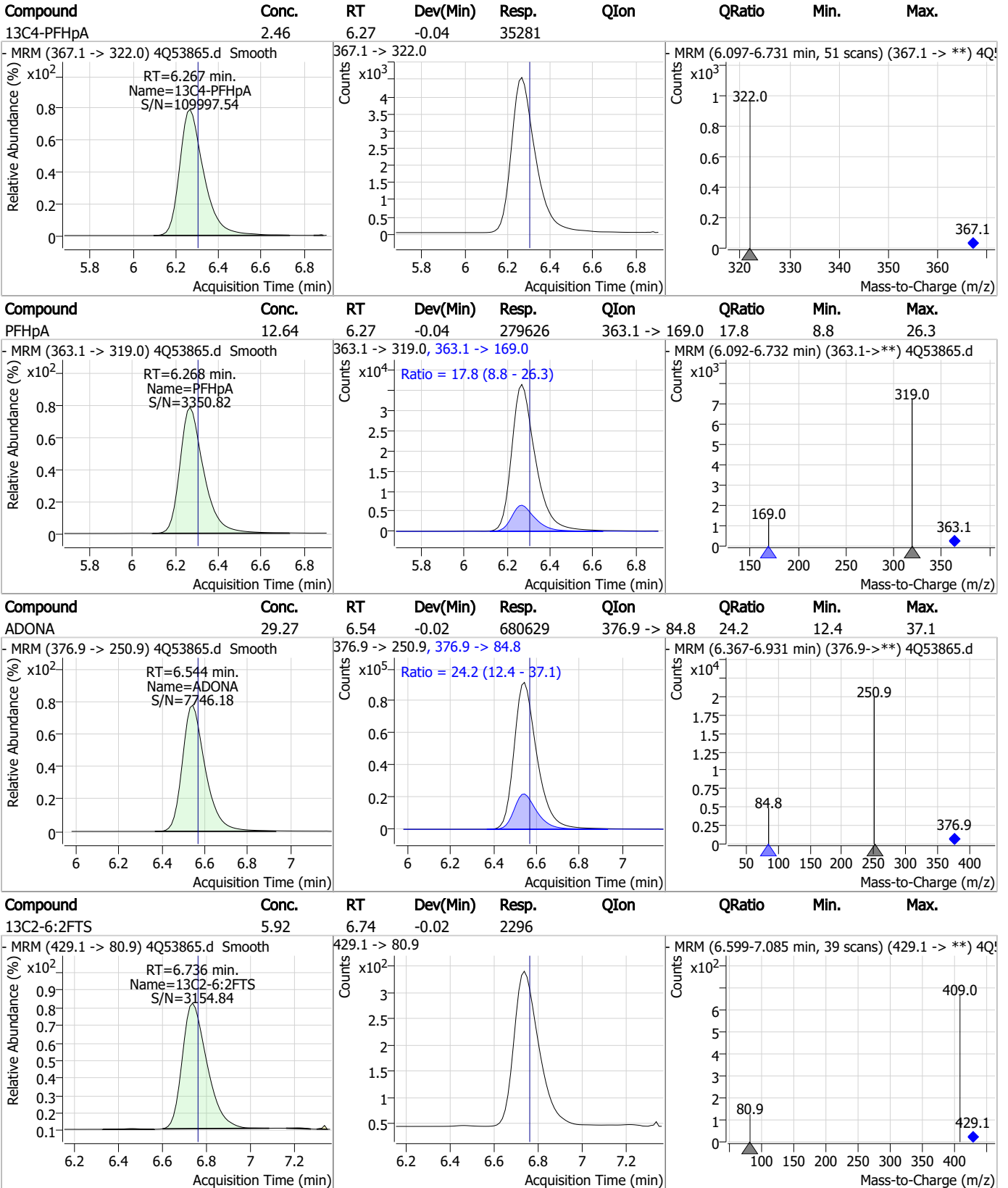
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	309.27	5.98	-0.06	712323	341.0 -> 217.0	71.5	36.4	109.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	11.21	6.26	-0.04	33294	349.1 -> 98.9	46.8	21.7	65.0



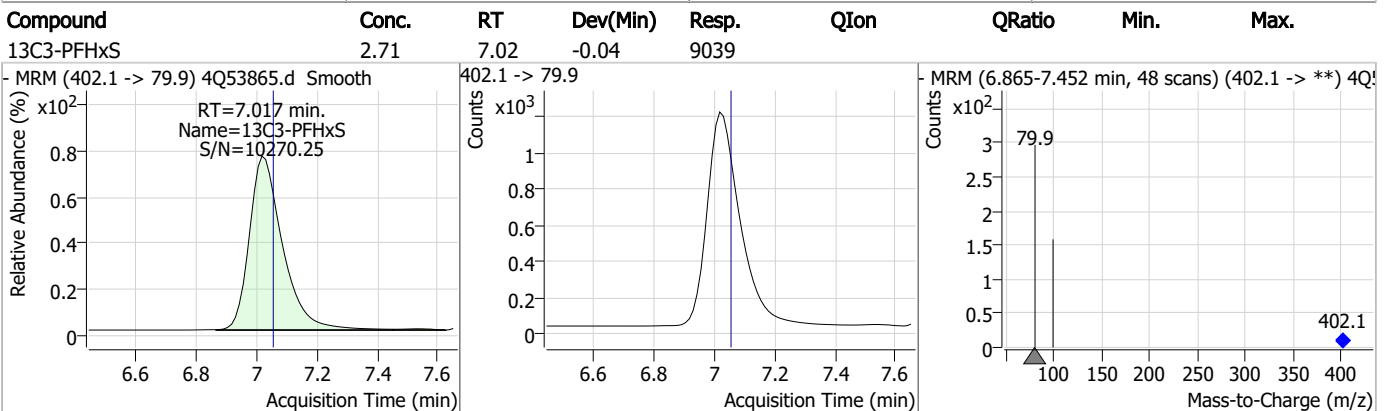
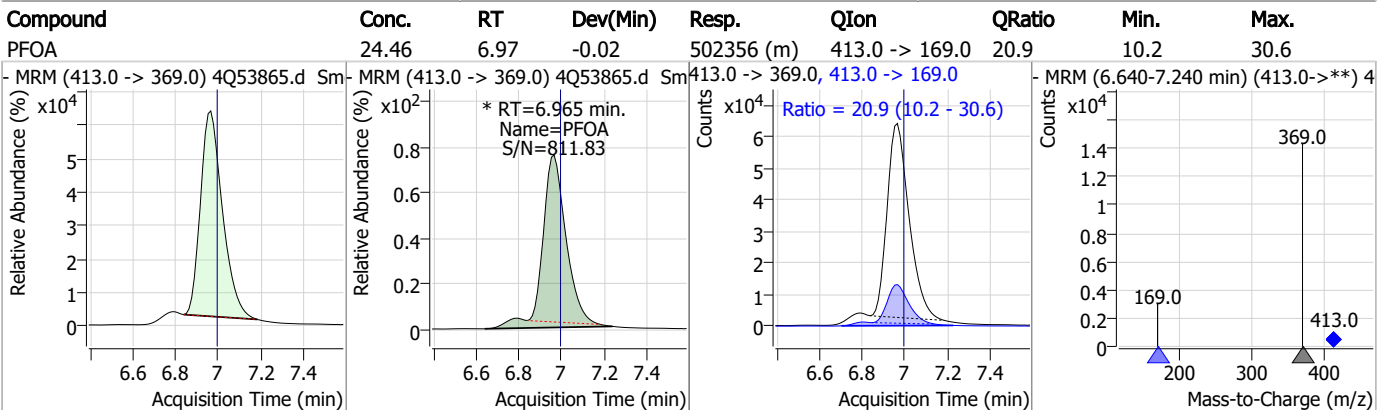
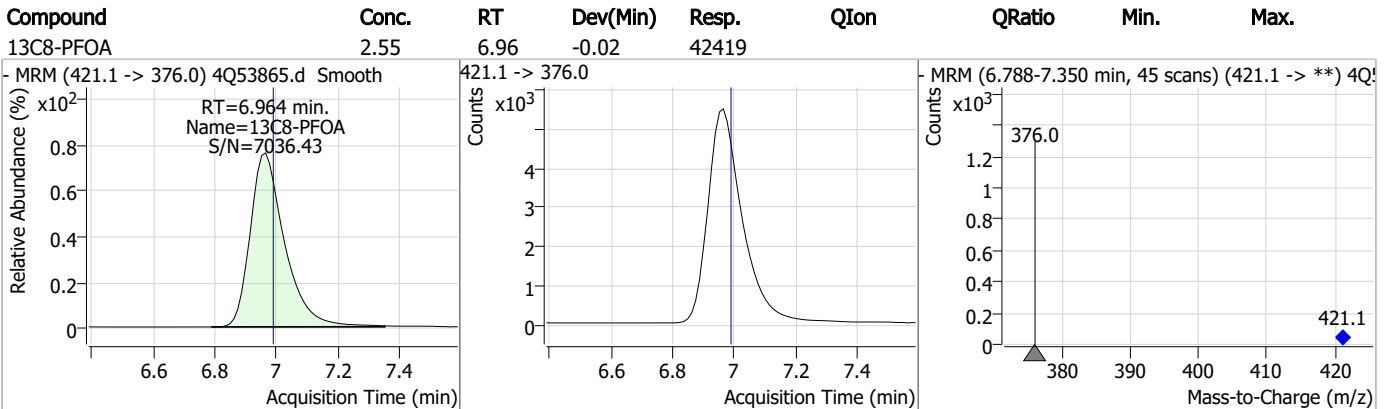
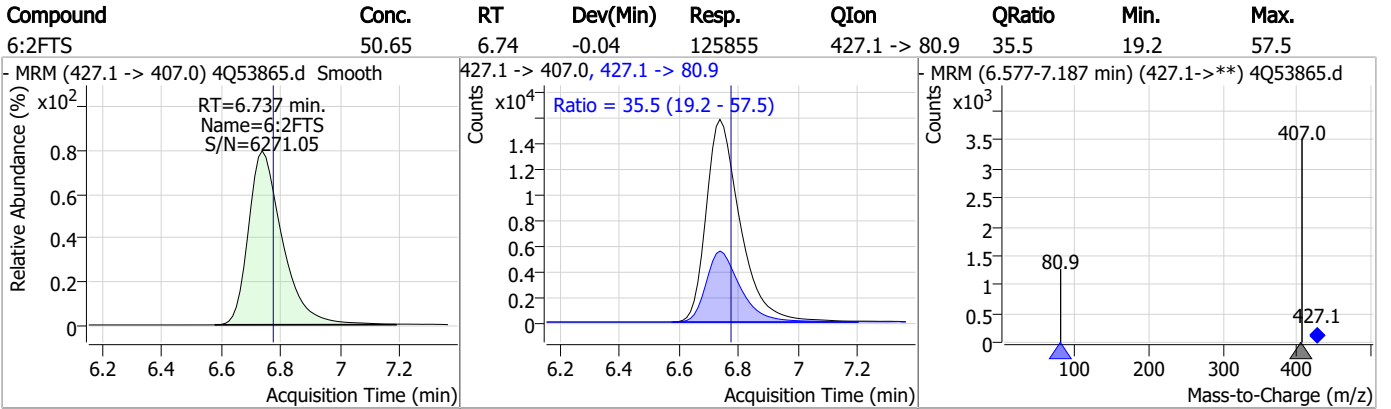
Perfluorinated Compounds by LC/MS/MS



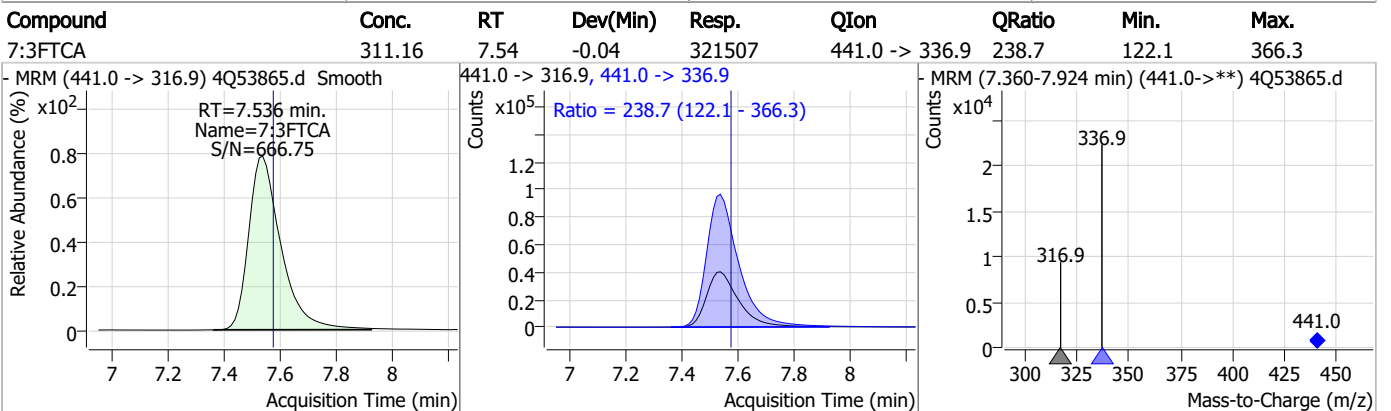
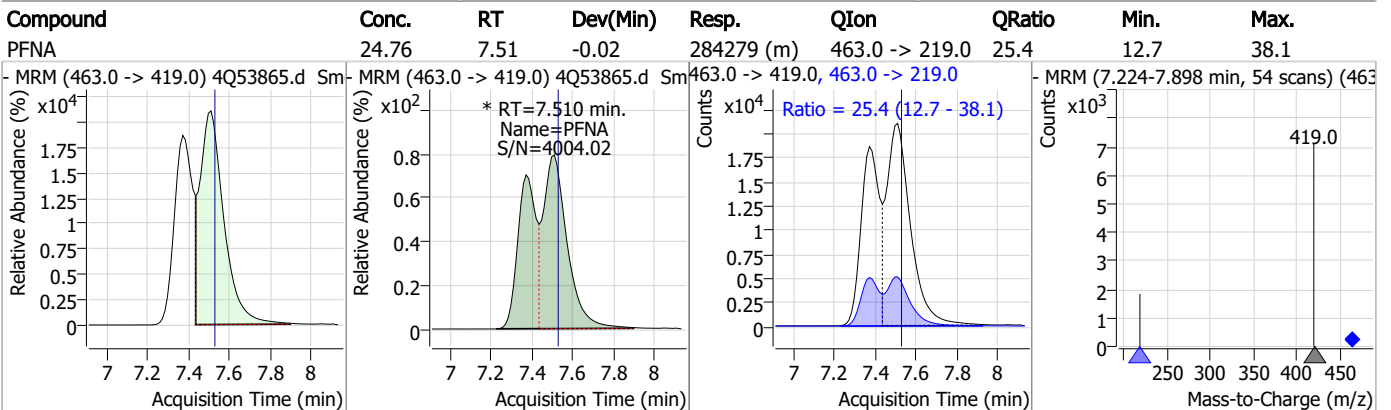
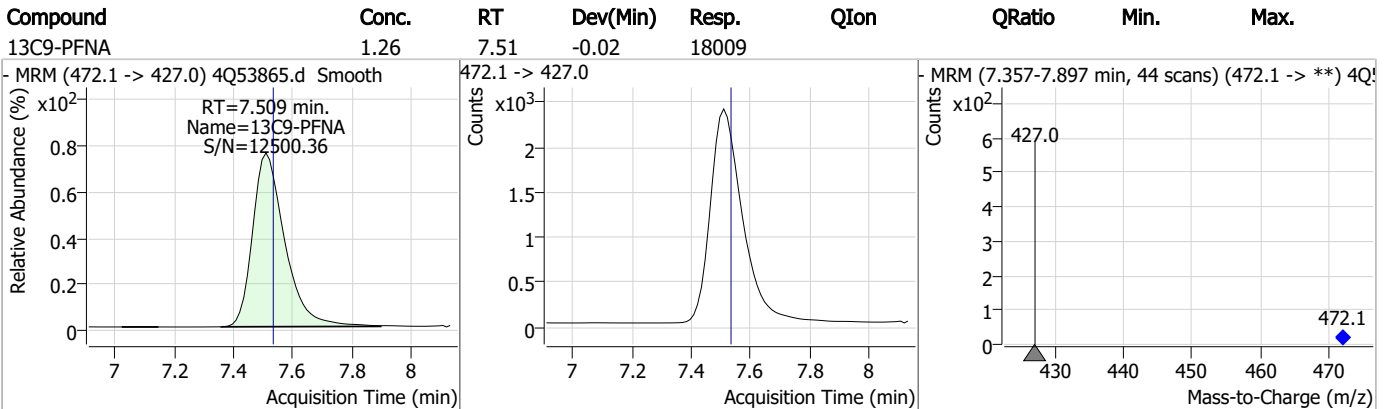
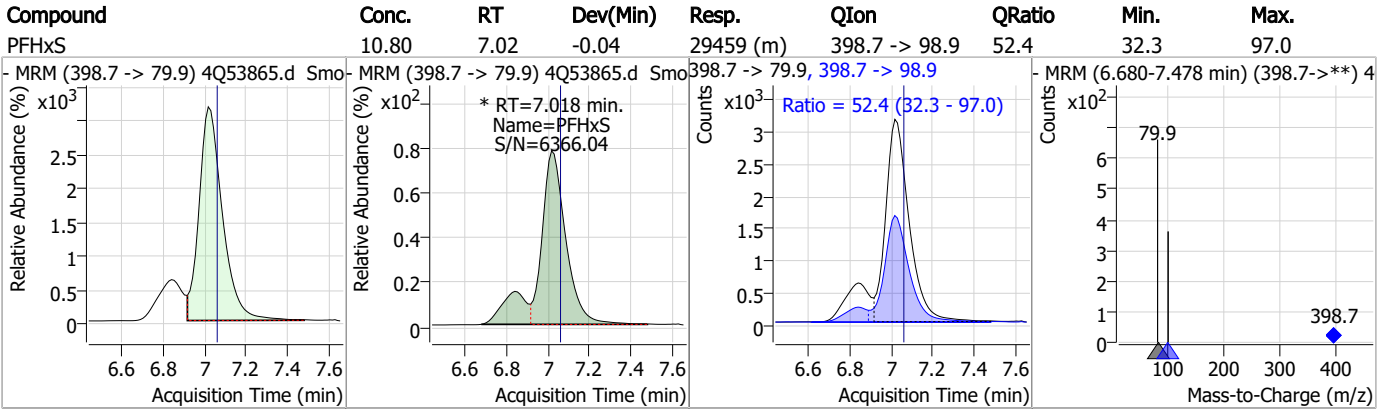
7.6.4

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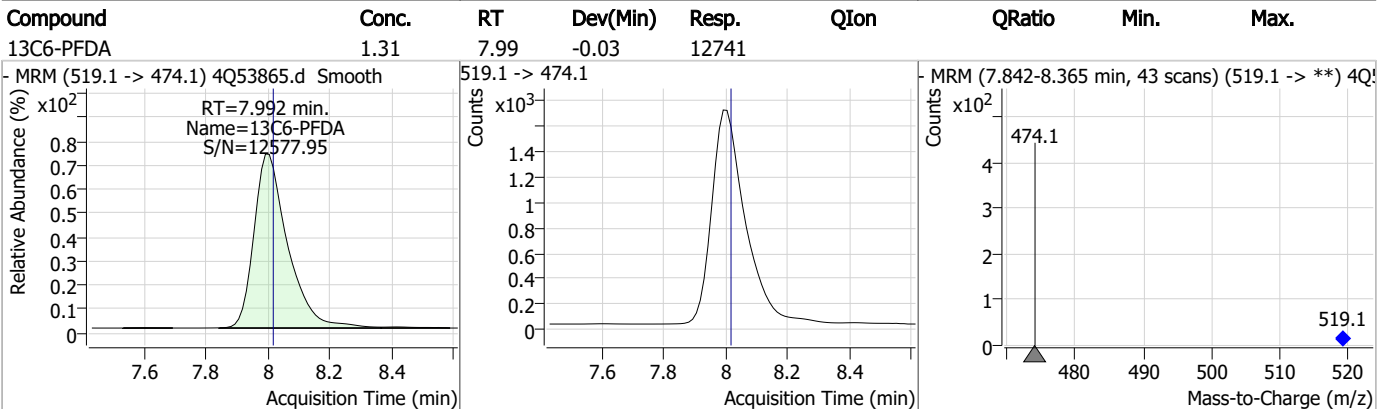
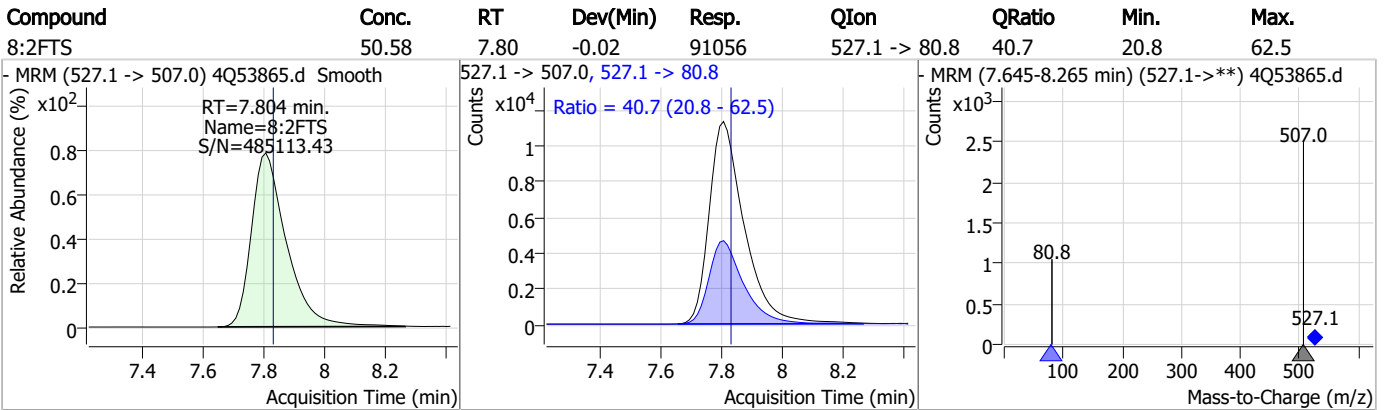
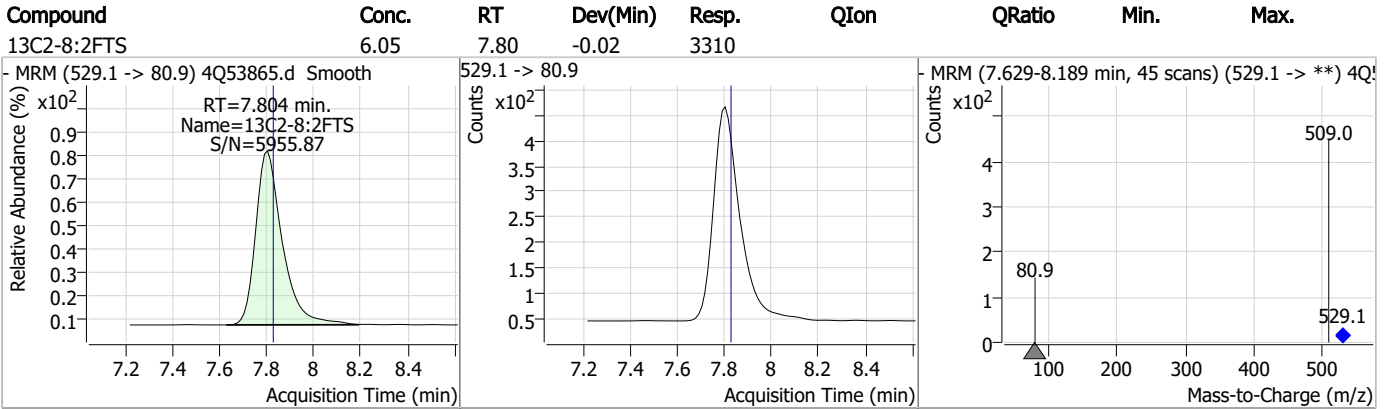
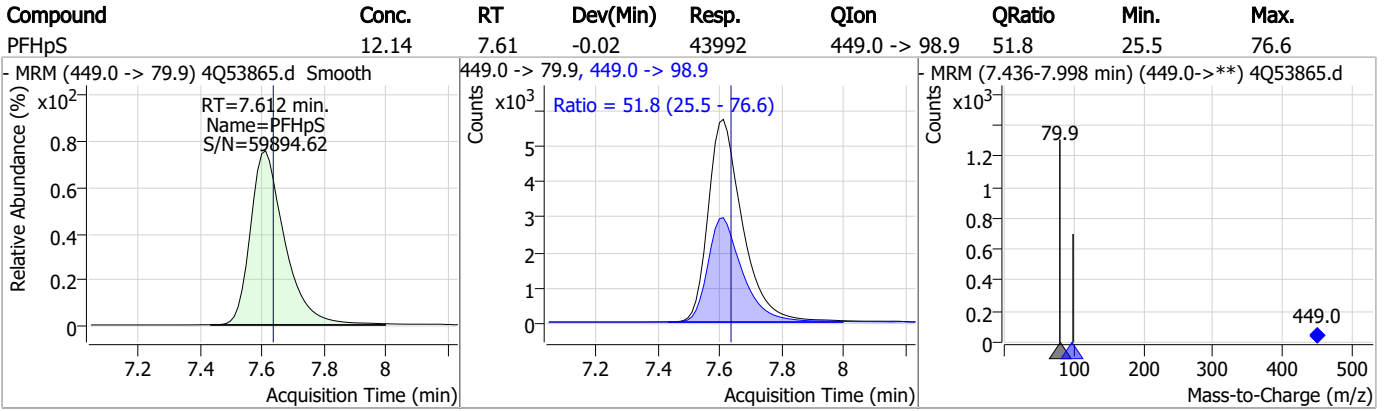
Perfluorinated Compounds by LC/MS/MS



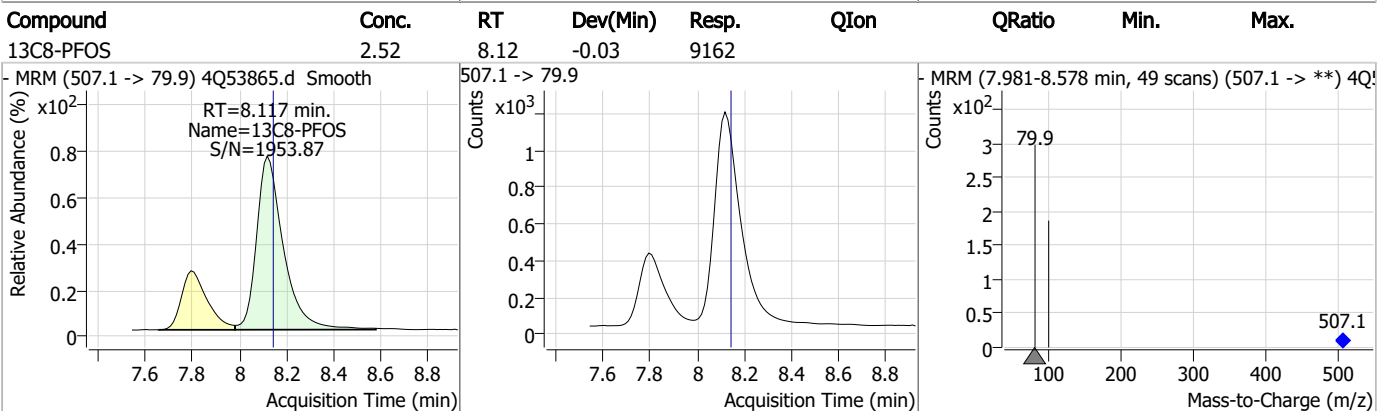
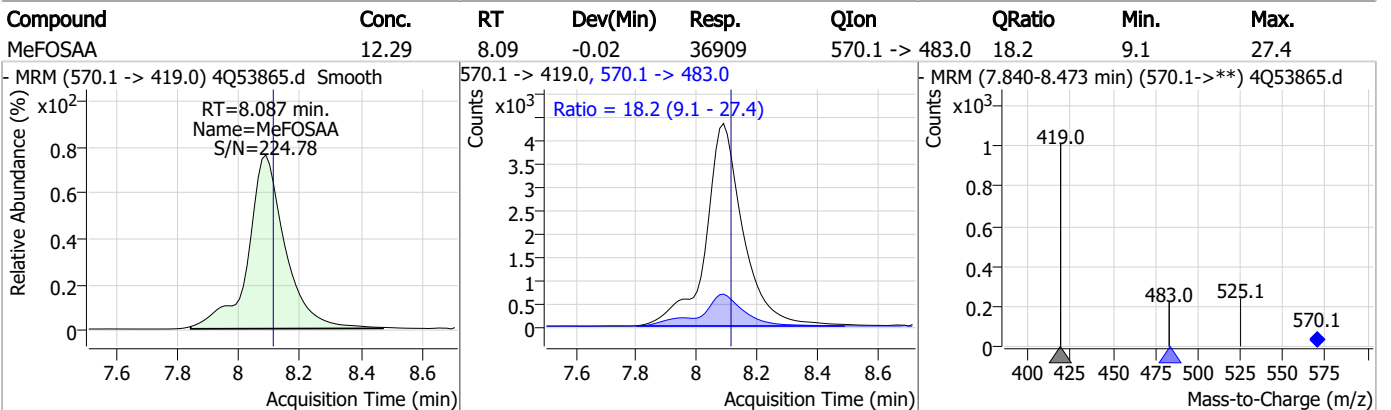
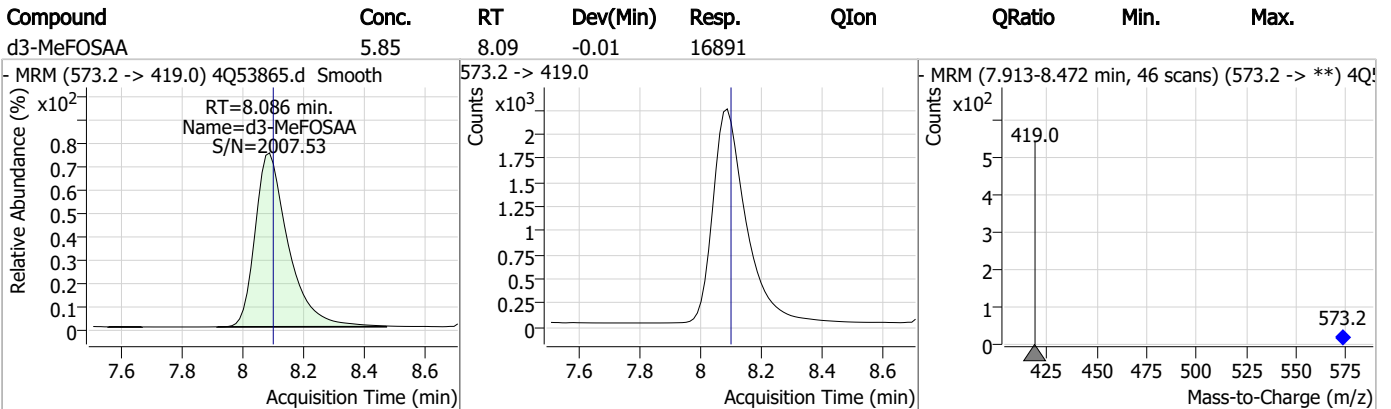
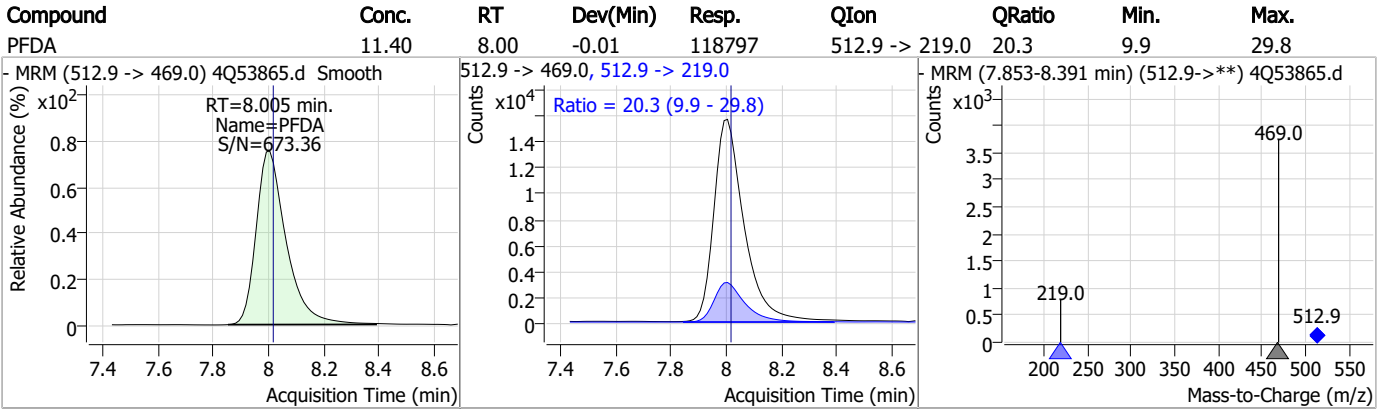
Perfluorinated Compounds by LC/MS/MS



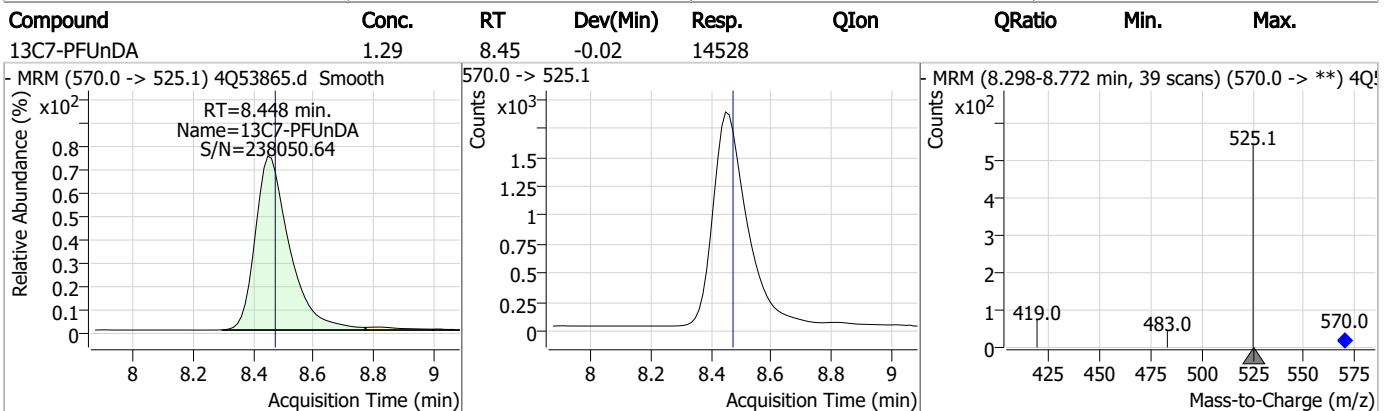
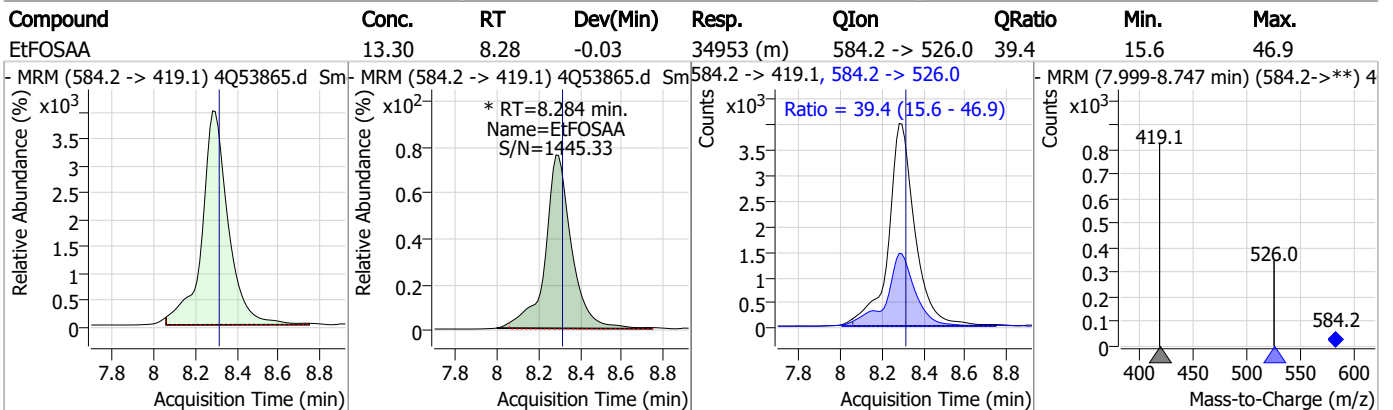
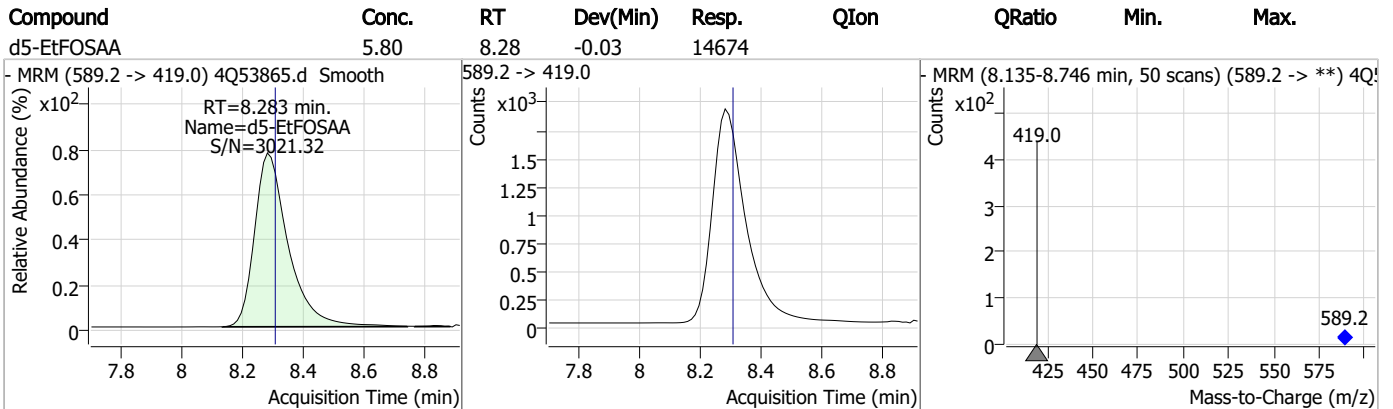
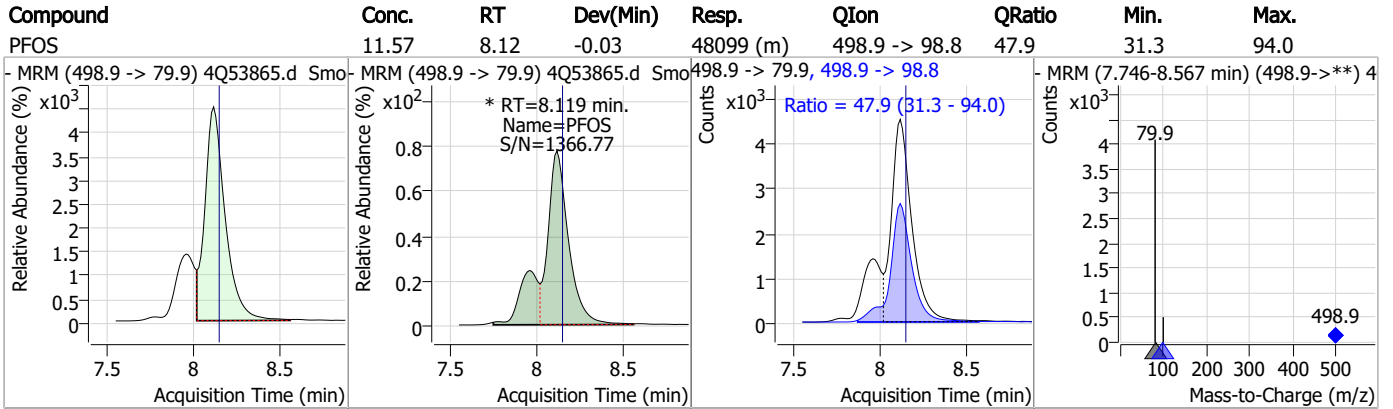
Perfluorinated Compounds by LC/MS/MS



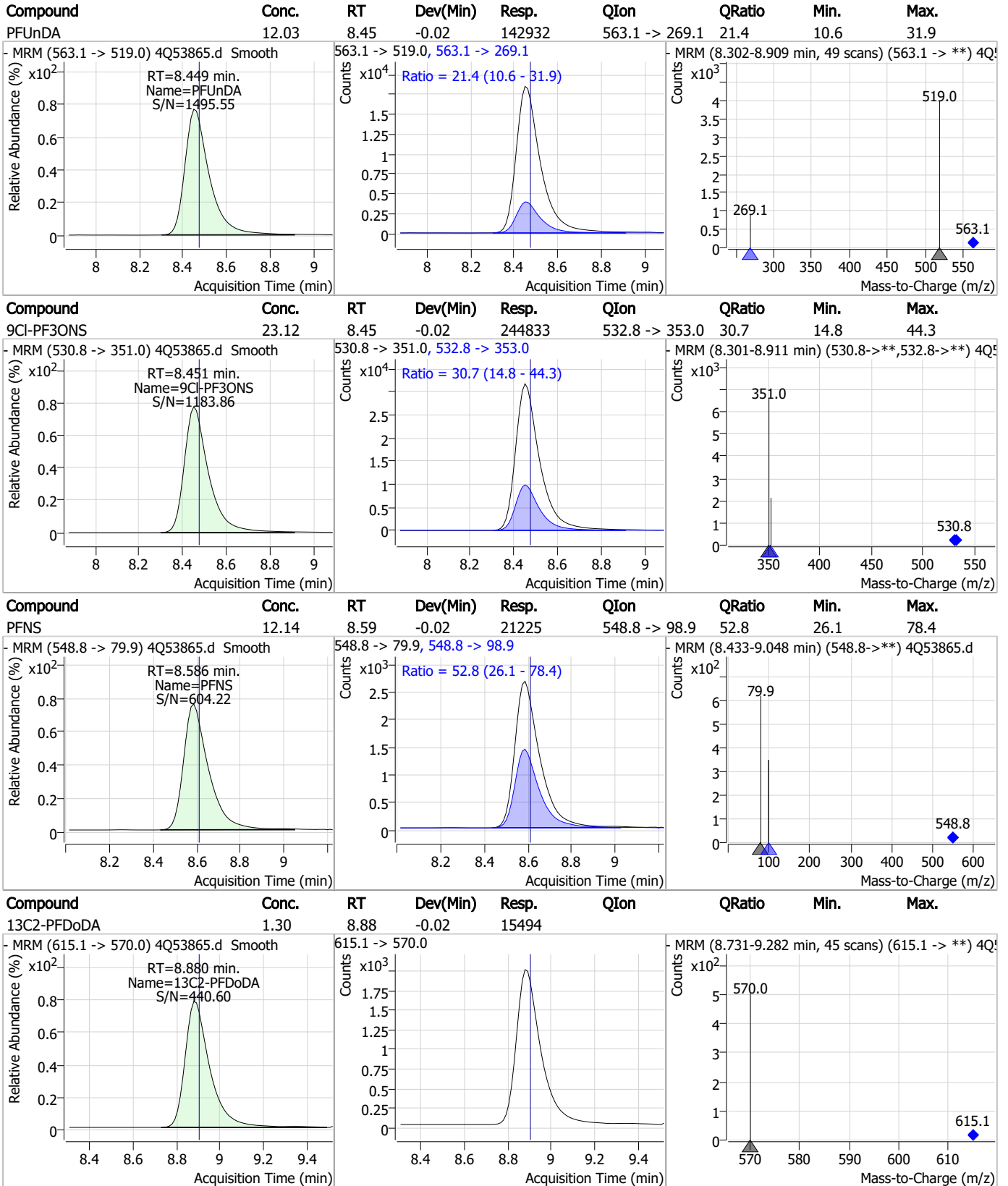
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

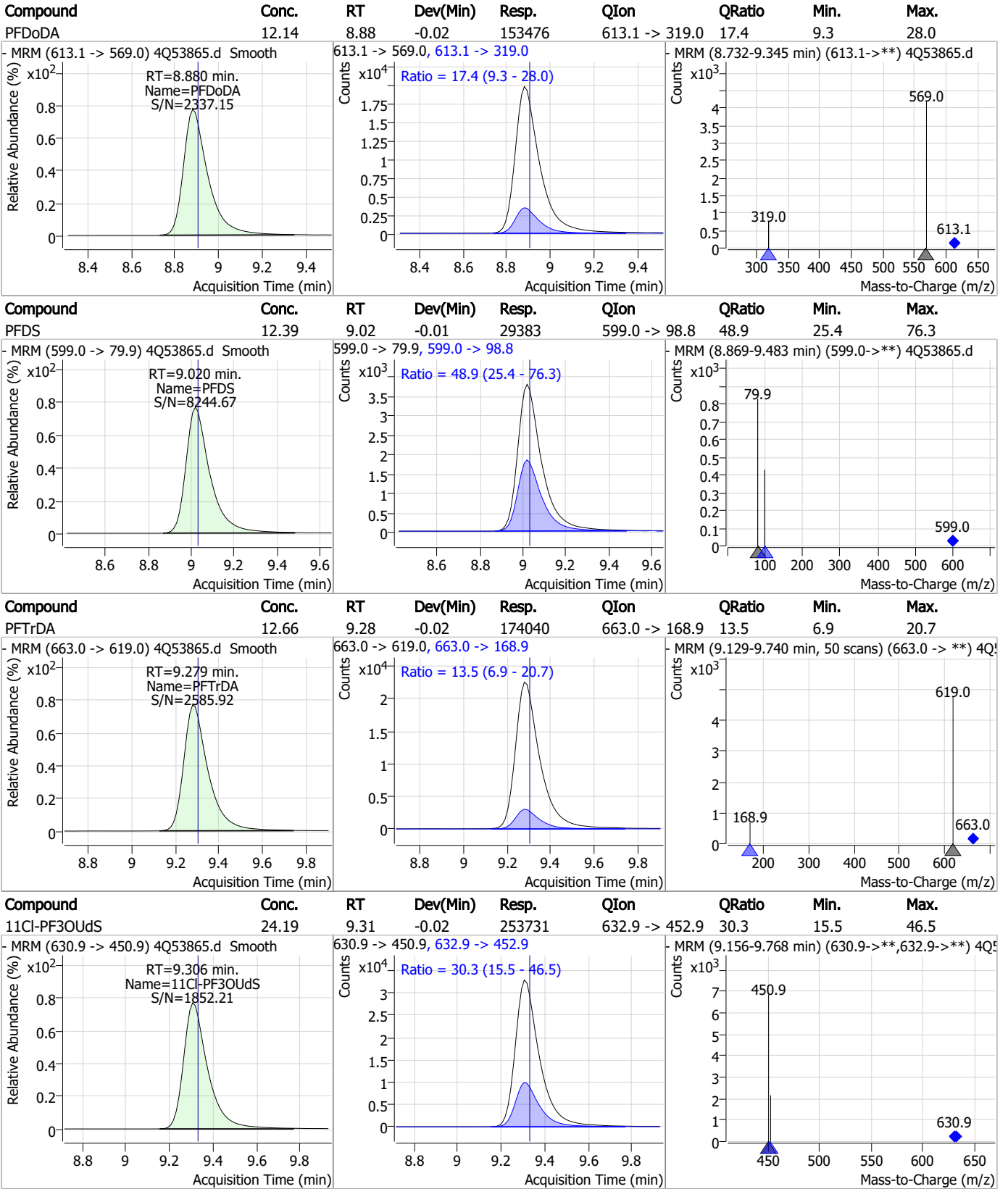


7.6.4

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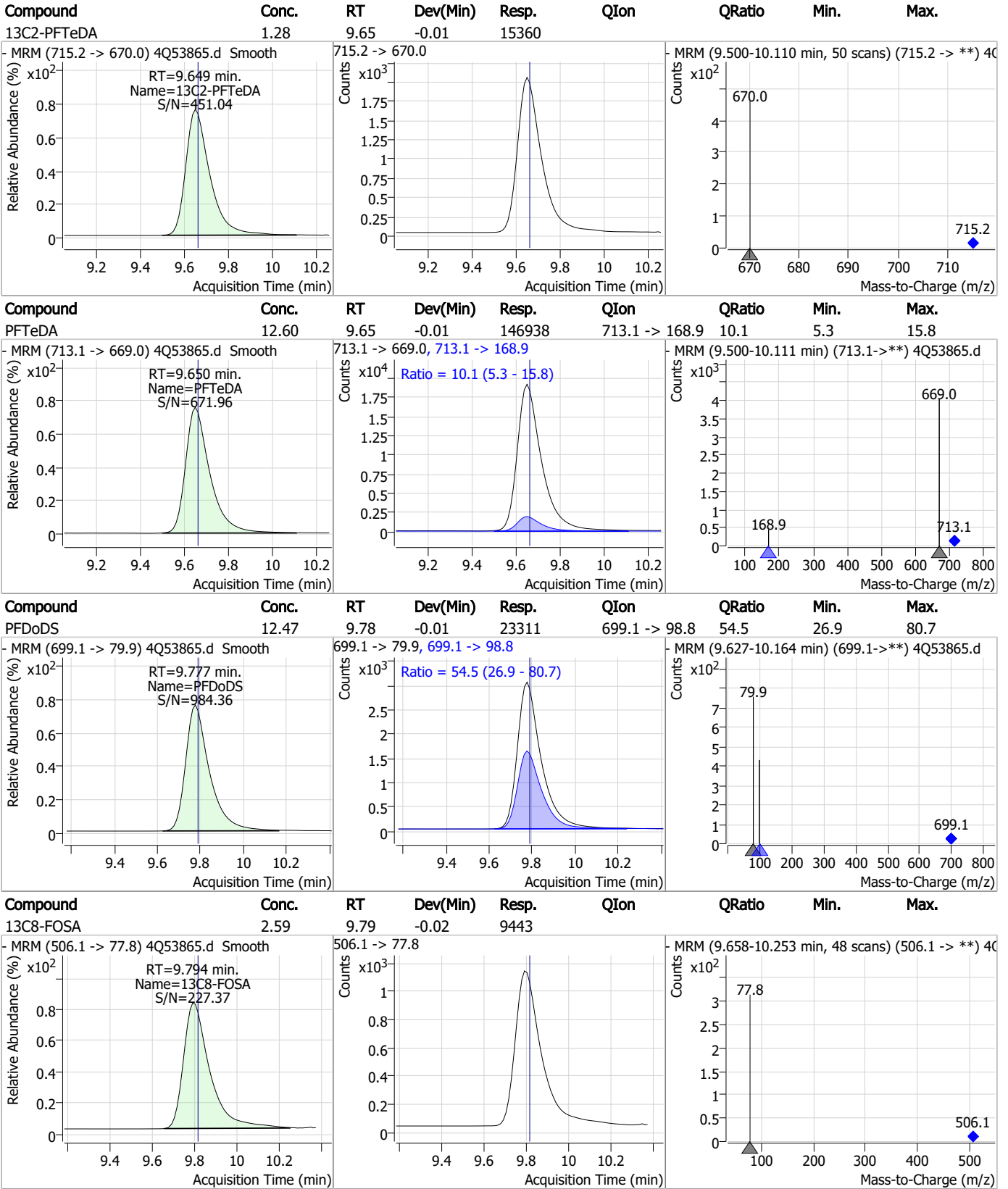
Perfluorinated Compounds by LC/MS/MS



7.6.4

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Perfluorinated Compounds by LC/MS/MS

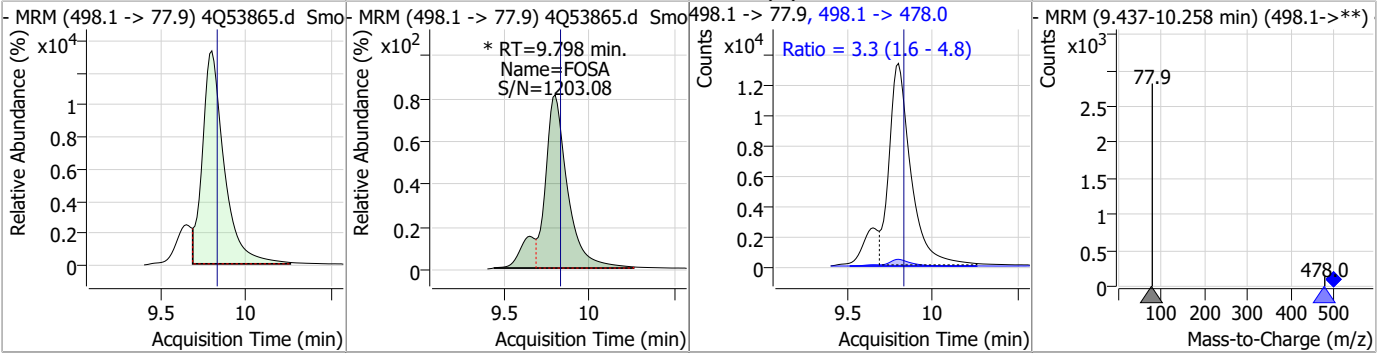


7.6.4

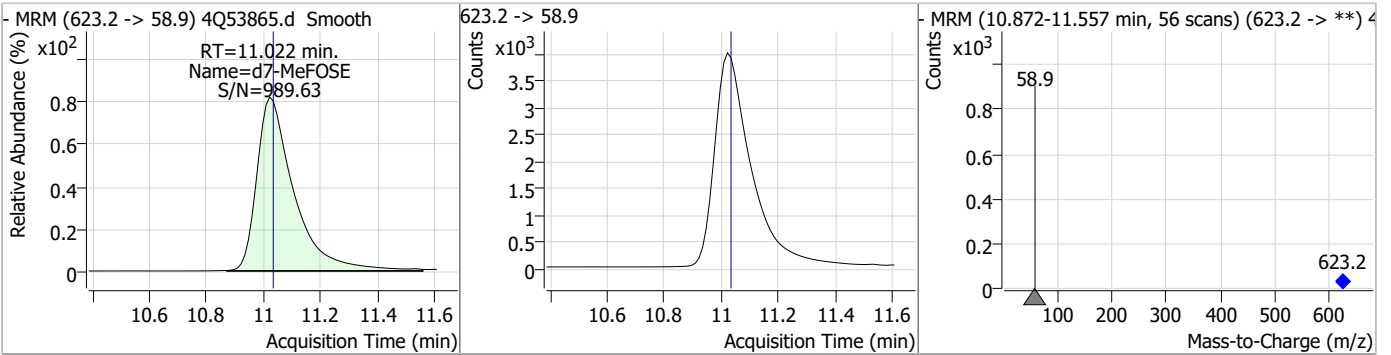
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Perfluorinated Compounds by LC/MS/MS

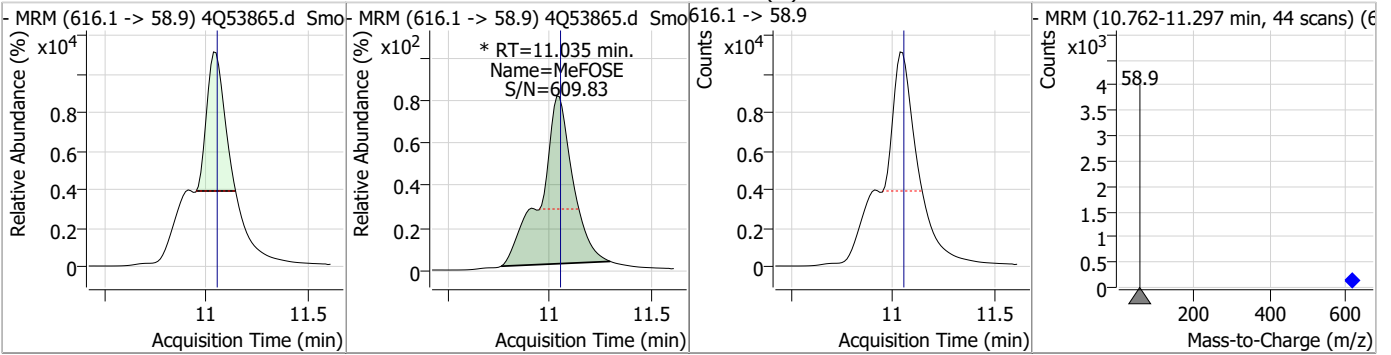
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	28.85	9.80	-0.02	132764 (m)	498.1 -> 478.0	3.3	1.6	4.8



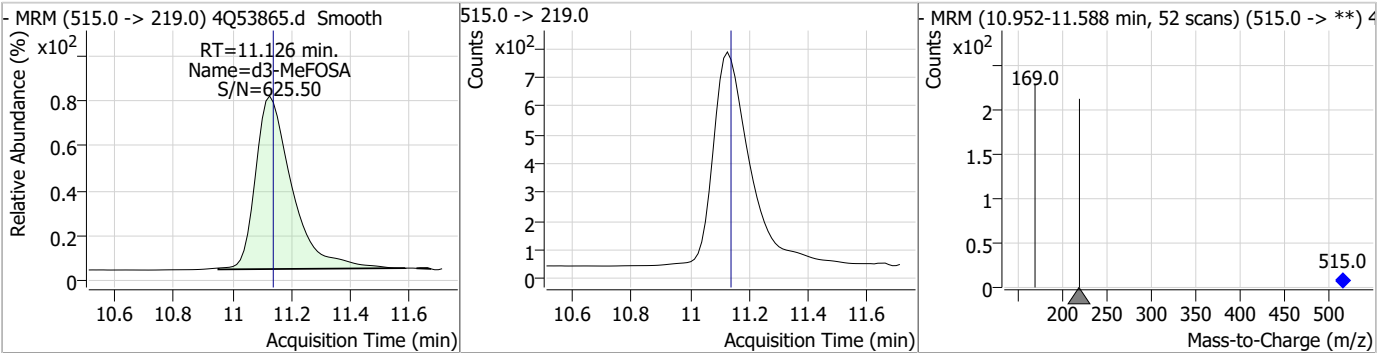
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	22.92	11.02	-0.01	35954				



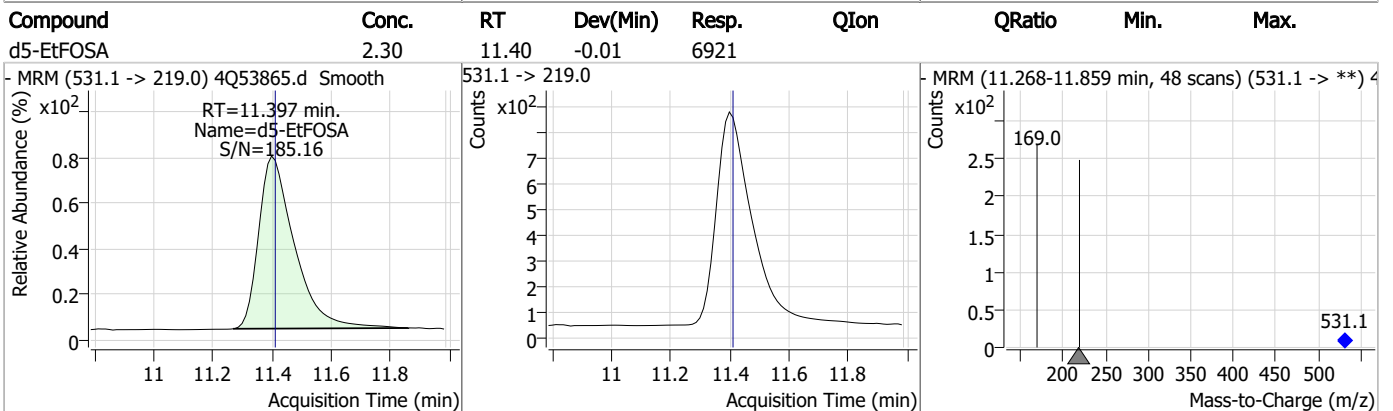
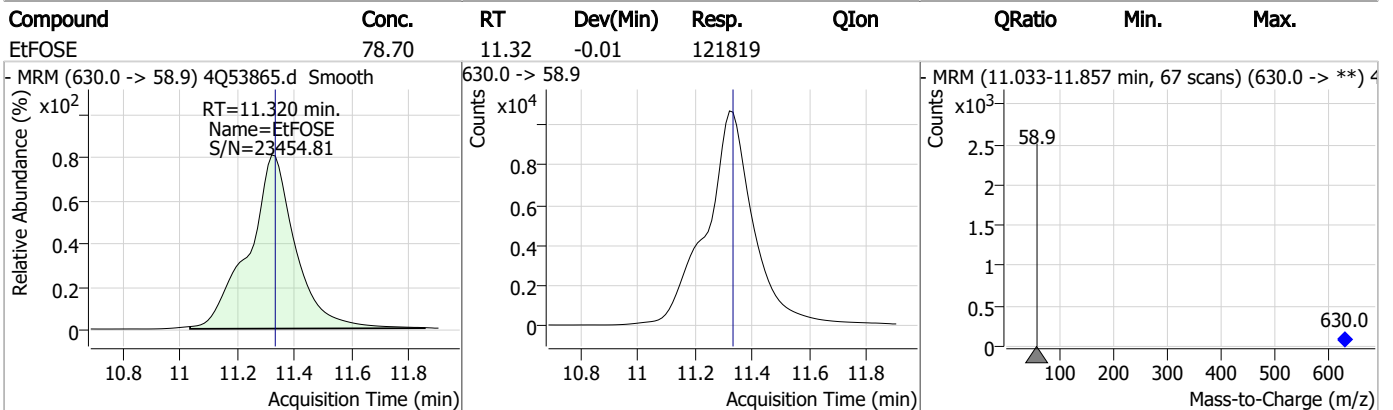
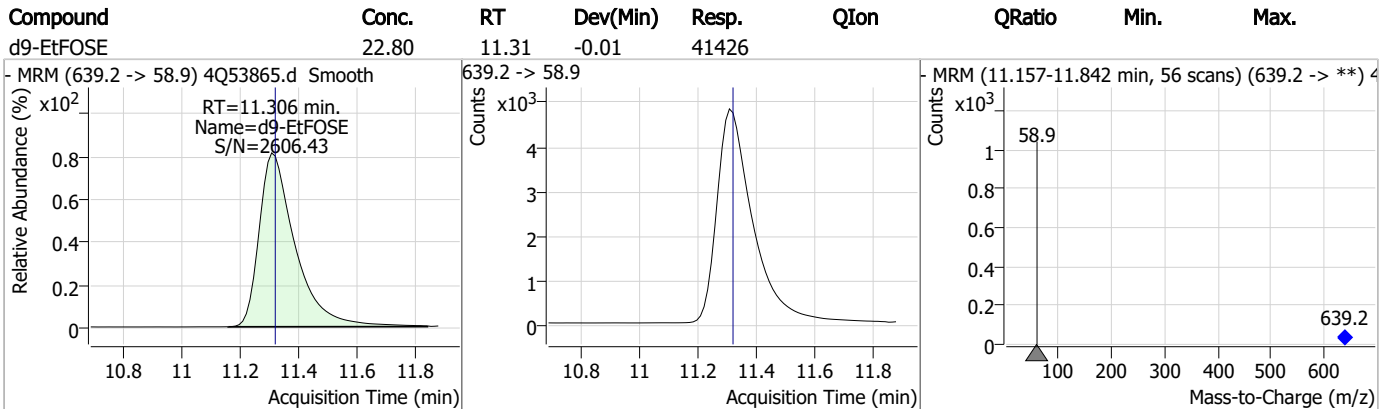
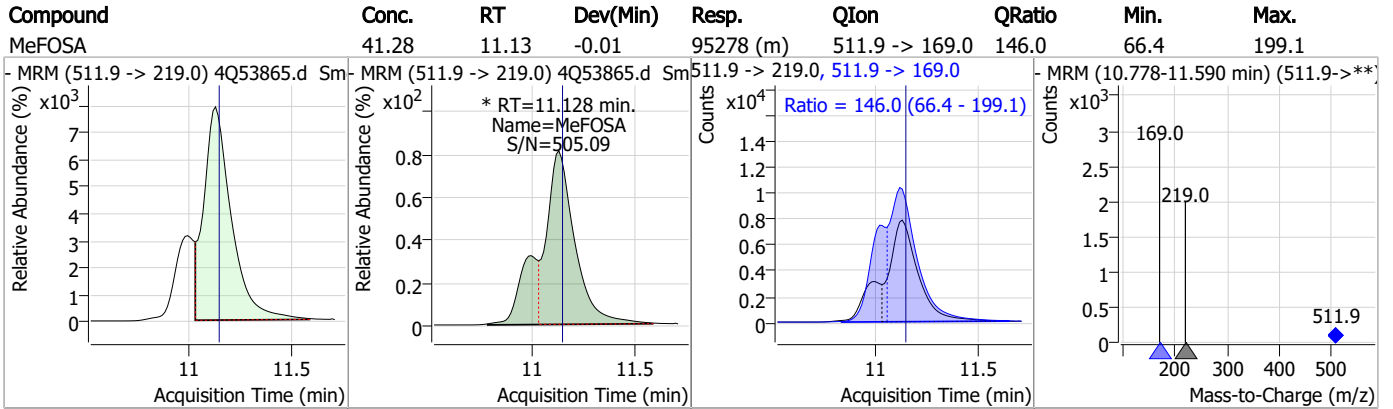
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	71.54	11.03	-0.01	117195 (m)				



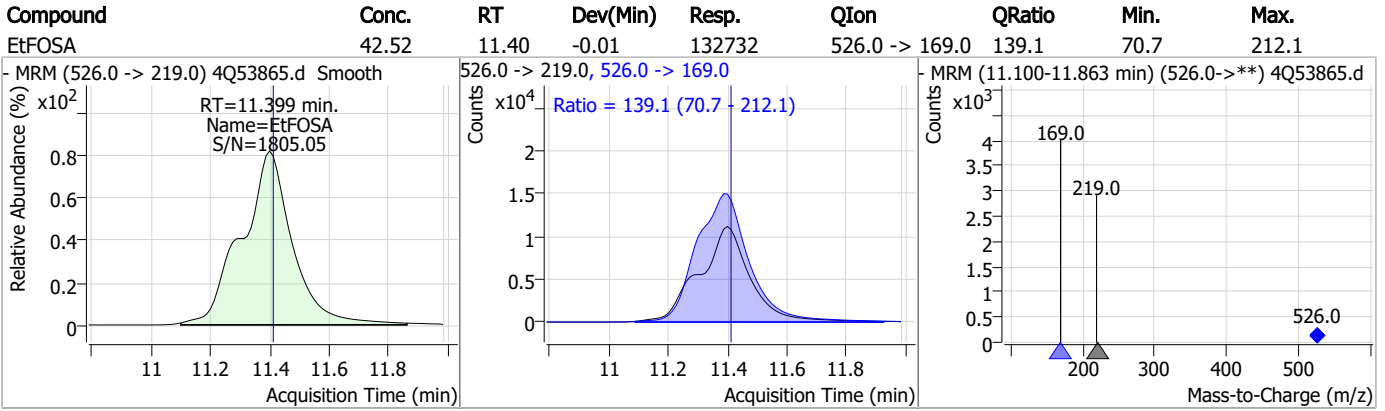
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.50	11.13	-0.01	6359				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.4

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Manual Integration Approval Summary

Sample Number: S4Q786-RT Method: EPA DRAFT 1633
Lab FileID: 4Q53865.D Analyst approved: 11/16/23 13:59 Anna Ludwig
Injection Time: 11/15/23 10:15 Supervisor approved: 11/16/23 15:17 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		6.96	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorononanoic acid	375-95-1		7.51	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak
PFOSA	754-91-6		9.80	Split peak
MeFOSE	24448-09-7		11.04	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.6.4.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtie
 11/19/23 09:22

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54003.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 10:41:06 AM
 Sample Name : RT TDCA
 Vial : P1-B1
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q788_TDCA.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.068	507.1 -> 79.9	8829	2.50	µg/L	-0.025	
13C4-PFOS	8.068	502.8 -> 79.9	8054	2.50	µg/L	-0.025	
System Monitoring Compounds							
13C8-PFOS	8.068	507.1 -> 79.9	8829	2.78	µg/L	-0.025	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.2%				
Target Compounds							
PFOS	8.069	498.9 -> 79.9 498.9 -> 98.8	8140 3929	2.70	µg/L	m	96
TCDCa	6.697	498.9 -> 79.9	2976	7.30	ng/ml		100
TDCA	6.697	498.9 -> 79.9	3156	8.55	ng/ml		100
TUDCA	5.692	498.9 -> 79.9	4235	5.41	ng/ml		100

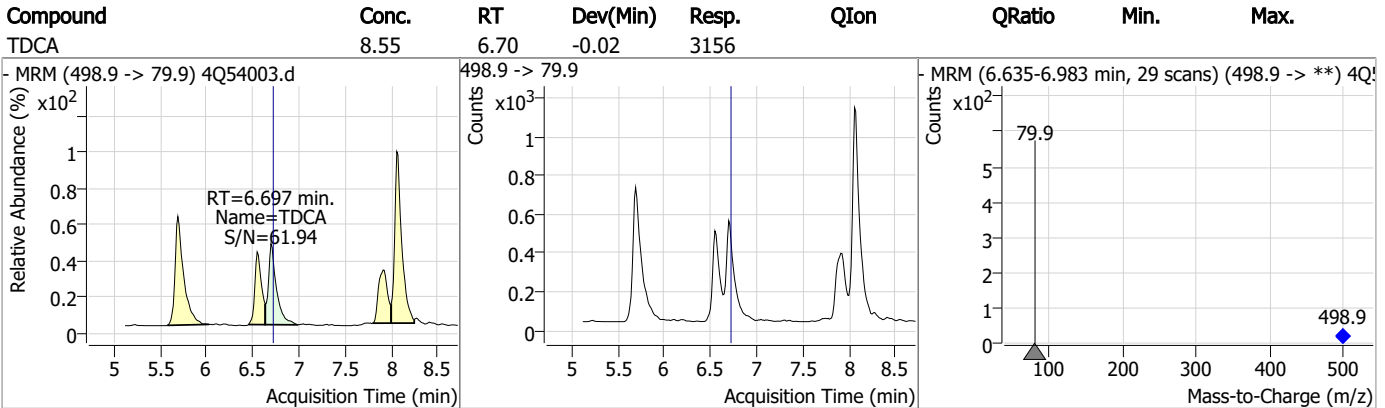
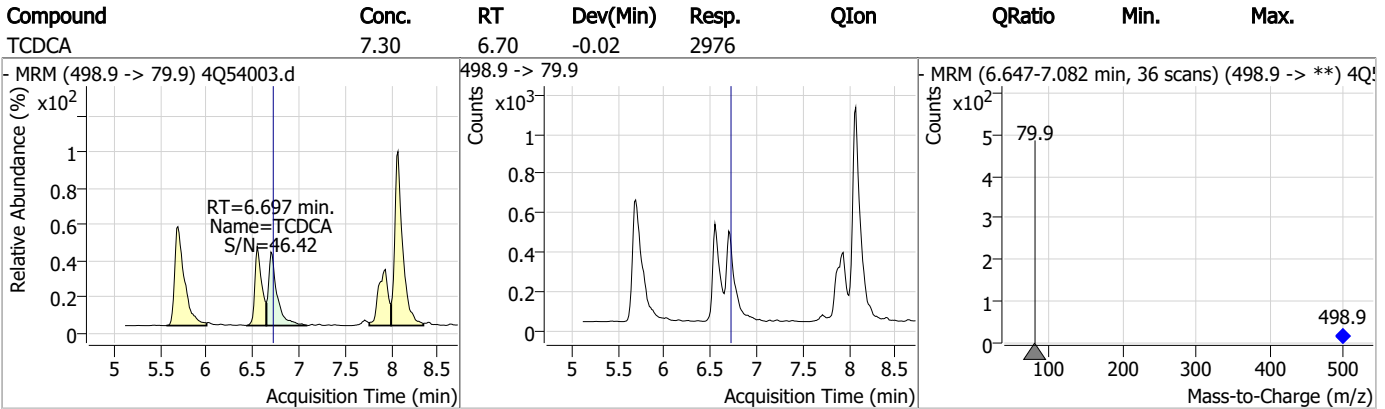
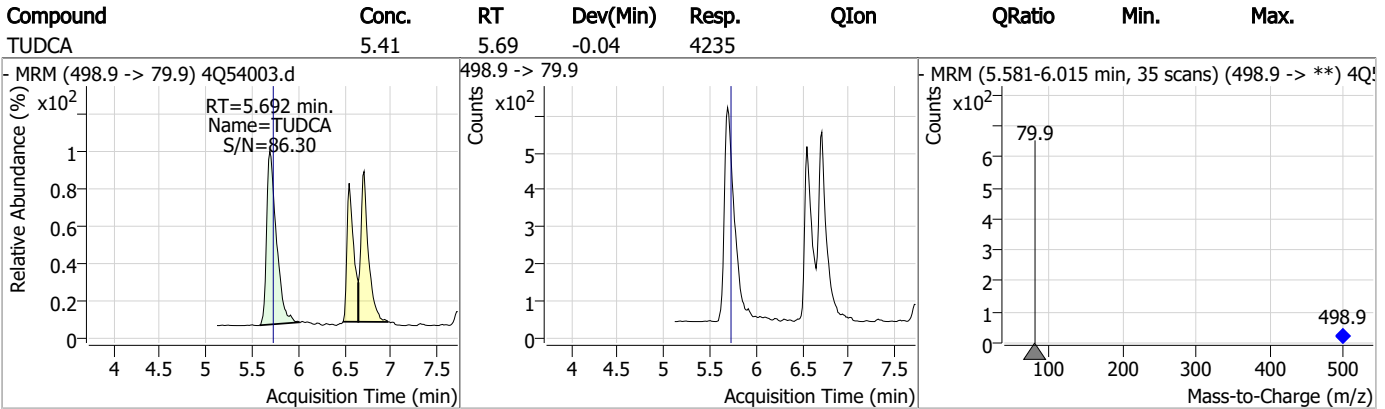
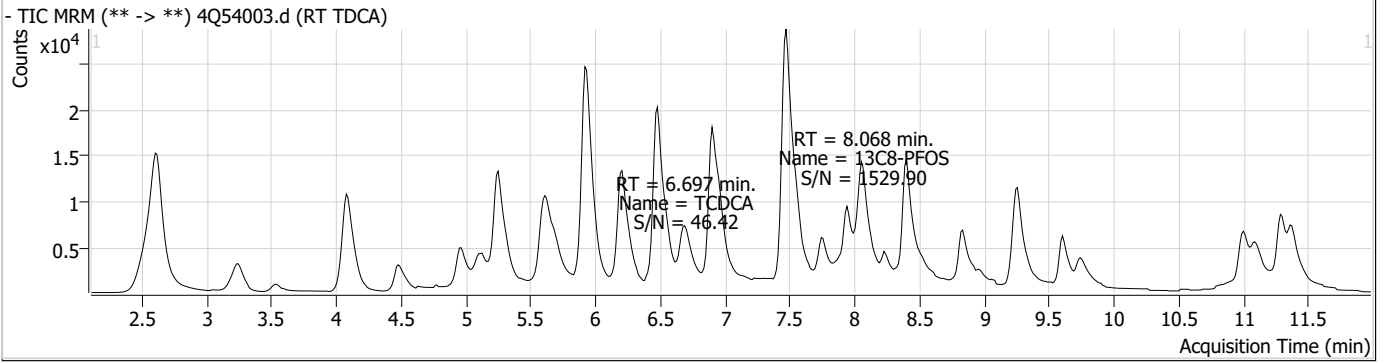
= Qualifier out of range, m = manually integrated, + = Area summed

7.6.5

7

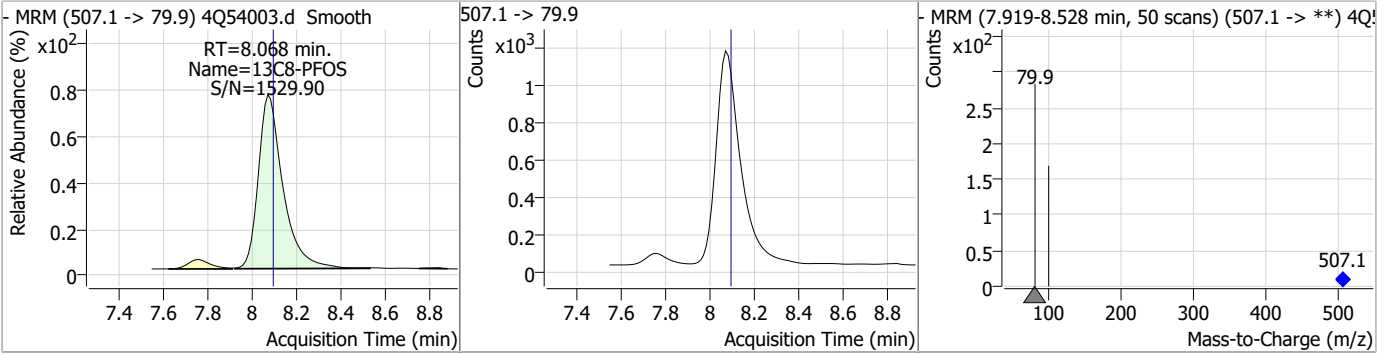


Perfluorinated Compounds by LC/MS/MS

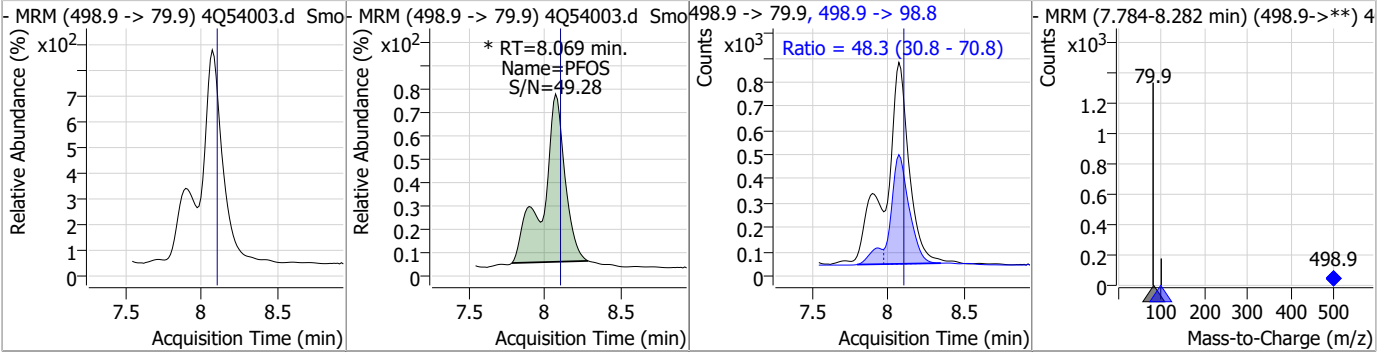


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.78	8.07	-0.02	8829				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.70	8.07	-0.02	8140 (m)	498.9 -> 98.8	48.3	30.8	70.8



7.6.5

7

Manual Integration Approval Summary

Sample Number: S4Q788-RT Method: EPA DRAFT 1633
Lab FileID: 4Q54003.D Analyst approved: 11/18/23 15:04 Mike Eger
Injection Time: 11/17/23 10:41 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.07	Split peak

7.6.5.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54004.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 10:55:49 AM
 Sample Name : RT_BR_LN
 Vial : P1-B2
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.587	216.8 -> 171.9	82362	10.00 µg/L	-0.013
M5-PFPeA	4.075	268.3 -> 223.0	37764	5.00 µg/L	-0.012
M5-PFHxA	5.248	318.0 -> 273.0	27977	2.50 µg/L	-0.012
M4-PFHpA	6.205	367.1 -> 322.0	26101	2.50 µg/L	-0.012
M8-PFOA	6.913	421.1 -> 376.0	29596	2.50 µg/L	-0.012
M9-PFNA	7.458	472.1 -> 427.0	12966	1.25 µg/L	-0.012
M6-PFDA	7.954	519.1 -> 474.1	9298	1.25 µg/L	-0.012
M7-PFUnDA	8.411	570.0 -> 525.1	10279	1.25 µg/L	-0.013
M2-PFDoDA	8.830	615.1 -> 570.0	10040	1.25 µg/L	-0.012
M2-PFTeDA	9.612	715.2 -> 670.0	10959	1.25 µg/L	0.000
M8-FOSA	9.769	506.1 -> 77.8	7082	2.50 µg/L	0.000
M3-PFBS	5.103	302.1 -> 79.9	8694	2.50 µg/L	-0.012
M3-PFHxS	6.967	402.1 -> 79.9	6962	2.50 µg/L	-0.012
M8-PFOS	8.080	507.1 -> 79.9	7027	2.50 µg/L	0.000
M2-4:2FTS	4.959	329.1 -> 80.9	862	5.00 µg/L	-0.012
M2-6:2FTS	6.686	429.1 -> 80.9	1709	5.00 µg/L	-0.012
M2-8:2FTS	7.754	529.1 -> 80.9	2214	5.00 µg/L	-0.012
M3-MeFOSAA	8.037	573.2 -> 419.0	11613	5.00 µg/L	-0.012
M3-HFPO-DA	5.602	286.9 -> 168.9	25364	10.00 µg/L	-0.012
M5-EtFOSAA	8.246	589.2 -> 419.0	9423	5.00 µg/L	0.000
M7-MeFOSE	10.997	623.2 -> 58.9	28878	25.00 µg/L	-0.012
M9-EtFOSE	11.294	639.2 -> 58.9	32655	25.00 µg/L	0.000
M5-EtFOSA	11.385	531.1 -> 219.0	5734	2.50 µg/L	0.000
M3-MeFOSA	11.101	515.0 -> 219.0	4412	2.50 µg/L	-0.012
13C4-PFOS	8.081	502.8 -> 79.9	6008	2.50 µg/L	0.000
13C3-PFBA	2.578	216.0 -> 172.0	40159	5.00 µg/L	-0.012
18O2-PFHxS	6.966	403.0 -> 83.9	3994	2.50 µg/L	-0.012
13C4-PFOA	6.914	417.1 -> 372.0	32596	2.50 µg/L	-0.012
13C2-PFDA	7.955	515.1 -> 470.1	9359	1.25 µg/L	-0.012
13C5-PFNA	7.459	468.0 -> 423.0	12881	1.25 µg/L	-0.012
13C2-PFHxA	5.249	315.1 -> 270.0	30302	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	4.959	329.1 -> 80.9	862	5.66 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.1%		
13C2-6:2FTS	6.686	429.1 -> 80.9	1709	5.28 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.7%		
13C2-8:2FTS	7.754	529.1 -> 80.9	2214	4.97 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C2-PFDoDA	8.830	615.1 -> 570.0	10040	1.20 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C2-PFTeDA	9.612	715.2 -> 670.0	10959	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.2%		
13C3-PFBS	5.103	302.1 -> 79.9	8694	2.88 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 115.1%		
13C3-PFHxS	6.967	402.1 -> 79.9	6962	2.77 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.0%	
13C4-PFBA	2.587	216.8 -> 171.9	82362	9.94 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C4-PFHpA	6.205	367.1 -> 322.0	26101	2.43 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.2%	
13C5-PFHxA	5.248	318.0 -> 273.0	27977	2.49 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C5-PFPeA	4.075	268.3 -> 223.0	37764	4.96 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C6-PFDA	7.954	519.1 -> 474.1	9298	1.34 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.9%	
13C7-PFUnDA	8.411	570.0 -> 525.1	10279	1.32 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.3%	
13C8-FOSA	9.769	506.1 -> 77.8	7082	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C8-PFOA	6.913	421.1 -> 376.0	29596	2.49 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C8-PFOS	8.080	507.1 -> 79.9	7027	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.4%	
13C9-PFNA	7.458	472.1 -> 427.0	12966	1.24 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.4%	
d3-MeFOSAA	8.037	573.2 -> 419.0	11613	4.72 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.4%	
13C3-HFPO-DA	5.602	286.9 -> 168.9	25364	10.03 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
d3-MeFOSA	11.101	515.0 -> 219.0	4412	2.29 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.5%	
d5-EtFOSAA	8.246	589.2 -> 419.0	9423	4.57 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 91.3%	
d7-MeFOSE	10.997	623.2 -> 58.9	28878	24.00 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.0%	
d9-EtFOSE	11.294	639.2 -> 58.9	32655	23.84 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.4%	
d5-EtFOSA	11.385	531.1 -> 219.0	5734	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.1%	
Target Compounds					QValue
4:2FTS	4.960	327.1 -> 307.0	63299	40.05 µg/L	98
		327.1 -> 80.9	26569		
6:2FTS	6.687	427.1 -> 407.0	75264	42.35 µg/L	99
		427.1 -> 80.9	27872		
8:2FTS	7.754	527.1 -> 507.0	52550	44.77 µg/L	95
		527.1 -> 80.8	23257		
EtFOSAA	8.247	584.2 -> 419.1	22089	12.38 µg/L	m 99
		584.2 -> 526.0	8805		
FOSA	9.760	498.1 -> 77.9	85284	25.95 µg/L	m 98
		498.1 -> 478.0	2986		
MeFOSAA	8.038	570.1 -> 419.0	23693	12.74 µg/L	m 97
		570.1 -> 483.0	4721		
PFBA	2.582	212.8 -> 168.9	136758	48.25 µg/L	100
PFBS	5.105	298.7 -> 79.9	29175	10.14 µg/L	98
		298.7 -> 98.8	10635		
PFDA	7.955	512.9 -> 469.0	83787	11.85 µg/L	99
		512.9 -> 219.0	16709		
PFDoDA	8.843	613.1 -> 569.0	102401	12.52 µg/L	100
		613.1 -> 319.0	18325		
PFDS	8.970	599.0 -> 79.9	20960	11.75 µg/L	96

7.6.6
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	10708			
PFHpA	6.206	363.1 -> 319.0	195359	12.38	µg/L	99
		363.1 -> 169.0	35275			
PFHpS	7.561	449.0 -> 79.9	32412	11.98	µg/L	88
		449.0 -> 98.9	15846			
PFHxA	5.251	313.0 -> 269.0	113817	12.17	µg/L	100
		313.0 -> 118.9	3420			
PFHxS	6.968	398.7 -> 79.9	20885	10.50	µg/L	m 100
		398.7 -> 98.9	10890			
PFNA	7.321	463.0 -> 419.0	216952	27.05	µg/L	m 99
		463.0 -> 219.0	55961			
PFNS	8.537	548.8 -> 79.9	15295	11.63	µg/L	98
		548.8 -> 98.9	8153			
PFOA	6.915	413.0 -> 369.0	387417	29.41	µg/L	m 100
		413.0 -> 169.0	80069			
PFOS	8.069	498.9 -> 79.9	35001	11.75	µg/L	m 96
		498.9 -> 98.8	16065			
PFPeA	4.077	263.0 -> 219.0	184357	24.57	µg/L	100
PFPeS	6.195	349.1 -> 79.9	24220	10.86	µg/L	98
		349.1 -> 98.9	11090			
PFTeDA	9.613	713.1 -> 669.0	99180	12.37	µg/L	99
		713.1 -> 168.9	10507			
PFTrDA	9.242	663.0 -> 619.0	116051	13.34	µg/L	99
		663.0 -> 168.9	15933			
PFUnDA	8.411	563.1 -> 519.0	99775	12.06	µg/L	100
		563.1 -> 269.1	21294			
11CI-PF3OUdS	9.269	630.9 -> 450.9	180002	22.98	µg/L	98
		632.9 -> 452.9	54378			
9CI-PF3ONS	8.413	530.8 -> 351.0	177732	22.37	µg/L	96
		532.8 -> 353.0	55314			
ADONA	6.482	376.9 -> 250.9	486789	24.72	µg/L	98
		376.9 -> 84.8	116080			
HFPO-DA	5.603	284.9 -> 168.9	62604	24.88	µg/L	97
		284.9 -> 184.9	6127			
3:3FTCA	3.523	241.0 -> 177.0	26618	60.08	µg/L	99
		241.0 -> 117.0	2347			
5:3FTCA	5.931	341.0 -> 237.1	489102	301.31	µg/L	99
		341.0 -> 217.0	345596			
7:3FTCA	7.486	441.0 -> 316.9	217946	298.06	µg/L	95
		441.0 -> 336.9	522090			
EtFOSA	11.387	526.0 -> 219.0	104172	43.44	µg/L	98
		526.0 -> 169.0	146000			
EtFOSE	11.307	630.0 -> 58.9	98489	80.08	µg/L	100
MeFOSA	11.103	511.9 -> 219.0	73070	46.39	µg/L	m 96
		511.9 -> 169.0	104849			
MeFOSE	11.023	616.1 -> 58.9	102529	84.25	µg/L	100
PFDoS	9.740	699.1 -> 79.9	16545	12.60	µg/L	96
		699.1 -> 98.8	9546			
NFDHA	5.129	295.0 -> 201.0	17562	21.81	µg/L	99
		295.0 -> 84.9	4432			
PFMBA	4.479	279.0 -> 85.1	98785	23.88	µg/L	100
PFMPA	3.228	229.0 -> 84.9	114676	24.20	µg/L	100
PFEESA	5.635	314.8 -> 134.9	159127	21.62	µg/L	100
		314.8 -> 82.9	5448			

= Qualifier out of range, m = manually integrated, + = Area summed

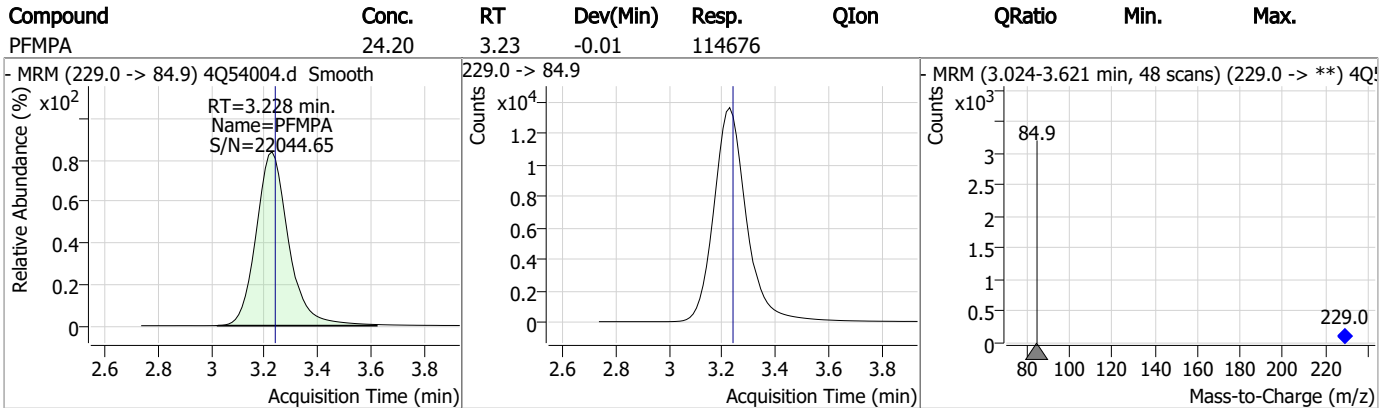
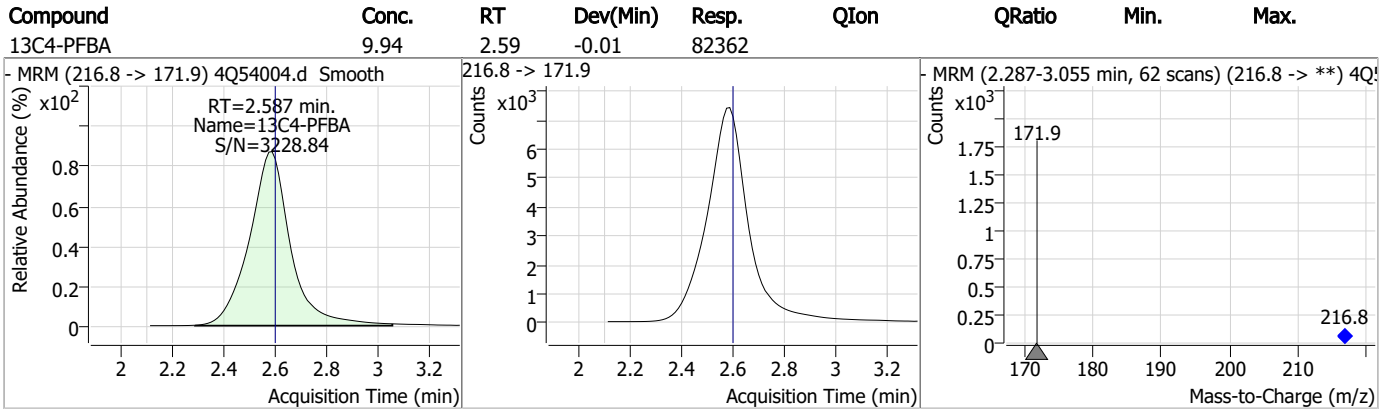
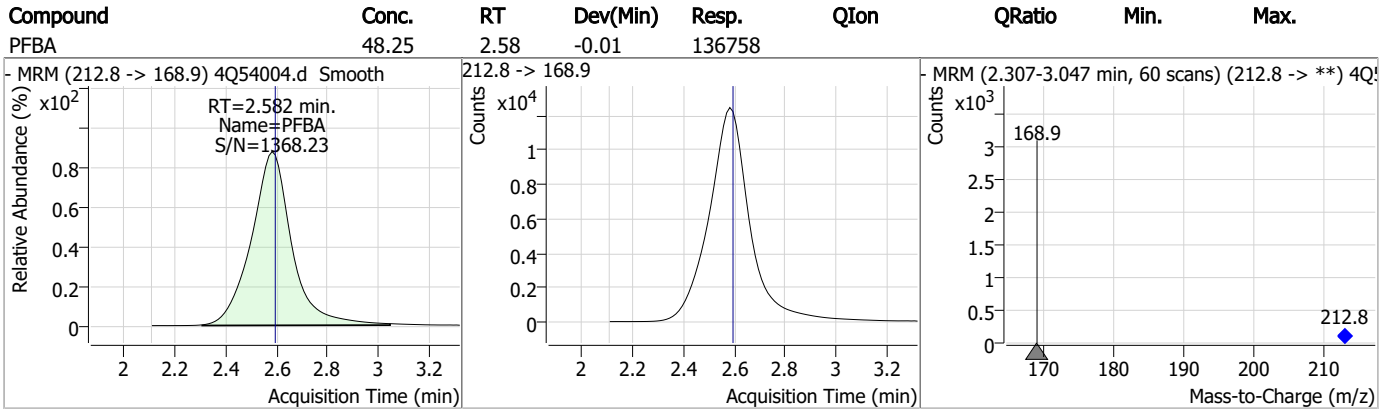
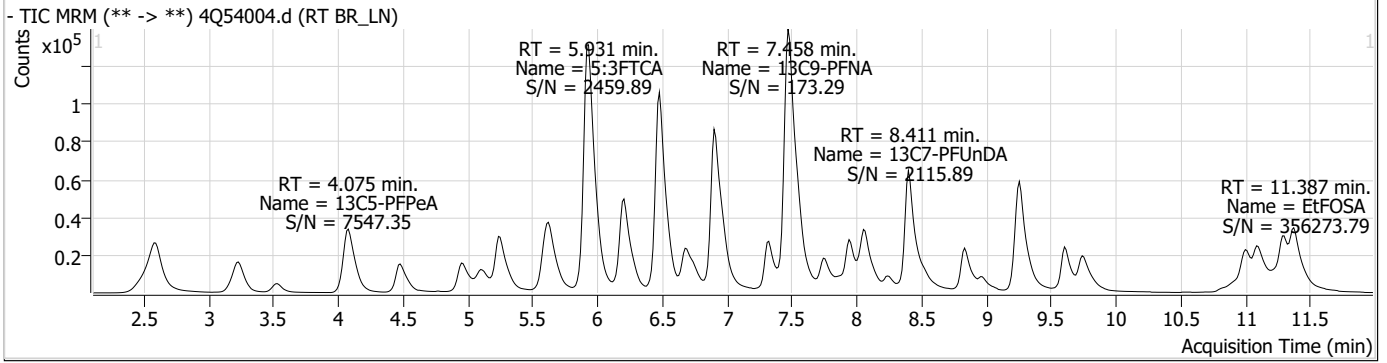
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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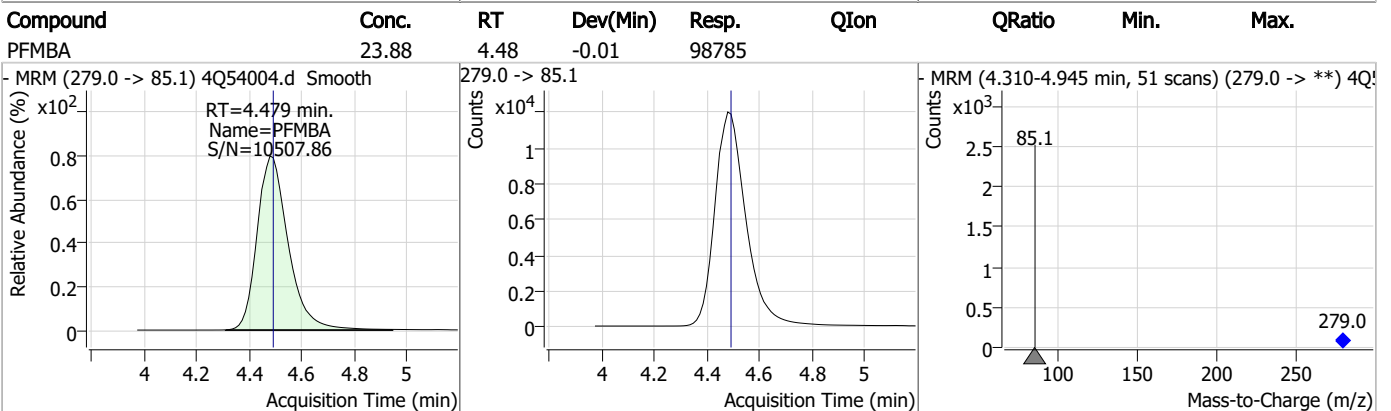
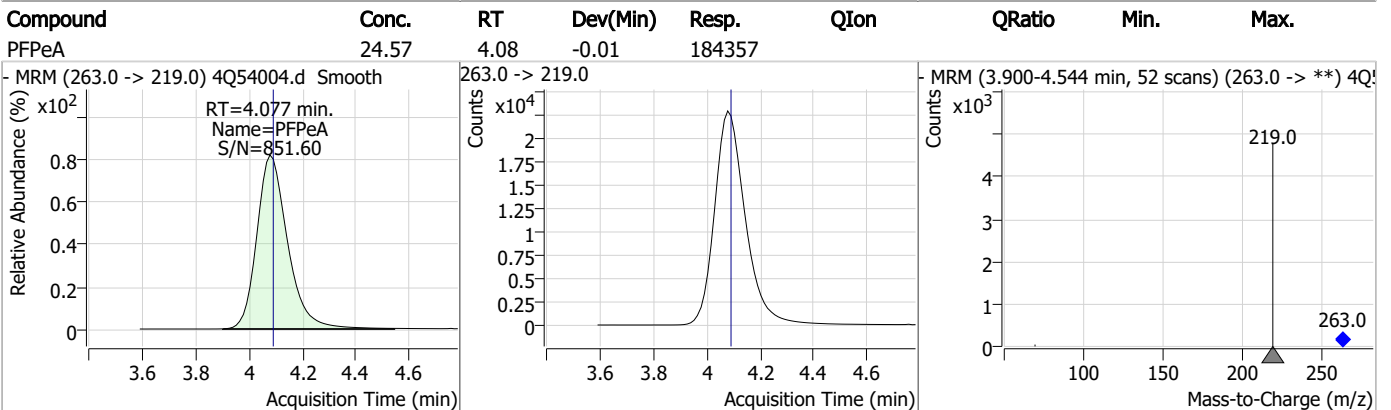
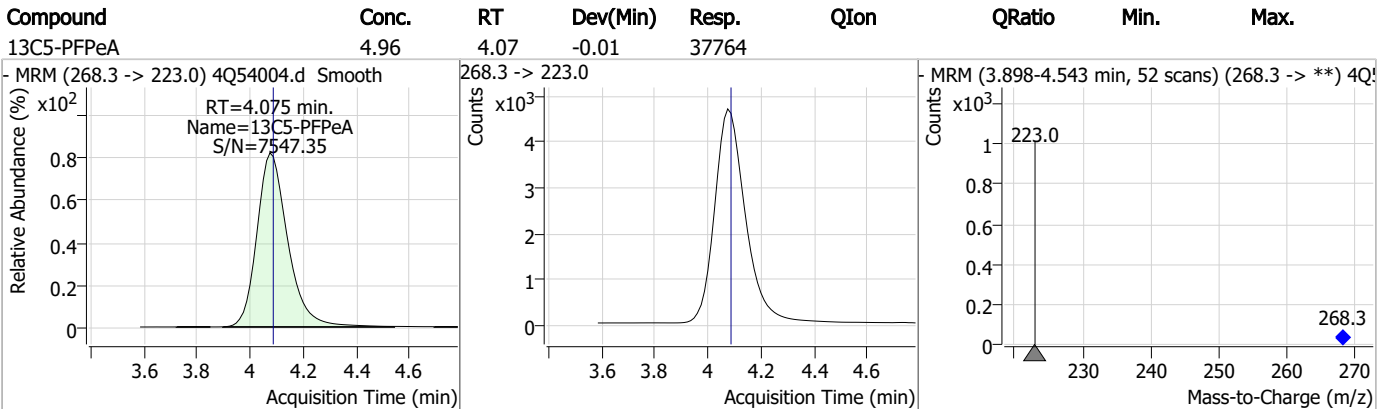
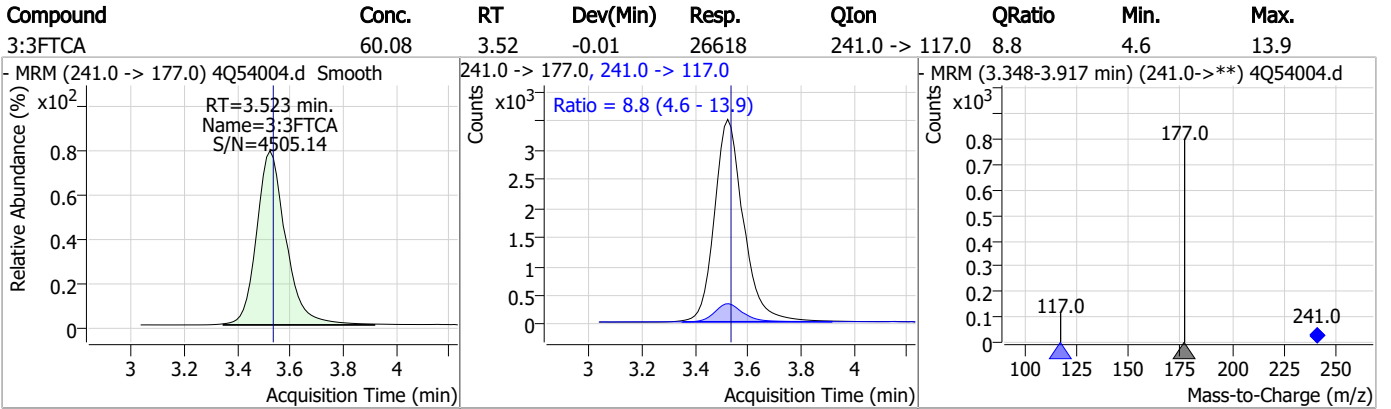
7.6.6

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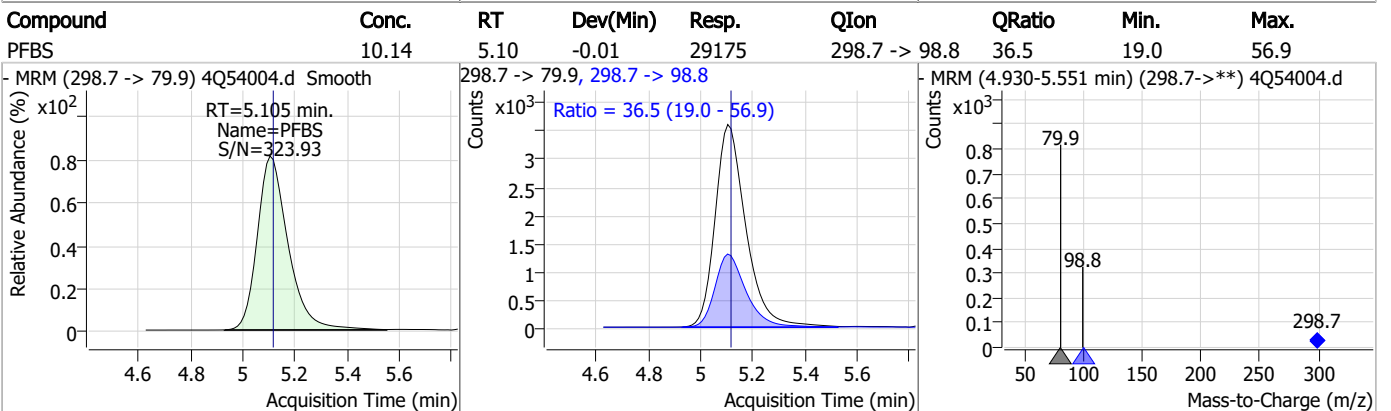
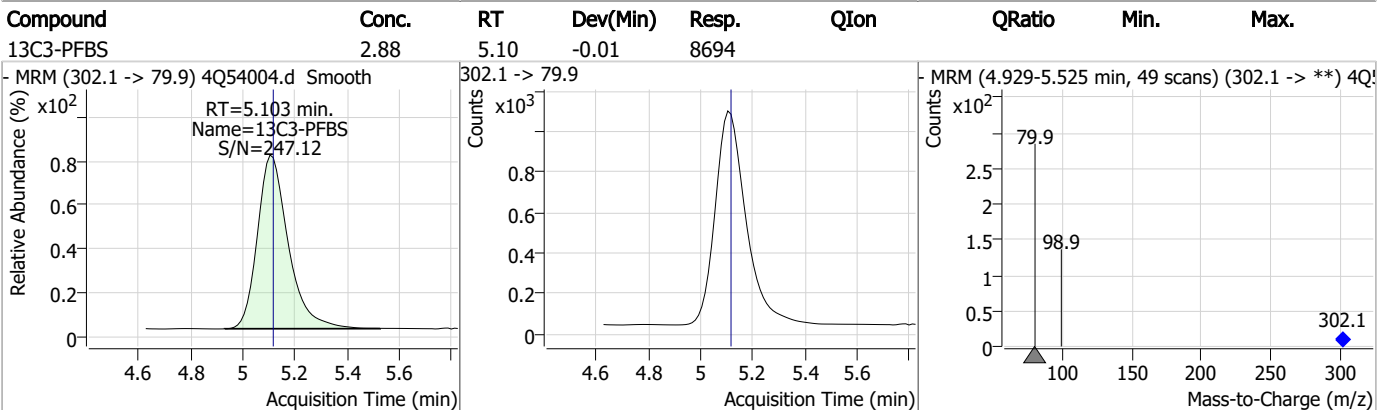
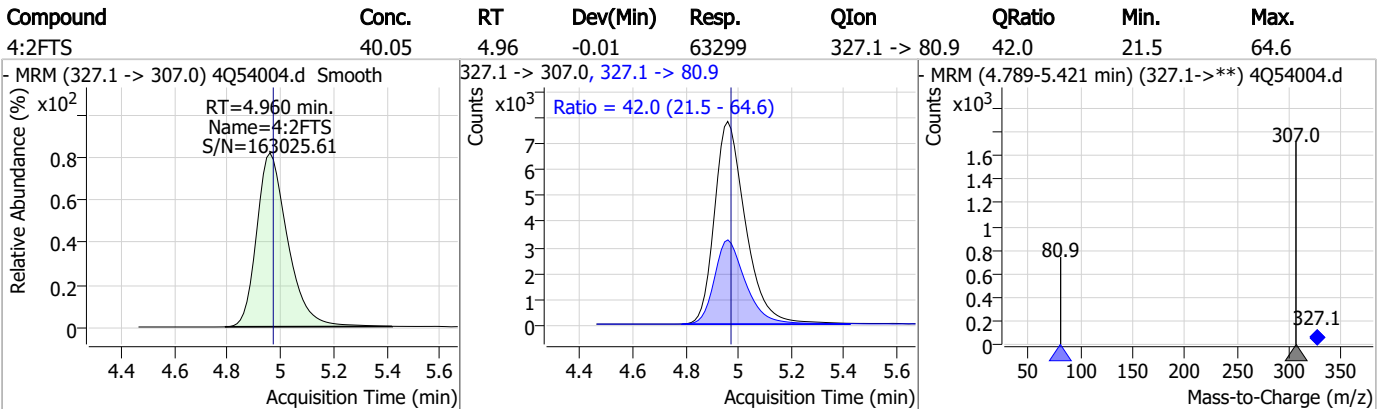
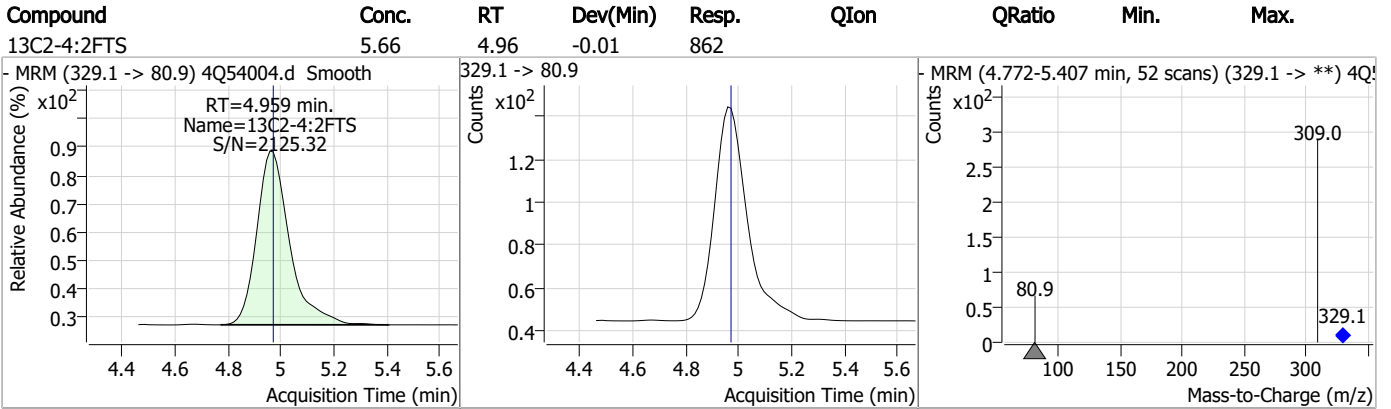
Perfluorinated Compounds by LC/MS/MS



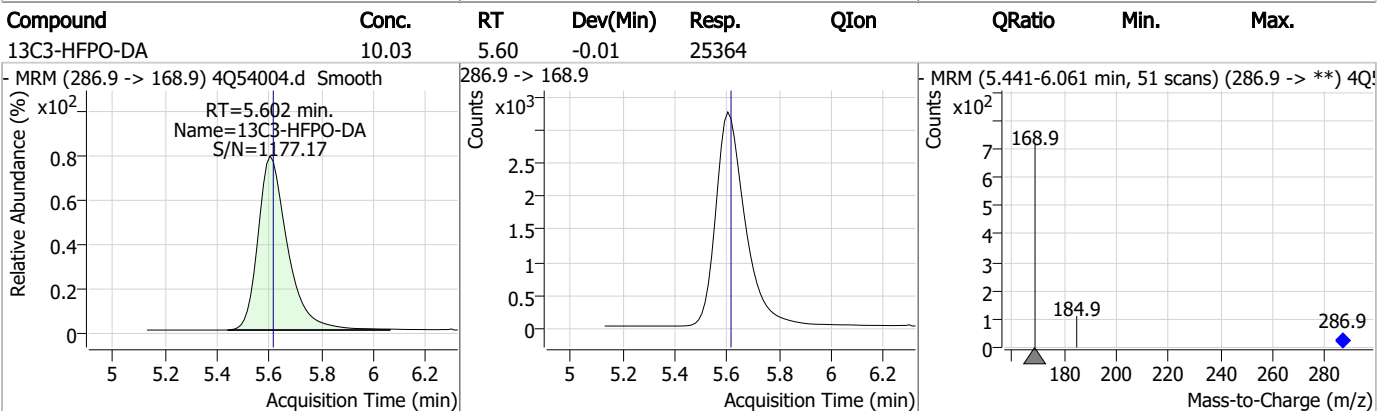
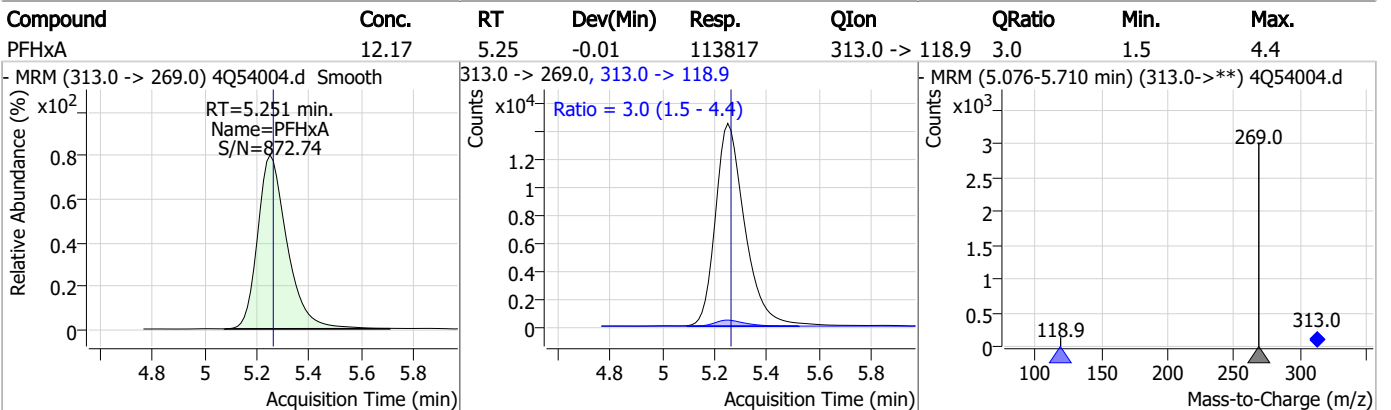
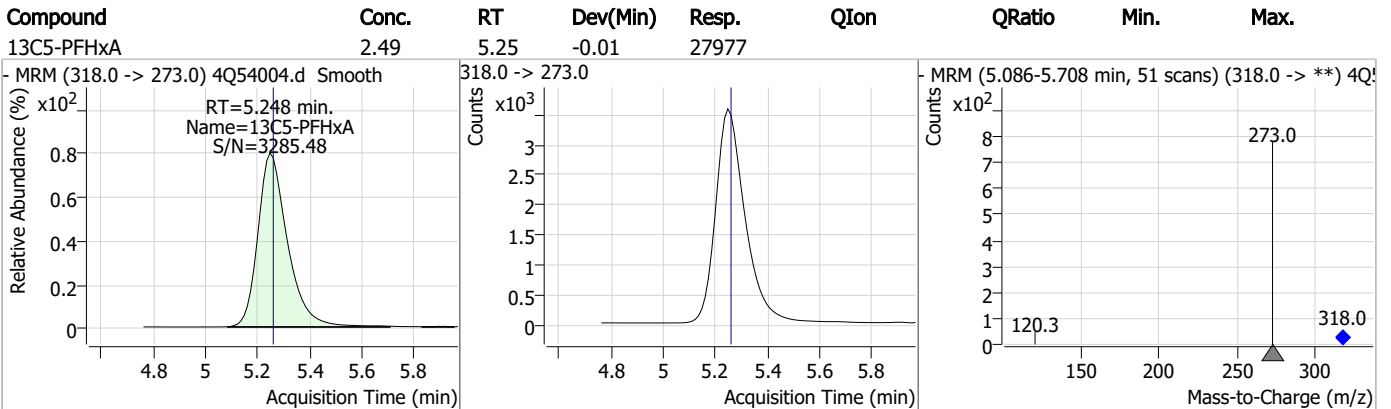
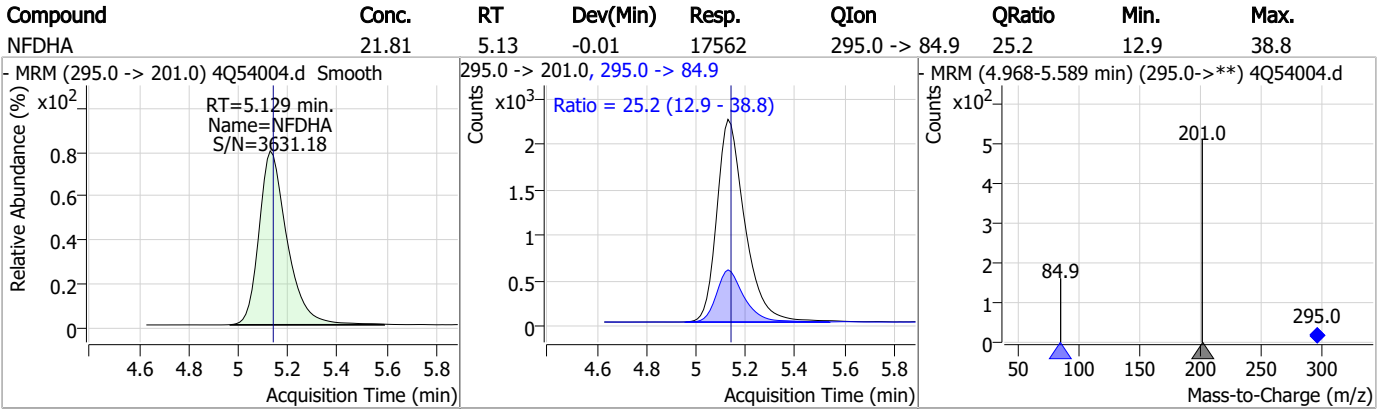
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

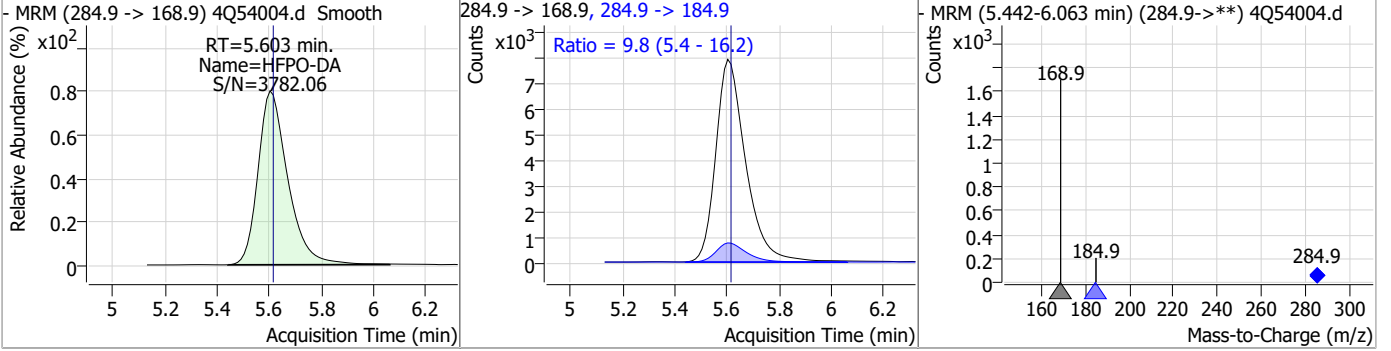


Perfluorinated Compounds by LC/MS/MS

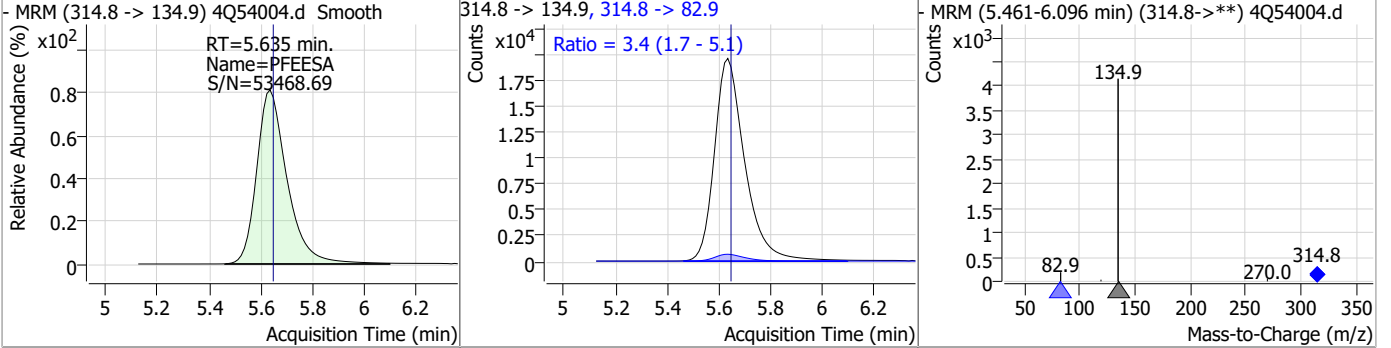


Perfluorinated Compounds by LC/MS/MS

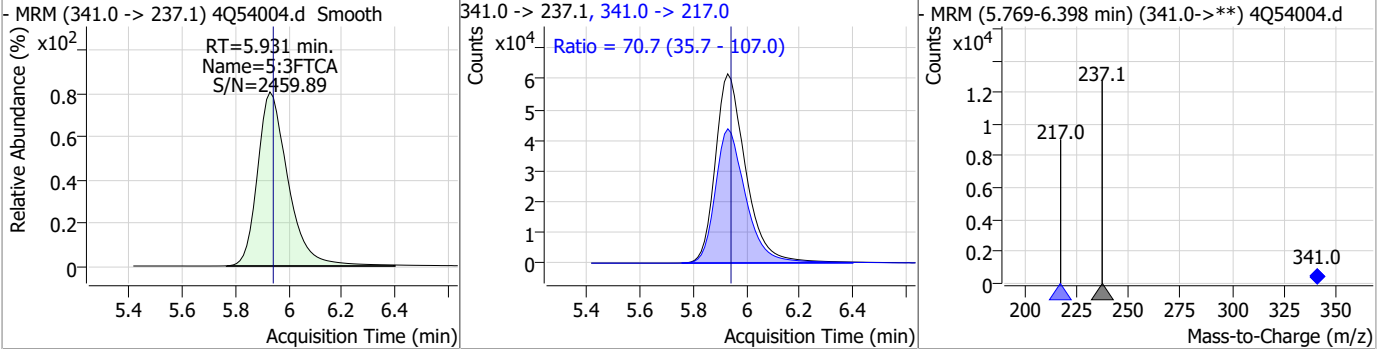
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	24.88	5.60	-0.01	62604	284.9 -> 184.9	9.8	5.4	16.2



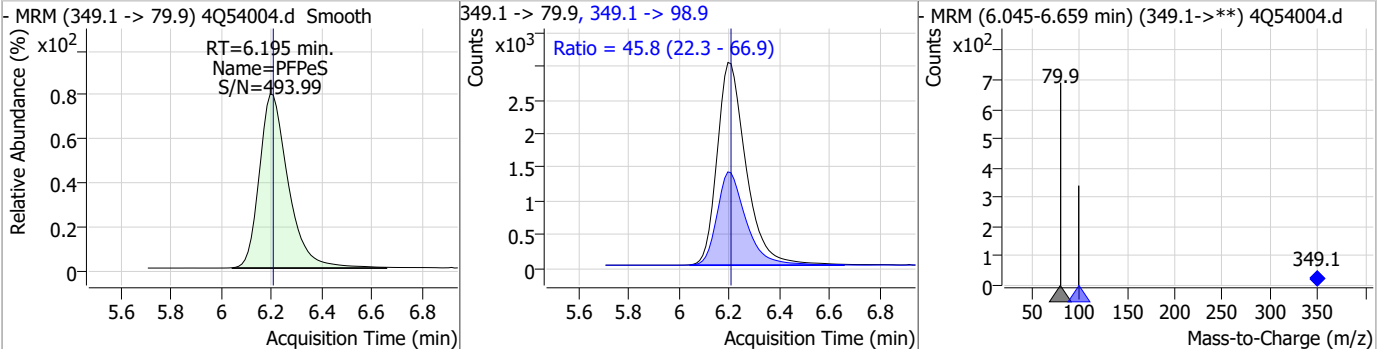
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	21.62	5.63	-0.01	159127	314.8 -> 82.9	3.4	1.7	5.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	301.31	5.93	-0.01	489102	341.0 -> 217.0	70.7	35.7	107.0

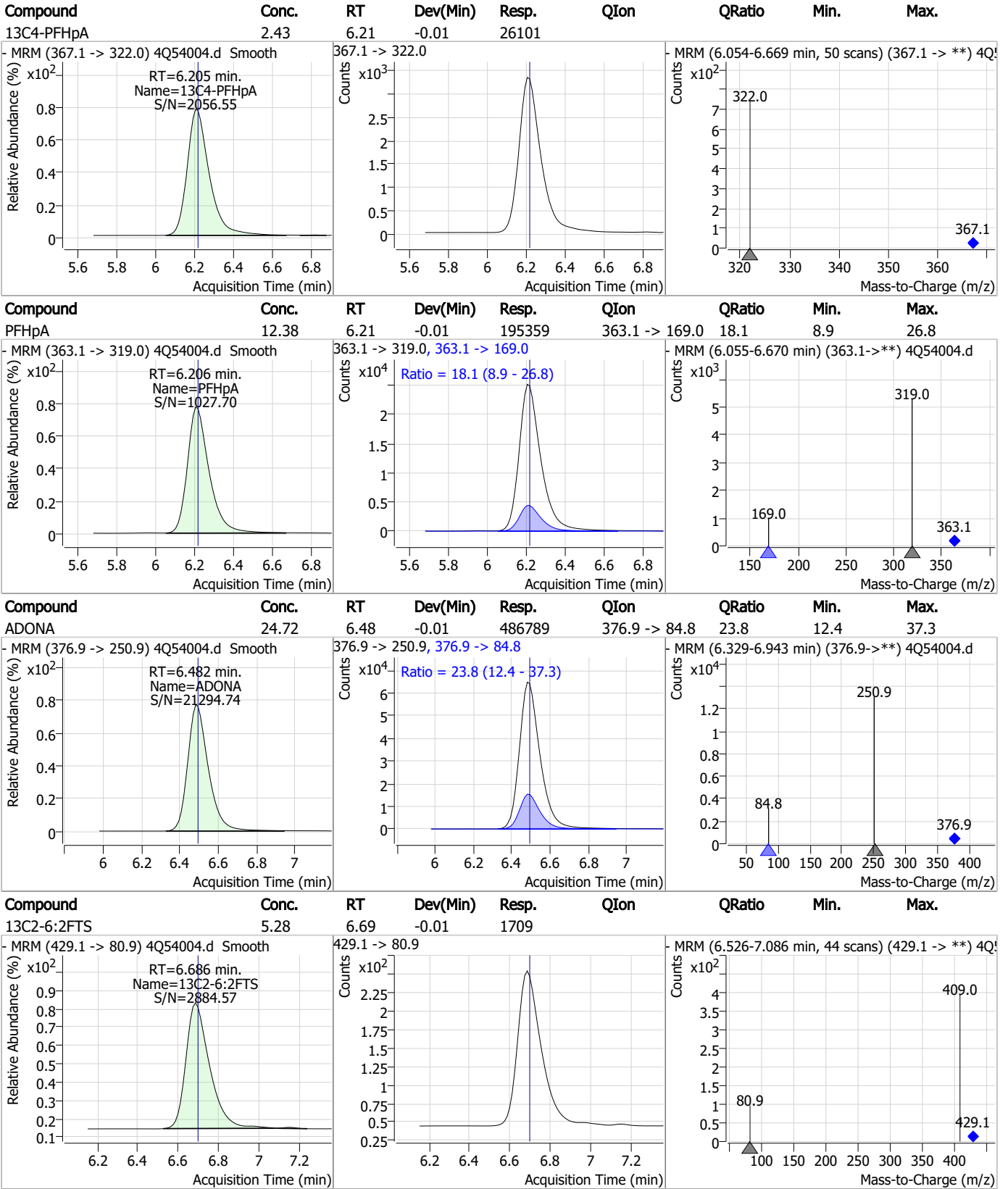


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	10.86	6.19	-0.01	24220	349.1 -> 98.9	45.8	22.3	66.9



7.6.6
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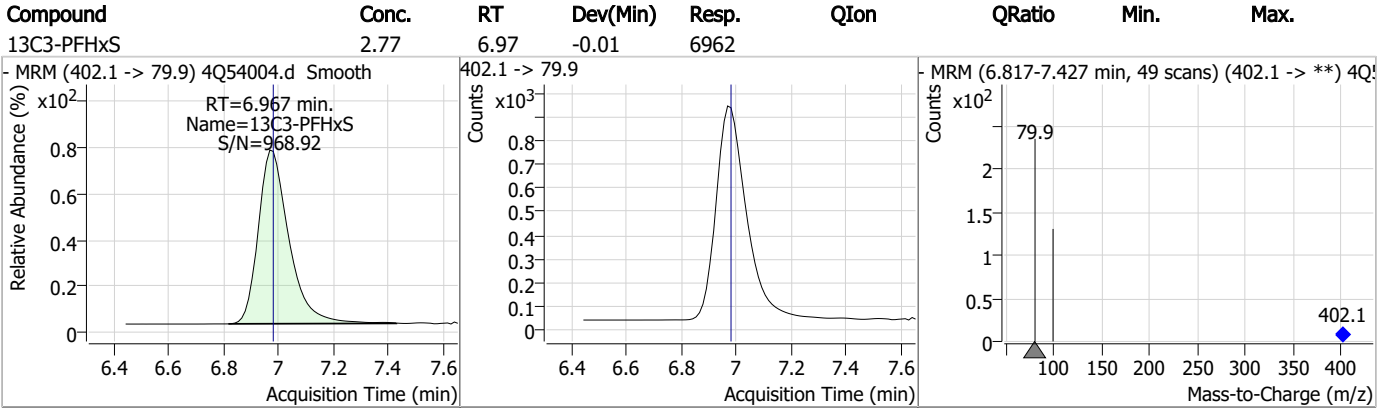
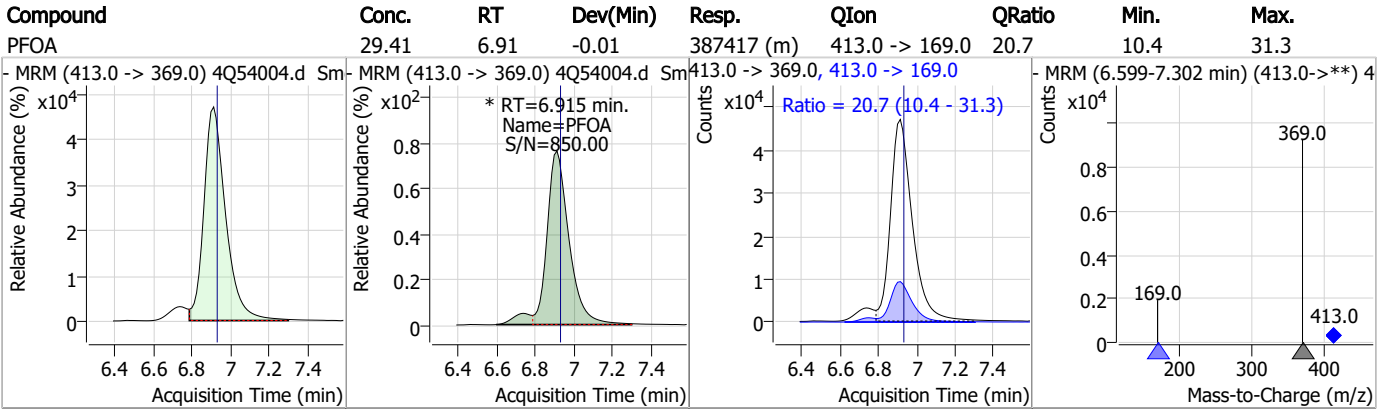
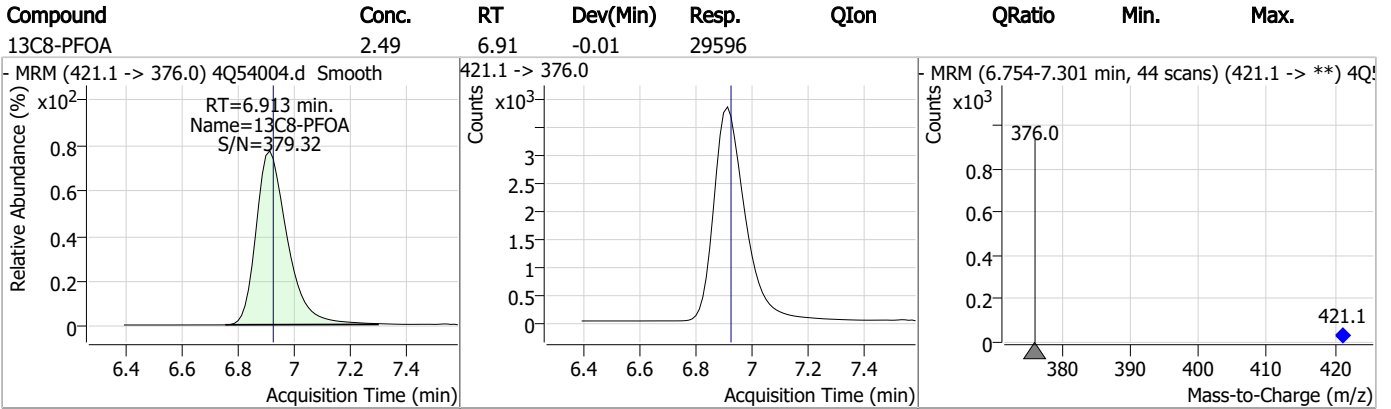
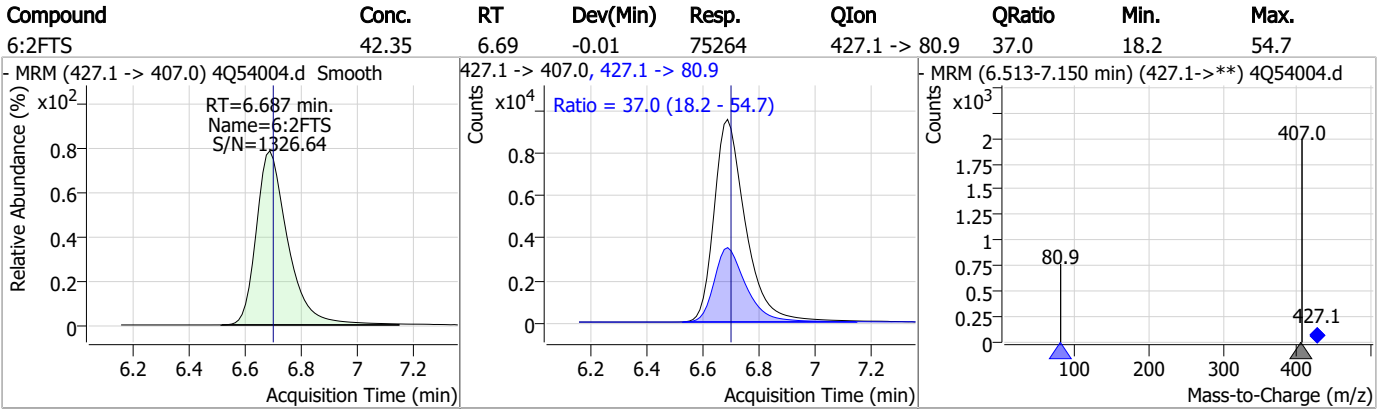
Perfluorinated Compounds by LC/MS/MS



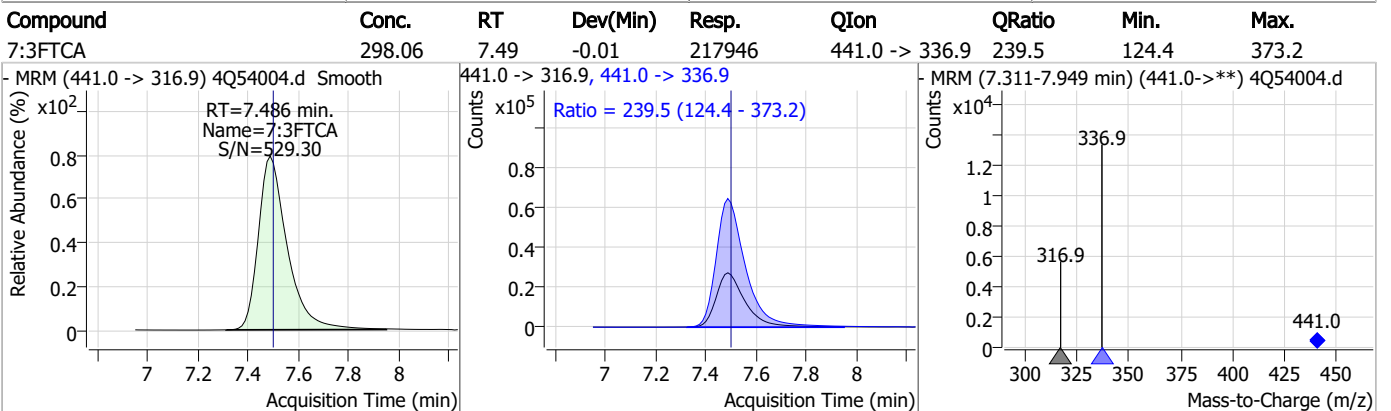
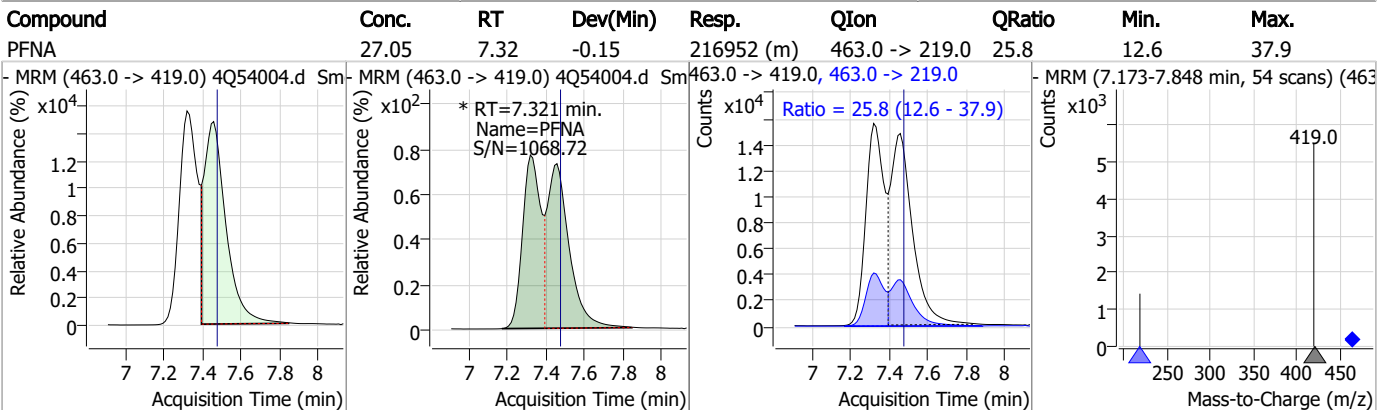
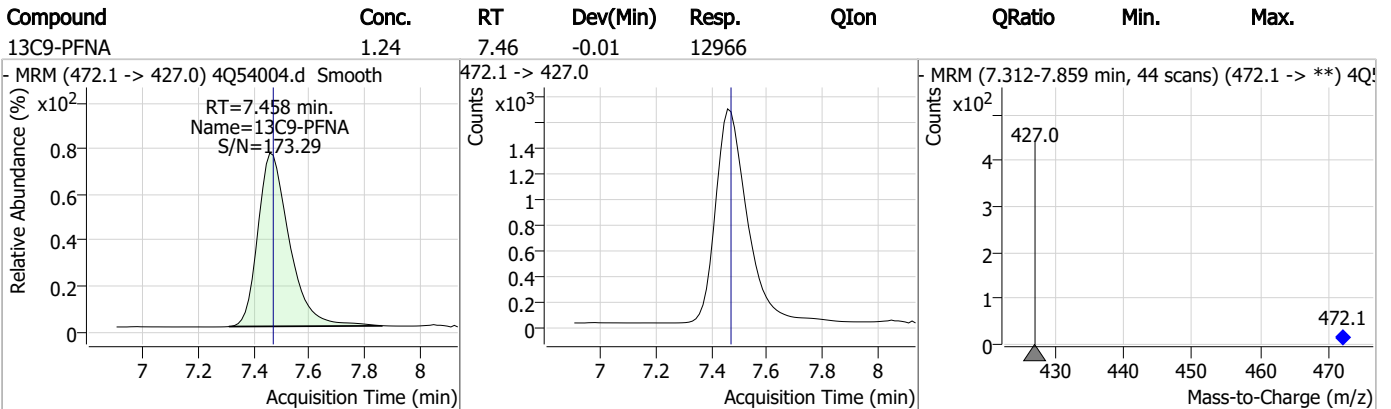
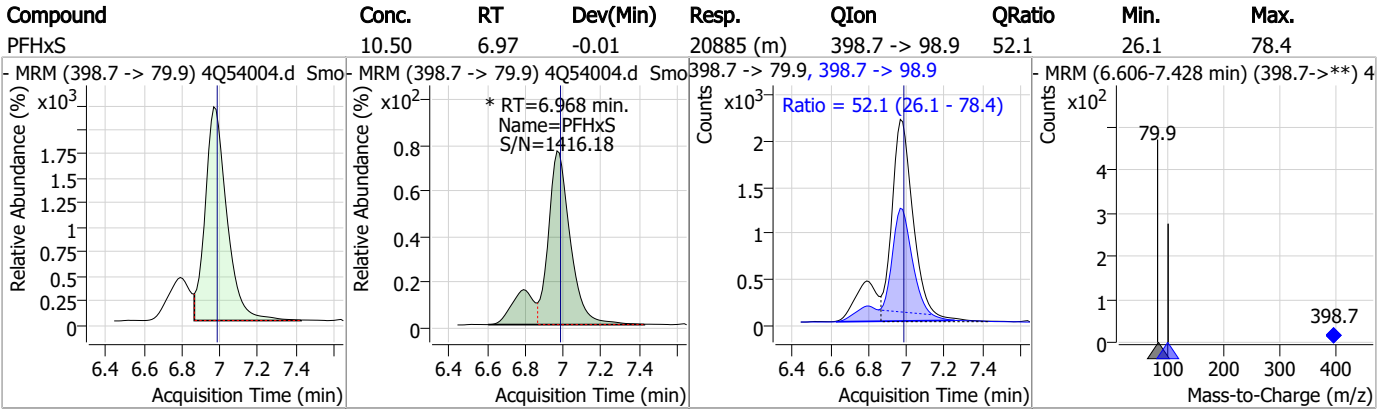
7.6.6

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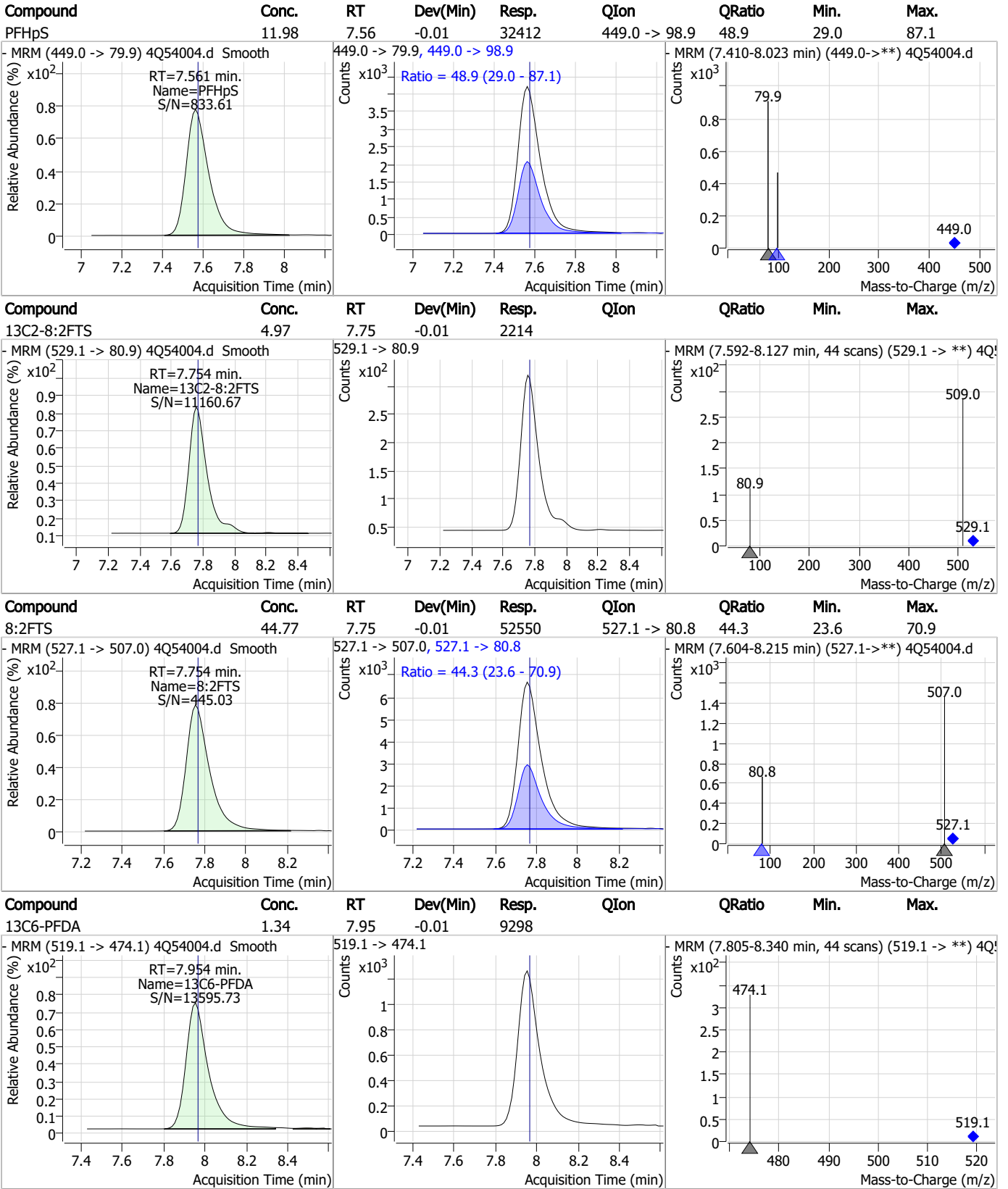
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

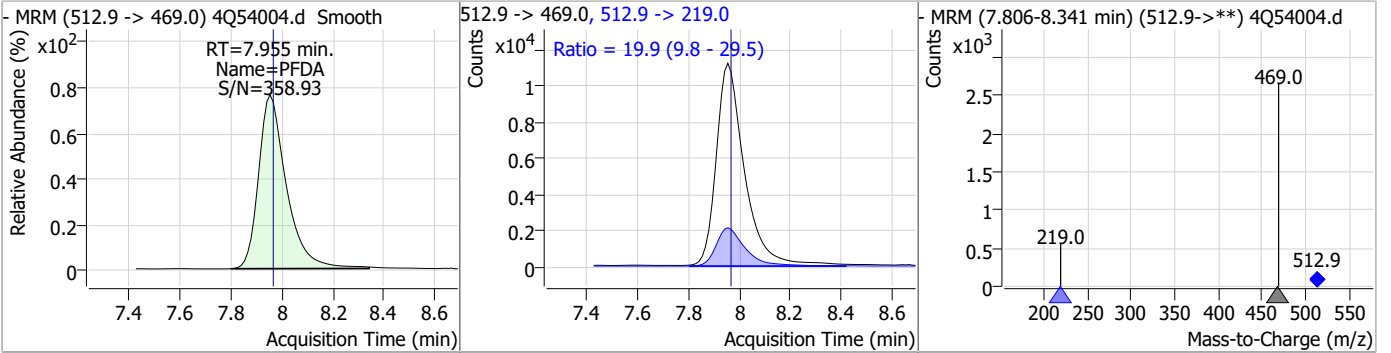


7.6.6

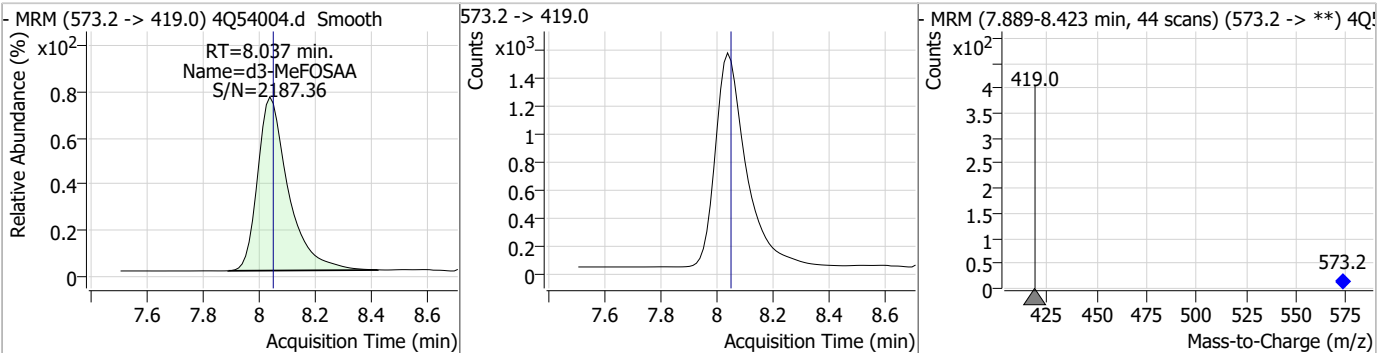
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Perfluorinated Compounds by LC/MS/MS

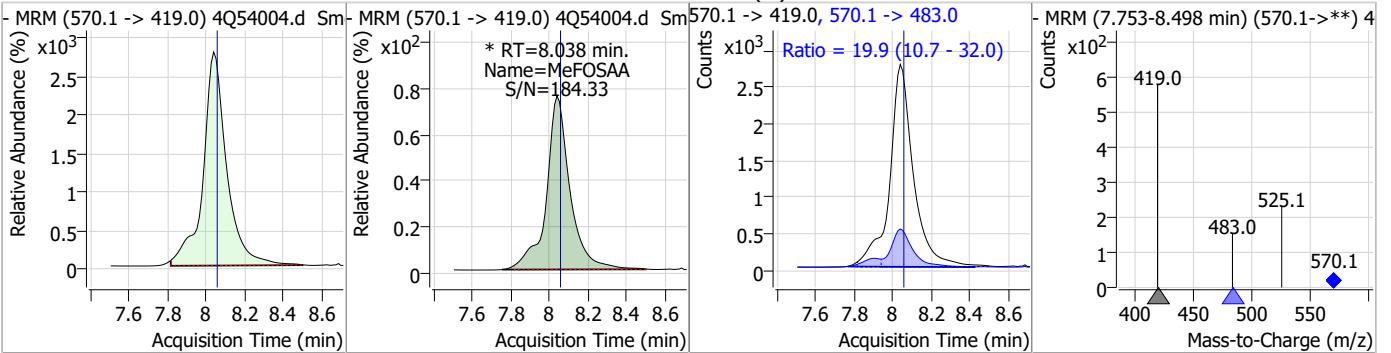
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	11.85	7.96	-0.01	83787	512.9 -> 219.0	19.9	9.8	29.5



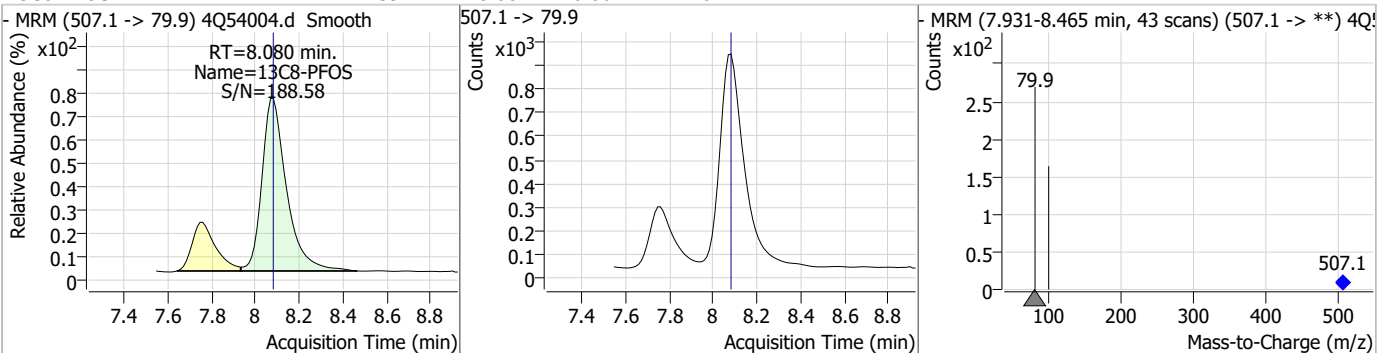
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.72	8.04	-0.01	11613				



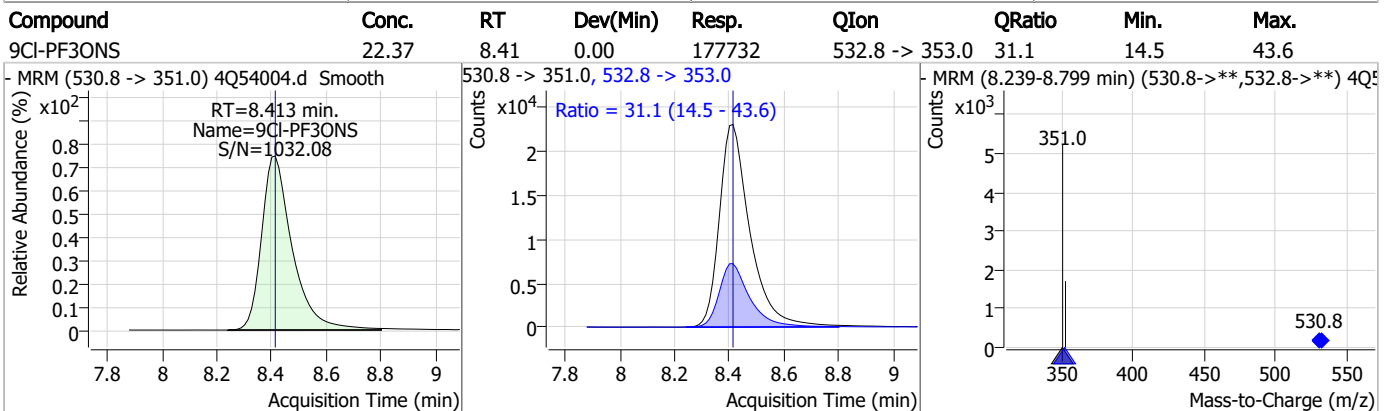
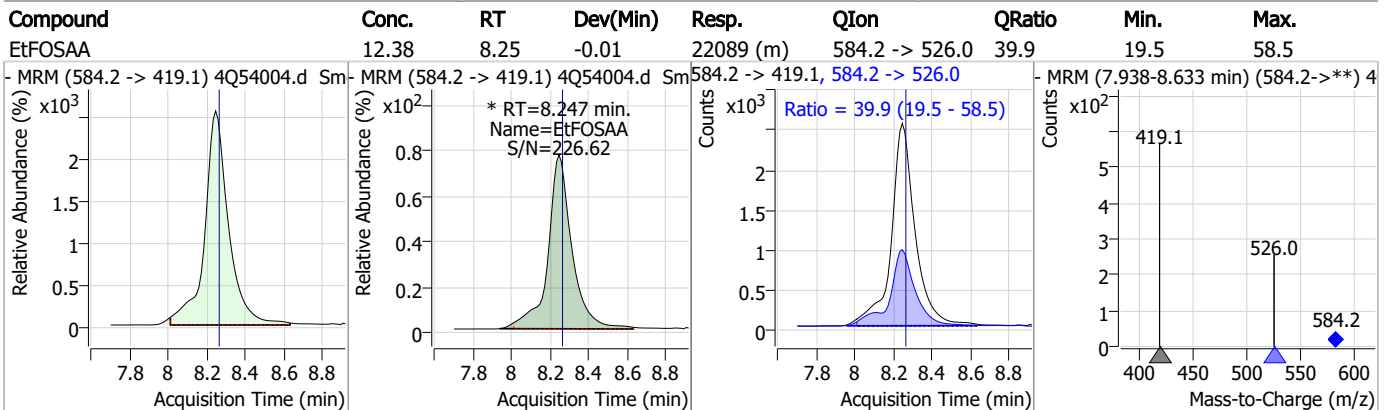
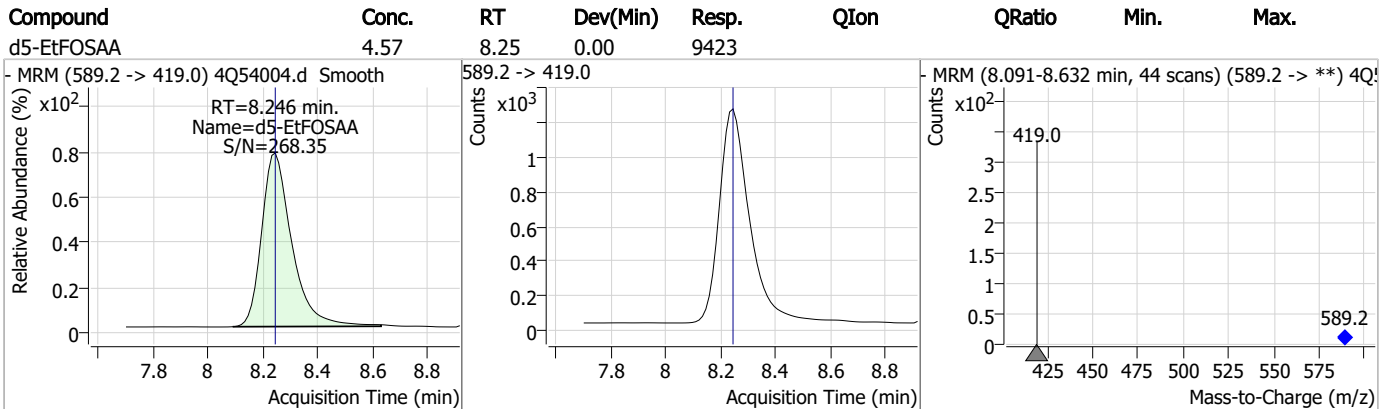
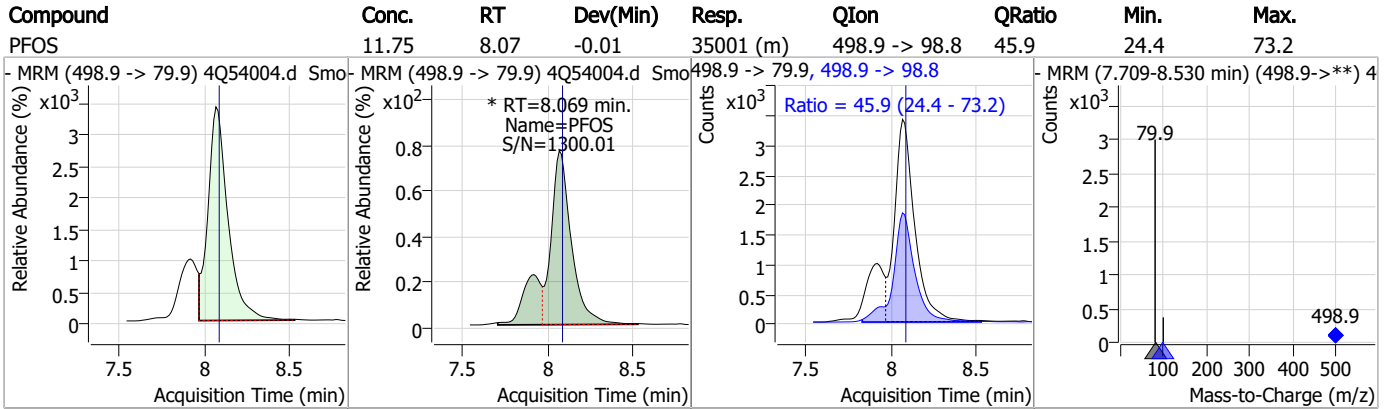
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	12.74	8.04	-0.01	23693 (m)	570.1 -> 483.0	19.9	10.7	32.0



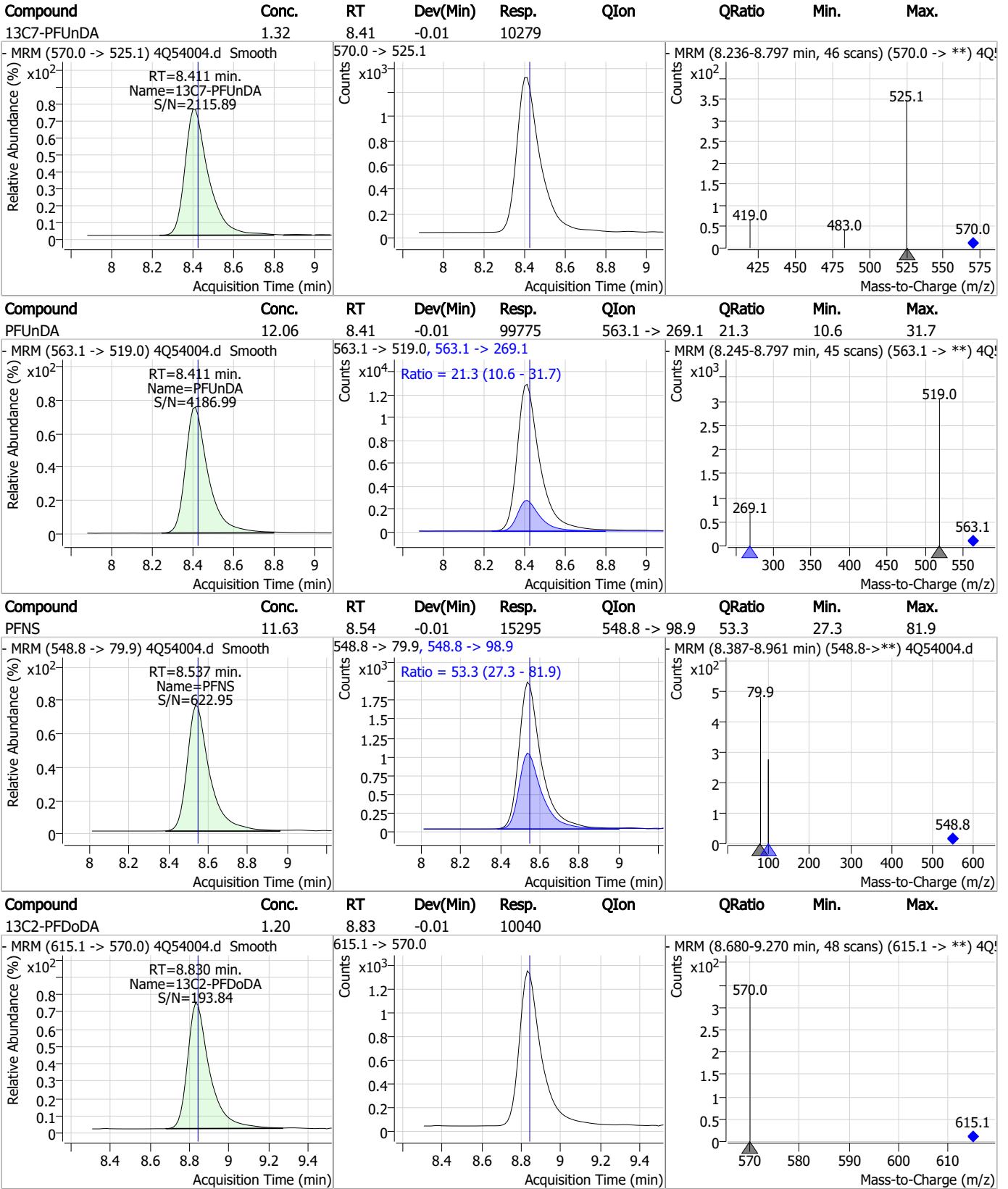
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.39	8.08	0.00	7027				



Perfluorinated Compounds by LC/MS/MS



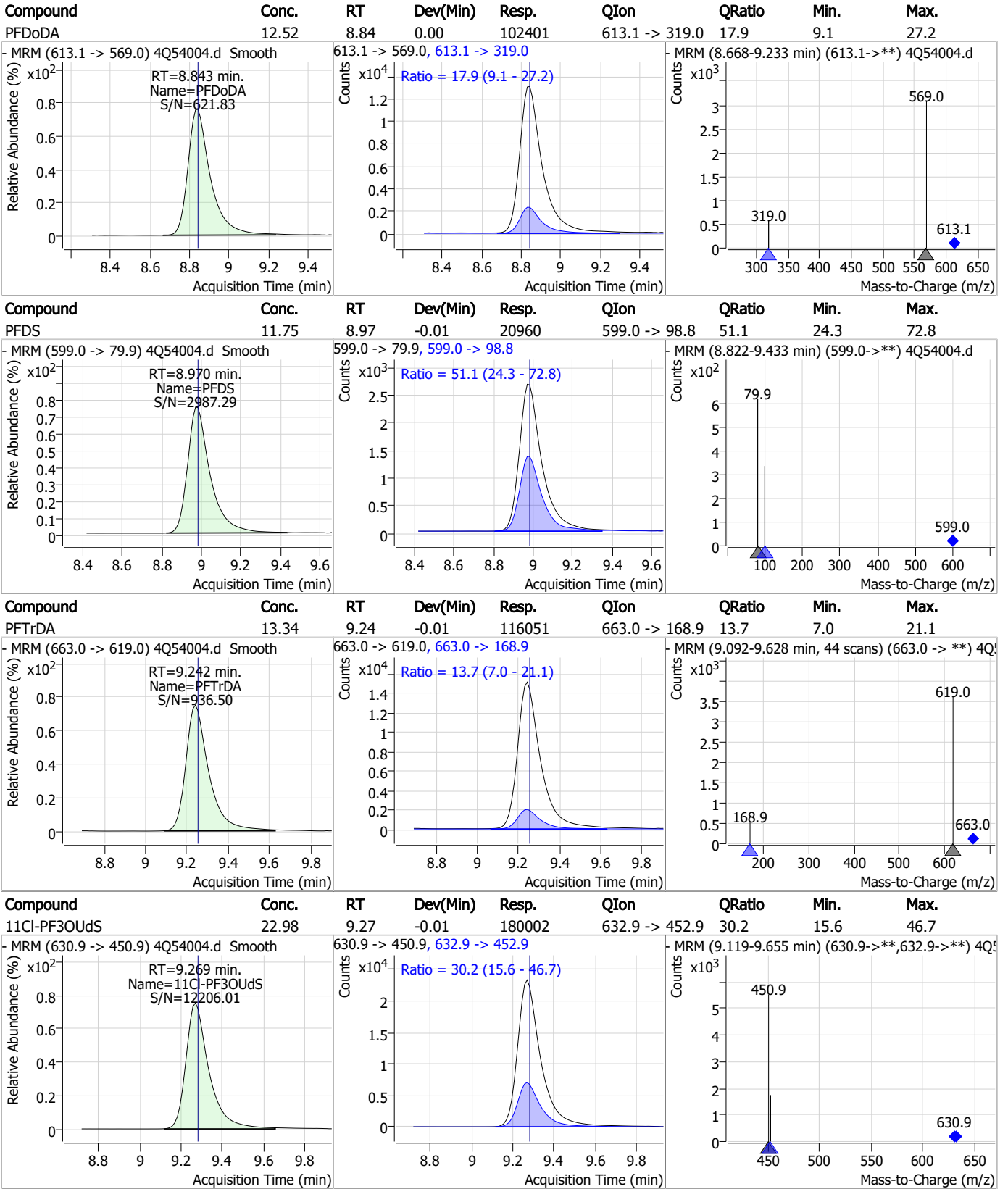
Perfluorinated Compounds by LC/MS/MS



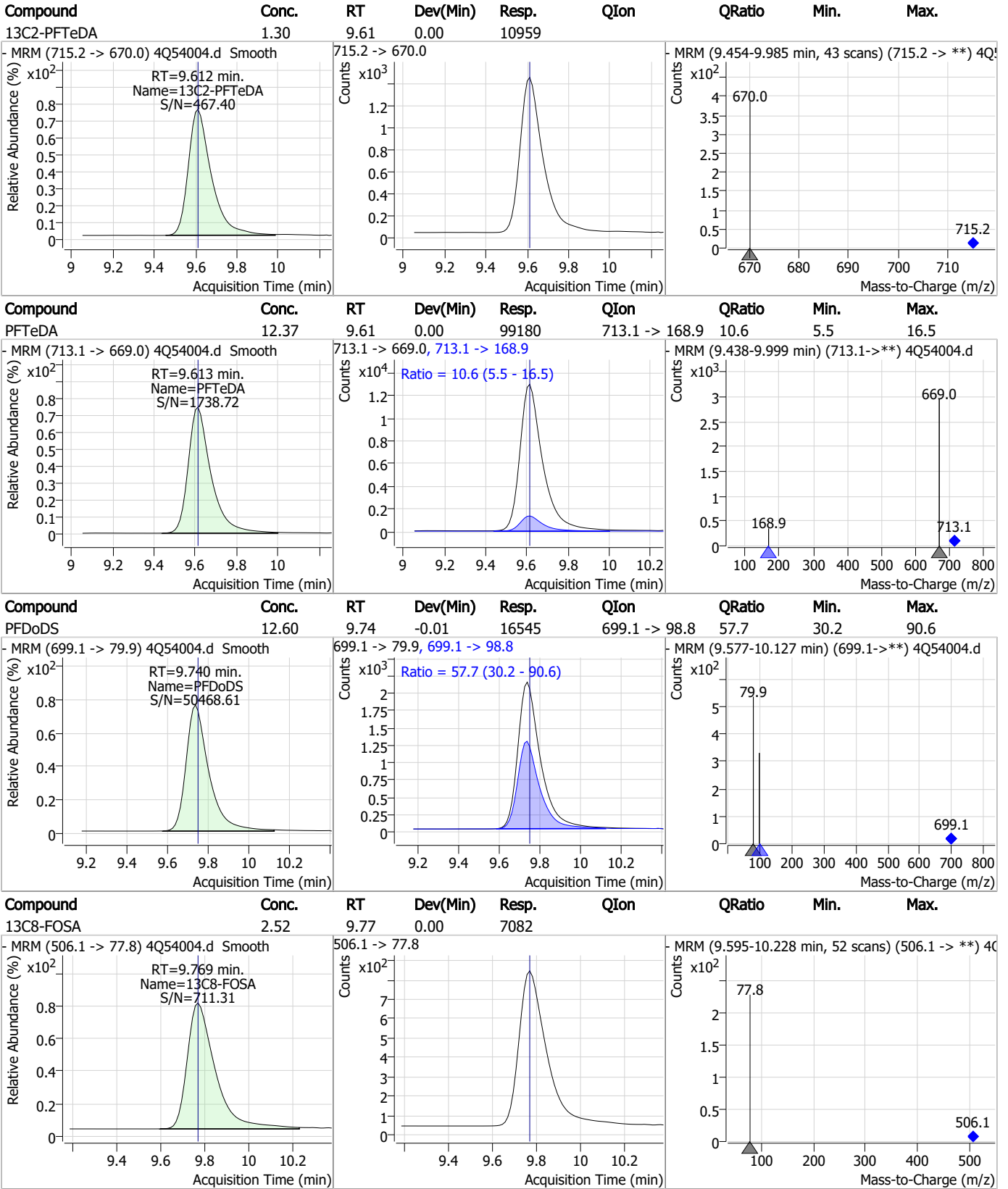
7.6.6
7



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

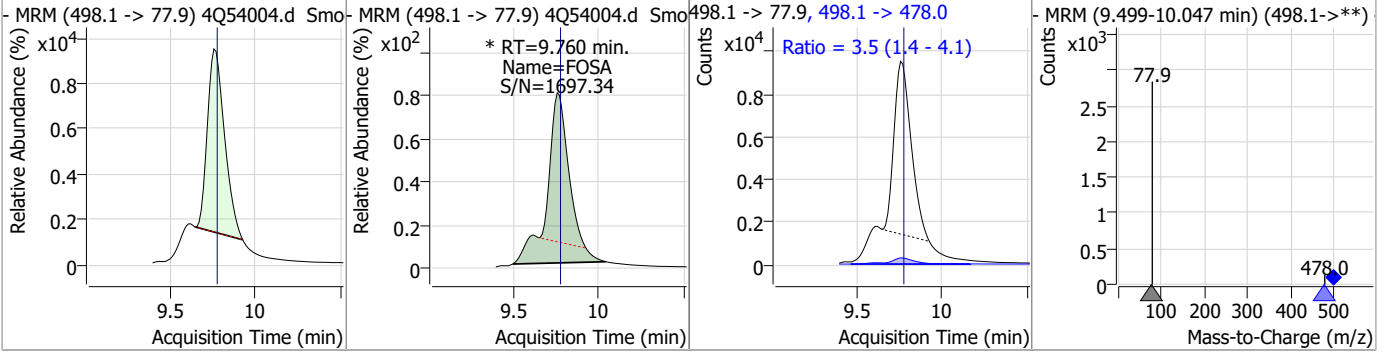


7.6.6

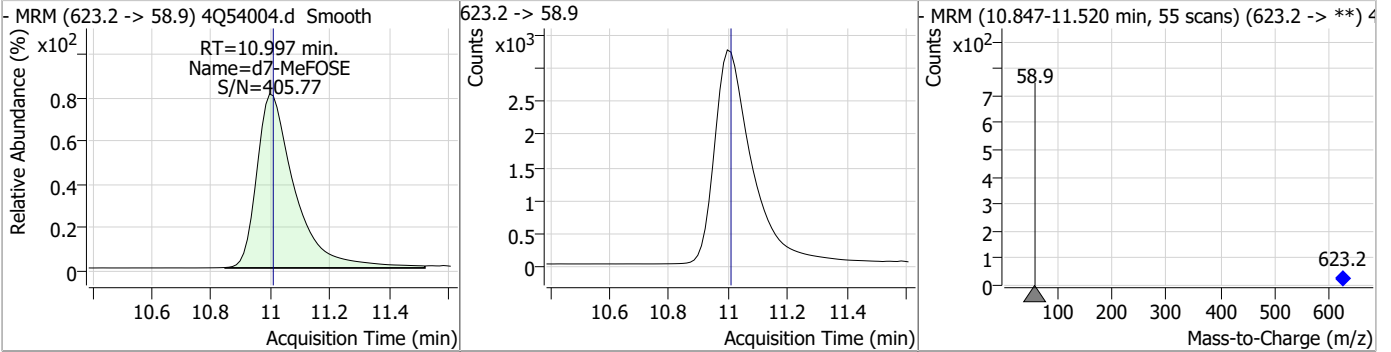
7

Perfluorinated Compounds by LC/MS/MS

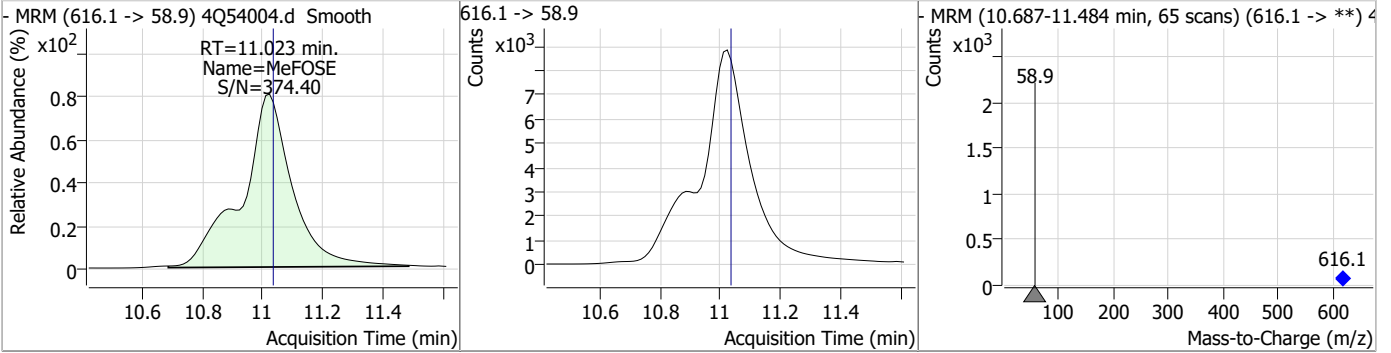
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	25.95	9.76	-0.01	85284 (m)	498.1 -> 478.0	3.5	1.4	4.1



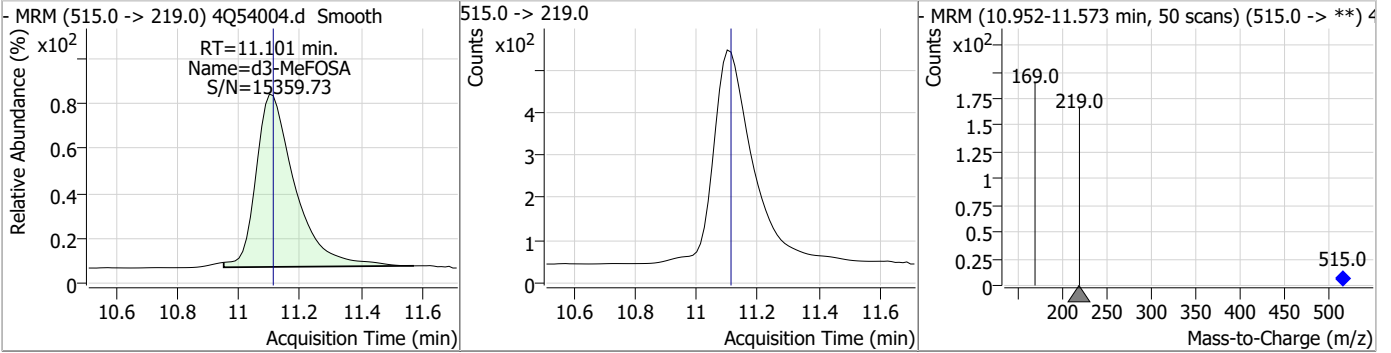
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.00	11.00	-0.01	28878				



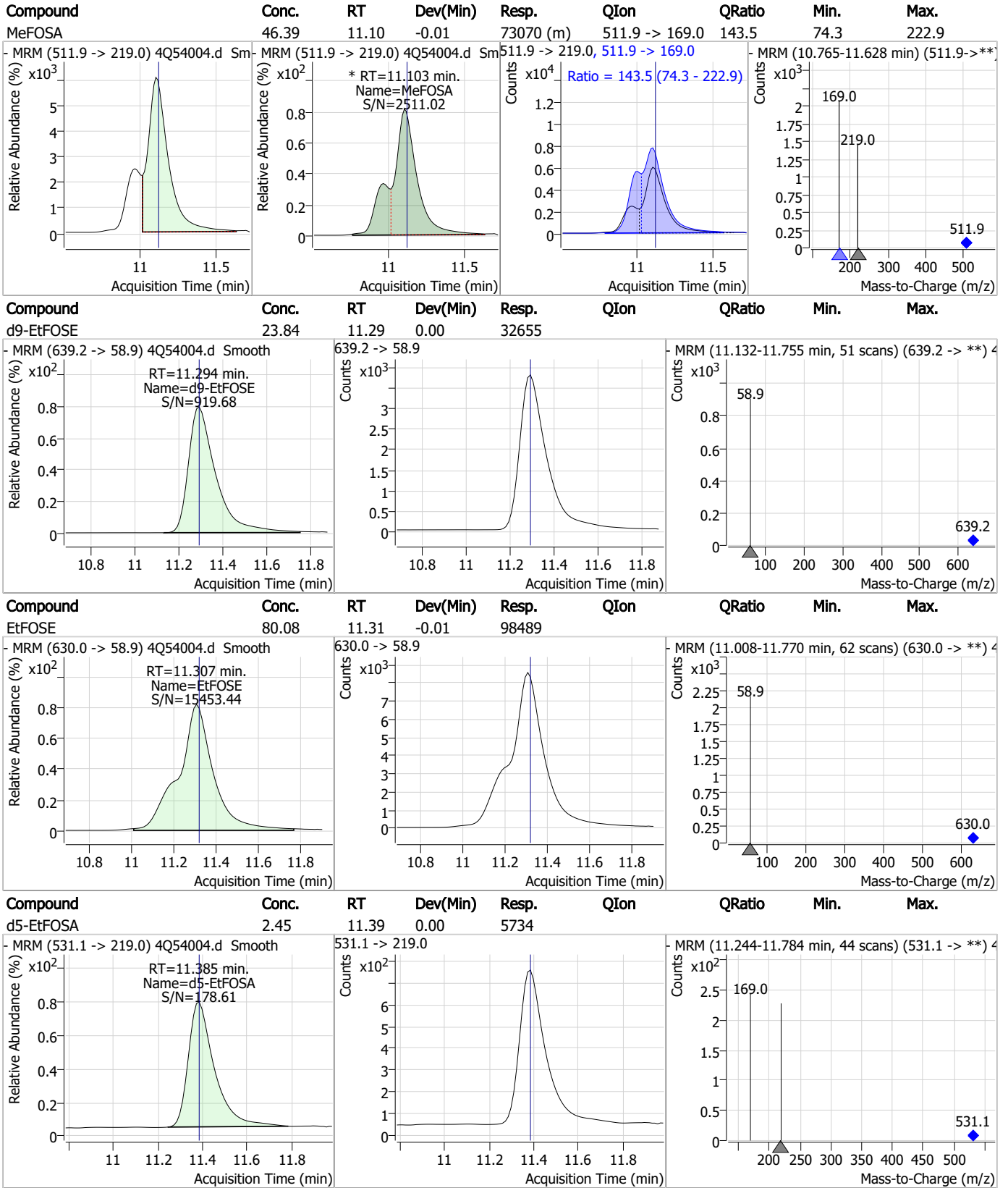
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	84.25	11.02	-0.01	102529				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.29	11.10	-0.01	4412				



Perfluorinated Compounds by LC/MS/MS

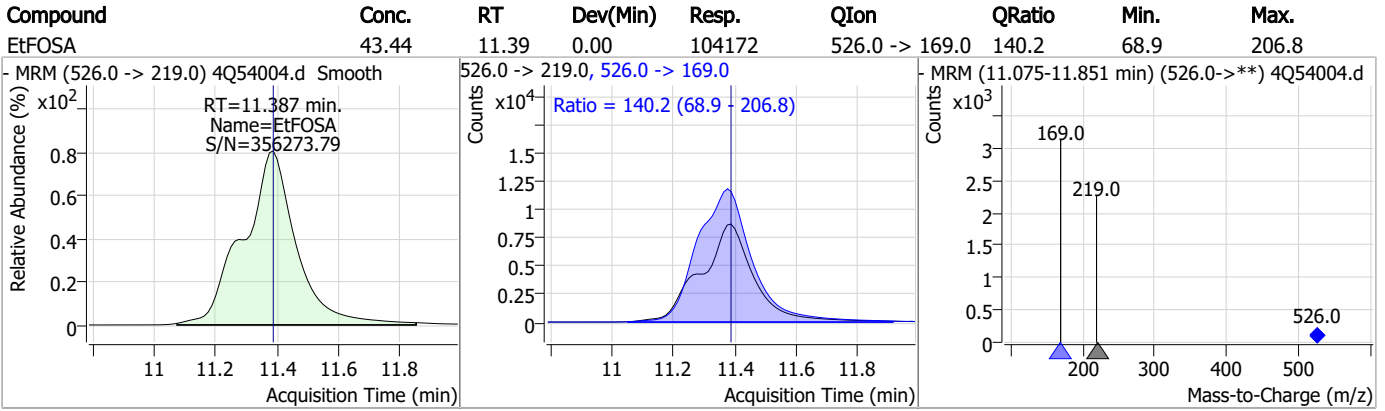


7.6.6

7



Perfluorinated Compounds by LC/MS/MS



Manual Integration Approval Summary

Sample Number: S4Q788-RT Method: EPA DRAFT 1633
Lab FileID: 4Q54004.D Analyst approved: 11/18/23 15:04 Mike Eger
Injection Time: 11/17/23 10:55 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		6.92	Split peak
Perfluorohexanesulfonic acid	355-46-4		6.97	Split peak
Perfluorononanoic acid	375-95-1		7.32	Split peak
MeFOSAA	2355-31-9		8.04	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.07	Split peak
EtFOSAA	2991-50-6		8.25	Split peak
PFOSA	754-91-6		9.76	Split peak
MeFOSA	31506-32-8		11.10	Split peak

7.6.6.1
7

QQQ Check Tune Report



Instrument Name LCMS4-Q
MS Model G6470A
MS Instrument Serial SG2004G105
Software_Firmware Version 10.0.142, FW: A.00.08.100
Tune Date & Time 13 November 2023 10:54:12
Data Path D:\MassHunter\Tune\QQQ\G6470A\atunes.TUNE.XML
Ion Source AJS ESI
Ionization Mode AJS ESI
Tuned Resolution All
Vacuum Pressure 1.70E+0 [R] (Torr); 3.52E-5 [H] (Torr)

Source Parameters

Parameter	Negative
Gas Temp (°C)	300
Gas Flow (l/min)	8
Nebulizer (psi)	15
Capillary (V)	4000
Nozzle Voltage (V)	1500
Sheath Gas Temp (°C)	250
Sheath Gas Flow (l/min)	7

7.7.1

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QQQ Check Tune Report



Negative Results

Analyzer: MS1 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	113.00	0.01	Pass	0.70	0.70	0.00	Pass	227368
302.00	302.01	0.01	Pass	0.70	0.70	0.00	Pass	138519
601.98	602.01	0.03	Pass	0.70	0.69	-0.01	Pass	305367
1033.99	1034.02	0.03	Pass	0.70	0.69	-0.01	Pass	427801
1633.95	1633.99	0.04	Pass	0.70	0.69	-0.01	Pass	806592
2233.91	2233.91	0.00	Pass	0.70	0.71	0.01	Pass	499029

Analyzer: MS2 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.08	0.08	Pass	0.70	0.59	-0.11	Pass	46573
112.99	112.99	0.00	Pass	0.70	0.69	-0.01	Pass	163290
302.00	302.01	0.01	Pass	0.70	0.68	-0.02	Pass	135624
601.98	601.98	0.00	Pass	0.70	0.69	-0.01	Pass	202321
1033.99	1033.98	-0.01	Pass	0.70	0.68	-0.02	Pass	319410
1633.95	1633.92	-0.03	Pass	0.70	0.71	0.01	Pass	584341
2233.91	2233.89	-0.02	Pass	0.70	0.70	0.00	Pass	576793

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.81	-0.18	Pass	1.20	1.63	0.43	Pass	322328
302.00	301.86	-0.14	Pass	1.20	1.24	0.04	Pass	213939
601.98	601.88	-0.10	Pass	1.20	1.14	-0.06	Pass	429920
1033.99	1033.97	-0.02	Pass	1.20	1.13	-0.07	Pass	663252
1633.95	1633.97	0.02	Pass	1.20	1.14	-0.06	Pass	1580095
2233.91	2233.96	0.05	Pass	1.20	1.18	-0.02	Pass	1032815

Analyzer: MS2 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.10	0.10	Pass	1.20	1.07	-0.13	Pass	65678
112.99	113.00	0.01	Pass	1.20	1.18	-0.02	Pass	232383
302.00	301.99	-0.01	Pass	1.20	1.32	0.12	Pass	206553
601.98	601.97	-0.01	Pass	1.20	1.41	0.21	Pass	388803
1033.99	1033.98	-0.01	Pass	1.20	1.50	0.30	Pass	697863
1633.95	1633.94	-0.01	Pass	1.20	1.39	0.19	Pass	2088363
2233.91	2233.94	0.03	Pass	1.20	1.23	0.03	Pass	1456858

Analyzer: MS1 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.69	-0.30	Pass	2.50	2.91	0.41	Pass	367627
302.00	301.80	-0.20	Pass	2.50	2.46	-0.04	Pass	268105
601.98	601.79	-0.19	Pass	2.50	2.57	0.07	Pass	645149
1033.99	1033.51	-0.48	Pass	2.50	2.69	0.19	Pass	1354719
1633.95	1633.50	-0.45	Pass	2.50	2.90	0.40	Pass	4797595
2233.91	2233.37	-0.54	Pass	2.50	3.15	0.65	Pass	4318898

Analyzer: MS2 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.05	0.05	Pass	2.50	2.33	-0.17	Pass	82745
112.99	112.98	-0.01	Pass	2.50	2.47	-0.03	Pass	312208
302.00	301.99	-0.01	Pass	2.50	2.57	0.07	Pass	272432
601.98	601.97	-0.01	Pass	2.50	2.61	0.11	Pass	589767
1033.99	1034.00	0.01	Pass	2.50	2.67	0.17	Pass	1223328
1633.95	1633.96	0.01	Pass	2.50	2.49	-0.01	Pass	4323037
2233.91	2233.89	-0.02	Pass	2.50	2.23	-0.27	Pass	4496058

7.7.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53731.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 3:40:26 PM
 Sample Name : ic785-1
 Vial : P1-A2
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.661	216.8 -> 171.9	81965	10.00 µg/L	-0.037
M5-PFPeA	4.125	268.3 -> 223.0	34245	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	26337	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	25012	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	27853	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	12072	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	8068	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	9873	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	9523	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9448	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	6548	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	7102	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6107	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6458	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	661	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1410	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1991	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	10065	5.00 µg/L	-0.012
M3-HFPO-DA	5.652	286.9 -> 168.9	23394	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	9273	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	28685	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	32095	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5469	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4321	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5697	2.50 µg/L	-0.026
13C3-PFBA	2.653	216.0 -> 172.0	38453	5.00 µg/L	-0.050
18O2-PFHxS	7.028	403.0 -> 83.9	3990	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	32218	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	8564	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	11786	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	27755	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	661	4.84 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.8%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1410	4.90 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C2-8:2FTS	7.804	529.1 -> 80.9	1991	4.91 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C2-PFDoDA	8.880	615.1 -> 570.0	9523	1.23 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9448	1.21 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C3-PFBS	5.152	302.1 -> 79.9	7102	2.37 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.9%		
13C3-PFHxS	7.017	402.1 -> 79.9	6107	2.47 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C4-PFBA	2.661	216.8 -> 171.9	81965	10.23 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C4-PFHpA	6.267	367.1 -> 322.0	25012	2.58 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C5-PFHxA	5.297	318.0 -> 273.0	26337	2.54 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C5-PFPeA	4.125	268.3 -> 223.0	34245	5.06 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C6-PFDA	7.992	519.1 -> 474.1	8068	1.28 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C7-PFUnDA	8.448	570.0 -> 525.1	9873	1.36 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.4%	
13C8-FOSA	9.794	506.1 -> 77.8	6548	2.40 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.2%	
13C8-PFOA	6.964	421.1 -> 376.0	27853	2.42 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.9%	
13C8-PFOS	8.117	507.1 -> 79.9	6458	2.37 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.0%	
13C9-PFNA	7.509	472.1 -> 427.0	12072	1.30 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.9%	
d3-MeFOSAA	8.086	573.2 -> 419.0	10065	4.66 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.2%	
13C3-HFPO-DA	5.652	286.9 -> 168.9	23394	9.90 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.0%	
d3-MeFOSA	11.126	515.0 -> 219.0	4321	2.27 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.9%	
d5-EtFOSAA	8.283	589.2 -> 419.0	9273	4.90 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.0%	
d7-MeFOSE	11.022	623.2 -> 58.9	28685	24.44 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.8%	
d9-EtFOSE	11.319	639.2 -> 58.9	32095	23.61 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 94.5%	
d5-EtFOSA	11.397	531.1 -> 219.0	5469	2.43 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	998	0.76 µg/L	100
		327.1 -> 80.9	418		
6:2FTS	6.737	427.1 -> 407.0	1207	0.79 µg/L	100
		427.1 -> 80.9	466		
8:2FTS	7.792	527.1 -> 507.0	874	0.81 µg/L	85
		527.1 -> 80.8	447		
EtFOSAA	8.297	584.2 -> 419.1	257	0.15 µg/L	#m 47
		584.2 -> 526.0	155		
FOSA	9.798	498.1 -> 77.9	570	0.18 µg/L	100
		498.1 -> 478.0	18		
MeFOSAA	8.075	570.1 -> 419.0	441	0.25 µg/L	#m 77
		570.1 -> 483.0	36		
PFBA	2.657	212.8 -> 168.9	2106	0.71 µg/L	100
PFBS	5.153	298.7 -> 79.9	436	0.17 µg/L	83
		298.7 -> 98.8	123		
PFDA	7.992	512.9 -> 469.0	1445	0.22 µg/L	92
		512.9 -> 219.0	234		
PFDODA	8.880	613.1 -> 569.0	1588	0.20 µg/L	92
		613.1 -> 319.0	239		
PFDS	9.020	599.0 -> 79.9	309	0.18 µg/L	87

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	184			
PFHpA	6.268	363.1 -> 319.0	2865	0.18	µg/L	95
		363.1 -> 169.0	433			
PFHpS	7.599	449.0 -> 79.9	498	0.20	µg/L	71
		449.0 -> 98.9	154			
PFHxA	5.300	313.0 -> 269.0	1668	0.18	µg/L	99
		313.0 -> 118.9	41			
PFHxS	7.018	398.7 -> 79.9	310	0.17	µg/L	m 76
		398.7 -> 98.9	141			
PFNA	7.522	463.0 -> 419.0	1307	0.17	µg/L	98
		463.0 -> 219.0	320			
PFNS	8.574	548.8 -> 79.9	181	0.15	µg/L	85
		548.8 -> 98.9	114			
PFOA	6.965	413.0 -> 369.0	2681	0.20	µg/L	97
		413.0 -> 169.0	508			
PFOS	8.119	498.9 -> 79.9	646	0.22	µg/L	m 65
		498.9 -> 98.8	228			
PFPeA	4.127	263.0 -> 219.0	2623	0.35	µg/L	100
PFPeS	6.245	349.1 -> 79.9	328	0.16	µg/L	86
		349.1 -> 98.9	171			
PFTeDA	9.650	713.1 -> 669.0	1279	0.18	µg/L	97
		713.1 -> 168.9	122			
PFTrDA	9.279	663.0 -> 619.0	1282	0.15	µg/L	#m 82
		663.0 -> 168.9	272			
PFUnDA	8.449	563.1 -> 519.0	1383	0.17	µg/L	95
		563.1 -> 269.1	264			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	2539	0.35	µg/L	98
		632.9 -> 452.9	815			
9Cl-PF3ONS	8.451	530.8 -> 351.0	2710	0.37	µg/L	90
		532.8 -> 353.0	941			
ADONA	6.544	376.9 -> 250.9	6000	0.37	µg/L	100
		376.9 -> 84.8	1496			
HFPO-DA	5.653	284.9 -> 168.9	889	0.36	µg/L	91
		284.9 -> 184.9	112			
3:3FTCA	3.573	241.0 -> 177.0	375	0.81	µg/L	94
		241.0 -> 117.0	27			
5:3FTCA	5.983	341.0 -> 237.1	7073	4.37	µg/L	93
		341.0 -> 217.0	4749			
7:3FTCA	7.536	441.0 -> 316.9	3095	4.26	µg/L	95
		441.0 -> 336.9	7825			
EtFOSA	11.399	526.0 -> 219.0	819	0.33	µg/L	m 98
		526.0 -> 169.0	1177			
EtFOSE	11.332	630.0 -> 58.9	1204	1.00	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	593	0.38	µg/L	77
		511.9 -> 169.0	949			
MeFOSE	11.047	616.1 -> 58.9	1125	0.86	µg/L	m 100
PFDoDS	9.777	699.1 -> 79.9	260	0.20	µg/L	90
		699.1 -> 98.8	122			
NFDHA	5.166	295.0 -> 201.0	213	0.35	µg/L	# 75
		295.0 -> 84.9	77			
PFMBA	4.529	279.0 -> 85.1	1525	0.36	µg/L	100
PFMPA	3.278	229.0 -> 84.9	1619	0.34	µg/L	100
PFEESA	5.684	314.8 -> 134.9	2143	0.29	µg/L	99
		314.8 -> 82.9	67			

= Qualifier out of range, m = manually integrated, + = Area summed

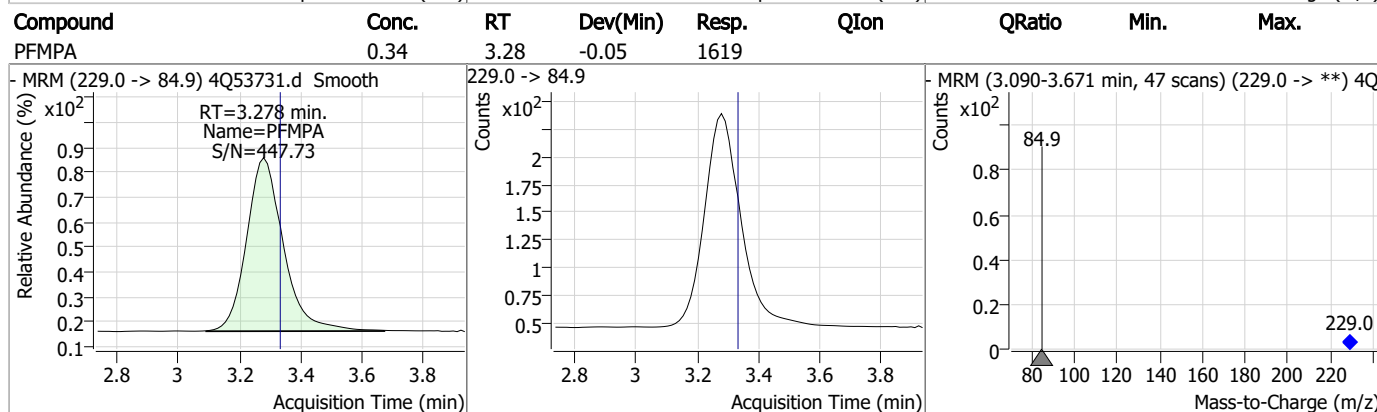
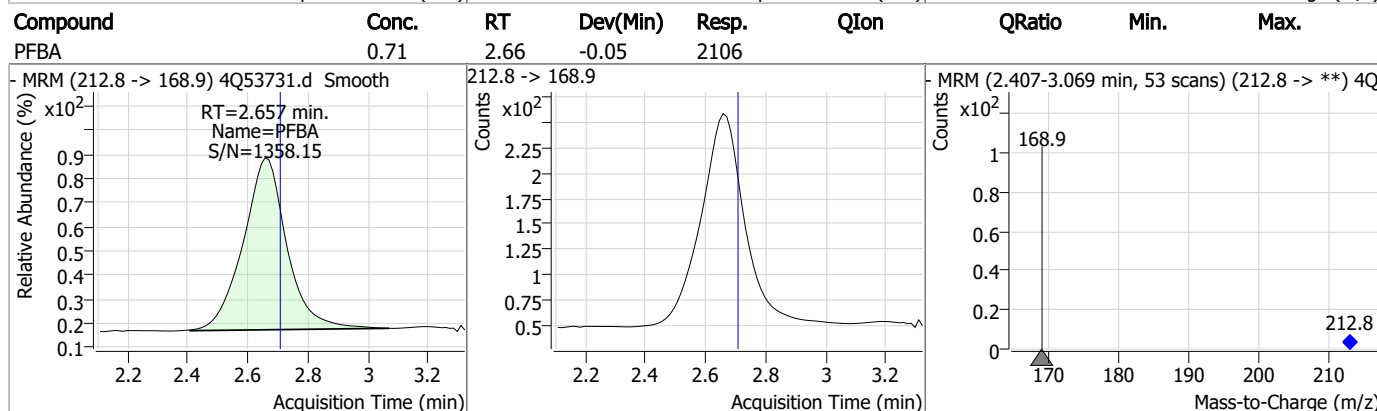
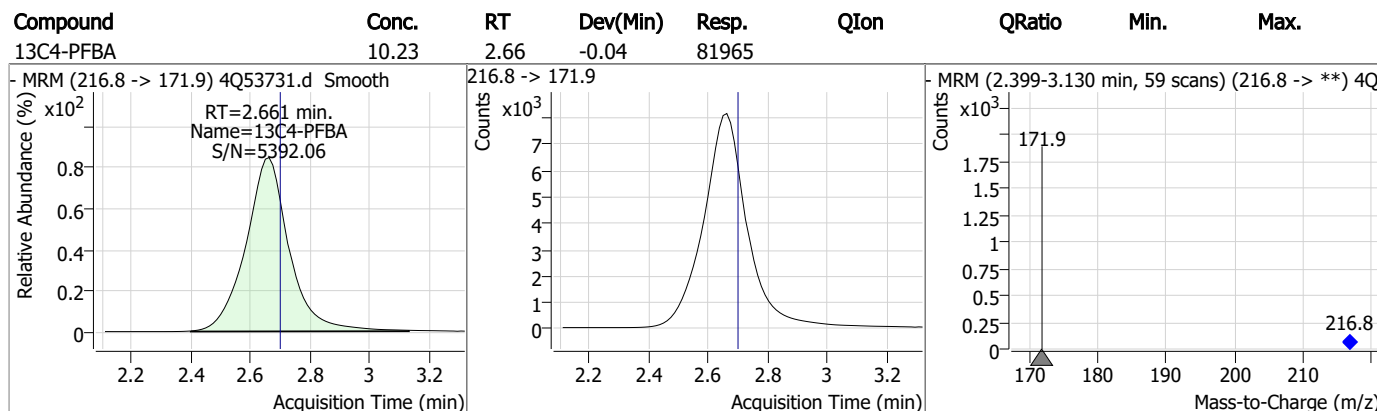
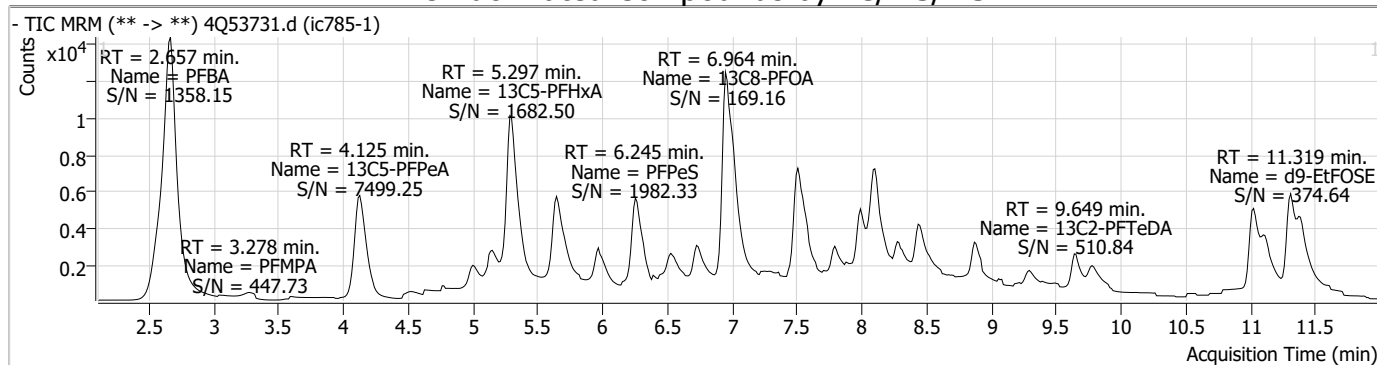
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.2
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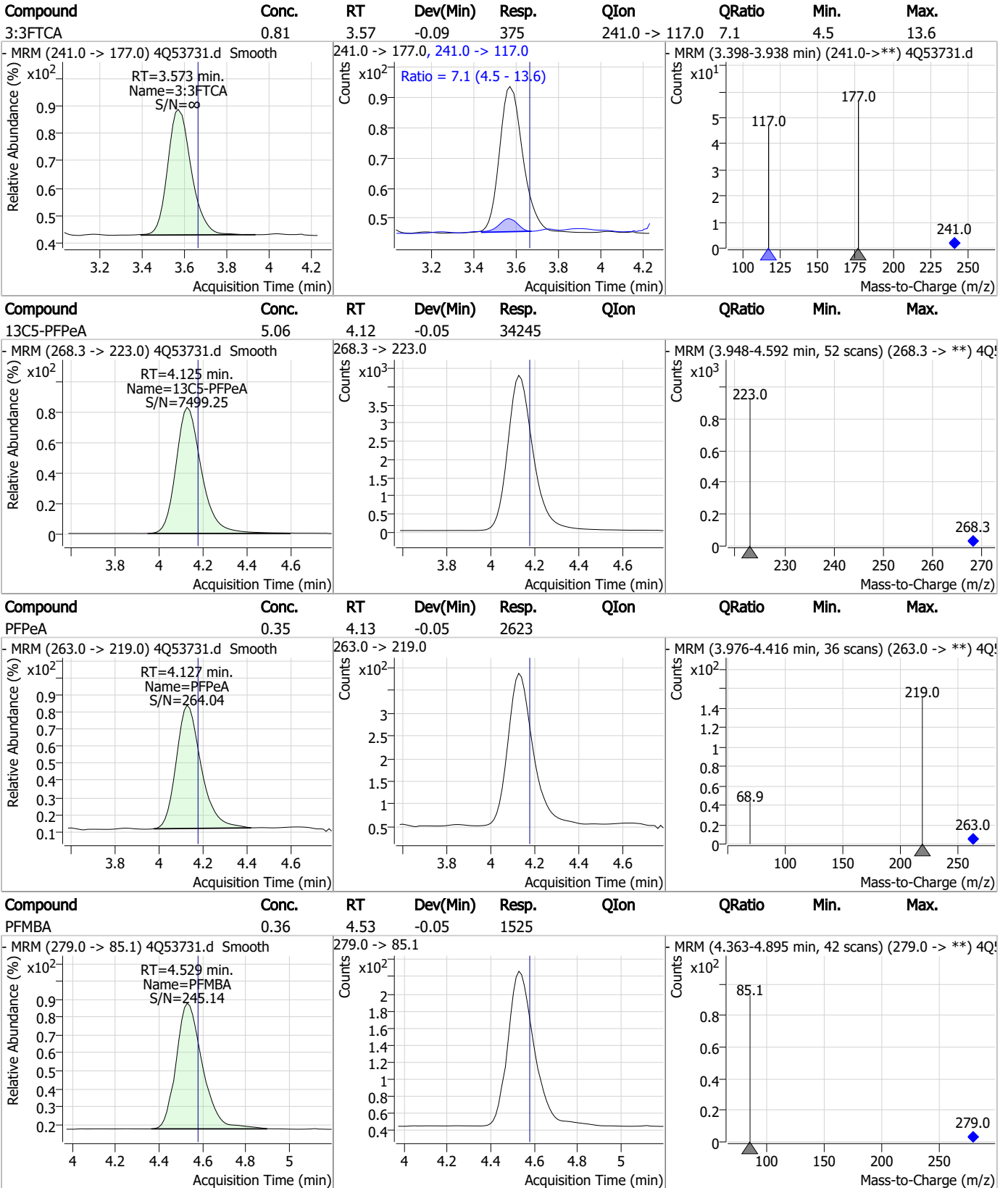


Perfluorinated Compounds by LC/MS/MS

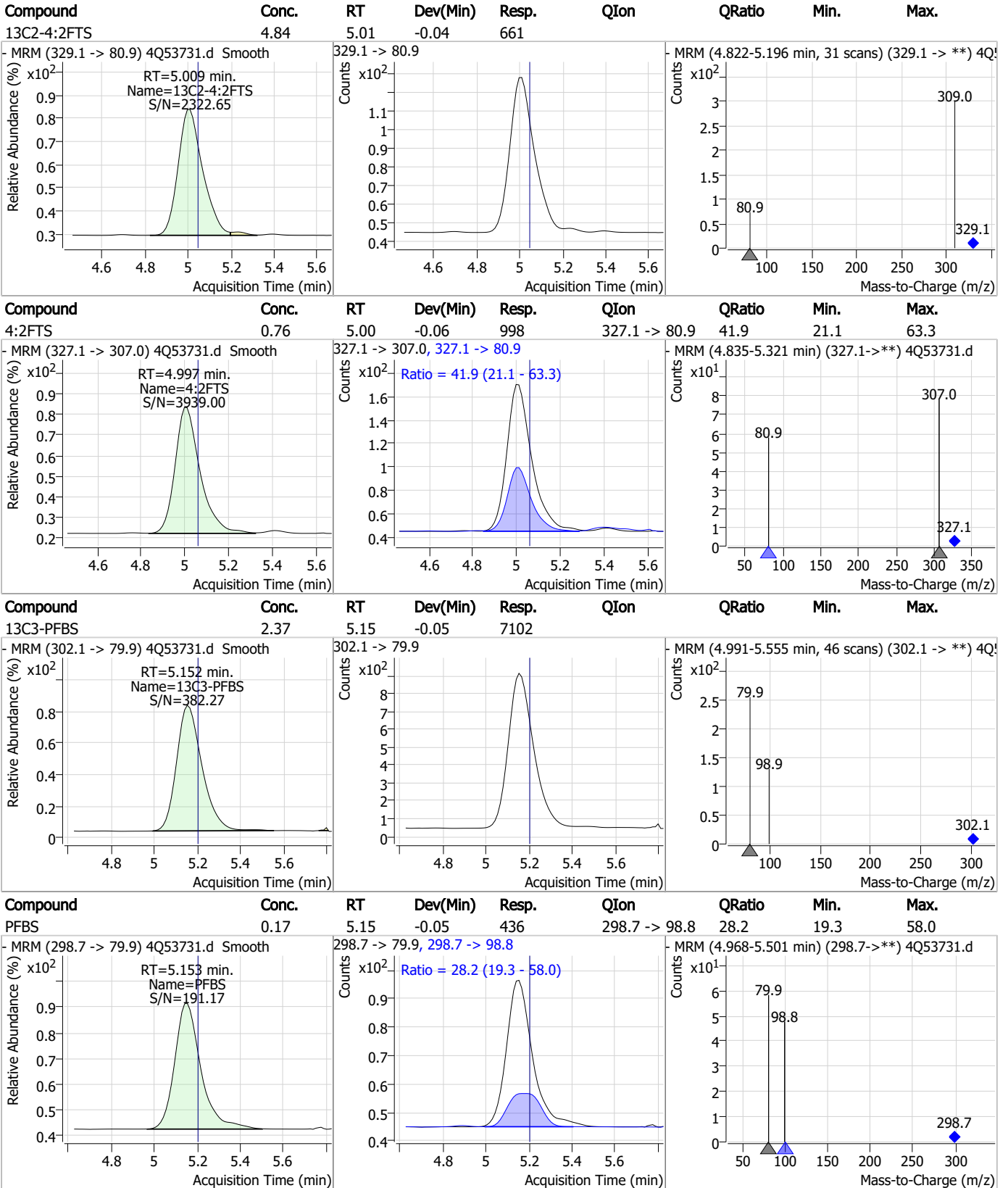


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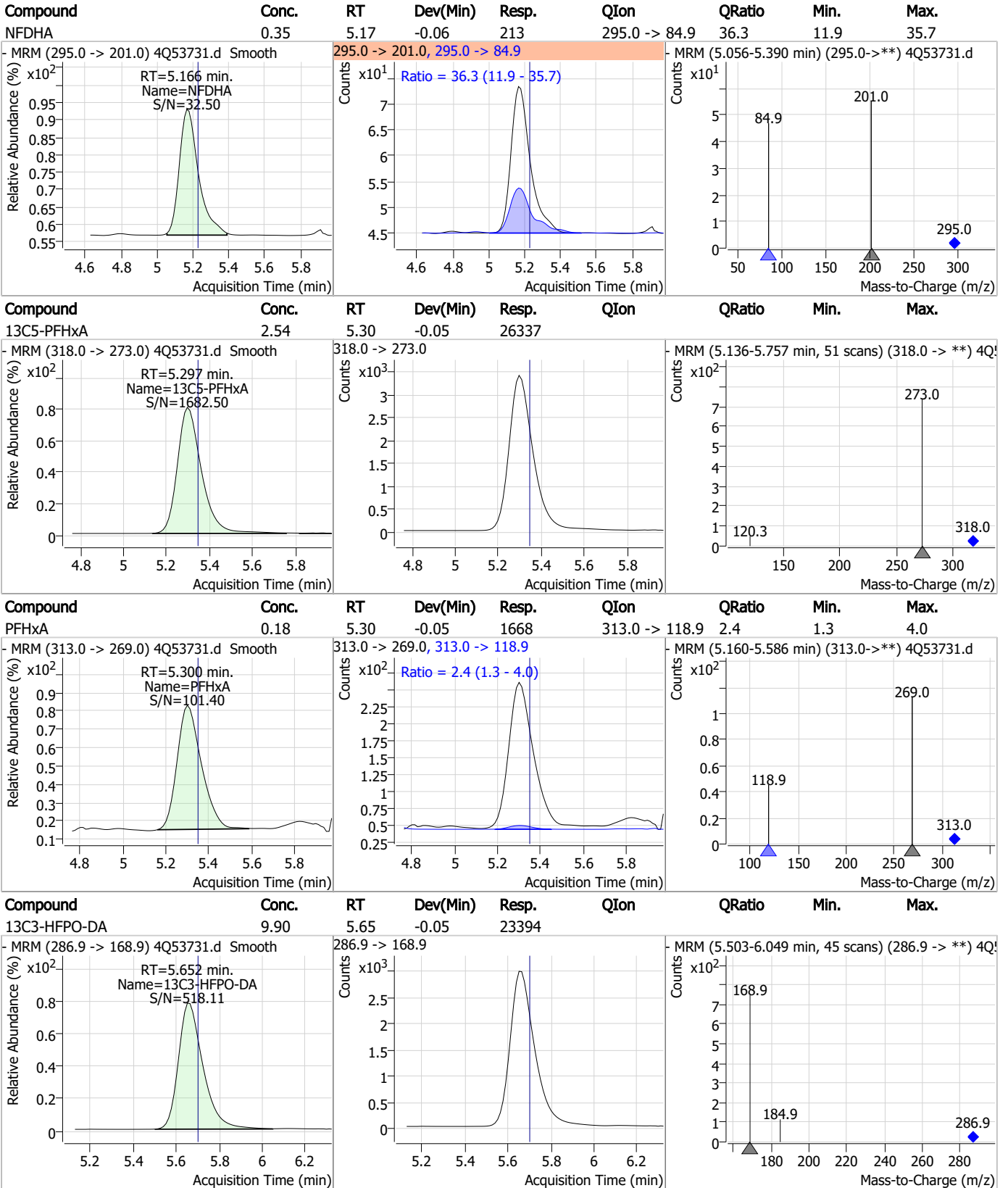
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

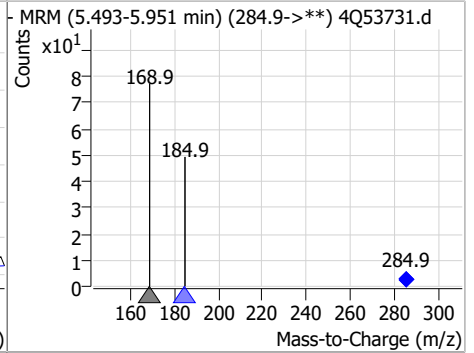
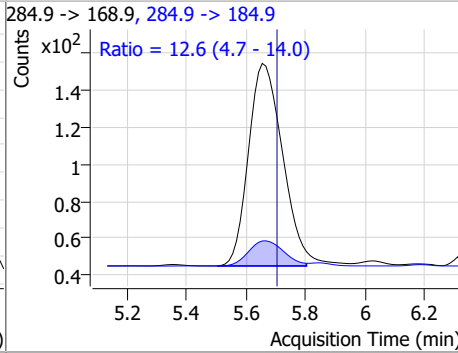
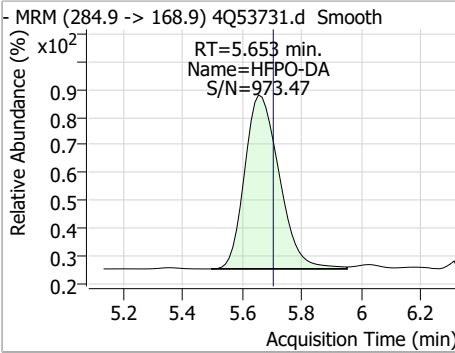


Perfluorinated Compounds by LC/MS/MS

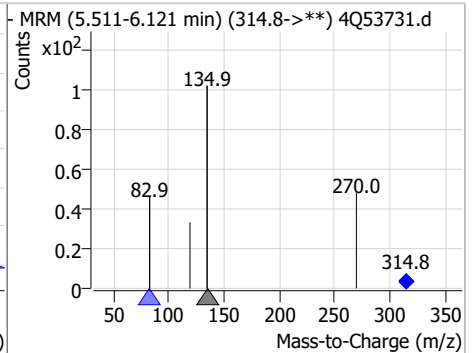
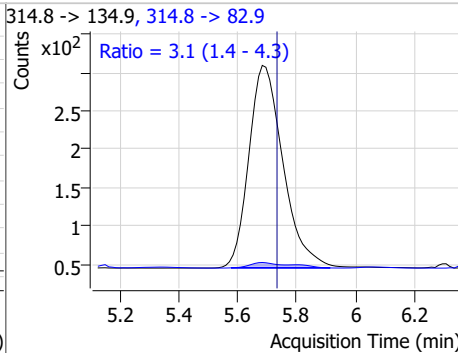
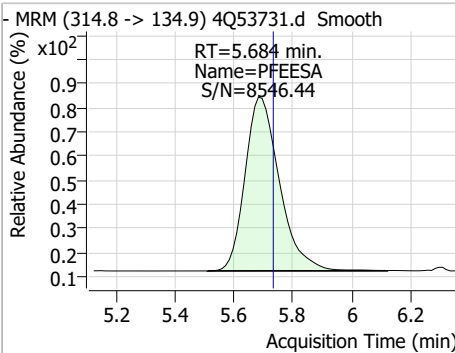


Perfluorinated Compounds by LC/MS/MS

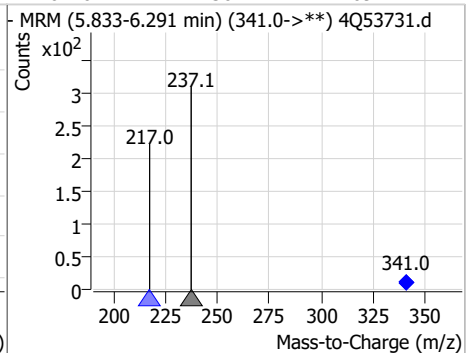
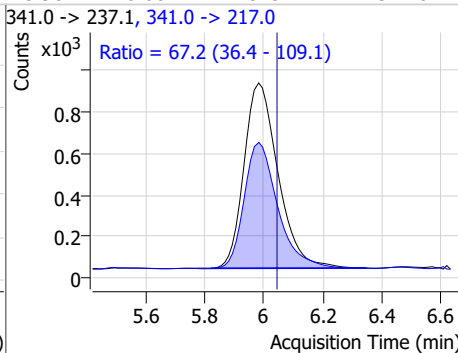
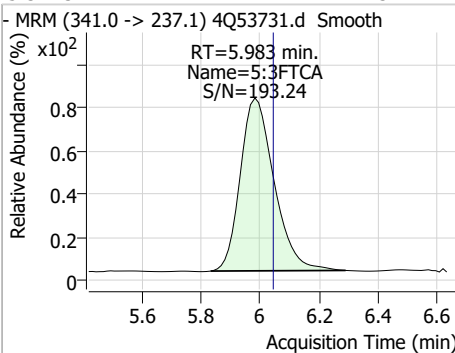
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.36	5.65	-0.05	889	284.9 -> 184.9	12.6	4.7	14.0



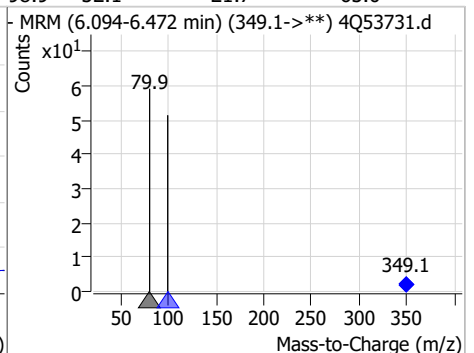
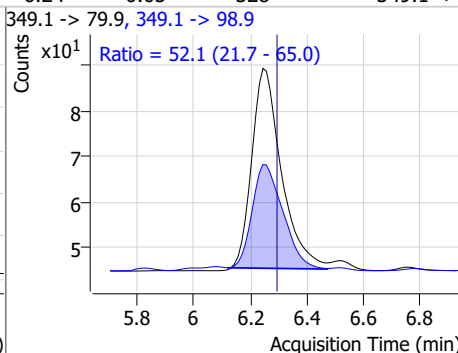
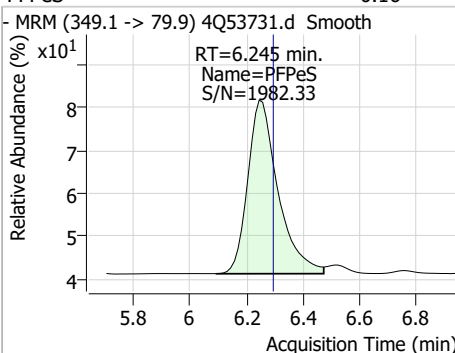
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.29	5.68	-0.05	2143	314.8 -> 82.9	3.1	1.4	4.3



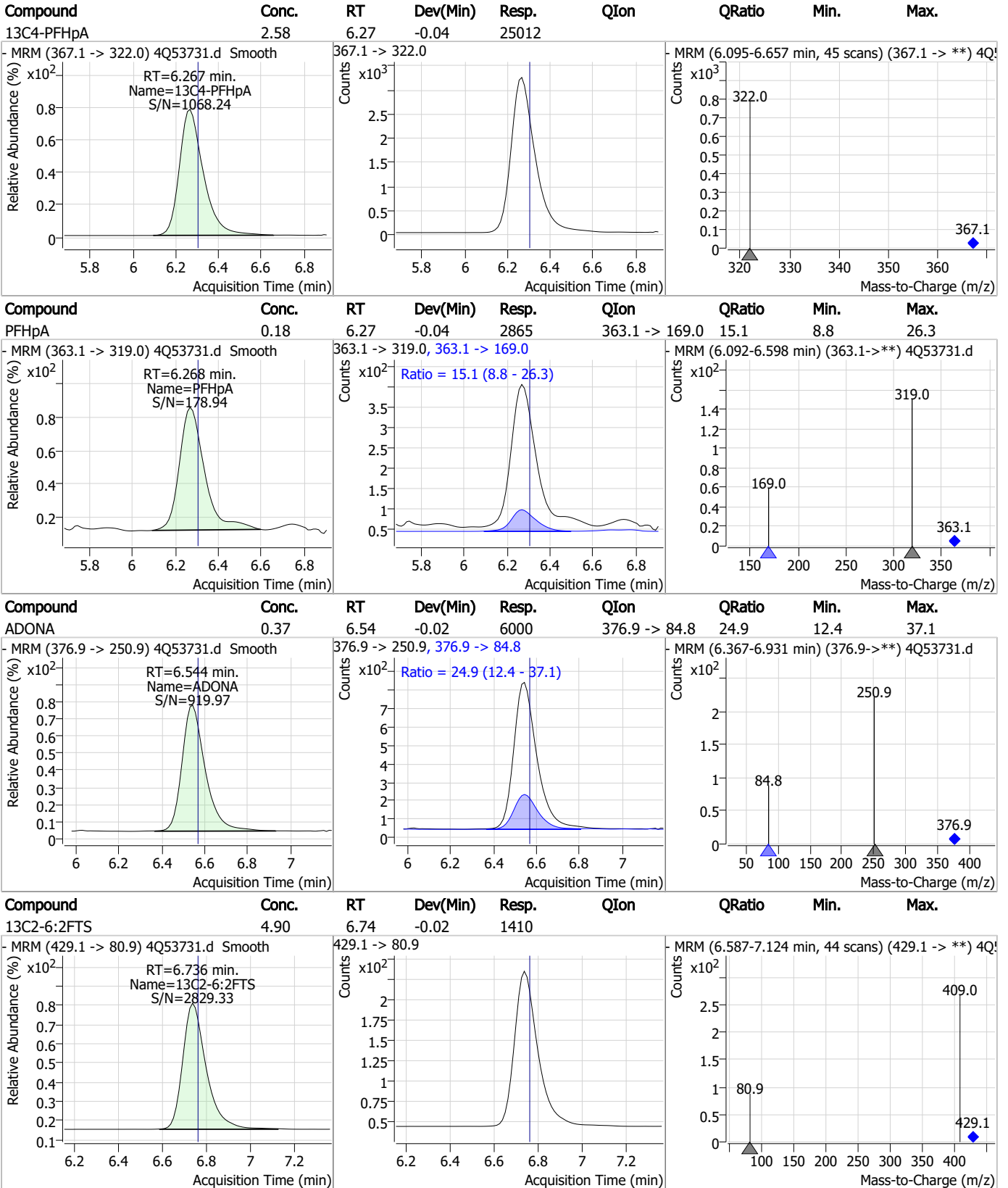
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	4.37	5.98	-0.06	7073	341.0 -> 217.0	67.2	36.4	109.1



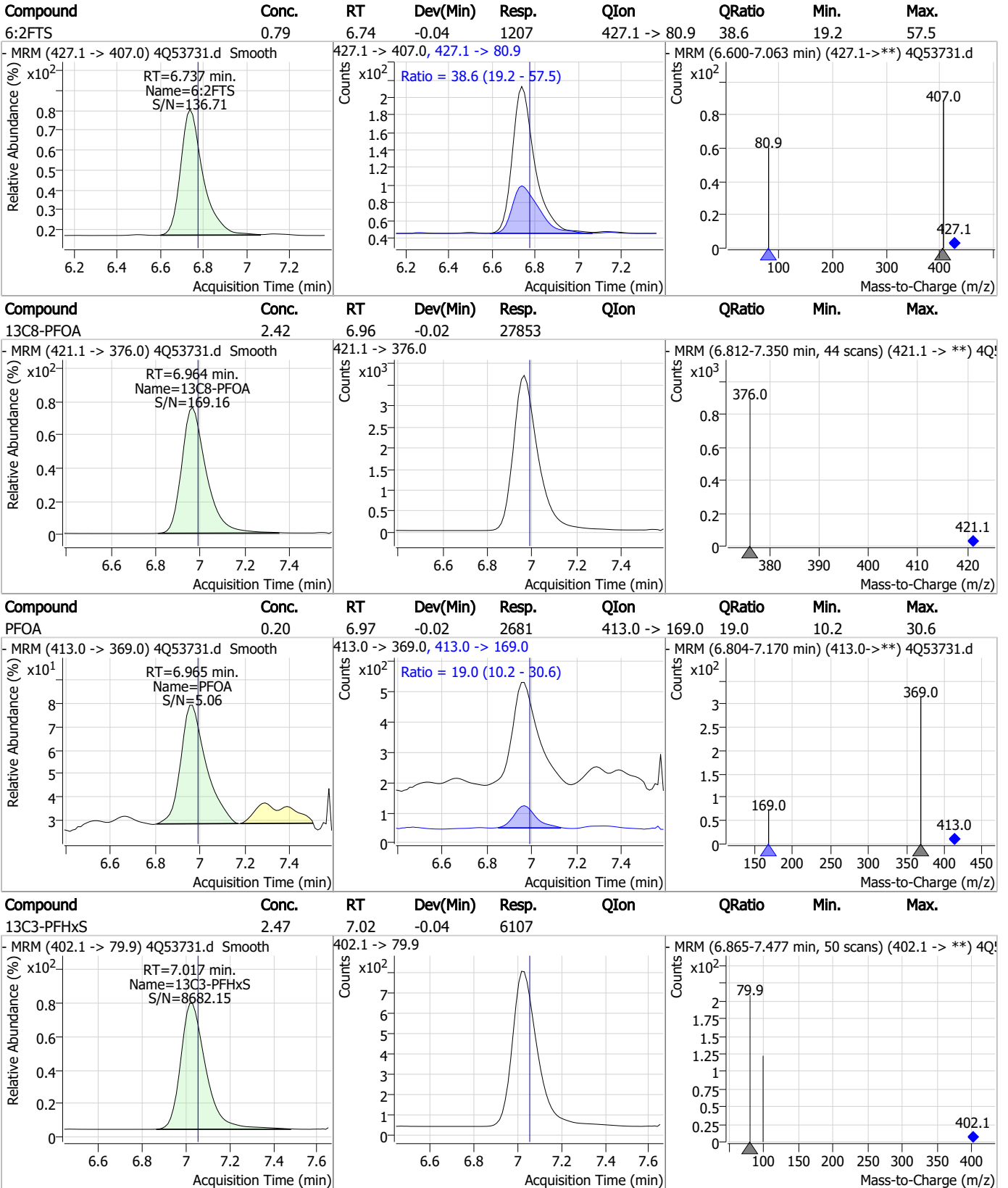
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.16	6.24	-0.05	328	349.1 -> 98.9	52.1	21.7	65.0



Perfluorinated Compounds by LC/MS/MS



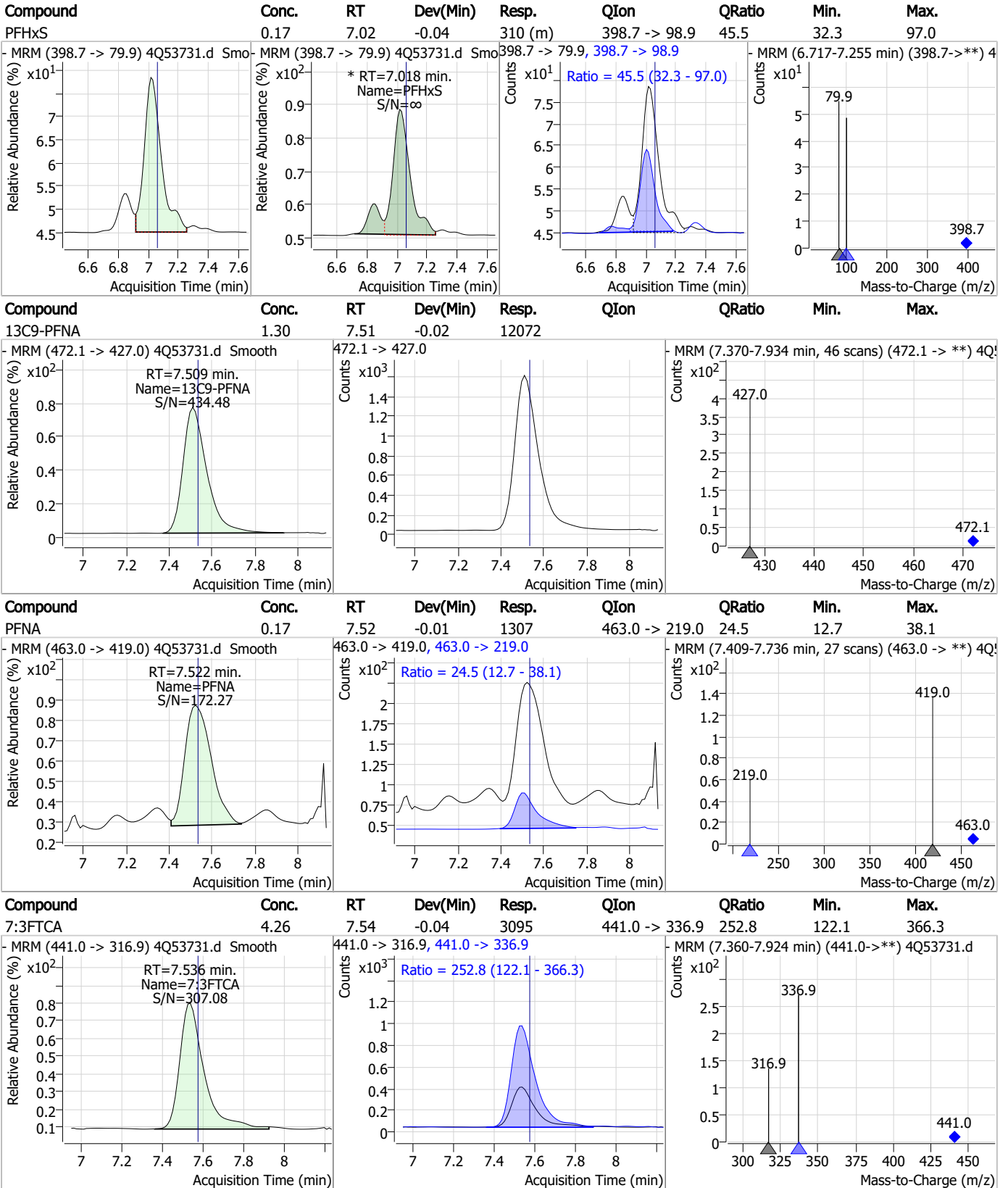
Perfluorinated Compounds by LC/MS/MS



7.7.2

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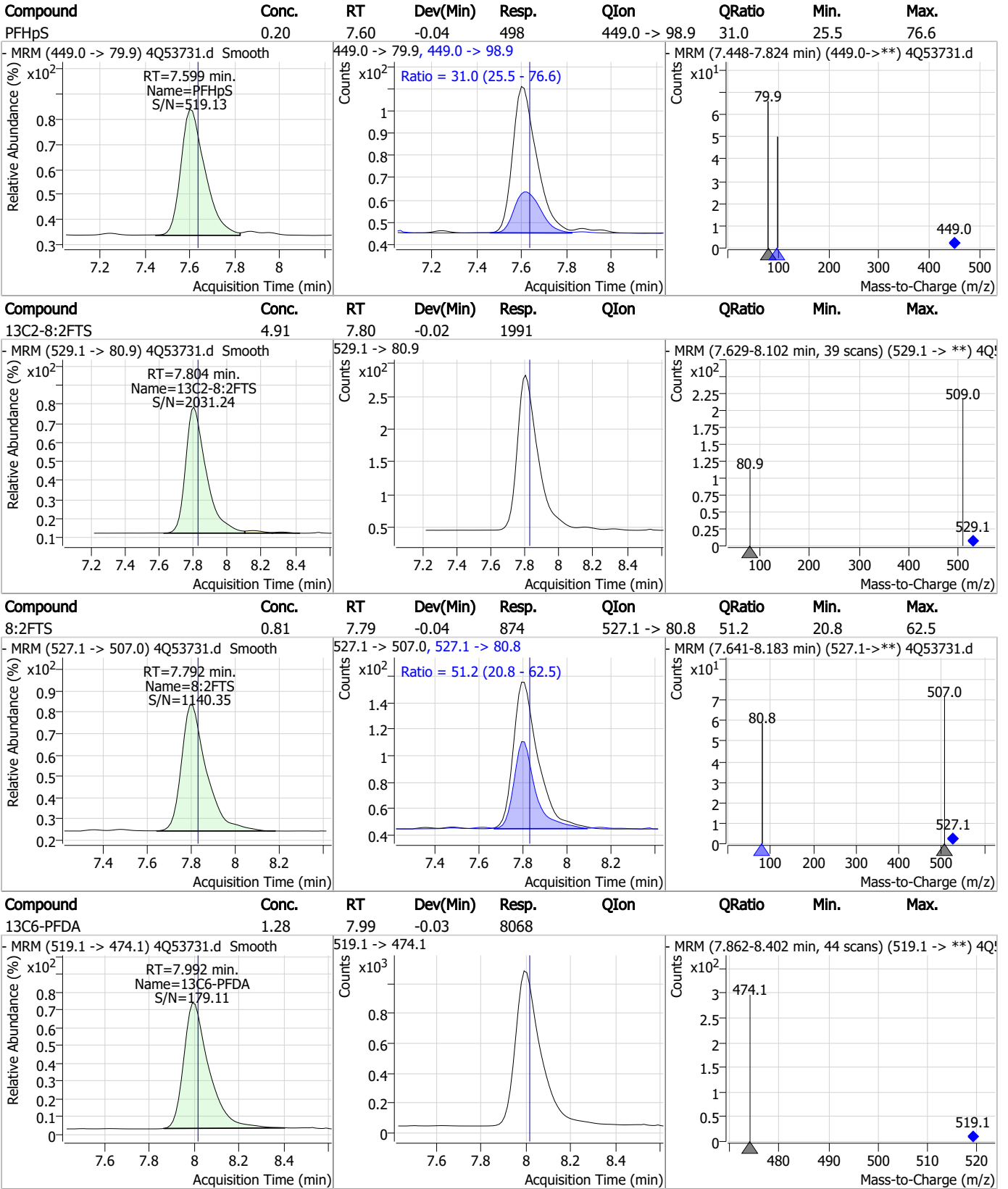
Perfluorinated Compounds by LC/MS/MS



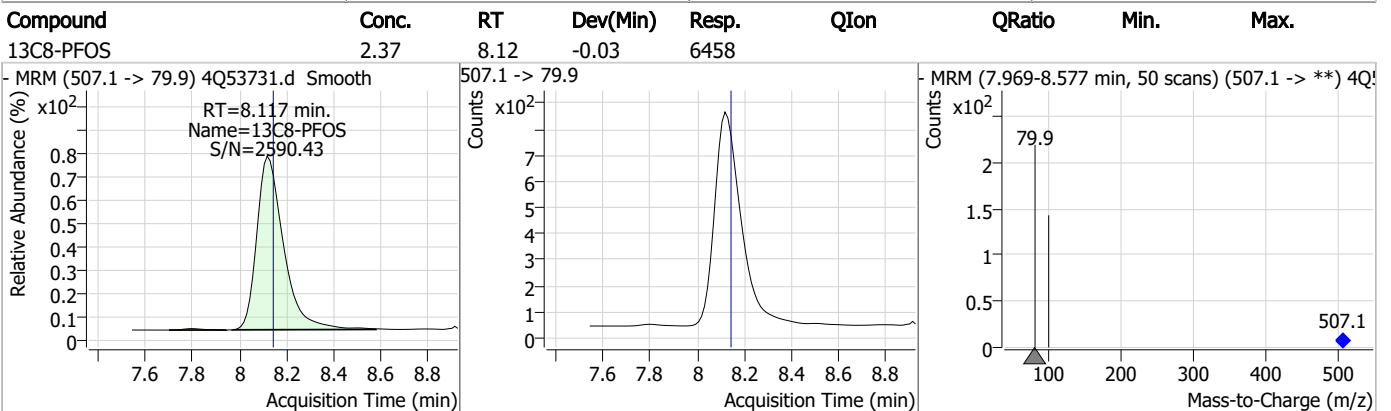
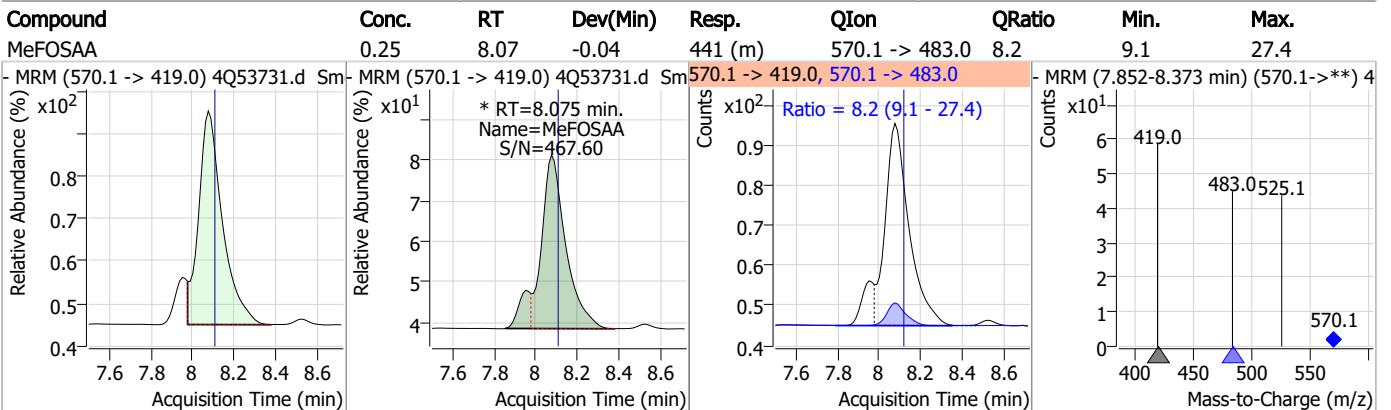
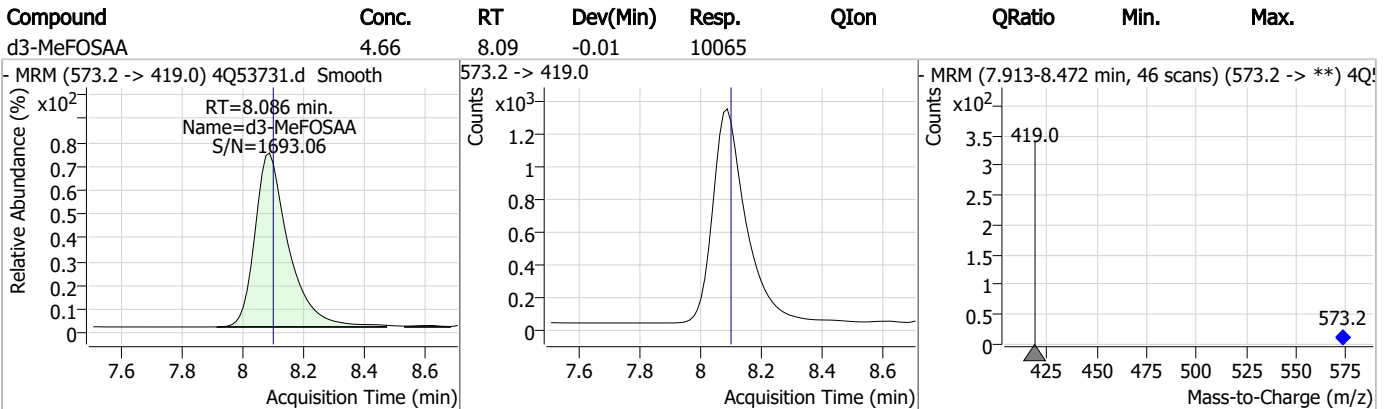
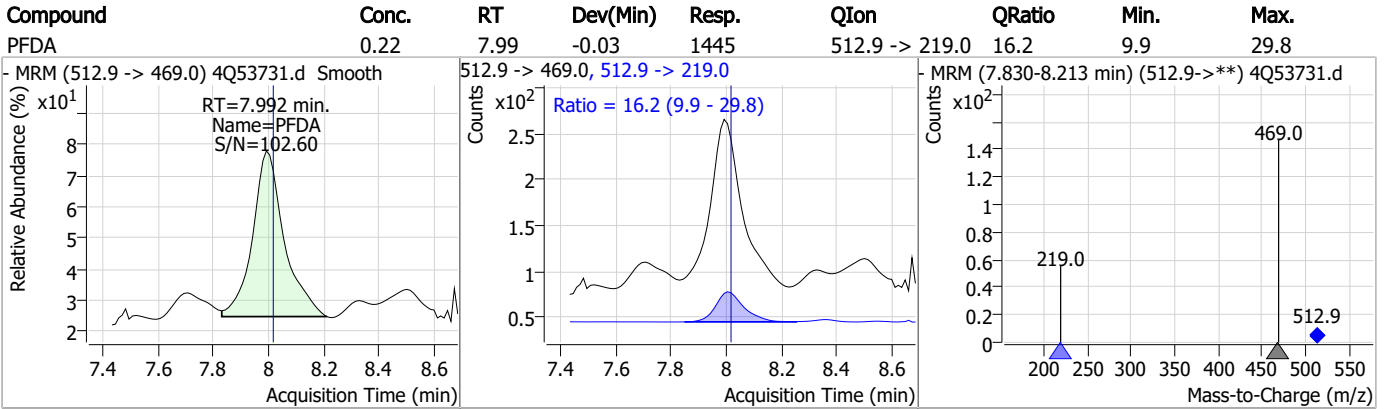
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

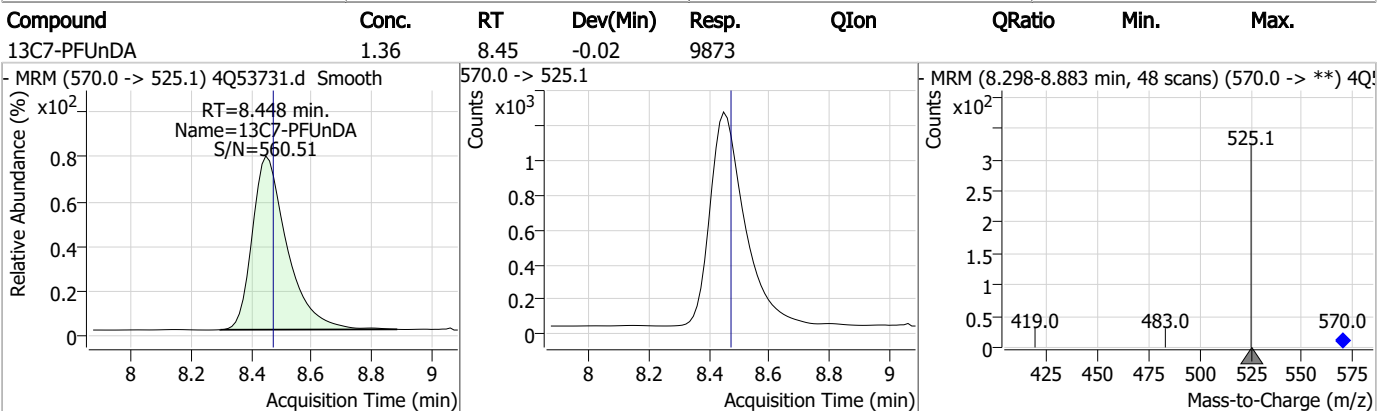
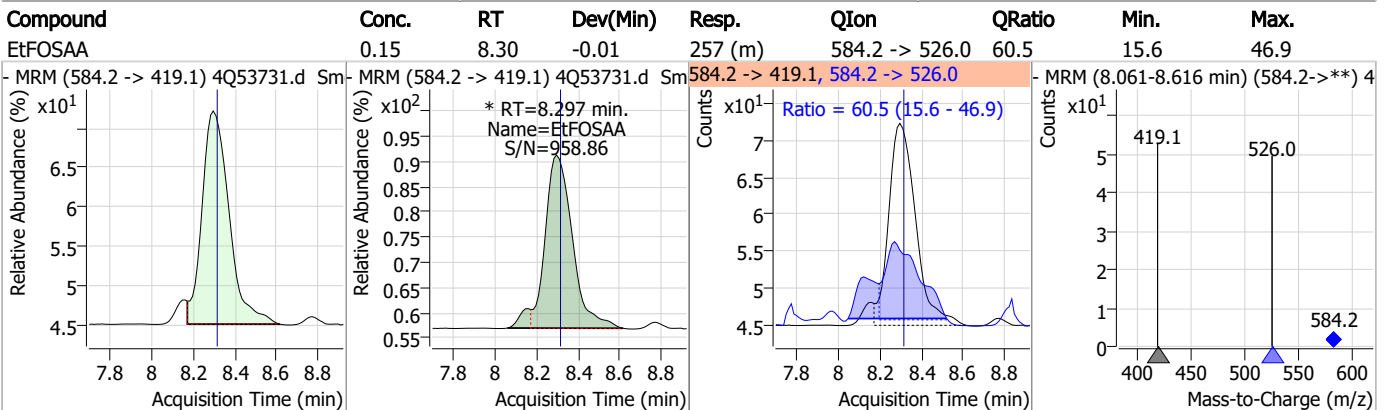
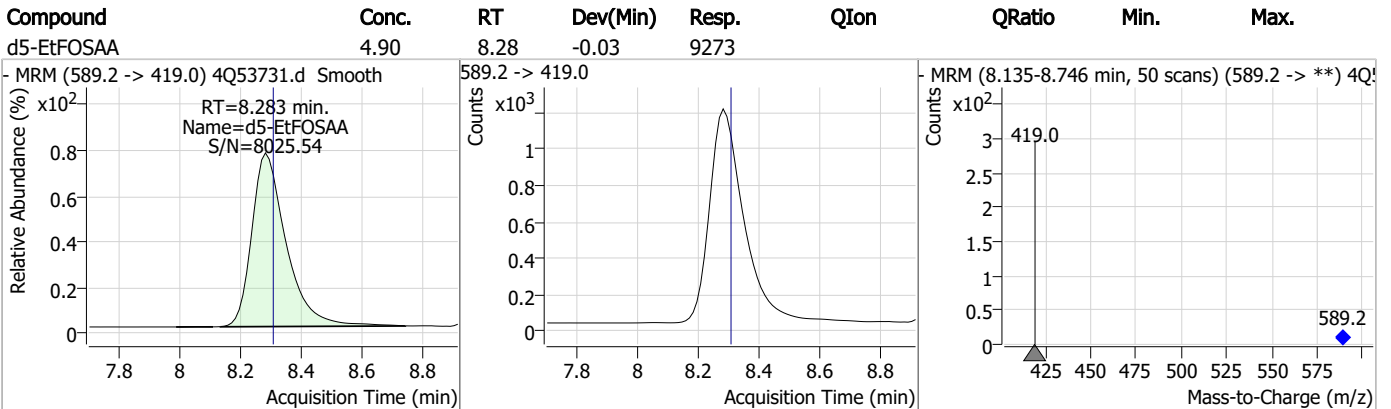
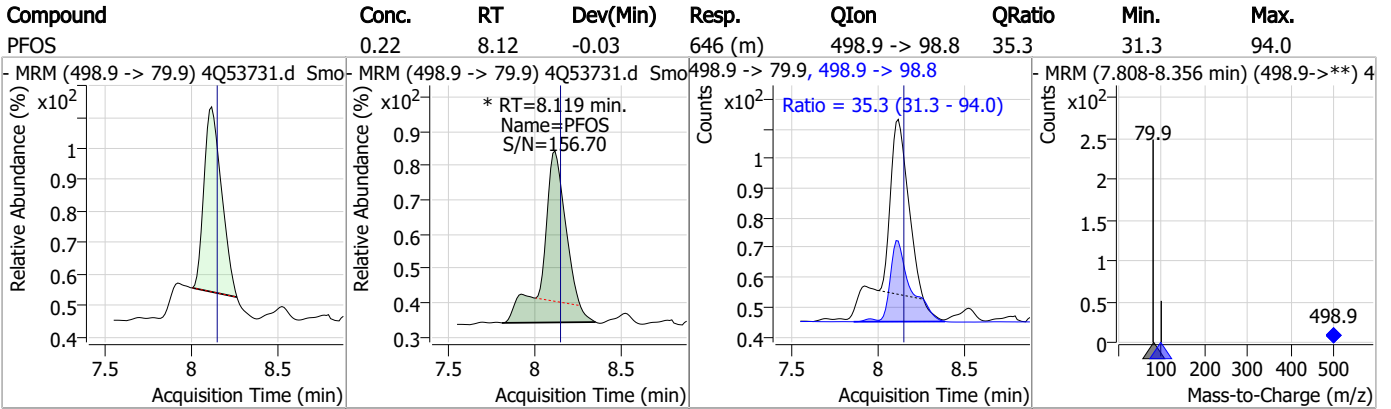


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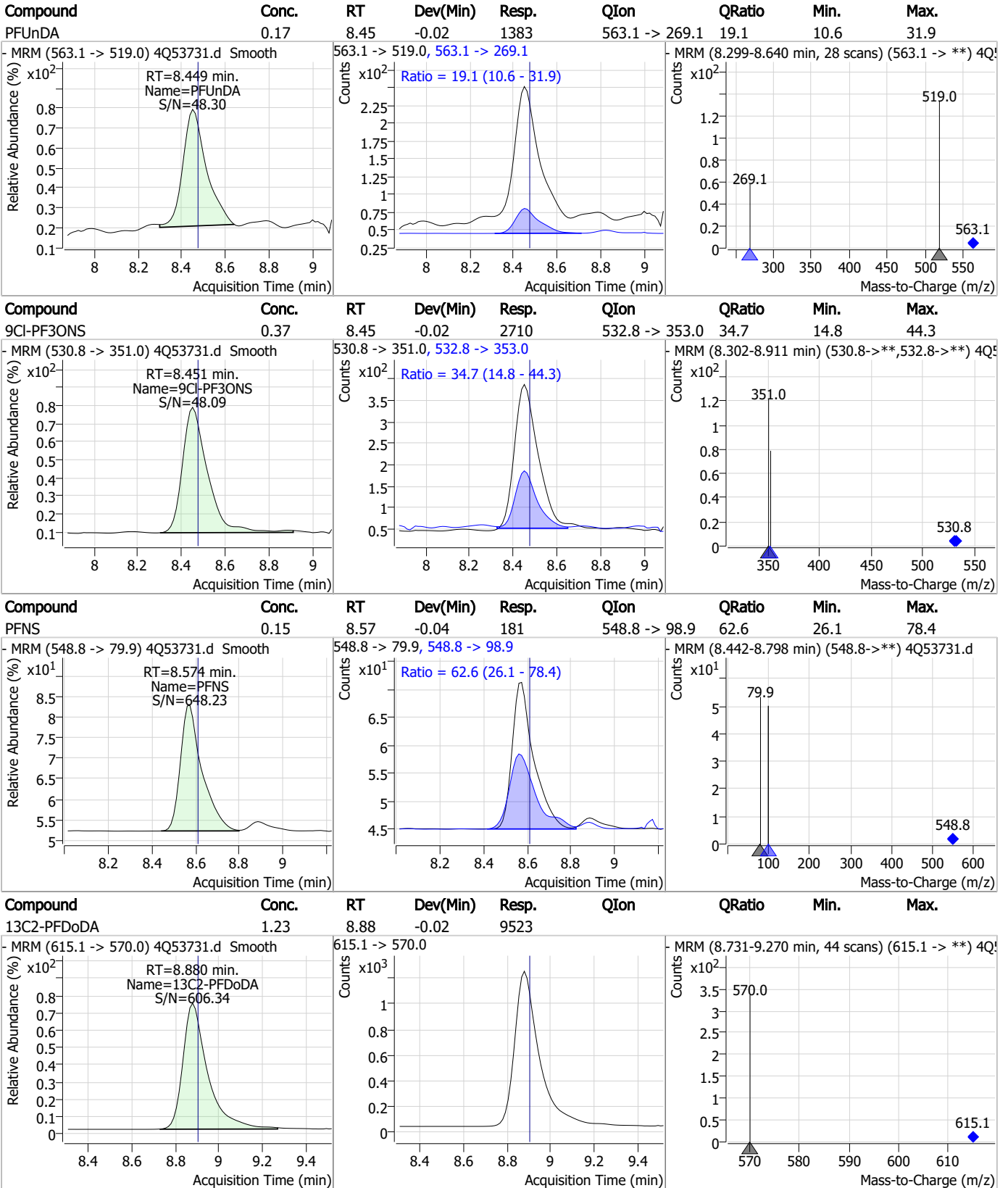
Perfluorinated Compounds by LC/MS/MS



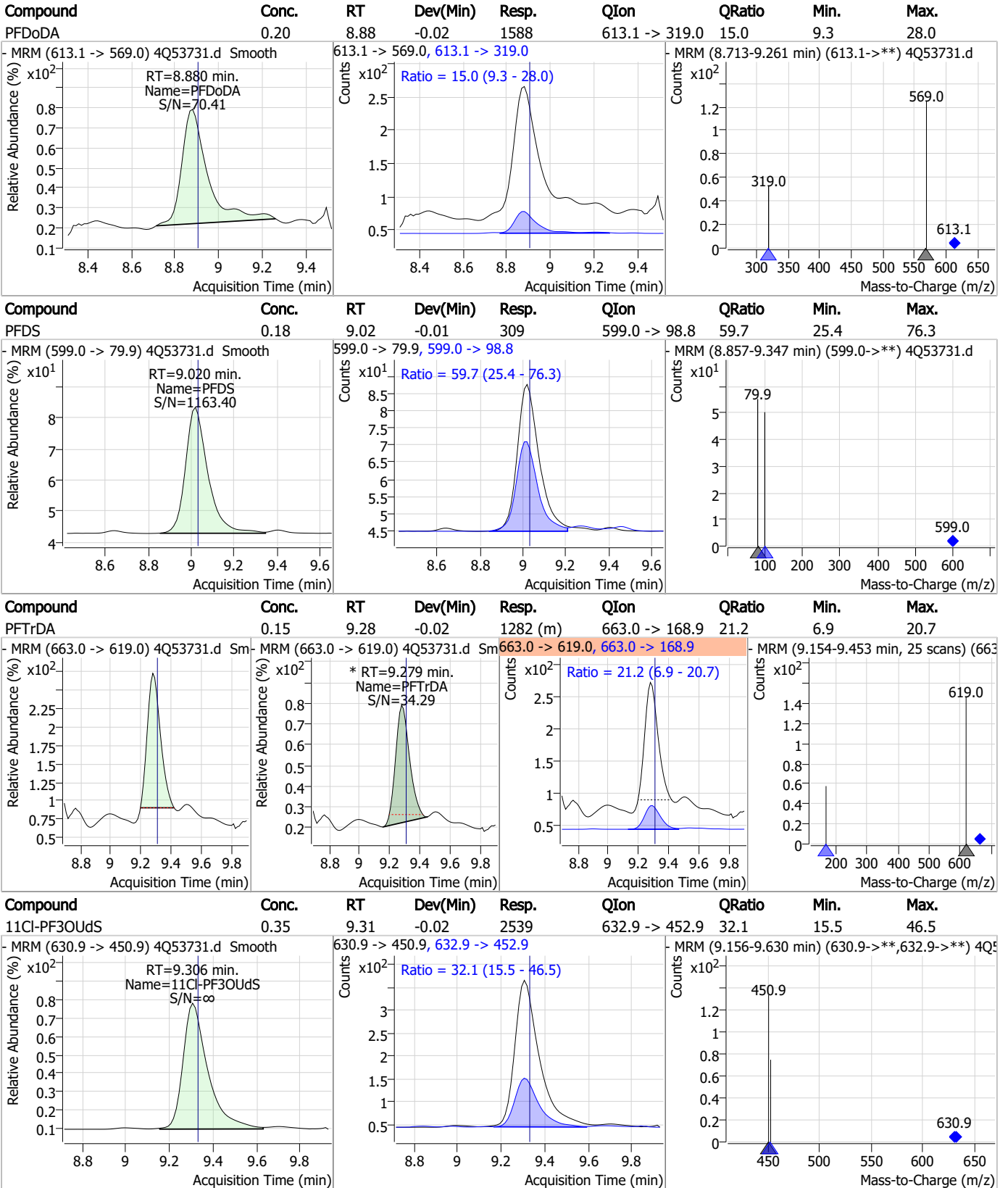
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

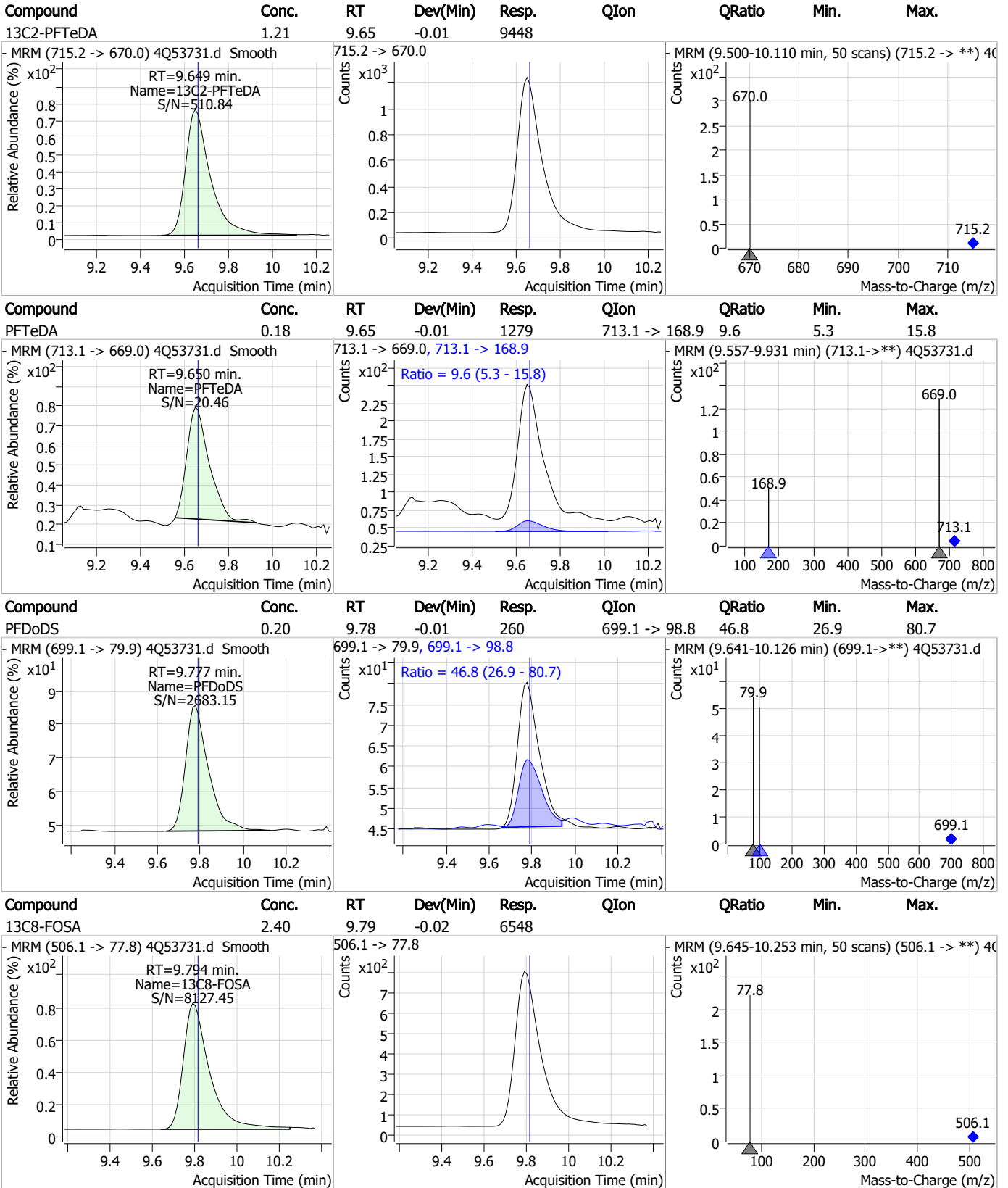


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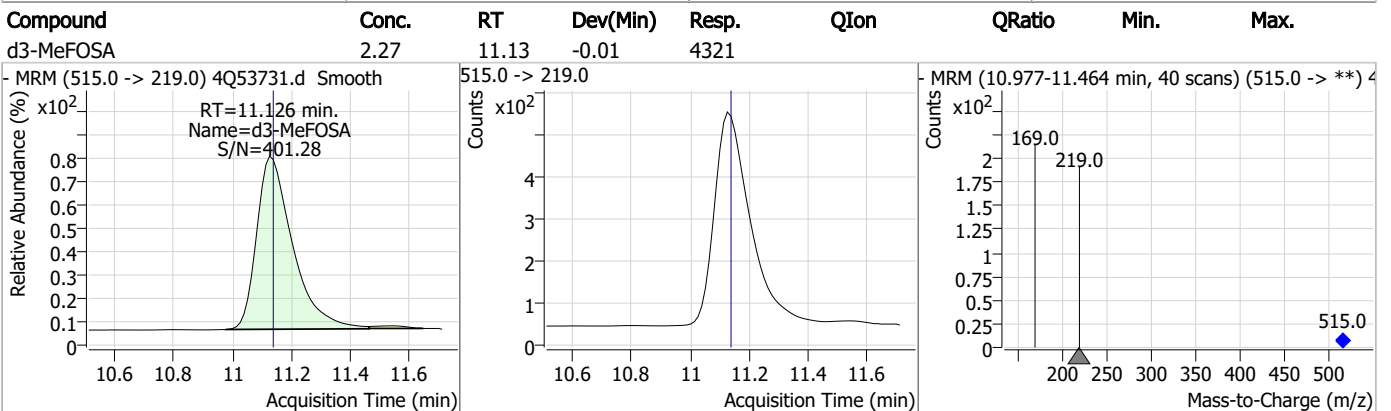
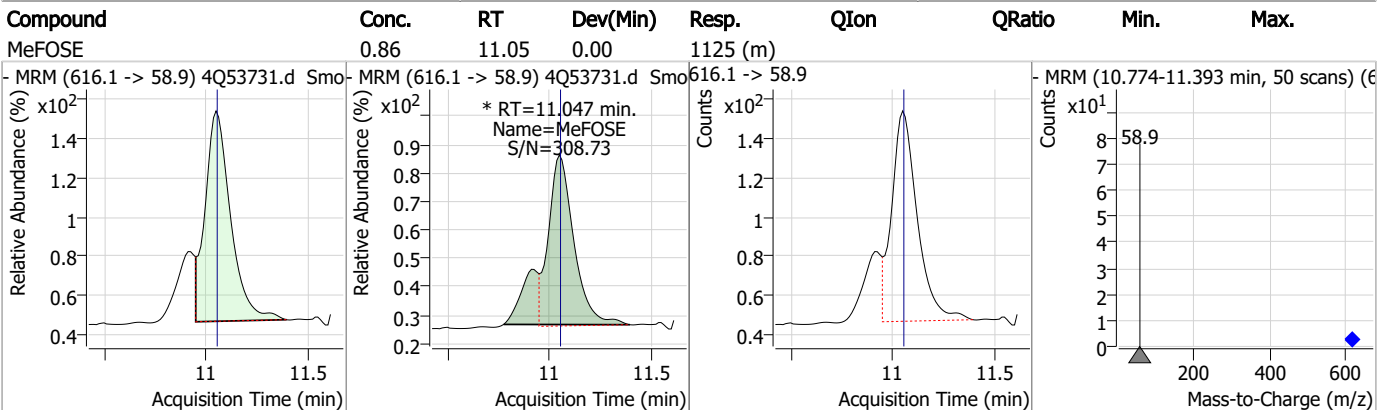
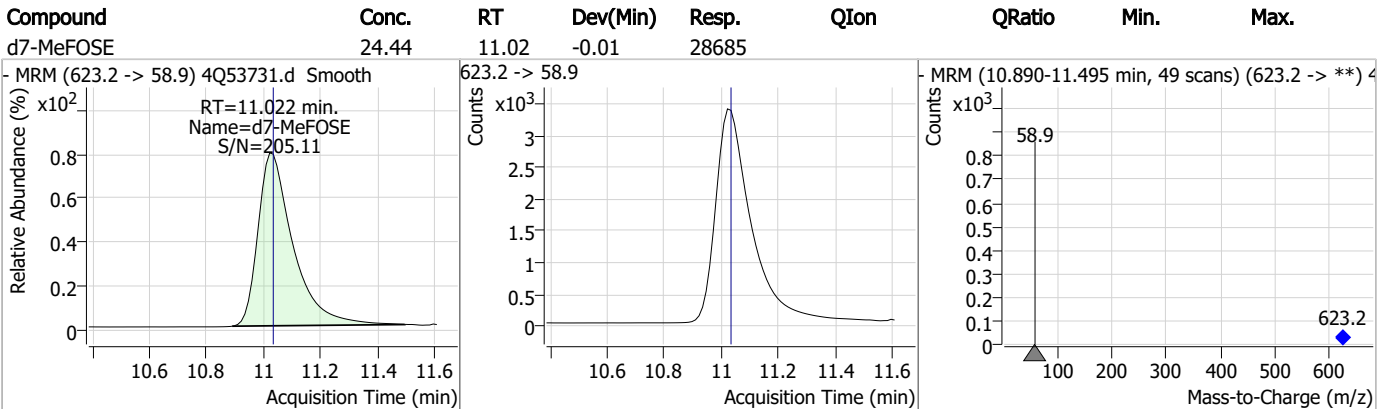
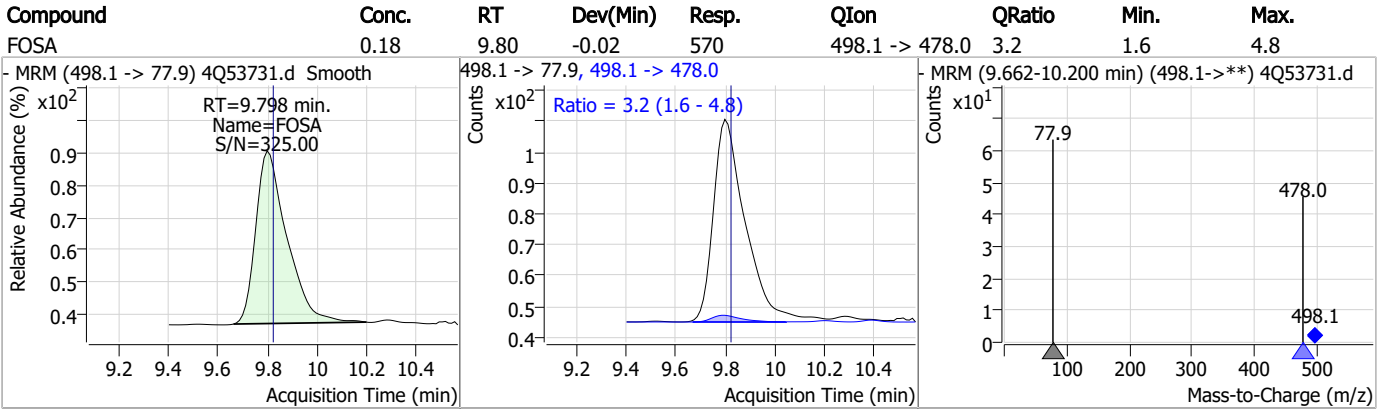
Perfluorinated Compounds by LC/MS/MS



7.7.2

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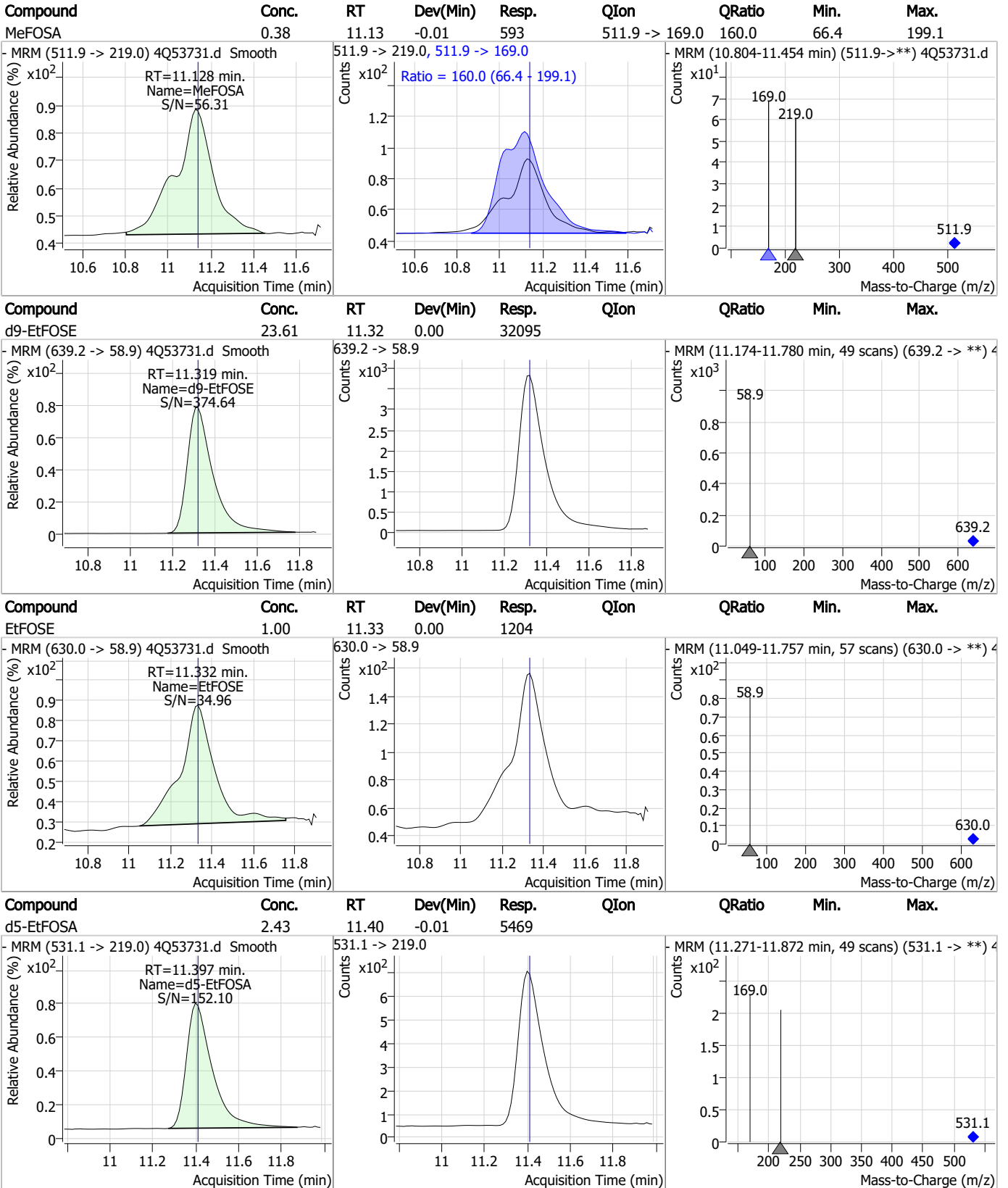
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

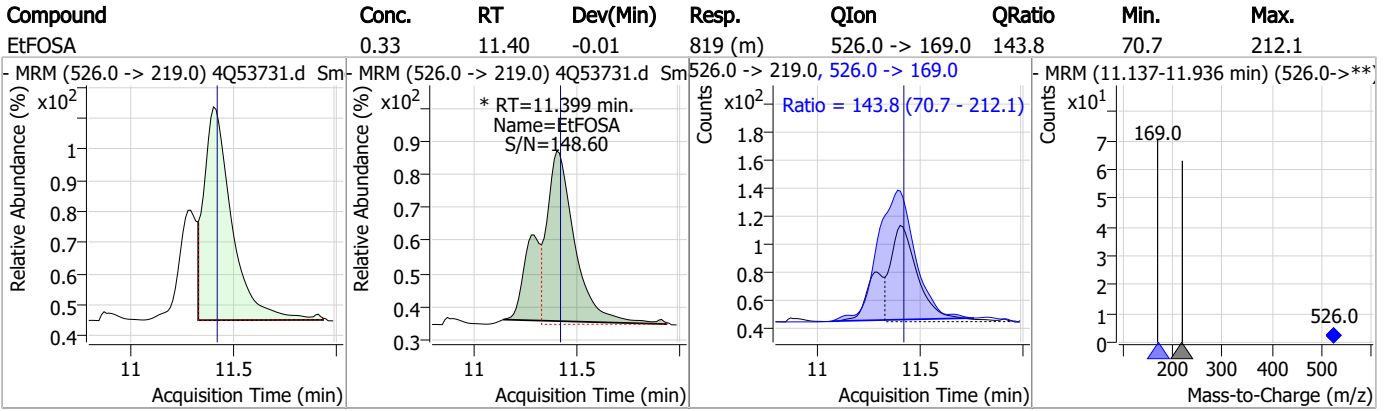


7.7.2

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Perfluorinated Compounds by LC/MS/MS



7.7.2

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Manual Integration Approval Summary

Sample Number: S4Q785-IC785 Method: EPA DRAFT 1633
Lab FileID: 4Q53731.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 15:40 Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
MeFOSAA	2355-31-9		8.07	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
Perfluorotridecanoic acid	72629-94-8		9.28	Poor instrument integration
MeFOSE	24448-09-7		11.05	Split peak
EtFOSA	4151-50-2		11.40	Split peak

7.7.2.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53732.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 3:55:10 PM
 Sample Name : ic785-2
 Vial : P1-A3
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	81429	10.00 µg/L	-0.075
M5-PFPeA	4.112	268.3 -> 223.0	34526	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	26376	2.50 µg/L	-0.050
M4-PFHpA	6.255	367.1 -> 322.0	25213	2.50 µg/L	-0.050
M8-PFOA	6.964	421.1 -> 376.0	28859	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	12292	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	8648	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	10124	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	9808	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9484	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	6694	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	7570	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6294	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6843	2.50 µg/L	-0.026
M2-4:2FTS	4.996	329.1 -> 80.9	713	5.00 µg/L	-0.050
M2-6:2FTS	6.736	429.1 -> 80.9	1480	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2286	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	11187	5.00 µg/L	-0.012
M3-HFPO-DA	5.652	286.9 -> 168.9	24217	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	9637	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	29681	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	36714	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5500	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4601	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5563	2.50 µg/L	-0.026
13C3-PFBA	2.616	216.0 -> 172.0	38759	5.00 µg/L	-0.087
18O2-PFHxS	7.016	403.0 -> 83.9	3946	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	32017	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	8499	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	11908	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	27909	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	713	5.28 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1480	5.20 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2286	5.70 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.0%		
13C2-PFDoDA	8.880	615.1 -> 570.0	9808	1.28 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9484	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C3-PFBS	5.152	302.1 -> 79.9	7570	2.56 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C3-PFHxS	7.017	402.1 -> 79.9	6294	2.57 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)	QValue
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.9%			
13C4-PFBA	2.624	216.8 -> 171.9	81429	10.08 µg/L	-0.075	
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.8%			
13C4-PFHpA	6.255	367.1 -> 322.0	25213	2.59 µg/L	-0.050	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.6%			
13C5-PFHxA	5.297	318.0 -> 273.0	26376	2.53 µg/L	-0.050	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%			
13C5-PFPeA	4.112	268.3 -> 223.0	34526	5.07 µg/L	-0.062	
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.4%			
13C6-PFDA	8.004	519.1 -> 474.1	8648	1.38 µg/L	-0.013	
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 110.6%			
13C7-PFUnDA	8.448	570.0 -> 525.1	10124	1.40 µg/L	-0.025	
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 112.1%			
13C8-FOSA	9.794	506.1 -> 77.8	6694	2.52 µg/L	-0.025	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%			
13C8-PFOA	6.964	421.1 -> 376.0	28859	2.52 µg/L	-0.025	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.0%			
13C8-PFOS	8.117	507.1 -> 79.9	6843	2.58 µg/L	-0.026	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.1%			
13C9-PFNA	7.509	472.1 -> 427.0	12292	1.31 µg/L	-0.025	
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.7%			
d3-MeFOSAA	8.086	573.2 -> 419.0	11187	5.30 µg/L	-0.012	
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.1%			
13C3-HFPO-DA	5.652	286.9 -> 168.9	24217	10.20 µg/L	-0.050	
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 102.0%			
d3-MeFOSA	11.126	515.0 -> 219.0	4601	2.48 µg/L	-0.012	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.2%			
d5-EtFOSAA	8.283	589.2 -> 419.0	9637	5.22 µg/L	-0.026	
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.3%			
d7-MeFOSE	11.022	623.2 -> 58.9	29681	25.90 µg/L	-0.012	
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 103.6%			
d9-EtFOSE	11.319	639.2 -> 58.9	36714	27.66 µg/L	0.000	
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 110.6%			
d5-EtFOSA	11.397	531.1 -> 219.0	5500	2.50 µg/L	-0.012	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%			
Target Compounds						
4:2FTS	4.997	327.1 -> 307.0	2171	1.54 µg/L		94
		327.1 -> 80.9	831			
6:2FTS	6.737	427.1 -> 407.0	2322	1.45 µg/L		97
		427.1 -> 80.9	853			
8:2FTS	7.804	527.1 -> 507.0	1660	1.34 µg/L		95
		527.1 -> 80.8	742			
EtFOSAA	8.284	584.2 -> 419.1	586	0.34 µg/L	#	59
		584.2 -> 526.0	314			
FOSA	9.798	498.1 -> 77.9	1326	0.41 µg/L		98
		498.1 -> 478.0	51			
MeFOSAA	8.087	570.1 -> 419.0	589	0.30 µg/L	#	59
		570.1 -> 483.0	216			
PFBA	2.620	212.8 -> 168.9	4382	1.48 µg/L		100
PFBS	5.153	298.7 -> 79.9	957	0.36 µg/L		96
		298.7 -> 98.8	394			
PFDA	8.005	512.9 -> 469.0	2589	0.37 µg/L		98
		512.9 -> 219.0	533			
PFDODA	8.880	613.1 -> 569.0	2897	0.36 µg/L		91
		613.1 -> 319.0	655			
PFDS	9.020	599.0 -> 79.9	615	0.35 µg/L		86

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	374			
PFHpA	6.255	363.1 -> 319.0	5667	0.36	µg/L	92
		363.1 -> 169.0	1191			
PFHpS	7.612	449.0 -> 79.9	828	0.31	µg/L	81
		449.0 -> 98.9	533			
PFHxA	5.300	313.0 -> 269.0	3301	0.36	µg/L	96
		313.0 -> 118.9	131			
PFHxS	7.018	398.7 -> 79.9	680	0.36	µg/L	m 79
		398.7 -> 98.9	327			
PFNA	7.510	463.0 -> 419.0	3135	0.40	µg/L	84
		463.0 -> 219.0	544			
PFNS	8.586	548.8 -> 79.9	546	0.42	µg/L	89
		548.8 -> 98.9	243			
PFOA	6.953	413.0 -> 369.0	5531	0.40	µg/L	96
		413.0 -> 169.0	1035			
PFOS	8.131	498.9 -> 79.9	942	0.30	µg/L	m 99
		498.9 -> 98.8	580			
PFPeA	4.114	263.0 -> 219.0	5678	0.76	µg/L	100
PFPeS	6.257	349.1 -> 79.9	770	0.37	µg/L	100
		349.1 -> 98.9	334			
PFTeDA	9.650	713.1 -> 669.0	2834	0.39	µg/L	97
		713.1 -> 168.9	334			
PFTrDA	9.279	663.0 -> 619.0	3182	0.37	µg/L	95
		663.0 -> 168.9	503			
PFUnDA	8.449	563.1 -> 519.0	2731	0.33	µg/L	85
		563.1 -> 269.1	769			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	5255	0.70	µg/L	95
		632.9 -> 452.9	1768			
9Cl-PF3ONS	8.451	530.8 -> 351.0	5490	0.72	µg/L	95
		532.8 -> 353.0	1769			
ADONA	6.531	376.9 -> 250.9	14024	0.84	µg/L	99
		376.9 -> 84.8	3509			
HFPO-DA	5.653	284.9 -> 168.9	2095	0.82	µg/L	99
		284.9 -> 184.9	206			
3:3FTCA	3.561	241.0 -> 177.0	879	1.90	µg/L	98
		241.0 -> 117.0	75			
5:3FTCA	5.983	341.0 -> 237.1	14792	9.12	µg/L	99
		341.0 -> 217.0	10634			
7:3FTCA	7.524	441.0 -> 316.9	7321	10.06	µg/L	81
		441.0 -> 336.9	15496			
EtFOSA	11.399	526.0 -> 219.0	2000	0.81	µg/L	95
		526.0 -> 169.0	2701			
EtFOSE	11.332	630.0 -> 58.9	2583	1.88	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	1312	0.79	µg/L	m 90
		511.9 -> 169.0	1899			
MeFOSE	11.047	616.1 -> 58.9	2728	2.02	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	449	0.32	µg/L	84
		699.1 -> 98.8	292			
NFDHA	5.179	295.0 -> 201.0	600	0.99	µg/L	98
		295.0 -> 84.9	150			
PFMBA	4.516	279.0 -> 85.1	3321	0.77	µg/L	100
PFMPA	3.253	229.0 -> 84.9	3662	0.76	µg/L	100
PFEESA	5.684	314.8 -> 134.9	5124	0.70	µg/L	98
		314.8 -> 82.9	177			

= Qualifier out of range, m = manually integrated, + = Area summed

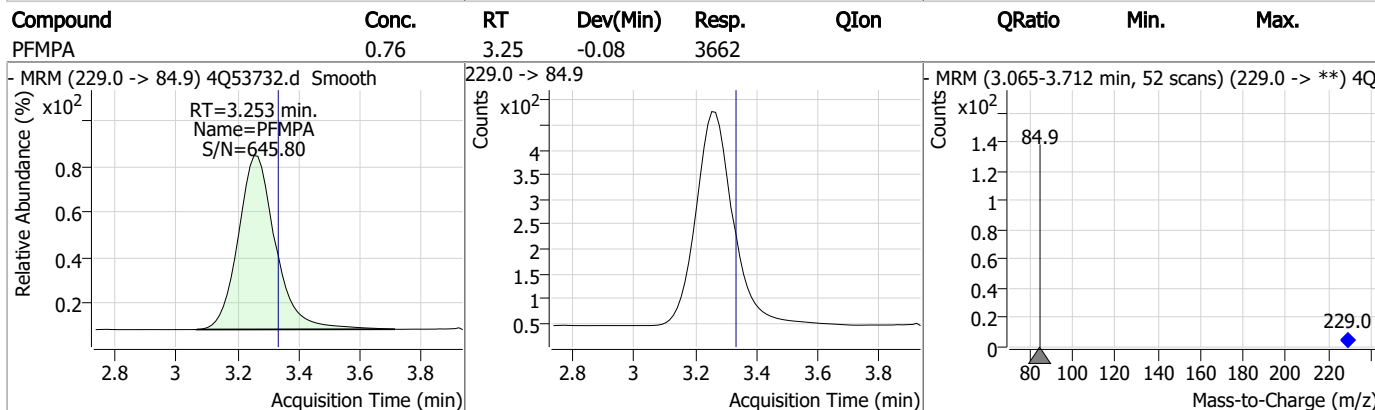
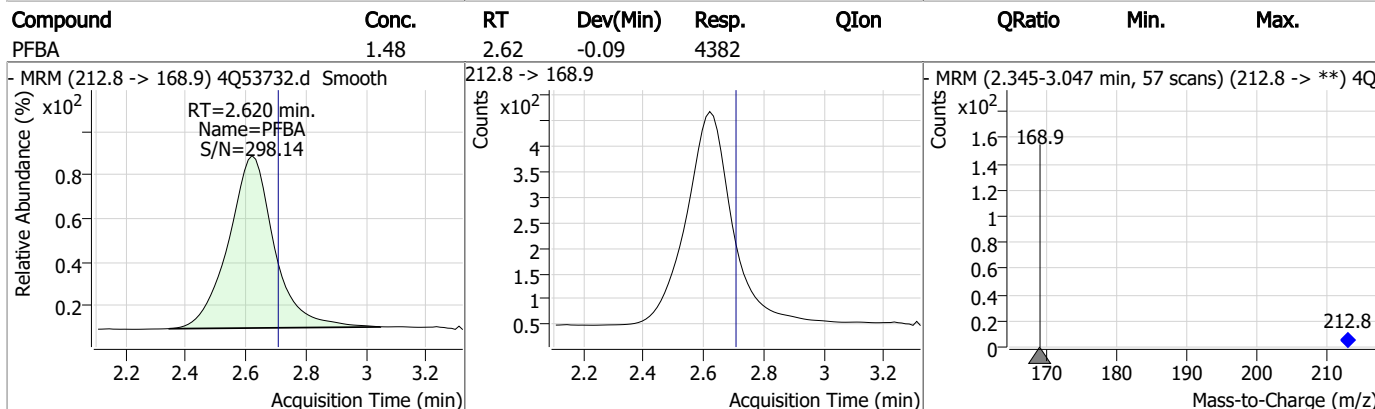
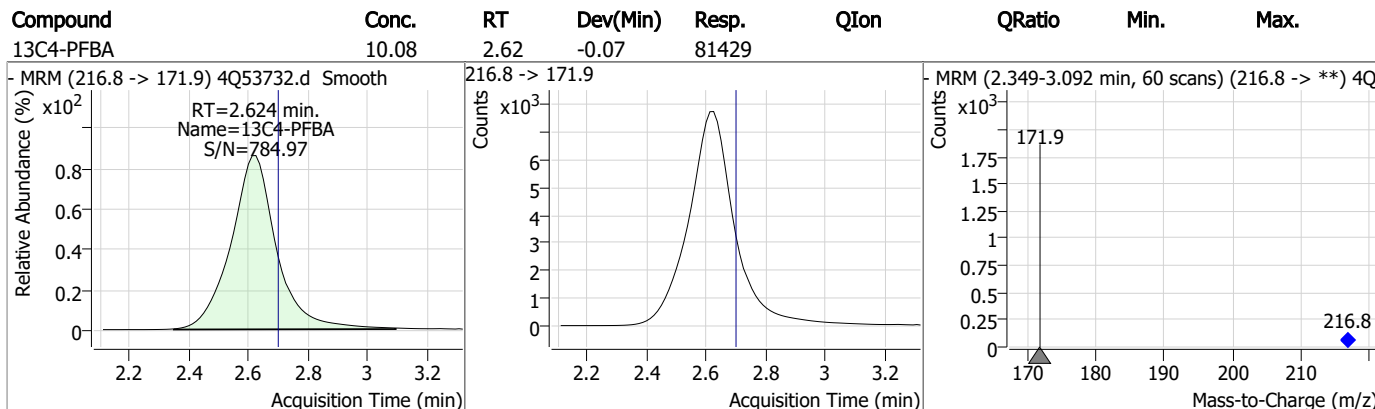
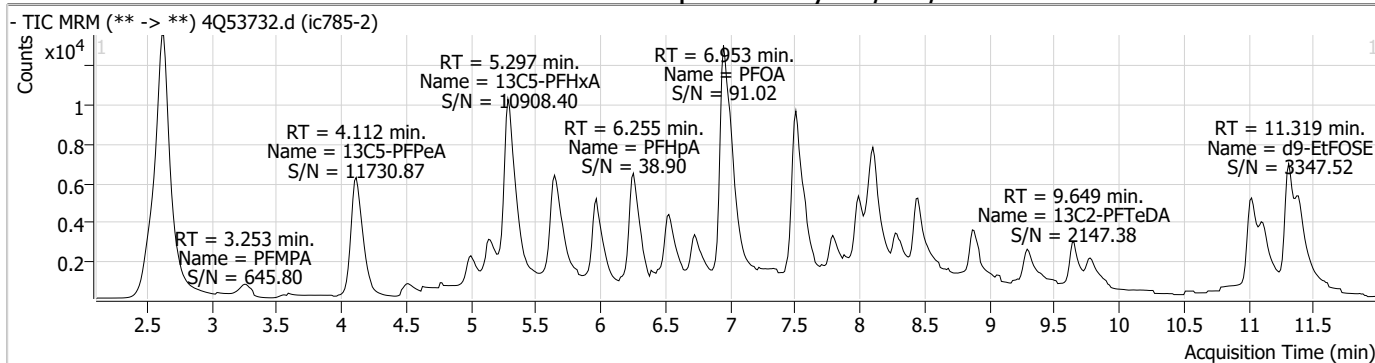
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.3

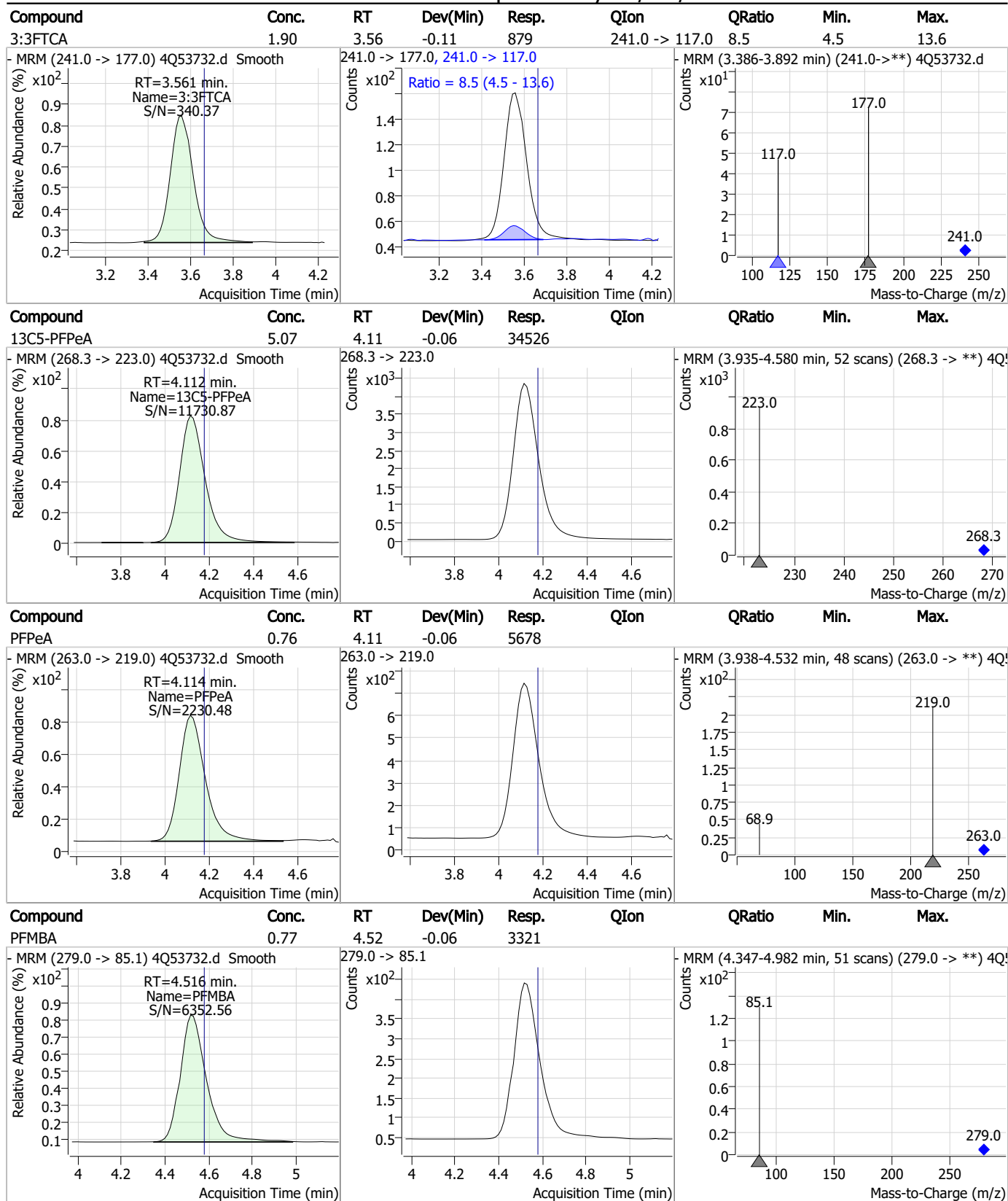
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Perfluorinated Compounds by LC/MS/MS



7.7.3
7

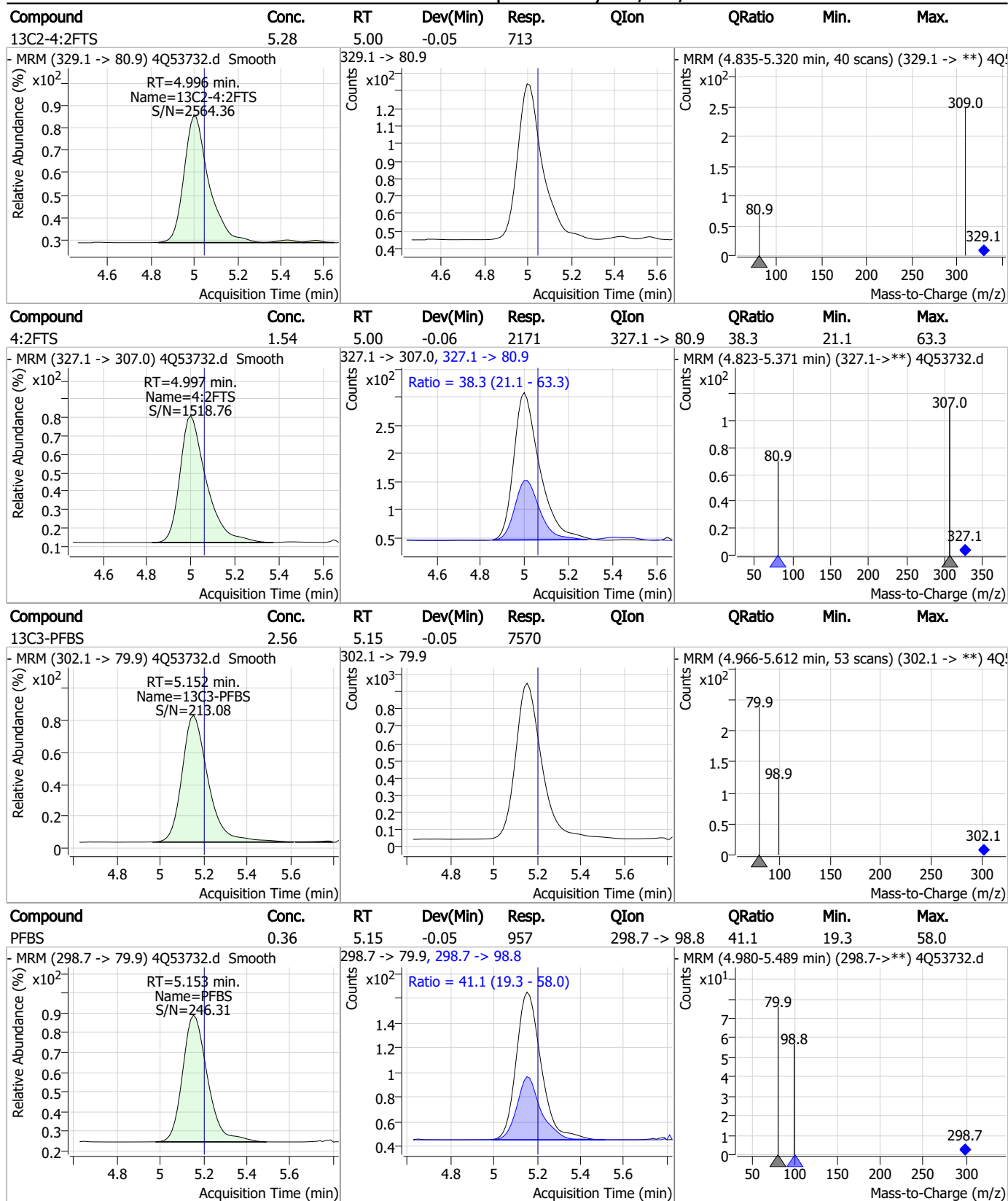
Perfluorinated Compounds by LC/MS/MS



7.7.3

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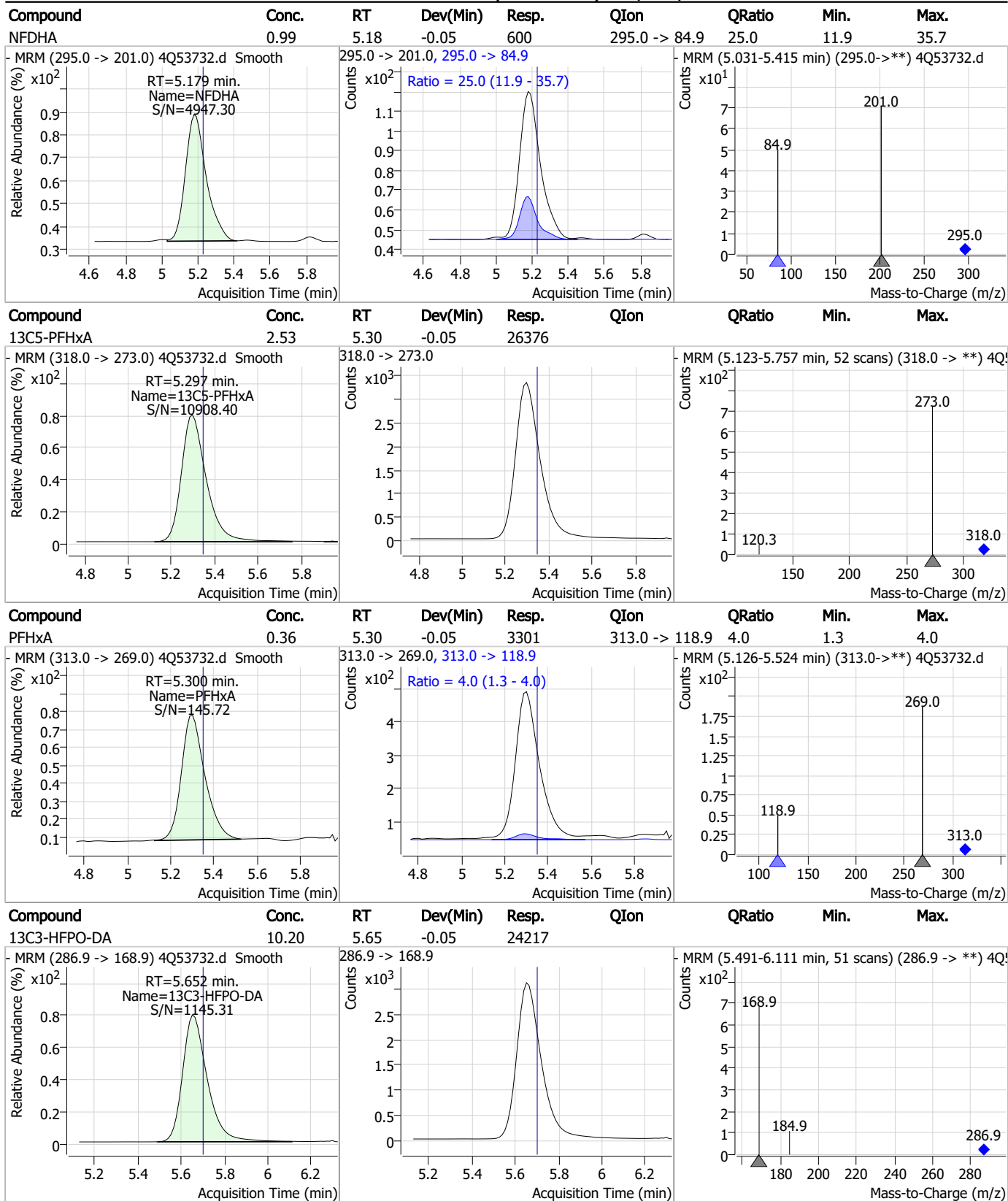
Perfluorinated Compounds by LC/MS/MS



7.7.3

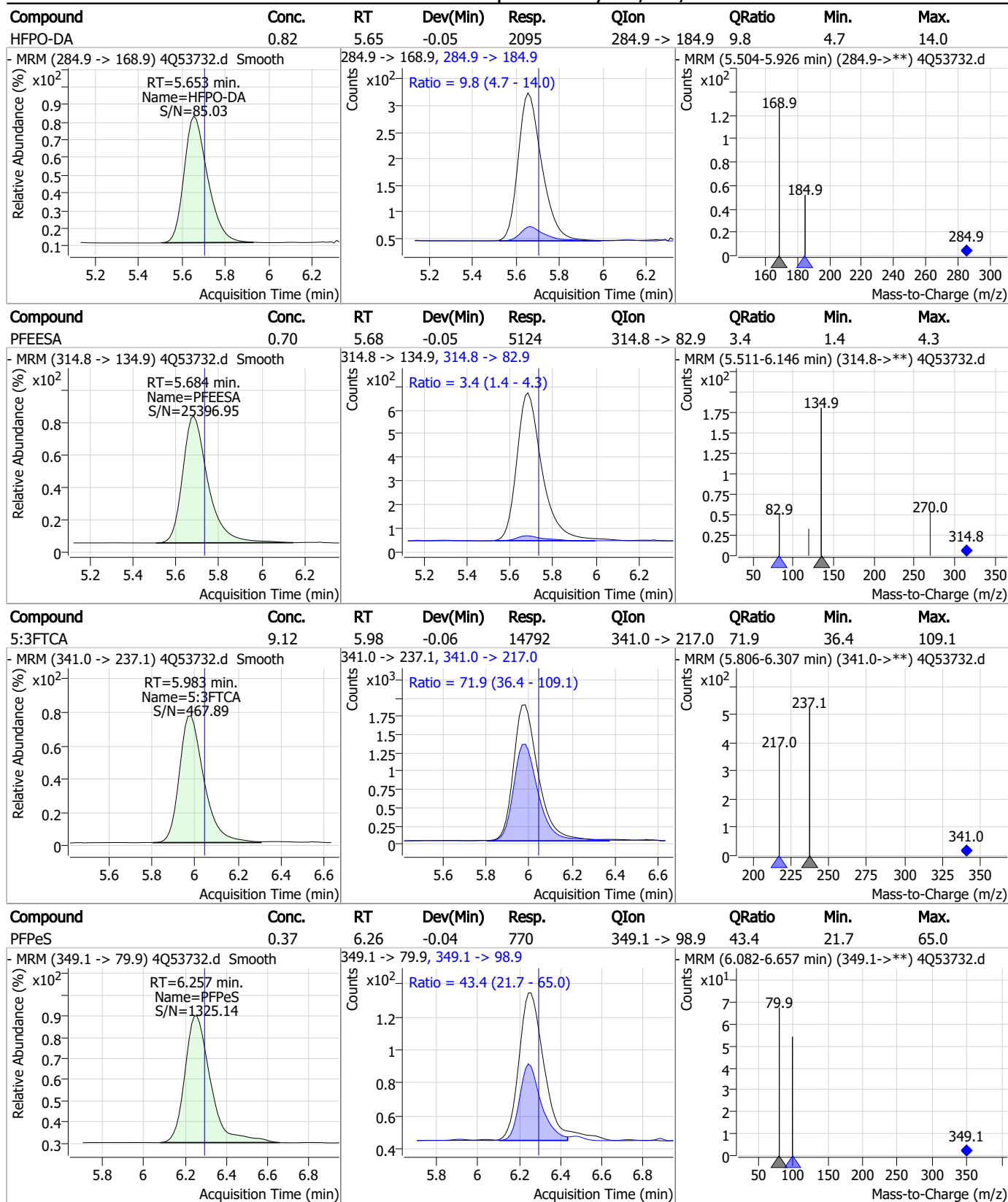
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Perfluorinated Compounds by LC/MS/MS



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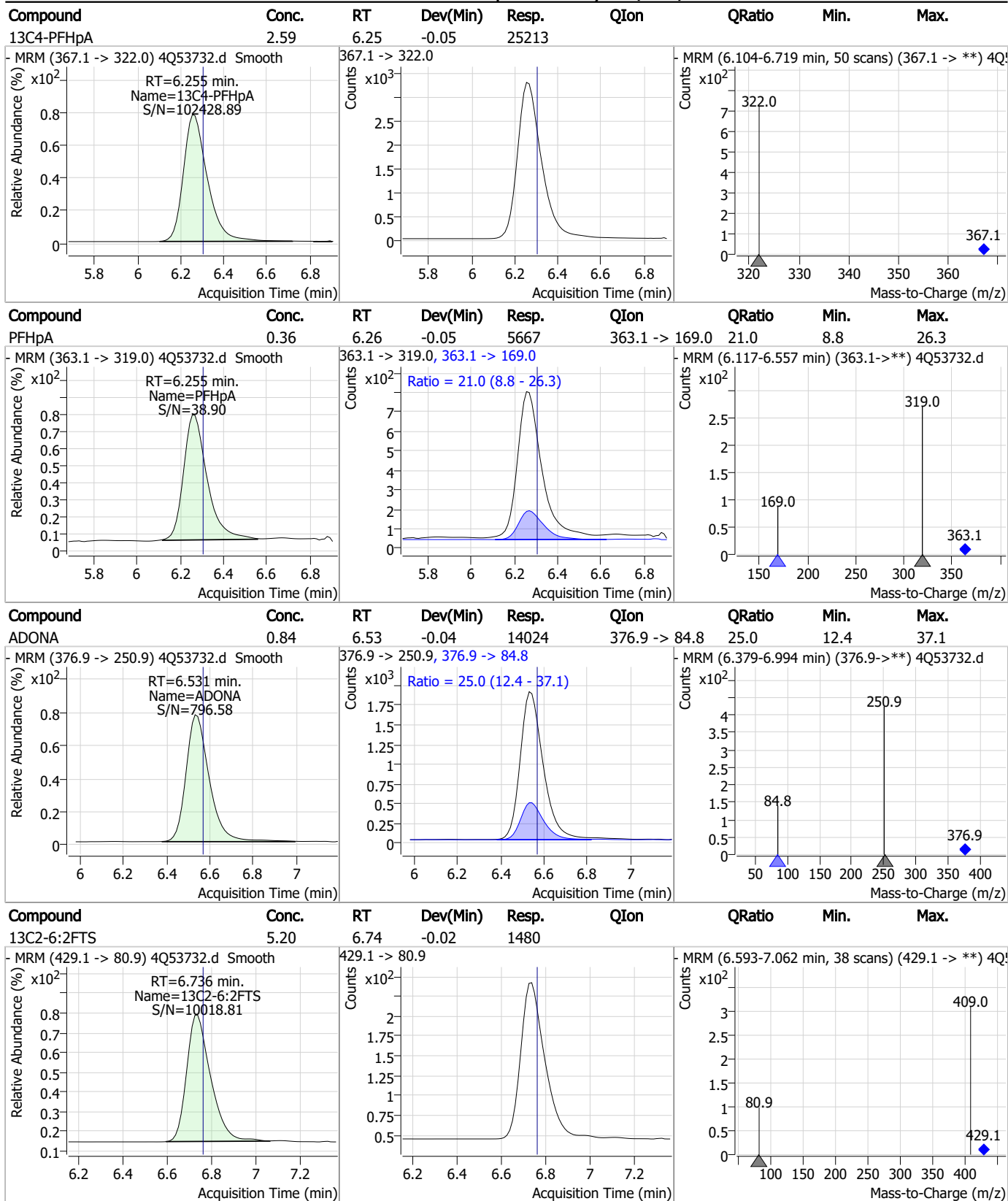
Perfluorinated Compounds by LC/MS/MS



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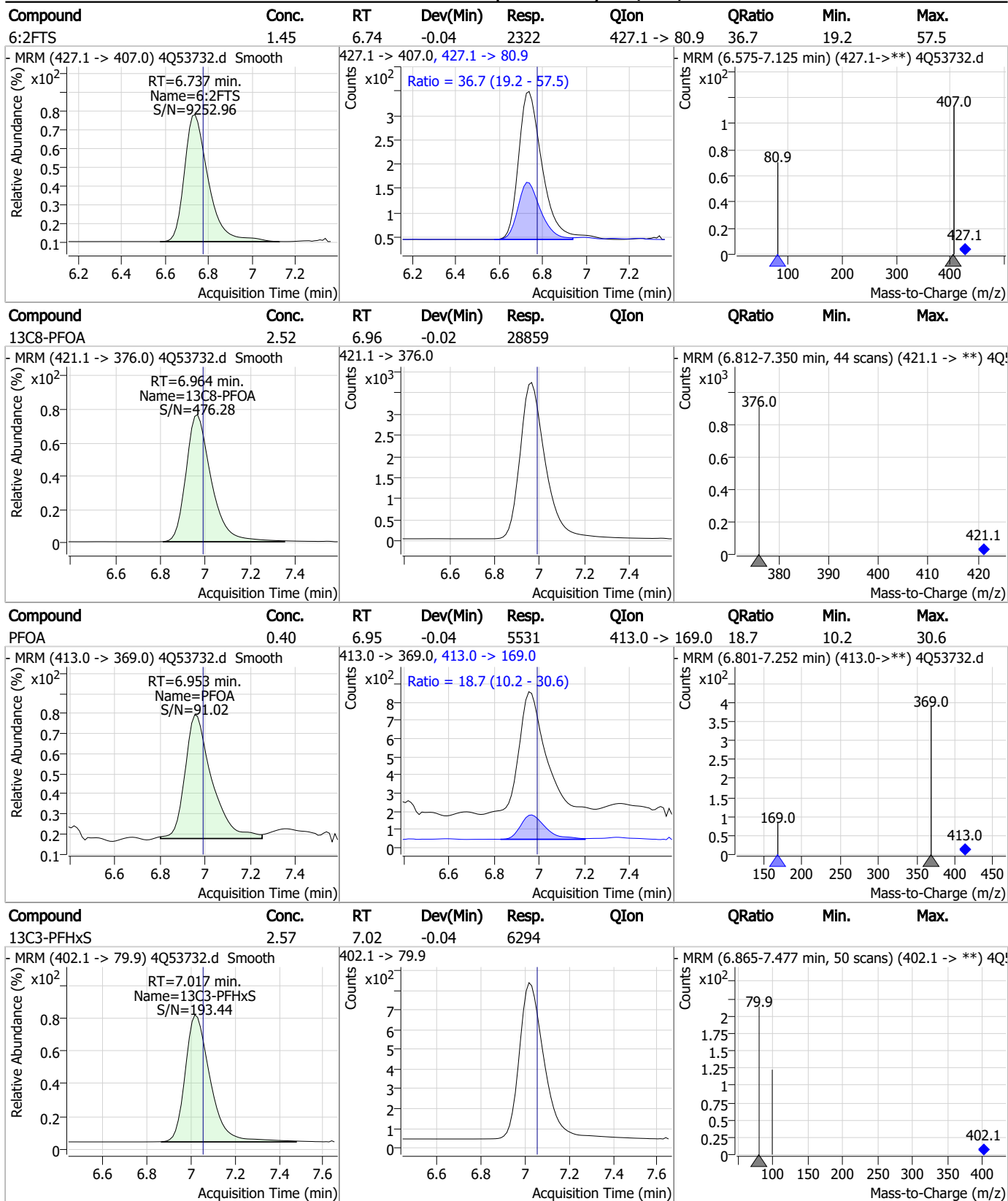
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Perfluorinated Compounds by LC/MS/MS



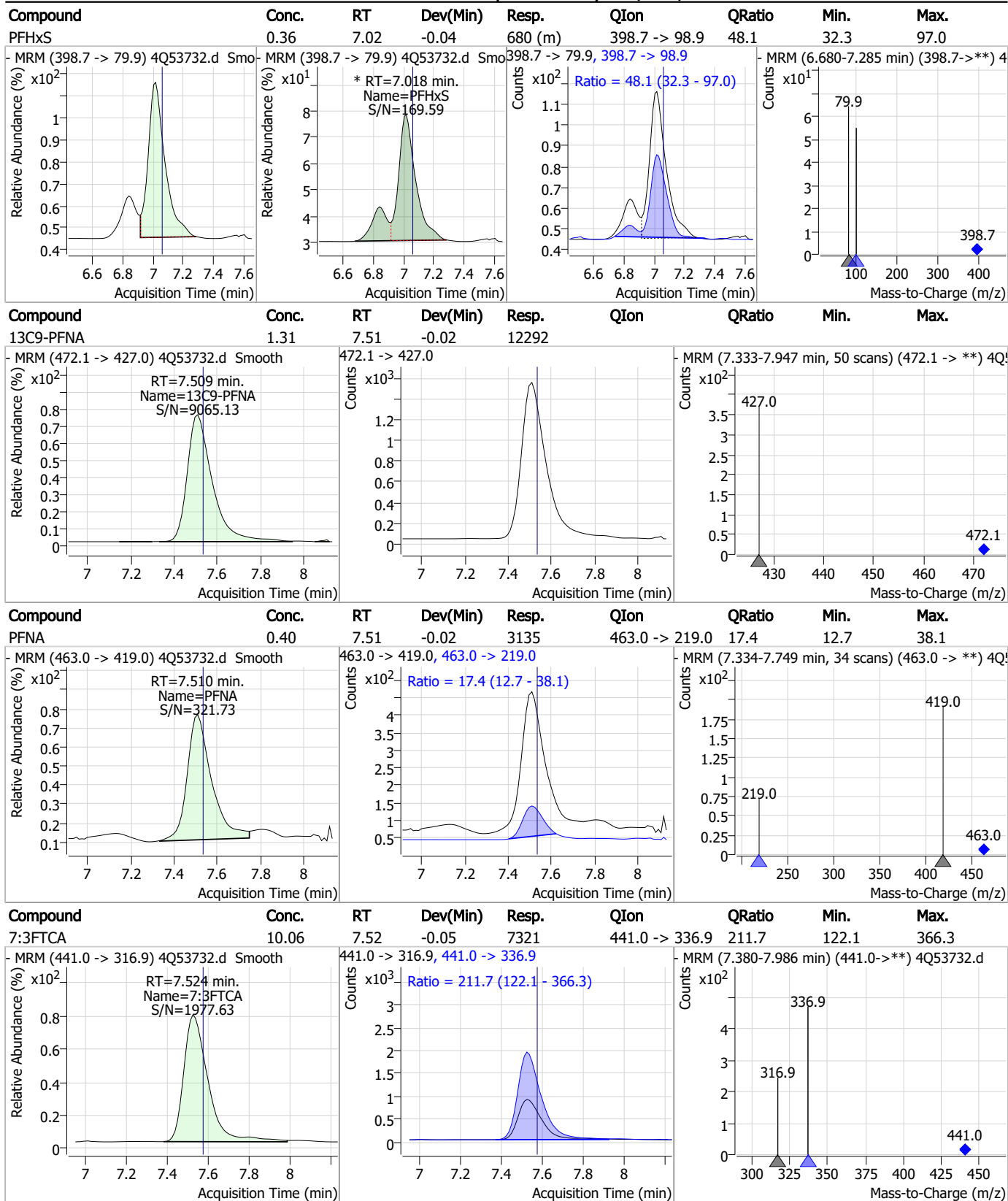
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Perfluorinated Compounds by LC/MS/MS



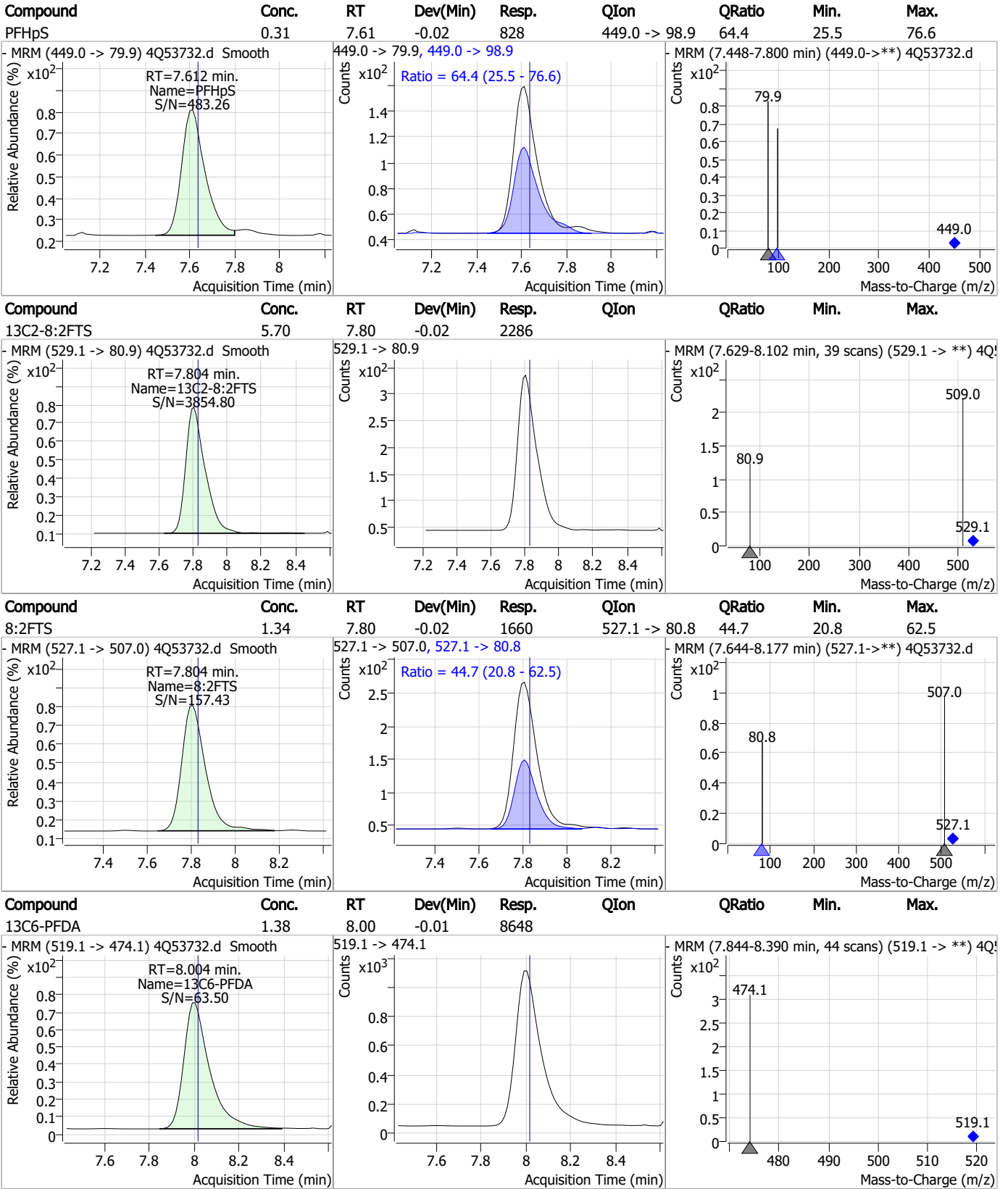
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Perfluorinated Compounds by LC/MS/MS



7.7.3
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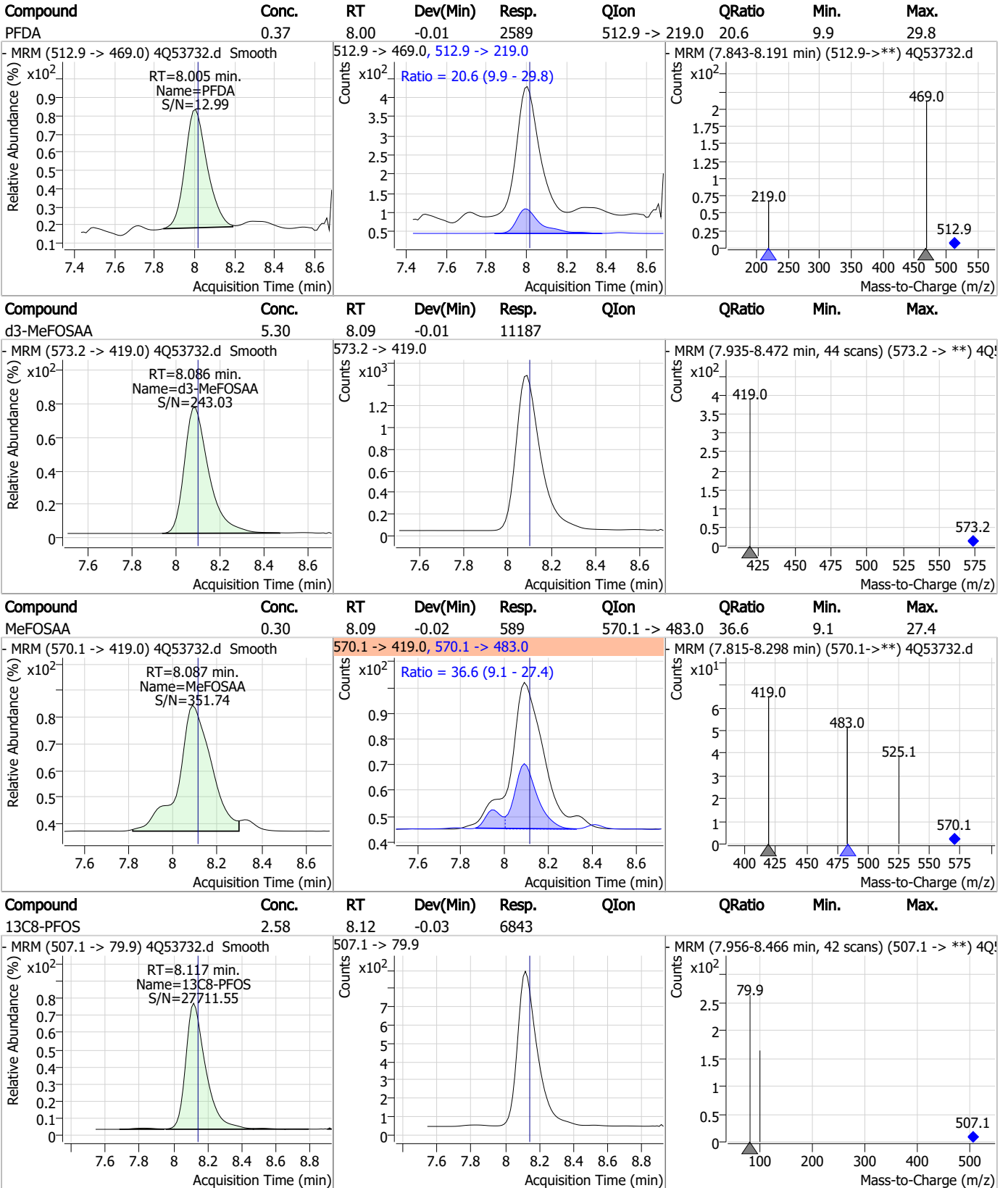
Perfluorinated Compounds by LC/MS/MS



7.7.3

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Perfluorinated Compounds by LC/MS/MS

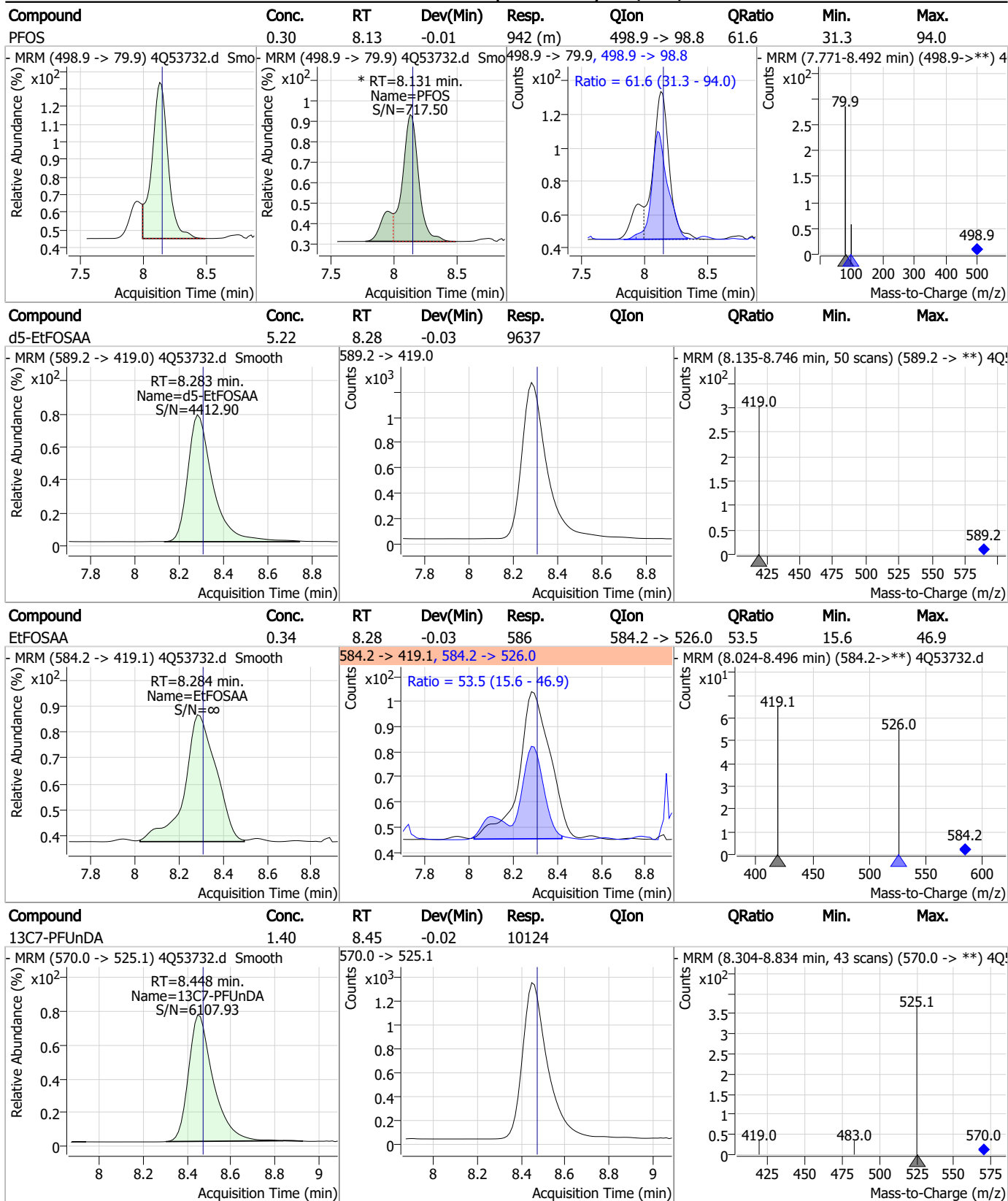


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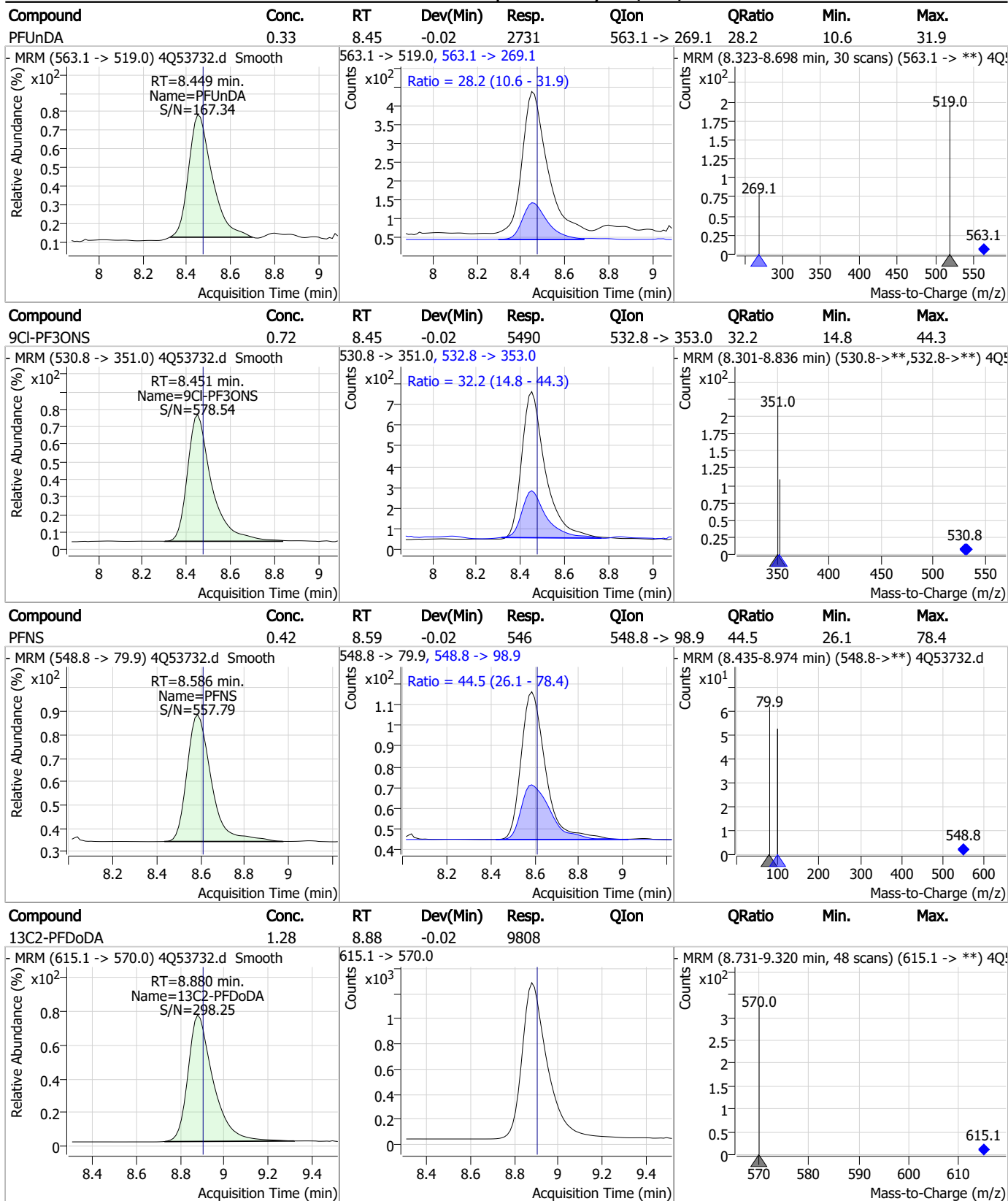


Perfluorinated Compounds by LC/MS/MS



7.7.3
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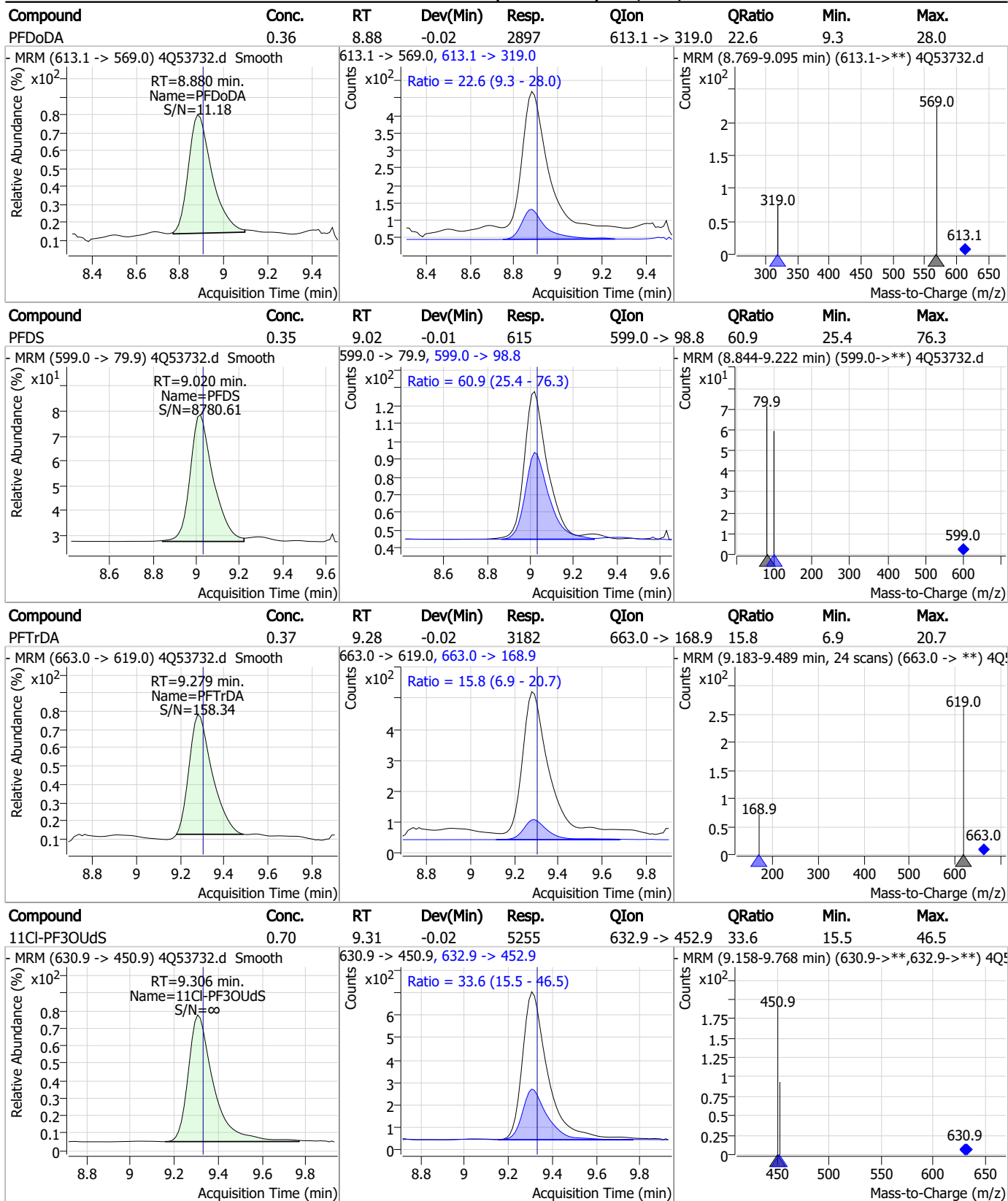
Perfluorinated Compounds by LC/MS/MS



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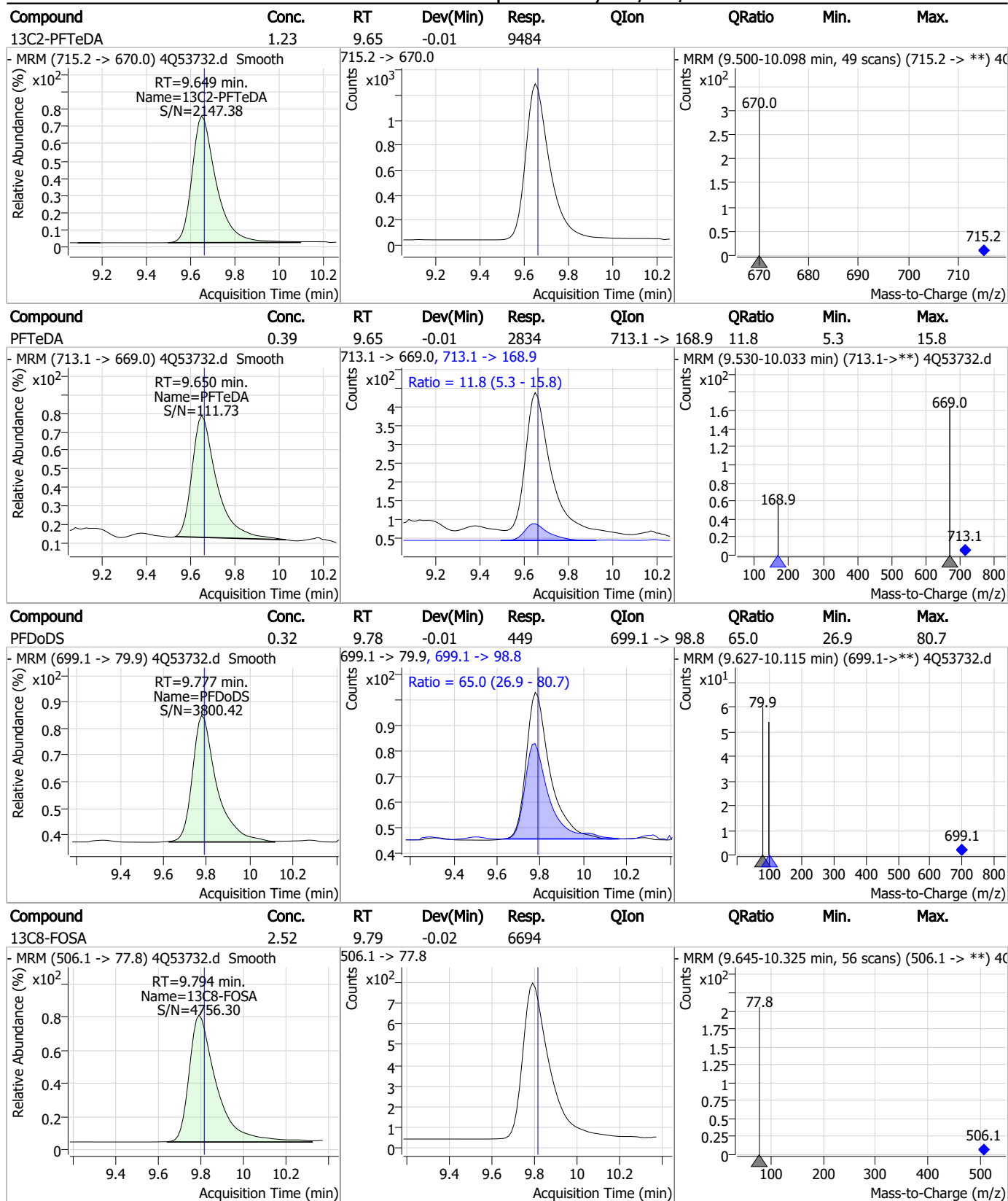
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

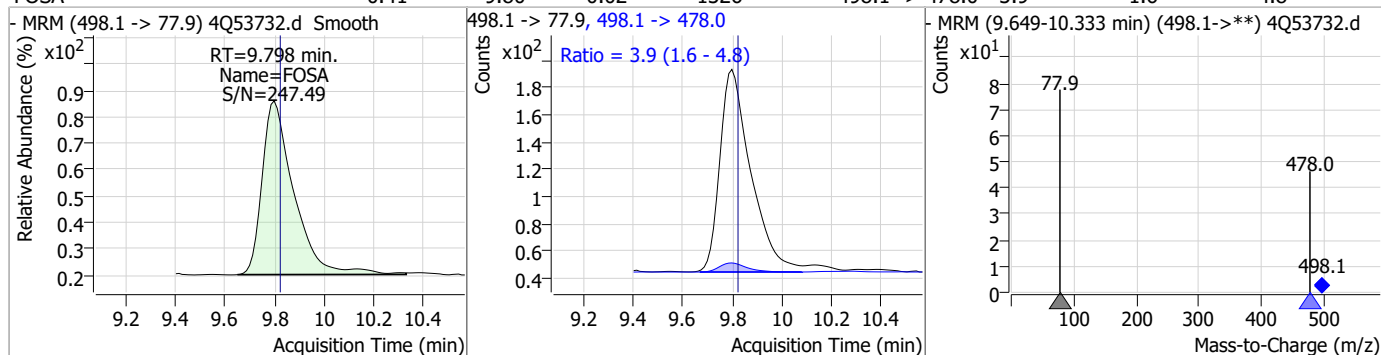


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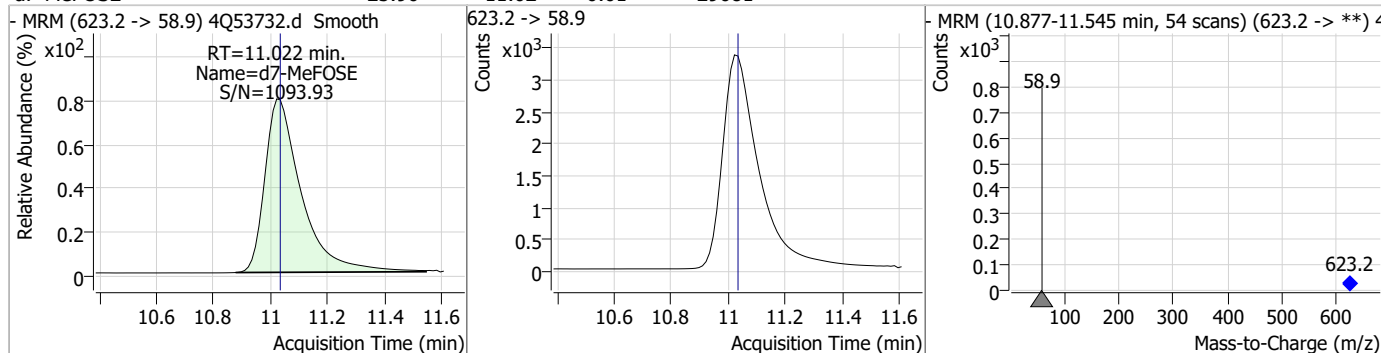
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Perfluorinated Compounds by LC/MS/MS

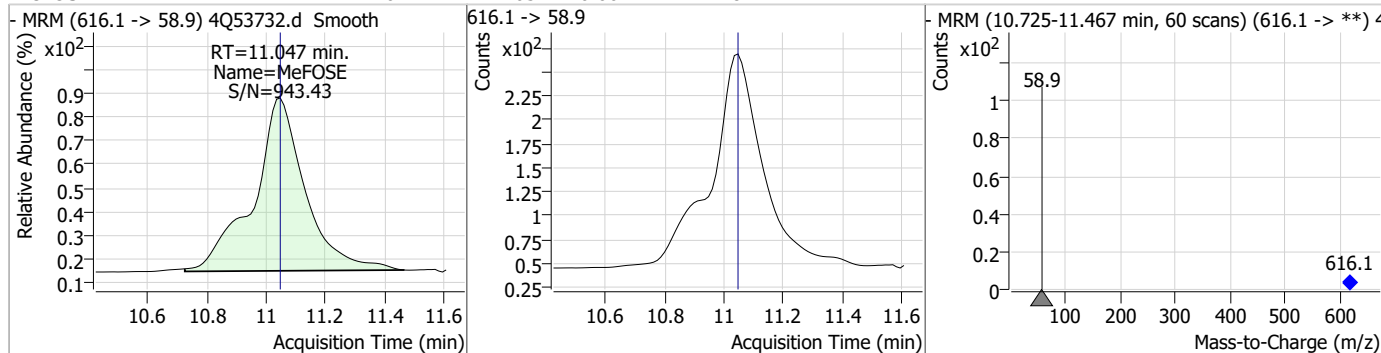
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.41	9.80	-0.02	1326	498.1 -> 478.0	3.9	1.6	4.8



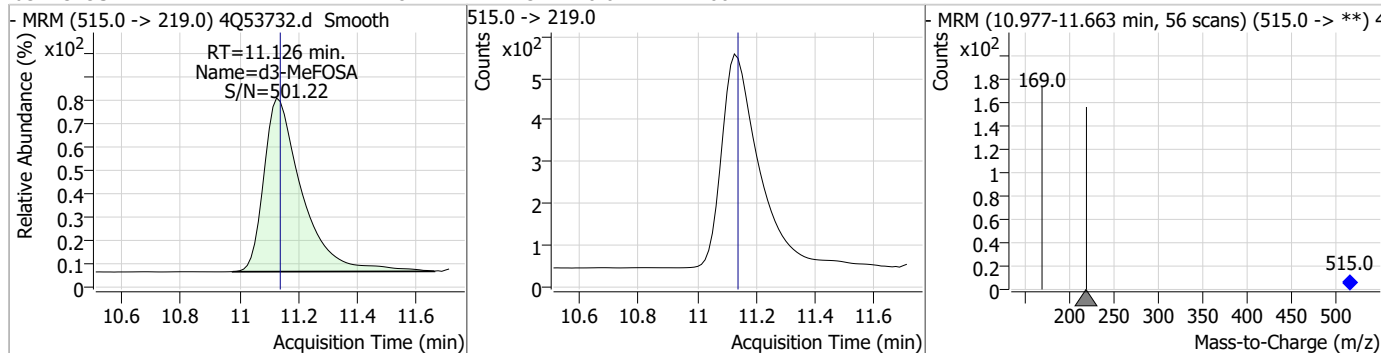
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.90	11.02	-0.01	29681				



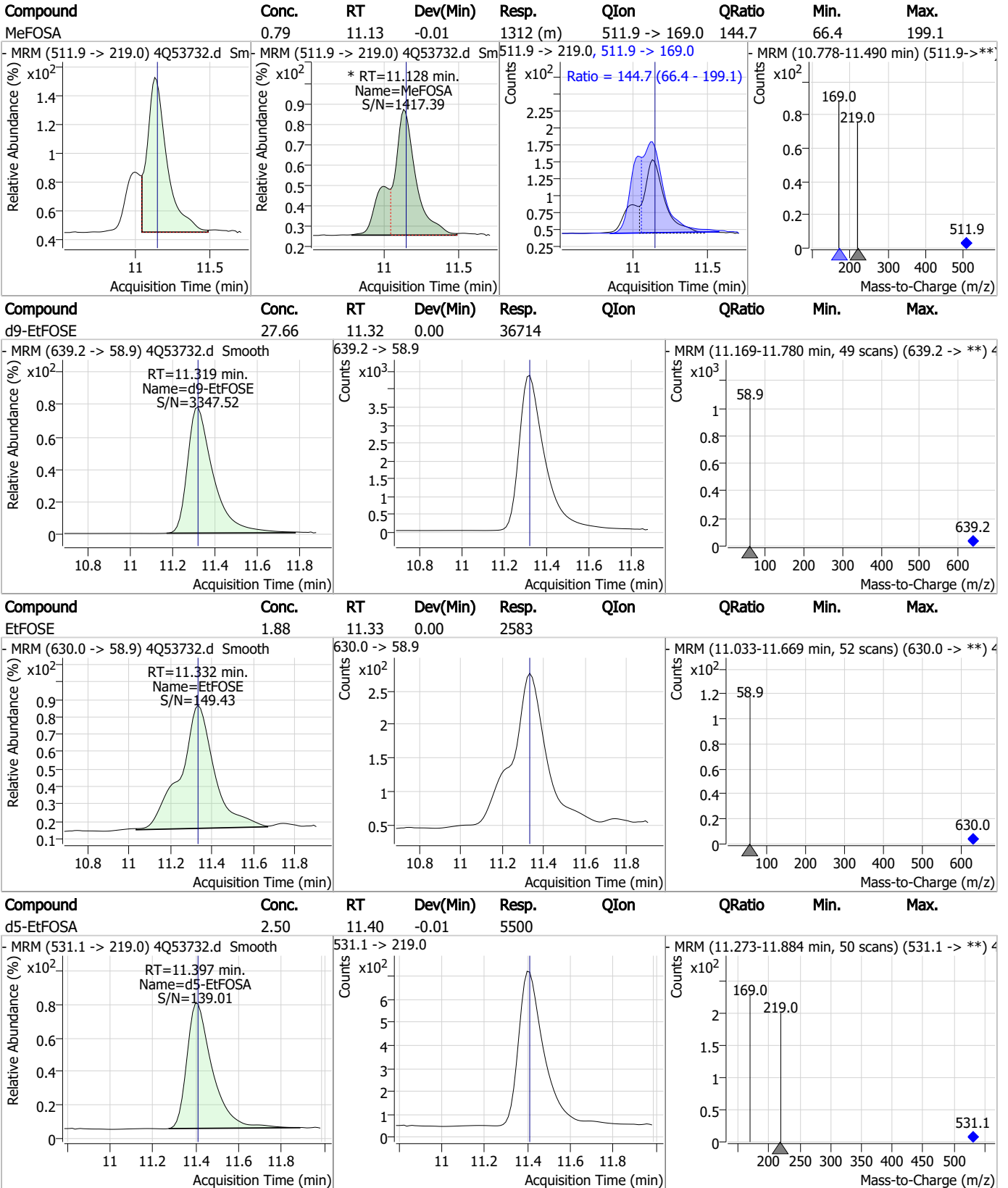
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	2.02	11.05	0.00	2728				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.48	11.13	-0.01	4601				



Perfluorinated Compounds by LC/MS/MS

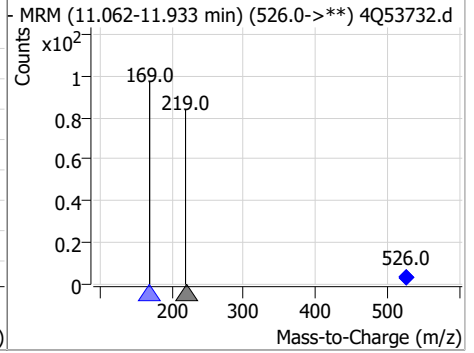
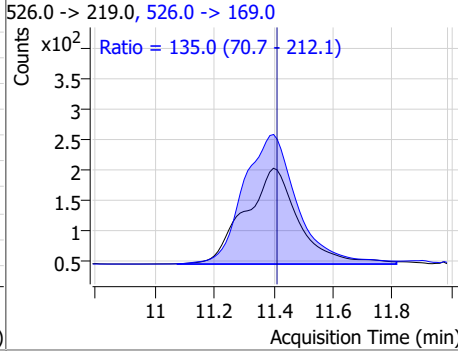
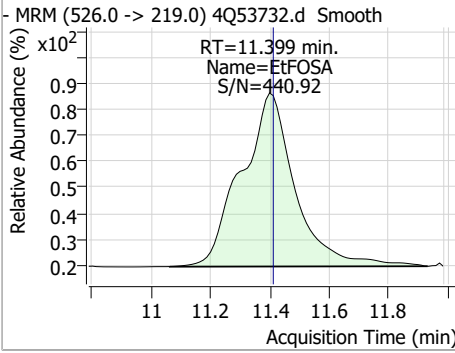


7.7.3

7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	0.81	11.40	-0.01	2000	526.0 -> 169.0	135.0	70.7	212.1



7.7.3

7

Manual Integration Approval Summary

Sample Number: S4Q785-IC785 Method: EPA DRAFT 1633
Lab FileID: 4Q53732.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 15:55 Supervisor approved: 11/14/23 15:48 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.13	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.3.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53733.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 4:09:55 PM
 Sample Name : ic785-3
 Vial : P1-A4
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	88140	10.00 µg/L	-0.075
M5-PFPeA	4.125	268.3 -> 223.0	36839	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	28307	2.50 µg/L	-0.050
M4-PFHpA	6.255	367.1 -> 322.0	26761	2.50 µg/L	-0.050
M8-PFOA	6.964	421.1 -> 376.0	31629	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	13199	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	9211	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	10527	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	10580	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	11164	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	7256	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	7951	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6460	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7275	2.50 µg/L	-0.026
M2-4:2FTS	4.996	329.1 -> 80.9	742	5.00 µg/L	-0.050
M2-6:2FTS	6.736	429.1 -> 80.9	1623	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2197	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	11969	5.00 µg/L	-0.012
M3-HFPO-DA	5.652	286.9 -> 168.9	26439	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	9919	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	31099	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	36570	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	6220	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4946	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6173	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	43253	5.00 µg/L	-0.075
18O2-PFHxS	7.016	403.0 -> 83.9	4573	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	35372	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	10172	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	13292	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	30831	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	742	4.74 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.8%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1623	4.92 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2197	4.73 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.5%		
13C2-PFDoDA	8.880	615.1 -> 570.0	10580	1.15 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.2%		
13C2-PFTeDA	9.649	715.2 -> 670.0	11164	1.21 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.7%		
13C3-PFBS	5.152	302.1 -> 79.9	7951	2.32 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.7%		
13C3-PFHxS	7.017	402.1 -> 79.9	6460	2.28 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.2%		
13C4-PFBA	2.624	216.8 -> 171.9	88140	9.78 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C4-PFHpA	6.255	367.1 -> 322.0	26761	2.49 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C5-PFHxA	5.297	318.0 -> 273.0	28307	2.46 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C5-PFPeA	4.125	268.3 -> 223.0	36839	4.90 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C6-PFDA	8.004	519.1 -> 474.1	9211	1.23 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C7-PFUnDA	8.448	570.0 -> 525.1	10527	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.4%		
13C8-FOSA	9.794	506.1 -> 77.8	7256	2.46 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C8-PFOA	6.964	421.1 -> 376.0	31629	2.50 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C8-PFOS	8.117	507.1 -> 79.9	7275	2.47 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C9-PFNA	7.509	472.1 -> 427.0	13199	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.7%		
d3-MeFOSAA	8.086	573.2 -> 419.0	11969	5.11 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C3-HFPO-DA	5.652	286.9 -> 168.9	26439	10.08 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.8%		
d3-MeFOSA	11.126	515.0 -> 219.0	4946	2.40 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.1%		
d5-EtFOSAA	8.283	589.2 -> 419.0	9919	4.84 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.8%		
d7-MeFOSE	11.022	623.2 -> 58.9	31099	24.46 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 97.8%		
d9-EtFOSE	11.319	639.2 -> 58.9	36570	24.83 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.3%		
d5-EtFOSA	11.397	531.1 -> 219.0	6220	2.55 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.8%		
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	6976	4.76 µg/L	97
		327.1 -> 80.9	3067		
6:2FTS	6.737	427.1 -> 407.0	7890	4.49 µg/L	98
		427.1 -> 80.9	3141		
8:2FTS	7.804	527.1 -> 507.0	5668	4.74 µg/L	92
		527.1 -> 80.8	2646		
EtFOSAA	8.284	584.2 -> 419.1	2319	1.31 µg/L	89
		584.2 -> 526.0	861		
FOSA	9.798	498.1 -> 77.9	4222	1.19 µg/L	99
		498.1 -> 478.0	152		
MeFOSAA	8.087	570.1 -> 419.0	2449	1.15 µg/L	95
		570.1 -> 483.0	505		
PFBA	2.620	212.8 -> 168.9	15402	4.80 µg/L	100
PFBS	5.153	298.7 -> 79.9	3141	1.11 µg/L	94
		298.7 -> 98.8	1105		
PFDA	7.992	512.9 -> 469.0	8759	1.16 µg/L	96
		512.9 -> 219.0	1580		
PFDODA	8.880	613.1 -> 569.0	10433	1.21 µg/L	99
		613.1 -> 319.0	1988		
PFDS	9.020	599.0 -> 79.9	2113	1.12 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	1079			
PFHpA	6.268	363.1 -> 319.0	20563	1.23	µg/L	100
		363.1 -> 169.0	3571			
PFHpS	7.599	449.0 -> 79.9	3363	1.17	µg/L	99
		449.0 -> 98.9	1738			
PFHxA	5.300	313.0 -> 269.0	11778	1.19	µg/L	99
		313.0 -> 118.9	355			
PFHxS	7.018	398.7 -> 79.9	2338	1.20	µg/L	m 86
		398.7 -> 98.9	1260			
PFNA	7.510	463.0 -> 419.0	9859	1.17	µg/L	98
		463.0 -> 219.0	2382			
PFNS	8.586	548.8 -> 79.9	1745	1.26	µg/L	88
		548.8 -> 98.9	1064			
PFOA	6.965	413.0 -> 369.0	18298	1.20	µg/L	99
		413.0 -> 169.0	3625			
PFOS	8.119	498.9 -> 79.9	3712	1.12	µg/L	m 89
		498.9 -> 98.8	2012			
PFPeA	4.127	263.0 -> 219.0	19493	2.43	µg/L	100
PFPeS	6.257	349.1 -> 79.9	2363	1.11	µg/L	92
		349.1 -> 98.9	1141			
PFTeDA	9.650	713.1 -> 669.0	10262	1.21	µg/L	100
		713.1 -> 168.9	1066			
PFTrDA	9.279	663.0 -> 619.0	12535	1.33	µg/L	100
		663.0 -> 168.9	1709			
PFUnDA	8.449	563.1 -> 519.0	11165	1.30	µg/L	96
		563.1 -> 269.1	2564			
11CI-PF3OUdS	9.306	630.9 -> 450.9	18272	2.21	µg/L	99
		632.9 -> 452.9	5590			
9CI-PF3ONS	8.451	530.8 -> 351.0	19628	2.36	µg/L	99
		532.8 -> 353.0	5651			
ADONA	6.531	376.9 -> 250.9	48922	2.67	µg/L	99
		376.9 -> 84.8	11940			
HFPO-DA	5.653	284.9 -> 168.9	6554	2.34	µg/L	99
		284.9 -> 184.9	641			
3:3FTCA	3.561	241.0 -> 177.0	2925	5.86	µg/L	99
		241.0 -> 117.0	258			
5:3FTCA	5.983	341.0 -> 237.1	51860	29.80	µg/L	99
		341.0 -> 217.0	37438			
7:3FTCA	7.524	441.0 -> 316.9	24198	30.99	µg/L	93
		441.0 -> 336.9	56290			
EtFOSA	11.399	526.0 -> 219.0	6763	2.41	µg/L	92
		526.0 -> 169.0	8895			
EtFOSE	11.332	630.0 -> 58.9	8030	5.88	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	4383	2.44	µg/L	m 87
		511.9 -> 169.0	6501			
MeFOSE	11.047	616.1 -> 58.9	8900	6.28	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	1792	1.21	µg/L	100
		699.1 -> 98.8	965			
NFDHA	5.179	295.0 -> 201.0	1624	2.49	µg/L	99
		295.0 -> 84.9	396			
PFMBA	4.529	279.0 -> 85.1	11316	2.45	µg/L	100
PFMPA	3.265	229.0 -> 84.9	12661	2.47	µg/L	100
PFEESA	5.684	314.8 -> 134.9	17363	2.22	µg/L	98
		314.8 -> 82.9	633			

= Qualifier out of range, m = manually integrated, + = Area summed

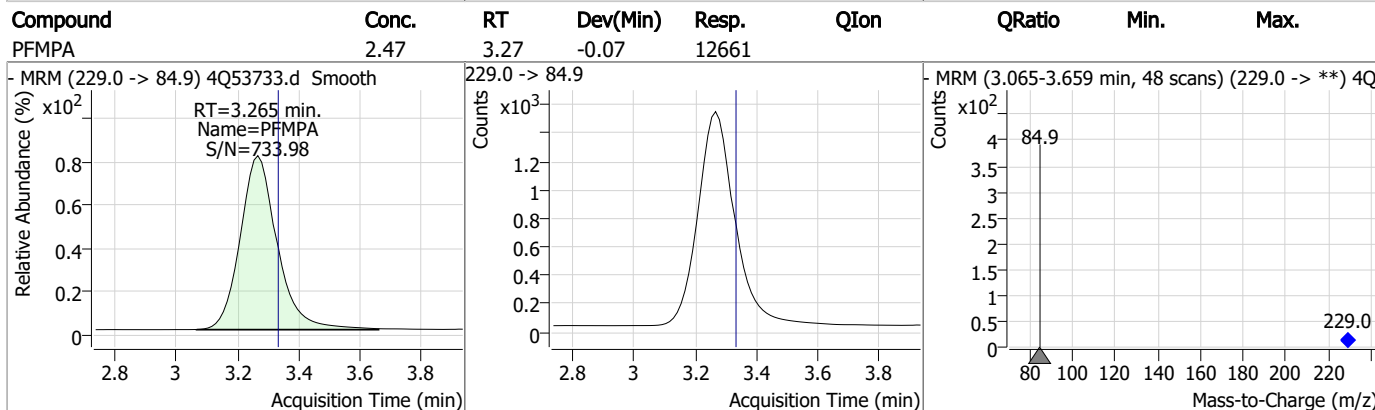
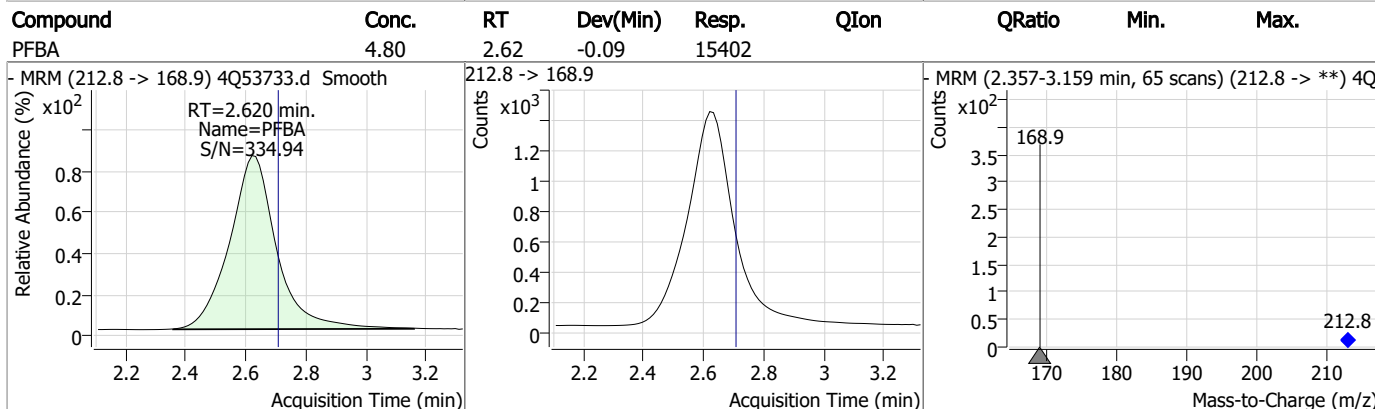
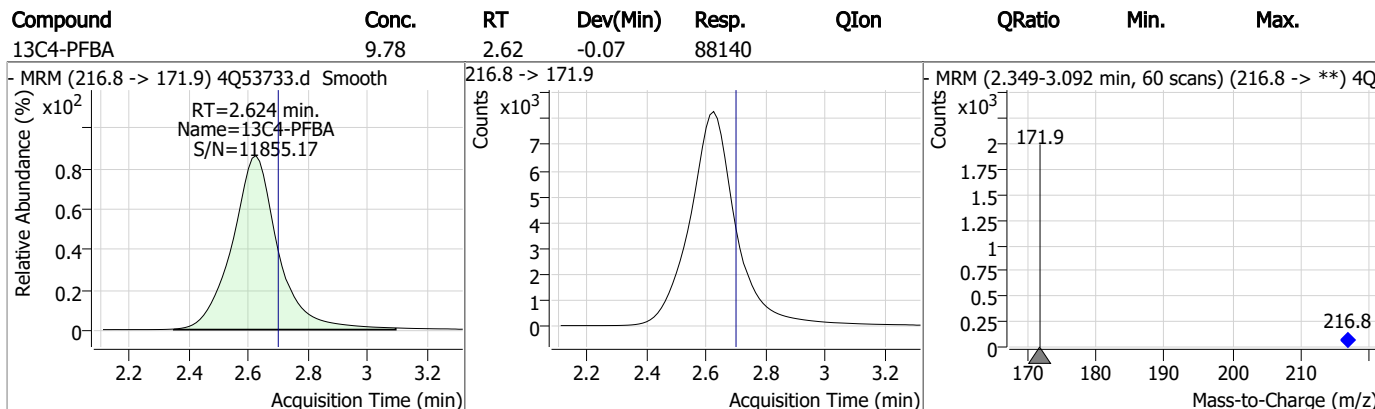
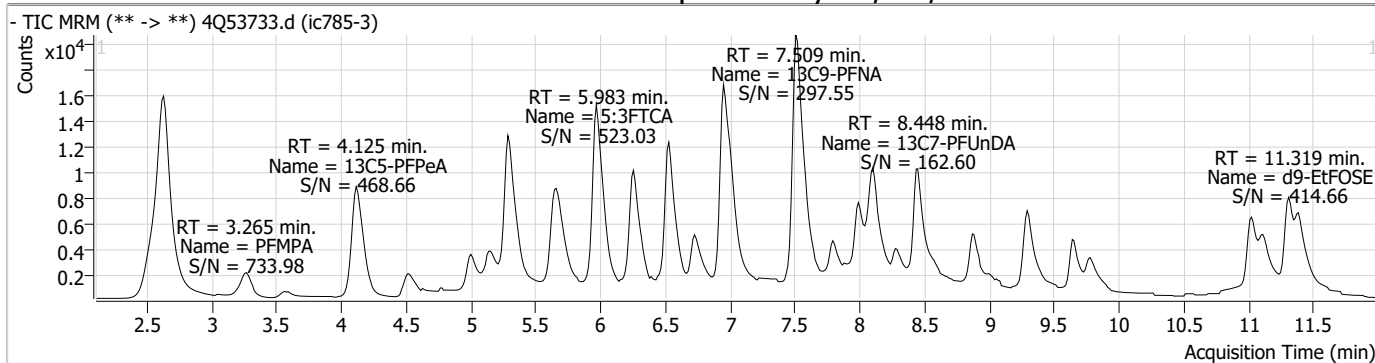
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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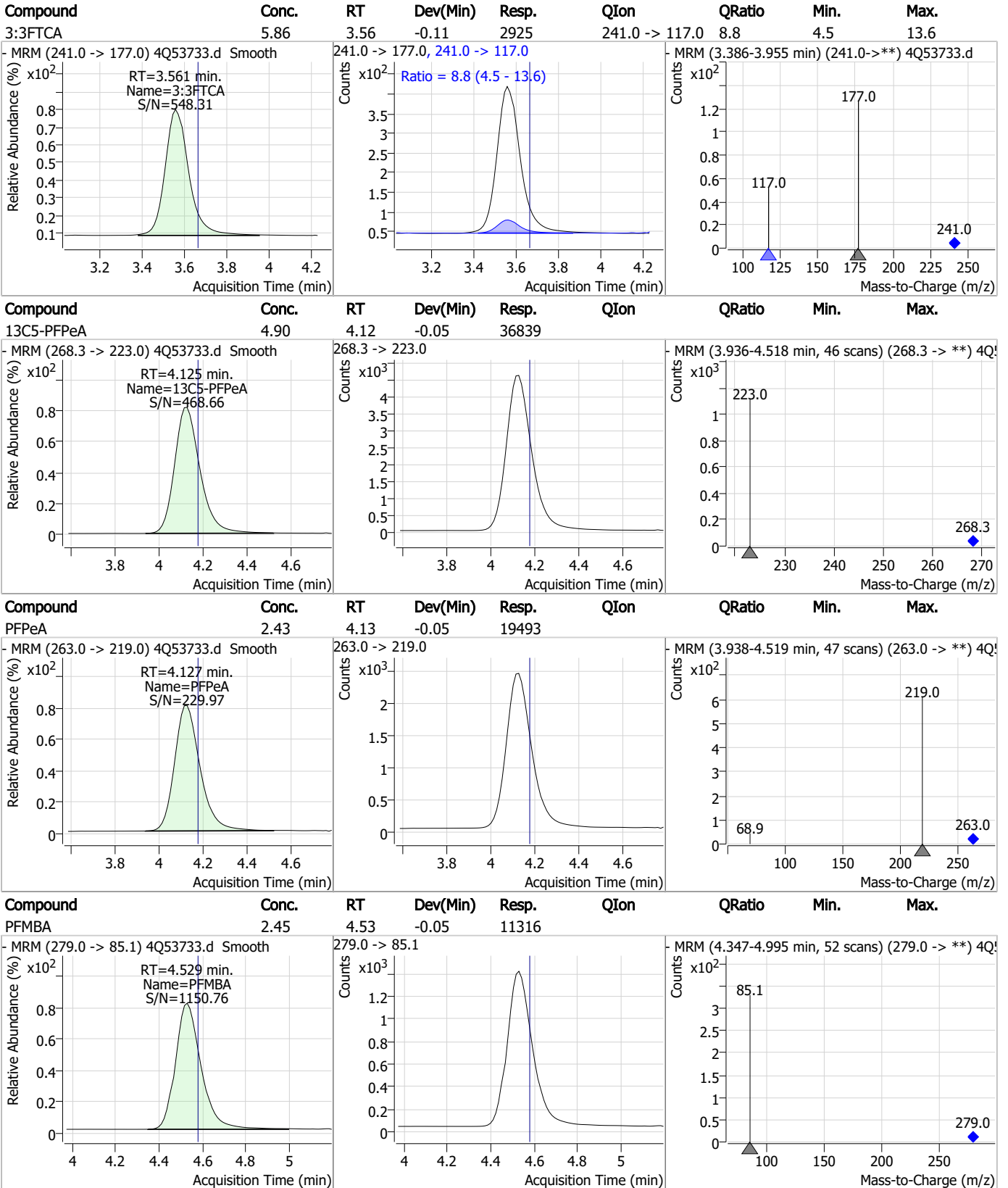
7.7.4

7

Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

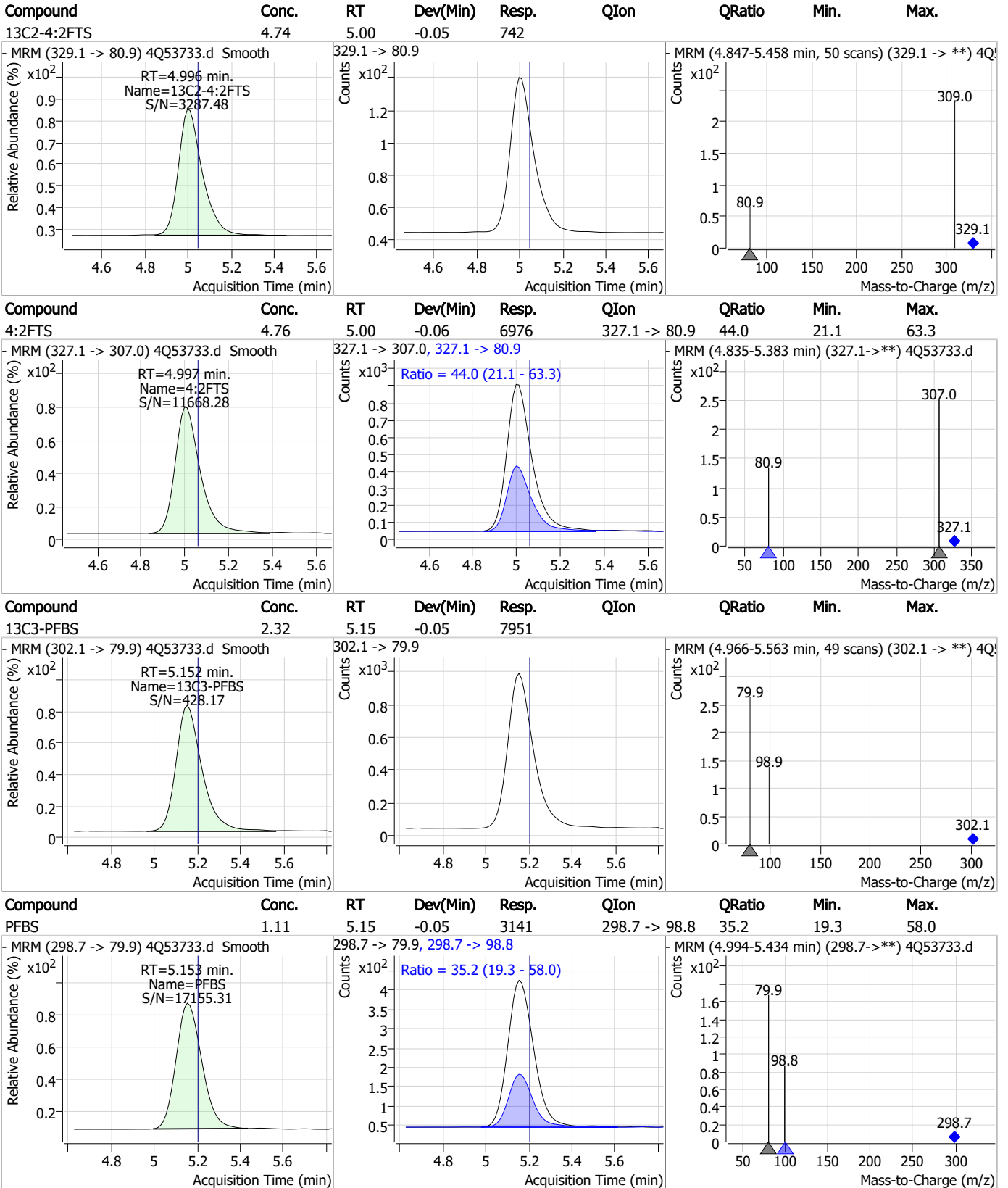


7.7.4

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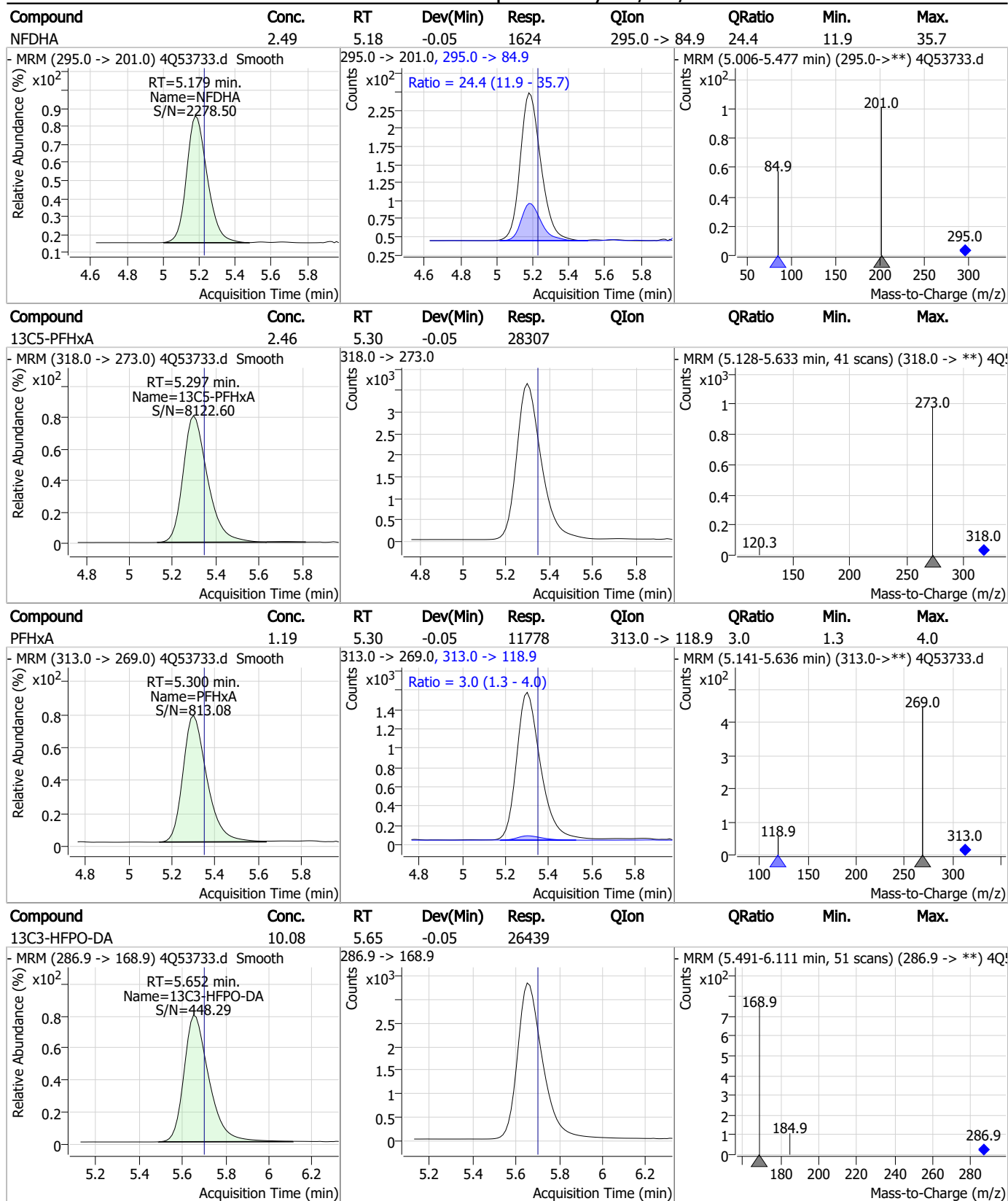
Perfluorinated Compounds by LC/MS/MS



7.7.4

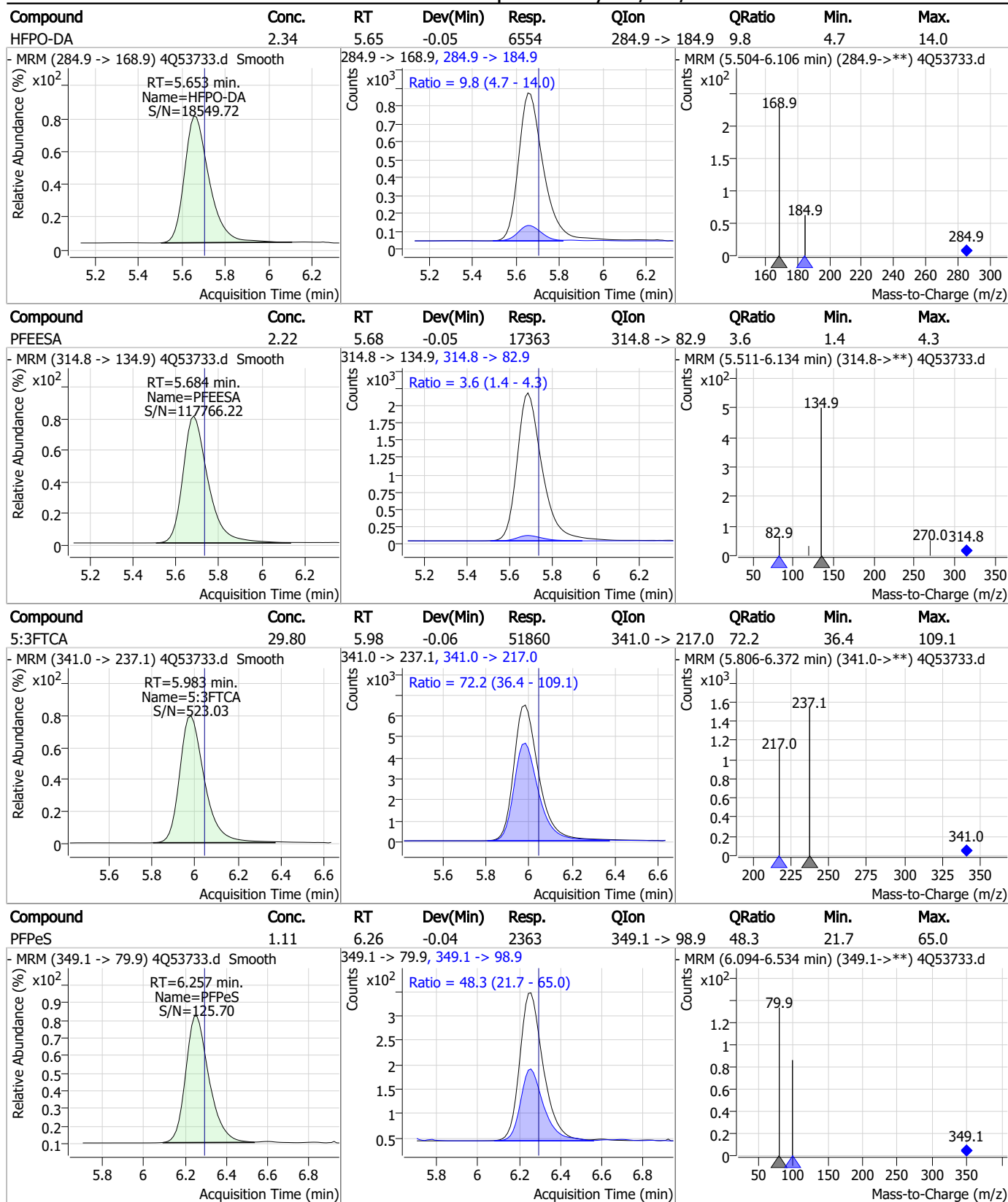
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Perfluorinated Compounds by LC/MS/MS



7.7.4
7

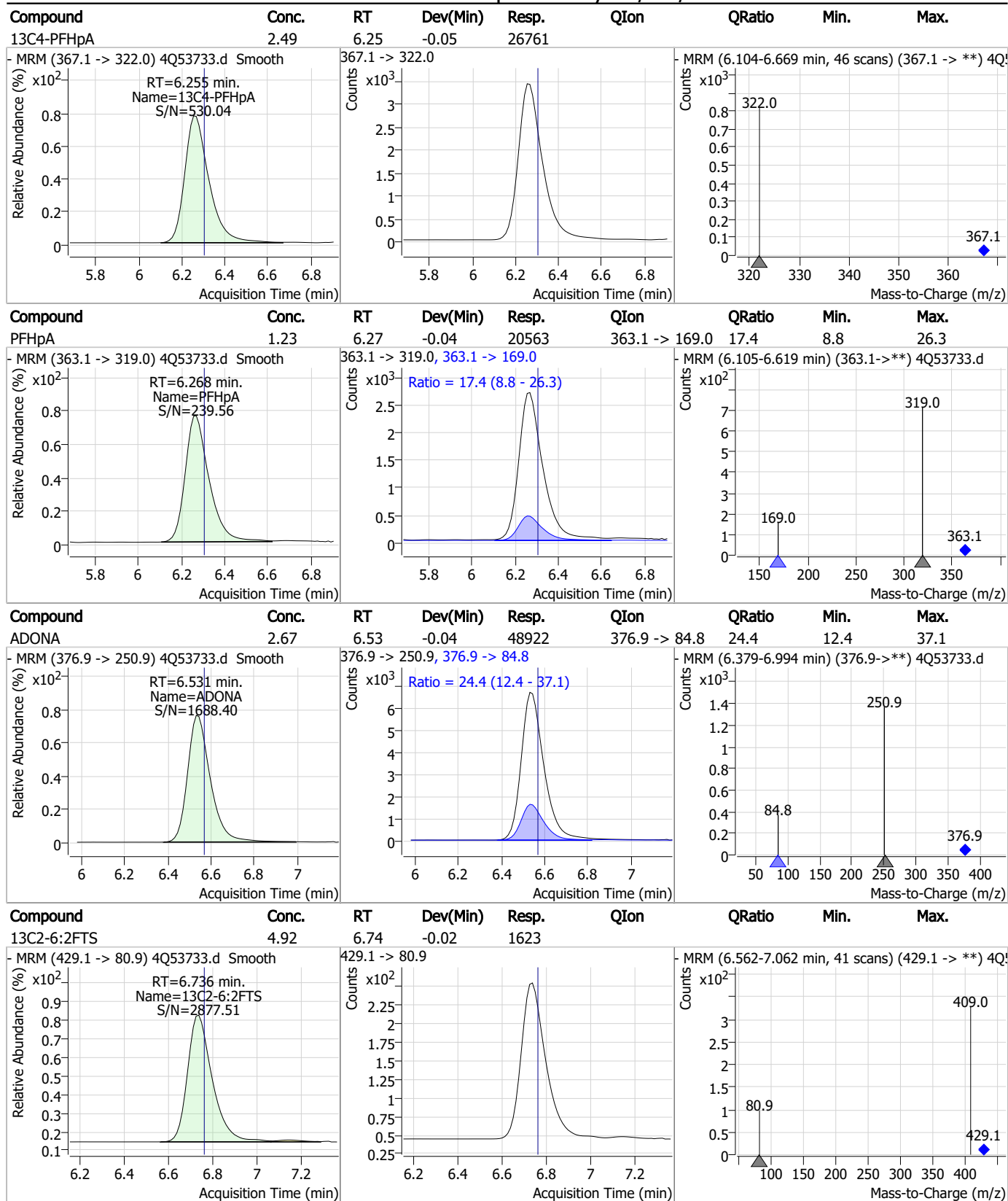
Perfluorinated Compounds by LC/MS/MS



7.7.4
7



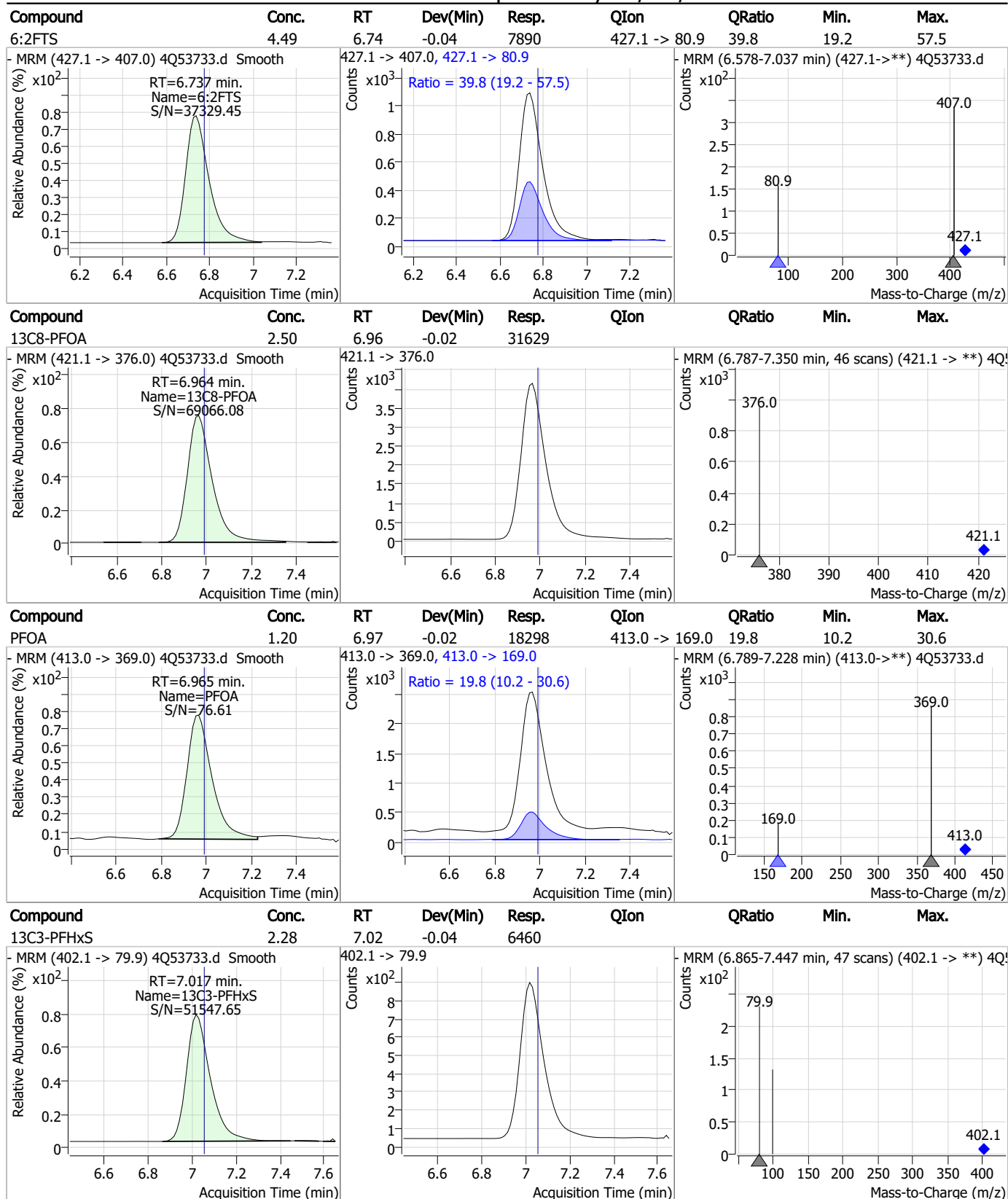
Perfluorinated Compounds by LC/MS/MS



7.7.4

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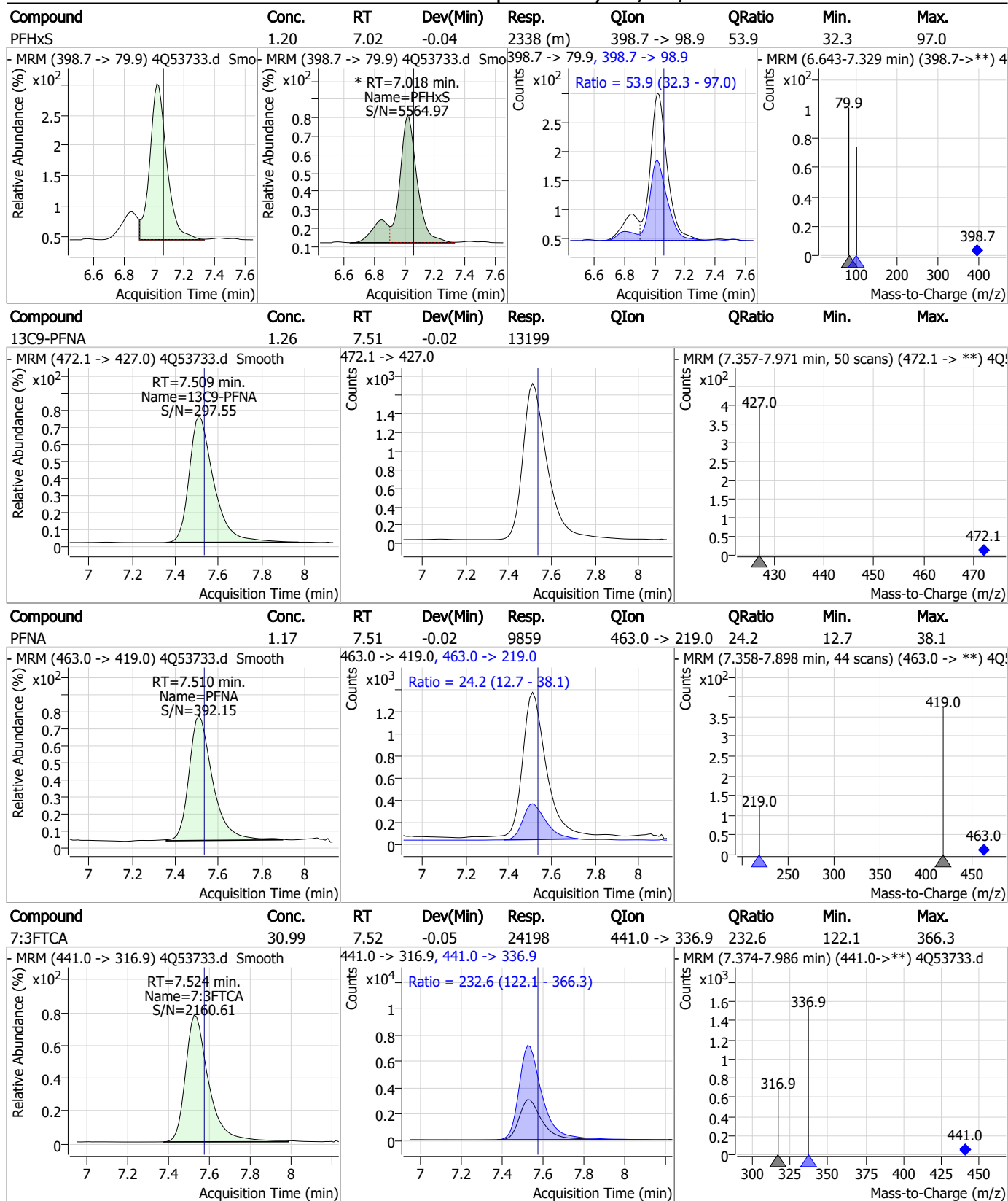
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7.7.4

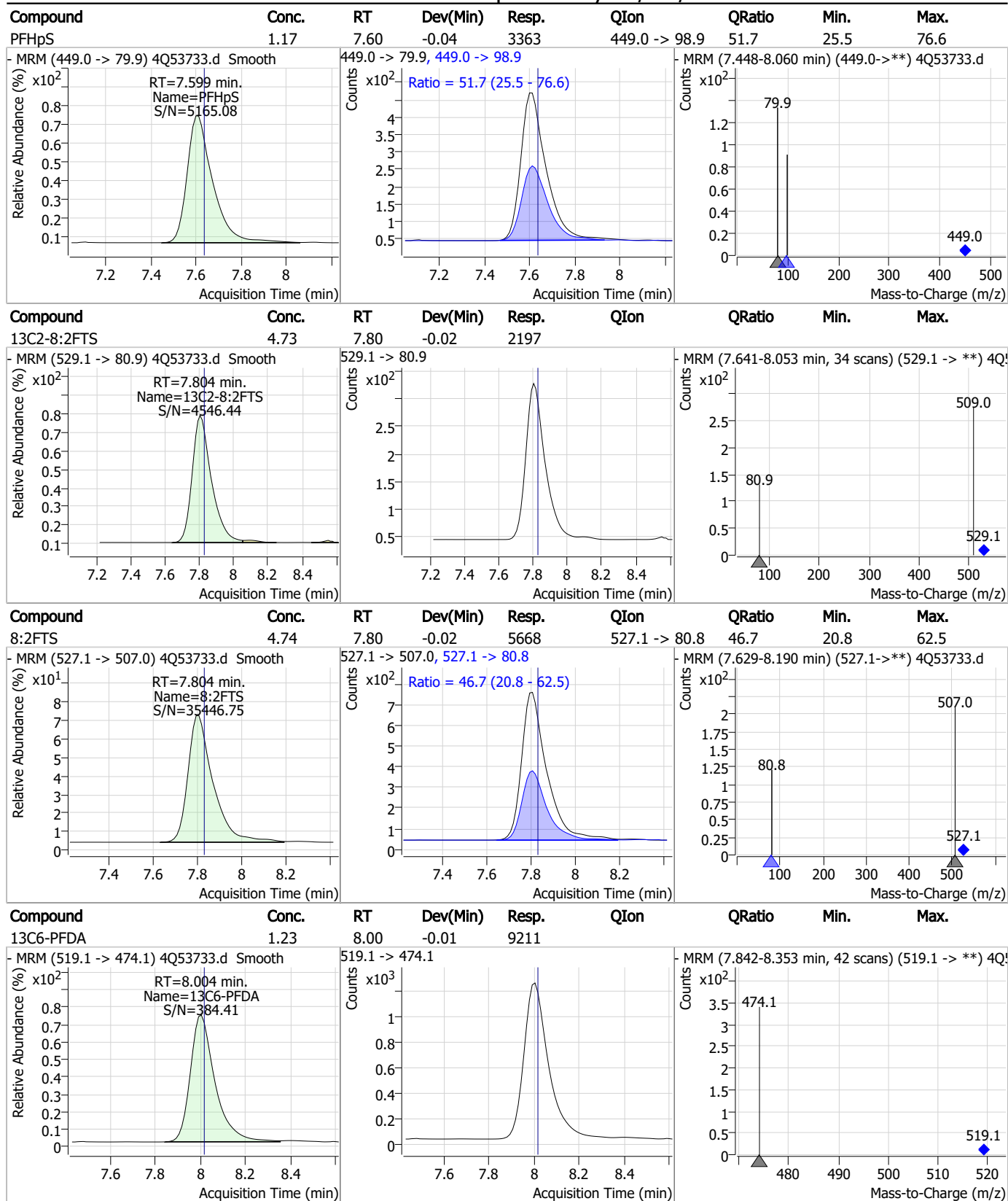
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Perfluorinated Compounds by LC/MS/MS



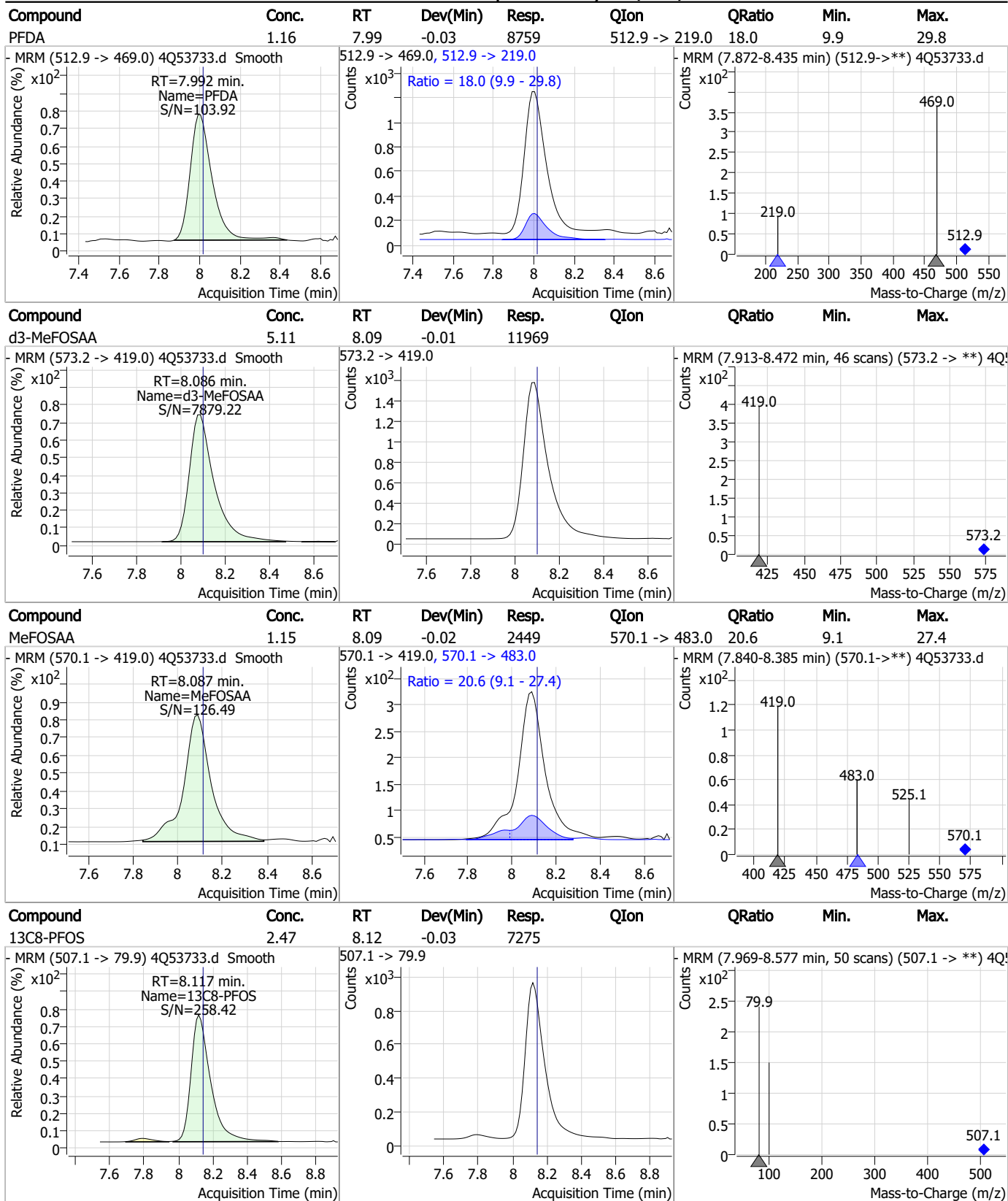
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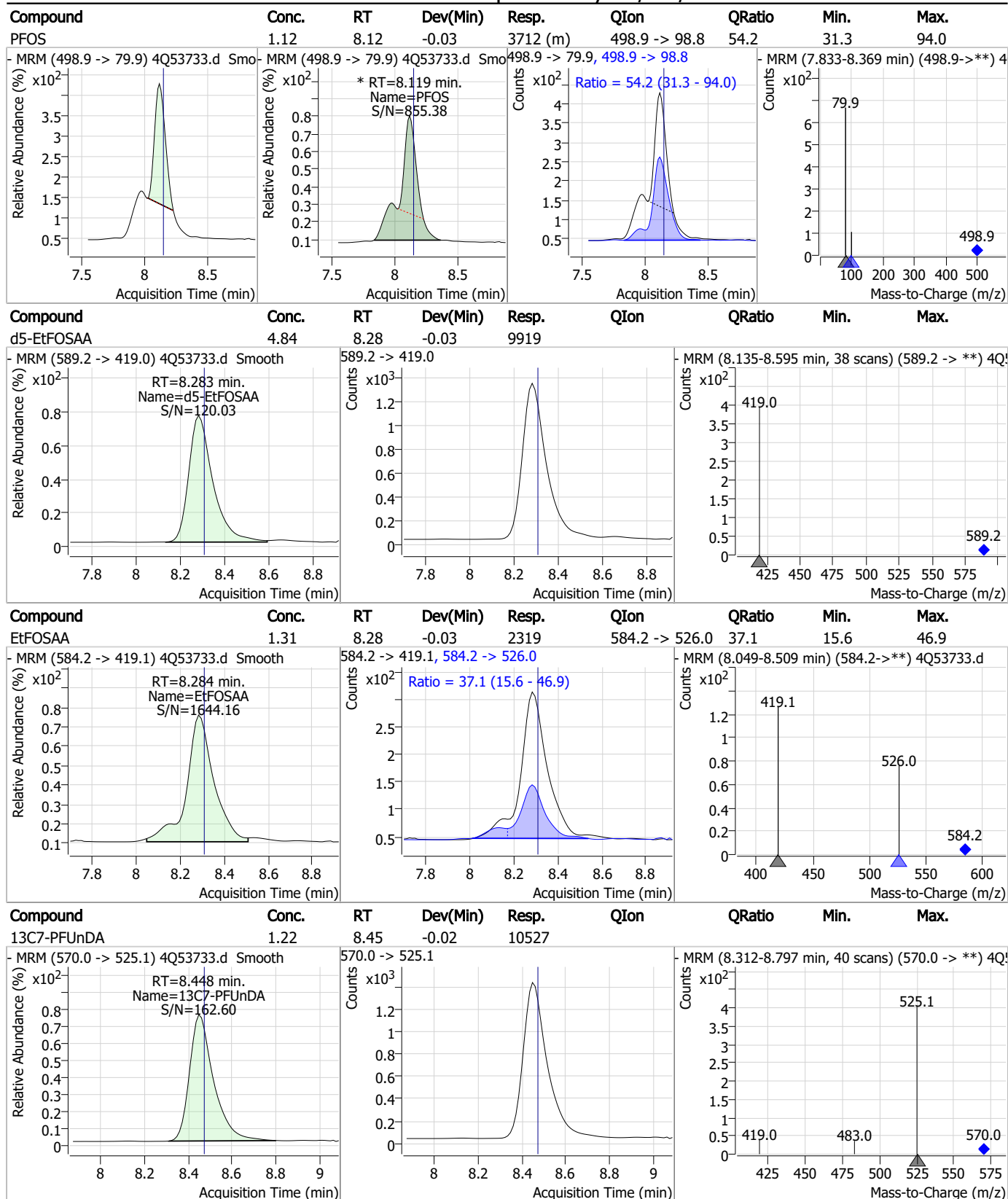
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Perfluorinated Compounds by LC/MS/MS



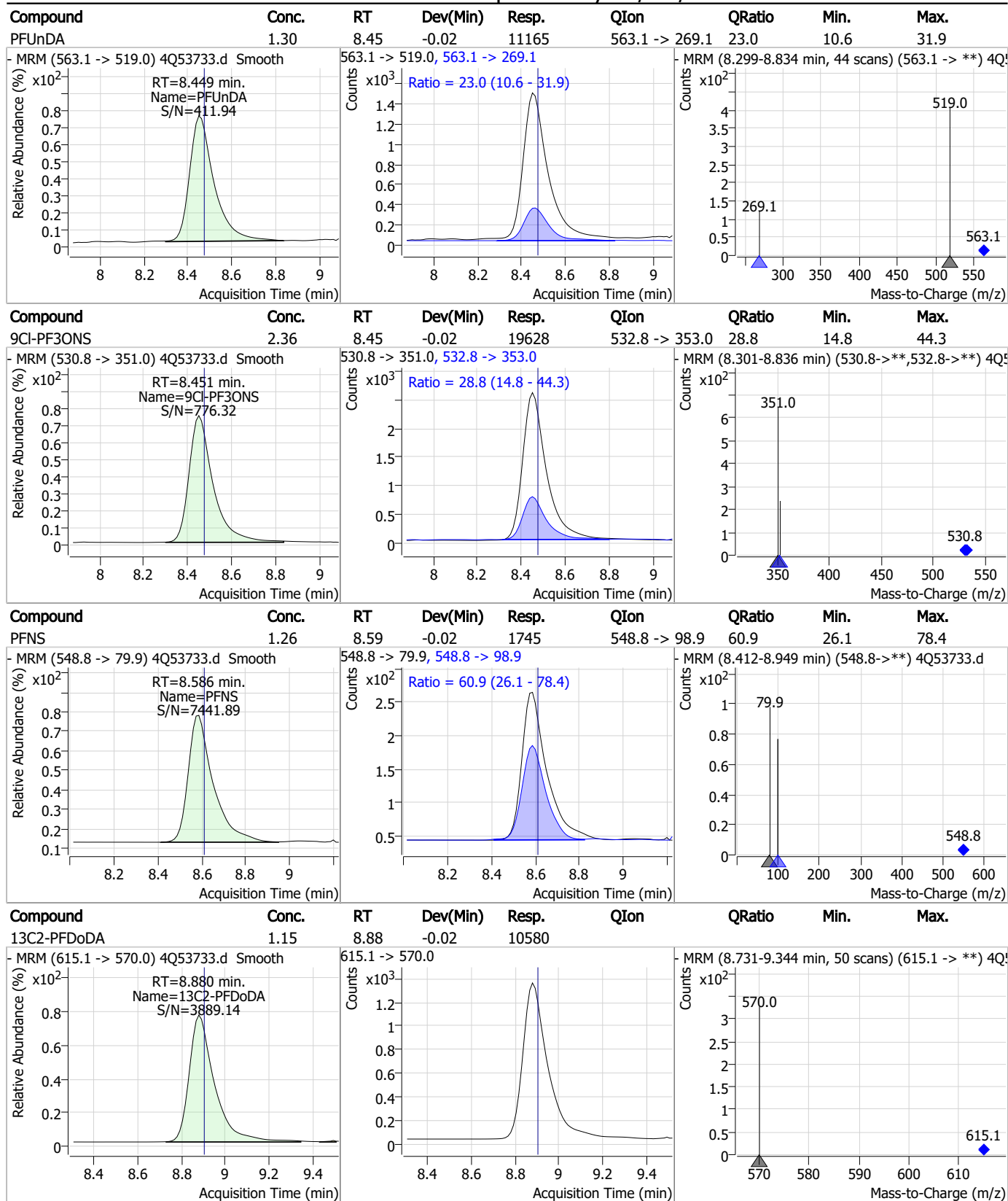
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Perfluorinated Compounds by LC/MS/MS



7.7.4
7

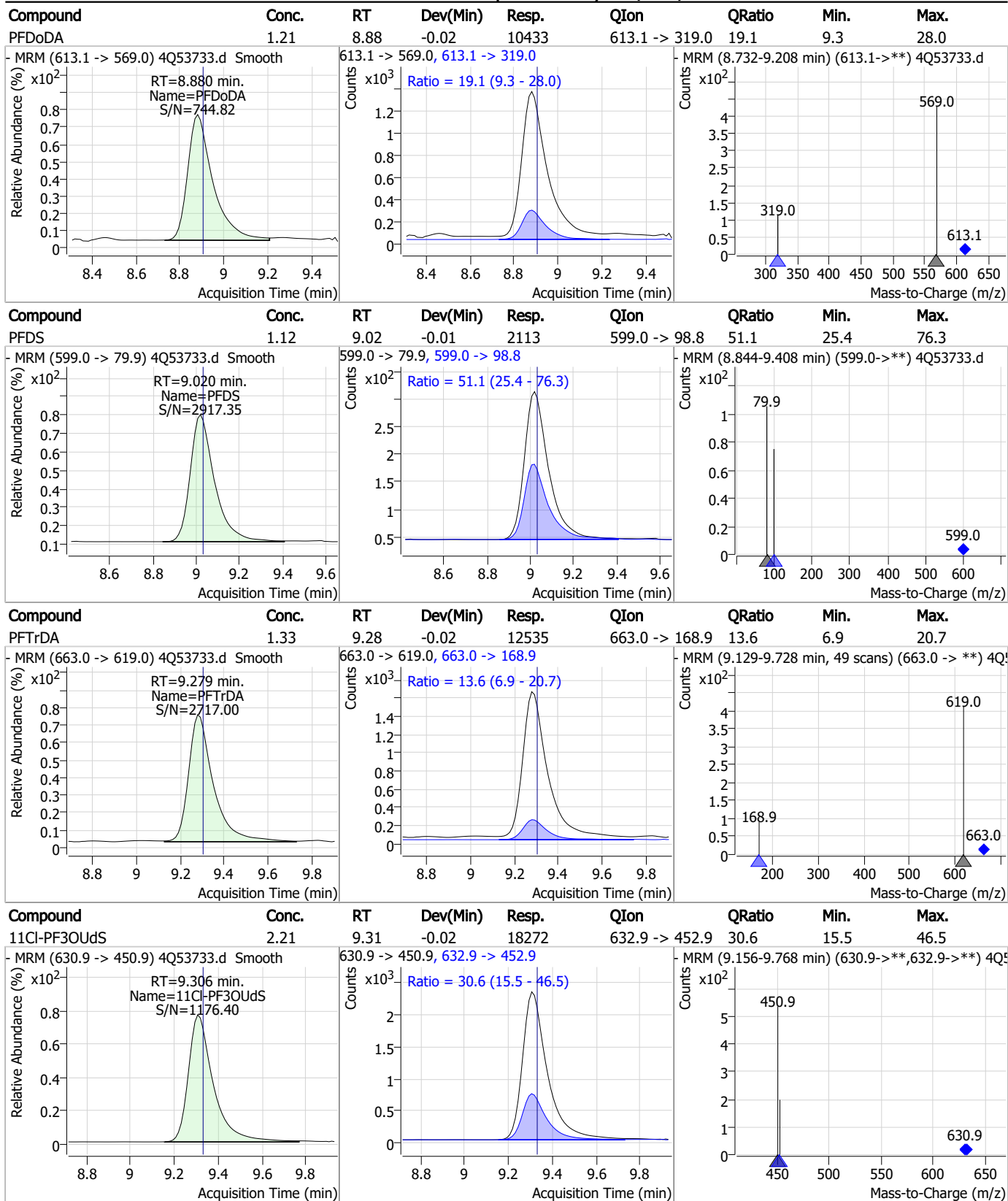
Perfluorinated Compounds by LC/MS/MS



7.7.4

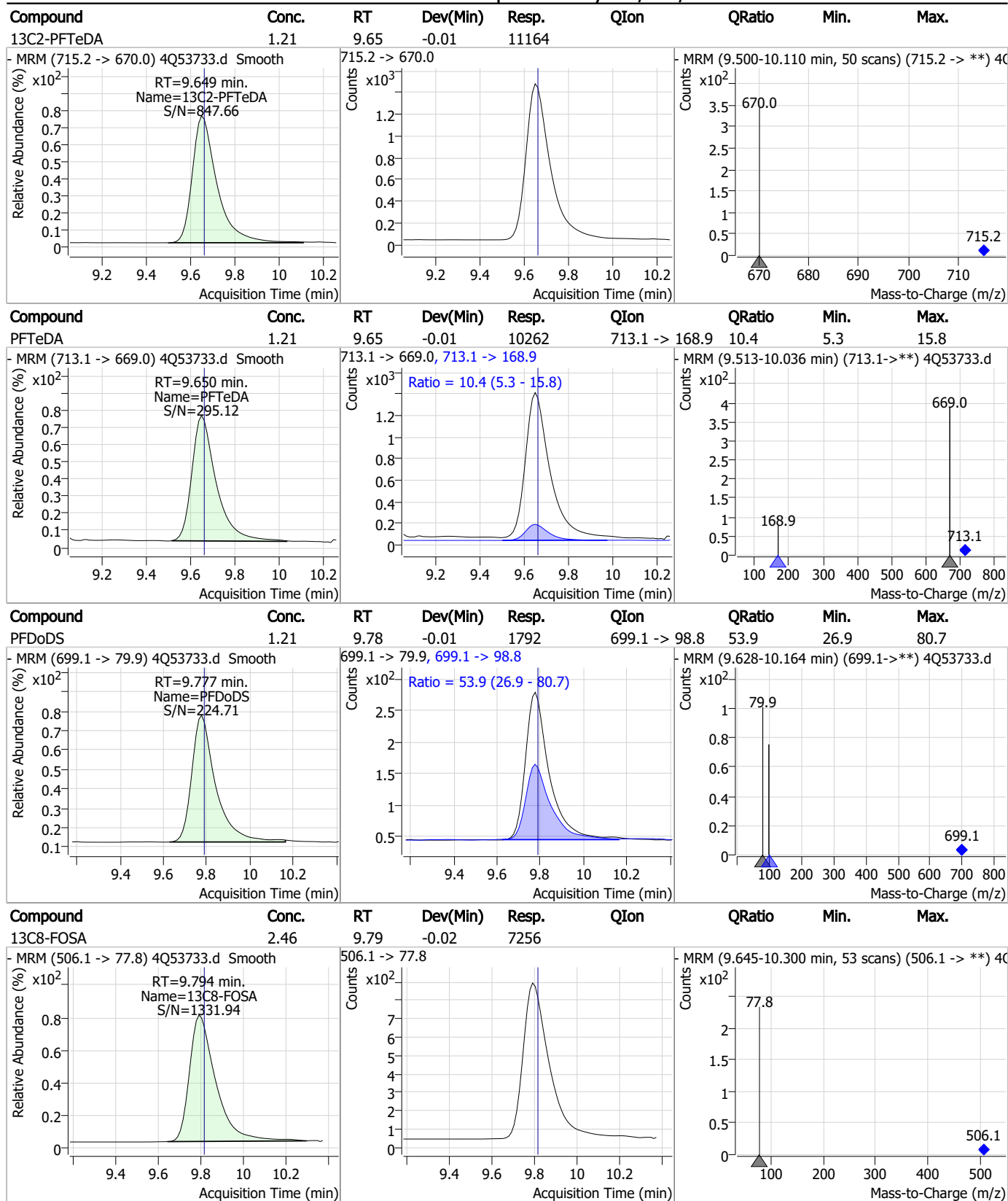
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Perfluorinated Compounds by LC/MS/MS



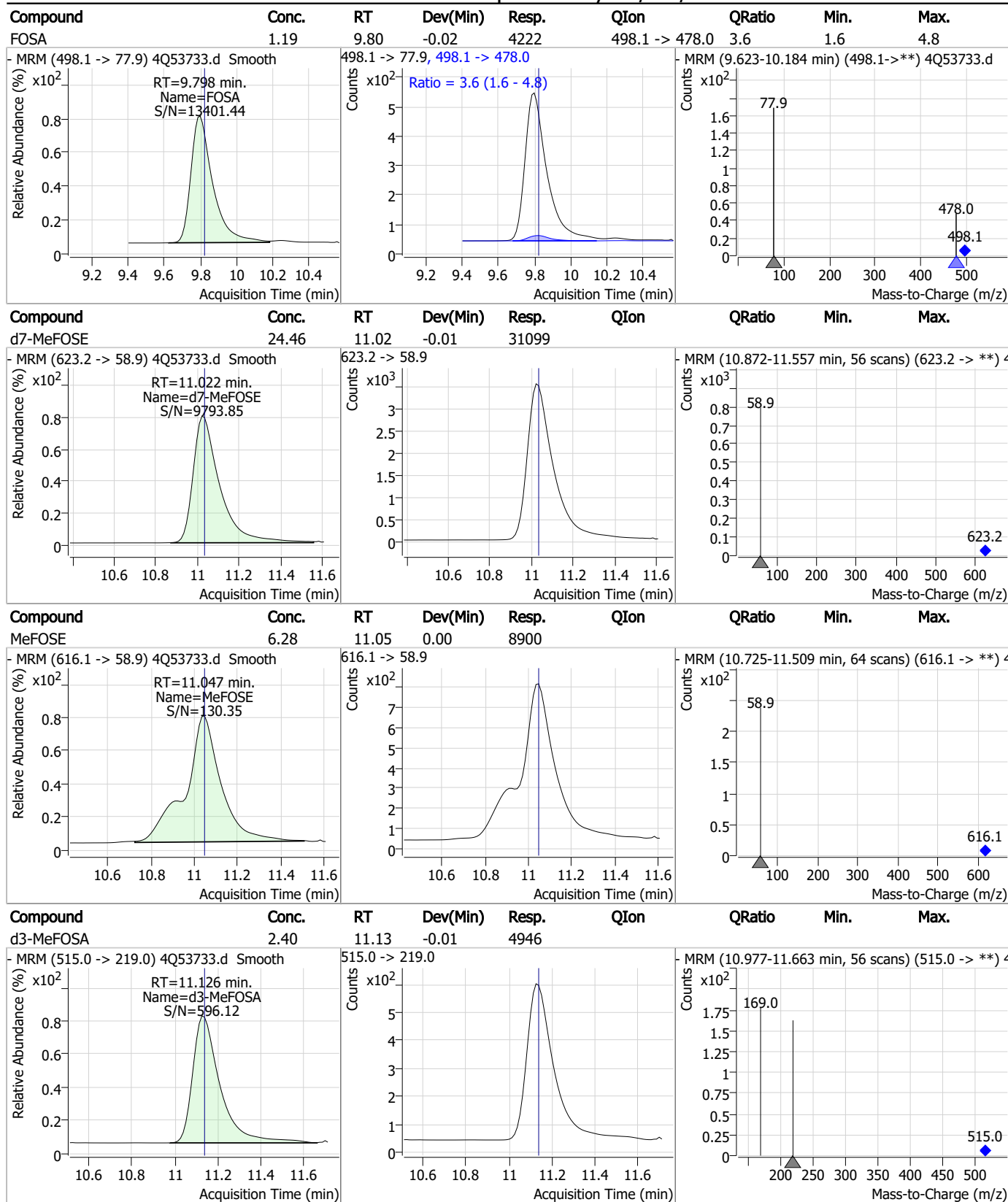
7.7.4
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Perfluorinated Compounds by LC/MS/MS



7.7.4
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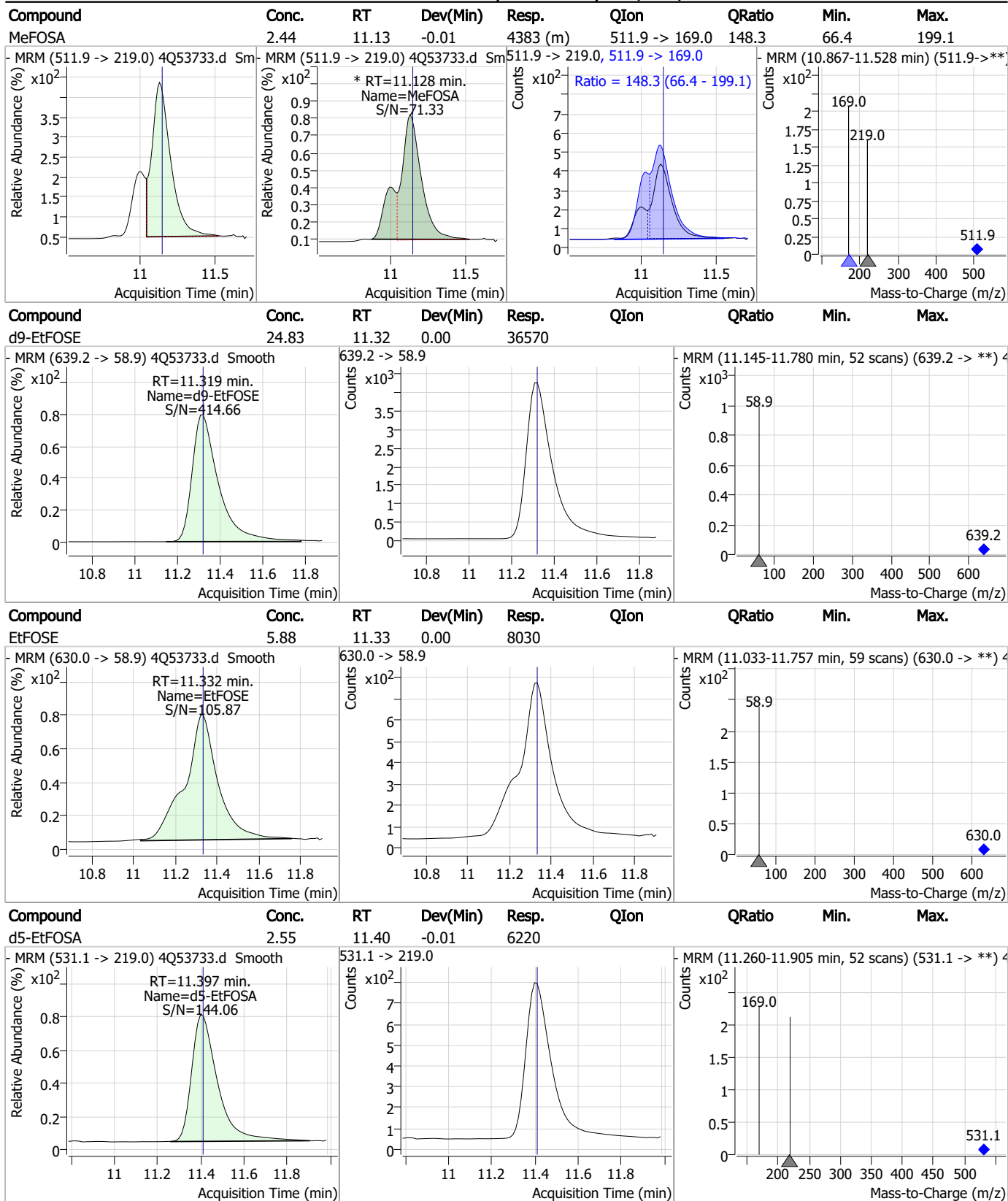
Perfluorinated Compounds by LC/MS/MS



7.7.4

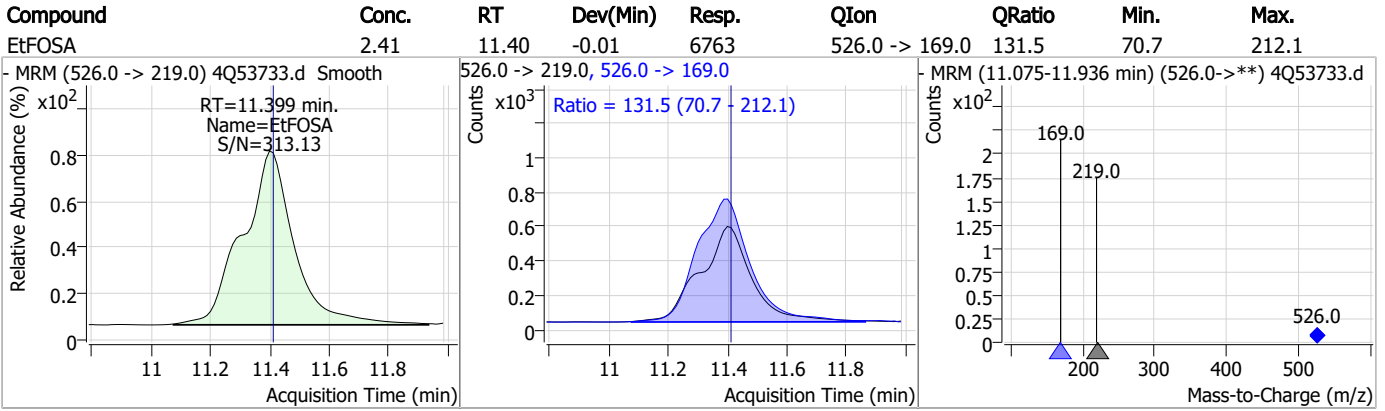
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Perfluorinated Compounds by LC/MS/MS



7.7.4
7

Perfluorinated Compounds by LC/MS/MS



7.7.4

7

Manual Integration Approval Summary

Sample Number: S4Q785-IC785 Method: EPA DRAFT 1633
Lab FileID: 4Q53733.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 16:09 Supervisor approved: 11/14/23 15:48 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.4.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53734.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 4:43:47 PM
 Sample Name : icc785-4
 Vial : P1-A5
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	91117	10.00 µg/L	0.000
M5-PFPeA	4.175	268.3 -> 223.0	38047	5.00 µg/L	0.000
M5-PFHxA	5.347	318.0 -> 273.0	28159	2.50 µg/L	0.000
M4-PFHpA	6.304	367.1 -> 322.0	25330	2.50 µg/L	0.000
M8-PFOA	6.989	421.1 -> 376.0	28427	2.50 µg/L	0.000
M9-PFNA	7.534	472.1 -> 427.0	12113	1.25 µg/L	0.000
M6-PFDA	8.017	519.1 -> 474.1	8008	1.25 µg/L	0.000
M7-PFUnDA	8.473	570.0 -> 525.1	10255	1.25 µg/L	0.000
M2-PFDoDA	8.905	615.1 -> 570.0	9955	1.25 µg/L	0.000
M2-PFTeDA	9.662	715.2 -> 670.0	11033	1.25 µg/L	0.000
M8-FOSA	9.818	506.1 -> 77.8	7592	2.50 µg/L	0.000
M3-PFBS	5.202	302.1 -> 79.9	7831	2.50 µg/L	0.000
M3-PFHxS	7.054	402.1 -> 79.9	6470	2.50 µg/L	0.000
M8-PFOS	8.143	507.1 -> 79.9	6415	2.50 µg/L	0.000
M2-4:2FTS	5.046	329.1 -> 80.9	700	5.00 µg/L	0.000
M2-6:2FTS	6.761	429.1 -> 80.9	1416	5.00 µg/L	0.000
M2-8:2FTS	7.828	529.1 -> 80.9	1746	5.00 µg/L	0.000
M3-MeFOSAA	8.099	573.2 -> 419.0	10279	5.00 µg/L	0.000
M3-HFPO-DA	5.702	286.9 -> 168.9	24173	10.00 µg/L	0.000
M5-EtFOSAA	8.309	589.2 -> 419.0	8979	5.00 µg/L	0.000
M7-MeFOSE	11.034	623.2 -> 58.9	30476	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	34312	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	5583	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	4672	2.50 µg/L	0.000
13C4-PFOS	8.144	502.8 -> 79.9	5220	2.50 µg/L	0.000
13C3-PFBA	2.703	216.0 -> 172.0	43453	5.00 µg/L	0.000
18O2-PFHxS	7.054	403.0 -> 83.9	4137	2.50 µg/L	0.000
13C4-PFOA	6.989	417.1 -> 372.0	31223	2.50 µg/L	0.000
13C2-PFDA	8.029	515.1 -> 470.1	8807	1.25 µg/L	0.000
13C5-PFNA	7.534	468.0 -> 423.0	12220	1.25 µg/L	0.000
13C2-PFHxA	5.348	315.1 -> 270.0	29243	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.046	329.1 -> 80.9	700	4.94 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C2-6:2FTS	6.761	429.1 -> 80.9	1416	4.75 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.9%		
13C2-8:2FTS	7.828	529.1 -> 80.9	1746	4.15 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 83.0%		
13C2-PFDoDA	8.905	615.1 -> 570.0	9955	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C2-PFTeDA	9.662	715.2 -> 670.0	11033	1.38 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 110.4%		
13C3-PFBS	5.202	302.1 -> 79.9	7831	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C3-PFHxS	7.054	402.1 -> 79.9	6470	2.52 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C4-PFBA	2.699	216.8 -> 171.9	91117	10.06 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C4-PFHpA	6.304	367.1 -> 322.0	25330	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C5-PFHxA	5.347	318.0 -> 273.0	28159	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C5-PFPeA	4.175	268.3 -> 223.0	38047	5.33 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.7%	
13C6-PFDA	8.017	519.1 -> 474.1	8008	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C7-PFUnDA	8.473	570.0 -> 525.1	10255	1.37 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.5%	
13C8-FOSA	9.818	506.1 -> 77.8	7592	3.04 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 121.7%	
13C8-PFOA	6.989	421.1 -> 376.0	28427	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C8-PFOS	8.143	507.1 -> 79.9	6415	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.0%	
13C9-PFNA	7.534	472.1 -> 427.0	12113	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.6%	
d3-MeFOSAA	8.099	573.2 -> 419.0	10279	5.19 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.9%	
13C3-HFPO-DA	5.702	286.9 -> 168.9	24173	9.71 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.1%	
d3-MeFOSA	11.139	515.0 -> 219.0	4672	2.68 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.3%	
d5-EtFOSAA	8.309	589.2 -> 419.0	8979	5.18 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.6%	
d7-MeFOSE	11.034	623.2 -> 58.9	30476	28.34 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 113.4%	
d9-EtFOSE	11.319	639.2 -> 58.9	34312	27.55 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 110.2%	
d5-EtFOSA	11.410	531.1 -> 219.0	5583	2.70 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.1%	
Target Compounds					QValue
4:2FTS	5.059	327.1 -> 307.0	13378	9.67 µg/L	100
		327.1 -> 80.9	5647		
6:2FTS	6.774	427.1 -> 407.0	15005	9.80 µg/L	100
		427.1 -> 80.9	5754		
8:2FTS	7.829	527.1 -> 507.0	10482	11.04 µg/L	100
		527.1 -> 80.8	4367		
EtFOSAA	8.310	584.2 -> 419.1	4233	2.63 µg/L	92
		584.2 -> 526.0	1512		
FOSA	9.823	498.1 -> 77.9	8997	2.43 µg/L	100
		498.1 -> 478.0	289		
MeFOSAA	8.112	570.1 -> 419.0	4379	2.40 µg/L	100
		570.1 -> 483.0	799		
PFBA	2.707	212.8 -> 168.9	32973	9.95 µg/L	100
PFBS	5.203	298.7 -> 79.9	6184	2.23 µg/L	100
		298.7 -> 98.8	2393		
PFDA	8.017	512.9 -> 469.0	16092	2.46 µg/L	100
		512.9 -> 219.0	3198		
PFDoDA	8.905	613.1 -> 569.0	21042	2.59 µg/L	100
		613.1 -> 319.0	3929		
PFDS	9.032	599.0 -> 79.9	4251	2.56 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2162			
PFHpA	6.305	363.1 -> 319.0	39067	2.46	µg/L	100
		363.1 -> 169.0	6854			
PFHpS	7.637	449.0 -> 79.9	6361	2.51	µg/L	100
		449.0 -> 98.9	3248			
PFHxA	5.350	313.0 -> 269.0	25764	2.62	µg/L	100
		313.0 -> 118.9	689			
PFHxS	7.055	398.7 -> 79.9	4185	2.14	µg/L	m 93
		398.7 -> 98.9	2484			
PFNA	7.534	463.0 -> 419.0	18470	2.39	µg/L	100
		463.0 -> 219.0	4688			
PFNS	8.611	548.8 -> 79.9	3249	2.65	µg/L	100
		548.8 -> 98.9	1698			
PFOA	6.990	413.0 -> 369.0	34912	2.54	µg/L	100
		413.0 -> 169.0	7132			
PFOS	8.144	498.9 -> 79.9	6829	2.35	µg/L	m 84
		498.9 -> 98.8	3406			
PFPeA	4.177	263.0 -> 219.0	41164	4.97	µg/L	100
PFPeS	6.294	349.1 -> 79.9	4948	2.33	µg/L	100
		349.1 -> 98.9	2145			
PFTeDA	9.662	713.1 -> 669.0	20299	2.42	µg/L	100
		713.1 -> 168.9	2137			
PFTrDA	9.304	663.0 -> 619.0	24192	2.74	µg/L	100
		663.0 -> 168.9	3341			
PFUnDA	8.474	563.1 -> 519.0	21052	2.51	µg/L	100
		563.1 -> 269.1	4474			
11Cl-PF3OUdS	9.331	630.9 -> 450.9	37472	4.97	µg/L	100
		632.9 -> 452.9	11614			
9Cl-PF3ONS	8.475	530.8 -> 351.0	38016	4.99	µg/L	100
		532.8 -> 353.0	11229			
ADONA	6.568	376.9 -> 250.9	53922	3.22	µg/L	100
		376.9 -> 84.8	13342			
HFPO-DA	5.703	284.9 -> 168.9	13124	5.13	µg/L	100
		284.9 -> 184.9	1229			
3:3FTCA	3.667	241.0 -> 177.0	6272	12.15	µg/L	100
		241.0 -> 117.0	569			
5:3FTCA	6.045	341.0 -> 237.1	108535	62.69	µg/L	100
		341.0 -> 217.0	78915			
7:3FTCA	7.574	441.0 -> 316.9	44235	56.96	µg/L	100
		441.0 -> 336.9	108020			
EtFOSA	11.412	526.0 -> 219.0	12672	5.03	µg/L	100
		526.0 -> 169.0	17919			
EtFOSE	11.332	630.0 -> 58.9	16237	12.67	µg/L	100
MeFOSA	11.140	511.9 -> 219.0	9159	5.40	µg/L	m 92
		511.9 -> 169.0	13028			
MeFOSE	11.047	616.1 -> 58.9	14611	10.52	µg/L	m 100
PFDoDS	9.789	699.1 -> 79.9	3447	2.63	µg/L	100
		699.1 -> 98.8	1855			
NFDHA	5.229	295.0 -> 201.0	3445	5.30	µg/L	100
		295.0 -> 84.9	819			
PFMBA	4.578	279.0 -> 85.1	23494	4.93	µg/L	100
PFMPA	3.332	229.0 -> 84.9	26105	4.92	µg/L	100
PFEESA	5.734	314.8 -> 134.9	33942	4.36	µg/L	100
		314.8 -> 82.9	978			

= Qualifier out of range, m = manually integrated, + = Area summed

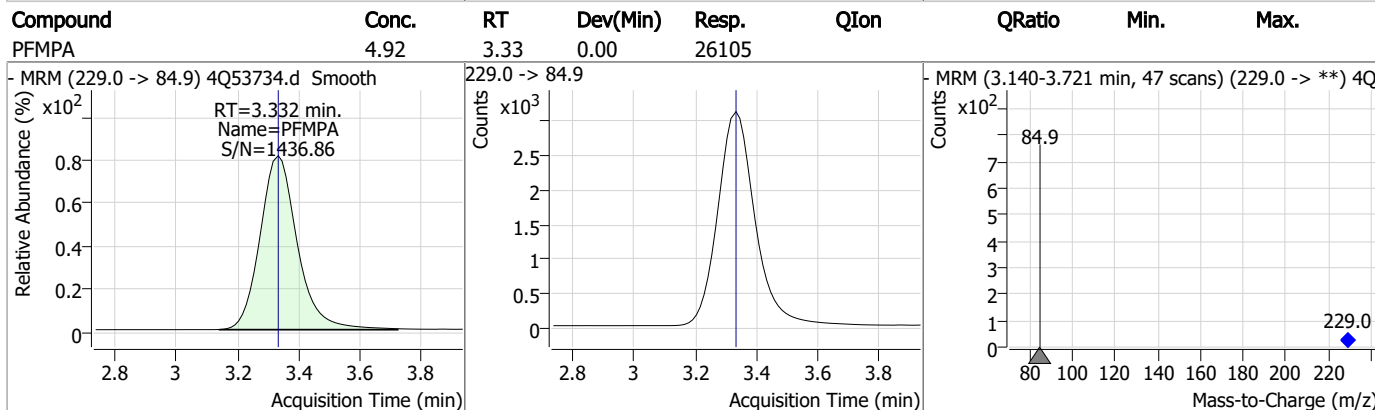
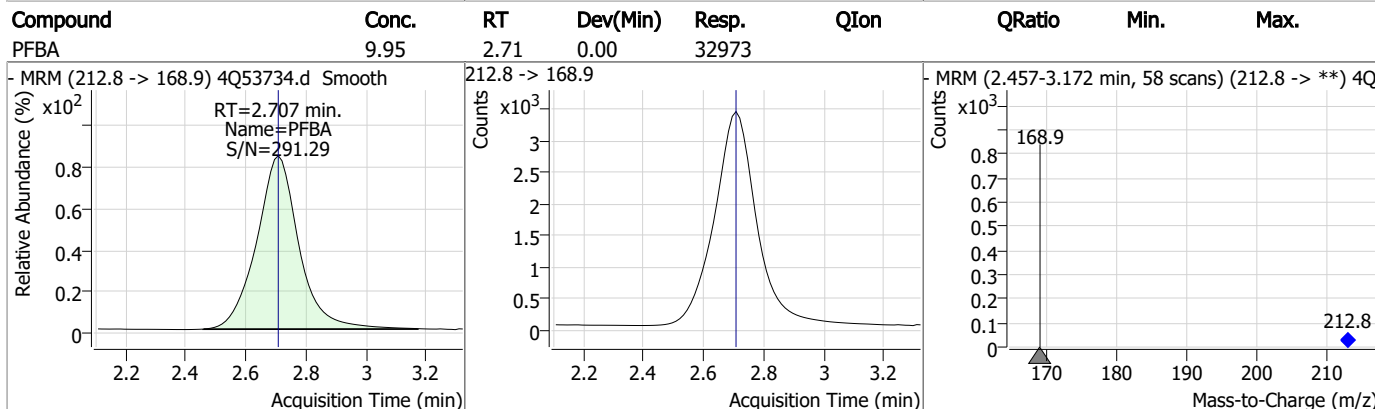
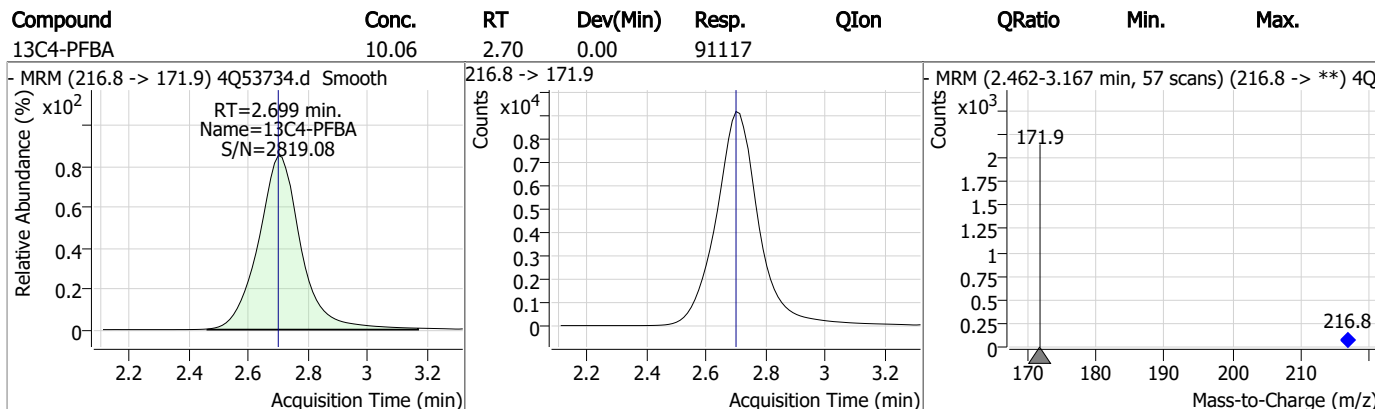
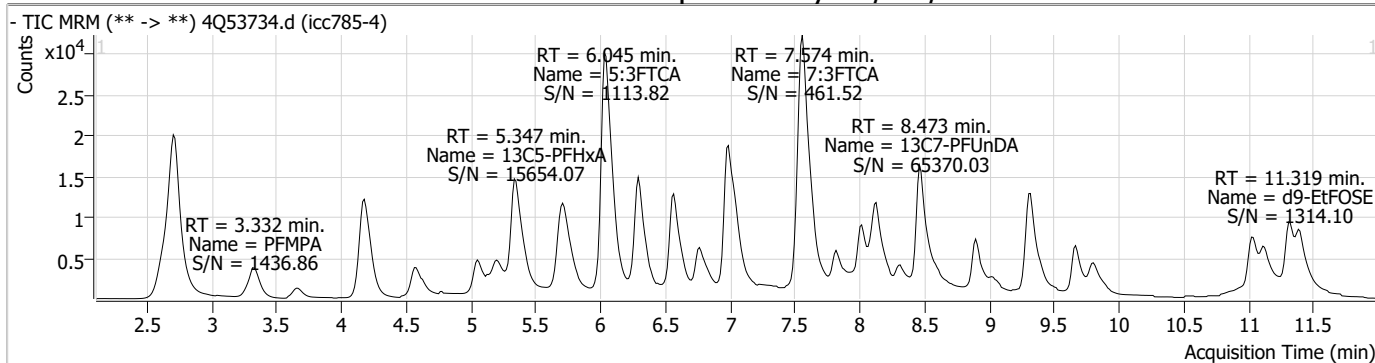
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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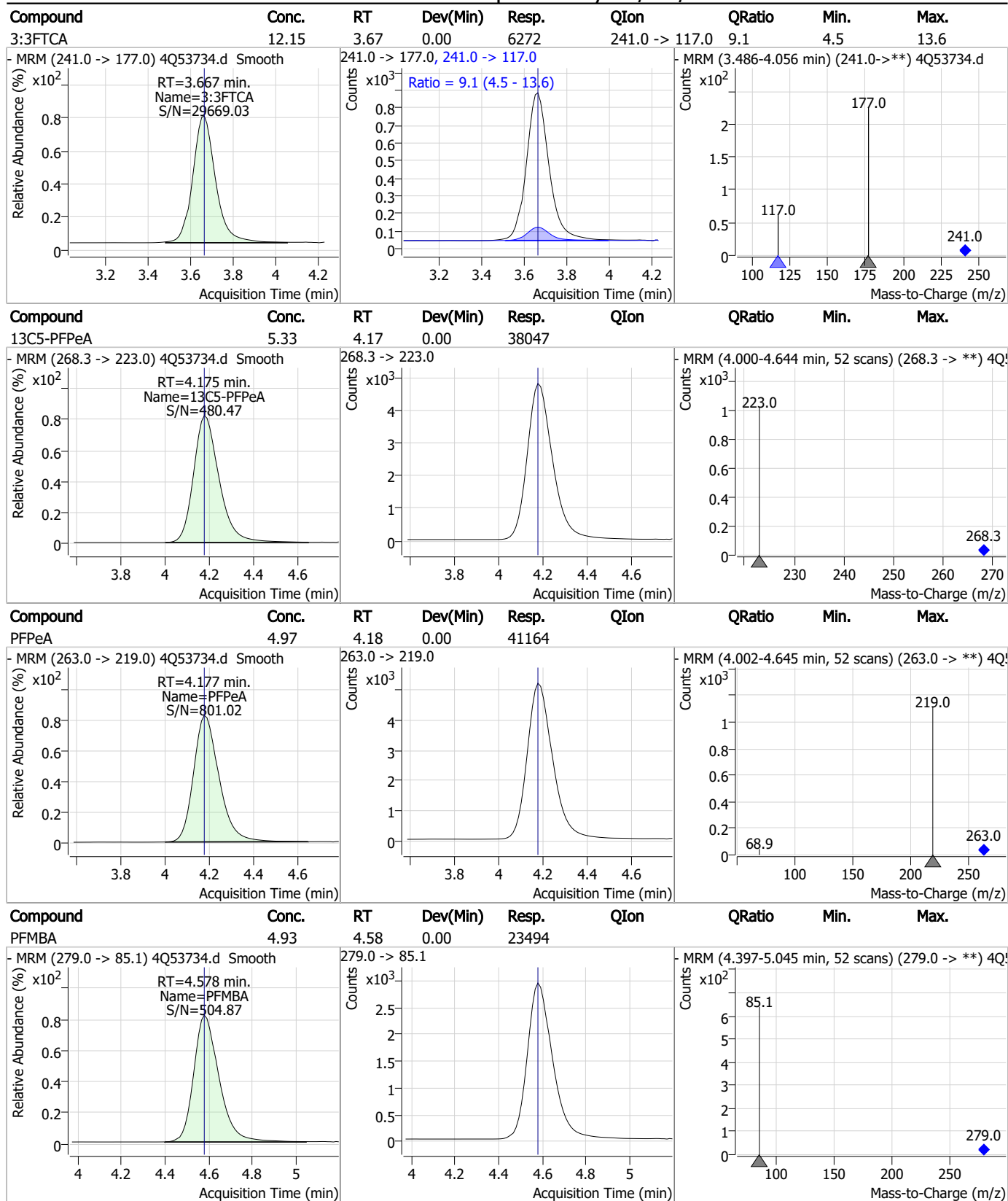
7.7.5

7

Perfluorinated Compounds by LC/MS/MS

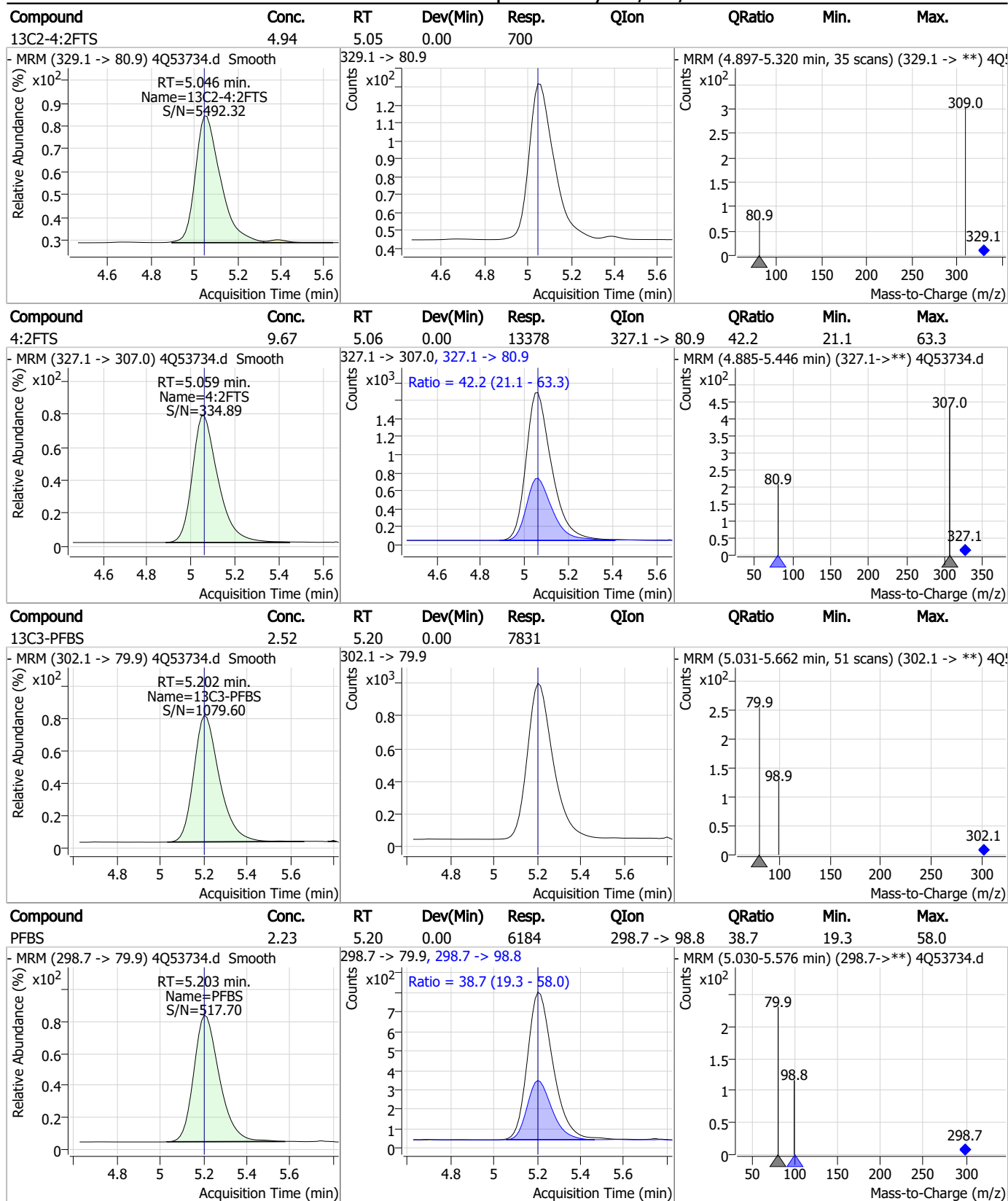


Perfluorinated Compounds by LC/MS/MS



7.7.5
7

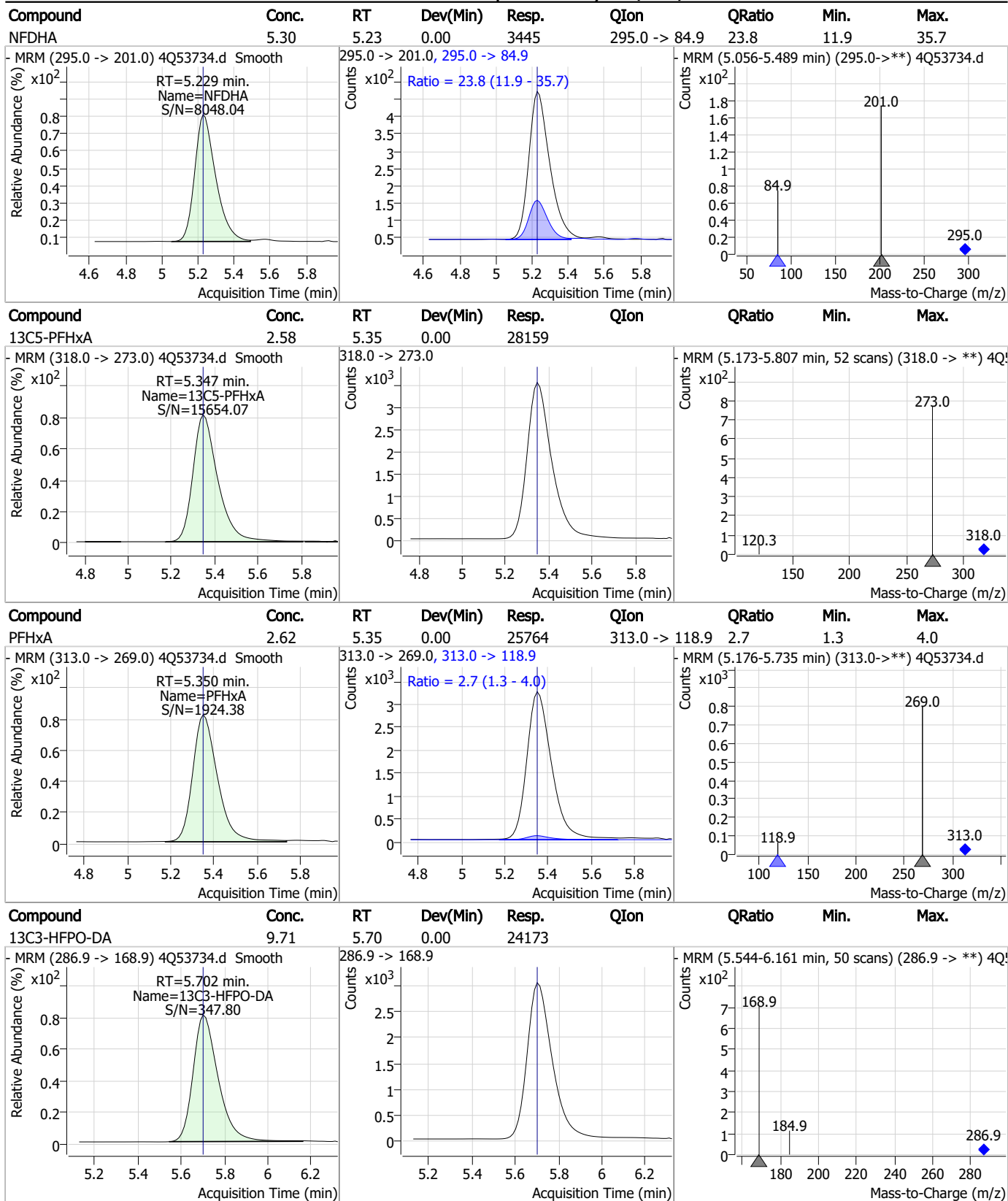
Perfluorinated Compounds by LC/MS/MS



7.7.5

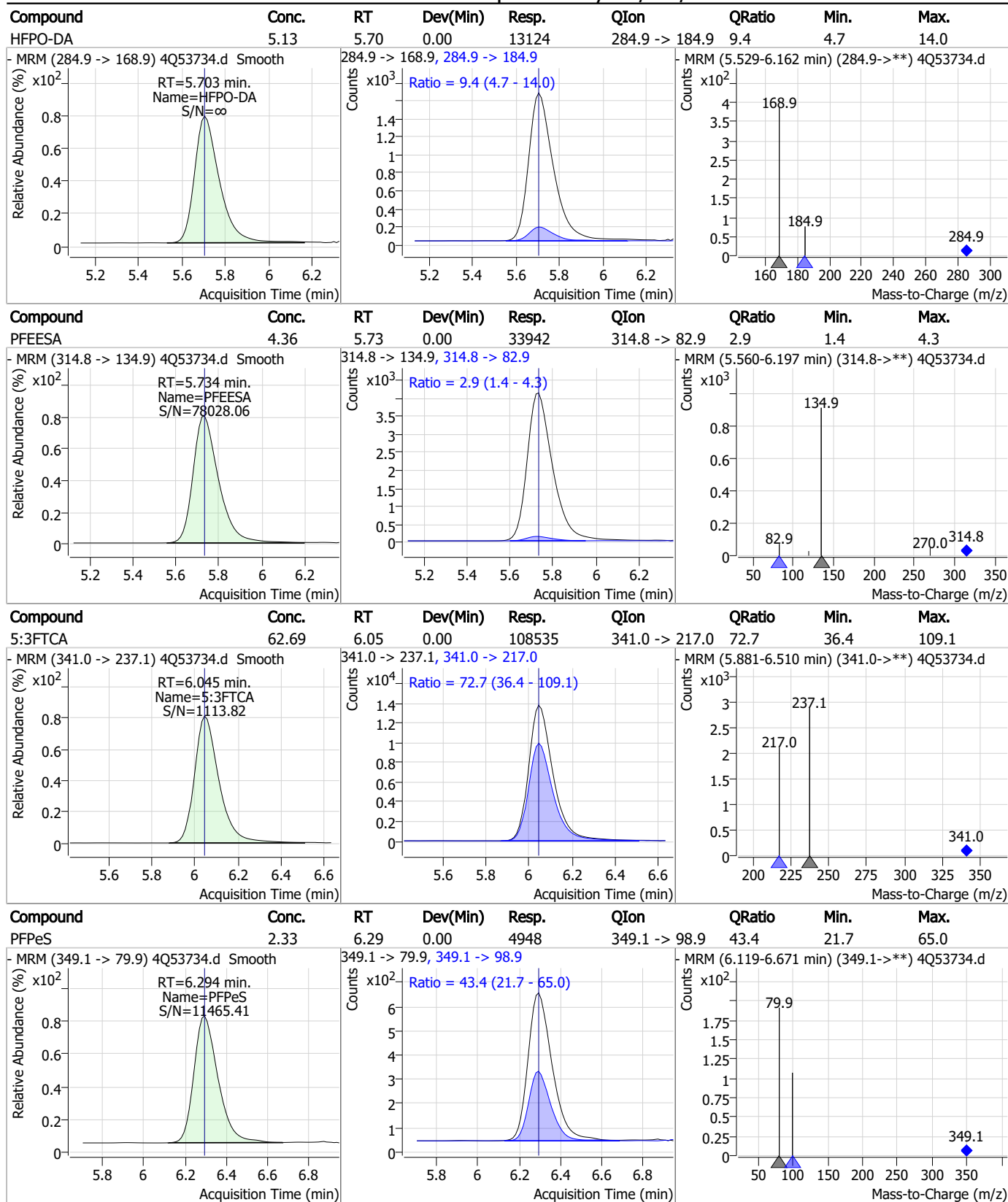
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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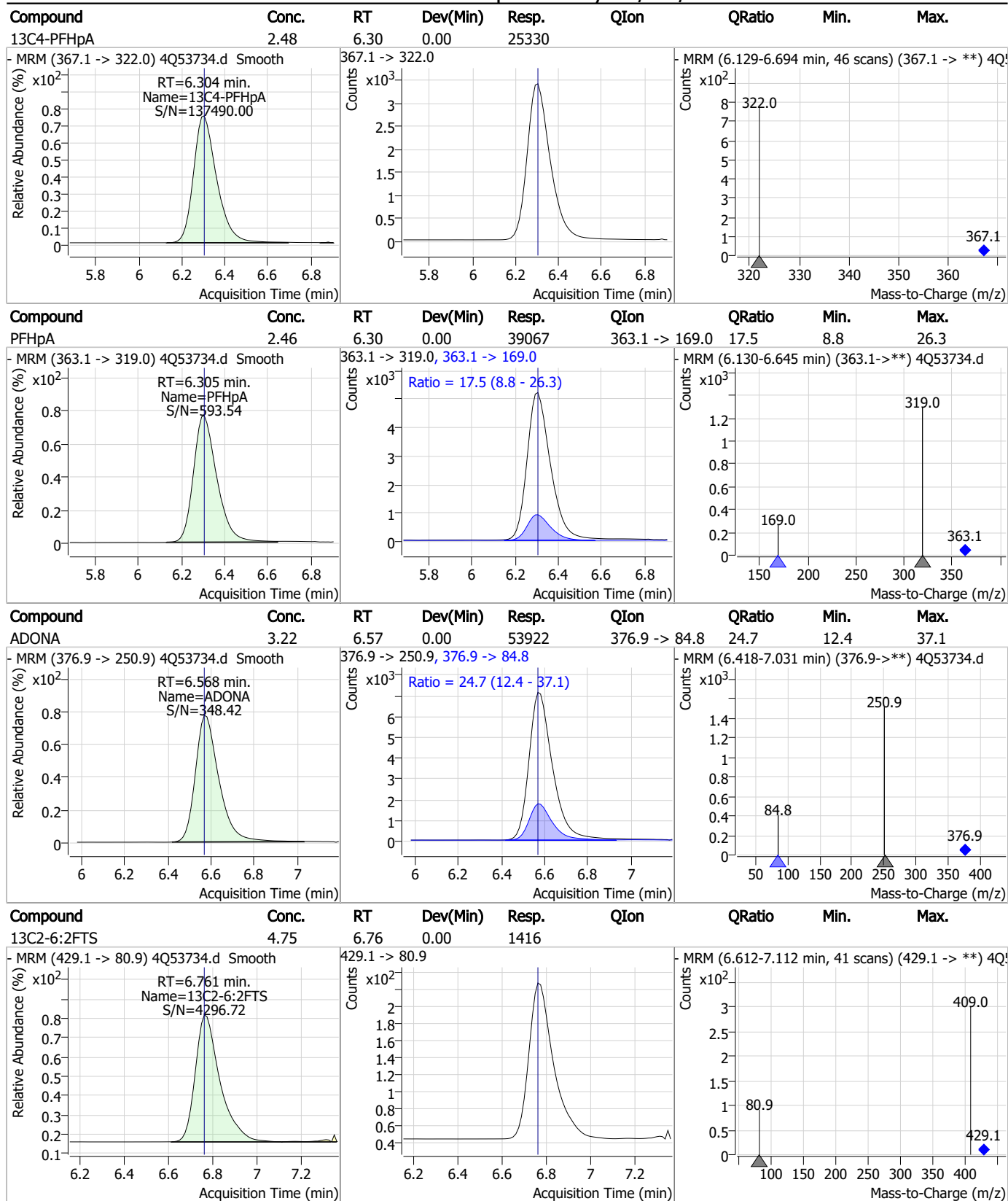
Perfluorinated Compounds by LC/MS/MS



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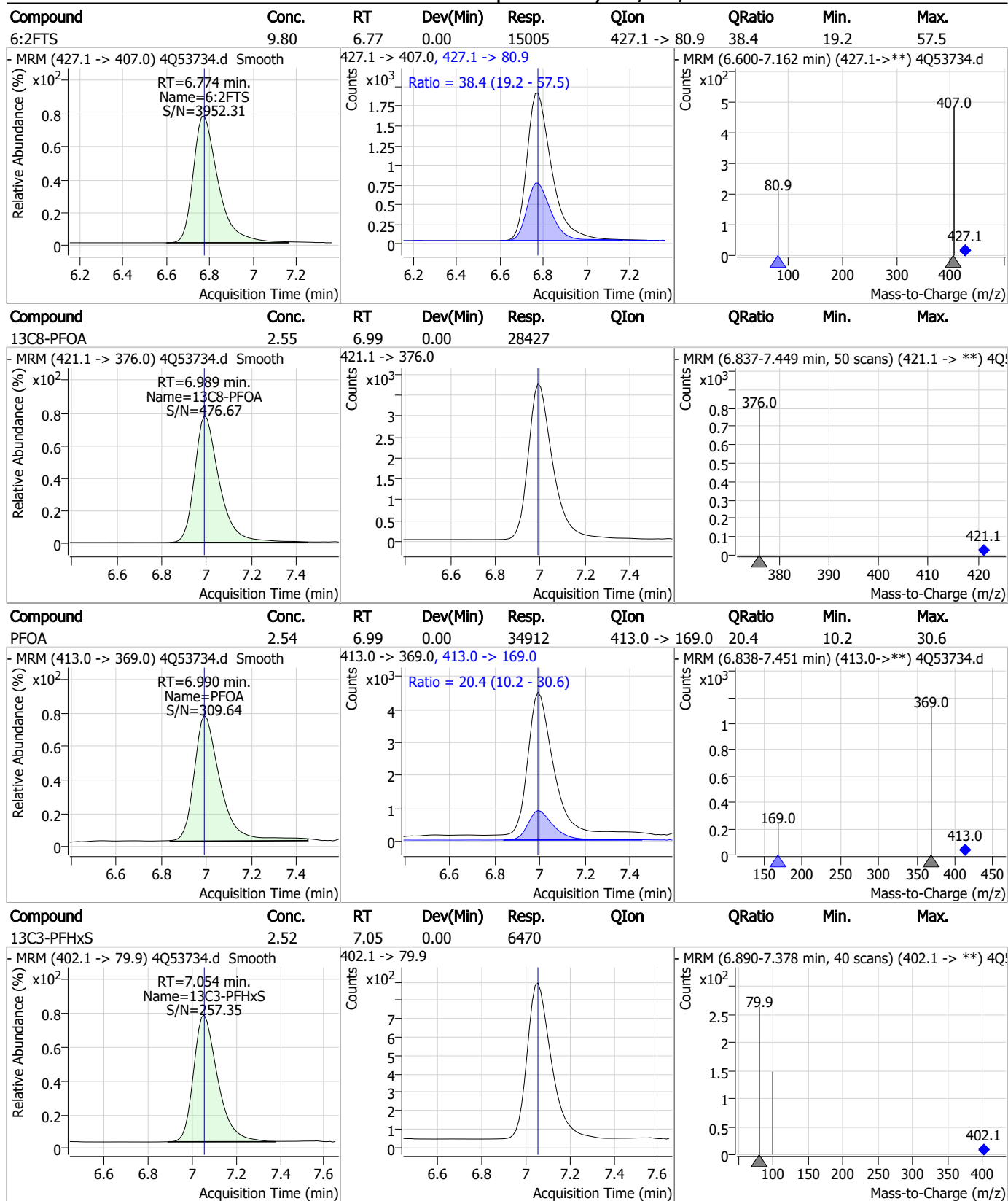
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Perfluorinated Compounds by LC/MS/MS



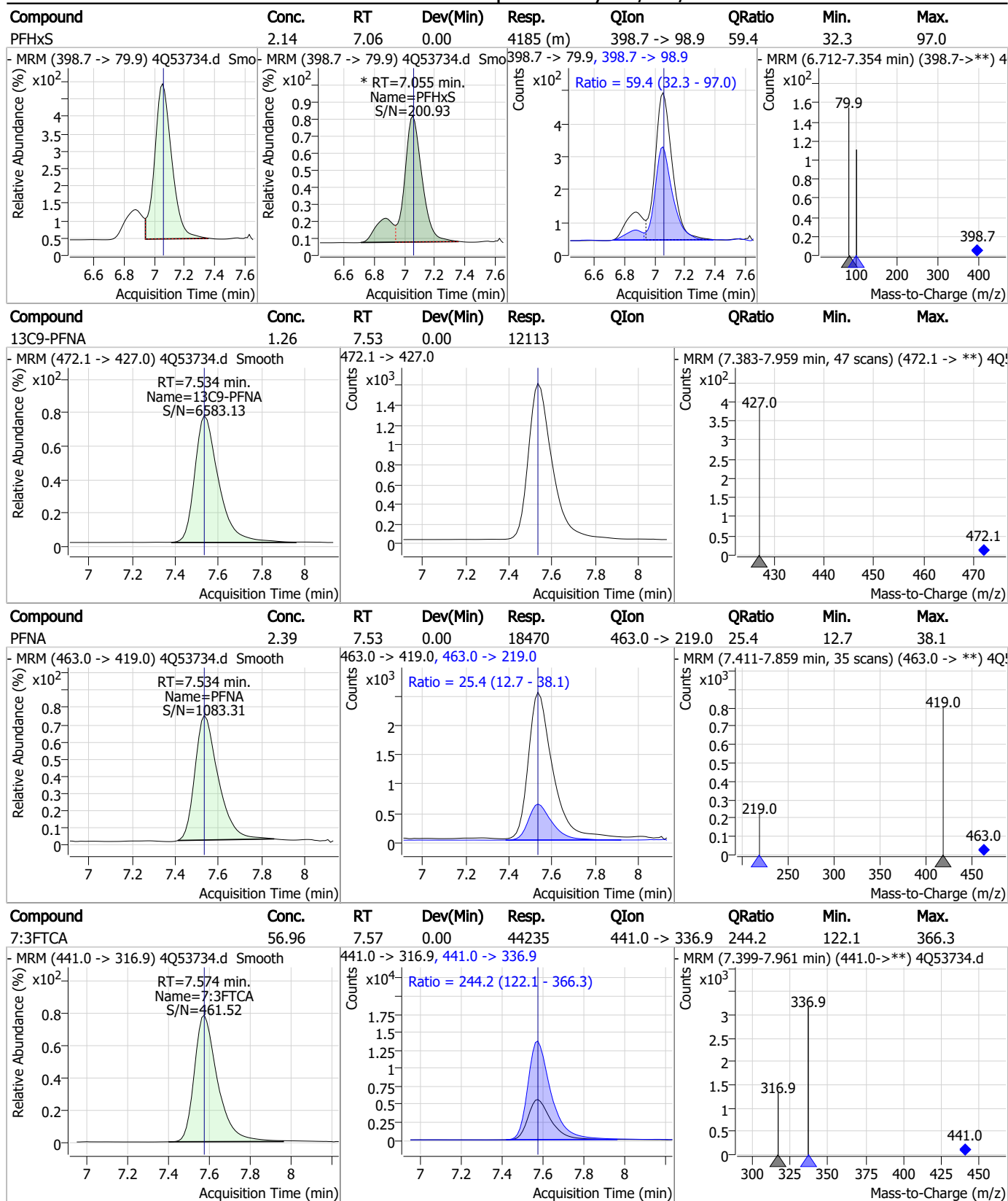
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Perfluorinated Compounds by LC/MS/MS



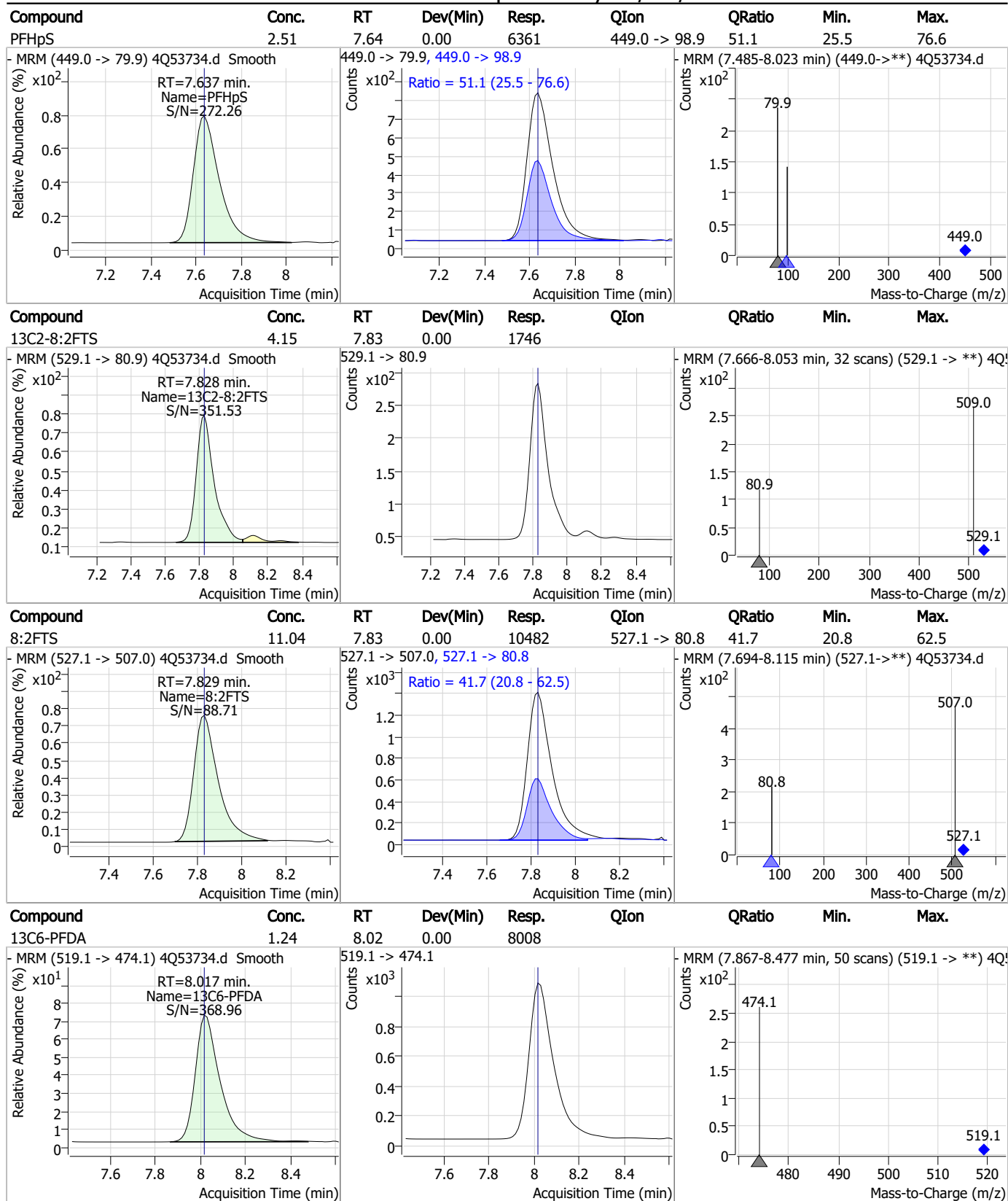
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Perfluorinated Compounds by LC/MS/MS



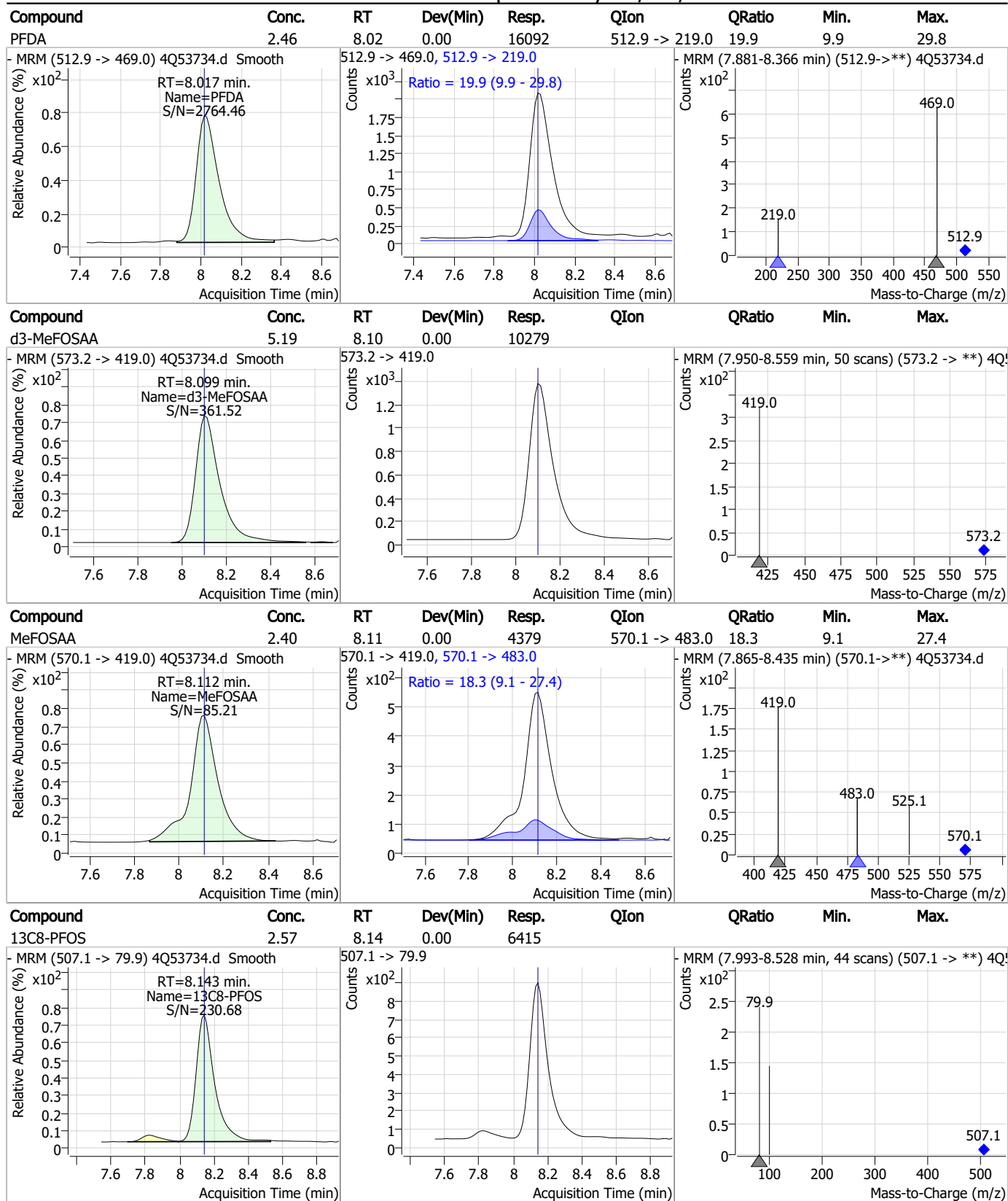
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Perfluorinated Compounds by LC/MS/MS



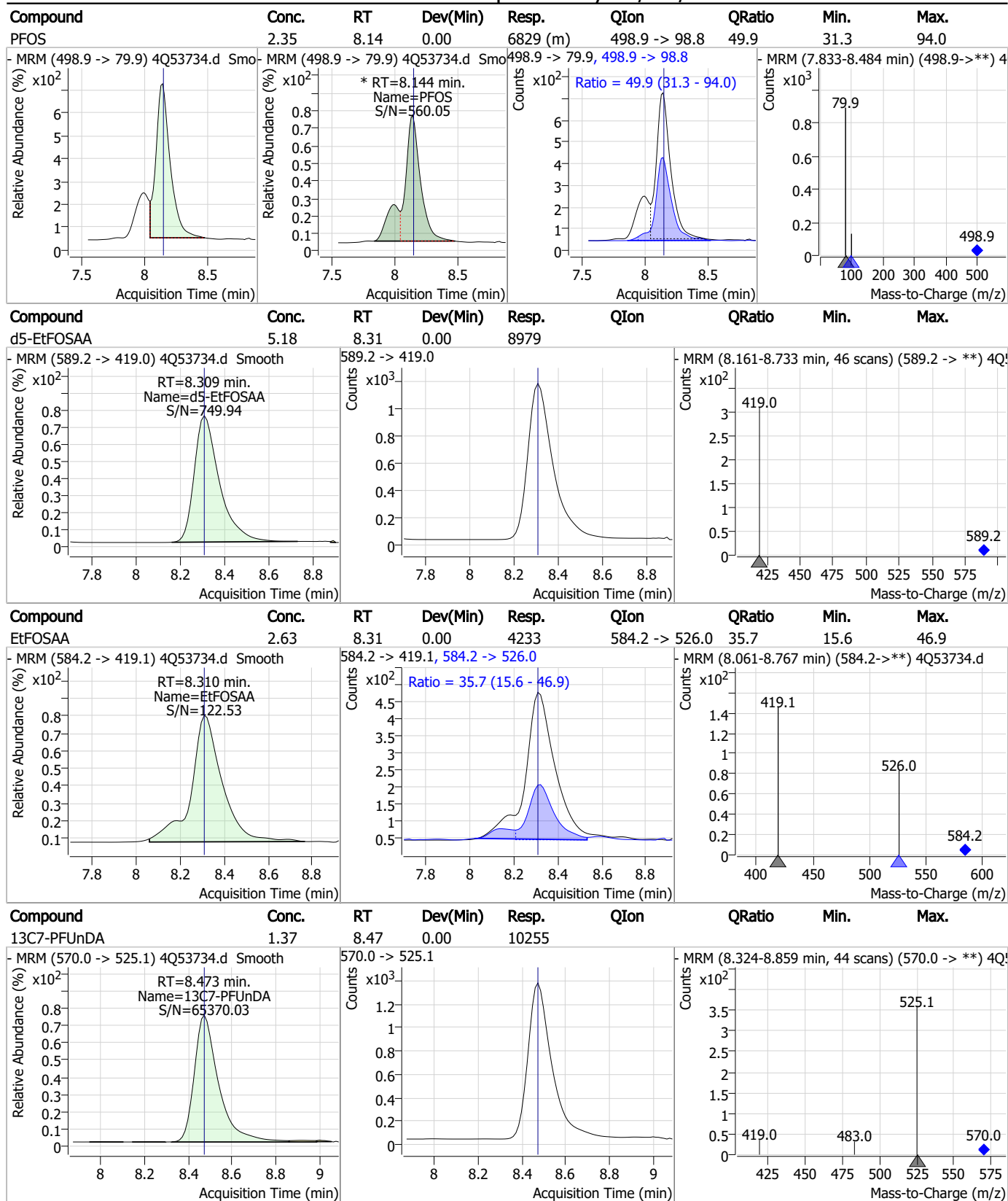
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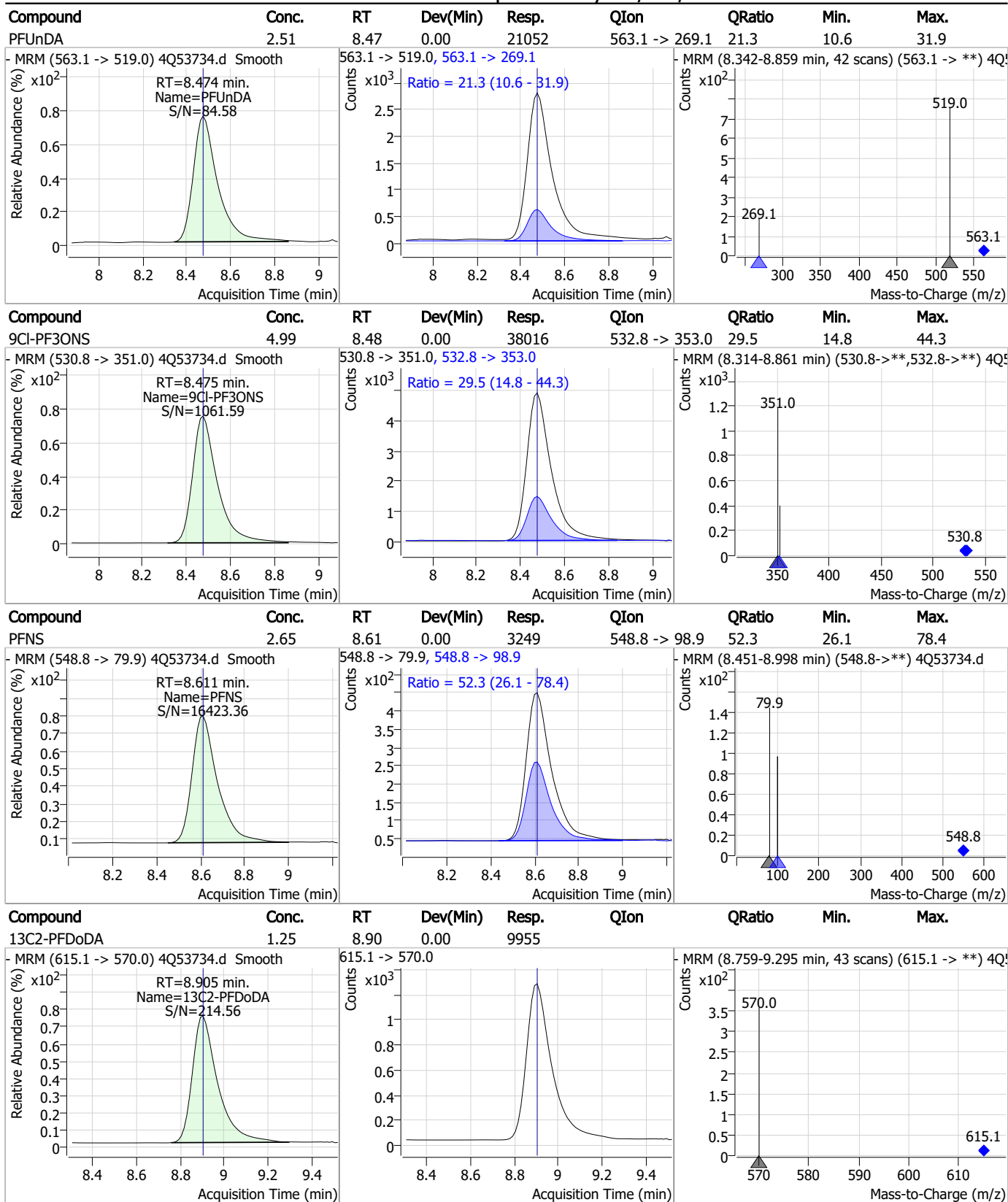
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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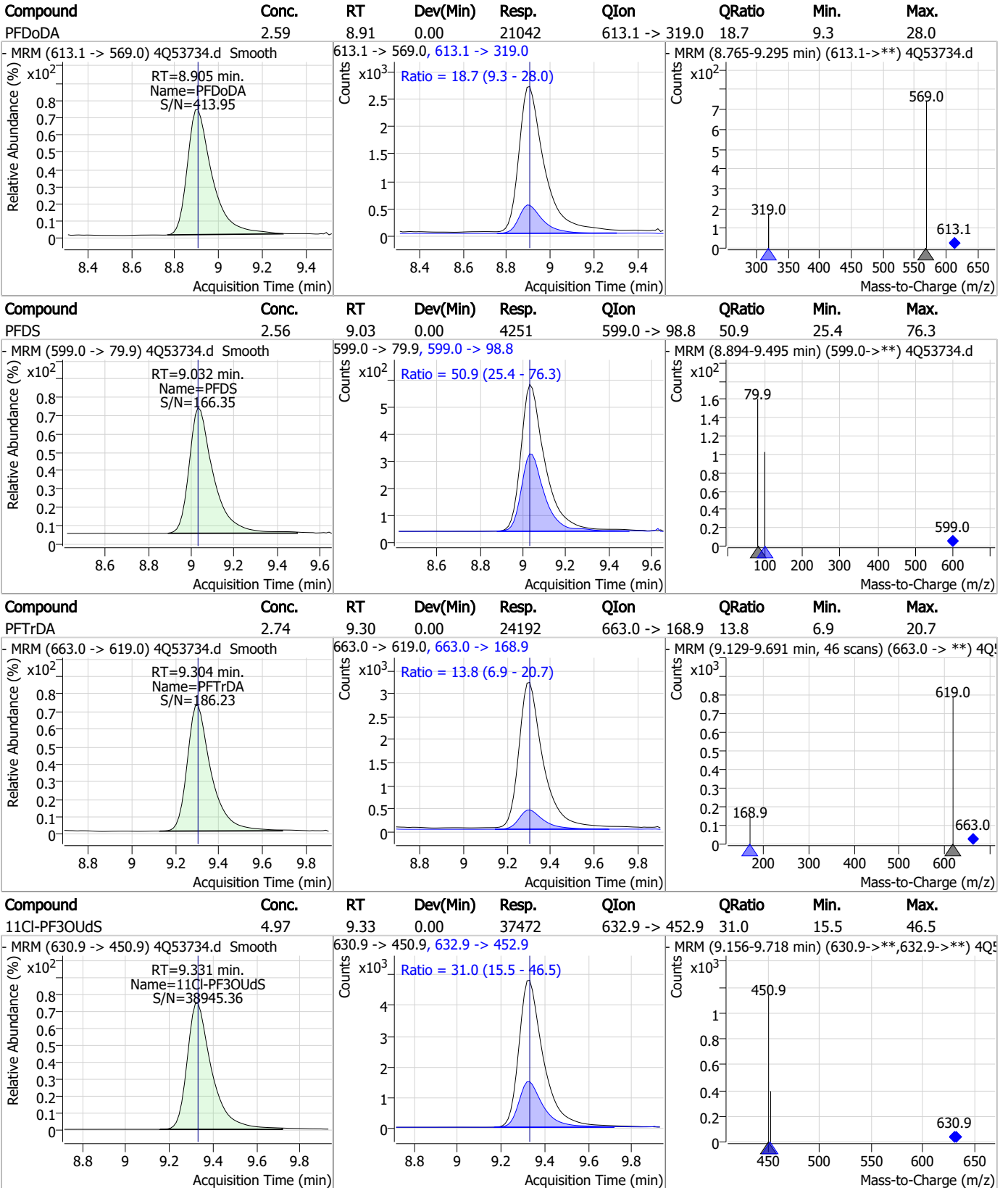
Perfluorinated Compounds by LC/MS/MS



7.7.5

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Perfluorinated Compounds by LC/MS/MS

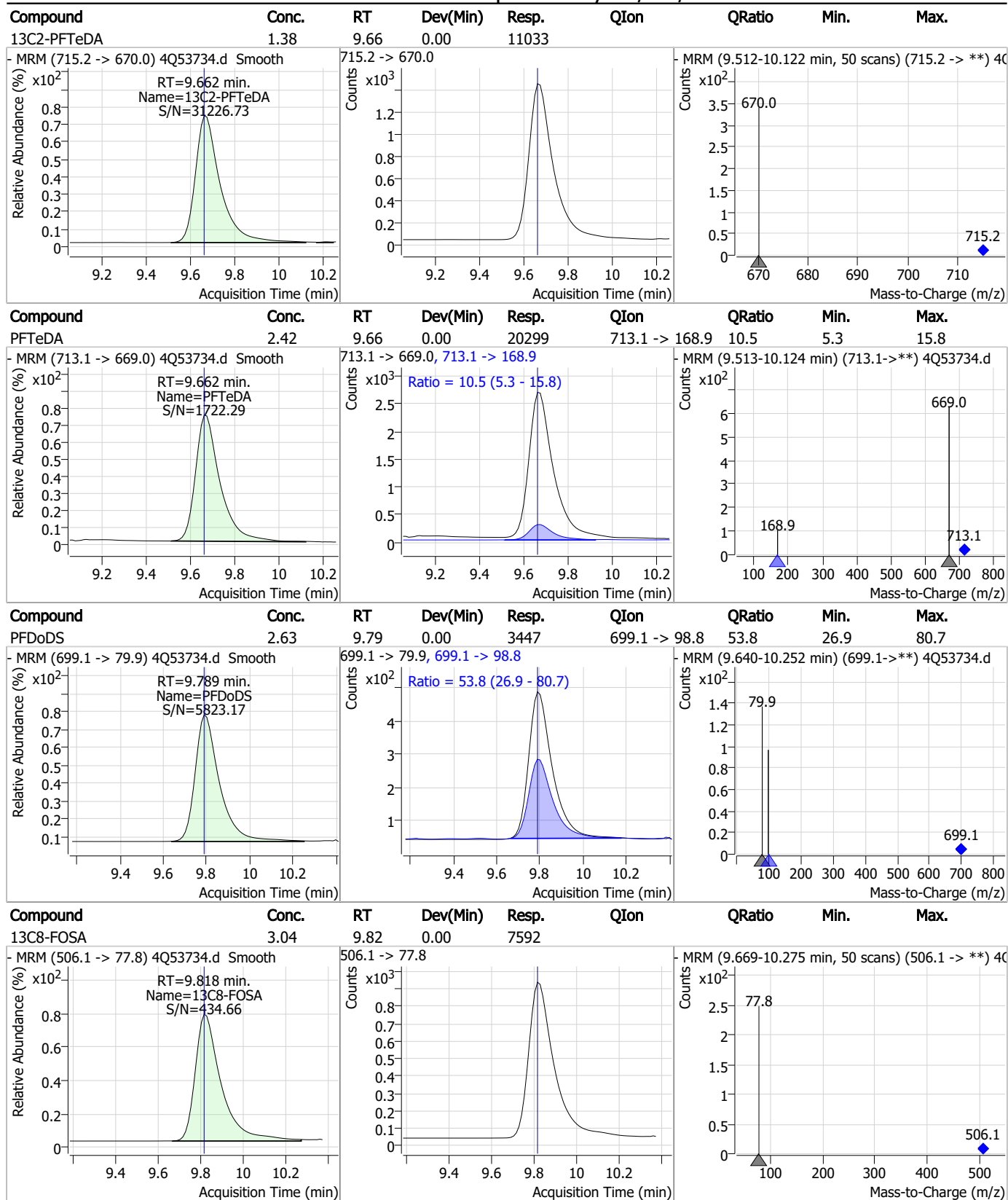


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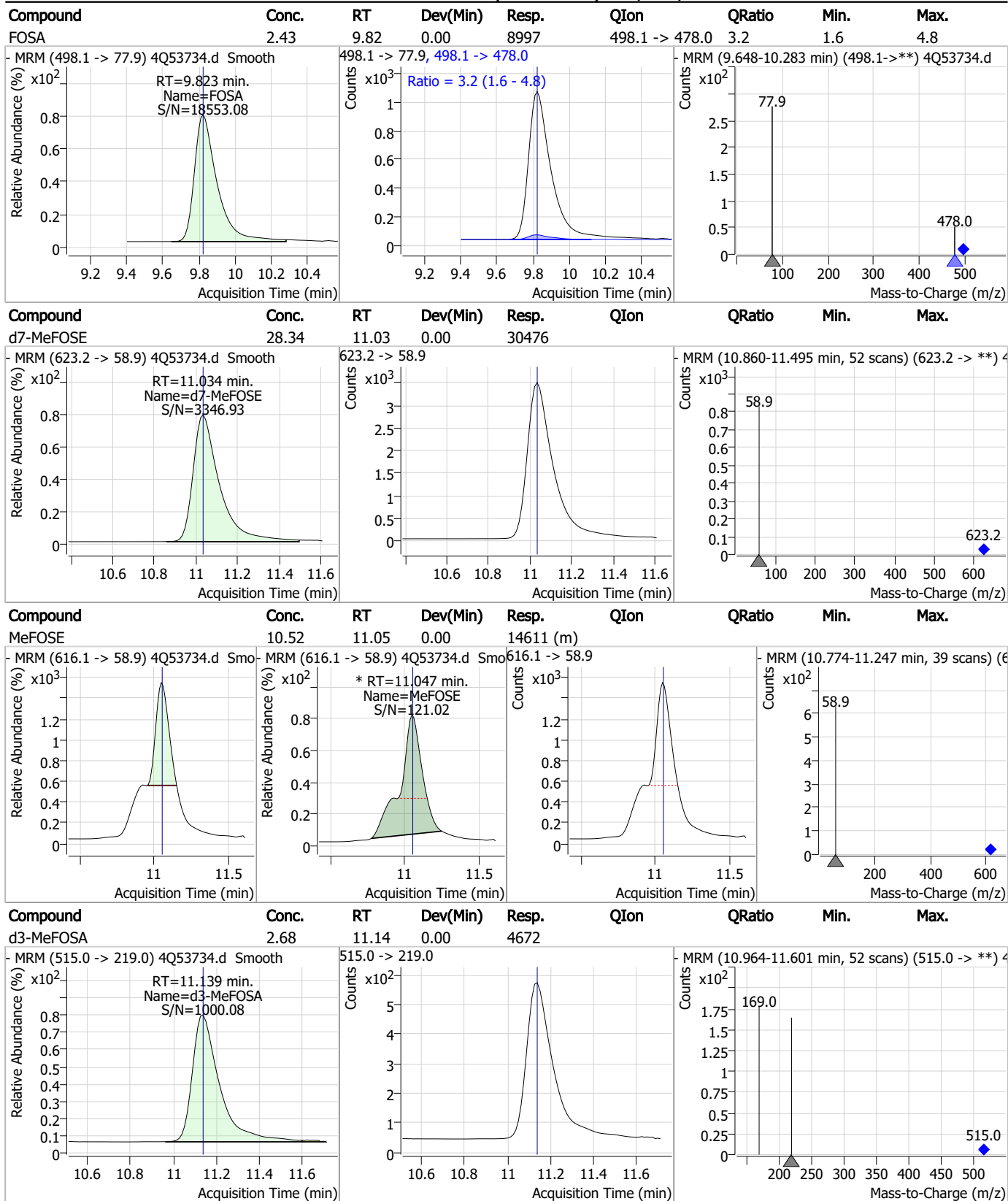


Perfluorinated Compounds by LC/MS/MS



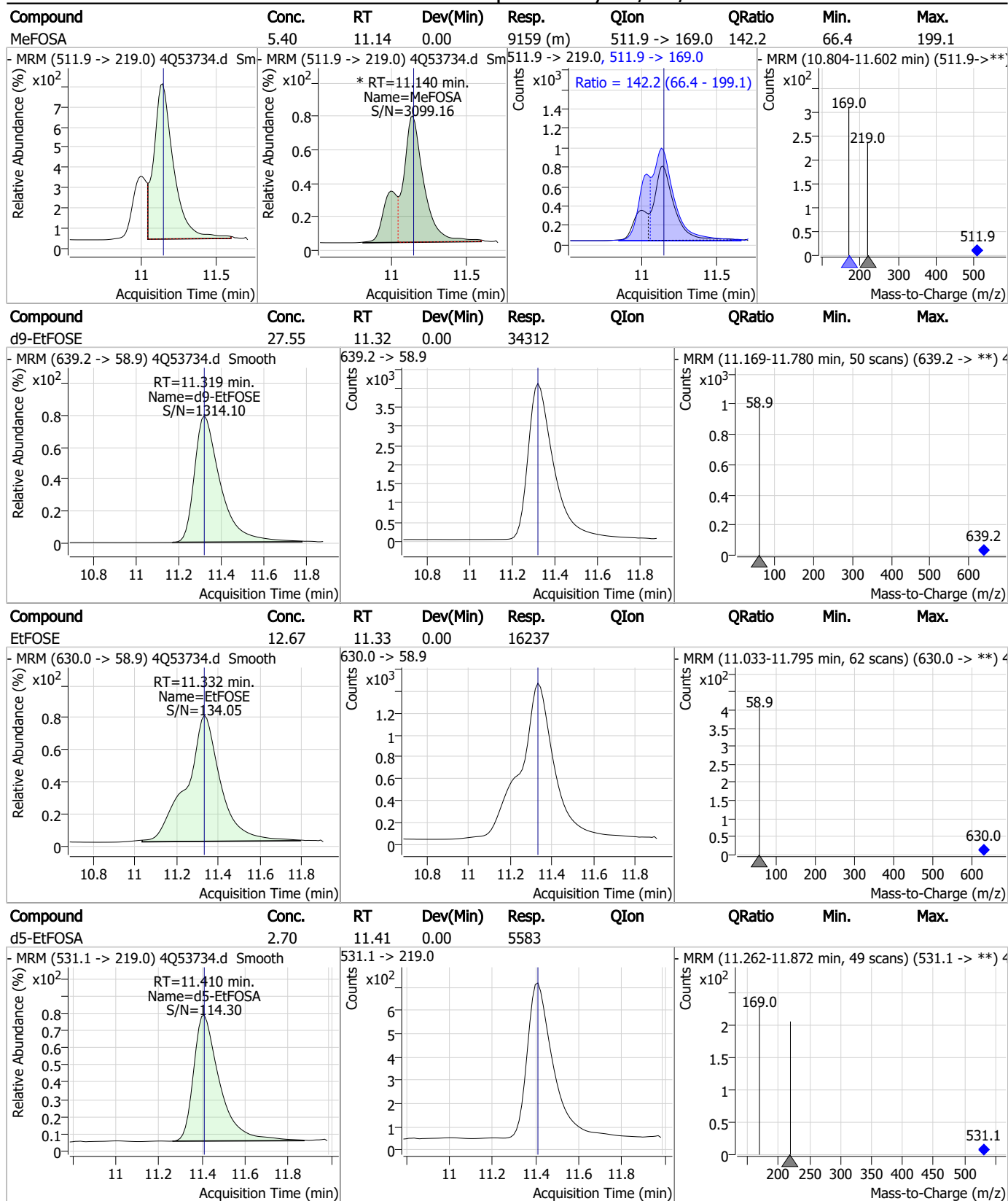
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Perfluorinated Compounds by LC/MS/MS



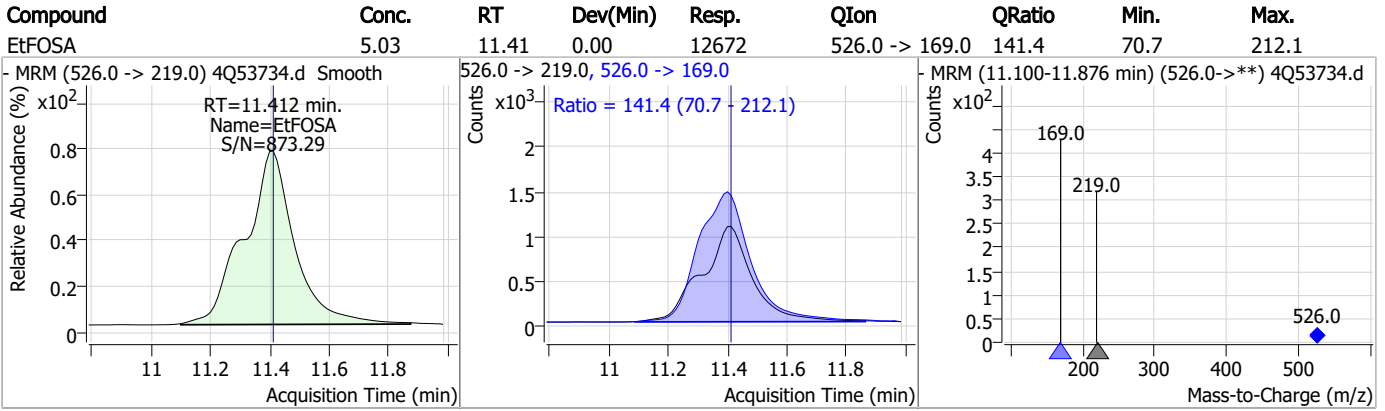
7.7.5
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Perfluorinated Compounds by LC/MS/MS



7.7.5
7

Perfluorinated Compounds by LC/MS/MS



7.7.5

7

Manual Integration Approval Summary

Sample Number: S4Q785-ICC785 Method: EPA DRAFT 1633
Lab FileID: 4Q53734.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 16:43 Supervisor approved: 11/14/23 15:48 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.05	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.14	Split peak
MeFOSE	24448-09-7		11.05	Split peak
MeFOA	31506-32-8		11.14	Split peak

7.7.5.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53735.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 4:58:34 PM
 Sample Name : ic785-5
 Vial : P1-A6
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.636	216.8 -> 171.9	92381	10.00 µg/L	-0.062
M5-PFPeA	4.125	268.3 -> 223.0	39544	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	29966	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	28498	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	32352	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	12908	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	9649	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	10343	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	11374	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	11453	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	7605	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	8489	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	7288	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7434	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	825	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1704	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2307	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	12802	5.00 µg/L	-0.012
M3-HFPO-DA	5.652	286.9 -> 168.9	27196	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	11101	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	32717	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	35806	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5897	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	5178	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6671	2.50 µg/L	-0.026
13C3-PFBA	2.641	216.0 -> 172.0	44146	5.00 µg/L	-0.062
18O2-PFHxS	7.016	403.0 -> 83.9	4638	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	35178	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	10179	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	14071	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	31690	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	825	5.20 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1704	5.10 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2307	4.89 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C2-PFDoDA	8.880	615.1 -> 570.0	11374	1.24 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C2-PFTeDA	9.649	715.2 -> 670.0	11453	1.24 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C3-PFBS	5.152	302.1 -> 79.9	8489	2.44 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C3-PFHxS	7.017	402.1 -> 79.9	7288	2.53 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C4-PFBA	2.636	216.8 -> 171.9	92381	10.04 µg/L	-0.062
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C4-PFHpA	6.267	367.1 -> 322.0	28498	2.58 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C5-PFHxA	5.297	318.0 -> 273.0	29966	2.54 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C5-PFPeA	4.125	268.3 -> 223.0	39544	5.12 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C6-PFDA	7.992	519.1 -> 474.1	9649	1.29 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C7-PFUnDA	8.448	570.0 -> 525.1	10343	1.19 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.6%		
13C8-FOSA	9.794	506.1 -> 77.8	7605	2.39 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.4%		
13C8-PFOA	6.964	421.1 -> 376.0	32352	2.58 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C8-PFOS	8.117	507.1 -> 79.9	7434	2.33 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.4%		
13C9-PFNA	7.509	472.1 -> 427.0	12908	1.16 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.1%		
d3-MeFOSAA	8.086	573.2 -> 419.0	12802	5.06 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C3-HFPO-DA	5.652	286.9 -> 168.9	27196	10.08 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.8%		
d3-MeFOSA	11.126	515.0 -> 219.0	5178	2.33 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.1%		
d5-EtFOSAA	8.283	589.2 -> 419.0	11101	5.01 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.2%		
d7-MeFOSE	11.034	623.2 -> 58.9	32717	23.81 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 95.2%		
d9-EtFOSE	11.319	639.2 -> 58.9	35806	22.50 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 90.0%		
d5-EtFOSA	11.397	531.1 -> 219.0	5897	2.23 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 89.3%		
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	31500	19.31 µg/L	100
		327.1 -> 80.9	13210		
6:2FTS	6.737	427.1 -> 407.0	37453	20.31 µg/L	97
		427.1 -> 80.9	13765		
8:2FTS	7.804	527.1 -> 507.0	28152	22.44 µg/L	99
		527.1 -> 80.8	11556		
EtFOSAA	8.297	584.2 -> 419.1	10090	5.08 µg/L	84
		584.2 -> 526.0	4052		
FOSA	9.798	498.1 -> 77.9	19973	5.39 µg/L	100
		498.1 -> 478.0	615		
MeFOSAA	8.087	570.1 -> 419.0	11546	5.07 µg/L	100
		570.1 -> 483.0	2092		
PFBA	2.645	212.8 -> 168.9	72922	21.71 µg/L	100
PFBS	5.153	298.7 -> 79.9	14240	4.73 µg/L	100
		298.7 -> 98.8	5494		
PFDA	7.992	512.9 -> 469.0	39865	5.05 µg/L	100
		512.9 -> 219.0	7975		
PFDODA	8.880	613.1 -> 569.0	50514	5.45 µg/L	98
		613.1 -> 319.0	9004		
PFDS	9.020	599.0 -> 79.9	10268	5.34 µg/L	97

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	5025			
PFHpA	6.268	363.1 -> 319.0	94005	5.26	µg/L	98
		363.1 -> 169.0	17236			
PFHpS	7.612	449.0 -> 79.9	15362	5.23	µg/L	99
		449.0 -> 98.9	7970			
PFHxA	5.300	313.0 -> 269.0	55393	5.29	µg/L	99
		313.0 -> 118.9	1764			
PFHxS	7.018	398.7 -> 79.9	10633	4.84	µg/L	m 85
		398.7 -> 98.9	5628			
PFNA	7.510	463.0 -> 419.0	46939	5.70	µg/L	98
		463.0 -> 219.0	11458			
PFNS	8.586	548.8 -> 79.9	7468	5.26	µg/L	99
		548.8 -> 98.9	3848			
PFOA	6.965	413.0 -> 369.0	79562	5.08	µg/L	100
		413.0 -> 169.0	16343			
PFOS	8.119	498.9 -> 79.9	17317	5.13	µg/L	m 81
		498.9 -> 98.8	8277			
PFPeA	4.127	263.0 -> 219.0	91562	10.64	µg/L	100
PFPeS	6.257	349.1 -> 79.9	11617	4.85	µg/L	97
		349.1 -> 98.9	5262			
PFTeDA	9.650	713.1 -> 669.0	48403	5.57	µg/L	98
		713.1 -> 168.9	4654			
PFTrDA	9.279	663.0 -> 619.0	58338	5.78	µg/L	99
		663.0 -> 168.9	7924			
PFUnDA	8.449	563.1 -> 519.0	50970	6.03	µg/L	98
		563.1 -> 269.1	10440			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	88721	10.45	µg/L	99
		632.9 -> 452.9	27152			
9Cl-PF3ONS	8.451	530.8 -> 351.0	88631	10.34	µg/L	99
		532.8 -> 353.0	26729			
ADONA	6.531	376.9 -> 250.9	225779	12.00	µg/L	100
		376.9 -> 84.8	56105			
HFPO-DA	5.653	284.9 -> 168.9	30687	10.65	µg/L	97
		284.9 -> 184.9	3219			
3:3FTCA	3.573	241.0 -> 177.0	13444	25.69	µg/L	99
		241.0 -> 117.0	1195			
5:3FTCA	5.983	341.0 -> 237.1	250328	135.88	µg/L	97
		341.0 -> 217.0	176690			
7:3FTCA	7.536	441.0 -> 316.9	112745	136.42	µg/L	94
		441.0 -> 336.9	263832			
EtFOSA	11.399	526.0 -> 219.0	30569	11.49	µg/L	97
		526.0 -> 169.0	41926			
EtFOSE	11.332	630.0 -> 58.9	36440	27.24	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	20525	10.92	µg/L	m 86
		511.9 -> 169.0	30555			
MeFOSE	11.047	616.1 -> 58.9	41853	28.08	µg/L	m 100
PFDoDS	9.777	699.1 -> 79.9	8060	5.31	µg/L	97
		699.1 -> 98.8	4493			
NFDHA	5.179	295.0 -> 201.0	7808	11.30	µg/L	94
		295.0 -> 84.9	2070			
PFMBA	4.529	279.0 -> 85.1	52874	10.67	µg/L	100
PFMPA	3.265	229.0 -> 84.9	59196	10.74	µg/L	100
PFEESA	5.684	314.8 -> 134.9	80648	9.73	µg/L	98
		314.8 -> 82.9	2770			

= Qualifier out of range, m = manually integrated, + = Area summed

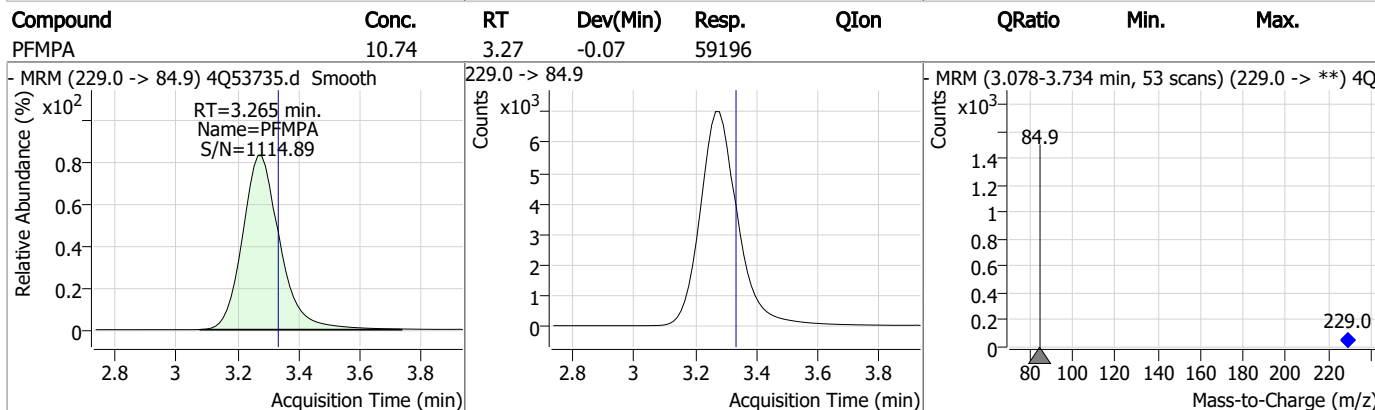
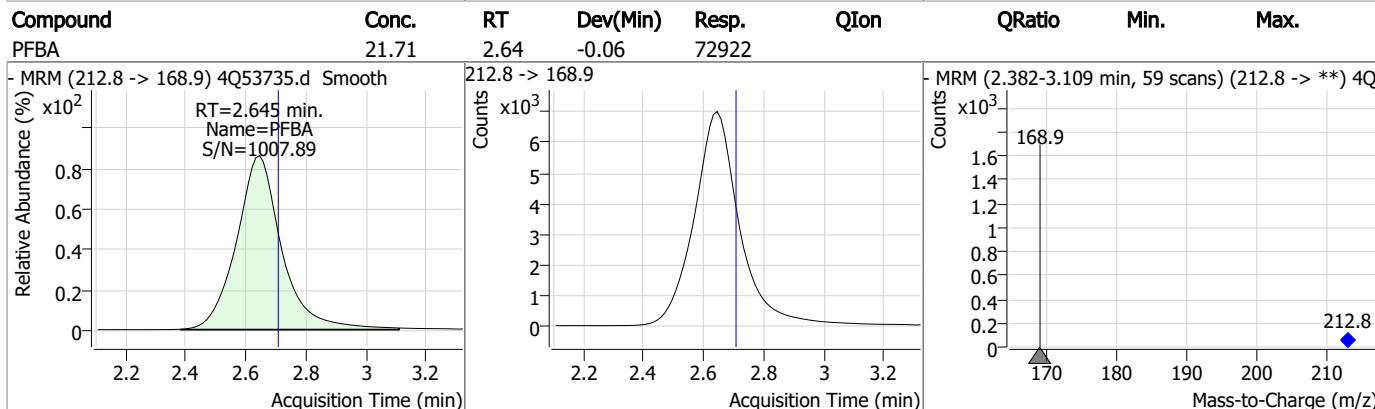
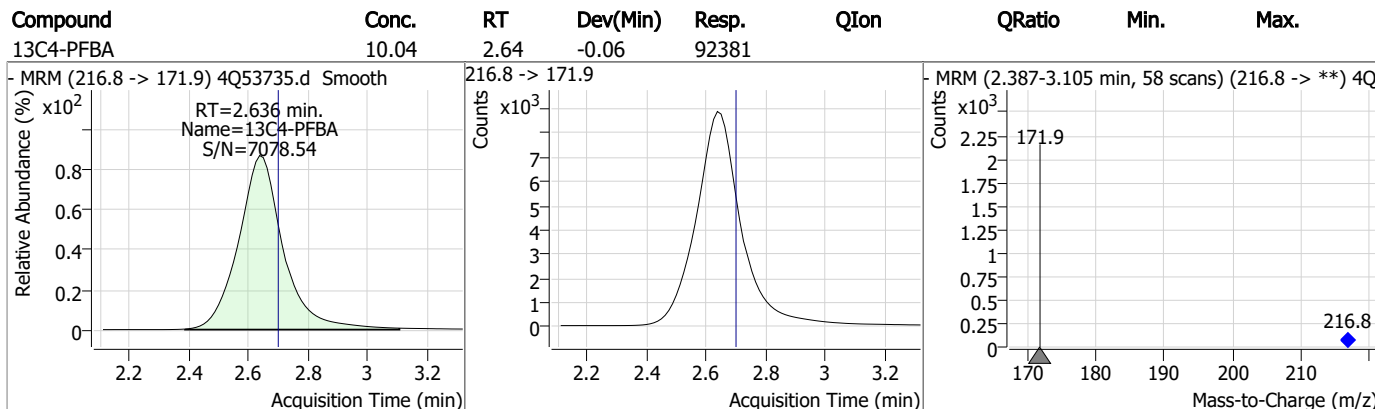
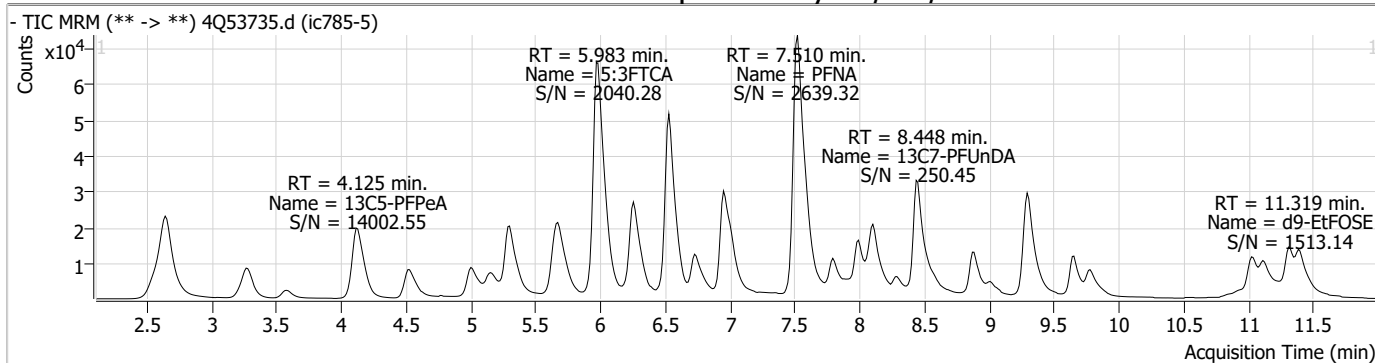
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.6

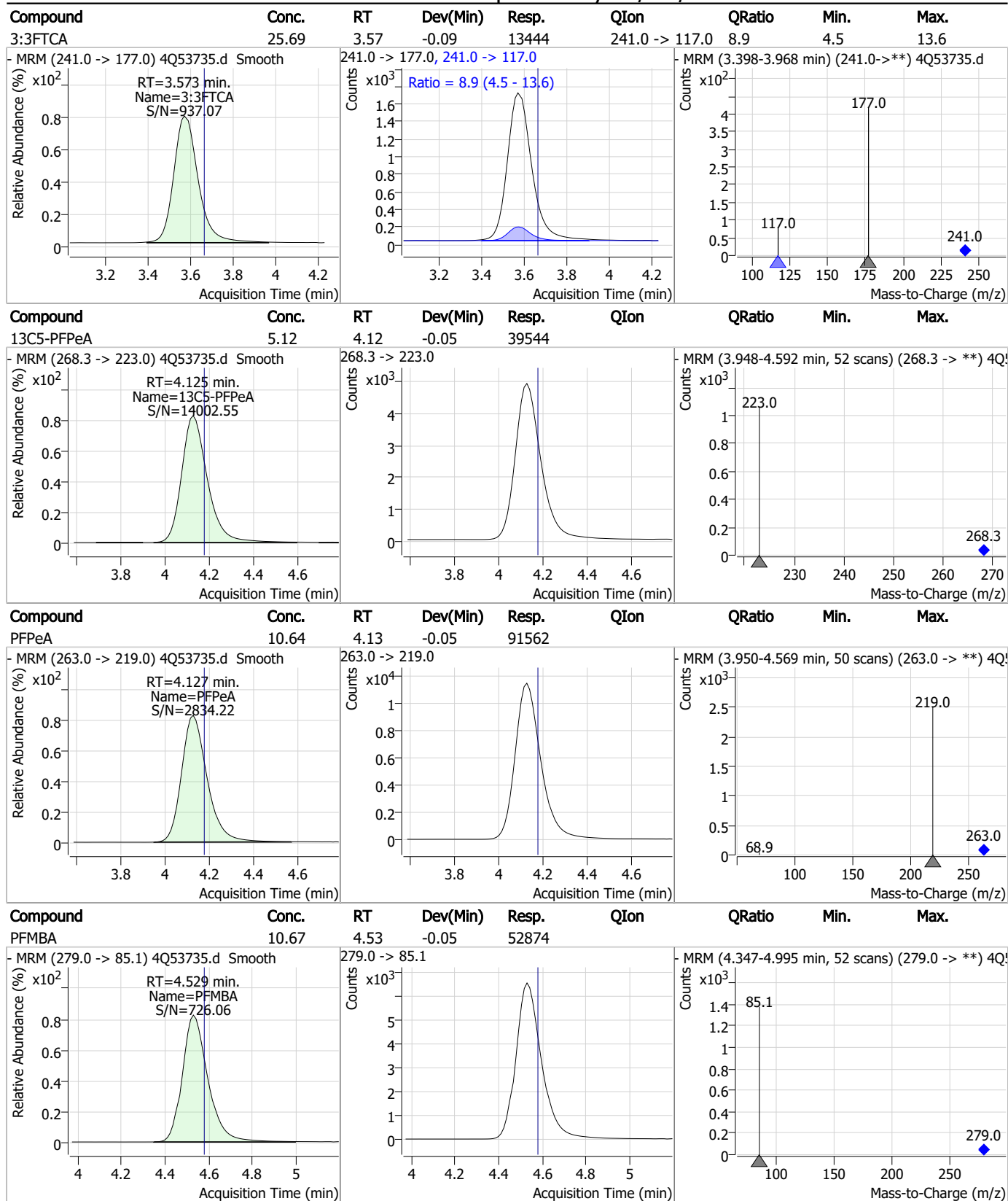
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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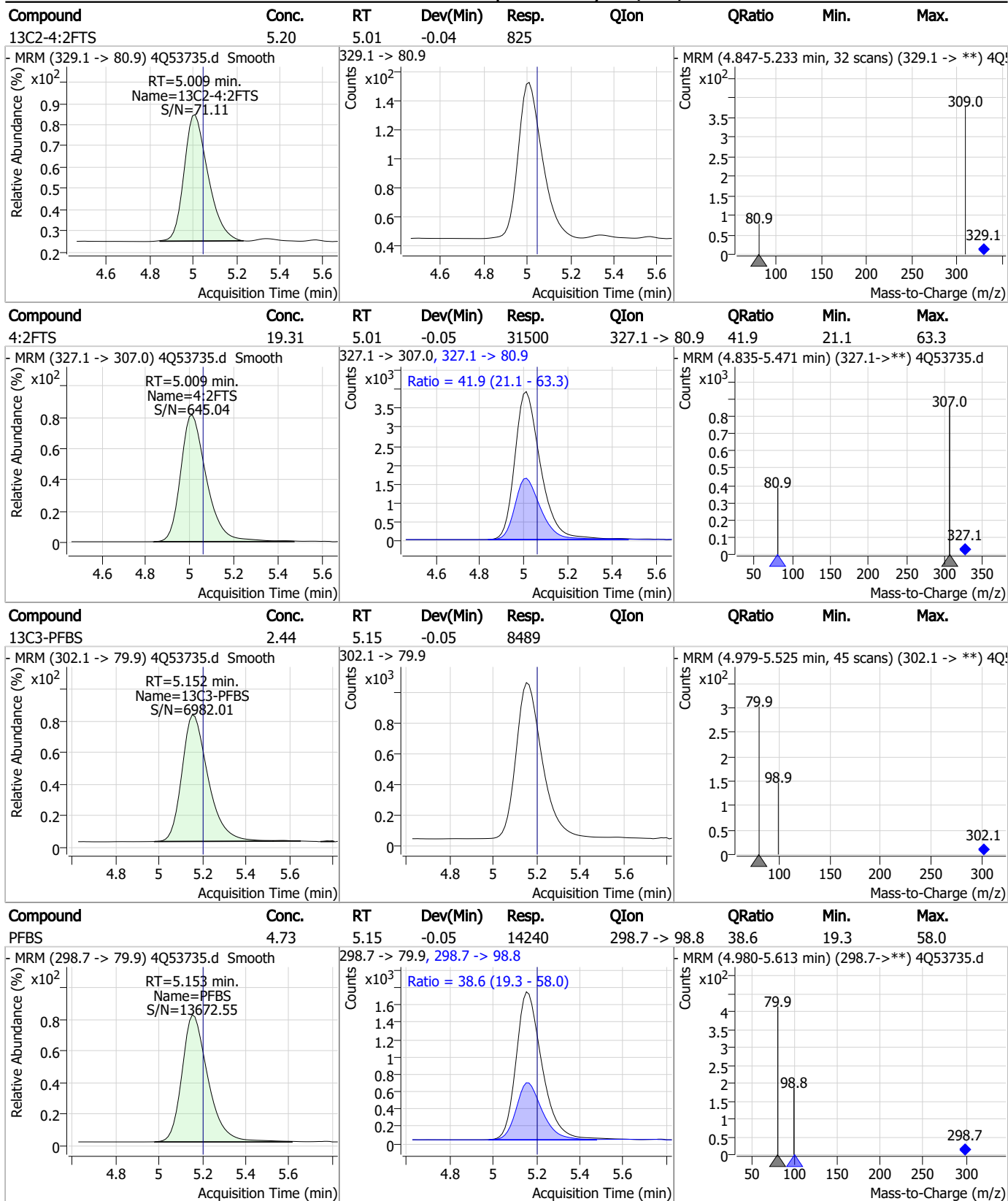
Perfluorinated Compounds by LC/MS/MS



7.7.6

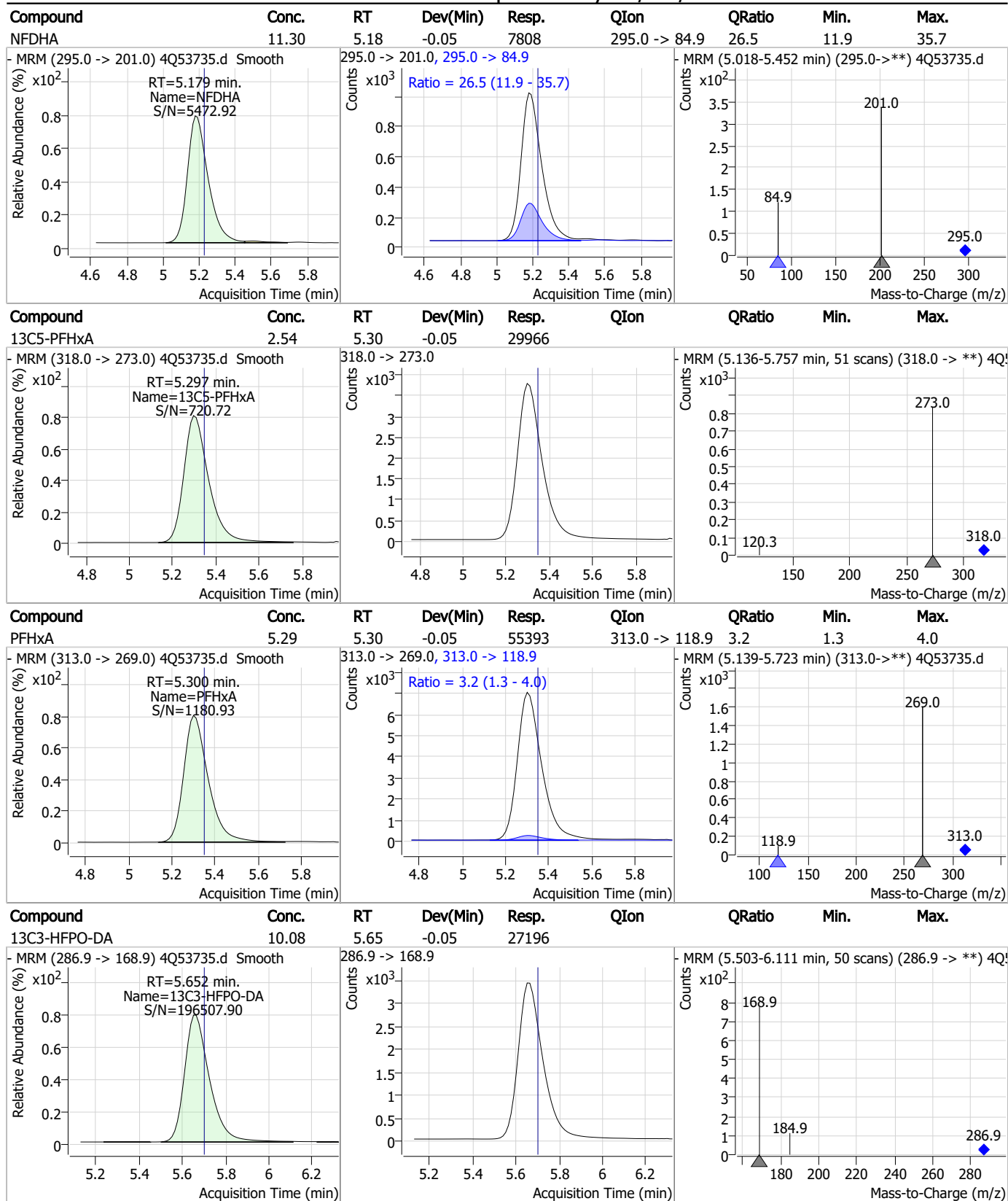
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Perfluorinated Compounds by LC/MS/MS



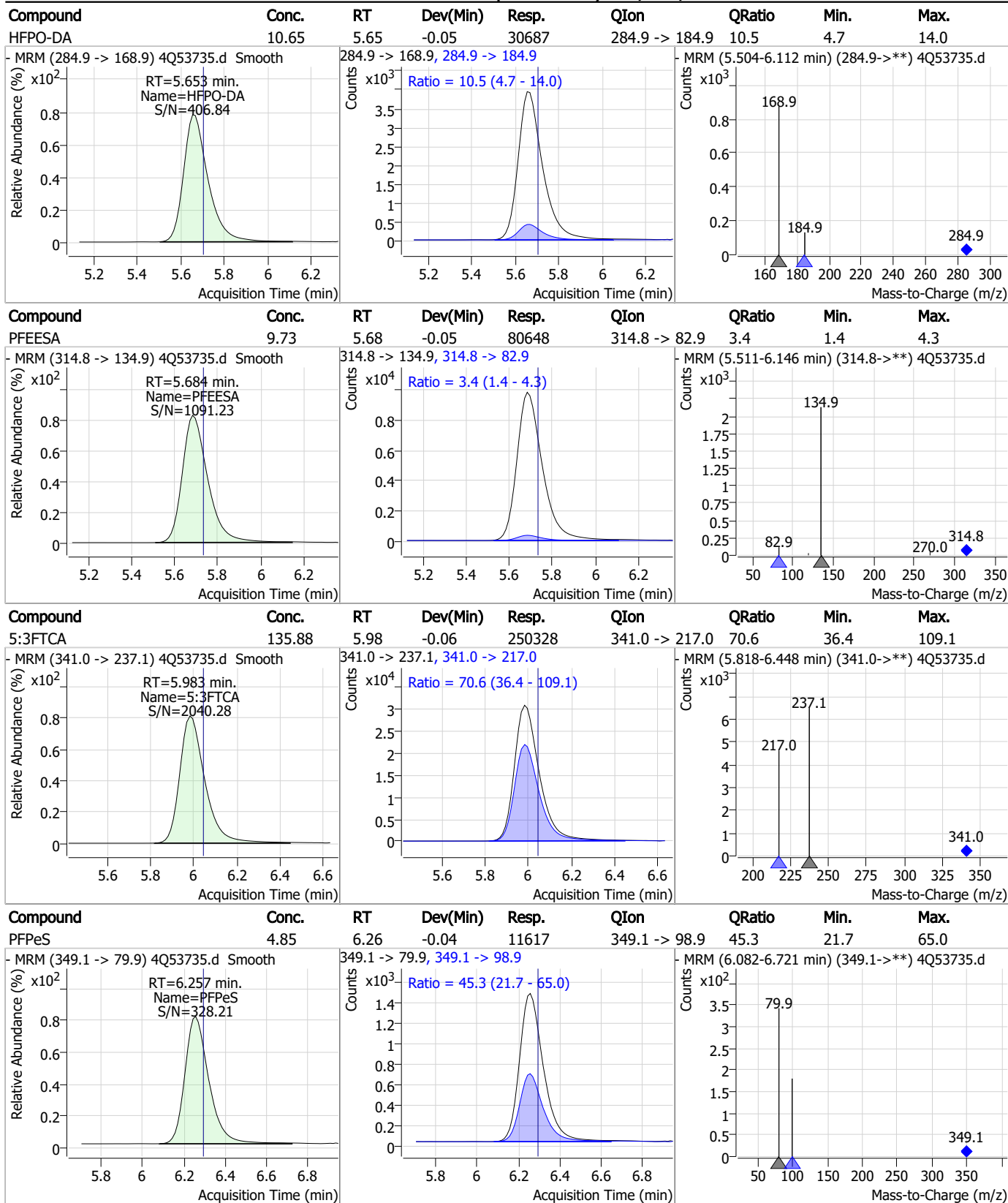
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Perfluorinated Compounds by LC/MS/MS



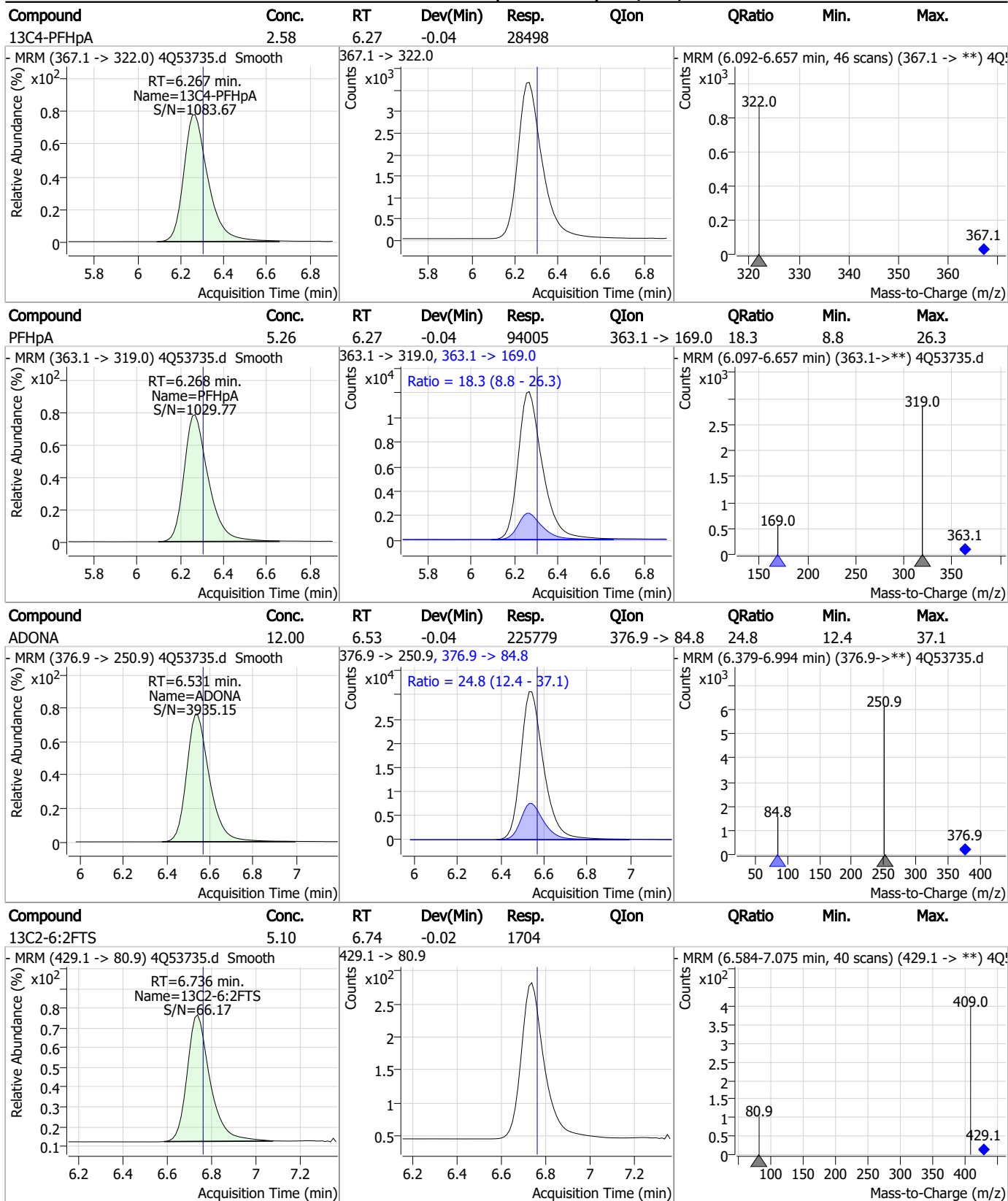
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Perfluorinated Compounds by LC/MS/MS



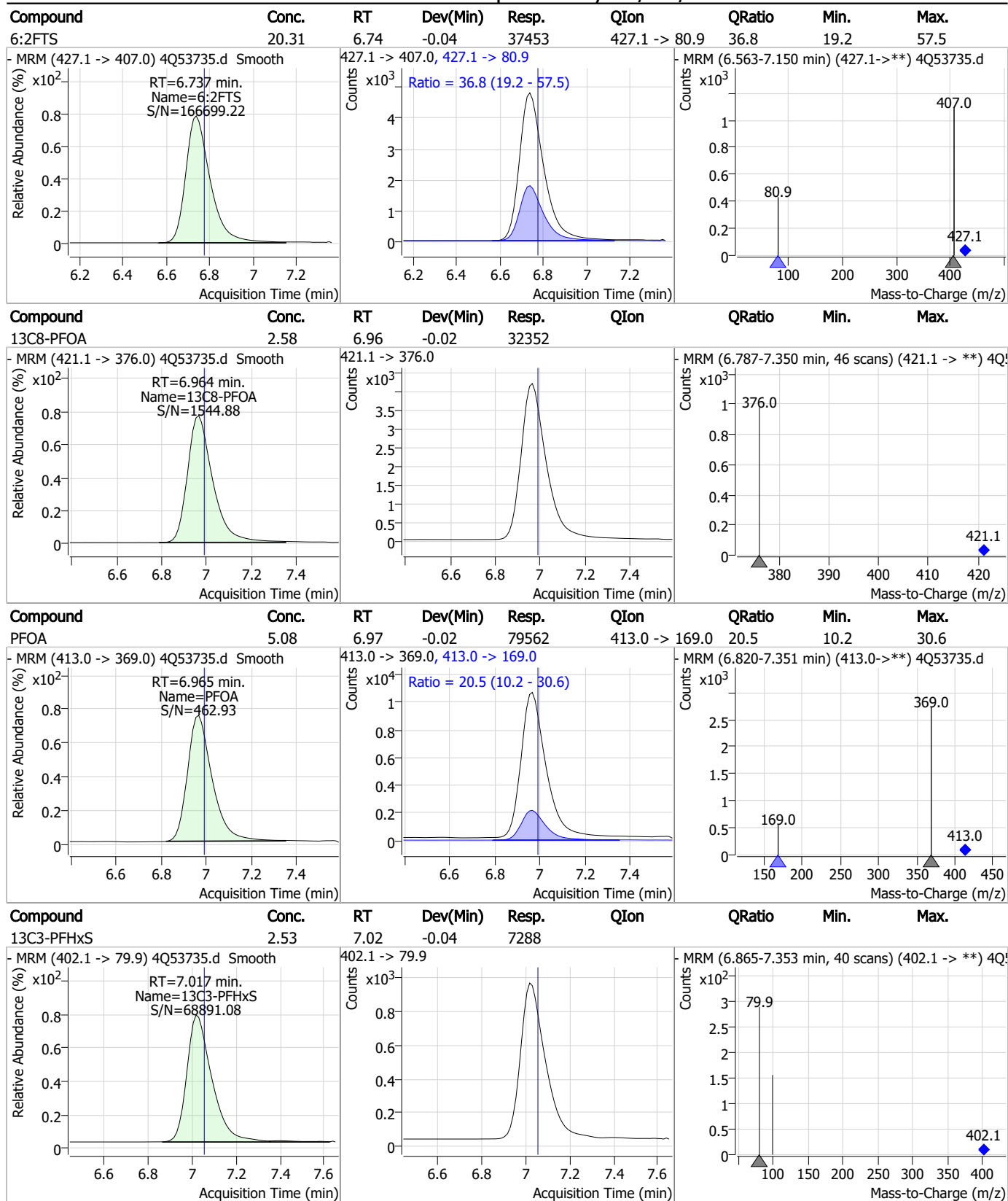
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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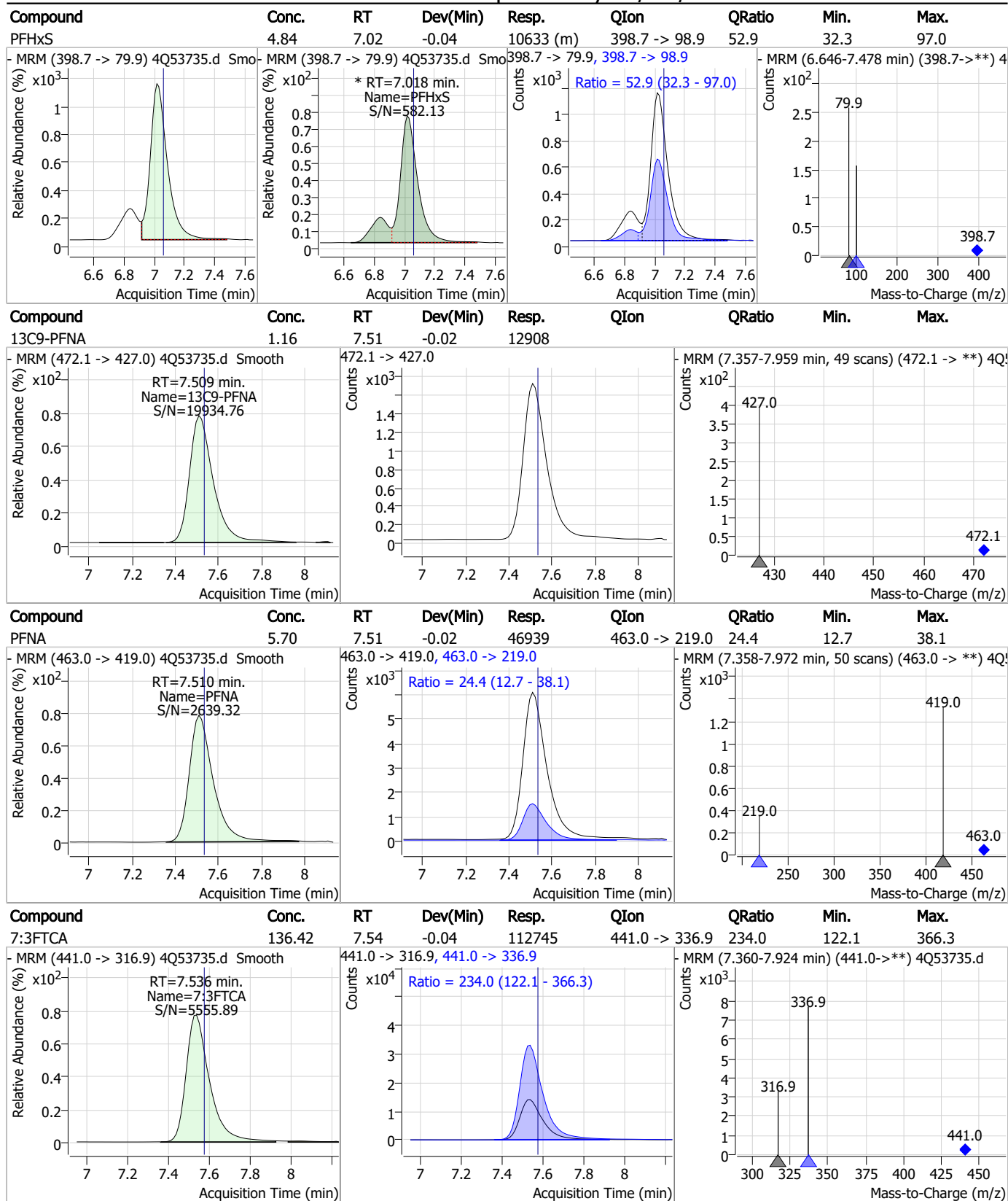
Perfluorinated Compounds by LC/MS/MS



7.7.6

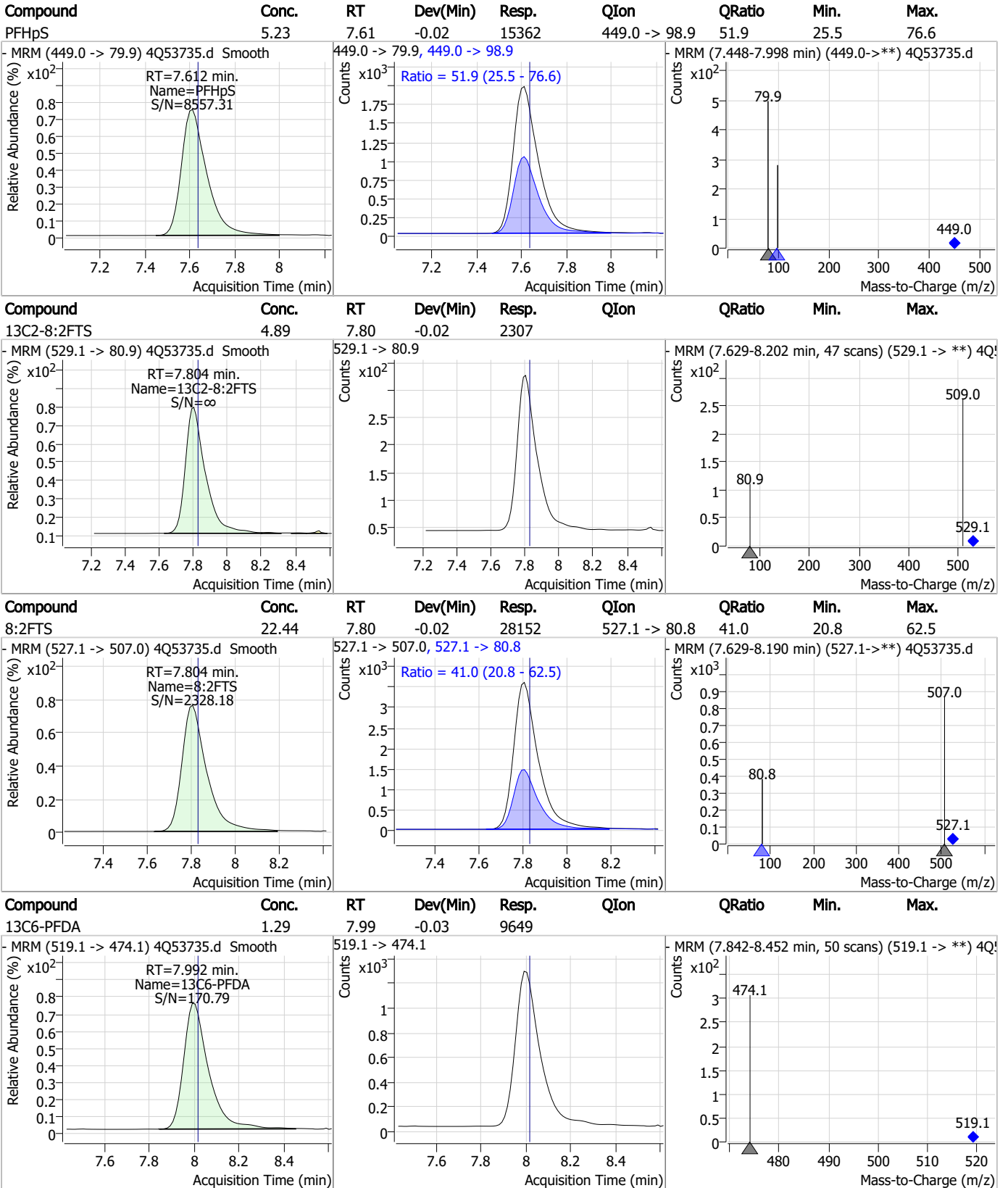
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Perfluorinated Compounds by LC/MS/MS



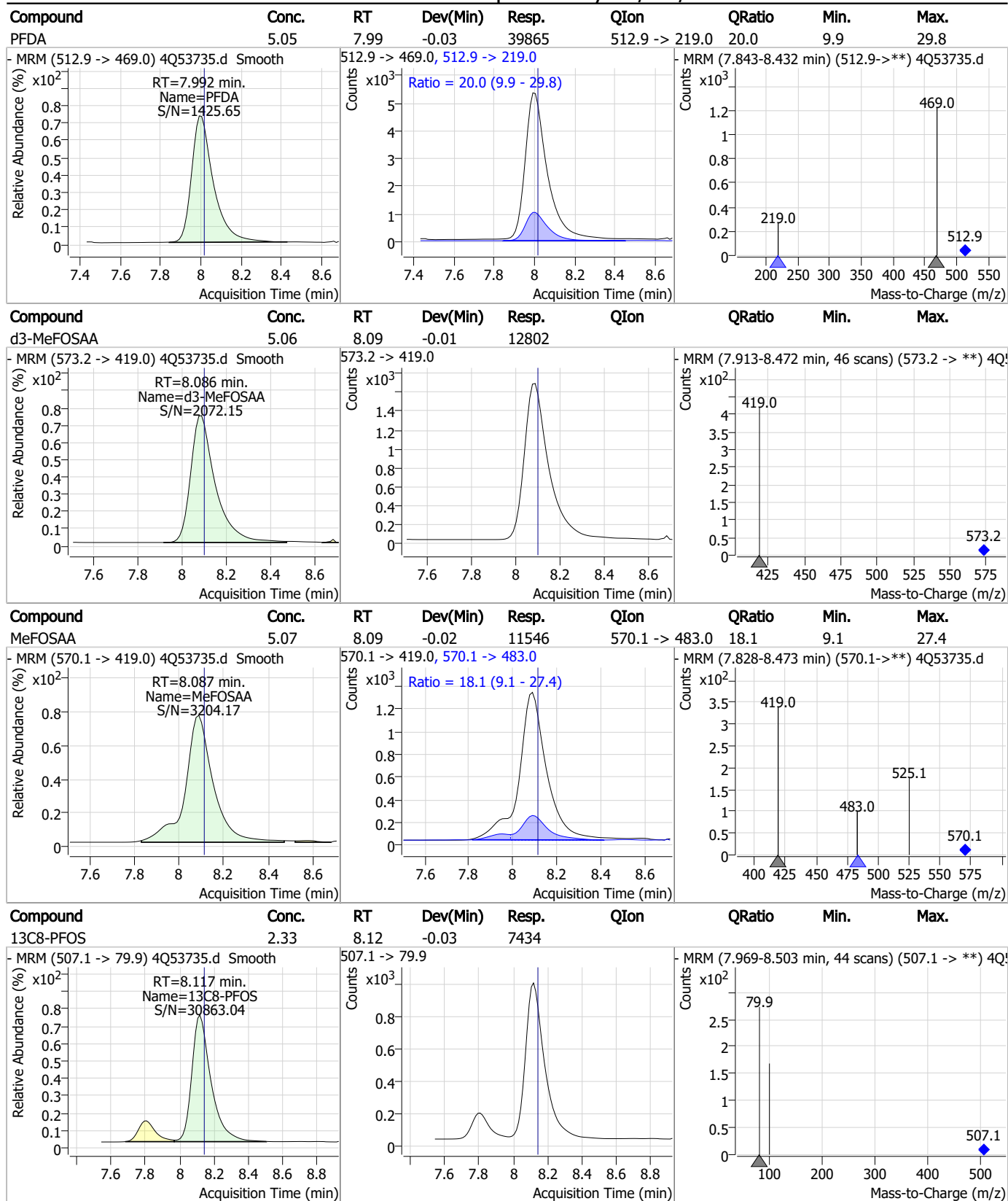
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Perfluorinated Compounds by LC/MS/MS



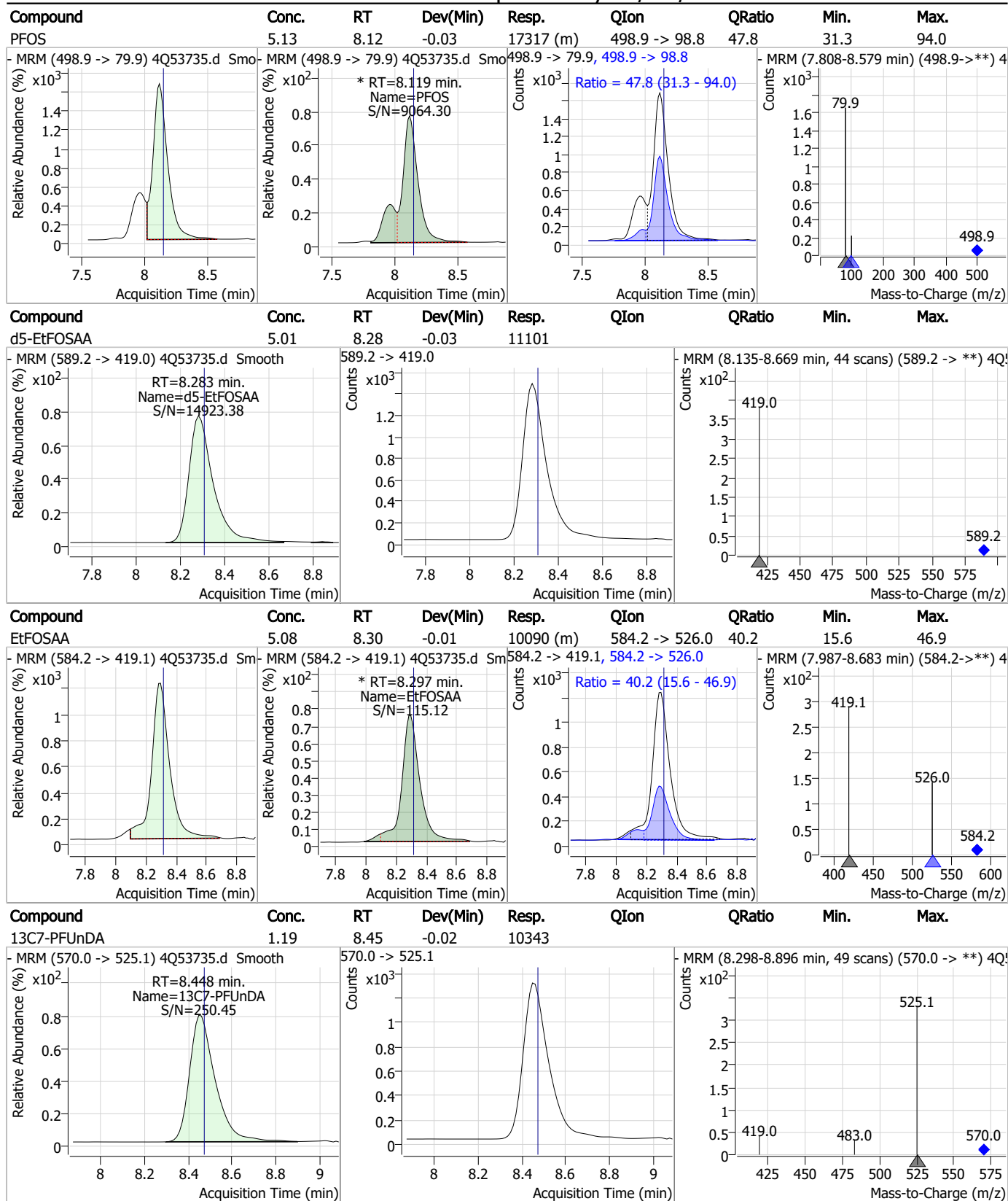
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Perfluorinated Compounds by LC/MS/MS



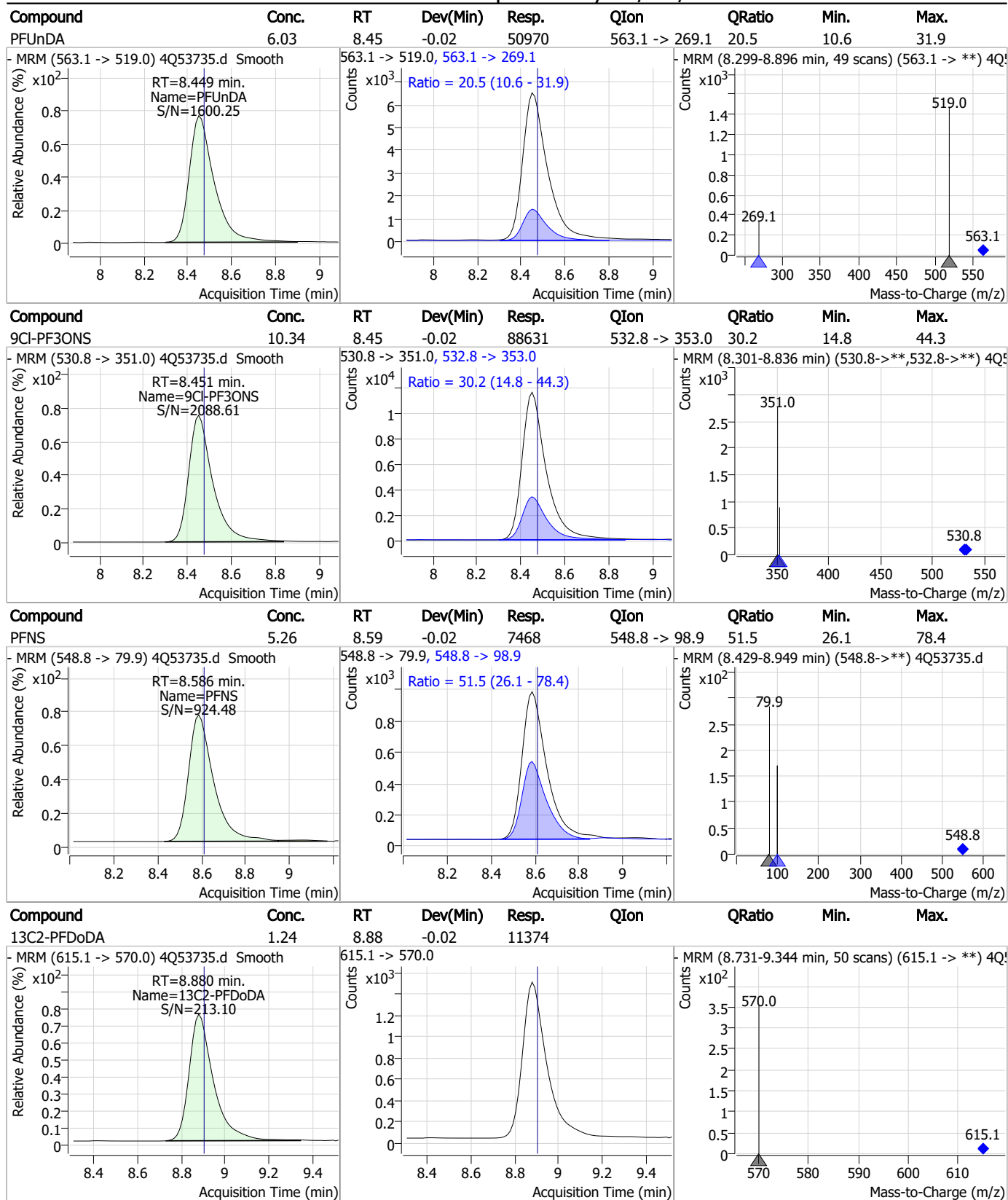
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Perfluorinated Compounds by LC/MS/MS



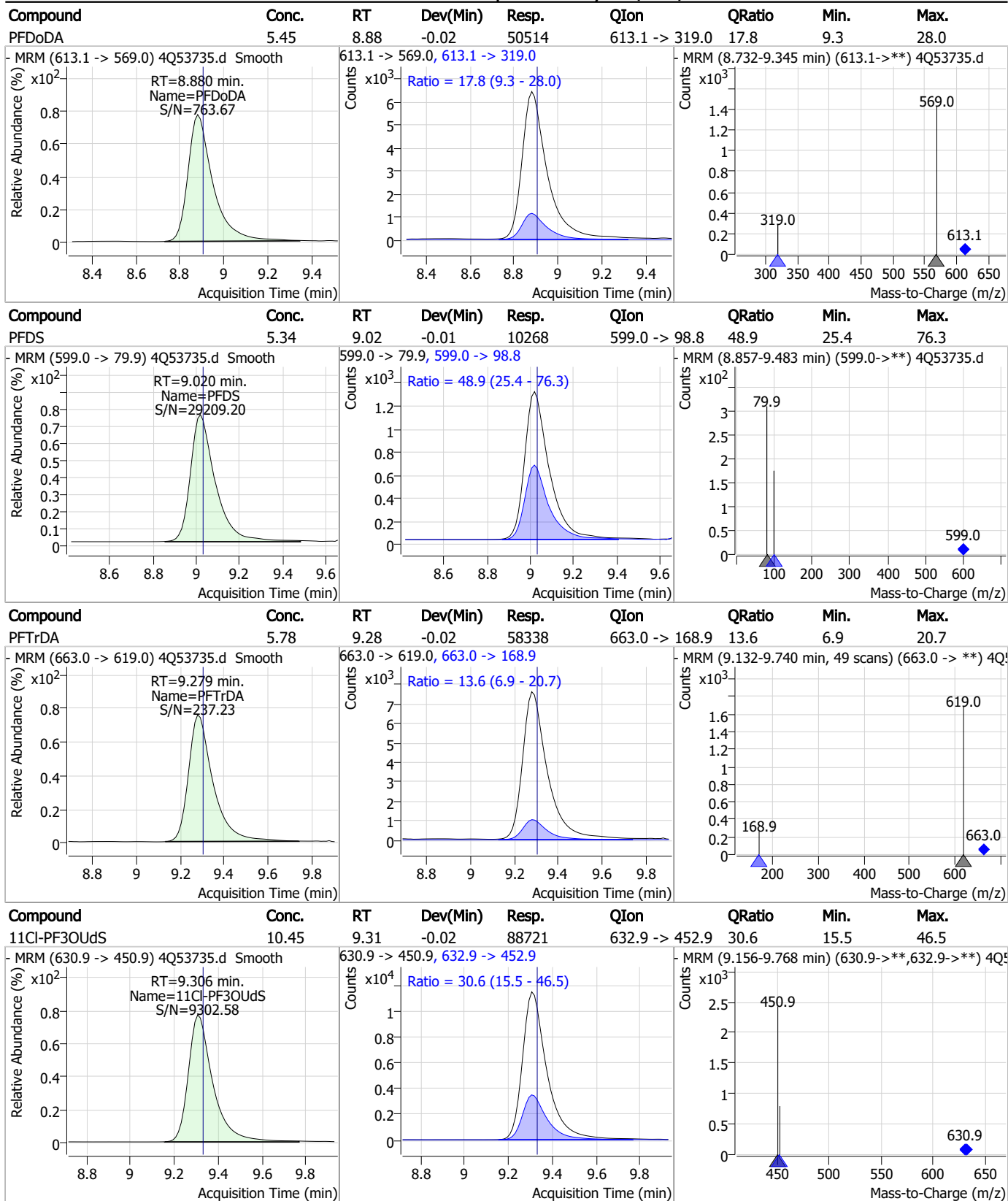
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Perfluorinated Compounds by LC/MS/MS



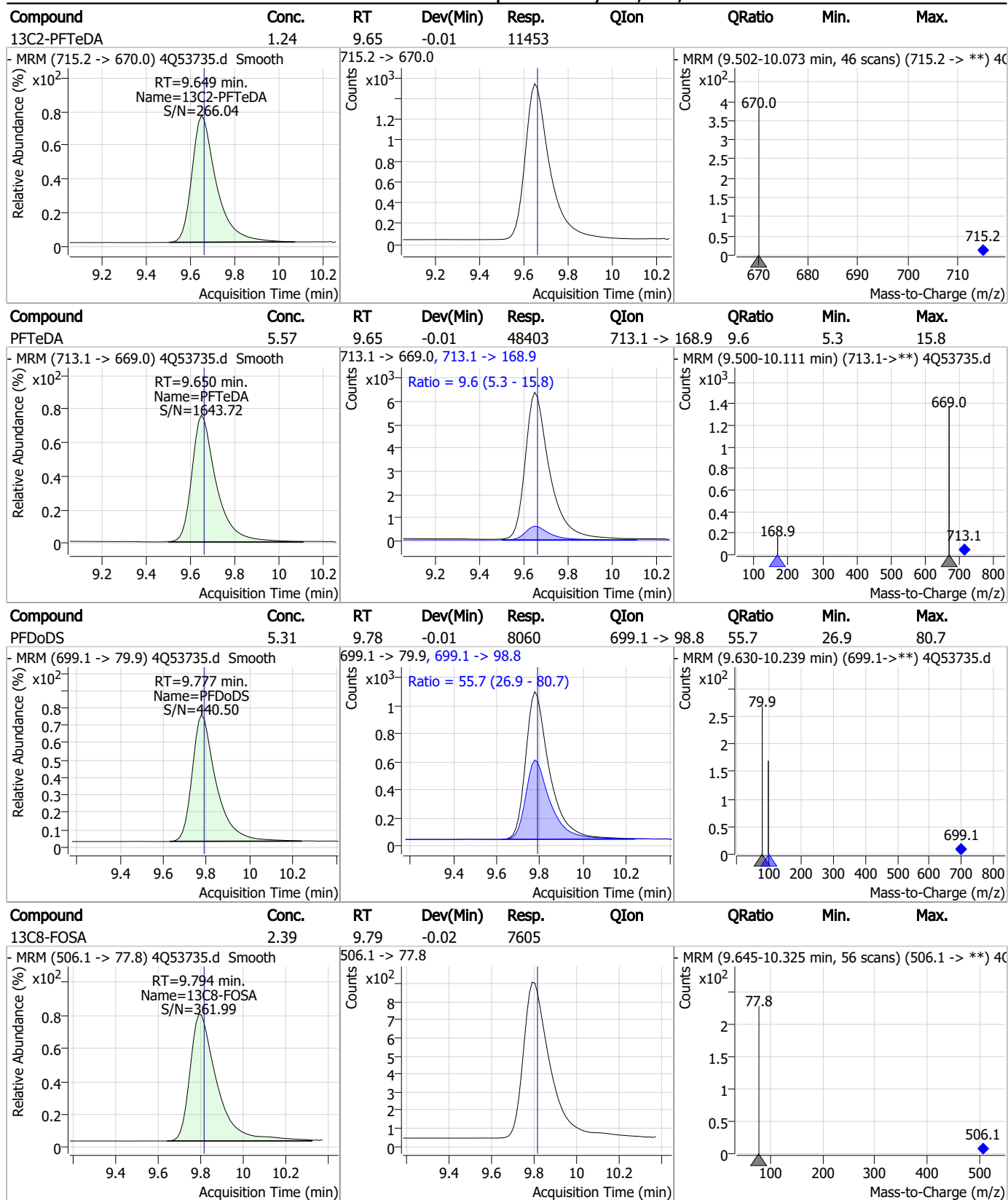
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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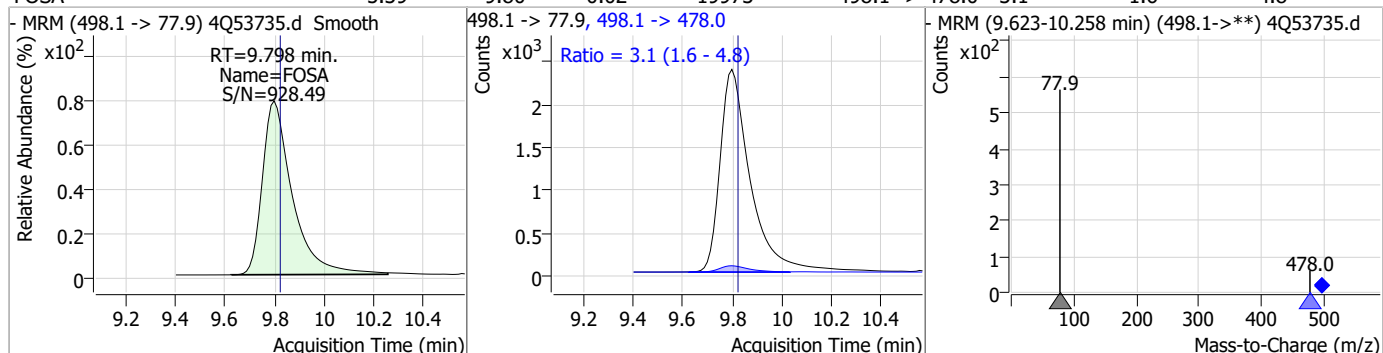
Perfluorinated Compounds by LC/MS/MS



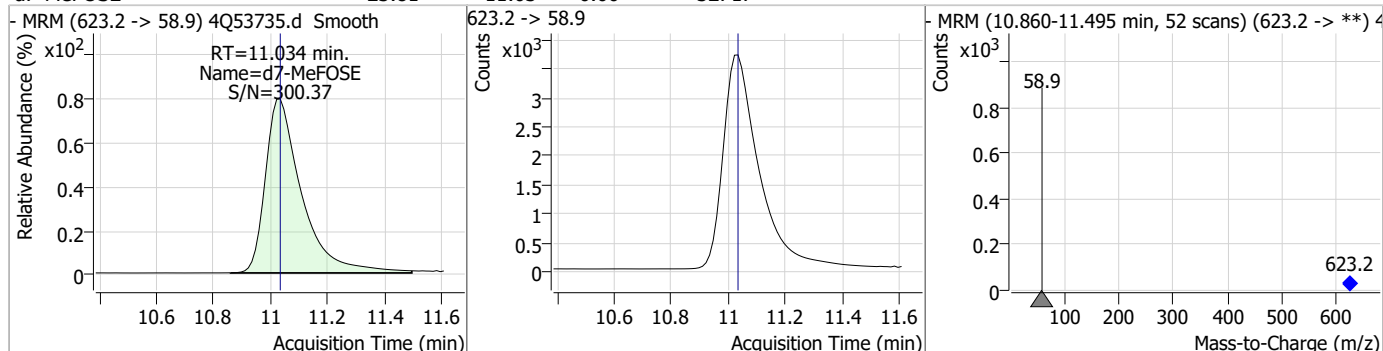
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Perfluorinated Compounds by LC/MS/MS

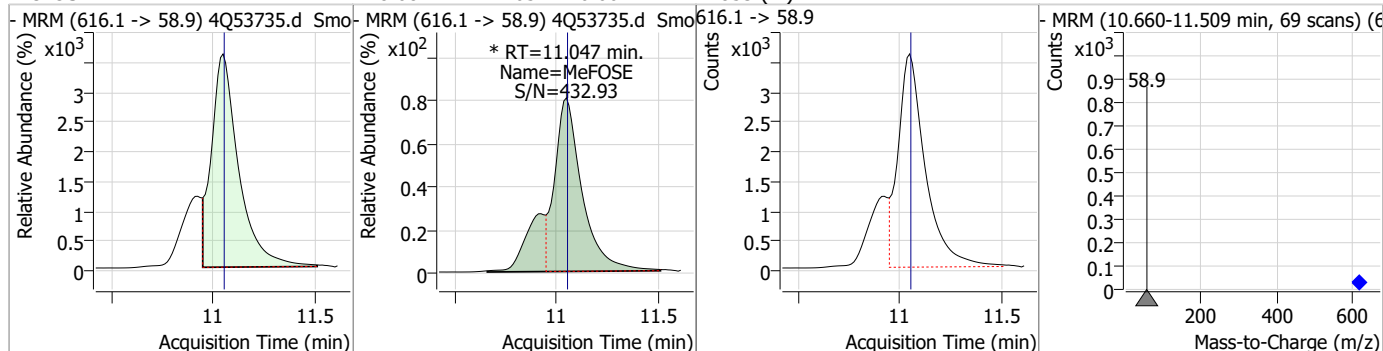
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	5.39	9.80	-0.02	19973	498.1 -> 478.0	3.1	1.6	4.8



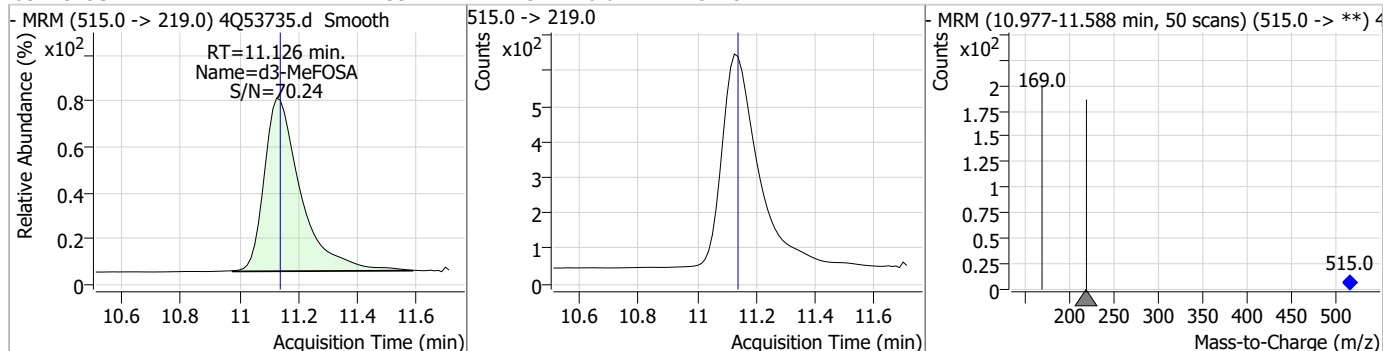
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.81	11.03	0.00	32717				



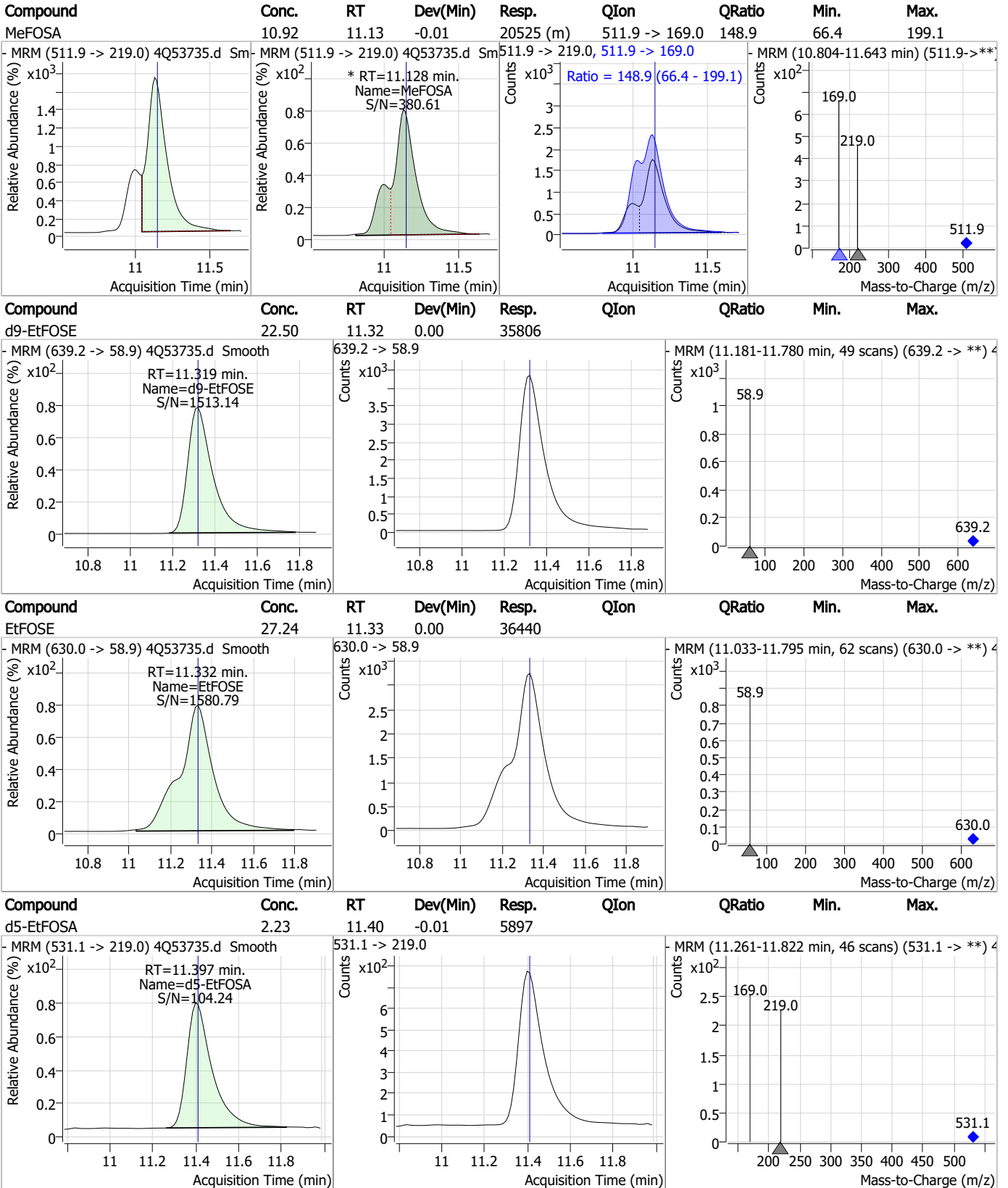
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	28.08	11.05	0.00	41853 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.33	11.13	-0.01	5178				

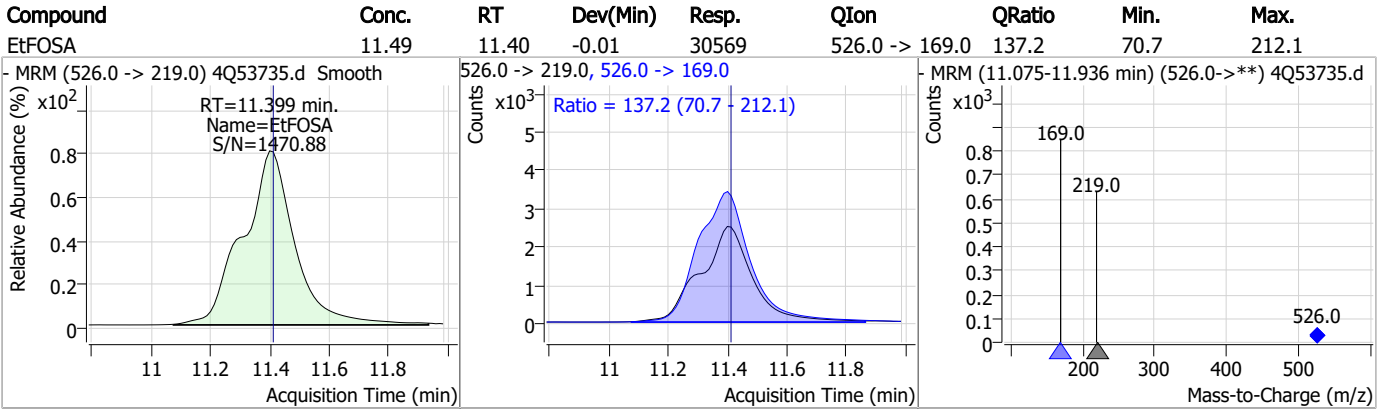


Perfluorinated Compounds by LC/MS/MS



7.7.6
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Perfluorinated Compounds by LC/MS/MS



7.7.6

7

Manual Integration Approval Summary

Sample Number: S4Q785-IC785 Method: EPA DRAFT 1633
Lab FileID: 4Q53735.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 16:58 Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
MeFOSE	24448-09-7		11.05	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.6.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53736.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 5:13:19 PM
 Sample Name : ic785-6
 Vial : P1-A7
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	101423	10.00 µg/L	-0.075
M5-PFPeA	4.112	268.3 -> 223.0	44264	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	35040	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	33077	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	37726	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	17045	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	12122	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	13587	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	14949	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	13781	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	8881	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	9874	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	8463	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	9931	2.50 µg/L	-0.026
M2-4:2FTS	4.996	329.1 -> 80.9	944	5.00 µg/L	-0.050
M2-6:2FTS	6.736	429.1 -> 80.9	2074	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	3279	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	14049	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	32031	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	13039	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	38218	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	45896	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	7680	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	6280	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	7722	2.50 µg/L	-0.026
13C3-PFBA	2.616	216.0 -> 172.0	48228	5.00 µg/L	-0.087
18O2-PFHxS	7.016	403.0 -> 83.9	5491	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	43226	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	13115	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	17090	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	38220	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	944	5.02 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C2-6:2FTS	6.736	429.1 -> 80.9	2074	5.24 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.8%		
13C2-8:2FTS	7.804	529.1 -> 80.9	3279	5.87 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.5%		
13C2-PFDoDA	8.880	615.1 -> 570.0	14949	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C2-PFTeDA	9.649	715.2 -> 670.0	13781	1.16 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.6%		
13C3-PFBS	5.152	302.1 -> 79.9	9874	2.40 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C3-PFHxS	7.017	402.1 -> 79.9	8463	2.49 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C4-PFBA	2.624	216.8 -> 171.9	101423	10.09 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C4-PFHpA	6.267	367.1 -> 322.0	33077	2.48 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C5-PFHxA	5.297	318.0 -> 273.0	35040	2.46 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C5-PFPeA	4.112	268.3 -> 223.0	44264	4.75 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.0%	
13C6-PFDA	8.004	519.1 -> 474.1	12122	1.26 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C7-PFUnDA	8.448	570.0 -> 525.1	13587	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.5%	
13C8-FOSA	9.794	506.1 -> 77.8	8881	2.41 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.2%	
13C8-PFOA	6.964	421.1 -> 376.0	37726	2.44 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C8-PFOS	8.117	507.1 -> 79.9	9931	2.69 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.7%	
13C9-PFNA	7.509	472.1 -> 427.0	17045	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.2%	
d3-MeFOSAA	8.074	573.2 -> 419.0	14049	4.80 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C3-HFPO-DA	5.652	286.9 -> 168.9	32031	9.85 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.5%	
d3-MeFOSA	11.126	515.0 -> 219.0	6280	2.44 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.5%	
d5-EtFOSAA	8.283	589.2 -> 419.0	13039	5.08 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.7%	
d7-MeFOSE	11.022	623.2 -> 58.9	38218	24.02 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.1%	
d9-EtFOSE	11.319	639.2 -> 58.9	45896	24.91 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.6%	
d5-EtFOSA	11.397	531.1 -> 219.0	7680	2.51 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.5%	
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	70971	38.05 µg/L	98
		327.1 -> 80.9	28881		
6:2FTS	6.737	427.1 -> 407.0	85547	38.12 µg/L	97
		427.1 -> 80.9	31437		
8:2FTS	7.804	527.1 -> 507.0	60896	34.15 µg/L	99
		527.1 -> 80.8	25806		
EtFOSAA	8.284	584.2 -> 419.1	25163	10.78 µg/L	m 82
		584.2 -> 526.0	10299		
FOSA	9.798	498.1 -> 77.9	45724	10.56 µg/L	100
		498.1 -> 478.0	1439		
MeFOSAA	8.087	570.1 -> 419.0	27131	10.87 µg/L	98
		570.1 -> 483.0	5190		
PFBA	2.620	212.8 -> 168.9	163791	44.41 µg/L	100
PFBS	5.153	298.7 -> 79.9	32775	9.35 µg/L	99
		298.7 -> 98.8	12468		
PFDA	7.992	512.9 -> 469.0	94868	9.57 µg/L	100
		512.9 -> 219.0	18740		
PFDoDA	8.880	613.1 -> 569.0	117847	9.67 µg/L	98
		613.1 -> 319.0	20743		
PFDS	9.020	599.0 -> 79.9	23899	9.30 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	11821			
PFHpA	6.268	363.1 -> 319.0	224820	10.84	µg/L	100
		363.1 -> 169.0	39665			
PFHpS	7.612	449.0 -> 79.9	36068	9.19	µg/L	99
		449.0 -> 98.9	18279			
PFHxA	5.300	313.0 -> 269.0	130589	10.67	µg/L	99
		313.0 -> 118.9	3957			
PFHxS	7.018	398.7 -> 79.9	24675	9.67	µg/L	m 83
		398.7 -> 98.9	12647			
PFNA	7.510	463.0 -> 419.0	110657	10.18	µg/L	97
		463.0 -> 219.0	26475			
PFNS	8.586	548.8 -> 79.9	17954	9.47	µg/L	99
		548.8 -> 98.9	9300			
PFOA	6.965	413.0 -> 369.0	191220	10.47	µg/L	100
		413.0 -> 169.0	38578			
PFOS	8.119	498.9 -> 79.9	36868	8.18	µg/L	m 84
		498.9 -> 98.8	18649			
PFPeA	4.114	263.0 -> 219.0	216436	22.48	µg/L	100
PFPeS	6.257	349.1 -> 79.9	26744	9.62	µg/L	100
		349.1 -> 98.9	11641			
PFTeDA	9.650	713.1 -> 669.0	110340	10.55	µg/L	99
		713.1 -> 168.9	11158			
PFTrDA	9.279	663.0 -> 619.0	135078	10.18	µg/L	100
		663.0 -> 168.9	18514			
PFUnDA	8.449	563.1 -> 519.0	111429	10.03	µg/L	99
		563.1 -> 269.1	23236			
11CI-PF3OUdS	9.306	630.9 -> 450.9	207831	20.78	µg/L	99
		632.9 -> 452.9	63249			
9CI-PF3ONS	8.451	530.8 -> 351.0	207141	20.52	µg/L	100
		532.8 -> 353.0	61570			
ADONA	6.531	376.9 -> 250.9	533610	24.07	µg/L	99
		376.9 -> 84.8	128766			
HFPO-DA	5.653	284.9 -> 168.9	72568	21.39	µg/L	99
		284.9 -> 184.9	7101			
3:3FTCA	3.561	241.0 -> 177.0	31420	54.68	µg/L	100
		241.0 -> 117.0	2891			
5:3FTCA	5.983	341.0 -> 237.1	585796	271.92	µg/L	99
		341.0 -> 217.0	419538			
7:3FTCA	7.524	441.0 -> 316.9	259966	269.00	µg/L	97
		441.0 -> 336.9	620798			
EtFOSA	11.399	526.0 -> 219.0	70962	20.49	µg/L	98
		526.0 -> 169.0	98692			
EtFOSE	11.332	630.0 -> 58.9	86864	50.66	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	47397	20.79	µg/L	m 90
		511.9 -> 169.0	68635			
MeFOSE	11.047	616.1 -> 58.9	93200	53.52	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	18557	9.16	µg/L	95
		699.1 -> 98.8	10633			
NFDHA	5.179	295.0 -> 201.0	18700	23.14	µg/L	96
		295.0 -> 84.9	4856			
PFMBA	4.529	279.0 -> 85.1	123139	22.20	µg/L	100
PFMPA	3.265	229.0 -> 84.9	137682	22.33	µg/L	100
PFEESA	5.684	314.8 -> 134.9	188207	19.43	µg/L	98
		314.8 -> 82.9	6508			

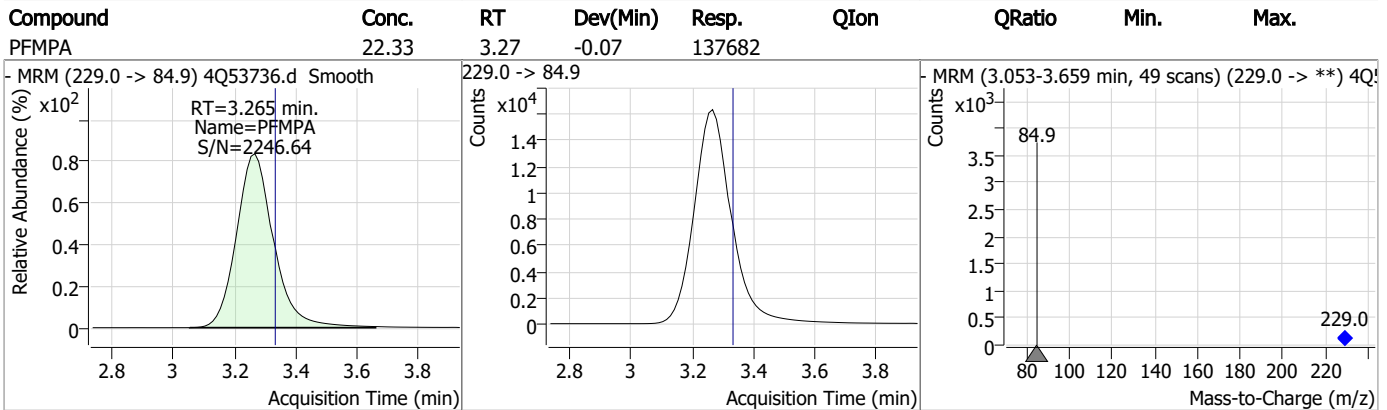
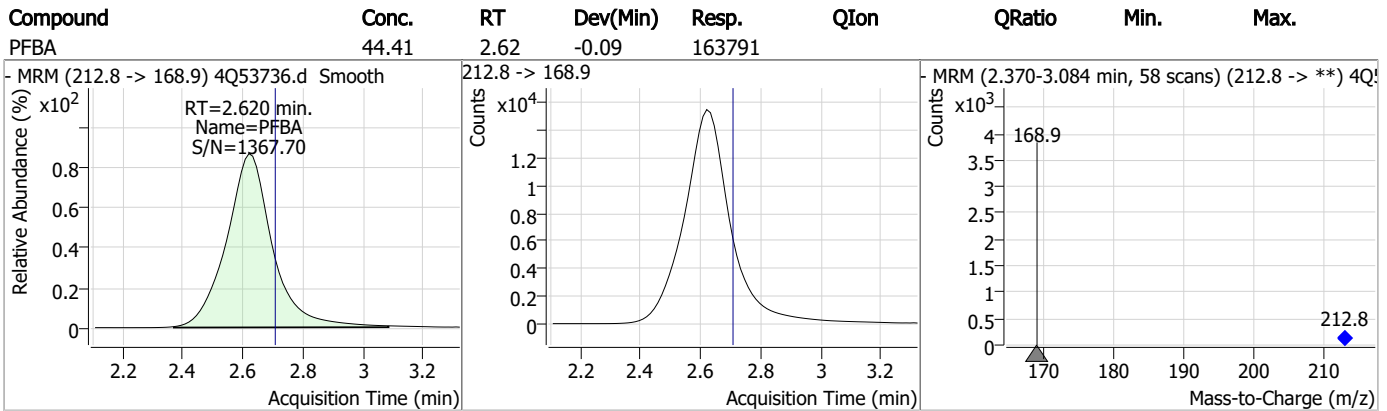
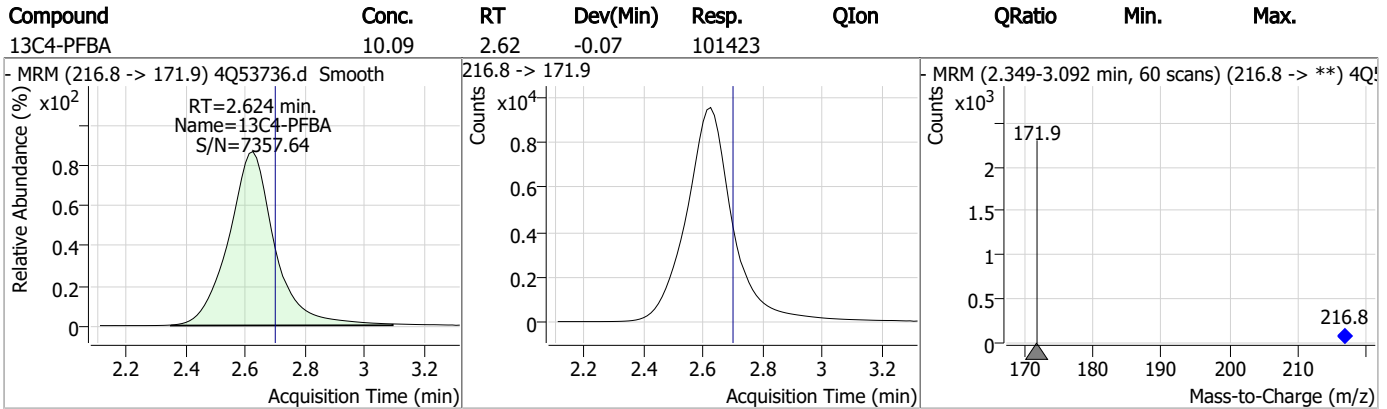
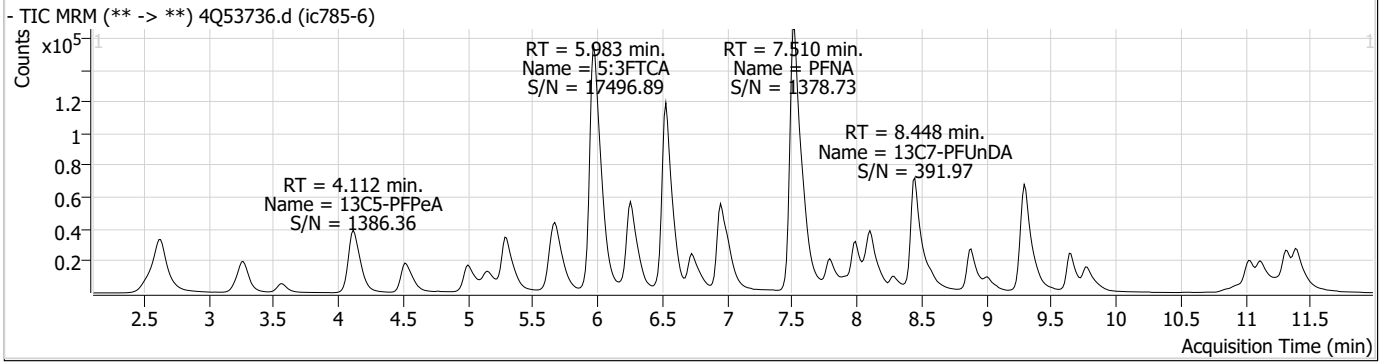
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

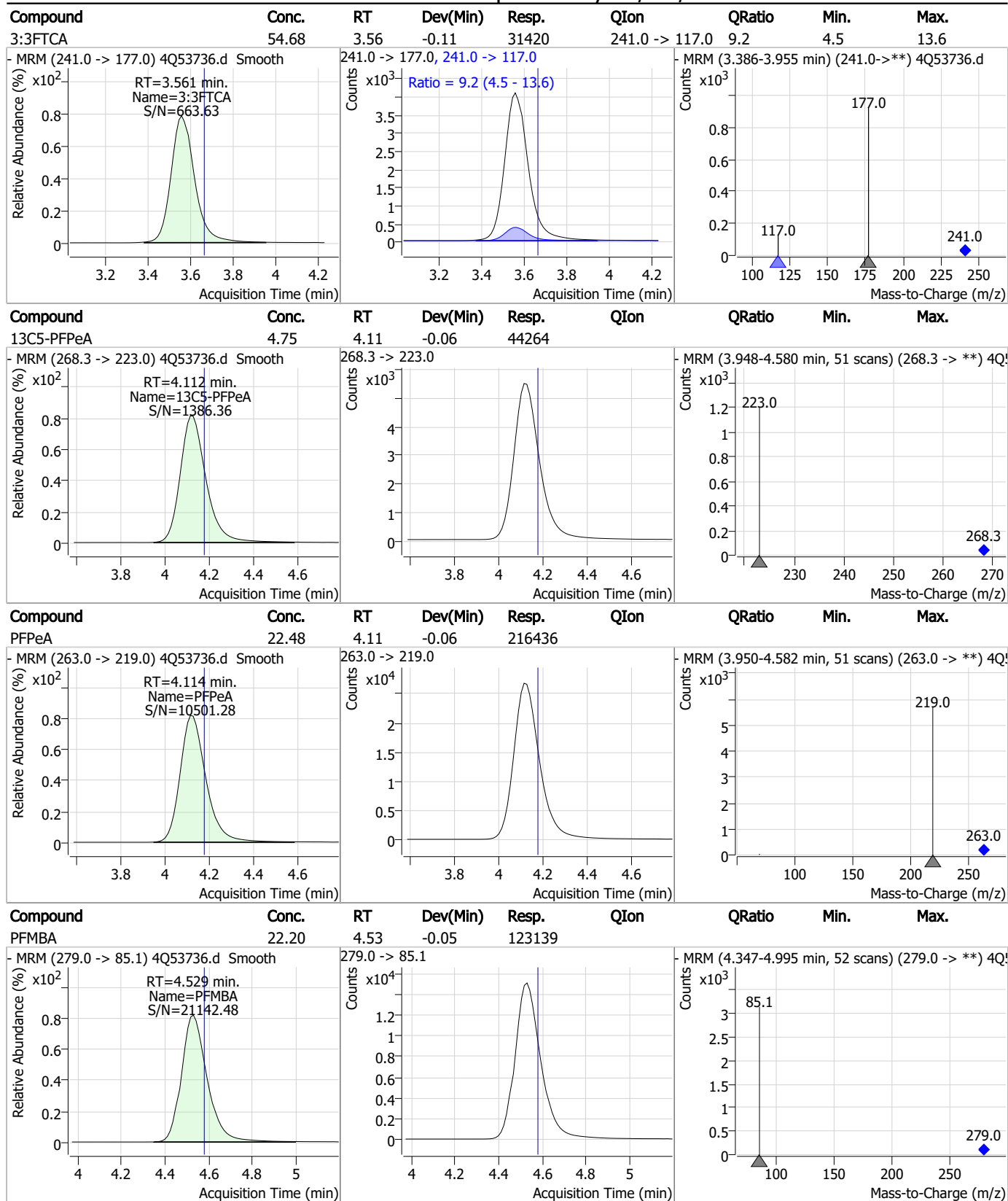
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.7
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Perfluorinated Compounds by LC/MS/MS

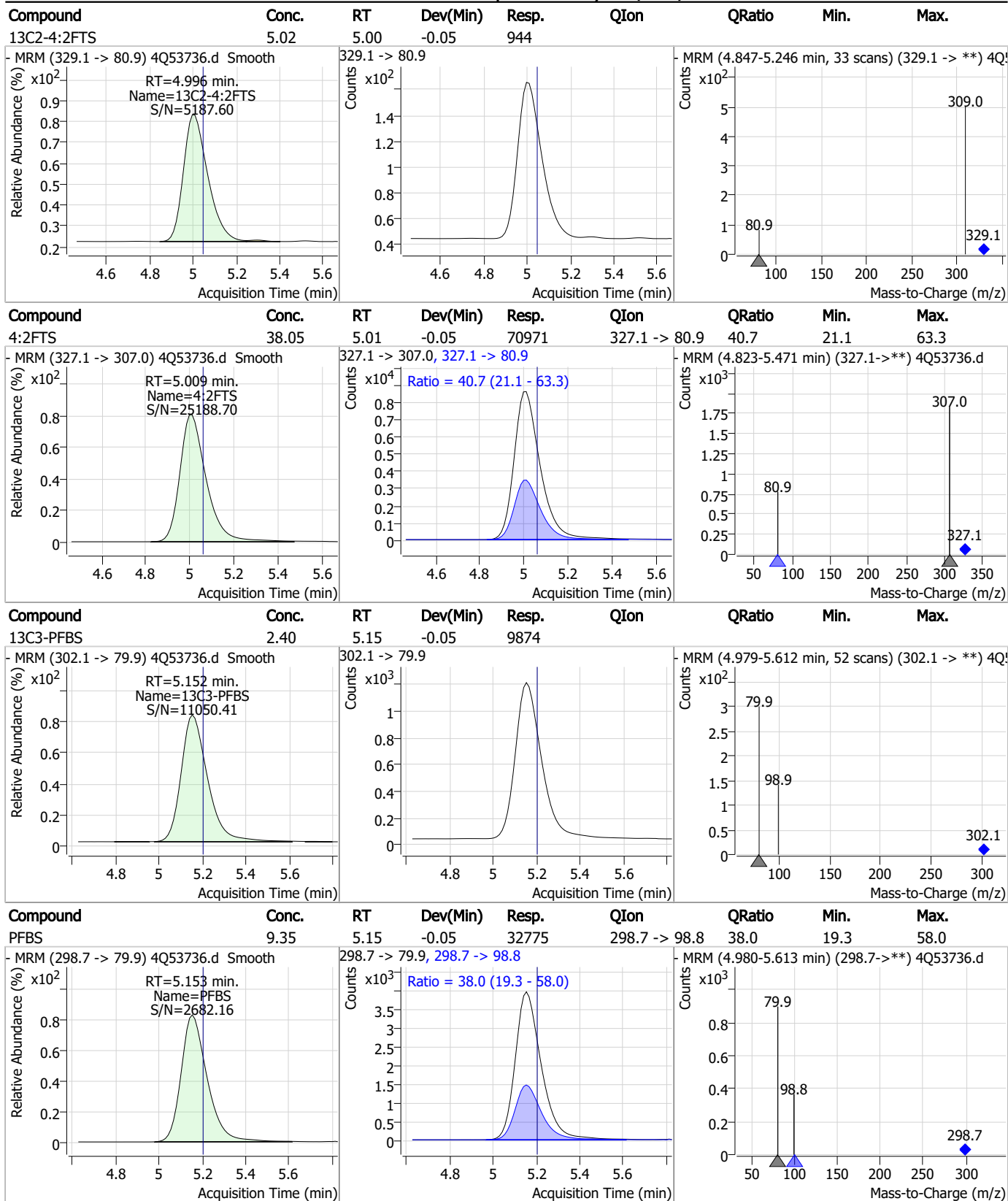


Perfluorinated Compounds by LC/MS/MS



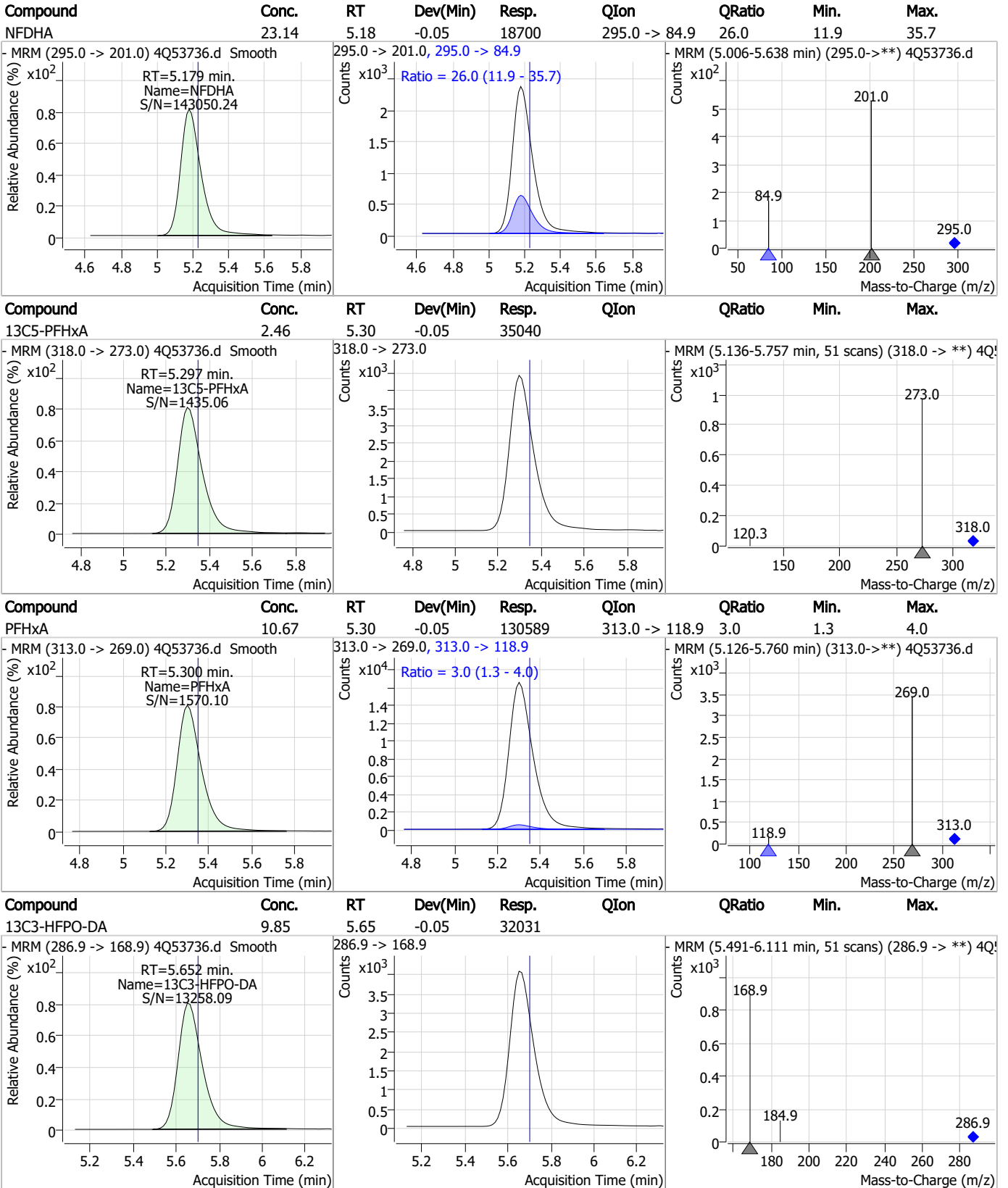
7.7.7
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Perfluorinated Compounds by LC/MS/MS



7.7.7
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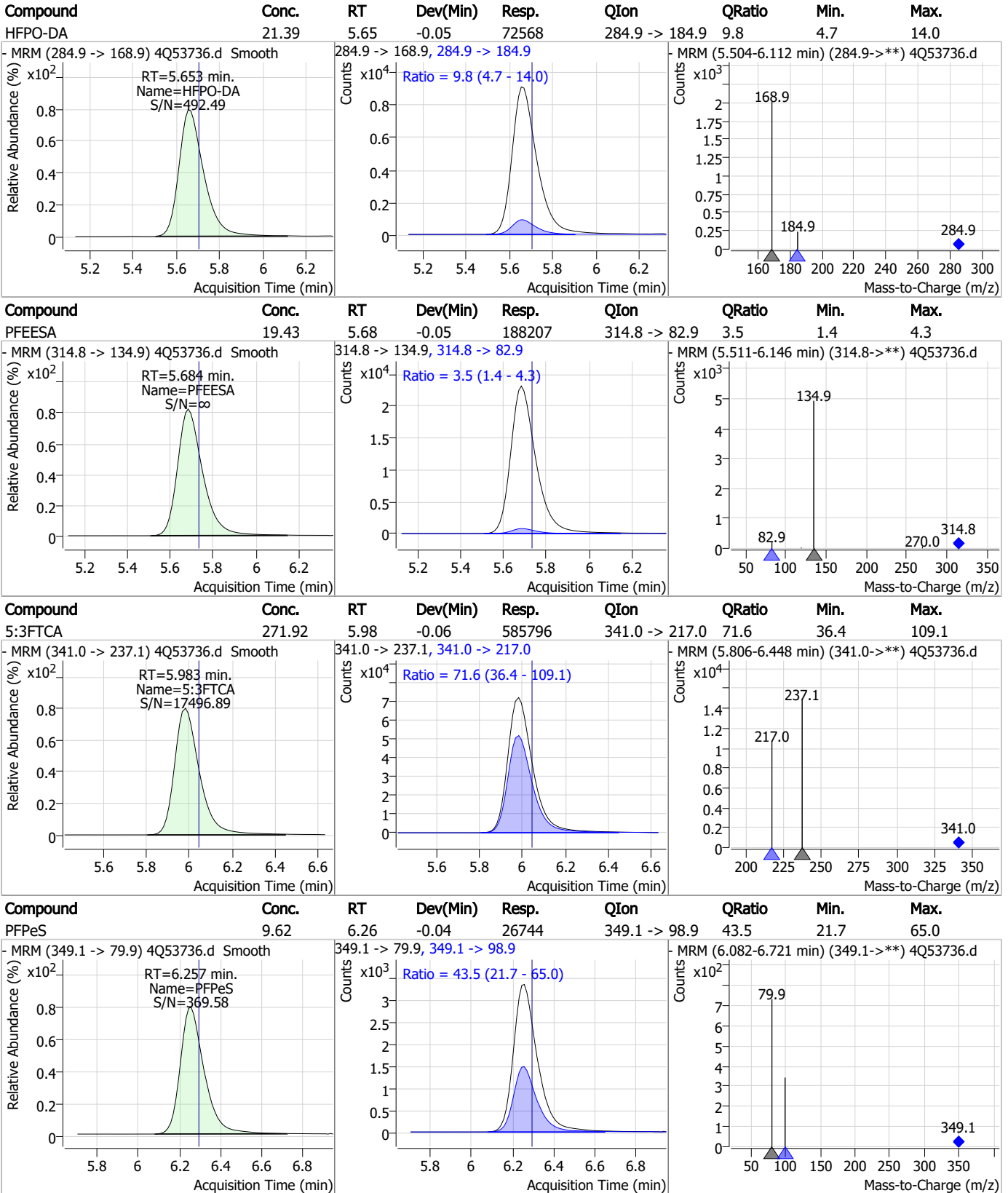
Perfluorinated Compounds by LC/MS/MS



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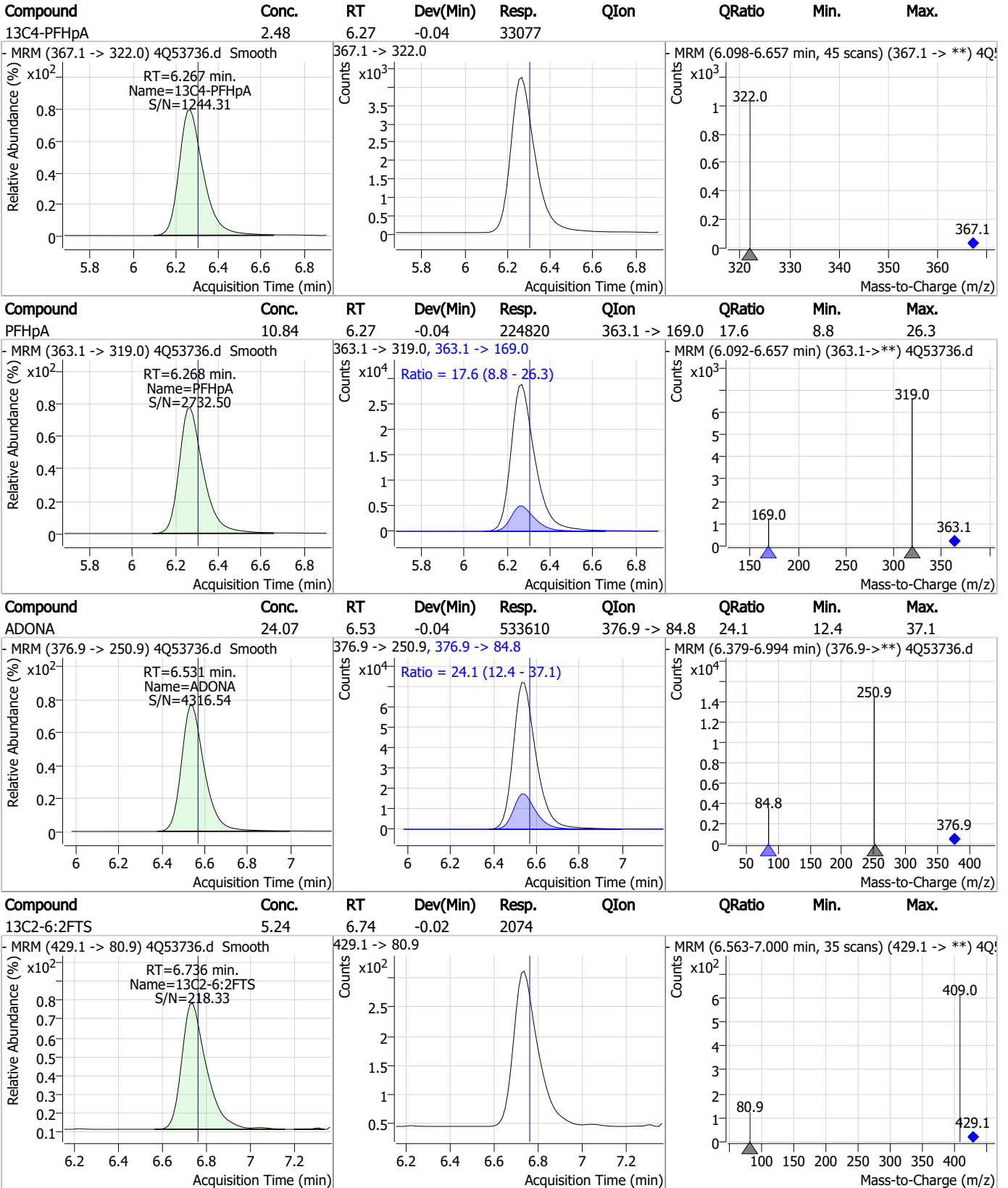
Perfluorinated Compounds by LC/MS/MS



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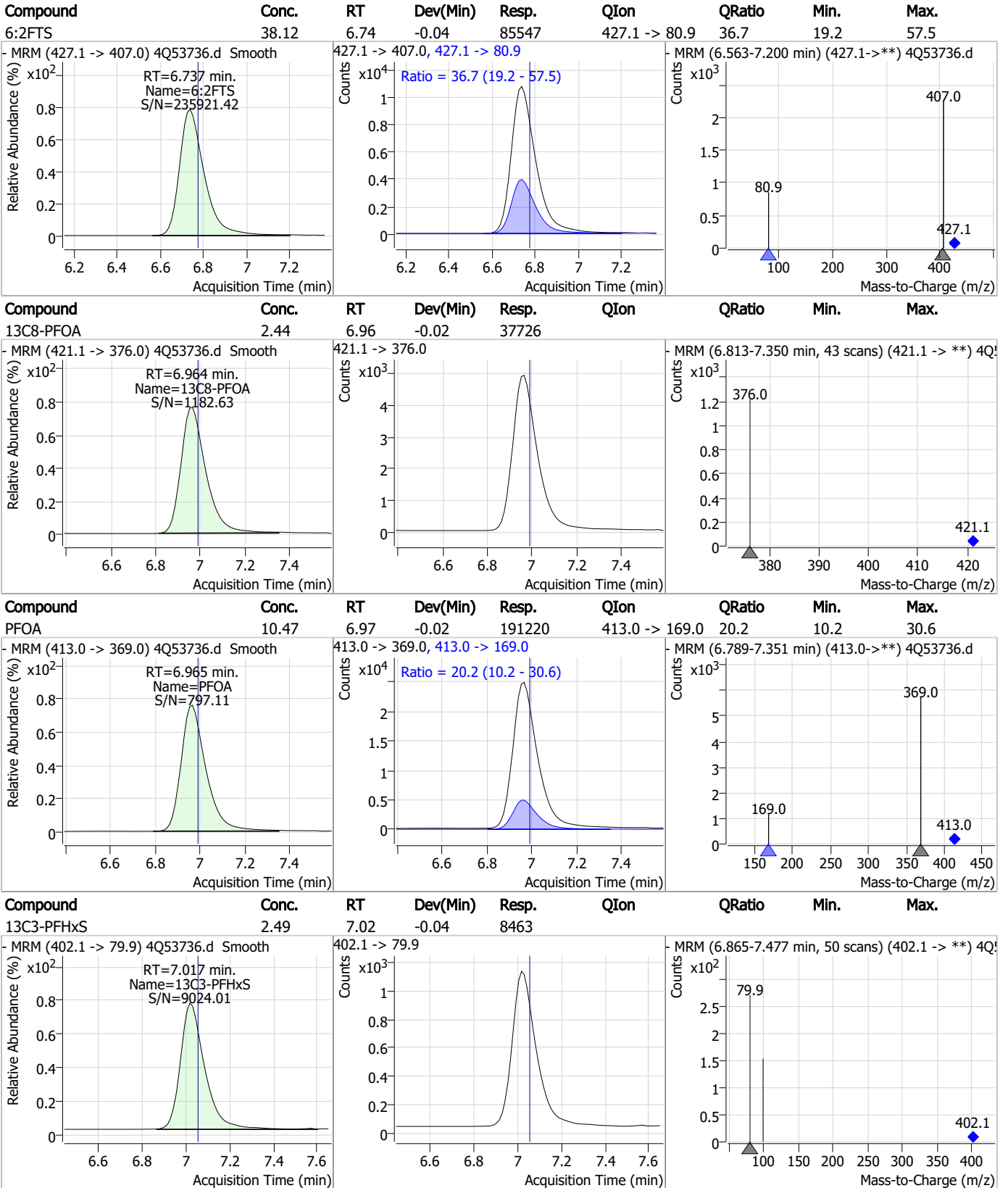
Perfluorinated Compounds by LC/MS/MS



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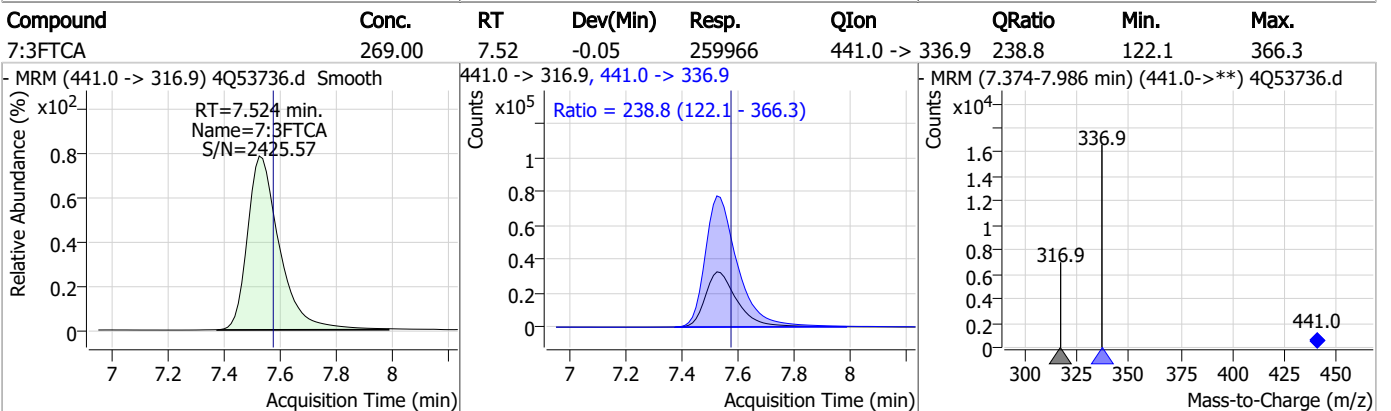
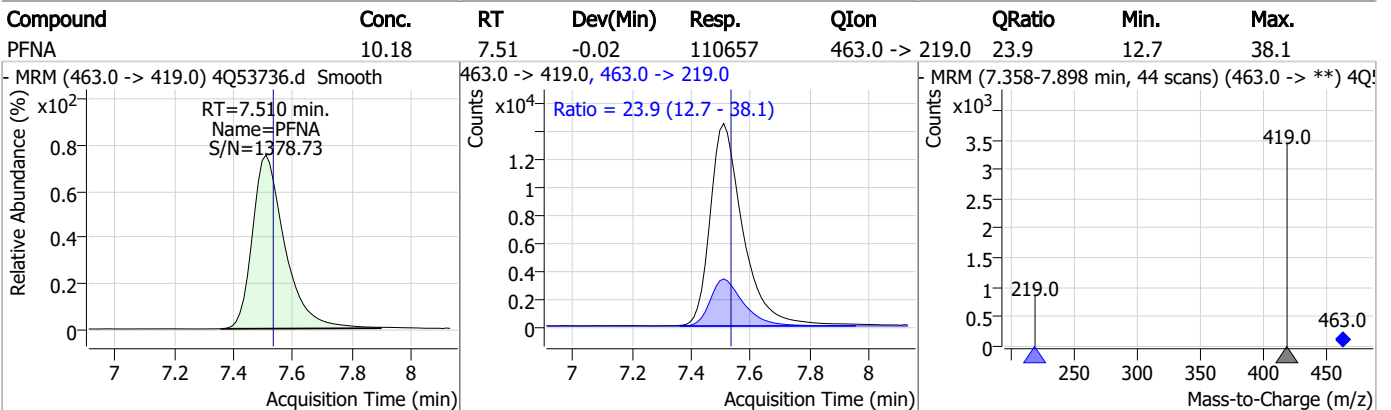
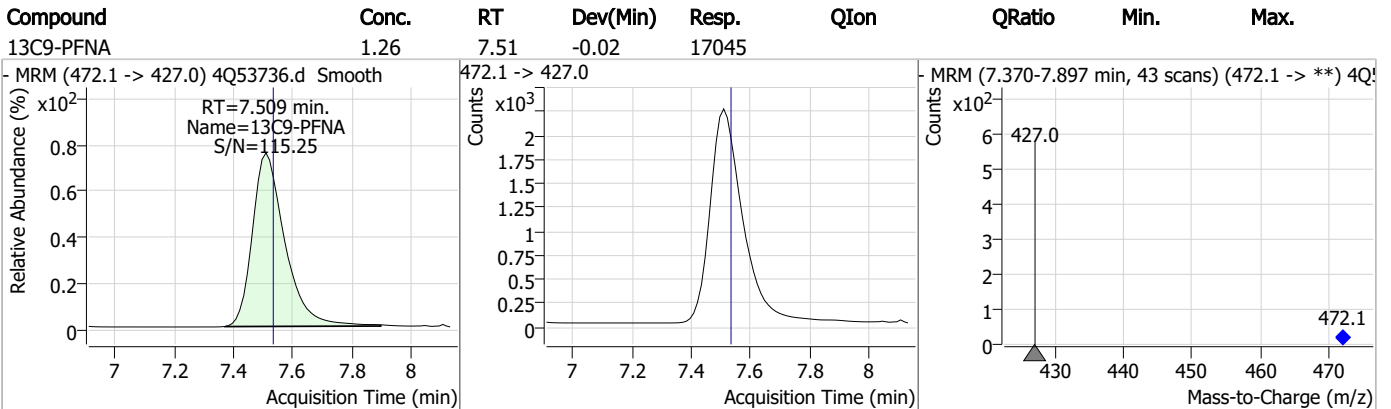
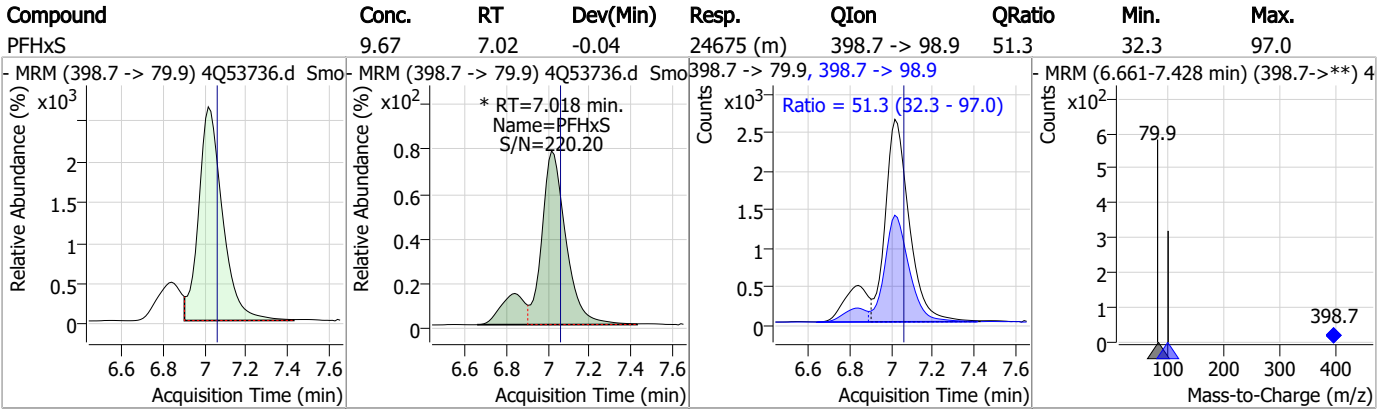
Perfluorinated Compounds by LC/MS/MS



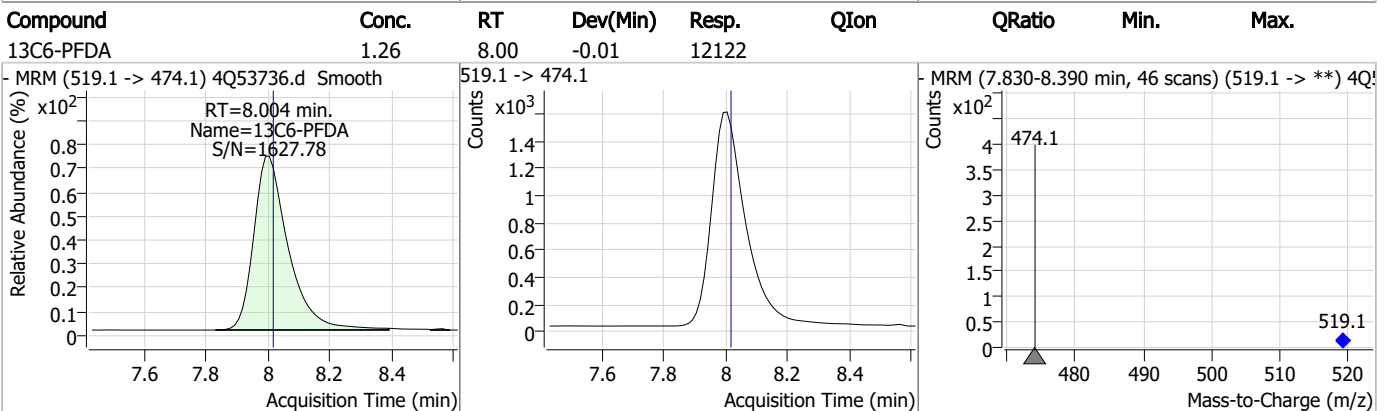
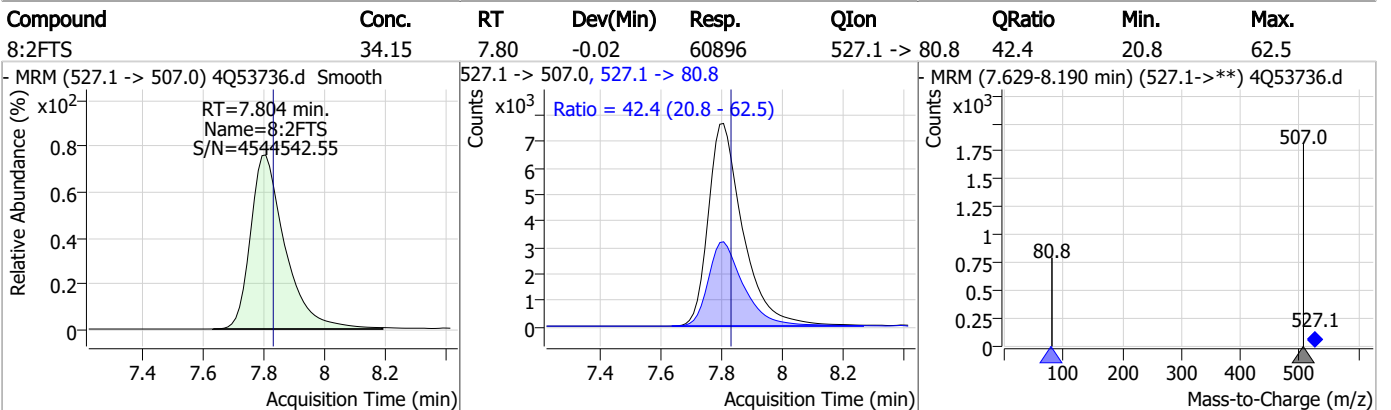
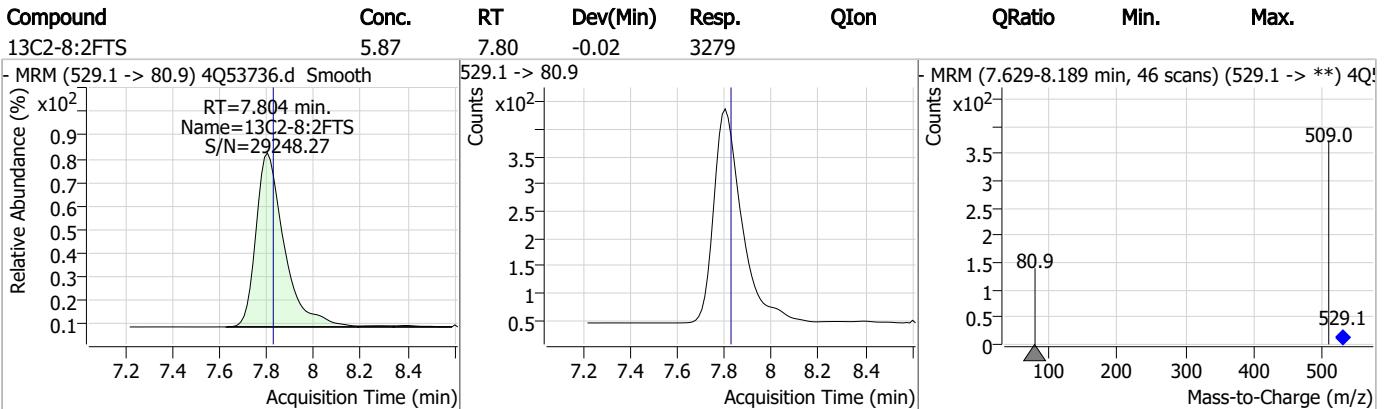
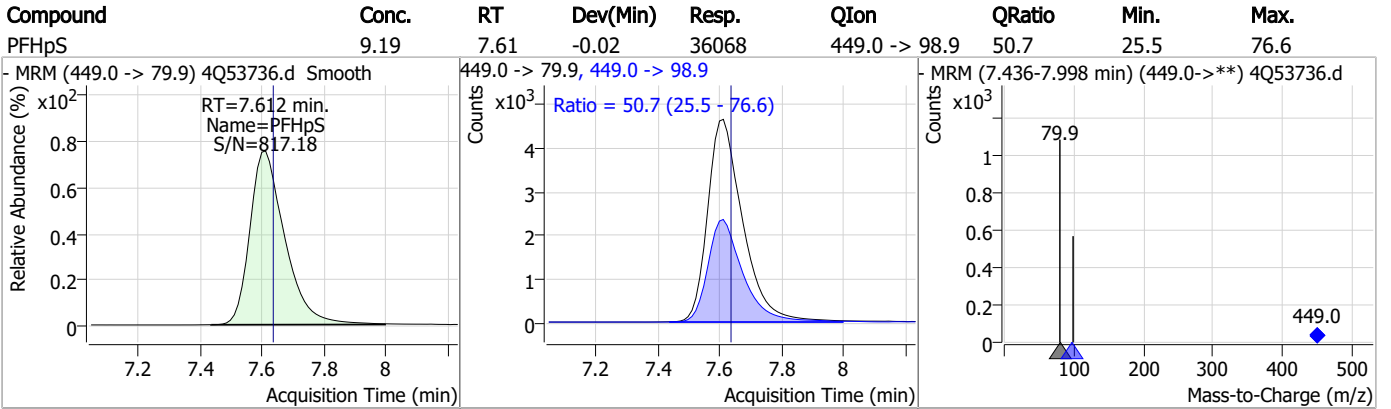
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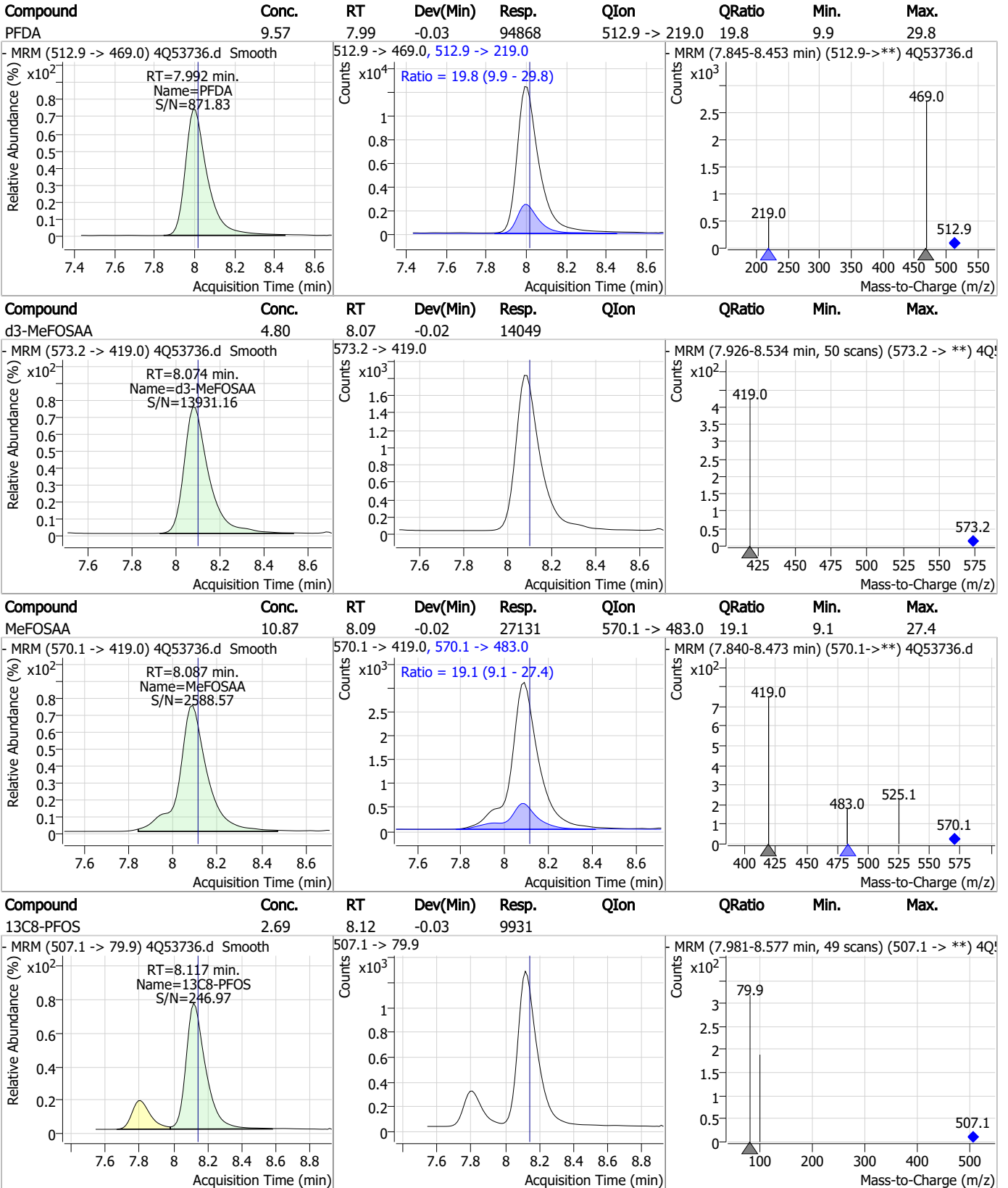
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

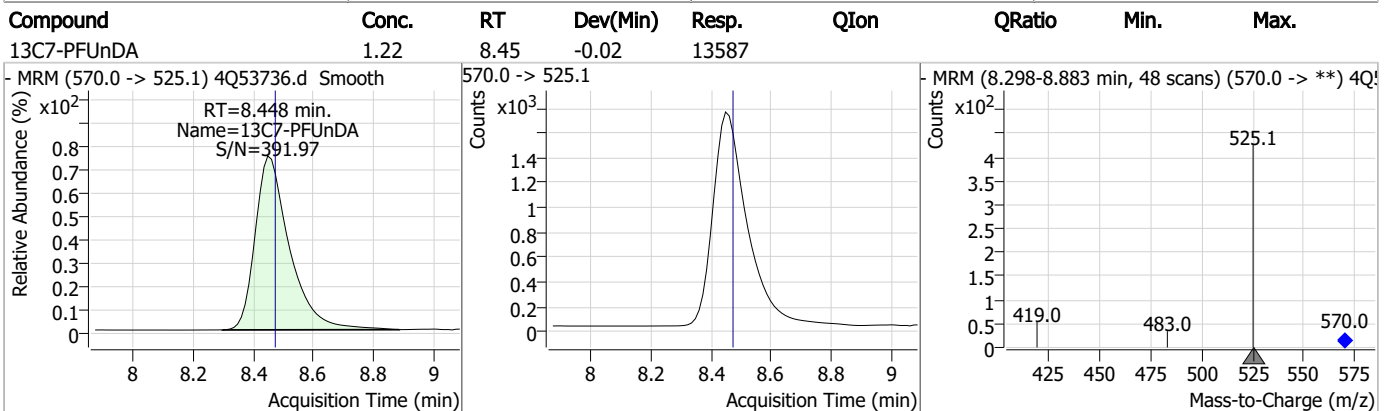
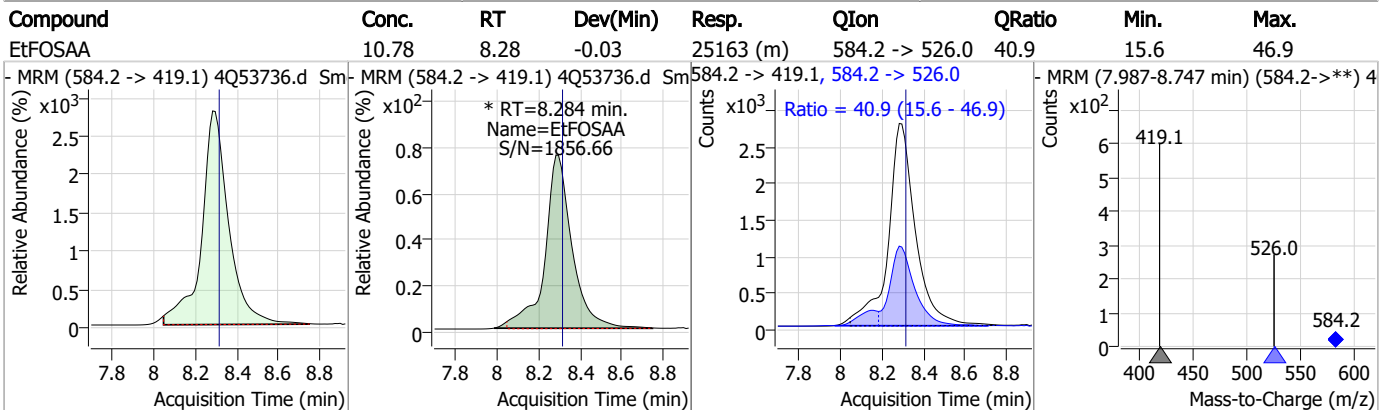
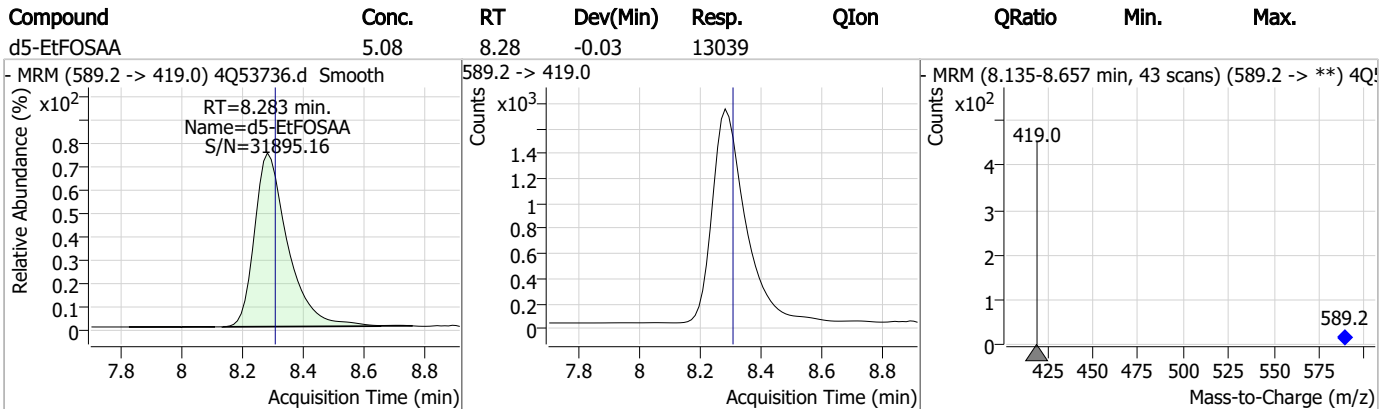
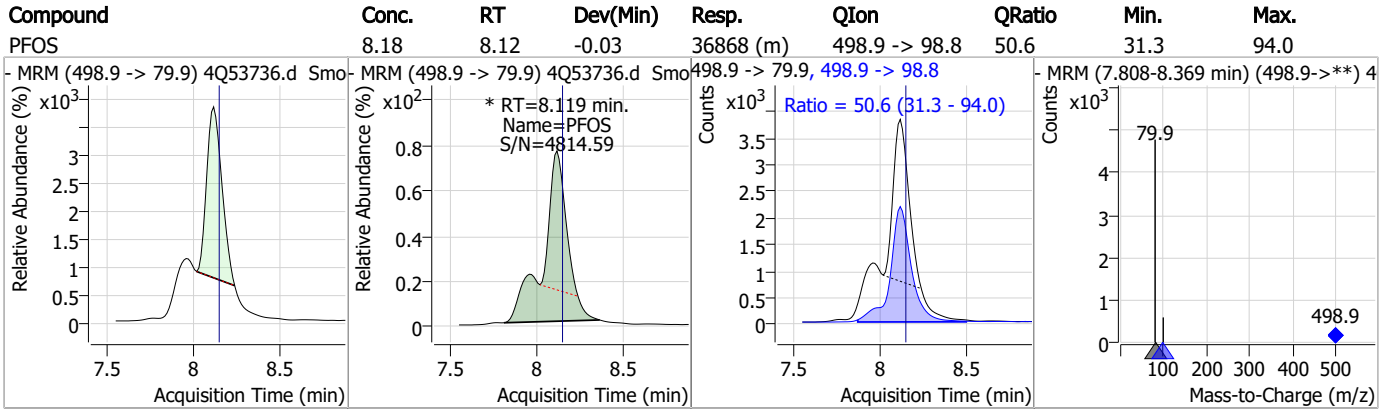


Perfluorinated Compounds by LC/MS/MS

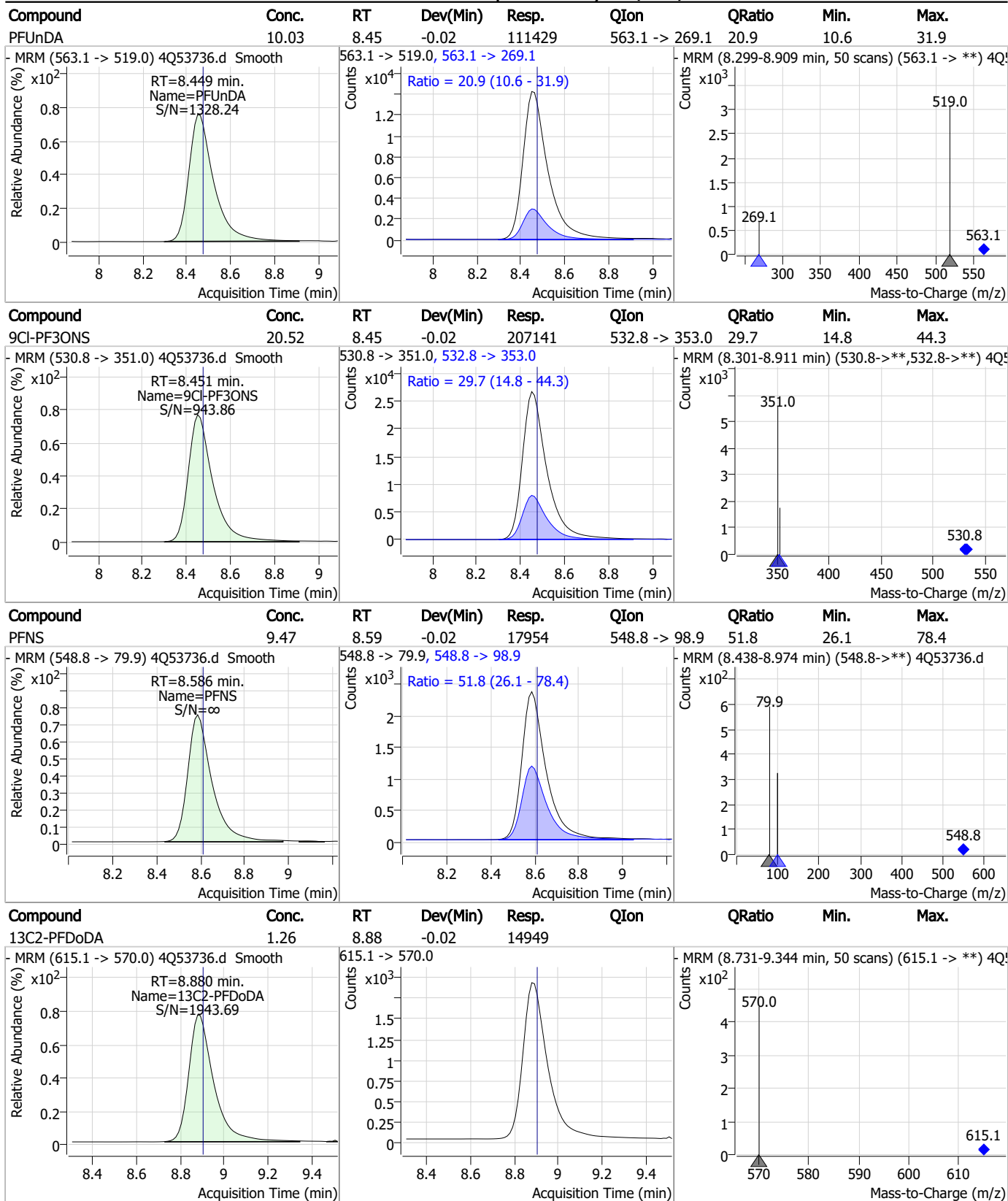


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Perfluorinated Compounds by LC/MS/MS

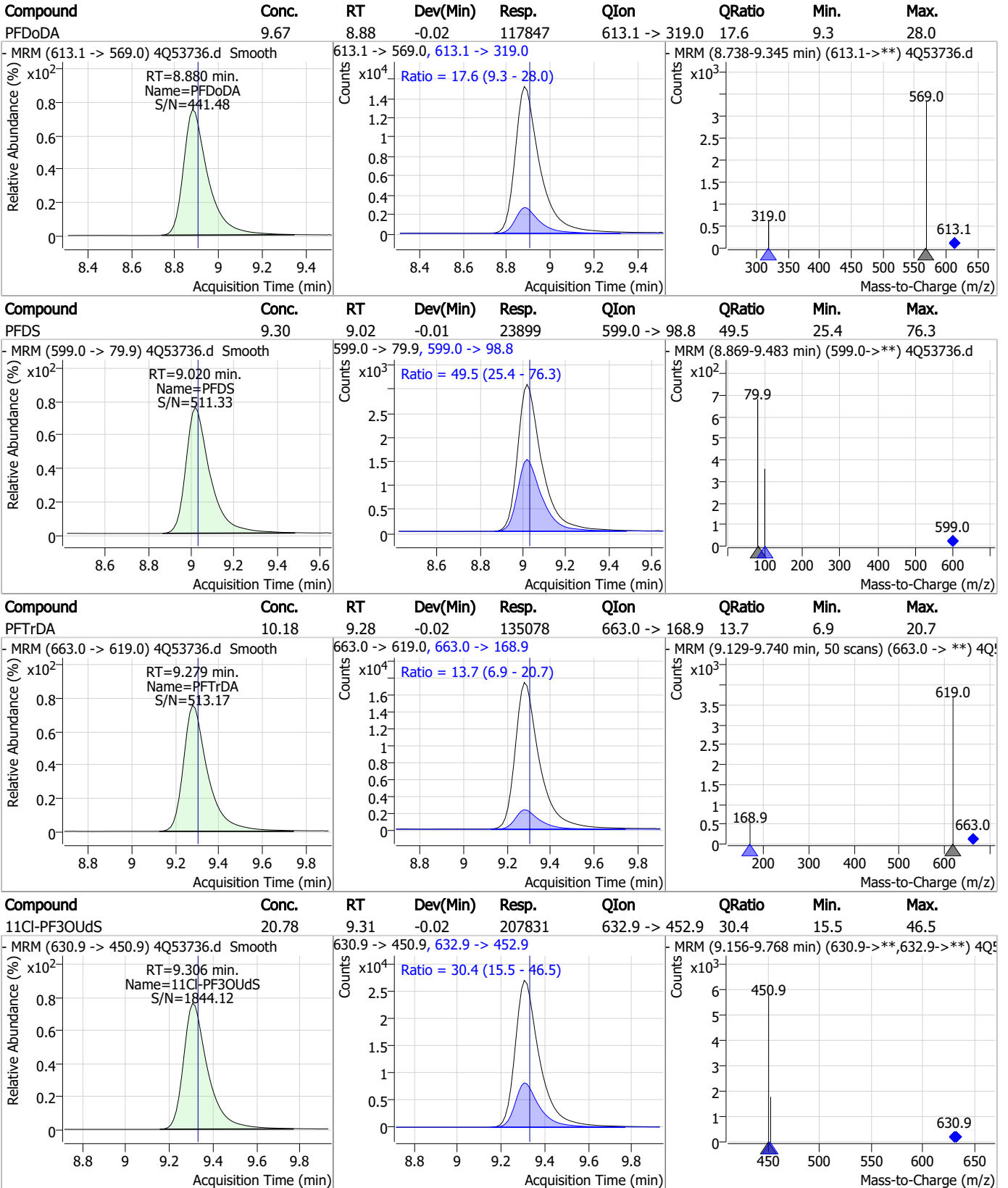


Perfluorinated Compounds by LC/MS/MS



7.7.7
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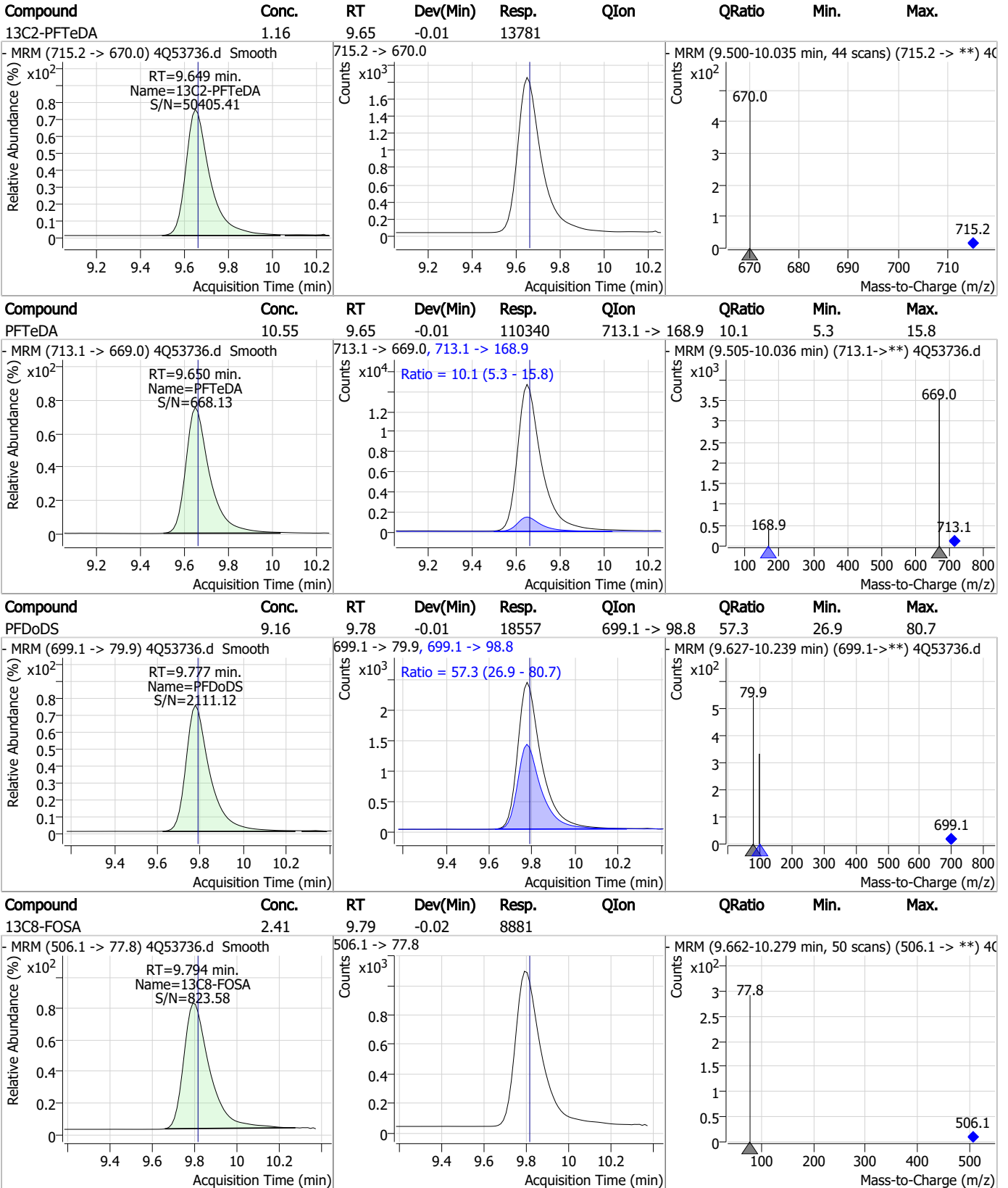
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

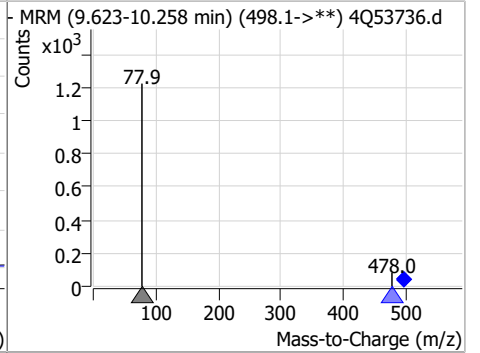
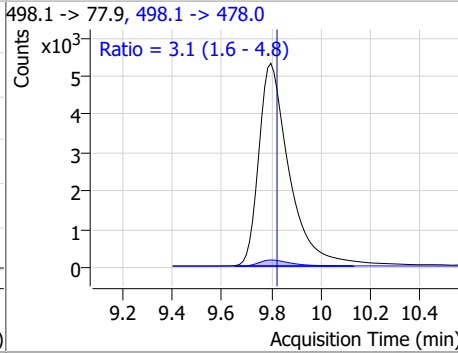
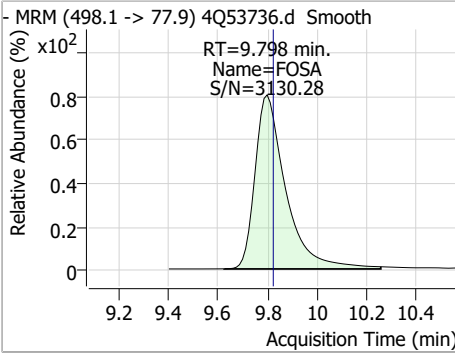


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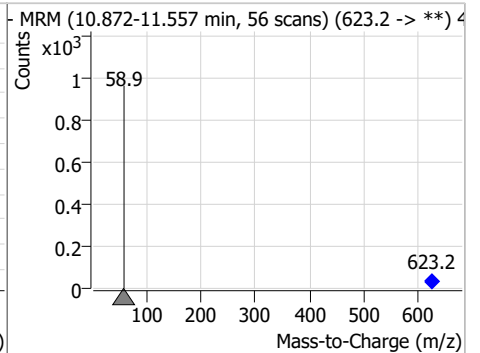
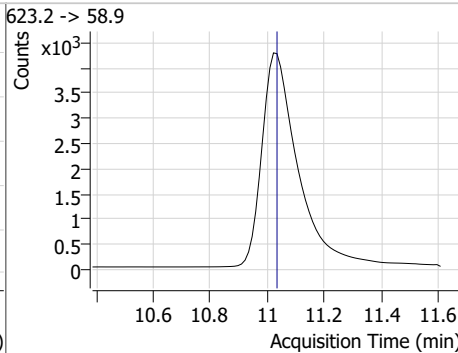
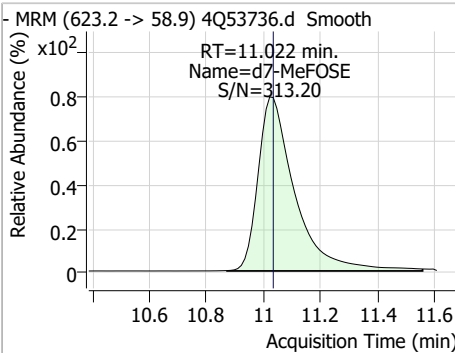
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Perfluorinated Compounds by LC/MS/MS

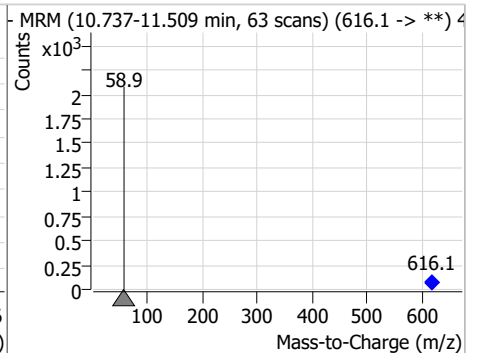
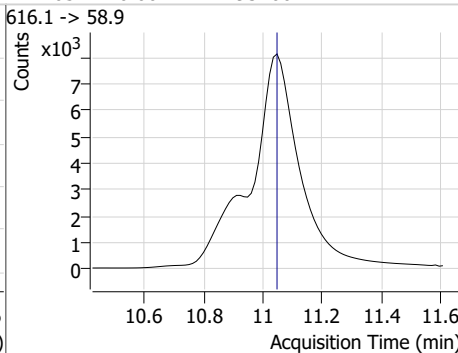
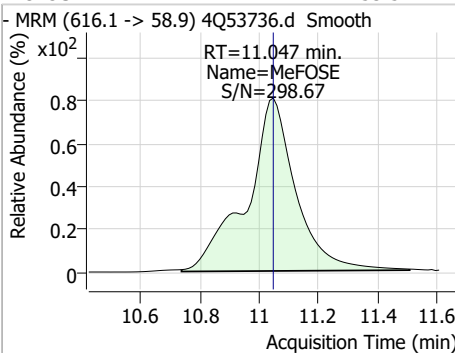
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	10.56	9.80	-0.02	45724	498.1 -> 478.0	3.1	1.6	4.8



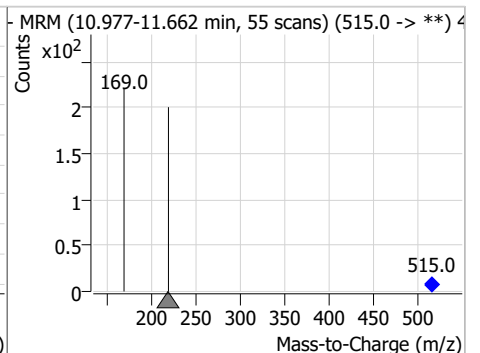
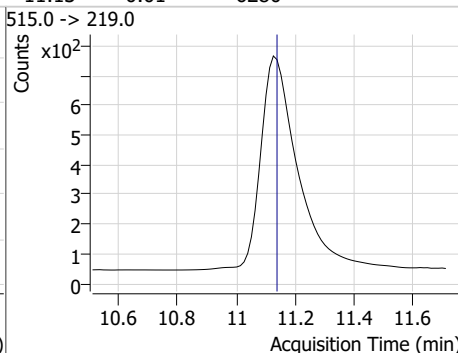
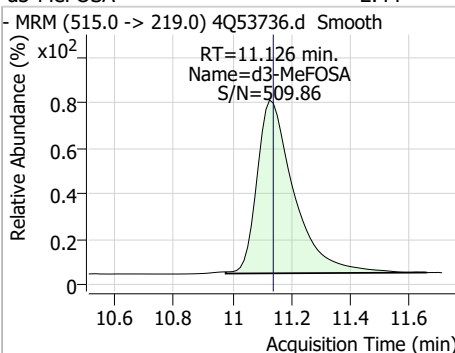
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.02	11.02	-0.01	38218	623.2 -> 58.9			



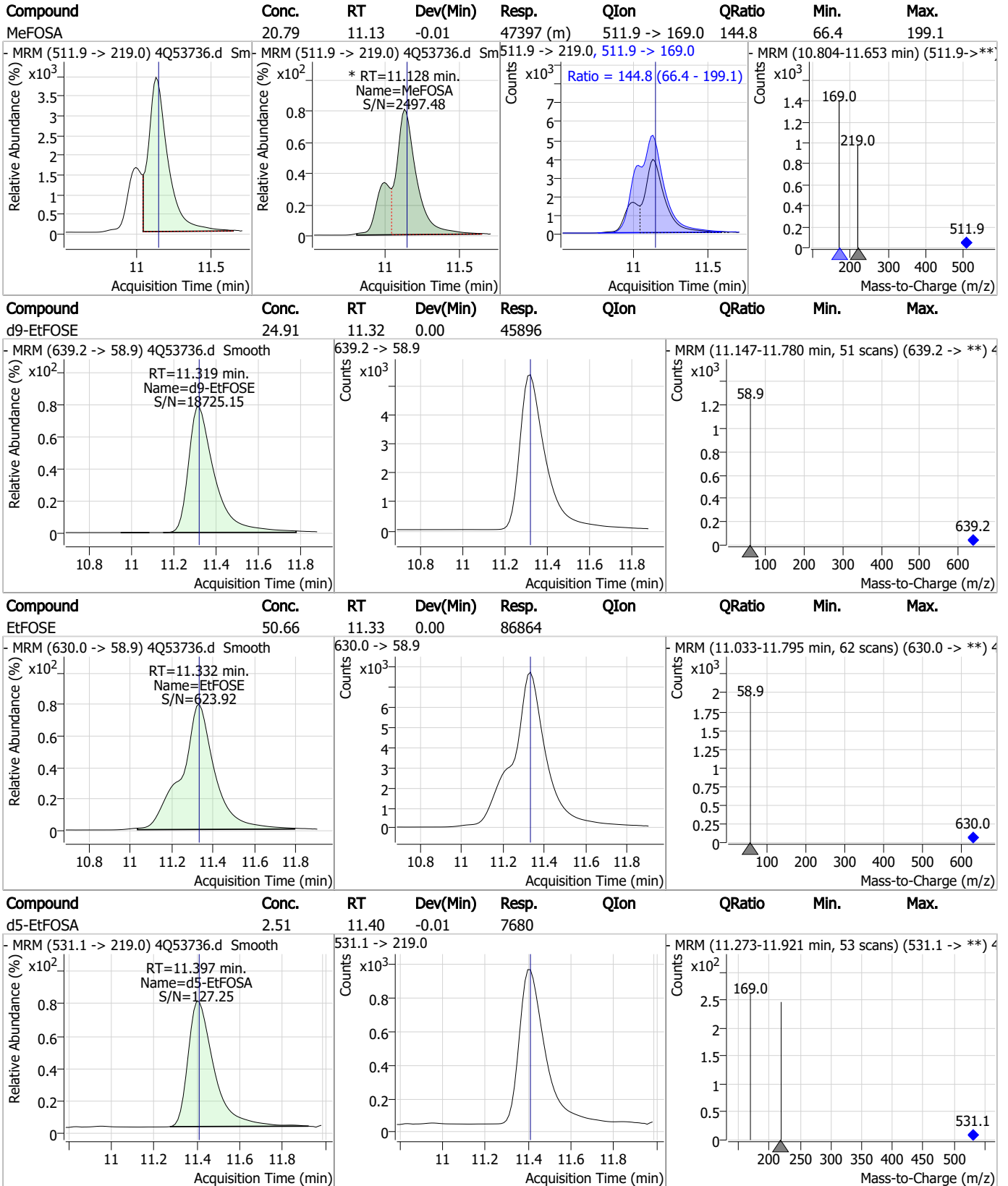
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	53.52	11.05	0.00	93200	616.1 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.44	11.13	-0.01	6280	515.0 -> 169.0			



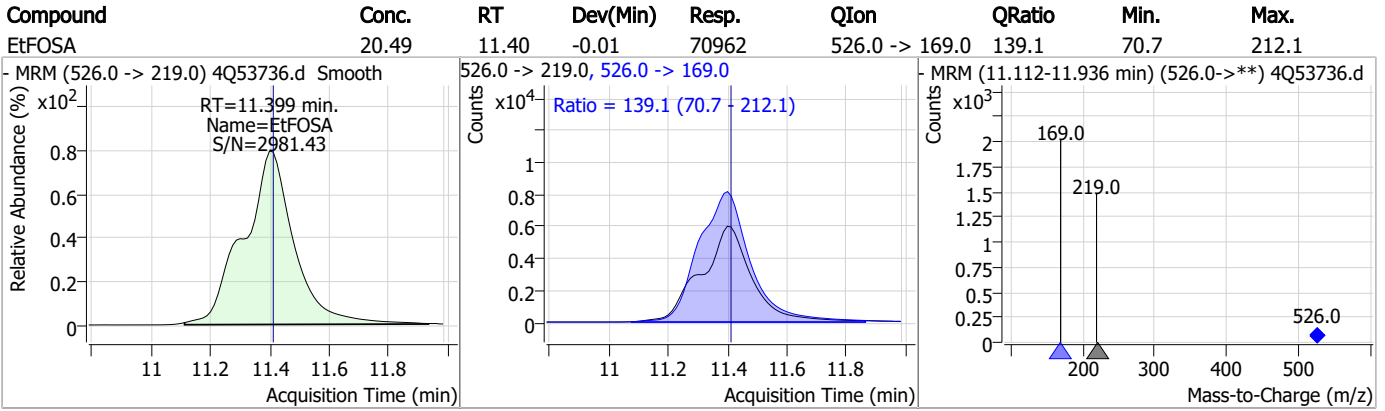
Perfluorinated Compounds by LC/MS/MS



7.7.7

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Perfluorinated Compounds by LC/MS/MS



7.7.7
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Manual Integration Approval Summary

Sample Number: S4Q785-IC785 Method: EPA DRAFT 1633
Lab FileID: 4Q53736.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 17:13 Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.7.1

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Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtje
 11/14/23 15:48

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53737.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 5:28:03 PM
 Sample Name : ic785-7
 Vial : P1-A8
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.612	216.8 -> 171.9	75407	10.00 µg/L	-0.087
M5-PFPeA	4.112	268.3 -> 223.0	33838	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	25676	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	23529	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	26804	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	11867	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	7825	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	8918	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	9926	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9943	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	6121	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	7389	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	5786	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6497	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	643	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1316	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1709	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	10341	5.00 µg/L	-0.012
M3-HFPO-DA	5.652	286.9 -> 168.9	23756	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	8815	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	27365	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	31385	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5586	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4810	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5536	2.50 µg/L	-0.026
13C3-PFBA	2.616	216.0 -> 172.0	36562	5.00 µg/L	-0.087
18O2-PFHxS	7.028	403.0 -> 83.9	3593	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	30520	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	8514	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	11895	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	27941	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	643	5.23 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.5%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1316	5.08 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C2-8:2FTS	7.804	529.1 -> 80.9	1709	4.68 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.6%		
13C2-PFDoDA	8.880	615.1 -> 570.0	9926	1.29 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.4%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9943	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C3-PFBS	5.152	302.1 -> 79.9	7389	2.74 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.7%		
13C3-PFHxS	7.017	402.1 -> 79.9	5786	2.60 µg/L	-0.037

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.9%		
13C4-PFBA	2.612	216.8 -> 171.9	75407	9.90 µg/L	-0.087
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C4-PFHpA	6.267	367.1 -> 322.0	23529	2.41 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.6%		
13C5-PFHxA	5.297	318.0 -> 273.0	25676	2.46 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C5-PFPeA	4.112	268.3 -> 223.0	33838	4.96 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C6-PFDA	8.004	519.1 -> 474.1	7825	1.25 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C7-PFUnDA	8.448	570.0 -> 525.1	8918	1.23 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C8-FOSA	9.794	506.1 -> 77.8	6121	2.31 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.5%		
13C8-PFOA	6.964	421.1 -> 376.0	26804	2.46 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C8-PFOS	8.117	507.1 -> 79.9	6497	2.46 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C9-PFNA	7.509	472.1 -> 427.0	11867	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.2%		
d3-MeFOSAA	8.086	573.2 -> 419.0	10341	4.93 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C3-HFPO-DA	5.652	286.9 -> 168.9	23756	9.99 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.9%		
d3-MeFOSA	11.126	515.0 -> 219.0	4810	2.60 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.2%		
d5-EtFOSAA	8.283	589.2 -> 419.0	8815	4.79 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.9%		
d7-MeFOSE	11.022	623.2 -> 58.9	27365	23.99 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 96.0%		
d9-EtFOSE	11.319	639.2 -> 58.9	31385	23.76 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 95.0%		
d5-EtFOSA	11.397	531.1 -> 219.0	5586	2.55 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.0%		
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	125524	98.83 µg/L	99
		327.1 -> 80.9	52100		
6:2FTS	6.737	427.1 -> 407.0	151688	106.48 µg/L	97
		427.1 -> 80.9	55722		
8:2FTS	7.804	527.1 -> 507.0	110735	119.17 µg/L	99
		527.1 -> 80.8	45613		
EtFOSAA	8.284	584.2 -> 419.1	48239	30.56 µg/L	m 84
		584.2 -> 526.0	19206		
FOSA	9.798	498.1 -> 77.9	84016	28.16 µg/L	100
		498.1 -> 478.0	2618		
MeFOSAA	8.087	570.1 -> 419.0	52401	28.51 µg/L	97
		570.1 -> 483.0	10298		
PFBA	2.620	212.8 -> 168.9	309227	112.76 µg/L	100
PFBS	5.153	298.7 -> 79.9	60823	23.19 µg/L	99
		298.7 -> 98.8	23934		
PFDA	8.005	512.9 -> 469.0	174452	27.26 µg/L	99
		512.9 -> 219.0	35275		
PFDoDA	8.880	613.1 -> 569.0	225169	27.81 µg/L	97
		613.1 -> 319.0	39072		
PFDS	9.020	599.0 -> 79.9	45180	26.87 µg/L	99

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	22540			
PFHpA	6.268	363.1 -> 319.0	427587	28.98	µg/L	100
		363.1 -> 169.0	74914			
PFHpS	7.612	449.0 -> 79.9	68816	26.79	µg/L	100
		449.0 -> 98.9	35156			
PFHxA	5.300	313.0 -> 269.0	253296	28.24	µg/L	99
		313.0 -> 118.9	7671			
PFHxS	7.018	398.7 -> 79.9	45577	26.11	µg/L	m 84
		398.7 -> 98.9	23870			
PFNA	7.510	463.0 -> 419.0	213932	28.27	µg/L	96
		463.0 -> 219.0	50327			
PFNS	8.586	548.8 -> 79.9	32044	25.84	µg/L	98
		548.8 -> 98.9	16346			
PFOA	6.965	413.0 -> 369.0	359828	27.73	µg/L	98
		413.0 -> 169.0	70823			
PFOS	8.119	498.9 -> 79.9	75812	25.71	µg/L	m 79
		498.9 -> 98.8	35350			
PFPeA	4.114	263.0 -> 219.0	409292	55.60	µg/L	100
PFPeS	6.257	349.1 -> 79.9	52284	27.49	µg/L	97
		349.1 -> 98.9	23633			
PFTeDA	9.650	713.1 -> 669.0	210787	27.92	µg/L	100
		713.1 -> 168.9	21881			
PFTrDA	9.279	663.0 -> 619.0	250142	28.39	µg/L	100
		663.0 -> 168.9	34284			
PFUnDA	8.449	563.1 -> 519.0	200284	27.46	µg/L	98
		563.1 -> 269.1	40980			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	395914	53.38	µg/L	99
		632.9 -> 452.9	119553			
9Cl-PF3ONS	8.451	530.8 -> 351.0	371609	49.63	µg/L	98
		532.8 -> 353.0	113391			
ADONA	6.544	376.9 -> 250.9	1004748	61.12	µg/L	100
		376.9 -> 84.8	246447			
HFPO-DA	5.653	284.9 -> 168.9	140545	55.87	µg/L	99
		284.9 -> 184.9	13507			
3:3FTCA	3.561	241.0 -> 177.0	61547	144.07	µg/L	99
		241.0 -> 117.0	5418			
5:3FTCA	5.983	341.0 -> 237.1	1113871	705.63	µg/L	99
		341.0 -> 217.0	798232			
7:3FTCA	7.524	441.0 -> 316.9	494736	698.63	µg/L	94
		441.0 -> 336.9	1158803			
EtFOSA	11.399	526.0 -> 219.0	134530	53.40	µg/L	97
		526.0 -> 169.0	185447			
EtFOSE	11.332	630.0 -> 58.9	162696	138.75	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	89879	51.49	µg/L	m 89
		511.9 -> 169.0	131207			
MeFOSE	11.047	616.1 -> 58.9	174720	140.14	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	35336	26.65	µg/L	95
		699.1 -> 98.8	20307			
NFDHA	5.179	295.0 -> 201.0	32631	55.10	µg/L	93
		295.0 -> 84.9	8815			
PFMBA	4.529	279.0 -> 85.1	232804	54.91	µg/L	100
PFMPA	3.265	229.0 -> 84.9	261021	55.37	µg/L	100
PFEESA	5.684	314.8 -> 134.9	360443	50.77	µg/L	99
		314.8 -> 82.9	11678			

= Qualifier out of range, m = manually integrated, + = Area summed

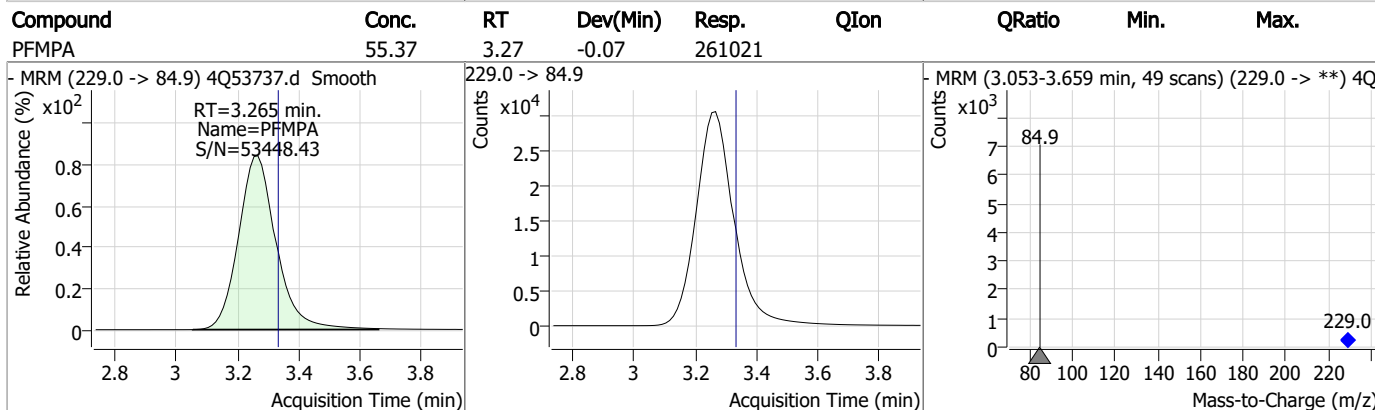
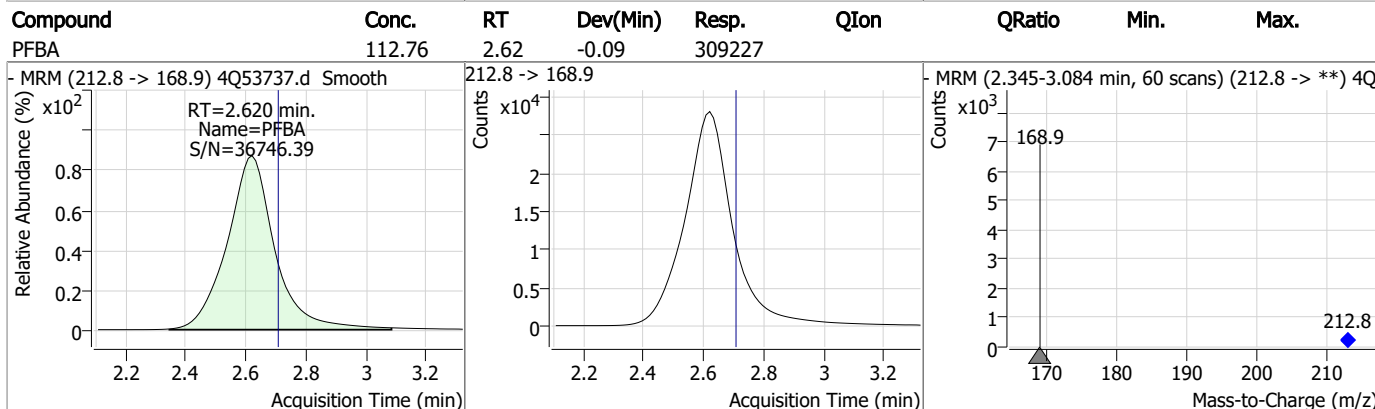
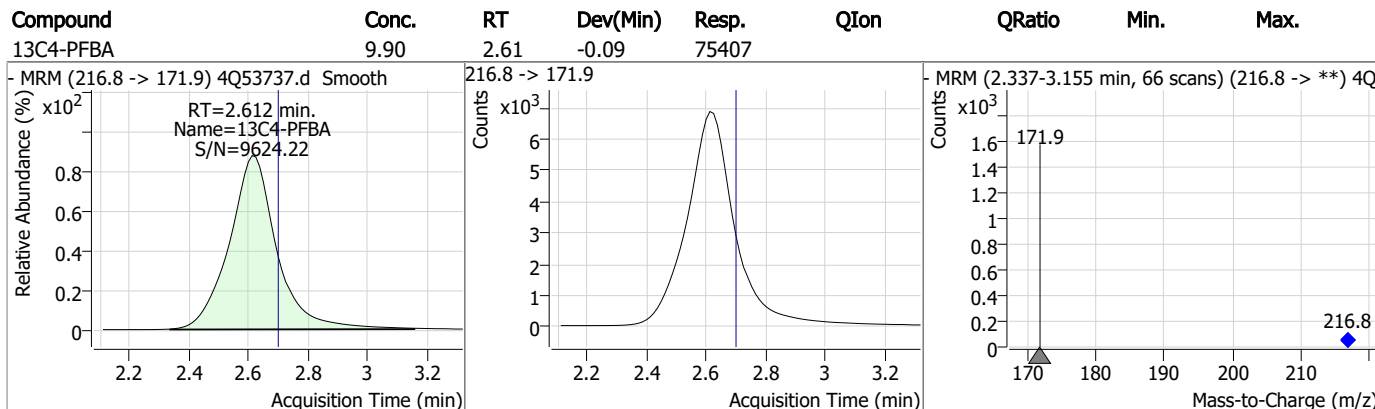
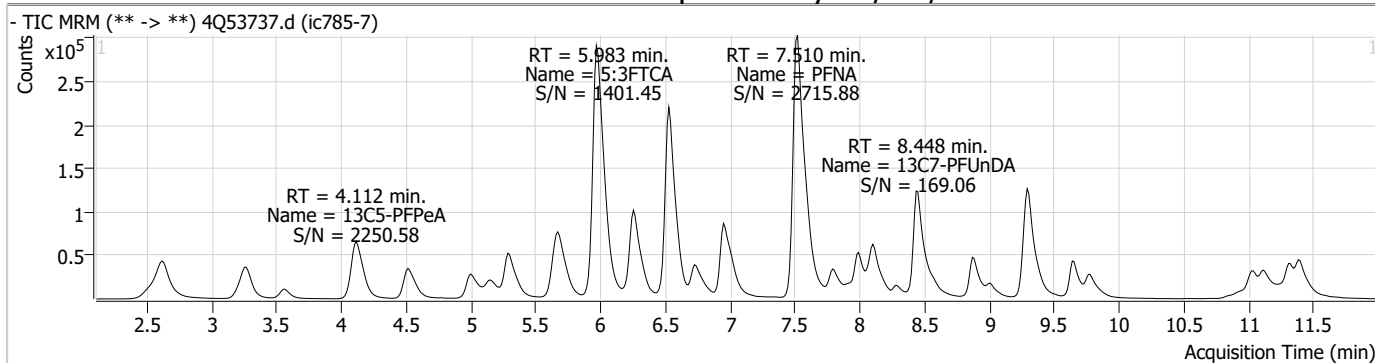
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.8
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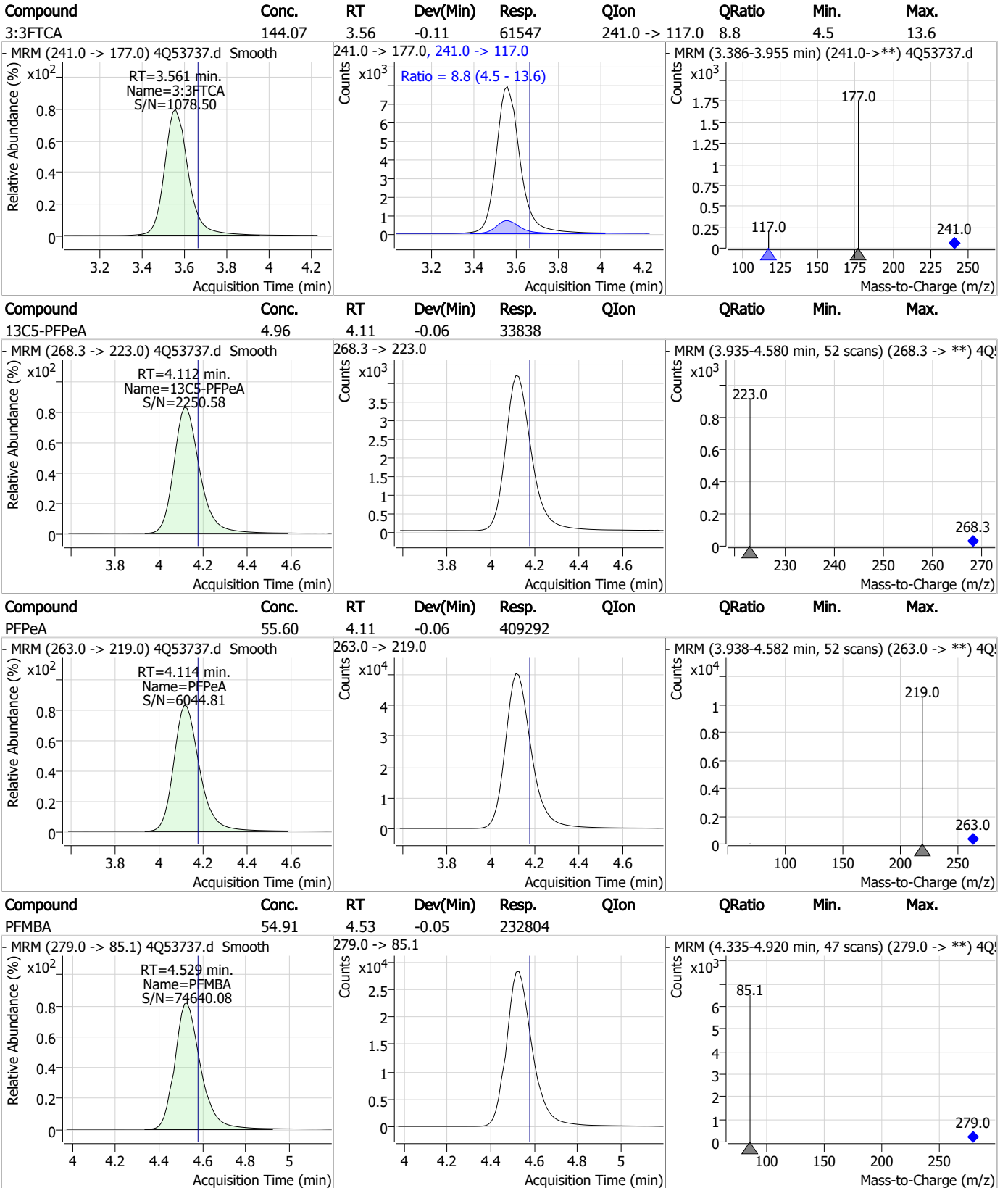


Perfluorinated Compounds by LC/MS/MS



7.7.8
7

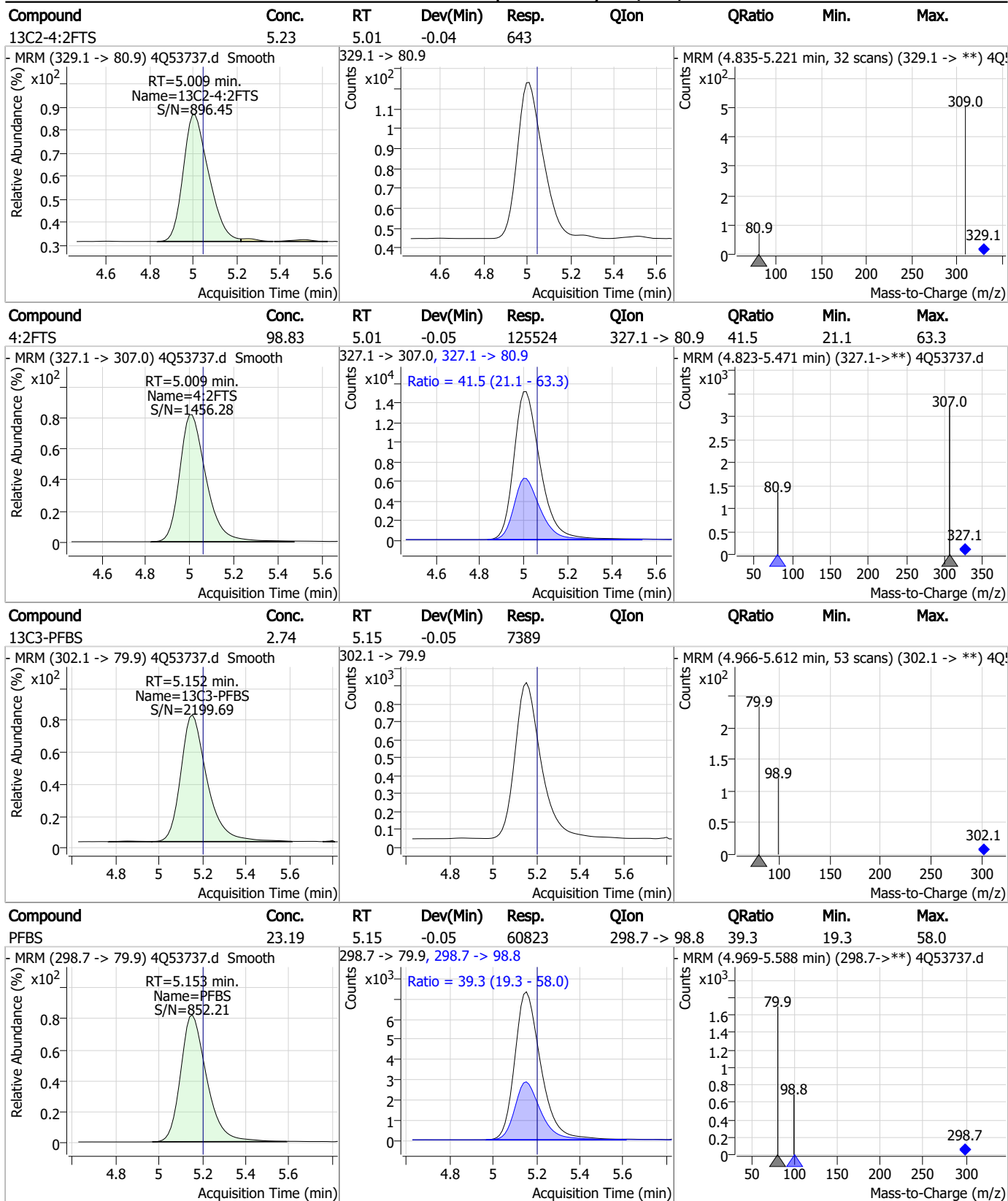
Perfluorinated Compounds by LC/MS/MS



7.7.8

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Perfluorinated Compounds by LC/MS/MS



7.7.8
7

Perfluorinated Compounds by LC/MS/MS

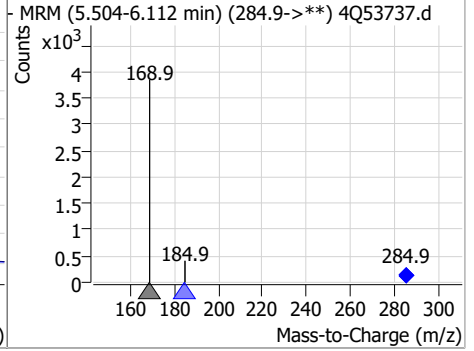
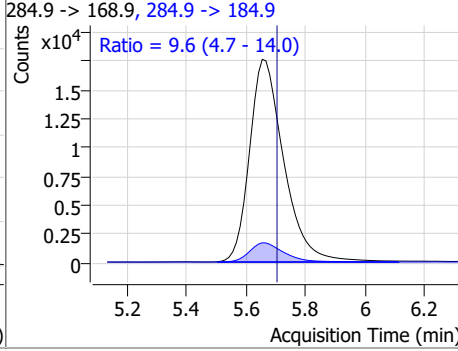
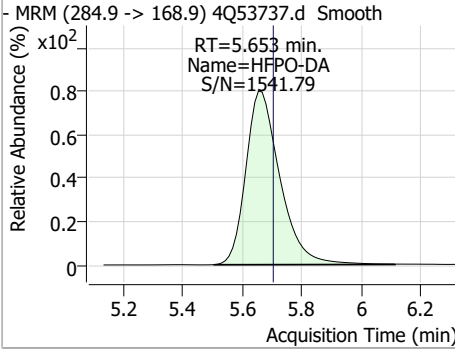
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	55.10	5.18	-0.05	32631	295.0 -> 84.9	27.0	11.9	35.7
- MRM (295.0 -> 201.0) 4Q53737.d Smooth			295.0 -> 201.0, 295.0 -> 84.9		- MRM (5.006-5.638 min) (295.0->**) 4Q53737.d			
13C5-PFHxA	2.46	5.30	-0.05	25676				
- MRM (318.0 -> 273.0) 4Q53737.d Smooth			318.0 -> 273.0		- MRM (5.125-5.757 min, 51 scans) (318.0 -> **) 4Q53737.d			
PFHxA	28.24	5.30	-0.05	253296	313.0 -> 118.9	3.0	1.3	4.0
- MRM (313.0 -> 269.0) 4Q53737.d Smooth			313.0 -> 269.0, 313.0 -> 118.9		- MRM (5.126-5.710 min) (313.0->**) 4Q53737.d			
13C3-HFPO-DA	9.99	5.65	-0.05	23756				
- MRM (286.9 -> 168.9) 4Q53737.d Smooth			286.9 -> 168.9		- MRM (5.491-6.086 min, 49 scans) (286.9 -> **) 4Q53737.d			

7.7.8

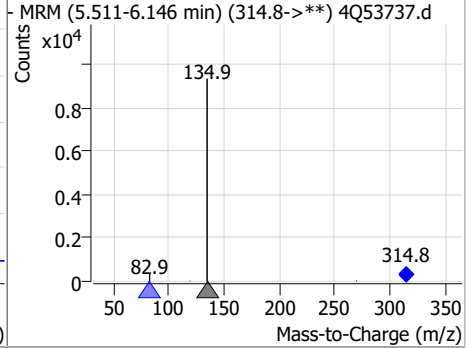
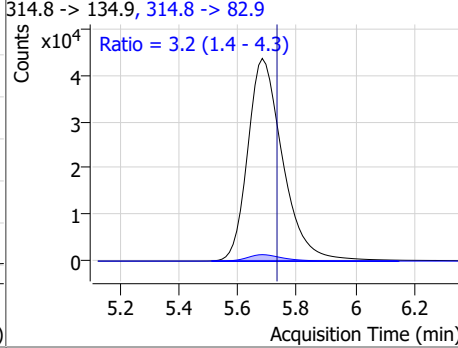
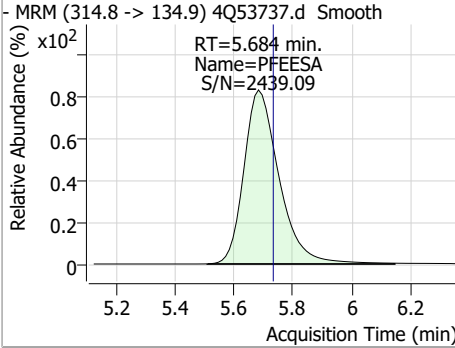
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Perfluorinated Compounds by LC/MS/MS

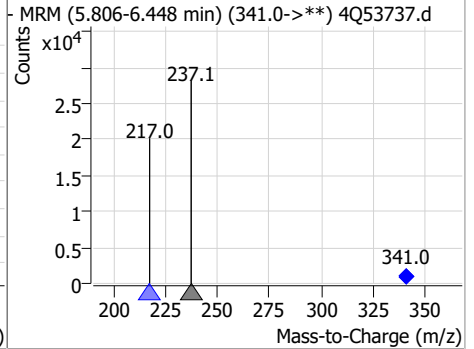
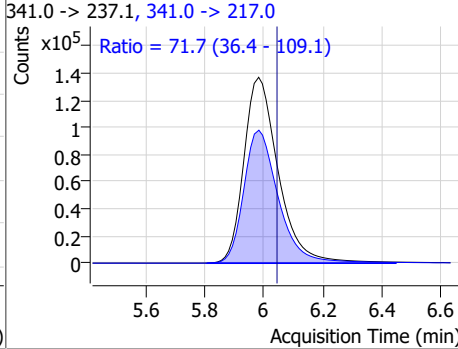
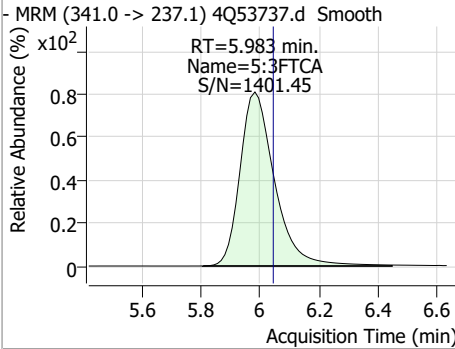
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	55.87	5.65	-0.05	140545	284.9 -> 184.9	9.6	4.7	14.0



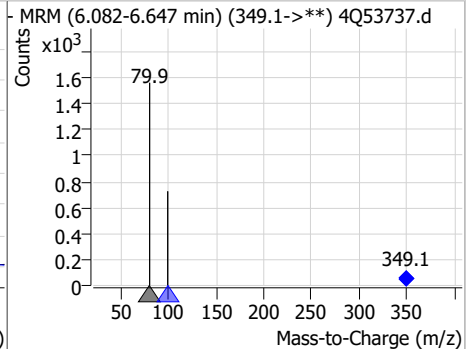
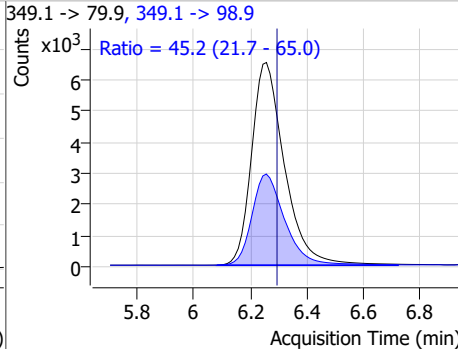
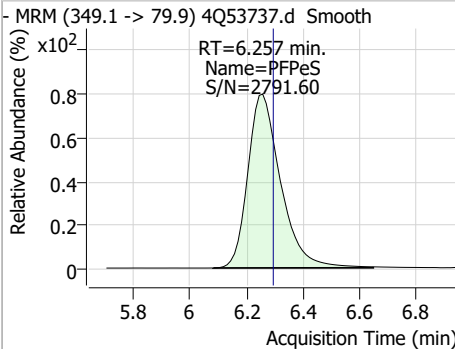
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	50.77	5.68	-0.05	360443	314.8 -> 82.9	3.2	1.4	4.3



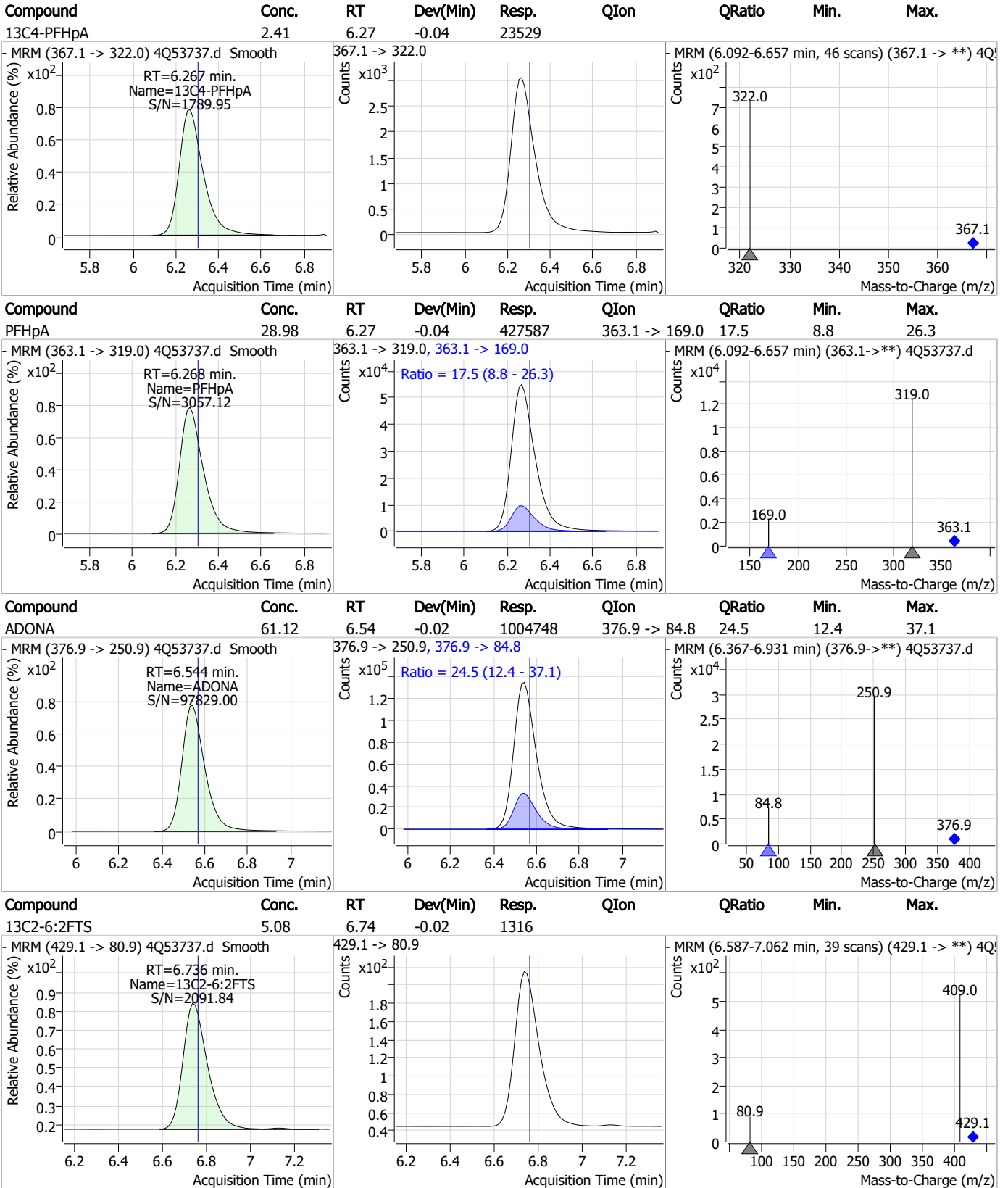
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	705.63	5.98	-0.06	1113871	341.0 -> 217.0	71.7	36.4	109.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	27.49	6.26	-0.04	52284	349.1 -> 98.9	45.2	21.7	65.0



Perfluorinated Compounds by LC/MS/MS

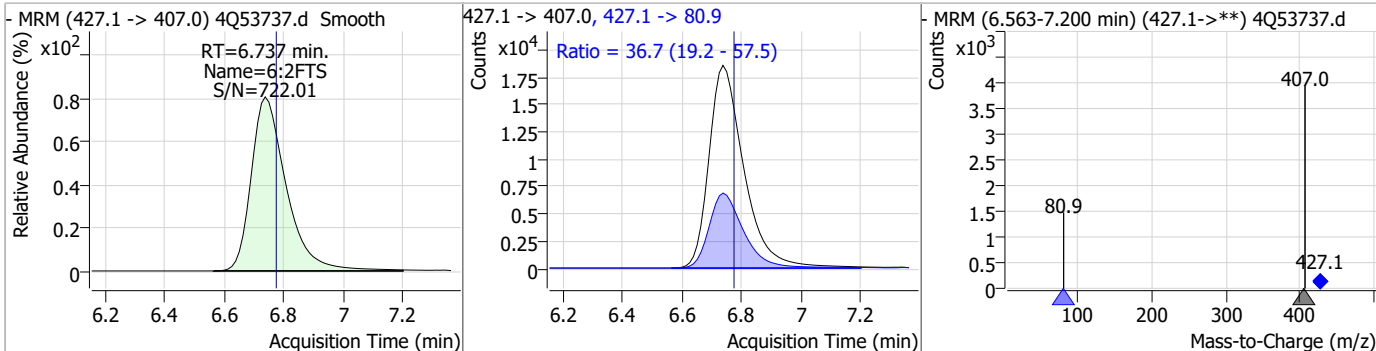


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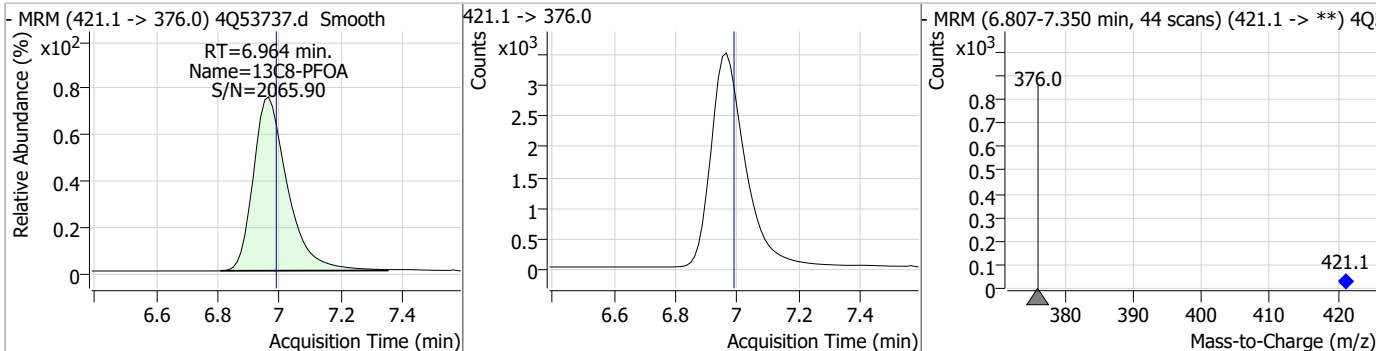
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Perfluorinated Compounds by LC/MS/MS

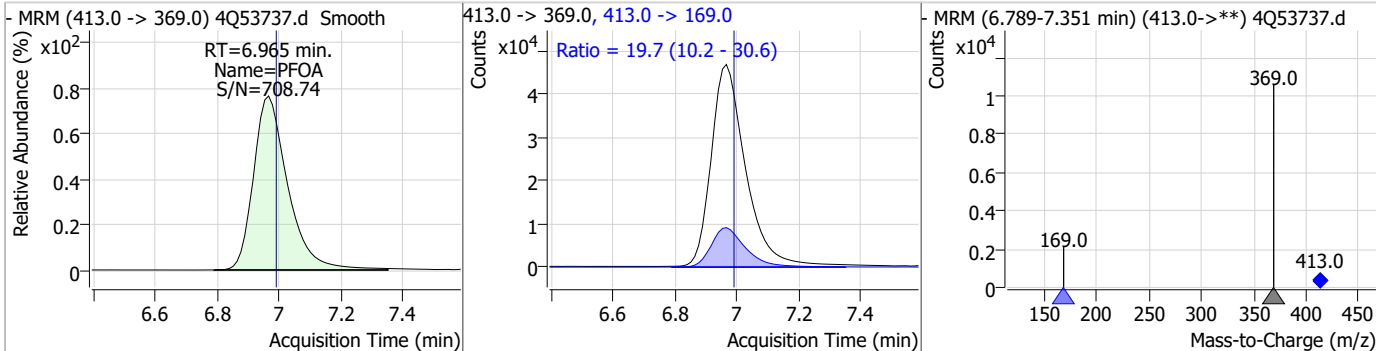
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	106.48	6.74	-0.04	151688	427.1 -> 80.9	36.7	19.2	57.5



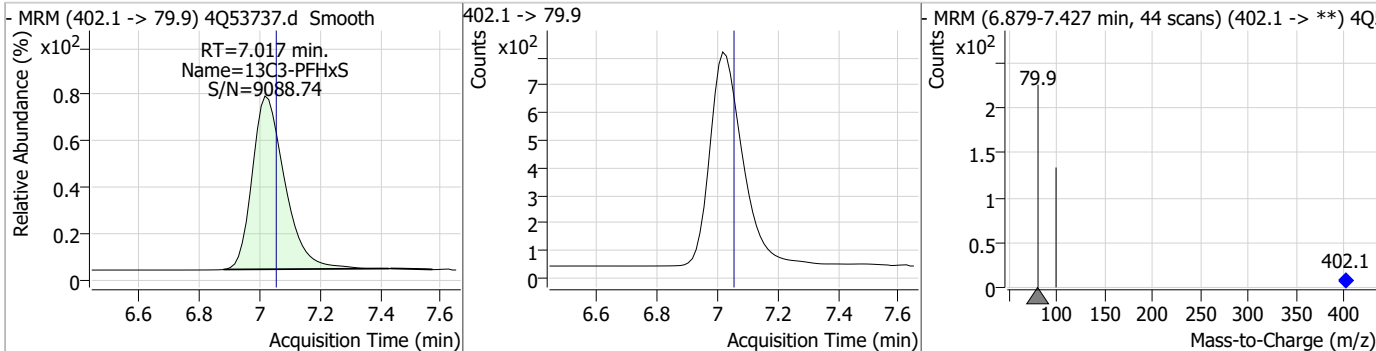
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	2.46	6.96	-0.02	26804	421.1 -> 376.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	27.73	6.97	-0.02	359828	413.0 -> 169.0	19.7	10.2	30.6

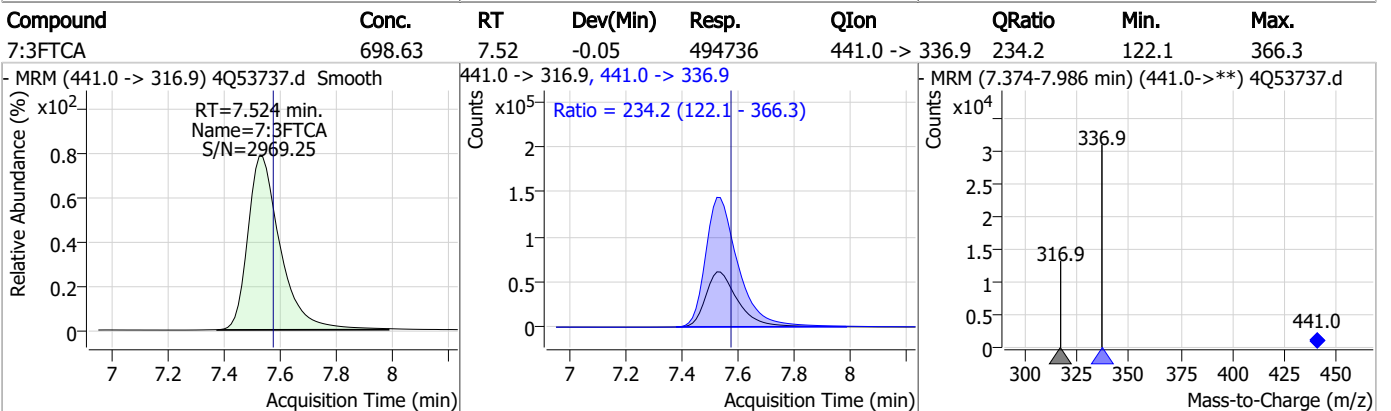
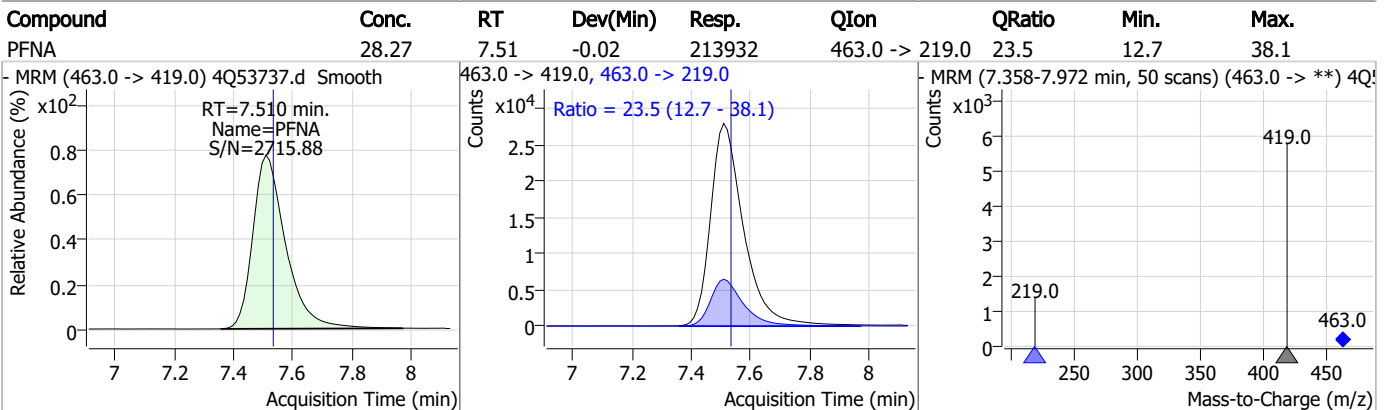
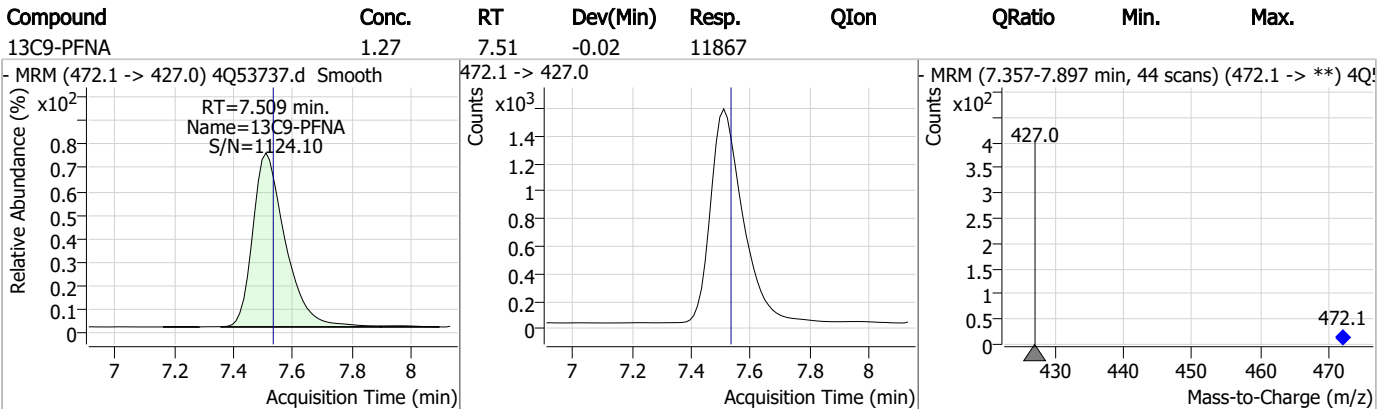
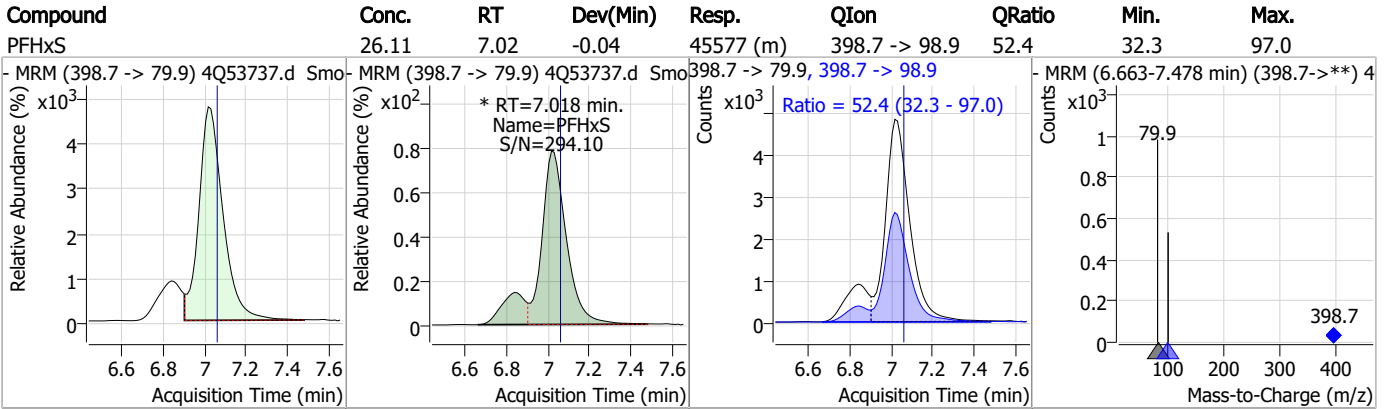


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	2.60	7.02	-0.04	5786	402.1 -> 79.9			

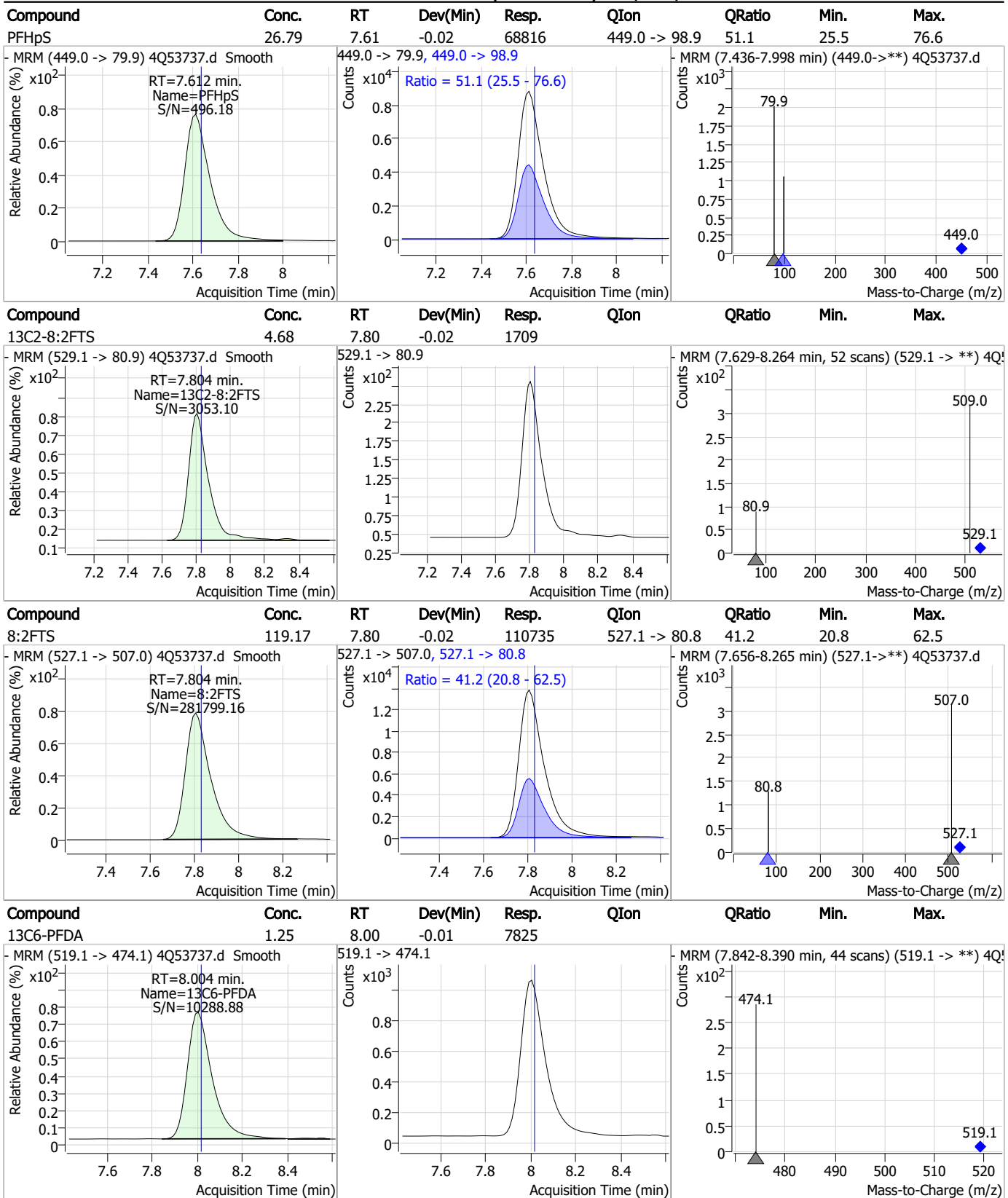


7.7.8
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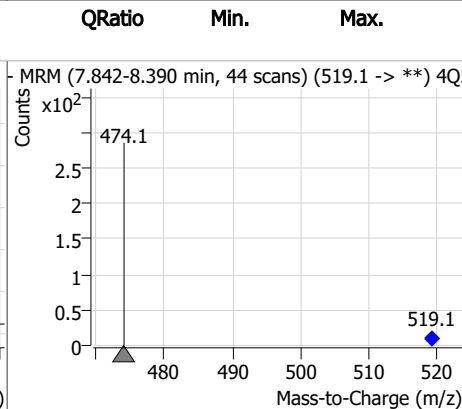
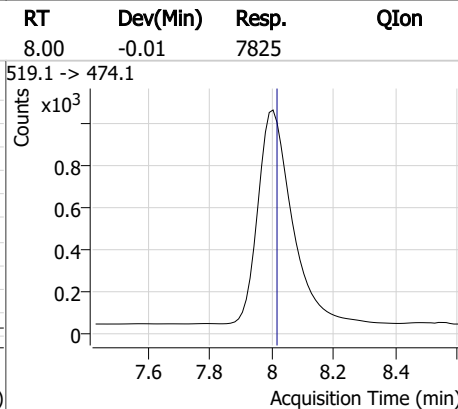
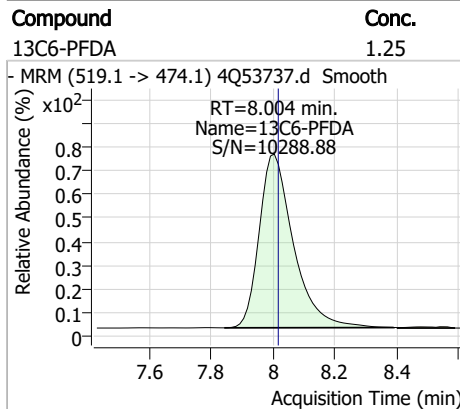
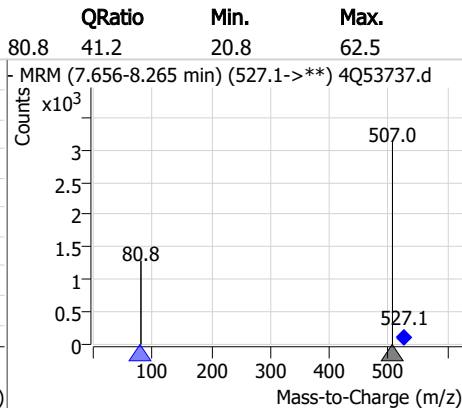
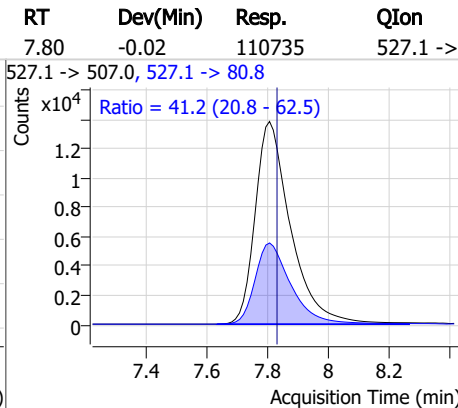
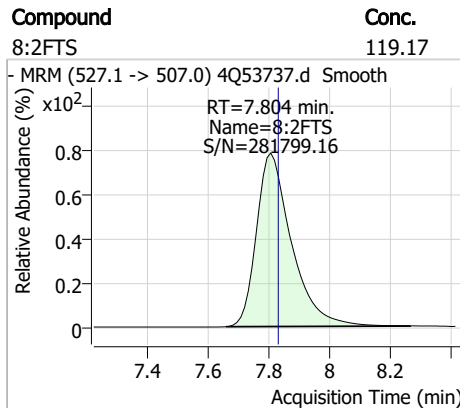
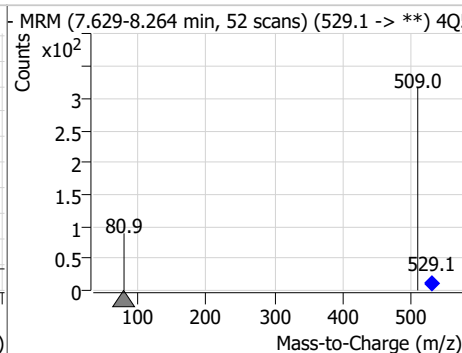
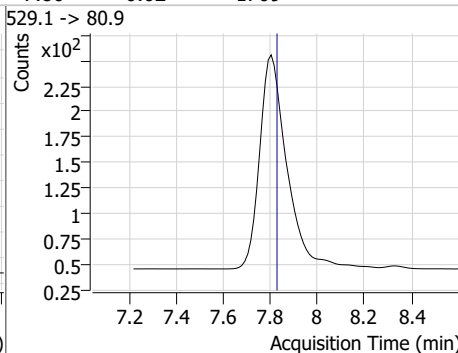
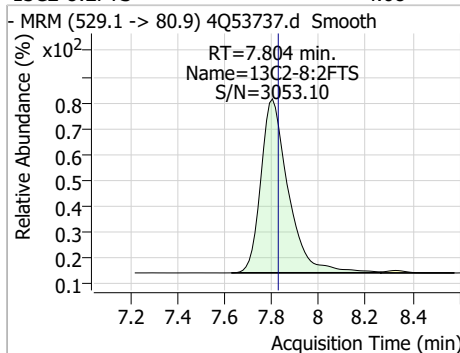
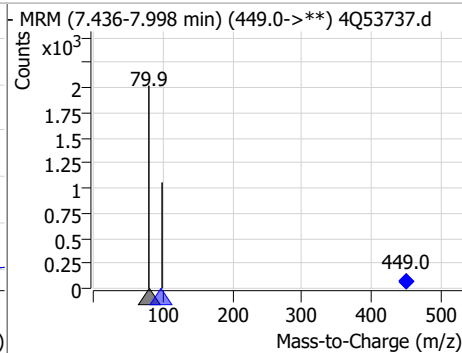
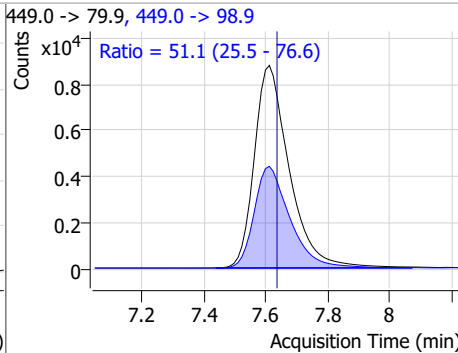
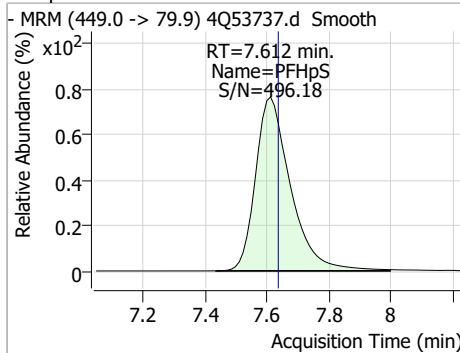
Perfluorinated Compounds by LC/MS/MS



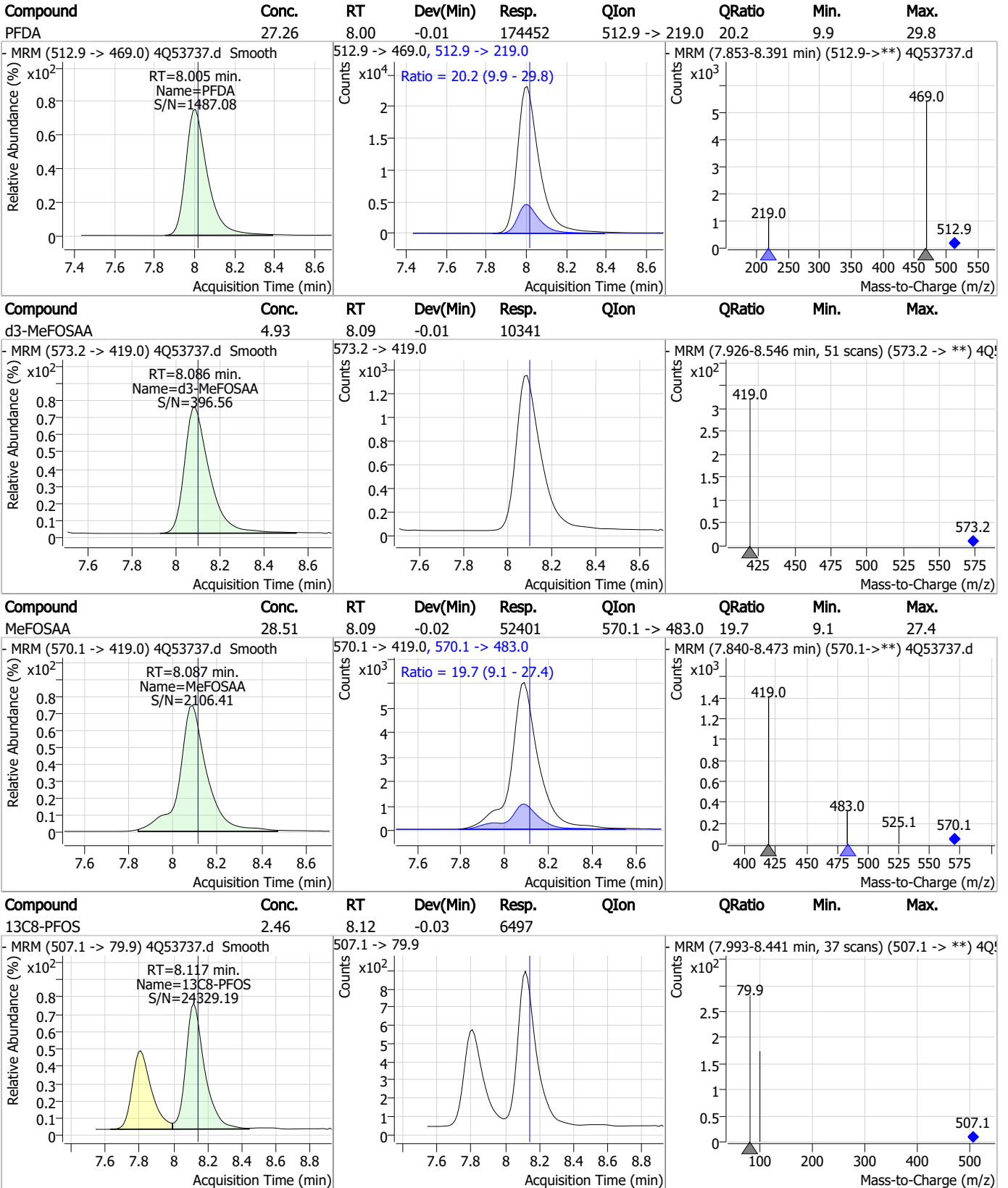
Perfluorinated Compounds by LC/MS/MS



7.7.8
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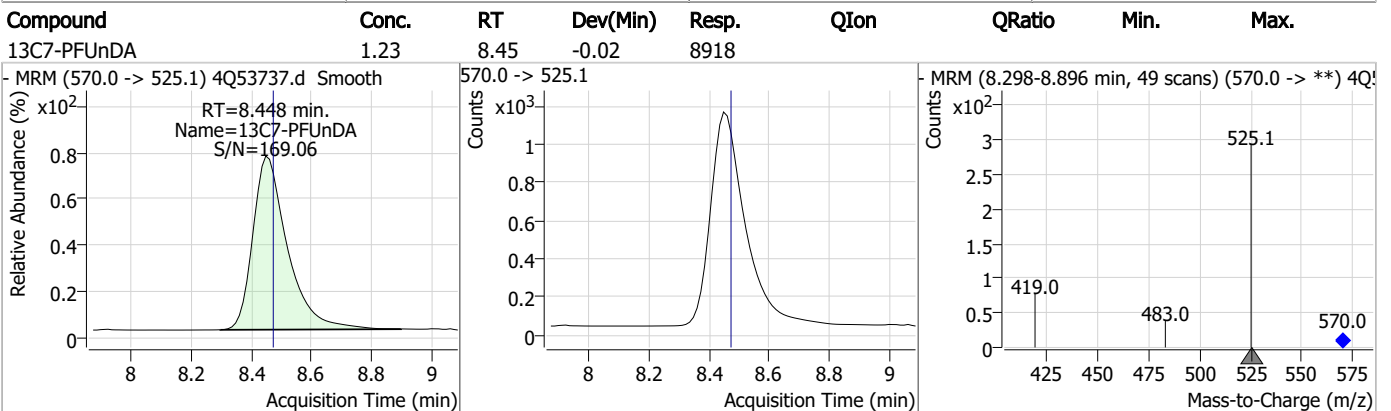
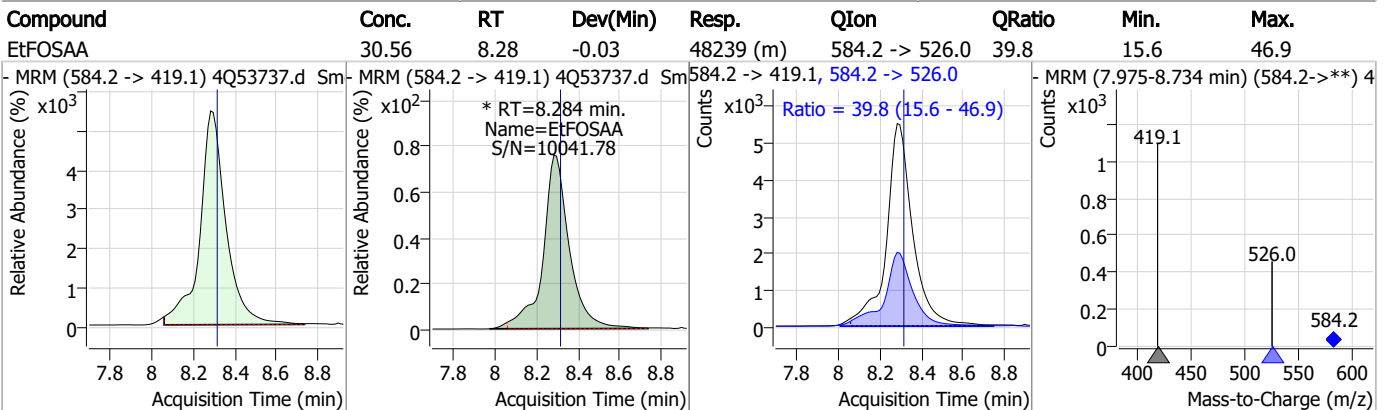
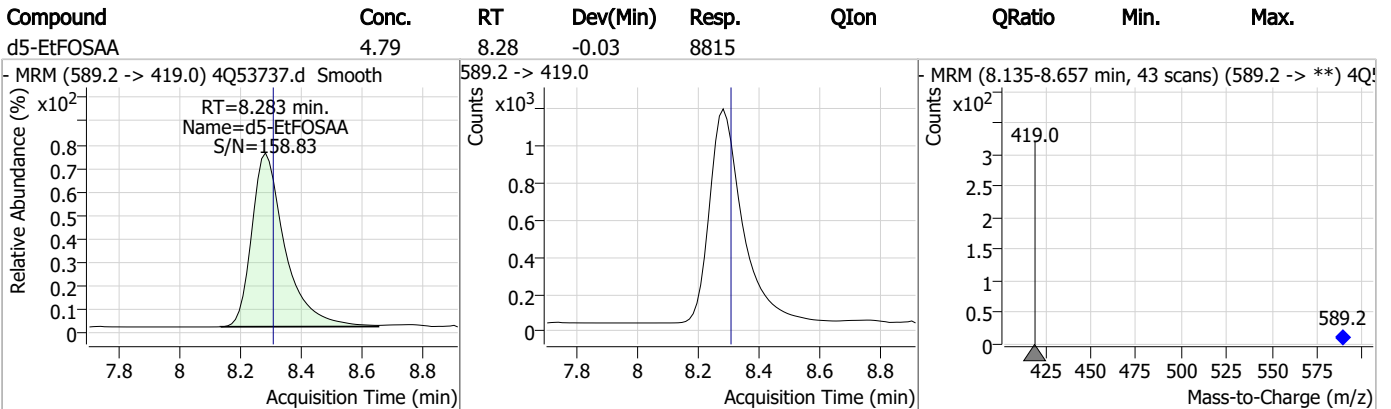
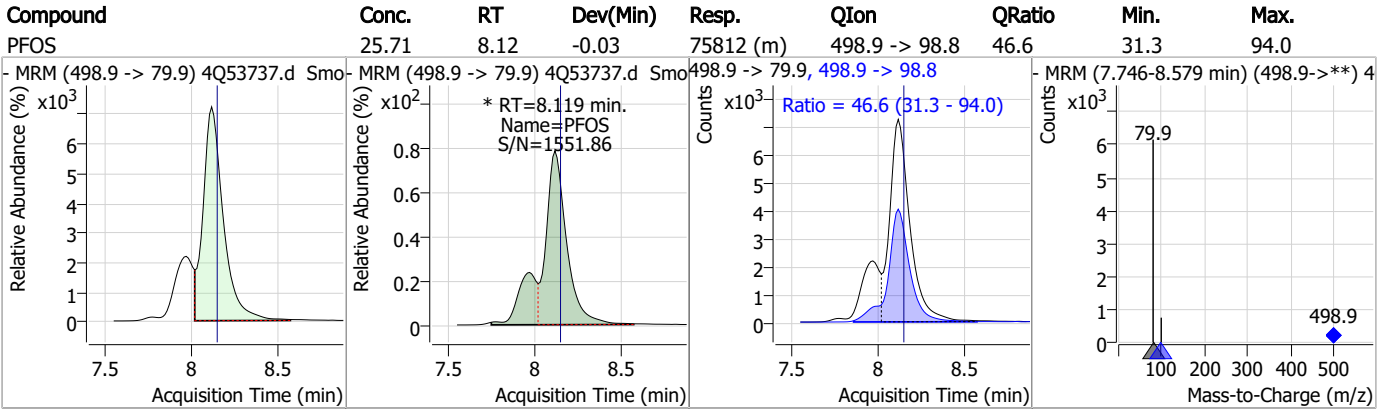


Perfluorinated Compounds by LC/MS/MS



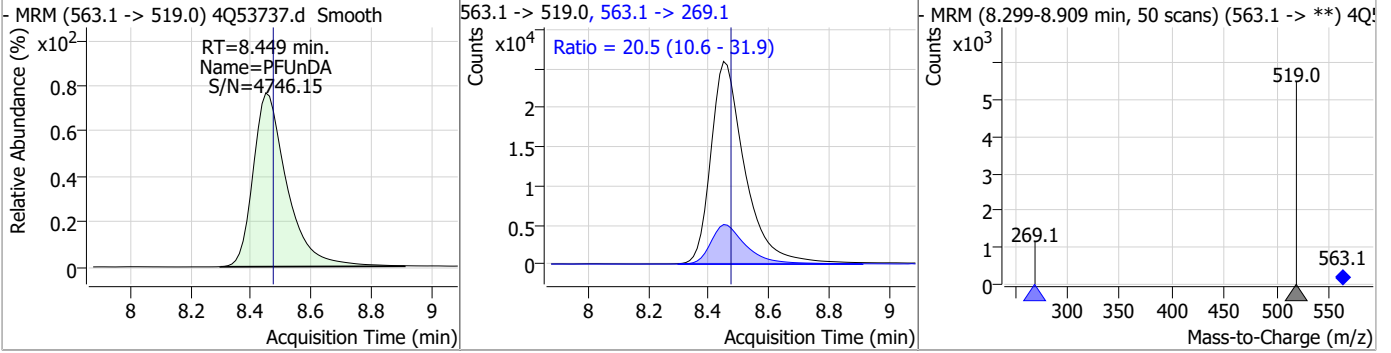
7.7.8
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Perfluorinated Compounds by LC/MS/MS

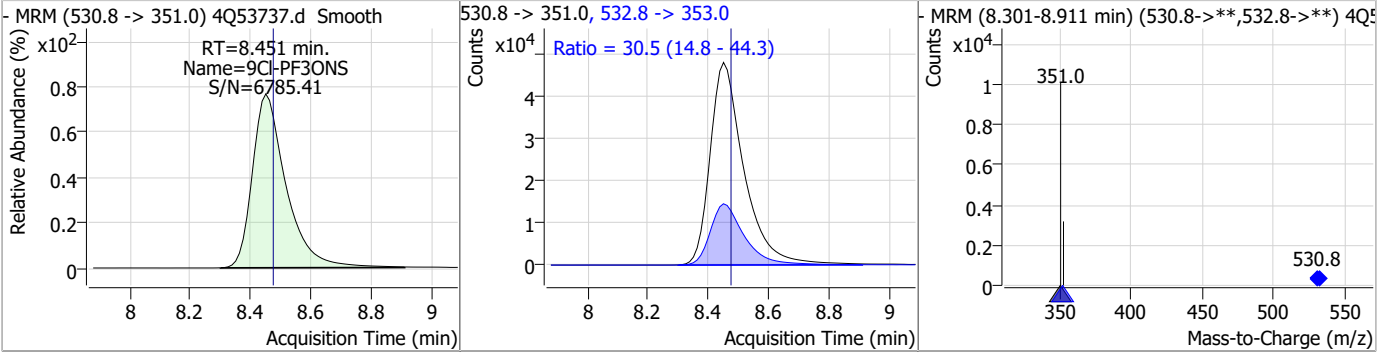


Perfluorinated Compounds by LC/MS/MS

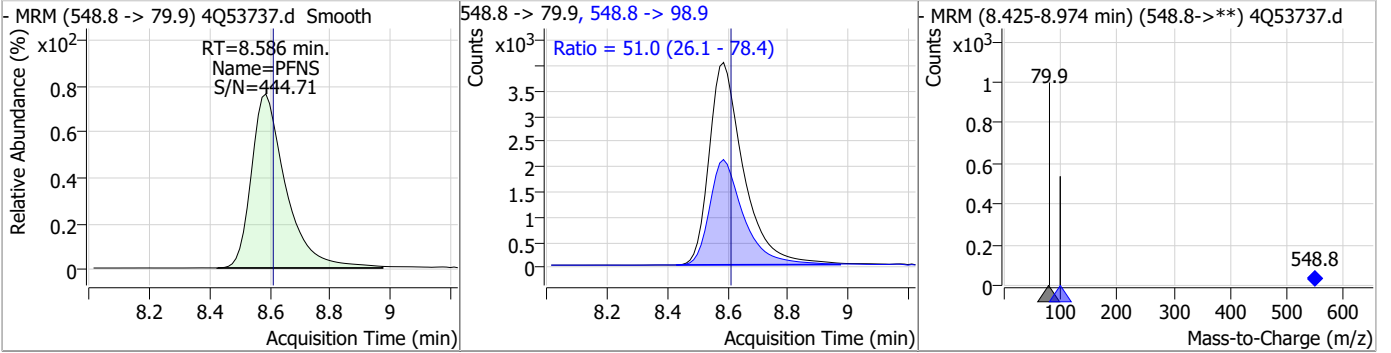
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	27.46	8.45	-0.02	200284	563.1 -> 269.1	20.5	10.6	31.9



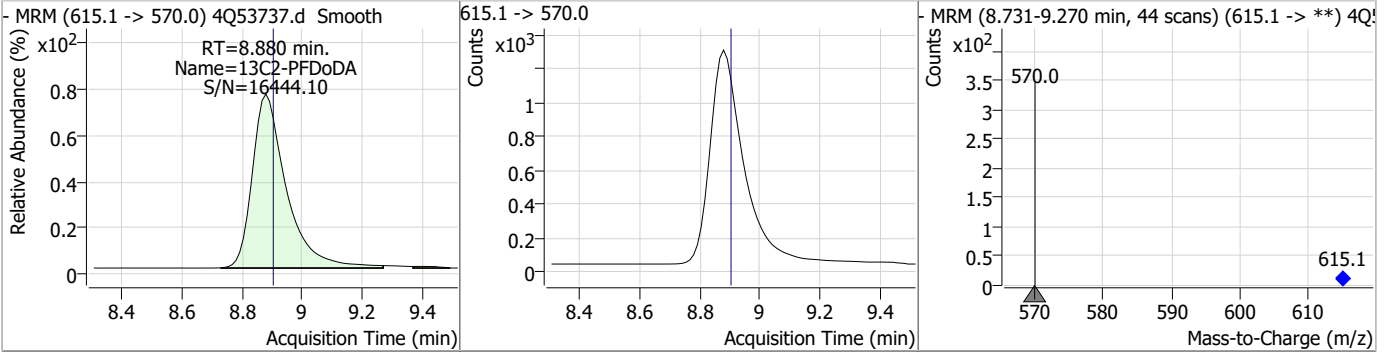
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	49.63	8.45	-0.02	371609	532.8 -> 353.0	30.5	14.8	44.3



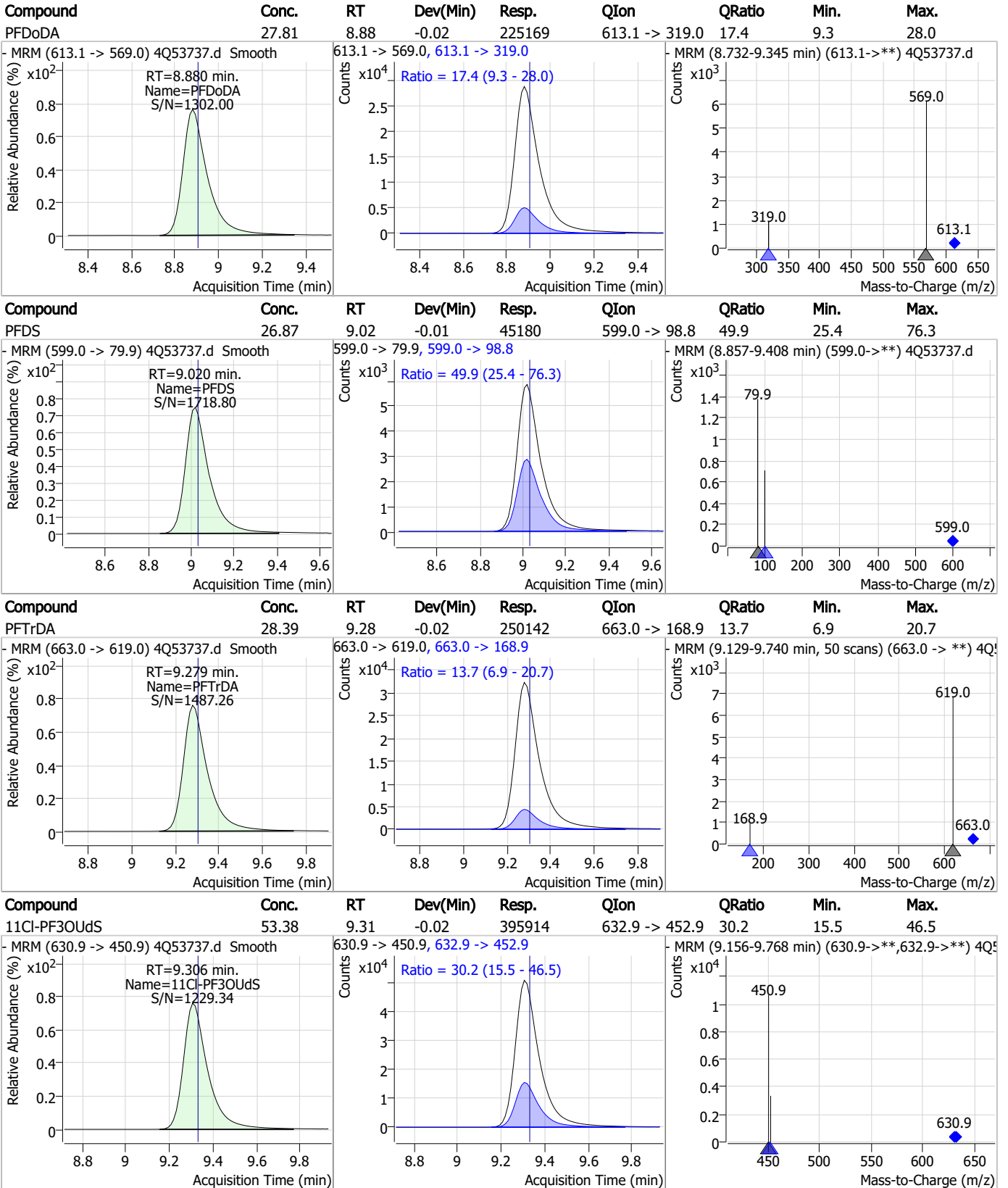
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	25.84	8.59	-0.02	32044	548.8 -> 98.9	51.0	26.1	78.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.29	8.88	-0.02	9926	615.1 -> 570.0			



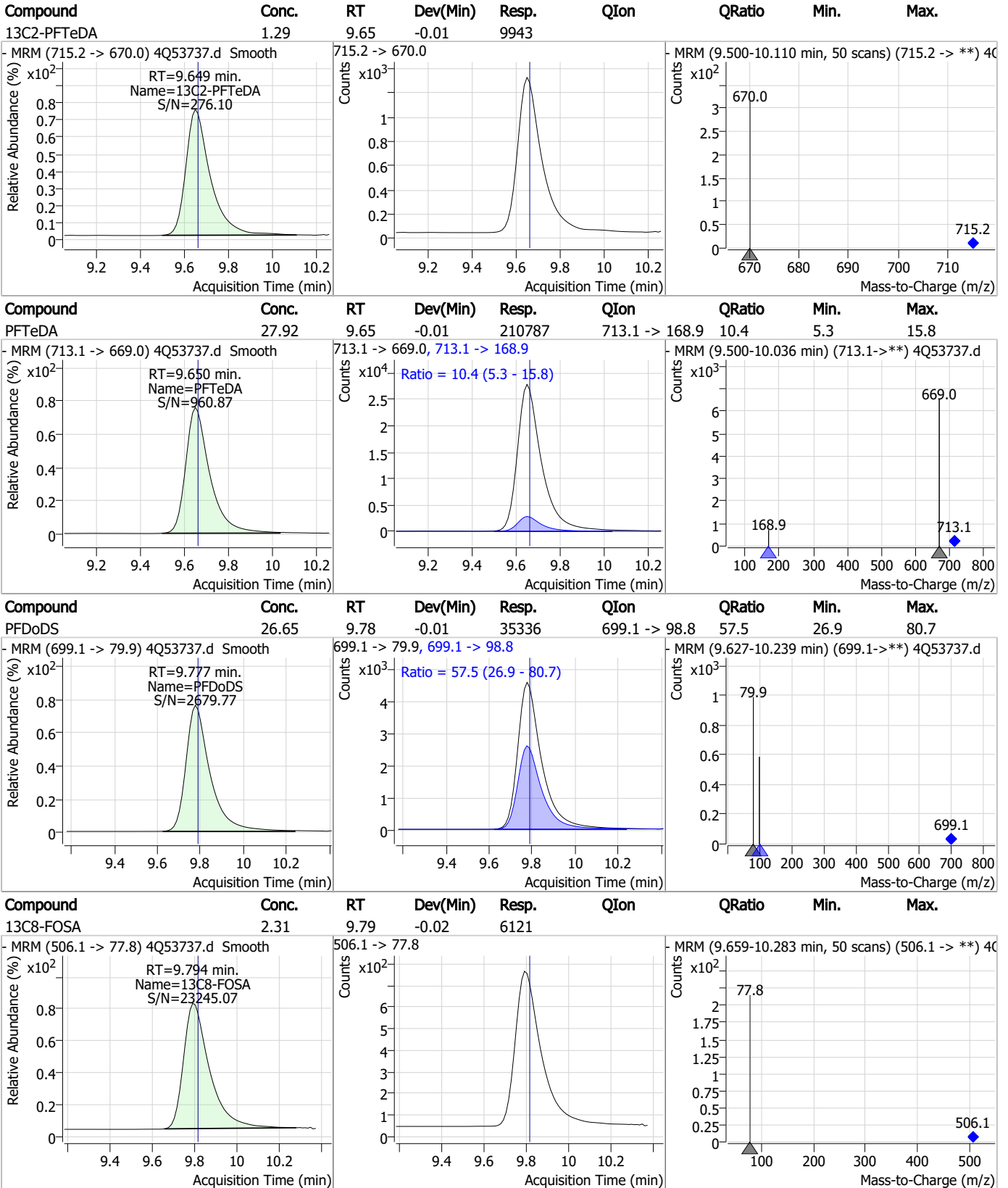
Perfluorinated Compounds by LC/MS/MS



7.7.8

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Perfluorinated Compounds by LC/MS/MS

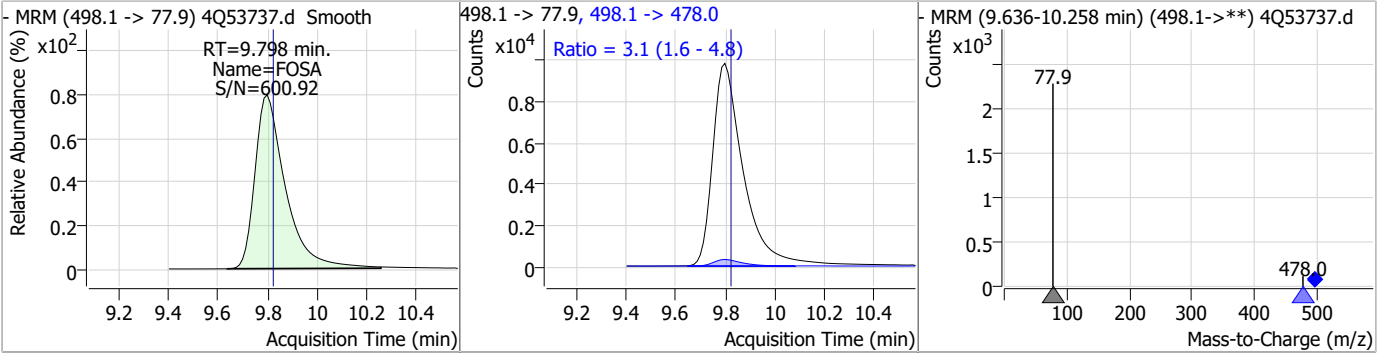


7.7.8

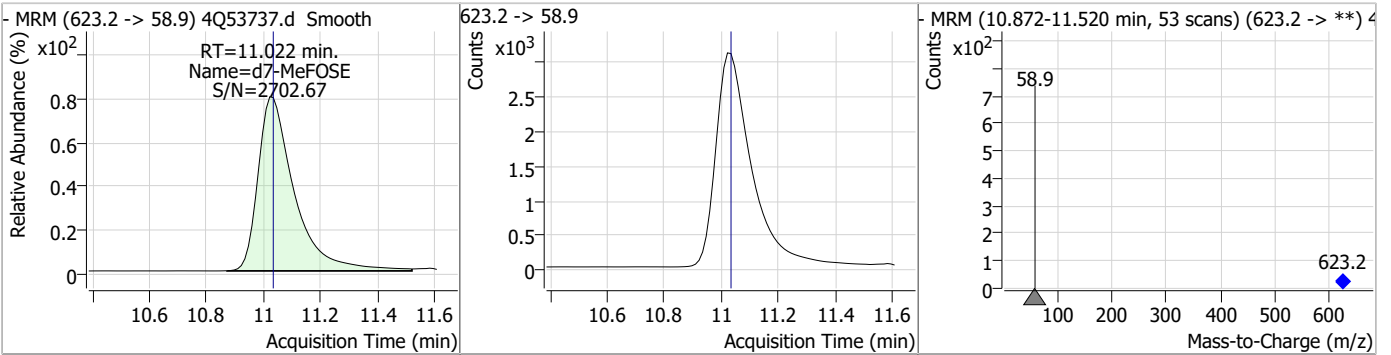
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Perfluorinated Compounds by LC/MS/MS

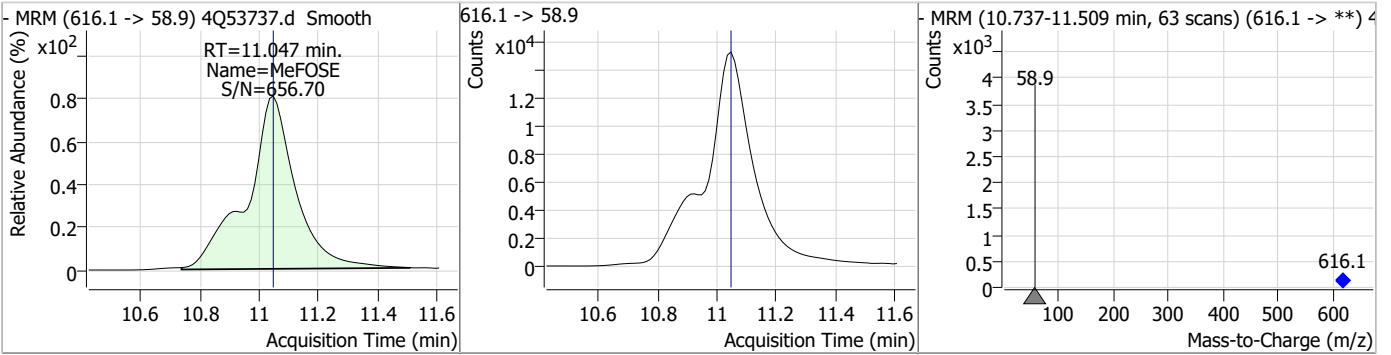
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	28.16	9.80	-0.02	84016	498.1 -> 478.0	3.1	1.6	4.8



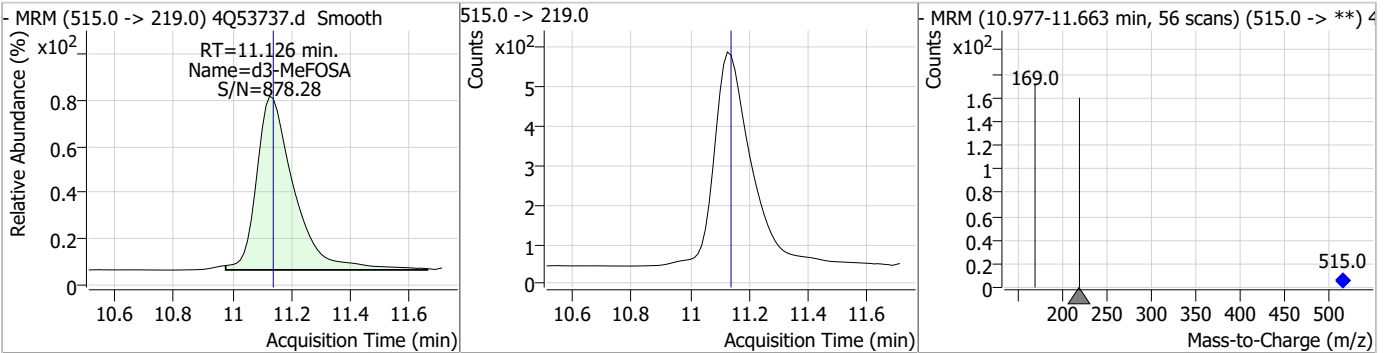
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.99	11.02	-0.01	27365	623.2 -> 58.9			



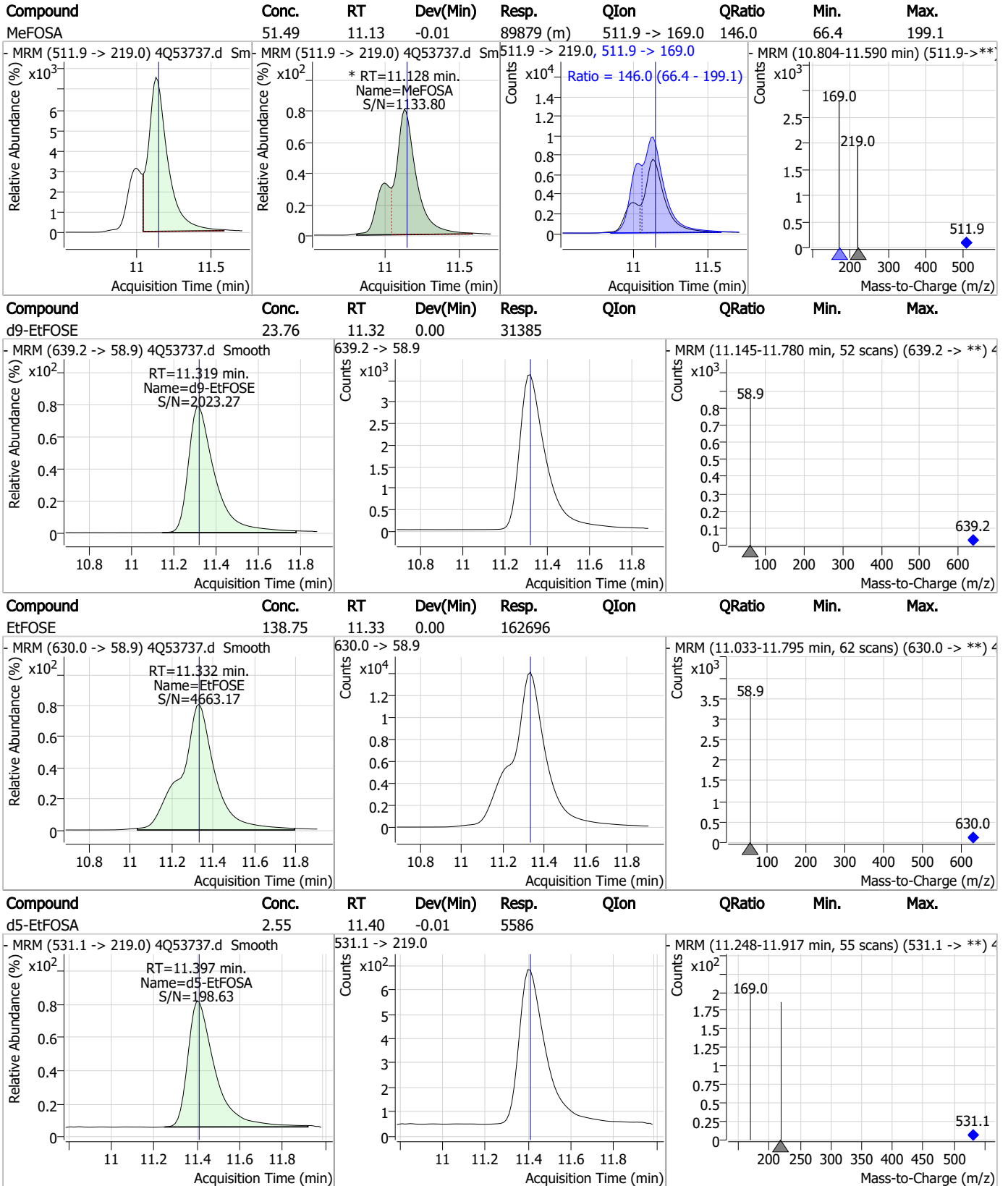
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	140.14	11.05	0.00	174720	616.1 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.60	11.13	-0.01	4810	515.0 -> 169.0			



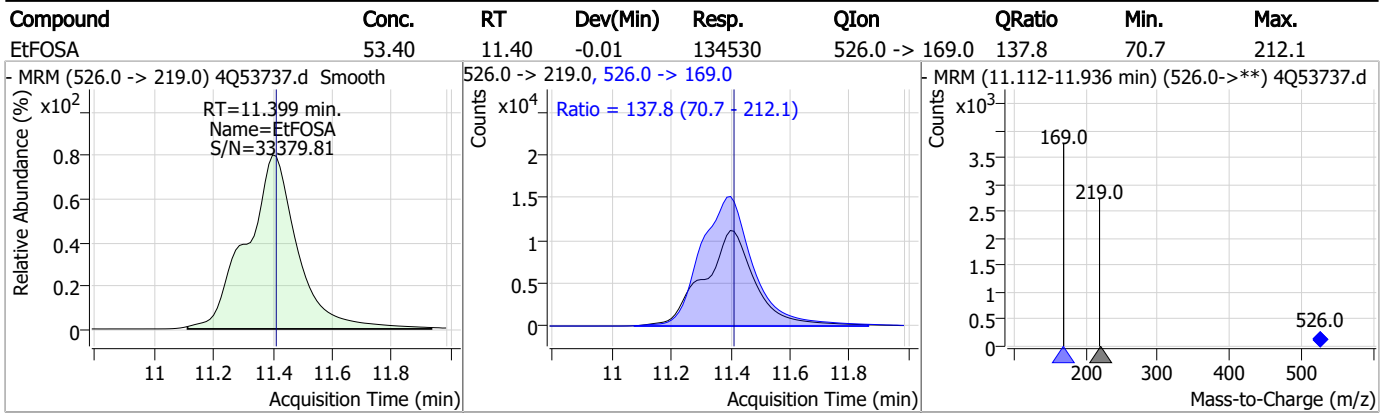
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q785-IC785 Method: EPA DRAFT 1633
Lab FileID: 4Q53737.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 17:28 Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak
MeFOSA	31506-32-8		11.13	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53738.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 5:42:50 PM
 Sample Name : ic785-8
 Vial : P1-A9
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.636	216.8 -> 171.9	68974	10.00 µg/L	-0.062
M5-PFPeA	4.125	268.3 -> 223.0	31740	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	24433	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	22495	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	25328	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	10855	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	6575	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	7146	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	9662	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9696	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	5948	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	6932	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	5482	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6060	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	567	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1210	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1798	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	9451	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	23441	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	8322	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	25958	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	30259	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	5053	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	4695	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5035	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	33739	5.00 µg/L	-0.075
18O2-PFHxS	7.016	403.0 -> 83.9	3489	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	28178	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	8298	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	11636	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	27047	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	567	4.75 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.0%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1210	4.81 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C2-8:2FTS	7.804	529.1 -> 80.9	1798	5.07 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C2-PFDoDA	8.880	615.1 -> 570.0	9662	1.29 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.2%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9696	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C3-PFBS	5.152	302.1 -> 79.9	6932	2.65 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.0%		
13C3-PFHxS	7.017	402.1 -> 79.9	5482	2.54 µg/L	-0.037

7.7.9
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C4-PFBA	2.636	216.8 -> 171.9	68974	9.81 µg/L	-0.062
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 98.1%		
13C4-PFHpA	6.267	367.1 -> 322.0	22495	2.38 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.4%		
13C5-PFHxA	5.297	318.0 -> 273.0	24433	2.42 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C5-PFPeA	4.125	268.3 -> 223.0	31740	4.81 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C6-PFDA	8.004	519.1 -> 474.1	6575	1.08 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 86.1%		
13C7-PFUnDA	8.448	570.0 -> 525.1	7146	1.01 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 81.0%		
13C8-FOSA	9.794	506.1 -> 77.8	5948	2.47 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C8-PFOA	6.964	421.1 -> 376.0	25328	2.52 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C8-PFOS	8.117	507.1 -> 79.9	6060	2.52 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C9-PFNA	7.509	472.1 -> 427.0	10855	1.18 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.6%		
d3-MeFOSAA	8.074	573.2 -> 419.0	9451	4.95 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C3-HFPO-DA	5.652	286.9 -> 168.9	23441	10.18 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 101.8%		
d3-MeFOSA	11.126	515.0 -> 219.0	4695	2.79 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.8%		
d5-EtFOSAA	8.283	589.2 -> 419.0	8322	4.98 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.5%		
d7-MeFOSE	11.022	623.2 -> 58.9	25958	25.03 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.1%		
d9-EtFOSE	11.319	639.2 -> 58.9	30259	25.19 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.7%		
d5-EtFOSA	11.410	531.1 -> 219.0	5053	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%		
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	265628	237.09 µg/L	98
		327.1 -> 80.9	108549		
6:2FTS	6.737	427.1 -> 407.0	322310	246.17 µg/L	96
		427.1 -> 80.9	115494		
8:2FTS	7.804	527.1 -> 507.0	236496	241.87 µg/L	98
		527.1 -> 80.8	95575		
EtFOSAA	8.284	584.2 -> 419.1	110140	73.90 µg/L	m 82
		584.2 -> 526.0	45272		
FOSA	9.798	498.1 -> 77.9	201884	69.64 µg/L	100
		498.1 -> 478.0	6269		
MeFOSAA	8.075	570.1 -> 419.0	117919	70.20 µg/L	100
		570.1 -> 483.0	21598		
PFBA	2.632	212.8 -> 168.9	711730	283.74 µg/L	100
PFBS	5.153	298.7 -> 79.9	144225	58.63 µg/L	98
		298.7 -> 98.8	53876		
PFDA	7.992	512.9 -> 469.0	407196	75.72 µg/L	100
		512.9 -> 219.0	81455		
PFDoDA	8.880	613.1 -> 569.0	538567	68.35 µg/L	97
		613.1 -> 319.0	94485		
PFDS	9.020	599.0 -> 79.9	109781	70.00 µg/L	98

7.7.9
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	54185			
PFHpA	6.268	363.1 -> 319.0	1013161	71.81	µg/L	99
		363.1 -> 169.0	181521			
PFHpS	7.612	449.0 -> 79.9	164066	68.47	µg/L	99
		449.0 -> 98.9	85373			
PFHxA	5.300	313.0 -> 269.0	617068	72.29	µg/L	99
		313.0 -> 118.9	18592			
PFHxS	7.018	398.7 -> 79.9	100822	60.97	µg/L	m 89
		398.7 -> 98.9	56868			
PFNA	7.510	463.0 -> 419.0	506663	73.20	µg/L	97
		463.0 -> 219.0	121508			
PFNS	8.586	548.8 -> 79.9	72476	62.67	µg/L	97
		548.8 -> 98.9	36307			
PFOA	6.965	413.0 -> 369.0	829524	67.65	µg/L	100
		413.0 -> 169.0	168758			
PFOS	8.119	498.9 -> 79.9	175005	63.64	µg/L	m 79
		498.9 -> 98.8	80945			
PFPeA	4.127	263.0 -> 219.0	976775	141.46	µg/L	100
PFPeS	6.257	349.1 -> 79.9	125797	69.83	µg/L	99
		349.1 -> 98.9	55212			
PFTeDA	9.650	713.1 -> 669.0	511571	69.50	µg/L	99
		713.1 -> 168.9	51114			
PFTrDA	9.279	663.0 -> 619.0	567279	66.15	µg/L	100
		663.0 -> 168.9	77273			
PFUnDA	8.449	563.1 -> 519.0	427831	73.20	µg/L	99
		563.1 -> 269.1	92565			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	914560	124.96	µg/L	100
		632.9 -> 452.9	283958			
9Cl-PF3ONS	8.451	530.8 -> 351.0	808630	109.43	µg/L	98
		532.8 -> 353.0	249374			
ADONA	6.544	376.9 -> 250.9	2395745	147.68	µg/L	100
		376.9 -> 84.8	588816			
HFPO-DA	5.653	284.9 -> 168.9	335478	135.14	µg/L	99
		284.9 -> 184.9	32534			
3:3FTCA	3.573	241.0 -> 177.0	154191	394.59	µg/L	99
		241.0 -> 117.0	13624			
5:3FTCA	5.983	341.0 -> 237.1	2705526	1801.08	µg/L	99
		341.0 -> 217.0	1950465			
7:3FTCA	7.524	441.0 -> 316.9	1210006	1795.55	µg/L	94
		441.0 -> 336.9	2826738			
EtFOSA	11.399	526.0 -> 219.0	328854	144.31	µg/L	97
		526.0 -> 169.0	452537			
EtFOSE	11.332	630.0 -> 58.9	385462	340.95	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	226137	132.72	µg/L	m 92
		511.9 -> 169.0	321173			
MeFOSE	11.047	616.1 -> 58.9	437268	369.73	µg/L	m 100
PFDoS	9.777	699.1 -> 79.9	84263	68.13	µg/L	97
		699.1 -> 98.8	47118			
NFDHA	5.179	295.0 -> 201.0	73977	131.28	µg/L	97
		295.0 -> 84.9	18851			
PFMBA	4.529	279.0 -> 85.1	562838	141.53	µg/L	100
PFMPA	3.265	229.0 -> 84.9	637303	144.12	µg/L	100
PFEESA	5.684	314.8 -> 134.9	828431	122.62	µg/L	98
		314.8 -> 82.9	28421			

= Qualifier out of range, m = manually integrated, + = Area summed

7.7.9
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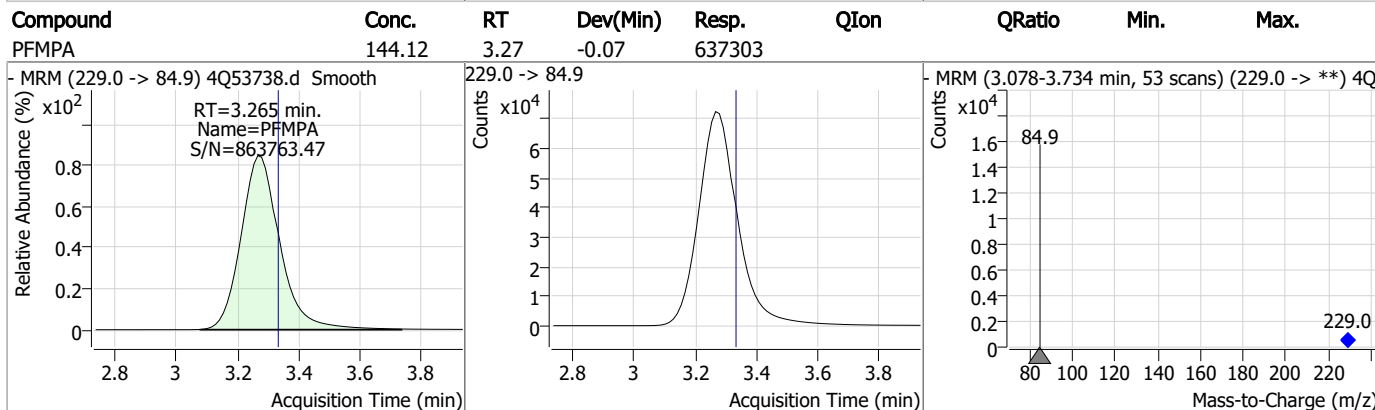
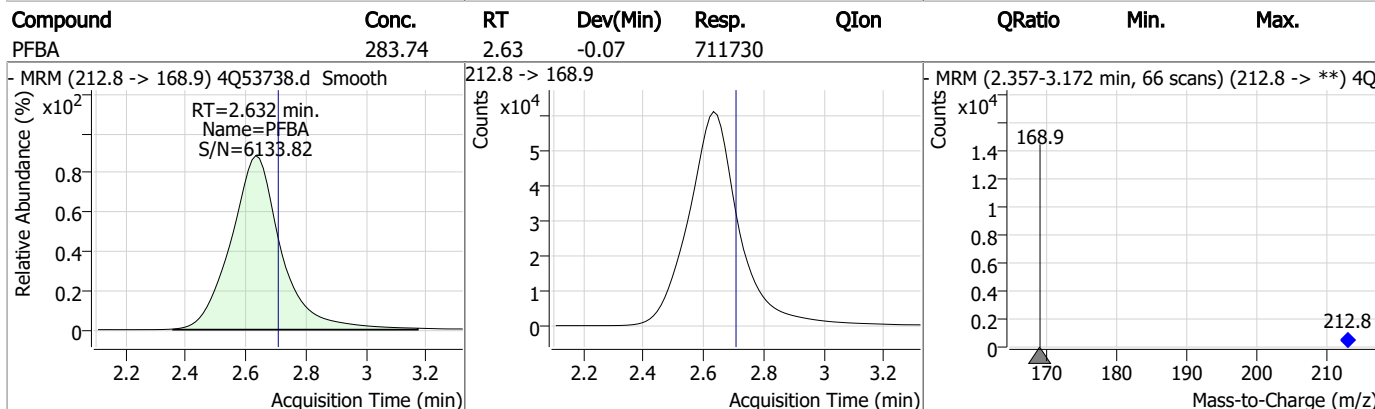
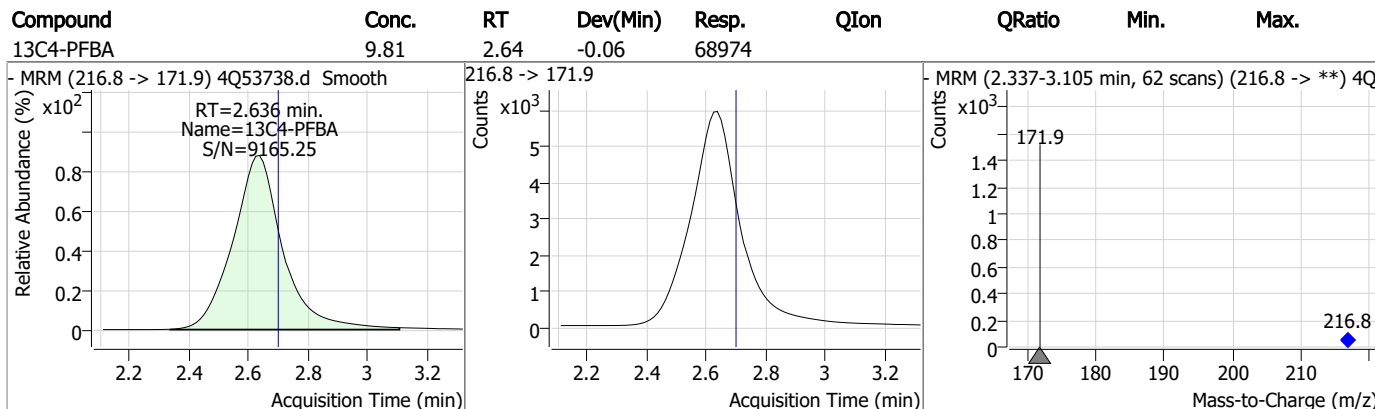
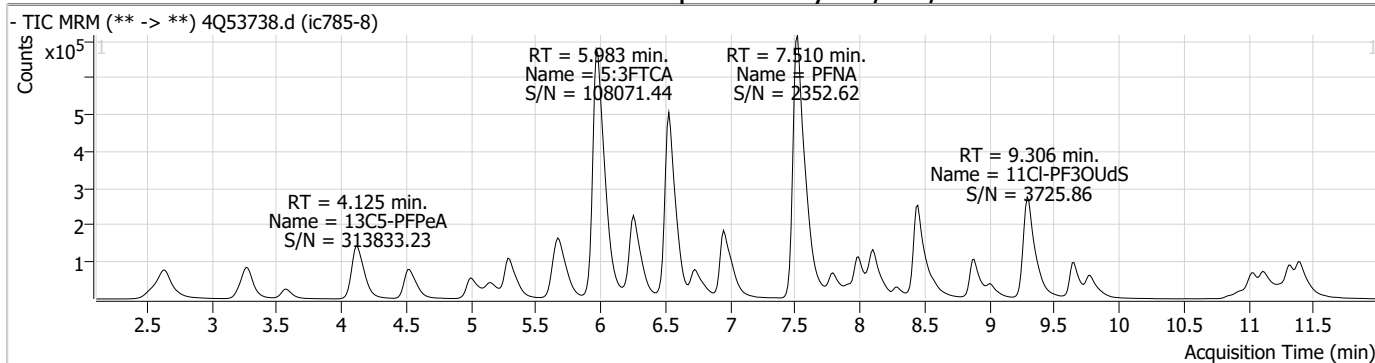
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.9

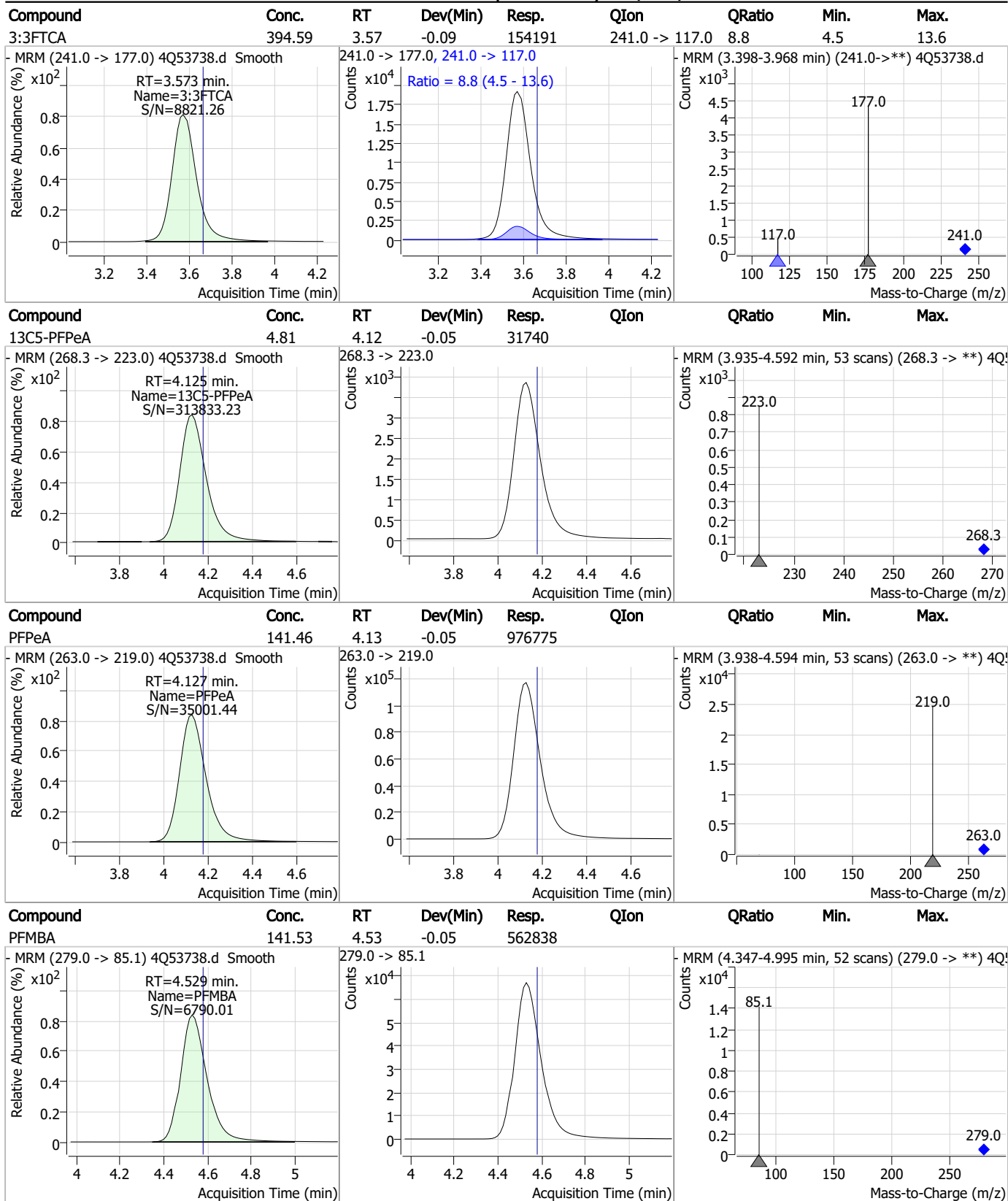
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Perfluorinated Compounds by LC/MS/MS



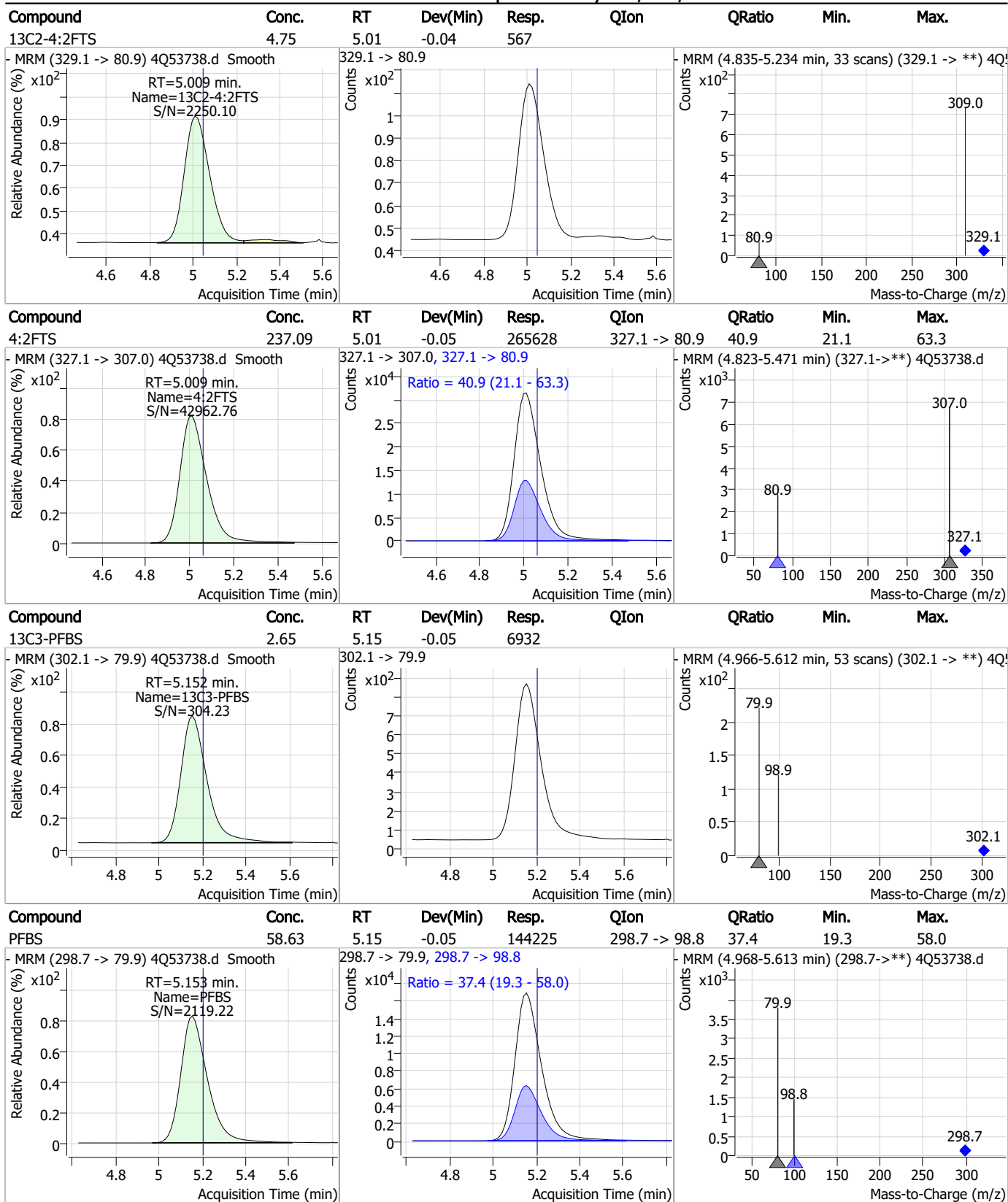
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Perfluorinated Compounds by LC/MS/MS



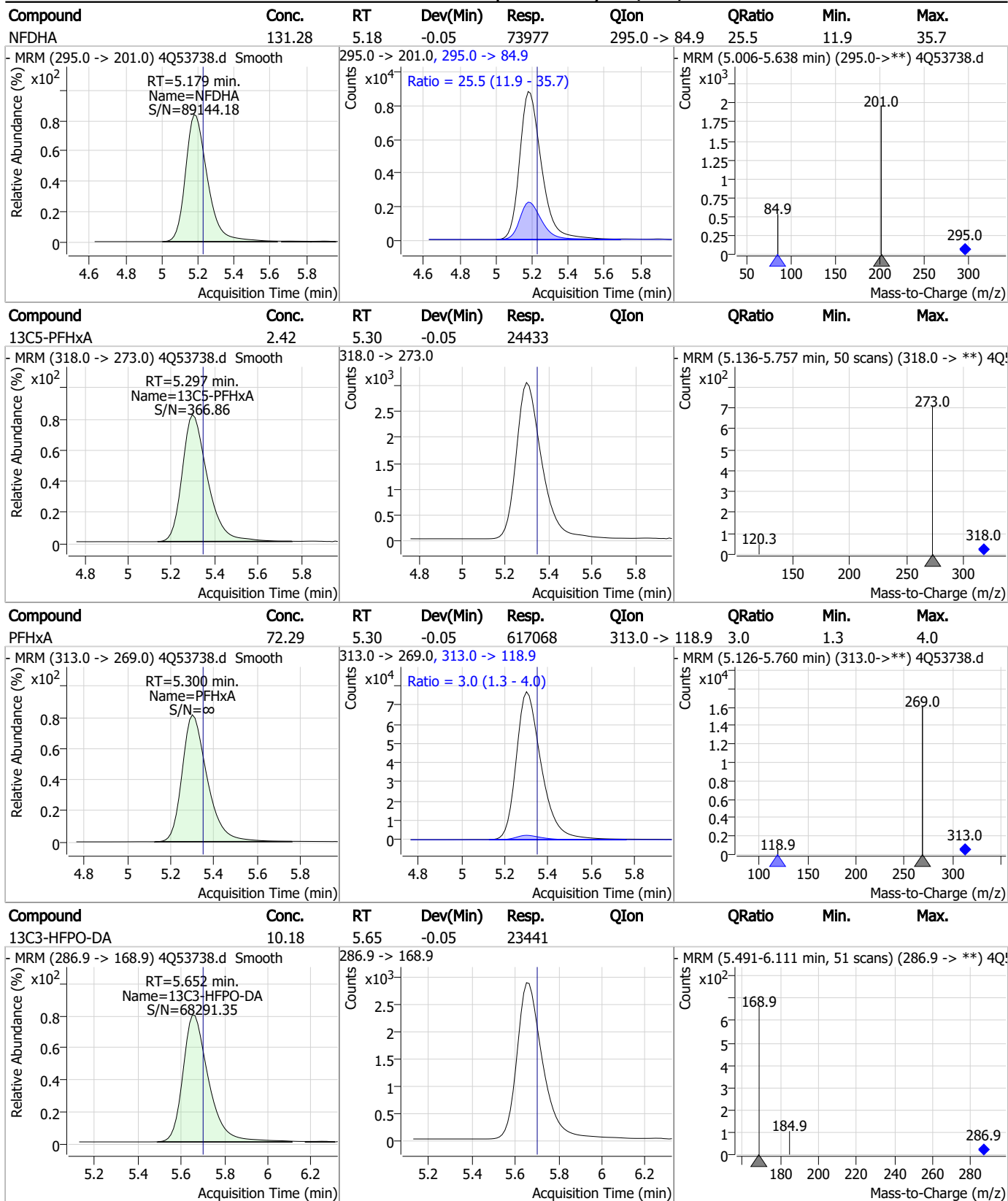
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Perfluorinated Compounds by LC/MS/MS



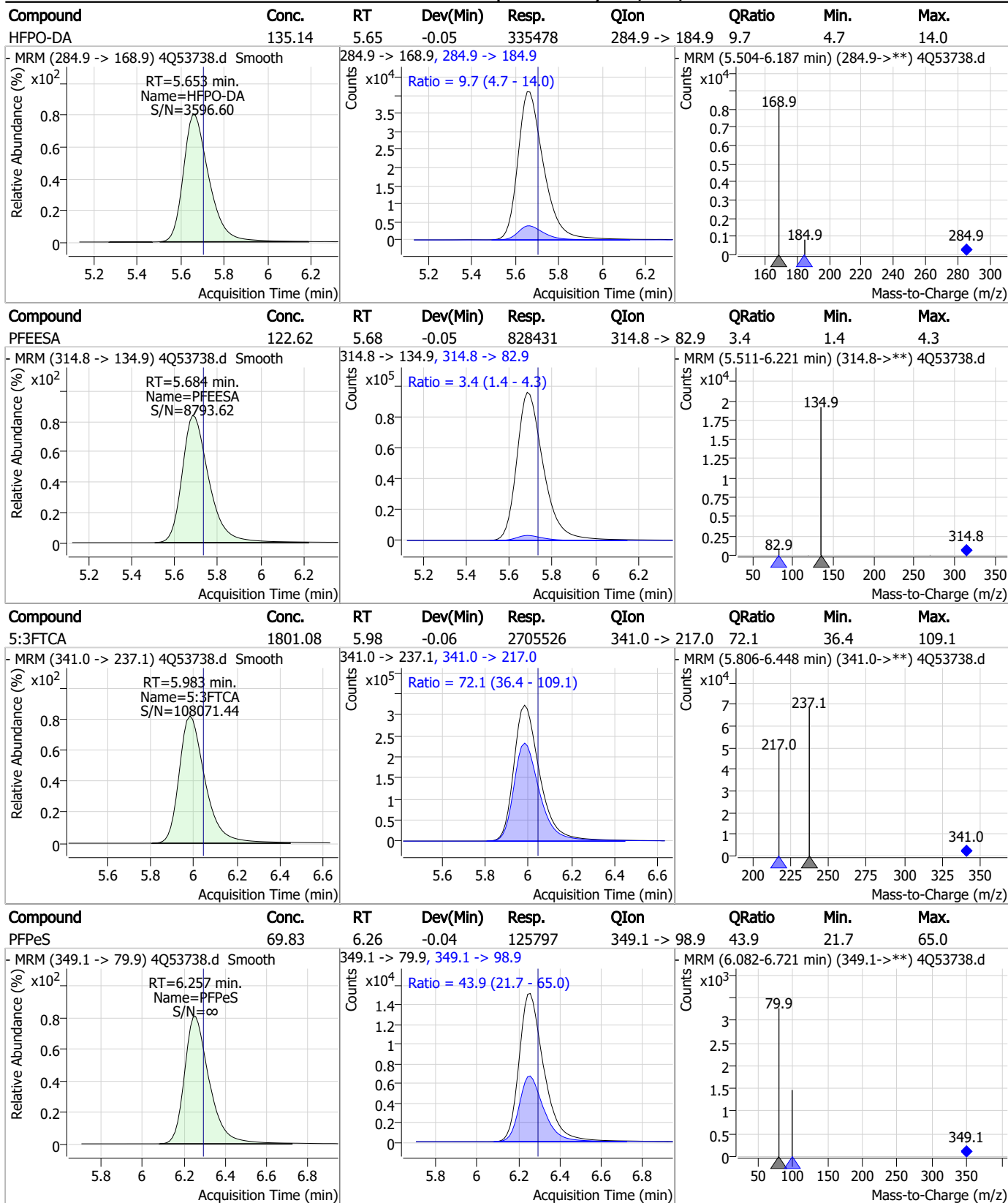
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Perfluorinated Compounds by LC/MS/MS



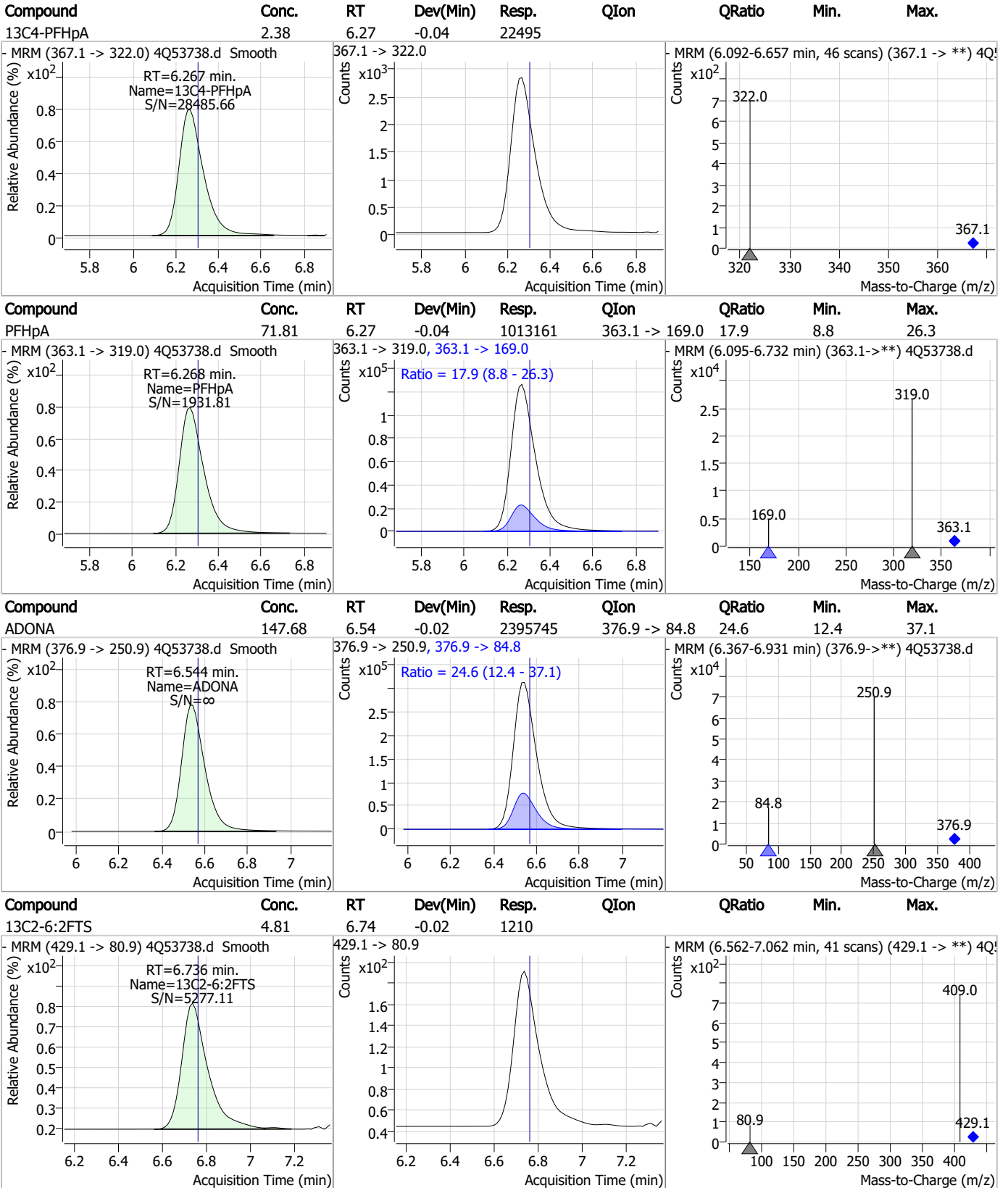
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Perfluorinated Compounds by LC/MS/MS



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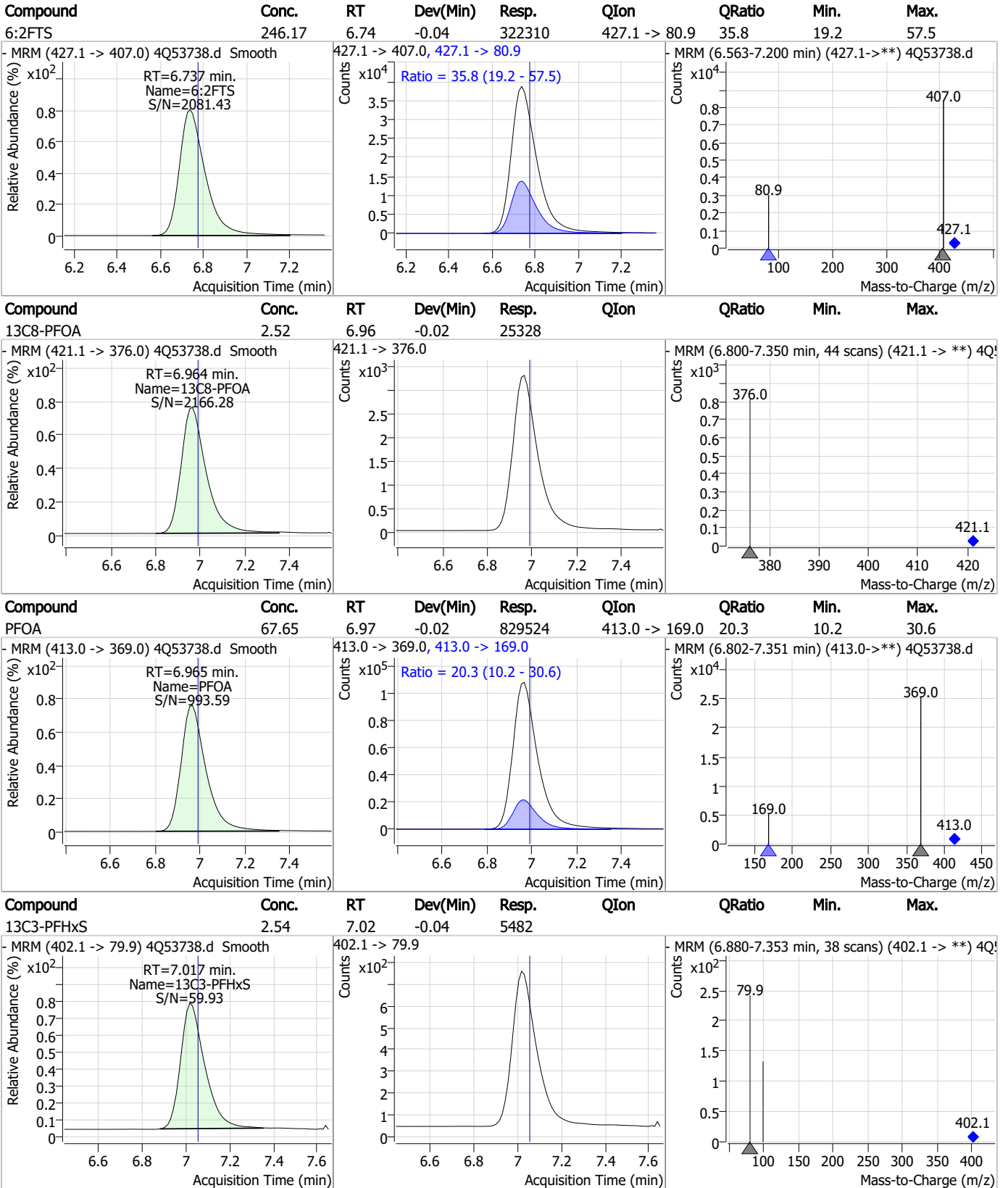
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

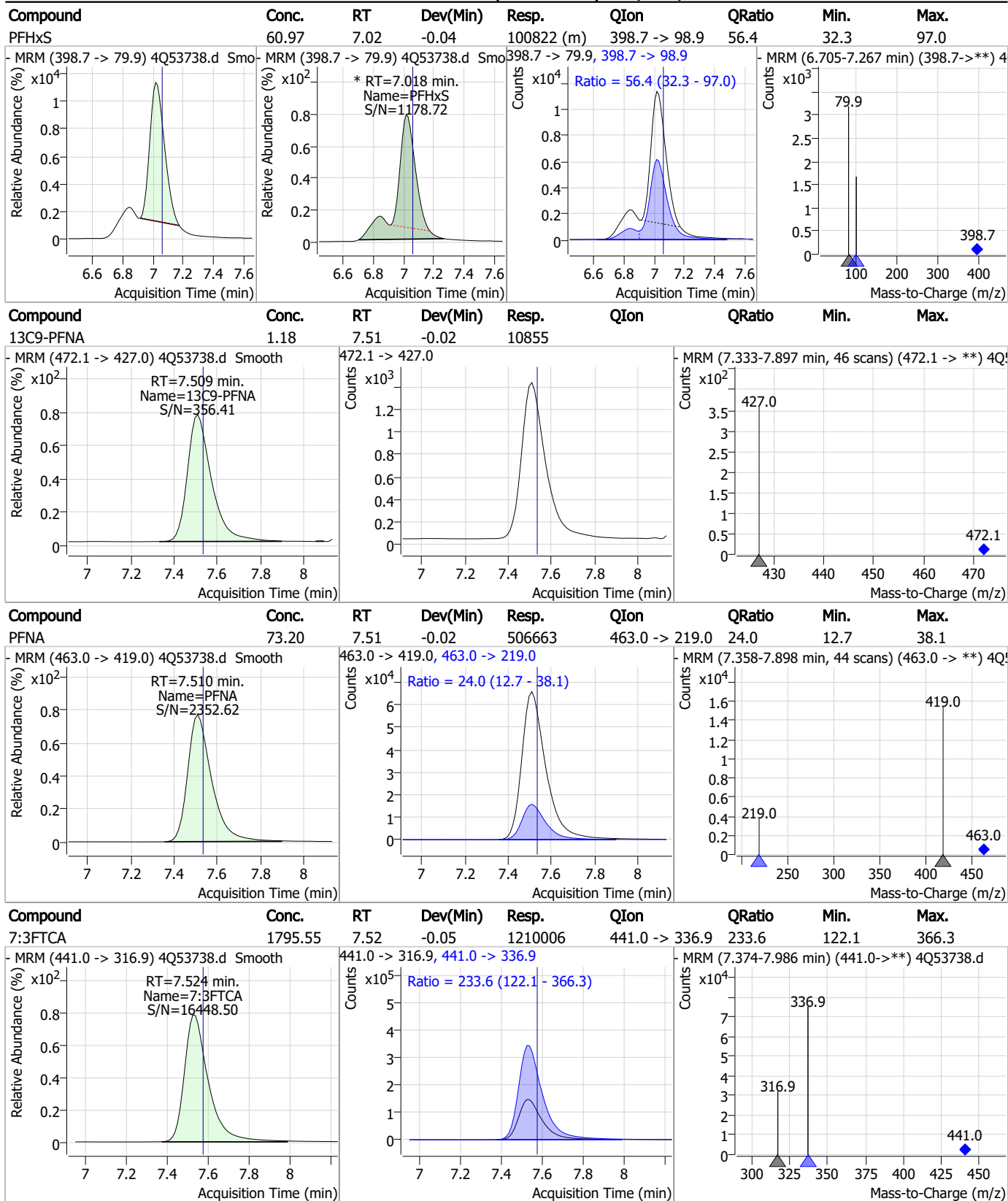


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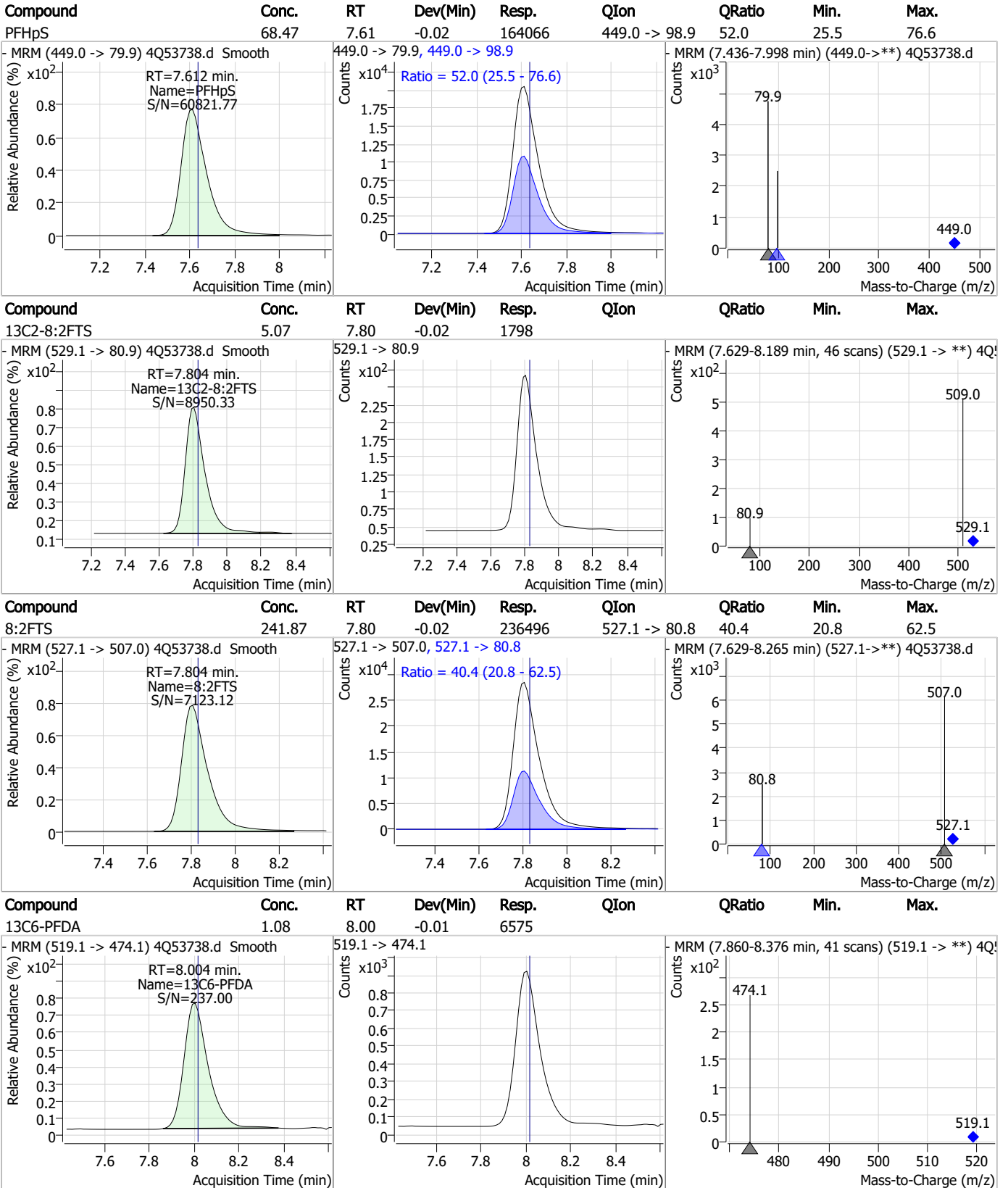


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

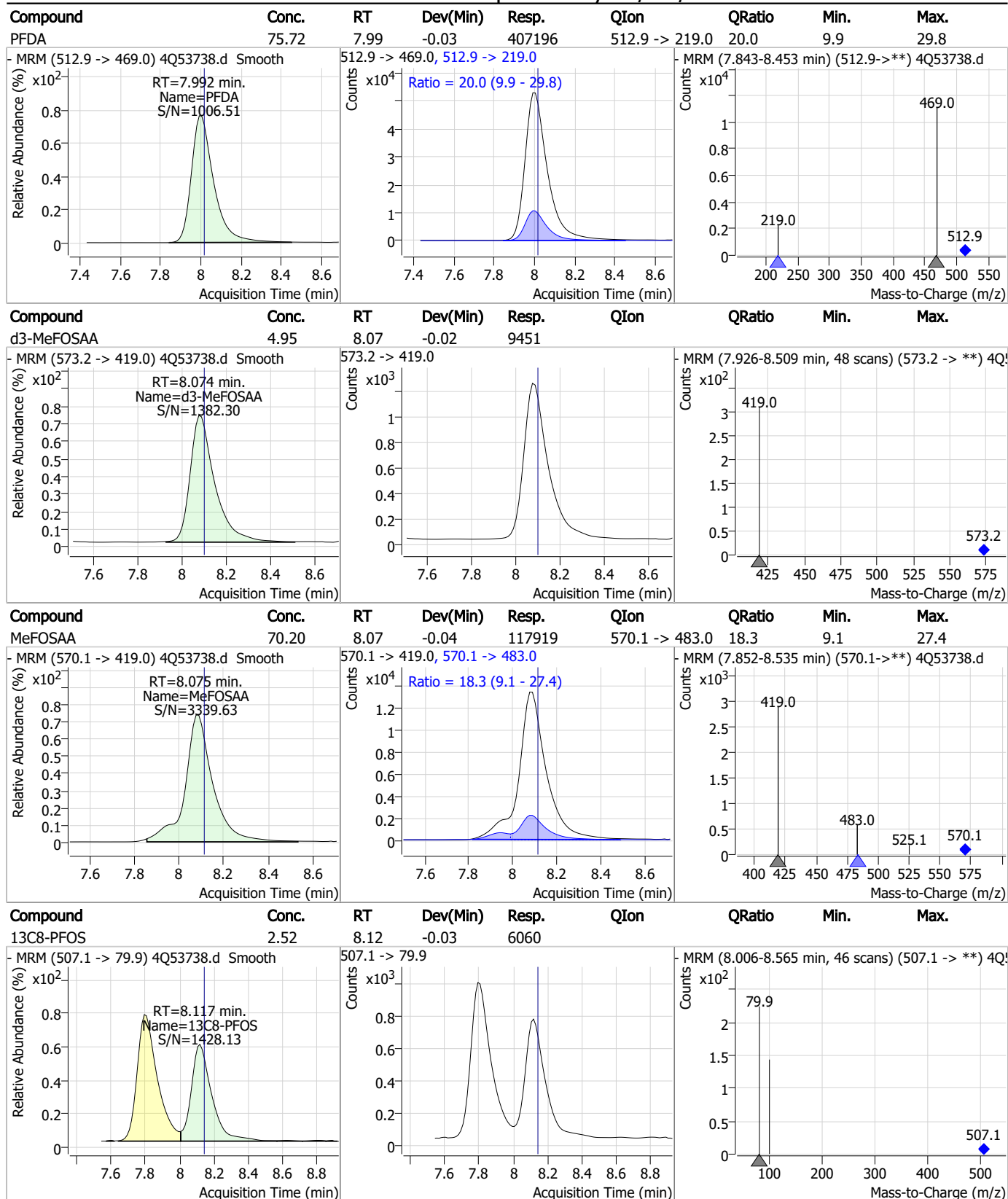


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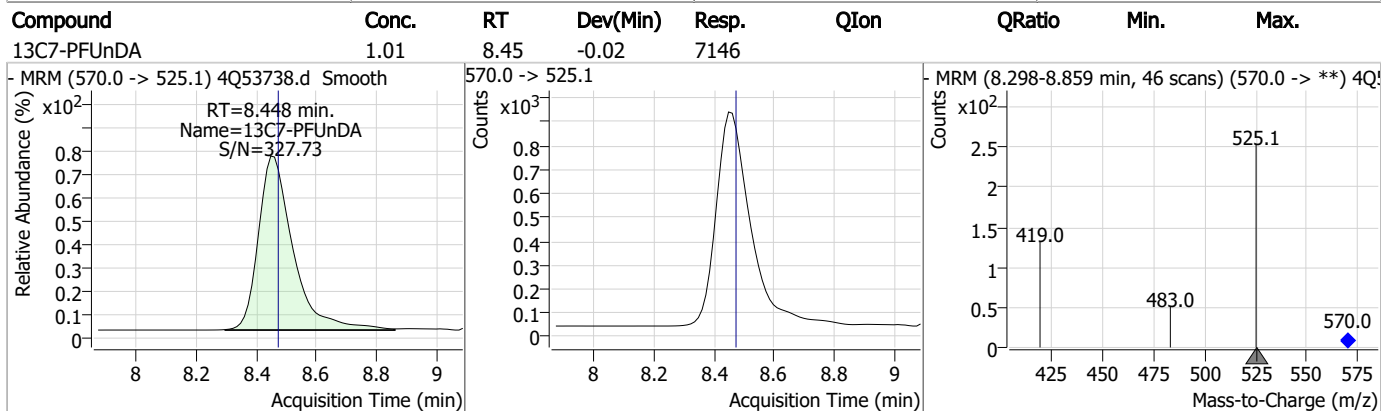
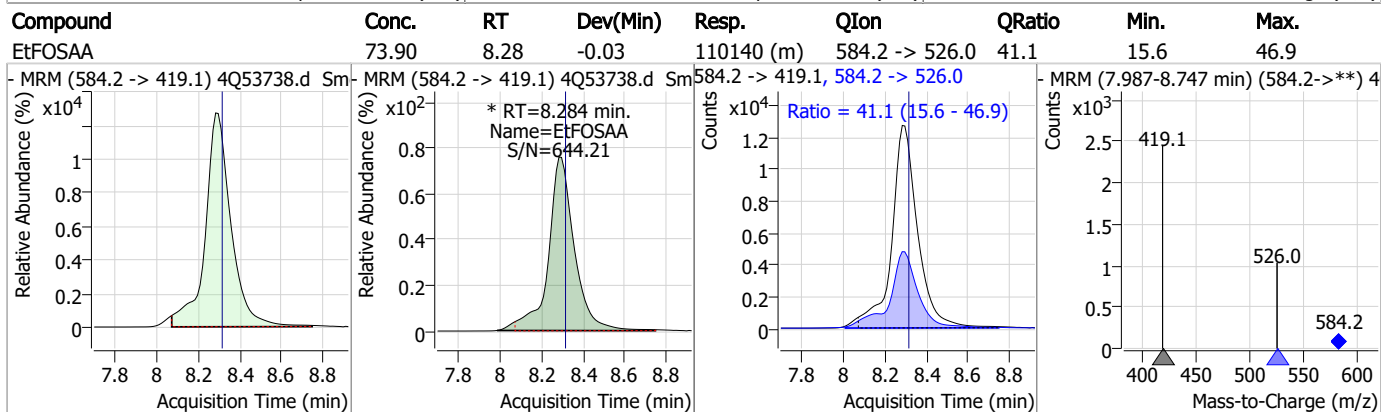
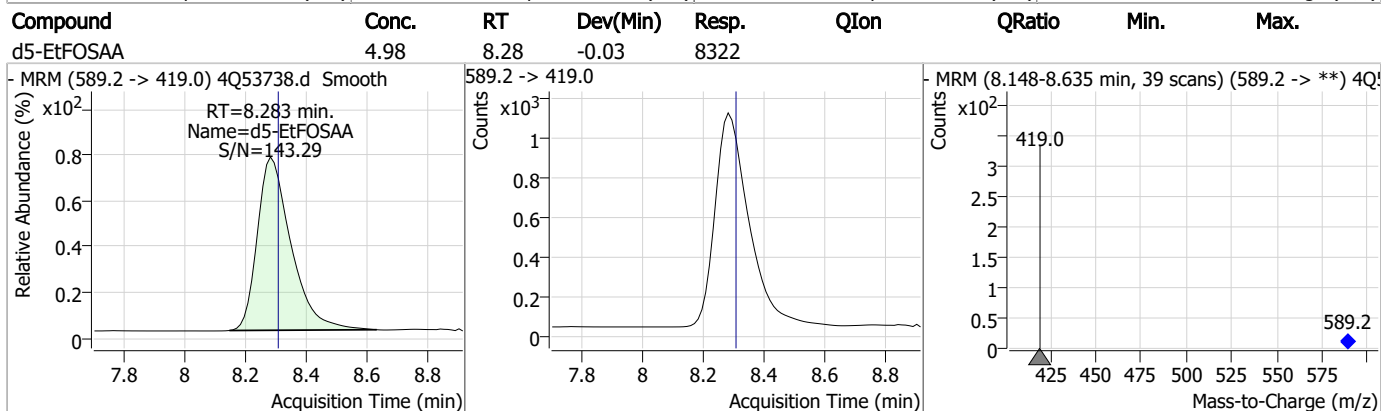
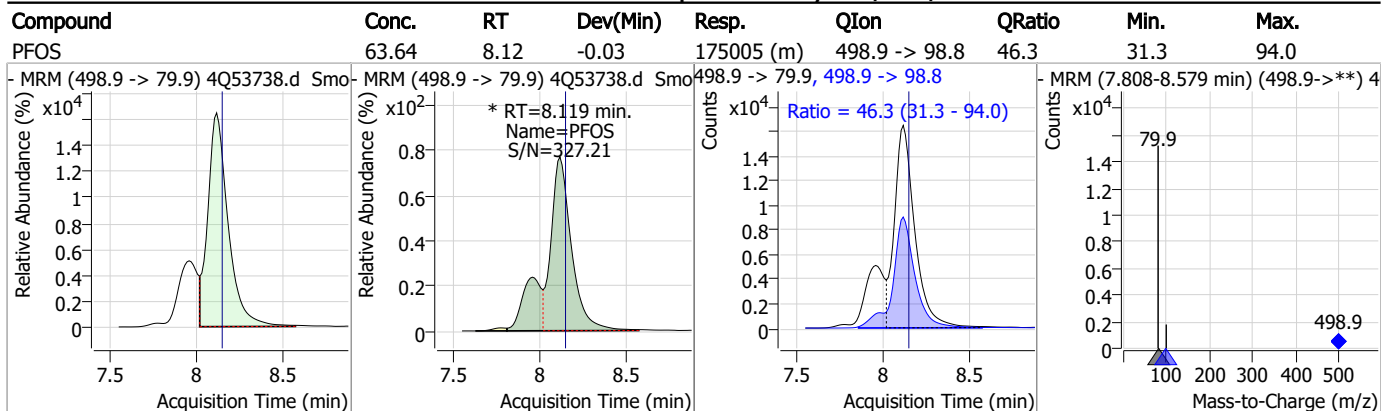


Perfluorinated Compounds by LC/MS/MS



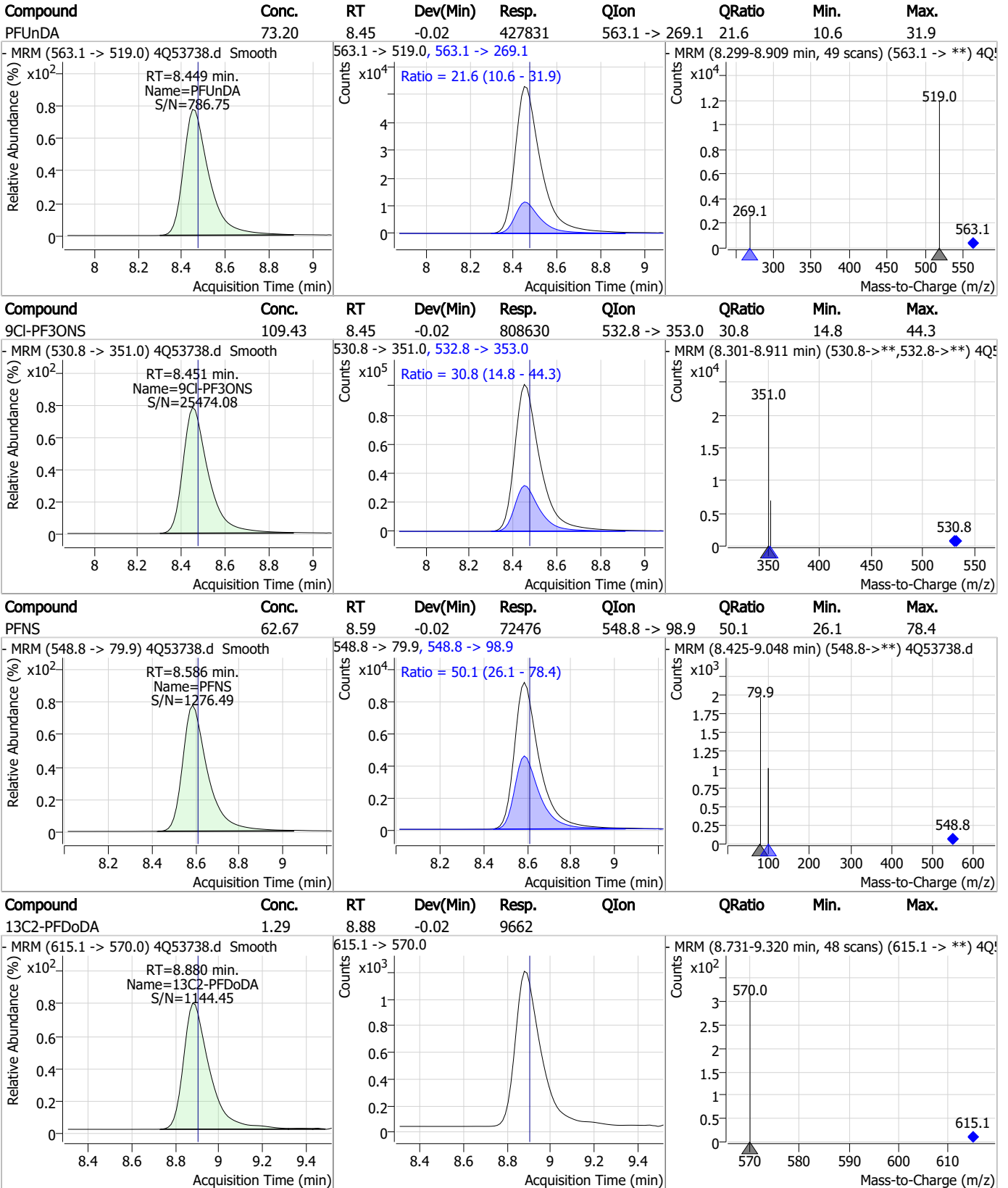
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Perfluorinated Compounds by LC/MS/MS



7.7.9
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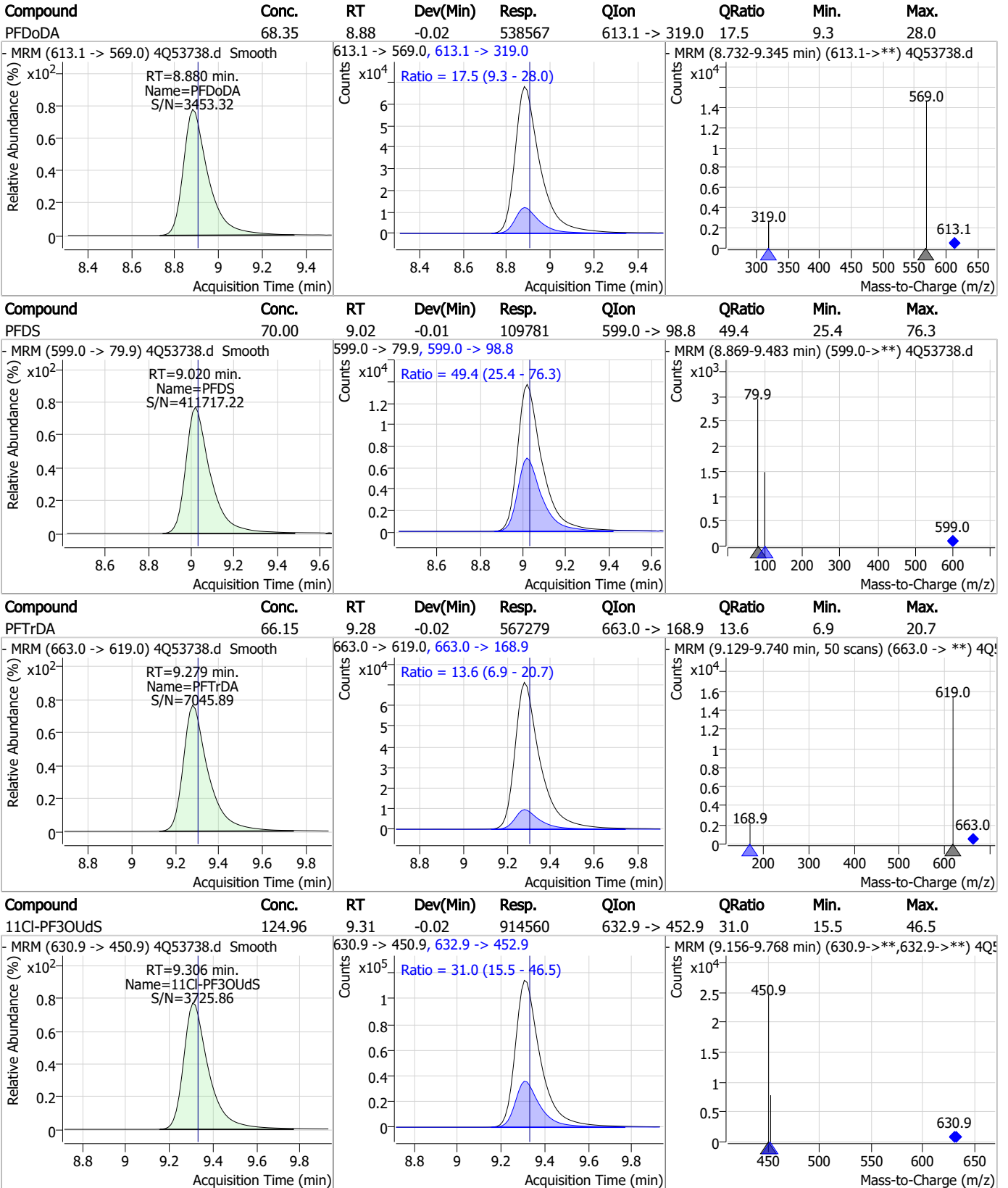
Perfluorinated Compounds by LC/MS/MS



7.7.9

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Perfluorinated Compounds by LC/MS/MS

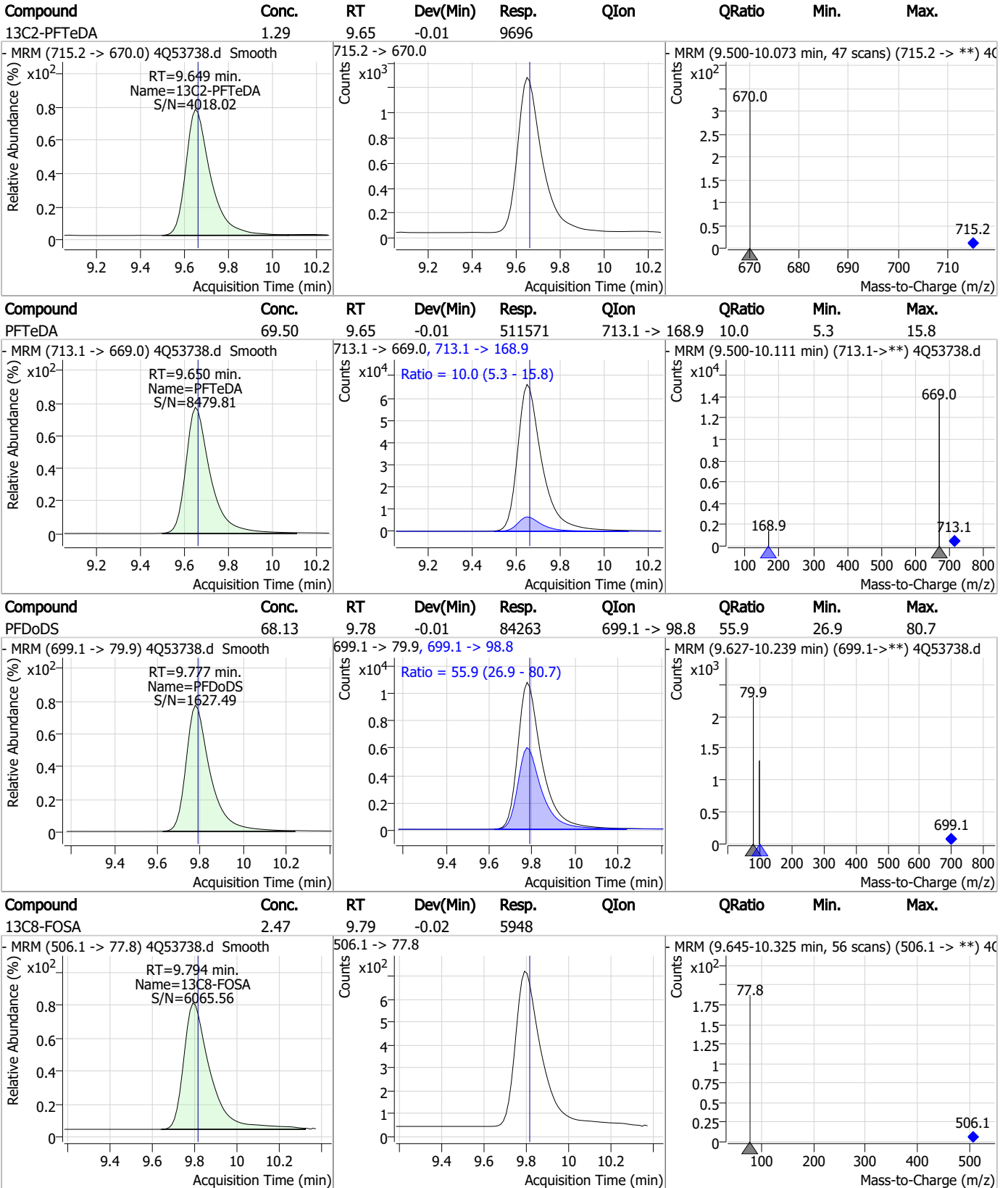


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Perfluorinated Compounds by LC/MS/MS

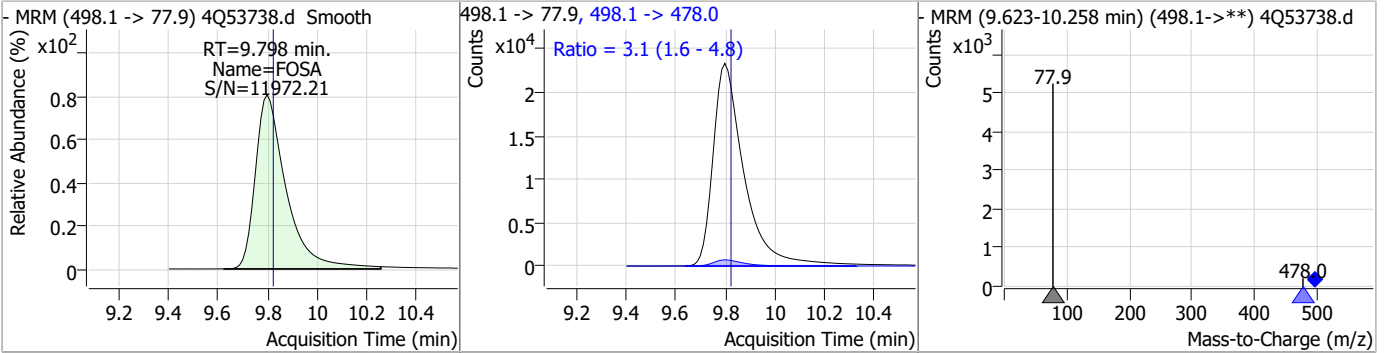


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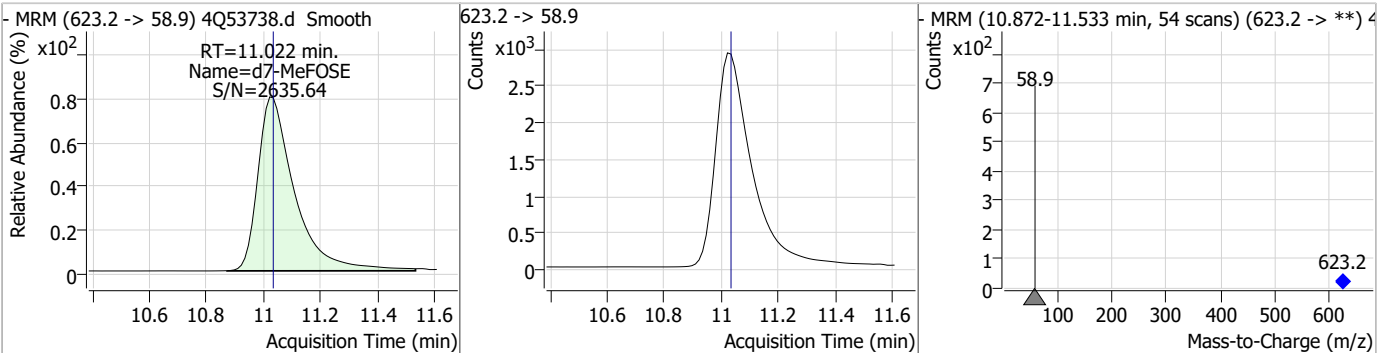
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Perfluorinated Compounds by LC/MS/MS

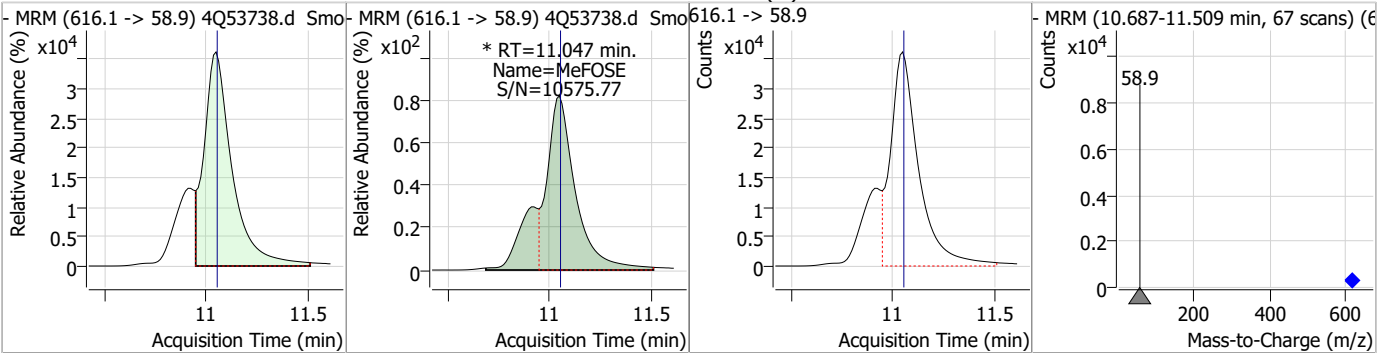
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	69.64	9.80	-0.02	201884	498.1 -> 478.0	3.1	1.6	4.8



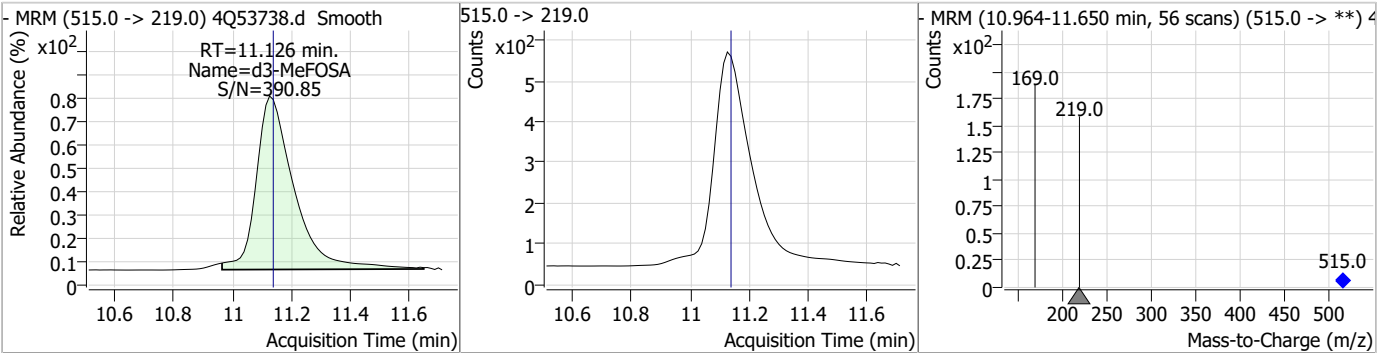
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.03	11.02	-0.01	25958				



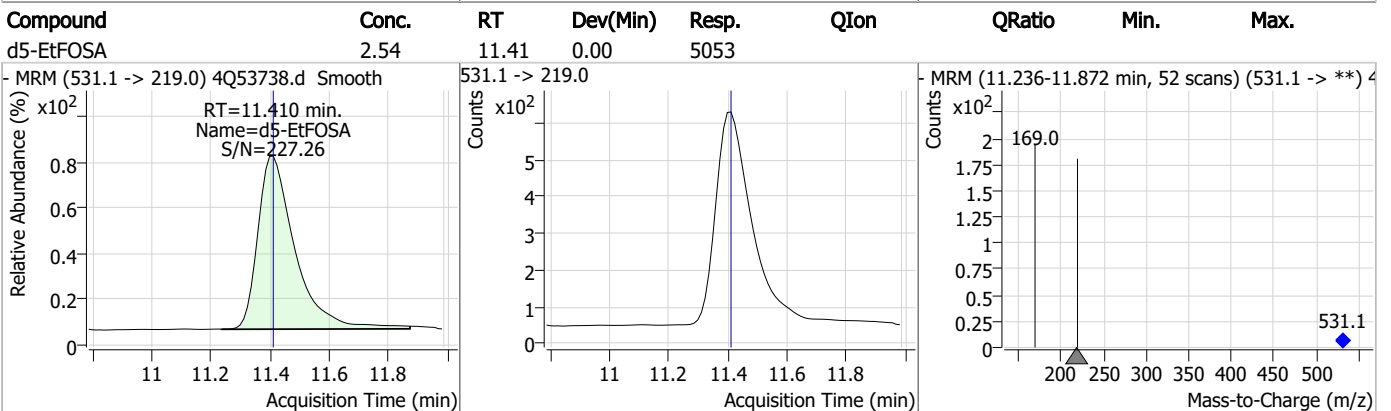
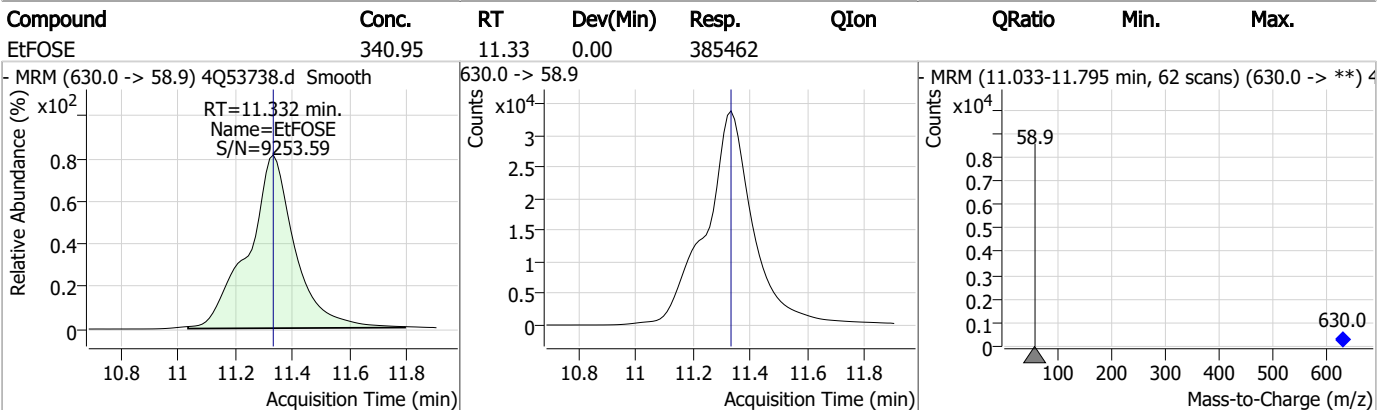
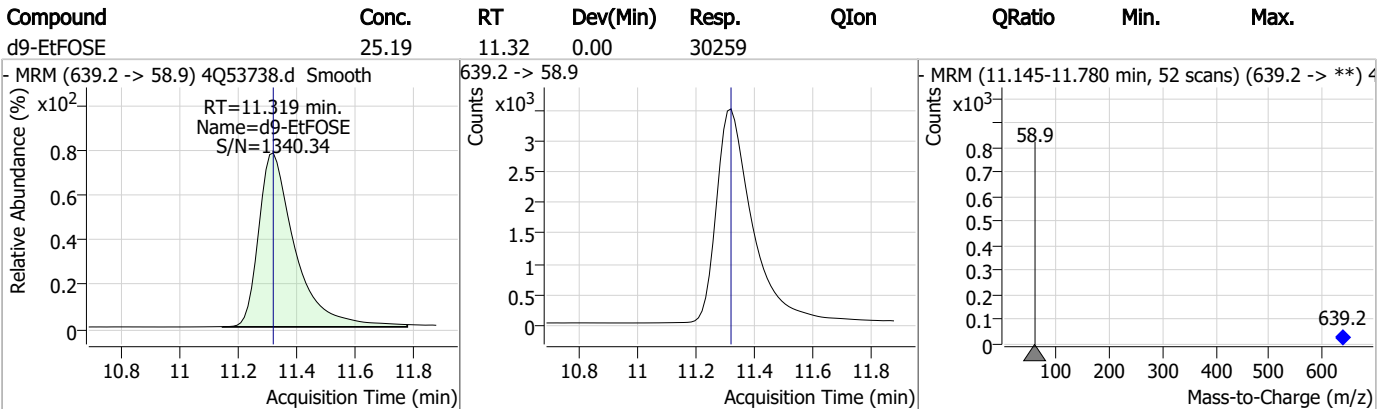
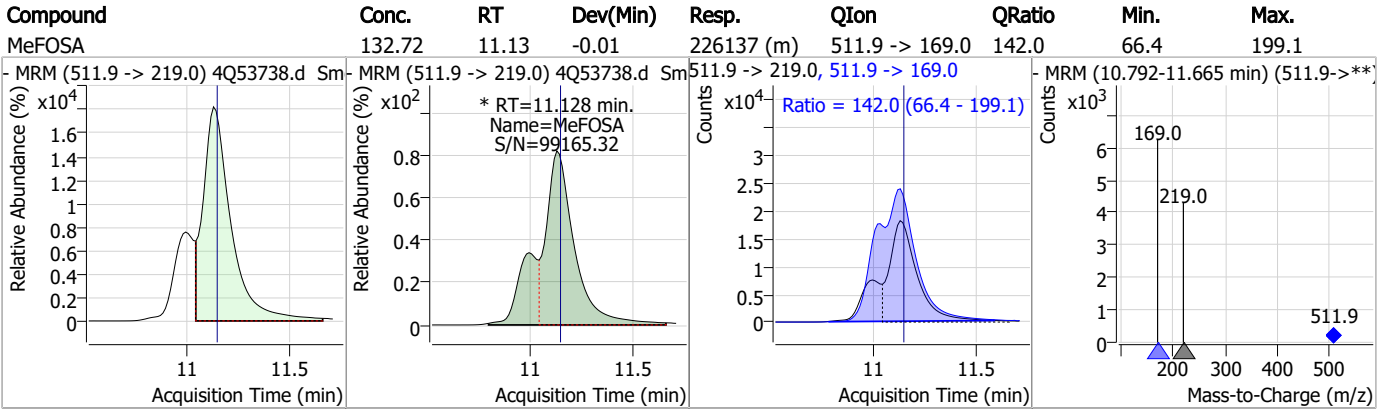
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	369.73	11.05	0.00	437268 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.79	11.13	-0.01	4695				



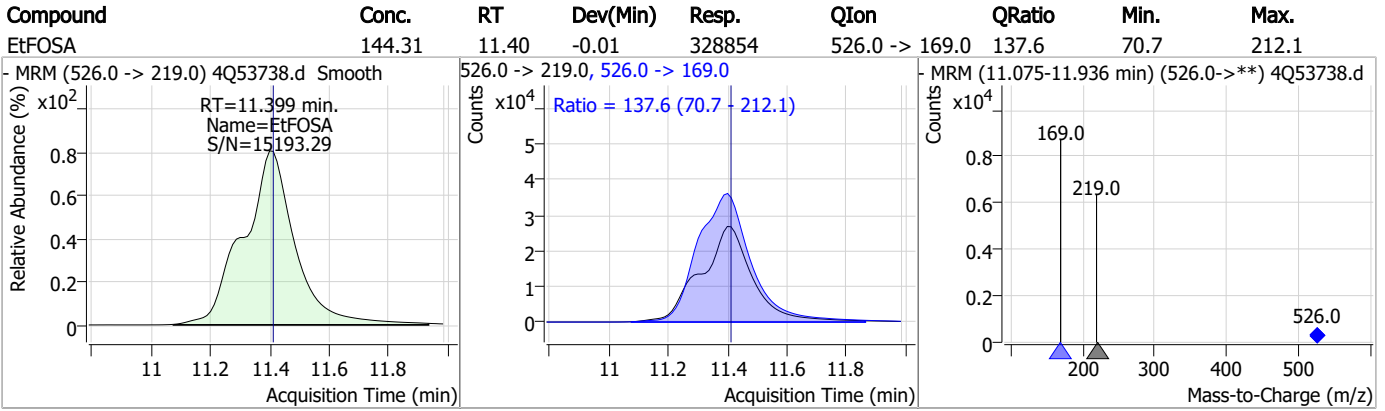
Perfluorinated Compounds by LC/MS/MS



7.7.9

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Perfluorinated Compounds by LC/MS/MS



7.7.9

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Manual Integration Approval Summary

Sample Number: S4Q785-IC785 Method: EPA DRAFT 1633
Lab FileID: 4Q53738.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 17:42 Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak
MeFOSE	24448-09-7		11.05	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.9.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53740.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 6:12:22 PM
 Sample Name : icv785-4
 Vial : P1-B3
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	91086	10.00 µg/L	-0.075
M5-PFPeA	4.112	268.3 -> 223.0	38704	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	30443	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	28170	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	31628	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	13639	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	9559	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	11458	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	11245	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	11351	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	7646	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	8546	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6570	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7558	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	925	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1632	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2328	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	13119	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	26751	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	10087	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	31421	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	36290	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	6039	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4833	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6428	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	43251	5.00 µg/L	-0.075
18O2-PFHxS	7.016	403.0 -> 83.9	4466	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	36230	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	10134	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	13040	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	32003	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	925	6.05 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.0%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1632	5.07 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2328	5.13 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C2-PFDoDA	8.880	615.1 -> 570.0	11245	1.23 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C2-PFTeDA	9.649	715.2 -> 670.0	11351	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C3-PFBS	5.152	302.1 -> 79.9	8546	2.55 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C3-PFHxS	7.017	402.1 -> 79.9	6570	2.37 µg/L	-0.037

7.7.10
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.9%	
13C4-PFBA	2.624	216.8 -> 171.9	91086	10.11 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C4-PFHpA	6.267	367.1 -> 322.0	28170	2.52 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C5-PFHxA	5.297	318.0 -> 273.0	30443	2.55 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C5-PFPeA	4.112	268.3 -> 223.0	38704	4.96 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C6-PFDA	8.004	519.1 -> 474.1	9559	1.28 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C7-PFUnDA	8.448	570.0 -> 525.1	11458	1.33 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.4%	
13C8-FOSA	9.794	506.1 -> 77.8	7646	2.49 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C8-PFOA	6.964	421.1 -> 376.0	31628	2.45 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C8-PFOS	8.117	507.1 -> 79.9	7558	2.46 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C9-PFNA	7.509	472.1 -> 427.0	13639	1.33 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.1%	
d3-MeFOSAA	8.074	573.2 -> 419.0	13119	5.38 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.6%	
13C3-HFPO-DA	5.652	286.9 -> 168.9	26751	9.82 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.2%	
d3-MeFOSA	11.126	515.0 -> 219.0	4833	2.25 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.1%	
d5-EtFOSAA	8.283	589.2 -> 419.0	10087	4.72 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.5%	
d7-MeFOSE	11.022	623.2 -> 58.9	31421	23.73 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 94.9%	
d9-EtFOSE	11.319	639.2 -> 58.9	36290	23.66 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 94.6%	
d5-EtFOSA	11.397	531.1 -> 219.0	6039	2.37 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.9%	
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	15577	8.52 µg/L	99
		327.1 -> 80.9	6429		
6:2FTS	6.737	427.1 -> 407.0	18273	10.34 µg/L	99
		427.1 -> 80.9	6878		
8:2FTS	7.804	527.1 -> 507.0	13418	10.60 µg/L	96
		527.1 -> 80.8	5943		
EtFOSAA	8.284	584.2 -> 419.1	5237	2.90 µg/L	m 86
		584.2 -> 526.0	2047		
FOSA	9.798	498.1 -> 77.9	8990	2.41 µg/L	100
		498.1 -> 478.0	283		
MeFOSAA	8.087	570.1 -> 419.0	5522	2.37 µg/L	97
		570.1 -> 483.0	1087		
PFBA	2.620	212.8 -> 168.9	32434	9.79 µg/L	100
PFBS	5.153	298.7 -> 79.9	6169	2.03 µg/L	98
		298.7 -> 98.8	2466		
PFDA	8.005	512.9 -> 469.0	18159	2.32 µg/L	98
		512.9 -> 219.0	3796		
PFDODA	8.880	613.1 -> 569.0	22197	2.42 µg/L	99
		613.1 -> 319.0	4210		
PFDS	9.020	599.0 -> 79.9	4552	2.33 µg/L	97

7.7.10
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2419			
PFHpA	6.268	363.1 -> 319.0	43766	2.48	µg/L	97
		363.1 -> 169.0	8154			
PFHpS	7.612	449.0 -> 79.9	7429	2.49	µg/L	95
		449.0 -> 98.9	3547			
PFHxA	5.300	313.0 -> 269.0	24623	2.32	µg/L	97
		313.0 -> 118.9	923			
PFHxS	7.018	398.7 -> 79.9	5053	2.55	µg/L	m 83
		398.7 -> 98.9	2592			
PFNA	7.510	463.0 -> 419.0	21232	2.44	µg/L	98
		463.0 -> 219.0	5203			
PFNS	8.586	548.8 -> 79.9	3435	2.38	µg/L	99
		548.8 -> 98.9	1813			
PFOA	6.965	413.0 -> 369.0	36189	2.36	µg/L	98
		413.0 -> 169.0	7700			
PFOS	8.119	498.9 -> 79.9	7372	2.15	µg/L	m 90
		498.9 -> 98.8	4045			
PFPeA	4.114	263.0 -> 219.0	41399	4.92	µg/L	100
PFPeS	6.257	349.1 -> 79.9	4953	2.29	µg/L	87
		349.1 -> 98.9	2558			
PFTeDA	9.650	713.1 -> 669.0	20611	2.39	µg/L	99
		713.1 -> 168.9	2264			
PFTrDA	9.279	663.0 -> 619.0	26131	2.62	µg/L	100
		663.0 -> 168.9	3635			
PFUnDA	8.449	563.1 -> 519.0	23372	2.49	µg/L	99
		563.1 -> 269.1	4920			
11CI-PF3OUdS	9.306	630.9 -> 450.9	39295	4.70	µg/L	100
		632.9 -> 452.9	12136			
9CI-PF3ONS	8.451	530.8 -> 351.0	40084	4.75	µg/L	99
		532.8 -> 353.0	12107			
ADONA	6.544	376.9 -> 250.9	102870	5.56	µg/L	99
		376.9 -> 84.8	25018			
HFPO-DA	5.665	284.9 -> 168.9	13709	4.84	µg/L	98
		284.9 -> 184.9	1377			
3:3FTCA	3.561	241.0 -> 177.0	6152	11.92	µg/L	98
		241.0 -> 117.0	526			
5:3FTCA	5.983	341.0 -> 237.1	110953	59.28	µg/L	99
		341.0 -> 217.0	79965			
7:3FTCA	7.524	441.0 -> 316.9	50091	59.66	µg/L	98
		441.0 -> 336.9	120956			
EtFOSA	11.399	526.0 -> 219.0	13974	5.13	µg/L	95
		526.0 -> 169.0	18861			
EtFOSE	11.332	630.0 -> 58.9	17339	12.79	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	9616	5.48	µg/L	91
		511.9 -> 169.0	13744			
MeFOSE	11.047	616.1 -> 58.9	18129	12.66	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	3715	2.41	µg/L	97
		699.1 -> 98.8	2076			
NFDHA	5.179	295.0 -> 201.0	3611	5.14	µg/L	95
		295.0 -> 84.9	956			
PFMBA	4.529	279.0 -> 85.1	23702	4.89	µg/L	100
PFMPA	3.265	229.0 -> 84.9	26450	4.91	µg/L	100
PFEESA	5.684	314.8 -> 134.9	36393	4.32	µg/L	98
		314.8 -> 82.9	1306			

= Qualifier out of range, m = manually integrated, + = Area summed

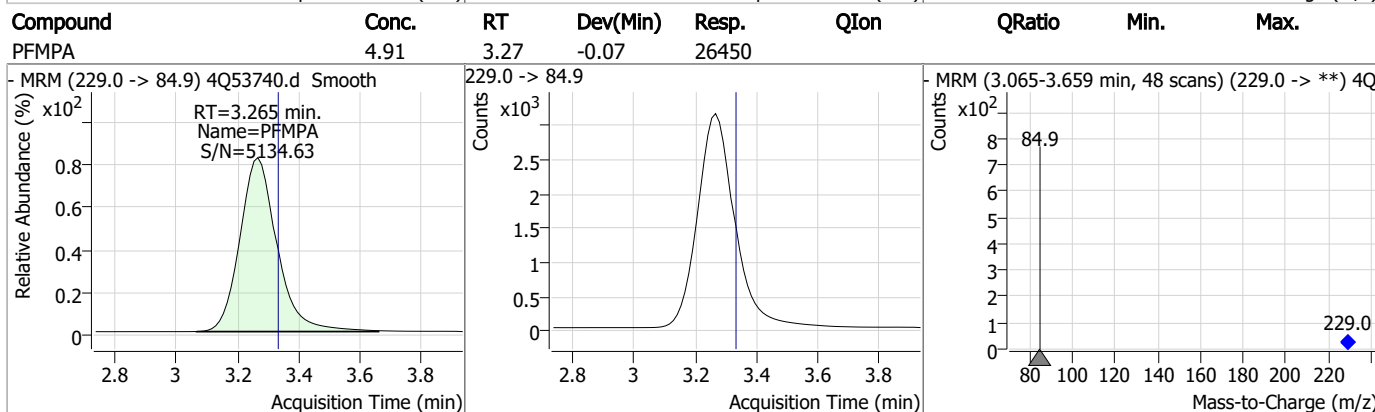
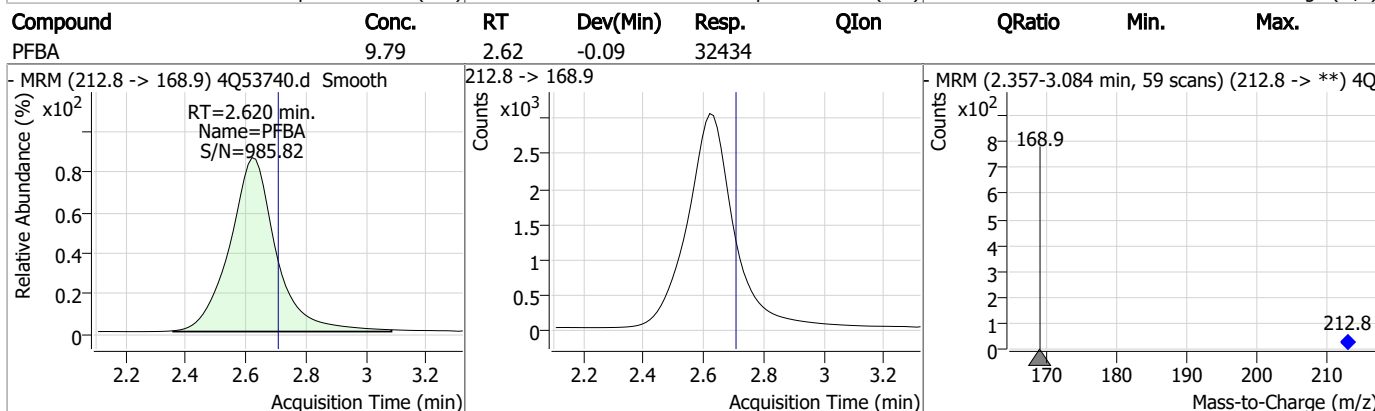
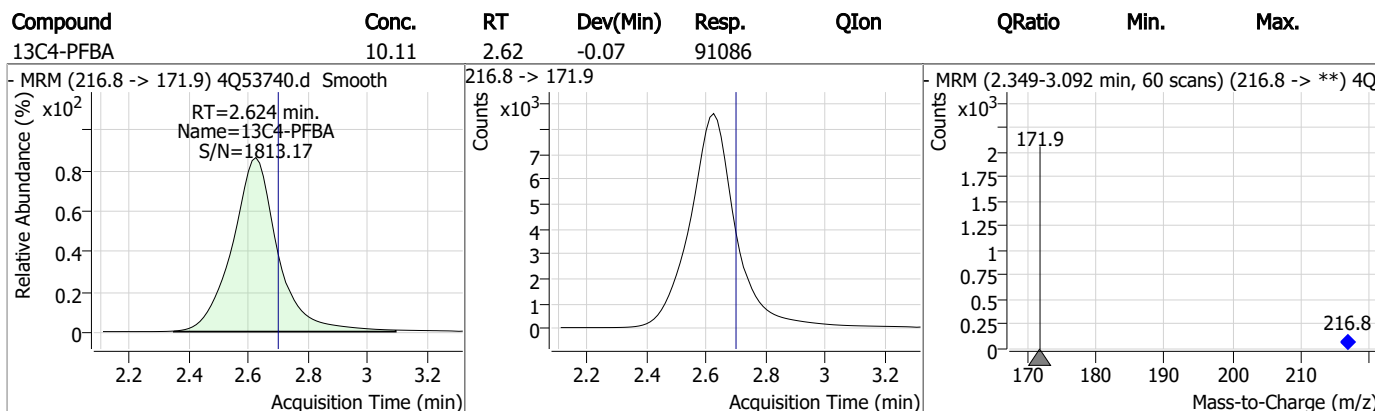
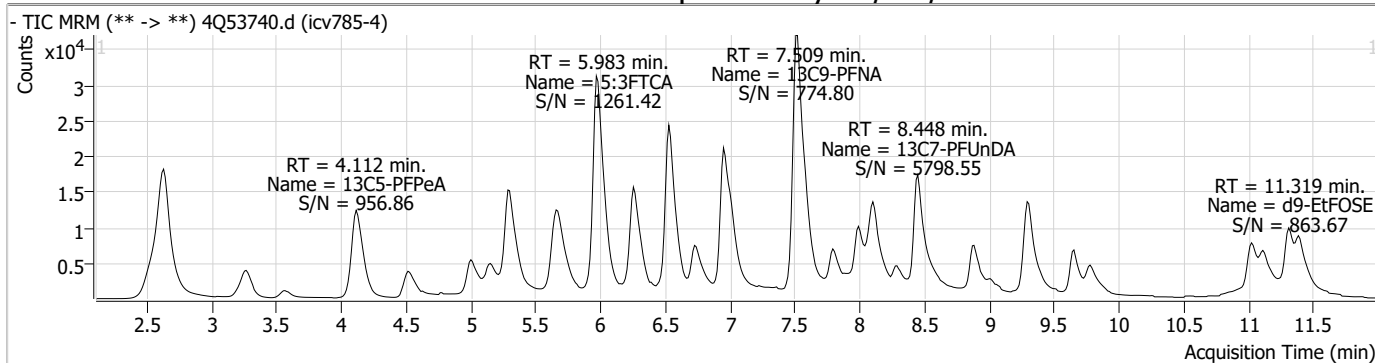
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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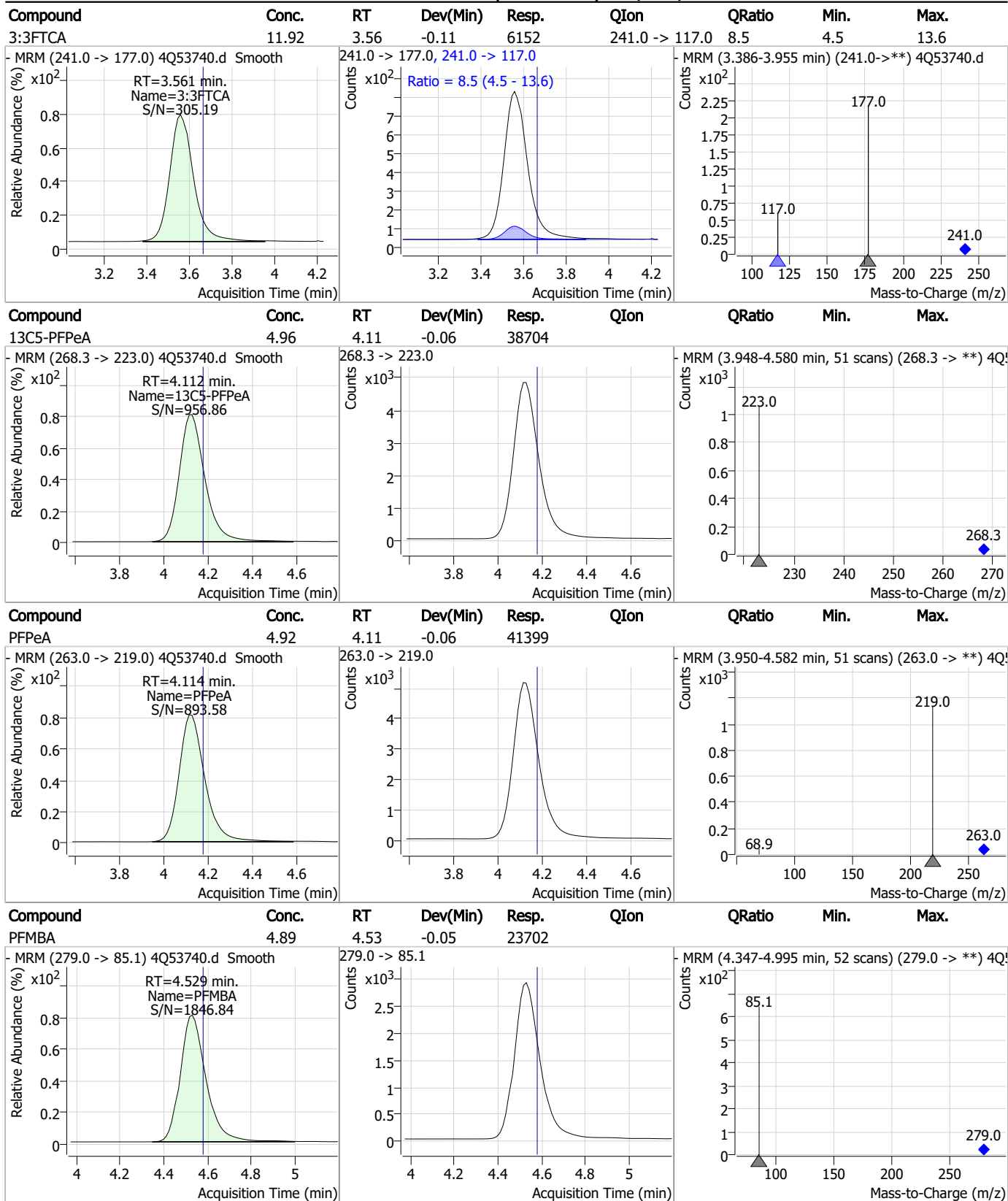
7.7.10

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Perfluorinated Compounds by LC/MS/MS

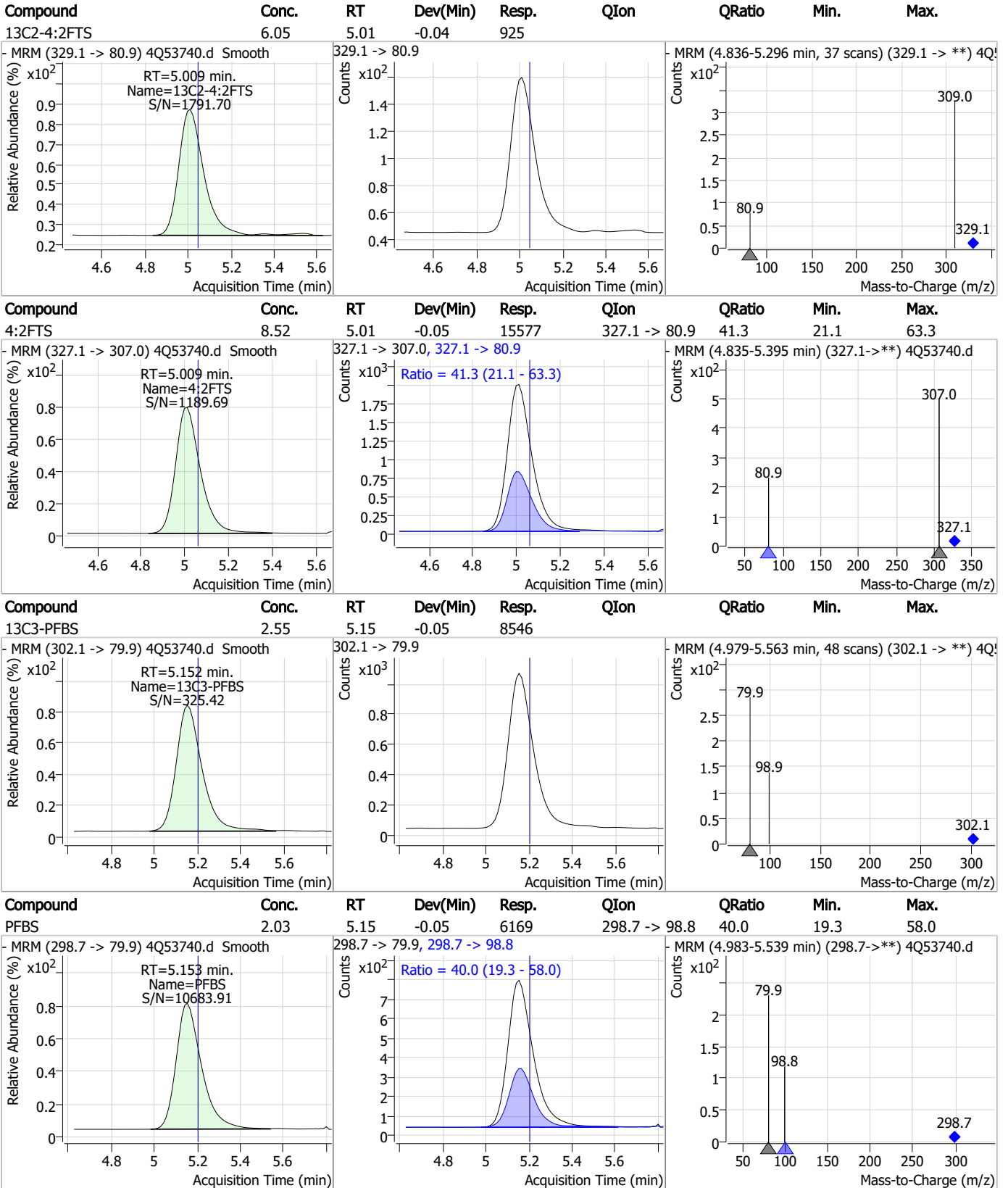


Perfluorinated Compounds by LC/MS/MS



7.7.10
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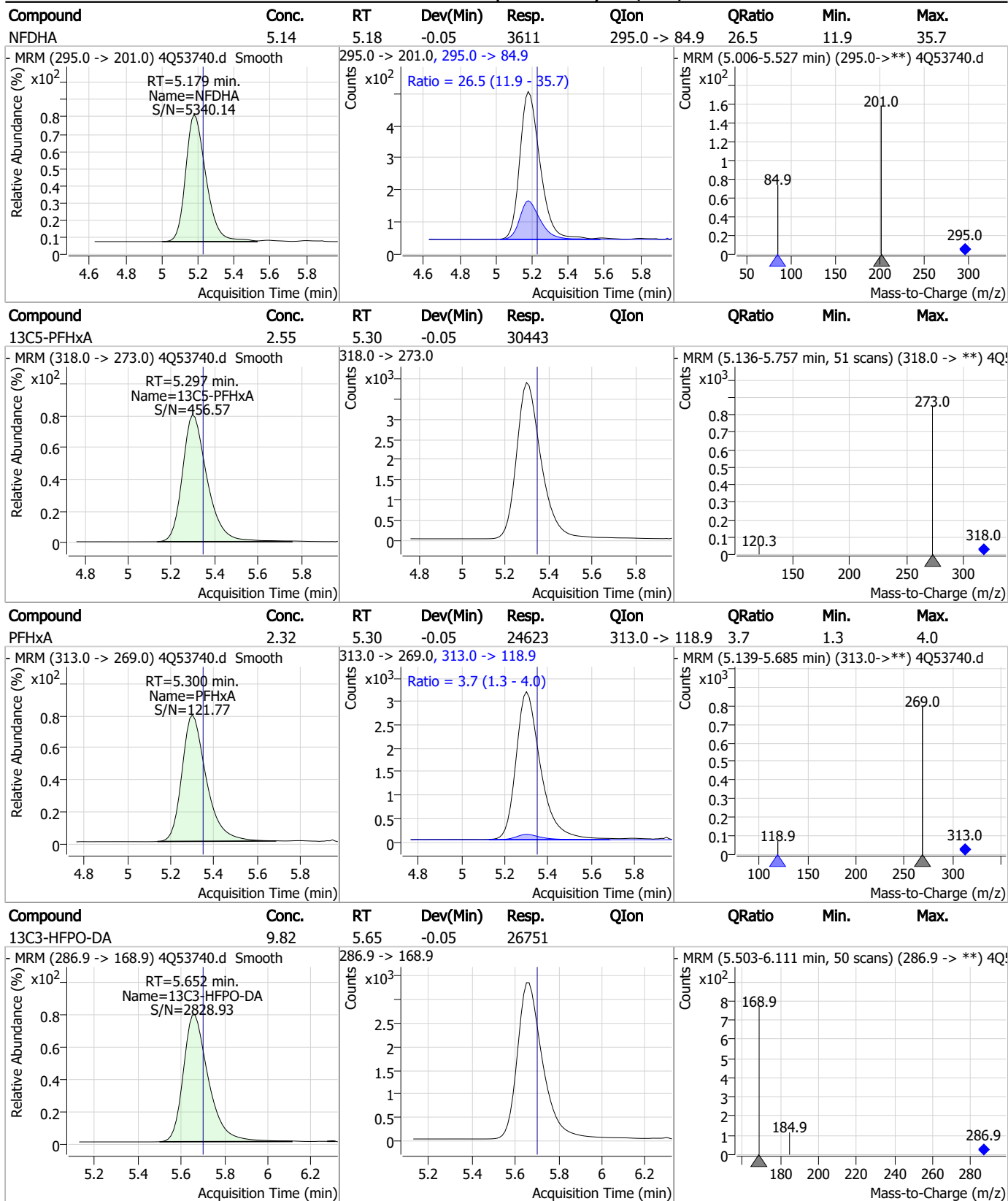
Perfluorinated Compounds by LC/MS/MS



7.7.10 7



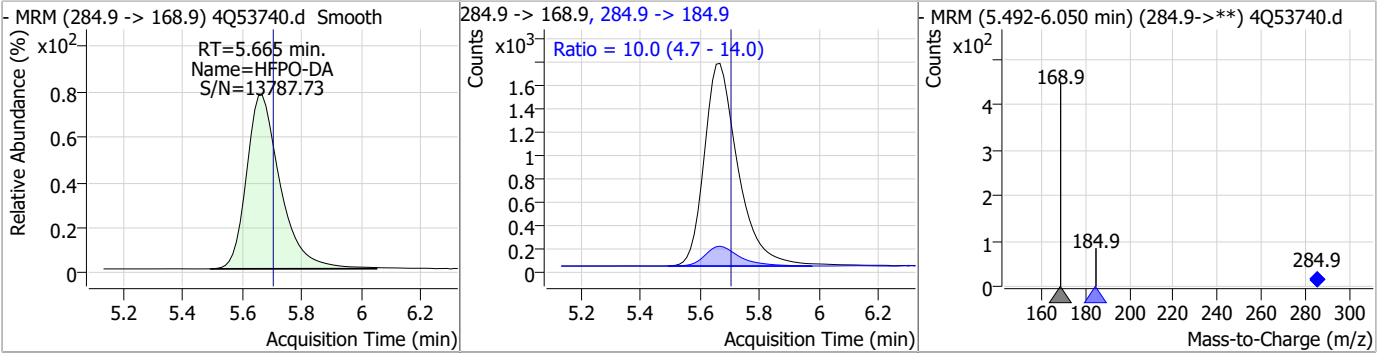
Perfluorinated Compounds by LC/MS/MS



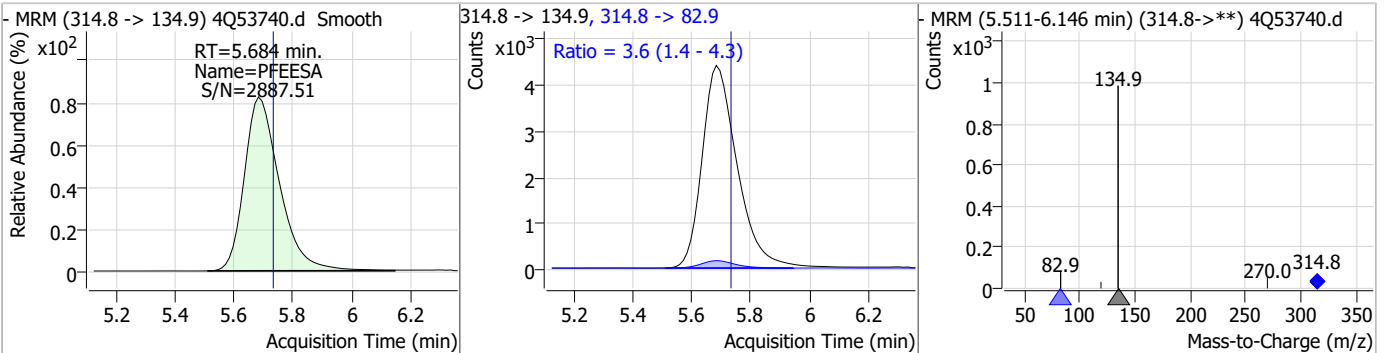
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Perfluorinated Compounds by LC/MS/MS

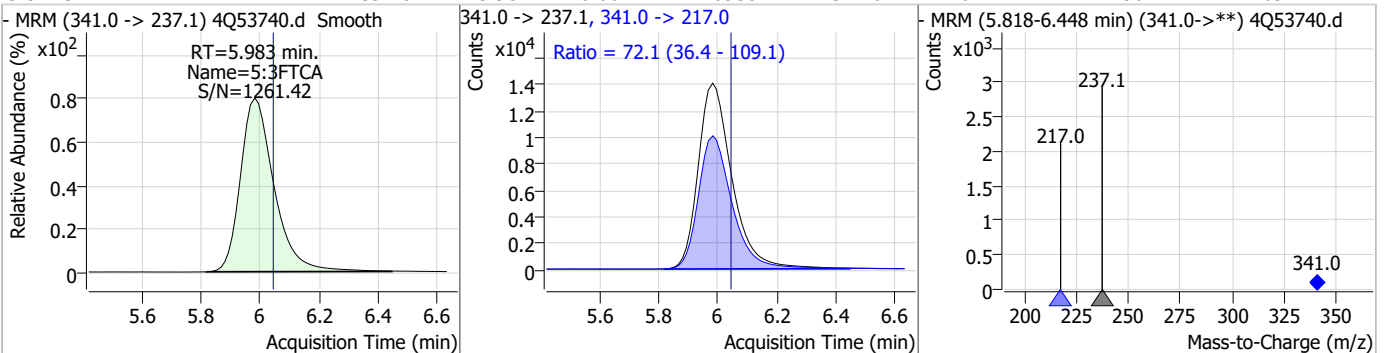
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.84	5.67	-0.04	13709	284.9 -> 184.9	10.0	4.7	14.0



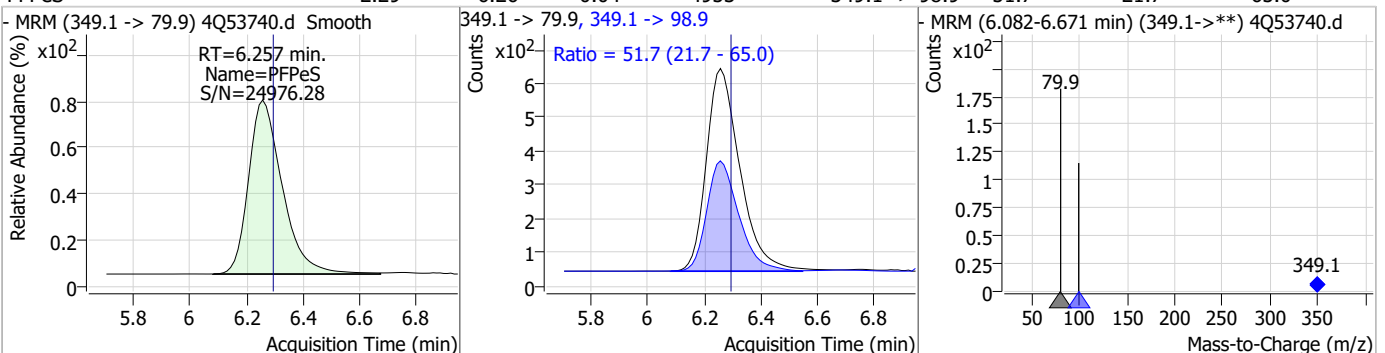
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.32	5.68	-0.05	36393	314.8 -> 82.9	3.6	1.4	4.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	59.28	5.98	-0.06	110953	341.0 -> 217.0	72.1	36.4	109.1

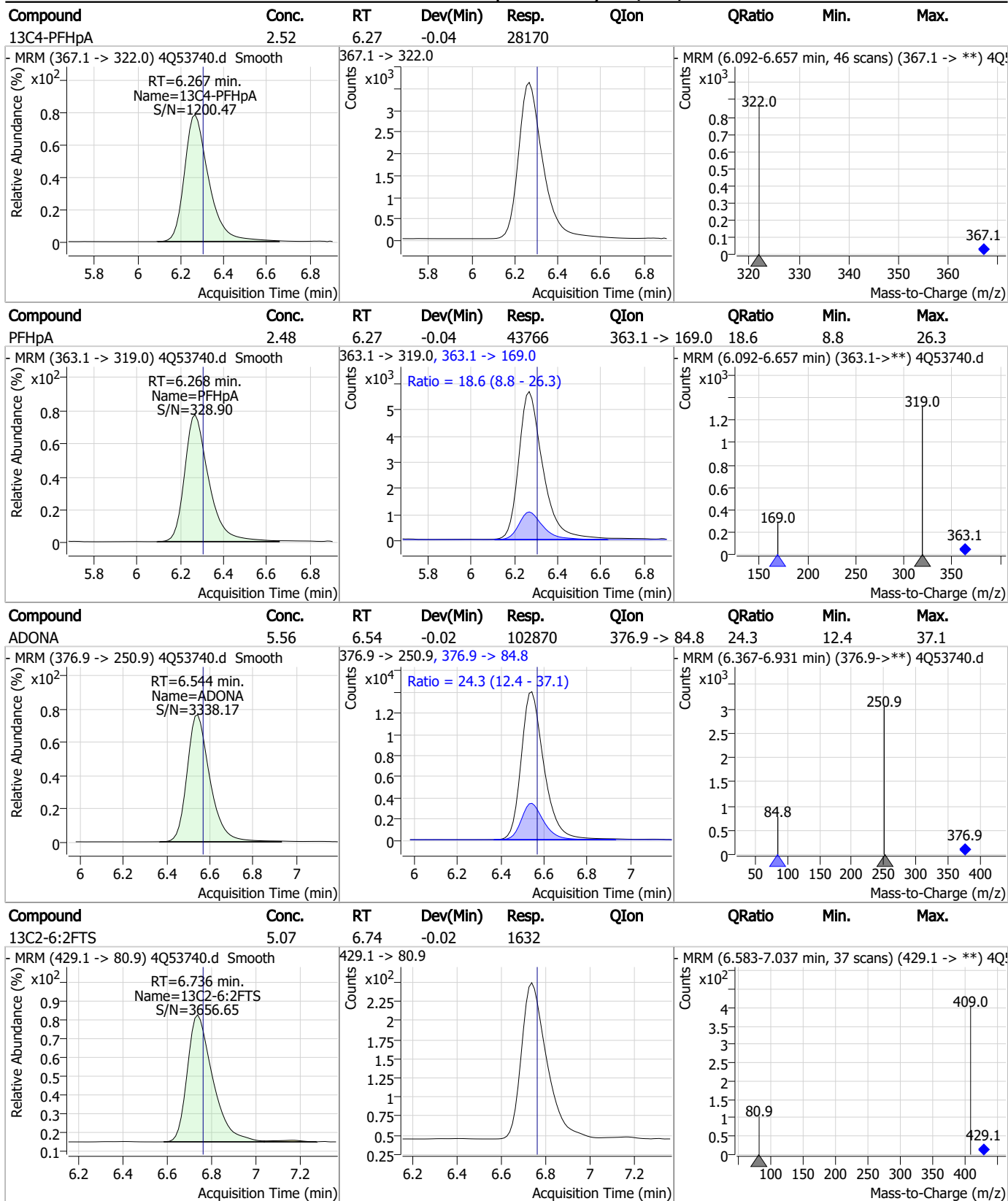


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.29	6.26	-0.04	4953	349.1 -> 98.9	51.7	21.7	65.0



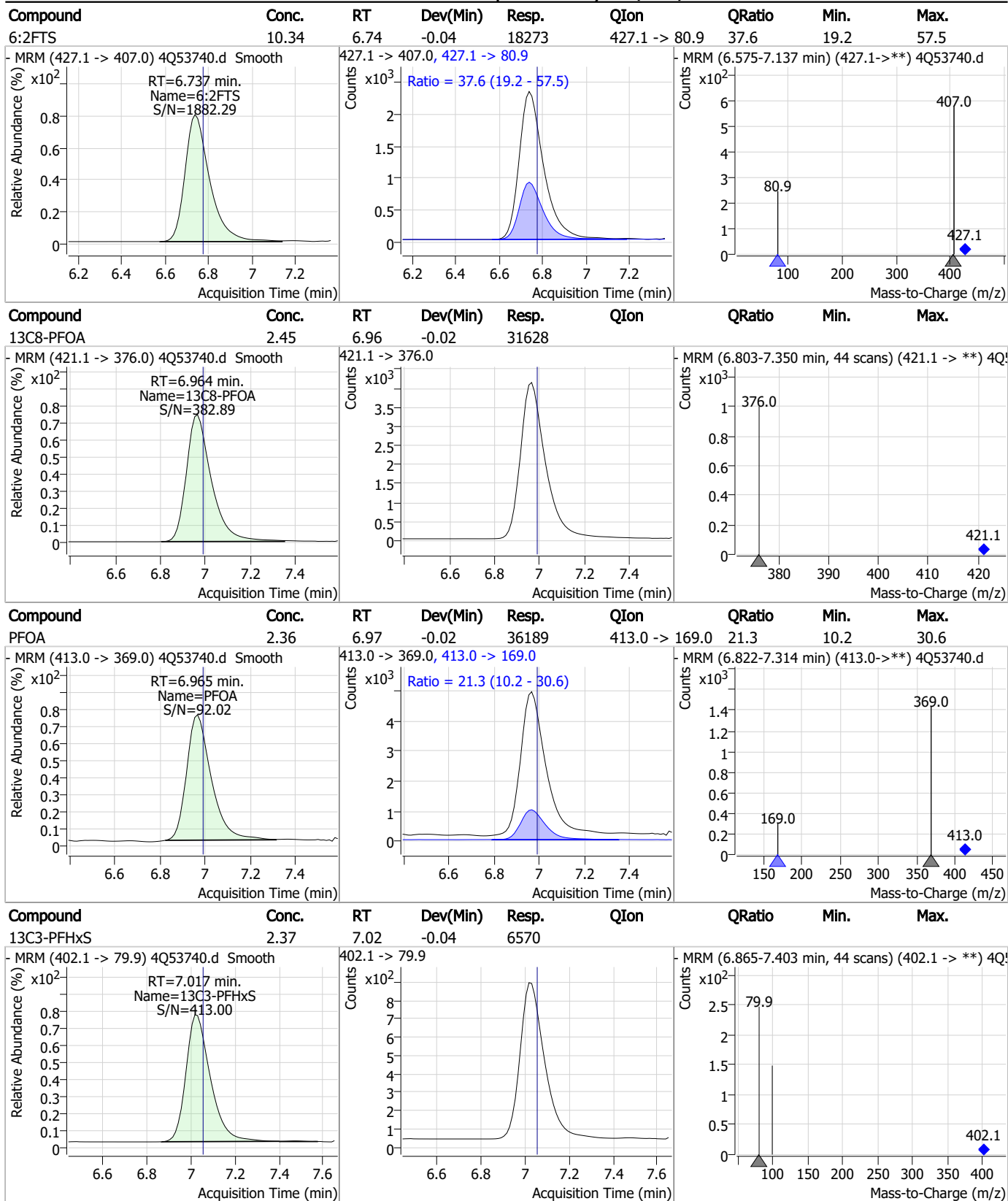
7.7.10 7

Perfluorinated Compounds by LC/MS/MS



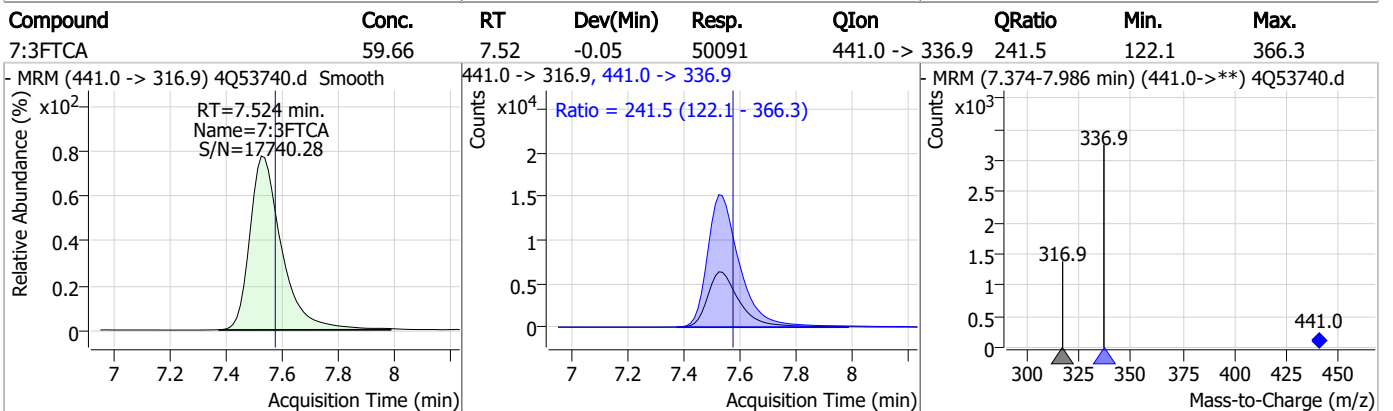
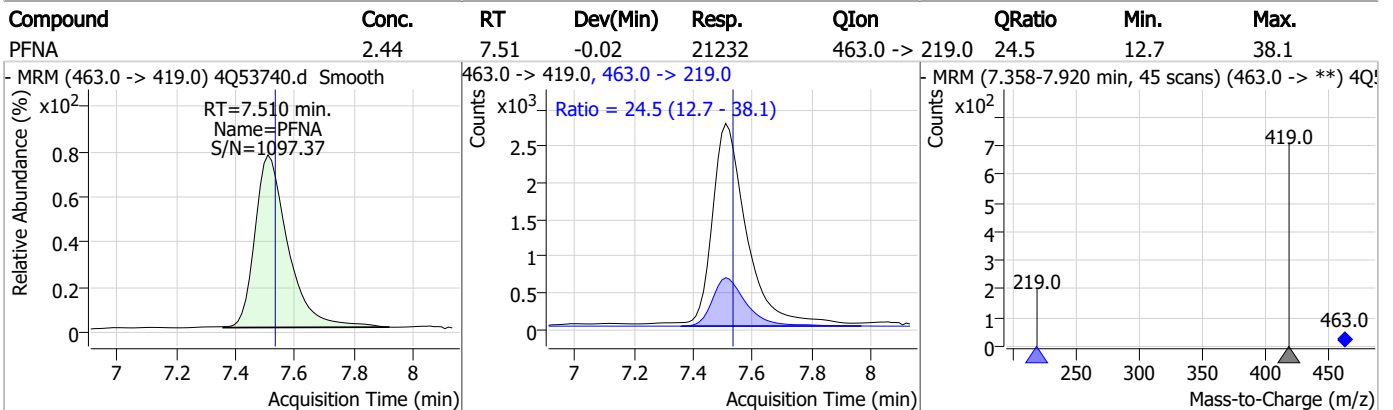
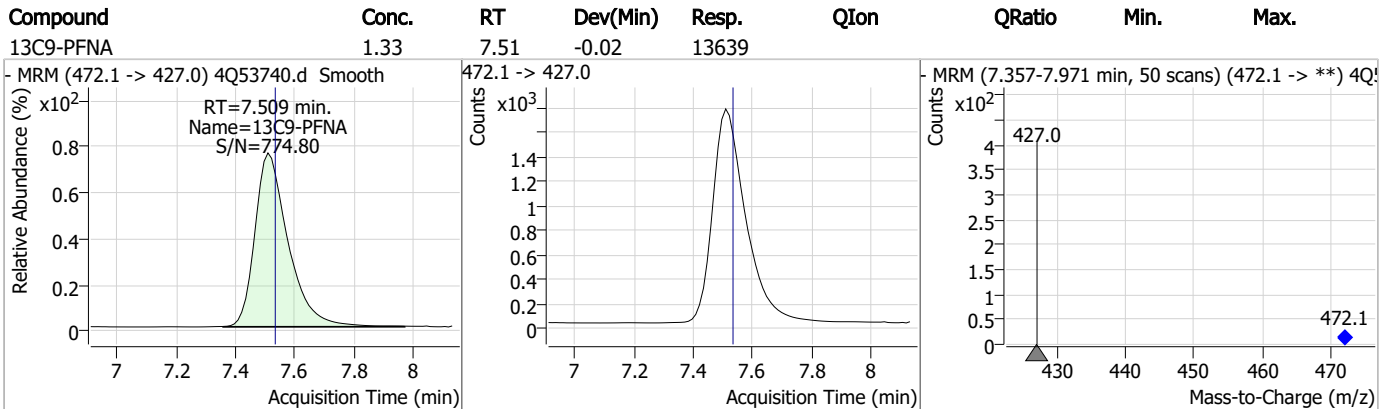
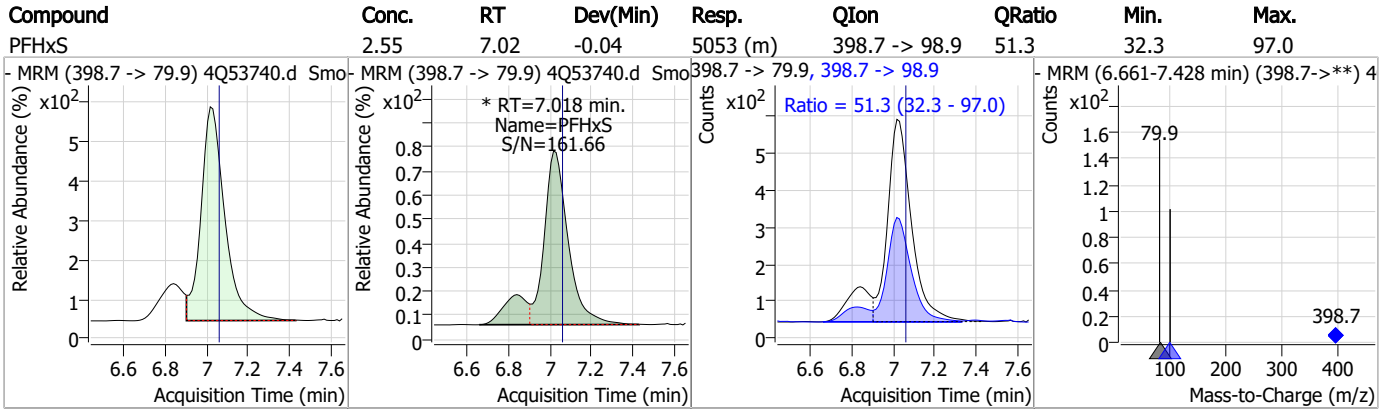
7.7.10 7

Perfluorinated Compounds by LC/MS/MS

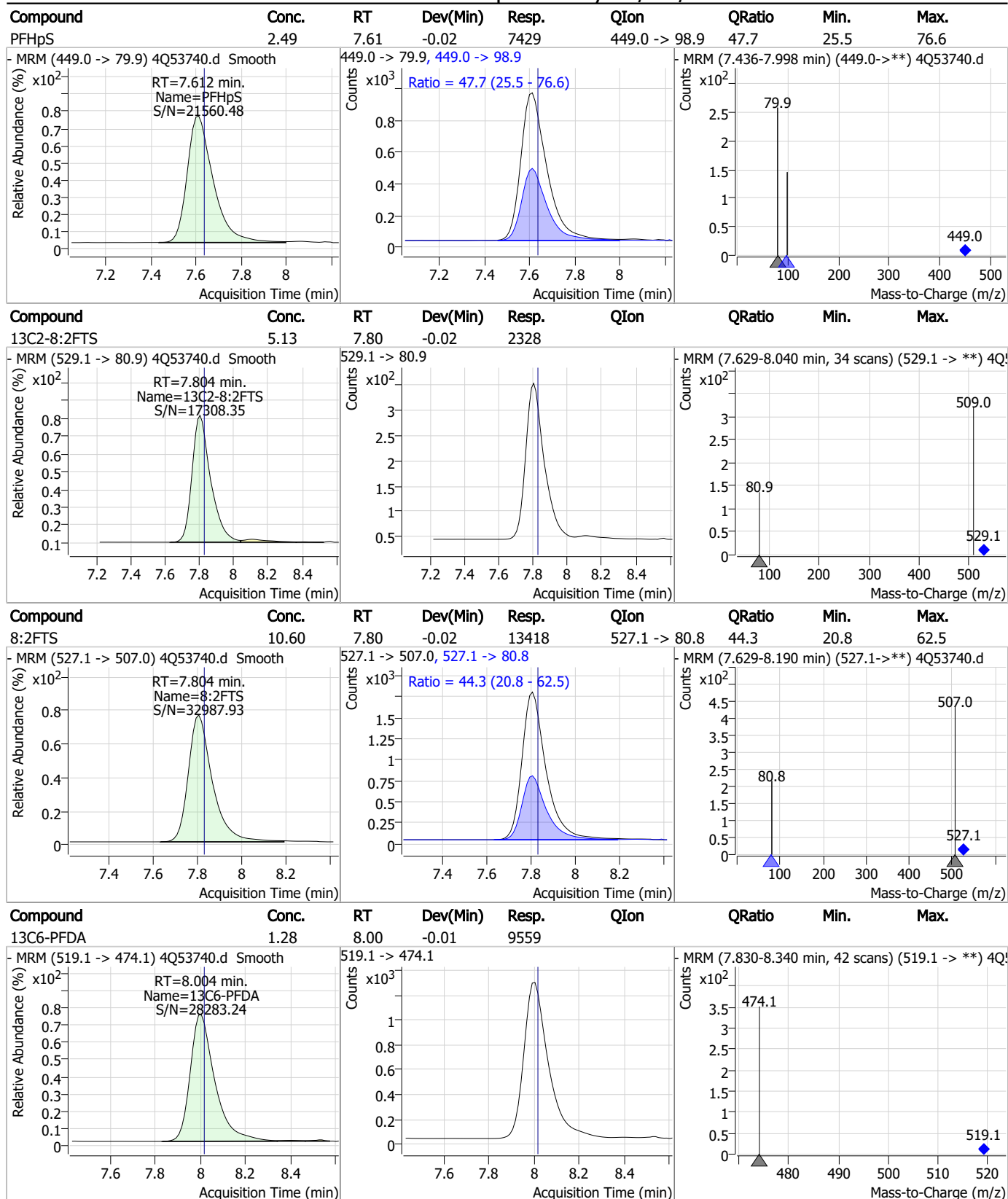


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Perfluorinated Compounds by LC/MS/MS

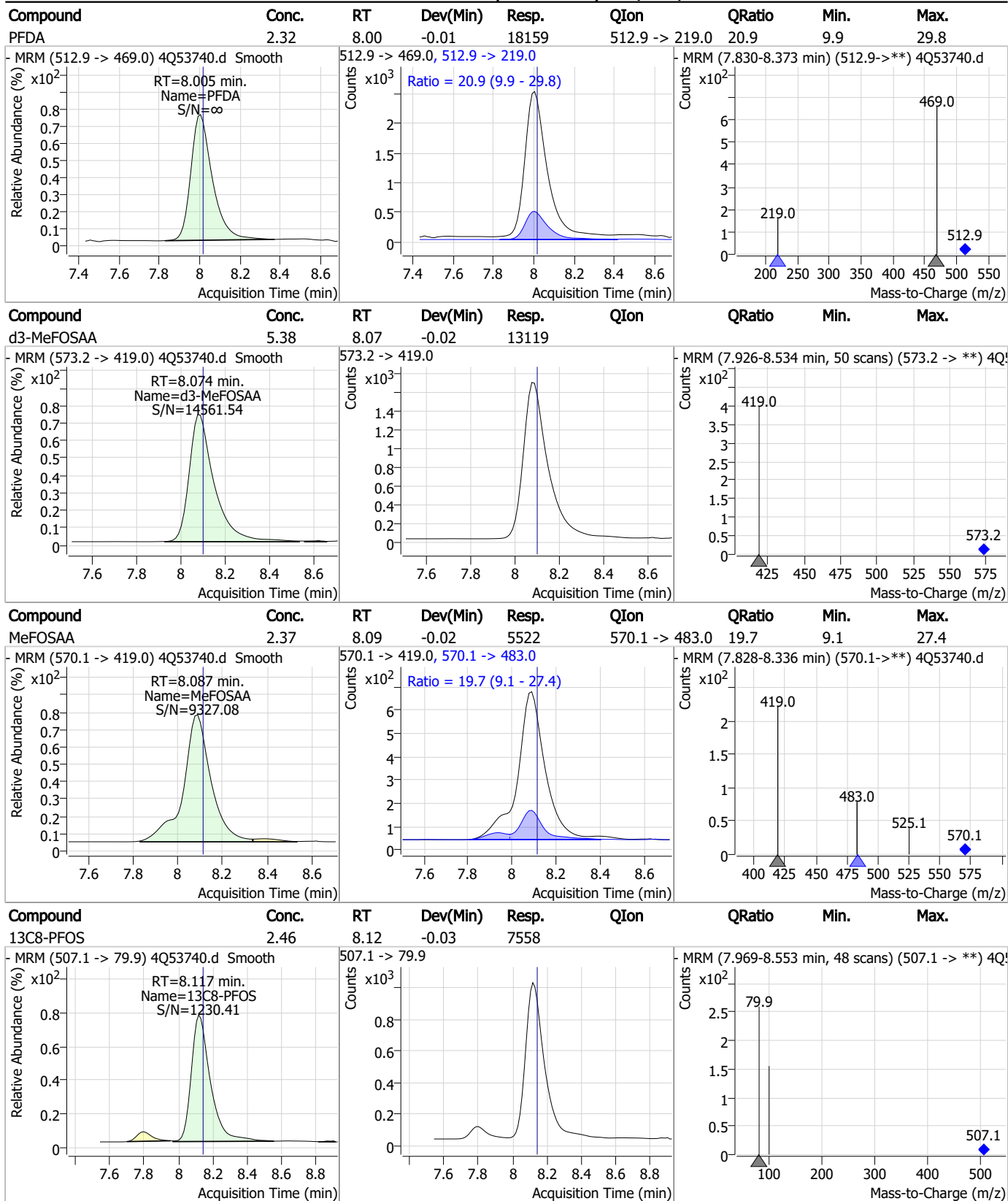


Perfluorinated Compounds by LC/MS/MS



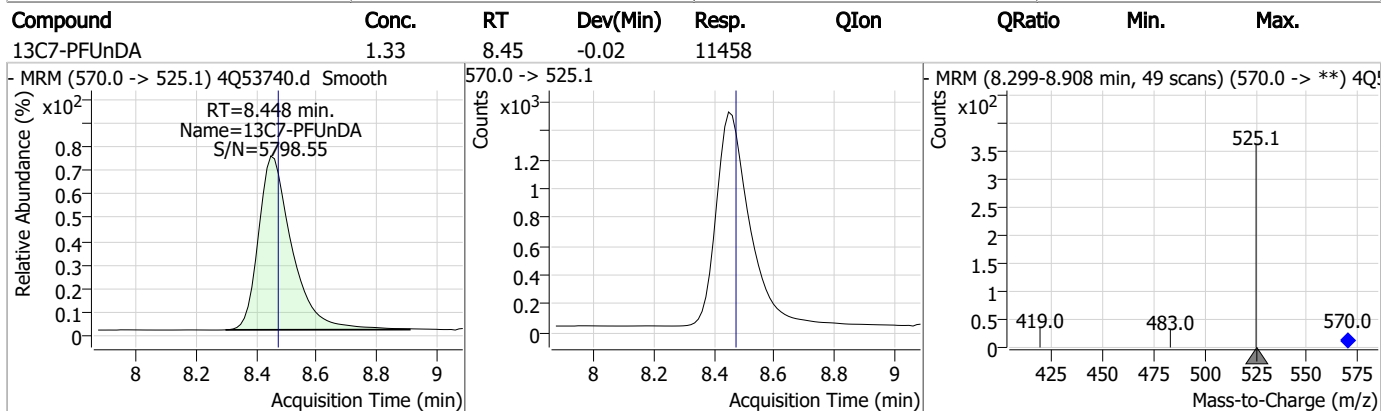
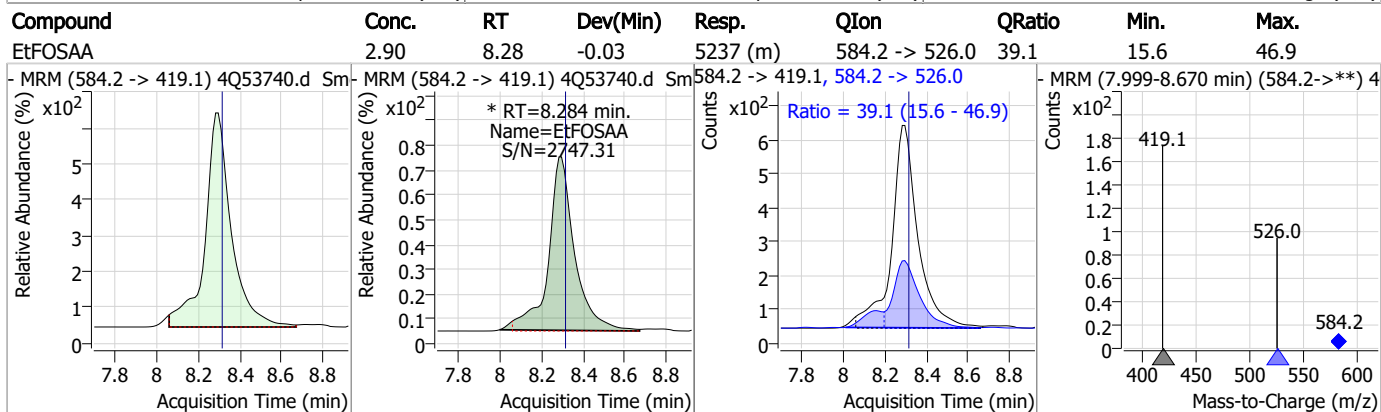
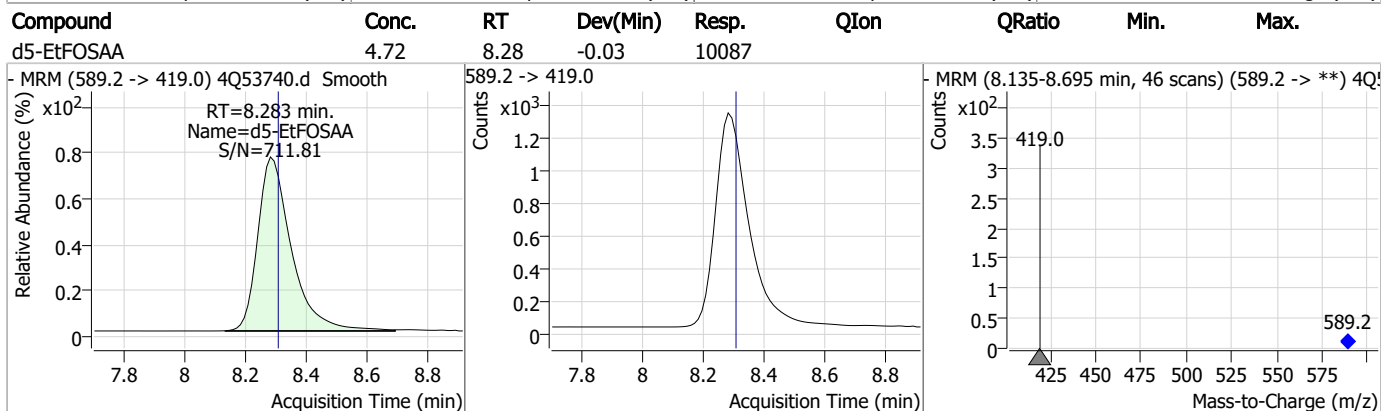
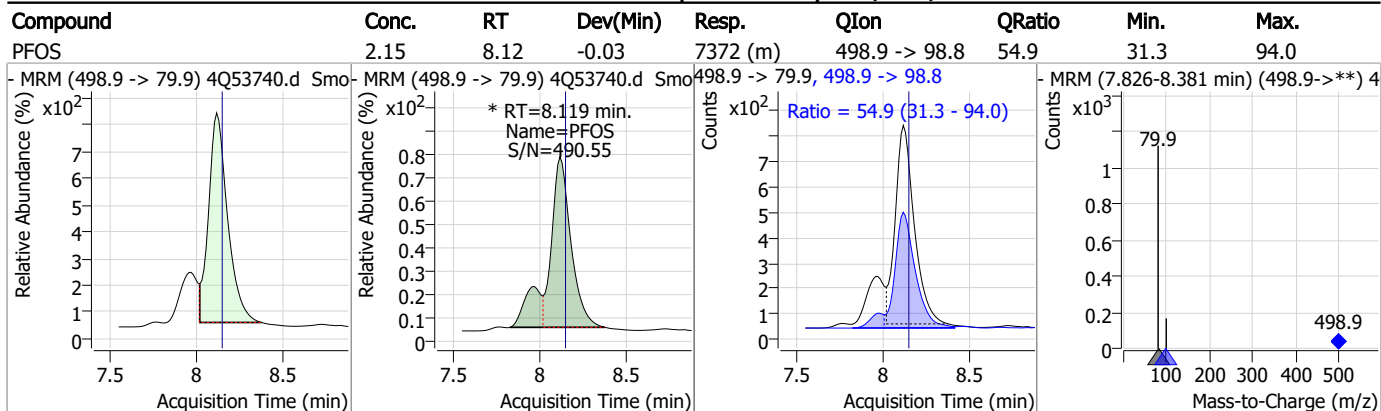
7.7.10 7

Perfluorinated Compounds by LC/MS/MS

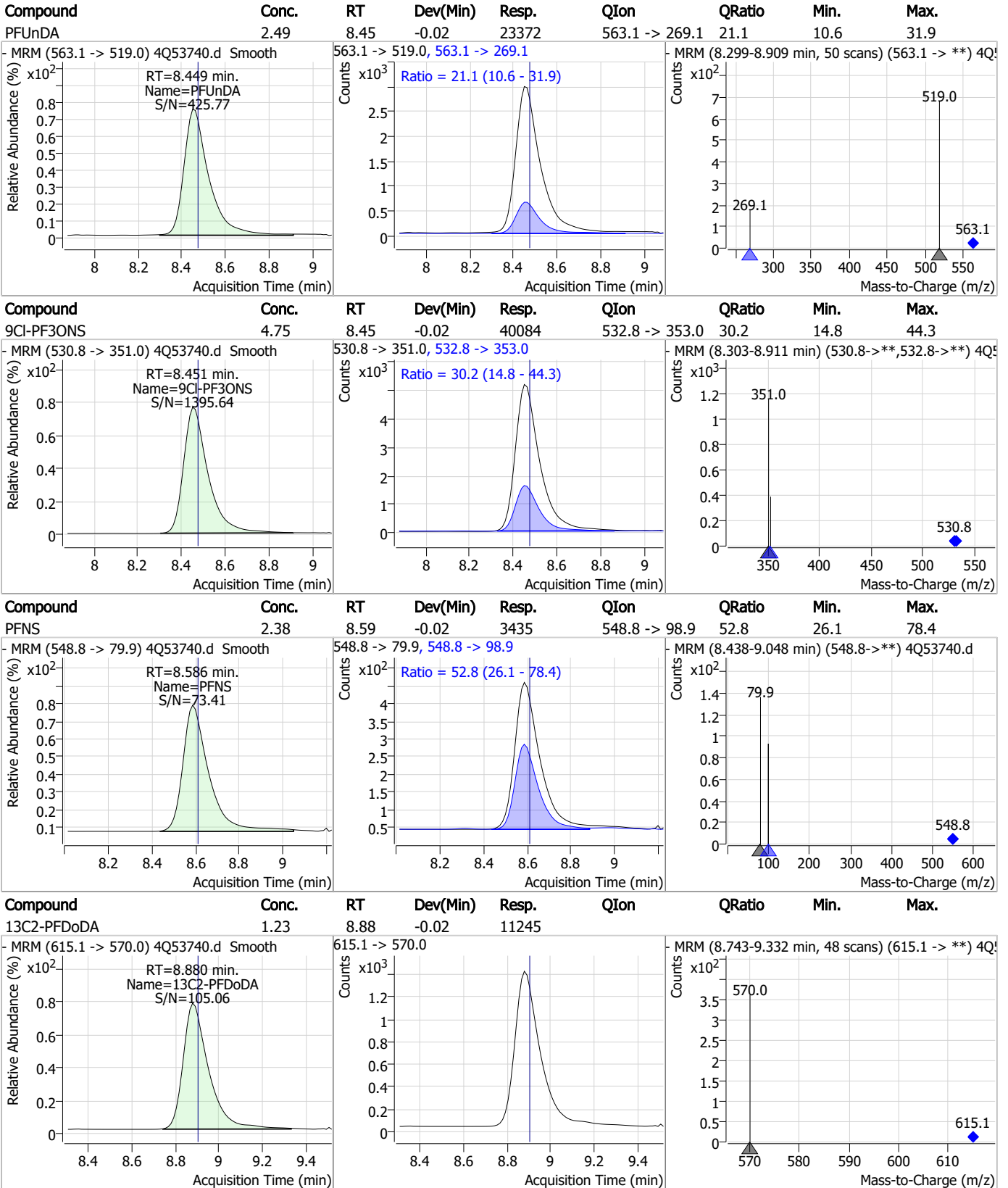


7.7.10
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Perfluorinated Compounds by LC/MS/MS



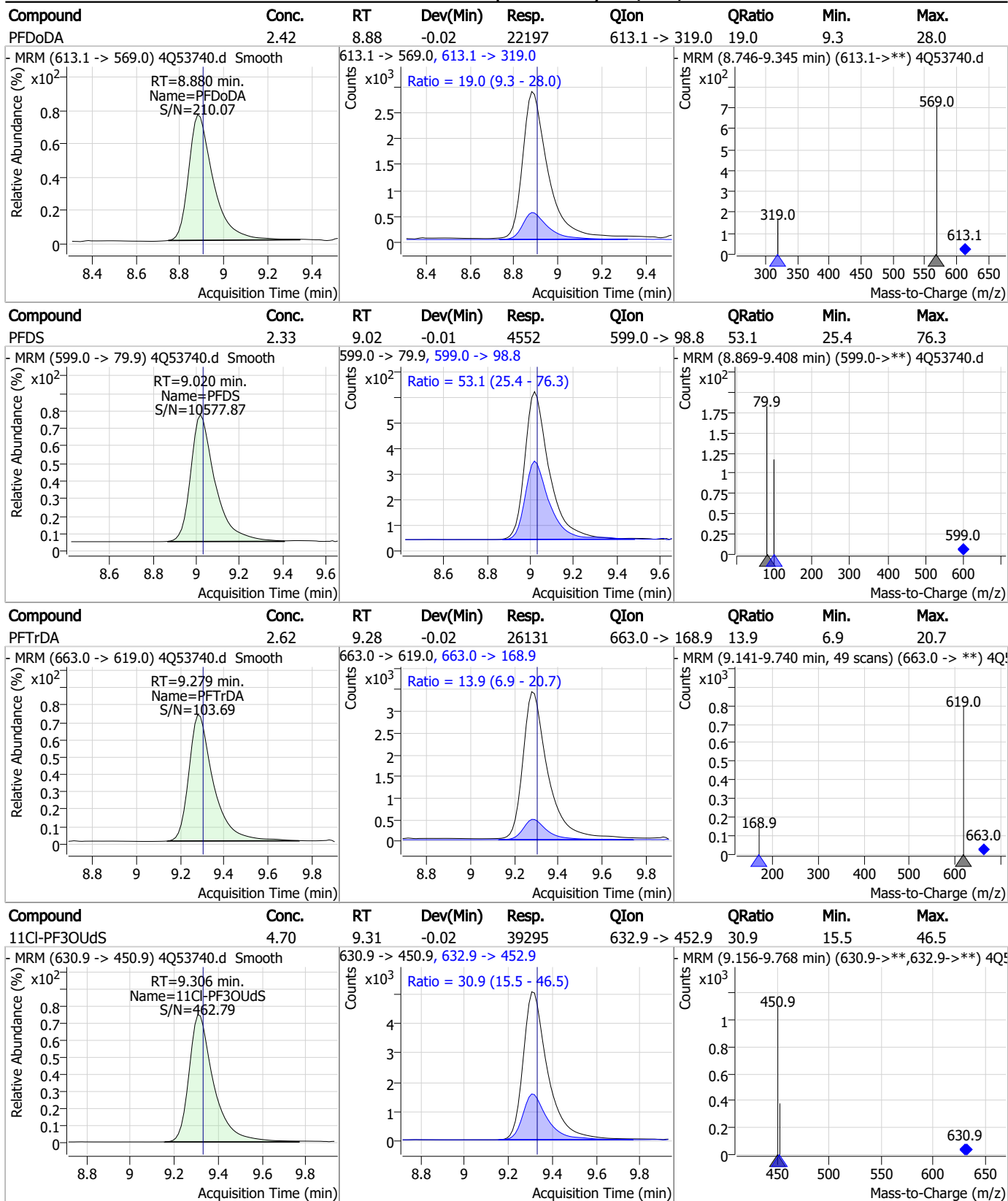
Perfluorinated Compounds by LC/MS/MS



7.7.10 7

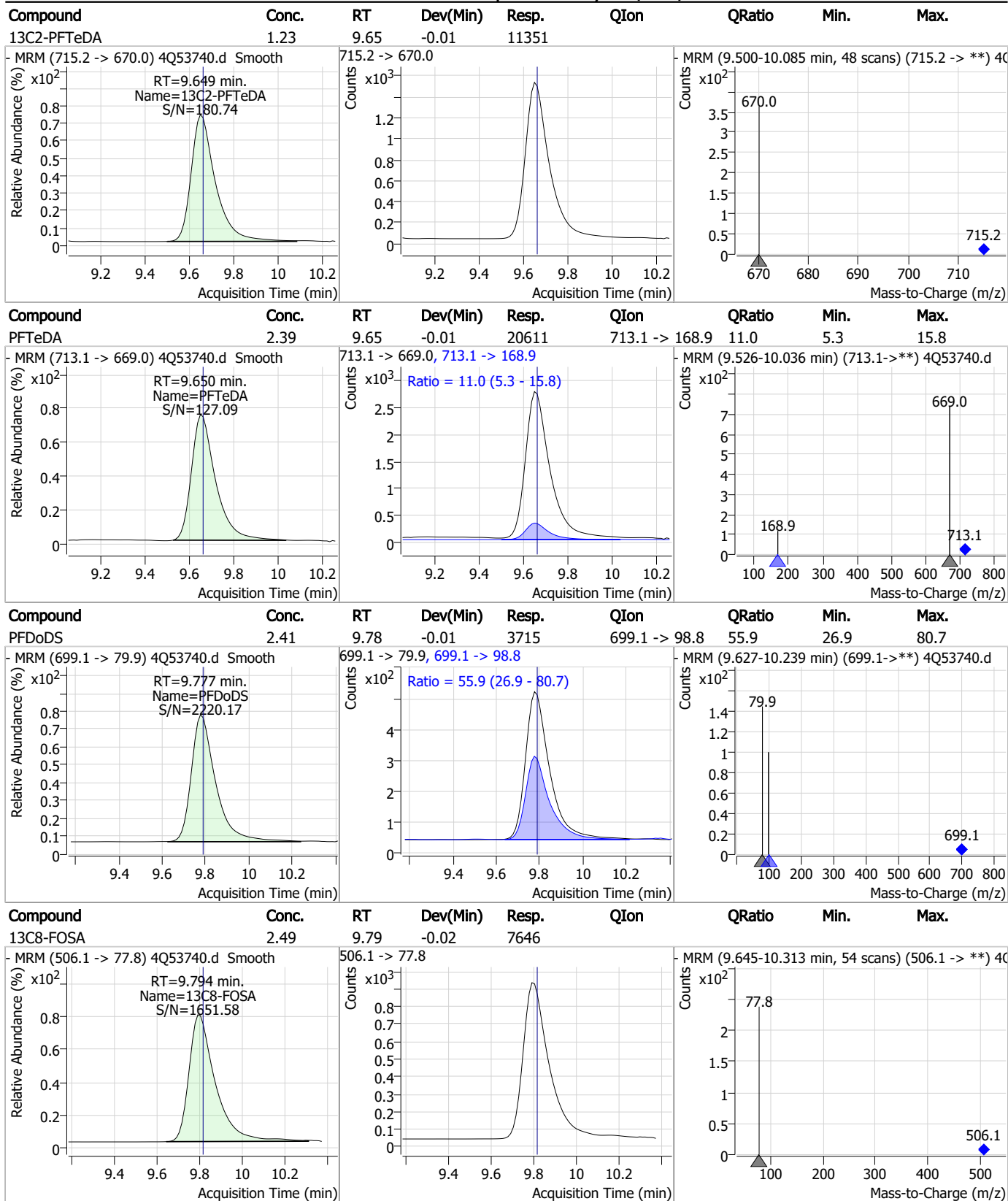


Perfluorinated Compounds by LC/MS/MS



7.7.10
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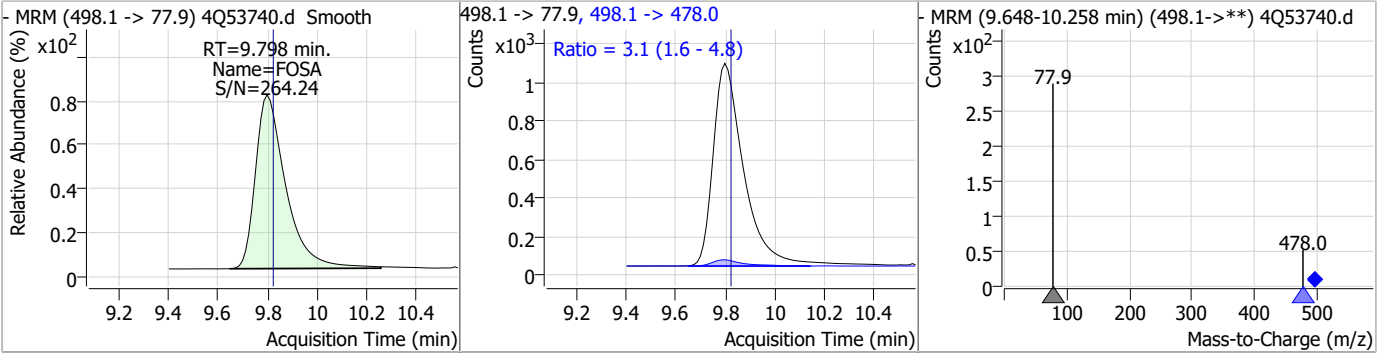
Perfluorinated Compounds by LC/MS/MS



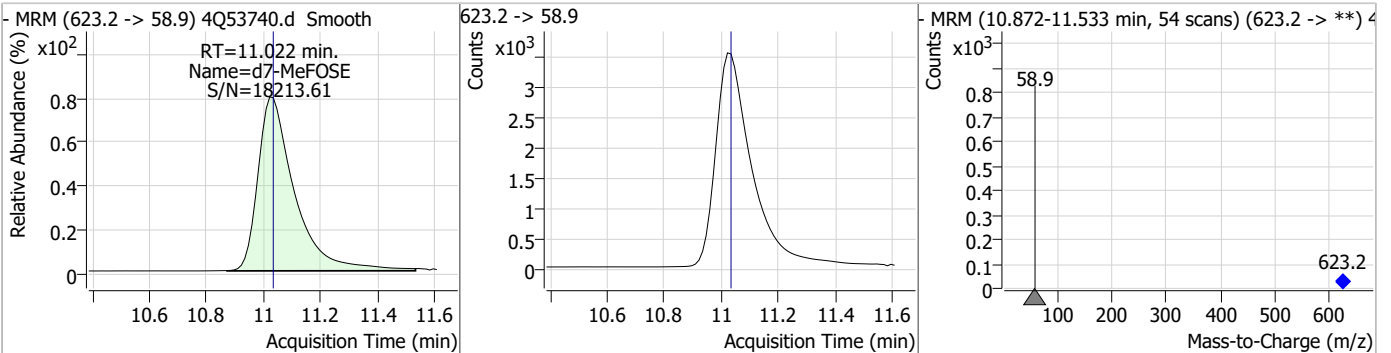
7.7.10 7

Perfluorinated Compounds by LC/MS/MS

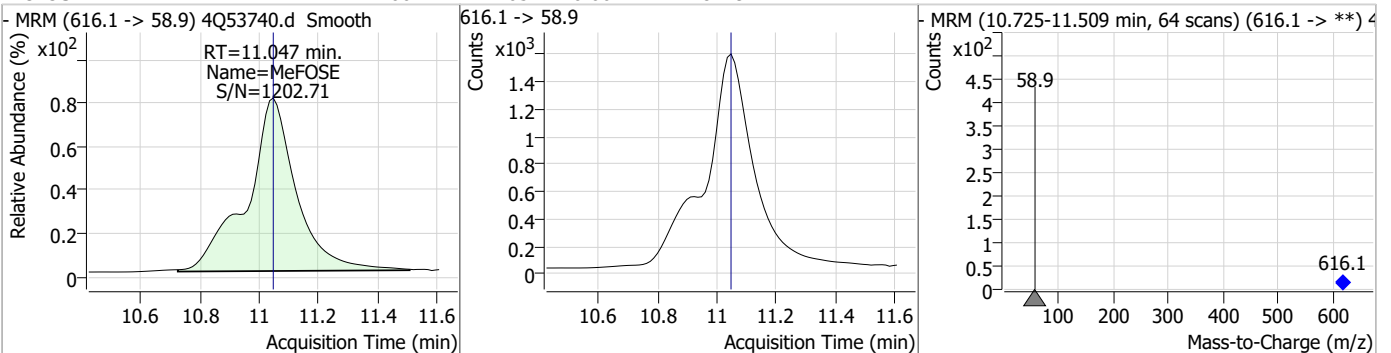
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.41	9.80	-0.02	8990	498.1 -> 478.0	3.1	1.6	4.8



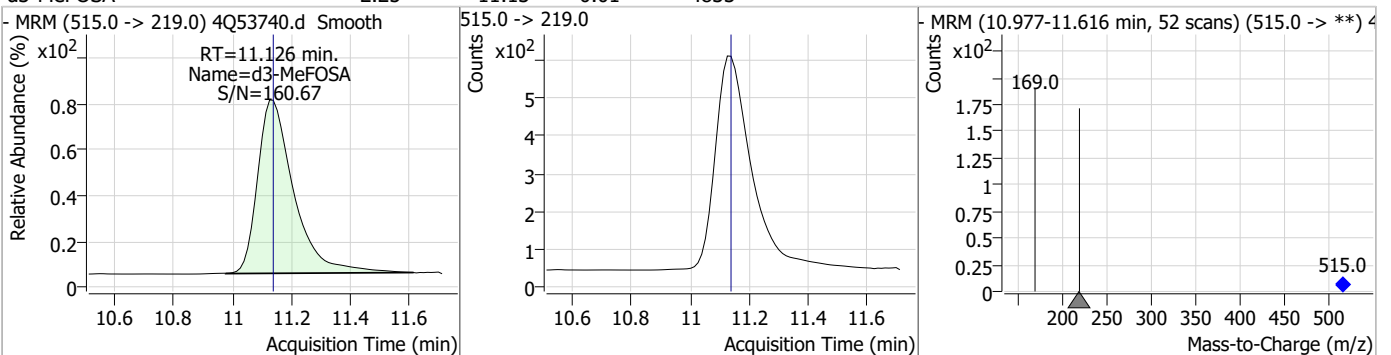
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.73	11.02	-0.01	31421				



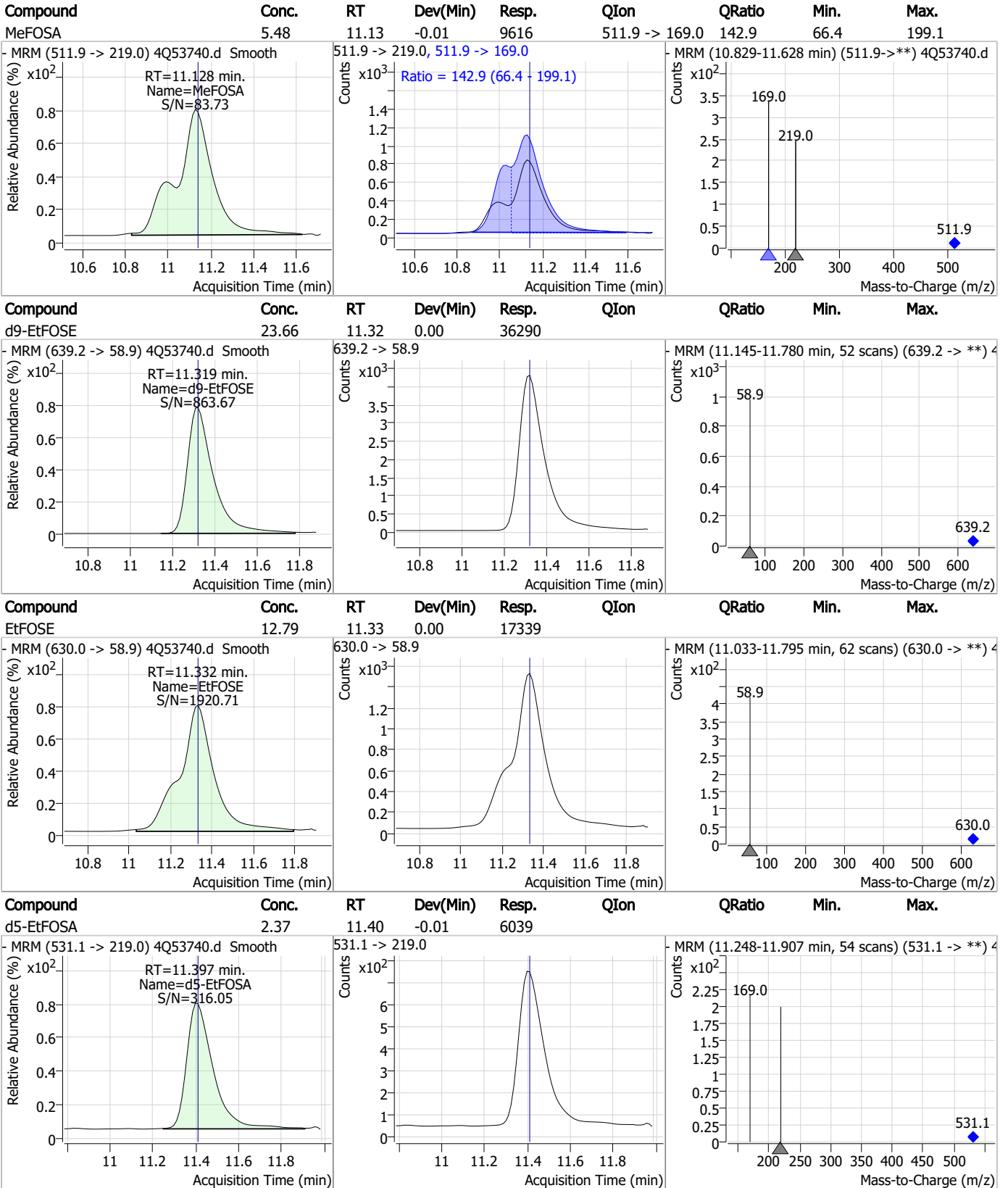
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.66	11.05	0.00	18129				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.25	11.13	-0.01	4833				



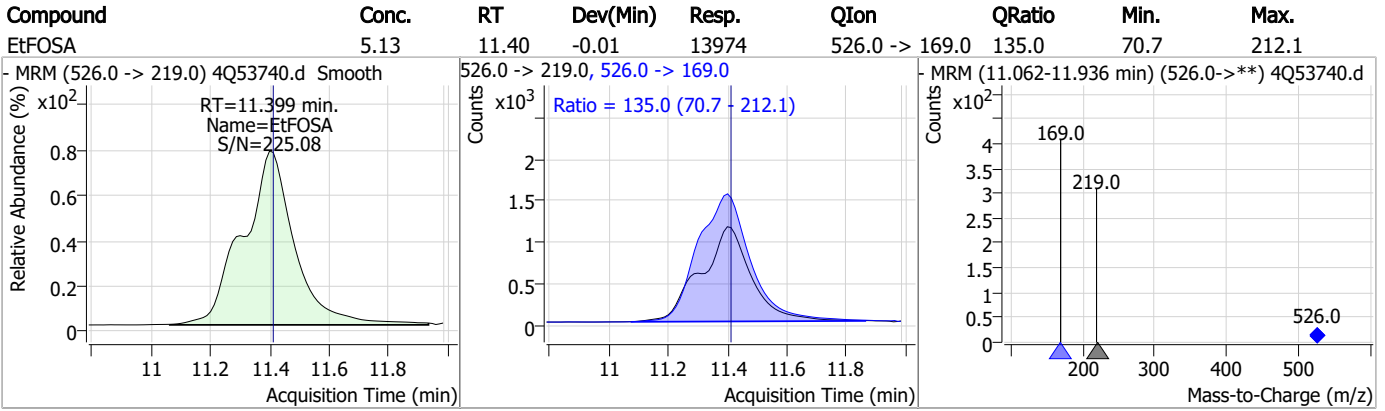
Perfluorinated Compounds by LC/MS/MS



7.7.10 7



Perfluorinated Compounds by LC/MS/MS



7.7.10
7



Manual Integration Approval Summary

Sample Number: S4Q785-ICV785 Method: EPA DRAFT 1633
Lab FileID: 4Q53740.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 18:12 Supervisor approved: 11/14/23 15:48 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Poorly defined baseline
Perfluorooctanesulfonic acid	1763-23-1		8.12	Poorly defined baseline
EtFOSAA	2991-50-6		8.28	Poorly defined baseline

7.7.10.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53741.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 6:27:06 PM
 Sample Name : icv785-20
 Vial : P1-B4
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	114032	10.00 µg/L	-0.075
M5-PFPeA	4.125	268.3 -> 223.0	48802	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	36604	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	33820	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	40160	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	16154	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	10950	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	12821	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	14297	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	14337	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	9003	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	10592	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	8648	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	9394	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	1010	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1962	5.00 µg/L	-0.025
M2-8:2FTS	7.791	529.1 -> 80.9	2981	5.00 µg/L	-0.037
M3-MeFOSAA	8.074	573.2 -> 419.0	15147	5.00 µg/L	-0.025
M3-HFPO-DA	5.664	286.9 -> 168.9	33895	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	12771	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	36558	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	45246	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	7410	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	6246	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	7933	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	54544	5.00 µg/L	-0.075
18O2-PFHxS	7.028	403.0 -> 83.9	5428	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	43091	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	12041	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	16894	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	39940	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	1010	5.44 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.7%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1962	5.01 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C2-8:2FTS	7.791	529.1 -> 80.9	2981	5.40 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.1%		
13C2-PFDoDA	8.880	615.1 -> 570.0	14297	1.32 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.3%		
13C2-PFTeDA	9.649	715.2 -> 670.0	14337	1.31 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.9%		
13C3-PFBS	5.152	302.1 -> 79.9	10592	2.60 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.1%		
13C3-PFHxS	7.017	402.1 -> 79.9	8648	2.57 µg/L	-0.037

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.8%	
13C4-PFBA	2.624	216.8 -> 171.9	114032	10.03 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C4-PFHpA	6.267	367.1 -> 322.0	33820	2.43 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.1%	
13C5-PFHxA	5.297	318.0 -> 273.0	36604	2.46 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C5-PFPeA	4.125	268.3 -> 223.0	48802	5.01 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C6-PFDA	7.992	519.1 -> 474.1	10950	1.24 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C7-PFUnDA	8.448	570.0 -> 525.1	12821	1.25 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C8-FOSA	9.794	506.1 -> 77.8	9003	2.37 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.0%	
13C8-PFOA	6.964	421.1 -> 376.0	40160	2.61 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.4%	
13C8-PFOS	8.117	507.1 -> 79.9	9394	2.48 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C9-PFNA	7.509	472.1 -> 427.0	16154	1.21 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.0%	
d3-MeFOSAA	8.074	573.2 -> 419.0	15147	5.04 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C3-HFPO-DA	5.664	286.9 -> 168.9	33895	9.97 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
d3-MeFOSA	11.126	515.0 -> 219.0	6246	2.36 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.4%	
d5-EtFOSAA	8.283	589.2 -> 419.0	12771	4.85 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.9%	
d7-MeFOSE	11.034	623.2 -> 58.9	36558	22.37 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.5%	
d9-EtFOSE	11.319	639.2 -> 58.9	45246	23.90 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.6%	
d5-EtFOSA	11.397	531.1 -> 219.0	7410	2.36 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.4%	
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	39198	19.65 µg/L	97
		327.1 -> 80.9	15770		
6:2FTS	6.737	427.1 -> 407.0	46482	21.89 µg/L	97
		427.1 -> 80.9	16903		
8:2FTS	7.804	527.1 -> 507.0	32210	19.87 µg/L	98
		527.1 -> 80.8	13749		
EtFOSAA	8.284	584.2 -> 419.1	46920	20.52 µg/L	m 89
		584.2 -> 526.0	17412		
FOSA	9.798	498.1 -> 77.9	79745	18.17 µg/L	99
		498.1 -> 478.0	2382		
MeFOSAA	8.087	570.1 -> 419.0	49844	18.51 µg/L	100
		570.1 -> 483.0	9185		
PFBA	2.632	212.8 -> 168.9	74350	17.93 µg/L	100
PFBS	5.153	298.7 -> 79.9	67891	18.06 µg/L	99
		298.7 -> 98.8	26629		
PFDA	8.005	512.9 -> 469.0	175213	19.56 µg/L	99
		512.9 -> 219.0	35862		
PFDoDA	8.880	613.1 -> 569.0	201555	17.28 µg/L	97
		613.1 -> 319.0	34837		
PFDS	9.020	599.0 -> 79.9	45623	18.77 µg/L	98

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	22708			
PFHpA	6.268	363.1 -> 319.0	407172	19.20	µg/L	100
		363.1 -> 169.0	71534			
PFHpS	7.612	449.0 -> 79.9	66588	17.93	µg/L	98
		449.0 -> 98.9	35104			
PFHxA	5.300	313.0 -> 269.0	255480	19.98	µg/L	99
		313.0 -> 118.9	7731			
PFHxS	7.018	398.7 -> 79.9	53093	20.35	µg/L	m 80
		398.7 -> 98.9	26166			
PFNA	7.510	463.0 -> 419.0	216665	21.04	µg/L	96
		463.0 -> 219.0	50650			
PFNS	8.586	548.8 -> 79.9	32286	18.01	µg/L	100
		548.8 -> 98.9	16926			
PFOA	6.965	413.0 -> 369.0	343611	17.67	µg/L	99
		413.0 -> 169.0	68741			
PFOS	8.119	498.9 -> 79.9	73552	17.25	µg/L	m 77
		498.9 -> 98.8	33191			
PFPeA	4.127	263.0 -> 219.0	201339	18.96	µg/L	100
PFPeS	6.257	349.1 -> 79.9	54956	19.34	µg/L	97
		349.1 -> 98.9	24914			
PFTeDA	9.650	713.1 -> 669.0	215283	19.78	µg/L	100
		713.1 -> 168.9	22797			
PFTrDA	9.279	663.0 -> 619.0	225487	17.77	µg/L	100
		663.0 -> 168.9	31179			
PFUnDA	8.449	563.1 -> 519.0	198138	18.90	µg/L	99
		563.1 -> 269.1	41086			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	203142	19.20	µg/L	100
		632.9 -> 452.9	62725			
9Cl-PF3ONS	8.451	530.8 -> 351.0	199647	18.69	µg/L	99
		532.8 -> 353.0	59514			
ADONA	6.531	376.9 -> 250.9	500837	21.35	µg/L	99
		376.9 -> 84.8	122103			
HFPO-DA	5.665	284.9 -> 168.9	67567	18.82	µg/L	99
		284.9 -> 184.9	6525			
3:3FTCA	3.561	241.0 -> 177.0	11639	18.02	µg/L	100
		241.0 -> 117.0	1051			
5:3FTCA	5.983	341.0 -> 237.1	44194	19.64	µg/L	98
		341.0 -> 217.0	31569			
7:3FTCA	7.524	441.0 -> 316.9	17750	17.58	µg/L	99
		441.0 -> 336.9	43521			
EtFOSA	11.412	526.0 -> 219.0	58275	17.44	µg/L	76
		526.0 -> 169.0	65298			
EtFOSE	11.332	630.0 -> 58.9	164806	97.49	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	40712	17.96	µg/L	87
		511.9 -> 169.0	47976			
MeFOSE	11.047	616.1 -> 58.9	163247	98.01	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	33921	17.69	µg/L	96
		699.1 -> 98.8	19282			
NFDHA	5.179	295.0 -> 201.0	17138	20.30	µg/L	97
		295.0 -> 84.9	4293			
PFMBA	4.529	279.0 -> 85.1	110466	18.07	µg/L	100
PFMPA	3.265	229.0 -> 84.9	124349	18.29	µg/L	100
PFEESA	5.684	314.8 -> 134.9	177172	17.51	µg/L	98
		314.8 -> 82.9	6058			

= Qualifier out of range, m = manually integrated, + = Area summed



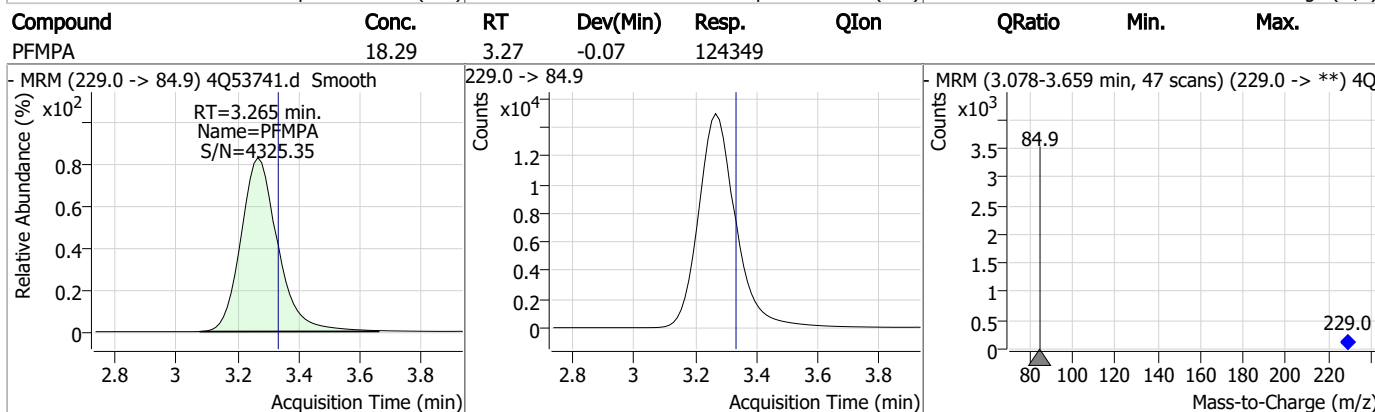
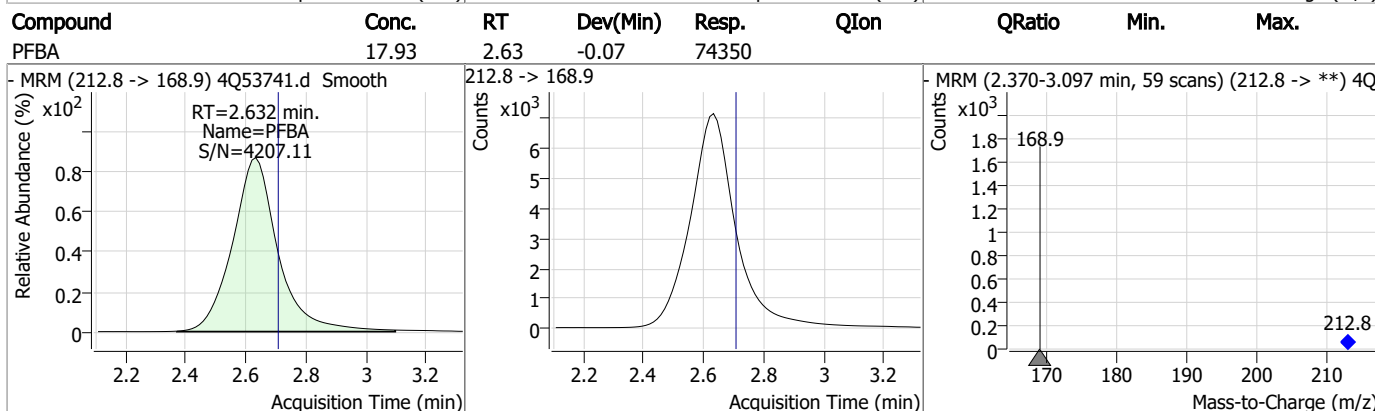
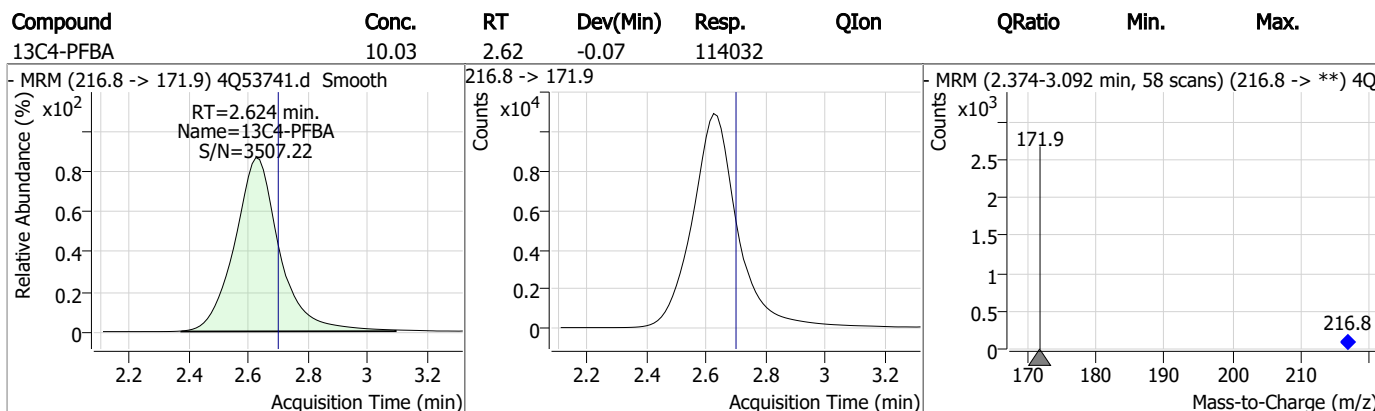
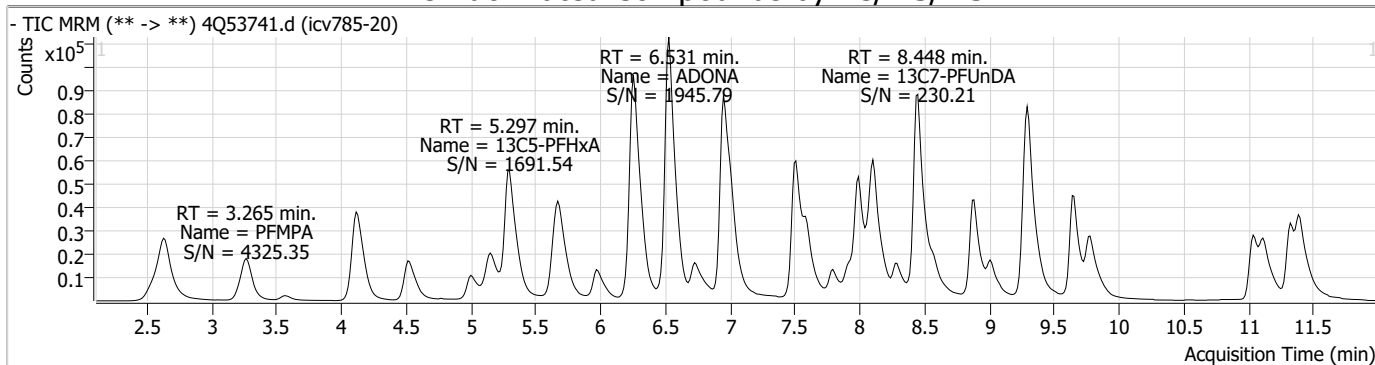
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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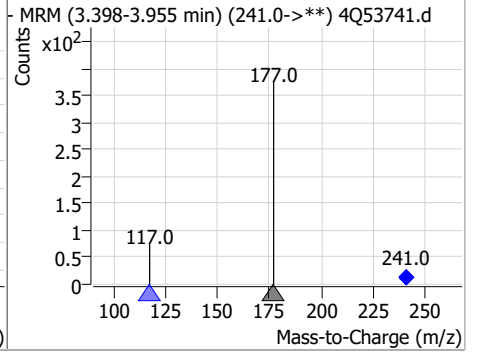
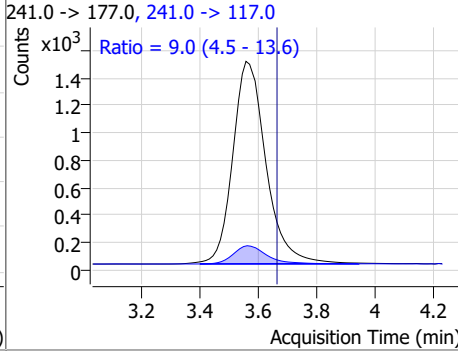
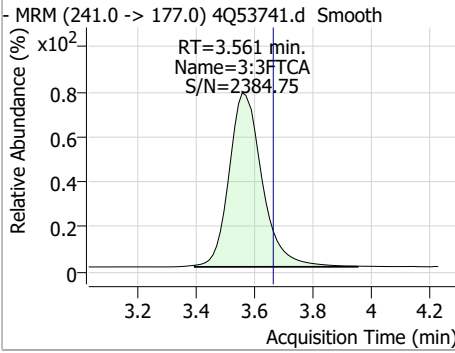
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Perfluorinated Compounds by LC/MS/MS

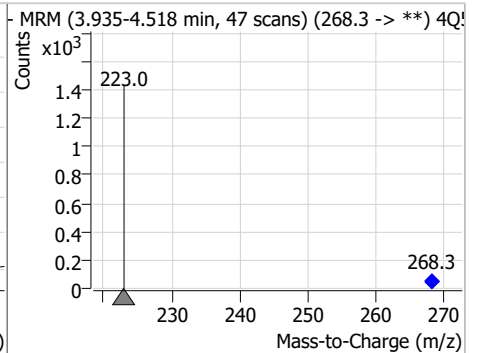
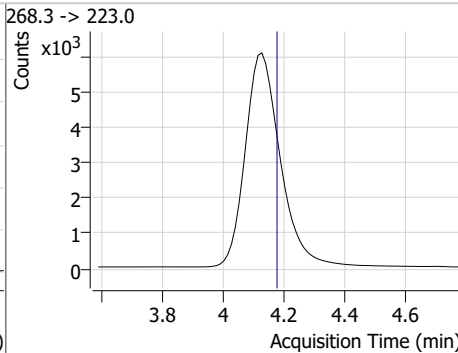
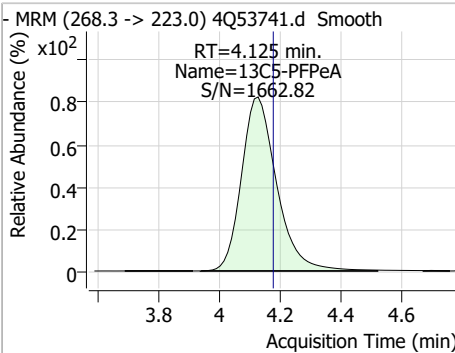


Perfluorinated Compounds by LC/MS/MS

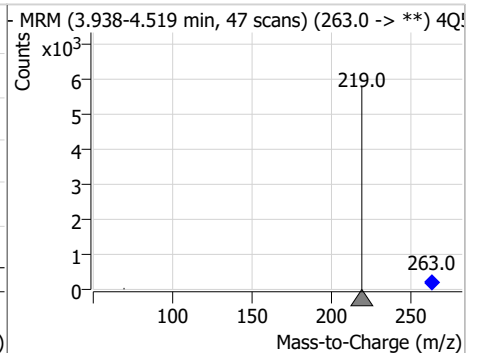
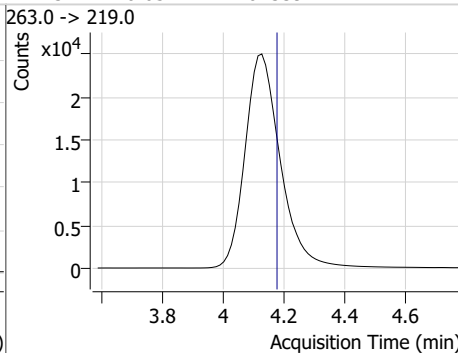
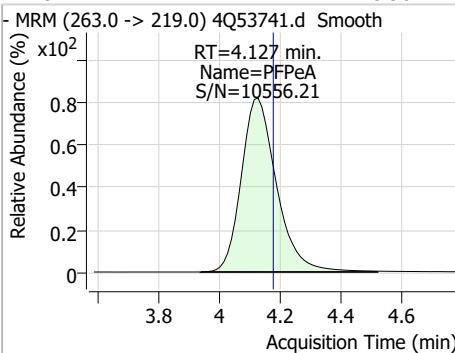
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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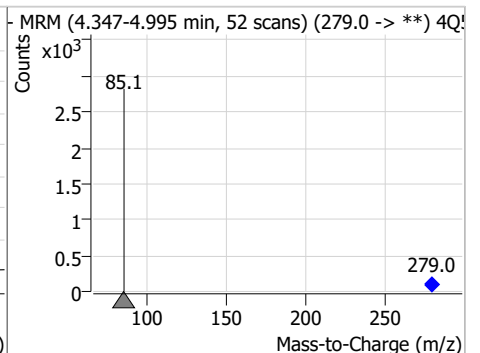
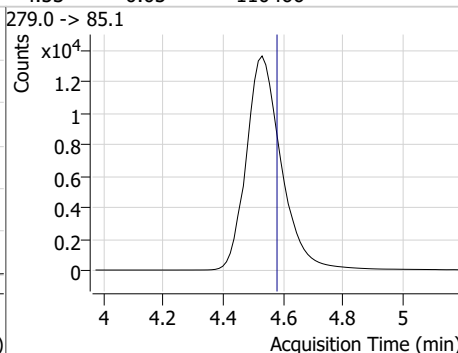
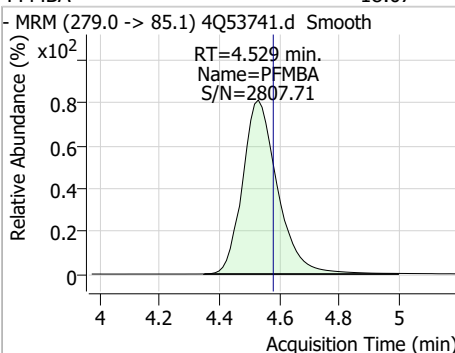
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.01	4.12	-0.05	48802				



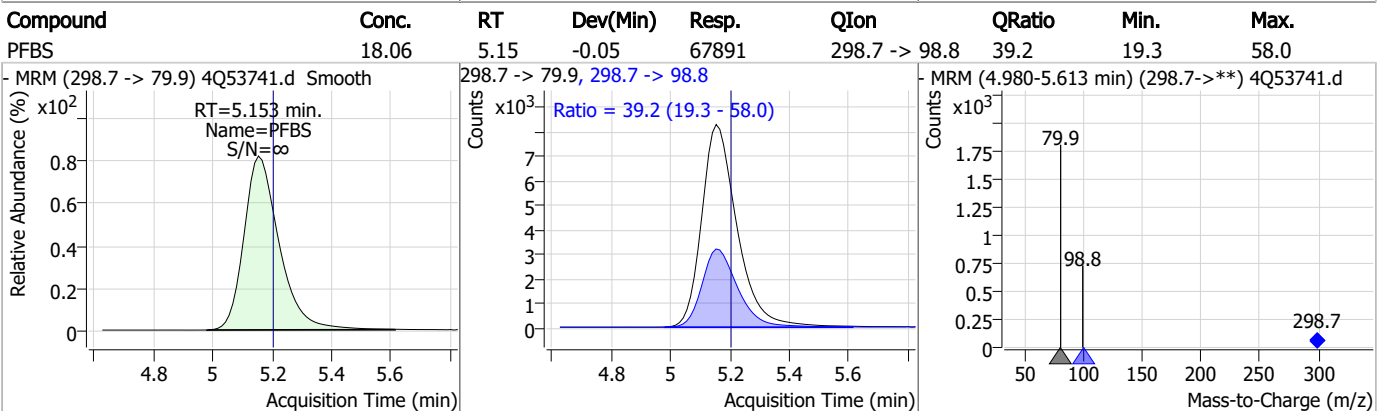
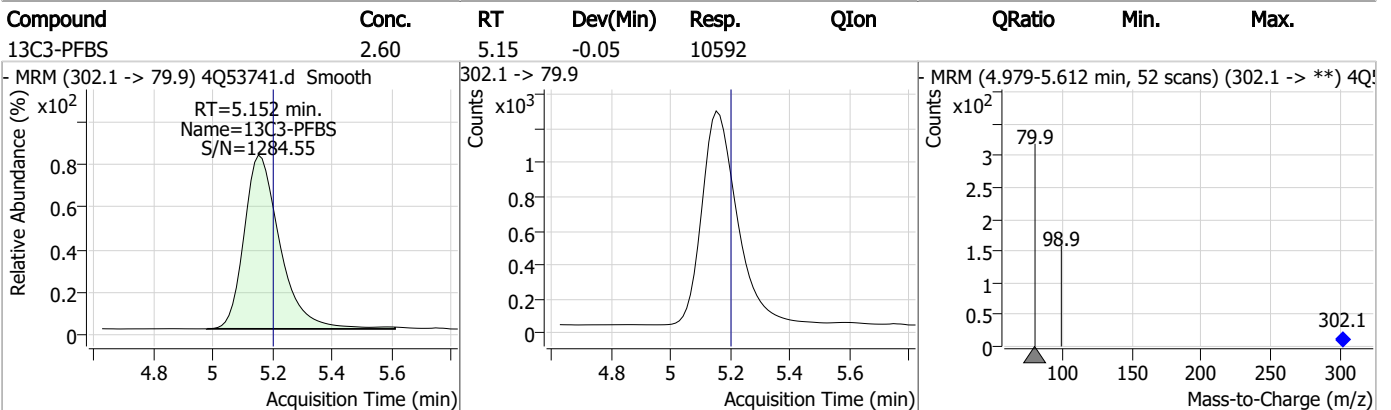
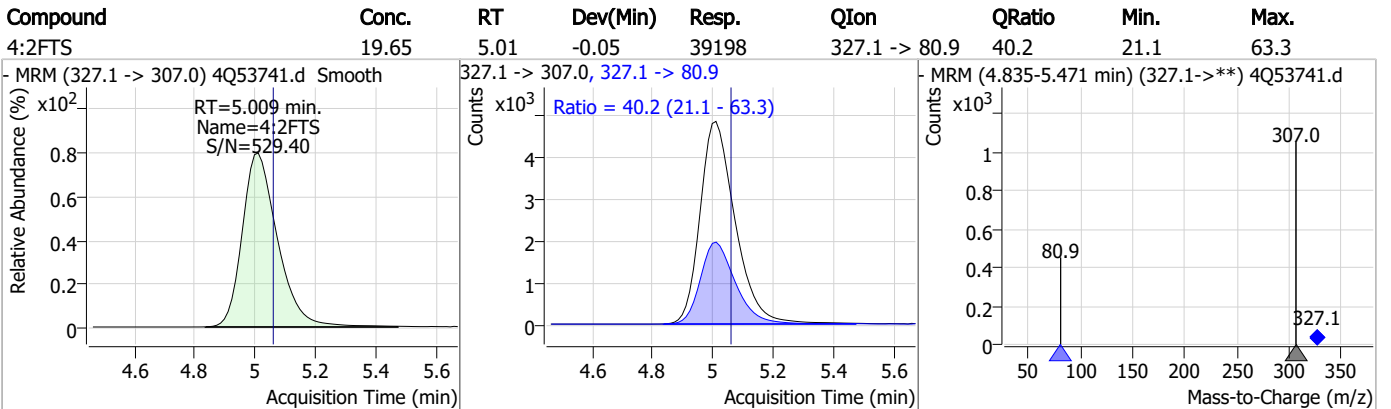
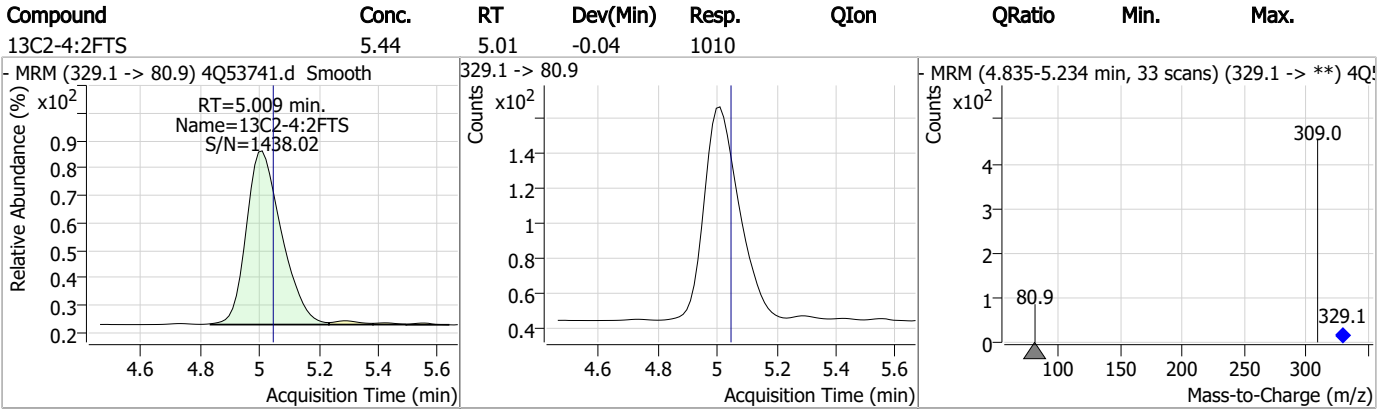
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	18.96	4.13	-0.05	201339				



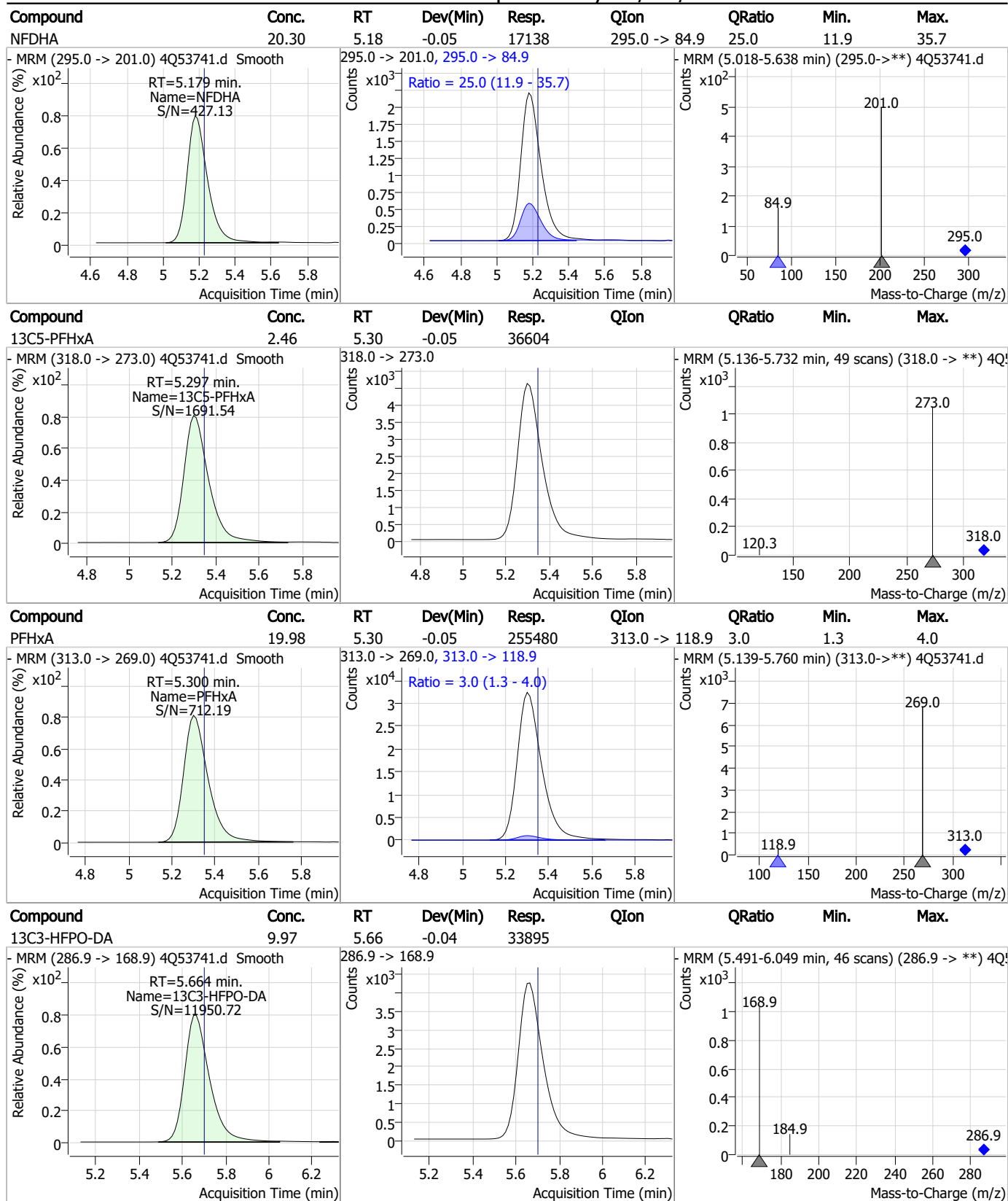
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	18.07	4.53	-0.05	110466				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

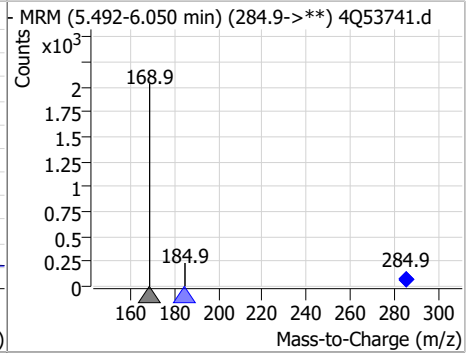
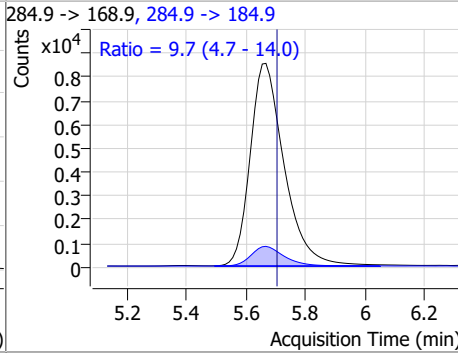
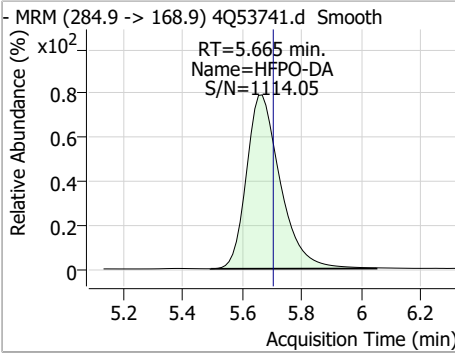


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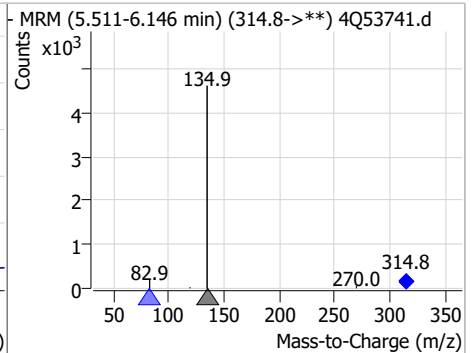
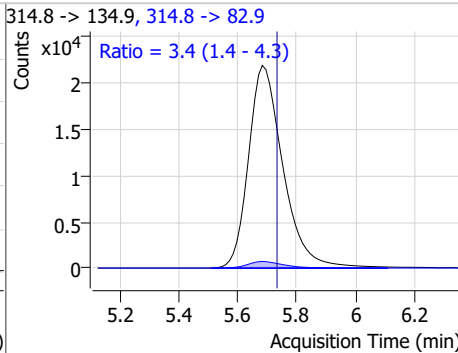
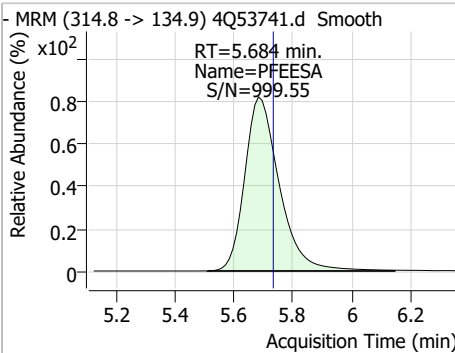
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Perfluorinated Compounds by LC/MS/MS

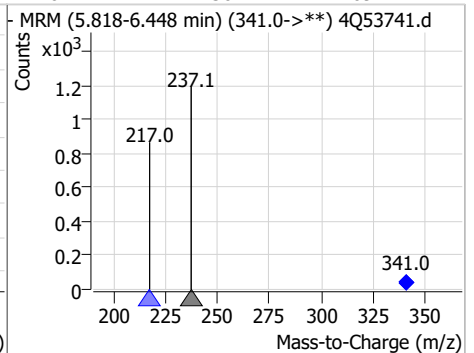
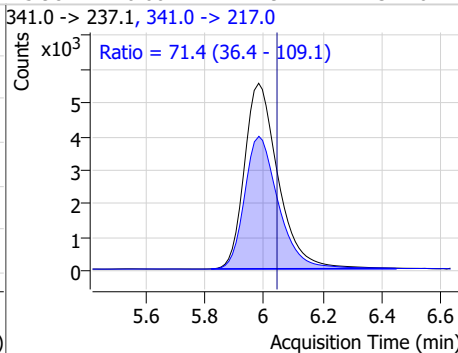
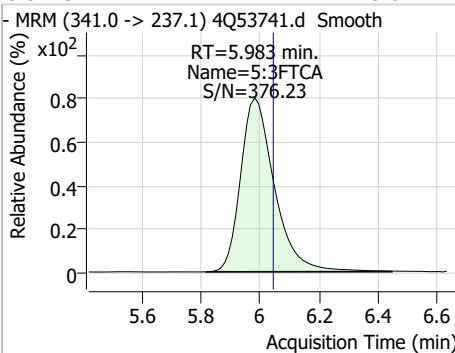
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	18.82	5.67	-0.04	67567	284.9 -> 184.9	9.7	4.7	14.0



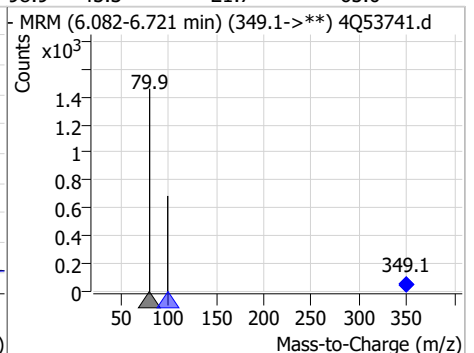
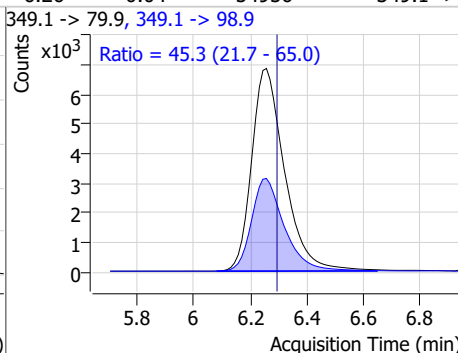
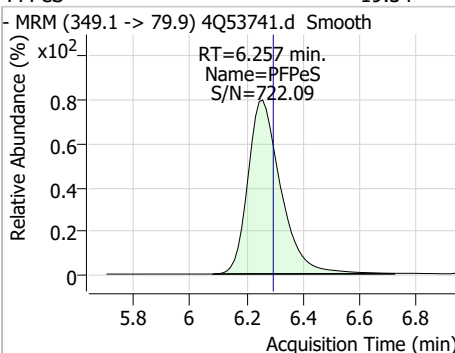
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	17.51	5.68	-0.05	177172	314.8 -> 82.9	3.4	1.4	4.3



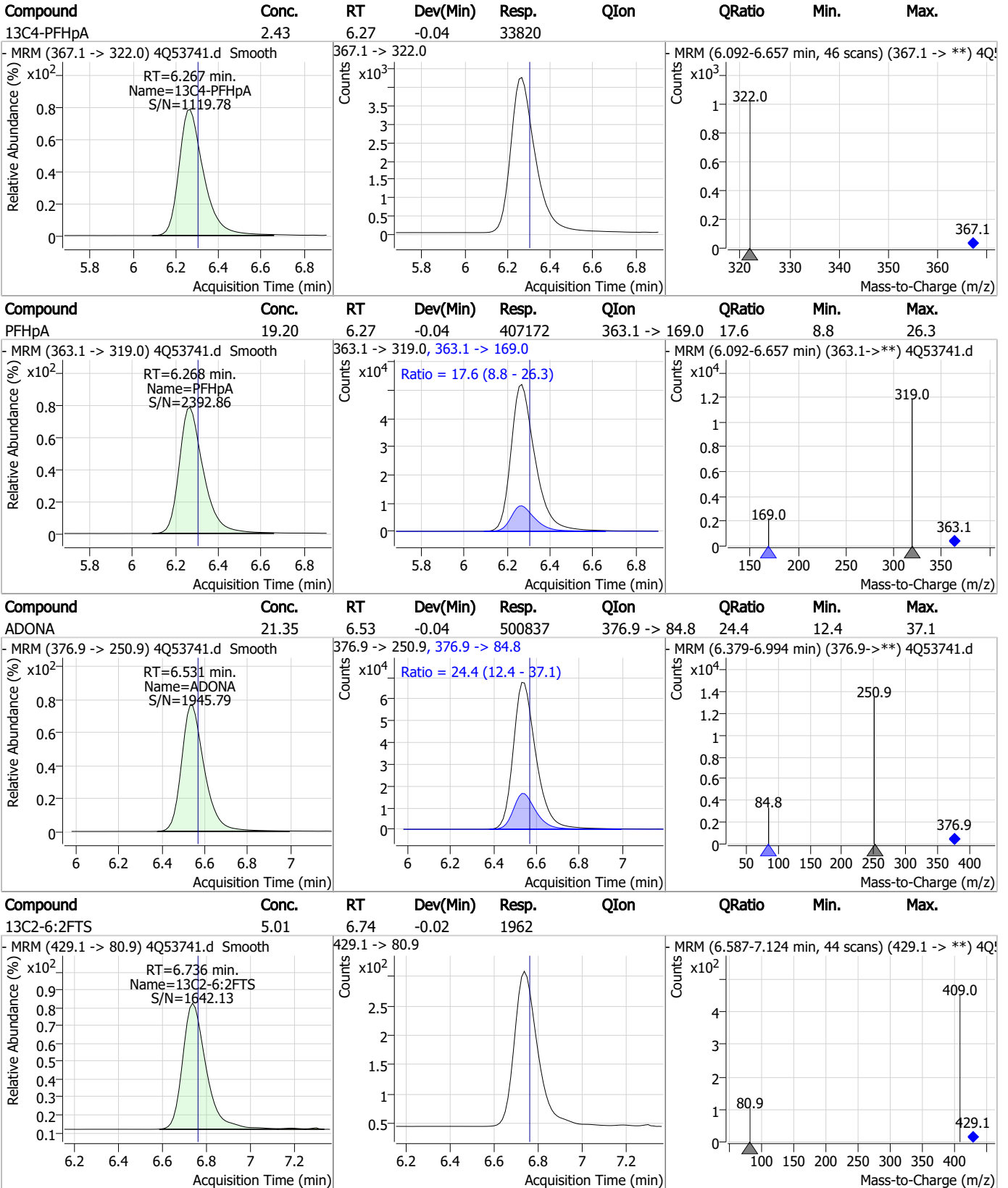
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	19.64	5.98	-0.06	44194	341.0 -> 217.0	71.4	36.4	109.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	19.34	6.26	-0.04	54956	349.1 -> 98.9	45.3	21.7	65.0



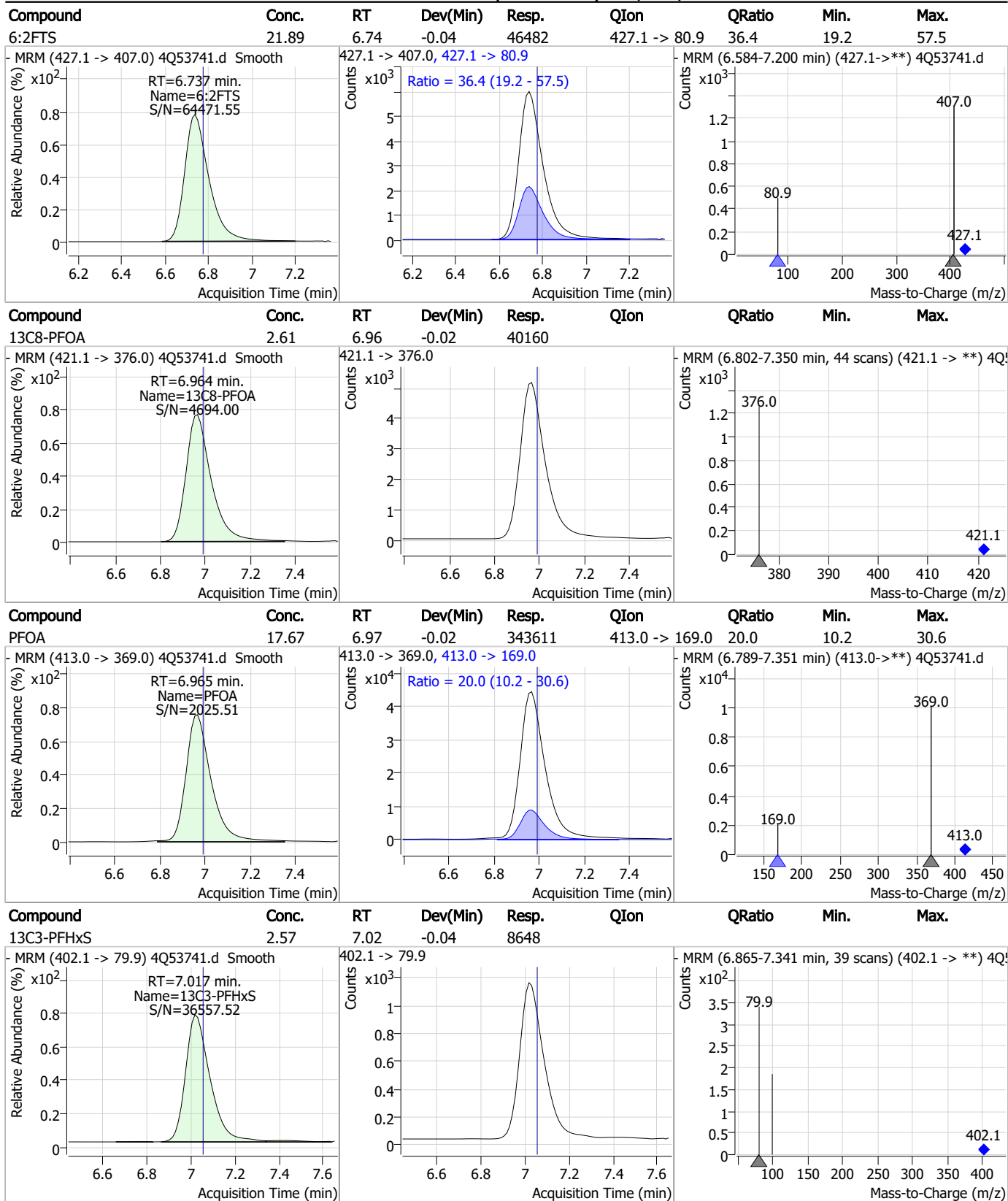
Perfluorinated Compounds by LC/MS/MS



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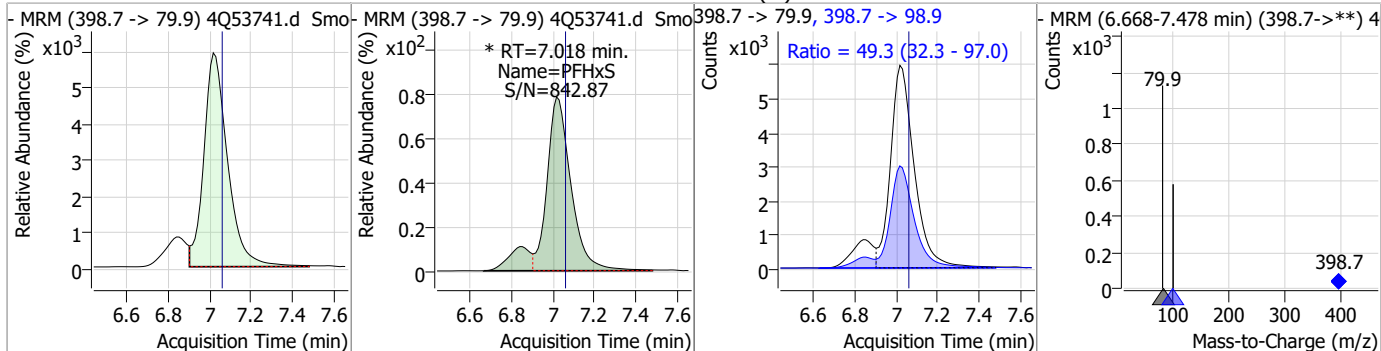
Perfluorinated Compounds by LC/MS/MS



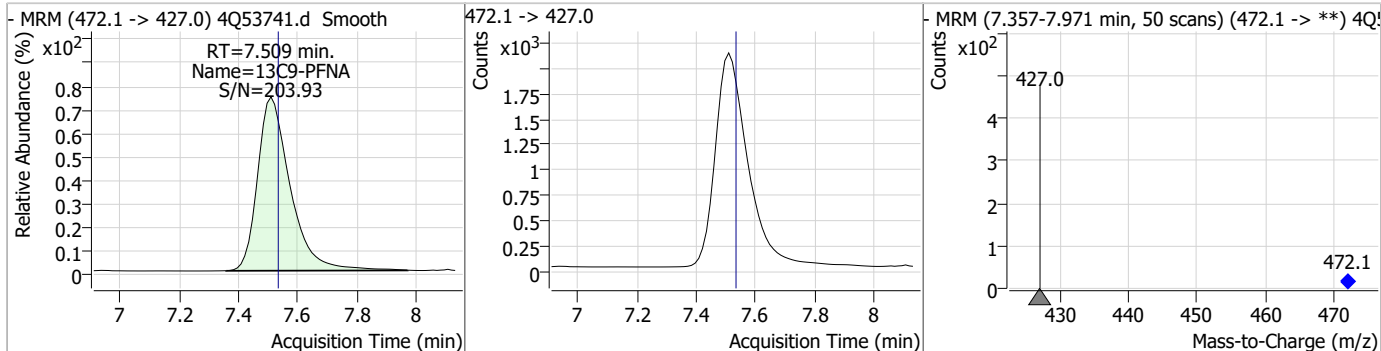
7.7.11
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Perfluorinated Compounds by LC/MS/MS

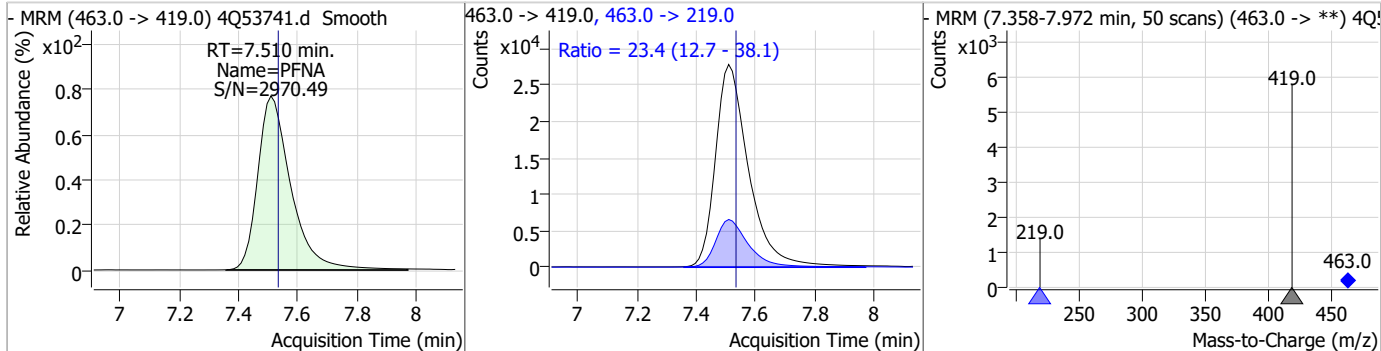
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	20.35	7.02	-0.04	53093 (m)	398.7 -> 98.9	49.3	32.3	97.0



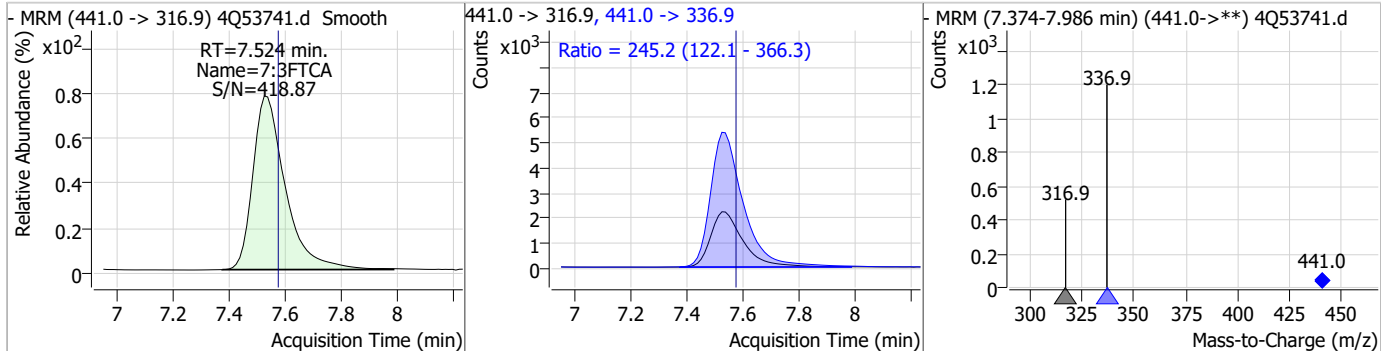
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.21	7.51	-0.02	16154				



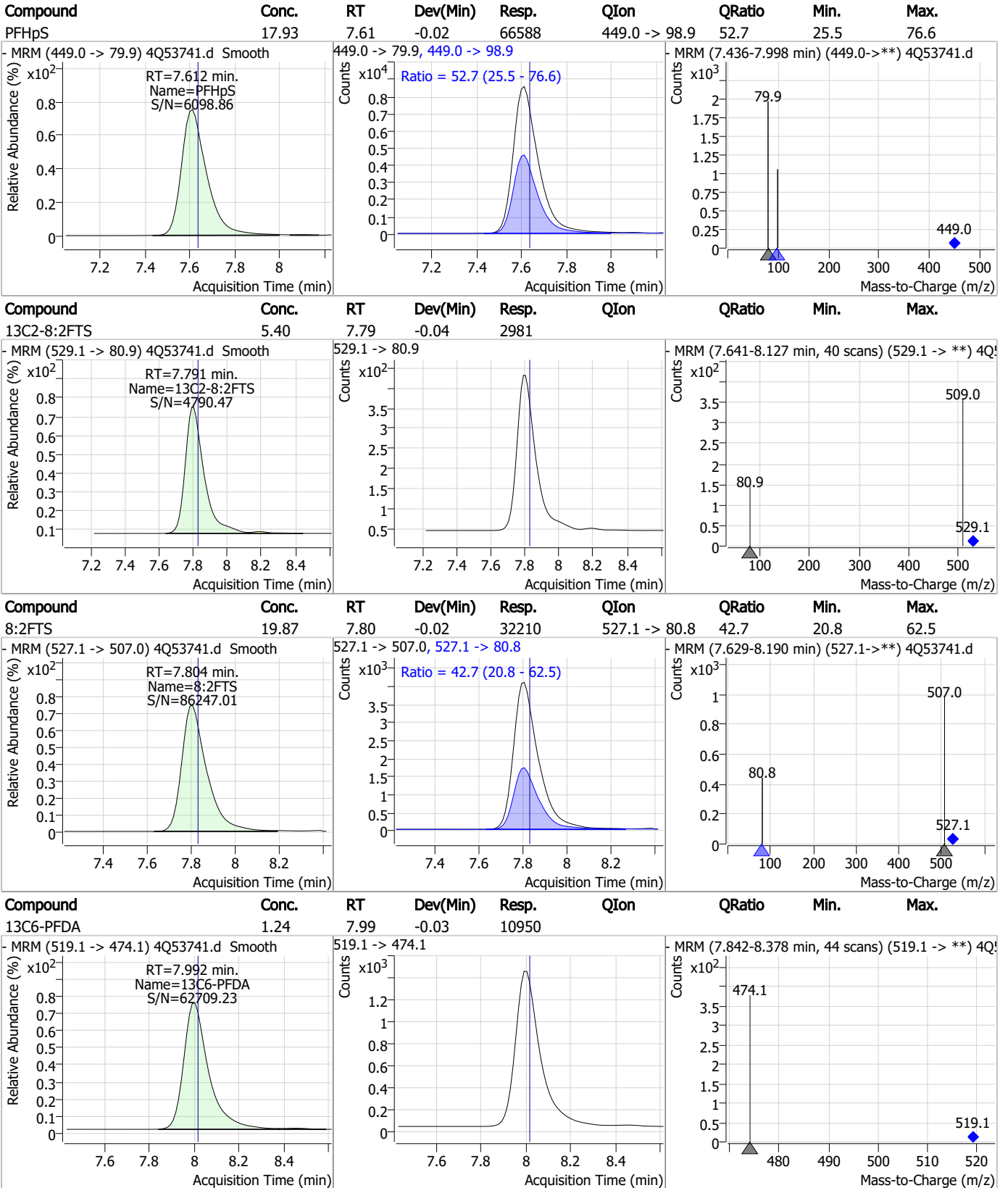
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	21.04	7.51	-0.02	216665	463.0 -> 219.0	23.4	12.7	38.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	17.58	7.52	-0.05	17750	441.0 -> 336.9	245.2	122.1	366.3



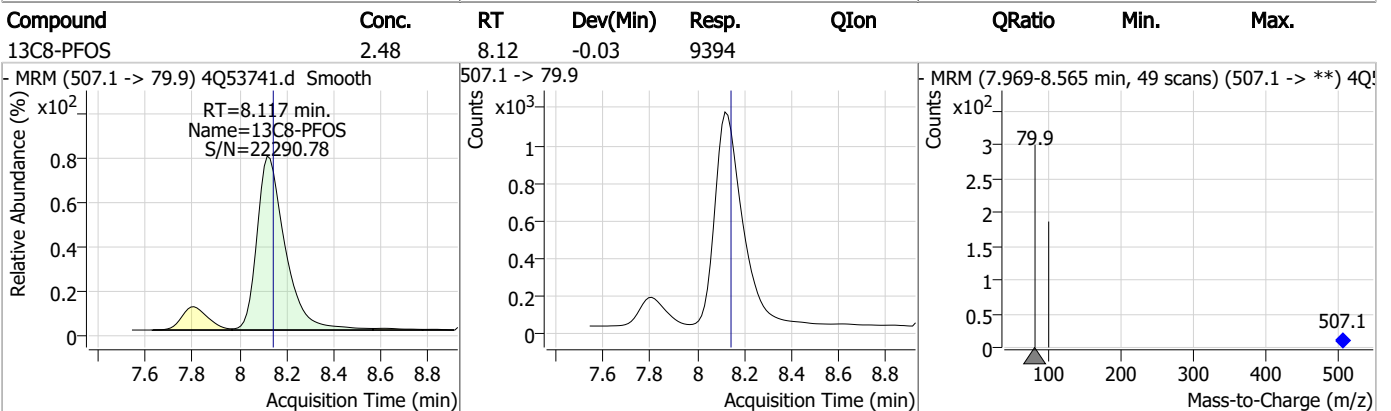
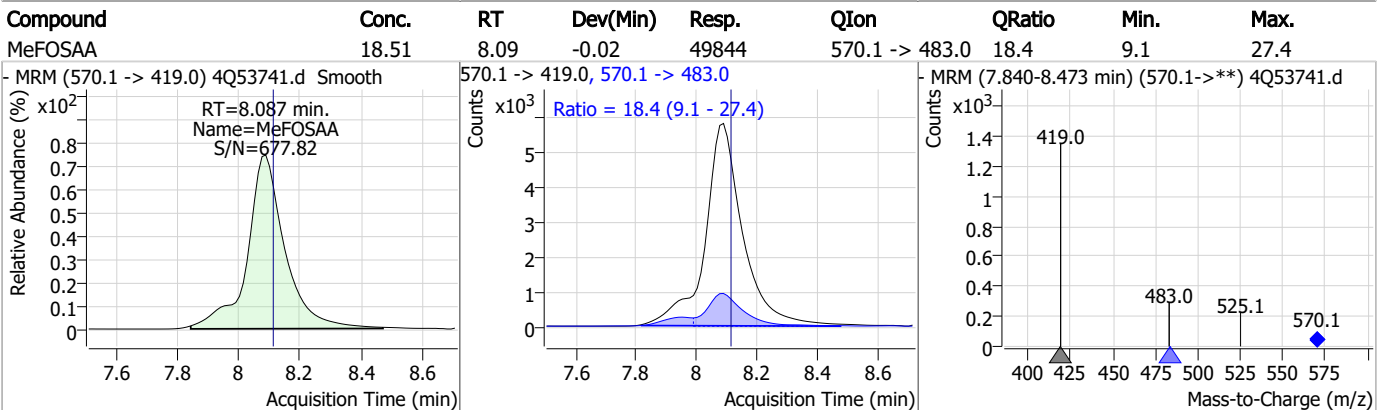
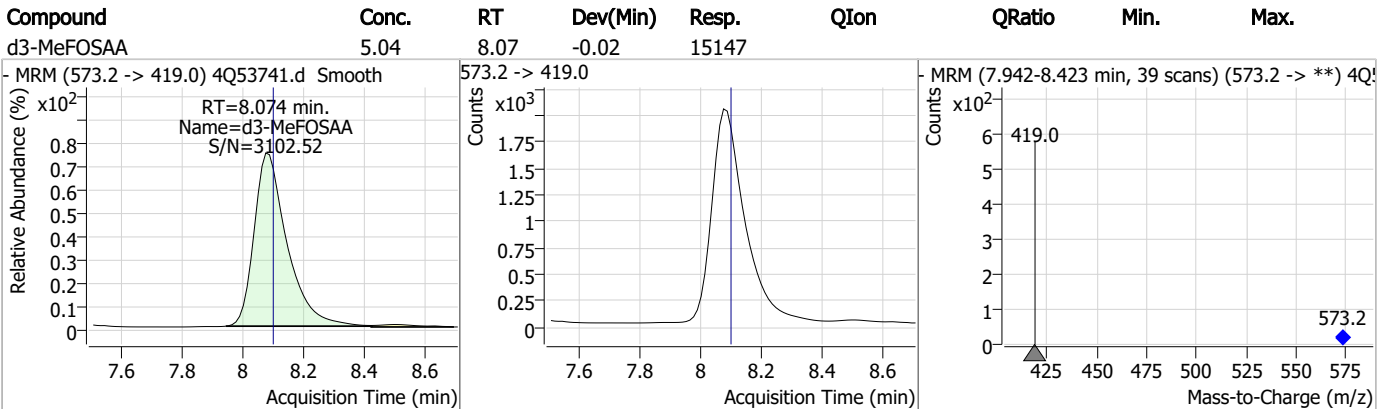
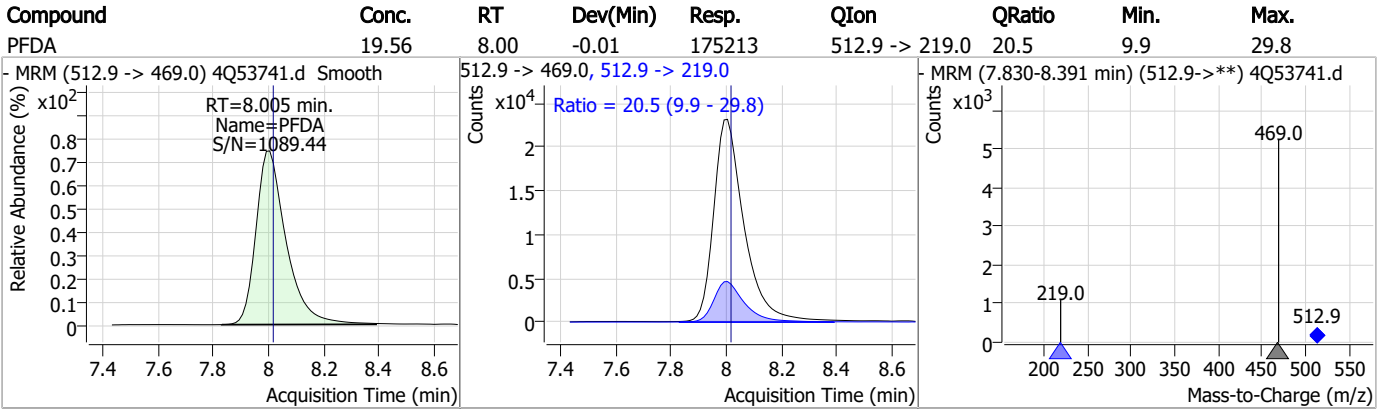
Perfluorinated Compounds by LC/MS/MS



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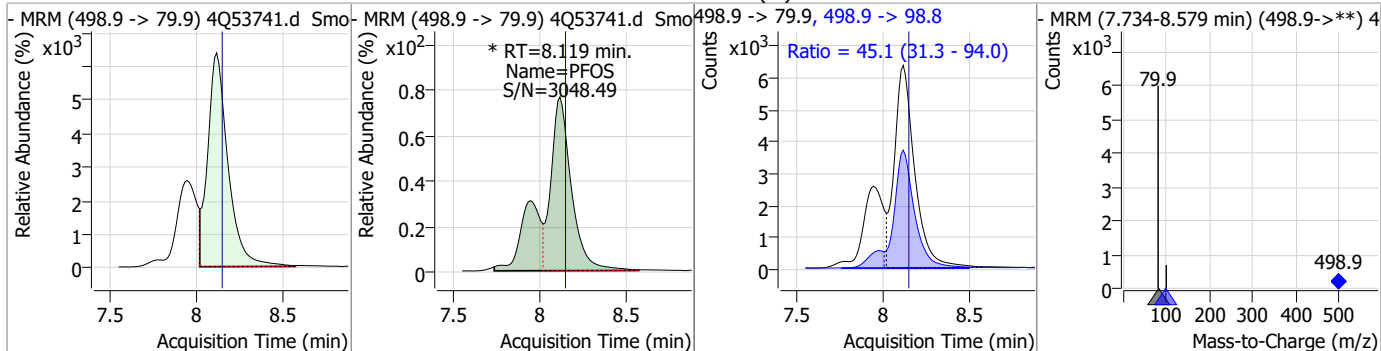
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Perfluorinated Compounds by LC/MS/MS

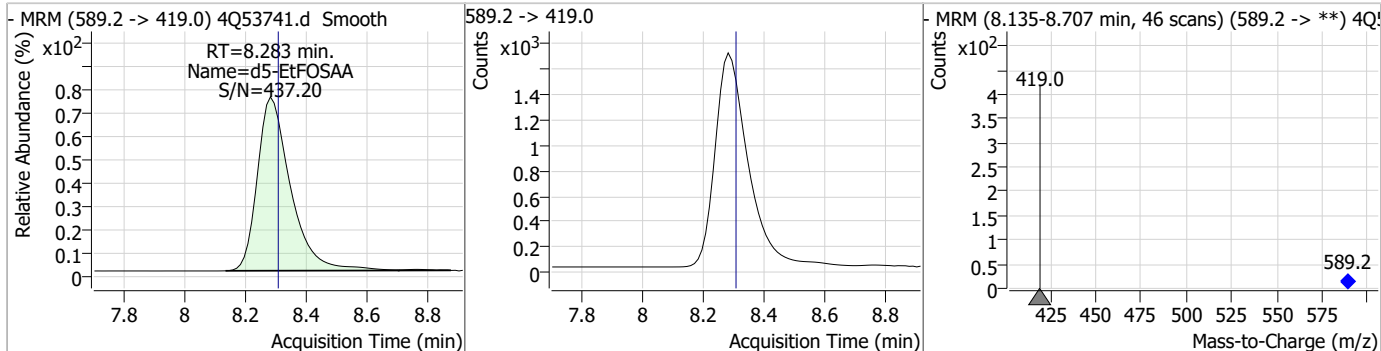


Perfluorinated Compounds by LC/MS/MS

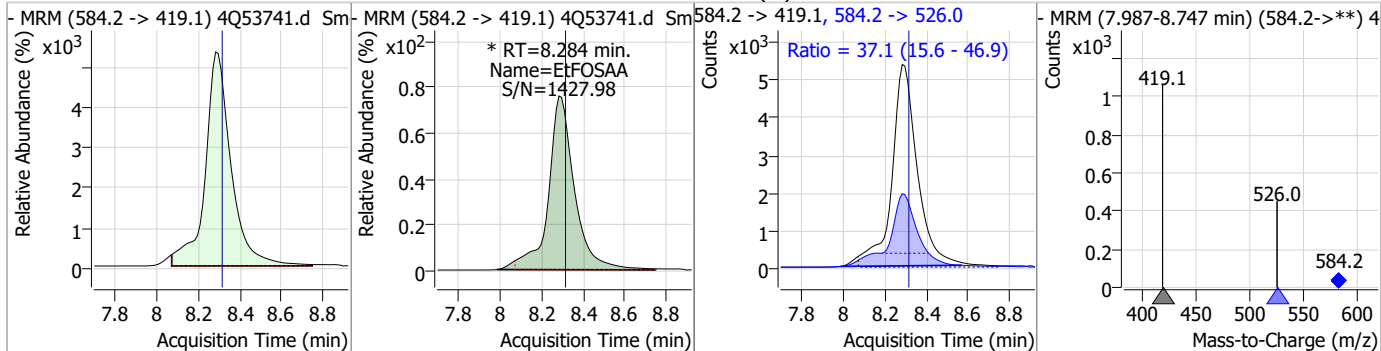
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	17.25	8.12	-0.03	73552 (m)	498.9 -> 98.8	45.1	31.3	94.0



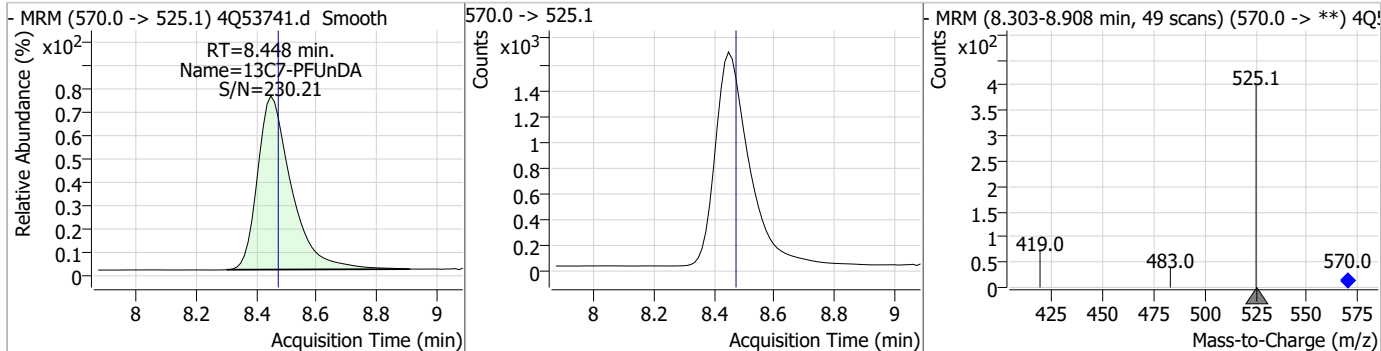
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.85	8.28	-0.03	12771				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	20.52	8.28	-0.03	46920 (m)	584.2 -> 526.0	37.1	15.6	46.9

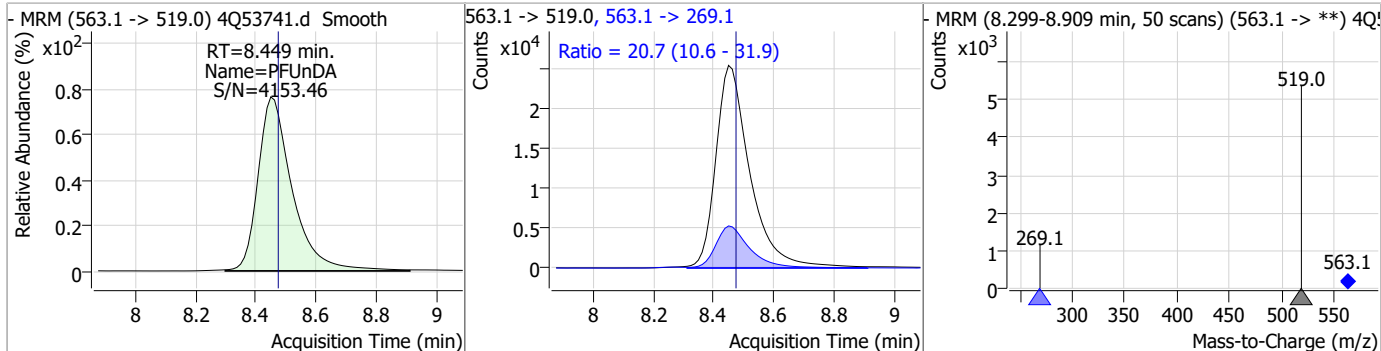


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.25	8.45	-0.02	12821				

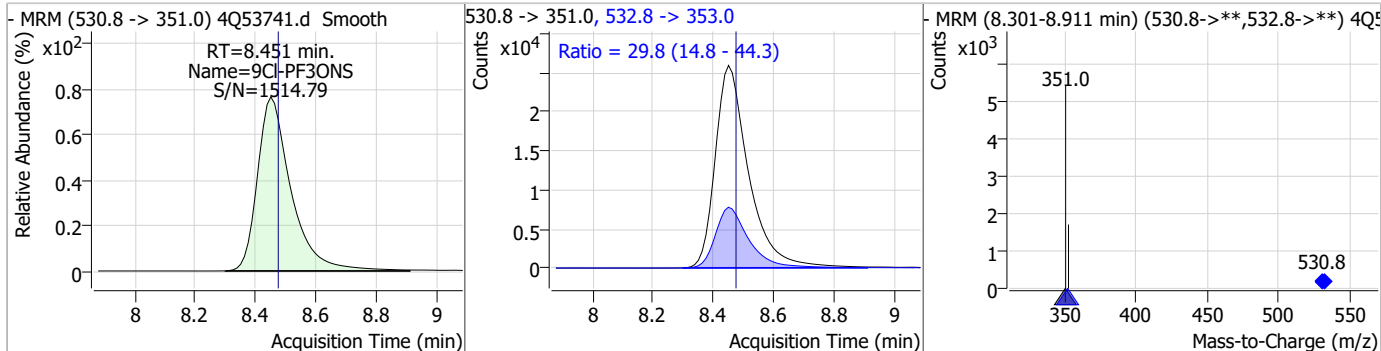


Perfluorinated Compounds by LC/MS/MS

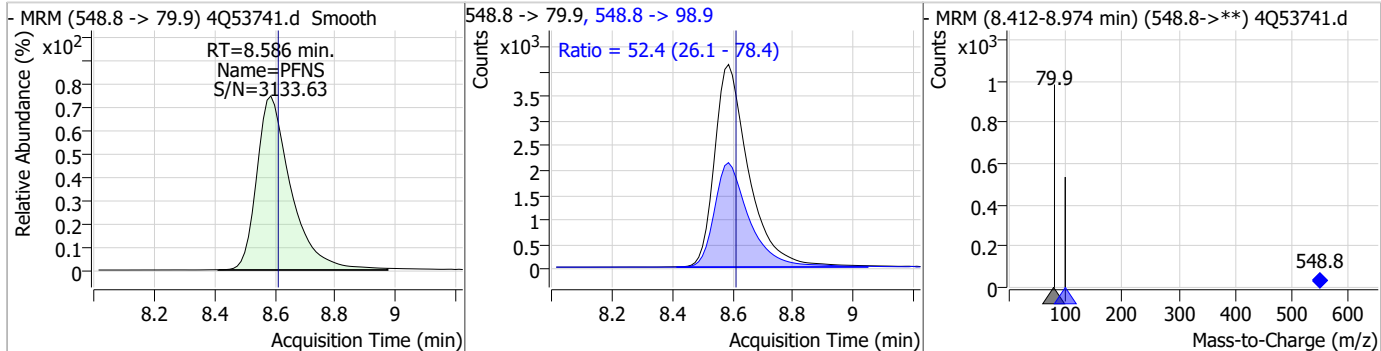
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	18.90	8.45	-0.02	198138	563.1 -> 269.1	20.7	10.6	31.9



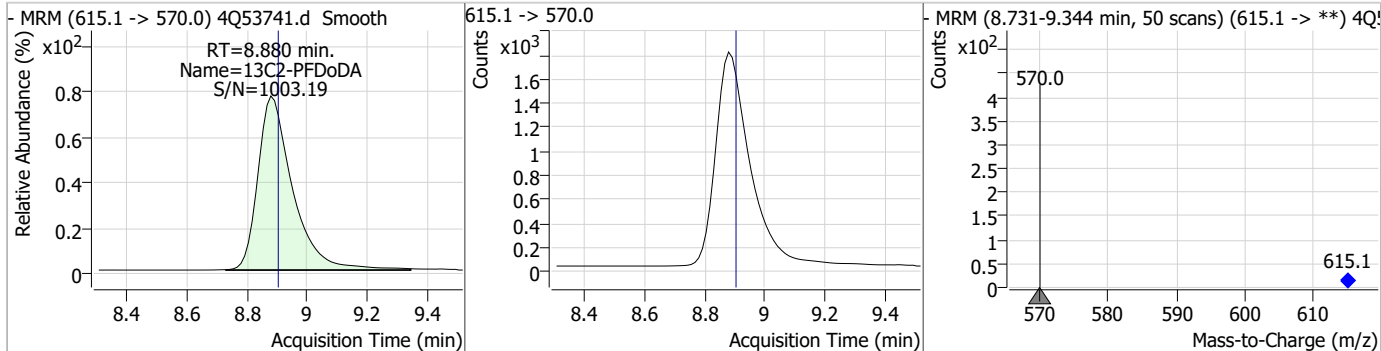
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	18.69	8.45	-0.02	199647	532.8 -> 353.0	29.8	14.8	44.3



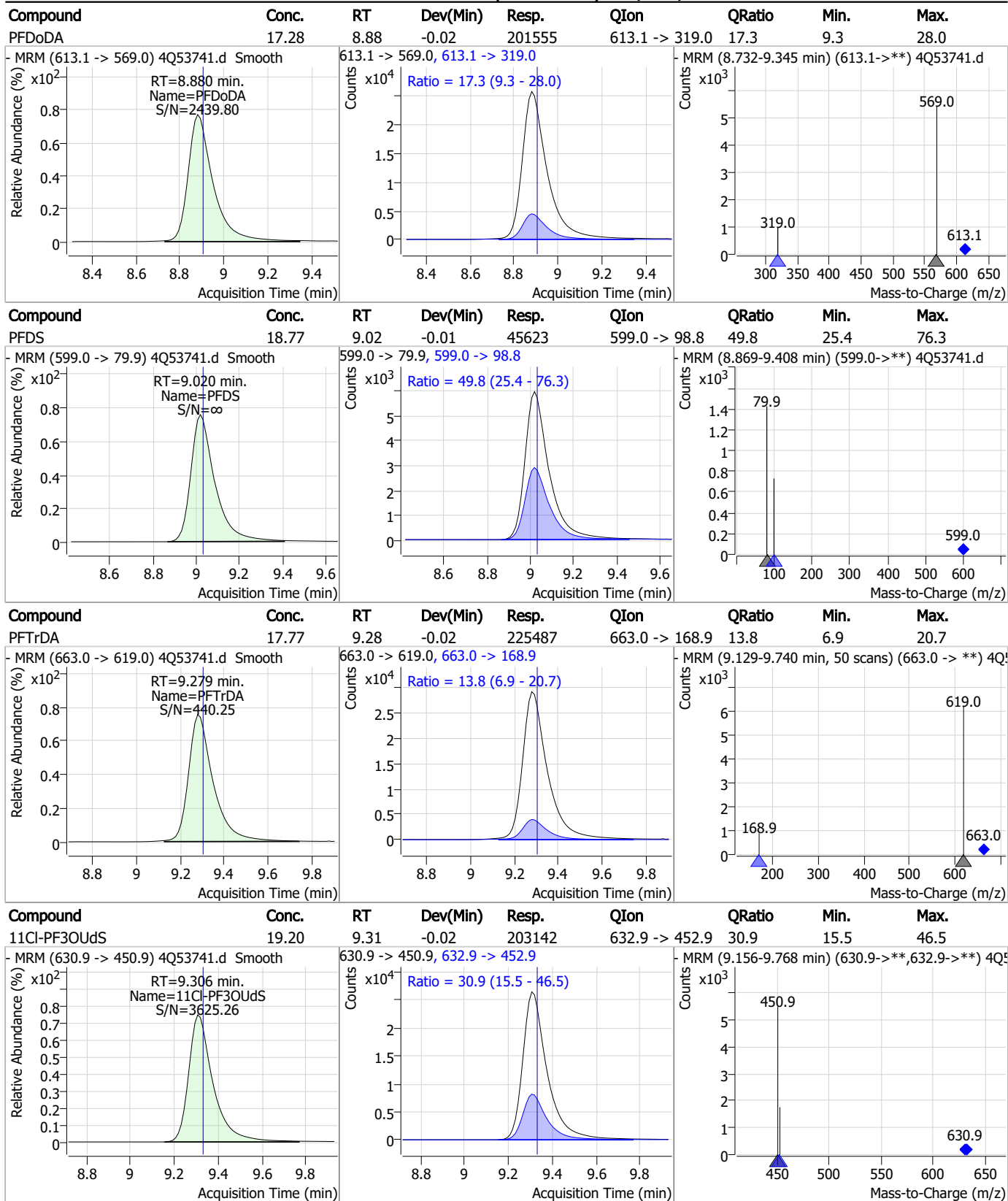
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	18.01	8.59	-0.02	32286	548.8 -> 98.9	52.4	26.1	78.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.32	8.88	-0.02	14297	615.1 -> 570.0			

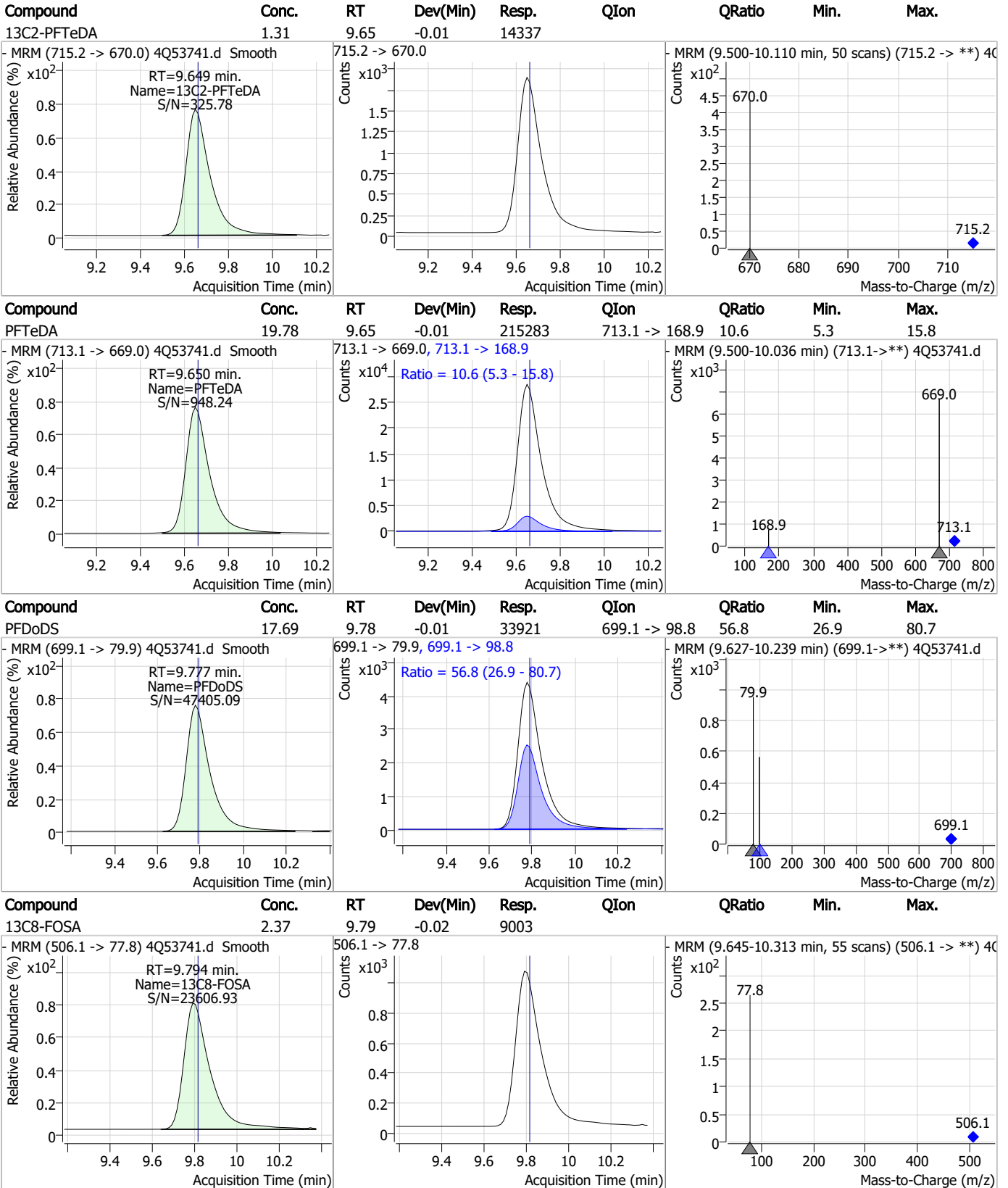


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



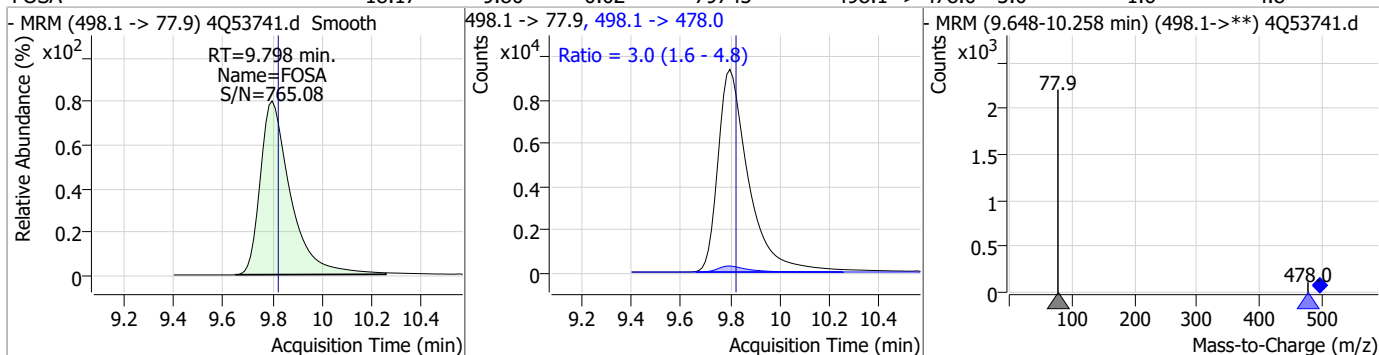
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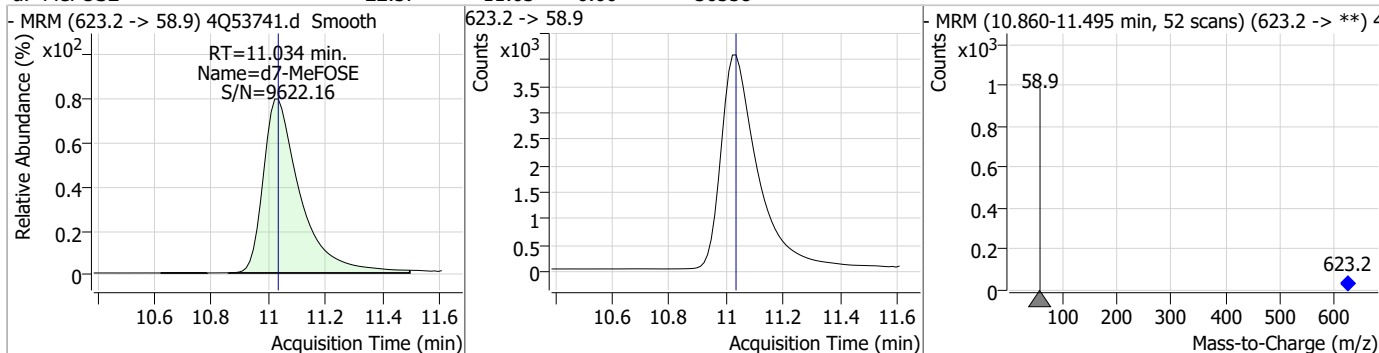


Perfluorinated Compounds by LC/MS/MS

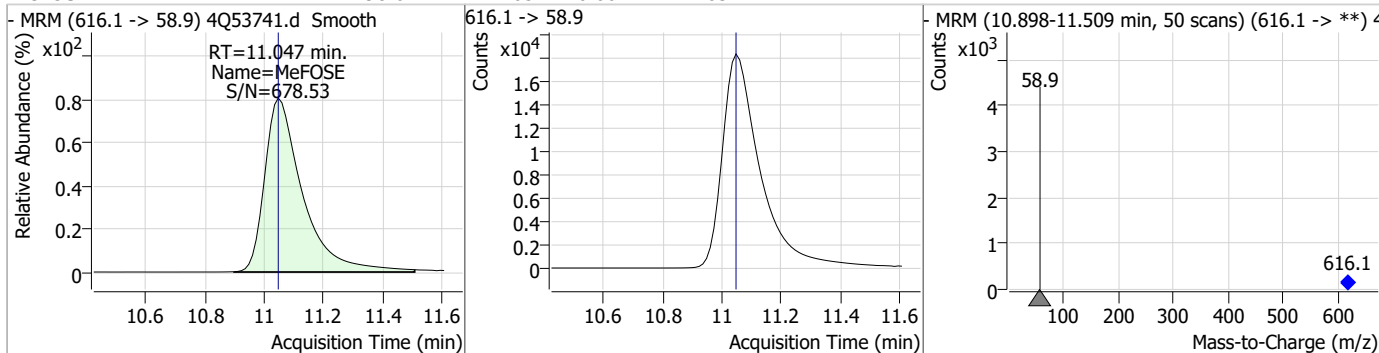
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	18.17	9.80	-0.02	79745	498.1 -> 478.0	3.0	1.6	4.8



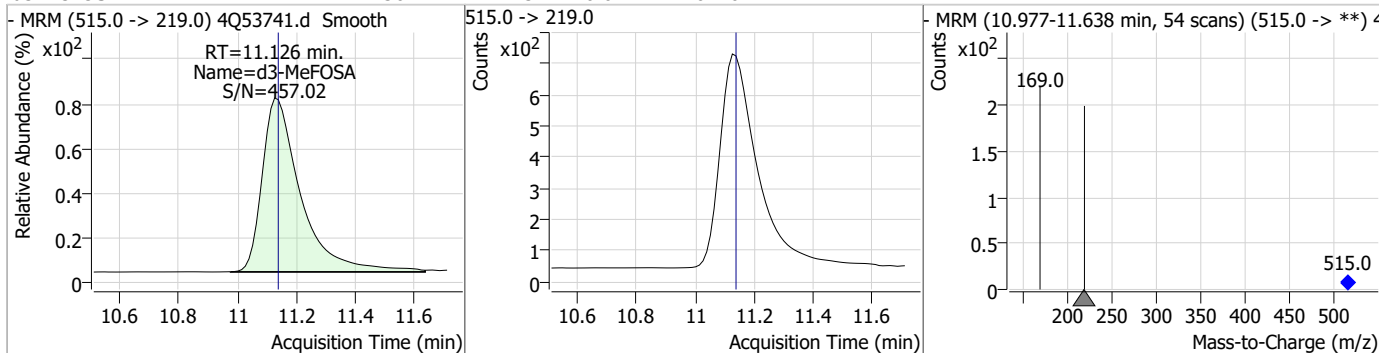
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	22.37	11.03	0.00	36558				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	98.01	11.05	0.00	163247				

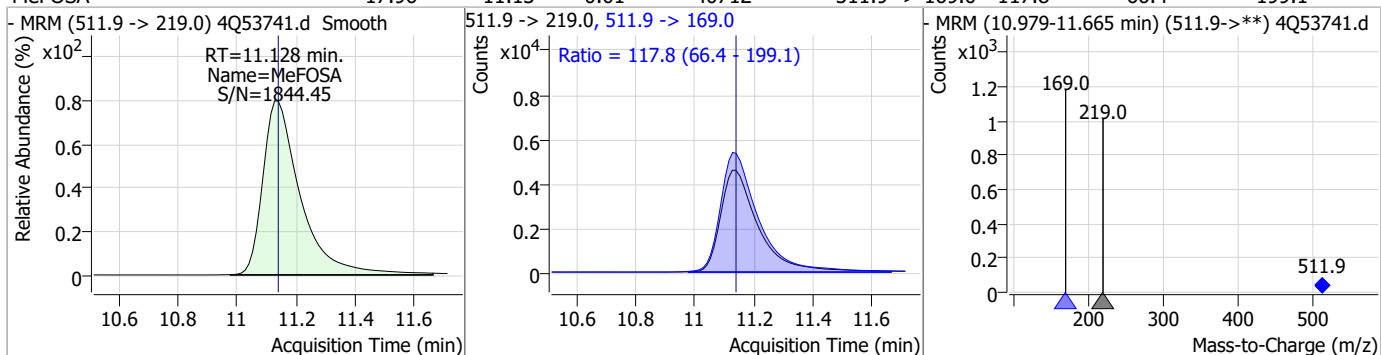


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.36	11.13	-0.01	6246				

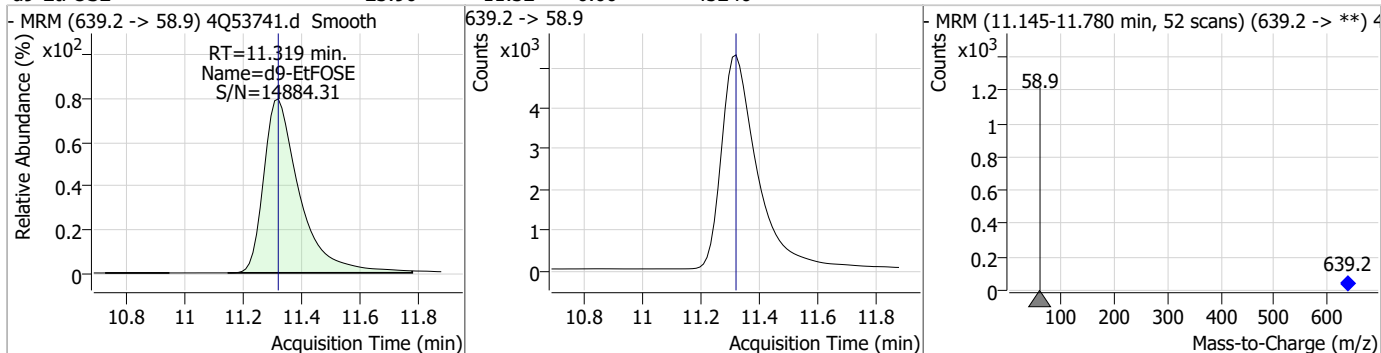


Perfluorinated Compounds by LC/MS/MS

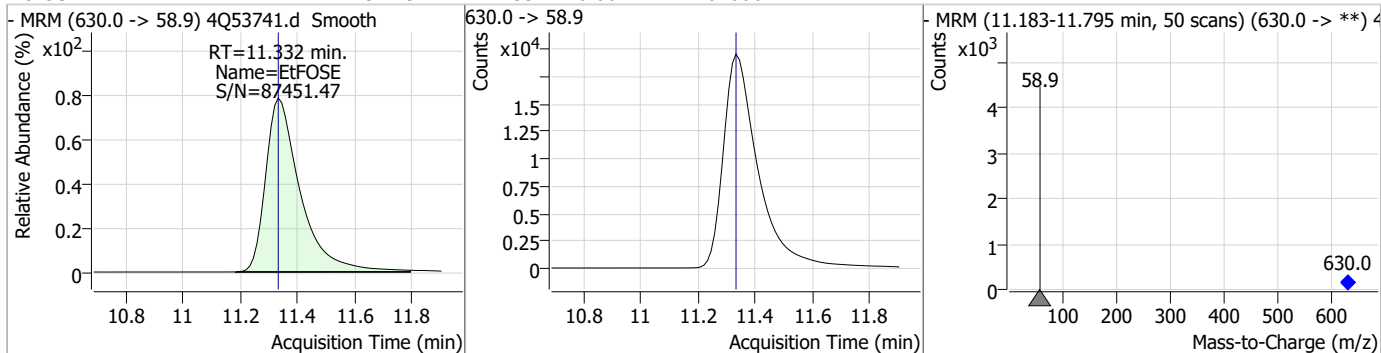
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	17.96	11.13	-0.01	40712	511.9 -> 169.0	117.8	66.4	199.1



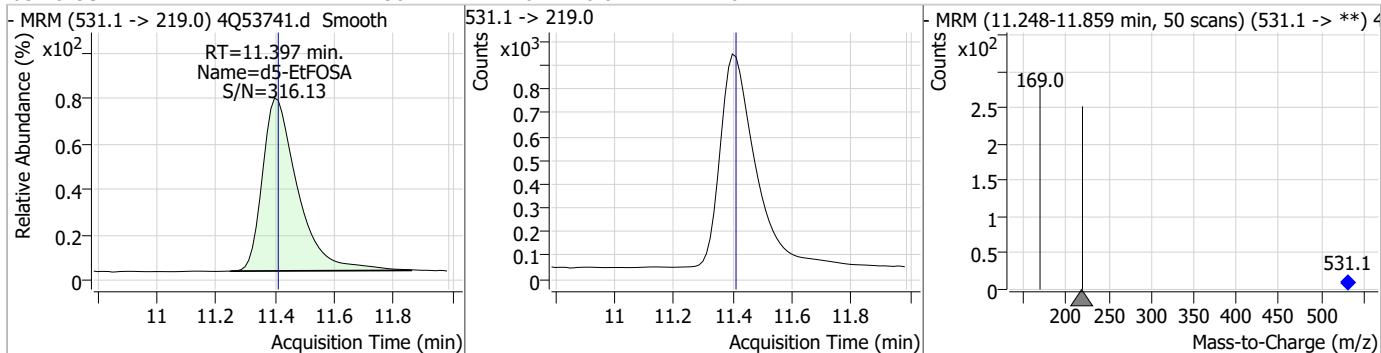
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	23.90	11.32	0.00	45246				



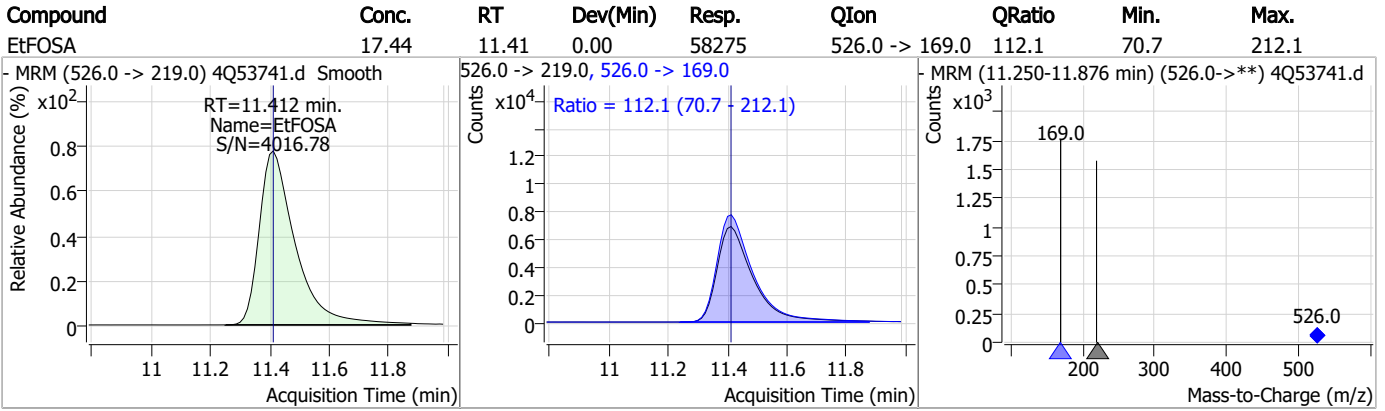
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	97.49	11.33	0.00	164806				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.36	11.40	-0.01	7410				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q785-ICV785 Method: EPA DRAFT 1633
Lab FileID: 4Q53741.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 18:27 Supervisor approved: 11/14/23 15:48 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53868.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/15/2023 11:00:07 AM
 Sample Name : cc785-4
 Vial : P1-A5
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q786.batch.bin
 Sample Information : OP98180,S4Q786,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	91802	10.00 µg/L	-0.075
M5-PFPeA	4.125	268.3 -> 223.0	39480	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	29372	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	29164	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	35919	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	14631	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	10004	1.25 µg/L	-0.013
M7-PFUnDA	8.449	570.0 -> 525.1	11927	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	12132	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	12126	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	7478	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	8594	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	7074	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7942	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	1172	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	2392	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	3169	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	15436	5.00 µg/L	-0.025
M3-HFPO-DA	5.664	286.9 -> 168.9	26871	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	12583	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	32789	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	39854	25.00 µg/L	0.000
M5-EtFOSA	11.398	531.1 -> 219.0	6281	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	5089	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6650	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	44587	5.00 µg/L	-0.075
18O2-PFHxS	7.016	403.0 -> 83.9	4185	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	39721	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	11103	1.25 µg/L	-0.037
13C5-PFNA	7.509	468.0 -> 423.0	15273	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	32831	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	1172	8.18 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 163.6%		
13C2-6:2FTS	6.736	429.1 -> 80.9	2392	7.93 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 158.6%		
13C2-8:2FTS	7.804	529.1 -> 80.9	3169	7.45 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 149.0%		
13C2-PFDoDA	8.880	615.1 -> 570.0	12132	1.21 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C2-PFTeDA	9.649	715.2 -> 670.0	12126	1.20 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C3-PFBS	5.152	302.1 -> 79.9	8594	2.74 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.5%		
13C3-PFHxS	7.017	402.1 -> 79.9	7074	2.73 µg/L	-0.037

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.1%		
13C4-PFBA	2.624	216.8 -> 171.9	91802	9.88 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C4-PFHpA	6.267	367.1 -> 322.0	29164	2.55 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C5-PFHxA	5.297	318.0 -> 273.0	29372	2.40 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C5-PFPeA	4.125	268.3 -> 223.0	39480	4.93 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C6-PFDA	8.004	519.1 -> 474.1	10004	1.22 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C7-PFUnDA	8.449	570.0 -> 525.1	11927	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C8-FOSA	9.794	506.1 -> 77.8	7478	2.35 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.1%		
13C8-PFOA	6.964	421.1 -> 376.0	35919	2.53 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C8-PFOS	8.117	507.1 -> 79.9	7942	2.50 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C9-PFNA	7.509	472.1 -> 427.0	14631	1.21 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.2%		
d3-MeFOSAA	8.074	573.2 -> 419.0	15436	6.12 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.4%		
13C3-HFPO-DA	5.664	286.9 -> 168.9	26871	9.62 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 96.2%		
d3-MeFOSA	11.126	515.0 -> 219.0	5089	2.29 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.8%		
d5-EtFOSAA	8.283	589.2 -> 419.0	12583	5.70 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.9%		
d7-MeFOSE	11.022	623.2 -> 58.9	32789	23.93 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 95.7%		
d9-EtFOSE	11.319	639.2 -> 58.9	39854	25.12 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
d5-EtFOSA	11.398	531.1 -> 219.0	6281	2.39 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.4%		
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	20859	9.01 µg/L	99
		327.1 -> 80.9	8690		
6:2FTS	6.737	427.1 -> 407.0	24949	9.64 µg/L	98
		427.1 -> 80.9	9344		
8:2FTS	7.804	527.1 -> 507.0	17670	10.25 µg/L	98
		527.1 -> 80.8	7570		
EtFOSAA	8.284	584.2 -> 419.1	5756	2.55 µg/L	m 73
		584.2 -> 526.0	2666		
FOSA	9.798	498.1 -> 77.9	9325	2.56 µg/L	99
		498.1 -> 478.0	317		
MeFOSAA	8.087	570.1 -> 419.0	6074	2.21 µg/L	94
		570.1 -> 483.0	1278		
PFBA	2.620	212.8 -> 168.9	33322	9.98 µg/L	100
PFBS	5.153	298.7 -> 79.9	6444	2.11 µg/L	93
		298.7 -> 98.8	2762		
PFDA	7.992	512.9 -> 469.0	19739	2.41 µg/L	98
		512.9 -> 219.0	4099		
PFDODA	8.880	613.1 -> 569.0	25420	2.57 µg/L	96
		613.1 -> 319.0	4283		
PFDS	9.020	599.0 -> 79.9	5067	2.47 µg/L	95

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	2402	2.48	µg/L	99
		363.1 -> 319.0	45312			
PFHpS	7.612	363.1 -> 169.0	8176	2.26	µg/L	98
		449.0 -> 79.9	7111			
PFHxA	5.300	449.0 -> 98.9	3740	2.61	µg/L	99
		313.0 -> 269.0	26767			
PFHxS	7.018	313.0 -> 118.9	816	2.52	µg/L	m
		398.7 -> 79.9	5382			
PFNA	7.510	398.7 -> 98.9	2740	2.59	µg/L	98
		463.0 -> 419.0	24182			
PFNS	8.574	463.0 -> 219.0	5904	2.39	µg/L	93
		548.8 -> 79.9	3625			
PFOA	6.965	548.8 -> 98.9	2072	2.37	µg/L	99
		413.0 -> 369.0	41140			
PFOS	8.119	413.0 -> 169.0	8610	2.37	µg/L	m
		498.9 -> 79.9	8557			
PFPeA	4.127	498.9 -> 98.8	3731	4.92	µg/L	100
		263.0 -> 219.0	42228			
PFPeS	6.257	349.1 -> 79.9	5664	2.44	µg/L	97
		349.1 -> 98.9	2576			
PFTeDA	9.650	713.1 -> 669.0	22977	2.50	µg/L	99
		713.1 -> 168.9	2460			
PFTrDA	9.279	663.0 -> 619.0	27426	2.55	µg/L	98
		663.0 -> 168.9	3980			
PFUnDA	8.449	563.1 -> 519.0	24074	2.47	µg/L	99
		563.1 -> 269.1	5203			
11CI-PF3OUdS	9.306	630.9 -> 450.9	39980	4.77	µg/L	99
		632.9 -> 452.9	12550			
9CI-PF3ONS	8.451	530.8 -> 351.0	41962	4.95	µg/L	96
		532.8 -> 353.0	13293			
ADONA	6.544	376.9 -> 250.9	110431	5.94	µg/L	99
		376.9 -> 84.8	26484			
HFPO-DA	5.665	284.9 -> 168.9	14260	5.01	µg/L	99
		284.9 -> 184.9	1411			
3:3FTCA	3.561	241.0 -> 177.0	6112	11.75	µg/L	99
		241.0 -> 117.0	544			
5:3FTCA	5.983	341.0 -> 237.1	115044	63.71	µg/L	97
		341.0 -> 217.0	81156			
7:3FTCA	7.524	441.0 -> 316.9	53232	65.71	µg/L	95
		441.0 -> 336.9	125580			
EtFOSA	11.399	526.0 -> 219.0	13940	4.92	µg/L	99
		526.0 -> 169.0	19591			
EtFOSE	11.332	630.0 -> 58.9	18414	12.37	µg/L	100
		511.9 -> 219.0	9768			
MeFOSA	11.128	511.9 -> 169.0	14088	5.29	µg/L	m
		616.1 -> 58.9	19075			
MeFOSE	11.047	699.1 -> 79.9	3718	12.77	µg/L	100
		699.1 -> 98.8	2088			
PFDoDS	9.777	295.0 -> 201.0	3736	2.29	µg/L	97
		295.0 -> 84.9	967			
NFDHA	5.179	279.0 -> 85.1	24360	5.52	µg/L	96
		229.0 -> 84.9	27519			
PFMBA	4.529	314.8 -> 134.9	37615	4.63	µg/L	100
		314.8 -> 82.9	1137			

= Qualifier out of range, m = manually integrated, + = Area summed



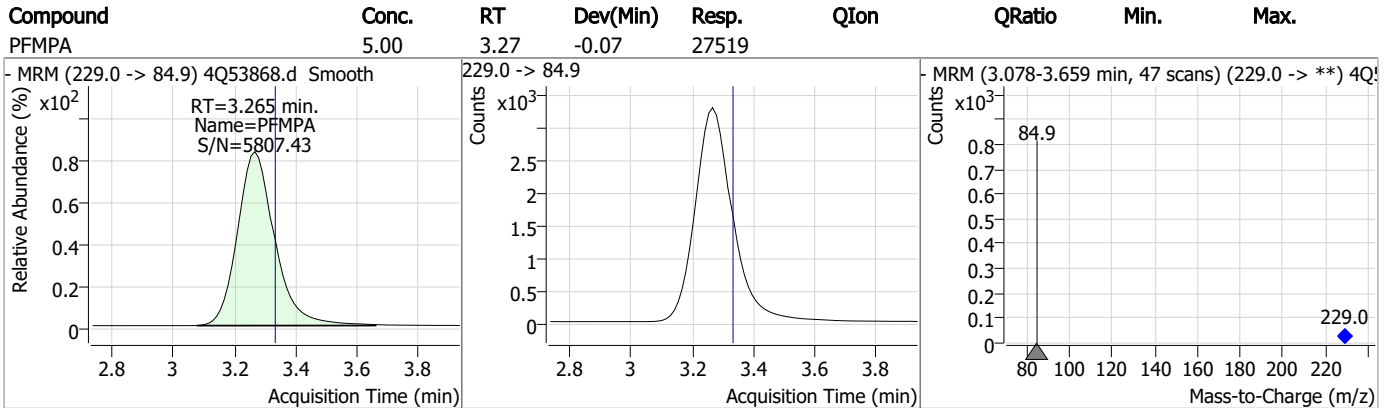
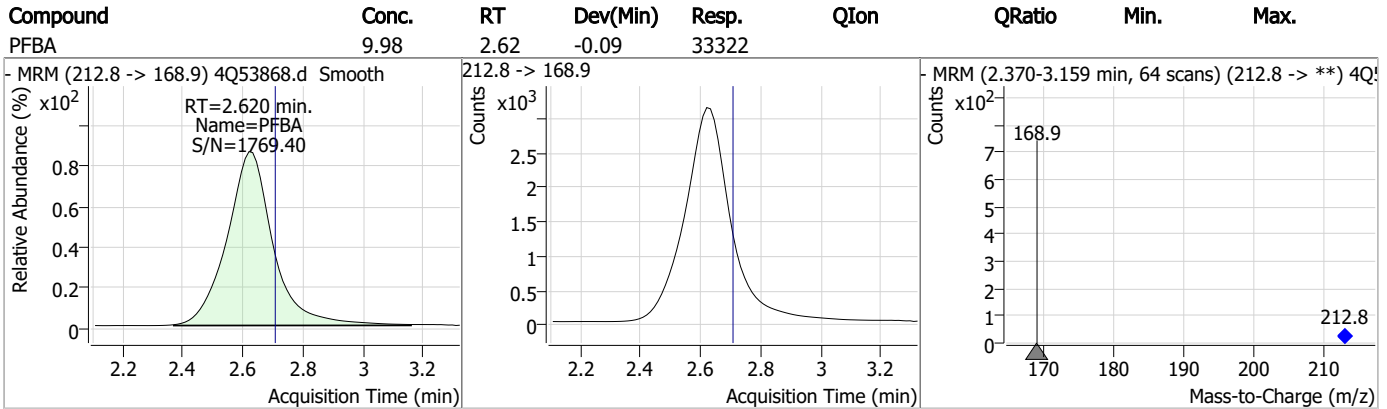
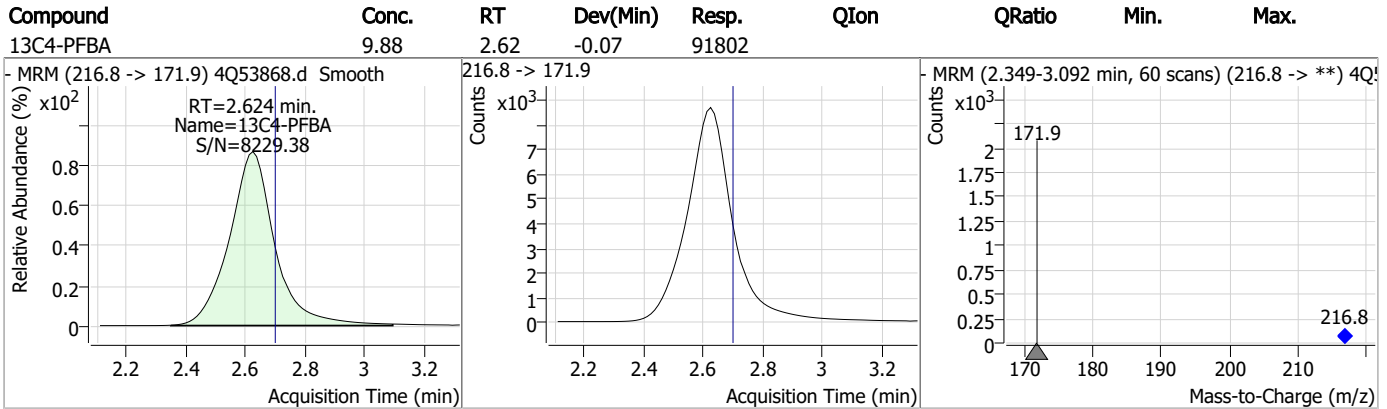
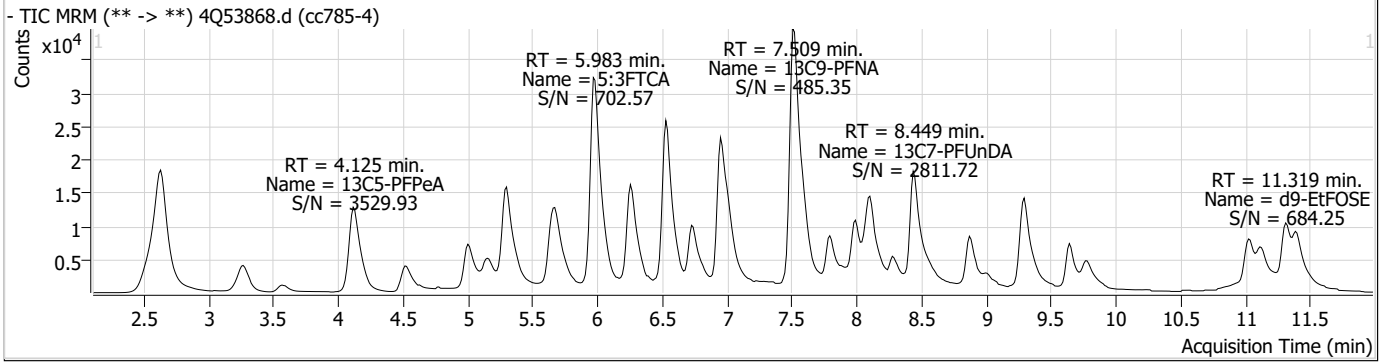
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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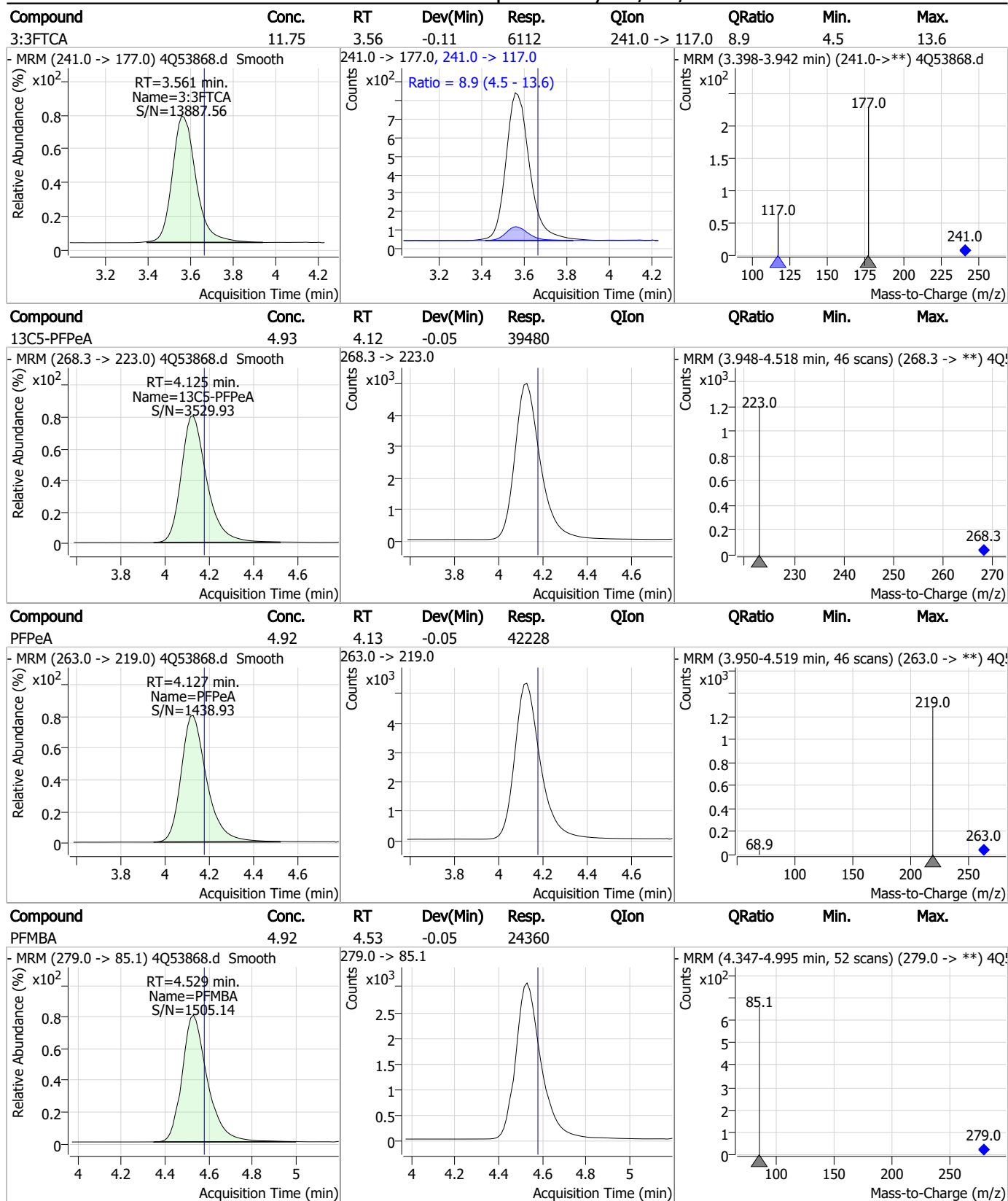
7.7.12

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Perfluorinated Compounds by LC/MS/MS



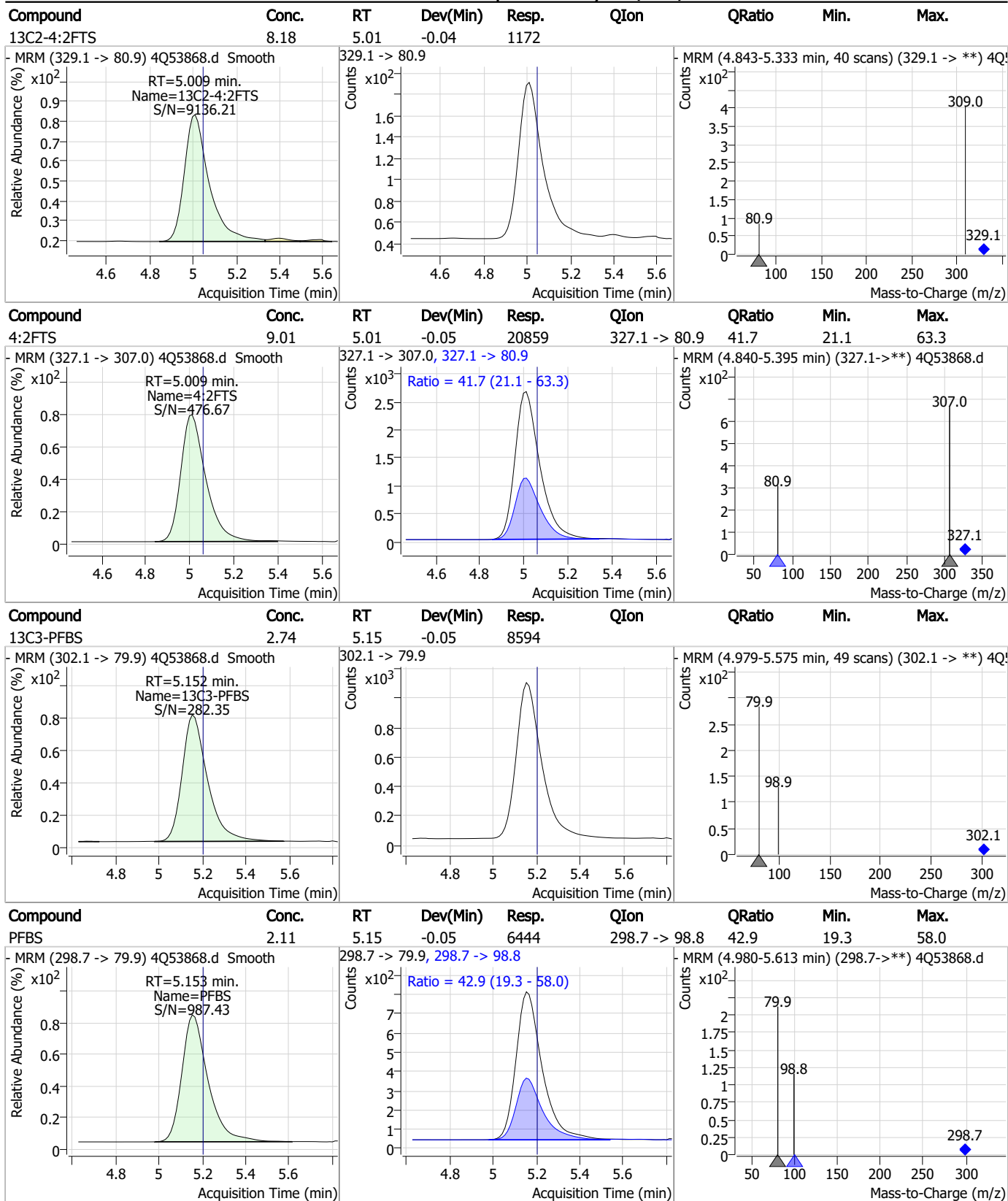
Perfluorinated Compounds by LC/MS/MS



7.7.12

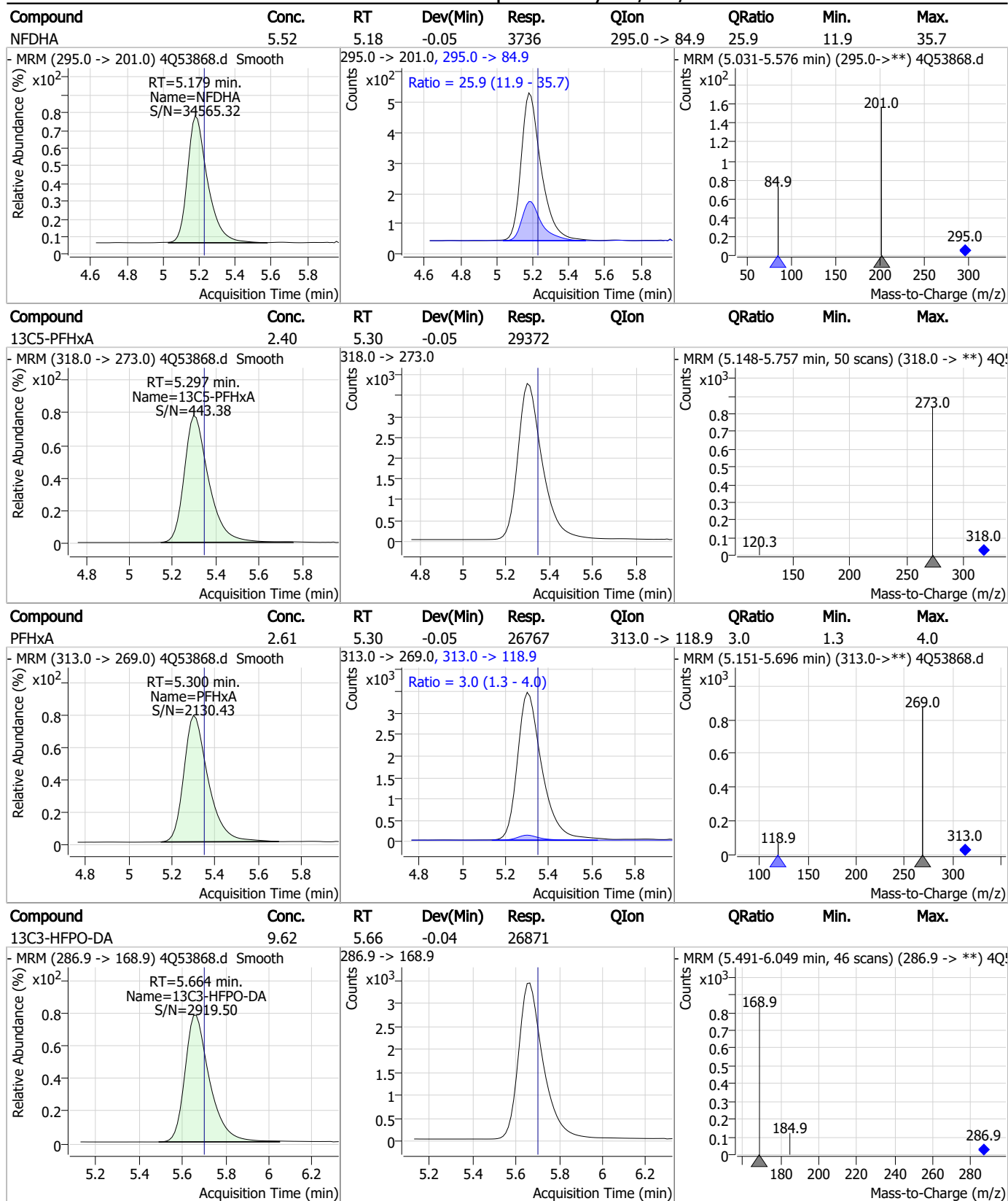
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Perfluorinated Compounds by LC/MS/MS



7.7.12
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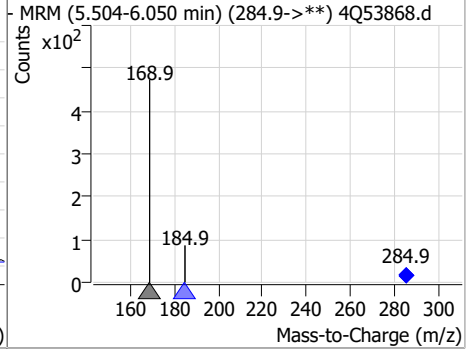
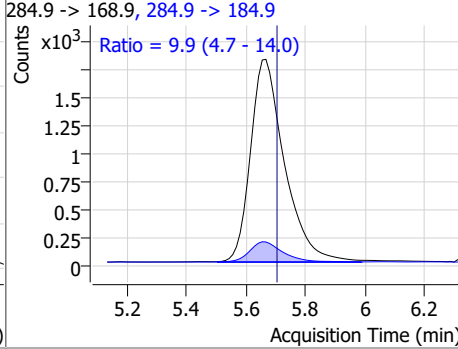
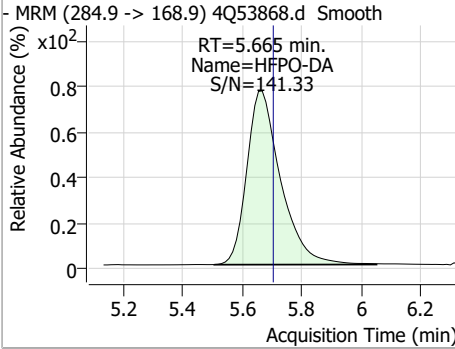
Perfluorinated Compounds by LC/MS/MS



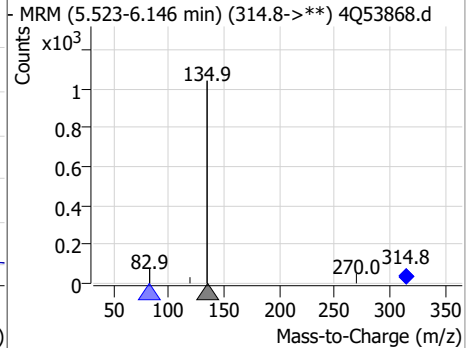
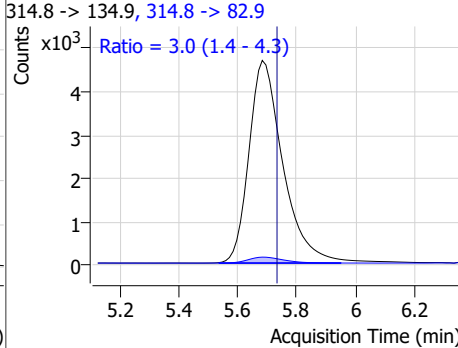
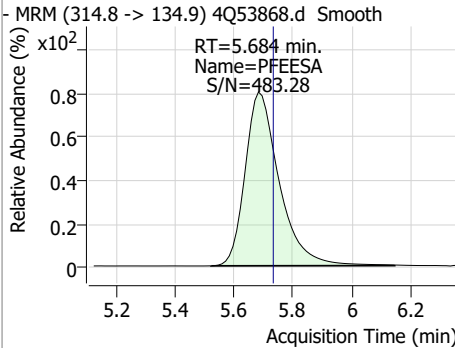
7.7.12
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Perfluorinated Compounds by LC/MS/MS

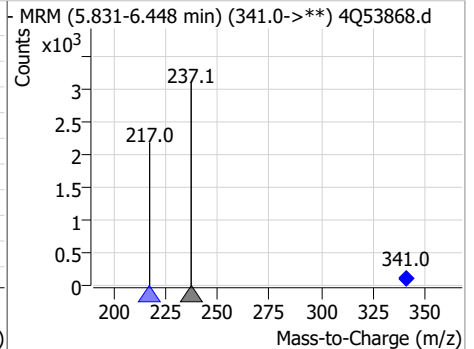
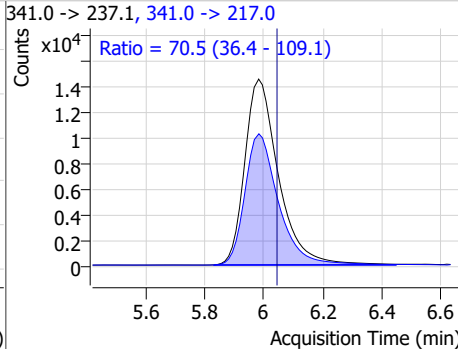
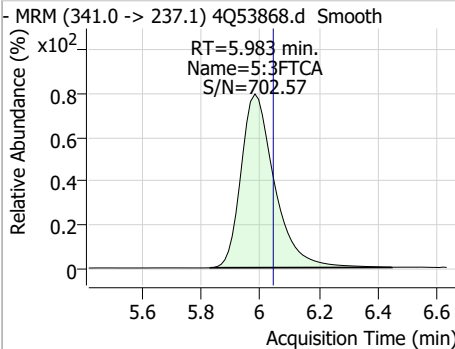
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	5.01	5.67	-0.04	14260	284.9 -> 184.9	9.9	4.7	14.0



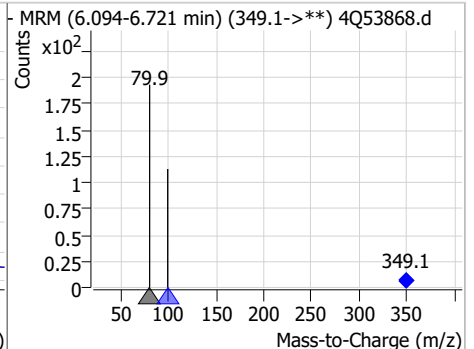
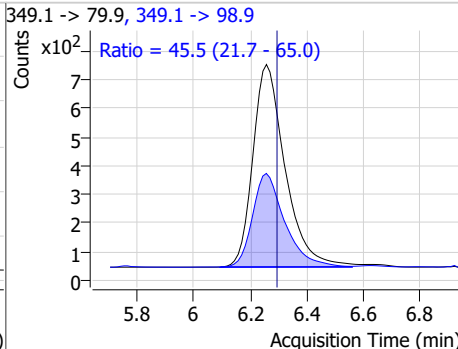
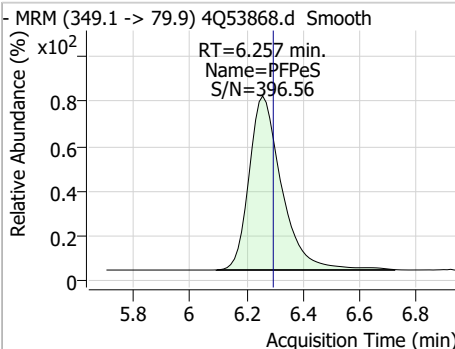
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.63	5.68	-0.05	37615	314.8 -> 82.9	3.0	1.4	4.3



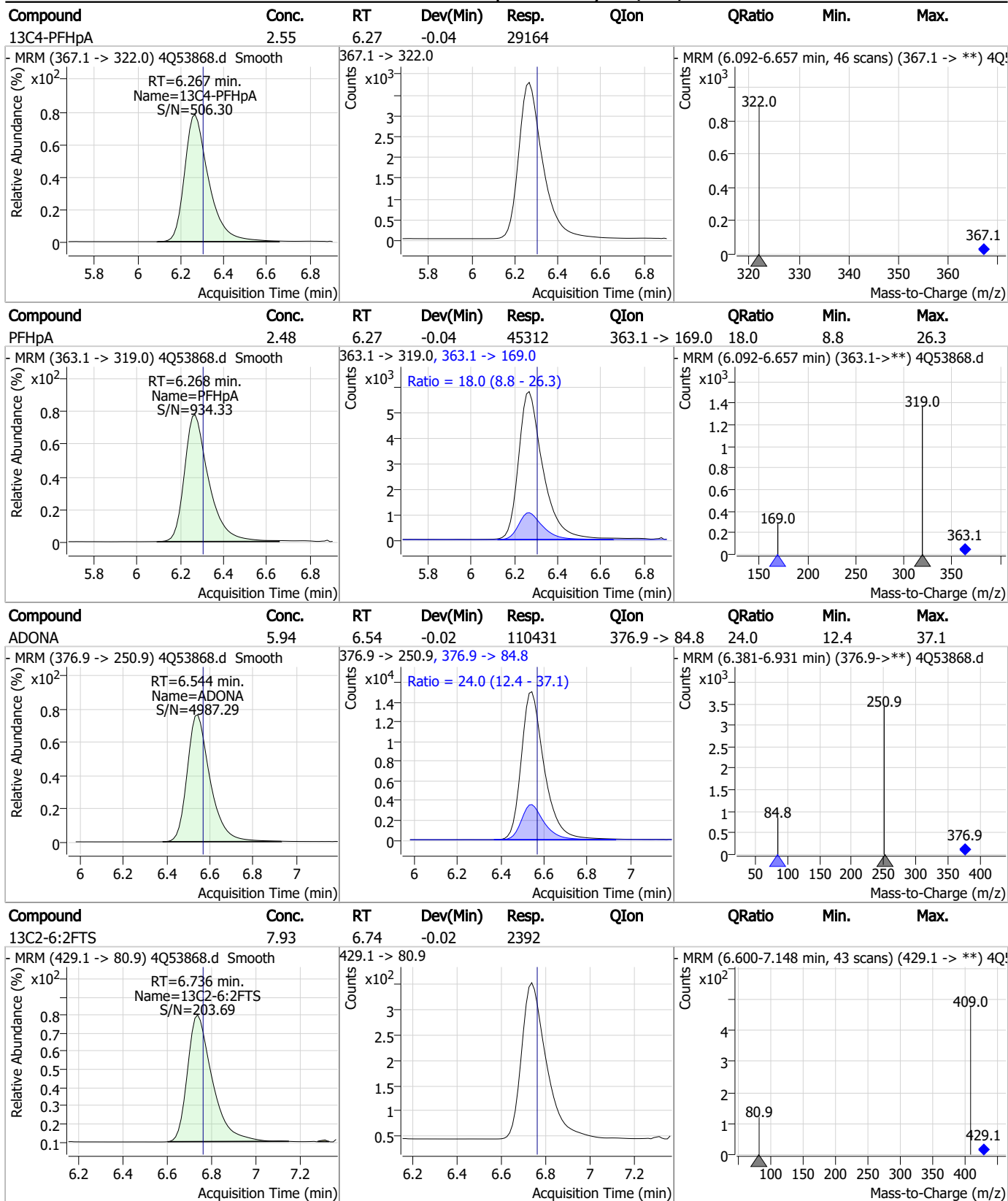
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	63.71	5.98	-0.06	115044	341.0 -> 217.0	70.5	36.4	109.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.44	6.26	-0.04	5664	349.1 -> 98.9	45.5	21.7	65.0

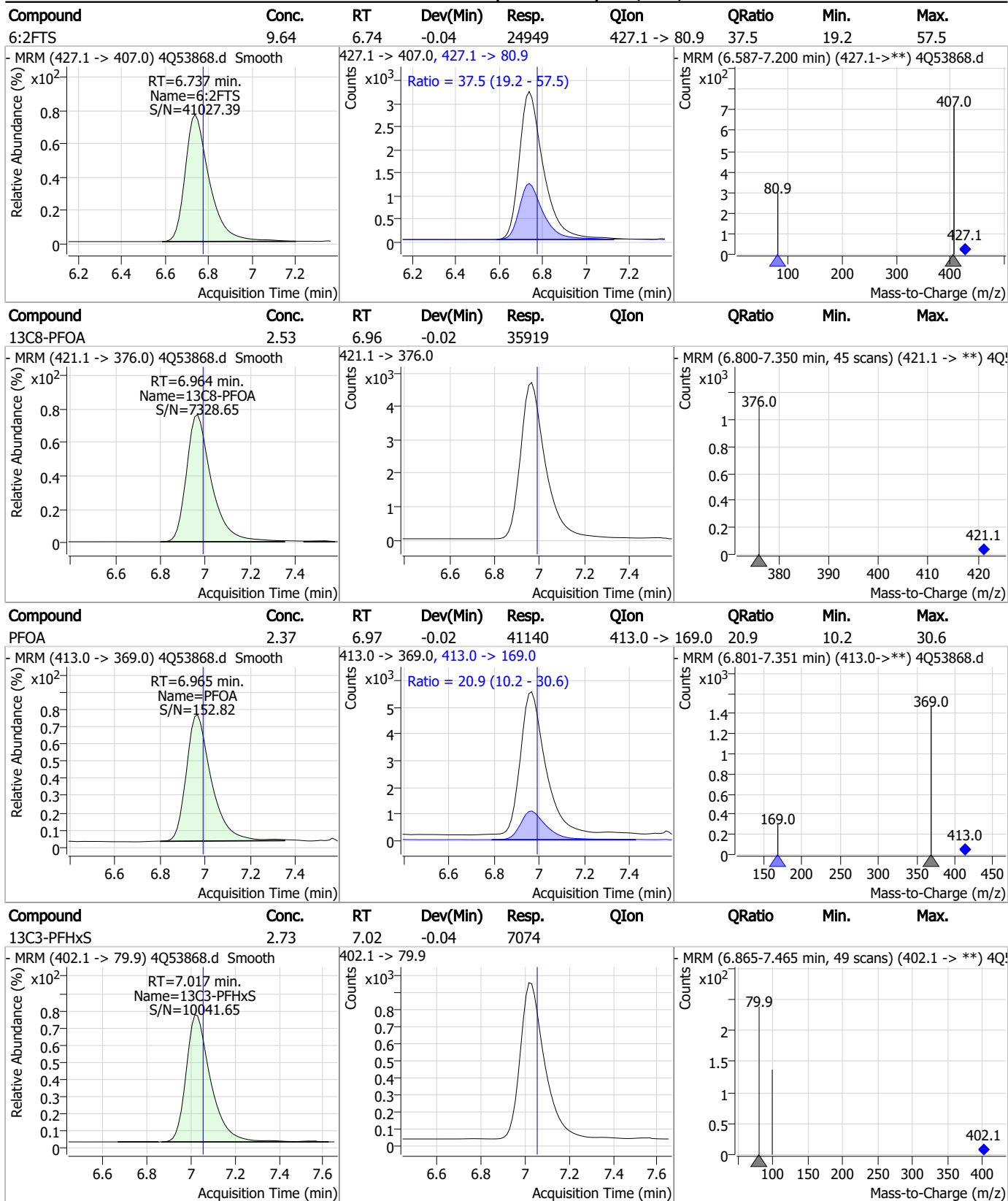


Perfluorinated Compounds by LC/MS/MS



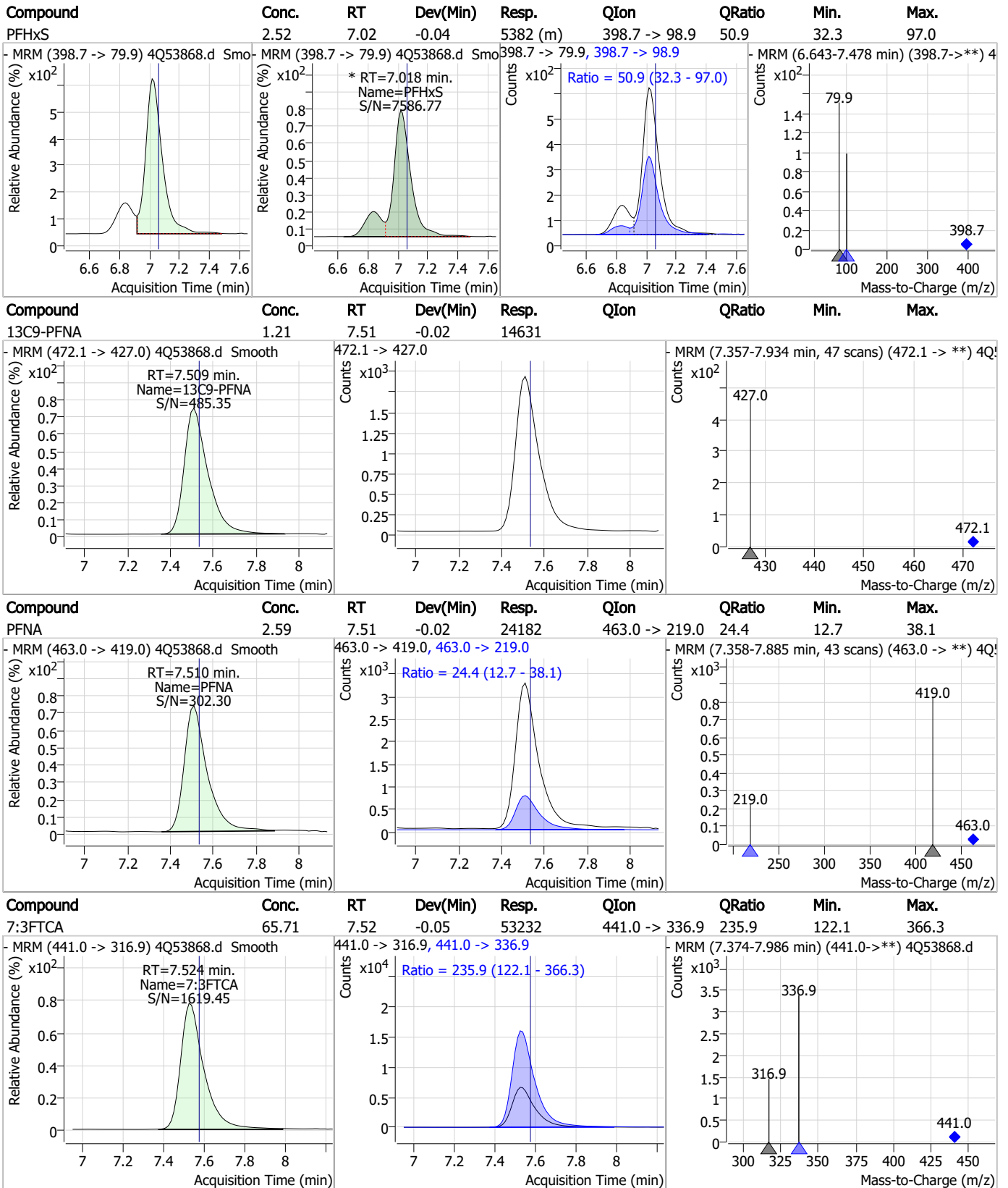
7.7.12
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Perfluorinated Compounds by LC/MS/MS



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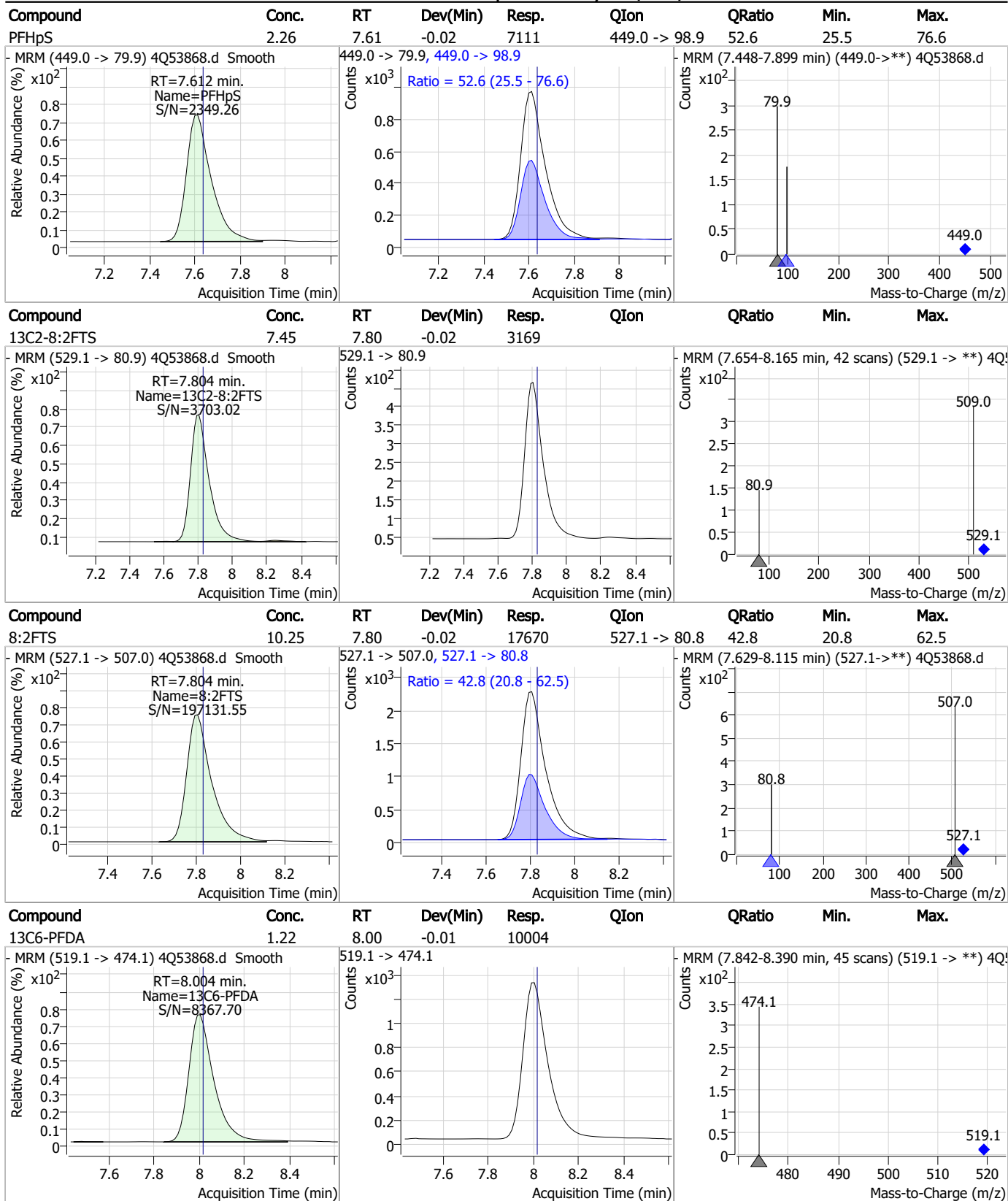
Perfluorinated Compounds by LC/MS/MS



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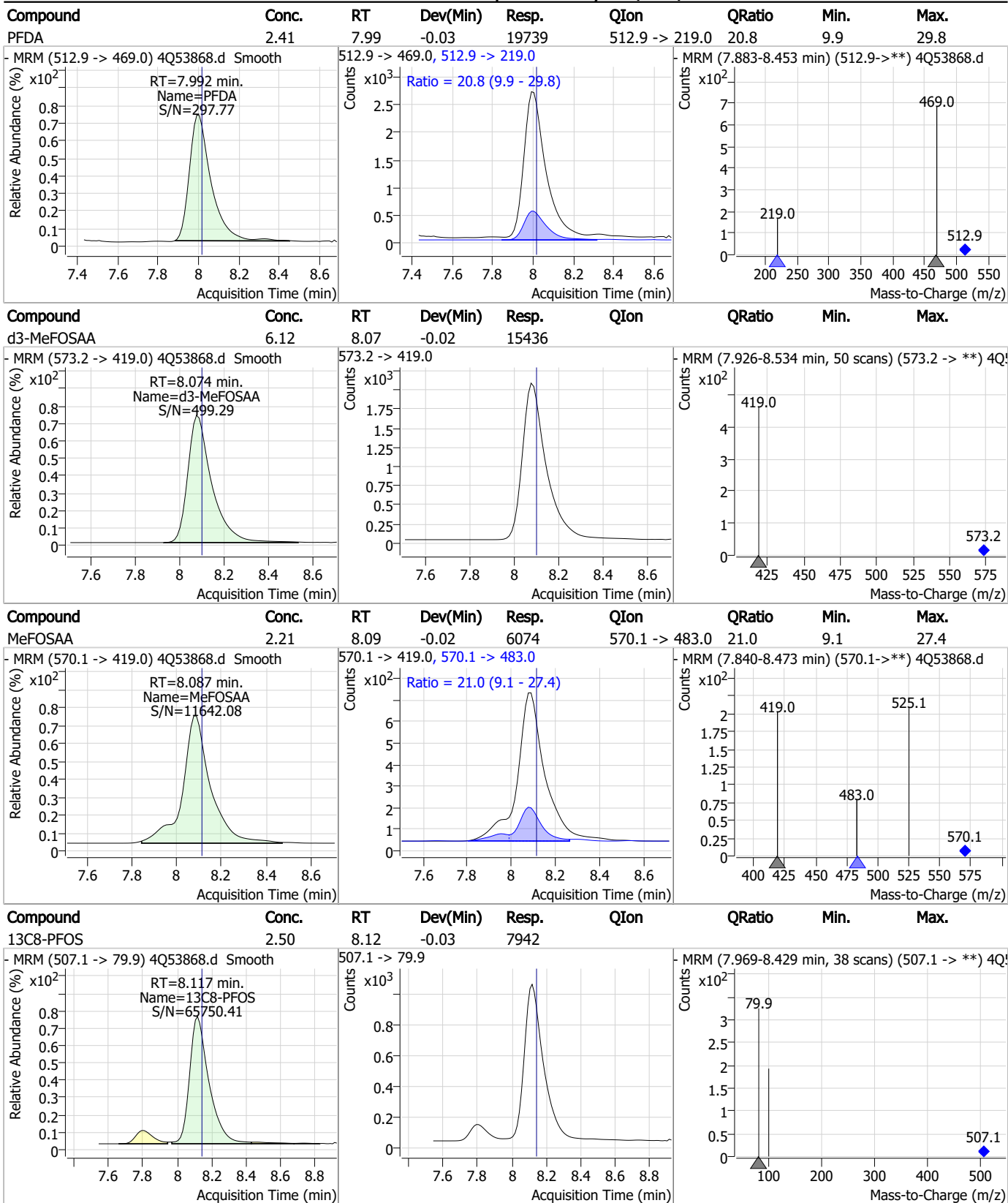


Perfluorinated Compounds by LC/MS/MS



7.7.12
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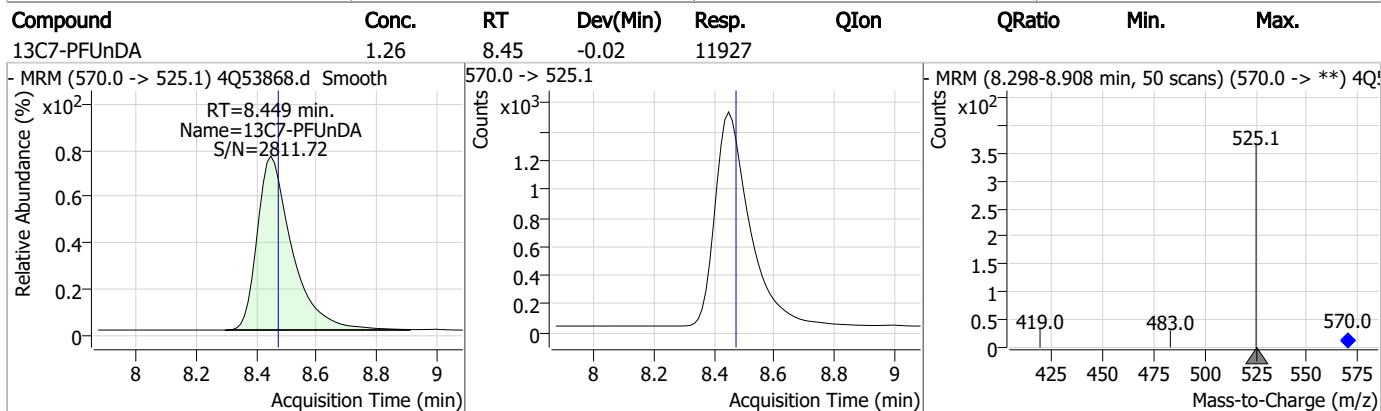
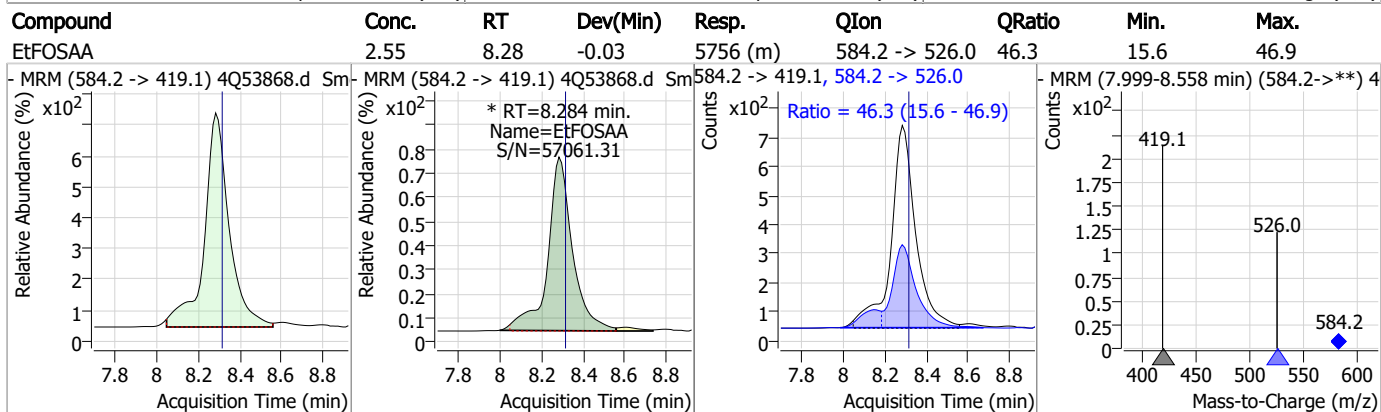
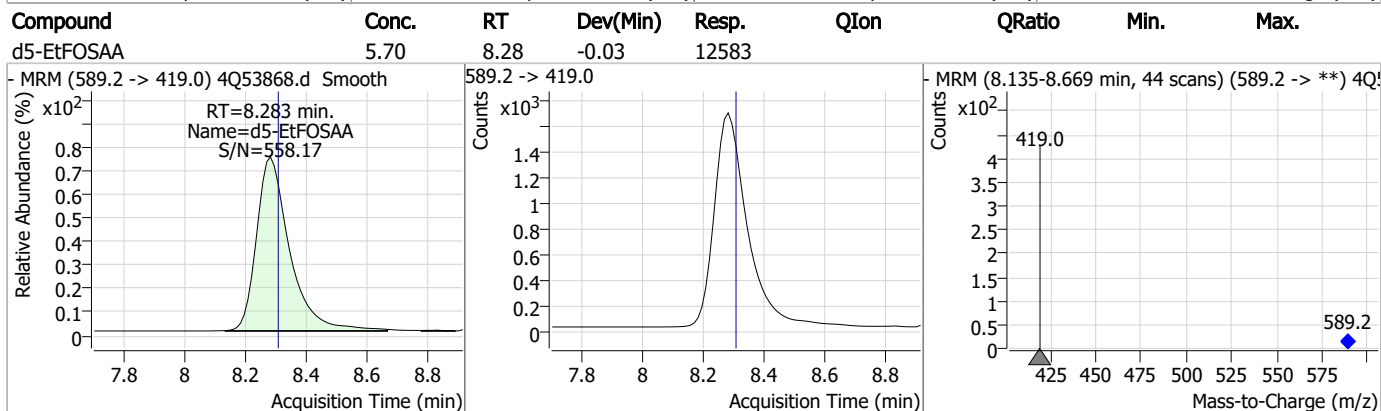
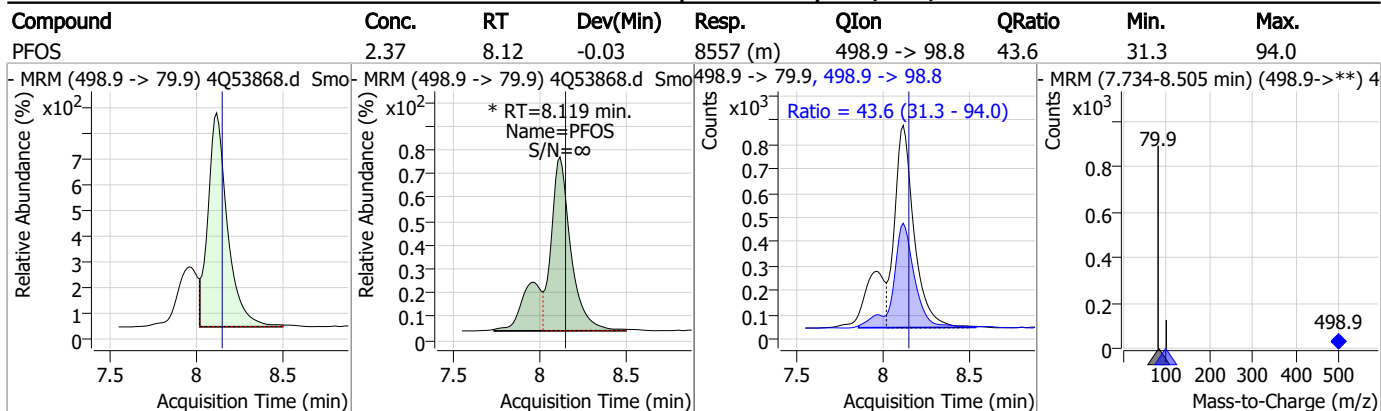
Perfluorinated Compounds by LC/MS/MS



7.7.12
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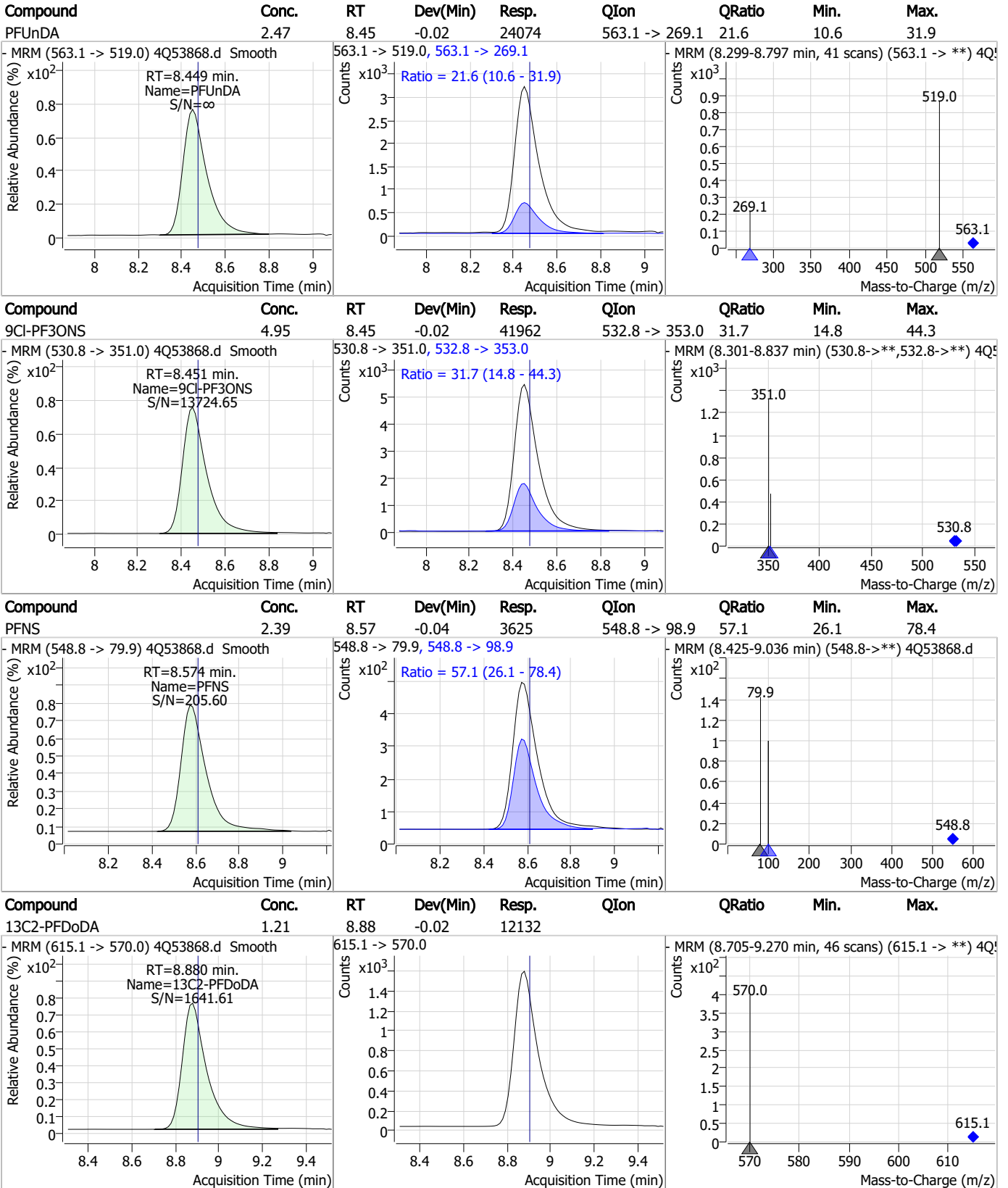


Perfluorinated Compounds by LC/MS/MS



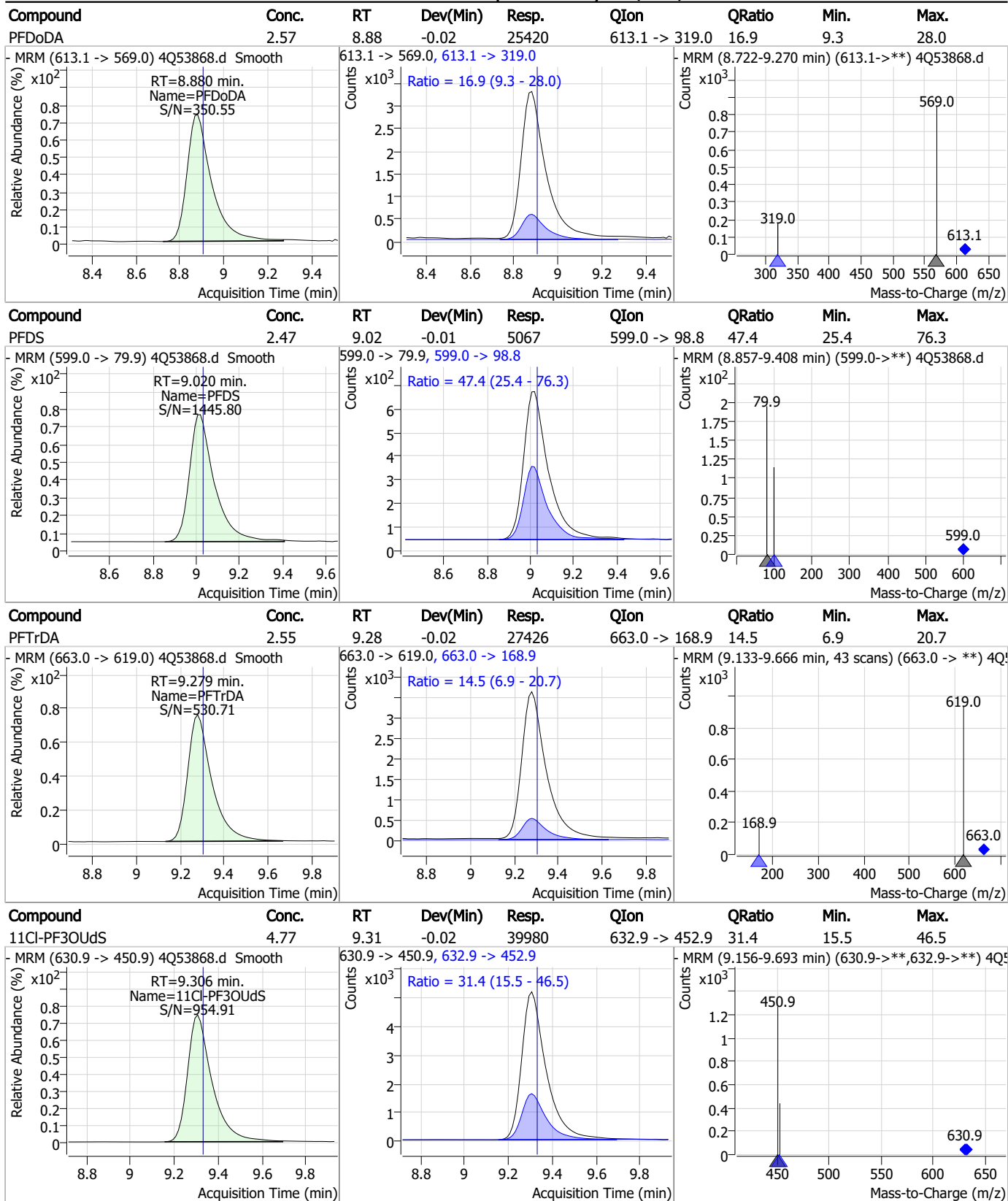
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Perfluorinated Compounds by LC/MS/MS



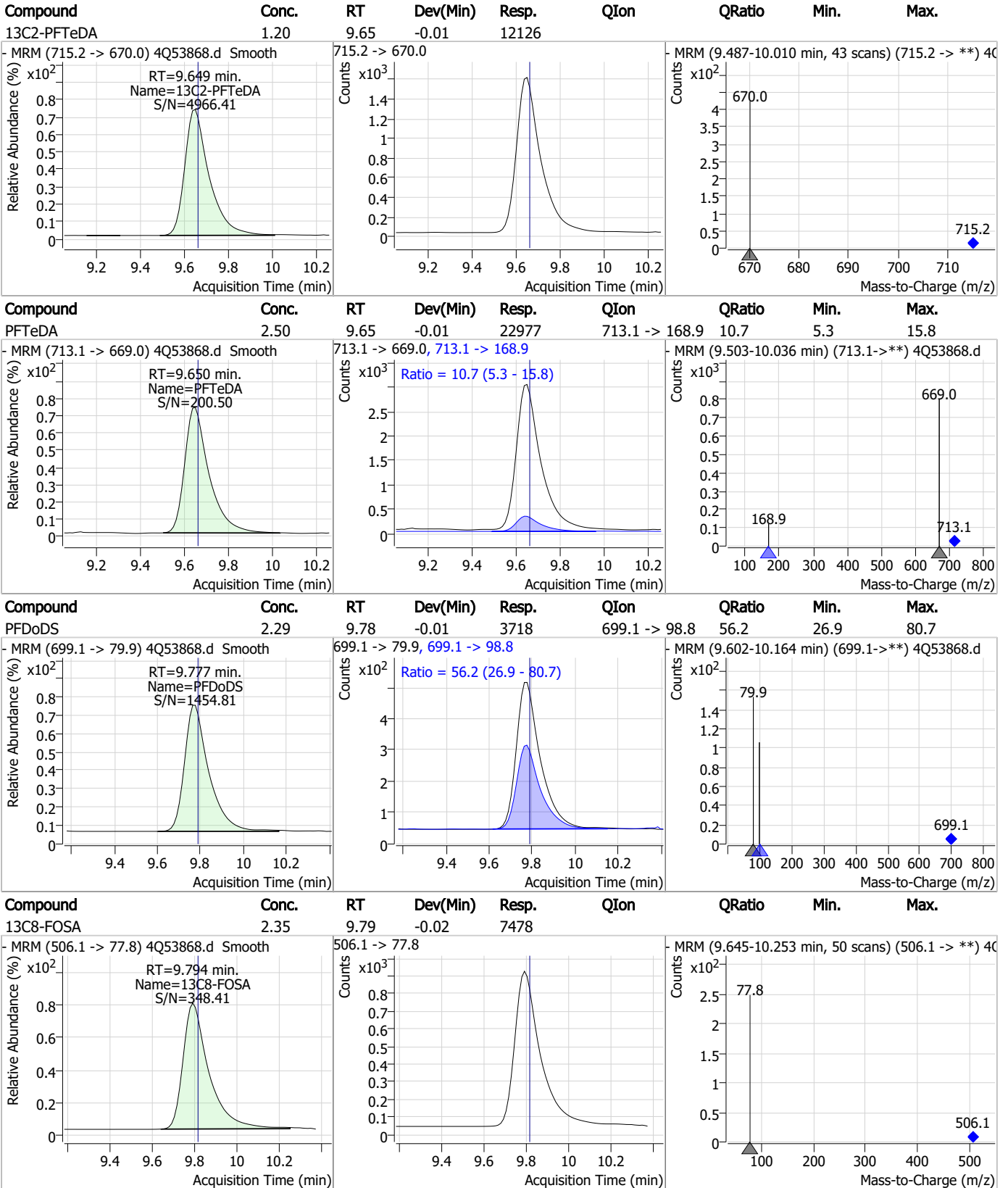
7.7.12
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Perfluorinated Compounds by LC/MS/MS



7.7.12
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Perfluorinated Compounds by LC/MS/MS

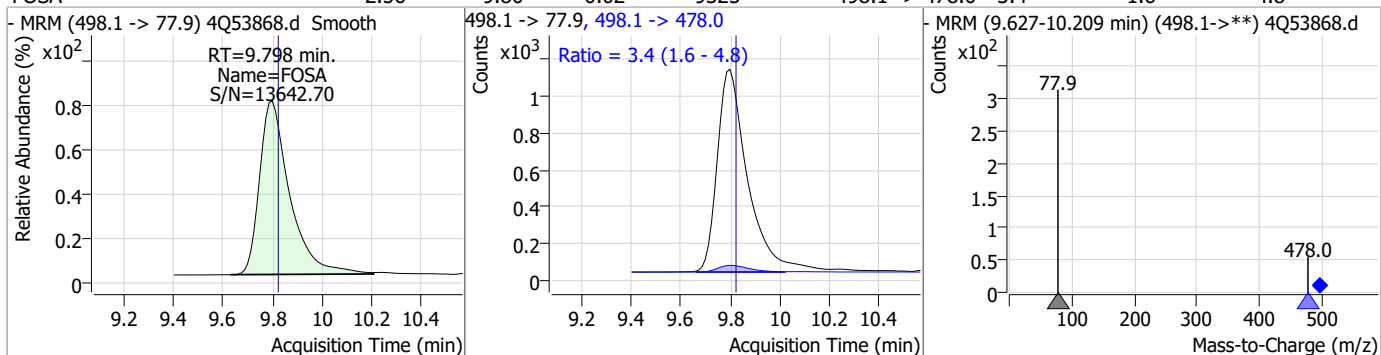


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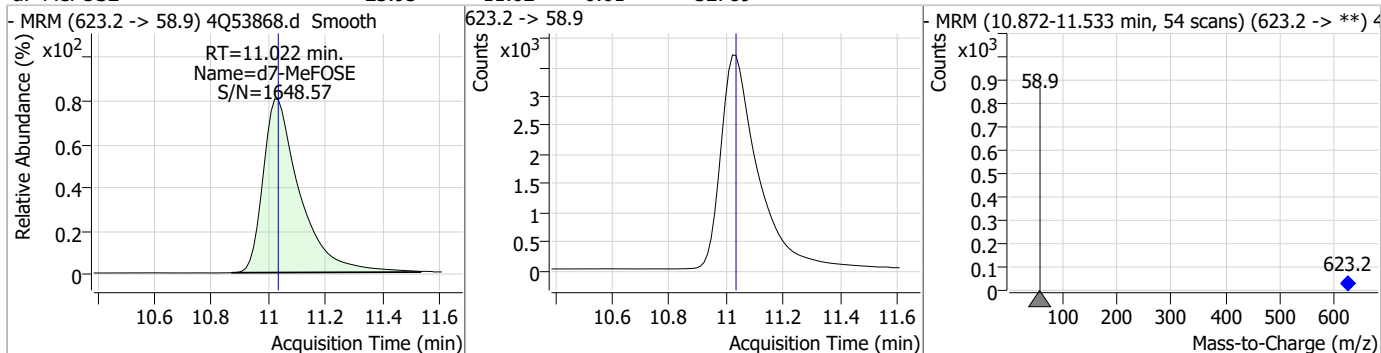


Perfluorinated Compounds by LC/MS/MS

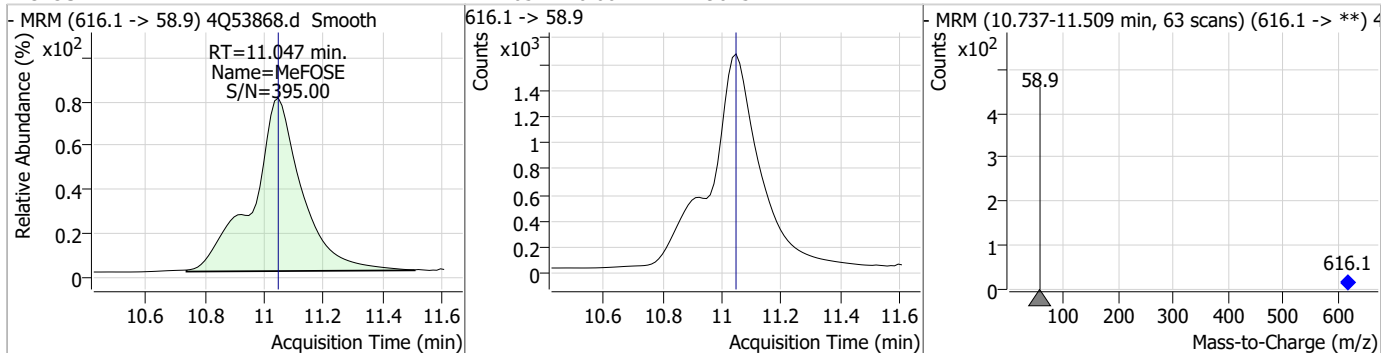
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.56	9.80	-0.02	9325	498.1 -> 478.0	3.4	1.6	4.8



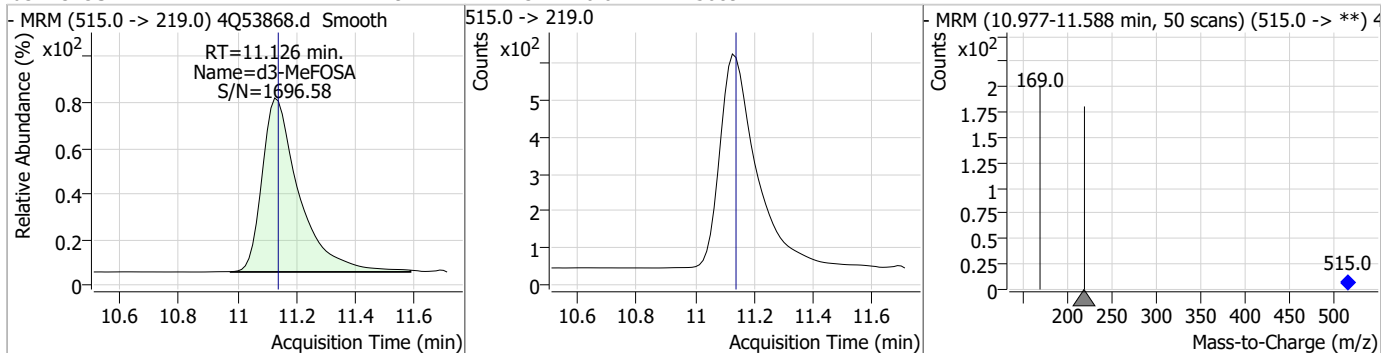
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.93	11.02	-0.01	32789				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.77	11.05	0.00	19075				

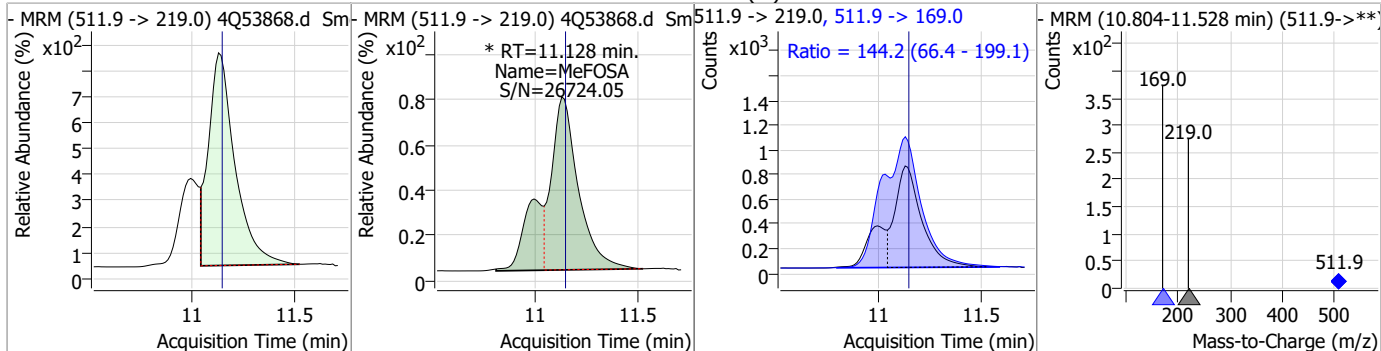


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.29	11.13	-0.01	5089				

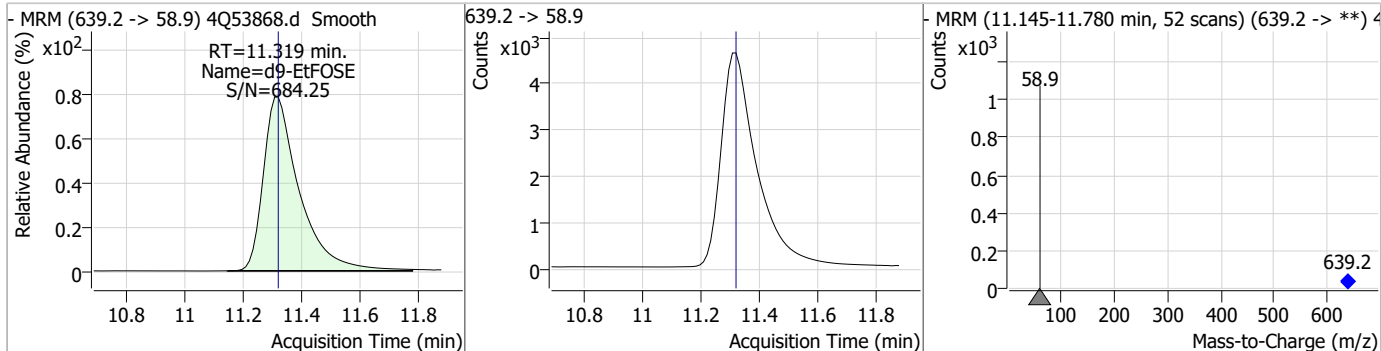


Perfluorinated Compounds by LC/MS/MS

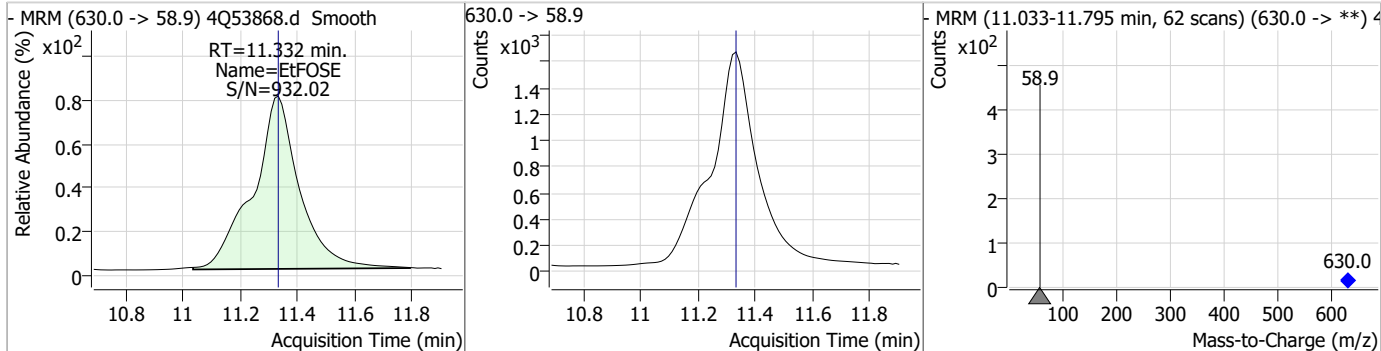
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	5.29	11.13	-0.01	9768 (m)	511.9 -> 169.0	144.2	66.4	199.1



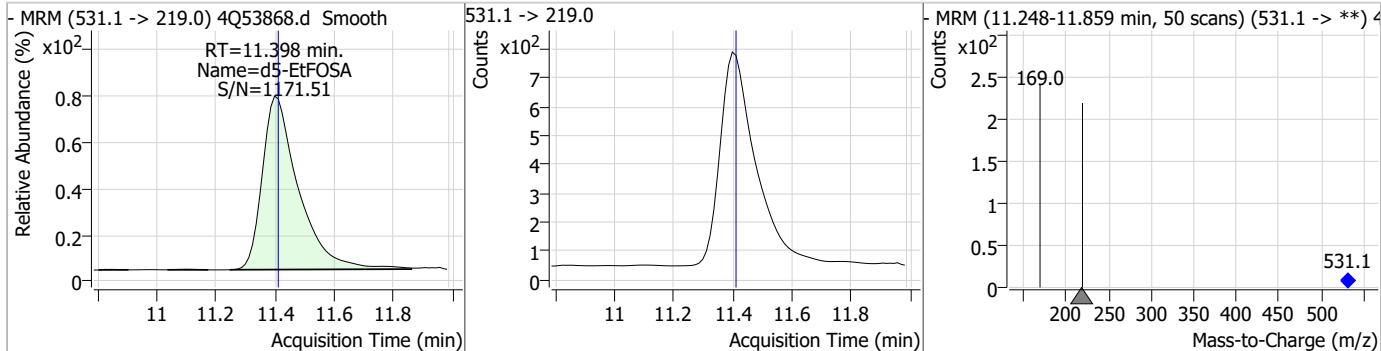
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.12	11.32	0.00	39854				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.37	11.33	0.00	18414				

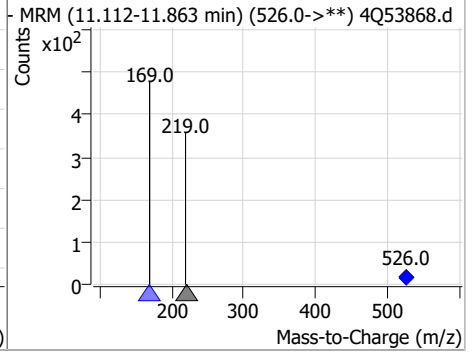
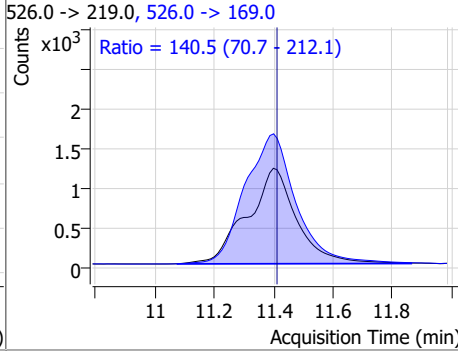
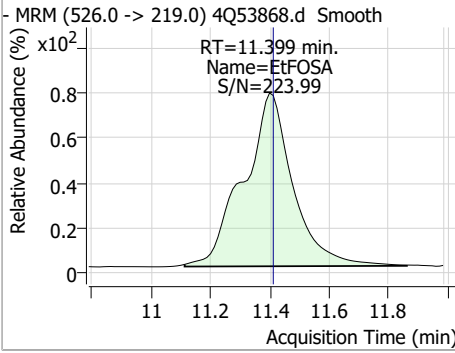


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.39	11.40	-0.01	6281				



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.92	11.40	-0.01	13940	526.0 -> 169.0	140.5	70.7	212.1



7.7.12
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Manual Integration Approval Summary

Sample Number: S4Q786-CC785 Method: EPA DRAFT 1633
Lab FileID: 4Q53868.D Analyst approved: 11/16/23 13:59 Anna Ludwig
Injection Time: 11/15/23 11:00 Supervisor approved: 11/16/23 15:17 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Poorly defined baseline
Perfluorooctanesulfonic acid	1763-23-1		8.12	Poorly defined baseline
EtFOSAA	2991-50-6		8.28	Poorly defined baseline
MeFOSA	31506-32-8		11.13	Poorly defined baseline

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53869.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/15/2023 11:14:54 AM
 Sample Name : cc785-1.0LL
 Vial : P1-A2
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q786.batch.bin
 Sample Information : OP98180,S4Q786,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	85627	10.00 µg/L	-0.075
M5-PFPeA	4.112	268.3 -> 223.0	37035	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	27803	2.50 µg/L	-0.050
M4-PFHpA	6.255	367.1 -> 322.0	26229	2.50 µg/L	-0.050
M8-PFOA	6.952	421.1 -> 376.0	32268	2.50 µg/L	-0.037
M9-PFNA	7.509	472.1 -> 427.0	13613	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	9566	1.25 µg/L	-0.025
M7-PFUnDA	8.449	570.0 -> 525.1	10720	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	11568	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	10880	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	7004	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	7787	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6686	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7042	2.50 µg/L	-0.026
M2-4:2FTS	4.996	329.1 -> 80.9	1136	5.00 µg/L	-0.050
M2-6:2FTS	6.736	429.1 -> 80.9	2263	5.00 µg/L	-0.025
M2-8:2FTS	7.791	529.1 -> 80.9	3189	5.00 µg/L	-0.037
M3-MeFOSAA	8.074	573.2 -> 419.0	14274	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	25508	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	11380	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	30222	25.00 µg/L	-0.012
M9-EtFOSE	11.306	639.2 -> 58.9	35249	25.00 µg/L	-0.012
M5-EtFOSA	11.398	531.1 -> 219.0	5720	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4724	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6076	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	41289	5.00 µg/L	-0.075
18O2-PFHxS	7.016	403.0 -> 83.9	4113	2.50 µg/L	-0.038
13C4-PFOA	6.952	417.1 -> 372.0	36340	2.50 µg/L	-0.037
13C2-PFDA	7.992	515.1 -> 470.1	9850	1.25 µg/L	-0.037
13C5-PFNA	7.509	468.0 -> 423.0	13026	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	30505	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	1136	8.07 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 161.4%		
13C2-6:2FTS	6.736	429.1 -> 80.9	2263	7.63 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 152.6%		
13C2-8:2FTS	7.791	529.1 -> 80.9	3189	7.63 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 152.5%		
13C2-PFDoDA	8.880	615.1 -> 570.0	11568	1.30 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.1%		
13C2-PFTeDA	9.649	715.2 -> 670.0	10880	1.22 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C3-PFBS	5.152	302.1 -> 79.9	7787	2.52 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C3-PFHxS	7.017	402.1 -> 79.9	6686	2.62 µg/L	-0.037

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.9%	
13C4-PFBA	2.624	216.8 -> 171.9	85627	9.95 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C4-PFHpA	6.255	367.1 -> 322.0	26229	2.46 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C5-PFHxA	5.297	318.0 -> 273.0	27803	2.44 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C5-PFPeA	4.112	268.3 -> 223.0	37035	4.98 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C6-PFDA	7.992	519.1 -> 474.1	9566	1.32 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C7-PFUnDA	8.449	570.0 -> 525.1	10720	1.28 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C8-FOSA	9.794	506.1 -> 77.8	7004	2.41 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.5%	
13C8-PFOA	6.952	421.1 -> 376.0	32268	2.49 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C8-PFOS	8.117	507.1 -> 79.9	7042	2.43 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.1%	
13C9-PFNA	7.509	472.1 -> 427.0	13613	1.33 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.0%	
d3-MeFOSAA	8.074	573.2 -> 419.0	14274	6.19 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 123.9%	
13C3-HFPO-DA	5.652	286.9 -> 168.9	25508	9.83 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.3%	
d3-MeFOSA	11.126	515.0 -> 219.0	4724	2.33 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.2%	
d5-EtFOSAA	8.283	589.2 -> 419.0	11380	5.64 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 112.8%	
d7-MeFOSE	11.022	623.2 -> 58.9	30222	24.15 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.6%	
d9-EtFOSE	11.306	639.2 -> 58.9	35249	24.31 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.3%	
d5-EtFOSA	11.398	531.1 -> 219.0	5720	2.38 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.1%	
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	1511	0.67 µg/L	100
		327.1 -> 80.9	634		
6:2FTS	6.737	427.1 -> 407.0	1644	0.67 µg/L	99
		427.1 -> 80.9	624		
8:2FTS	7.792	527.1 -> 507.0	1136	0.66 µg/L	98
		527.1 -> 80.8	459		
EtFOSAA	8.284	584.2 -> 419.1	499	0.24 µg/L	m 93
		584.2 -> 526.0	174		
FOSA	9.798	498.1 -> 77.9	666	0.19 µg/L	# 95
		498.1 -> 478.0	10		
MeFOSAA	8.075	570.1 -> 419.0	399	0.16 µg/L	m 93
		570.1 -> 483.0	85		
PFBA	2.620	212.8 -> 168.9	2159	0.69 µg/L	100
PFBS	5.166	298.7 -> 79.9	402	0.15 µg/L	97
		298.7 -> 98.8	149		
PFDA	7.992	512.9 -> 469.0	1188	0.15 µg/L	m 95
		512.9 -> 219.0	263		
PFDODA	8.880	613.1 -> 569.0	1529	0.16 µg/L	96
		613.1 -> 319.0	257		
PFDS	9.020	599.0 -> 79.9	332	0.18 µg/L	99

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.255	599.0 -> 98.8	168	0.18	µg/L	94
		363.1 -> 319.0	3008			
PFHpS	7.599	363.1 -> 169.0	451	0.15	µg/L	99
		449.0 -> 79.9	424			
PFHxA	5.300	449.0 -> 98.9	215	0.17	µg/L	97
		313.0 -> 269.0	1652			
PFHxS	7.018	313.0 -> 118.9	30	0.19	µg/L	m
		398.7 -> 79.9	392			
PFNA	7.497	398.7 -> 98.9	201	0.16	µg/L	94
		463.0 -> 419.0	1415			
PFNS	8.586	463.0 -> 219.0	318	0.20	µg/L	97
		548.8 -> 79.9	275			
PFOA	6.965	548.8 -> 98.9	138	0.19	µg/L	98
		413.0 -> 369.0	2954			
PFOS	8.119	413.0 -> 169.0	635	0.18	µg/L	m
		498.9 -> 79.9	563			
PFPeA	4.127	498.9 -> 98.8	264	0.35	µg/L	100
		263.0 -> 219.0	2783			
PFPeS	6.257	349.1 -> 79.9	403	0.18	µg/L	100
		349.1 -> 98.9	174			
PFTeDA	9.650	713.1 -> 669.0	1278	0.15	µg/L	#
		713.1 -> 168.9	209			
PFTrDA	9.279	663.0 -> 619.0	1774	0.17	µg/L	96
		663.0 -> 168.9	218			
PFUnDA	8.449	563.1 -> 519.0	1530	0.17	µg/L	93
		563.1 -> 269.1	277			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	2581	0.32	µg/L	97
		632.9 -> 452.9	757			
9Cl-PF3ONS	8.451	530.8 -> 351.0	2742	0.34	µg/L	95
		532.8 -> 353.0	739			
ADONA	6.531	376.9 -> 250.9	6993	0.40	µg/L	100
		376.9 -> 84.8	1733			
HFPO-DA	5.653	284.9 -> 168.9	889	0.33	µg/L	#
		284.9 -> 184.9	137			
3:3FTCA	3.561	241.0 -> 177.0	383	0.79	µg/L	91
		241.0 -> 117.0	47			
5:3FTCA	5.983	341.0 -> 237.1	7024	4.11	µg/L	98
		341.0 -> 217.0	5246			
7:3FTCA	7.524	441.0 -> 316.9	3086	4.02	µg/L	86
		441.0 -> 336.9	8290			
EtFOSA	11.399	526.0 -> 219.0	1003	0.39	µg/L	100
		526.0 -> 169.0	1414			
EtFOSE	11.332	630.0 -> 58.9	1250	0.95	µg/L	100
		511.9 -> 219.0	549			
MeFOSA	11.128	511.9 -> 169.0	967	0.32	µg/L	63
		616.1 -> 58.9	1345			
MeFOSE	11.035	699.1 -> 79.9	229	0.98	µg/L	100
		699.1 -> 98.8	139			
PFDoDS	9.777	295.0 -> 201.0	239	0.16	µg/L	90
		295.0 -> 84.9	61			
NFDHA	5.154	279.0 -> 85.1	1545	0.37	µg/L	97
		229.0 -> 84.9	1799			
PFMBA	4.529	314.8 -> 134.9	2381	0.33	µg/L	100
		314.8 -> 82.9	110			
PFMPA	3.265			0.35	µg/L	100
PFEESA	5.684			0.31	µg/L	#

= Qualifier out of range, m = manually integrated, + = Area summed

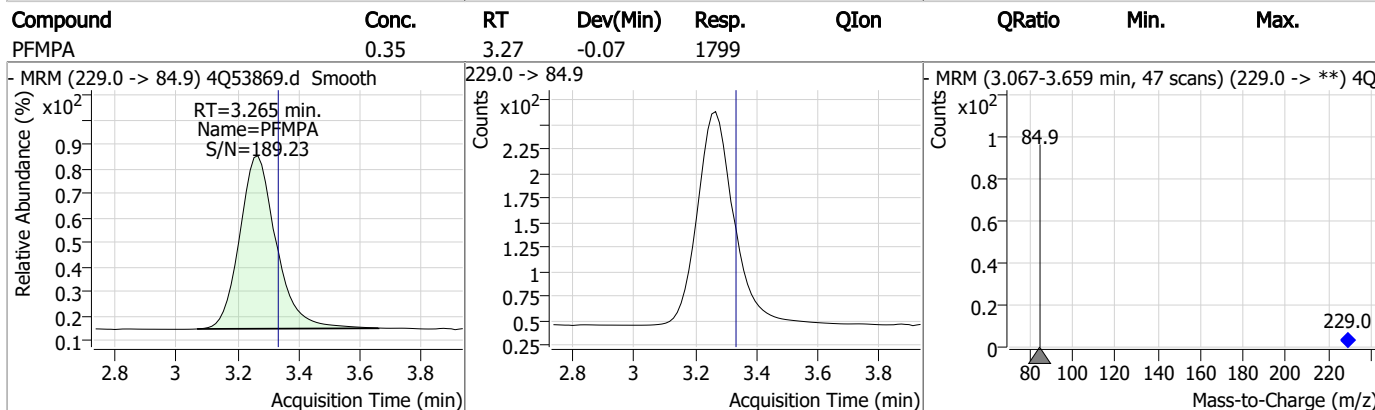
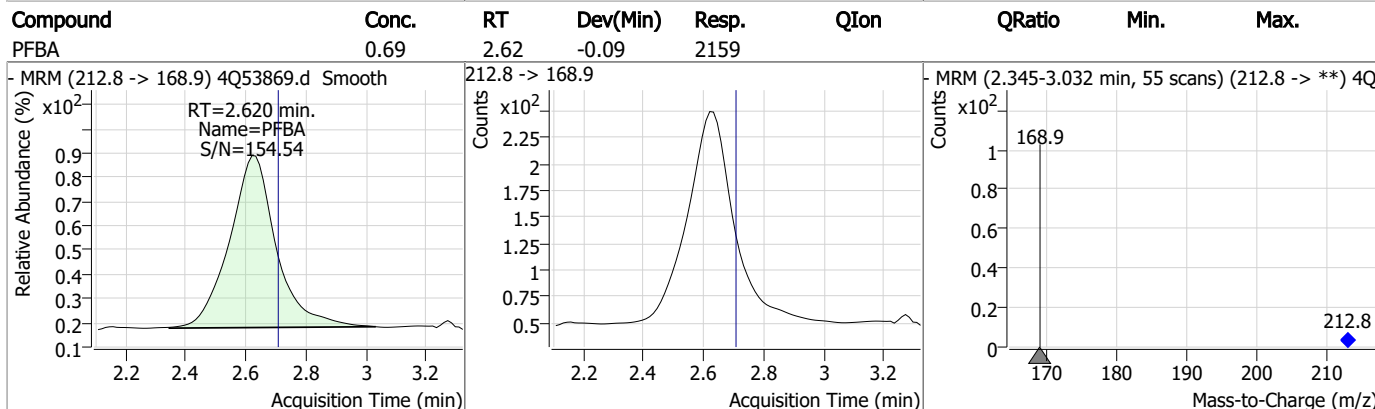
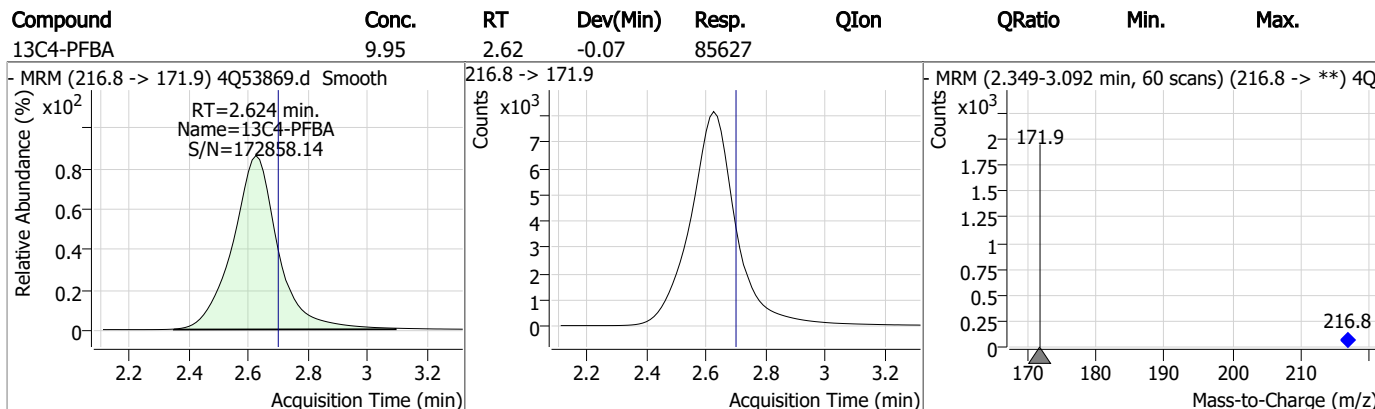
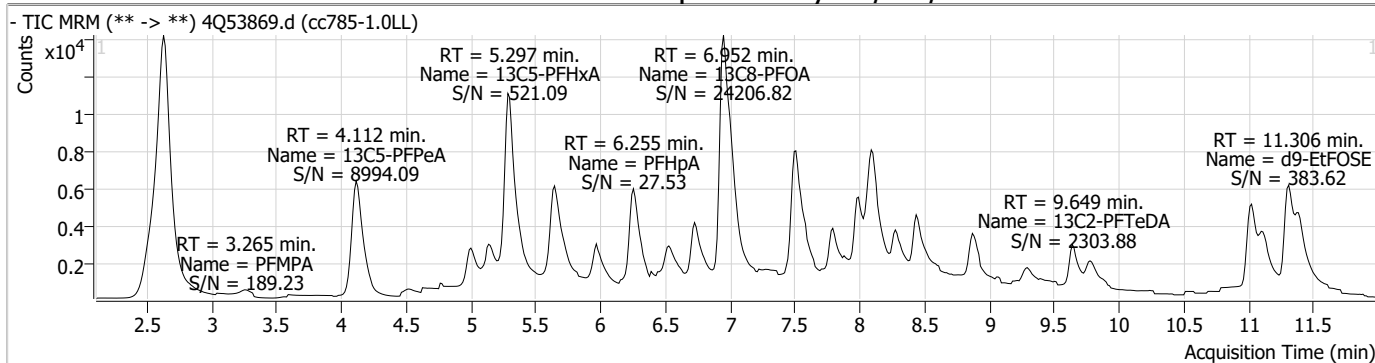
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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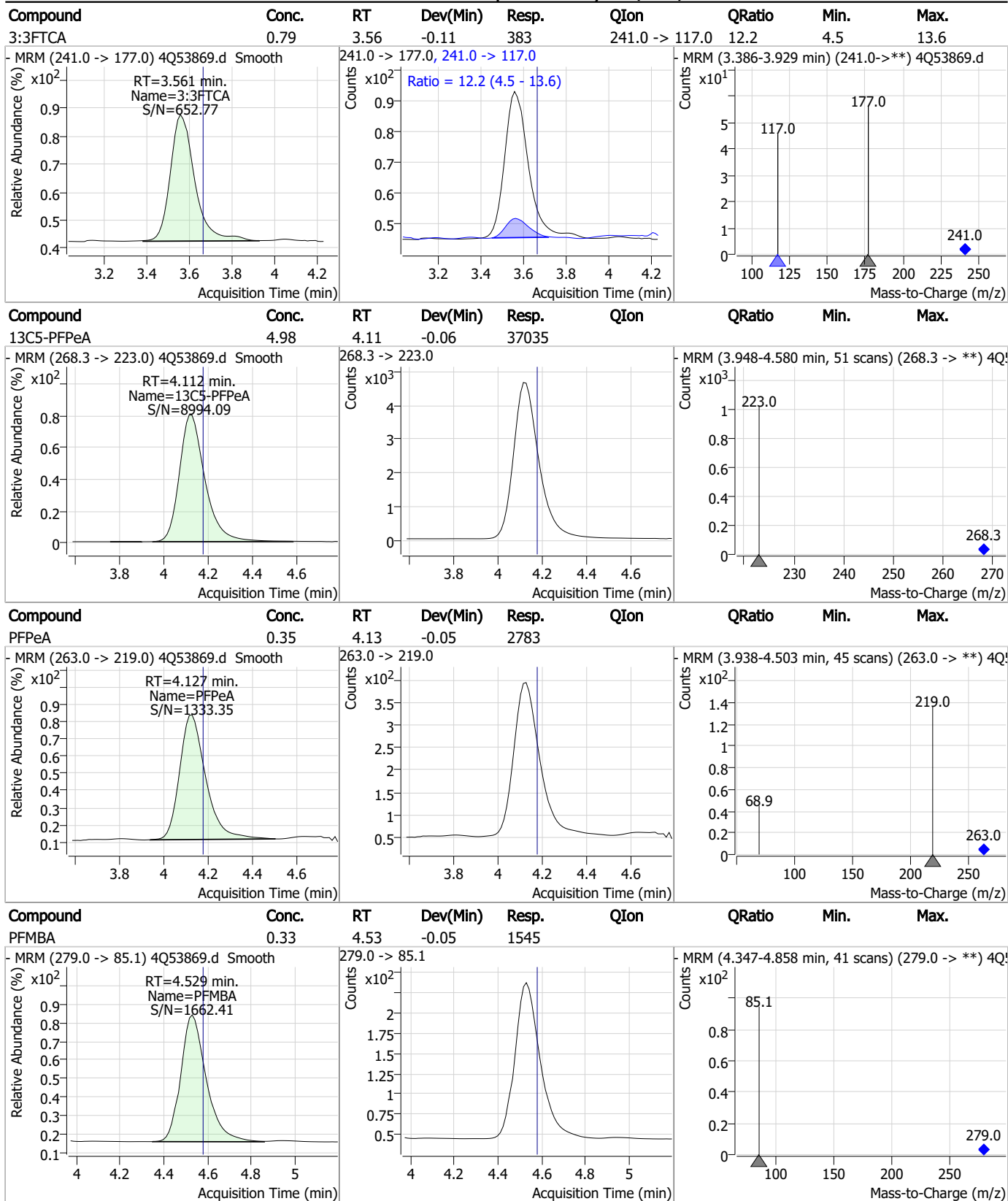
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Perfluorinated Compounds by LC/MS/MS



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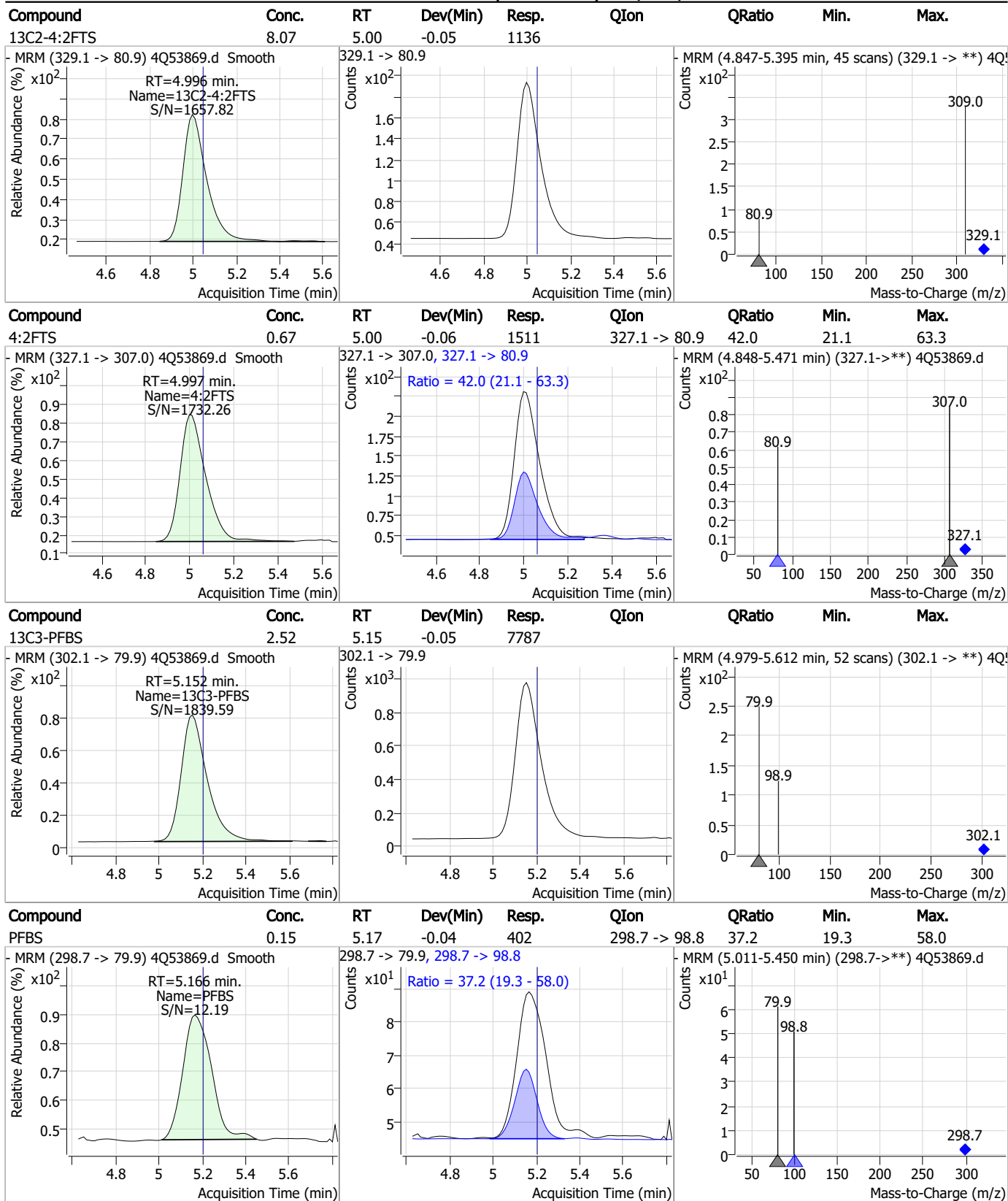
Perfluorinated Compounds by LC/MS/MS



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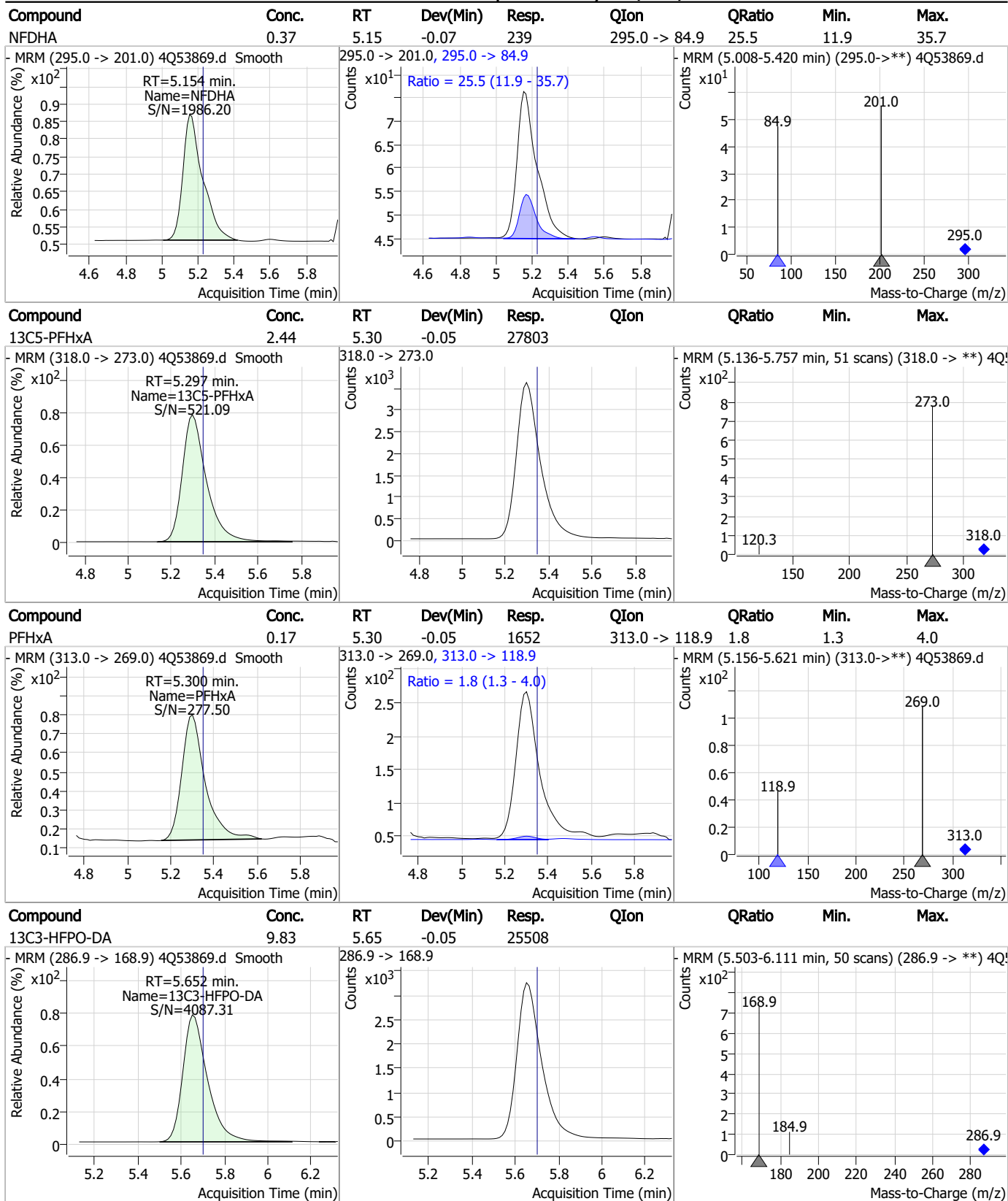
Perfluorinated Compounds by LC/MS/MS



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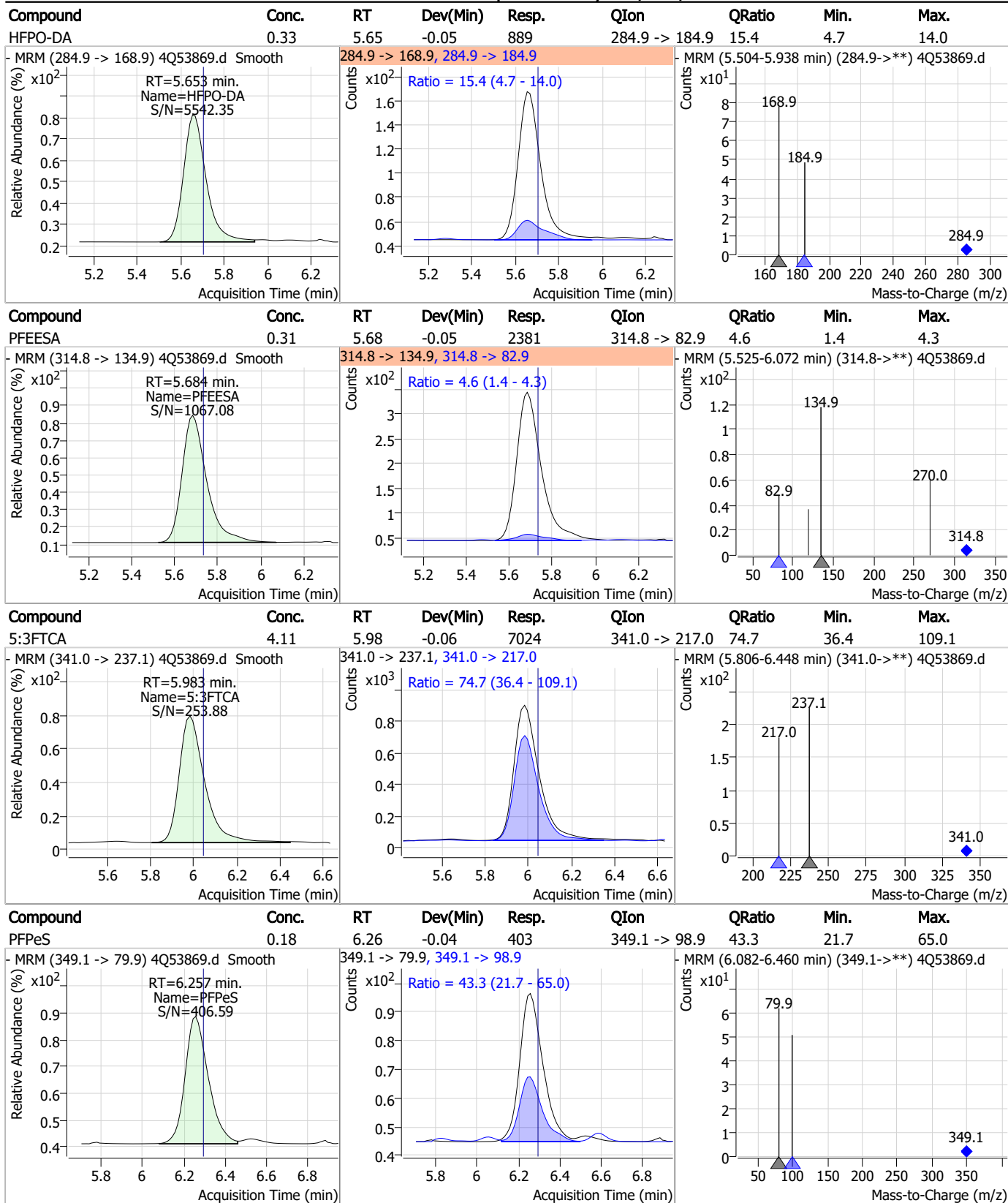
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Perfluorinated Compounds by LC/MS/MS



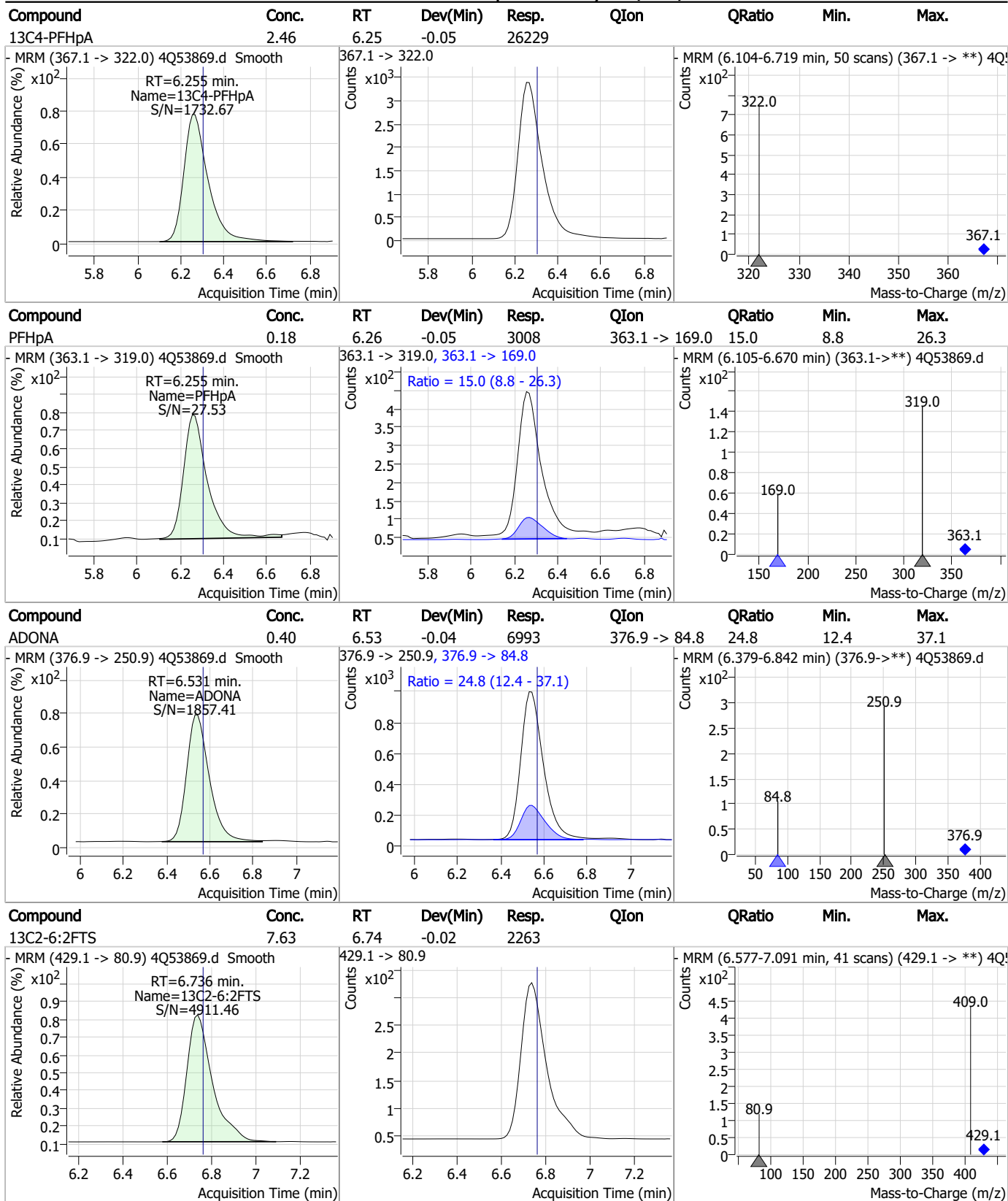
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Perfluorinated Compounds by LC/MS/MS



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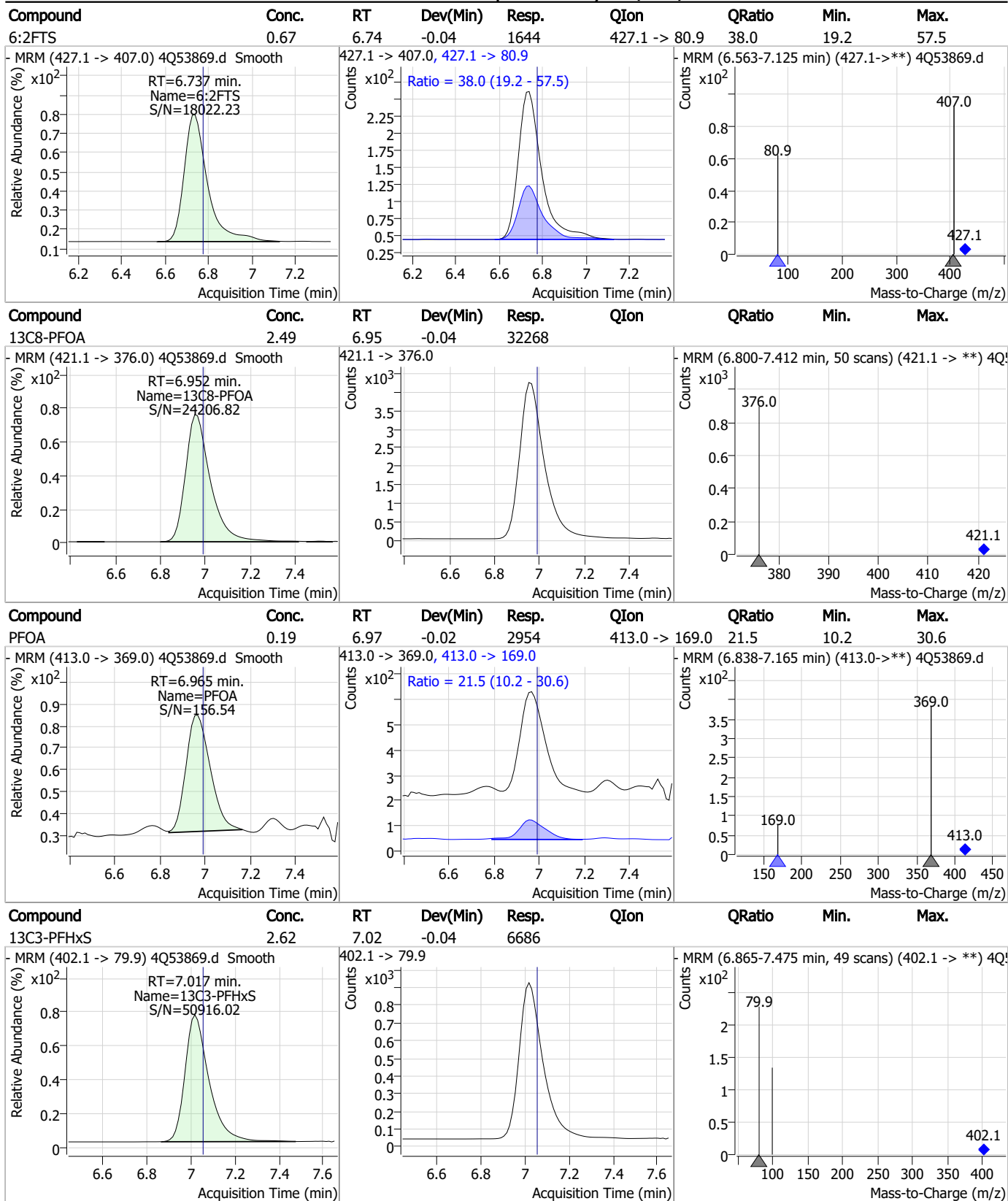
Perfluorinated Compounds by LC/MS/MS



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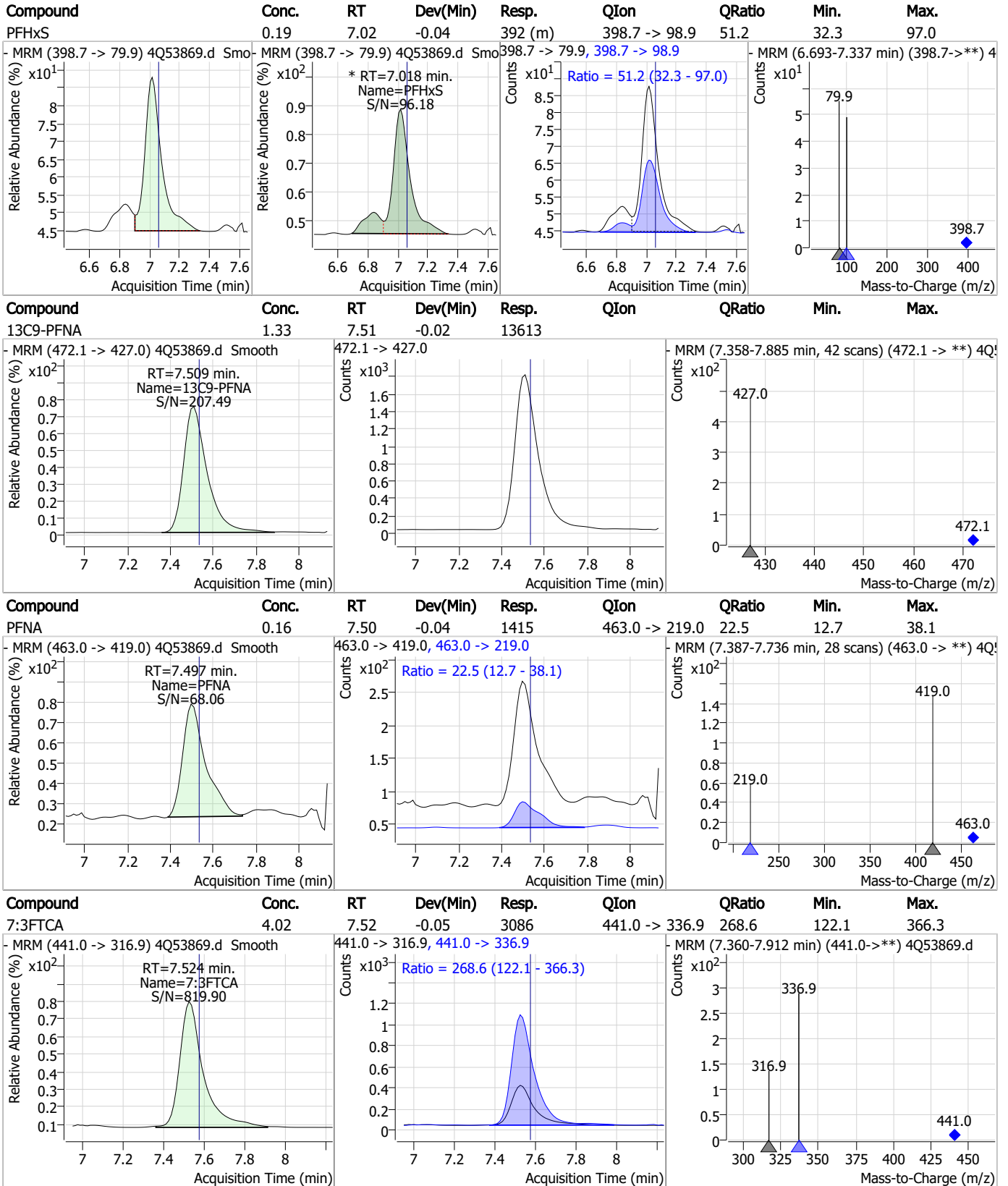
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Perfluorinated Compounds by LC/MS/MS



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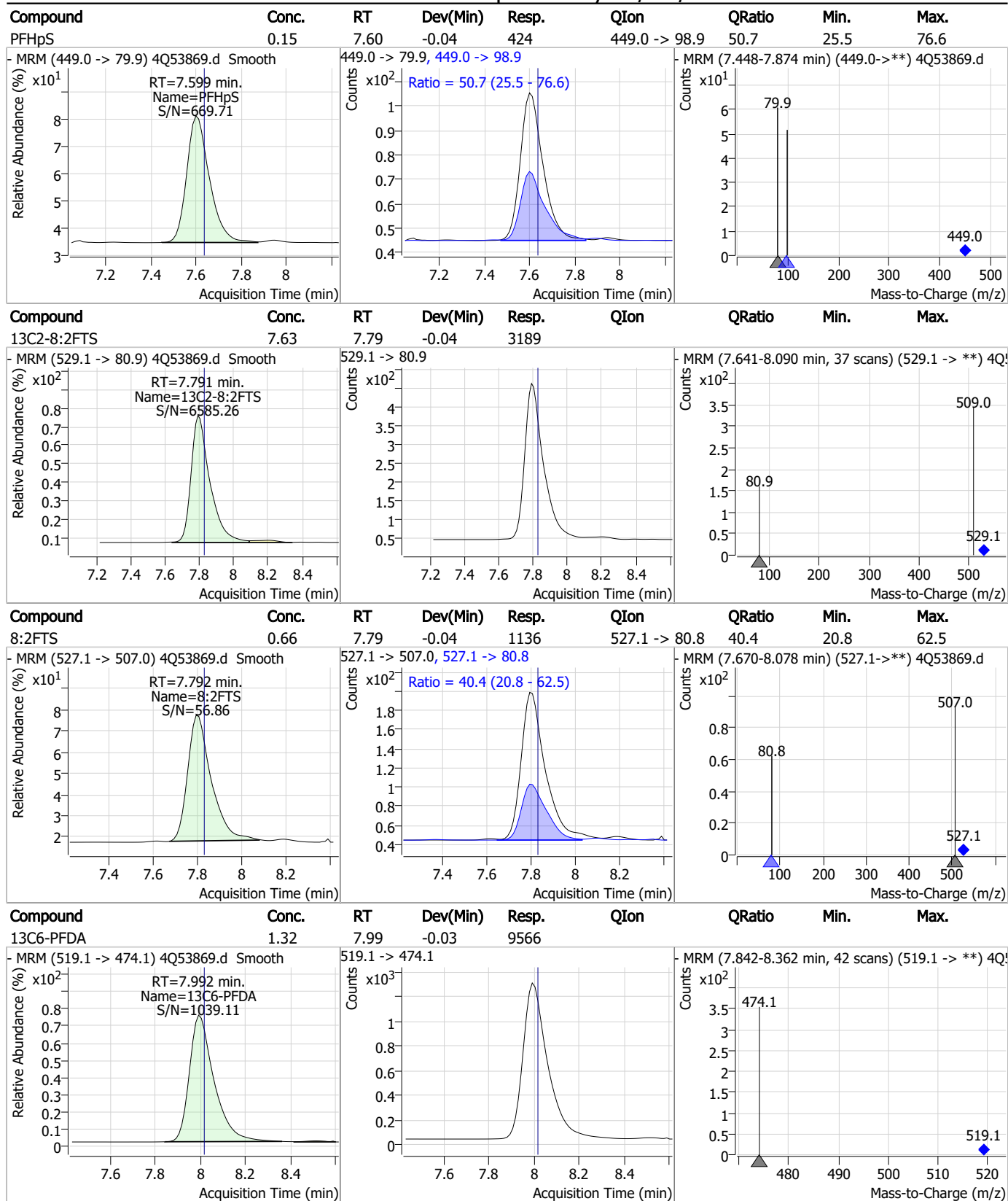
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



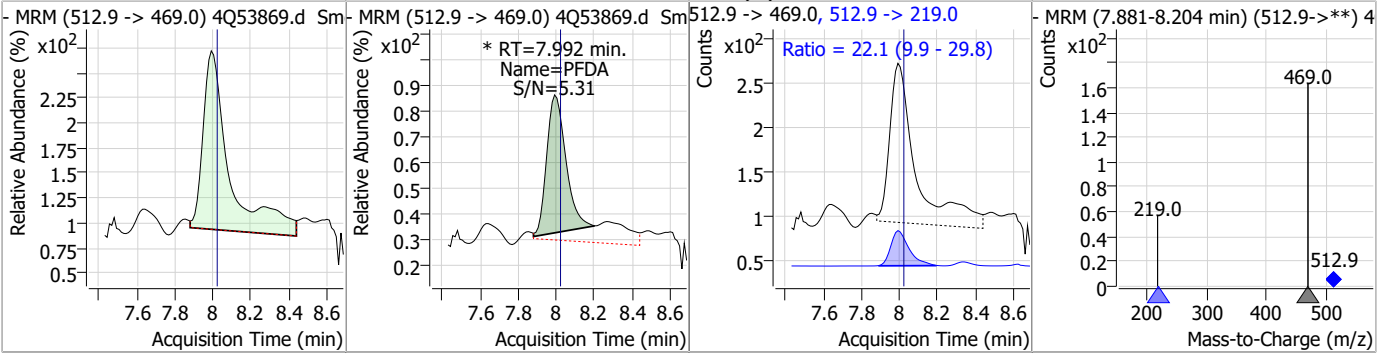
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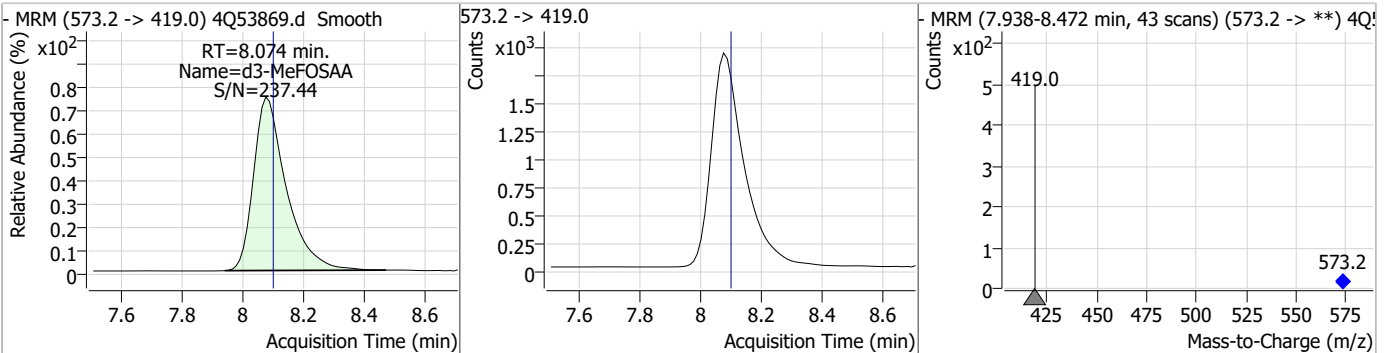


Perfluorinated Compounds by LC/MS/MS

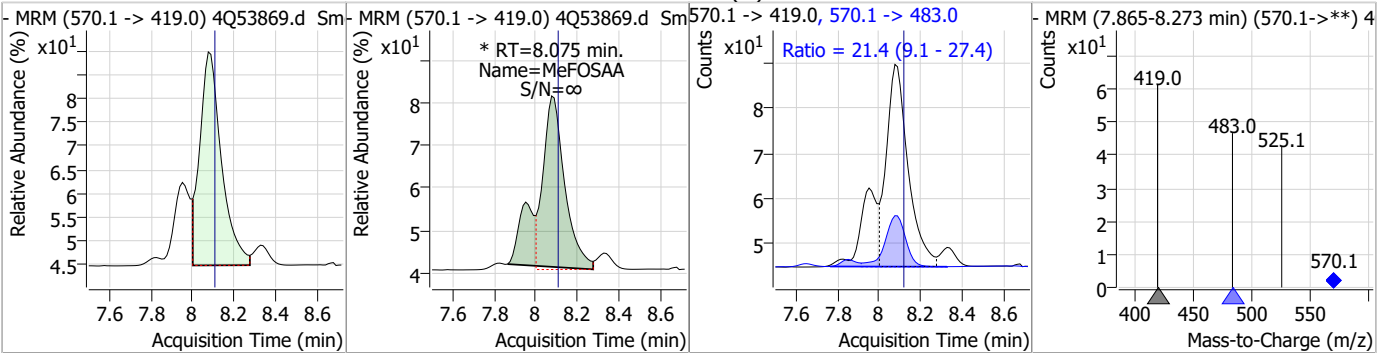
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.15	7.99	-0.03	1188 (m)	512.9 -> 219.0	22.1	9.9	29.8



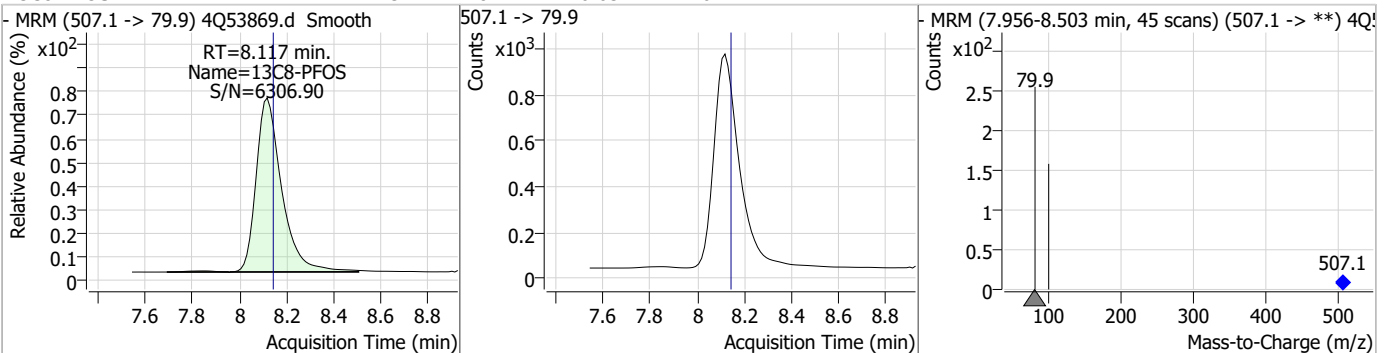
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	6.19	8.07	-0.02	14274				



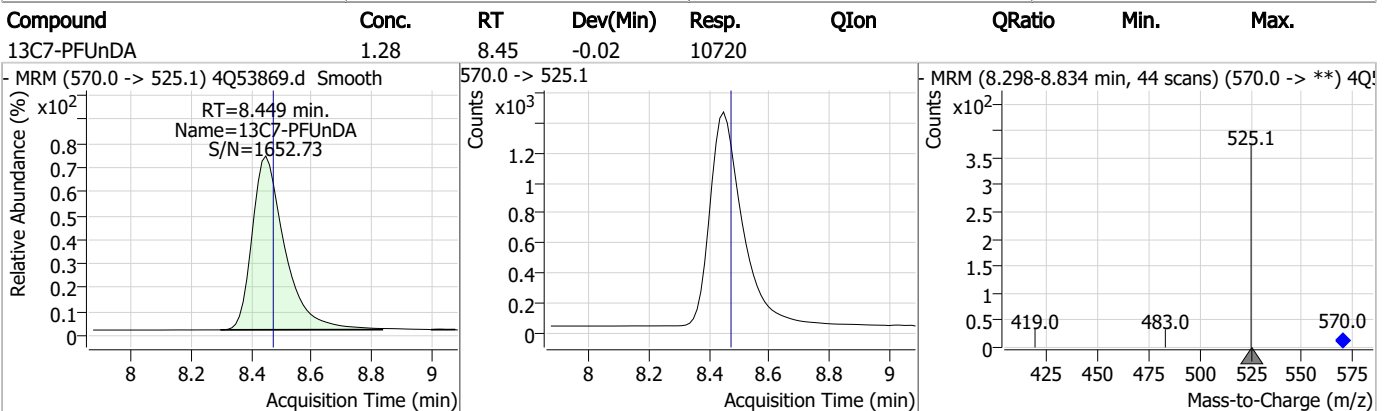
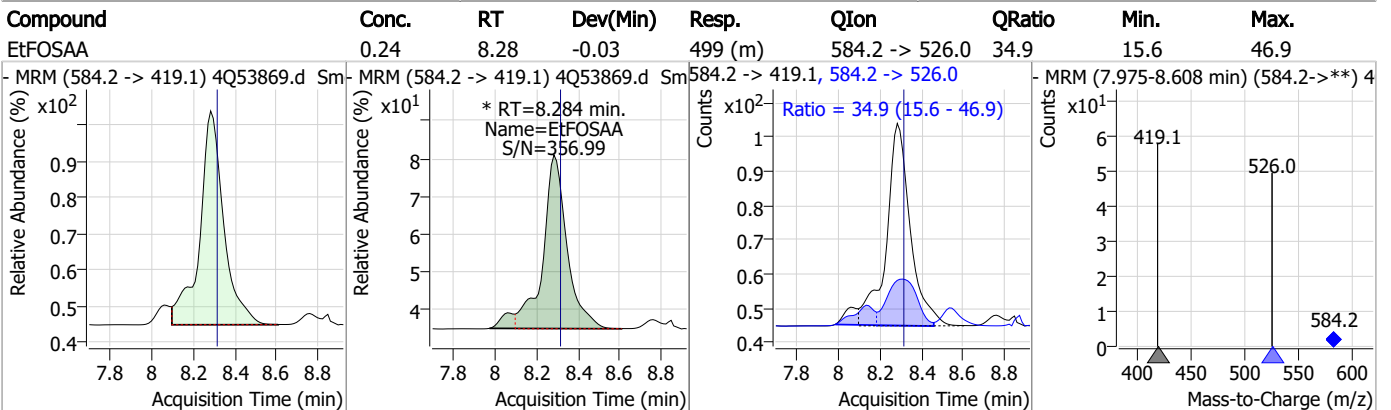
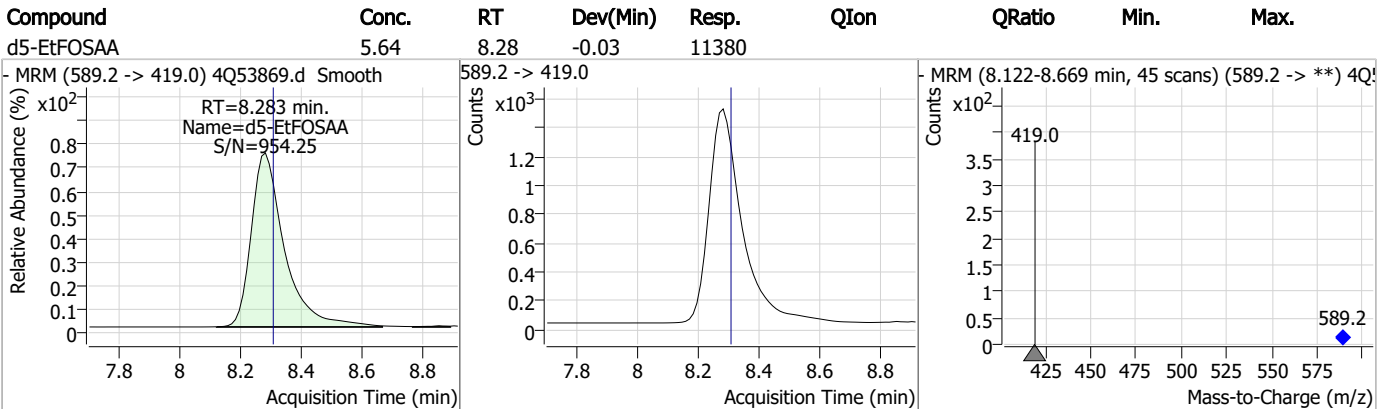
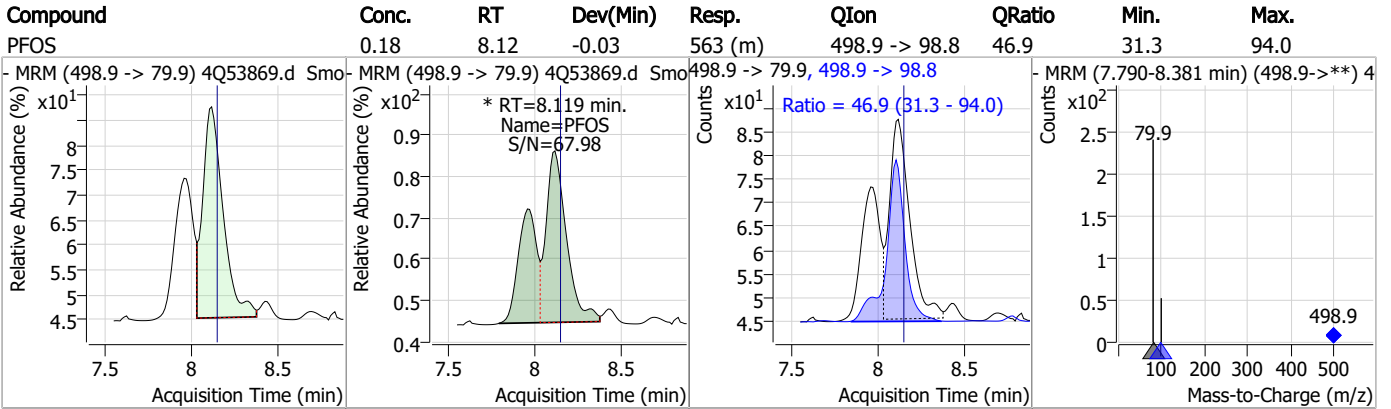
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.16	8.07	-0.04	399 (m)	570.1 -> 483.0	21.4	9.1	27.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.43	8.12	-0.03	7042				

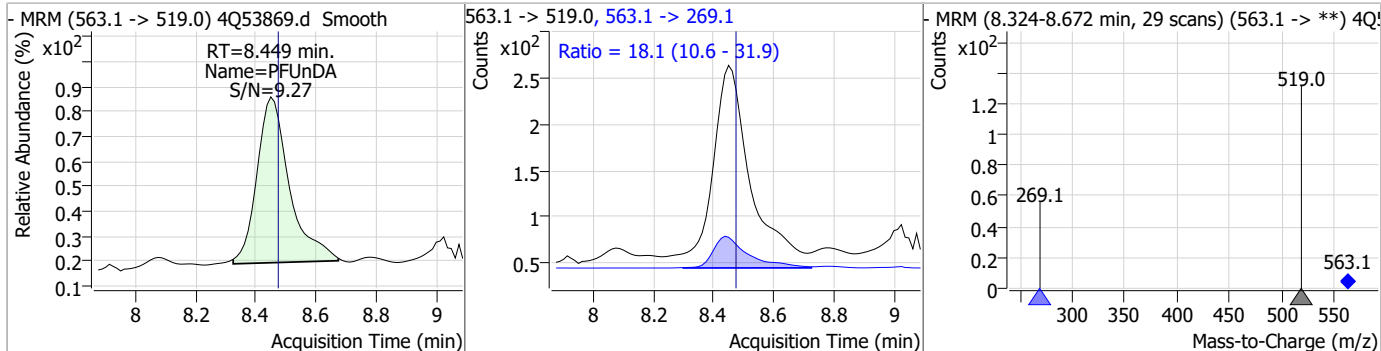


Perfluorinated Compounds by LC/MS/MS

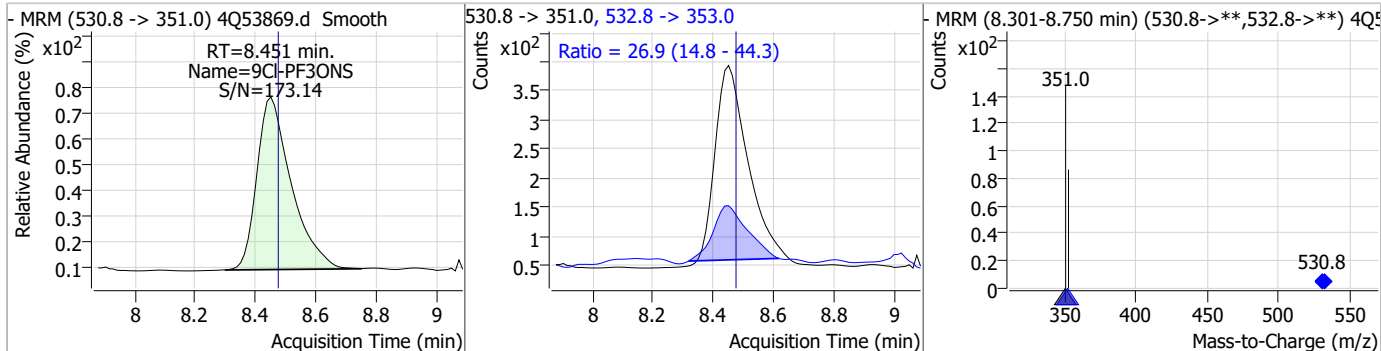


Perfluorinated Compounds by LC/MS/MS

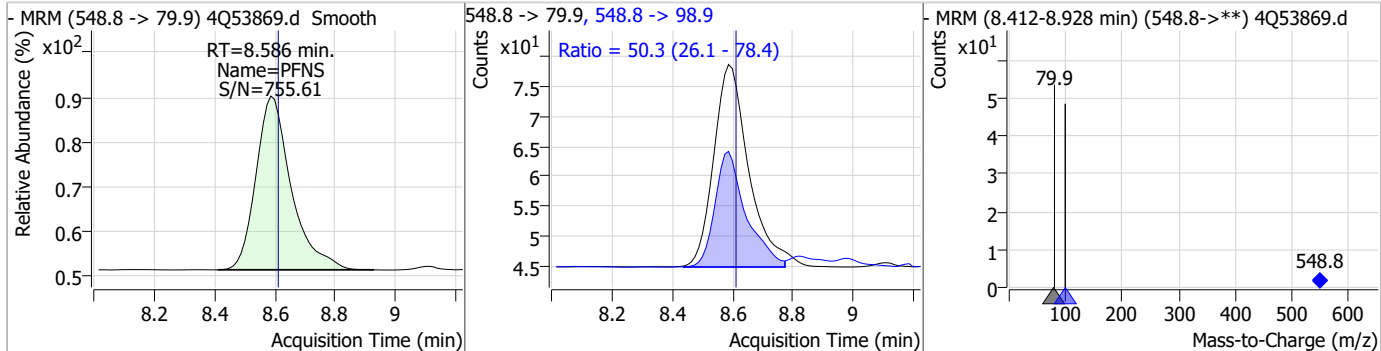
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.17	8.45	-0.02	1530	563.1 -> 269.1	18.1	10.6	31.9



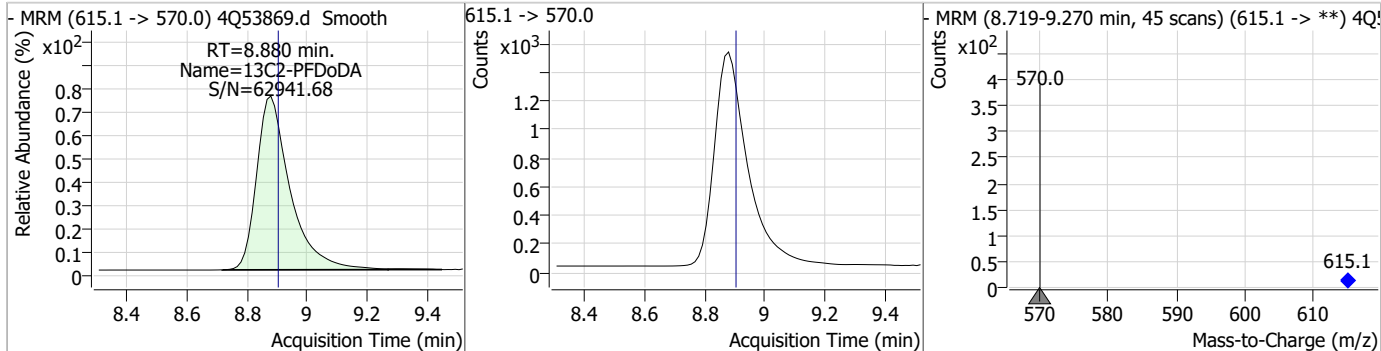
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	0.34	8.45	-0.02	2742	532.8 -> 353.0	26.9	14.8	44.3



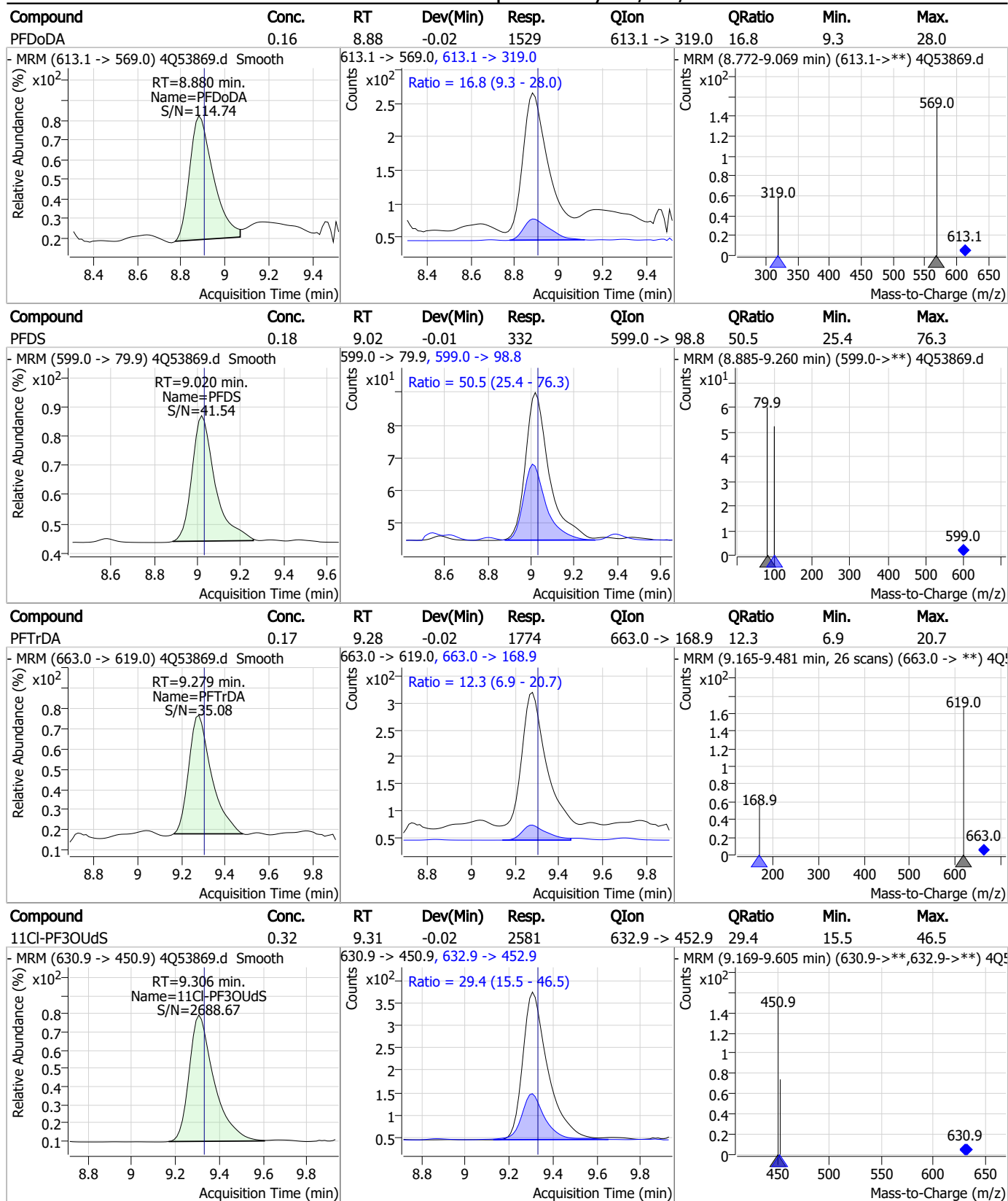
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	0.20	8.59	-0.02	275	548.8 -> 98.9	50.3	26.1	78.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.30	8.88	-0.02	11568				



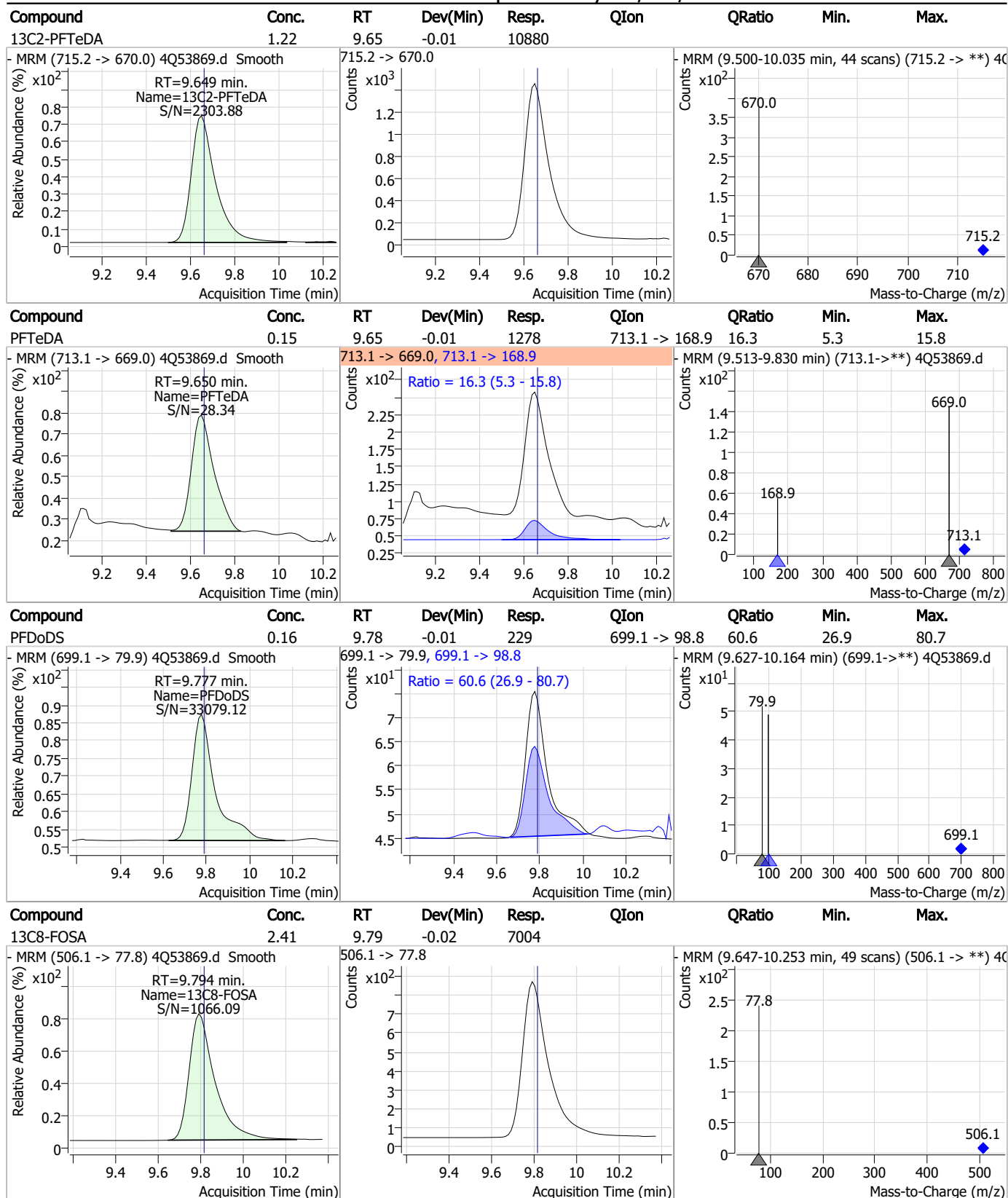
Perfluorinated Compounds by LC/MS/MS



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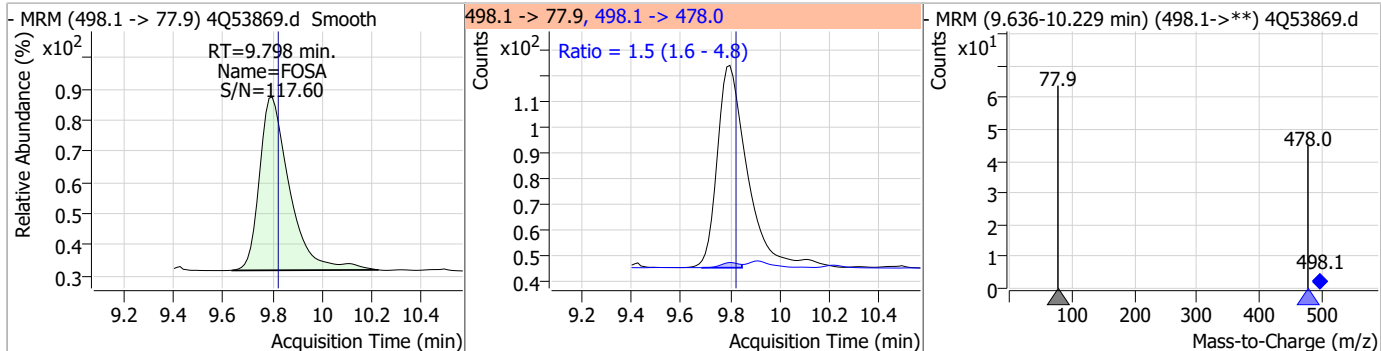
Perfluorinated Compounds by LC/MS/MS



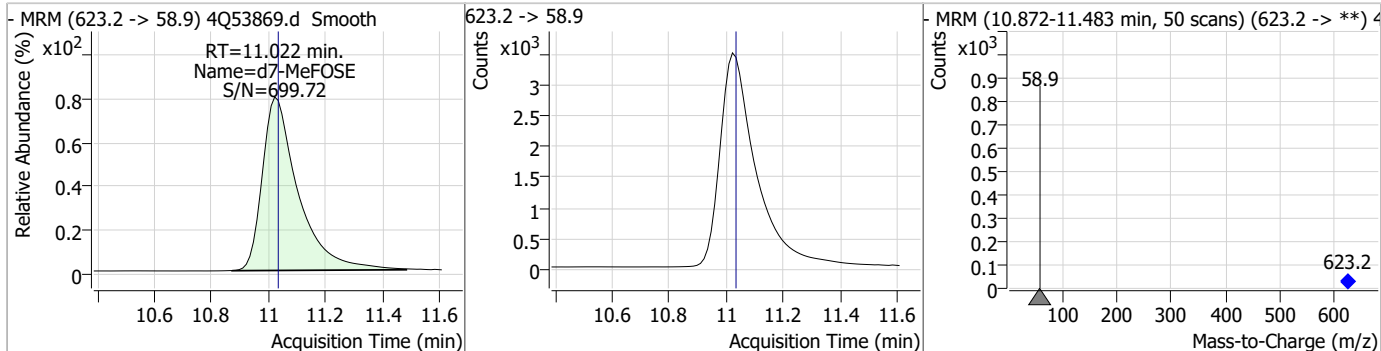
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Perfluorinated Compounds by LC/MS/MS

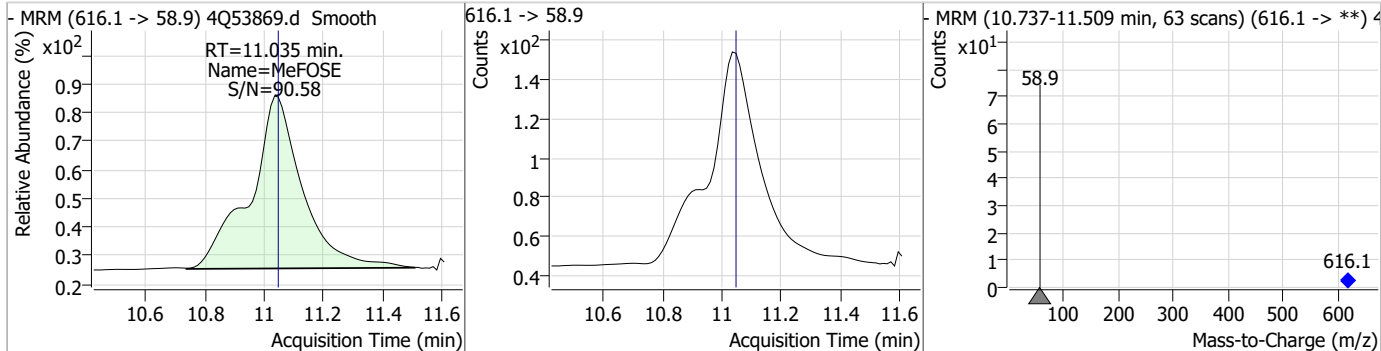
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.19	9.80	-0.02	666	498.1 -> 478.0	1.5	1.6	4.8



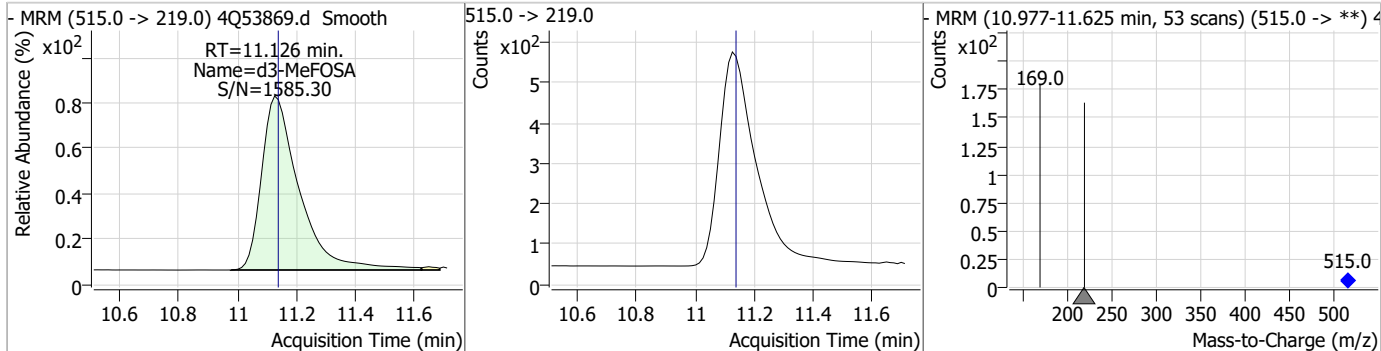
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.15	11.02	-0.01	30222				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	0.98	11.04	-0.01	1345				

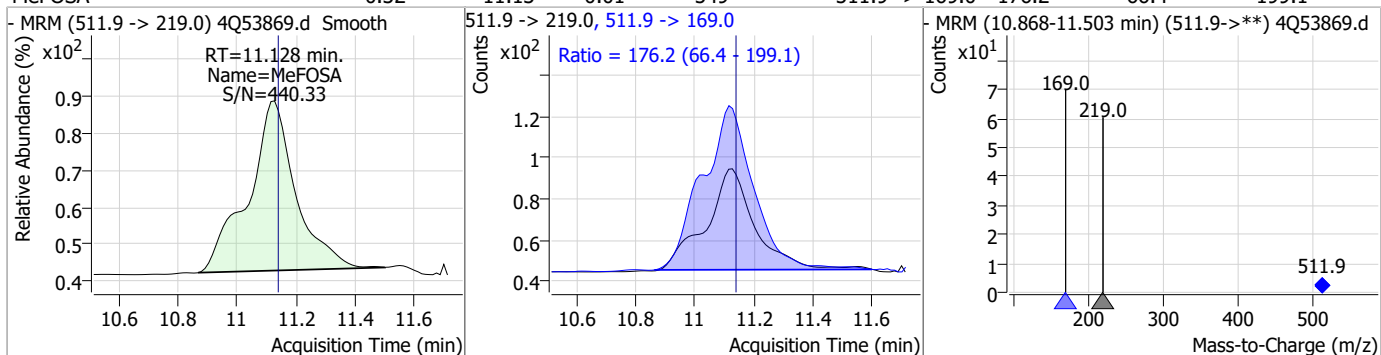


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.33	11.13	-0.01	4724				

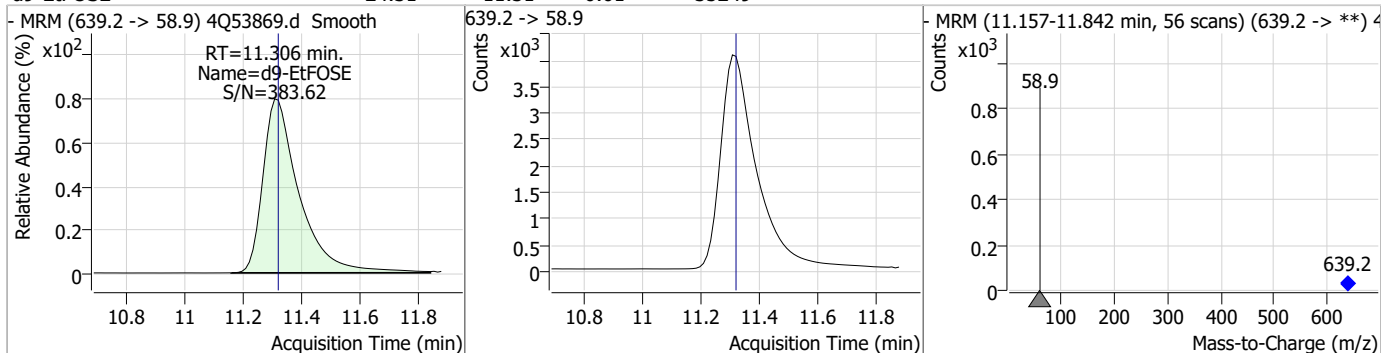


Perfluorinated Compounds by LC/MS/MS

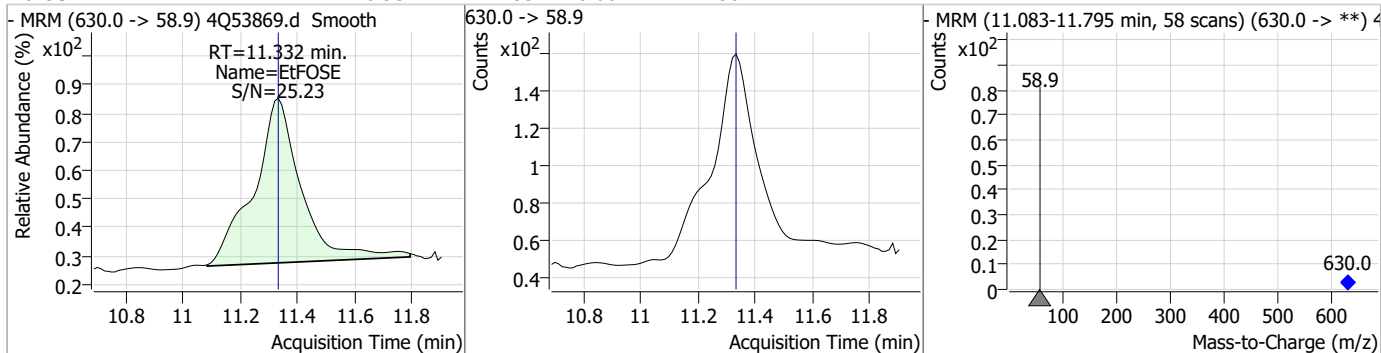
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	0.32	11.13	-0.01	549	511.9 -> 169.0	176.2	66.4	199.1



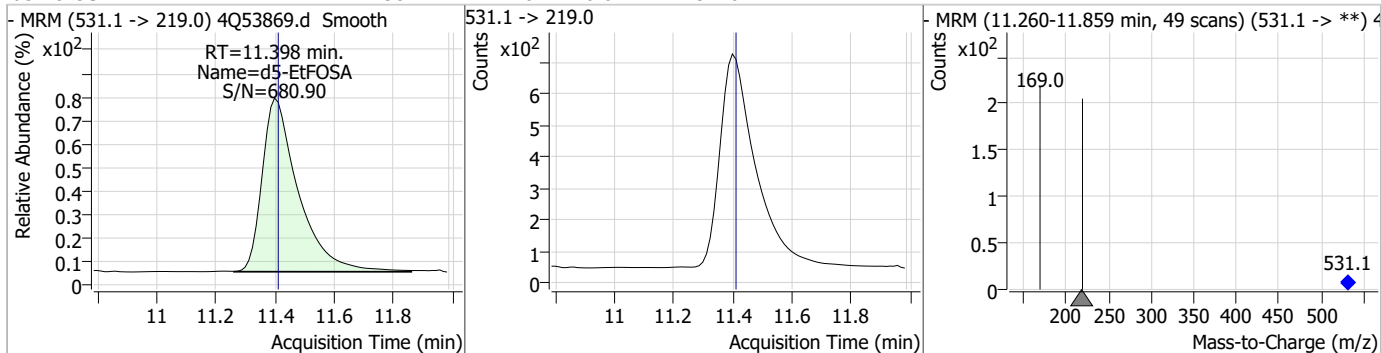
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.31	11.31	-0.01	35249				



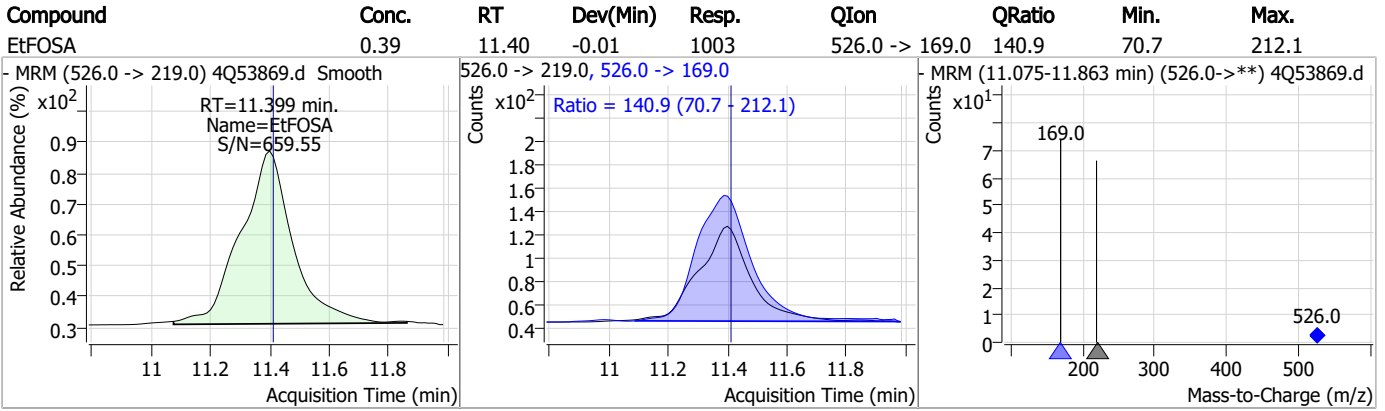
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	0.95	11.33	0.00	1250				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.38	11.40	-0.01	5720				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q786-CC785 Method: EPA DRAFT 1633
Lab FileID: 4Q53869.D Analyst approved: 11/16/23 15:48 Anna Ludwig
Injection Time: 11/15/23 11:14 Supervisor approved: 11/16/23 16:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorodecanoic acid	335-76-2		7.99	Poorly defined baseline
MeFOSAA	2355-31-9		8.07	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53879.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/15/2023 1:53:52 PM
 Sample Name : cc785-4
 Vial : P1-A5
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q786.batch.bin
 Sample Information : OP98180,S4Q786,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	92305	10.00 µg/L	-0.075
M5-PFPeA	4.125	268.3 -> 223.0	40016	5.00 µg/L	-0.050
M5-PFHxA	5.310	318.0 -> 273.0	29697	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	28707	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	34613	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	14435	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	10488	1.25 µg/L	-0.013
M7-PFUnDA	8.461	570.0 -> 525.1	11922	1.25 µg/L	-0.012
M2-PFDoDA	8.880	615.1 -> 570.0	12003	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	11875	1.25 µg/L	-0.012
M8-FOSA	9.806	506.1 -> 77.8	7852	2.50 µg/L	-0.012
M3-PFBS	5.152	302.1 -> 79.9	8411	2.50 µg/L	-0.050
M3-PFHxS	7.029	402.1 -> 79.9	7350	2.50 µg/L	-0.025
M8-PFOS	8.117	507.1 -> 79.9	8054	2.50 µg/L	-0.026
M2-4:2FTS	5.021	329.1 -> 80.9	1091	5.00 µg/L	-0.025
M2-6:2FTS	6.736	429.1 -> 80.9	2124	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2835	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	14619	5.00 µg/L	-0.012
M3-HFPO-DA	5.664	286.9 -> 168.9	26750	10.00 µg/L	-0.037
M5-EtFOSAA	8.296	589.2 -> 419.0	11838	5.00 µg/L	-0.014
M7-MeFOSE	11.034	623.2 -> 58.9	31830	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	35953	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5959	2.50 µg/L	-0.012
M3-MeFOSA	11.139	515.0 -> 219.0	4895	2.50 µg/L	0.000
13C4-PFOS	8.118	502.8 -> 79.9	6237	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	44679	5.00 µg/L	-0.075
18O2-PFHxS	7.028	403.0 -> 83.9	4635	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	38495	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	10461	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	14995	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	33710	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.021	329.1 -> 80.9	1091	6.88 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 137.6%		
13C2-6:2FTS	6.736	429.1 -> 80.9	2124	6.35 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 127.1%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2835	6.02 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 120.3%		
13C2-PFDoDA	8.880	615.1 -> 570.0	12003	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.7%		
13C2-PFTeDA	9.649	715.2 -> 670.0	11875	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C3-PFBS	5.152	302.1 -> 79.9	8411	2.42 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.8%		
13C3-PFHxS	7.029	402.1 -> 79.9	7350	2.56 µg/L	-0.025

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C4-PFBA	2.624	216.8 -> 171.9	92305	9.91 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C4-PFHpA	6.267	367.1 -> 322.0	28707	2.44 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C5-PFHxA	5.310	318.0 -> 273.0	29697	2.36 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.5%		
13C5-PFPeA	4.125	268.3 -> 223.0	40016	4.87 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C6-PFDA	8.004	519.1 -> 474.1	10488	1.36 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 109.0%		
13C7-PFUnDA	8.461	570.0 -> 525.1	11922	1.34 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.2%		
13C8-FOSA	9.806	506.1 -> 77.8	7852	2.63 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.3%		
13C8-PFOA	6.964	421.1 -> 376.0	34613	2.52 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C8-PFOS	8.117	507.1 -> 79.9	8054	2.70 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.2%		
13C9-PFNA	7.509	472.1 -> 427.0	14435	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.7%		
d3-MeFOSAA	8.086	573.2 -> 419.0	14619	6.18 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.6%		
13C3-HFPO-DA	5.664	286.9 -> 168.9	26750	9.32 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 93.2%		
d3-MeFOSA	11.139	515.0 -> 219.0	4895	2.35 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.1%		
d5-EtFOSAA	8.296	589.2 -> 419.0	11838	5.71 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.3%		
d7-MeFOSE	11.034	623.2 -> 58.9	31830	24.77 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.1%		
d9-EtFOSE	11.319	639.2 -> 58.9	35953	24.16 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 96.6%		
d5-EtFOSA	11.397	531.1 -> 219.0	5959	2.41 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.5%		
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	19687	9.13 µg/L	98
		327.1 -> 80.9	8583		
6:2FTS	6.737	427.1 -> 407.0	23558	10.25 µg/L	98
		427.1 -> 80.9	8779		
8:2FTS	7.804	527.1 -> 507.0	16945	10.99 µg/L	99
		527.1 -> 80.8	7007		
EtFOSAA	8.297	584.2 -> 419.1	5897	2.78 µg/L	m 85
		584.2 -> 526.0	2341		
FOSA	9.798	498.1 -> 77.9	9220	2.41 µg/L	99
		498.1 -> 478.0	259		
MeFOSAA	8.087	570.1 -> 419.0	6561	2.53 µg/L	92
		570.1 -> 483.0	1427		
PFBA	2.632	212.8 -> 168.9	33883	10.09 µg/L	100
PFBS	5.153	298.7 -> 79.9	6582	2.20 µg/L	97
		298.7 -> 98.8	2430		
PFDA	8.005	512.9 -> 469.0	19657	2.29 µg/L	97
		512.9 -> 219.0	4199		
PFDoDA	8.880	613.1 -> 569.0	25097	2.56 µg/L	97
		613.1 -> 319.0	4402		
PFDS	9.020	599.0 -> 79.9	4824	2.31 µg/L	99

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	2437	2.53	µg/L	99
		363.1 -> 319.0	45499			
PFHpS	7.612	363.1 -> 169.0	8129	2.37	µg/L	96
		449.0 -> 79.9	7549			
PFHxA	5.300	449.0 -> 98.9	3634	2.50	µg/L	98
		313.0 -> 269.0	25986			
PFHxS	7.030	313.0 -> 118.9	875	2.32	µg/L	81
		398.7 -> 79.9	5141			
PFNA	7.522	398.7 -> 98.9	2558	2.58	µg/L	97
		463.0 -> 419.0	23770			
PFNS	8.586	463.0 -> 219.0	5673	2.48	µg/L	96
		548.8 -> 79.9	3804			
PFOA	6.965	548.8 -> 98.9	1885	2.46	µg/L	100
		413.0 -> 369.0	41140			
PFOS	8.119	413.0 -> 169.0	8487	2.18	µg/L	81
		498.9 -> 79.9	7974			
PFPeA	4.127	498.9 -> 98.8	3809	4.94	µg/L	100
		263.0 -> 219.0	42984			
PFPeS	6.257	349.1 -> 79.9	5502	2.28	µg/L	96
		349.1 -> 98.9	2538			
PFTeDA	9.650	713.1 -> 669.0	22147	2.46	µg/L	100
		713.1 -> 168.9	2311			
PFTrDA	9.292	663.0 -> 619.0	28176	2.64	µg/L	100
		663.0 -> 168.9	3841			
PFUnDA	8.461	563.1 -> 519.0	24993	2.56	µg/L	100
		563.1 -> 269.1	5372			
11CI-PF3OUdS	9.306	630.9 -> 450.9	40083	4.80	µg/L	99
		632.9 -> 452.9	12280			
9CI-PF3ONS	8.463	530.8 -> 351.0	41730	4.95	µg/L	97
		532.8 -> 353.0	13016			
ADONA	6.544	376.9 -> 250.9	108357	5.85	µg/L	100
		376.9 -> 84.8	26494			
HFPO-DA	5.665	284.9 -> 168.9	14878	5.25	µg/L	98
		284.9 -> 184.9	1495			
3:3FTCA	3.561	241.0 -> 177.0	6209	11.87	µg/L	100
		241.0 -> 117.0	563			
5:3FTCA	5.996	341.0 -> 237.1	114906	62.94	µg/L	99
		341.0 -> 217.0	82121			
7:3FTCA	7.536	441.0 -> 316.9	53720	65.59	µg/L	94
		441.0 -> 336.9	125555			
EtFOSA	11.412	526.0 -> 219.0	13834	5.15	µg/L	98
		526.0 -> 169.0	19192			
EtFOSE	11.332	630.0 -> 58.9	17030	12.68	µg/L	100
		511.9 -> 219.0	9818			
MeFOSA	11.128	511.9 -> 169.0	13734	5.53	µg/L	94
		616.1 -> 58.9	18603			
MeFOSE	11.047	699.1 -> 79.9	3760	12.83	µg/L	100
		699.1 -> 98.8	2234			
PFDoDS	9.777	295.0 -> 201.0	3490	2.29	µg/L	92
		295.0 -> 84.9	1007			
NFDHA	5.191	279.0 -> 85.1	24516	5.10	µg/L	90
		229.0 -> 84.9	27571			
PFMBA	4.529	314.8 -> 134.9	37350	4.89	µg/L	100
		314.8 -> 82.9	1342			
PFMPA	3.265			4.95	µg/L	100
PFEESA	5.696			4.55	µg/L	98

= Qualifier out of range, m = manually integrated, + = Area summed

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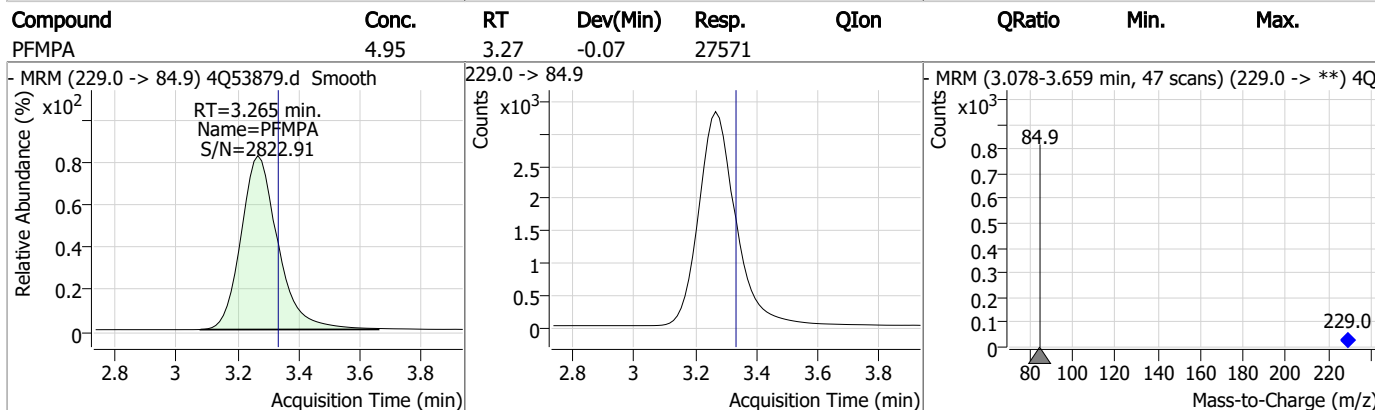
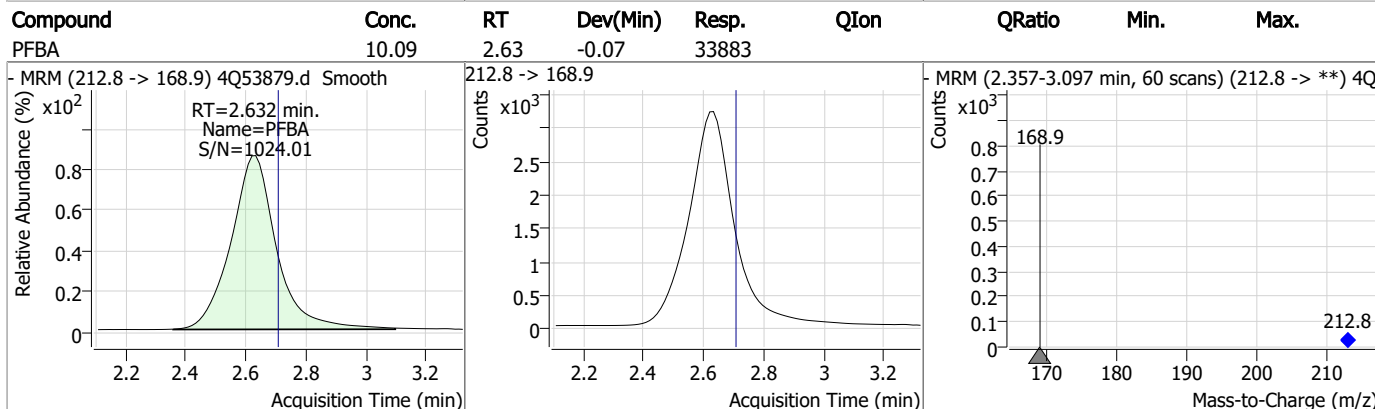
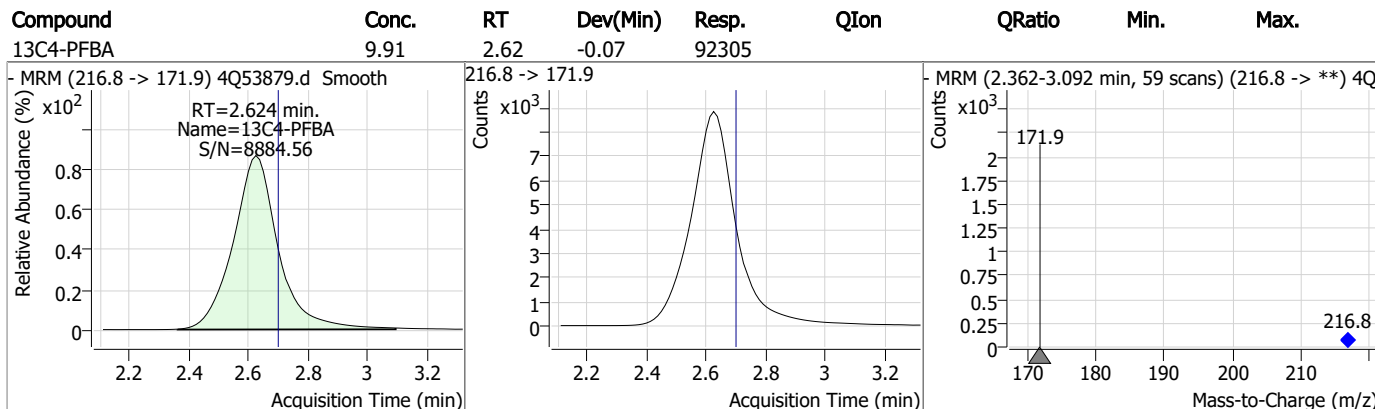
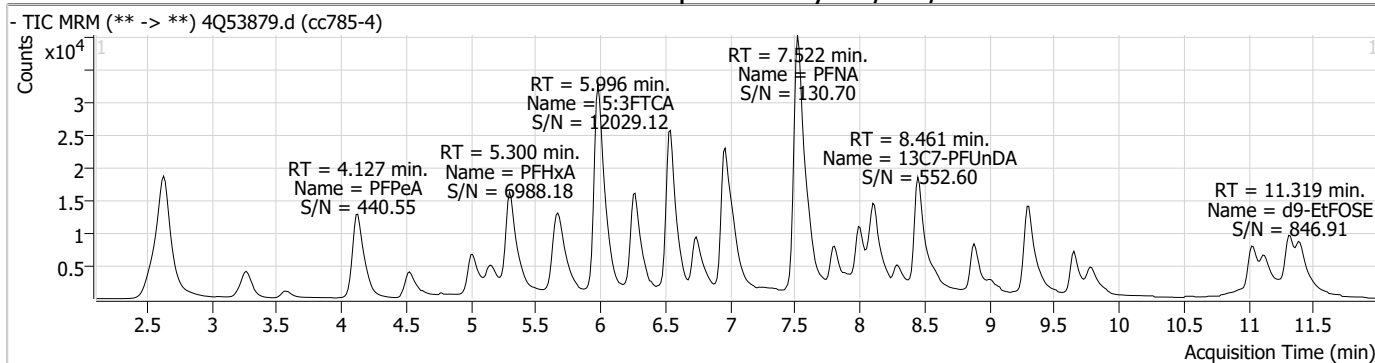
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.14

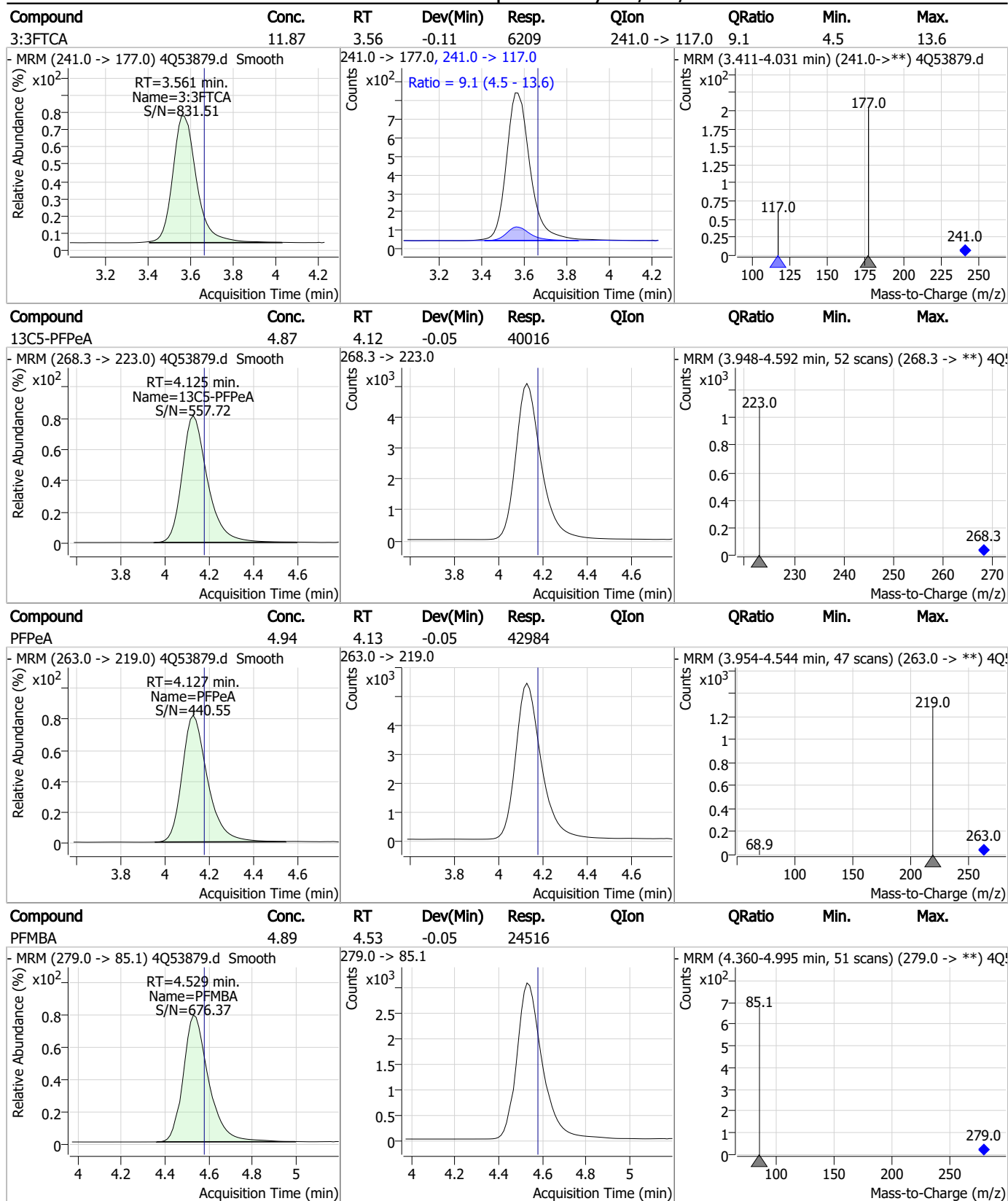
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Perfluorinated Compounds by LC/MS/MS



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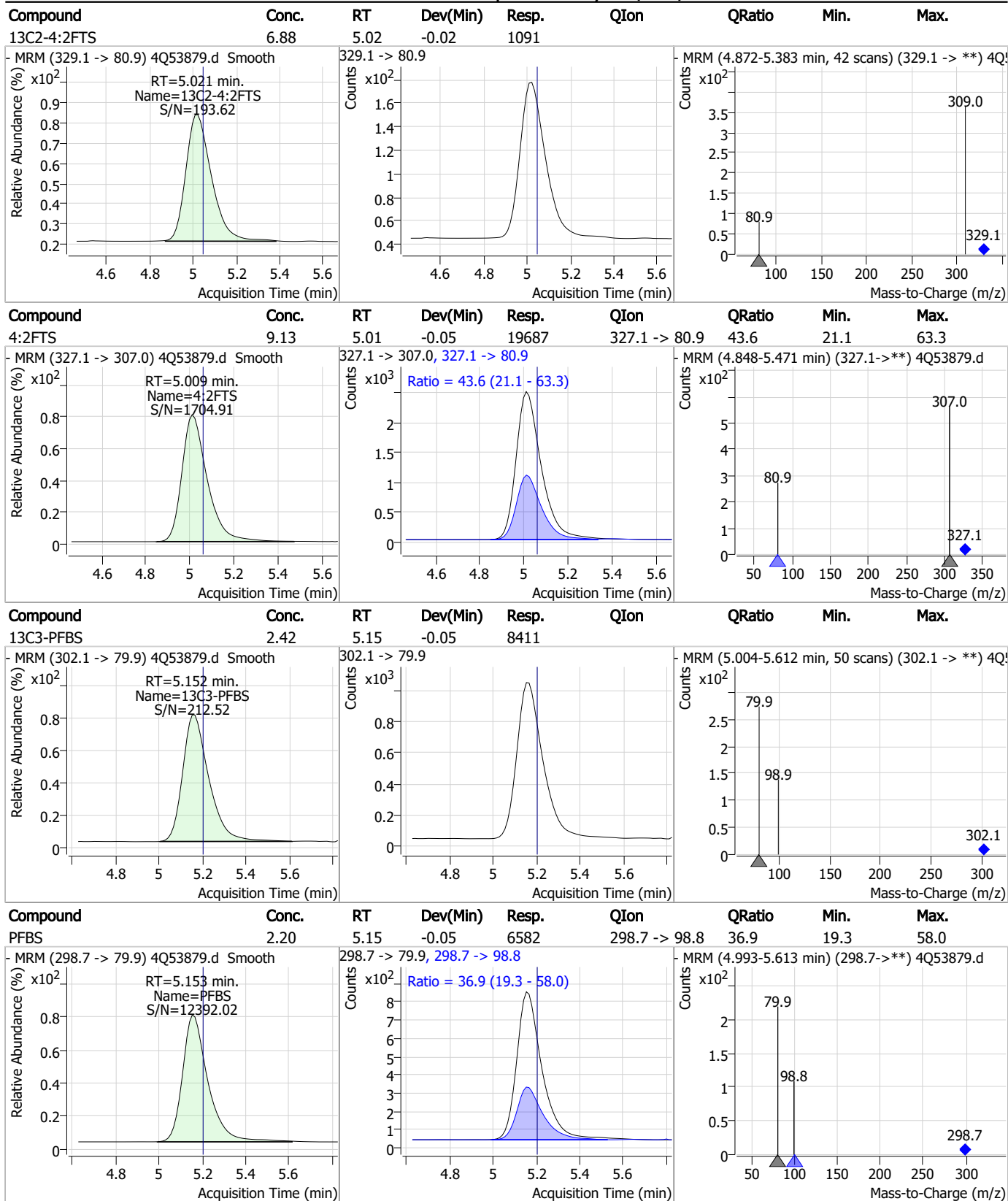
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

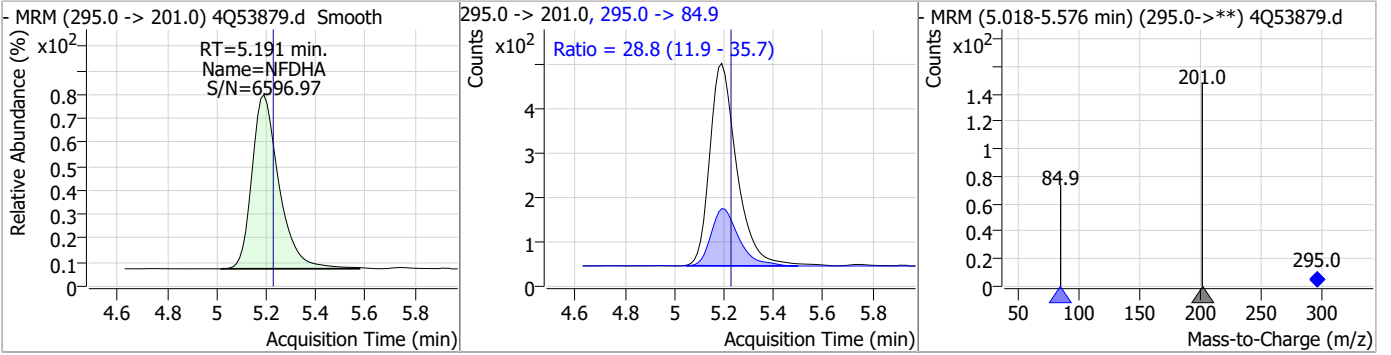


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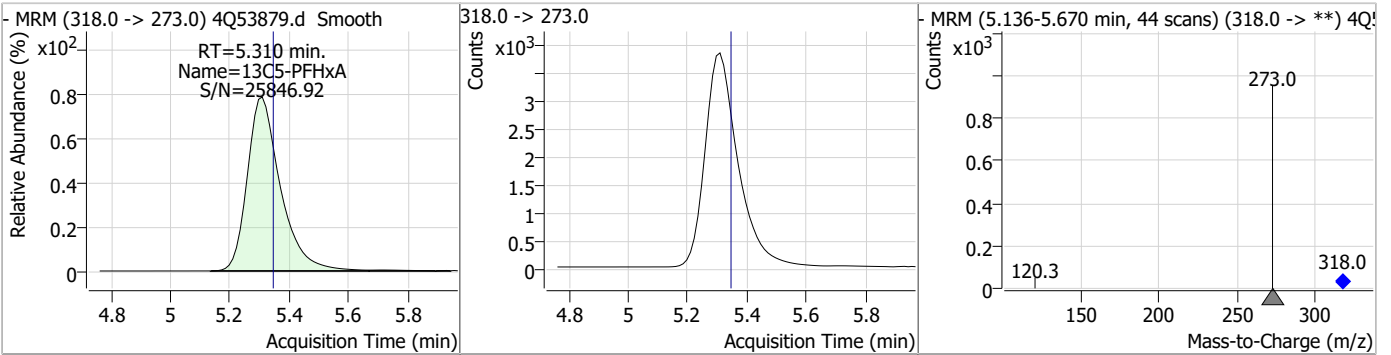
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Perfluorinated Compounds by LC/MS/MS

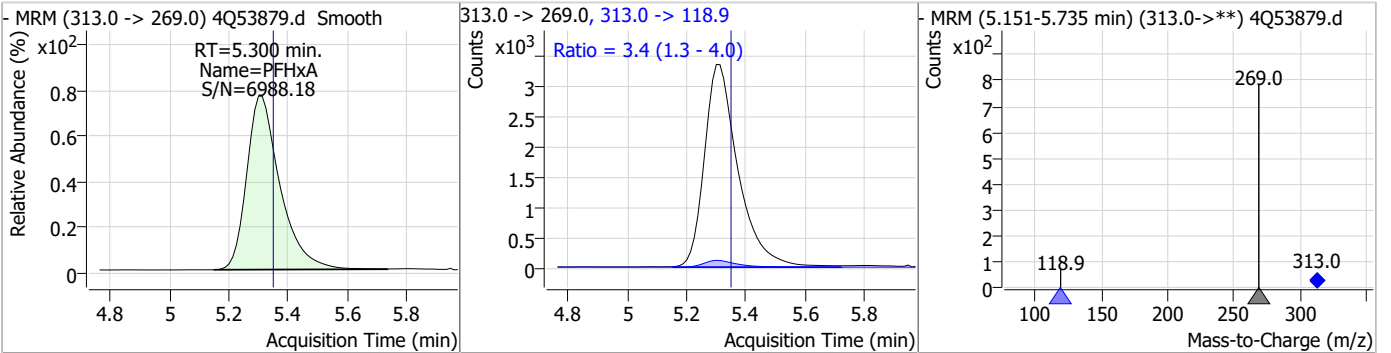
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	5.10	5.19	-0.04	3490	295.0 -> 84.9	28.8	11.9	35.7



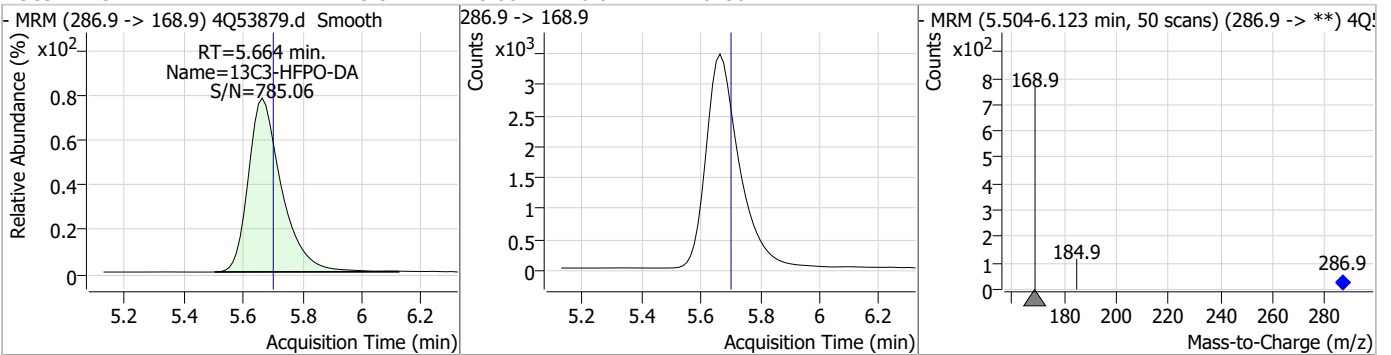
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.36	5.31	-0.04	29697				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.50	5.30	-0.05	25986	313.0 -> 118.9	3.4	1.3	4.0

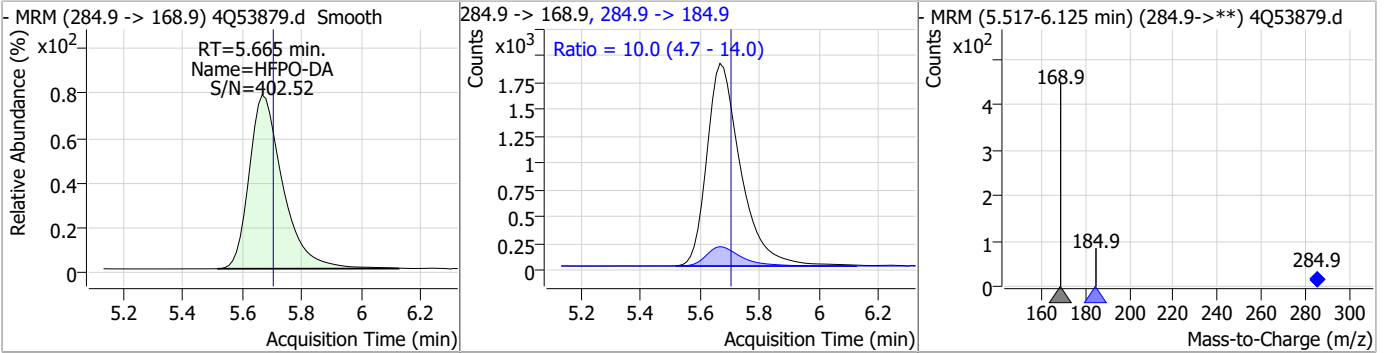


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.32	5.66	-0.04	26750				

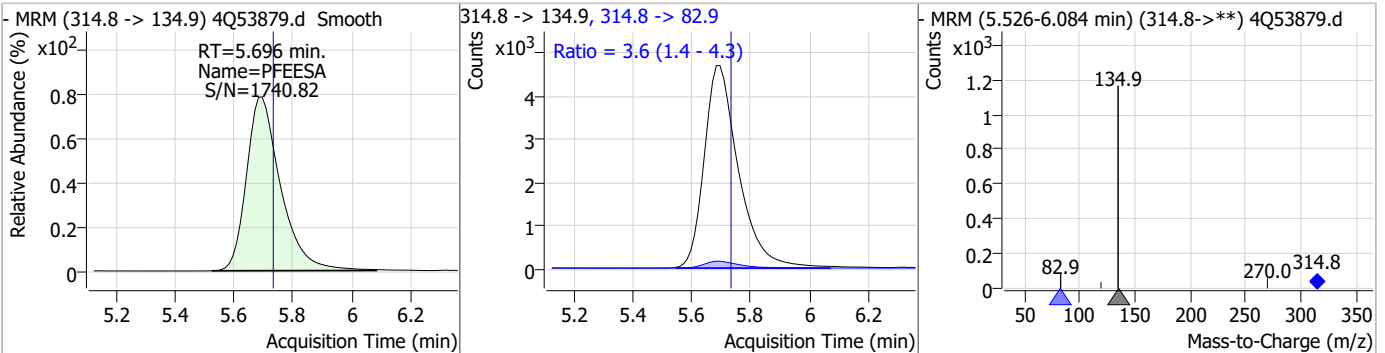


Perfluorinated Compounds by LC/MS/MS

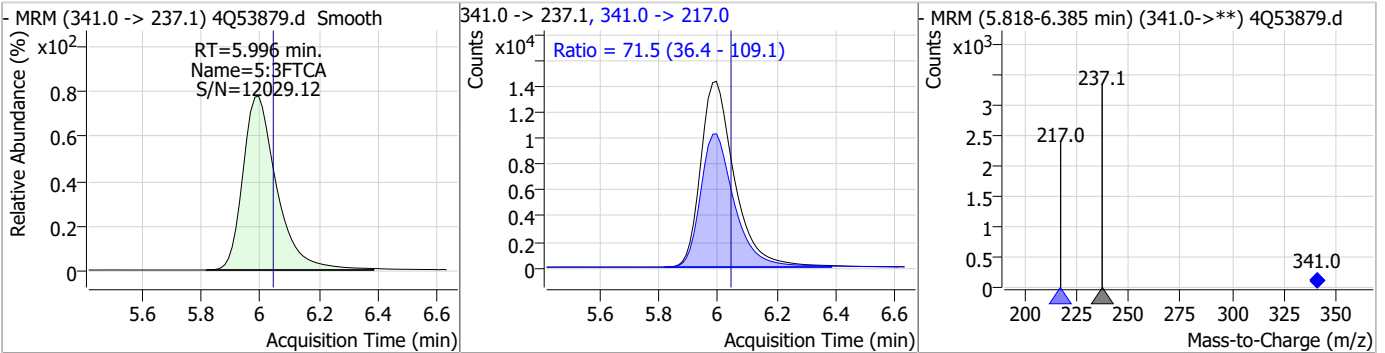
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	5.25	5.67	-0.04	14878	284.9 -> 184.9	10.0	4.7	14.0



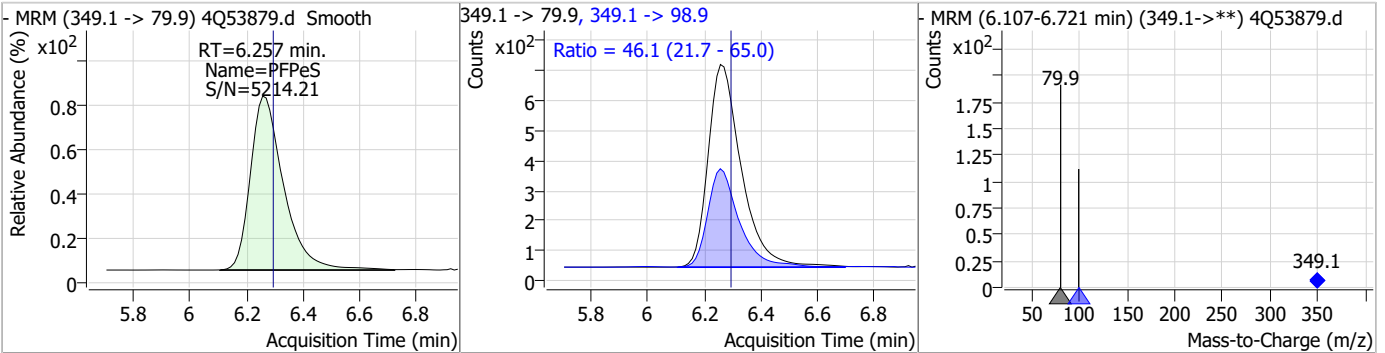
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.55	5.70	-0.04	37350	314.8 -> 82.9	3.6	1.4	4.3



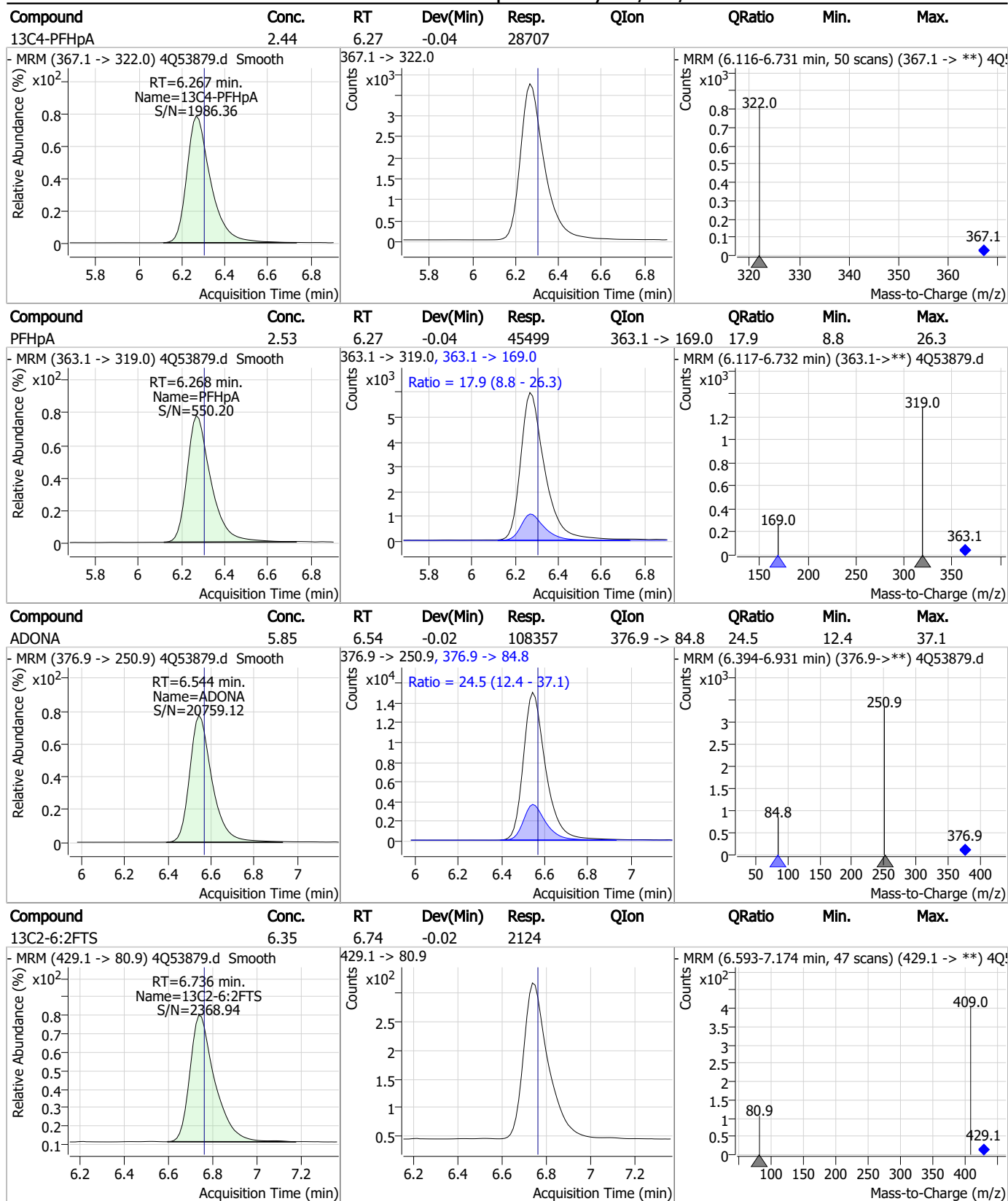
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	62.94	6.00	-0.05	114906	341.0 -> 217.0	71.5	36.4	109.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.28	6.26	-0.04	5502	349.1 -> 98.9	46.1	21.7	65.0

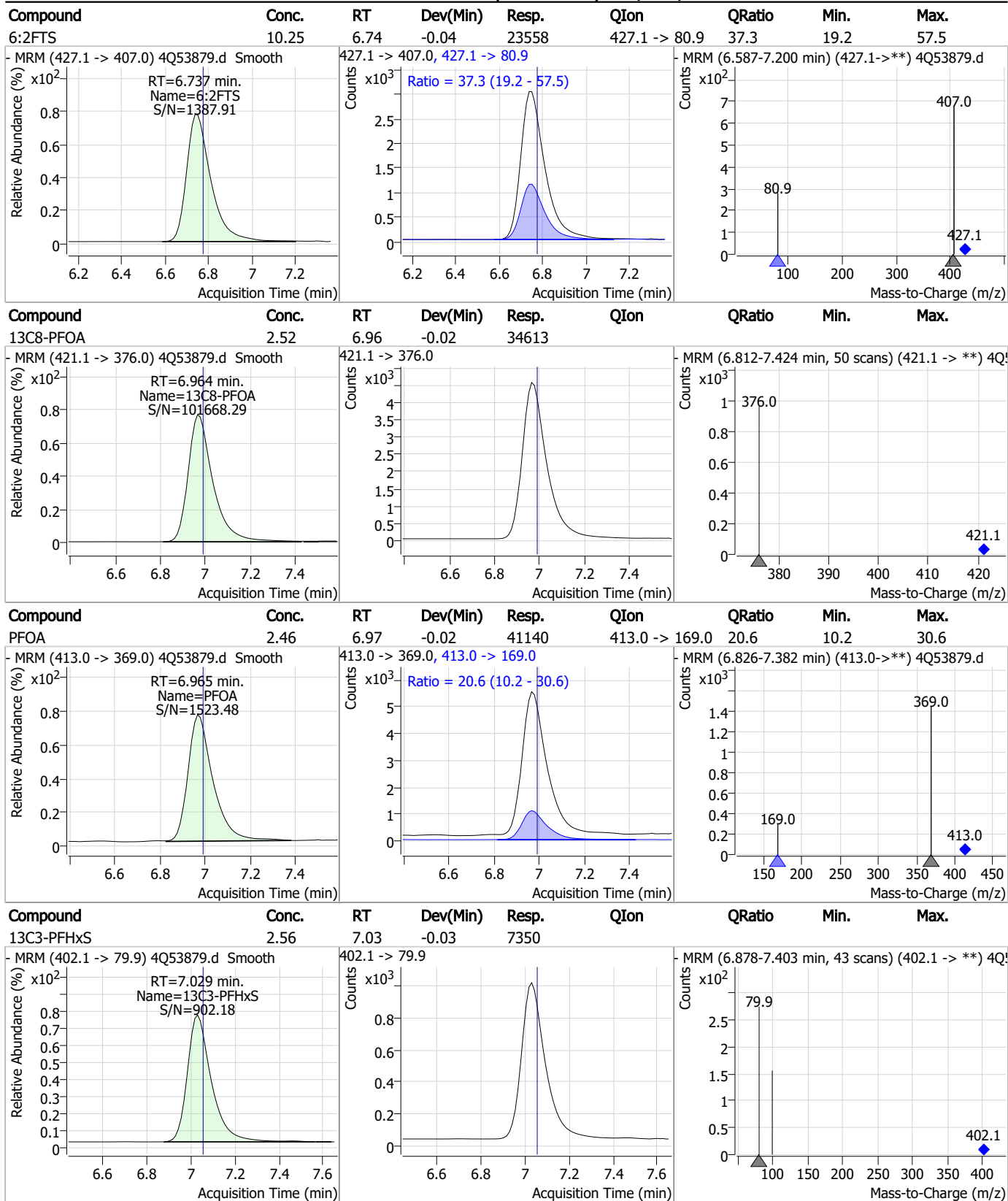


Perfluorinated Compounds by LC/MS/MS



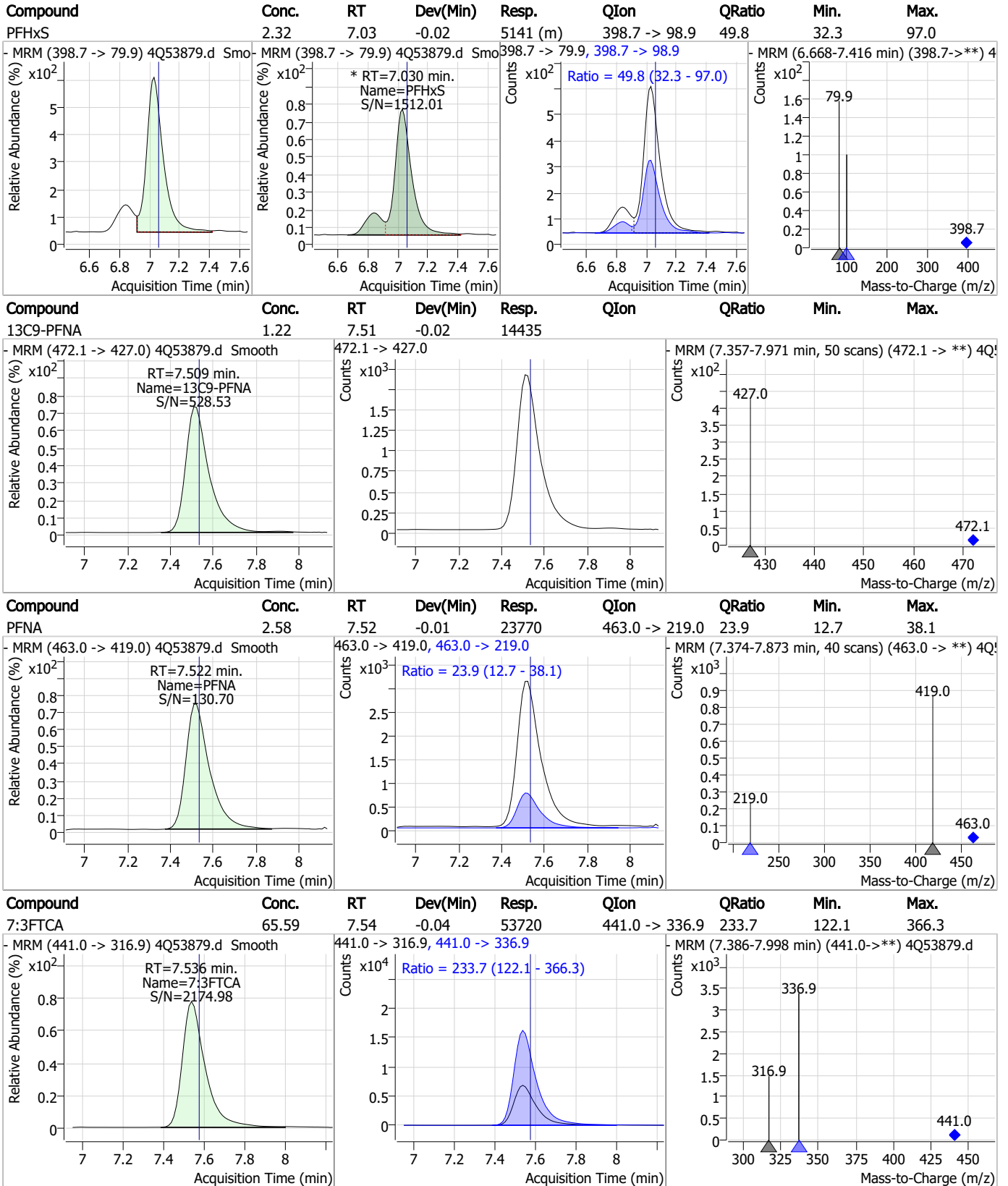
7.7.14
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Perfluorinated Compounds by LC/MS/MS



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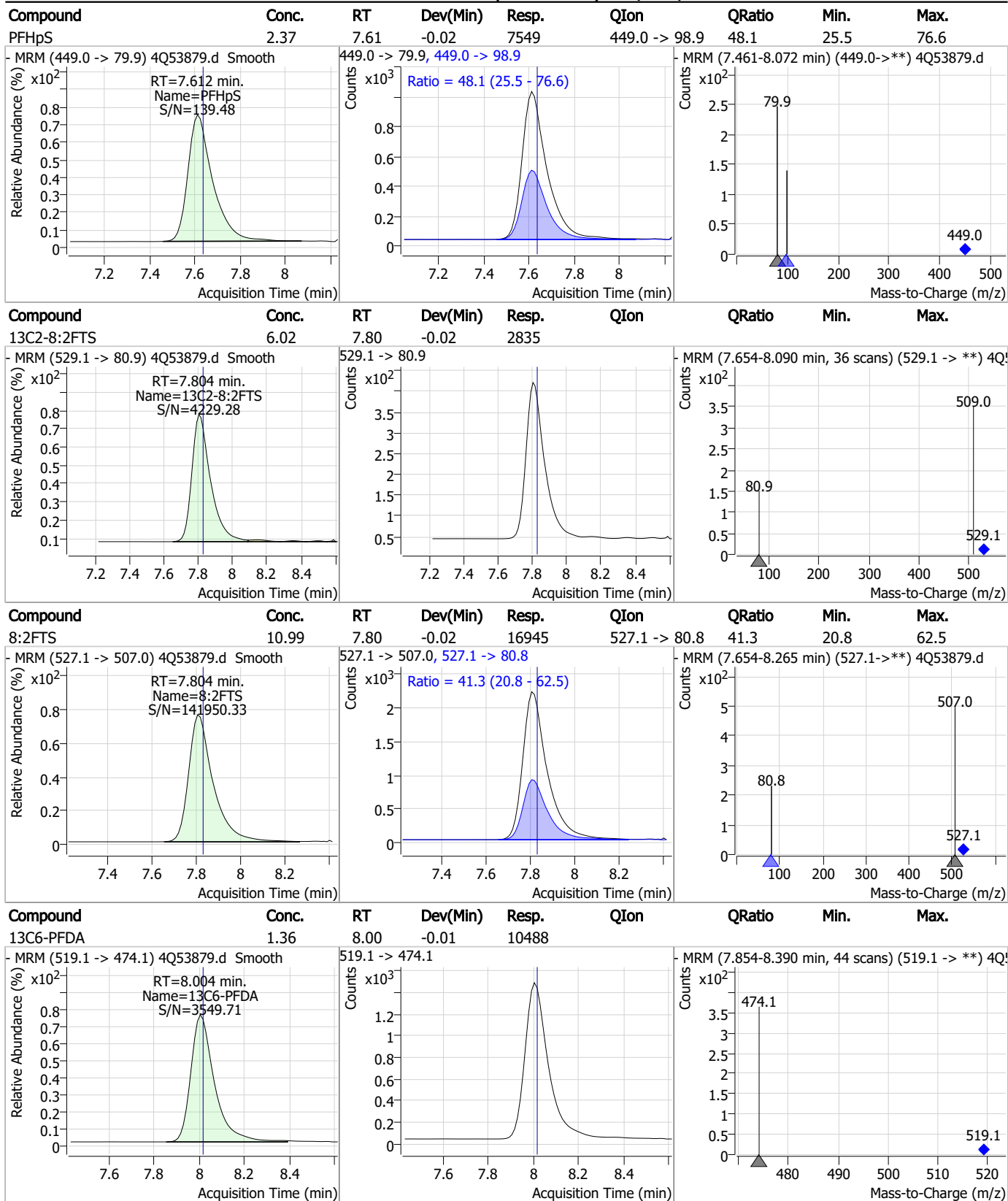
Perfluorinated Compounds by LC/MS/MS



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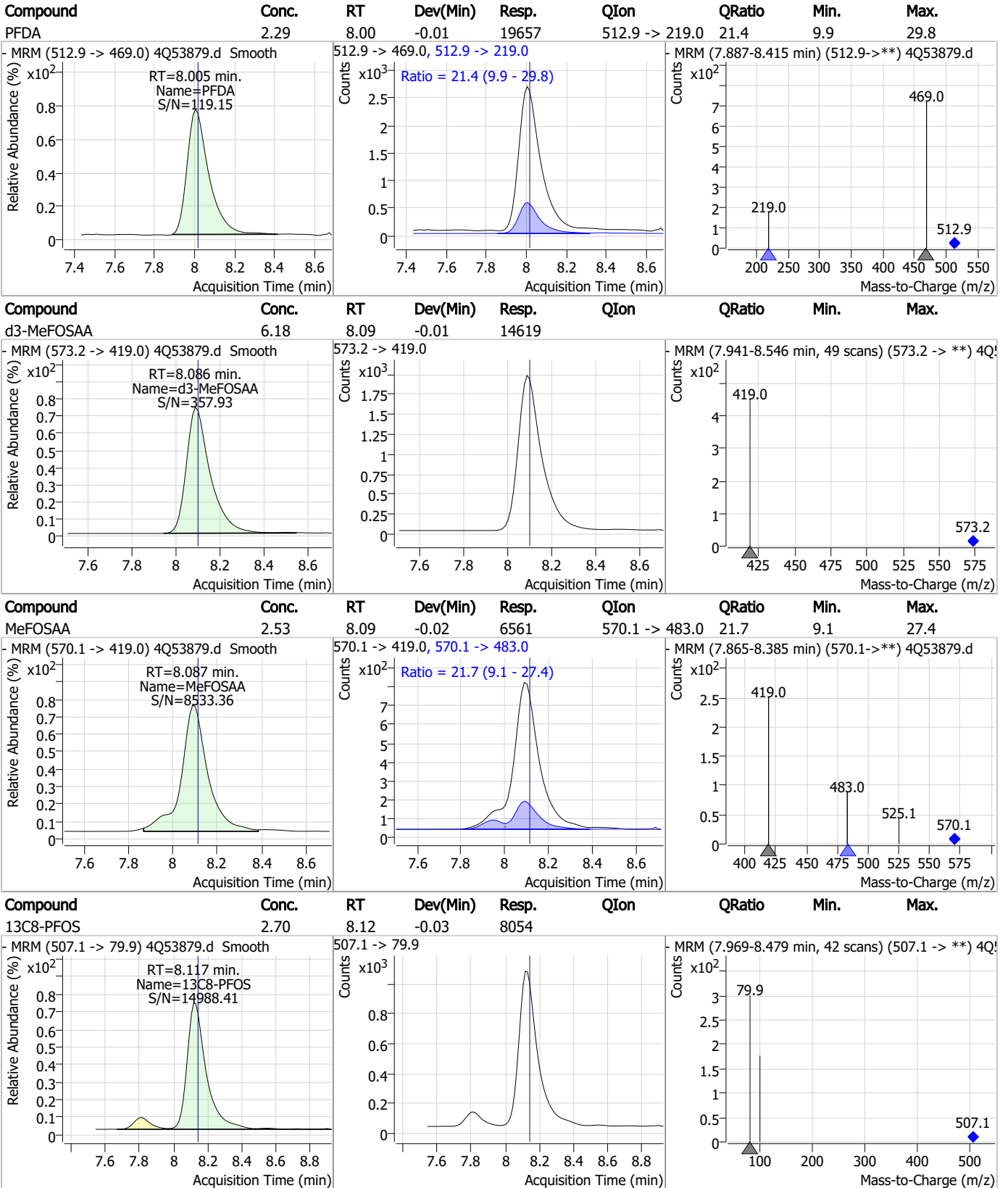


Perfluorinated Compounds by LC/MS/MS



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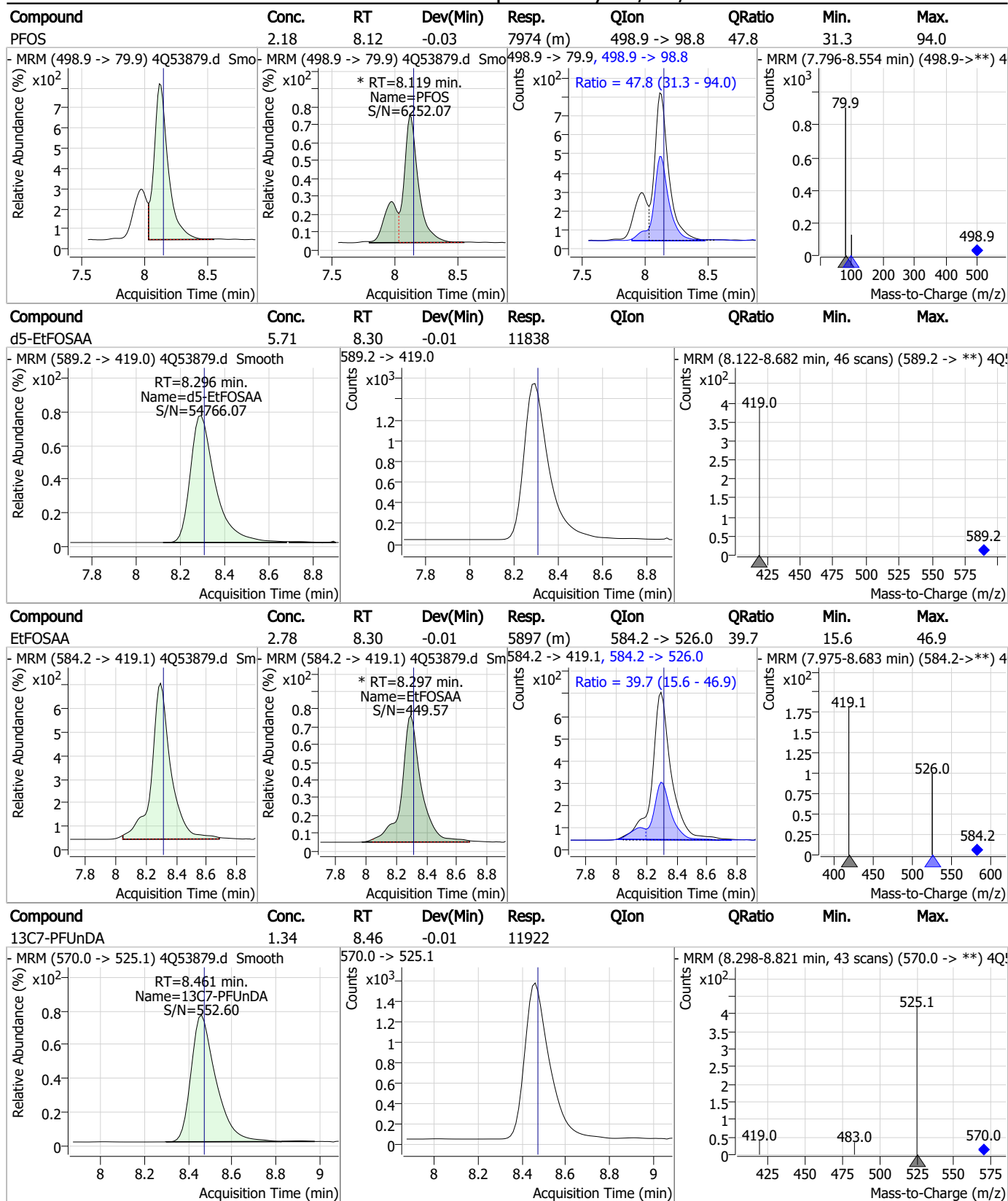
Perfluorinated Compounds by LC/MS/MS



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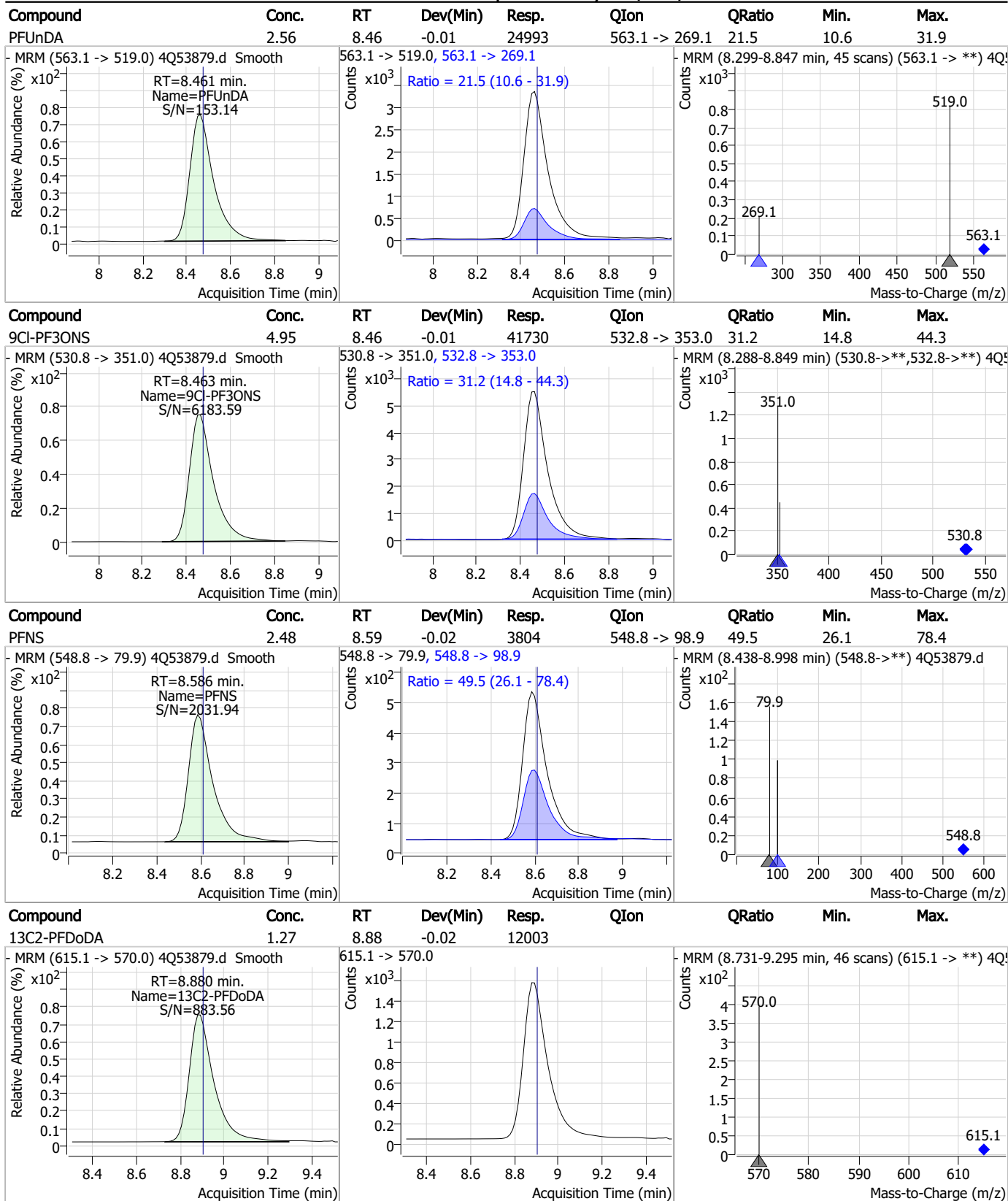


Perfluorinated Compounds by LC/MS/MS



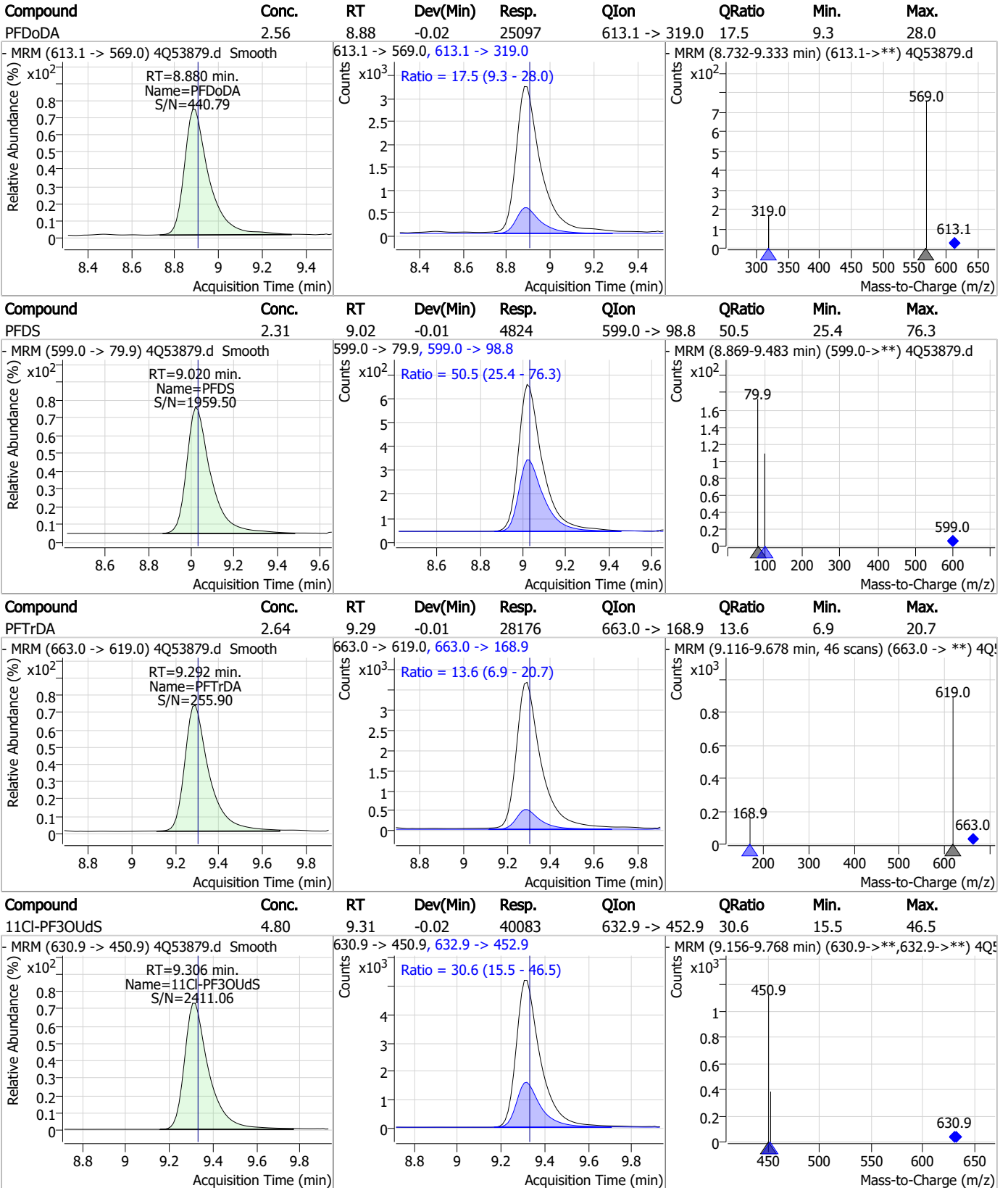
7.7.14
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Perfluorinated Compounds by LC/MS/MS



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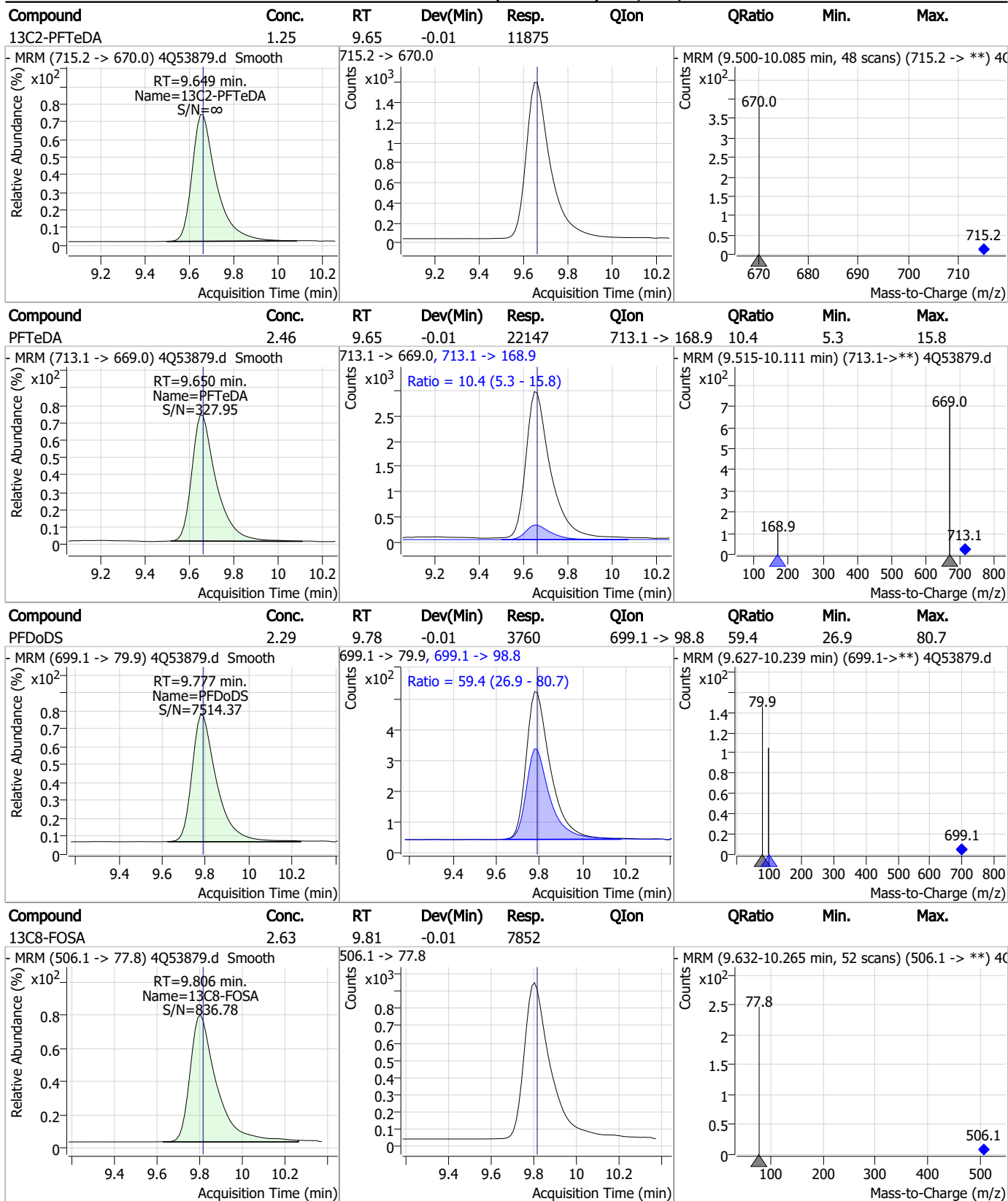
Perfluorinated Compounds by LC/MS/MS



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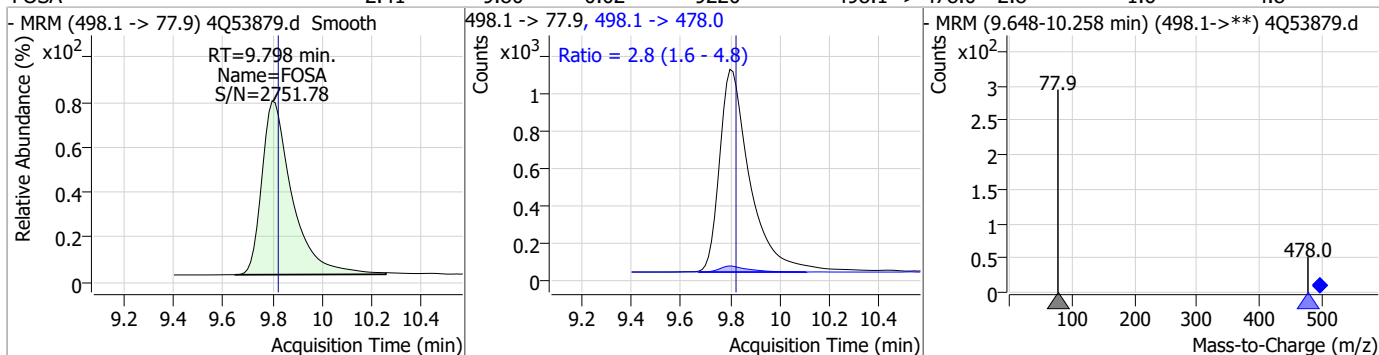
Perfluorinated Compounds by LC/MS/MS



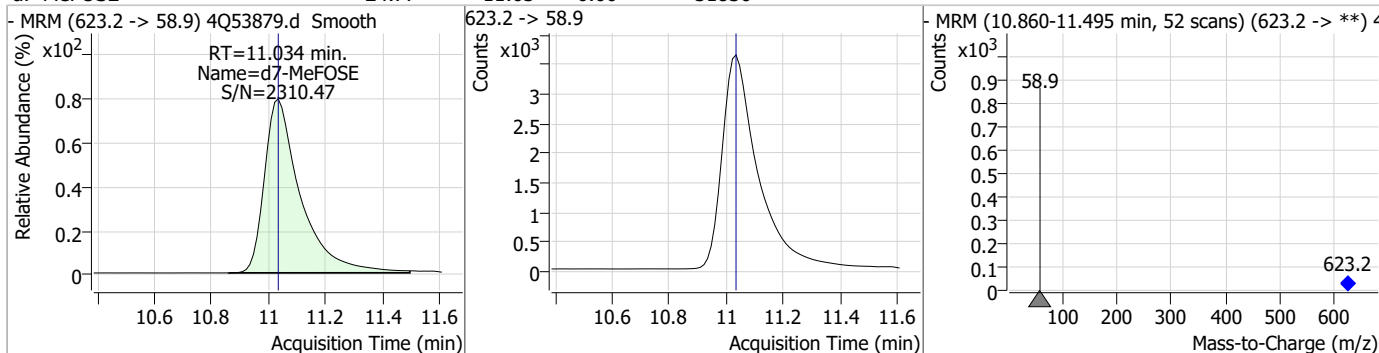
7.7.14
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Perfluorinated Compounds by LC/MS/MS

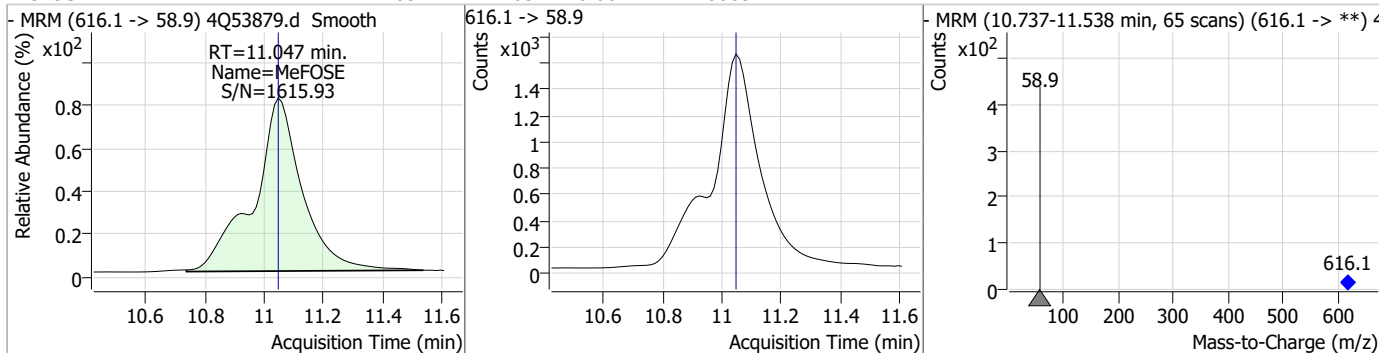
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.41	9.80	-0.02	9220	498.1 -> 478.0	2.8	1.6	4.8



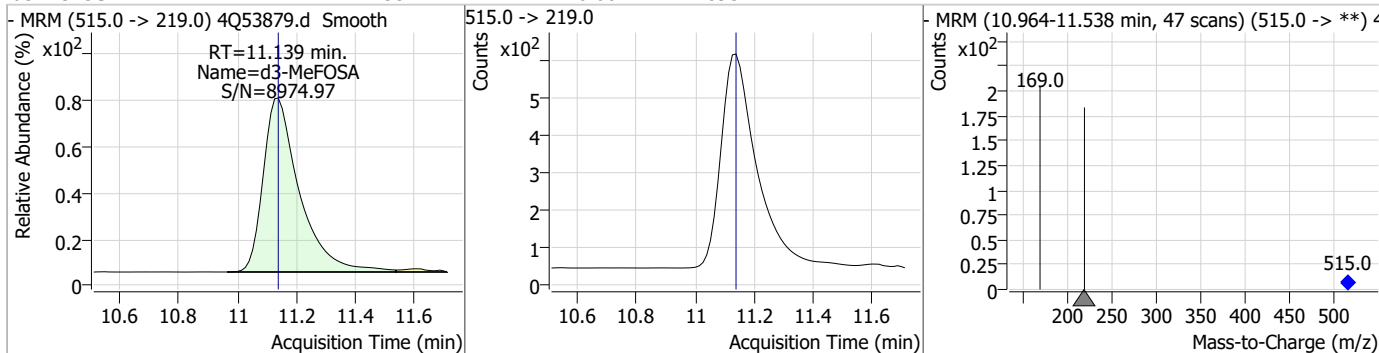
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.77	11.03	0.00	31830				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.83	11.05	0.00	18603				

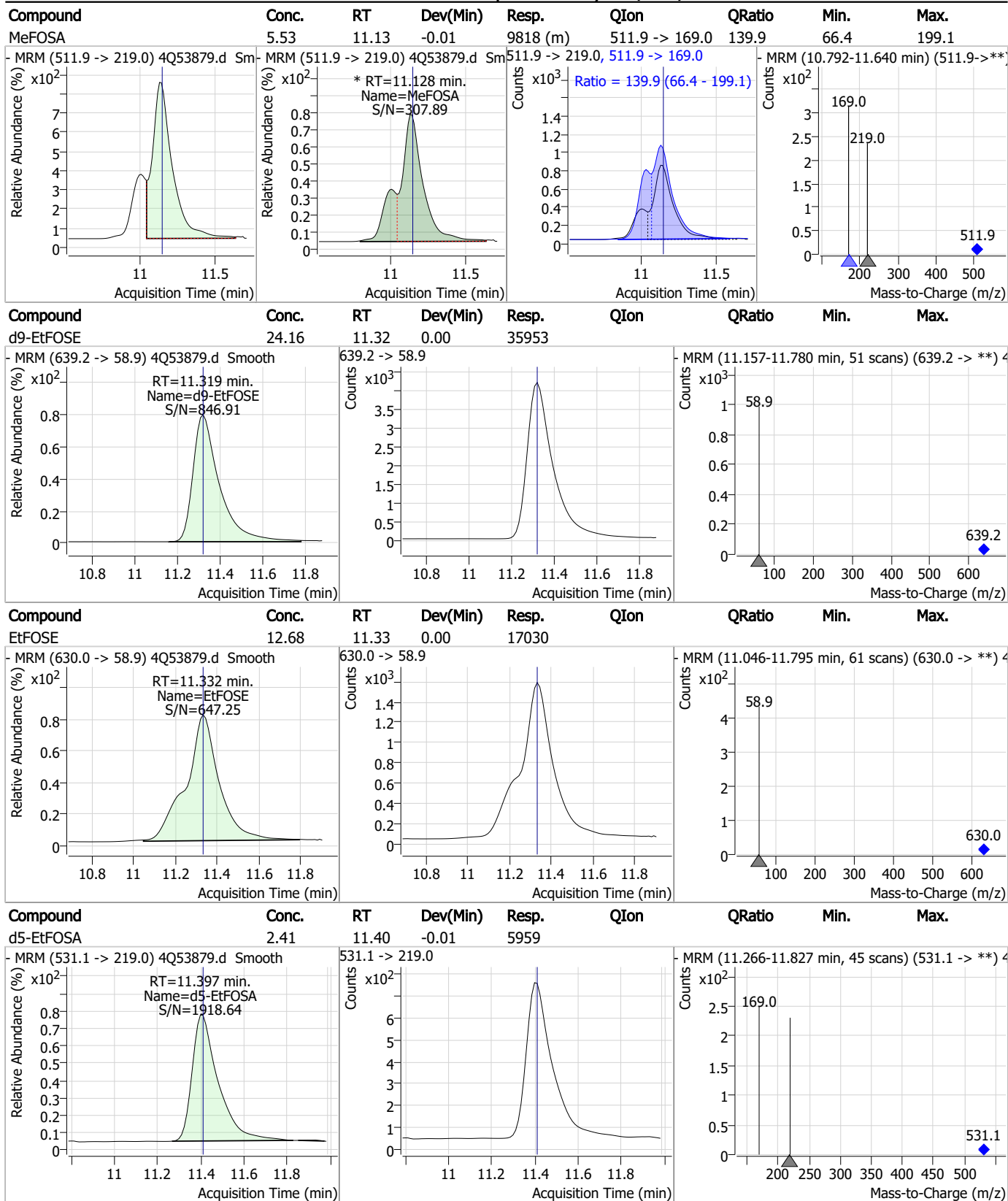


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.35	11.14	0.00	4895				



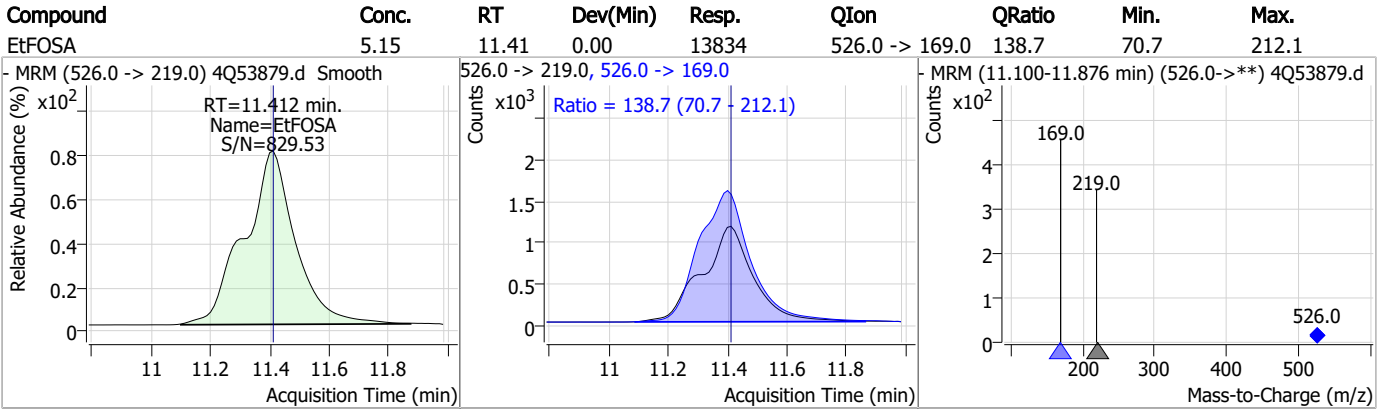
7.7.14
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Perfluorinated Compounds by LC/MS/MS



7.7.14
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Perfluorinated Compounds by LC/MS/MS



7.7.14

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Manual Integration Approval Summary

Sample Number: S4Q786-CC785 Method: EPA DRAFT 1633
Lab FileID: 4Q53879.D Analyst approved: 11/16/23 13:59 Anna Ludwig
Injection Time: 11/15/23 13:53 Supervisor approved: 11/16/23 15:17 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.03	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.14.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53890.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/15/2023 4:36:11 PM
 Sample Name : cc785-4
 Vial : P1-A5
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q786.batch.bin
 Sample Information : OP98180,S4Q786,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	94542	10.00 µg/L	-0.075
M5-PFPeA	4.125	268.3 -> 223.0	40212	5.00 µg/L	-0.050
M5-PFHxA	5.310	318.0 -> 273.0	31027	2.50 µg/L	-0.037
M4-PFHpA	6.280	367.1 -> 322.0	29572	2.50 µg/L	-0.025
M8-PFOA	6.976	421.1 -> 376.0	35670	2.50 µg/L	-0.012
M9-PFNA	7.521	472.1 -> 427.0	14645	1.25 µg/L	-0.012
M6-PFDA	8.017	519.1 -> 474.1	9871	1.25 µg/L	0.000
M7-PFUnDA	8.461	570.0 -> 525.1	12014	1.25 µg/L	-0.012
M2-PFDoDA	8.892	615.1 -> 570.0	11537	1.25 µg/L	-0.012
M2-PFTeDA	9.662	715.2 -> 670.0	11962	1.25 µg/L	0.000
M8-FOSA	9.806	506.1 -> 77.8	7962	2.50 µg/L	-0.012
M3-PFBS	5.165	302.1 -> 79.9	8501	2.50 µg/L	-0.038
M3-PFHxS	7.029	402.1 -> 79.9	7047	2.50 µg/L	-0.025
M8-PFOS	8.130	507.1 -> 79.9	7903	2.50 µg/L	-0.013
M2-4:2FTS	5.021	329.1 -> 80.9	1014	5.00 µg/L	-0.025
M2-6:2FTS	6.748	429.1 -> 80.9	1937	5.00 µg/L	-0.012
M2-8:2FTS	7.816	529.1 -> 80.9	2762	5.00 µg/L	-0.012
M3-MeFOSAA	8.086	573.2 -> 419.0	13648	5.00 µg/L	-0.012
M3-HFPO-DA	5.677	286.9 -> 168.9	27455	10.00 µg/L	-0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	11473	5.00 µg/L	-0.014
M7-MeFOSE	11.034	623.2 -> 58.9	32187	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	36270	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	6325	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	4582	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	6277	2.50 µg/L	-0.013
13C3-PFBA	2.628	216.0 -> 172.0	45392	5.00 µg/L	-0.075
18O2-PFHxS	7.028	403.0 -> 83.9	4662	2.50 µg/L	-0.025
13C4-PFOA	6.977	417.1 -> 372.0	39607	2.50 µg/L	-0.012
13C2-PFDA	8.017	515.1 -> 470.1	10798	1.25 µg/L	-0.012
13C5-PFNA	7.522	468.0 -> 423.0	14043	1.25 µg/L	-0.012
13C2-PFHxA	5.311	315.1 -> 270.0	32664	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.021	329.1 -> 80.9	1014	6.36 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 127.1%		
13C2-6:2FTS	6.748	429.1 -> 80.9	1937	5.76 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.2%		
13C2-8:2FTS	7.816	529.1 -> 80.9	2762	5.83 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.6%		
13C2-PFDoDA	8.892	615.1 -> 570.0	11537	1.18 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.7%		
13C2-PFTeDA	9.662	715.2 -> 670.0	11962	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C3-PFBS	5.165	302.1 -> 79.9	8501	2.43 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C3-PFHxS	7.029	402.1 -> 79.9	7047	2.44 µg/L	-0.025

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C4-PFBA	2.624	216.8 -> 171.9	94542	10.00 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C4-PFHpA	6.280	367.1 -> 322.0	29572	2.60 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C5-PFHxA	5.310	318.0 -> 273.0	31027	2.55 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C5-PFPeA	4.125	268.3 -> 223.0	40212	5.05 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C6-PFDA	8.017	519.1 -> 474.1	9871	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C7-PFUnDA	8.461	570.0 -> 525.1	12014	1.31 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.7%	
13C8-FOSA	9.806	506.1 -> 77.8	7962	2.65 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.1%	
13C8-PFOA	6.976	421.1 -> 376.0	35670	2.52 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C8-PFOS	8.130	507.1 -> 79.9	7903	2.64 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.5%	
13C9-PFNA	7.521	472.1 -> 427.0	14645	1.32 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.8%	
d3-MeFOSAA	8.086	573.2 -> 419.0	13648	5.73 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.7%	
13C3-HFPO-DA	5.677	286.9 -> 168.9	27455	9.88 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.8%	
d3-MeFOSA	11.139	515.0 -> 219.0	4582	2.19 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 87.5%	
d5-EtFOSAA	8.296	589.2 -> 419.0	11473	5.50 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 110.1%	
d7-MeFOSE	11.034	623.2 -> 58.9	32187	24.89 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.6%	
d9-EtFOSE	11.319	639.2 -> 58.9	36270	24.22 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.9%	
d5-EtFOSA	11.410	531.1 -> 219.0	6325	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
Target Compounds					QValue
4:2FTS	5.022	327.1 -> 307.0	18048	9.00 µg/L	99
		327.1 -> 80.9	7506		
6:2FTS	6.749	427.1 -> 407.0	20997	10.02 µg/L	97
		427.1 -> 80.9	7732		
8:2FTS	7.816	527.1 -> 507.0	15400	10.25 µg/L	98
		527.1 -> 80.8	6649		
EtFOSAA	8.297	584.2 -> 419.1	5731	2.79 µg/L	m 77
		584.2 -> 526.0	2512		
FOSA	9.810	498.1 -> 77.9	9603	2.47 µg/L	98
		498.1 -> 478.0	257		
MeFOSAA	8.099	570.1 -> 419.0	6099	2.51 µg/L	90
		570.1 -> 483.0	1378		
PFBA	2.632	212.8 -> 168.9	34747	10.11 µg/L	100
PFBS	5.166	298.7 -> 79.9	6586	2.18 µg/L	98
		298.7 -> 98.8	2610		
PFDA	8.017	512.9 -> 469.0	20336	2.52 µg/L	98
		512.9 -> 219.0	3850		
PFDoDA	8.893	613.1 -> 569.0	24462	2.60 µg/L	99
		613.1 -> 319.0	4418		
PFDS	9.032	599.0 -> 79.9	5004	2.45 µg/L	99

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.280	599.0 -> 98.8	2573	2.48	µg/L	98
		363.1 -> 319.0	46047			
PFHpS	7.612	363.1 -> 169.0	8453	2.45	µg/L	97
		449.0 -> 79.9	7668			
PFHxA	5.313	449.0 -> 98.9	3770	2.40	µg/L	99
		313.0 -> 269.0	26050			
PFHxS	7.030	313.0 -> 118.9	806	2.35	µg/L	90
		398.7 -> 79.9	5001			
PFNA	7.522	398.7 -> 98.9	2860	2.43	µg/L	98
		463.0 -> 419.0	22678			
PFNS	8.598	463.0 -> 219.0	5584	2.61	µg/L	90
		548.8 -> 79.9	3941			
PFOA	6.978	548.8 -> 98.9	1797	2.31	µg/L	100
		413.0 -> 369.0	39863			
PFOS	8.131	413.0 -> 169.0	8182	2.35	µg/L	81
		498.9 -> 79.9	8418			
PFPeA	4.127	498.9 -> 98.8	4056	4.93	µg/L	100
		263.0 -> 219.0	43127			
PFPeS	6.269	349.1 -> 79.9	5383	2.32	µg/L	93
		349.1 -> 98.9	2570			
PFTeDA	9.662	713.1 -> 669.0	22563	2.48	µg/L	100
		713.1 -> 168.9	2407			
PFTrDA	9.292	663.0 -> 619.0	27953	2.73	µg/L	99
		663.0 -> 168.9	4025			
PFUnDA	8.461	563.1 -> 519.0	24718	2.52	µg/L	98
		563.1 -> 269.1	5522			
11Cl-PF3OUdS	9.319	630.9 -> 450.9	40850	4.77	µg/L	98
		632.9 -> 452.9	13114			
9Cl-PF3ONS	8.463	530.8 -> 351.0	42861	4.95	µg/L	100
		532.8 -> 353.0	12595			
ADONA	6.556	376.9 -> 250.9	108091	5.69	µg/L	99
		376.9 -> 84.8	26047			
HFPO-DA	5.678	284.9 -> 168.9	14452	4.97	µg/L	97
		284.9 -> 184.9	1514			
3:3FTCA	3.573	241.0 -> 177.0	6375	11.90	µg/L	98
		241.0 -> 117.0	539			
5:3FTCA	5.996	341.0 -> 237.1	116727	61.19	µg/L	97
		341.0 -> 217.0	82127			
7:3FTCA	7.536	441.0 -> 316.9	53322	62.31	µg/L	96
		441.0 -> 336.9	126943			
EtFOSA	11.412	526.0 -> 219.0	14527	5.09	µg/L	96
		526.0 -> 169.0	19747			
EtFOSE	11.332	630.0 -> 58.9	17944	13.24	µg/L	100
		511.9 -> 219.0	9496			
MeFOSA	11.140	511.9 -> 169.0	14708	5.71	µg/L	81
		616.1 -> 58.9	19355			
MeFOSE	11.060	699.1 -> 79.9	3699	13.20	µg/L	100
		699.1 -> 98.8	2098			
PFDoDS	9.789	295.0 -> 201.0	3595	2.29	µg/L	96
		295.0 -> 84.9	1005			
NFDHA	5.191	279.0 -> 85.1	24655	5.02	µg/L	92
		229.0 -> 84.9	28309			
PFMBA	4.541	314.8 -> 134.9	38563	4.89	µg/L	100
		314.8 -> 82.9	1318			
PFMPA	3.265			5.05	µg/L	100
PFEESA	5.696			4.50	µg/L	98

= Qualifier out of range, m = manually integrated, + = Area summed

7.7.15
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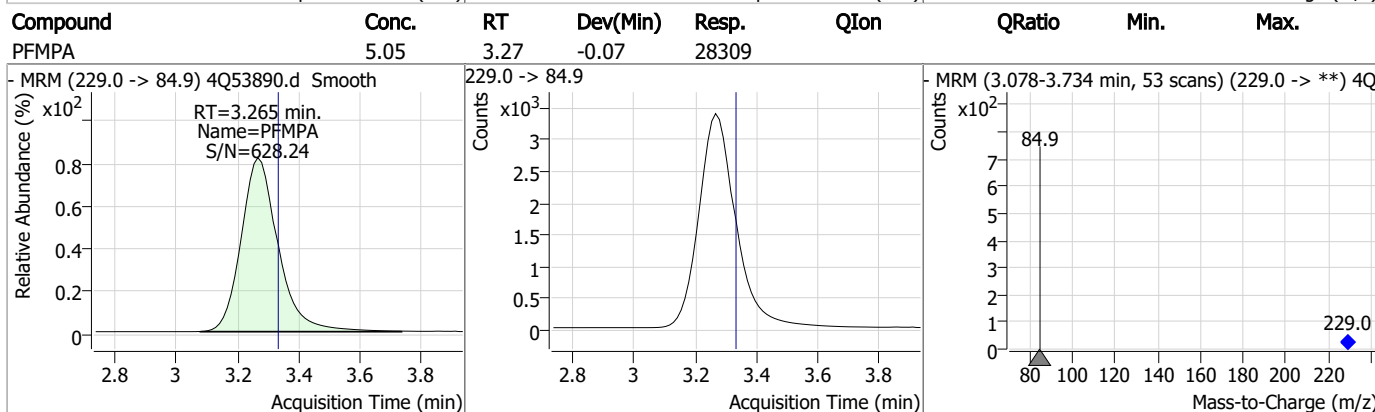
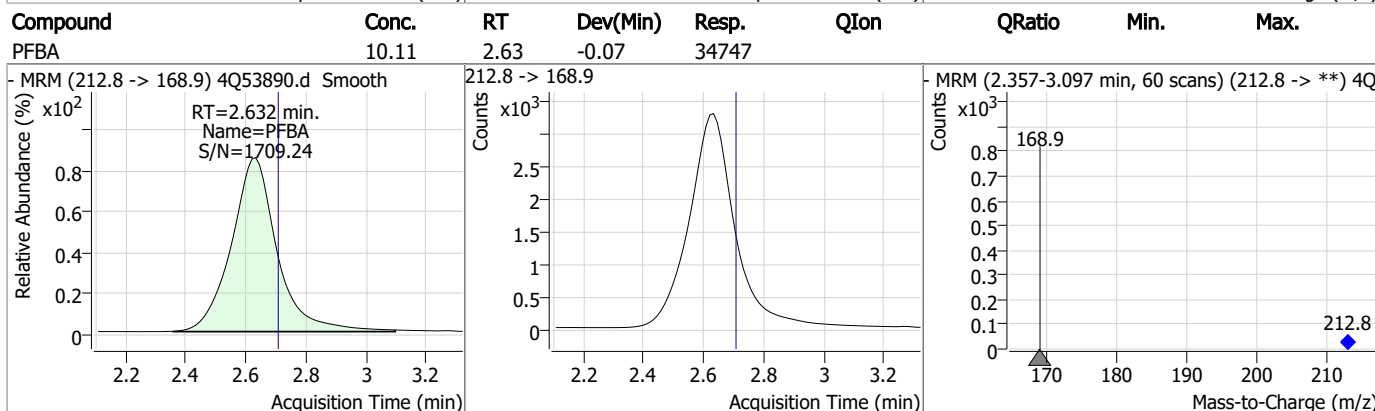
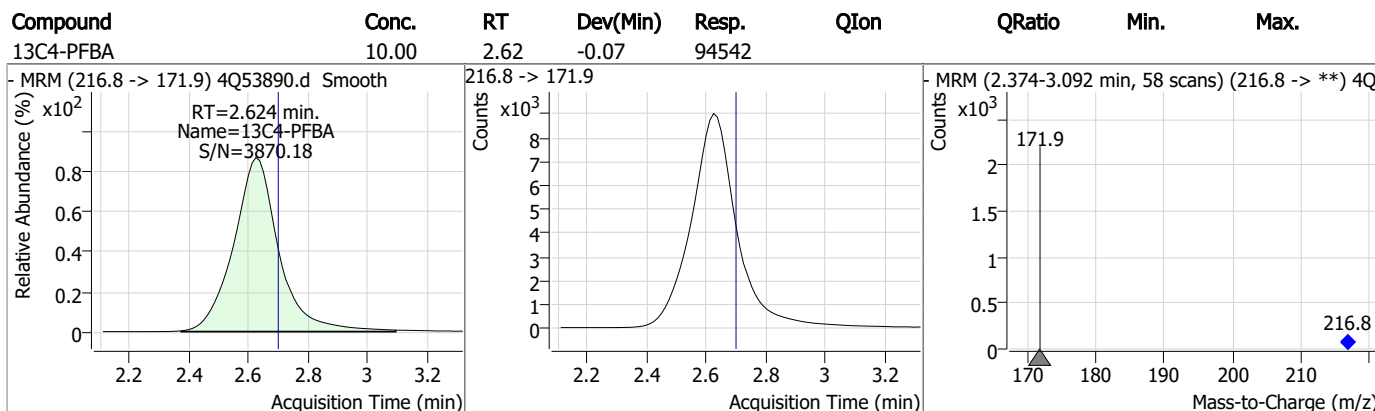
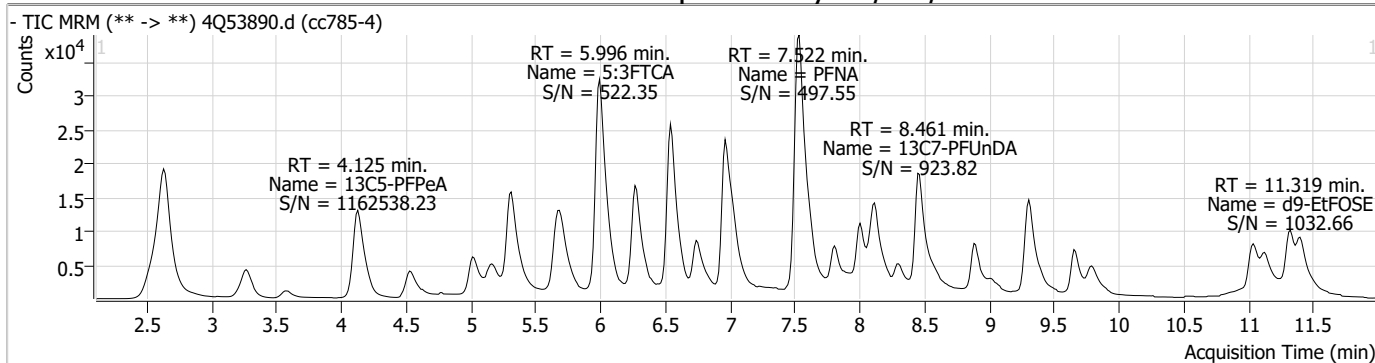
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.15

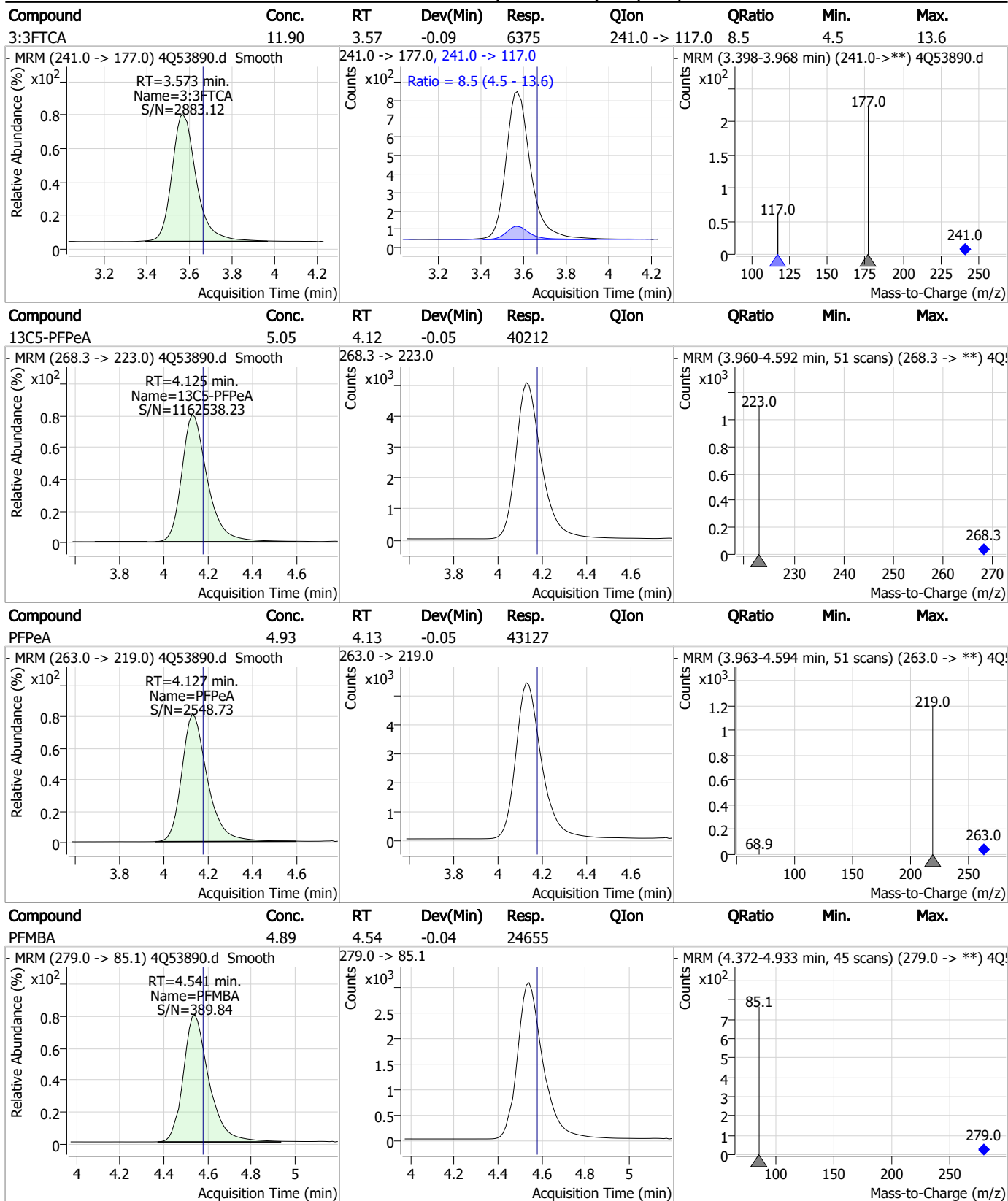
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Perfluorinated Compounds by LC/MS/MS



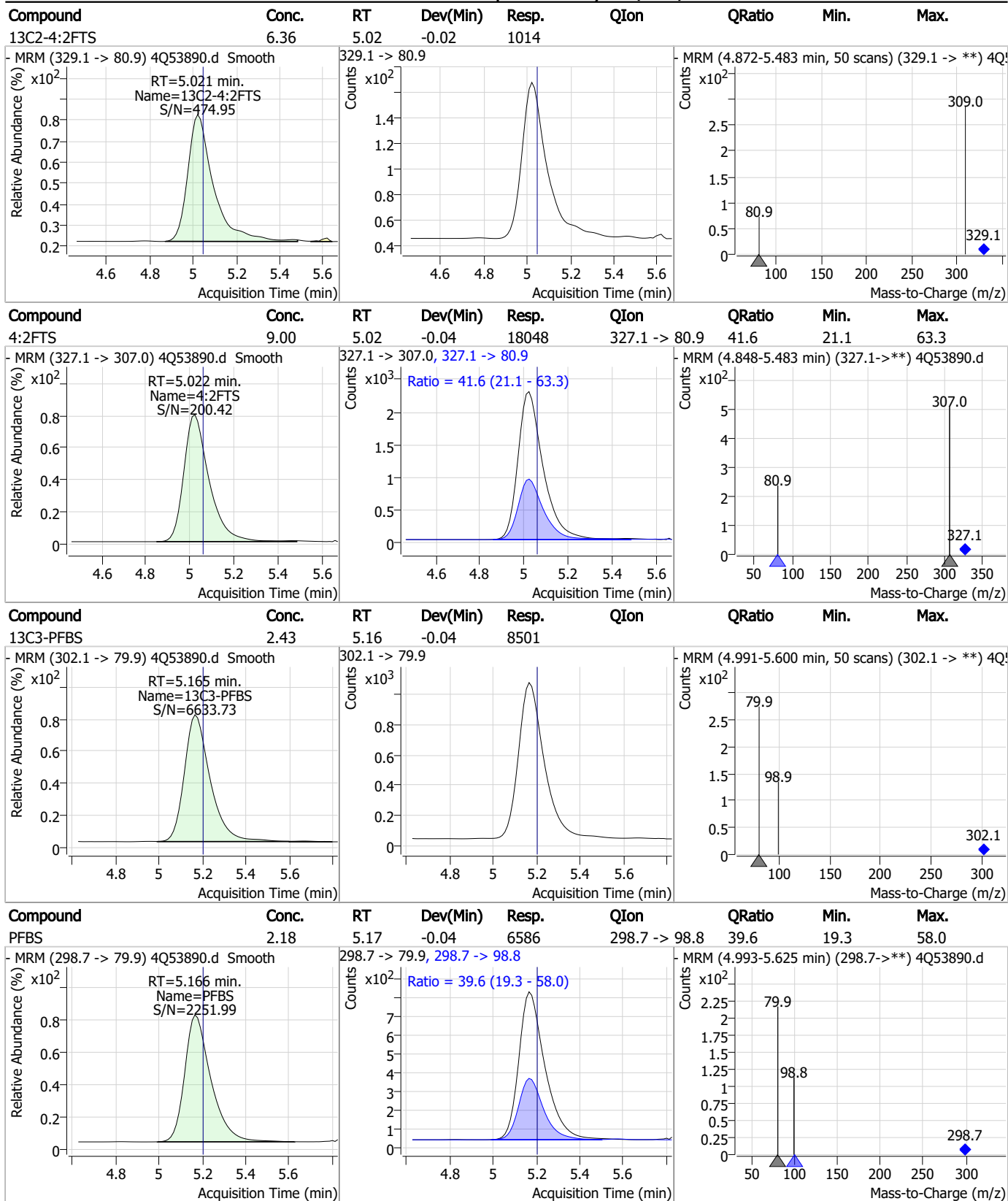
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Perfluorinated Compounds by LC/MS/MS



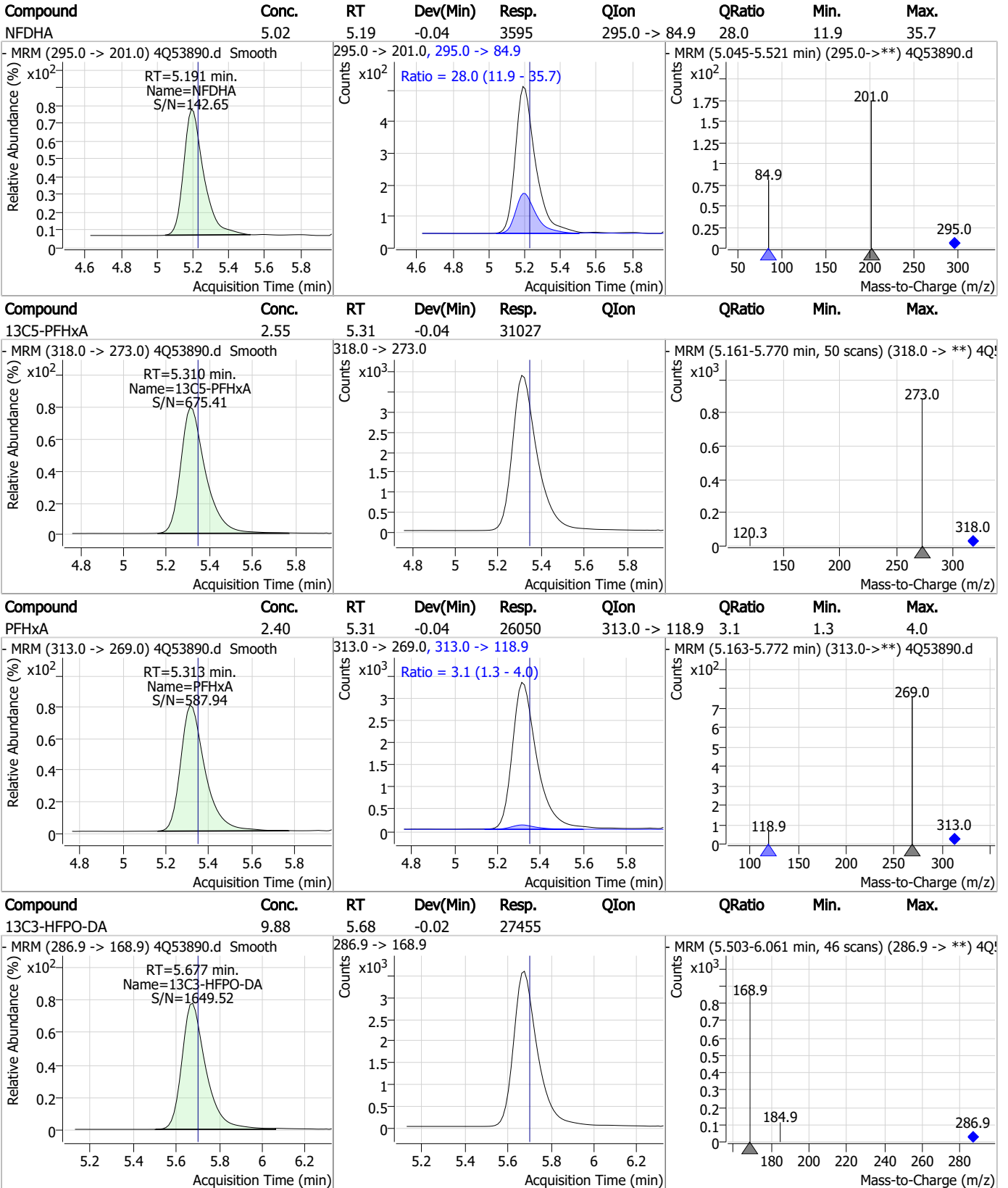
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Perfluorinated Compounds by LC/MS/MS



7.7.15
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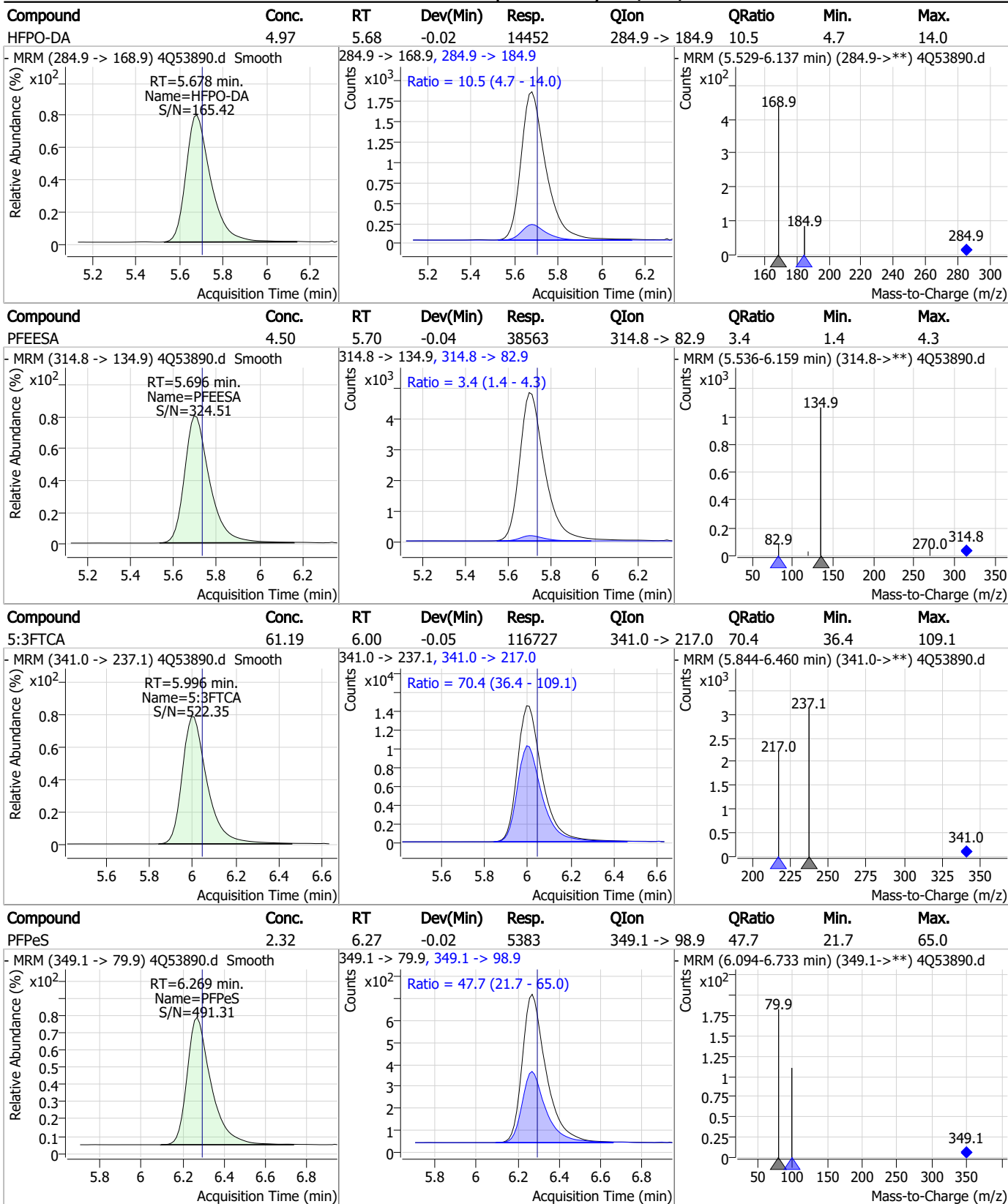
Perfluorinated Compounds by LC/MS/MS



7.7.15
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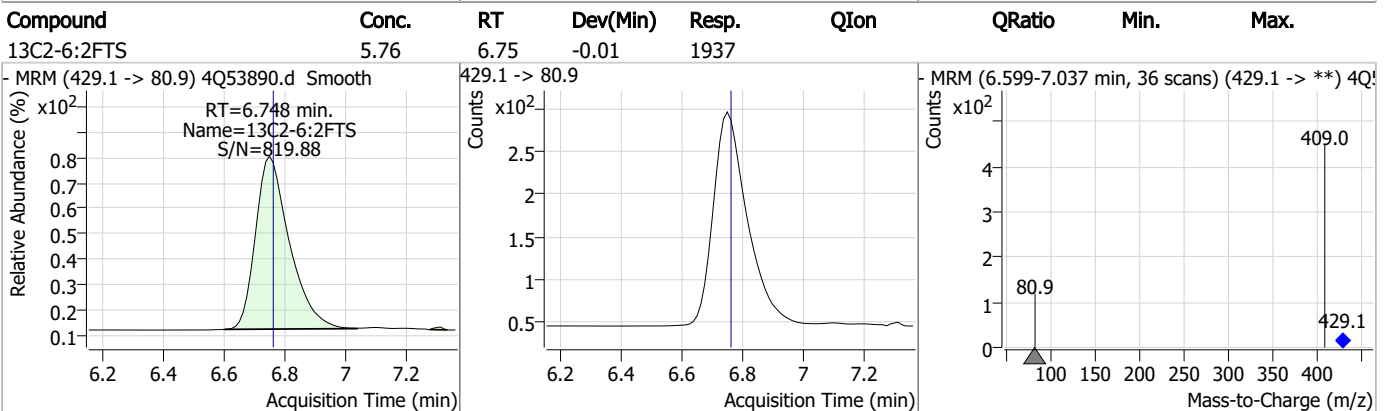
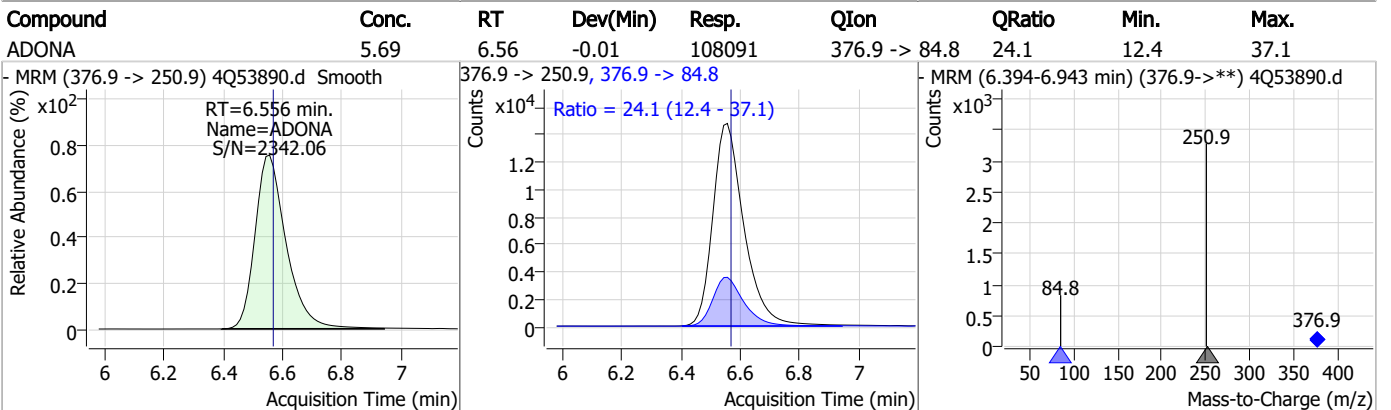
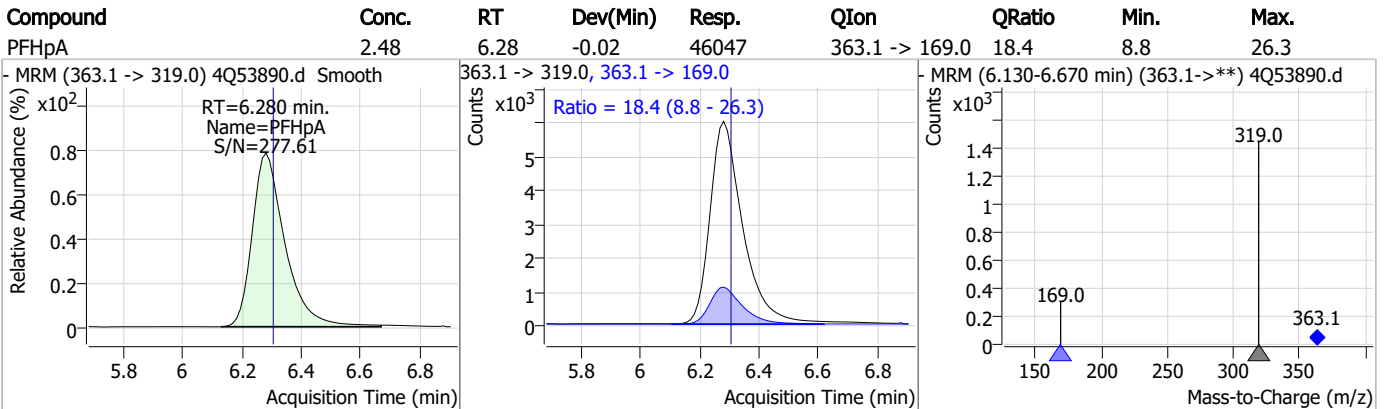
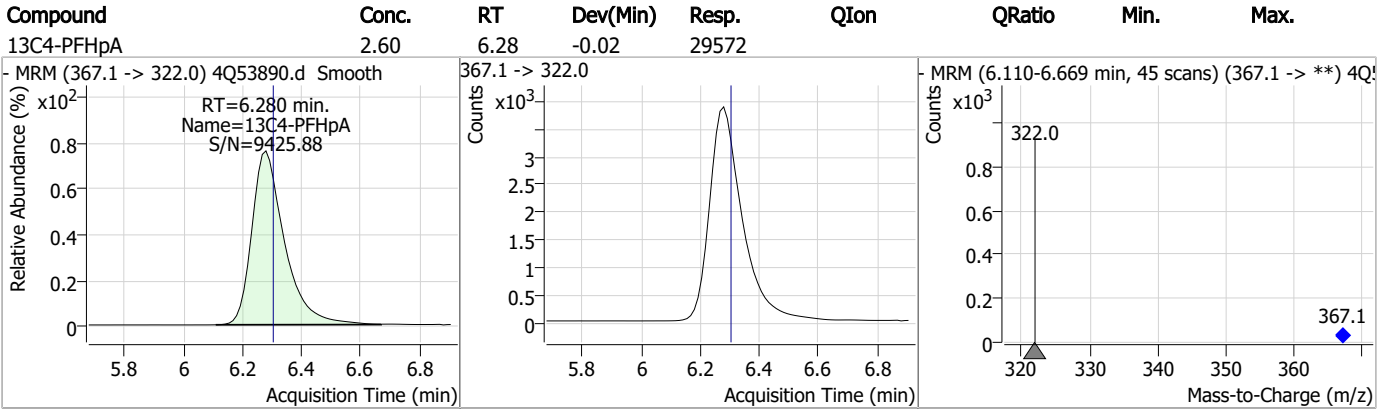


Perfluorinated Compounds by LC/MS/MS



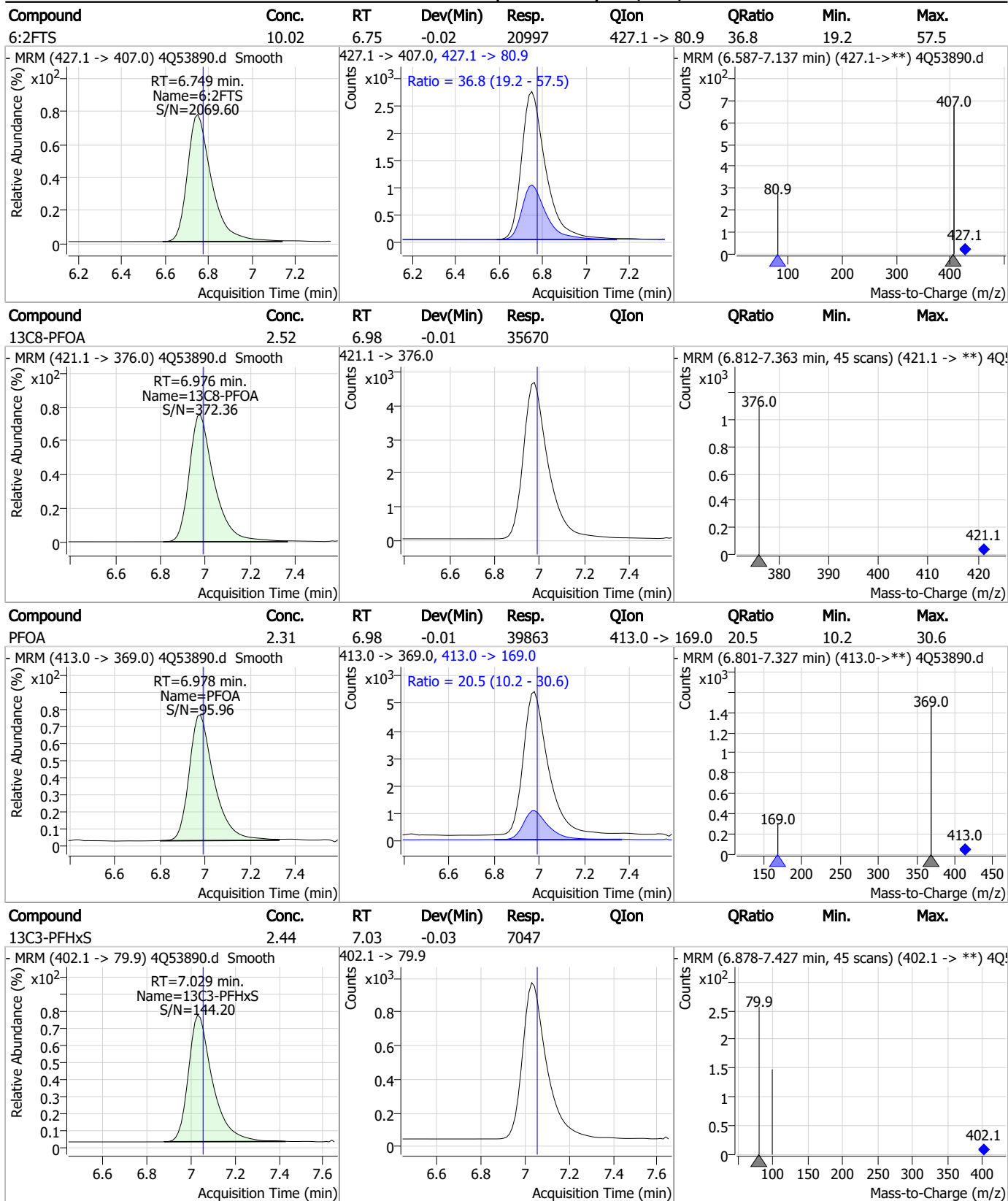
7.7.15
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Perfluorinated Compounds by LC/MS/MS



7.7.15
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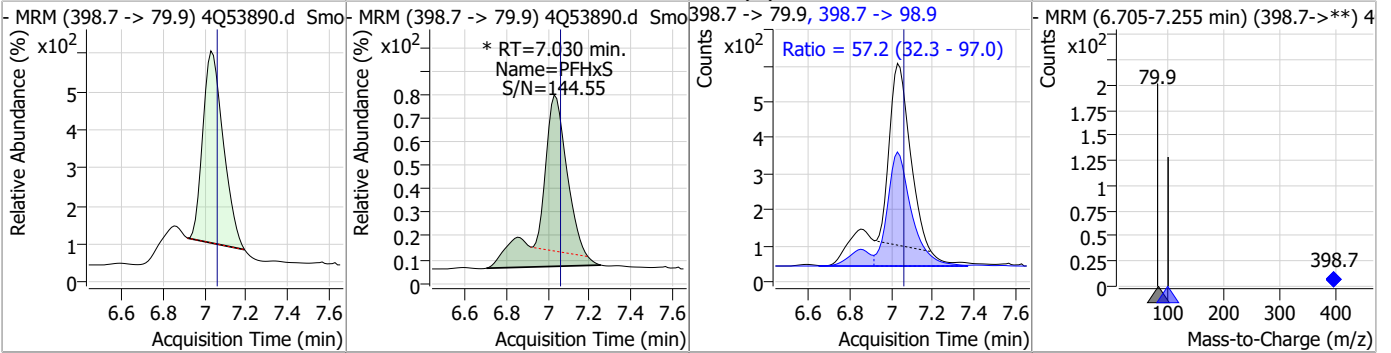
Perfluorinated Compounds by LC/MS/MS



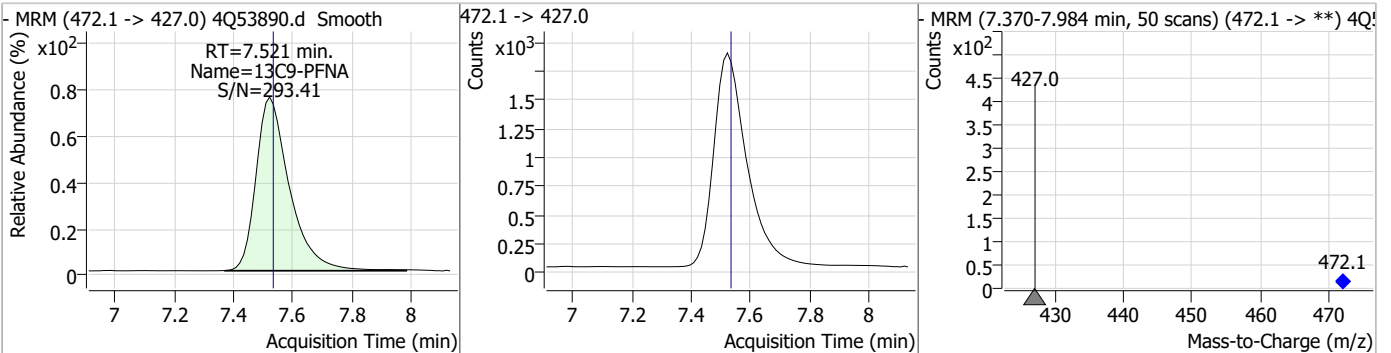
7.7.15
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Perfluorinated Compounds by LC/MS/MS

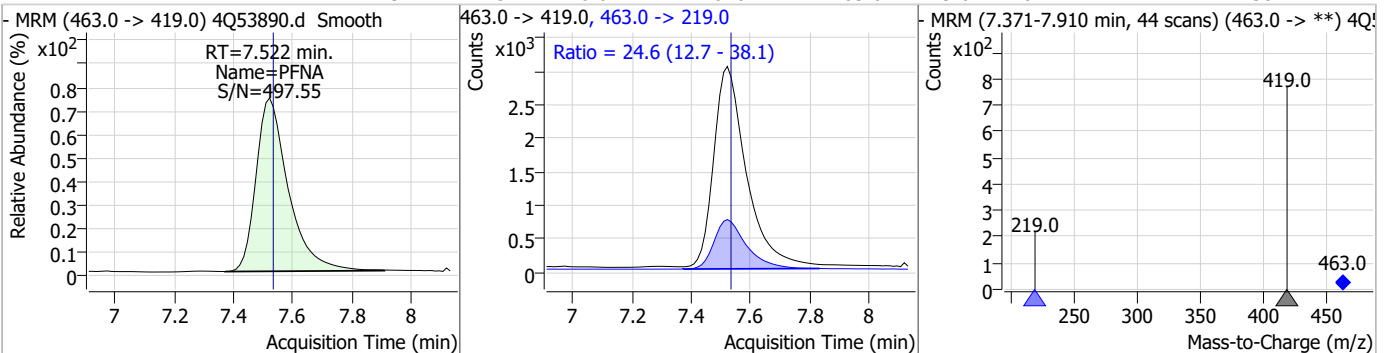
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	2.35	7.03	-0.02	5001 (m)	398.7 -> 98.9	57.2	32.3	97.0



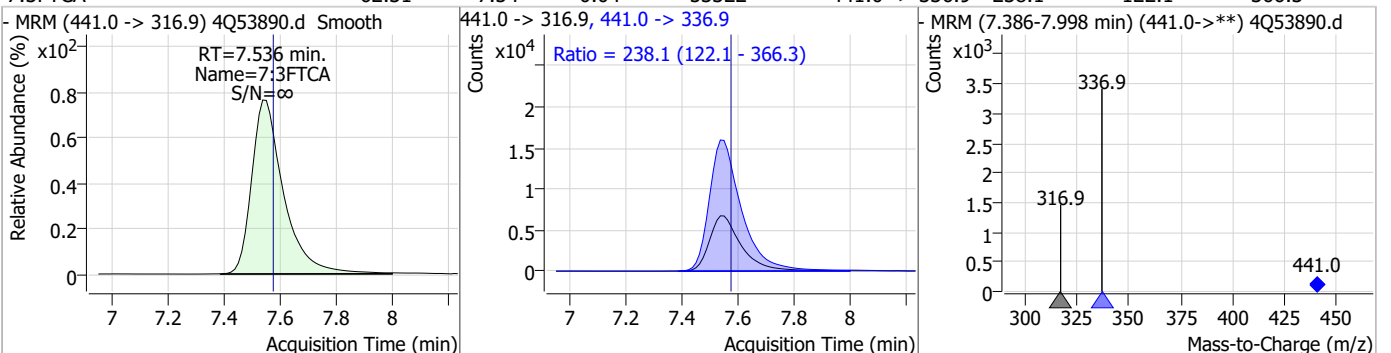
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.32	7.52	-0.01	14645				



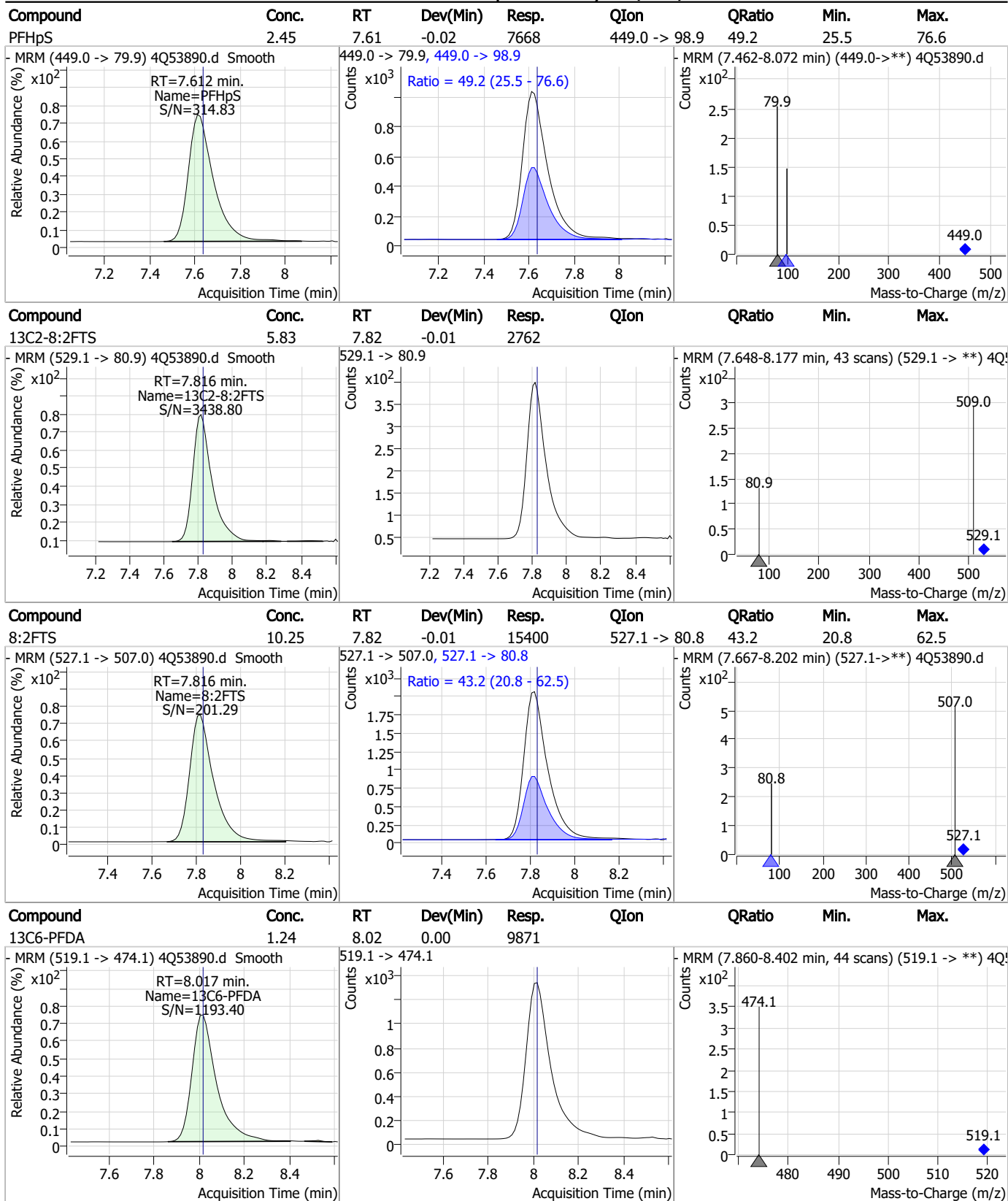
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	2.43	7.52	-0.01	22678	463.0 -> 219.0	24.6	12.7	38.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	62.31	7.54	-0.04	53322	441.0 -> 336.9	238.1	122.1	366.3

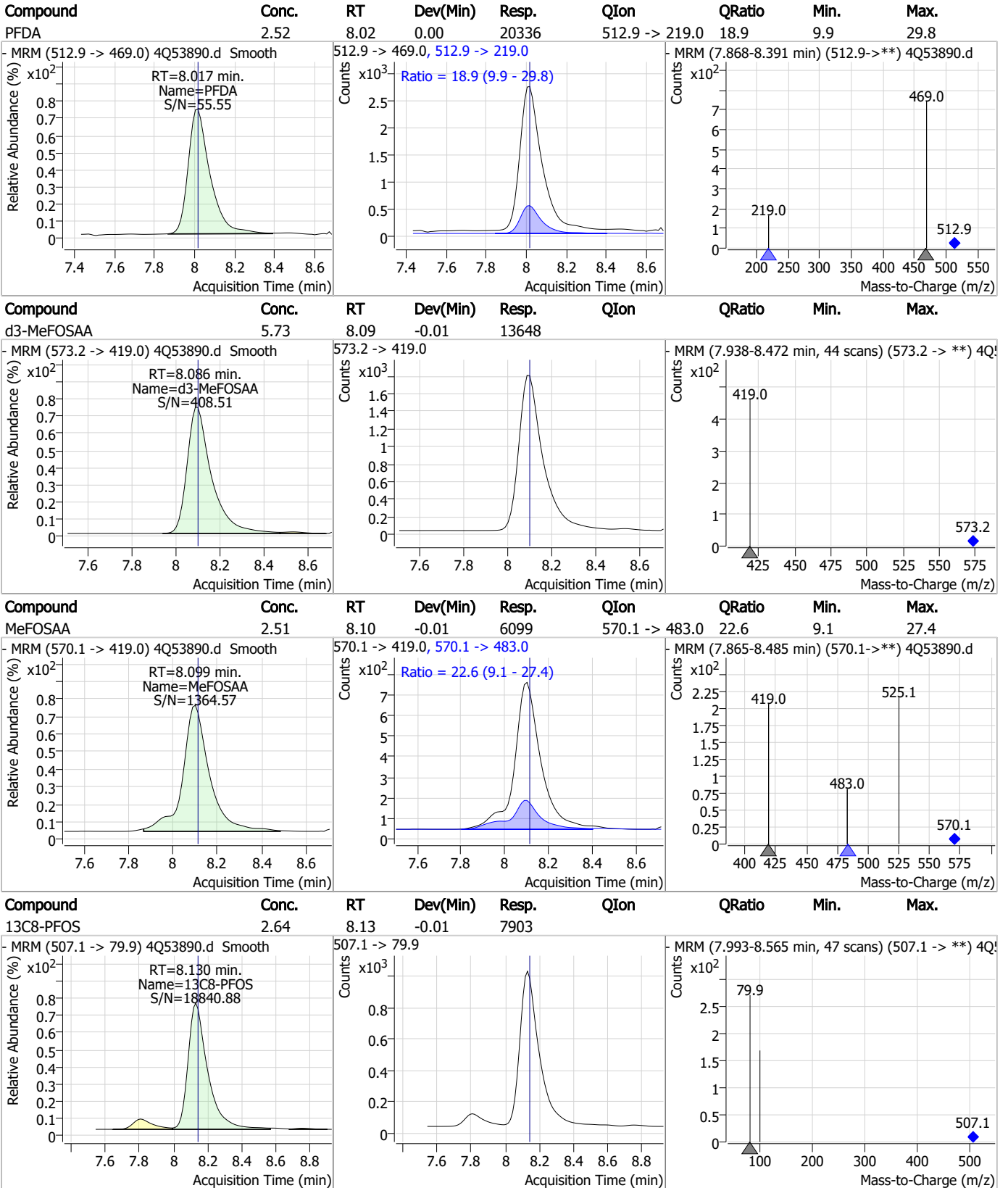


Perfluorinated Compounds by LC/MS/MS



7.7.15
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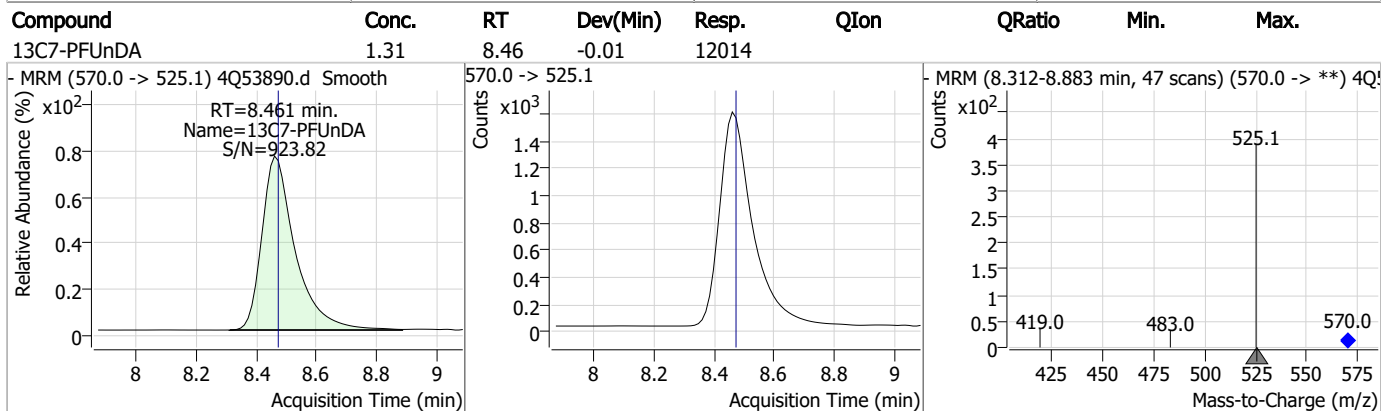
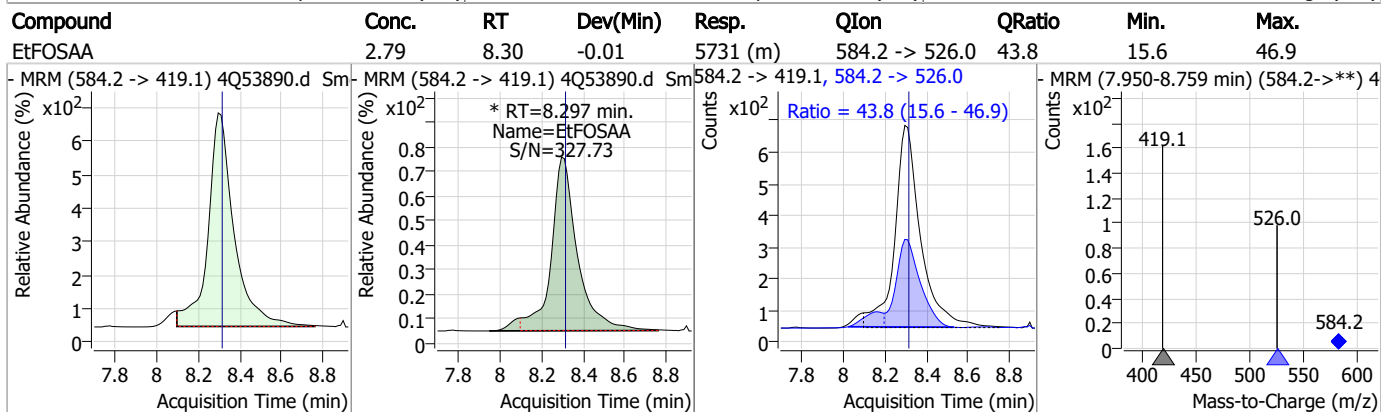
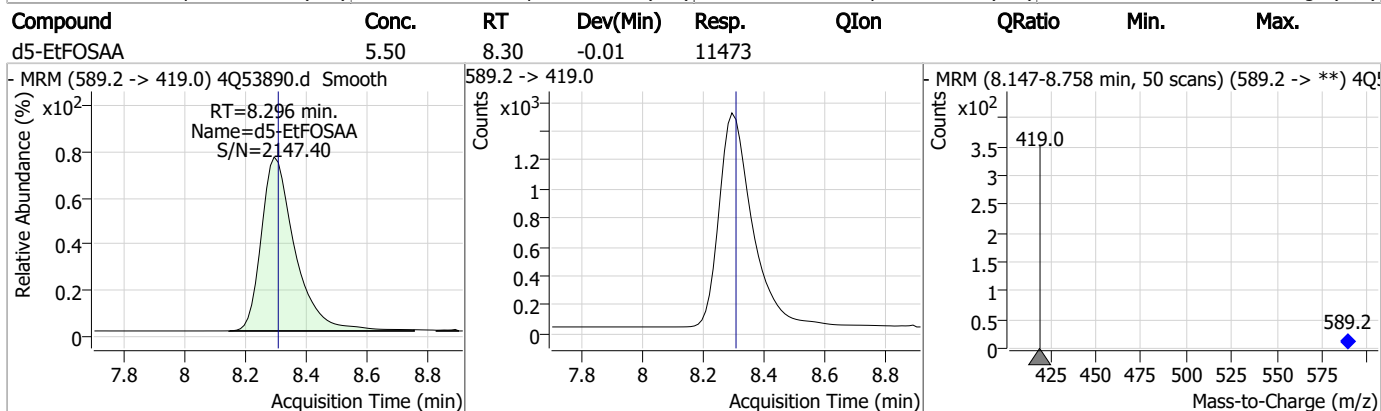
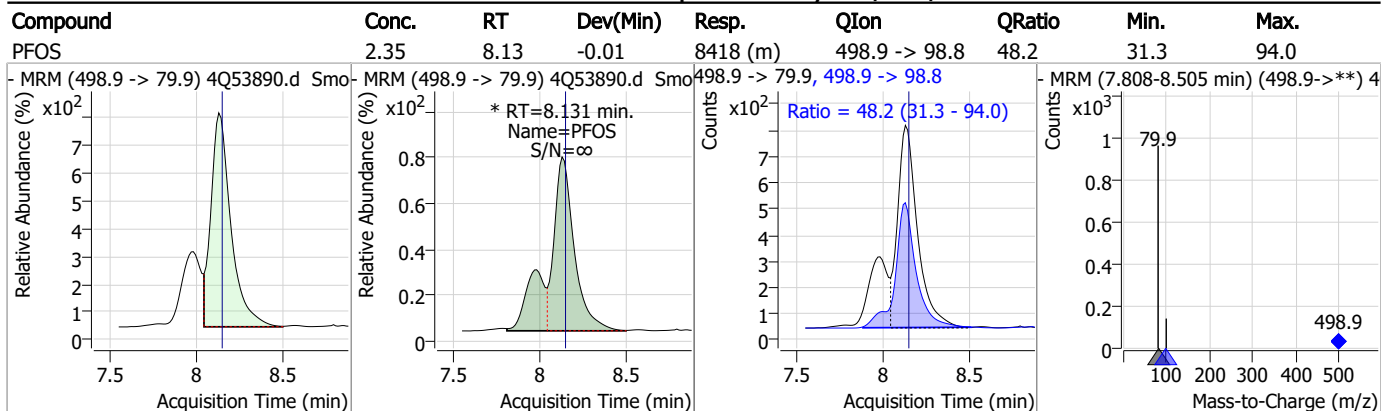
Perfluorinated Compounds by LC/MS/MS



7.7.15 7

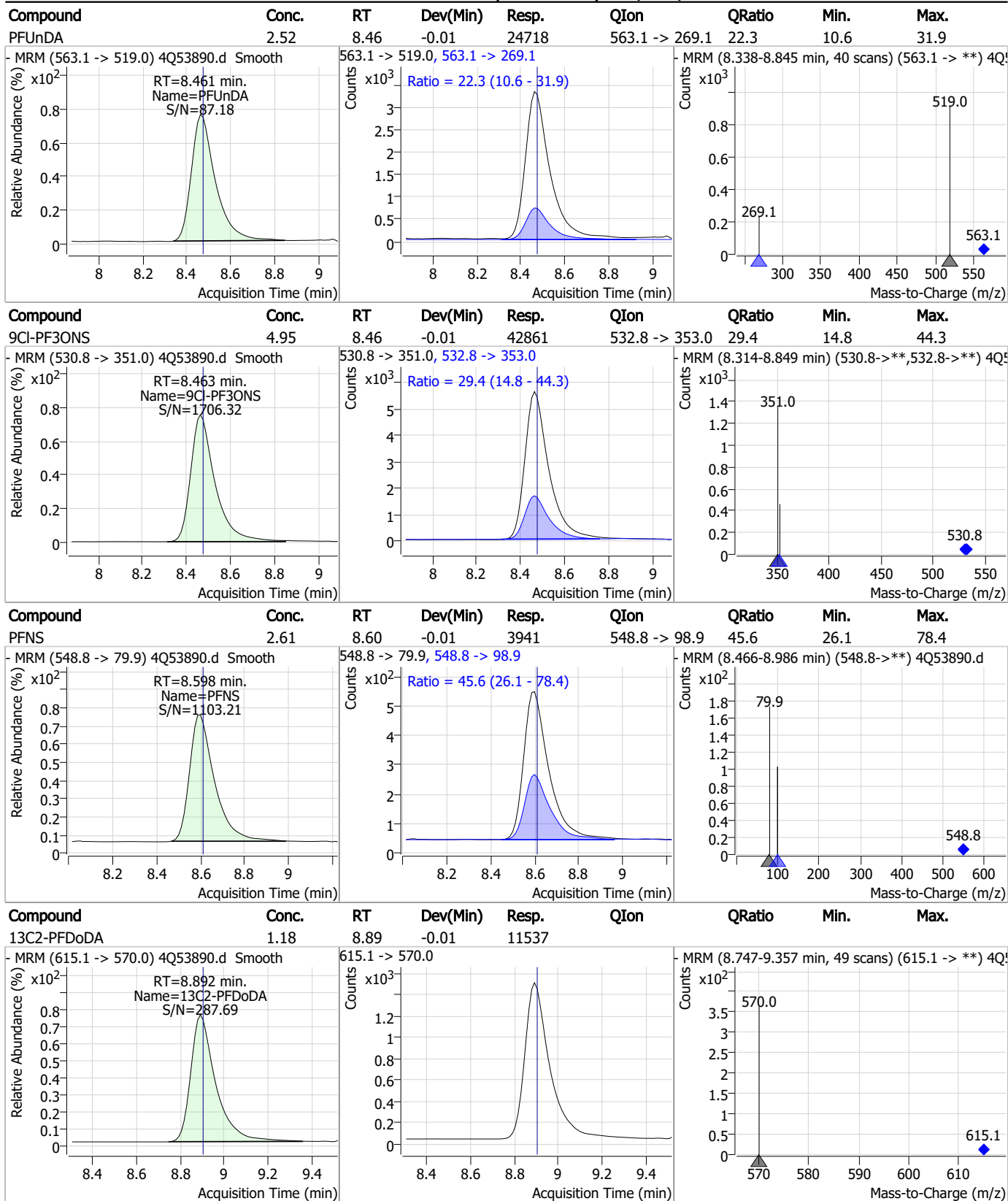


Perfluorinated Compounds by LC/MS/MS



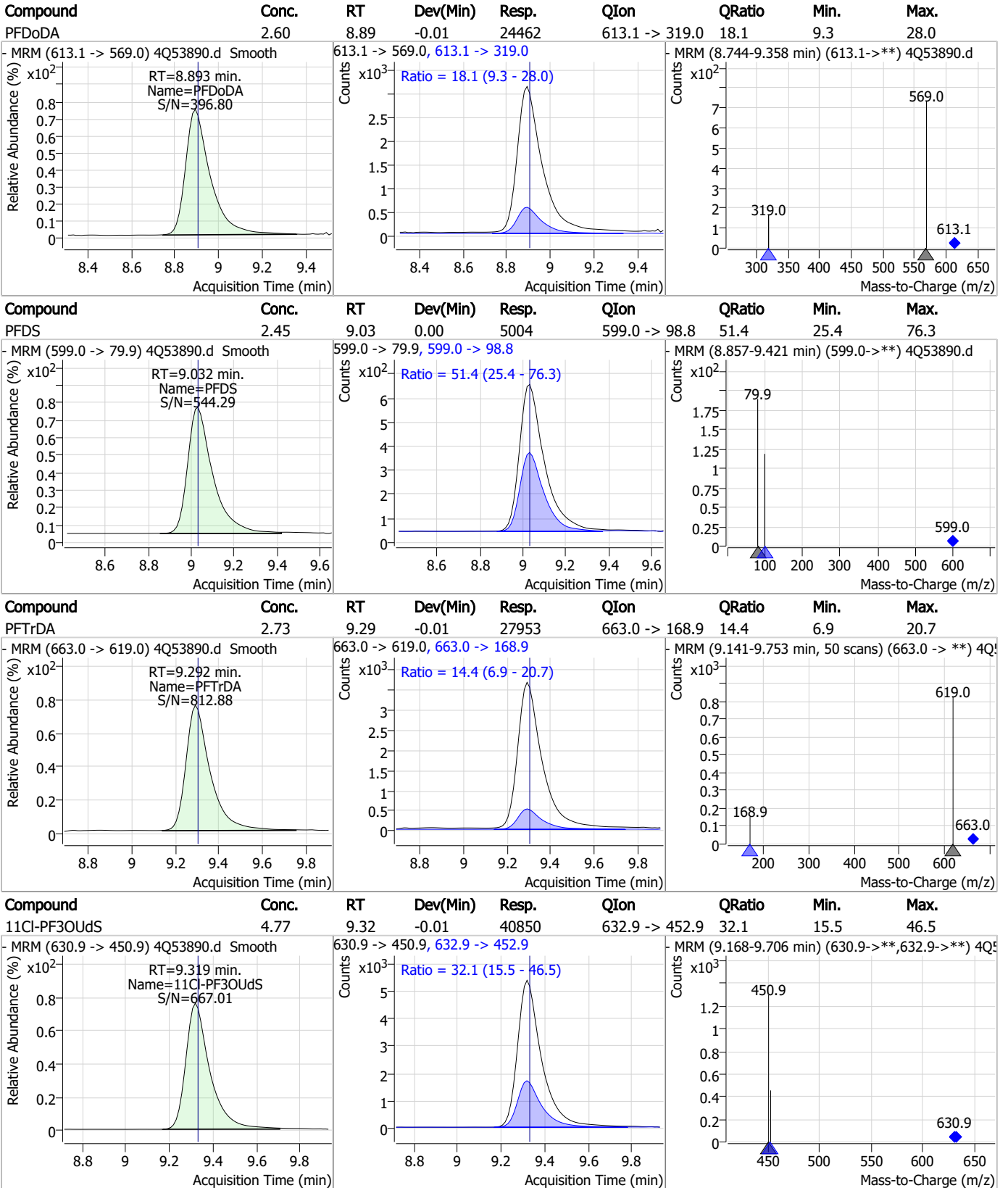
7.7.15
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Perfluorinated Compounds by LC/MS/MS



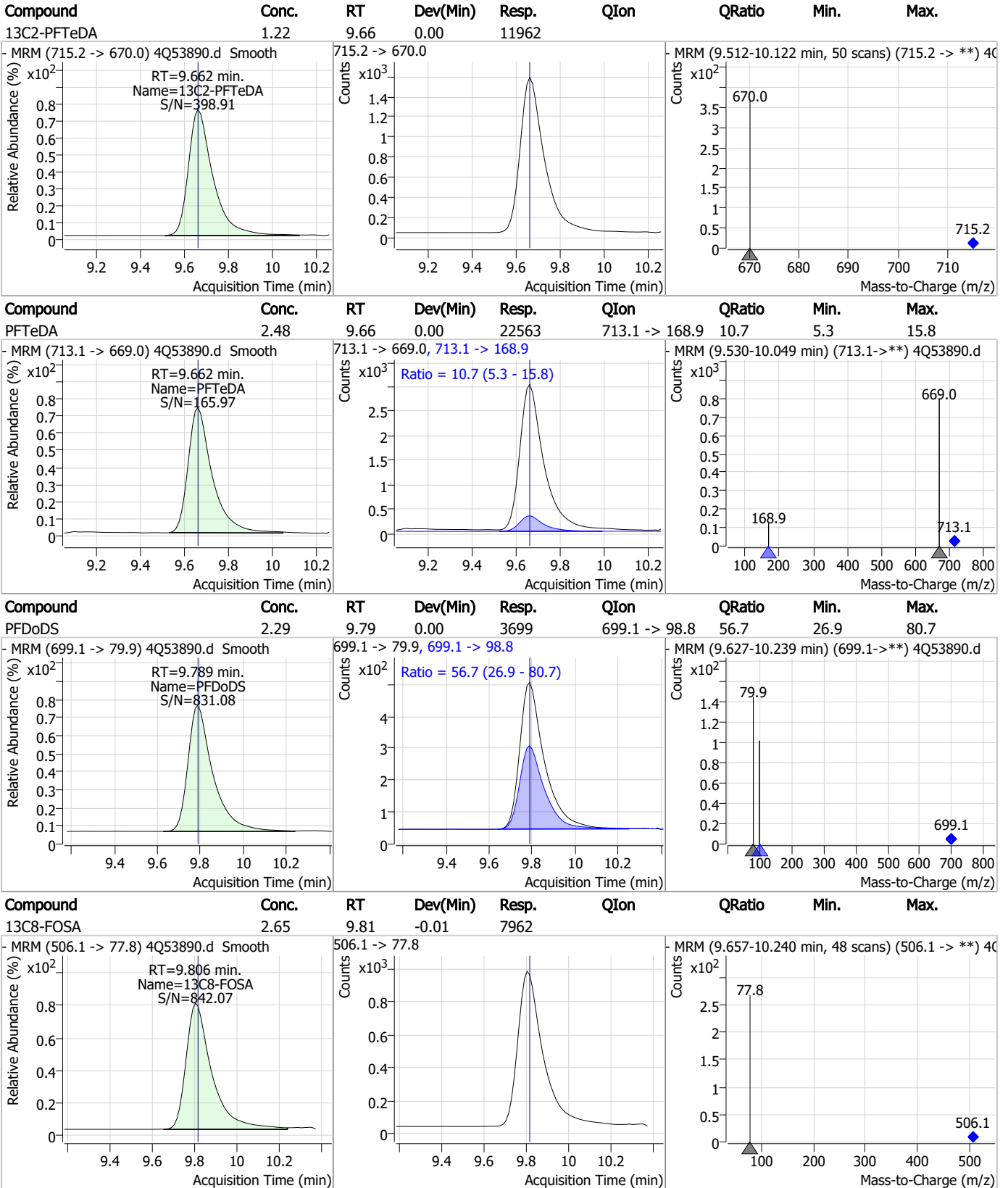
7.7.15
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Perfluorinated Compounds by LC/MS/MS



7.7.15 7

Perfluorinated Compounds by LC/MS/MS

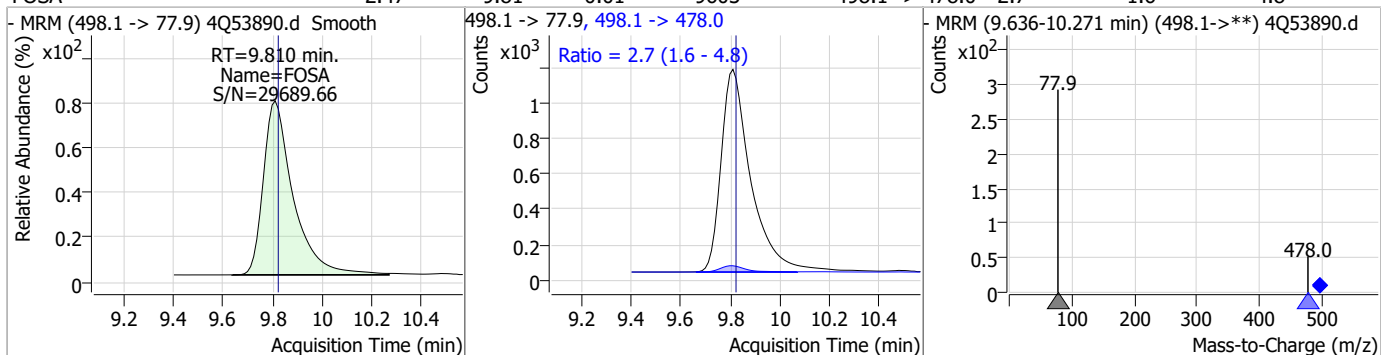


7.7.15 7

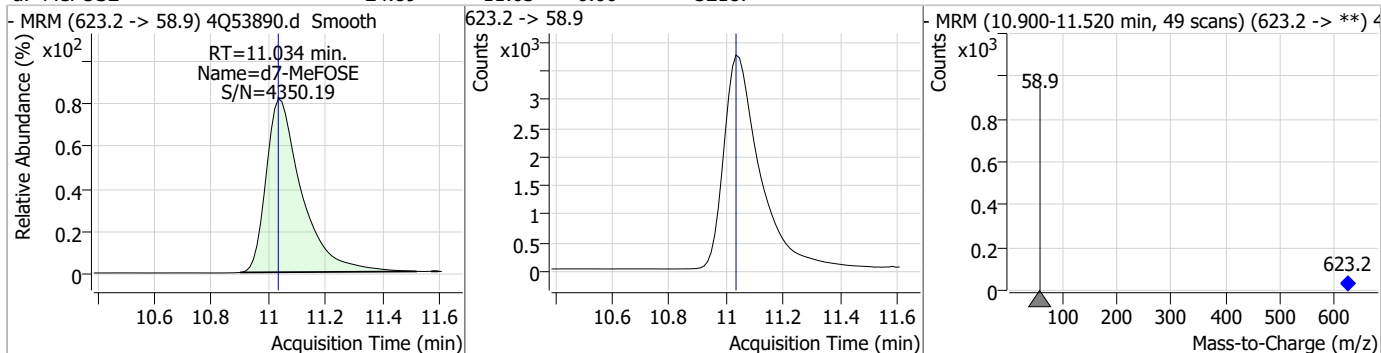


Perfluorinated Compounds by LC/MS/MS

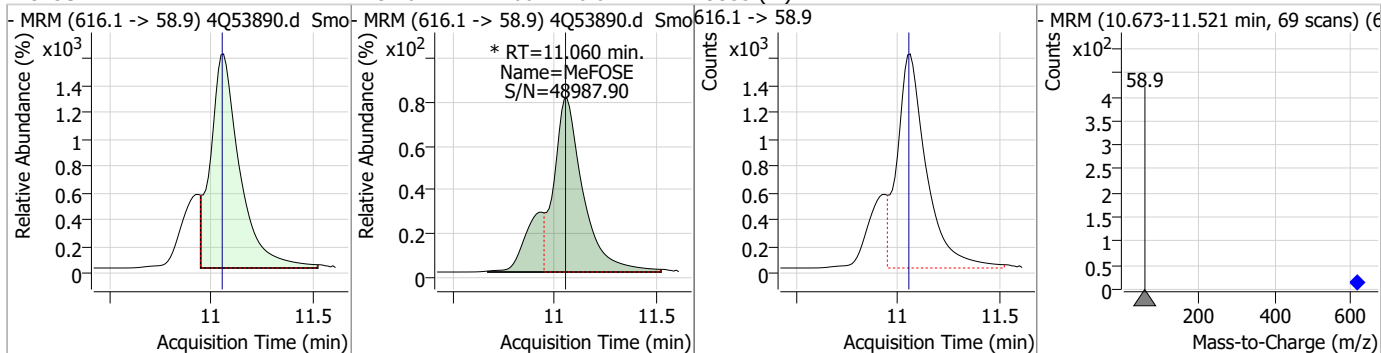
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.47	9.81	-0.01	9603	498.1 -> 478.0	2.7	1.6	4.8



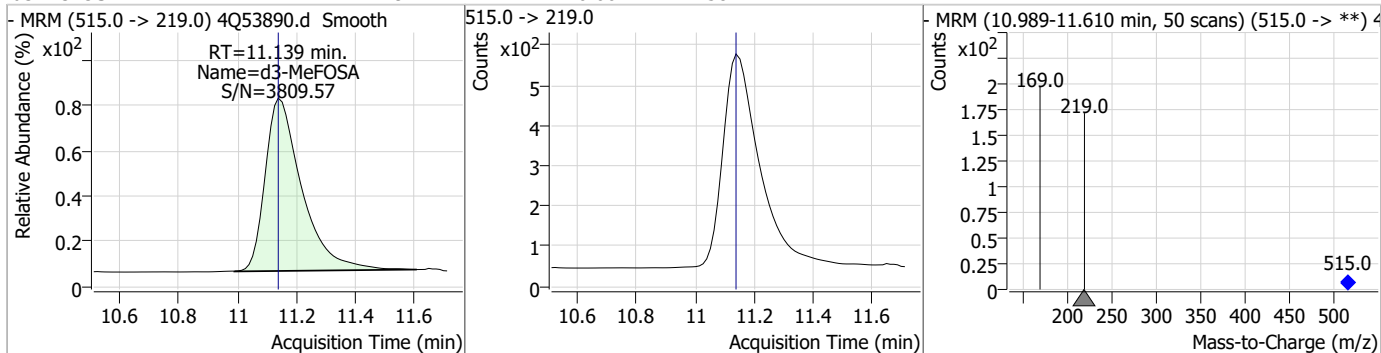
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.89	11.03	0.00	32187	623.2 -> 58.9			



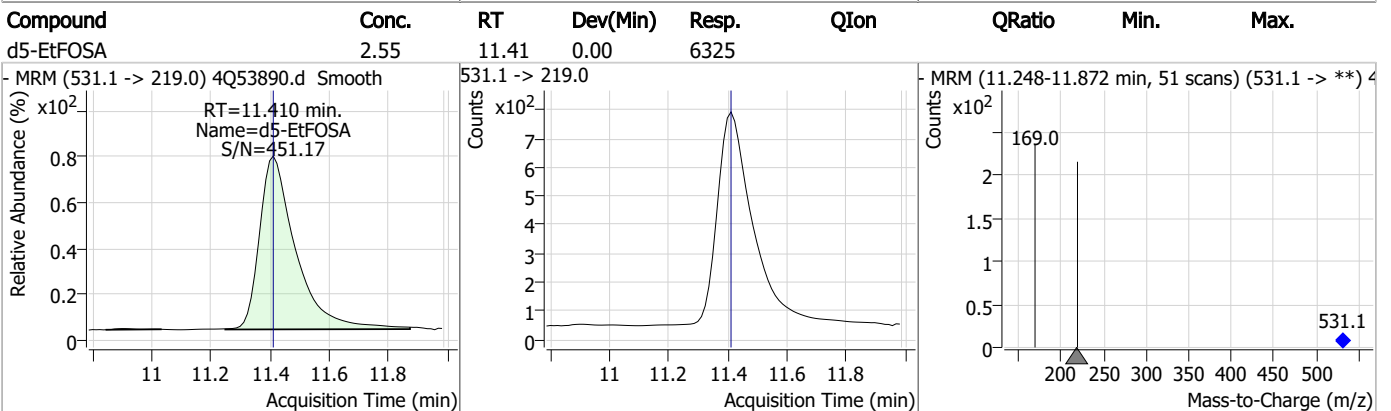
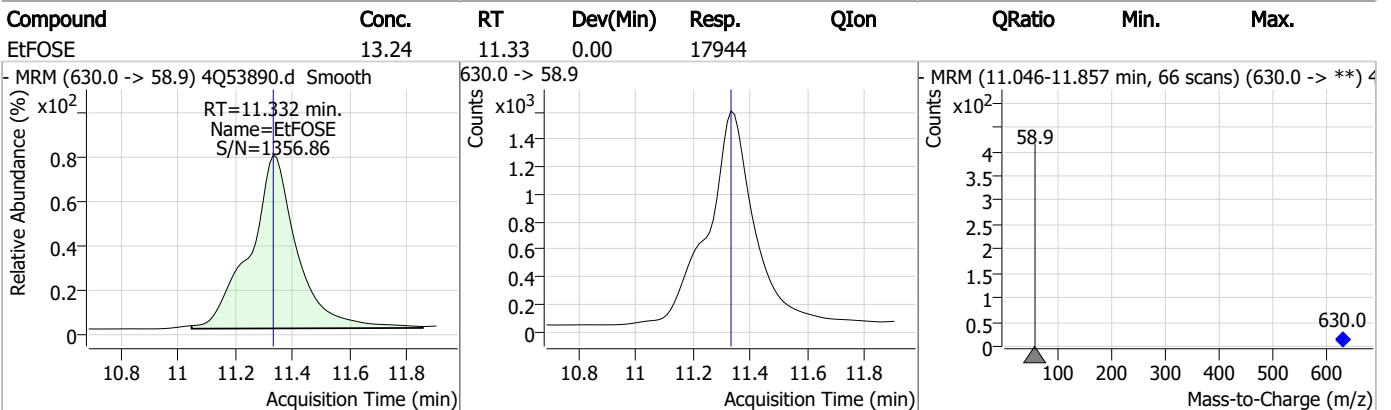
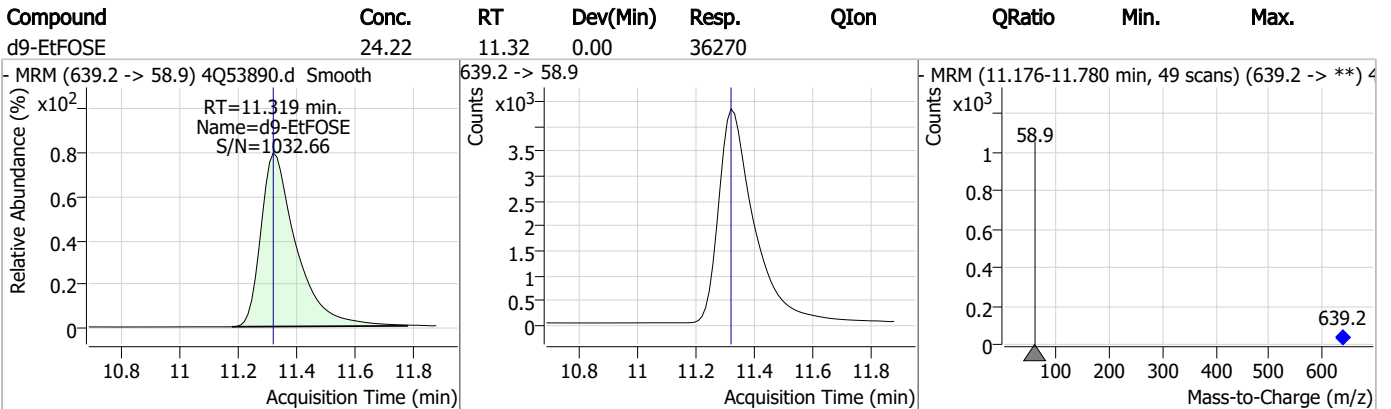
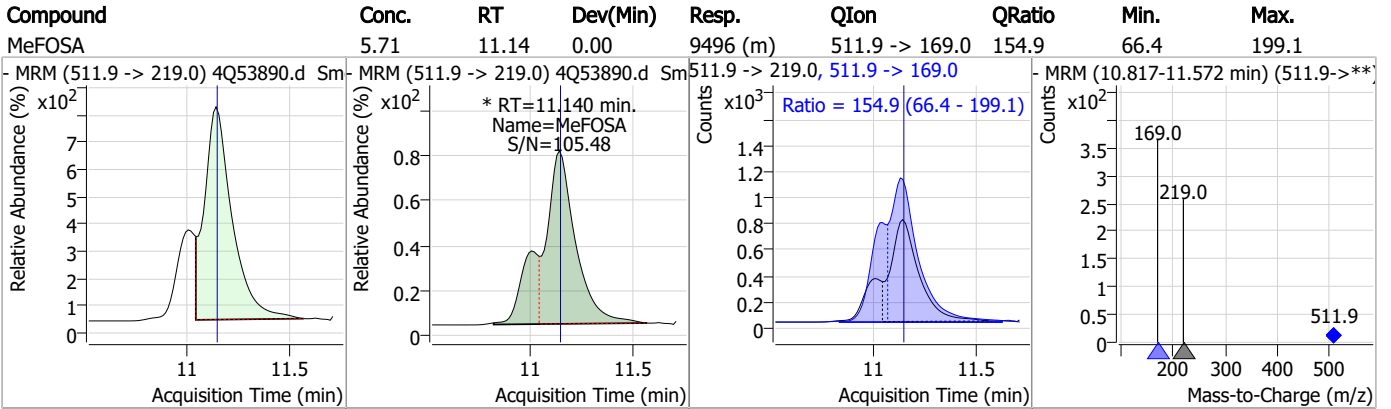
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	13.20	11.06	0.01	19355 (m)	616.1 -> 58.9			



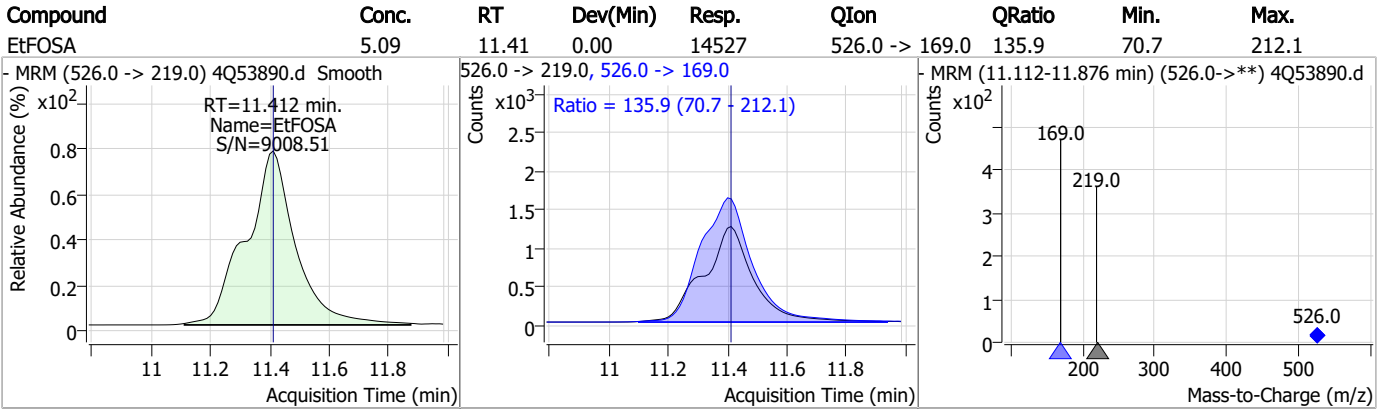
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.19	11.14	0.00	4582	515.0 -> 219.0			



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.7.15

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Manual Integration Approval Summary

Sample Number: S4Q786-CC785 Method: EPA DRAFT 1633
Lab FileID: 4Q53890.D Analyst approved: 11/16/23 13:59 Anna Ludwig
Injection Time: 11/15/23 16:36 Supervisor approved: 11/16/23 15:17 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.03	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.13	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
MeFOSE	24448-09-7		11.06	Split peak
MeFOSA	31506-32-8		11.14	Split peak

7.7.15.1

7

QQQ Check Tune Report



Instrument Name LCMS4-Q
MS Model G6470A
MS Instrument Serial SG2004G105
Software_Firmware Version 10.0.142, FW: A.00.08.100
Tune Date & Time 13 November 2023 10:54:12
Data Path D:\MassHunter\Tune\QQQ\G6470A\atunes.TUNE.XML
Ion Source AJS ESI
Ionization Mode AJS ESI
Tuned Resolution All
Vacuum Pressure 1.70E+0 [R] (Torr); 3.52E-5 [H] (Torr)

Source Parameters

Parameter	Negative
Gas Temp (°C)	300
Gas Flow (l/min)	8
Nebulizer (psi)	15
Capillary (V)	4000
Nozzle Voltage (V)	1500
Sheath Gas Temp (°C)	250
Sheath Gas Flow (l/min)	7

QQQ Check Tune Report



Negative Results

Analyzer: MS1 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	113.00	0.01	Pass	0.70	0.70	0.00	Pass	227368
302.00	302.01	0.01	Pass	0.70	0.70	0.00	Pass	138519
601.98	602.01	0.03	Pass	0.70	0.69	-0.01	Pass	305367
1033.99	1034.02	0.03	Pass	0.70	0.69	-0.01	Pass	427801
1633.95	1633.99	0.04	Pass	0.70	0.69	-0.01	Pass	806592
2233.91	2233.91	0.00	Pass	0.70	0.71	0.01	Pass	499029

Analyzer: MS2 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.08	0.08	Pass	0.70	0.59	-0.11	Pass	46573
112.99	112.99	0.00	Pass	0.70	0.69	-0.01	Pass	163290
302.00	302.01	0.01	Pass	0.70	0.68	-0.02	Pass	135624
601.98	601.98	0.00	Pass	0.70	0.69	-0.01	Pass	202321
1033.99	1033.98	-0.01	Pass	0.70	0.68	-0.02	Pass	319410
1633.95	1633.92	-0.03	Pass	0.70	0.71	0.01	Pass	584341
2233.91	2233.89	-0.02	Pass	0.70	0.70	0.00	Pass	576793

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.81	-0.18	Pass	1.20	1.63	0.43	Pass	322328
302.00	301.86	-0.14	Pass	1.20	1.24	0.04	Pass	213939
601.98	601.88	-0.10	Pass	1.20	1.14	-0.06	Pass	429920
1033.99	1033.97	-0.02	Pass	1.20	1.13	-0.07	Pass	663252
1633.95	1633.97	0.02	Pass	1.20	1.14	-0.06	Pass	1580095
2233.91	2233.96	0.05	Pass	1.20	1.18	-0.02	Pass	1032815

Analyzer: MS2 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.10	0.10	Pass	1.20	1.07	-0.13	Pass	65678
112.99	113.00	0.01	Pass	1.20	1.18	-0.02	Pass	232383
302.00	301.99	-0.01	Pass	1.20	1.32	0.12	Pass	206553
601.98	601.97	-0.01	Pass	1.20	1.41	0.21	Pass	388803
1033.99	1033.98	-0.01	Pass	1.20	1.50	0.30	Pass	697863
1633.95	1633.94	-0.01	Pass	1.20	1.39	0.19	Pass	2088363
2233.91	2233.94	0.03	Pass	1.20	1.23	0.03	Pass	1456858

Analyzer: MS1 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.69	-0.30	Pass	2.50	2.91	0.41	Pass	367627
302.00	301.80	-0.20	Pass	2.50	2.46	-0.04	Pass	268105
601.98	601.79	-0.19	Pass	2.50	2.57	0.07	Pass	645149
1033.99	1033.51	-0.48	Pass	2.50	2.69	0.19	Pass	1354719
1633.95	1633.50	-0.45	Pass	2.50	2.90	0.40	Pass	4797595
2233.91	2233.37	-0.54	Pass	2.50	3.15	0.65	Pass	4318898

Analyzer: MS2 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.05	0.05	Pass	2.50	2.33	-0.17	Pass	82745
112.99	112.98	-0.01	Pass	2.50	2.47	-0.03	Pass	312208
302.00	301.99	-0.01	Pass	2.50	2.57	0.07	Pass	272432
601.98	601.97	-0.01	Pass	2.50	2.61	0.11	Pass	589767
1033.99	1034.00	0.01	Pass	2.50	2.67	0.17	Pass	1223328
1633.95	1633.96	0.01	Pass	2.50	2.49	-0.01	Pass	4323037
2233.91	2233.89	-0.02	Pass	2.50	2.23	-0.27	Pass	4496058

7.7.16
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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54006.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 11:25:20 AM
 Sample Name : ic788-1
 Vial : P1-A2
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.587	216.8 -> 171.9	79579	10.00 µg/L	-0.013
M5-PFPeA	4.087	268.3 -> 223.0	35355	5.00 µg/L	0.000
M5-PFHxA	5.260	318.0 -> 273.0	25891	2.50 µg/L	0.000
M4-PFHpA	6.217	367.1 -> 322.0	25640	2.50 µg/L	0.000
M8-PFOA	6.913	421.1 -> 376.0	30232	2.50 µg/L	-0.012
M9-PFNA	7.471	472.1 -> 427.0	12669	1.25 µg/L	0.000
M6-PFDA	7.954	519.1 -> 474.1	8525	1.25 µg/L	-0.012
M7-PFUnDA	8.411	570.0 -> 525.1	10043	1.25 µg/L	-0.013
M2-PFDoDA	8.843	615.1 -> 570.0	10145	1.25 µg/L	0.000
M2-PFTeDA	9.612	715.2 -> 670.0	10990	1.25 µg/L	0.000
M8-FOSA	9.769	506.1 -> 77.8	6854	2.50 µg/L	0.000
M3-PFBS	5.103	302.1 -> 79.9	7630	2.50 µg/L	-0.012
M3-PFHxS	6.980	402.1 -> 79.9	6123	2.50 µg/L	0.000
M8-PFOS	8.080	507.1 -> 79.9	6549	2.50 µg/L	0.000
M2-4:2FTS	4.971	329.1 -> 80.9	753	5.00 µg/L	0.000
M2-6:2FTS	6.686	429.1 -> 80.9	1780	5.00 µg/L	-0.012
M2-8:2FTS	7.754	529.1 -> 80.9	2229	5.00 µg/L	-0.012
M3-MeFOSAA	8.037	573.2 -> 419.0	11608	5.00 µg/L	-0.012
M3-HFPO-DA	5.615	286.9 -> 168.9	24178	10.00 µg/L	0.000
M5-EtFOSAA	8.246	589.2 -> 419.0	9972	5.00 µg/L	0.000
M7-MeFOSE	11.009	623.2 -> 58.9	28916	25.00 µg/L	0.000
M9-EtFOSE	11.294	639.2 -> 58.9	32318	25.00 µg/L	0.000
M5-EtFOSA	11.385	531.1 -> 219.0	5840	2.50 µg/L	0.000
M3-MeFOSA	11.114	515.0 -> 219.0	4412	2.50 µg/L	0.000
13C4-PFOS	8.068	502.8 -> 79.9	5892	2.50 µg/L	-0.012
13C3-PFBA	2.591	216.0 -> 172.0	38327	5.00 µg/L	0.000
18O2-PFHxS	6.979	403.0 -> 83.9	3915	2.50 µg/L	0.000
13C4-PFOA	6.914	417.1 -> 372.0	33731	2.50 µg/L	-0.012
13C2-PFDA	7.955	515.1 -> 470.1	9588	1.25 µg/L	-0.012
13C5-PFNA	7.459	468.0 -> 423.0	12506	1.25 µg/L	-0.012
13C2-PFHxA	5.261	315.1 -> 270.0	27890	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	4.971	329.1 -> 80.9	753	5.04 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C2-6:2FTS	6.686	429.1 -> 80.9	1780	5.61 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.3%		
13C2-8:2FTS	7.754	529.1 -> 80.9	2229	5.10 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.1%		
13C2-PFDoDA	8.843	615.1 -> 570.0	10145	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.6%		
13C2-PFTeDA	9.612	715.2 -> 670.0	10990	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C3-PFBS	5.103	302.1 -> 79.9	7630	2.57 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C3-PFHxS	6.980	402.1 -> 79.9	6123	2.49 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C4-PFBA	2.587	216.8 -> 171.9	79579	10.06 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C4-PFHpA	6.217	367.1 -> 322.0	25640	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.7%		
13C5-PFHxA	5.260	318.0 -> 273.0	25891	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C5-PFPeA	4.087	268.3 -> 223.0	35355	5.05 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C6-PFDA	7.954	519.1 -> 474.1	8525	1.20 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.7%		
13C7-PFUnDA	8.411	570.0 -> 525.1	10043	1.26 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C8-FOSA	9.769	506.1 -> 77.8	6854	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C8-PFOA	6.913	421.1 -> 376.0	30232	2.46 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C8-PFOS	8.080	507.1 -> 79.9	6549	2.27 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.7%		
13C9-PFNA	7.471	472.1 -> 427.0	12669	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.0%		
d3-MeFOSAA	8.037	573.2 -> 419.0	11608	4.81 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C3-HFPO-DA	5.615	286.9 -> 168.9	24178	10.39 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 103.9%		
d3-MeFOSA	11.114	515.0 -> 219.0	4412	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.3%		
d5-EtFOSAA	8.246	589.2 -> 419.0	9972	4.93 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.5%		
d7-MeFOSE	11.009	623.2 -> 58.9	28916	24.50 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 98.0%		
d9-EtFOSE	11.294	639.2 -> 58.9	32318	24.06 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 96.3%		
d5-EtFOSA	11.385	531.1 -> 219.0	5840	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.9%		
Target Compounds					QValue
4:2FTS	4.960	327.1 -> 307.0	1103	0.80 µg/L	98
		327.1 -> 80.9	490		
6:2FTS	6.687	427.1 -> 407.0	1340	0.72 µg/L	97
		427.1 -> 80.9	512		
8:2FTS	7.754	527.1 -> 507.0	940	0.79 µg/L	91
		527.1 -> 80.8	391		
EtFOSAA	8.247	584.2 -> 419.1	353	0.19 µg/L	95
		584.2 -> 526.0	128		
FOSA	9.773	498.1 -> 77.9	554	0.17 µg/L	96
		498.1 -> 478.0	8		
MeFOSAA	8.037	570.1 -> 419.0	410	0.22 µg/L	91
		570.1 -> 483.0	104		
PFBA	2.595	212.8 -> 168.9	2116	0.77 µg/L	100
PFBS	5.117	298.7 -> 79.9	388	0.15 µg/L	88
		298.7 -> 98.8	176		
PFDA	7.955	512.9 -> 469.0	1234	0.19 µg/L	99
		512.9 -> 219.0	247		
PFDODA	8.843	613.1 -> 569.0	1774	0.21 µg/L	97
		613.1 -> 319.0	299		
PFDS	8.970	599.0 -> 79.9	362	0.22 µg/L	91

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	154			
PFHpA	6.218	363.1 -> 319.0	2862	0.18	µg/L	98
		363.1 -> 169.0	535			
PFHpS	7.561	449.0 -> 79.9	465	0.18	µg/L	85
		449.0 -> 98.9	217			
PFHxA	5.251	313.0 -> 269.0	1629	0.19	µg/L	99
		313.0 -> 118.9	50			
PFHxS	6.968	398.7 -> 79.9	313	0.18	µg/L	m 88
		398.7 -> 98.9	190			
PFNA	7.459	463.0 -> 419.0	1393	0.18	µg/L	85
		463.0 -> 219.0	458			
PFNS	8.537	548.8 -> 79.9	297	0.24	µg/L	93
		548.8 -> 98.9	177			
PFOA	6.915	413.0 -> 369.0	2568	0.19	µg/L	98
		413.0 -> 169.0	557			
PFOS	8.081	498.9 -> 79.9	616	0.22	µg/L	m 91
		498.9 -> 98.8	264			
PFPeA	4.089	263.0 -> 219.0	2750	0.39	µg/L	100
PFPeS	6.220	349.1 -> 79.9	378	0.19	µg/L	94
		349.1 -> 98.9	153			
PFTeDA	9.613	713.1 -> 669.0	1559	0.19	µg/L	94
		713.1 -> 168.9	134			
PFTrDA	9.242	663.0 -> 619.0	1693	0.19	µg/L	99
		663.0 -> 168.9	245			
PFUnDA	8.411	563.1 -> 519.0	1450	0.18	µg/L	92
		563.1 -> 269.1	359			
11Cl-PF3OUdS	9.269	630.9 -> 450.9	2864	0.38	µg/L	96
		632.9 -> 452.9	821			
9Cl-PF3ONS	8.413	530.8 -> 351.0	2797	0.37	µg/L	93
		532.8 -> 353.0	921			
ADONA	6.494	376.9 -> 250.9	7227	0.38	µg/L	100
		376.9 -> 84.8	1784			
HFPO-DA	5.628	284.9 -> 168.9	794	0.33	µg/L	100
		284.9 -> 184.9	85			
3:3FTCA	3.536	241.0 -> 177.0	435	1.02	µg/L	100
		241.0 -> 117.0	40			
5:3FTCA	5.943	341.0 -> 237.1	7307	4.86	µg/L	99
		341.0 -> 217.0	5149			
7:3FTCA	7.486	441.0 -> 316.9	3434	5.07	µg/L	89
		441.0 -> 336.9	7908			
EtFOSA	11.387	526.0 -> 219.0	890	0.36	µg/L	94
		526.0 -> 169.0	1291			
EtFOSE	11.320	630.0 -> 58.9	1280	1.05	µg/L	100
MeFOSA	11.115	511.9 -> 219.0	657	0.42	µg/L	82
		511.9 -> 169.0	830			
MeFOSE	11.023	616.1 -> 58.9	1267	1.04	µg/L	100
PFDoDS	9.740	699.1 -> 79.9	248	0.20	µg/L	80
		699.1 -> 98.8	188			
NFDHA	5.129	295.0 -> 201.0	339	0.46	µg/L	90
		295.0 -> 84.9	71			
PFMBA	4.491	279.0 -> 85.1	1482	0.38	µg/L	100
PFMPA	3.228	229.0 -> 84.9	1756	0.40	µg/L	100
PFEESA	5.647	314.8 -> 134.9	2451	0.36	µg/L	# 94
		314.8 -> 82.9	129			

= Qualifier out of range, m = manually integrated, + = Area summed

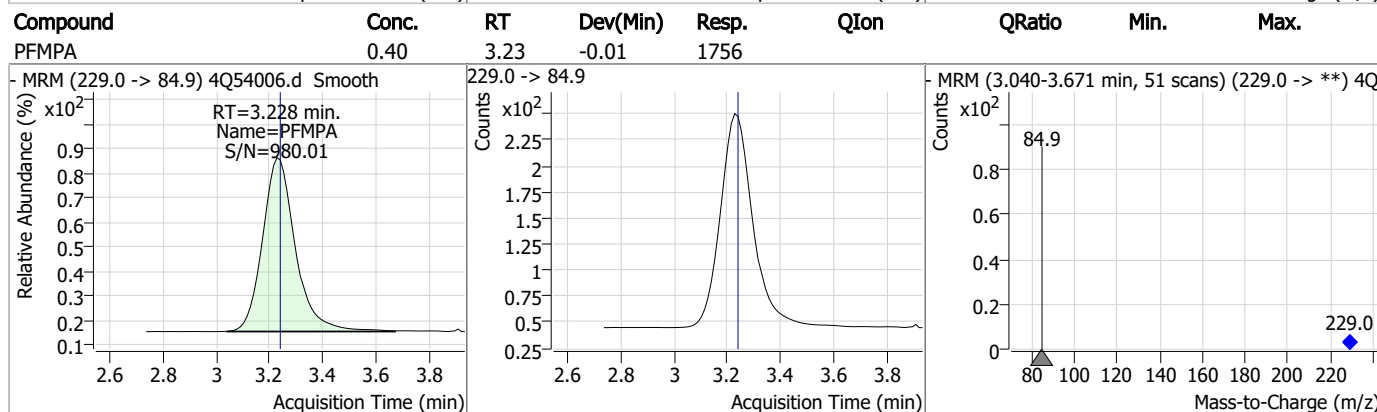
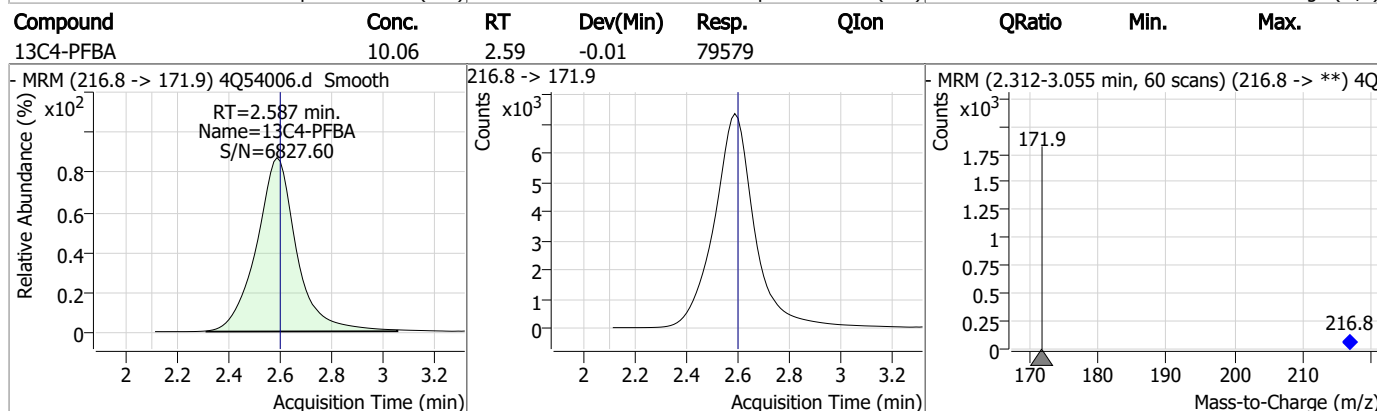
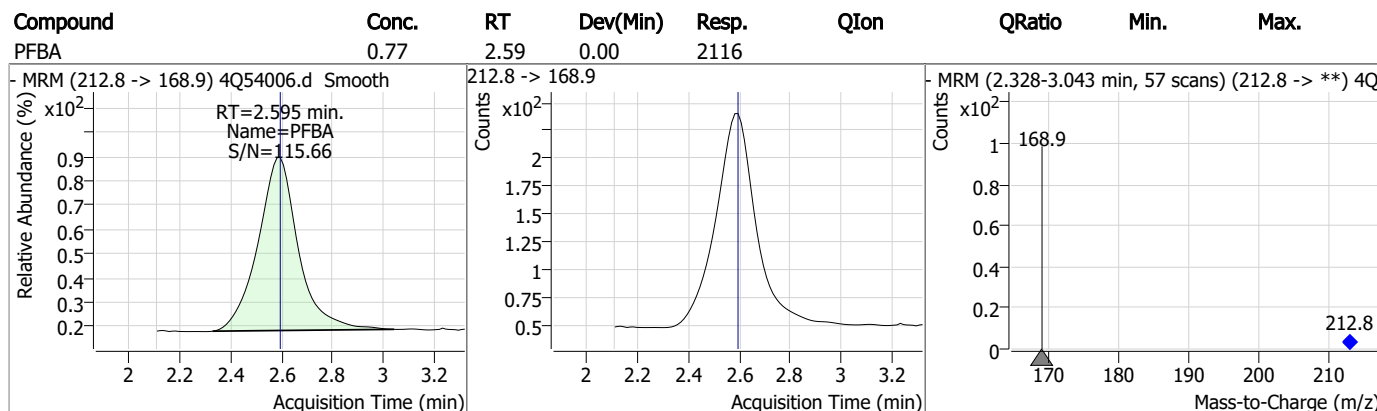
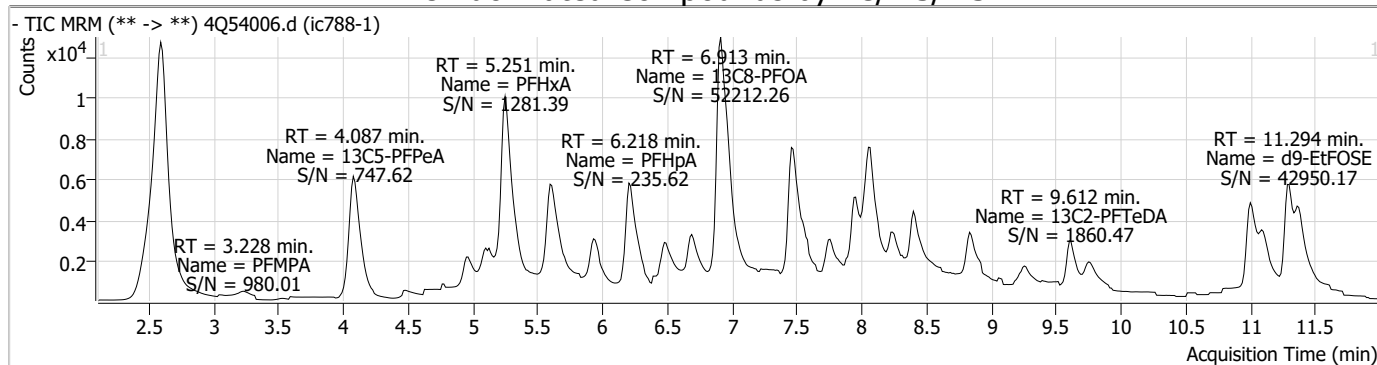
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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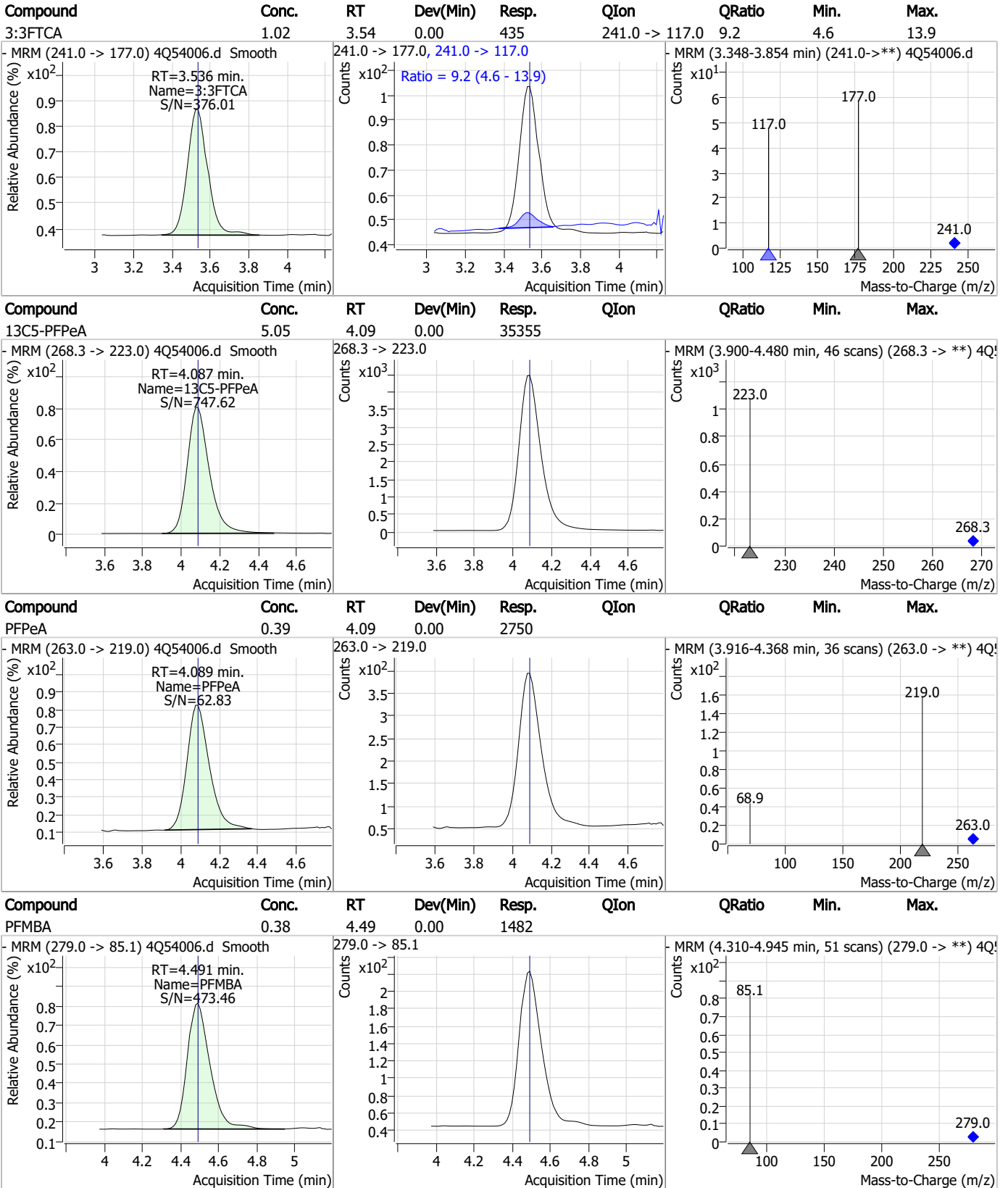
7.7.17
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Perfluorinated Compounds by LC/MS/MS

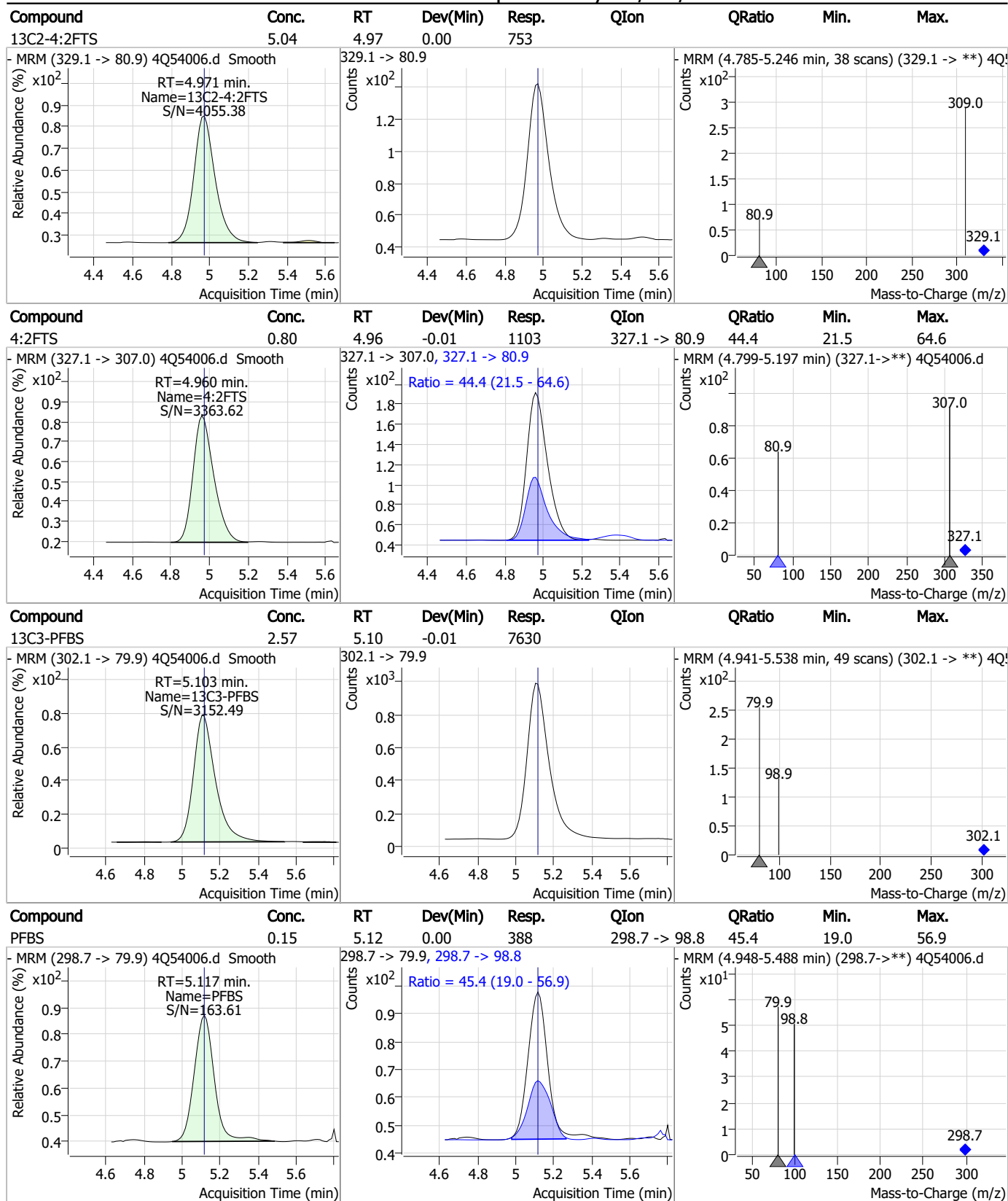


Perfluorinated Compounds by LC/MS/MS



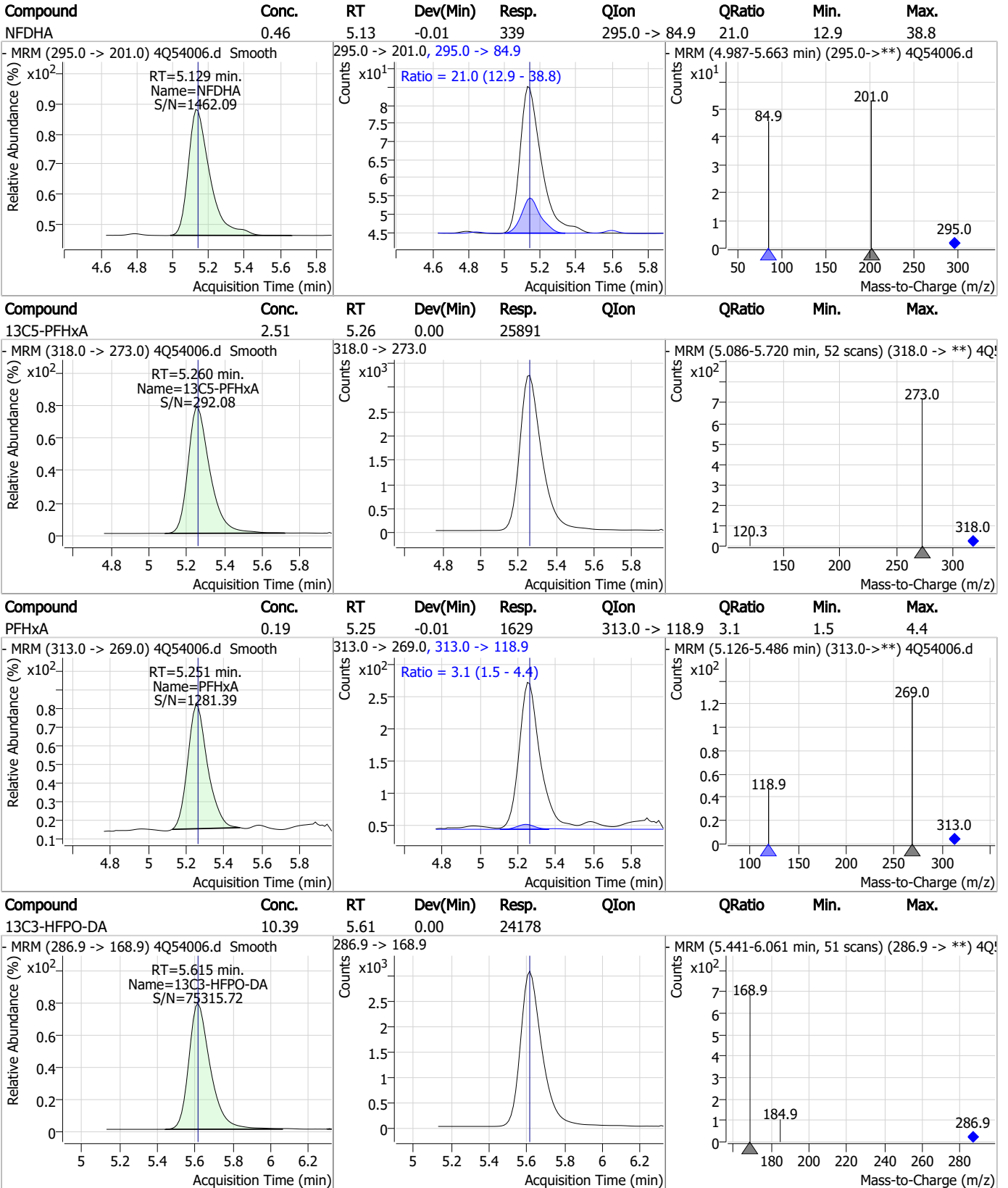
7.7.17
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Perfluorinated Compounds by LC/MS/MS



7.7.17

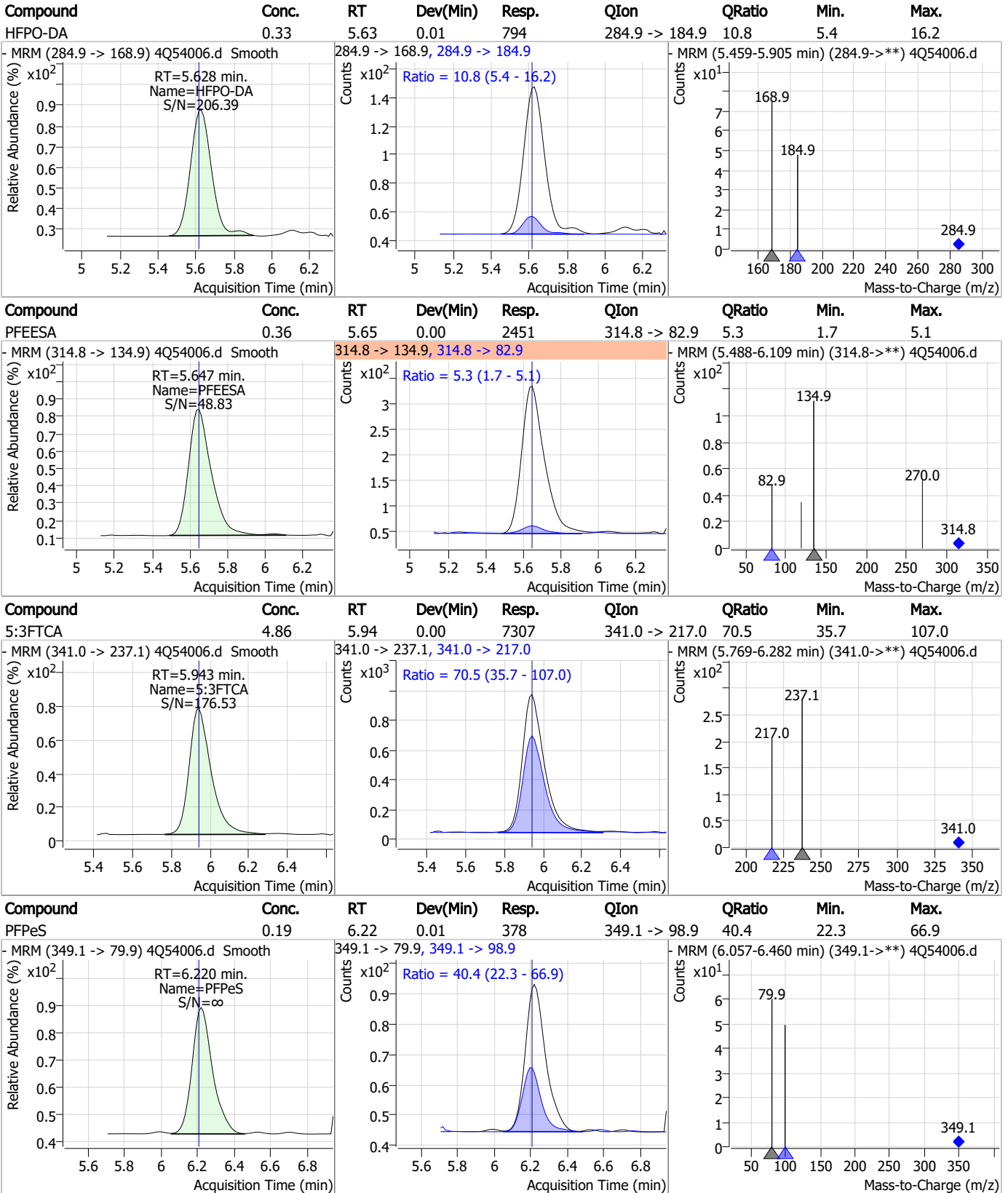
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

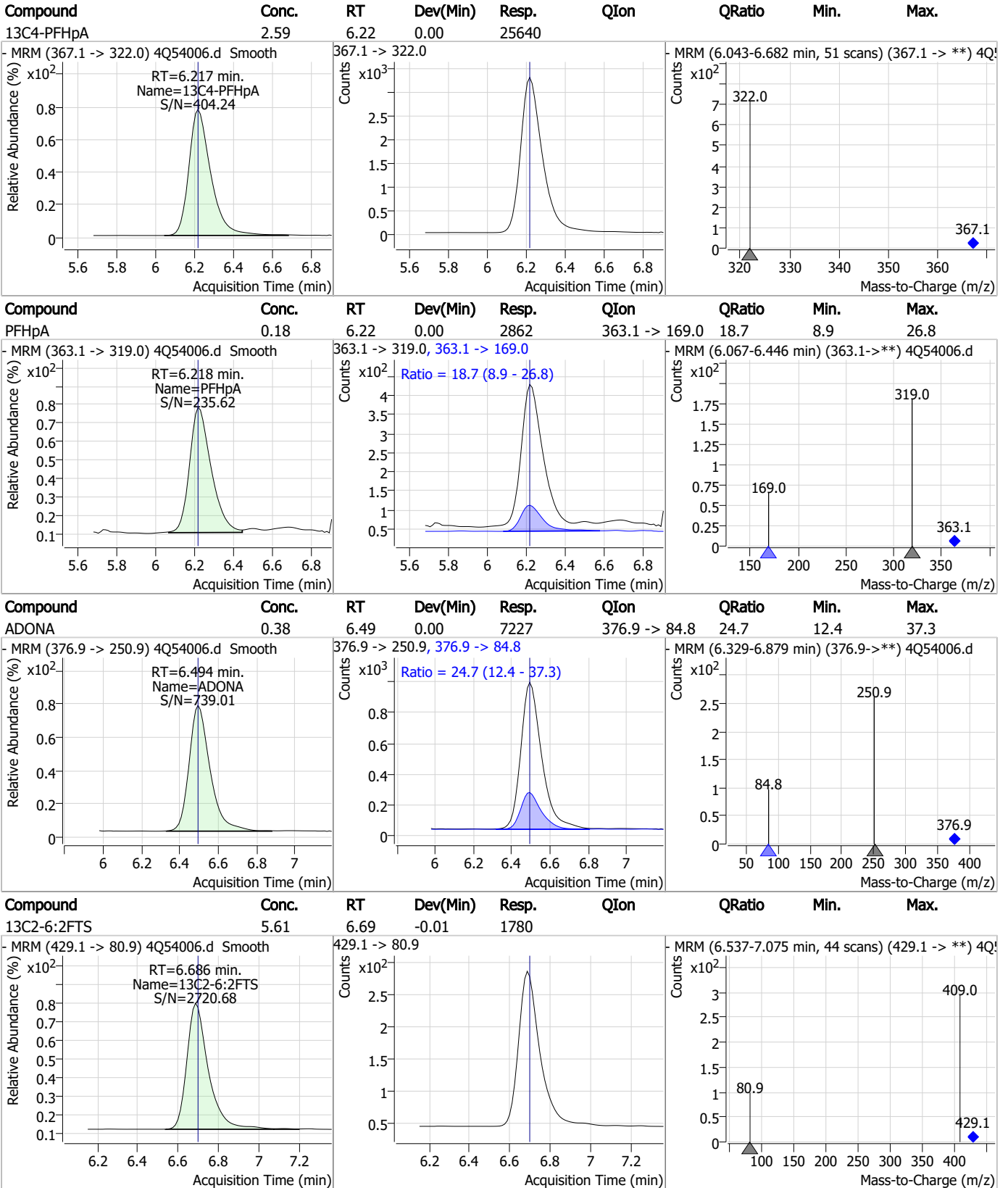


7.7.17

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Perfluorinated Compounds by LC/MS/MS

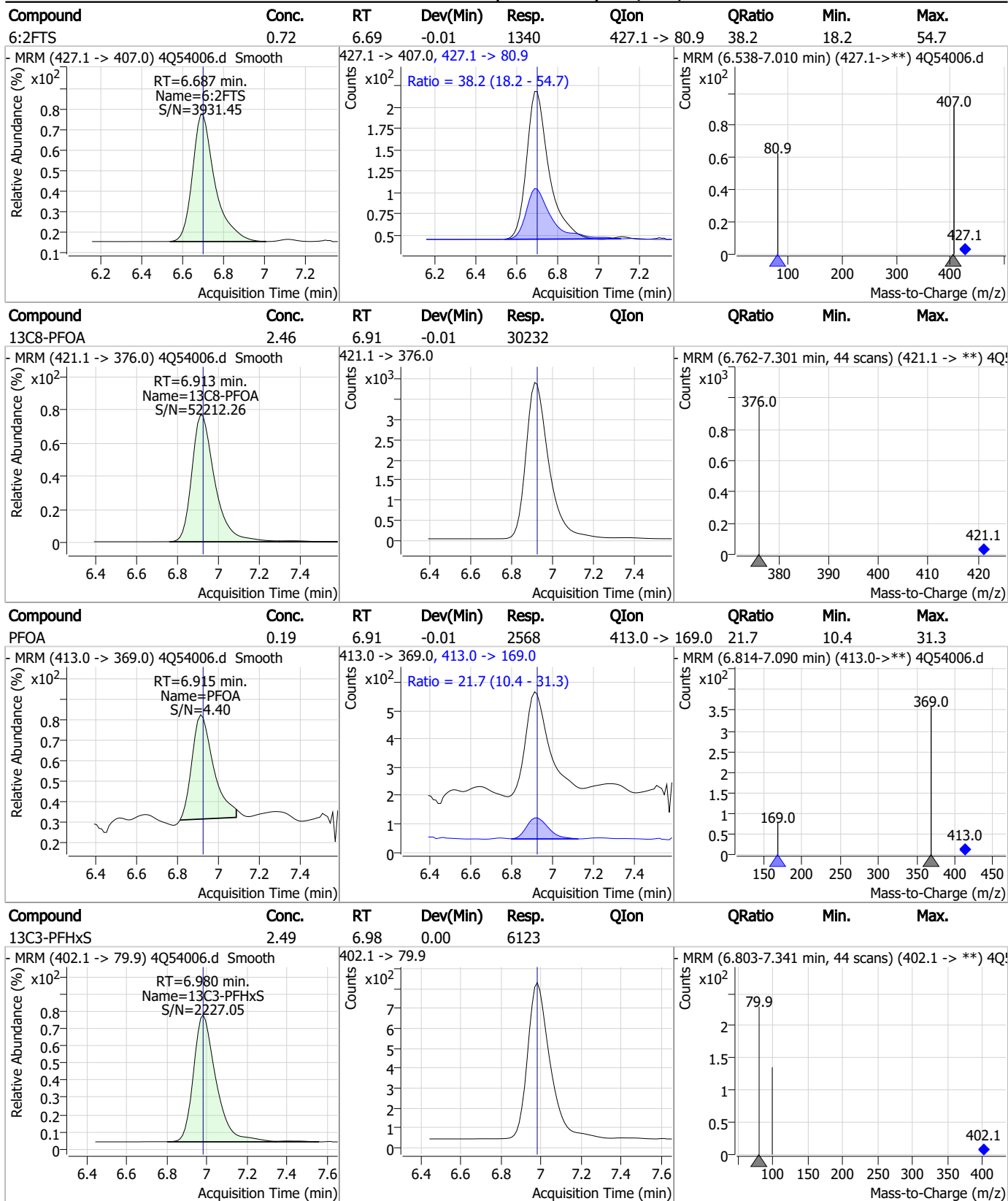


7.7.17

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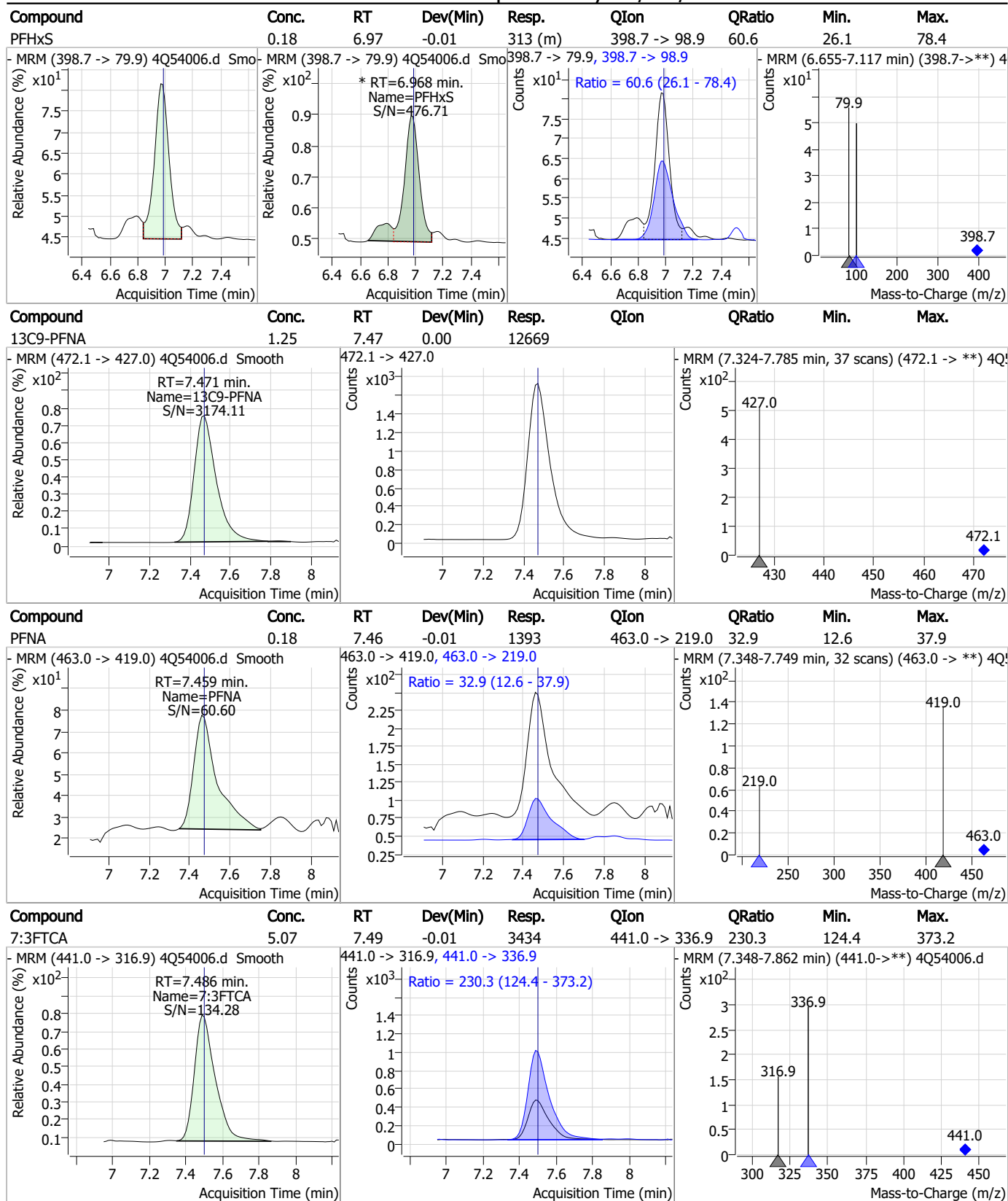


Perfluorinated Compounds by LC/MS/MS



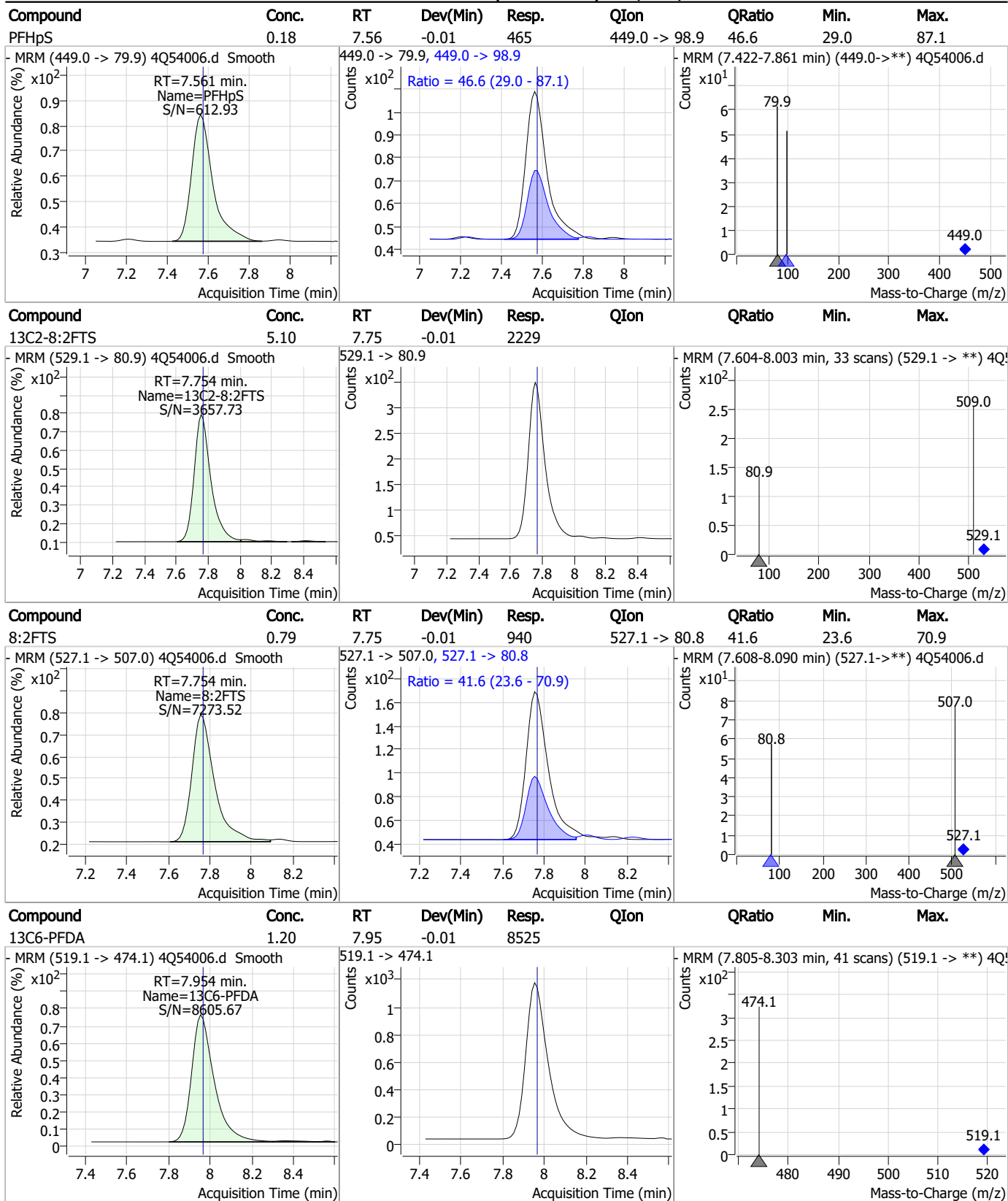
7.7.17

Perfluorinated Compounds by LC/MS/MS



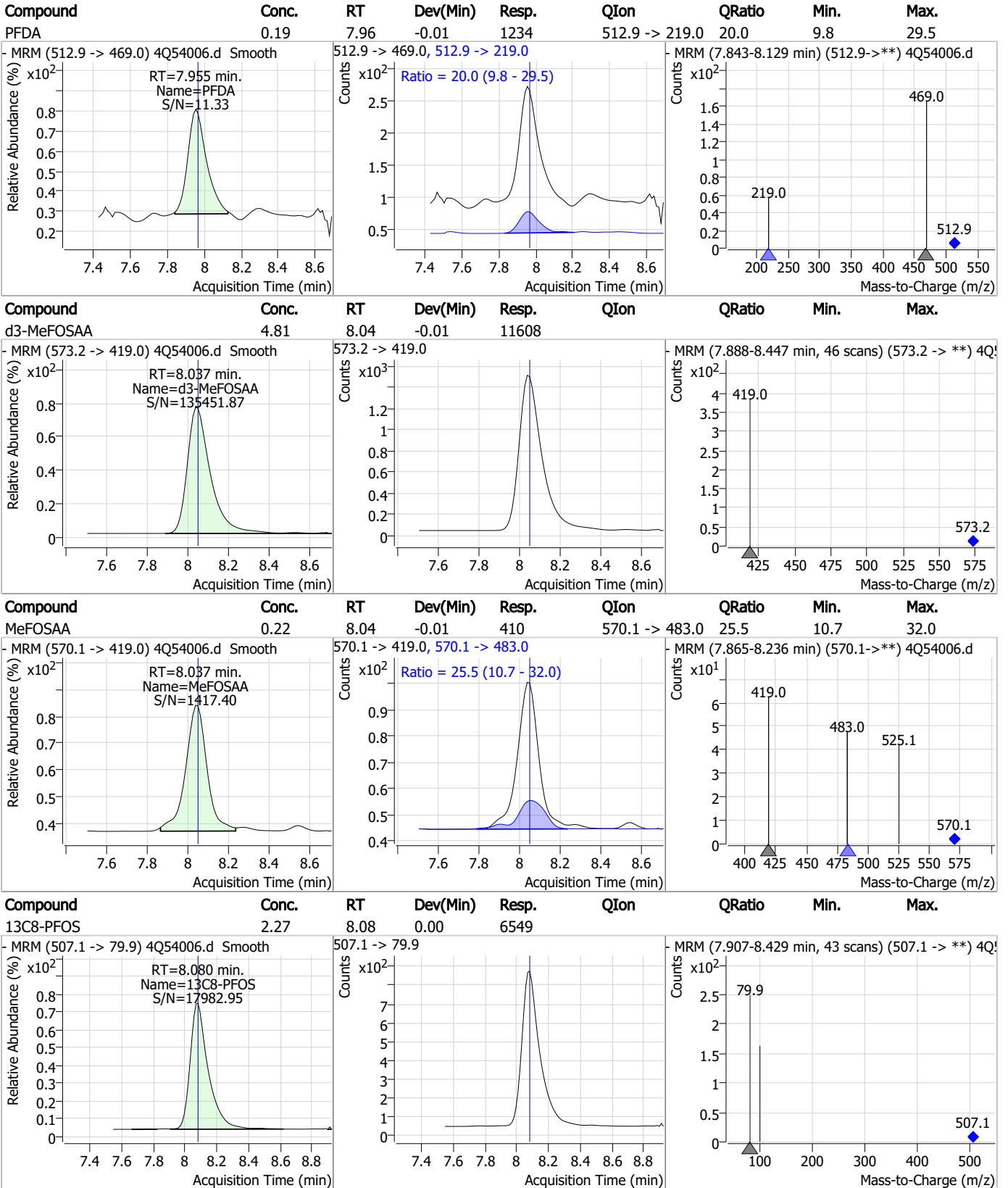
7.7.17

Perfluorinated Compounds by LC/MS/MS



7.7.17

Perfluorinated Compounds by LC/MS/MS

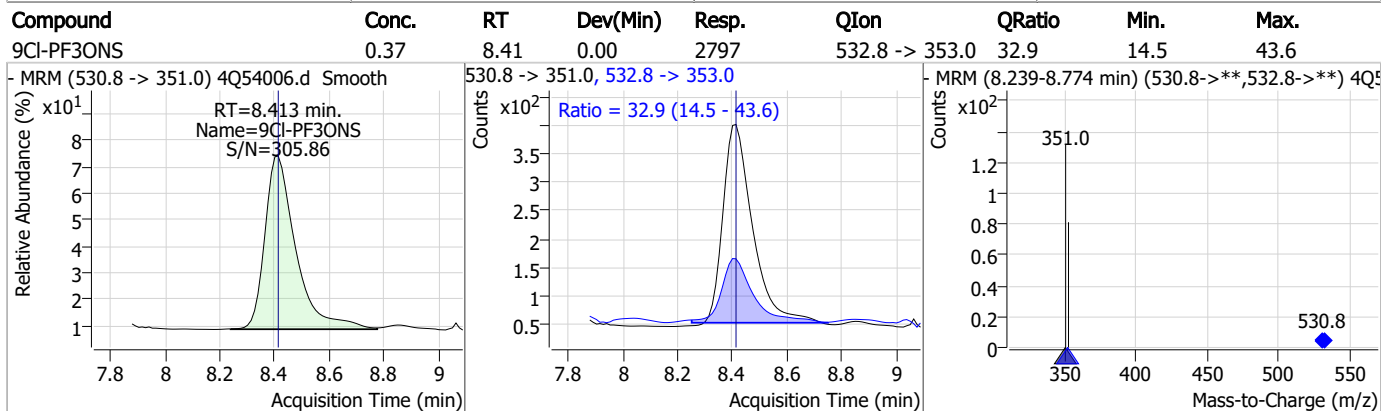
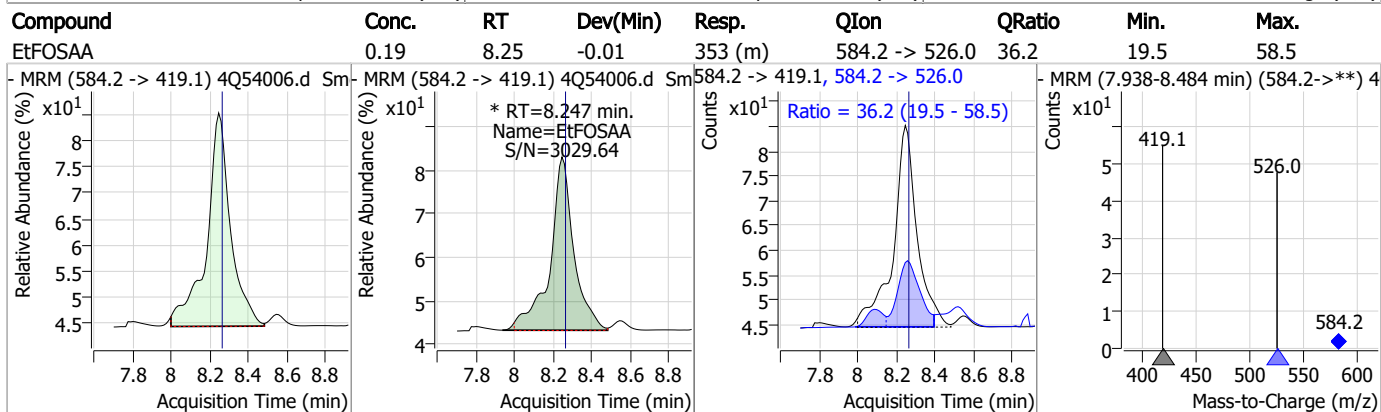
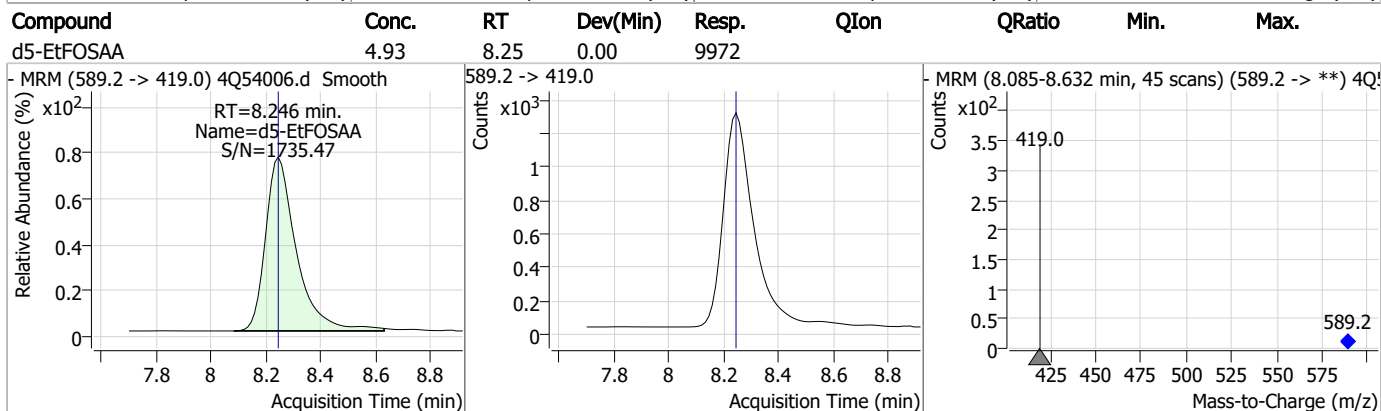
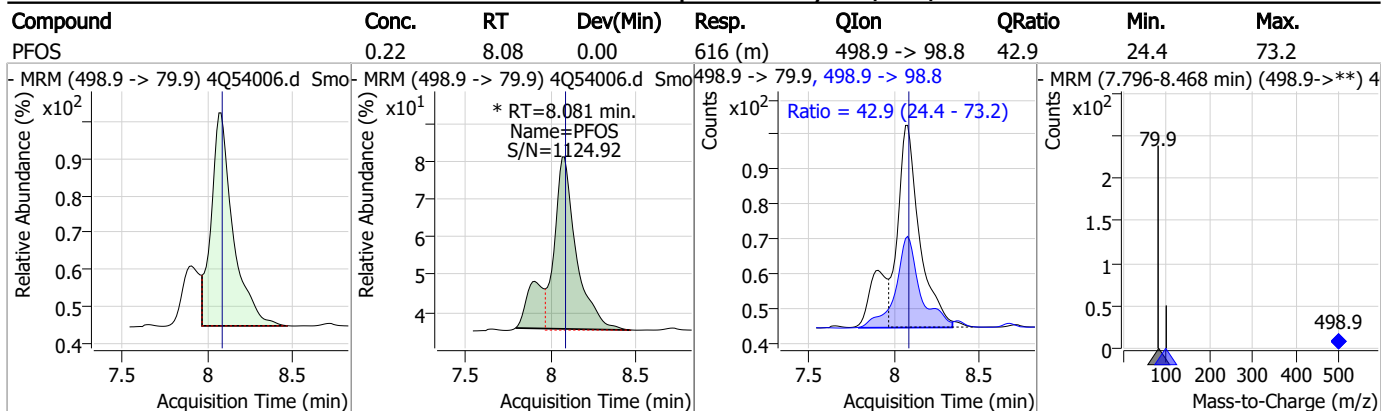


7.7.17

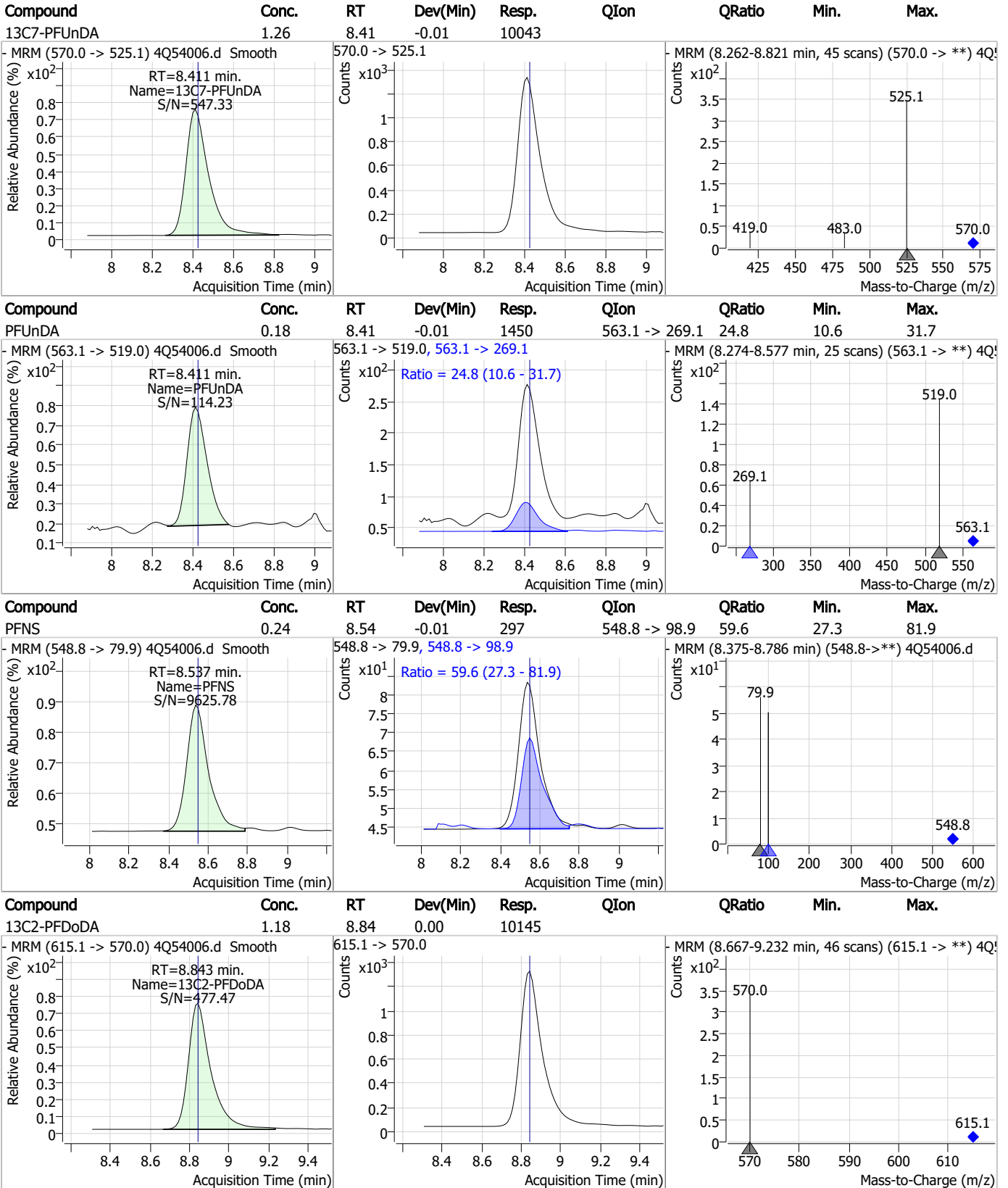
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

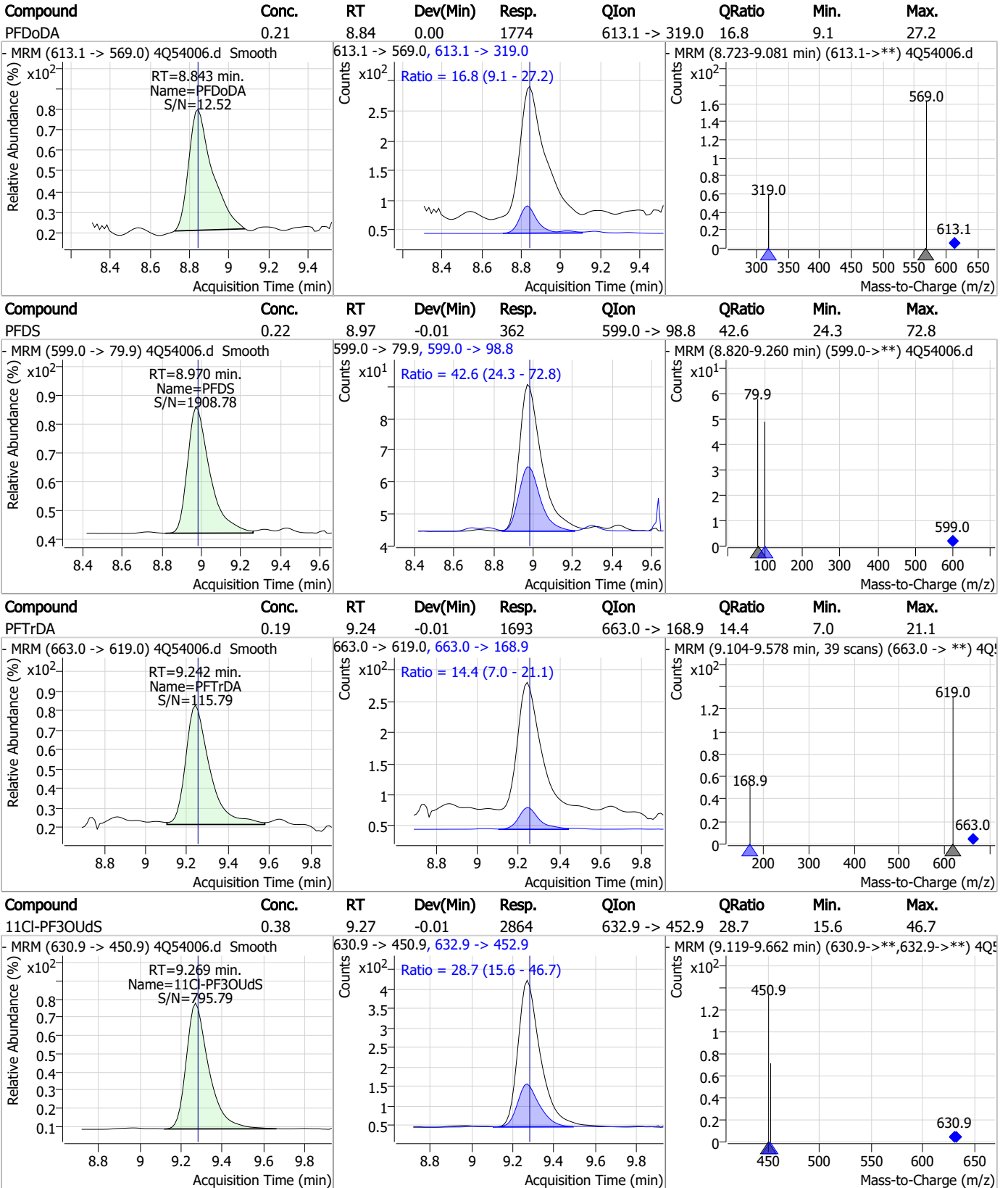


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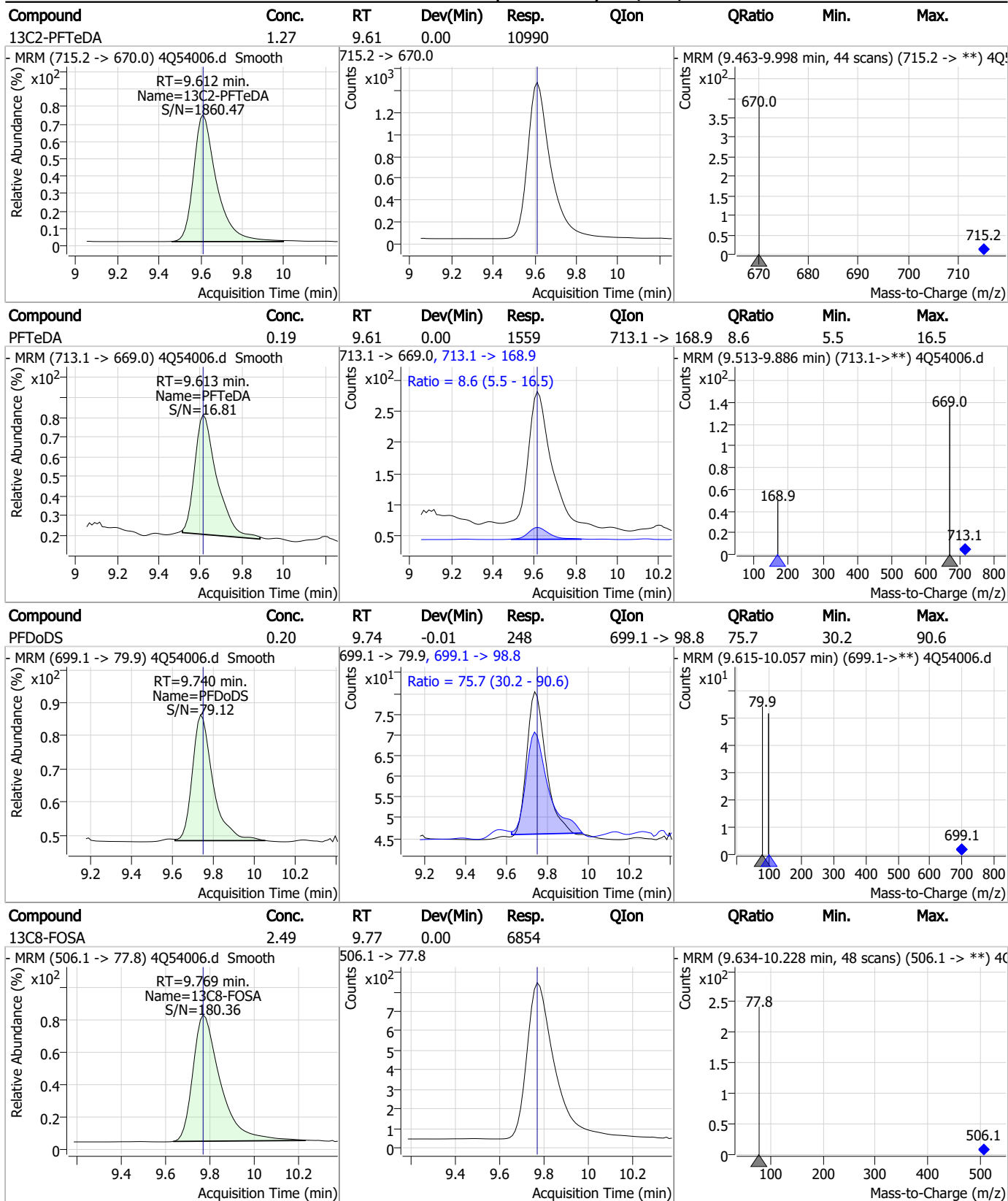
Perfluorinated Compounds by LC/MS/MS



7.7.17
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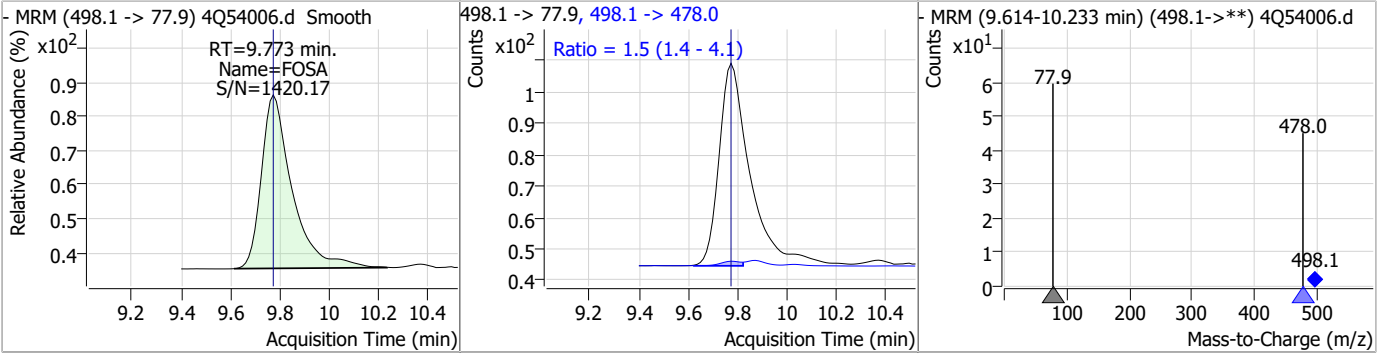
Perfluorinated Compounds by LC/MS/MS



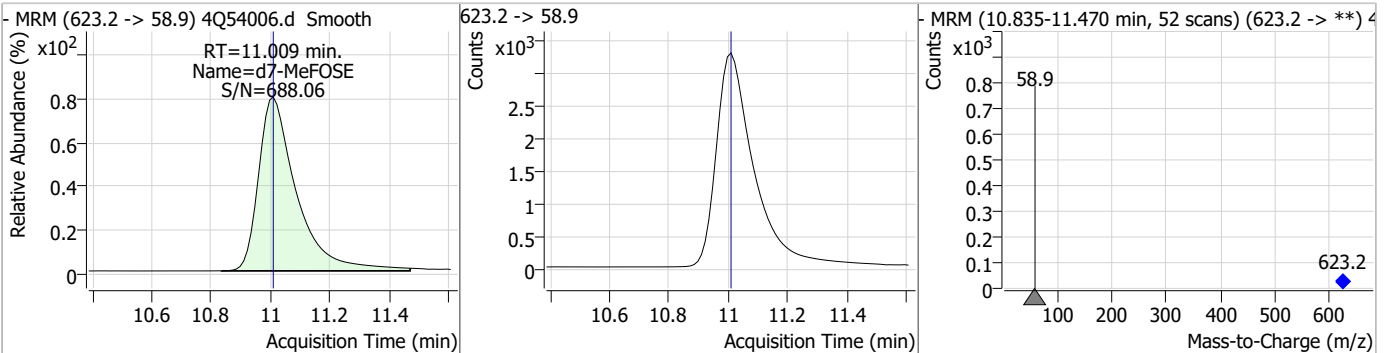
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Perfluorinated Compounds by LC/MS/MS

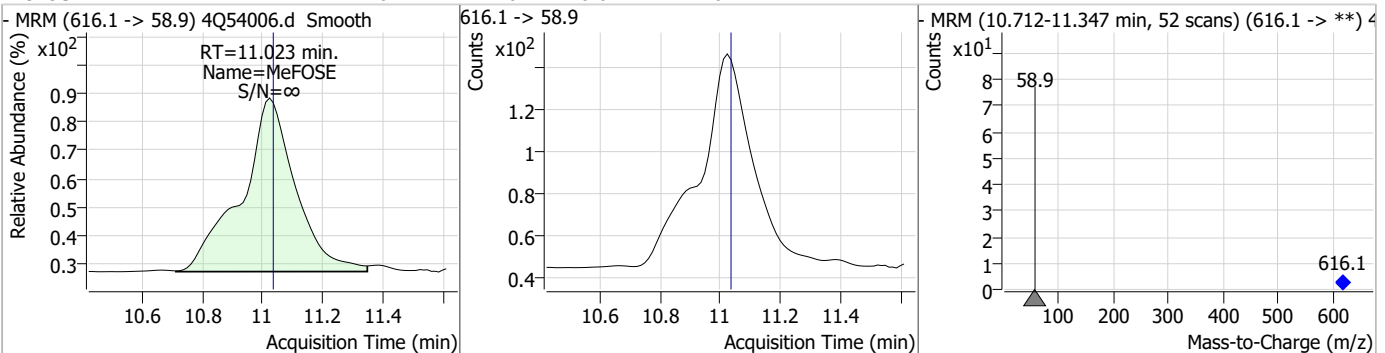
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.17	9.77	0.00	554	498.1 -> 478.0	1.5	1.4	4.1



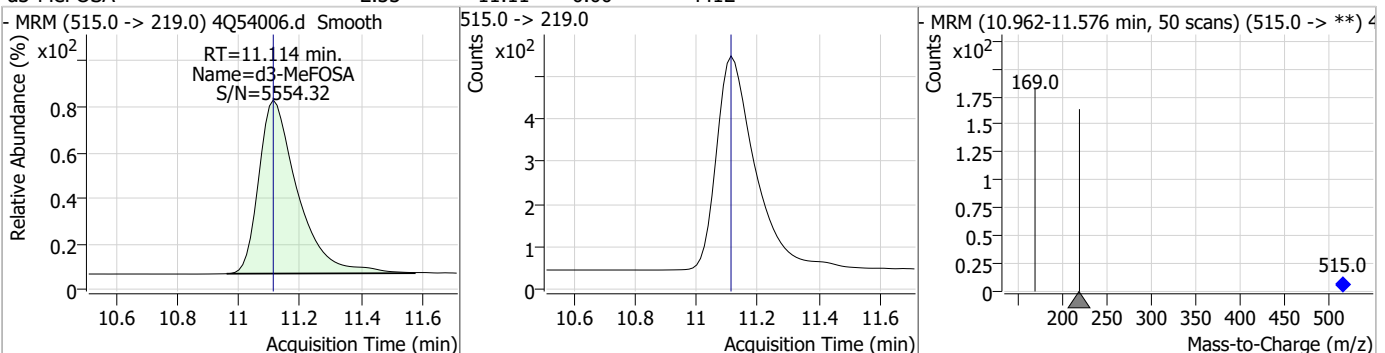
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.50	11.01	0.00	28916				



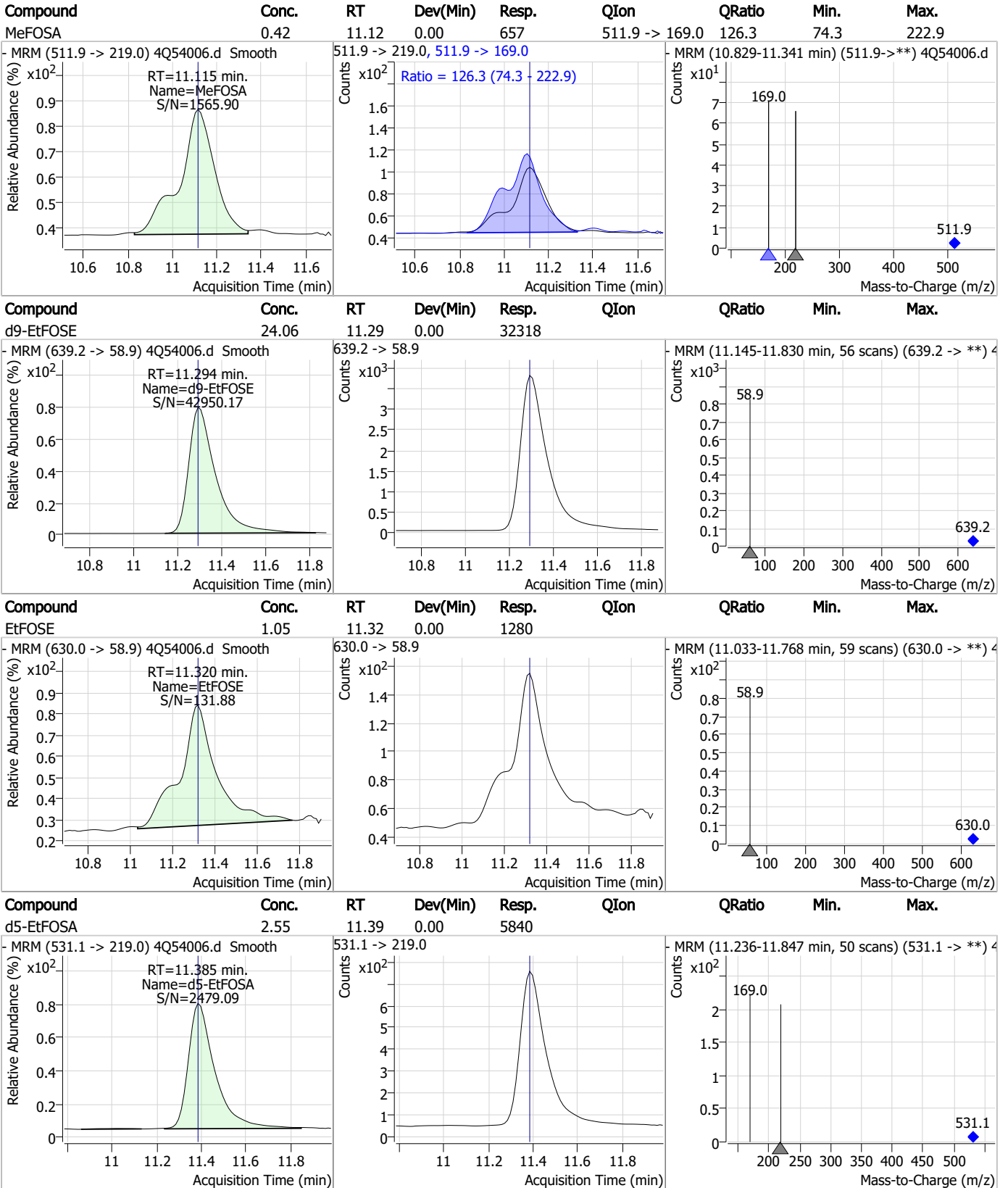
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	1.04	11.02	-0.01	1267				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.33	11.11	0.00	4412				



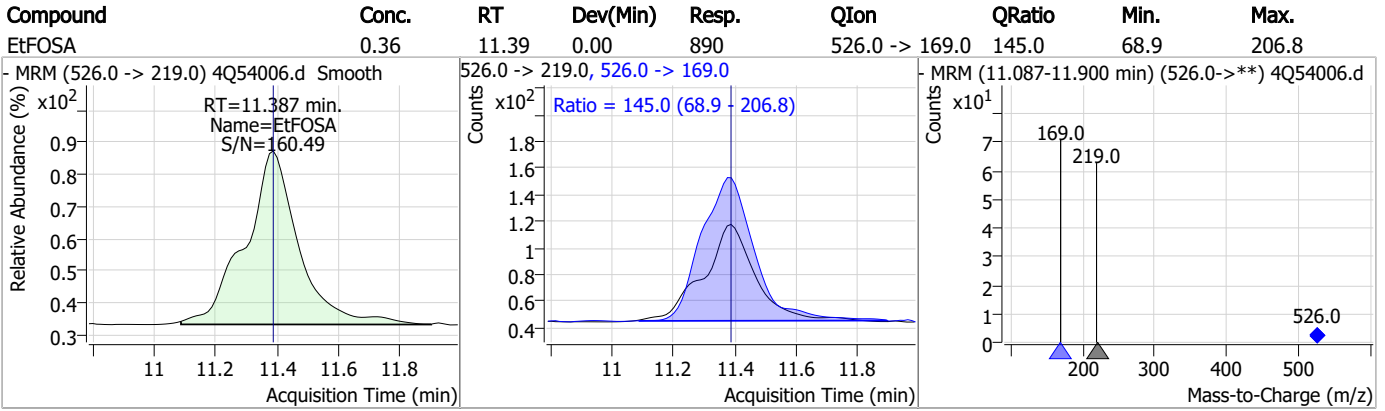
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q788-IC788 Method: EPA DRAFT 1633
Lab FileID: 4Q54006.D Analyst approved: 11/18/23 15:04 Mike Eger
Injection Time: 11/17/23 11:25 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.97	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.08	Split peak
EtFOSAA	2991-50-6		8.25	Split peak

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7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54007.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 11:40:15 AM
 Sample Name : ic788-2
 Vial : P1-A3
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.624	216.8 -> 171.9	82003	10.00 µg/L	0.025
M5-PFPeA	4.087	268.3 -> 223.0	36357	5.00 µg/L	0.000
M5-PFHxA	5.260	318.0 -> 273.0	26690	2.50 µg/L	0.000
M4-PFHpA	6.217	367.1 -> 322.0	26027	2.50 µg/L	0.000
M8-PFOA	6.926	421.1 -> 376.0	31145	2.50 µg/L	0.000
M9-PFNA	7.471	472.1 -> 427.0	12983	1.25 µg/L	0.000
M6-PFDA	7.954	519.1 -> 474.1	9052	1.25 µg/L	-0.012
M7-PFUnDA	8.411	570.0 -> 525.1	10949	1.25 µg/L	-0.013
M2-PFDoDA	8.843	615.1 -> 570.0	10276	1.25 µg/L	0.000
M2-PFTeDA	9.624	715.2 -> 670.0	10482	1.25 µg/L	0.012
M8-FOSA	9.781	506.1 -> 77.8	6770	2.50 µg/L	0.012
M3-PFBS	5.116	302.1 -> 79.9	7730	2.50 µg/L	0.000
M3-PFHxS	6.980	402.1 -> 79.9	6589	2.50 µg/L	0.000
M8-PFOS	8.080	507.1 -> 79.9	7136	2.50 µg/L	0.000
M2-4:2FTS	4.959	329.1 -> 80.9	780	5.00 µg/L	-0.012
M2-6:2FTS	6.699	429.1 -> 80.9	1855	5.00 µg/L	0.000
M2-8:2FTS	7.766	529.1 -> 80.9	2322	5.00 µg/L	0.000
M3-MeFOSAA	8.049	573.2 -> 419.0	11604	5.00 µg/L	0.000
M3-HFPO-DA	5.615	286.9 -> 168.9	23803	10.00 µg/L	0.000
M5-EtFOSAA	8.246	589.2 -> 419.0	9895	5.00 µg/L	0.000
M7-MeFOSE	11.009	623.2 -> 58.9	29897	25.00 µg/L	0.000
M9-EtFOSE	11.294	639.2 -> 58.9	33347	25.00 µg/L	0.000
M5-EtFOSA	11.385	531.1 -> 219.0	5777	2.50 µg/L	0.000
M3-MeFOSA	11.114	515.0 -> 219.0	4634	2.50 µg/L	0.000
13C4-PFOS	8.081	502.8 -> 79.9	6286	2.50 µg/L	0.000
13C3-PFBA	2.628	216.0 -> 172.0	40052	5.00 µg/L	0.037
18O2-PFHxS	6.979	403.0 -> 83.9	4142	2.50 µg/L	0.000
13C4-PFOA	6.914	417.1 -> 372.0	33846	2.50 µg/L	-0.012
13C2-PFDA	7.967	515.1 -> 470.1	8704	1.25 µg/L	0.000
13C5-PFNA	7.471	468.0 -> 423.0	12726	1.25 µg/L	0.000
13C2-PFHxA	5.261	315.1 -> 270.0	28954	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	4.959	329.1 -> 80.9	780	4.94 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C2-6:2FTS	6.699	429.1 -> 80.9	1855	5.53 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.6%		
13C2-8:2FTS	7.766	529.1 -> 80.9	2322	5.03 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C2-PFDoDA	8.843	615.1 -> 570.0	10276	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.6%		
13C2-PFTeDA	9.624	715.2 -> 670.0	10482	1.34 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.1%		
13C3-PFBS	5.116	302.1 -> 79.9	7730	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C3-PFHxS	6.980	402.1 -> 79.9	6589	2.53 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C4-PFBA	2.624	216.8 -> 171.9	82003	9.92 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C4-PFHpA	6.217	367.1 -> 322.0	26027	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C5-PFHxA	5.260	318.0 -> 273.0	26690	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C5-PFPeA	4.087	268.3 -> 223.0	36357	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C6-PFDA	7.954	519.1 -> 474.1	9052	1.40 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 111.9%	
13C7-PFUnDA	8.411	570.0 -> 525.1	10949	1.51 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 120.6%	
13C8-FOSA	9.781	506.1 -> 77.8	6770	2.31 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.2%	
13C8-PFOA	6.926	421.1 -> 376.0	31145	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C8-PFOS	8.080	507.1 -> 79.9	7136	2.32 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.6%	
13C9-PFNA	7.471	472.1 -> 427.0	12983	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.7%	
d3-MeFOSAA	8.049	573.2 -> 419.0	11604	4.51 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 90.1%	
13C3-HFPO-DA	5.615	286.9 -> 168.9	23803	9.85 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.5%	
d3-MeFOSA	11.114	515.0 -> 219.0	4634	2.30 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.9%	
d5-EtFOSAA	8.246	589.2 -> 419.0	9895	4.58 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 91.6%	
d7-MeFOSE	11.009	623.2 -> 58.9	29897	23.74 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.0%	
d9-EtFOSE	11.294	639.2 -> 58.9	33347	23.27 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 93.1%	
d5-EtFOSA	11.385	531.1 -> 219.0	5777	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.5%	
Target Compounds					QValue
4:2FTS	4.972	327.1 -> 307.0	2024	1.42 µg/L	97
		327.1 -> 80.9	830		
6:2FTS	6.699	427.1 -> 407.0	2441	1.27 µg/L	90
		427.1 -> 80.9	1039		
8:2FTS	7.754	527.1 -> 507.0	1771	1.44 µg/L	88
		527.1 -> 80.8	694		
EtFOSAA	8.259	584.2 -> 419.1	764	0.41 µg/L	85
		584.2 -> 526.0	229		
FOSA	9.773	498.1 -> 77.9	1173	0.37 µg/L	99
		498.1 -> 478.0	36		
MeFOSAA	8.050	570.1 -> 419.0	577	0.31 µg/L	94
		570.1 -> 483.0	139		
PFBA	2.620	212.8 -> 168.9	4003	1.42 µg/L	100
PFBS	5.117	298.7 -> 79.9	940	0.37 µg/L	99
		298.7 -> 98.8	349		
PFDA	7.955	512.9 -> 469.0	2332	0.34 µg/L	93
		512.9 -> 219.0	530		
PFDODA	8.843	613.1 -> 569.0	3206	0.38 µg/L	95
		613.1 -> 319.0	509		
PFDS	8.983	599.0 -> 79.9	659	0.36 µg/L	99

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	317			
PFHpA	6.218	363.1 -> 319.0	5918	0.38	µg/L	100
		363.1 -> 169.0	1041			
PFHpS	7.561	449.0 -> 79.9	1005	0.37	µg/L	97
		449.0 -> 98.9	559			
PFHxA	5.263	313.0 -> 269.0	3292	0.37	µg/L	100
		313.0 -> 118.9	95			
PFHxS	6.981	398.7 -> 79.9	629	0.33	µg/L	m 74
		398.7 -> 98.9	215			
PFNA	7.472	463.0 -> 419.0	2960	0.37	µg/L	97
		463.0 -> 219.0	799			
PFNS	8.549	548.8 -> 79.9	398	0.30	µg/L	65
		548.8 -> 98.9	318			
PFOA	6.915	413.0 -> 369.0	4795	0.35	µg/L	93
		413.0 -> 169.0	853			
PFOS	8.081	498.9 -> 79.9	1041	0.34	µg/L	m 95
		498.9 -> 98.8	471			
PFPeA	4.089	263.0 -> 219.0	4966	0.69	µg/L	100
PFPeS	6.207	349.1 -> 79.9	788	0.37	µg/L	97
		349.1 -> 98.9	366			
PFTeDA	9.613	713.1 -> 669.0	2776	0.36	µg/L	98
		713.1 -> 168.9	280			
PFTrDA	9.242	663.0 -> 619.0	3376	0.38	µg/L	97
		663.0 -> 168.9	430			
PFUnDA	8.411	563.1 -> 519.0	2955	0.34	µg/L	92
		563.1 -> 269.1	733			
11CI-PF3OUdS	9.269	630.9 -> 450.9	4961	0.67	µg/L	94
		632.9 -> 452.9	1707			
9CI-PF3ONS	8.413	530.8 -> 351.0	5332	0.72	µg/L	99
		532.8 -> 353.0	1592			
ADONA	6.494	376.9 -> 250.9	13004	0.70	µg/L	98
		376.9 -> 84.8	3348			
HFPO-DA	5.616	284.9 -> 168.9	1689	0.72	µg/L	95
		284.9 -> 184.9	151			
3:3FTCA	3.548	241.0 -> 177.0	765	1.73	µg/L	98
		241.0 -> 117.0	75			
5:3FTCA	5.943	341.0 -> 237.1	13315	8.60	µg/L	98
		341.0 -> 217.0	9693			
7:3FTCA	7.486	441.0 -> 316.9	5875	8.42	µg/L	99
		441.0 -> 336.9	14472			
EtFOSA	11.387	526.0 -> 219.0	1670	0.69	µg/L	97
		526.0 -> 169.0	2374			
EtFOSE	11.307	630.0 -> 58.9	2465	1.96	µg/L	100
MeFOSA	11.115	511.9 -> 219.0	1169	0.71	µg/L	99
		511.9 -> 169.0	1728			
MeFOSE	11.023	616.1 -> 58.9	2144	1.70	µg/L	m 100
PFDoDS	9.752	699.1 -> 79.9	419	0.31	µg/L	89
		699.1 -> 98.8	288			
NFDHA	5.141	295.0 -> 201.0	490	0.64	µg/L	93
		295.0 -> 84.9	110			
PFMBA	4.491	279.0 -> 85.1	2880	0.72	µg/L	100
PFMPA	3.240	229.0 -> 84.9	3327	0.73	µg/L	100
PFEESA	5.647	314.8 -> 134.9	4373	0.62	µg/L	100
		314.8 -> 82.9	143			

= Qualifier out of range, m = manually integrated, + = Area summed

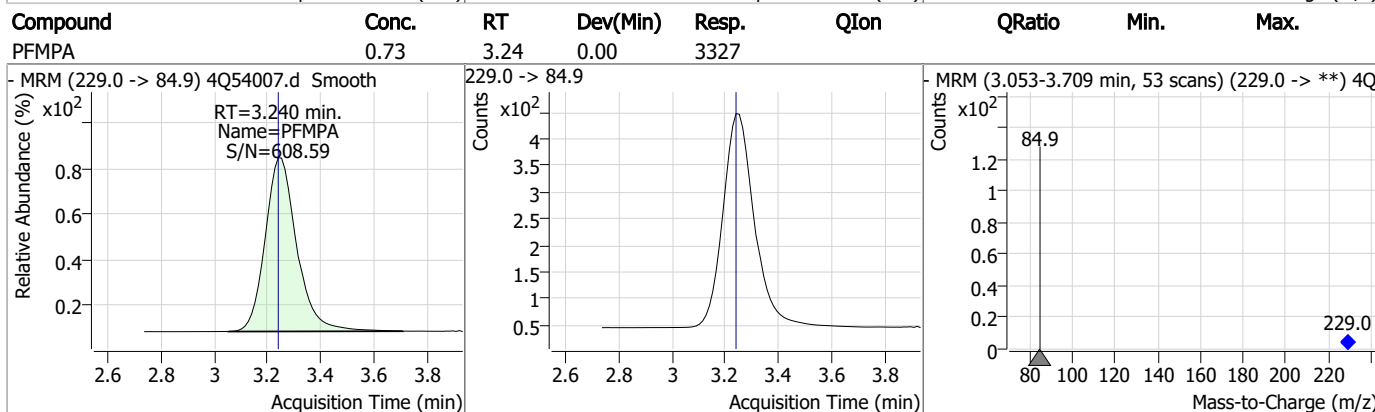
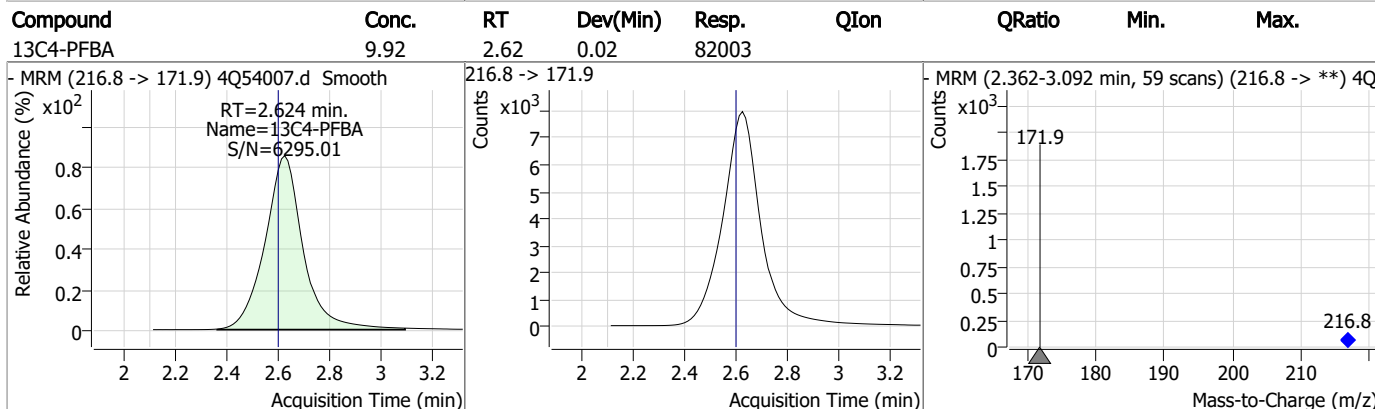
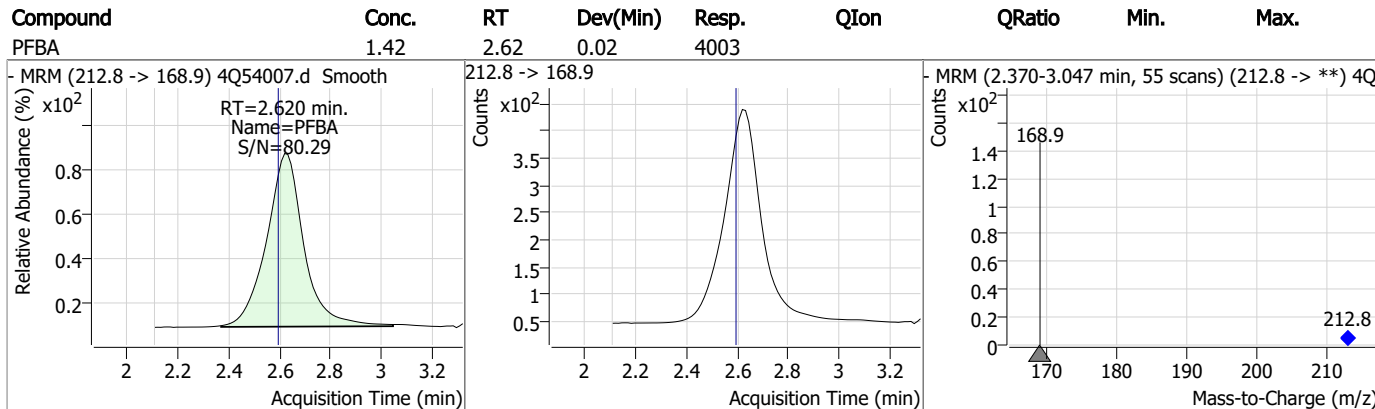
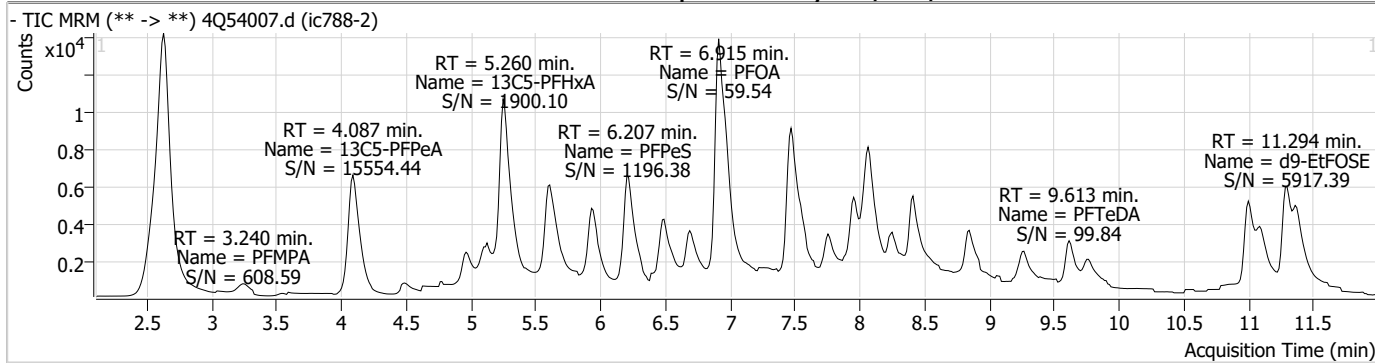
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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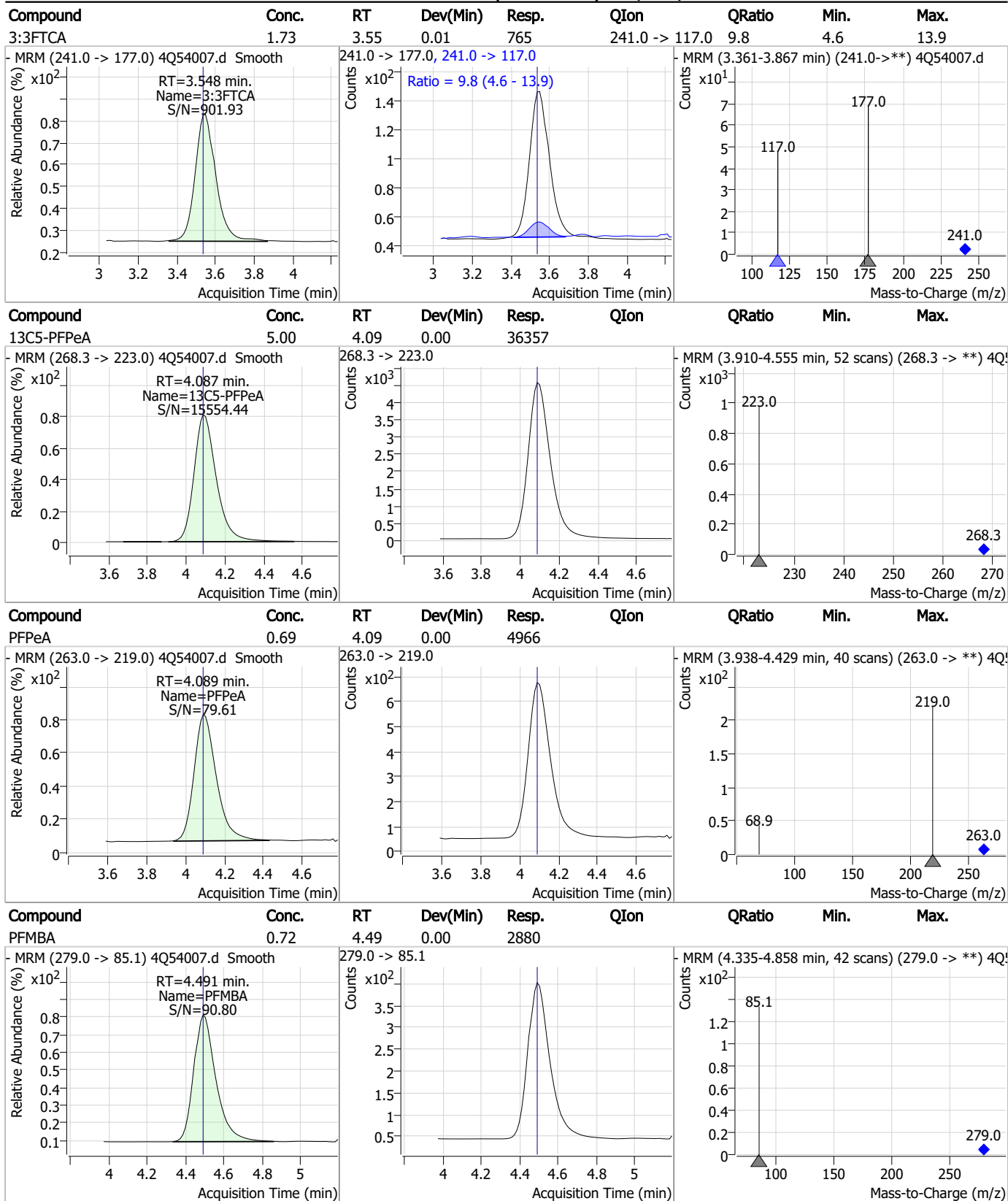
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Perfluorinated Compounds by LC/MS/MS



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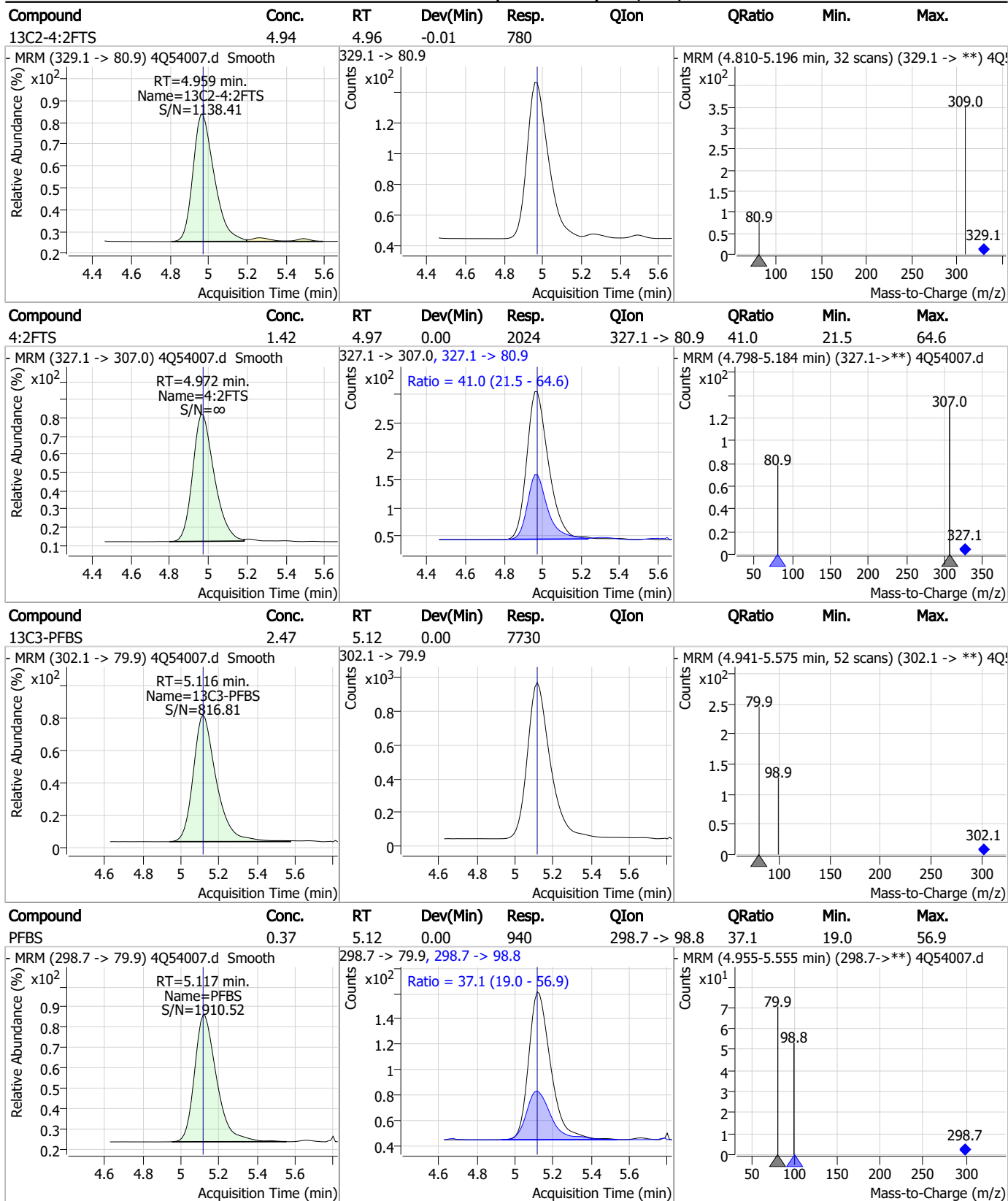
Perfluorinated Compounds by LC/MS/MS



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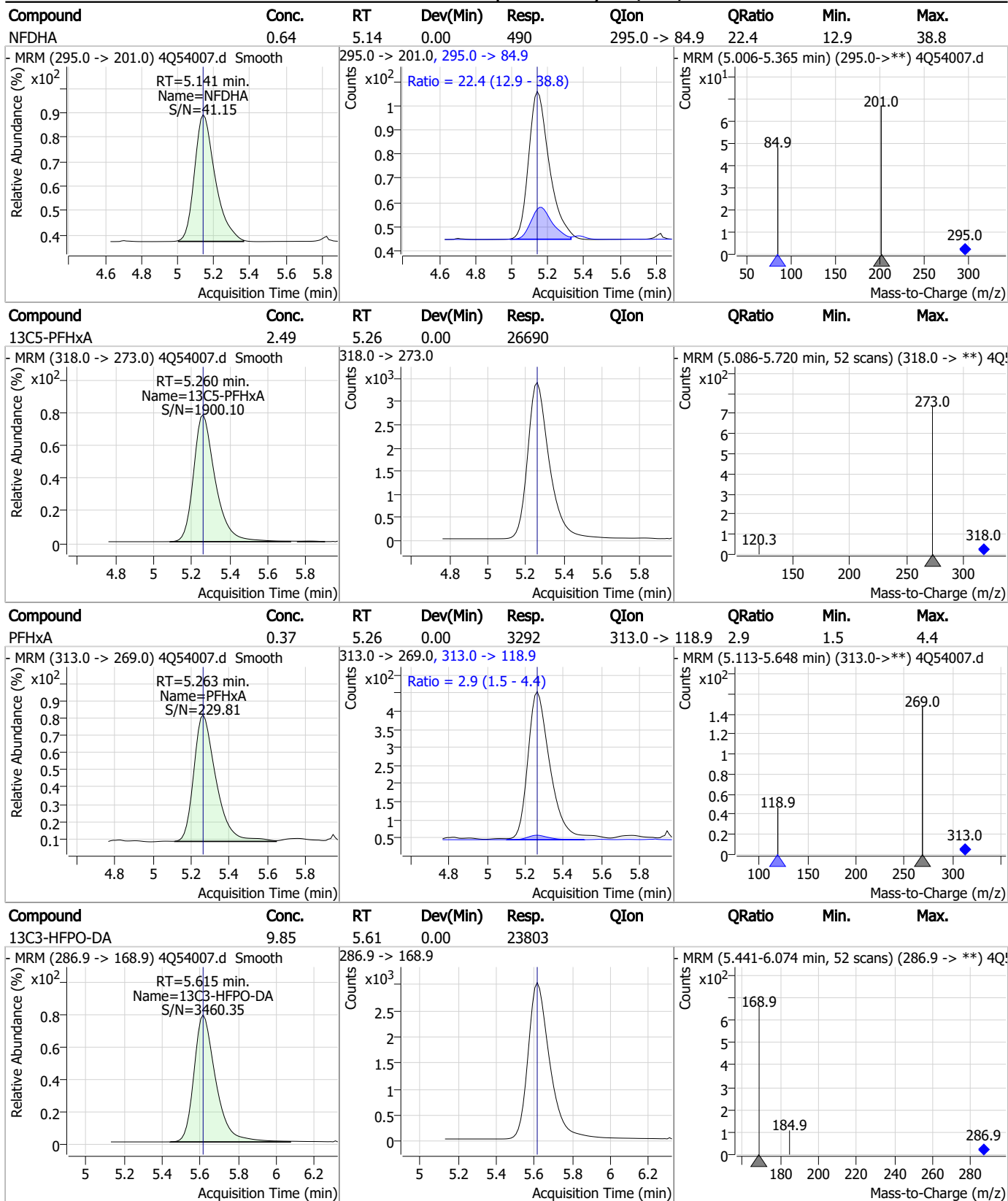
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Perfluorinated Compounds by LC/MS/MS



7.7.18 7

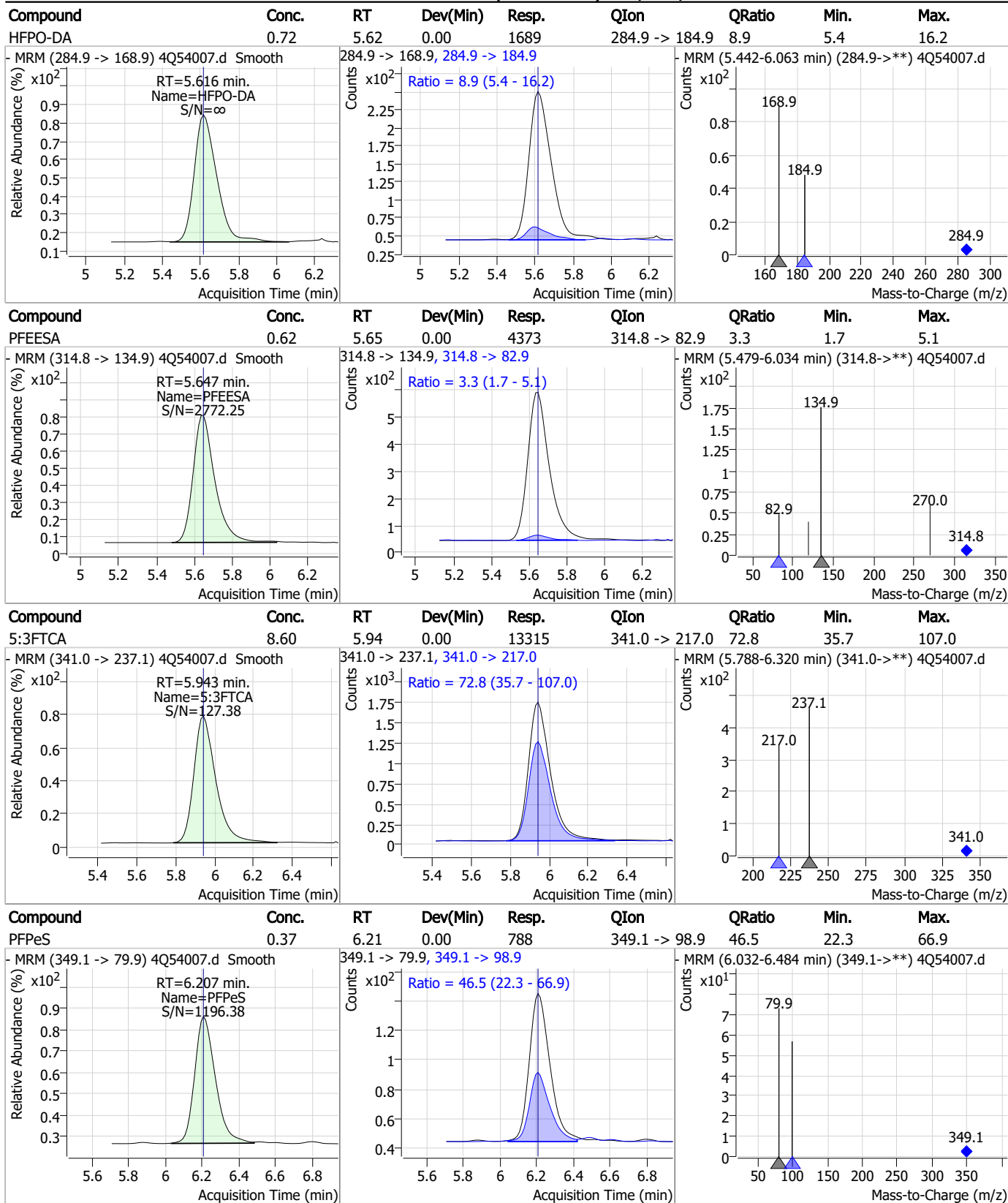
Perfluorinated Compounds by LC/MS/MS



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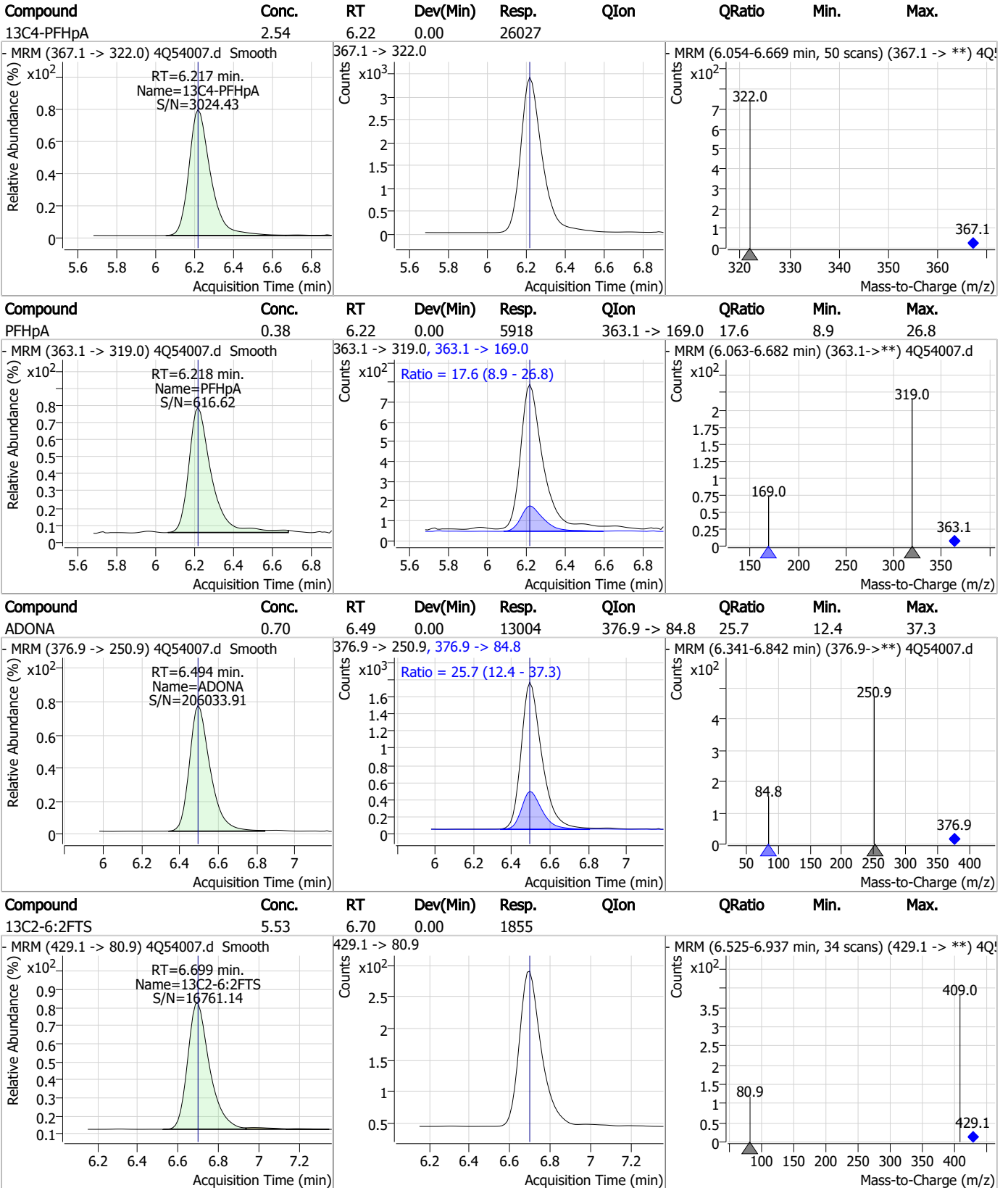
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Perfluorinated Compounds by LC/MS/MS



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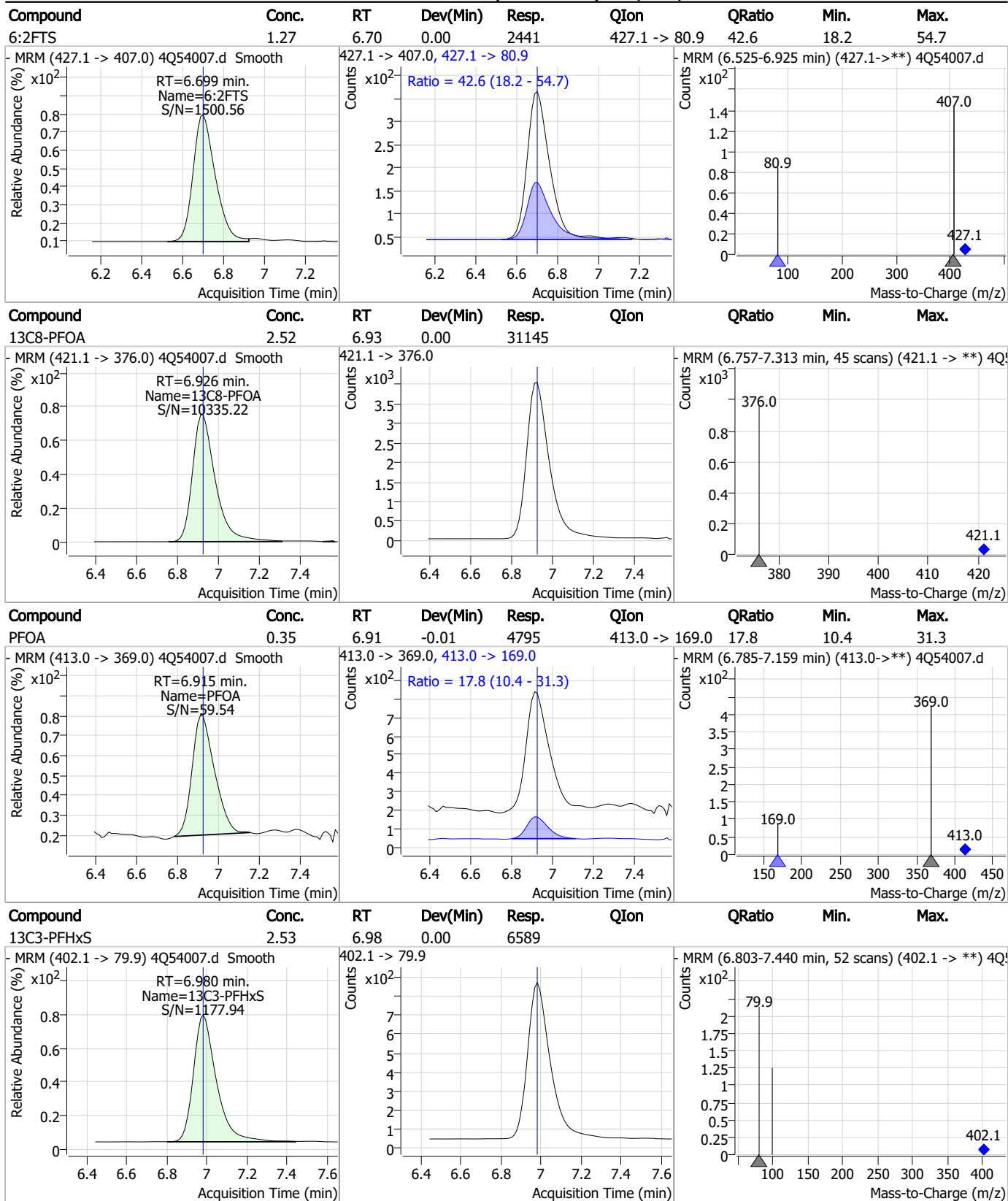
Perfluorinated Compounds by LC/MS/MS



7.7.18 7



Perfluorinated Compounds by LC/MS/MS

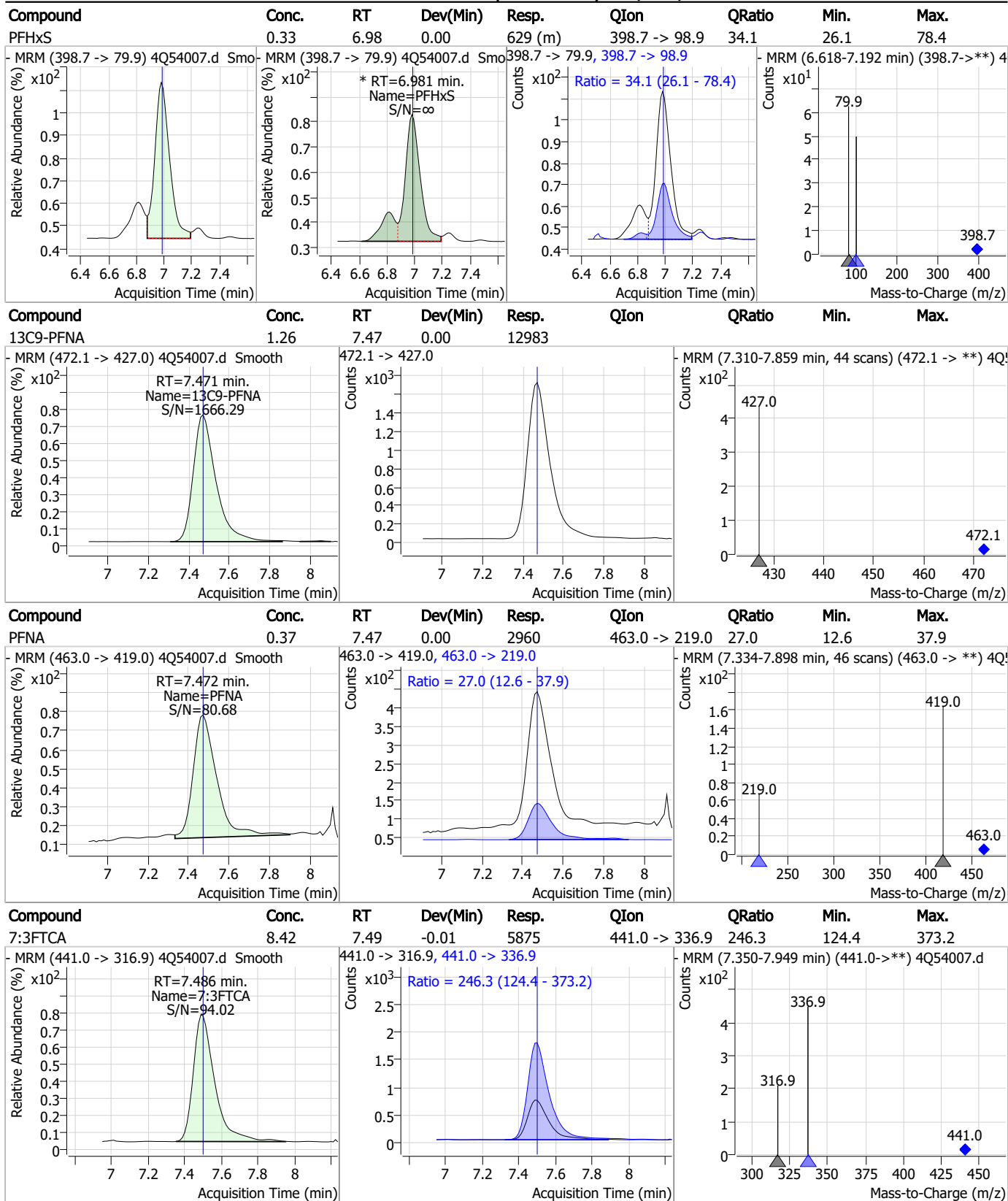


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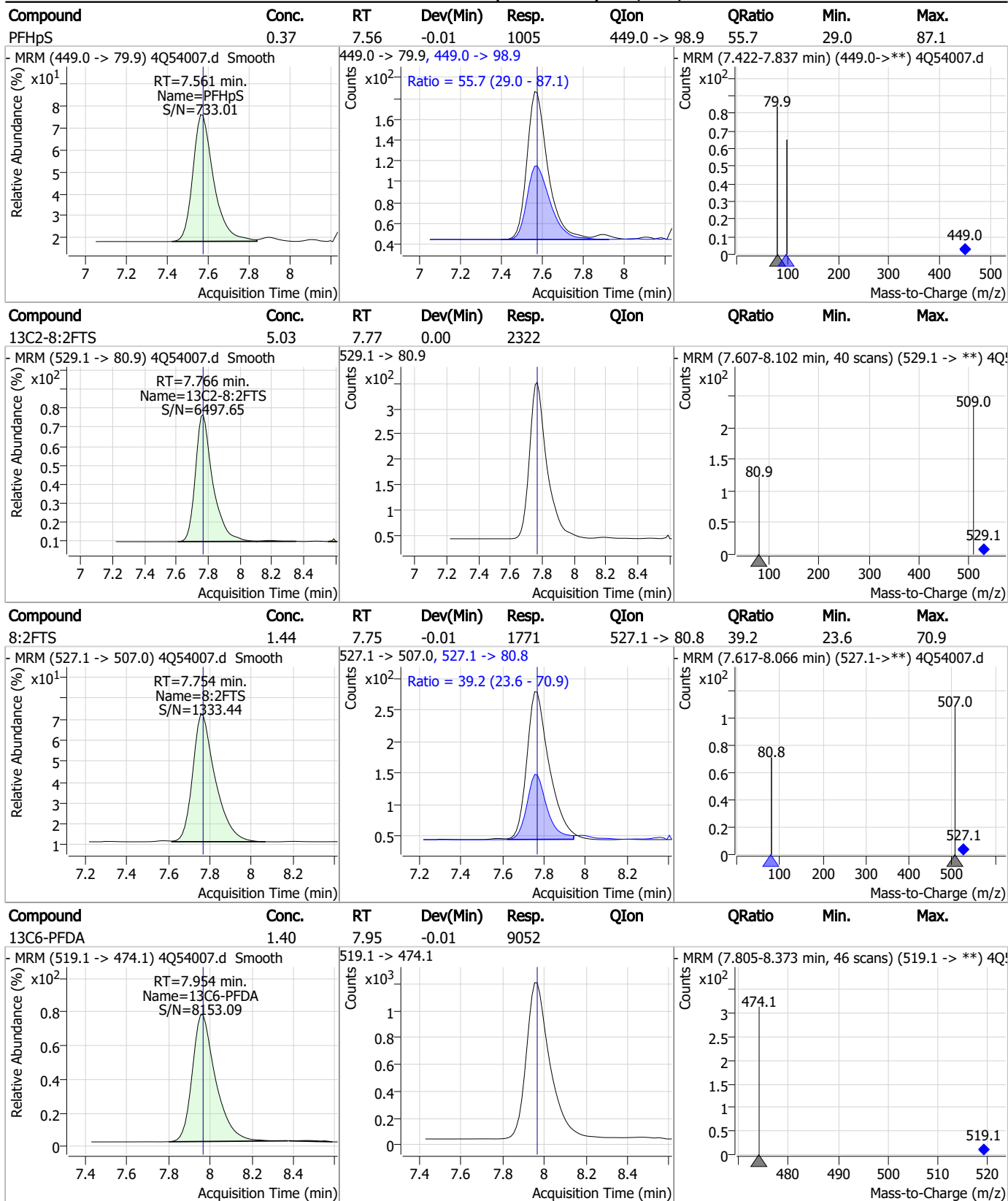


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

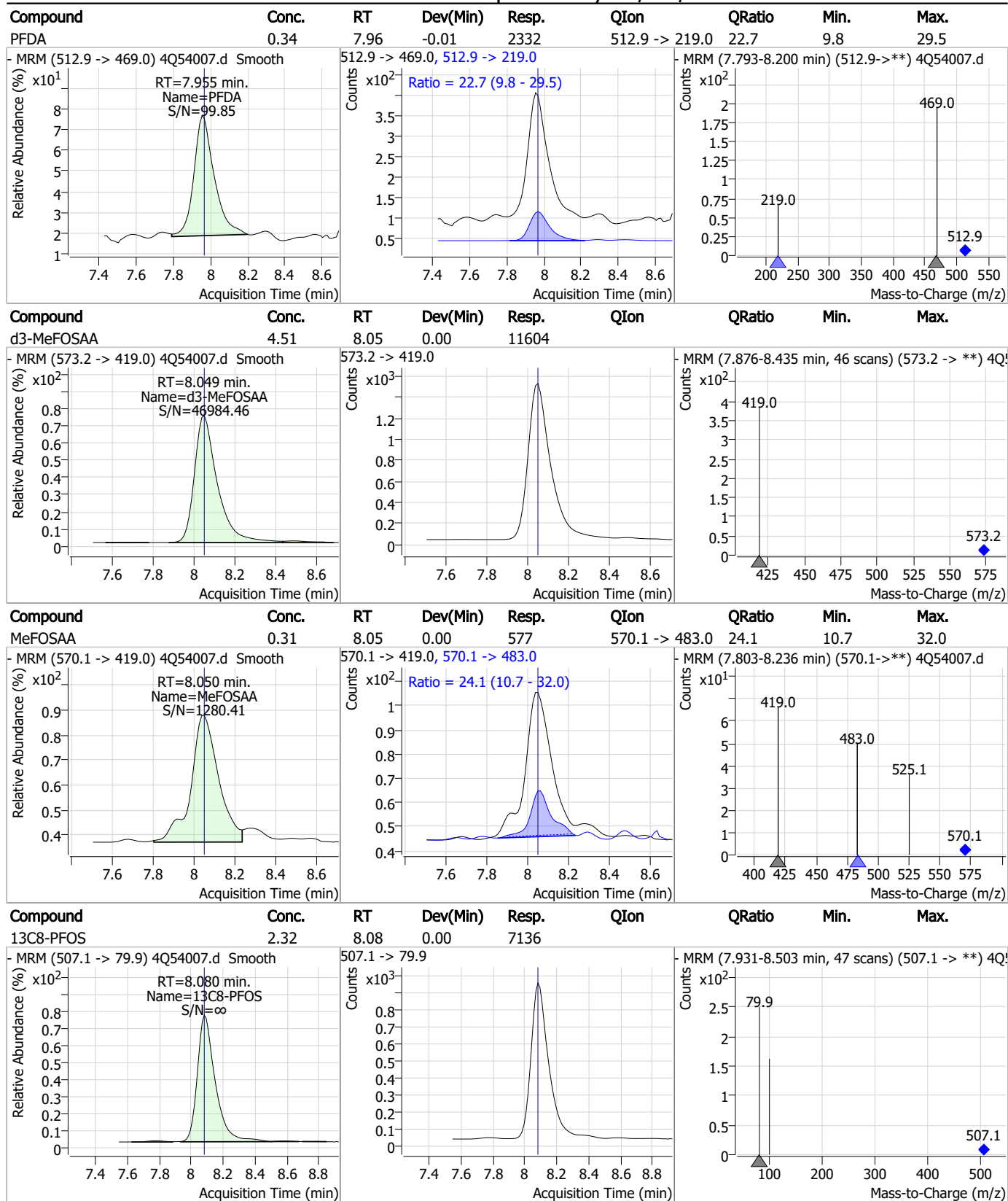


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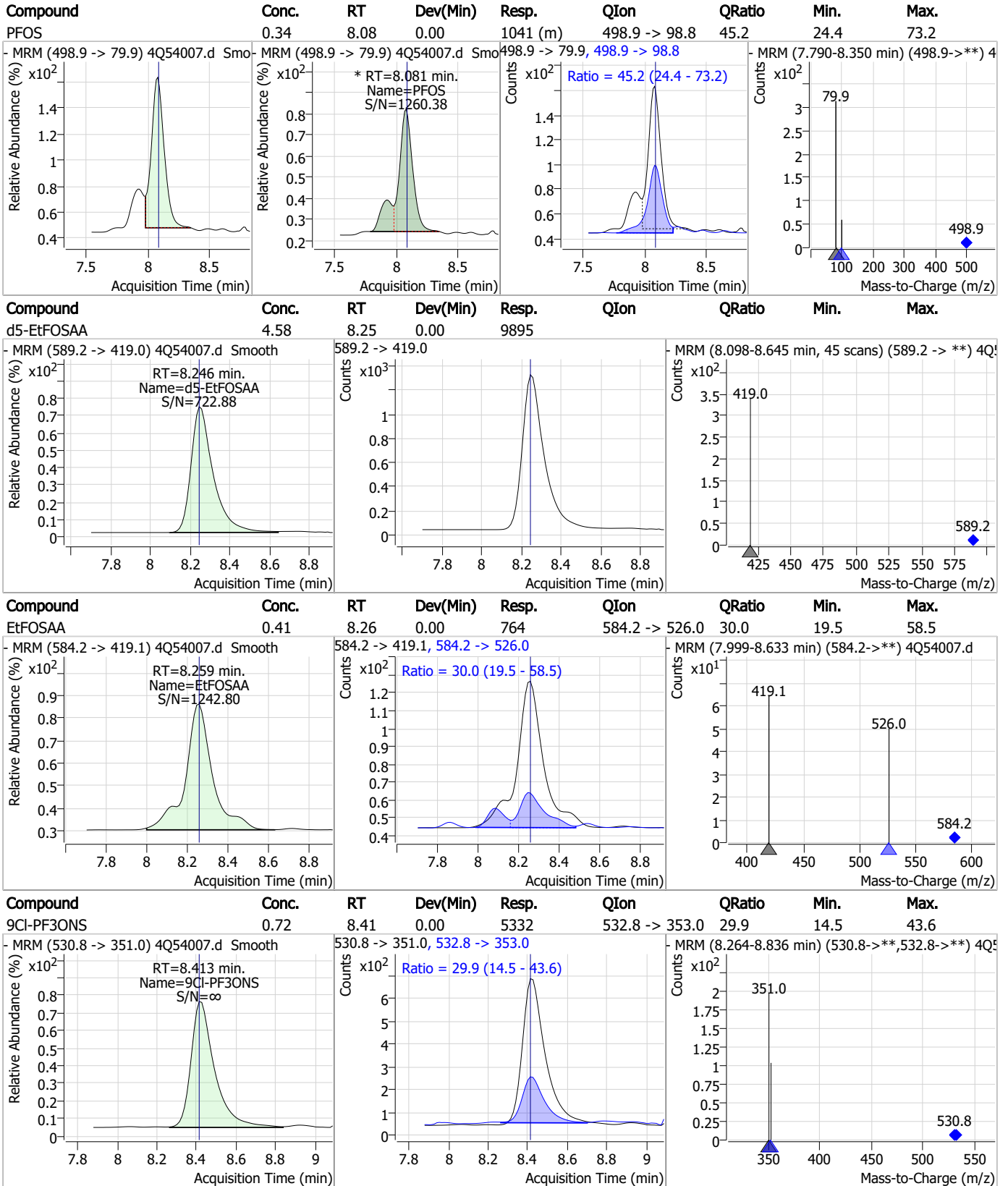
Perfluorinated Compounds by LC/MS/MS



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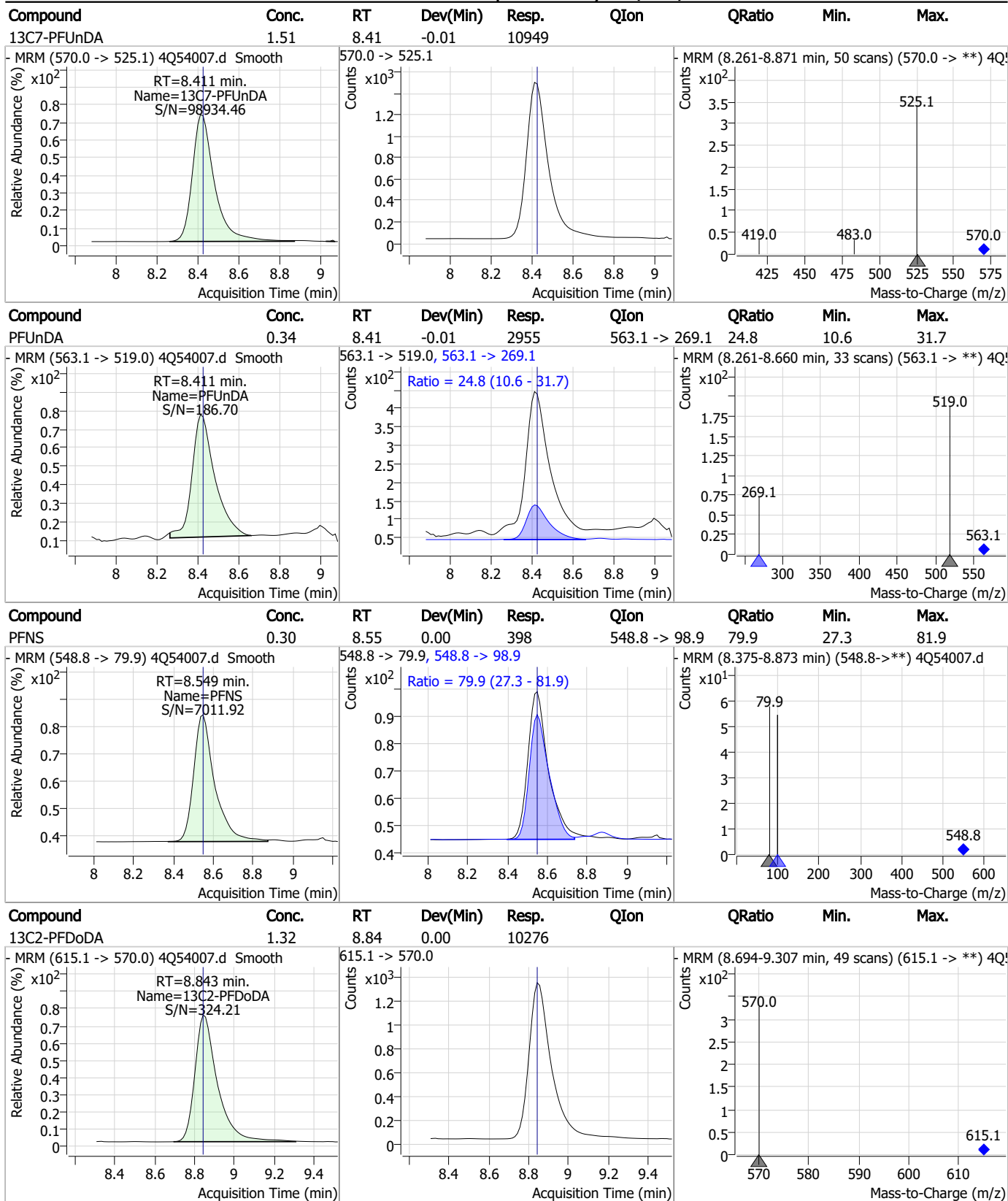
Perfluorinated Compounds by LC/MS/MS



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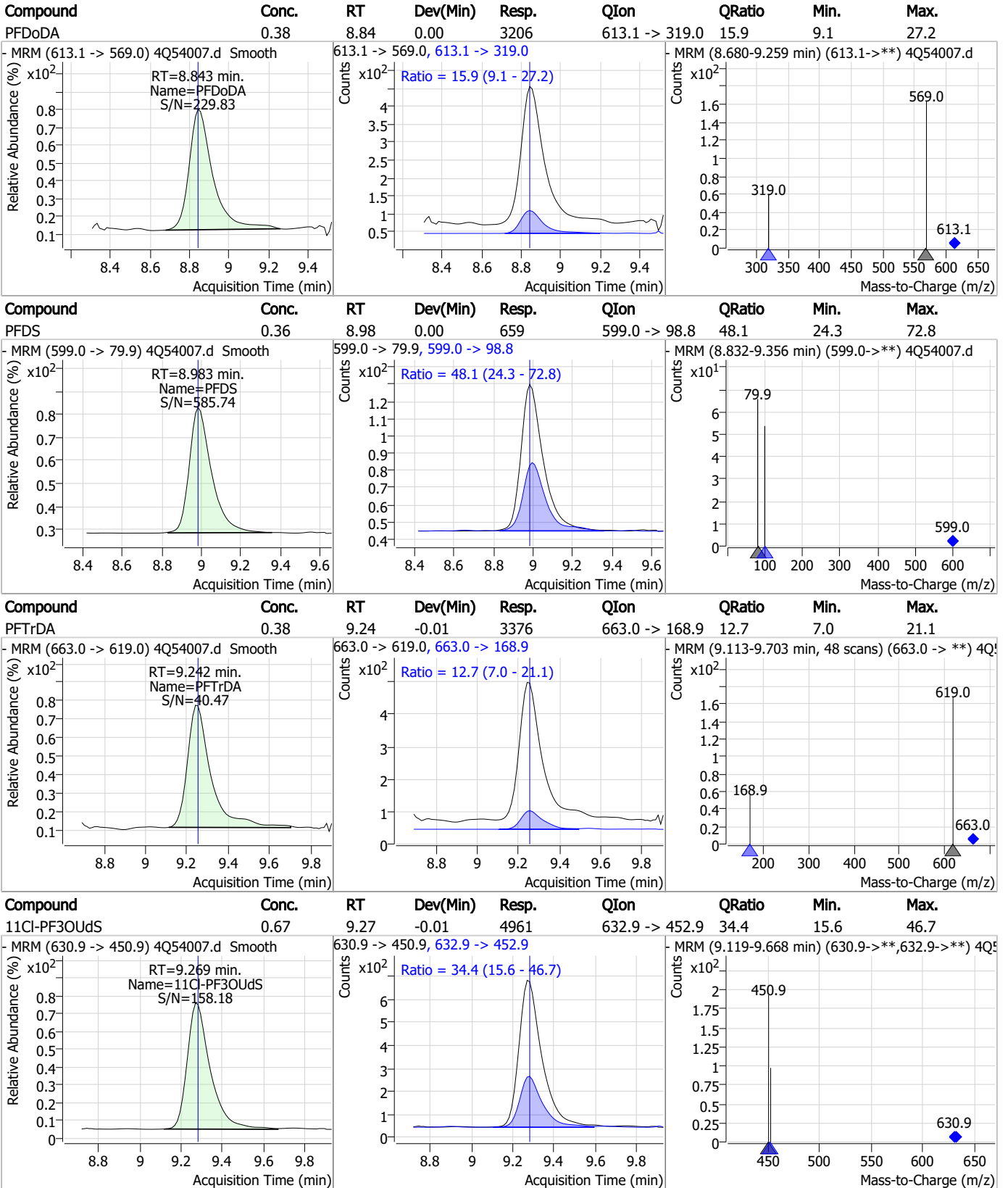


Perfluorinated Compounds by LC/MS/MS



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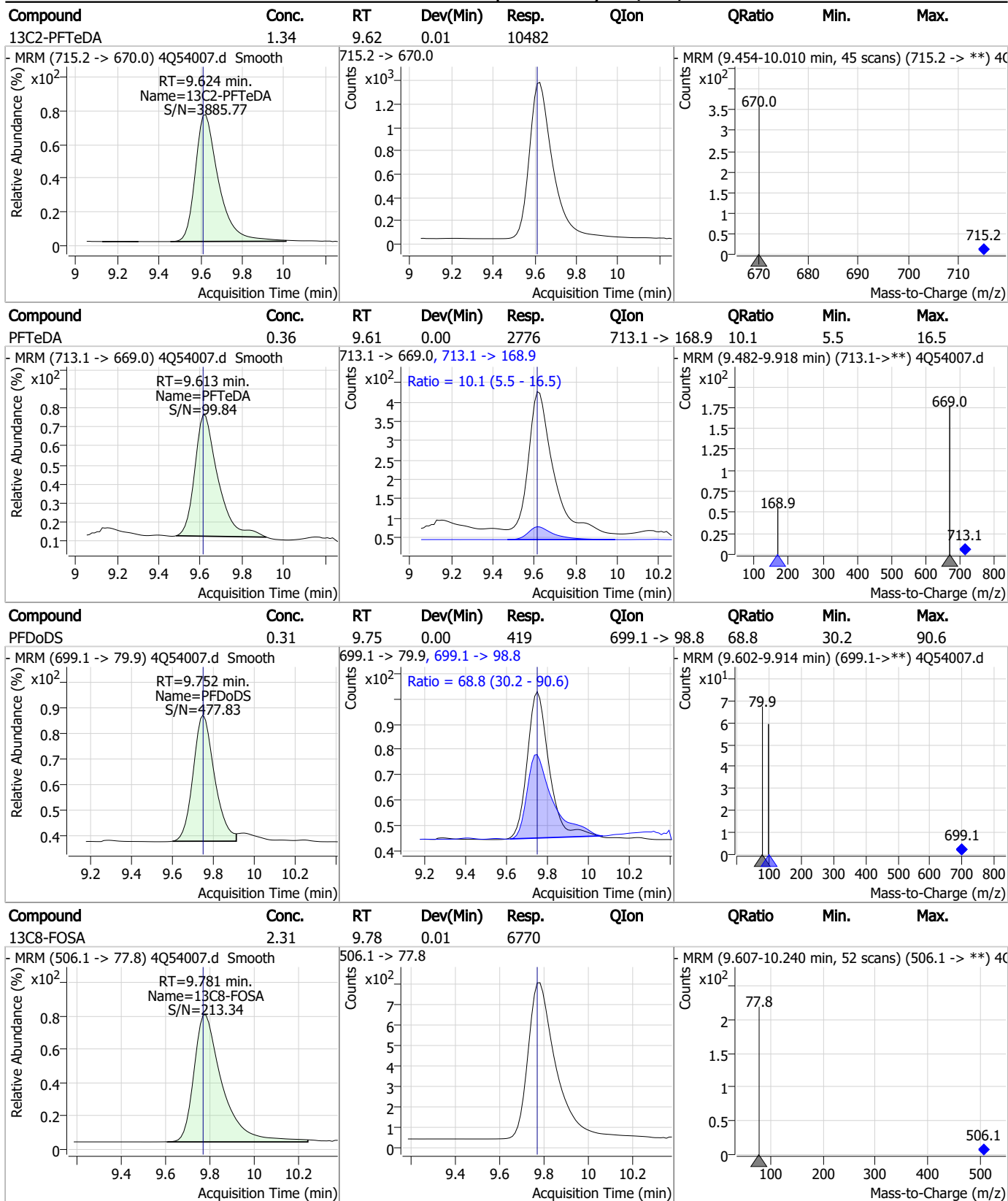
Perfluorinated Compounds by LC/MS/MS



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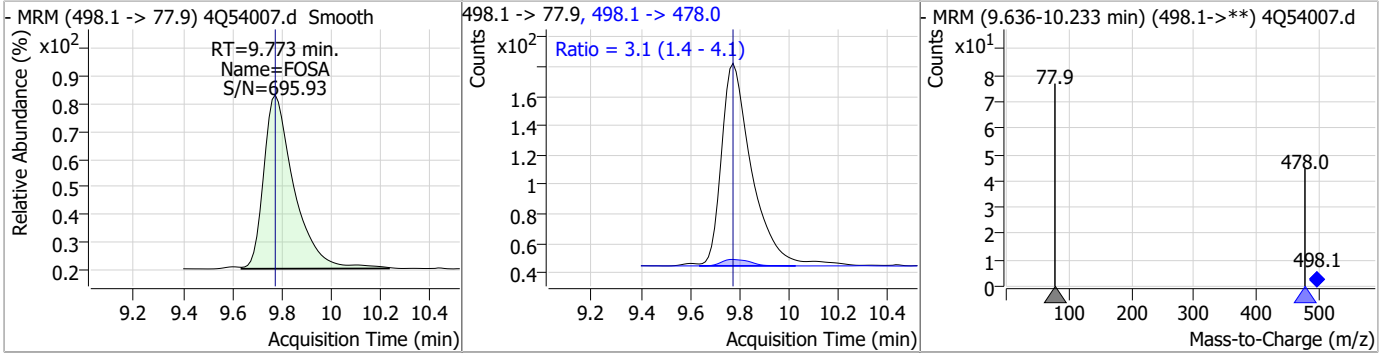
Perfluorinated Compounds by LC/MS/MS



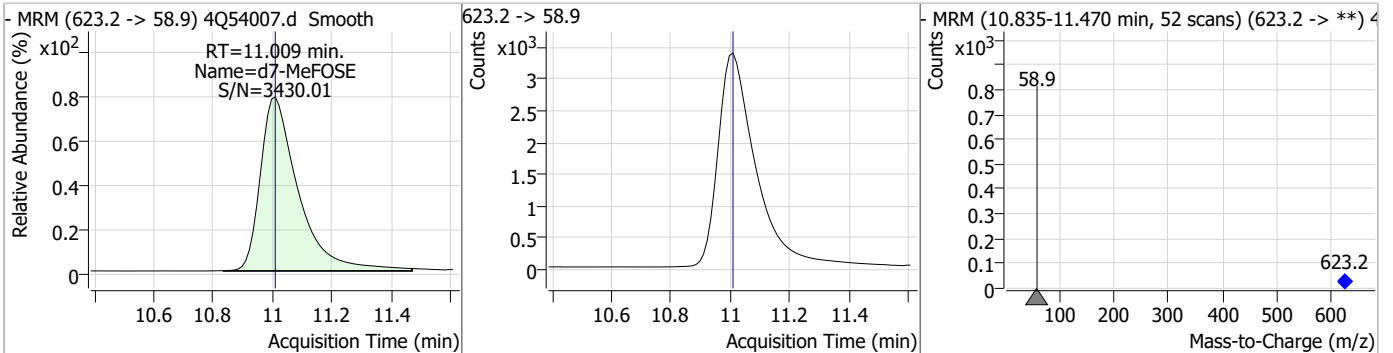
7.7.18
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Perfluorinated Compounds by LC/MS/MS

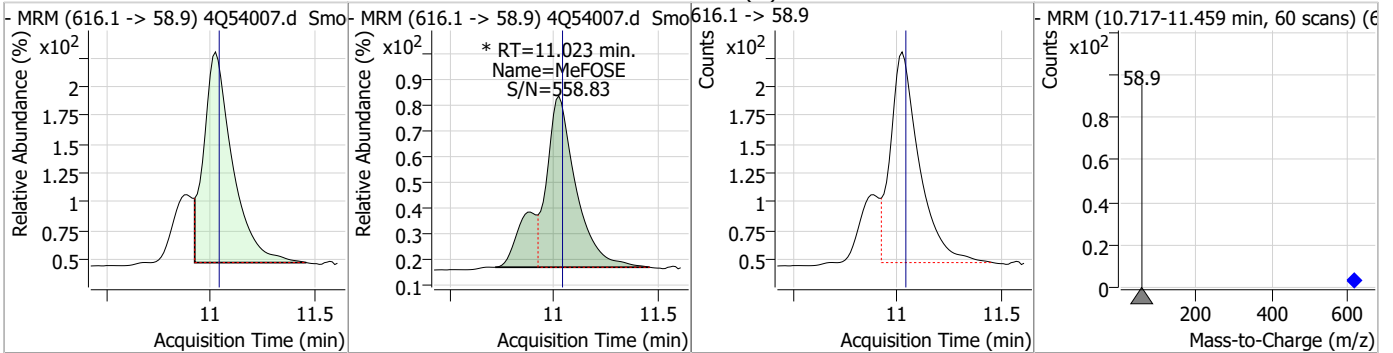
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.37	9.77	0.00	1173	498.1 -> 478.0	3.1	1.4	4.1



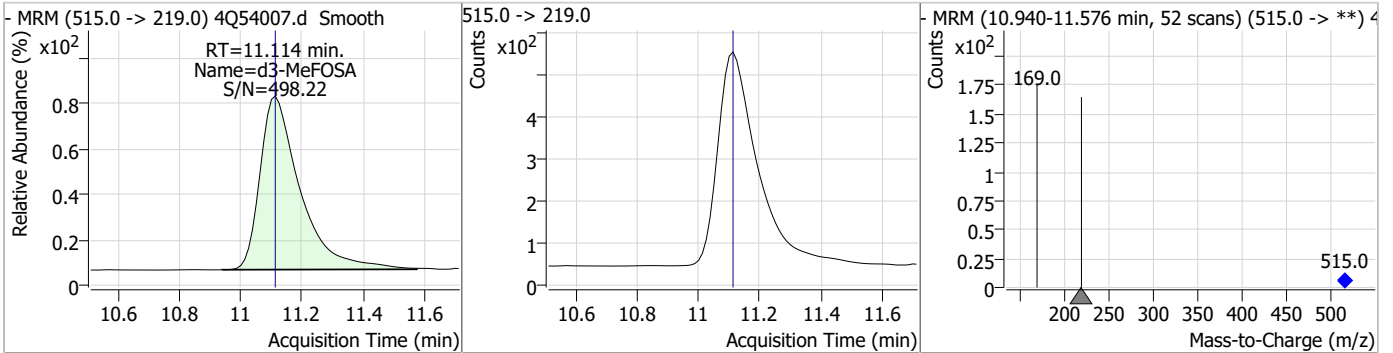
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.74	11.01	0.00	29897				



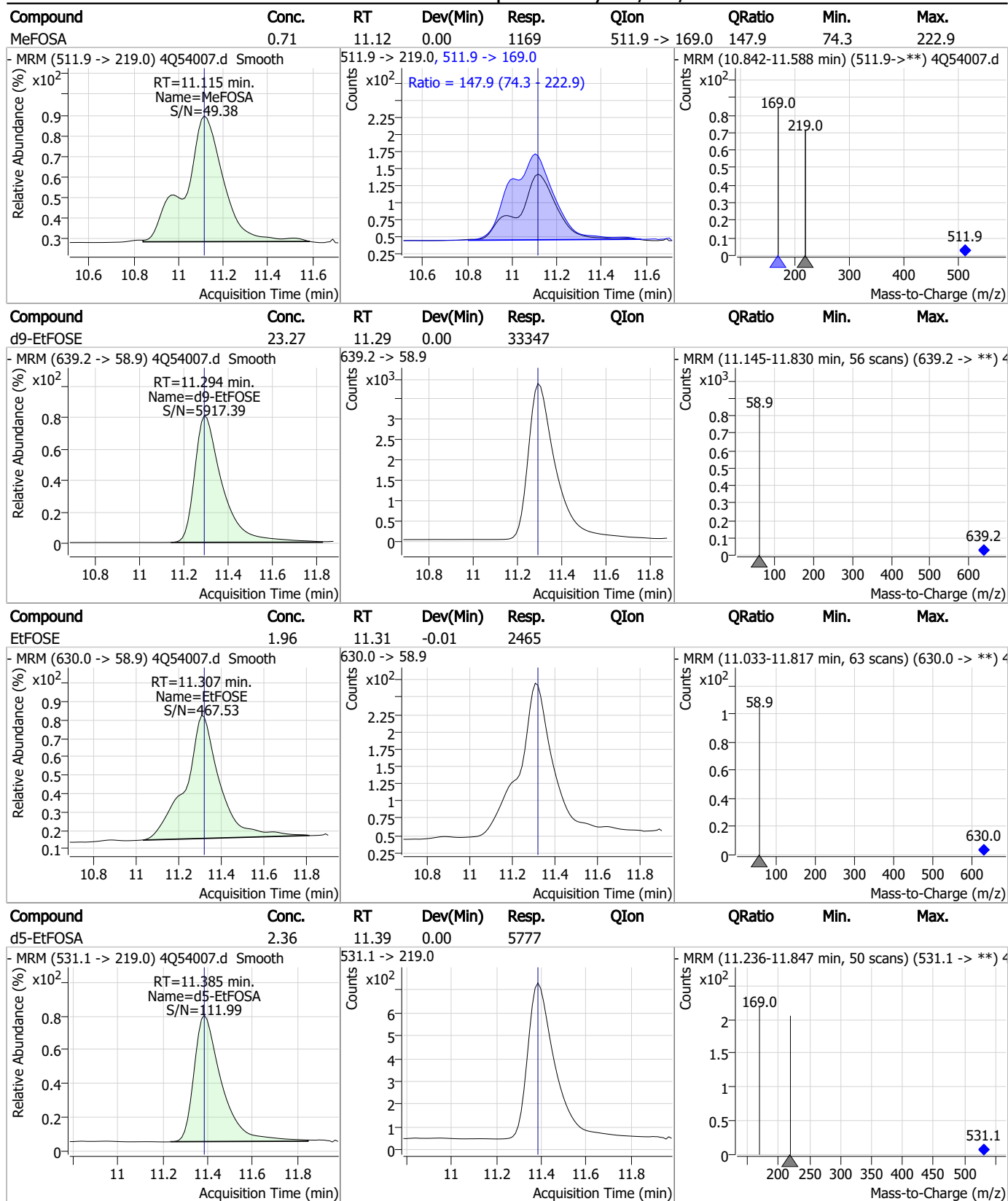
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	1.70	11.02	-0.01	2144 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.30	11.11	0.00	4634				



Perfluorinated Compounds by LC/MS/MS

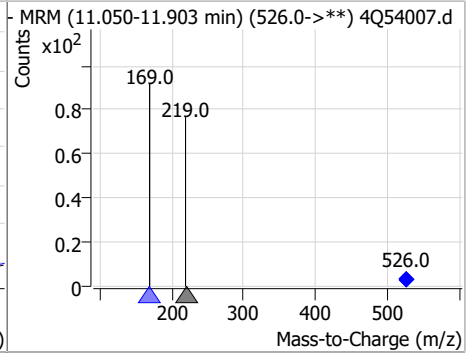
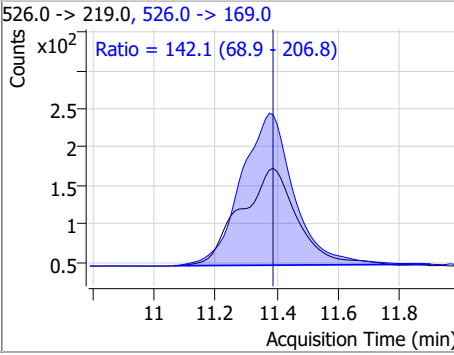
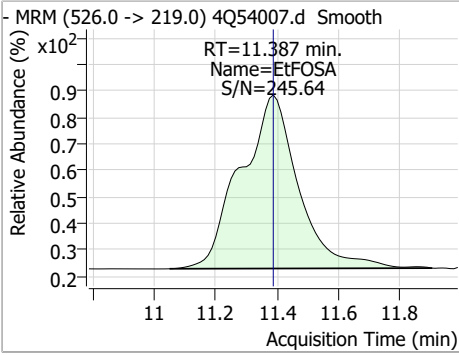


7.7.18
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOsa	0.69	11.39	0.00	1670	526.0 -> 169.0	142.1	68.9	206.8



7.7.18
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Manual Integration Approval Summary

Sample Number: S4Q788-IC788 Method: EPA DRAFT 1633
Lab FileID: 4Q54007.D Analyst approved: 11/18/23 15:04 Mike Eger
Injection Time: 11/17/23 11:40 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.98	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.08	Split peak
MeFOSE	24448-09-7		11.02	Split peak

7.7.18.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54008.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 11:55:00 AM
 Sample Name : ic788-3
 Vial : P1-A4
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.599	216.8 -> 171.9	80239	10.00 µg/L	0.000
M5-PFPeA	4.087	268.3 -> 223.0	35304	5.00 µg/L	0.000
M5-PFHxA	5.260	318.0 -> 273.0	26217	2.50 µg/L	0.000
M4-PFHpA	6.217	367.1 -> 322.0	24666	2.50 µg/L	0.000
M8-PFOA	6.926	421.1 -> 376.0	30891	2.50 µg/L	0.000
M9-PFNA	7.471	472.1 -> 427.0	12418	1.25 µg/L	0.000
M6-PFDA	7.967	519.1 -> 474.1	8245	1.25 µg/L	0.000
M7-PFUnDA	8.424	570.0 -> 525.1	10238	1.25 µg/L	0.000
M2-PFDoDA	8.855	615.1 -> 570.0	10045	1.25 µg/L	0.012
M2-PFTeDA	9.624	715.2 -> 670.0	10227	1.25 µg/L	0.012
M8-FOSA	9.781	506.1 -> 77.8	6546	2.50 µg/L	0.012
M3-PFBS	5.116	302.1 -> 79.9	7782	2.50 µg/L	0.000
M3-PFHxS	6.980	402.1 -> 79.9	6423	2.50 µg/L	0.000
M8-PFOS	8.080	507.1 -> 79.9	7021	2.50 µg/L	0.000
M2-4:2FTS	4.971	329.1 -> 80.9	736	5.00 µg/L	0.000
M2-6:2FTS	6.699	429.1 -> 80.9	1646	5.00 µg/L	0.000
M2-8:2FTS	7.766	529.1 -> 80.9	2331	5.00 µg/L	0.000
M3-MeFOSAA	8.049	573.2 -> 419.0	11602	5.00 µg/L	0.000
M3-HFPO-DA	5.615	286.9 -> 168.9	23131	10.00 µg/L	0.000
M5-EtFOSAA	8.259	589.2 -> 419.0	9306	5.00 µg/L	0.012
M7-MeFOSE	11.009	623.2 -> 58.9	28380	25.00 µg/L	0.000
M9-EtFOSE	11.294	639.2 -> 58.9	32802	25.00 µg/L	0.000
M5-EtFOSA	11.385	531.1 -> 219.0	5542	2.50 µg/L	0.000
M3-MeFOSA	11.114	515.0 -> 219.0	4269	2.50 µg/L	0.000
13C4-PFOS	8.081	502.8 -> 79.9	5679	2.50 µg/L	0.000
13C3-PFBA	2.603	216.0 -> 172.0	38250	5.00 µg/L	0.012
18O2-PFHxS	6.991	403.0 -> 83.9	4105	2.50 µg/L	0.012
13C4-PFOA	6.926	417.1 -> 372.0	32691	2.50 µg/L	0.000
13C2-PFDA	7.967	515.1 -> 470.1	9112	1.25 µg/L	0.000
13C5-PFNA	7.471	468.0 -> 423.0	12839	1.25 µg/L	0.000
13C2-PFHxA	5.261	315.1 -> 270.0	28131	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	4.971	329.1 -> 80.9	736	4.70 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.0%		
13C2-6:2FTS	6.699	429.1 -> 80.9	1646	4.95 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C2-8:2FTS	7.766	529.1 -> 80.9	2331	5.09 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C2-PFDoDA	8.855	615.1 -> 570.0	10045	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C2-PFTeDA	9.624	715.2 -> 670.0	10227	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C3-PFBS	5.116	302.1 -> 79.9	7782	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C3-PFHxS	6.980	402.1 -> 79.9	6423	2.49 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C4-PFBA	2.599	216.8 -> 171.9	80239	10.16 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C4-PFHpA	6.217	367.1 -> 322.0	24666	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C5-PFHxA	5.260	318.0 -> 273.0	26217	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C5-PFPeA	4.087	268.3 -> 223.0	35304	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C6-PFDA	7.967	519.1 -> 474.1	8245	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.4%		
13C7-PFUnDA	8.424	570.0 -> 525.1	10238	1.35 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.7%		
13C8-FOSA	9.781	506.1 -> 77.8	6546	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C8-PFOA	6.926	421.1 -> 376.0	30891	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.5%		
13C8-PFOS	8.080	507.1 -> 79.9	7021	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C9-PFNA	7.471	472.1 -> 427.0	12418	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.5%		
d3-MeFOSAA	8.049	573.2 -> 419.0	11602	4.99 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.7%		
13C3-HFPO-DA	5.615	286.9 -> 168.9	23131	9.86 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 98.6%		
d3-MeFOSA	11.114	515.0 -> 219.0	4269	2.34 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.7%		
d5-EtFOSAA	8.259	589.2 -> 419.0	9306	4.77 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.4%		
d7-MeFOSE	11.009	623.2 -> 58.9	28380	24.95 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.8%		
d9-EtFOSE	11.294	639.2 -> 58.9	32802	25.34 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 101.3%		
d5-EtFOSA	11.385	531.1 -> 219.0	5542	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.3%		
Target Compounds					QValue
4:2FTS	4.972	327.1 -> 307.0	7009	5.19 µg/L	98
		327.1 -> 80.9	3088		
6:2FTS	6.699	427.1 -> 407.0	8581	5.01 µg/L	99
		427.1 -> 80.9	3179		
8:2FTS	7.767	527.1 -> 507.0	5820	4.71 µg/L	96
		527.1 -> 80.8	2899		
EtFOSAA	8.259	584.2 -> 419.1	2256	1.28 µg/L	m 95
		584.2 -> 526.0	942		
FOSA	9.773	498.1 -> 77.9	3957	1.30 µg/L	97
		498.1 -> 478.0	152		
MeFOSAA	8.050	570.1 -> 419.0	2438	1.31 µg/L	m 92
		570.1 -> 483.0	431		
PFBA	2.607	212.8 -> 168.9	13839	5.01 µg/L	100
PFBS	5.117	298.7 -> 79.9	2745	1.07 µg/L	97
		298.7 -> 98.8	1096		
PFDA	7.968	512.9 -> 469.0	8266	1.32 µg/L	98
		512.9 -> 219.0	1696		
PFDODA	8.856	613.1 -> 569.0	10260	1.25 µg/L	97
		613.1 -> 319.0	1708		
PFDS	8.983	599.0 -> 79.9	2065	1.16 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	979			
PFHpA	6.230	363.1 -> 319.0	18890	1.27	µg/L	95
		363.1 -> 169.0	3771			
PFHpS	7.573	449.0 -> 79.9	3322	1.23	µg/L	83
		449.0 -> 98.9	1506			
PFHxA	5.263	313.0 -> 269.0	10945	1.25	µg/L	97
		313.0 -> 118.9	410			
PFHxS	6.981	398.7 -> 79.9	2274	1.24	µg/L	m 93
		398.7 -> 98.9	1083			
PFNA	7.472	463.0 -> 419.0	10383	1.35	µg/L	96
		463.0 -> 219.0	2427			
PFNS	8.549	548.8 -> 79.9	1716	1.31	µg/L	96
		548.8 -> 98.9	981			
PFOA	6.927	413.0 -> 369.0	16556	1.20	µg/L	100
		413.0 -> 169.0	3498			
PFOS	8.081	498.9 -> 79.9	3568	1.20	µg/L	m 96
		498.9 -> 98.8	1635			
PFPeA	4.089	263.0 -> 219.0	17448	2.49	µg/L	100
PFPeS	6.220	349.1 -> 79.9	2311	1.12	µg/L	86
		349.1 -> 98.9	1235			
PFTeDA	9.625	713.1 -> 669.0	8997	1.20	µg/L	99
		713.1 -> 168.9	946			
PFTrDA	9.255	663.0 -> 619.0	10903	1.25	µg/L	98
		663.0 -> 168.9	1635			
PFUnDA	8.424	563.1 -> 519.0	10026	1.22	µg/L	98
		563.1 -> 269.1	2034			
11CI-PF3OUdS	9.282	630.9 -> 450.9	16800	2.35	µg/L	98
		632.9 -> 452.9	5435			
9CI-PF3ONS	8.426	530.8 -> 351.0	17407	2.40	µg/L	99
		532.8 -> 353.0	4996			
ADONA	6.506	376.9 -> 250.9	45932	2.56	µg/L	99
		376.9 -> 84.8	11727			
HFPO-DA	5.616	284.9 -> 168.9	5827	2.54	µg/L	99
		284.9 -> 184.9	650			
3:3FTCA	3.536	241.0 -> 177.0	2566	5.95	µg/L	100
		241.0 -> 117.0	234			
5:3FTCA	5.943	341.0 -> 237.1	46866	30.81	µg/L	100
		341.0 -> 217.0	33465			
7:3FTCA	7.499	441.0 -> 316.9	21188	30.92	µg/L	95
		441.0 -> 336.9	50999			
EtFOSA	11.387	526.0 -> 219.0	5829	2.51	µg/L	99
		526.0 -> 169.0	8098			
EtFOSE	11.320	630.0 -> 58.9	7710	6.24	µg/L	100
MeFOSA	11.115	511.9 -> 219.0	4160	2.73	µg/L	m 93
		511.9 -> 169.0	5789			
MeFOSE	11.023	616.1 -> 58.9	7491	6.26	µg/L	100
PFDoDS	9.752	699.1 -> 79.9	1574	1.20	µg/L	95
		699.1 -> 98.8	887			
NFDHA	5.141	295.0 -> 201.0	1678	2.22	µg/L	97
		295.0 -> 84.9	411			
PFMBA	4.491	279.0 -> 85.1	9599	2.48	µg/L	100
PFMPA	3.240	229.0 -> 84.9	10970	2.48	µg/L	100
PFEESA	5.647	314.8 -> 134.9	15293	2.22	µg/L	99
		314.8 -> 82.9	563			

= Qualifier out of range, m = manually integrated, + = Area summed

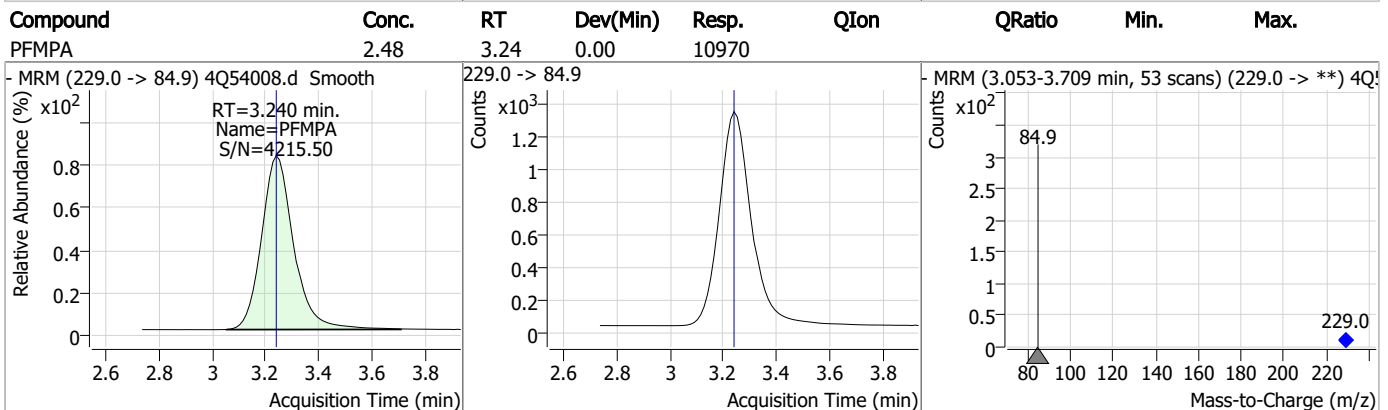
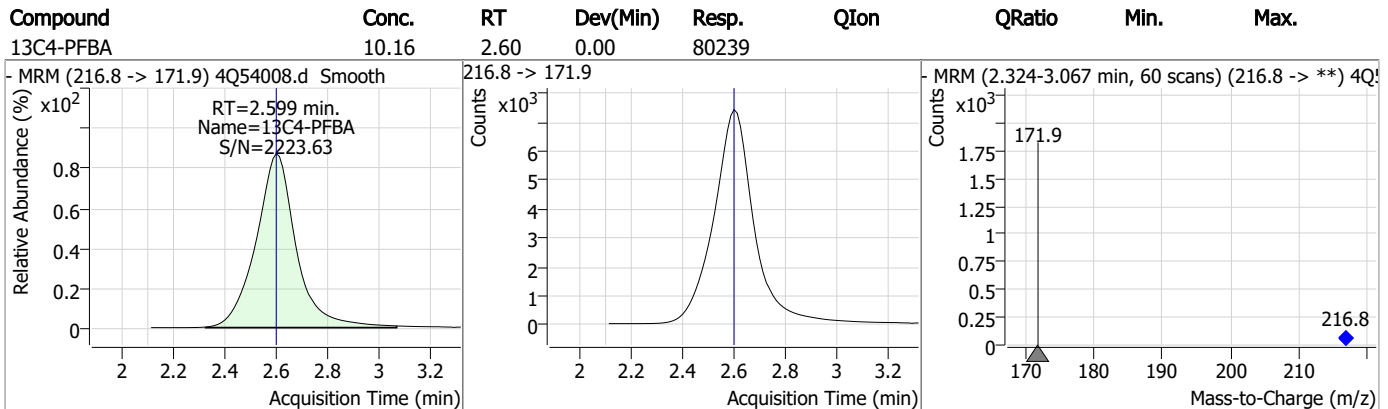
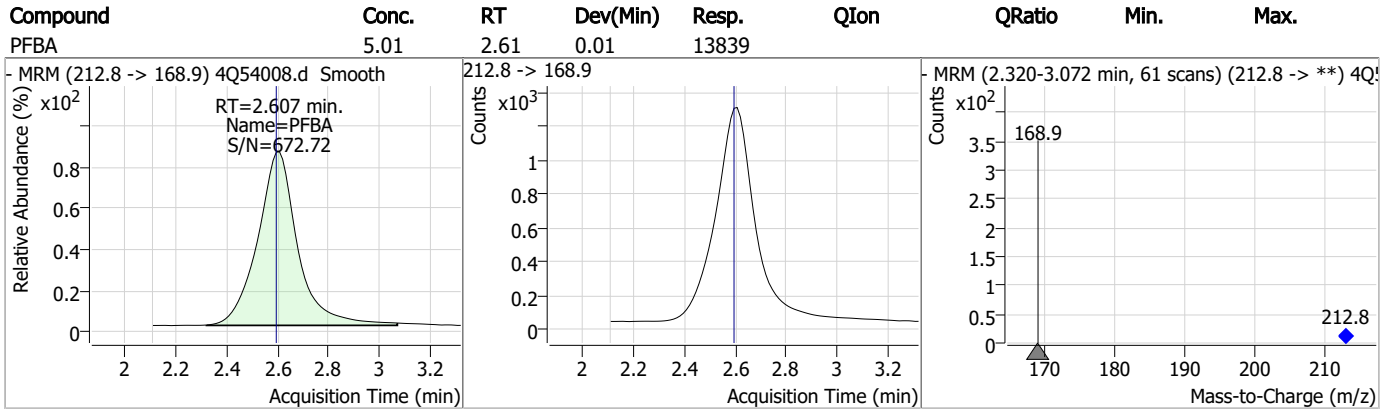
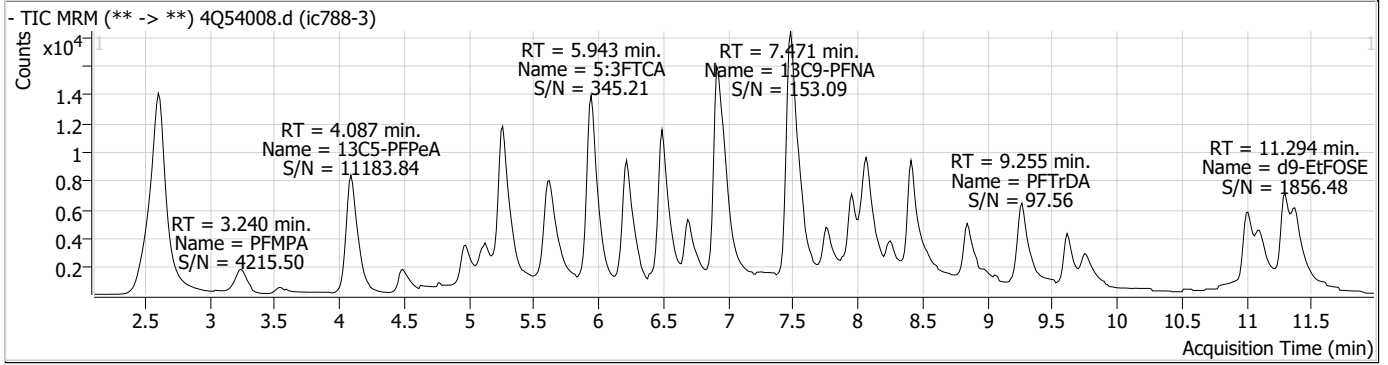
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.19

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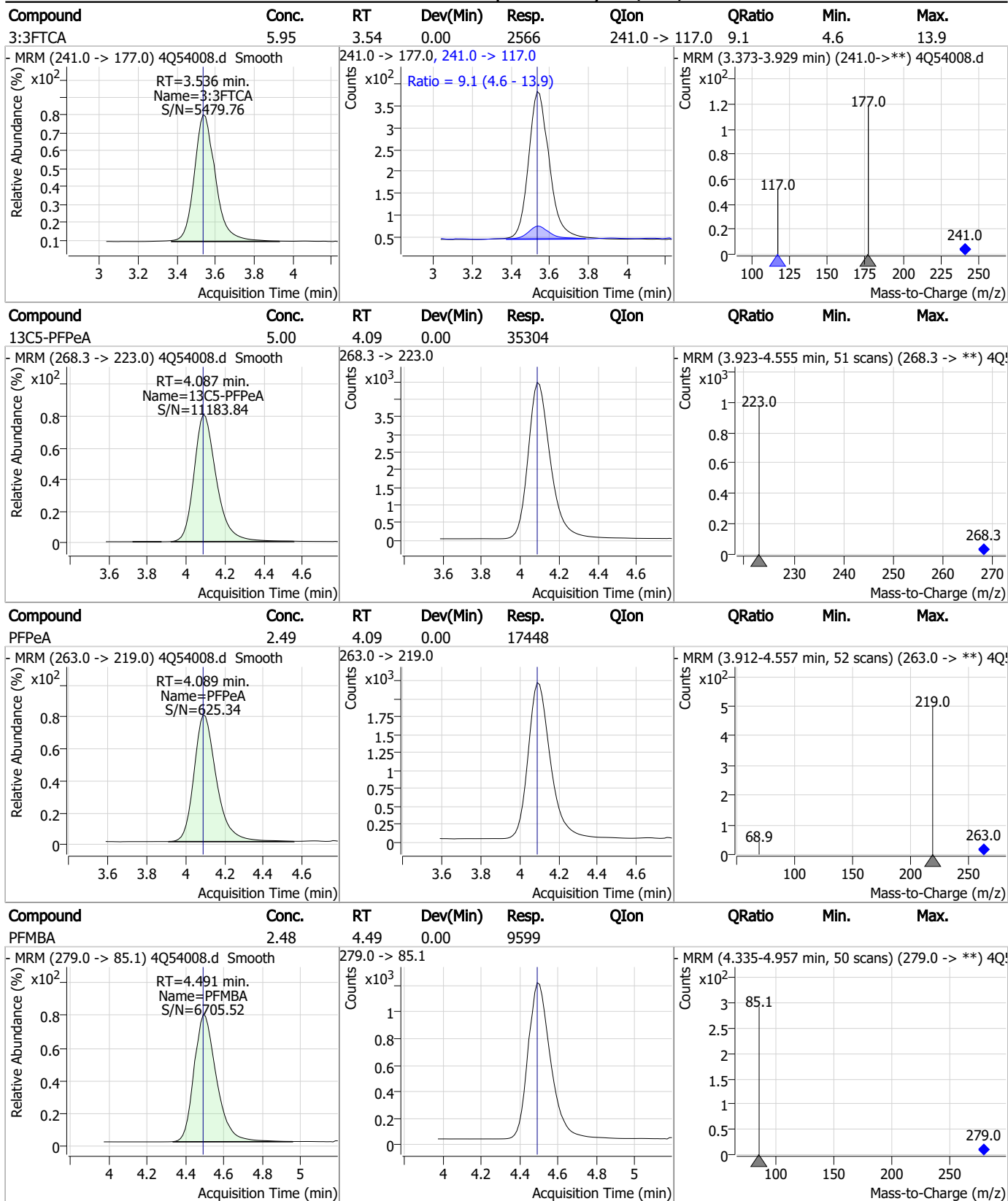
Perfluorinated Compounds by LC/MS/MS



7.7.19

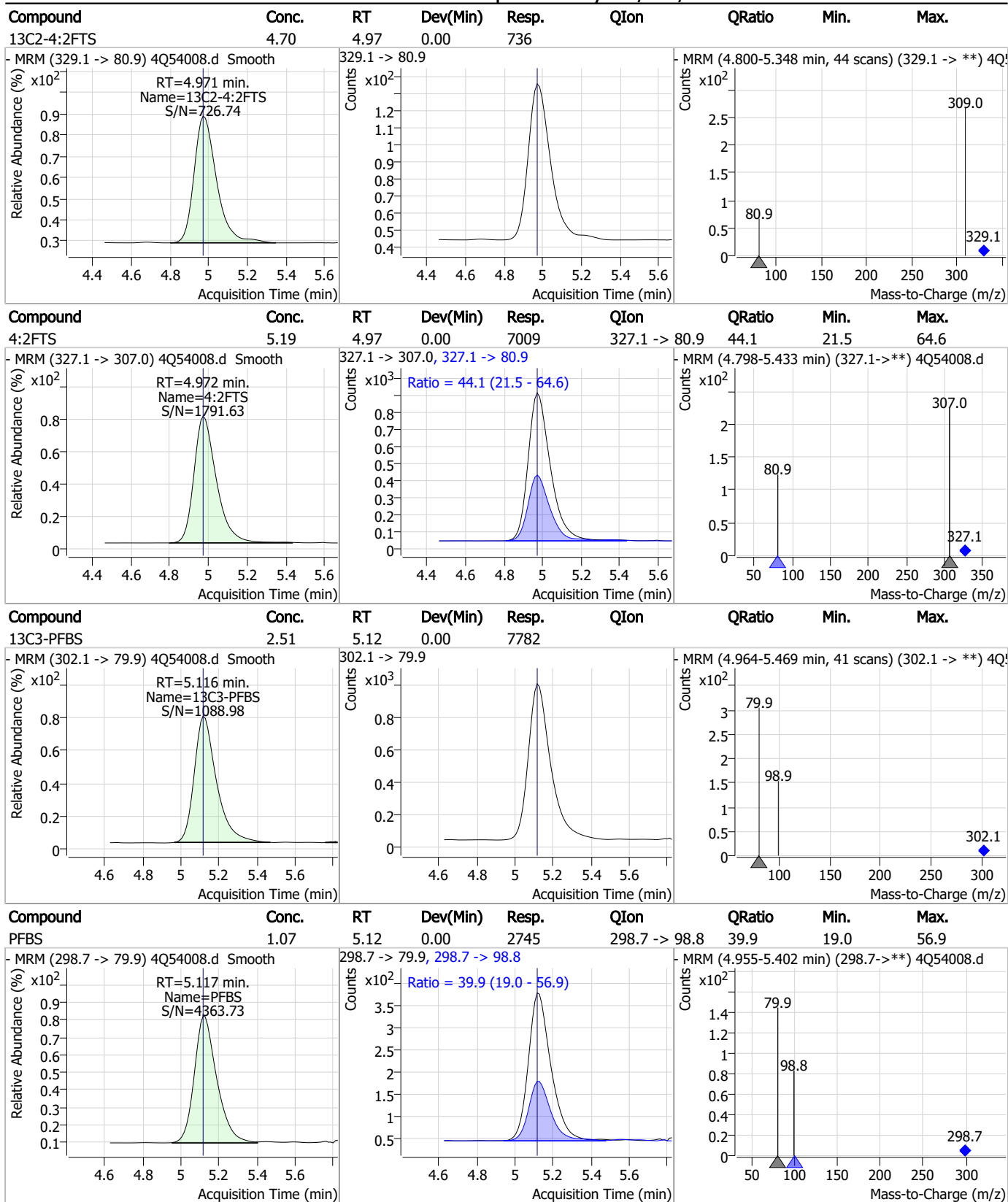
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Perfluorinated Compounds by LC/MS/MS



7.7.19 7

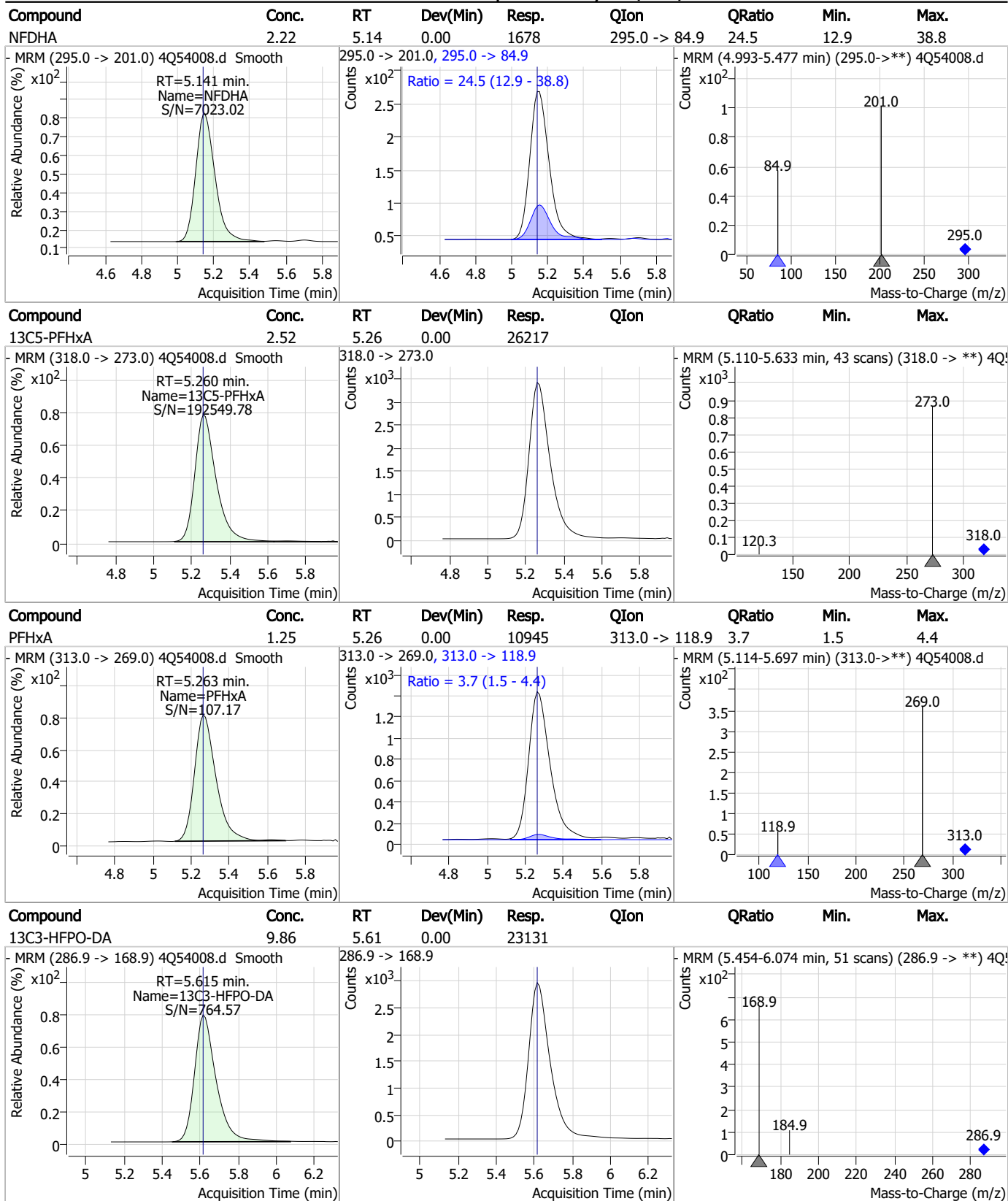
Perfluorinated Compounds by LC/MS/MS



7.7.19

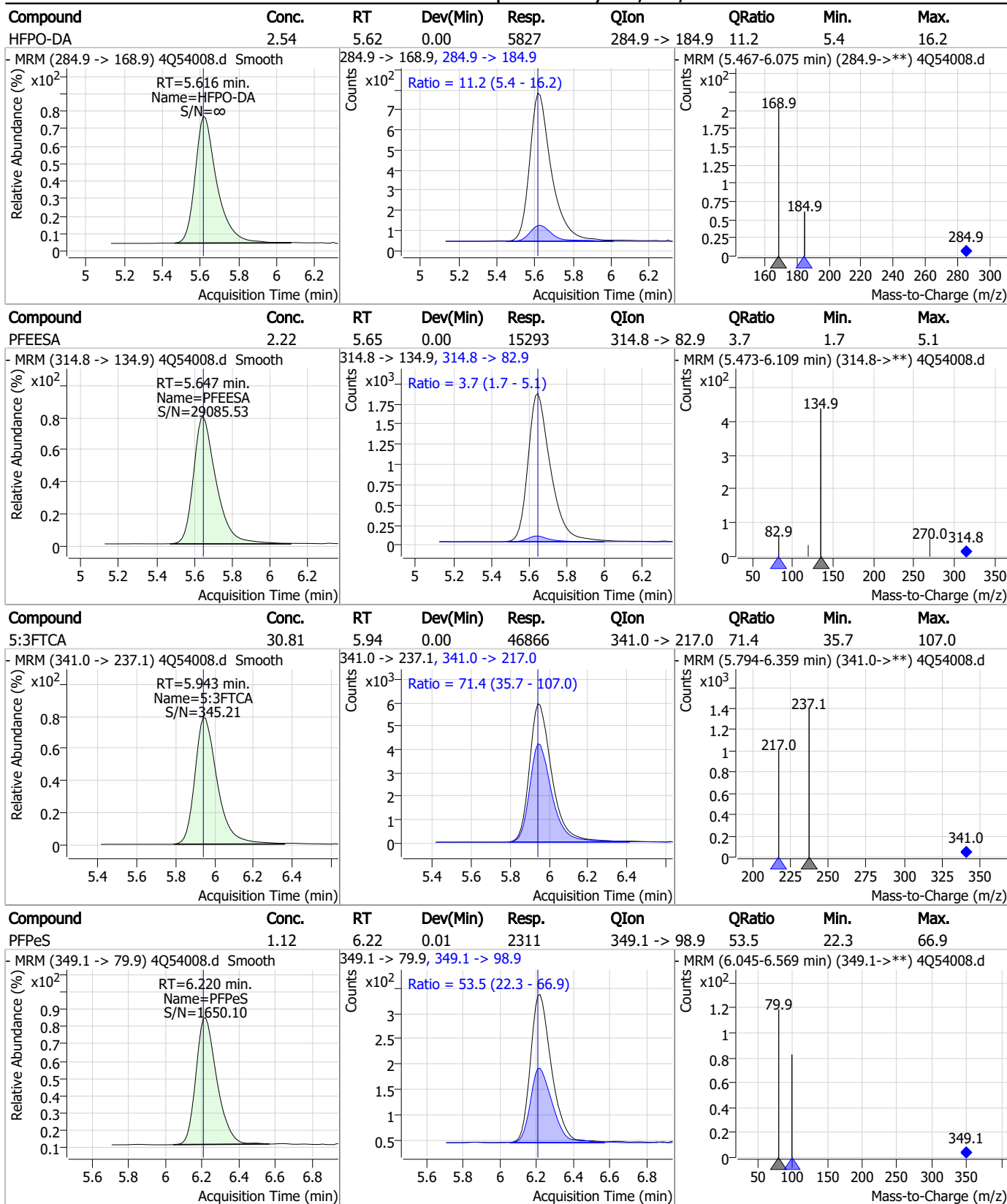
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Perfluorinated Compounds by LC/MS/MS



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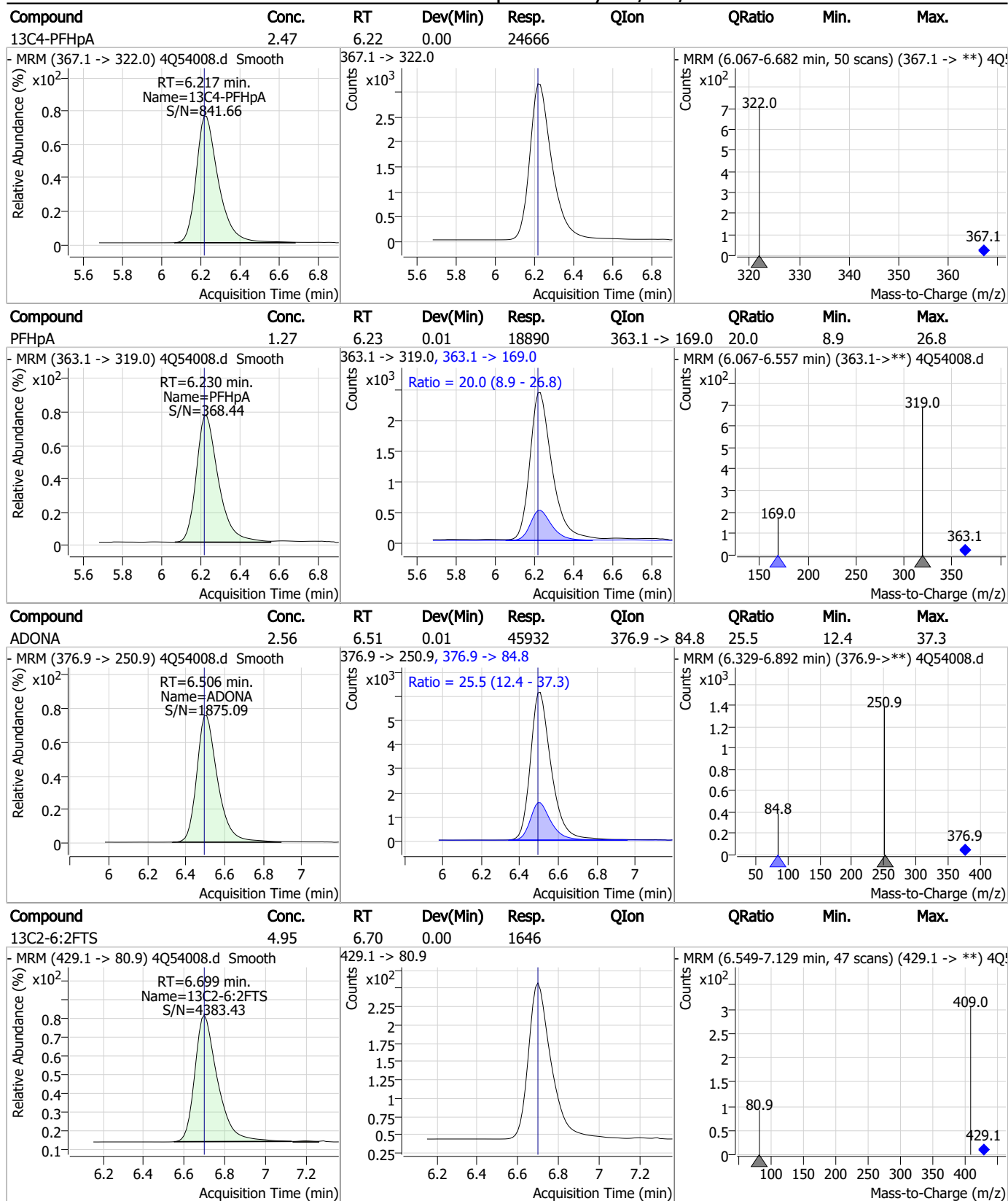
Perfluorinated Compounds by LC/MS/MS



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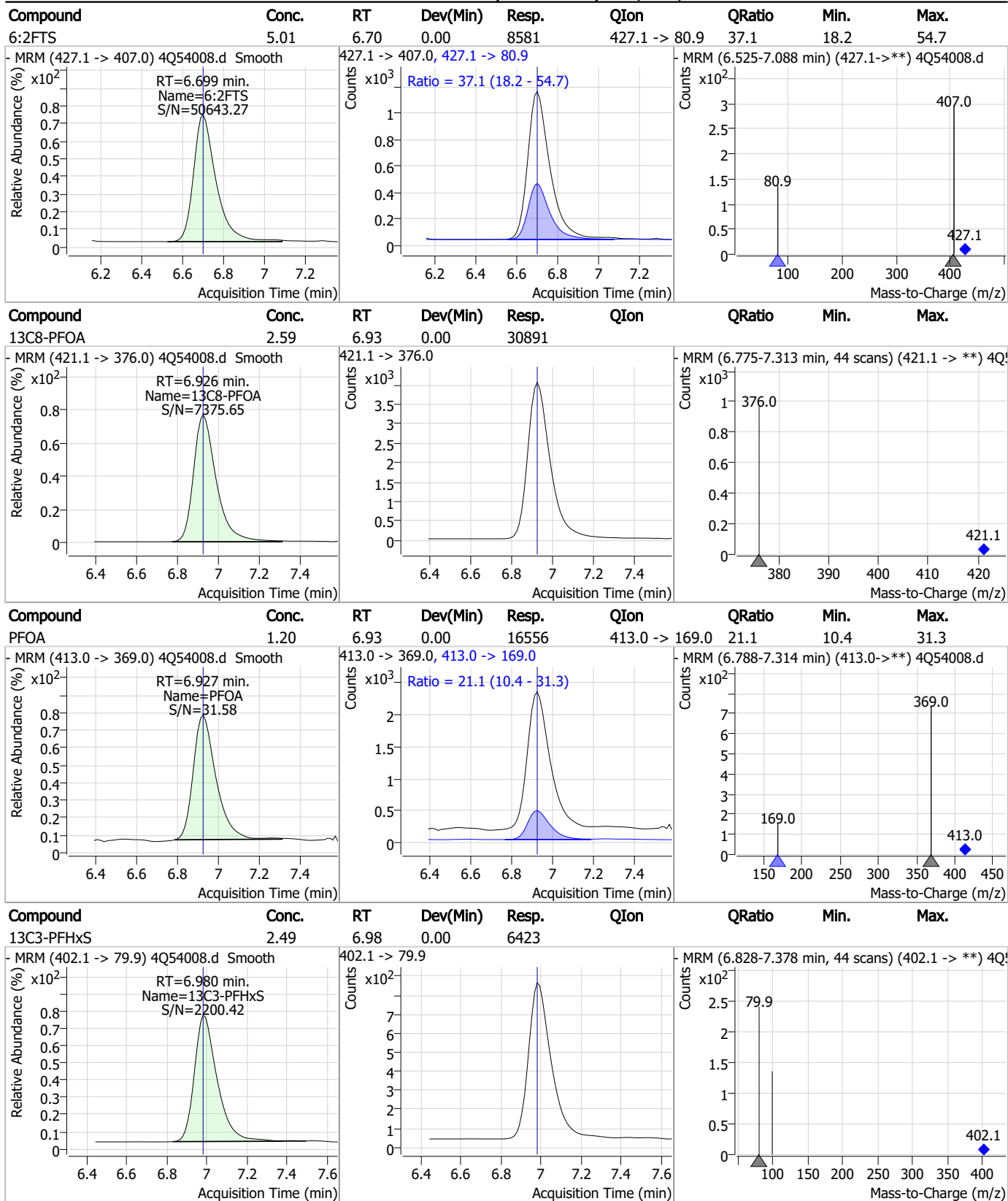
Perfluorinated Compounds by LC/MS/MS



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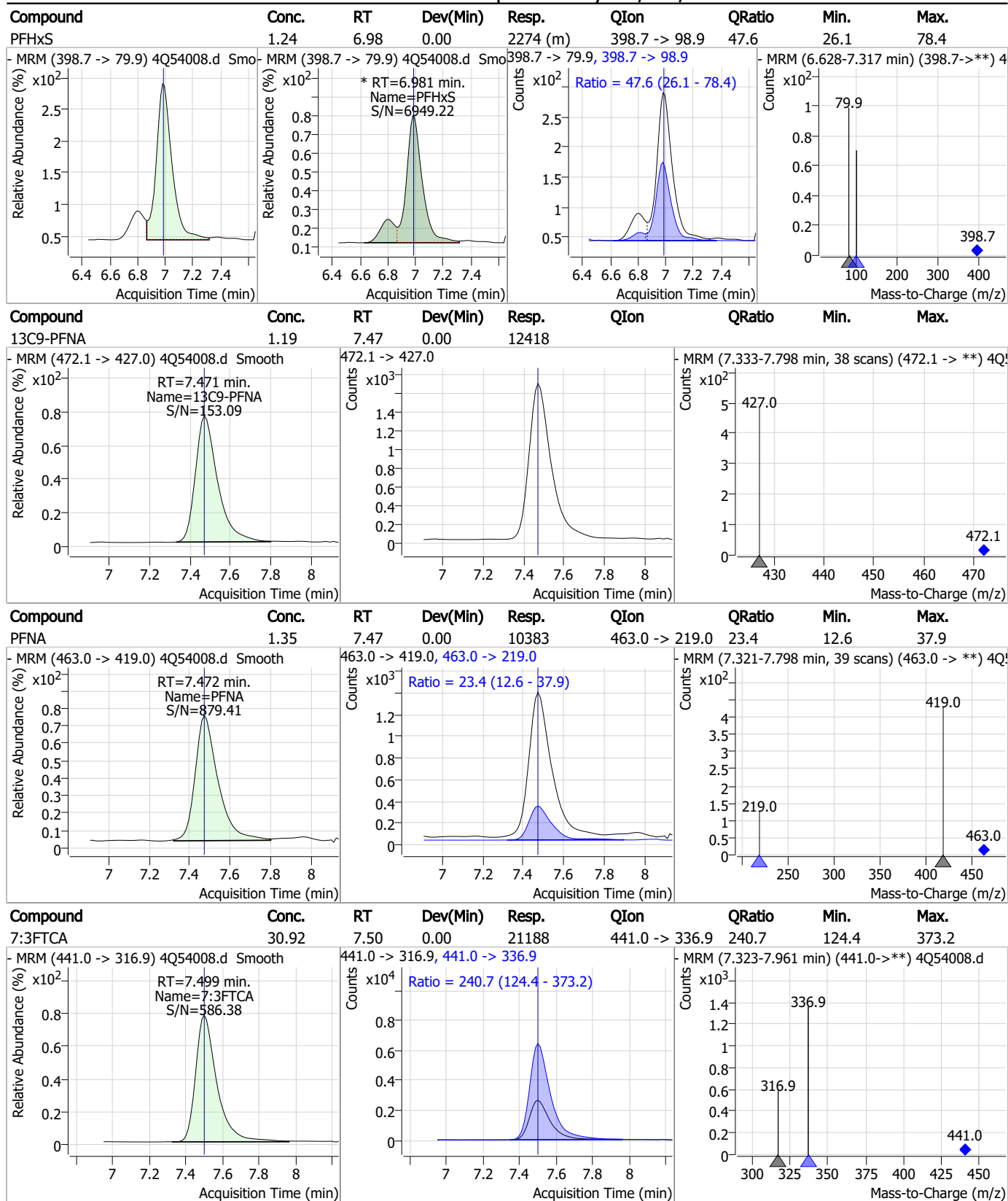
Perfluorinated Compounds by LC/MS/MS



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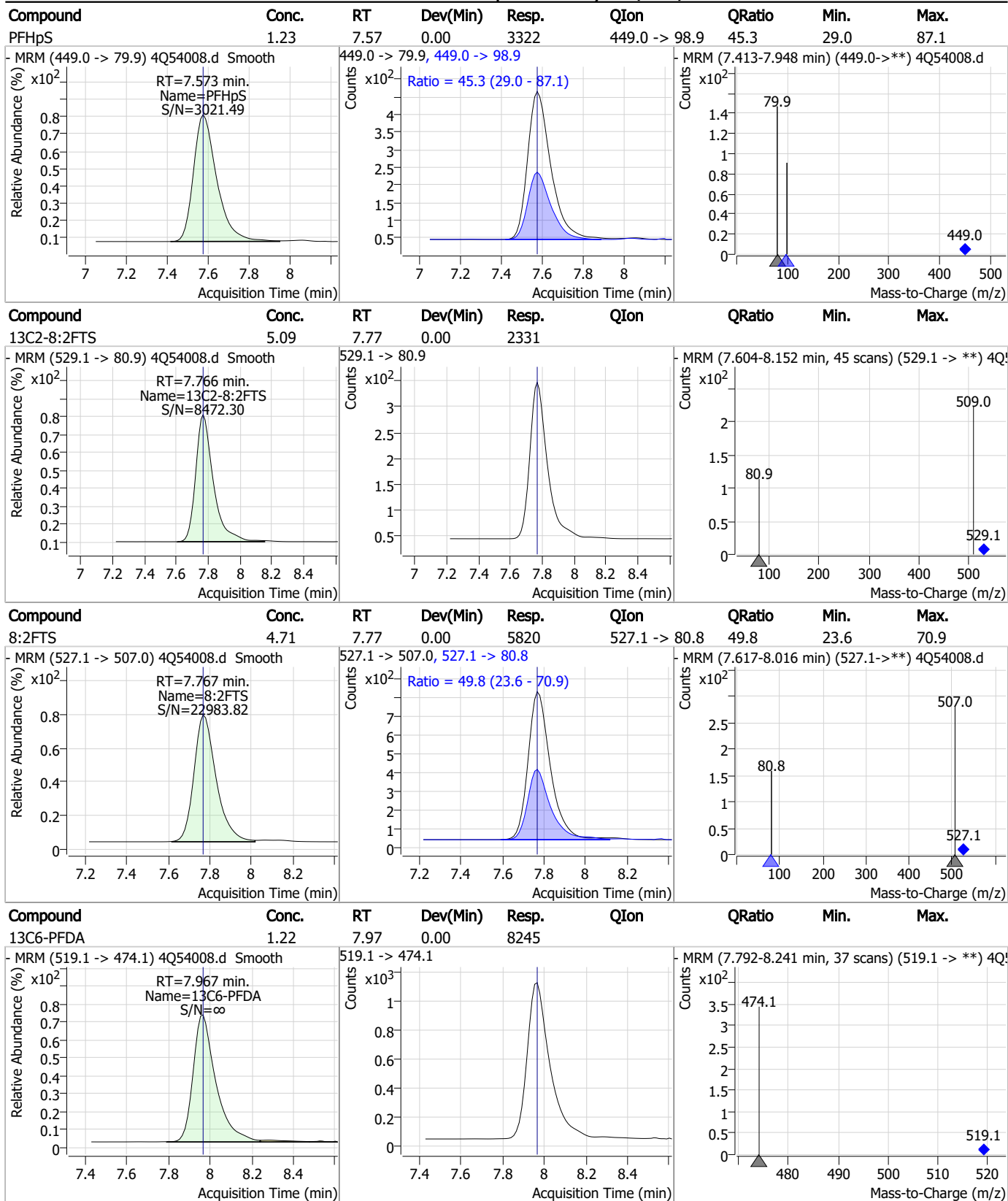
Perfluorinated Compounds by LC/MS/MS



7.7.19

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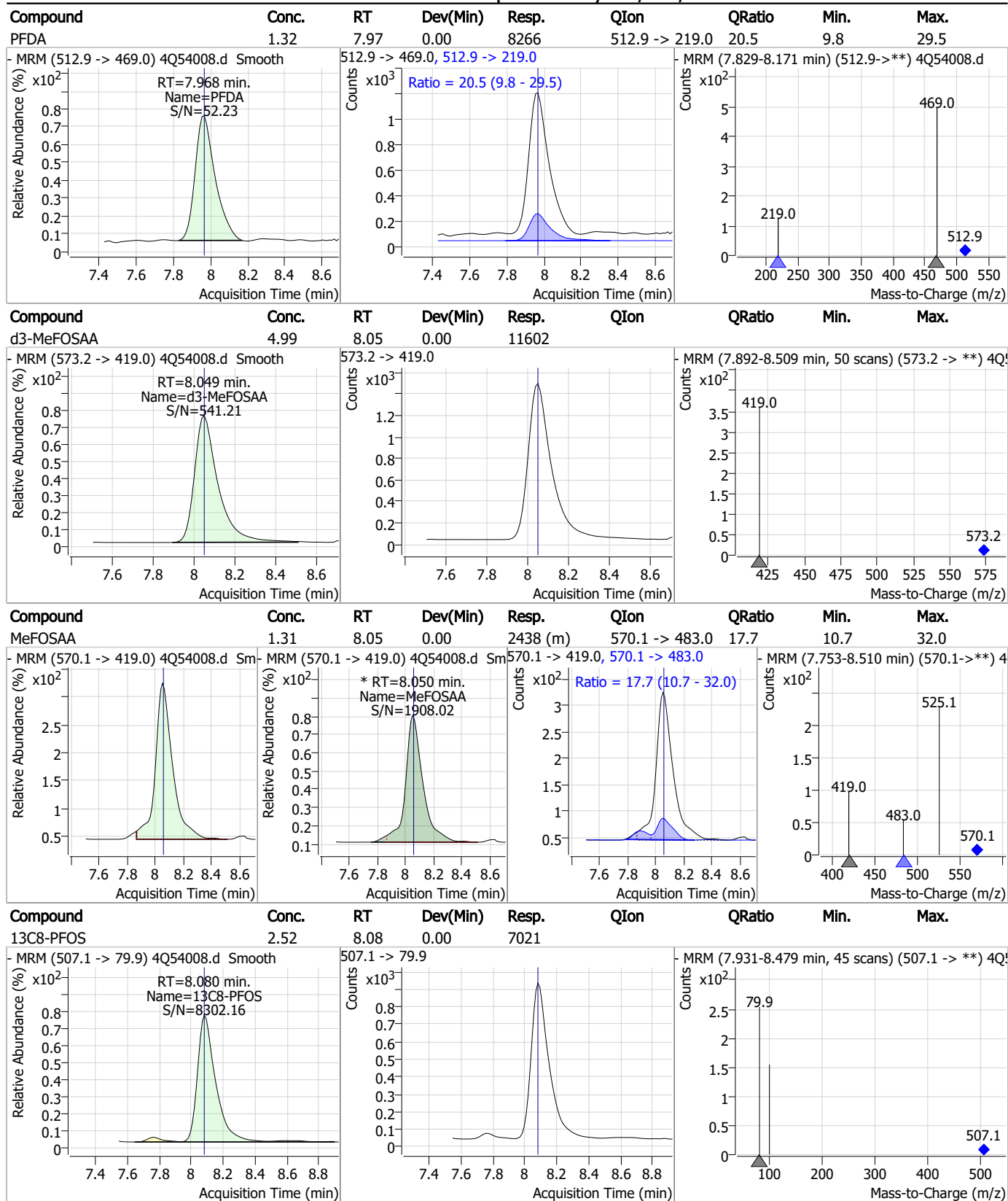
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

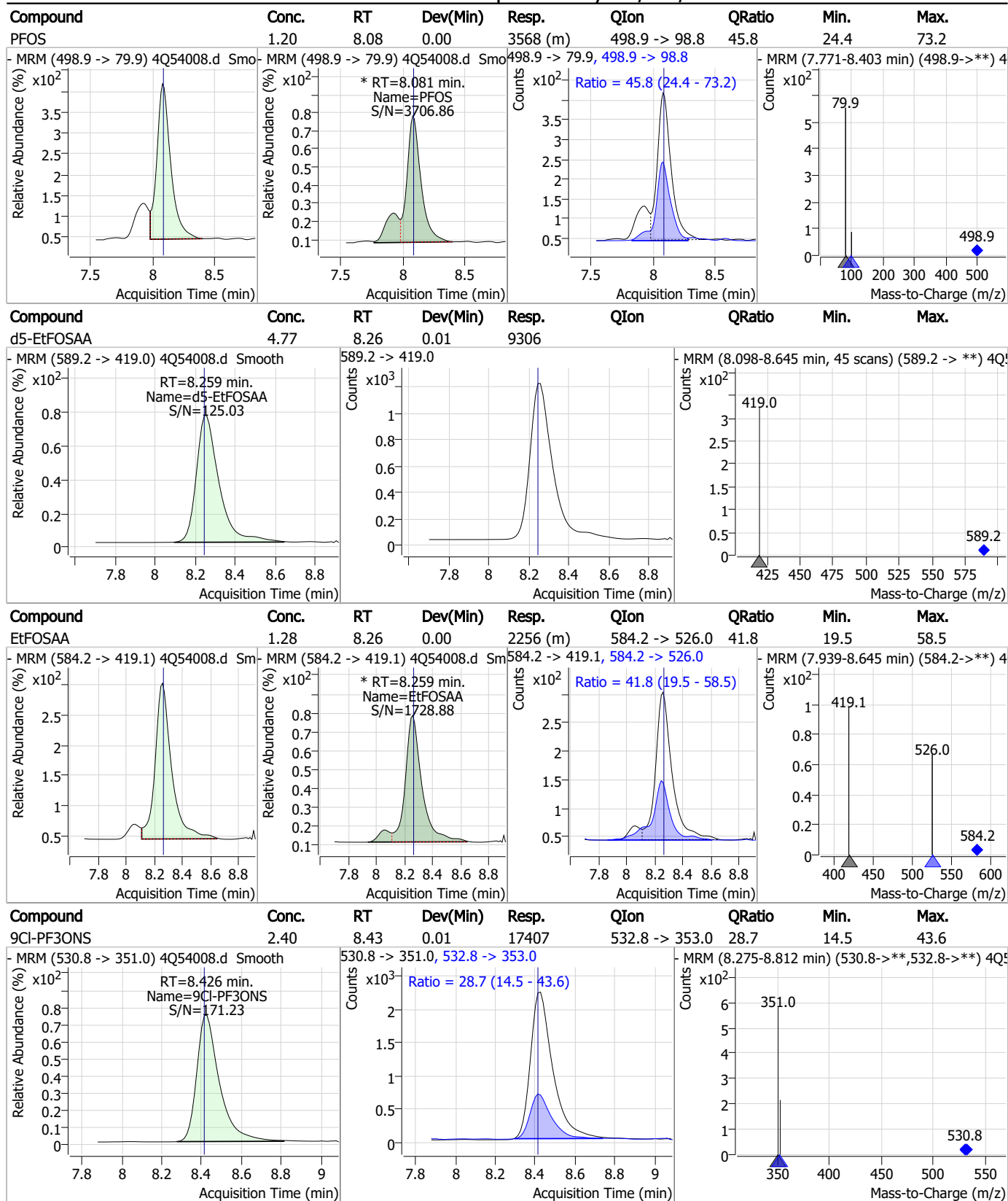


7.7.19

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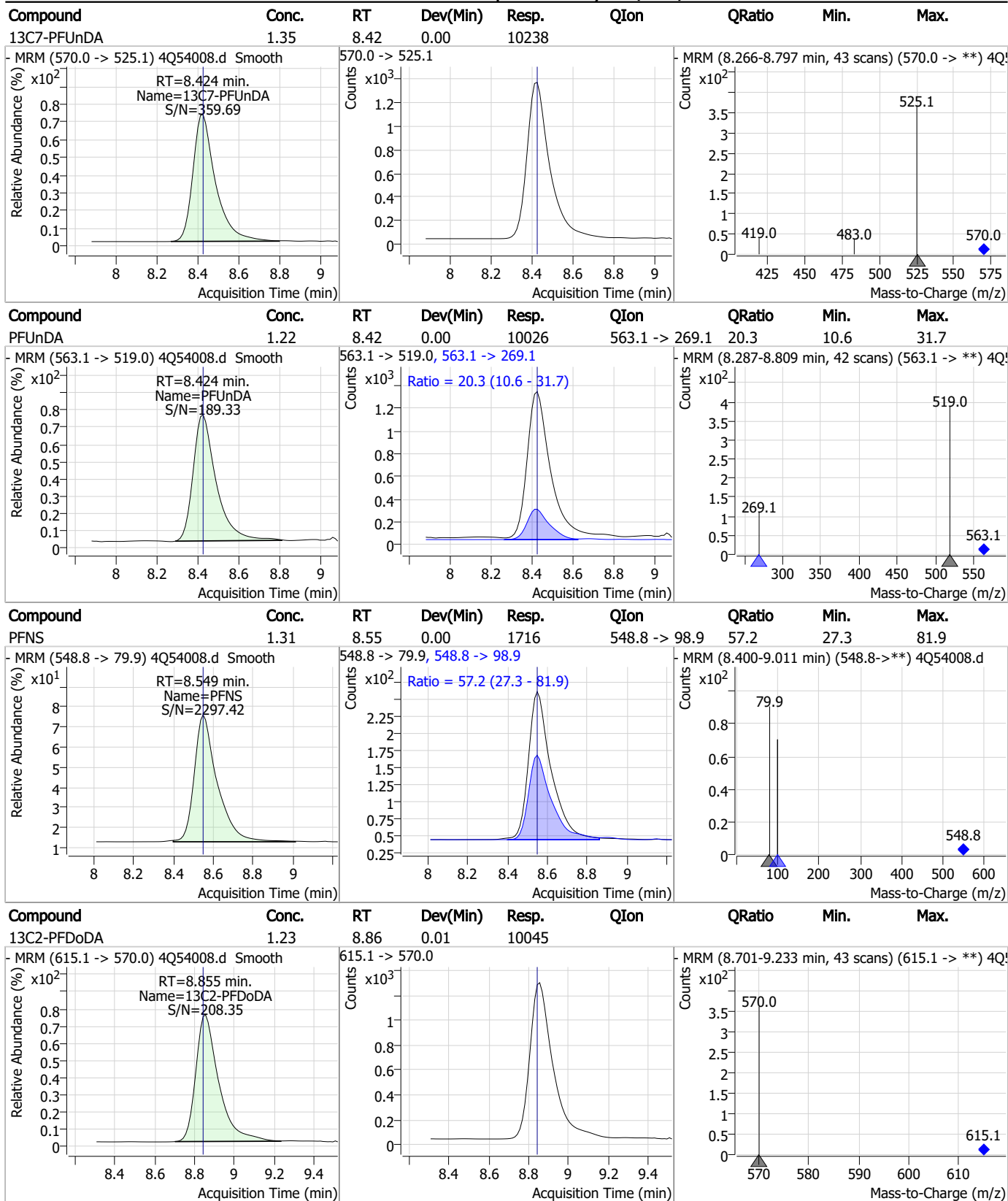
Perfluorinated Compounds by LC/MS/MS



7.7.19

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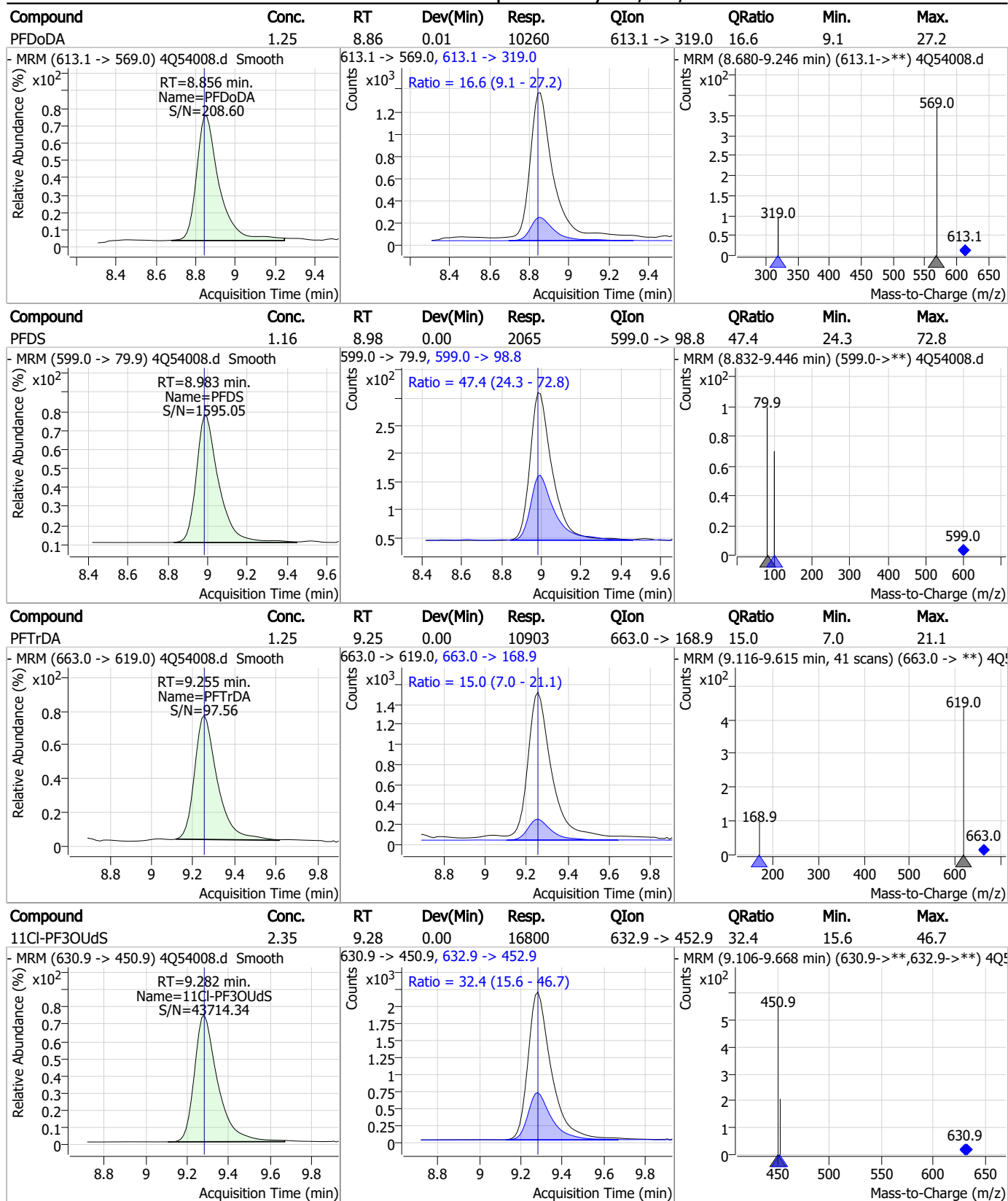
Perfluorinated Compounds by LC/MS/MS



7.7.19

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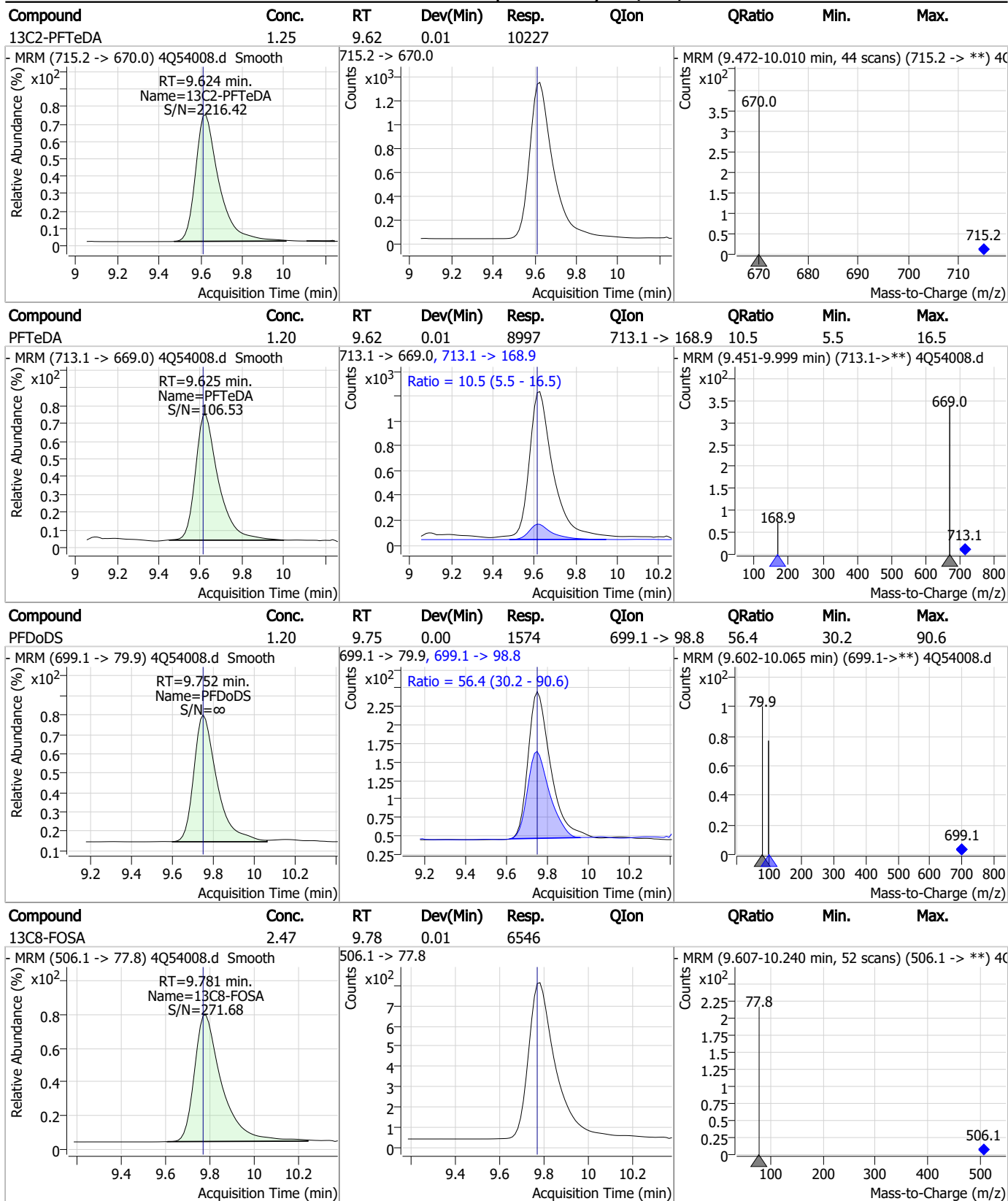
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

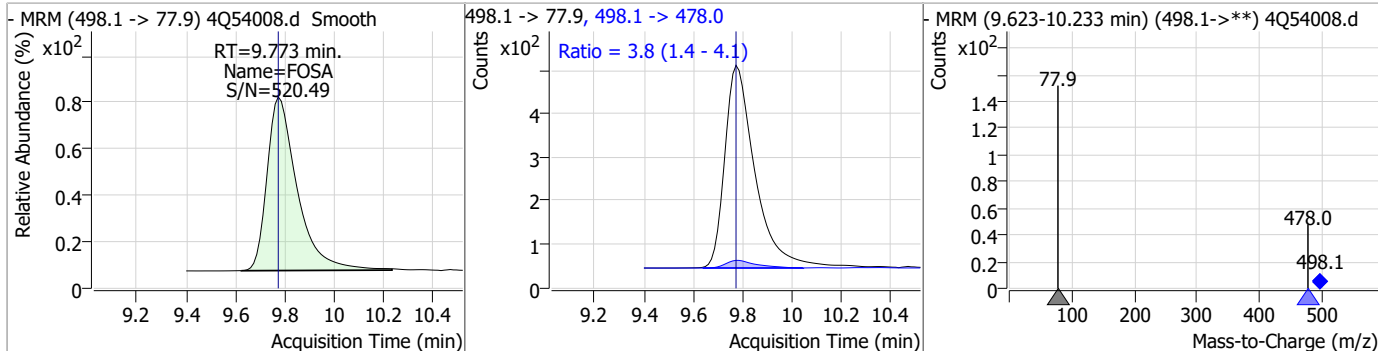


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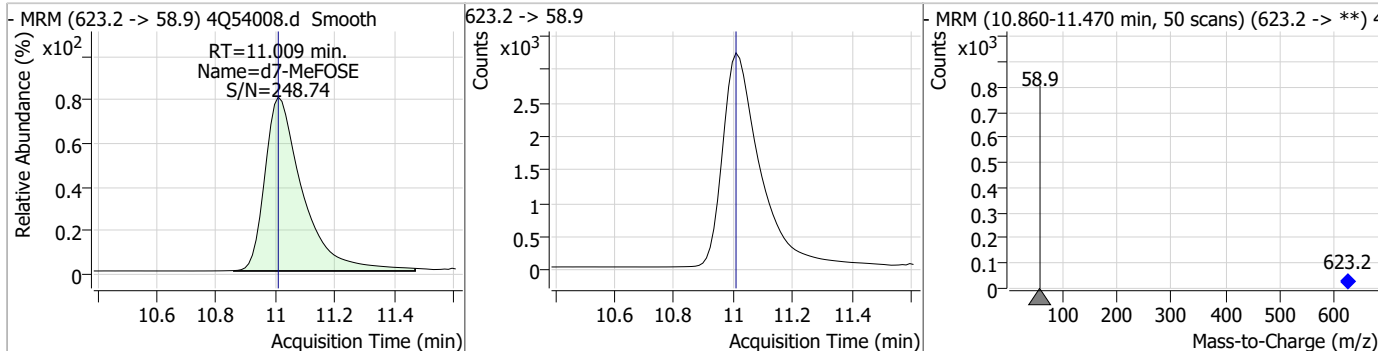
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Perfluorinated Compounds by LC/MS/MS

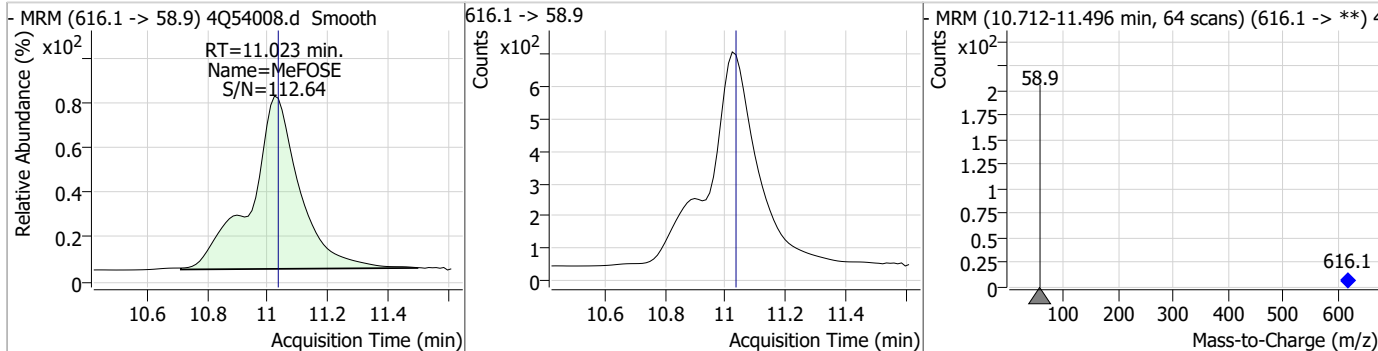
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	1.30	9.77	0.00	3957	498.1 -> 478.0	3.8	1.4	4.1



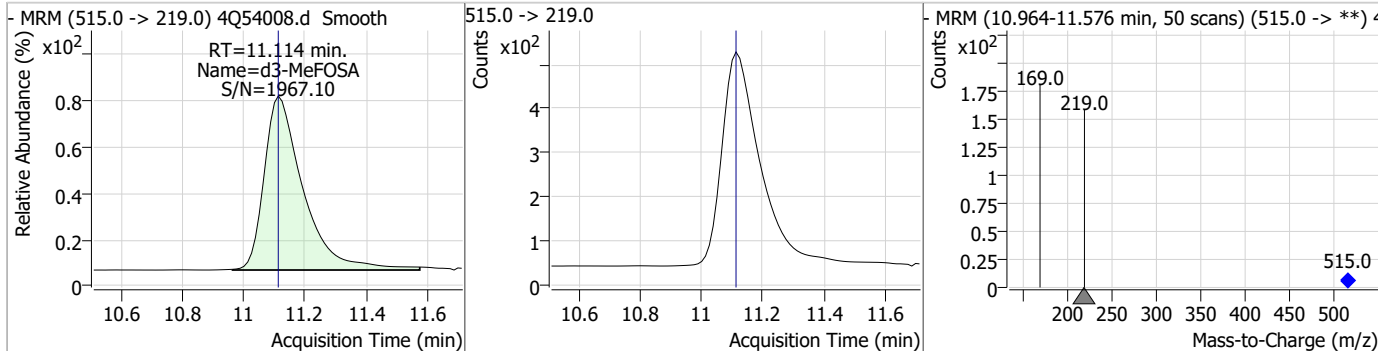
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.95	11.01	0.00	28380	623.2 -> 58.9			



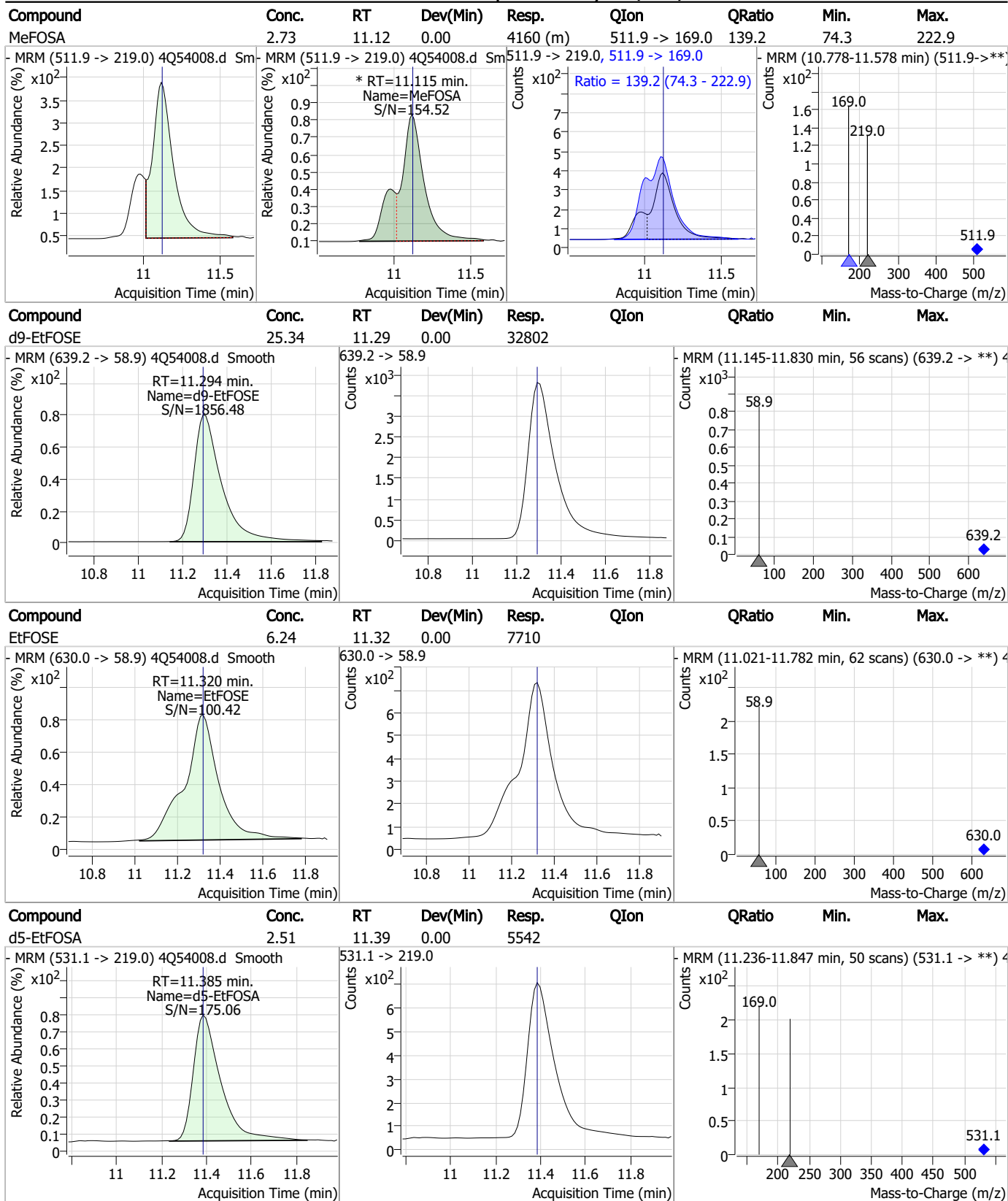
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	6.26	11.02	-0.01	7491	616.1 -> 58.9			



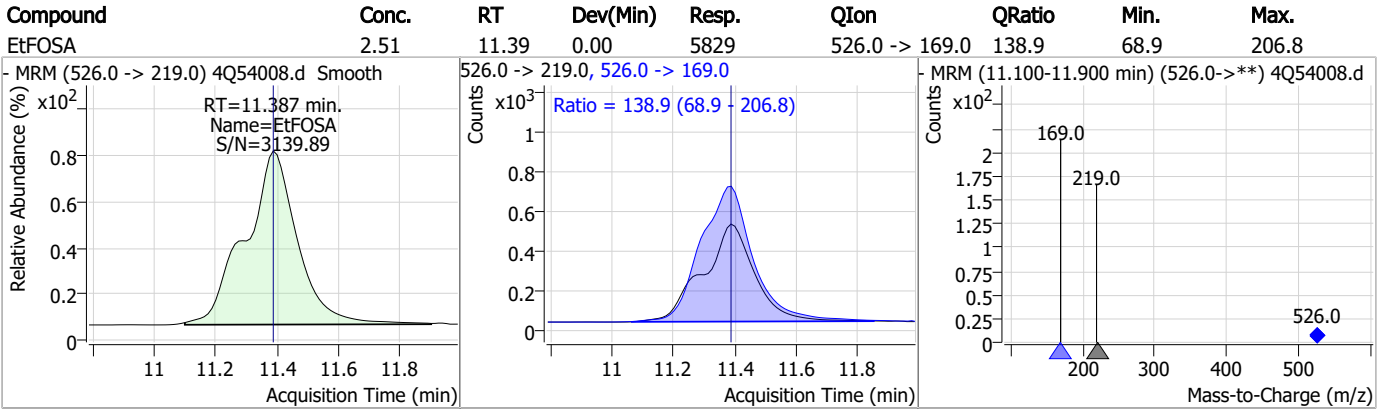
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.34	11.11	0.00	4269	515.0 -> 219.0			



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.7.19
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Manual Integration Approval Summary

Sample Number: S4Q788-IC788 Method: EPA DRAFT 1633
Lab FileID: 4Q54008.D Analyst approved: 11/18/23 15:04 Mike Eger
Injection Time: 11/17/23 11:55 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.98	Split peak
MeFOSAA	2355-31-9		8.05	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.08	Split peak
EtFOSAA	2991-50-6		8.26	Split peak
MeFOSA	31506-32-8		11.12	Split peak

7.7.19.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54009.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 12:09:45 PM
 Sample Name : icc788-4
 Vial : P1-A5
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.599	216.8 -> 171.9	81610	10.00 µg/L	0.000
M5-PFPeA	4.087	268.3 -> 223.0	36451	5.00 µg/L	0.000
M5-PFHxA	5.260	318.0 -> 273.0	26434	2.50 µg/L	0.000
M4-PFHpA	6.217	367.1 -> 322.0	26225	2.50 µg/L	0.000
M8-PFOA	6.926	421.1 -> 376.0	31245	2.50 µg/L	0.000
M9-PFNA	7.471	472.1 -> 427.0	12950	1.25 µg/L	0.000
M6-PFDA	7.967	519.1 -> 474.1	8740	1.25 µg/L	0.000
M7-PFUnDA	8.424	570.0 -> 525.1	9913	1.25 µg/L	0.000
M2-PFDoDA	8.843	615.1 -> 570.0	10583	1.25 µg/L	0.000
M2-PFTeDA	9.612	715.2 -> 670.0	10440	1.25 µg/L	0.000
M8-FOSA	9.769	506.1 -> 77.8	7092	2.50 µg/L	0.000
M3-PFBS	5.116	302.1 -> 79.9	7830	2.50 µg/L	0.000
M3-PFHxS	6.980	402.1 -> 79.9	6562	2.50 µg/L	0.000
M8-PFOS	8.080	507.1 -> 79.9	7237	2.50 µg/L	0.000
M2-4:2FTS	4.971	329.1 -> 80.9	902	5.00 µg/L	0.000
M2-6:2FTS	6.699	429.1 -> 80.9	1672	5.00 µg/L	0.000
M2-8:2FTS	7.766	529.1 -> 80.9	2285	5.00 µg/L	0.000
M3-MeFOSAA	8.049	573.2 -> 419.0	12165	5.00 µg/L	0.000
M3-HFPO-DA	5.615	286.9 -> 168.9	23858	10.00 µg/L	0.000
M5-EtFOSAA	8.246	589.2 -> 419.0	9954	5.00 µg/L	0.000
M7-MeFOSE	11.009	623.2 -> 58.9	29566	25.00 µg/L	0.000
M9-EtFOSE	11.294	639.2 -> 58.9	33925	25.00 µg/L	0.000
M5-EtFOSA	11.385	531.1 -> 219.0	5845	2.50 µg/L	0.000
M3-MeFOSA	11.114	515.0 -> 219.0	4567	2.50 µg/L	0.000
13C4-PFOS	8.081	502.8 -> 79.9	5953	2.50 µg/L	0.000
13C3-PFBA	2.591	216.0 -> 172.0	39844	5.00 µg/L	0.000
18O2-PFHxS	6.979	403.0 -> 83.9	4158	2.50 µg/L	0.000
13C4-PFOA	6.926	417.1 -> 372.0	33810	2.50 µg/L	0.000
13C2-PFDA	7.967	515.1 -> 470.1	9302	1.25 µg/L	0.000
13C5-PFNA	7.471	468.0 -> 423.0	12753	1.25 µg/L	0.000
13C2-PFHxA	5.261	315.1 -> 270.0	28475	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	4.971	329.1 -> 80.9	902	5.69 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.7%		
13C2-6:2FTS	6.699	429.1 -> 80.9	1672	4.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C2-8:2FTS	7.766	529.1 -> 80.9	2285	4.93 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C2-PFDoDA	8.843	615.1 -> 570.0	10583	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.7%		
13C2-PFTeDA	9.612	715.2 -> 670.0	10440	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C3-PFBS	5.116	302.1 -> 79.9	7830	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C3-PFHxS	6.980	402.1 -> 79.9	6562	2.51 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C4-PFBA	2.599	216.8 -> 171.9	81610	9.92 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C4-PFHpA	6.217	367.1 -> 322.0	26225	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.9%		
13C5-PFHxA	5.260	318.0 -> 273.0	26434	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C5-PFPeA	4.087	268.3 -> 223.0	36451	5.10 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C6-PFDA	7.967	519.1 -> 474.1	8740	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C7-PFUnDA	8.424	570.0 -> 525.1	9913	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C8-FOSA	9.769	506.1 -> 77.8	7092	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C8-PFOA	6.926	421.1 -> 376.0	31245	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C8-PFOS	8.080	507.1 -> 79.9	7237	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C9-PFNA	7.471	472.1 -> 427.0	12950	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.2%		
d3-MeFOSAA	8.049	573.2 -> 419.0	12165	4.99 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C3-HFPO-DA	5.615	286.9 -> 168.9	23858	10.04 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.4%		
d3-MeFOSA	11.114	515.0 -> 219.0	4567	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.6%		
d5-EtFOSAA	8.246	589.2 -> 419.0	9954	4.87 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.3%		
d7-MeFOSE	11.009	623.2 -> 58.9	29566	24.79 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.2%		
d9-EtFOSE	11.294	639.2 -> 58.9	33925	25.00 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.0%		
d5-EtFOSA	11.385	531.1 -> 219.0	5845	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
Target Compounds					QValue
4:2FTS	4.972	327.1 -> 307.0	14399	8.70 µg/L	100
		327.1 -> 80.9	6198		
6:2FTS	6.699	427.1 -> 407.0	17968	10.34 µg/L	100
		427.1 -> 80.9	6557		
8:2FTS	7.767	527.1 -> 507.0	11644	9.61 µg/L	100
		527.1 -> 80.8	5502		
EtFOSAA	8.259	584.2 -> 419.1	4630	2.46 µg/L	100
		584.2 -> 526.0	1806		
FOSA	9.773	498.1 -> 77.9	8047	2.44 µg/L	100
		498.1 -> 478.0	218		
MeFOSAA	8.050	570.1 -> 419.0	4683	2.40 µg/L	100
		570.1 -> 483.0	1000		
PFBA	2.595	212.8 -> 168.9	27585	9.82 µg/L	100
PFBS	5.117	298.7 -> 79.9	5709	2.20 µg/L	100
		298.7 -> 98.8	2166		
PFDA	7.968	512.9 -> 469.0	16796	2.53 µg/L	100
		512.9 -> 219.0	3301		
PFDoDA	8.843	613.1 -> 569.0	20558	2.38 µg/L	100
		613.1 -> 319.0	3723		
PFDS	8.983	599.0 -> 79.9	4197	2.29 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2038			
PFHpA	6.218	363.1 -> 319.0	38010	2.40	µg/L	100
		363.1 -> 169.0	6782			
PFHpS	7.573	449.0 -> 79.9	6221	2.23	µg/L	100
		449.0 -> 98.9	3611			
PFHxA	5.263	313.0 -> 269.0	21342	2.41	µg/L	100
		313.0 -> 118.9	628			
PFHxS	6.981	398.7 -> 79.9	4035	2.15	µg/L	m 100
		398.7 -> 98.9	2110			
PFNA	7.472	463.0 -> 419.0	19752	2.47	µg/L	100
		463.0 -> 219.0	4997			
PFNS	8.549	548.8 -> 79.9	2936	2.17	µg/L	100
		548.8 -> 98.9	1604			
PFOA	6.927	413.0 -> 369.0	34162	2.46	µg/L	100
		413.0 -> 169.0	7126			
PFOS	8.081	498.9 -> 79.9	6303	2.06	µg/L	m 100
		498.9 -> 98.8	3075			
PFPeA	4.089	263.0 -> 219.0	35324	4.88	µg/L	100
PFPeS	6.207	349.1 -> 79.9	4717	2.24	µg/L	100
		349.1 -> 98.9	2105			
PFTeDA	9.613	713.1 -> 669.0	18835	2.47	µg/L	100
		713.1 -> 168.9	2066			
PFTrDA	9.255	663.0 -> 619.0	22947	2.50	µg/L	100
		663.0 -> 168.9	3233			
PFUnDA	8.424	563.1 -> 519.0	20349	2.55	µg/L	100
		563.1 -> 269.1	4305			
11CI-PF3OUdS	9.282	630.9 -> 450.9	34159	4.64	µg/L	100
		632.9 -> 452.9	10640			
9CI-PF3ONS	8.413	530.8 -> 351.0	36206	4.84	µg/L	100
		532.8 -> 353.0	10526			
ADONA	6.494	376.9 -> 250.9	93945	5.07	µg/L	100
		376.9 -> 84.8	23340			
HFPO-DA	5.616	284.9 -> 168.9	12136	5.13	µg/L	100
		284.9 -> 184.9	1310			
3:3FTCA	3.536	241.0 -> 177.0	5236	11.93	µg/L	100
		241.0 -> 117.0	484			
5:3FTCA	5.943	341.0 -> 237.1	95019	61.95	µg/L	100
		341.0 -> 217.0	67794			
7:3FTCA	7.499	441.0 -> 316.9	42477	61.48	µg/L	100
		441.0 -> 336.9	105672			
EtFOSA	11.387	526.0 -> 219.0	11575	4.74	µg/L	100
		526.0 -> 169.0	15958			
EtFOSE	11.320	630.0 -> 58.9	14837	11.61	µg/L	100
MeFOSA	11.115	511.9 -> 219.0	7904	4.85	µg/L	m 100
		511.9 -> 169.0	11746			
MeFOSE	11.035	616.1 -> 58.9	14986	12.03	µg/L	100
PFDoDS	9.752	699.1 -> 79.9	3124	2.31	µg/L	100
		699.1 -> 98.8	1887			
NFDHA	5.141	295.0 -> 201.0	3258	4.28	µg/L	100
		295.0 -> 84.9	843			
PFMBA	4.491	279.0 -> 85.1	19664	4.93	µg/L	100
PFMPA	3.240	229.0 -> 84.9	22174	4.85	µg/L	100
PFEESA	5.647	314.8 -> 134.9	31174	4.48	µg/L	100
		314.8 -> 82.9	1053			

= Qualifier out of range, m = manually integrated, + = Area summed

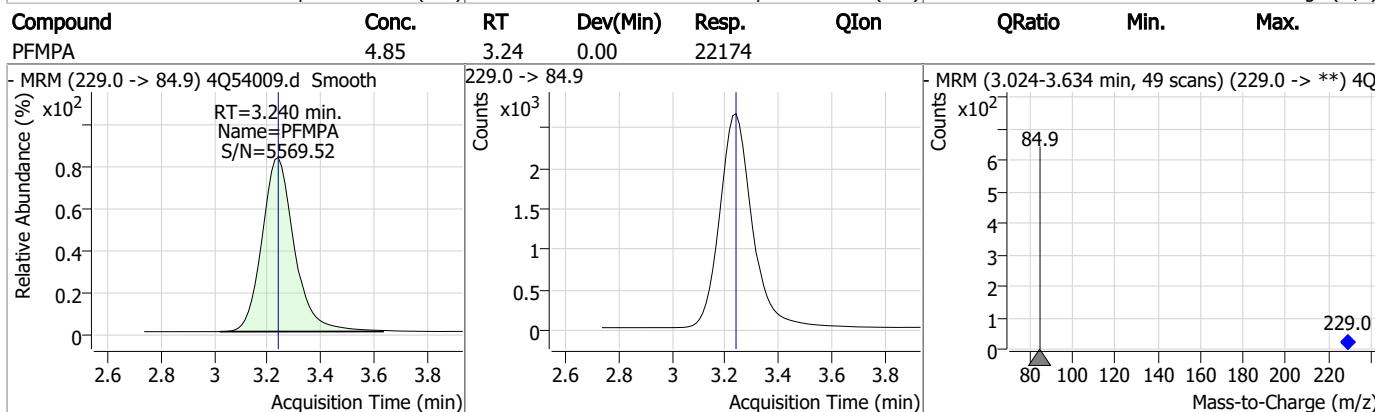
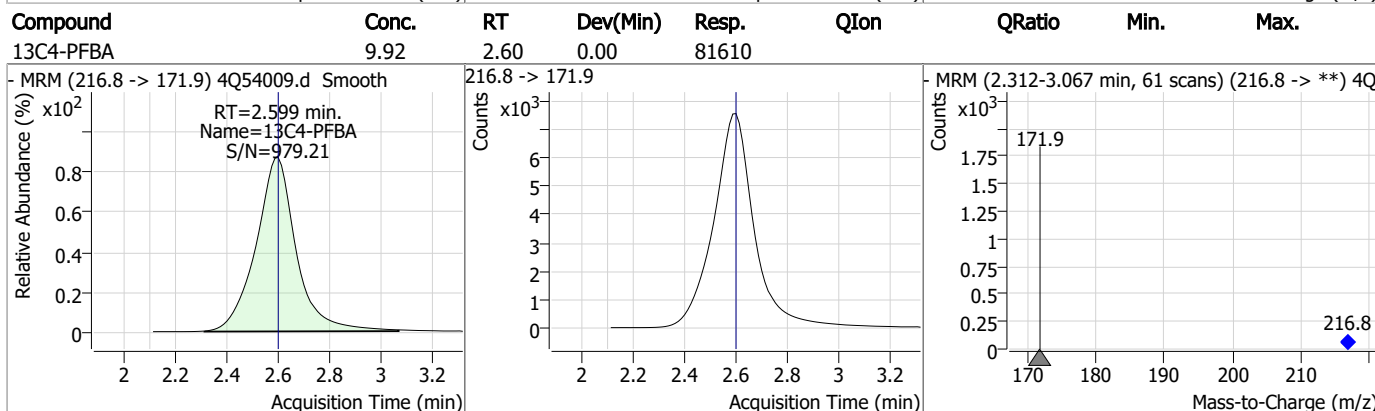
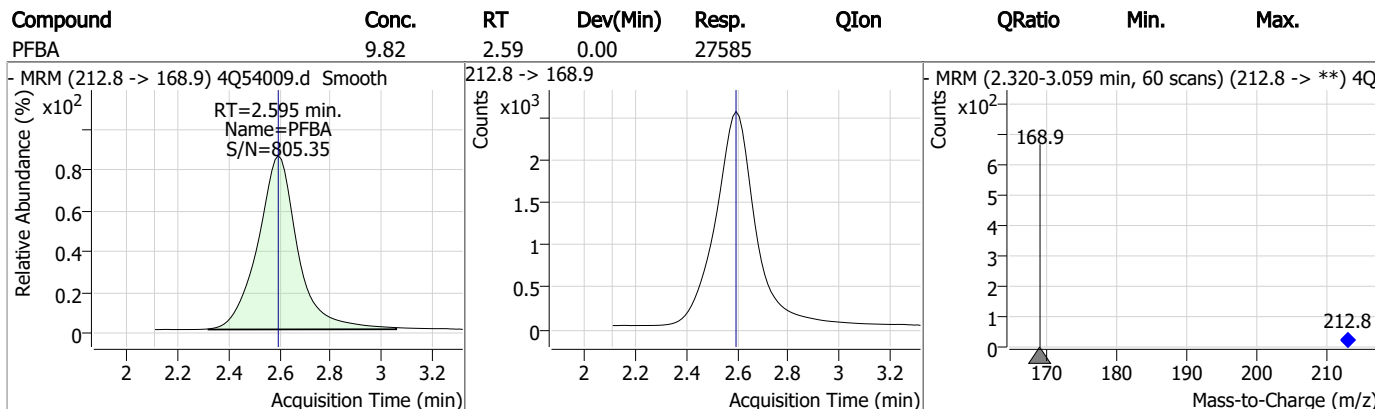
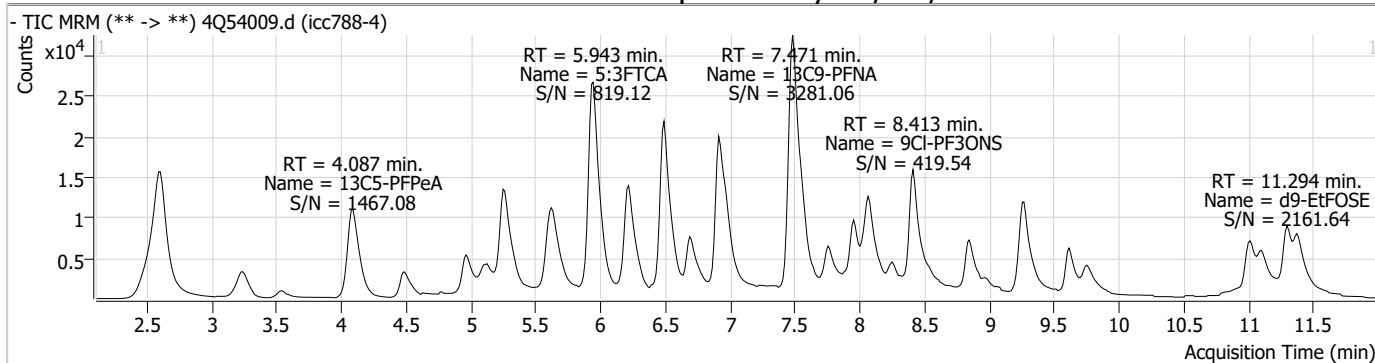
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.20

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Perfluorinated Compounds by LC/MS/MS

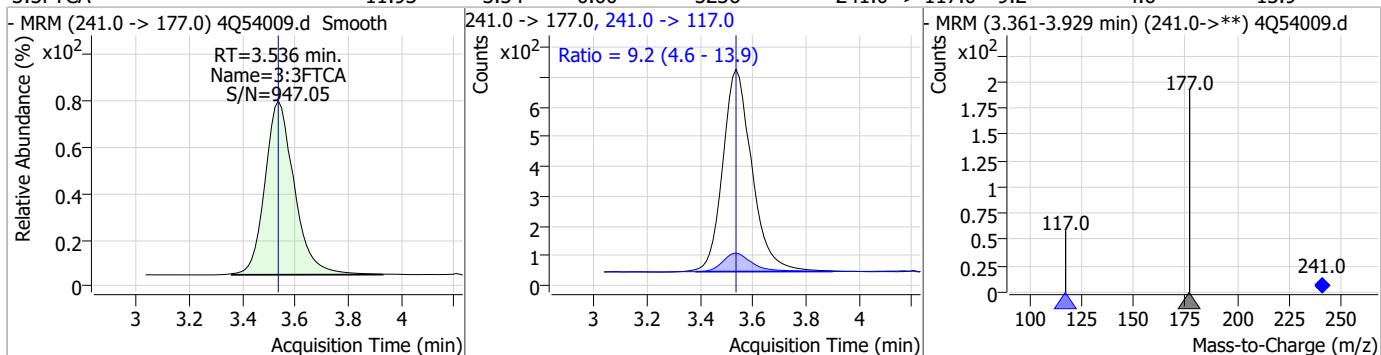


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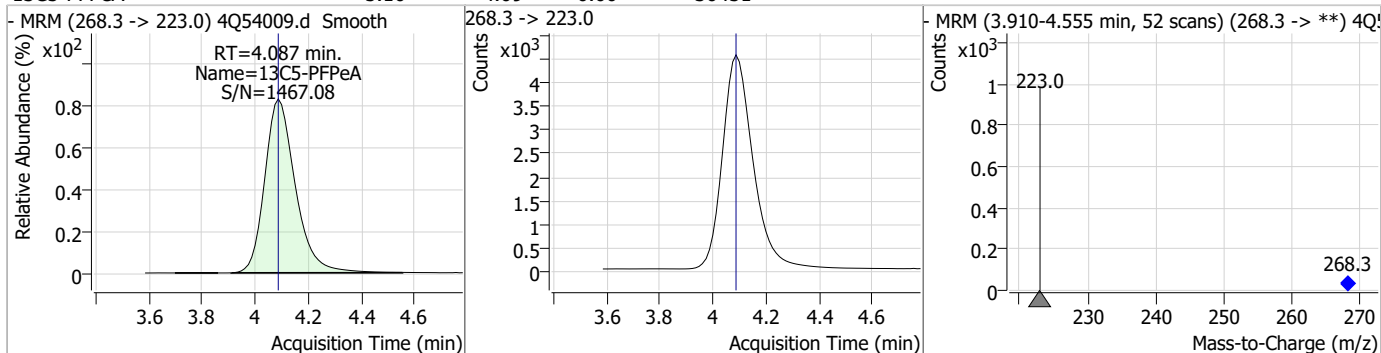
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Perfluorinated Compounds by LC/MS/MS

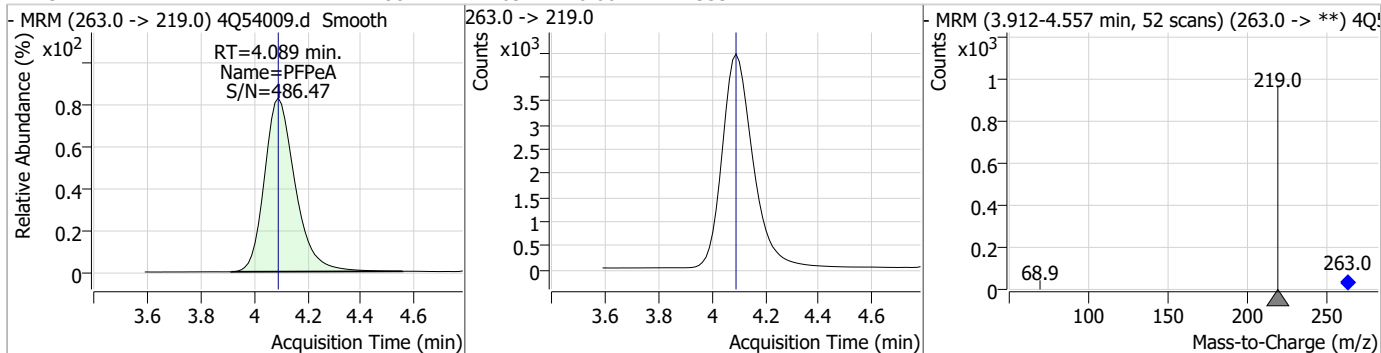
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	11.93	3.54	0.00	5236	241.0 -> 117.0	9.2	4.6	13.9



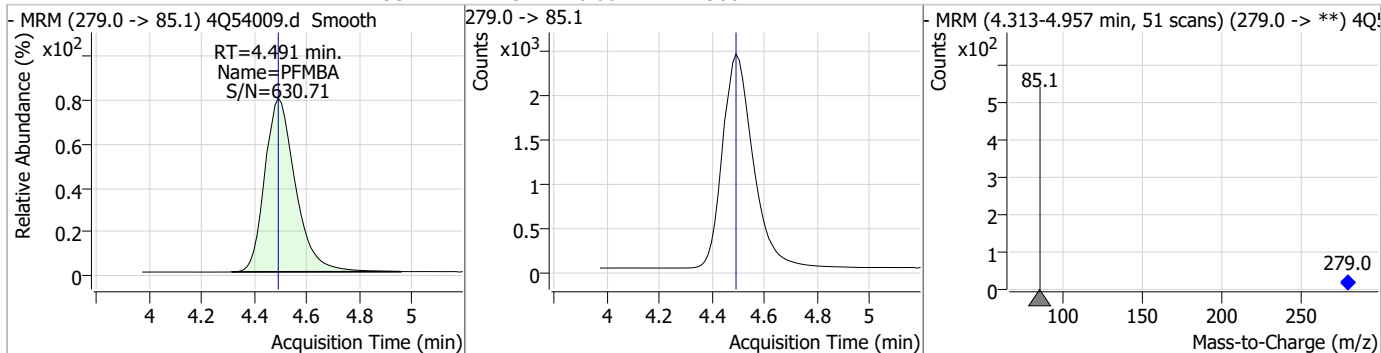
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.10	4.09	0.00	36451				



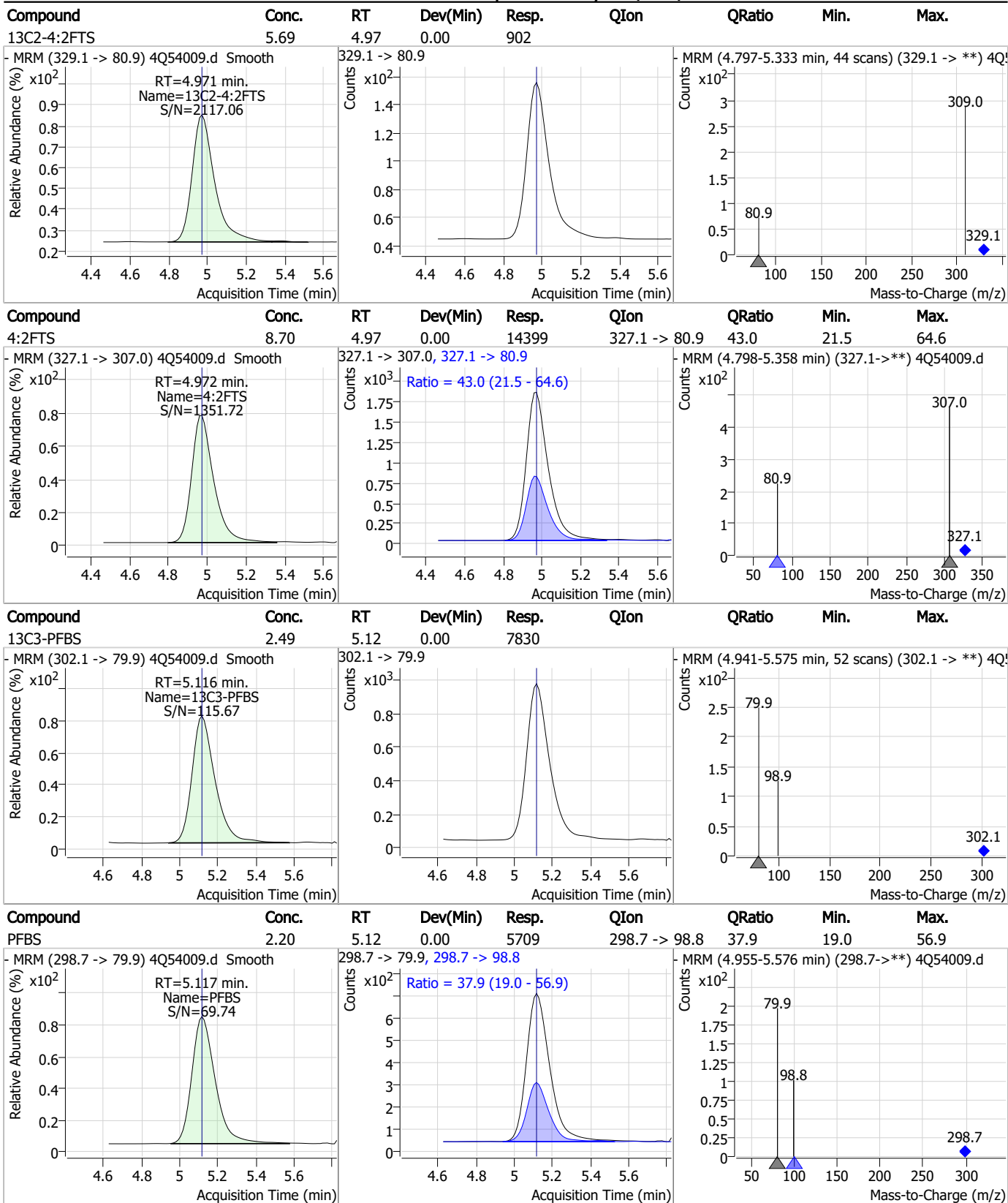
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.88	4.09	0.00	35324				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.93	4.49	0.00	19664				

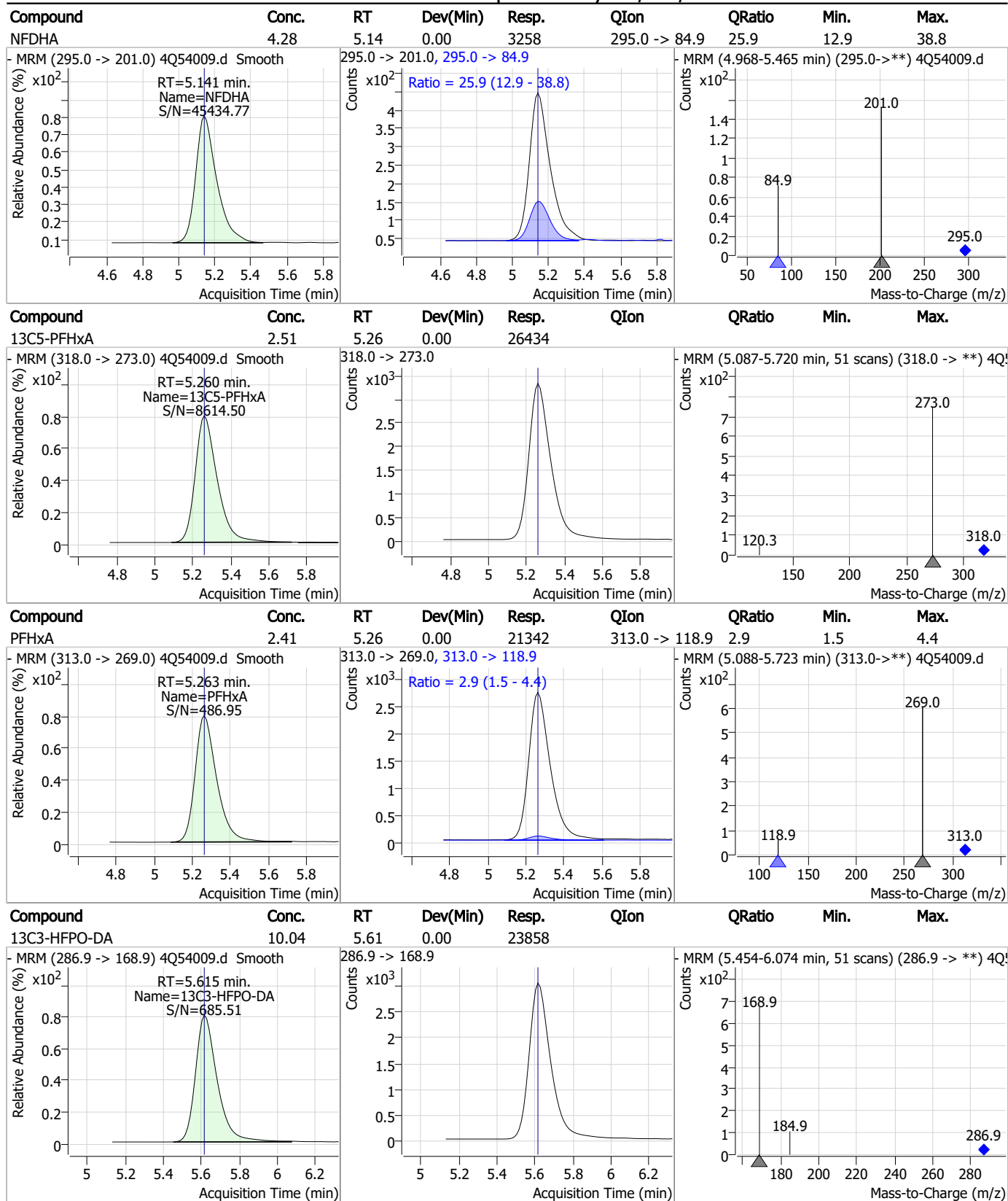


Perfluorinated Compounds by LC/MS/MS



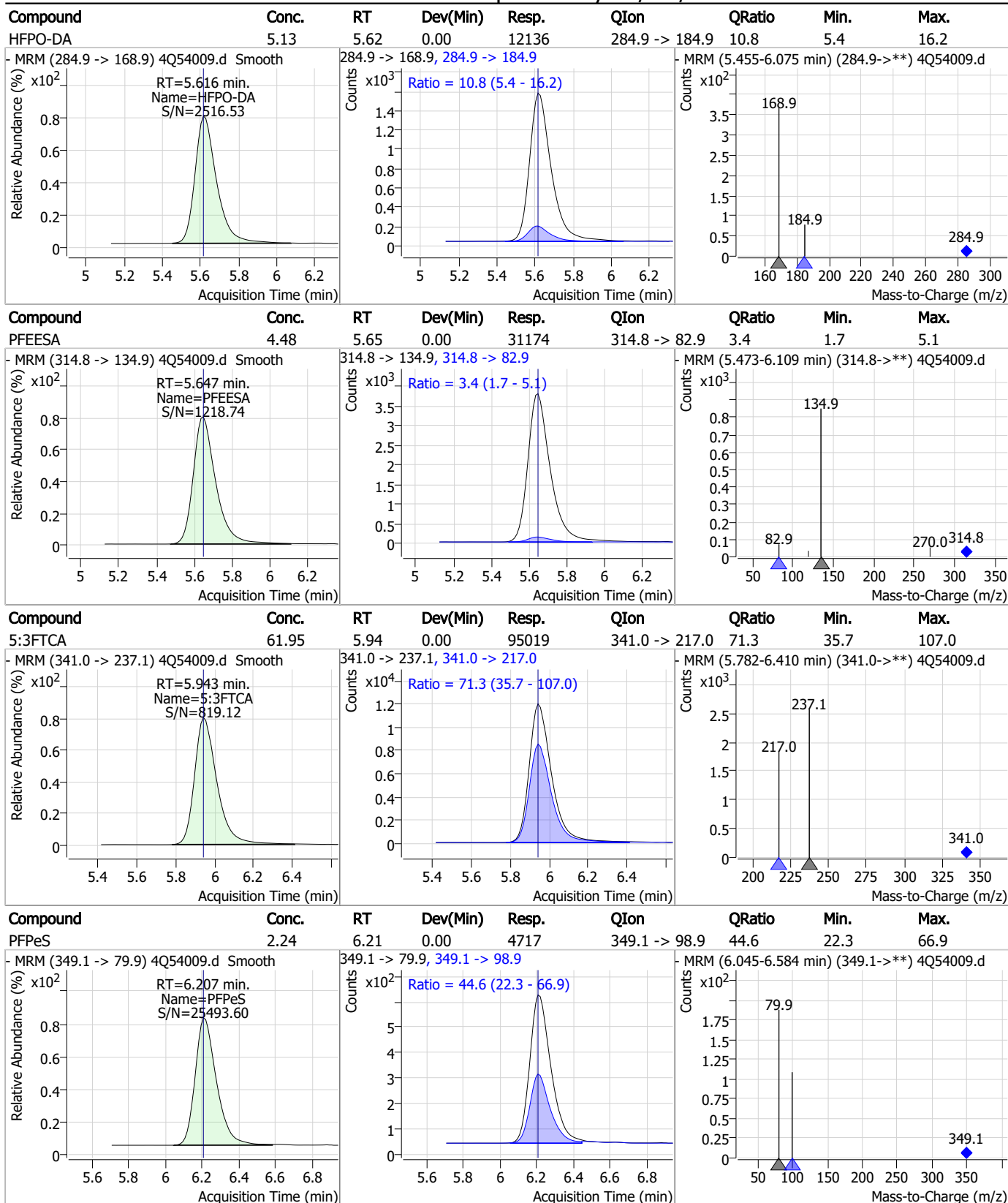
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Perfluorinated Compounds by LC/MS/MS



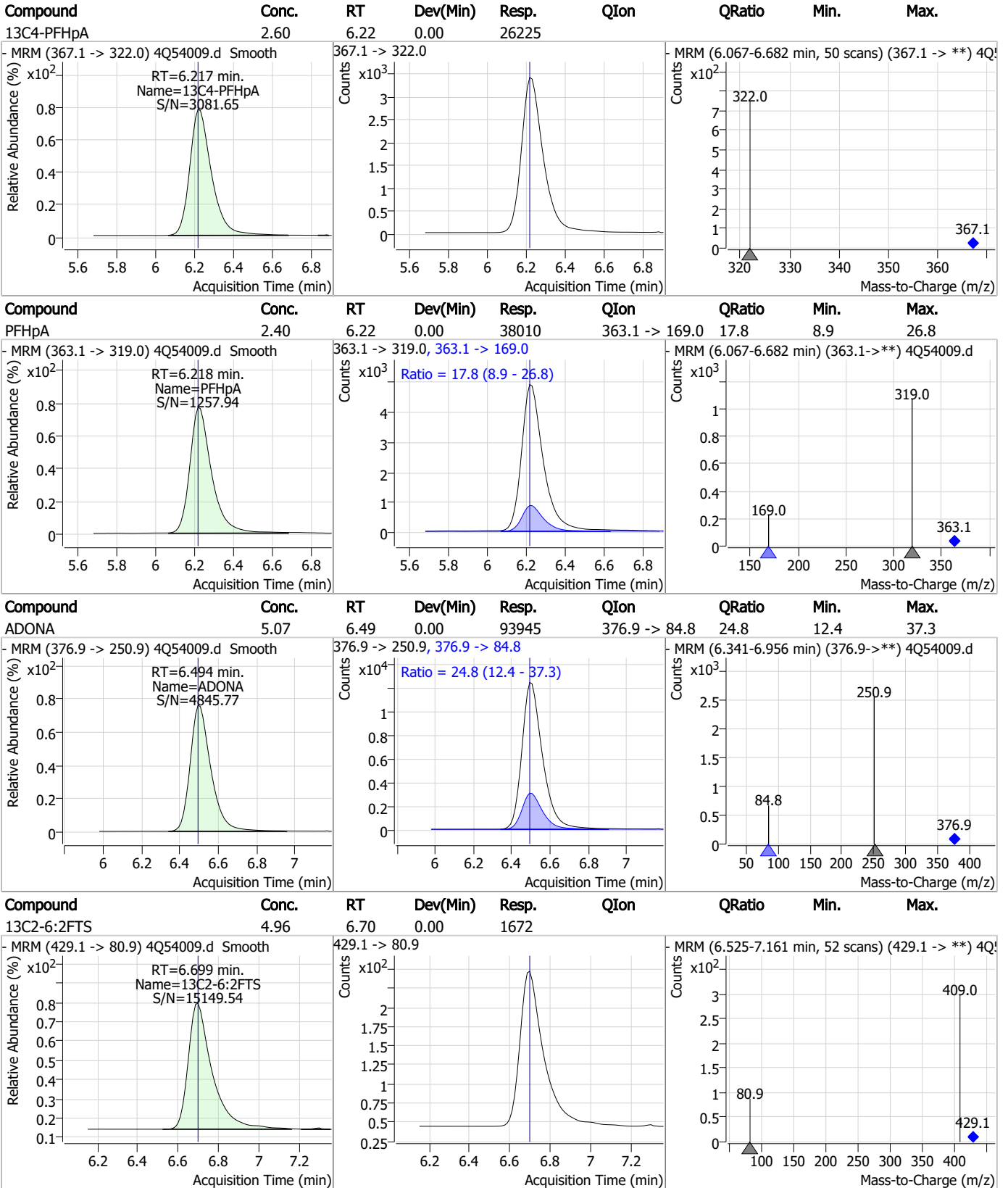
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Perfluorinated Compounds by LC/MS/MS



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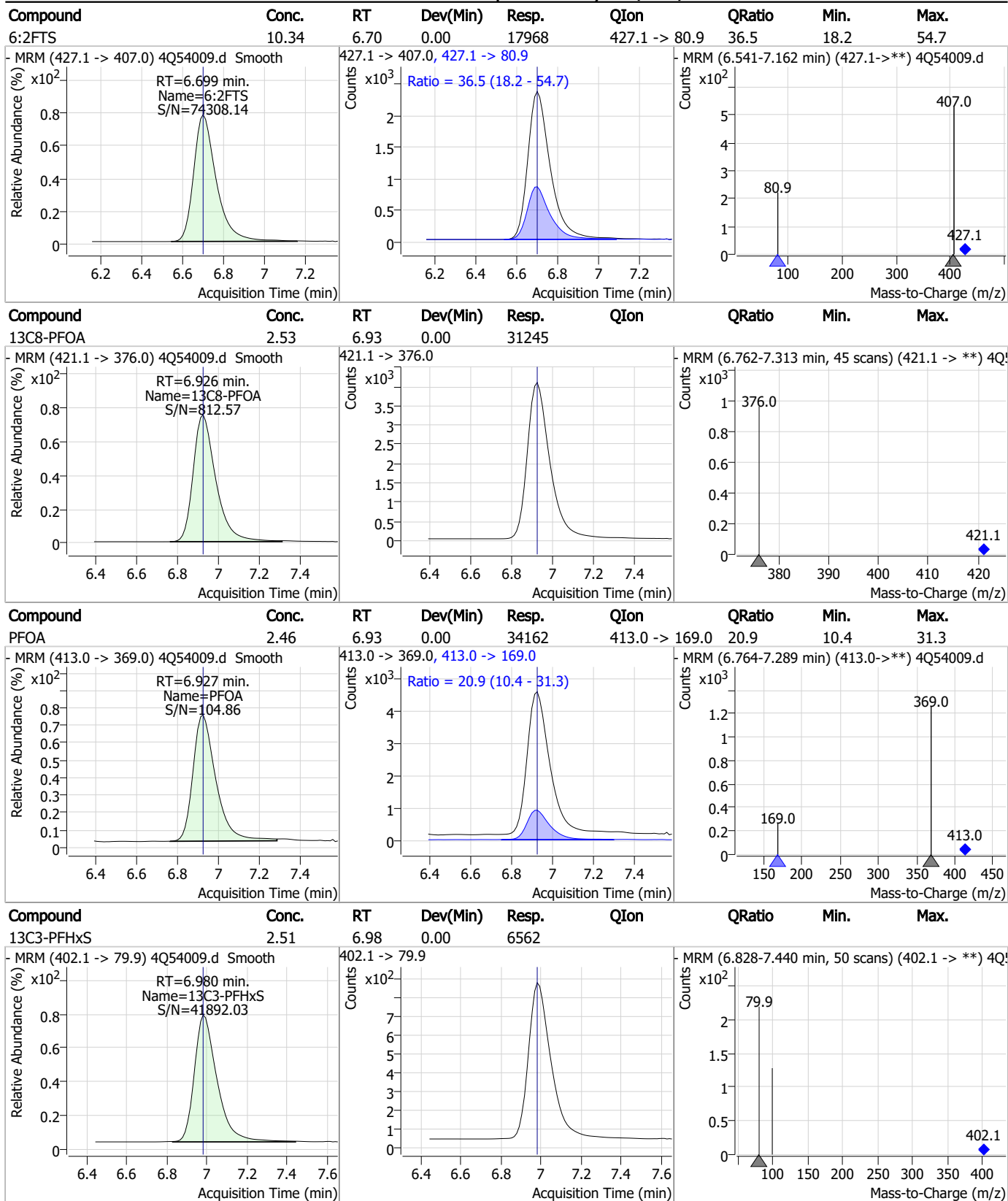
Perfluorinated Compounds by LC/MS/MS



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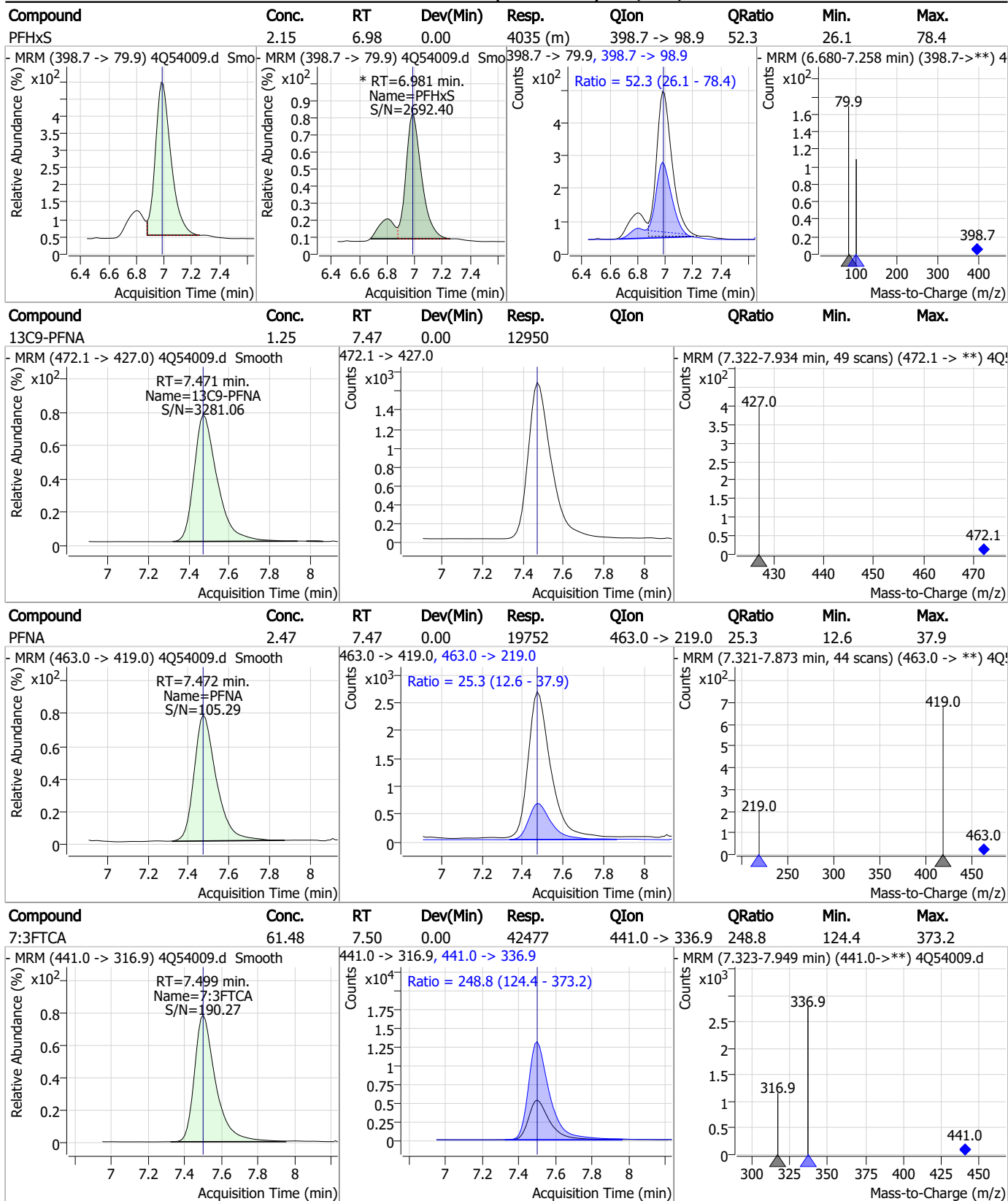
Perfluorinated Compounds by LC/MS/MS



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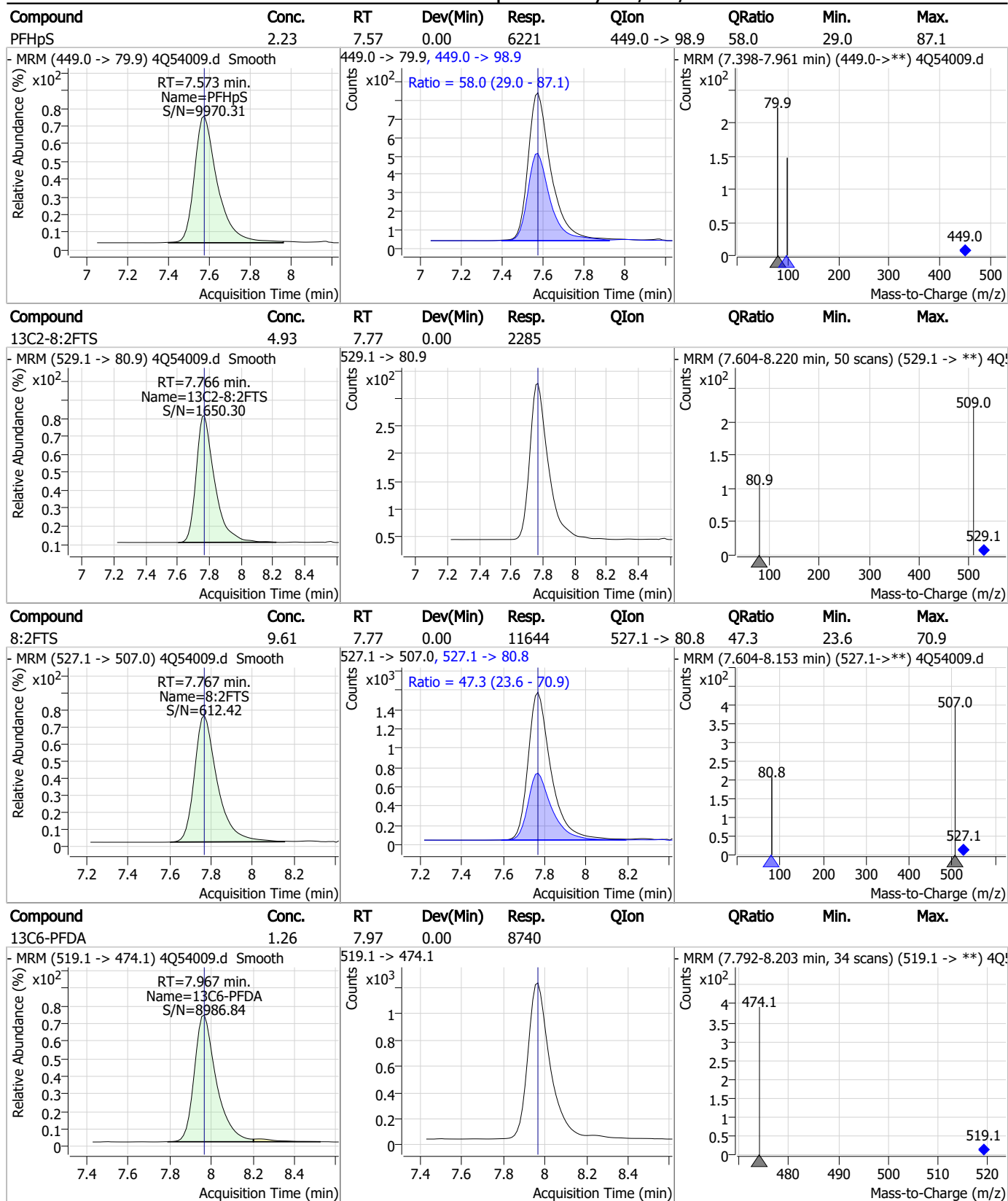
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Perfluorinated Compounds by LC/MS/MS



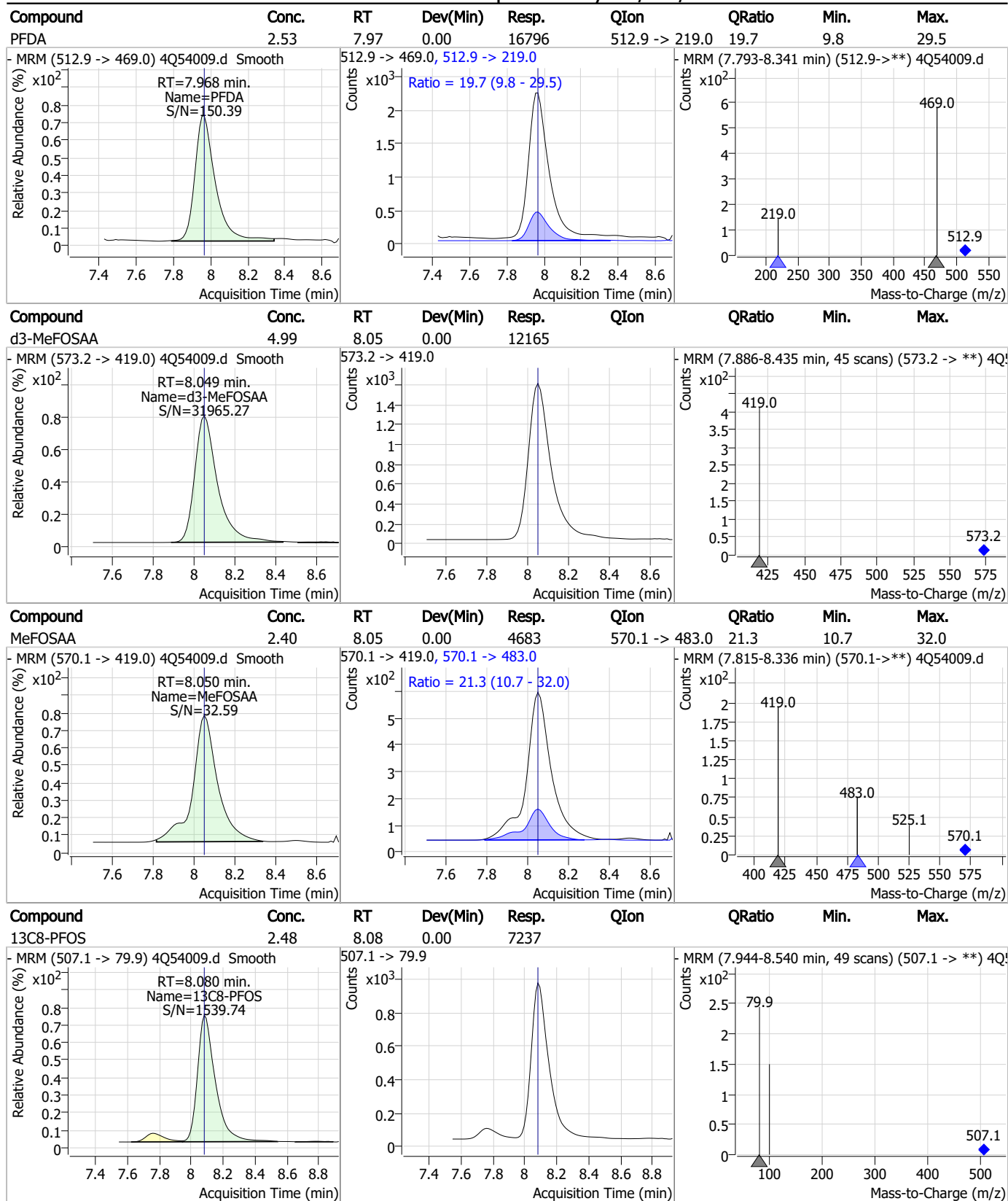
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Perfluorinated Compounds by LC/MS/MS



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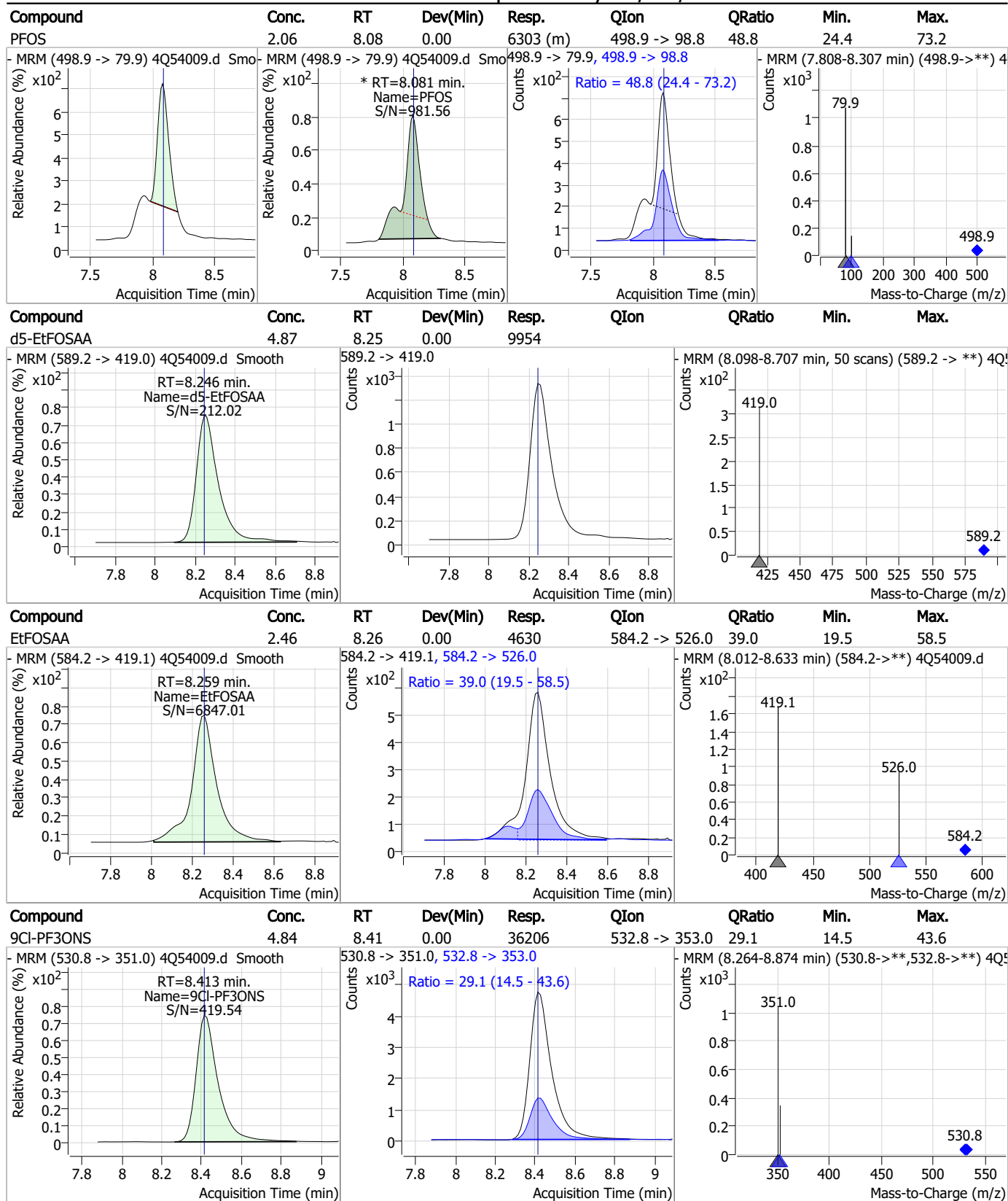
Perfluorinated Compounds by LC/MS/MS



7.7.20

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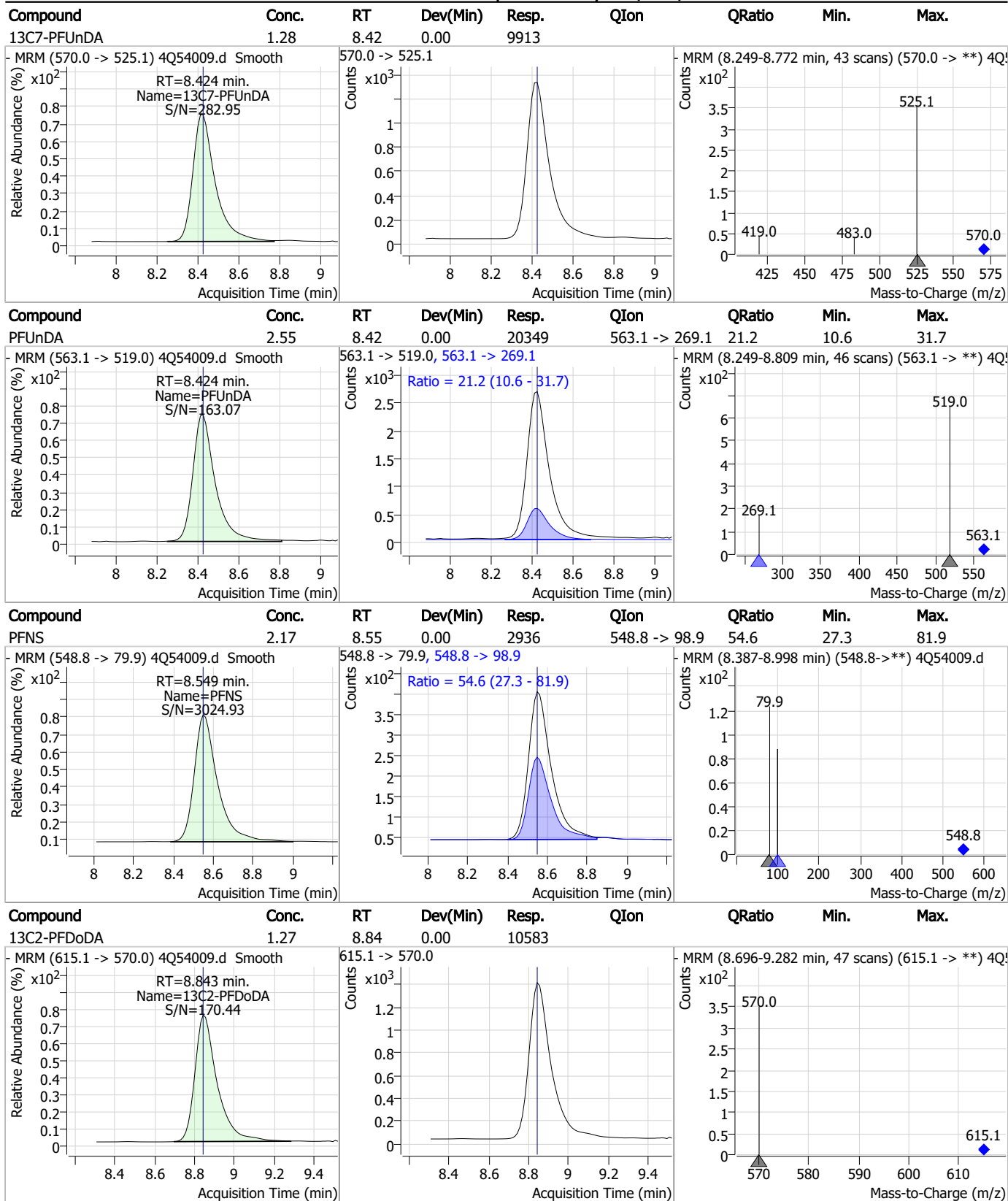
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

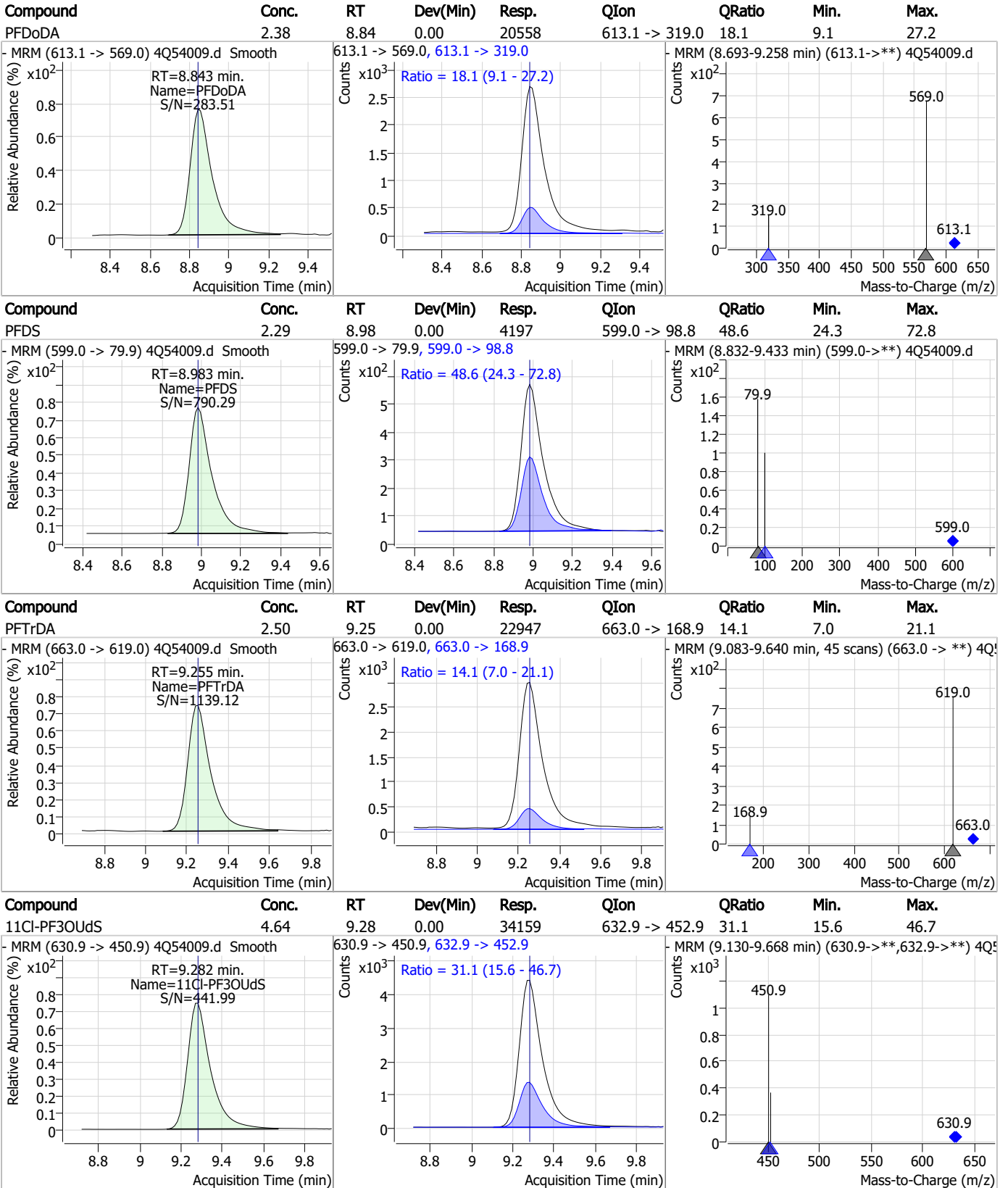


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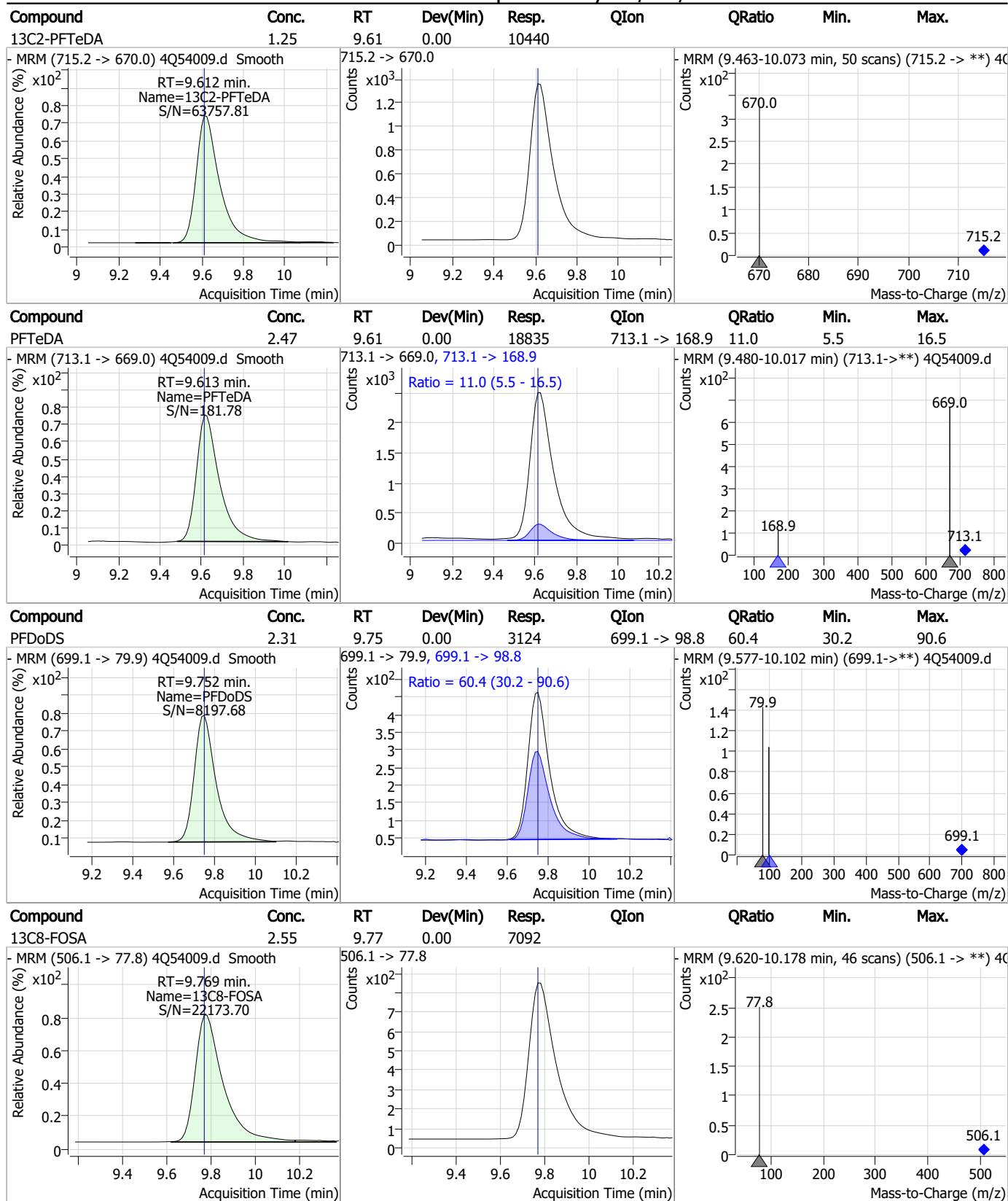
Perfluorinated Compounds by LC/MS/MS



7.7.20 7



Perfluorinated Compounds by LC/MS/MS

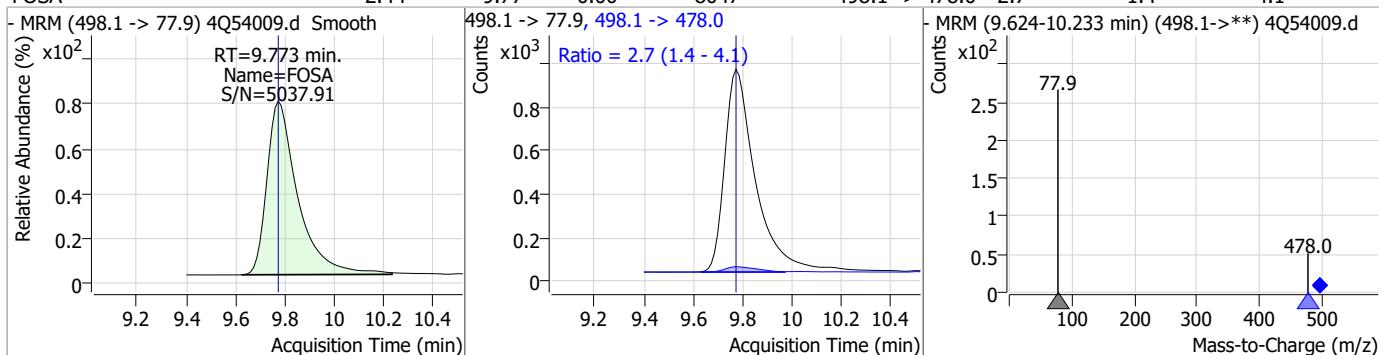


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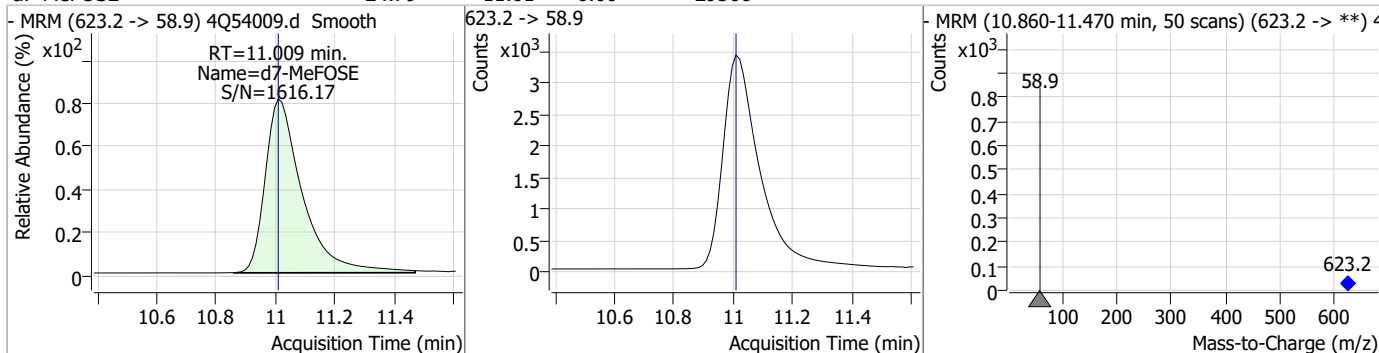
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Perfluorinated Compounds by LC/MS/MS

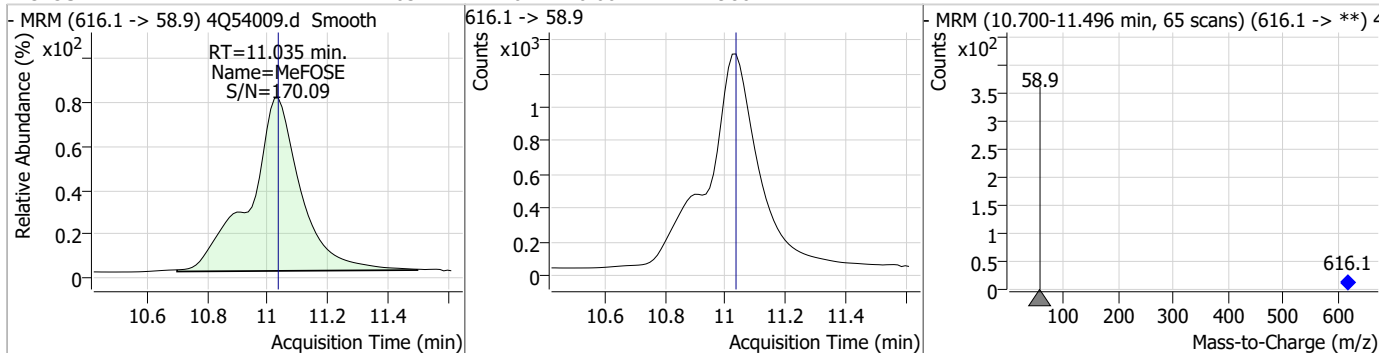
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.44	9.77	0.00	8047	498.1 -> 478.0	2.7	1.4	4.1



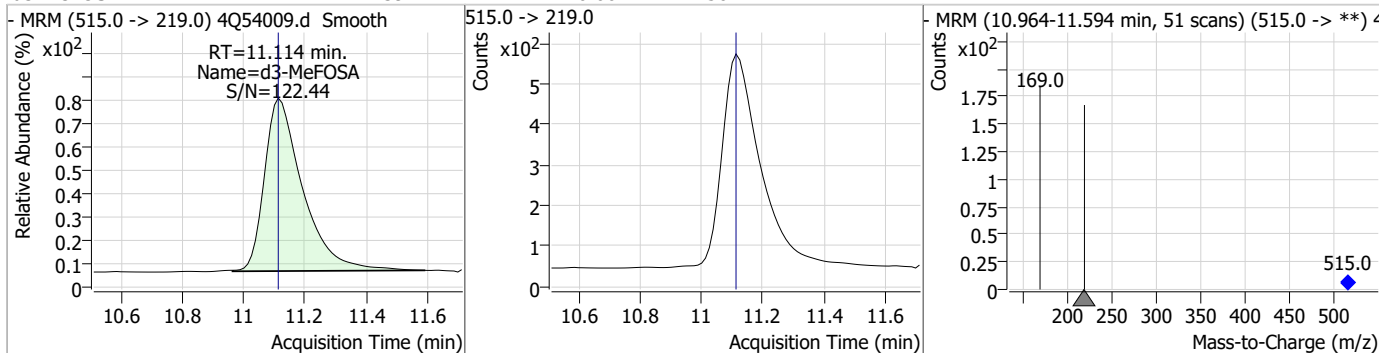
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.79	11.01	0.00	29566	623.2 -> 58.9			



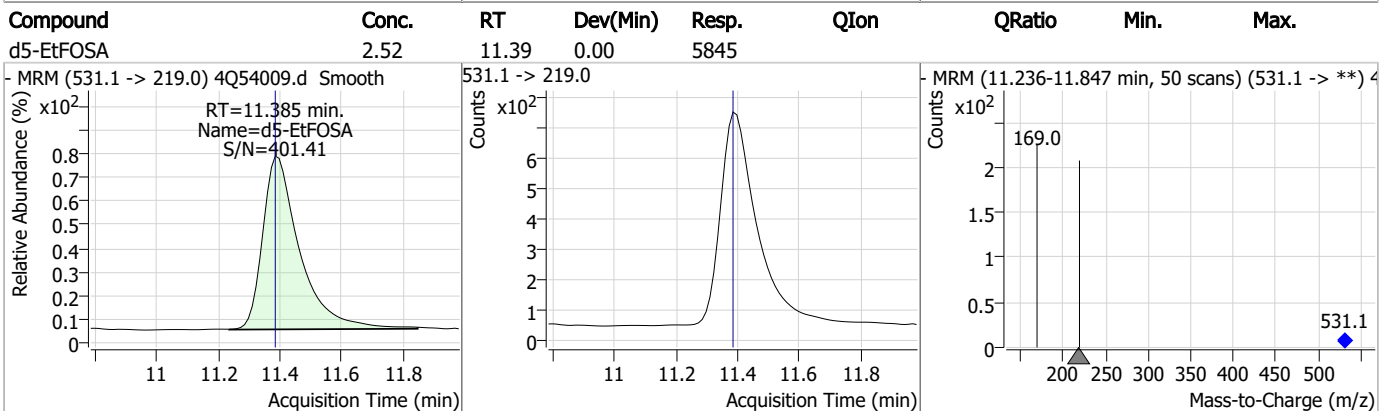
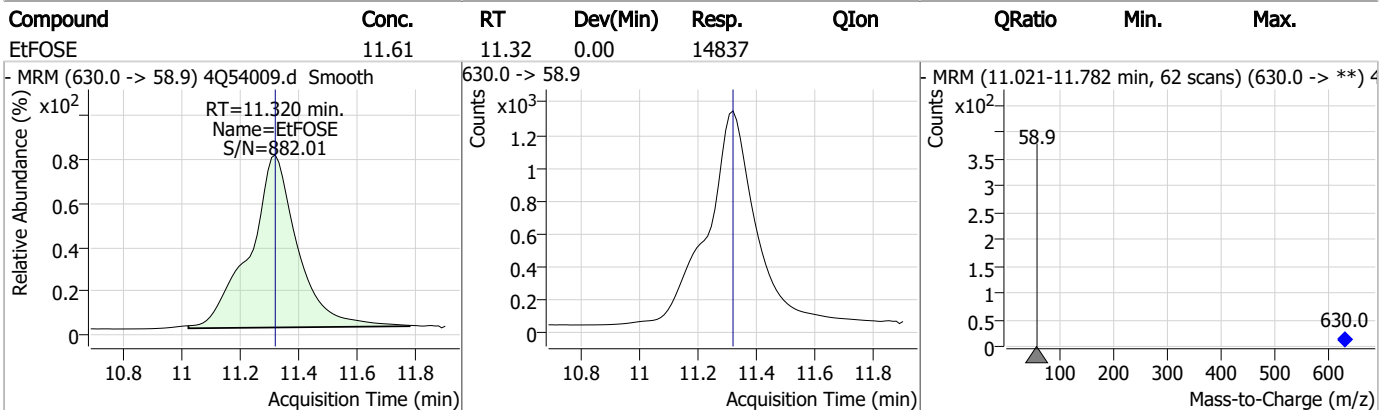
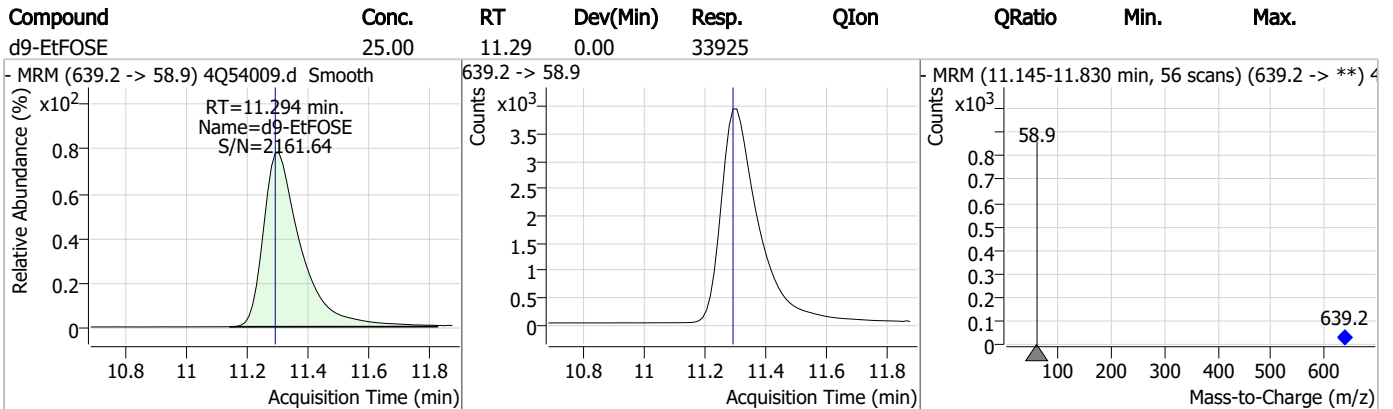
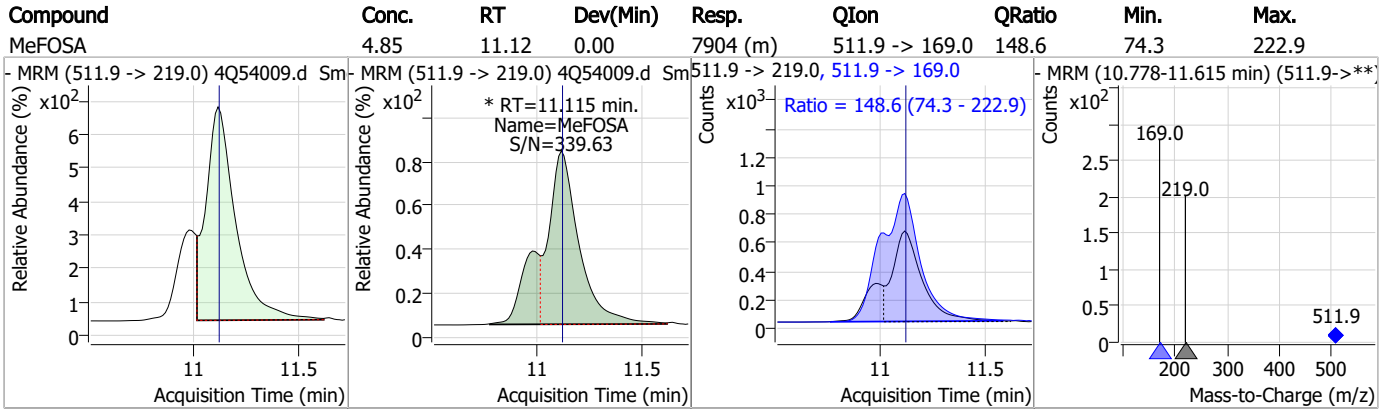
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.03	11.04	0.00	14986	616.1 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.39	11.11	0.00	4567	515.0 -> 169.0			



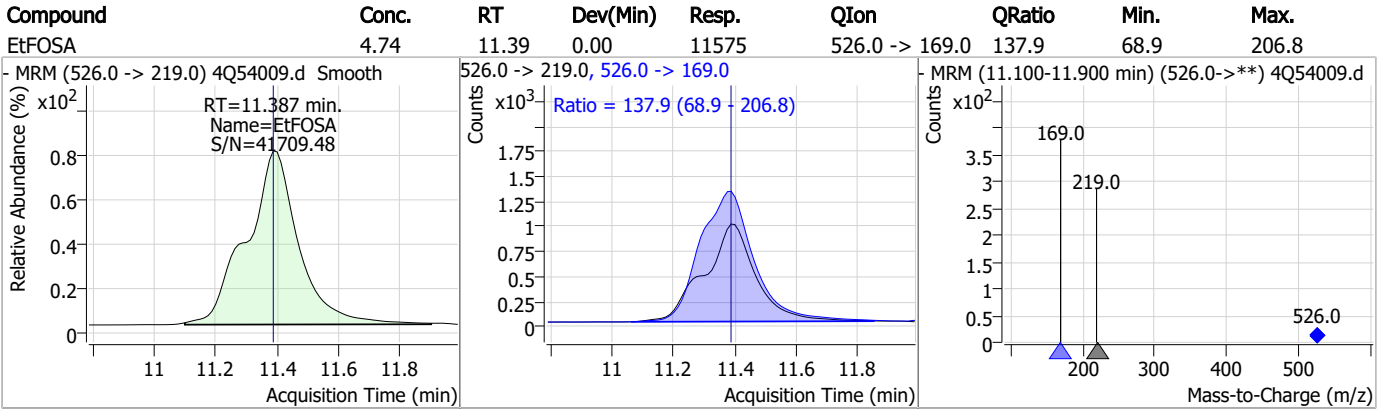
Perfluorinated Compounds by LC/MS/MS



7.7.20
7



Perfluorinated Compounds by LC/MS/MS



7.7.20
7



Manual Integration Approval Summary

Sample Number: S4Q788-ICC788 Method: EPA DRAFT 1633
Lab FileID: 4Q54009.D Analyst approved: 11/18/23 15:04 Mike Eger
Injection Time: 11/17/23 12:09 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.98	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.08	Split peak
MeFOSA	31506-32-8		11.12	Split peak

7.7.20.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54010.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 12:24:31 PM
 Sample Name : ic788-5
 Vial : P1-A6
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.599	216.8 -> 171.9	85367	10.00 µg/L	0.000
M5-PFPeA	4.087	268.3 -> 223.0	38096	5.00 µg/L	0.000
M5-PFHxA	5.260	318.0 -> 273.0	28350	2.50 µg/L	0.000
M4-PFHpA	6.230	367.1 -> 322.0	26448	2.50 µg/L	0.012
M8-PFOA	6.926	421.1 -> 376.0	32689	2.50 µg/L	0.000
M9-PFNA	7.471	472.1 -> 427.0	13896	1.25 µg/L	0.000
M6-PFDA	7.967	519.1 -> 474.1	9120	1.25 µg/L	0.000
M7-PFUnDA	8.424	570.0 -> 525.1	10463	1.25 µg/L	0.000
M2-PFDoDA	8.843	615.1 -> 570.0	11132	1.25 µg/L	0.000
M2-PFTeDA	9.624	715.2 -> 670.0	10708	1.25 µg/L	0.012
M8-FOSA	9.781	506.1 -> 77.8	7133	2.50 µg/L	0.012
M3-PFBS	5.116	302.1 -> 79.9	8580	2.50 µg/L	0.000
M3-PFHxS	6.992	402.1 -> 79.9	6818	2.50 µg/L	0.012
M8-PFOS	8.092	507.1 -> 79.9	7357	2.50 µg/L	0.012
M2-4:2FTS	4.971	329.1 -> 80.9	869	5.00 µg/L	0.000
M2-6:2FTS	6.699	429.1 -> 80.9	1741	5.00 µg/L	0.000
M2-8:2FTS	7.766	529.1 -> 80.9	2543	5.00 µg/L	0.000
M3-MeFOSAA	8.049	573.2 -> 419.0	12337	5.00 µg/L	0.000
M3-HFPO-DA	5.627	286.9 -> 168.9	25427	10.00 µg/L	0.012
M5-EtFOSAA	8.259	589.2 -> 419.0	10472	5.00 µg/L	0.012
M7-MeFOSE	11.009	623.2 -> 58.9	30877	25.00 µg/L	0.000
M9-EtFOSE	11.306	639.2 -> 58.9	34806	25.00 µg/L	0.012
M5-EtFOSA	11.385	531.1 -> 219.0	5893	2.50 µg/L	0.000
M3-MeFOSA	11.114	515.0 -> 219.0	4840	2.50 µg/L	0.000
13C4-PFOS	8.081	502.8 -> 79.9	6133	2.50 µg/L	0.000
13C3-PFBA	2.591	216.0 -> 172.0	41255	5.00 µg/L	0.000
18O2-PFHxS	6.991	403.0 -> 83.9	4379	2.50 µg/L	0.012
13C4-PFOA	6.926	417.1 -> 372.0	36157	2.50 µg/L	0.000
13C2-PFDA	7.967	515.1 -> 470.1	9729	1.25 µg/L	0.000
13C5-PFNA	7.471	468.0 -> 423.0	13813	1.25 µg/L	0.000
13C2-PFHxA	5.261	315.1 -> 270.0	30237	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	4.971	329.1 -> 80.9	869	5.20 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C2-6:2FTS	6.699	429.1 -> 80.9	1741	4.91 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C2-8:2FTS	7.766	529.1 -> 80.9	2543	5.21 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.1%		
13C2-PFDoDA	8.843	615.1 -> 570.0	11132	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C2-PFTeDA	9.624	715.2 -> 670.0	10708	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C3-PFBS	5.116	302.1 -> 79.9	8580	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.6%		
13C3-PFHxS	6.992	402.1 -> 79.9	6818	2.48 µg/L	0.012

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C4-PFBA	2.599	216.8 -> 171.9	85367	10.02 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C4-PFHpA	6.230	367.1 -> 322.0	26448	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C5-PFHxA	5.260	318.0 -> 273.0	28350	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C5-PFPeA	4.087	268.3 -> 223.0	38096	5.02 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C6-PFDA	7.967	519.1 -> 474.1	9120	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C7-PFUnDA	8.424	570.0 -> 525.1	10463	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C8-FOSA	9.781	506.1 -> 77.8	7133	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C8-PFOA	6.926	421.1 -> 376.0	32689	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C8-PFOS	8.092	507.1 -> 79.9	7357	2.45 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C9-PFNA	7.471	472.1 -> 427.0	13896	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.3%		
d3-MeFOSAA	8.049	573.2 -> 419.0	12337	4.91 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C3-HFPO-DA	5.627	286.9 -> 168.9	25427	10.08 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.8%		
d3-MeFOSA	11.114	515.0 -> 219.0	4840	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.3%		
d5-EtFOSAA	8.259	589.2 -> 419.0	10472	4.97 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.4%		
d7-MeFOSE	11.009	623.2 -> 58.9	30877	25.13 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
d9-EtFOSE	11.306	639.2 -> 58.9	34806	24.89 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.6%		
d5-EtFOSA	11.385	531.1 -> 219.0	5893	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.7%		
Target Compounds					QValue
4:2FTS	4.972	327.1 -> 307.0	30417	19.08 µg/L	97
		327.1 -> 80.9	12545		
6:2FTS	6.699	427.1 -> 407.0	35693	19.72 µg/L	96
		427.1 -> 80.9	13969		
8:2FTS	7.767	527.1 -> 507.0	26335	19.52 µg/L	94
		527.1 -> 80.8	11481		
EtFOSAA	8.259	584.2 -> 419.1	9967	5.03 µg/L	98
		584.2 -> 526.0	4024		
FOSA	9.773	498.1 -> 77.9	16724	5.05 µg/L	98
		498.1 -> 478.0	576		
MeFOSAA	8.050	570.1 -> 419.0	10609	5.37 µg/L	m 94
		570.1 -> 483.0	1953		
PFBA	2.595	212.8 -> 168.9	59415	20.22 µg/L	100
PFBS	5.117	298.7 -> 79.9	12325	4.34 µg/L	100
		298.7 -> 98.8	4650		
PFDA	7.968	512.9 -> 469.0	35586	5.13 µg/L	97
		512.9 -> 219.0	7511		
PFDODA	8.855	613.1 -> 569.0	45046	4.97 µg/L	97
		613.1 -> 319.0	7565		
PFDS	8.983	599.0 -> 79.9	9038	4.84 µg/L	99

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	4464			
PFHpA	6.230	363.1 -> 319.0	79716	4.99	µg/L	98
		363.1 -> 169.0	14954			
PFHpS	7.573	449.0 -> 79.9	13914	4.91	µg/L	91
		449.0 -> 98.9	7095			
PFHxA	5.263	313.0 -> 269.0	47449	5.01	µg/L	99
		313.0 -> 118.9	1581			
PFHxS	6.993	398.7 -> 79.9	8741	4.49	µg/L	m 90
		398.7 -> 98.9	5218			
PFNA	7.472	463.0 -> 419.0	42726	4.97	µg/L	97
		463.0 -> 219.0	10223			
PFNS	8.549	548.8 -> 79.9	7046	5.12	µg/L	96
		548.8 -> 98.9	3628			
PFOA	6.927	413.0 -> 369.0	73208	5.03	µg/L	99
		413.0 -> 169.0	14870			
PFOS	8.081	498.9 -> 79.9	13714	4.40	µg/L	m 99
		498.9 -> 98.8	6815			
PFPeA	4.089	263.0 -> 219.0	76767	10.14	µg/L	100
PFPeS	6.220	349.1 -> 79.9	10149	4.65	µg/L	100
		349.1 -> 98.9	4534			
PFTeDA	9.625	713.1 -> 669.0	39596	5.06	µg/L	100
		713.1 -> 168.9	4389			
PFTrDA	9.255	663.0 -> 619.0	49835	5.17	µg/L	99
		663.0 -> 168.9	7215			
PFUnDA	8.424	563.1 -> 519.0	43069	5.11	µg/L	99
		563.1 -> 269.1	9281			
11CI-PF3OUdS	9.282	630.9 -> 450.9	73315	9.34	µg/L	100
		632.9 -> 452.9	22964			
9CI-PF3ONS	8.426	530.8 -> 351.0	77191	9.69	µg/L	97
		532.8 -> 353.0	23668			
ADONA	6.506	376.9 -> 250.9	202252	10.24	µg/L	99
		376.9 -> 84.8	48855			
HFPO-DA	5.628	284.9 -> 168.9	25551	10.13	µg/L	96
		284.9 -> 184.9	2347			
3:3FTCA	3.536	241.0 -> 177.0	11182	24.35	µg/L	99
		241.0 -> 117.0	989			
5:3FTCA	5.955	341.0 -> 237.1	206373	125.46	µg/L	99
		341.0 -> 217.0	146270			
7:3FTCA	7.499	441.0 -> 316.9	92434	124.75	µg/L	96
		441.0 -> 336.9	223417			
EtFOSA	11.387	526.0 -> 219.0	24928	10.11	µg/L	98
		526.0 -> 169.0	33901			
EtFOSE	11.320	630.0 -> 58.9	31999	24.41	µg/L	100
MeFOSA	11.115	511.9 -> 219.0	17346	10.04	µg/L	m 96
		511.9 -> 169.0	24961			
MeFOSE	11.023	616.1 -> 58.9	32041	24.63	µg/L	100
PFDoDS	9.752	699.1 -> 79.9	6905	5.02	µg/L	96
		699.1 -> 98.8	3938			
NFDHA	5.141	295.0 -> 201.0	7198	8.82	µg/L	99
		295.0 -> 84.9	1886			
PFMBA	4.491	279.0 -> 85.1	42403	10.16	µg/L	100
PFMPA	3.240	229.0 -> 84.9	47741	9.99	µg/L	100
PFEESA	5.647	314.8 -> 134.9	65998	8.85	µg/L	100
		314.8 -> 82.9	2282			

= Qualifier out of range, m = manually integrated, + = Area summed

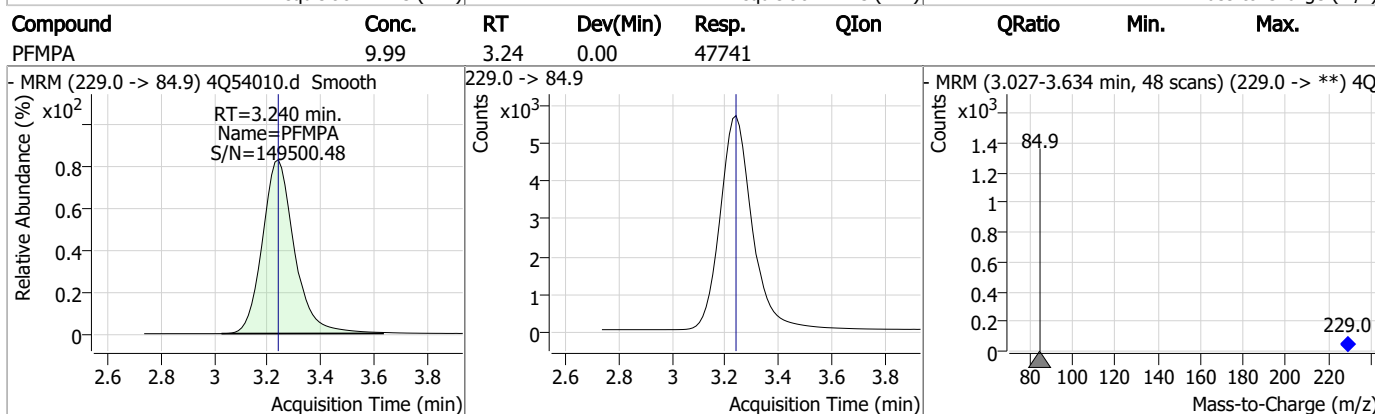
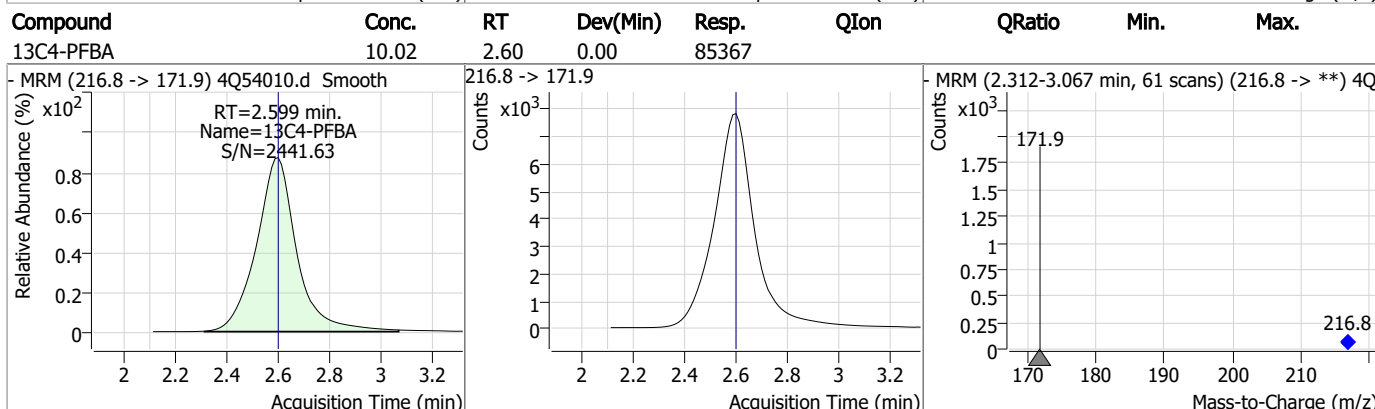
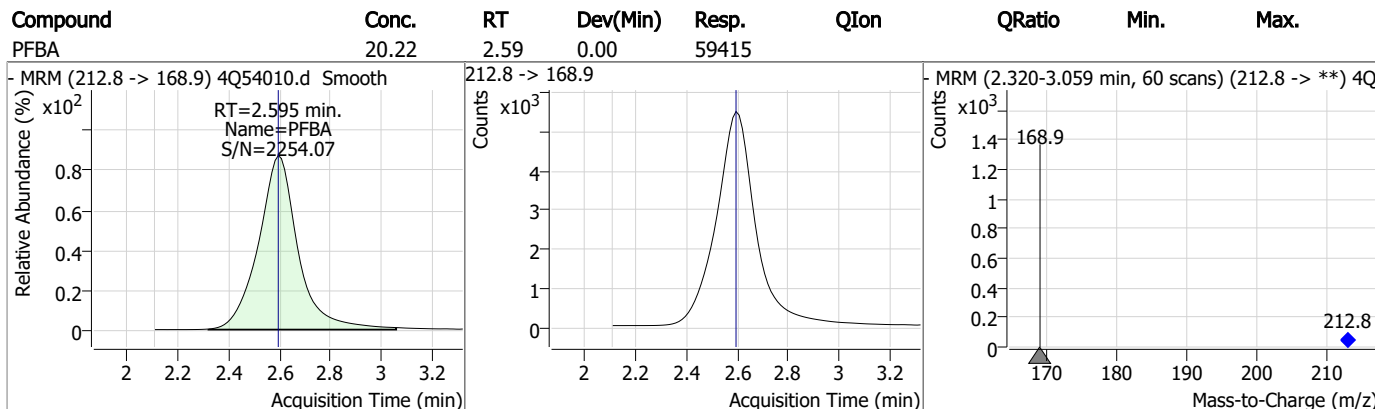
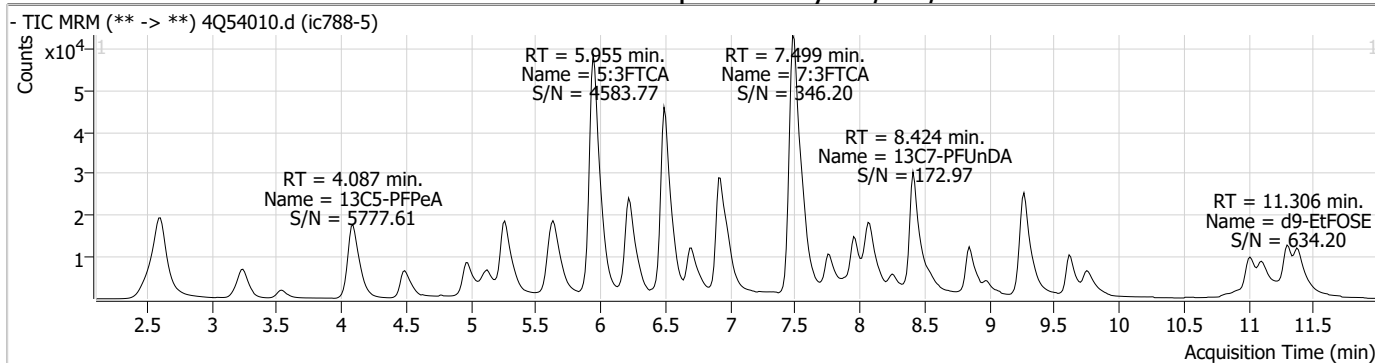
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.21

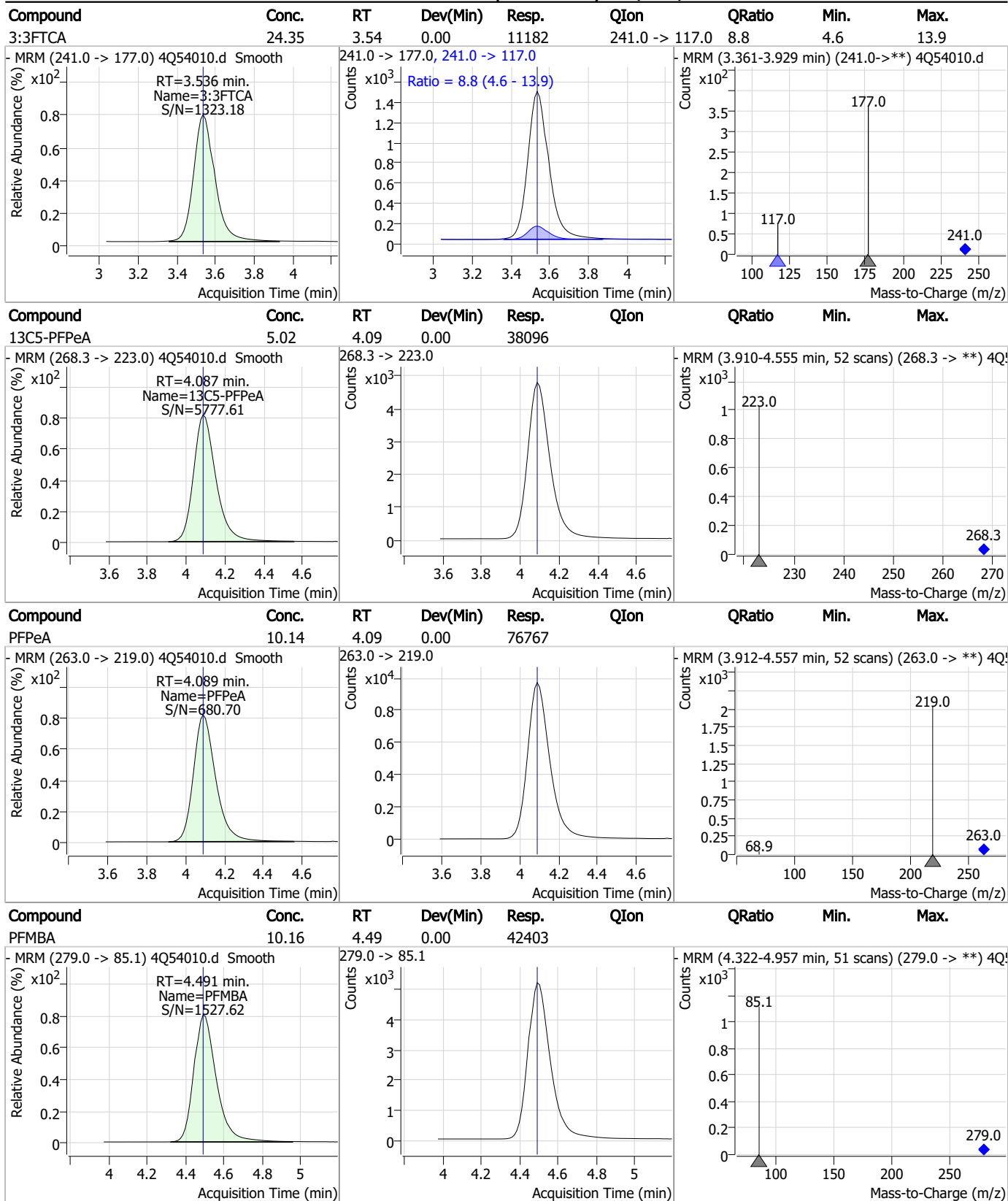
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Perfluorinated Compounds by LC/MS/MS



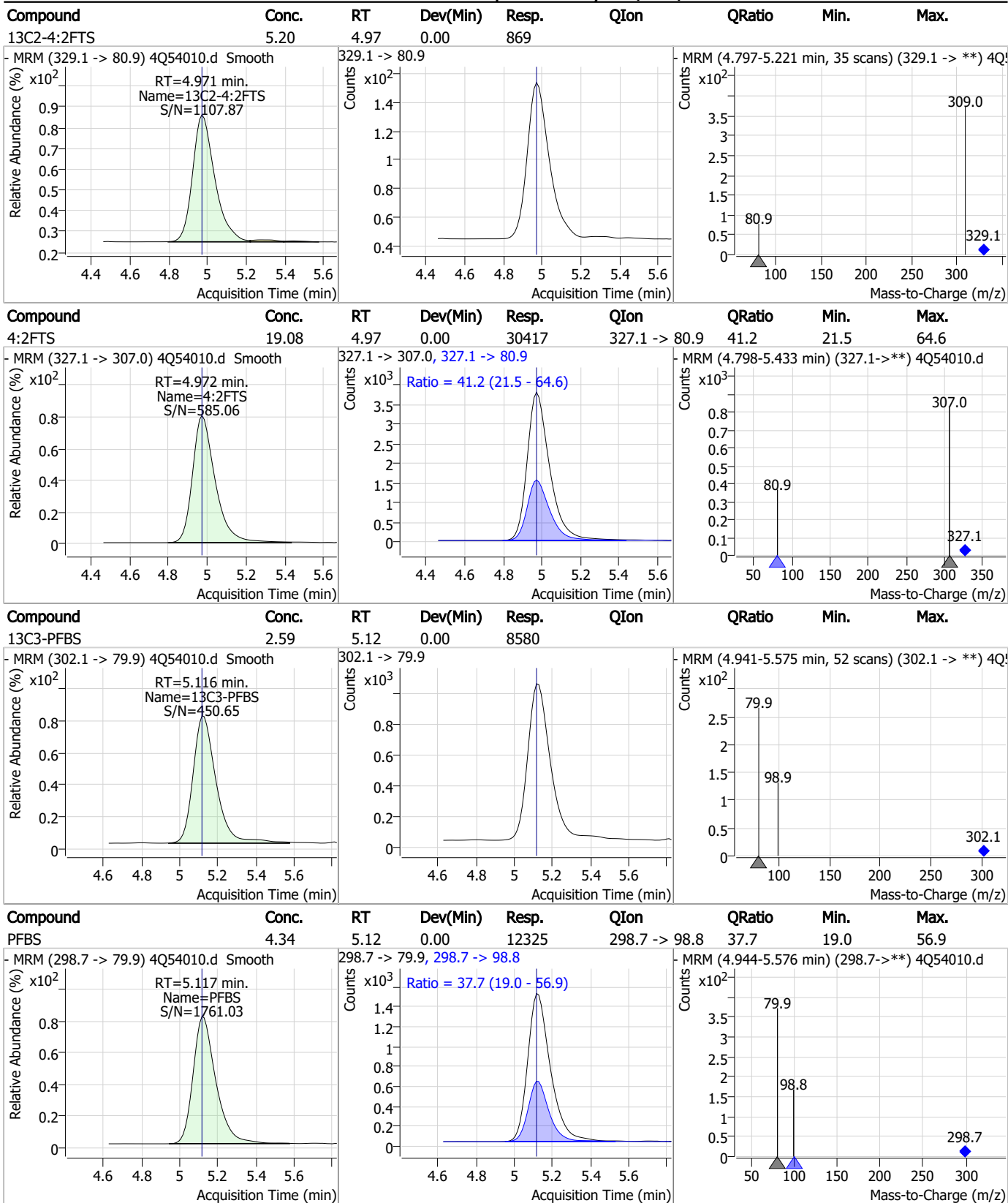
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Perfluorinated Compounds by LC/MS/MS



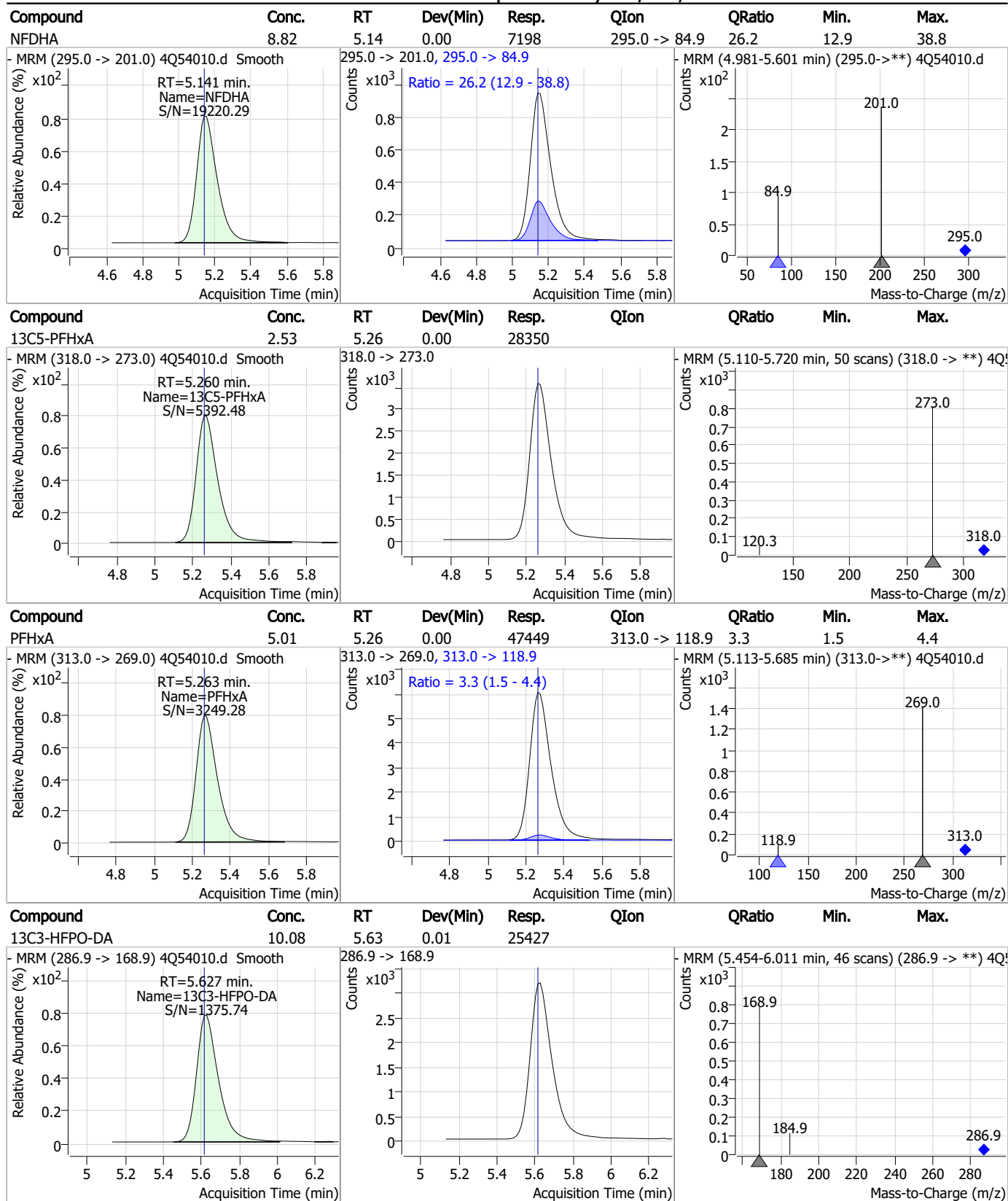
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Perfluorinated Compounds by LC/MS/MS



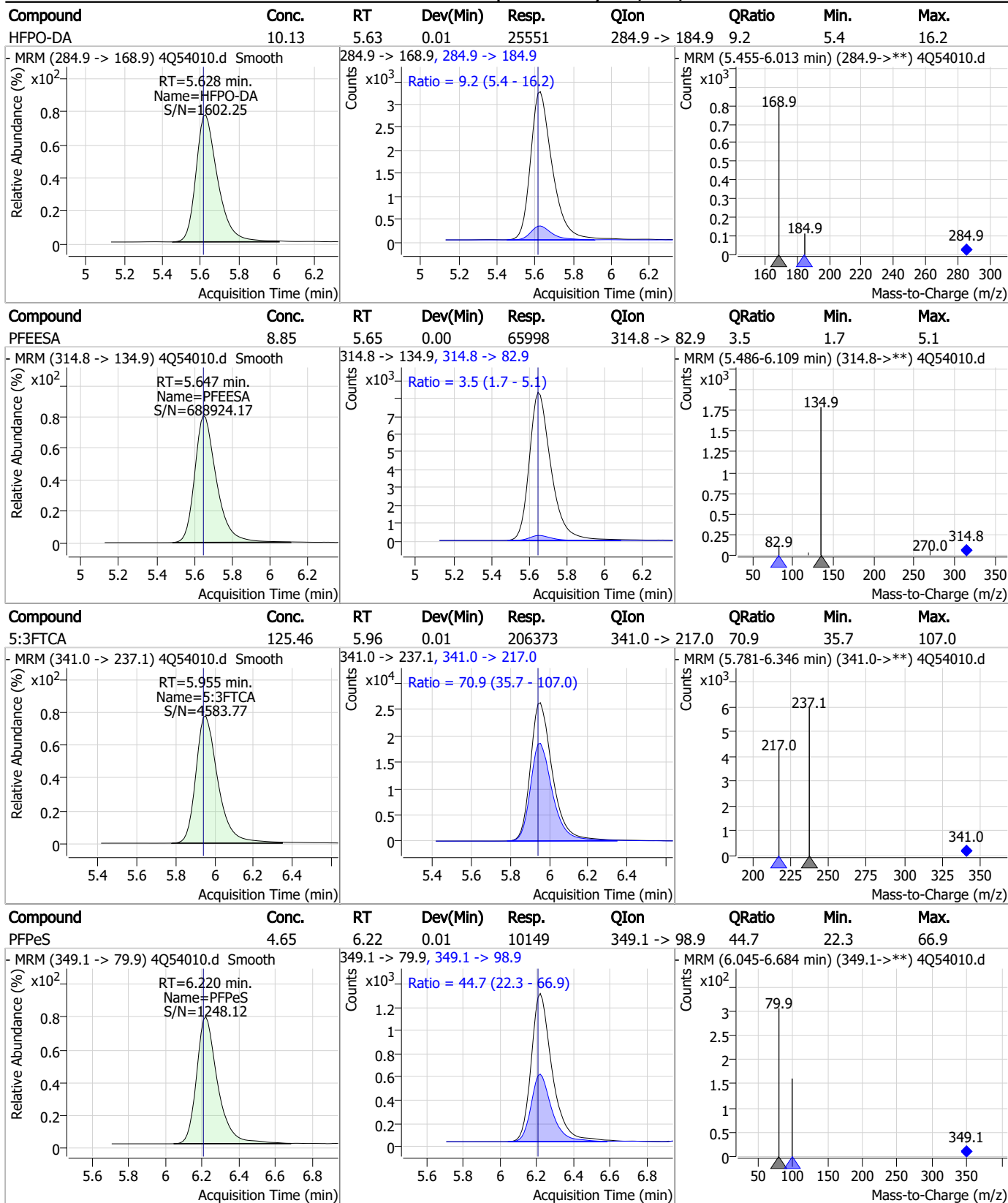
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Perfluorinated Compounds by LC/MS/MS



7.7.21
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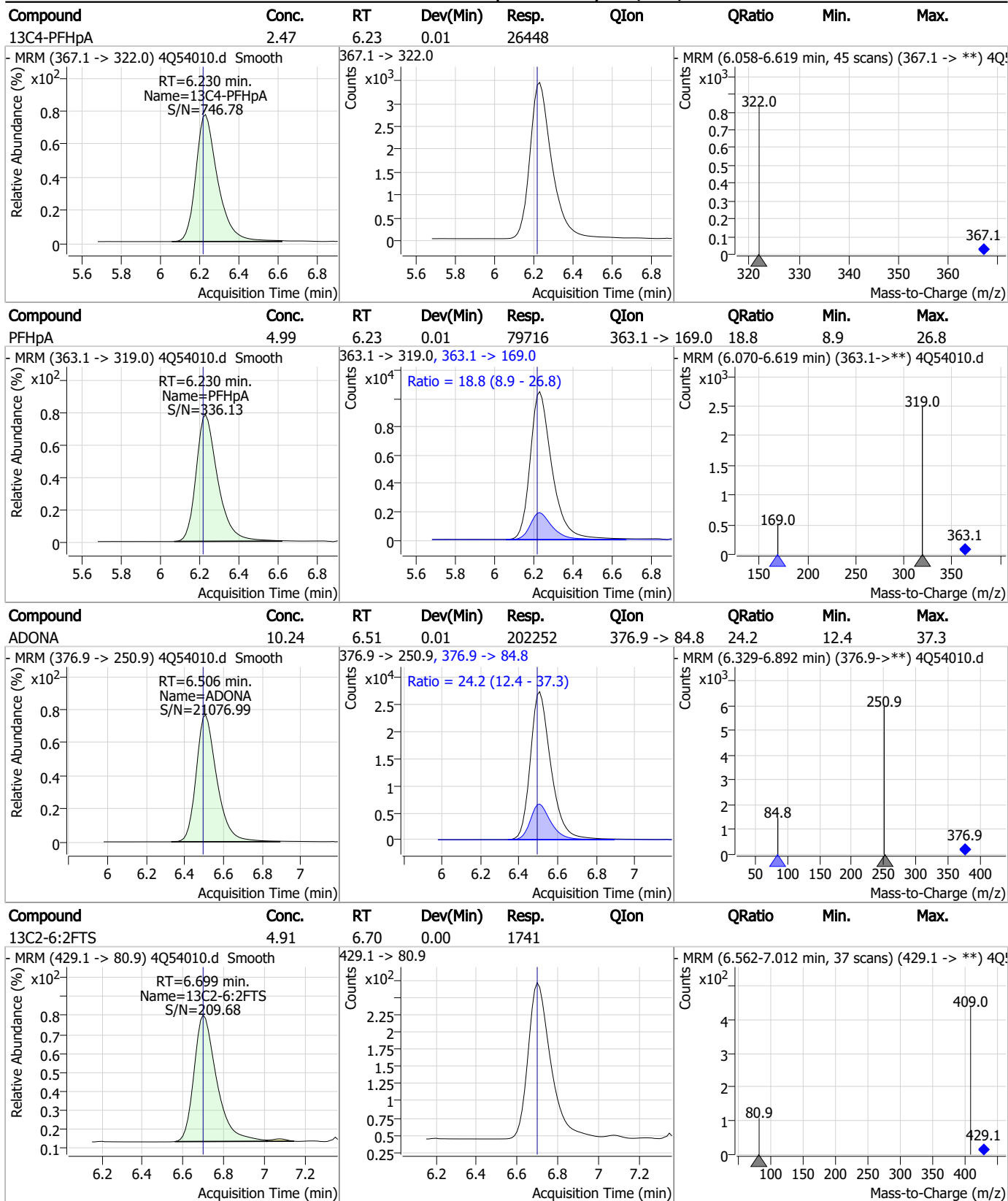
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

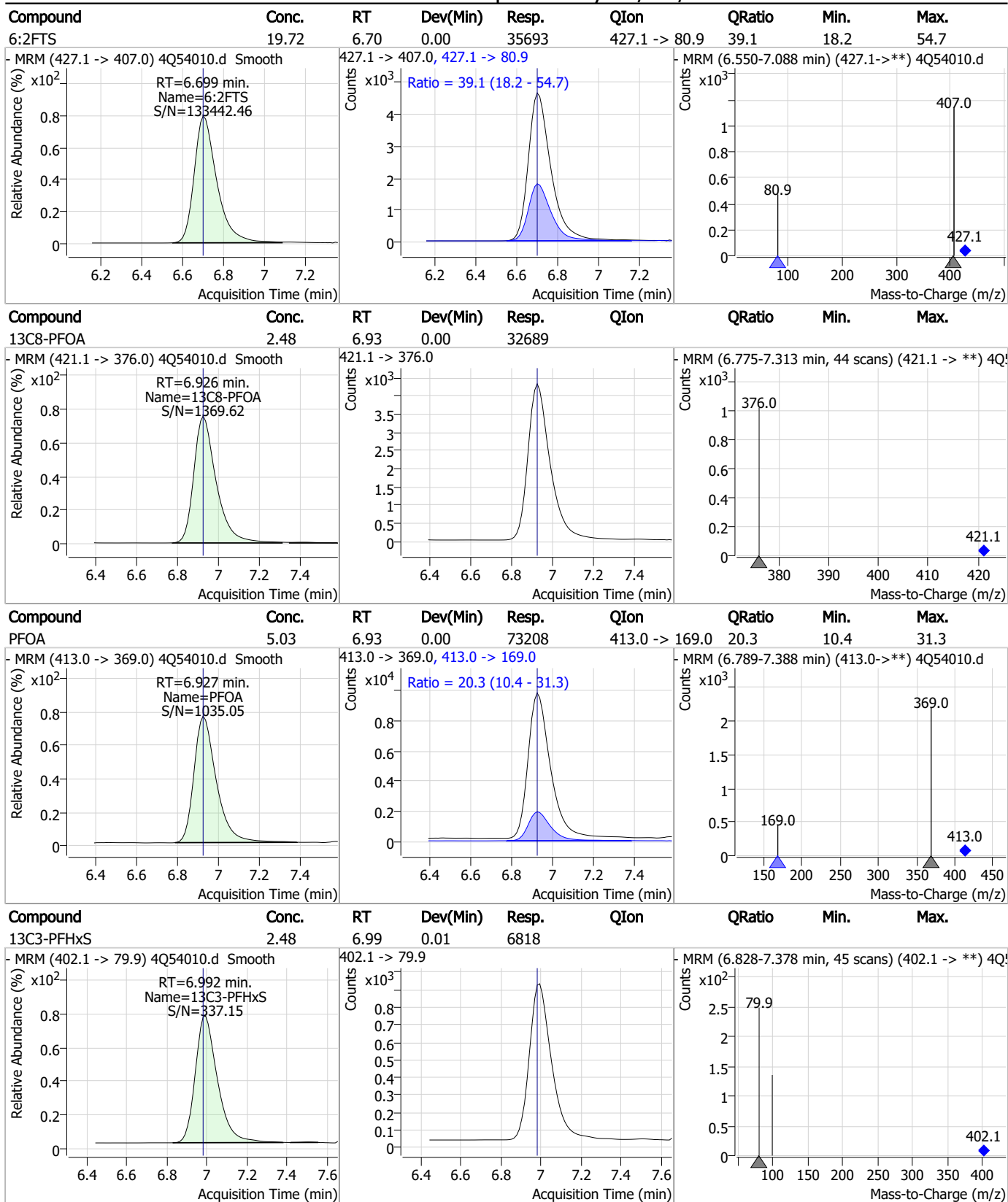


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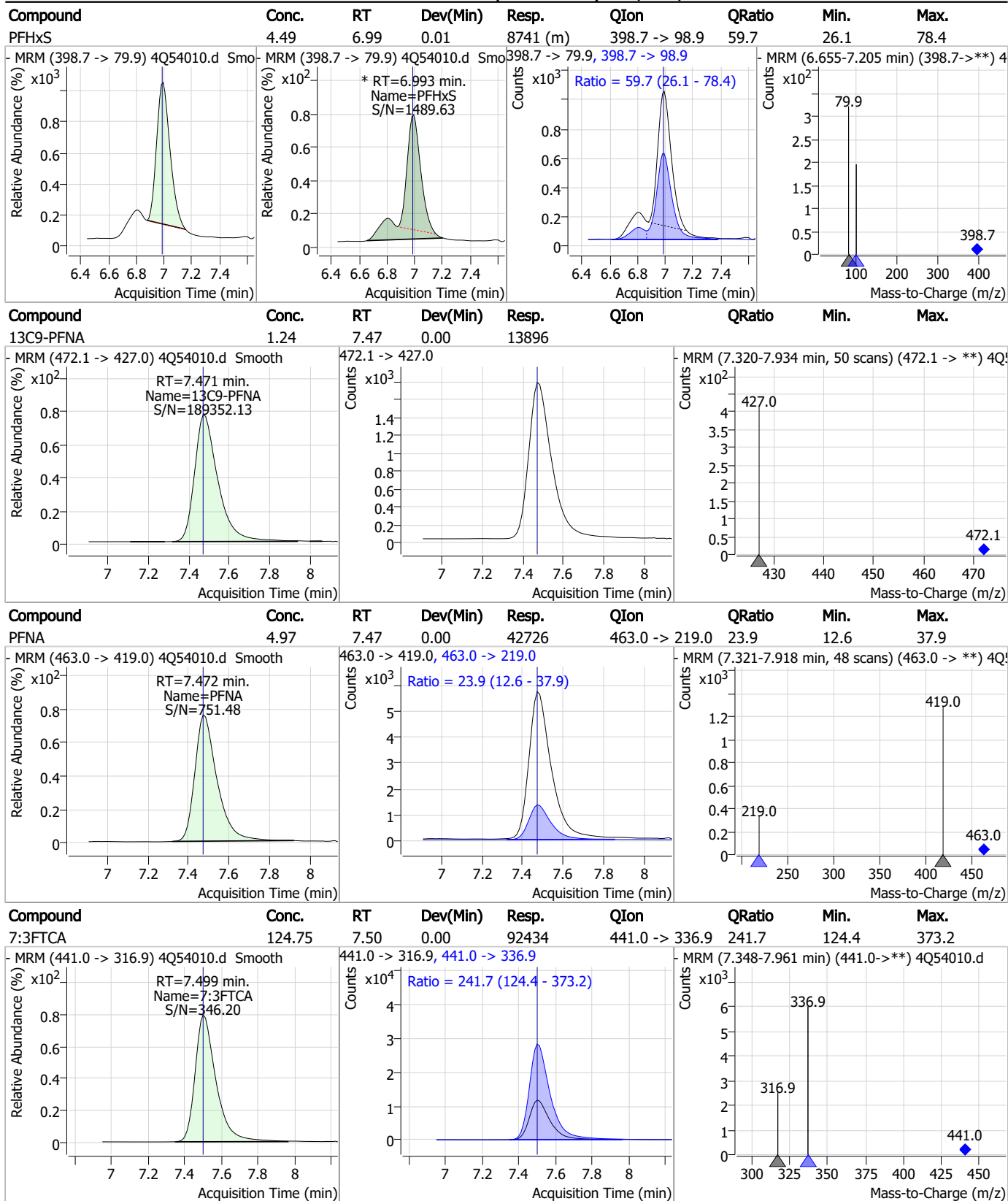
Perfluorinated Compounds by LC/MS/MS



7.7.21

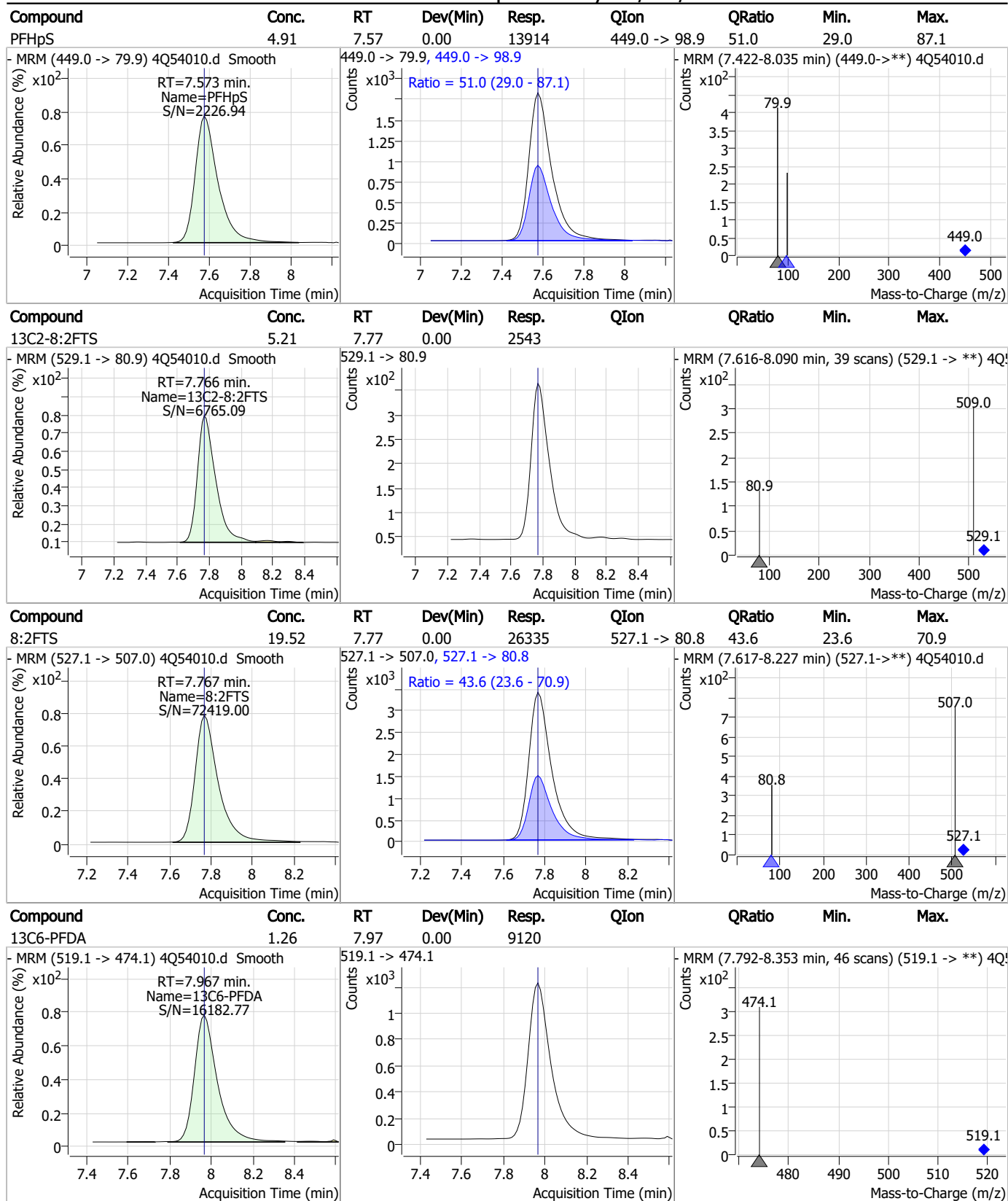
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Perfluorinated Compounds by LC/MS/MS



7.7.21

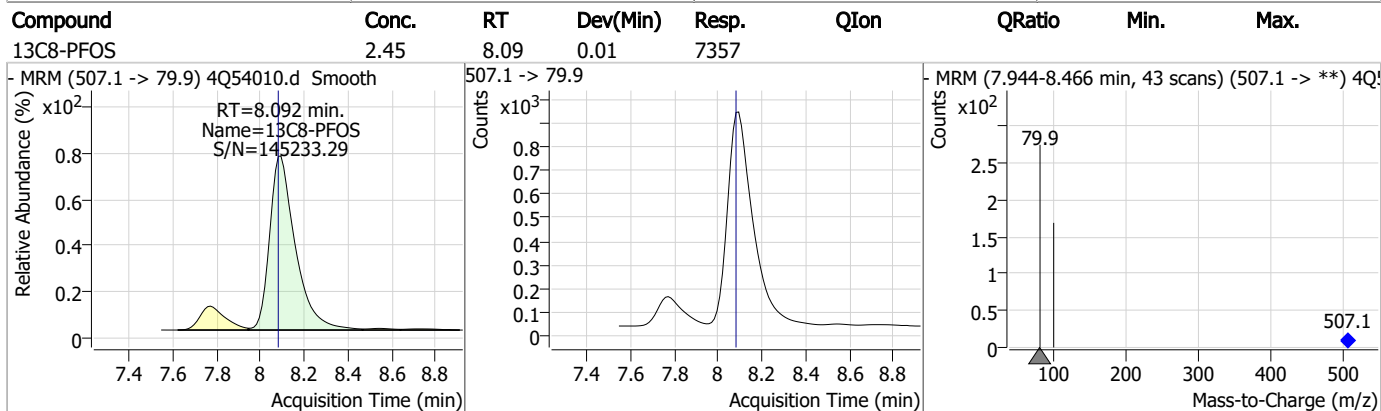
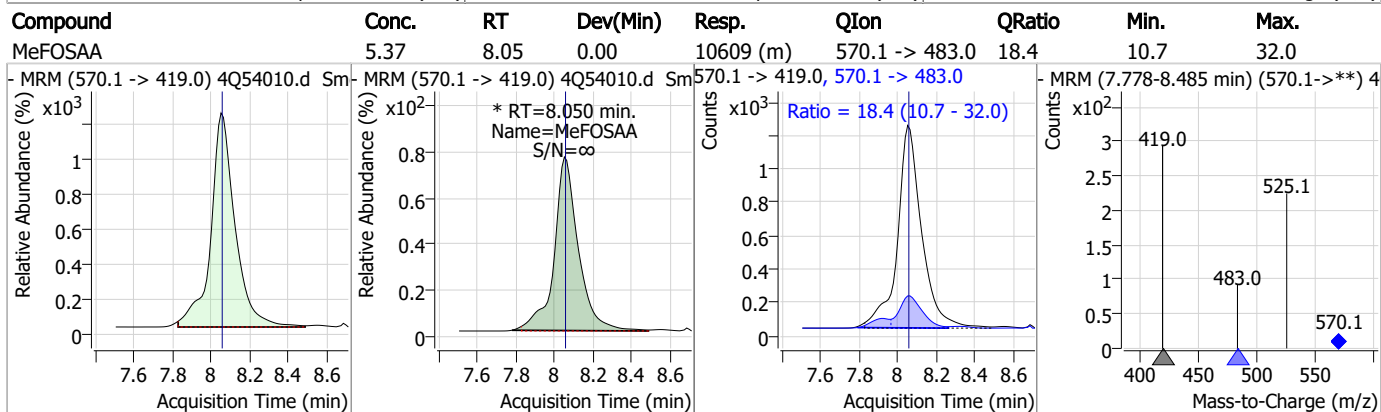
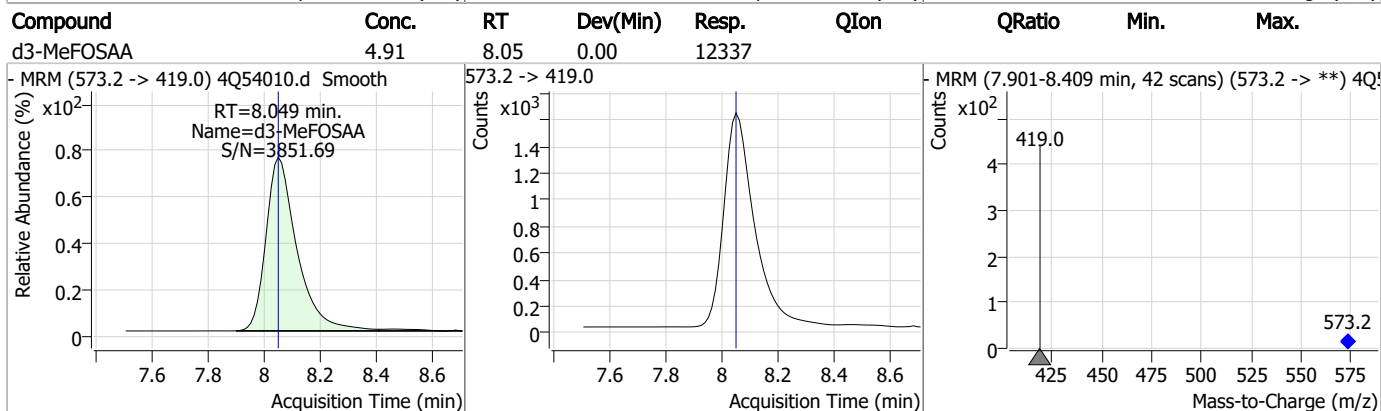
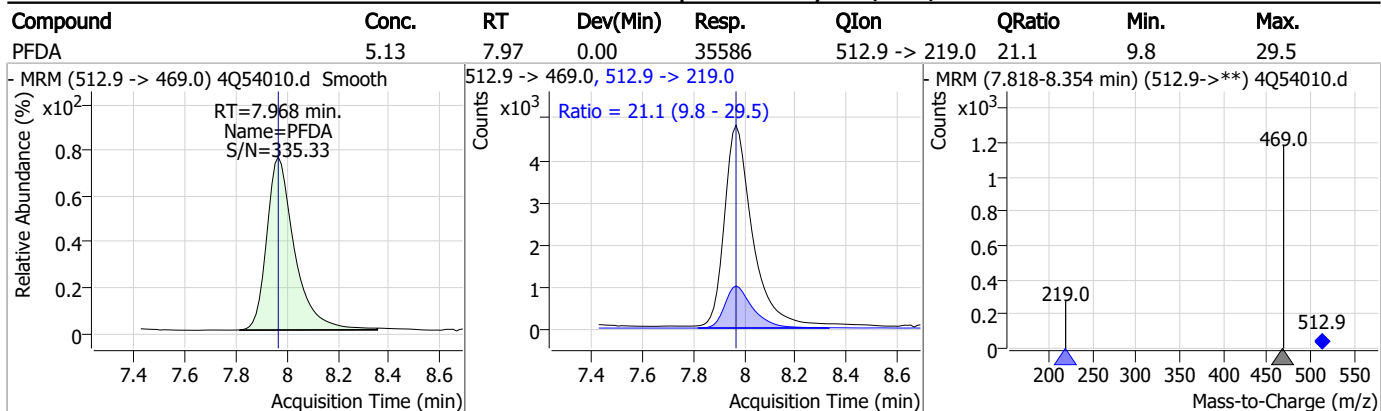
Perfluorinated Compounds by LC/MS/MS



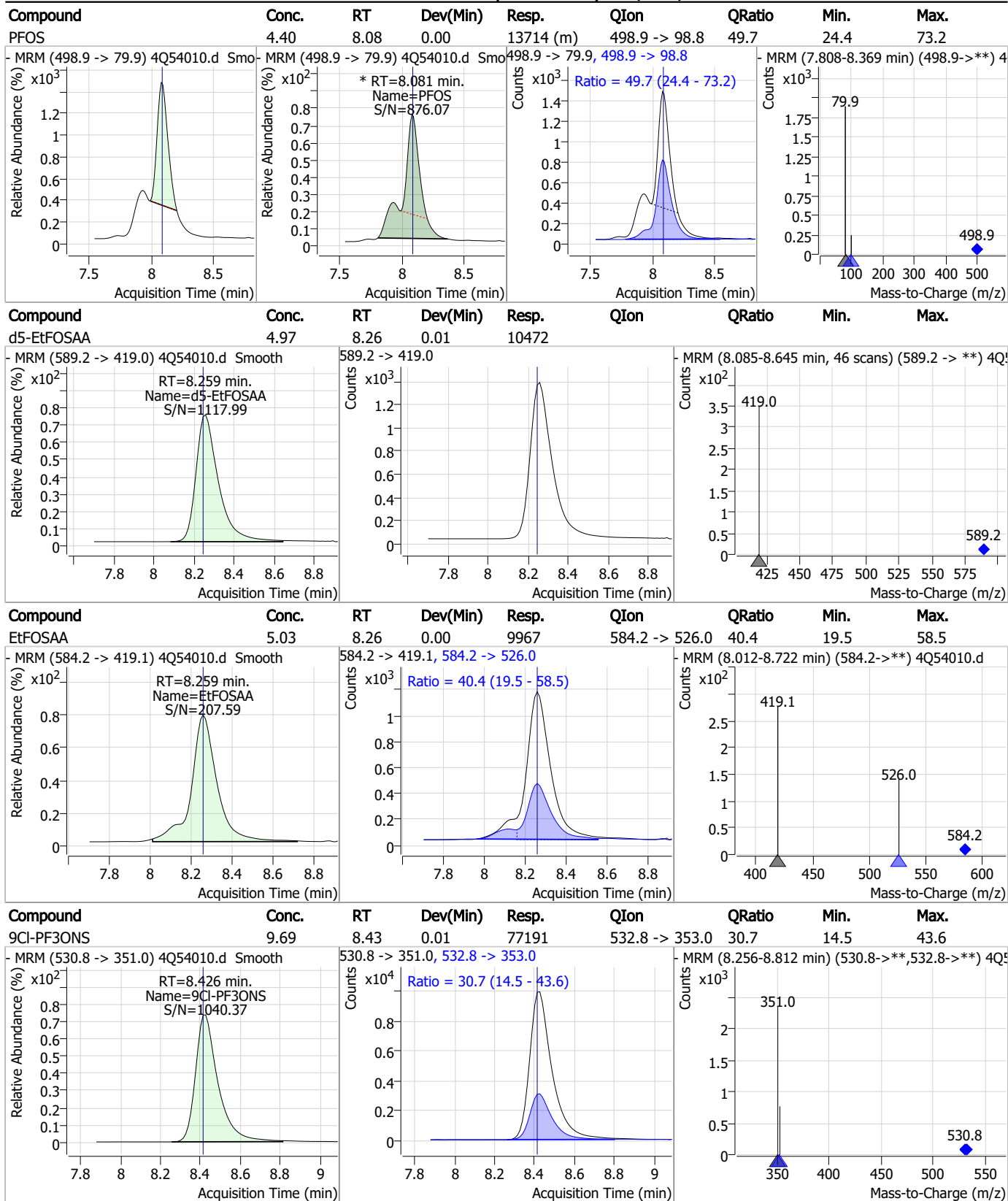
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Perfluorinated Compounds by LC/MS/MS



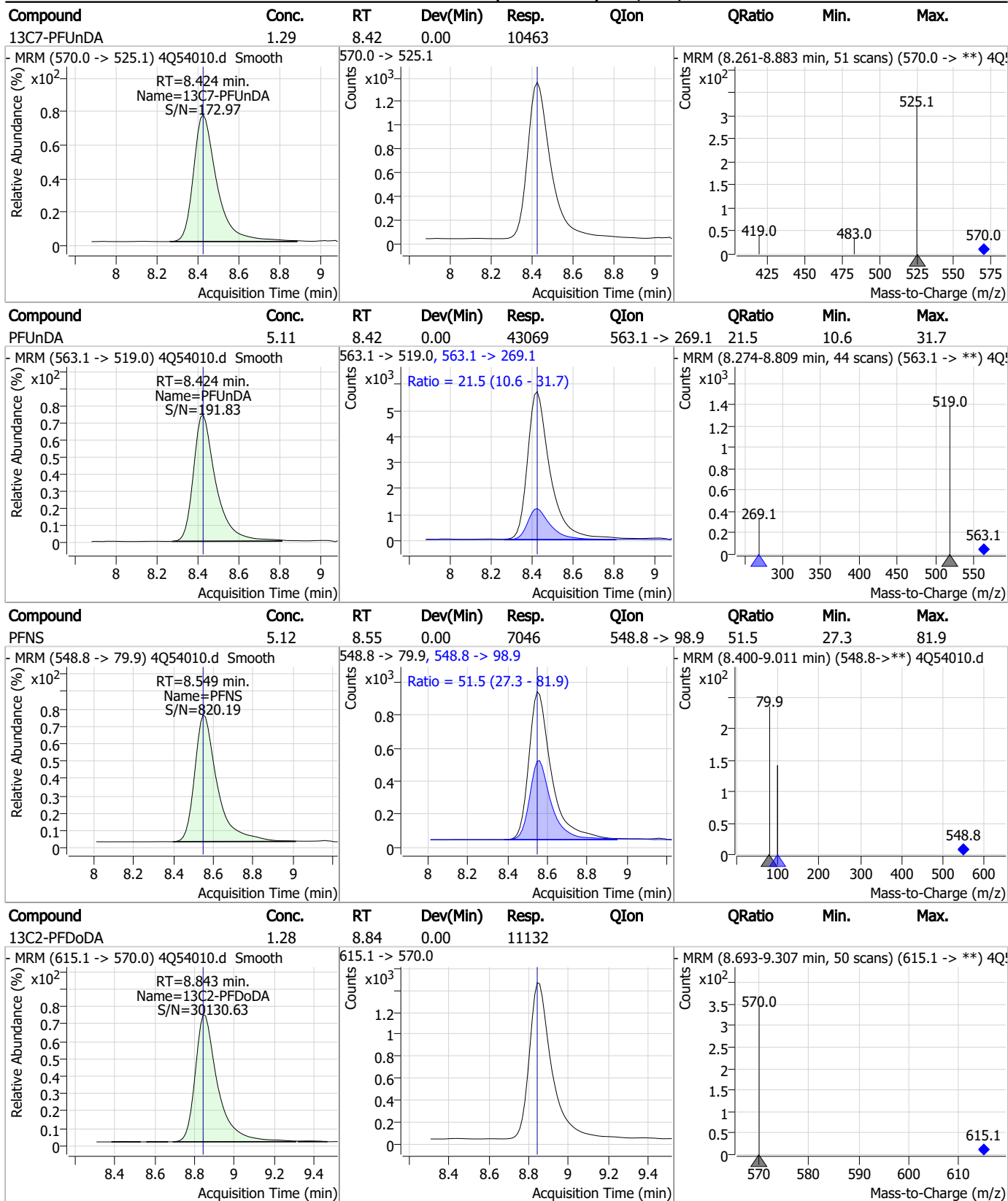
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

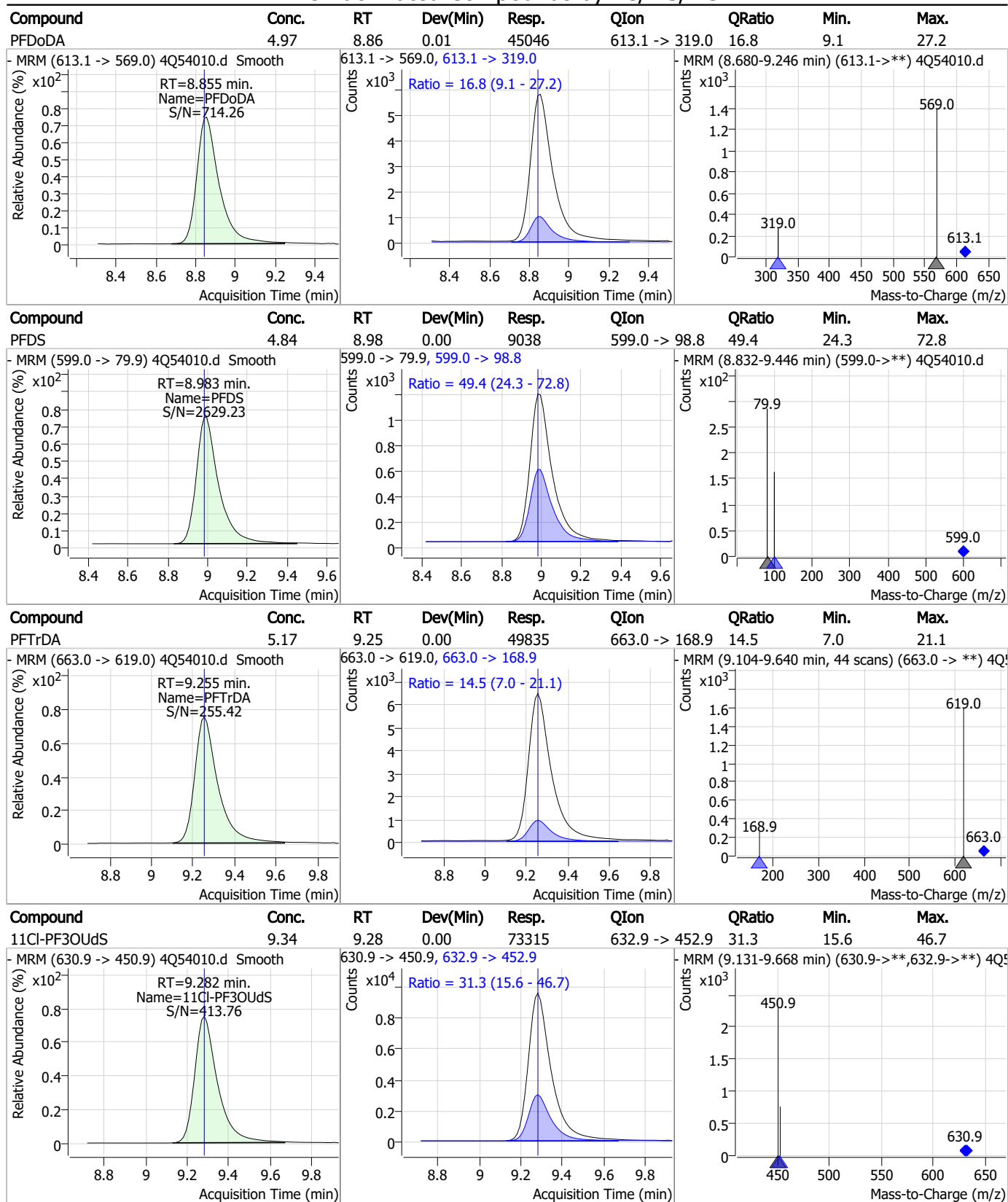


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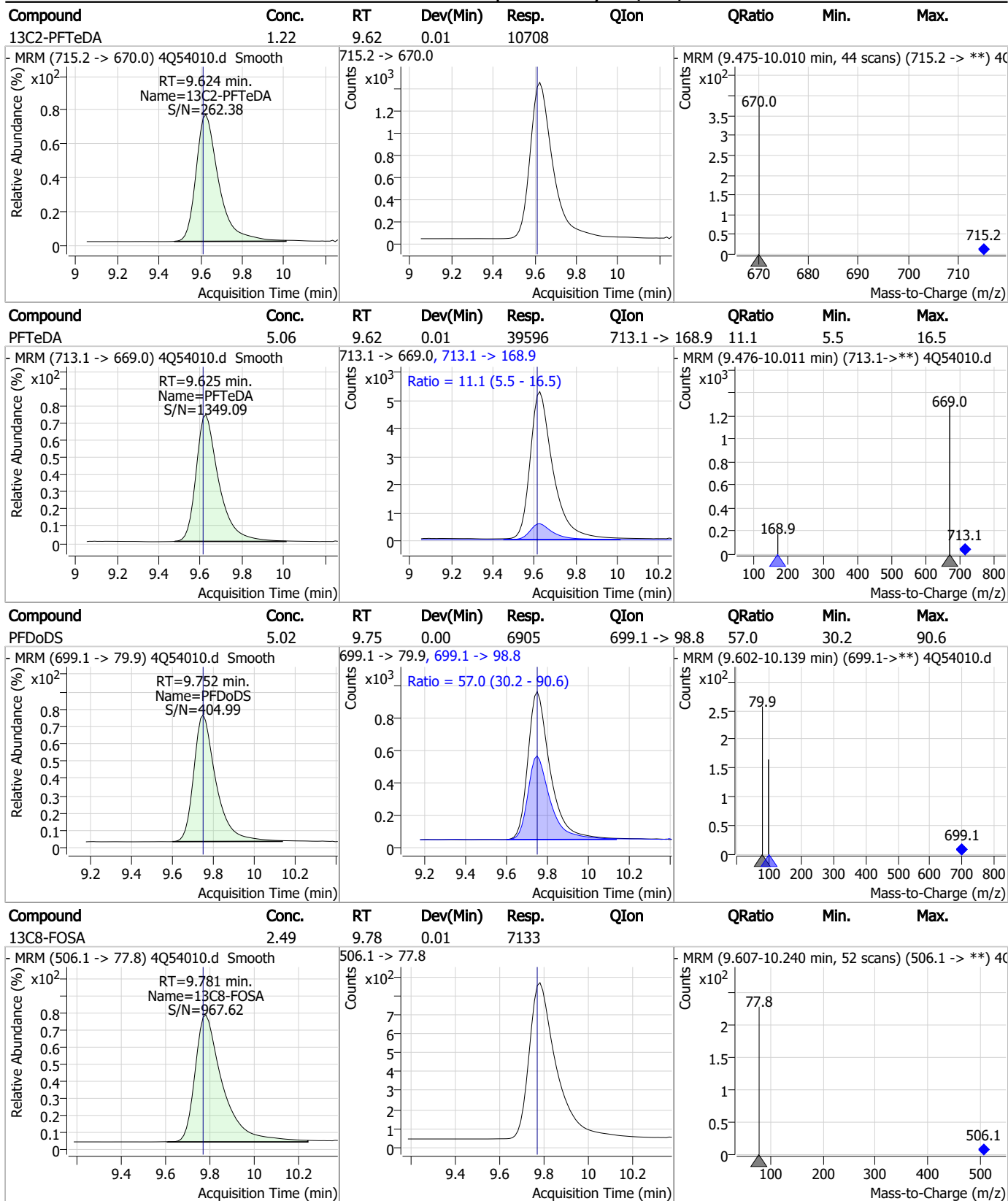
Perfluorinated Compounds by LC/MS/MS



7.7.21

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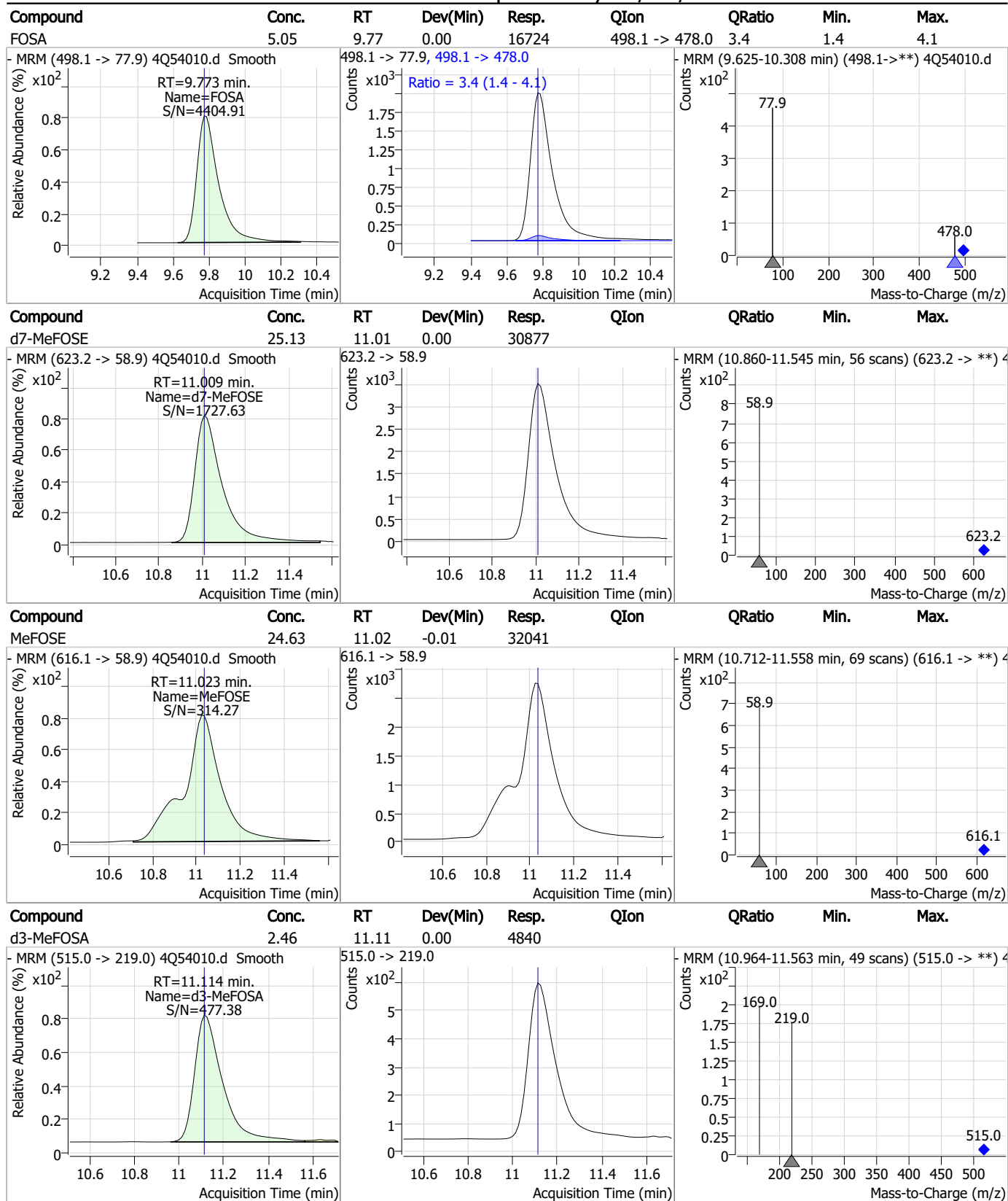
Perfluorinated Compounds by LC/MS/MS



7.7.21

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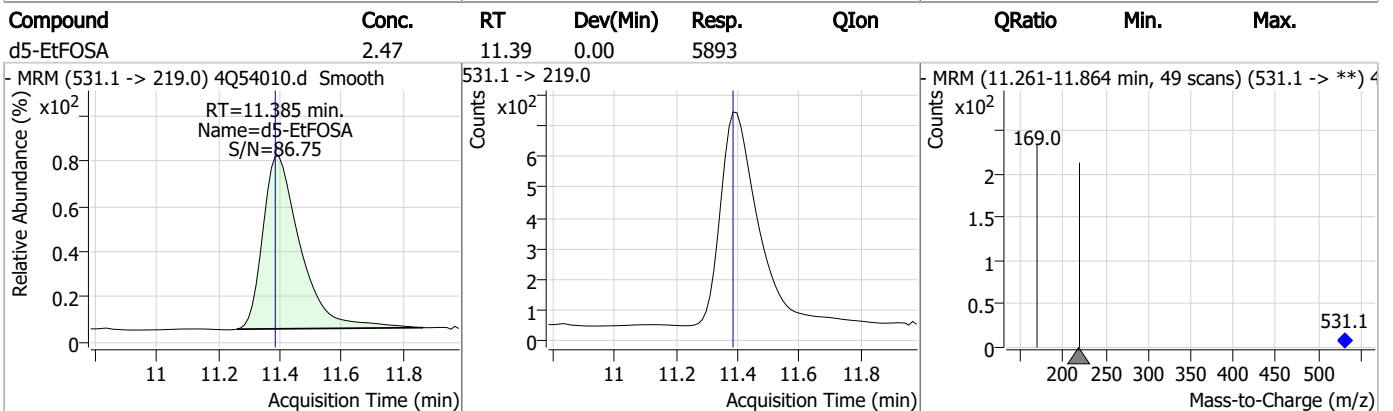
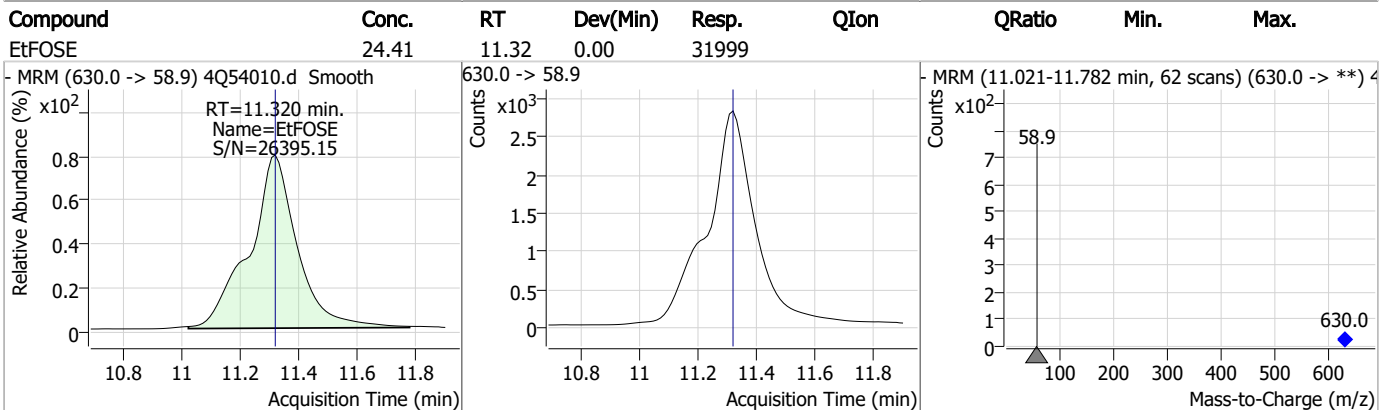
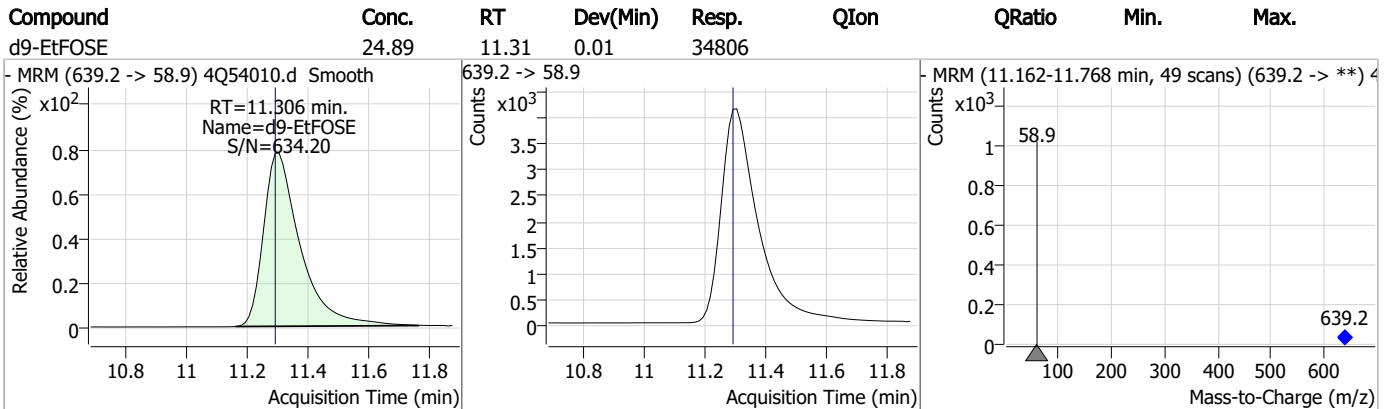
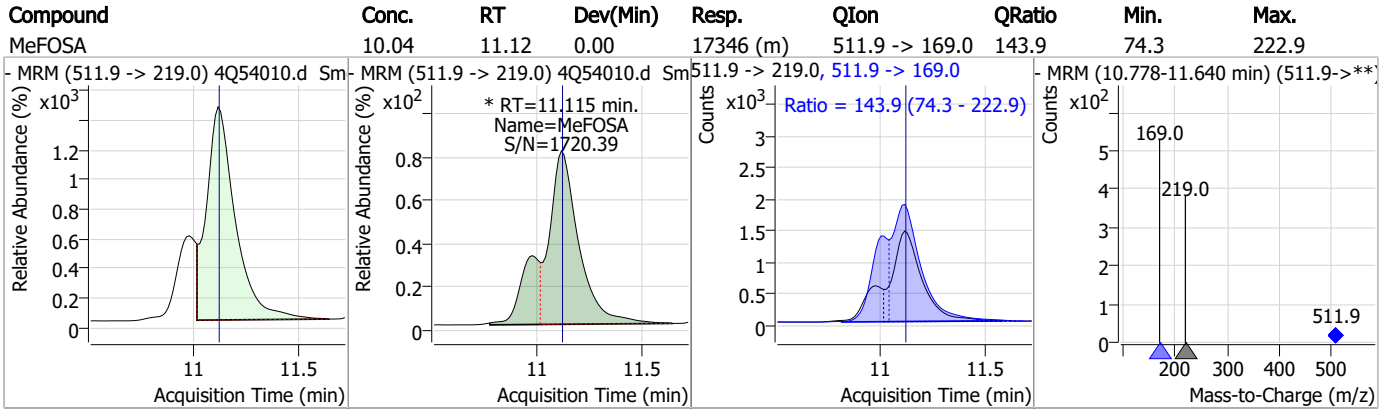
Perfluorinated Compounds by LC/MS/MS



7.7.21

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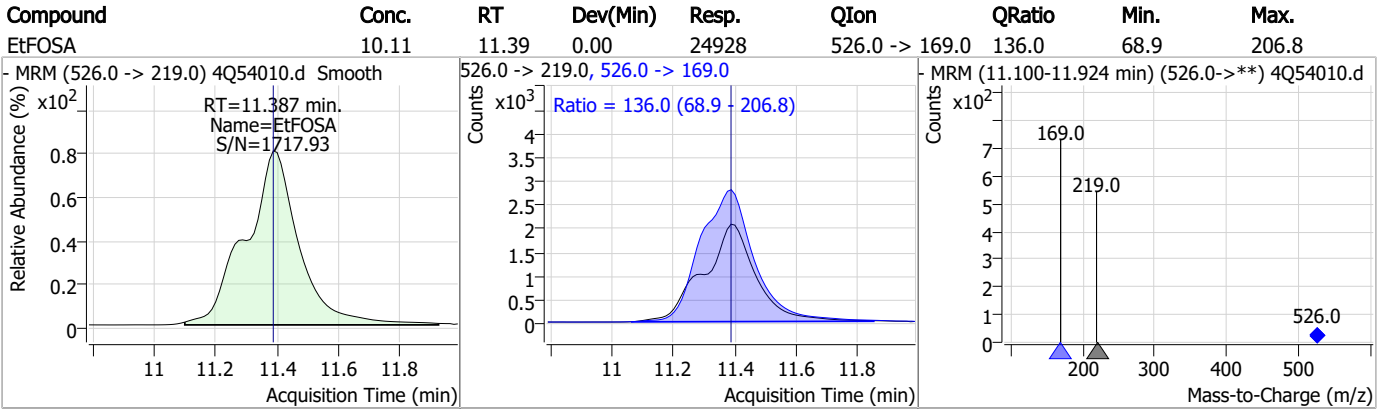
Perfluorinated Compounds by LC/MS/MS



7.7.21
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Perfluorinated Compounds by LC/MS/MS



7.7.21

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Manual Integration Approval Summary

Sample Number: S4Q788-IC788 Method: EPA DRAFT 1633
Lab FileID: 4Q54010.D Analyst approved: 11/18/23 15:04 Mike Eger
Injection Time: 11/17/23 12:24 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.99	Split peak
MeFOSAA	2355-31-9		8.05	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.08	Split peak
MeFOSA	31506-32-8		11.12	Split peak

7.7.21.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54011.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 12:39:23 PM
 Sample Name : ic788-6
 Vial : P1-A7
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.612	216.8 -> 171.9	82260	10.00 µg/L	0.012
M5-PFPeA	4.100	268.3 -> 223.0	36880	5.00 µg/L	0.012
M5-PFHxA	5.260	318.0 -> 273.0	27604	2.50 µg/L	0.000
M4-PFHpA	6.230	367.1 -> 322.0	25833	2.50 µg/L	0.012
M8-PFOA	6.926	421.1 -> 376.0	30726	2.50 µg/L	0.000
M9-PFNA	7.471	472.1 -> 427.0	13232	1.25 µg/L	0.000
M6-PFDA	7.967	519.1 -> 474.1	9009	1.25 µg/L	0.000
M7-PFUnDA	8.424	570.0 -> 525.1	10021	1.25 µg/L	0.000
M2-PFDoDA	8.855	615.1 -> 570.0	10727	1.25 µg/L	0.012
M2-PFTeDA	9.624	715.2 -> 670.0	10537	1.25 µg/L	0.012
M8-FOSA	9.781	506.1 -> 77.8	6699	2.50 µg/L	0.012
M3-PFBS	5.116	302.1 -> 79.9	7995	2.50 µg/L	0.000
M3-PFHxS	6.992	402.1 -> 79.9	6493	2.50 µg/L	0.012
M8-PFOS	8.080	507.1 -> 79.9	7378	2.50 µg/L	0.000
M2-4:2FTS	4.971	329.1 -> 80.9	810	5.00 µg/L	0.000
M2-6:2FTS	6.699	429.1 -> 80.9	1618	5.00 µg/L	0.000
M2-8:2FTS	7.779	529.1 -> 80.9	2460	5.00 µg/L	0.012
M3-MeFOSAA	8.049	573.2 -> 419.0	11663	5.00 µg/L	0.000
M3-HFPO-DA	5.615	286.9 -> 168.9	24284	10.00 µg/L	0.000
M5-EtFOSAA	8.259	589.2 -> 419.0	10284	5.00 µg/L	0.012
M7-MeFOSE	11.009	623.2 -> 58.9	29792	25.00 µg/L	0.000
M9-EtFOSE	11.306	639.2 -> 58.9	33026	25.00 µg/L	0.012
M5-EtFOSA	11.385	531.1 -> 219.0	5410	2.50 µg/L	0.000
M3-MeFOSA	11.114	515.0 -> 219.0	4389	2.50 µg/L	0.000
13C4-PFOS	8.093	502.8 -> 79.9	5625	2.50 µg/L	0.012
13C3-PFBA	2.616	216.0 -> 172.0	39674	5.00 µg/L	0.025
18O2-PFHxS	6.991	403.0 -> 83.9	4181	2.50 µg/L	0.012
13C4-PFOA	6.926	417.1 -> 372.0	33311	2.50 µg/L	0.000
13C2-PFDA	7.967	515.1 -> 470.1	9891	1.25 µg/L	0.000
13C5-PFNA	7.471	468.0 -> 423.0	13139	1.25 µg/L	0.000
13C2-PFHxA	5.261	315.1 -> 270.0	29234	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	4.971	329.1 -> 80.9	810	5.08 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C2-6:2FTS	6.699	429.1 -> 80.9	1618	4.78 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.6%		
13C2-8:2FTS	7.779	529.1 -> 80.9	2460	5.27 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C2-PFDoDA	8.855	615.1 -> 570.0	10727	1.21 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.0%		
13C2-PFTeDA	9.624	715.2 -> 670.0	10537	1.18 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.8%		
13C3-PFBS	5.116	302.1 -> 79.9	7995	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C3-PFHxS	6.992	402.1 -> 79.9	6493	2.47 µg/L	0.012

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C4-PFBA	2.612	216.8 -> 171.9	82260	10.05 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C4-PFHpA	6.230	367.1 -> 322.0	25833	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.7%		
13C5-PFHxA	5.260	318.0 -> 273.0	27604	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C5-PFPeA	4.100	268.3 -> 223.0	36880	5.02 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C6-PFDA	7.967	519.1 -> 474.1	9009	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C7-PFUnDA	8.424	570.0 -> 525.1	10021	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C8-FOSA	9.781	506.1 -> 77.8	6699	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C8-PFOA	6.926	421.1 -> 376.0	30726	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C8-PFOS	8.080	507.1 -> 79.9	7378	2.68 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.0%		
13C9-PFNA	7.471	472.1 -> 427.0	13232	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.4%		
d3-MeFOSAA	8.049	573.2 -> 419.0	11663	5.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C3-HFPO-DA	5.615	286.9 -> 168.9	24284	9.96 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.6%		
d3-MeFOSA	11.114	515.0 -> 219.0	4389	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.3%		
d5-EtFOSAA	8.259	589.2 -> 419.0	10284	5.32 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.4%		
d7-MeFOSE	11.009	623.2 -> 58.9	29792	26.44 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 105.8%		
d9-EtFOSE	11.306	639.2 -> 58.9	33026	25.76 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 103.0%		
d5-EtFOSA	11.385	531.1 -> 219.0	5410	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.8%		
Target Compounds					QValue
4:2FTS	4.972	327.1 -> 307.0	67647	45.53 µg/L	97
		327.1 -> 80.9	27911		
6:2FTS	6.699	427.1 -> 407.0	82860	49.25 µg/L	100
		427.1 -> 80.9	30175		
8:2FTS	7.767	527.1 -> 507.0	57566	44.13 µg/L	93
		527.1 -> 80.8	24552		
EtFOSAA	8.259	584.2 -> 419.1	22325	11.47 µg/L	m 92
		584.2 -> 526.0	9844		
FOSA	9.785	498.1 -> 77.9	39014	12.55 µg/L	99
		498.1 -> 478.0	1211		
MeFOSAA	8.050	570.1 -> 419.0	24407	13.06 µg/L	95
		570.1 -> 483.0	4622		
PFBA	2.620	212.8 -> 168.9	139737	49.36 µg/L	100
PFBS	5.117	298.7 -> 79.9	28423	10.74 µg/L	100
		298.7 -> 98.8	10712		
PFDA	7.968	512.9 -> 469.0	85778	12.52 µg/L	99
		512.9 -> 219.0	17146		
PFDoDA	8.856	613.1 -> 569.0	105238	12.04 µg/L	99
		613.1 -> 319.0	19365		
PFDS	8.995	599.0 -> 79.9	20686	11.05 µg/L	97

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	10539			
PFHpA	6.230	363.1 -> 319.0	192294	12.31	µg/L	100
		363.1 -> 169.0	34616			
PFHpS	7.573	449.0 -> 79.9	32592	11.47	µg/L	93
		449.0 -> 98.9	17155			
PFHxA	5.263	313.0 -> 269.0	112389	12.18	µg/L	100
		313.0 -> 118.9	3372			
PFHxS	6.993	398.7 -> 79.9	21641	11.66	µg/L	m 97
		398.7 -> 98.9	10905			
PFNA	7.484	463.0 -> 419.0	99097	12.11	µg/L	98
		463.0 -> 219.0	23903			
PFNS	8.549	548.8 -> 79.9	15524	11.24	µg/L	95
		548.8 -> 98.9	7885			
PFOA	6.927	413.0 -> 369.0	173290	12.67	µg/L	98
		413.0 -> 169.0	34231			
PFOS	8.094	498.9 -> 79.9	34233	10.95	µg/L	m 98
		498.9 -> 98.8	16139			
PFPeA	4.102	263.0 -> 219.0	181418	24.76	µg/L	100
PFPeS	6.220	349.1 -> 79.9	23693	11.39	µg/L	98
		349.1 -> 98.9	10931			
PFTeDA	9.625	713.1 -> 669.0	97073	12.60	µg/L	100
		713.1 -> 168.9	10606			
PFTrDA	9.255	663.0 -> 619.0	116292	12.52	µg/L	100
		663.0 -> 168.9	16397			
PFUnDA	8.424	563.1 -> 519.0	100585	12.47	µg/L	100
		563.1 -> 269.1	21340			
11CI-PF3OUdS	9.282	630.9 -> 450.9	178411	23.79	µg/L	100
		632.9 -> 452.9	55040			
9CI-PF3ONS	8.426	530.8 -> 351.0	176955	23.26	µg/L	96
		532.8 -> 353.0	55229			
ADONA	6.506	376.9 -> 250.9	478170	25.36	µg/L	99
		376.9 -> 84.8	115587			
HFPO-DA	5.628	284.9 -> 168.9	61146	25.38	µg/L	97
		284.9 -> 184.9	5960			
3:3FTCA	3.548	241.0 -> 177.0	26366	59.58	µg/L	99
		241.0 -> 117.0	2303			
5:3FTCA	5.955	341.0 -> 237.1	492024	307.21	µg/L	100
		341.0 -> 217.0	351569			
7:3FTCA	7.499	441.0 -> 316.9	221890	307.55	µg/L	93
		441.0 -> 336.9	525311			
EtFOSA	11.387	526.0 -> 219.0	58132	25.70	µg/L	98
		526.0 -> 169.0	81433			
EtFOSE	11.320	630.0 -> 58.9	76060	61.15	µg/L	100
MeFOSA	11.115	511.9 -> 219.0	40639	25.94	µg/L	m 98
		511.9 -> 169.0	59438			
MeFOSE	11.035	616.1 -> 58.9	74269	59.16	µg/L	100
PFDoDS	9.752	699.1 -> 79.9	16128	11.70	µg/L	96
		699.1 -> 98.8	9195			
NFDHA	5.141	295.0 -> 201.0	16315	20.54	µg/L	99
		295.0 -> 84.9	4325			
PFMBA	4.491	279.0 -> 85.1	99416	24.61	µg/L	100
PFMPA	3.253	229.0 -> 84.9	113148	24.45	µg/L	100
PFEESA	5.647	314.8 -> 134.9	158511	21.82	µg/L	100
		314.8 -> 82.9	5326			

= Qualifier out of range, m = manually integrated, + = Area summed

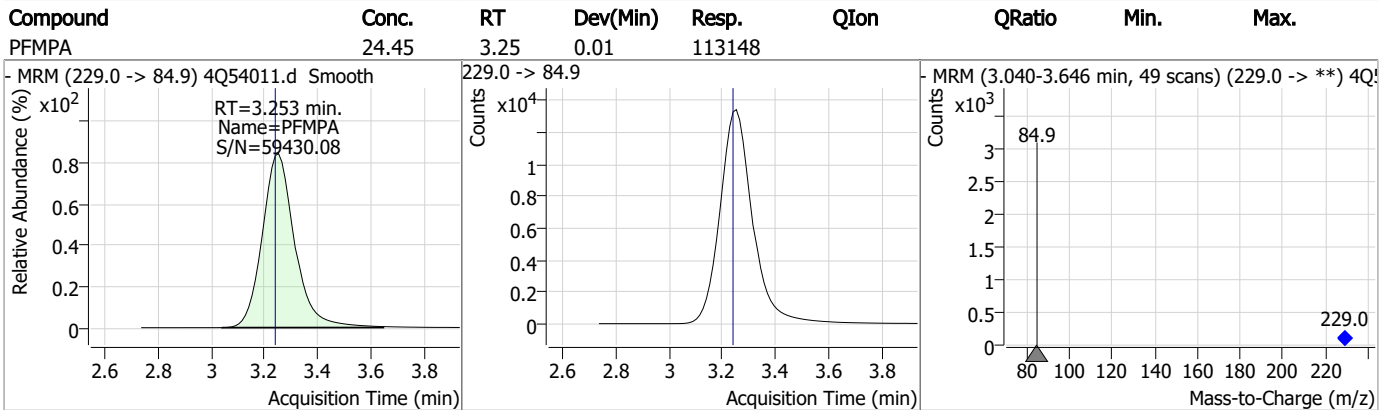
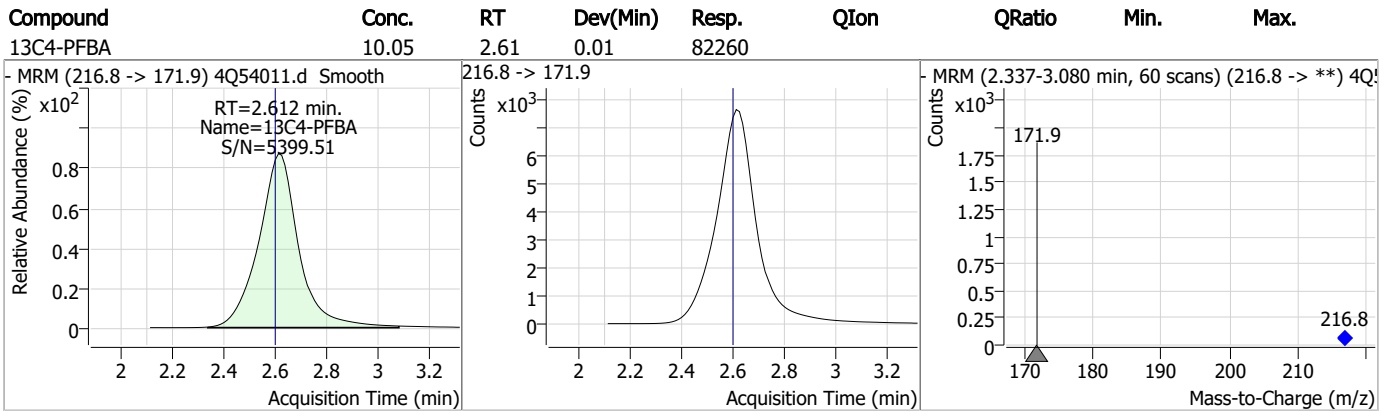
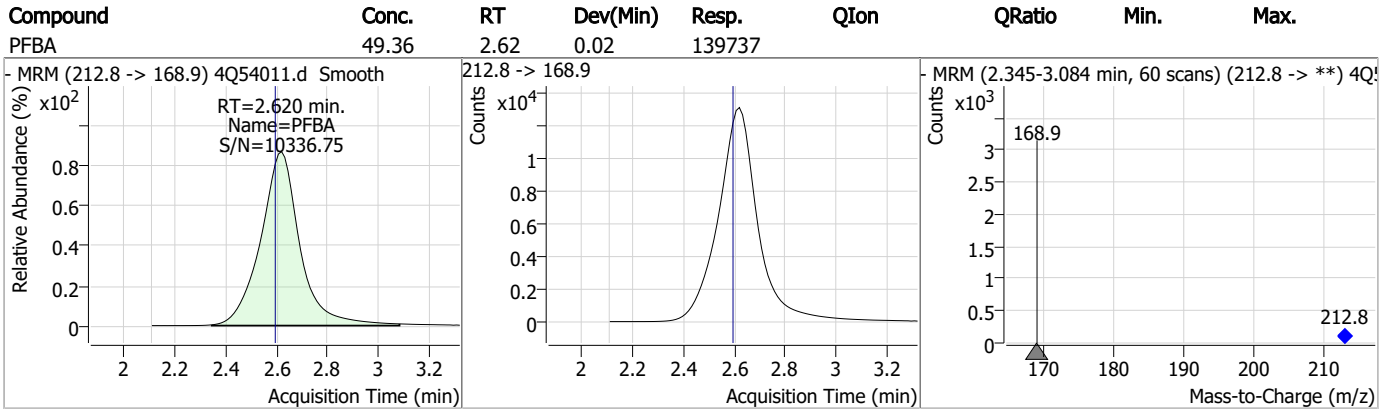
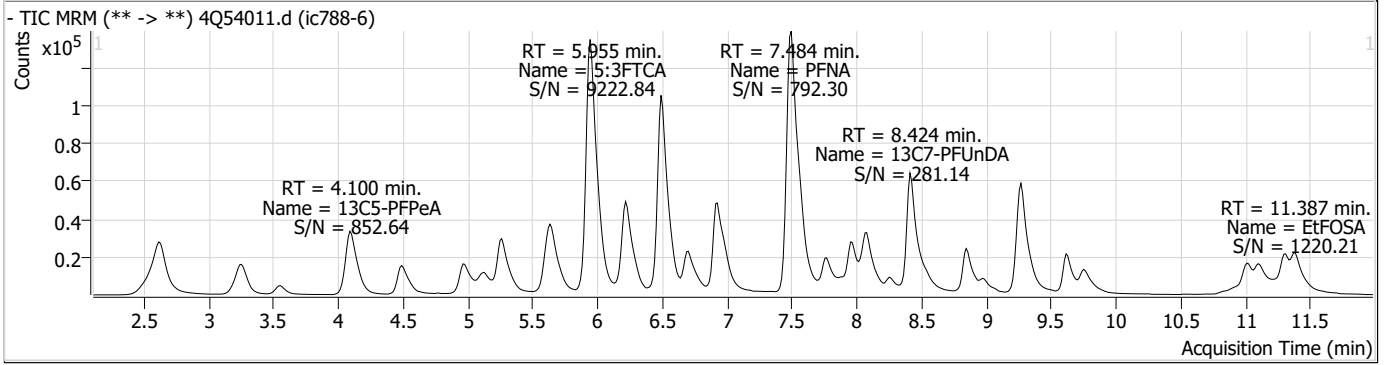
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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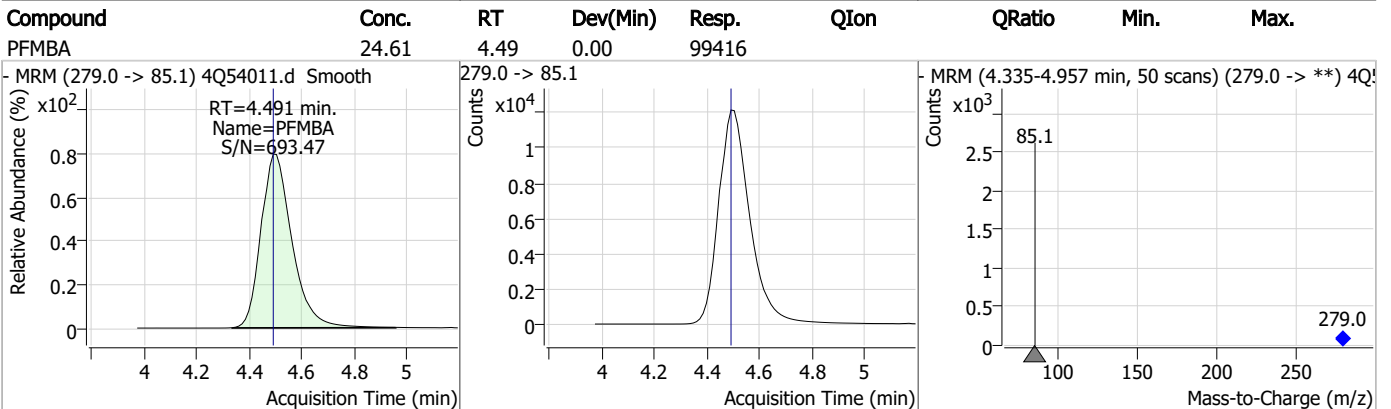
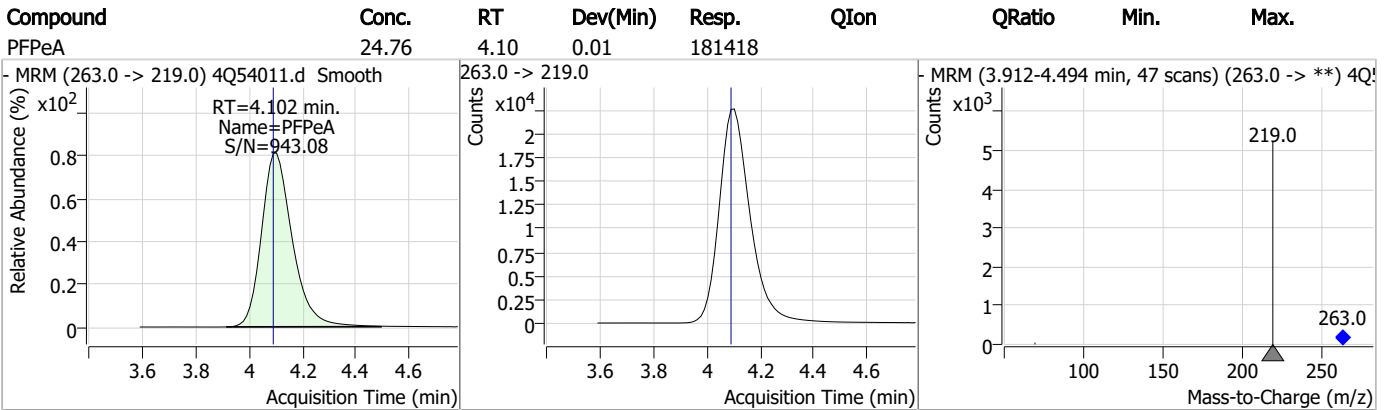
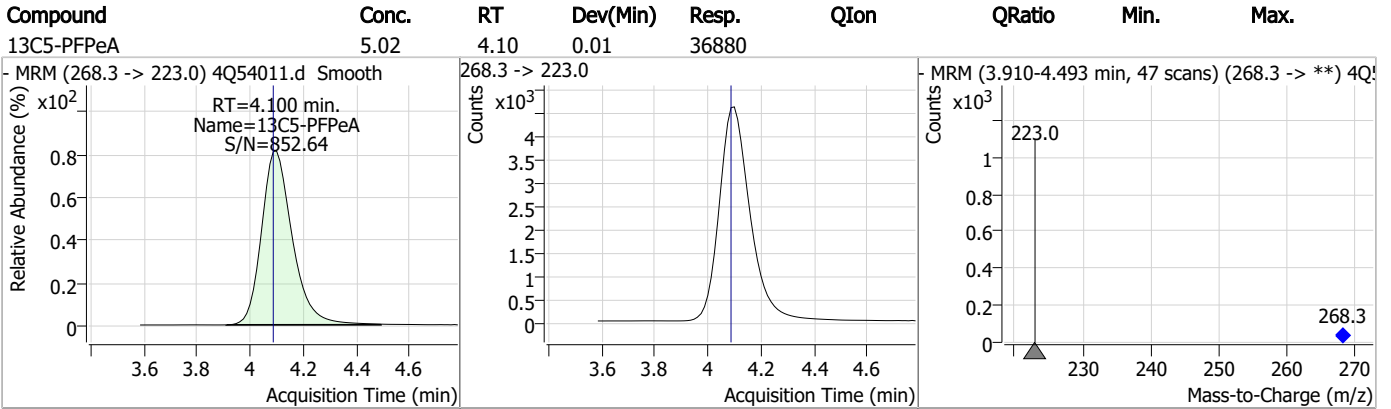
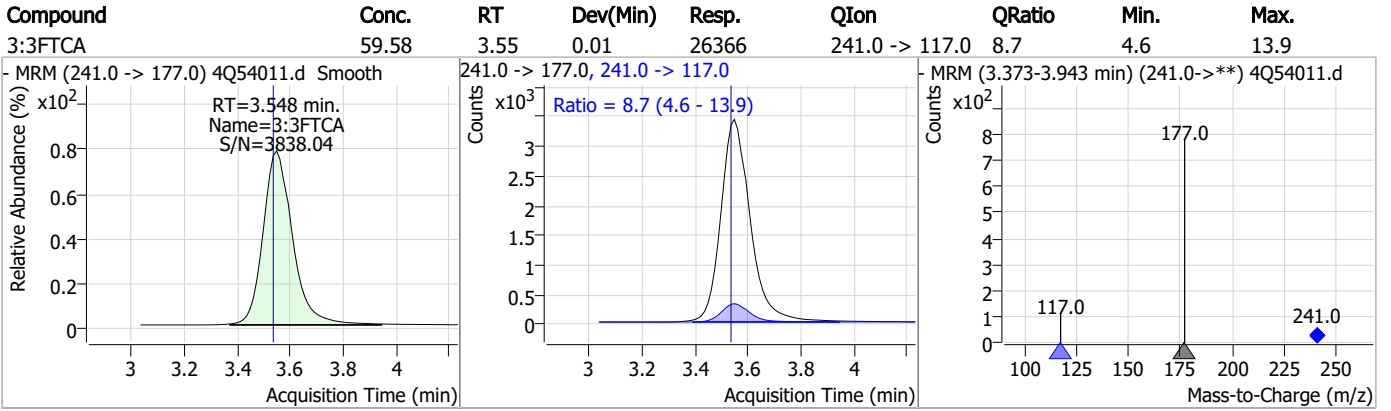
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

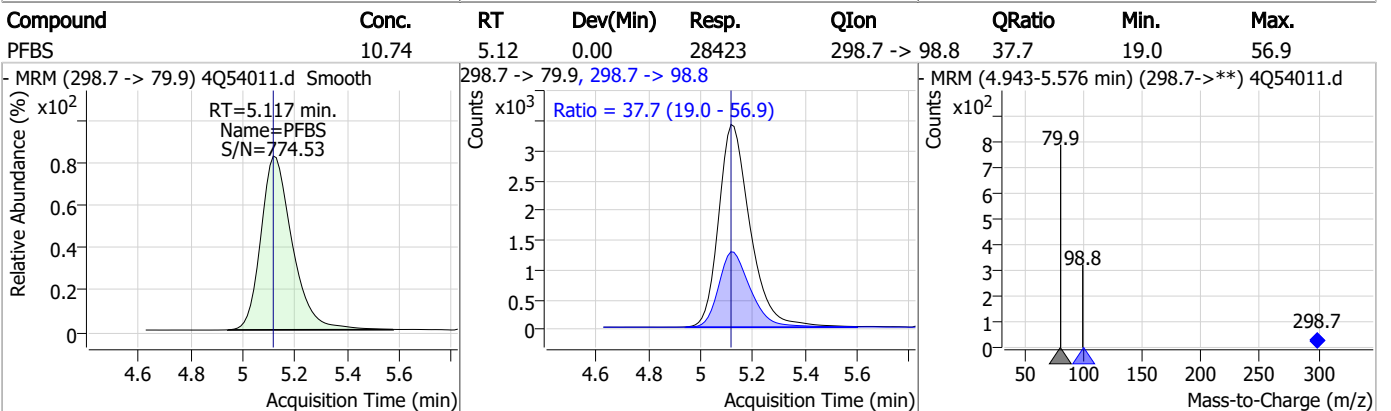
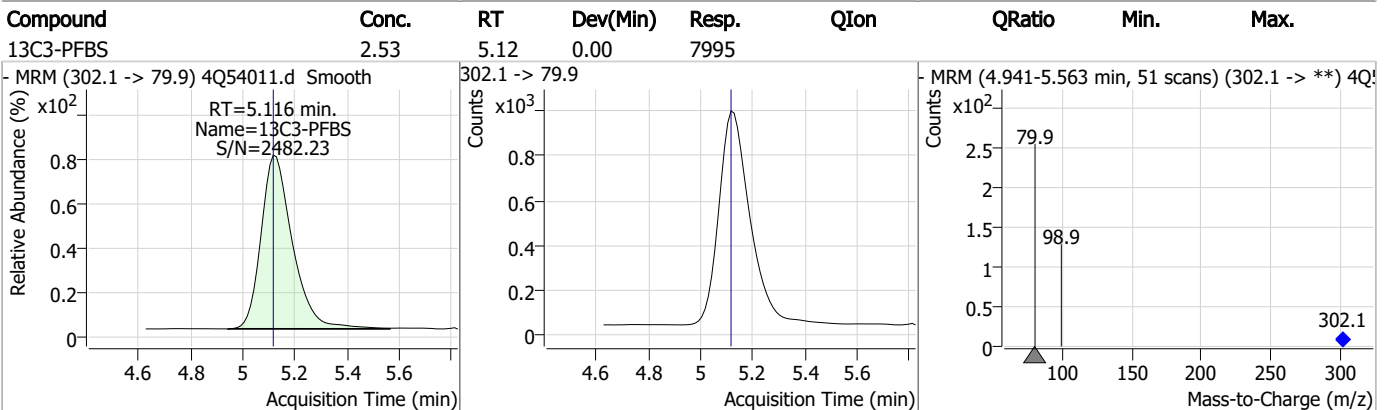
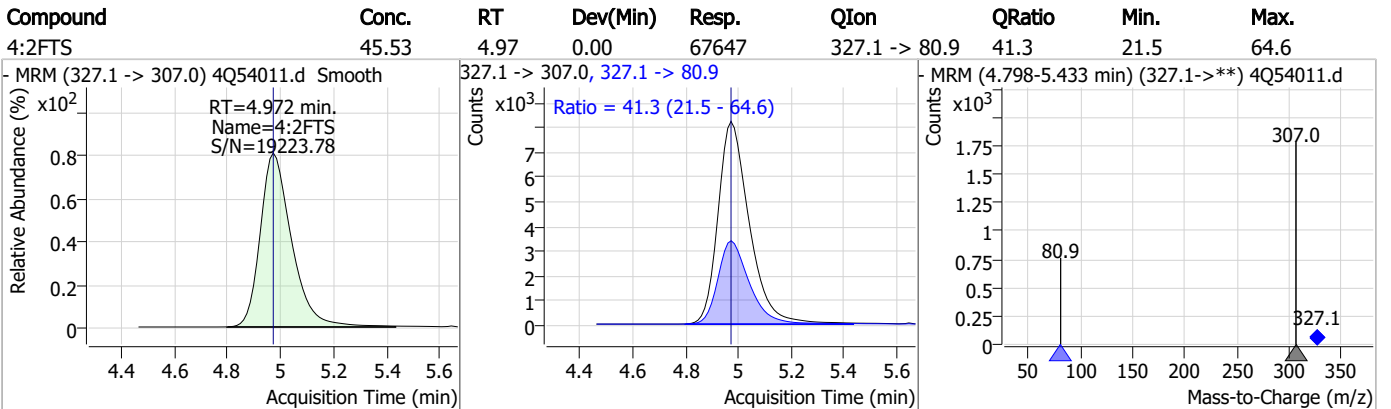
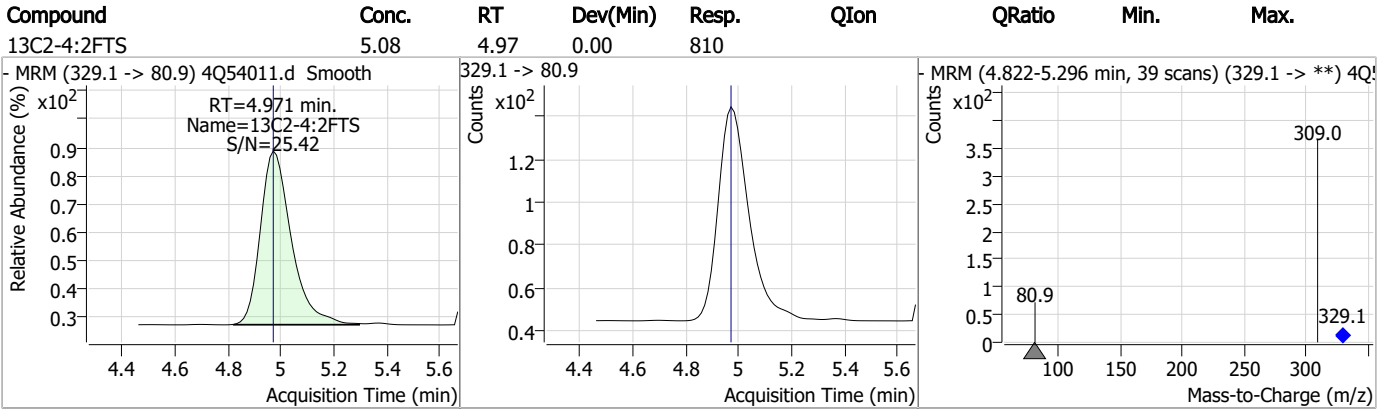


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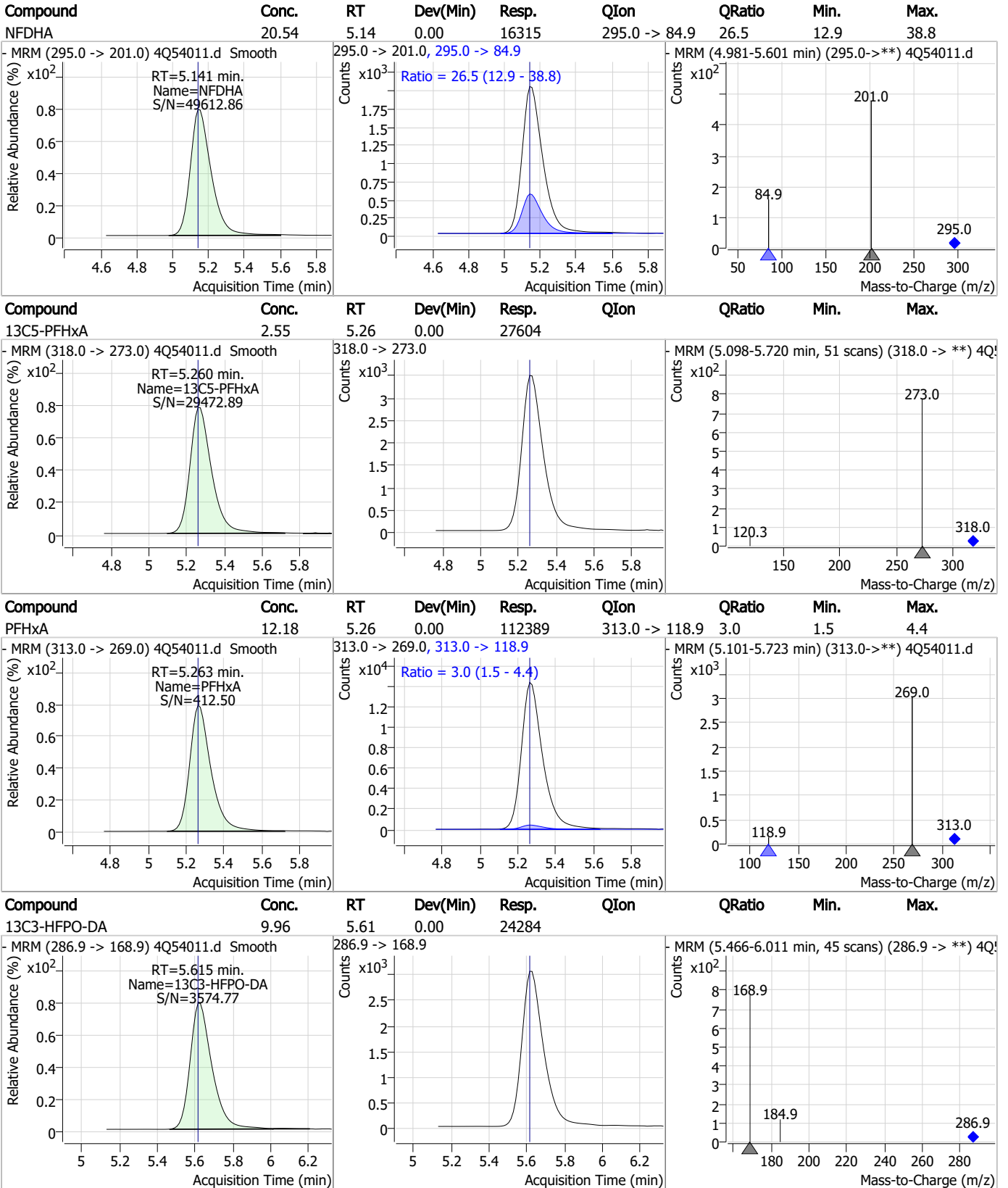
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



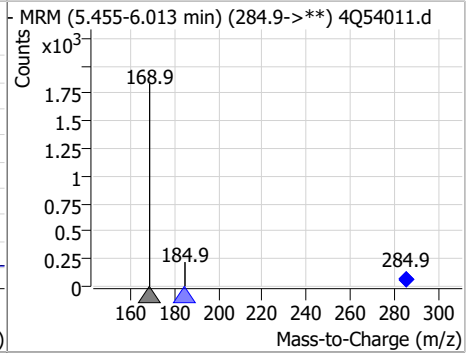
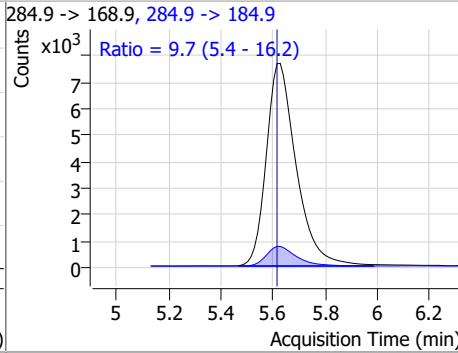
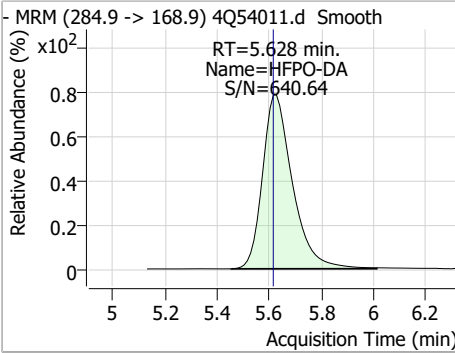
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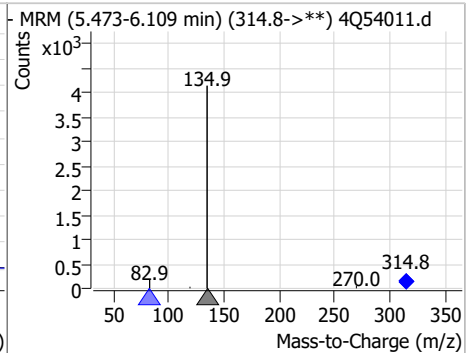
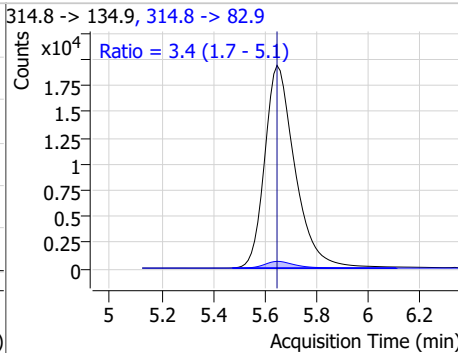
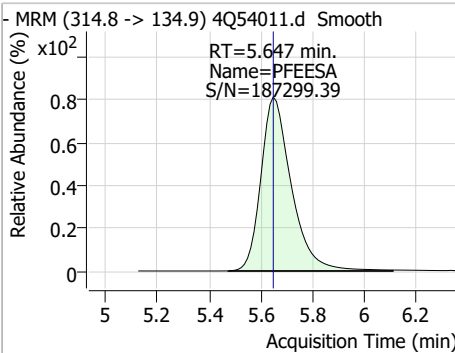


Perfluorinated Compounds by LC/MS/MS

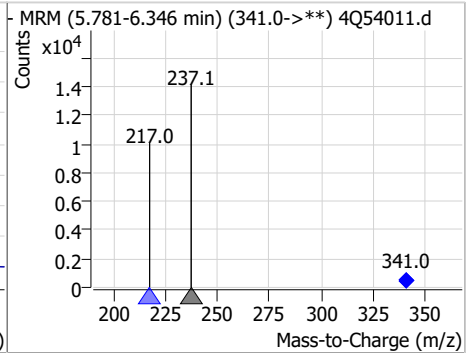
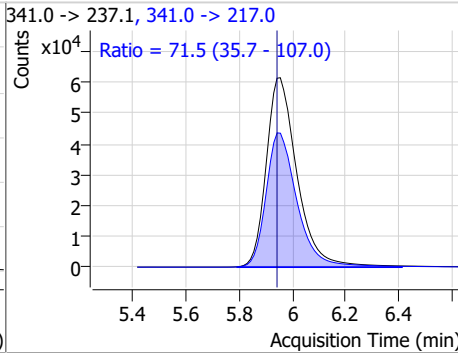
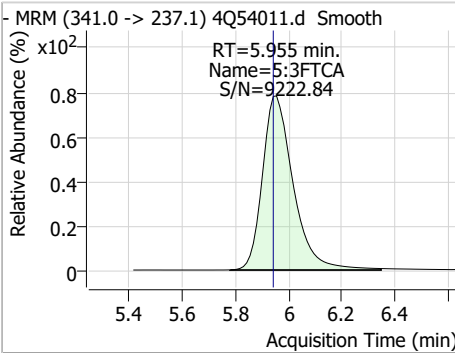
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	25.38	5.63	0.01	61146	284.9 -> 184.9	9.7	5.4	16.2



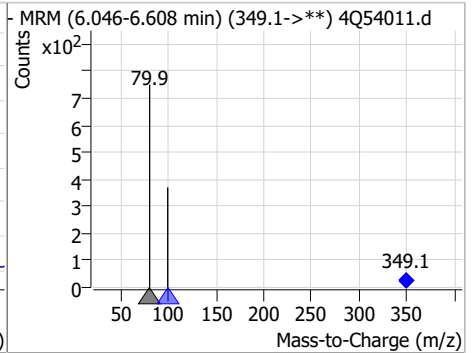
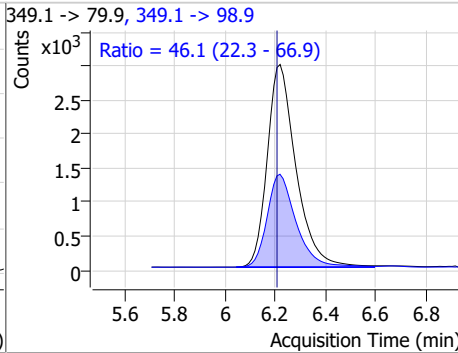
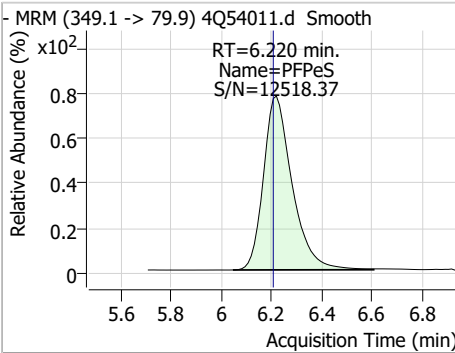
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	21.82	5.65	0.00	158511	314.8 -> 82.9	3.4	1.7	5.1



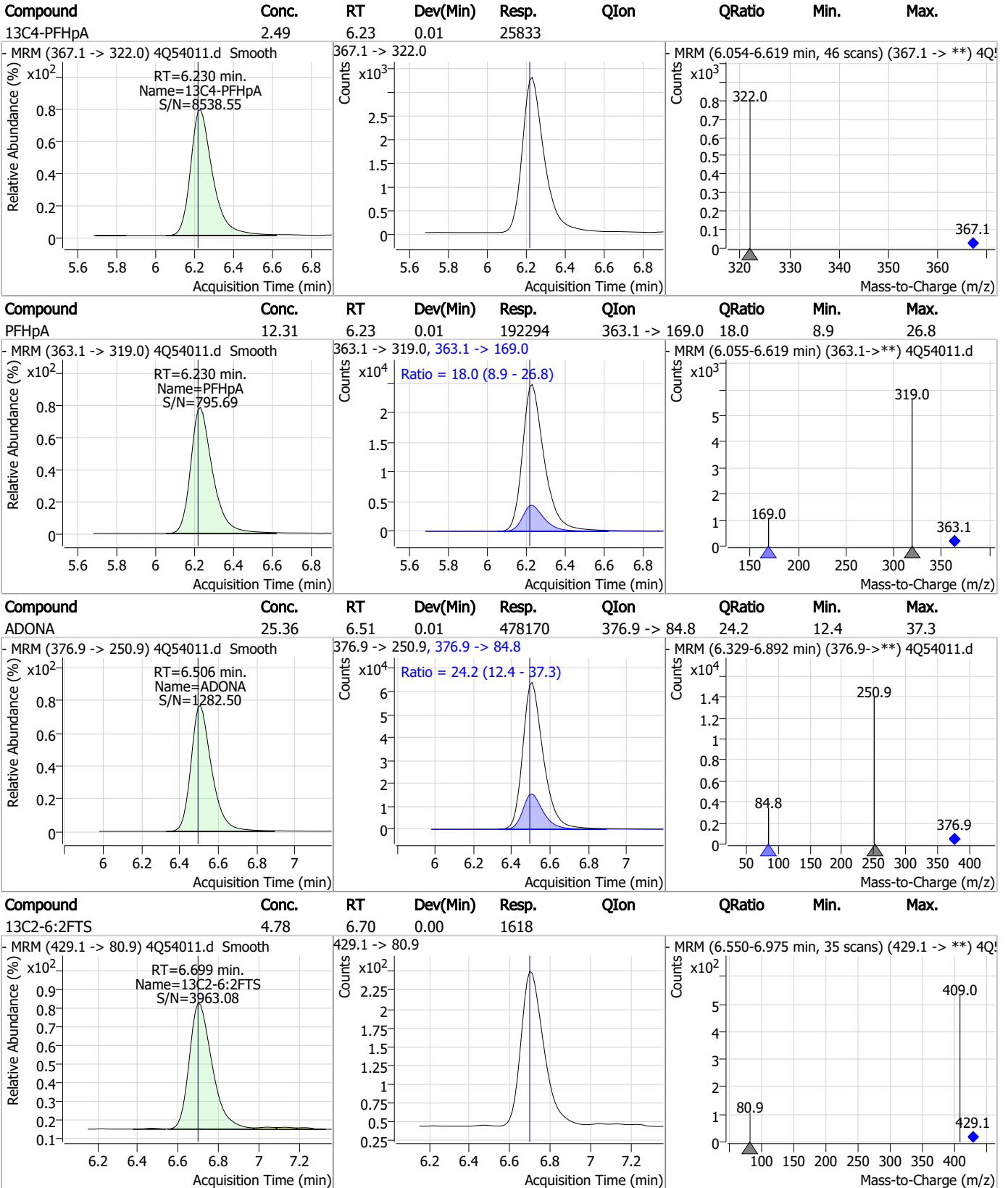
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	307.21	5.96	0.01	492024	341.0 -> 217.0	71.5	35.7	107.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	11.39	6.22	0.01	23693	349.1 -> 98.9	46.1	22.3	66.9



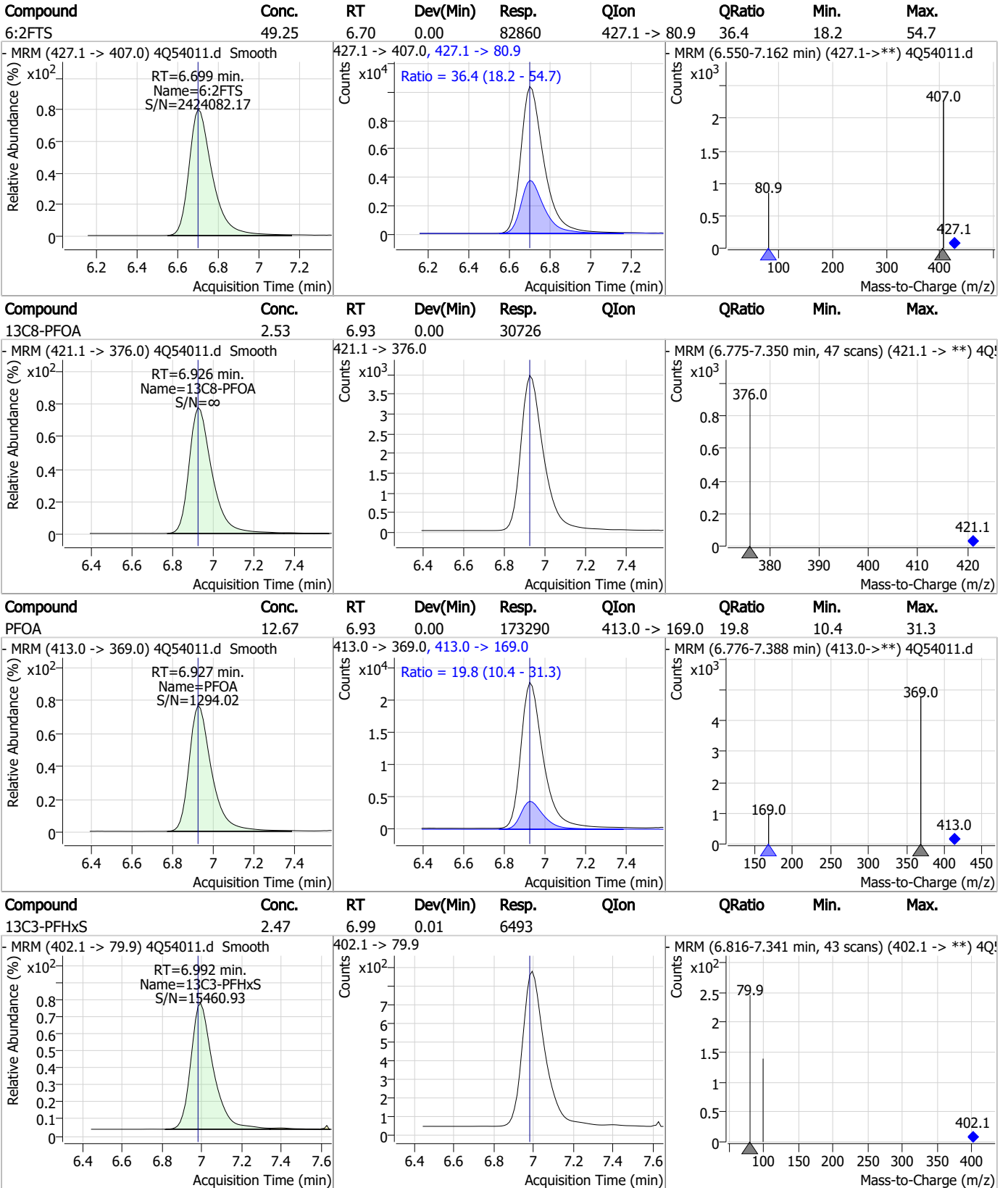
Perfluorinated Compounds by LC/MS/MS



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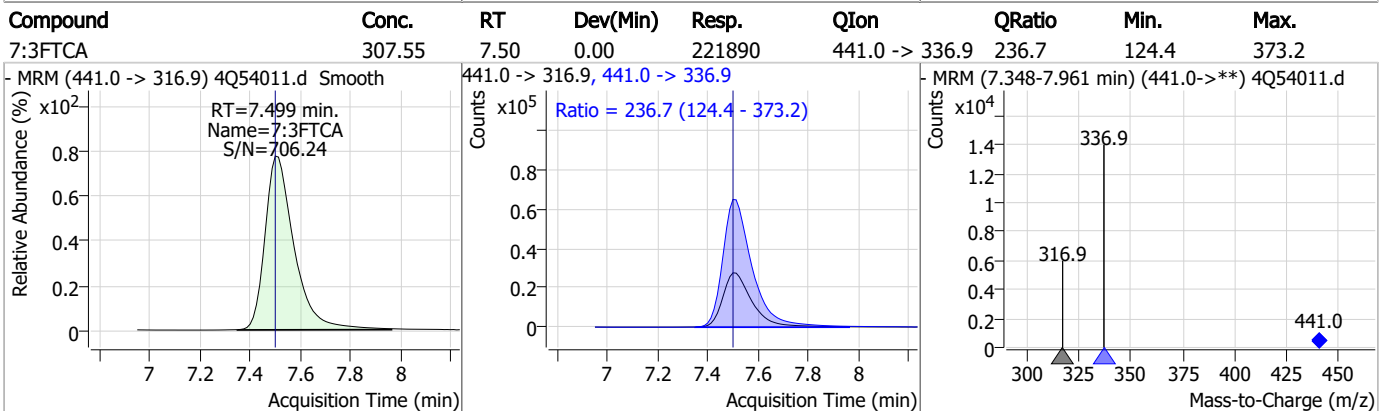
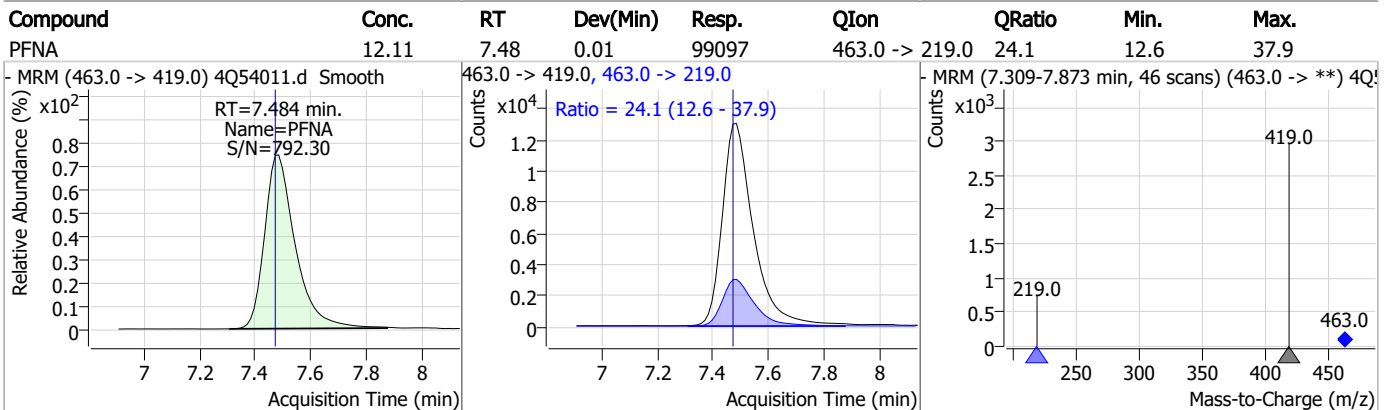
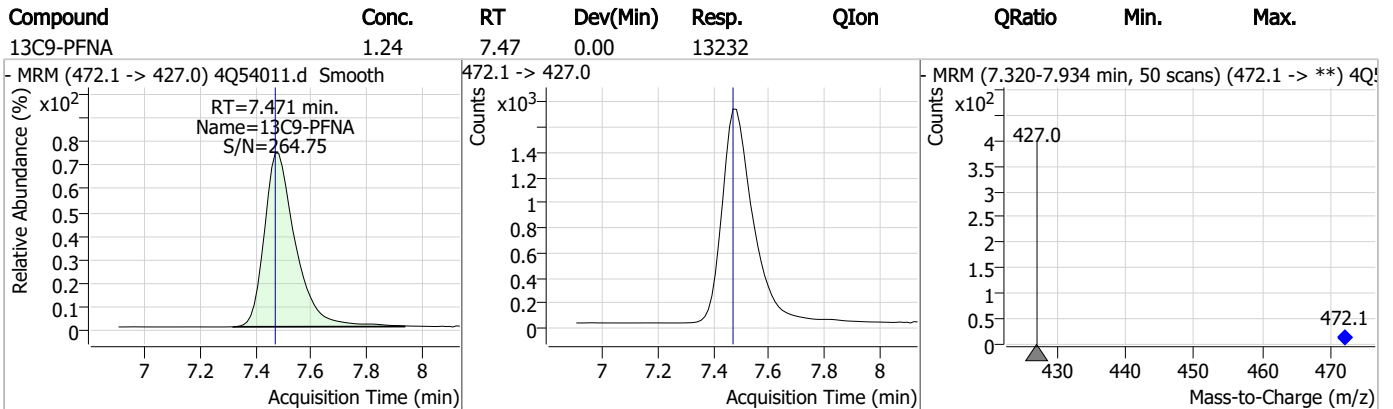
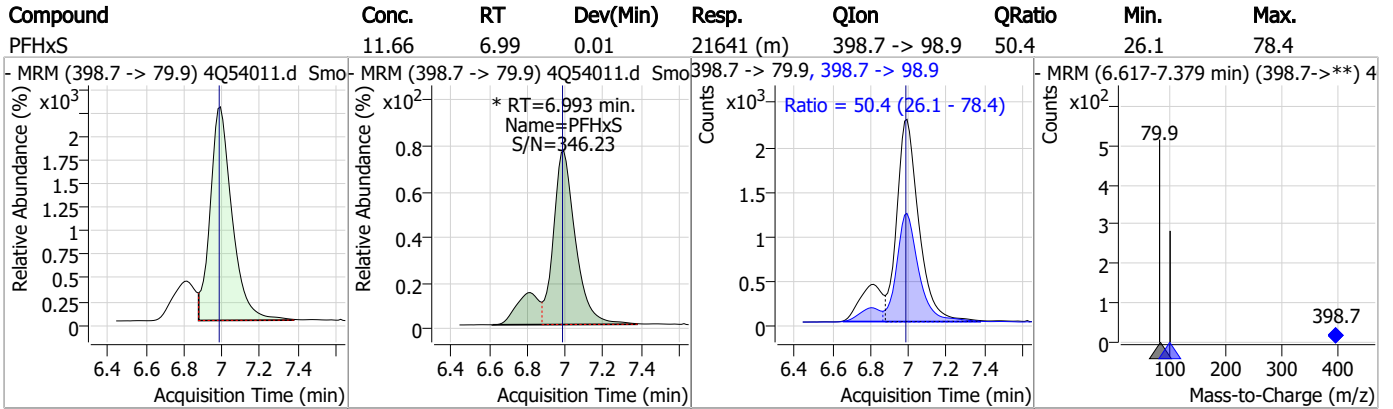
Perfluorinated Compounds by LC/MS/MS



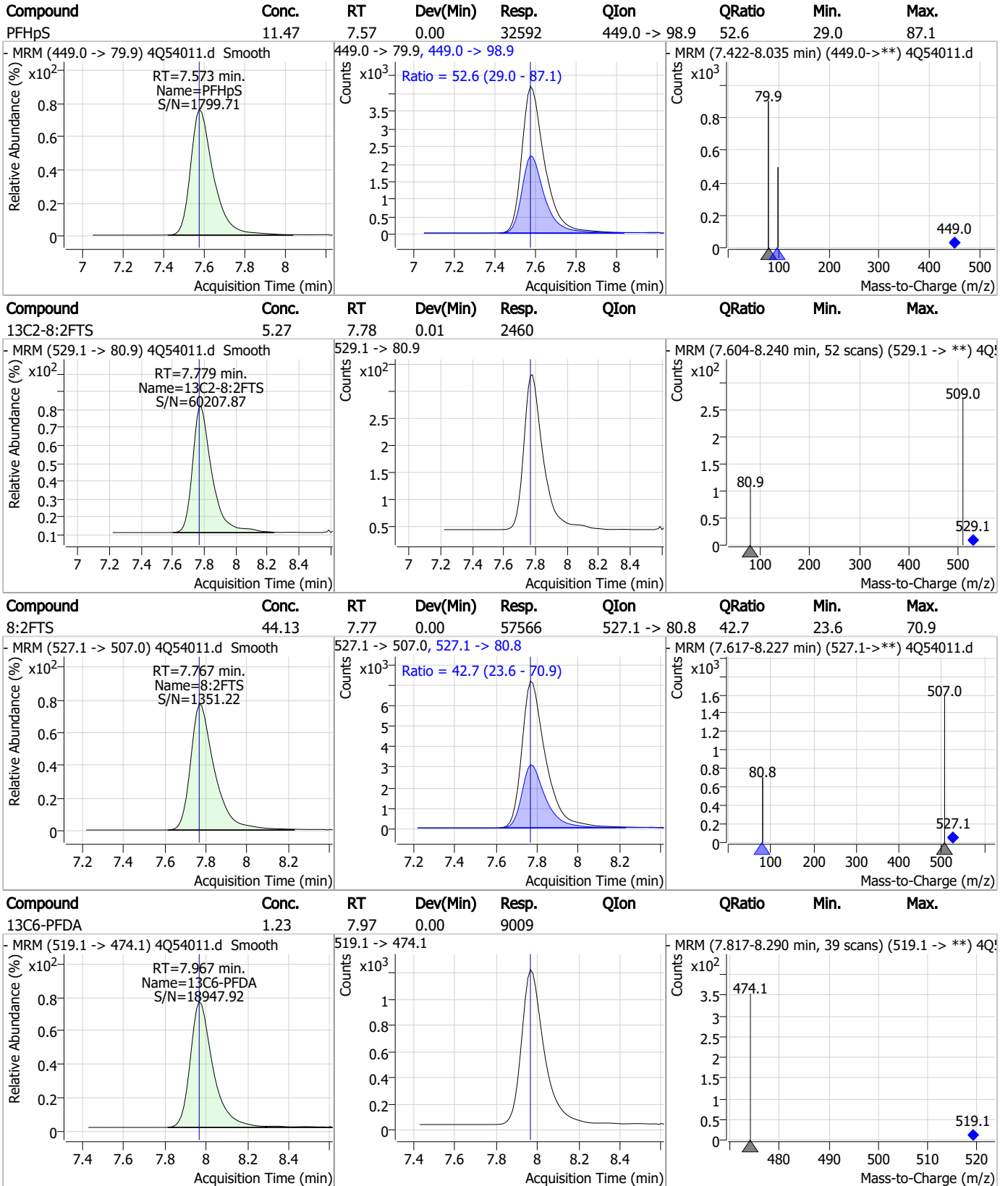
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Perfluorinated Compounds by LC/MS/MS

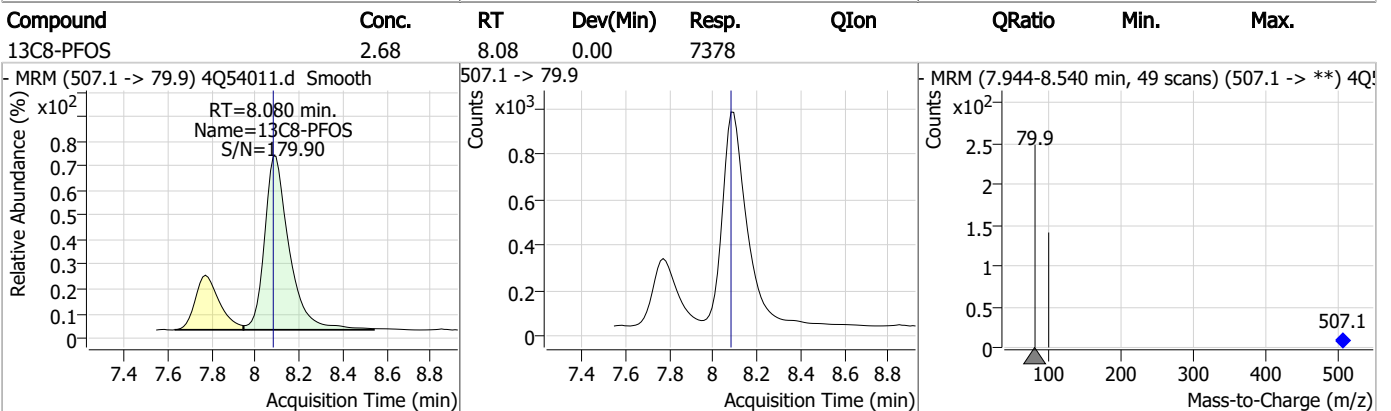
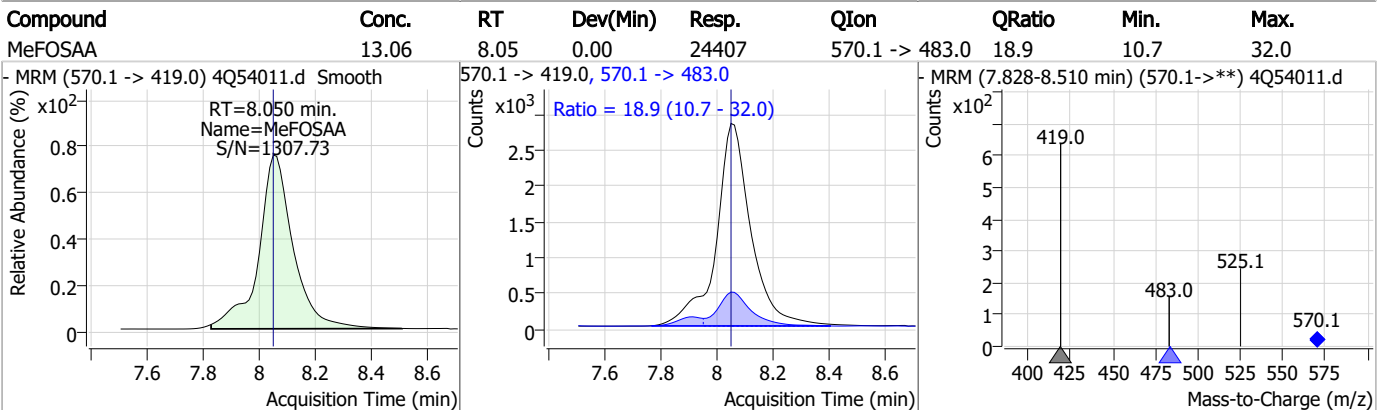
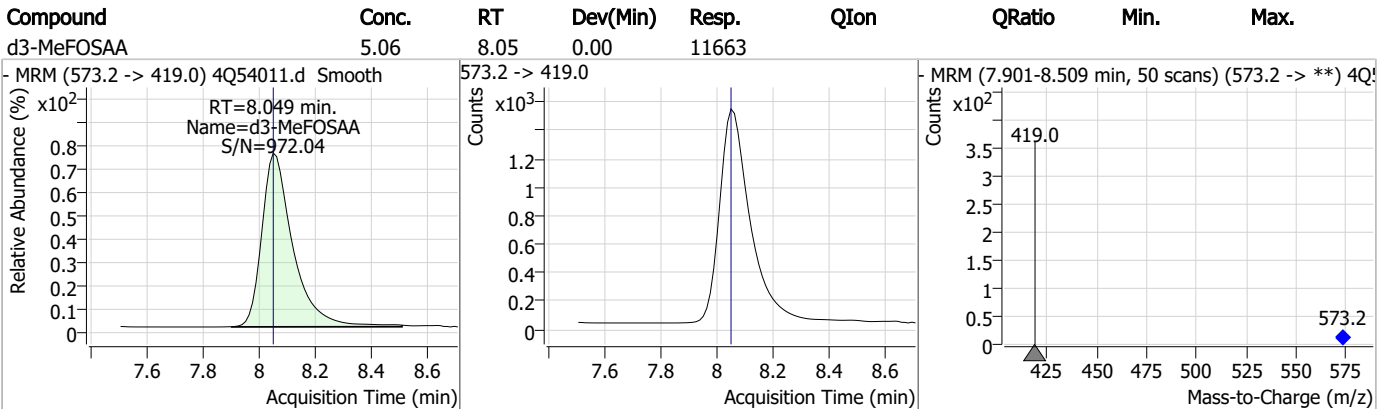
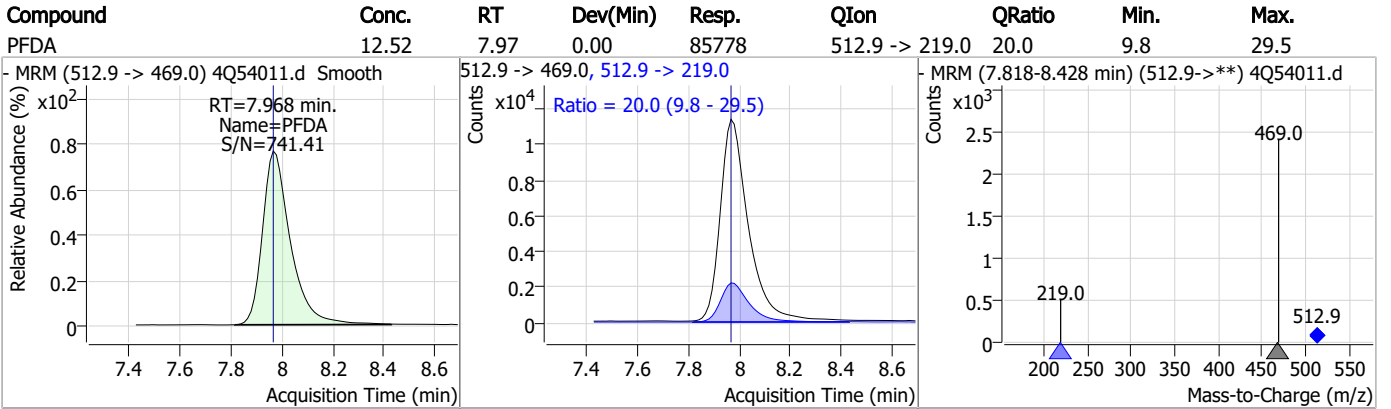


Perfluorinated Compounds by LC/MS/MS



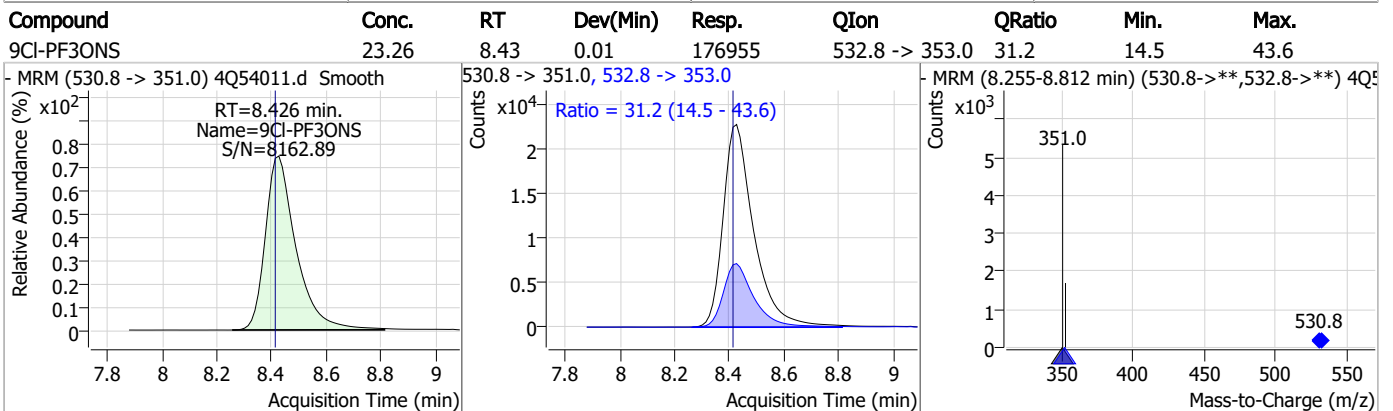
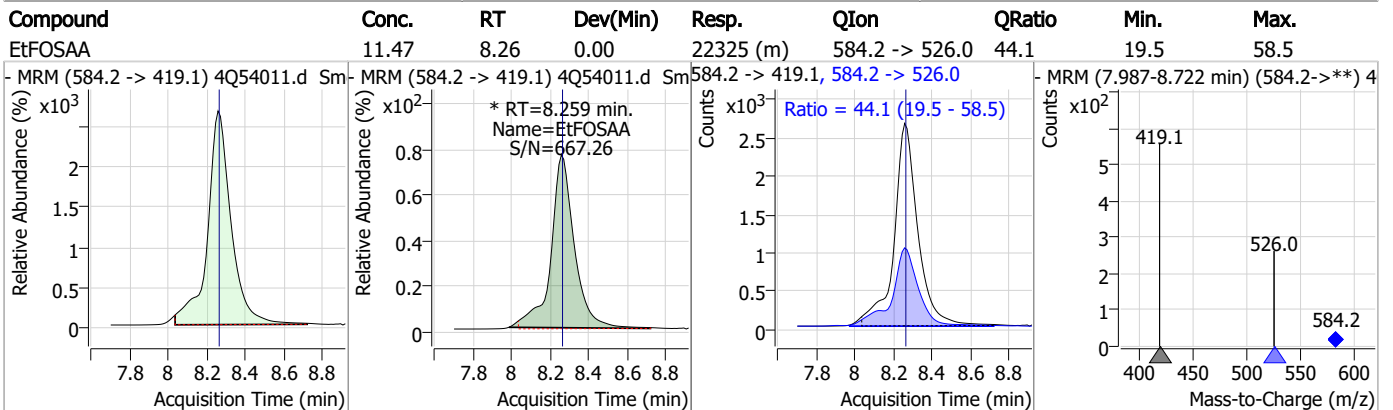
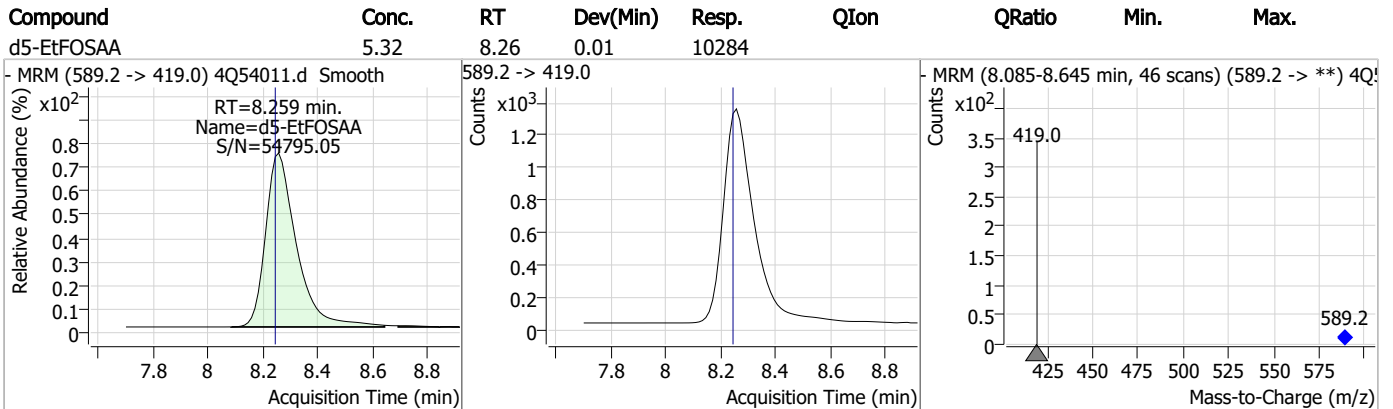
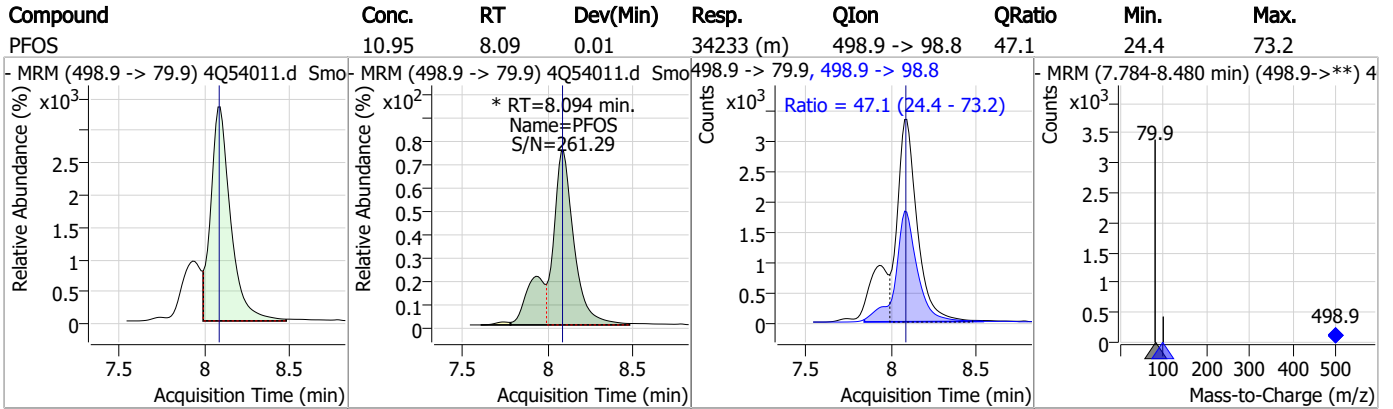
7.7.22 7

Perfluorinated Compounds by LC/MS/MS

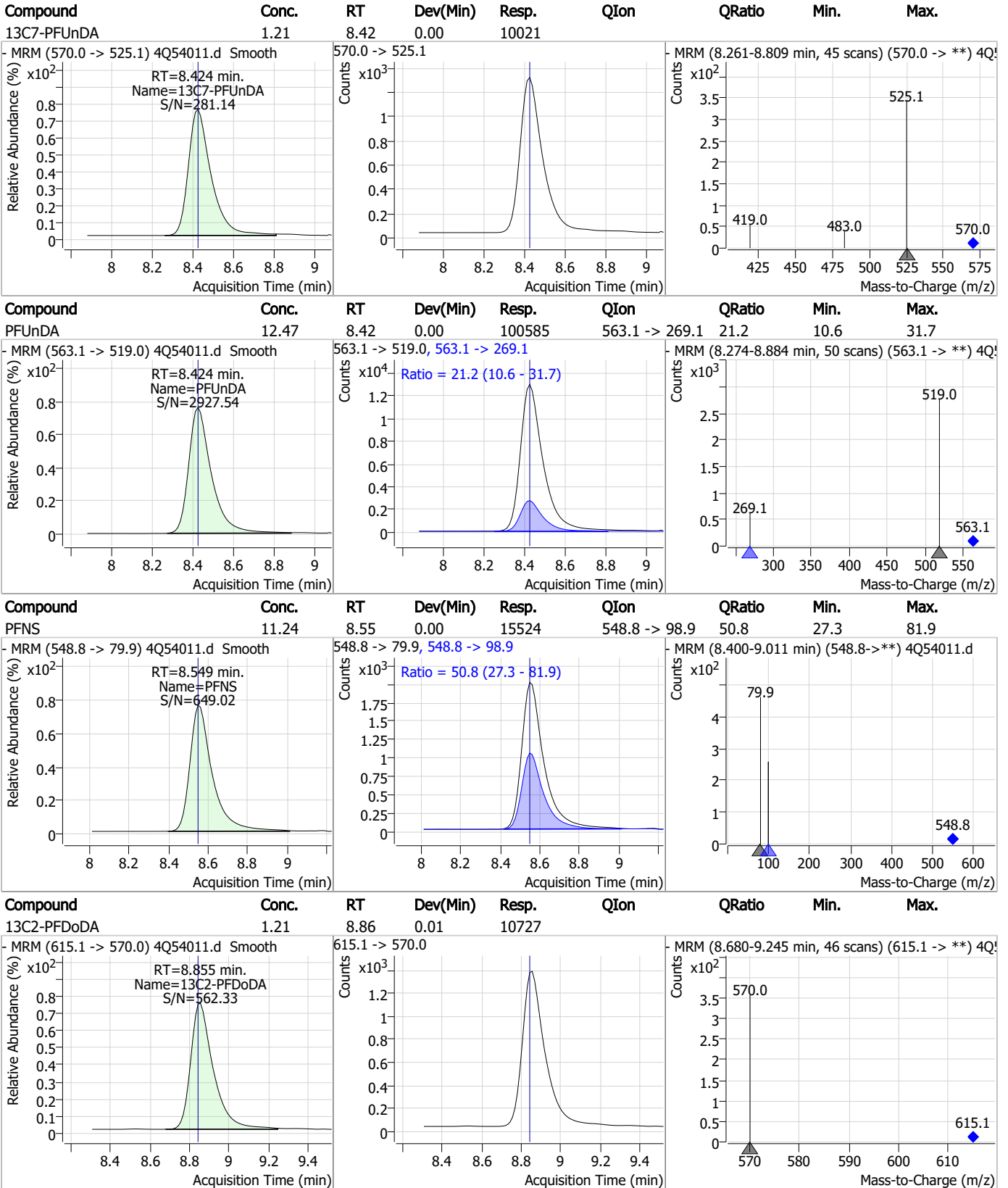


7.7.22 7

Perfluorinated Compounds by LC/MS/MS



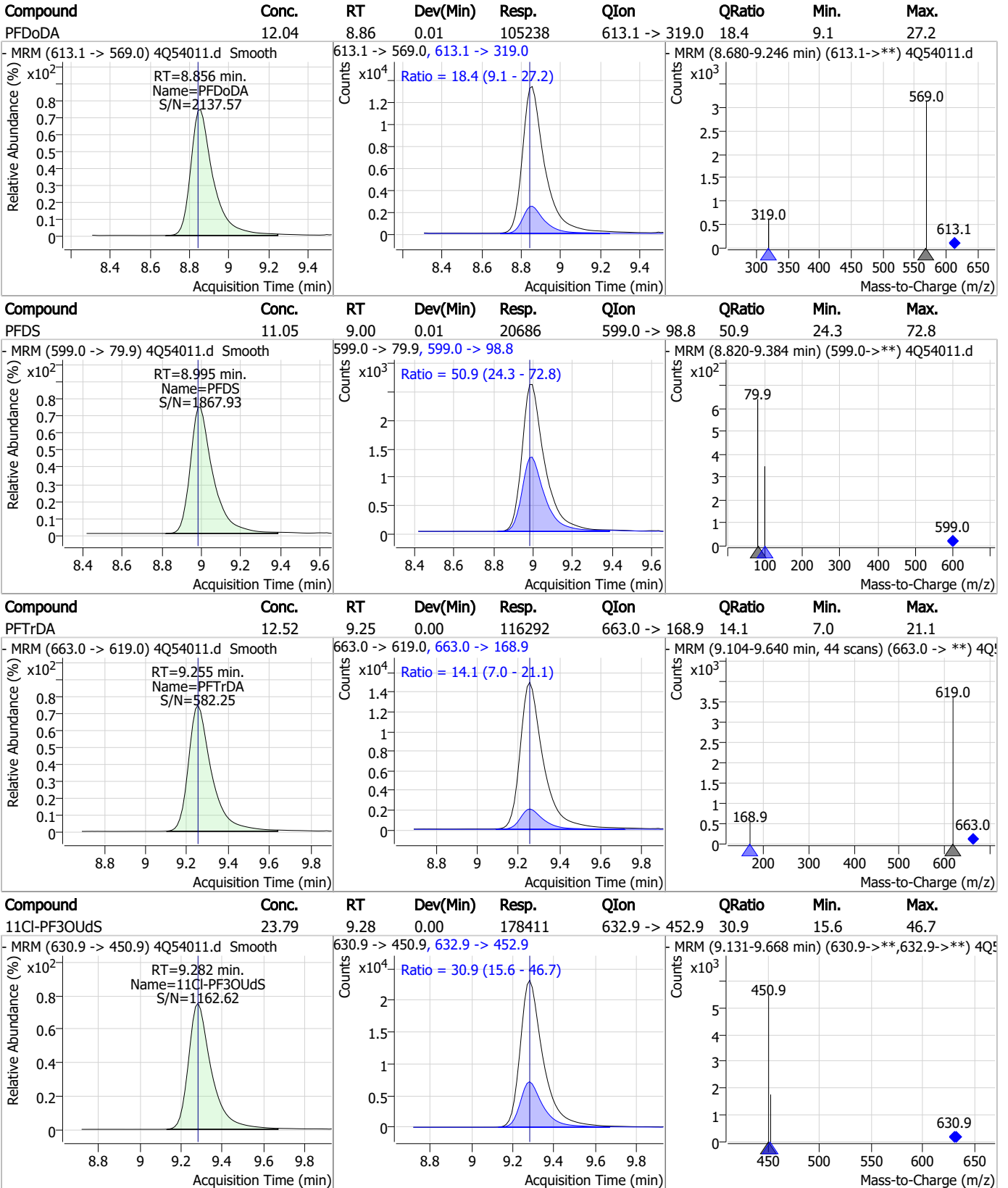
Perfluorinated Compounds by LC/MS/MS



7.7.22 7

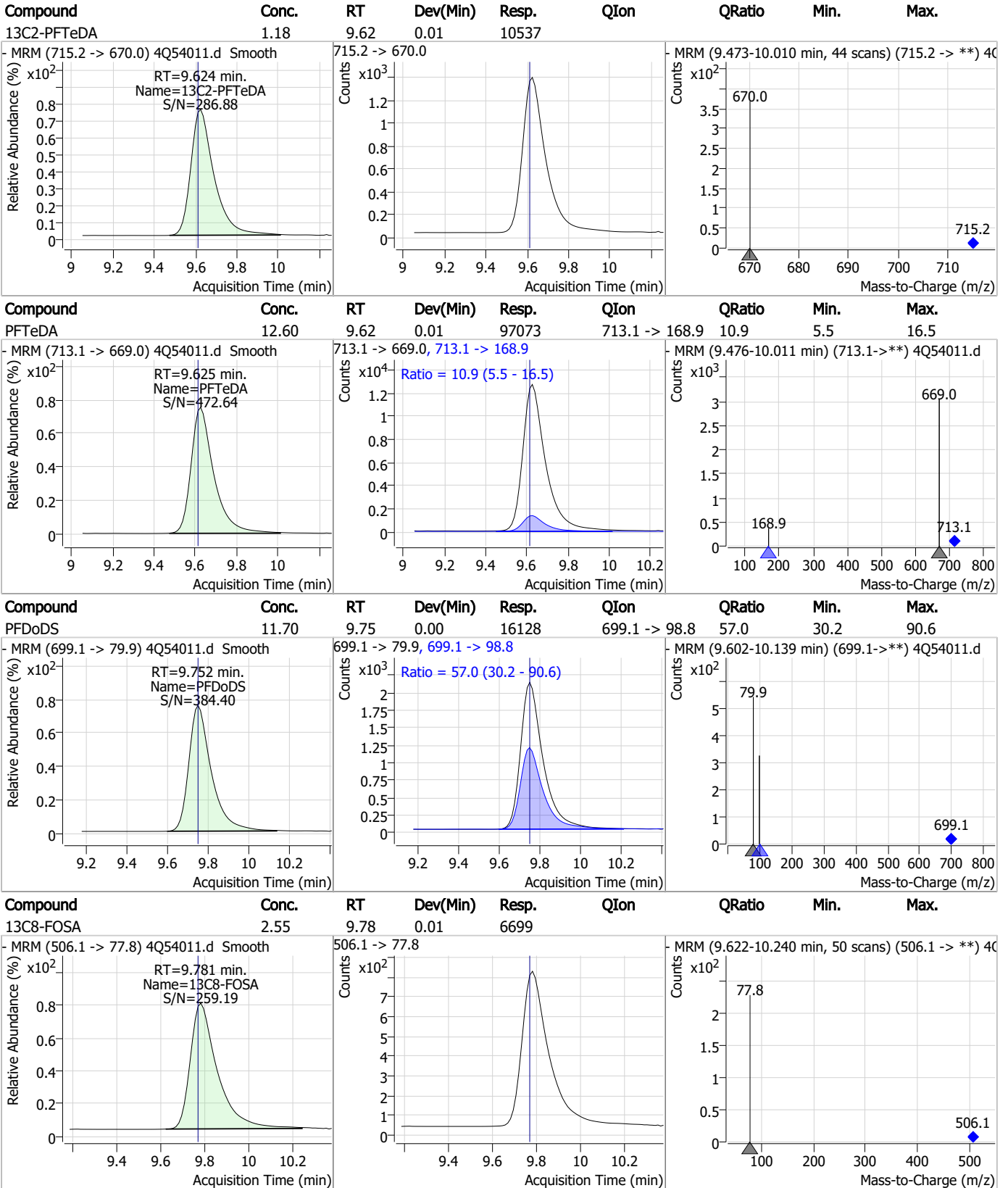


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

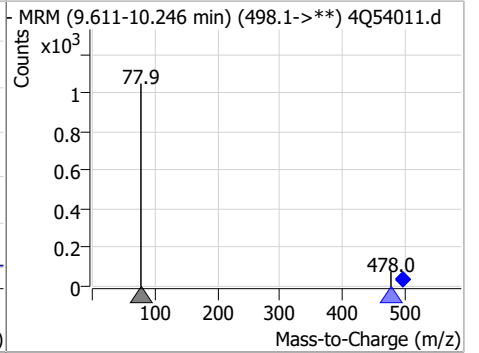
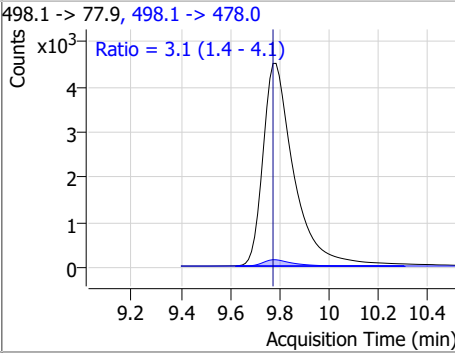
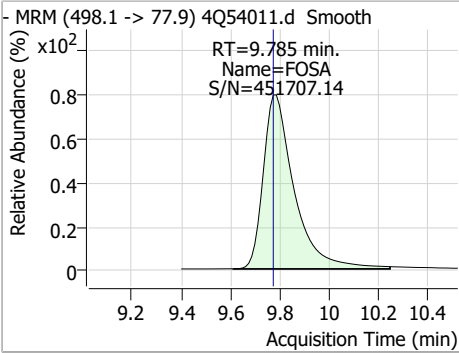


7.7.22 7

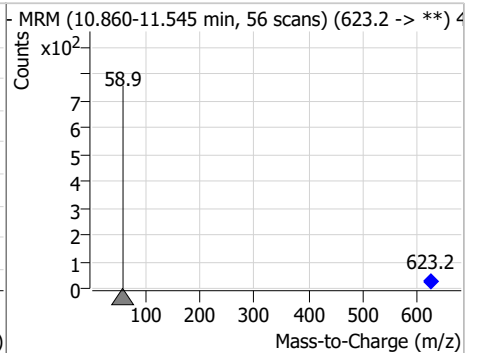
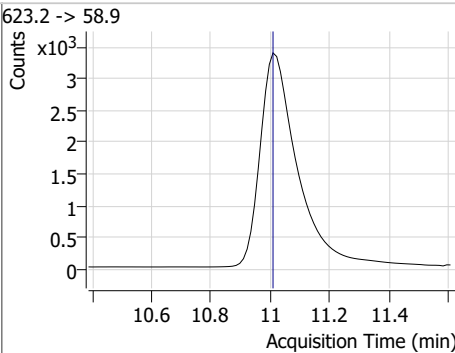
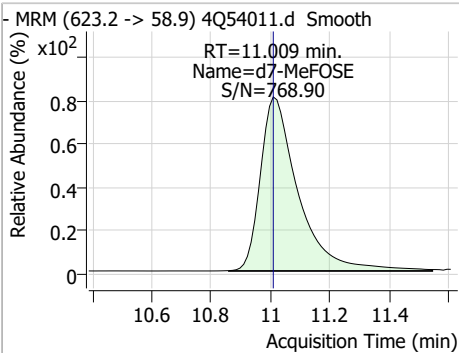


Perfluorinated Compounds by LC/MS/MS

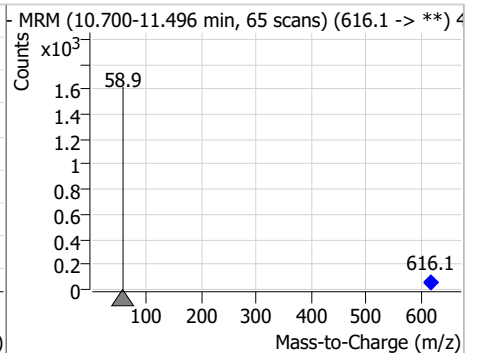
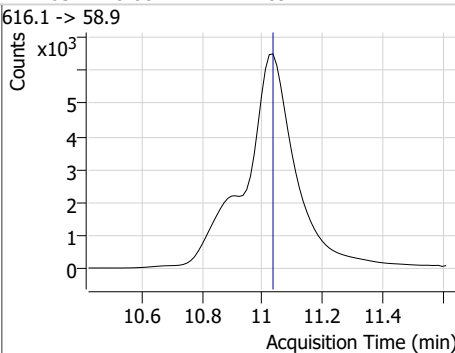
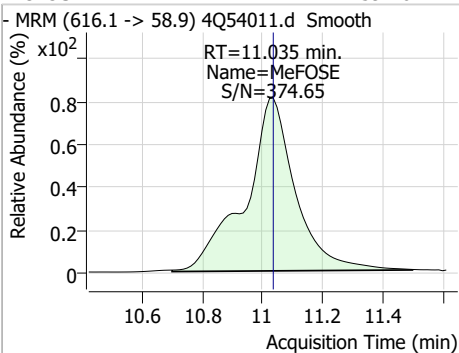
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	12.55	9.79	0.01	39014	498.1 -> 478.0	3.1	1.4	4.1



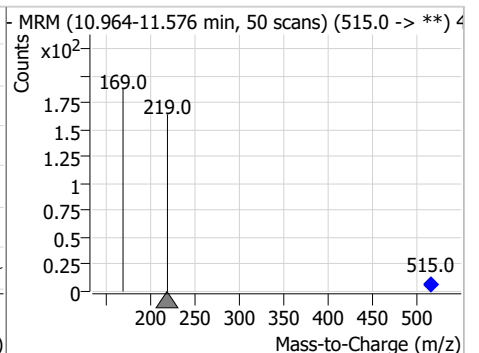
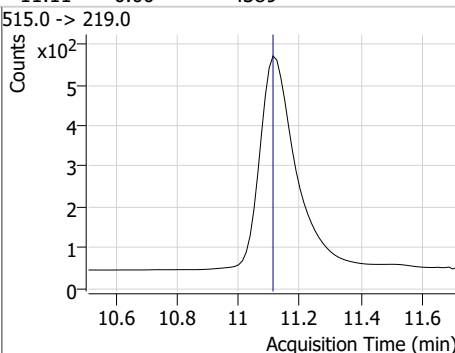
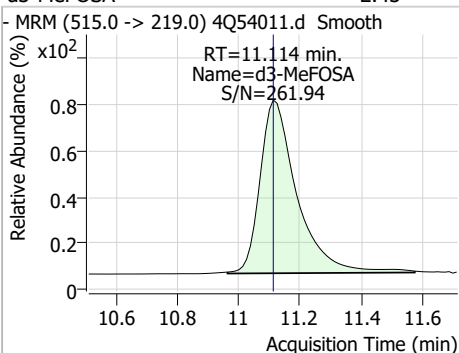
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.44	11.01	0.00	29792	623.2 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	59.16	11.03	0.00	74269	616.1 -> 58.9			

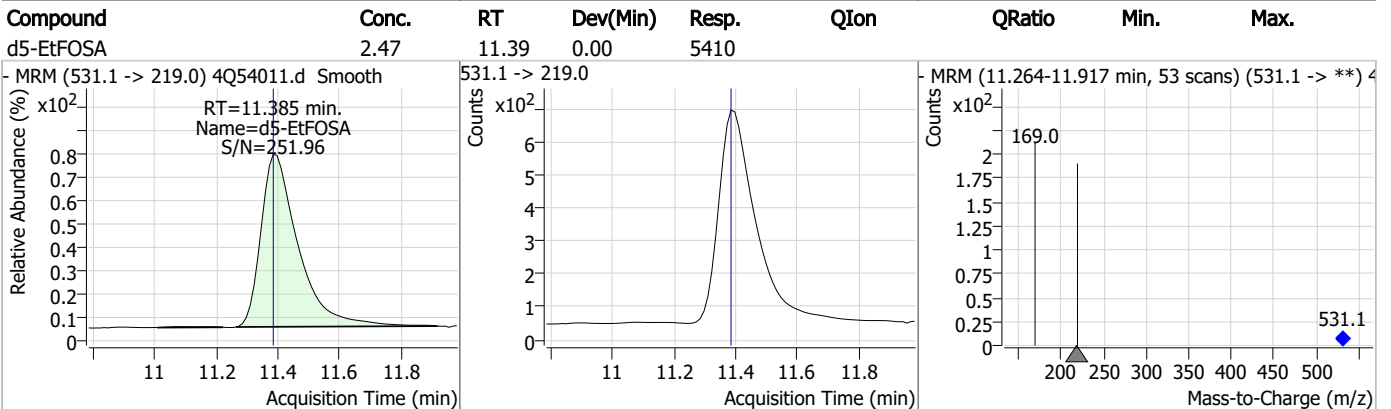
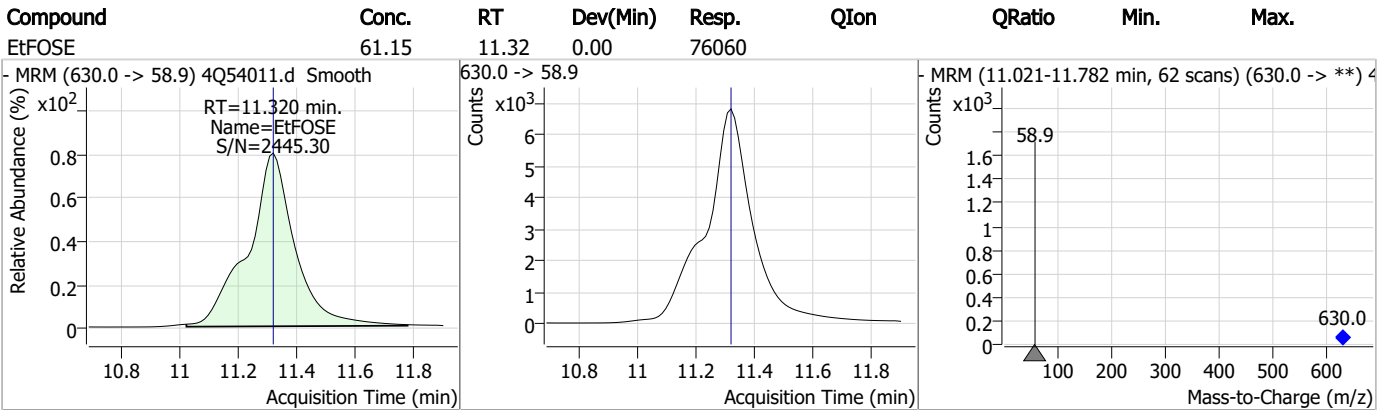
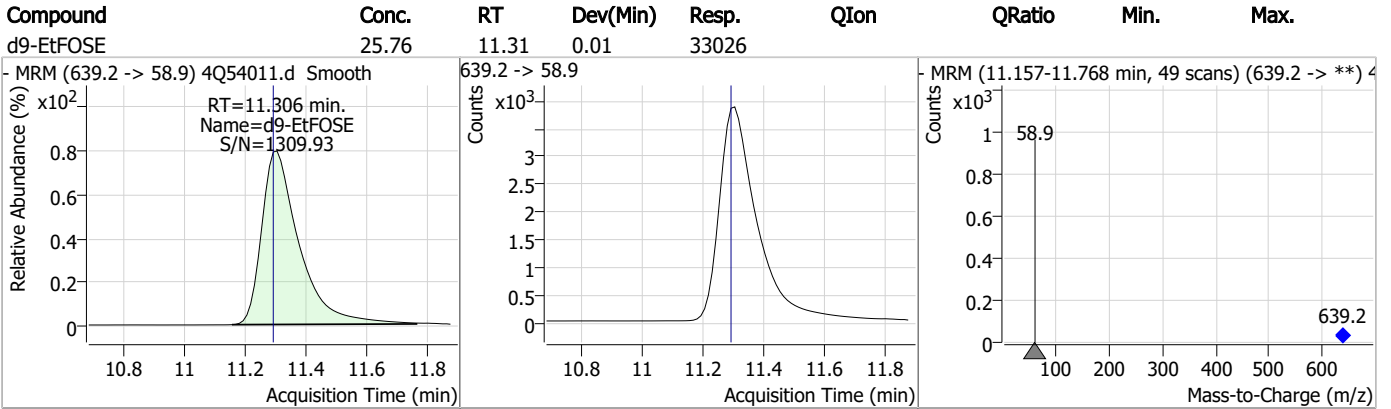
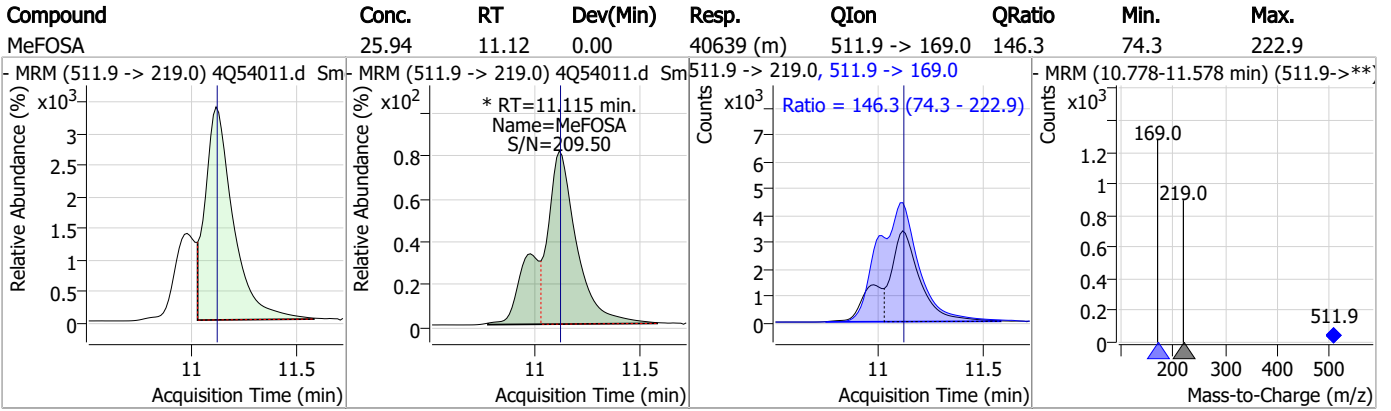


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.43	11.11	0.00	4389	515.0 -> 219.0			



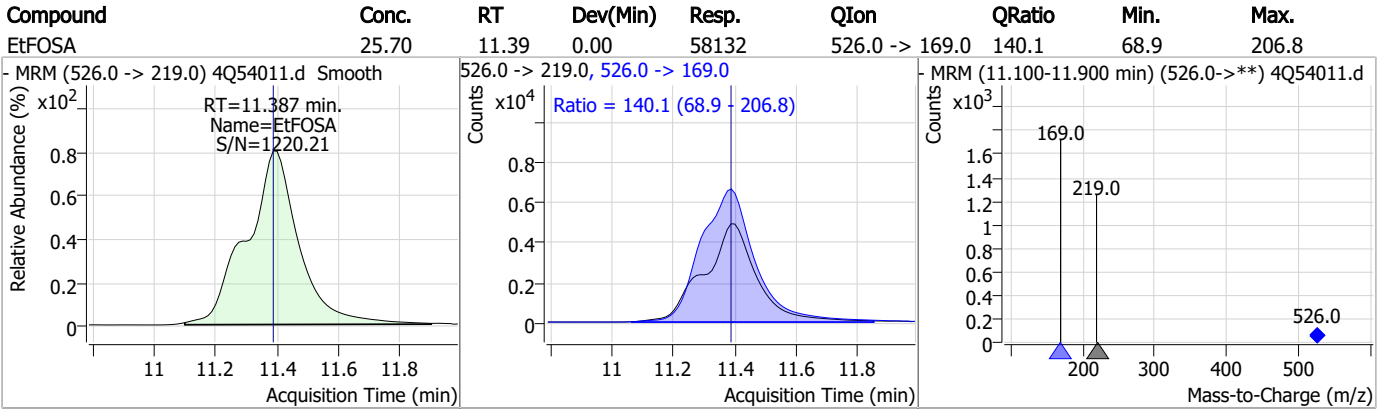
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Perfluorinated Compounds by LC/MS/MS



7.7.22
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Perfluorinated Compounds by LC/MS/MS



7.7.22

7

Manual Integration Approval Summary

Sample Number: S4Q788-IC788 Method: EPA DRAFT 1633
Lab FileID: 4Q54011.D Analyst approved: 11/18/23 15:04 Mike Eger
Injection Time: 11/17/23 12:39 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.99	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.09	Split peak
EtFOSAA	2991-50-6		8.26	Split peak
MeFOSA	31506-32-8		11.12	Split peak

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Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtje
 11/19/23 09:22

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54012.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 12:54:08 PM
 Sample Name : ic788-7
 Vial : P1-A8
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.587	216.8 -> 171.9	75621	10.00 µg/L	-0.013
M5-PFPeA	4.087	268.3 -> 223.0	34903	5.00 µg/L	0.000
M5-PFHxA	5.260	318.0 -> 273.0	25072	2.50 µg/L	0.000
M4-PFHpA	6.230	367.1 -> 322.0	23988	2.50 µg/L	0.012
M8-PFOA	6.926	421.1 -> 376.0	28124	2.50 µg/L	0.000
M9-PFNA	7.483	472.1 -> 427.0	12645	1.25 µg/L	0.012
M6-PFDA	7.967	519.1 -> 474.1	8498	1.25 µg/L	0.000
M7-PFUnDA	8.424	570.0 -> 525.1	8887	1.25 µg/L	0.000
M2-PFDoDA	8.855	615.1 -> 570.0	10188	1.25 µg/L	0.012
M2-PFTeDA	9.624	715.2 -> 670.0	10121	1.25 µg/L	0.012
M8-FOSA	9.781	506.1 -> 77.8	6362	2.50 µg/L	0.012
M3-PFBS	5.116	302.1 -> 79.9	7167	2.50 µg/L	0.000
M3-PFHxS	6.992	402.1 -> 79.9	6433	2.50 µg/L	0.012
M8-PFOS	8.093	507.1 -> 79.9	6523	2.50 µg/L	0.012
M2-4:2FTS	4.971	329.1 -> 80.9	691	5.00 µg/L	0.000
M2-6:2FTS	6.699	429.1 -> 80.9	1518	5.00 µg/L	0.000
M2-8:2FTS	7.766	529.1 -> 80.9	2064	5.00 µg/L	0.000
M3-MeFOSAA	8.049	573.2 -> 419.0	11772	5.00 µg/L	0.000
M3-HFPO-DA	5.627	286.9 -> 168.9	23016	10.00 µg/L	0.012
M5-EtFOSAA	8.259	589.2 -> 419.0	9673	5.00 µg/L	0.012
M7-MeFOSE	11.009	623.2 -> 58.9	26339	25.00 µg/L	0.000
M9-EtFOSE	11.306	639.2 -> 58.9	30480	25.00 µg/L	0.012
M5-EtFOSA	11.398	531.1 -> 219.0	5092	2.50 µg/L	0.012
M3-MeFOSA	11.114	515.0 -> 219.0	4481	2.50 µg/L	0.000
13C4-PFOS	8.093	502.8 -> 79.9	5411	2.50 µg/L	0.012
13C3-PFBA	2.591	216.0 -> 172.0	36397	5.00 µg/L	0.000
18O2-PFHxS	6.991	403.0 -> 83.9	3748	2.50 µg/L	0.012
13C4-PFOA	6.926	417.1 -> 372.0	31087	2.50 µg/L	0.000
13C2-PFDA	7.967	515.1 -> 470.1	9001	1.25 µg/L	0.000
13C5-PFNA	7.471	468.0 -> 423.0	12217	1.25 µg/L	0.000
13C2-PFHxA	5.261	315.1 -> 270.0	27823	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	4.971	329.1 -> 80.9	691	4.83 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.7%		
13C2-6:2FTS	6.699	429.1 -> 80.9	1518	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C2-8:2FTS	7.766	529.1 -> 80.9	2064	4.94 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C2-PFDoDA	8.855	615.1 -> 570.0	10188	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C2-PFTeDA	9.624	715.2 -> 670.0	10121	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C3-PFBS	5.116	302.1 -> 79.9	7167	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C3-PFHxS	6.992	402.1 -> 79.9	6433	2.73 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.3%		
13C4-PFBA	2.587	216.8 -> 171.9	75621	10.07 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C4-PFHpA	6.230	367.1 -> 322.0	23988	2.43 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C5-PFHxA	5.260	318.0 -> 273.0	25072	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C5-PFPeA	4.087	268.3 -> 223.0	34903	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C6-PFDA	7.967	519.1 -> 474.1	8498	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C7-PFUnDA	8.424	570.0 -> 525.1	8887	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.6%		
13C8-FOSA	9.781	506.1 -> 77.8	6362	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C8-PFOA	6.926	421.1 -> 376.0	28124	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C8-PFOS	8.093	507.1 -> 79.9	6523	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C9-PFNA	7.483	472.1 -> 427.0	12645	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.2%		
d3-MeFOSAA	8.049	573.2 -> 419.0	11772	5.31 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.2%		
13C3-HFPO-DA	5.627	286.9 -> 168.9	23016	9.92 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.2%		
d3-MeFOSA	11.114	515.0 -> 219.0	4481	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.2%		
d5-EtFOSAA	8.259	589.2 -> 419.0	9673	5.20 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.1%		
d7-MeFOSE	11.009	623.2 -> 58.9	26339	24.30 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 97.2%		
d9-EtFOSE	11.306	639.2 -> 58.9	30480	24.71 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 98.8%		
d5-EtFOSA	11.398	531.1 -> 219.0	5092	2.42 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.7%		
Target Compounds					QValue
4:2FTS	4.972	327.1 -> 307.0	125401	98.95 µg/L	98
		327.1 -> 80.9	52047		
6:2FTS	6.699	427.1 -> 407.0	153979	97.54 µg/L	100
		427.1 -> 80.9	56135		
8:2FTS	7.767	527.1 -> 507.0	111525	101.88 µg/L	91
		527.1 -> 80.8	46028		
EtFOSAA	8.259	584.2 -> 419.1	49113	26.82 µg/L	m 97
		584.2 -> 526.0	18179		
FOSA	9.785	498.1 -> 77.9	77567	26.27 µg/L	99
		498.1 -> 478.0	2363		
MeFOSAA	8.050	570.1 -> 419.0	48716	25.83 µg/L	95
		570.1 -> 483.0	9326		
PFBA	2.595	212.8 -> 168.9	277145	106.49 µg/L	100
PFBS	5.117	298.7 -> 79.9	58728	24.76 µg/L	99
		298.7 -> 98.8	22646		
PFDA	7.968	512.9 -> 469.0	169914	26.29 µg/L	99
		512.9 -> 219.0	34137		
PFDoDA	8.856	613.1 -> 569.0	215507	25.96 µg/L	99
		613.1 -> 319.0	38407		
PFDS	8.995	599.0 -> 79.9	42607	25.74 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	21386			
PFHpA	6.230	363.1 -> 319.0	394678	27.22	µg/L	99
		363.1 -> 169.0	71462			
PFHpS	7.573	449.0 -> 79.9	64709	25.77	µg/L	90
		449.0 -> 98.9	32798			
PFHxA	5.263	313.0 -> 269.0	231133	27.57	µg/L	99
		313.0 -> 118.9	7446			
PFHxS	6.993	398.7 -> 79.9	40267	21.90	µg/L	m 97
		398.7 -> 98.9	21990			
PFNA	7.484	463.0 -> 419.0	206347	26.39	µg/L	97
		463.0 -> 219.0	48694			
PFNS	8.561	548.8 -> 79.9	30591	25.05	µg/L	92
		548.8 -> 98.9	15032			
PFOA	6.927	413.0 -> 369.0	345853	27.63	µg/L	99
		413.0 -> 169.0	70250			
PFOS	8.094	498.9 -> 79.9	68986	24.95	µg/L	m 99
		498.9 -> 98.8	33363			
PFPeA	4.089	263.0 -> 219.0	372902	53.78	µg/L	100
PFPeS	6.220	349.1 -> 79.9	49132	23.84	µg/L	99
		349.1 -> 98.9	21511			
PFTeDA	9.625	713.1 -> 669.0	201195	27.18	µg/L	98
		713.1 -> 168.9	20727			
PFTrDA	9.255	663.0 -> 619.0	235215	26.66	µg/L	99
		663.0 -> 168.9	32327			
PFUnDA	8.424	563.1 -> 519.0	193453	27.04	µg/L	100
		563.1 -> 269.1	41009			
11Cl-PF3OUdS	9.282	630.9 -> 450.9	359577	50.59	µg/L	100
		632.9 -> 452.9	111851			
9Cl-PF3ONS	8.426	530.8 -> 351.0	346045	48.00	µg/L	97
		532.8 -> 353.0	106830			
ADONA	6.506	376.9 -> 250.9	971995	54.39	µg/L	99
		376.9 -> 84.8	237243			
HFPO-DA	5.628	284.9 -> 168.9	125723	55.07	µg/L	98
		284.9 -> 184.9	12397			
3:3FTCA	3.536	241.0 -> 177.0	54651	134.34	µg/L	99
		241.0 -> 117.0	4748			
5:3FTCA	5.943	341.0 -> 237.1	1006667	692.00	µg/L	99
		341.0 -> 217.0	723879			
7:3FTCA	7.499	441.0 -> 316.9	450941	688.13	µg/L	91
		441.0 -> 336.9	1050934			
EtFOSA	11.399	526.0 -> 219.0	118752	55.77	µg/L	100
		526.0 -> 169.0	163947			
EtFOSE	11.320	630.0 -> 58.9	152715	133.03	µg/L	100
MeFOSA	11.115	511.9 -> 219.0	81166	50.74	µg/L	m 100
		511.9 -> 169.0	120149			
MeFOSE	11.035	616.1 -> 58.9	153818	138.59	µg/L	100
PFDoDS	9.752	699.1 -> 79.9	33706	27.65	µg/L	95
		699.1 -> 98.8	18974			
NFDHA	5.141	295.0 -> 201.0	33836	46.90	µg/L	98
		295.0 -> 84.9	8376			
PFMBA	4.491	279.0 -> 85.1	202603	52.99	µg/L	100
PFMPA	3.240	229.0 -> 84.9	231479	52.86	µg/L	100
PFEESA	5.647	314.8 -> 134.9	324064	49.12	µg/L	100
		314.8 -> 82.9	10862			

= Qualifier out of range, m = manually integrated, + = Area summed

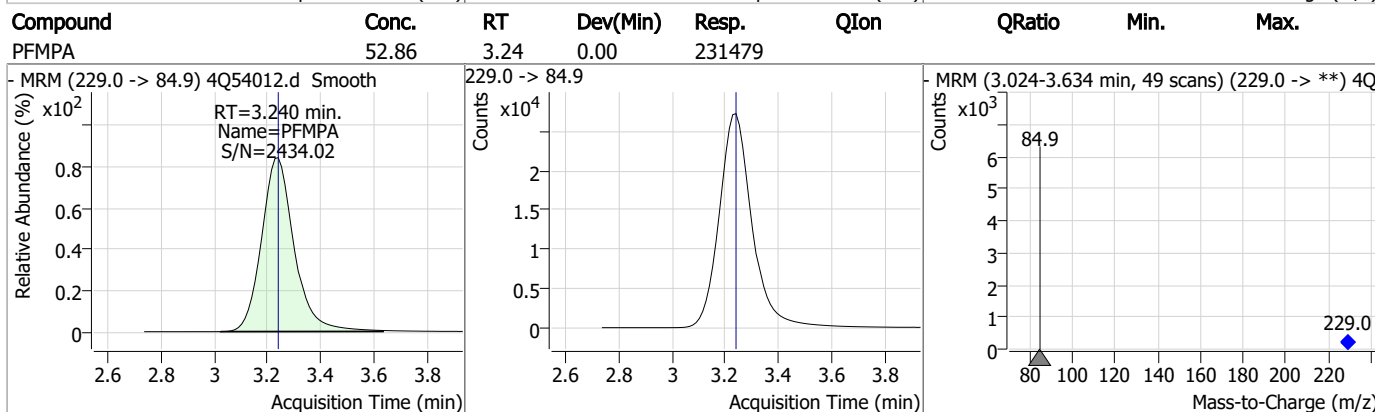
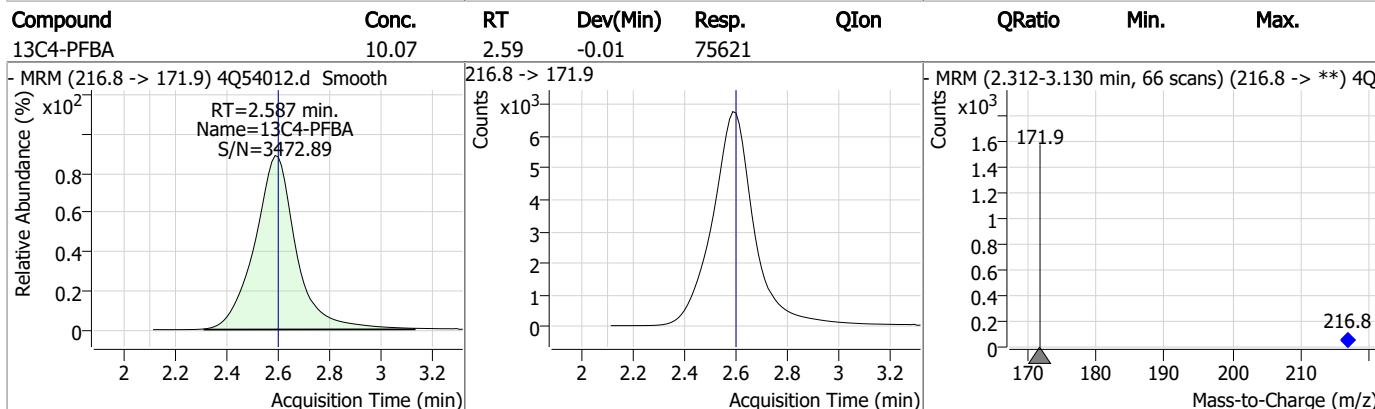
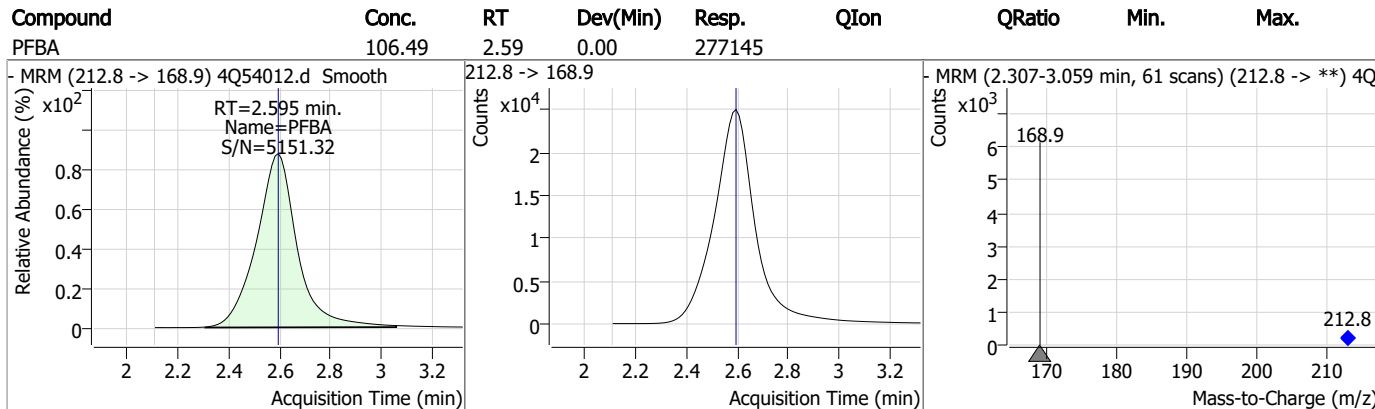
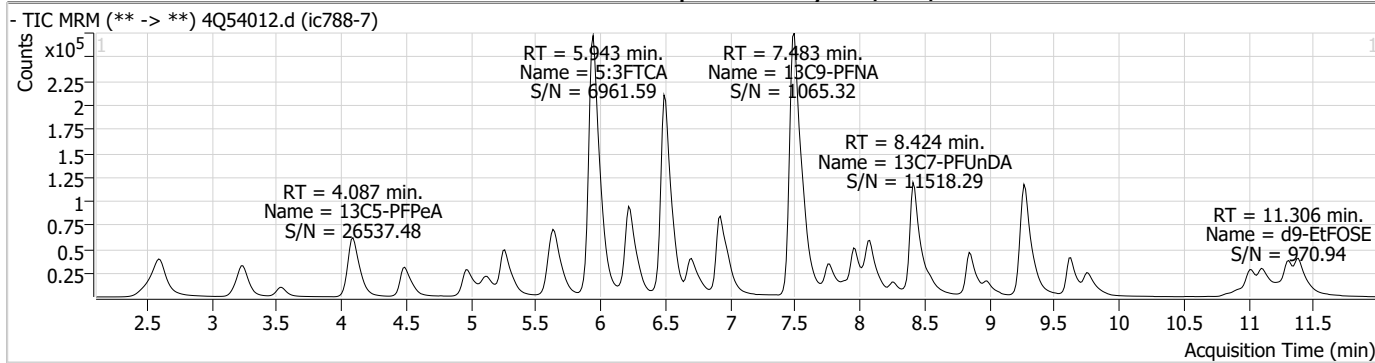
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.23
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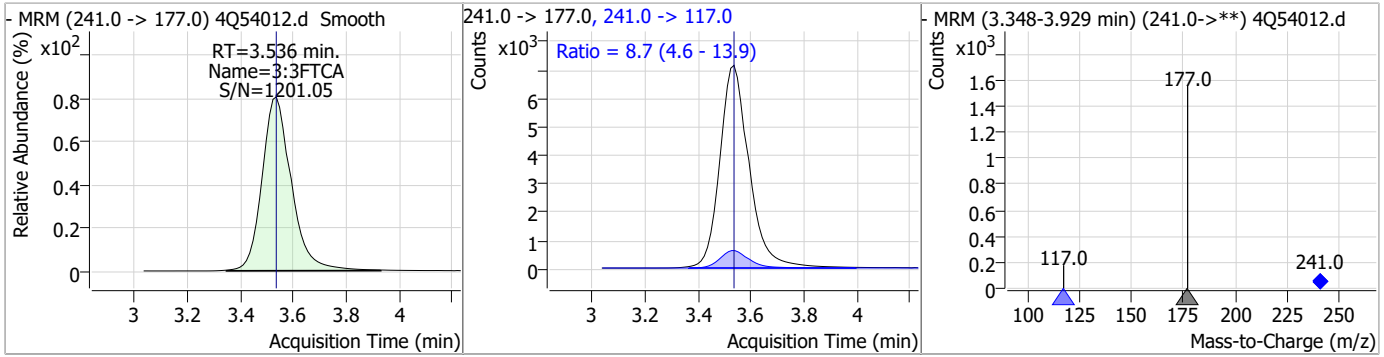
Perfluorinated Compounds by LC/MS/MS



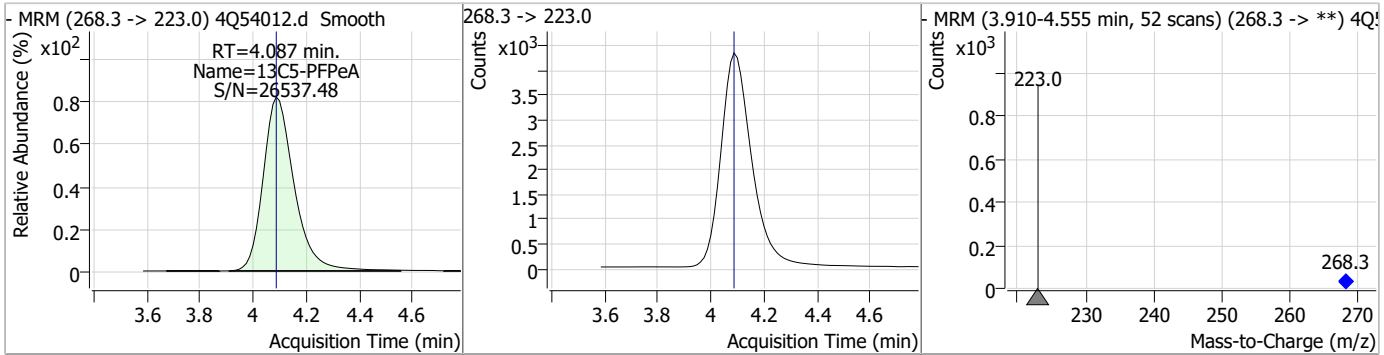
7.7.23
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Perfluorinated Compounds by LC/MS/MS

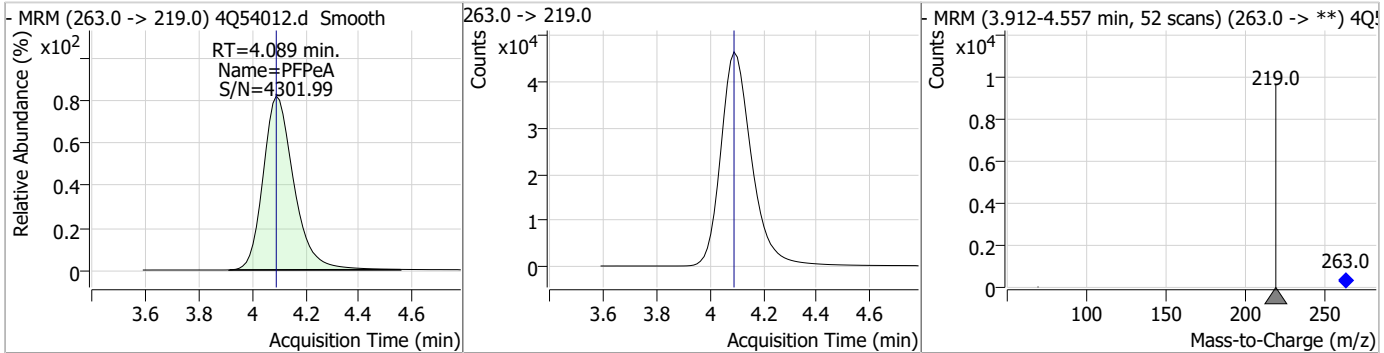
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	134.34	3.54	0.00	54651	241.0 -> 117.0	8.7	4.6	13.9



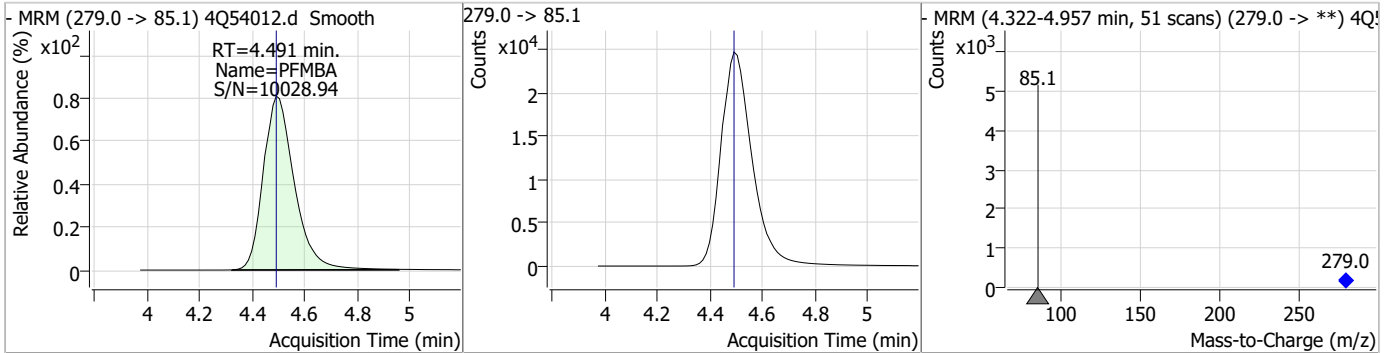
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.00	4.09	0.00	34903				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	53.78	4.09	0.00	372902				

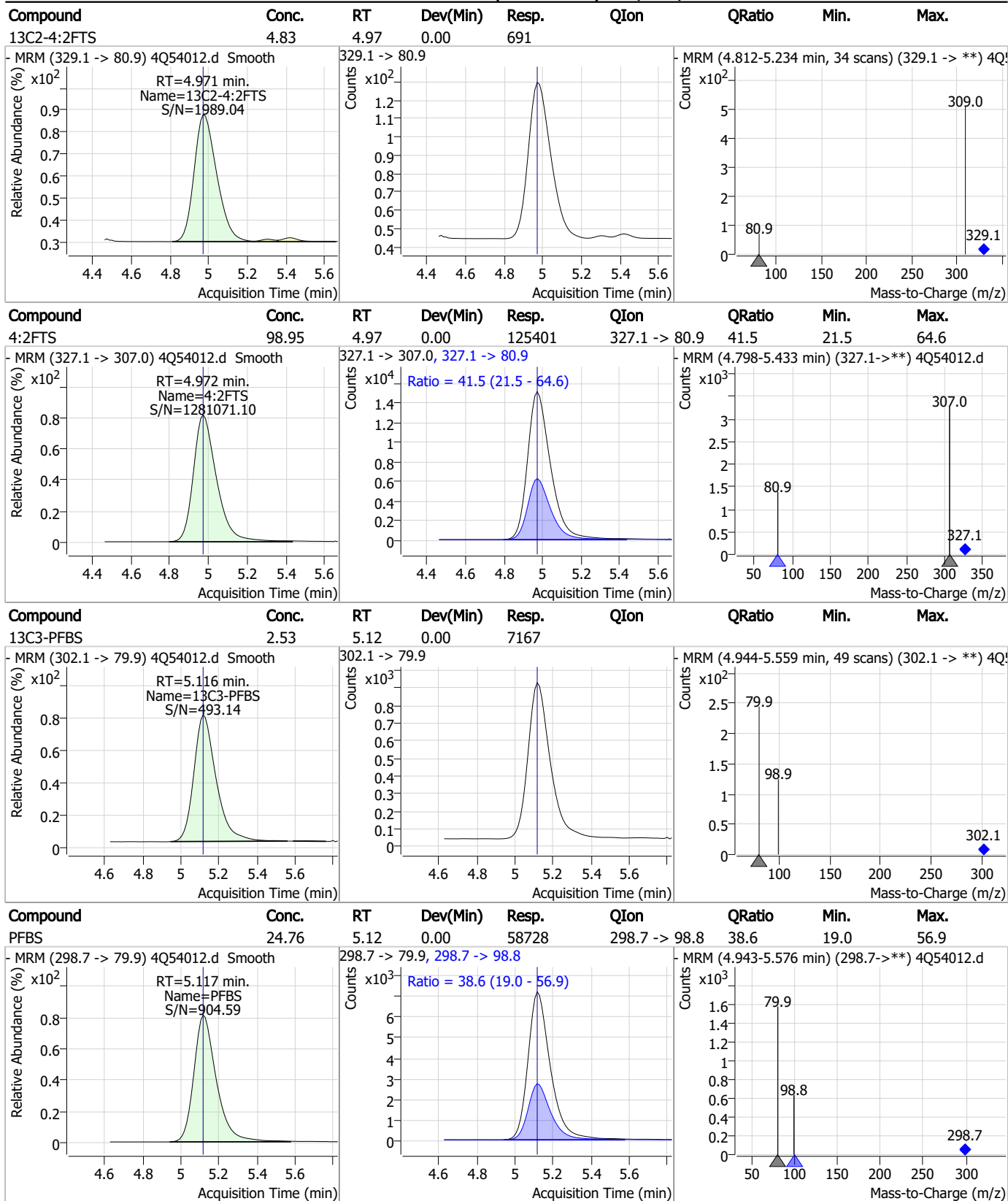


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	52.99	4.49	0.00	202603				



7.7.23
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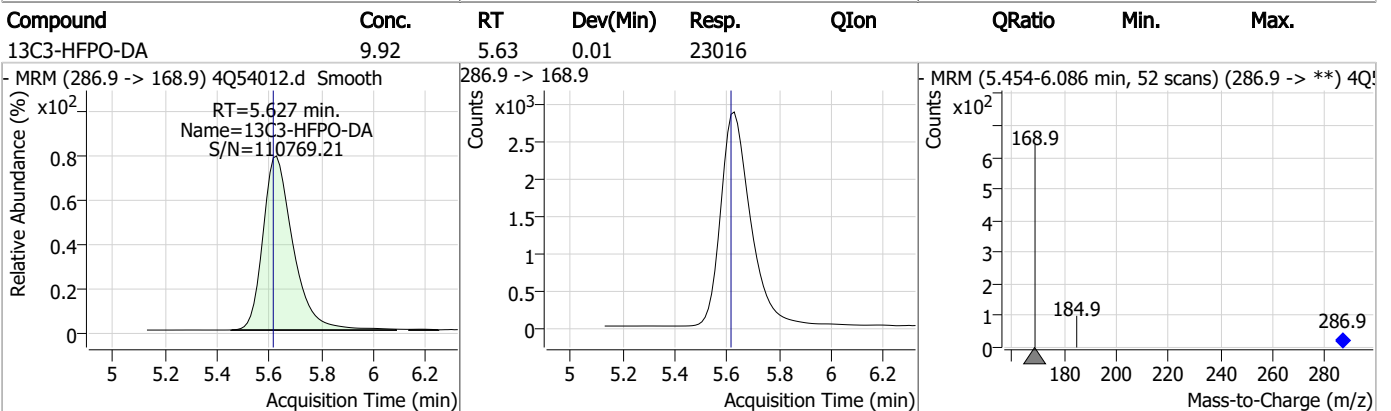
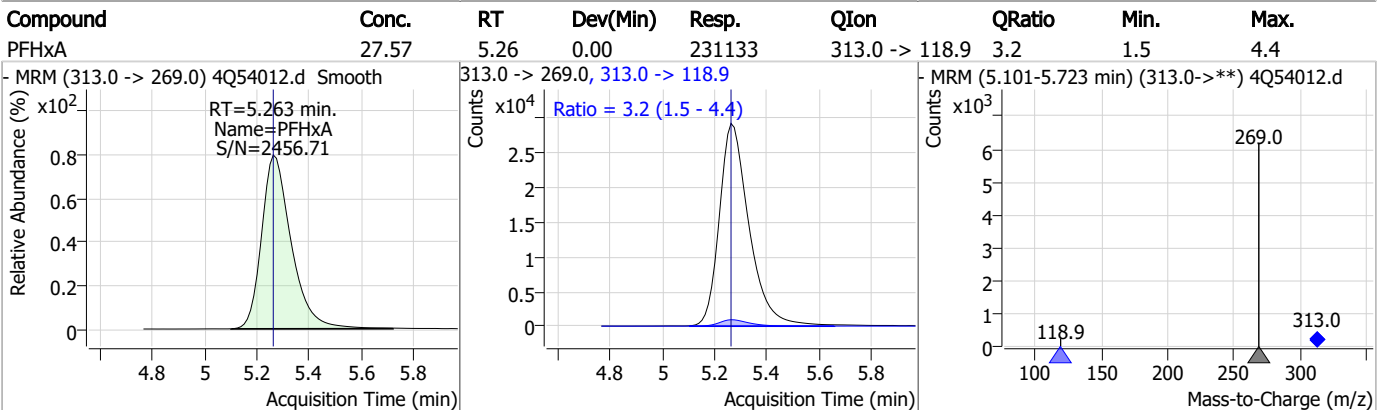
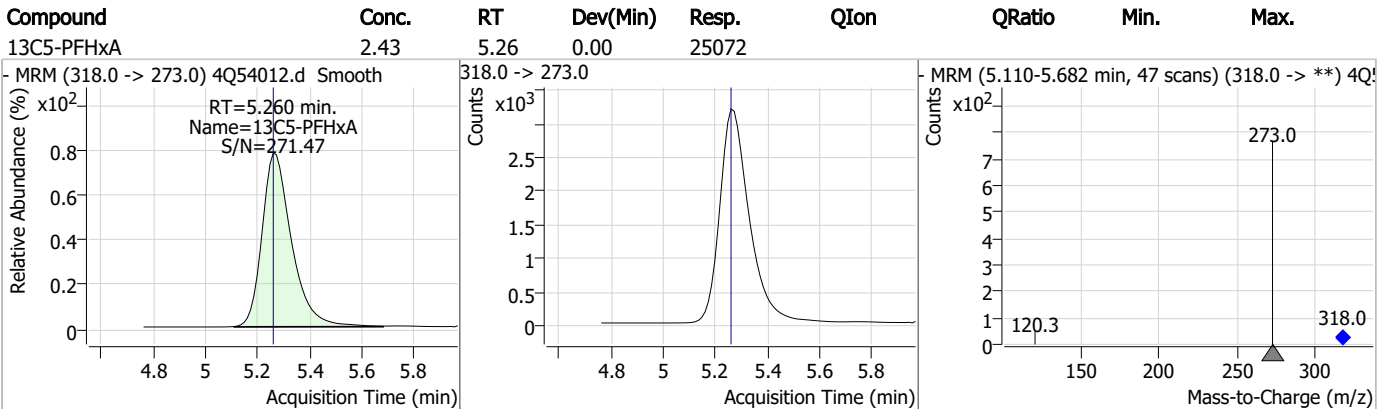
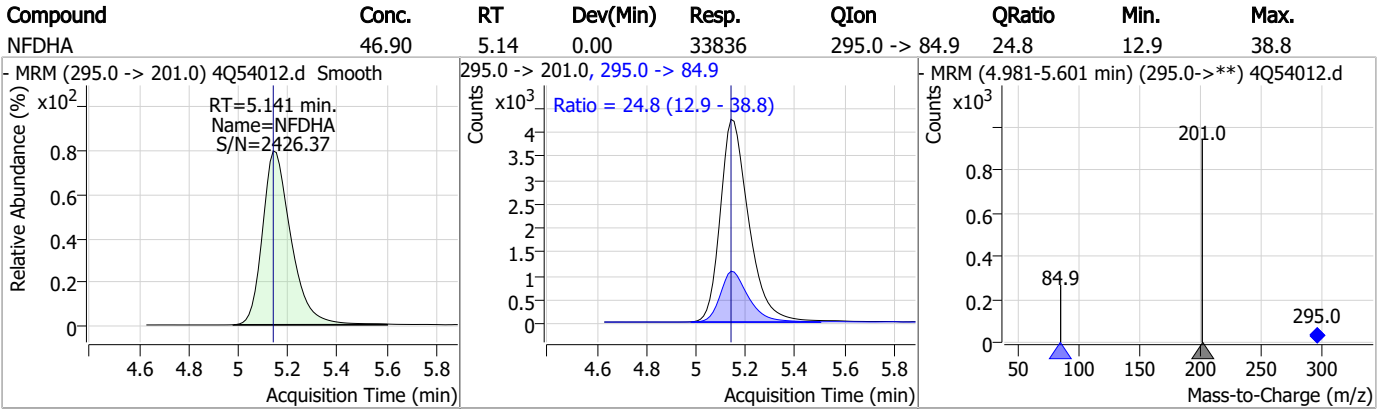
Perfluorinated Compounds by LC/MS/MS



7.7.23

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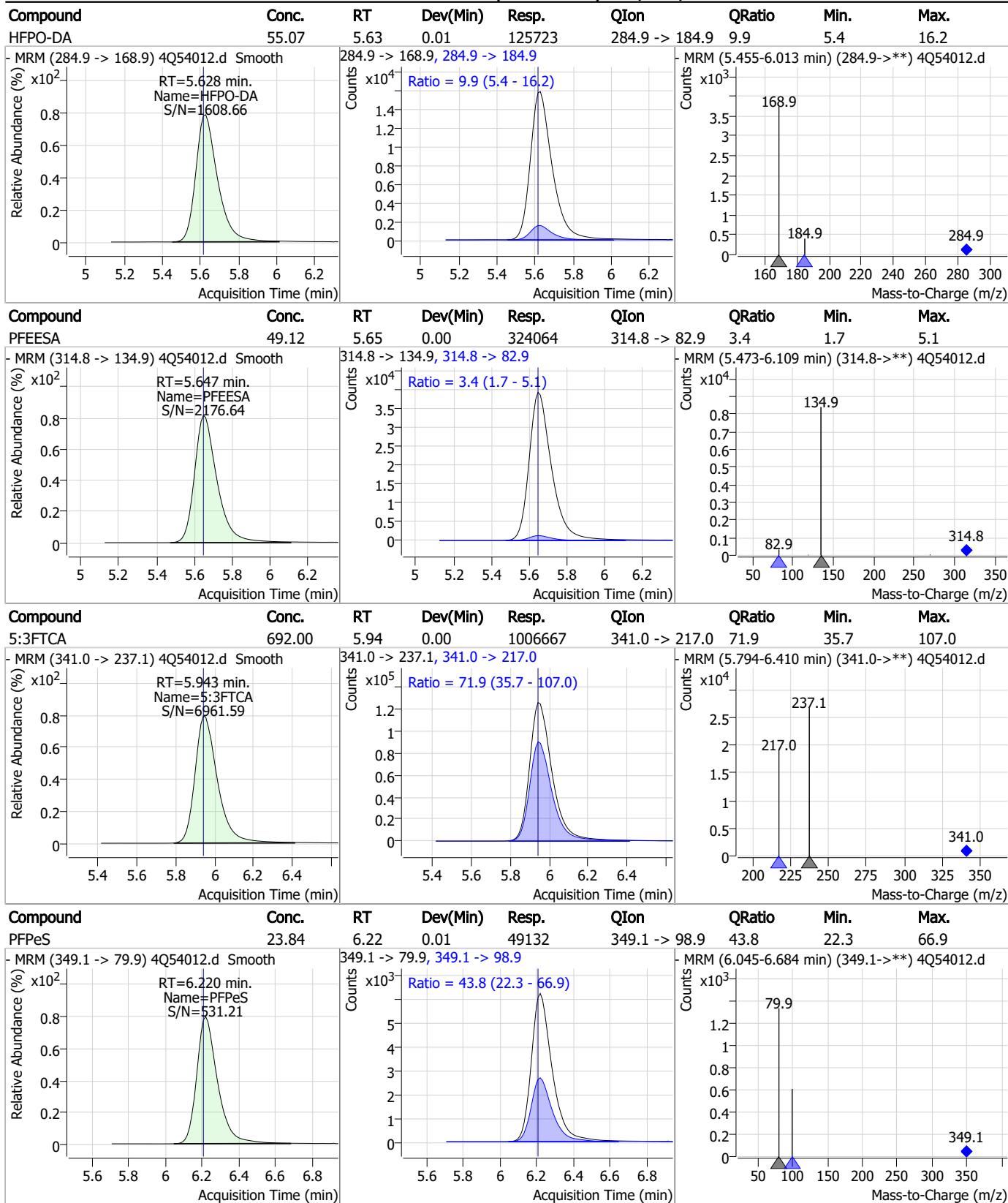
Perfluorinated Compounds by LC/MS/MS



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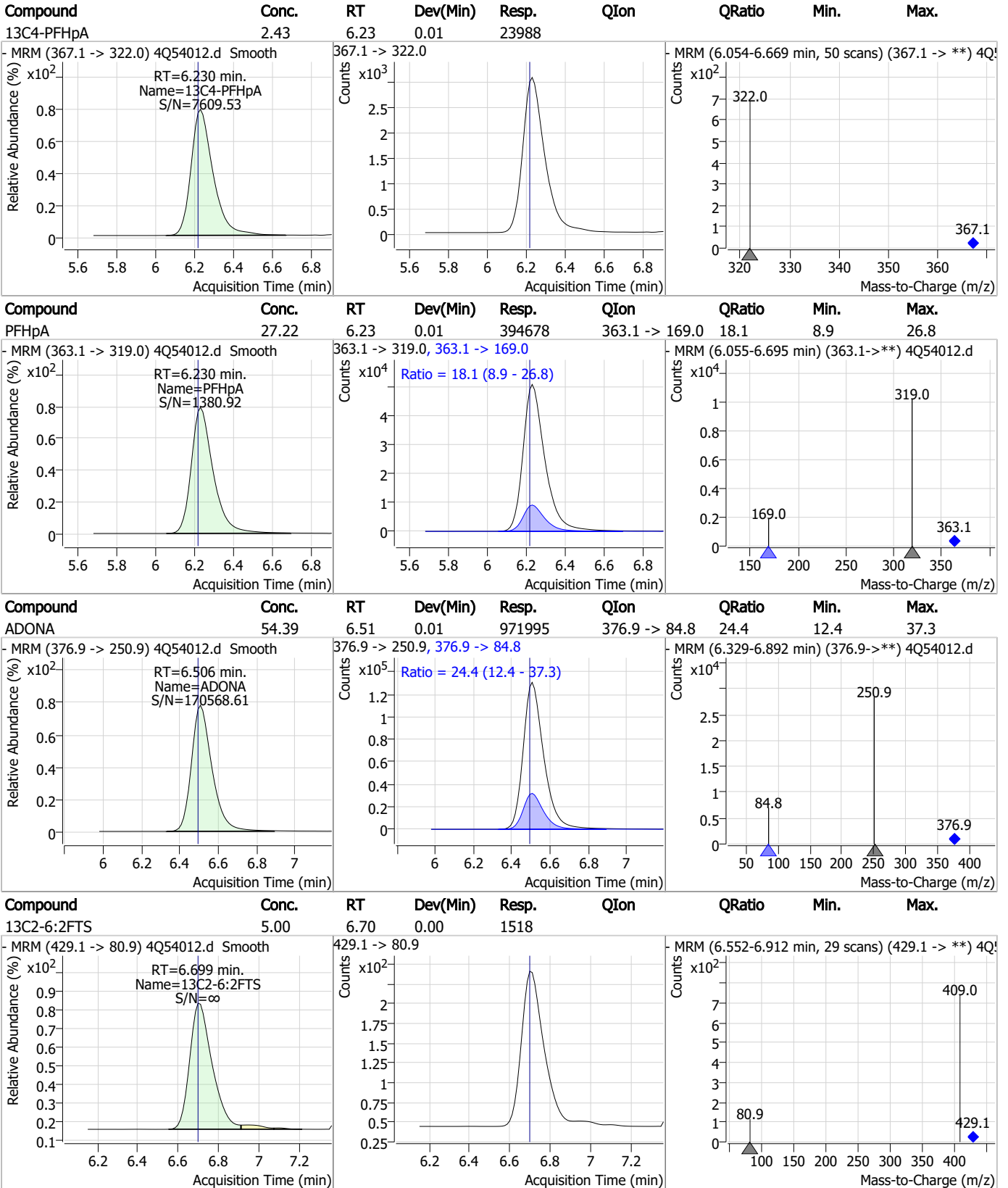
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

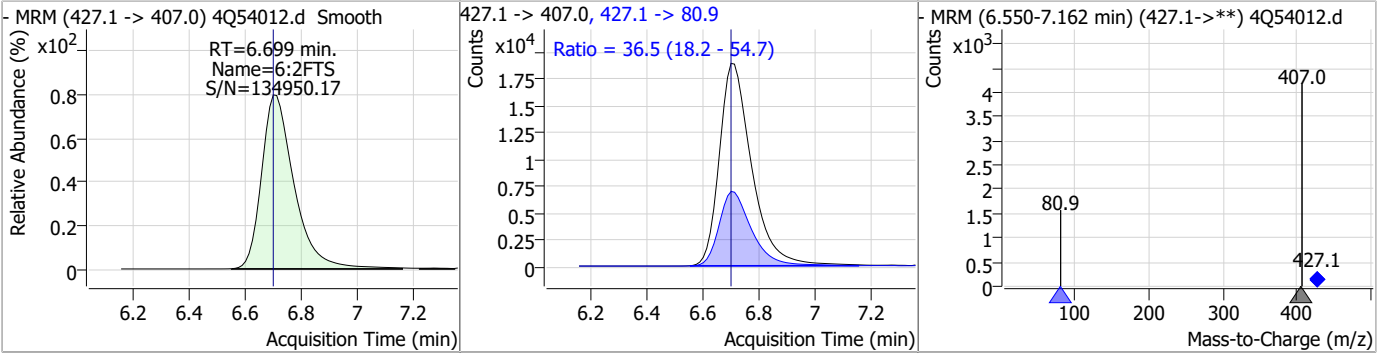


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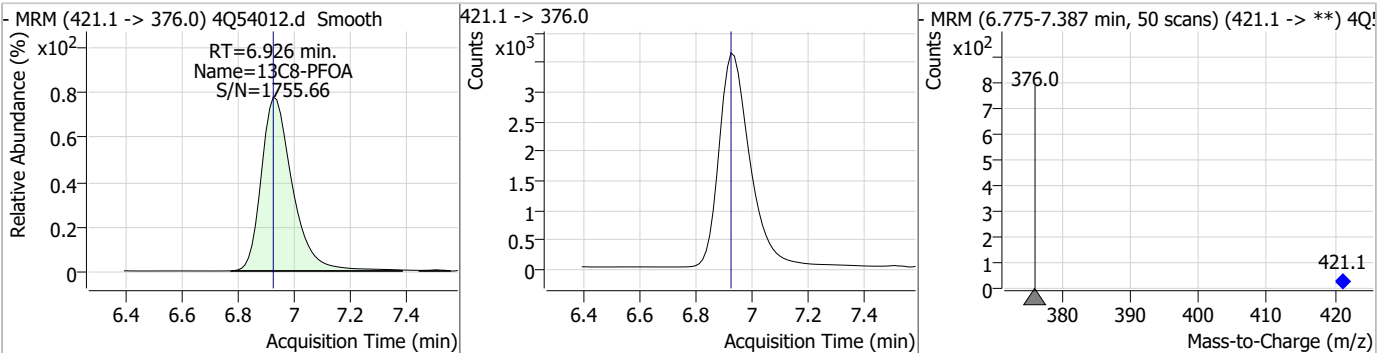


Perfluorinated Compounds by LC/MS/MS

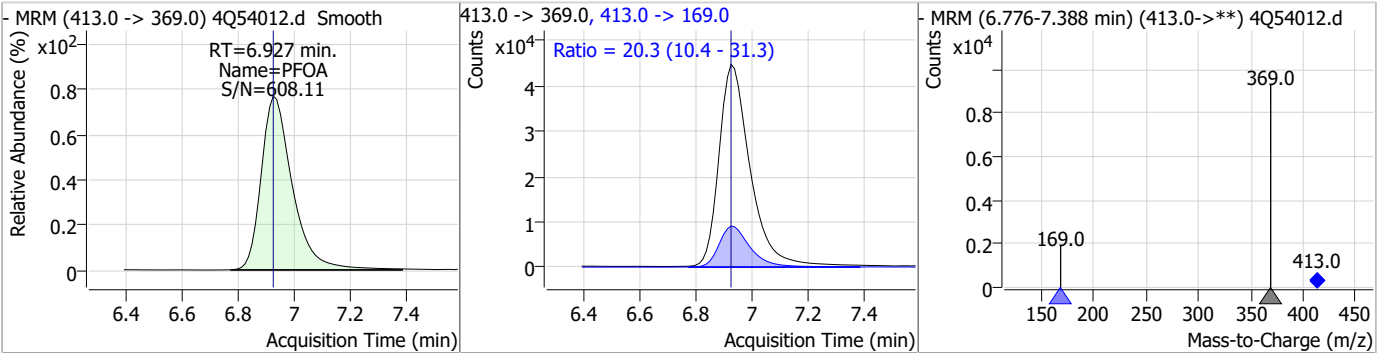
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
6:2FTS	97.54	6.70	0.00	153979	427.1 -> 80.9	36.5	18.2	54.7



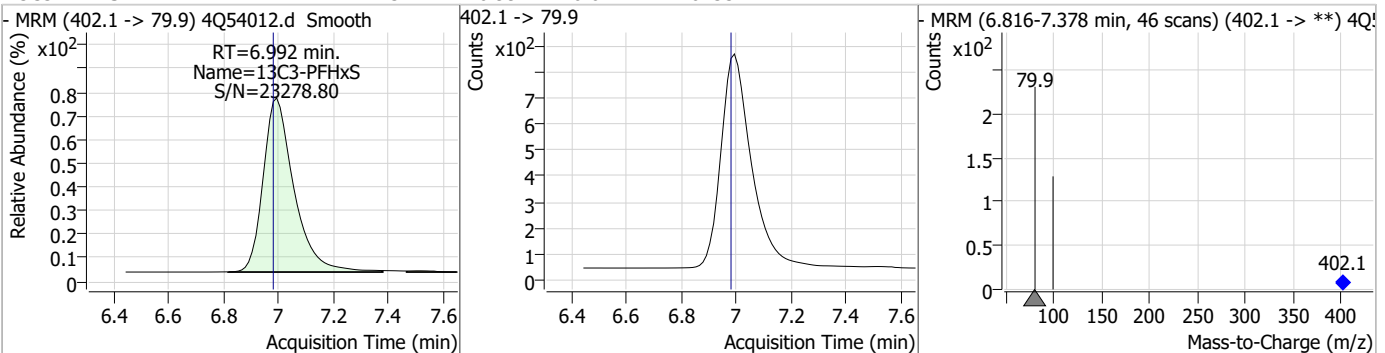
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	2.48	6.93	0.00	28124				



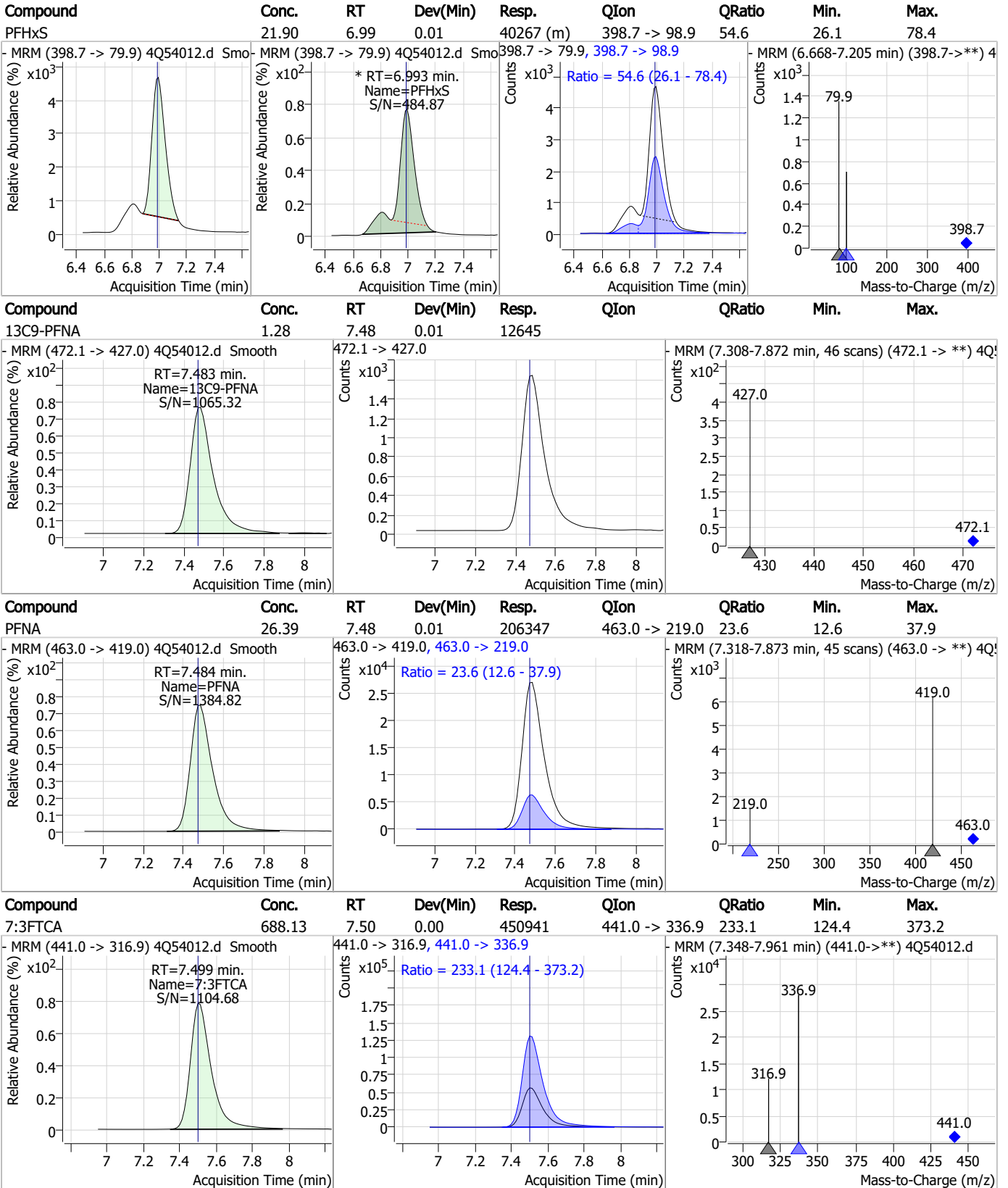
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	27.63	6.93	0.00	345853	413.0 -> 169.0	20.3	10.4	31.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	2.73	6.99	0.01	6433				



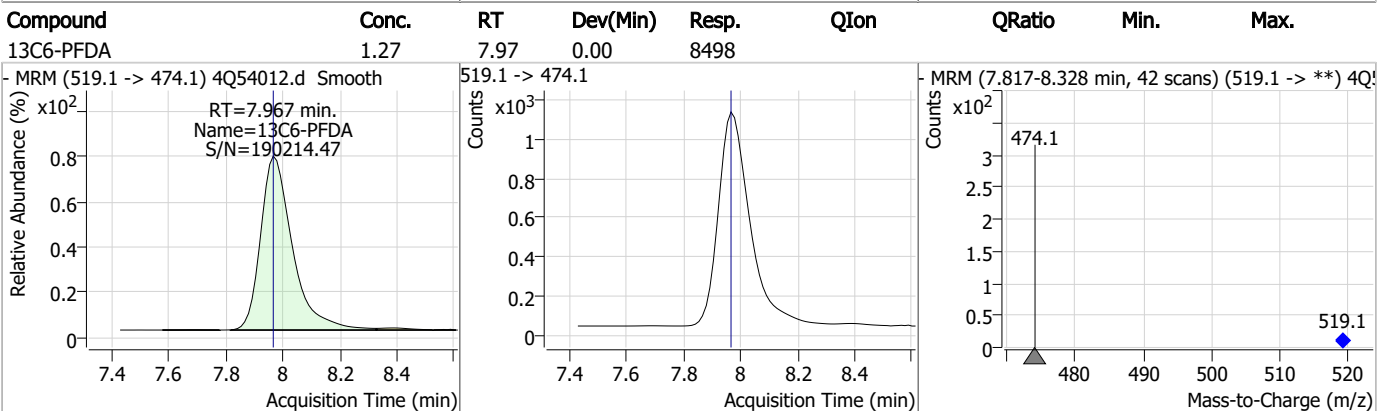
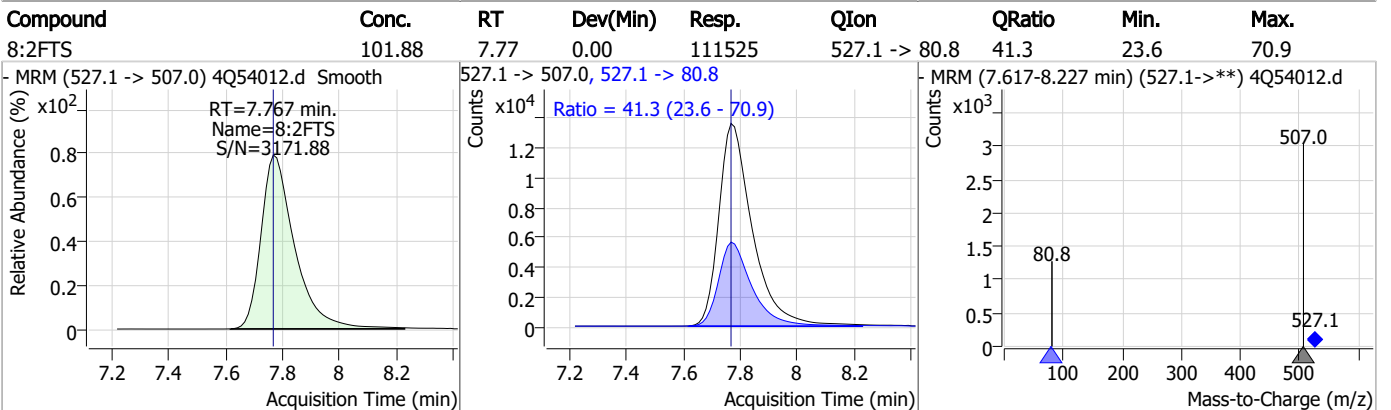
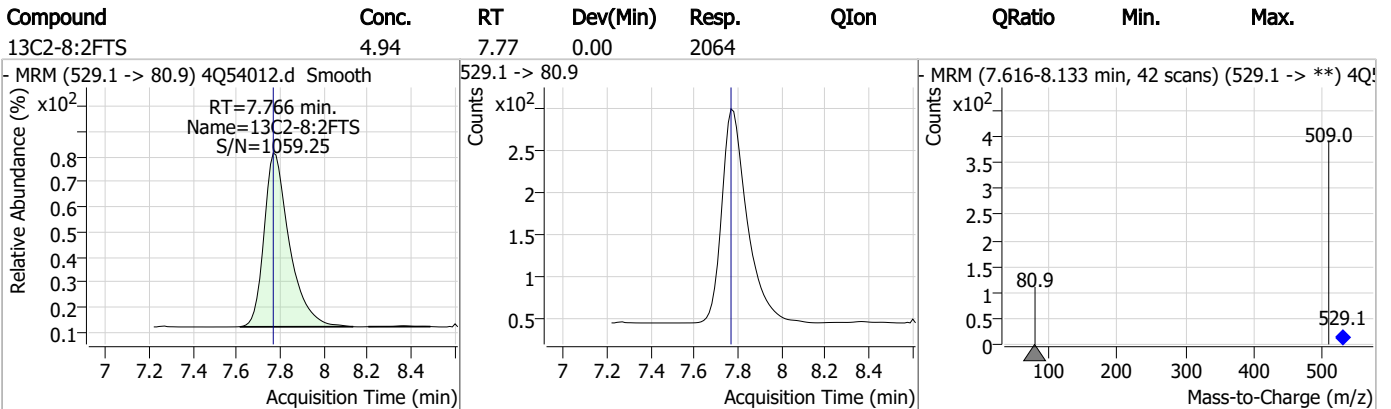
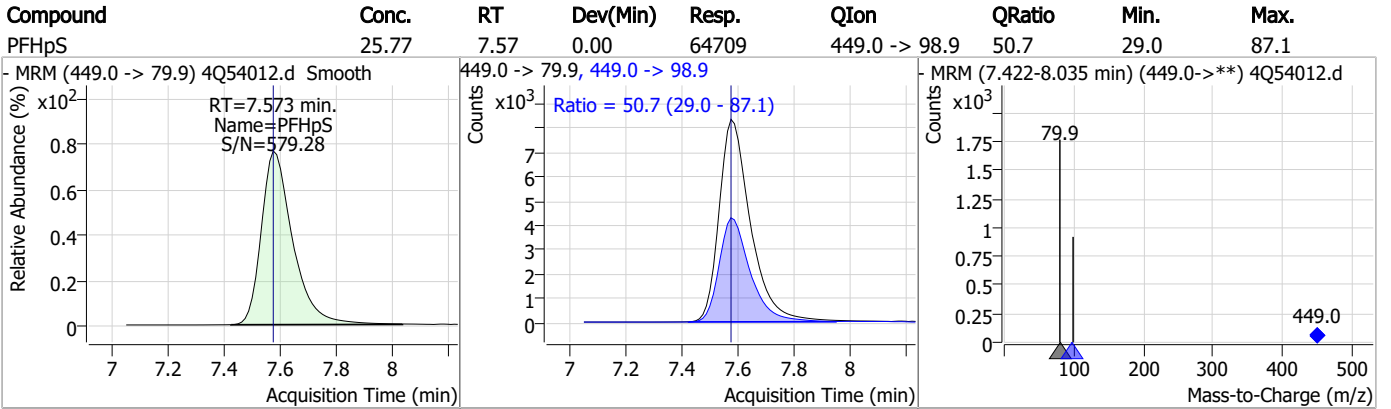
Perfluorinated Compounds by LC/MS/MS



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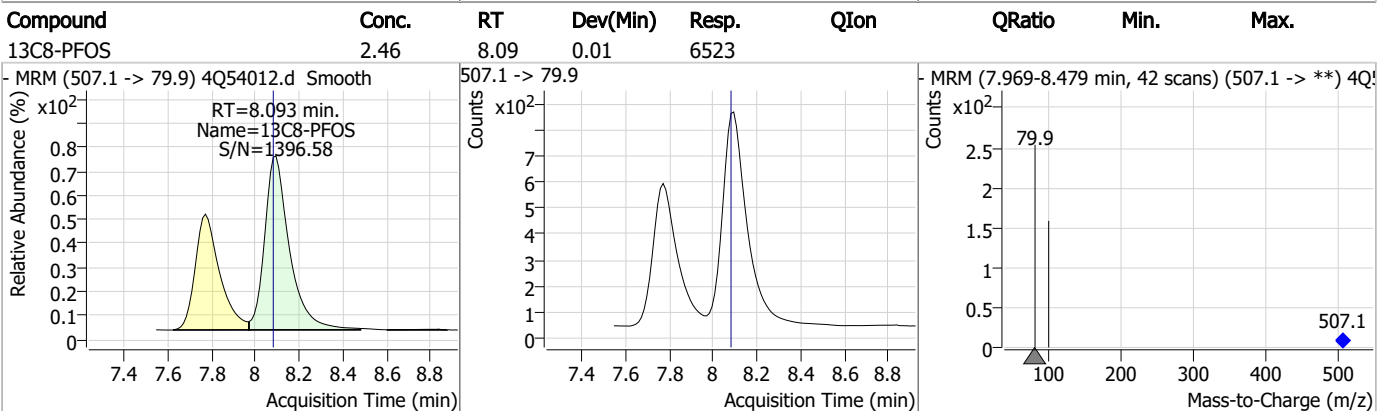
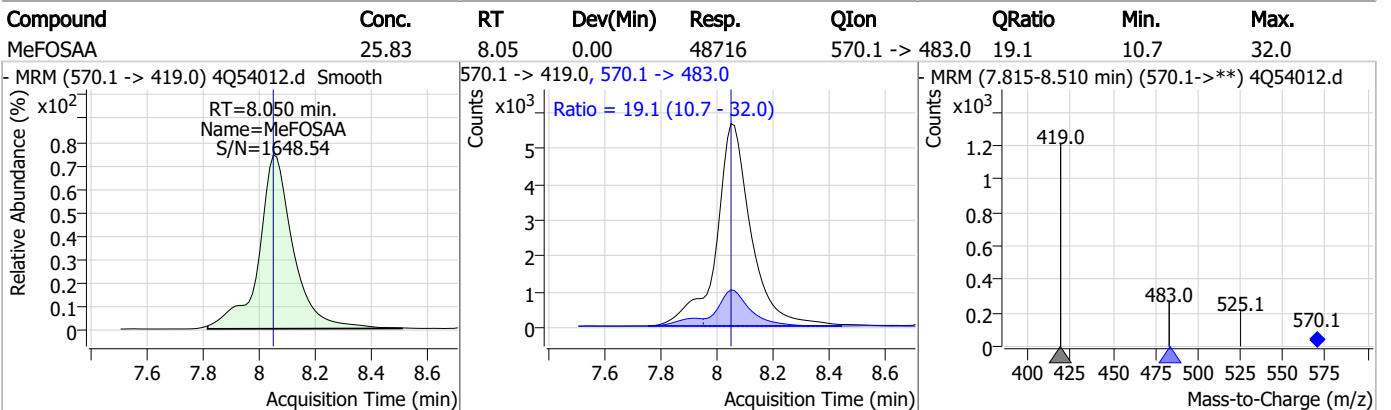
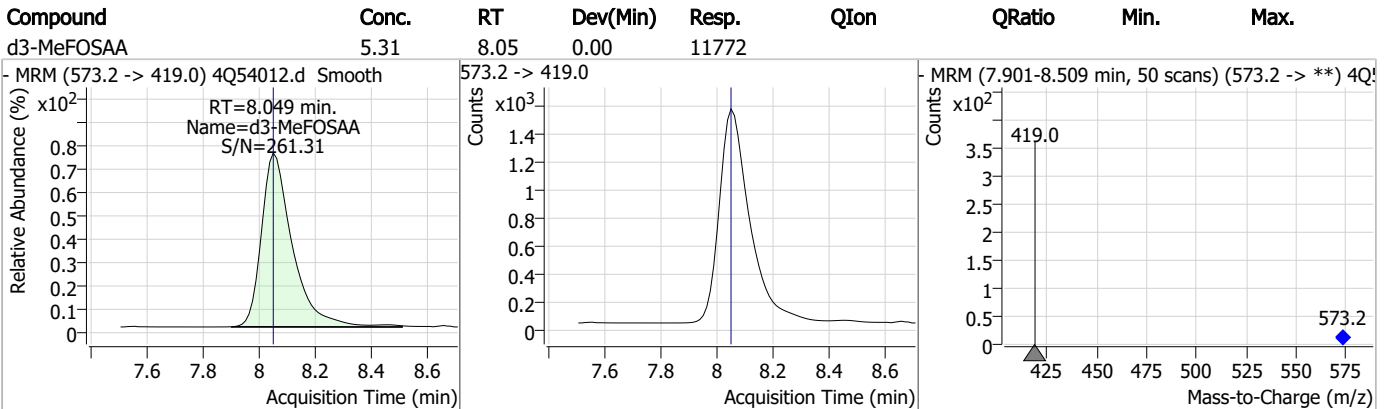
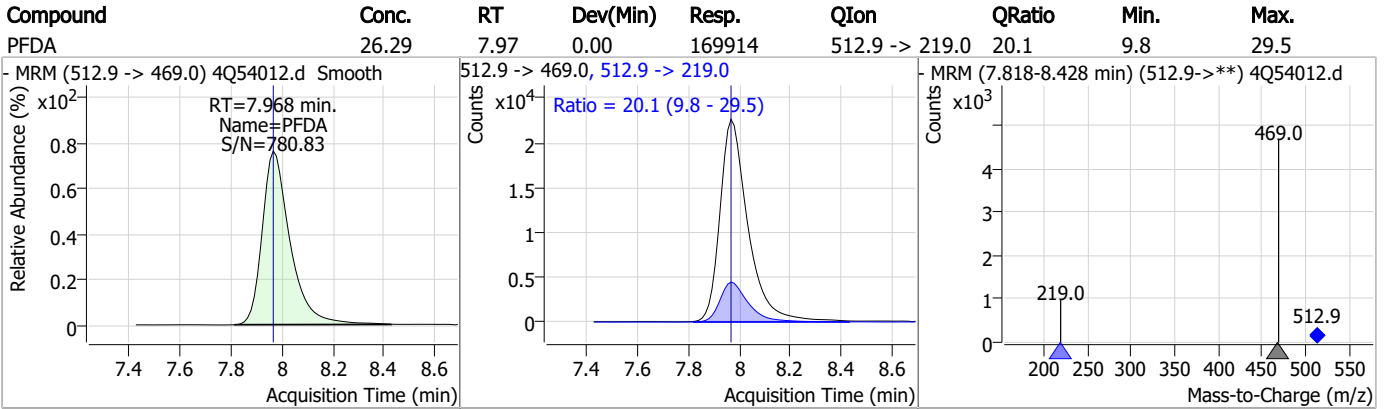
Perfluorinated Compounds by LC/MS/MS



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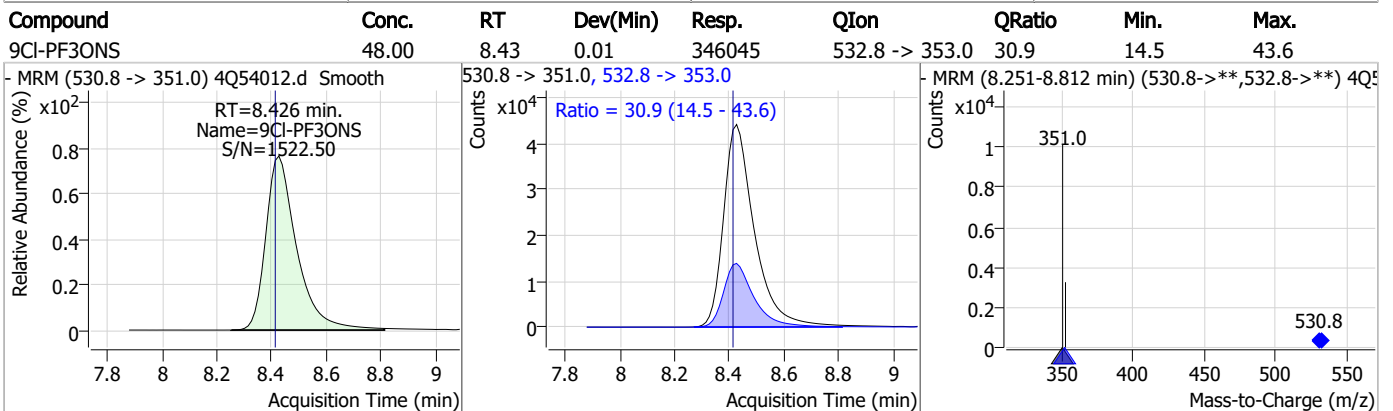
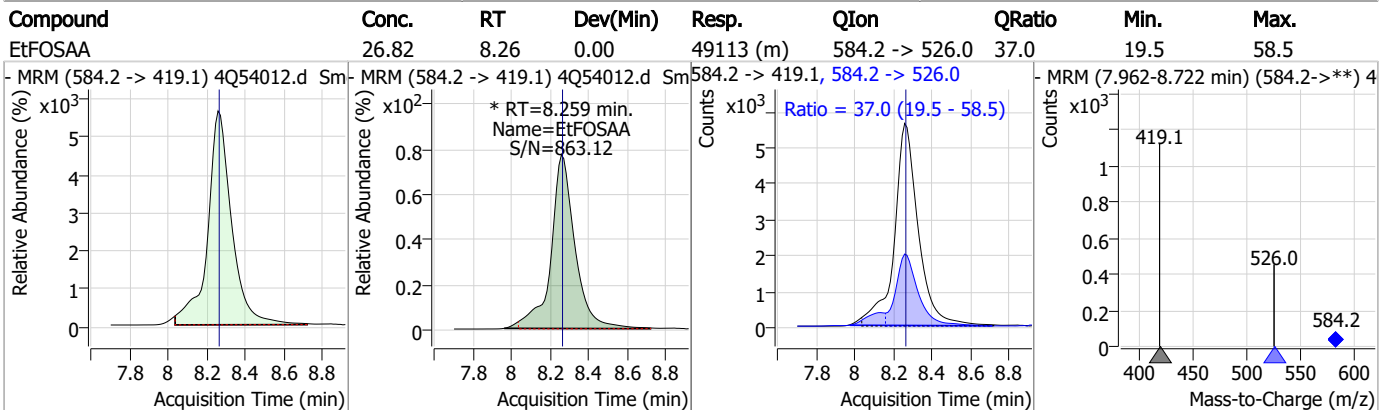
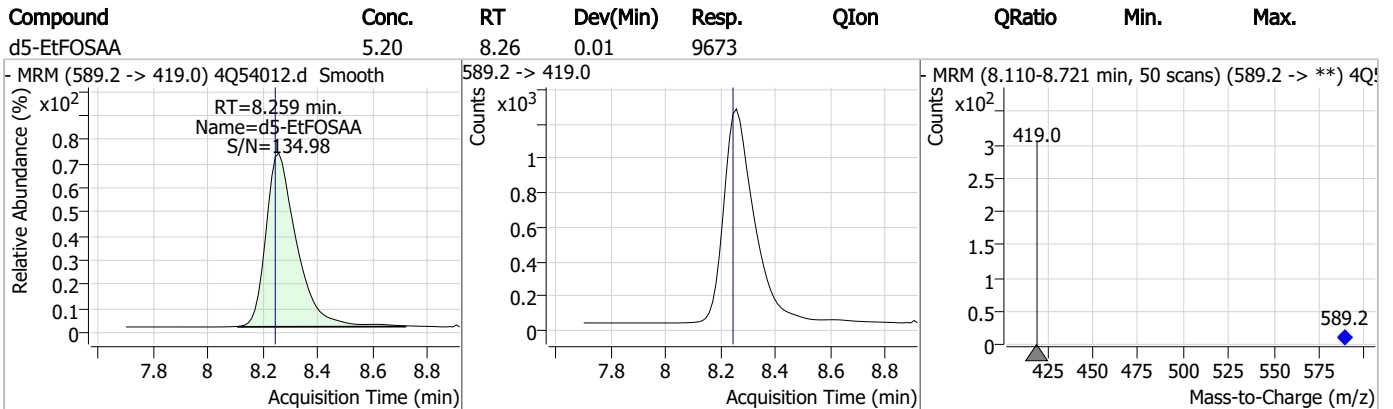
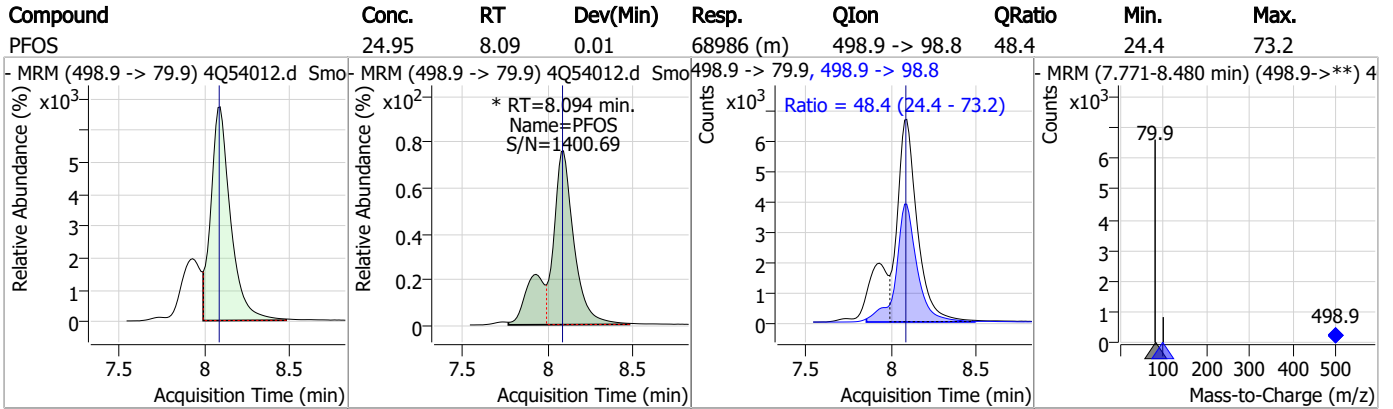


Perfluorinated Compounds by LC/MS/MS



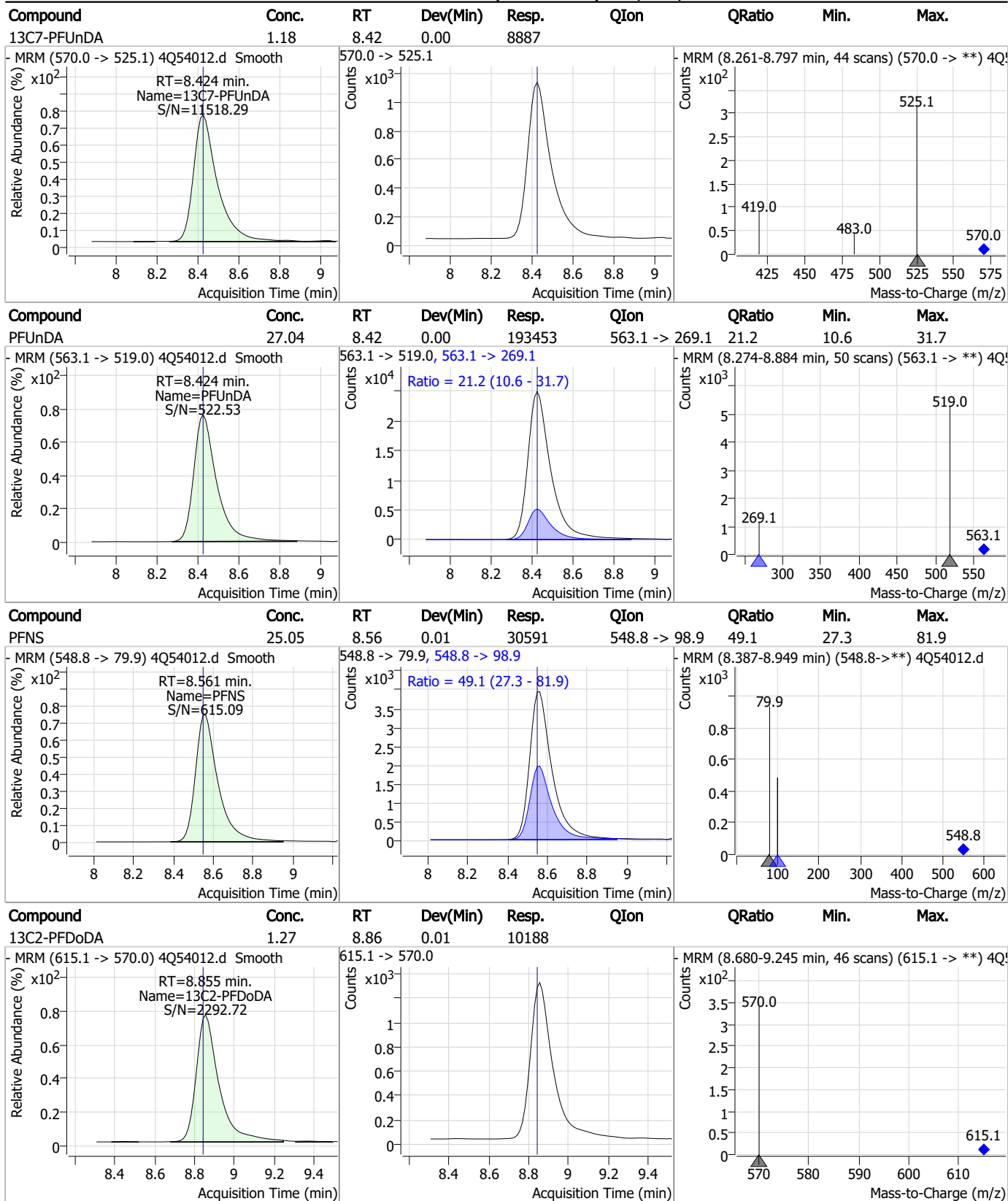
7.7.23 7

Perfluorinated Compounds by LC/MS/MS



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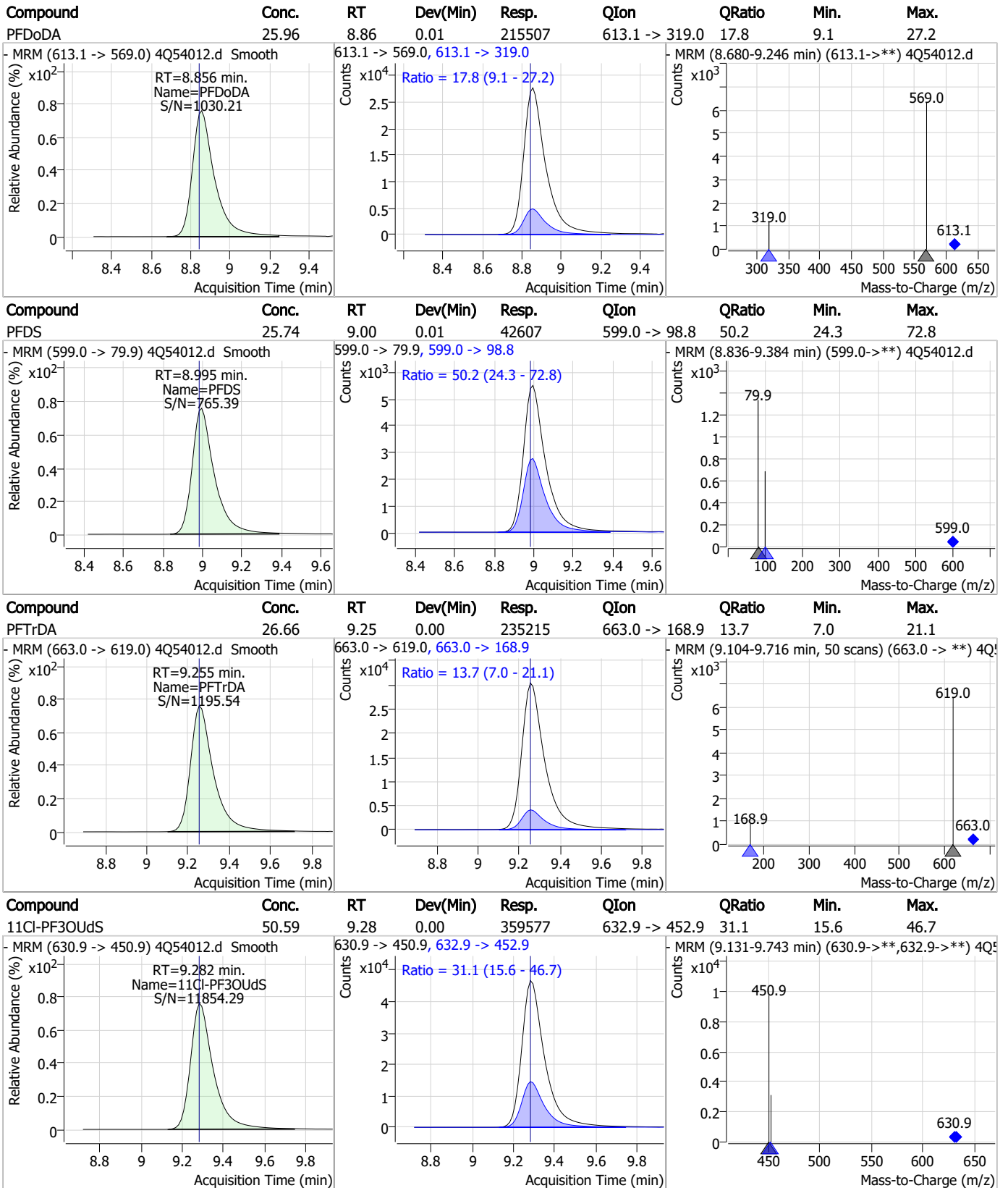
Perfluorinated Compounds by LC/MS/MS



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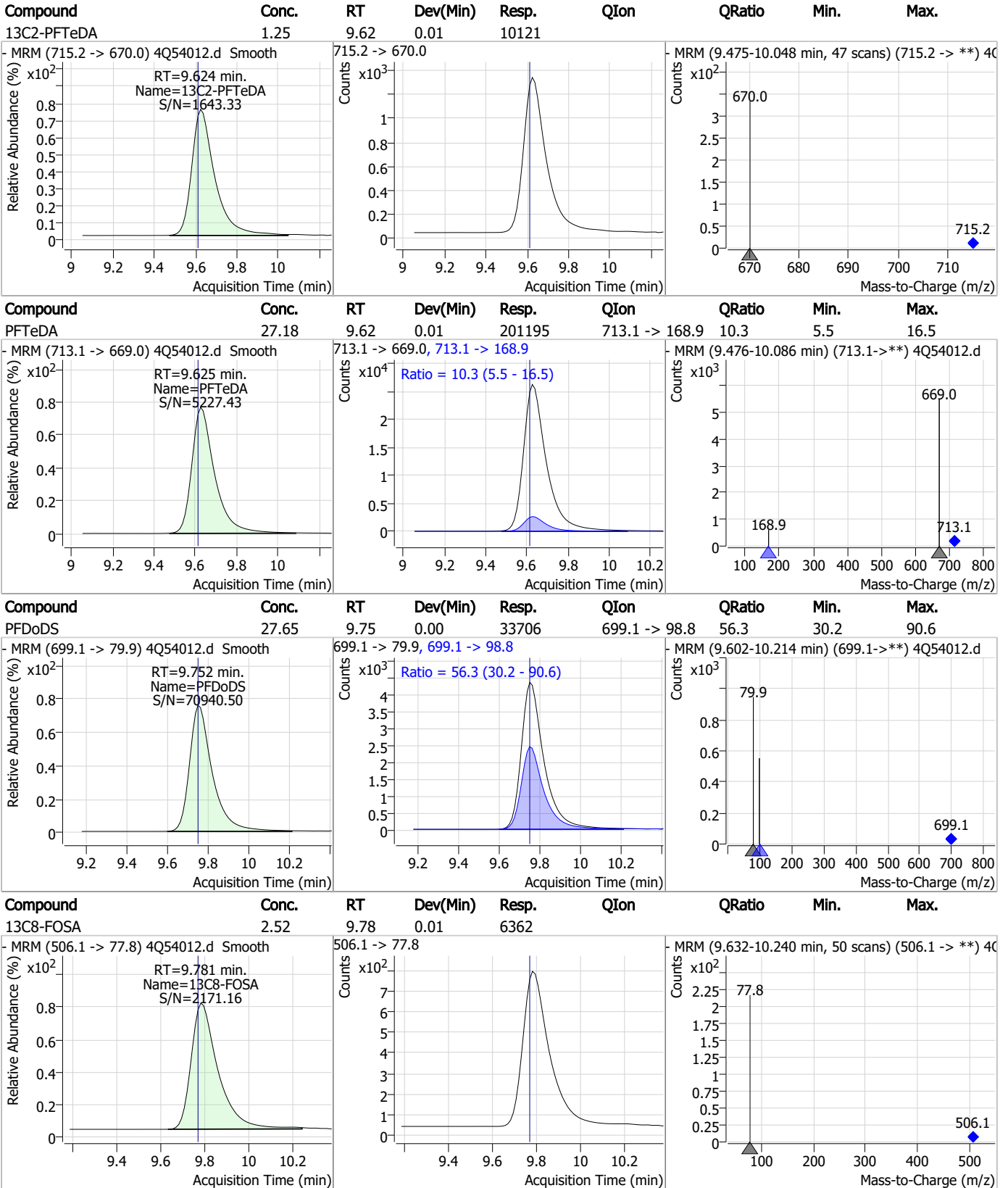


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



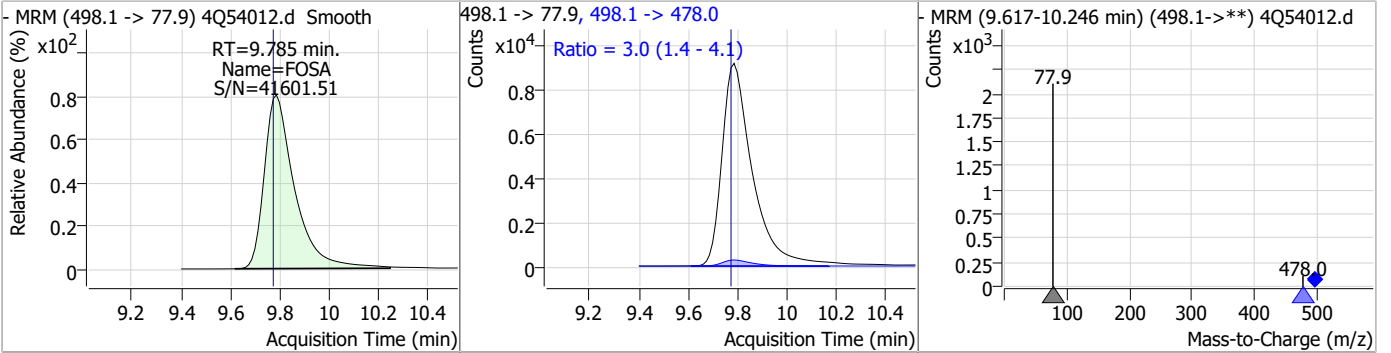
7.7.23

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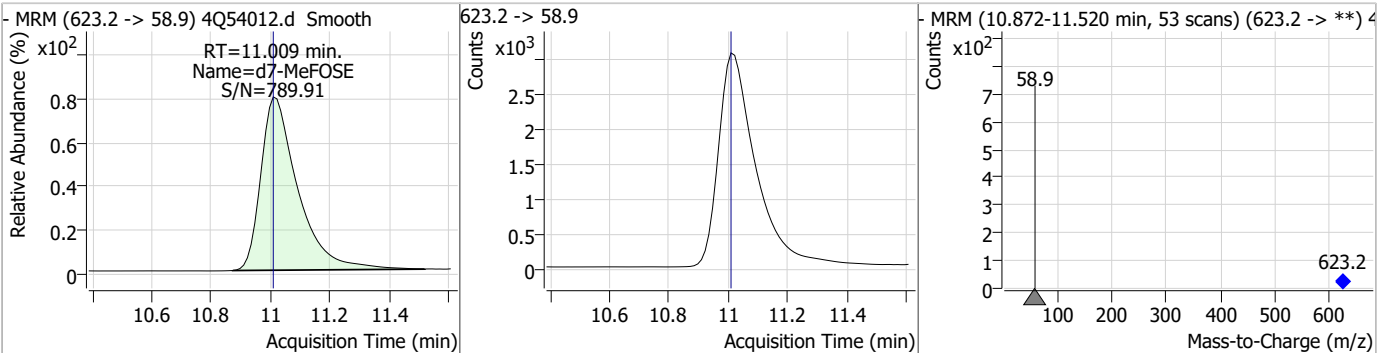


Perfluorinated Compounds by LC/MS/MS

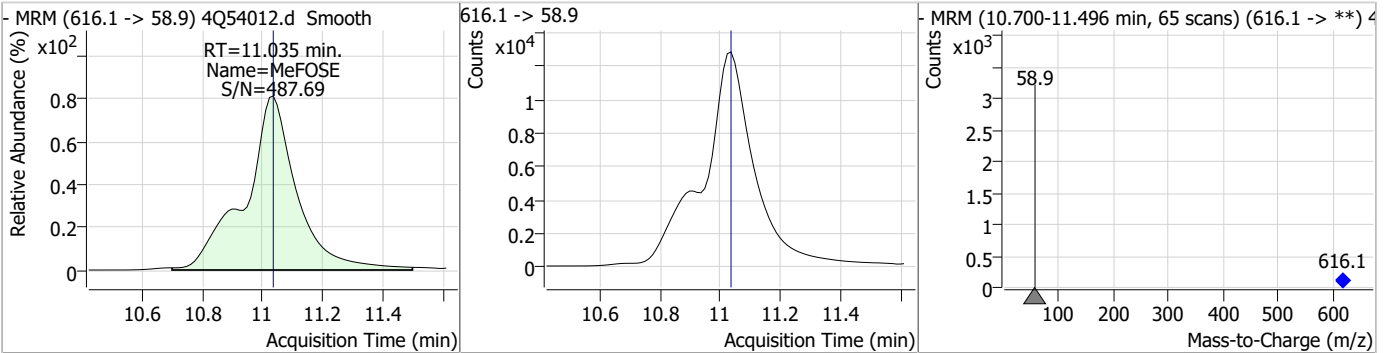
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	26.27	9.79	0.01	77567	498.1 -> 478.0	3.0	1.4	4.1



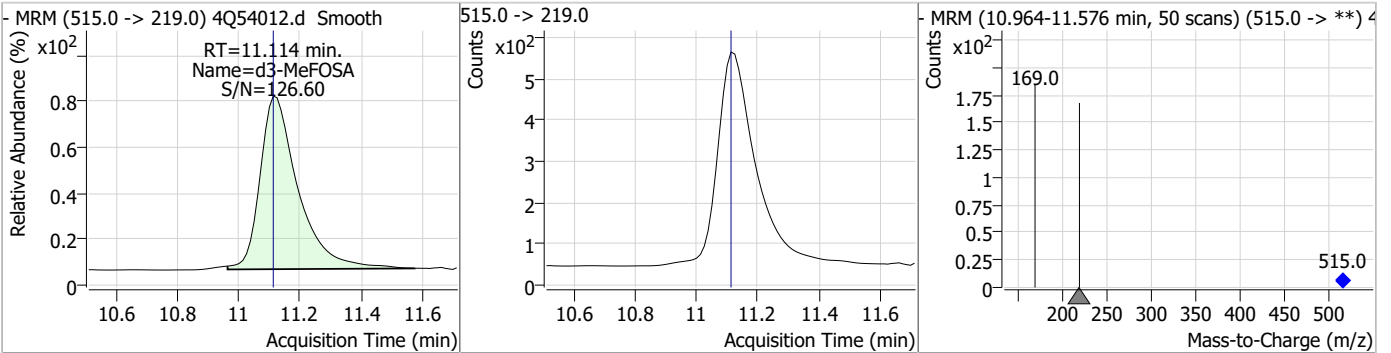
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.30	11.01	0.00	26339	623.2 -> 58.9			



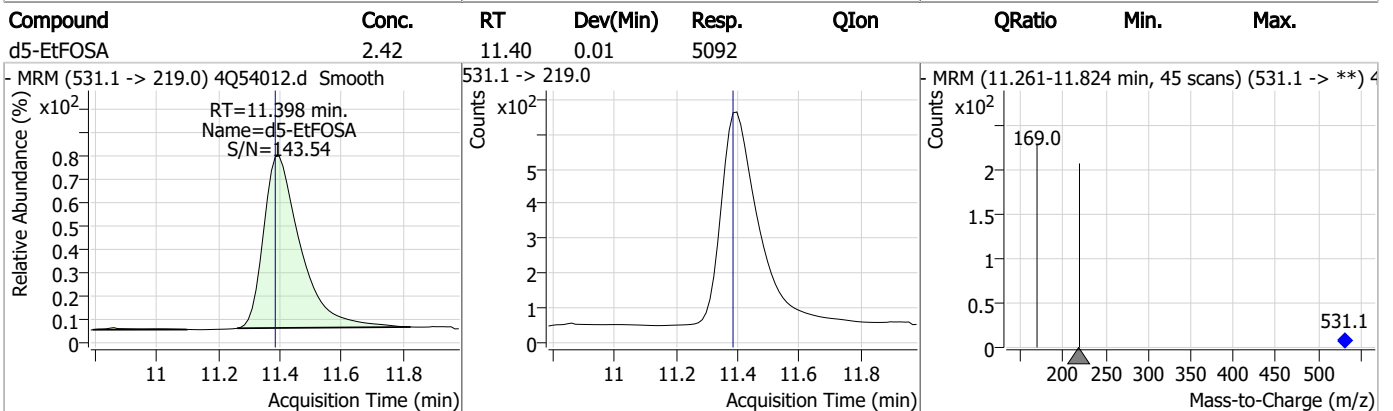
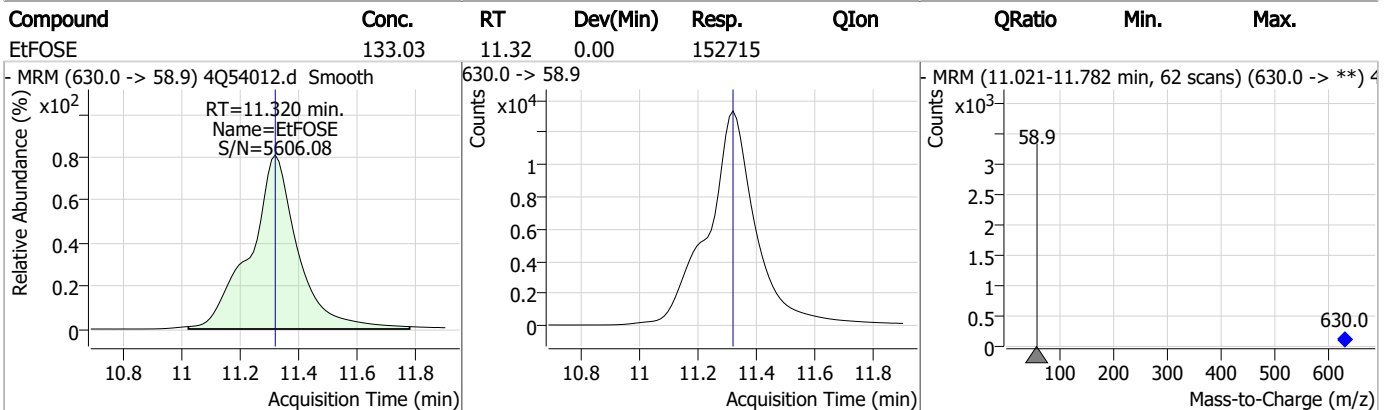
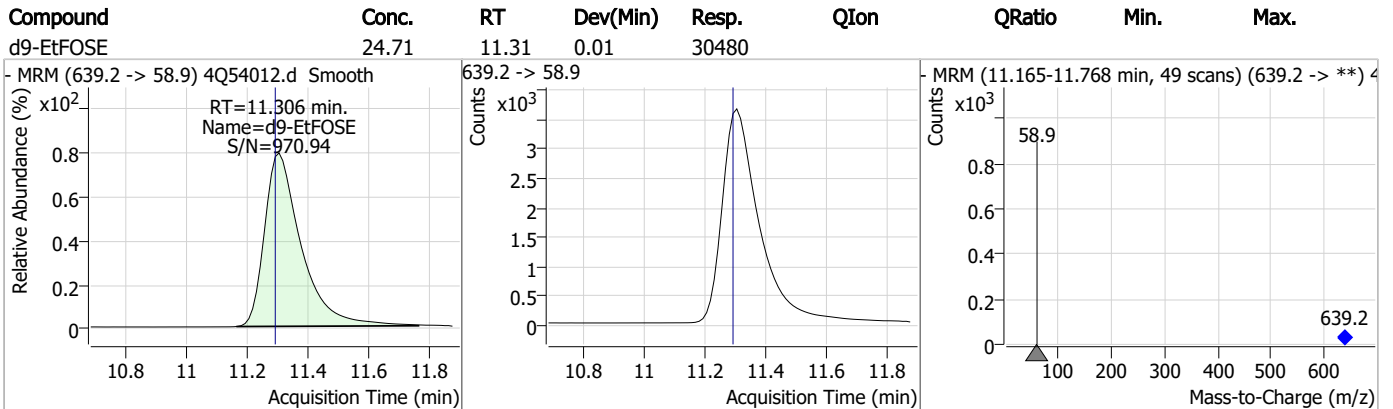
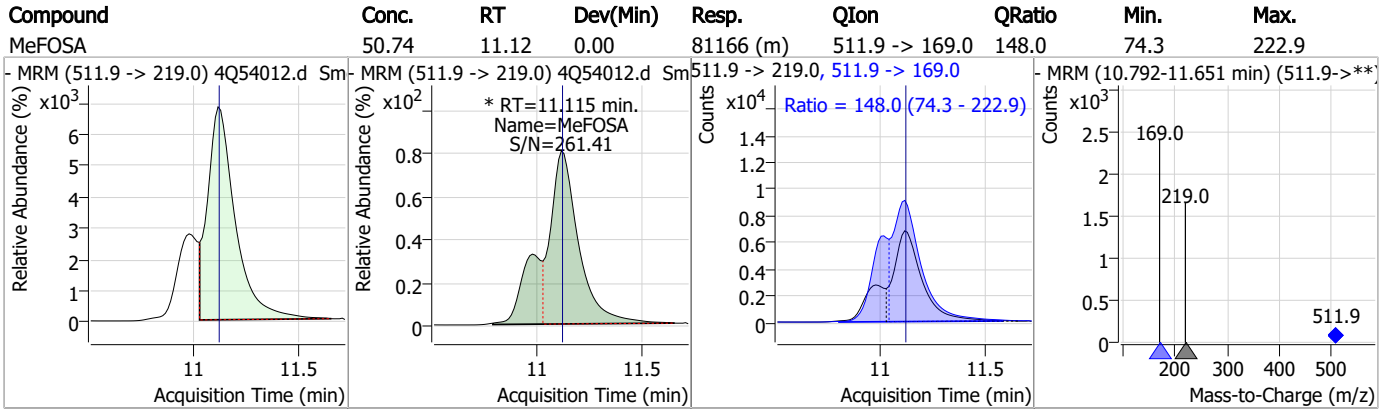
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	138.59	11.04	0.00	153818	616.1 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.58	11.11	0.00	4481	515.0 -> 219.0			

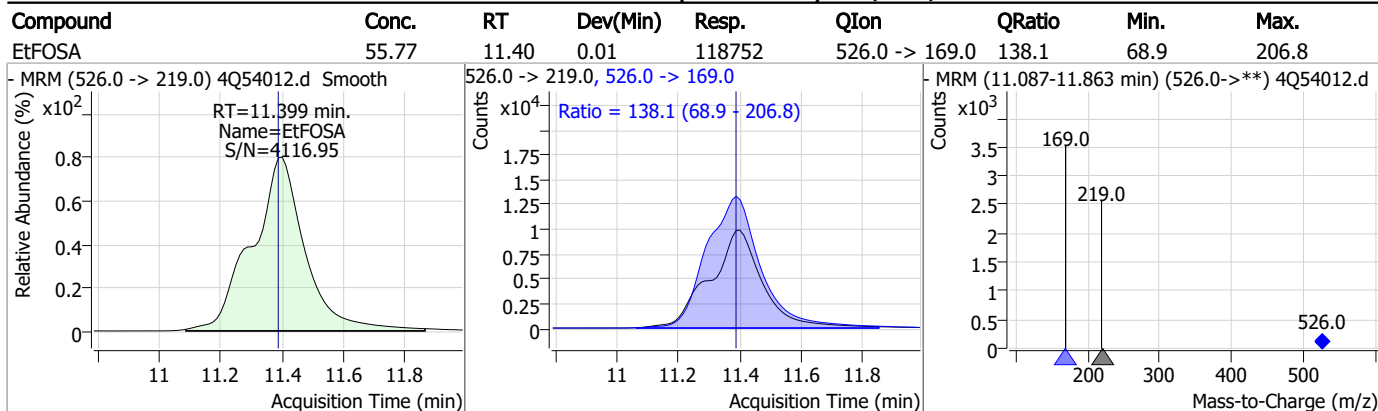


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q788-IC788 Method: EPA DRAFT 1633
Lab FileID: 4Q54012.D Analyst approved: 11/18/23 15:04 Mike Eger
Injection Time: 11/17/23 12:54 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.99	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.09	Split peak
EtFOSAA	2991-50-6		8.26	Split peak
MeFOSA	31506-32-8		11.12	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54013.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 1:08:55 PM
 Sample Name : ic788-8
 Vial : P1-A9
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.587	216.8 -> 171.9	68520	10.00 µg/L	-0.013
M5-PFPeA	4.087	268.3 -> 223.0	32565	5.00 µg/L	0.000
M5-PFHxA	5.260	318.0 -> 273.0	24667	2.50 µg/L	0.000
M4-PFHpA	6.230	367.1 -> 322.0	22925	2.50 µg/L	0.012
M8-PFOA	6.926	421.1 -> 376.0	25759	2.50 µg/L	0.000
M9-PFNA	7.483	472.1 -> 427.0	11315	1.25 µg/L	0.012
M6-PFDA	7.967	519.1 -> 474.1	7799	1.25 µg/L	0.000
M7-PFUnDA	8.424	570.0 -> 525.1	6967	1.25 µg/L	0.000
M2-PFDoDA	8.855	615.1 -> 570.0	9953	1.25 µg/L	0.012
M2-PFTeDA	9.624	715.2 -> 670.0	9939	1.25 µg/L	0.012
M8-FOSA	9.781	506.1 -> 77.8	5774	2.50 µg/L	0.012
M3-PFBS	5.116	302.1 -> 79.9	6840	2.50 µg/L	0.000
M3-PFHxS	6.992	402.1 -> 79.9	5611	2.50 µg/L	0.012
M8-PFOS	8.093	507.1 -> 79.9	6529	2.50 µg/L	0.012
M2-4:2FTS	4.959	329.1 -> 80.9	672	5.00 µg/L	-0.012
M2-6:2FTS	6.711	429.1 -> 80.9	1341	5.00 µg/L	0.012
M2-8:2FTS	7.779	529.1 -> 80.9	1925	5.00 µg/L	0.012
M3-MeFOSAA	8.049	573.2 -> 419.0	10443	5.00 µg/L	0.000
M3-HFPO-DA	5.615	286.9 -> 168.9	22224	10.00 µg/L	0.000
M5-EtFOSAA	8.259	589.2 -> 419.0	8652	5.00 µg/L	0.012
M7-MeFOSE	11.022	623.2 -> 58.9	24619	25.00 µg/L	0.012
M9-EtFOSE	11.306	639.2 -> 58.9	28896	25.00 µg/L	0.012
M5-EtFOSA	11.385	531.1 -> 219.0	4947	2.50 µg/L	0.000
M3-MeFOSA	11.114	515.0 -> 219.0	4777	2.50 µg/L	0.000
13C4-PFOS	8.093	502.8 -> 79.9	4701	2.50 µg/L	0.012
13C3-PFBA	2.591	216.0 -> 172.0	33877	5.00 µg/L	0.000
18O2-PFHxS	6.991	403.0 -> 83.9	3891	2.50 µg/L	0.012
13C4-PFOA	6.926	417.1 -> 372.0	29116	2.50 µg/L	0.000
13C2-PFDA	7.967	515.1 -> 470.1	8988	1.25 µg/L	0.000
13C5-PFNA	7.484	468.0 -> 423.0	10883	1.25 µg/L	0.012
13C2-PFHxA	5.261	315.1 -> 270.0	26895	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	4.959	329.1 -> 80.9	672	4.53 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 90.5%		
13C2-6:2FTS	6.711	429.1 -> 80.9	1341	4.25 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 85.1%		
13C2-8:2FTS	7.779	529.1 -> 80.9	1925	4.43 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 88.7%		
13C2-PFDoDA	8.855	615.1 -> 570.0	9953	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C2-PFTeDA	9.624	715.2 -> 670.0	9939	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C3-PFBS	5.116	302.1 -> 79.9	6840	2.32 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.9%		
13C3-PFHxS	6.992	402.1 -> 79.9	5611	2.30 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.8%	
13C4-PFBA	2.587	216.8 -> 171.9	68520	9.80 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C4-PFHpA	6.230	367.1 -> 322.0	22925	2.40 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.2%	
13C5-PFHxA	5.260	318.0 -> 273.0	24667	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C5-PFPeA	4.087	268.3 -> 223.0	32565	4.82 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.4%	
13C6-PFDA	7.967	519.1 -> 474.1	7799	1.17 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.4%	
13C7-PFUnDA	8.424	570.0 -> 525.1	6967	0.93 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 74.3%	
13C8-FOSA	9.781	506.1 -> 77.8	5774	2.63 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.2%	
13C8-PFOA	6.926	421.1 -> 376.0	25759	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.9%	
13C8-PFOS	8.093	507.1 -> 79.9	6529	2.83 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 113.3%	
13C9-PFNA	7.483	472.1 -> 427.0	11315	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.6%	
d3-MeFOSAA	8.049	573.2 -> 419.0	10443	5.42 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.5%	
13C3-HFPO-DA	5.615	286.9 -> 168.9	22224	9.90 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.0%	
d3-MeFOSA	11.114	515.0 -> 219.0	4777	3.17 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 126.7%	
d5-EtFOSAA	8.259	589.2 -> 419.0	8652	5.36 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.2%	
d7-MeFOSE	11.022	623.2 -> 58.9	24619	26.14 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 104.6%	
d9-EtFOSE	11.306	639.2 -> 58.9	28896	26.97 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 107.9%	
d5-EtFOSA	11.385	531.1 -> 219.0	4947	2.70 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.2%	
Target Compounds					QValue
4:2FTS	4.972	327.1 -> 307.0	262794	213.23 µg/L	97
		327.1 -> 80.9	108153		
6:2FTS	6.712	427.1 -> 407.0	320949	230.20 µg/L	100
		427.1 -> 80.9	117759		
8:2FTS	7.779	527.1 -> 507.0	234522	229.77 µg/L	91
		527.1 -> 80.8	96666		
EtFOSAA	8.259	584.2 -> 419.1	106986	65.31 µg/L	99
		584.2 -> 526.0	42449	m	
FOSA	9.785	498.1 -> 77.9	186117	69.45 µg/L	99
		498.1 -> 478.0	5748		
MeFOSAA	8.062	570.1 -> 419.0	113987	68.14 µg/L	95
		570.1 -> 483.0	21444		
PFBA	2.595	212.8 -> 168.9	648480	274.99 µg/L	100
PFBS	5.117	298.7 -> 79.9	135531	59.86 µg/L	99
		298.7 -> 98.8	51948		
PFDA	7.968	512.9 -> 469.0	391559	66.02 µg/L	99
		512.9 -> 219.0	78621		
PFDoDA	8.856	613.1 -> 569.0	516774	63.71 µg/L	98
		613.1 -> 319.0	88759		
PFDS	8.995	599.0 -> 79.9	103364	62.38 µg/L	98

7.7.24
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.230	599.0 -> 98.8	51575	68.29	µg/L	100
		363.1 -> 319.0	946314			
PFHpS	7.586	363.1 -> 169.0	170217	61.34	µg/L	92
		449.0 -> 79.9	154182			
PFHxA	5.263	449.0 -> 98.9	79689	68.36	µg/L	99
		313.0 -> 269.0	563818			
PFHxS	6.993	313.0 -> 118.9	17470	64.17	µg/L	99
		398.7 -> 79.9	102897			
PFNA	7.484	398.7 -> 98.9	53126	68.92	µg/L	97
		463.0 -> 419.0	482292			
PFNS	8.561	463.0 -> 219.0	115162	56.36	µg/L	94
		548.8 -> 79.9	68896			
PFOA	6.927	548.8 -> 98.9	34862	69.32	µg/L	99
		413.0 -> 369.0	794614			
PFOS	8.094	413.0 -> 169.0	161688	57.52	µg/L	98
		498.9 -> 79.9	159173			
PFPeA	4.089	498.9 -> 98.8	75726	138.79	µg/L	100
		263.0 -> 219.0	897859			
PFPeS	6.220	349.1 -> 79.9	116798	64.96	µg/L	100
		349.1 -> 98.9	51739			
PFTeDA	9.625	713.1 -> 669.0	486183	66.88	µg/L	98
		713.1 -> 168.9	49218			
PFTrDA	9.255	663.0 -> 619.0	529804	61.45	µg/L	99
		663.0 -> 168.9	72508			
PFUnDA	8.424	563.1 -> 519.0	410611	73.20	µg/L	99
		563.1 -> 269.1	89135			
11Cl-PF3OUdS	9.282	630.9 -> 450.9	851919	124.12	µg/L	100
		632.9 -> 452.9	263777			
9Cl-PF3ONS	8.426	530.8 -> 351.0	759659	109.13	µg/L	98
		532.8 -> 353.0	230070			
ADONA	6.506	376.9 -> 250.9	2315101	134.16	µg/L	99
		376.9 -> 84.8	558602			
HFPO-DA	5.628	284.9 -> 168.9	305248	138.46	µg/L	96
		284.9 -> 184.9	28729			
3:3FTCA	3.536	241.0 -> 177.0	137967	374.29	µg/L	98
		241.0 -> 117.0	11867			
5:3FTCA	5.955	341.0 -> 237.1	2410220	1684.05	µg/L	99
		341.0 -> 217.0	1730014			
7:3FTCA	7.512	441.0 -> 316.9	1076240	1669.31	µg/L	91
		441.0 -> 336.9	2514945			
EtFOSA	11.399	526.0 -> 219.0	288869	139.62	µg/L	99
		526.0 -> 169.0	400426			
EtFOSE	11.320	630.0 -> 58.9	347250	319.07	µg/L	100
		511.9 -> 219.0	203837			
MeFOSA	11.115	511.9 -> 169.0	295604	119.53	µg/L	97
		616.1 -> 58.9	358106			
MeFOSE	11.035	699.1 -> 79.9	78757	345.18	µg/L	100
		699.1 -> 98.8	45018			
PFDoDS	9.752	295.0 -> 201.0	73840	64.54	µg/L	96
		295.0 -> 84.9	18237			
NFDHA	5.154	279.0 -> 85.1	490871	104.03	µg/L	98
		229.0 -> 84.9	563626			
PFMBA	4.491	314.8 -> 134.9	745855	137.96	µg/L	100
		314.8 -> 82.9	24492			
PFMPA	3.240			114.91	µg/L	100
PFEESA	5.647					

= Qualifier out of range, m = manually integrated, + = Area summed

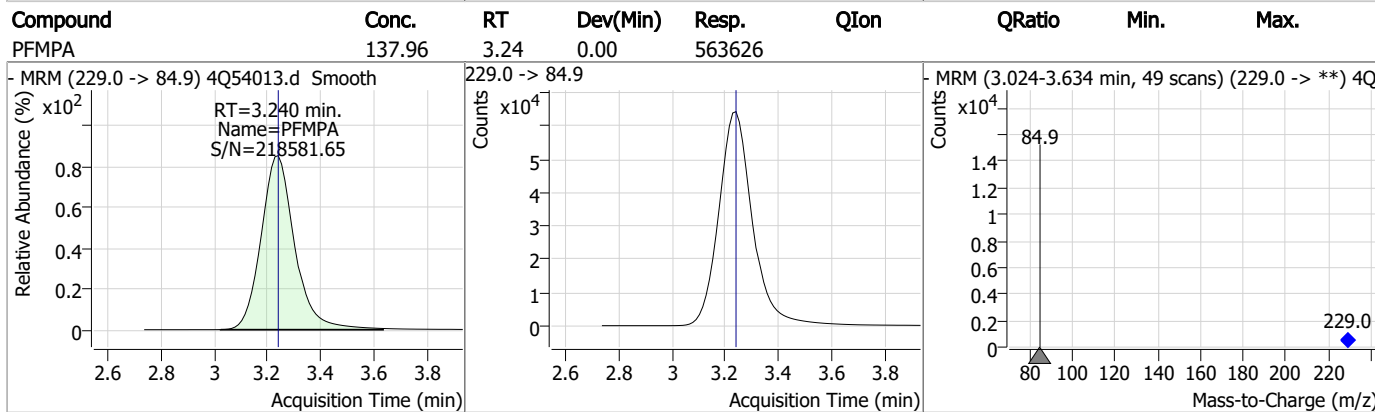
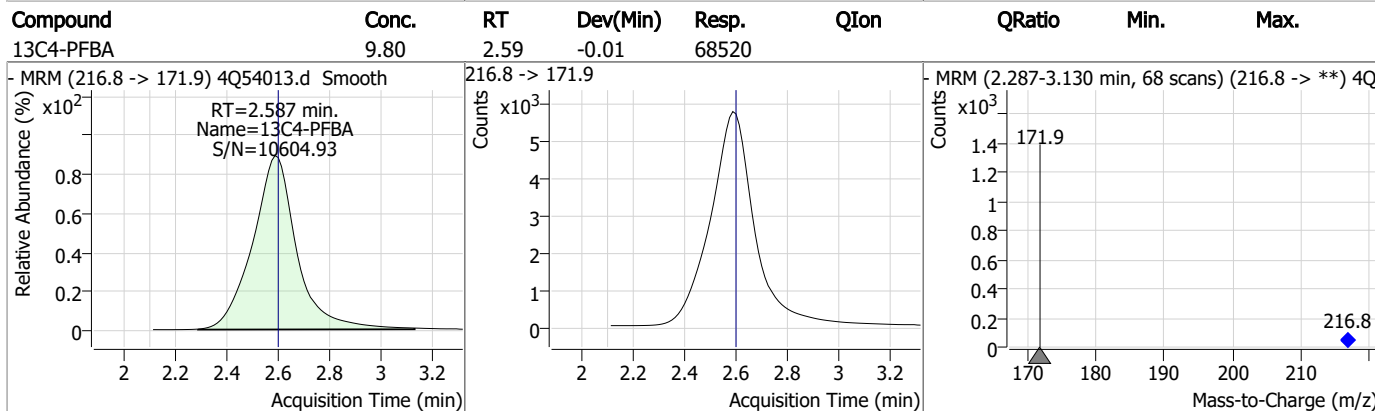
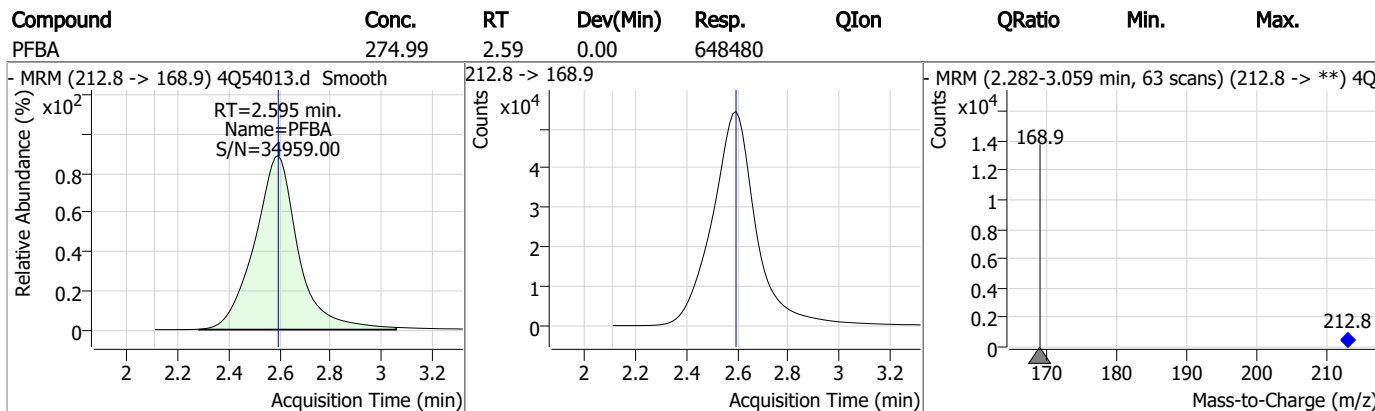
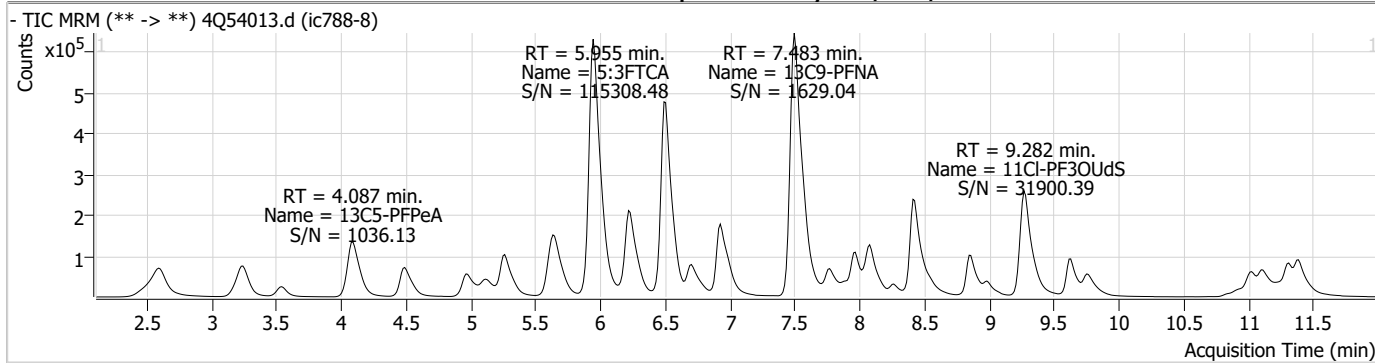
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.24

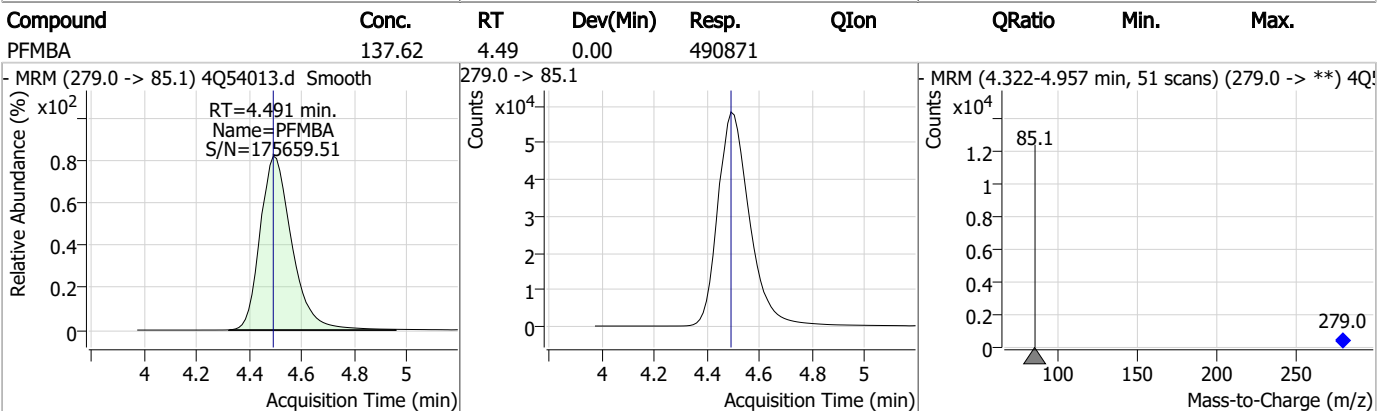
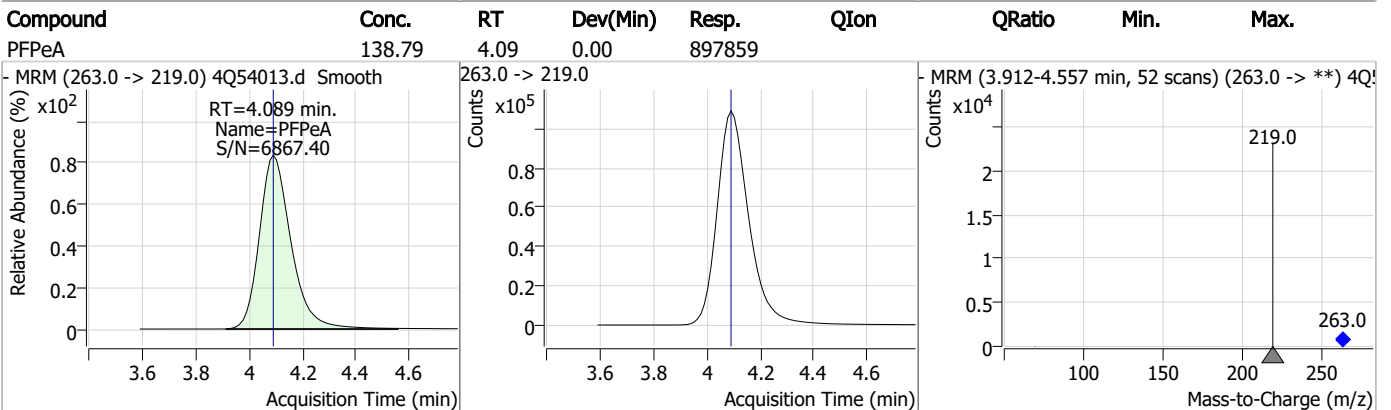
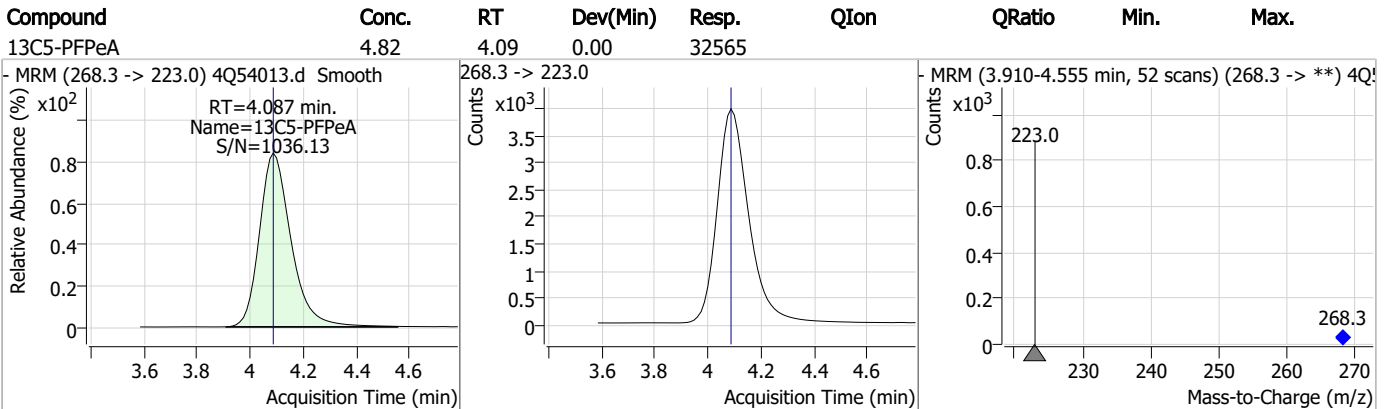
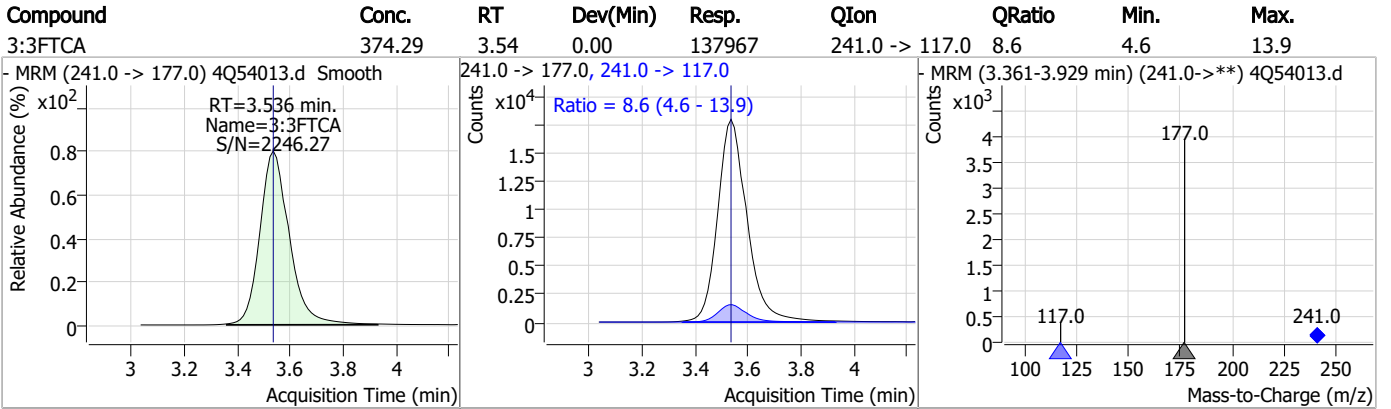
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Perfluorinated Compounds by LC/MS/MS

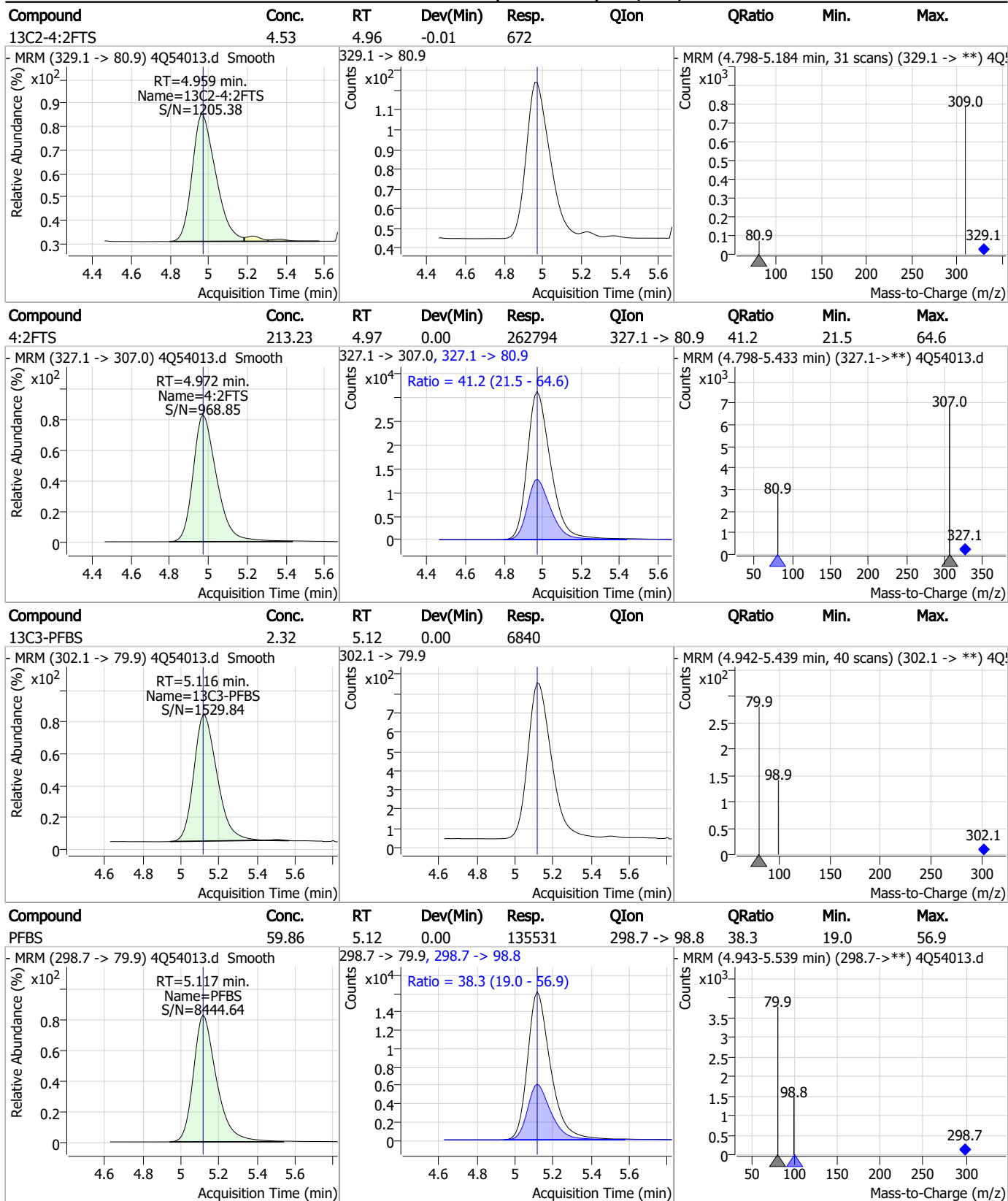


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Perfluorinated Compounds by LC/MS/MS

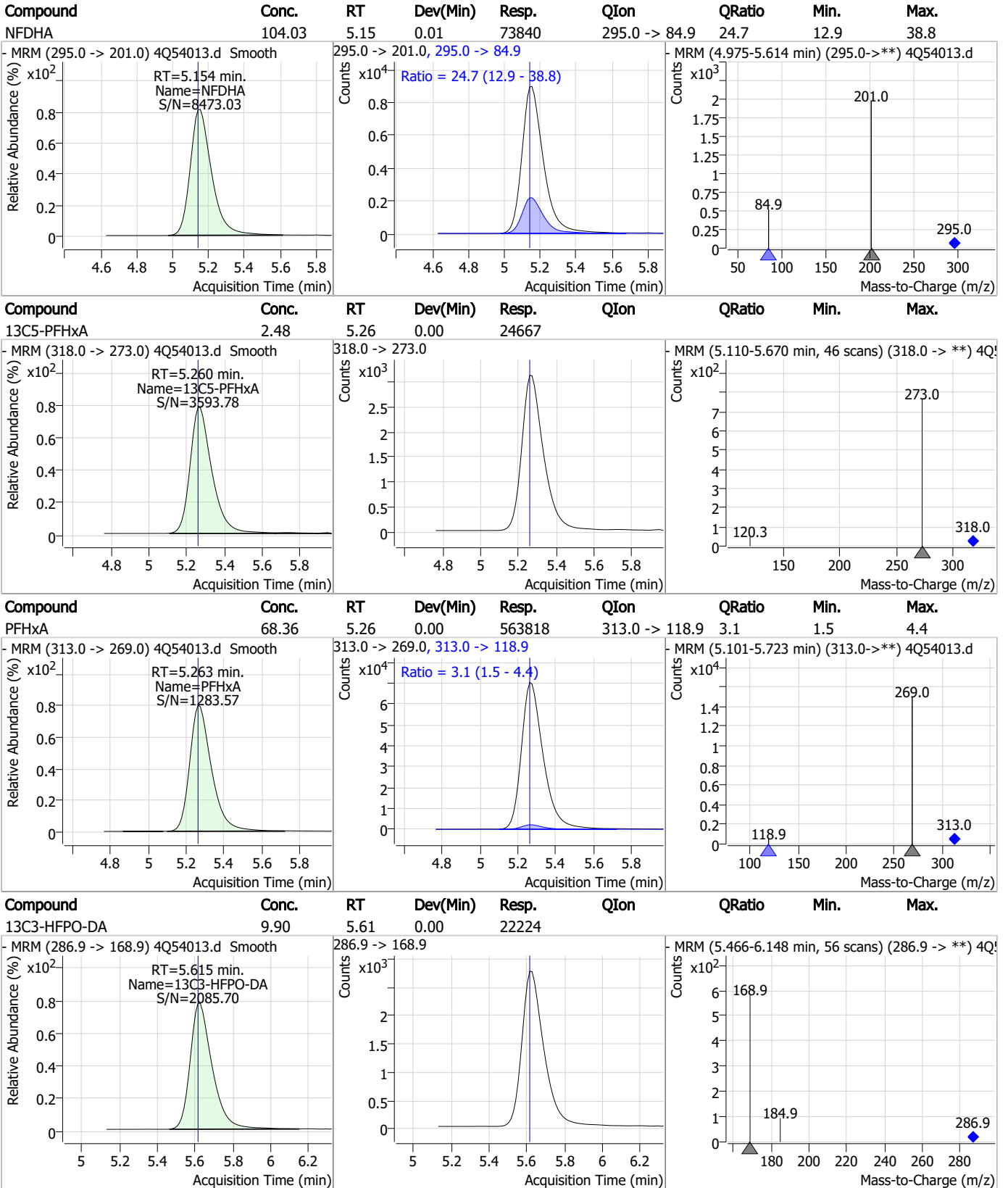


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



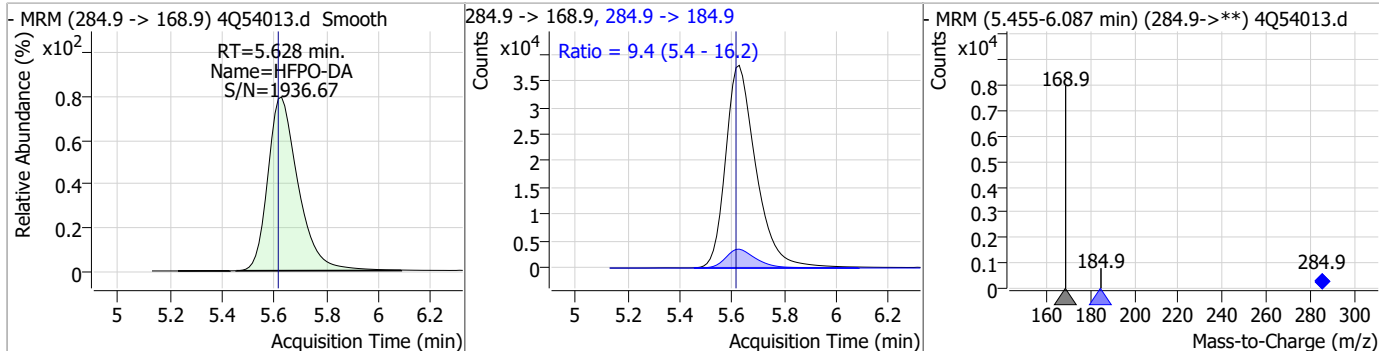
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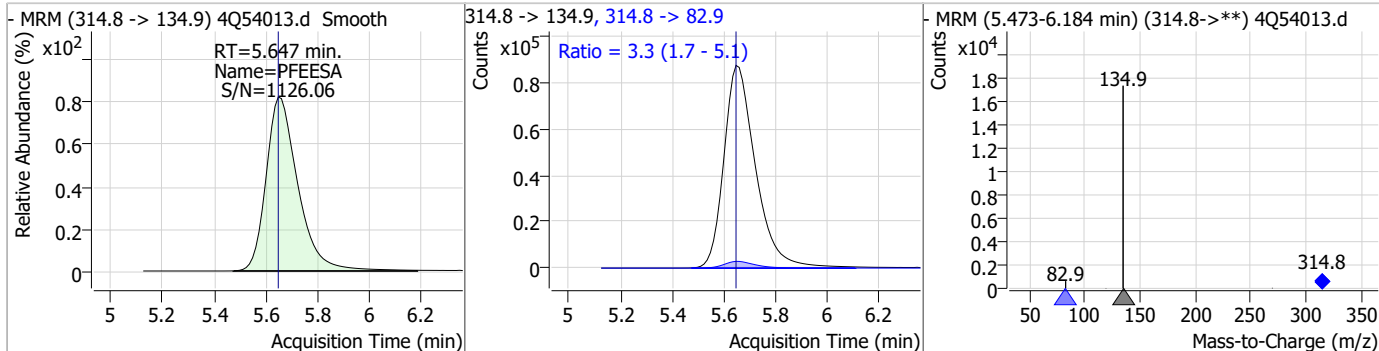


Perfluorinated Compounds by LC/MS/MS

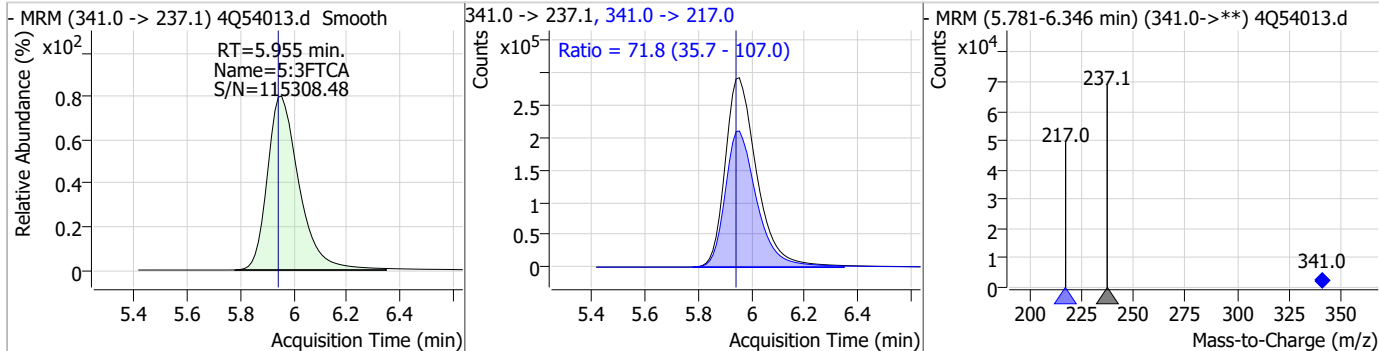
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	138.46	5.63	0.01	305248	284.9 -> 184.9	9.4	5.4	16.2



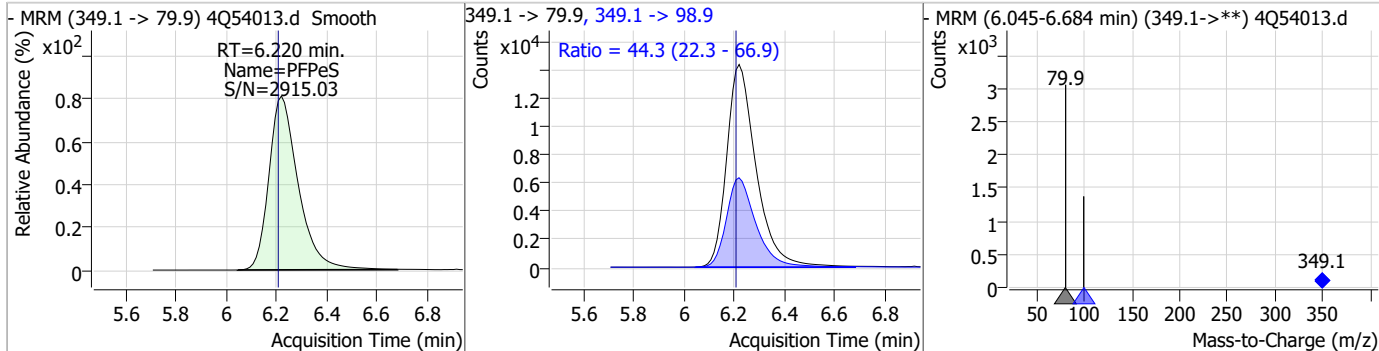
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	114.91	5.65	0.00	745855	314.8 -> 82.9	3.3	1.7	5.1



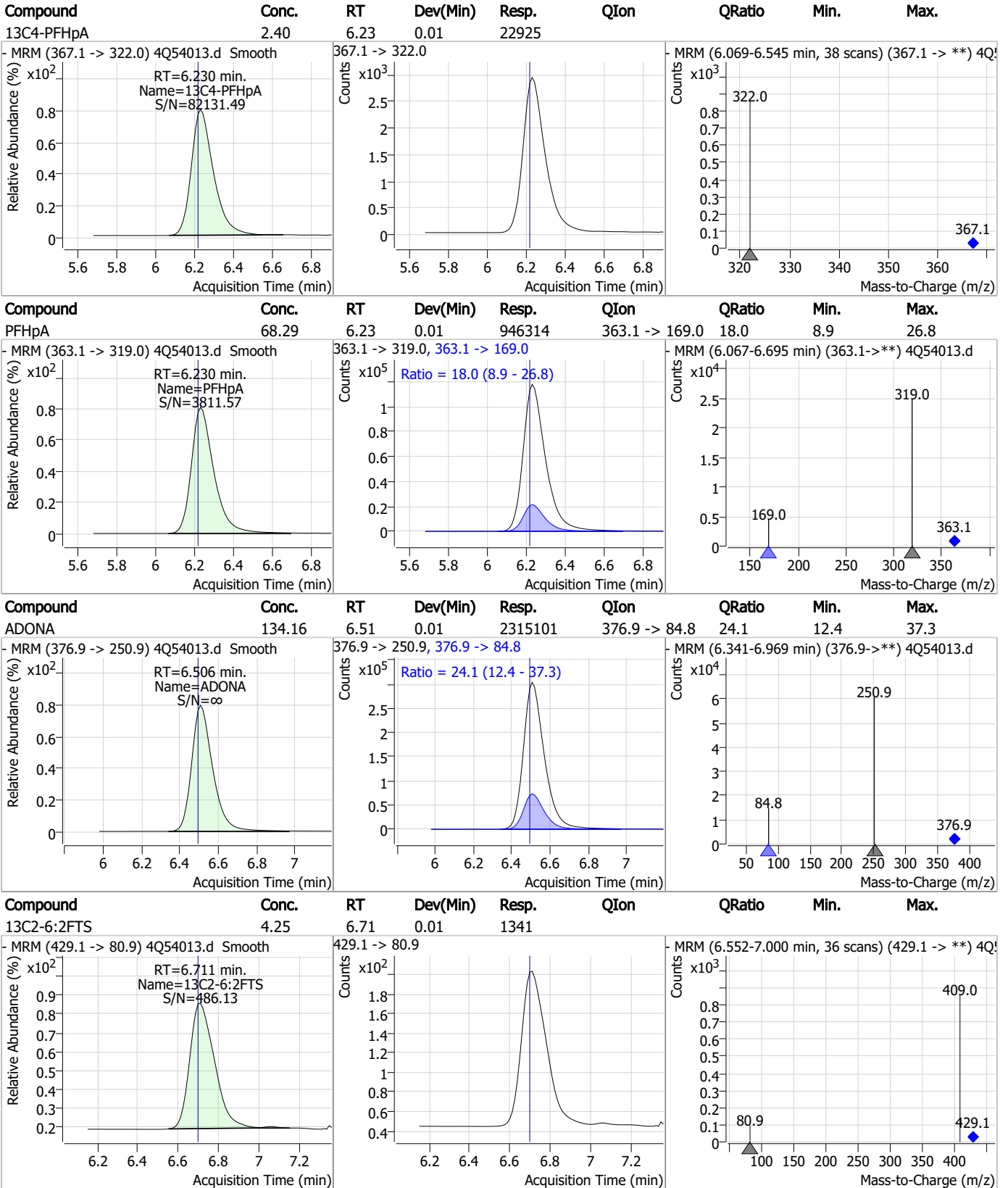
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	1684.05	5.96	0.01	2410220	341.0 -> 217.0	71.8	35.7	107.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	64.96	6.22	0.01	116798	349.1 -> 98.9	44.3	22.3	66.9



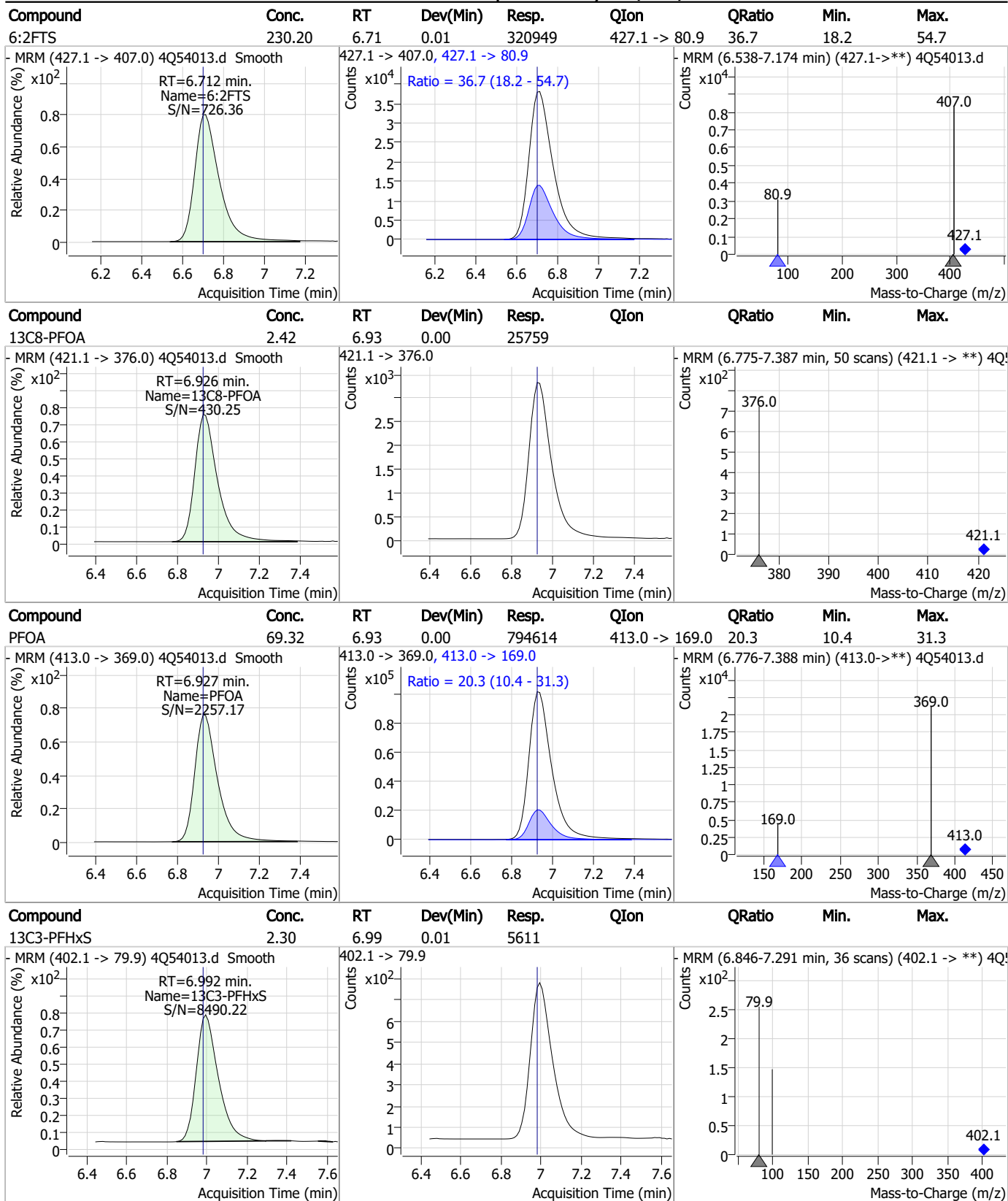
Perfluorinated Compounds by LC/MS/MS



7.7.24 7



Perfluorinated Compounds by LC/MS/MS

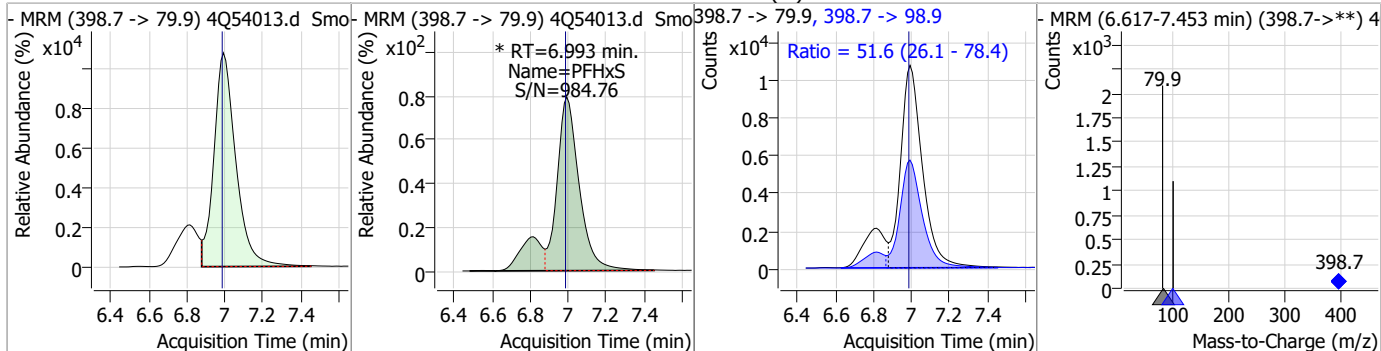


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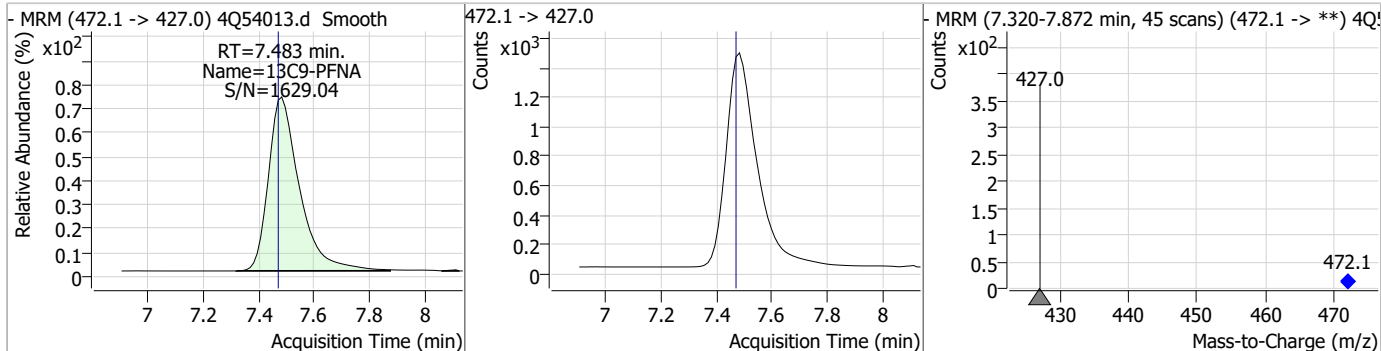
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Perfluorinated Compounds by LC/MS/MS

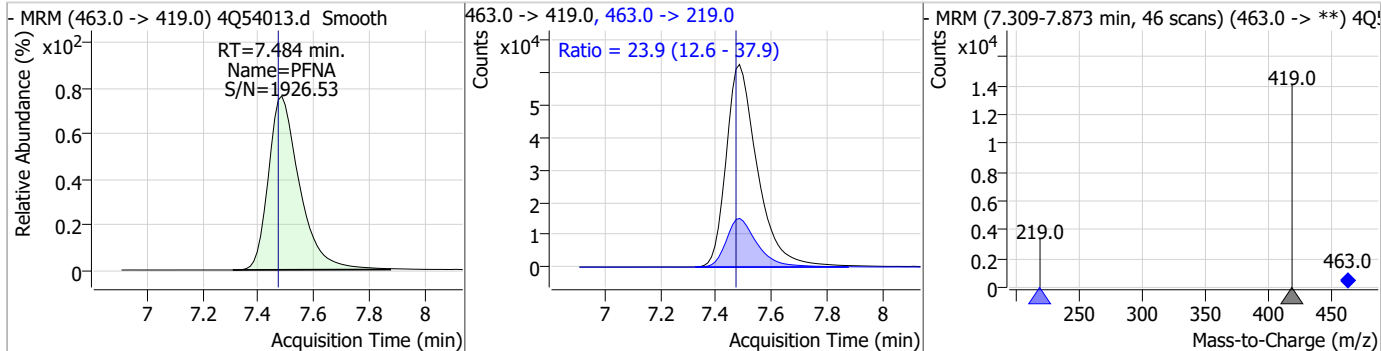
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	64.17	6.99	0.01	102897 (m)	398.7 -> 98.9	51.6	26.1	78.4



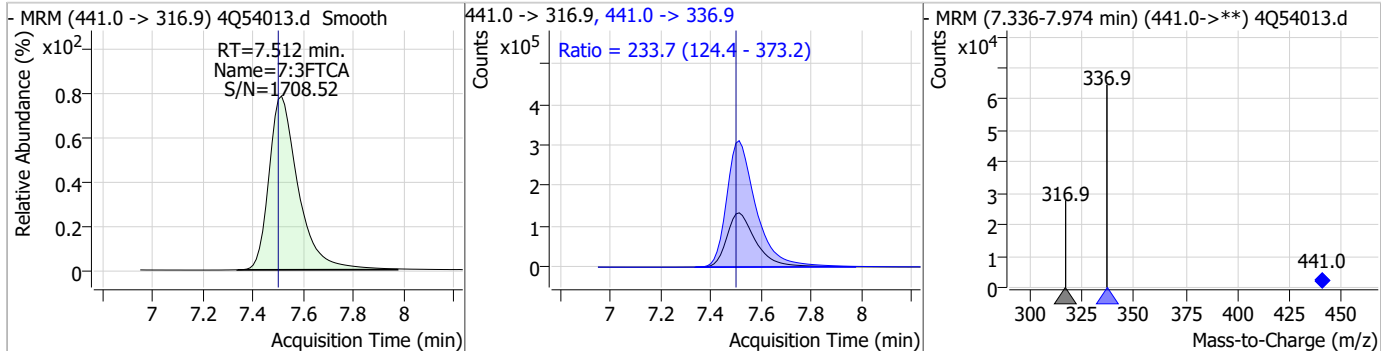
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.28	7.48	0.01	11315				



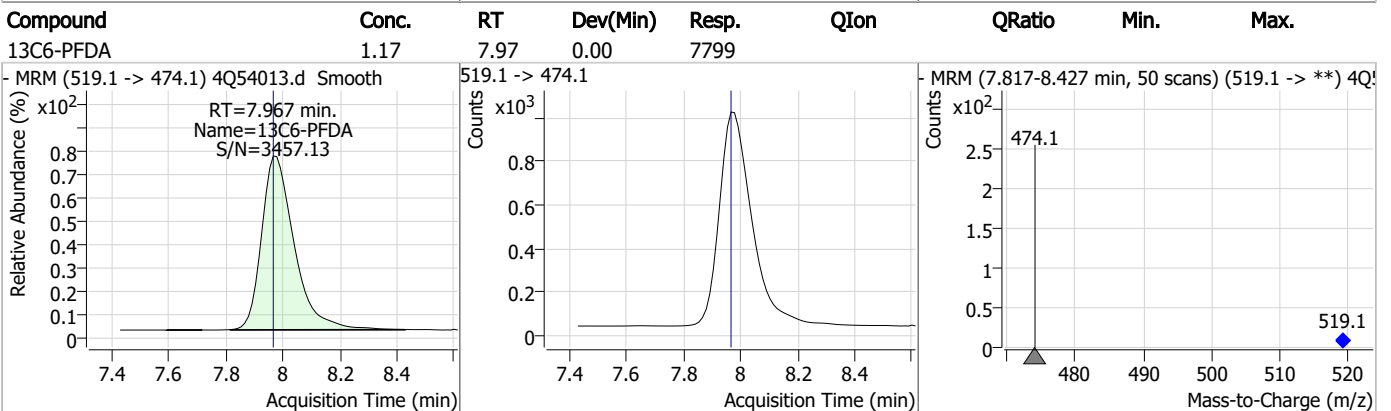
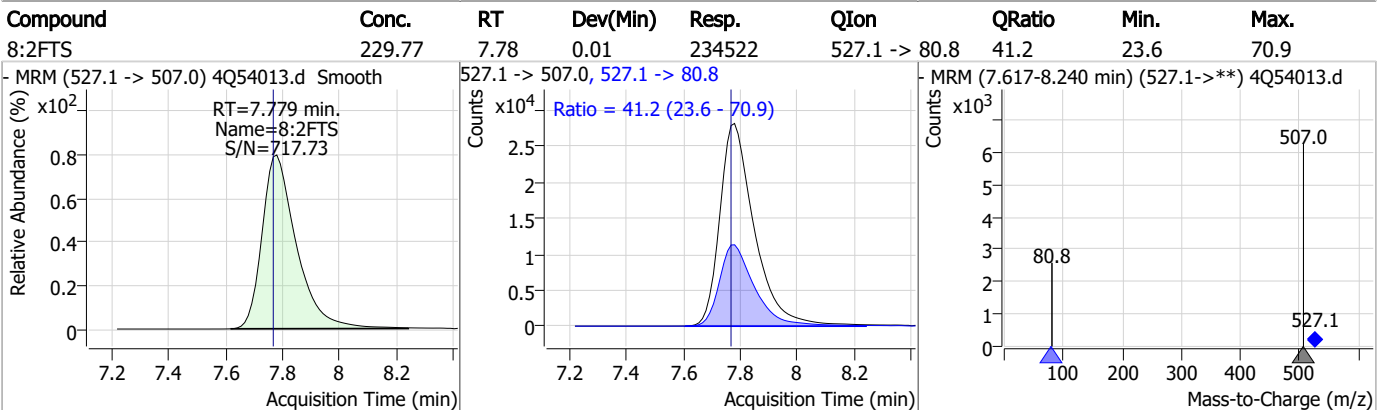
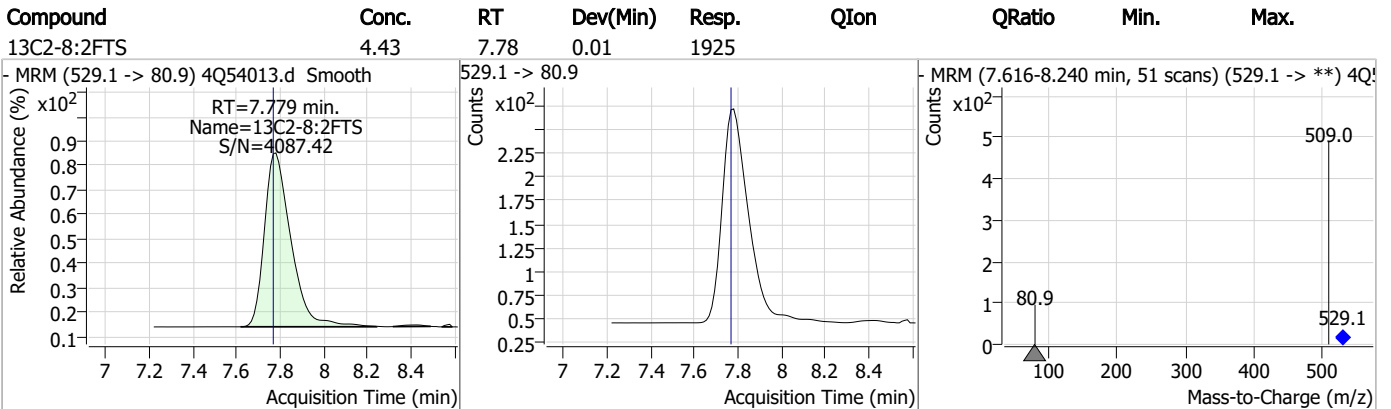
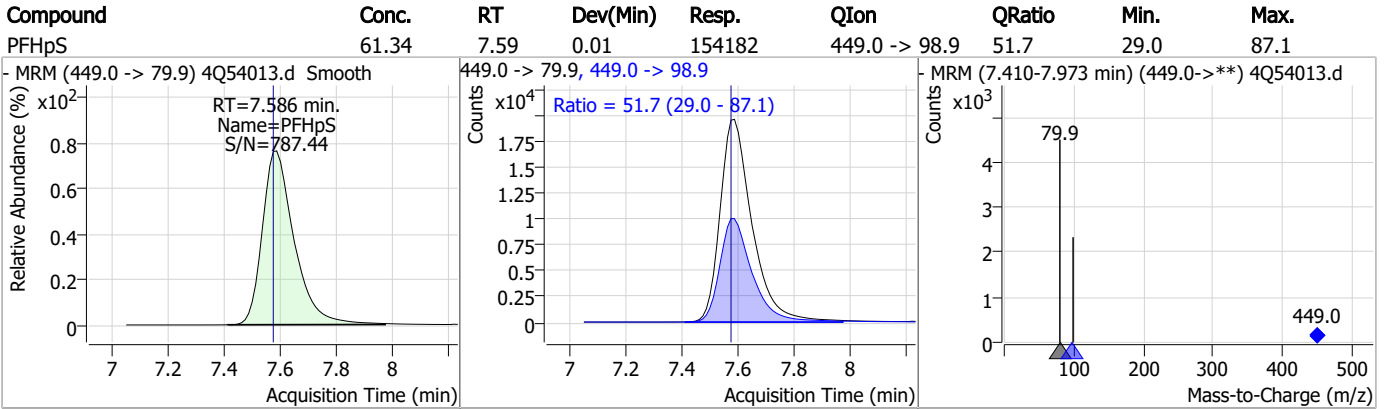
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	68.92	7.48	0.01	482292	463.0 -> 219.0	23.9	12.6	37.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	1669.31	7.51	0.01	1076240	441.0 -> 336.9	233.7	124.4	373.2



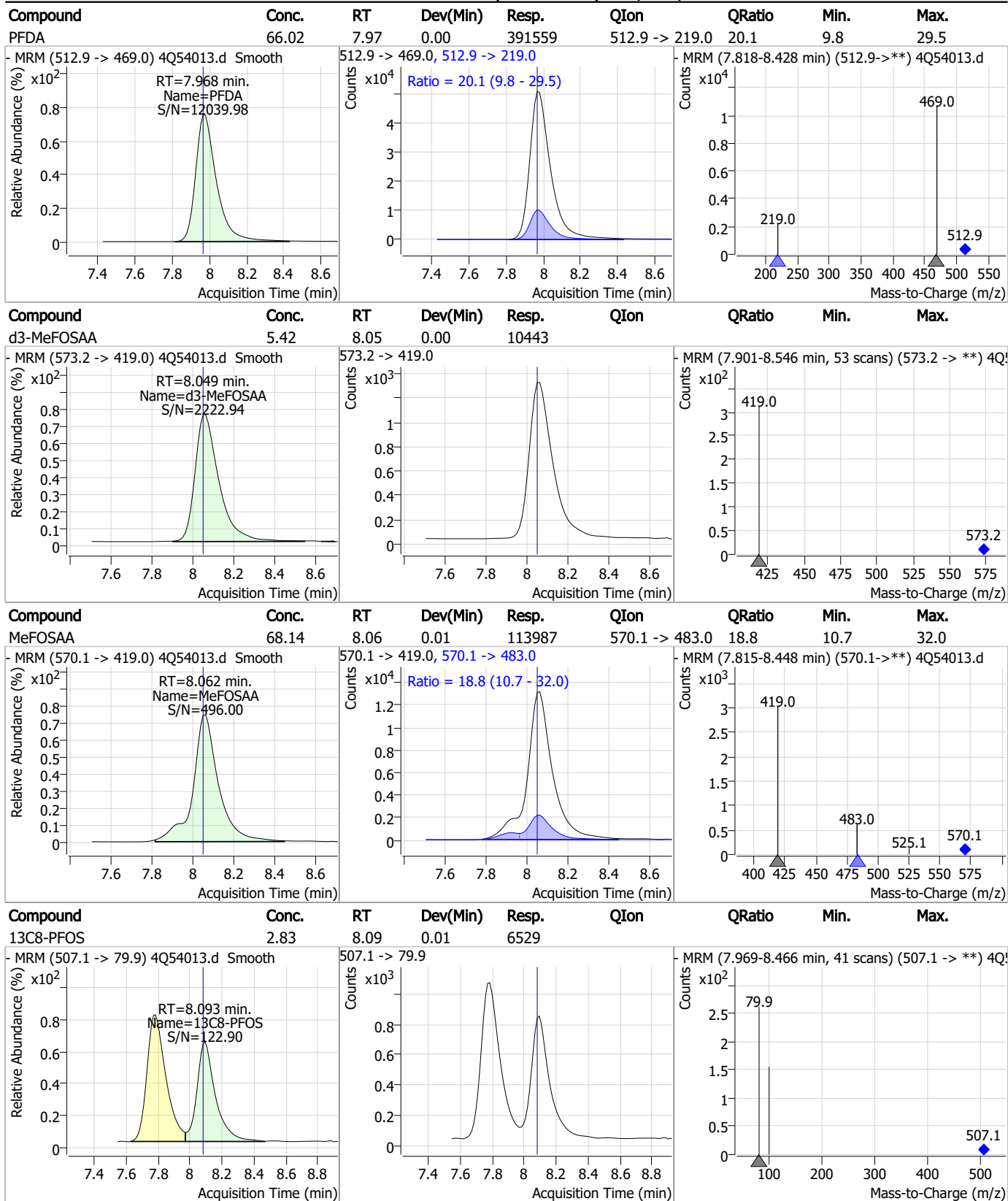
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

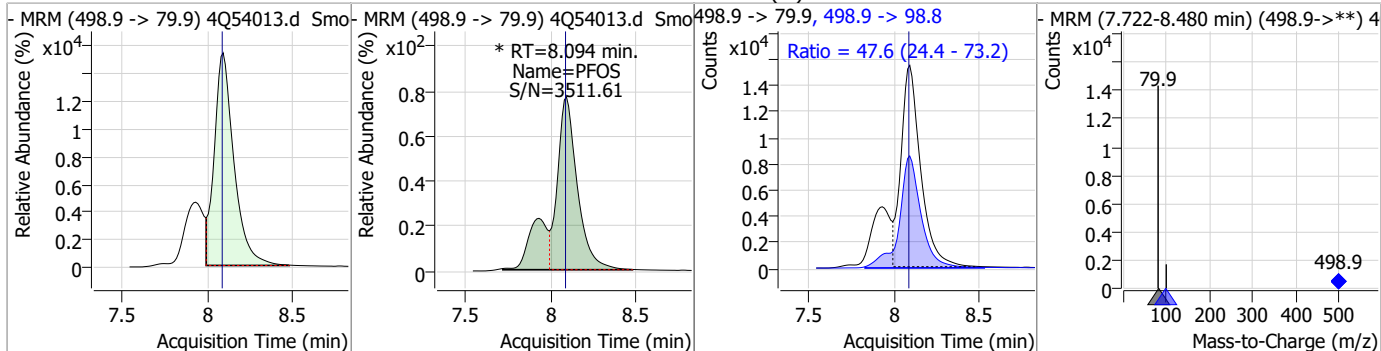


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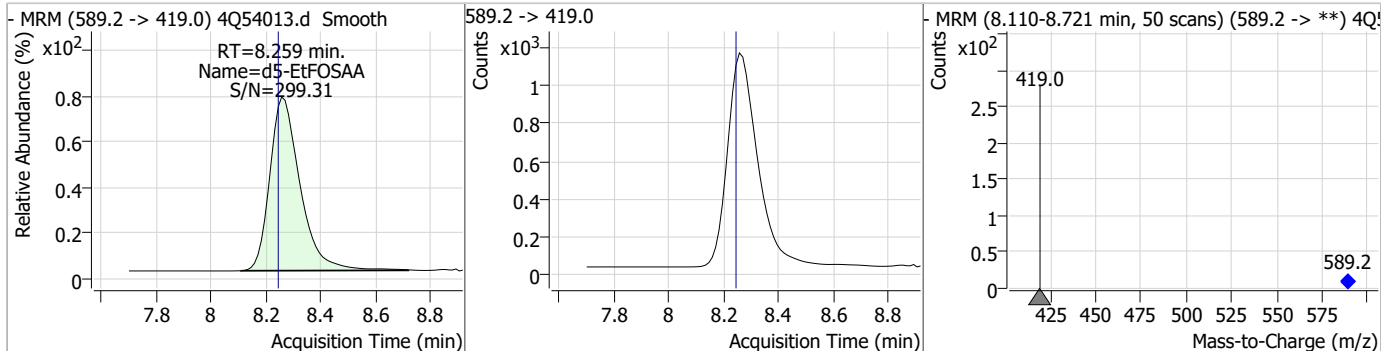
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Perfluorinated Compounds by LC/MS/MS

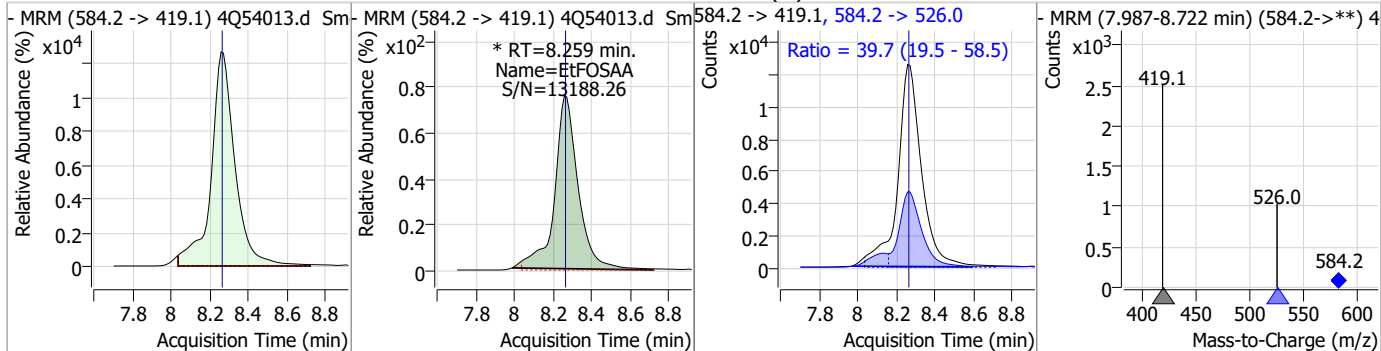
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	57.52	8.09	0.01	159173 (m)	498.9 -> 98.8	47.6	24.4	73.2



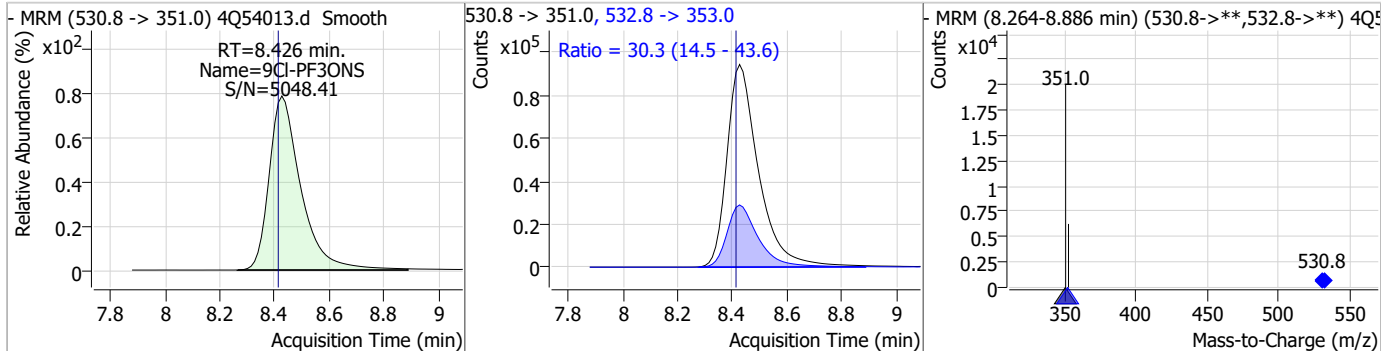
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.36	8.26	0.01	8652				



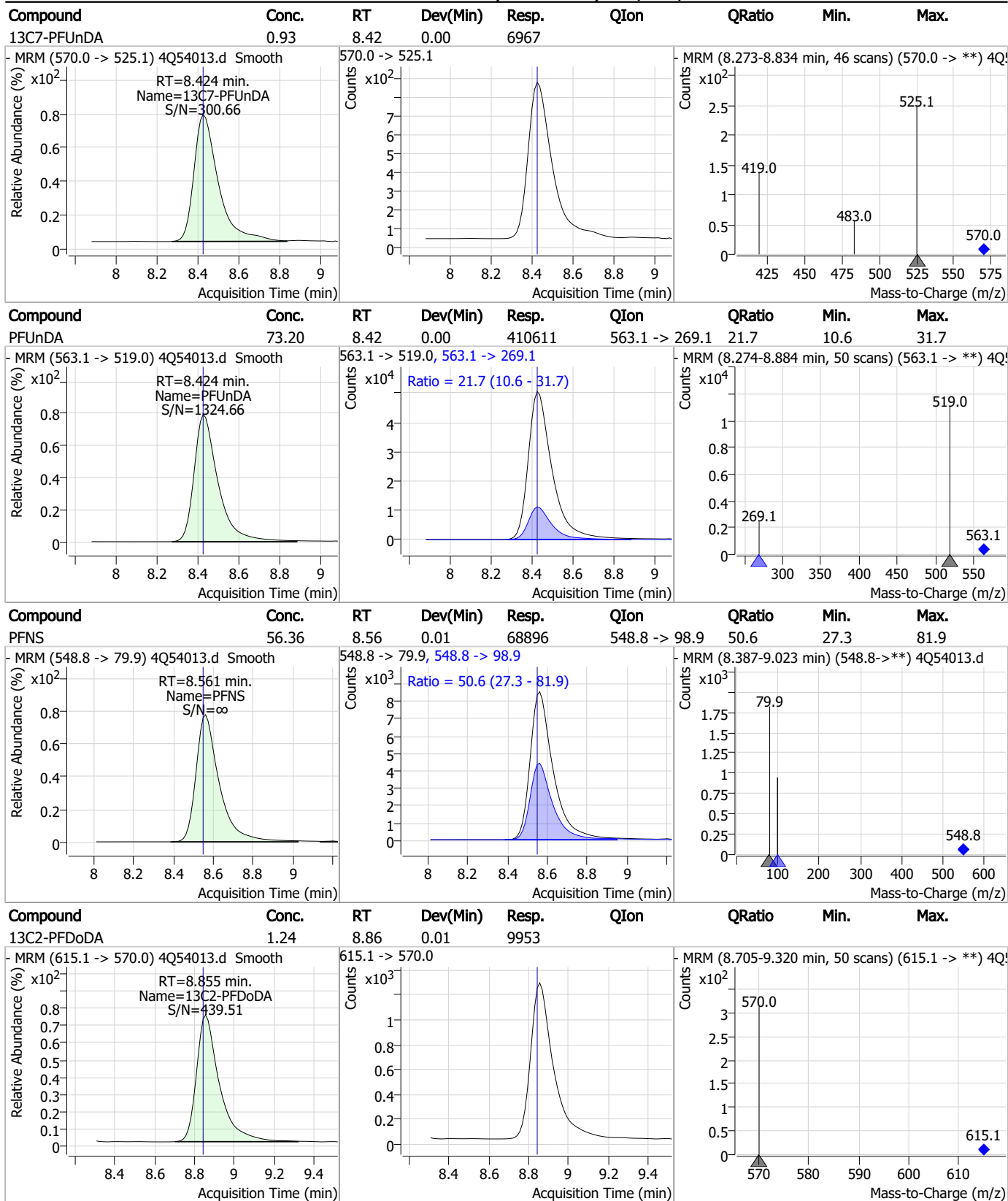
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	65.31	8.26	0.00	106986 (m)	584.2 -> 526.0	39.7	19.5	58.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	109.13	8.43	0.01	759659	532.8 -> 353.0	30.3	14.5	43.6



Perfluorinated Compounds by LC/MS/MS



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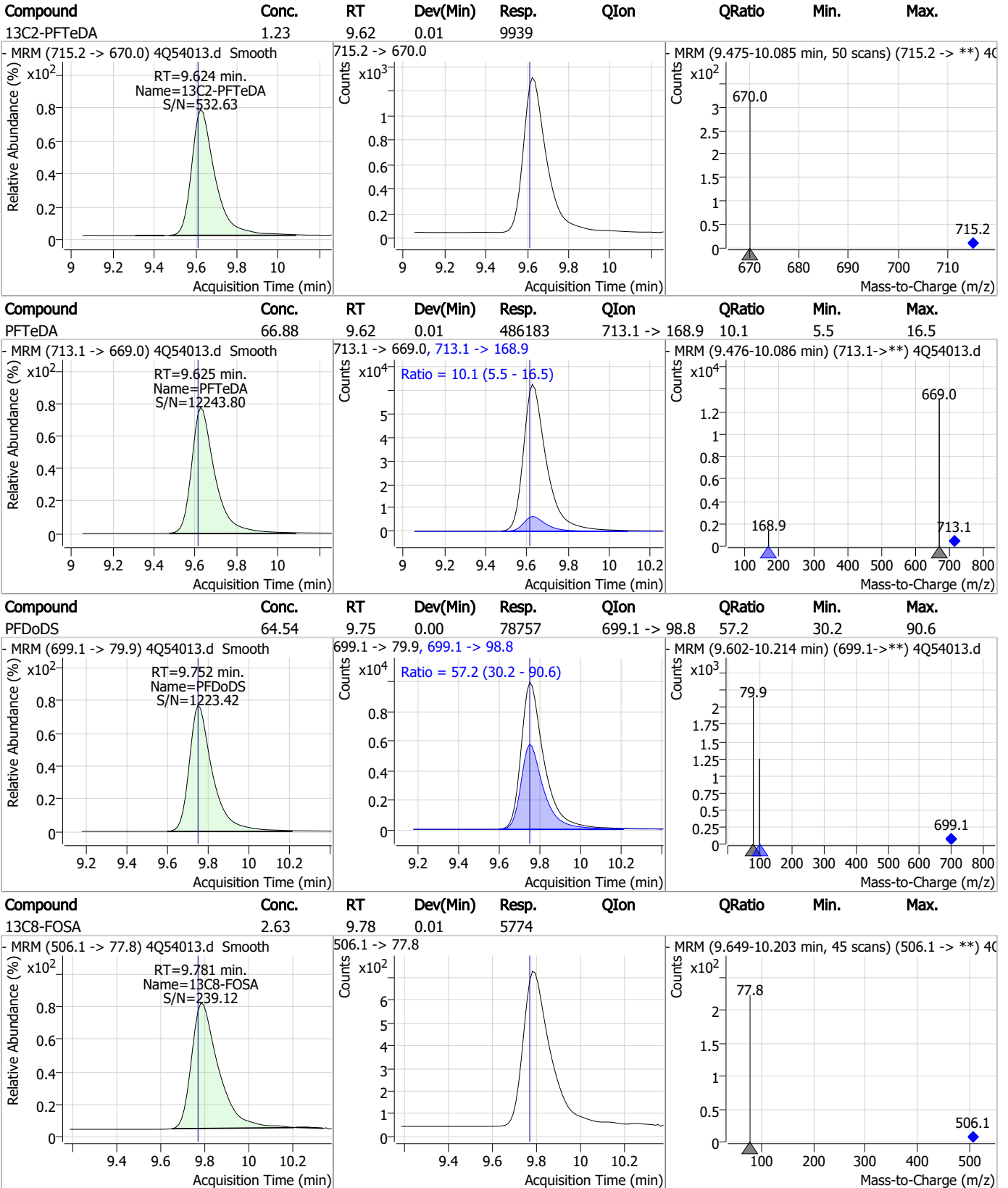


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDODA	63.71	8.86	0.01	516774	613.1 -> 319.0	17.2	9.1	27.2
PFDS	62.38	9.00	0.01	103364	599.0 -> 98.8	49.9	24.3	72.8
PFTrDA	61.45	9.25	0.00	529804	663.0 -> 168.9	13.7	7.0	21.1
11Cl-PF3OUdS	124.12	9.28	0.00	851919	632.9 -> 452.9	31.0	15.6	46.7

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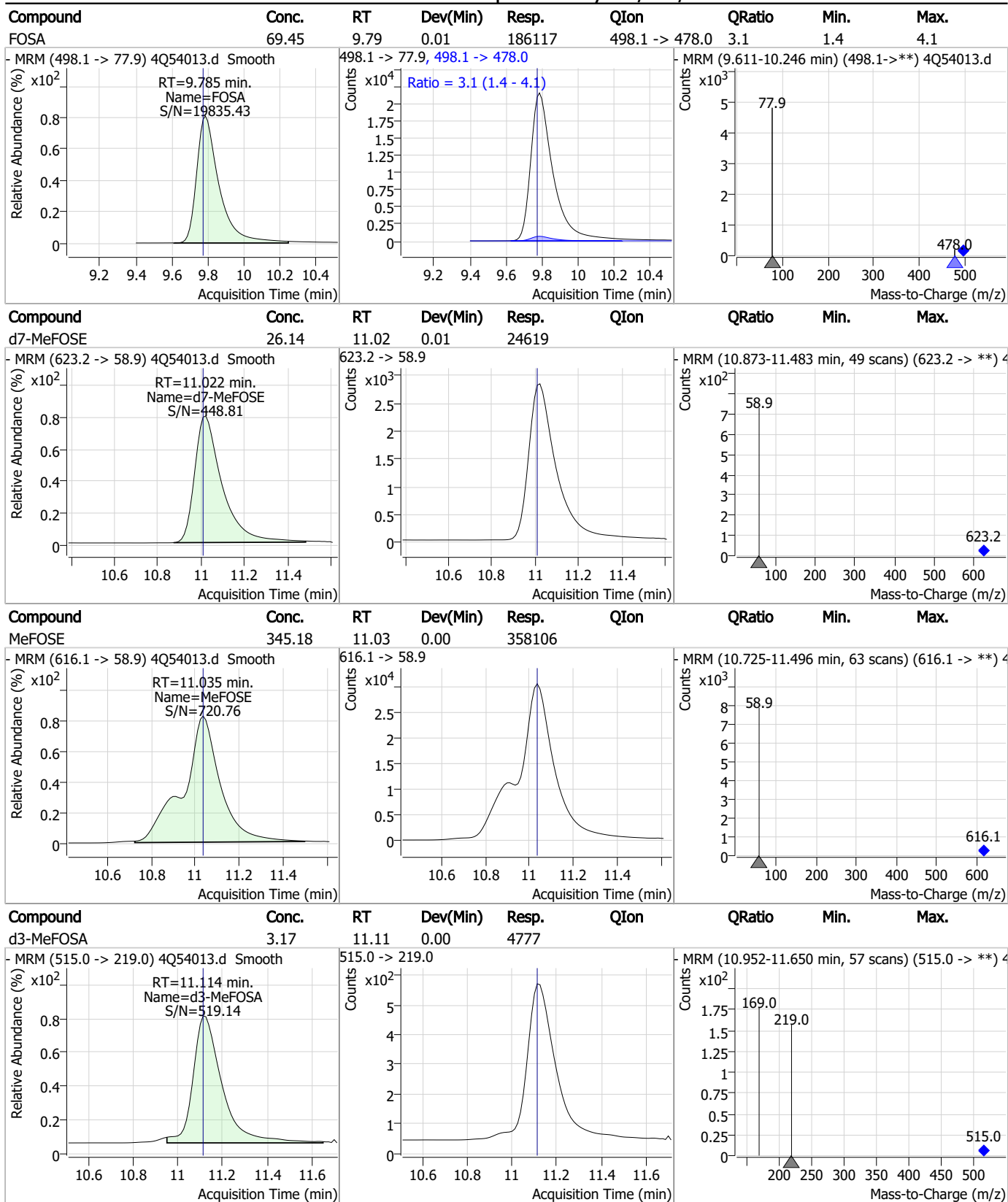
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

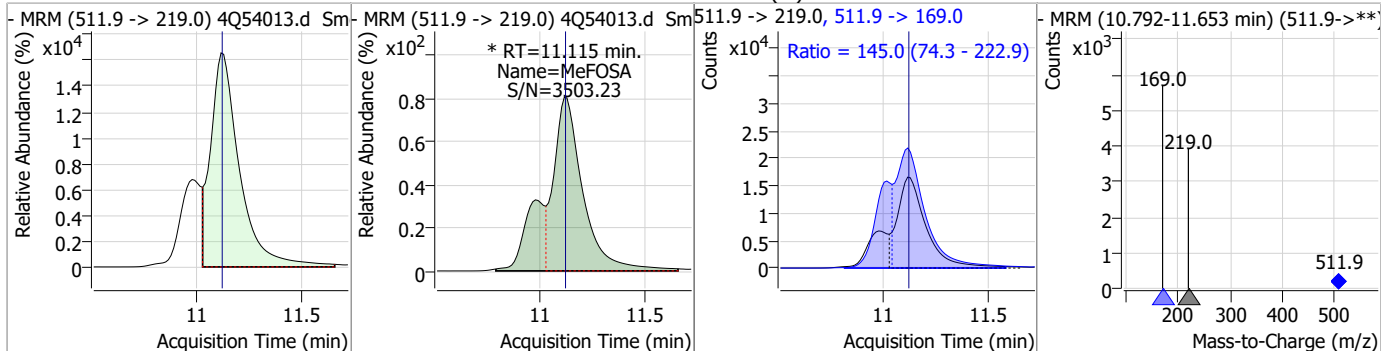


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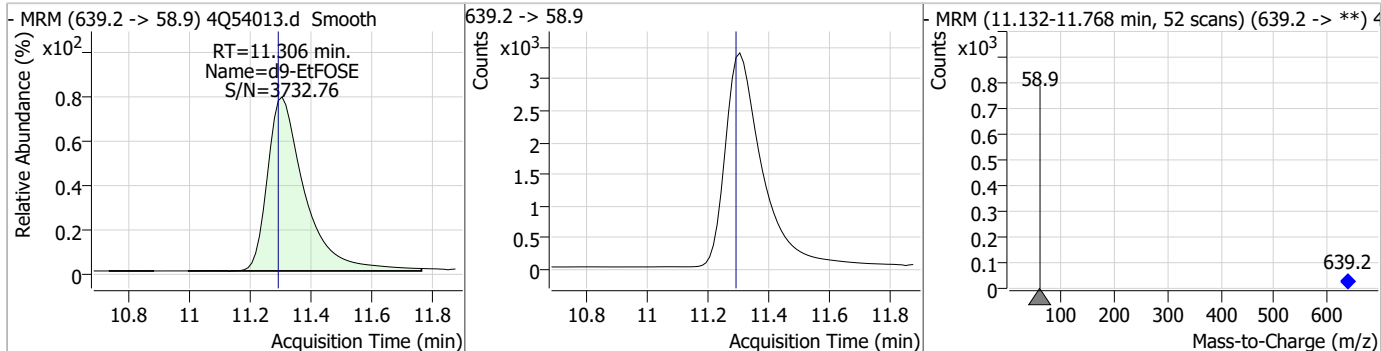


Perfluorinated Compounds by LC/MS/MS

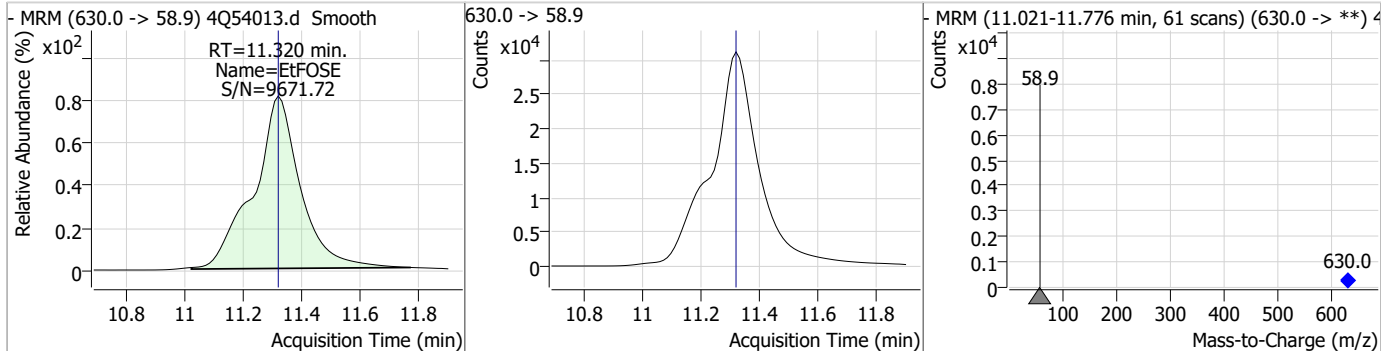
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	119.53	11.12	0.00	203837 (m)	511.9 -> 169.0	145.0	74.3	222.9



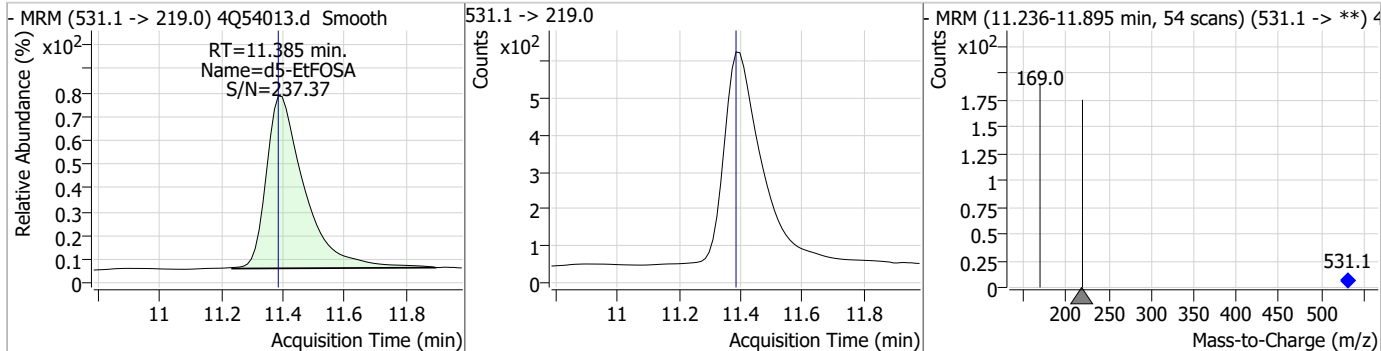
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	26.97	11.31	0.01	28896				



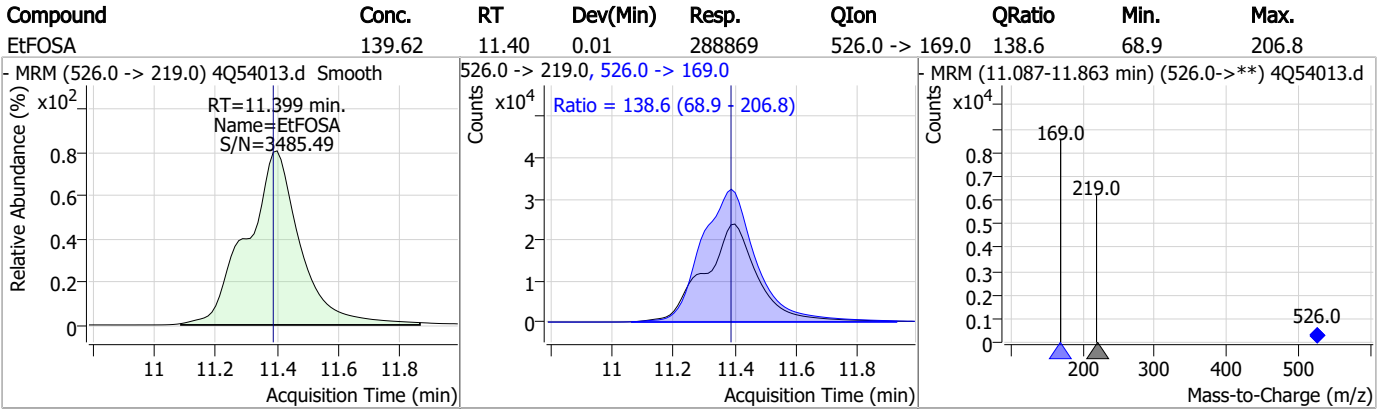
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	319.07	11.32	0.00	347250				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.70	11.39	0.00	4947				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q788-IC788 Method: EPA DRAFT 1633
Lab FileID: 4Q54013.D Analyst approved: 11/18/23 15:04 Mike Eger
Injection Time: 11/17/23 13:08 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.99	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.09	Split peak
EtFOSAA	2991-50-6		8.26	Split peak
MeFOSA	31506-32-8		11.12	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54015.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 1:38:24 PM
 Sample Name : icv788-4
 Vial : P1-B3
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.599	216.8 -> 171.9	80453	10.00 µg/L	0.000
M5-PFPeA	4.087	268.3 -> 223.0	35536	5.00 µg/L	0.000
M5-PFHxA	5.272	318.0 -> 273.0	25691	2.50 µg/L	0.012
M4-PFHpA	6.230	367.1 -> 322.0	25481	2.50 µg/L	0.012
M8-PFOA	6.938	421.1 -> 376.0	29844	2.50 µg/L	0.012
M9-PFNA	7.483	472.1 -> 427.0	12739	1.25 µg/L	0.012
M6-PFDA	7.967	519.1 -> 474.1	8939	1.25 µg/L	0.000
M7-PFUnDA	8.424	570.0 -> 525.1	10668	1.25 µg/L	0.000
M2-PFDoDA	8.855	615.1 -> 570.0	10376	1.25 µg/L	0.012
M2-PFTeDA	9.624	715.2 -> 670.0	10372	1.25 µg/L	0.012
M8-FOSA	9.794	506.1 -> 77.8	6939	2.50 µg/L	0.025
M3-PFBS	5.128	302.1 -> 79.9	7595	2.50 µg/L	0.012
M3-PFHxS	6.992	402.1 -> 79.9	6372	2.50 µg/L	0.012
M8-PFOS	8.093	507.1 -> 79.9	7056	2.50 µg/L	0.012
M2-4:2FTS	4.971	329.1 -> 80.9	866	5.00 µg/L	0.000
M2-6:2FTS	6.699	429.1 -> 80.9	1773	5.00 µg/L	0.000
M2-8:2FTS	7.779	529.1 -> 80.9	2389	5.00 µg/L	0.012
M3-MeFOSAA	8.062	573.2 -> 419.0	11818	5.00 µg/L	0.012
M3-HFPO-DA	5.627	286.9 -> 168.9	23203	10.00 µg/L	0.012
M5-EtFOSAA	8.259	589.2 -> 419.0	9747	5.00 µg/L	0.012
M7-MeFOSE	11.022	623.2 -> 58.9	28578	25.00 µg/L	0.012
M9-EtFOSE	11.306	639.2 -> 58.9	32928	25.00 µg/L	0.012
M5-EtFOSA	11.397	531.1 -> 219.0	5377	2.50 µg/L	0.012
M3-MeFOSA	11.114	515.0 -> 219.0	4430	2.50 µg/L	0.000
13C4-PFOS	8.093	502.8 -> 79.9	5588	2.50 µg/L	0.012
13C3-PFBA	2.591	216.0 -> 172.0	38785	5.00 µg/L	0.000
18O2-PFHxS	7.004	403.0 -> 83.9	3842	2.50 µg/L	0.025
13C4-PFOA	6.939	417.1 -> 372.0	33118	2.50 µg/L	0.012
13C2-PFDA	7.967	515.1 -> 470.1	9491	1.25 µg/L	0.000
13C5-PFNA	7.484	468.0 -> 423.0	12460	1.25 µg/L	0.012
13C2-PFHxA	5.273	315.1 -> 270.0	29021	2.50 µg/L	0.012

System Monitoring Compounds

13C2-4:2FTS	4.971	329.1 -> 80.9	866	5.90 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.1%		
13C2-6:2FTS	6.699	429.1 -> 80.9	1773	5.70 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.9%		
13C2-8:2FTS	7.779	529.1 -> 80.9	2389	5.58 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.5%		
13C2-PFDoDA	8.855	615.1 -> 570.0	10376	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C2-PFTeDA	9.624	715.2 -> 670.0	10372	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C3-PFBS	5.128	302.1 -> 79.9	7595	2.61 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.5%		
13C3-PFHxS	6.992	402.1 -> 79.9	6372	2.64 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.6%		
13C4-PFBA	2.599	216.8 -> 171.9	80453	10.05 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C4-PFHpA	6.230	367.1 -> 322.0	25481	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C5-PFHxA	5.272	318.0 -> 273.0	25691	2.39 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.6%		
13C5-PFPeA	4.087	268.3 -> 223.0	35536	4.88 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C6-PFDA	7.967	519.1 -> 474.1	8939	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C7-PFUnDA	8.424	570.0 -> 525.1	10668	1.35 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.7%		
13C8-FOSA	9.794	506.1 -> 77.8	6939	2.66 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.3%		
13C8-PFOA	6.938	421.1 -> 376.0	29844	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C8-PFOS	8.093	507.1 -> 79.9	7056	2.58 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C9-PFNA	7.483	472.1 -> 427.0	12739	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.9%		
d3-MeFOSAA	8.062	573.2 -> 419.0	11818	5.16 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.3%		
13C3-HFPO-DA	5.627	286.9 -> 168.9	23203	9.58 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 95.8%		
d3-MeFOSA	11.114	515.0 -> 219.0	4430	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.8%		
d5-EtFOSAA	8.259	589.2 -> 419.0	9747	5.08 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.5%		
d7-MeFOSE	11.022	623.2 -> 58.9	28578	25.53 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 102.1%		
d9-EtFOSE	11.306	639.2 -> 58.9	32928	25.85 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 103.4%		
d5-EtFOSA	11.397	531.1 -> 219.0	5377	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.9%		
Target Compounds					QValue
4:2FTS	4.972	327.1 -> 307.0	14698	9.26 µg/L	100
		327.1 -> 80.9	6344		
6:2FTS	6.712	427.1 -> 407.0	17765	9.64 µg/L	99
		427.1 -> 80.9	6359		
8:2FTS	7.779	527.1 -> 507.0	12726	10.04 µg/L	96
		527.1 -> 80.8	5636		
EtFOSAA	8.259	584.2 -> 419.1	4798	2.60 µg/L	m 97
		584.2 -> 526.0	1961		
FOSA	9.785	498.1 -> 77.9	8259	2.56 µg/L	96
		498.1 -> 478.0	322		
MeFOSAA	8.062	570.1 -> 419.0	5198	2.75 µg/L	97
		570.1 -> 483.0	1183		
PFBA	2.595	212.8 -> 168.9	28073	10.14 µg/L	100
PFBS	5.117	298.7 -> 79.9	5827	2.32 µg/L	96
		298.7 -> 98.8	2051		
PFDA	7.968	512.9 -> 469.0	16054	2.36 µg/L	95
		512.9 -> 219.0	3552		
PFDODA	8.856	613.1 -> 569.0	21147	2.50 µg/L	99
		613.1 -> 319.0	3721		
PFDS	8.995	599.0 -> 79.9	4074	2.28 µg/L	95

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.230	599.0 -> 98.8	2123	2.53	µg/L	100
		363.1 -> 319.0	38966			
PFHpS	7.586	363.1 -> 169.0	7021	2.37	µg/L	92
		449.0 -> 79.9	6443			
PFHxA	5.275	449.0 -> 98.9	3368	2.56	µg/L	99
		313.0 -> 269.0	21977			
PFHxS	6.993	313.0 -> 118.9	679	2.22	µg/L	91
		398.7 -> 79.9	4050			
PFNA	7.484	398.7 -> 98.9	2369	2.59	µg/L	97
		463.0 -> 419.0	20398			
PFNS	8.561	463.0 -> 219.0	4833	2.58	µg/L	95
		548.8 -> 79.9	3406			
PFOA	6.940	548.8 -> 98.9	1726	2.57	µg/L	98
		413.0 -> 369.0	34193			
PFOS	8.094	413.0 -> 169.0	6807	2.43	µg/L	91
		498.9 -> 79.9	7276			
PFPeA	4.089	498.9 -> 98.8	3114	5.08	µg/L	100
		263.0 -> 219.0	35873			
PFPeS	6.220	349.1 -> 79.9	4589	2.25	µg/L	95
		349.1 -> 98.9	2211			
PFTeDA	9.625	713.1 -> 669.0	19349	2.55	µg/L	99
		713.1 -> 168.9	2224			
PFTrDA	9.267	663.0 -> 619.0	23574	2.62	µg/L	98
		663.0 -> 168.9	3153			
PFUnDA	8.424	563.1 -> 519.0	20509	2.39	µg/L	100
		563.1 -> 269.1	4309			
11CI-PF3OUdS	9.282	630.9 -> 450.9	34577	4.83	µg/L	99
		632.9 -> 452.9	10979			
9CI-PF3ONS	8.426	530.8 -> 351.0	36526	5.03	µg/L	99
		532.8 -> 353.0	10890			
ADONA	6.506	376.9 -> 250.9	95469	5.30	µg/L	98
		376.9 -> 84.8	22818			
HFPO-DA	5.628	284.9 -> 168.9	12141	5.27	µg/L	100
		284.9 -> 184.9	1292			
3:3FTCA	3.536	241.0 -> 177.0	5274	12.19	µg/L	99
		241.0 -> 117.0	463			
5:3FTCA	5.955	341.0 -> 237.1	96612	64.81	µg/L	99
		341.0 -> 217.0	69494			
7:3FTCA	7.512	441.0 -> 316.9	42887	63.87	µg/L	96
		441.0 -> 336.9	103793			
EtFOSA	11.399	526.0 -> 219.0	11709	5.21	µg/L	100
		526.0 -> 169.0	16092			
EtFOSE	11.320	630.0 -> 58.9	15201	12.26	µg/L	100
		511.9 -> 219.0	8350			
MeFOSA	11.128	511.9 -> 169.0	11794	5.28	µg/L	94
		616.1 -> 58.9	15368			
MeFOSE	11.035	699.1 -> 79.9	3473	12.76	µg/L	100
		699.1 -> 98.8	1962			
PFDoDS	9.752	295.0 -> 201.0	3112	4.21	µg/L	91
		295.0 -> 84.9	947			
NFDHA	5.154	279.0 -> 85.1	19609	5.04	µg/L	100
		229.0 -> 84.9	22738			
PFMBA	4.491	314.8 -> 134.9	31362	4.64	µg/L	99
		314.8 -> 82.9	995			

= Qualifier out of range, m = manually integrated, + = Area summed

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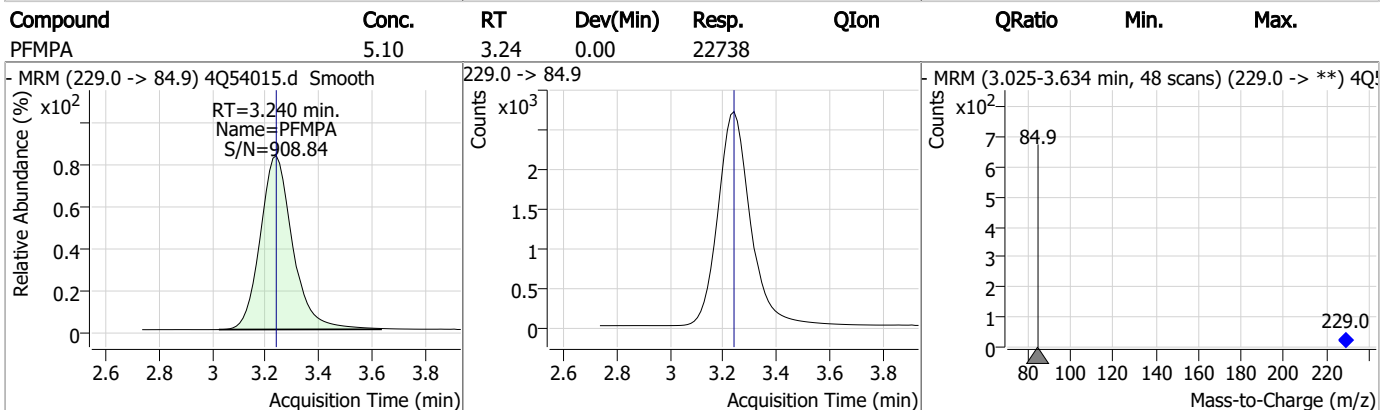
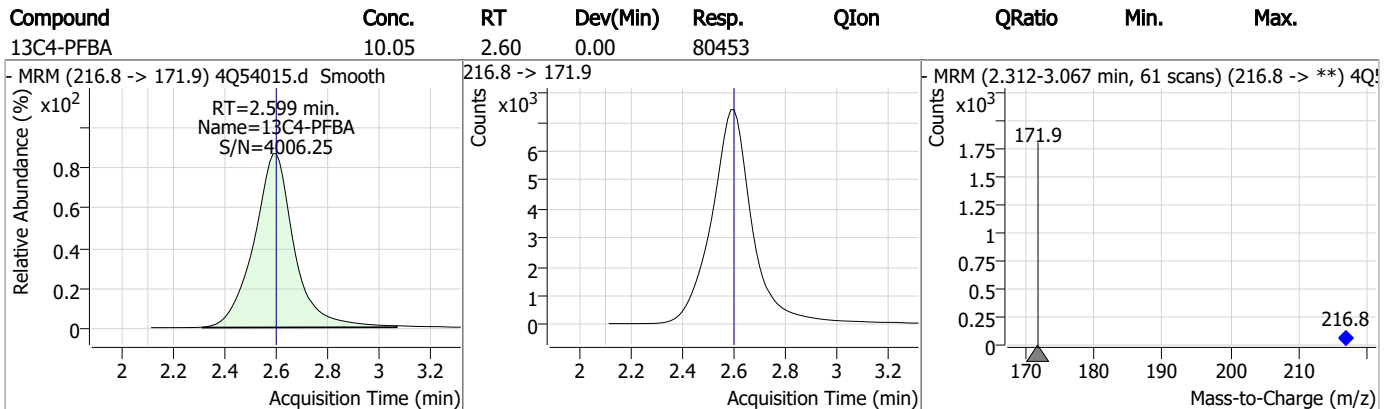
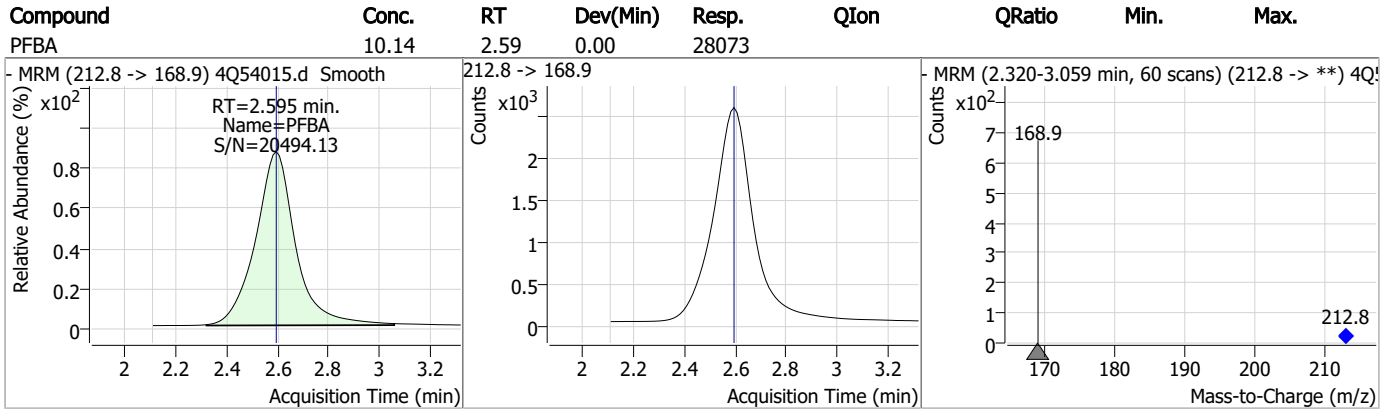
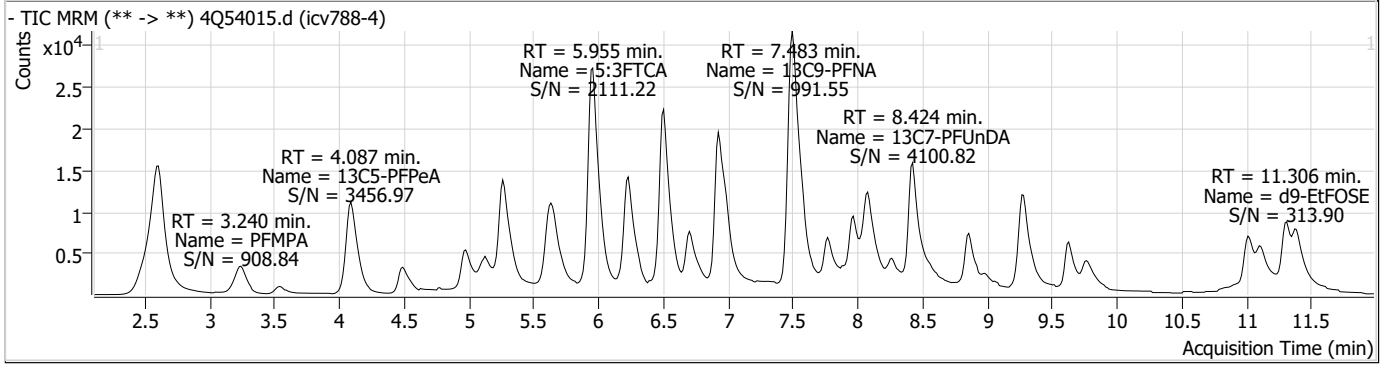
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.25

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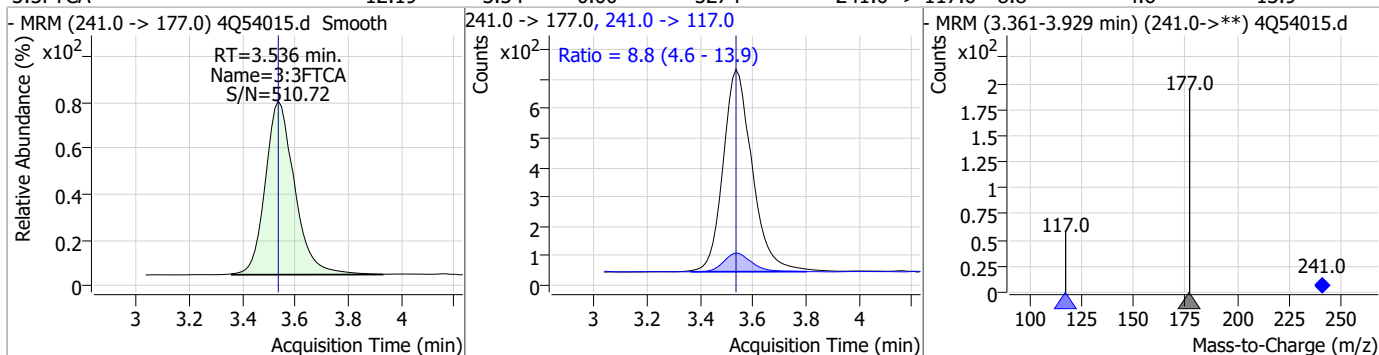
Perfluorinated Compounds by LC/MS/MS



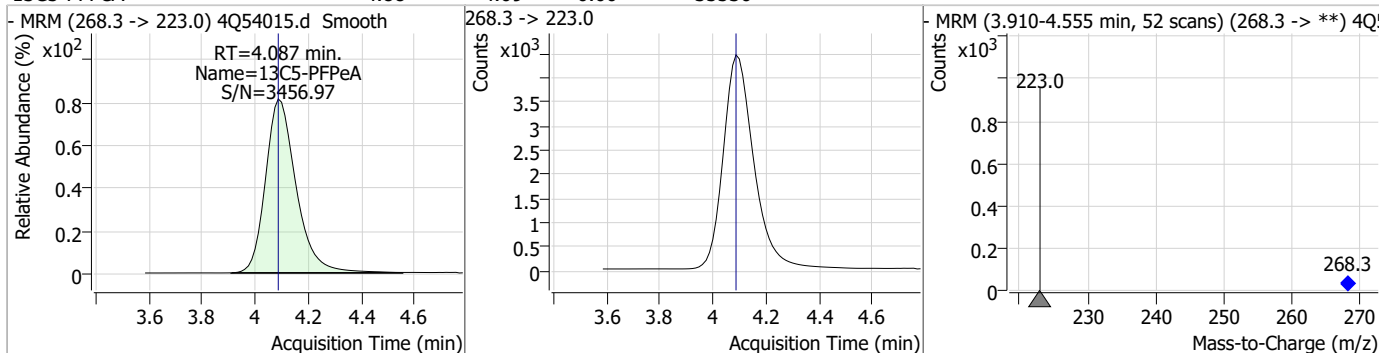
7.7.25
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Perfluorinated Compounds by LC/MS/MS

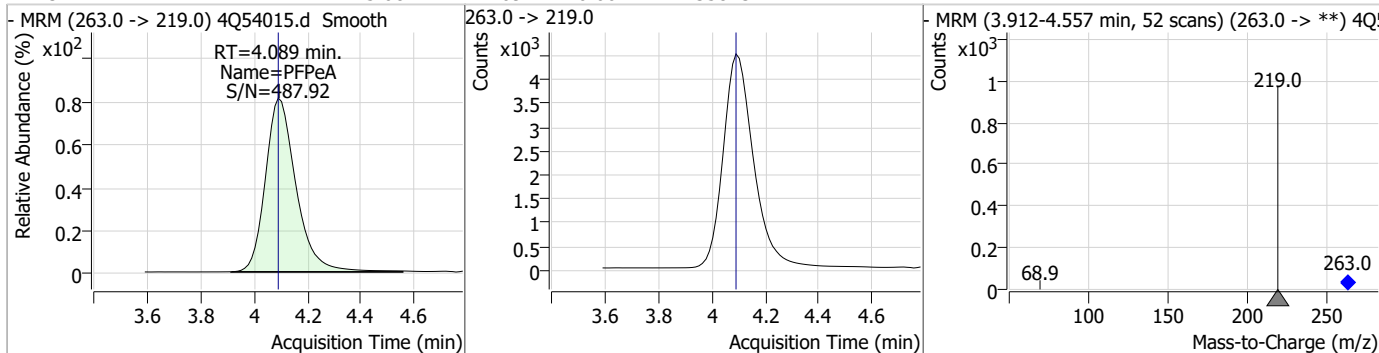
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	12.19	3.54	0.00	5274	241.0 -> 117.0	8.8	4.6	13.9



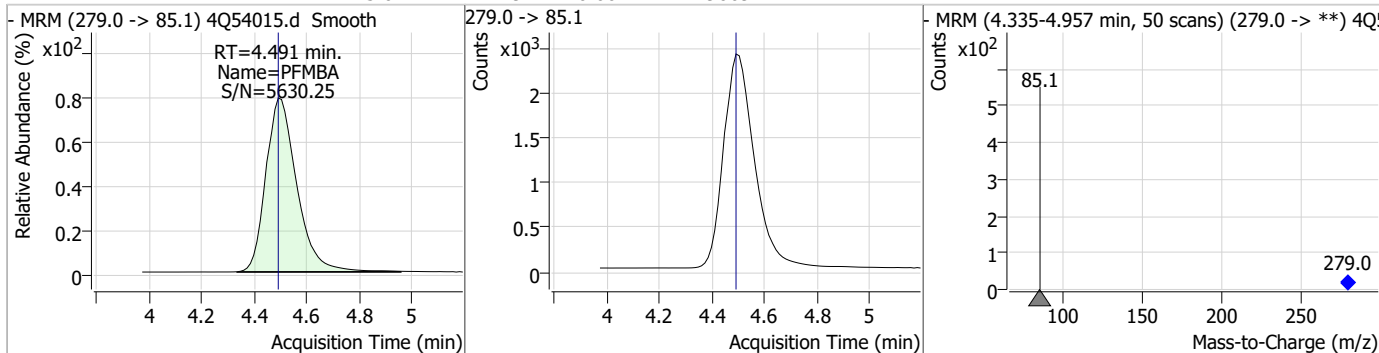
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.88	4.09	0.00	35536				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	5.08	4.09	0.00	35873				

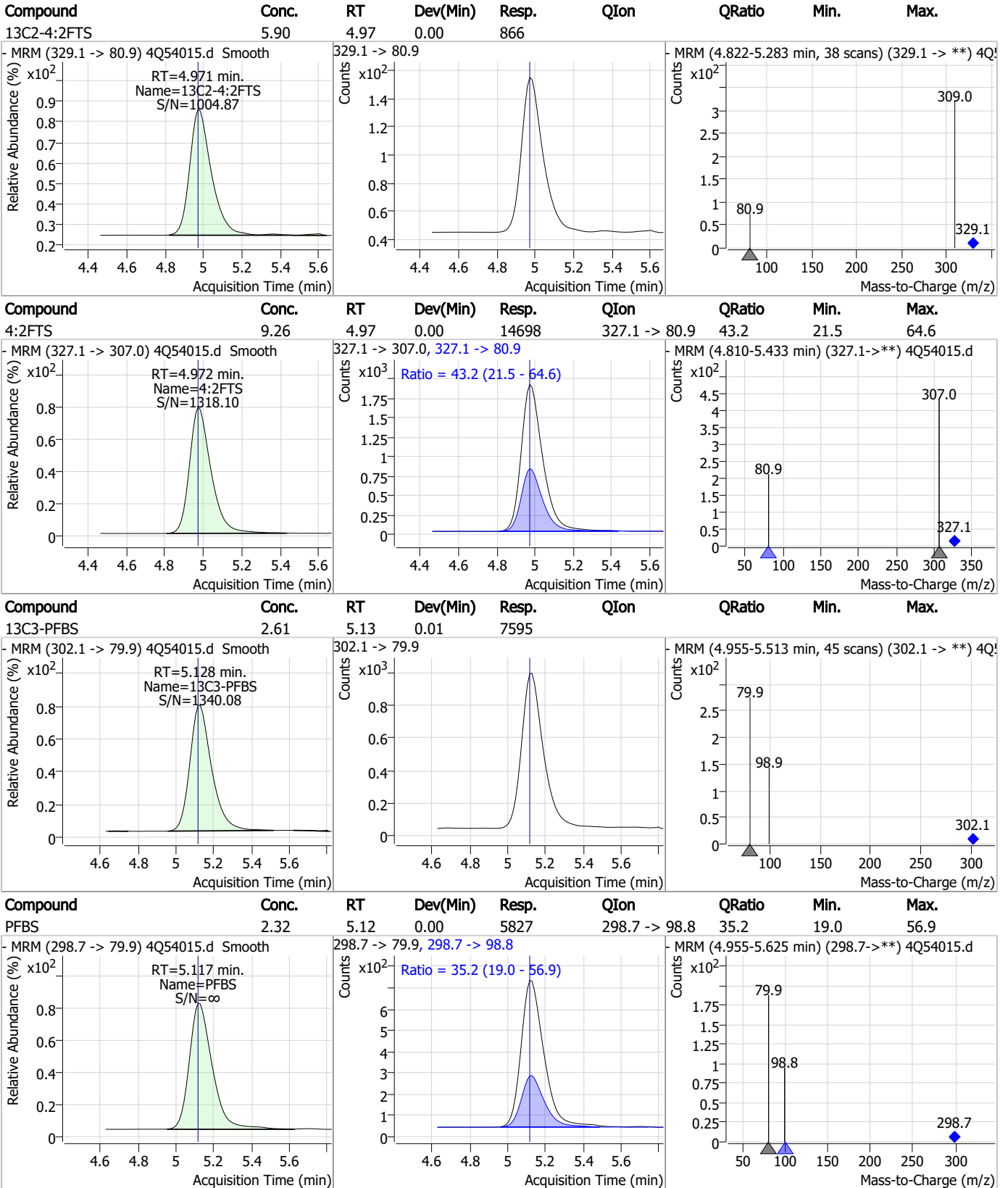


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	5.04	4.49	0.00	19609				



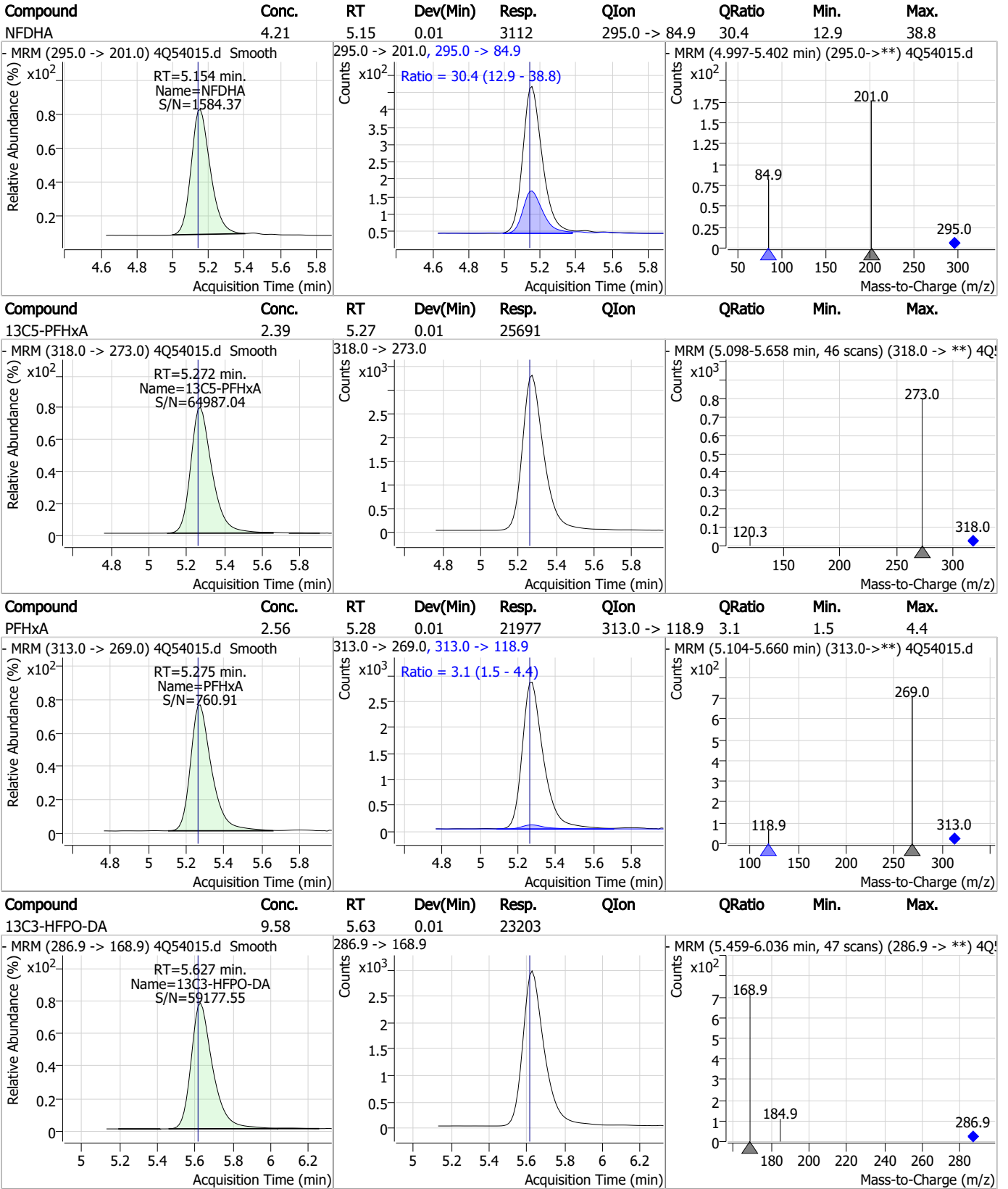
7.7.25 7

Perfluorinated Compounds by LC/MS/MS



7.7.25 7

Perfluorinated Compounds by LC/MS/MS

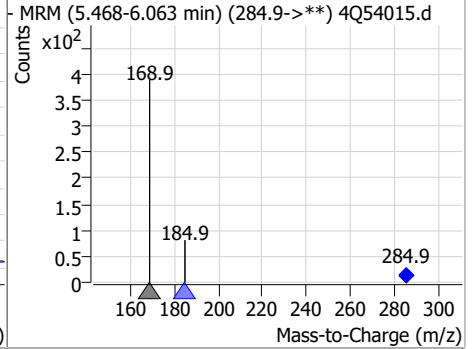
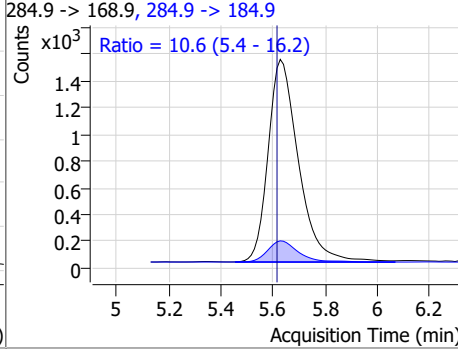
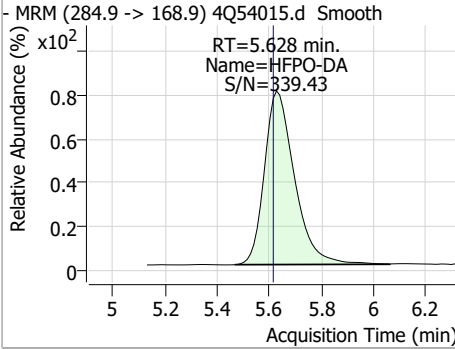


7.7.25 7

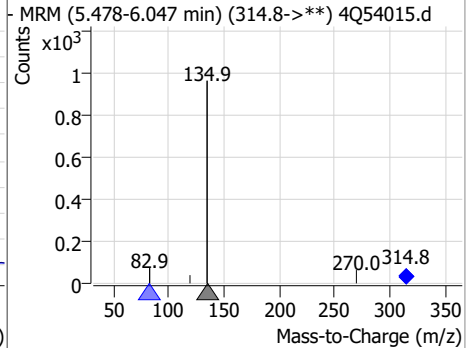
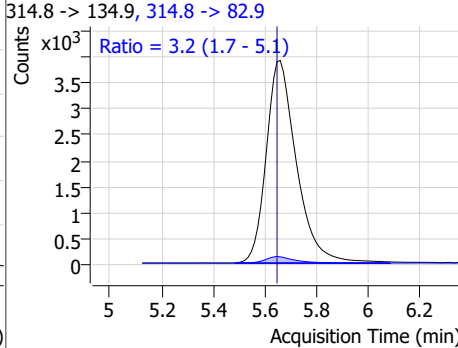
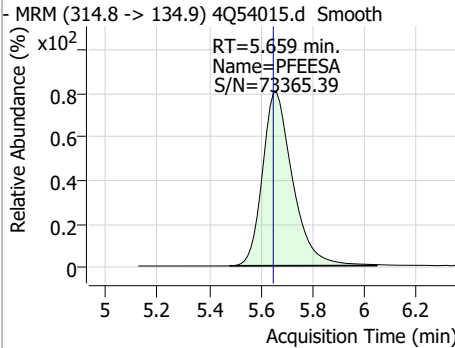


Perfluorinated Compounds by LC/MS/MS

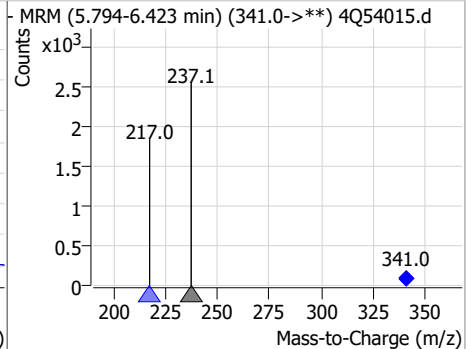
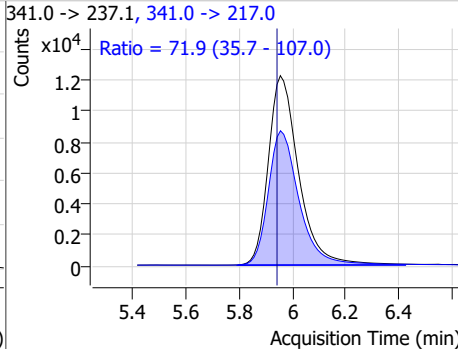
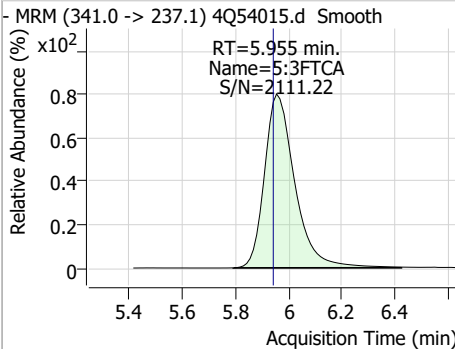
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	5.27	5.63	0.01	12141	284.9 -> 184.9	10.6	5.4	16.2



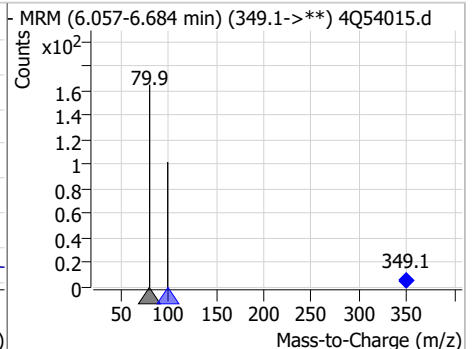
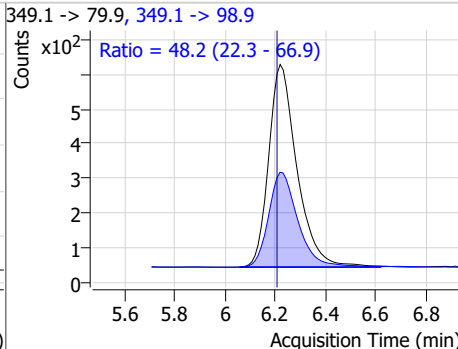
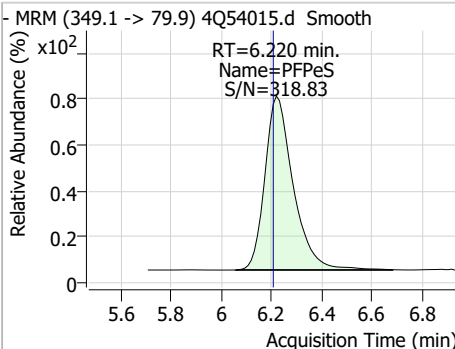
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.64	5.66	0.01	31362	314.8 -> 82.9	3.2	1.7	5.1



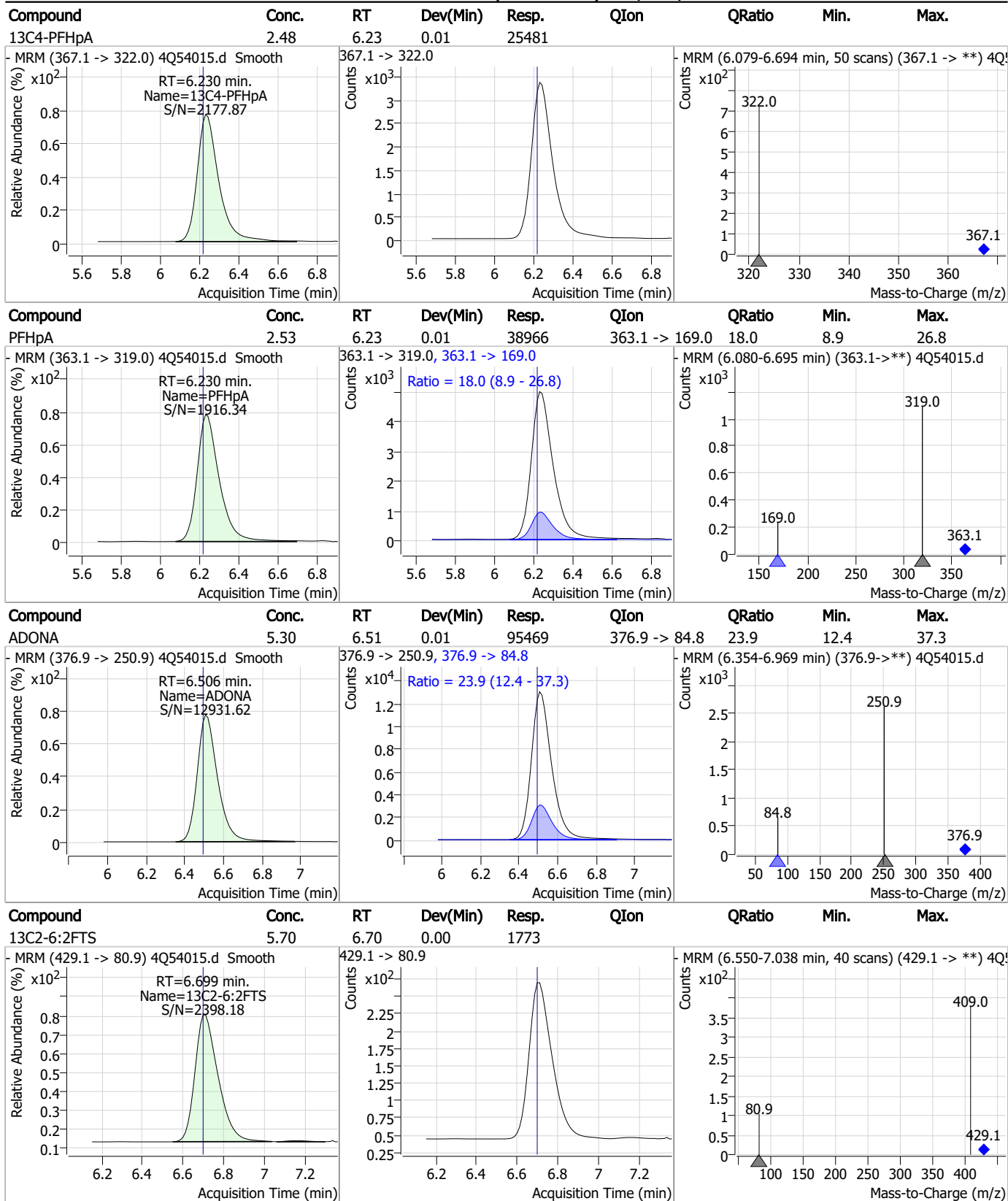
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	64.81	5.96	0.01	96612	341.0 -> 217.0	71.9	35.7	107.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.25	6.22	0.01	4589	349.1 -> 98.9	48.2	22.3	66.9

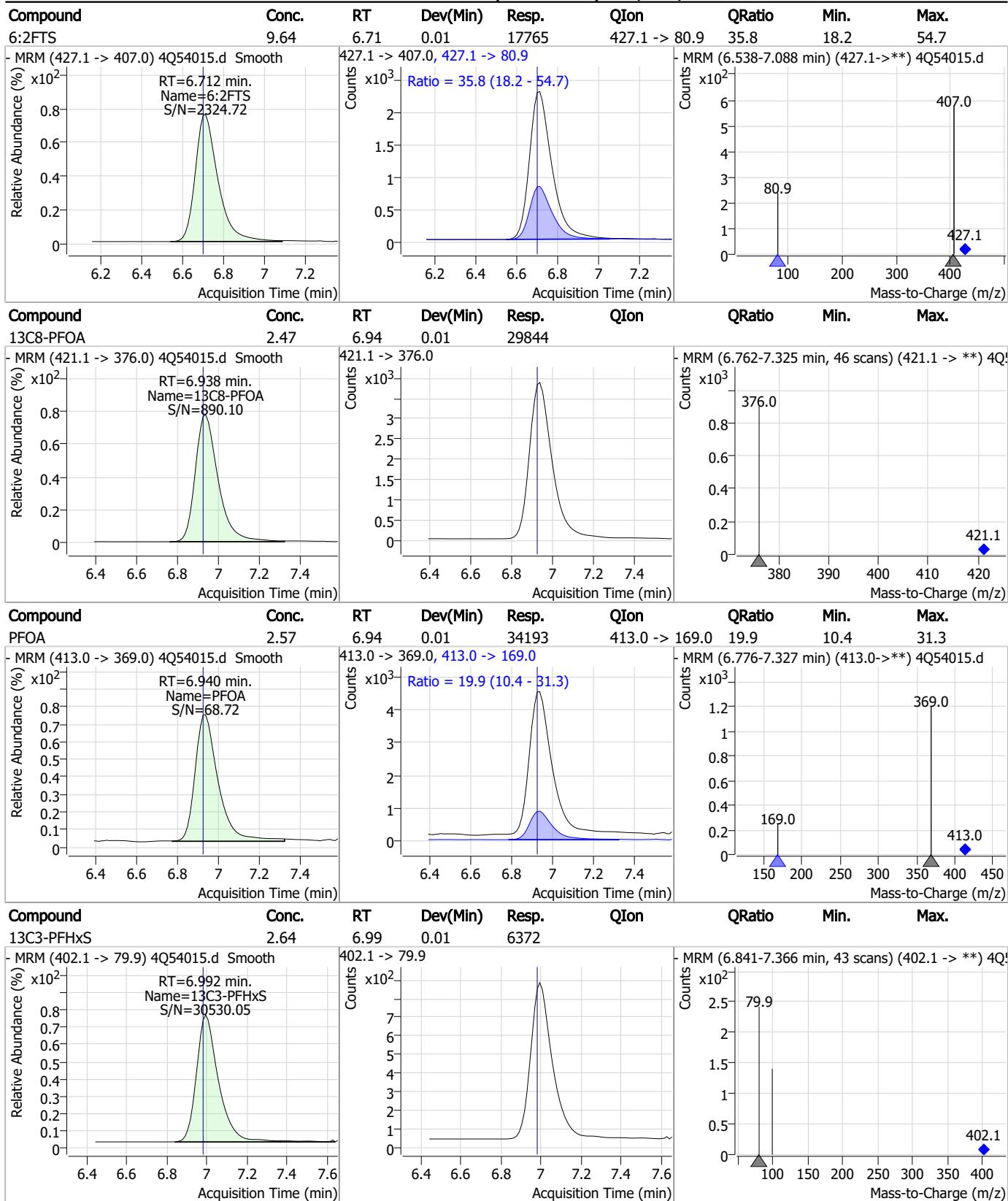


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

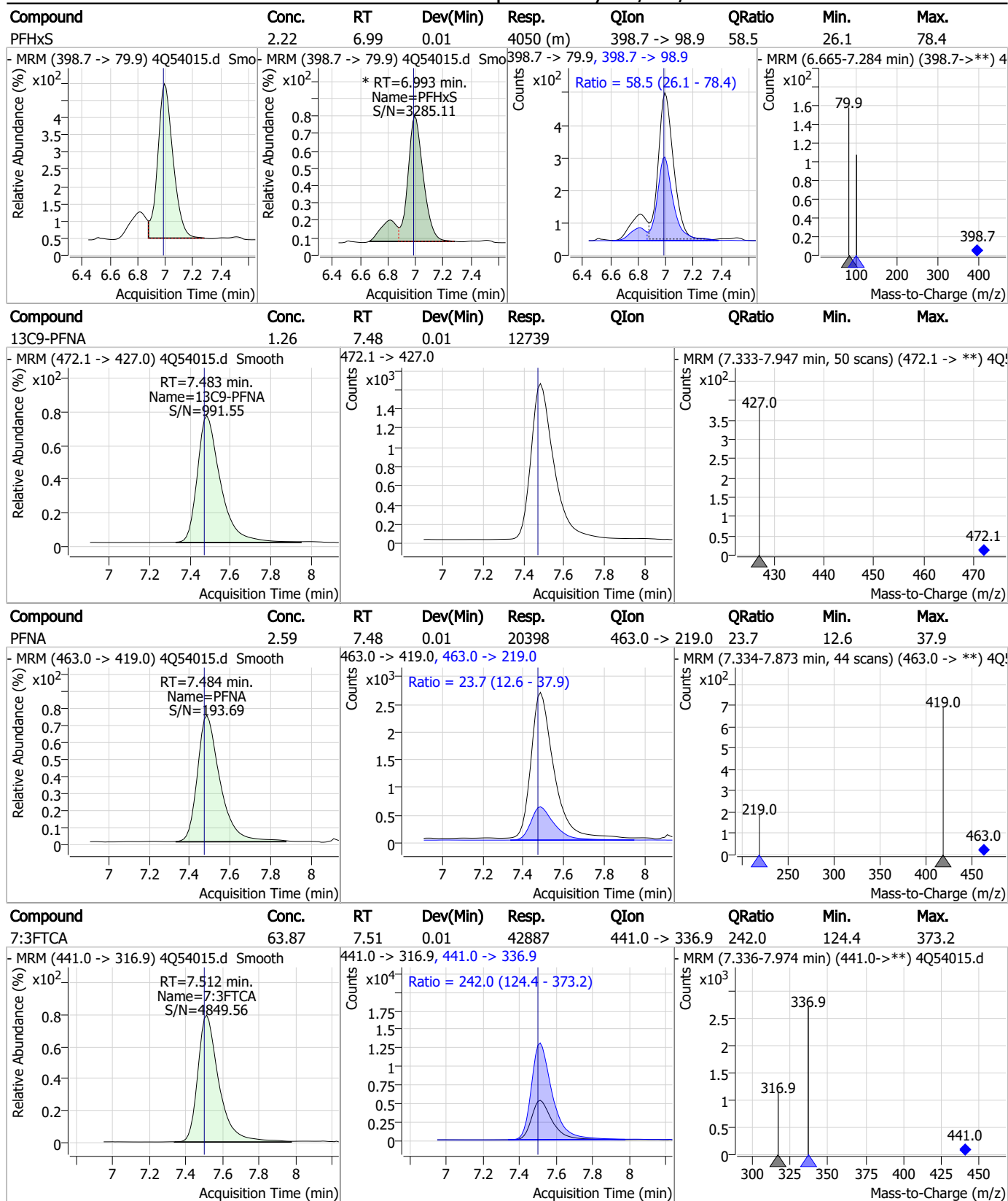


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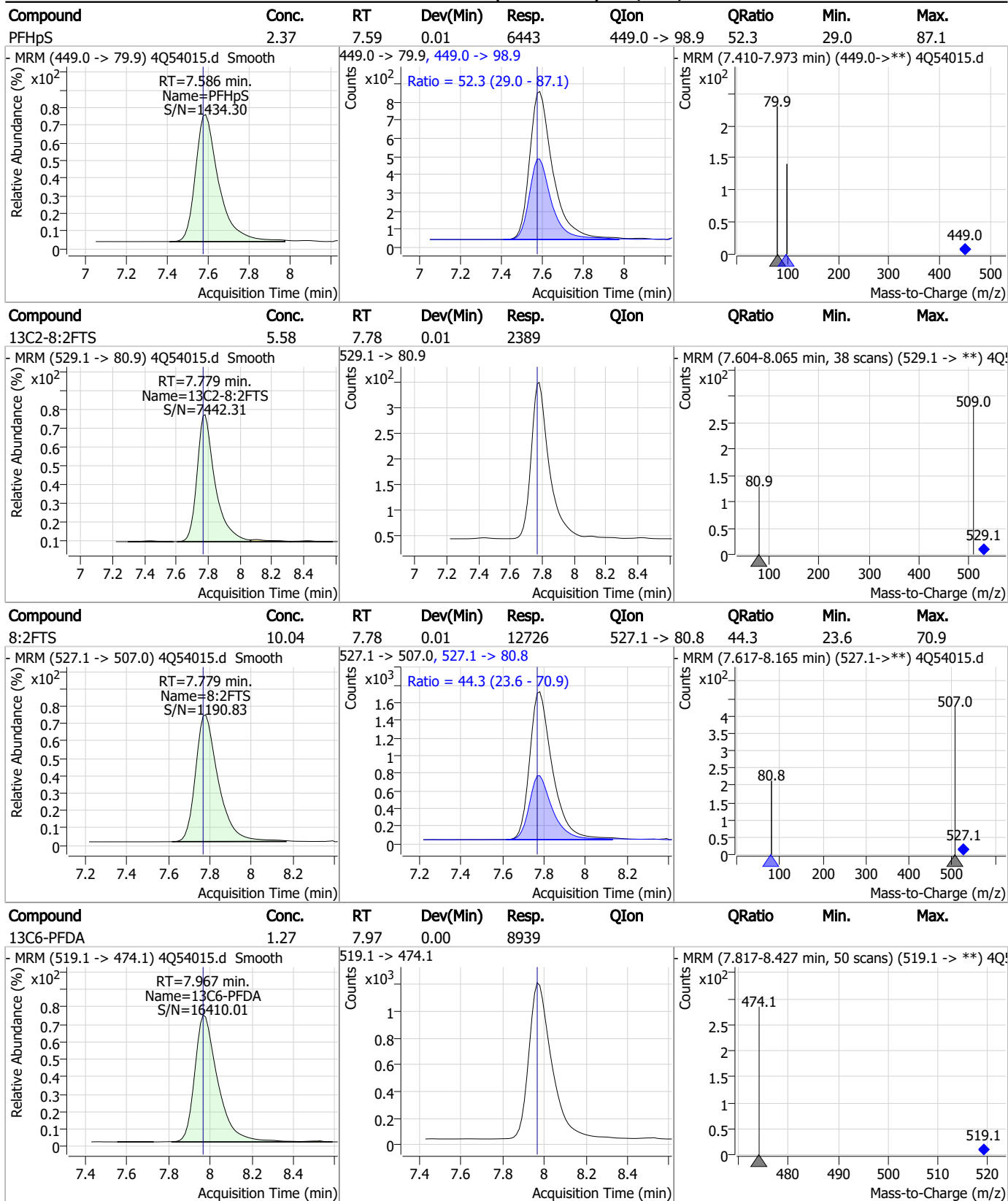


Perfluorinated Compounds by LC/MS/MS



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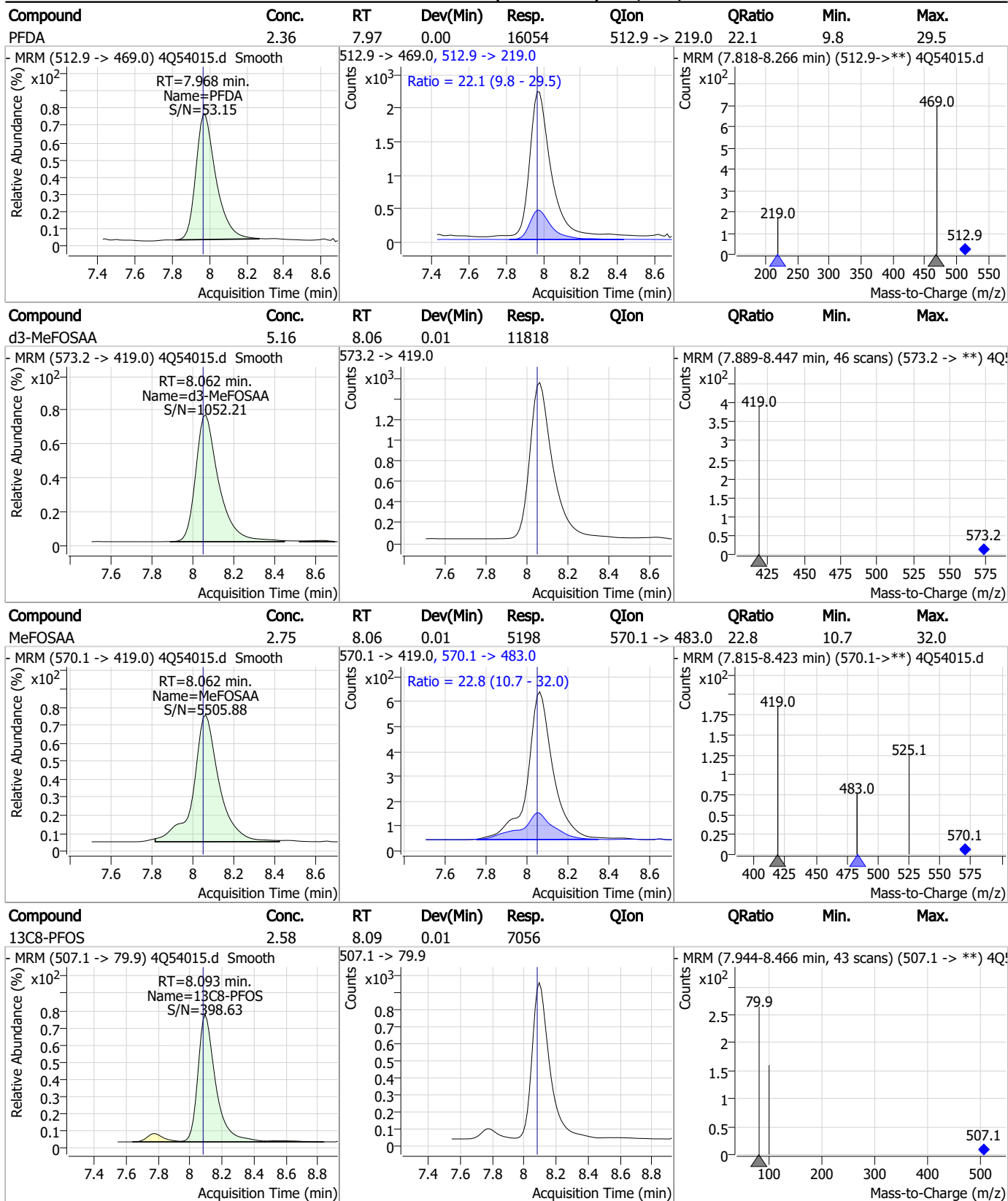
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

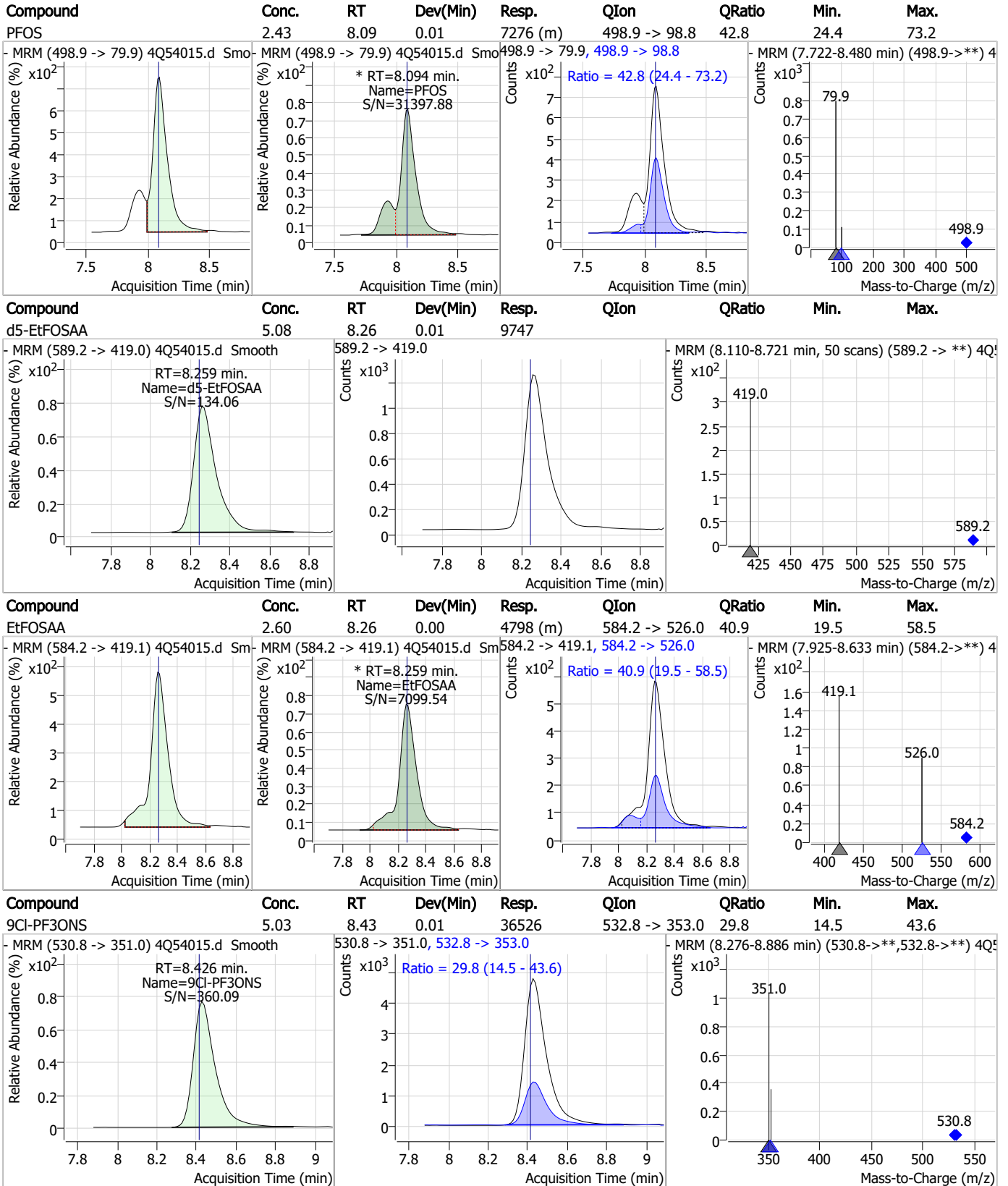


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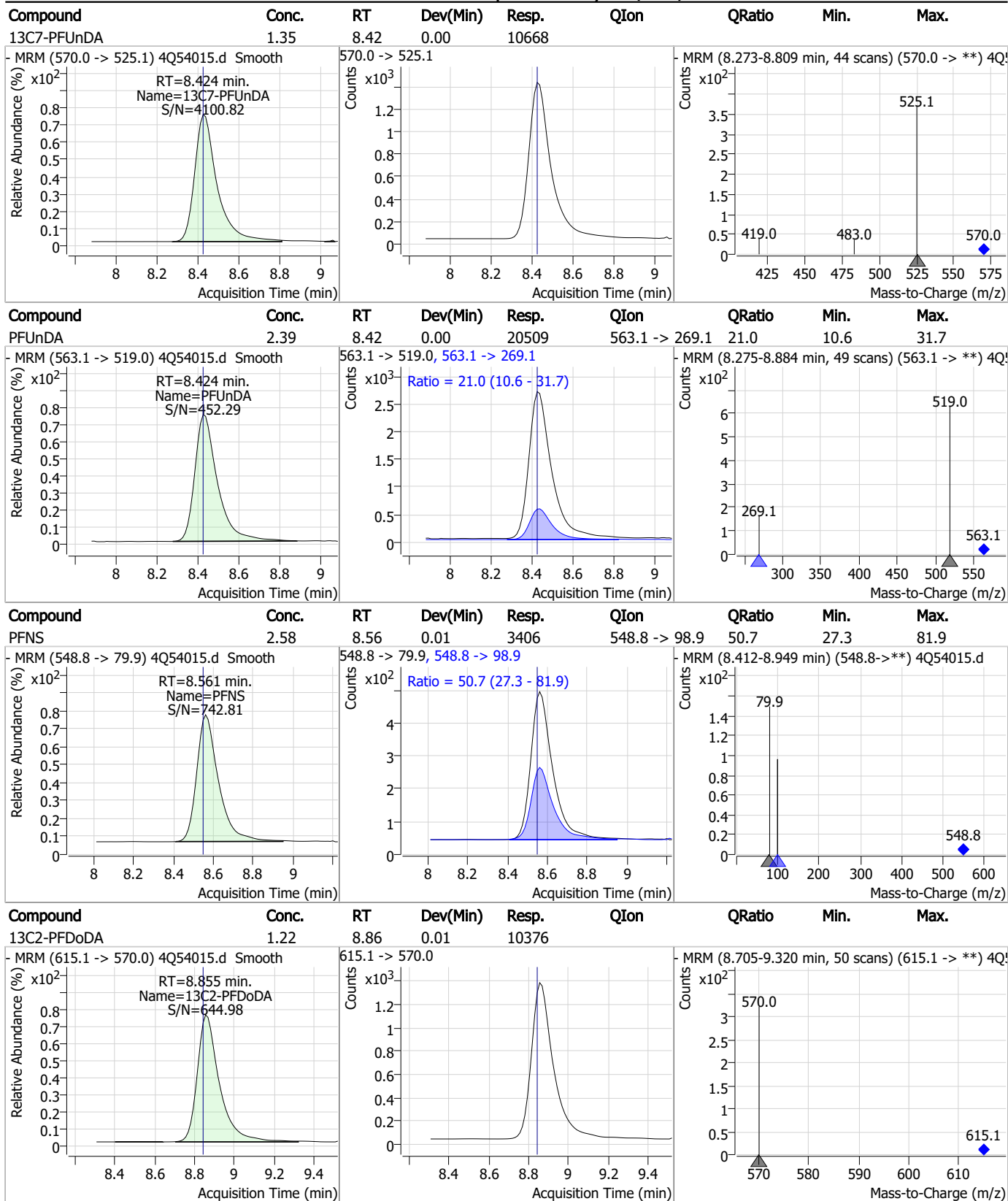
Perfluorinated Compounds by LC/MS/MS



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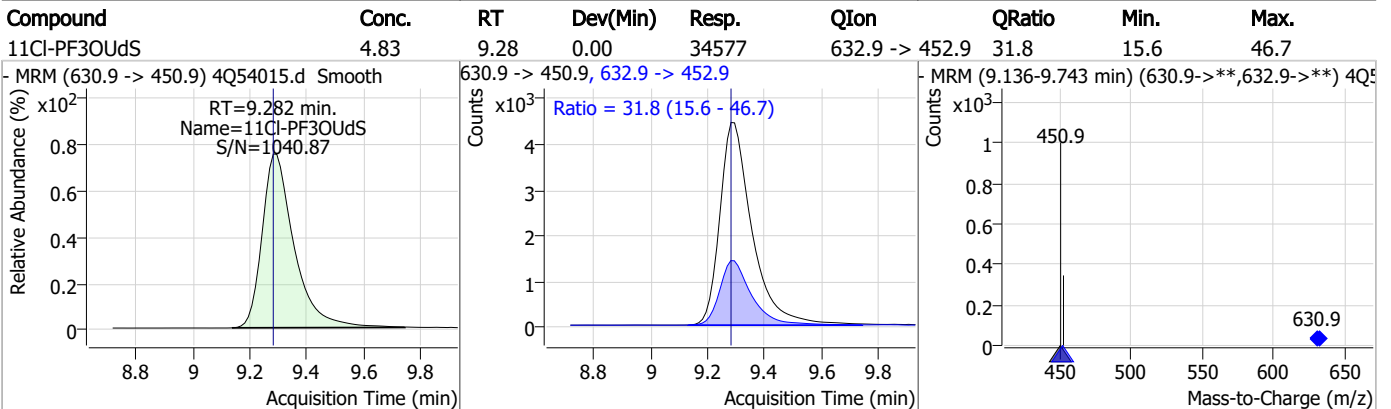
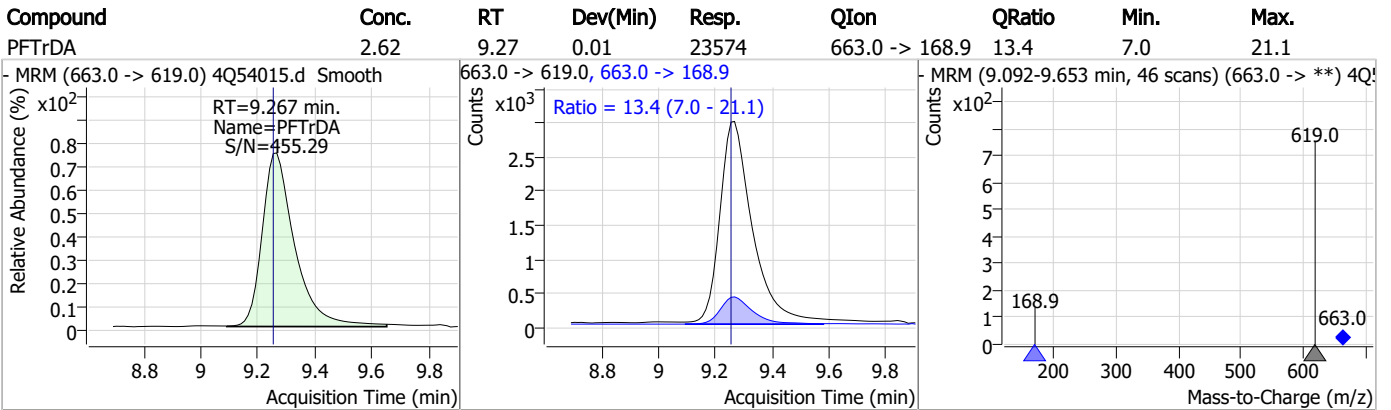
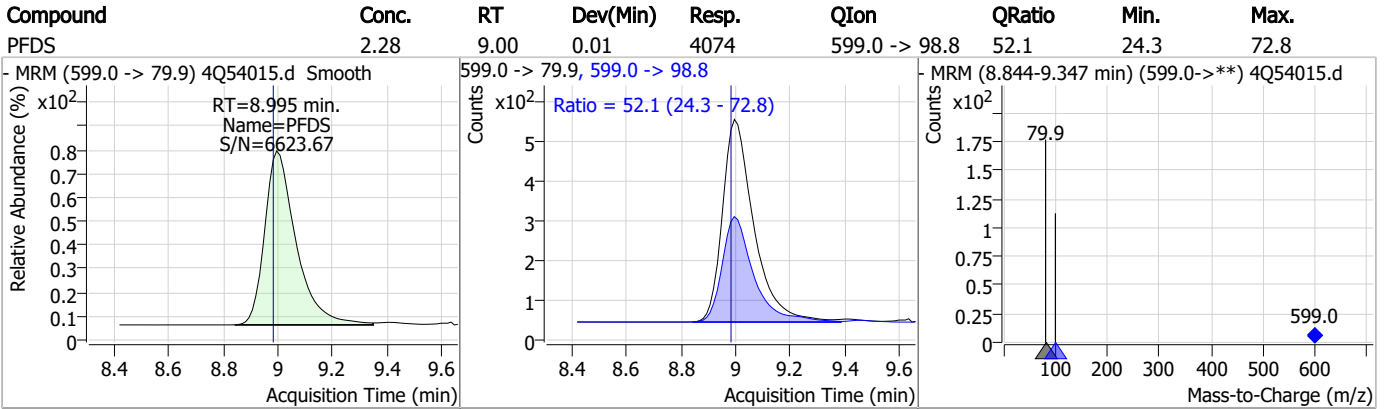
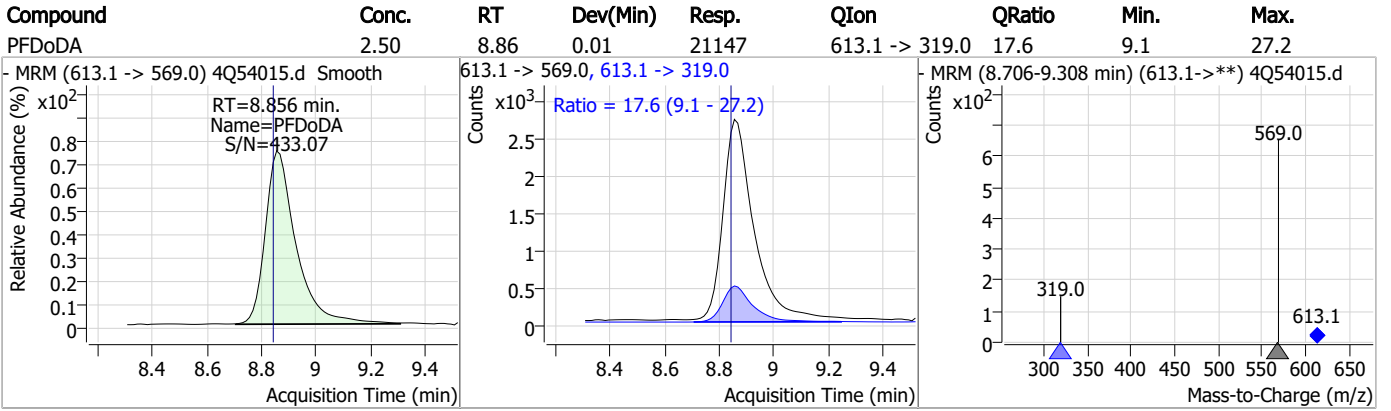
Perfluorinated Compounds by LC/MS/MS



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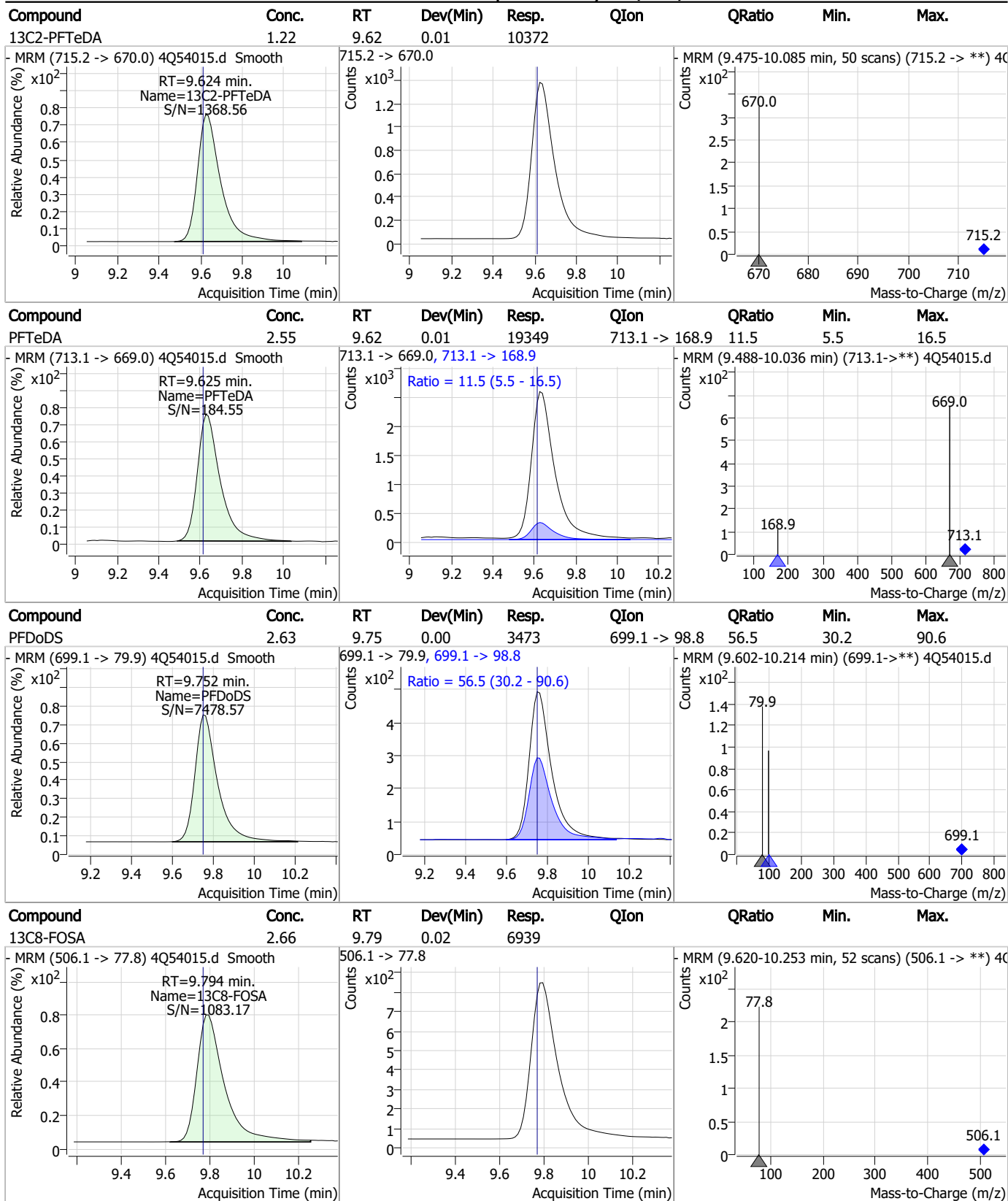


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



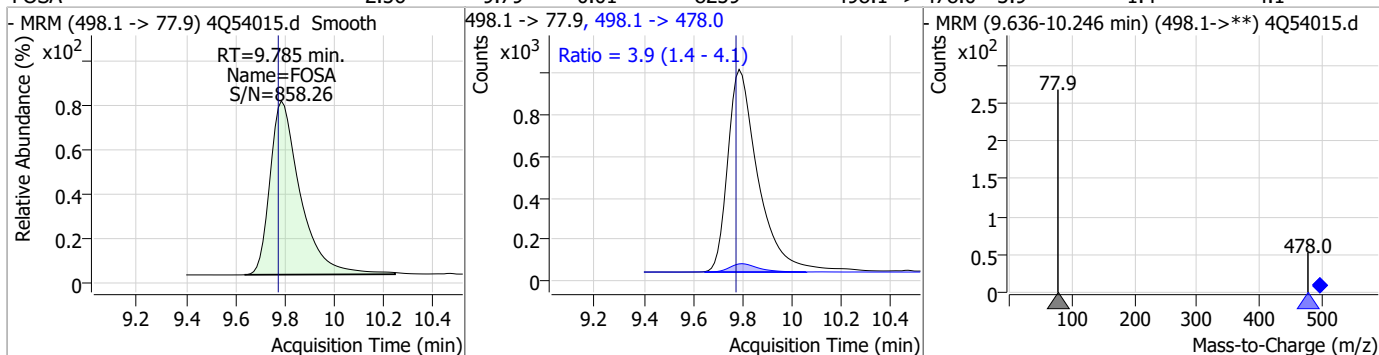
7.7.25

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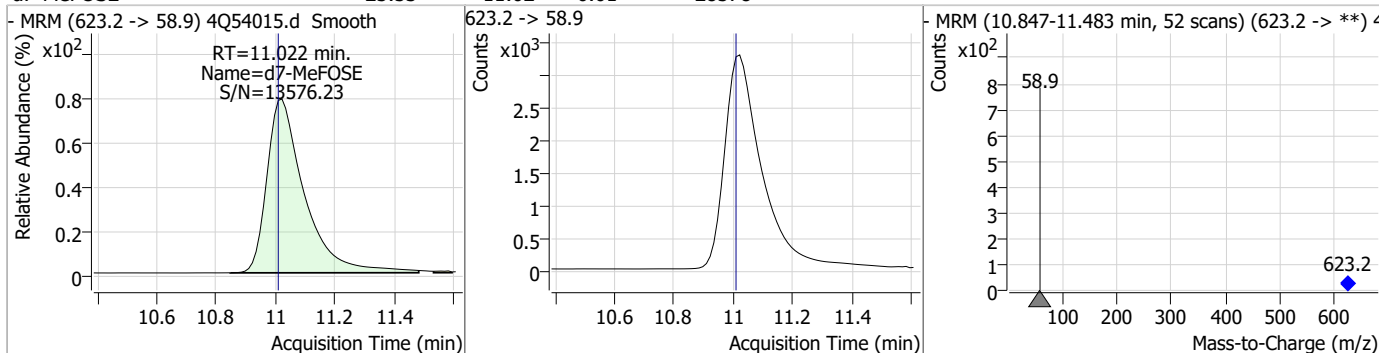


Perfluorinated Compounds by LC/MS/MS

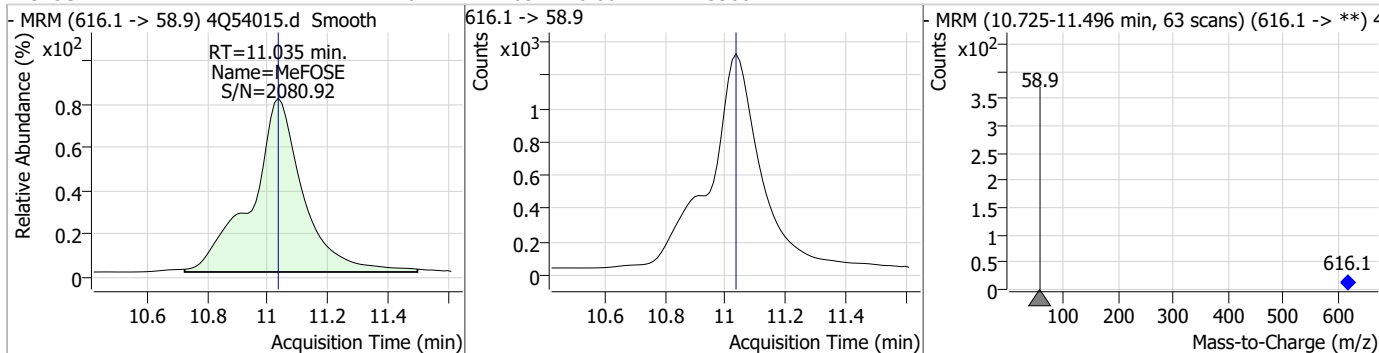
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.56	9.79	0.01	8259	498.1 -> 478.0	3.9	1.4	4.1



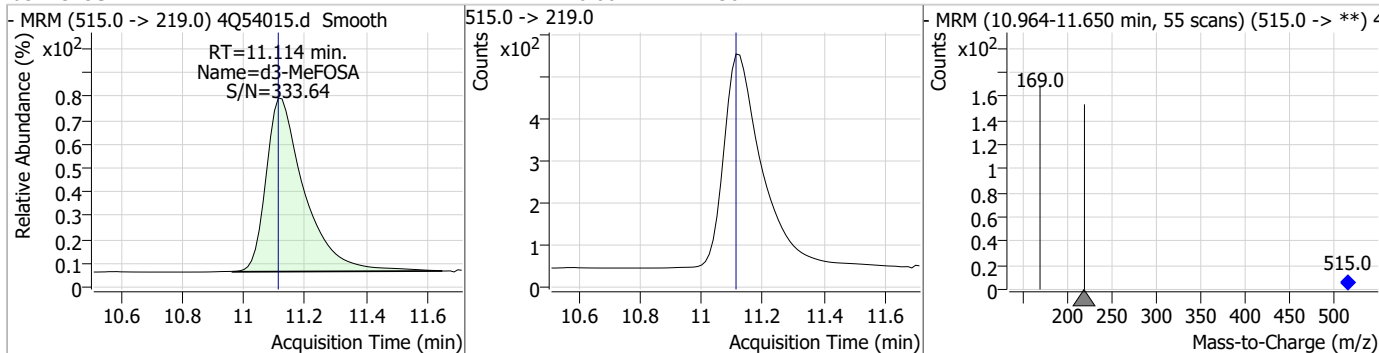
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.53	11.02	0.01	28578	623.2 -> 58.9			



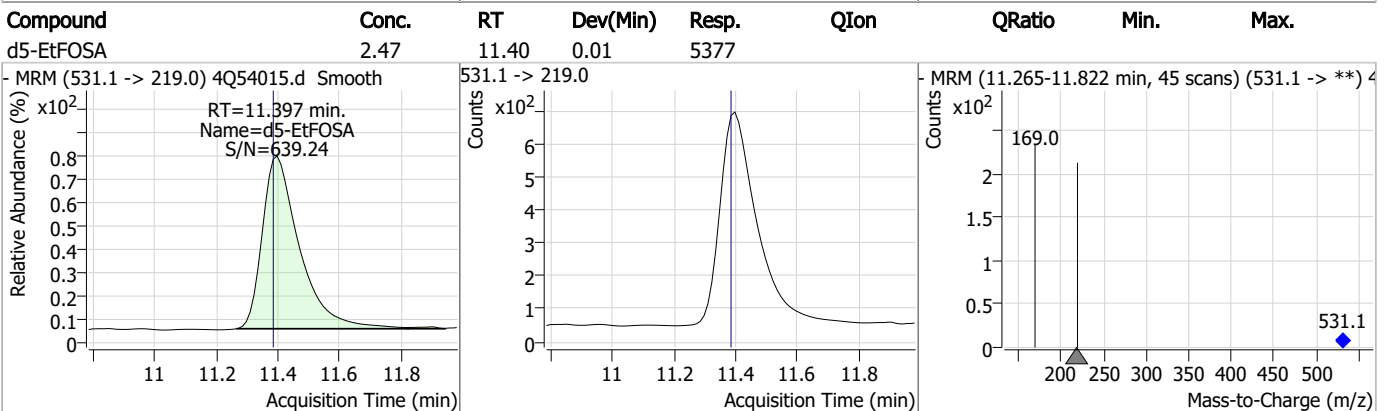
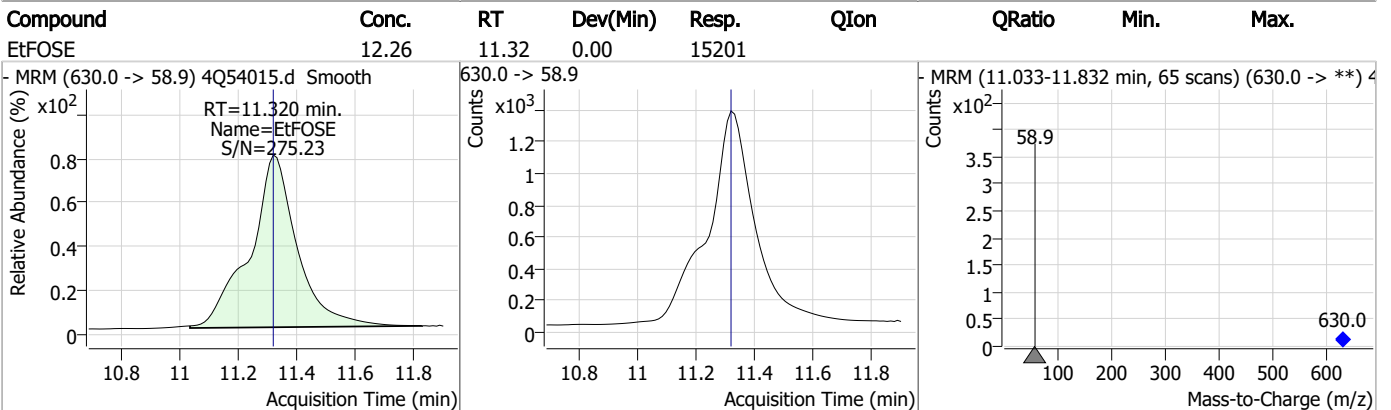
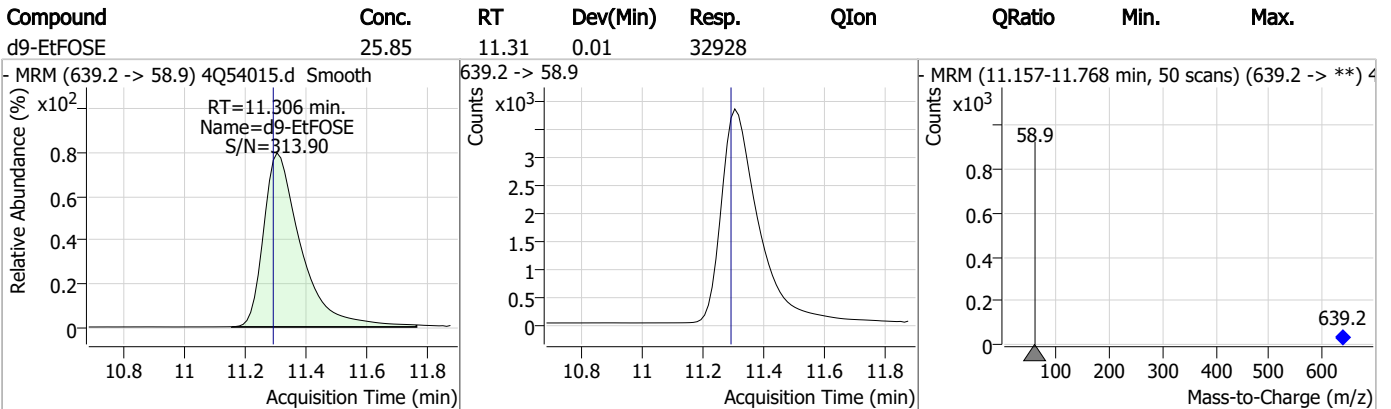
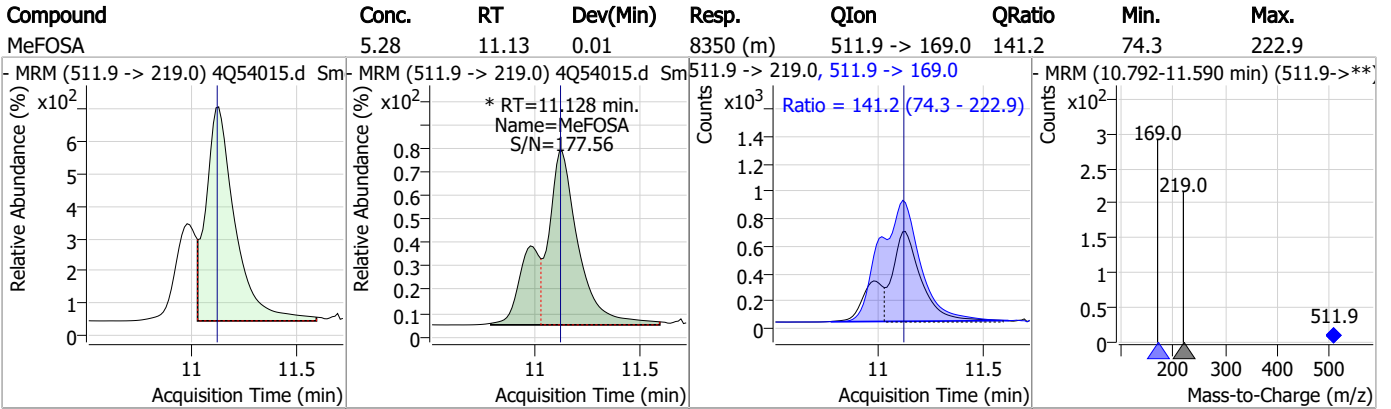
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.76	11.03	0.00	15368	616.1 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.47	11.11	0.00	4430	515.0 -> 169.0			



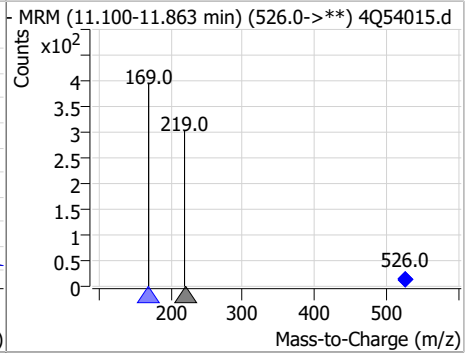
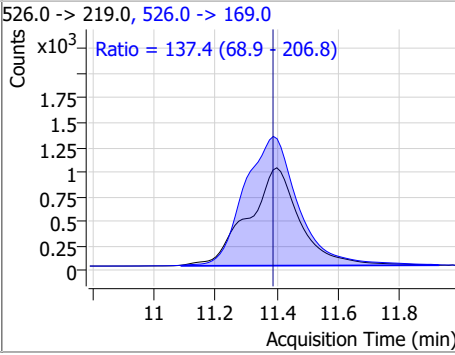
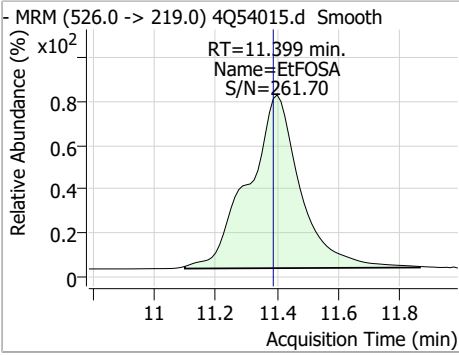
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	5.21	11.40	0.01	11709	526.0 -> 169.0	137.4	68.9	206.8



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Manual Integration Approval Summary

Sample Number: S4Q788-ICV788 Method: EPA DRAFT 1633
Lab FileID: 4Q54015.D Analyst approved: 11/18/23 15:04 Mike Eger
Injection Time: 11/17/23 13:38 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.99	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.09	Split peak
EtFOSAA	2991-50-6		8.26	Split peak
MeFOSA	31506-32-8		11.13	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54016.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 1:53:15 PM
 Sample Name : icv788-20
 Vial : P1-B4
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.612	216.8 -> 171.9	85981	10.00 µg/L	0.012
M5-PFPeA	4.100	268.3 -> 223.0	37338	5.00 µg/L	0.012
M5-PFHxA	5.272	318.0 -> 273.0	27155	2.50 µg/L	0.012
M4-PFHpA	6.230	367.1 -> 322.0	25683	2.50 µg/L	0.012
M8-PFOA	6.938	421.1 -> 376.0	31149	2.50 µg/L	0.012
M9-PFNA	7.483	472.1 -> 427.0	13235	1.25 µg/L	0.012
M6-PFDA	7.979	519.1 -> 474.1	9343	1.25 µg/L	0.012
M7-PFUnDA	8.424	570.0 -> 525.1	10609	1.25 µg/L	0.000
M2-PFDoDA	8.855	615.1 -> 570.0	11091	1.25 µg/L	0.012
M2-PFTeDA	9.624	715.2 -> 670.0	10975	1.25 µg/L	0.012
M8-FOSA	9.781	506.1 -> 77.8	6755	2.50 µg/L	0.012
M3-PFBS	5.128	302.1 -> 79.9	8216	2.50 µg/L	0.012
M3-PFHxS	6.992	402.1 -> 79.9	6827	2.50 µg/L	0.012
M8-PFOS	8.093	507.1 -> 79.9	7150	2.50 µg/L	0.012
M2-4:2FTS	4.984	329.1 -> 80.9	835	5.00 µg/L	0.012
M2-6:2FTS	6.711	429.1 -> 80.9	1683	5.00 µg/L	0.012
M2-8:2FTS	7.779	529.1 -> 80.9	2653	5.00 µg/L	0.012
M3-MeFOSAA	8.062	573.2 -> 419.0	12636	5.00 µg/L	0.012
M3-HFPO-DA	5.627	286.9 -> 168.9	24878	10.00 µg/L	0.012
M5-EtFOSAA	8.259	589.2 -> 419.0	10183	5.00 µg/L	0.012
M7-MeFOSE	11.022	623.2 -> 58.9	29769	25.00 µg/L	0.012
M9-EtFOSE	11.306	639.2 -> 58.9	33571	25.00 µg/L	0.012
M5-EtFOSA	11.398	531.1 -> 219.0	5928	2.50 µg/L	0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4833	2.50 µg/L	0.012
13C4-PFOS	8.093	502.8 -> 79.9	6062	2.50 µg/L	0.012
13C3-PFBA	2.616	216.0 -> 172.0	42209	5.00 µg/L	0.025
18O2-PFHxS	6.991	403.0 -> 83.9	4137	2.50 µg/L	0.012
13C4-PFOA	6.939	417.1 -> 372.0	34768	2.50 µg/L	0.012
13C2-PFDA	7.980	515.1 -> 470.1	9971	1.25 µg/L	0.012
13C5-PFNA	7.484	468.0 -> 423.0	13243	1.25 µg/L	0.012
13C2-PFHxA	5.273	315.1 -> 270.0	29777	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	4.984	329.1 -> 80.9	835	5.29 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.7%		
13C2-6:2FTS	6.711	429.1 -> 80.9	1683	5.02 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C2-8:2FTS	7.779	529.1 -> 80.9	2653	5.75 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.0%		
13C2-PFDoDA	8.855	615.1 -> 570.0	11091	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C2-PFTeDA	9.624	715.2 -> 670.0	10975	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C3-PFBS	5.128	302.1 -> 79.9	8216	2.62 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.0%		
13C3-PFHxS	6.992	402.1 -> 79.9	6827	2.63 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.0%	
13C4-PFBA	2.612	216.8 -> 171.9	85981	9.87 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C4-PFHpA	6.230	367.1 -> 322.0	25683	2.43 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C5-PFHxA	5.272	318.0 -> 273.0	27155	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C5-PFPeA	4.100	268.3 -> 223.0	37338	4.99 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C6-PFDA	7.979	519.1 -> 474.1	9343	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C7-PFUnDA	8.424	570.0 -> 525.1	10609	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C8-FOSA	9.781	506.1 -> 77.8	6755	2.39 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.4%	
13C8-PFOA	6.938	421.1 -> 376.0	31149	2.45 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C8-PFOS	8.093	507.1 -> 79.9	7150	2.41 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.2%	
13C9-PFNA	7.483	472.1 -> 427.0	13235	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.7%	
d3-MeFOSAA	8.062	573.2 -> 419.0	12636	5.09 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C3-HFPO-DA	5.627	286.9 -> 168.9	24878	10.01 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
d3-MeFOSA	11.126	515.0 -> 219.0	4833	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%	
d5-EtFOSAA	8.259	589.2 -> 419.0	10183	4.89 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.8%	
d7-MeFOSE	11.022	623.2 -> 58.9	29769	24.51 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.1%	
d9-EtFOSE	11.306	639.2 -> 58.9	33571	24.29 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.2%	
d5-EtFOSA	11.398	531.1 -> 219.0	5928	2.51 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.5%	
Target Compounds					QValue
4:2FTS	4.972	327.1 -> 307.0	30788	20.12 µg/L	99
		327.1 -> 80.9	12968		
6:2FTS	6.712	427.1 -> 407.0	38920	22.24 µg/L	100
		427.1 -> 80.9	14289		
8:2FTS	7.779	527.1 -> 507.0	24478	17.40 µg/L	98
		527.1 -> 80.8	11308		
EtFOSAA	8.272	584.2 -> 419.1	38013	19.72 µg/L	m 96
		584.2 -> 526.0	15801		
FOSA	9.785	498.1 -> 77.9	59957	19.12 µg/L	99
		498.1 -> 478.0	1857		
MeFOSAA	8.062	570.1 -> 419.0	39698	19.61 µg/L	97
		570.1 -> 483.0	7896		
PFBA	2.607	212.8 -> 168.9	54899	18.55 µg/L	100
PFBS	5.129	298.7 -> 79.9	51521	18.94 µg/L	99
		298.7 -> 98.8	19832		
PFDA	7.980	512.9 -> 469.0	137736	19.39 µg/L	100
		512.9 -> 219.0	27334		
PFDoDA	8.856	613.1 -> 569.0	150962	16.70 µg/L	99
		613.1 -> 319.0	26806		
PFDS	8.995	599.0 -> 79.9	35840	19.75 µg/L	99

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.230	599.0 -> 98.8	17618	19.75	µg/L	100
		363.1 -> 319.0	306572			
PFHpS	7.586	363.1 -> 169.0	55024	18.99	µg/L	90
		449.0 -> 79.9	52275			
PFHxA	5.275	449.0 -> 98.9	26572	21.48	µg/L	100
		313.0 -> 269.0	195007			
PFHxS	6.993	313.0 -> 118.9	5912	20.60	µg/L	99
		398.7 -> 79.9	40189			
PFNA	7.484	398.7 -> 98.9	20826	20.43	µg/L	97
		463.0 -> 419.0	167201			
PFNS	8.561	463.0 -> 219.0	40057	19.17	µg/L	96
		548.8 -> 79.9	25657			
PFOA	6.940	548.8 -> 98.9	13202	19.23	µg/L	99
		413.0 -> 369.0	266623			
PFOS	8.094	413.0 -> 169.0	54766	18.35	µg/L	92
		498.9 -> 79.9	55602			
PFPeA	4.102	498.9 -> 98.8	24236	19.68	µg/L	100
		263.0 -> 219.0	145944			
PFPeS	6.220	349.1 -> 79.9	43410	19.85	µg/L	100
		349.1 -> 98.9	19416			
PFTeDA	9.625	713.1 -> 669.0	171758	21.40	µg/L	98
		713.1 -> 168.9	17510			
PFTrDA	9.255	663.0 -> 619.0	174619	18.18	µg/L	100
		663.0 -> 168.9	24274			
PFUnDA	8.424	563.1 -> 519.0	150462	17.61	µg/L	99
		563.1 -> 269.1	32907			
11CI-PF3OUdS	9.282	630.9 -> 450.9	152361	19.83	µg/L	98
		632.9 -> 452.9	46048			
9CI-PF3ONS	8.426	530.8 -> 351.0	151752	19.47	µg/L	98
		532.8 -> 353.0	45562			
ADONA	6.506	376.9 -> 250.9	403792	20.90	µg/L	99
		376.9 -> 84.8	98974			
HFPO-DA	5.628	284.9 -> 168.9	49645	20.12	µg/L	98
		284.9 -> 184.9	4901			
3:3FTCA	3.548	241.0 -> 177.0	8610	18.62	µg/L	100
		241.0 -> 117.0	793			
5:3FTCA	5.955	341.0 -> 237.1	31187	19.79	µg/L	95
		341.0 -> 217.0	23506			
7:3FTCA	7.512	441.0 -> 316.9	12887	18.16	µg/L	95
		441.0 -> 336.9	31021			
EtFOSA	11.399	526.0 -> 219.0	44626	18.00	µg/L	78
		526.0 -> 169.0	49923			
EtFOSE	11.320	630.0 -> 58.9	125611	99.34	µg/L	100
		511.9 -> 219.0	32351			
MeFOSA	11.128	511.9 -> 169.0	36942	18.75	µg/L	73
		616.1 -> 58.9	130015			
MeFOSE	11.035	699.1 -> 79.9	26752	103.64	µg/L	100
		699.1 -> 98.8	14812			
PFDoDS	9.752	295.0 -> 201.0	13204	20.02	µg/L	93
		295.0 -> 84.9	3432			
NFDHA	5.154	279.0 -> 85.1	81189	16.90	µg/L	100
		229.0 -> 84.9	94322			
PFMBA	4.504	314.8 -> 134.9	127453	19.85	µg/L	100
		314.8 -> 82.9	4244			
PFMPA	3.240			20.14	µg/L	100
PFEESA	5.659			17.84	µg/L	100

= Qualifier out of range, m = manually integrated, + = Area summed

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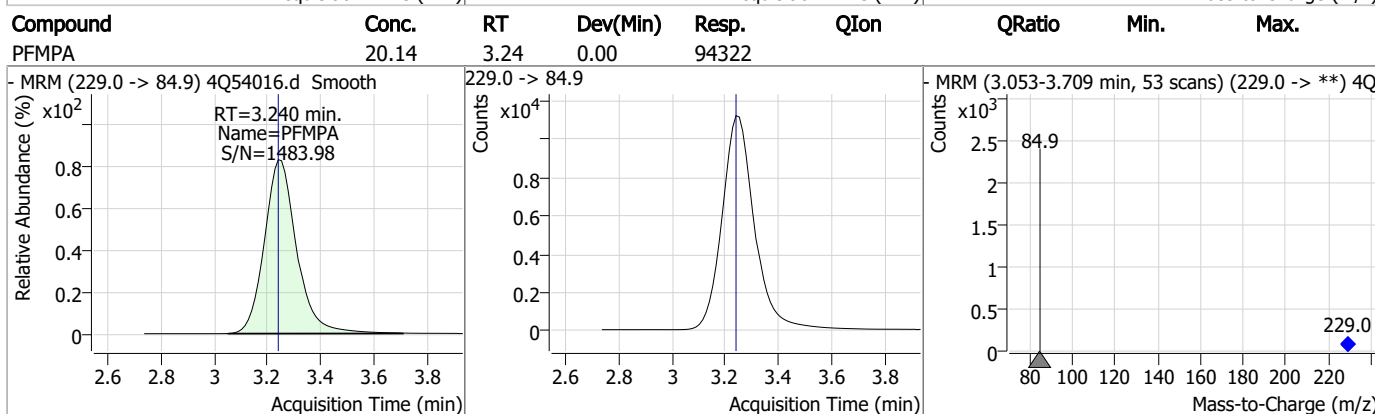
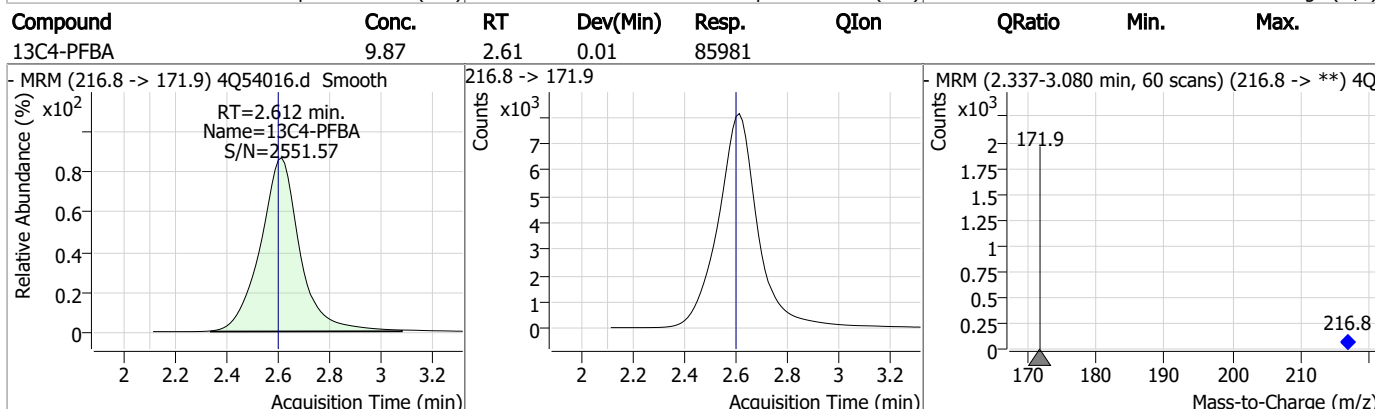
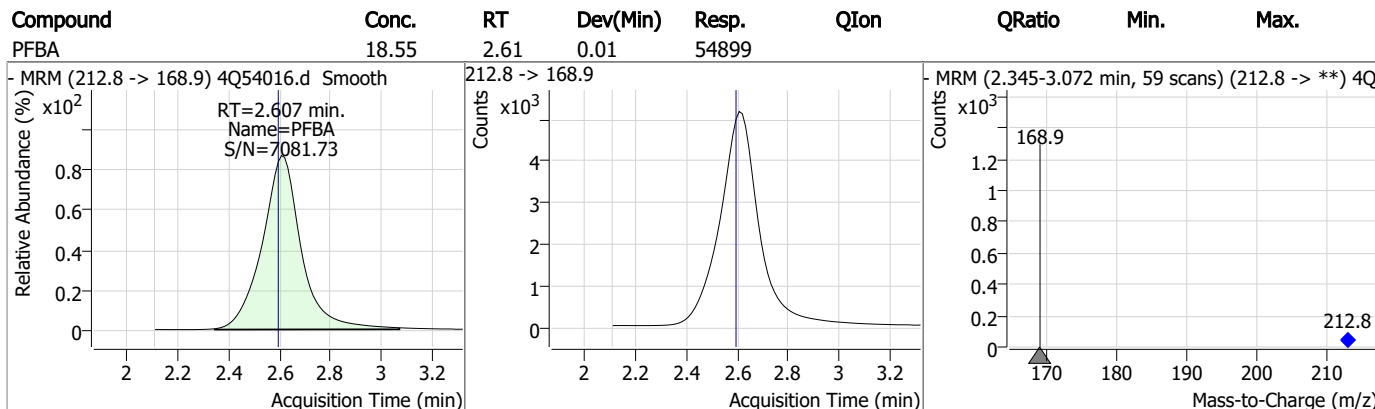
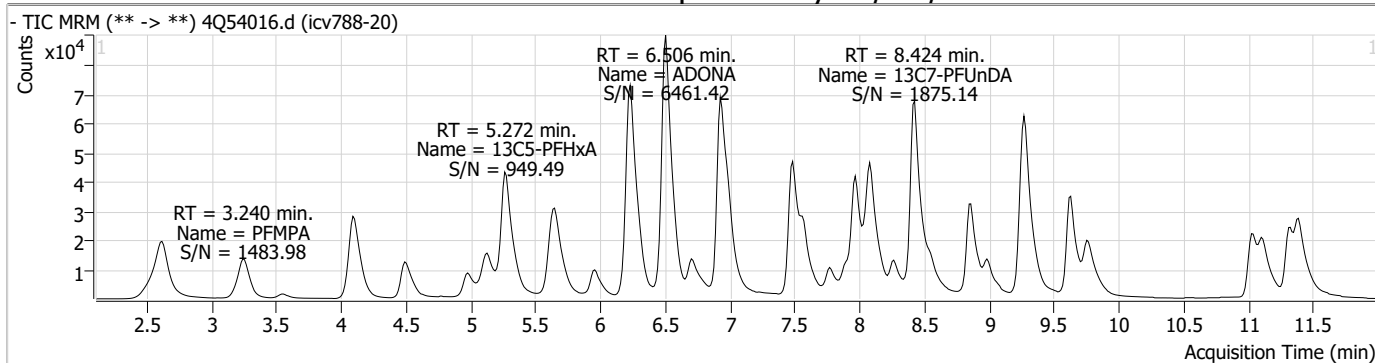
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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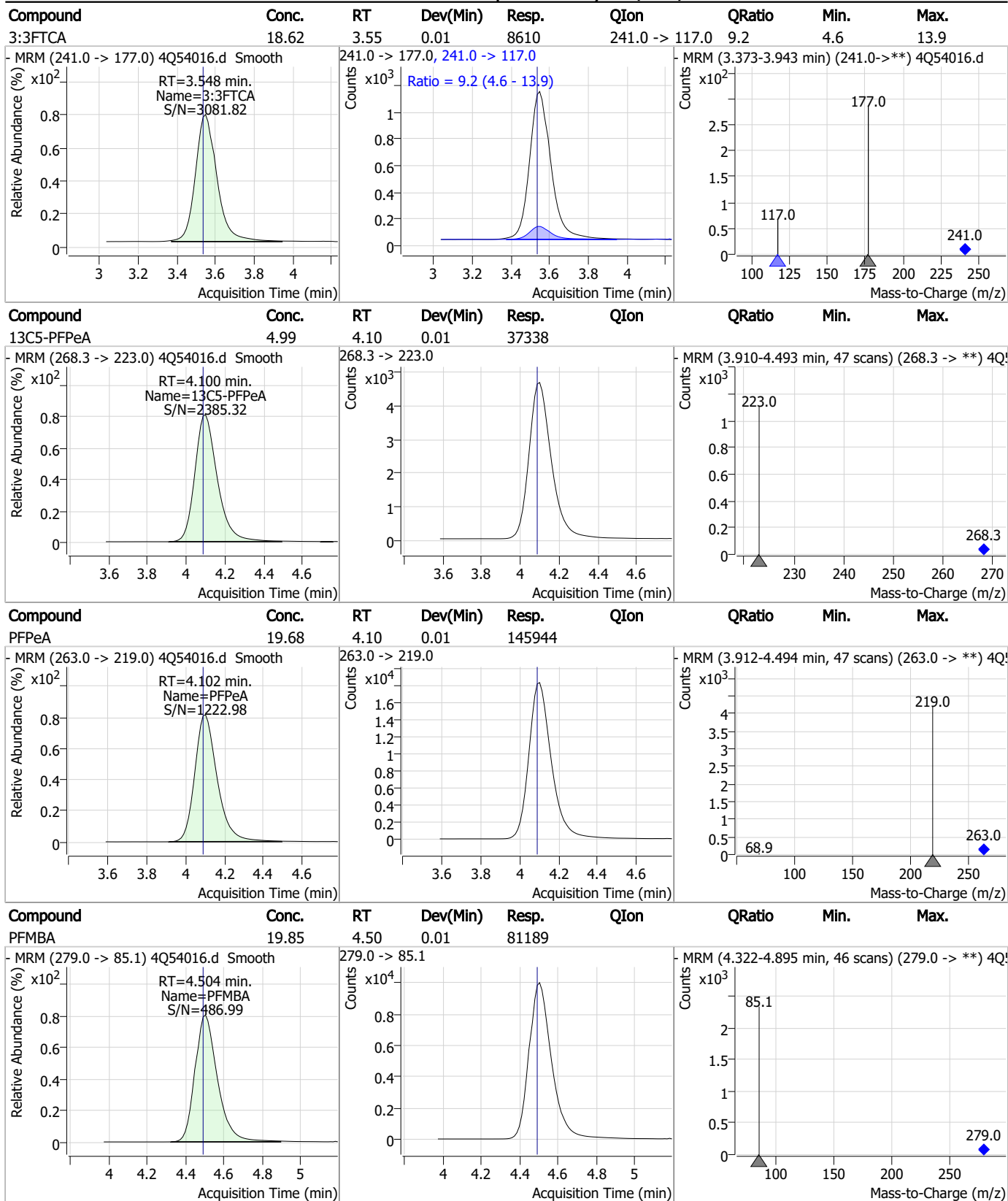
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Perfluorinated Compounds by LC/MS/MS



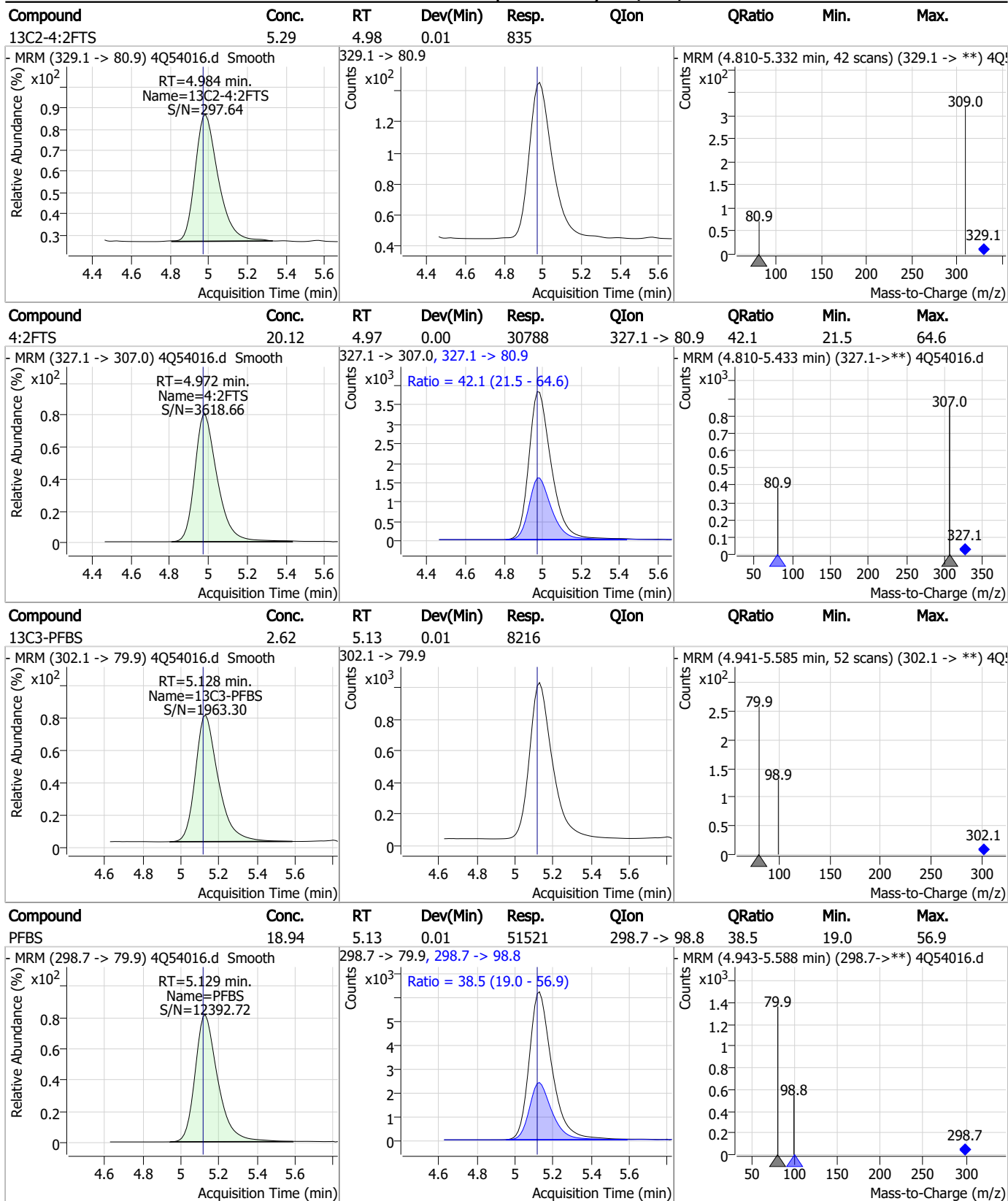
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

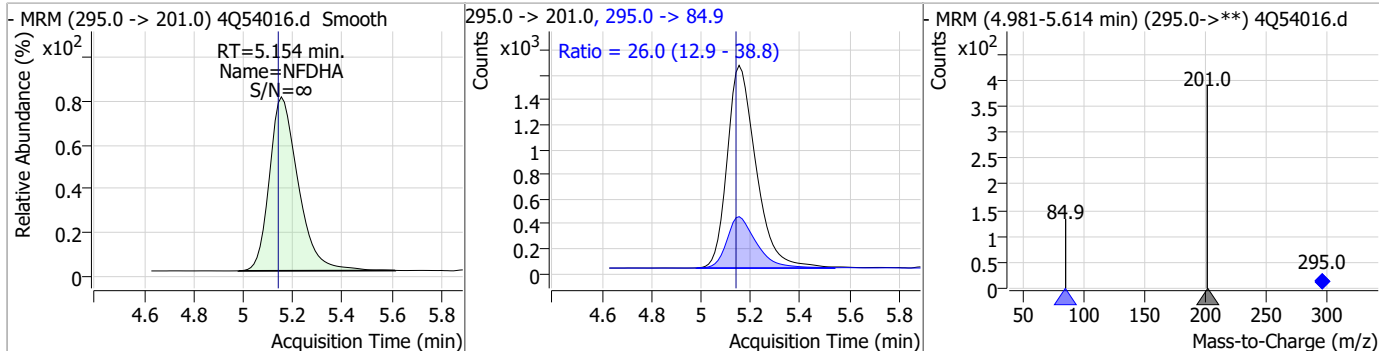


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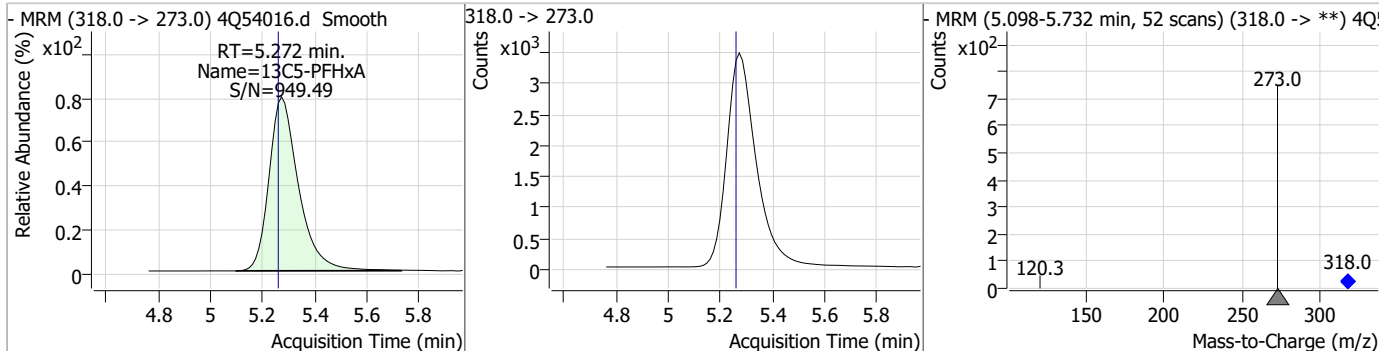
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Perfluorinated Compounds by LC/MS/MS

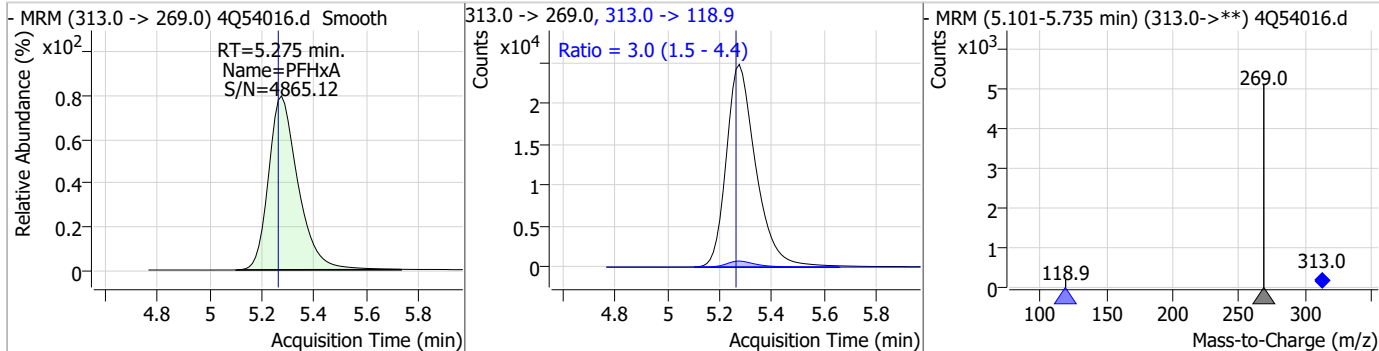
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	16.90	5.15	0.01	13204	295.0 -> 84.9	26.0	12.9	38.8



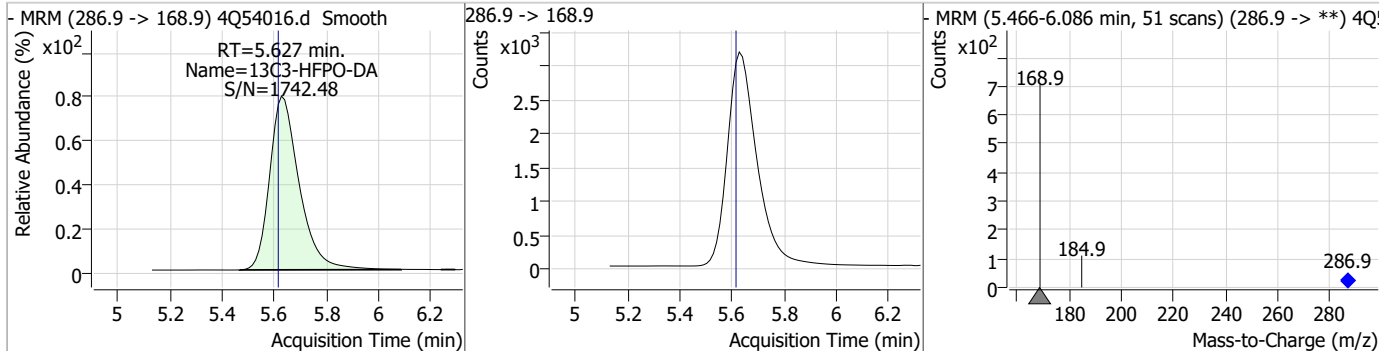
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.46	5.27	0.01	27155				



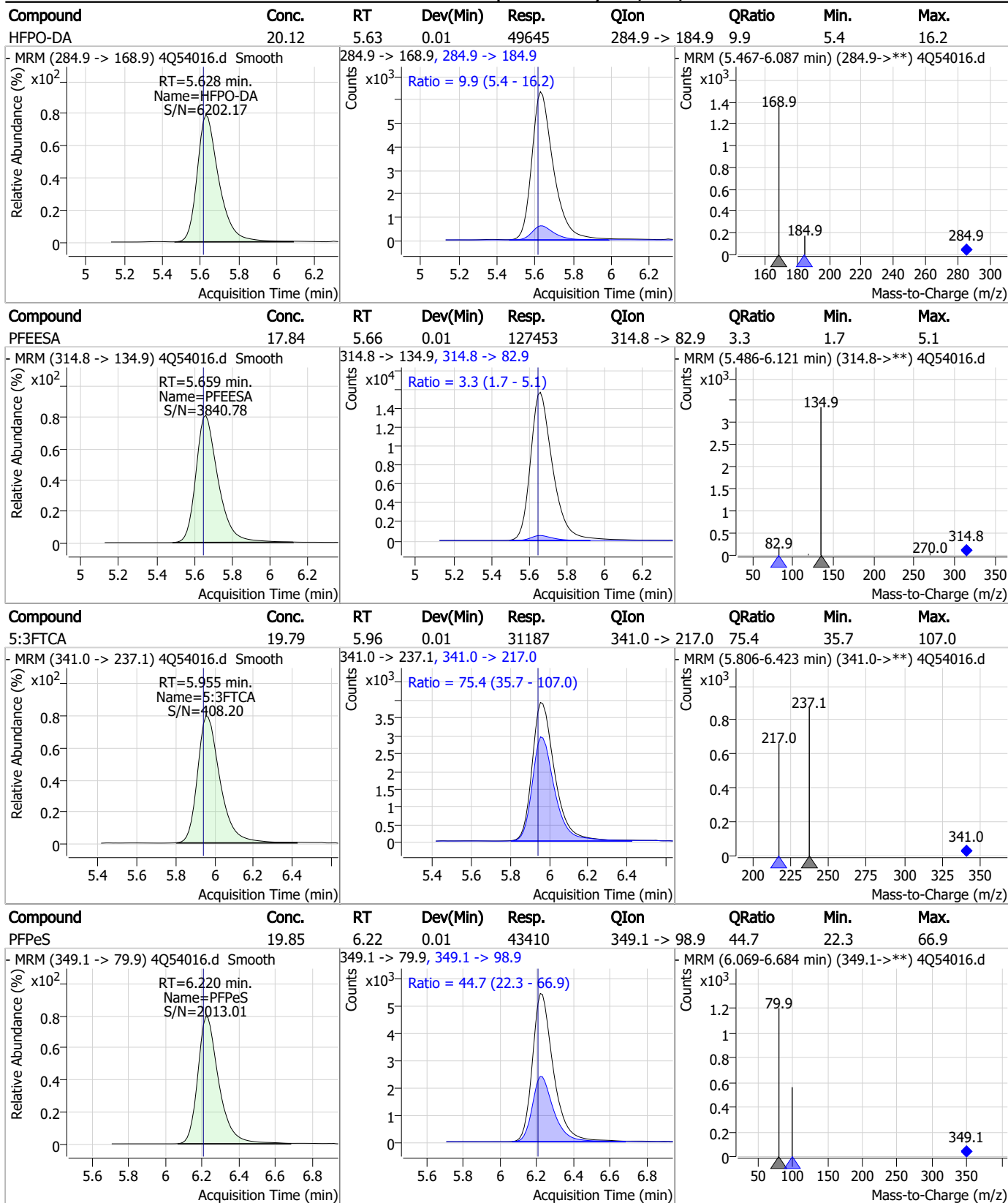
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	21.48	5.28	0.01	195007	313.0 -> 118.9	3.0	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.01	5.63	0.01	24878				



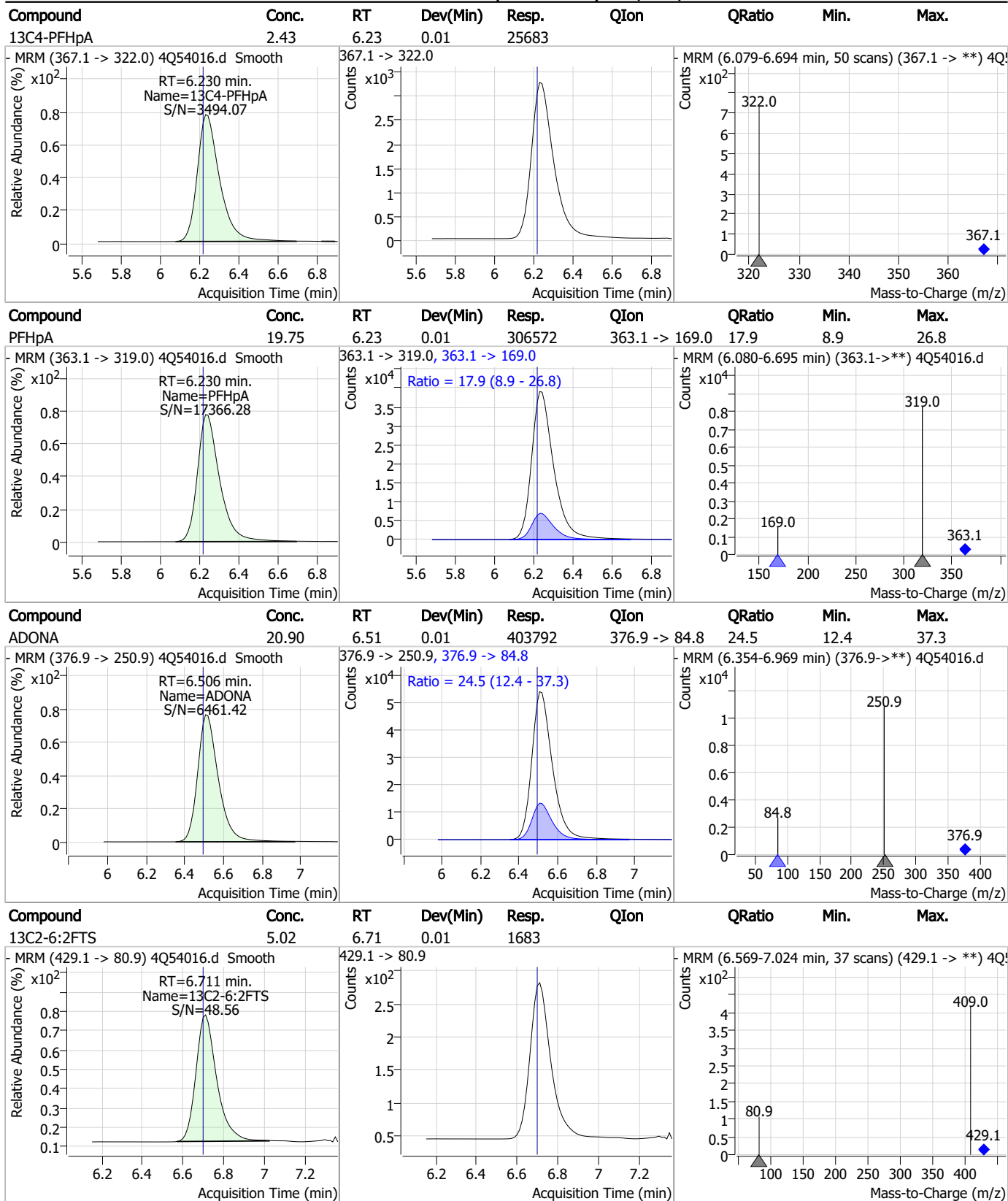
Perfluorinated Compounds by LC/MS/MS



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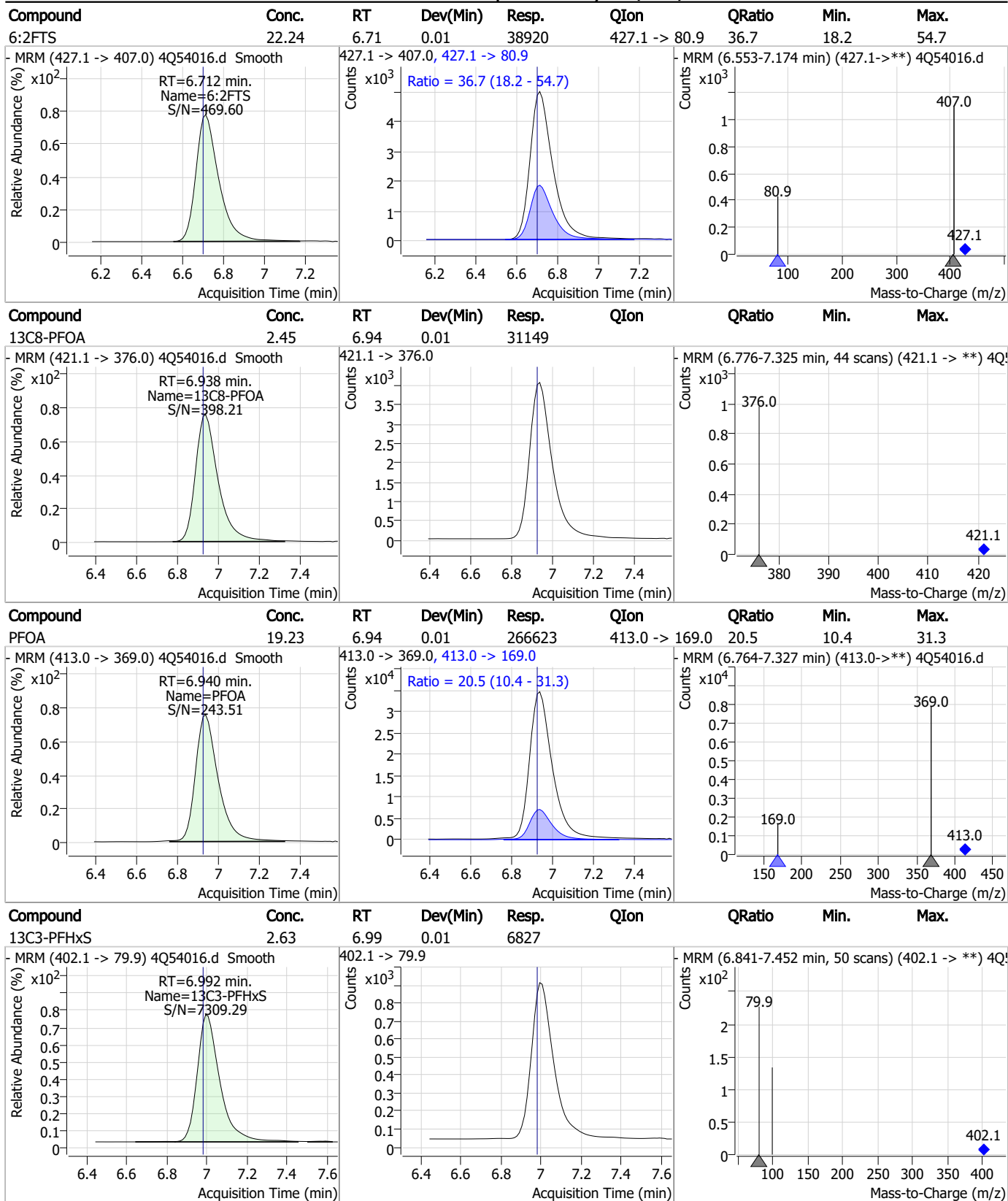
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Perfluorinated Compounds by LC/MS/MS



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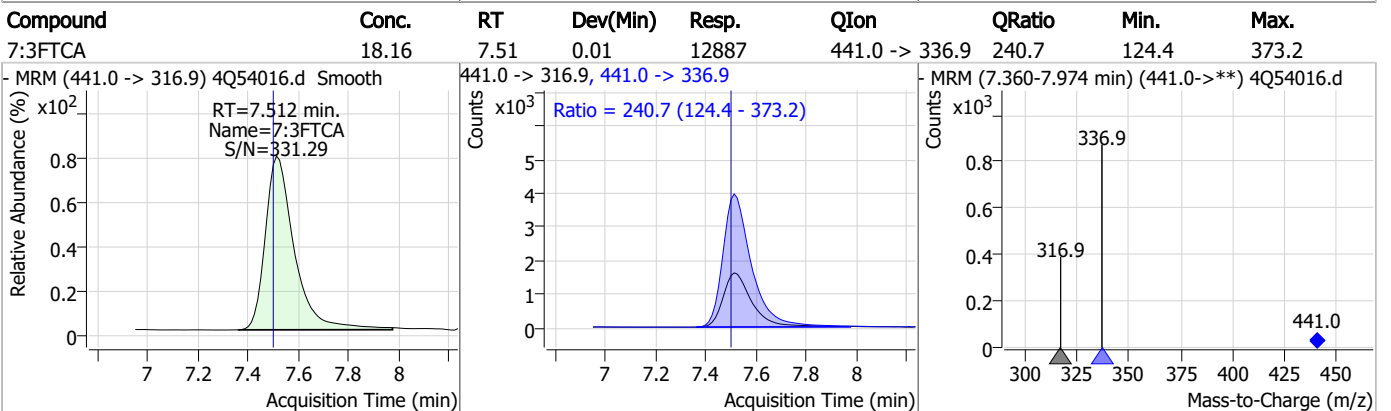
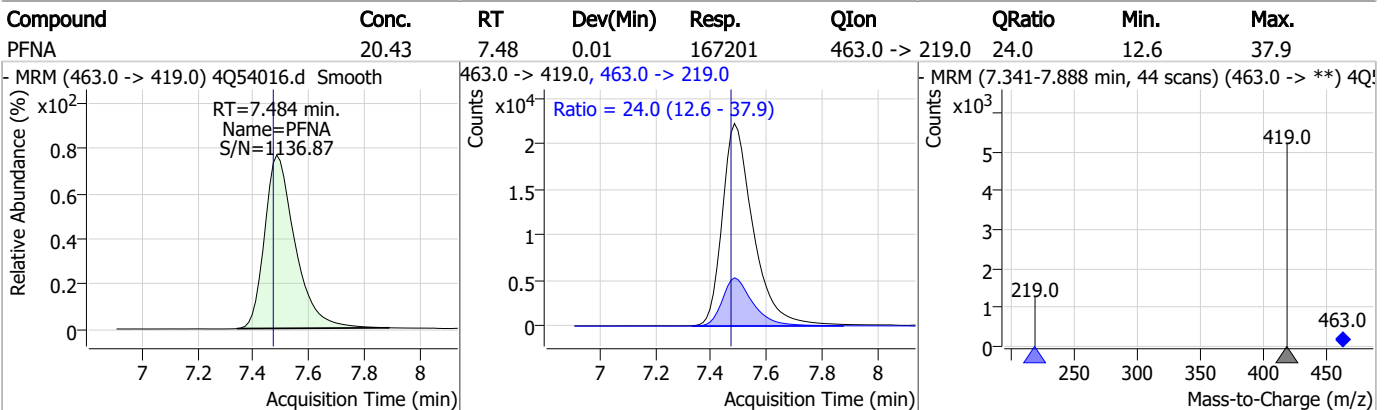
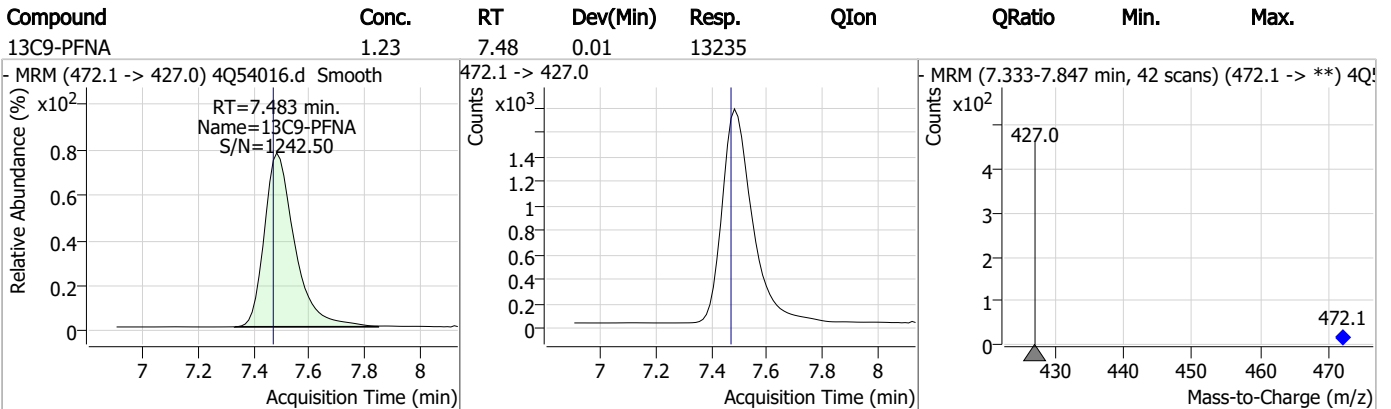
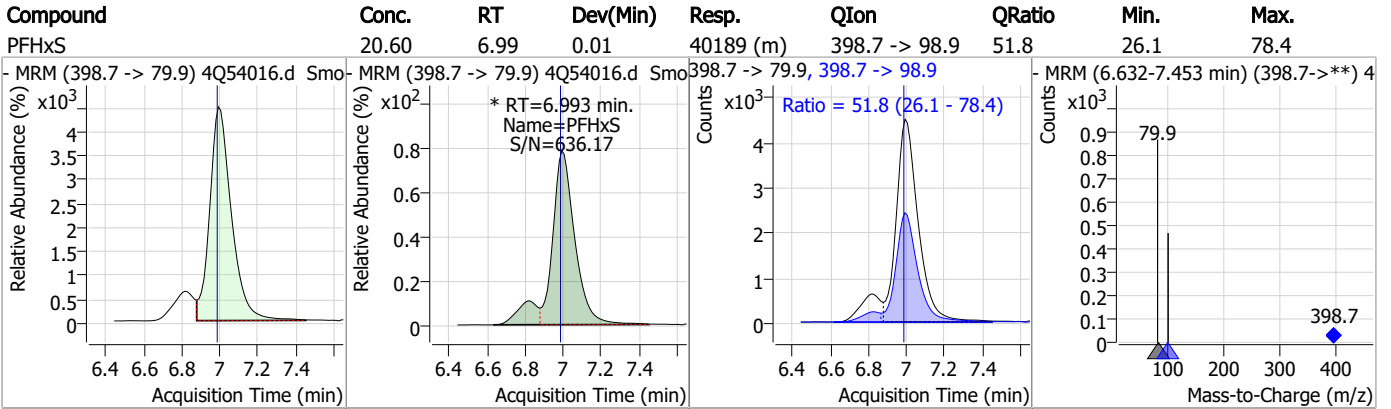
Perfluorinated Compounds by LC/MS/MS



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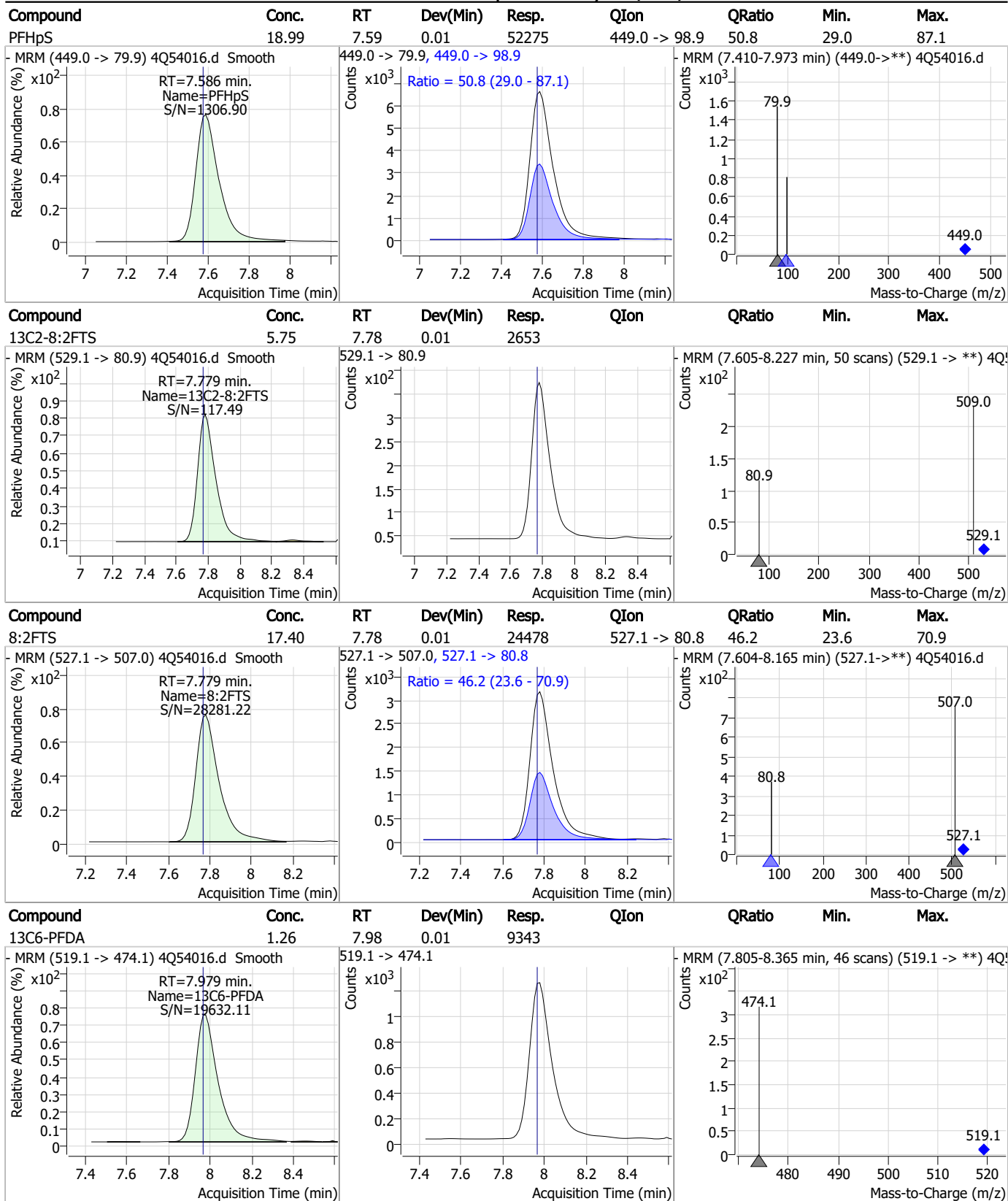
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

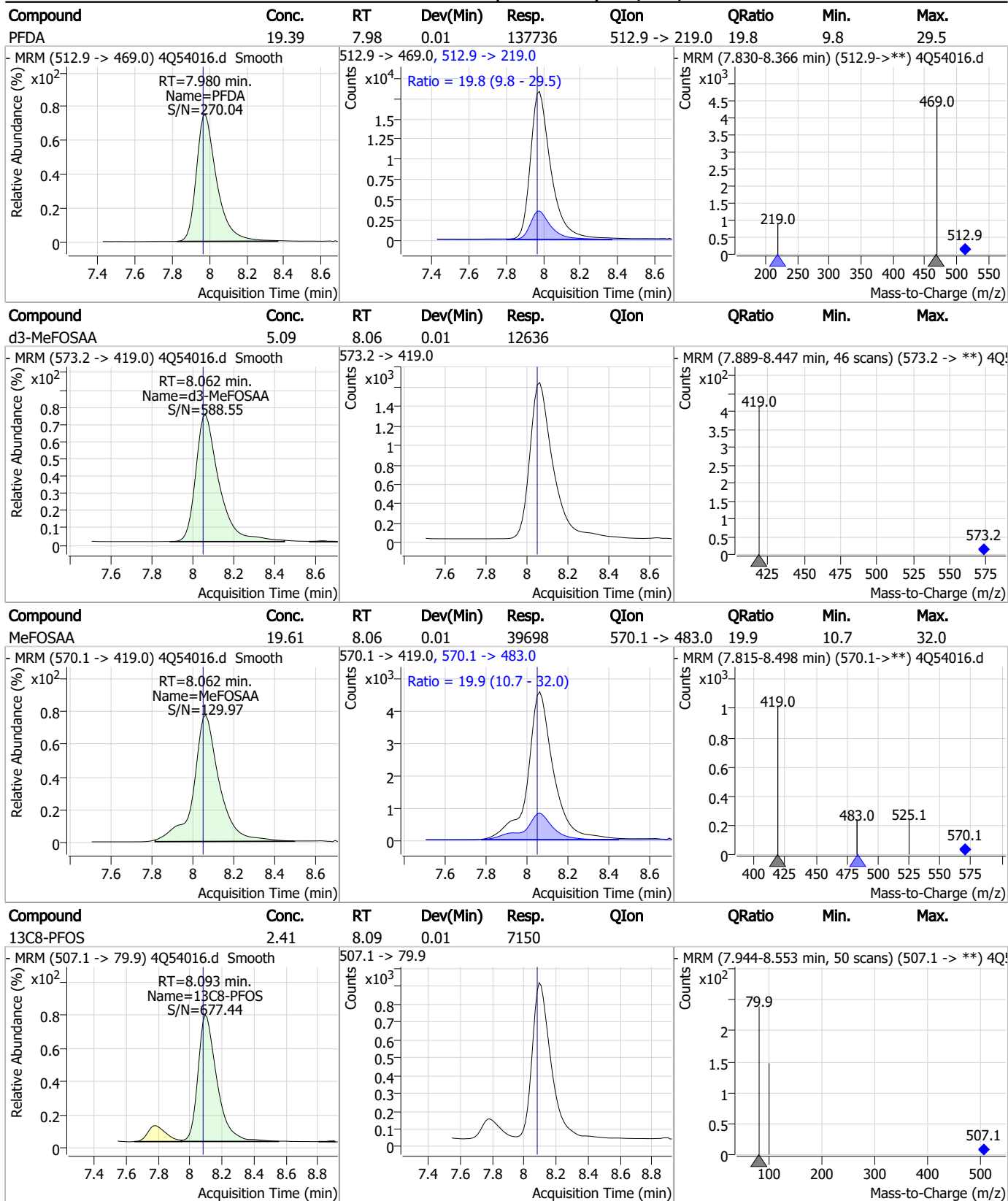


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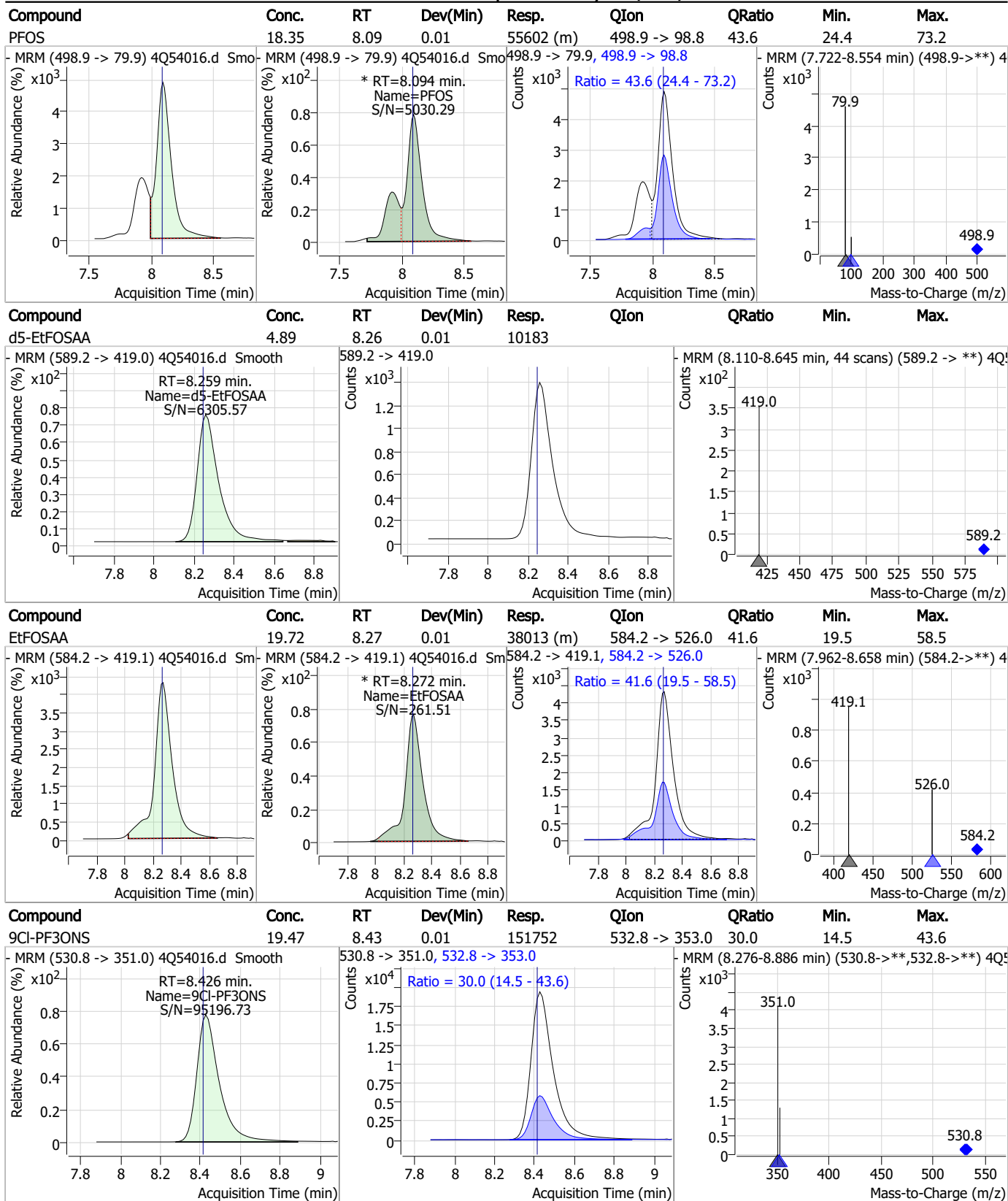
Perfluorinated Compounds by LC/MS/MS



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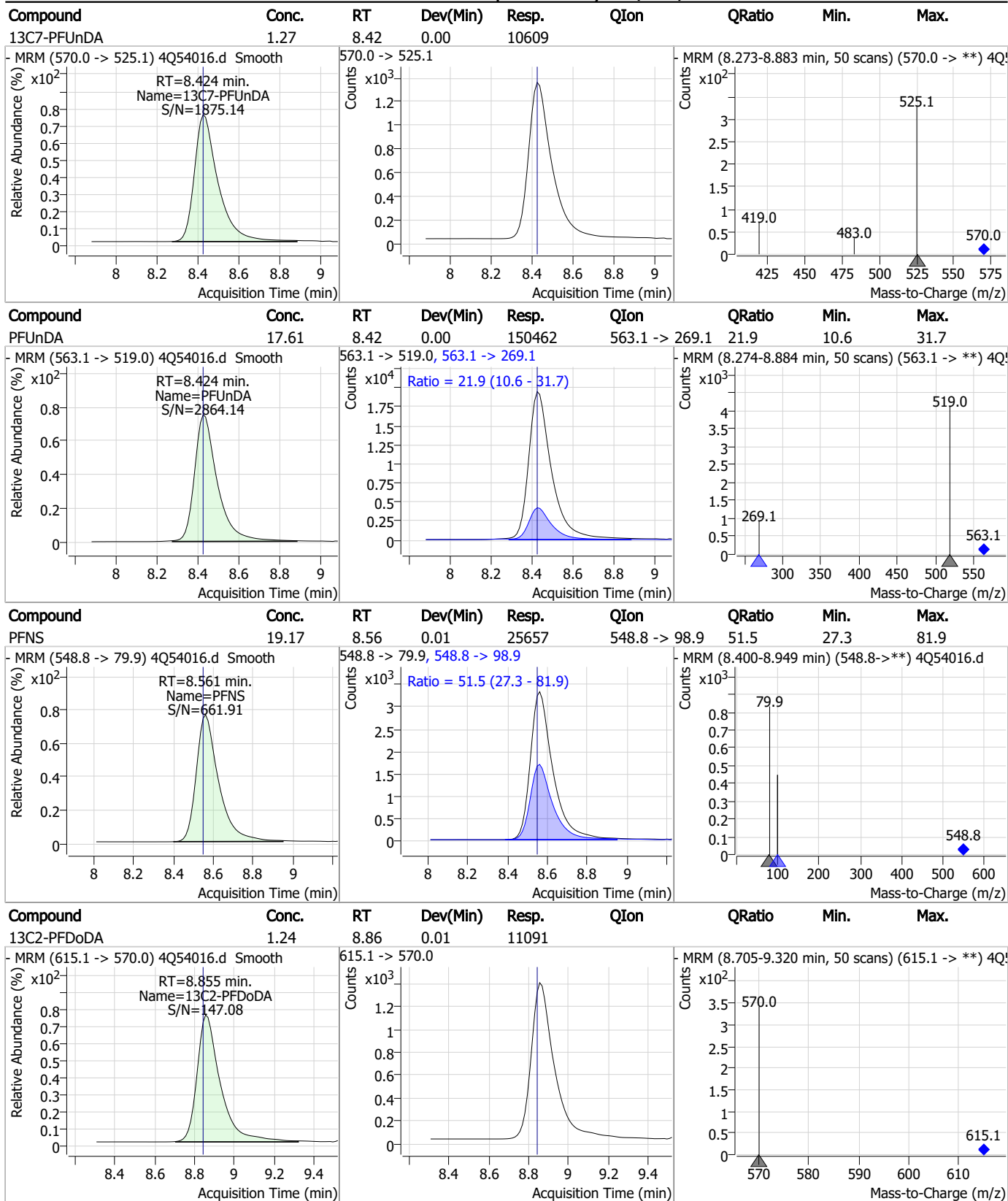
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

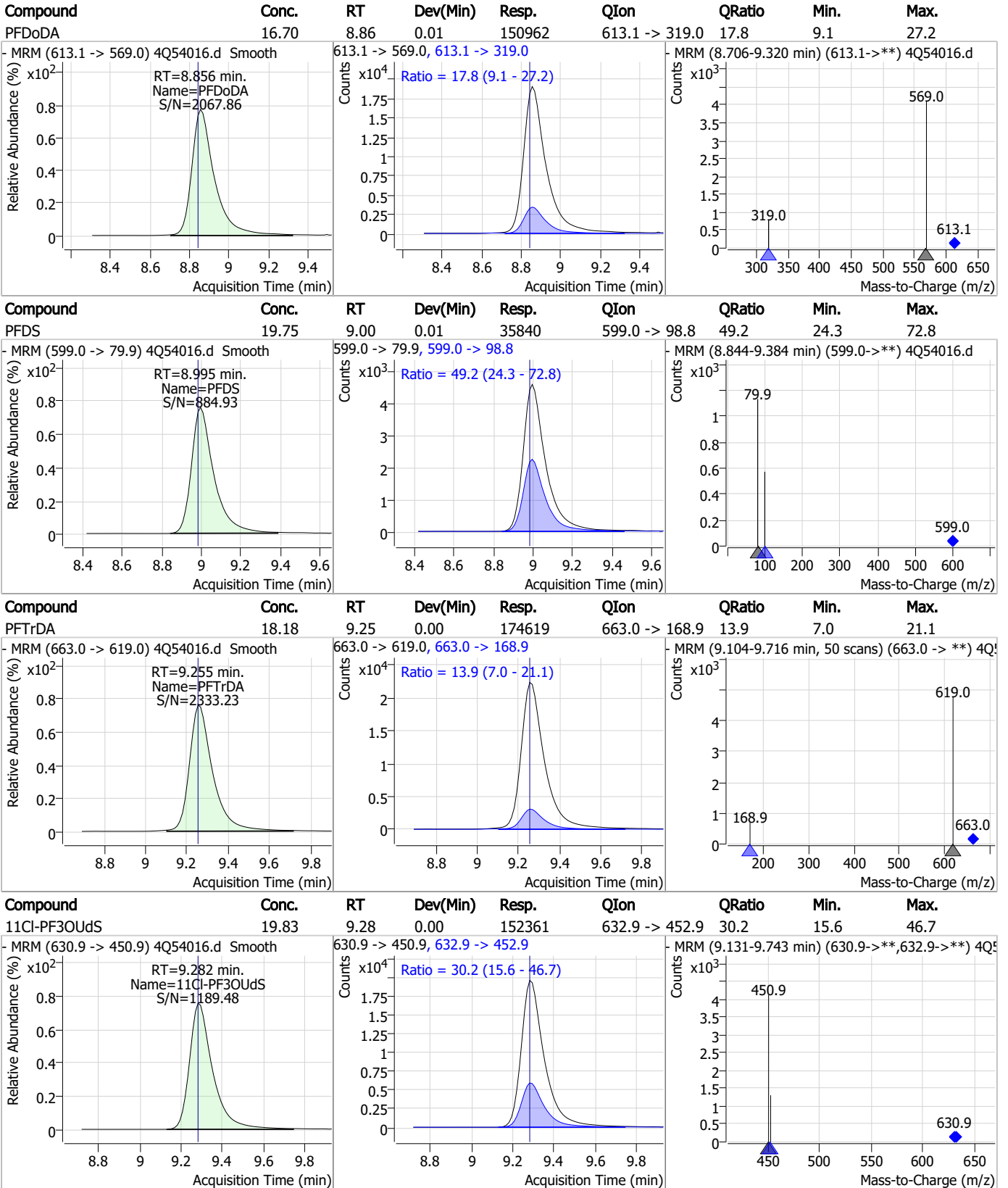


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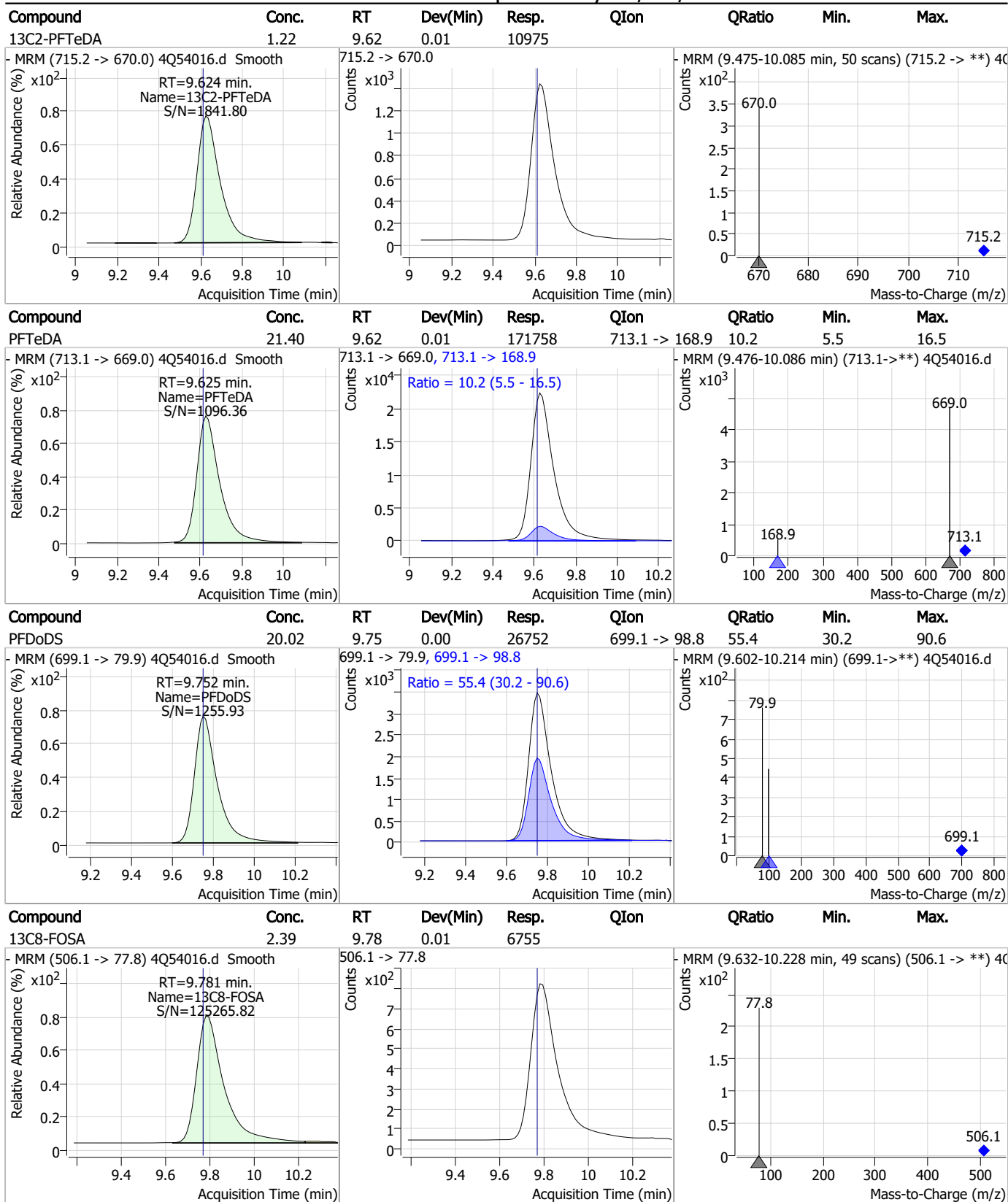
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



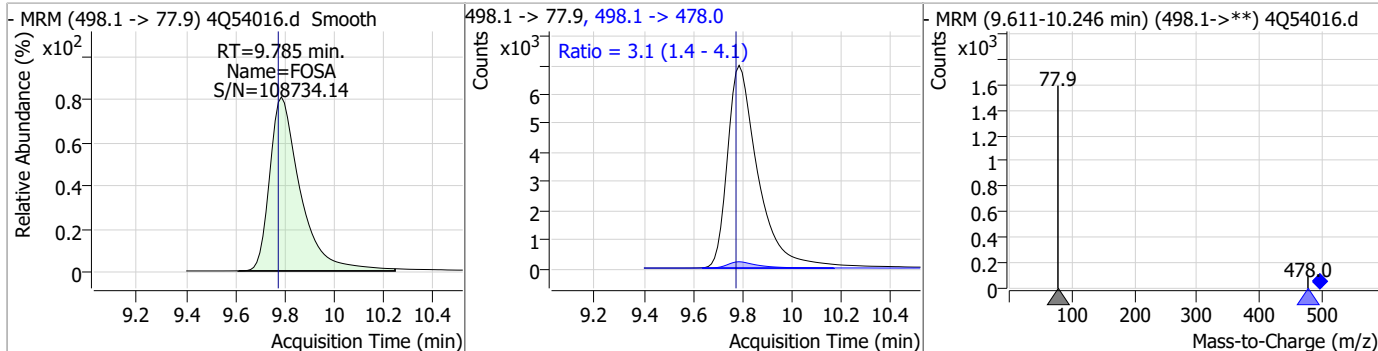
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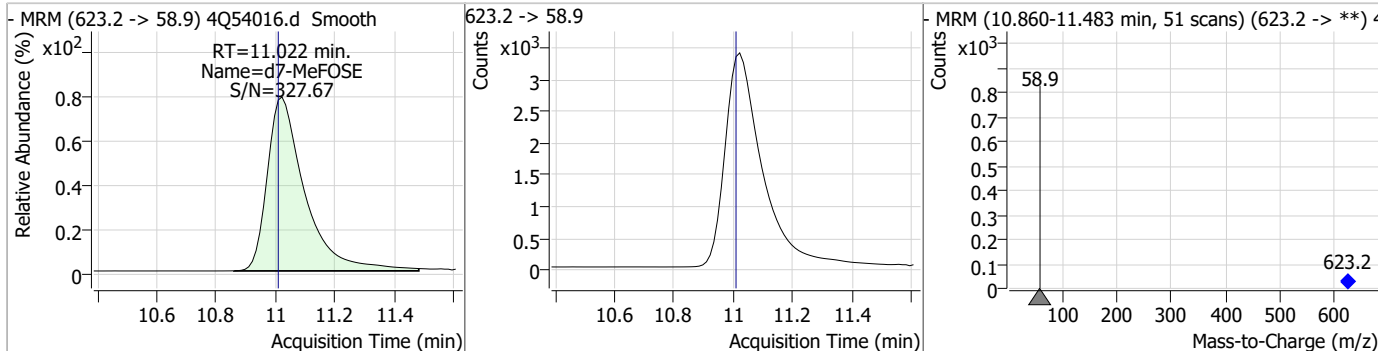


Perfluorinated Compounds by LC/MS/MS

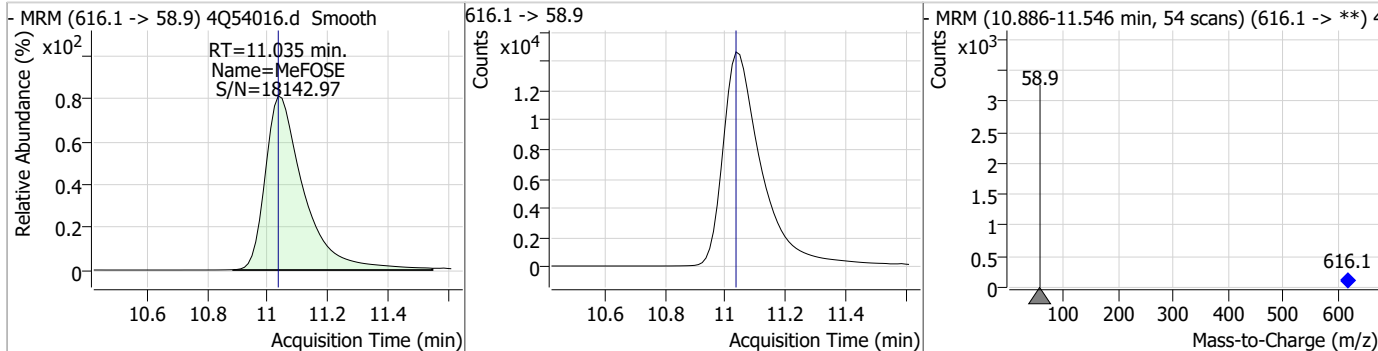
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	19.12	9.79	0.01	59957	498.1 -> 478.0	3.1	1.4	4.1



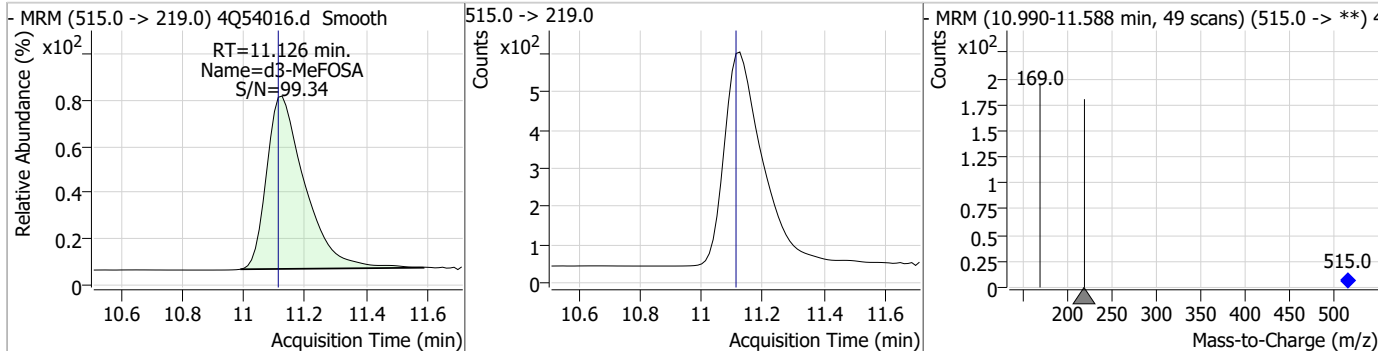
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.51	11.02	0.01	29769				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	103.64	11.04	0.00	130015				

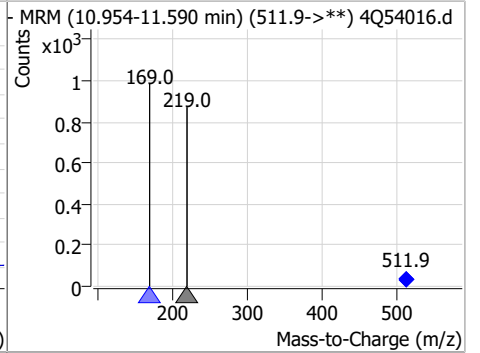
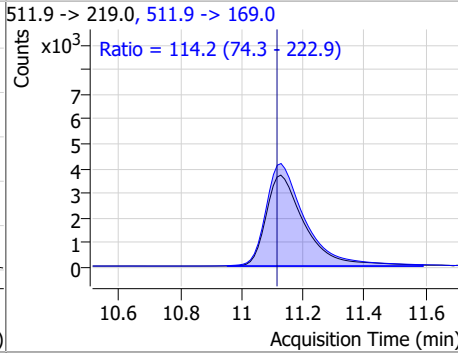
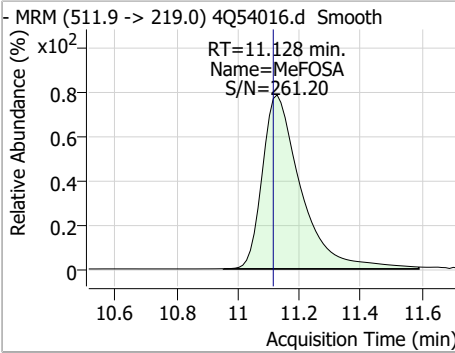


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.48	11.13	0.01	4833				

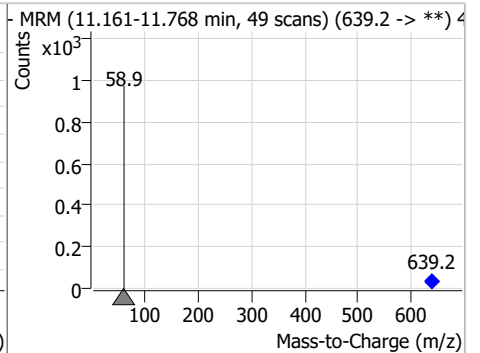
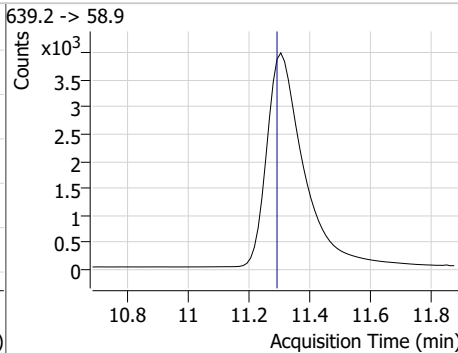
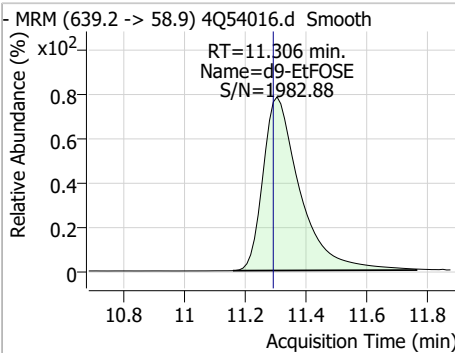


Perfluorinated Compounds by LC/MS/MS

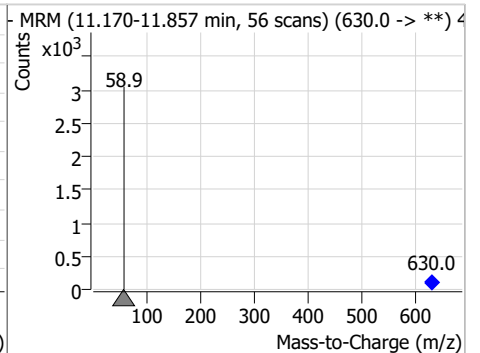
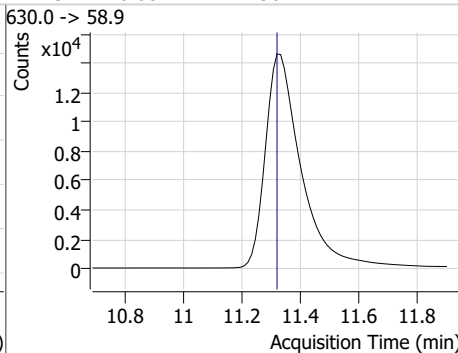
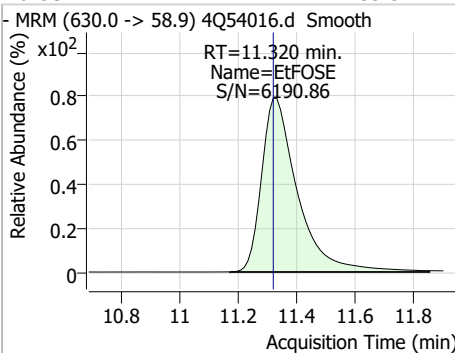
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	18.75	11.13	0.01	32351	511.9 -> 169.0	114.2	74.3	222.9



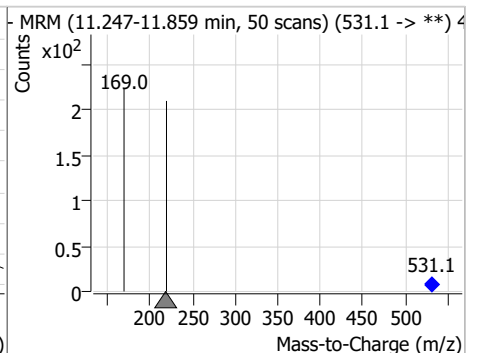
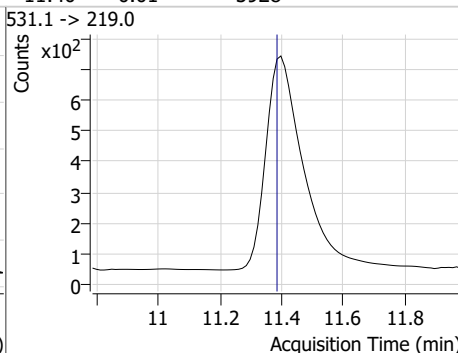
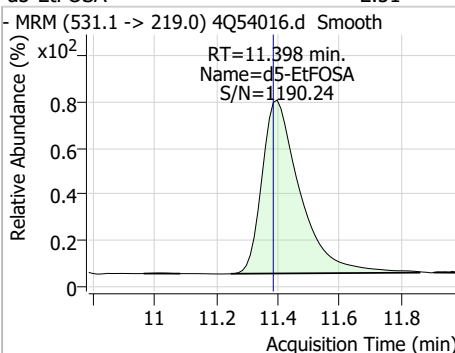
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.29	11.31	0.01	33571	639.2 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	99.34	11.32	0.00	125611	630.0 -> 58.9			



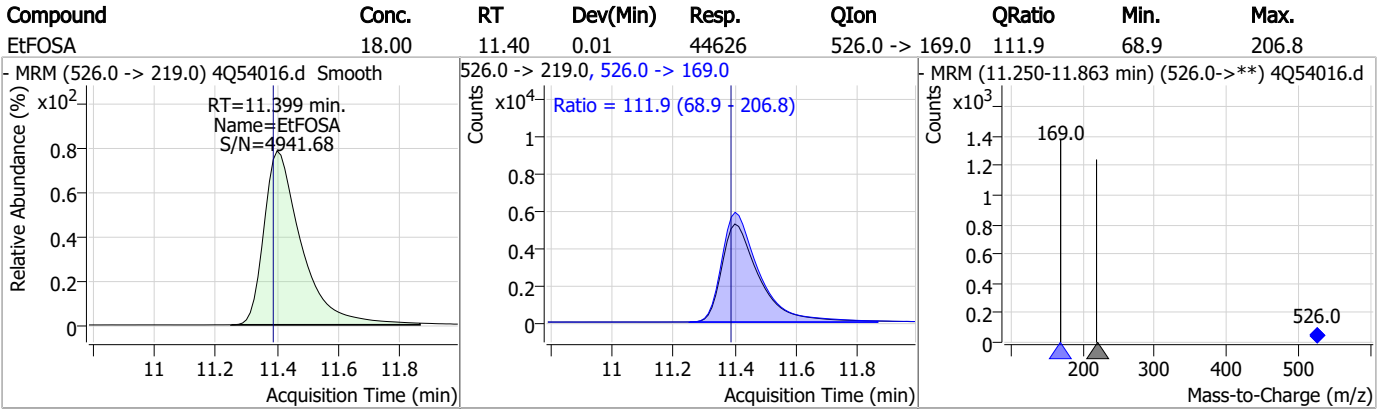
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.51	11.40	0.01	5928	531.1 -> 169.0			



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Perfluorinated Compounds by LC/MS/MS



7.7.26
7



Manual Integration Approval Summary

Sample Number: S4Q788-ICV788 Method: EPA DRAFT 1633
Lab FileID: 4Q54016.D Analyst approved: 11/18/23 15:04 Mike Eger
Injection Time: 11/17/23 13:53 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.99	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.09	Split peak
EtFOSAA	2991-50-6		8.27	Split peak

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7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54017.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 2:07:58 PM
 Sample Name : cc788-4
 Vial : P1-A5
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.587	216.8 -> 171.9	82464	10.00 µg/L	-0.013
M5-PFPeA	4.087	268.3 -> 223.0	36279	5.00 µg/L	0.000
M5-PFHxA	5.272	318.0 -> 273.0	27457	2.50 µg/L	0.012
M4-PFHpA	6.242	367.1 -> 322.0	25260	2.50 µg/L	0.025
M8-PFOA	6.938	421.1 -> 376.0	31343	2.50 µg/L	0.012
M9-PFNA	7.483	472.1 -> 427.0	13720	1.25 µg/L	0.012
M6-PFDA	7.979	519.1 -> 474.1	9027	1.25 µg/L	0.012
M7-PFUnDA	8.436	570.0 -> 525.1	10442	1.25 µg/L	0.012
M2-PFDoDA	8.855	615.1 -> 570.0	10945	1.25 µg/L	0.012
M2-PFTeDA	9.624	715.2 -> 670.0	10756	1.25 µg/L	0.012
M8-FOSA	9.794	506.1 -> 77.8	6675	2.50 µg/L	0.025
M3-PFBS	5.128	302.1 -> 79.9	8035	2.50 µg/L	0.012
M3-PFHxS	6.992	402.1 -> 79.9	6610	2.50 µg/L	0.012
M8-PFOS	8.093	507.1 -> 79.9	7271	2.50 µg/L	0.012
M2-4:2FTS	4.971	329.1 -> 80.9	872	5.00 µg/L	0.000
M2-6:2FTS	6.711	429.1 -> 80.9	1809	5.00 µg/L	0.012
M2-8:2FTS	7.779	529.1 -> 80.9	2280	5.00 µg/L	0.012
M3-MeFOSAA	8.062	573.2 -> 419.0	12156	5.00 µg/L	0.012
M3-HFPO-DA	5.627	286.9 -> 168.9	24456	10.00 µg/L	0.012
M5-EtFOSAA	8.271	589.2 -> 419.0	9967	5.00 µg/L	0.025
M7-MeFOSE	11.022	623.2 -> 58.9	28831	25.00 µg/L	0.012
M9-EtFOSE	11.306	639.2 -> 58.9	33542	25.00 µg/L	0.012
M5-EtFOSA	11.397	531.1 -> 219.0	5931	2.50 µg/L	0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4808	2.50 µg/L	0.012
13C4-PFOS	8.093	502.8 -> 79.9	6109	2.50 µg/L	0.012
13C3-PFBA	2.591	216.0 -> 172.0	39697	5.00 µg/L	0.000
18O2-PFHxS	6.991	403.0 -> 83.9	4328	2.50 µg/L	0.012
13C4-PFOA	6.939	417.1 -> 372.0	34214	2.50 µg/L	0.012
13C2-PFDA	7.980	515.1 -> 470.1	9312	1.25 µg/L	0.012
13C5-PFNA	7.484	468.0 -> 423.0	13271	1.25 µg/L	0.012
13C2-PFHxA	5.273	315.1 -> 270.0	28528	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	4.971	329.1 -> 80.9	872	5.28 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C2-6:2FTS	6.711	429.1 -> 80.9	1809	5.16 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.2%		
13C2-8:2FTS	7.779	529.1 -> 80.9	2280	4.72 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.5%		
13C2-PFDoDA	8.855	615.1 -> 570.0	10945	1.31 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.1%		
13C2-PFTeDA	9.624	715.2 -> 670.0	10756	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.8%		
13C3-PFBS	5.128	302.1 -> 79.9	8035	2.45 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.1%		
13C3-PFHxS	6.992	402.1 -> 79.9	6610	2.43 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C4-PFBA	2.587	216.8 -> 171.9	82464	10.06 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C4-PFHpA	6.242	367.1 -> 322.0	25260	2.50 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C5-PFHxA	5.272	318.0 -> 273.0	27457	2.60 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.9%		
13C5-PFPeA	4.087	268.3 -> 223.0	36279	5.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C6-PFDA	7.979	519.1 -> 474.1	9027	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.3%		
13C7-PFUnDA	8.436	570.0 -> 525.1	10442	1.34 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.5%		
13C8-FOSA	9.794	506.1 -> 77.8	6675	2.34 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 93.6%		
13C8-PFOA	6.938	421.1 -> 376.0	31343	2.51 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C8-PFOS	8.093	507.1 -> 79.9	7271	2.43 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C9-PFNA	7.483	472.1 -> 427.0	13720	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.1%		
d3-MeFOSAA	8.062	573.2 -> 419.0	12156	4.86 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C3-HFPO-DA	5.627	286.9 -> 168.9	24456	10.28 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 102.8%		
d3-MeFOSA	11.126	515.0 -> 219.0	4808	2.45 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.1%		
d5-EtFOSAA	8.271	589.2 -> 419.0	9967	4.75 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.0%		
d7-MeFOSE	11.022	623.2 -> 58.9	28831	23.56 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 94.2%		
d9-EtFOSE	11.306	639.2 -> 58.9	33542	24.09 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 96.3%		
d5-EtFOSA	11.397	531.1 -> 219.0	5931	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.8%		
Target Compounds					QValue
4:2FTS	4.972	327.1 -> 307.0	14631	9.16 µg/L	99
		327.1 -> 80.9	6208		
6:2FTS	6.712	427.1 -> 407.0	17789	9.46 µg/L	100
		427.1 -> 80.9	6516		
8:2FTS	7.779	527.1 -> 507.0	12275	10.15 µg/L	94
		527.1 -> 80.8	5317		
EtFOSAA	8.272	584.2 -> 419.1	4939	2.62 µg/L	m 97
		584.2 -> 526.0	2027		
FOSA	9.785	498.1 -> 77.9	8194	2.64 µg/L	99
		498.1 -> 478.0	255		
MeFOSAA	8.062	570.1 -> 419.0	5409	2.78 µg/L	90
		570.1 -> 483.0	888		
PFBA	2.595	212.8 -> 168.9	27940	9.84 µg/L	100
PFBS	5.129	298.7 -> 79.9	5596	2.10 µg/L	95
		298.7 -> 98.8	2305		
PFDA	7.980	512.9 -> 469.0	16427	2.39 µg/L	99
		512.9 -> 219.0	3298		
PFDODA	8.856	613.1 -> 569.0	20442	2.29 µg/L	94
		613.1 -> 319.0	4252		
PFDS	8.995	599.0 -> 79.9	4344	2.35 µg/L	98

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.243	599.0 -> 98.8	2060	2.52	µg/L	99
		363.1 -> 319.0	38477			
PFHpS	7.586	363.1 -> 169.0	6983	2.25	µg/L	89
		449.0 -> 79.9	6286			
PFHxA	5.275	449.0 -> 98.9	3150	2.42	µg/L	98
		313.0 -> 269.0	22226			
PFHxS	6.993	313.0 -> 118.9	760	2.35	µg/L	97
		398.7 -> 79.9	4435			
PFNA	7.484	398.7 -> 98.9	2398	2.26	µg/L	96
		463.0 -> 419.0	19212			
PFNS	8.561	463.0 -> 219.0	4463	2.26	µg/L	95
		548.8 -> 79.9	3074			
PFOA	6.940	548.8 -> 98.9	1573	2.37	µg/L	99
		413.0 -> 369.0	33002			
PFOS	8.094	413.0 -> 169.0	7084	2.28	µg/L	96
		498.9 -> 79.9	7015			
PFPeA	4.089	498.9 -> 98.8	3216	4.97	µg/L	100
		263.0 -> 219.0	35837			
PFPeS	6.232	349.1 -> 79.9	4790	2.26	µg/L	100
		349.1 -> 98.9	2142			
PFTeDA	9.625	713.1 -> 669.0	19386	2.46	µg/L	100
		713.1 -> 168.9	2133			
PFTrDA	9.267	663.0 -> 619.0	22969	2.42	µg/L	99
		663.0 -> 168.9	3113			
PFUnDA	8.437	563.1 -> 519.0	20420	2.43	µg/L	99
		563.1 -> 269.1	4471			
11Cl-PF3OUdS	9.294	630.9 -> 450.9	35255	4.67	µg/L	98
		632.9 -> 452.9	10568			
9Cl-PF3ONS	8.426	530.8 -> 351.0	36210	4.73	µg/L	96
		532.8 -> 353.0	11398			
ADONA	6.519	376.9 -> 250.9	93384	4.92	µg/L	98
		376.9 -> 84.8	22324			
HFPO-DA	5.628	284.9 -> 168.9	11912	4.91	µg/L	99
		284.9 -> 184.9	1327			
3:3FTCA	3.536	241.0 -> 177.0	5306	11.96	µg/L	100
		241.0 -> 117.0	489			
5:3FTCA	5.955	341.0 -> 237.1	96782	60.75	µg/L	98
		341.0 -> 217.0	67610			
7:3FTCA	7.512	441.0 -> 316.9	44247	61.65	µg/L	91
		441.0 -> 336.9	102974			
EtFOSA	11.399	526.0 -> 219.0	11672	4.71	µg/L	99
		526.0 -> 169.0	16230			
EtFOSE	11.320	630.0 -> 58.9	15840	12.54	µg/L	100
		511.9 -> 219.0	8069			
MeFOSA	11.128	511.9 -> 169.0	10916	4.70	µg/L	89
		616.1 -> 58.9	15649			
MeFOSE	11.035	699.1 -> 79.9	3370	12.88	µg/L	100
		699.1 -> 98.8	1862			
PFDoDS	9.752	295.0 -> 201.0	3464	2.48	µg/L	93
		295.0 -> 84.9	940			
NFDHA	5.154	279.0 -> 85.1	20037	4.38	µg/L	98
		229.0 -> 84.9	22615			
PFMBA	4.491	314.8 -> 134.9	32083	5.04	µg/L	100
		314.8 -> 82.9	1026			
PFMPA	3.240			4.97	µg/L	100
PFEESA	5.659			4.44	µg/L	99

= Qualifier out of range, m = manually integrated, + = Area summed

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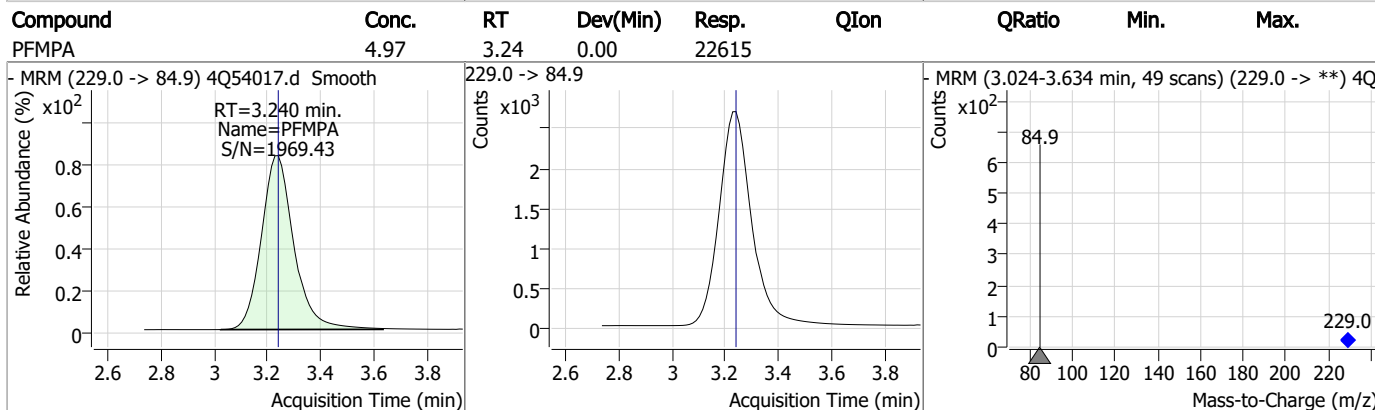
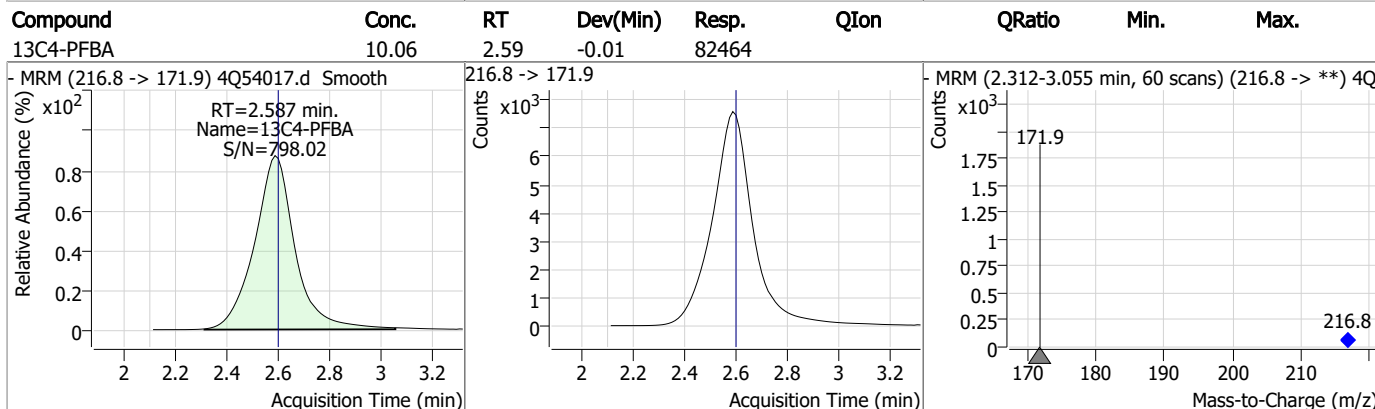
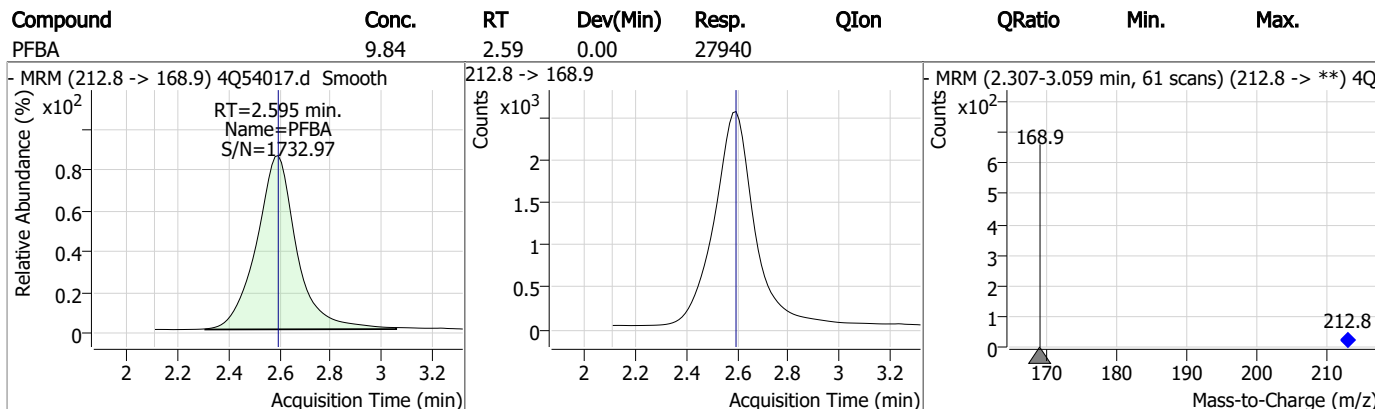
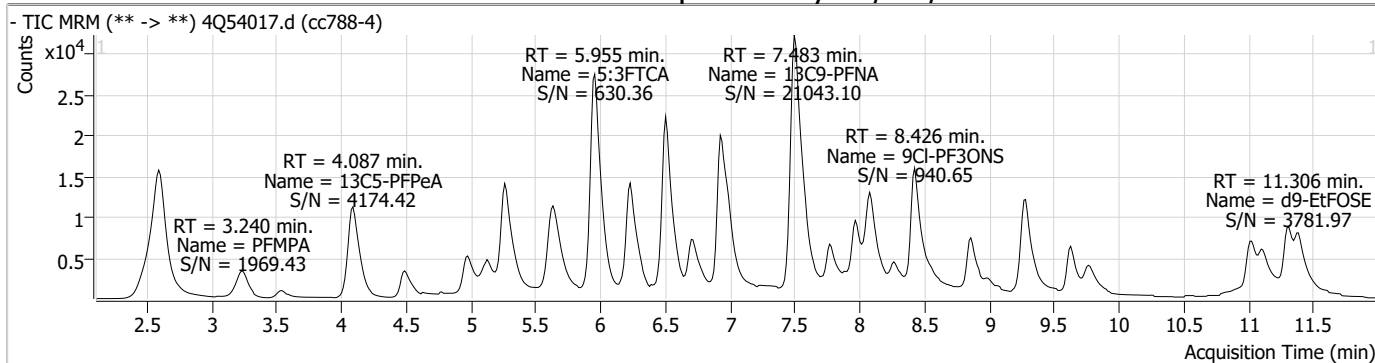
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.27

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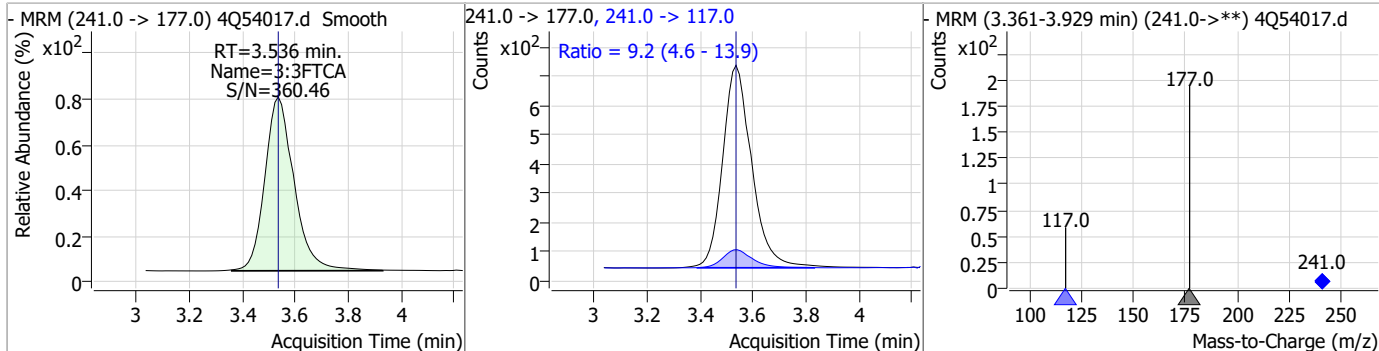
Perfluorinated Compounds by LC/MS/MS



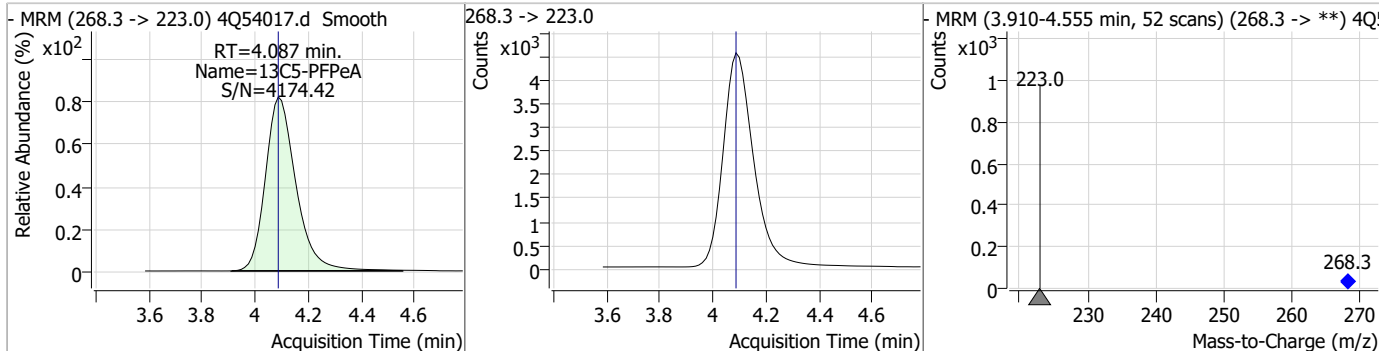
7.7.27
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Perfluorinated Compounds by LC/MS/MS

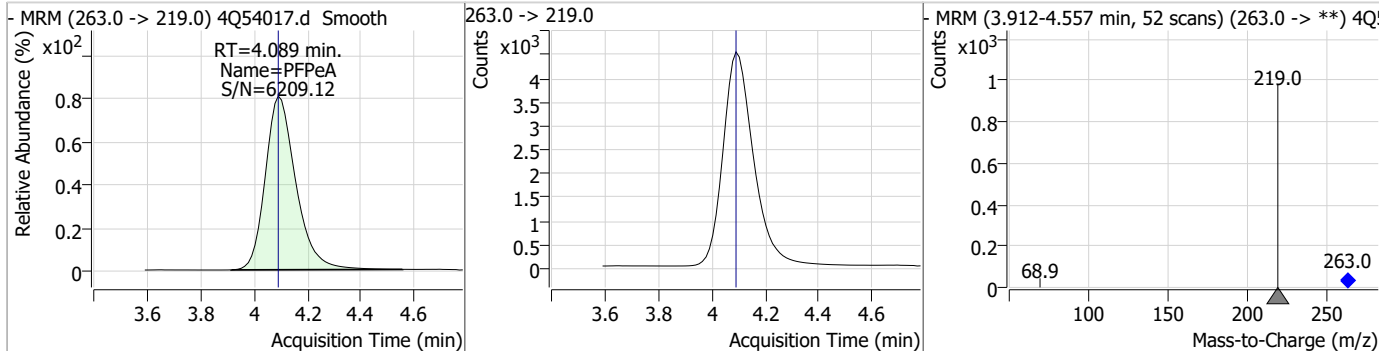
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	11.96	3.54	0.00	5306	241.0 -> 117.0	9.2	4.6	13.9



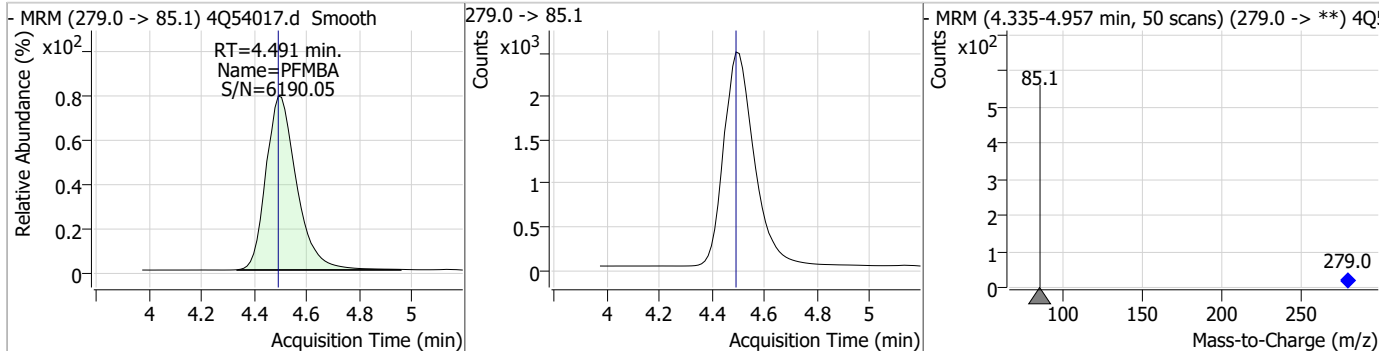
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.06	4.09	0.00	36279				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.97	4.09	0.00	35837				

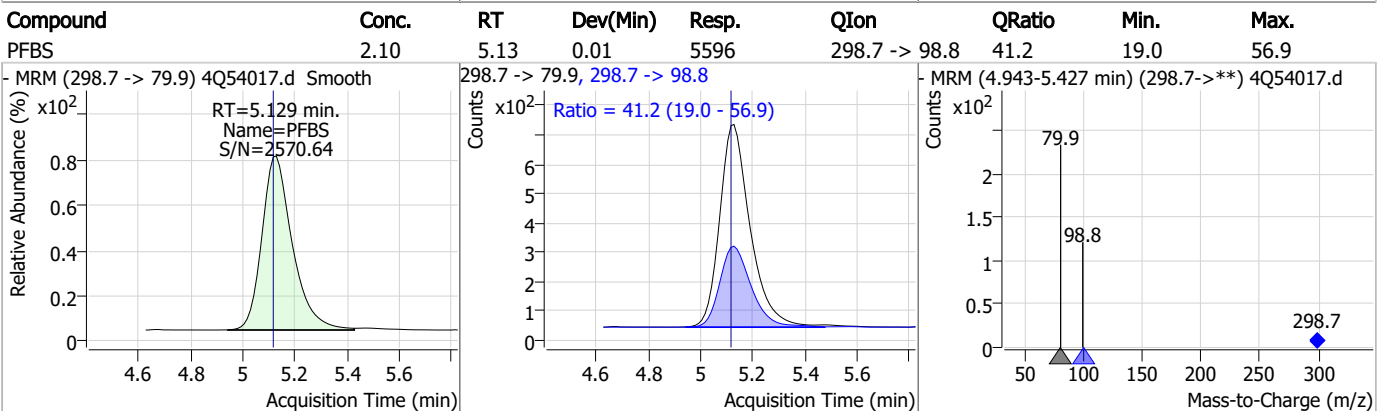
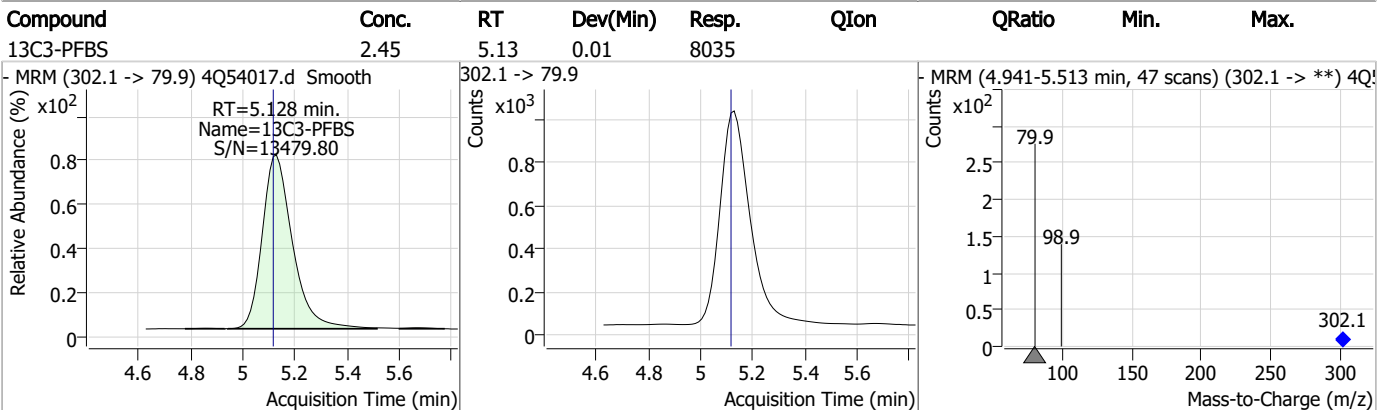
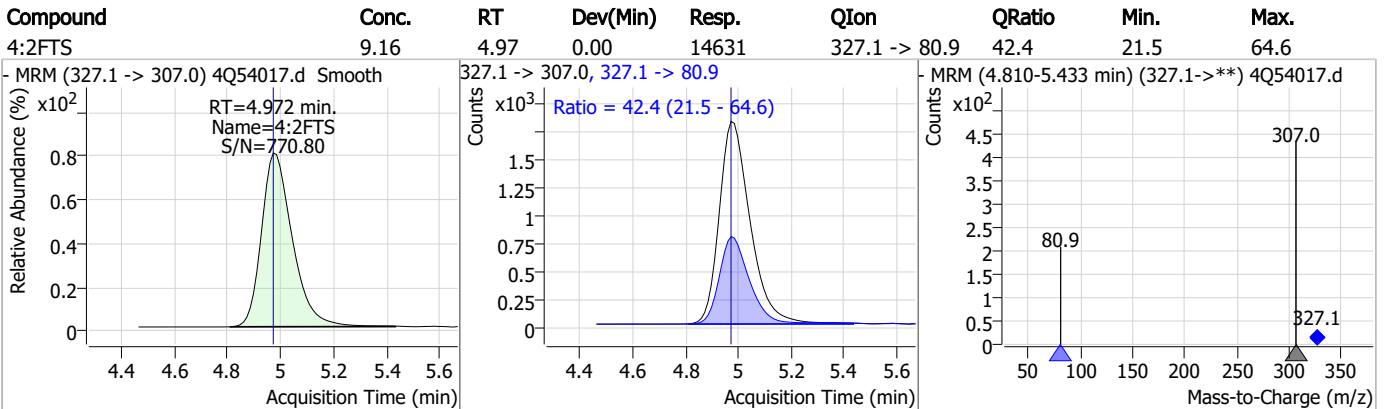
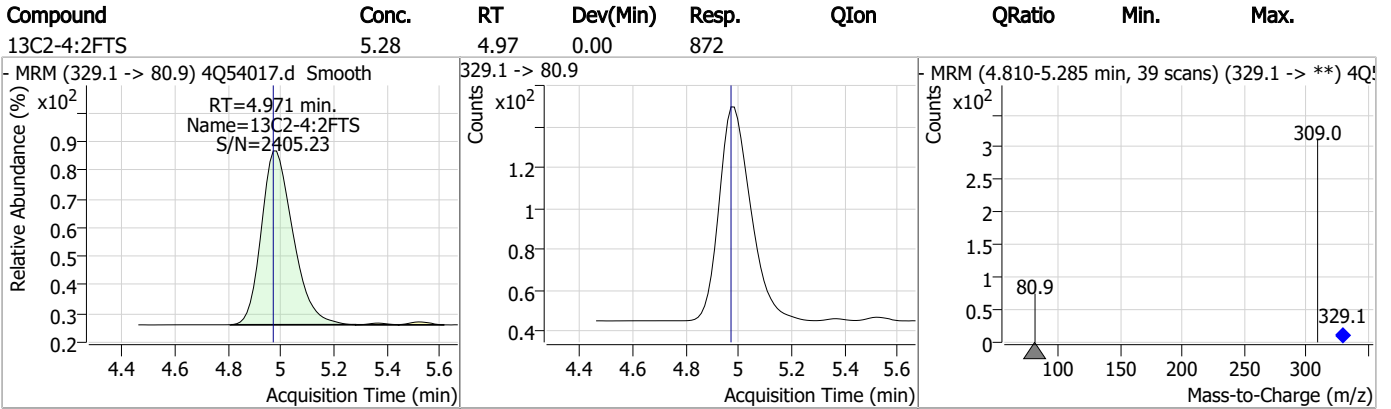


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	5.04	4.49	0.00	20037				



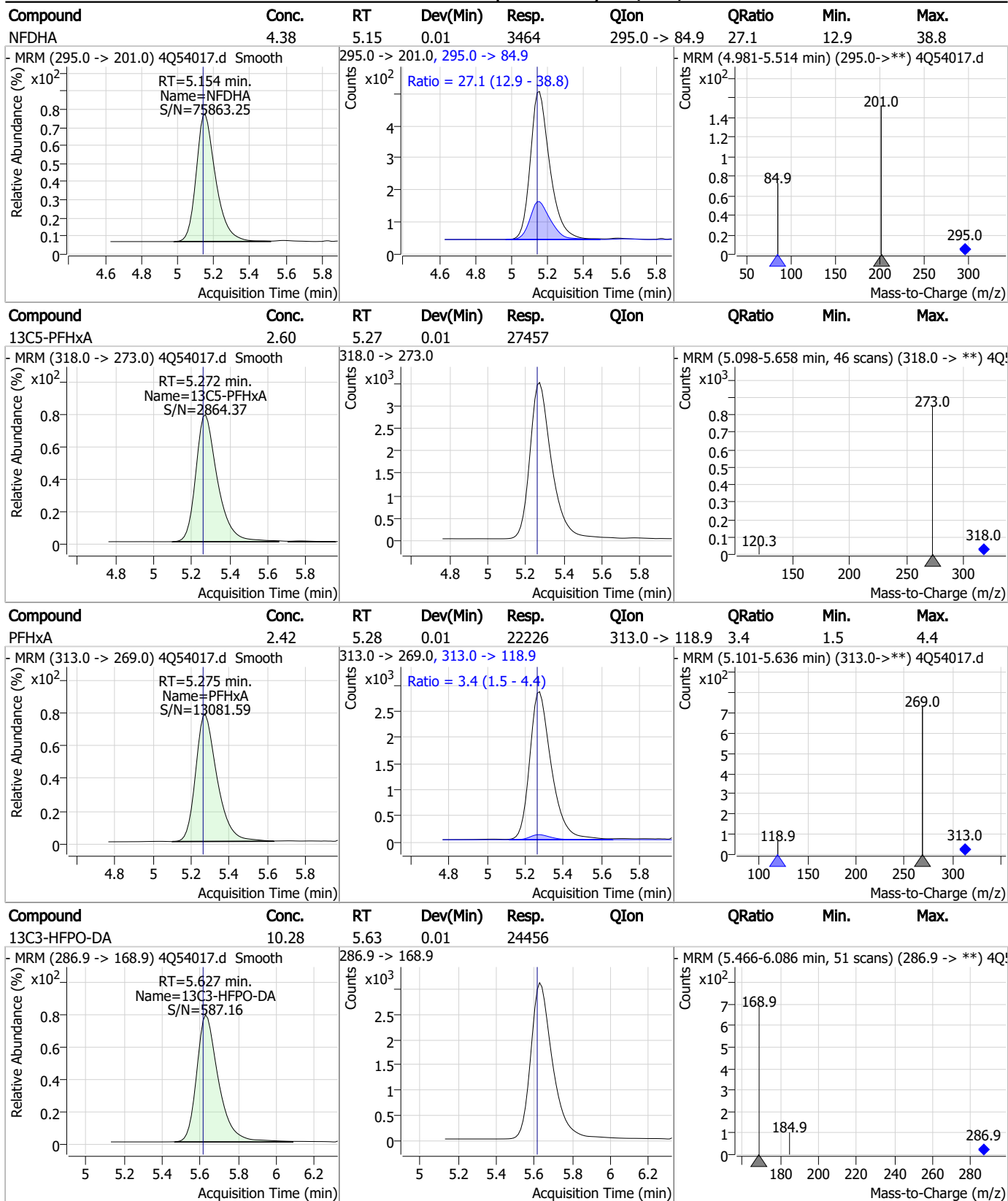
7.7.27
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Perfluorinated Compounds by LC/MS/MS



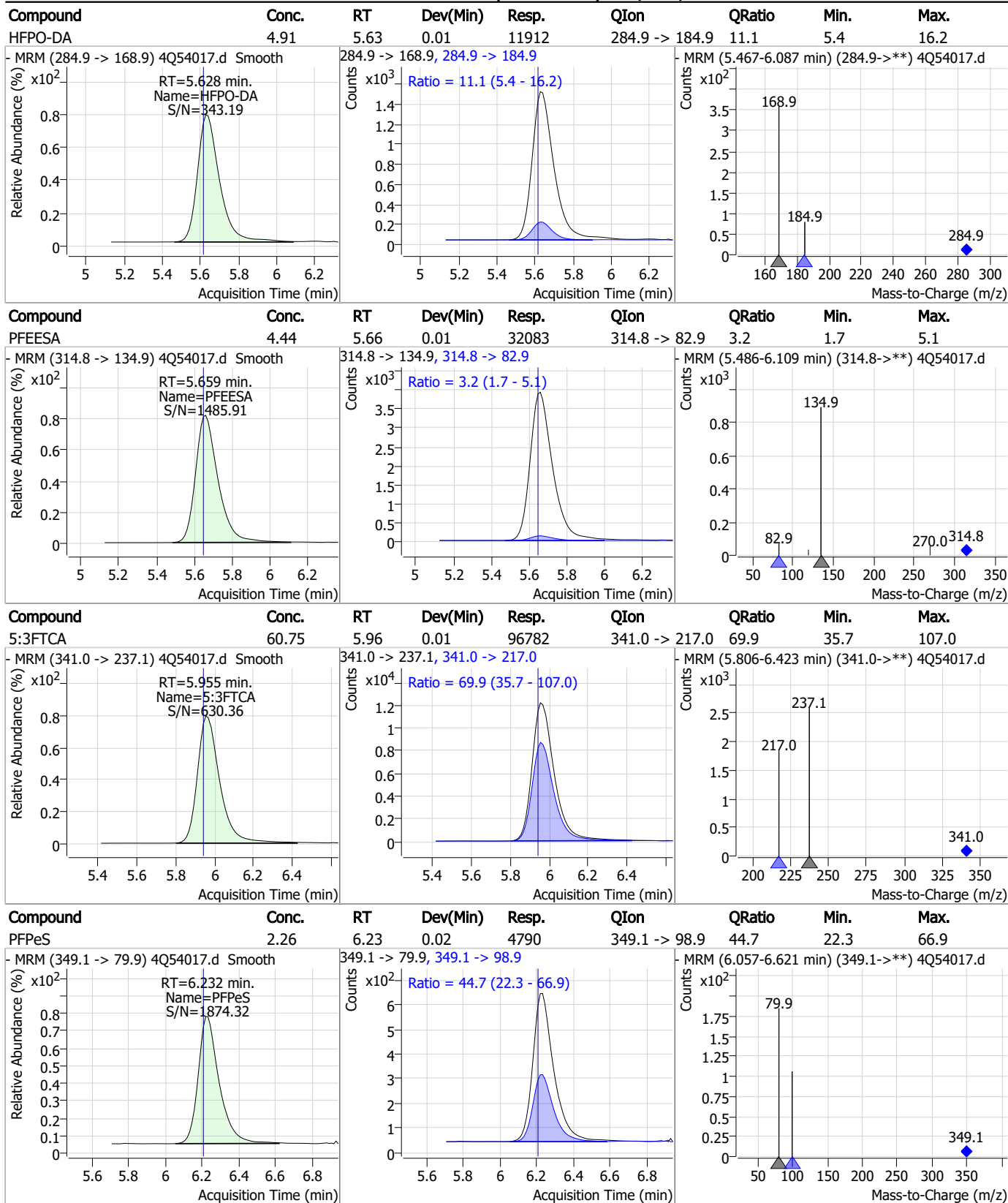
7.7.27 7

Perfluorinated Compounds by LC/MS/MS



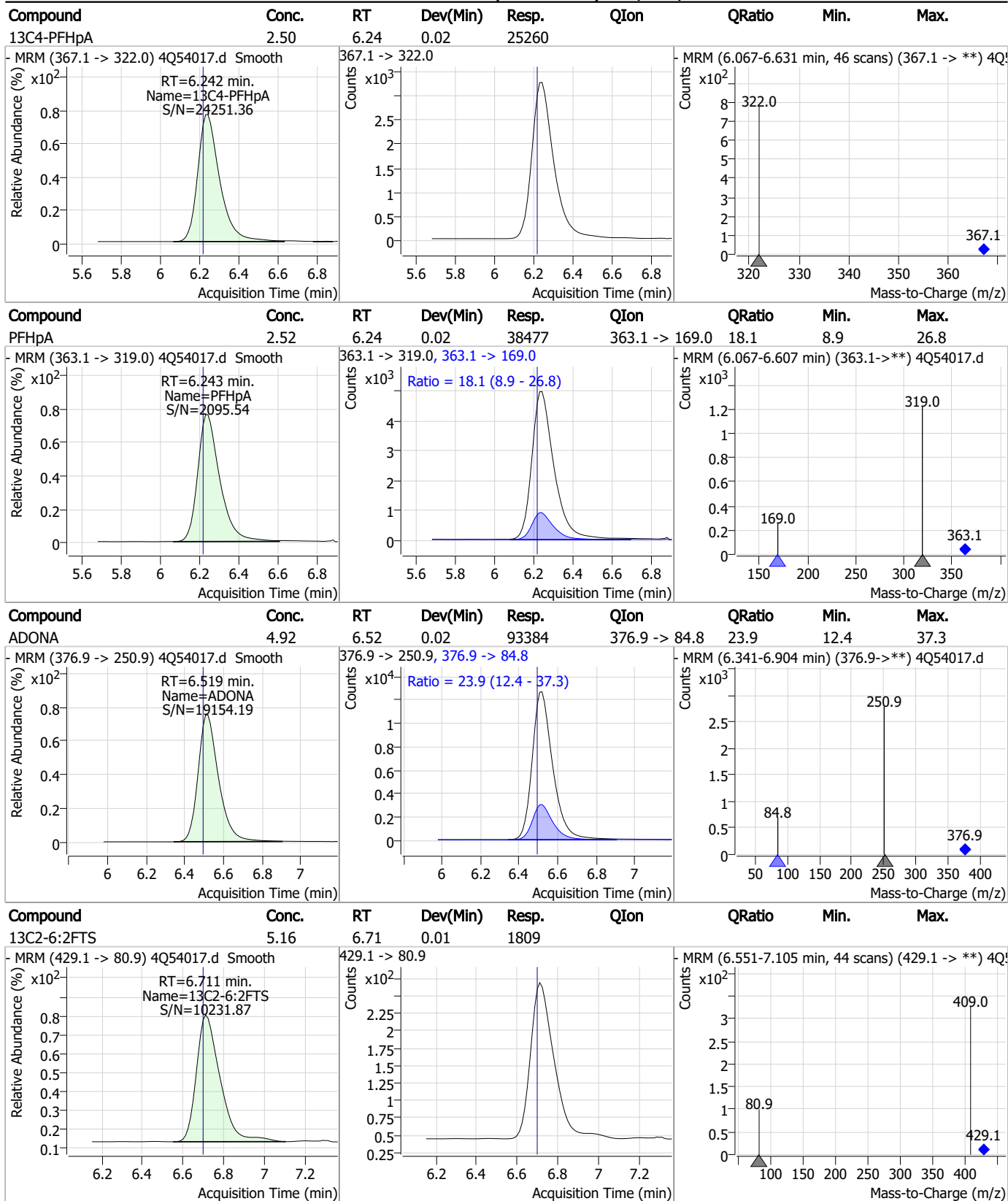
7.7.27
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Perfluorinated Compounds by LC/MS/MS



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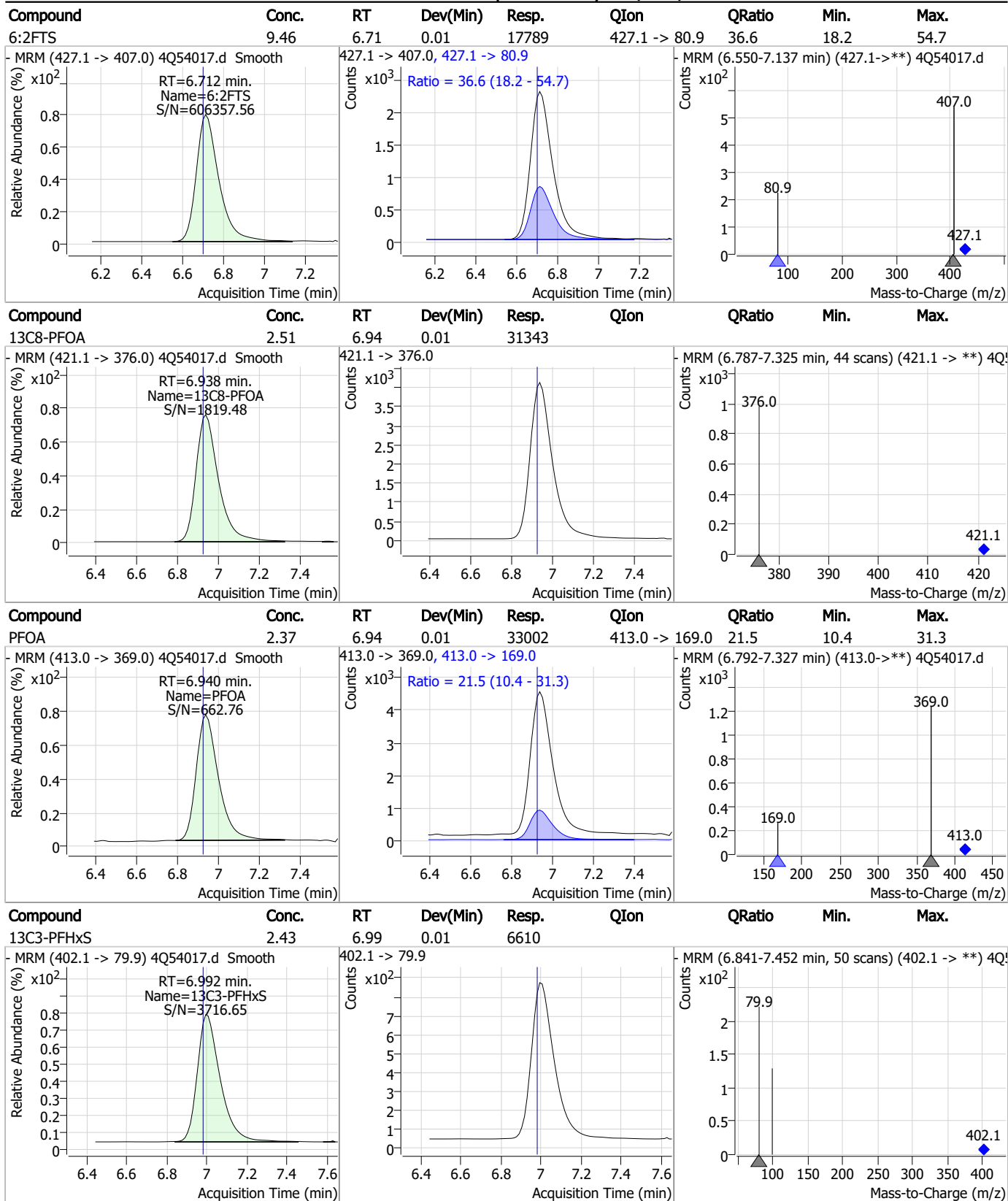
Perfluorinated Compounds by LC/MS/MS



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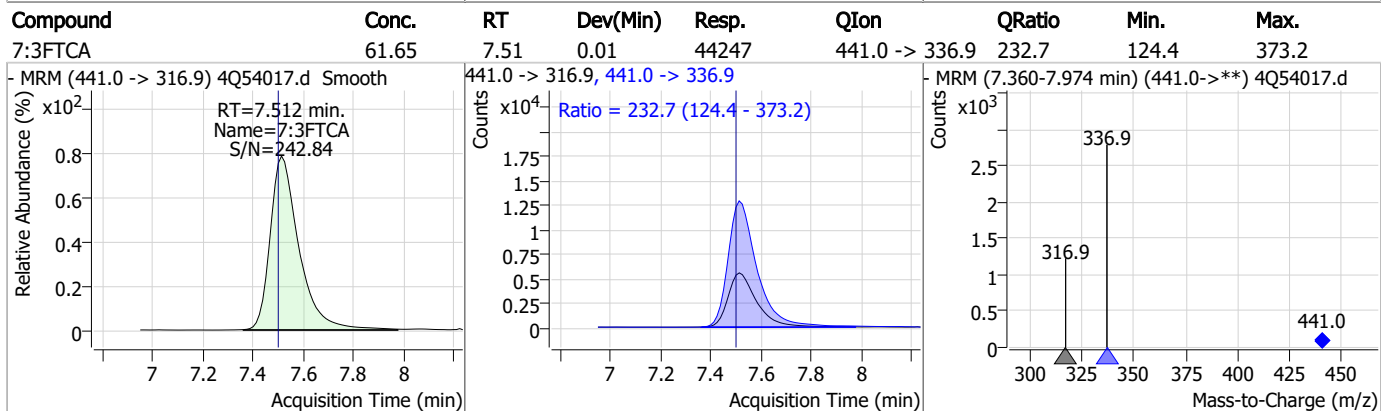
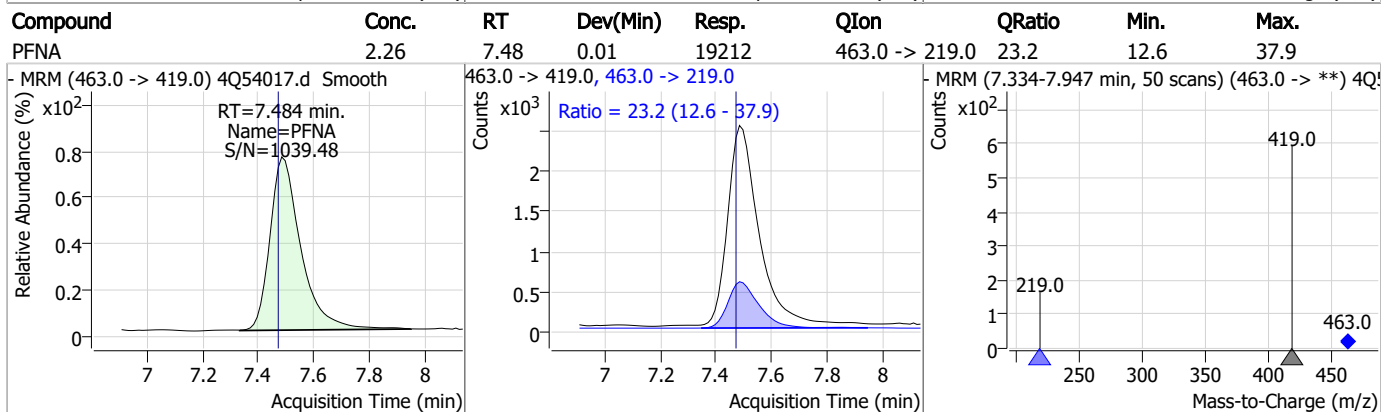
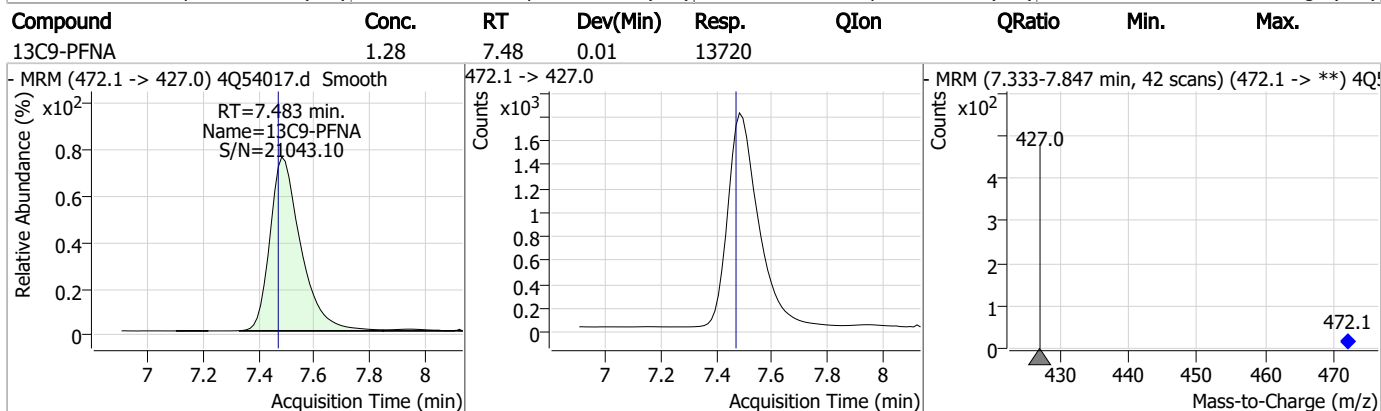
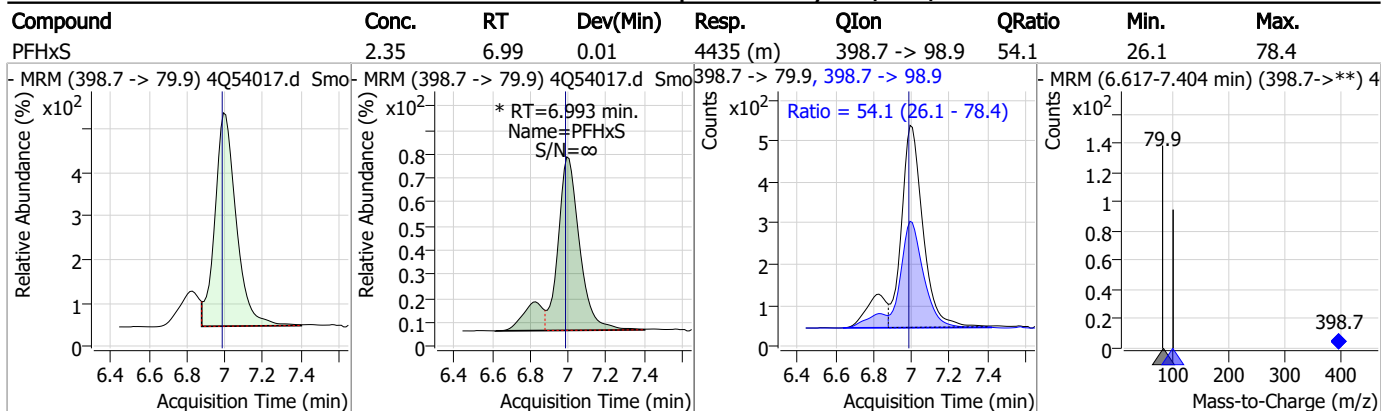
Perfluorinated Compounds by LC/MS/MS



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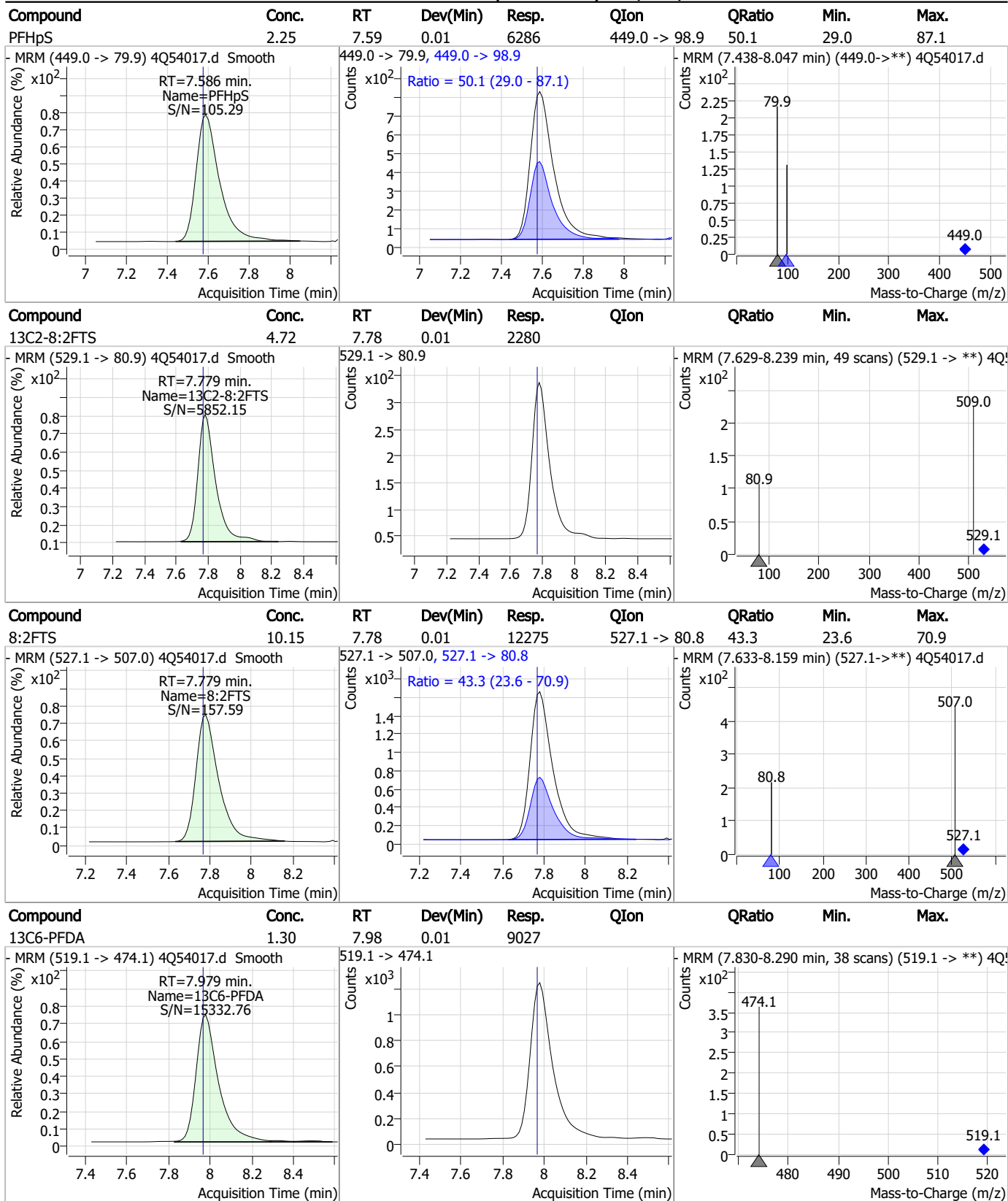


Perfluorinated Compounds by LC/MS/MS



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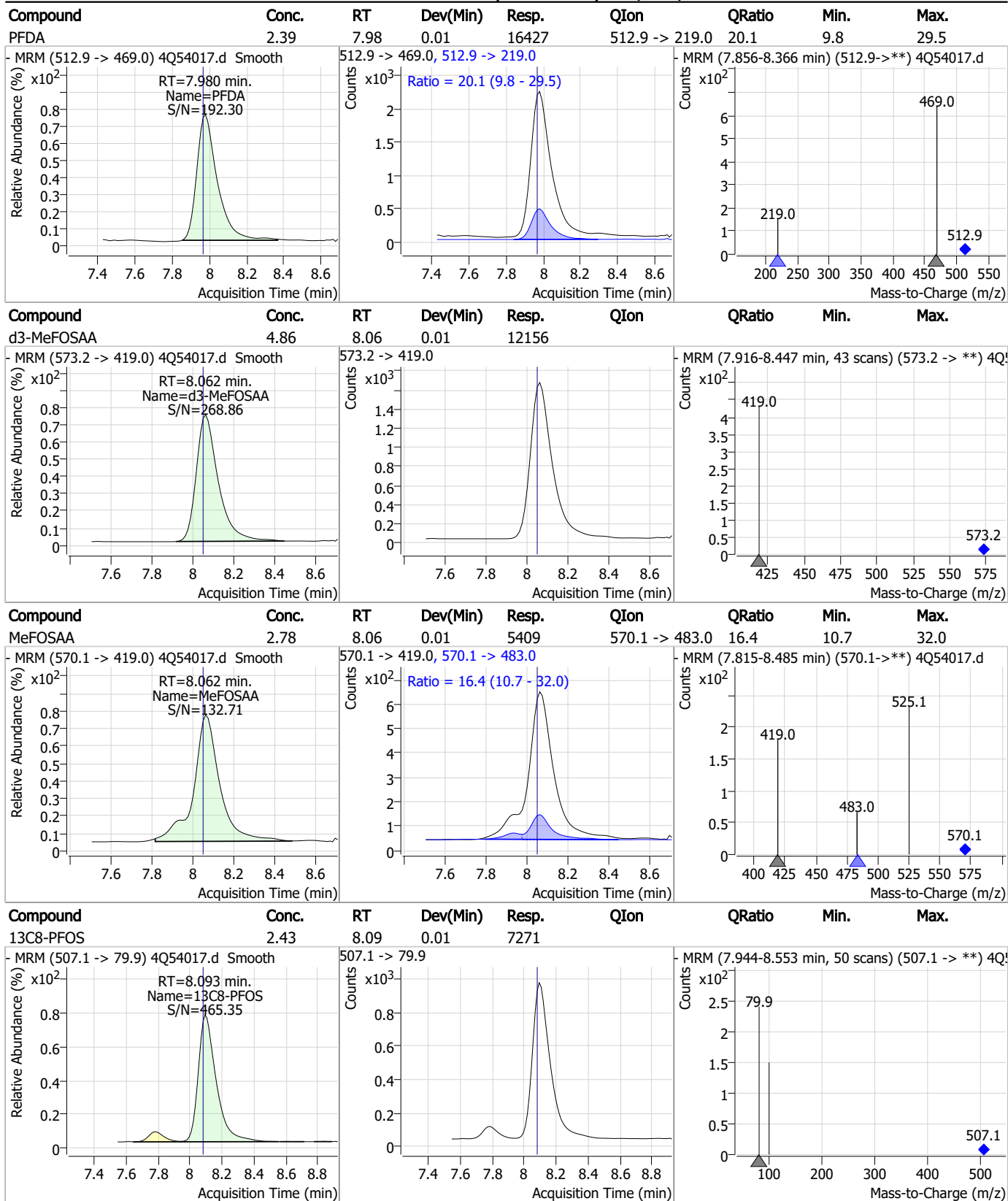
Perfluorinated Compounds by LC/MS/MS



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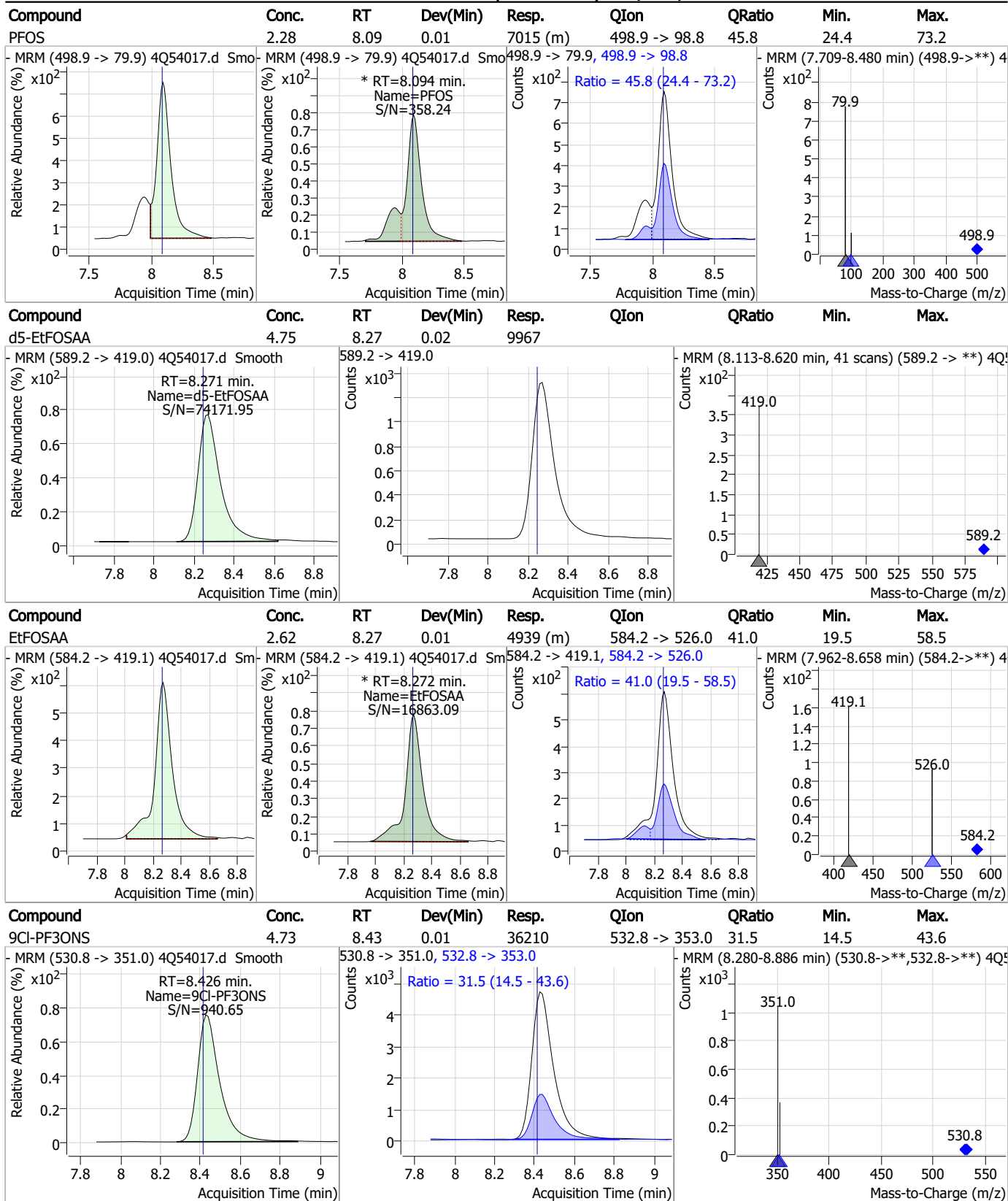
Perfluorinated Compounds by LC/MS/MS



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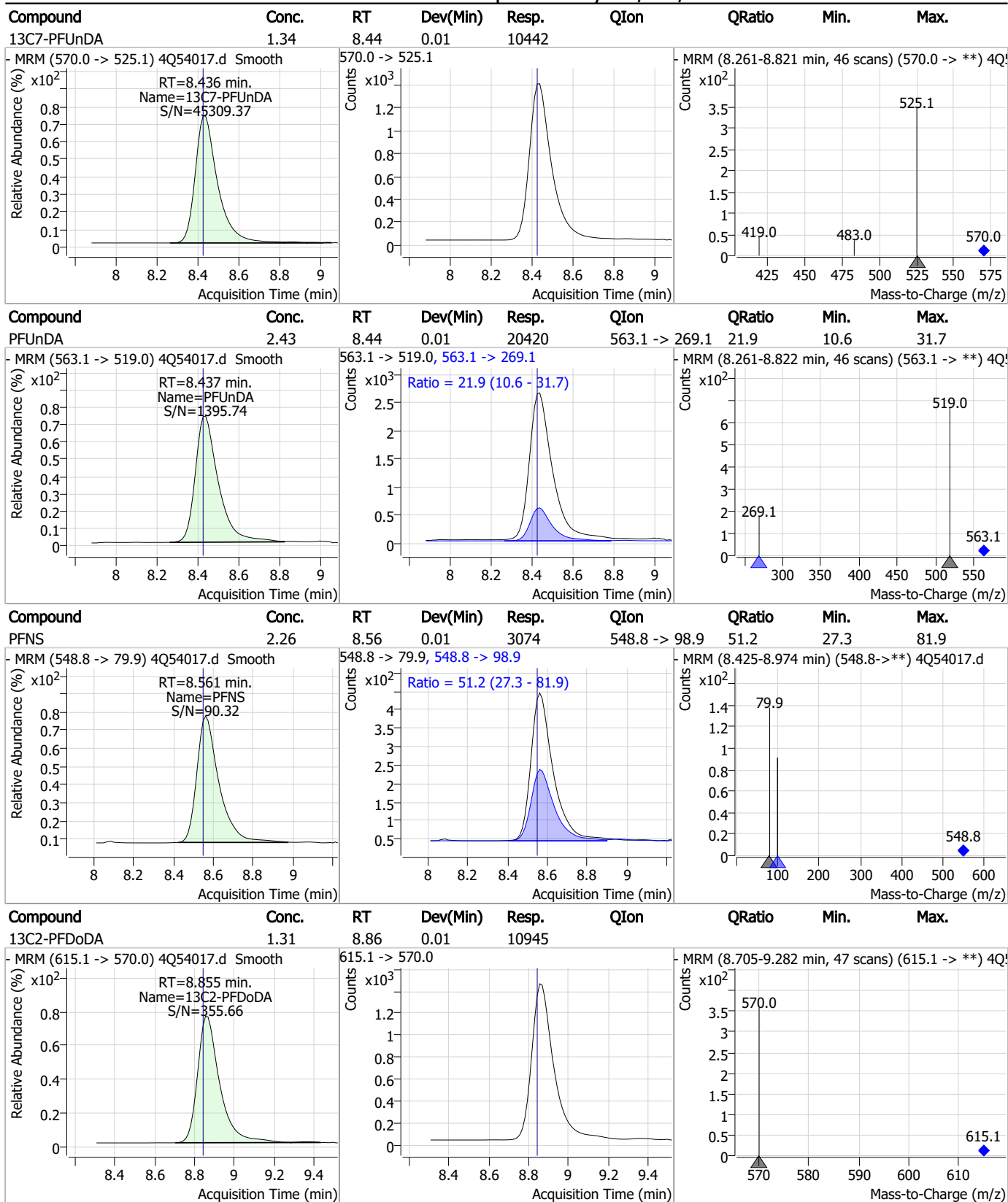
Perfluorinated Compounds by LC/MS/MS



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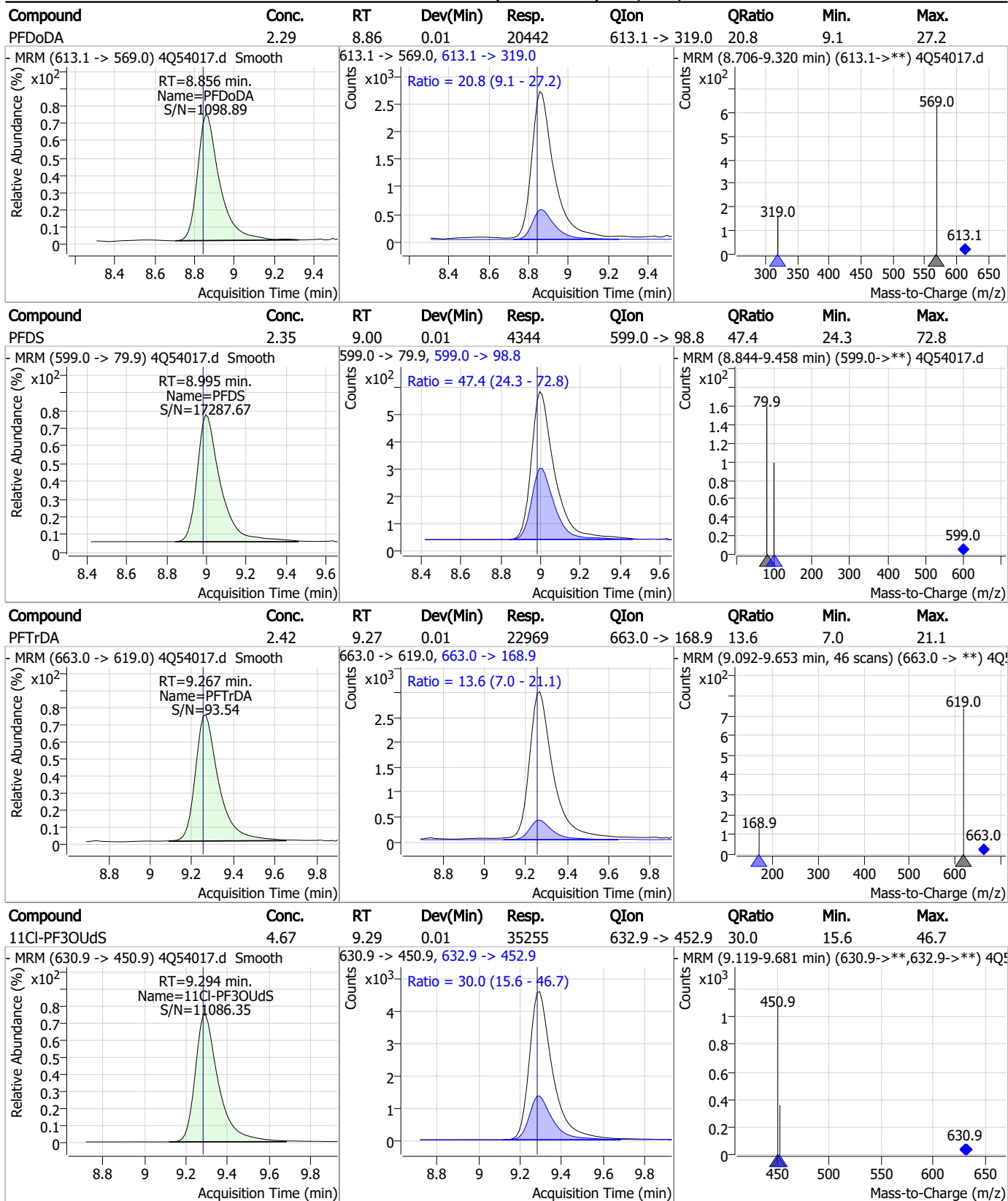
Perfluorinated Compounds by LC/MS/MS



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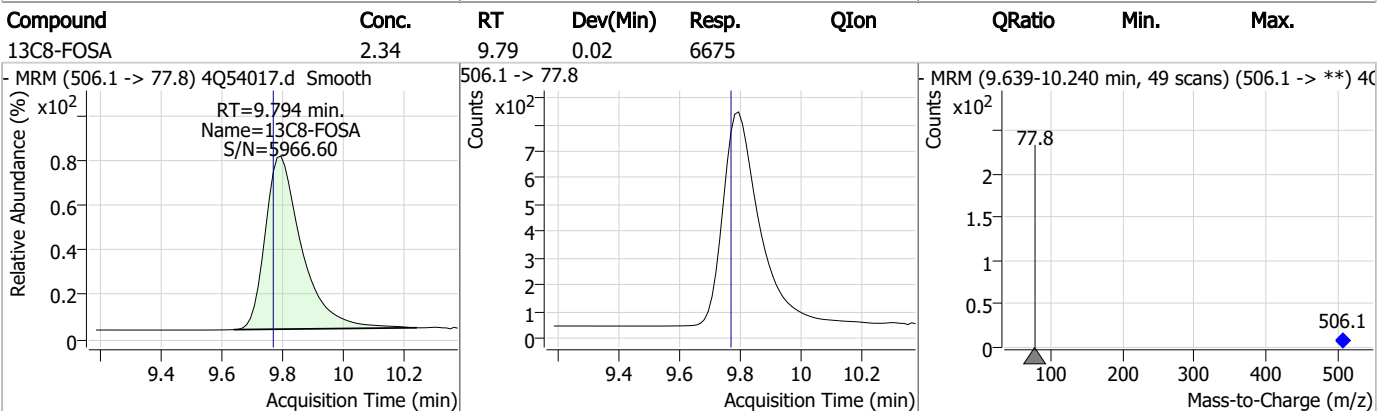
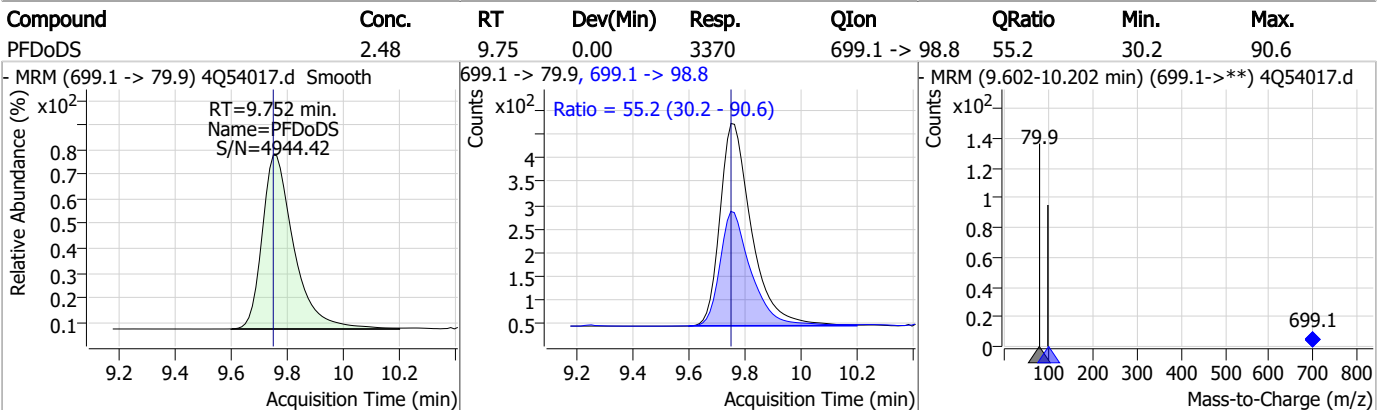
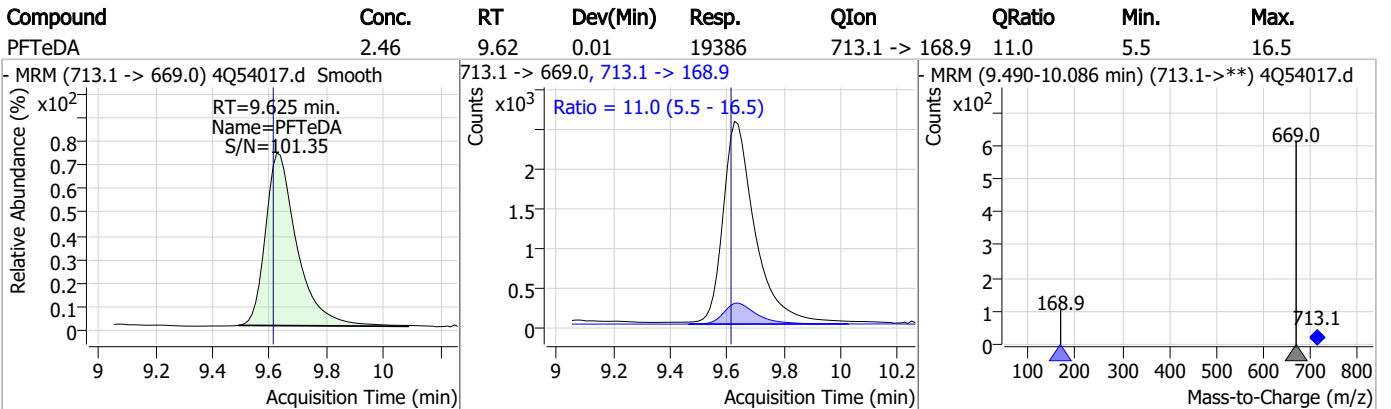
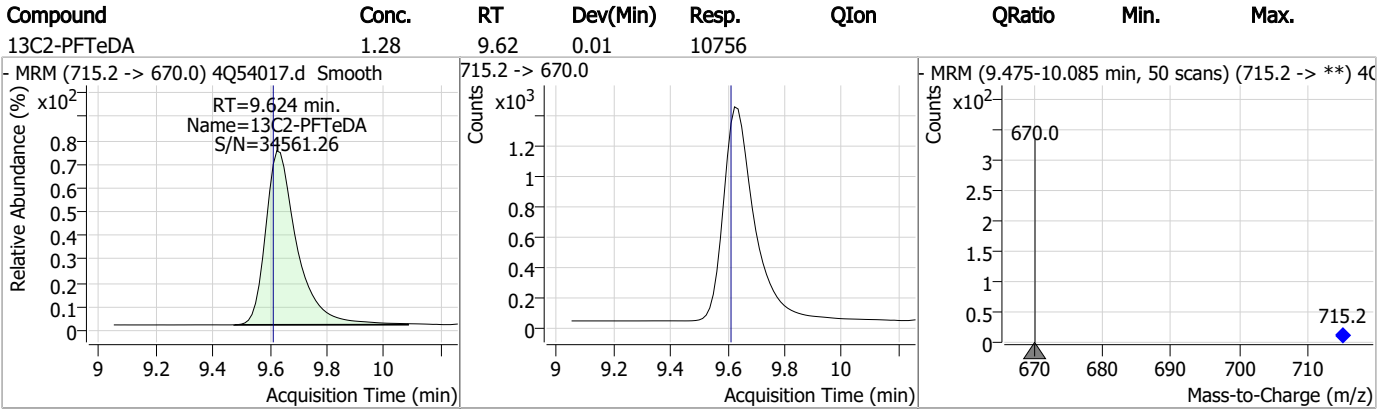
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

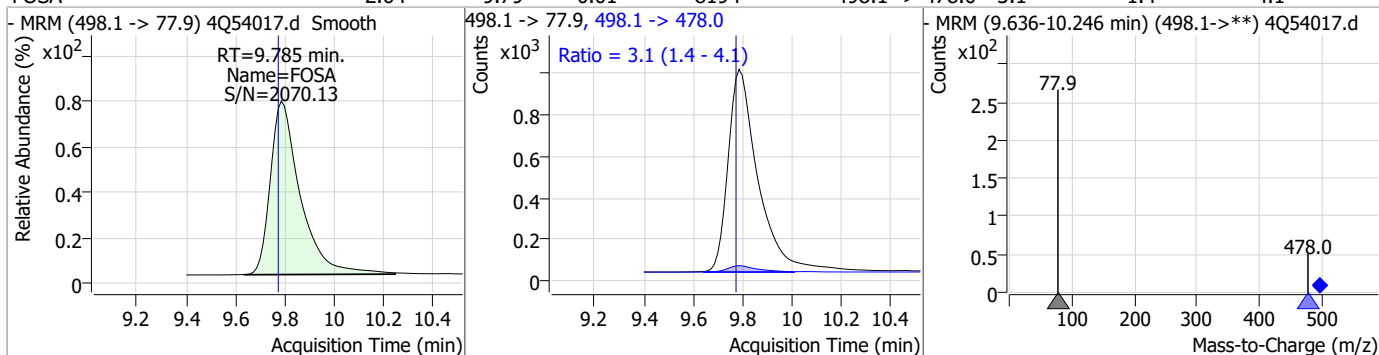


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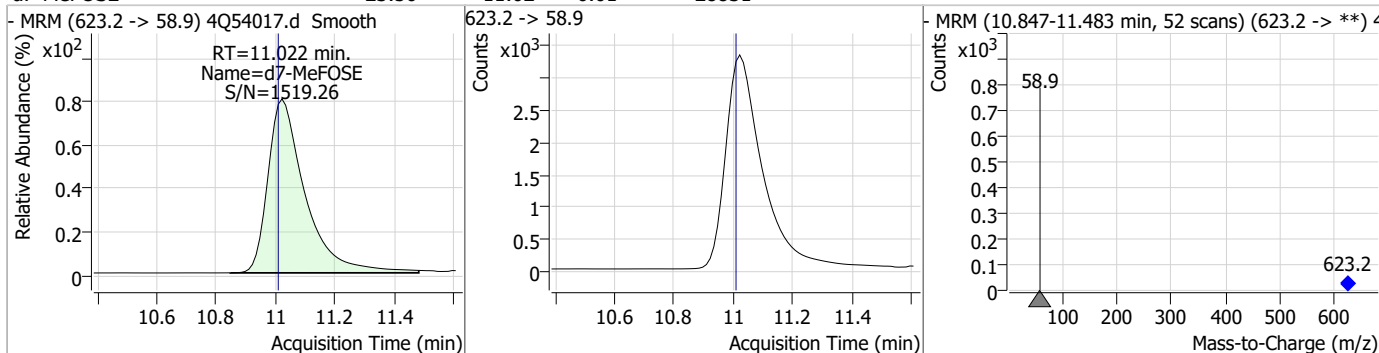


Perfluorinated Compounds by LC/MS/MS

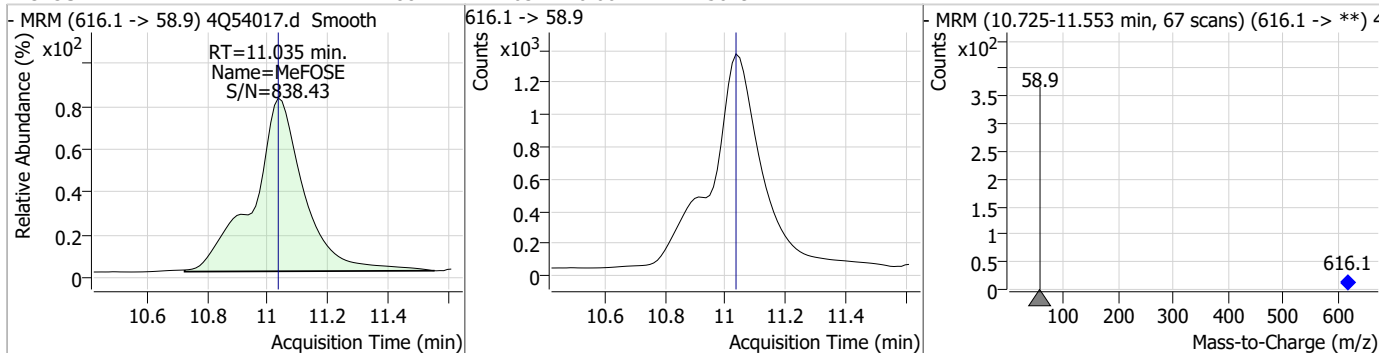
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.64	9.79	0.01	8194	498.1 -> 478.0	3.1	1.4	4.1



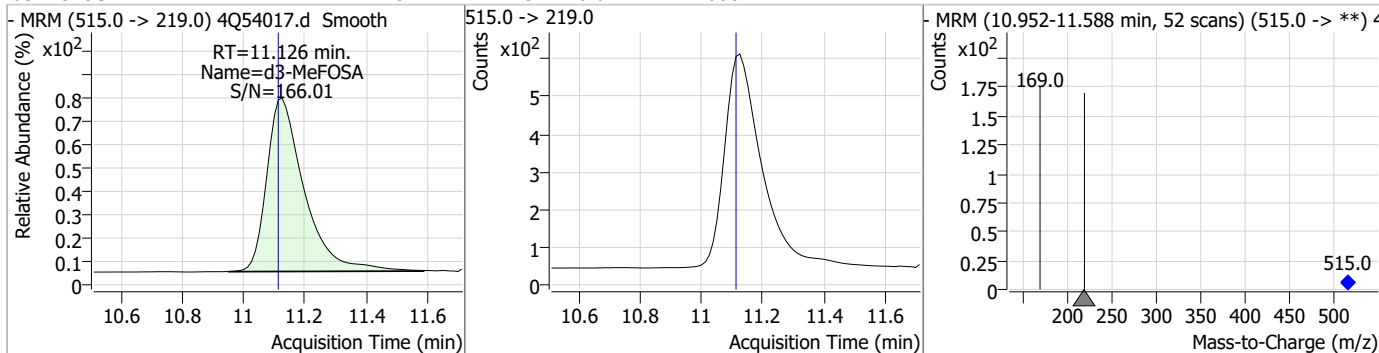
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.56	11.02	0.01	28831				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.88	11.03	0.00	15649				

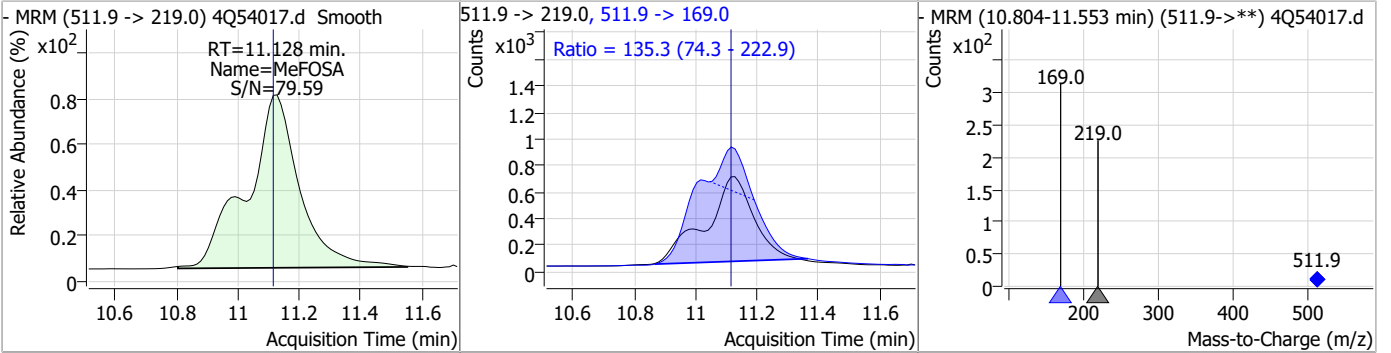


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.45	11.13	0.01	4808				

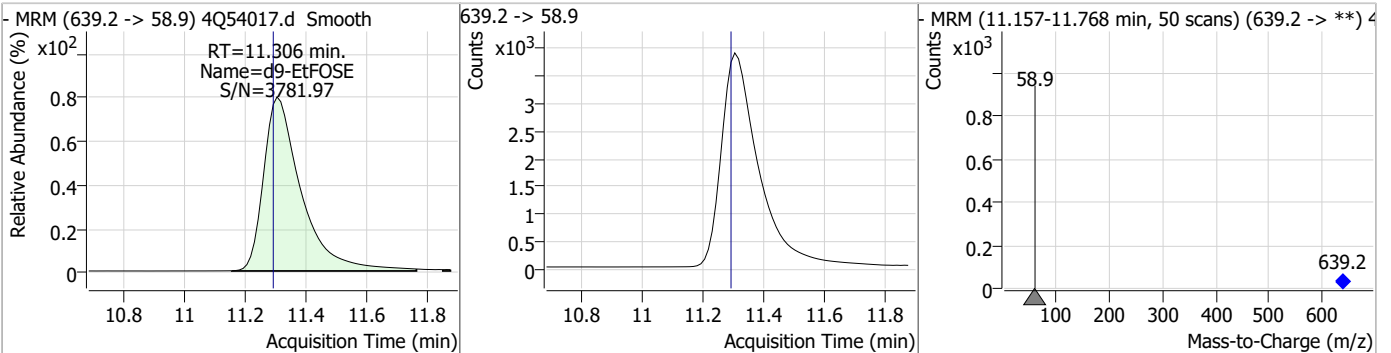


Perfluorinated Compounds by LC/MS/MS

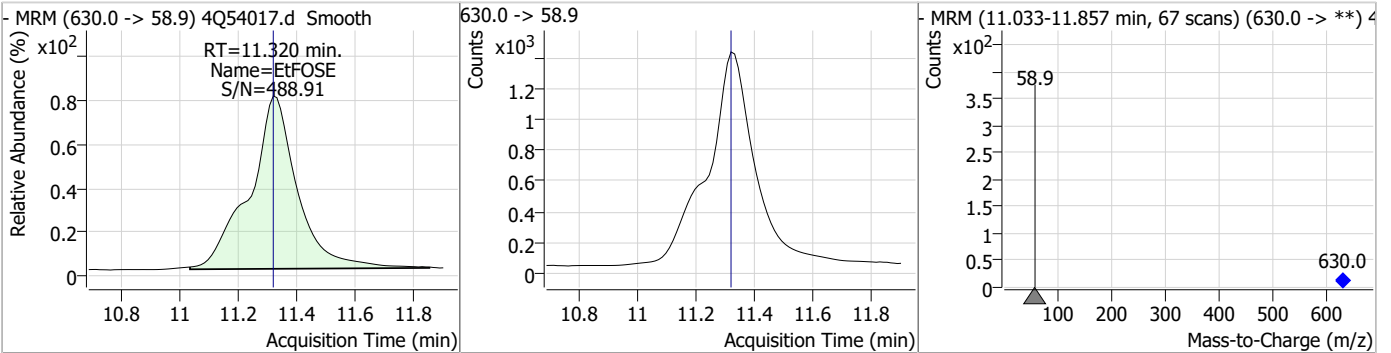
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.70	11.13	0.01	8069	511.9 -> 169.0	135.3	74.3	222.9



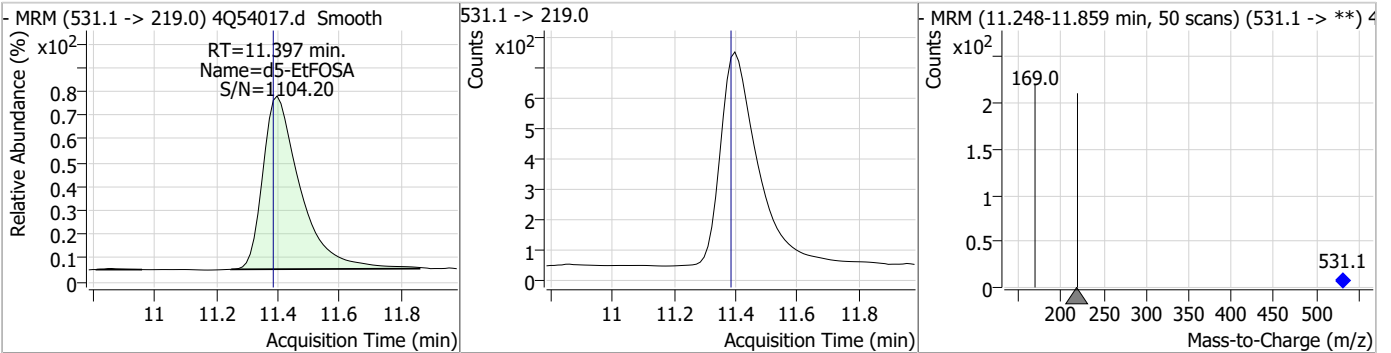
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.09	11.31	0.01	33542				



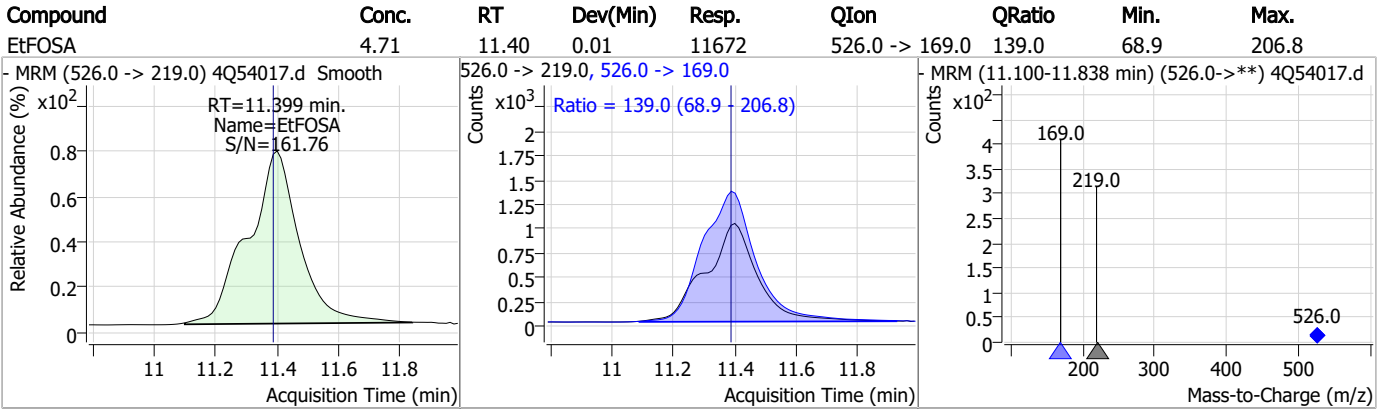
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.54	11.32	0.00	15840				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.49	11.40	0.01	5931				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q788-CC788 Method: EPA DRAFT 1633
Lab FileID: 4Q54017.D Analyst approved: 11/18/23 15:04 Mike Eger
Injection Time: 11/17/23 14:07 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.99	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.09	Split peak
EtFOSAA	2991-50-6		8.27	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54018.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 2:22:45 PM
 Sample Name : cc788-1.0LL
 Vial : P1-A2
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.599	216.8 -> 171.9	80890	10.00 µg/L	0.000
M5-PFPeA	4.087	268.3 -> 223.0	34974	5.00 µg/L	0.000
M5-PFHxA	5.272	318.0 -> 273.0	26198	2.50 µg/L	0.012
M4-PFHpA	6.230	367.1 -> 322.0	24600	2.50 µg/L	0.012
M8-PFOA	6.938	421.1 -> 376.0	29832	2.50 µg/L	0.012
M9-PFNA	7.483	472.1 -> 427.0	11939	1.25 µg/L	0.012
M6-PFDA	7.967	519.1 -> 474.1	8854	1.25 µg/L	0.000
M7-PFUnDA	8.436	570.0 -> 525.1	10454	1.25 µg/L	0.012
M2-PFDoDA	8.855	615.1 -> 570.0	10643	1.25 µg/L	0.012
M2-PFTeDA	9.637	715.2 -> 670.0	10638	1.25 µg/L	0.025
M8-FOSA	9.794	506.1 -> 77.8	6825	2.50 µg/L	0.025
M3-PFBS	5.128	302.1 -> 79.9	7508	2.50 µg/L	0.012
M3-PFHxS	6.992	402.1 -> 79.9	6143	2.50 µg/L	0.012
M8-PFOS	8.093	507.1 -> 79.9	6830	2.50 µg/L	0.012
M2-4:2FTS	4.971	329.1 -> 80.9	838	5.00 µg/L	0.000
M2-6:2FTS	6.711	429.1 -> 80.9	1846	5.00 µg/L	0.012
M2-8:2FTS	7.779	529.1 -> 80.9	2339	5.00 µg/L	0.012
M3-MeFOSAA	8.062	573.2 -> 419.0	12594	5.00 µg/L	0.012
M3-HFPO-DA	5.627	286.9 -> 168.9	24151	10.00 µg/L	0.012
M5-EtFOSAA	8.259	589.2 -> 419.0	9781	5.00 µg/L	0.012
M7-MeFOSE	11.022	623.2 -> 58.9	28693	25.00 µg/L	0.012
M9-EtFOSE	11.306	639.2 -> 58.9	32500	25.00 µg/L	0.012
M5-EtFOSA	11.397	531.1 -> 219.0	5625	2.50 µg/L	0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4146	2.50 µg/L	0.012
13C4-PFOS	8.093	502.8 -> 79.9	5918	2.50 µg/L	0.012
13C3-PFBA	2.603	216.0 -> 172.0	38576	5.00 µg/L	0.012
18O2-PFHxS	6.991	403.0 -> 83.9	3956	2.50 µg/L	0.012
13C4-PFOA	6.939	417.1 -> 372.0	33052	2.50 µg/L	0.012
13C2-PFDA	7.980	515.1 -> 470.1	10220	1.25 µg/L	0.012
13C5-PFNA	7.484	468.0 -> 423.0	12494	1.25 µg/L	0.012
13C2-PFHxA	5.273	315.1 -> 270.0	27937	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	4.971	329.1 -> 80.9	838	5.55 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.1%		
13C2-6:2FTS	6.711	429.1 -> 80.9	1846	5.76 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.3%		
13C2-8:2FTS	7.779	529.1 -> 80.9	2339	5.30 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.0%		
13C2-PFDoDA	8.855	615.1 -> 570.0	10643	1.16 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.1%		
13C2-PFTeDA	9.637	715.2 -> 670.0	10638	1.16 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.6%		
13C3-PFBS	5.128	302.1 -> 79.9	7508	2.51 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C3-PFHxS	6.992	402.1 -> 79.9	6143	2.47 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C4-PFBA	2.599	216.8 -> 171.9	80890	10.16 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C4-PFHpA	6.230	367.1 -> 322.0	24600	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C5-PFHxA	5.272	318.0 -> 273.0	26198	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C5-PFPeA	4.087	268.3 -> 223.0	34974	4.98 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C6-PFDA	7.967	519.1 -> 474.1	8854	1.17 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.2%	
13C7-PFUnDA	8.436	570.0 -> 525.1	10454	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C8-FOSA	9.794	506.1 -> 77.8	6825	2.47 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C8-PFOA	6.938	421.1 -> 376.0	29832	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C8-PFOS	8.093	507.1 -> 79.9	6830	2.35 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.2%	
13C9-PFNA	7.483	472.1 -> 427.0	11939	1.18 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.3%	
d3-MeFOSAA	8.062	573.2 -> 419.0	12594	5.20 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.9%	
13C3-HFPO-DA	5.627	286.9 -> 168.9	24151	10.36 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.6%	
d3-MeFOSA	11.126	515.0 -> 219.0	4146	2.18 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 87.3%	
d5-EtFOSAA	8.259	589.2 -> 419.0	9781	4.81 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.2%	
d7-MeFOSE	11.022	623.2 -> 58.9	28693	24.20 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.8%	
d9-EtFOSE	11.306	639.2 -> 58.9	32500	24.09 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.4%	
d5-EtFOSA	11.397	531.1 -> 219.0	5625	2.44 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%	
Target Compounds					QValue
4:2FTS	4.972	327.1 -> 307.0	1068	0.69 µg/L	88
		327.1 -> 80.9	538		
6:2FTS	6.712	427.1 -> 407.0	1344	0.70 µg/L	93
		427.1 -> 80.9	544		
8:2FTS	7.779	527.1 -> 507.0	996	0.80 µg/L	98
		527.1 -> 80.8	487		
EtFOSAA	8.272	584.2 -> 419.1	449	0.24 µg/L	m 94
		584.2 -> 526.0	158		
FOSA	9.785	498.1 -> 77.9	639	0.20 µg/L	98
		498.1 -> 478.0	13		
MeFOSAA	8.050	570.1 -> 419.0	366	0.18 µg/L	#m 72
		570.1 -> 483.0	30		
PFBA	2.607	212.8 -> 168.9	2147	0.77 µg/L	100
PFBS	5.129	298.7 -> 79.9	455	0.18 µg/L	84
		298.7 -> 98.8	216		
PFDA	7.980	512.9 -> 469.0	1227	0.18 µg/L	92
		512.9 -> 219.0	284		
PFDODA	8.856	613.1 -> 569.0	1860	0.21 µg/L	96
		613.1 -> 319.0	300		
PFDS	8.995	599.0 -> 79.9	350	0.20 µg/L	86

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	136			
PFHpA	6.243	363.1 -> 319.0	2820	0.19	µg/L	99
		363.1 -> 169.0	490			
PFHpS	7.586	449.0 -> 79.9	412	0.16	µg/L	100
		449.0 -> 98.9	240			
PFHxA	5.275	313.0 -> 269.0	1719	0.20	µg/L	98
		313.0 -> 118.9	40			
PFHxS	6.981	398.7 -> 79.9	345	0.20	µg/L	m 98
		398.7 -> 98.9	174			
PFNA	7.484	463.0 -> 419.0	1617	0.22	µg/L	87
		463.0 -> 219.0	302			
PFNS	8.561	548.8 -> 79.9	282	0.22	µg/L	87
		548.8 -> 98.9	129			
PFOA	6.927	413.0 -> 369.0	2432	0.18	µg/L	93
		413.0 -> 169.0	583			
PFOS	8.081	498.9 -> 79.9	516	0.18	µg/L	m 89
		498.9 -> 98.8	215			
PFPeA	4.102	263.0 -> 219.0	2748	0.40	µg/L	100
PFPeS	6.220	349.1 -> 79.9	371	0.19	µg/L	92
		349.1 -> 98.9	184			
PFTeDA	9.637	713.1 -> 669.0	1266	0.16	µg/L	94
		713.1 -> 168.9	167			
PFTrDA	9.267	663.0 -> 619.0	1887	0.20	µg/L	98
		663.0 -> 168.9	251			
PFUnDA	8.424	563.1 -> 519.0	1305	0.16	µg/L	87
		563.1 -> 269.1	358			
11Cl-PF3OUdS	9.294	630.9 -> 450.9	2643	0.35	µg/L	95
		632.9 -> 452.9	900			
9Cl-PF3ONS	8.426	530.8 -> 351.0	2687	0.36	µg/L	99
		532.8 -> 353.0	792			
ADONA	6.506	376.9 -> 250.9	7274	0.39	µg/L	100
		376.9 -> 84.8	1795			
HFPO-DA	5.628	284.9 -> 168.9	1058	0.44	µg/L	95
		284.9 -> 184.9	95			
3:3FTCA	3.536	241.0 -> 177.0	387	0.89	µg/L	96
		241.0 -> 117.0	41			
5:3FTCA	5.955	341.0 -> 237.1	7418	4.88	µg/L	99
		341.0 -> 217.0	5249			
7:3FTCA	7.512	441.0 -> 316.9	3183	4.65	µg/L	98
		441.0 -> 336.9	7786			
EtFOSA	11.399	526.0 -> 219.0	1004	0.43	µg/L	95
		526.0 -> 169.0	1323			
EtFOSE	11.320	630.0 -> 58.9	1359	1.11	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	607	0.41	µg/L	m 97
		511.9 -> 169.0	923			
MeFOSE	11.035	616.1 -> 58.9	1218	1.01	µg/L	100
PFDoDS	9.752	699.1 -> 79.9	269	0.21	µg/L	96
		699.1 -> 98.8	154			
NFDHA	5.154	295.0 -> 201.0	253	0.34	µg/L	90
		295.0 -> 84.9	53			
PFMBA	4.504	279.0 -> 85.1	1582	0.41	µg/L	100
PFMPA	3.240	229.0 -> 84.9	1725	0.39	µg/L	100
PFEESA	5.659	314.8 -> 134.9	2191	0.32	µg/L	98
		314.8 -> 82.9	90			

= Qualifier out of range, m = manually integrated, + = Area summed

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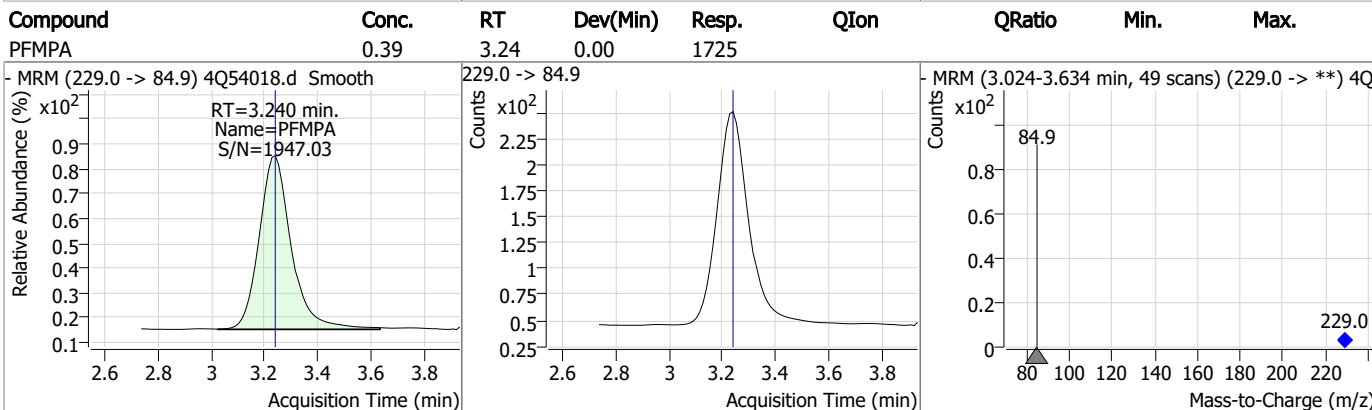
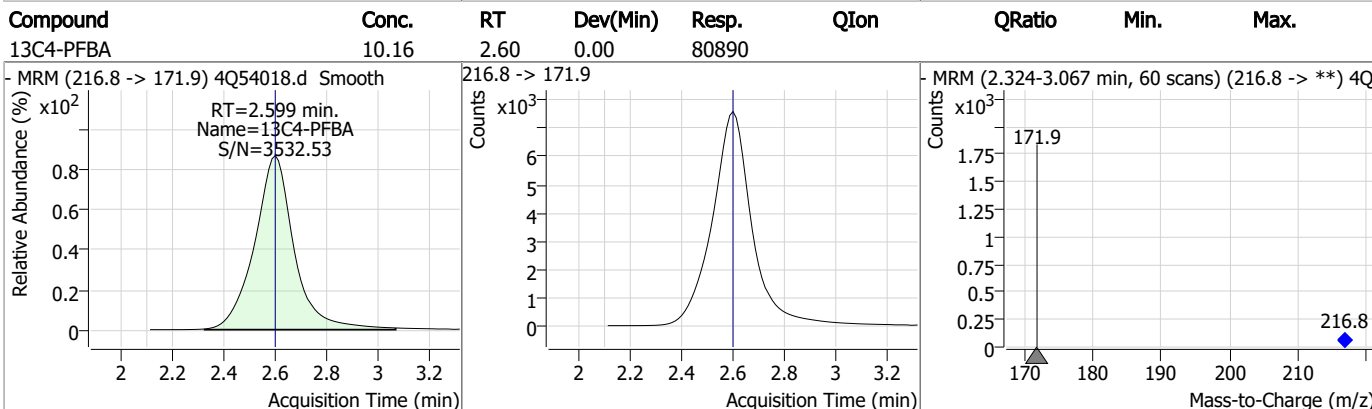
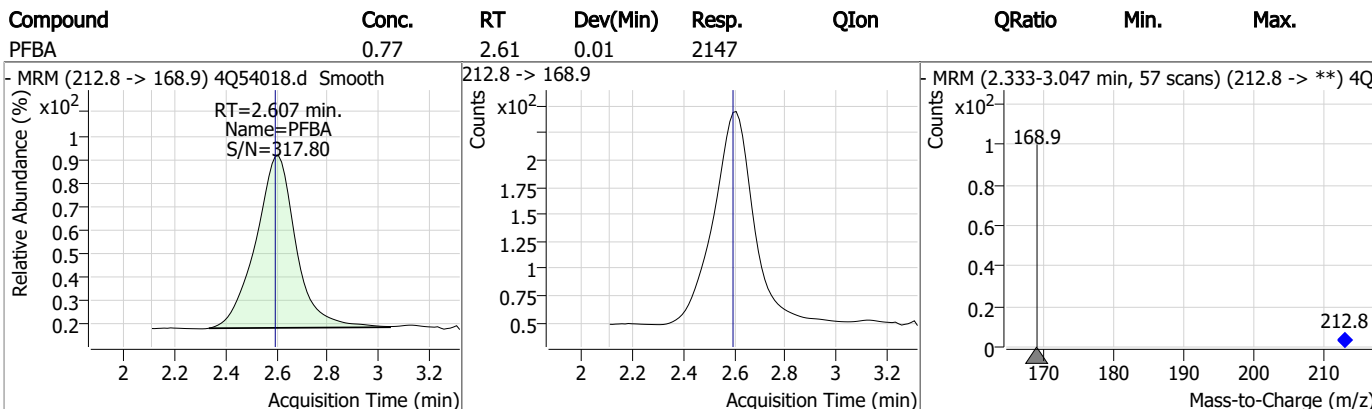
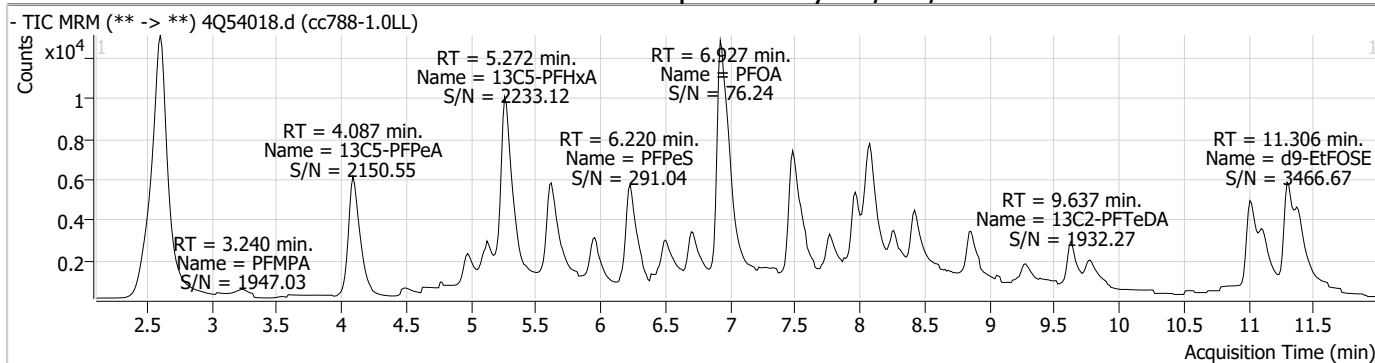
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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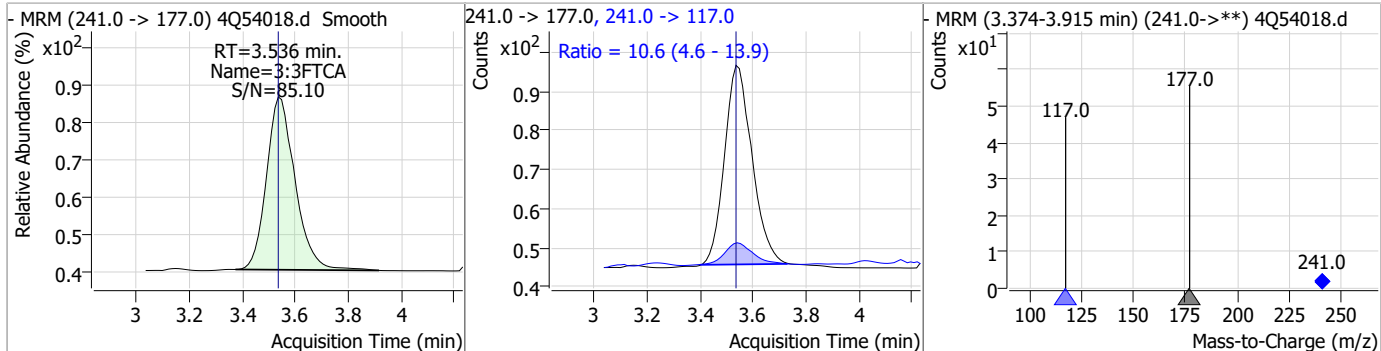
Perfluorinated Compounds by LC/MS/MS



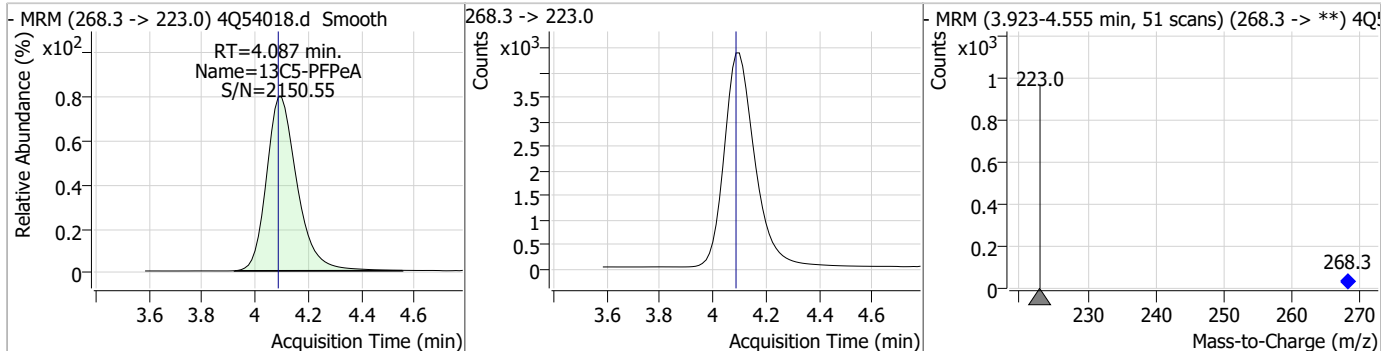
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Perfluorinated Compounds by LC/MS/MS

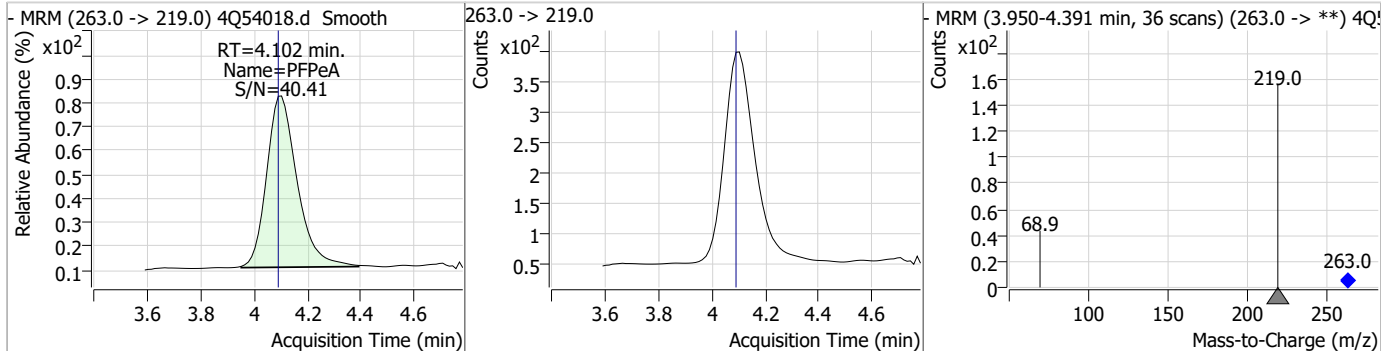
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	0.89	3.54	0.00	387	241.0 -> 117.0	10.6	4.6	13.9



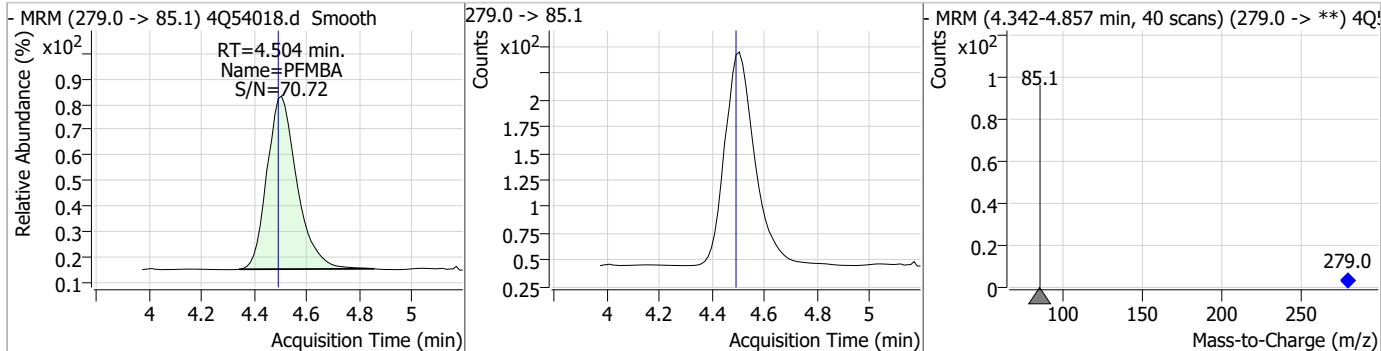
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.98	4.09	0.00	34974				



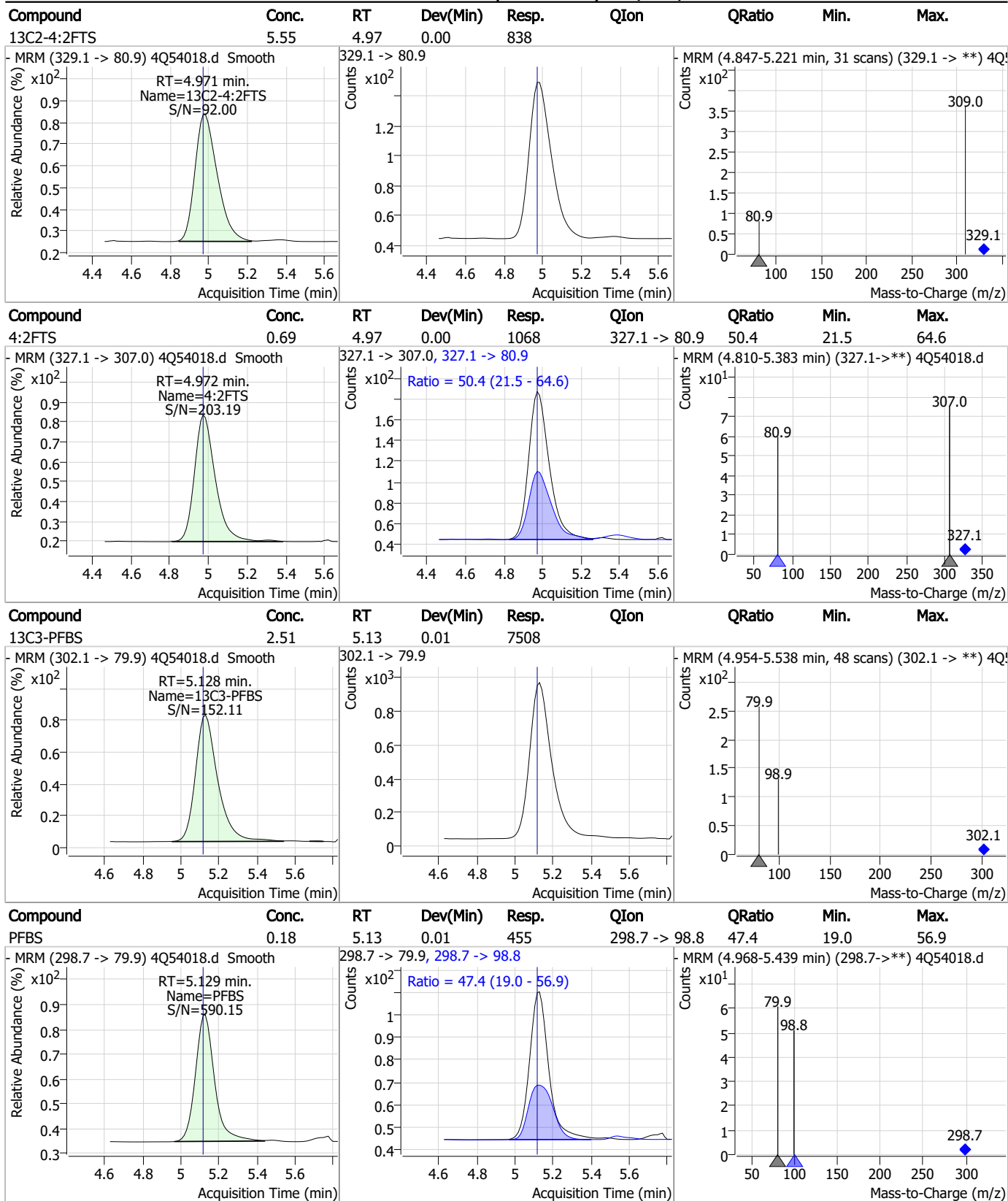
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.40	4.10	0.01	2748				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	0.41	4.50	0.01	1582				

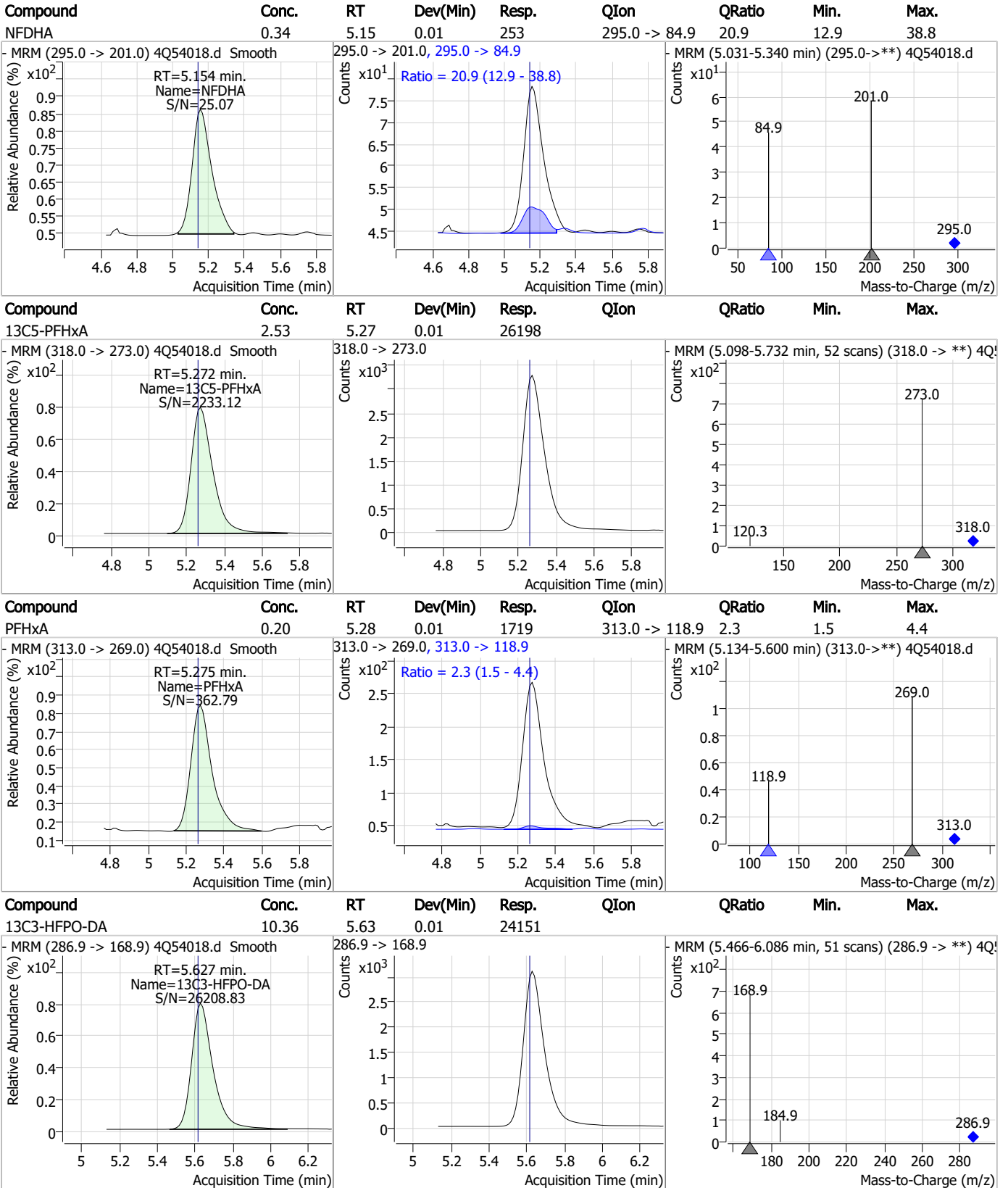


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

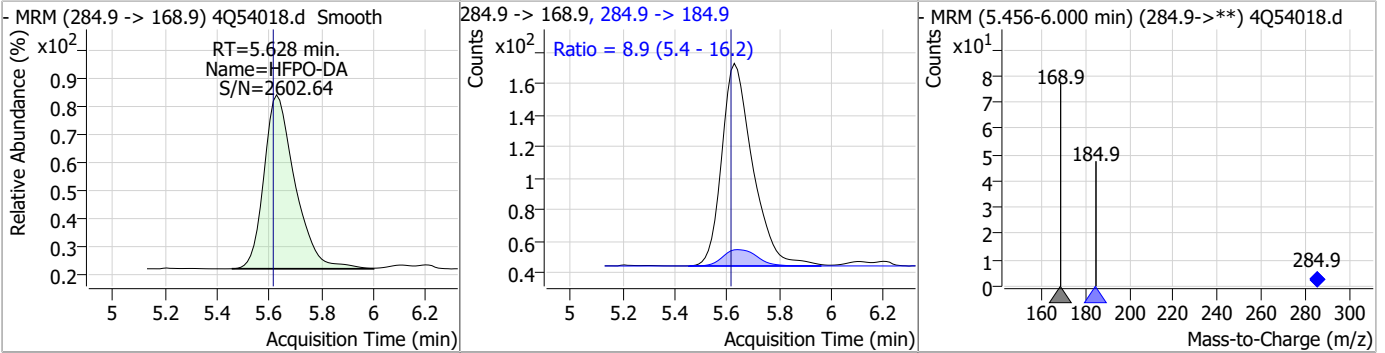


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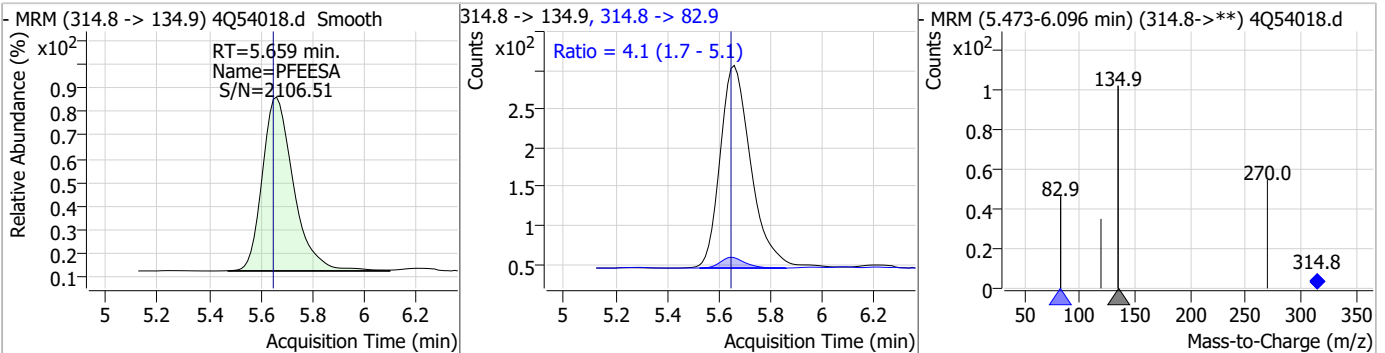
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Perfluorinated Compounds by LC/MS/MS

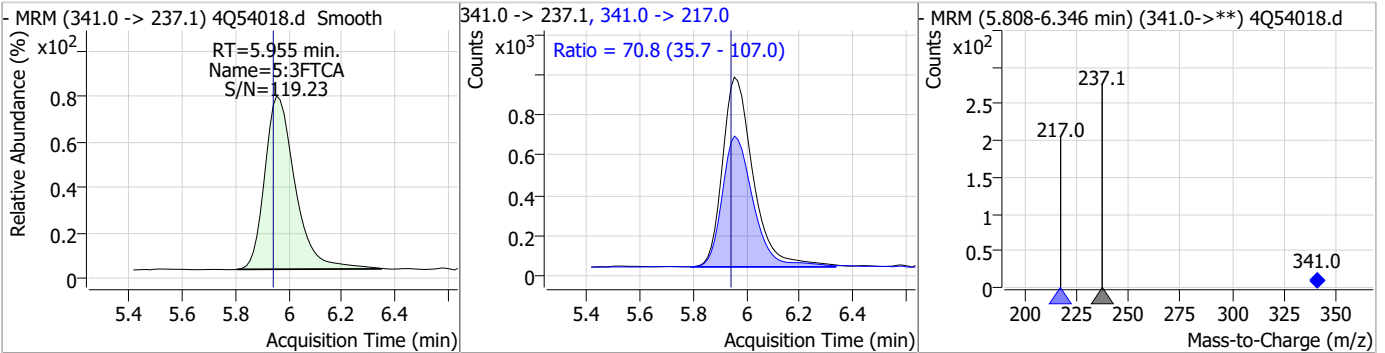
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.44	5.63	0.01	1058	284.9 -> 184.9	8.9	5.4	16.2



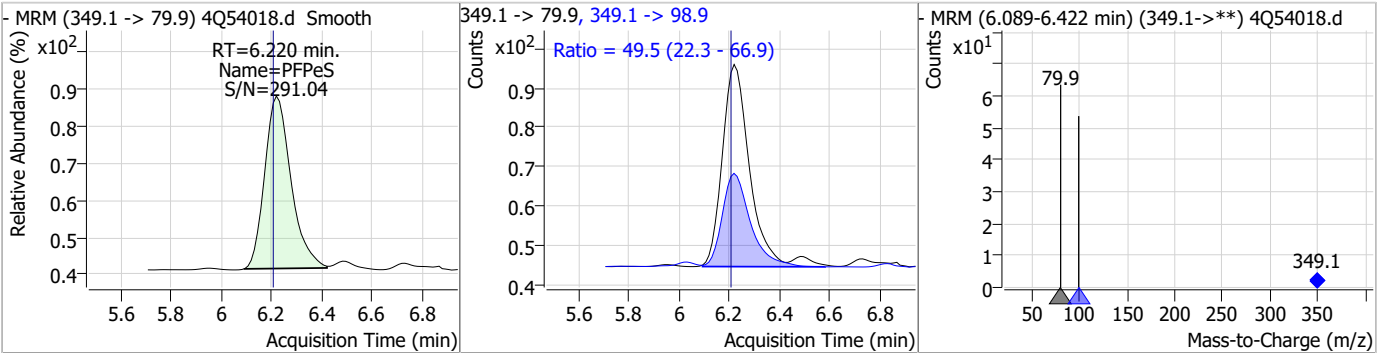
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.32	5.66	0.01	2191	314.8 -> 82.9	4.1	1.7	5.1



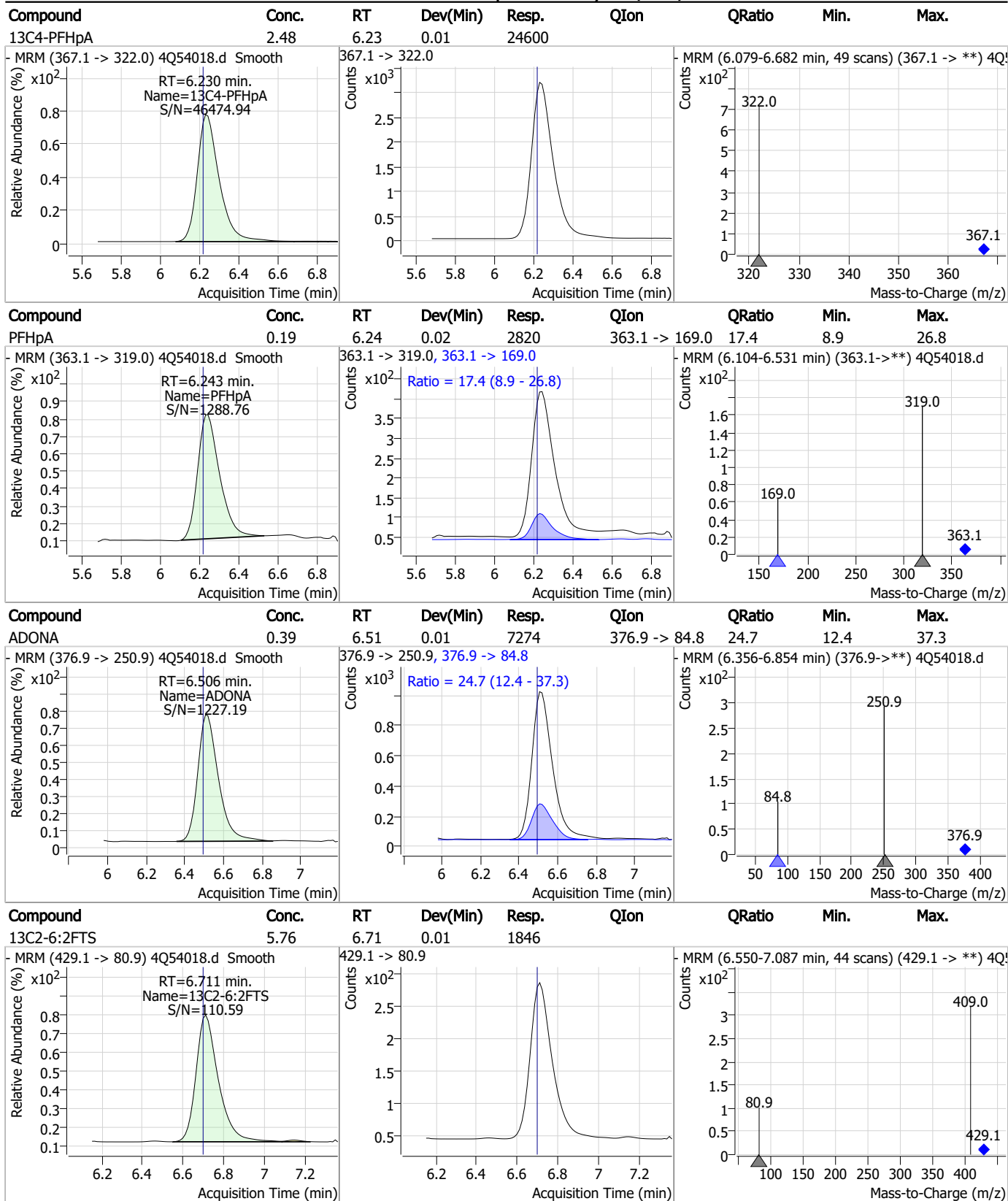
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	4.88	5.96	0.01	7418	341.0 -> 217.0	70.8	35.7	107.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.19	6.22	0.01	371	349.1 -> 98.9	49.5	22.3	66.9

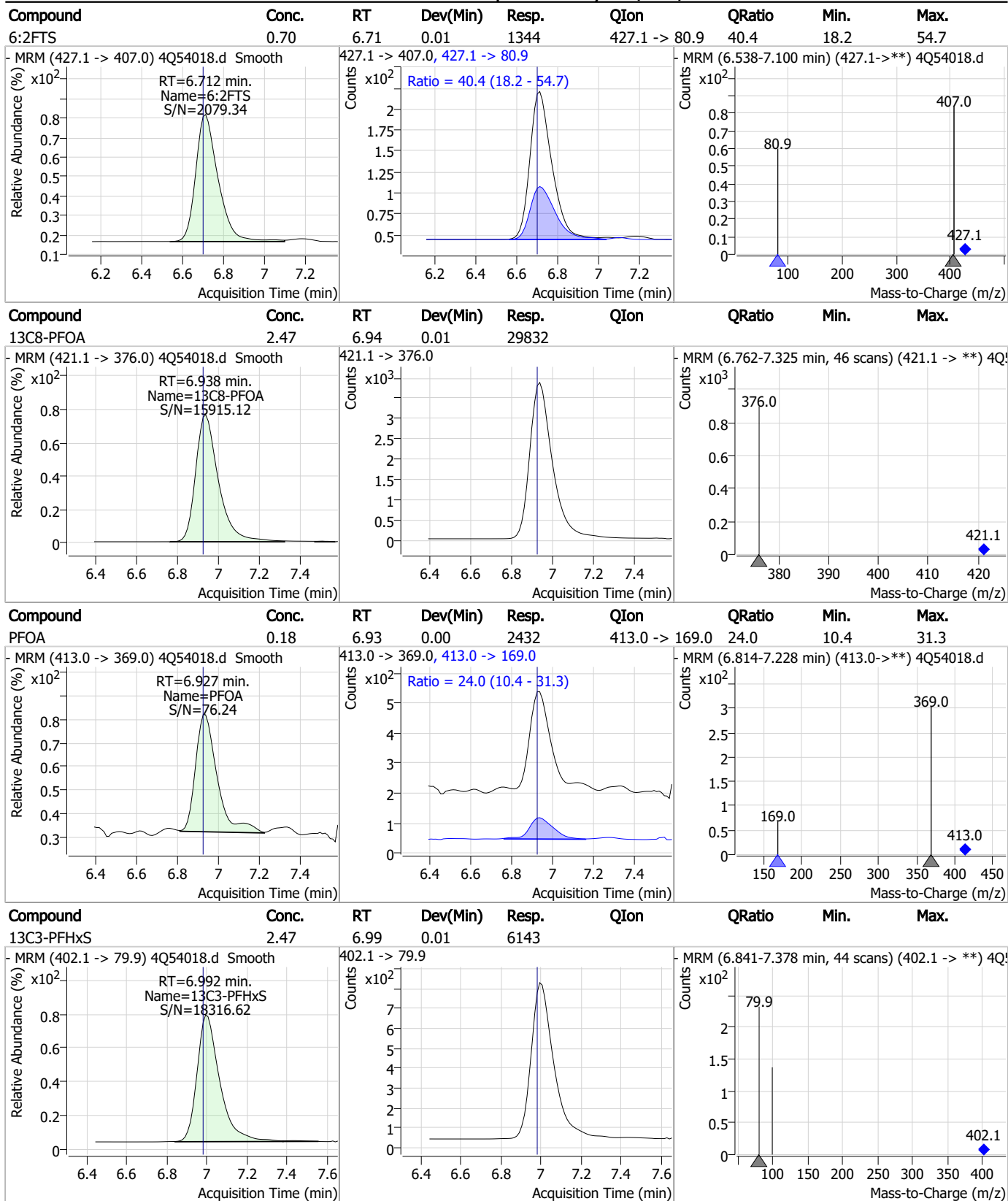


Perfluorinated Compounds by LC/MS/MS



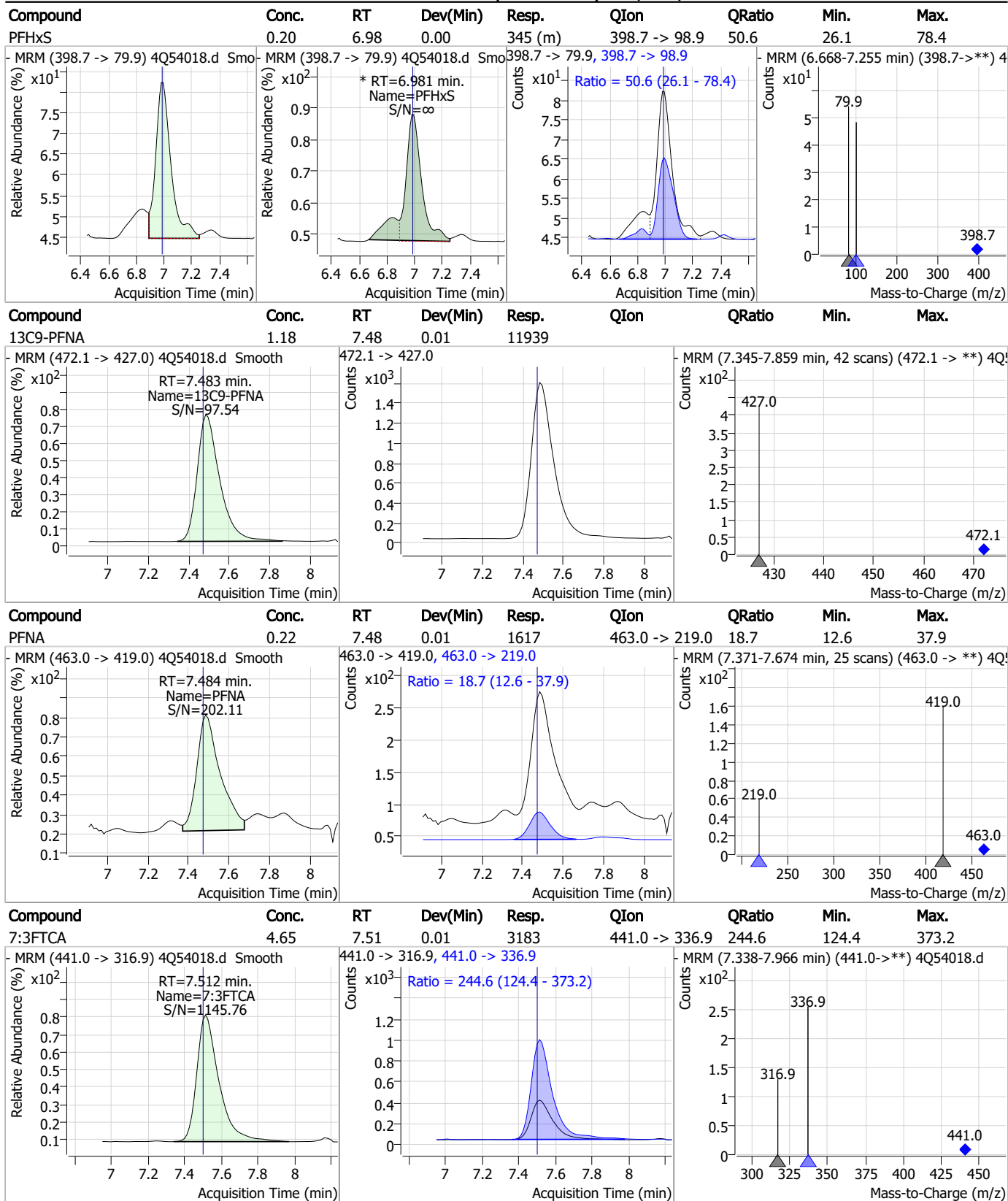
7.7.28
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Perfluorinated Compounds by LC/MS/MS



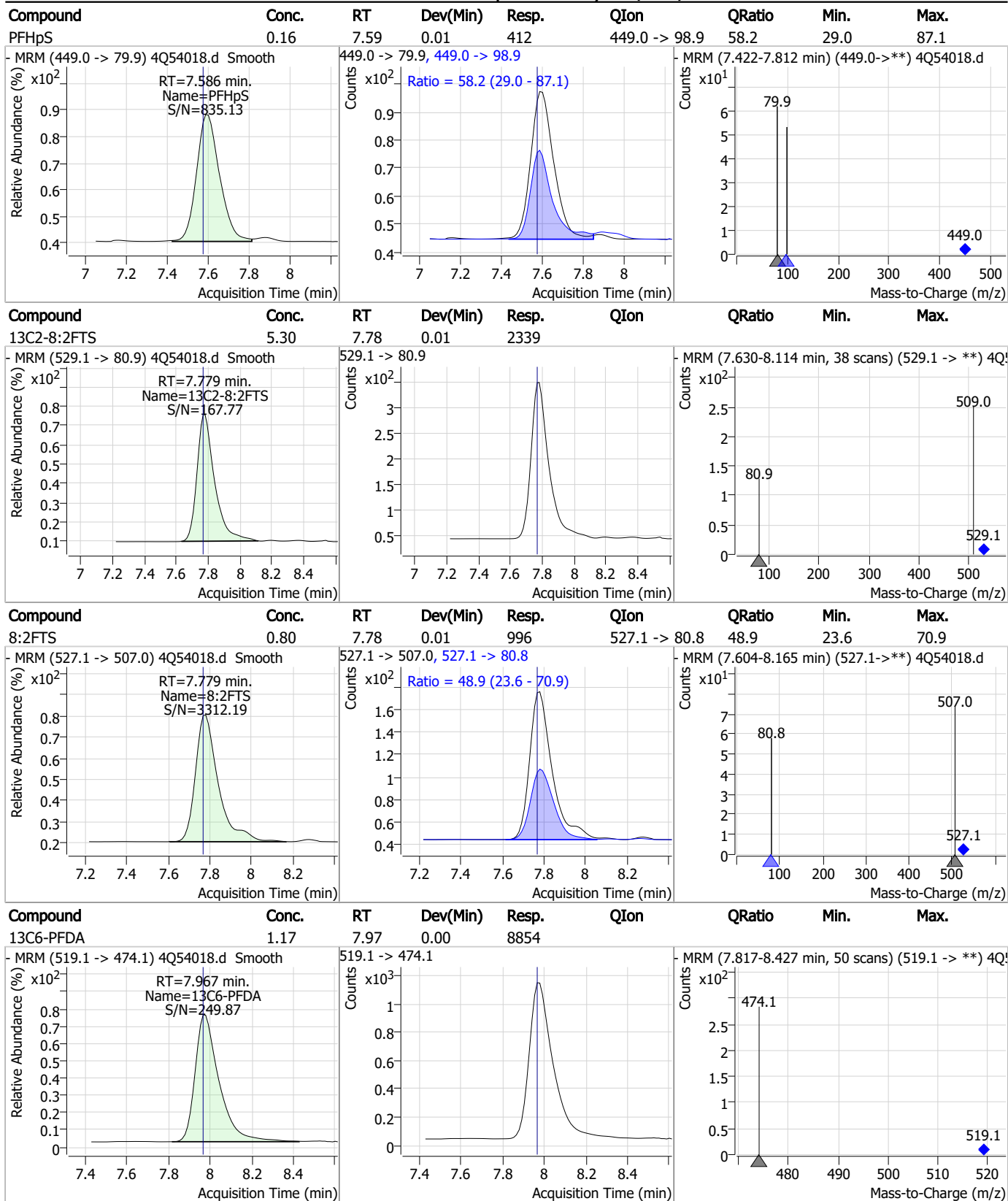
7.7.28 7

Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

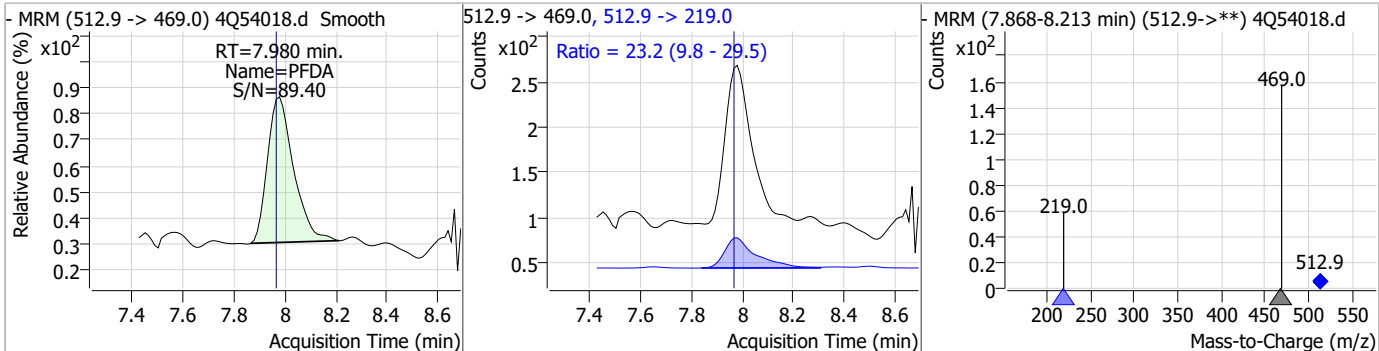


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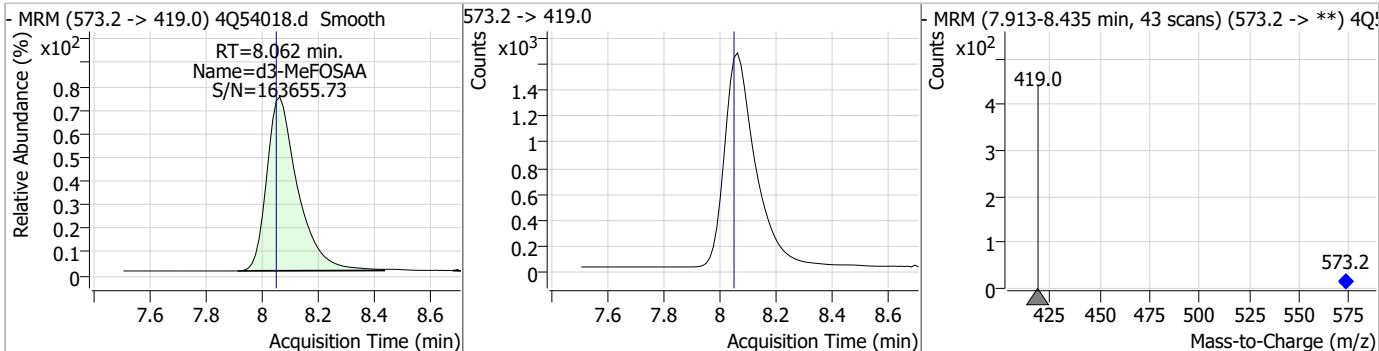
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Perfluorinated Compounds by LC/MS/MS

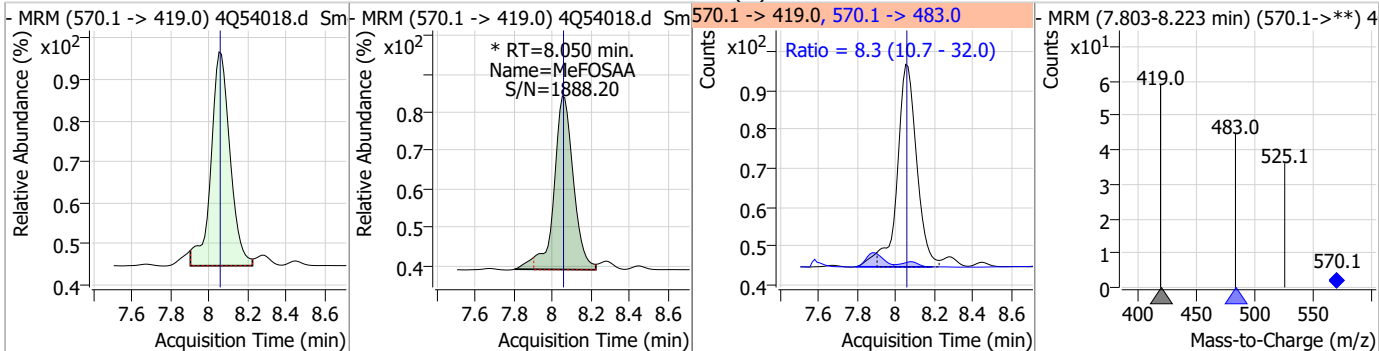
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.18	7.98	0.01	1227	512.9 -> 219.0	23.2	9.8	29.5



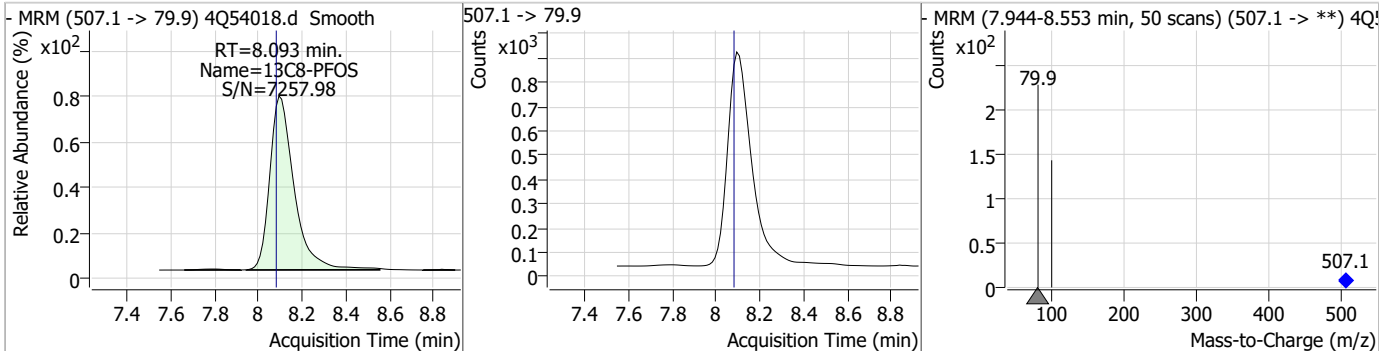
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.20	8.06	0.01	12594				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.18	8.05	0.00	366 (m)	570.1 -> 483.0	8.3	10.7	32.0

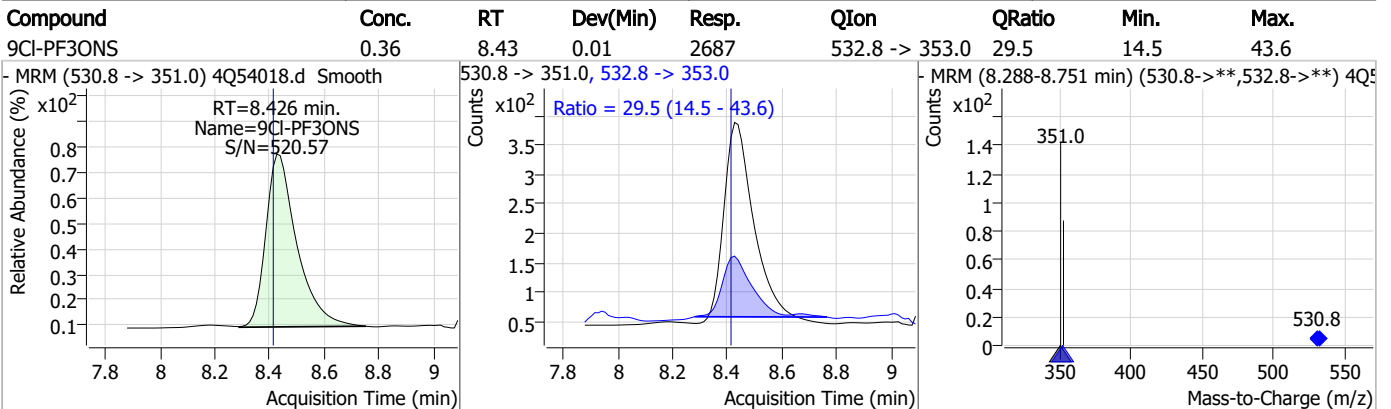
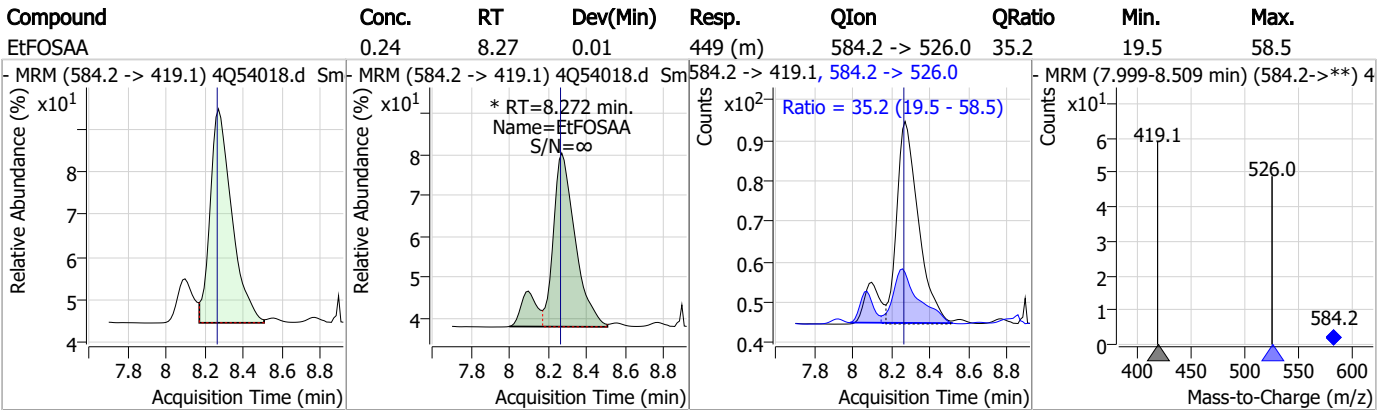
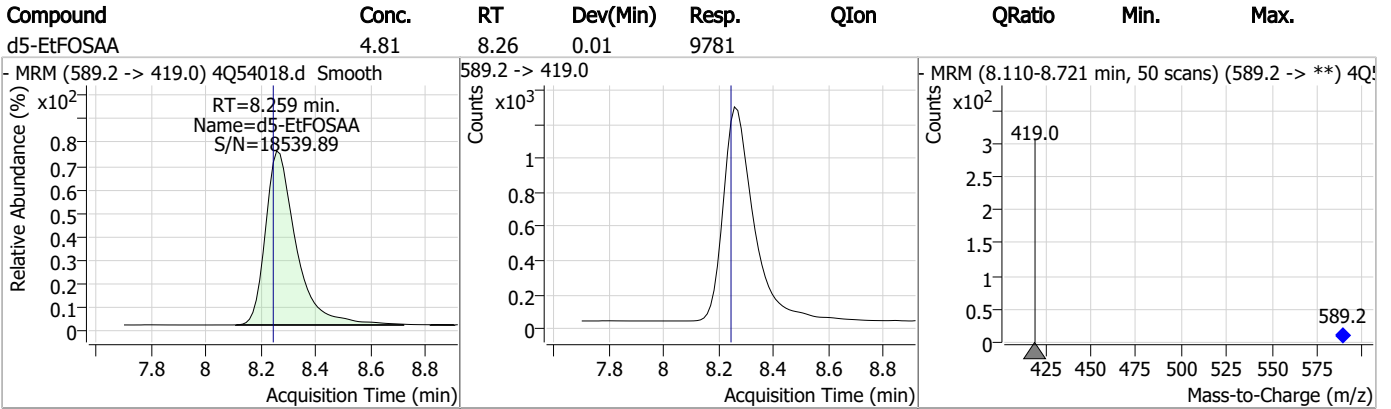
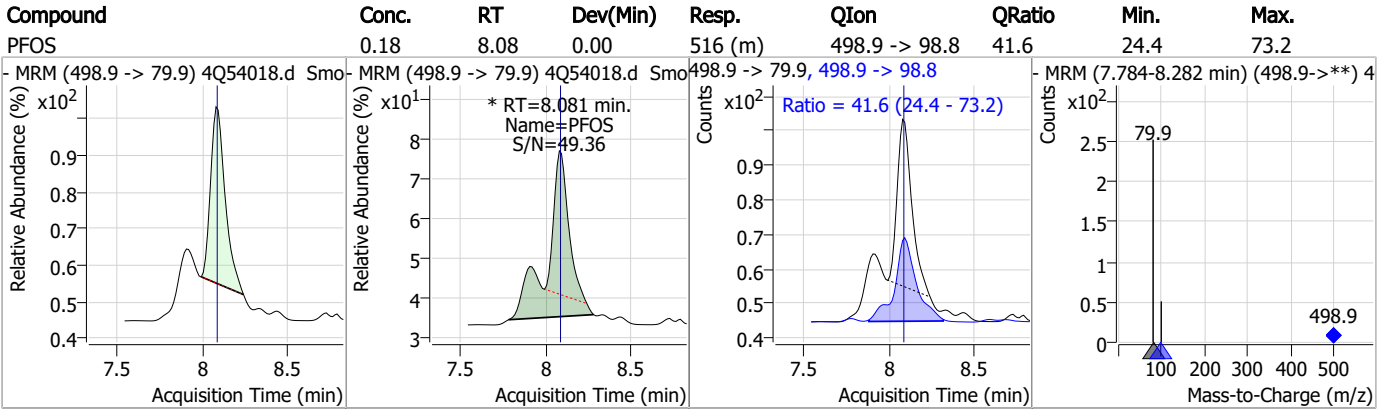


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.35	8.09	0.01	6830				

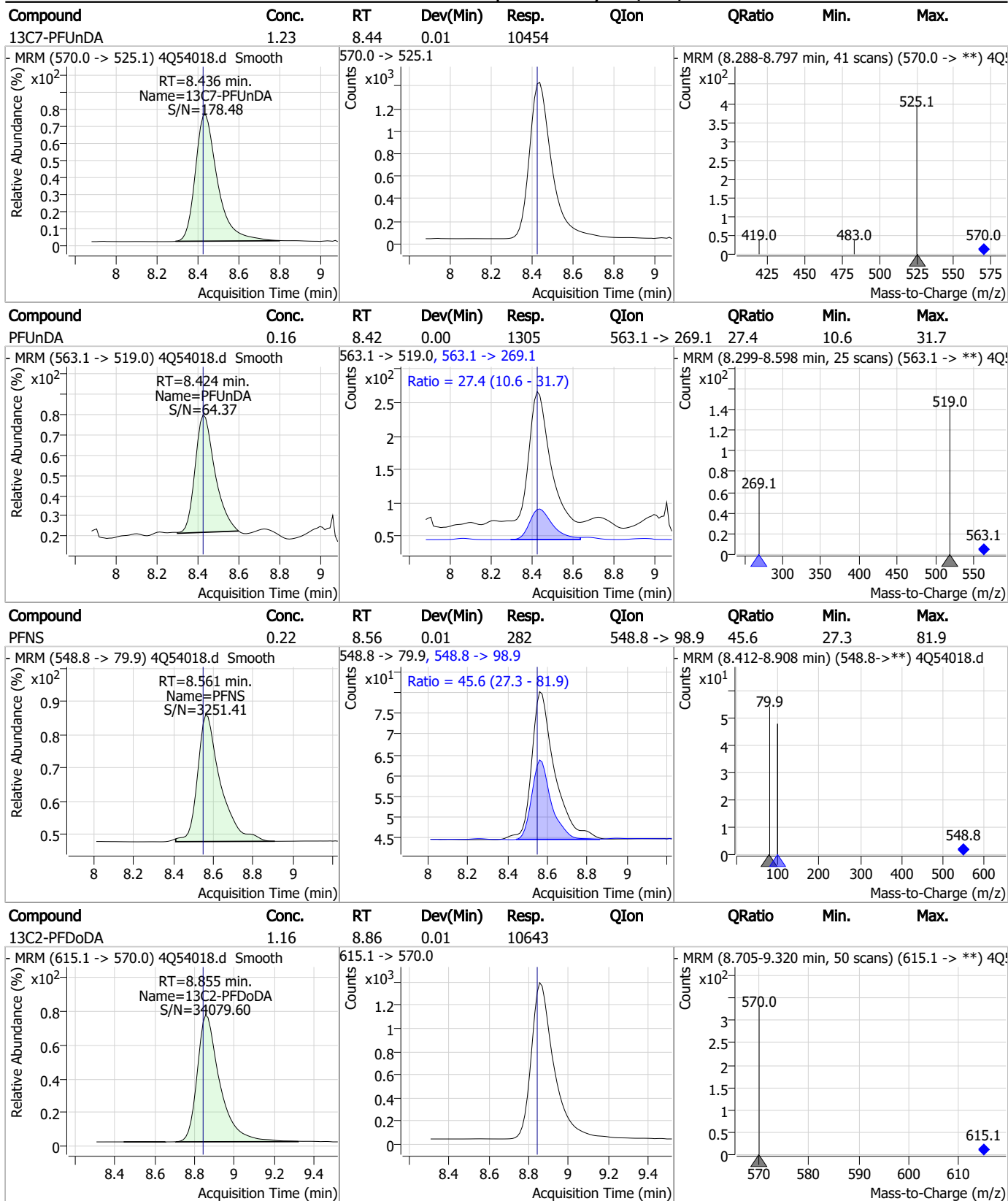


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Perfluorinated Compounds by LC/MS/MS



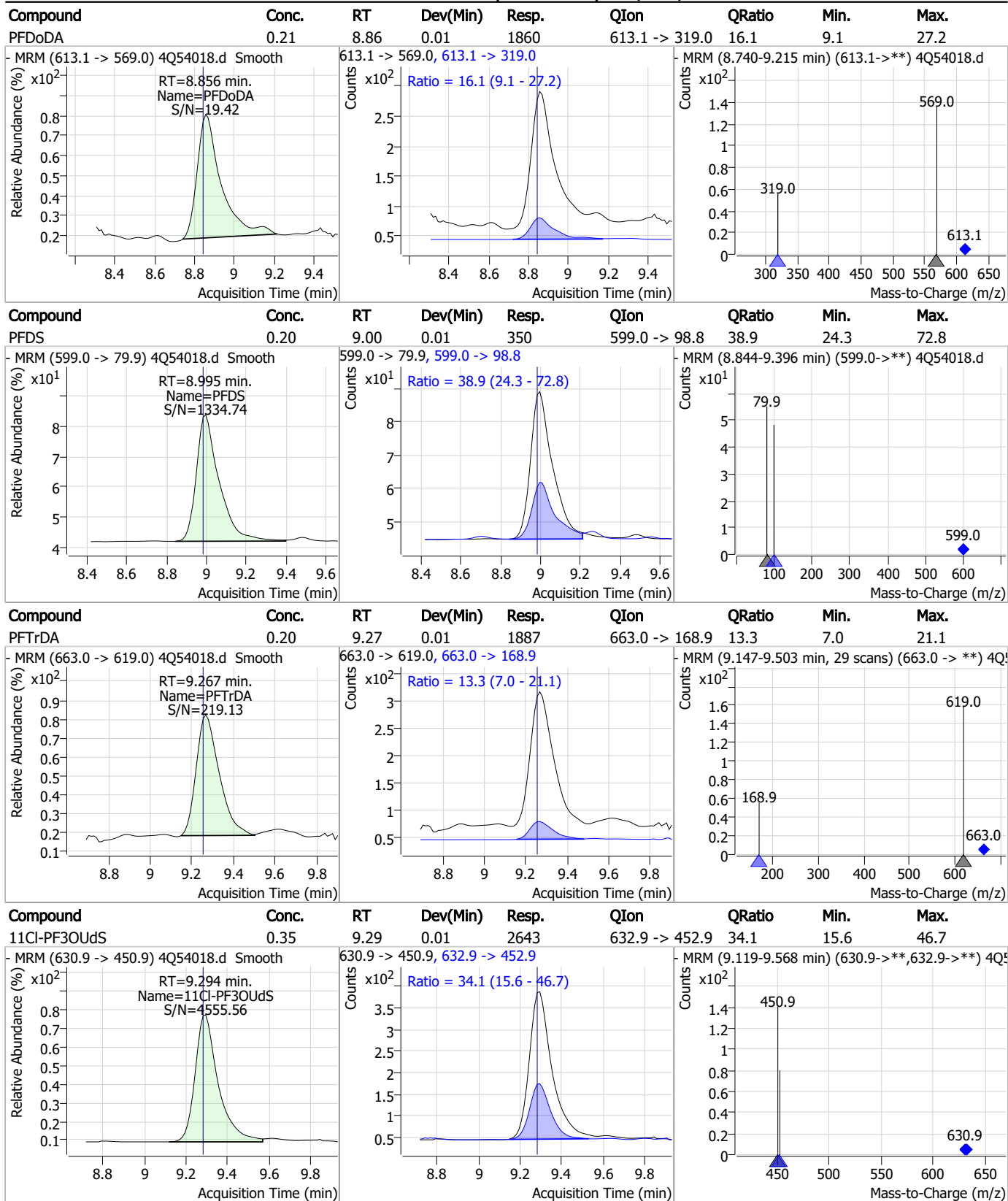
Perfluorinated Compounds by LC/MS/MS



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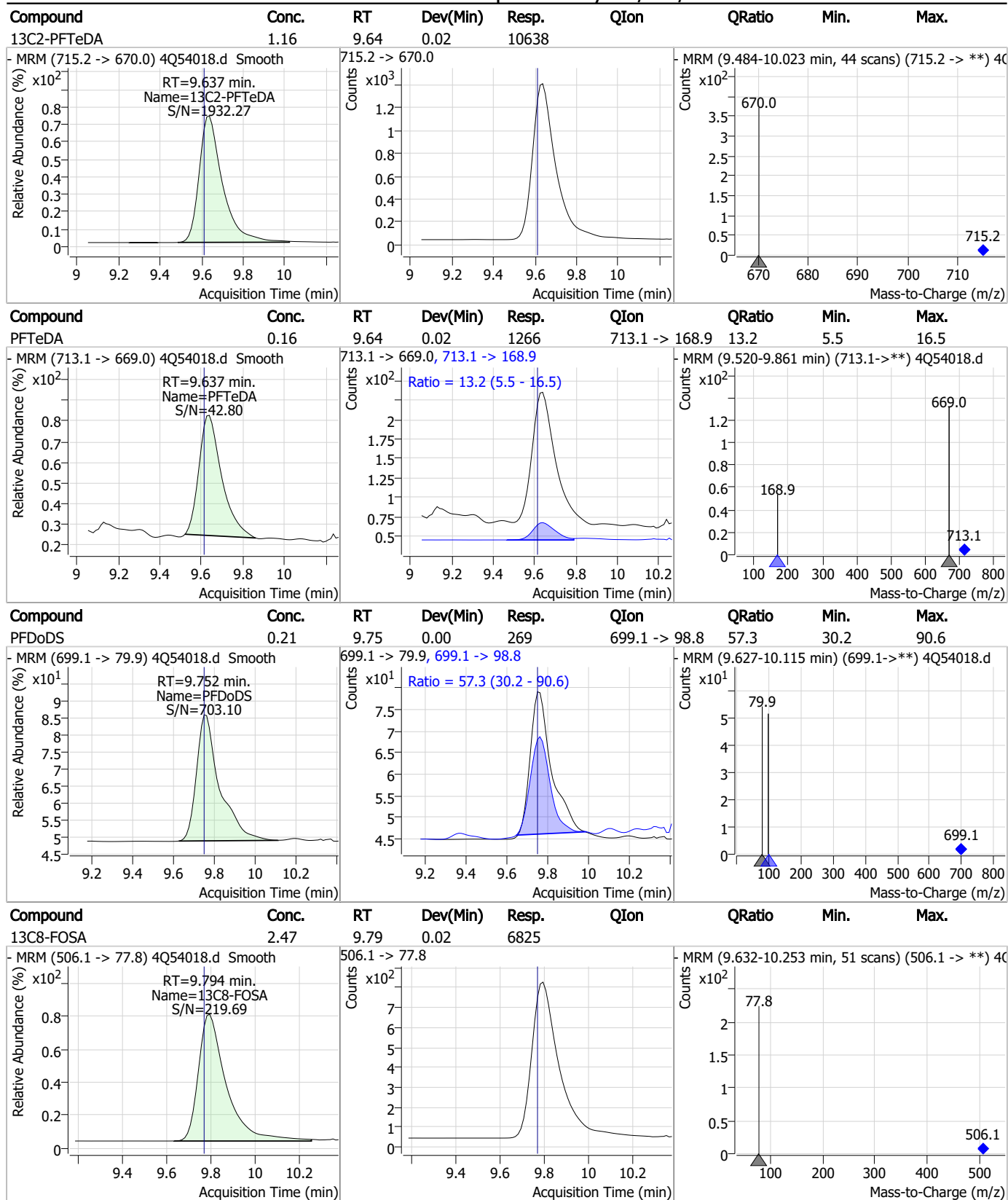
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

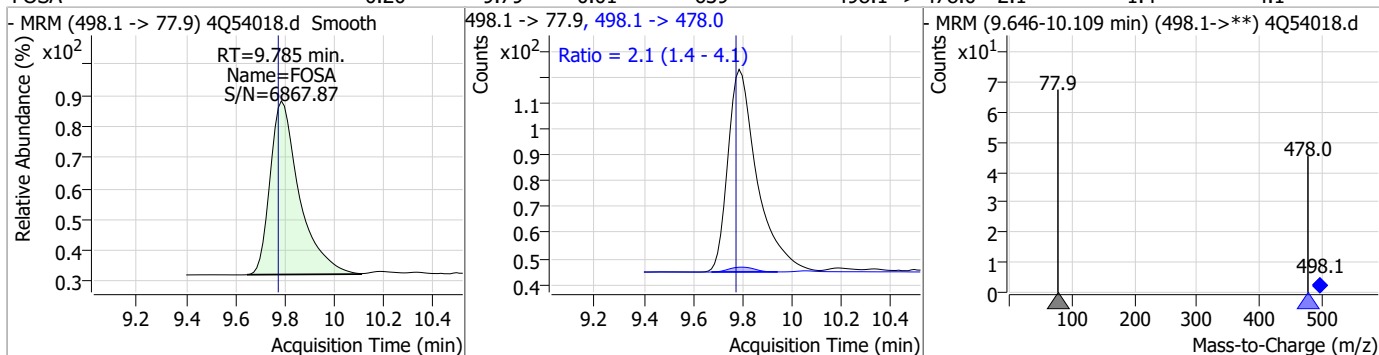


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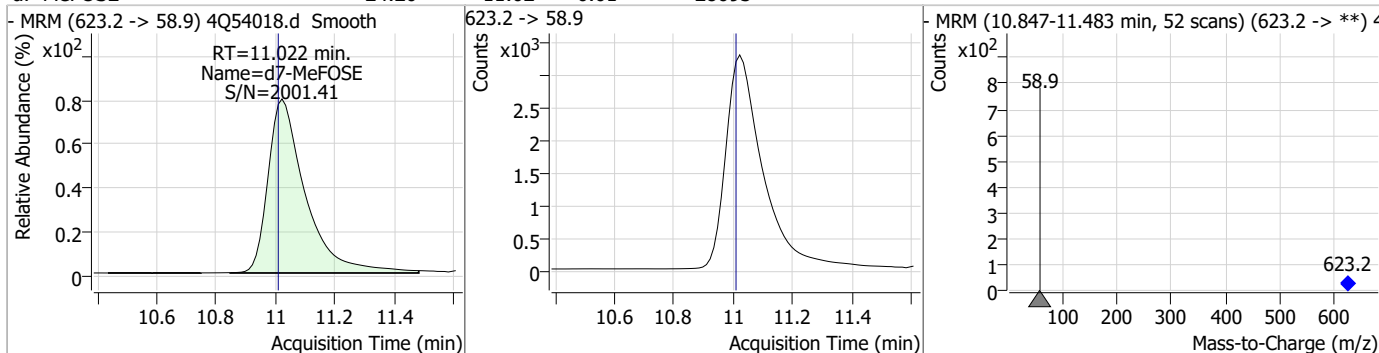
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Perfluorinated Compounds by LC/MS/MS

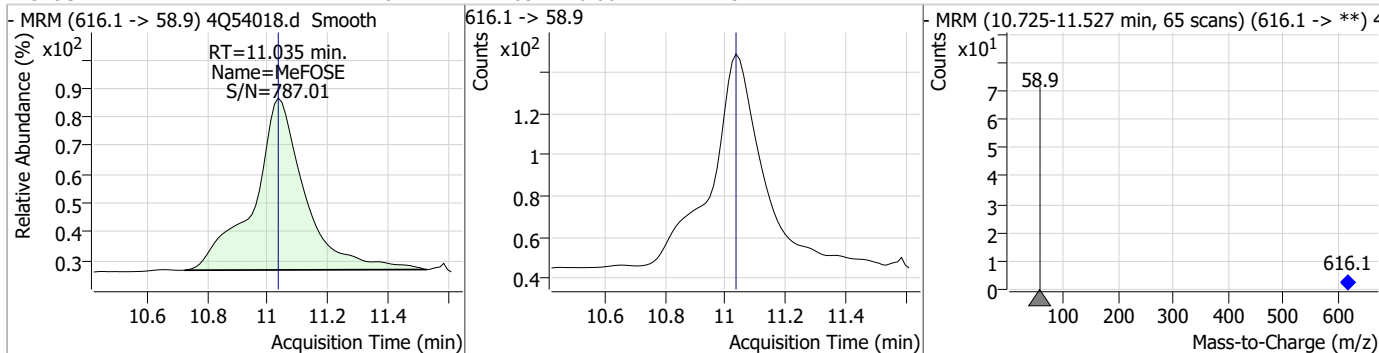
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.20	9.79	0.01	639	498.1 -> 478.0	2.1	1.4	4.1



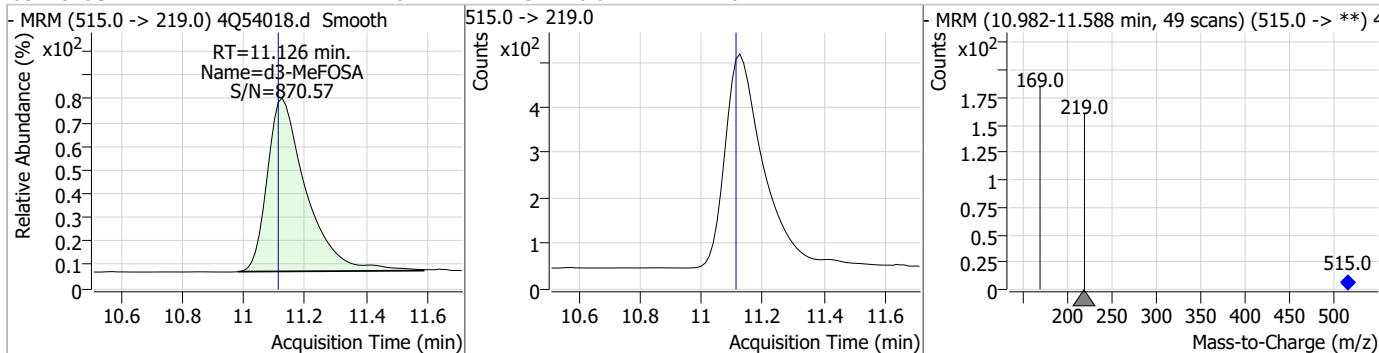
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.20	11.02	0.01	28693				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	1.01	11.03	0.00	1218				

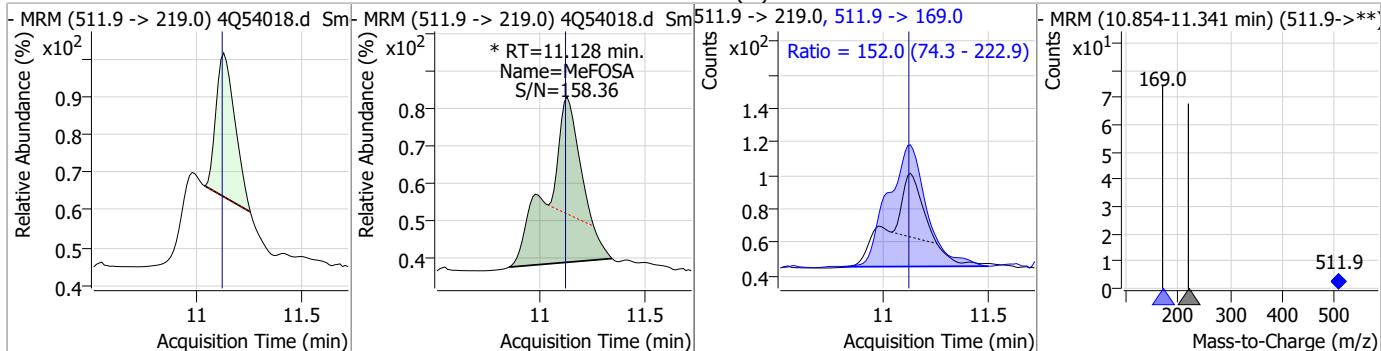


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.18	11.13	0.01	4146				

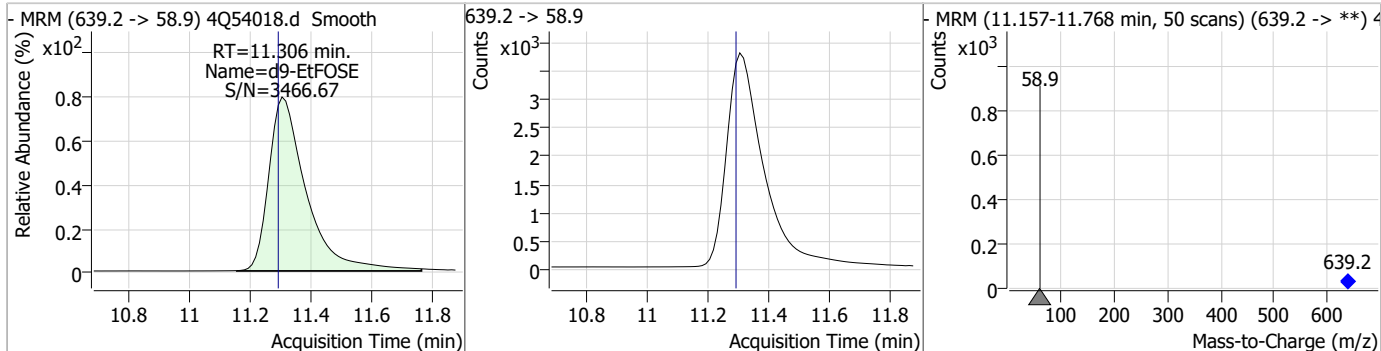


Perfluorinated Compounds by LC/MS/MS

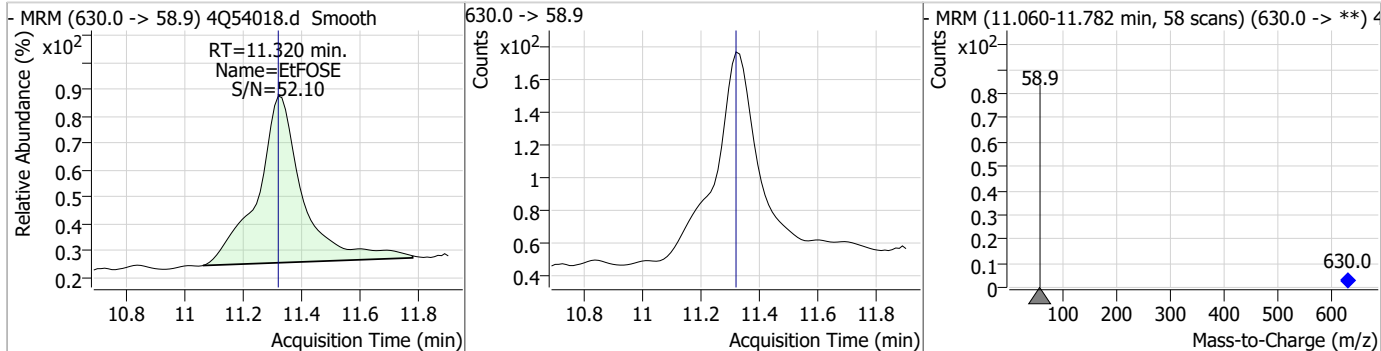
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	0.41	11.13	0.01	607 (m)	511.9 -> 169.0	152.0	74.3	222.9



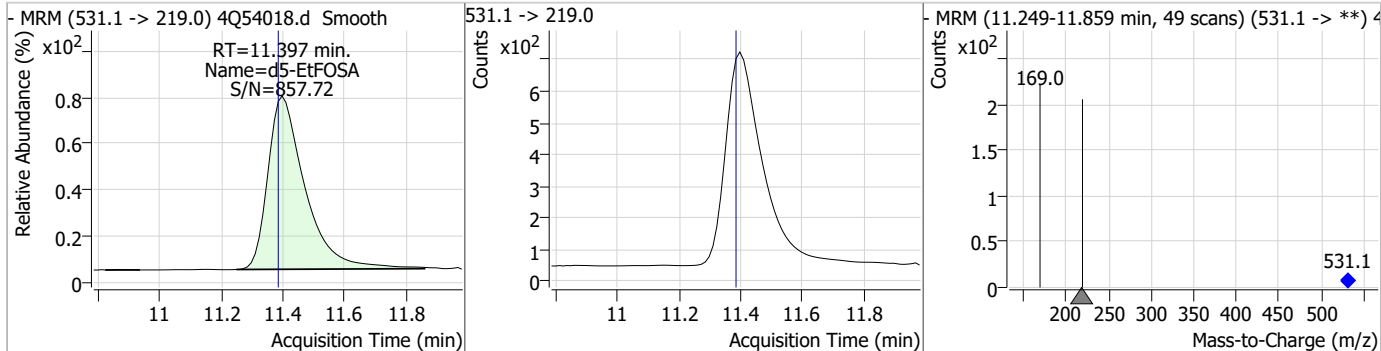
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.09	11.31	0.01	32500				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	1.11	11.32	0.00	1359				

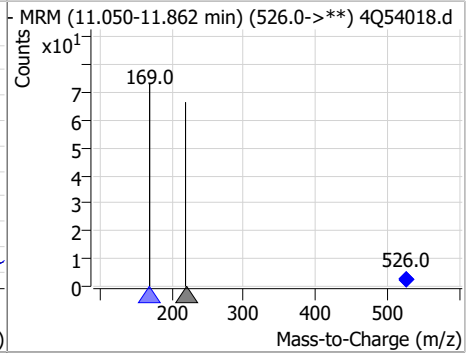
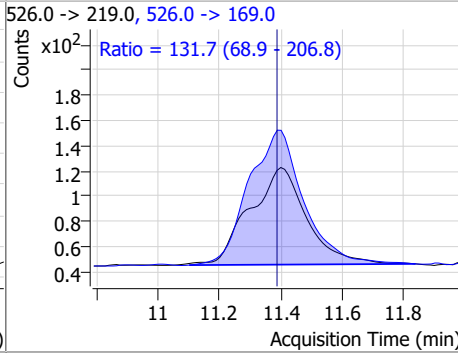
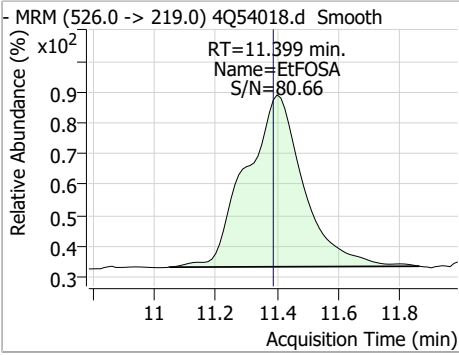


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.44	11.40	0.01	5625				



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	0.43	11.40	0.01	1004	526.0 -> 169.0	131.7	68.9	206.8



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Manual Integration Approval Summary

Sample Number: S4Q788-CC788 Method: EPA DRAFT 1633
Lab FileID: 4Q54018.D Analyst approved: 11/18/23 15:04 Mike Eger
Injection Time: 11/17/23 14:22 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.98	Split peak
MeFOSAA	2355-31-9		8.05	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.08	Split peak
EtFOSAA	2991-50-6		8.27	Split peak
MeFOSA	31506-32-8		11.13	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54028.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 5:18:08 PM
 Sample Name : cc788-4
 Vial : P1-A5
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.674	216.8 -> 171.9	88826	10.00 µg/L	0.075
M5-PFPeA	4.137	268.3 -> 223.0	37905	5.00 µg/L	0.050
M5-PFHxA	5.310	318.0 -> 273.0	26837	2.50 µg/L	0.050
M4-PFHpA	6.267	367.1 -> 322.0	26181	2.50 µg/L	0.050
M8-PFOA	6.964	421.1 -> 376.0	29298	2.50 µg/L	0.038
M9-PFNA	7.509	472.1 -> 427.0	12879	1.25 µg/L	0.038
M6-PFDA	8.004	519.1 -> 474.1	8785	1.25 µg/L	0.037
M7-PFUnDA	8.448	570.0 -> 525.1	10009	1.25 µg/L	0.025
M2-PFDoDA	8.880	615.1 -> 570.0	9973	1.25 µg/L	0.037
M2-PFTeDA	9.649	715.2 -> 670.0	10727	1.25 µg/L	0.037
M8-FOSA	9.818	506.1 -> 77.8	7182	2.50 µg/L	0.050
M3-PFBS	5.165	302.1 -> 79.9	7953	2.50 µg/L	0.049
M3-PFHxS	7.029	402.1 -> 79.9	6530	2.50 µg/L	0.050
M8-PFOS	8.117	507.1 -> 79.9	7079	2.50 µg/L	0.037
M2-4:2FTS	5.009	329.1 -> 80.9	857	5.00 µg/L	0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1541	5.00 µg/L	0.037
M2-8:2FTS	7.804	529.1 -> 80.9	2144	5.00 µg/L	0.037
M3-MeFOSAA	8.086	573.2 -> 419.0	11093	5.00 µg/L	0.037
M3-HFPO-DA	5.664	286.9 -> 168.9	23806	10.00 µg/L	0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	9433	5.00 µg/L	0.037
M7-MeFOSE	11.034	623.2 -> 58.9	29277	25.00 µg/L	0.025
M9-EtFOSE	11.319	639.2 -> 58.9	32563	25.00 µg/L	0.025
M5-EtFOSA	11.410	531.1 -> 219.0	5782	2.50 µg/L	0.025
M3-MeFOSA	11.126	515.0 -> 219.0	4550	2.50 µg/L	0.012
13C4-PFOS	8.118	502.8 -> 79.9	5864	2.50 µg/L	0.037
13C3-PFBA	2.666	216.0 -> 172.0	42863	5.00 µg/L	0.075
18O2-PFHxS	7.028	403.0 -> 83.9	4265	2.50 µg/L	0.050
13C4-PFOA	6.964	417.1 -> 372.0	32266	2.50 µg/L	0.038
13C2-PFDA	8.004	515.1 -> 470.1	9678	1.25 µg/L	0.037
13C5-PFNA	7.509	468.0 -> 423.0	12486	1.25 µg/L	0.038
13C2-PFHxA	5.311	315.1 -> 270.0	30178	2.50 µg/L	0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	857	5.27 µg/L	0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.3%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1541	4.46 µg/L	0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.2%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2144	4.51 µg/L	0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 90.1%		
13C2-PFDoDA	8.880	615.1 -> 570.0	9973	1.15 µg/L	0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.2%		
13C2-PFTeDA	9.649	715.2 -> 670.0	10727	1.23 µg/L	0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C3-PFBS	5.165	302.1 -> 79.9	7953	2.46 µg/L	0.049
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C3-PFHxS	7.029	402.1 -> 79.9	6530	2.44 µg/L	0.050

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.5%	
13C4-PFBA	2.674	216.8 -> 171.9	88826	10.04 µg/L	0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C4-PFHpA	6.267	367.1 -> 322.0	26181	2.45 µg/L	0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C5-PFHxA	5.310	318.0 -> 273.0	26837	2.40 µg/L	0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.0%	
13C5-PFPeA	4.137	268.3 -> 223.0	37905	5.00 µg/L	0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C6-PFDA	8.004	519.1 -> 474.1	8785	1.22 µg/L	0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C7-PFUnDA	8.448	570.0 -> 525.1	10009	1.24 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C8-FOSA	9.818	506.1 -> 77.8	7182	2.62 µg/L	0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.9%	
13C8-PFOA	6.964	421.1 -> 376.0	29298	2.49 µg/L	0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C8-PFOS	8.117	507.1 -> 79.9	7079	2.46 µg/L	0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C9-PFNA	7.509	472.1 -> 427.0	12879	1.27 µg/L	0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.8%	
d3-MeFOSAA	8.086	573.2 -> 419.0	11093	4.62 µg/L	0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.4%	
13C3-HFPO-DA	5.664	286.9 -> 168.9	23806	9.46 µg/L	0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.6%	
d3-MeFOSA	11.126	515.0 -> 219.0	4550	2.42 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%	
d5-EtFOSAA	8.283	589.2 -> 419.0	9433	4.68 µg/L	0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.7%	
d7-MeFOSE	11.034	623.2 -> 58.9	29277	24.92 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
d9-EtFOSE	11.319	639.2 -> 58.9	32563	24.36 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.4%	
d5-EtFOSA	11.410	531.1 -> 219.0	5782	2.53 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	12691	8.08 µg/L	96
		327.1 -> 80.9	5748		
6:2FTS	6.737	427.1 -> 407.0	14958	9.34 µg/L	99
		427.1 -> 80.9	5568		
8:2FTS	7.804	527.1 -> 507.0	11002	9.68 µg/L	93
		527.1 -> 80.8	4669		
EtFOSAA	8.297	584.2 -> 419.1	4463	2.50 µg/L	95
		584.2 -> 526.0	1865		
FOSA	9.823	498.1 -> 77.9	8035	2.41 µg/L	98
		498.1 -> 478.0	268		
MeFOSAA	8.087	570.1 -> 419.0	4645	2.61 µg/L	97
		570.1 -> 483.0	933		
PFBA	2.670	212.8 -> 168.9	29968	9.80 µg/L	100
PFBS	5.166	298.7 -> 79.9	5821	2.21 µg/L	99
		298.7 -> 98.8	2237		
PFDA	8.005	512.9 -> 469.0	15116	2.26 µg/L	97
		512.9 -> 219.0	3153		
PFDODA	8.880	613.1 -> 569.0	20263	2.49 µg/L	100
		613.1 -> 319.0	3630		
PFDS	9.020	599.0 -> 79.9	4232	2.36 µg/L	94

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	2240	2.46	µg/L	99
		363.1 -> 319.0	38903			
PFHpS	7.612	363.1 -> 169.0	6768	2.26	µg/L	91
		449.0 -> 79.9	6169			
PFHxA	5.313	449.0 -> 98.9	3166	2.56	µg/L	99
		313.0 -> 269.0	22954			
PFHxS	7.030	313.0 -> 118.9	728	2.34	µg/L	m
		398.7 -> 79.9	4366			
PFNA	7.510	398.7 -> 98.9	2501	2.42	µg/L	96
		463.0 -> 419.0	19316			
PFNS	8.586	463.0 -> 219.0	4517	2.53	µg/L	97
		548.8 -> 79.9	3354			
PFOA	6.965	548.8 -> 98.9	1901	2.49	µg/L	99
		413.0 -> 369.0	32466			
PFOS	8.119	413.0 -> 169.0	6700	2.21	µg/L	m
		498.9 -> 79.9	6639			
PFPeA	4.139	498.9 -> 98.8	3243	5.03	µg/L	100
		263.0 -> 219.0	37902			
PFPeS	6.257	349.1 -> 79.9	4020	1.92	µg/L	80
		349.1 -> 98.9	2329			
PFTeDA	9.650	713.1 -> 669.0	19241	2.45	µg/L	98
		713.1 -> 168.9	2271			
PFTrDA	9.279	663.0 -> 619.0	23508	2.72	µg/L	100
		663.0 -> 168.9	3321			
PFUnDA	8.449	563.1 -> 519.0	20115	2.50	µg/L	100
		563.1 -> 269.1	4258			
11CI-PF3OUdS	9.306	630.9 -> 450.9	35661	4.85	µg/L	98
		632.9 -> 452.9	10796			
9CI-PF3ONS	8.451	530.8 -> 351.0	35844	4.81	µg/L	95
		532.8 -> 353.0	11431			
ADONA	6.544	376.9 -> 250.9	62267	3.37	µg/L	100
		376.9 -> 84.8	15581			
HFPO-DA	5.665	284.9 -> 168.9	11632	4.93	µg/L	97
		284.9 -> 184.9	1140			
3:3FTCA	3.630	241.0 -> 177.0	5709	11.95	µg/L	100
		241.0 -> 117.0	523			
5:3FTCA	6.020	341.0 -> 237.1	99327	63.79	µg/L	99
		341.0 -> 217.0	70125			
7:3FTCA	7.562	441.0 -> 316.9	43566	62.11	µg/L	93
		441.0 -> 336.9	102730			
EtFOSA	11.399	526.0 -> 219.0	11985	4.96	µg/L	99
		526.0 -> 169.0	16381			
EtFOSE	11.332	630.0 -> 58.9	14948	12.19	µg/L	100
		511.9 -> 219.0	8546			
MeFOSA	11.128	511.9 -> 169.0	12365	5.26	µg/L	m
		616.1 -> 58.9	15203			
MeFOSE	11.047	699.1 -> 79.9	3406	12.32	µg/L	100
		699.1 -> 98.8	1899			
PFDoDS	9.777	295.0 -> 201.0	3341	4.33	µg/L	98
		295.0 -> 84.9	825			
NFDHA	5.191	279.0 -> 85.1	20856	5.02	µg/L	100
		229.0 -> 84.9	23427			
PFMBA	3.290	314.8 -> 134.9	30971	4.93	µg/L	100
		314.8 -> 82.9	1146			
PFEESA	5.684			4.39	µg/L	99

= Qualifier out of range, m = manually integrated, + = Area summed

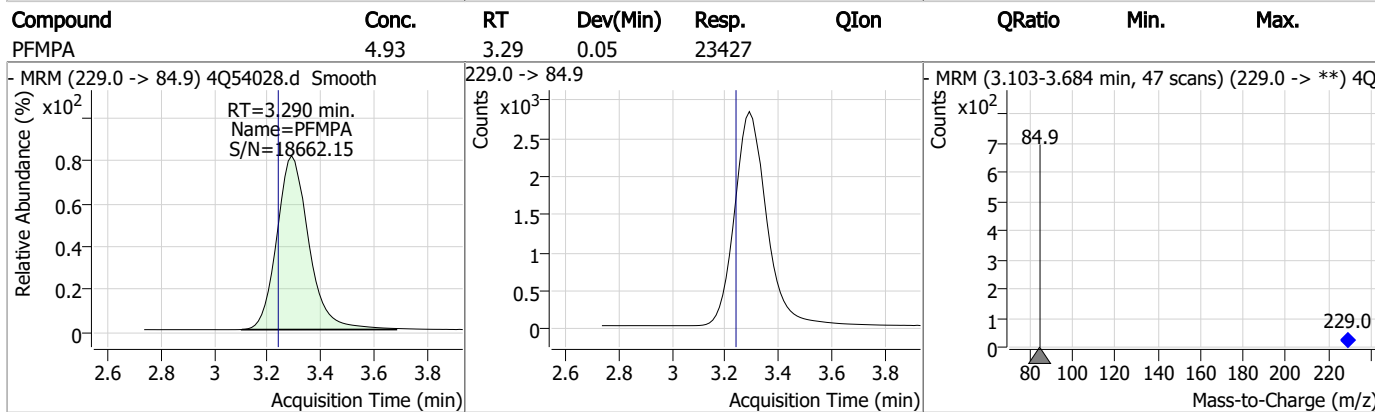
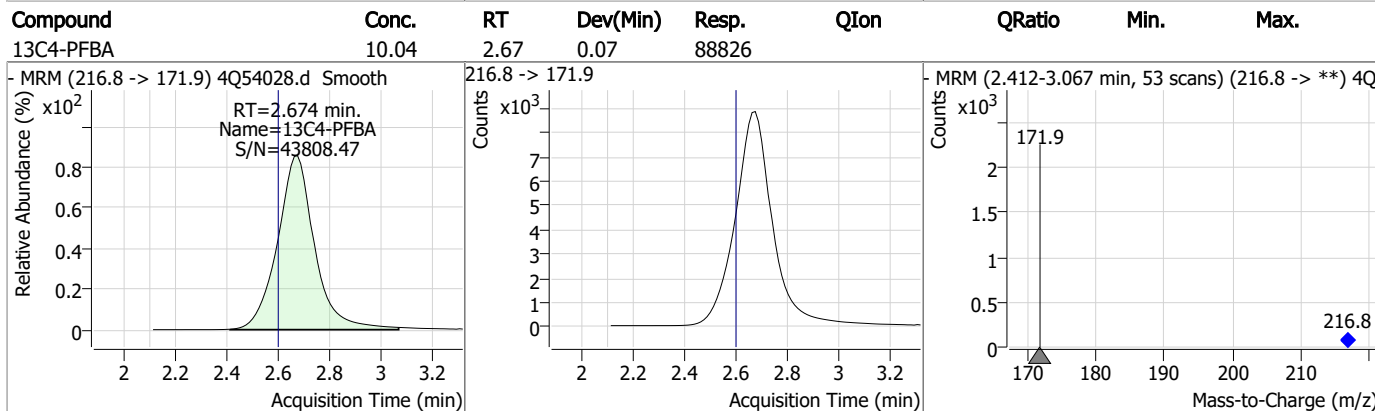
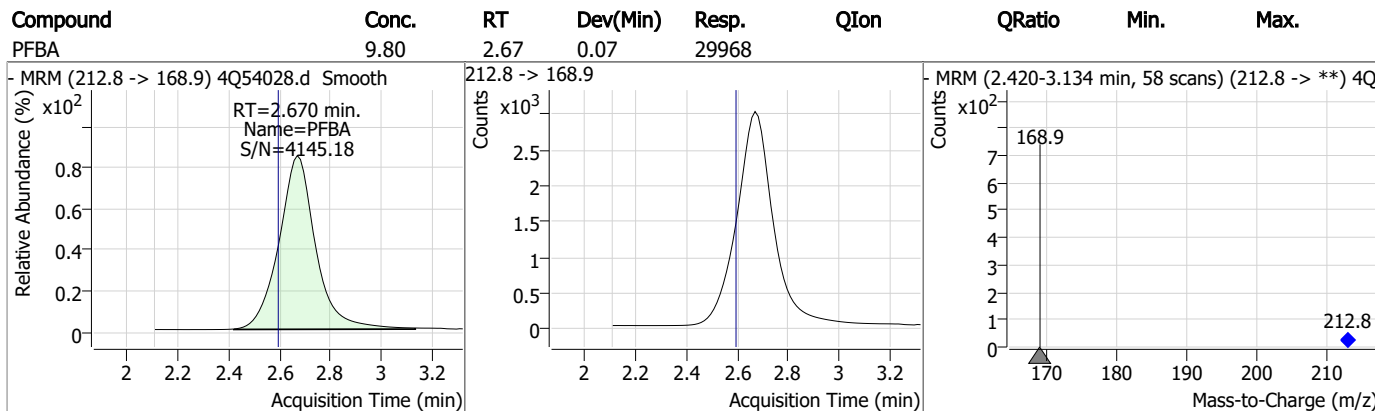
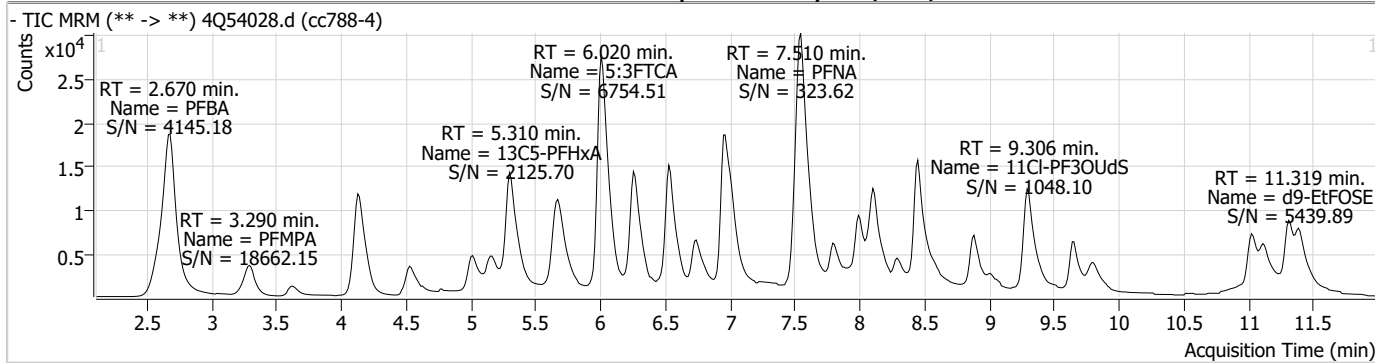
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7:7.29

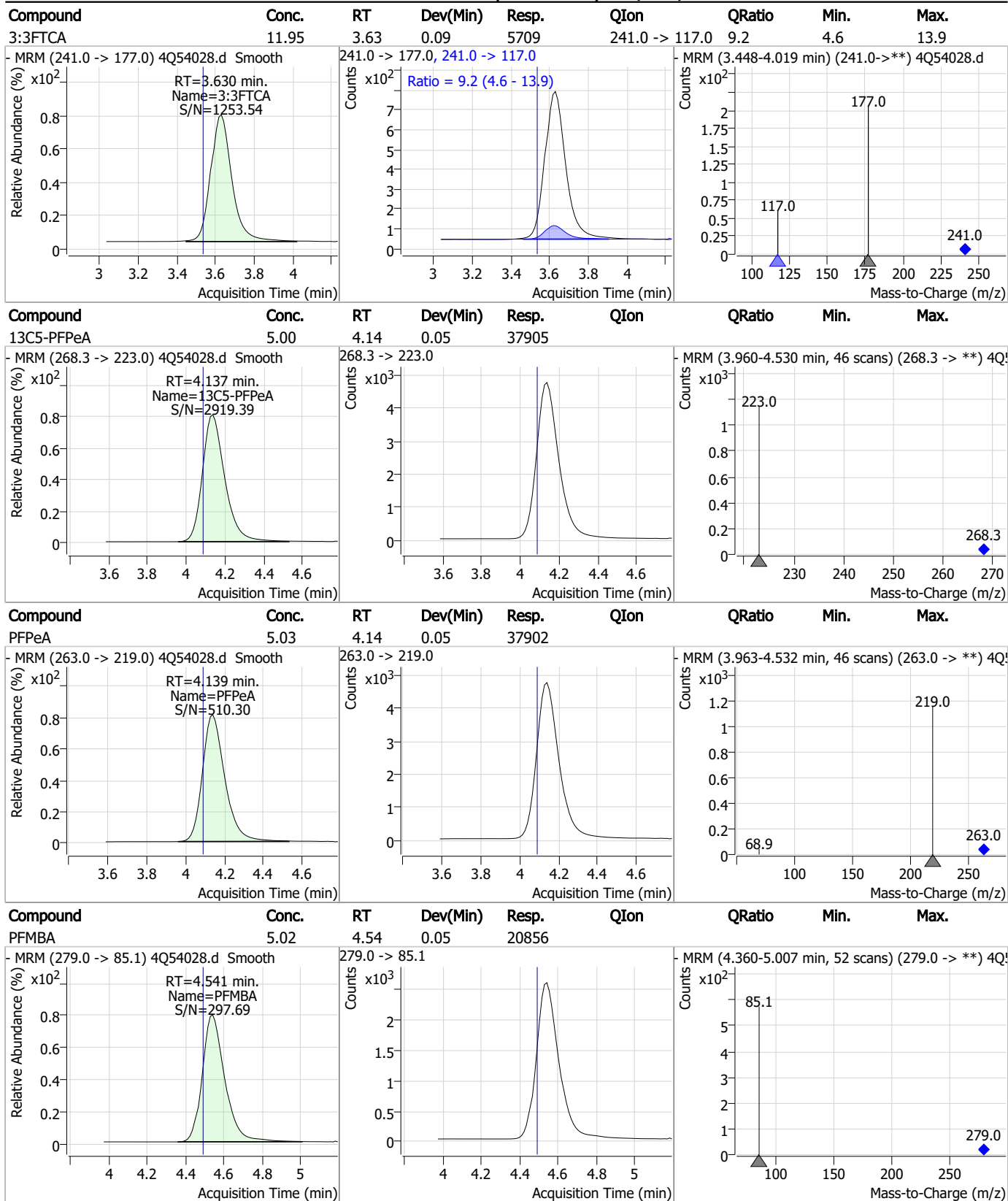
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Perfluorinated Compounds by LC/MS/MS



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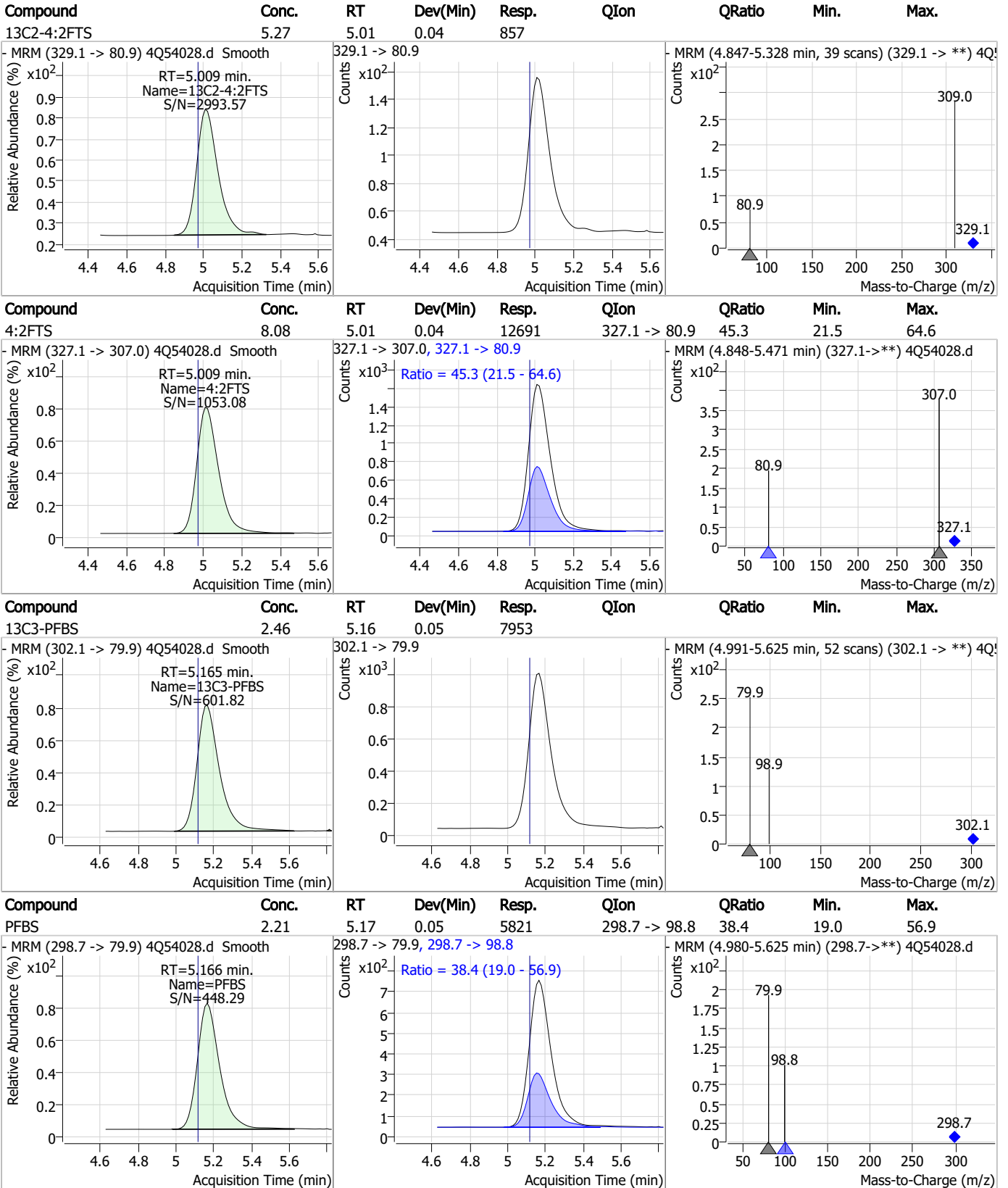
Perfluorinated Compounds by LC/MS/MS



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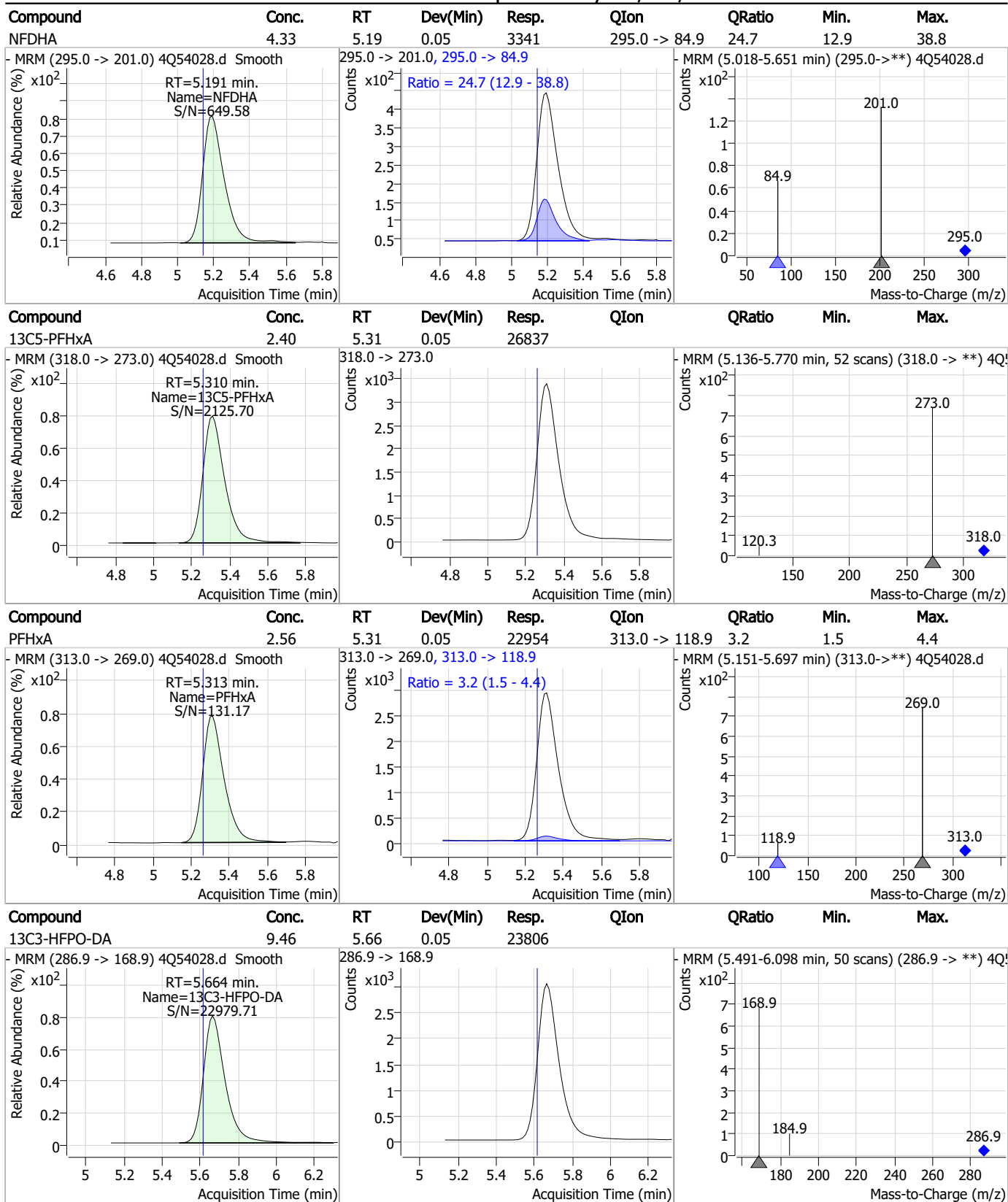
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

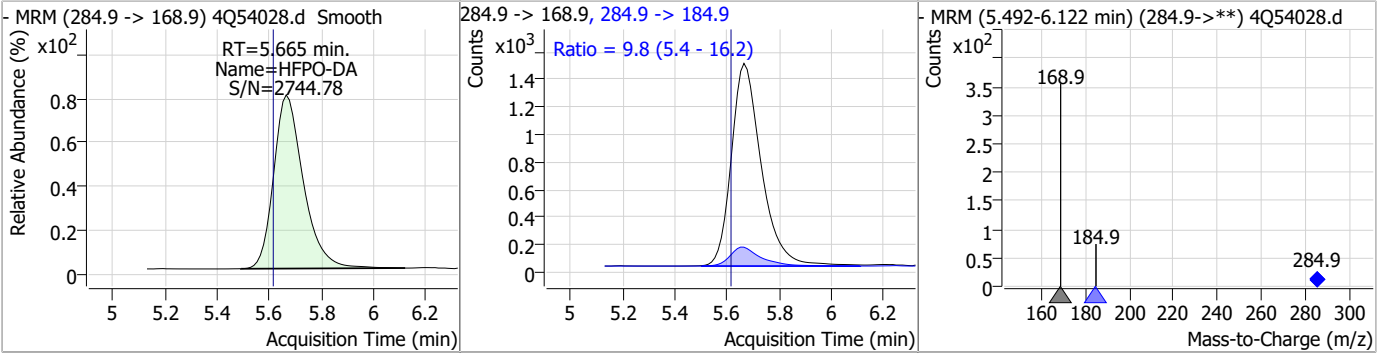


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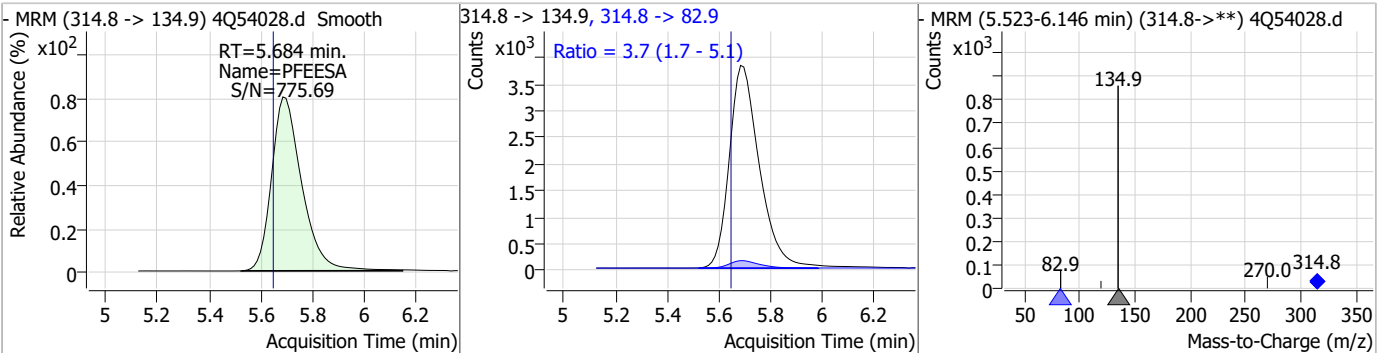
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Perfluorinated Compounds by LC/MS/MS

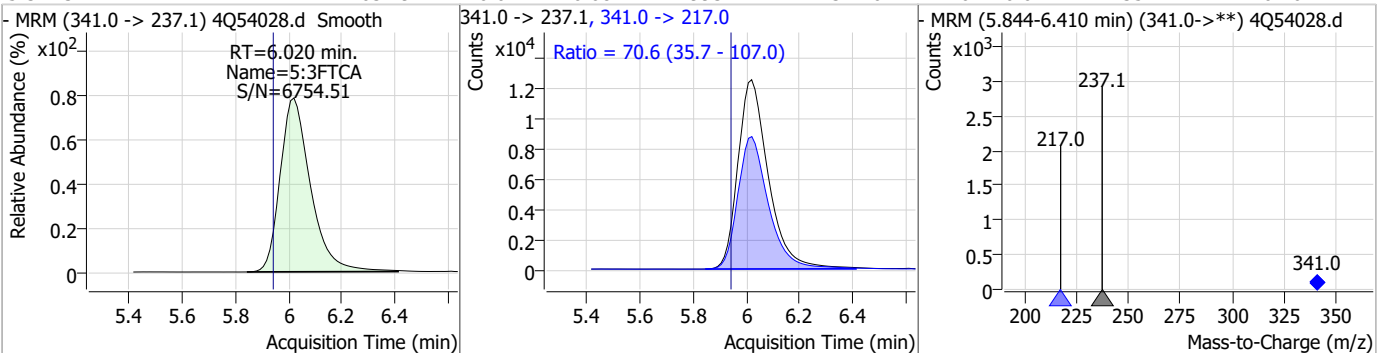
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.93	5.67	0.05	11632	284.9 -> 184.9	9.8	5.4	16.2



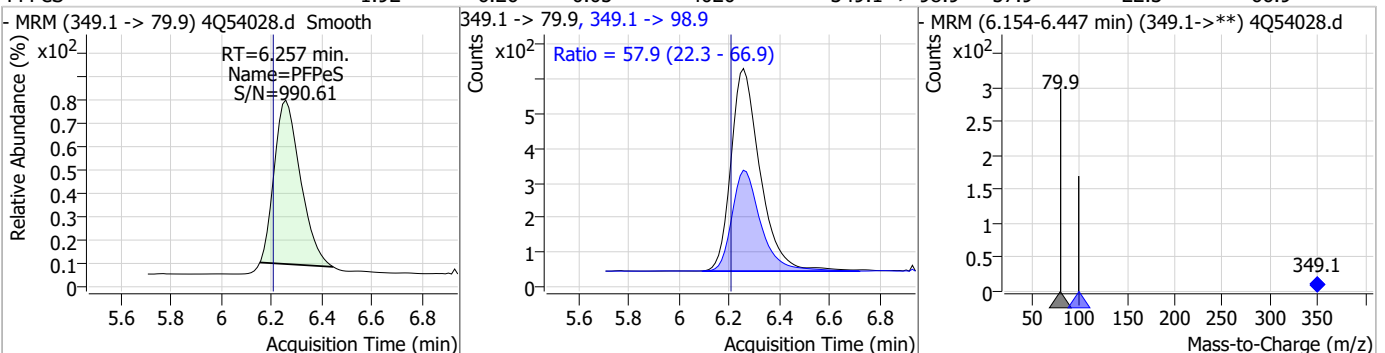
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.39	5.68	0.04	30971	314.8 -> 82.9	3.7	1.7	5.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	63.79	6.02	0.08	99327	341.0 -> 217.0	70.6	35.7	107.0

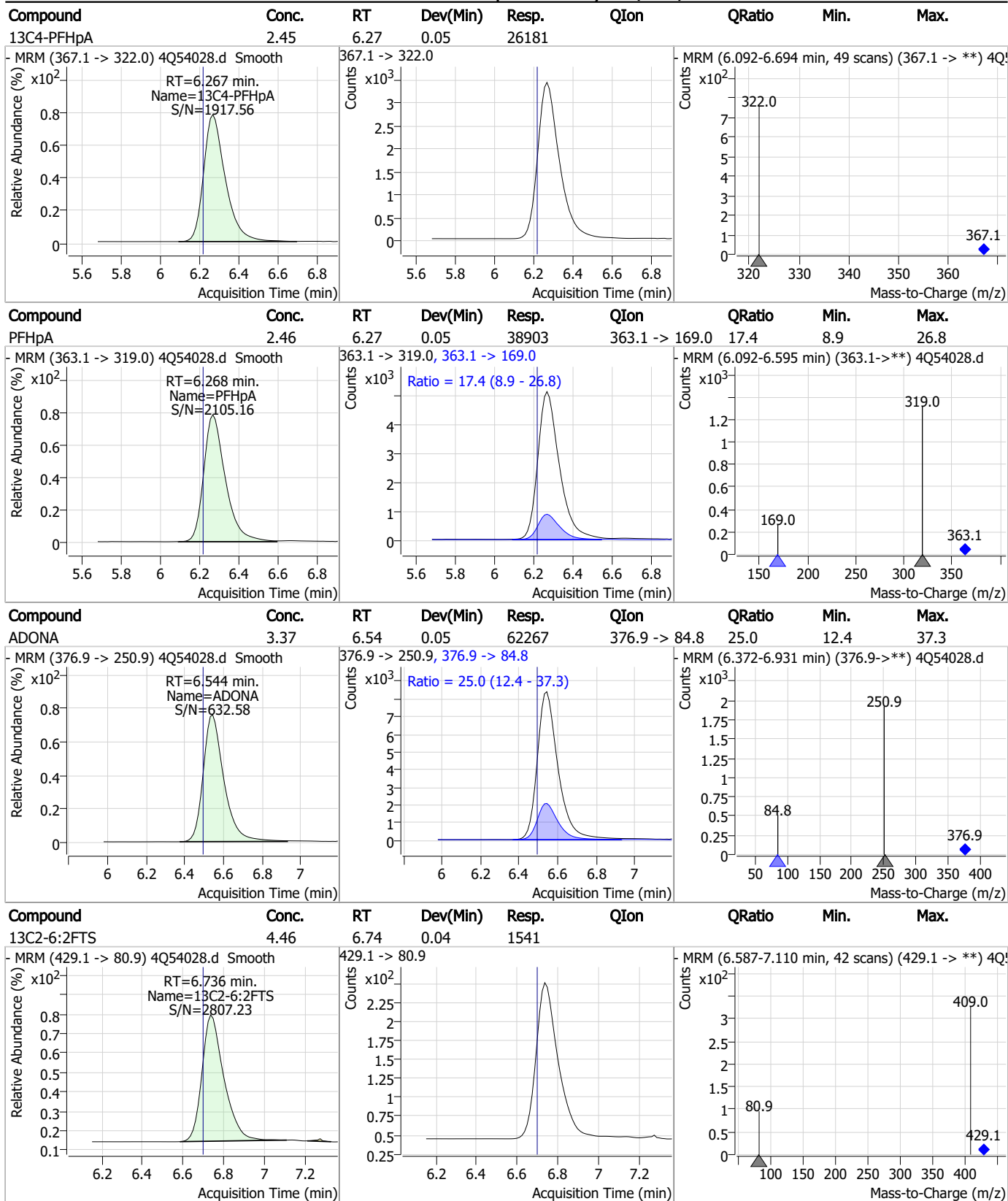


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.92	6.26	0.05	4020	349.1 -> 98.9	57.9	22.3	66.9



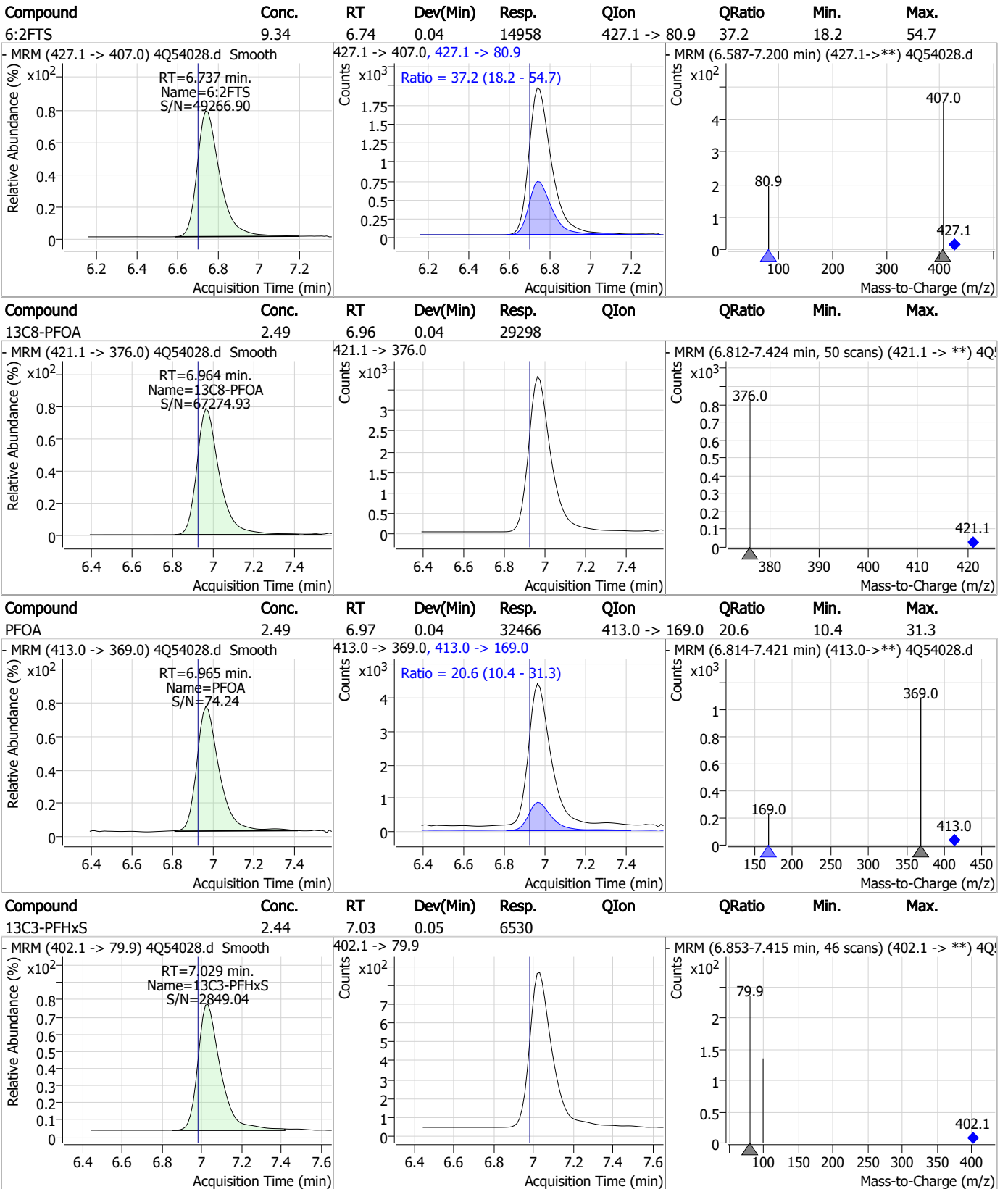
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Perfluorinated Compounds by LC/MS/MS



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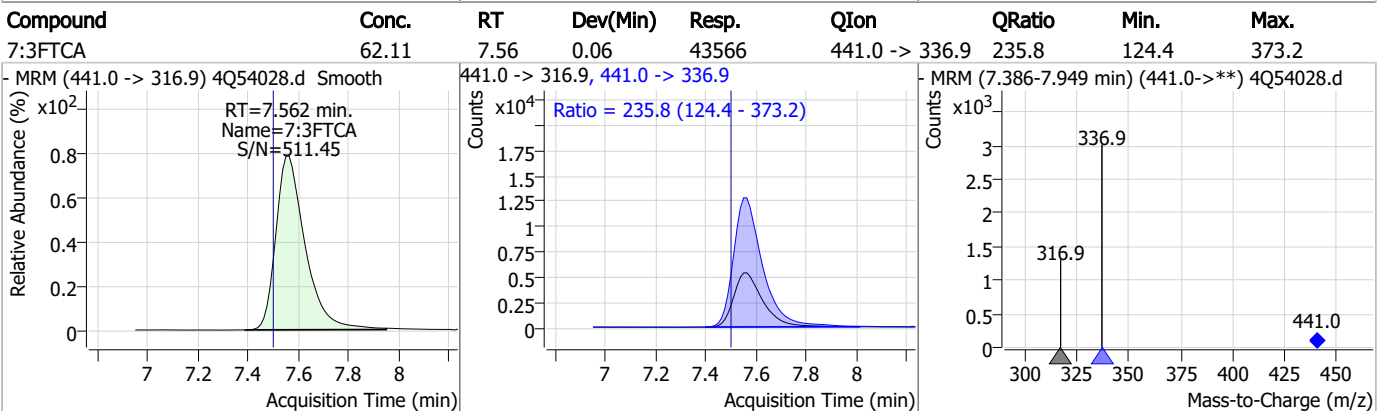
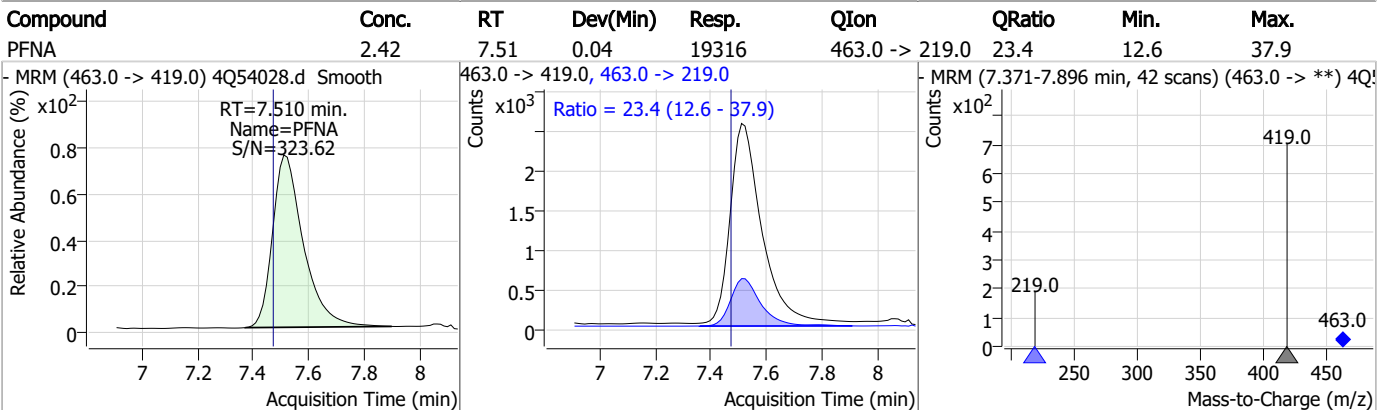
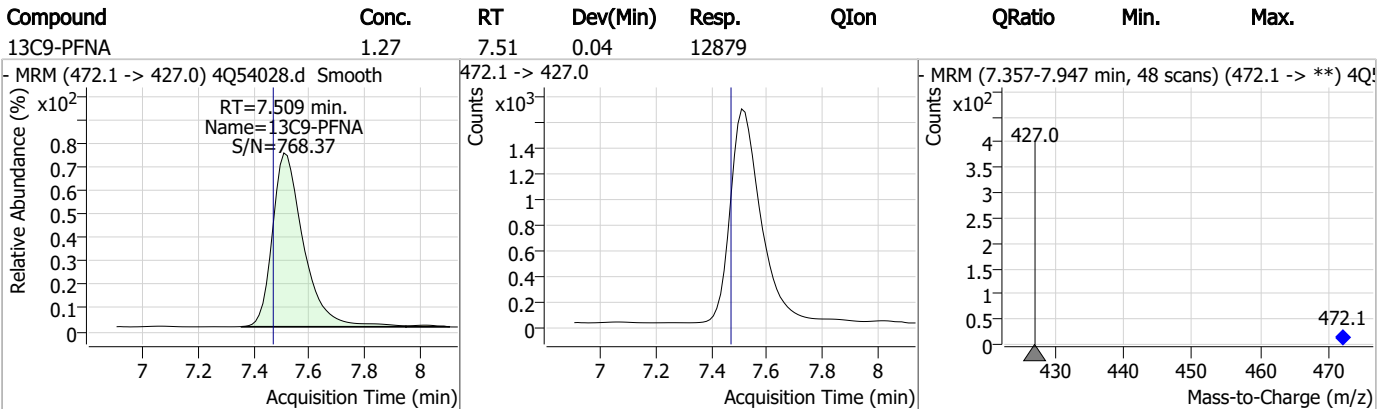
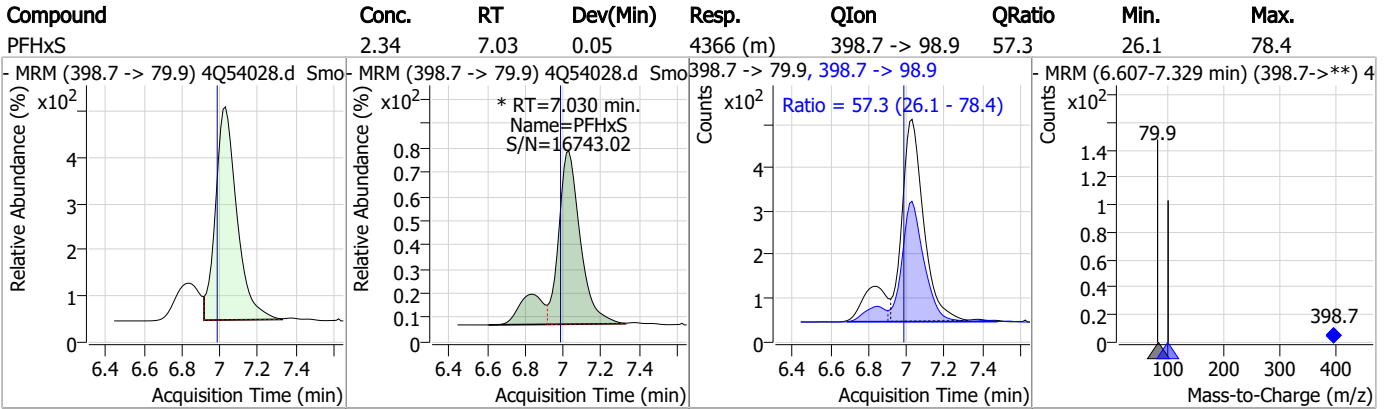
Perfluorinated Compounds by LC/MS/MS



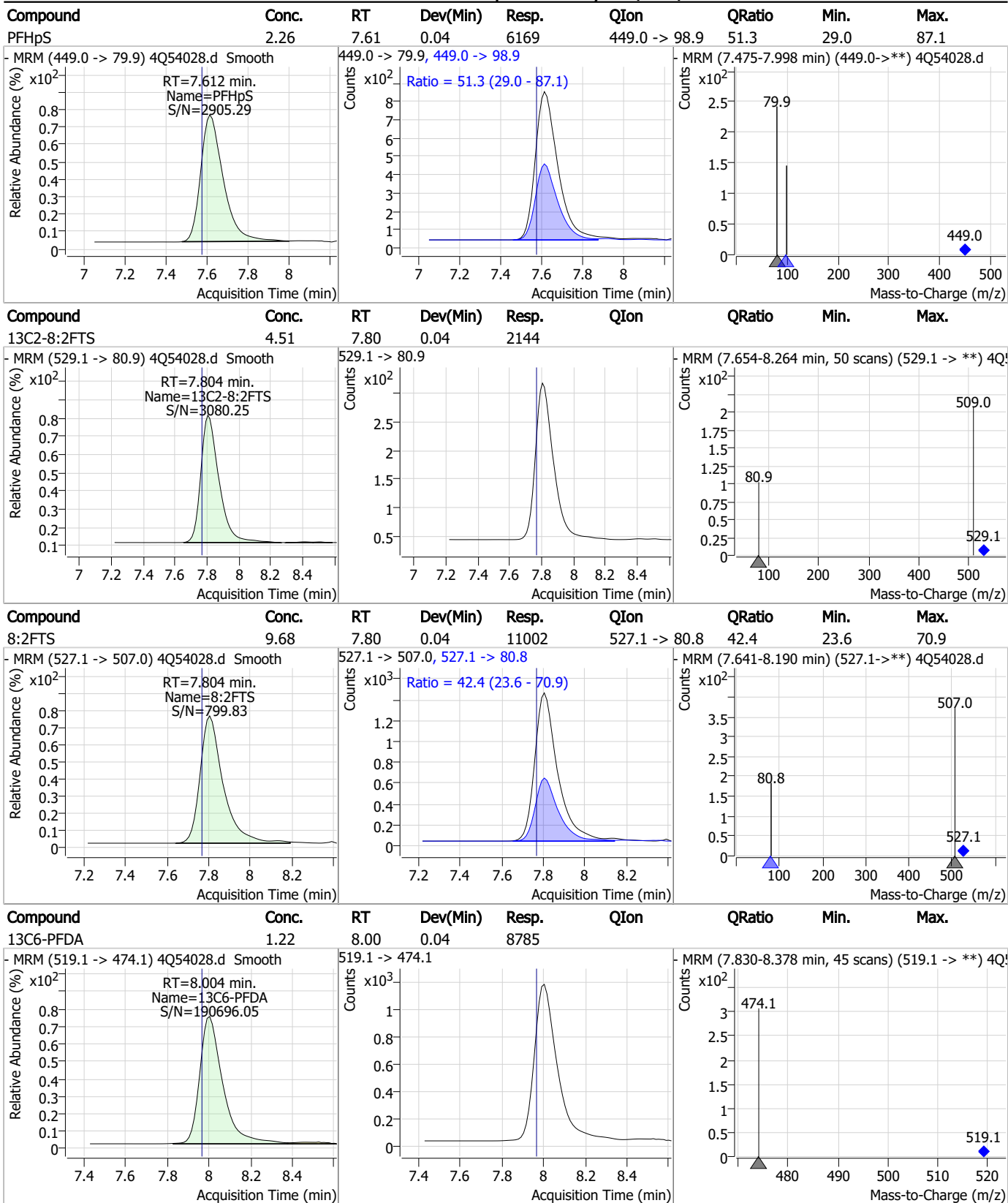
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Perfluorinated Compounds by LC/MS/MS

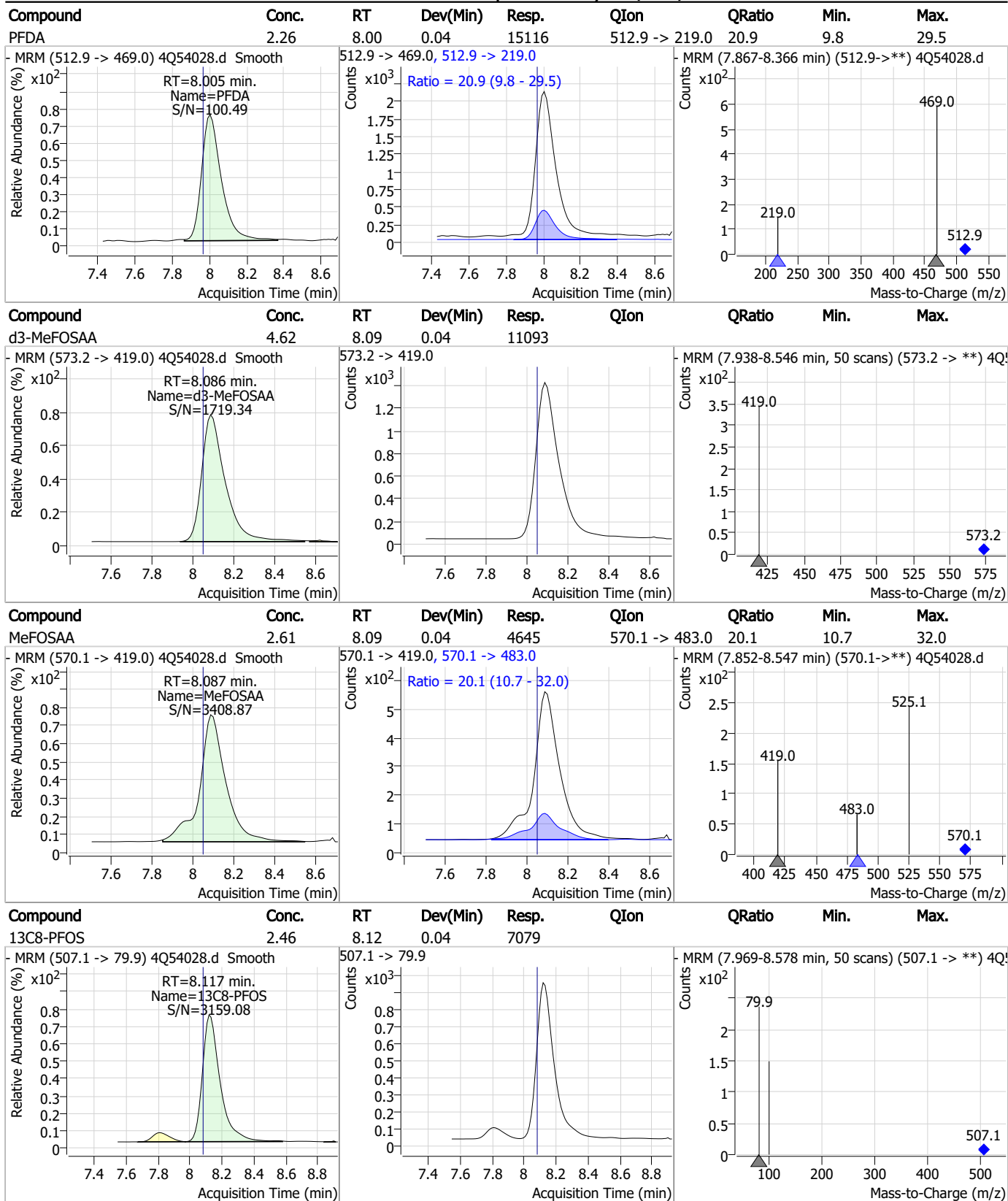


Perfluorinated Compounds by LC/MS/MS



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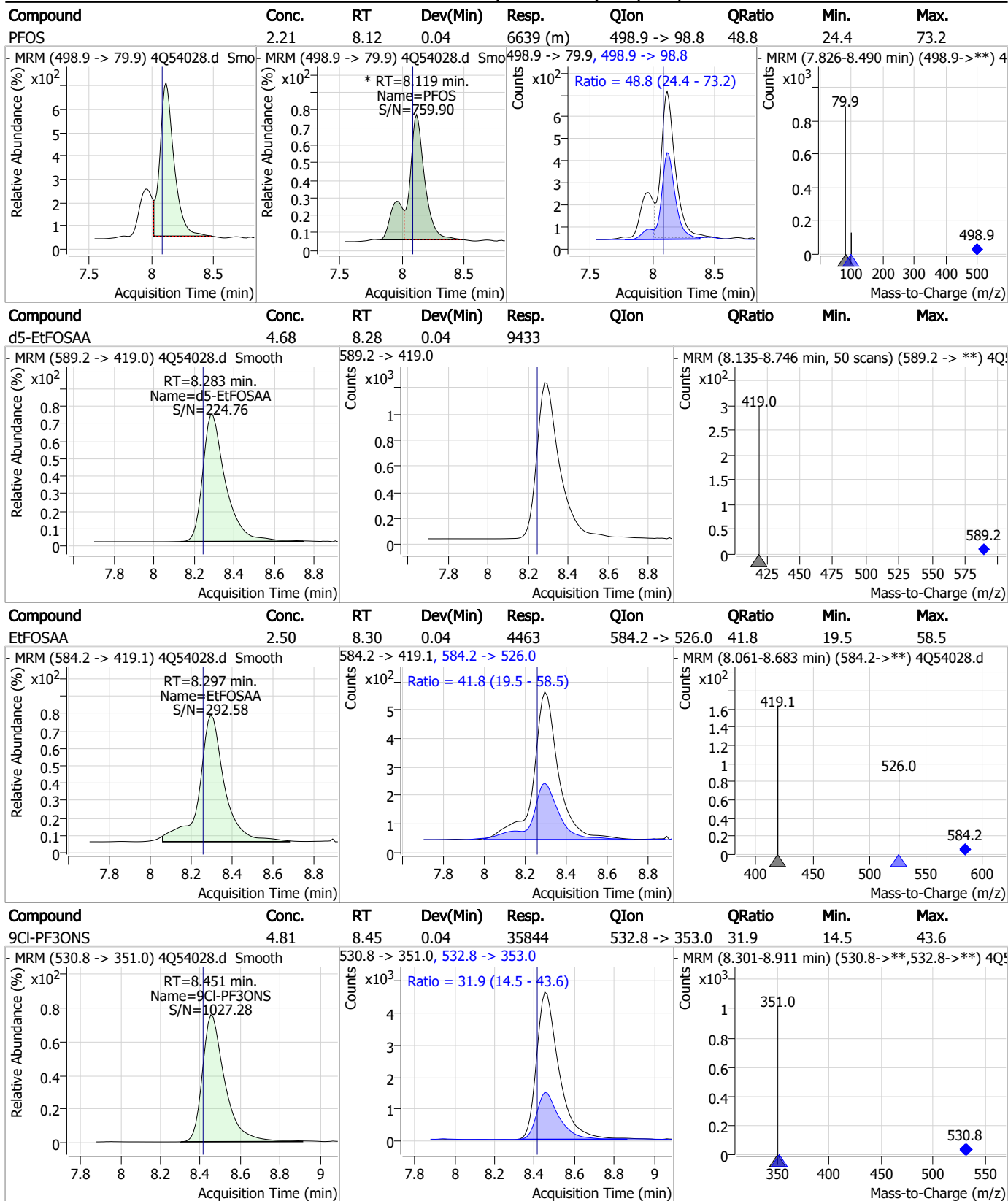
Perfluorinated Compounds by LC/MS/MS



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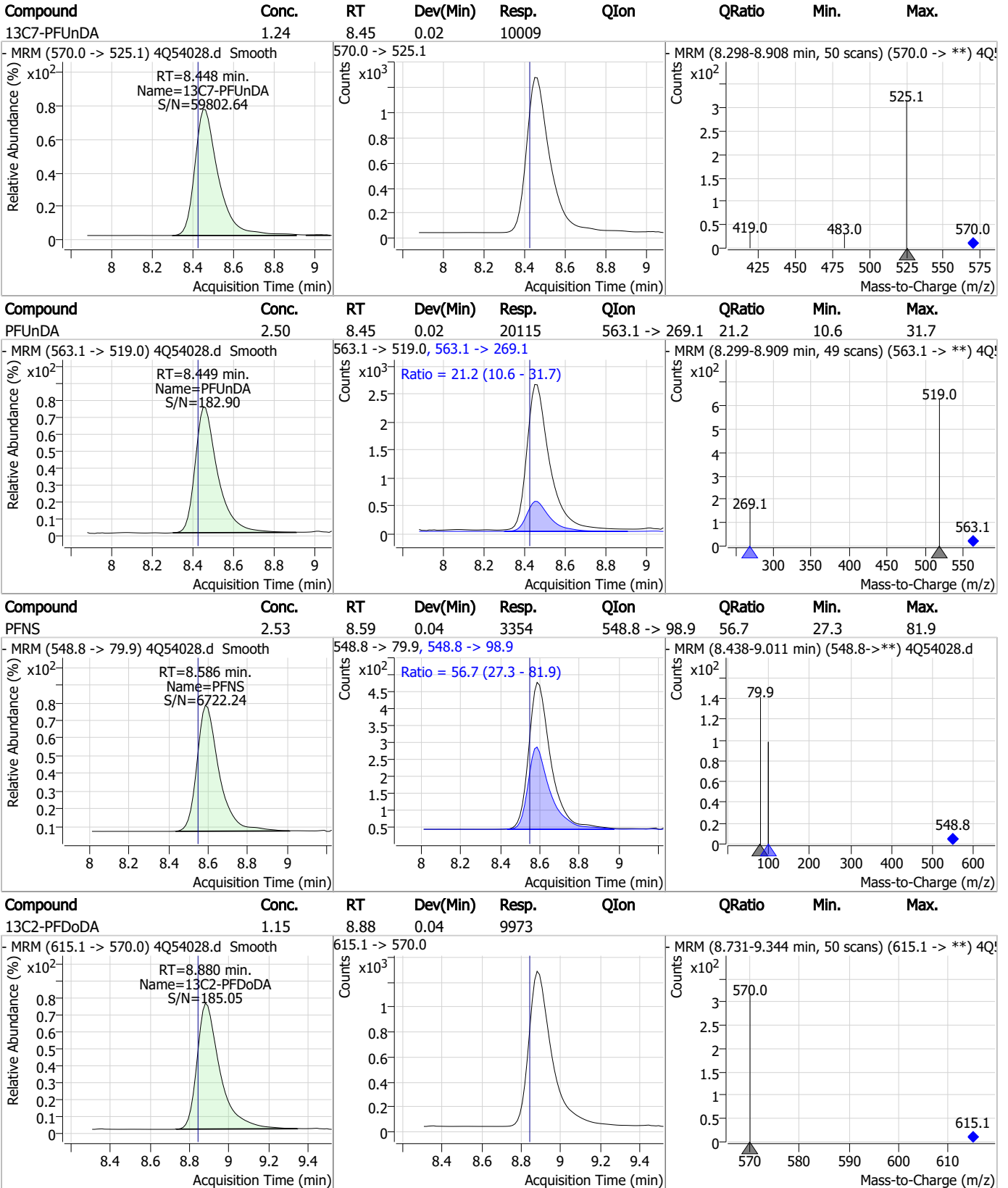
Perfluorinated Compounds by LC/MS/MS



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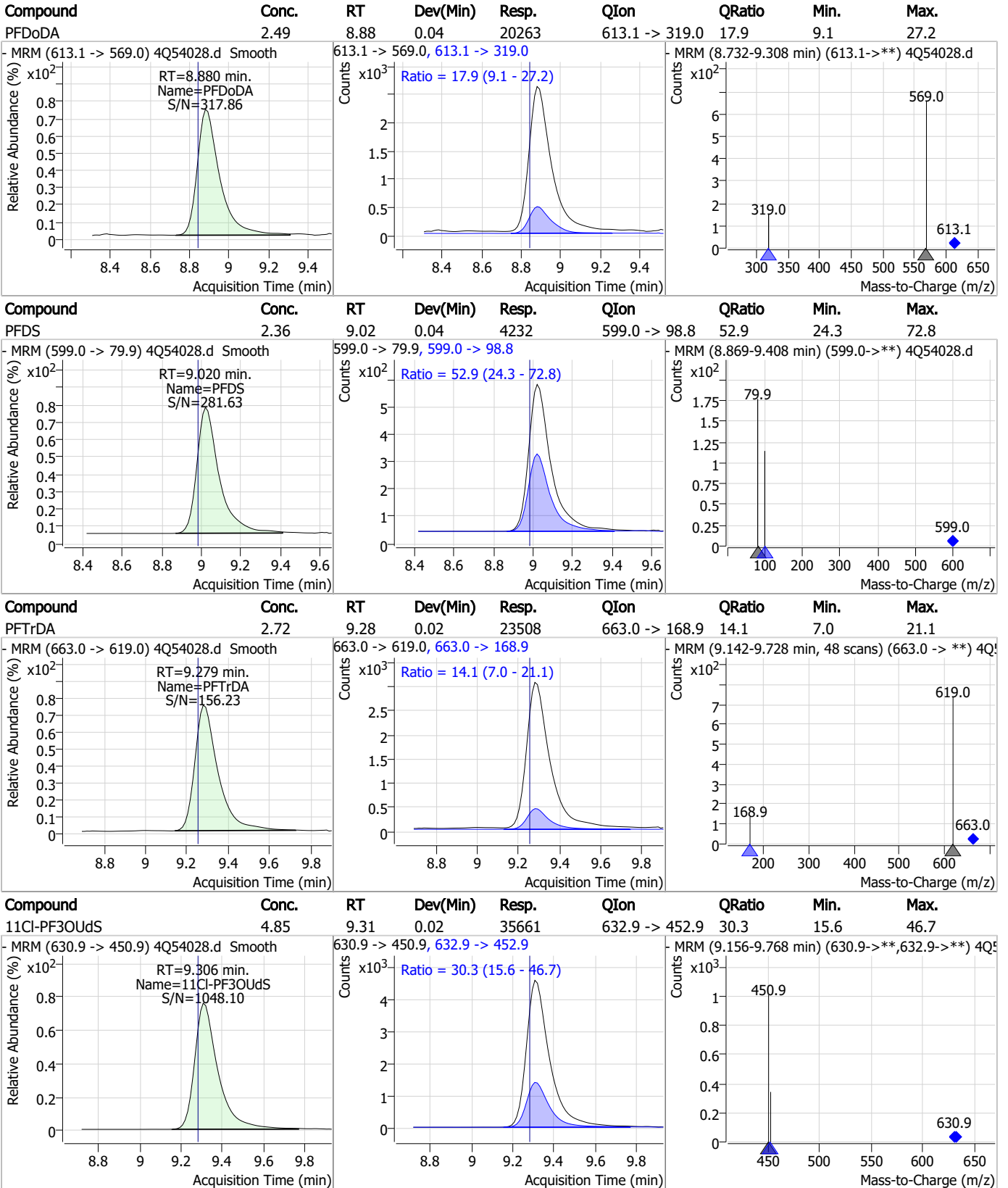
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Perfluorinated Compounds by LC/MS/MS



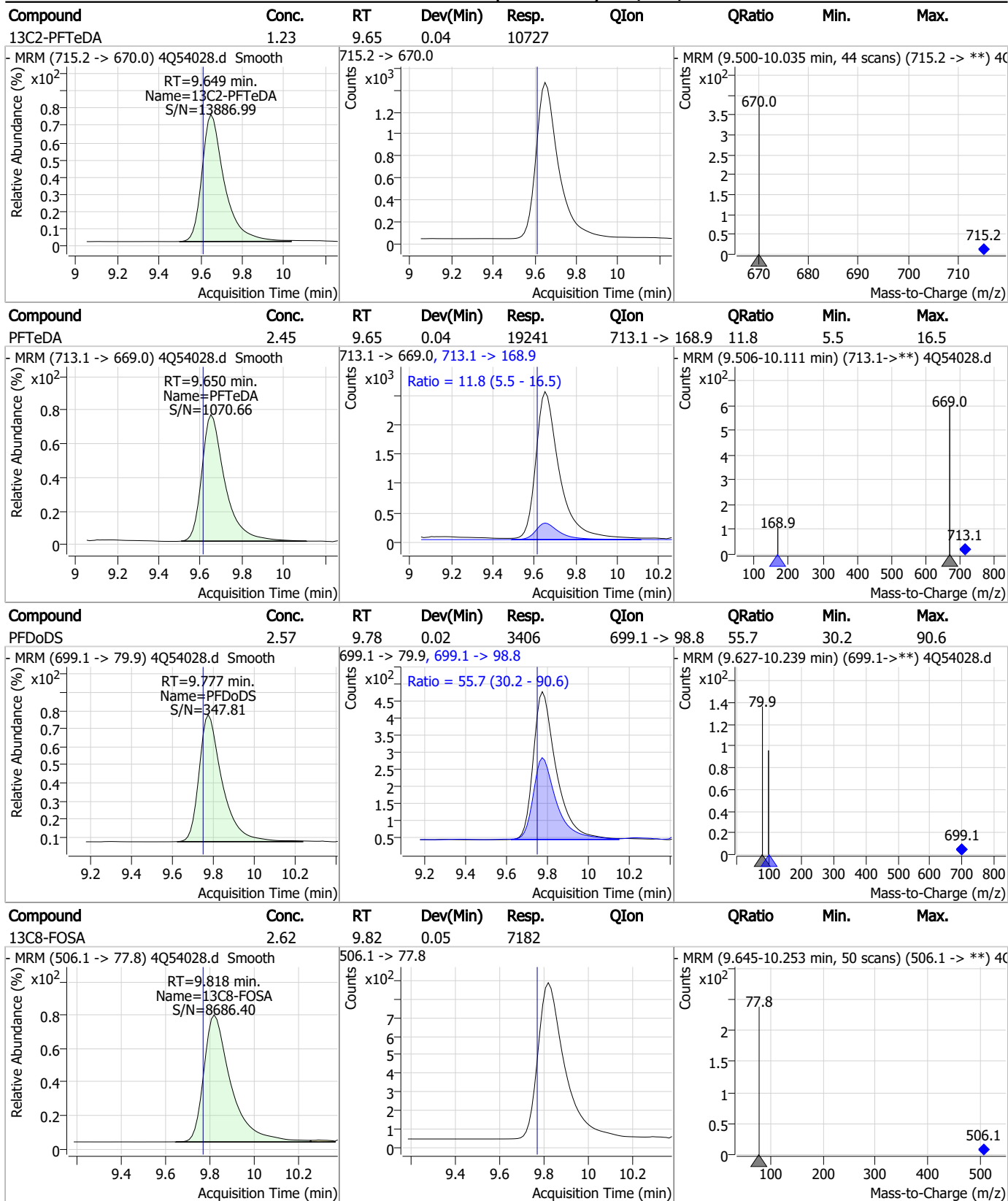
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

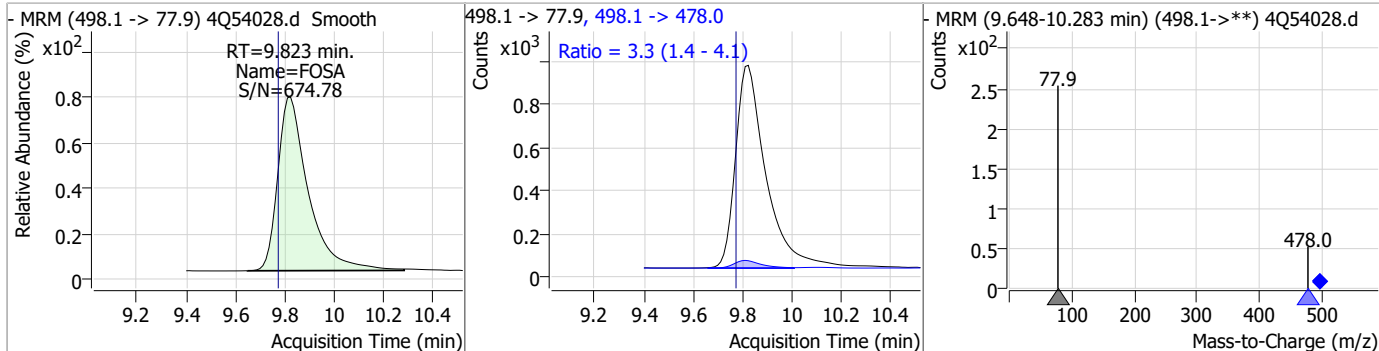


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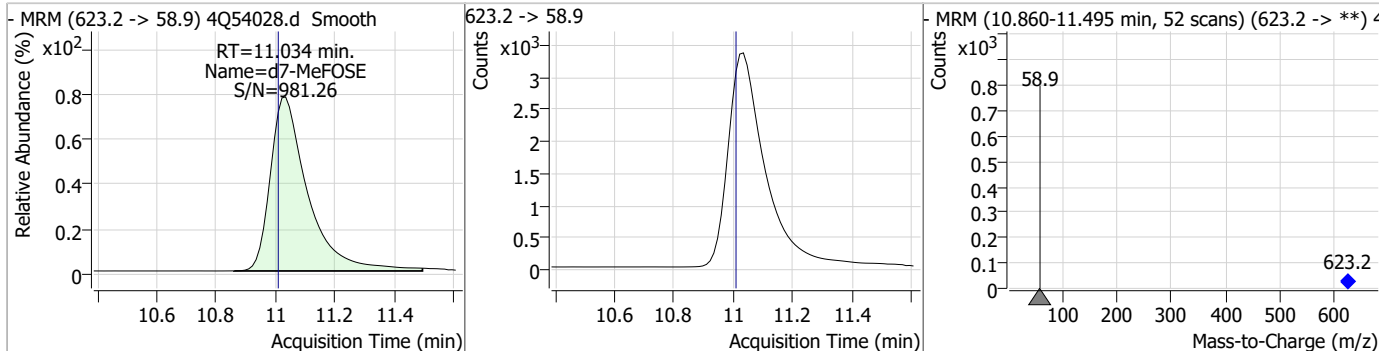
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Perfluorinated Compounds by LC/MS/MS

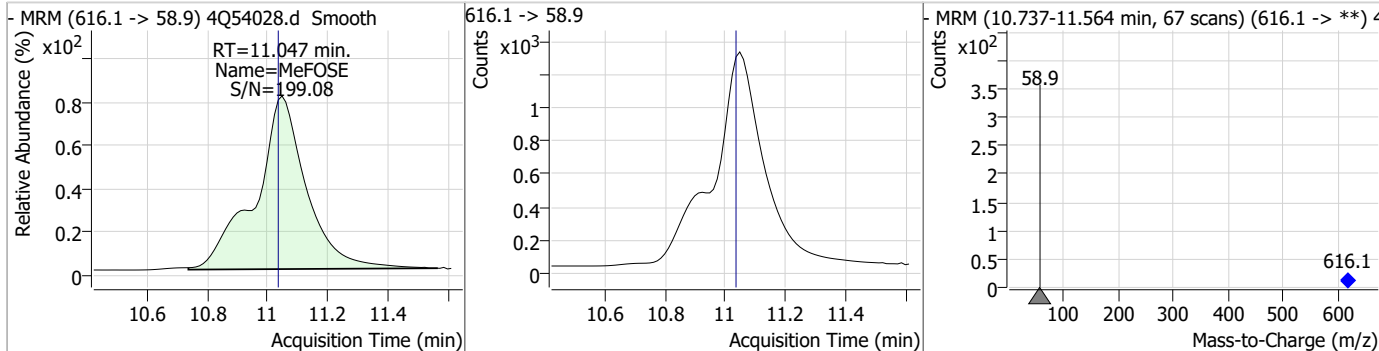
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.41	9.82	0.05	8035	498.1 -> 478.0	3.3	1.4	4.1



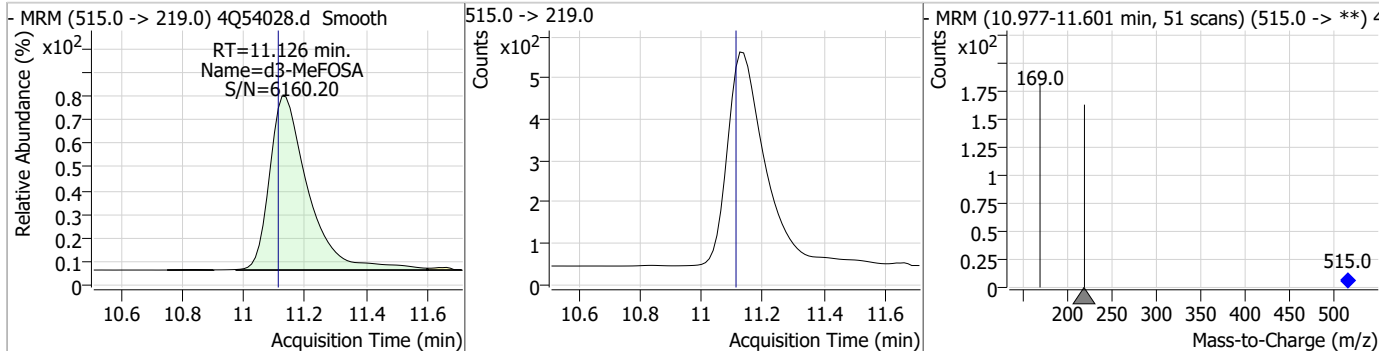
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.92	11.03	0.02	29277				



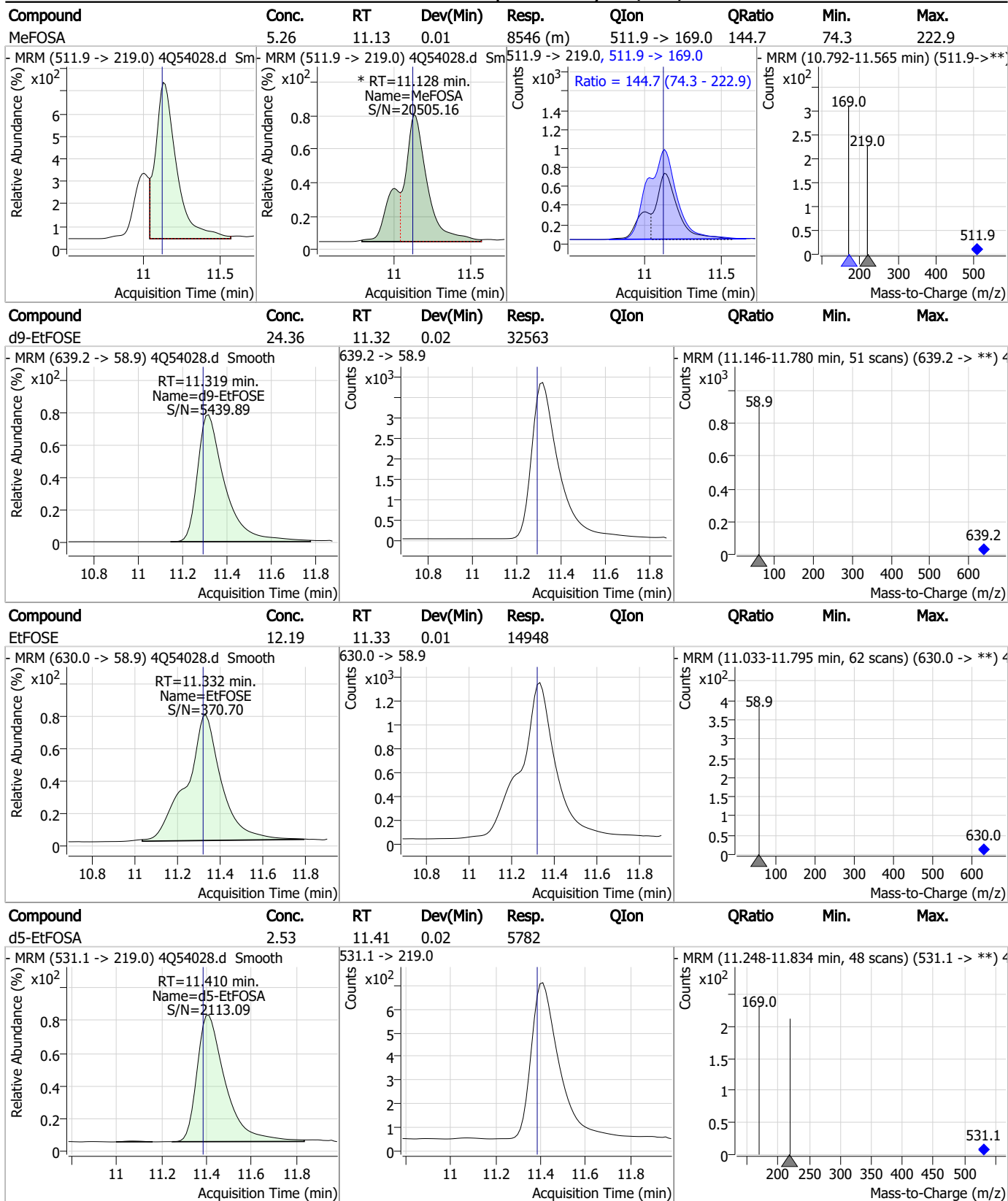
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.32	11.05	0.01	15203				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.42	11.13	0.01	4550				



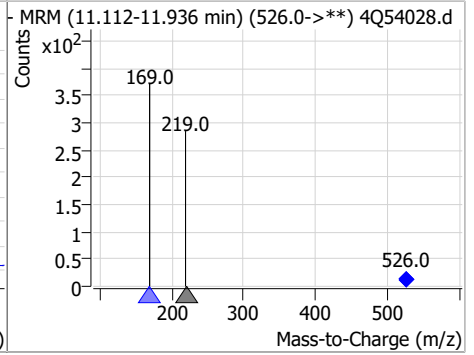
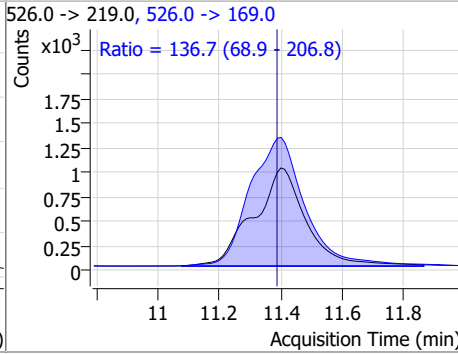
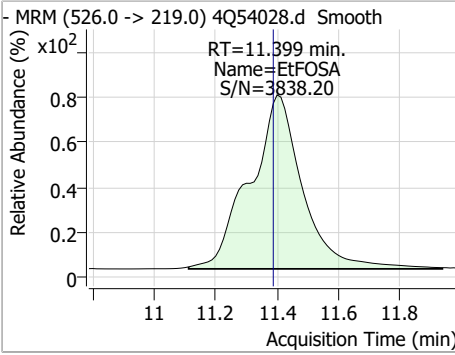
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.96	11.40	0.01	11985	526.0 -> 169.0	136.7	68.9	206.8



7.7.29

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Manual Integration Approval Summary

Sample Number: S4Q788-CC788 Method: EPA DRAFT 1633
Lab FileID: 4Q54028.D Analyst approved: 11/18/23 15:04 Mike Eger
Injection Time: 11/17/23 17:18 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.03	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
MeFOSA	31506-32-8		11.13	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54047.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/17/2023 9:58:25 PM
 Sample Name : cc788-4
 Vial : P1-A5
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.599	216.8 -> 171.9	85553	10.00 µg/L	0.000
M5-PFPeA	4.100	268.3 -> 223.0	36740	5.00 µg/L	0.012
M5-PFHxA	5.272	318.0 -> 273.0	27608	2.50 µg/L	0.012
M4-PFHpA	6.242	367.1 -> 322.0	27352	2.50 µg/L	0.025
M8-PFOA	6.938	421.1 -> 376.0	31037	2.50 µg/L	0.012
M9-PFNA	7.483	472.1 -> 427.0	13920	1.25 µg/L	0.012
M6-PFDA	7.979	519.1 -> 474.1	9631	1.25 µg/L	0.012
M7-PFUnDA	8.436	570.0 -> 525.1	11084	1.25 µg/L	0.012
M2-PFDoDA	8.855	615.1 -> 570.0	11199	1.25 µg/L	0.012
M2-PFTeDA	9.637	715.2 -> 670.0	10755	1.25 µg/L	0.025
M8-FOSA	9.794	506.1 -> 77.8	6764	2.50 µg/L	0.025
M3-PFBS	5.128	302.1 -> 79.9	8296	2.50 µg/L	0.012
M3-PFHxS	7.005	402.1 -> 79.9	6872	2.50 µg/L	0.025
M8-PFOS	8.093	507.1 -> 79.9	7347	2.50 µg/L	0.012
M2-4:2FTS	4.984	329.1 -> 80.9	1015	5.00 µg/L	0.012
M2-6:2FTS	6.711	429.1 -> 80.9	2014	5.00 µg/L	0.012
M2-8:2FTS	7.779	529.1 -> 80.9	3018	5.00 µg/L	0.012
M3-MeFOSAA	8.062	573.2 -> 419.0	13626	5.00 µg/L	0.012
M3-HFPO-DA	5.640	286.9 -> 168.9	23928	10.00 µg/L	0.025
M5-EtFOSAA	8.259	589.2 -> 419.0	11191	5.00 µg/L	0.012
M7-MeFOSE	11.022	623.2 -> 58.9	29059	25.00 µg/L	0.012
M9-EtFOSE	11.306	639.2 -> 58.9	32611	25.00 µg/L	0.012
M5-EtFOSA	11.398	531.1 -> 219.0	5867	2.50 µg/L	0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4596	2.50 µg/L	0.012
13C4-PFOS	8.093	502.8 -> 79.9	6082	2.50 µg/L	0.012
13C3-PFBA	2.603	216.0 -> 172.0	40794	5.00 µg/L	0.012
18O2-PFHxS	7.004	403.0 -> 83.9	4302	2.50 µg/L	0.025
13C4-PFOA	6.939	417.1 -> 372.0	33930	2.50 µg/L	0.012
13C2-PFDA	7.980	515.1 -> 470.1	9657	1.25 µg/L	0.012
13C5-PFNA	7.484	468.0 -> 423.0	13488	1.25 µg/L	0.012
13C2-PFHxA	5.273	315.1 -> 270.0	30816	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	4.984	329.1 -> 80.9	1015	6.18 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.6%		
13C2-6:2FTS	6.711	429.1 -> 80.9	2014	5.78 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.6%		
13C2-8:2FTS	7.779	529.1 -> 80.9	3018	6.29 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 125.8%		
13C2-PFDoDA	8.855	615.1 -> 570.0	11199	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.7%		
13C2-PFTeDA	9.637	715.2 -> 670.0	10755	1.24 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C3-PFBS	5.128	302.1 -> 79.9	8296	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C3-PFHxS	7.005	402.1 -> 79.9	6872	2.54 µg/L	0.025

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C4-PFBA	2.599	216.8 -> 171.9	85553	10.16 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C4-PFHpA	6.242	367.1 -> 322.0	27352	2.50 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C5-PFHxA	5.272	318.0 -> 273.0	27608	2.42 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C5-PFPeA	4.100	268.3 -> 223.0	36740	4.75 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.9%	
13C6-PFDA	7.979	519.1 -> 474.1	9631	1.34 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.3%	
13C7-PFUnDA	8.436	570.0 -> 525.1	11084	1.38 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 110.0%	
13C8-FOSA	9.794	506.1 -> 77.8	6764	2.38 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.2%	
13C8-PFOA	6.938	421.1 -> 376.0	31037	2.51 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C8-PFOS	8.093	507.1 -> 79.9	7347	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C9-PFNA	7.483	472.1 -> 427.0	13920	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.9%	
d3-MeFOSAA	8.062	573.2 -> 419.0	13626	5.47 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.4%	
13C3-HFPO-DA	5.640	286.9 -> 168.9	23928	9.31 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 93.1%	
d3-MeFOSA	11.126	515.0 -> 219.0	4596	2.35 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.2%	
d5-EtFOSAA	8.259	589.2 -> 419.0	11191	5.36 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.1%	
d7-MeFOSE	11.022	623.2 -> 58.9	29059	23.85 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.4%	
d9-EtFOSE	11.306	639.2 -> 58.9	32611	23.52 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 94.1%	
d5-EtFOSA	11.398	531.1 -> 219.0	5867	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	
Target Compounds					QValue
4:2FTS	4.985	327.1 -> 307.0	16998	9.14 µg/L	99
		327.1 -> 80.9	7202		
6:2FTS	6.712	427.1 -> 407.0	21105	10.08 µg/L	98
		427.1 -> 80.9	7910		
8:2FTS	7.779	527.1 -> 507.0	15187	9.49 µg/L	88
		527.1 -> 80.8	5975		
EtFOSAA	8.272	584.2 -> 419.1	5133	2.42 µg/L	m 98
		584.2 -> 526.0	2066		
FOSA	9.798	498.1 -> 77.9	8112	2.58 µg/L	100
		498.1 -> 478.0	216		
MeFOSAA	8.062	570.1 -> 419.0	5544	2.54 µg/L	m 93
		570.1 -> 483.0	1007		
PFBA	2.607	212.8 -> 168.9	29005	9.85 µg/L	100
PFBS	5.129	298.7 -> 79.9	5923	2.16 µg/L	97
		298.7 -> 98.8	2149		
PFDA	7.980	512.9 -> 469.0	17845	2.44 µg/L	99
		512.9 -> 219.0	3579		
PFDoDA	8.868	613.1 -> 569.0	21425	2.35 µg/L	99
		613.1 -> 319.0	3799		
PFDS	8.995	599.0 -> 79.9	4456	2.39 µg/L	97

7.7.30
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.243	599.0 -> 98.8	2251	2.36	µg/L	99
		363.1 -> 319.0	39077			
PFHpS	7.586	363.1 -> 169.0	7052	2.36	µg/L	90
		449.0 -> 79.9	6665			
PFHxA	5.275	449.0 -> 98.9	3375	2.47	µg/L	100
		313.0 -> 269.0	22820			
PFHxS	7.006	313.0 -> 118.9	678	2.20	µg/L	98
		398.7 -> 79.9	4328			
PFNA	7.484	398.7 -> 98.9	2328	2.34	µg/L	94
		463.0 -> 419.0	20156			
PFNS	8.561	463.0 -> 219.0	4522	2.30	µg/L	90
		548.8 -> 79.9	3167			
PFOA	6.940	548.8 -> 98.9	1965	2.38	µg/L	99
		413.0 -> 369.0	32914			
PFOS	8.094	413.0 -> 169.0	6982	2.39	µg/L	99
		498.9 -> 79.9	7456			
PFPeA	4.102	498.9 -> 98.8	3574	5.06	µg/L	100
		263.0 -> 219.0	36915			
PFPeS	6.232	349.1 -> 79.9	4892	2.22	µg/L	100
		349.1 -> 98.9	2187			
PFTeDA	9.637	713.1 -> 669.0	19116	2.43	µg/L	99
		713.1 -> 168.9	2158			
PFTrDA	9.267	663.0 -> 619.0	23926	2.47	µg/L	99
		663.0 -> 168.9	3321			
PFUnDA	8.437	563.1 -> 519.0	21134	2.37	µg/L	99
		563.1 -> 269.1	4589			
11Cl-PF3OUdS	9.294	630.9 -> 450.9	35733	4.84	µg/L	98
		632.9 -> 452.9	10804			
9Cl-PF3ONS	8.438	530.8 -> 351.0	36901	4.92	µg/L	96
		532.8 -> 353.0	11481			
ADONA	6.519	376.9 -> 250.9	95533	5.14	µg/L	98
		376.9 -> 84.8	22721			
HFPO-DA	5.628	284.9 -> 168.9	12567	5.29	µg/L	98
		284.9 -> 184.9	1256			
3:3FTCA	3.548	241.0 -> 177.0	5399	11.73	µg/L	99
		241.0 -> 117.0	525			
5:3FTCA	5.968	341.0 -> 237.1	99408	62.06	µg/L	99
		341.0 -> 217.0	70371			
7:3FTCA	7.512	441.0 -> 316.9	44207	61.26	µg/L	98
		441.0 -> 336.9	108211			
EtFOSA	11.399	526.0 -> 219.0	11939	4.87	µg/L	97
		526.0 -> 169.0	16871			
EtFOSE	11.320	630.0 -> 58.9	15594	12.70	µg/L	100
		511.9 -> 219.0	7481			
MeFOSA	11.128	511.9 -> 169.0	12010	4.56	µg/L	91
		616.1 -> 58.9	14803			
MeFOSE	11.035	699.1 -> 79.9	3316	12.09	µg/L	100
		699.1 -> 98.8	1974			
PFDoDS	9.765	295.0 -> 201.0	3455	4.35	µg/L	100
		295.0 -> 84.9	886			
NFDHA	5.154	279.0 -> 85.1	20473	5.09	µg/L	100
		229.0 -> 84.9	23267			
PFMBA	3.240	314.8 -> 134.9	31812	4.38	µg/L	98
		314.8 -> 82.9	1270			

= Qualifier out of range, m = manually integrated, + = Area summed



7.7.30
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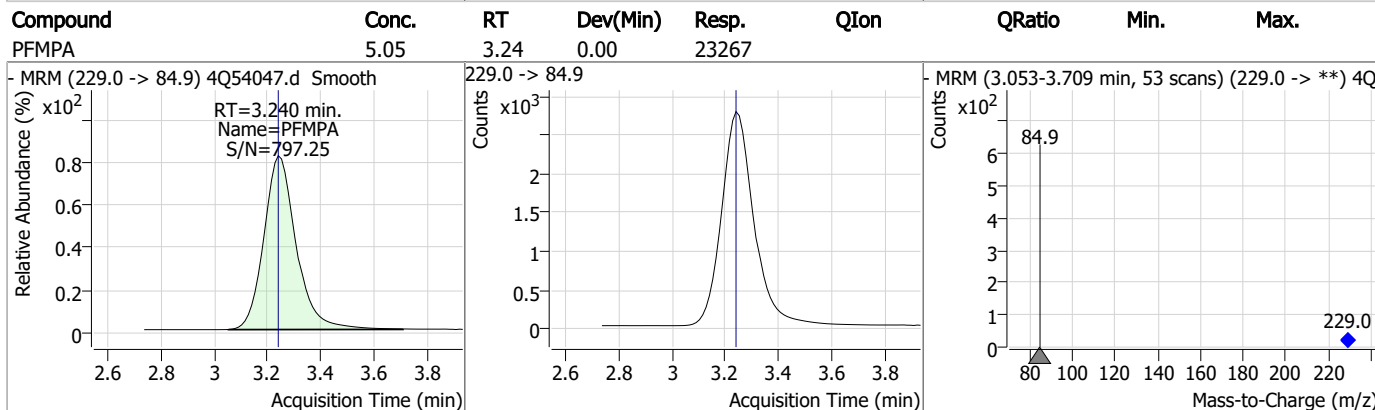
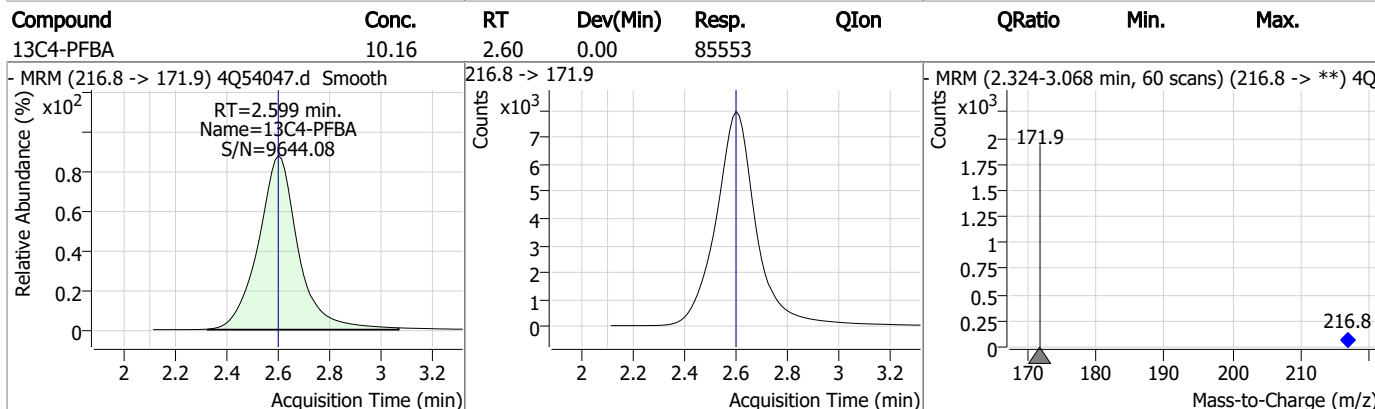
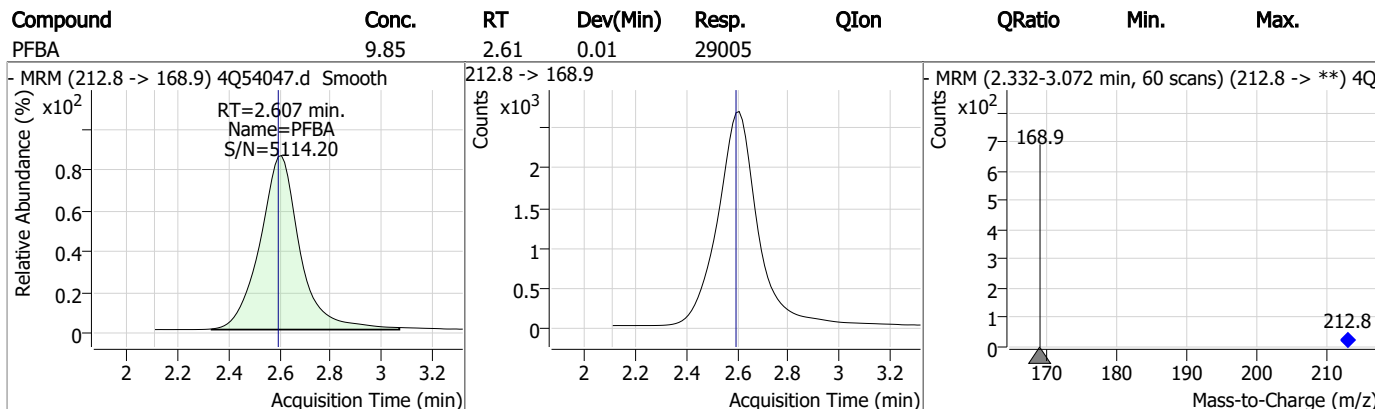
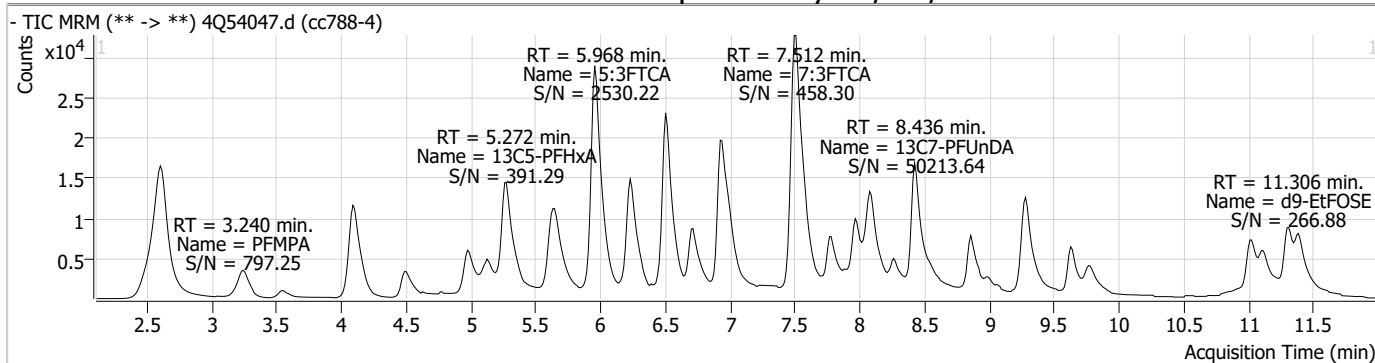
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.30

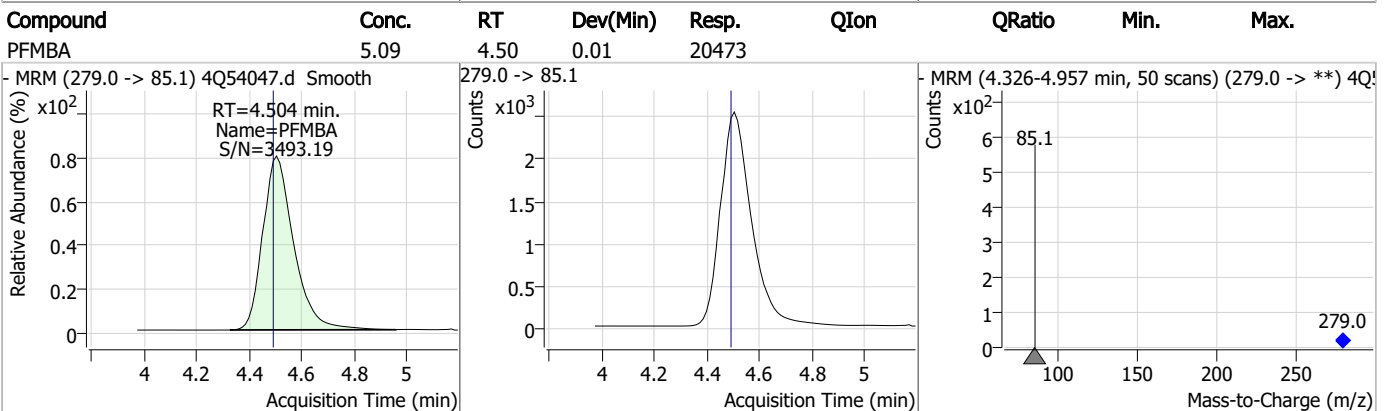
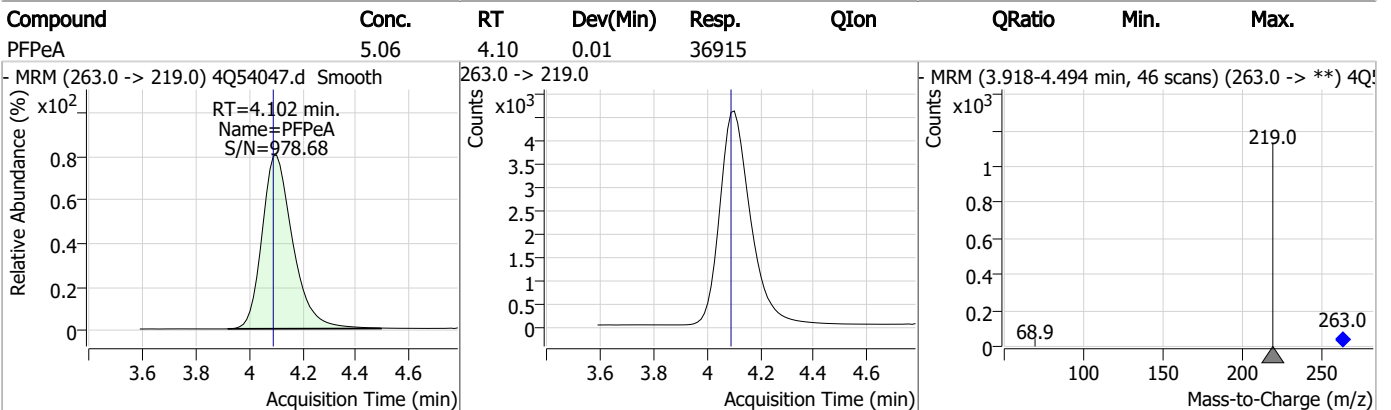
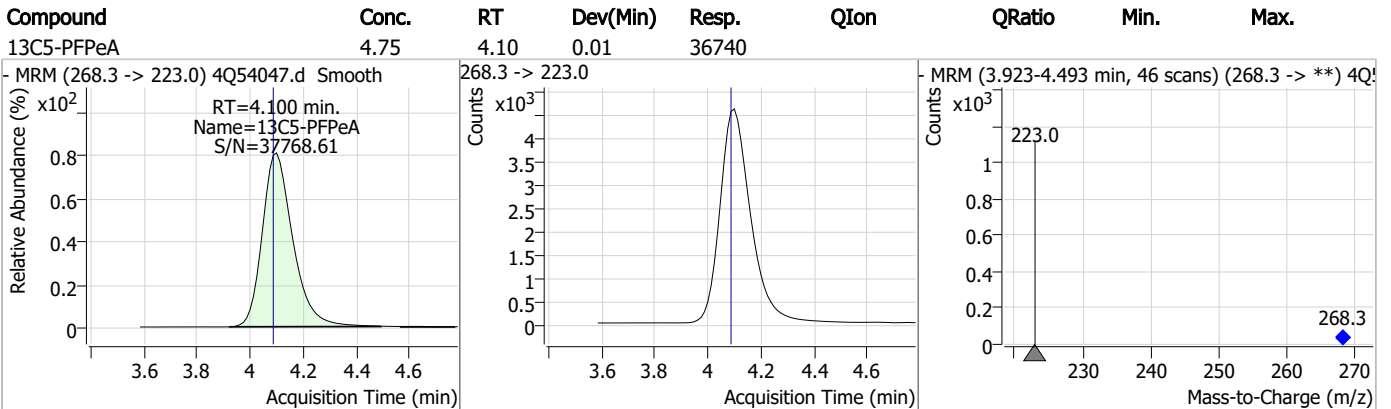
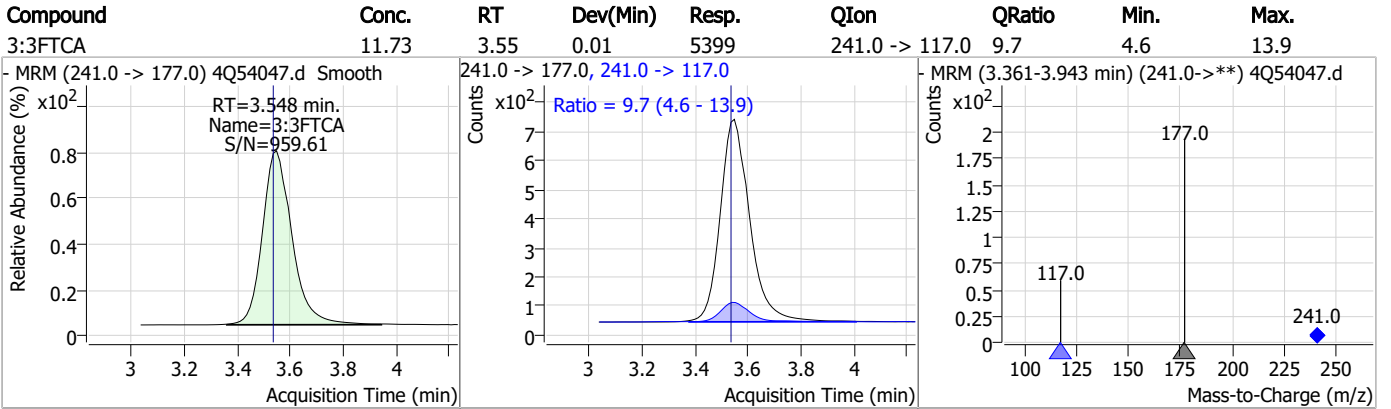
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Perfluorinated Compounds by LC/MS/MS

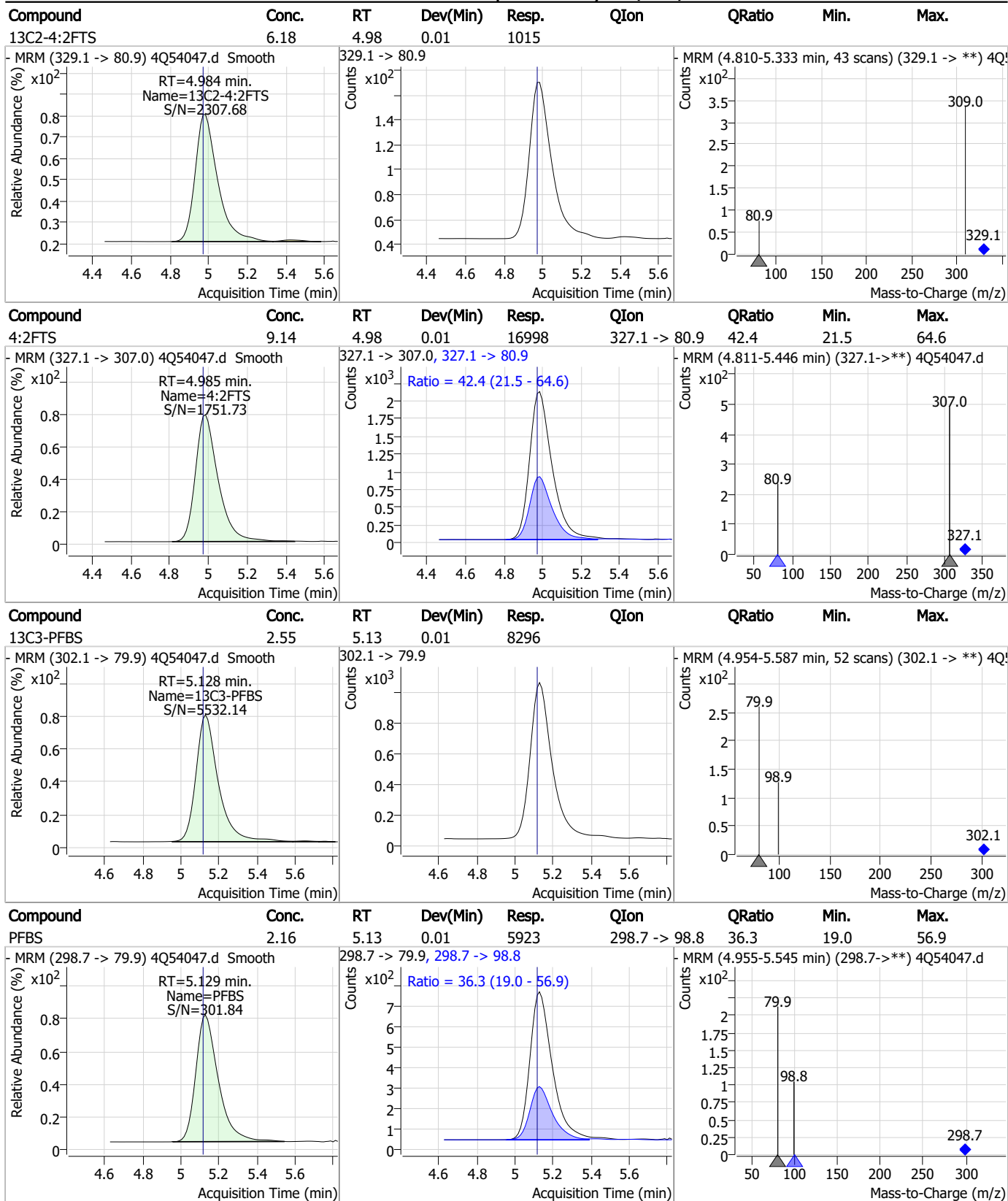


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Perfluorinated Compounds by LC/MS/MS



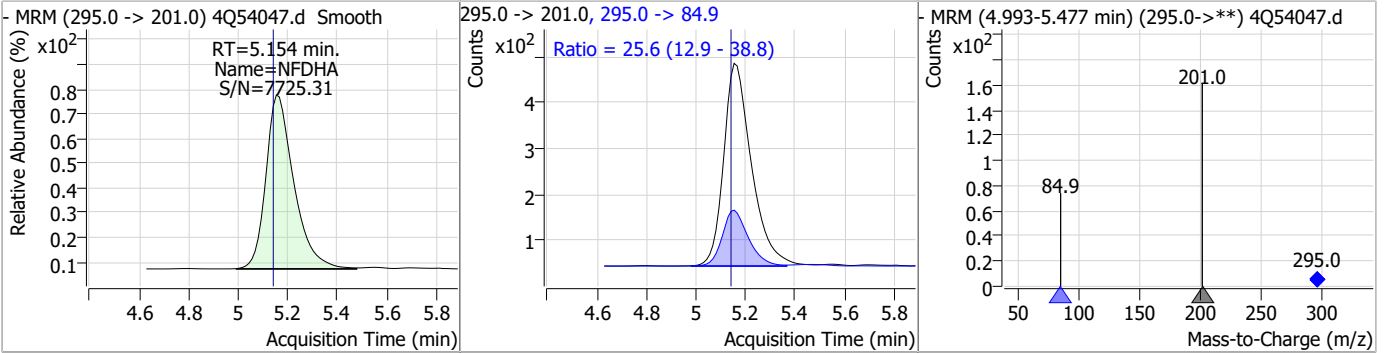
Perfluorinated Compounds by LC/MS/MS



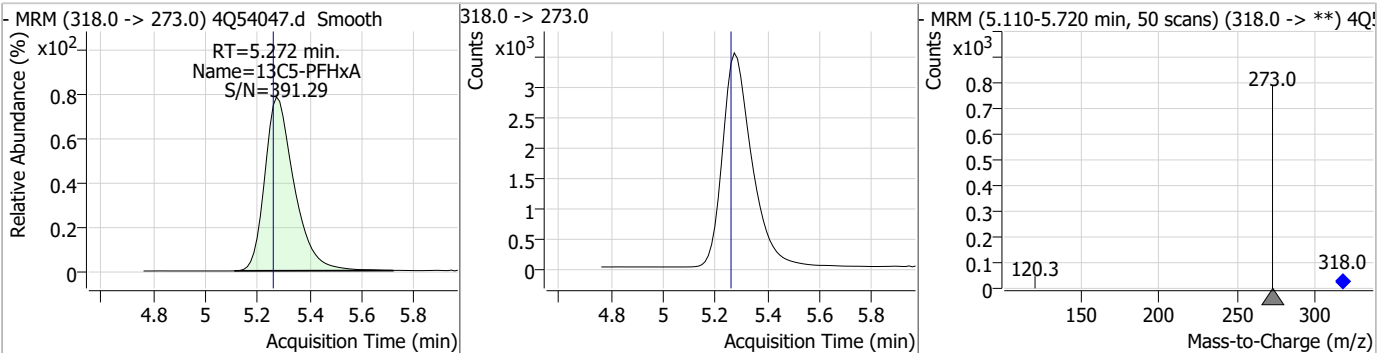
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Perfluorinated Compounds by LC/MS/MS

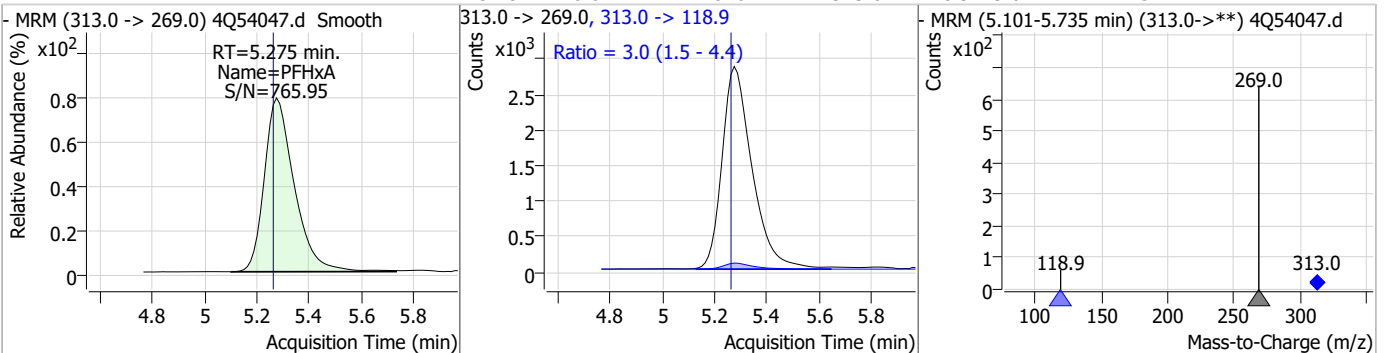
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	4.35	5.15	0.01	3455	295.0 -> 84.9	25.6	12.9	38.8



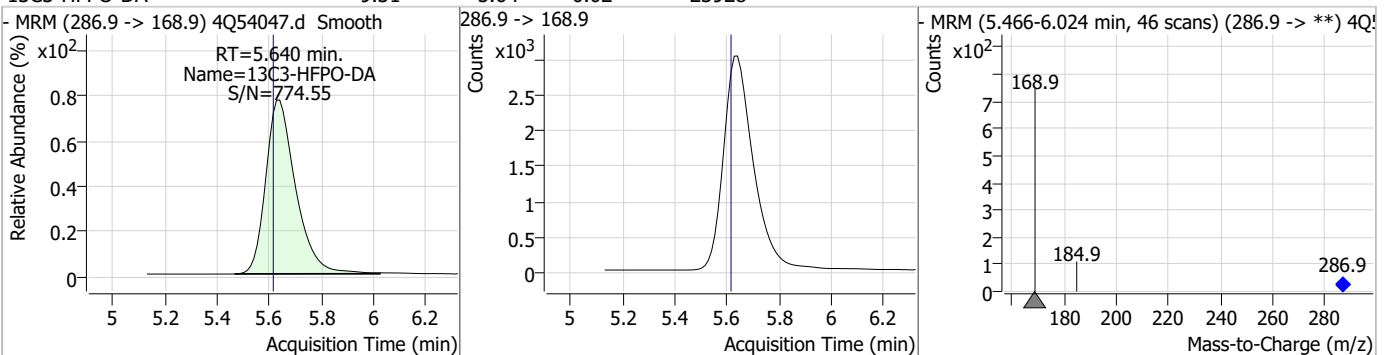
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.42	5.27	0.01	27608				



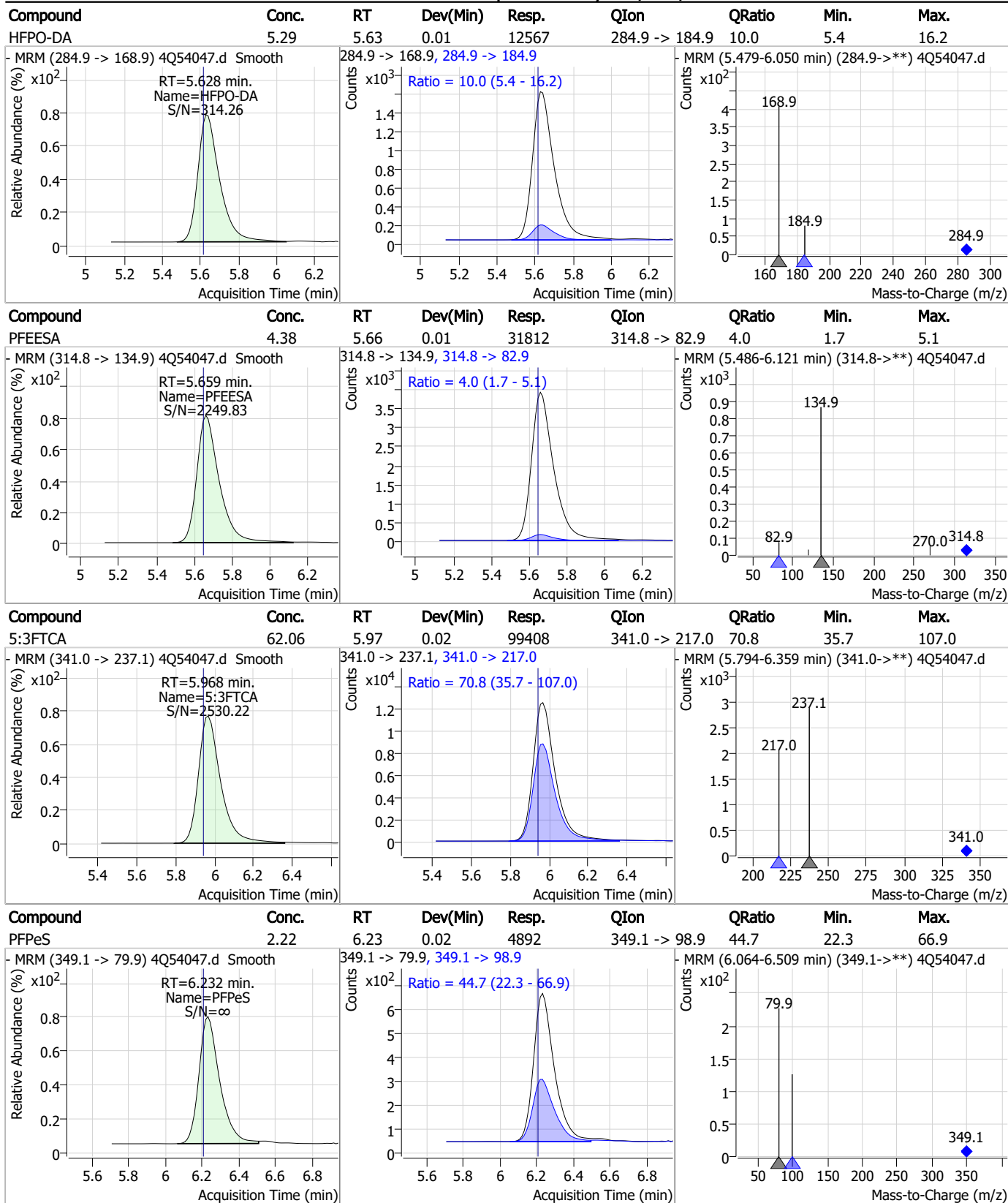
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.47	5.28	0.01	22820	313.0 -> 118.9	3.0	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.31	5.64	0.02	23928				

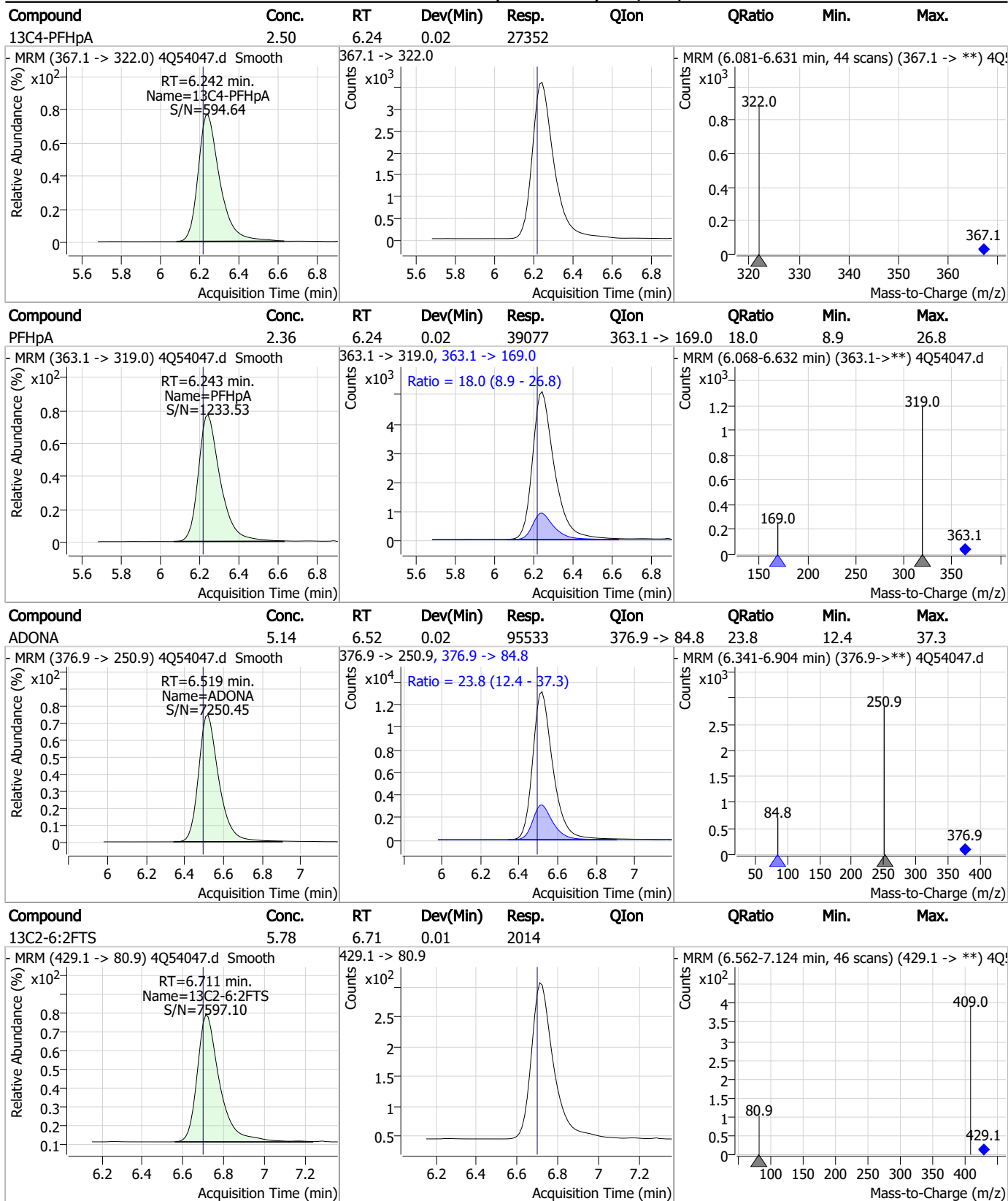


Perfluorinated Compounds by LC/MS/MS



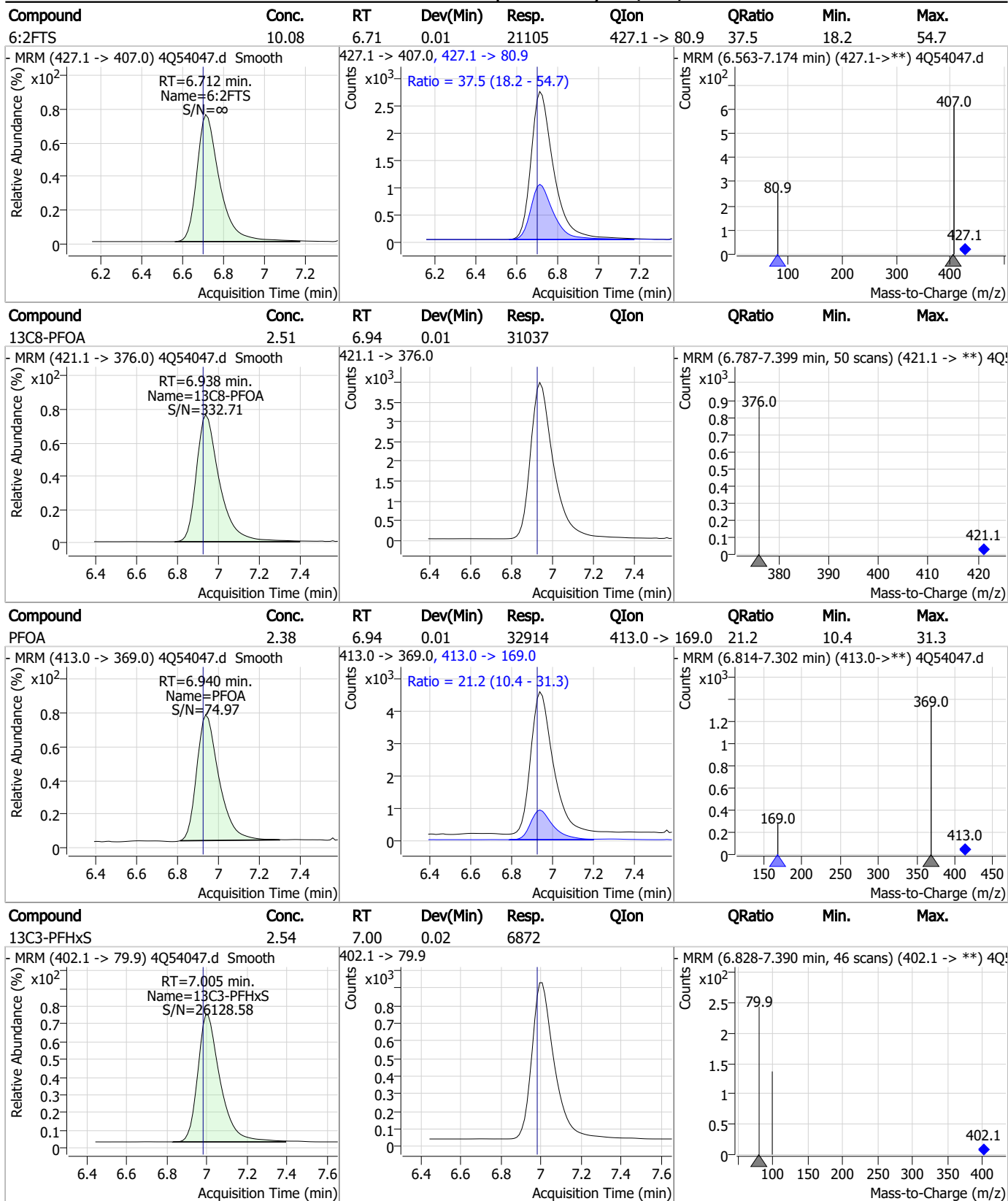
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Perfluorinated Compounds by LC/MS/MS



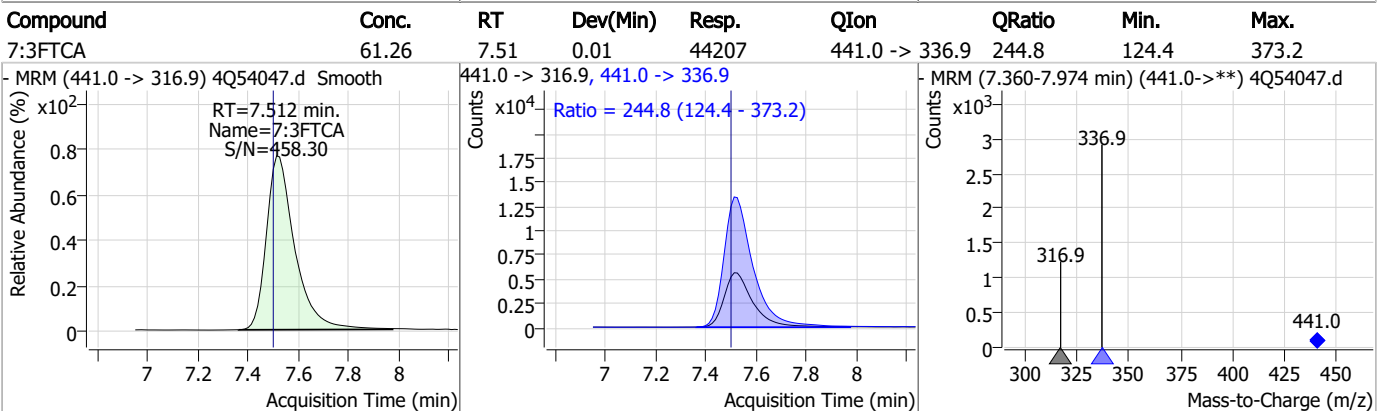
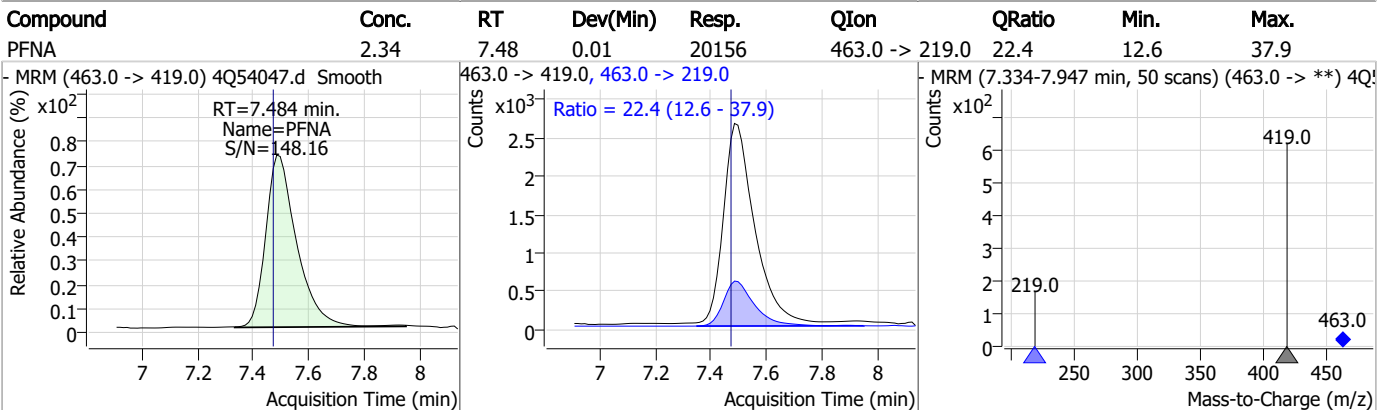
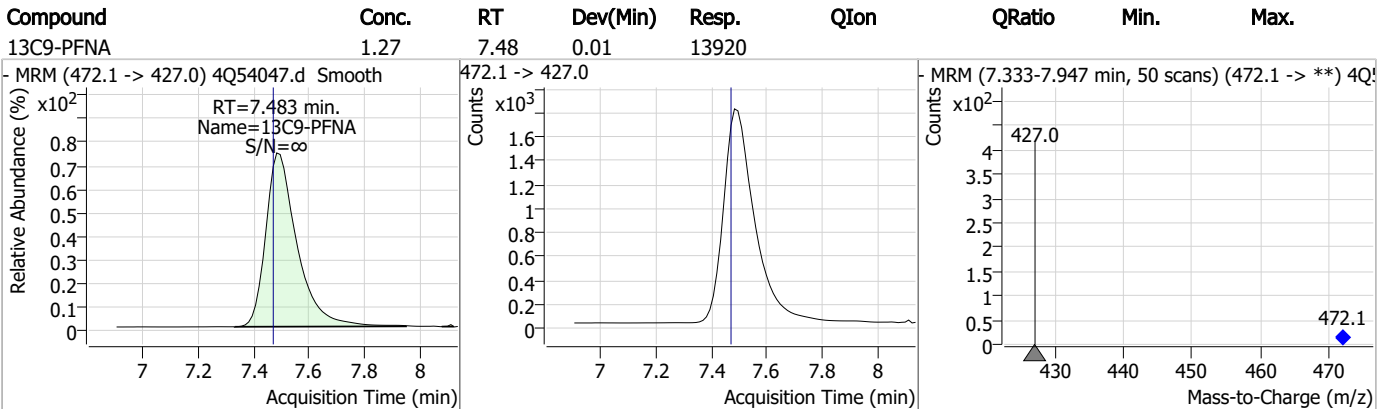
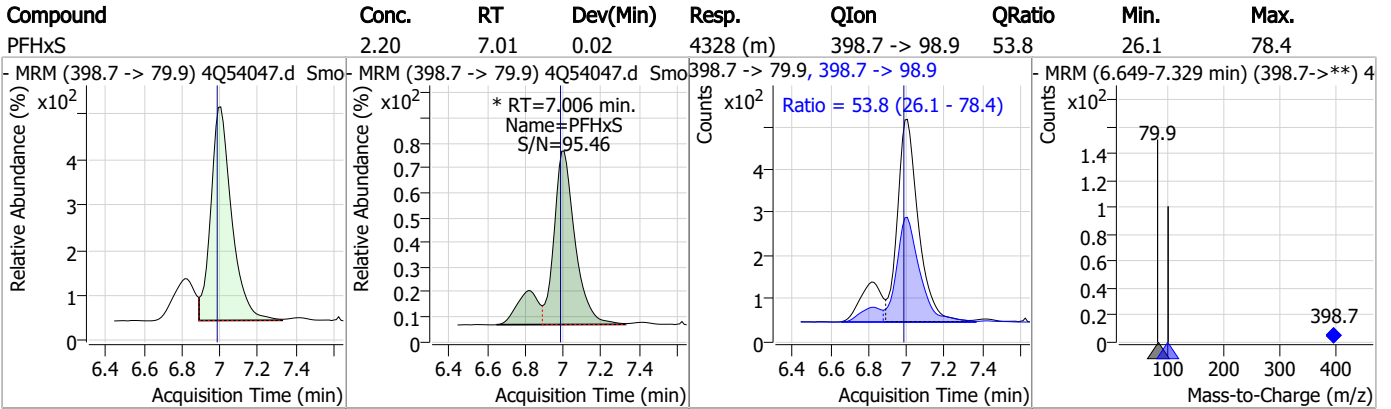
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Perfluorinated Compounds by LC/MS/MS

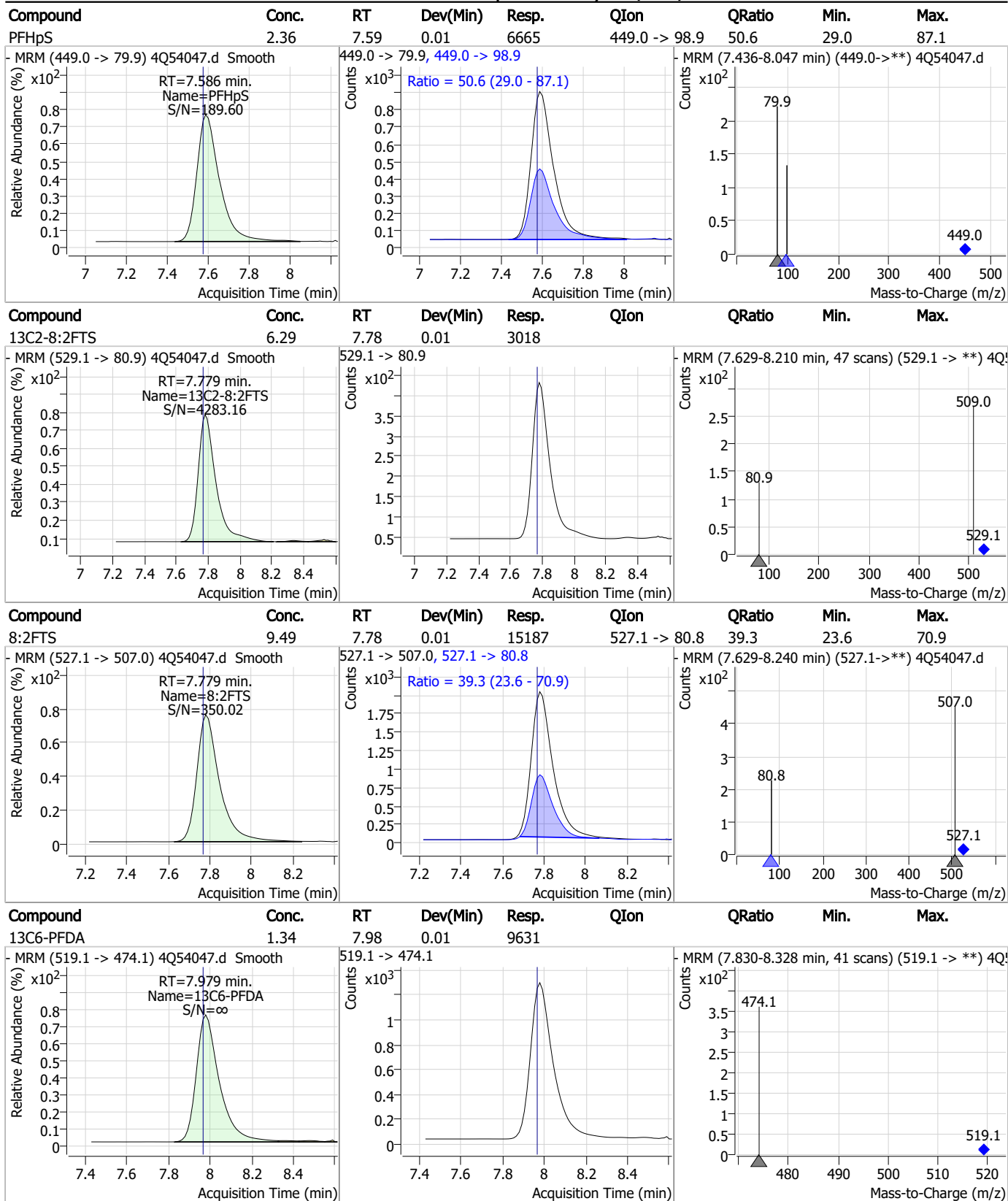


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Perfluorinated Compounds by LC/MS/MS

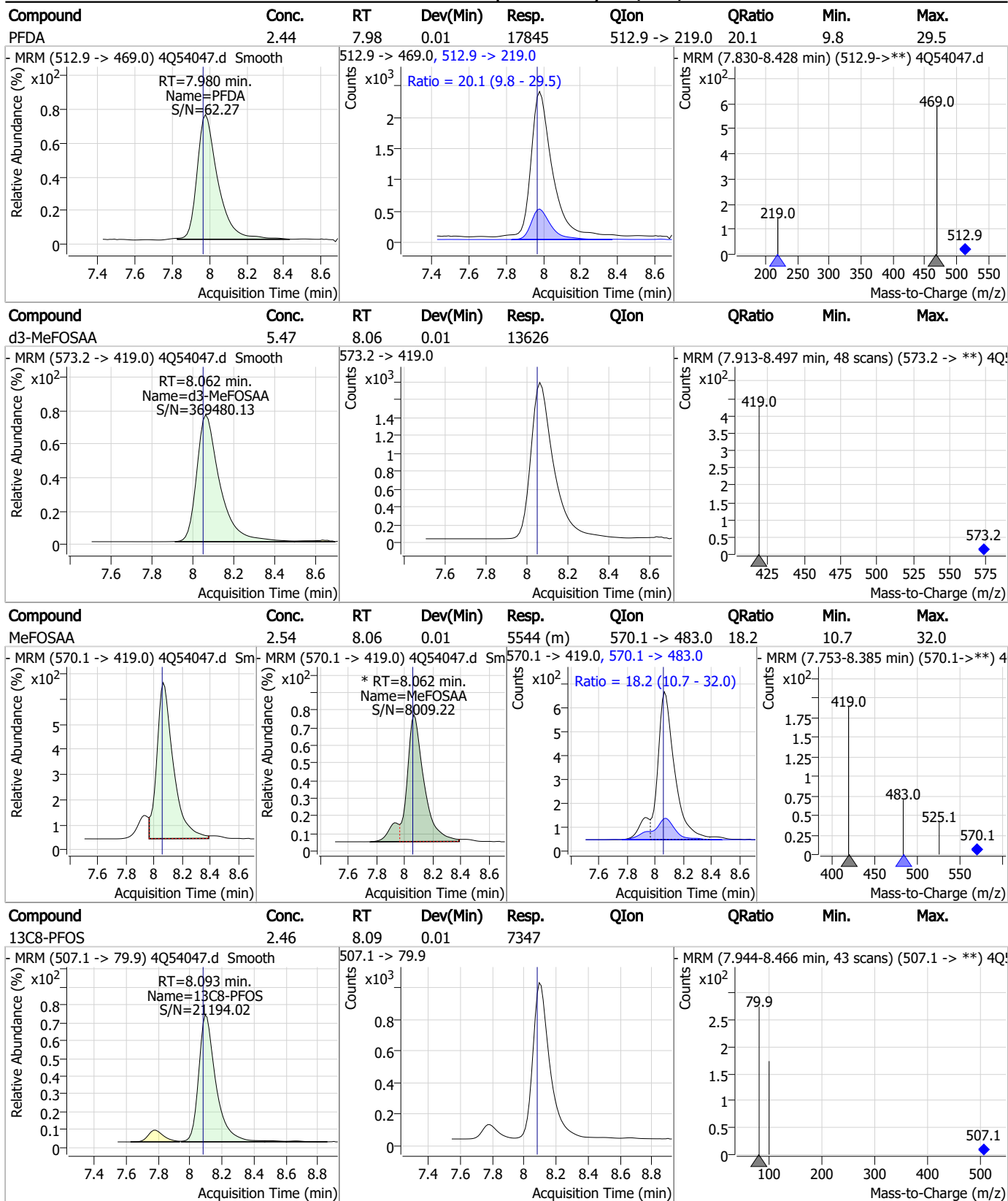


Perfluorinated Compounds by LC/MS/MS



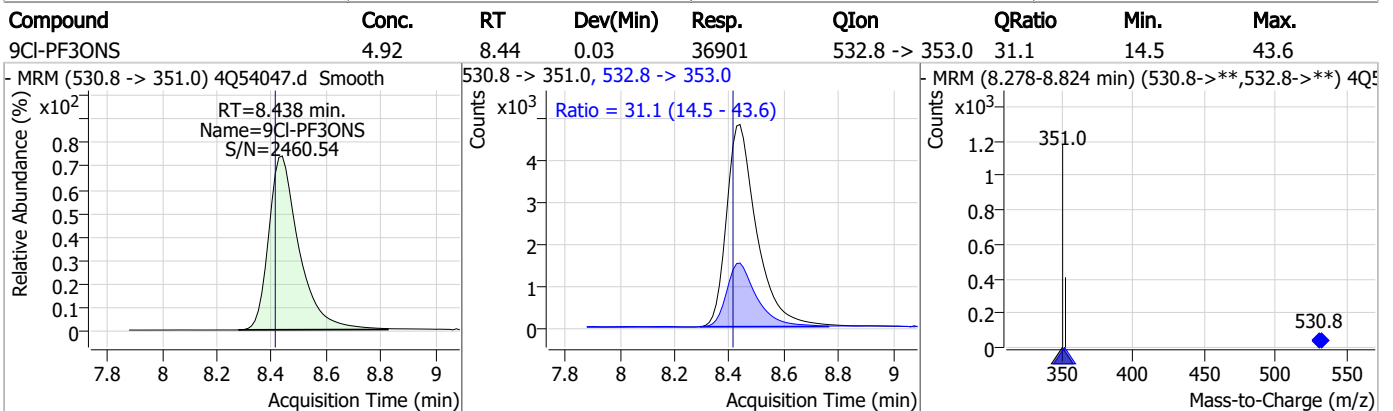
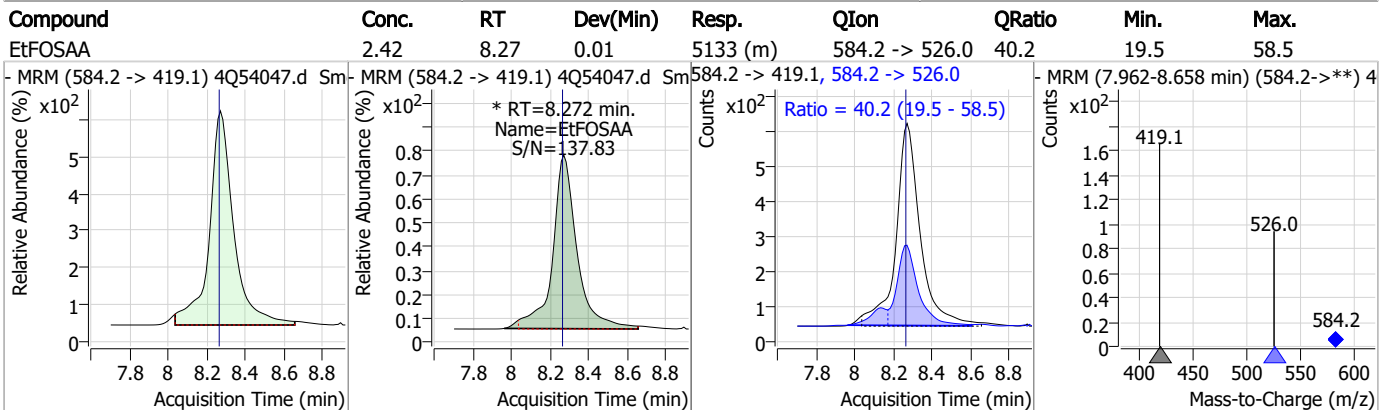
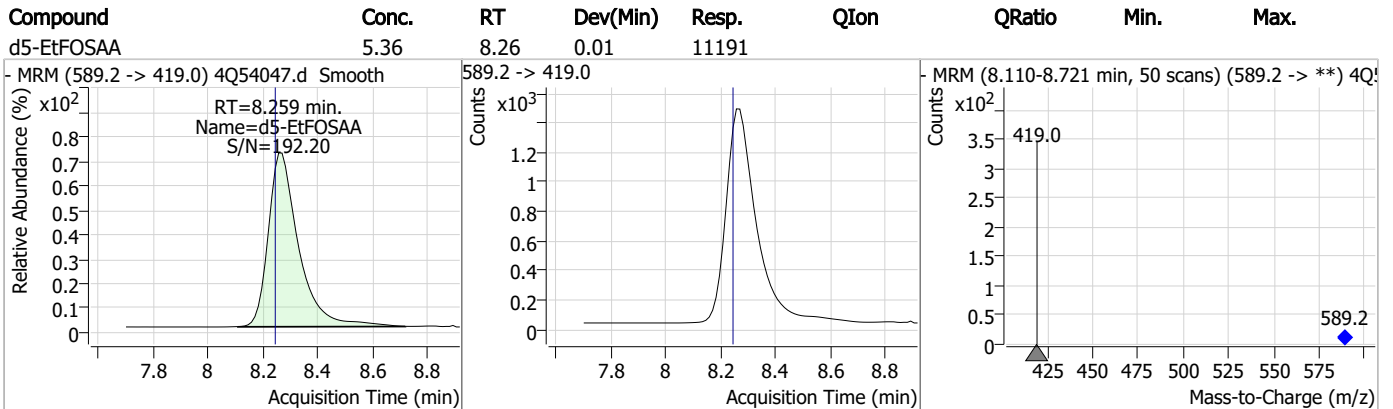
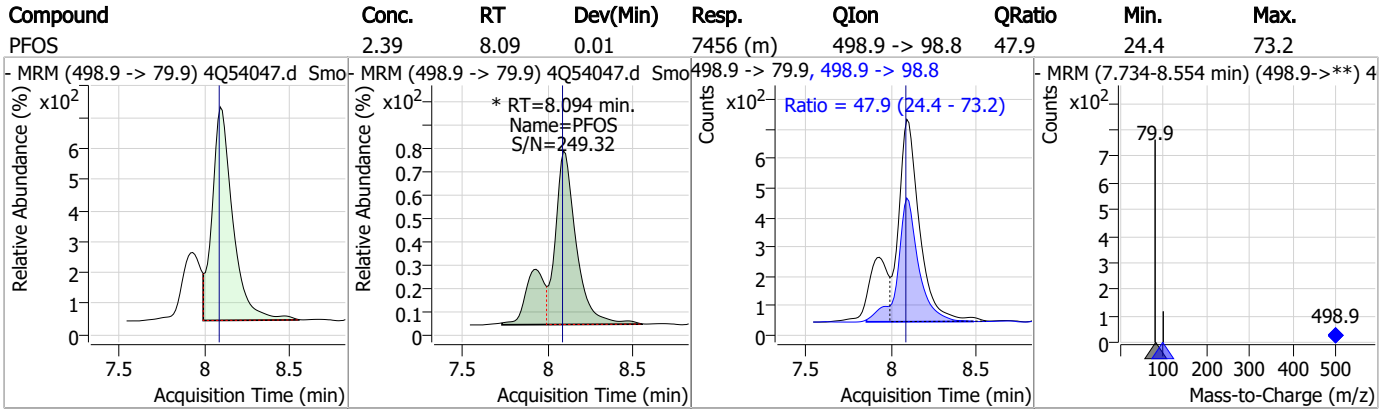
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Perfluorinated Compounds by LC/MS/MS



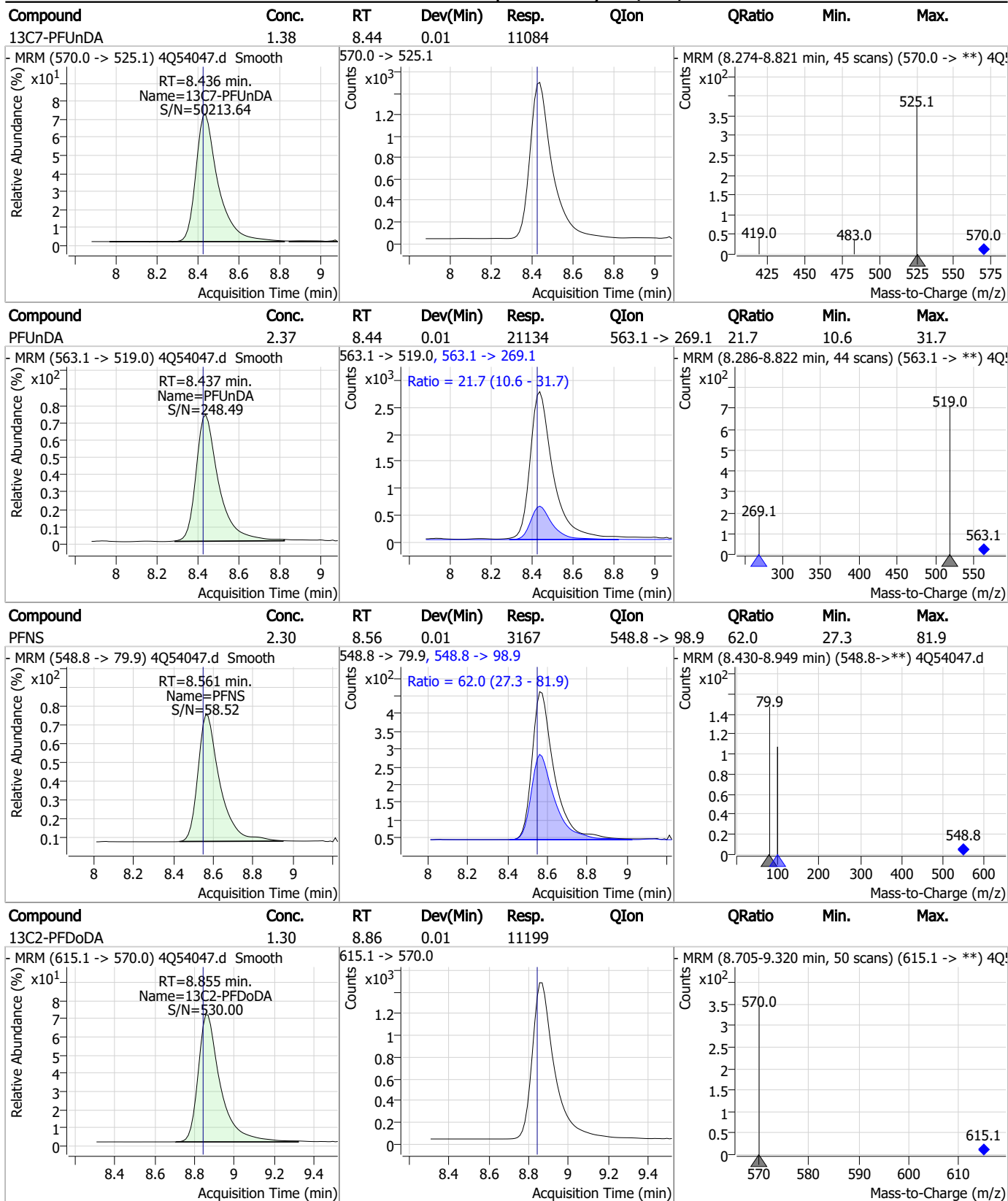
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Perfluorinated Compounds by LC/MS/MS



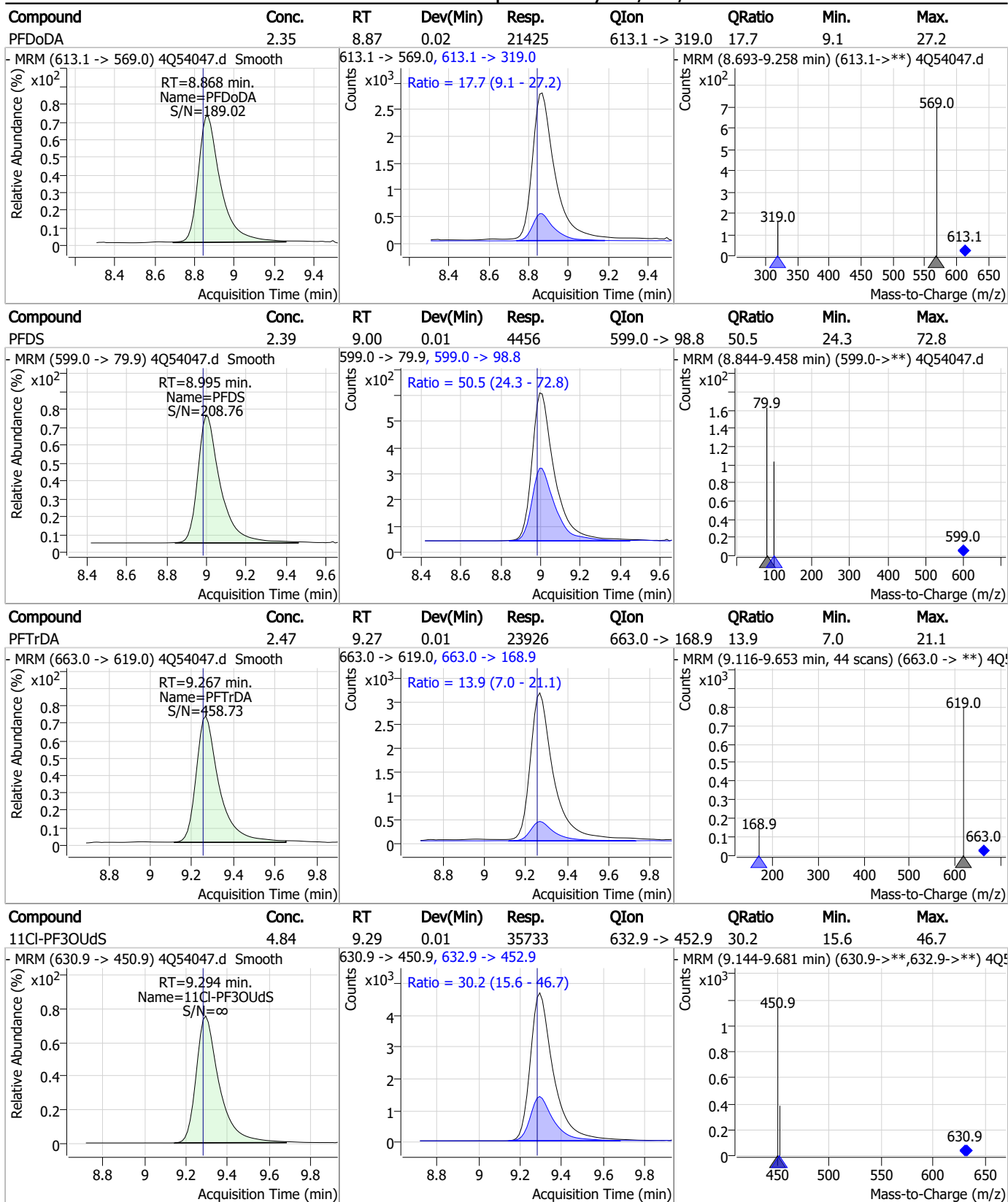
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Perfluorinated Compounds by LC/MS/MS



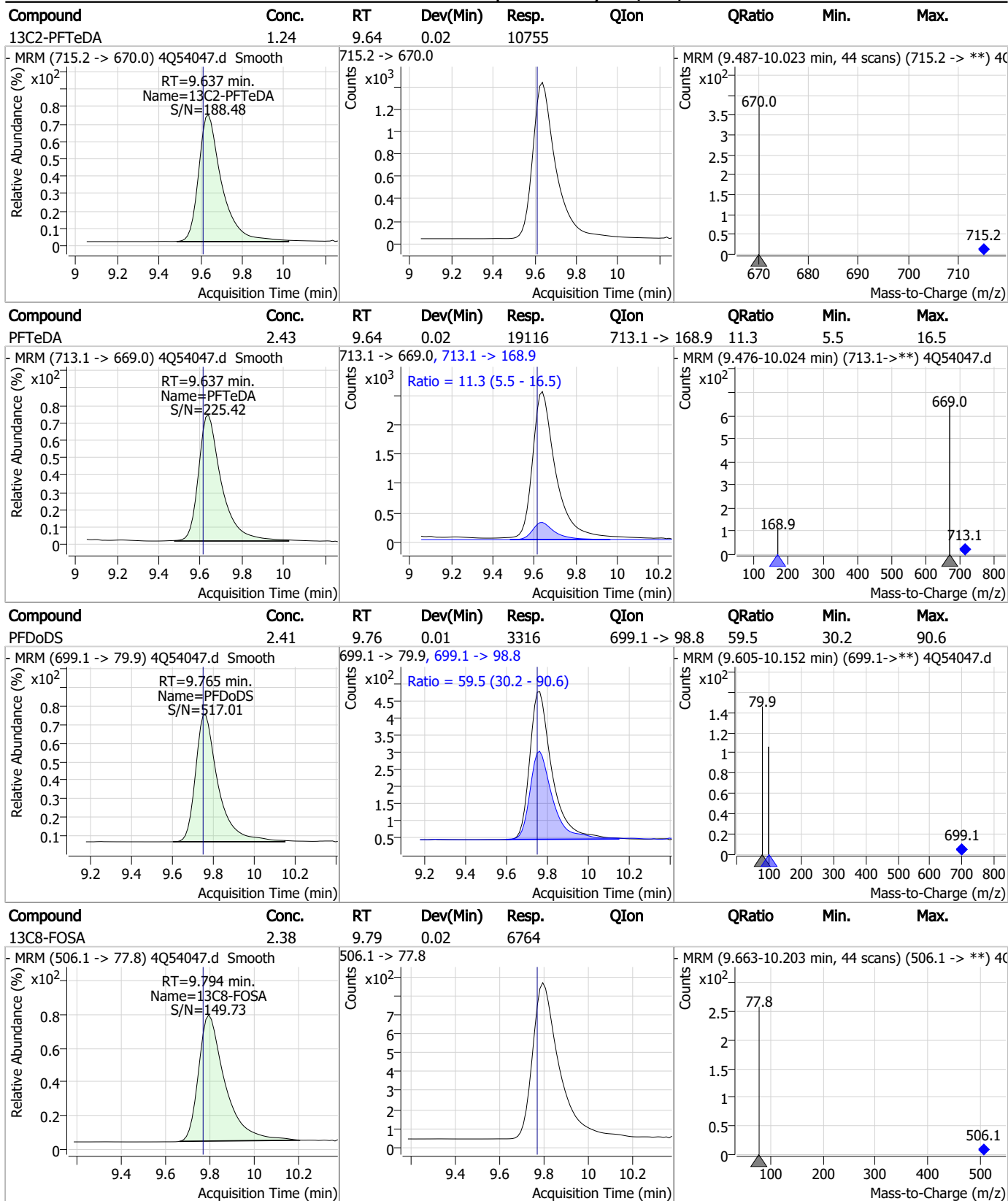
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Perfluorinated Compounds by LC/MS/MS



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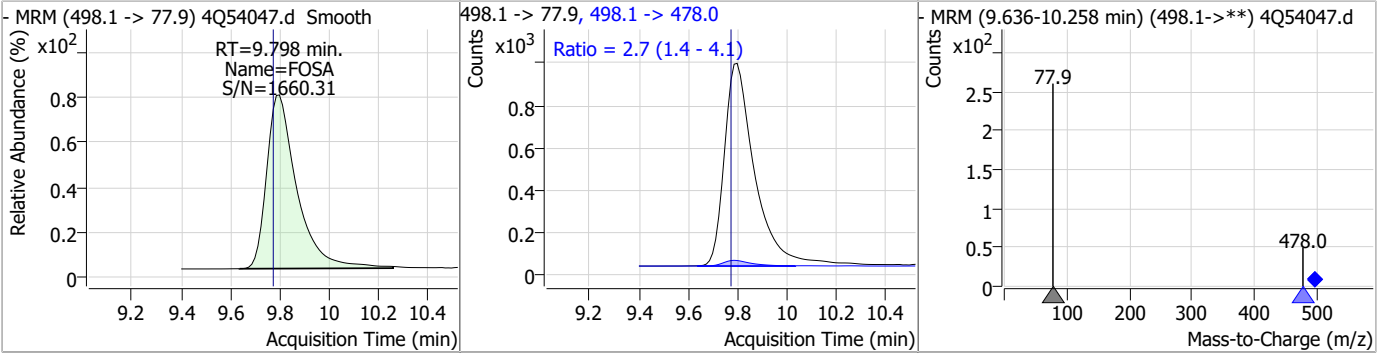
Perfluorinated Compounds by LC/MS/MS



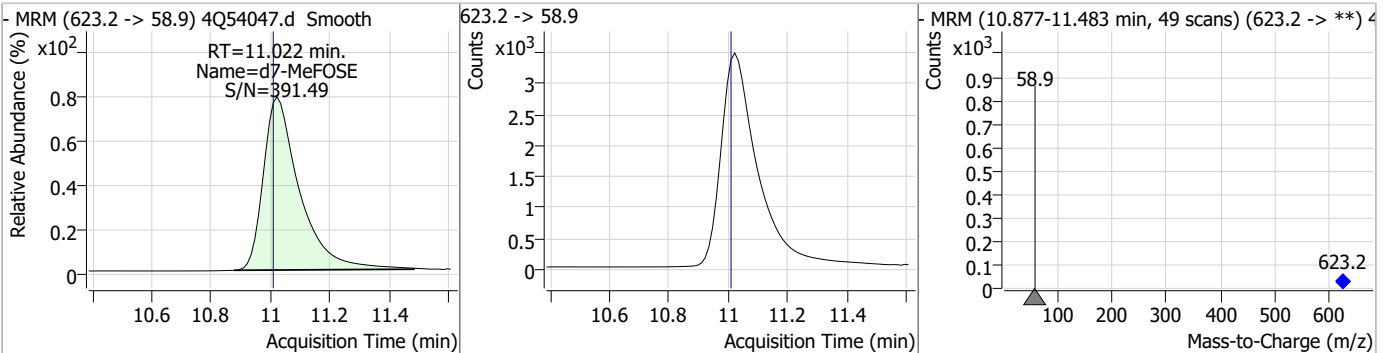
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Perfluorinated Compounds by LC/MS/MS

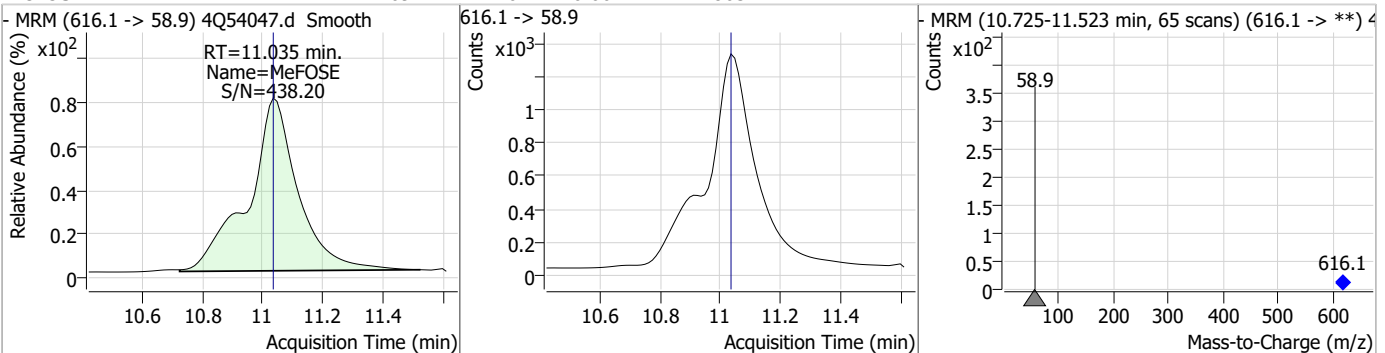
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.58	9.80	0.02	8112	498.1 -> 478.0	2.7	1.4	4.1



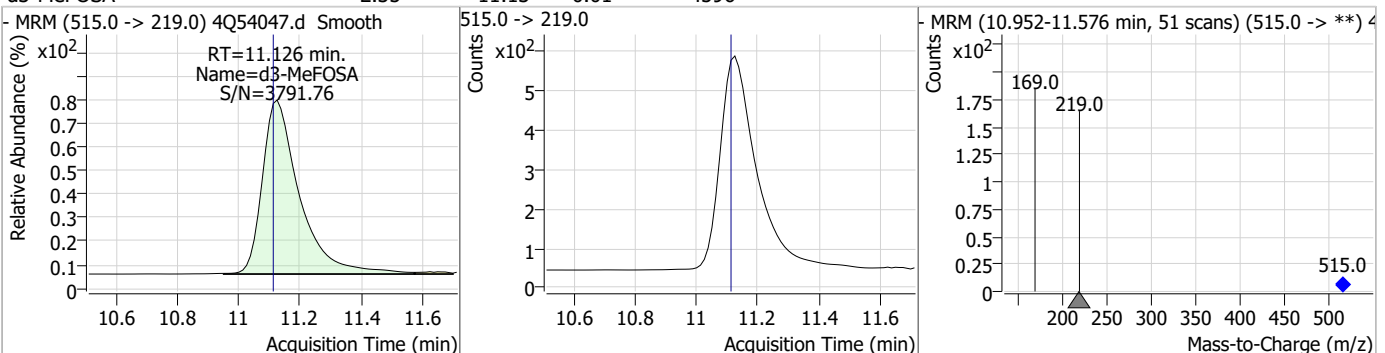
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.85	11.02	0.01	29059				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.09	11.04	0.00	14803				

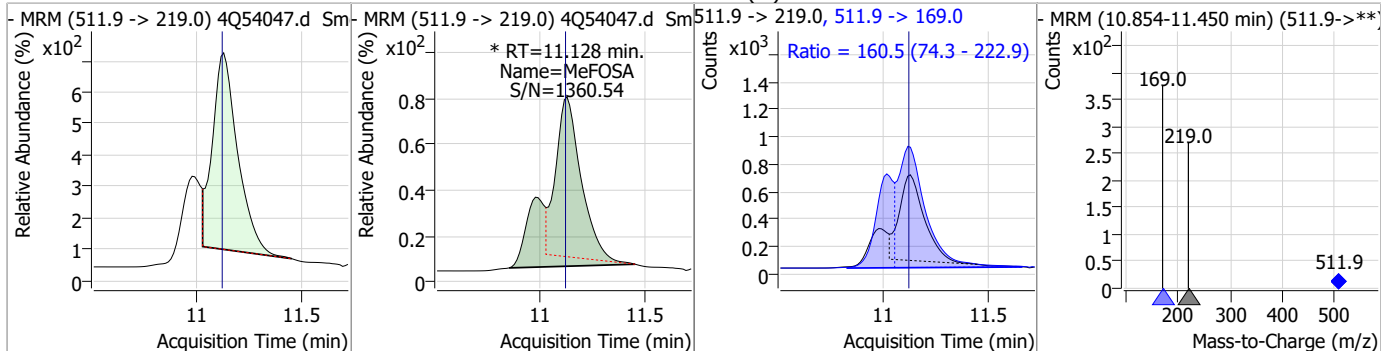


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.35	11.13	0.01	4596				

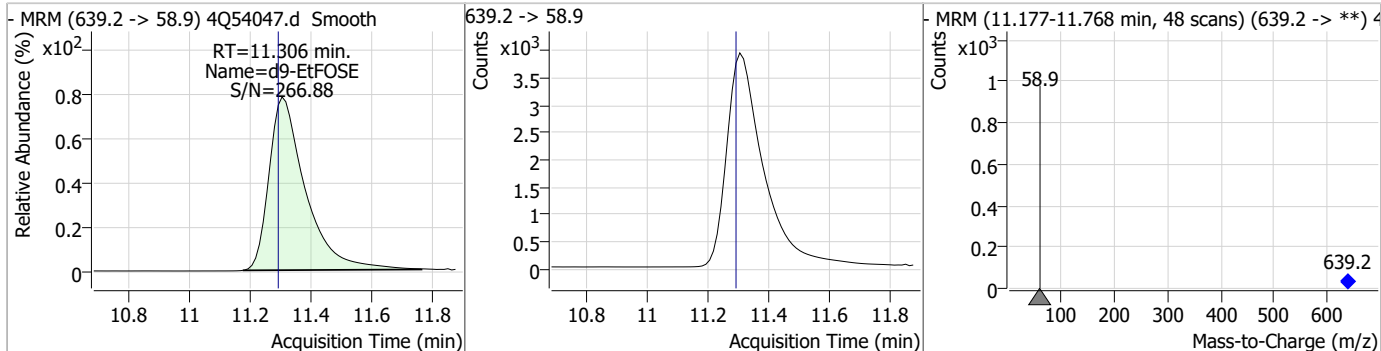


Perfluorinated Compounds by LC/MS/MS

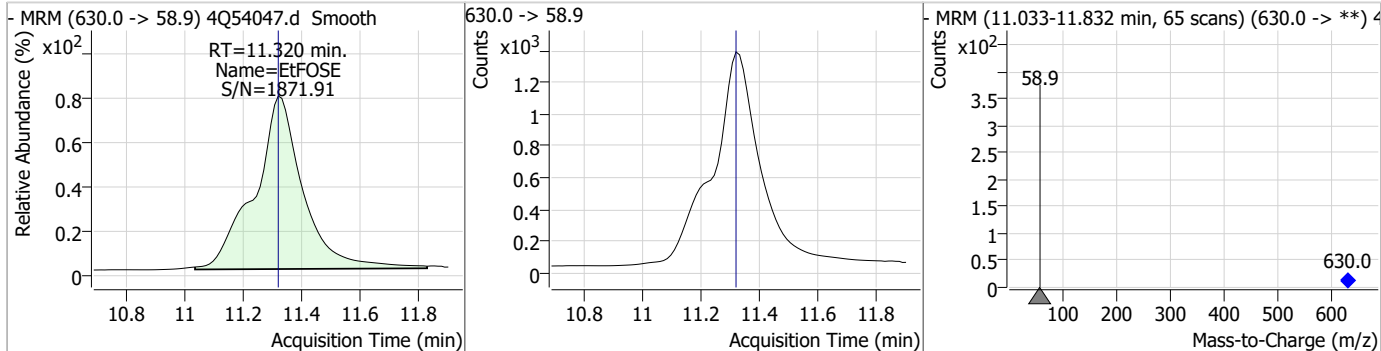
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.56	11.13	0.01	7481 (m)	511.9 -> 169.0	160.5	74.3	222.9



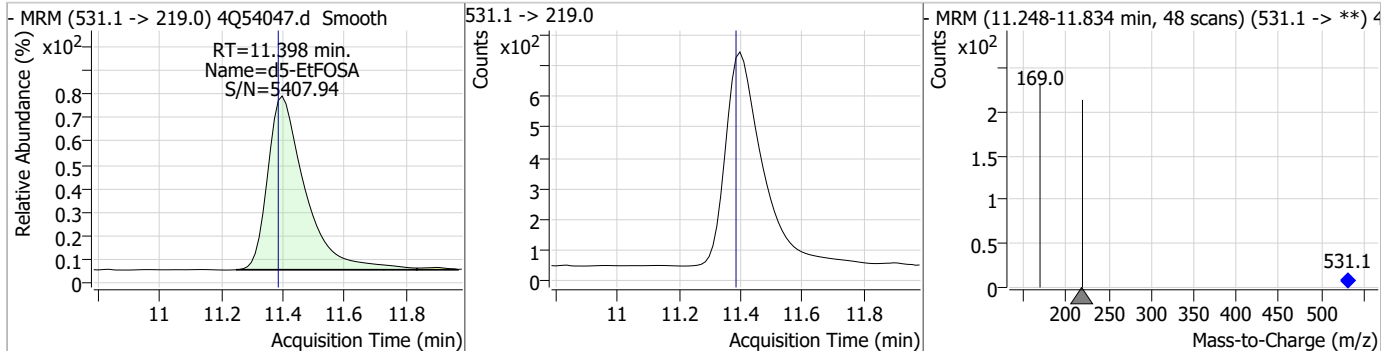
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	23.52	11.31	0.01	32611				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.70	11.32	0.00	15594				

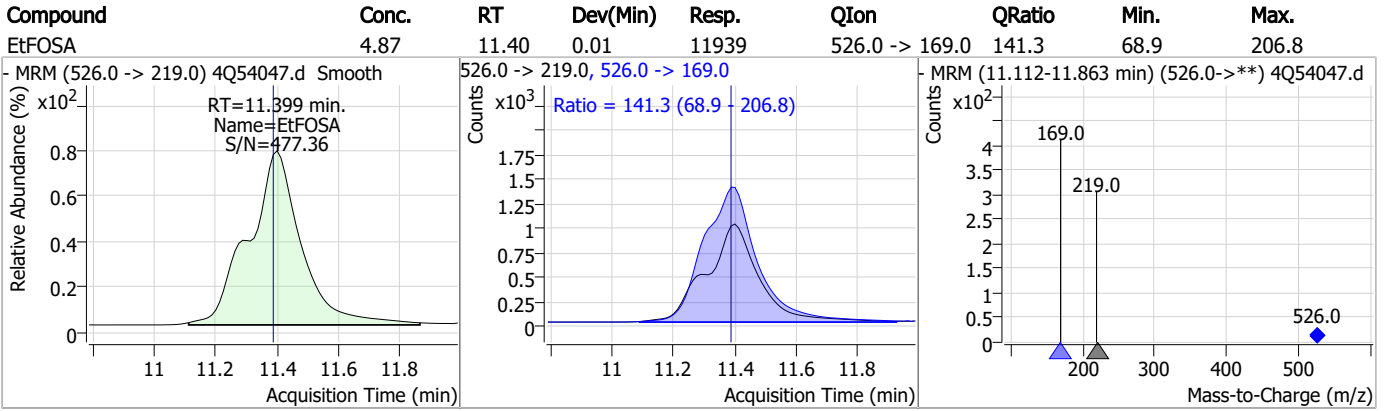


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.48	11.40	0.01	5867				



7.7.30
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Perfluorinated Compounds by LC/MS/MS



7.7.30
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Manual Integration Approval Summary

Sample Number: S4Q788-CC788 Method: EPA DRAFT 1633
Lab FileID: 4Q54047.D Analyst approved: 11/19/23 09:20 Natasha Gumtie
Injection Time: 11/17/23 21:58 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.01	Split peak
MeFOSAA	2355-31-9		8.06	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.09	Split peak
EtFOSAA	2991-50-6		8.27	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.30.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q54059.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/18/2023 12:55:28 AM
 Sample Name : cc788-4
 Vial : P1-A5
 DA Method File : 1633_111723_S4Q788.quantmethod.xml
 Batch Name : s4q788.batch.bin
 Sample Information : OP99838,S4Q788,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.599	216.8 -> 171.9	86059	10.00 µg/L	0.000
M5-PFPeA	4.087	268.3 -> 223.0	37149	5.00 µg/L	0.000
M5-PFHxA	5.272	318.0 -> 273.0	28077	2.50 µg/L	0.012
M4-PFHpA	6.230	367.1 -> 322.0	26659	2.50 µg/L	0.012
M8-PFOA	6.938	421.1 -> 376.0	30303	2.50 µg/L	0.012
M9-PFNA	7.483	472.1 -> 427.0	13682	1.25 µg/L	0.012
M6-PFDA	7.967	519.1 -> 474.1	9395	1.25 µg/L	0.000
M7-PFUnDA	8.436	570.0 -> 525.1	10933	1.25 µg/L	0.012
M2-PFDoDA	8.855	615.1 -> 570.0	11093	1.25 µg/L	0.012
M2-PFTeDA	9.637	715.2 -> 670.0	11167	1.25 µg/L	0.025
M8-FOSA	9.794	506.1 -> 77.8	7006	2.50 µg/L	0.025
M3-PFBS	5.128	302.1 -> 79.9	8229	2.50 µg/L	0.012
M3-PFHxS	6.992	402.1 -> 79.9	6845	2.50 µg/L	0.012
M8-PFOS	8.093	507.1 -> 79.9	7057	2.50 µg/L	0.012
M2-4:2FTS	4.971	329.1 -> 80.9	1003	5.00 µg/L	0.000
M2-6:2FTS	6.711	429.1 -> 80.9	2072	5.00 µg/L	0.012
M2-8:2FTS	7.779	529.1 -> 80.9	2945	5.00 µg/L	0.012
M3-MeFOSAA	8.062	573.2 -> 419.0	14295	5.00 µg/L	0.012
M3-HFPO-DA	5.627	286.9 -> 168.9	24269	10.00 µg/L	0.012
M5-EtFOSAA	8.259	589.2 -> 419.0	12283	5.00 µg/L	0.012
M7-MeFOSE	11.022	623.2 -> 58.9	29987	25.00 µg/L	0.012
M9-EtFOSE	11.306	639.2 -> 58.9	34560	25.00 µg/L	0.012
M5-EtFOSA	11.397	531.1 -> 219.0	5869	2.50 µg/L	0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4724	2.50 µg/L	0.012
13C4-PFOS	8.093	502.8 -> 79.9	6228	2.50 µg/L	0.012
13C3-PFBA	2.591	216.0 -> 172.0	41774	5.00 µg/L	0.000
18O2-PFHxS	6.991	403.0 -> 83.9	4254	2.50 µg/L	0.012
13C4-PFOA	6.939	417.1 -> 372.0	34535	2.50 µg/L	0.012
13C2-PFDA	7.980	515.1 -> 470.1	10110	1.25 µg/L	0.012
13C5-PFNA	7.484	468.0 -> 423.0	12900	1.25 µg/L	0.012
13C2-PFHxA	5.273	315.1 -> 270.0	29167	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	4.971	329.1 -> 80.9	1003	6.18 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.5%		
13C2-6:2FTS	6.711	429.1 -> 80.9	2072	6.01 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 120.3%		
13C2-8:2FTS	7.779	529.1 -> 80.9	2945	6.21 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 124.1%		
13C2-PFDoDA	8.855	615.1 -> 570.0	11093	1.23 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.1%		
13C2-PFTeDA	9.637	715.2 -> 670.0	11167	1.23 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C3-PFBS	5.128	302.1 -> 79.9	8229	2.56 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C3-PFHxS	6.992	402.1 -> 79.9	6845	2.56 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.4%		
13C4-PFBA	2.599	216.8 -> 171.9	86059	9.98 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C4-PFHpA	6.230	367.1 -> 322.0	26659	2.58 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.2%		
13C5-PFHxA	5.272	318.0 -> 273.0	28077	2.60 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.9%		
13C5-PFPeA	4.087	268.3 -> 223.0	37149	5.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C6-PFDA	7.967	519.1 -> 474.1	9395	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C7-PFUnDA	8.436	570.0 -> 525.1	10933	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.7%		
13C8-FOSA	9.794	506.1 -> 77.8	7006	2.41 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C8-PFOA	6.938	421.1 -> 376.0	30303	2.40 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.1%		
13C8-PFOS	8.093	507.1 -> 79.9	7057	2.31 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.5%		
13C9-PFNA	7.483	472.1 -> 427.0	13682	1.31 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.7%		
d3-MeFOSAA	8.062	573.2 -> 419.0	14295	5.60 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.1%		
13C3-HFPO-DA	5.627	286.9 -> 168.9	24269	9.97 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.7%		
d3-MeFOSA	11.126	515.0 -> 219.0	4724	2.36 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.5%		
d5-EtFOSAA	8.259	589.2 -> 419.0	12283	5.74 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.8%		
d7-MeFOSE	11.022	623.2 -> 58.9	29987	24.04 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 96.1%		
d9-EtFOSE	11.306	639.2 -> 58.9	34560	24.34 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 97.4%		
d5-EtFOSA	11.397	531.1 -> 219.0	5869	2.42 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.9%		
Target Compounds					QValue
4:2FTS	4.972	327.1 -> 307.0	18513	10.07 µg/L	98
		327.1 -> 80.9	8160		
6:2FTS	6.712	427.1 -> 407.0	22362	10.38 µg/L	97
		427.1 -> 80.9	8532		
8:2FTS	7.779	527.1 -> 507.0	15948	10.21 µg/L	94
		527.1 -> 80.8	6850		
EtFOSAA	8.272	584.2 -> 419.1	5142	2.21 µg/L	95
		584.2 -> 526.0	1844		
FOSA	9.785	498.1 -> 77.9	8352	2.57 µg/L	99
		498.1 -> 478.0	207		
MeFOSAA	8.062	570.1 -> 419.0	5536	2.42 µg/L	98
		570.1 -> 483.0	1239	m	
PFBA	2.595	212.8 -> 168.9	28998	9.79 µg/L	100
PFBS	5.129	298.7 -> 79.9	6011	2.21 µg/L	98
		298.7 -> 98.8	2223		
PFDA	7.980	512.9 -> 469.0	17582	2.46 µg/L	97
		512.9 -> 219.0	3736		
PFDODA	8.856	613.1 -> 569.0	21321	2.36 µg/L	99
		613.1 -> 319.0	3774		
PFDS	8.995	599.0 -> 79.9	4377	2.44 µg/L	91

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.230	599.0 -> 98.8	2391	2.47	µg/L	99
		363.1 -> 319.0	39812			
PFHpS	7.586	363.1 -> 169.0	7295	2.28	µg/L	99
		449.0 -> 79.9	6188			
PFHxA	5.275	449.0 -> 98.9	3522	2.41	µg/L	99
		313.0 -> 269.0	22658			
PFHxS	6.993	313.0 -> 118.9	748	2.22	µg/L	98
		398.7 -> 79.9	4343			
PFNA	7.484	398.7 -> 98.9	2326	2.40	µg/L	100
		463.0 -> 419.0	20279			
PFNS	8.561	463.0 -> 219.0	5167	2.30	µg/L	99
		548.8 -> 79.9	3036			
PFOA	6.940	548.8 -> 98.9	1636	2.61	µg/L	99
		413.0 -> 369.0	35203			
PFOS	8.094	413.0 -> 169.0	7229	2.40	µg/L	99
		498.9 -> 79.9	7169			
PFPeA	4.089	498.9 -> 98.8	3460	5.06	µg/L	100
		263.0 -> 219.0	37354			
PFPeS	6.220	349.1 -> 79.9	4863	2.22	µg/L	96
		349.1 -> 98.9	2281			
PFTeDA	9.625	713.1 -> 669.0	19560	2.39	µg/L	100
		713.1 -> 168.9	2159			
PFTrDA	9.267	663.0 -> 619.0	23784	2.48	µg/L	99
		663.0 -> 168.9	3416			
PFUnDA	8.437	563.1 -> 519.0	21940	2.49	µg/L	97
		563.1 -> 269.1	4373			
11CI-PF3OUdS	9.294	630.9 -> 450.9	35764	4.77	µg/L	98
		632.9 -> 452.9	10778			
9CI-PF3ONS	8.426	530.8 -> 351.0	37076	4.88	µg/L	94
		532.8 -> 353.0	11993			
ADONA	6.506	376.9 -> 250.9	96417	5.12	µg/L	99
		376.9 -> 84.8	23583			
HFPO-DA	5.628	284.9 -> 168.9	11944	4.96	µg/L	98
		284.9 -> 184.9	1196			
3:3FTCA	3.536	241.0 -> 177.0	5474	11.82	µg/L	99
		241.0 -> 117.0	481			
5:3FTCA	5.955	341.0 -> 237.1	99338	60.98	µg/L	100
		341.0 -> 217.0	71043			
7:3FTCA	7.512	441.0 -> 316.9	44962	61.27	µg/L	96
		441.0 -> 336.9	108624			
EtFOSA	11.399	526.0 -> 219.0	12014	4.89	µg/L	98
		526.0 -> 169.0	16343			
EtFOSE	11.320	630.0 -> 58.9	15901	12.22	µg/L	100
		511.9 -> 219.0	8229			
MeFOSA	11.115	511.9 -> 169.0	12248	4.88	µg/L	100
		616.1 -> 58.9	15414			
MeFOSE	11.035	699.1 -> 79.9	3322	12.20	µg/L	100
		699.1 -> 98.8	1991			
PFDoDS	9.764	295.0 -> 201.0	3448	2.52	µg/L	99
		295.0 -> 84.9	867			
NFDHA	5.154	279.0 -> 85.1	20541	4.27	µg/L	98
		229.0 -> 84.9	23353			
PFMBA	4.504	314.8 -> 134.9	31939	5.05	µg/L	100
		314.8 -> 82.9	1171			
PFMPA	3.240			5.01	µg/L	100
PFEESA	5.659			4.32	µg/L	99

= Qualifier out of range, m = manually integrated, + = Area summed

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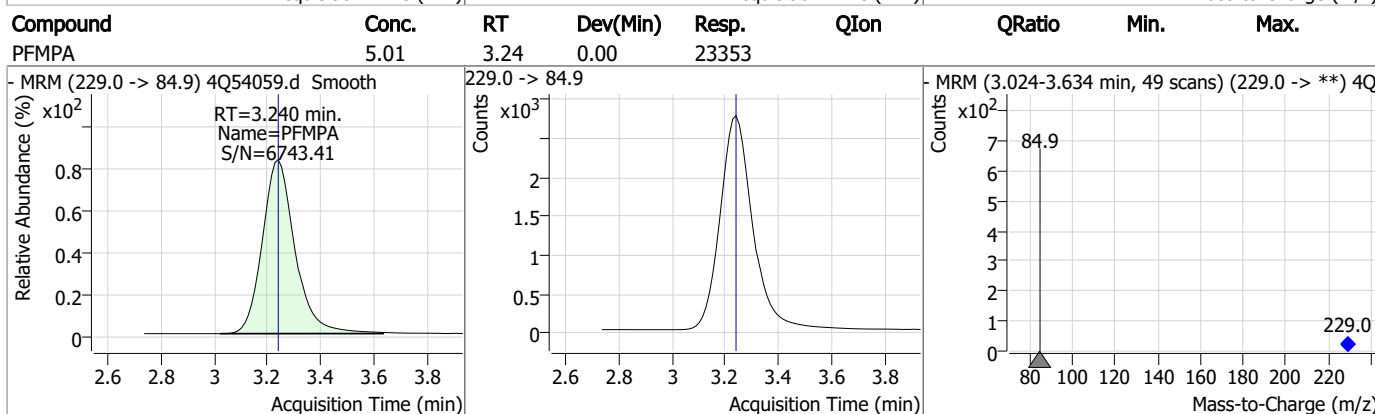
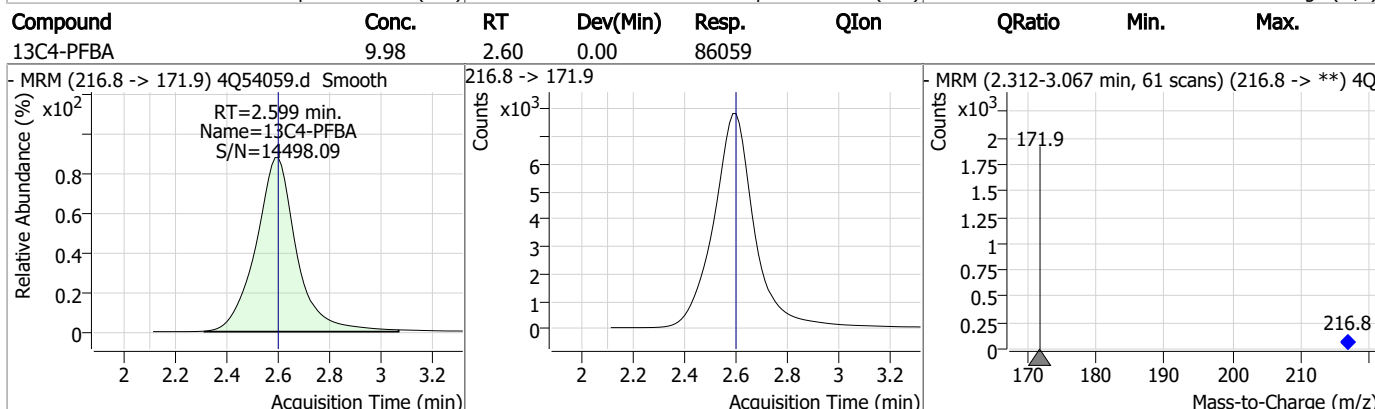
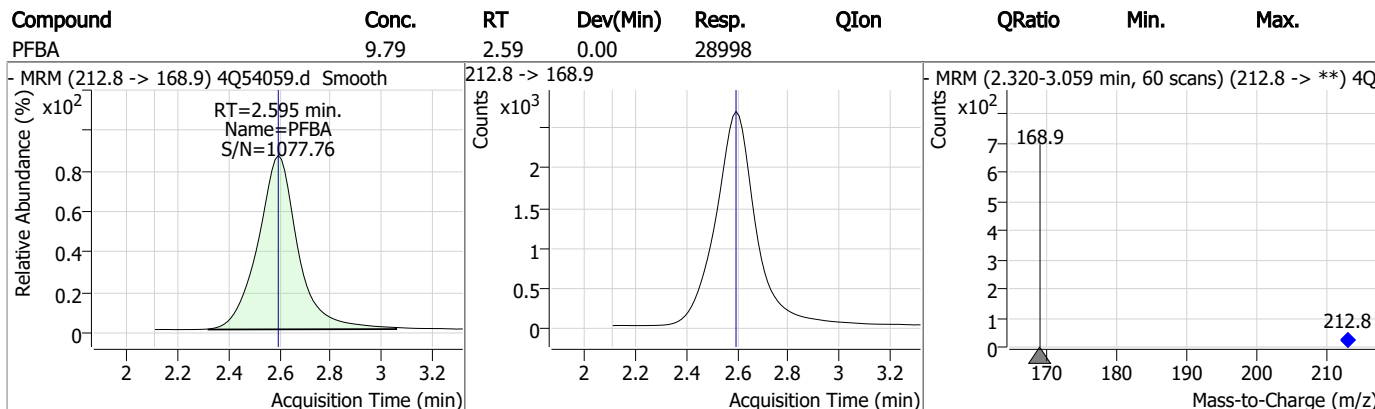
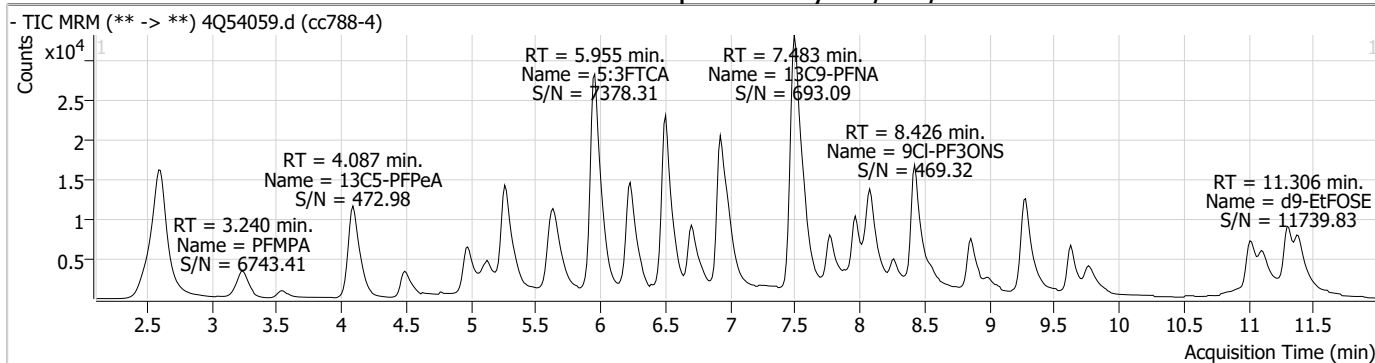
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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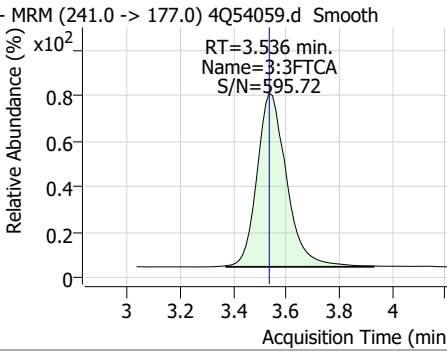
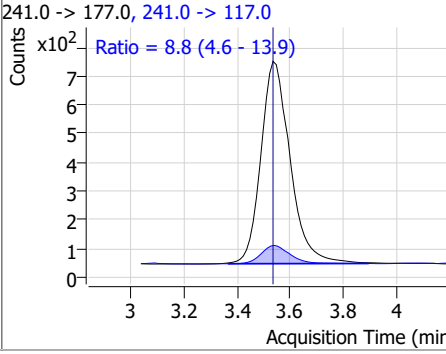
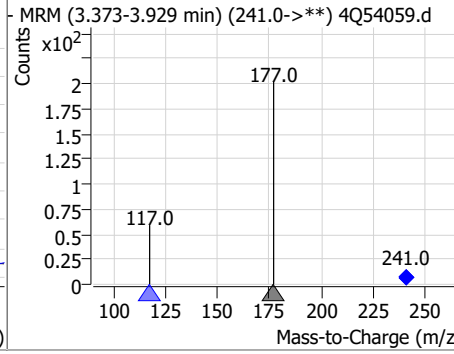
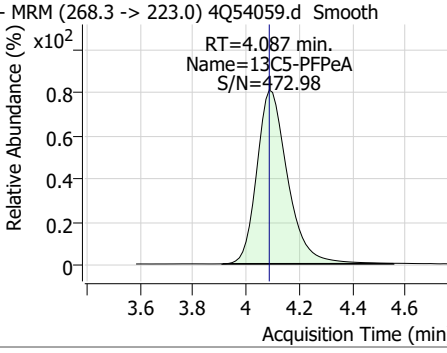
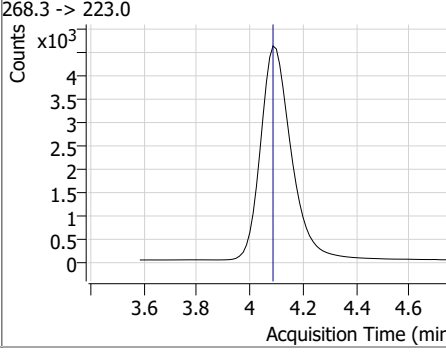
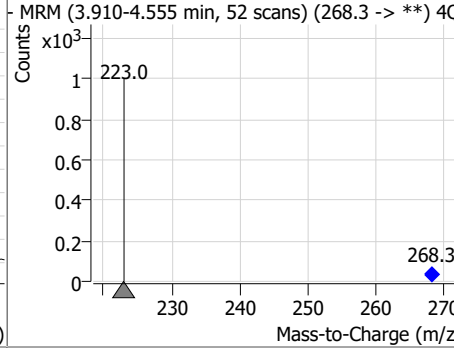
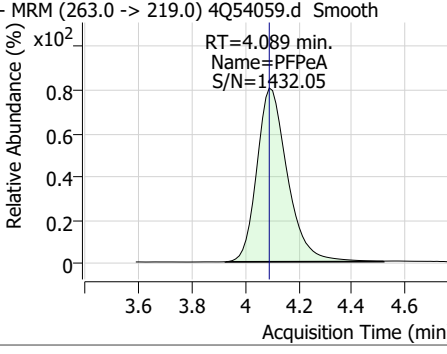
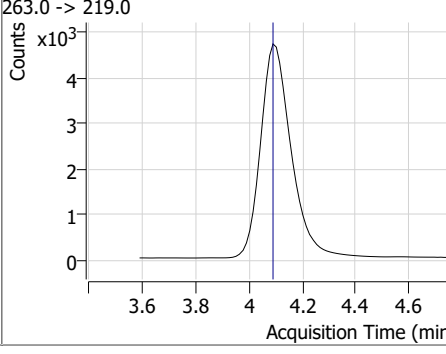
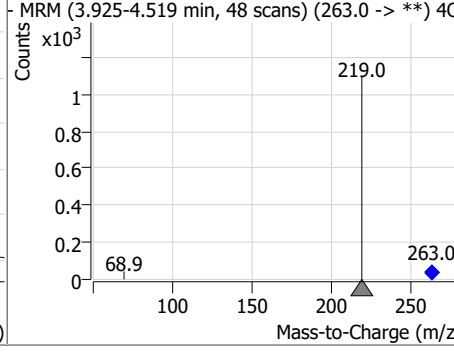
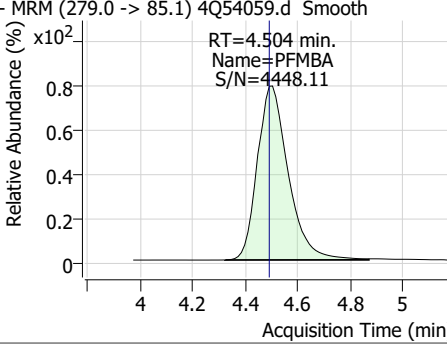
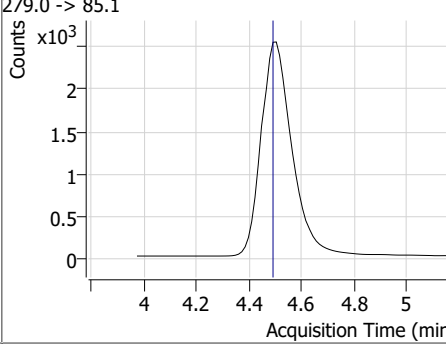
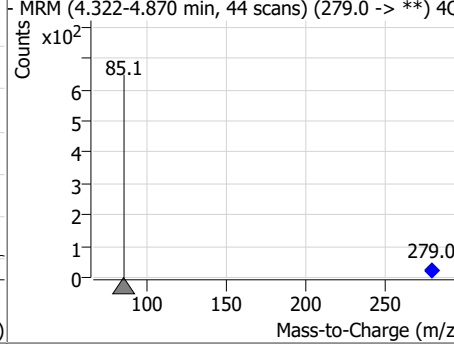
7.7.31

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Perfluorinated Compounds by LC/MS/MS

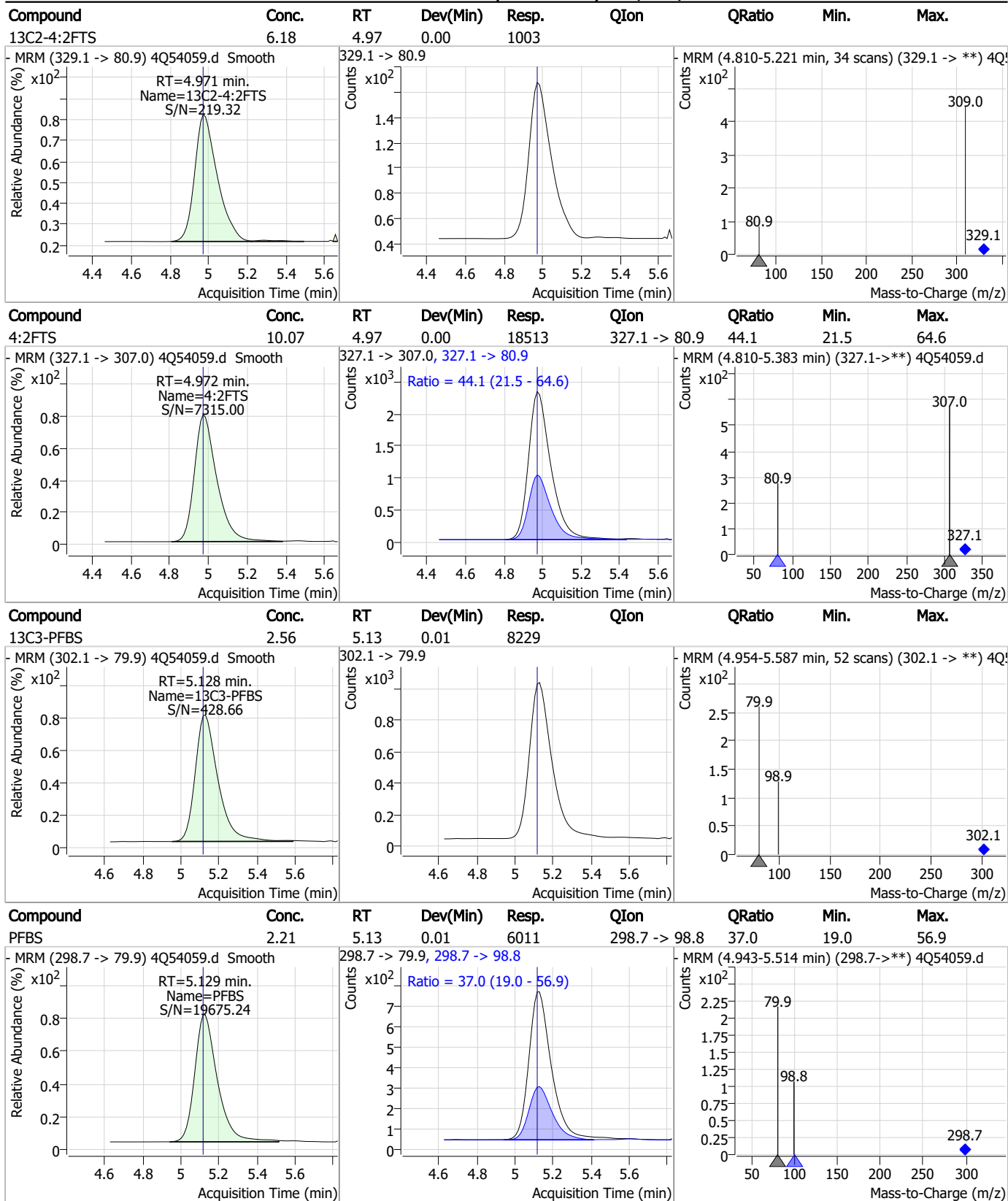


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	11.82	3.54	0.00	5474	241.0 -> 117.0	8.8	4.6	13.9
								
13C5-PFPeA	5.07	4.09	0.00	37149	241.0 -> 117.0	8.8	4.6	13.9
								
PFPeA	5.06	4.09	0.00	37354	263.0 -> 219.0	8.8	4.6	13.9
								
PFMBA	5.05	4.50	0.01	20541	279.0 -> 85.1	8.8	4.6	13.9
								

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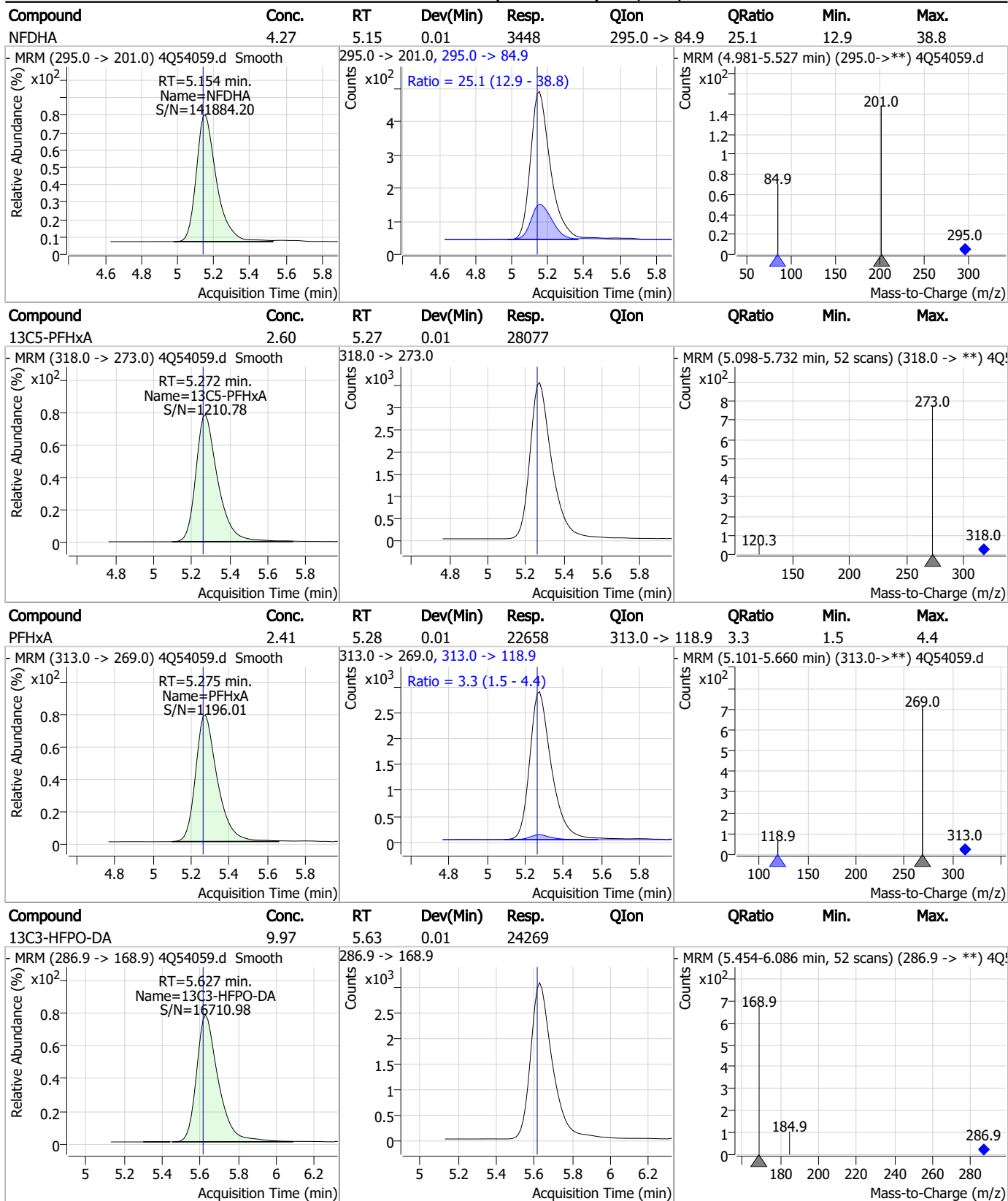
Perfluorinated Compounds by LC/MS/MS



7.7.31

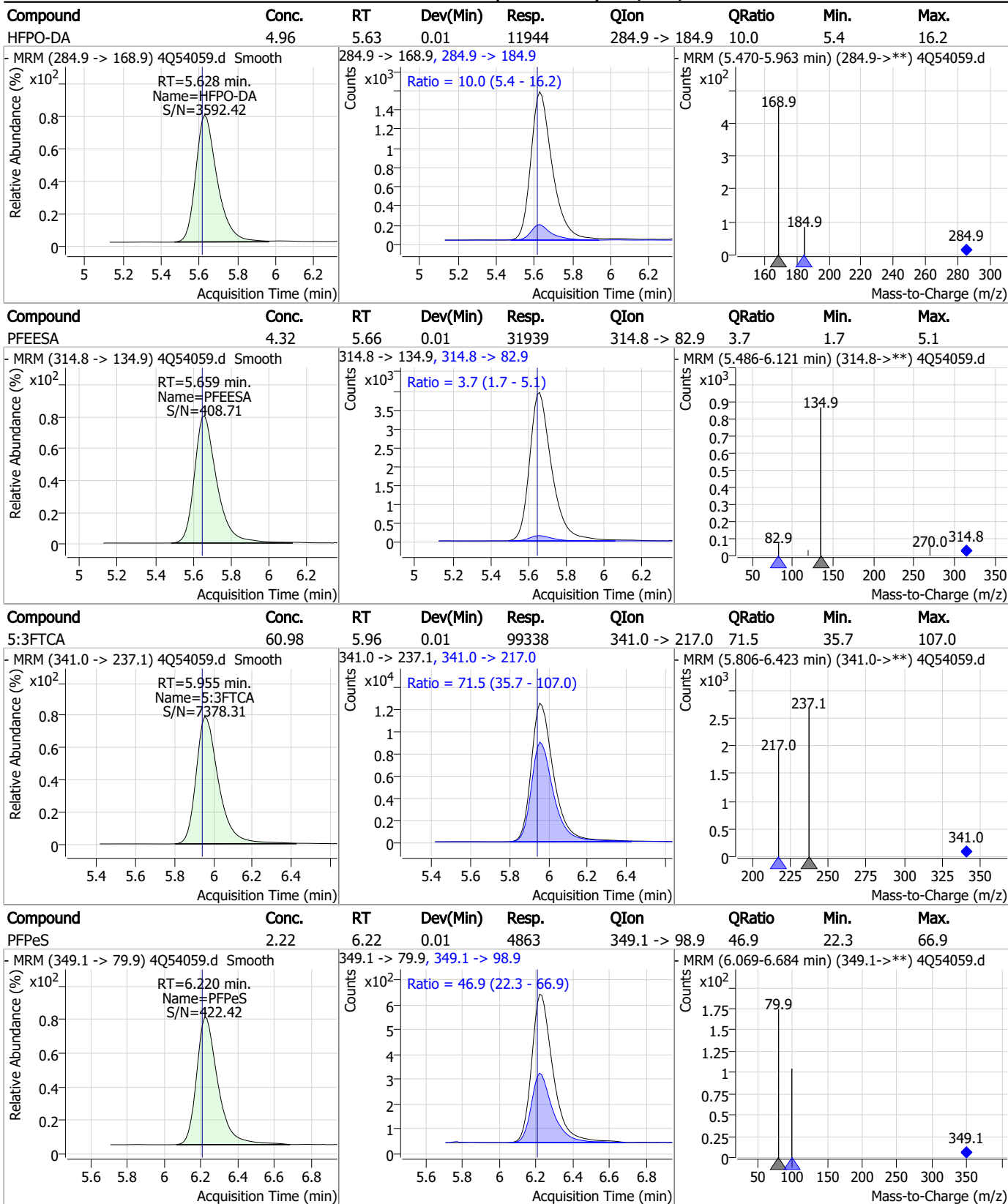
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Perfluorinated Compounds by LC/MS/MS



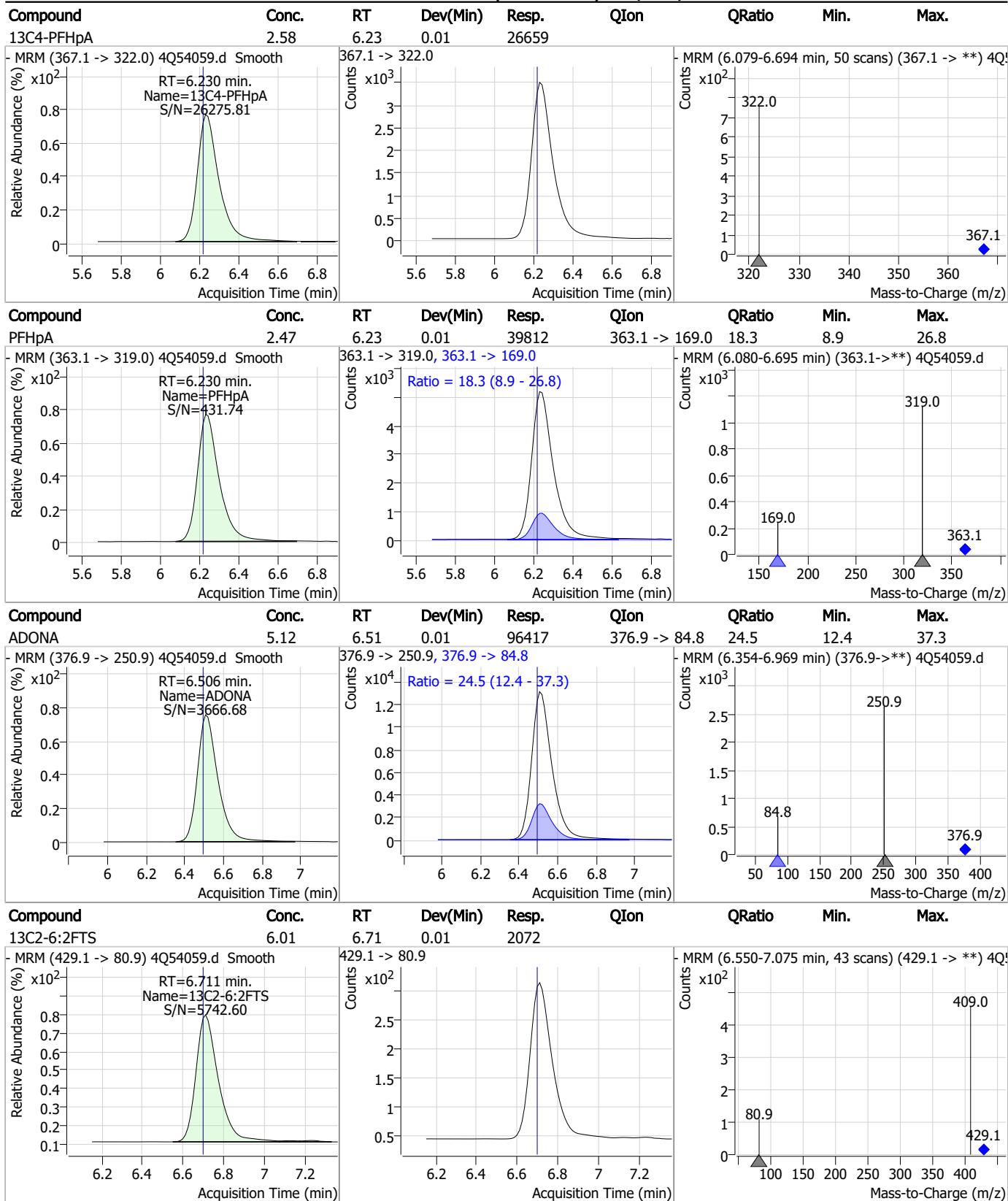
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Perfluorinated Compounds by LC/MS/MS



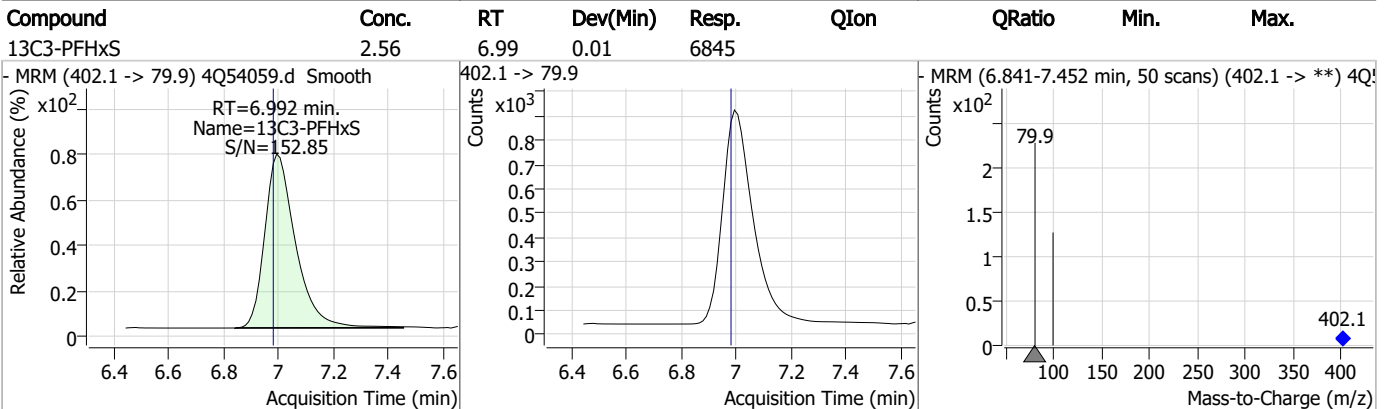
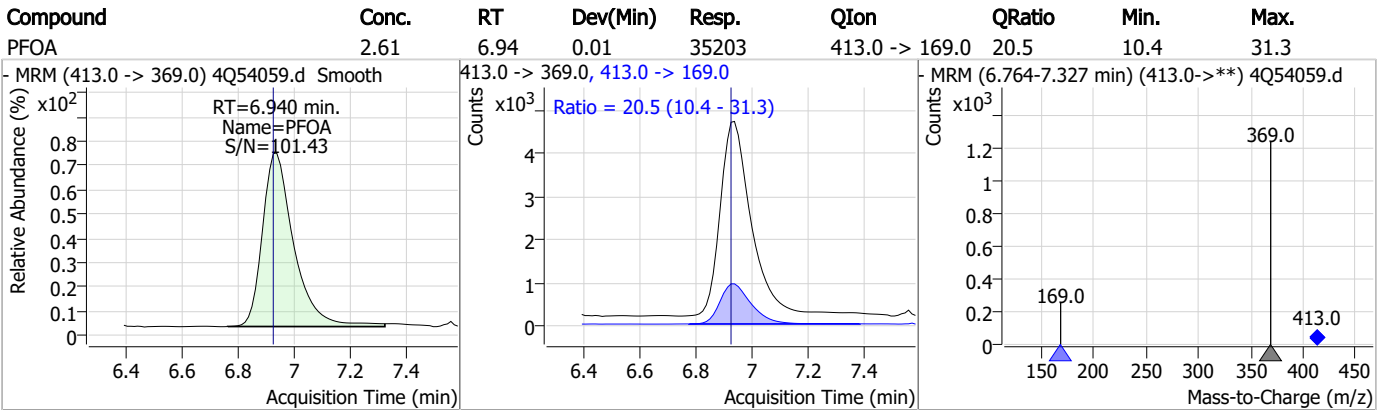
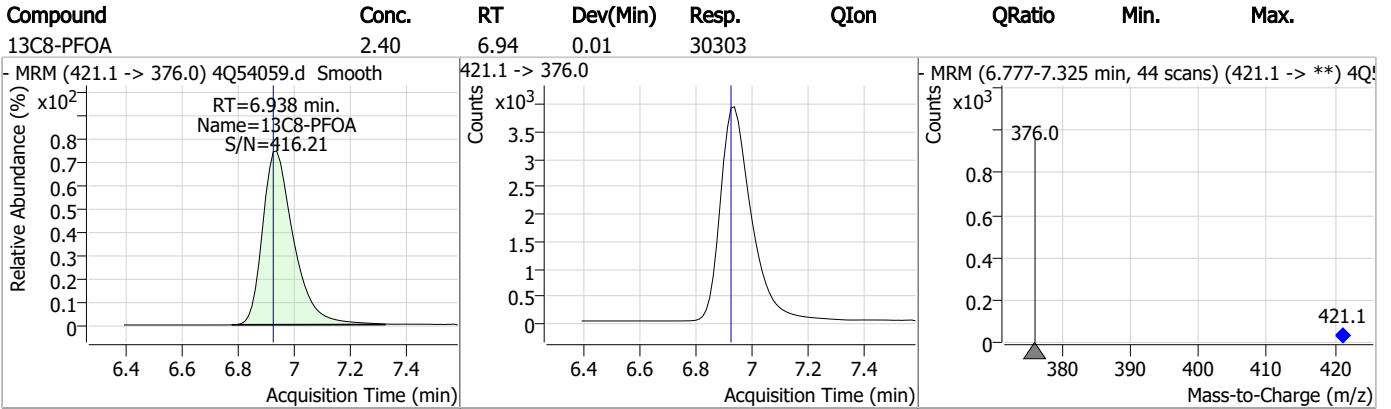
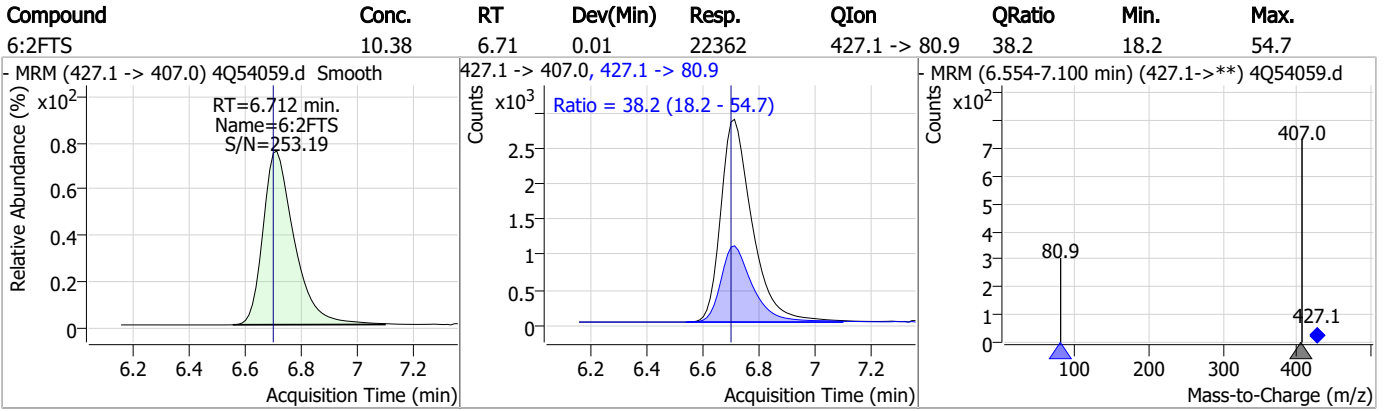
7.7.31
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Perfluorinated Compounds by LC/MS/MS

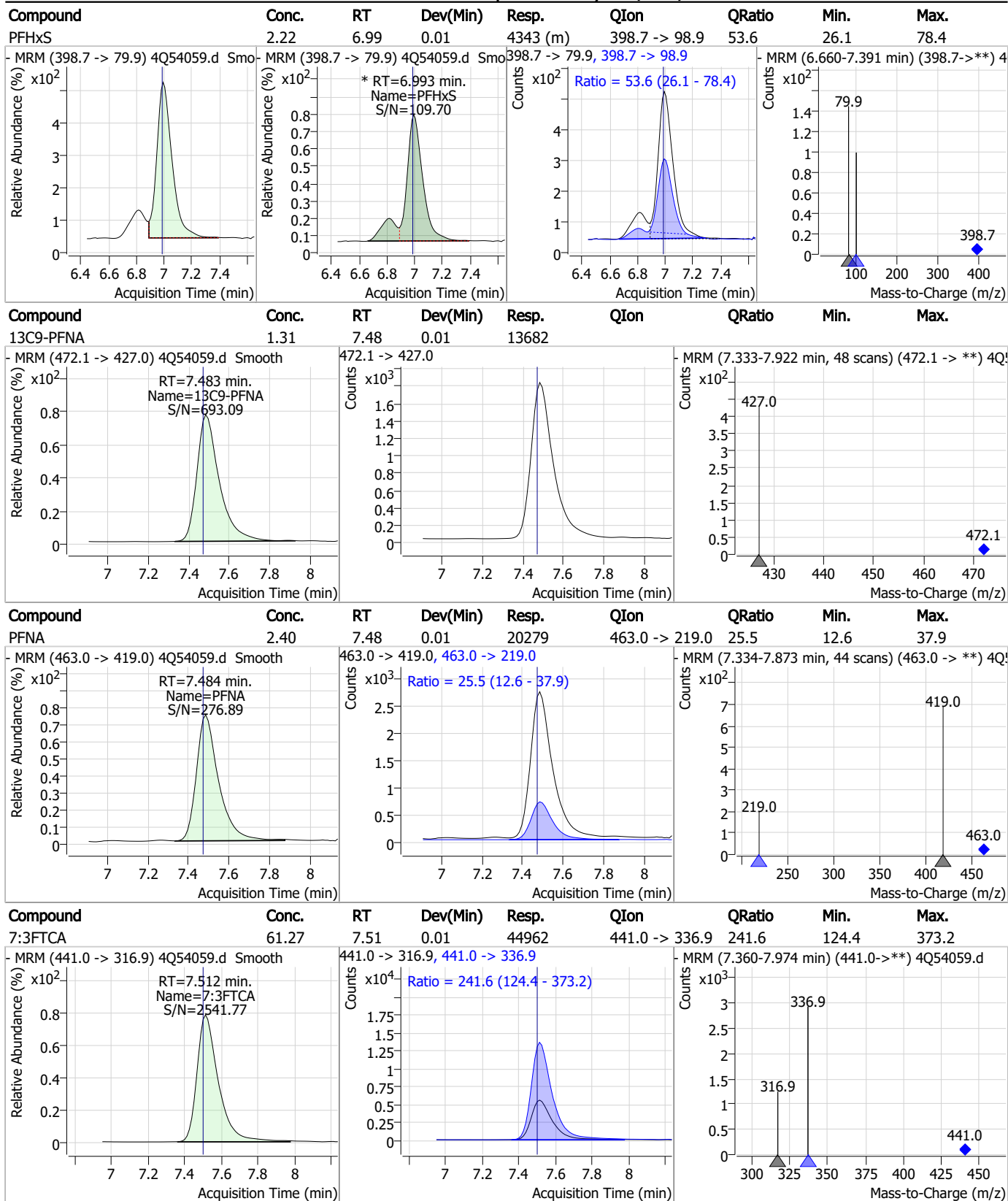


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Perfluorinated Compounds by LC/MS/MS

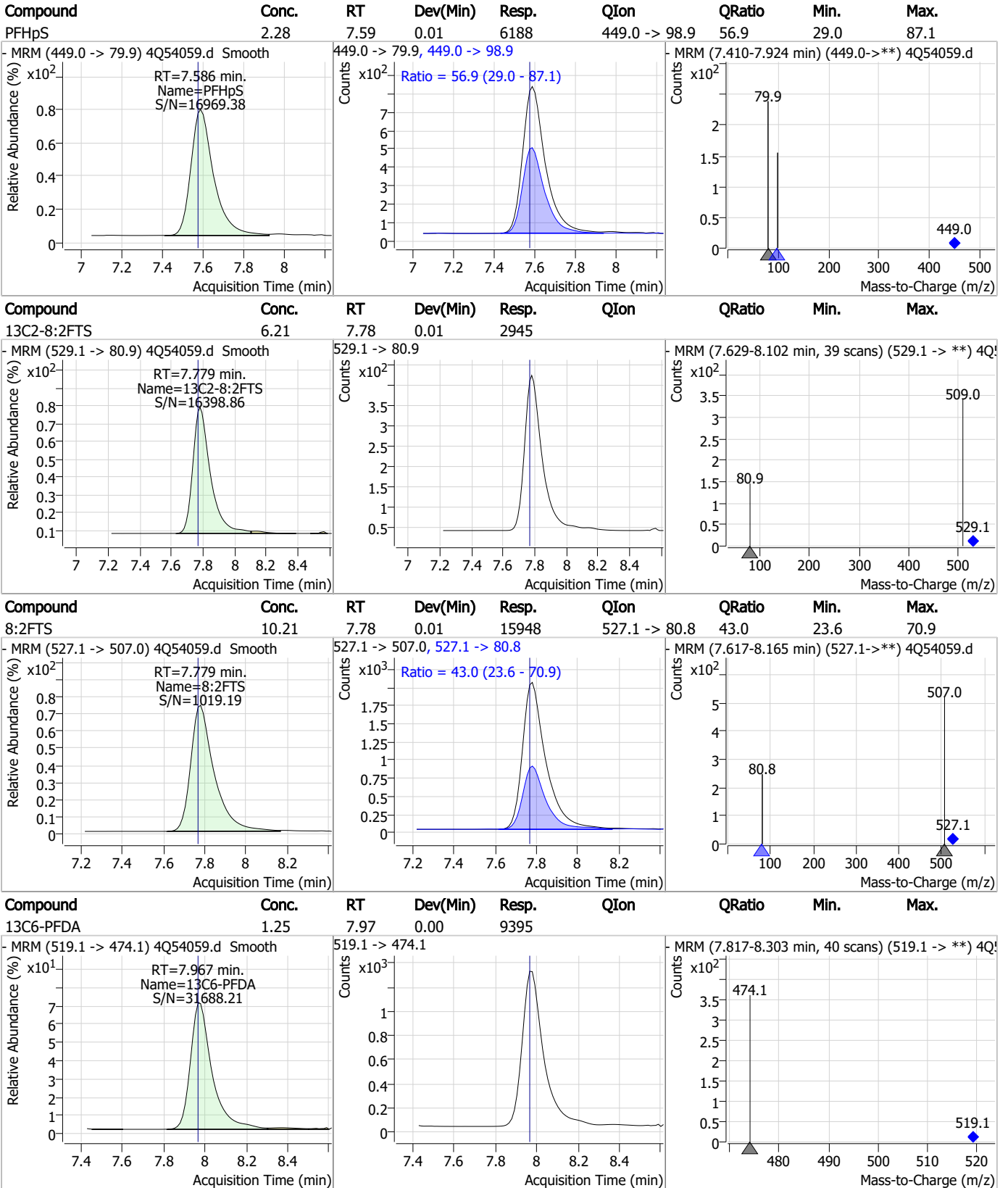


Perfluorinated Compounds by LC/MS/MS



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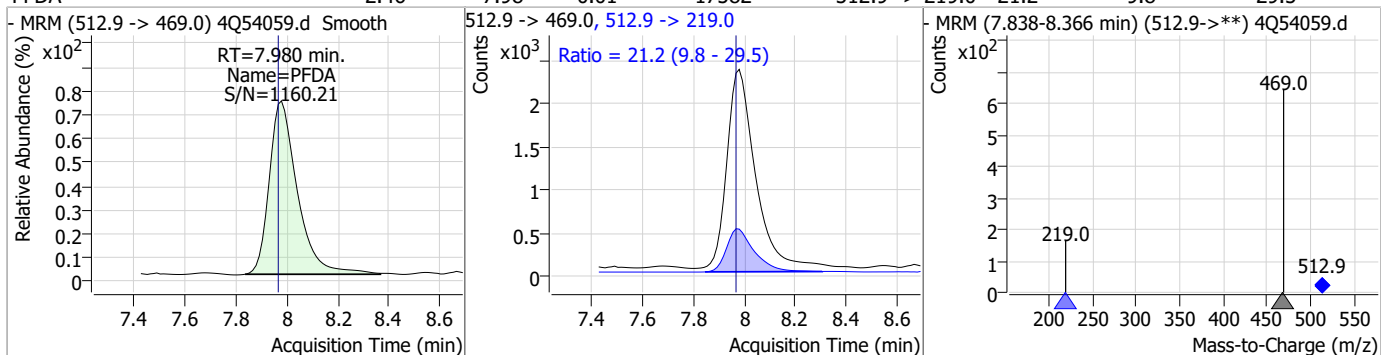
Perfluorinated Compounds by LC/MS/MS



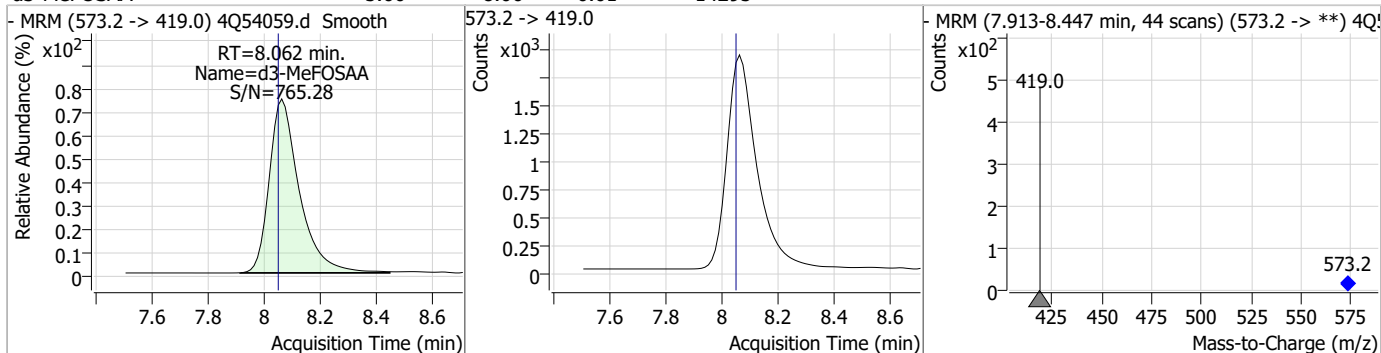
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Perfluorinated Compounds by LC/MS/MS

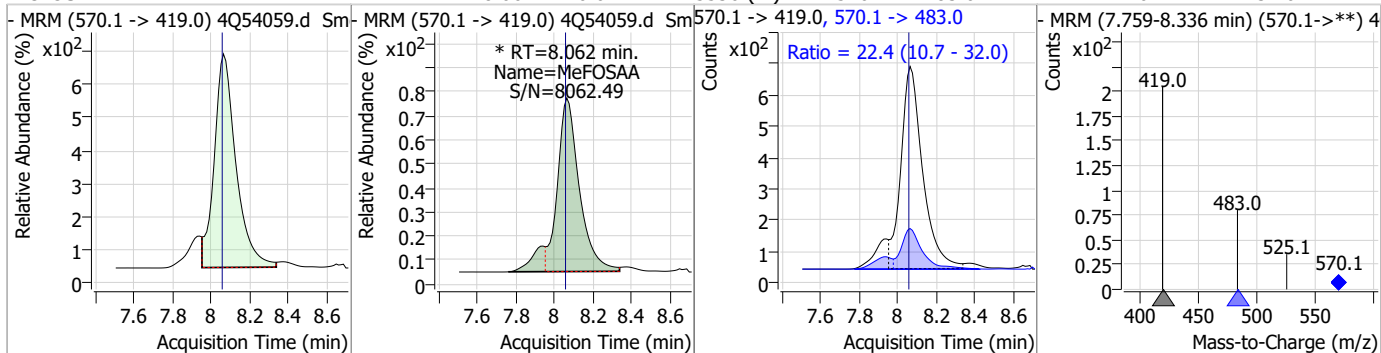
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.46	7.98	0.01	17582	512.9 -> 219.0	21.2	9.8	29.5



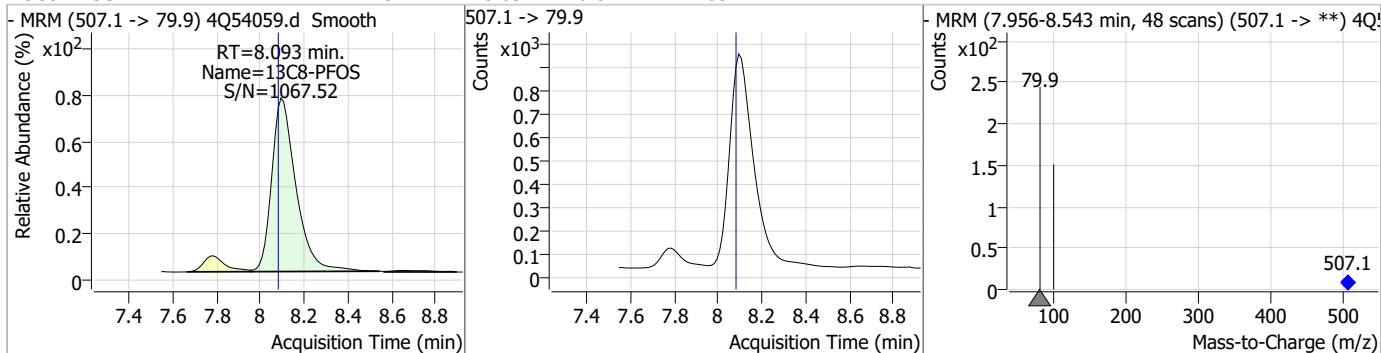
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.60	8.06	0.01	14295				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.42	8.06	0.01	5536 (m)	570.1 -> 483.0	22.4	10.7	32.0

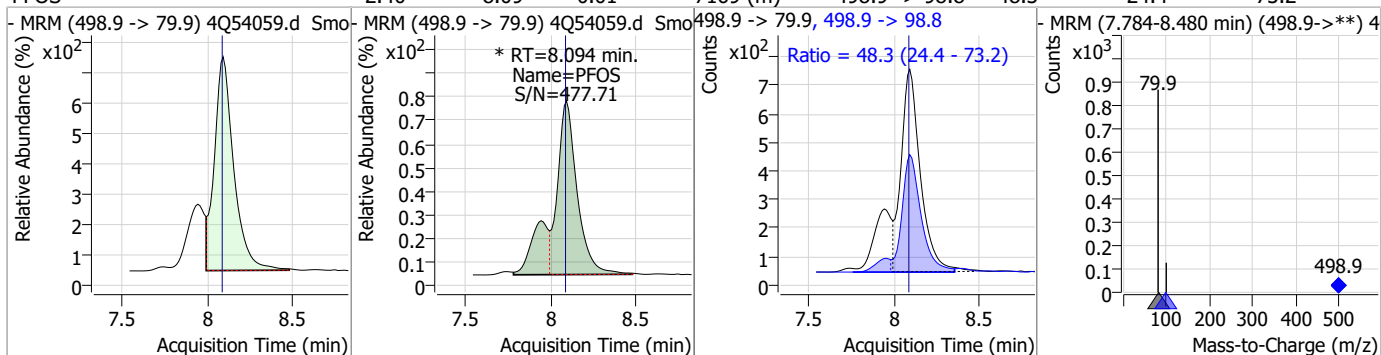


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.31	8.09	0.01	7057				

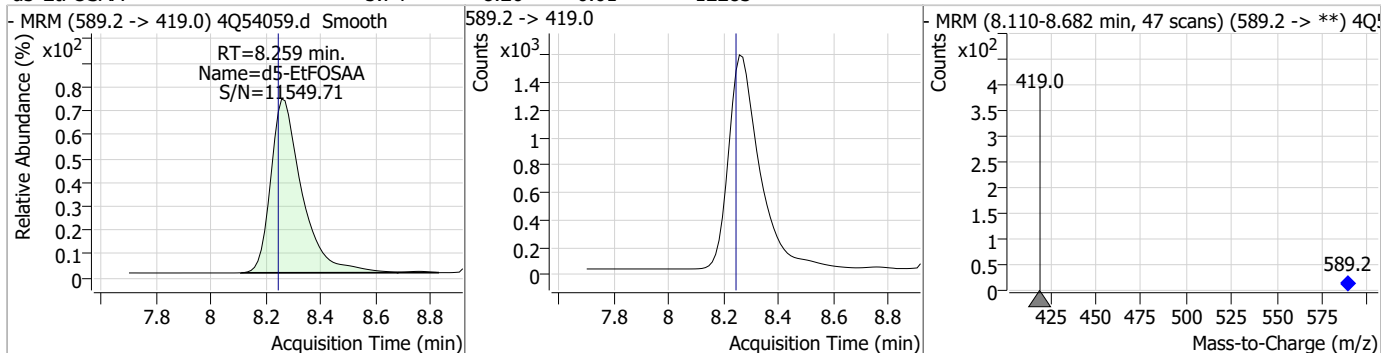


Perfluorinated Compounds by LC/MS/MS

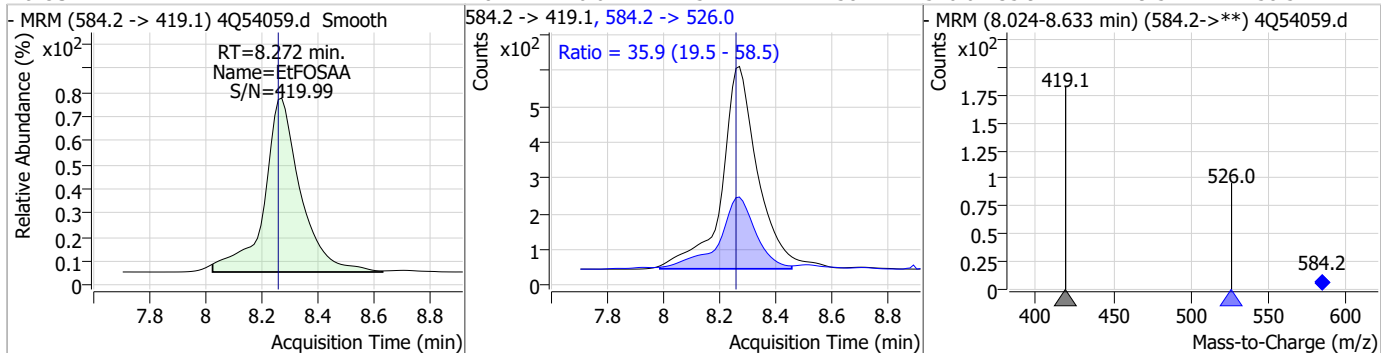
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.40	8.09	0.01	7169 (m)	498.9 -> 98.8	48.3	24.4	73.2



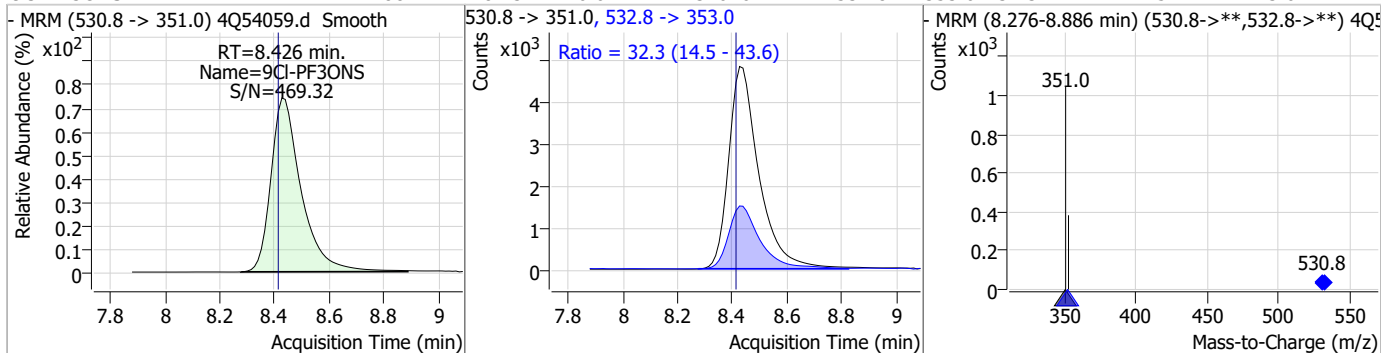
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.74	8.26	0.01	12283				



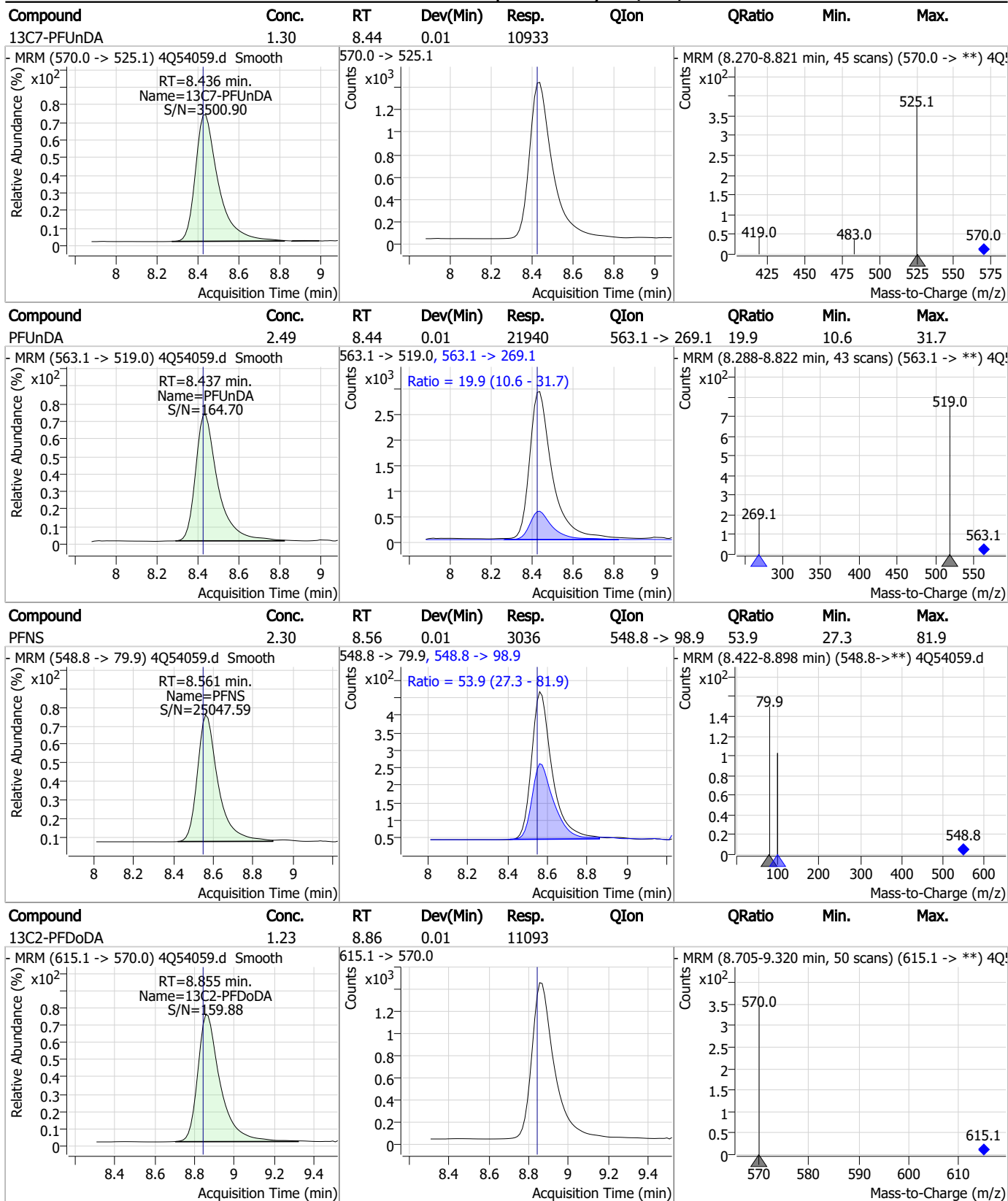
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.21	8.27	0.01	5142	584.2 -> 526.0	35.9	19.5	58.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	4.88	8.43	0.01	37076	532.8 -> 353.0	32.3	14.5	43.6

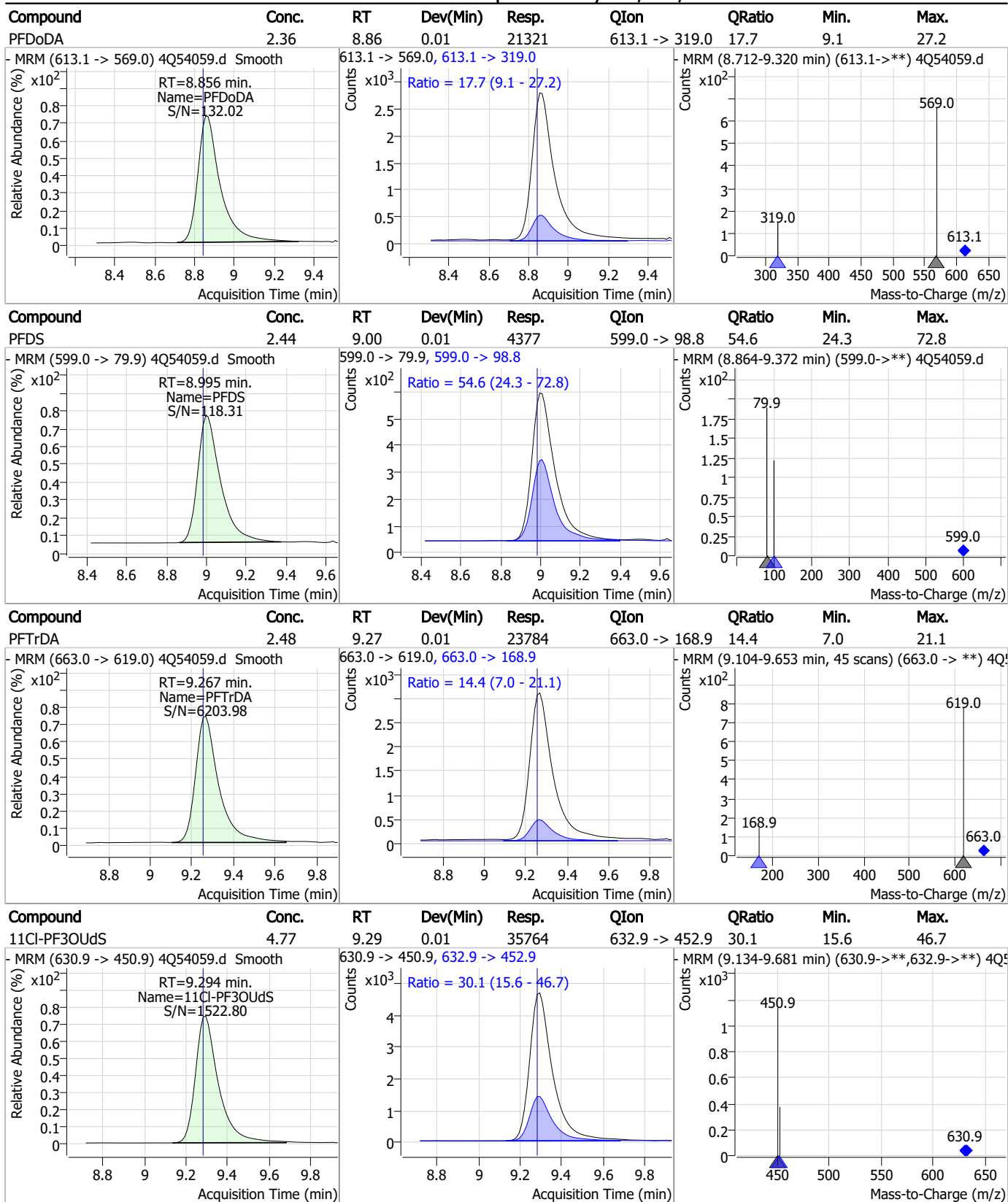


Perfluorinated Compounds by LC/MS/MS



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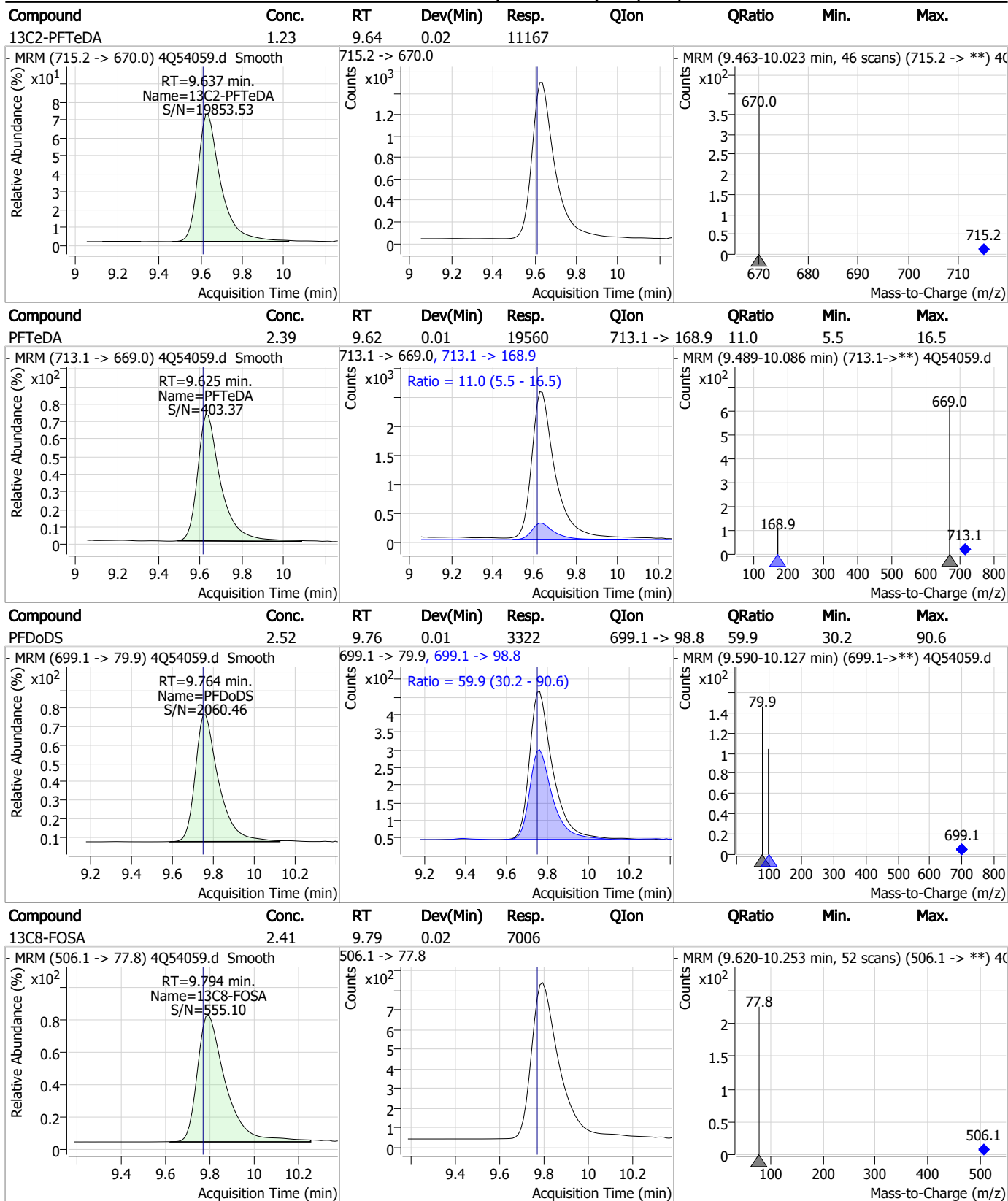
Perfluorinated Compounds by LC/MS/MS



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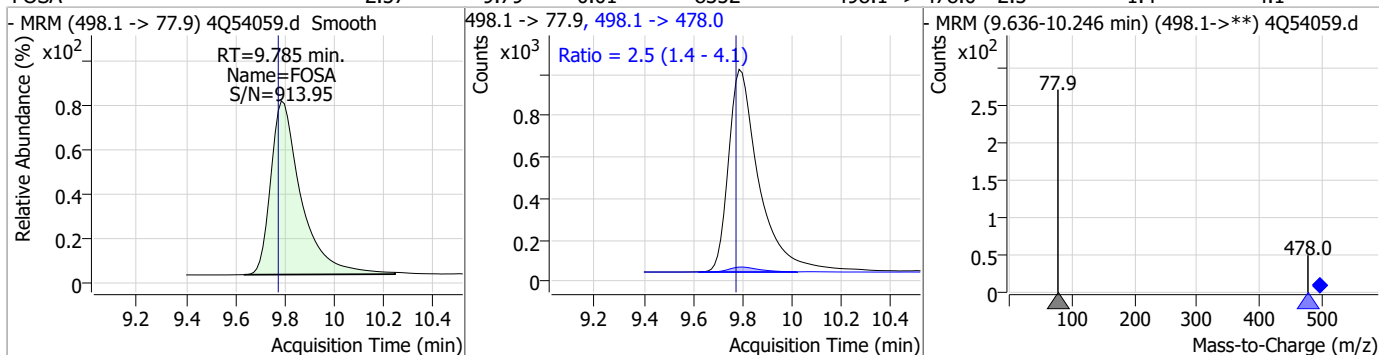
Perfluorinated Compounds by LC/MS/MS



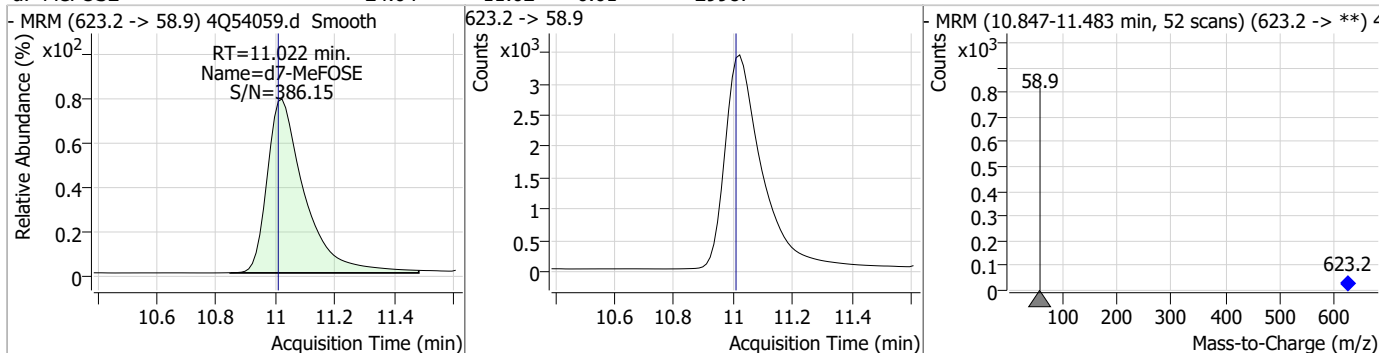
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Perfluorinated Compounds by LC/MS/MS

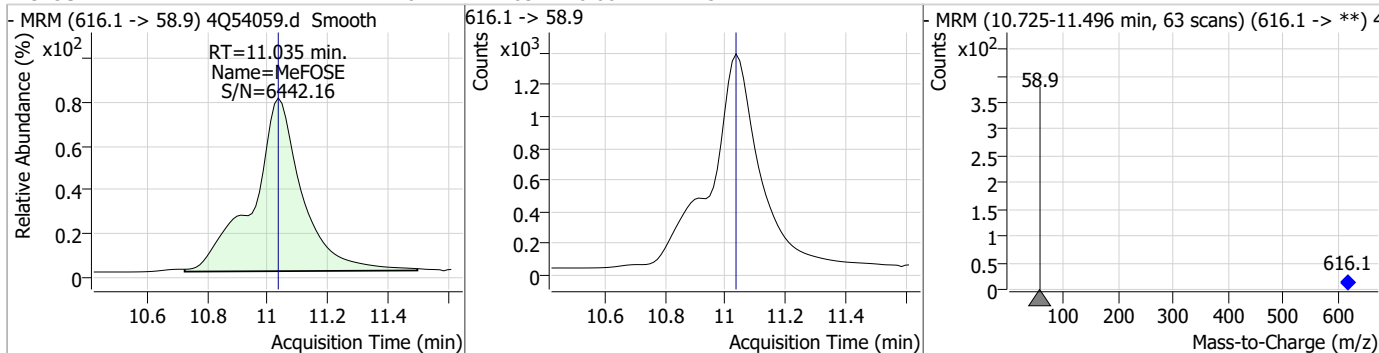
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.57	9.79	0.01	8352	498.1 -> 478.0	2.5	1.4	4.1



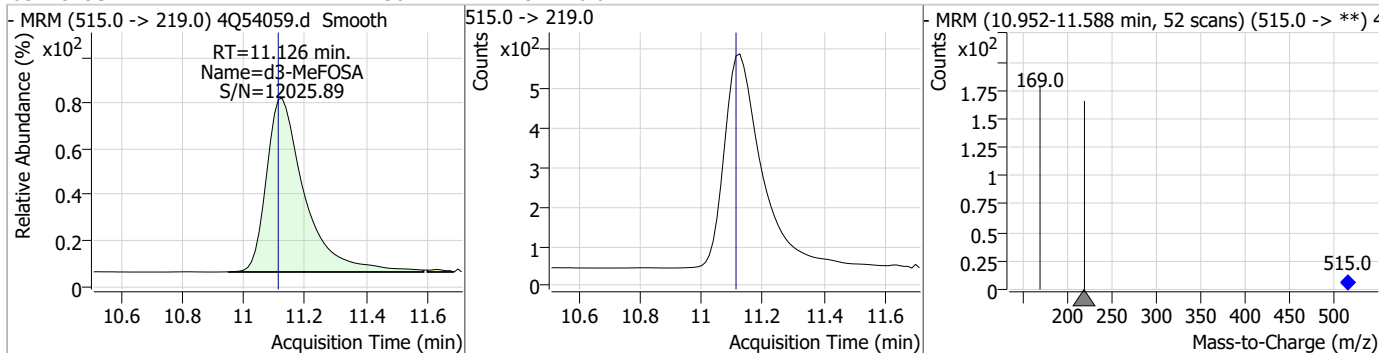
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.04	11.02	0.01	29987	623.2 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.20	11.03	0.00	15414	616.1 -> 58.9			



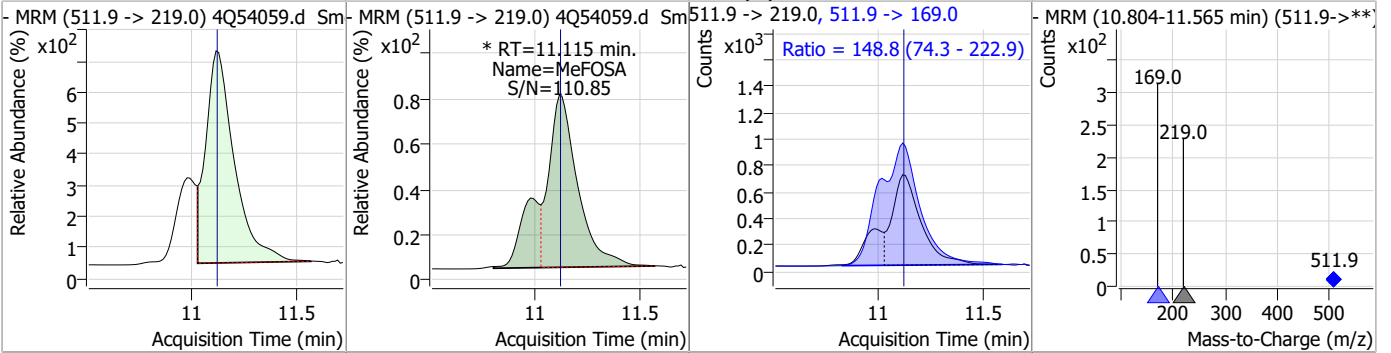
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.36	11.13	0.01	4724	515.0 -> 219.0			



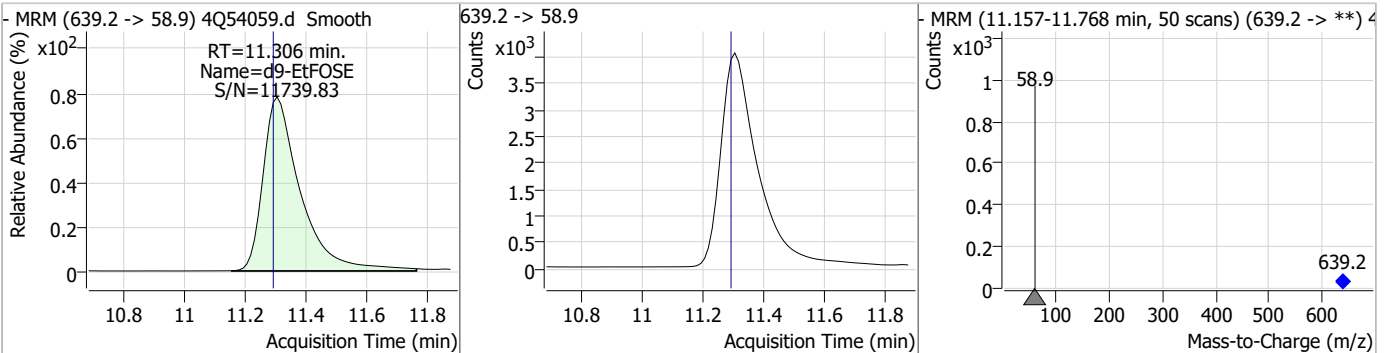
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Perfluorinated Compounds by LC/MS/MS

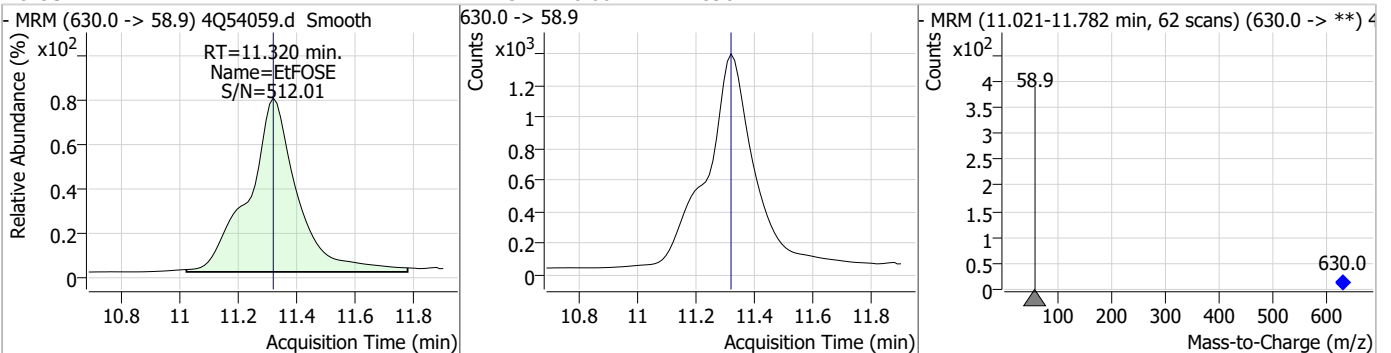
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.88	11.12	0.00	8229 (m)	511.9 -> 169.0	148.8	74.3	222.9



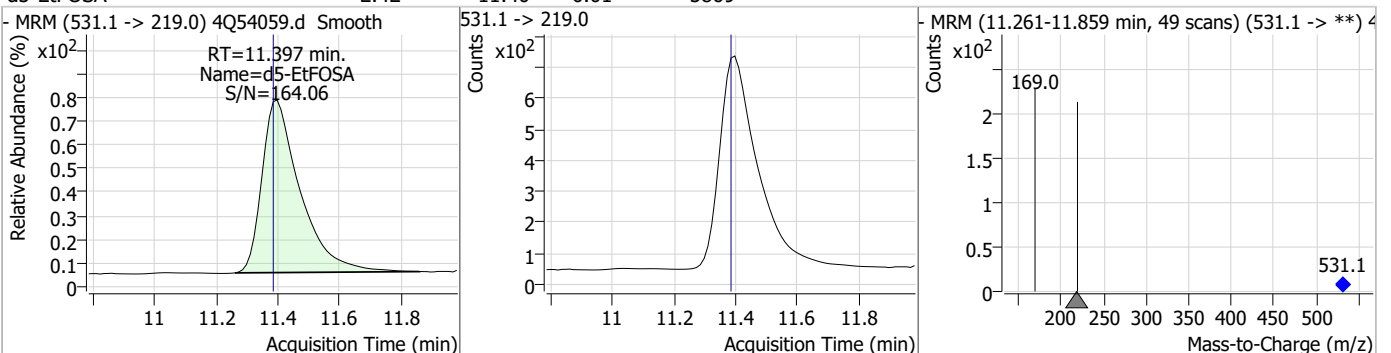
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.34	11.31	0.01	34560				



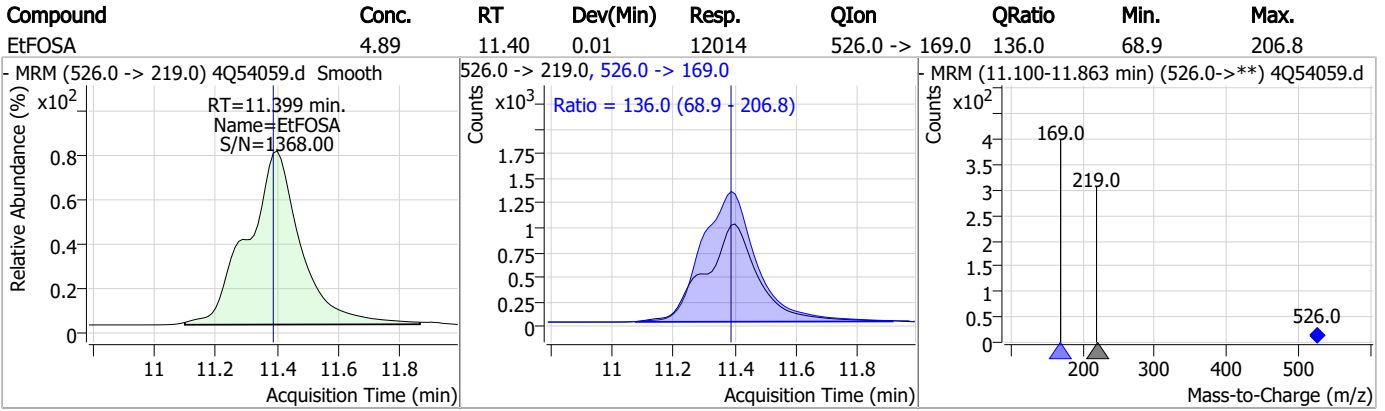
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.22	11.32	0.00	15901				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.42	11.40	0.01	5869				



Perfluorinated Compounds by LC/MS/MS



7.7.31

7



Manual Integration Approval Summary

Sample Number: S4Q788-CC788 Method: EPA DRAFT 1633
Lab FileID: 4Q54059.D Analyst approved: 11/18/23 15:05 Mike Eger
Injection Time: 11/18/23 00:55 Supervisor approved: 11/19/23 09:22 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		6.99	Split peak
MeFOSAA	2355-31-9		8.06	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.09	Split peak
MeFOSA	31506-32-8		11.12	Split peak

7.7.31.1
7

SGS ORLANDO

DATE:	11/13/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_111323_S4Q785
CAL DATE:	11/13/23
ANALYST:	AL
RUN BATCH:	S4Q785

ELUENT A LOT #:	233675 W5%ACN 226166 2mMAMAC.11706
ELUENT B LOT #:	ACN 226166
IC/CC STD LOT #:	LCMS 2192E
ICV STD LOT #:	LCMS 2199
ISTD/D STD LOT #:	12087D + 12030I

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q53716.d	P1-B9	ccb	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
2	4Q53717.d	P1-B9	ccb	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
3	4Q53718.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
4	4Q53719.d	P1-B2	RT BR_LN	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
5	4Q53720.d	P1-A9	high std	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
6	4Q53721.d	P1-A1	iblk	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
7	4Q53722.d	P1-A5	cc784-4	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
8	4Q53723.d	P1-A2	cc784-1.0LL	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	adona fail low
9	4Q53724.d	P1-A2	cc784-1.0LL	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	fail - recal
10	4Q53725.d	P1-A2	cc784-1.0LL	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	fail - recal
11	4Q53726.d	P1-B9	ccb	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
12	4Q53727.d	P1-B9	ccb	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
13	4Q53728.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
14	4Q53729.d	P1-B2	RT BR_LN	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
15	4Q53730.d	P1-A1	ic785-0	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	check tune file
16	4Q53731.d	P1-A2	ic785-1	1633full_4Q.m	Calibration	1.6/500	OP98180,S4Q785:500,,,5.0,1,water	pass
17	4Q53732.d	P1-A3	ic785-2	1633full_4Q.m	Calibration	3.2/500	OP98180,S4Q785:500,,,5.0,1,water	pass
18	4Q53733.d	P1-A4	ic785-3	1633full_4Q.m	Calibration	10/500	OP98180,S4Q785:500,,,5.0,1,water	pass
19	4Q53734.d	P1-A5	ic785-4	1633full_4Q.m	Calibration	20/500	OP98180,S4Q785:500,,,5.0,1,water	adona 68.2% - pass
20	4Q53735.d	P1-A6	ic785-5	1633full_4Q.m	Calibration	40/500	OP98180,S4Q785:500,,,5.0,1,water	pass
21	4Q53736.d	P1-A7	ic785-6	1633full_4Q.m	Calibration	100/500	OP98180,S4Q785:500,,,5.0,1,water	pass
22	4Q53737.d	P1-A8	ic785-7	1633full_4Q.m	Calibration	200/500	OP98180,S4Q785:500,,,5.0,1,water	pass
23	4Q53738.d	P1-A9	ic785-8	1633full_4Q.m	Calibration	1x	OP98180,S4Q785:500,,,5.0,1,water	pass
24	4Q53739.d	P1-A1	iblk	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
25	4Q53740.d	P1-B3	icv785-4	1633full_4Q.m	QC	20/500	OP98180,S4Q785:500,,,5.0,1,water	pass
26	4Q53741.d	P1-B4	icv785-20	1633full_4Q.m	QC	100/500	OP98180,S4Q785:500,,,5.0,1,water	pass
27	4Q53742.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	OP98180,S4Q785:500,,,5.0,1,water	pass
28	4Q53743.d	P1-A2	cc785-1.0LL	1633full_4Q.m	QC	1.6/500	OP98180,S4Q785:500,,,5.0,1,water	pass
29	4Q53744.d	P4-D1	op9997-bs	1633full_4Q.m	Sample		OP99997,S4Q785:500,,,5.0,1,water	✓
30	4Q53745.d	P4-D2	op9997-llbs:3	1633full_4Q.m	Sample		OP99997,S4Q785:500,,,5.0,1,water	✓
31	4Q53746.d	P4-D3	op9997-mb	1633full_4Q.m	Sample		OP99997,S4Q785:500,,,5.0,1,water	✓
32	4Q53747.d	P4-D4	fc11014-1	1633full_4Q.m	Sample		OP99997,S4Q785:520,,,5.0,1,water	✓
33	4Q53748.d	P4-D5	fc11062-1	1633full_4Q.m	Sample		OP99997,S4Q785:530,,,5.0,1,water	✓
34	4Q53749.d	P4-D6	fc11062-2	1633full_4Q.m	Sample		OP99997,S4Q785:520,,,5.0,1,water	✓
35	4Q53750.d	P4-D7	op9997-ms	1633full_4Q.m	Sample		OP99997,S4Q785:520,,,5.0,1,water	✓

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LCMS4-4Q ANALYSIS LOG

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36	4Q53751.d	P4-D8	fc11062-3	1633full_4Q.m	Sample	OP99997.S4Q785.530,,,5.0,1.,water	✓
37	4Q53752.d	P4-D9	op99997-dup	1633full_4Q.m	Sample	OP99997.S4Q785.530,,,5.0,1.,water	✓
38	4Q53753.d	P4-E1	fc11062-4	1633full_4Q.m	Sample	OP99997.S4Q785.500,,,5.0,1.,water	✓
39	4Q53754.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	pass
40	4Q53755.d	P1-A1	iccb	1633full_4Q.m	Sample	OP98180.S4Q785.500,,,5.0,1.,water	nd
41	4Q53756.d	P4-E2	fc11062-5	1633full_4Q.m	Sample	OP99997.S4Q785.540,,,5.0,1.,water	✓
42	4Q53757.d	P4-E3	fc11062-6	1633full_4Q.m	Sample	OP99997.S4Q785.550,,,5.0,1.,water	✓
43	4Q53758.d	P5-F8	op99956-bs	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1.,water	✓
44	4Q53759.d	P5-F9	op99956-llbs:3	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1.,water	✓
45	4Q53760.d	P6-A1	op99956-mb	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1.,water	✓
46	4Q53761.d	P6-A2	fc10708-1	1633full_4Q.m	Sample	OP99956.S4Q785.525,,,5.0,1.,water	✓
47	4Q53762.d	P6-A3	fc10708-2	1633full_4Q.m	Sample	OP99956.S4Q785.520,,,5.0,1.,water	✓
48	4Q53763.d	P6-A4	fc10708-3	1633full_4Q.m	Sample	OP99956.S4Q785.530,,,5.0,1.,water	✓
49	4Q53764.d	P6-A5	fc10708-4	1633full_4Q.m	Sample	OP99956.S4Q785.525,,,5.0,1.,water	✓
50	4Q53765.d	P6-A6	fc10708-5	1633full_4Q.m	Sample	OP99956.S4Q785.525,,,5.0,1.,water	✓
51	4Q53766.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	pass
52	4Q53767.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1.,water	nd
53	4Q53768.d	P6-A7	fc10708-6	1633full_4Q.m	Sample	OP99956.S4Q785.525,,,5.0,1.,water	✓
54	4Q53769.d	P6-A8	fc10708-7	1633full_4Q.m	Sample	OP99956.S4Q785.520,,,5.0,1.,water	✓
55	4Q53770.d	P6-A9	fc10708-8	1633full_4Q.m	Sample	OP99956.S4Q785.520,,,5.0,1.,water	✓
56	4Q53771.d	P6-B1	fc10708-9	1633full_4Q.m	Sample	OP99956.S4Q785.525,,,5.0,1.,water	✓
57	4Q53772.d	P6-B2	fc10708-10	1633full_4Q.m	Sample	OP99956.S4Q785.520,,,5.0,1.,water	✓
58	4Q53773.d	P6-B3	fc10708-11	1633full_4Q.m	Sample	OP99956.S4Q785.530,,,5.0,1.,water	✓
59	4Q53774.d	P6-B4	fc10708-12	1633full_4Q.m	Sample	OP99956.S4Q785.530,,,5.0,1.,water	✓
60	4Q53775.d	P6-B5	fc10708-13	1633full_4Q.m	Sample	OP99956.S4Q785.525,,,5.0,1.,water	✓
61	4Q53776.d	P6-B6	fc10708-14	1633full_4Q.m	Sample	OP99956.S4Q785.525,,,5.0,1.,water	✓
62	4Q53777.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	pass
63	4Q53778.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1.,water	nd
64	4Q53779.d	P6-B7	fc10708-15	1633full_4Q.m	Sample	OP99956.S4Q785.525,,,5.0,1.,water	✓
65	4Q53780.d	P6-B8	op99956-ms	1633full_4Q.m	Sample	OP99956.S4Q785.520,,,5.0,1.,water	✓
66	4Q53781.d	P6-B9	op99956-msd	1633full_4Q.m	Sample	OP99956.S4Q785.530,,,5.0,1.,water	✓
67	4Q53782.d	P6-C1	fc10708-16	1633full_4Q.m	Sample	OP99956.S4Q785.530,,,5.0,1.,water	✓
68	4Q53783.d	P6-C2	fc10708-17	1633full_4Q.m	Sample	OP99956.S4Q785.530,,,5.0,1.,water	✓
69	4Q53784.d	P6-C3	op99926-bs	1633full_4Q.m	Sample	OP99926.S4Q785.500,,,5.0,1.,water	3:3 high - ok
70	4Q53785.d	P6-C4	op99926-llbs:3	1633full_4Q.m	Sample	OP99926.S4Q785.500,,,5.0,1.,water	✓
71	4Q53786.d	P6-C5	op99926-mb	1633full_4Q.m	Sample	OP99926.S4Q785.500,,,5.0,1.,water	✓
72	4Q53787.d	P6-C6	fc10691-1	1633full_4Q.m	Sample	OP99926.S4Q785.520,,,5.0,1.,water	✓
73	4Q53788.d	P6-C7	fc10691-2	1633full_4Q.m	Sample	OP99926.S4Q785.500,,,5.0,1.,water	✓
74	4Q53789.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	pass
75	4Q53790.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1.,water	nd
76	4Q53791.d	P6-C8	fc10703-1	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1.,water	✓
77	4Q53792.d	P6-C9	op99926-ms	1633full_4Q.m	Sample	OP99926.S4Q785.540,,,5.0,1.,water	✓
78	4Q53793.d	P6-D1	fc10703-2	1633full_4Q.m	Sample	OP99926.S4Q785.535,,,5.0,1.,water	✓

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79	4Q53794.d	P6-D2	op99926-dup	1633full_4Q.m	Sample	OP99926.S4Q785.535,,,5.0,1,water	✓
80	4Q53795.d	P6-D3	fc10703-3	1633full_4Q.m	Sample	OP99926.S4Q785.540,,,5.0,1,water	✓
81	4Q53796.d	P6-D4	fc10703-4	1633full_4Q.m	Sample	OP99926.S4Q785.535,,,5.0,1,water	✓
82	4Q53797.d	P6-D5	fc10703-5	1633full_4Q.m	Sample	OP99926.S4Q785.530,,,5.0,1,water	✓
83	4Q53798.d	P6-D6	fc10703-6	1633full_4Q.m	Sample	OP99926.S4Q785.550,,,5.0,1,water	✓
84	4Q53799.d	P6-D7	fc10703-7	1633full_4Q.m	Sample	OP99926.S4Q785.530,,,5.0,1,water	✓
85	4Q53800.d	P6-D8	fc10703-8	1633full_4Q.m	Sample	OP99926.S4Q785.550,,,5.0,1,water	rr 2x e flag
86	4Q53801.d	P1-A5	cc785-4	1633full_4Q.m	QC	OP99956.S4Q785.500,,,5.0,1,water	pass
87	4Q53802.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1,water	nd
88	4Q53803.d	P6-D9	fc10703-9	1633full_4Q.m	Sample	OP99926.S4Q785.545,,,5.0,1,water	✓
89	4Q53804.d	P6-E1	fc10703-10	1633full_4Q.m	Sample	OP99926.S4Q785.535,,,5.0,1,water	✓
90	4Q53805.d	P6-E2	fc10703-11	1633full_4Q.m	Sample	OP99926.S4Q785.525,,,5.0,1,water	✓
91	4Q53806.d	P6-E3	fc10703-12	1633full_4Q.m	Sample	OP99926.S4Q785.525,,,5.0,1,water	✓
92	4Q53807.d	P6-E4	fc10703-13	1633full_4Q.m	Sample	OP99926.S4Q785.535,,,5.0,1,water	✓
93	4Q53808.d	P6-E5	fc10636-32	1633full_4Q.m	Sample	OP99872.S4Q785.370,,,5.0,10,water	✓
94	4Q53809.d	P6-E6	fc10636-39	1633full_4Q.m	Sample	OP99872.S4Q785.390,,,5.0,10,water	✓
95	4Q53810.d	P6-E7	fc10636-41	1633full_4Q.m	Sample	OP99872.S4Q785.415,,,5.0,10,water	✓
96	4Q53811.d	P6-E8	fc10643-1	1633full_4Q.m	Sample	OP99872.S4Q785.380,,,5.0,5,water	✓
97	4Q53812.d	P1-A5	ecc785-4	1633full_4Q.m	QC	OP99956.S4Q785.500,,,5.0,1,water	pass
98	4Q53813.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1,water	nd



SGS ORLANDO

DATE:	11/15/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_111323_S4Q785
CAL DATE:	11/13/23
ANALYST:	AL
RUN BATCH:	S4Q786

ELUENT A LOT #:	233675 W5%A/CN 226166 2mMAMAC. 11706
ELUENT B LOT #:	ACN 226166
IC/CC STD LOT #:	LCMS 2192E
ICV STD LOT #:	LCMS 2199
ISTD/ID STD LOT #:	12087D + 12030I

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q53862.d	P1-B9	ccb	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	nd
2	4Q53863.d	P1-B9	ccb	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	nd
3	4Q53864.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	pass
4	4Q53865.d	P1-B2	RT BR_LN	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	pass
5	4Q53866.d	P1-A9	high std	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	pass
6	4Q53867.d	P1-A1	iblk	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	nd
7	4Q53868.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	OP98180,S4Q786,500,,,5.0,1,water	pass
8	4Q53869.d	P1-A2	cc785-1.0LL	1633full_4Q.m	QC	1.6/500	OP98180,S4Q786,500,,,5.0,1,water	pass
9	4Q53870.d	P6-E9	fc10703-8	1633full_4Q.m	Sample	250/500	OP99926,S4Q786,550,,,5.0,2,water	✓
10	4Q53871.d	P1-F3	op58-bs	1633full_4Q.m	Sample		OP58,S4Q786,500,,,5.0,1,water	3:3 high, ok
11	4Q53872.d	P1-F4	op58-llbs:3	1633full_4Q.m	Sample		OP58,S4Q786,500,,,5.0,1,water	✓
12	4Q53873.d	P1-F5	op58-mb	1633full_4Q.m	Sample		OP58,S4Q786,500,,,5.0,1,water	✓
13	4Q53874.d	P1-F6	fc10561-9	1633full_4Q.m	Sample		OP58,S4Q786,420,,,5.0,1,water	✓
14	4Q53875.d	P1-F7	fc10636-23	1633full_4Q.m	Sample		OP58,S4Q786,65,,,5.0,1,water	✓
15	4Q53876.d	P1-F8	fc10636-23	1633full_4Q.m	Sample		OP58,S4Q786,65,,,5.0,10,water	✓
16	4Q53877.d	P1-F9	fc10636-28	1633full_4Q.m	Sample		OP58,S4Q786,60,,,5.0,1,water	✓
17	4Q53878.d	P2-A1	fc10636-28	1633full_4Q.m	Sample		OP58,S4Q786,60,,,5.0,10,water	✓
18	4Q53879.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	OP98180,S4Q786,500,,,5.0,1,water	pass
19	4Q53880.d	P1-A1	iccb	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	nd
20	4Q53881.d	P2-A2	fc11101-1	1633full_4Q.m	Sample		OP58,S4Q786,525,,,5.0,1,water	✓
21	4Q53882.d	P2-A3	op58-ms	1633full_4Q.m	Sample		OP58,S4Q786,535,,,5.0,1,water	✓
22	4Q53883.d	P2-A4	fc11101-2	1633full_4Q.m	Sample		OP58,S4Q786,545,,,5.0,1,water	rr 5x
23	4Q53884.d	P2-A5	op58-dup	1633full_4Q.m	Sample		OP58,S4Q786,540,,,5.0,1,water	rr 5x
24	4Q53885.d	P2-A6	fc11101-3	1633full_4Q.m	Sample		OP58,S4Q786,530,,,5.0,1,water	✓
25	4Q53886.d	P2-A7	fc11101-4	1633full_4Q.m	Sample		OP58,S4Q786,530,,,5.0,1,water	✓
26	4Q53887.d	P2-A8	fc11101-5	1633full_4Q.m	Sample		OP58,S4Q786,525,,,5.0,1,water	✓
27	4Q53888.d	P2-A9	fc11160-1	1633full_4Q.m	Sample		OP58,S4Q786,525,,,5.0,1,water	✓
28	4Q53889.d	P2-B1	fc11160-2	1633full_4Q.m	Sample		OP58,S4Q786,525,,,5.0,1,water	✓
29	4Q53890.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	OP98180,S4Q786,500,,,5.0,1,water	pass
30	4Q53891.d	P1-A1	iccb	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	nd
31	4Q53892.d	P6-F1	op99927-bs	1633full_4Q.m	Sample		OP99927,S4Q786,125,,,5.0,1,water	3:3 high, ok
32	4Q53893.d	P6-F2	op99927-llbs:2	1633full_4Q.m	Sample		OP99927,S4Q786,125,,,5.0,1,water	✓
33	4Q53894.d	P6-F3	op99927-mb	1633full_4Q.m	Sample		OP99927,S4Q786,125,,,5.0,1,water	✓
34	4Q53895.d	P6-F4	fc10789-1	1633full_4Q.m	Sample		OP99927,S4Q786,30,,,5.0,1,water	✓
35	4Q53896.d	P6-F5	fc10789-2	1633full_4Q.m	Sample		OP99927,S4Q786,45,,,5.0,1,water	✓

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LCMS4-4Q ANALYSIS LOG

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36	4Q53897.d	P6-F6	fc10789-3	1633full_4Q.m	Sample	OP99927,S4Q786,95,,5.0,1,water	✓
37	4Q53898.d	P6-F7	fc10789-4	1633full_4Q.m	Sample	OP99927,S4Q786,100,,5.0,1,water	✓
38	4Q53899.d	P6-F8	fc10789-5	1633full_4Q.m	Sample	OP99927,S4Q786,90,,5.0,1,water	✓
39	4Q53900.d	P6-F9	fc10789-6	1633full_4Q.m	Sample	OP99927,S4Q786,95,,5.0,1,water	✓
40	4Q53901.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	pass
41	4Q53902.d	P1-A1	iccb	1633full_4Q.m	Sample	OP98180,S4Q786,500,,5.0,1,water	nd
42	4Q53903.d	P1-C1	fc10789-7	1633full_4Q.m	Sample	OP99927,S4Q786,95,,5.0,1,water	✓
43	4Q53904.d	P1-C2	fc10789-8	1633full_4Q.m	Sample	OP99927,S4Q786,90,,5.0,1,water	✓
44	4Q53905.d	P1-C3	fc10789-9	1633full_4Q.m	Sample	OP99927,S4Q786,1145,,5.0,1,water	✓
45	4Q53906.d	P1-C4	fc10789-10	1633full_4Q.m	Sample	OP99927,S4Q786,125,,5.0,1,water	✓
46	4Q53907.d	P1-C5	fc10789-11	1633full_4Q.m	Sample	OP99927,S4Q786,115,,5.0,1,water	✓
47	4Q53908.d	P1-C6	fc10789-12	1633full_4Q.m	Sample	OP99927,S4Q786,125,,5.0,1,water	✓
48	4Q53909.d	P1-C7	fc10789-13	1633full_4Q.m	Sample	OP99927,S4Q786,110,,5.0,1,water	✓
49	4Q53910.d	P1-C8	fc10789-14	1633full_4Q.m	Sample	OP99927,S4Q786,120,,5.0,1,water	✓
50	4Q53911.d	P1-C9	fc10949-1	1633full_4Q.m	Sample	OP99927,S4Q786,125,,5.0,1,water	add eis
51	4Q53912.d	P1-D1	fc10949-1A	1633full_4Q.m	Sample	OP99927,S4Q786,125,,5.0,1,water	add eis
52	4Q53913.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	pass
53	4Q53914.d	P1-A1	iccb	1633full_4Q.m	Sample	OP98180,S4Q786,500,,5.0,1,water	nd
54	4Q53915.d	P1-D2	op80-bs	1633full_4Q.m	Sample	OP80,S4Q786,500,,5.0,1,water	✓
55	4Q53916.d	P1-D3	op80-llbs:3	1633full_4Q.m	Sample	OP80,S4Q786,500,,5.0,1,water	✓
56	4Q53917.d	P1-D4	op80-mb	1633full_4Q.m	Sample	OP80,S4Q786,500,,5.0,1,water	✓
57	4Q53918.d	P1-D5	fc10666-9	1633full_4Q.m	Sample	OP80,S4Q786,485,,5.0,1,water	✓
58	4Q53919.d	P1-D6	fc10843-1	1633full_4Q.m	Sample	OP80,S4Q786,465,,5.0,1,water	✓
59	4Q53920.d	P1-D7	fc10843-2	1633full_4Q.m	Sample	OP80,S4Q786,440,,5.0,1,water	✓
60	4Q53921.d	P1-D8	fc10843-3	1633full_4Q.m	Sample	OP80,S4Q786,450,,5.0,1,water	✓
61	4Q53922.d	P1-D9	fc10843-4	1633full_4Q.m	Sample	OP80,S4Q786,510,,5.0,1,water	✓
62	4Q53923.d	P1-E1	fc10843-5	1633full_4Q.m	Sample	OP80,S4Q786,475,,5.0,1,water	✓
63	4Q53924.d	P1-E2	fc10843-7	1633full_4Q.m	Sample	OP80,S4Q786,475,,5.0,1,water	✓
64	4Q53925.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	pass
65	4Q53926.d	P1-A1	iccb	1633full_4Q.m	Sample	OP98180,S4Q786,500,,5.0,1,water	nd
66	4Q53927.d	P1-E3	fc10843-8	1633full_4Q.m	Sample	OP80,S4Q786,480,,5.0,1,water	rr 5x e flag
67	4Q53928.d	P1-E4	fc10843-11	1633full_4Q.m	Sample	OP80,S4Q786,490,,5.0,1,water	rr 1 co
68	4Q53929.d	P1-E5	op80-ms	1633full_4Q.m	Sample	OP80,S4Q786,470,,5.0,1,water	wait for sample
69	4Q53930.d	P1-E6	op80-msd	1633full_4Q.m	Sample	OP80,S4Q786,465,,5.0,1,water	wait for sample
70	4Q53931.d	P1-E7	fc10894-1	1633full_4Q.m	Sample	OP80,S4Q786,505,,5.0,1,water	✓
71	4Q53932.d	P1-E8	fc10894-2	1633full_4Q.m	Sample	OP80,S4Q786,495,,5.0,1,water	✓
72	4Q53933.d	P1-E9	fc10894-3	1633full_4Q.m	Sample	OP80,S4Q786,510,,5.0,1,water	✓
73	4Q53934.d	P1-F1	fc10894-4	1633full_4Q.m	Sample	OP80,S4Q786,485,,5.0,1,water	✓
74	4Q53935.d	P1-F2	fc10894-5	1633full_4Q.m	Sample	OP80,S4Q786,505,,5.0,1,water	✓
75	4Q53936.d	P1-A5	ecc785-4	1633full_4Q.m	QC	20/500	pass
76	4Q53937.d	P1-A1	iccb	1633full_4Q.m	Sample	OP98180,S4Q786,500,,5.0,1,water	nd

SGS ORLANDO

DATE:	11/17/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_111723_S4Q788
CAL DATE:	11/13/23
ANALYST:	AL
RUN BATCH:	S4Q788

ELUENT A LOT #:	233675 W5%ACN 226166 2mMAMAC.11706
ELUENT B LOT #:	ACN 226166
IC/CC STD LOT #:	LCMS 2192E
ICV STD LOT #:	LCMS 2199
ISTD/D STD LOT #:	12087D + 12030I

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q54001.d	P1-B9	ccb	1633full_4Q.m	Sample		OP99838,S4Q788,500,,,5.0,1,water	✓
2	4Q54002.d	P1-B9	ccb	1633full_4Q.m	Sample		OP99838,S4Q788,500,,,5.0,1,water	✓
3	4Q54003.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP99838,S4Q788,500,,,5.0,1,water	✓
4	4Q54004.d	P1-B2	RT BR_LN	1633full_4Q.m	Sample		OP99838,S4Q788,500,,,5.0,1,water	✓
5	4Q54005.d	P1-A1	ic788-0	1633full_4Q.m	Sample		OP99838,S4Q788,500,,,5.0,1,water	✓
6	4Q54006.d	P1-A2	ic788-1	1633full_4Q.m	Calibration		OP99838,S4Q788,500,,,5.0,1,water	✓
7	4Q54007.d	P1-A3	ic788-2	1633full_4Q.m	Calibration		OP99838,S4Q788,500,,,5.0,1,water	✓
8	4Q54008.d	P1-A4	ic788-3	1633full_4Q.m	Calibration		OP99838,S4Q788,500,,,5.0,1,water	✓
9	4Q54009.d	P1-A5	icc788-4	1633full_4Q.m	Calibration		OP99838,S4Q788,500,,,5.0,1,water	✓
10	4Q54010.d	P1-A6	ic788-5	1633full_4Q.m	Calibration		OP99838,S4Q788,500,,,5.0,1,water	✓
11	4Q54011.d	P1-A7	ic788-6	1633full_4Q.m	Calibration		OP99838,S4Q788,500,,,5.0,1,water	✓
12	4Q54012.d	P1-A8	ic788-7	1633full_4Q.m	Calibration		OP99838,S4Q788,500,,,5.0,1,water	✓
13	4Q54013.d	P1-A9	ic788-8	1633full_4Q.m	Calibration		OP99838,S4Q788,500,,,5.0,1,water	✓
14	4Q54014.d	P1-A1	iblk	1633full_4Q.m	Sample		OP99838,S4Q788,500,,,5.0,1,water	✓
15	4Q54015.d	P1-B3	icv788-4	1633full_4Q.m	QC	4	OP99838,S4Q788,500,,,5.0,1,water	PASS
16	4Q54016.d	P1-B4	icv788-20	1633full_4Q.m	QC	20	OP99838,S4Q788,500,,,5.0,1,water	PASS
17	4Q54017.d	P1-A5	cc788-4	1633full_4Q.m	QC	4	OP99838,S4Q788,500,,,5.0,1,water	PASS
18	4Q54018.d	P1-A2	cc788-1,0LL	1633full_4Q.m	QC	1	OP99838,S4Q788,500,,,5.0,1,water	PASS
19	4Q54019.d	P2-E6	fc10789-2	1633full_4Q.m	Sample		OP99927,S4Q788,45,,,5.0,10,water	✓
20	4Q54020.d	P6-F6	fc10789-3	1633full_4Q.m	Sample		OP99927,S4Q788,95,,,5.0,1,water	✓
21	4Q54021.d	P2-E7	op134-bs	1633full_4Q.m	Sample		OP134,S4Q788,60,,,5.0,1,water	✓
22	4Q54022.d	P2-E8	op134-llbs:3	1633full_4Q.m	Sample		OP134,S4Q788,60,,,5.0,1,water	✓
23	4Q54023.d	P2-E9	opt34-mb	1633full_4Q.m	Sample		OP134,S4Q788,60,,,5.0,1,water	✓
24	4Q54024.d	P2-F1	fc10963-21	1633full_4Q.m	Sample		OP134,S4Q788,60,,,5.0,1,water	✓
25	4Q54025.d	P2-F2	fc10963-21	1633full_4Q.m	Sample		OP134,S4Q788,60,,,5.0,10,water	✓
26	4Q54026.d	P2-F3	fc10963-22	1633full_4Q.m	Sample		OP134,S4Q788,60,,,5.0,1,water	✓
27	4Q54027.d	P2-F4	fc10963-22	1633full_4Q.m	Sample		OP134,S4Q788,60,,,5.0,10,water	✓
28	4Q54028.d	P1-A5	cc788-4	1633full_4Q.m	QC	4	OP99838,S4Q788,500,,,5.0,1,water	PASS
29	4Q54029.d	P1-A1	iccb	1633full_4Q.m	Sample		OP99838,S4Q788,500,,,5.0,1,water	✓
30	4Q54030.d	P2-F5	fc10963-23	1633full_4Q.m	Sample		OP134,S4Q788,60,,,5.0,1,water	✓
31	4Q54031.d	P2-F6	fc10963-23	1633full_4Q.m	Sample		OP134,S4Q788,60,,,5.0,10,water	✓
32	4Q54032.d	P2-F7	fc10719-1	1633full_4Q.m	Sample		OP59,S4Q788,65,,,5.0,5,water	✓
33	4Q54033.d	P2-F8	op59-dup	1633full_4Q.m	Sample		OP59,S4Q788,60,,,5.0,5,water	✓
34	4Q54034.d	P1-D1	fc10949-1A	1633full_4Q.m	Sample		OP99927,S4Q788,500,,,5.0,1,water	✓
35	4Q54035.d	P2-F9	fc10949-1A	1633full_4Q.m	Sample		OP99927,S4Q788,500,,,5.0,5,water	✓

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SGS ORLANDO LCMS4-4Q ANALYSIS LOG

36	4Q54036.d	P1-A5	cc788-4	1633full_4Q.m	QC	4	OP99838.S4Q788.500,,,5.0,1,water	PASS
37	4Q54037.d	P1-A1	iccb	1633full_4Q.m	Sample		OP99838.S4Q788.500,,,5.0,1,water	✓
38	4Q54038.d	P3-A1	op137-bs	1633full_4Q.m	Sample		OP137.S4Q788.5.00,,,5.0,1,soil	✓
39	4Q54039.d	P3-A2	op137-llbs:3	1633full_4Q.m	Sample		OP137.S4Q788.5.00,,,5.0,1,soil	✓
40	4Q54040.d	P3-A3	op137-mb	1633full_4Q.m	Sample		OP137.S4Q788.5.00,,,5.0,1,soil	✓
41	4Q54041.d	P3-A4	fc10963-2	1633full_4Q.m	Sample		OP137.S4Q788.0.99,,,5.0,10,soil	✓
42	4Q54042.d	P3-A5	fc10963-2	1633full_4Q.m	Sample		OP137.S4Q788.0.99,,,5.0,10,soil	✓
43	4Q54043.d	P3-A6	op137-ms	1633full_4Q.m	Sample		OP137.S4Q788.0.97,,,5.0,1,soil	✓
44	4Q54044.d	P3-A7	op137-msd	1633full_4Q.m	Sample		OP137.S4Q788.0.97,,,5.0,1,soil	✓
45	4Q54045.d	P3-A8	fc10963-4	1633full_4Q.m	Sample		OP137.S4Q788.1.01,,,5.0,1,soil	✓
46	4Q54046.d	P3-A9	fc10963-4	1633full_4Q.m	Sample		OP137.S4Q788.1.01,,,5.0,10,soil	✓
47	4Q54047.d	P1-A5	cc788-4	1633full_4Q.m	QC	4	OP99838.S4Q788.500,,,5.0,1,water	PASS
48	4Q54048.d	P1-A1	iccb	1633full_4Q.m	Sample		OP99838.S4Q788.500,,,5.0,1,water	✓
49	4Q54049.d	P3-B1	op164-bs	1633full_4Q.m	Sample		OP164.S4Q788.500,,,5.0,1,water	✓
50	4Q54050.d	P3-B2	op164-llbs:3	1633full_4Q.m	Sample		OP164.S4Q788.500,,,5.0,1,water	✓
51	4Q54051.d	P3-B3	op164-mb	1633full_4Q.m	Sample		OP164.S4Q788.500,,,5.0,1,water	✓
52	4Q54052.d	P3-B4	fc10894-2	1633full_4Q.m	Sample		OP164.S4Q788.505,,,5.0,1,water	✓
53	4Q54053.d	P3-B5	fc10894-3	1633full_4Q.m	Sample		OP164.S4Q788.550,,,5.0,1,water	✓
54	4Q54054.d	P3-B6	fc11101-2	1633full_4Q.m	Sample		OP164.S4Q788.65,,,5.0,1,water	✓
55	4Q54055.d	P3-B7	fc11101-2	1633full_4Q.m	Sample		OP164.S4Q788.65,,,5.0,10,water	✓
56	4Q54056.d	P3-B8	op99994-bs	1633full_4Q.m	Sample		OP99994.S4Q788.500,,,5.0,1,water	✓
57	4Q54057.d	P3-B9	op99994-llbs:3	1633full_4Q.m	Sample		OP99994.S4Q788.500,,,5.0,1,water	✓
58	4Q54058.d	P3-C1	op99994-mb	1633full_4Q.m	Sample		OP99994.S4Q788.500,,,5.0,1,water	✓
59	4Q54059.d	P1-A5	cc788-4	1633full_4Q.m	QC	4	OP99838.S4Q788.500,,,5.0,1,water	PASS

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2192A-C	1033 Cal wtd. (spike)	LCMS 2191	PFAC	Sgs Labs	n/a	12/28/23	2ppm	250uL	4 mL	125	1033	9/24/23	12/28/23	MW
		11940	PFAC	Wellington	4-19-28	9/24/23	5ppm	250uL		312.5ppb	1033			
		11908	MXH	Wellington	4-19-28	9/24/23	1-4 ppm	250uL		125				
		11947B	PFAC		3-24-26	9/15/24	2ppm	250uL		125ppb				
		11969	MXF		12-1-27	9/24/24	2ppm	250uL		125ppb				
		11948A	PFAC		3-28-28	9/15/24	4-20 ppm	312 uL		312				
		11948B	MXG		3-28-28	9/24/24	4-20 ppm	312 uL		1100ppb				
		11971	PFAC		05/13/27	09/25/24	50ppm	200uL	2.0 mL	5ppb	95% MeOH	09/25/23	03/25/24	JR
		12016A	MXJ	Wellington Labs	05/13/27	09/25/24	50ppm	200uL	2.0 mL	5ppb	5% H ₂ O			
LCMS 2193	FOSE Std	11409	N-ET-FOSE		05/13/27	09/25/24								
		11410	N-Me-FOSE		05/13/27	09/25/24								
LCMS 2194	Full List 40 Spike (cont std)	11904/12006	PFAC-POD (25 Comp)	Absolute	03/13/28	09/11/24	1.0 ppm	400uL	4.0 mL	100ppb	95% MeOH	09/15/23	10/18/23	JR
		LCMS 2179	40 List Add-on#1	SGS Std	-	10/18/23								
		LCMS 2156	40 List Add-on#2		-	02/07/24								
		LCMS 2193	FOSE Std.		-	03/25/24	5.0 ppm			500ppb				
LCMS 2195	PFC Spike	12006	PFAC-POD (25 Comp)	Absolute	04/26/28	09/19/24	1.0 ppm	2 mL	5.0 mL	400ppb	95% MeOH	07/28/23	03/19/24	JR
		11432	N-Me-FOSAM	Wellington Labs	02/28/27	03/19/24	50 ppm	40 uL						
		11793	FESK-1		02/01/28	08/08/24								
		11792	FA-SA-1		12/01/27	08/08/24								
		11332	PFECHS		03/28/27	04/18/24								

* based on date opened as specified in each SGS - Orlando SOP.

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2188A-J	PFC ID SURR (10MB)	11986 A-J	MPFAC-24ES	Wellington Labs	06/08/26	09/19/24	1.0 ppm	1.2 mL	~2.5 mL	0.5 ppm	95% MeOH 5% H ₂ O	9/19/23	03/19/24	JR
↓	↓	11811	M3HFP-DA	↓	04/03/26	09/06/24	50 ppm	24 μL	↓	↓	↓	↓	↓	↓
↓	↓	11709	D-N-Me FOSA-M	↓	11/11/27	08/12/24	↓	↓	↓	↓	↓	↓	↓	↓
LCMS 2189A	T-PFOA STD. (BT)	10818	T-PFOA	Wellington Labs	01/08/26	10/27/25	50 ppm	8 μL	4 mL	100 ppb	95% MeOH 5% H ₂ O	09/21/23	10/27/23	AL
LCMS 2190	PFAC 1033 Cal DTD (copike)	11946B	PFAC MxH	Wellington Labs	4-19-28	9/21/24	1-4 ppm	250 μL	4 mL	62.5 125 250 ppb	1033 MIX (26884)	9/21/23	12/8/23	MJ
↓	↓	LCMS 2154	BR-LN Et+Me	Sgs Labo	MA	12/8/23	2 ppm	250 μL	↓	312.5 ppb	↓	↓	↓	↓
↓	↓	11947B	PFAC Mx F	Wellington Labs	3-24-26	9/15/24	2 ppm	250 μL	↓	12.5 ppb	↓	↓	↓	↓
↓	↓	11947C	PFAC Mx J	↓	3-28-28	9/15/24	4-20 ppm	250 μL	↓	312.1160 ppb	↓	↓	↓	↓
↓	↓	11948	PFAC Mx G	↓	12/1/27	9/15/24	2 ppm	250 μL	↓	12.5 ppb	↓	↓	↓	↓
LCMS 2191	1033 BR-LN Me + Et fosa	11497	br-N me fosa	Wellington Labs	8/23/27	12/28/23	50 ppm	100 μL	2.5 mL	2 ppm	1033 mix (18084)	9/24/23	12/28/23	MJ
↓	↓	11498	br-N Et fosa	↓	10/7/27	12/28/23	↓	100 μL	↓	2 ppm	↓	↓	↓	↓
↓	↓	11795	br-N me fosa	↓	10/7/27	06/28/24	↓	250 μL	↓	5 ppm	↓	↓	↓	↓
↓	↓	11796	br-N Et fosa	↓	10/7/27	06/28/24	↓	250 μL	↓	5 ppm	↓	↓	↓	↓
↓	↓					Continue next page								

std 29 11/9

* based on date opened as specified in each SGS - Orlando SOP.

ORLD-QAC-0017-6-03-FORM-lcms std prep log.xls 030819

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2156	L157 40 ADD ON #2	11513	FBSA-1	Wellington	11/10/26	4/18/24	50 ppm	80 uL	4.0 mL	1 ppm	95% meth 5% H2O	8/7/23	2/7/24	MW
		11514	FHXSA1		12/29/26	4/18/24					(3760)			
		11140B	I-PFAS		7/12/26	5/9/24								
LCMS 2157	1033 RT BR-LN	11496	br-Fosa	Wellington	10/7/27	12/28/23	50 ppm	10 uL 5 uL	5 mL	100 ppb	1033 mix (4930)	8/7/23	12/28/23	MW
		11497	br-N ETFOA		8/23/27			10 uL						
		11498	br-N ETFOA		10/7/27									
		11494	br-N MeFOA		10/7/27									
		11495	br-N ETFOA		10/7/27									
		11502	T-PFOA		01/27/27									
		11527	IPPFNA		01/10/27									
LCMS 2158 A-E	1033 Cul std. SPIKE	LCMS 2159 (2140)	Br-LN ET-me PFAC	SGS LABO Wellington	N/A 4/19/28	12/28/23	2 ppm 5 ppm	25 uL	4 mL	125 312.5 ppb	1033 mix 2088 uL	8/7/23	12/28/23	MW
		11930	MXH			7/31/24 8/7/24	1-4 ppm			62.5 125 250 ppb				
		11931A	PFAC		3/24/26	7-31-24 8-7-24	2 ppm			125 ppb				
		11931B	MXF			7-31-24 8-7-24	2 ppm			125 ppb				
		11907	PFAC		12/1/27	7-31-24 8-7-24	2 ppm			125 ppb				
		11932A	MXG		3-28-28	7-31-24 8-7-24	4-20 ppm	312 uL		312 1100 ppb				
		11933A	PFAC											
		11933B	MXJ											
						MA Confirm next page 8/7/23								

* based on date opened as specified in each SGS - Orlando SOP.

ORLD-QAC-0017-6-03-FORM-lcms std prep log.xls 030819

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2192A	1033 Cal std. (spike)	LCMS 2191	PFAC ^{MT} BE-TM PFAC	SGS Labs	N/A	12/28/23	2ppm 5ppm	250uL	4 mL	125 312.5ppb 62.5 250ppb	1633 real (2688SL)	9/24/23	12/28/23 14/06/23	mw
		11940	PFAC		4-19-28	9/24/23	1-4 ppm	250uL						
		11947B	PFAC		3-24-26	9/15/24	2 ppm	250uL		125ppb				
		11964	MXF		12-1-27	9/24/24	2 ppm	250uL		125ppb				
		11948A	PFAC		3-28-28	9/15/24	4-20 ppm	312 uL		312 1100 ppb				
		11948B	MXG		05/13/27	09/25/24	50ppm	200 uL	2.0 mL	5ppb	95/Meth 5/H ₂ O	09/25/23	03/25/24	JR
		11971 11992 12016A	PFAC MXJ		05/13/27	09/25/24								
LCMS 2193	FOSE Std	11409	N-ET-FOSE	Wellington Labs	05/13/27	09/25/24	50ppm	200 uL	2.0 mL	5ppb	95/Meth 5/H ₂ O	09/25/23	03/25/24	JR
		11410	N-Me-FOSE		05/13/27	09/25/24								
LCMS 2194	Full List 40 Spike (cal std)	11904/ 12006	PFAC-Dep (28 Comp)	Absolute	03/13/28	09/11/24	1.0 ppm	400 uL	4.0 mL	100 ppb	95/Meth 5/H ₂ O	09/25/23	10/16/23	JR
		LCMS 2179	40 List Add-m#1		-	10/18/23								
		LCMS 2150	40 List Add-m#2		-	02/07/24								
		LCMS 2193	FOSE Std.		-	03/25/24	5.0 ppm			500ppb				
LCMS 2195	PFC Spike	12006	PFAC-Dep (28 Comp)	Absolute	06/26/28	09/19/24	1.0 ppm	2 mL	5.0 mL	400ppb	95/Meth 5/H ₂ O	09/28/23	03/13/24	JR
		11432	N-Me FOSA-M	Wellington Labs	02/28/27	03/13/24	50 ppm	40 uL						
		11793	FBSA-1		02/01/28	08/08/24								
		11792	FH-SA-1		12/01/27	08/08/24								
		11332	PFECHS		03/28/27	04/18/24								

tested 9/25
9/25

* based on date opened as specified in each SGS - Orlando SOP.

ORLD-QAC-0017-6-03-FORM-lcms std prep log.xls 030819

12087A-J
rec'd: 10/11/23

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-ES

Mass-Labelled PFAS Extraction Standard Solution/Mixture

PRODUCT CODE: MPFAC-HIF-ES
LOT NUMBER: MPFACHIFES0623
SOLVENT(S): Methanol/Isopropanol (1%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 06/19/2023
LAST TESTED: (mm/dd/yyyy) 06/20/2023
EXPIRY DATE: (mm/dd/yyyy) 06/20/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

MPFAC-HIF-ES is a solution/mixture of ten mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄-C₁₂, C₁₄), three mass-labelled (¹³C) perfluoroalkanesulfonates (C₄, C₆, and C₈), three mass-labelled (one ¹³C and two ²H) perfluoro-1-octanesulfonamides, three mass-labelled (¹³C) fluorotelomer sulfonates (4:2, 6:2, and 8:2), two mass-labelled (²H) perfluorooctanesulfonamidoacetic acids, two mass-labelled (²H) perfluorooctanesulfonamidoethanols, and mass-labelled (¹³C) hexafluoropropylene oxide dimer acid (¹³C₅-GenX, M3HFPO-DA). The components and their concentrations are given in Table A.

The individual ¹³C-labelled components all have chemical purities >98% and isotopic purities of ≥99%. The individual ²H-labelled components all have chemical purities >98% and isotopic purities of ≥98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
 Figure 1: LC/MS Data (SIR)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#: 13, Issued 2004-11-10
 Revision#: 9, Revised 2020-12-23

MPFACHIFES0623 (1 of 7)
 rev0

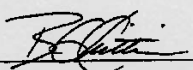
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Tab. : MPFAC-HIF-ES; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (1%)/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(¹³ C ₄)butanoic acid	MPFBA	2000		1
Perfluoro-n-(¹³ C ₅)pentanoic acid	M5PFPeA	1000		2
Perfluoro-n-(1,2,3,4,6- ¹³ C ₆)hexanoic acid	M5PFHxA	500		5
Perfluoro-n-(1,2,3,4- ¹³ C ₄)heptanoic acid	M4PFHpA	500		7
Perfluoro-n-(¹³ C ₈)octanoic acid	M8PFOA	500		10
Perfluoro-n-(¹³ C ₉)nonanoic acid	M9PFNA	250		11
Perfluoro-n-(1,2,3,4,5,6- ¹³ C ₆)decanoic acid	M6PFDA	250		14
Perfluoro-n-(1,2,3,4,5,6,7- ¹³ C ₇)undecanoic acid	M7PFUdA	250		18
Perfluoro-n-(1,2- ¹³ C ₂)dodecanoic acid	MPFDoA	250		19
Perfluoro-n-(1,2- ¹³ C ₂)tetradecanoic acid	M2PFTeDA	250		24
Perfluoro-1-(¹³ C ₈)octanesulfonamide	M8FOSA	500		16
N-Methyl-d ₃ -perfluoro-1-octanesulfonamide	d-N-MeFOSA	500		21
N-Ethyl-d ₅ -perfluoro-1-octanesulfonamide	d-N-EtFOSA	500		23
N-Methyl-d ₃ -perfluoro-1-octanesulfonamidoacetic acid	d3-N-MeFOSAA	1000		15
N-Ethyl-d ₅ -perfluoro-1-octanesulfonamidoacetic acid	d5-N-EtFOSAA	1000		17
2-(N-Methyl-d ₃ -perfluoro-1-octanesulfonamido)ethan-d ₄ -ol	d7-N-MeFOSE	5000		20
2-(N-Ethyl-d ₅ -perfluoro-1-octanesulfonamido)ethan-d ₄ -ol	d9-N-EtFOSE	5000		22
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)(¹³ C ₃)propanoic acid	M3HFPO-DA	2000		6
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-(2,3,4- ¹³ C ₃)butanesulfonate	M3PFBS	500	466	3
Sodium perfluoro-1-(1,2,3- ¹³ C ₃)hexanesulfonate	M3PFHxS	500	474	8
Sodium perfluoro-1-(¹³ C ₈)octanesulfonate	M8PFOS	500	479	12
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)hexanesulfonate	M2-4:2FTS	1000	938	4
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)octanesulfonate	M2-6:2FTS	1000	951	9
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)decanesulfonate	M2-8:2FTS	1000	960	13

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 06/22/2023
(mm/dd/yyyy)

12030 A-5
rec'd: 09/18/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-IS

**Mass-Labelled PFAS Injection
Standard Solution/Mixture**

PRODUCT CODE: MPFAC-HIF-IS
LOT NUMBER: MPFACHIFIS0723
SOLVENT(S): Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 07/05/2023
LAST TESTED: (mm/dd/yyyy) 07/05/2023
EXPIRY DATE: (mm/dd/yyyy) 07/05/2028
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

MPFAC-HIF-IS is a solution/mixture of five mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄, C₆, C₈-C₁₀) and two mass-labelled (¹⁸O and ¹³C) perfluoroalkanesulfonates (C₈ and C₉). The components and their concentrations are given in Table A.

The individual mass-labelled perfluoroalkylcarboxylic acids and perfluoroalkanesulfonates all have chemical purities of >98% and isotopic purities of ≥99% per ¹³C or >94% per ¹⁸O.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

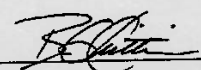
MPFACHIFIS0723 (1 of 5)
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Table A: MPFAC-HIF-IS; Components and Concentrations (ng/mL, ± 5% in methanol/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(2,3,4- ¹³ C ₃)butanoic acid	M3PFBA	1000		1
Perfluoro-n-(1,2- ¹³ C ₂)hexanoic acid	MPFHxA	500		2
Perfluoro-n-(1,2,3,4- ¹³ C ₄)octanoic acid	MPFOA	500		4
Perfluoro-n-(1,2,3,4,5- ¹³ C ₅)nonanoic acid	MPFNA	250		5
Perfluoro-n-(1,2- ¹³ C ₂)decanoic acid	MPFDA	250		7
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-hexane(¹⁸ O ₂)sulfonate	MPFHxS	500	474	3
Sodium perfluoro-1-(1,2,3,4- ¹³ C ₄)octanesulfonate	MPFOS	500	479	6

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 07/07/2023
(mimiddyyyyy)

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12016 A-B
rec'd: 09/11/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

<u>PRODUCT CODE:</u>	PFAC-MXJ
<u>LOT NUMBER:</u>	PFACMXJ0323
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	03/27/2023
<u>LAST TESTED:</u> (mm/dd/yyyy)	03/28/2023
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	03/28/2028
<u>RECOMMENDED STORAGE:</u>	Refrigerate ampoule

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
 Figure 1: LC/MS Data (SIR)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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 Revision#:9, Revised 2020-12-23

PFACMXJ0323 (1 of 5)
 rev0

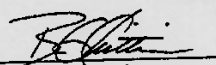
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A:

PFAC-MXJ; Components and Concentrations ($\mu\text{g/mL}$; $\pm 5\%$ in methanol)

Compound	Acronym	Concentration ($\mu\text{g/mL}$)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By:


B.G. Chittim, General Manager

Date: 04/12/2023
(mm/dd/yyyy)

Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

PFACMXJ0323 (3 of 5)
rev0

7.9.1
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Certified Reference Material CRM

CERTIFIED WEIGHT REPORT

Part Number: 64029
Lot Number: 062623
Description: PFOA-DOD
26 components
Prepaz (p°C)
D
DUTB

Expiration Date:
Recommended Storage:
Nominal Concentration (g/mL):
NIST Test Date:

Substrate(s):
Methanol (1 mL (M))
2-Propanol

Lot: 040729 (96%)
39500 (2%)

Formulated By: *P. S. ...*
Prepared By: *Adelle ...*

Formulated Date: 06/26/23
Prepared Date: 06/26/23

Volume(s) shown below were combined and diluted to (mL):
Note: All assigned values are mean concentrations.

Component	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty (mL)	Initial Conc. (g/mL)	Final Conc. (g/mL)	Uncertainty (g/mL)	Solvent Safety Info. On Attached PG	OSHA PEL (TWA)	Local ID (mL/g)	Local ID (g/mL)
1. Perfluoro-n-butanoic acid (PFBA)	95242	110422	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4	N/A	N/A	N/A
2. Perfluoro-pentanoic acid (PFPA)	95243	011722	0.02	2.00	0.017	50.3	1.00	0.02	2782-95-3	N/A	N/A	N/A
3. Perfluoro-hexanoic acid (PFHA)	91197	071023	0.02	2.00	0.017	50.2	1.00	0.02	3072-24-4	N/A	N/A	N/A
4. Perfluoro-heptanoic acid (PFHPA)	91198	110622	0.02	2.00	0.017	50.1	1.00	0.02	3745-24-4	N/A	N/A	N/A
5. Perfluoro-octanoic acid (PFOPA)	95202	09522	0.02	2.00	0.017	50.2	1.00	0.02	282-87-1 (L)	N/A	N/A	Isocet Hexylgyl
6. Perfluoro-nonoic acid (PFNA)	95203	110622	0.02	2.00	0.017	50.1	1.00	0.02	3745-24-4	N/A	N/A	N/A
7. Perfluoro-decanoic acid (PFDA)	91195	110622	0.02	2.00	0.017	50.0	1.00	0.02	3345-92-1	N/A	N/A	octad-1-ene
8. Perfluoro-undecanoic acid (PFUA)	95205	092423	0.02	2.00	0.017	50.2	1.00	0.02	2069-64-9	N/A	N/A	N/A
9. Perfluoro-dodecanoic acid (PFDA)	91196	092423	0.02	2.00	0.017	50.1	1.00	0.02	2726-34-8	N/A	N/A	N/A
10. Perfluoro-tridecanoic acid (PFTrDA)	95204	110622	0.02	2.00	0.017	50.1	1.00	0.02	2726-34-8	N/A	N/A	N/A
11. Perfluoro-tetradecanoic acid (PFTrDA)	95203	03022	0.02	2.00	0.017	50.0	1.00	0.02	2744-9-4	N/A	N/A	N/A
12. Perfluoro-1-iodooctadecanoic acid (PF18IODA)	3677	FSM1221	0.02	2.00	0.017	50.0	1.00	0.02	2553-31-9 (L)	N/A	N/A	N/A
13. Methylperfluorooctadecanoic acid (PF18MPOA)	4162	PF18MPOA029	0.02	2.00	0.017	50.0	1.00	0.02	2553-31-9 (L)	N/A	N/A	N/A
14. Methylperfluorooctadecanoic acid (PF18MPOA)	4163	PF18MPOA122	0.02	2.00	0.017	50.0	1.00	0.02	2911-59-4 (L)	N/A	N/A	N/A
15. Perfluorobutanesulfonic acid (PFBS)	91194	09022	0.02	2.00	0.017	50.2	1.00	0.02	2732-23-4	N/A	N/A	N/A
16. Perfluoropentanesulfonic acid (PFPS)	95244	091522	0.02	2.00	0.017	50.1	1.00	0.02	2732-23-4	N/A	N/A	N/A
17. Perfluorohexanesulfonic acid (PFHPS)	91198	090923	0.02	2.00	0.017	50.0	1.00	0.02	355-44-1 (L)	N/A	N/A	N/A
18. Perfluoroheptanesulfonic acid (PFHPS)	3672	LFHPS0622	0.02	2.00	0.017	49.8	1.00	0.02	375-24-1 (L)	N/A	N/A	N/A
19. Heptafluoroisobutanesulfonic acid (PFOS)	95201	090923	0.02	2.00	0.017	50.1	1.00	0.02	1783-29-1 (L)	N/A	N/A	N/A
20. Perfluoro-1-nonanesulfonic acid (PFNS)	3957	LFNS1122	0.02	2.00	0.017	48.0	1.00	0.02	185-77-2 (L)	N/A	N/A	N/A
21. Perfluoro-1-decanesulfonic acid (PFDS)	3671	LPDS1122	0.02	2.00	0.017	48.2	1.00	0.02	2711-71-4	N/A	N/A	N/A
22. 1H,1H,2H,2H-Perfluorooctane sulfonic acid (4:2 FTB)	6571	090522	0.02	2.00	0.017	50.2	1.00	0.02	2711-71-4	N/A	N/A	N/A
23. 1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTB)	6572	091023	0.02	2.00	0.017	50.2	1.00	0.02	3019-24-2	N/A	N/A	N/A
24. 1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTB)	3682	PF12SD23	0.02	2.00	0.017	49.3	1.00	0.02	1333-13-8	N/A	N/A	N/A
25. 2-Hexafluoroethyl-2,2,3,3-tetrafluoropropyl sulfonic acid (PF6-2DA)	95206	050223	0.02	2.00	0.017	49.2	1.00	0.02	1783-29-1 (L)	N/A	N/A	N/A
26. 1-Chlorooctadecyl-2,2,3,3-tetrafluoropropyl sulfonic acid (18:1-PPFOA)	4165	18:1-PPFOA029	0.02	2.00	0.017	47.1	1.00	0.02	2782-24-8 (L)	N/A	N/A	N/A
27. 9-Chlorooctadecyl-2,2,3,3-tetrafluoropropyl sulfonic acid (18:1-PPFOA)	4164	PF18S0S029	0.02	2.00	0.017	48.8	1.00	0.02	2782-24-8 (L)	N/A	N/A	N/A
28. Dodecafluoro-3H,4,β-dioxanone sulfonic acid (ADONA)	4163	PFADONA029	0.02	2.00	0.017	47.1	1.00	0.02	918005-14-4	N/A	N/A	N/A
Perfluorooctanoic acid (linear)*	95202	090922	0.02	2.00	0.004	49.6	0.99	0.010	335-67-1 (L)	N/A	Local ID (mL/g)	Local ID (g/mL)
Perfluorodecanoic acid (branched isomer)*	95202	090922	0.02	2.00	0.004	0.5	0.01	0.001	335-67-1 (L)	N/A	N/A	N/A
Perfluorohexanesulfonic acid (linear)*	91196	030923	0.02	2.00	0.017	44.0	0.98	0.02	355-44-4 (L)	N/A	N/A	N/A
Perfluorooctanesulfonic acid (branched isomer)*	91196	030923	0.02	2.00	0.017	0.0	0.12	0.0020	355-44-4 (L)	N/A	N/A	N/A
Heptafluoroisobutanesulfonic acid (linear)*	95201	090923	0.02	2.00	0.017	38.1	0.76	0.02	1783-29-1 (L)	N/A	N/A	N/A
Heptafluorodecylsulfonic acid (branched isomer)*	95201	090923	0.02	2.00	0.017	7.5	0.15	0.003	1783-29-1 (L)	N/A	N/A	N/A
Heptafluorooctanesulfonic acid (branched isomer)*	95201	090923	0.02	2.00	0.017	4.0	0.08	0.002	1783-29-1 (L)	N/A	N/A	N/A
Heptafluorodecylsulfonic acid (branched isomer)*	95201	090923	0.02	2.00	0.017	0.5	0.010	0.0002	1783-29-1 (L)	N/A	N/A	N/A
M-Methylperfluoro-1-octadecylsulfonamide acid (linear)*	4162	PF18MPOA029	0.02	2.00	0.017	38.0	0.72	0.04	2553-31-9 (L)	N/A	N/A	N/A
M-Methylperfluoro-1-octadecylsulfonamide acid (branched)*	4162	PF18MPOA029	0.02	2.00	0.017	0.5	0.10	0.011	2553-31-9 (L)	N/A	N/A	N/A
M-Methylperfluoro-1-tetradecylsulfonamide acid (linear)*	4162	PF14MPOA029	0.02	2.00	0.017	5.0	0.10	0.005	2553-31-9 (L)	N/A	N/A	N/A
M-Methylperfluoro-1-tetradecylsulfonamide acid (branched)*	4162	PF14MPOA029	0.02	2.00	0.017	2.5	0.05	0.0009	2553-31-9 (L)	N/A	N/A	N/A
N-Ethylperfluoro-1-octadecylsulfonamide acid (linear)*	4163	PF18EPOA029	0.02	2.00	0.017	36.5	0.73	0.04	2961-59-5 (L)	N/A	N/A	N/A
N-Ethylperfluoro-1-octadecylsulfonamide acid (branched)*	4163	PF18EPOA029	0.02	2.00	0.017	7.7	0.15	0.009	2961-59-5 (L)	N/A	N/A	N/A
M-Ethylperfluoro-1-tetradecylsulfonamide acid (linear)*	4163	PF14EPOA029	0.02	2.00	0.017	5.3	0.11	0.005	2961-59-5 (L)	N/A	N/A	N/A
M-Ethylperfluoro-1-tetradecylsulfonamide acid (branched)*	4163	PF14EPOA029	0.02	2.00	0.017	0.4	0.007	0.0008	2961-59-5 (L)	N/A	N/A	N/A

*Qualitative standard (Sect. 3.13) is available for PFOA that contains the linear and branched isomers (Wellington Labs, Cat. No. T-PFOA, or equivalent). This PFOA standard must be purchased and used to identify the retention times of the branched PFOA isomers. The PFOA standard must be used for quantitation (Sect. 12.2) until a quantitative PFOA standard containing the branched and linear isomers becomes commercially available.

*The certified value is the concentration calculated from gravimetric and volumetric measurements after the sample is dried. All standards are certified for 0.5% of the stated value, unless otherwise noted.
*All standards, after opening amples, should be stored with caps tight and under nitrogen atmosphere in laboratory conditions.
*Certification Reference Material (CRM) is a material that is certified by a government agency representing the laboratory or NIST Measurement Base.
NIST Reference Number 1397, U.S. Government Printing Office, Washington, DC, 1994.



11994
rec'd: 08/13/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPePA (5:3)

LOT NUMBER:

FPePA0722

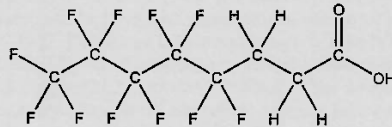
COMPOUND:

3-Perfluoropentyl propanoic acid

STRUCTURE:

CAS #:

914637-49-3



MOLECULAR FORMULA:

$C_8H_5F_{11}O_2$

MOLECULAR WEIGHT:

342.11

CONCENTRATION:

$50.0 \pm 2.5 \mu\text{g/mL}$

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/02/2022

EXPIRY DATE: (mm/dd/yyyy)

08/02/2027

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <0.5% of the unsaturated 5:3 telomer acid ($C_8H_3F_{11}O_2$) as an impurity determined by $^1\text{H NMR}$.

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Certified By:

B.G. Chittim, General Manager

Date: 08/10/2022

(mm/dd/yyyy)

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11992
rec'd 08/13/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

PRODUCT CODE: PFAC-MXJ
LOT NUMBER: PFACMXJ0323
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 03/27/2023
LAST TESTED: (mm/dd/yyyy) 03/28/2023
EXPIRY DATE: (mm/dd/yyyy) 03/28/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

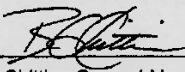
- See page 2 for further details.

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Table A: PFAC-MXJ; Components and Concentrations ($\mu\text{g}/\text{mL}$; $\pm 5\%$ in methanol)

Compound	Acronym	Concentration ($\mu\text{g}/\text{mL}$)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By: 
B.G. Chittim, General Manager

Date: 04/12/2023
(mm/dd/yyyy)

11971
rec'd: 08/22/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

<u>PRODUCT CODE:</u>	PFAC-MXJ
<u>LOT NUMBER:</u>	PFACMXJ0323
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	03/27/2023
<u>LAST TESTED:</u> (mm/dd/yyyy)	03/28/2023
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	03/28/2028
<u>RECOMMENDED STORAGE:</u>	Refrigerate ampoule

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

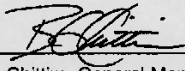
PFACMXJ0323 (1 of 5)
rev0

7.9.1
7

Table A:

PFAC-MXJ; Components and Concentrations (µg/mL; ± 5% in methanol)

Compound	Acronym	Concentration (µg/mL)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By: 
B.G. Chittim, General Manager

Date: 04/12/2023
(mm/dd/yyyy)

11968
rec'd '08/22/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

Native PFAS
Solution/Mixture

PRODUCT CODE: PFAC-MXH
LOT NUMBER: PFACMXH0423
SOLVENT(S): Methanol/Isopropanol (2%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 04/06/2023
LAST TESTED: (mm/dd/yyyy) 04/19/2023
EXPIRY DATE: (mm/dd/yyyy) 04/19/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₆, C₇, C₈, C₁₀ and C₁₂ linear; C₆ and C₈ linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide. The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Table B: Isomeric Components and Percent Composition of N-MeFOSAA
- Table C: Isomeric Components and Percent Composition of N-EtFOSAA
- Table D: Isomeric Components and Percent Composition of PFHxSK
- Table E: Isomeric Components and Percent Composition of PFOSK
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXH0423 (1 of 11)
rev1

7.9.1
7

e A:

**PFAC-MXH; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (2%)/water (<1%))**

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-butanoic acid	PFBA	4000		1
Perfluoro-n-pentanoic acid	PFPeA	2000		2
Perfluoro-n-hexanoic acid	PFHxA	1000		5
Perfluoro-n-heptanoic acid	PFHpA	1000		7
Perfluoro-n-octanoic acid	PFOA	1000		11
Perfluoro-n-nonanoic acid	PFNA	1000		14
Perfluoro-n-decanoic acid	PFDA	1000		18
Perfluoro-n-undecanoic acid	PFUdA	1000		23
Perfluoro-n-dodecanoic acid	PFDoA	1000		26
Perfluoro-n-tridecanoic acid	PFTrDA	1000		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1000		29
Perfluoro-1-octanesulfonamide	FOSA	1000		24
N-Methylperfluorooctanesulfonamidoacetic acid ^a	N-MeFOSAA: linear isomer	760		20
	N-MeFOSAA: ∑ branched isomers	240		17
N-Ethylperfluorooctanesulfonamidoacetic acid ^b	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanedisulfonate	L-PFBS	1000	887	3
Sodium perfluoro-1-pentadisulfonate	L-PFPeS	1000	941	6
Potassium perfluorohexadisulfonate ^c	PFHxSK: linear isomer	811	741	9
	PFHxSK: ∑ branched isomers	189	173	8
Sodium perfluoro-1-heptadisulfonate	L-PFHpS	1000	953	12
Potassium perfluorooctadisulfonate ^d	PFOSK: linear isomer	788	732	15
	PFOSK: ∑ branched isomers	211	196	13
Sodium perfluoro-1-nonadisulfonate	L-PFNS	1000	962	19
Sodium perfluoro-1-decadisulfonate	L-PFDS	1000	965	25
Sodium perfluoro-1-dodecadisulfonate	L-PFDoS	1000	970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4000	3750	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4000	3800	10
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate	8:2FTS	4000	3840	16

^a See Table B for percent composition of linear and branched N-MeFOSAA isomers.

^b See Table C for percent composition of linear and branched N-EtFOSAA isomers.

^c See Table D for percent composition of linear and branched PFHxSK isomers.

^d See Table E for percent composition of linear and branched PFOSK isomers.

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 05/11/2023
(mm/dd/yyyy)

11948 A-B
rec'd: 08/09/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXG

Native Perfluoroalkyl Ether Carboxylic
Acids and Sulfonate Solution/Mixture

PRODUCT CODE: PFAC-MXG
LOT NUMBER: PFACMXG1122
SOLVENT(S): Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 11/30/2022
LAST TESTED: (mm/dd/yyyy) 12/01/2022
EXPIRY DATE: (mm/dd/yyyy) 12/01/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXG is a solution/mixture of three native perfluoroalkyl ether carboxylic acids and a native perfluoroalkyl ether sulfonate. The components and their concentrations are given in Table A.

The individual components all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

PFACMXG1122 (1 of 5)
rev0

7.9.1
7

Table A: PFAC-MXG; Components and Concentrations (ng/mL; ± 5% in methanol/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-4-oxapentanoic acid	PF4OPeA	2000		A
Perfluoro-5-oxahexanoic acid	PF5OHxA	2000		B
Perfluoro-3,6-dioxahexanoic acid	3,6-OPFHxA	2000		D
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro(2-ethoxyethane)sulfonate	PFEESA	2000	1780	C

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 12/09/2022
(mm/dd/yyyy)

11947A-B
rec'd: 08/09/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS Solution/Mixture

PRODUCT CODE: PFAC-MXF
LOT NUMBER: PFACMXF0323
SOLVENT(S): Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 03/23/2023
LAST TESTED: (mm/dd/yyyy) 03/24/2023
EXPIRY DATE: (mm/dd/yyyy) 03/24/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonoate (NaDONA), the major and minor components of F-53B (9Cl-PF3ONS and 11Cl-PF3OUdS), and hexafluoropropylene oxide dimer acid (GenX, HFPO-DA). The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

PFACMXF0323 (1 of 5)
rev0

7.9.1

7

Table A: PFAC-MXF; Components and Concentrations (ng/mL; ± 5% in Methanol/Water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid	HFPO-DA	2000		A
Sodium dodecafluoro-3H-4,8-dioxanonoate	NaDONA	2000	1890	B
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroicosafuoro-3-oxaundecane-1-sulfonate	11Cl-PF3OUdS	2000	1890	D

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 03/29/2023
(mm/dd/yyyy)

11946 A-B
rec'd: 08/09/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

Native PFAS
Solution/Mixture

PRODUCT CODE: PFAC-MXH
LOT NUMBER: PFACMXH0423
SOLVENT(S): Methanol/Isopropanol (2%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 04/06/2023
LAST TESTED: (mm/dd/yyyy) 04/19/2023
EXPIRY DATE: (mm/dd/yyyy) 04/19/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₆, C₇, C₈, C₉, C₁₀ and C₁₂ linear; C₆ and C₈ linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide. The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Table B: Isomeric Components and Percent Composition of N-MeFOSAA
- Table C: Isomeric Components and Percent Composition of N-EtFOSAA
- Table D: Isomeric Components and Percent Composition of PFHxSK
- Table E: Isomeric Components and Percent Composition of PFOSK
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

PFACMXH0423 (1 of 11)
rev1

7.9.1
7

Table A: PFAC-MXH; Components and Concentrations (ng/mL, ± 5% in methanol/isopropanol (2%)/water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-butanoic acid	PFBA	4000		1
Perfluoro-n-pentanoic acid	PFPeA	2000		2
Perfluoro-n-hexanoic acid	PFHxA	1000		5
Perfluoro-n-heptanoic acid	PFHpA	1000		7
Perfluoro-n-octanoic acid	PFOA	1000		11
Perfluoro-n-nonanoic acid	PFNA	1000		14
Perfluoro-n-decanoic acid	PFDA	1000		18
Perfluoro-n-undecanoic acid	PFUdA	1000		23
Perfluoro-n-dodecanoic acid	PFDoA	1000		26
Perfluoro-n-tridecanoic acid	PFTrDA	1000		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1000		29
Perfluoro-1-octanesulfonamide	FOSA	1000		24
N-Methylperfluorooctanesulfonamidoacetic acid ^a	N-MeFOSAA: linear isomer	760		20
	N-MeFOSAA: ∑ branched isomers	240		17
N-Ethylperfluorooctanesulfonamidoacetic acid ^b	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanedisulfonate	L-PFBS	1000	887	3
Sodium perfluoro-1-pentadisulfonate	L-PFPeS	1000	941	6
Potassium perfluorohexadisulfonate ^c	PFHxSK: linear isomer	811	741	9
	PFHxSK: ∑ branched isomers	189	173	8
Sodium perfluoro-1-heptadisulfonate	L-PFHpS	1000	953	12
Potassium perfluorooctadisulfonate ^d	PFOSK: linear isomer	788	732	15
	PFOSK: ∑ branched isomers	211	196	13
Sodium perfluoro-1-nonadisulfonate	L-PFNS	1000	962	19
Sodium perfluoro-1-decadisulfonate	L-PFDS	1000	965	25
Sodium perfluoro-1-dodecadisulfonate	L-PFDoS	1000	970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4000	3750	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4000	3800	10
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate	8:2FTS	4000	3840	16

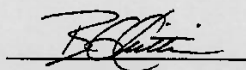
^a See Table B for percent composition of linear and branched N-MeFOSAA isomers.

^b See Table C for percent composition of linear and branched N-EtFOSAA isomers.

^c See Table D for percent composition of linear and branched PFHxSK isomers.

^d See Table E for percent composition of linear and branched PFOSK isomers.

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 05/11/2023
(mm/dd/yyyy)

11796
rec'd: 05/15/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSE

2-(N-Ethylperfluorooctanesulfonamido)ethanol
Isomeric Mix

PRODUCT CODE:	br-NEtFOSE
LOT NUMBER:	brNEtFOSE1022
CONCENTRATION:	50.0 ± 2.5 µg/mL
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	09/12/2022
LAST TESTED: (mm/dd/yyyy)	09/12/2022 (HRGC/LRMS) 10/07/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy)	10/07/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% 2-(N-ethylperfluorooctanesulfonamido)ethanol linear and branched isomers. The full name, structure, and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
Figure 3: LC/MS Data (SIR)
Figure 4: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 1691-99-2 (for linear isomer).

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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

brNEtFOSE1022 (1 of 7)
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11795
rec'd 10/15/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSE

2-(N-Methylperfluorooctanesulfonamido)ethanol
Isomeric Mix

PRODUCT CODE: br-NMeFOSE
LOT NUMBER: brNMeFOSE0922
CONCENTRATION: 50.0 ± 2.5 µg/mL
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 09/02/2022
LAST TESTED: (mm/dd/yyyy) 09/07/2022 (HRGC/LRMS)
 10/07/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 10/07/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% 2-(N-methylperfluorooctanesulfonamido)ethanol linear and branched isomers. The full name, structure, and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS Data (SIR)
- Figure 4: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 24448-09-7 (for linear isomer).

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11794
rec'd: 05/15/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFECHS

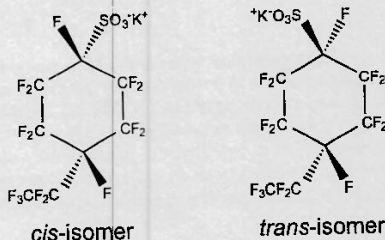
LOT NUMBER: PFECHS0223

COMPOUND:

Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

STRUCTURE:

CAS #: 335-24-0



MOLECULAR FORMULA:

C₉F₁₅SO₃K

MOLECULAR WEIGHT: 500.22

CONCENTRATION:

50.0 ± 2.5 µg/mL (K salt)
46.2 ± 2.3 µg/mL (PFECHS acid)
46.1 ± 2.3 µg/mL (PFECHS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/14/2023

EXPIRY DATE: (mm/dd/yyyy)

03/14/2028

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains a mixture of the *cis/trans* isomers of PFECHS at a ratio of 1:1.27 (*cis:trans*, by ¹⁹F NMR).

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Certified By:

B.G. Chittim, General Manager

Date: 03/16/2023
(mm/dd/yyyy)

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11762 rec'd: 04/20/23



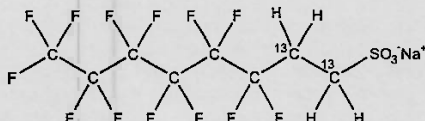
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CERTIFICATE OF ANALYSIS DOCUMENTATION

7.9.1
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PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS1122
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-(1,2-¹³C₂)octanesulfonate

STRUCTURE: **CAS #:** 2708218-89-5



MOLECULAR FORMULA: ¹³C₂¹²C₆H₄F₁₃SO₃Na **MOLECULAR WEIGHT:** 452.13
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
47.6 ± 2.4 µg/mL (M2-6:2FTS acid)
47.5 ± 2.4 µg/mL (M2-6:2FTS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 11/24/2022 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 11/24/2027
RECOMMENDED STORAGE: Refrigerate ampoule

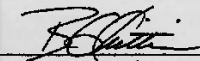
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 6:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

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Certified By:  **Date:** 12/13/2022
B.G. Chittim, General Manager (mm/dd/yyyy)

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Form#: 27, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

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11649 Rec. 02/13/23

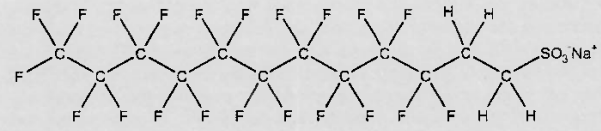


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PRODUCT CODE: 10:2FTS **LOT NUMBER:** 102FTS1122
COMPOUND: Sodium 1H,1H,2H,2H-perfluorododecanesulfonate

STRUCTURE: **CAS #:** 108026-35-3



MOLECULAR FORMULA: $C_{12}H_4F_{21}SO_3Na$ **MOLECULAR WEIGHT:** 650.18
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
 48.3 ± 2.4 µg/mL (10:2FTS acid)
 48.2 ± 2.4 µg/mL (10:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/01/2022
EXPIRY DATE: (mm/dd/yyyy) 12/01/2027
RECOMMENDED STORAGE: Refrigerate ampoule

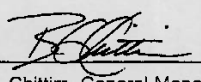
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:  Date: 12/09/2022
 B.G. Chittim, General Manager (mm/dd/yyyy)

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rev0

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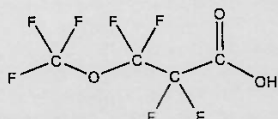
11648 Rec. 02/13/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PF4OPeA **LOT NUMBER:** PF4OPeA0722
COMPOUND: Perfluoro-4-oxapentanoic acid
SYNONYM: Perfluoro-3-methoxypropanoic acid (PFMPA) **CAS #:** 377-73-1
STRUCTURE:



MOLECULAR FORMULA: C₄HF₇O₃ **MOLECULAR WEIGHT:** 230.04
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/02/2022
EXPIRY DATE: (mm/dd/yyyy) 08/02/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

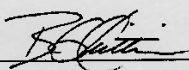
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By: 
B.G. Chittim, General Manager Date: 08/15/2022
(mm/dd/yyyy)

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11514 rec'd 11/14/22

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PRODUCT CODE:

FHxSA-I

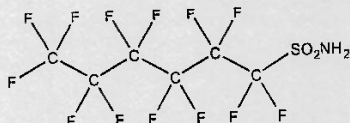
LOT NUMBER: FHxSA1221I

COMPOUND:

Perfluoro-1-hexanesulfonamide

CAS #: 41997-13-1

STRUCTURE:



MOLECULAR FORMULA:

C₆H₂F₁₃NO₂S

MOLECULAR WEIGHT: 399.13

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Isopropanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/29/2021

EXPIRY DATE: (mm/dd/yyyy)

12/29/2026

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

Date: 01/10/2022
(mm/dd/yyyy)

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FHxSA1221I (1 of 4)

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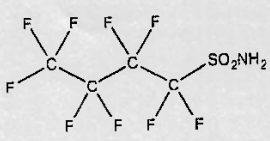
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PRODUCT CODE: FBSA-I
COMPOUND: Perfluoro-1-butanefulfonamide

LOT NUMBER: FBSA11211

STRUCTURE:

CAS #: 30334-69-1



MOLECULAR FORMULA: C₄H₂F₉NO₂S
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/10/2021
EXPIRY DATE: (mm/dd/yyyy) 11/10/2026
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 299.11
SOLVENT(S): Isopropanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: 
B.G. Chittim, General Manager

Date: 11/10/2021
(mm/dd/yyyy)

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11498



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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSA

N-Ethylperfluorooctanesulfonamide Isomeric Mix

<u>PRODUCT CODE:</u>	br-NEtFOSA
<u>LOT NUMBER:</u>	brNEtFOSA0922
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/mL
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	08/23/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	10/07/2022
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	10/07/2027
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-ethylperfluorooctanesulfonamide (linear and branched isomers). The full name, structure, and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (SIR)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 4151-50-2 (for linear isomer).

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

brNEtFOSA0922 (1 of 6)
rev1

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11497



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSA

N-Methylperfluorooctanesulfonamide Isomeric Mix

<u>PRODUCT CODE:</u>	br-NMeFOSA
<u>LOT NUMBER:</u>	brNMeFOSA0822
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/mL
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	08/18/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	08/23/2022
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	08/23/2027
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-methylperfluorooctanesulfonamide (linear and branched isomers). The full name, structure, and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
 Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
 Figure 2: LC/MS Data (SIR)
 Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 31506-32-8 (for linear isomer).

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

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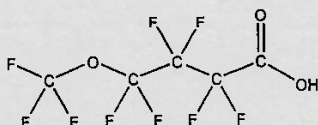
11465



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PF5OHxA **LOT NUMBER:** PF5OHxA0722
COMPOUND: Perfluoro-5-oxahexanoic acid
SYNONYM: Perfluoro-4-methoxybutanoic acid (PFMBA)
STRUCTURE: **CAS #:** 863090-89-5



MOLECULAR FORMULA: C₆H₂F₉O₃ **MOLECULAR WEIGHT:** 280.05
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/02/2022
EXPIRY DATE: (mm/dd/yyyy) 08/02/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

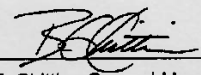
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 08/26/2022
 (mm/dd/yyyy)

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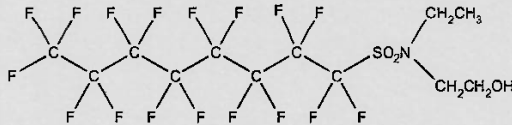
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n, 09/27/2

PRODUCT CODE: N-EtFOSE-M **LOT NUMBER:** NEtFOSE0622M
COMPOUND: 2-(N-ethylperfluoro-1-octanesulfonamido)ethanol

STRUCTURE: **CAS #:** 1691-99-2



11409

MOLECULAR FORMULA: C₁₂H₁₆F₁₇NO₃S **MOLECULAR WEIGHT:** 571.25
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/13/2022 (HRGC/LRMS)
05/13/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 05/13/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

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Certified By: 
B.G. Chittim, General Manager **Date:** 07/13/2022
(mm/dd/yyyy)

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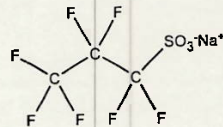
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFPrS
COMPOUND: Sodium perfluoro-1-propanesulfonate

LOT NUMBER: LPFPrS0721

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₃F₇SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt)
46.0 ± 2.3 µg/mL (PFPrS acid)
45.8 ± 2.3 µg/mL (PFPrS anion)

MOLECULAR WEIGHT: 272.07
SOLVENT(S): Methanol

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/12/2021
EXPIRY DATE: (mm/dd/yyyy) 07/12/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: 
B.G. Chittim, General Manager

Date: 08/04/2021
(mm/dd/yyyy)

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Form#:27, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

LPFPrS0721 (1 of 4)
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FPPrPA(3:3FTCA) 1116 B



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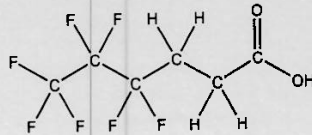
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FPPrPA
COMPOUND: 3-Perfluoropropyl propanoic acid

LOT NUMBER: FPPrPA0122

STRUCTURE:

CAS #: 356-02-5



MOLECULAR FORMULA: C₆H₅F₇O₂
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/03/2022
EXPIRY DATE: (mm/dd/yyyy) 02/03/2027
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 242.09
SOLVENT(S): Methanol

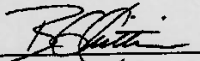
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <1% of the unsaturated 3:3 telomer acid (C₆H₃F₇O₂) as an impurity determined by ¹⁹F NMR.

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Certified By: 
B.G. Chittim, General Manager

Date: 02/04/2022
(mm/dd/yyyy)

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1116 A.B NW

1116B on the back NW



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHpPA

LOT NUMBER:

FHpPA1020

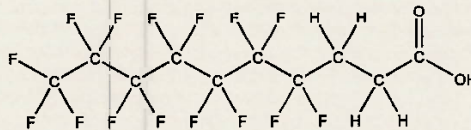
COMPOUND:

3-Perfluoroheptyl propanoic acid

STRUCTURE:

CAS #:

812-70-4



MOLECULAR FORMULA:

C₁₀H₅F₁₅O₂

MOLECULAR WEIGHT:

442.12

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/12/2020

EXPIRY DATE: (mm/dd/yyyy)

11/12/2025

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 11/27/2020

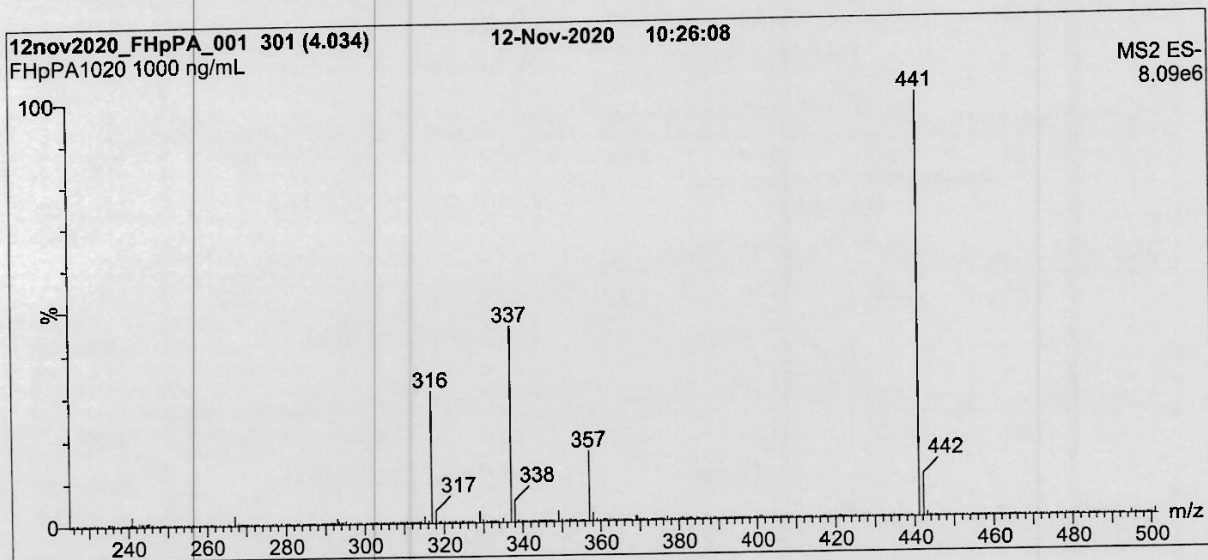
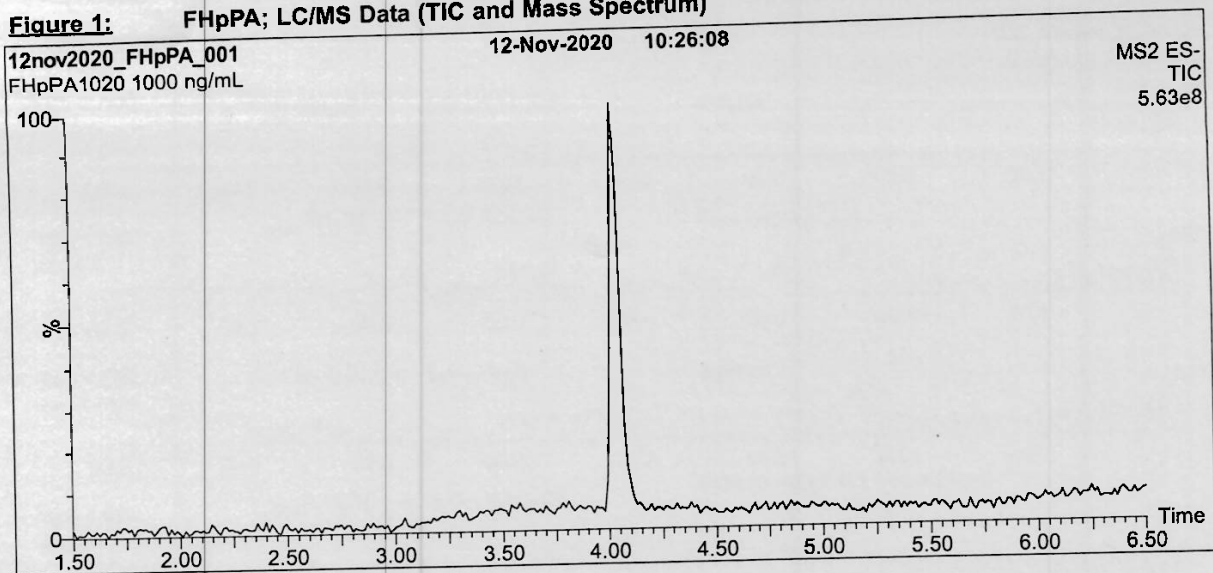
(mm/dd/yyyy)

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Form#: 27, Issued 2004-11-10
Revision#: 8, Revised 2020-09-10

FHpPA1020 (1 of 4)
rev0

Figure 1: FHpPA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

Waters Acquity Ultra Performance LC
Waters Xevo TQ-S micro MS

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H₂O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 μ L/min

MS Parameters:

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 28.50
Desolvation Temperature ($^{\circ}$ C) = 500
Desolvation Gas Flow (L/hr) = 1000



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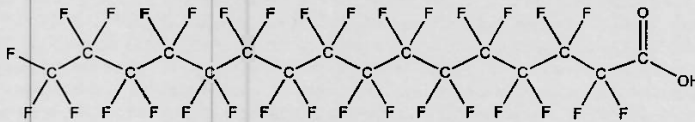
CERTIFICATE OF ANALYSIS
DOCUMENTATION

10842 * NG 01/18/23

PRODUCT CODE: PFHxDA **LOT NUMBER:** PFHxDA0421

COMPOUND: Perfluoro-n-hexadecanoic acid

STRUCTURE: **CAS #:** 67905-19-5



MOLECULAR FORMULA: C₁₆HF₃₁O₂ **MOLECULAR WEIGHT:** 814.13

CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 05/07/2021

EXPIRY DATE: (mm/dd/yyyy) 05/07/2026

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

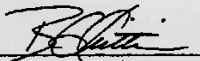
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By: 
B.G. Chittim, General Manager

Date: 05/25/2021
(mm/dd/yyyy)

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Form#:27, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFHxDA0421 (1 of 4)
rev0

7.9.1

7



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CERTIFICATE OF ANALYSIS DOCUMENTATION

10847 NG 01/18/23

PRODUCT CODE:

PFODA

LOT NUMBER:

PFODA0821

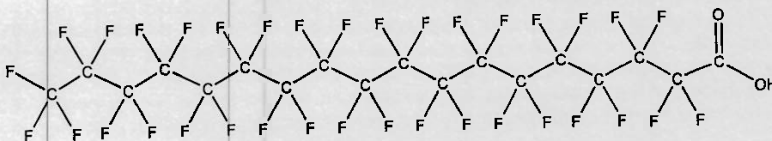
COMPOUND:

Perfluoro-n-octadecanoic acid

STRUCTURE:

CAS #:

16517-11-6



MOLECULAR FORMULA:

C₁₈H₃₅O₂

MOLECULAR WEIGHT:

914.14

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

09/03/2021

EXPIRY DATE: (mm/dd/yyyy)

09/03/2026

RECOMMENDED STORAGE:

Store ampoule at ambient temperature in a dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- The solubility of this product in methanol is very sensitive to storage conditions and solvent composition. The stated validity period applies to the sealed ampoules stored at ambient temperature.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 09/28/2021

(mm/dd/yyyy)

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7



10

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DOCUMENTATION

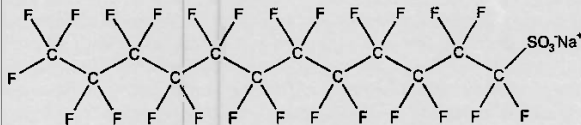
10840

PRODUCT CODE: L-PFDoS
COMPOUND: Sodium perfluoro-1-dodecanesulfonate

LOT NUMBER: LPFDoS0721

STRUCTURE:

CAS #: 1260224-54-1



MOLECULAR FORMULA: C₁₂F₂₅SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt)
48.5 ± 2.4 µg/mL (PFDoS acid)
48.4 ± 2.4 µg/mL (PFDoS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/09/2021
EXPIRY DATE: (mm/dd/yyyy) 07/09/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 722.14
SOLVENT(S): Methanol


DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~0.2% of perfluoro-n-dodecanoic acid (PFDoA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 07/16/2021
(mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-EtFOSA-M

10837

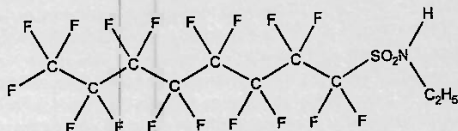
LOT NUMBER: NEtFOSA0821M

COMPOUND:

N-ethylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA:

C₁₀H₉F₁₇NO₂S

MOLECULAR WEIGHT:

527.20

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/12/2021

EXPIRY DATE: (mm/dd/yyyy)

08/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

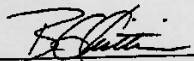
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:


B.G. Chittim, General Manager

Date: 08/16/2021

(mm/dd/yyyy)

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7.9.1
7

10765 A-13



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

3,6-OPFHpA

*rec'd
WPH
8/20/21*

LOT NUMBER:

36OPFHpA0320

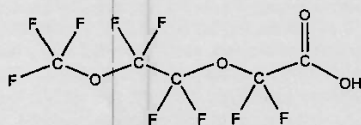
COMPOUND:

Perfluoro-3,6-dioxaheptanoic acid

STRUCTURE:

CAS #:

151772-58-6



MOLECULAR FORMULA:

C₆H₂F₉O₄

MOLECULAR WEIGHT:

296.04

CONCENTRATION:

50.0 ± 2.5 µg/ml

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/31/2020

EXPIRY DATE: (mm/dd/yyyy)

03/31/2025

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 05/27/2020
(mm/dd/yyyy)

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11969
rec'd: 08/22/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS
Solution/Mixture

PRODUCT CODE: PFAC-MXF
LOT NUMBER: PFACMXF0323
SOLVENT(S): Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 03/23/2023
LAST TESTED: (mm/dd/yyyy) 03/24/2023
EXPIRY DATE: (mm/dd/yyyy) 03/24/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonoate (NaDONA), the major and minor components of F-53B (9CI-PF3ONS and 11CI-PF3OUdS), and hexafluoropropylene oxide dimer acid (GenX, HFPO-DA). The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXF0323 (1 of 5)
rev0

7.9.1

7

Tab A: PFAC-MXF; Components and Concentrations (ng/mL; ± 5% in Methanol/Water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid	HFPO-DA	2000		A
Sodium dodecafluoro-3H-4,8-dioxananoate	NaDONA	2000	1890	B
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate	11Cl-PF3OUdS	2000	1890	D

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 03/29/2023
(mm/dd/yyyy)

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2192A-C	1033 Cal wtd. (spike)	LCMS 2191	PFAC	Sgs Labs	n/a	12/28/23	2ppm	250uL	4 mL	125	1033	9/24/23	12/28/23	MW
		11940	PFAC	Wellington	4-19-28	9/24/23	5ppm	250uL		312.5ppb	1033			
		11908	MXH	Wellington	4-19-28	9/24/23	1-4 ppm	250uL		42.5				
		11947B	PFAC		3-24-26	9/15/24	2ppm	250uL		125ppb				
		11969	MXF		12-1-27	9/24/24	2ppm	250uL		125ppb				
		11948A	PFAC		3-28-28	9/15/24	4-20 ppm	312 uL		312				
		11948B	MXG		3-28-28	9/24/24	4-20 ppm	312 uL		1100ppb				
		11971	PFAC		05/13/27	09/25/24	50ppm	200uL	2.0 mL	5ppb	95% MeOH	09/25/23	03/25/24	JR
		12016A	MXJ	Wellington Labs	05/13/27	09/25/24	50ppm	200uL	2.0 mL	5ppb	5% H ₂ O			
LCMS 2193	FOSE Std	11409	N-ET-FOSE		05/13/27	09/25/24								
		11410	N-Me-FOSE		05/13/27	09/25/24								
LCMS 2194	Full List 40 Spike (cont std)	11904/12006	POA-DOB (25 Comp)	Absolute	03/13/28	09/11/24	1.0 ppm	400uL	4.0 mL	100ppb	95% MeOH	09/15/23	10/18/23	JR
		LCMS 2179	40 List Add-on#1	SGS Std	-	10/18/23								
		LCMS 2156	40 List Add-on#2		-	02/07/24								
		LCMS 2193	FOSE Std.		-	03/25/24	5.0 ppm			500ppb				
LCMS 2195	PFC Spike	12006	POA-DOB (25 Comp)	Absolute	04/26/28	09/19/24	1.0 ppm	2 mL	5.0 mL	400ppb	95% MeOH	07/28/23	03/19/24	JR
		11432	N-Me FOSAM	Wellington Labs	02/28/27	03/19/24	50 ppm	40 uL						
		11793	FESK-1		02/01/28	08/08/24								
		11792	FA-SA-1		12/01/27	08/08/24								
		11332	PFECHS		03/28/27	04/18/24								

* based on date opened as specified in each SGS - Orlando SOP.

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2188A-J	PFC ID SURR (10MB)	11986 A-J	MPFAC-24ES	Wellington Labs	06/08/26	09/19/24	1.0 ppm	1.2 mL	~2.5 mL	0.5 ppm	95% MeOH 5% H ₂ O	9/19/23	03/19/24	JR
↓	↓	11811	M3HFP-DA	↓	04/03/26	09/06/24	50 ppm	24 mL	↓	↓	↓	↓	↓	↓
↓	↓	11709	D-N-Me FOSA-M	↓	11/11/27	08/12/24	↓	↓	↓	↓	↓	↓	↓	↓
LCMS 2189A	T-PFOA STD. (BT)	10818	T-PFOA	Wellington Labs	01/08/26	10/27/25	50 ppm	8 μL	4 mL	100 ppb	95% MeOH 5% H ₂ O	09/21/23	10/27/23	AL
LCMS 2190	PFAC 1033 Cal DTD (copike)	11946B	PFAC MxH	Wellington Labs	4-19-28	9/21/24	1-4 ppm	250 μL	4 mL	62.5 125 250 ppb	1033 MxH (2688M)	9/21/23	12/8/23	MJ
↓	↓	LCMS 2154	BR-LN Et+Me	Sgs Labo	MA	12/8/23	2 ppm	250 μL	↓	312.5 ppb	↓	↓	↓	↓
↓	↓	11947B	PFAC Mx F	Wellington Labs	3-24-26	9/15/24	2 ppm	250 μL	↓	12.5 ppb	↓	↓	↓	↓
↓	↓	11947C	PFAC Mx J	↓	3-28-28 12-11-27	9/15/24	4-20 ppm	250 μL	↓	312.1160 ppb	↓	↓	↓	↓
↓	↓	11948	PFAC Mx G	↓	12/1/27	9/15/24	2 ppm	250 μL	↓	12.5 ppb	↓	↓	↓	↓
LCMS 2191	1033 BR-LN Me + Et fosa	11497	br-N me fosa	Wellington Labs	8/23/27	12/28/23	50 ppm	100 μL	2.5 mL	2 ppm	1033 MxG (1808M)	9/24/23	12/28/23	MJ
↓	↓	11498	br-N Et fosa	↓	10/7/27	12/28/23	↓	100 μL	↓	2 ppm	↓	↓	↓	↓
↓	↓	11795	br-N me fosa	↓	10/7/27	06/28/24	↓	250 μL	↓	5 ppm	↓	↓	↓	↓
↓	↓	11796	br-N Et fosa	↓	10/7/27	06/28/24	↓	250 μL	↓	5 ppm	↓	↓	↓	↓
↓	↓					Continue next page								

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2156	L15740 ADD ON #2	11513	FBSA-1	Wellington	11/10/26	4/18/24	50 ppm	80 uL	4.0 mL	1 ppm	95% meth 5% H2O	8/7/23	2/7/24	MW
		11514	FHXSA1		12/29/26	4/18/24					(3760)			
		11140B	I-PFAS		7/12/26	5/9/24								
LCMS 2157	1033 RT BR-LN	11496	br-Fosa	Wellington	10/7/27	12/28/23	50 ppm	10 uL 5 uL	5 mL	100 ppb	1033 mix	8/7/23	12/28/23	MW
		11497	br-N MeFosa		8/23/27			10 uL			(4930)			
		11498	br-N EHFosa		10/7/27									
		11494	br-N MeFose		10/7/27									
		11495	br-N EHFose		10/7/27									
		11502	T-PFOA		01/27/27									
		11527	IPPFNA		01/10/27									
LCMS 2158 A-E	1033 Cul std. SPIKE	LCMS 2159 (2140)	Br-LN E+Me PFAC	SGS Labo	N/A	12/28/23	2 ppm 5 ppm	25 uL	4 mL	125 312.5 ppb	1033 mix 2088 uL	8/7/23	12/28/23	MW
		11930	MXH	Wellington	4/19/28	7/31/24 8/7/24	1-4 ppm			62.5 125 250 ppb				
		11931A	PFAC		3/24/26	7-31-24 8-7-24	2 ppm			125 ppb				
		11931B	MXF		12/1/27	7-31-24 8-7-24	2 ppm			125 ppb				
		11907	PFAC		3-28-28	7-31-24 8-7-24	4-20 ppm			312 1100 ppb				
		11932A	MXG											
		11933A	PFAC											
		11933B	MXJ											

* based on date opened as specified in each SGS - Orlando SOP.

ORLD-QAC-0017-6-03-FORM-ICMS std prep log.xls 030819

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2192A	1033 Cal std. (spike)	LCMS 2191	PFAC ^{MT} BE-TM PFAC	SGS Labs	n/a	12/28/23	2ppm 5ppm	250uL	4 mL	125 312.5ppb 62.5 250ppb	1633 1633 1633 (26884)	9/24/23 12/28/23 12/28/23	12/28/23 12/28/23 12/28/23	MLW
		11940	PFAC		4-19-28	9/24/23	1-4 ppm	250uL						
		11947B	PFAC		3-24-26	9/15/24	2 ppm	250uL		125ppb				
		11964	MXF		12-1-27	9/24/24	2 ppm	250uL		125ppb				
		11948A	PFAC		3-28-28	9/15/24	4-20 ppm	312 uL		312 1100 ppb				
		11948B	MXG		05/13/27	09/25/24	50ppm	200 uL	2.0 mL	5ppb	95/Meth 5/H ₂ O	09/25/23	03/25/24	JR
LCMS 2193	FOSE Std	11409	N-ET-FOSE	Wellington Labs	05/13/27	09/25/24	↓	↓	↓	↓				
		11410	N-Me-FOSE		05/13/27	09/25/24	↓	↓	↓	↓				
LCMS 2194	Full List 40 Spike (cal std)	11904/12006	PFAC-Dep (28 comp)	Absolute	03/13/28	09/11/24	1.0 ppm	400 uL	4.0 mL	100 ppb	95/Meth 5/H ₂ O	09/25/23	10/16/23	JR
		LCMS 2179	40 List Add-m#1	SGS Std	-	10/18/23	↓	↓	↓	↓				
		LCMS 2156	40 List Add-m#2		-	02/07/24	↓	↓	↓	↓				
		LCMS 2193	FOSE Std.		-	03/25/24	5.0 ppm	↓	↓	500 ppb				
LCMS 2195	PFC Spike	12006	PFAC-Dep (28 comp)	Absolute	06/26/28	09/19/24	1.0 ppm	2 mL	5.0 mL	400 ppb	95/Meth 5/H ₂ O	09/28/23	03/13/24	JR
		11432	N-Me FOSA-M	Wellington Labs	02/28/27	03/13/24	50 ppm	40 uL	↓	↓				
		11793	FBSA-1		02/01/28	08/08/24	↓	↓	↓	↓				
		11792	FH-SA-1		12/01/27	08/08/24	↓	↓	↓	↓				
		11332	PFECHS		03/28/27	04/18/24	↓	↓	↓	↓				

* based on date opened as specified in each SGS - Orlando SOP.

ORLD-QAC-0017-6-03-FORM-lcms std prep log.xls 030819

12087A-J
rec'd: 10/11/23

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-ES

Mass-Labelled PFAS Extraction Standard Solution/Mixture

PRODUCT CODE: MPFAC-HIF-ES
LOT NUMBER: MPFACHIFES0623
SOLVENT(S): Methanol/Isopropanol (1%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 06/19/2023
LAST TESTED: (mm/dd/yyyy) 06/20/2023
EXPIRY DATE: (mm/dd/yyyy) 06/20/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

MPFAC-HIF-ES is a solution/mixture of ten mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄-C₁₂, C₁₄), three mass-labelled (¹³C) perfluoroalkanesulfonates (C₄, C₆, and C₈), three mass-labelled (one ¹³C and two ²H) perfluoro-1-octanesulfonamides, three mass-labelled (¹³C) fluorotelomer sulfonates (4:2, 6:2, and 8:2), two mass-labelled (²H) perfluorooctanesulfonamidoacetic acids, two mass-labelled (²H) perfluorooctanesulfonamidoethanols, and mass-labelled (¹³C) hexafluoropropylene oxide dimer acid (¹³C₅-GenX, M3HFPO-DA). The components and their concentrations are given in Table A.

The individual ¹³C-labelled components all have chemical purities >98% and isotopic purities of ≥99%. The individual ²H-labelled components all have chemical purities >98% and isotopic purities of ≥98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#: 13, Issued 2004-11-10
 Revision#: 9, Revised 2020-12-23

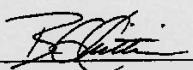
MPFACHIFES0623 (1 of 7)
 rev0

7.9.2
7

Tab. : MPFAC-HIF-ES; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (1%)/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(¹³ C ₄)butanoic acid	MPFBA	2000		1
Perfluoro-n-(¹³ C ₅)pentanoic acid	M5PFPeA	1000		2
Perfluoro-n-(1,2,3,4,6- ¹³ C ₆)hexanoic acid	M5PFHxA	500		5
Perfluoro-n-(1,2,3,4- ¹³ C ₄)heptanoic acid	M4PFHpA	500		7
Perfluoro-n-(¹³ C ₈)octanoic acid	M8PFOA	500		10
Perfluoro-n-(¹³ C ₉)nonanoic acid	M9PFNA	250		11
Perfluoro-n-(1,2,3,4,5,6- ¹³ C ₆)decanoic acid	M6PFDA	250		14
Perfluoro-n-(1,2,3,4,5,6,7- ¹³ C ₇)undecanoic acid	M7PFUdA	250		18
Perfluoro-n-(1,2- ¹³ C ₂)dodecanoic acid	MPFDoA	250		19
Perfluoro-n-(1,2- ¹³ C ₂)tetradecanoic acid	M2PFTeDA	250		24
Perfluoro-1-(¹³ C ₈)octanesulfonamide	M8FOSA	500		16
N-Methyl-d ₃ -perfluoro-1-octanesulfonamide	d-N-MeFOSA	500		21
N-Ethyl-d ₅ -perfluoro-1-octanesulfonamide	d-N-EtFOSA	500		23
N-Methyl-d ₃ -perfluoro-1-octanesulfonamidoacetic acid	d3-N-MeFOSAA	1000		15
N-Ethyl-d ₅ -perfluoro-1-octanesulfonamidoacetic acid	d5-N-EtFOSAA	1000		17
2-(N-Methyl-d ₃ -perfluoro-1-octanesulfonamido)ethan-d ₄ -ol	d7-N-MeFOSE	5000		20
2-(N-Ethyl-d ₅ -perfluoro-1-octanesulfonamido)ethan-d ₄ -ol	d9-N-EtFOSE	5000		22
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)(¹³ C ₃)propanoic acid	M3HFPO-DA	2000		6
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-(2,3,4- ¹³ C ₃)butanesulfonate	M3PFBS	500	466	3
Sodium perfluoro-1-(1,2,3- ¹³ C ₃)hexanesulfonate	M3PFHxS	500	474	8
Sodium perfluoro-1-(¹³ C ₈)octanesulfonate	M8PFOS	500	479	12
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)hexanesulfonate	M2-4:2FTS	1000	938	4
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)octanesulfonate	M2-6:2FTS	1000	951	9
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)decanesulfonate	M2-8:2FTS	1000	960	13

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 06/22/2023
(mm/dd/yyyy)

12030 A-5
rec'd: 09/18/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-IS

Mass-Labelled PFAS Injection
Standard Solution/Mixture

PRODUCT CODE: MPFAC-HIF-IS
LOT NUMBER: MPFACHIFIS0723
SOLVENT(S): Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 07/05/2023
LAST TESTED: (mm/dd/yyyy) 07/05/2023
EXPIRY DATE: (mm/dd/yyyy) 07/05/2028
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

MPFAC-HIF-IS is a solution/mixture of five mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄, C₆, C₈-C₁₀) and two mass-labelled (¹⁸O and ¹³C) perfluoroalkanesulfonates (C₈ and C₉). The components and their concentrations are given in Table A.

The individual mass-labelled perfluoroalkylcarboxylic acids and perfluoroalkanesulfonates all have chemical purities of >98% and isotopic purities of ≥99% per ¹³C or >94% per ¹⁸O.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

MPFACHIFIS0723 (1 of 5)
rev0

7.9.2
7

Table A: MPFAC-HIF-IS; Components and Concentrations (ng/mL, ± 5% in methanol/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(2,3,4- ¹³ C ₃)butanoic acid	M3PFBA	1000		1
Perfluoro-n-(1,2- ¹³ C ₂)hexanoic acid	MPFHxA	500		2
Perfluoro-n-(1,2,3,4- ¹³ C ₄)octanoic acid	MPFOA	500		4
Perfluoro-n-(1,2,3,4,5- ¹³ C ₅)nonanoic acid	MPFNA	250		5
Perfluoro-n-(1,2- ¹³ C ₂)decanoic acid	MPFDA	250		7
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-hexane(¹⁸ O ₂)sulfonate	MPFHxS	500	474	3
Sodium perfluoro-1-(1,2,3,4- ¹³ C ₄)octanesulfonate	MPFOS	500	479	6

* Concentrations have been rounded to three significant figures.

Certified By: _____

B.G. Chittim, General Manager

Date: 07/07/2023

(mimiddyyyyy)

12016 A-B
rec'd: 09/11/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

PRODUCT CODE: PFAC-MXJ
LOT NUMBER: PFACMXJ0323
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 03/27/2023
LAST TESTED: (mm/dd/yyyy) 03/28/2023
EXPIRY DATE: (mm/dd/yyyy) 03/28/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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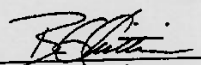
7.9.2
7

A:

PFAC-MXJ; Components and Concentrations ($\mu\text{g/mL}$; $\pm 5\%$ in methanol)

Compound	Acronym	Concentration ($\mu\text{g/mL}$)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By:


B.G. Chittim, General Manager

Date: 04/12/2023
(mm/dd/yyyy)

Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

PFACMXJ0323 (3 of 5)
rev0

7.9.2
7



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT

Part Number: 64029
Lot Number: 062623
Description: PFDA-DOD
2 components
Prepaz (0 °C)
D
007B

Expiration Date:
Recommended Storage:
Nominal Concentration (g/mL):
NIST Test Date:

Substrate(s):
Methanol (1 mL (10%)
2-Prepared

Lot #: 040729 (95%)
32500 (5%)

Formulated By: Prakash Chakraborty
Reviewed By: Aditi Das

DATE: 06/26/23

Volume(s) shown below were combined and diluted to (mL):
Note: All assigned values are mean concentrations.

Component	Part Number	Lot Number	Deliver Final	Initial (mL)	Uncertainty (mL)	Initial Conc (g/mL)	Final Conc (g/mL)	Final Uncertainty (g/mL)	Final Value (g/mL)	Final Uncertainty (g/mL)	Final Value (g/mL)	Final Uncertainty (g/mL)	Final Value (g/mL)	Final Uncertainty (g/mL)
1. Perfluoro-n-butanoic acid (PFBA)	95242	110422	0.02	2.00	0.017	50.1	1.00	0.02	375.29-4	N/A	N/A	N/A	N/A	
2. Perfluoro-pentanoic acid (PFPA)	95243	011723	0.02	2.00	0.017	50.3	1.00	0.02	3782.95-3	N/A	N/A	N/A	N/A	
3. Perfluoro-hexanoic acid (PFHA)	90197	071023	0.02	2.00	0.017	50.2	1.00	0.02	3073.24-4	N/A	N/A	N/A	N/A	
4. Perfluoro-heptanoic acid (PFHPA)	90198	110622	0.02	2.00	0.017	50.1	1.00	0.02	3745.64-3	N/A	N/A	N/A	N/A	
5. Perfluoro-octanoic acid (PFOPA)	95202	09522	0.02	2.00	0.017	50.2	1.00	0.02	3284.91-1(L)	N/A	N/A	N/A	Isolated Hexamethyl	
6. Perfluoro-nonoic acid (PFNA)	95203	110622	0.02	2.00	0.017	50.1	1.00	0.02	3745.92-1	N/A	N/A	N/A	Octadecyl Strength	
7. Perfluoro-decanoic acid (PFDA)	90195	110622	0.02	2.00	0.017	50.0	1.00	0.02	3069.64-9	N/A	N/A	N/A	N/A	
8. Perfluoro-undecanoic acid (PFUA)	95205	052423	0.02	2.00	0.017	50.1	1.00	0.02	3726.84-8	N/A	N/A	N/A	N/A	
9. Perfluoro-dodecanoic acid (PFDDA)	90204	110622	0.02	2.00	0.017	50.1	1.00	0.02	3745.92-1	N/A	N/A	N/A	N/A	
10. Perfluoro-tridecanoic acid (PFDDA)	90204	110622	0.02	2.00	0.017	50.1	1.00	0.02	3745.92-1	N/A	N/A	N/A	N/A	
11. Perfluoro-tetradecanoic acid (PFDDA)	90203	03022	0.02	2.00	0.017	50.0	1.00	0.02	3745.92-1	N/A	N/A	N/A	N/A	
12. Perfluoro-1-iodooctadecanoic acid (PFDOIA)	3677	PFDA1221	0.02	2.00	0.017	50.0	1.00	0.02	2535.31-5 (L)	N/A	N/A	N/A	N/A	
13. Methylperfluorooctadecanoic acid (PFMPDOIA)	4162	PFDOIA0429	0.02	2.00	0.017	50.0	1.00	0.02	2811.59-4 (L)	N/A	N/A	N/A	N/A	
14. Methylperfluorododecanoic acid (PFMPDDA)	4163	PFDDA0429	0.02	2.00	0.017	50.0	1.00	0.02	2732.23-4	N/A	N/A	N/A	N/A	
15. Perfluorobutanesulfonic acid (PFBS)	90194	060522	0.02	2.00	0.017	50.2	1.00	0.02	3752.23-4	N/A	N/A	N/A	N/A	
16. Perfluoropentanesulfonic acid (PFPS)	95244	091522	0.02	2.00	0.017	50.1	1.00	0.02	3554.41-1	N/A	N/A	N/A	N/A	
17. Perfluorohexanesulfonic acid (PFHFS)	90196	080923	0.02	2.00	0.017	50.0	1.00	0.02	3752.23-4	N/A	N/A	N/A	N/A	
18. Perfluoroheptanesulfonic acid (PFHFS)	3672	LFPHS0422	0.02	2.00	0.017	49.8	1.00	0.02	3752.23-4 (L)	N/A	N/A	N/A	N/A	
19. Heptafluoroisobutanesulfonic acid (PFOSI)	95201	050923	0.02	2.00	0.017	50.1	1.00	0.02	1783.28-1 (L)	N/A	N/A	N/A	N/A	
20. Perfluoro-1-nonanesulfonic acid (PFNS)	3957	LFPS1122	0.02	2.00	0.017	49.0	1.01	0.02	3852.71-2	N/A	N/A	N/A	N/A	
21. Perfluoro-1-decanesulfonic acid (PFDS)	3671	LPDS1122	0.02	2.00	0.017	49.2	1.01	0.02	3771.71-2	N/A	N/A	N/A	N/A	
22. 1H,1H,2H,2H-Perfluorooctane sulfonic acid (4:2 FTB)	6571	060522	0.02	2.00	0.017	50.2	1.00	0.02	3771.71-2	N/A	N/A	N/A	N/A	
23. 1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTB)	6572	031023	0.02	2.00	0.017	50.2	1.00	0.02	3819.24-2	N/A	N/A	N/A	N/A	
24. 1H,1H,2H,2H-Perfluorododecane sulfonic acid (8:2 FTB)	3682	PFPS0423	0.02	2.00	0.017	49.2	1.00	0.02	3833.13-4	N/A	N/A	N/A	N/A	
25. 2-Hydroxyperfluorooctyl-2,2,3,3-tetrafluoroethyl sulfonic acid (PFPO-SA)	90695	050223	0.02	2.00	0.017	49.2	1.00	0.02	3783.28-1	N/A	N/A	N/A	N/A	
26. 1-Chloro-2-hydroxyperfluorooctyl-2,2,3,3-tetrafluoroethyl sulfonic acid (1D-PFO-S-Cl)	4165	1D-PFO-S-Cl0429	0.02	2.00	0.017	49.1	1.00	0.02	3783.28-1	N/A	N/A	N/A	N/A	
27. 9-Chloro-2-hydroxyperfluorodecyl-2,2,3,3-tetrafluoroethyl sulfonic acid (9D-PFO-S-Cl)	4164	9D-PFO-S-Cl0429	0.02	2.00	0.017	49.8	1.00	0.02	3783.28-1	N/A	N/A	N/A	N/A	
28. Dodecafluoro-3H,4,β-dioxanone sulfonic acid (DDO-SA)	4163	NBD0SA0129	0.02	2.00	0.017	47.1	1.00	0.02	918005-14-4	N/A	N/A	N/A	N/A	
Perfluorooctanoic acid (linear)*	95202	060522	0.02	2.00	0.004	49.6	0.99	0.010	335-67-1 (L)	N/A	N/A	N/A	Isolated Hexamethyl	
Perfluorodecanoic acid (branched isomer)*	95202	060522	0.02	2.00	0.004	0.5	0.01	0.001	335-67-1 (L)	N/A	N/A	N/A	Isolated Hexamethyl	
Perfluorohexanesulfonic acid (branched isomer)*	90196	030923	0.02	2.00	0.017	44.0	0.98	0.02	355-64-4 (L)	N/A	N/A	N/A	N/A	
Perfluorooctanesulfonic acid (branched isomer)*	90196	030923	0.02	2.00	0.017	0.0	0.12	0.000	355-64-4 (L)	N/A	N/A	N/A	N/A	
Heptafluoroisobutanesulfonic acid (linear)*	95201	030923	0.02	2.00	0.017	38.1	0.76	0.02	1783-28-1 (L)	N/A	N/A	N/A	N/A	
Heptafluoroisobutanesulfonic acid (branched isomer)*	95201	030923	0.02	2.00	0.017	7.5	0.15	0.003	1783-28-1 (L)	N/A	N/A	N/A	N/A	
Heptafluorooctanesulfonic acid (branched isomer)*	95201	030923	0.02	2.00	0.017	4.0	0.08	0.002	1783-28-1 (L)	N/A	N/A	N/A	N/A	
Heptafluorodecane sulfonic acid (branched isomer)*	95201	030923	0.02	2.00	0.017	0.5	0.010	0.0002	1783-28-1 (L)	N/A	N/A	N/A	N/A	
M-Methylperfluoro-1-octadecanesulfonic acid (linear)*	4162	PFDOIA0429	0.02	2.00	0.017	38.0	0.72	0.04	2555-31-9 (L)	N/A	N/A	N/A	N/A	
M-Methylperfluoro-1-dodecanesulfonic acid (branched)*	4162	PFDDA0429	0.02	2.00	0.017	36.5	0.13	0.011	2555-31-9 (L)	N/A	N/A	N/A	N/A	
M-Methylperfluoro-1-octadecanesulfonic acid (branched)*	4162	PFDOIA0429	0.02	2.00	0.017	5.0	0.10	0.005	2555-31-9 (L)	N/A	N/A	N/A	N/A	
M-Methylperfluoro-1-dodecanesulfonic acid (branched)*	4162	PFDDA0429	0.02	2.00	0.017	2.5	0.05	0.0009	2555-31-9 (L)	N/A	N/A	N/A	N/A	
N-Ethylperfluoro-1-octadecanesulfonic acid (linear)*	4163	PFDOIA0429	0.02	2.00	0.017	36.5	0.73	0.04	2961-59-5 (L)	N/A	N/A	N/A	N/A	
N-Ethylperfluoro-1-dodecanesulfonic acid (branched)*	4163	PFDDA0429	0.02	2.00	0.017	7.7	0.15	0.009	2961-59-5 (L)	N/A	N/A	N/A	N/A	
M-Ethylperfluoro-1-octadecanesulfonic acid (branched)*	4163	PFDOIA0429	0.02	2.00	0.017	5.3	0.11	0.005	2961-59-5 (L)	N/A	N/A	N/A	N/A	
M-Ethylperfluoro-1-dodecanesulfonic acid (branched)*	4163	PFDDA0429	0.02	2.00	0.017	0.4	0.007	0.0006	2961-59-5 (L)	N/A	N/A	N/A	N/A	

*Quantitative standard (Sect. 3.13) is available for PFDA that contains the linear and branched isomers (Wellington Labs, Cat. No. T-PFDA, or equivalent). This PFDA standard must be purchased and used to identify the retention times of the branched PFDA isomers. The only PFDA standard must be used for quantitation (Sect. 12.2) until a quantitative PFDA standard containing the branched and linear isomers becomes commercially available.

*The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise noted.
 *Standard uncertainty is given in parentheses following the certified value.
 *All standards, after opening amples, should be stored with caps tight and under nitrogen atmosphere.
 *Certification Reference Material (CRM) is a primary standard for the purpose of calibrating the laboratory or NIST Measurement Service.
 NIST Reference Number 1297, U.S. Government Printing Office, Washington, DC, 1994.

12006
Rec'd: 09/07/23

11994
rec'd: 08/13/22



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPePA (5:3)

LOT NUMBER:

FPePA0722

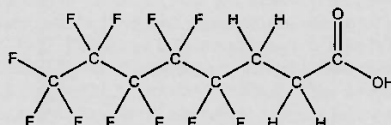
COMPOUND:

3-Perfluoropentyl propanoic acid

STRUCTURE:

CAS #:

914637-49-3



MOLECULAR FORMULA:

$C_8H_5F_{11}O_2$

MOLECULAR WEIGHT:

342.11

CONCENTRATION:

$50.0 \pm 2.5 \mu\text{g/mL}$

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/02/2022

EXPIRY DATE: (mm/dd/yyyy)

08/02/2027

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <0.5% of the unsaturated 5:3 telomer acid ($C_8H_3F_{11}O_2$) as an impurity determined by $^1\text{H NMR}$.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 08/10/2022

(mm/dd/yyyy)

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11992
rec'd 08/13/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

PRODUCT CODE: PFAC-MXJ
LOT NUMBER: PFACMXJ0323
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 03/27/2023
LAST TESTED: (mm/dd/yyyy) 03/28/2023
EXPIRY DATE: (mm/dd/yyyy) 03/28/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

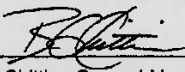
- See page 2 for further details.

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Table A: PFAC-MXJ; Components and Concentrations ($\mu\text{g}/\text{mL}$; $\pm 5\%$ in methanol)

Compound	Acronym	Concentration ($\mu\text{g}/\text{mL}$)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By: 
B.G. Chittim, General Manager

Date: 04/12/2023
(mm/dd/yyyy)

11971
rec'd: 08/22/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

PRODUCT CODE: PFAC-MXJ
LOT NUMBER: PFACMXJ0323
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 03/27/2023
LAST TESTED: (mm/dd/yyyy) 03/28/2023
EXPIRY DATE: (mm/dd/yyyy) 03/28/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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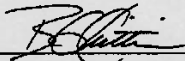
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Table A:

PFAC-MXJ; Components and Concentrations (µg/mL; ± 5% in methanol)

Compound	Acronym	Concentration (µg/mL)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By: 
B.G. Chittim, General Manager

Date: 04/12/2023
(mm/dd/yyyy)

11968
rec'd 08/22/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

Native PFAS
Solution/Mixture

PRODUCT CODE: PFAC-MXH
LOT NUMBER: PFACMXH0423
SOLVENT(S): Methanol/Isopropanol (2%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 04/06/2023
LAST TESTED: (mm/dd/yyyy) 04/19/2023
EXPIRY DATE: (mm/dd/yyyy) 04/19/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₆, C₇, C₈, C₁₀ and C₁₂ linear; C₆ and C₈ linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide. The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Table B: Isomeric Components and Percent Composition of N-MeFOSAA
- Table C: Isomeric Components and Percent Composition of N-EtFOSAA
- Table D: Isomeric Components and Percent Composition of PFHxSK
- Table E: Isomeric Components and Percent Composition of PFOSK
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

PFACMXH0423 (1 of 11)
rev 1

7.9.2
7

e A:

**PFAC-MXH; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (2%)/water (<1%))**

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-butanoic acid	PFBA	4000		1
Perfluoro-n-pentanoic acid	PFPeA	2000		2
Perfluoro-n-hexanoic acid	PFHxA	1000		5
Perfluoro-n-heptanoic acid	PFHpA	1000		7
Perfluoro-n-octanoic acid	PFOA	1000		11
Perfluoro-n-nonanoic acid	PFNA	1000		14
Perfluoro-n-decanoic acid	PFDA	1000		18
Perfluoro-n-undecanoic acid	PFUdA	1000		23
Perfluoro-n-dodecanoic acid	PFDoA	1000		26
Perfluoro-n-tridecanoic acid	PFTrDA	1000		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1000		29
Perfluoro-1-octanesulfonamide	FOSA	1000		24
N-Methylperfluorooctanesulfonamidoacetic acid ^a	N-MeFOSAA: linear isomer	760		20
	N-MeFOSAA: ∑ branched isomers	240		17
N-Ethylperfluorooctanesulfonamidoacetic acid ^b	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanesulfonate	L-PFBS	1000	887	3
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	1000	941	6
Potassium perfluorohexanesulfonate ^c	PFHxSK: linear isomer	811	741	9
	PFHxSK: ∑ branched isomers	189	173	8
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	1000	953	12
Potassium perfluorooctanesulfonate ^d	PFOSK: linear isomer	788	732	15
	PFOSK: ∑ branched isomers	211	196	13
Sodium perfluoro-1-nonanesulfonate	L-PFNS	1000	962	19
Sodium perfluoro-1-decanesulfonate	L-PFDS	1000	965	25
Sodium perfluoro-1-dodecanesulfonate	L-PFDoS	1000	970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4000	3750	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4000	3800	10
Sodium 1H,1H,2H,2H-perfluorodecanesulfonate	8:2FTS	4000	3840	16


^a See Table B for percent composition of linear and branched N-MeFOSAA isomers.

^b See Table C for percent composition of linear and branched N-EtFOSAA isomers.

^c See Table D for percent composition of linear and branched PFHxSK isomers.

^d See Table E for percent composition of linear and branched PFOSK isomers.

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 05/11/2023
(mm/dd/yyyy)

11948 A-B
rec'd: 08/09/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXG

Native Perfluoroalkyl Ether Carboxylic
Acids and Sulfonate Solution/Mixture

PRODUCT CODE: PFAC-MXG
LOT NUMBER: PFACMXG1122
SOLVENT(S): Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 11/30/2022
LAST TESTED: (mm/dd/yyyy) 12/01/2022
EXPIRY DATE: (mm/dd/yyyy) 12/01/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXG is a solution/mixture of three native perfluoroalkyl ether carboxylic acids and a native perfluoroalkyl ether sulfonate. The components and their concentrations are given in Table A.

The individual components all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

PFACMXG1122 (1 of 5)
rev0

7.9.2
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Table A: PFAC-MXG; Components and Concentrations (ng/mL; ± 5% in methanol/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-4-oxapentanoic acid	PF4OPeA	2000		A
Perfluoro-5-oxahexanoic acid	PF5OHxA	2000		B
Perfluoro-3,6-dioxahexanoic acid	3,6-OPFHxA	2000		D
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro(2-ethoxyethane)sulfonate	PFEESA	2000	1780	C

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 12/09/2022
(mm/dd/yyyy)

11947A-B
rec'd: 08/09/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS Solution/Mixture

PRODUCT CODE: PFAC-MXF
LOT NUMBER: PFACMXF0323
SOLVENT(S): Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 03/23/2023
LAST TESTED: (mm/dd/yyyy) 03/24/2023
EXPIRY DATE: (mm/dd/yyyy) 03/24/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonoate (NaDONA), the major and minor components of F-53B (9Cl-PF3ONS and 11Cl-PF3OUdS), and hexafluoropropylene oxide dimer acid (GenX, HFPO-DA). The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Revision#: 9, Revised 2020-12-23

PFACMXF0323 (1 of 5)
rev0

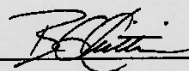
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Table A: PFAC-MXF; Components and Concentrations (ng/mL; ± 5% in Methanol/Water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid	HFPO-DA	2000		A
Sodium dodecafluoro-3H-4,8-dioxanonoate	NaDONA	2000	1890	B
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate	11Cl-PF3OUdS	2000	1890	D

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 03/29/2023
(mm/dd/yyyy)

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11946 A-B
rec'd: 08/09/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

Native PFAS
Solution/Mixture

PRODUCT CODE: PFAC-MXH
LOT NUMBER: PFACMXH0423
SOLVENT(S): Methanol/Isopropanol (2%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 04/06/2023
LAST TESTED: (mm/dd/yyyy) 04/19/2023
EXPIRY DATE: (mm/dd/yyyy) 04/19/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₆, C₇, C₈, C₁₀ and C₁₂ linear; C₆ and C₈ linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide. The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Table B: Isomeric Components and Percent Composition of N-MeFOSAA
- Table C: Isomeric Components and Percent Composition of N-EtFOSAA
- Table D: Isomeric Components and Percent Composition of PFHxSK
- Table E: Isomeric Components and Percent Composition of PFOSK
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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Revision#: 9, Revised 2020-12-23

PFACMXH0423 (1 of 11)
rev1

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Table A: PFAC-MXH; Components and Concentrations (ng/mL, ± 5% in methanol/isopropanol (2%)/water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-butanoic acid	PFBA	4000		1
Perfluoro-n-pentanoic acid	PFPeA	2000		2
Perfluoro-n-hexanoic acid	PFHxA	1000		5
Perfluoro-n-heptanoic acid	PFHpA	1000		7
Perfluoro-n-octanoic acid	PFOA	1000		11
Perfluoro-n-nonanoic acid	PFNA	1000		14
Perfluoro-n-decanoic acid	PFDA	1000		18
Perfluoro-n-undecanoic acid	PFUdA	1000		23
Perfluoro-n-dodecanoic acid	PFDoA	1000		26
Perfluoro-n-tridecanoic acid	PFTrDA	1000		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1000		29
Perfluoro-1-octanesulfonamide	FOSA	1000		24
N-Methylperfluorooctanesulfonamidoacetic acid ^a	N-MeFOSAA: linear isomer	760		20
	N-MeFOSAA: ∑ branched isomers	240		17
N-Ethylperfluorooctanesulfonamidoacetic acid ^b	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanedisulfonate	L-PFBS	1000	887	3
Sodium perfluoro-1-pentadisulfonate	L-PFPeS	1000	941	6
Potassium perfluorohexadisulfonate ^c	PFHxSK: linear isomer	811	741	9
	PFHxSK: ∑ branched isomers	189	173	8
Sodium perfluoro-1-heptadisulfonate	L-PFHpS	1000	953	12
Potassium perfluorooctadisulfonate ^d	PFOSK: linear isomer	788	732	15
	PFOSK: ∑ branched isomers	211	196	13
Sodium perfluoro-1-nonadisulfonate	L-PFNS	1000	962	19
Sodium perfluoro-1-decadisulfonate	L-PFDS	1000	965	25
Sodium perfluoro-1-dodecadisulfonate	L-PFDoS	1000	970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4000	3750	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4000	3800	10
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate	8:2FTS	4000	3840	16

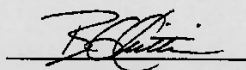
^a See Table B for percent composition of linear and branched N-MeFOSAA isomers.

^b See Table C for percent composition of linear and branched N-EtFOSAA isomers.

^c See Table D for percent composition of linear and branched PFHxSK isomers.

^d See Table E for percent composition of linear and branched PFOSK isomers.

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 05/11/2023
(mm/dd/yyyy)

11796
rec'd: 05/15/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSE

2-(N-Ethylperfluorooctanesulfonamido)ethanol
Isomeric Mix

PRODUCT CODE:	br-NEtFOSE
LOT NUMBER:	brNEtFOSE1022
CONCENTRATION:	50.0 ± 2.5 µg/mL
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	09/12/2022
LAST TESTED: (mm/dd/yyyy)	09/12/2022 (HRGC/LRMS) 10/07/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy)	10/07/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% 2-(N-ethylperfluorooctanesulfonamido)ethanol linear and branched isomers. The full name, structure, and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
Figure 3: LC/MS Data (SIR)
Figure 4: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 1691-99-2 (for linear isomer).

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Revision#: 9, Revised 2020-12-23

brNEtFOSE1022 (1 of 7)
rev1

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11795
rec'd 10/15/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSE

2-(N-Methylperfluorooctanesulfonamido)ethanol
Isomeric Mix

PRODUCT CODE: br-NMeFOSE
LOT NUMBER: brNMeFOSE0922
CONCENTRATION: 50.0 ± 2.5 µg/mL
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 09/02/2022
LAST TESTED: (mm/dd/yyyy) 09/07/2022 (HRGC/LRMS)
 10/07/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 10/07/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% 2-(N-methylperfluorooctanesulfonamido)ethanol linear and branched isomers. The full name, structure, and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS Data (SIR)
- Figure 4: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 24448-09-7 (for linear isomer).

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Revision#: 9, Revised 2020-12-23

brNMeFOSE0922 (1 of 7)
rev1

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11794
rec'd: 05/15/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

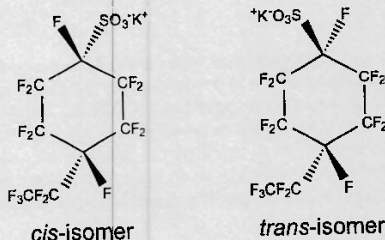
PFECHS

LOT NUMBER: PFECHS0223

COMPOUND:

Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

STRUCTURE:



CAS #: 335-24-0

MOLECULAR FORMULA:

C₉F₁₅SO₃K

MOLECULAR WEIGHT: 500.22

CONCENTRATION:

50.0 ± 2.5 µg/mL (K salt)
46.2 ± 2.3 µg/mL (PFECHS acid)
46.1 ± 2.3 µg/mL (PFECHS anion)

SOLVENT(S): Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/14/2023

EXPIRY DATE: (mm/dd/yyyy)

03/14/2028

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains a mixture of the *cis/trans* isomers of PFECHS at a ratio of 1:1.27 (*cis:trans*, by ¹⁹F NMR).

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Certified By:

B.G. Chittim, General Manager

Date: 03/16/2023
(mm/dd/yyyy)

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7.9.2
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11762 rec'd: 04/20/23

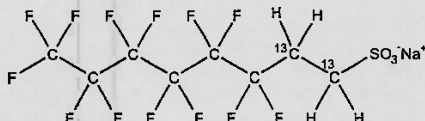


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS1122
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-(1,2-¹³C₂)octanesulfonate

STRUCTURE: **CAS #:** 2708218-89-5



MOLECULAR FORMULA: ¹³C₂¹²C₆H₄F₁₃SO₃Na **MOLECULAR WEIGHT:** 452.13
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
47.6 ± 2.4 µg/mL (M2-6:2FTS acid)
47.5 ± 2.4 µg/mL (M2-6:2FTS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 11/24/2022 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 11/24/2027
RECOMMENDED STORAGE: Refrigerate ampoule

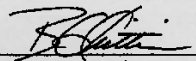
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 6:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

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Certified By:  **Date:** 12/13/2022
B.G. Chittim, General Manager (mm/dd/yyyy)

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Form#: 27, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

M262FTS1122 (1 of 4)
rev0

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11710
rec'd: 03/17/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSA-M

LOT NUMBER:

NMeFOSA1122M

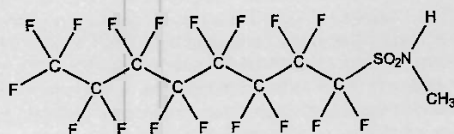
COMPOUND:

N-Methylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #:

31506-32-8



MOLECULAR FORMULA:

C₉H₄F₁₇NO₂S

MOLECULAR WEIGHT:

513.17

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/11/2022

EXPIRY DATE: (mm/dd/yyyy)

11/11/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

Date: 11/25/2022

(mm/dd/yyyy)

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11649 Rec. 02/13/23

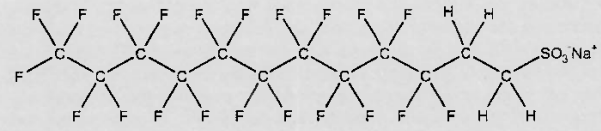


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 10:2FTS **LOT NUMBER:** 102FTS1122
COMPOUND: Sodium 1H,1H,2H,2H-perfluorododecanesulfonate

STRUCTURE: **CAS #:** 108026-35-3



MOLECULAR FORMULA: C₁₂H₄F₂₁SO₃Na **MOLECULAR WEIGHT:** 650.18
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
48.3 ± 2.4 µg/mL (10:2FTS acid)
48.2 ± 2.4 µg/mL (10:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/01/2022
EXPIRY DATE: (mm/dd/yyyy) 12/01/2027
RECOMMENDED STORAGE: Refrigerate ampoule

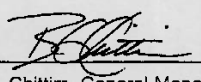
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:  **Date:** 12/09/2022
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Revision# 9, Revised 2020-12-23

102FTS1122 (1 of 4)
rev0

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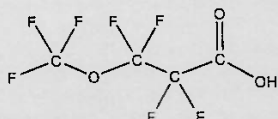
11648 Rec. 02/13/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PF4OPeA **LOT NUMBER:** PF4OPeA0722
COMPOUND: Perfluoro-4-oxapentanoic acid
SYNONYM: Perfluoro-3-methoxypropanoic acid (PFMPA) **CAS #:** 377-73-1
STRUCTURE:



MOLECULAR FORMULA: C₄HF₇O₃ **MOLECULAR WEIGHT:** 230.04
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/02/2022
EXPIRY DATE: (mm/dd/yyyy) 08/02/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

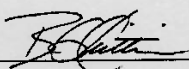
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By: 
B.G. Chittim, General Manager Date: 08/15/2022
(mm/dd/yyyy)

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11514 rec'd 11/14/22

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHxSA-I

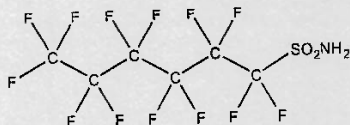
LOT NUMBER: FHxSA1221I

COMPOUND:

Perfluoro-1-hexanesulfonamide

CAS #: 41997-13-1

STRUCTURE:



MOLECULAR FORMULA:

C₆H₂F₁₃NO₂S

MOLECULAR WEIGHT: 399.13

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Isopropanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/29/2021

EXPIRY DATE: (mm/dd/yyyy)

12/29/2026

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 01/10/2022
(mm/dd/yyyy)

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FHxSA1221I (1 of 4)

11498



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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSA

N-Ethylperfluorooctanesulfonamide Isomeric Mix

<u>PRODUCT CODE:</u>	br-NEtFOSA
<u>LOT NUMBER:</u>	brNEtFOSA0922
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/mL
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	08/23/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	10/07/2022
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	10/07/2027
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-ethylperfluorooctanesulfonamide (linear and branched isomers). The full name, structure, and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
 Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
 Figure 2: LC/MS Data (SIR)
 Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 4151-50-2 (for linear isomer).

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Revision#:9, Revised 2020-12-23

brNEtFOSA0922 (1 of 6)
rev1

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11497



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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSA

N-Methylperfluorooctanesulfonamide Isomeric Mix

<u>PRODUCT CODE:</u>	br-NMeFOSA
<u>LOT NUMBER:</u>	brNMeFOSA0822
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/mL
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	08/18/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	08/23/2022
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	08/23/2027
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-methylperfluorooctanesulfonamide (linear and branched isomers). The full name, structure, and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
 Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
 Figure 2: LC/MS Data (SIR)
 Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 31506-32-8 (for linear isomer).

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

brNMeFOSA0822 (1 of 6)
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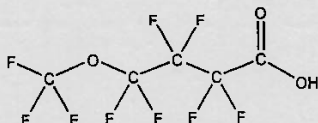
11465



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PF5OHxA **LOT NUMBER:** PF5OHxA0722
COMPOUND: Perfluoro-5-oxahexanoic acid
SYNONYM: Perfluoro-4-methoxybutanoic acid (PFMBA)
STRUCTURE: **CAS #:** 863090-89-5



MOLECULAR FORMULA: C₆H₂F₉O₃ **MOLECULAR WEIGHT:** 280.05
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/02/2022
EXPIRY DATE: (mm/dd/yyyy) 08/02/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

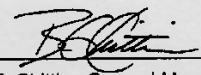
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 08/26/2022
 (mm/dd/yyyy)

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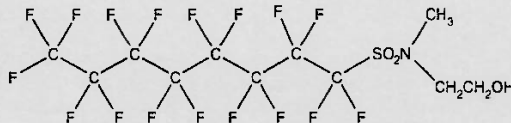
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CERTIFICATE OF ANALYSIS DOCUMENTATION

12 = 9/2/22

PRODUCT CODE: N-MeFOSE-M **LOT NUMBER:** NMeFOSE0522M
COMPOUND: 2-(N-methylperfluoro-1-octanesulfonamido)ethanol

STRUCTURE: **CAS #:** 24448-09-7



11410

MOLECULAR FORMULA: C₁₁H₈F₁₇NO₃S **MOLECULAR WEIGHT:** 557.22
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/13/2022 (HRGC/LRMS)
05/13/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 05/13/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

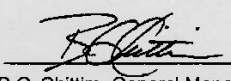
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 06/14/2022
B.G. Chittim, General Manager (mm/dd/yyyy)

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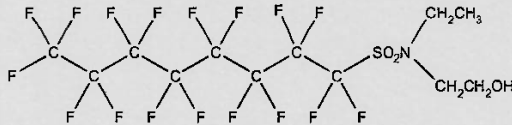
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CERTIFICATE OF ANALYSIS DOCUMENTATION

n, 09/27/2

PRODUCT CODE: N-EtFOSE-M **LOT NUMBER:** NEtFOSE0622M
COMPOUND: 2-(N-ethylperfluoro-1-octanesulfonamido)ethanol

STRUCTURE: **CAS #:** 1691-99-2



11409

MOLECULAR FORMULA: C₁₂H₁₆F₁₇NO₃S **MOLECULAR WEIGHT:** 571.25
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/13/2022 (HRGC/LRMS)
05/13/2022 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 05/13/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

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Certified By: 
B.G. Chittim, General Manager **Date:** 07/13/2022
(mm/dd/yyyy)

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Revision# 9, Revised 2020-12-23

NEtFOSE0622M (1 of 5)
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11140



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFPrS

LOT NUMBER:

LPFPrS0721

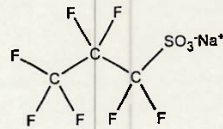
COMPOUND:

Sodium perfluoro-1-propanesulfonate

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

C₃F₇SO₃Na

MOLECULAR WEIGHT:

272.07

CONCENTRATION:

50.0 ± 2.5 µg/mL (Na salt)
46.0 ± 2.3 µg/mL (PFPrS acid)
45.8 ± 2.3 µg/mL (PFPrS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

07/12/2021

EXPIRY DATE: (mm/dd/yyyy)

07/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

Date: 08/04/2021

(mm/dd/yyyy)

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Revision#:9, Revised 2020-12-23

LPFPrS0721 (1 of 4)
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FPrPA(3:3FTEA) 1116 B



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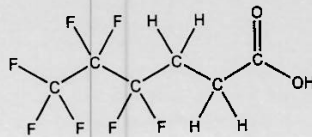
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FPrPA
COMPOUND: 3-Perfluoropropyl propanoic acid

LOT NUMBER: FPrPA0122

STRUCTURE:

CAS #: 356-02-5



MOLECULAR FORMULA: C₆H₅F₇O₂
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/03/2022
EXPIRY DATE: (mm/dd/yyyy) 02/03/2027
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 242.09
SOLVENT(S): Methanol

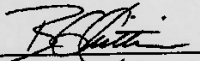
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <1% of the unsaturated 3:3 telomer acid (C₆H₃F₇O₂) as an impurity determined by ¹⁹F NMR.

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Certified By: 
B.G. Chittim, General Manager

Date: 02/04/2022
(mm/dd/yyyy)

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1116 A/B NW

1116B on the back NW



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHpPA

LOT NUMBER:

FHpPA1020

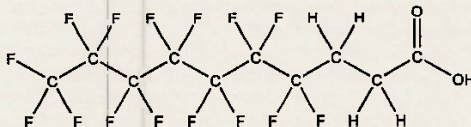
COMPOUND:

3-Perfluoroheptyl propanoic acid

STRUCTURE:

CAS #:

812-70-4



MOLECULAR FORMULA:

C₁₀H₅F₁₅O₂

MOLECULAR WEIGHT:

442.12

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/12/2020

EXPIRY DATE: (mm/dd/yyyy)

11/12/2025

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

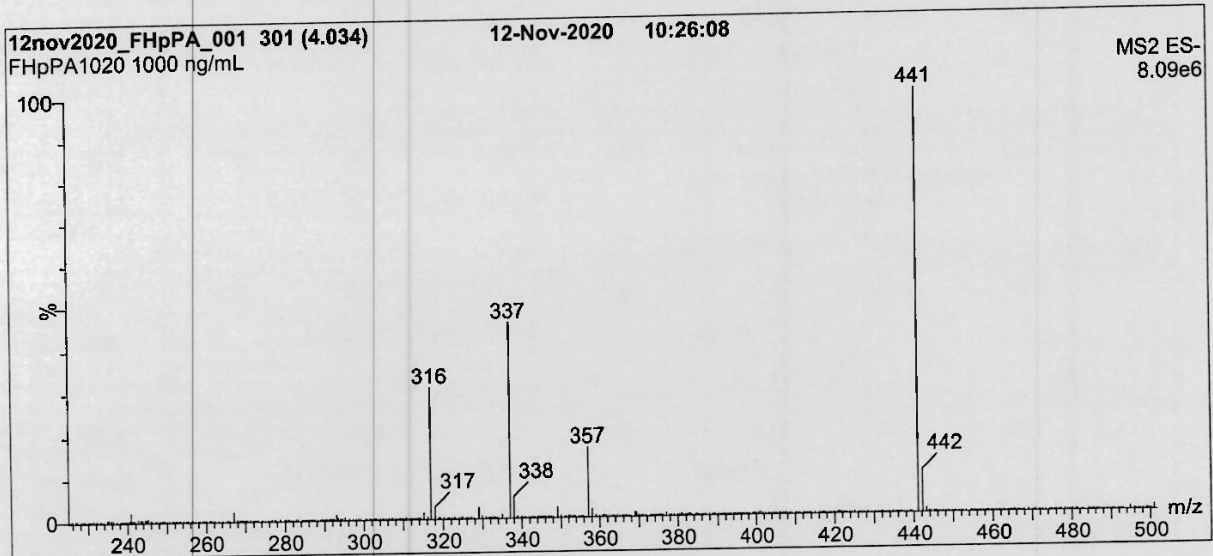
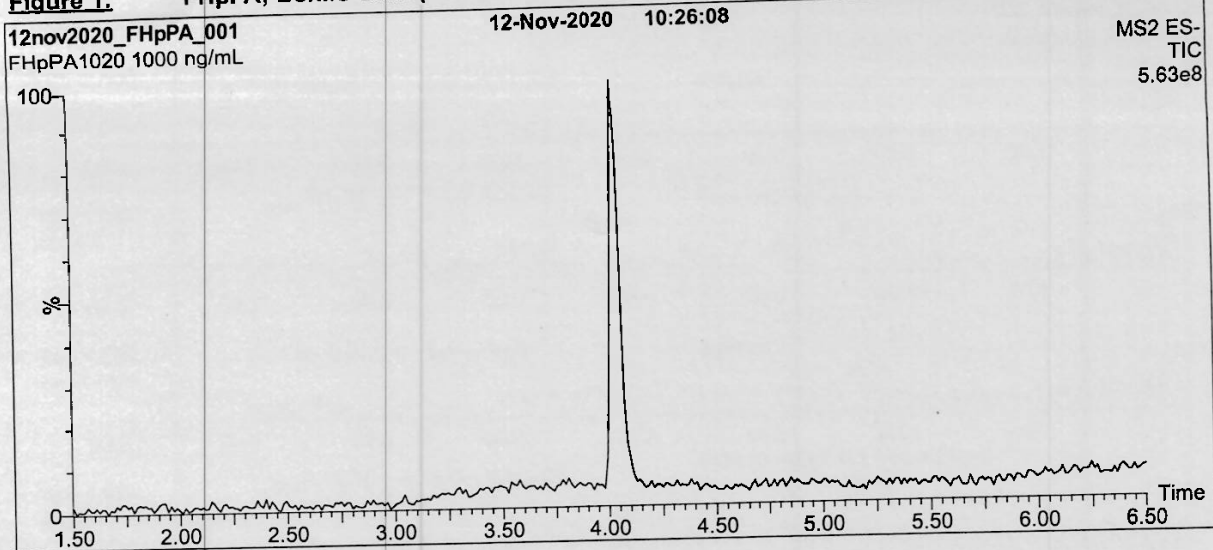
Date: 11/27/2020

(mm/dd/yyyy)

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519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

Form#: 27, Issued 2004-11-10
Revision#: 8, Revised 2020-09-10

FHpPA1020 (1 of 4)
rev0

Figure 1: FHpPA; LC/MS Data (TIC and Mass Spectrum)**Conditions for Figure 1:**

Waters Acquity Ultra Performance LC
Waters Xevo TQ-S micro MS

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H₂O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 μ L/min

MS Parameters:

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 28.50
Desolvation Temperature ($^{\circ}$ C) = 500
Desolvation Gas Flow (L/hr) = 1000

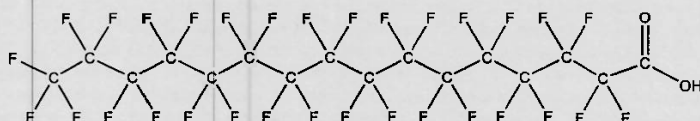


10842 * NG 01/18/23

PRODUCT CODE: PFHxDA **LOT NUMBER:** PFHxDA0421

COMPOUND: Perfluoro-n-hexadecanoic acid

STRUCTURE: **CAS #:** 67905-19-5



MOLECULAR FORMULA: C₁₆HF₃₁O₂ **MOLECULAR WEIGHT:** 814.13
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
 Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/07/2021
EXPIRY DATE: (mm/dd/yyyy) 05/07/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

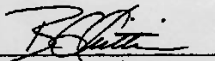
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 05/25/2021
 B.G. Chittim, General Manager (mm/dd/yyyy)

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7.9.2
7



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CERTIFICATE OF ANALYSIS DOCUMENTATION

10847 NG 01/18/23

PRODUCT CODE:

PFODA

LOT NUMBER:

PFODA0821

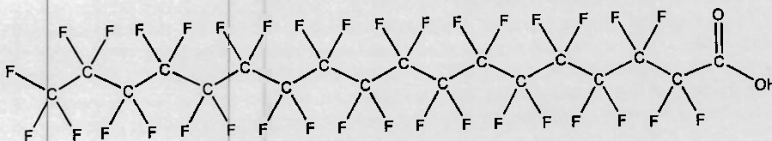
COMPOUND:

Perfluoro-n-octadecanoic acid

STRUCTURE:

CAS #:

16517-11-6



MOLECULAR FORMULA:

C₁₈H₃₅O₂

MOLECULAR WEIGHT:

914.14

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

09/03/2021

EXPIRY DATE: (mm/dd/yyyy)

09/03/2026

RECOMMENDED STORAGE:

Store ampoule at ambient temperature in a dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- The solubility of this product in methanol is very sensitive to storage conditions and solvent composition. The stated validity period applies to the sealed ampoules stored at ambient temperature.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 09/28/2021

(mm/dd/yyyy)

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DOCUMENTATION

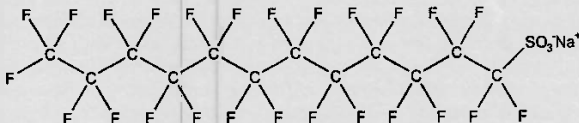
10840

PRODUCT CODE: L-PFDoS
COMPOUND: Sodium perfluoro-1-dodecanesulfonate

LOT NUMBER: LPFDoS0721

STRUCTURE:

CAS #: 1260224-54-1



MOLECULAR FORMULA: C₁₂F₂₅SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt)
48.5 ± 2.4 µg/mL (PFDoS acid)
48.4 ± 2.4 µg/mL (PFDoS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/09/2021
EXPIRY DATE: (mm/dd/yyyy) 07/09/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 722.14
SOLVENT(S): Methanol

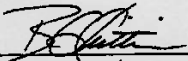
DOCUMENTATION/ DATA ATTACHED:

- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~0.2% of perfluoro-n-dodecanoic acid (PFDoA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager
Date: 07/16/2021
(mm/dd/yyyy)

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PRODUCT CODE:

N-EtFOSA-M

10837

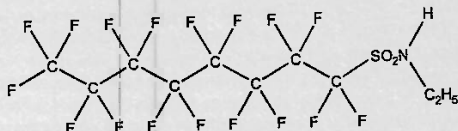
LOT NUMBER: NEtFOSA0821M

COMPOUND:

N-ethylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA:

C₁₀H₉F₁₇NO₂S

MOLECULAR WEIGHT:

527.20

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/12/2021

EXPIRY DATE: (mm/dd/yyyy)

08/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

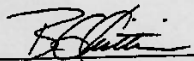
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:


B.G. Chittim, General Manager

Date: 08/16/2021

(mm/dd/yyyy)

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7.9.2
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10765 A-13



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

3,6-OPFHpA

*rec'd
WPH
8/20/21*

LOT NUMBER:

36OPFHpA0320

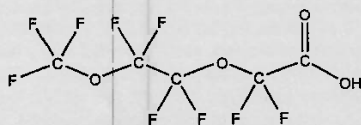
COMPOUND:

Perfluoro-3,6-dioxaheptanoic acid

STRUCTURE:

CAS #:

151772-58-6



MOLECULAR FORMULA:

C₆H₂F₉O₄

MOLECULAR WEIGHT:

296.04

CONCENTRATION:

50.0 ± 2.5 µg/ml

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/31/2020

EXPIRY DATE: (mm/dd/yyyy)

03/31/2025

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 05/27/2020
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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11969
rec'd: 08/22/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS
Solution/Mixture

PRODUCT CODE: PFAC-MXF
LOT NUMBER: PFACMXF0323
SOLVENT(S): Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 03/23/2023
LAST TESTED: (mm/dd/yyyy) 03/24/2023
EXPIRY DATE: (mm/dd/yyyy) 03/24/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonanoate (NaDONA), the major and minor components of F-53B (9CI-PF3ONS and 11CI-PF3OUdS), and hexafluoropropylene oxide dimer acid (GenX, HFPO-DA). The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXF0323 (1 of 5)
rev0

7.9.2

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Tab A: PFAC-MXF; Components and Concentrations (ng/mL; ± 5% in Methanol/Water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid	HFPO-DA	2000		A
Sodium dodecafluoro-3H-4,8-dioxananoate	NaDONA	2000	1890	B
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate	11Cl-PF3OUdS	2000	1890	D

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 03/29/2023
(mm/dd/yyyy)

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time Started: 11/17/23 9:30
(mm/dd/yy 24:00)

Method: EPA 1633 Draft List 40 QSM

Date/Time Finished: 11/17/23 1600
(mm/dd/yy 24:00)

Balance ID: _____

Batch#: OP164

Ext. By: KG

Conc. By: _____

Viald By: _____

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount (ul)	Spike Amount (ul)	Final Volume (ml)	Manifold ID	Comments
OP 164 MB		500	7	NA	25		5.0	AS	
OP 164 BS		500	7	NA	25		5.0	AS	
OP 164 LLBS		500	7	NA	25	200	5.0	AS	
FC10894-2 Re	2	505	7	NA	25	60	5.0	AS	
-3 Re	2	505	7	NA	25		5.0	AS	
FC11101-2 Re	1	VS	7	NA	25		5.0	AS	
KG 11/17/23									
OP MS									
OP MSD									
OP DUP									

Comments:

KG 11/17/23

EIS (SURR) ID: 12150 M-O Conc: 250-5000 µg/ml Exp. Date: 11/16/24 Inj. By: KG Ver. By: JCR
 SPIKE.1 ID: CMS 2222-C Conc: ~~250-5000~~ Exp. Date: 04/04/24 Inj. By: KG Ver. By: JCR
 SPIKE.2 ID: _____ Conc: _____ Exp. Date: _____ Inj. By: _____ Ver. By: _____
 NIS (ISTD) ID: 12151 D-E Conc: 250-10000 ng/ml Exp. Date: 11/15/24 Inj. By: AL Ver. By: JL

TurboVap Temp (Therm ID): _____ N-Evap Temp (Therm ID): _____
 Observed Temp °C: _____ Corr. Temp °C: _____ Observed Temp °C: _____ Corr. Temp °C: _____

Methanol Lot # 232689 1% NH4OH MeOH PF726 SPE Lot # 675245A-01
 Water Lot# DI Water 0.3M Formic Acid PF720 Syringe filter Lot # _____
 Acetic Acid# 194003 3% NH4OH Sol _____ pH paper Lot# 205A23
 0.1M Formic PF721 5% Formic Acid _____ Carbon Lot# 99687

Relinquished By: *Kati Hull*
 Accepted By: *[Signature]*

Date: 11/17/23
 Date: 11/17/23

7.10.1 7

