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Automated Report

Technical Report for

AECOM, INC.

N6274223F0104 RH Fire Suppression System

60697810

SGS Job Number: FC11062

Sampling Date: 11/07/23



Report to:

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Total number of pages in report: 652



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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Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001)
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Test results relate only to samples analyzed.

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Sample Summary

AECOM, INC.

Job No: FC11062

**N6274223F0104 RH Fire Suppression System
Project No: 60697810**

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
FC11062-1	11/07/23	10:00 CL	11/08/23	AQ	Ground Water	AF-HDMW225303-WGN01LF-2311
FC11062-2	11/07/23	10:00 MD	11/08/23	AQ	Ground Water	AF-RHMW04-WGN01LF-2311
FC11062-3	11/07/23	12:40 MD	11/08/23	AQ	Ground Water	AF-RHMW06-WGN01LF-2311
FC11062-4	11/07/23	11:40 CL	11/08/23	AQ	Ground Water	AF-RHMW225401-WGN01B-2311
FC11062-5	11/07/23	11:50 MYJV	11/08/23	AQ	Ground Water	AF-RHMW02-WGN01LF-2311
FC11062-6	11/07/23	11:50 MYJV	11/08/23	AQ	Ground Water	AF-RHMW02-WGFD01LF-2311

SAMPLE DELIVERY GROUP CASE NARRATIVE

2

Client: AECOM, INC.

Job No: FC11062

Site: N6274223F0104 RH Fire Suppression System

Report Date: 11/14/2023 4:43:12

On 11/08/2023, 6 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 5.2 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC11062 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: OP99997

Sample(s) FC11062-2MS, FC11062-3DUP were used as the QC samples indicated.

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.

Narrative prepared by:

Kim Benham, Client Services (*Signature on File*)

Summary of Hits

Job Number: FC11062
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 11/07/23



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
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FC11062-1 AF-HDMW225303-WGN01LF-2311

No hits reported in this sample.

FC11062-2 AF-RHMW04-WGN01LF-2311

No hits reported in this sample.

FC11062-3 AF-RHMW06-WGN01LF-2311

No hits reported in this sample.

FC11062-4 AF-RHMW225401-WGN01B-2311

Perfluoropentanoic acid	0.94 J	8.0	2.0	ng/l	EPA DRAFT 1633
Perfluorohexanoic acid	0.83 J	4.0	2.0	ng/l	EPA DRAFT 1633
Perfluoroheptanoic acid	0.61 J	4.0	2.0	ng/l	EPA DRAFT 1633
Perfluorooctanoic acid	1.2 J	4.0	1.0	ng/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	0.59 J	4.0	2.0	ng/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid	0.81 J	4.0	2.0	ng/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid	1.1 J	4.0	2.0	ng/l	EPA DRAFT 1633

FC11062-5 AF-RHMW02-WGN01LF-2311

No hits reported in this sample.

FC11062-6 AF-RHMW02-WGFD01LF-2311

Perfluorooctanesulfonic acid	1.1 J	3.6	1.8	ng/l	EPA DRAFT 1633
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Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-HDMW225303-WGN01LF-2311		
Lab Sample ID:	FC11062-1	Date Sampled:	11/07/23
Matrix:	AQ - Ground Water	Date Received:	11/08/23
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	4Q53748.D	1	11/13/23 20:10	AL	11/09/23 08:40	OP99997	S4Q785
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
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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	7.5	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-HDMW225303-WGN01LF-2311		
Lab Sample ID:	FC11062-1	Date Sampled:	11/07/23
Matrix:	AQ - Ground Water	Date Received:	11/08/23
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 carboxylate	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	113%		20-150%
	13C5-PFPeA	110%		20-150%
	13C5-PFHxA	108%		20-150%
	13C4-PFHpA	112%		20-150%
	13C8-PFOA	113%		20-150%
	13C9-PFNA	112%		20-150%
	13C6-PFDA	109%		20-150%
	13C7-PFUnDA	107%		20-150%
	13C2-PFDoDA	95%		20-150%
	13C2-PFTeDA	86%		20-150%
	13C3-PFBS	113%		20-150%
	13C3-PFHxS	111%		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-HDMW225303-WGN01LF-2311		Date Sampled: 11/07/23
Lab Sample ID: FC11062-1		Date Received: 11/08/23
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	97%		20-150%
	13C8-FOSA	81%		20-150%
	d3-MeFOSA	82%		20-150%
	d5-EtFOSA	95%		20-150%
	d3-MeFOSAA	97%		20-150%
	d5-EtFOSAA	92%		20-150%
	d7-MeFOSE	79%		20-150%
	d9-EtFOSE	88%		20-150%
	13C2-4:2FTS	93%		20-180%
	13C2-6:2FTS	91%		20-180%
	13C2-8:2FTS	95%		20-180%
	13C3-HFPO-DA	109%		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

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW04-WGN01LF-2311		
Lab Sample ID:	FC11062-2	Date Sampled:	11/07/23
Matrix:	AQ - Ground Water	Date Received:	11/08/23
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	4Q53749.D	1	11/13/23 20:25	AL	11/09/23 08:40	OP99997	S4Q785
Run #2							

Run #	Initial Volume	Final Volume
Run #1	520 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	7.7	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	0.96 U	3.8	0.96	0.48	ng/l	
375-95-1	Perfluorononanoic acid	1.9 U	3.8	1.9	0.59	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	0.58	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	3.8	1.9	0.58	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.8	1.9	0.81	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	0.52	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.8	1.9	0.55	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.8	1.9	0.62	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	7.7 U	19	7.7	3.1	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.7 U	19	7.7	3.3	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.7 U	19	7.7	4.0	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	7.7	3.8	0.96	ng/l	
4151-50-2	EtFOSA	3.8 U	7.7	3.8	0.96	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-RHMW04-WGN01LF-2311		
Lab Sample ID:	FC11062-2	Date Sampled:	11/07/23
Matrix:	AQ - Ground Water	Date Received:	11/08/23
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	0.96	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	0.96	ng/l	
919005-14-4	ADONA	3.8 U	7.7	3.8	1.8	ng/l	
377-73-1	PFMPA	1.9 U	7.7	1.9	0.96	ng/l	
863090-89-5	PFMBA	3.8 U	7.7	3.8	1.1	ng/l	
151772-58-6	NFDHA	3.8 U	7.7	3.8	1.2	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.8 U	7.7	3.8	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.8 U	7.7	3.8	1.7	ng/l	
113507-82-7	PFEESA	1.9 U	7.7	1.9	0.75	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.6 U	19	9.6	4.3	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	96	19	8.4	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	96	19	7.5	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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	13C4-PFBA	106%		20-150%
	13C5-PFPeA	115%		20-150%
	13C5-PFHxA	113%		20-150%
	13C4-PFHpA	115%		20-150%
	13C8-PFOA	113%		20-150%
	13C9-PFNA	111%		20-150%
	13C6-PFDA	114%		20-150%
	13C7-PFUnDA	116%		20-150%
	13C2-PFDoDA	105%		20-150%
	13C2-PFTeDA	92%		20-150%
	13C3-PFBS	113%		20-150%
	13C3-PFHxS	110%		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-RHMW04-WGN01LF-2311	
Lab Sample ID:	FC11062-2	Date Sampled: 11/07/23
Matrix:	AQ - Ground Water	Date Received: 11/08/23
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	96%		20-150%
	13C8-FOSA	87%		20-150%
	d3-MeFOSA	80%		20-150%
	d5-EtFOSA	95%		20-150%
	d3-MeFOSAA	100%		20-150%
	d5-EtFOSAA	93%		20-150%
	d7-MeFOSE	80%		20-150%
	d9-EtFOSE	86%		20-150%
	13C2-4:2FTS	86%		20-180%
	13C2-6:2FTS	87%		20-180%
	13C2-8:2FTS	92%		20-180%
	13C3-HFPO-DA	113%		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

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW06-WGN01LF-2311		
Lab Sample ID:	FC11062-3	Date Sampled:	11/07/23
Matrix:	AQ - Ground Water	Date Received:	11/08/23
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	4Q53751.D	1	11/13/23 20:54	AL	11/09/23 08:40	OP99997	S4Q785
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-RHMW06-WGN01LF-2311		
Lab Sample ID:	FC11062-3	Date Sampled:	11/07/23
Matrix:	AQ - Ground Water	Date Received:	11/08/23
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 carboxylate	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	108%		20-150%
	13C5-PFPeA	110%		20-150%
	13C5-PFHxA	109%		20-150%
	13C4-PFHpA	111%		20-150%
	13C8-PFOA	113%		20-150%
	13C9-PFNA	116%		20-150%
	13C6-PFDA	102%		20-150%
	13C7-PFUnDA	107%		20-150%
	13C2-PFDoDA	92%		20-150%
	13C2-PFTeDA	80%		20-150%
	13C3-PFBS	112%		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-RHMW06-WGN01LF-2311	
Lab Sample ID:	FC11062-3	Date Sampled: 11/07/23
Matrix:	AQ - Ground Water	Date Received: 11/08/23
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	96%		20-150%
	13C8-FOSA	83%		20-150%
	d3-MeFOSA	80%		20-150%
	d5-EtFOSA	90%		20-150%
	d3-MeFOSAA	94%		20-150%
	d5-EtFOSAA	87%		20-150%
	d7-MeFOSE	75%		20-150%
	d9-EtFOSE	83%		20-150%
	13C2-4:2FTS	85%		20-180%
	13C2-6:2FTS	93%		20-180%
	13C2-8:2FTS	89%		20-180%
	13C3-HFPO-DA	109%		20-150%

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 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

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Report of Analysis

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Client Sample ID:	AF-RHMW225401-WGN01B-2311		
Lab Sample ID:	FC11062-4	Date Sampled:	11/07/23
Matrix:	AQ - Ground Water	Date Received:	11/08/23
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	4Q53753.D	1	11/13/23 21:24	AL	11/09/23 08:40	OP99997	S4Q785
Run #2							

Run #	Initial Volume	Final Volume
Run #1	500 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	4.0 U	16	4.0	1.9	ng/l	
2706-90-3	Perfluoropentanoic acid	0.94	8.0	2.0	0.94	ng/l	J
307-24-4	Perfluorohexanoic acid	0.83	4.0	2.0	0.50	ng/l	J
375-85-9	Perfluoroheptanoic acid	0.61	4.0	2.0	0.50	ng/l	J
335-67-1	Perfluorooctanoic acid	1.2	4.0	1.0	0.50	ng/l	J
375-95-1	Perfluorononanoic acid	2.0 U	4.0	2.0	0.61	ng/l	
335-76-2	Perfluorodecanoic acid	2.0 U	4.0	2.0	0.50	ng/l	
2058-94-8	Perfluoroundecanoic acid	2.0 U	4.0	2.0	0.60	ng/l	
307-55-1	Perfluorododecanoic acid	2.0 U	4.0	2.0	0.60	ng/l	
72629-94-8	Perfluorotridecanoic acid	2.0 U	4.0	2.0	0.84	ng/l	
376-06-7	Perfluorotetradecanoic acid	2.0 U	4.0	2.0	0.50	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.59	4.0	2.0	0.50	ng/l	J
2706-91-4	Perfluoropentanesulfonic acid	4.0 U	5.0	4.0	1.1	ng/l	
355-46-4	Perfluorohexanesulfonic acid	0.81	4.0	2.0	0.70	ng/l	J
375-92-8	Perfluoroheptanesulfonic acid	2.0 U	4.0	2.0	0.50	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.1	4.0	2.0	0.54	ng/l	J
68259-12-1	Perfluorononanesulfonic acid	2.0 U	4.0	2.0	0.57	ng/l	
335-77-3	Perfluorodecanesulfonic acid	2.0 U	4.0	2.0	0.64	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	4.0 U	5.0	4.0	1.1	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	8.0 U	20	8.0	3.2	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	8.0 U	20	8.0	3.5	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	8.0 U	20	8.0	4.1	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	2.0 U	4.0	2.0	0.67	ng/l	
31506-32-8	MeFOSA	4.0 U	8.0	4.0	1.0	ng/l	
4151-50-2	EtFOSA	4.0 U	8.0	4.0	1.0	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-RHMW225401-WGN01B-2311	
Lab Sample ID:	FC11062-4	Date Sampled: 11/07/23
Matrix:	AQ - Ground Water	Date Received: 11/08/23
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	4.0 U	5.0	4.0	1.0	ng/l	
2991-50-6	EtFOSAA	4.0 U	5.0	4.0	1.3	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	20 U	40	20	4.4	ng/l	
1691-99-2	EtFOSE	20 U	40	20	7.4	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	2.0 U	4.0	2.0	1.0	ng/l	
919005-14-4	ADONA	4.0 U	8.0	4.0	1.9	ng/l	
377-73-1	PFMPA	2.0 U	8.0	2.0	1.0	ng/l	
863090-89-5	PFMBA	4.0 U	8.0	4.0	1.1	ng/l	
151772-58-6	NFDHA	4.0 U	8.0	4.0	1.2	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	4.0 U	8.0	4.0	1.4	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	4.0 U	8.0	4.0	1.8	ng/l	
113507-82-7	PFEESA	2.0 U	8.0	2.0	0.78	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	10 U	20	10	4.5	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	20 U	100	20	8.7	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	20 U	100	20	7.9	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	108%		20-150%
	13C5-PFPeA	110%		20-150%
	13C5-PFHxA	103%		20-150%
	13C4-PFHpA	108%		20-150%
	13C8-PFOA	101%		20-150%
	13C9-PFNA	114%		20-150%
	13C6-PFDA	103%		20-150%
	13C7-PFUnDA	108%		20-150%
	13C2-PFDoDA	91%		20-150%
	13C2-PFTeDA	82%		20-150%
	13C3-PFBS	117%		20-150%
	13C3-PFHxS	117%		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

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Report of Analysis

Client Sample ID:	AF-RHMW225401-WGN01B-2311	
Lab Sample ID:	FC11062-4	Date Sampled: 11/07/23
Matrix:	AQ - Ground Water	Date Received: 11/08/23
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	104%		20-150%
	13C8-FOSA	98%		20-150%
	d3-MeFOSA	91%		20-150%
	d5-EtFOSA	99%		20-150%
	d3-MeFOSAA	114%		20-150%
	d5-EtFOSAA	95%		20-150%
	d7-MeFOSE	93%		20-150%
	d9-EtFOSE	96%		20-150%
	13C2-4:2FTS	100%		20-180%
	13C2-6:2FTS	104%		20-180%
	13C2-8:2FTS	97%		20-180%
	13C3-HFPO-DA	108%		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

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Report of Analysis

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Client Sample ID:	AF-RHMW02-WGN01LF-2311		
Lab Sample ID:	FC11062-5	Date Sampled:	11/07/23
Matrix:	AQ - Ground Water	Date Received:	11/08/23
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	4Q53756.D	1	11/13/23 22:08	AL	11/09/23 08:40	OP99997	S4Q785
Run #2							

Run #	Initial Volume	Final Volume
Run #1	540 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.7 U	15	3.7	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.9 U	7.4	1.9	0.87	ng/l	
307-24-4	Perfluorohexanoic acid	1.9 U	3.7	1.9	0.46	ng/l	
375-85-9	Perfluoroheptanoic acid	1.9 U	3.7	1.9	0.46	ng/l	
335-67-1	Perfluorooctanoic acid	0.93 U	3.7	0.93	0.46	ng/l	
375-95-1	Perfluorononanoic acid	1.9 U	3.7	1.9	0.56	ng/l	
335-76-2	Perfluorodecanoic acid	1.9 U	3.7	1.9	0.46	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	3.7	1.9	0.56	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	3.7	1.9	0.56	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.7	1.9	0.78	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.9 U	3.7	1.9	0.46	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	1.9 U	3.7	1.9	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	1.9 U	3.7	1.9	0.65	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.9 U	3.7	1.9	0.46	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.9 U	3.7	1.9	0.50	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.7	1.9	0.53	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.7	1.9	0.59	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.7 U	4.6	3.7	1.1	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.4 U	19	7.4	3.0	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.4 U	19	7.4	3.2	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.4 U	19	7.4	3.8	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.9 U	3.7	1.9	0.62	ng/l	
31506-32-8	MeFOSA	3.7 U	7.4	3.7	0.93	ng/l	
4151-50-2	EtFOSA	3.7 U	7.4	3.7	0.93	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-RHMW02-WGN01LF-2311	
Lab Sample ID:	FC11062-5	Date Sampled: 11/07/23
Matrix:	AQ - Ground Water	Date Received: 11/08/23
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	0.93	ng/l	
2991-50-6	EtFOSAA	3.7 U	4.6	3.7	1.2	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	19 U	37	19	4.1	ng/l	
1691-99-2	EtFOSE	19 U	37	19	6.9	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.9 U	3.7	1.9	0.93	ng/l	
919005-14-4	ADONA	3.7 U	7.4	3.7	1.7	ng/l	
377-73-1	PFMPA	1.9 U	7.4	1.9	0.93	ng/l	
863090-89-5	PFMBA	3.7 U	7.4	3.7	1.1	ng/l	
151772-58-6	NFDHA	3.7 U	7.4	3.7	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.7 U	7.4	3.7	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.7 U	7.4	3.7	1.6	ng/l	
113507-82-7	PFEESA	1.9 U	7.4	1.9	0.72	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.3 U	19	9.3	4.2	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	93	19	8.1	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	93	19	7.3	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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13C4-PFBA	72%			20-150%
13C5-PFPeA	93%			20-150%
13C5-PFHxA	97%			20-150%
13C4-PFHpA	102%			20-150%
13C8-PFOA	99%			20-150%
13C9-PFNA	99%			20-150%
13C6-PFDA	93%			20-150%
13C7-PFUnDA	98%			20-150%
13C2-PFDoDA	80%			20-150%
13C2-PFTeDA	71%			20-150%
13C3-PFBS	101%			20-150%
13C3-PFHxS	97%			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-RHMW02-WGN01LF-2311	
Lab Sample ID:	FC11062-5	Date Sampled: 11/07/23
Matrix:	AQ - Ground Water	Date Received: 11/08/23
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	91%		20-150%
	13C8-FOSA	89%		20-150%
	d3-MeFOSA	72%		20-150%
	d5-EtFOSA	84%		20-150%
	d3-MeFOSAA	92%		20-150%
	d5-EtFOSAA	88%		20-150%
	d7-MeFOSE	79%		20-150%
	d9-EtFOSE	82%		20-150%
	13C2-4:2FTS	110%		20-180%
	13C2-6:2FTS	87%		20-180%
	13C2-8:2FTS	80%		20-180%
	13C3-HFPO-DA	84%		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

SGS North America Inc.

Report of Analysis

Page 1 of 3

Client Sample ID:	AF-RHMW02-WGFD01LF-2311		
Lab Sample ID:	FC11062-6	Date Sampled:	11/07/23
Matrix:	AQ - Ground Water	Date Received:	11/08/23
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	4Q53757.D	1	11/13/23 22:23	AL	11/09/23 08:40	OP99997	S4Q785
Run #2							

Run #	Initial Volume	Final Volume
Run #1	550 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
---------	----------	--------	-----	-----	----	-------	---

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	3.6 U	15	3.6	1.7	ng/l	
2706-90-3	Perfluoropentanoic acid	1.8 U	7.3	1.8	0.85	ng/l	
307-24-4	Perfluorohexanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
375-85-9	Perfluoroheptanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
335-67-1	Perfluorooctanoic acid	0.91 U	3.6	0.91	0.45	ng/l	
375-95-1	Perfluorononanoic acid	1.8 U	3.6	1.8	0.55	ng/l	
335-76-2	Perfluorodecanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	3.6	1.8	0.55	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	3.6	1.8	0.55	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	3.6	1.8	0.76	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.8 U	3.6	1.8	0.45	ng/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	1.8 U	3.6	1.8	0.45	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.6 U	4.5	3.6	1.0	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.8 U	3.6	1.8	0.64	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.8 U	3.6	1.8	0.45	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.1	3.6	1.8	0.49	ng/l	J
68259-12-1	Perfluorononanesulfonic acid	1.8 U	3.6	1.8	0.52	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	3.6	1.8	0.58	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.6 U	4.5	3.6	1.0	ng/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	7.3 U	18	7.3	2.9	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.3 U	18	7.3	3.2	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.3 U	18	7.3	3.7	ng/l	

PERFLUOROOCCTANE SULFONAMIDES

754-91-6	PFOSA	1.8 U	3.6	1.8	0.61	ng/l	
31506-32-8	MeFOSA	3.6 U	7.3	3.6	0.91	ng/l	
4151-50-2	EtFOSA	3.6 U	7.3	3.6	0.91	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-RHMW02-WGFD01LF-2311		
Lab Sample ID:	FC11062-6	Date Sampled:	11/07/23
Matrix:	AQ - Ground Water	Date Received:	11/08/23
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
---------	----------	--------	-----	-----	----	-------	---

PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	3.6 U	4.5	3.6	0.91	ng/l	
2991-50-6	EtFOSAA	3.6 U	4.5	3.6	1.2	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	18 U	36	18	4.0	ng/l	
1691-99-2	EtFOSE	18 U	36	18	6.7	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.8 U	3.6	1.8	0.91	ng/l	
919005-14-4	ADONA	3.6 U	7.3	3.6	1.7	ng/l	
377-73-1	PFMPA	1.8 U	7.3	1.8	0.91	ng/l	
863090-89-5	PFMBA	3.6 U	7.3	3.6	1.0	ng/l	
151772-58-6	NFDHA	3.6 U	7.3	3.6	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.6 U	7.3	3.6	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.6 U	7.3	3.6	1.6	ng/l	
113507-82-7	PFEESA	1.8 U	7.3	1.8	0.71	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.1 U	18	9.1	4.1	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	18 U	91	18	7.9	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	18 U	91	18	7.1	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	81%		20-150%
	13C5-PFPeA	104%		20-150%
	13C5-PFHxA	108%		20-150%
	13C4-PFHpA	115%		20-150%
	13C8-PFOA	109%		20-150%
	13C9-PFNA	113%		20-150%
	13C6-PFDA	95%		20-150%
	13C7-PFUnDA	96%		20-150%
	13C2-PFDoDA	84%		20-150%
	13C2-PFTeDA	69%		20-150%
	13C3-PFBS	112%		20-150%
	13C3-PFHxS	115%		20-150%

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 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

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4

Report of Analysis

Client Sample ID:	AF-RHMW02-WGFD01LF-2311		
Lab Sample ID:	FC11062-6	Date Sampled:	11/07/23
Matrix:	AQ - Ground Water	Date Received:	11/08/23
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	111%		20-150%
	13C8-FOSA	99%		20-150%
	d3-MeFOSA	85%		20-150%
	d5-EtFOSA	92%		20-150%
	d3-MeFOSAA	109%		20-150%
	d5-EtFOSAA	96%		20-150%
	d7-MeFOSE	87%		20-150%
	d9-EtFOSE	91%		20-150%
	13C2-4:2FTS	129%		20-180%
	13C2-6:2FTS	94%		20-180%
	13C2-8:2FTS	96%		20-180%
	13C3-HFPO-DA	95%		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

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

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



SGS North America Inc - Orlando

COC #: 2311AFSG04

Chain of Custody

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Form containing Client/Reporting Information, Project Information, Analytical Information, Matrix Codes, Turnaround Time, Data Deliverable Information, and Chain of Custody table.

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INITIAL ASSESSMENT SP
LABEL VERIFICATION u

United AWB: D10-98547530

4.8 IR#1

FC11062: Chain of Custody

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Staff #

Client / Reporting Information			Project Information			Analytical Information										Matrix Codes
Company Name: AECOM			Project Name: N6274223F0104 RH Fire Suppression System			<div style="position: relative; height: 100px;"> WAD 11/7/23 </div>										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OI - 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 Project Manager: Watson Tanji		Email: katie.abbott@aecom.com Email: watson.tanji@aecom.com		Project # 23F0104 - 60697810												
Phone #: 303-796-4624 / 808-954-4512			Fax #													
Sampler(s) Name(s) (Printed) Sampler 1: WAD, AL, ES Sampler 2:			Client Purchase Order # 151253			PFAS EPA Draft: 1633										LAB USE ONLY
SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NOISE	HCl	PH	HNO3	H2SO4	NaOH-ZnAc	DI WATER	MESH	
2	AF-RHMMW04-WGN01LF-2311	11/7/23	1000	WAD, N, P, S	GW	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 _____ Rush T/A Data Available VIA Email or Lablink			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 ANB: 010-98547536										
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 Miranda DeCarro/AECOM		11/7/23 1200		[Signature] AECOM		11/7/23 1400		3 [Signature] AECOM		11/7/23 1400		4 [Signature] UC				
5 [Signature] UC				6 [Signature] UC 11/08/23 1430				7 [Signature] UC				8 [Signature] UC				

PFAS_COCs_ALL_10022023.xls Rev 031318



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SGS North America Inc - Orlando
Chain of Custody

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COC #: 2311AFSG09

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FC11062

SGS - ORLANDO Quote #

SIFF

Client / Reporting Information			Project Information				Analytical Information										Matrix Codes		
Company Name: AECOM			Project Name: N6274223F0104 RH Fire Suppression System				<div style="position: relative; width: 100%; height: 100%;"> PFAS EPA Draft: 1633 </div>										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OI - 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 # 23F0104 - 60697810																
Project Manager: Watson Tanji		Email: watson.tanji@aecom.com	Fax #																
Phone #: 303-796-4624 / 808-954-4512			Client Purchase Order # 151253																
Sampler(s) Name(s) (Printed)			Sampler 1: MD, AL, FS Sampler 2:																
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION			CONTAINER INFORMATION										LAB USE ONLY				
		DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NI(OH)	HI(OH)	HE(OH)	NI(OH)-ZINAC	DIWATER		MESH			
3	AF-RHMMW06-WGN01LF-2311	11/7/23	1240	MD,AL,FS	GW	3		X											
<div style="position: relative; width: 100%; height: 100%;"> MD 11/7/23 </div>																			
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: DLW-98547536											
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				Relinquished By/Affiliation		Date Time:		Received By/Affiliation							
1 Miranda DeGarmo/AECOM		11/7/23 1440		2 Ellie Shimatsu AECOM				3 Ellie Shimatsu AECOM		11/7/23 1600		4 UC							
5 Relinquished by/Affiliation		Date Time:		Received By/Affiliation				Relinquished By/Affiliation		Date Time:		Received By/Affiliation							
UC				6 [Signature] 11/08/23				7				8							

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FC11062: Chain of Custody

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Chain of Custody

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FC11062

SGS - ORLANDO Quote #

SI 1111

Client / Reporting Information			Project Information			Analytical Information										Matrix Codes		
Company Name: AECOM			Project Name: N6274223F0104 RH Fire Suppression System			<div style="display: flex; justify-content: space-between;"> PFAS EPA Draft 1633 W1107/23 </div>										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 # 23FO104 - 60697810		Fax #													
Project Manager: Watson Tanji		Email: watson.tanji@aecom.com	Client Purchase Order # 151253		Sampler(s) Name(s) (Printed)													
Phone #: 303-796-4624 / 808-954-4512			Sampler 1: Clara Lim			Sampler 2: Jorge Villalobos												
SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	CONTAINER INFORMATION										LAB USE ONLY				
				SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NOH	HNO3	H2SO4	NaOH-ZnAc		DI WATER	MESH		
4	AF-RHMW225401-WGN01B-2311	11/07/23	1140	CL	GW	3		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: 010-98547530												
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		Relinquished By/Affiliation		Date Time:	Received By/Affiliation		Relinquished By/Affiliation		Date Time:	Received By/Affiliation					
1 Clara Lim AECOM		11/07/23 1245	2 Ellie Shimatsu AECOM		3 Ellie Shimatsu AECOM		11/03/23 1400	4 UC		5 UC		11/08/23 1430	7					
5 UC			6		7			8										

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FC11062: Chain of Custody

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FC11062

SGS - ORLANDO Quote #

STAFF

Client / Reporting Information			Project Information			Analytical Information										Matrix Codes			
Company Name: AECOM			Project Name: N6274223F0104 RH Fire Suppression System			<div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>Mx 11/7/23</p> </div>										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OI - 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 # 23F0104 - 60697810																
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			
SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCL	HNH3	HNO3	H2SO4	NACH-ZNAC	DI WATER	MESH				
5	AF-RHMW02-WGN01LF-2311	11/7/23	1150	M4/JV	GW	3		X								X			
6	AF-RHMW02-WGFD011 F-2311	11/7/23	1150	M4/JV	GW	3		X								X			
Mx 11/7/23																			
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 ANB: D10 - 98547530			
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 M4/JV AECOM		11/7/23 1400		2 [Signature] AECOM		11/7/23 1400		3 [Signature] AECOM		11/7/23 1400		4 [Signature] AECOM							
5 [Signature] UC		Date Time:		6 [Signature] UC		11/09/23 1430		7 [Signature] UC		Date Time:		8 [Signature] UC							

PFAS_COCs_ALL_10022023.xls Rev 031316

FC11062: Chain of Custody

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SGS Sample Receipt Summary

Job Number: fc11062

Client: AECOM

Project: N6274223F0104 RH Fire Suppression Syst

Date / Time Received: 11/8/2023 2:30:00 PM

Delivery Method: United Cargo/Airspace

Airbill #'s: United Cargo AWB #: 016-98547536

Cooler Temps (Raw Measured) °C: Cooler 1: (4.8);

Cooler Temps (Corrected) °C: Cooler 1: (5.2);

Cooler Informatio

	<u>Y</u>	<u>or</u>	<u>N</u>
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

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

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

Sample Information

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
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. Sufficient 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 checked="" type="checkbox"/>
8. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
9. Compositing instructions clear	<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 checked="" type="checkbox"/>
11. % Solids Jar Received?	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
12. Residual Chlorine Present?	<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 #: pH 0-3: <u>226422</u>	pH 10-12: _____	Other: (Specify) pH 1.0 - 12.0 <u>222221</u>
Residual Chlorine Test Strip Lot: _____		

Comments

SM001

Rev. Date 05/04/17

Technician: SHAYLAP

Date: 11/8/2023 2:30:00 PM

Reviewer: TW

Date: 11/08/2023

FC11062: Chain of Custody

Page 6 of 6

QC Evaluation: DOD QSM5.x Limits

Job Number: FC11062
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 11/07/23

QC Sample ID	CAS#	Analyte	Sample Result Type	Result Type	Units	Limits
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No DOD QSM5.x Limits found for methods in this job.

* Sample used for QC is not from job FC11062

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: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q785-IBLK	4Q53739.D	1	11/13/23	AL	n/a	n/a	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11062-1, FC11062-2, FC11062-3, FC11062-4, FC11062-5, FC11062-6

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	0.0015	0.0080	0.0010	ug/l	J
4151-50-2	EtFOSA	0.0029	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	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	

Instrument Blank

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q785-IBLK	4Q53739.D	1	11/13/23	AL	n/a	n/a	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11062-1, FC11062-2, FC11062-3, FC11062-4, FC11062-5, FC11062-6

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	101% 20-150%
	13C5-PFHxA	97% 20-150%
	13C4-PFHpA	102% 20-150%
	13C8-PFOA	102% 20-150%
	13C9-PFNA	92% 20-150%
	13C6-PFDA	102% 20-150%
	13C7-PFUnDA	106% 20-150%
	13C2-PFDoDA	101% 20-150%
	13C2-PFTeDA	96% 20-150%
	13C3-PFBS	108% 20-150%
	13C3-PFHxS	107% 20-150%
	13C8-PFOS	104% 20-150%
	13C8-FOSA	98% 20-150%
	d3-MeFOSAA	104% 20-150%
	d5-EtFOSAA	100% 20-150%
	13C2-4:2FTS	128% 20-180%
	13C2-6:2FTS	112% 20-180%
	13C2-8:2FTS	113% 20-180%

6.1.1
6

Continuing Calibration Blank

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q785-ICCB	4Q53755.D	1	11/13/23	AL	n/a	n/a	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11062-5, FC11062-6

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: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q785-ICCB	4Q53755.D	1	11/13/23	AL	n/a	n/a	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11062-5, FC11062-6

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	100% 20-150%
	13C5-PFHxA	99% 20-150%
	13C4-PFHpA	100% 20-150%
	13C8-PFOA	107% 20-150%
	13C9-PFNA	103% 20-150%
	13C6-PFDA	99% 20-150%
	13C7-PFUnDA	105% 20-150%
	13C2-PFDoDA	94% 20-150%
	13C2-PFTeDA	95% 20-150%
	13C3-PFBS	98% 20-150%
	13C3-PFHxS	101% 20-150%
	13C8-PFOS	105% 20-150%
	13C8-FOSA	100% 20-150%
	d3-MeFOSAA	108% 20-150%
	d5-EtFOSAA	101% 20-150%
	13C2-4:2FTS	87% 20-180%
	13C2-6:2FTS	90% 20-180%
	13C2-8:2FTS	84% 20-180%

Method Blank Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-MB	4Q53746.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11062-1, FC11062-2, FC11062-3, FC11062-4, FC11062-5, FC11062-6

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: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-MB	4Q53746.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11062-1, FC11062-2, FC11062-3, FC11062-4, FC11062-5, FC11062-6

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	109% 20-150%
	13C5-PFPeA	108% 20-150%
	13C5-PFHxA	106% 20-150%
	13C4-PFHpA	106% 20-150%
	13C8-PFOA	112% 20-150%
	13C9-PFNA	114% 20-150%
	13C6-PFDA	103% 20-150%
	13C7-PFUnDA	116% 20-150%
	13C2-PFDoDA	102% 20-150%
	13C2-PFTeDA	91% 20-150%
	13C3-PFBS	103% 20-150%
	13C3-PFHxS	106% 20-150%
	13C8-PFOS	104% 20-150%
	13C8-FOSA	61% 20-150%
	d3-MeFOSA	67% 20-150%
	d5-EtFOSA	77% 20-150%
	d3-MeFOSAA	105% 20-150%
	d5-EtFOSAA	93% 20-150%
	d7-MeFOSE	57% 20-150%
	d9-EtFOSE	68% 20-150%
	13C2-4:2FTS	92% 20-180%
	13C2-6:2FTS	97% 20-180%
	13C2-8:2FTS	101% 20-180%
	13C3-HFPO-DA	106% 20-150%

6.1.3
6

Blank Spike Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-LLBS	4Q53745.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11062-1, FC11062-2, FC11062-3, FC11062-4, FC11062-5, FC11062-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.03	0.0296	99	40-150
2706-90-3	Perfluoropentanoic acid	0.015	0.0147	98	40-150
307-24-4	Perfluorohexanoic acid	0.0075	0.0073	97	40-150
375-85-9	Perfluoroheptanoic acid	0.0075	0.0075	100	40-150
335-67-1	Perfluorooctanoic acid	0.0075	0.0070	93	40-150
375-95-1	Perfluorononanoic acid	0.0075	0.0078	104	40-150
335-76-2	Perfluorodecanoic acid	0.0075	0.0070	93	40-150
2058-94-8	Perfluoroundecanoic acid	0.0075	0.0077	103	40-150
307-55-1	Perfluorododecanoic acid	0.0075	0.0077	103	40-150
72629-94-8	Perfluorotridecanoic acid	0.0075	0.0076	101	40-150
376-06-7	Perfluorotetradecanoic acid	0.0075	0.0066	88	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00665	0.0068	102	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	0.0066	92	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00696	0.0071	102	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00722	0.0077	107	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00724	0.0071	98	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.00728	0.0069	95	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0281	0.0249	89	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0285	0.0280	98	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0288	0.0325	113	40-150
754-91-6	PFOSA	0.0075	0.0077	103	40-150
31506-32-8	MeFOSA	0.015	0.0192	128	40-150
4151-50-2	EtFOSA	0.015	0.0147	98	40-150
2355-31-9	MeFOSAA	0.0075	0.0079	105	40-150
2991-50-6	EtFOSAA	0.0075	0.0085	113	40-150
24448-09-7	MeFOSE	0.0375	0.0381	102	40-150
1691-99-2	EtFOSE	0.0375	0.0381	102	40-150
13252-13-6	HFPO-DA (GenX)	0.015	0.0154	103	40-150
919005-14-4	ADONA	0.0142	0.0168	119	40-150
377-73-1	PFMPA	0.015	0.0173	115	40-150
863090-89-5	PFMBA	0.015	0.0165	110	40-150
151772-58-6	NFDHA	0.015	0.0189	126	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	0.0139	98	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-LLBS	4Q53745.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11062-1, FC11062-2, FC11062-3, FC11062-4, FC11062-5, FC11062-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0134	0.0157	118	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.0375	0.0266	71	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.188	0.175	93	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.188	0.174	93	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	113%	20-150%
	13C5-PFPeA	113%	20-150%
	13C5-PFHxA	111%	20-150%
	13C4-PFHpA	112%	20-150%
	13C8-PFOA	113%	20-150%
	13C9-PFNA	106%	20-150%
	13C6-PFDA	113%	20-150%
	13C7-PFUnDA	116%	20-150%
	13C2-PFDoDA	103%	20-150%
	13C2-PFTeDA	93%	20-150%
	13C3-PFBS	110%	20-150%
	13C3-PFHxS	115%	20-150%
	13C8-PFOS	110%	20-150%
	13C8-FOSA	85%	20-150%
	d3-MeFOSA	67%	20-150%
	d5-EtFOSA	82%	20-150%
	d3-MeFOSAA	112%	20-150%
	d5-EtFOSAA	105%	20-150%
	d7-MeFOSE	70%	20-150%
	d9-EtFOSE	80%	20-150%
	13C2-4:2FTS	119%	20-180%
	13C2-6:2FTS	116%	20-180%
	13C2-8:2FTS	103%	20-180%
	13C3-HFPO-DA	112%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-BS	4Q53744.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11062-1, FC11062-2, FC11062-3, FC11062-4, FC11062-5, FC11062-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.0882	88	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0452	90	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0227	91	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0227	91	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0216	86	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0211	84	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0214	86	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0214	86	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0222	89	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0220	88	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0228	91	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0204	92	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0221	94	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0213	93	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0241	101	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0218	94	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0263	109	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0231	96	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0230	95	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.0769	82	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.0834	88	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.0875	91	40-150
754-91-6	PFOSA	0.025	0.0223	89	40-150
31506-32-8	MeFOSA	0.05	0.0464	93	40-150
4151-50-2	EtFOSA	0.05	0.0447	89	40-150
2355-31-9	MeFOSAA	0.025	0.0215	86	40-150
2991-50-6	EtFOSAA	0.025	0.0241	96	40-150
24448-09-7	MeFOSE	0.125	0.109	87	40-150
1691-99-2	EtFOSE	0.125	0.114	91	40-150
13252-13-6	HFPO-DA (GenX)	0.05	0.0470	94	40-150
919005-14-4	ADONA	0.0473	0.0506	107	40-150
377-73-1	PFMPA	0.05	0.0314	63	40-150
863090-89-5	PFMBA	0.05	0.0503	101	40-150
151772-58-6	NFDHA	0.05	0.0548	110	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0431	92	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0436	92	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-BS	4Q53744.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11062-1, FC11062-2, FC11062-3, FC11062-4, FC11062-5, FC11062-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0460	103	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.132	106	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.508	81	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.551	88	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	38%	20-150%
	13C5-PFPeA	109%	20-150%
	13C5-PFHxA	109%	20-150%
	13C4-PFHpA	110%	20-150%
	13C8-PFOA	114%	20-150%
	13C9-PFNA	118%	20-150%
	13C6-PFDA	105%	20-150%
	13C7-PFUnDA	117%	20-150%
	13C2-PFDoDA	107%	20-150%
	13C2-PFTeDA	96%	20-150%
	13C3-PFBS	111%	20-150%
	13C3-PFHxS	113%	20-150%
	13C8-PFOS	99%	20-150%
	13C8-FOSA	82%	20-150%
	d3-MeFOSA	79%	20-150%
	d5-EtFOSA	90%	20-150%
	d3-MeFOSAA	115%	20-150%
	d5-EtFOSAA	105%	20-150%
	d7-MeFOSE	72%	20-150%
	d9-EtFOSE	87%	20-150%
	13C2-4:2FTS	119%	20-180%
	13C2-6:2FTS	125%	20-180%
	13C2-8:2FTS	123%	20-180%
	13C3-HFPO-DA	109%	20-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-MS	4Q53750.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785
FC11062-2	4Q53749.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11062-1, FC11062-2, FC11062-3, FC11062-4, FC11062-5, FC11062-6

CAS No.	Compound	FC11062-2 ug/l	Spike Q	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.015 U	0.0962	0.0835	87	40-150
2706-90-3	Perfluoropentanoic acid	0.0077 U	0.0481	0.0413	86	40-150
307-24-4	Perfluorohexanoic acid	0.0038 U	0.024	0.0214	89	40-150
375-85-9	Perfluoroheptanoic acid	0.0038 U	0.024	0.0215	89	40-150
335-67-1	Perfluorooctanoic acid	0.0038 U	0.024	0.0212	88	40-150
375-95-1	Perfluorononanoic acid	0.0038 U	0.024	0.0204	85	40-150
335-76-2	Perfluorodecanoic acid	0.0038 U	0.024	0.0211	88	40-150
2058-94-8	Perfluoroundecanoic acid	0.0038 U	0.024	0.0197	82	40-150
307-55-1	Perfluorododecanoic acid	0.0038 U	0.024	0.0216	90	40-150
72629-94-8	Perfluorotridecanoic acid	0.0038 U	0.024	0.0212	88	40-150
376-06-7	Perfluorotetradecanoic acid	0.0038 U	0.024	0.0236	98	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0038 U	0.0213	0.0176	83	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0048 U	0.0226	0.0186	82	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0038 U	0.022	0.0208	95	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	0.0229	0.0195	85	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	0.0223	0.0197	88	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	0.0231	0.0209	90	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	0.0232	0.0186	80	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0048 U	0.0233	0.0169	72	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.019 U	0.0901	0.0821	91	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.019 U	0.0913	0.0894	98	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.019 U	0.0923	0.0849	92	40-150
754-91-6	PFOSA	0.0038 U	0.024	0.0217	90	40-150
31506-32-8	MeFOSA	0.0077 U	0.0481	0.0454	94	40-150
4151-50-2	EtFOSA	0.0077 U	0.0481	0.0405	84	40-150
2355-31-9	MeFOSAA	0.0048 U	0.024	0.0213	89	40-150
2991-50-6	EtFOSAA	0.0048 U	0.024	0.0222	92	40-150
24448-09-7	MeFOSE	0.038 U	0.12	0.101	84	40-150
1691-99-2	EtFOSE	0.038 U	0.12	0.108	90	40-150
13252-13-6	HFPO-DA (GenX)	0.0038 U	0.0481	0.0428	89	40-150
919005-14-4	ADONA	0.0077 U	0.0454	0.0476	105	40-150
377-73-1	PFMPA	0.0077 U	0.0481	0.0468	97	40-150
863090-89-5	PFMBA	0.0077 U	0.0481	0.0462	96	40-150
151772-58-6	NFDHA	0.0077 U	0.0481	0.0500	104	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0077 U	0.045	0.0400	89	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0077 U	0.0454	0.0342	75	40-150

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-MS	4Q53750.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785
FC11062-2	4Q53749.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11062-1, FC11062-2, FC11062-3, FC11062-4, FC11062-5, FC11062-6

CAS No.	Compound	FC11062-2 ug/l	Spike Q	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0077 U	0.0428	0.0444	104	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.019 U	0.12	0.0904	75	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.096 U	0.601	0.515	86	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.096 U	0.601	0.533	89	40-150

CAS No.	ID Standard Recoveries	MS	FC11062-2	Limits
	13C4-PFBA	95%	106%	20-150%
	13C5-PFPeA	114%	115%	20-150%
	13C5-PFHxA	111%	113%	20-150%
	13C4-PFHpA	110%	115%	20-150%
	13C8-PFOA	113%	113%	20-150%
	13C9-PFNA	115%	111%	20-150%
	13C6-PFDA	103%	114%	20-150%
	13C7-PFUnDA	110%	116%	20-150%
	13C2-PFDoDA	96%	105%	20-150%
	13C2-PFTeDA	80%	92%	20-150%
	13C3-PFBS	118%	113%	20-150%
	13C3-PFHxS	120%	110%	20-150%
	13C8-PFOS	106%	96%	20-150%
	13C8-FOSA	90%	87%	20-150%
	d3-MeFOSA	81%	80%	20-150%
	d5-EtFOSA	90%	95%	20-150%
	d3-MeFOSAA	99%	100%	20-150%
	d5-EtFOSAA	95%	93%	20-150%
	d7-MeFOSE	79%	80%	20-150%
	d9-EtFOSE	86%	86%	20-150%
	13C2-4:2FTS	93%	86%	20-180%
	13C2-6:2FTS	100%	87%	20-180%
	13C2-8:2FTS	103%	92%	20-180%
	13C3-HFPO-DA	113%	113%	20-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-DUP	4Q53752.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785
FC11062-3	4Q53751.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11062-1, FC11062-2, FC11062-3, FC11062-4, FC11062-5, FC11062-6

CAS No.	Compound	FC11062-3 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	0.0075 U	ND		nc		30
307-24-4	Perfluorohexanoic acid	0.0038 U	ND		nc		30
375-85-9	Perfluoroheptanoic acid	0.0038 U	ND		nc		30
335-67-1	Perfluorooctanoic acid	0.0038 U	ND		nc		30
375-95-1	Perfluorononanoic acid	0.0038 U	ND		nc		30
335-76-2	Perfluorodecanoic acid	0.0038 U	ND		nc		30
2058-94-8	Perfluoroundecanoic acid	0.0038 U	ND		nc		30
307-55-1	Perfluorododecanoic acid	0.0038 U	ND		nc		30
72629-94-8	Perfluorotridecanoic acid	0.0038 U	ND		nc		30
376-06-7	Perfluorotetradecanoic acid	0.0038 U	ND		nc		30
375-73-5	Perfluorobutanesulfonic acid	0.0038 U	ND		nc		30
2706-91-4	Perfluoropentanesulfonic acid	0.0047 U	ND		nc		30
355-46-4	Perfluorohexanesulfonic acid	0.0038 U	ND		nc		30
375-92-8	Perfluoroheptanesulfonic acid	0.0038 U	ND		nc		30
1763-23-1	Perfluorooctanesulfonic acid	0.0038 U	ND		nc		30
68259-12-1	Perfluorononanesulfonic acid	0.0038 U	ND		nc		30
335-77-3	Perfluorodecanesulfonic acid	0.0038 U	ND		nc		30
79780-39-5	Perfluorododecanesulfonic aci	0.0047 U	ND		nc		30
757124-72-44:2	Fluorotelomer sulfonate	0.019 U	ND		nc		30
27619-97-2	6:2 Fluorotelomer sulfonate	0.019 U	ND		nc		30
39108-34-4	8:2 Fluorotelomer sulfonate	0.019 U	ND		nc		30
754-91-6	PFOSA	0.0038 U	ND		nc		30
31506-32-8	MeFOSA	0.0075 U	ND		nc		30
4151-50-2	EtFOSA	0.0075 U	ND		nc		30
2355-31-9	MeFOSAA	0.0047 U	ND		nc		30
2991-50-6	EtFOSAA	0.0047 U	ND		nc		30
24448-09-7	MeFOSE	0.038 U	ND		nc		30
1691-99-2	EtFOSE	0.038 U	ND		nc		30
13252-13-6	HFPO-DA (GenX)	0.0038 U	ND		nc		30
919005-14-4	ADONA	0.0075 U	ND		nc		30
377-73-1	PFMPA	0.0075 U	ND		nc		30
863090-89-5	PFMBA	0.0075 U	ND		nc		30
151772-58-6	NFDHA	0.0075 U	ND		nc		30
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0075 U	ND		nc		30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0075 U	ND		nc		30

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99997-DUP	4Q53752.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785
FC11062-3	4Q53751.D	1	11/13/23	AL	11/09/23	OP99997	S4Q785

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11062-1, FC11062-2, FC11062-3, FC11062-4, FC11062-5, FC11062-6

CAS No.	Compound	FC11062-3 ug/l	DUP Q ug/l	Q	RPD	Limits
113507-82-7PFEESA		0.0075 U	ND		nc	30
356-02-5	3:3 Fluorotelomer carboxylate	0.019 U	ND		nc	30
914637-49-35:3	Fluorotelomer carboxylate	0.094 U	ND		nc	30
812-70-4	7:3 Fluorotelomer carboxylate	0.094 U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC11062-3	Limits
	13C4-PFBA	106%	108%	20-150%
	13C5-PFPeA	110%	110%	20-150%
	13C5-PFHxA	110%	109%	20-150%
	13C4-PFHpA	114%	111%	20-150%
	13C8-PFOA	112%	113%	20-150%
	13C9-PFNA	111%	116%	20-150%
	13C6-PFDA	98%	102%	20-150%
	13C7-PFUnDA	107%	107%	20-150%
	13C2-PFDoDA	88%	92%	20-150%
	13C2-PFTeDA	77%	80%	20-150%
	13C3-PFBS	107%	112%	20-150%
	13C3-PFHxS	100%	105%	20-150%
	13C8-PFOS	97%	96%	20-150%
	13C8-FOSA	84%	83%	20-150%
	d3-MeFOSA	80%	80%	20-150%
	d5-EtFOSA	90%	90%	20-150%
	d3-MeFOSAA	92%	94%	20-150%
	d5-EtFOSAA	82%	87%	20-150%
	d7-MeFOSE	78%	75%	20-150%
	d9-EtFOSE	84%	83%	20-150%
	13C2-4:2FTS	102%	85%	20-180%
	13C2-6:2FTS	103%	93%	20-180%
	13C2-8:2FTS	98%	89%	20-180%
	13C3-HFPO-DA	111%	109%	20-150%

* = Outside of Control Limits.

Injection Standard Area Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q785-CC785	Injection Date:	11/13/23
Lab File ID:	4Q53742.D	Injection Time:	18:41
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	41260	2.62	30486	5.30	33995	6.96	12469	7.51	9541	8.00
Upper Limit ^d	81648	3.02	60160	5.70	66984	7.36	25974	7.91	19038	8.40
Lower Limit ^e	16330	2.22	12032	4.90	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
OP99997-BS	37356	2.69	26715	5.30	29372	6.96	11283	7.51	8568	7.99	1
OP99997-LLBS	39262	2.69	27239	5.31	30816	6.96	12182	7.51	8717	8.00	1
OP99997-MB	40713	2.69	28967	5.31	31383	6.96	11954	7.51	8888	7.99	1
ZZZZZZ	39364	2.70	27251	5.31	31133	6.96	11666	7.51	9105	8.00	1
FC11062-1	39392	2.70	28005	5.31	30718	6.96	11729	7.51	8922	8.00	1
FC11062-2	37826	2.70	26085	5.31	29426	6.96	11591	7.51	7736	8.00	1
OP99997-MS	38916	2.69	27027	5.31	30218	6.96	11393	7.51	8639	7.99	1
FC11062-3	38083	2.70	27224	5.30	30076	6.96	10996	7.51	8504	8.00	1
OP99997-DUP	35419	2.69	24969	5.31	27890	6.96	10466	7.51	8527	7.99	1
FC11062-4	37741	2.70	27148	5.31	30848	6.96	11446	7.51	8964	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
6

Injection Standard Area Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q785-CC785	Injection Date:	11/13/23
Lab File ID:	4Q53742.D	Injection Time:	18:41
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	4323	7.03	6003	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
OP99997-BS	3724	7.02	5410	8.12	1
OP99997-LLBS	3912	7.03	5559	8.12	1
OP99997-MB	4139	7.02	6017	8.12	1
ZZZZZZ	4209	7.03	5481	8.12	1
FC11062-1	3926	7.03	5915	8.12	1
FC11062-2	3813	7.03	5636	8.12	1
OP99997-MS	3711	7.02	5581	8.12	1
FC11062-3	3932	7.03	5681	8.12	1
OP99997-DUP	3800	7.02	5466	8.12	1
FC11062-4	3797	7.03	5517	8.12	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: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q785-CC785	Injection Date:	11/13/23
Lab File ID:	4Q53754.D	Injection Time:	21:38
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	42067	2.62	30844	5.30	34306	6.95	14031	7.51	9948	7.99
Upper Limit ^d	81648	3.02	60160	5.70	66984	7.35	25974	7.91	19038	8.39
Lower Limit ^e	16330	2.22	12032	4.90	13397	6.55	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
S4Q785-ICCB	39995	2.62	29243	5.30	32126	6.96	12608	7.51	9202	7.99	1
FC11062-5	34008	2.70	30151	5.30	30966	6.95	12067	7.51	9102	7.99	1
FC11062-6	30872	2.70	27702	5.30	29390	6.95	10690	7.51	9118	7.99	1
OP99956-BS	42166	2.70	29251	5.30	31983	6.95	12987	7.50	8884	7.99	1
OP99956-LLBS	39918	2.70	26400	5.30	30591	6.95	11235	7.51	8994	7.99	1
OP99956-MB	42481	2.69	29959	5.30	31967	6.96	12476	7.51	9524	7.99	1
ZZZZZZ	44124	2.70	30026	5.30	34810	6.95	13807	7.51	9970	7.99	1
ZZZZZZ	44269	2.70	30324	5.30	35708	6.95	13920	7.50	9450	7.99	1
ZZZZZZ	43342	2.69	30773	5.30	34289	6.95	13586	7.51	10197	7.99	1
ZZZZZZ	41881	2.69	29993	5.30	33551	6.95	12851	7.51	9695	7.99	1
ZZZZZZ	43865	2.69	30479	5.30	35263	6.95	13671	7.50	10416	7.99	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.

Injection Standard Area Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q785-CC785	Injection Date:	11/13/23
Lab File ID:	4Q53754.D	Injection Time:	21:38
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	4120	7.02	6018	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
S4Q785-ICCB	4212	7.02	5693	8.12	1
FC11062-5	4041	7.02	5611	8.12	1
FC11062-6	3631	7.02	5157	8.12	1
OP99956-BS	4167	7.02	5955	8.12	1
OP99956-LLBS	3811	7.02	5556	8.12	1
OP99956-MB	4098	7.02	5833	8.12	1
ZZZZZZ	4605	7.02	6444	8.11	1
ZZZZZZ	4398	7.02	6453	8.12	1
ZZZZZZ	4140	7.02	6362	8.12	1
ZZZZZZ	4465	7.02	6381	8.12	1
ZZZZZZ	4534	7.02	6458	8.12	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.

TDCA Retention Time Check

Job Number: FC11062
 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)
FC11062-1	4Q53748.D	11/13/23	20:10	05:15	AF-HDMW225303-WGN01LF-2311
FC11062-2	4Q53749.D	11/13/23	20:25	05:30	AF-RHMW04-WGN01LF-2311
OP99997-MS	4Q53750.D	11/13/23	20:39	05:44	Matrix Spike
FC11062-3	4Q53751.D	11/13/23	20:54	05:59	AF-RHMW06-WGN01LF-2311
OP99997-DUP	4Q53752.D	11/13/23	21:09	06:14	Duplicate
FC11062-4	4Q53753.D	11/13/23	21:24	06:29	AF-RHMW225401-WGN01B-2311
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
FC11062-5	4Q53756.D	11/13/23	22:08	07:13	AF-RHMW02-WGN01LF-2311
FC11062-6	4Q53757.D	11/13/23	22:23	07:28	AF-RHMW02-WGFD01LF-2311
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: FC11062
 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 FC11062)
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 FC11062)
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 FC11062)
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)

TDCA Retention Time Check

Job Number: FC11062
 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 FC11062)
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

6

Ion Ratio Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q785 Method: EPA DRAFT 1633

Lab Sample ID	Lab File ID	Ion Ratios						
		PFPeA	PFHxA	PFHpA	PFOA	PFBS	PFHxS	PFOS
S4Q785-ICC785	4Q53734.D	0	2.7	17.5	20.4	38.7	59.4	49.9
FC11062-1	4Q53748.D							
FC11062-2	4Q53749.D							
FC11062-3	4Q53751.D							
FC11062-4	4Q53753.D	0	.8	19.2	12.3	45.2	69.6	38.3
FC11062-5	4Q53756.D							
FC11062-6	4Q53757.D							44.4

6.7.1
6

Isotope Dilution Standard Recovery Summary

Job Number: FC11062
 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
FC11062-1	4Q53748.D	113	110	108	112	113	112	109	107
FC11062-2	4Q53749.D	106	115	113	115	113	111	114	116
FC11062-3	4Q53751.D	108	110	109	111	113	116	102	107
FC11062-4	4Q53753.D	108	110	103	108	101	114	103	108
FC11062-5	4Q53756.D	72	93	97	102	99	99	93	98
FC11062-6	4Q53757.D	81	104	108	115	109	113	95	96
OP99997-BS	4Q53744.D	38	109	109	110	114	118	105	117
OP99997-DUP	4Q53752.D	106	110	110	114	112	111	98	107
OP99997-LLBS	4Q53745.D	113	113	111	112	113	106	113	116
OP99997-MB	4Q53746.D	109	108	106	106	112	114	103	116
OP99997-MS	4Q53750.D	95	114	111	110	113	115	103	110
S4Q785-IBLK	4Q53739.D	101	101	97	102	102	92	102	106
S4Q785-ICCB	4Q53755.D	100	100	99	100	107	103	99	105

Isotope Dilution Standards	Recovery Limits
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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%

6.8.1
6

Isotope Dilution Standard Recovery Summary

Job Number: FC11062
 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
FC11062-1	4Q53748.D	95	86	113	111	97	81	82	95
FC11062-2	4Q53749.D	105	92	113	110	96	87	80	95
FC11062-3	4Q53751.D	92	80	112	105	96	83	80	90
FC11062-4	4Q53753.D	91	82	117	117	104	98	91	99
FC11062-5	4Q53756.D	80	71	101	97	91	89	72	84
FC11062-6	4Q53757.D	84	69	112	115	111	99	85	92
OP99997-BS	4Q53744.D	107	96	111	113	99	82	79	90
OP99997-DUP	4Q53752.D	88	77	107	100	97	84	80	90
OP99997-LLBS	4Q53745.D	103	93	110	115	110	85	67	82
OP99997-MB	4Q53746.D	102	91	103	106	104	61	67	77
OP99997-MS	4Q53750.D	96	80	118	120	106	90	81	90
S4Q785-IBLK	4Q53739.D	101	96	108	107	104	98		
S4Q785-ICCB	4Q53755.D	94	95	98	101	105	100		

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: FC11062
 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
FC11062-1	4Q53748.D	97	92	79	88	93	91	95	109
FC11062-2	4Q53749.D	100	93	80	86	86	87	92	113
FC11062-3	4Q53751.D	94	87	75	83	85	93	89	109
FC11062-4	4Q53753.D	114	95	93	96	100	104	97	108
FC11062-5	4Q53756.D	92	88	79	82	110	87	80	84
FC11062-6	4Q53757.D	109	96	87	91	129	94	96	95
OP99997-BS	4Q53744.D	115	105	72	87	119	125	123	109
OP99997-DUP	4Q53752.D	92	82	78	84	102	103	98	111
OP99997-LLBS	4Q53745.D	112	105	70	80	119	116	103	112
OP99997-MB	4Q53746.D	105	93	57	68	92	97	101	106
OP99997-MS	4Q53750.D	99	95	79	86	93	100	103	113
S4Q785-IBLK	4Q53739.D	104	100			128	112	113	
S4Q785-ICCB	4Q53755.D	108	101			87	90	84	

Isotope Dilution Standards

Recovery Limits

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%

Initial Calibration Summary

Job Number: FC11062
 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	Level Name	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	1	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
				D:\MassHunter\Data\111323_1633_S4Q785\4Q53732.d	2	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
				D:\MassHunter\Data\111323_1633_S4Q785\4Q53733.d	3	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
				D:\MassHunter\Data\111323_1633_S4Q785\4Q53734.d	4	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
				D:\MassHunter\Data\111323_1633_S4Q785\4Q53735.d	5	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
				D:\MassHunter\Data\111323_1633_S4Q785\4Q53736.d	6	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
				D:\MassHunter\Data\111323_1633_S4Q785\4Q53737.d	7	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
				D:\MassHunter\Data\111323_1633_S4Q785\4Q53738.d	8	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
						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
						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
						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
						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
						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
						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
						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
																11/14/2023 10:06:38 AM

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

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Initial Calibration Summary

Job Number: FC11062
 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 PFHs	Avg RF	1.0097	0.7936	0.9702	1.0402	1.0842	0.7622	1.1114	1.1363	0.9885	14.244
I M8-PFOS	Avg RF	1.3444	0.9274	1.0997	1.1471	1.2551	0.8001	1.2574	1.2448	1.1345	16.388
T PFHs	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 M3-MeFOSAA	Avg RF	0.9501	1.0816	0.9916	1.0859	1.1283	0.9062	1.1833	1.1449	1.0590	9.349
T MeFOSAA	Avg RF	6.7850	7.6601	7.8322	4.7210	8.7850	7.0515	8.9514	8.6521	7.5548	18.472
I M3-HFO-DA	Avg RF	3.0972	3.0308	3.1760	3.3640	3.4855	2.7666	3.3461	2.9515	3.1522	7.591
T HFO-DA	Avg RF	2.8715	2.8705	2.9253	3.2807	3.4521	2.7464	3.5272	3.3029	3.1221	9.661
I M5-ERFOSAA	Avg RF	0.6917	0.7597	0.9351	0.9429	0.9090	0.7719	1.0944	1.0587	0.8954	16.098
T ERFOSAA	Avg RF	0.9807	1.1489	1.1447	0.9589	1.2792	0.9755	1.2770	1.3476	1.1391	13.545
I M9-ERFOSE	Avg RF	0.9376	0.8795	0.8783	0.9464	1.0177	0.7571	1.0368	1.0191	0.9341	10.105
T ERFOSE	Avg RF										

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

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Initial Calibration Summary

Job Number: FC11062
 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-PPFA	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-HFPO-DA	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: FC11062
 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: FC11062
 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: FC11062
 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: FC11062
 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--		
PFEESA	20.000	17.505	-12.5	87.5

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-CC785
 Lab FileID: 4Q53742.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: 4Q53742
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.945	18.9	118.9
13C2-6:2FTS	5.000	5.296	5.9	105.9
13C2-8:2FTS	5.000	5.248	5.0	105.0
13C2-PFDoDA	1.250	1.273	1.8	101.8
13C2-PFTeDA	1.250	1.228	-1.8	98.2
13C3-PFBS	2.500	2.505	0.2	100.2
13C3-PFHxS	2.500	2.569	2.8	102.8
13C4-PFBA	10.000	9.868	-1.3	98.7
13C4-PFHpA	2.500	2.520	0.8	100.8
13C5-PFHxA	2.500	2.424	-3.0	97.0
13C5-PFPeA	5.000	4.860	-2.8	97.2
13C6-PFDA	1.250	1.269	1.5	101.5
13C7-PFUnDA	1.250	1.278	2.2	102.2
13C8-FOSA	2.500	2.458	-1.7	98.3
13C8-PFOA	2.500	2.567	2.7	102.7
13C8-PFOS	2.500	2.417	-3.3	96.7
13C9-PFNA	1.250	1.315	5.2	105.2
4:2FTS	9.375	8.677	-7.4	92.6
6:2FTS	9.500	10.299	8.4	108.4
8:2FTS	9.600	10.471	9.1	109.1
d3-MeFOSAA	5.000	5.300	6.0	106.0
EtFOSAA	2.500	2.579	3.1	103.1
FOSA	2.500	2.617	4.7	104.7
MeFOSAA	2.500	2.349	-6.0	94.0
PFBA	10.000	10.074	0.7	100.7
PFBS	2.218	2.094	-5.6	94.4
PFDA	2.500	2.345	-6.2	93.8
PFDoDA	2.500	2.389	-4.4	95.6
PFDS	2.413	2.530	4.8	104.8
PFHpA	2.500	2.495	-0.2	99.8
PFHpS	2.383	2.483	4.2	104.2
PFHxA	2.500	2.496	-0.2	99.8
PFHxS	2.285	2.333	2.1	102.1
PFNA	2.500	2.552	2.1	102.1
PFNS	2.405	2.544	5.8	105.8
PFOA	2.500	2.435	-2.6	97.4
PFOS	2.320	2.422	4.4	104.4

Continuing Calibration Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-CC785
 Lab FileID: 4Q53742.D

PFPeA	5.000	5.069	1.4	101.4
PFPeS	2.353	2.410	2.4	102.4
PFTeDA	2.500	2.432	-2.7	97.3
PFTTrDA	2.500	2.592	3.7	103.7
PFUnDA	2.500	2.452	-1.9	98.1
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	4.828	2.2	102.2
13C3-HFPO-DA	10.000	9.767	-2.3	97.7
9C1-PF3ONS	4.675	4.817	3.0	103.0
ADONA	4.725	5.683	20.3	120.3
HFPO-DA	5.000	4.955	-0.9	99.1
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.869	-4.9	95.1
5:3FTCA	62.400	62.275	-0.2	99.8
7:3FTCA	62.400	63.062	1.1	101.1
d3-MeFOSA	2.500	2.122	-15.1	84.9
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.960	-0.8	99.2
EtFOSE	12.500	12.833	2.7	102.7
MeFOSA	5.000	5.725	14.5	114.5
MeFOSE	12.500	13.297	6.4	106.4
PFDoDS	2.425	2.479	2.2	102.2
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.972	-0.6	99.4
d7-MeFOSE	25.000	24.495	-2.0	98.0
d9-EtFOSE	25.000	24.495	-2.0	98.0
d5-EtFOSA	2.500	2.487	-0.5	99.5
NFDHA	5.000	5.527	10.5	110.5
PFMBA	5.000	5.042	0.8	100.8
PFMPA	5.000	5.052	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--		
PFEEESA	4.450	4.595	3.3	103.3

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-CC785
 Lab FileID: 4Q53743.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: 4Q53743
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.872	17.4	117.4
13C2-6:2FTS	5.000	5.288	5.8	105.8
13C2-8:2FTS	5.000	5.343	6.9	106.9
13C2-PFDoDA	1.250	1.368	9.5	109.5
13C2-PFTeDA	1.250	1.265	1.2	101.2
13C3-PFBS	2.500	2.570	2.8	102.8
13C3-PFHxS	2.500	2.554	2.2	102.2
13C4-PFBA	10.000	10.129	1.3	101.3
13C4-PFHpA	2.500	2.537	1.5	101.5
13C5-PFHxA	2.500	2.642	5.7	105.7
13C5-PFPeA	5.000	5.189	3.8	103.8
13C6-PFDA	1.250	1.424	13.9	113.9
13C7-PFUnDA	1.250	1.430	14.4	114.4
13C8-FOSA	2.500	2.562	2.5	102.5
13C8-PFOA	2.500	2.616	4.6	104.6
13C8-PFOS	2.500	2.510	0.4	100.4
13C9-PFNA	1.250	1.223	-2.1	97.9
4:2FTS	0.750	0.694	-7.5	92.5
6:2FTS	0.760	0.783	3.0	103.0
8:2FTS	0.768	0.750	-2.3	97.7
d3-MeFOSAA	5.000	5.436	8.7	108.7
EtFOSAA	0.200	0.162	-19.1	80.9
FOSA	0.200	0.177	-11.3	88.7
MeFOSAA	0.200	0.199	-0.4	99.6
PFBA	0.800	0.697	-12.9	87.1
PFBS	0.177	0.159	-10.4	89.6
PFDA	0.200	0.166	-16.8	83.2
PFDoDA	0.200	0.187	-6.3	93.7
PFDS	0.193	0.161	-16.5	83.5
PFHpA	0.200	0.188	-6.1	93.9
PFHpS	0.191	0.180	-5.9	94.1
PFHxA	0.200	0.180	-10.1	89.9
PFHxS	0.183	0.167	-8.7	91.3
PFNA	0.200	0.174	-12.9	87.1
PFNS	0.192	0.165	-14.0	86.0
PFOA	0.200	0.158	-21.1	78.9
PFOS	0.186	0.203	9.1	109.1

Continuing Calibration Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-CC785
 Lab FileID: 4Q53743.D

PFPeA	0.400	0.341	-14.7	85.3
PFPeS	0.188	0.153	-18.8	81.2
PFTeDA	0.200	0.187	-6.7	93.3
PFTTrDA	0.200	0.205	2.5	102.5
PFUnDA	0.200	0.196	-2.0	98.0
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	0.338	-10.5	89.5
13C3-HFPO-DA	10.000	10.241	2.4	102.4
9C1-PF3ONS	0.374	0.321	-14.2	85.8
ADONA	0.378	0.375	-0.9	99.1
HFPO-DA	0.400	0.308	-23.0	77.0
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.851	-14.8	85.2
5:3FTCA	4.992	4.041	-19.1	80.9
7:3FTCA	4.992	4.226	-15.3	84.7
d3-MeFOSA	2.500	2.275	-9.0	91.0
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.400	0.424	6.1	106.1
EtFOSE	1.000	1.095	9.5	109.5
MeFOSA	0.400	0.325	-18.8	81.2
MeFOSE	1.000	0.972	-2.8	97.2
PFDoDS	0.194	0.158	-18.3	81.7
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.897	-2.1	97.9
d7-MeFOSE	25.000	24.968	-0.1	99.9
d9-EtFOSE	25.000	24.191	-3.2	96.8
d5-EtFOSA	2.500	2.383	-4.7	95.3
NFDHA	0.400	0.392	-2.0	98.0
PFMBA	0.400	0.334	-16.4	83.6
PFMPA	0.400	0.358	-10.6	89.4
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	0.356	0.302	-15.0	85.0

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-CC785
 Lab FileID: 4Q53754.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: 4Q53754
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.292	5.8	105.8
13C2-6:2FTS	5.000	4.770	-4.6	95.4
13C2-8:2FTS	5.000	4.817	-3.7	96.3
13C2-PFDoDA	1.250	1.173	-6.2	93.8
13C2-PFTeDA	1.250	1.218	-2.6	97.4
13C3-PFBS	2.500	2.691	7.6	107.6
13C3-PFHxS	2.500	2.650	6.0	106.0
13C4-PFBA	10.000	9.883	-1.2	98.8
13C4-PFHpA	2.500	2.440	-2.4	97.6
13C5-PFHxA	2.500	2.478	-0.9	99.1
13C5-PFPeA	5.000	4.939	-1.2	98.8
13C6-PFDA	1.250	1.174	-6.1	93.9
13C7-PFUnDA	1.250	1.218	-2.6	97.4
13C8-FOSA	2.500	2.452	-1.9	98.1
13C8-PFOA	2.500	2.523	0.9	100.9
13C8-PFOS	2.500	2.534	1.4	101.4
13C9-PFNA	1.250	1.126	-9.9	90.1
4:2FTS	9.375	8.692	-7.3	92.7
6:2FTS	9.500	10.132	6.6	106.6
8:2FTS	9.600	9.709	1.1	101.1
d3-MeFOSAA	5.000	5.241	4.8	104.8
EtFOSAA	2.500	2.707	8.3	108.3
FOSA	2.500	2.512	0.5	100.5
MeFOSAA	2.500	2.300	-8.0	92.0
PFBA	10.000	9.943	-0.6	99.4
PFBS	2.218	2.108	-5.0	95.0
PFDA	2.500	2.554	2.1	102.1
PFDoDA	2.500	2.616	4.6	104.6
PFDS	2.413	2.406	-0.3	99.7
PFHpA	2.500	2.554	2.2	102.2
PFHpS	2.383	2.428	1.9	101.9
PFHxA	2.500	2.445	-2.2	97.8
PFHxS	2.285	2.454	7.4	107.4
PFNA	2.500	2.651	6.1	106.1
PFNS	2.405	2.522	4.9	104.9
PFOA	2.500	2.414	-3.4	96.6
PFOS	2.320	2.341	0.9	100.9

Continuing Calibration Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-CC785
 Lab FileID: 4Q53754.D

PFPeA	5.000	5.005	0.1	100.1
PFPeS	2.353	2.325	-1.2	98.8
PFTeDA	2.500	2.405	-3.8	96.2
PFTTrDA	2.500	2.662	6.5	106.5
PFUnDA	2.500	2.477	-0.9	99.1
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	4.707	-0.4	99.6
13C3-HFPO-DA	10.000	9.753	-2.5	97.5
9C1-PF3ONS	4.675	4.891	4.6	104.6
ADONA	4.725	5.731	21.3	121.3
HFPO-DA	5.000	4.910	-1.8	98.2
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.934	-4.4	95.6
5:3FTCA	62.400	61.153	-2.0	98.0
7:3FTCA	62.400	59.971	-3.9	96.1
d3-MeFOSA	2.500	2.284	-8.6	91.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.765	-4.7	95.3
EtFOSE	12.500	12.410	-0.7	99.3
MeFOSA	5.000	5.403	8.1	108.1
MeFOSE	12.500	12.564	0.5	100.5
PFDoDS	2.425	2.536	4.6	104.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.931	-1.4	98.6
d7-MeFOSE	25.000	24.928	-0.3	99.7
d9-EtFOSE	25.000	24.359	-2.6	97.4
d5-EtFOSA	2.500	2.567	2.7	102.7
NFDHA	5.000	5.371	7.4	107.4
PFMBA	5.000	4.872	-2.6	97.4
PFMPA	5.000	4.981	-0.4	99.6
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.478	0.6	100.6

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-CC785
 Lab FileID: 4Q53766.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: 4Q53766
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.878	17.6	117.6
13C2-6:2FTS	5.000	5.445	8.9	108.9
13C2-8:2FTS	5.000	5.080	1.6	101.6
13C2-PFDoDA	1.250	1.207	-3.4	96.6
13C2-PFTeDA	1.250	1.129	-9.7	90.3
13C3-PFBS	2.500	2.551	2.0	102.0
13C3-PFHxS	2.500	2.360	-5.6	94.4
13C4-PFBA	10.000	9.877	-1.2	98.8
13C4-PFHpA	2.500	2.513	0.5	100.5
13C5-PFHxA	2.500	2.408	-3.7	96.3
13C5-PFPeA	5.000	4.880	-2.4	97.6
13C6-PFDA	1.250	1.193	-4.6	95.4
13C7-PFUnDA	1.250	1.224	-2.1	97.9
13C8-FOSA	2.500	2.290	-8.4	91.6
13C8-PFOA	2.500	2.546	1.8	101.8
13C8-PFOS	2.500	2.436	-2.5	97.5
13C9-PFNA	1.250	1.097	-12.2	87.8
4:2FTS	9.375	8.671	-7.5	92.5
6:2FTS	9.500	10.036	5.6	105.6
8:2FTS	9.600	10.633	10.8	110.8
d3-MeFOSAA	5.000	5.345	6.9	106.9
EtFOSAA	2.500	2.696	7.8	107.8
FOSA	2.500	2.478	-0.9	99.1
MeFOSAA	2.500	2.453	-1.9	98.1
PFBA	10.000	9.843	-1.6	98.4
PFBS	2.218	2.029	-8.5	91.5
PFDA	2.500	2.585	3.4	103.4
PFDoDA	2.500	2.379	-4.8	95.2
PFDS	2.413	2.325	-3.7	96.3
PFHpA	2.500	2.536	1.5	101.5
PFHpS	2.383	2.438	2.3	102.3
PFHxA	2.500	2.516	0.6	100.6
PFHxS	2.285	2.578	12.8	112.8
PFNA	2.500	3.018	20.7	120.7
PFNS	2.405	2.571	6.9	106.9
PFOA	2.500	2.240	-10.4	89.6
PFOS	2.320	2.377	2.5	102.5

Continuing Calibration Summary

Job Number: FC11062
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q785-CC785
 Lab FileID: 4Q53766.D

PFPeA	5.000	5.008	0.2	100.2
PFPeS	2.353	2.552	8.5	108.5
PFTeDA	2.500	2.671	6.8	106.8
PFTTrDA	2.500	2.474	-1.1	98.9
PFUnDA	2.500	2.597	3.9	103.9
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	4.647	-1.6	98.4
13C3-HFPO-DA	10.000	9.703	-3.0	97.0
9C1-PF3ONS	4.675	4.961	6.1	106.1
ADONA	4.725	5.809	22.9	122.9
HFPO-DA	5.000	5.105	2.1	102.1
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.123	-2.9	97.1
5:3FTCA	62.400	62.972	0.9	100.9
7:3FTCA	62.400	62.026	-0.6	99.4
d3-MeFOSA	2.500	2.168	-13.3	86.7
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.936	-1.3	98.7
EtFOSE	12.500	12.608	0.9	100.9
MeFOSA	5.000	5.545	10.9	110.9
MeFOSE	12.500	13.073	4.6	104.6
PFDoDS	2.425	2.507	3.4	103.4
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.826	-3.5	96.5
d7-MeFOSE	25.000	22.484	-10.1	89.9
d9-EtFOSE	25.000	22.221	-11.1	88.9
d5-EtFOSA	2.500	2.337	-6.5	93.5
NFDHA	5.000	5.672	13.4	113.4
PFMBA	5.000	4.981	-0.4	99.6
PFMPA	5.000	5.056	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	4.607	3.5	103.5

CC Criteria: +/- 30%

Run Sequence Report

Job Number: FC11062
 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)
FC11062-1	4Q53748.D	11/13/23 20:10	OP99997	AF-HDMW225303-WGN01LF-2311
FC11062-2	4Q53749.D	11/13/23 20:25	OP99997	AF-RHMW04-WGN01LF-2311
OP99997-MS	4Q53750.D	11/13/23 20:39	OP99997	Matrix Spike
FC11062-3	4Q53751.D	11/13/23 20:54	OP99997	AF-RHMW06-WGN01LF-2311
OP99997-DUP	4Q53752.D	11/13/23 21:09	OP99997	Duplicate
FC11062-4	4Q53753.D	11/13/23 21:24	OP99997	AF-RHMW225401-WGN01B-2311
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
FC11062-5	4Q53756.D	11/13/23 22:08	OP99997	AF-RHMW02-WGN01LF-2311
FC11062-6	4Q53757.D	11/13/23 22:23	OP99997	AF-RHMW02-WGFD01LF-2311
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: FC11062
 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 FC11062)
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 FC11062)
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 FC11062)
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 FC11062)
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

6-10-1
6

MS Semi-volatiles

Raw Data

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53748.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 8:10:18 PM
 Sample Name : fc11062-1
 Vial : P4-D5
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP99997,S4Q785,530,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	92627	10.00 µg/L	0.000
M5-PFPeA	4.137	268.3 -> 223.0	37590	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	28306	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	27340	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	30856	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	12927	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	8920	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	10192	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	9591	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	8676	1.25 µg/L	-0.012
M8-FOSA	9.806	506.1 -> 77.8	5699	2.50 µg/L	-0.012
M3-PFBS	5.165	302.1 -> 79.9	8330	2.50 µg/L	-0.038
M3-PFHxS	7.017	402.1 -> 79.9	6743	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6857	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	626	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1292	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1902	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	10876	5.00 µg/L	-0.025
M3-HFPO-DA	5.664	286.9 -> 168.9	26081	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	9055	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	24018	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	30884	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	5590	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	4032	2.50 µg/L	0.000
13C4-PFOS	8.118	502.8 -> 79.9	5915	2.50 µg/L	-0.026
13C3-PFBA	2.703	216.0 -> 172.0	39392	5.00 µg/L	0.000
18O2-PFHxS	7.028	403.0 -> 83.9	3926	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	30718	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	8922	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	11729	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	28005	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	626	4.66 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.2%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1292	4.56 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.3%		
13C2-8:2FTS	7.804	529.1 -> 80.9	1902	4.76 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.3%		
13C2-PFDoDA	8.880	615.1 -> 570.0	9591	1.19 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.3%		
13C2-PFTeDA	9.649	715.2 -> 670.0	8676	1.07 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 85.7%		
13C3-PFBS	5.165	302.1 -> 79.9	8330	2.83 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 113.1%		
13C3-PFHxS	7.017	402.1 -> 79.9	6743	2.77 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 = 110.8%	
13C4-PFBA	2.699	216.8 -> 171.9	92627	11.28 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 112.8%	
13C4-PFHpA	6.267	367.1 -> 322.0	27340	2.80 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.9%	
13C5-PFHxA	5.310	318.0 -> 273.0	28306	2.71 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.4%	
13C5-PFPeA	4.137	268.3 -> 223.0	37590	5.50 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 110.1%	
13C6-PFDA	8.004	519.1 -> 474.1	8920	1.36 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.7%	
13C7-PFUnDA	8.448	570.0 -> 525.1	10192	1.34 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.5%	
13C8-FOSA	9.806	506.1 -> 77.8	5699	2.02 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 80.6%	
13C8-PFOA	6.964	421.1 -> 376.0	30856	2.81 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.5%	
13C8-PFOS	8.117	507.1 -> 79.9	6857	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	12927	1.40 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 111.8%	
d3-MeFOSAA	8.074	573.2 -> 419.0	10876	4.85 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C3-HFPO-DA	5.664	286.9 -> 168.9	26081	10.94 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 109.4%	
d3-MeFOSA	11.139	515.0 -> 219.0	4032	2.04 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 81.7%	
d5-EtFOSAA	8.283	589.2 -> 419.0	9055	4.61 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.2%	
d7-MeFOSE	11.034	623.2 -> 58.9	24018	19.71 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 78.8%	
d9-EtFOSE	11.319	639.2 -> 58.9	30884	21.88 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 87.5%	
d5-EtFOSA	11.410	531.1 -> 219.0	5590	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.5%	

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.	

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	7.510	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	-	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



7.1.1
7

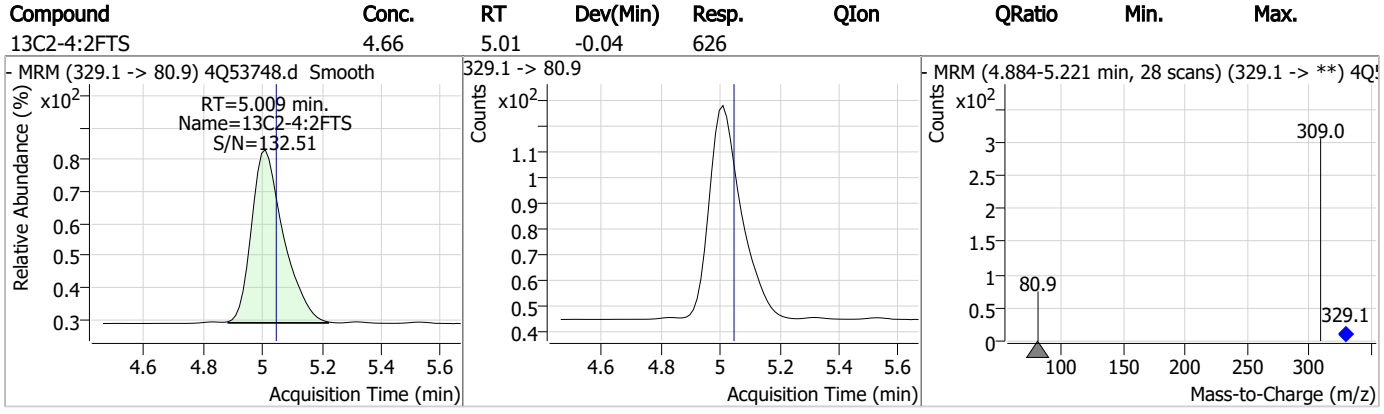
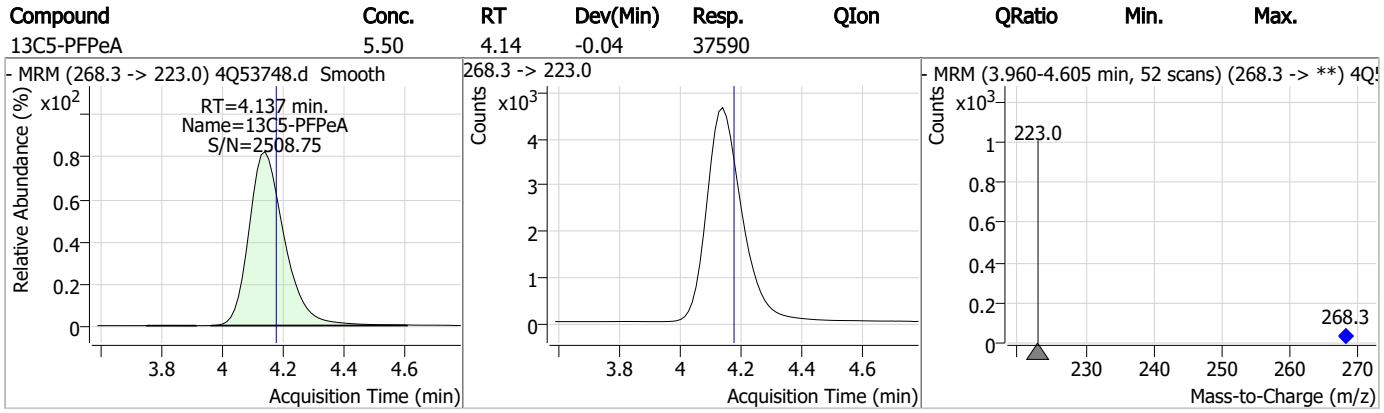
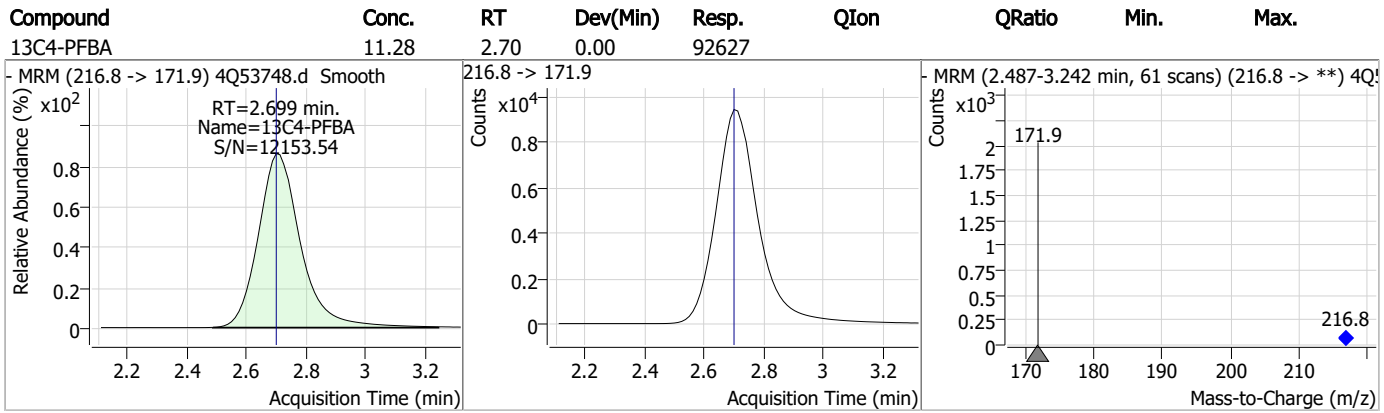
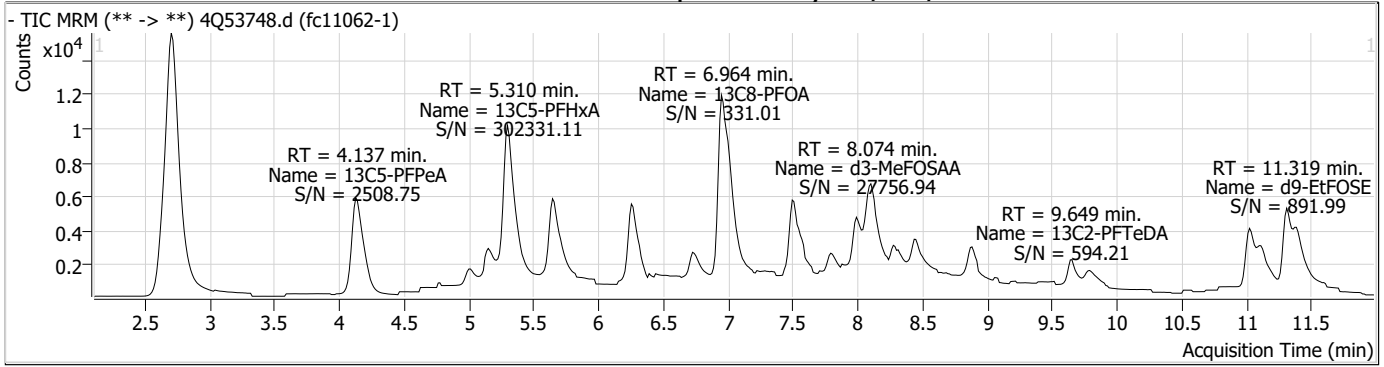
Perfluorinated Compounds by LC/MS/MS

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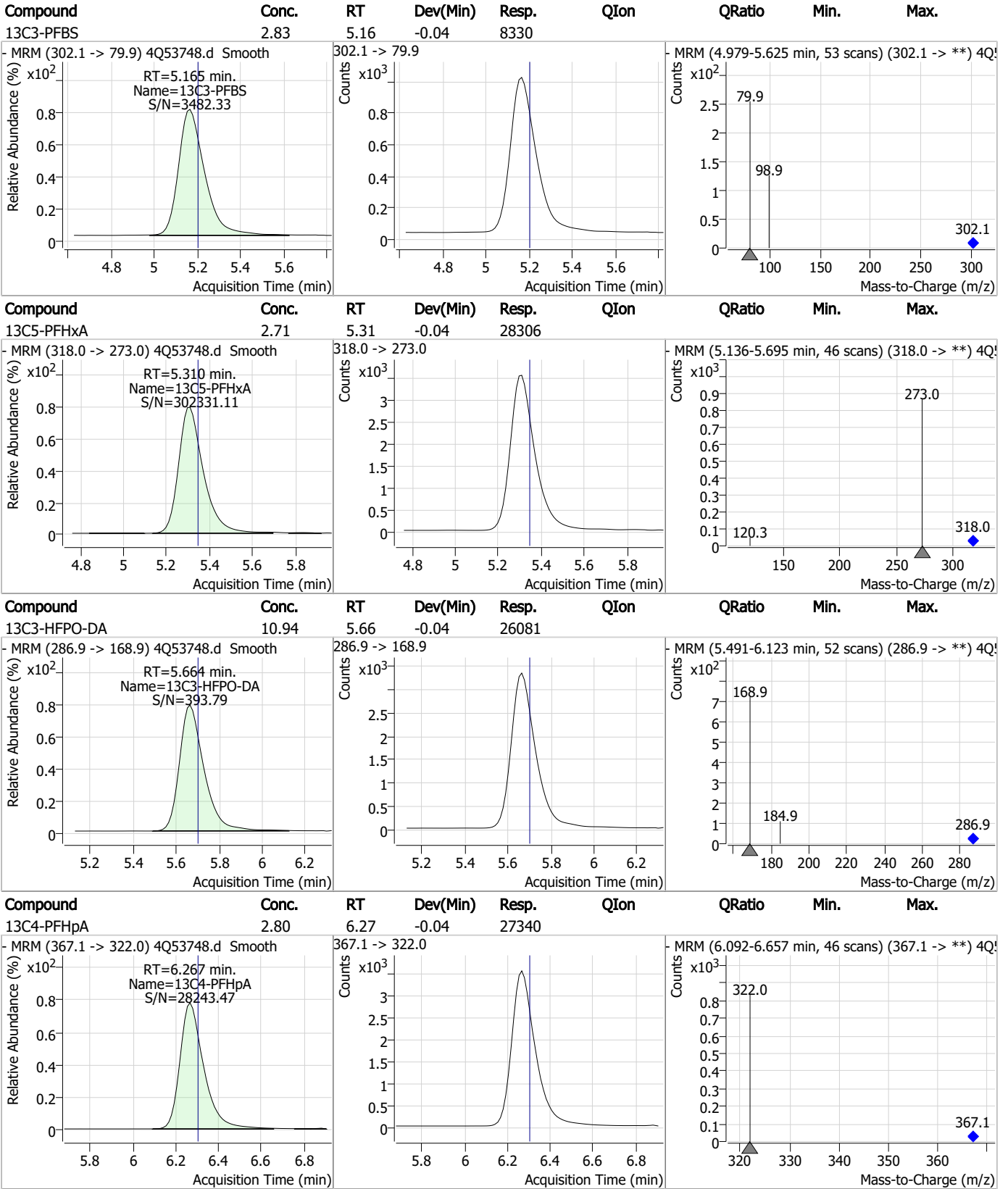
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Perfluorinated Compounds by LC/MS/MS



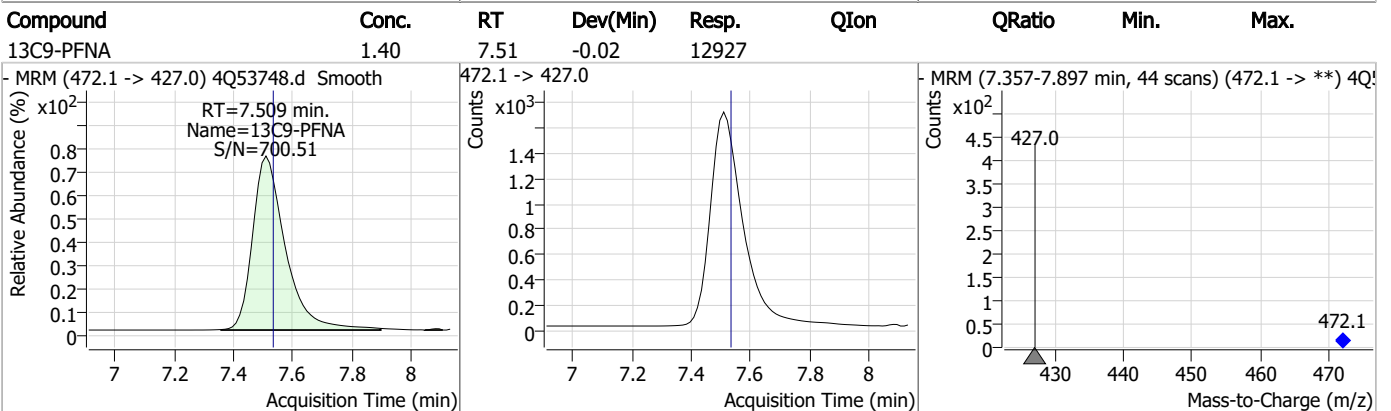
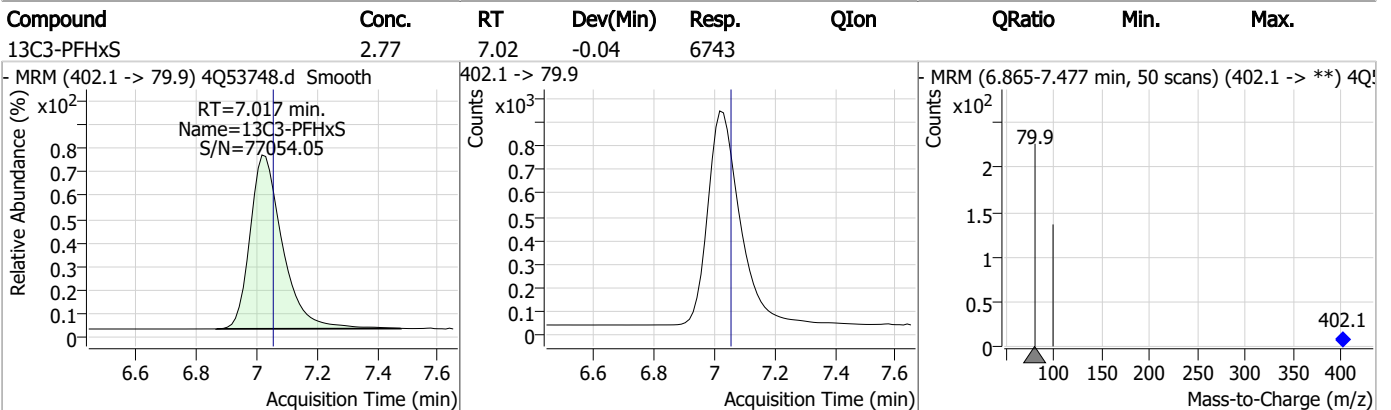
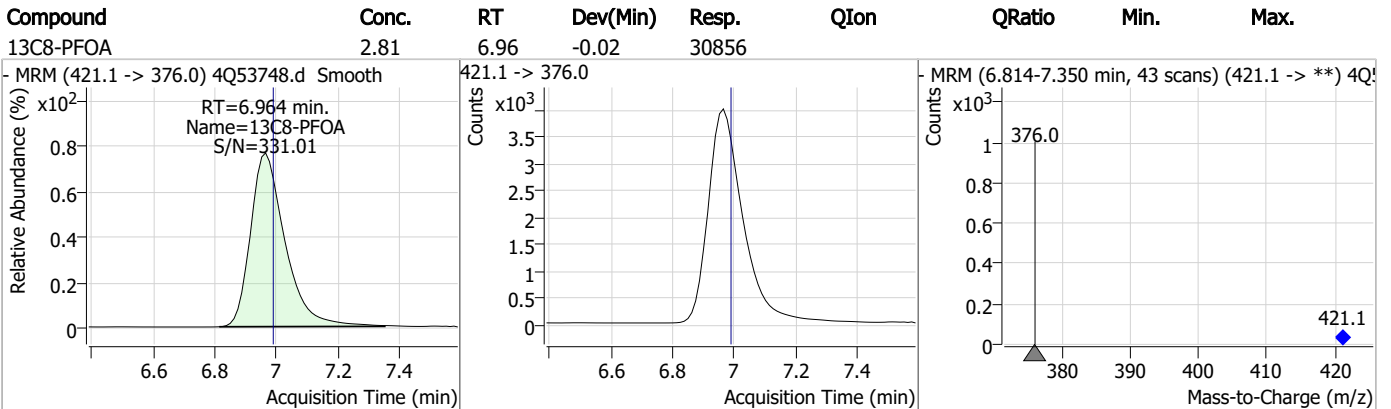
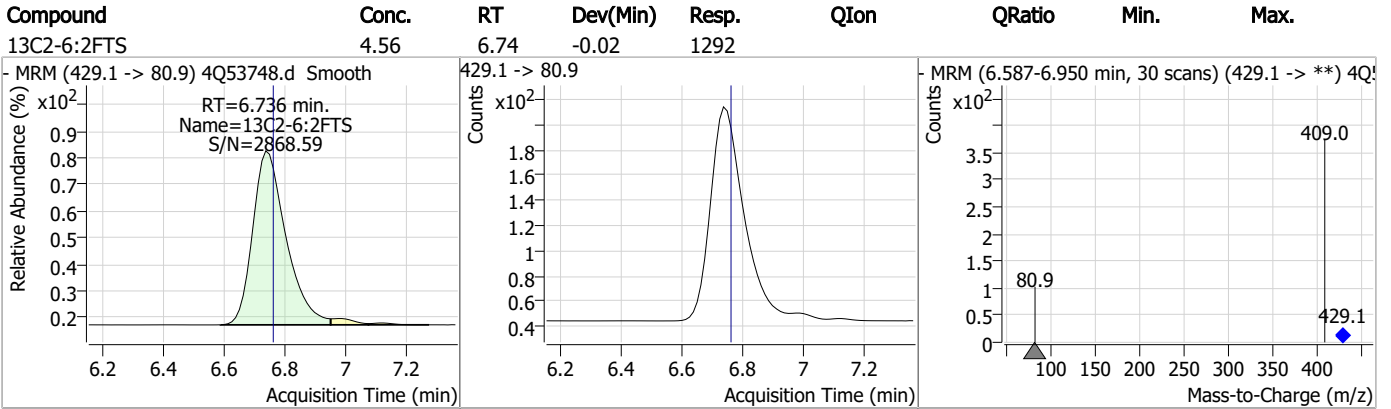
Perfluorinated Compounds by LC/MS/MS



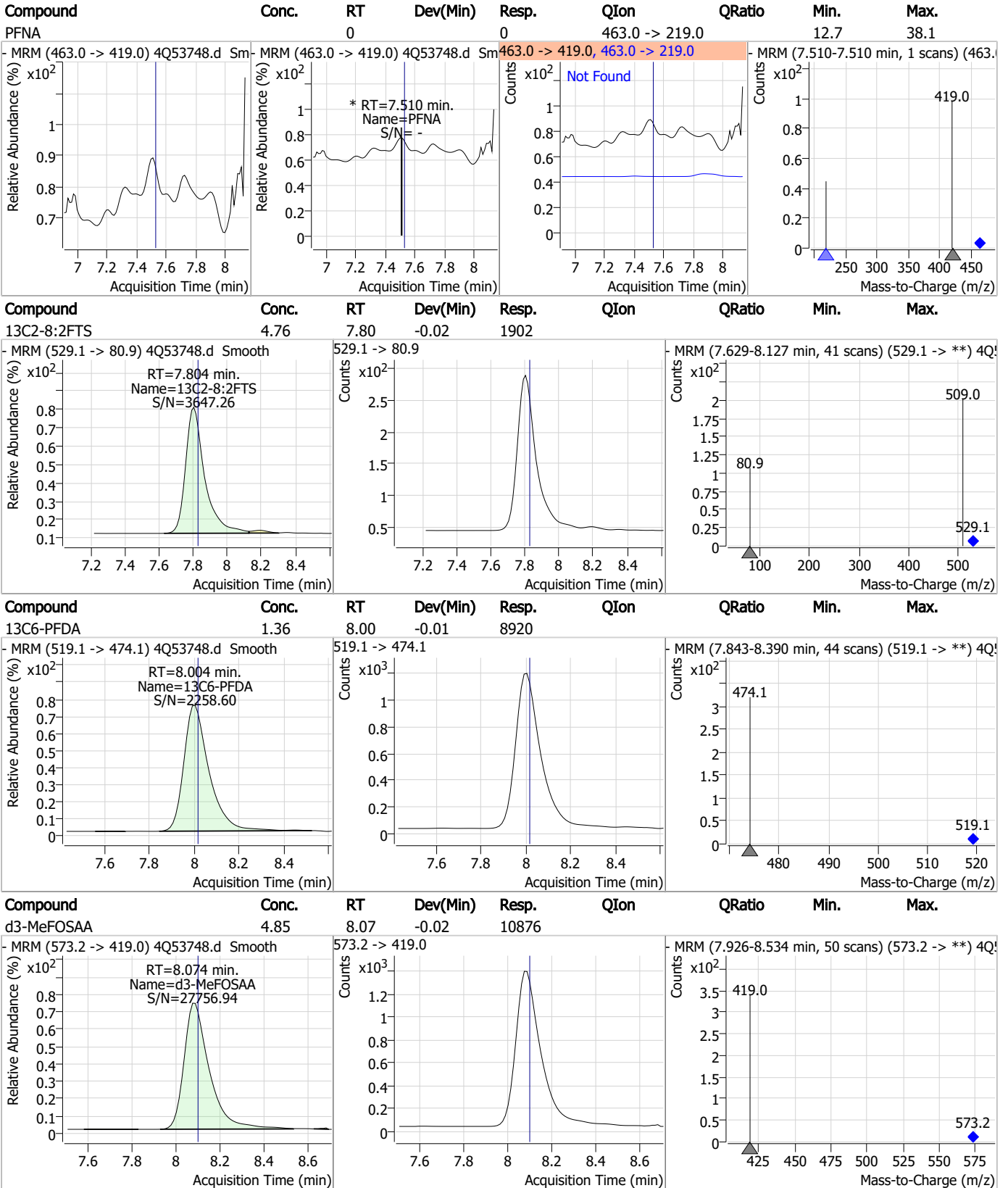
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Perfluorinated Compounds by LC/MS/MS

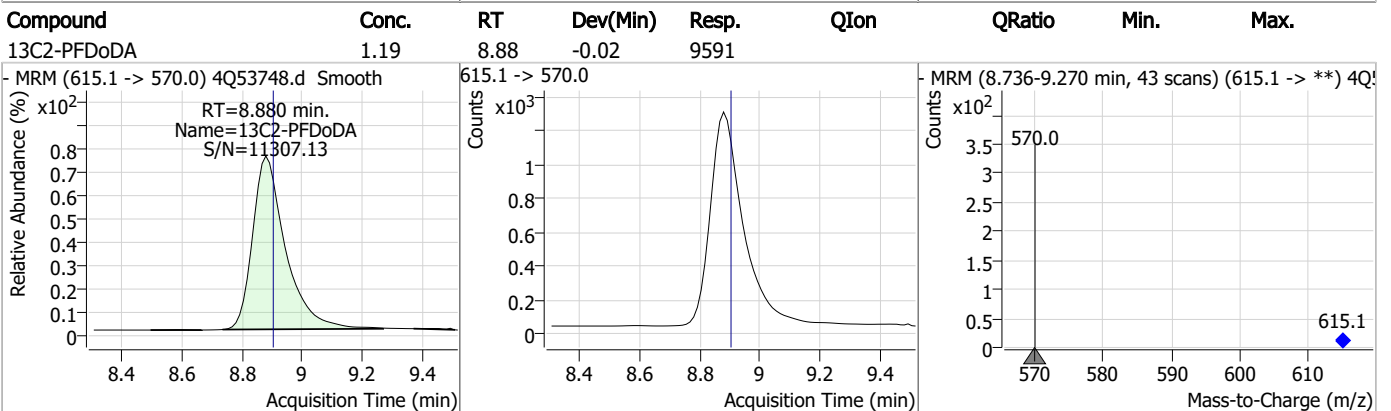
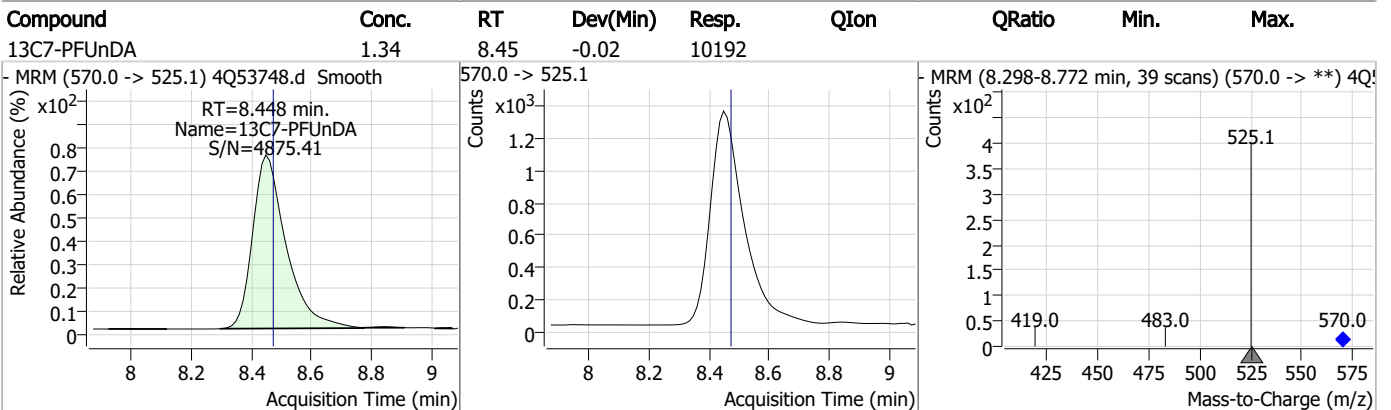
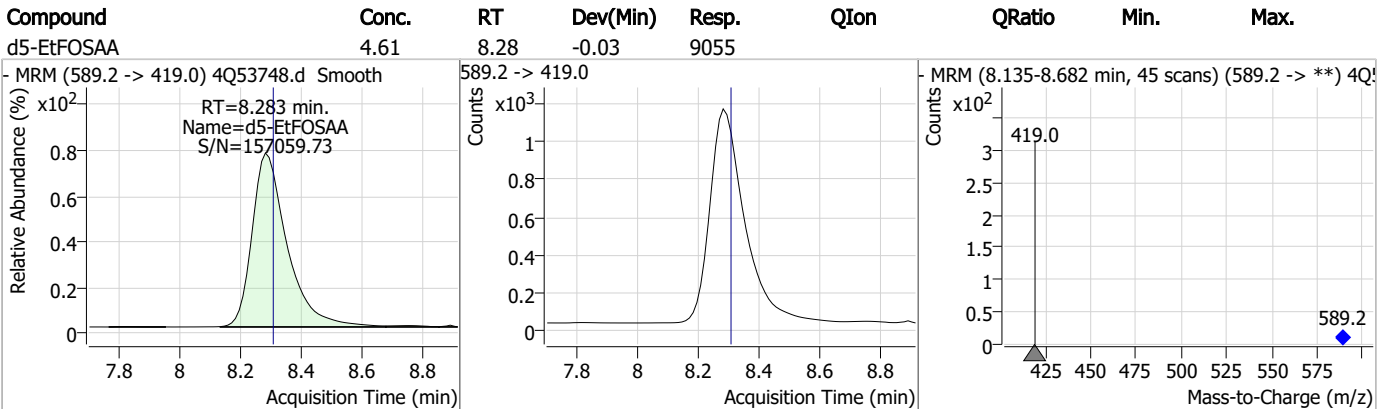
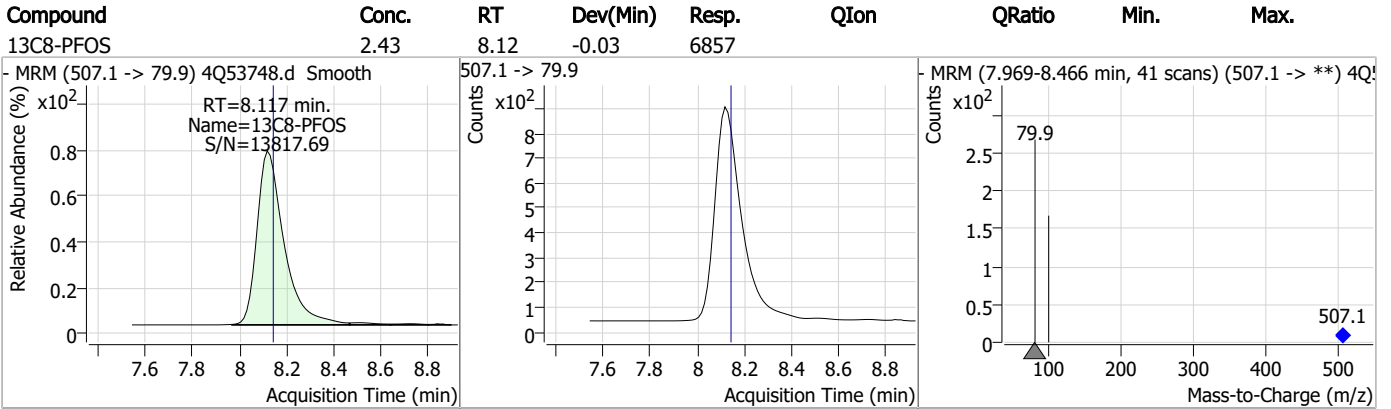


Perfluorinated Compounds by LC/MS/MS

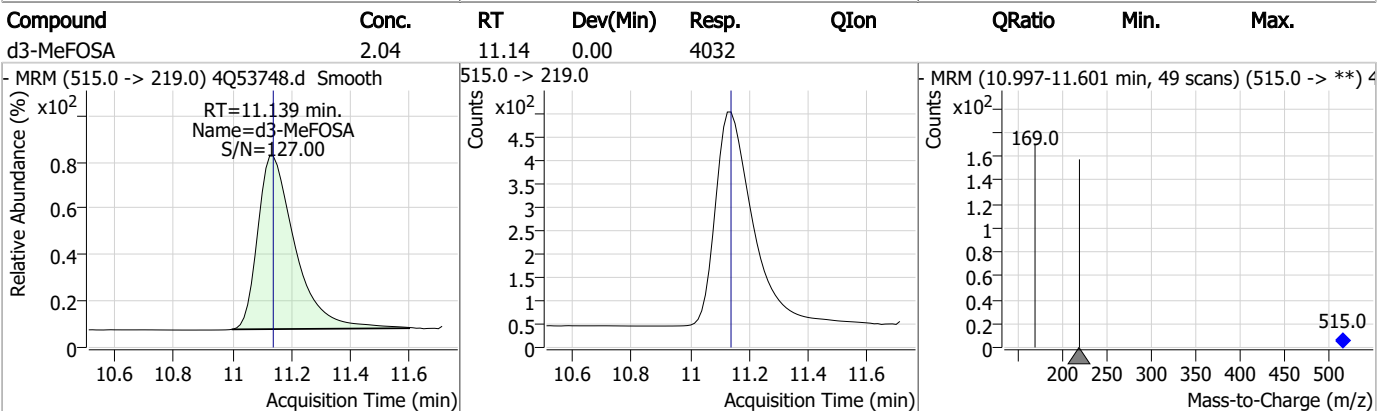
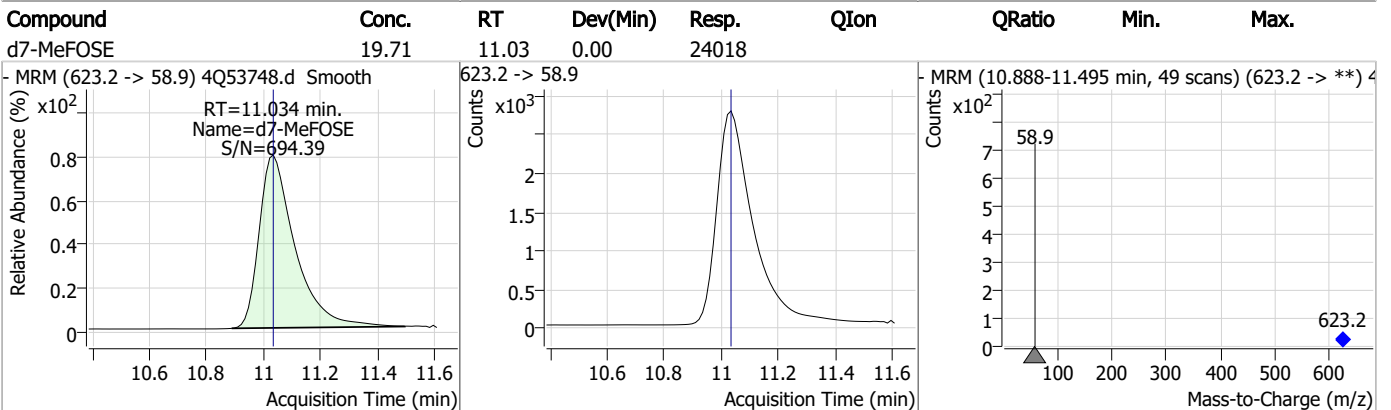
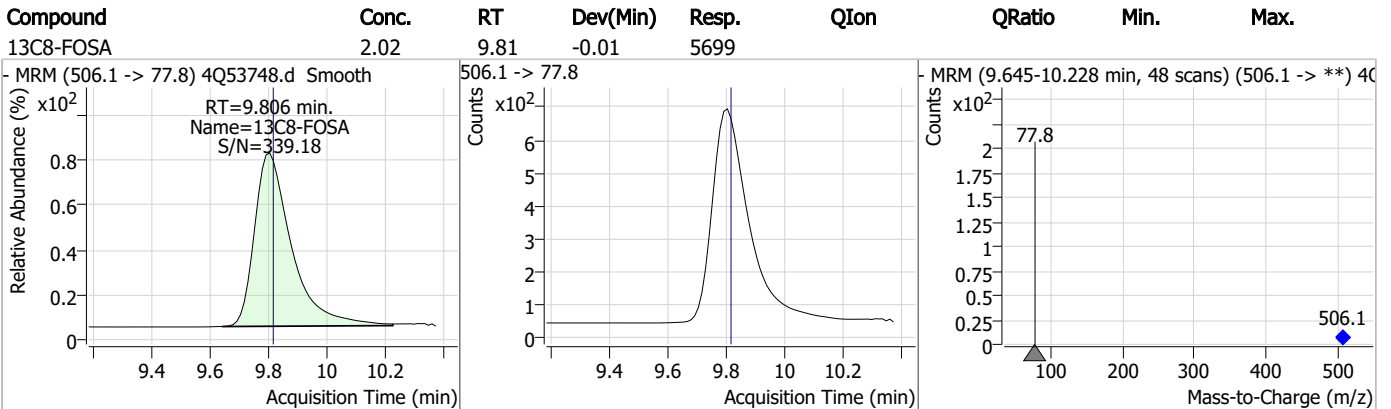
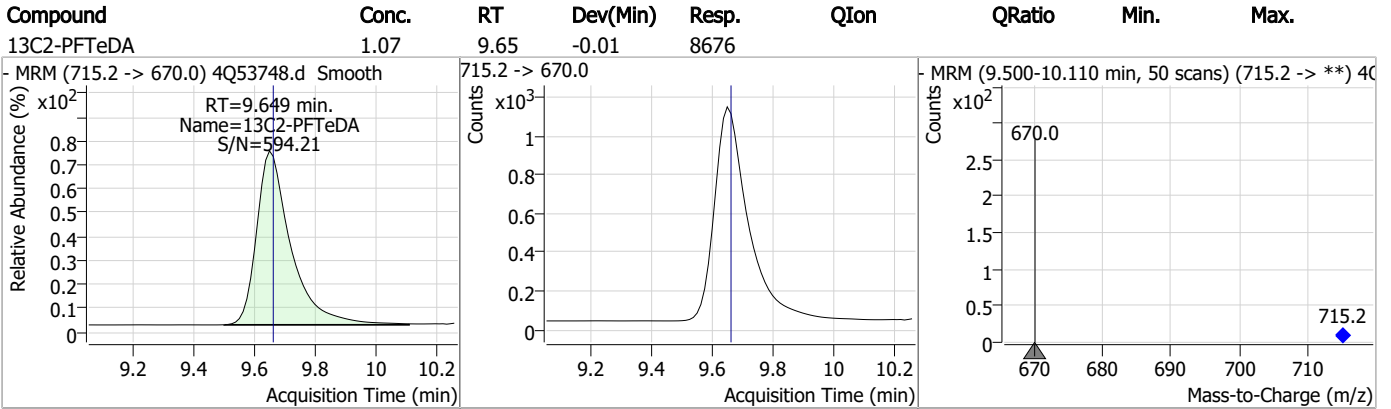


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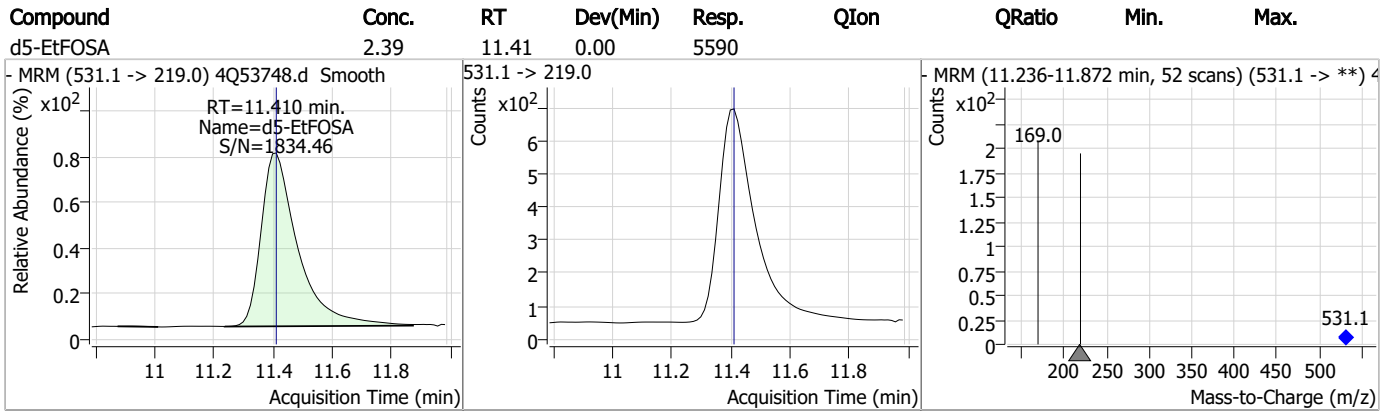
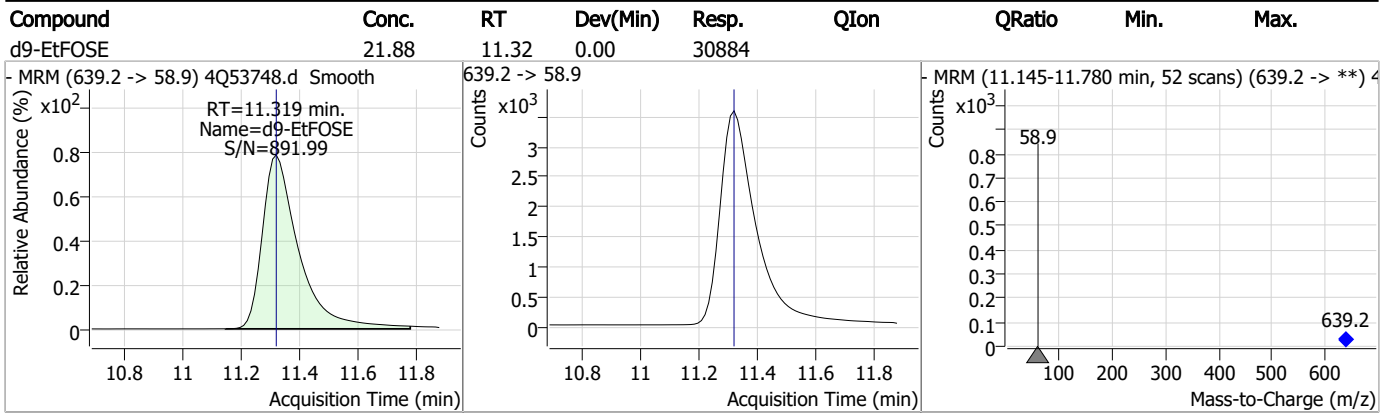
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

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 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 8:25:04 PM
 Sample Name : fc11062-2
 Vial : P4-D6
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP99997,S4Q785,520,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	83884	10.00 µg/L	0.000
M5-PFPeA	4.137	268.3 -> 223.0	36659	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	27516	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	26108	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	29571	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	12716	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	8081	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	9576	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	9151	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	8052	1.25 µg/L	-0.012
M8-FOSA	9.806	506.1 -> 77.8	5849	2.50 µg/L	-0.012
M3-PFBS	5.165	302.1 -> 79.9	8064	2.50 µg/L	-0.038
M3-PFHxS	7.029	402.1 -> 79.9	6471	2.50 µg/L	-0.025
M8-PFOS	8.117	507.1 -> 79.9	6462	2.50 µg/L	-0.026
M2-4:2FTS	5.021	329.1 -> 80.9	561	5.00 µg/L	-0.025
M2-6:2FTS	6.736	429.1 -> 80.9	1202	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1776	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	10703	5.00 µg/L	-0.012
M3-HFPO-DA	5.664	286.9 -> 168.9	25173	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	8733	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	23160	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	29019	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5275	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3751	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5636	2.50 µg/L	-0.026
13C3-PFBA	2.703	216.0 -> 172.0	37826	5.00 µg/L	0.000
18O2-PFHxS	7.028	403.0 -> 83.9	3813	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	29426	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	7736	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	11591	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	26085	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.021	329.1 -> 80.9	561	4.30 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 86.0%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1202	4.37 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 87.4%		
13C2-8:2FTS	7.804	529.1 -> 80.9	1776	4.58 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.6%		
13C2-PFDoDA	8.880	615.1 -> 570.0	9151	1.31 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.9%		
13C2-PFTeDA	9.649	715.2 -> 670.0	8052	1.15 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.7%		
13C3-PFBS	5.165	302.1 -> 79.9	8064	2.82 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 112.8%		
13C3-PFHxS	7.029	402.1 -> 79.9	6471	2.74 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 = 109.5%		
13C4-PFBA	2.699	216.8 -> 171.9	83884	10.64 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 106.4%		
13C4-PFHpA	6.267	367.1 -> 322.0	26108	2.87 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 114.8%		
13C5-PFHxA	5.310	318.0 -> 273.0	27516	2.83 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 113.1%		
13C5-PFPeA	4.137	268.3 -> 223.0	36659	5.76 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.2%		
13C6-PFDA	8.004	519.1 -> 474.1	8081	1.42 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 113.6%		
13C7-PFUnDA	8.448	570.0 -> 525.1	9576	1.46 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 116.4%		
13C8-FOSA	9.806	506.1 -> 77.8	5849	2.17 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 86.8%		
13C8-PFOA	6.964	421.1 -> 376.0	29571	2.81 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 112.6%		
13C8-PFOS	8.117	507.1 -> 79.9	6462	2.40 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.1%		
13C9-PFNA	7.509	472.1 -> 427.0	12716	1.39 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 111.3%		
d3-MeFOSAA	8.086	573.2 -> 419.0	10703	5.01 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C3-HFPO-DA	5.664	286.9 -> 168.9	25173	11.34 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 113.4%		
d3-MeFOSA	11.126	515.0 -> 219.0	3751	1.99 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 79.8%		
d5-EtFOSAA	8.283	589.2 -> 419.0	8733	4.67 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.3%		
d7-MeFOSE	11.034	623.2 -> 58.9	23160	19.95 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 79.8%		
d9-EtFOSE	11.319	639.2 -> 58.9	29019	21.58 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 86.3%		
d5-EtFOSA	11.397	531.1 -> 219.0	5275	2.36 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.6%		

Target Compounds

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.	



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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

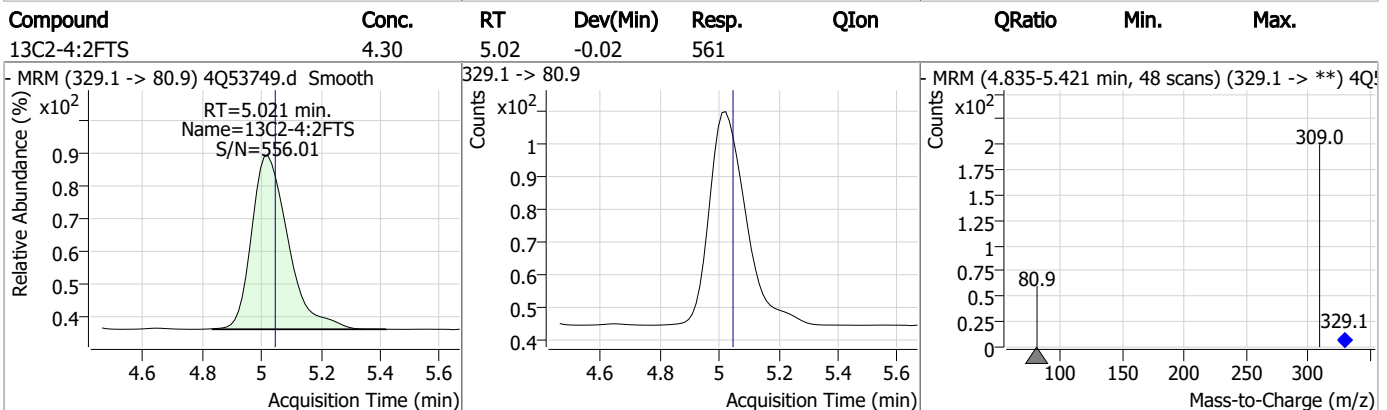
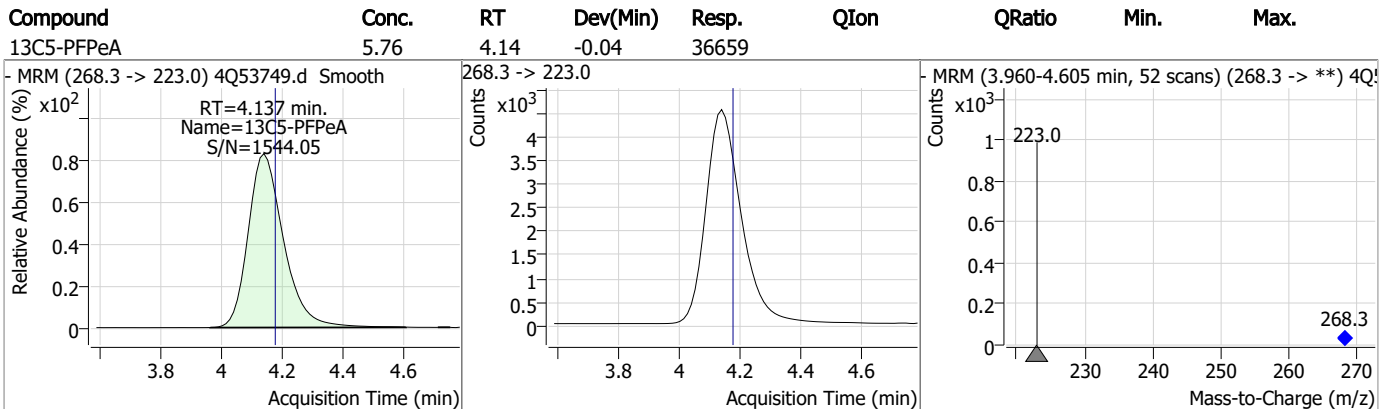
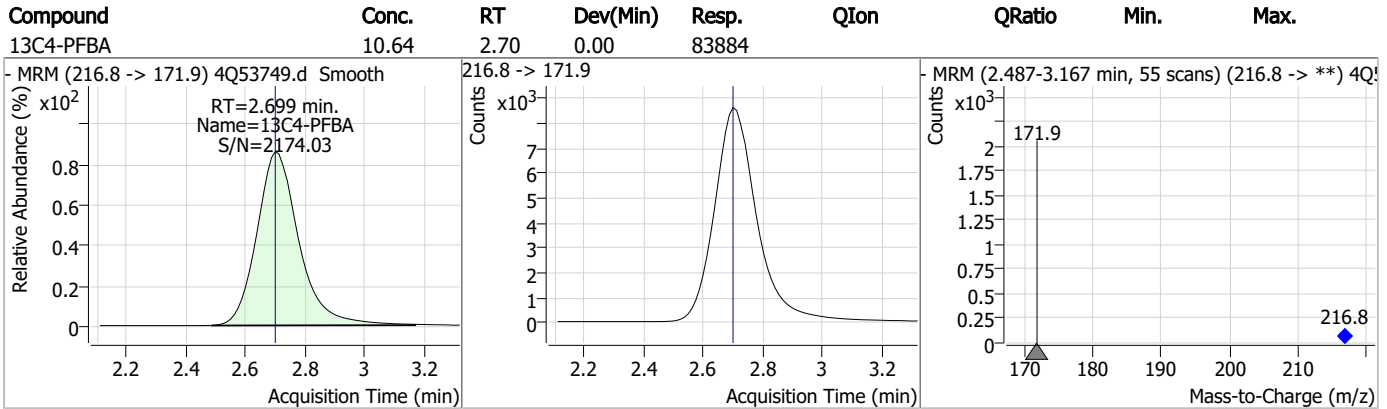
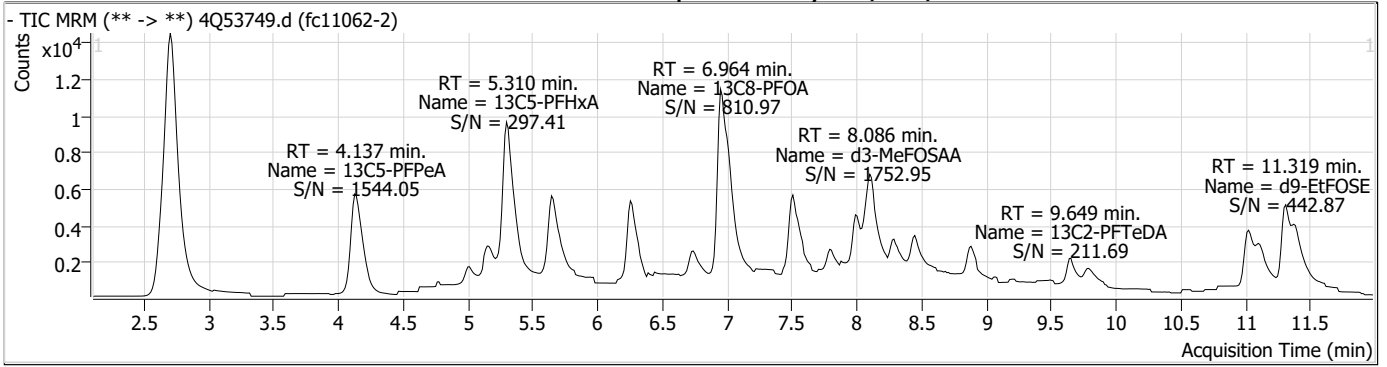
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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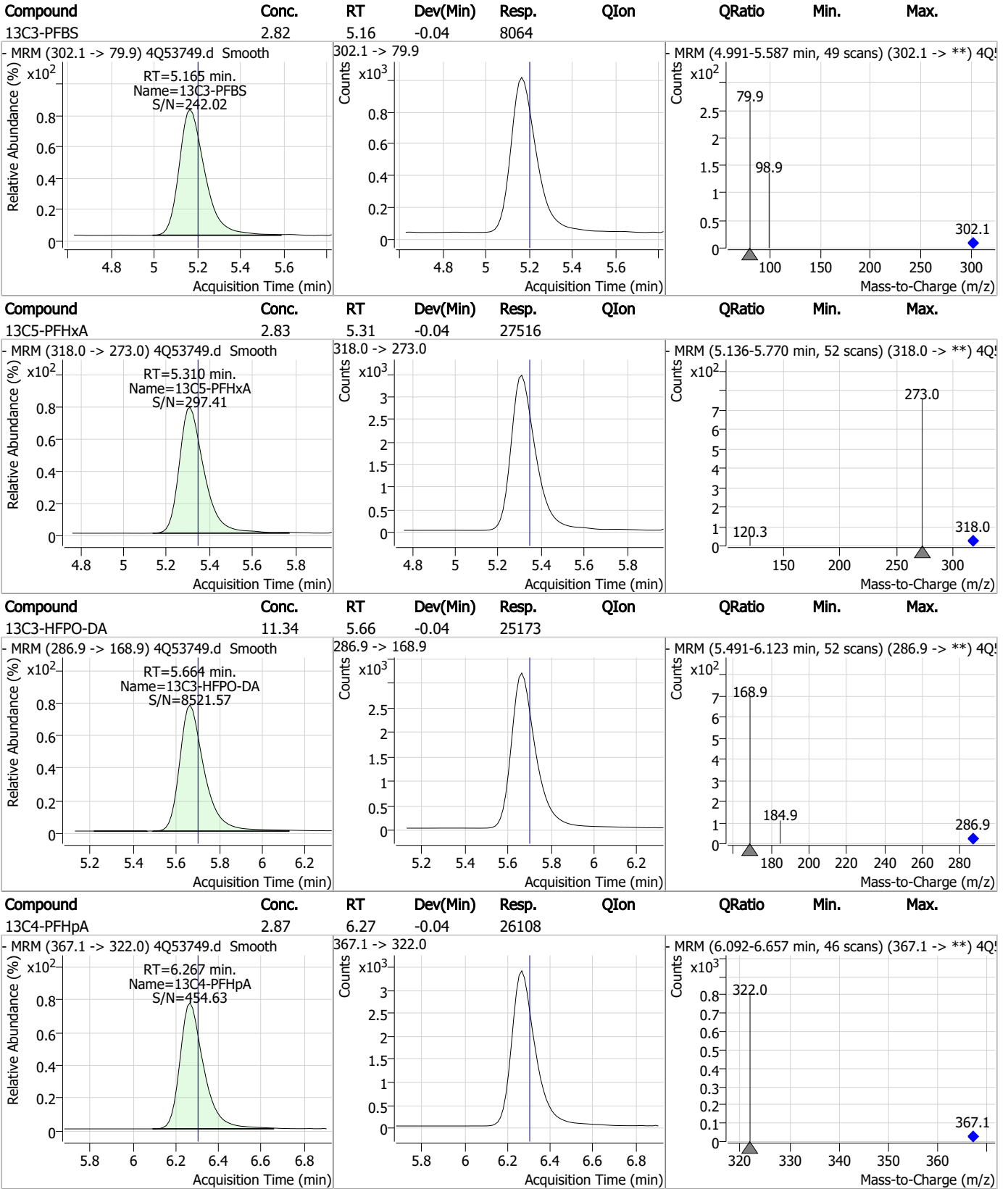
7.1.2
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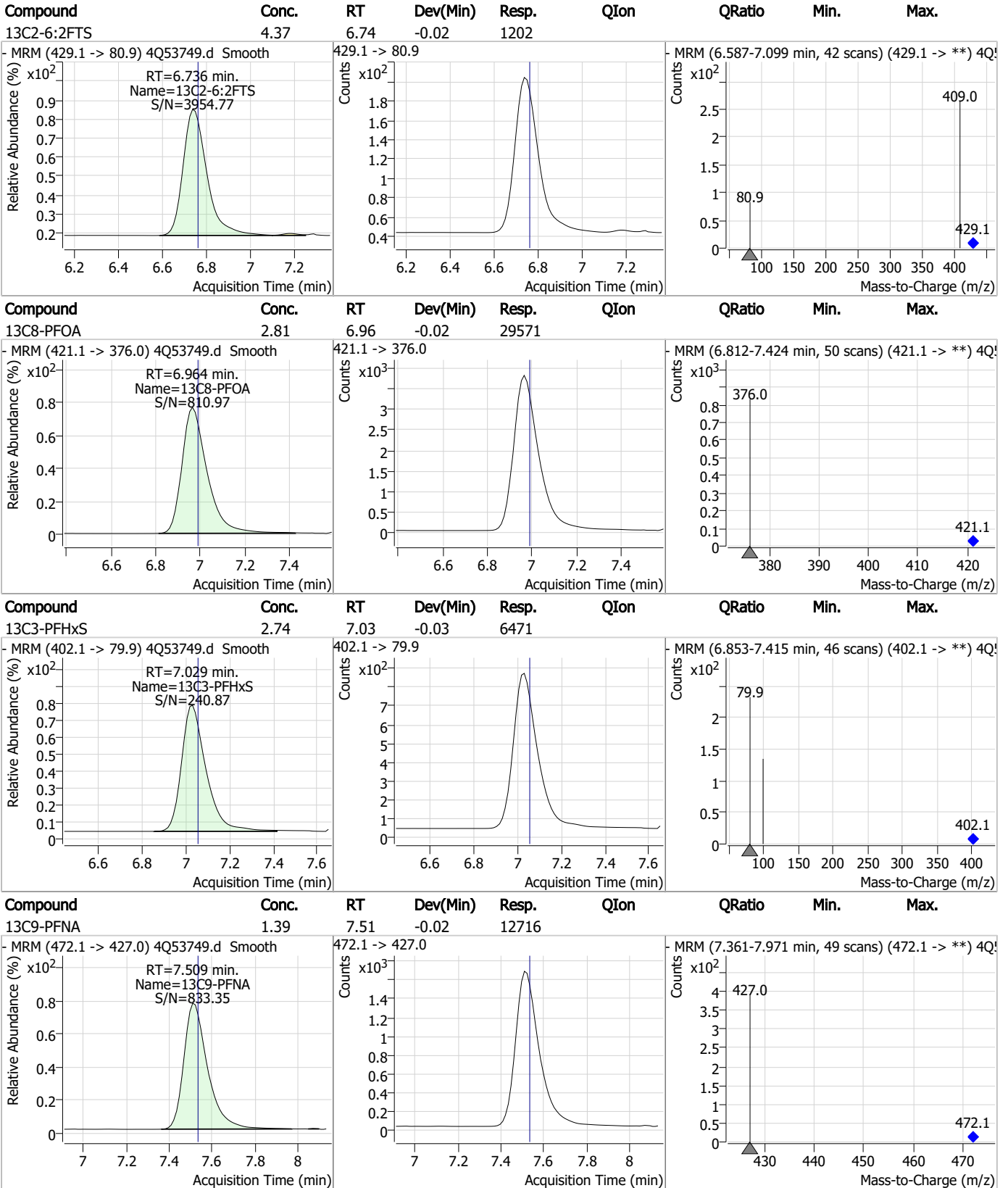
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



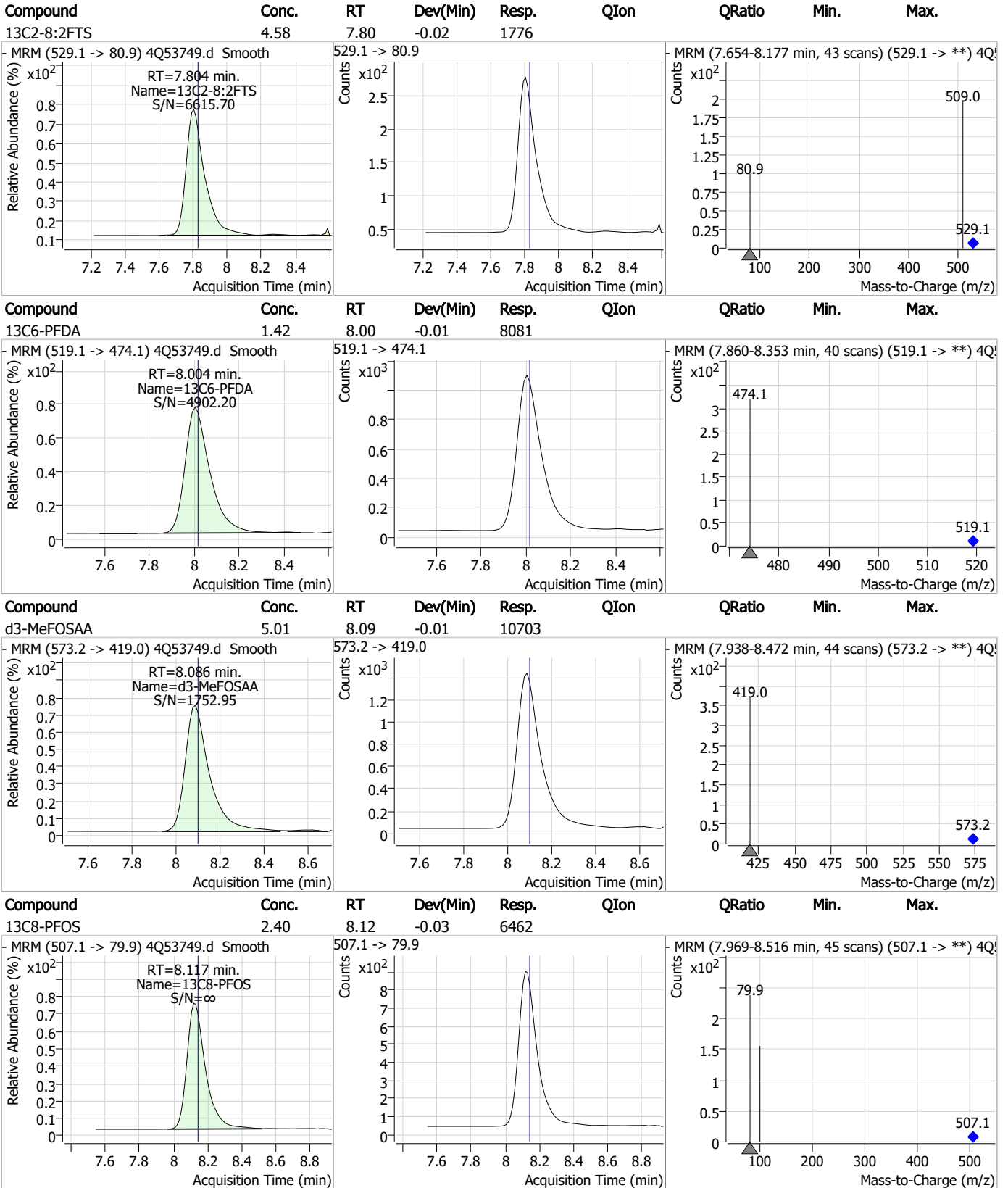
Perfluorinated Compounds by LC/MS/MS



7.1.2

7

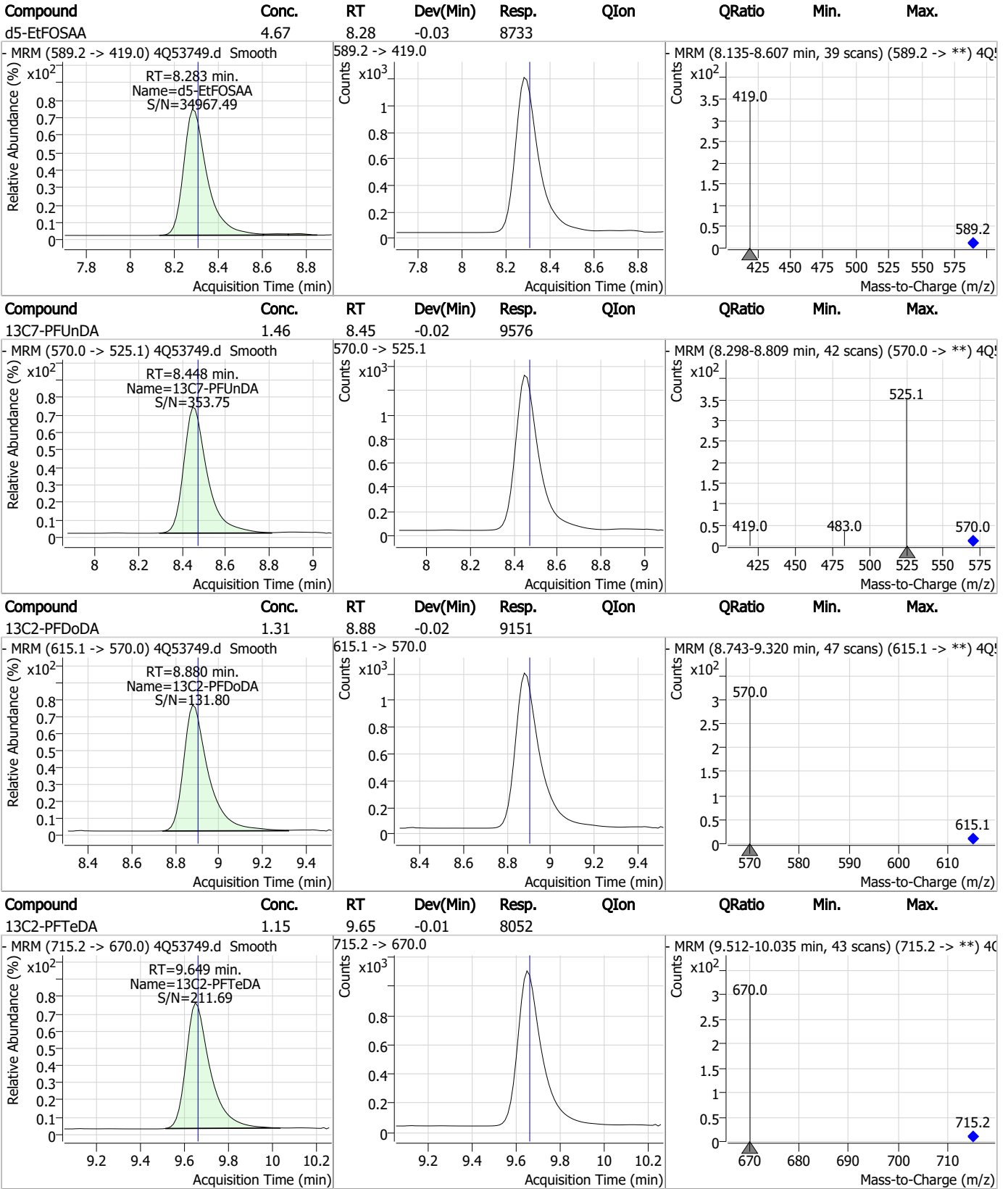
Perfluorinated Compounds by LC/MS/MS



7.1.2

7

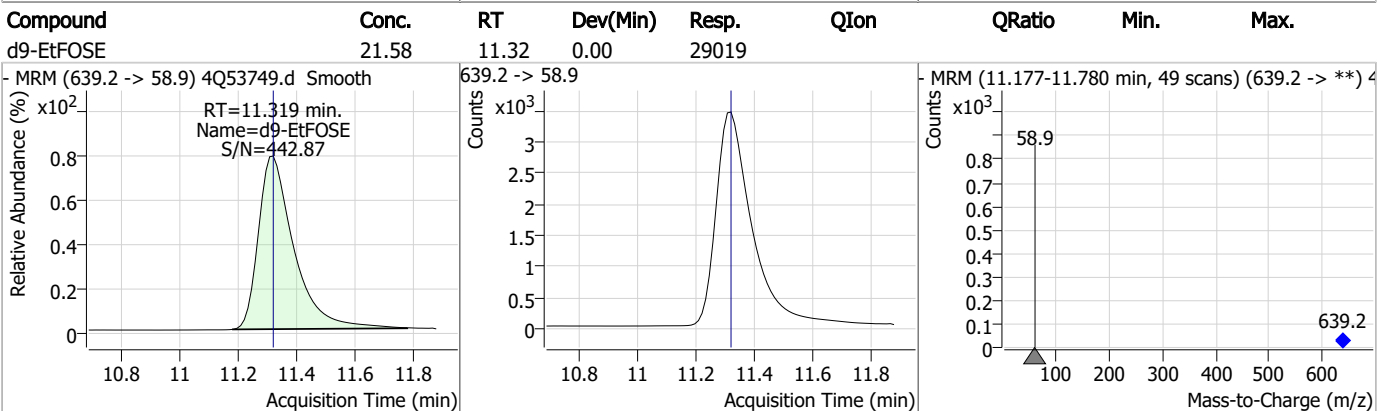
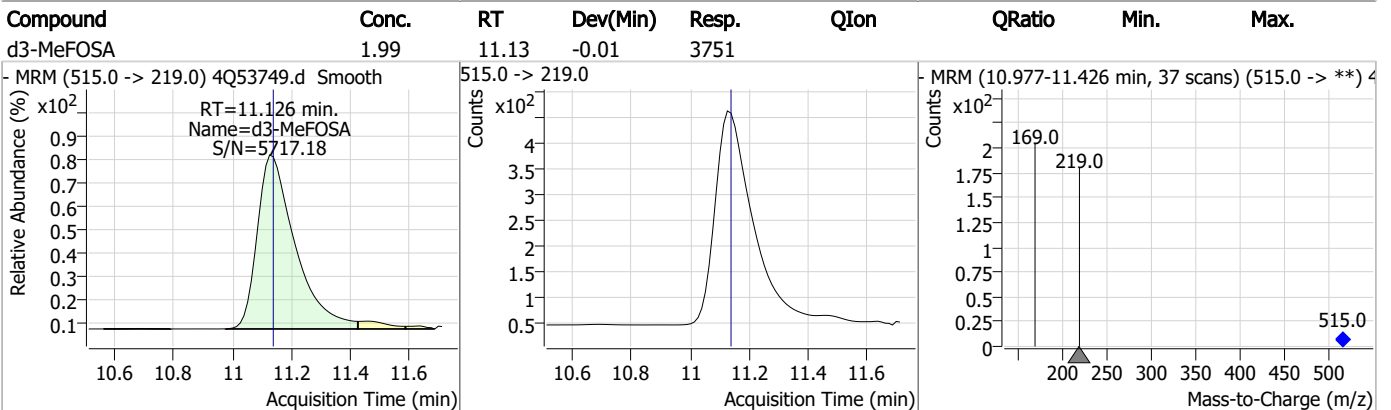
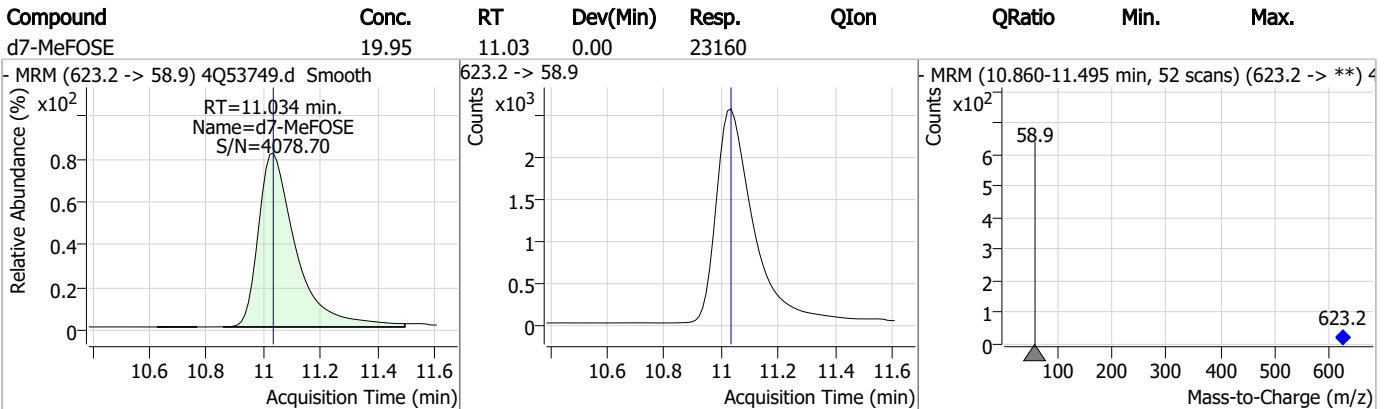
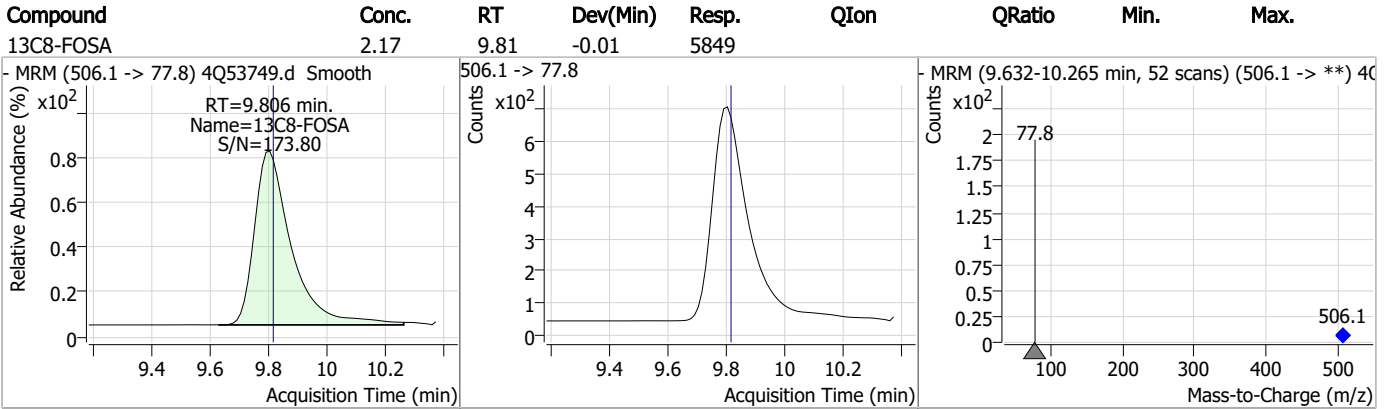
Perfluorinated Compounds by LC/MS/MS



7.1.2

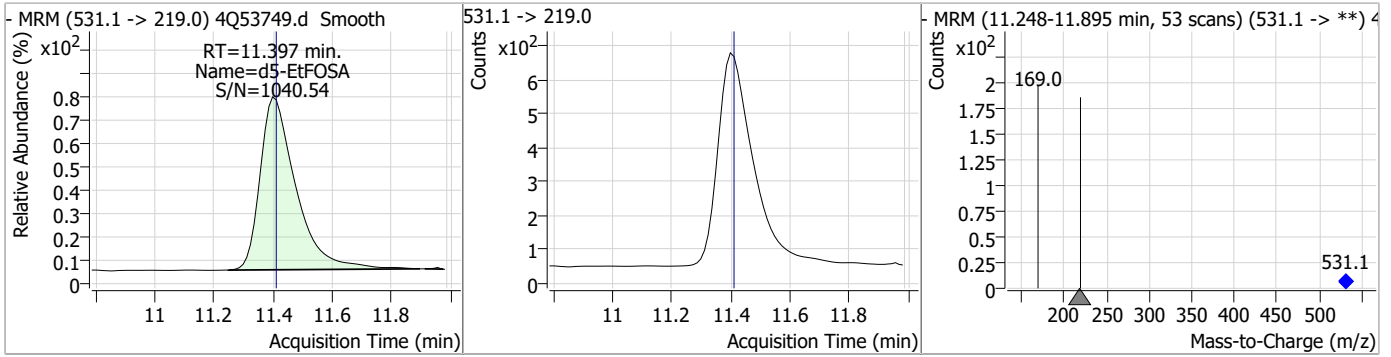
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.36	11.40	-0.01	5275				



7.1.2
7



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53751.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 8:54:32 PM
 Sample Name : fc11062-3
 Vial : P4-D8
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP99997,S4Q785,530,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	85604	10.00 µg/L	0.000
M5-PFPeA	4.137	268.3 -> 223.0	36535	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	27543	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	26328	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	30247	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	12550	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	7994	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	9681	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	8836	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	7694	1.25 µg/L	-0.012
M8-FOSA	9.806	506.1 -> 77.8	5648	2.50 µg/L	-0.012
M3-PFBS	5.165	302.1 -> 79.9	8286	2.50 µg/L	-0.038
M3-PFHxS	7.017	402.1 -> 79.9	6384	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6541	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	569	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1317	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1786	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	10108	5.00 µg/L	-0.012
M3-HFPO-DA	5.664	286.9 -> 168.9	25208	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	8245	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	21937	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	28096	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5064	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3801	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5681	2.50 µg/L	-0.026
13C3-PFBA	2.703	216.0 -> 172.0	38083	5.00 µg/L	0.000
18O2-PFHxS	7.028	403.0 -> 83.9	3932	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	30076	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	8504	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	10996	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	27224	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	569	4.23 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 84.5%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1317	4.64 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.9%		
13C2-8:2FTS	7.804	529.1 -> 80.9	1786	4.47 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.4%		
13C2-PFDoDA	8.880	615.1 -> 570.0	8836	1.15 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.1%		
13C2-PFTeDA	9.649	715.2 -> 670.0	7694	1.00 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 79.7%		
13C3-PFBS	5.165	302.1 -> 79.9	8286	2.81 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 112.4%		
13C3-PFHxS	7.017	402.1 -> 79.9	6384	2.62 µg/L	-0.037

7.1.3

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 = 104.8%	
13C4-PFBA	2.699	216.8 -> 171.9	85604	10.79 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 107.9%	
13C4-PFHpA	6.267	367.1 -> 322.0	26328	2.77 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.9%	
13C5-PFHxA	5.310	318.0 -> 273.0	27543	2.71 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.5%	
13C5-PFPeA	4.137	268.3 -> 223.0	36535	5.50 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 110.0%	
13C6-PFDA	7.992	519.1 -> 474.1	7994	1.28 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C7-PFUnDA	8.448	570.0 -> 525.1	9681	1.34 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.1%	
13C8-FOSA	9.806	506.1 -> 77.8	5648	2.08 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 83.2%	
13C8-PFOA	6.964	421.1 -> 376.0	30247	2.82 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.7%	
13C8-PFOS	8.117	507.1 -> 79.9	6541	2.41 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.4%	
13C9-PFNA	7.509	472.1 -> 427.0	12550	1.45 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 115.8%	
d3-MeFOSAA	8.086	573.2 -> 419.0	10108	4.69 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.8%	
13C3-HFPO-DA	5.664	286.9 -> 168.9	25208	10.88 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 108.8%	
d3-MeFOSA	11.126	515.0 -> 219.0	3801	2.01 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 80.2%	
d5-EtFOSAA	8.283	589.2 -> 419.0	8245	4.37 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 87.4%	
d7-MeFOSE	11.022	623.2 -> 58.9	21937	18.74 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 75.0%	
d9-EtFOSE	11.319	639.2 -> 58.9	28096	20.73 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 82.9%	
d5-EtFOSA	11.397	531.1 -> 219.0	5064	2.25 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.1%	

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.	



7.13
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

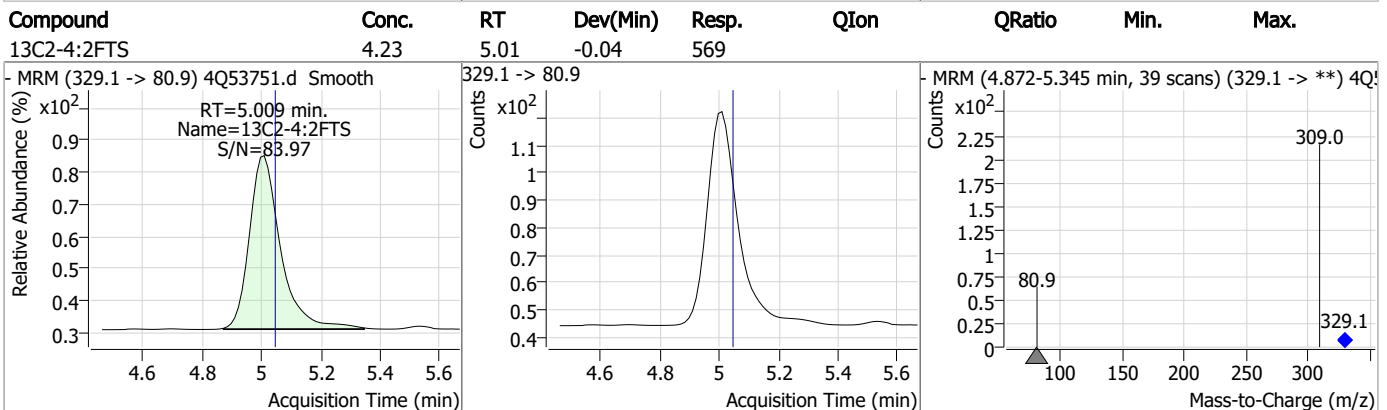
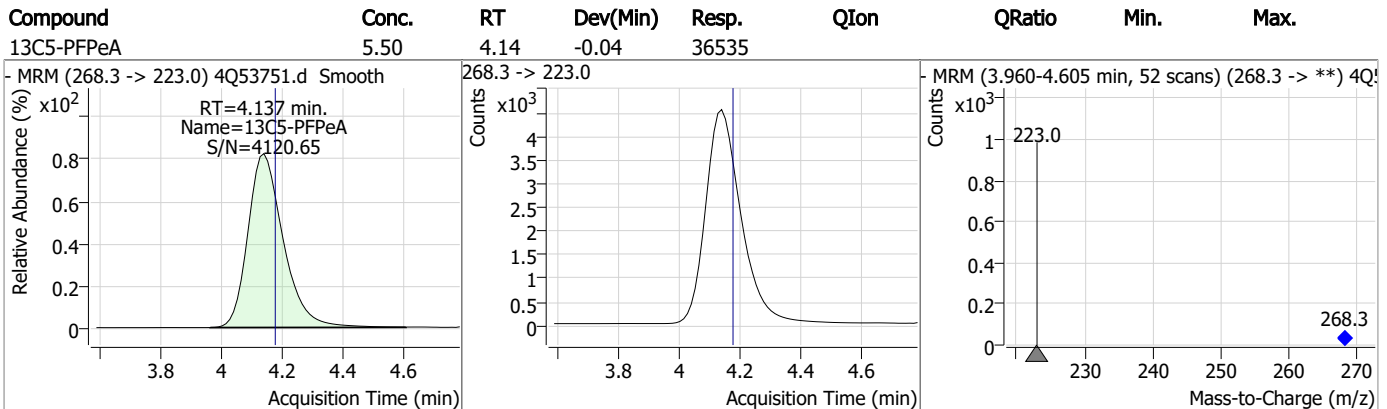
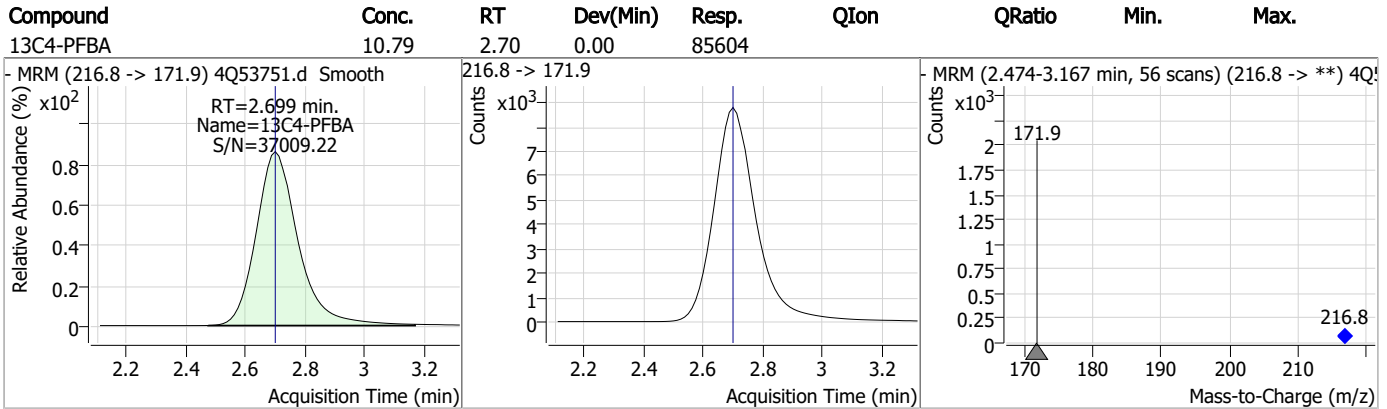
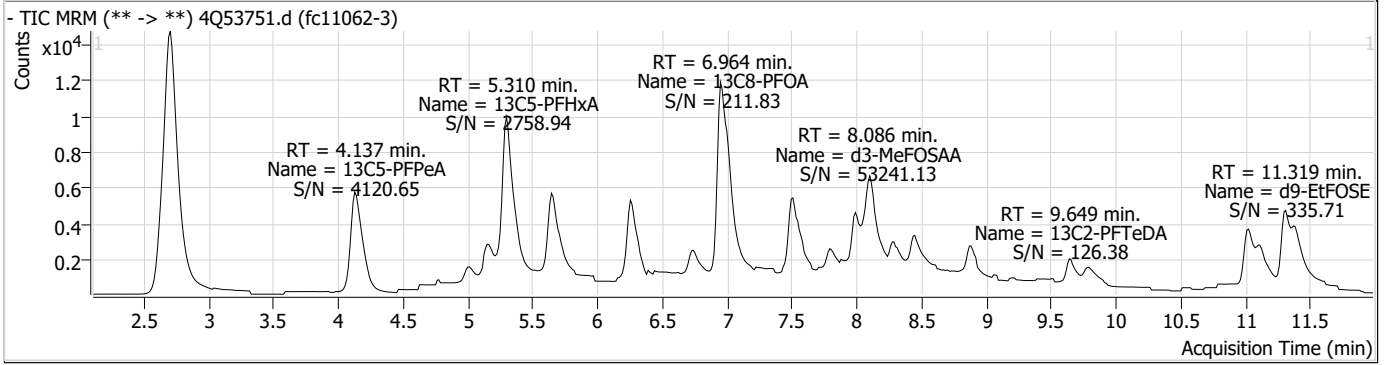
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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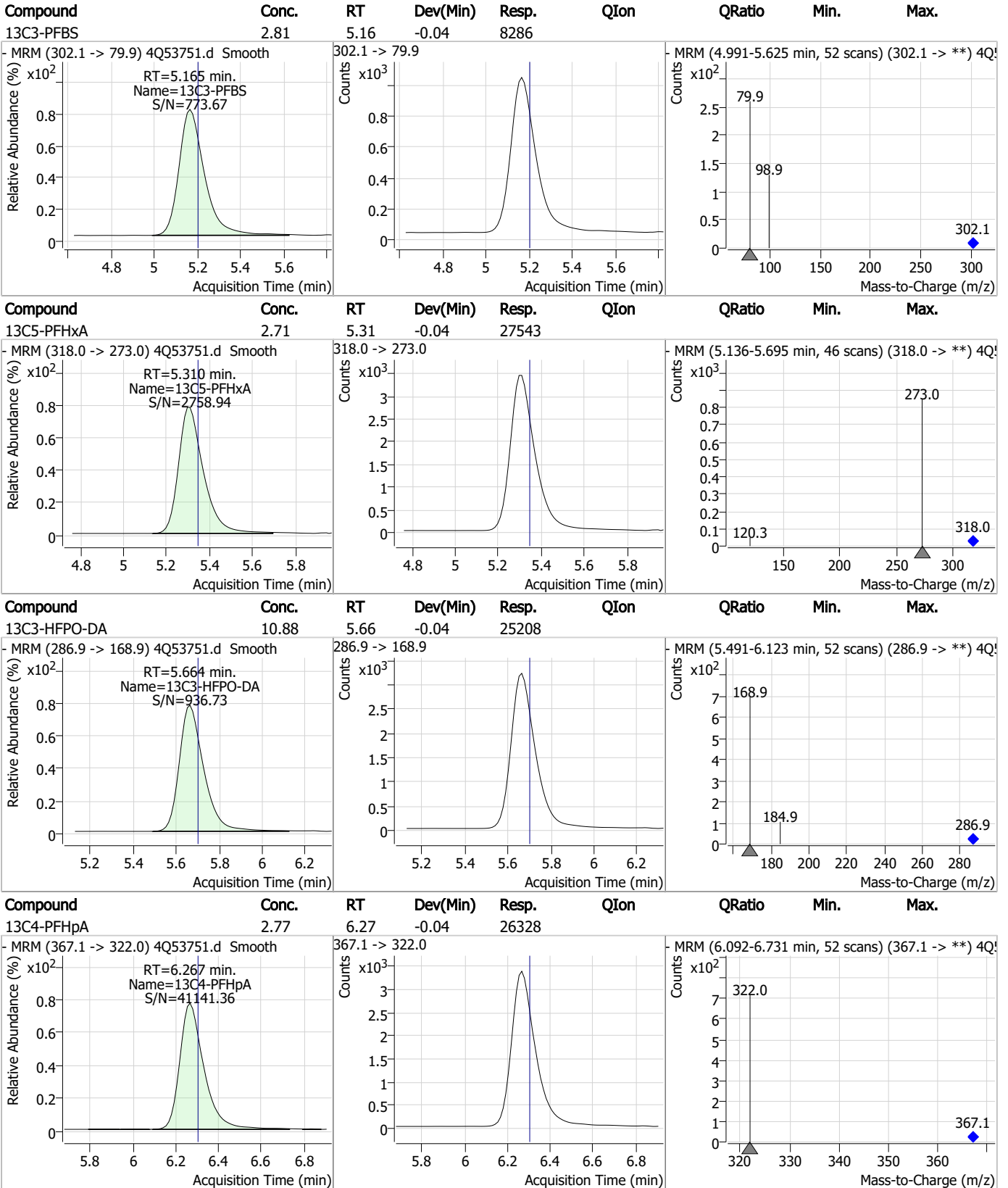
7.1.3
7



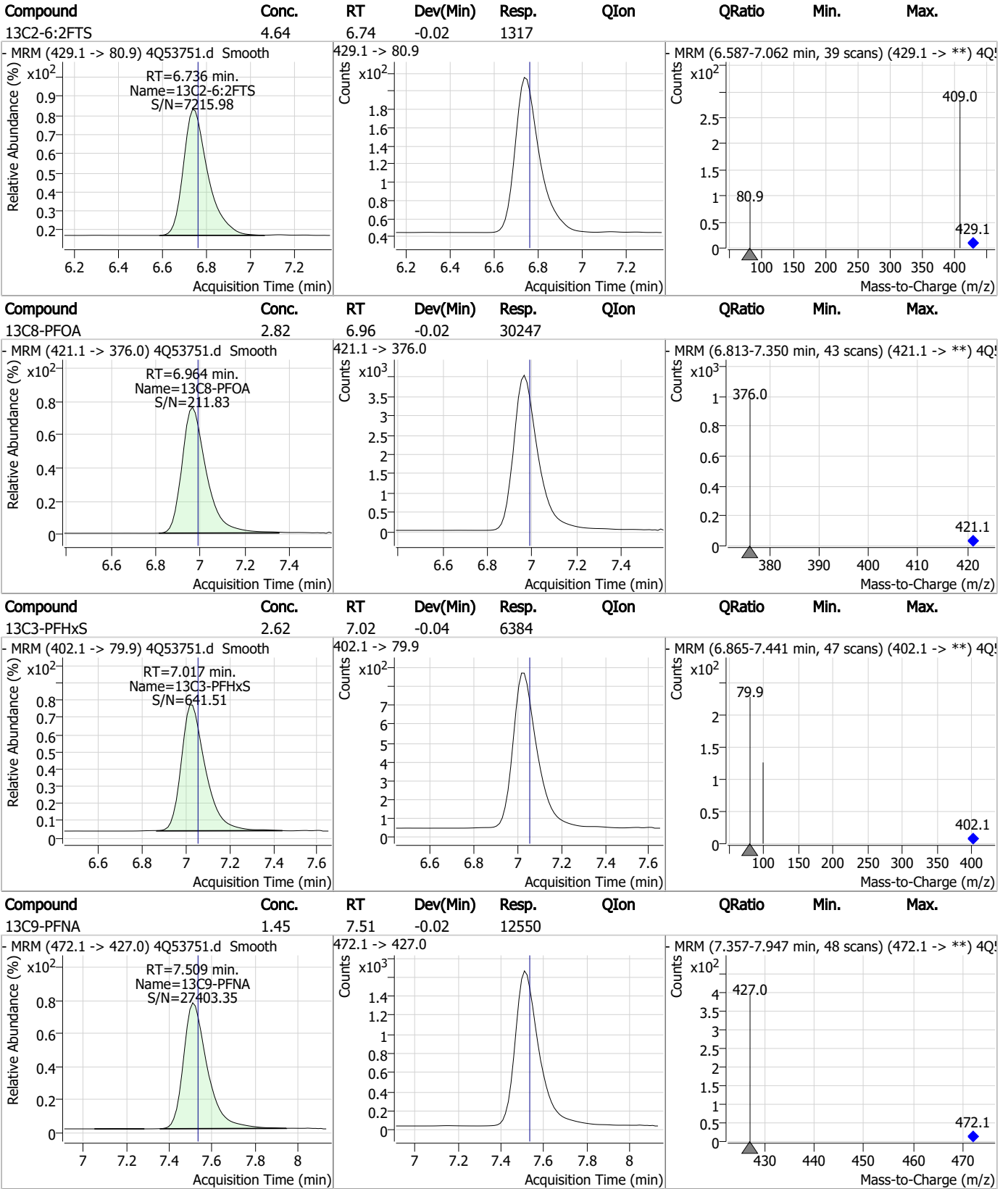
Perfluorinated Compounds by LC/MS/MS



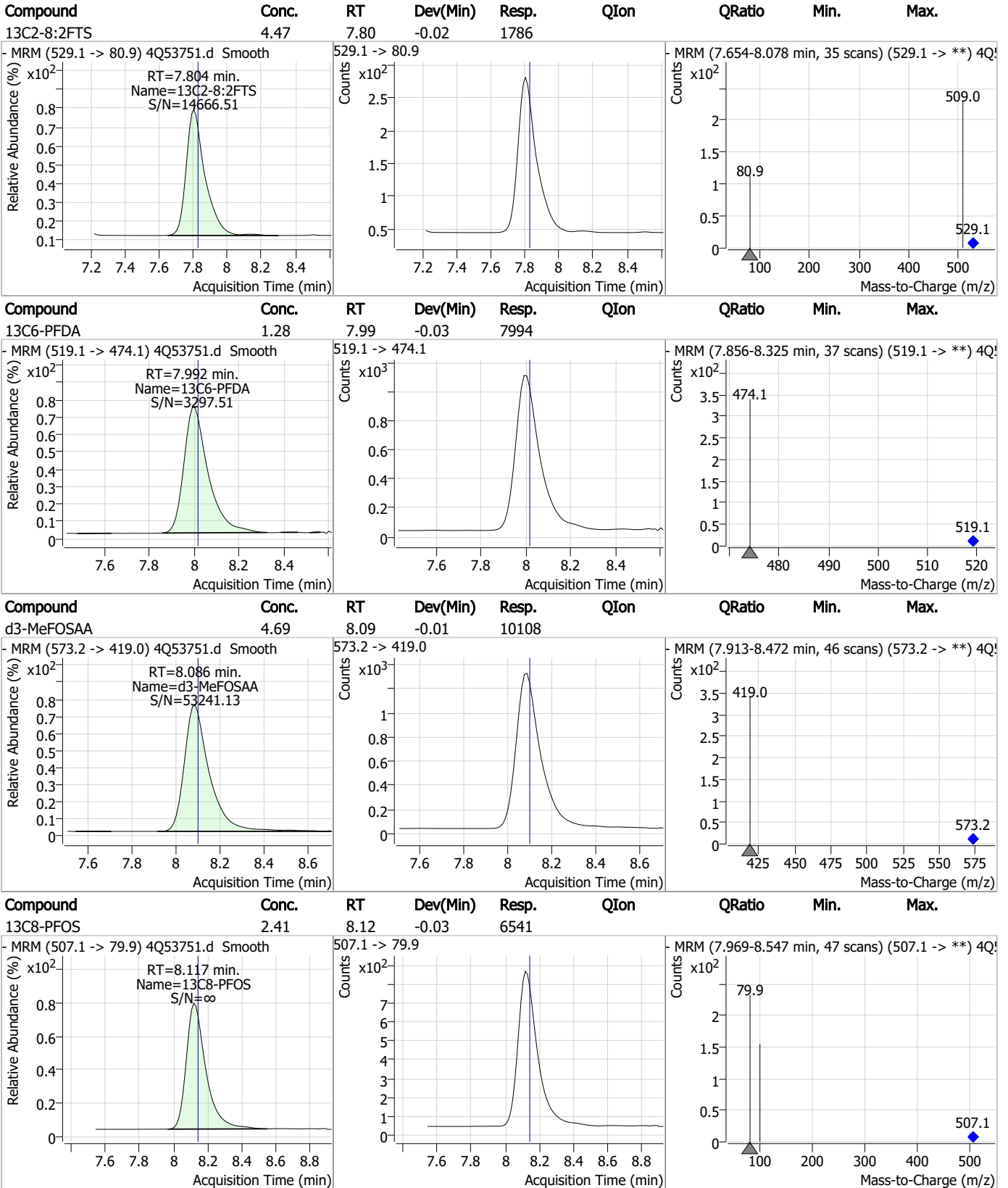
Perfluorinated Compounds by LC/MS/MS



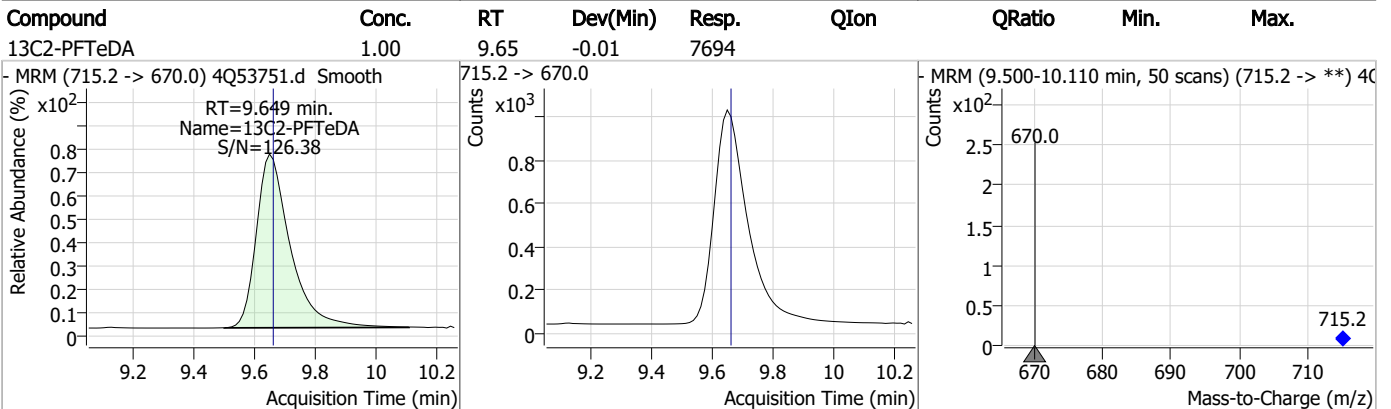
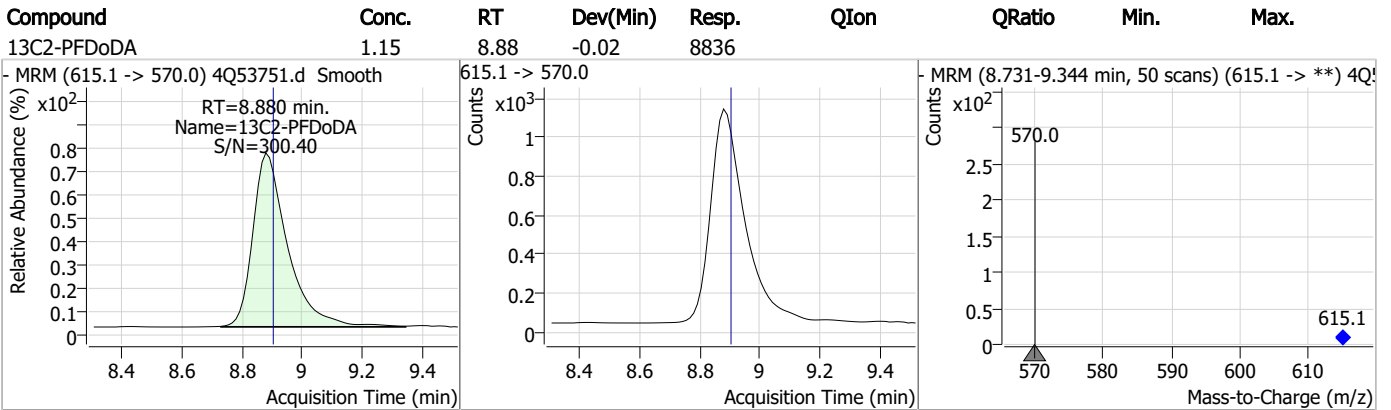
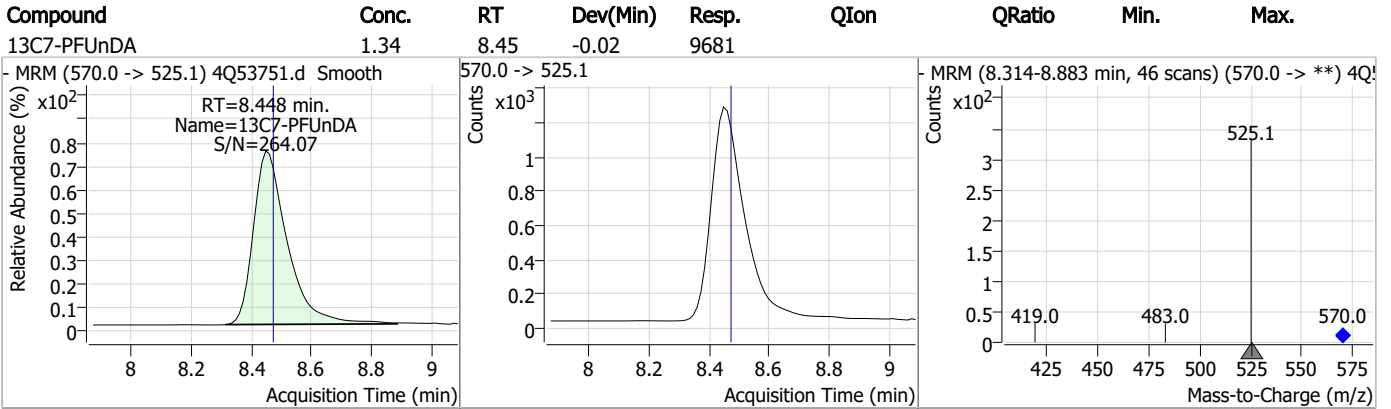
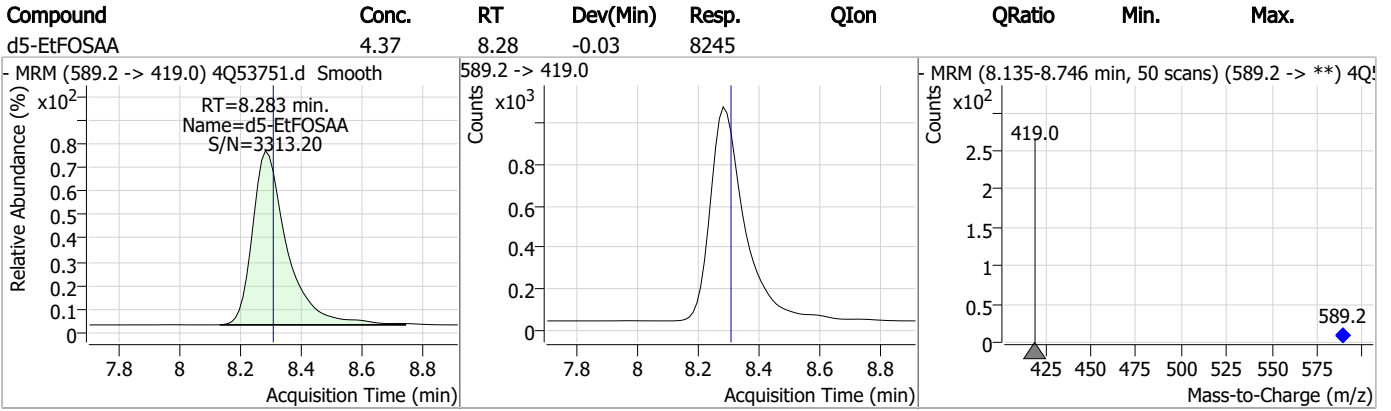
Perfluorinated Compounds by LC/MS/MS



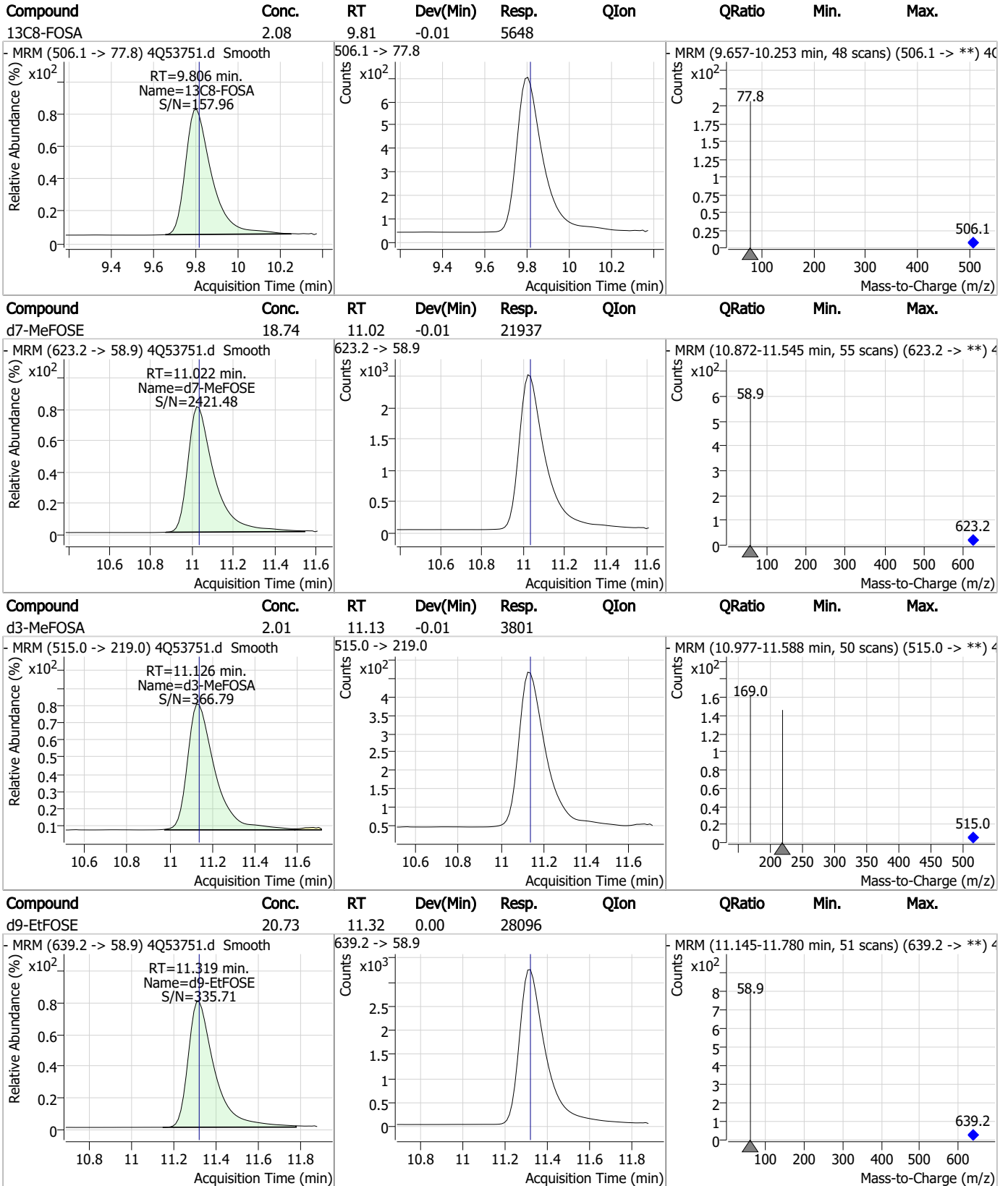
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

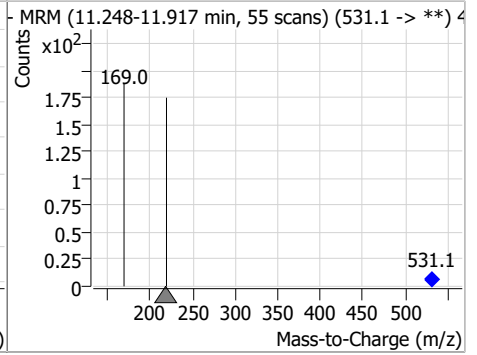
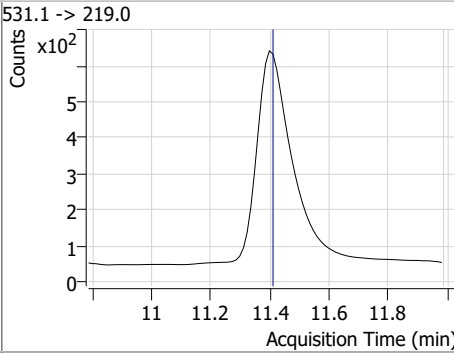
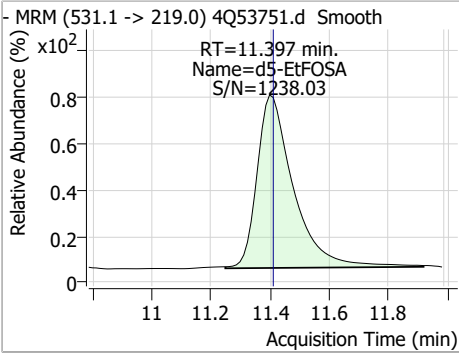


Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.25	11.40	-0.01	5064				



7.1.3
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53753.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 9:24:02 PM
 Sample Name : fc11062-4
 Vial : P4-E1
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP99997,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	85162	10.00 µg/L	0.000
M5-PFPeA	4.137	268.3 -> 223.0	36337	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	26062	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	25684	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	22764	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	12825	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	8529	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	10289	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	9204	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	8339	1.25 µg/L	-0.012
M8-FOSA	9.806	506.1 -> 77.8	6455	2.50 µg/L	-0.012
M3-PFBS	5.165	302.1 -> 79.9	8310	2.50 µg/L	-0.038
M3-PFHxS	7.029	402.1 -> 79.9	6880	2.50 µg/L	-0.025
M8-PFOS	8.117	507.1 -> 79.9	6858	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	651	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1418	5.00 µg/L	-0.025
M2-8:2FTS	7.791	529.1 -> 80.9	1874	5.00 µg/L	-0.037
M3-MeFOSAA	8.086	573.2 -> 419.0	11878	5.00 µg/L	-0.012
M3-HFPO-DA	5.664	286.9 -> 168.9	25011	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	8688	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	26423	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	31724	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5378	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4180	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5517	2.50 µg/L	-0.026
13C3-PFBA	2.703	216.0 -> 172.0	37741	5.00 µg/L	0.000
18O2-PFHxS	7.028	403.0 -> 83.9	3797	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	30848	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	8964	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	11446	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	27148	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	651	5.01 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1418	5.18 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.6%		
13C2-8:2FTS	7.791	529.1 -> 80.9	1874	4.86 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C2-PFDoDA	8.880	615.1 -> 570.0	9204	1.14 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.0%		
13C2-PFTeDA	9.649	715.2 -> 670.0	8339	1.02 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 81.9%		
13C3-PFBS	5.165	302.1 -> 79.9	8310	2.92 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 116.7%		
13C3-PFHxS	7.029	402.1 -> 79.9	6880	2.92 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 = 116.9%		
13C4-PFBA	2.699	216.8 -> 171.9	85162	10.83 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 108.3%		
13C4-PFHpA	6.267	367.1 -> 322.0	25684	2.71 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.5%		
13C5-PFHxA	5.310	318.0 -> 273.0	26062	2.57 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C5-PFPeA	4.137	268.3 -> 223.0	36337	5.49 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.7%		
13C6-PFDA	8.004	519.1 -> 474.1	8529	1.29 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.5%		
13C7-PFUnDA	8.448	570.0 -> 525.1	10289	1.35 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.0%		
13C8-FOSA	9.806	506.1 -> 77.8	6455	2.45 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C8-PFOA	6.964	421.1 -> 376.0	27821	2.53 µg/L	m -0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C8-PFOS	8.117	507.1 -> 79.9	6858	2.60 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.1%		
13C9-PFNA	7.509	472.1 -> 427.0	12825	1.42 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 113.7%		
d3-MeFOSAA	8.086	573.2 -> 419.0	11878	5.68 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.6%		
13C3-HFPO-DA	5.664	286.9 -> 168.9	25011	10.83 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 108.3%		
d3-MeFOSA	11.126	515.0 -> 219.0	4180	2.27 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.8%		
d5-EtFOSAA	8.283	589.2 -> 419.0	8688	4.74 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.8%		
d7-MeFOSE	11.022	623.2 -> 58.9	26423	23.25 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 93.0%		
d9-EtFOSE	11.319	639.2 -> 58.9	31724	24.10 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 96.4%		
d5-EtFOSA	11.397	531.1 -> 219.0	5378	2.46 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.5%		

Target Compounds

Compound	RT	Transition	Response	Conc. Units	Dev(Min)	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	5.166	298.7 -> 79.9	173	0.06 µg/L	89	
		298.7 -> 98.8	78			
PFDA	7.968	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	6.268	599.0 -> 98.8				
		363.1 -> 319.0	989	0.06 µg/L	m	96
PFHpS	-	363.1 -> 169.0	190			
		449.0 -> 79.9	-	N.D.		
PFHxA	5.313	449.0 -> 98.9				
		313.0 -> 269.0	756	0.08 µg/L	#	94
PFHxS	7.018	313.0 -> 118.9	6			
		398.7 -> 79.9	168	0.08 µg/L	m	94
PFNA	-	398.7 -> 98.9	117			
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	6.965	548.8 -> 98.9				
		413.0 -> 369.0	1318	0.12 µg/L		83
PFOS	7.920	413.0 -> 169.0	162			
		498.9 -> 79.9	356	0.11 µg/L	m	69
PFPeA	4.139	498.9 -> 98.8	136			
		263.0 -> 219.0	744	0.09 µg/L		100
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	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
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	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				
PFEESA	-					

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

7.1.4
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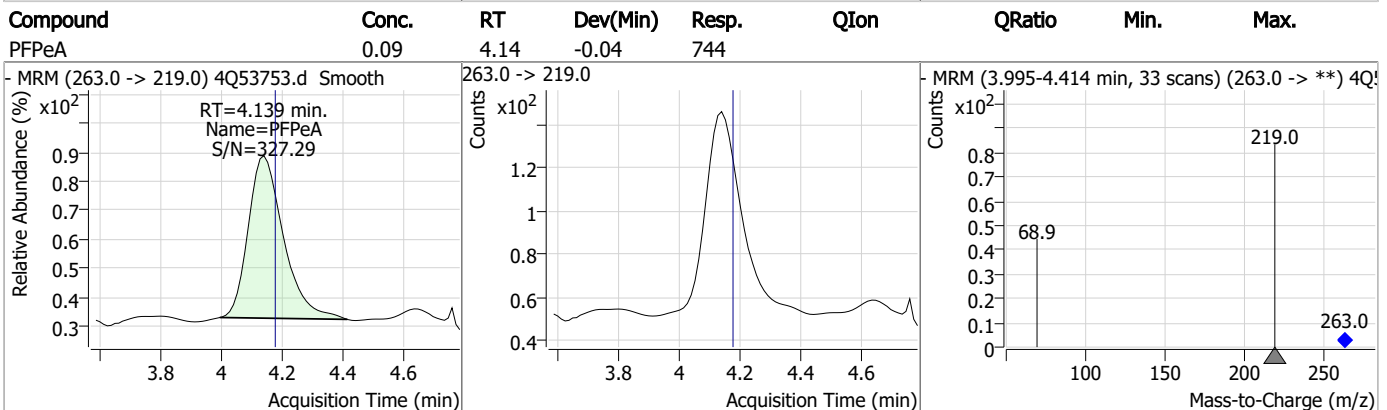
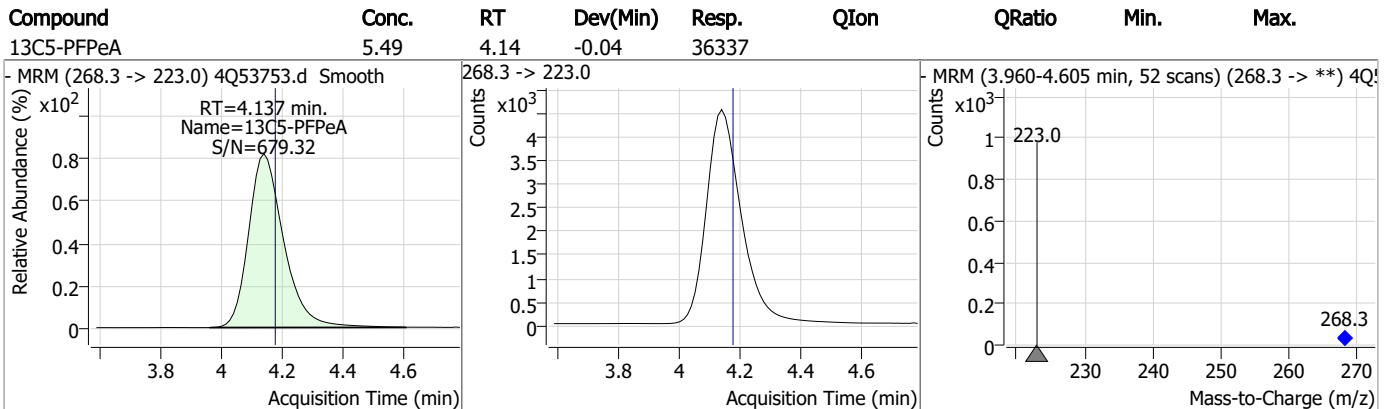
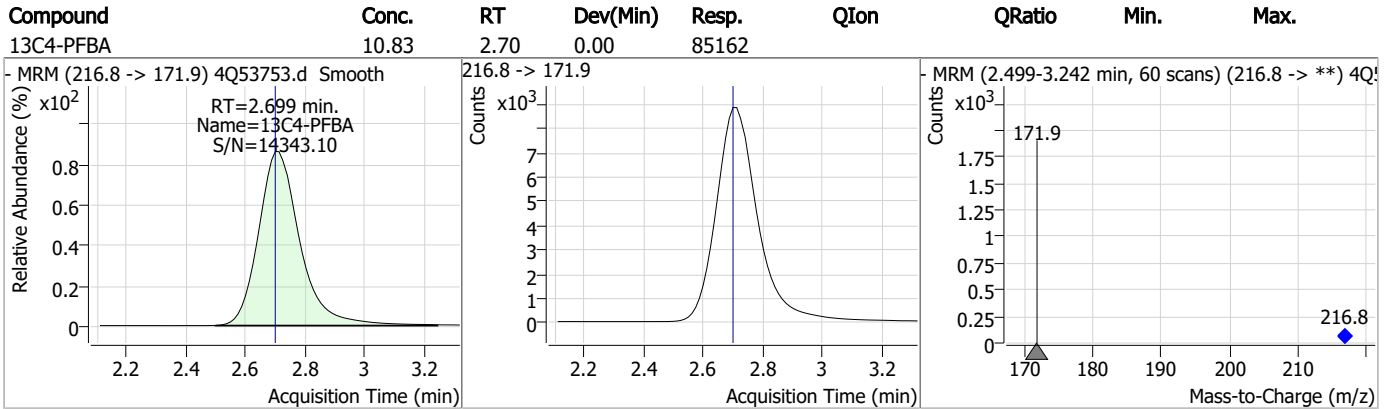
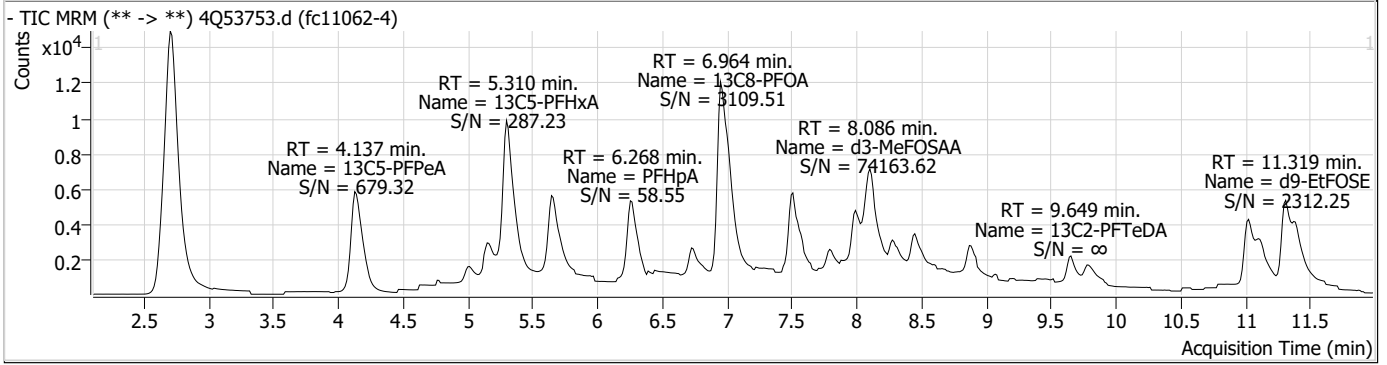
Perfluorinated Compounds by LC/MS/MS

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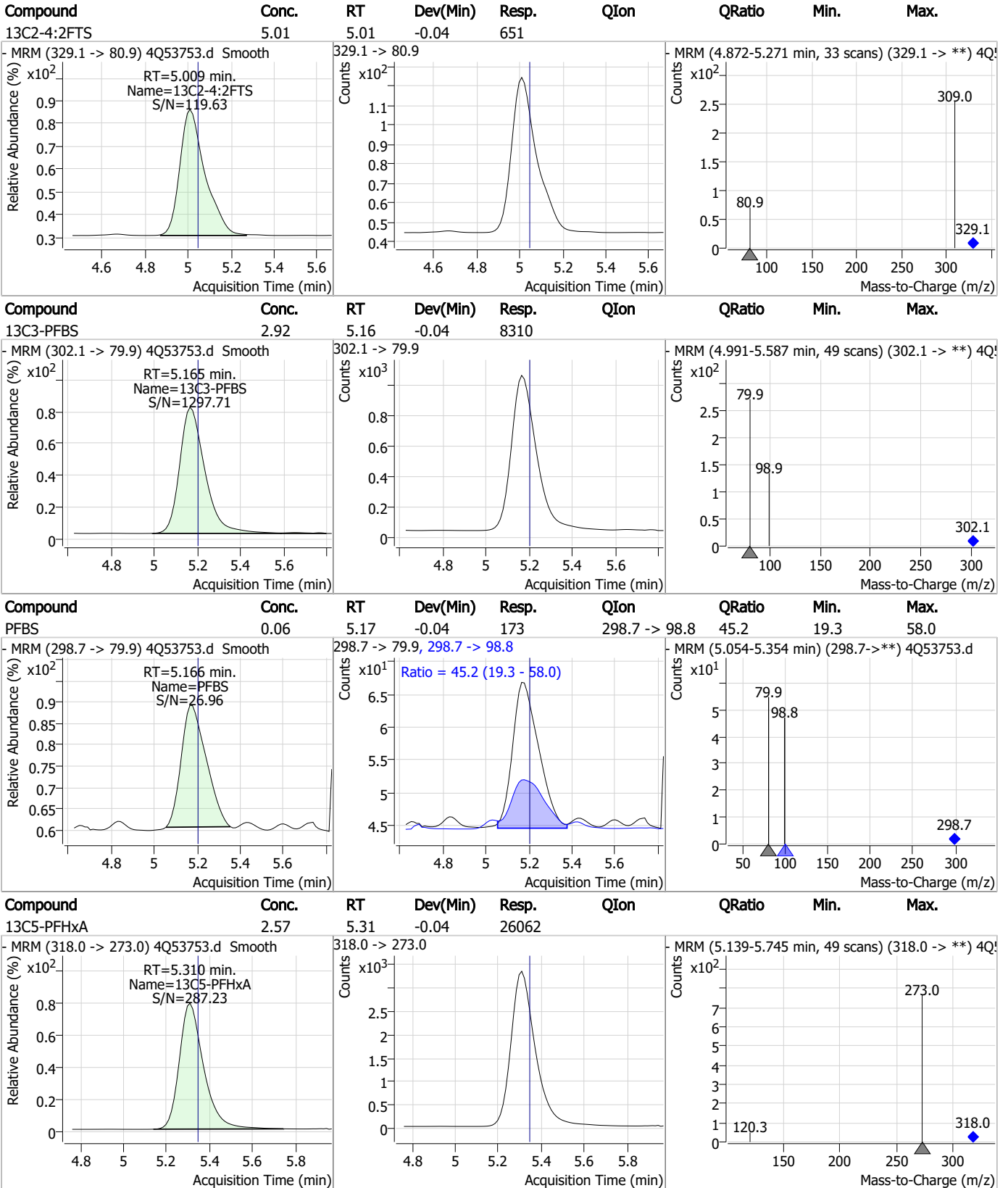
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

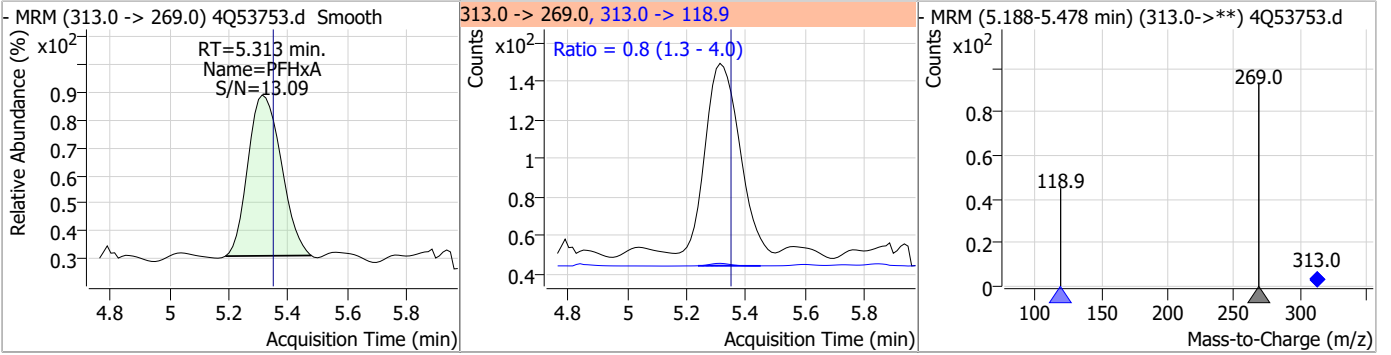


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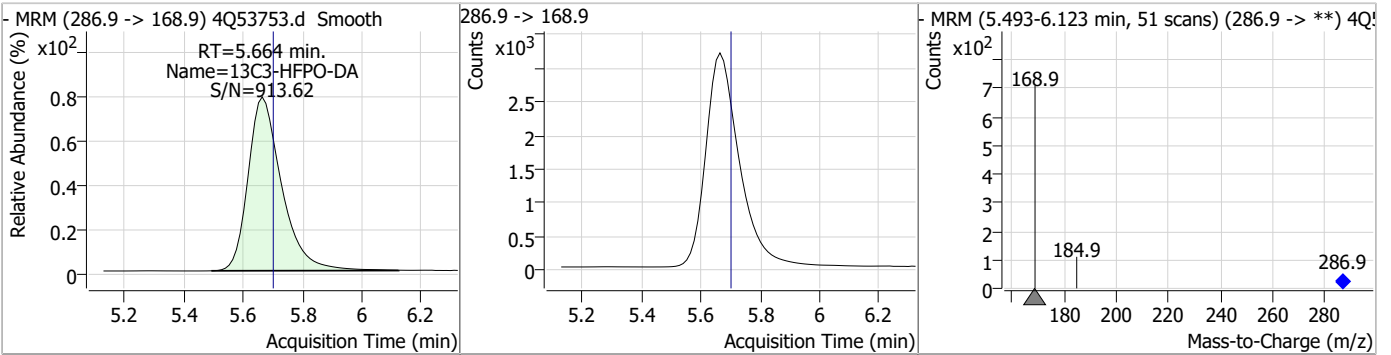
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Perfluorinated Compounds by LC/MS/MS

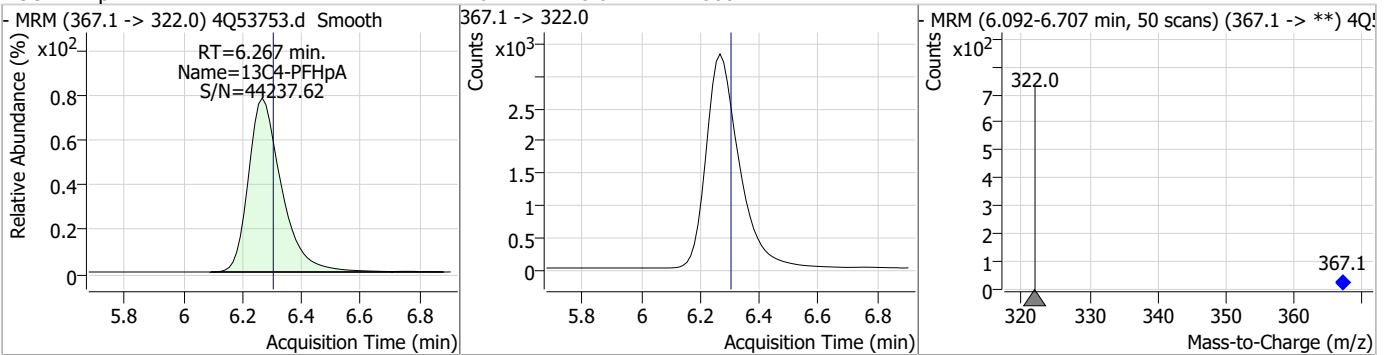
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.08	5.31	-0.04	756	313.0 -> 118.9	0.8	1.3	4.0



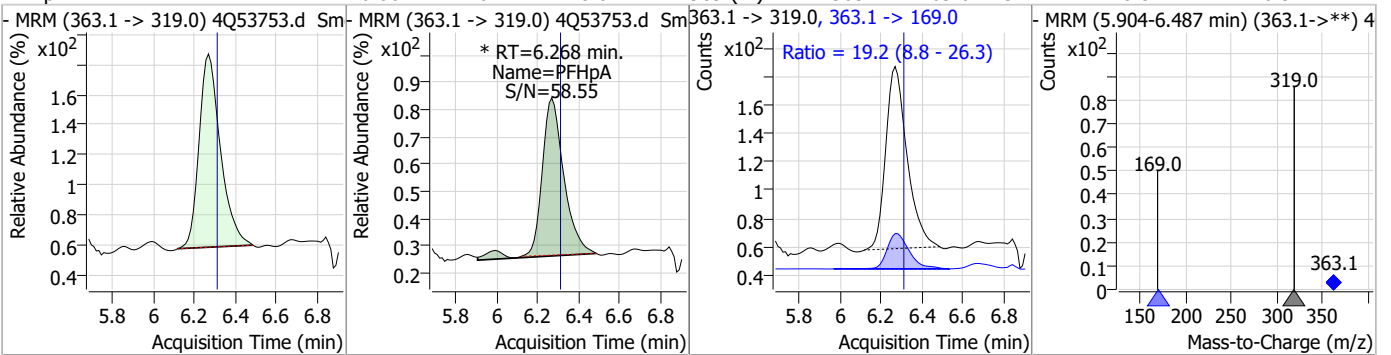
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.83	5.66	-0.04	25011				



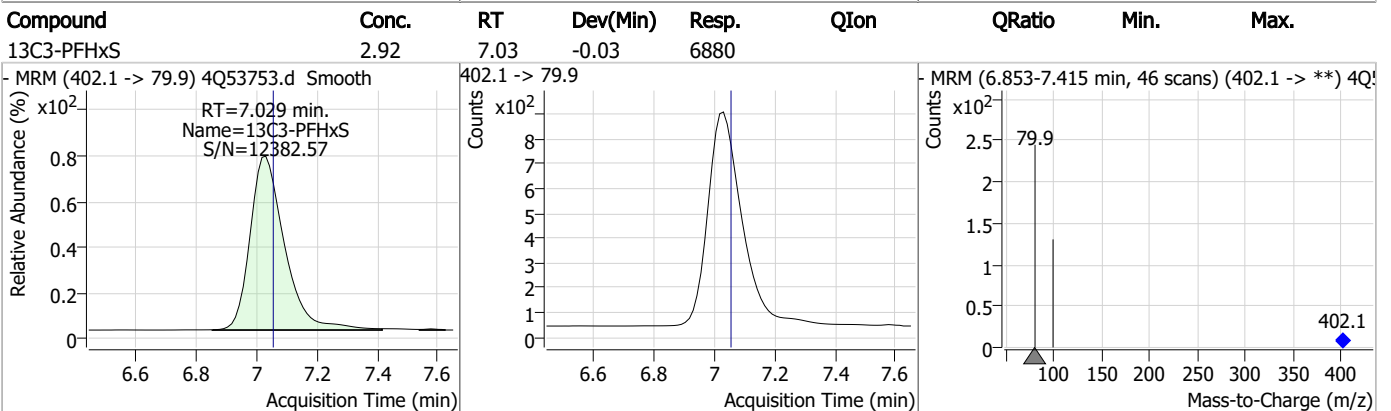
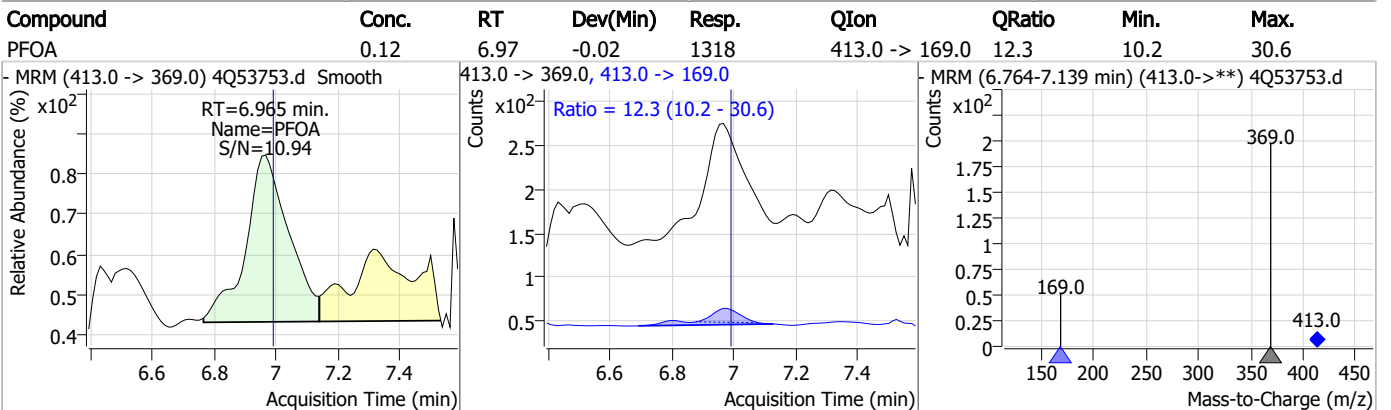
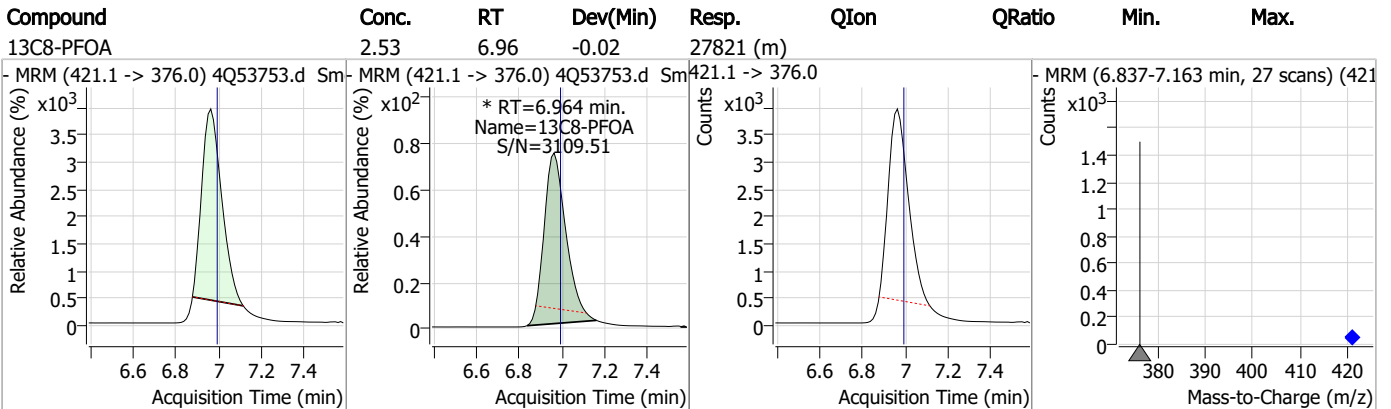
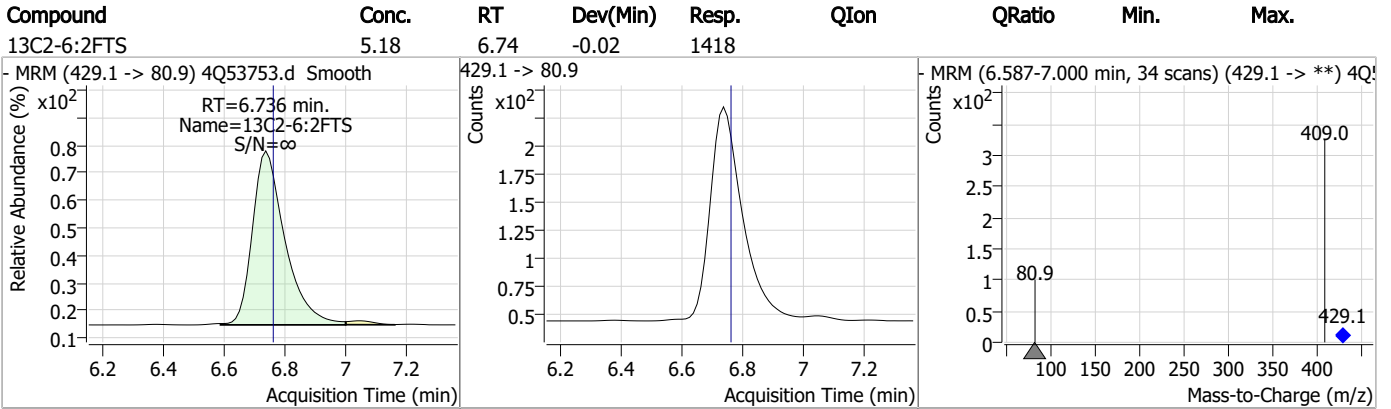
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.71	6.27	-0.04	25684				



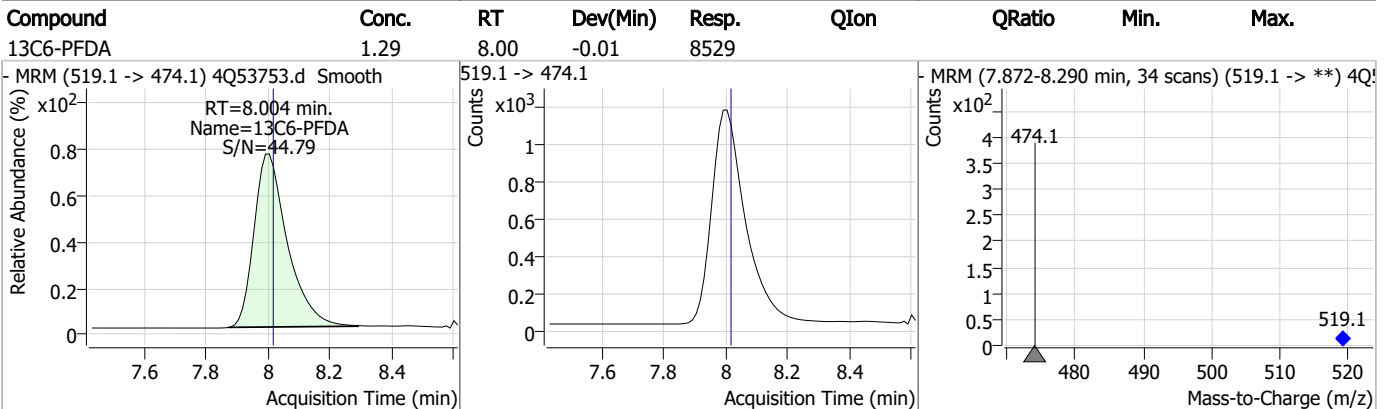
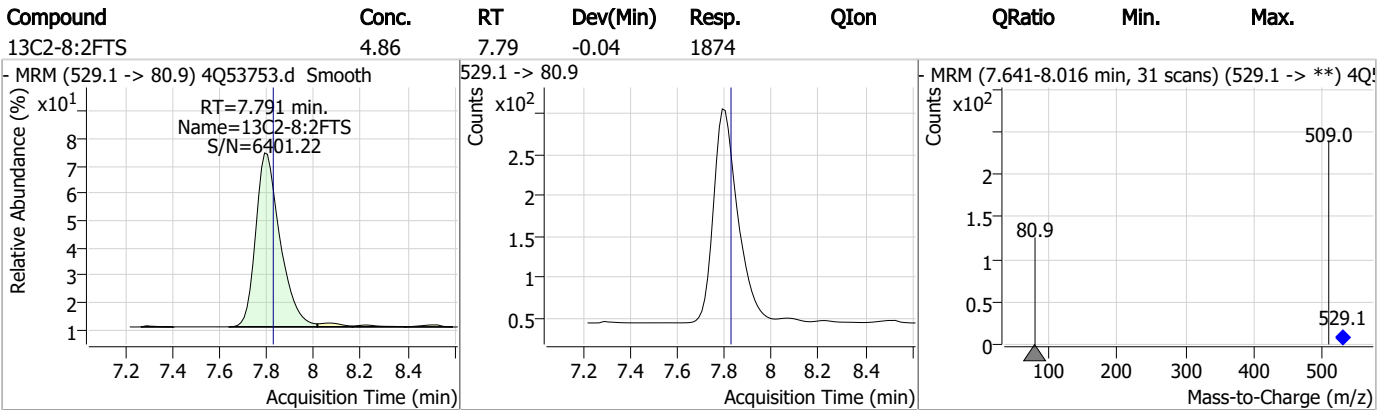
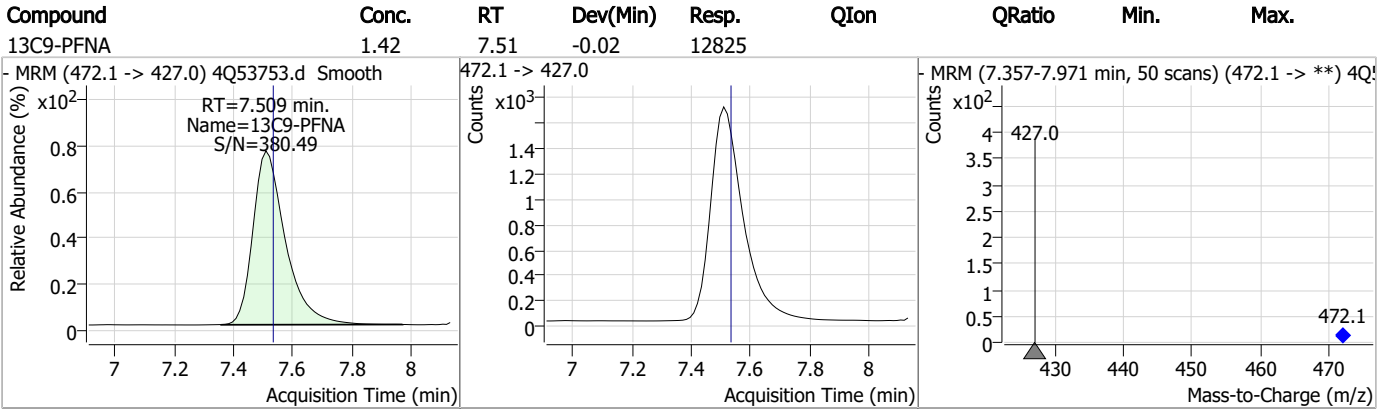
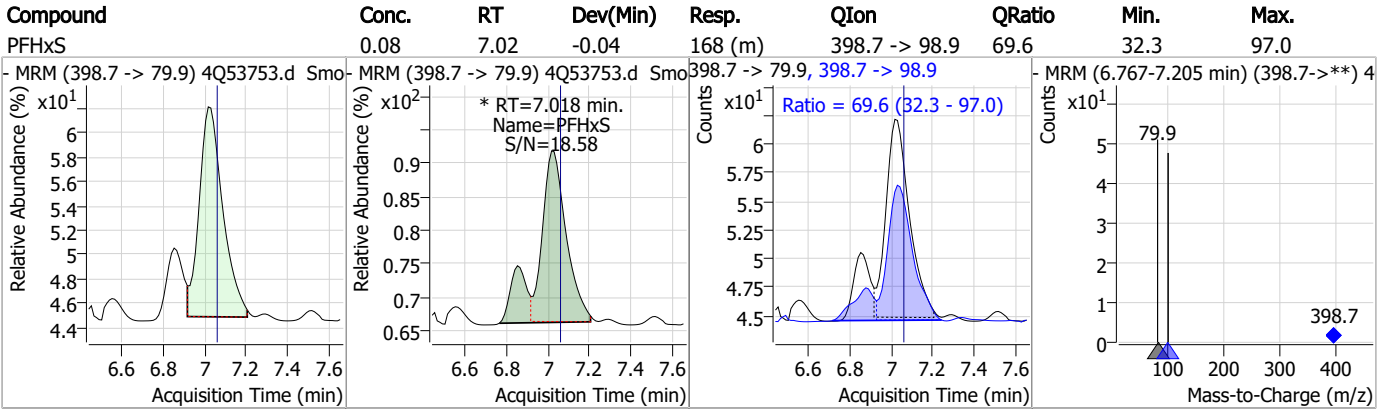
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.06	6.27	-0.04	989 (m)	363.1 -> 169.0	19.2	8.8	26.3



Perfluorinated Compounds by LC/MS/MS



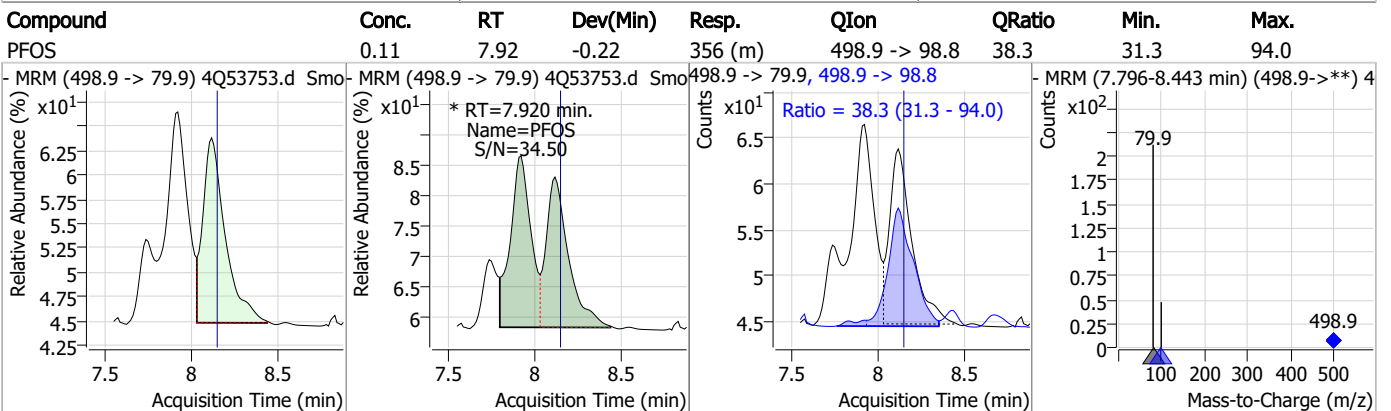
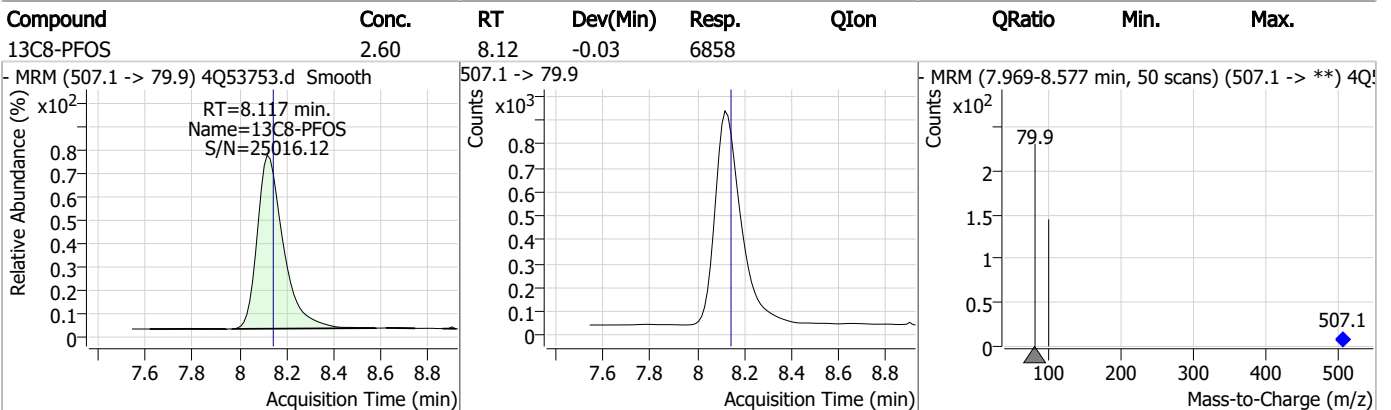
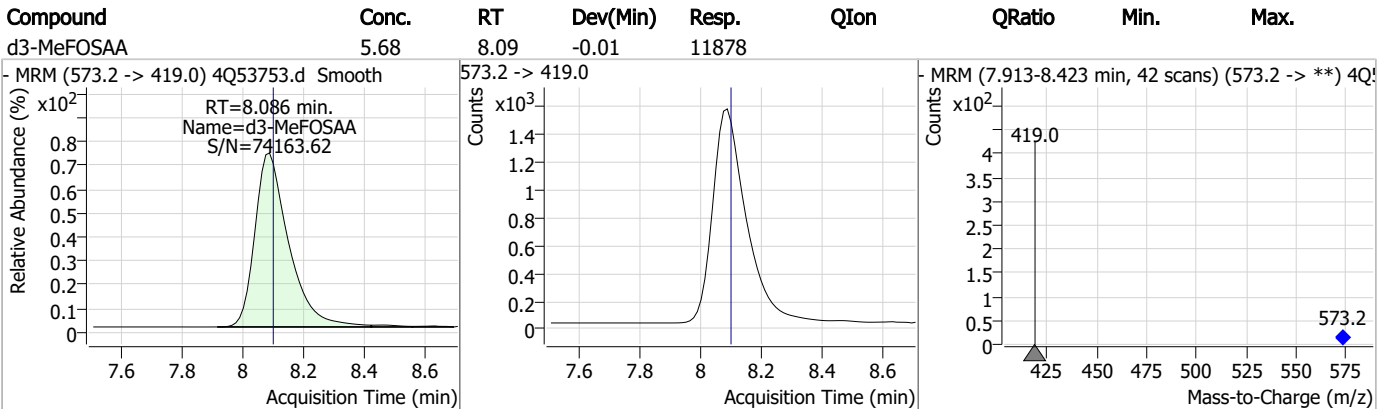
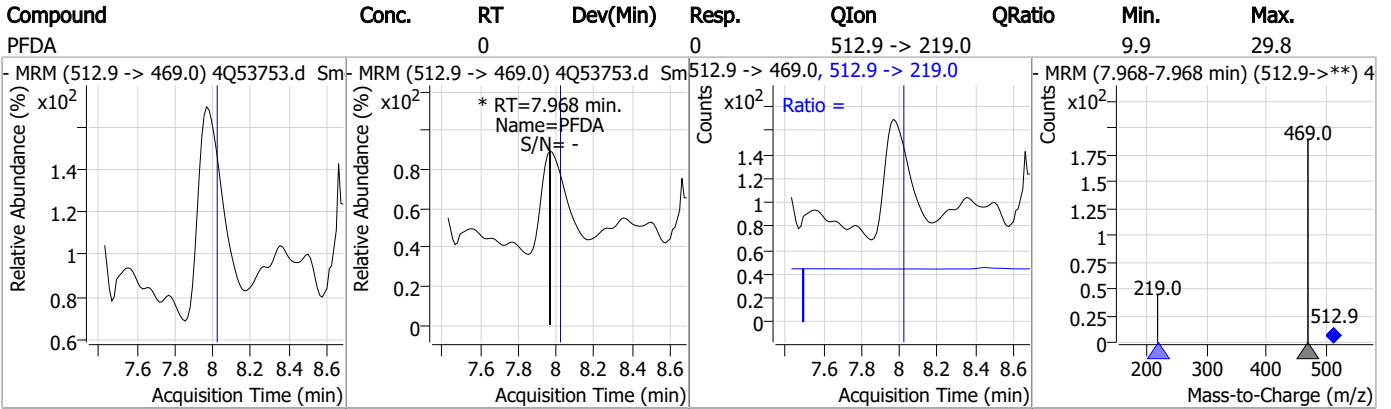
Perfluorinated Compounds by LC/MS/MS



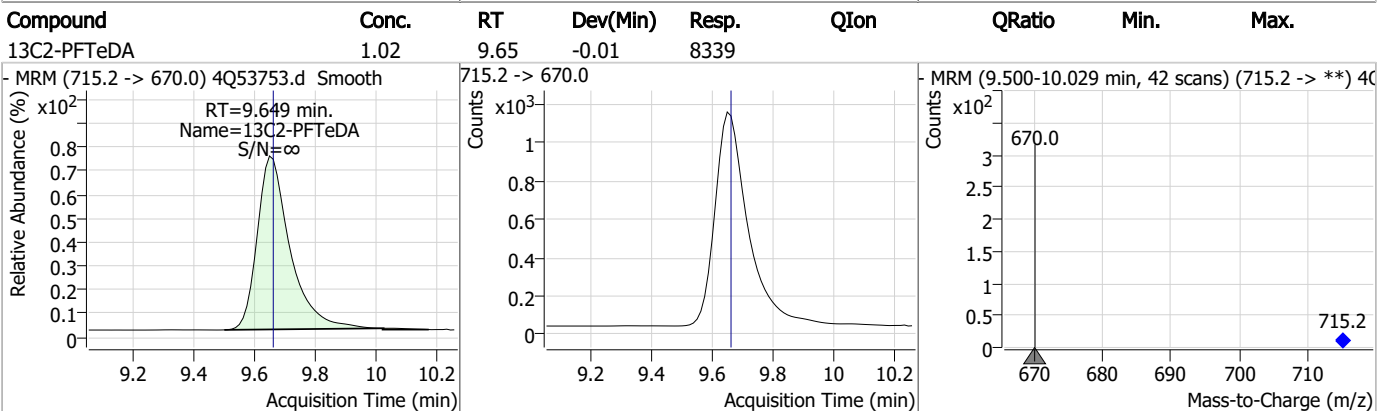
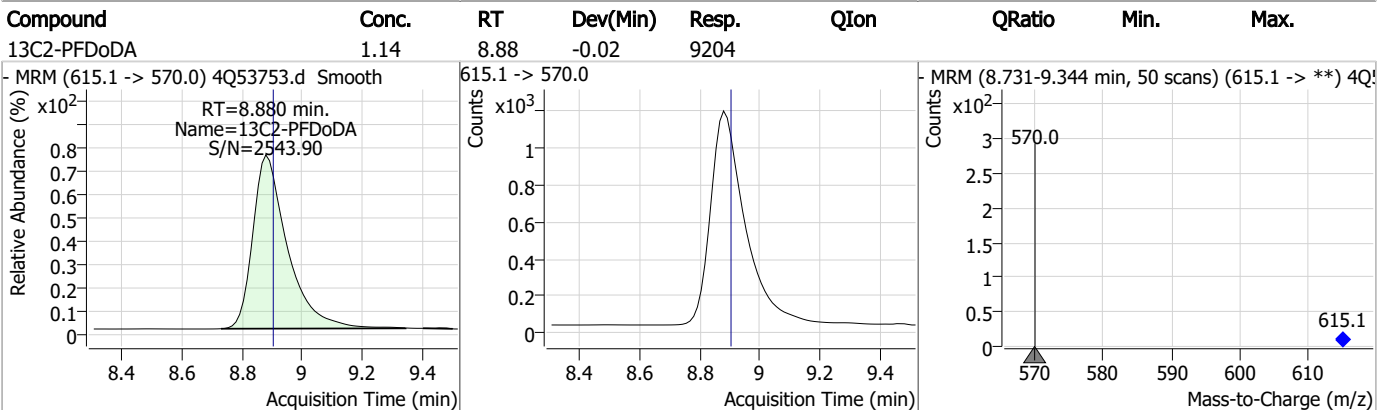
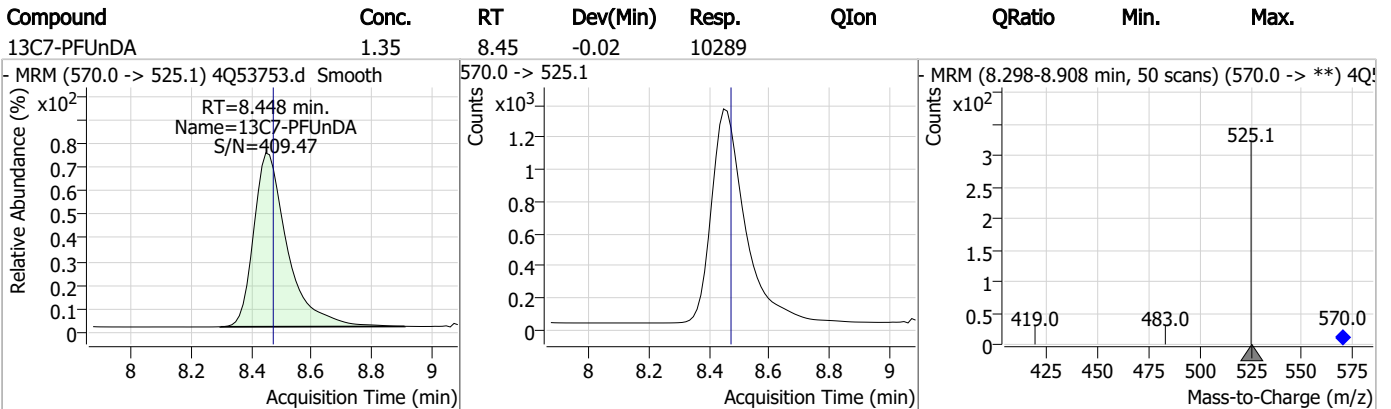
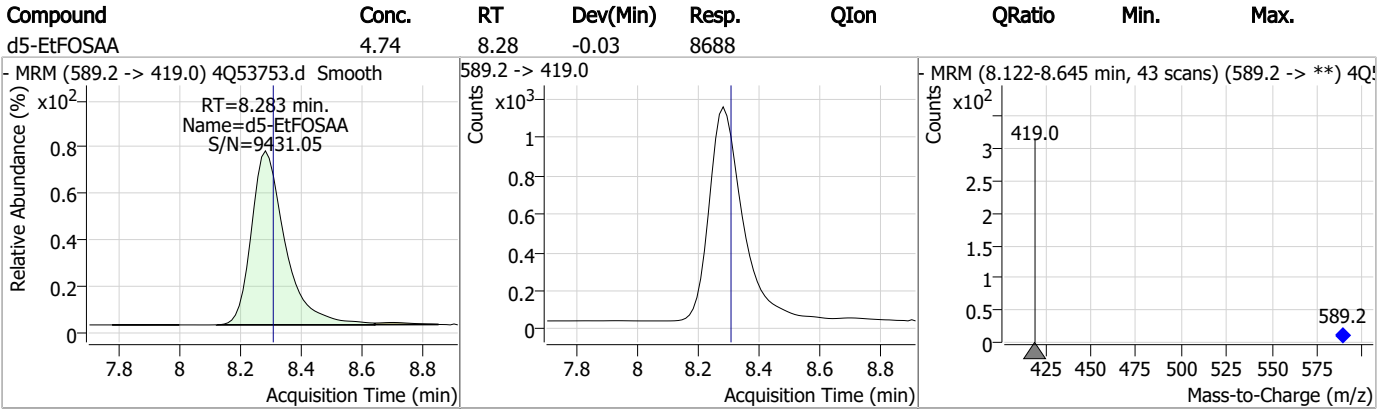
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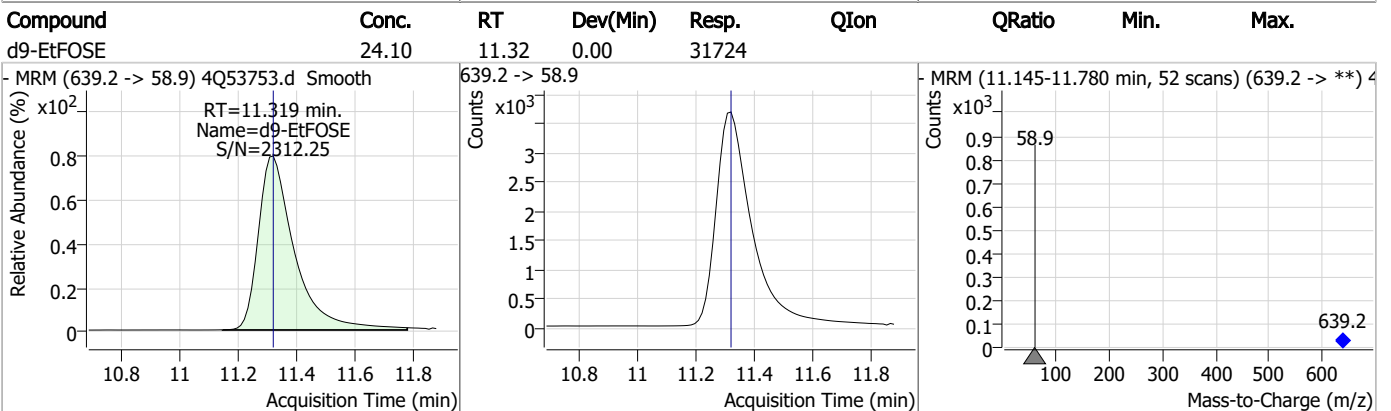
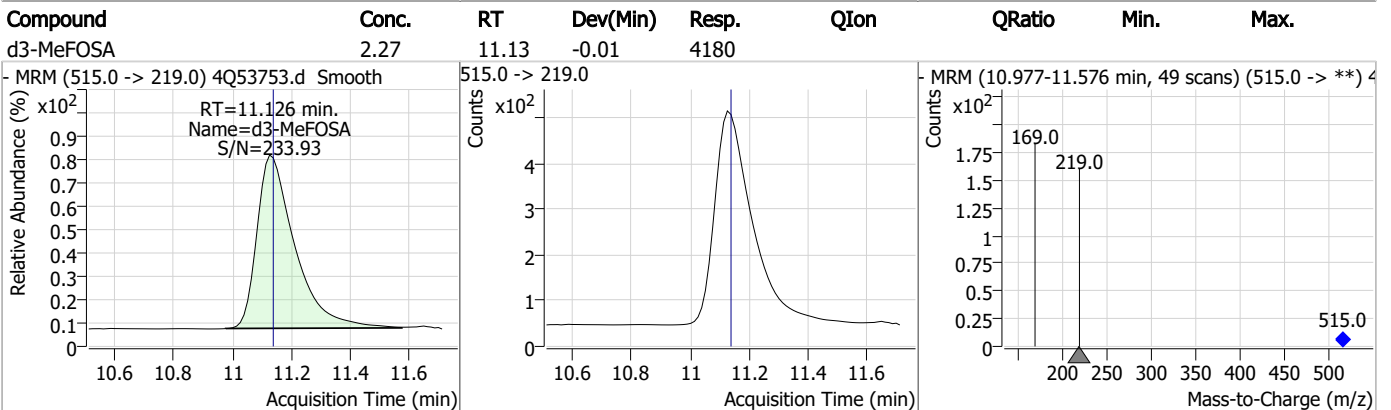
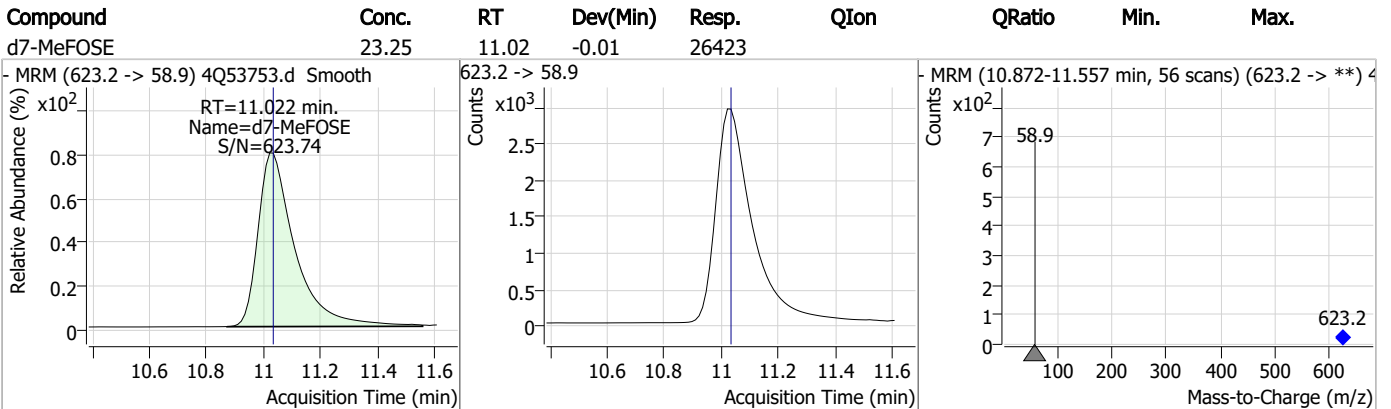
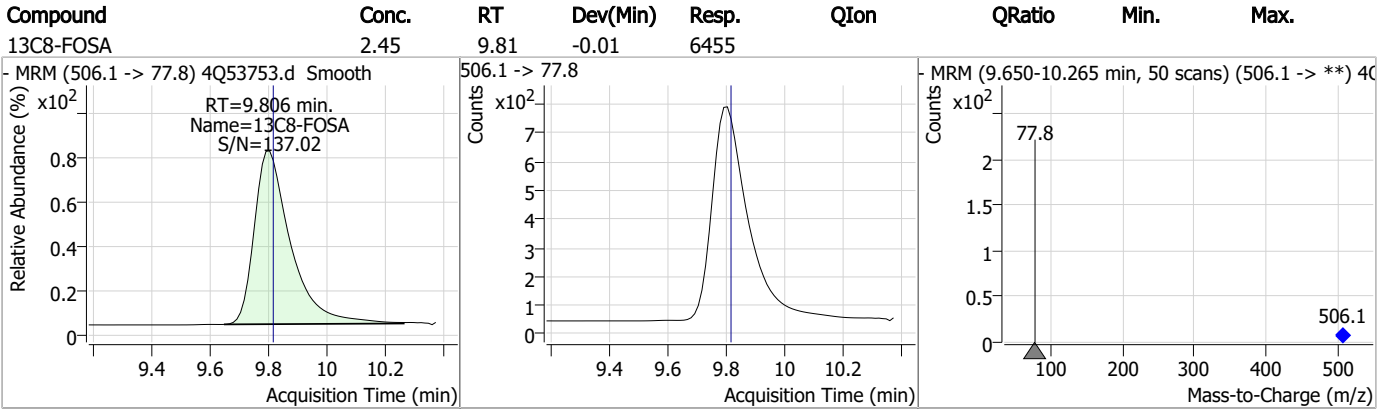
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

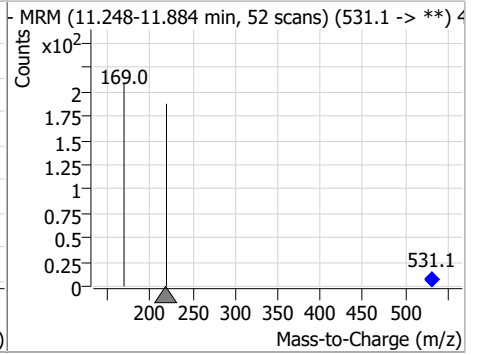
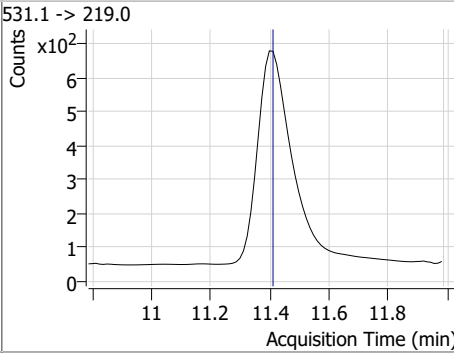
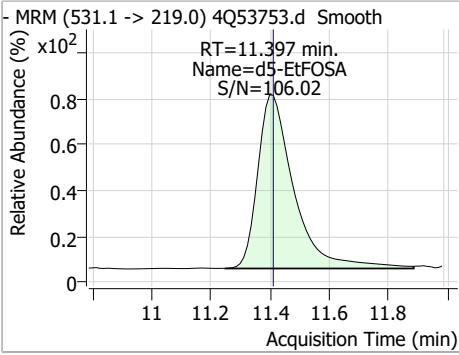


Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.46	11.40	-0.01	5378				



7.1.4
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Manual Integration Approval Summary

Sample Number: FC11062-4 Method: EPA DRAFT 1633
Lab FileID: 4Q53753.D Analyst approved: 11/14/23 16:34 Anna Ludwig
Injection Time: 11/13/23 21:24 Supervisor approved: 11/14/23 16:36 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoroheptanoic acid	375-85-9		6.27	Split peak
13C8-PFOA			6.96	Poorly defined baseline
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		7.92	Split peak

7.1.4.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53756.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 10:08:18 PM
 Sample Name : fc11062-5
 Vial : P4-E2
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP99997,S4Q785,540,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.711	216.8 -> 171.9	51186	10.00 µg/L	0.012
M5-PFPeA	4.125	268.3 -> 223.0	34333	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	27191	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	26862	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	27343	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	11729	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	7812	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	9484	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	8197	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	7294	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	5965	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	7661	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6062	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6108	2.50 µg/L	-0.026
M2-4:2FTS	4.996	329.1 -> 80.9	762	5.00 µg/L	-0.050
M2-6:2FTS	6.736	429.1 -> 80.9	1266	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1651	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	9760	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	21586	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	8240	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	22766	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	27338	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	4682	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3369	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5611	2.50 µg/L	-0.026
13C3-PFBA	2.703	216.0 -> 172.0	34008	5.00 µg/L	0.000
18O2-PFHxS	7.016	403.0 -> 83.9	4041	2.50 µg/L	-0.038
13C4-PFOA	6.952	417.1 -> 372.0	30966	2.50 µg/L	-0.037
13C2-PFDA	7.992	515.1 -> 470.1	9102	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	12067	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	30151	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	762	5.51 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.2%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1266	4.34 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 86.9%		
13C2-8:2FTS	7.804	529.1 -> 80.9	1651	4.02 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 80.4%		
13C2-PFDoDA	8.880	615.1 -> 570.0	8197	1.00 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 79.8%		
13C2-PFTeDA	9.649	715.2 -> 670.0	7294	0.88 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 70.6%		
13C3-PFBS	5.152	302.1 -> 79.9	7661	2.53 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C3-PFHxS	7.017	402.1 -> 79.9	6062	2.42 µg/L	-0.037

7.15
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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 = 96.8%		
13C4-PFBA	2.711	216.8 -> 171.9	51186	7.22	µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 72.2%		
13C4-PFHpA	6.267	367.1 -> 322.0	26862	2.55	µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%		
13C5-PFHxA	5.297	318.0 -> 273.0	27191	2.42	µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%		
13C5-PFPeA	4.125	268.3 -> 223.0	34333	4.67	µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.4%		
13C6-PFDA	7.992	519.1 -> 474.1	7812	1.17	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.3%		
13C7-PFUnDA	8.448	570.0 -> 525.1	9484	1.23	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.0%		
13C8-FOSA	9.794	506.1 -> 77.8	5965	2.22	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.0%		
13C8-PFOA	6.964	421.1 -> 376.0	27343	2.47	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%		
13C8-PFOS	8.117	507.1 -> 79.9	6108	2.28	µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.2%		
13C9-PFNA	7.509	472.1 -> 427.0	11729	1.23	µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.6%		
d3-MeFOSAA	8.074	573.2 -> 419.0	9760	4.59	µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 91.7%		
13C3-HFPO-DA	5.652	286.9 -> 168.9	21586	8.41	µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 84.1%		
d3-MeFOSA	11.126	515.0 -> 219.0	3369	1.80	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 72.0%		
d5-EtFOSAA	8.283	589.2 -> 419.0	8240	4.42	µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 88.4%		
d7-MeFOSE	11.022	623.2 -> 58.9	22766	19.70	µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 78.8%		
d9-EtFOSE	11.319	639.2 -> 58.9	27338	20.42	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 81.7%		
d5-EtFOSA	11.397	531.1 -> 219.0	4682	2.11	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 84.3%		

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	2.457	212.8 -> 168.9	0	µg/L	m	1
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	6.255	599.0 -> 98.8				
		363.1 -> 319.0	396	0.02 µg/L	#m	12
PFHpS	-	363.1 -> 169.0	221			
		449.0 -> 79.9	-	N.D.		
PFHxA	4.802	449.0 -> 98.9				
		313.0 -> 269.0	0	µg/L	m	1
PFHxS	-	313.0 -> 118.9	0			
		398.7 -> 79.9	-	N.D.		
PFNA	-	398.7 -> 98.9				
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	-	548.8 -> 98.9				
		413.0 -> 369.0	-	N.D.		
PFOS	-	413.0 -> 169.0				
		498.9 -> 79.9	-	N.D.		
PFPeA	4.241	498.9 -> 98.8				
		263.0 -> 219.0	0	µg/L	m	1
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	-	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	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
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	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

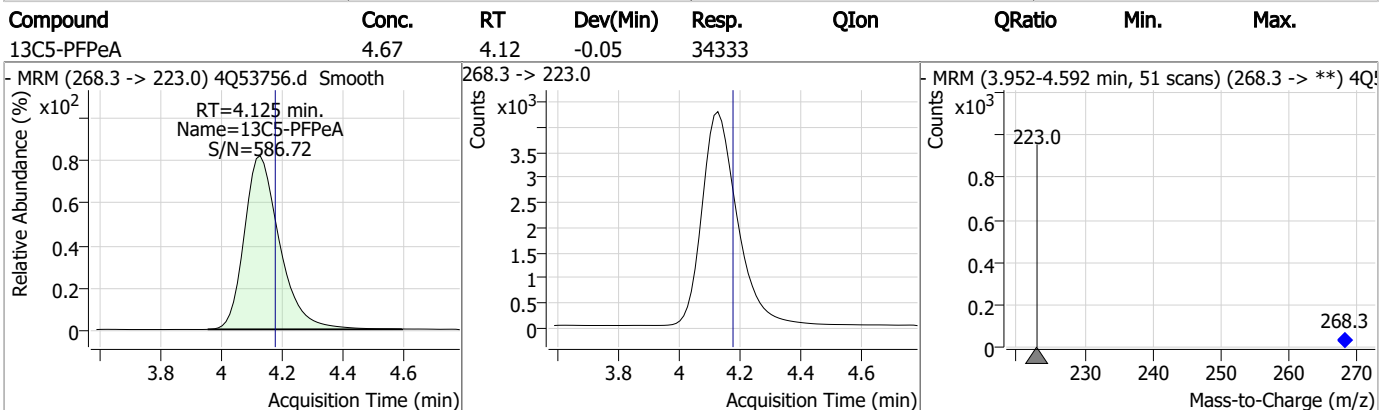
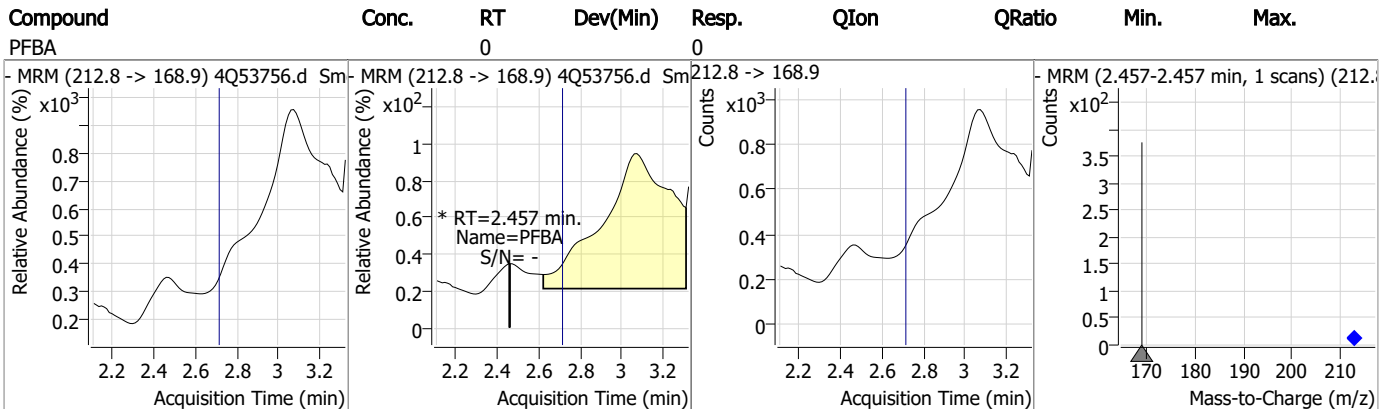
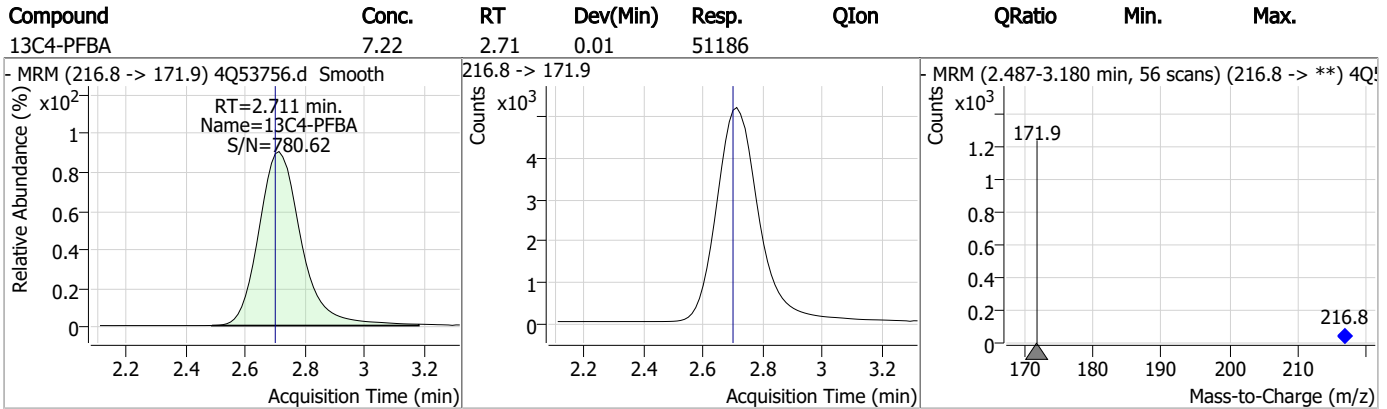
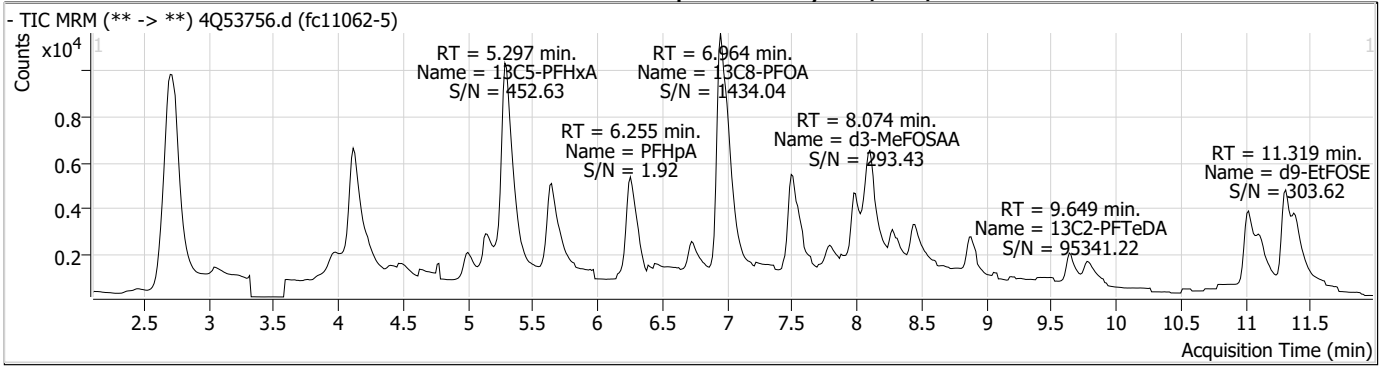
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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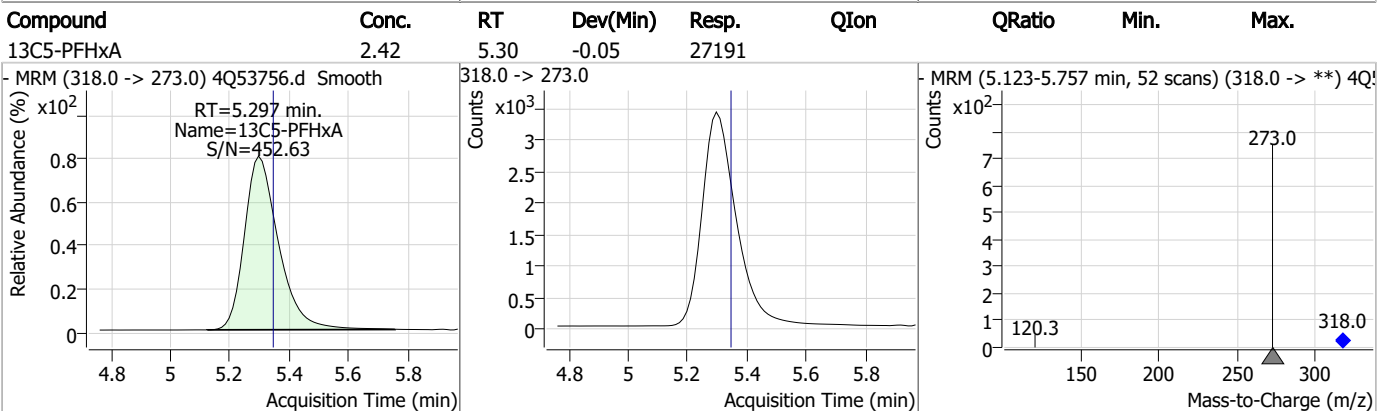
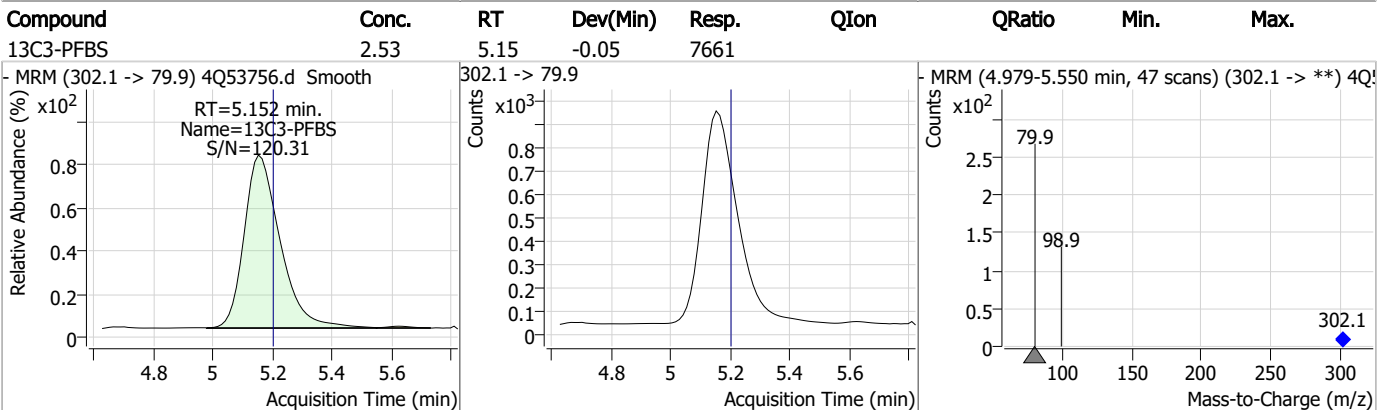
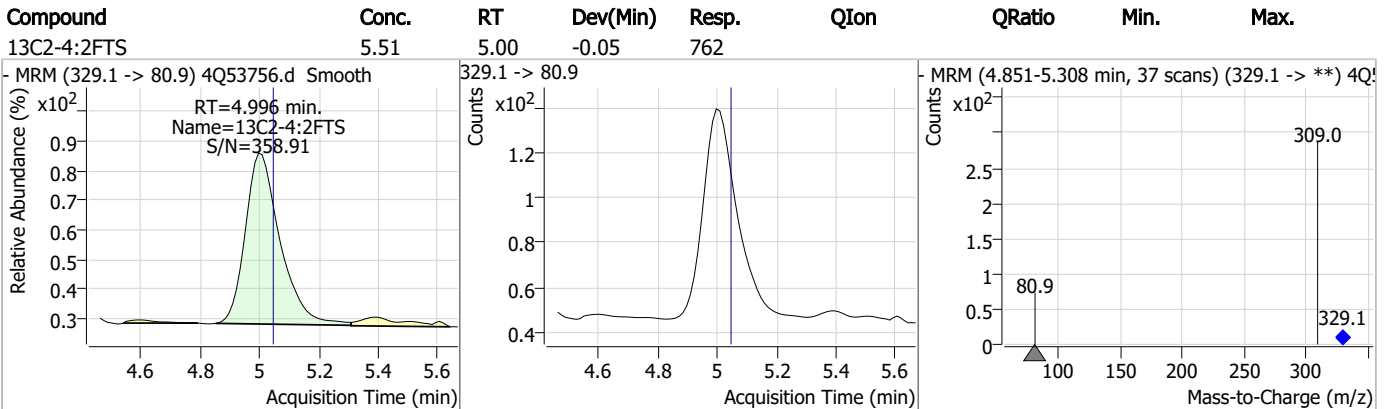
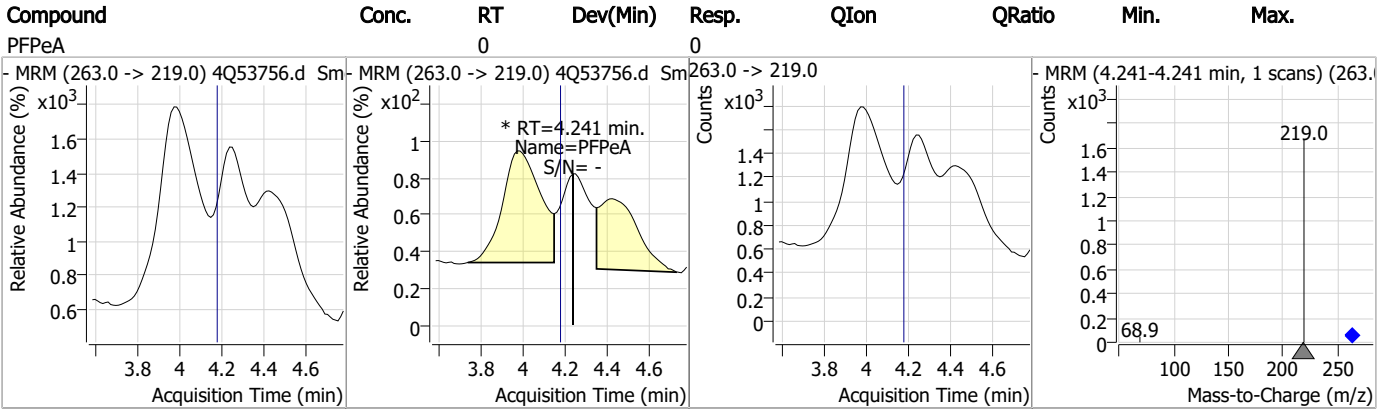
7.1.5
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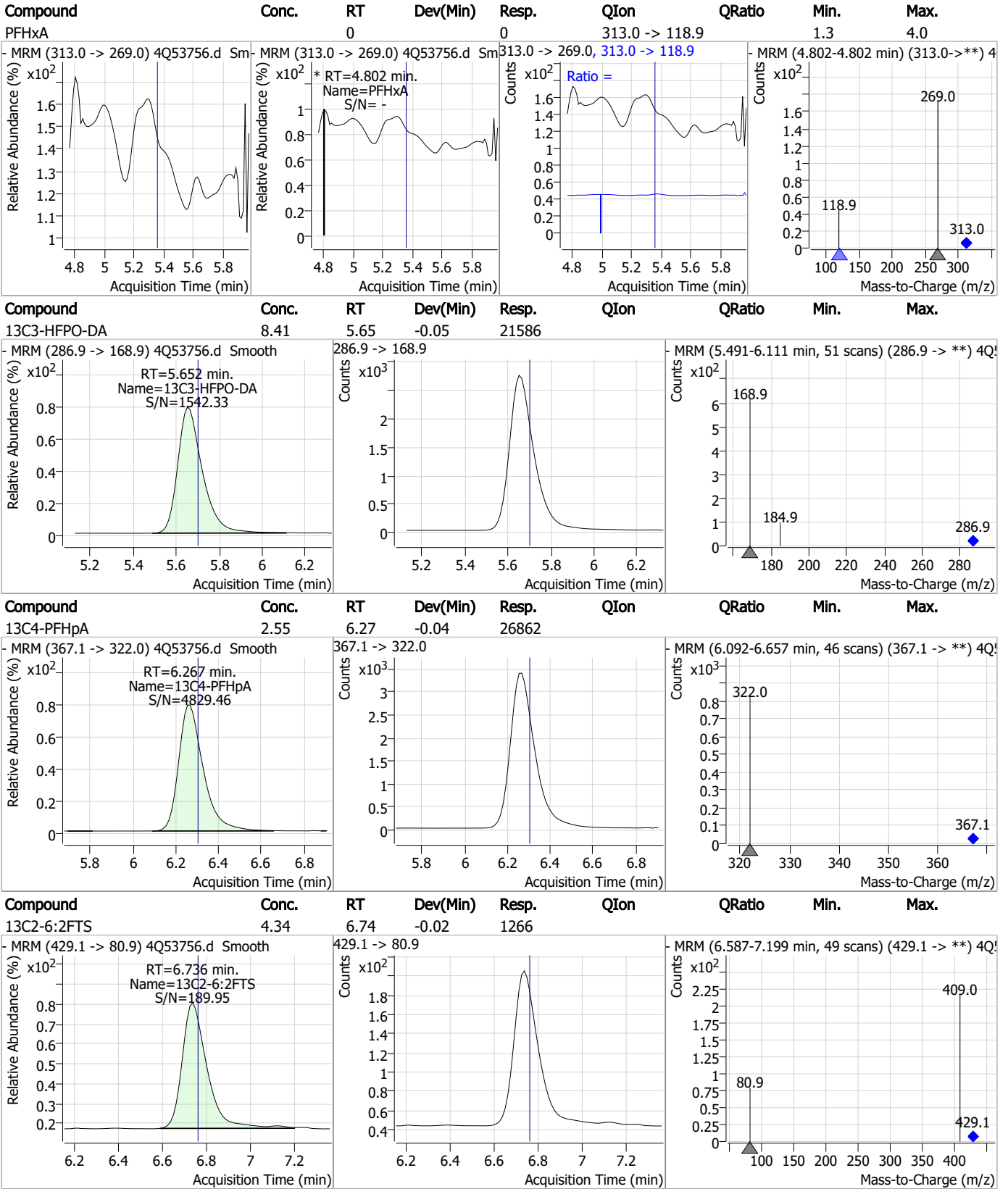
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



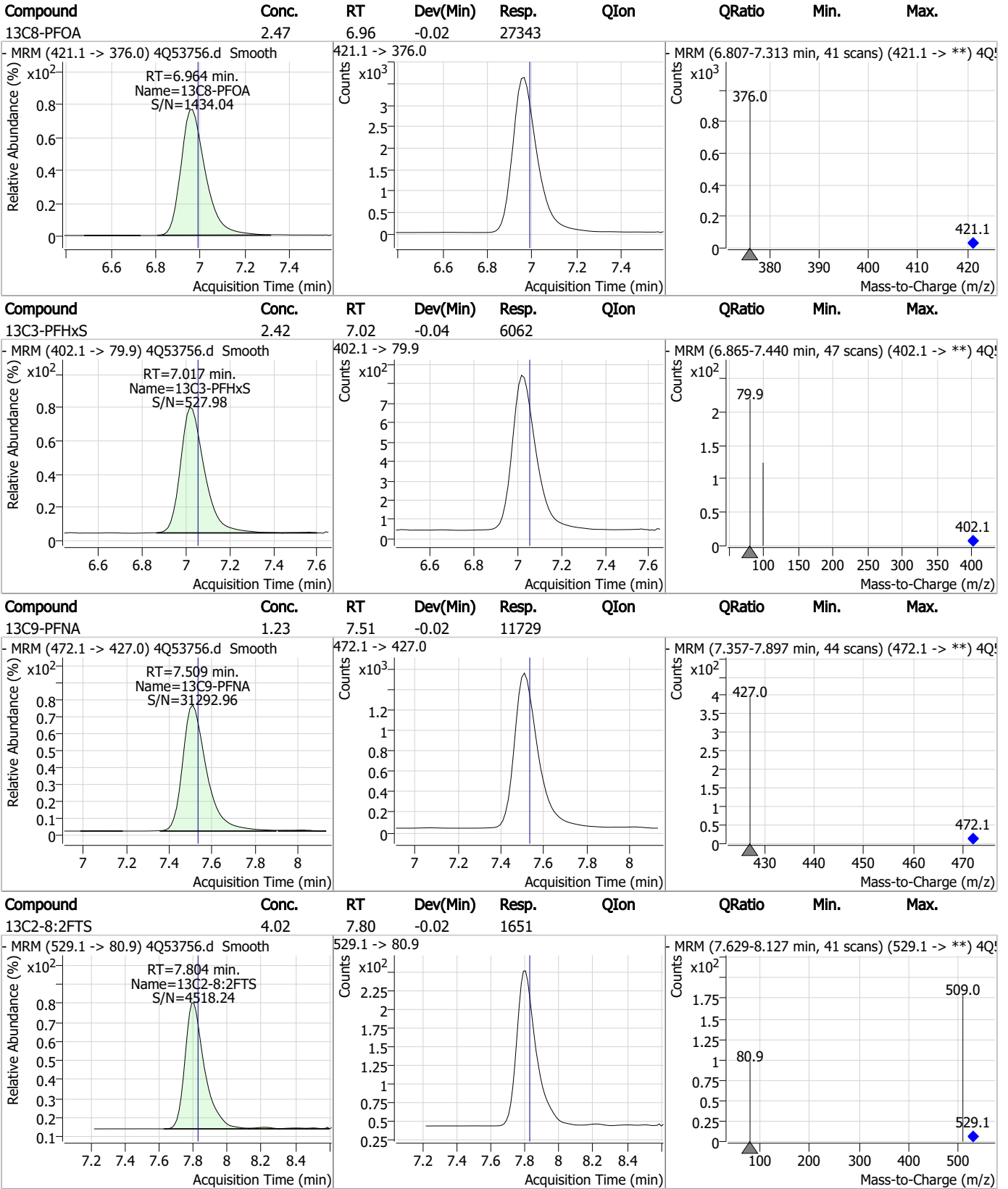
Perfluorinated Compounds by LC/MS/MS



7.1.5

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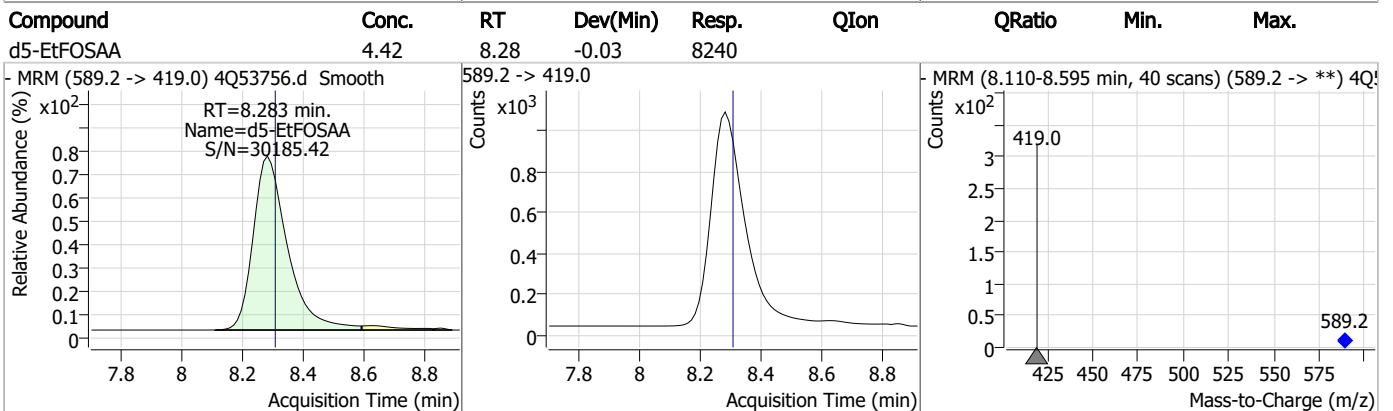
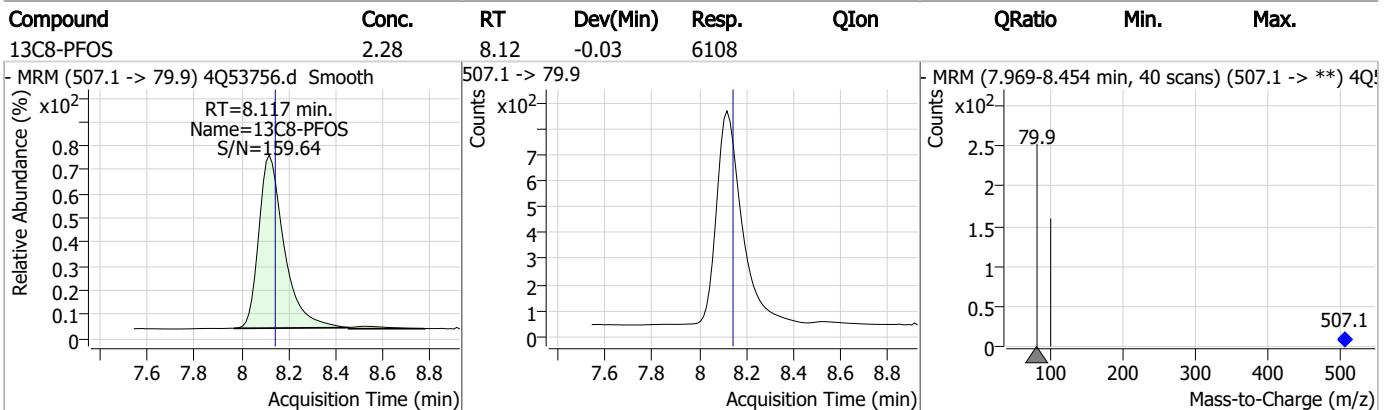
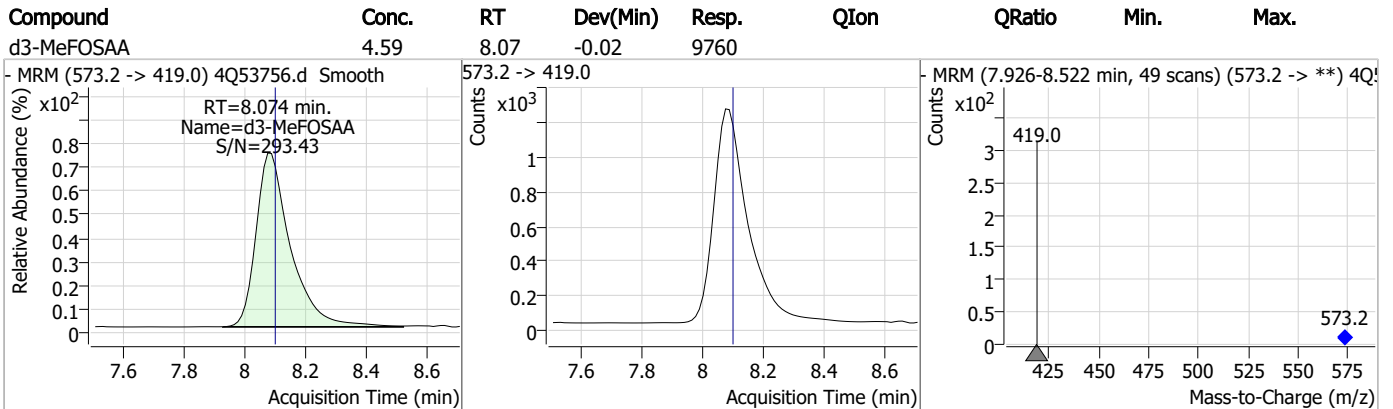
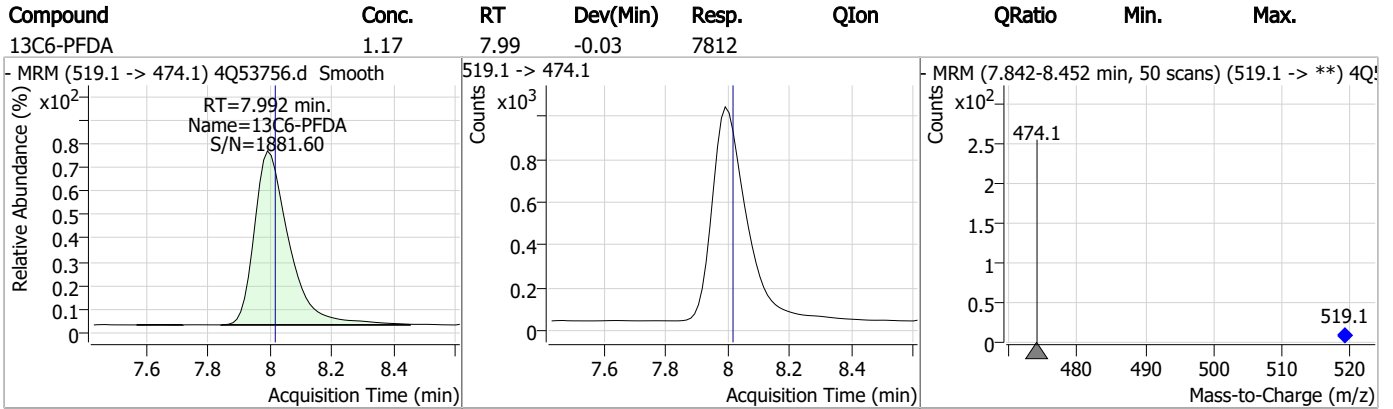
Perfluorinated Compounds by LC/MS/MS



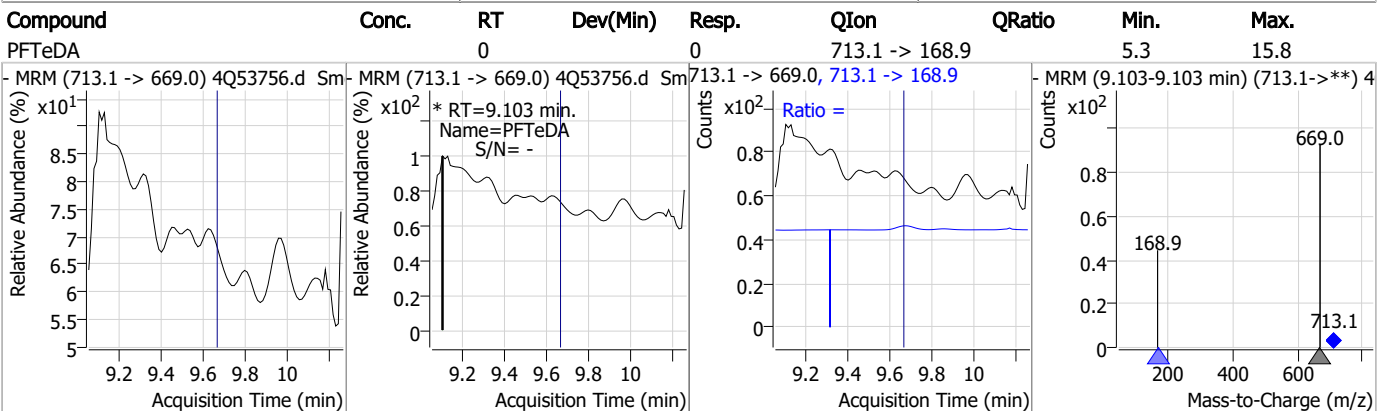
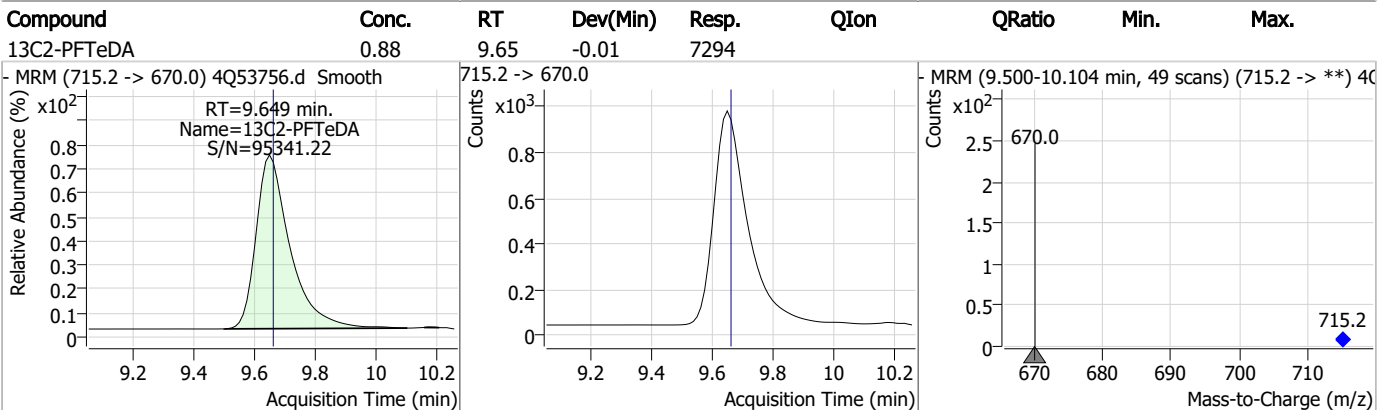
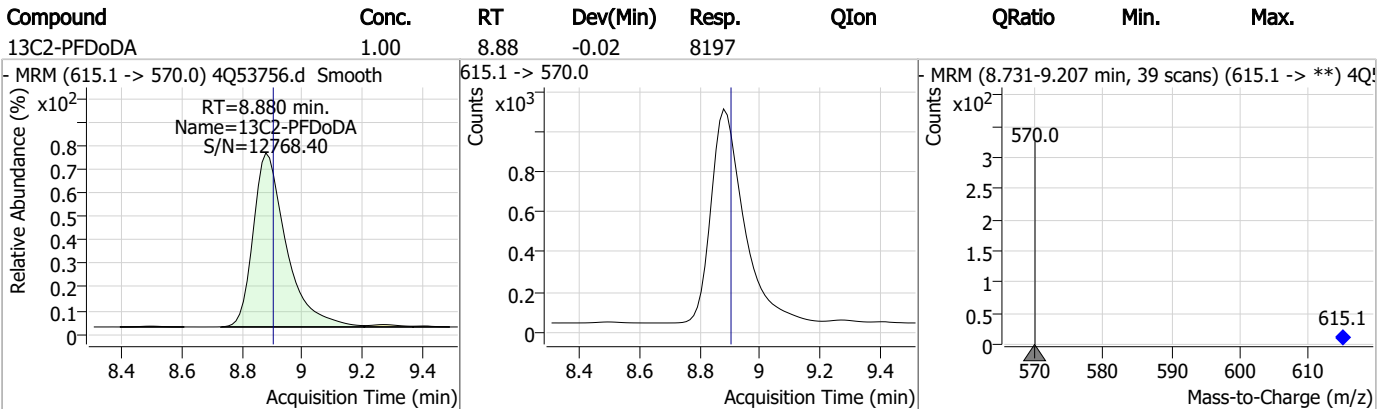
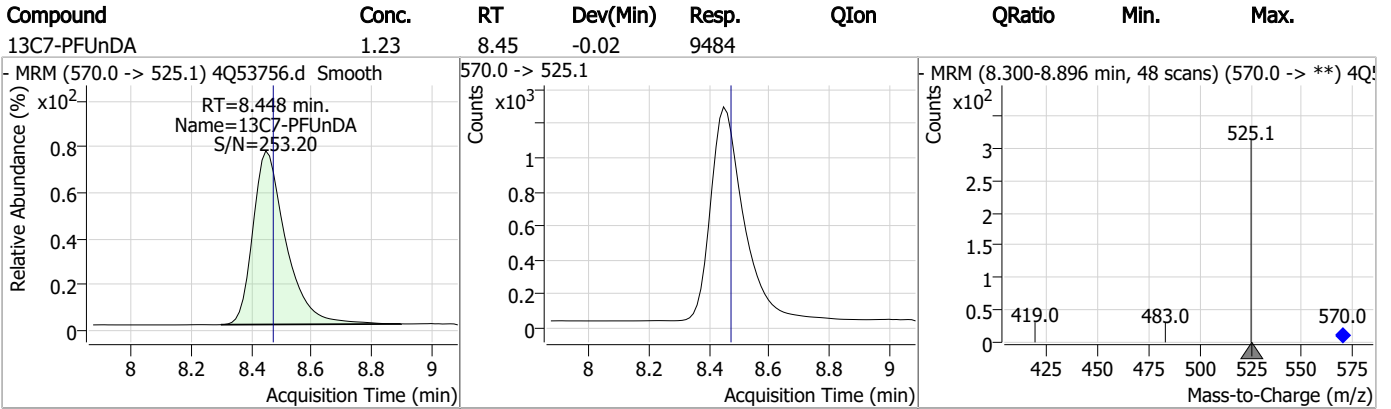
7.15

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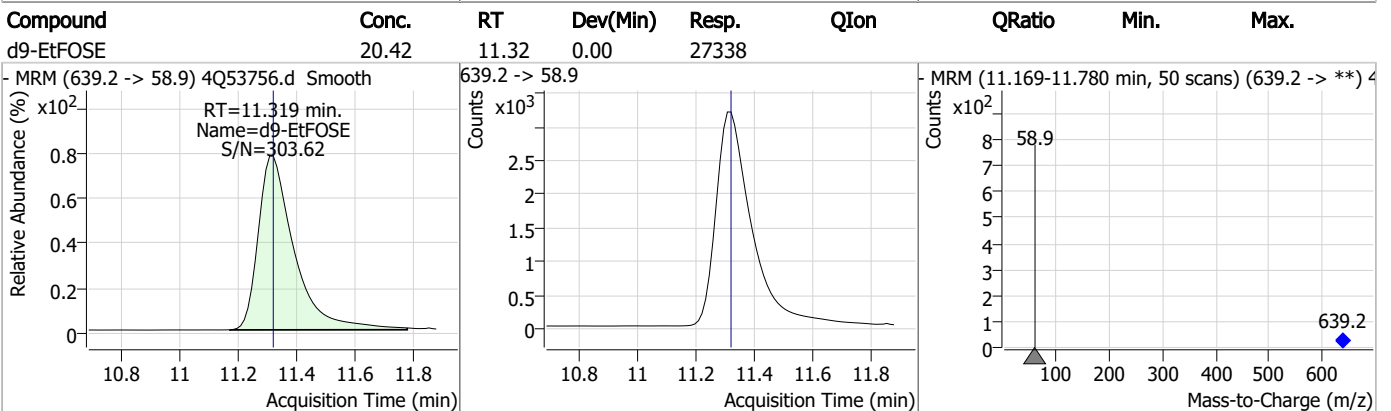
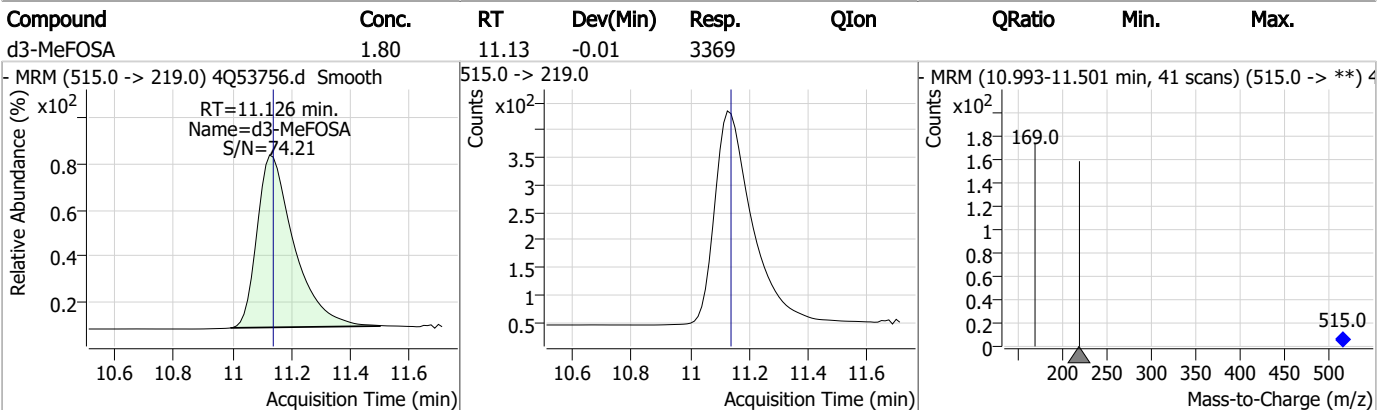
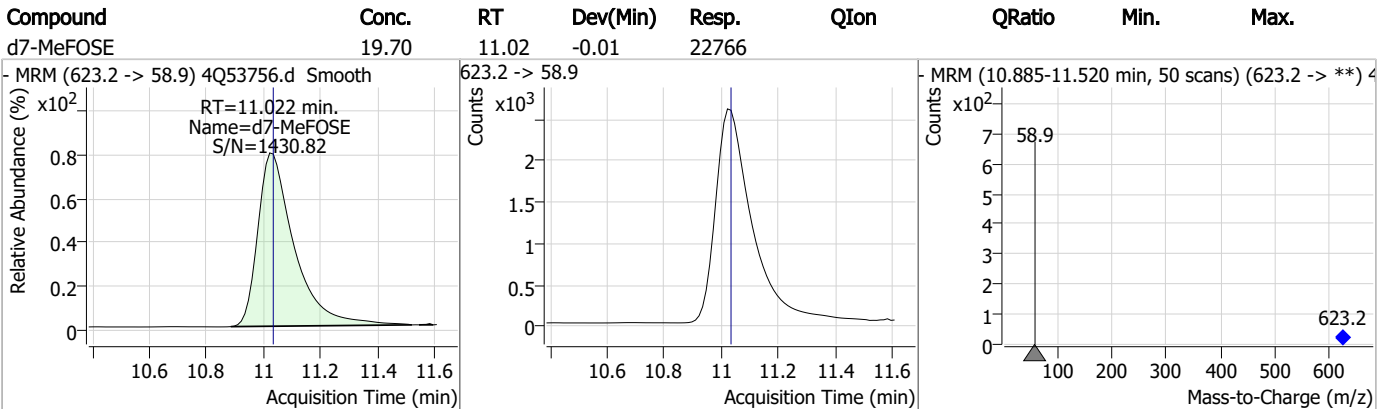
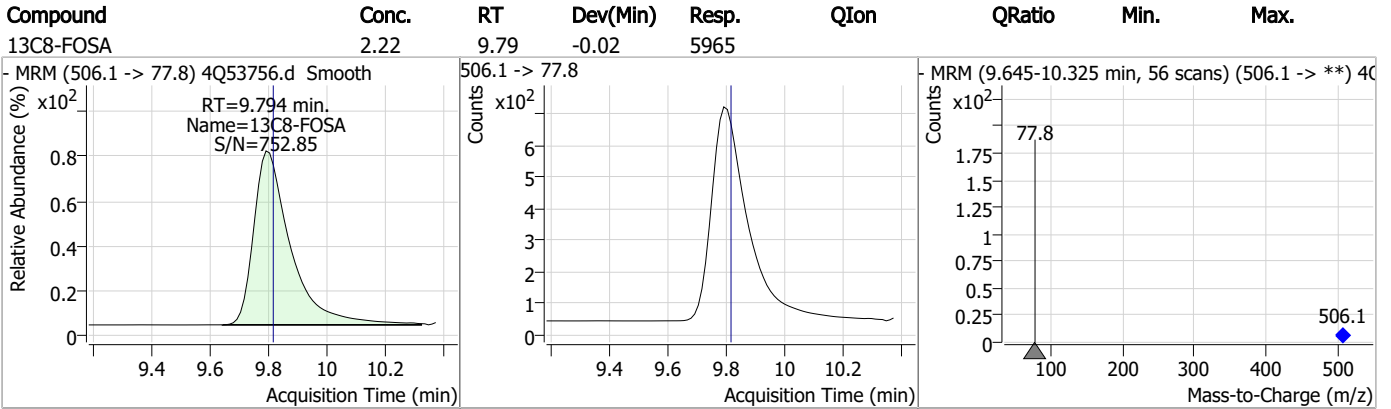
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

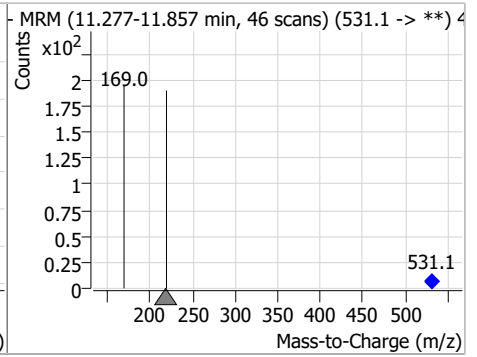
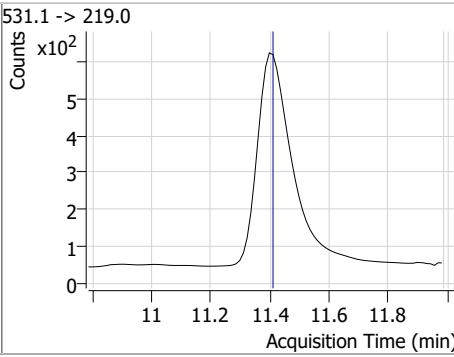
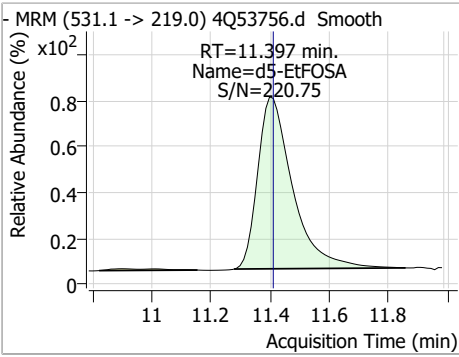


Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.11	11.40	-0.01	4682				



7.1.5
7

Manual Integration Approval Summary

Sample Number: FC11062-5 Method: EPA DRAFT 1633
Lab FileID: 4Q53756.D Analyst approved: 11/14/23 13:57 Anna Ludwig
Injection Time: 11/13/23 22:08 Supervisor approved: 11/14/23 15:56 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoroheptanoic acid	375-85-9		6.25	Split peak

7.1.5.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53757.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 10:23:02 PM
 Sample Name : fc11062-6
 Vial : P4-E3
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP99997,S4Q785,550,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	52016	10.00 µg/L	0.000
M5-PFPeA	4.125	268.3 -> 223.0	35132	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	27900	2.50 µg/L	-0.050
M4-PFHpA	6.255	367.1 -> 322.0	27835	2.50 µg/L	-0.050
M8-PFOA	6.952	421.1 -> 376.0	28572	2.50 µg/L	-0.037
M9-PFNA	7.509	472.1 -> 427.0	11906	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	7927	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	9303	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	8654	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	7142	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	6119	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	7651	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6467	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6805	2.50 µg/L	-0.026
M2-4:2FTS	4.996	329.1 -> 80.9	802	5.00 µg/L	-0.050
M2-6:2FTS	6.736	429.1 -> 80.9	1235	5.00 µg/L	-0.025
M2-8:2FTS	7.791	529.1 -> 80.9	1774	5.00 µg/L	-0.037
M3-MeFOSAA	8.074	573.2 -> 419.0	10695	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	22506	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	8206	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	23100	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	27856	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	4711	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3670	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5157	2.50 µg/L	-0.026
13C3-PFBA	2.703	216.0 -> 172.0	30872	5.00 µg/L	0.000
18O2-PFHxS	7.016	403.0 -> 83.9	3631	2.50 µg/L	-0.038
13C4-PFOA	6.952	417.1 -> 372.0	29390	2.50 µg/L	-0.037
13C2-PFDA	7.992	515.1 -> 470.1	9118	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	10690	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	27702	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	802	6.45 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 129.1%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1235	4.72 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.4%		
13C2-8:2FTS	7.791	529.1 -> 80.9	1774	4.81 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.1%		
13C2-PFDoDA	8.880	615.1 -> 570.0	8654	1.05 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 84.1%		
13C2-PFTeDA	9.649	715.2 -> 670.0	7142	0.86 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 69.0%		
13C3-PFBS	5.152	302.1 -> 79.9	7651	2.81 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 112.4%		
13C3-PFHxS	7.017	402.1 -> 79.9	6467	2.87 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 = 114.9%		
13C4-PFBA	2.699	216.8 -> 171.9	52016	8.09 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 80.9%		
13C4-PFHpA	6.255	367.1 -> 322.0	27835	2.88 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 115.2%		
13C5-PFHxA	5.297	318.0 -> 273.0	27900	2.70 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.0%		
13C5-PFPeA	4.125	268.3 -> 223.0	35132	5.20 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C6-PFDA	7.992	519.1 -> 474.1	7927	1.18 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.5%		
13C7-PFUnDA	8.448	570.0 -> 525.1	9303	1.20 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.0%		
13C8-FOSA	9.794	506.1 -> 77.8	6119	2.48 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C8-PFOA	6.952	421.1 -> 376.0	28572	2.72 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.9%		
13C8-PFOS	8.117	507.1 -> 79.9	6805	2.76 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 110.5%		
13C9-PFNA	7.509	472.1 -> 427.0	11906	1.41 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 113.0%		
d3-MeFOSAA	8.074	573.2 -> 419.0	10695	5.47 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.4%		
13C3-HFPO-DA	5.652	286.9 -> 168.9	22506	9.55 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 95.5%		
d3-MeFOSA	11.126	515.0 -> 219.0	3670	2.13 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 85.3%		
d5-EtFOSAA	8.283	589.2 -> 419.0	8206	4.79 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.8%		
d7-MeFOSE	11.022	623.2 -> 58.9	23100	21.74 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 87.0%		
d9-EtFOSE	11.319	639.2 -> 58.9	27856	22.64 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 90.6%		
d5-EtFOSA	11.397	531.1 -> 219.0	4711	2.31 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.3%		

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	2.532	212.8 -> 168.9	0	µg/L m	1
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.	



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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				
		363.1 -> 319.0	0	µg/L	m	1
PFHpS	-	363.1 -> 169.0	0			
		449.0 -> 79.9	-	N.D.		
PFHxA	-	449.0 -> 98.9				
		313.0 -> 269.0	-	N.D.		
PFHxS	-	313.0 -> 118.9				
		398.7 -> 79.9	-	N.D.		
PFNA	-	398.7 -> 98.9				
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	-	548.8 -> 98.9				
		413.0 -> 369.0	-	N.D.		
PFOS	8.119	413.0 -> 169.0				
		498.9 -> 79.9	361	0.12 µg/L	m	77
PFPeA	4.241	498.9 -> 98.8	160			
		263.0 -> 219.0	0	µg/L	m	1
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	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
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	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				
PFEESA	-					

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

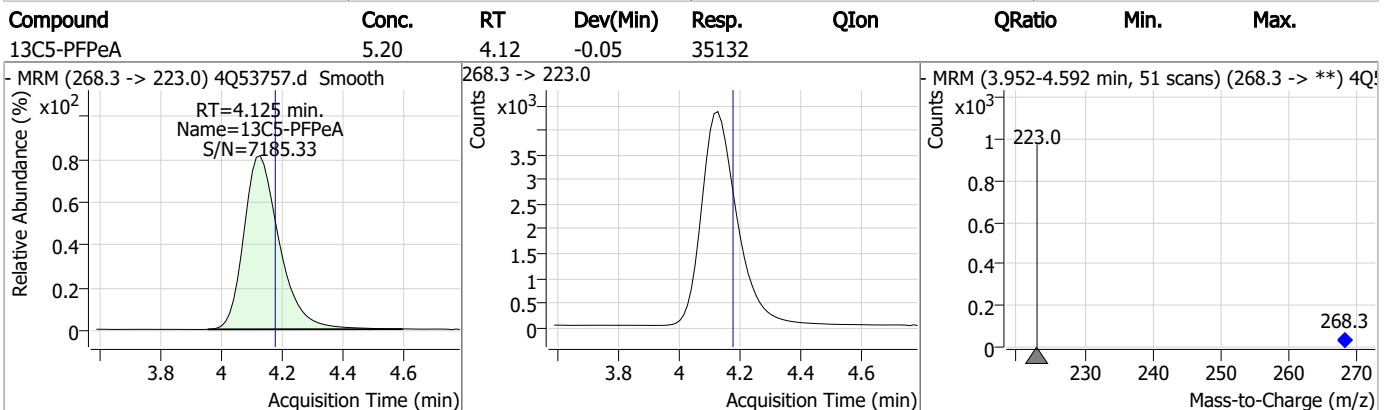
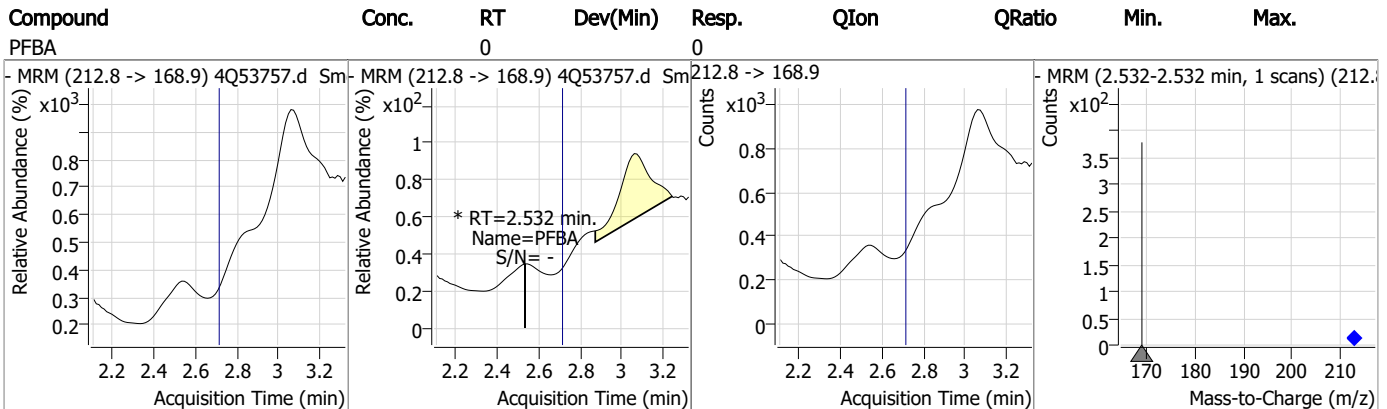
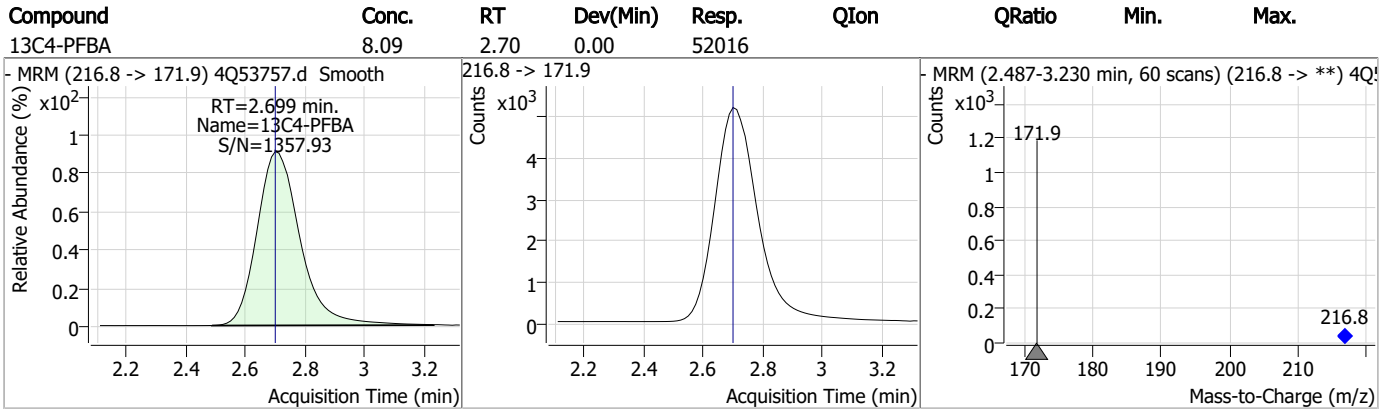
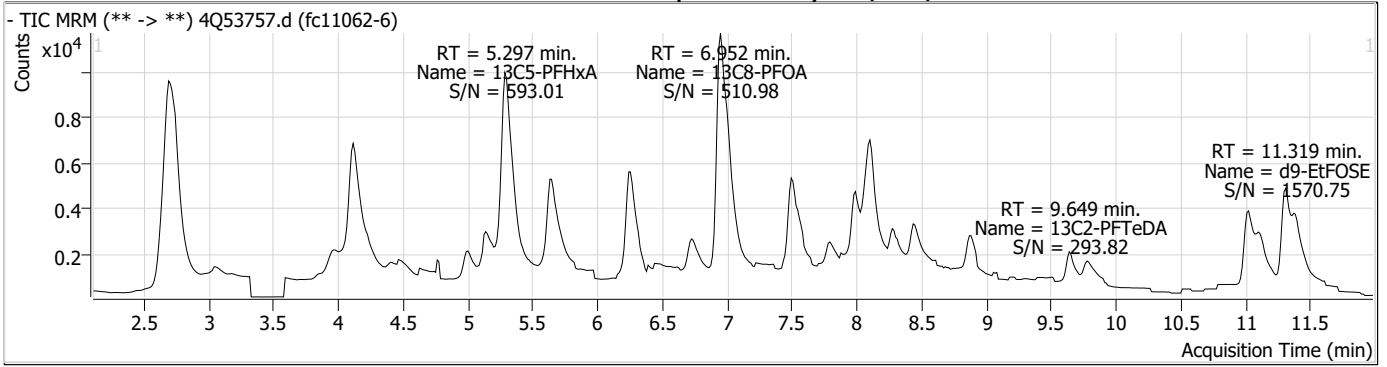
Perfluorinated Compounds by LC/MS/MS

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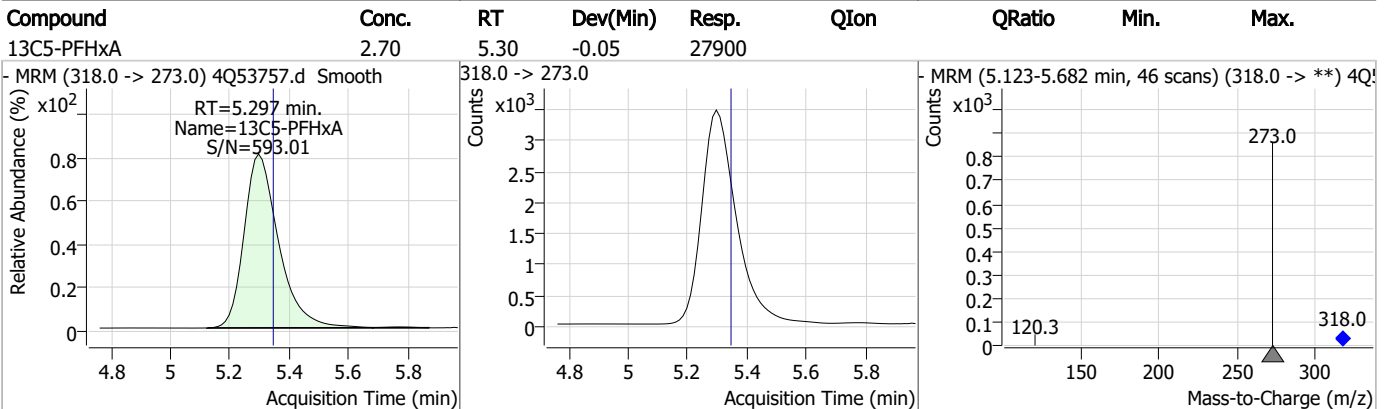
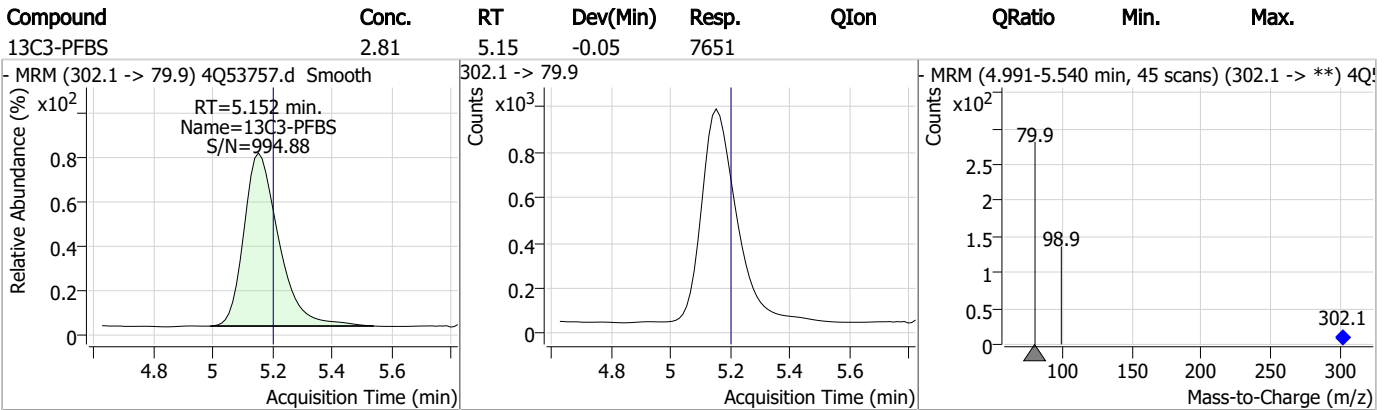
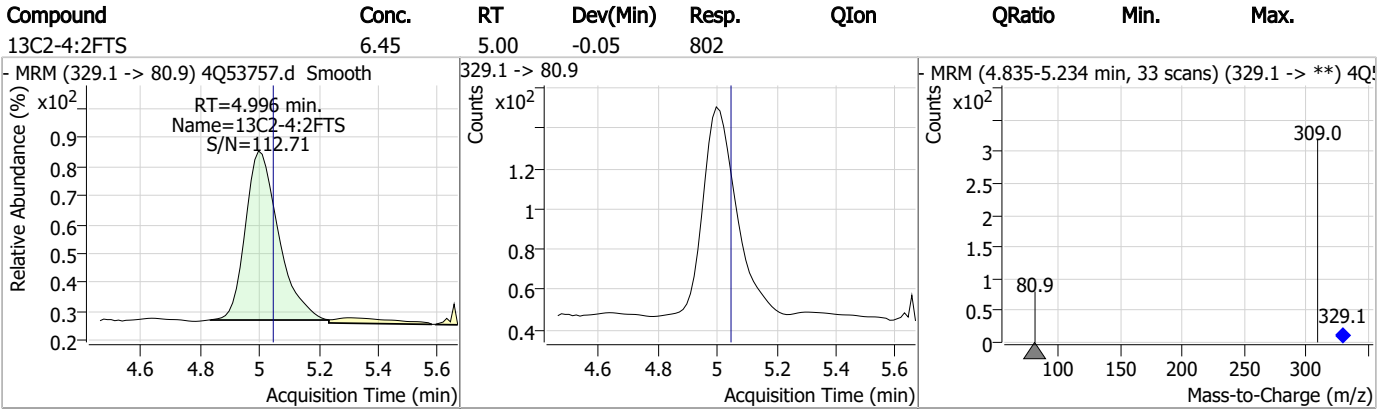
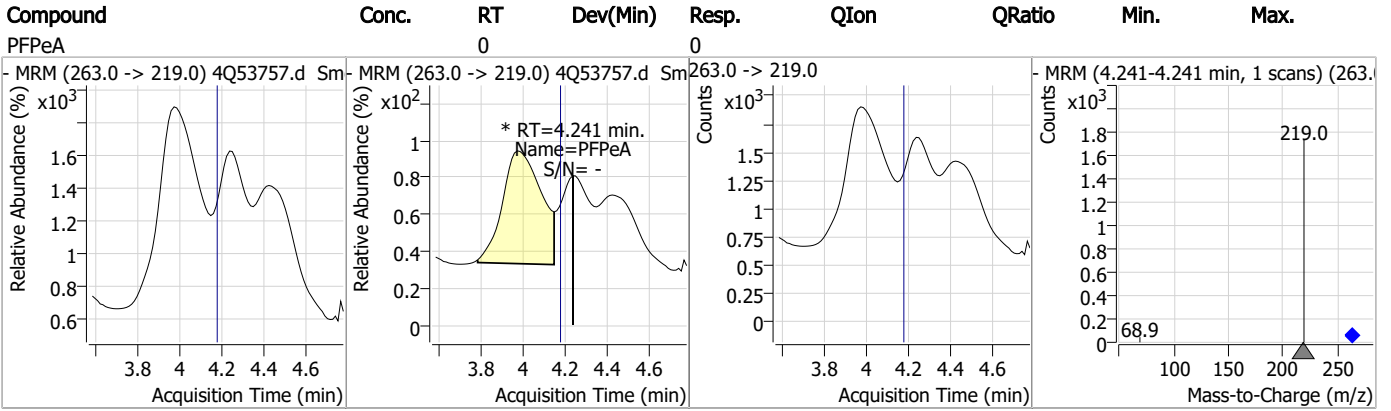
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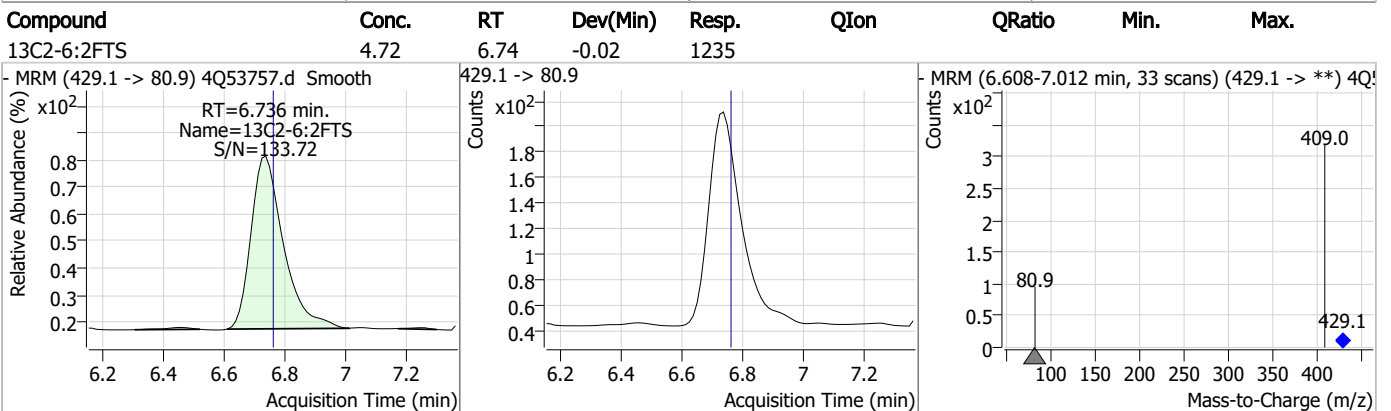
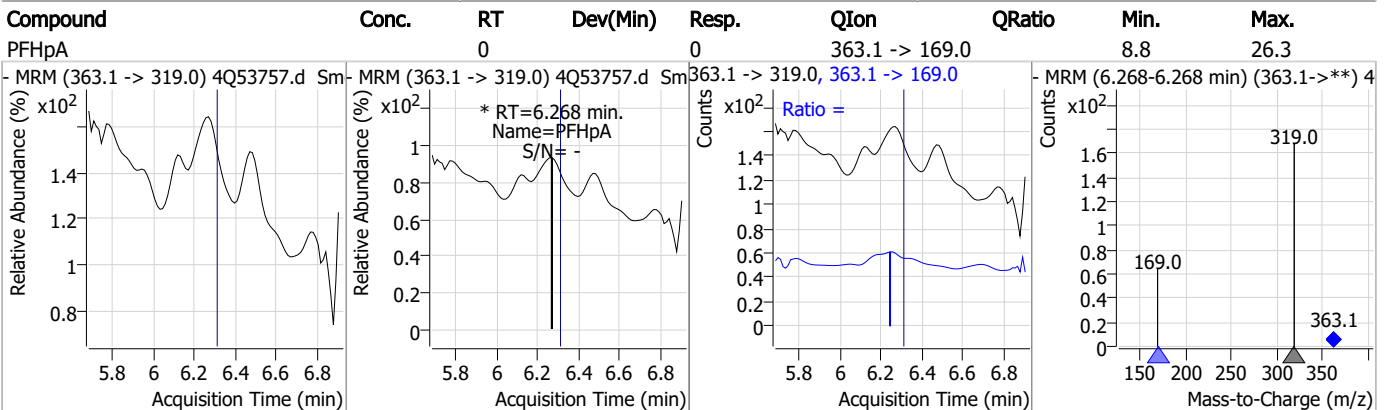
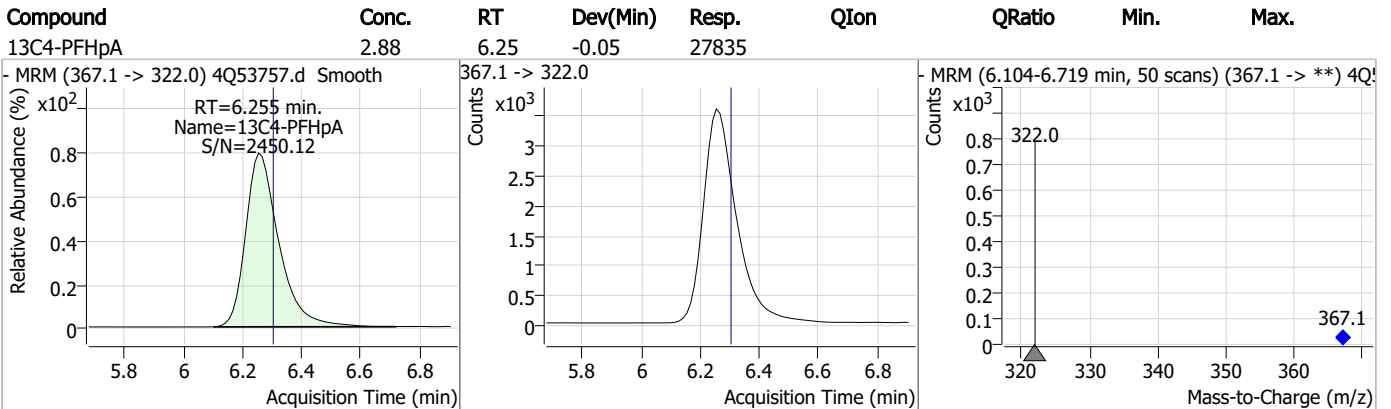
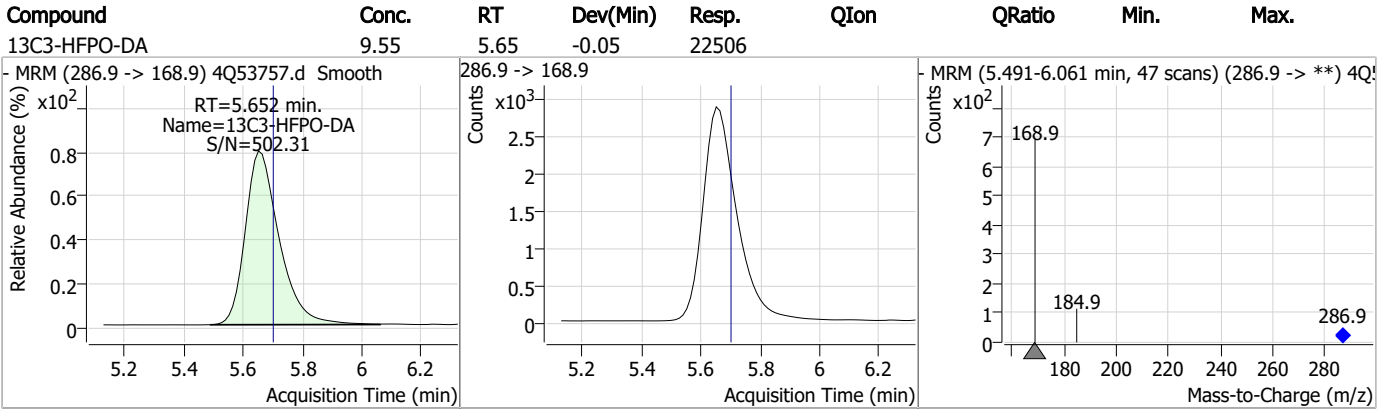
Perfluorinated Compounds by LC/MS/MS



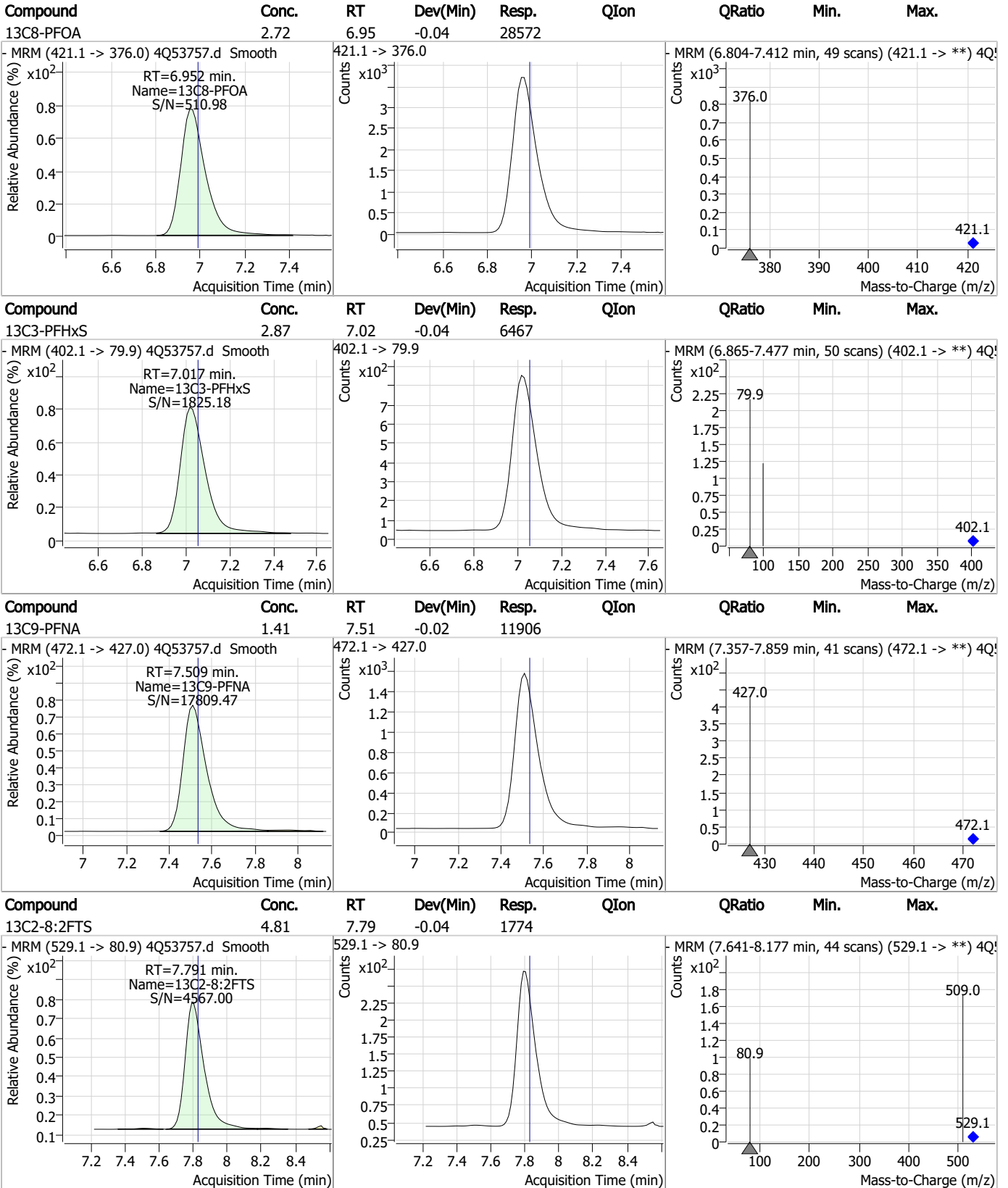
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

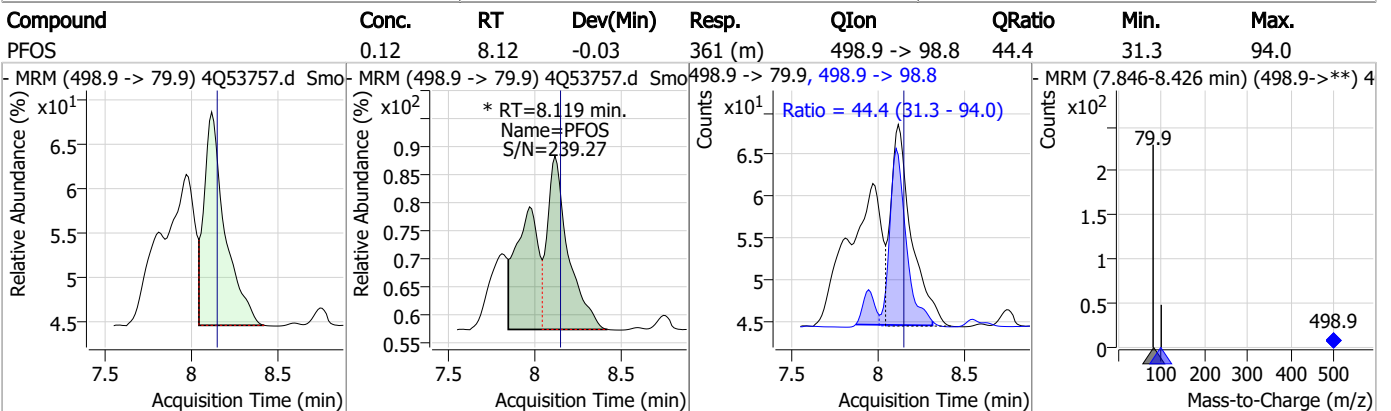
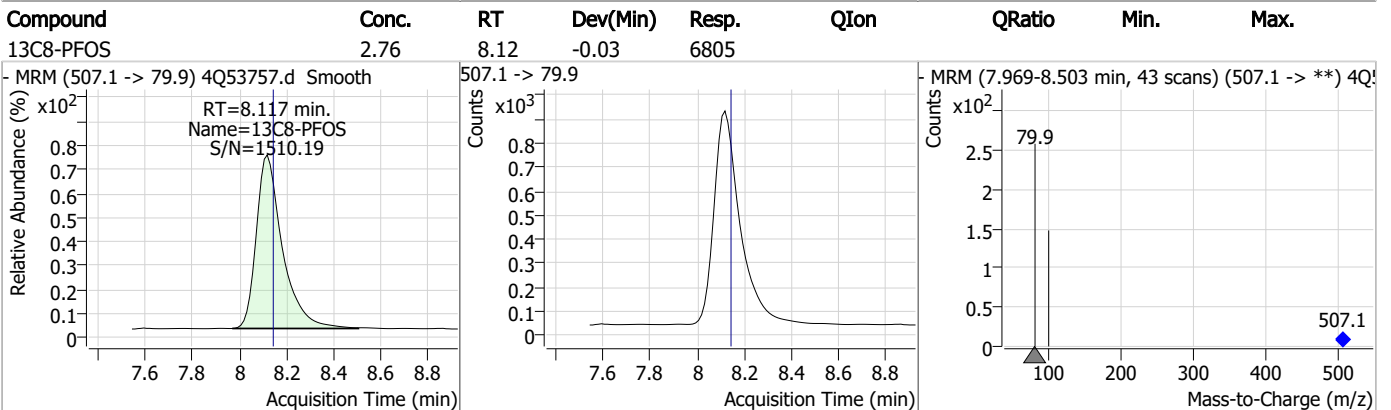
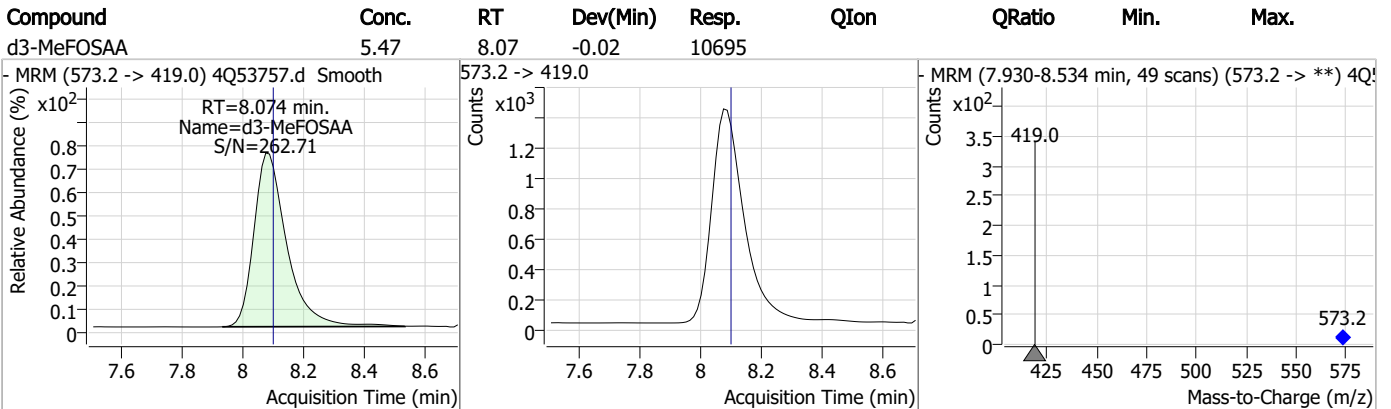
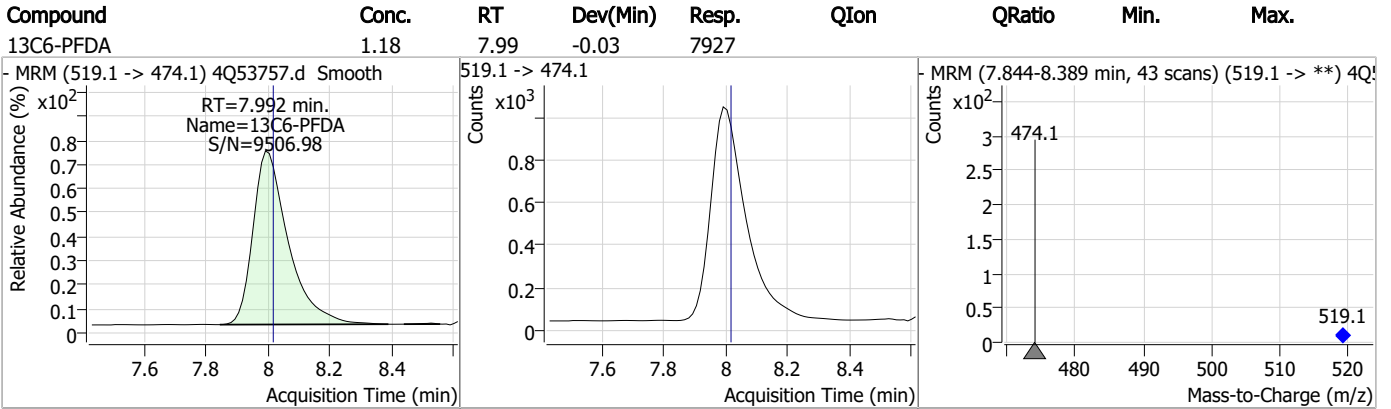


Perfluorinated Compounds by LC/MS/MS

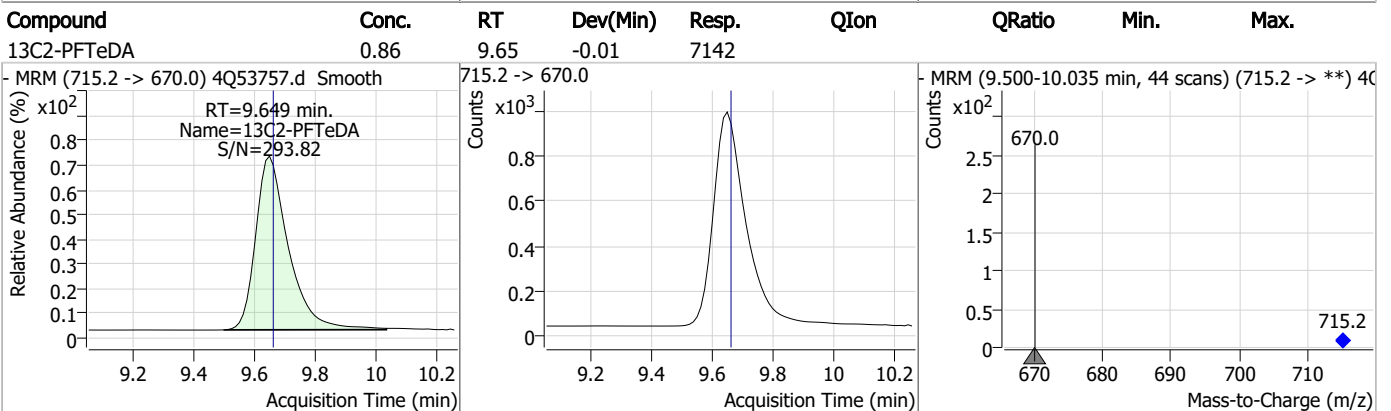
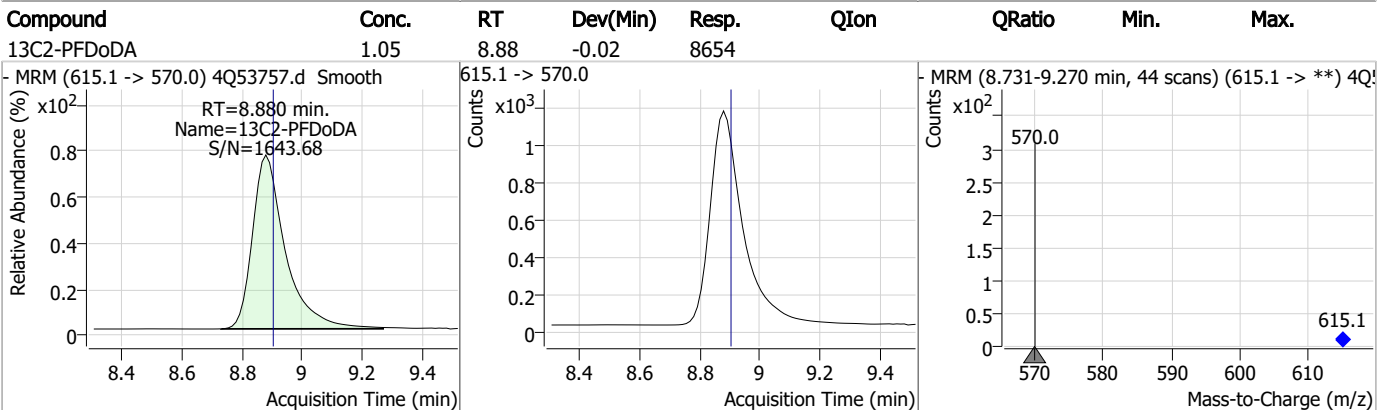
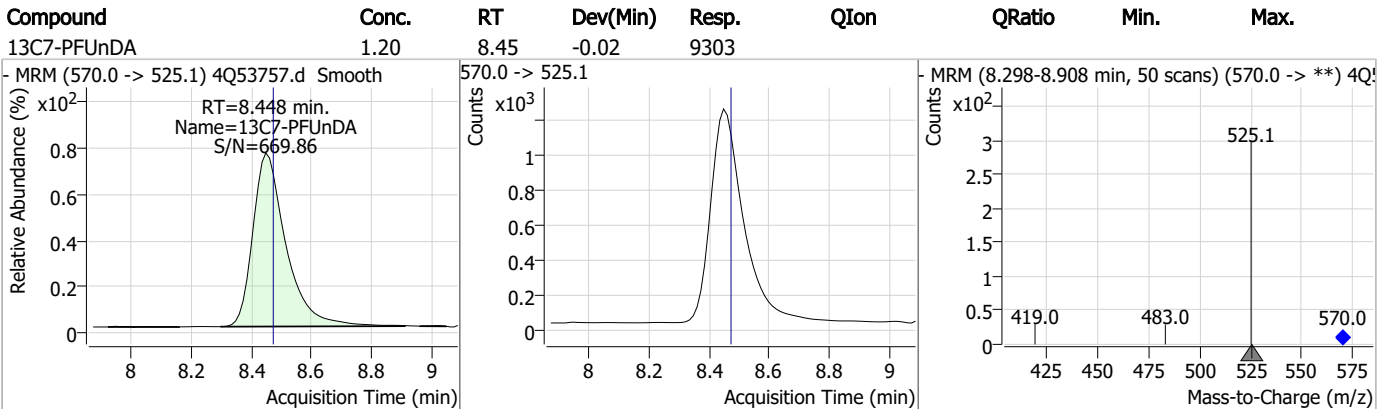
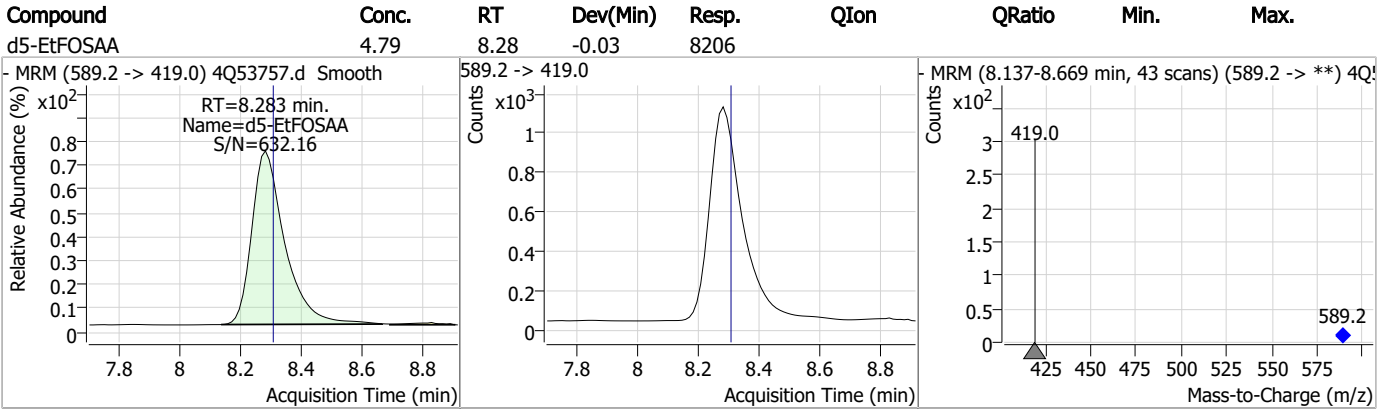


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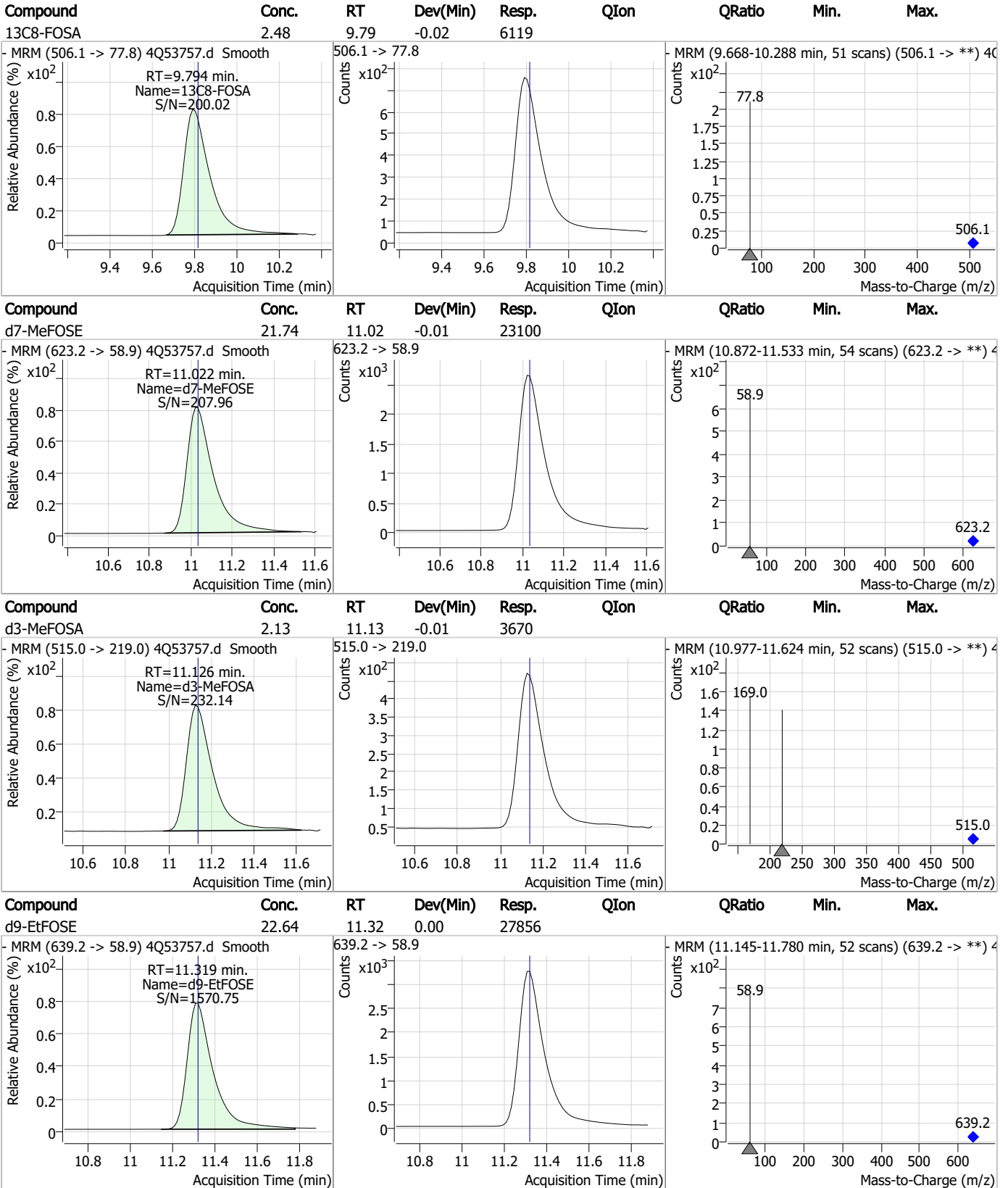
Perfluorinated Compounds by LC/MS/MS



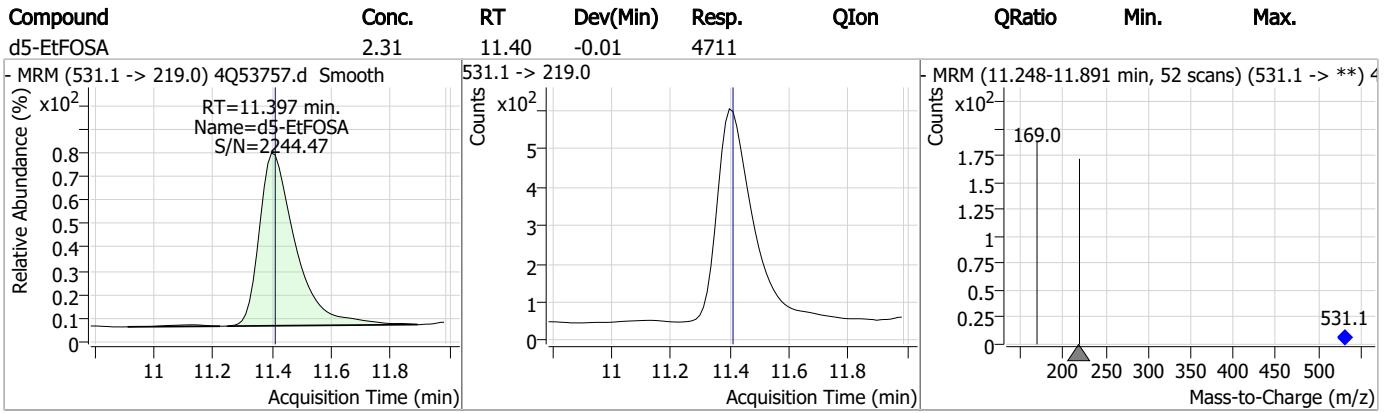
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: FC11062-6 Method: EPA DRAFT 1633
Lab FileID: 4Q53757.D Analyst approved: 11/14/23 13:57 Anna Ludwig
Injection Time: 11/13/23 22:23 Supervisor approved: 11/14/23 15:56 Natasha Guntie

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

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53746.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 7:40:46 PM
 Sample Name : op99997-mb
 Vial : P4-D3
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP99997,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	92865	10.00 µg/L	-0.013
M5-PFPeA	4.137	268.3 -> 223.0	38027	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	28743	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	26719	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	31231	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	13423	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	8396	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	10955	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	10267	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9180	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	4415	2.50 µg/L	-0.025
M3-PFBS	5.165	302.1 -> 79.9	8003	2.50 µg/L	-0.038
M3-PFHxS	7.017	402.1 -> 79.9	6787	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7453	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	650	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1443	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2131	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	11962	5.00 µg/L	-0.012
M3-HFPO-DA	5.664	286.9 -> 168.9	26188	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	9286	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	17685	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	24347	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	4593	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3358	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6017	2.50 µg/L	-0.026
13C3-PFBA	2.691	216.0 -> 172.0	40713	5.00 µg/L	-0.013
18O2-PFHxS	7.016	403.0 -> 83.9	4139	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	31383	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	8888	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	11954	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	28967	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	650	4.59 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.8%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1443	4.84 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.7%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2131	5.07 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C2-PFDoDA	8.880	615.1 -> 570.0	10267	1.28 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.4%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9180	1.14 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.0%		
13C3-PFBS	5.165	302.1 -> 79.9	8003	2.58 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C3-PFHxS	7.017	402.1 -> 79.9	6787	2.65 µg/L	-0.037

7.2.1
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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	2.686	216.8 -> 171.9	92865	10.95 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 109.5%	
13C4-PFHpA	6.267	367.1 -> 322.0	26719	2.64 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.8%	
13C5-PFHxA	5.310	318.0 -> 273.0	28743	2.66 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.4%	
13C5-PFPeA	4.137	268.3 -> 223.0	38027	5.38 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.6%	
13C6-PFDA	7.992	519.1 -> 474.1	8396	1.28 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C7-PFUnDA	8.448	570.0 -> 525.1	10955	1.45 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 115.9%	
13C8-FOSA	9.794	506.1 -> 77.8	4415	1.53 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 61.4%	
13C8-PFOA	6.964	421.1 -> 376.0	31231	2.79 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.5%	
13C8-PFOS	8.117	507.1 -> 79.9	7453	2.59 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C9-PFNA	7.509	472.1 -> 427.0	13423	1.42 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 113.9%	
d3-MeFOSAA	8.086	573.2 -> 419.0	11962	5.24 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.8%	
13C3-HFPO-DA	5.664	286.9 -> 168.9	26188	10.62 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 106.2%	
d3-MeFOSA	11.126	515.0 -> 219.0	3358	1.67 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 66.9%	
d5-EtFOSAA	8.283	589.2 -> 419.0	9286	4.65 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.9%	
d7-MeFOSE	11.034	623.2 -> 58.9	17685	14.27 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 57.1%	
d9-EtFOSE	11.319	639.2 -> 58.9	24347	16.96 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 67.8%	
d5-EtFOSA	11.397	531.1 -> 219.0	4593	1.93 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 77.1%	

Target Compounds

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
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



7.2.1
7

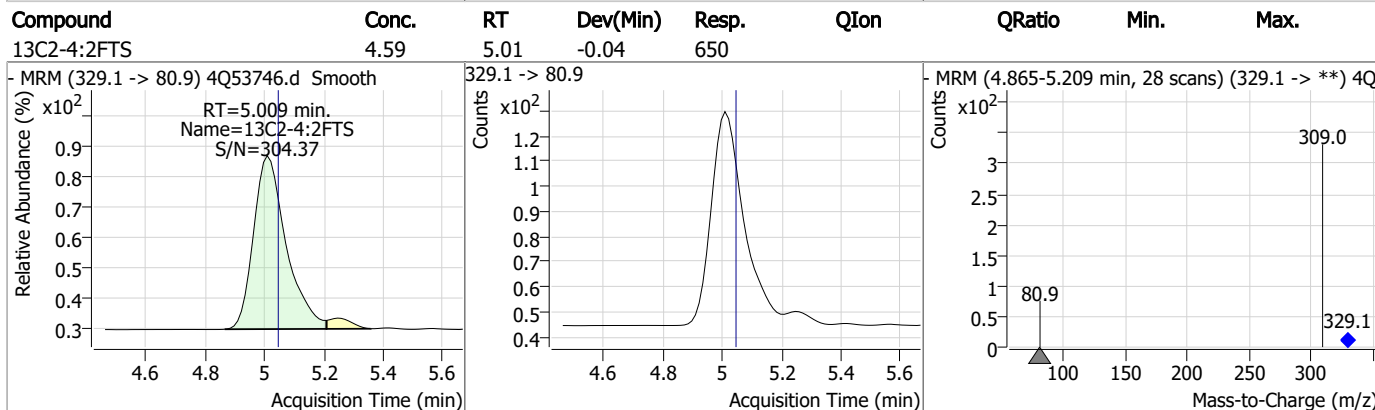
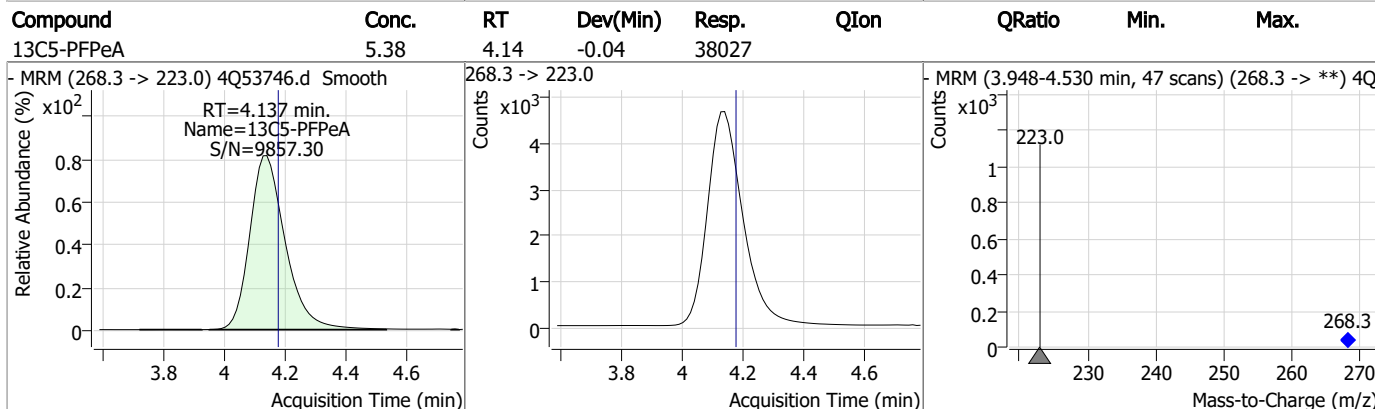
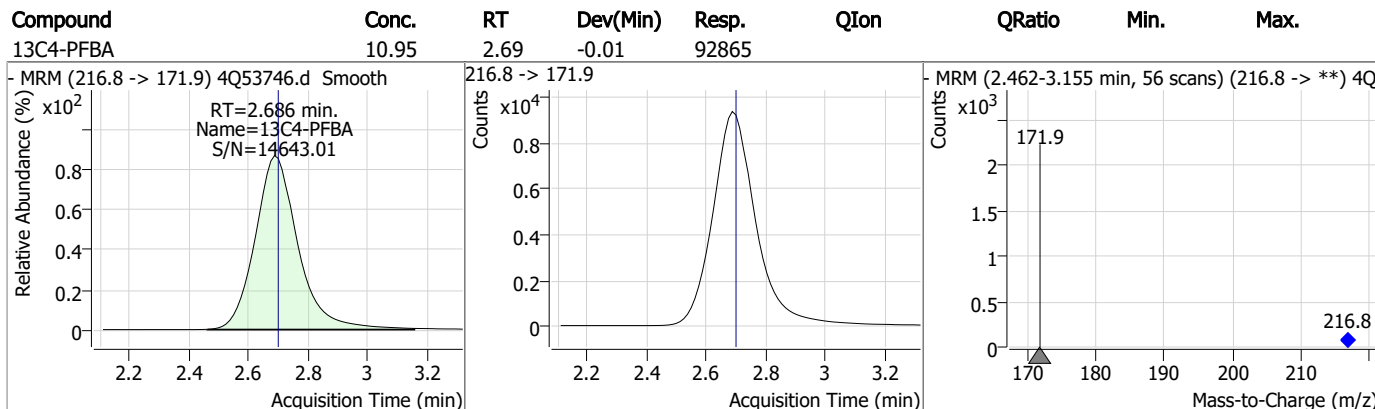
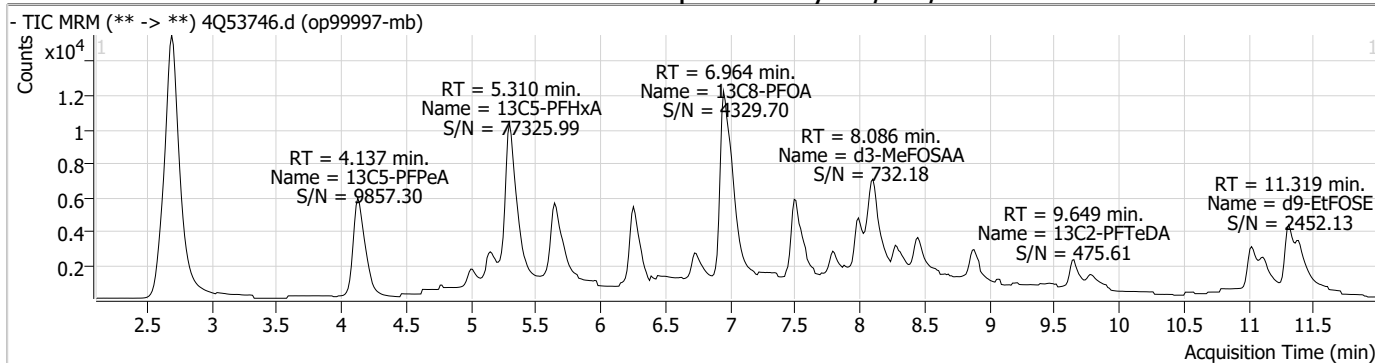
Perfluorinated Compounds by LC/MS/MS

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

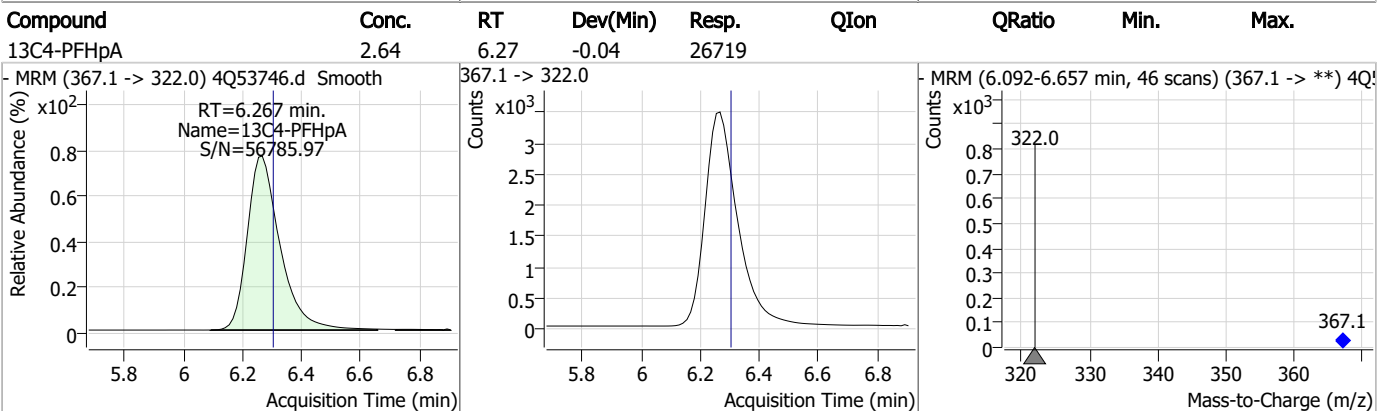
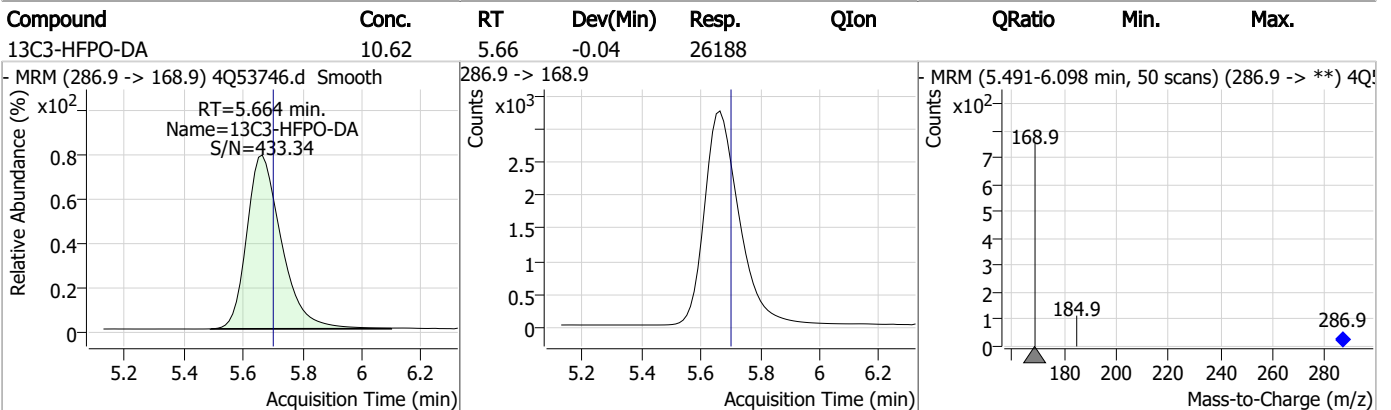
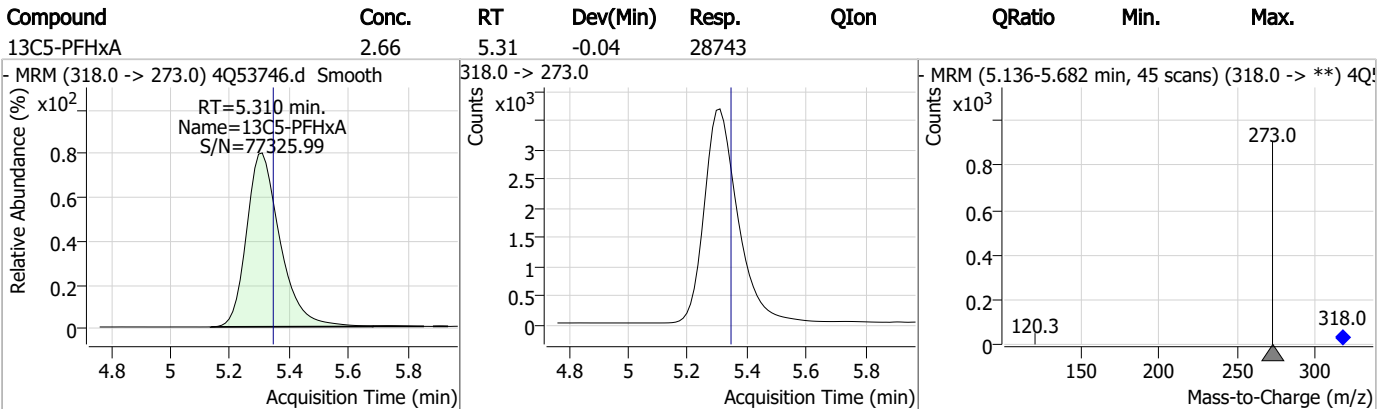
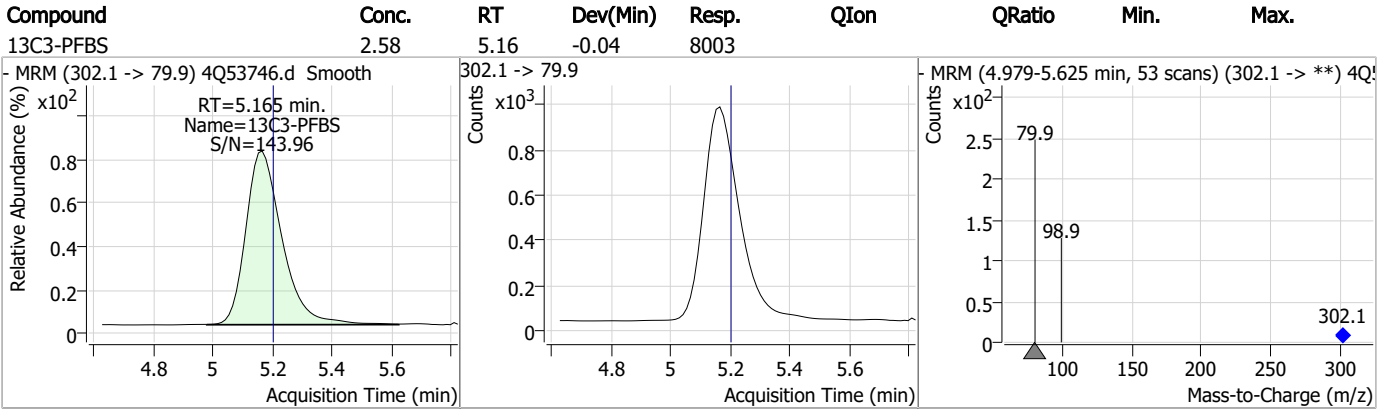
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Perfluorinated Compounds by LC/MS/MS

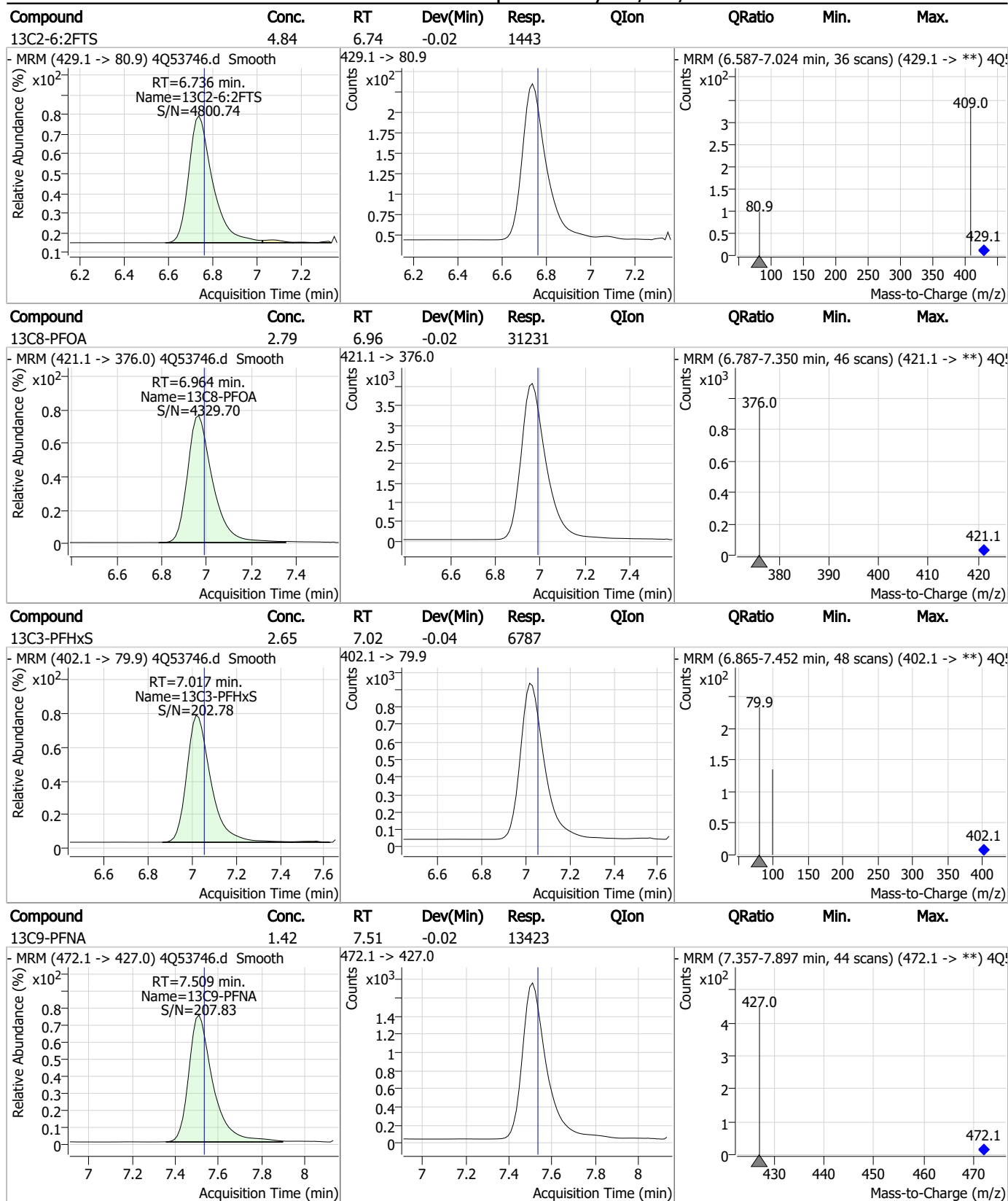


7.2.1
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Perfluorinated Compounds by LC/MS/MS

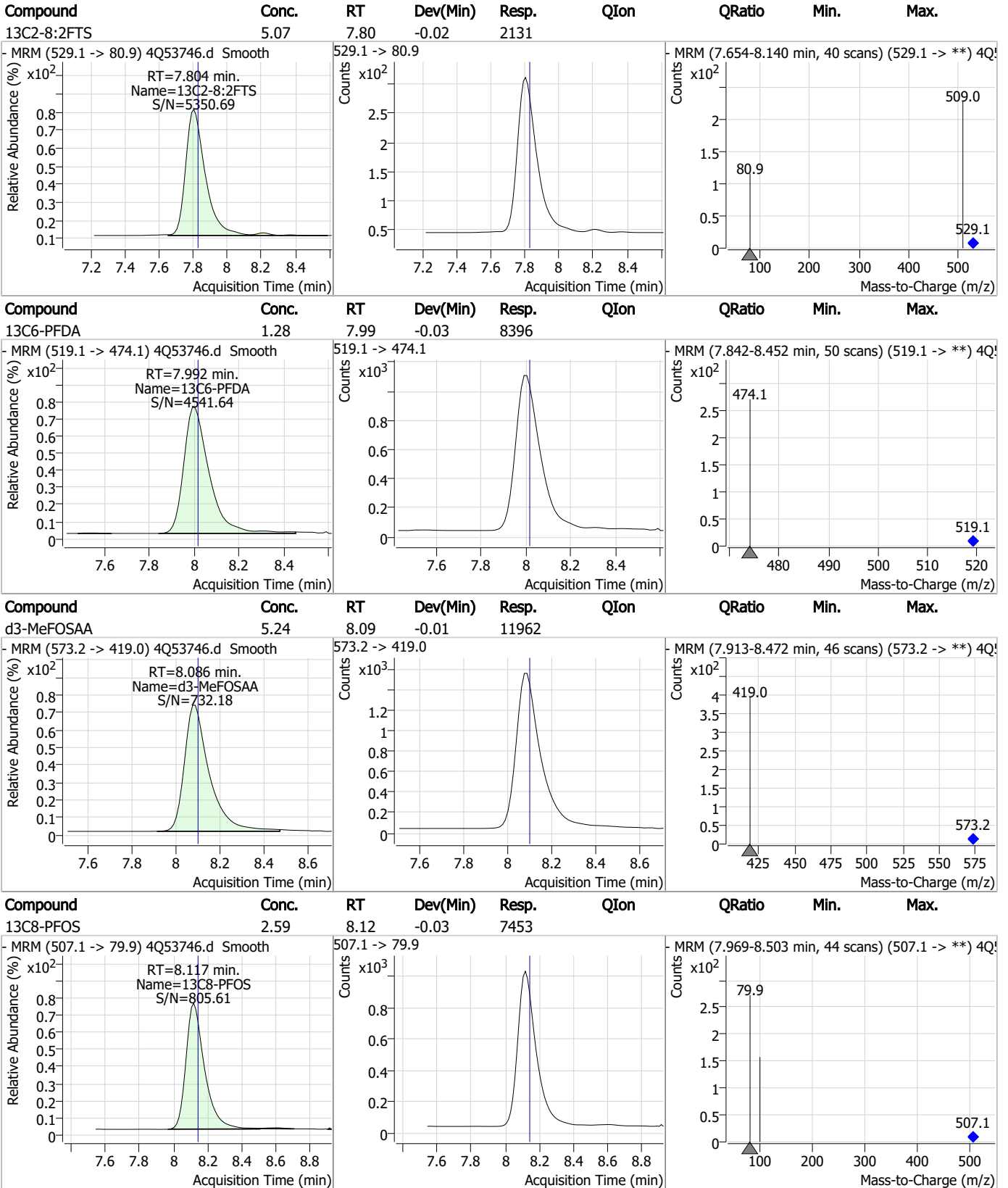


Perfluorinated Compounds by LC/MS/MS



7.2.1
7

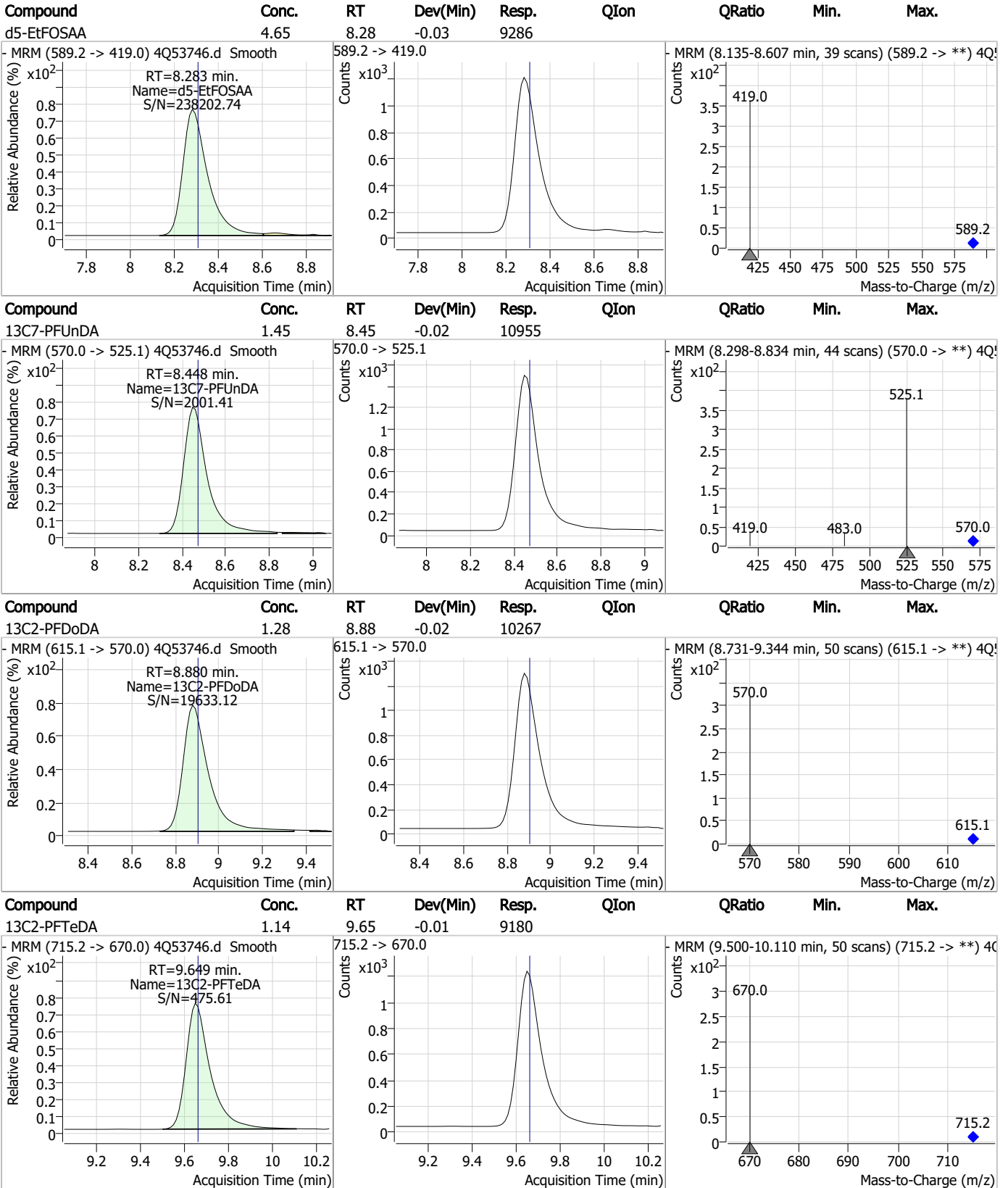
Perfluorinated Compounds by LC/MS/MS



7.2.1

7

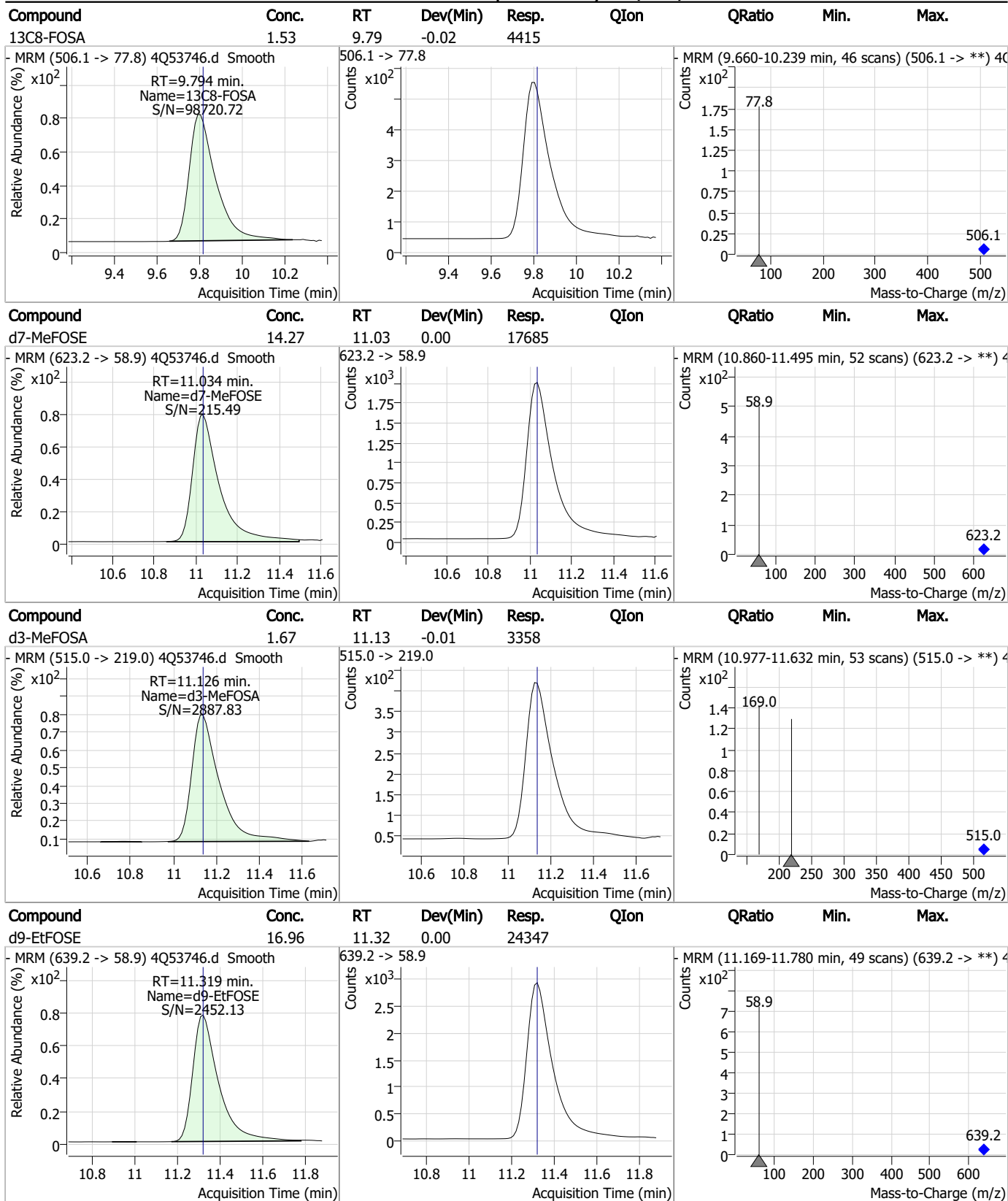
Perfluorinated Compounds by LC/MS/MS



7.2.1

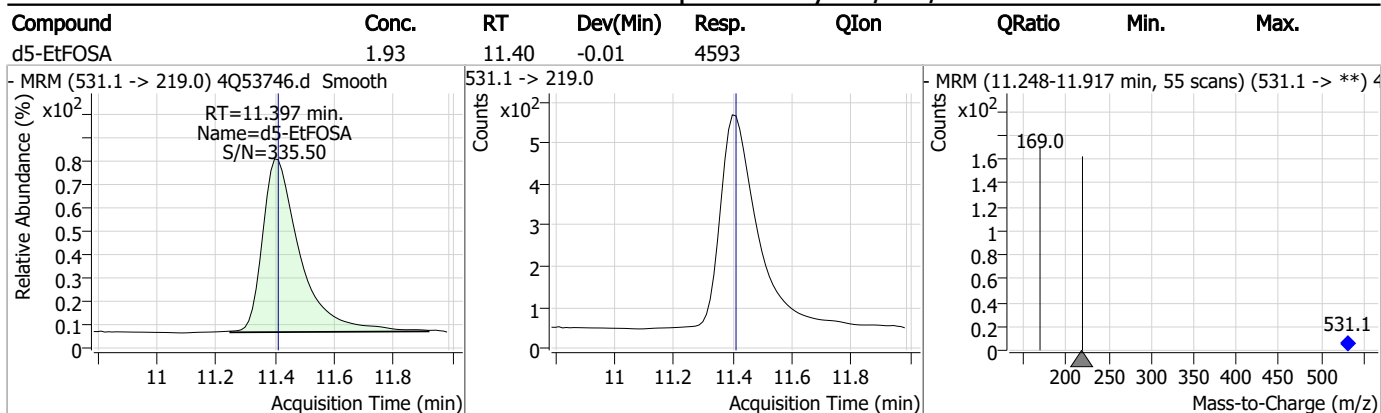
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Perfluorinated Compounds by LC/MS/MS



7.2.1
7

Perfluorinated Compounds by LC/MS/MS



7.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53739.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 5:57:35 PM
 Sample Name : iblk
 Vial : P1-A1
 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	82560	10.00 µg/L	-0.087
M5-PFPeA	4.112	268.3 -> 223.0	34969	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	25830	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	25328	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	29354	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	11559	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	8589	1.25 µg/L	-0.013
M7-PFUnDA	8.461	570.0 -> 525.1	10284	1.25 µg/L	-0.012
M2-PFDoDA	8.880	615.1 -> 570.0	10392	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9981	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	6774	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	7934	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6483	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7176	2.50 µg/L	-0.026
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	1584	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2241	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	11401	5.00 µg/L	-0.012
M3-HFPO-DA	5.652	286.9 -> 168.9	24845	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	9603	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	29083	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	34296	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	5576	2.50 µg/L	0.000
M3-MeFOSA	11.126	515.0 -> 219.0	4675	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5793	2.50 µg/L	-0.026
13C3-PFBA	2.616	216.0 -> 172.0	39178	5.00 µg/L	-0.087
18O2-PFHxS	7.016	403.0 -> 83.9	3914	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	32353	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	9124	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	12715	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	28453	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	857	6.40 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 128.0%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1584	5.61 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.2%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2241	5.63 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.6%		
13C2-PFDoDA	8.880	615.1 -> 570.0	10392	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	9981	1.20 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.4%		
13C3-PFBS	5.152	302.1 -> 79.9	7934	2.70 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.1%		
13C3-PFHxS	7.017	402.1 -> 79.9	6483	2.67 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 = 106.9%	
13C4-PFBA	2.612	216.8 -> 171.9	82560	10.11 µg/L	-0.087
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C4-PFHpA	6.267	367.1 -> 322.0	25328	2.55 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C5-PFHxA	5.297	318.0 -> 273.0	25830	2.43 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.4%	
13C5-PFPeA	4.112	268.3 -> 223.0	34969	5.04 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C6-PFDA	8.004	519.1 -> 474.1	8589	1.28 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C7-PFUnDA	8.461	570.0 -> 525.1	10284	1.33 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.0%	
13C8-FOSA	9.794	506.1 -> 77.8	6774	2.45 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C8-PFOA	6.964	421.1 -> 376.0	29354	2.54 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C8-PFOS	8.117	507.1 -> 79.9	7176	2.59 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C9-PFNA	7.509	472.1 -> 427.0	11559	1.15 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.2%	
d3-MeFOSAA	8.086	573.2 -> 419.0	11401	5.19 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C3-HFPO-DA	5.652	286.9 -> 168.9	24845	10.26 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.6%	
d3-MeFOSA	11.126	515.0 -> 219.0	4675	2.42 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.8%	
d5-EtFOSAA	8.283	589.2 -> 419.0	9603	4.99 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
d7-MeFOSE	11.034	623.2 -> 58.9	29083	24.37 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.5%	
d9-EtFOSE	11.319	639.2 -> 58.9	34296	24.81 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
d5-EtFOSA	11.410	531.1 -> 219.0	5576	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.3%	

7.22
7

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	-	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	-	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	11.449	526.0 -> 219.0	735	0.29 µg/L	m	77
		526.0 -> 169.0	831			
EtFOSE	11.345	630.0 -> 58.9	889	0.69 µg/L		100
		511.9 -> 219.0	250	0.15 µg/L	m	49
MeFOSA	11.154	511.9 -> 169.0	482			
		616.1 -> 58.9	505	0.38 µg/L	m	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



7.2.2
7

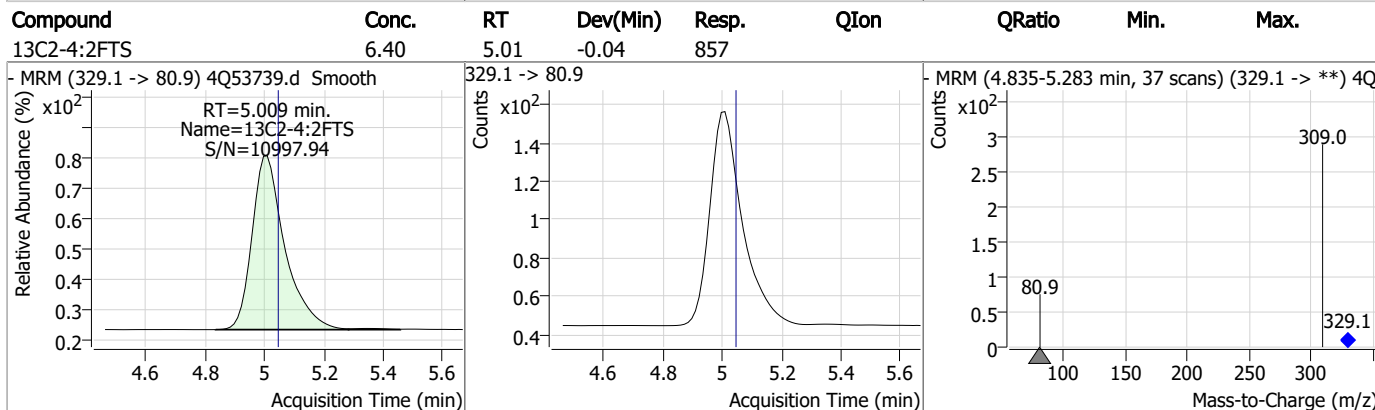
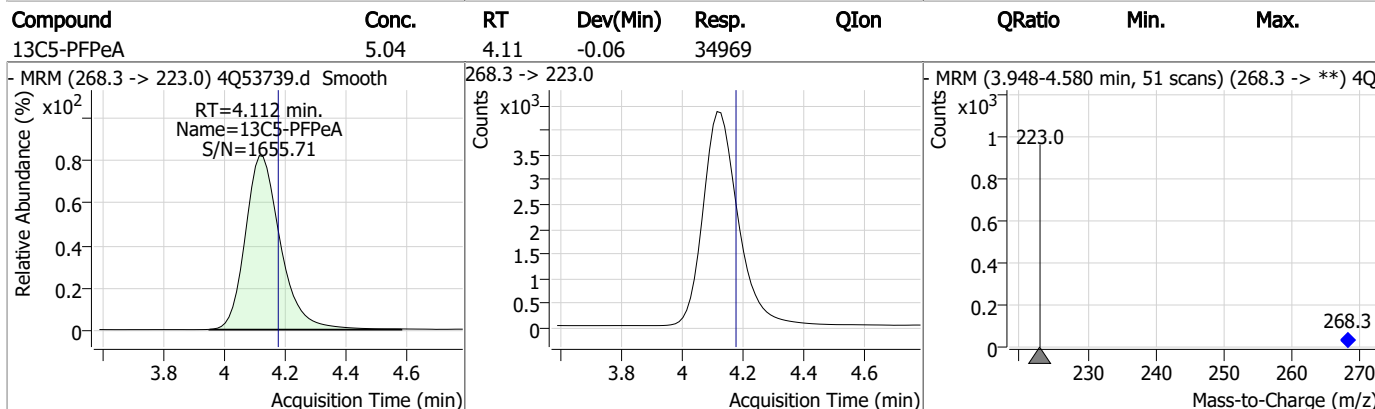
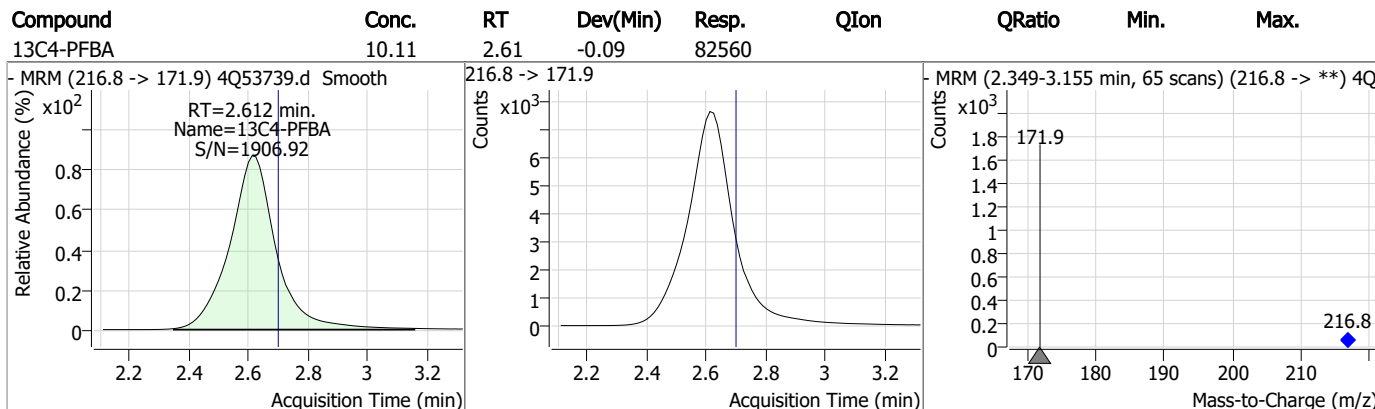
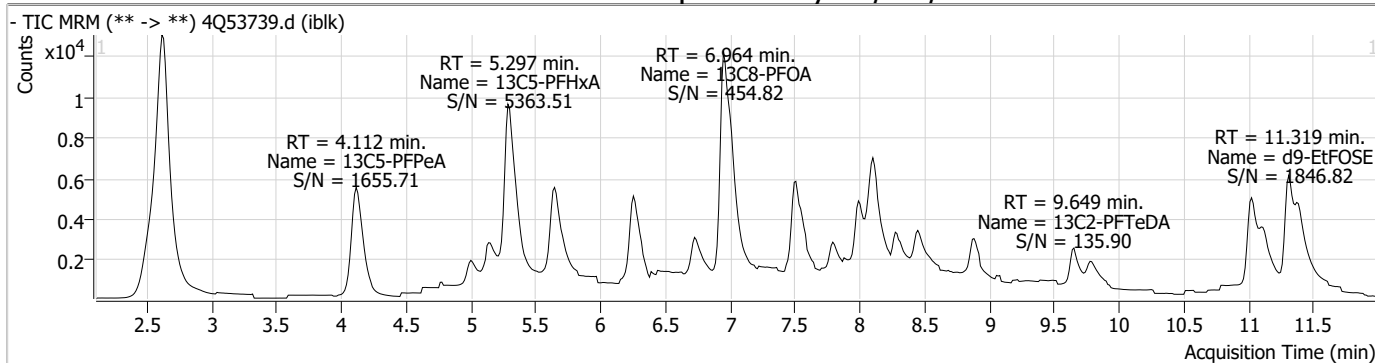
Perfluorinated Compounds by LC/MS/MS

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

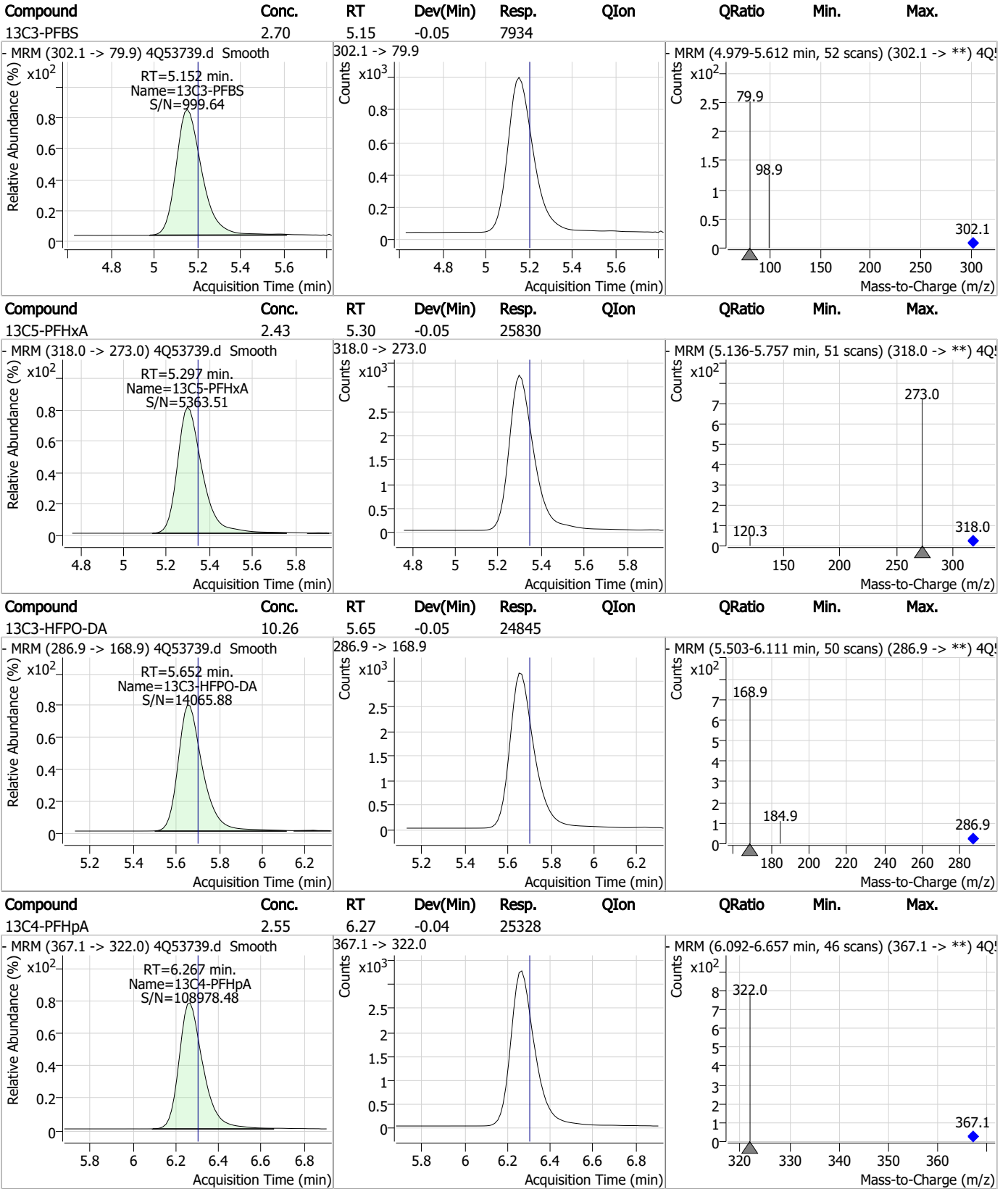
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Perfluorinated Compounds by LC/MS/MS



7.2.2
7

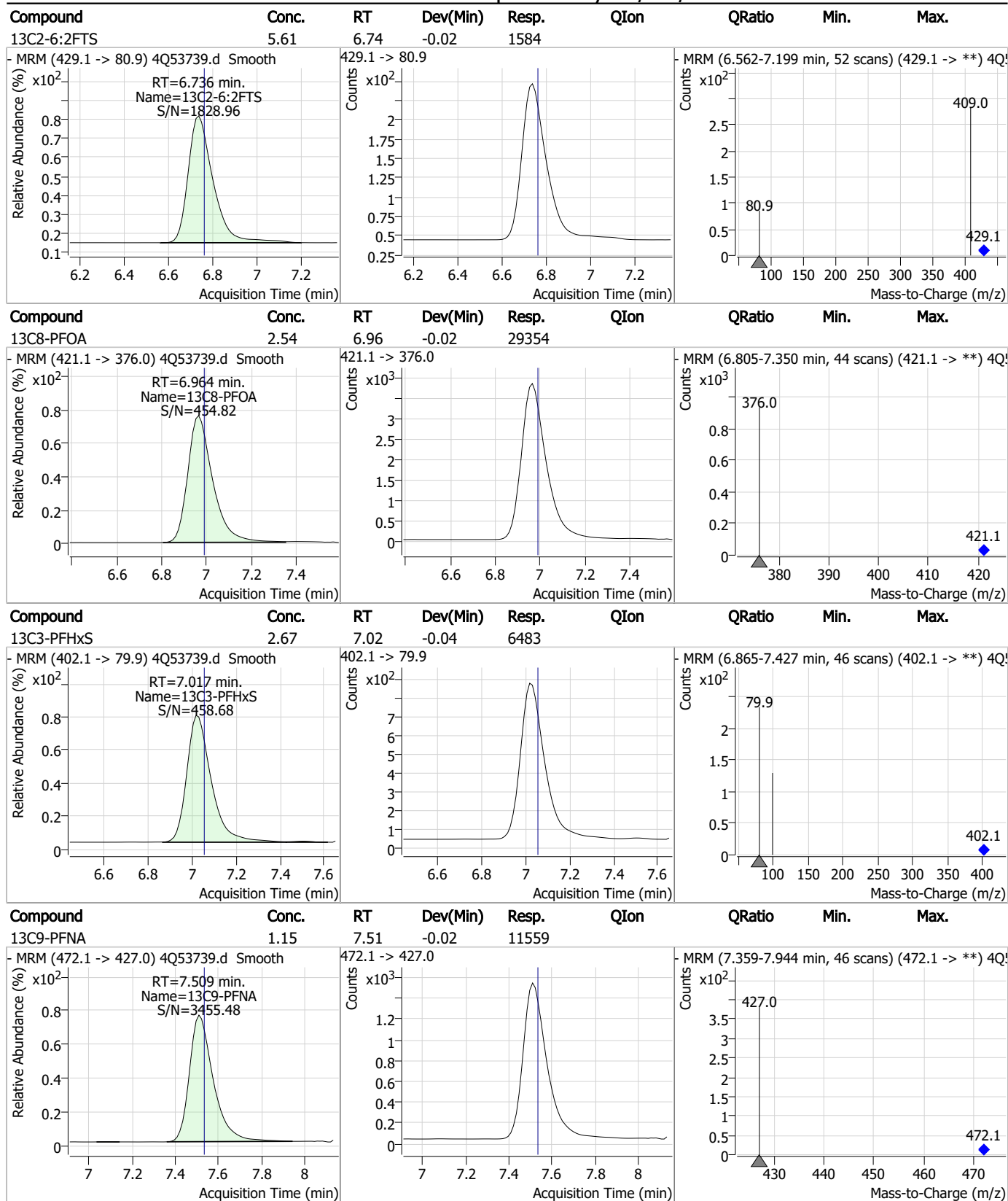
Perfluorinated Compounds by LC/MS/MS



7.2.2

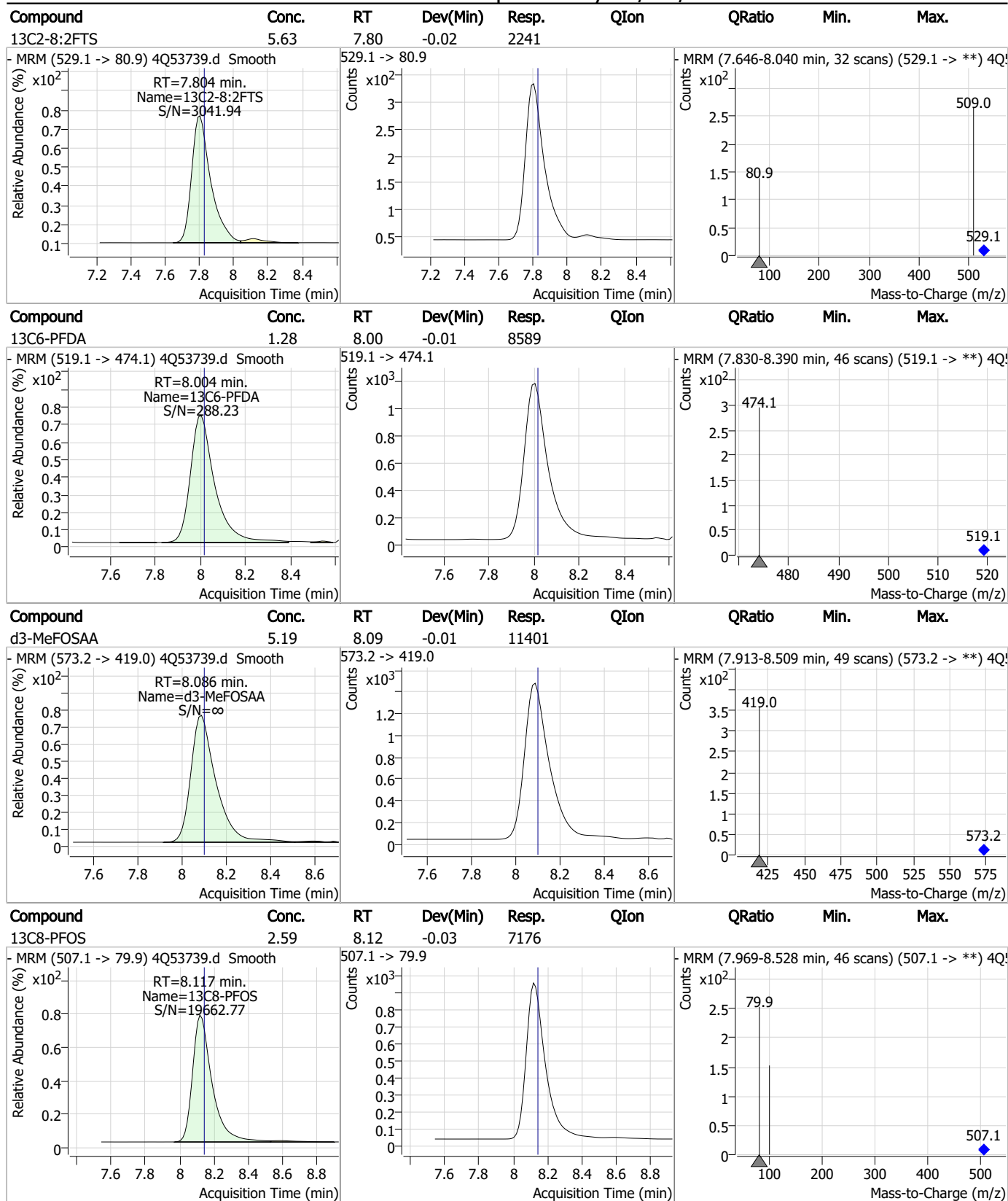
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Perfluorinated Compounds by LC/MS/MS



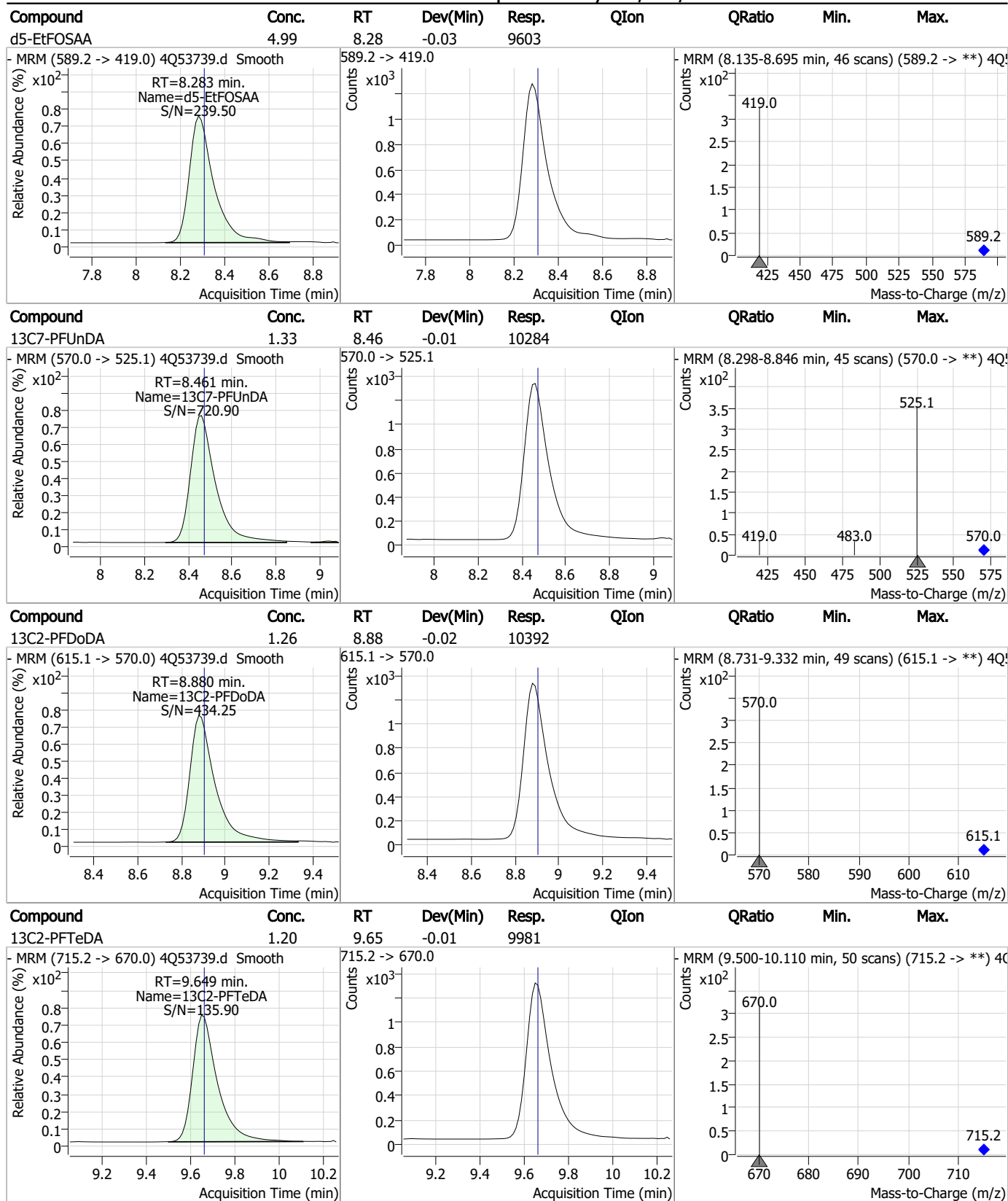
7.2.2
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Perfluorinated Compounds by LC/MS/MS



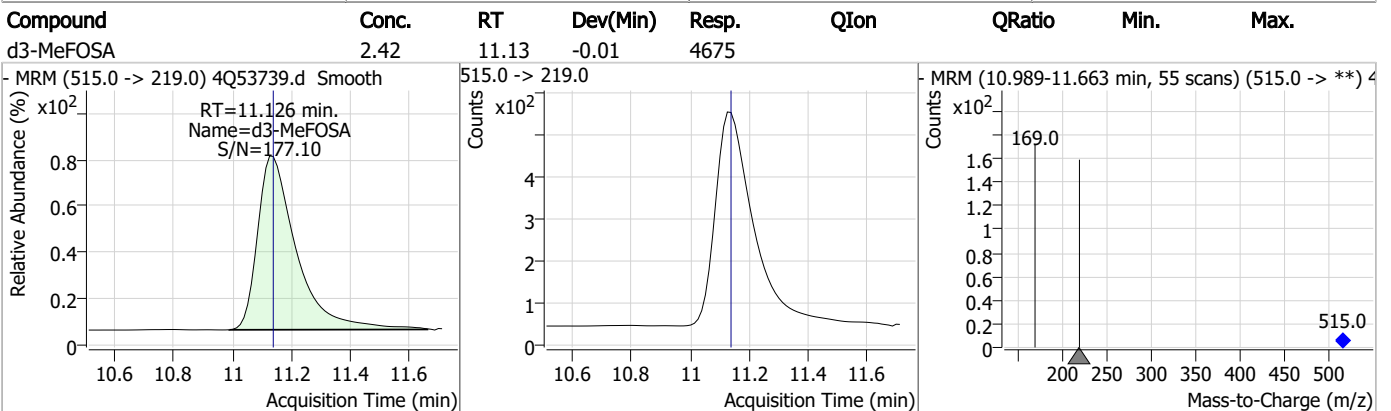
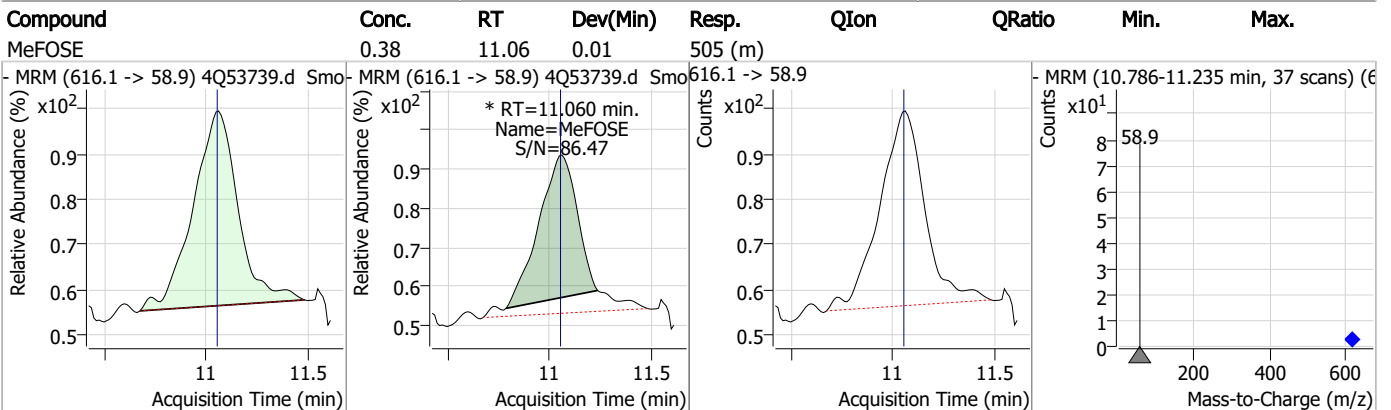
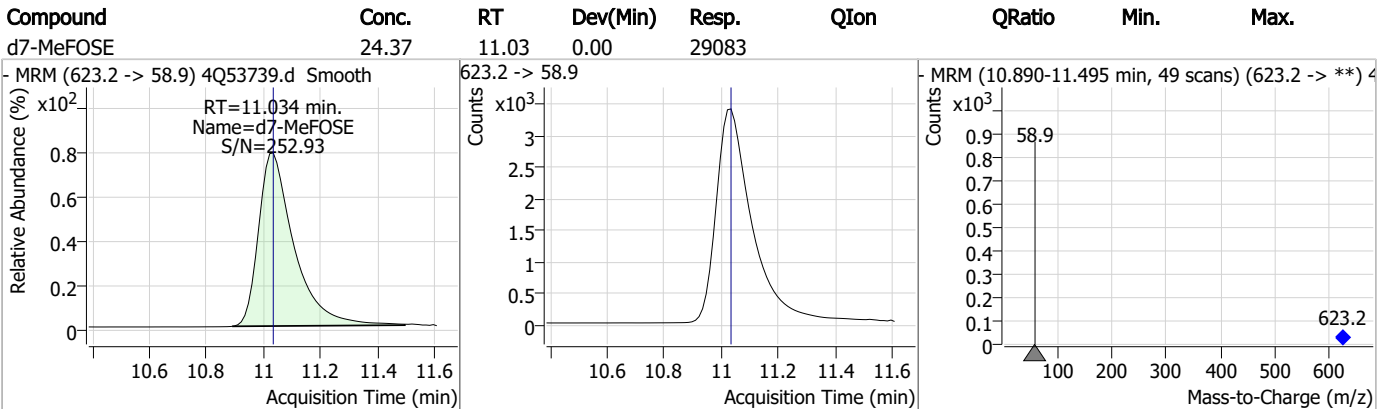
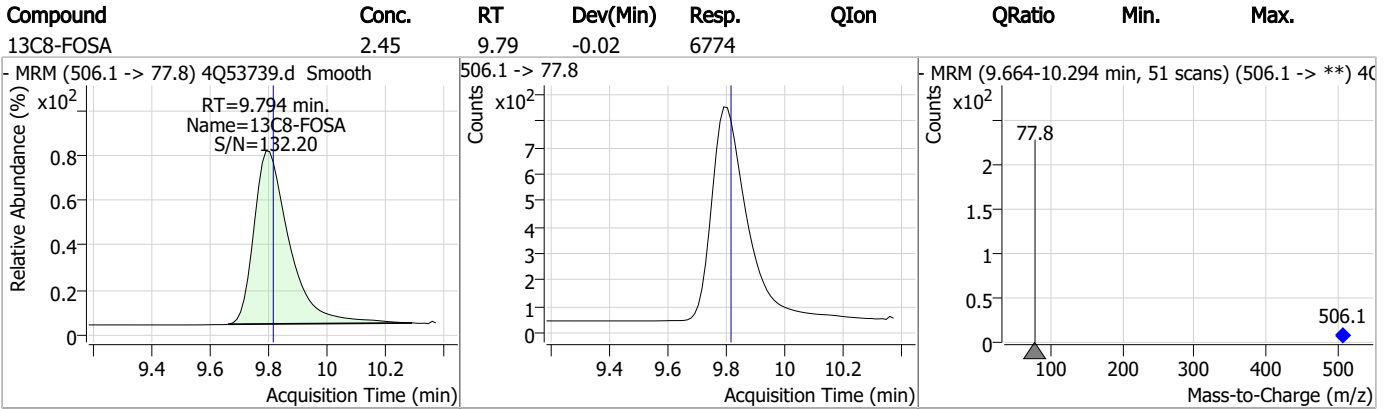
7.2.2
7

Perfluorinated Compounds by LC/MS/MS

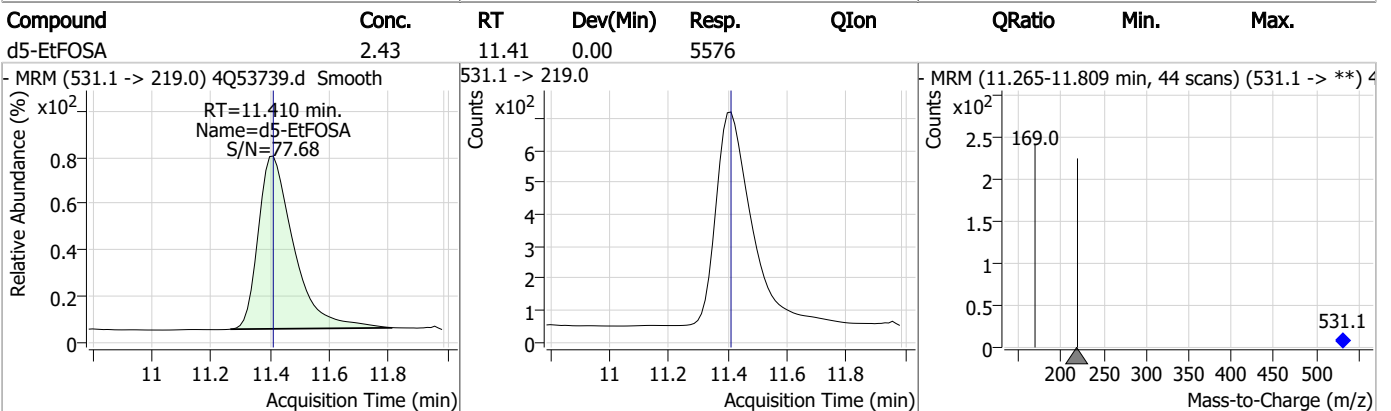
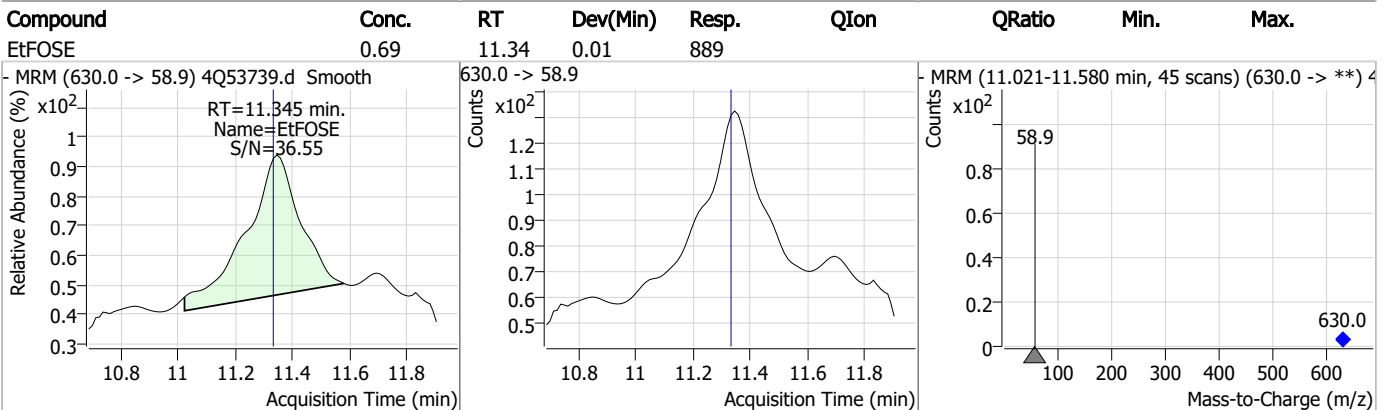
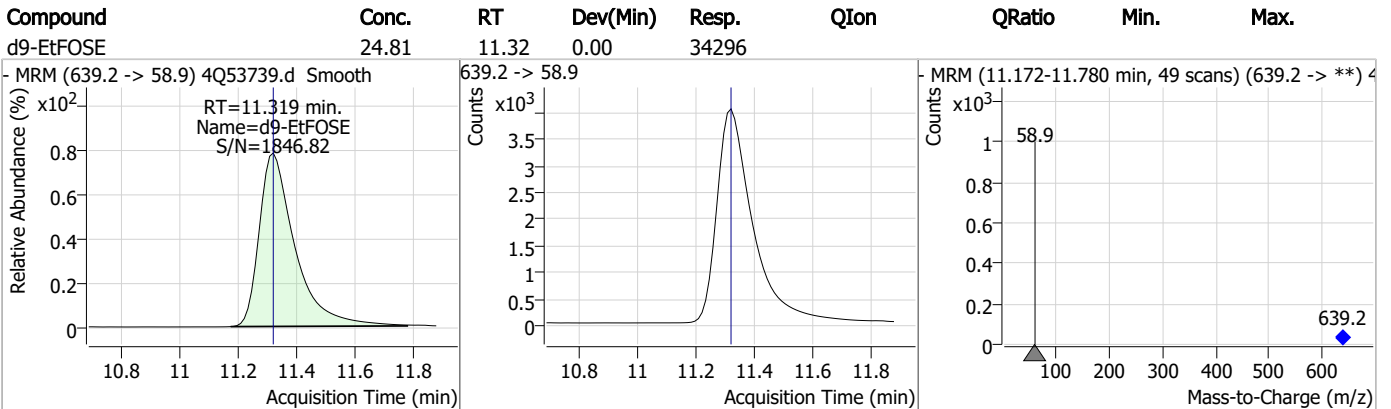
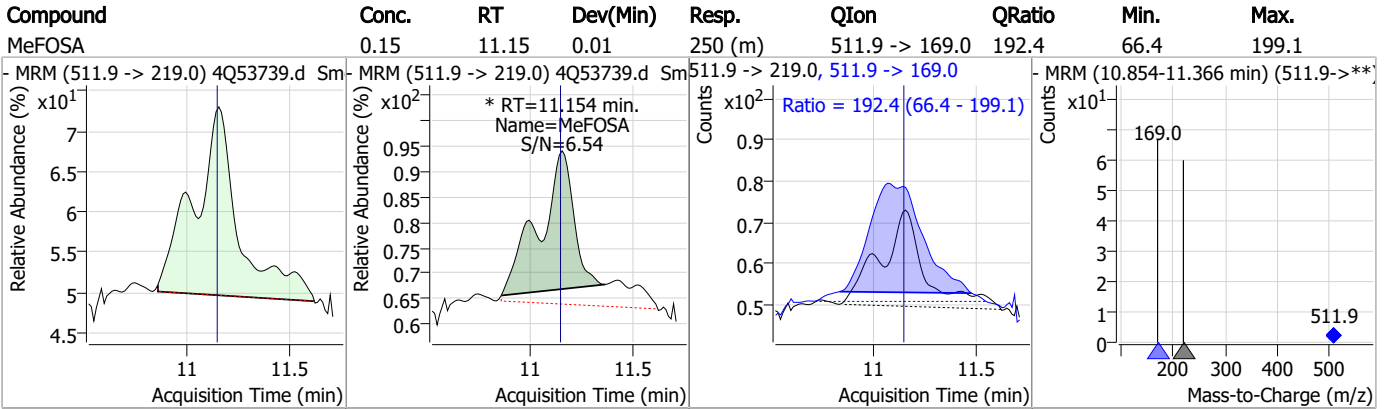


7.2.2
7

Perfluorinated Compounds by LC/MS/MS



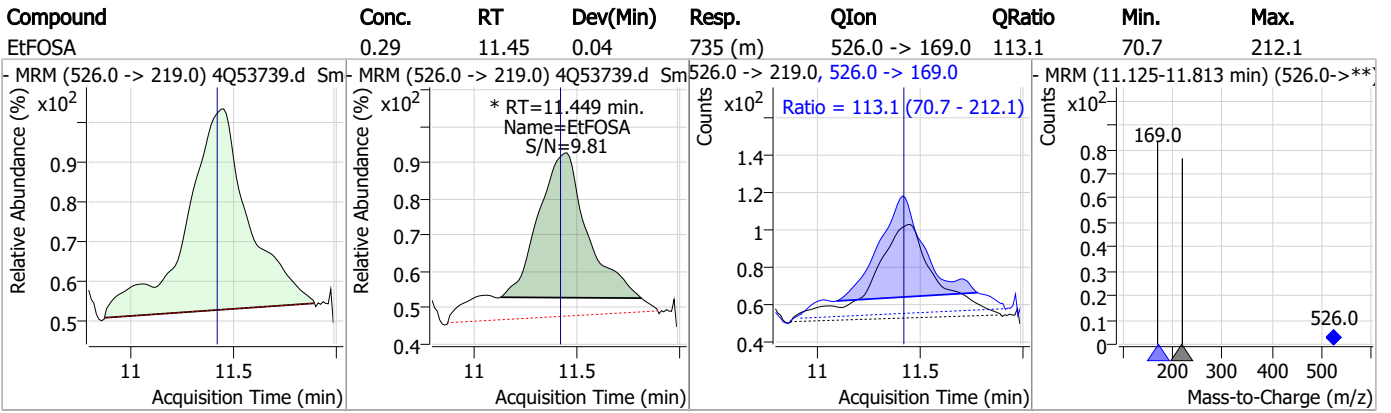
Perfluorinated Compounds by LC/MS/MS



7.2.2

7

Perfluorinated Compounds by LC/MS/MS



7.2.2
7

Manual Integration Approval Summary

Sample Number: S4Q785-IBLK Method: EPA DRAFT 1633
Lab FileID: 4Q53739.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 17:57 Supervisor approved: 11/14/23 15:48 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
MeFOSE	24448-09-7		11.06	Split peak
MeFOSA	31506-32-8		11.15	Split peak
EtFOSA	4151-50-2		11.45	Split peak

7.2.2.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53755.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 9:53:30 PM
 Sample Name : iccb
 Vial : P1-A1
 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	83390	10.00 µg/L	-0.087
M5-PFPeA	4.112	268.3 -> 223.0	35647	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	26941	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	25376	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	30617	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	12742	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	8419	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	10282	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	9746	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9925	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	6830	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	7743	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6609	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7161	2.50 µg/L	-0.026
M2-4:2FTS	4.996	329.1 -> 80.9	628	5.00 µg/L	-0.050
M2-6:2FTS	6.736	429.1 -> 80.9	1368	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1807	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	11658	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	24431	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	9579	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	29556	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	33598	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	6088	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4363	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5693	2.50 µg/L	-0.026
13C3-PFBA	2.616	216.0 -> 172.0	39995	5.00 µg/L	-0.087
18O2-PFHxS	7.016	403.0 -> 83.9	4212	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	32126	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	9202	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	12608	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	29243	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	628	4.35 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 87.1%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1368	4.50 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 90.1%		
13C2-8:2FTS	7.804	529.1 -> 80.9	1807	4.22 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 84.4%		
13C2-PFDoDA	8.880	615.1 -> 570.0	9746	1.17 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.9%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9925	1.19 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.0%		
13C3-PFBS	5.152	302.1 -> 79.9	7743	2.45 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C3-PFHxS	7.017	402.1 -> 79.9	6609	2.53 µg/L	-0.037

7.2.3
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 = 101.3%	
13C4-PFBA	2.612	216.8 -> 171.9	83390	10.01 µg/L	-0.087
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C4-PFHpA	6.267	367.1 -> 322.0	25376	2.49 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C5-PFHxA	5.297	318.0 -> 273.0	26941	2.47 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C5-PFPeA	4.112	268.3 -> 223.0	35647	5.00 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C6-PFDA	7.992	519.1 -> 474.1	8419	1.24 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C7-PFUnDA	8.448	570.0 -> 525.1	10282	1.31 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.1%	
13C8-FOSA	9.794	506.1 -> 77.8	6830	2.51 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C8-PFOA	6.964	421.1 -> 376.0	30617	2.67 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.8%	
13C8-PFOS	8.117	507.1 -> 79.9	7161	2.63 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.4%	
13C9-PFNA	7.509	472.1 -> 427.0	12742	1.28 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.5%	
d3-MeFOSAA	8.074	573.2 -> 419.0	11658	5.40 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.0%	
13C3-HFPO-DA	5.652	286.9 -> 168.9	24431	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	4363	2.30 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.9%	
d5-EtFOSAA	8.283	589.2 -> 419.0	9579	5.07 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.3%	
d7-MeFOSE	11.022	623.2 -> 58.9	29556	25.20 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
d9-EtFOSE	11.319	639.2 -> 58.9	33598	24.73 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.9%	
d5-EtFOSA	11.397	531.1 -> 219.0	6088	2.70 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.1%	

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	6.927	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

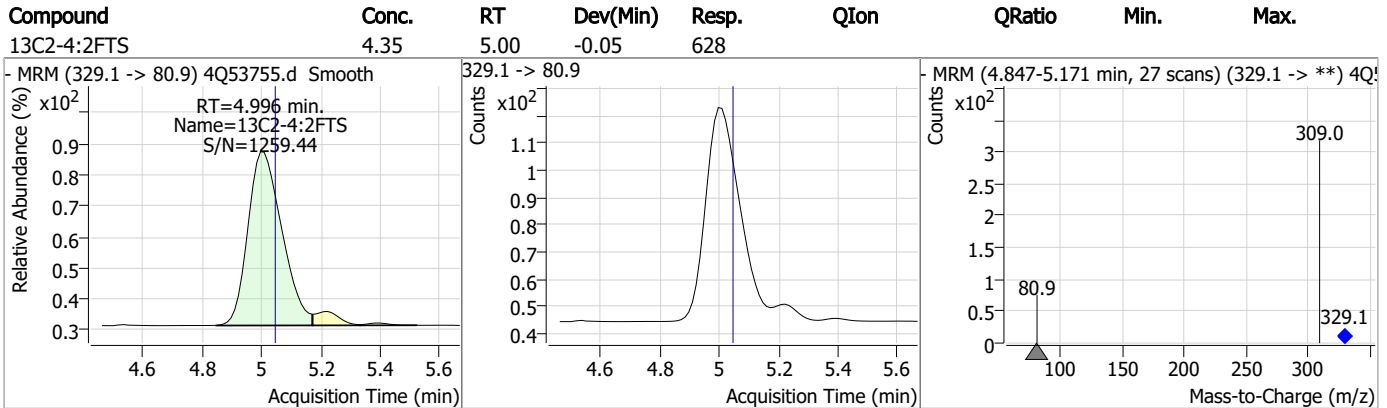
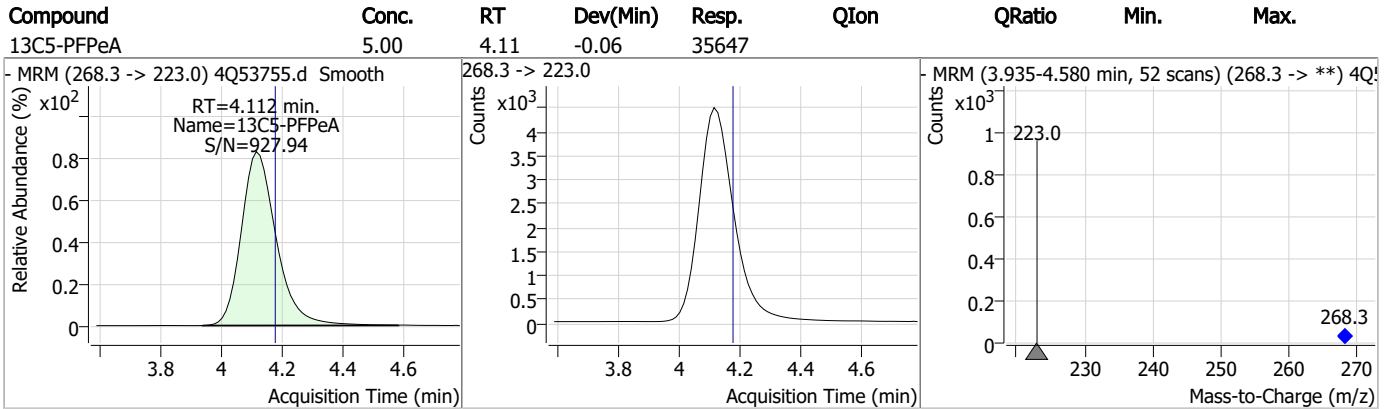
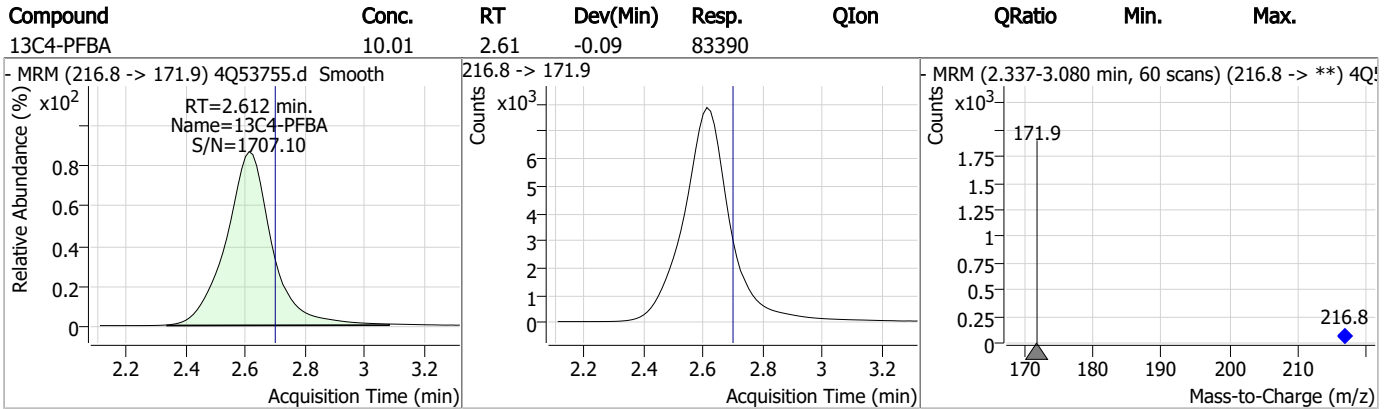
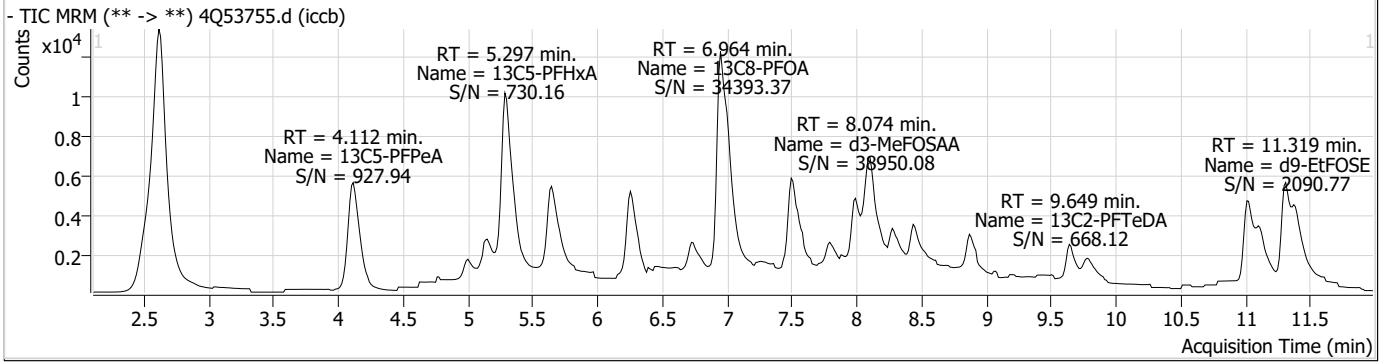
Perfluorinated Compounds by LC/MS/MS

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

7

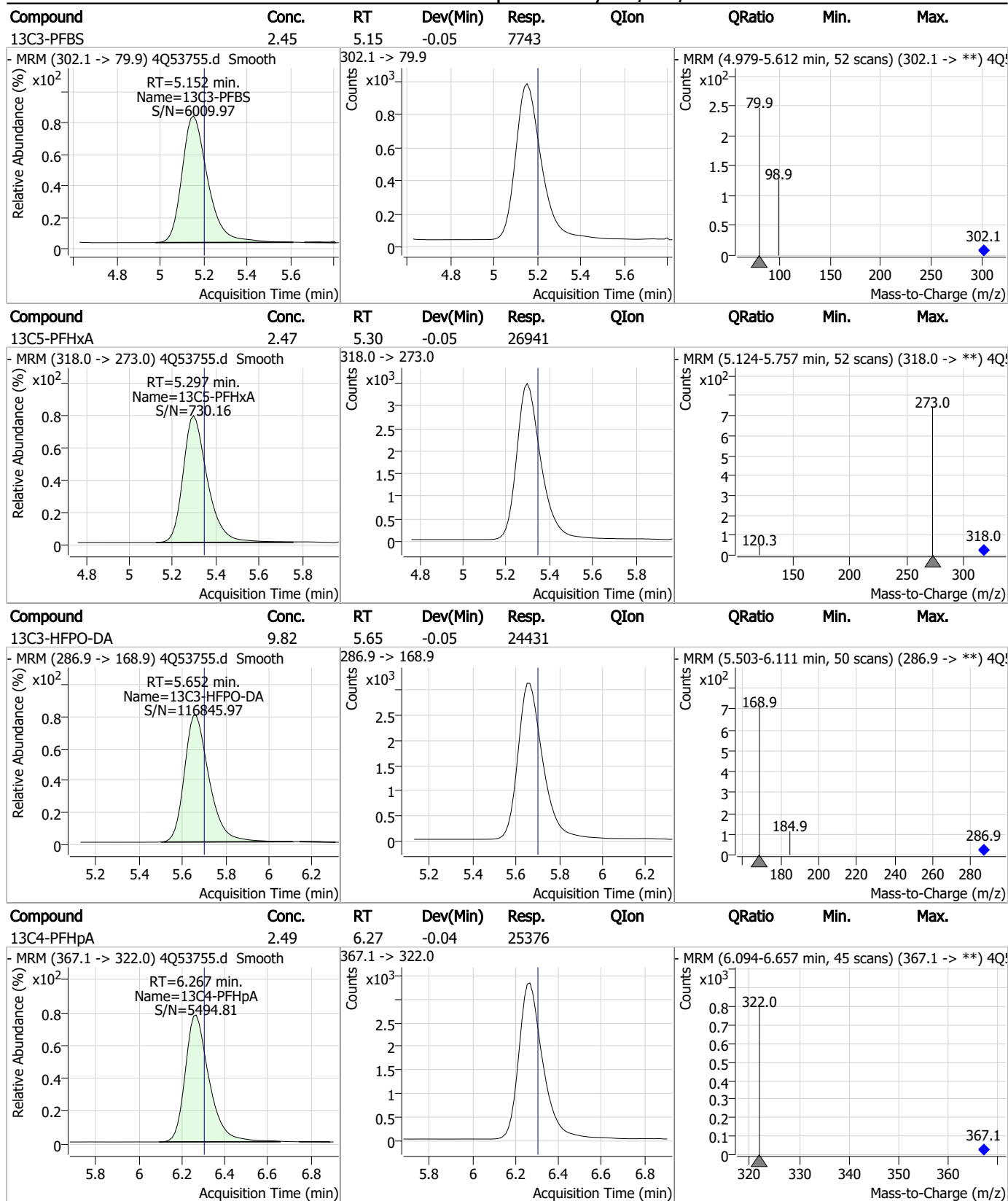
Perfluorinated Compounds by LC/MS/MS



7.2.3

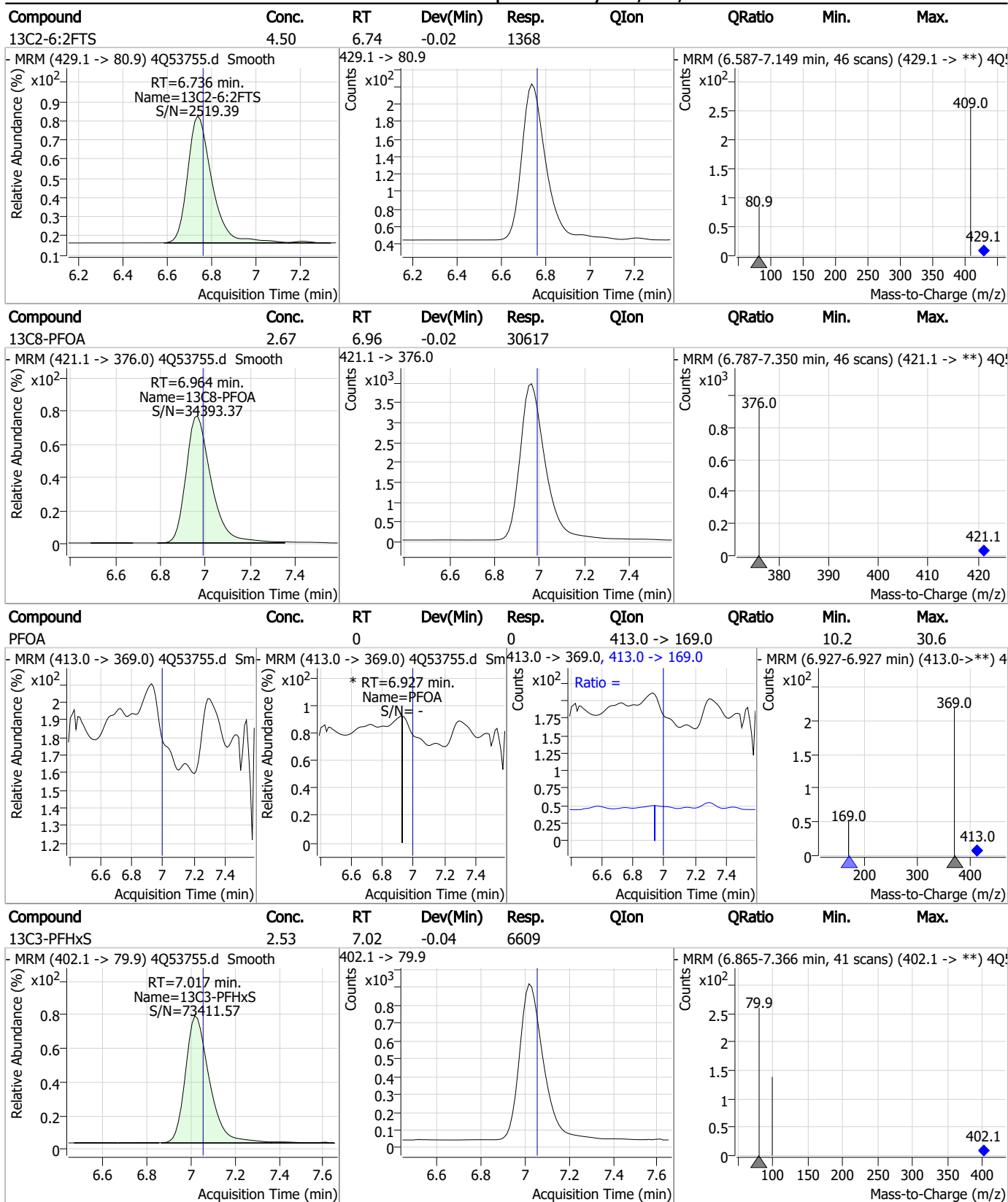
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Perfluorinated Compounds by LC/MS/MS



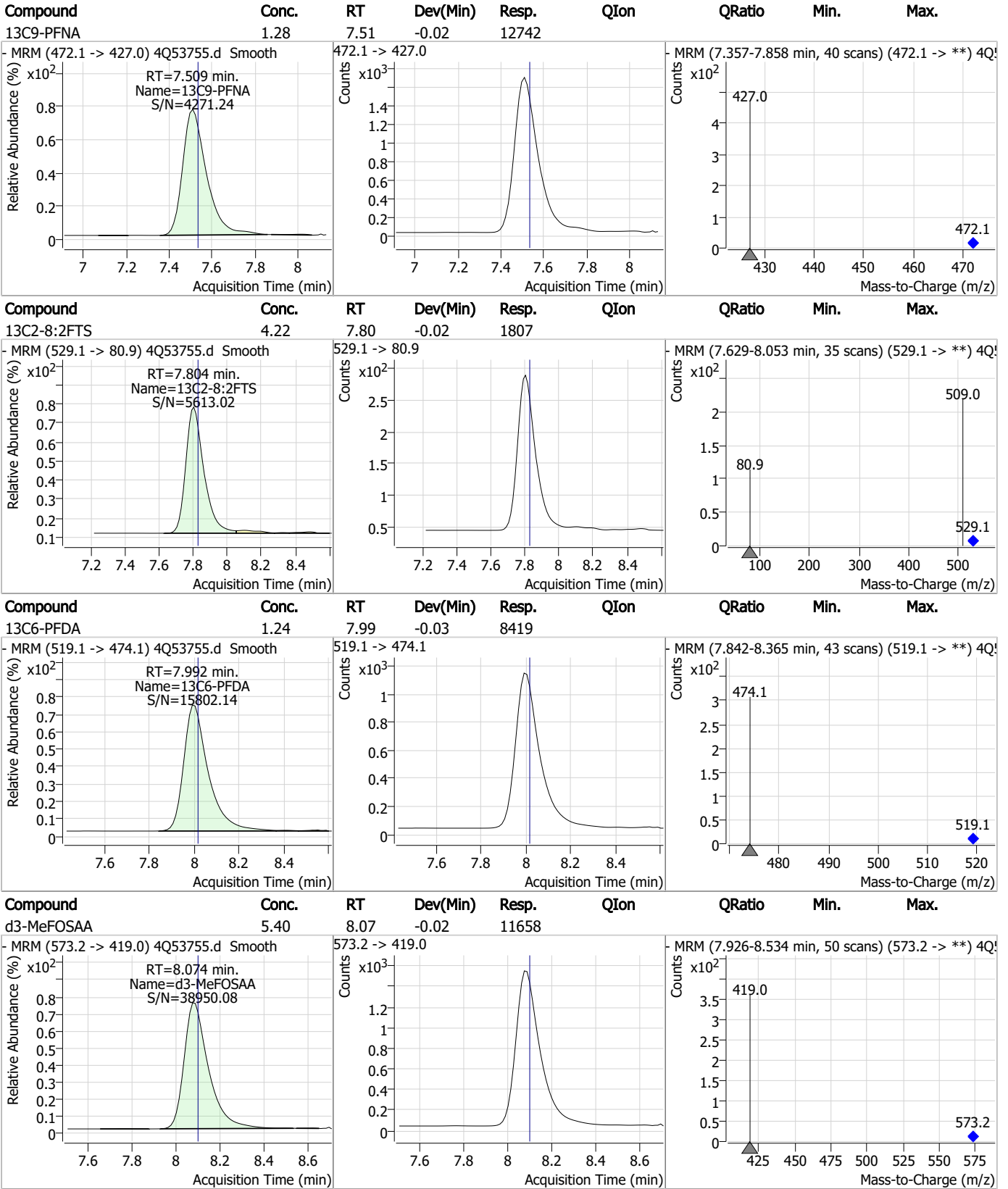
7.2.3
7

Perfluorinated Compounds by LC/MS/MS



7.2.3
7

Perfluorinated Compounds by LC/MS/MS

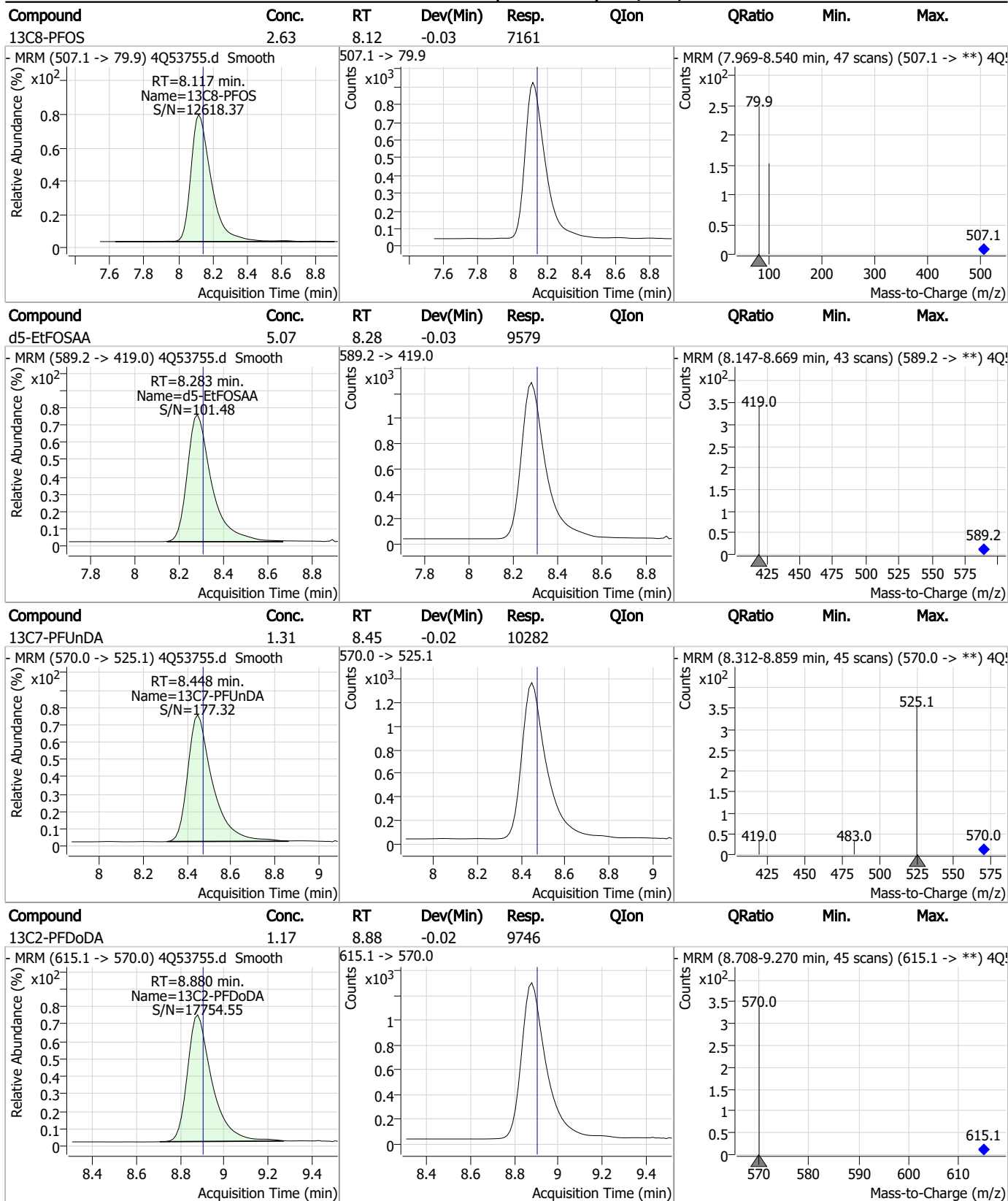


7.2.3

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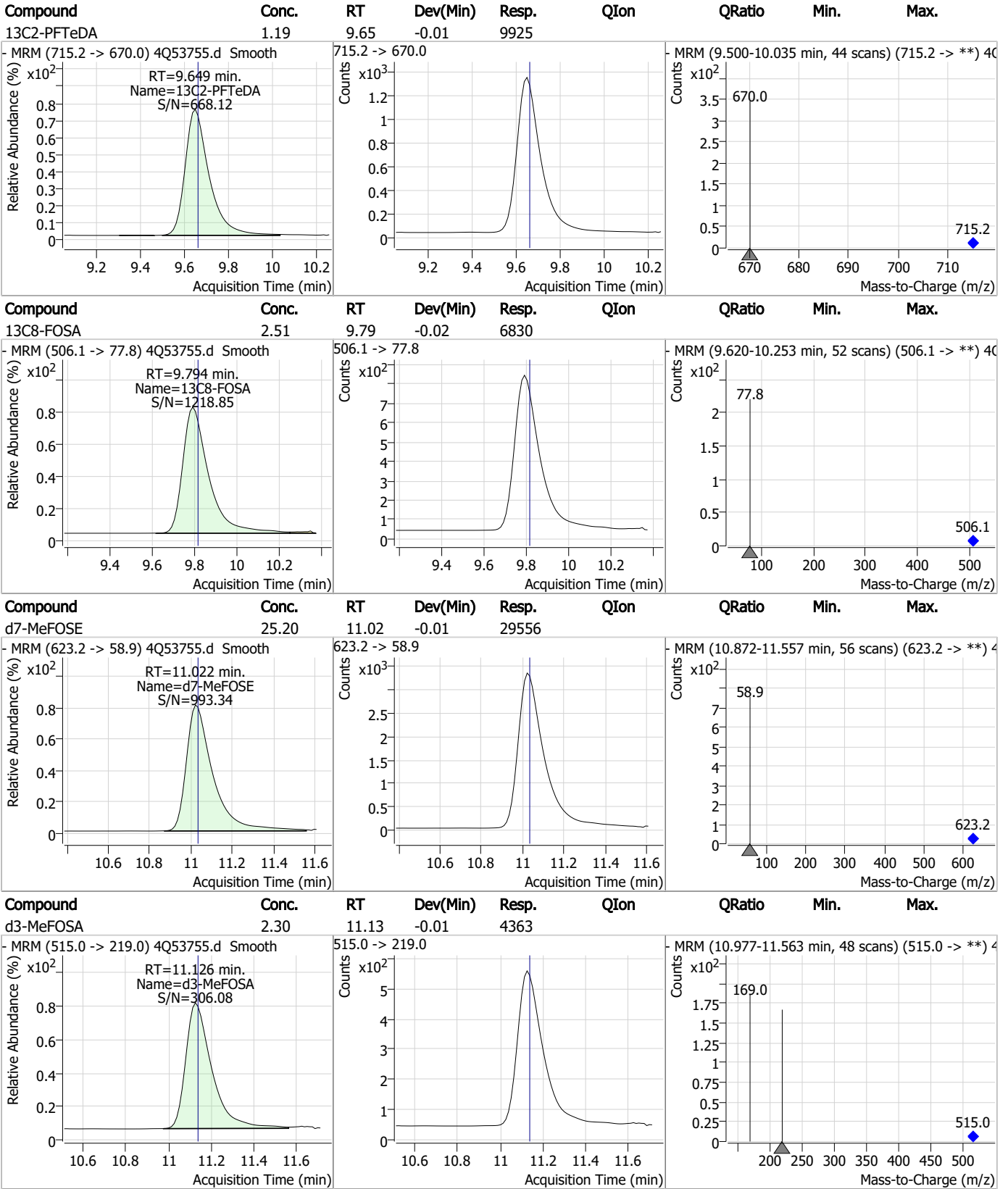


Perfluorinated Compounds by LC/MS/MS



7.2.3
7

Perfluorinated Compounds by LC/MS/MS

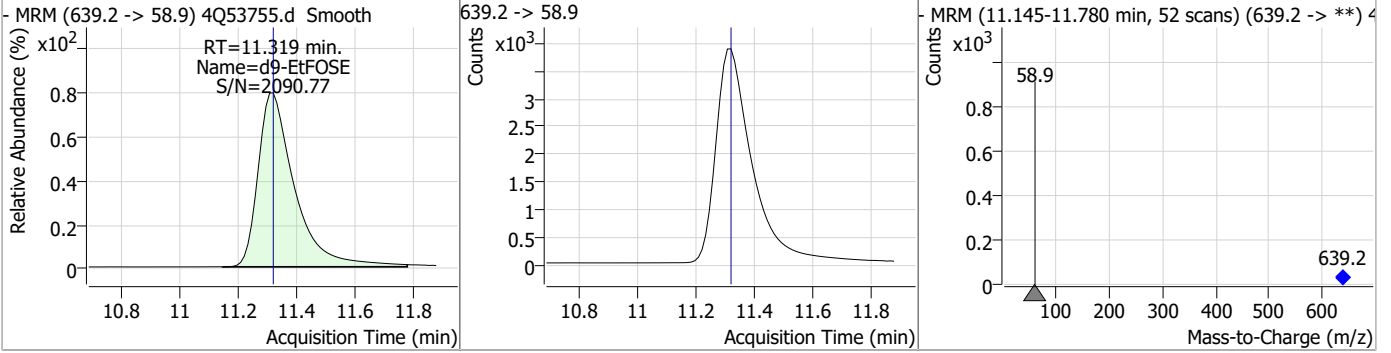


7.2.3

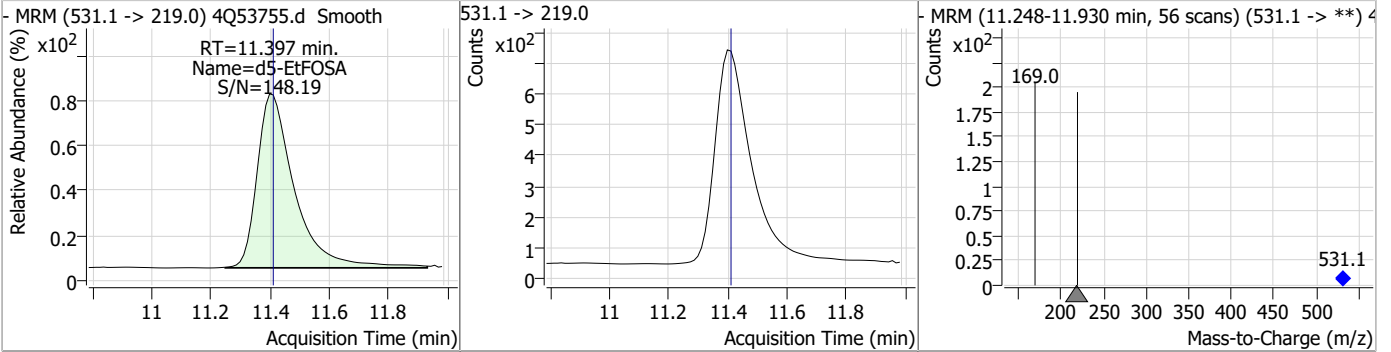
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.73	11.32	0.00	33598				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOFA	2.70	11.40	-0.01	6088				



7.2.3

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53744.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 7:11:19 PM
 Sample Name : op99997-bs
 Vial : P4-D1
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP99997,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	29903	10.00 µg/L	-0.013
M5-PFPeA	4.137	268.3 -> 223.0	35556	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	27246	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	25696	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	29924	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	13103	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	8313	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	10616	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	10302	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9329	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	5287	2.50 µg/L	-0.025
M3-PFBS	5.165	302.1 -> 79.9	7787	2.50 µg/L	-0.038
M3-PFHxS	7.017	402.1 -> 79.9	6499	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6379	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	761	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1672	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2322	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	11754	5.00 µg/L	-0.025
M3-HFPO-DA	5.664	286.9 -> 168.9	24704	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	9440	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	20143	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	27934	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	4816	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3578	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5410	2.50 µg/L	-0.026
13C3-PFBA	2.691	216.0 -> 172.0	37356	5.00 µg/L	-0.013
18O2-PFHxS	7.016	403.0 -> 83.9	3724	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	29372	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	8568	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	11283	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	26715	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	761	5.97 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 119.4%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1672	6.23 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 124.6%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2322	6.13 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.6%		
13C2-PFDoDA	8.880	615.1 -> 570.0	10302	1.33 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.6%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9329	1.20 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C3-PFBS	5.165	302.1 -> 79.9	7787	2.79 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.5%		
13C3-PFHxS	7.017	402.1 -> 79.9	6499	2.82 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 = 112.6%		
13C4-PFBA	2.686	216.8 -> 171.9	29903	3.84 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 38.4%		
13C4-PFHpA	6.267	367.1 -> 322.0	25696	2.76 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 110.3%		
13C5-PFHxA	5.310	318.0 -> 273.0	27246	2.73 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.4%		
13C5-PFPeA	4.137	268.3 -> 223.0	35556	5.46 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.1%		
13C6-PFDA	7.992	519.1 -> 474.1	8313	1.32 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C7-PFUnDA	8.448	570.0 -> 525.1	10616	1.46 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 116.5%		
13C8-FOSA	9.794	506.1 -> 77.8	5287	2.04 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 81.8%		
13C8-PFOA	6.964	421.1 -> 376.0	29924	2.85 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 114.1%		
13C8-PFOS	8.117	507.1 -> 79.9	6379	2.47 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C9-PFNA	7.509	472.1 -> 427.0	13103	1.47 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 117.8%		
d3-MeFOSAA	8.074	573.2 -> 419.0	11754	5.73 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.6%		
13C3-HFPO-DA	5.664	286.9 -> 168.9	24704	10.87 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 108.7%		
d3-MeFOSA	11.126	515.0 -> 219.0	3578	1.98 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 79.3%		
d5-EtFOSAA	8.283	589.2 -> 419.0	9440	5.25 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.1%		
d7-MeFOSE	11.034	623.2 -> 58.9	20143	18.07 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 72.3%		
d9-EtFOSE	11.319	639.2 -> 58.9	27934	21.64 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 86.6%		
d5-EtFOSA	11.397	531.1 -> 219.0	4816	2.25 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 89.9%		
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	11571	7.69 µg/L	97
		327.1 -> 80.9	5079		
6:2FTS	6.737	427.1 -> 407.0	15085	8.34 µg/L	97
		427.1 -> 80.9	5521		
8:2FTS	7.804	527.1 -> 507.0	11046	8.75 µg/L	99
		527.1 -> 80.8	4650		
EtFOSAA	8.284	584.2 -> 419.1	4066	2.41 µg/L	#m 70
		584.2 -> 526.0	1939		
FOSA	9.798	498.1 -> 77.9	5739	2.23 µg/L	99
		498.1 -> 478.0	202		
MeFOSAA	8.087	570.1 -> 419.0	4492	2.15 µg/L	96
		570.1 -> 483.0	744		
PFBA	2.695	212.8 -> 168.9	9594	8.82 µg/L	100
PFBS	5.153	298.7 -> 79.9	5649	2.04 µg/L	98
		298.7 -> 98.8	2122		
PFDA	8.005	512.9 -> 469.0	14581	2.14 µg/L	97
		512.9 -> 219.0	3114		
PFDODA	8.880	613.1 -> 569.0	18615	2.22 µg/L	97
		613.1 -> 319.0	3240		
PFDS	9.020	599.0 -> 79.9	3811	2.31 µg/L	99

7.3.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	1954			
PFHpA	6.268	363.1 -> 319.0	36655	2.27	µg/L	98
		363.1 -> 169.0	6667			
PFHpS	7.612	449.0 -> 79.9	6071	2.41	µg/L	100
		449.0 -> 98.9	3090			
PFHxA	5.300	313.0 -> 269.0	21609	2.27	µg/L	98
		313.0 -> 118.9	711			
PFHxS	7.018	398.7 -> 79.9	4174	2.13	µg/L	m 84
		398.7 -> 98.9	2165			
PFNA	7.510	463.0 -> 419.0	17629	2.11	µg/L	99
		463.0 -> 219.0	4579			
PFNS	8.586	548.8 -> 79.9	3207	2.63	µg/L	98
		548.8 -> 98.9	1641			
PFOA	6.965	413.0 -> 369.0	31359	2.16	µg/L	100
		413.0 -> 169.0	6396			
PFOS	8.119	498.9 -> 79.9	6308	2.18	µg/L	m 82
		498.9 -> 98.8	3087			
PFPeA	4.139	263.0 -> 219.0	34998	4.52	µg/L	100
PFPeS	6.257	349.1 -> 79.9	4718	2.21	µg/L	99
		349.1 -> 98.9	2027			
PFTeDA	9.650	713.1 -> 669.0	16177	2.28	µg/L	100
		713.1 -> 168.9	1719			
PFTrDA	9.279	663.0 -> 619.0	20099	2.20	µg/L	98
		663.0 -> 168.9	2953			
PFUnDA	8.449	563.1 -> 519.0	18565	2.14	µg/L	98
		563.1 -> 269.1	4171			
11CI-PF3OUdS	9.306	630.9 -> 450.9	33648	4.36	µg/L	100
		632.9 -> 452.9	10368			
9CI-PF3ONS	8.451	530.8 -> 351.0	33575	4.31	µg/L	95
		532.8 -> 353.0	10789			
ADONA	6.544	376.9 -> 250.9	86515	5.06	µg/L	100
		376.9 -> 84.8	21521			
HFPO-DA	5.665	284.9 -> 168.9	12303	4.70	µg/L	99
		284.9 -> 184.9	1130			
3:3FTCA	3.617	241.0 -> 177.0	2243	13.24	µg/L	99
		241.0 -> 117.0	194			
5:3FTCA	5.996	341.0 -> 237.1	85089	50.80	µg/L	99
		341.0 -> 217.0	62391			
7:3FTCA	7.536	441.0 -> 316.9	41414	55.11	µg/L	95
		441.0 -> 336.9	97400			
EtFOSA	11.399	526.0 -> 219.0	9718	4.47	µg/L	92
		526.0 -> 169.0	12771			
EtFOSE	11.332	630.0 -> 58.9	11944	11.44	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	6025	4.64	µg/L	88
		511.9 -> 169.0	8860			
MeFOSE	11.047	616.1 -> 58.9	9980	10.87	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	2988	2.30	µg/L	97
		699.1 -> 98.8	1674			
NFDHA	5.191	295.0 -> 201.0	3443	5.48	µg/L	89
		295.0 -> 84.9	1013			
PFMBA	4.529	279.0 -> 85.1	22429	5.03	µg/L	100
PFMPA	3.290	229.0 -> 84.9	15538	3.14	µg/L	100
PFEESA	5.684	314.8 -> 134.9	34670	4.60	µg/L	98
		314.8 -> 82.9	1212			

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



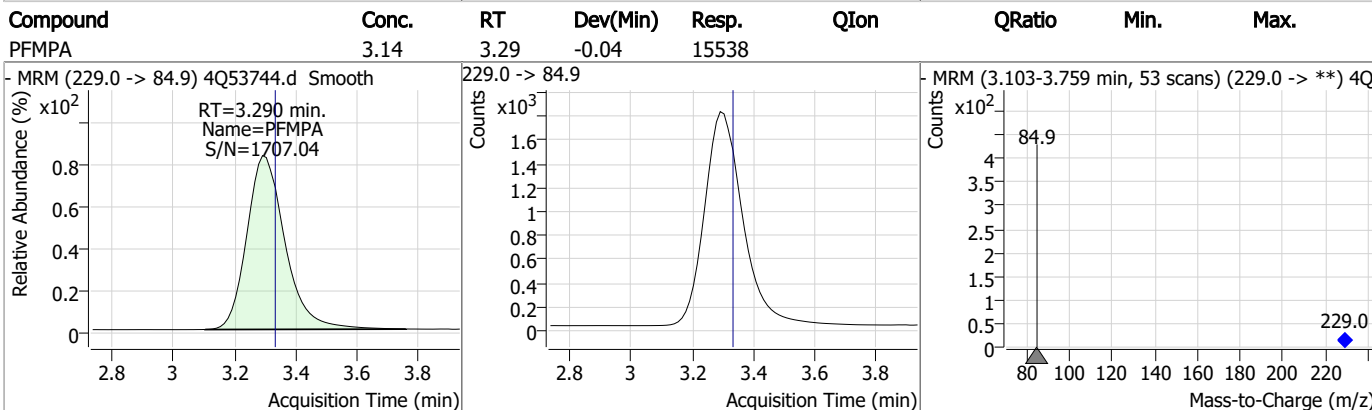
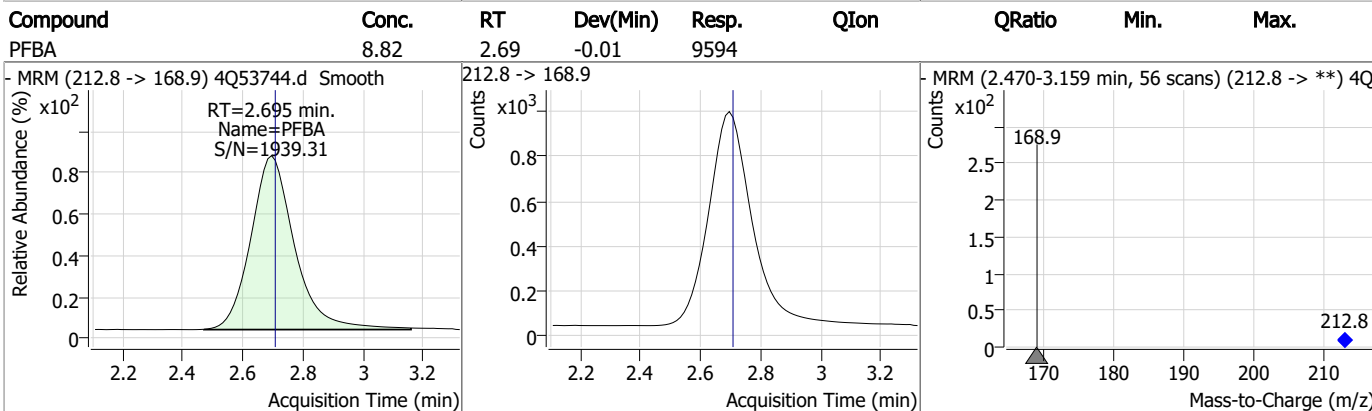
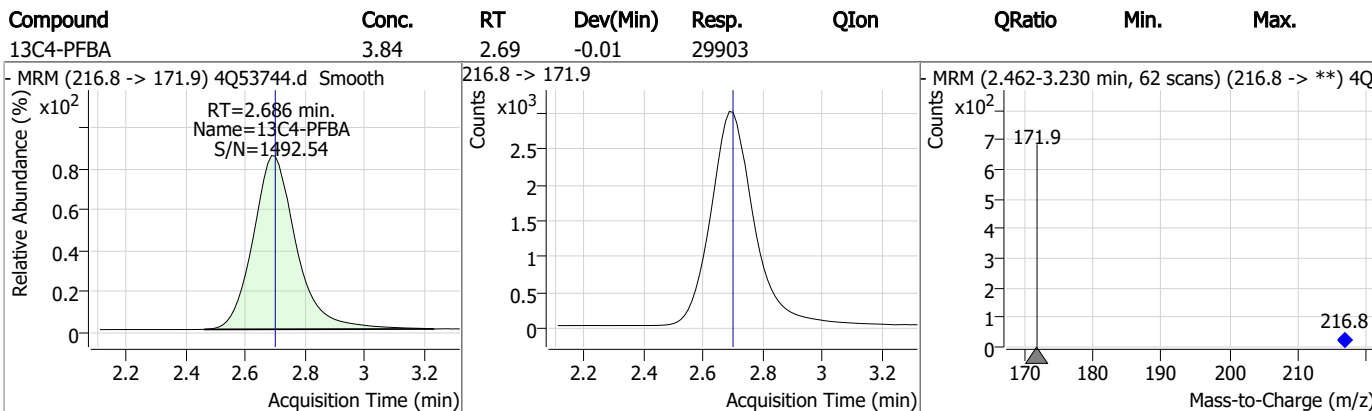
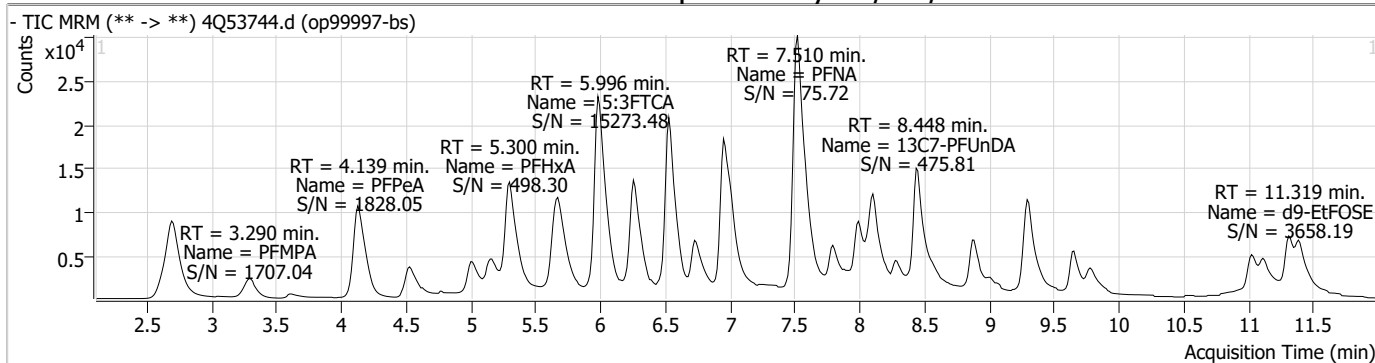
Perfluorinated Compounds by LC/MS/MS

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

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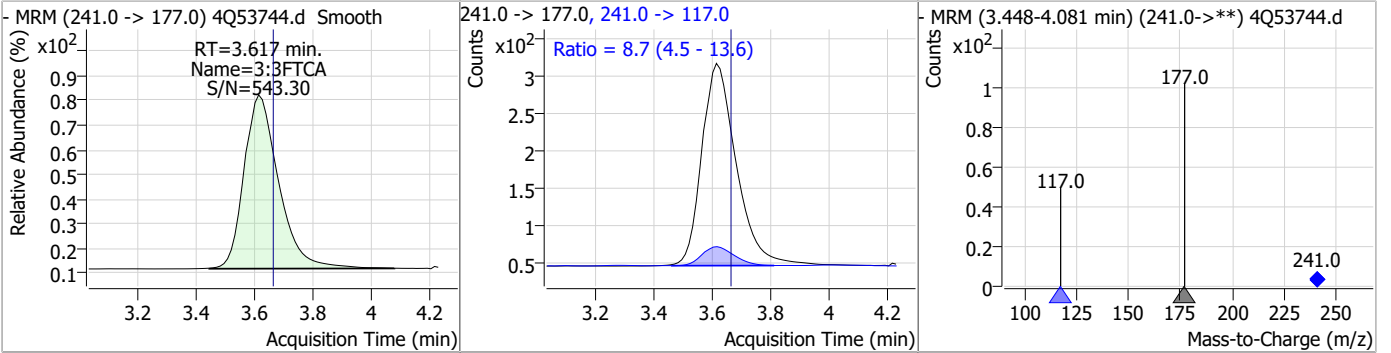
Perfluorinated Compounds by LC/MS/MS



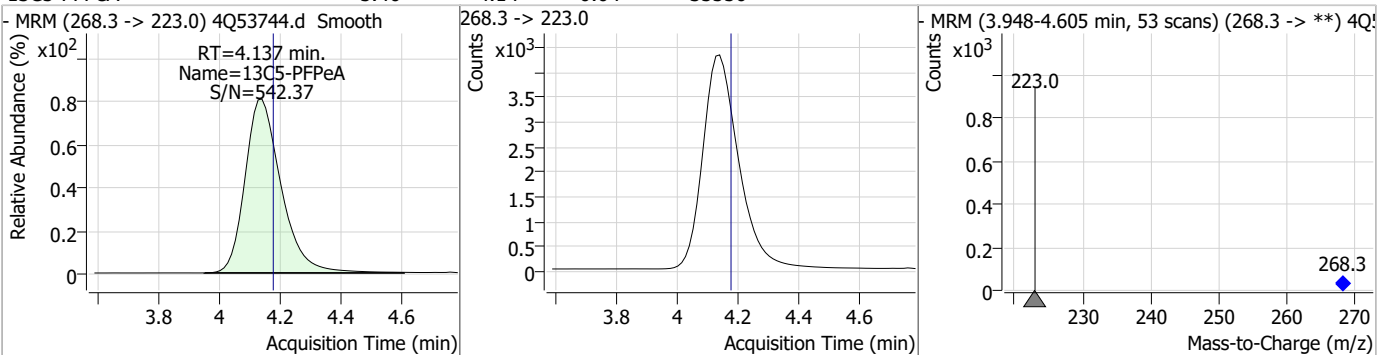
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Perfluorinated Compounds by LC/MS/MS

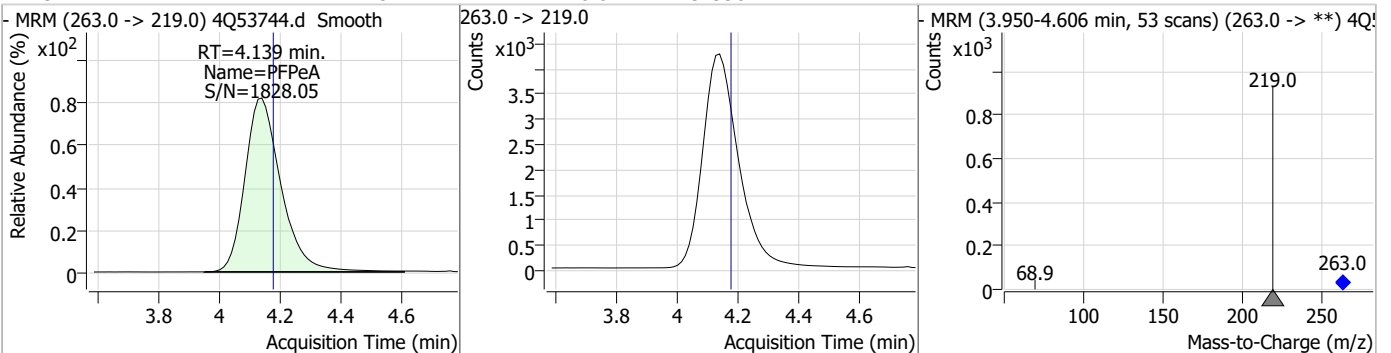
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	13.24	3.62	-0.05	2243	241.0 -> 117.0	8.7	4.5	13.6



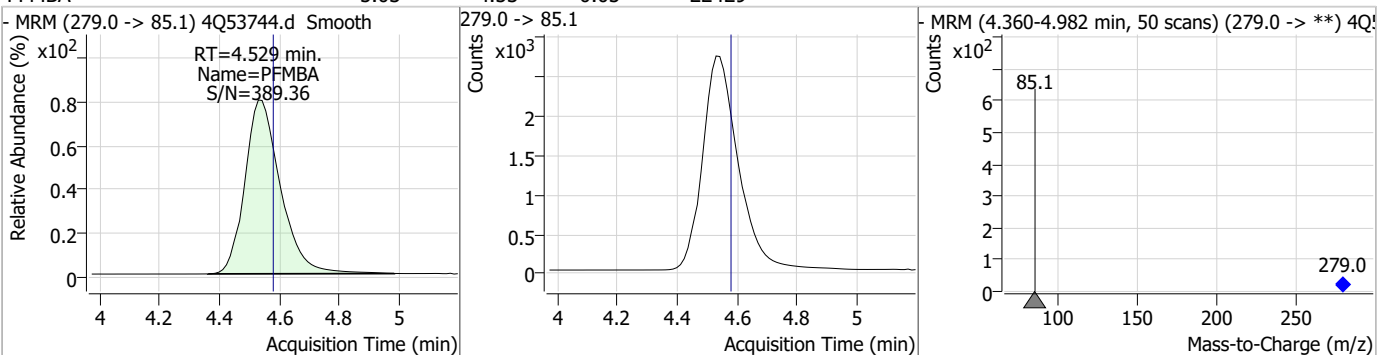
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.46	4.14	-0.04	35556				



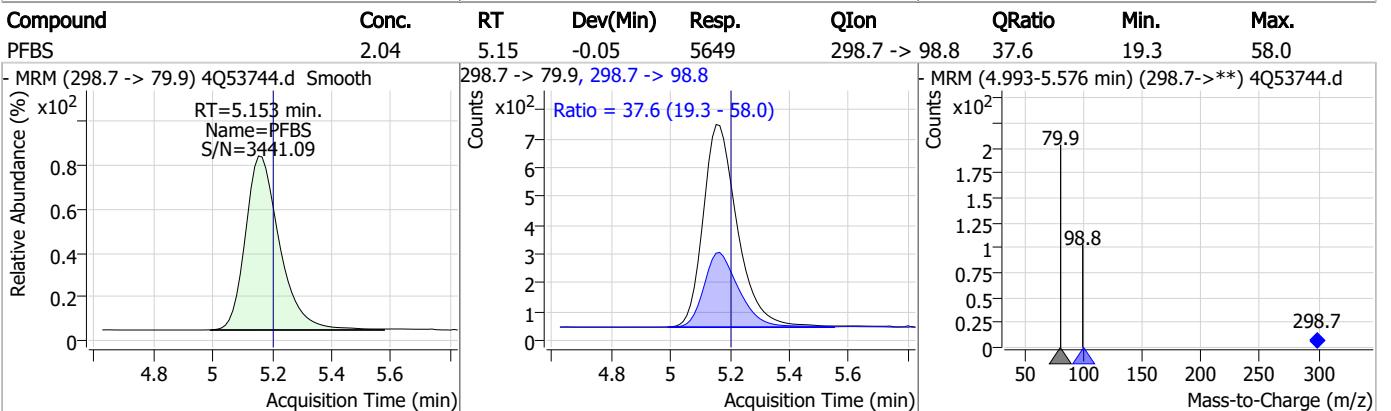
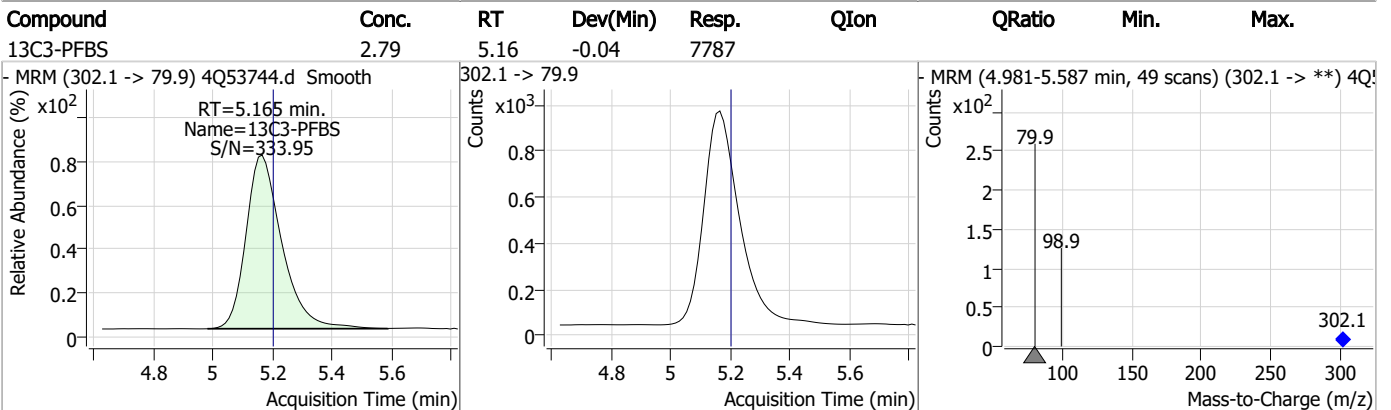
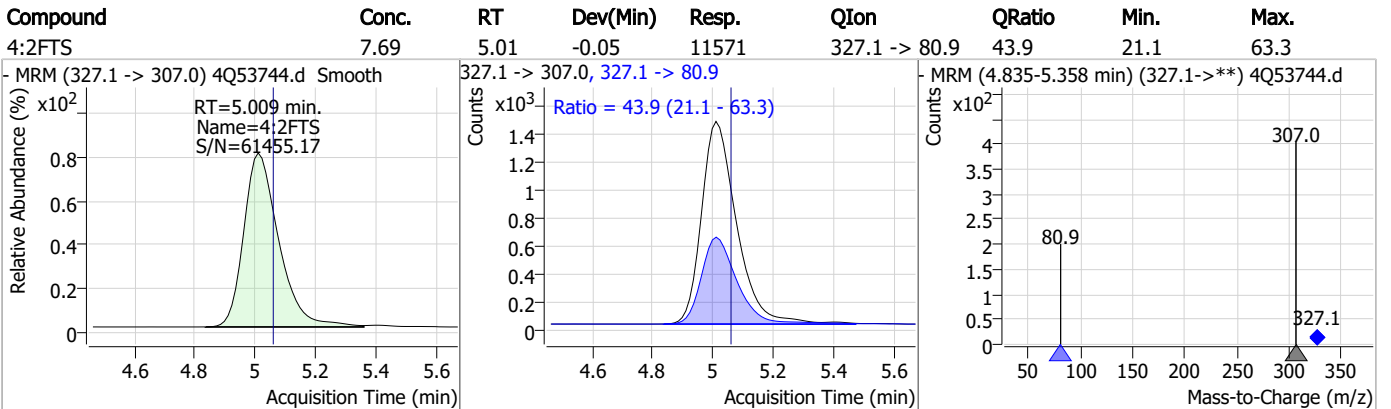
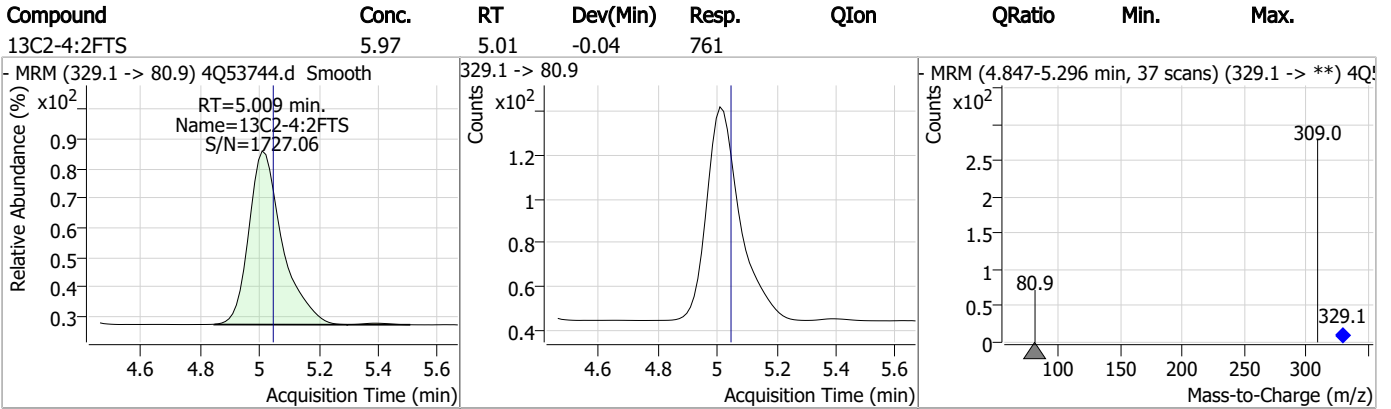
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.52	4.14	-0.04	34998				



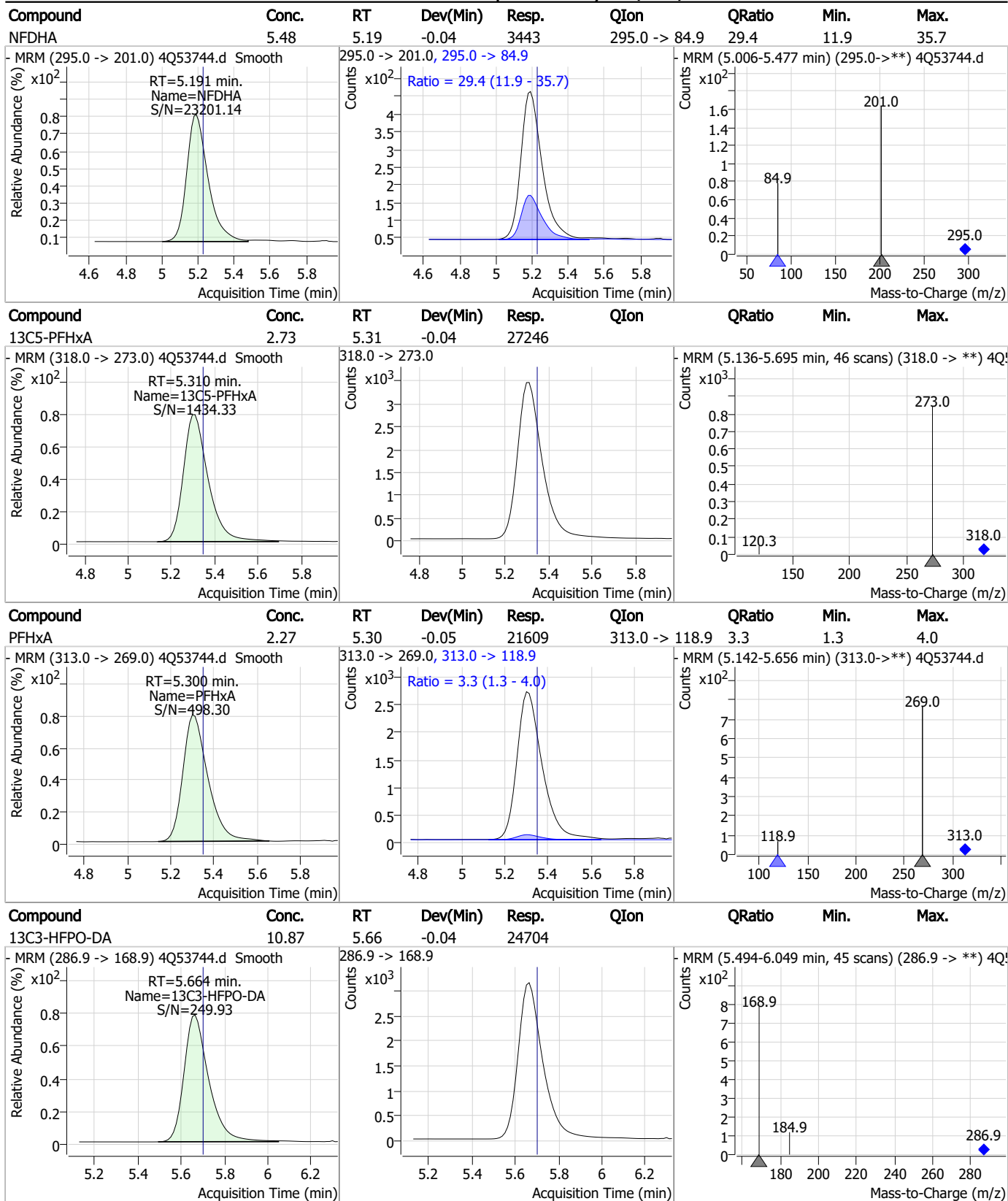
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	5.03	4.53	-0.05	22429				



Perfluorinated Compounds by LC/MS/MS



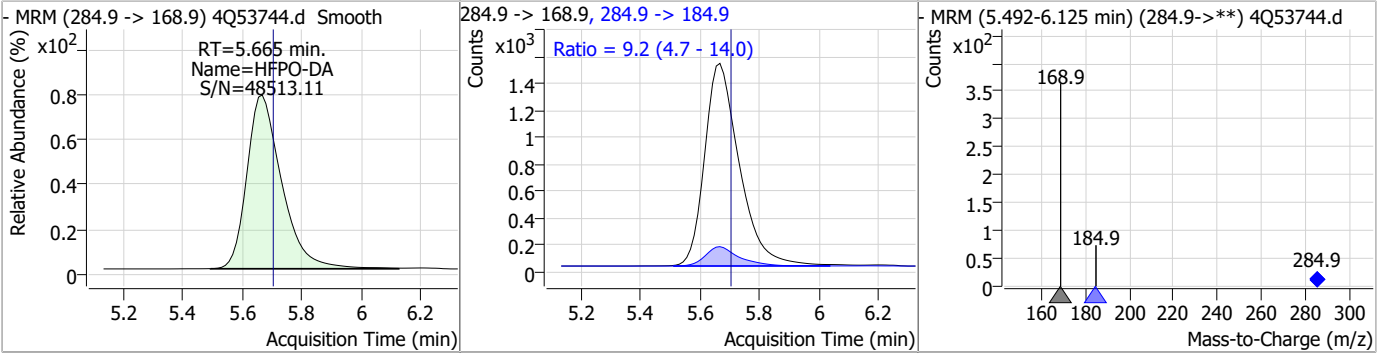
Perfluorinated Compounds by LC/MS/MS



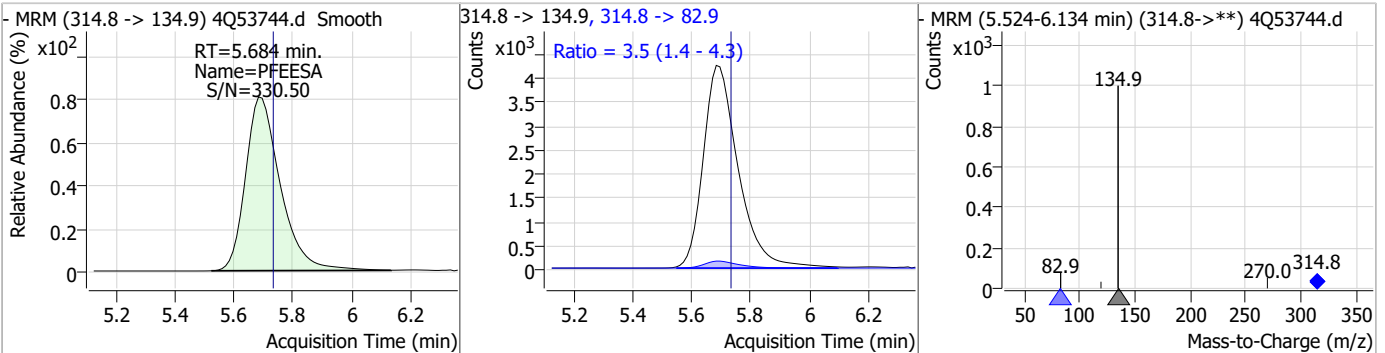
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Perfluorinated Compounds by LC/MS/MS

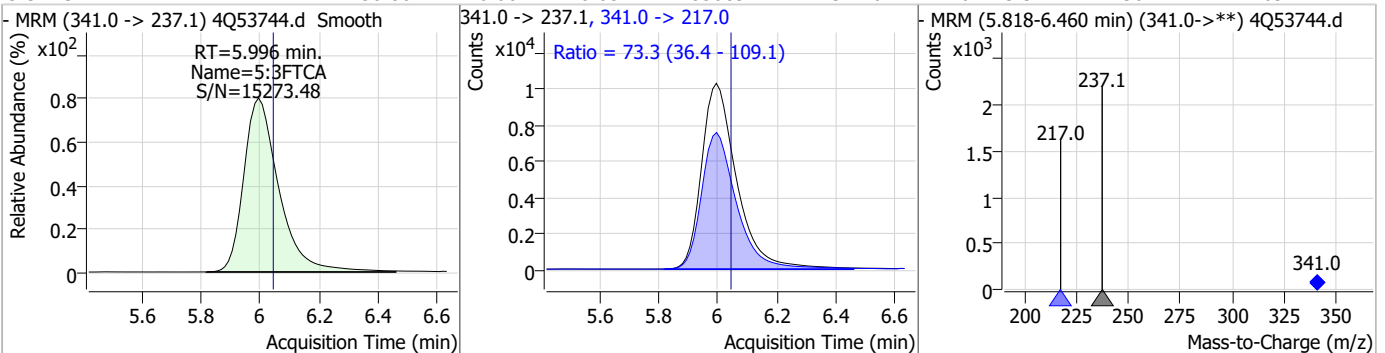
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.70	5.67	-0.04	12303	284.9 -> 184.9	9.2	4.7	14.0



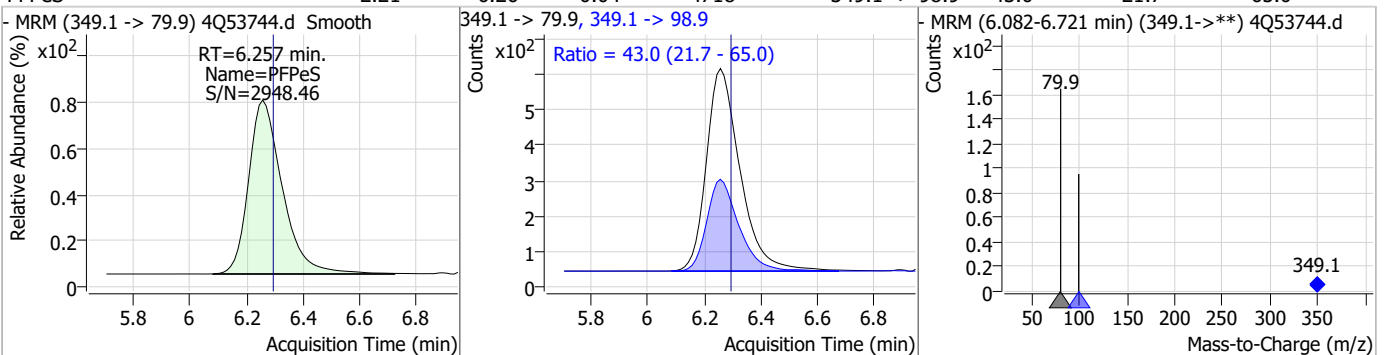
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.60	5.68	-0.05	34670	314.8 -> 82.9	3.5	1.4	4.3



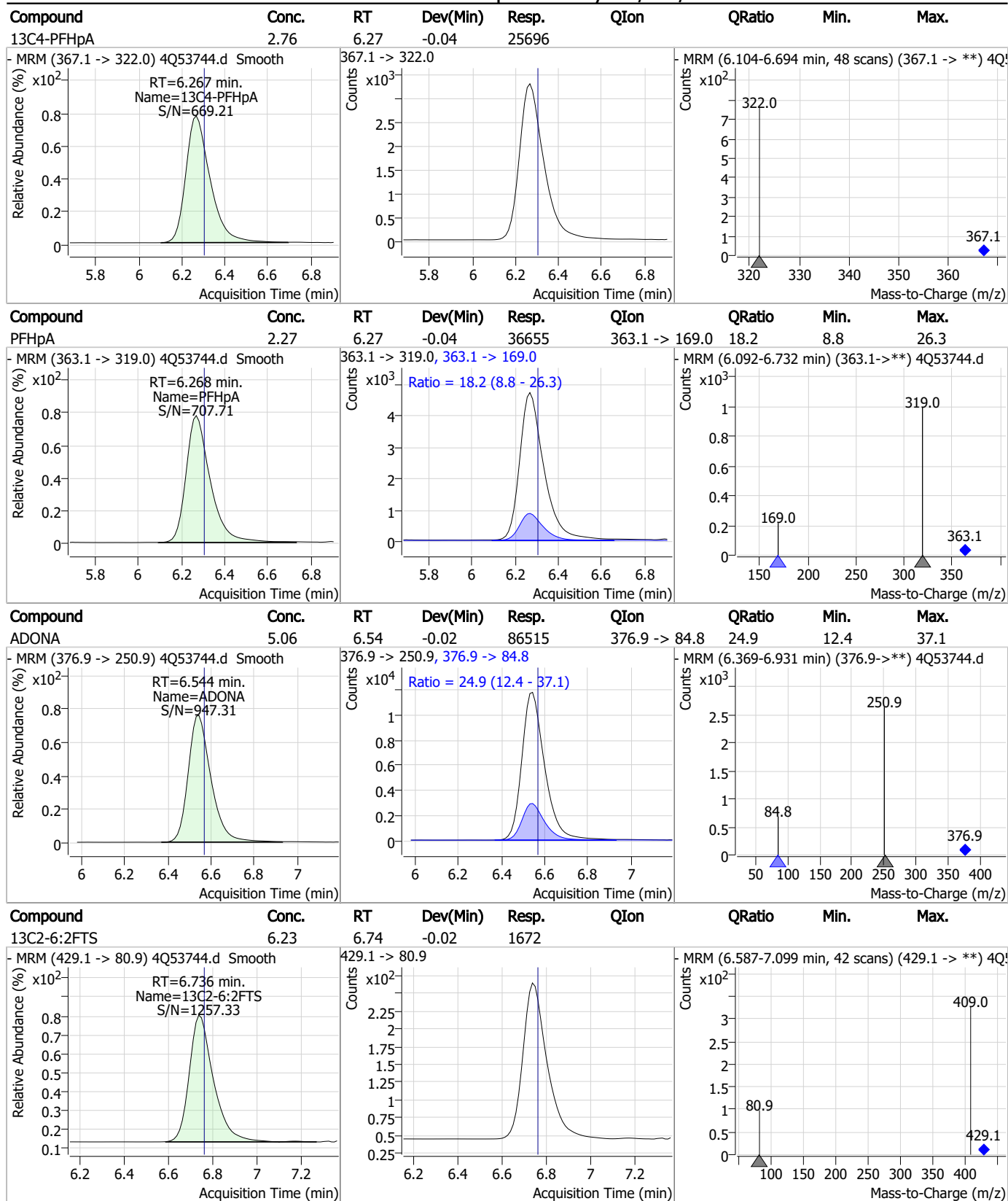
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	50.80	6.00	-0.05	85089	341.0 -> 217.0	73.3	36.4	109.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.21	6.26	-0.04	4718	349.1 -> 98.9	43.0	21.7	65.0



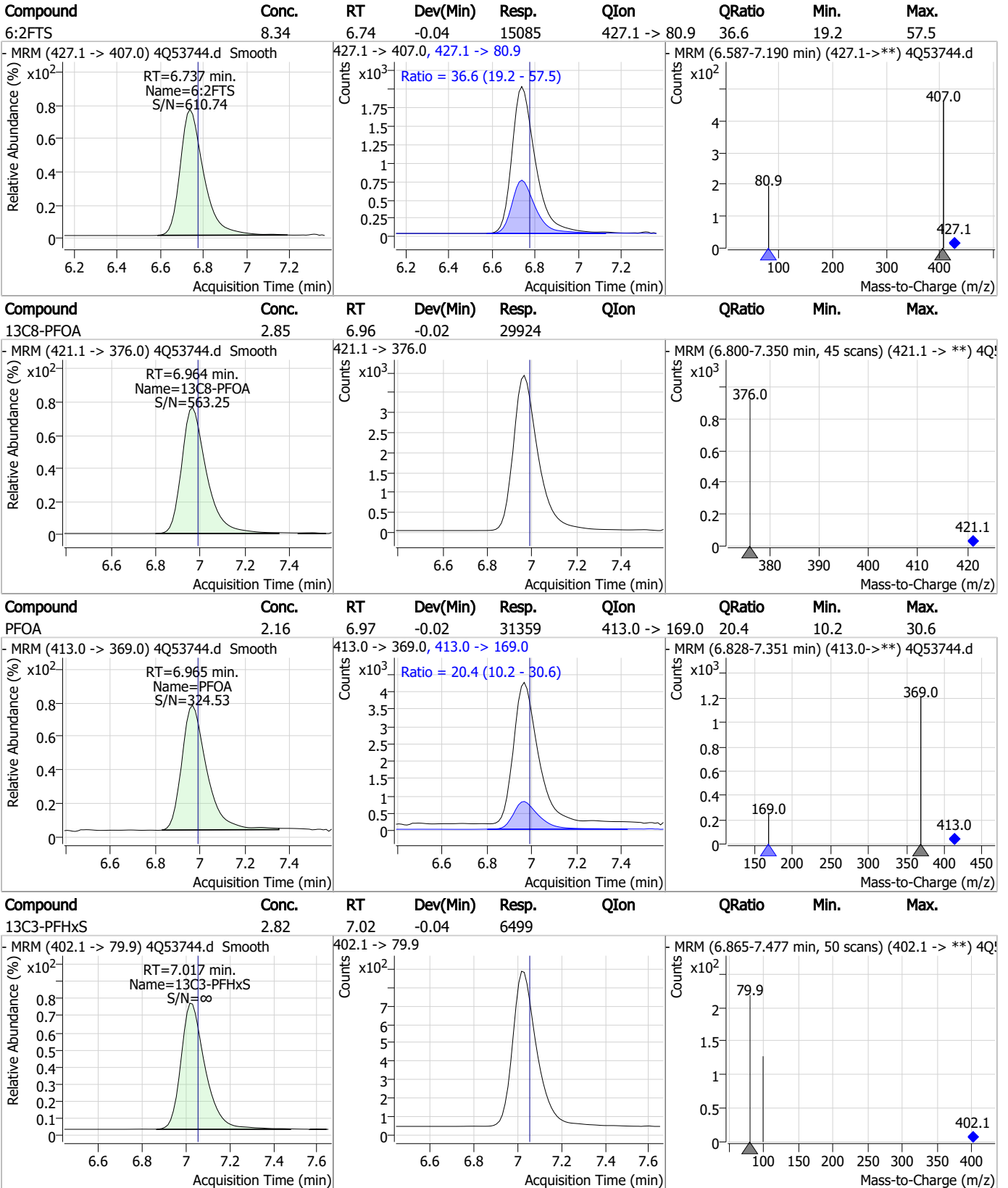
Perfluorinated Compounds by LC/MS/MS



7.3.1

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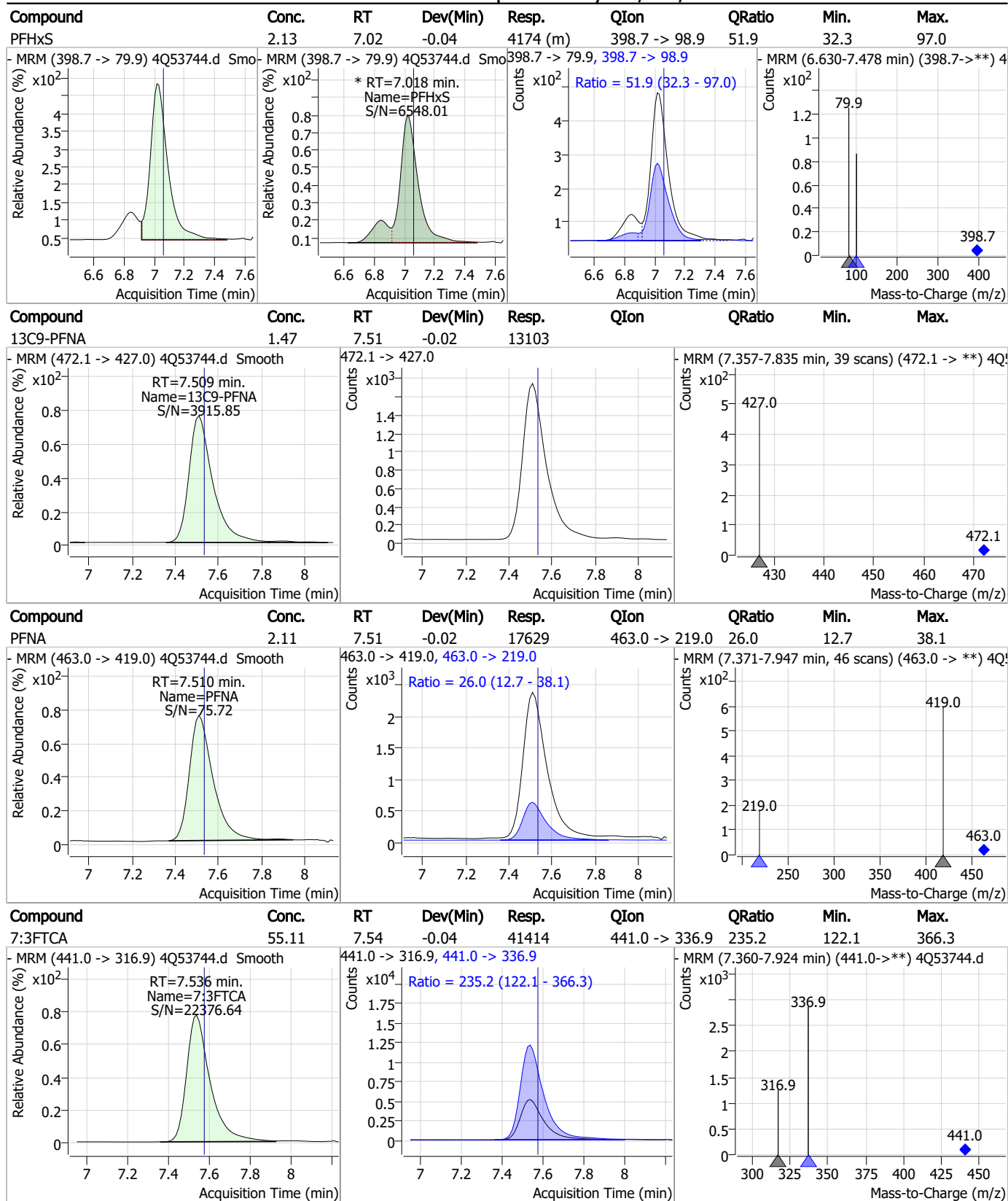
Perfluorinated Compounds by LC/MS/MS



7.3.1

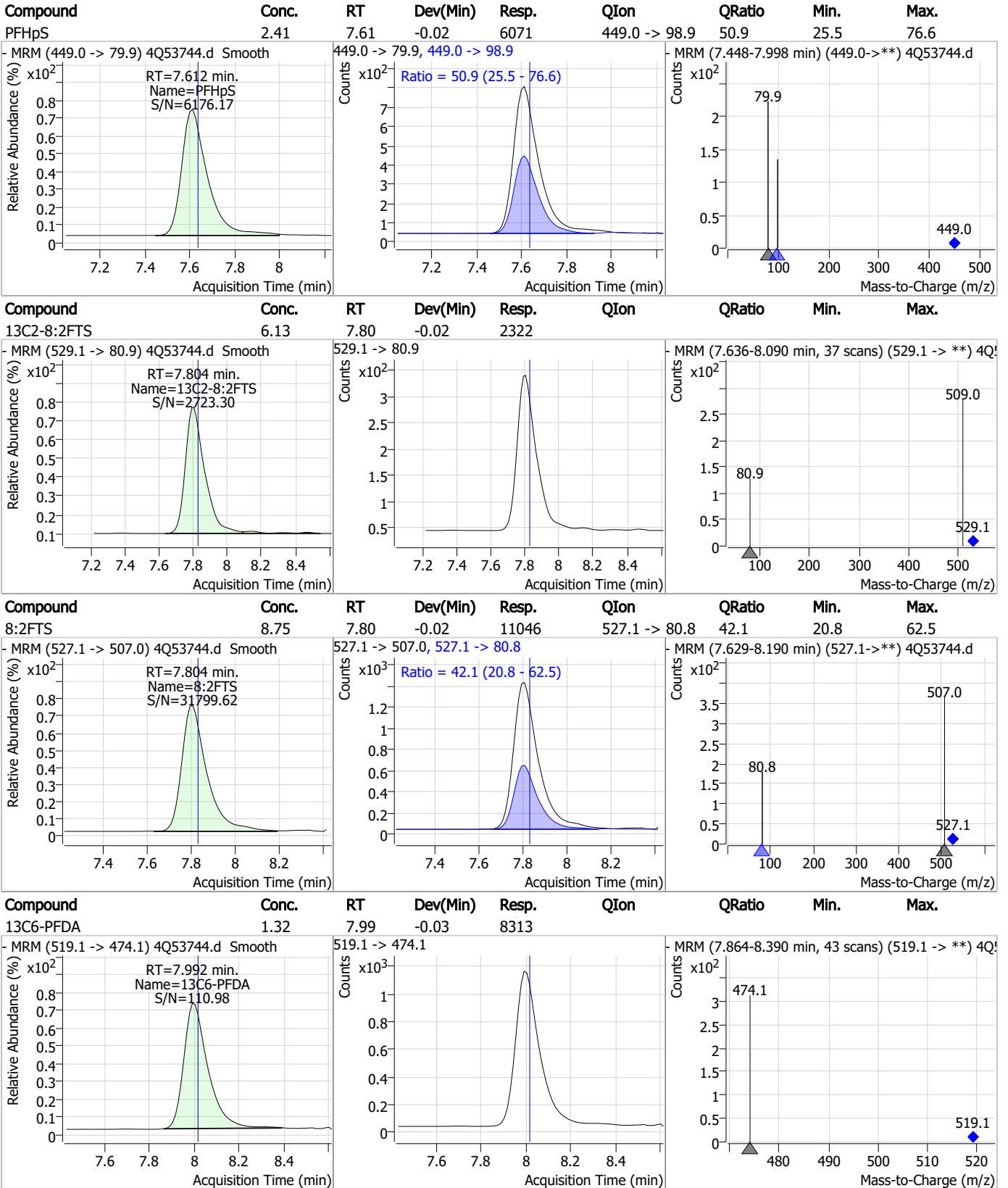
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Perfluorinated Compounds by LC/MS/MS



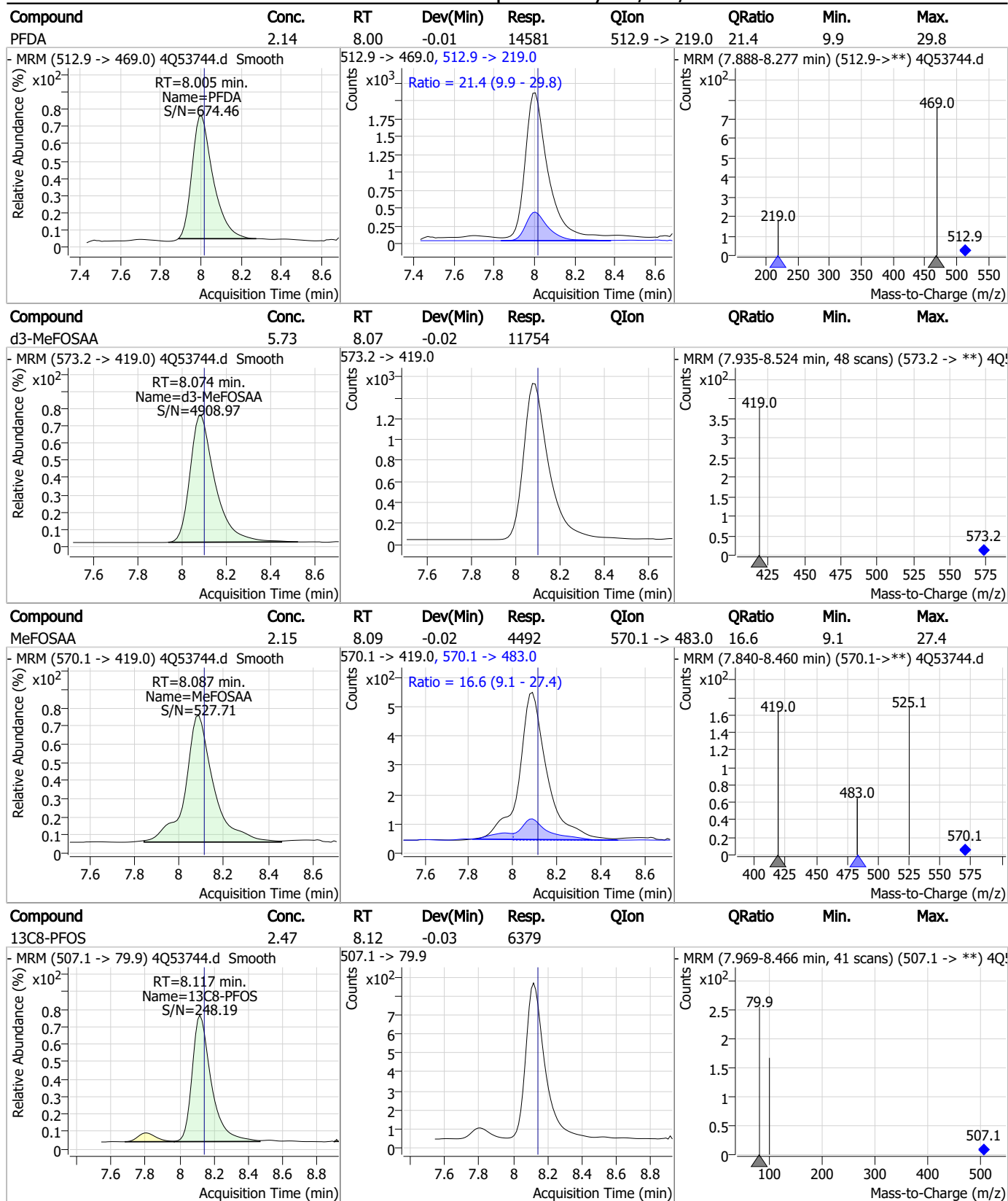
7.3.1
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Perfluorinated Compounds by LC/MS/MS



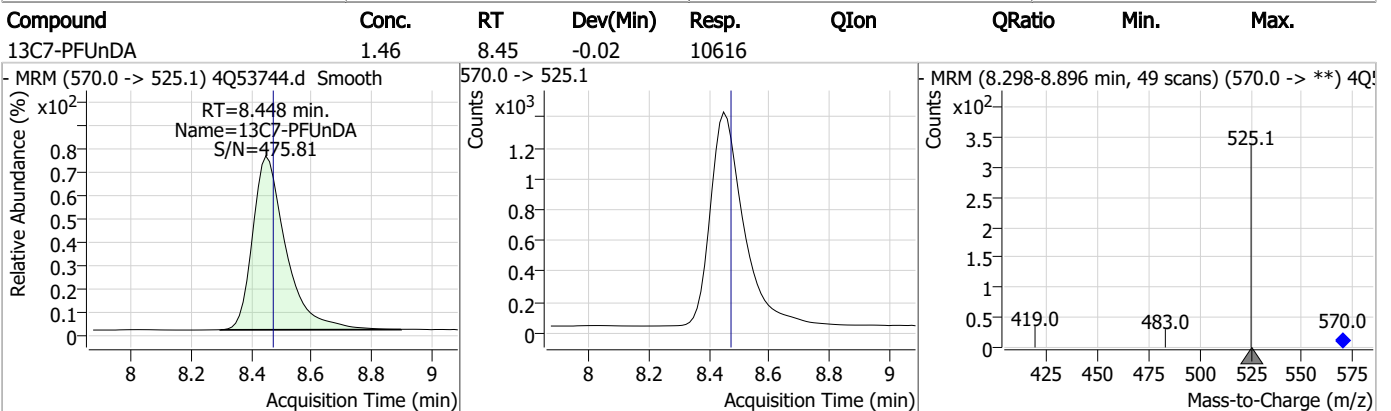
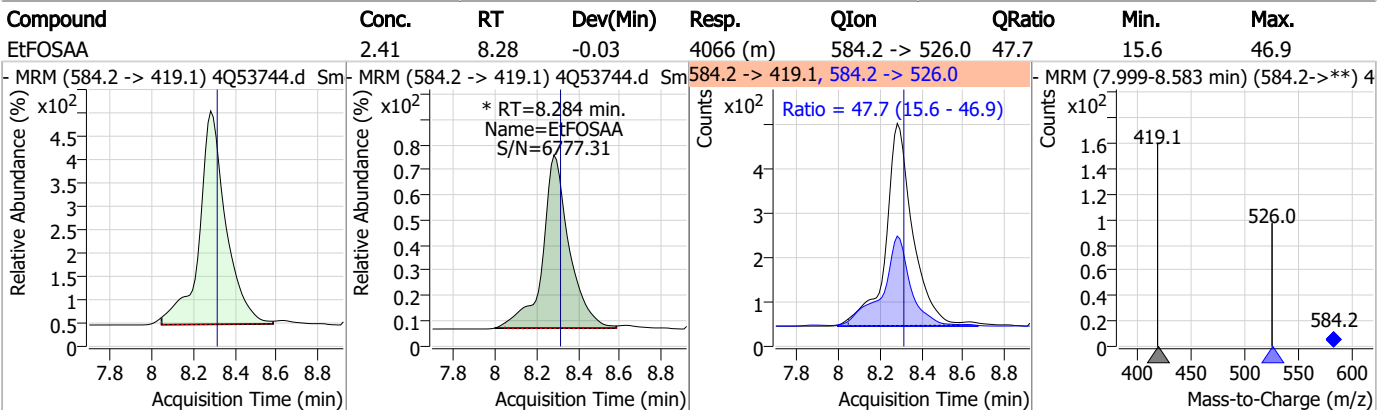
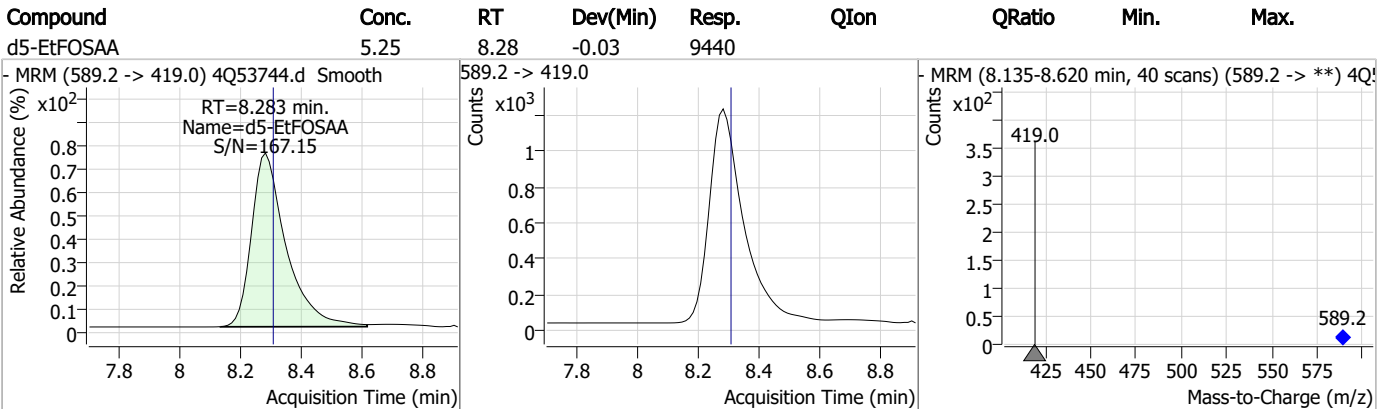
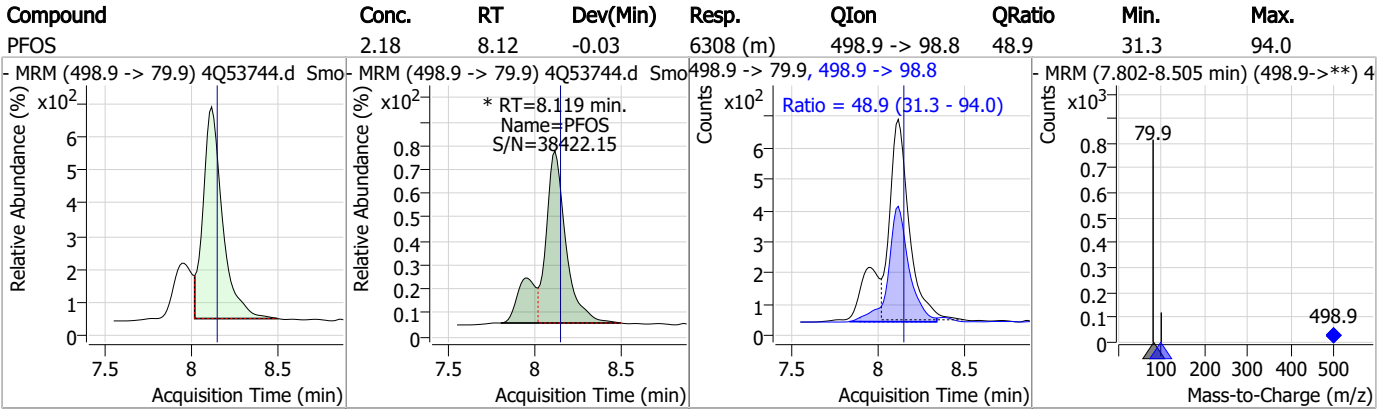
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Perfluorinated Compounds by LC/MS/MS



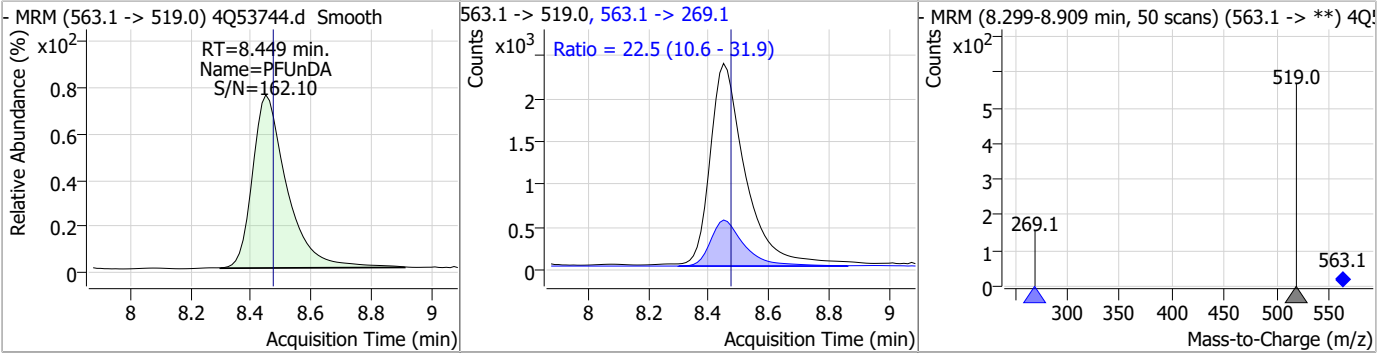
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Perfluorinated Compounds by LC/MS/MS

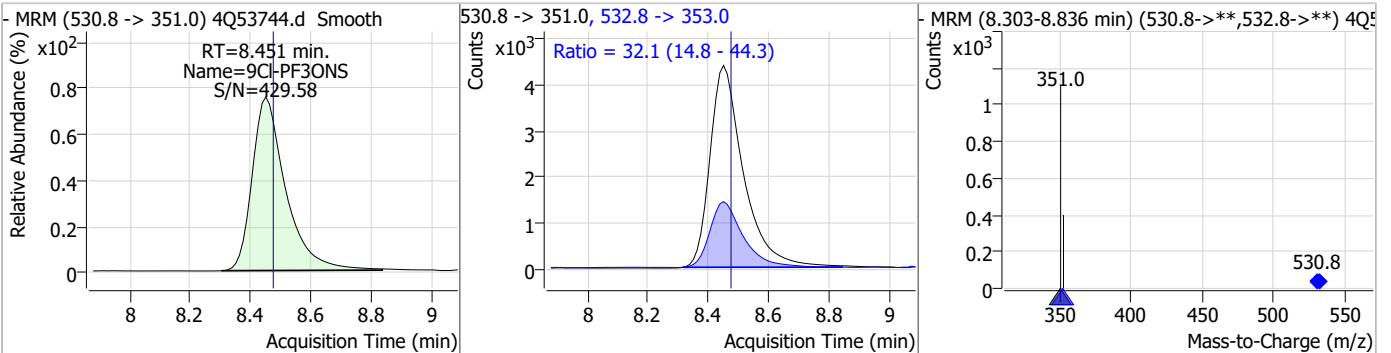


Perfluorinated Compounds by LC/MS/MS

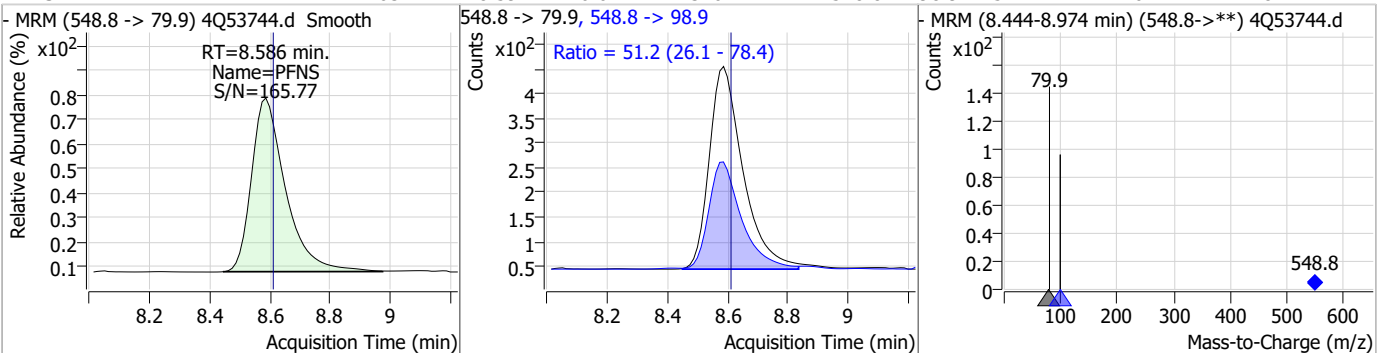
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	2.14	8.45	-0.02	18565	563.1 -> 269.1	22.5	10.6	31.9



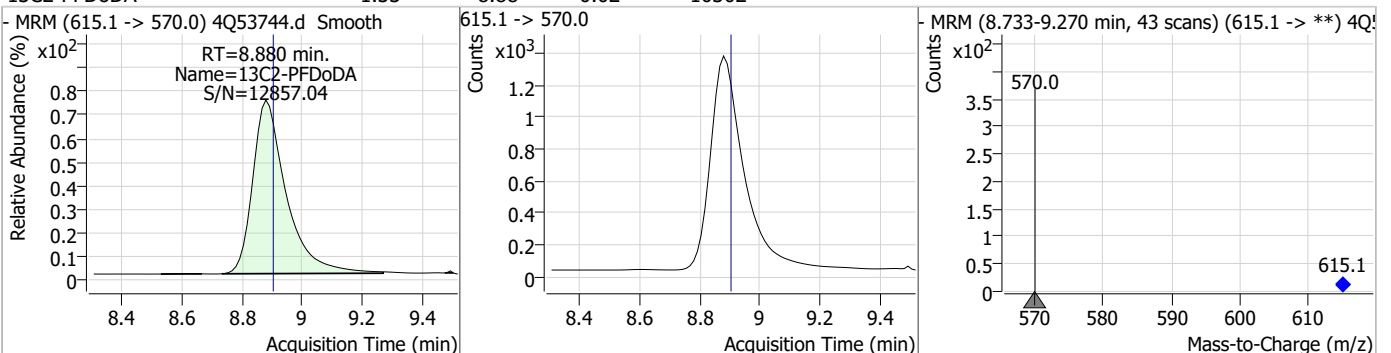
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	4.31	8.45	-0.02	33575	532.8 -> 353.0	32.1	14.8	44.3



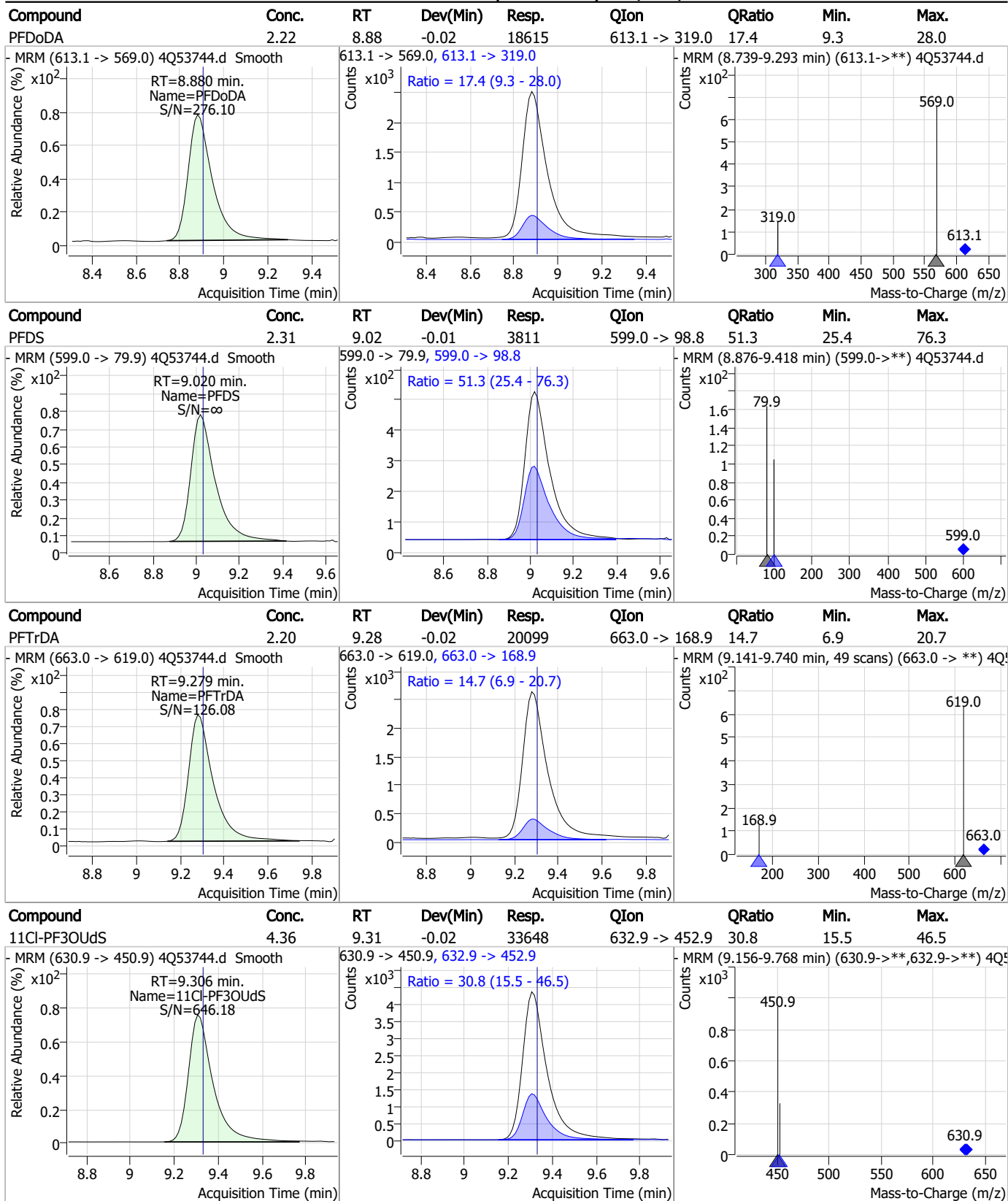
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	2.63	8.59	-0.02	3207	548.8 -> 98.9	51.2	26.1	78.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.33	8.88	-0.02	10302	615.1 -> 570.0			

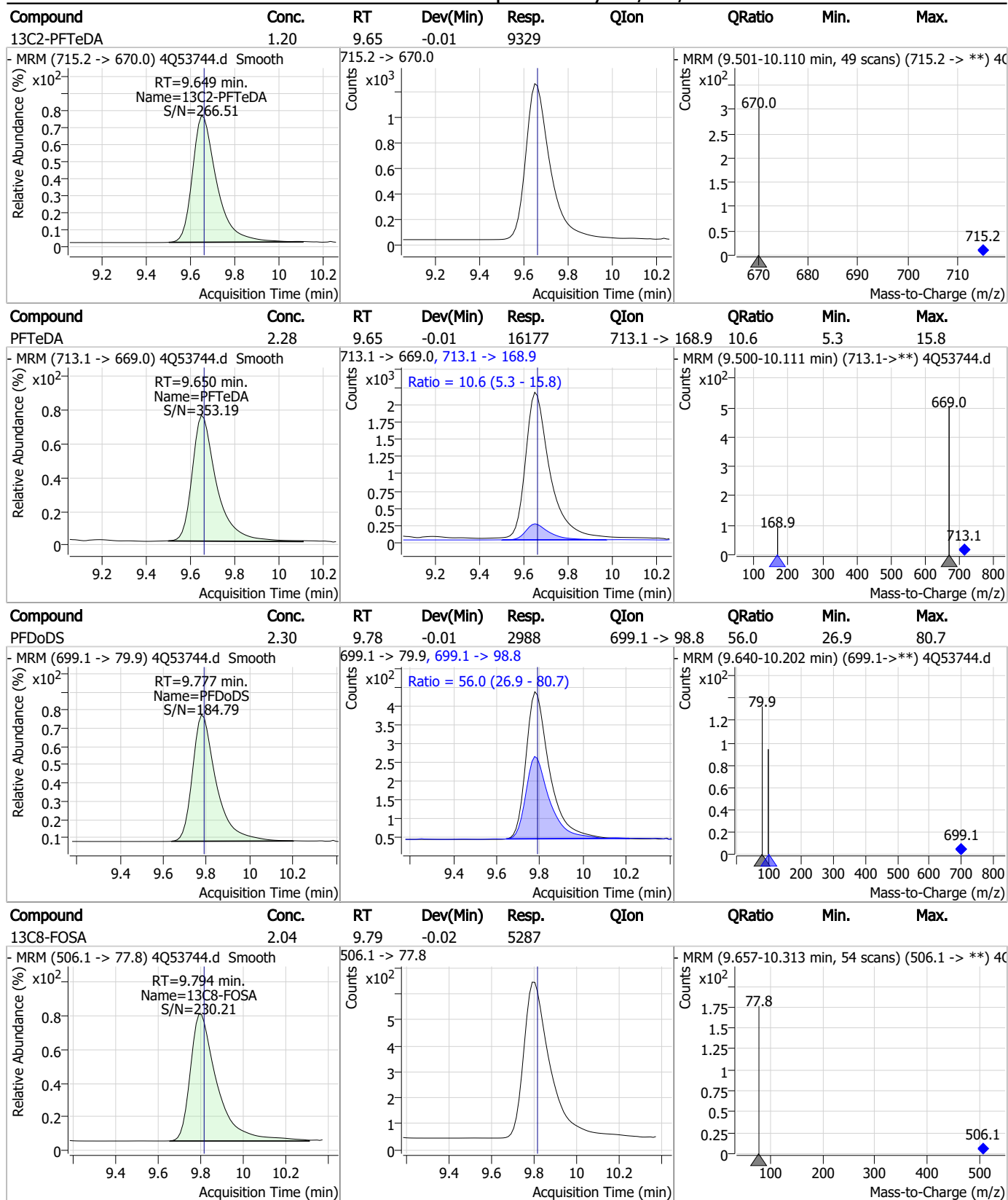


Perfluorinated Compounds by LC/MS/MS



7.3.1
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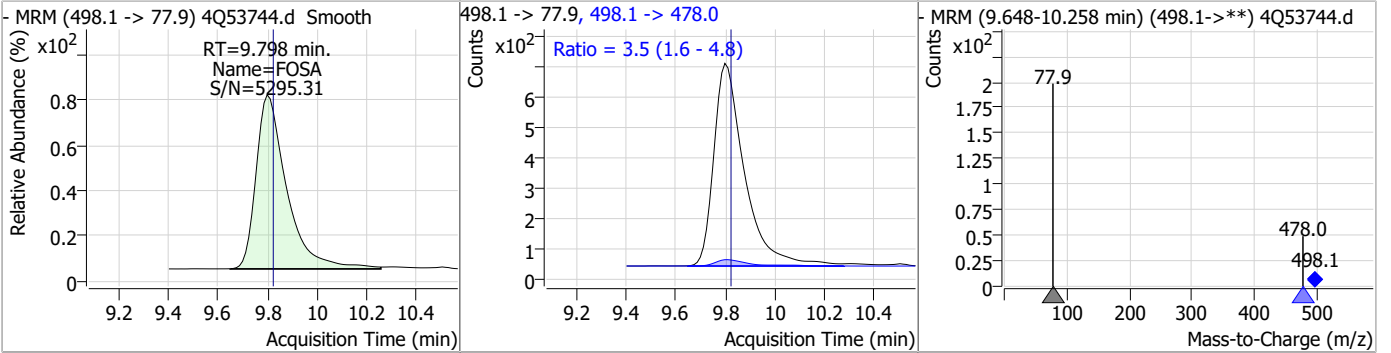
Perfluorinated Compounds by LC/MS/MS



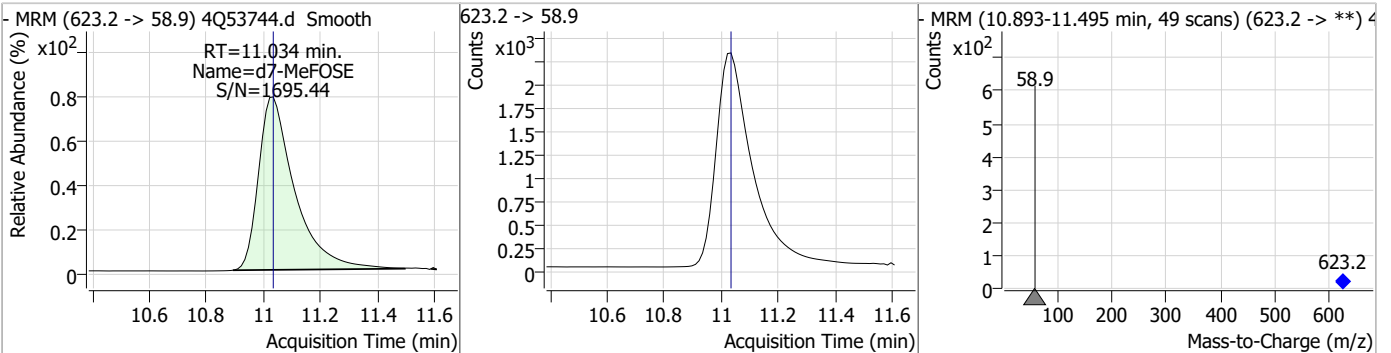
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Perfluorinated Compounds by LC/MS/MS

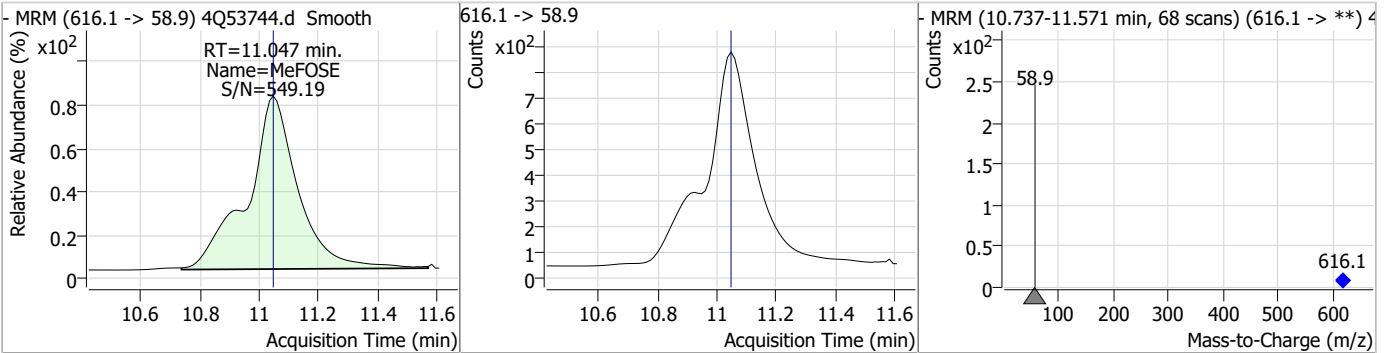
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.23	9.80	-0.02	5739	498.1 -> 478.0	3.5	1.6	4.8



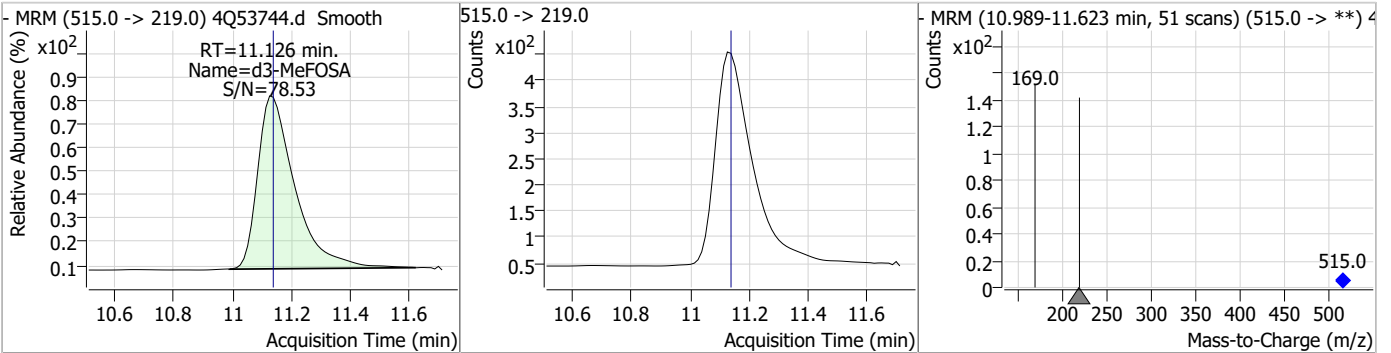
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	18.07	11.03	0.00	20143				



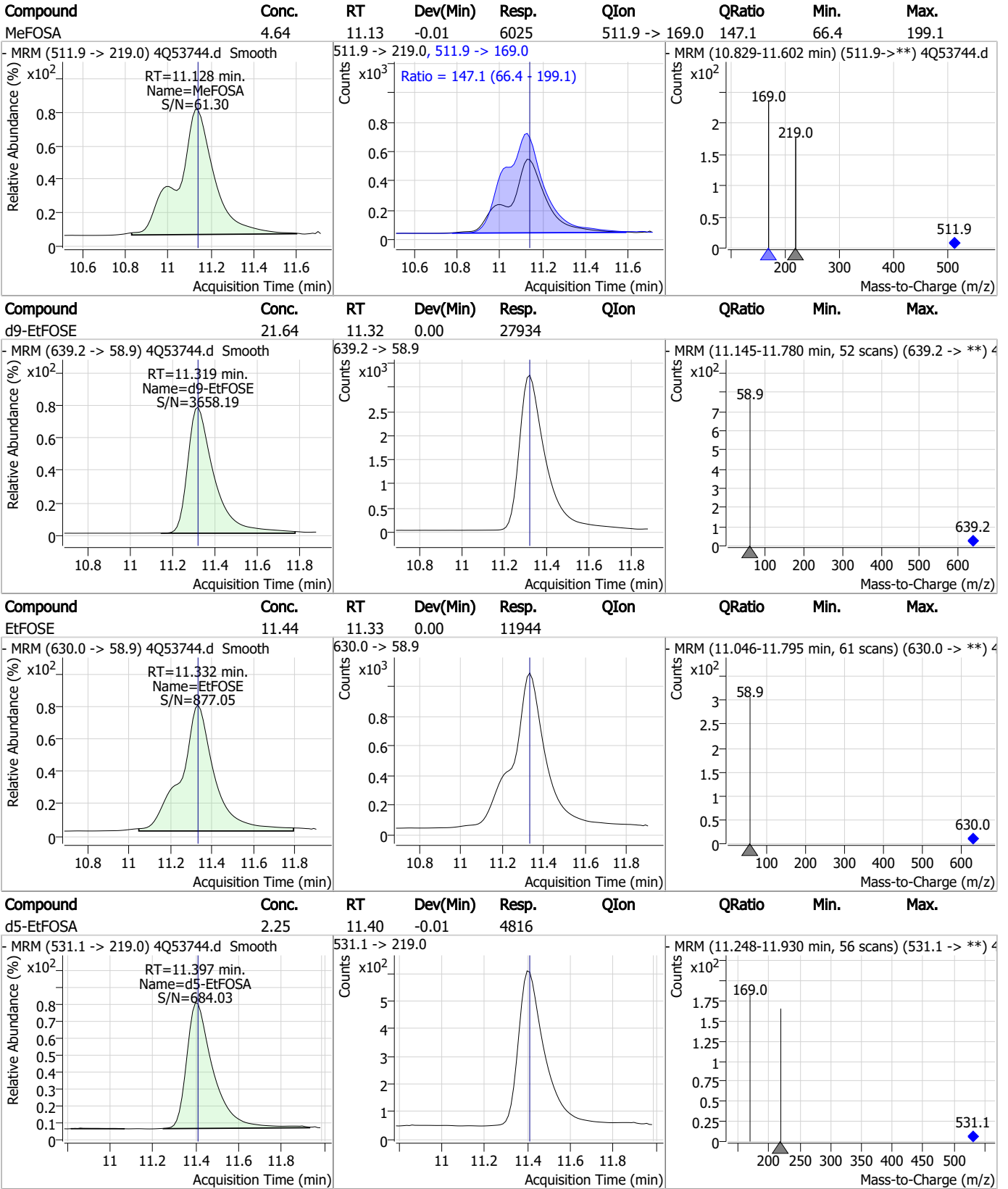
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	10.87	11.05	0.00	9980				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.98	11.13	-0.01	3578				



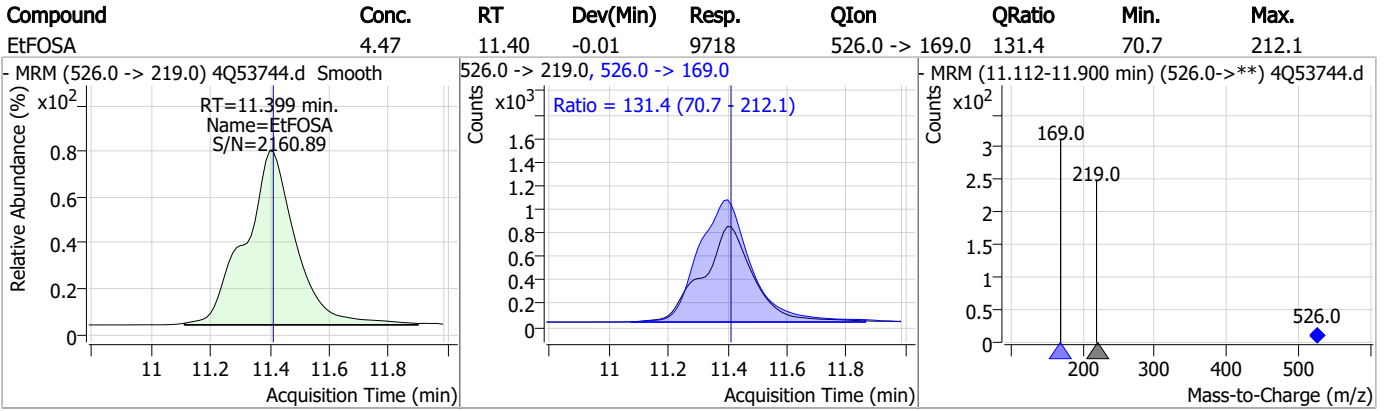
Perfluorinated Compounds by LC/MS/MS



7.3.1

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Perfluorinated Compounds by LC/MS/MS



7.3.1

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Manual Integration Approval Summary

Sample Number: OP99997-BS Method: EPA DRAFT 1633
Lab FileID: 4Q53744.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 19:11 Supervisor approved: 11/14/23 15:56 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

7.3.1.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53745.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 7:26:03 PM
 Sample Name : op99997-llbs:3
 Vial : P4-D2
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP99997,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	92296	10.00 µg/L	0.000
M5-PFPeA	4.137	268.3 -> 223.0	37510	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	28191	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	26639	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	31131	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	12767	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	9062	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	10763	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	10165	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9160	1.25 µg/L	-0.012
M8-FOSA	9.806	506.1 -> 77.8	5617	2.50 µg/L	-0.012
M3-PFBS	5.165	302.1 -> 79.9	8080	2.50 µg/L	-0.038
M3-PFHxS	7.029	402.1 -> 79.9	6980	2.50 µg/L	-0.025
M8-PFOS	8.117	507.1 -> 79.9	7322	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	794	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1635	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2057	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	11818	5.00 µg/L	-0.012
M3-HFPO-DA	5.664	286.9 -> 168.9	25994	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	9658	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	20131	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	26600	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	4512	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	3127	2.50 µg/L	0.000
13C4-PFOS	8.118	502.8 -> 79.9	5559	2.50 µg/L	-0.026
13C3-PFBA	2.691	216.0 -> 172.0	39262	5.00 µg/L	-0.013
18O2-PFHxS	7.028	403.0 -> 83.9	3912	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	30816	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	8717	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	12182	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	27239	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	794	5.93 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.6%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1635	5.80 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.9%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2057	5.17 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.5%		
13C2-PFDoDA	8.880	615.1 -> 570.0	10165	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	9160	1.16 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.6%		
13C3-PFBS	5.165	302.1 -> 79.9	8080	2.75 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 110.1%		
13C3-PFHxS	7.029	402.1 -> 79.9	6980	2.88 µg/L	-0.025

7.32
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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 = 115.1%	
13C4-PFBA	2.699	216.8 -> 171.9	92296	11.28 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 112.8%	
13C4-PFHpA	6.267	367.1 -> 322.0	26639	2.80 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.1%	
13C5-PFHxA	5.310	318.0 -> 273.0	28191	2.77 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.0%	
13C5-PFPeA	4.137	268.3 -> 223.0	37510	5.65 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 112.9%	
13C6-PFDA	8.004	519.1 -> 474.1	9062	1.41 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 113.0%	
13C7-PFUnDA	8.448	570.0 -> 525.1	10763	1.45 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 116.1%	
13C8-FOSA	9.806	506.1 -> 77.8	5617	2.11 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 84.6%	
13C8-PFOA	6.964	421.1 -> 376.0	31131	2.83 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 113.2%	
13C8-PFOS	8.117	507.1 -> 79.9	7322	2.76 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.3%	
13C9-PFNA	7.509	472.1 -> 427.0	12767	1.33 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.3%	
d3-MeFOSAA	8.086	573.2 -> 419.0	11818	5.61 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 112.1%	
13C3-HFPO-DA	5.664	286.9 -> 168.9	25994	11.21 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 112.1%	
d3-MeFOSA	11.139	515.0 -> 219.0	3127	1.69 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 67.4%	
d5-EtFOSAA	8.283	589.2 -> 419.0	9658	5.23 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.6%	
d7-MeFOSE	11.034	623.2 -> 58.9	20131	17.58 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 70.3%	
d9-EtFOSE	11.319	639.2 -> 58.9	26600	20.05 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 80.2%	
d5-EtFOSA	11.410	531.1 -> 219.0	4512	2.05 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 82.0%	
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	3911	2.49 µg/L	98
		327.1 -> 80.9	1610		
6:2FTS	6.737	427.1 -> 407.0	4962	2.80 µg/L	94
		427.1 -> 80.9	2091		
8:2FTS	7.804	527.1 -> 507.0	3637	3.25 µg/L	93
		527.1 -> 80.8	1680		
EtFOSAA	8.297	584.2 -> 419.1	1476	0.85 µg/L	82
		584.2 -> 526.0	608		
FOSA	9.798	498.1 -> 77.9	2109	0.77 µg/L	97
		498.1 -> 478.0	50		
MeFOSAA	8.087	570.1 -> 419.0	1654	0.79 µg/L	96
		570.1 -> 483.0	331		
PFBA	2.695	212.8 -> 168.9	9931	2.96 µg/L	100
PFBS	5.166	298.7 -> 79.9	1942	0.68 µg/L	90
		298.7 -> 98.8	638		
PFDA	8.005	512.9 -> 469.0	5190	0.70 µg/L	96
		512.9 -> 219.0	1127		
PFDODA	8.880	613.1 -> 569.0	6358	0.77 µg/L	95
		613.1 -> 319.0	1052		
PFDS	9.020	599.0 -> 79.9	1348	0.71 µg/L	96

7.3.2
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	653	0.75	µg/L	98
		363.1 -> 319.0	12571			
PFHpS	7.612	363.1 -> 169.0	2326	0.66	µg/L	90
		449.0 -> 79.9	1907			
PFHxA	5.313	449.0 -> 98.9	1110	0.73	µg/L	96
		313.0 -> 269.0	7184			
PFHxS	7.030	313.0 -> 118.9	282	0.66	µg/L	97
		398.7 -> 79.9	1382			
PFNA	7.510	398.7 -> 98.9	861	0.78	µg/L	96
		463.0 -> 419.0	6323			
PFNS	8.586	463.0 -> 219.0	1463	0.77	µg/L	96
		548.8 -> 79.9	1078			
PFOA	6.965	548.8 -> 98.9	598	0.70	µg/L	98
		413.0 -> 369.0	10553			
PFOS	8.119	413.0 -> 169.0	2230	0.71	µg/L	84
		498.9 -> 79.9	2364			
PFPeA	4.139	498.9 -> 98.8	1189	1.47	µg/L	100
		263.0 -> 219.0	11986			
PFPeS	6.257	349.1 -> 79.9	1634	0.71	µg/L	98
		349.1 -> 98.9	733			
PFTeDA	9.650	713.1 -> 669.0	4617	0.66	µg/L	95
		713.1 -> 168.9	565			
PFTrDA	9.279	663.0 -> 619.0	6880	0.76	µg/L	98
		663.0 -> 168.9	993			
PFUnDA	8.449	563.1 -> 519.0	6767	0.77	µg/L	100
		563.1 -> 269.1	1430			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	11302	1.39	µg/L	97
		632.9 -> 452.9	3348			
9Cl-PF3ONS	8.451	530.8 -> 351.0	11701	1.43	µg/L	97
		532.8 -> 353.0	3649			
ADONA	6.544	376.9 -> 250.9	30163	1.68	µg/L	99
		376.9 -> 84.8	7325			
HFPO-DA	5.665	284.9 -> 168.9	4234	1.54	µg/L	100
		284.9 -> 184.9	396			
3:3FTCA	3.630	241.0 -> 177.0	1389	2.66	µg/L	95
		241.0 -> 117.0	103			
5:3FTCA	5.996	341.0 -> 237.1	30246	17.45	µg/L	99
		341.0 -> 217.0	21697			
7:3FTCA	7.536	441.0 -> 316.9	13514	17.38	µg/L	96
		441.0 -> 336.9	34012			
EtFOSA	11.399	526.0 -> 219.0	2989	1.47	µg/L	95
		526.0 -> 169.0	4027			
EtFOSE	11.332	630.0 -> 58.9	3784	3.81	µg/L	100
		511.9 -> 219.0	2175			
MeFOSA	11.128	511.9 -> 169.0	3017	1.92	µg/L	95
		616.1 -> 58.9	3496			
MeFOSE	11.047	699.1 -> 79.9	1030	3.81	µg/L	100
		699.1 -> 98.8	564			
PFDoDS	9.777	295.0 -> 201.0	1227	0.69	µg/L	99
		295.0 -> 84.9	353			
NFDHA	5.191	279.0 -> 85.1	7735	1.89	µg/L	90
		229.0 -> 84.9	9019			
PFMBA	4.541	314.8 -> 134.9	12256	1.65	µg/L	100
		314.8 -> 82.9	351			
PFMPA	3.303			1.73	µg/L	100
PFEESA	5.696			1.57	µg/L	100

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

7.3.2
7

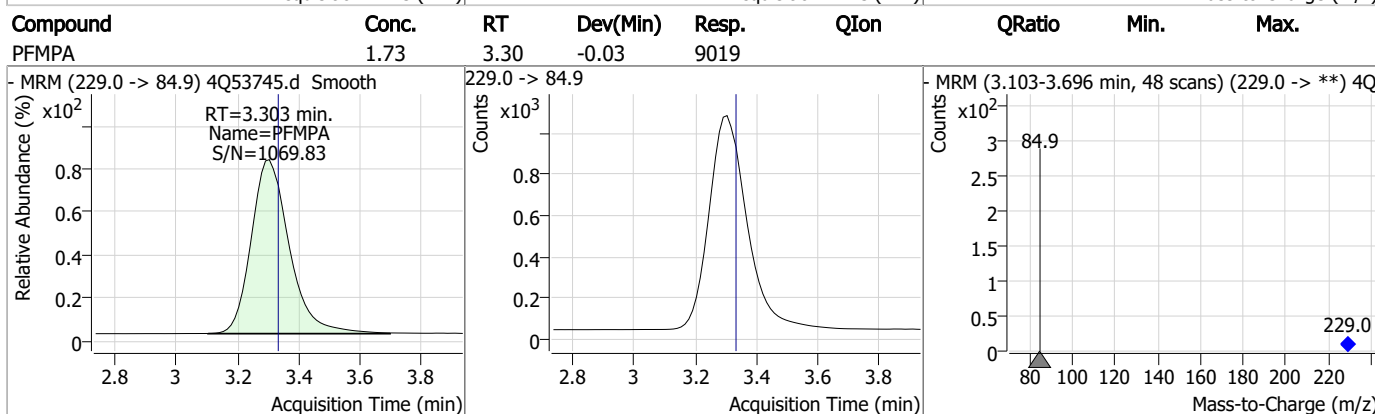
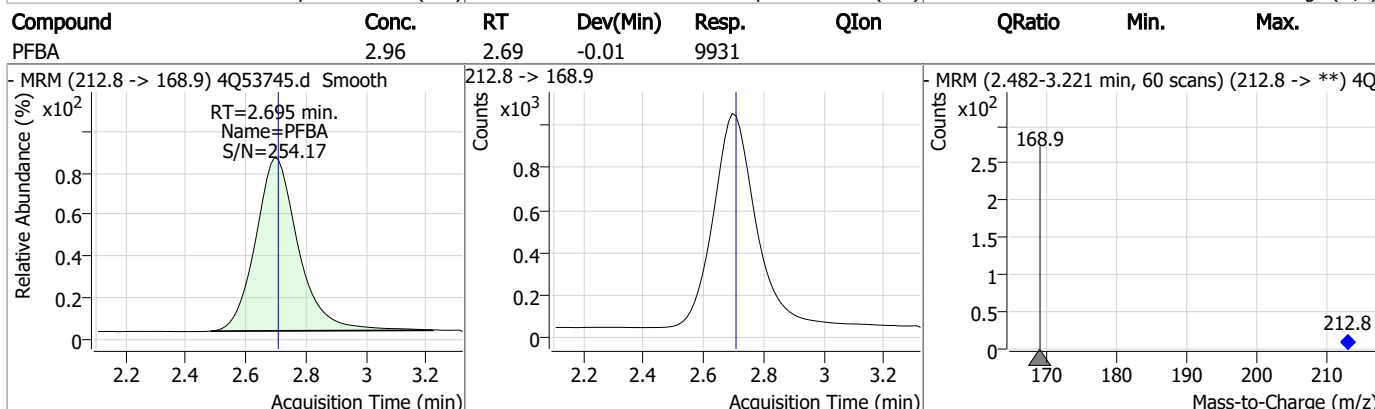
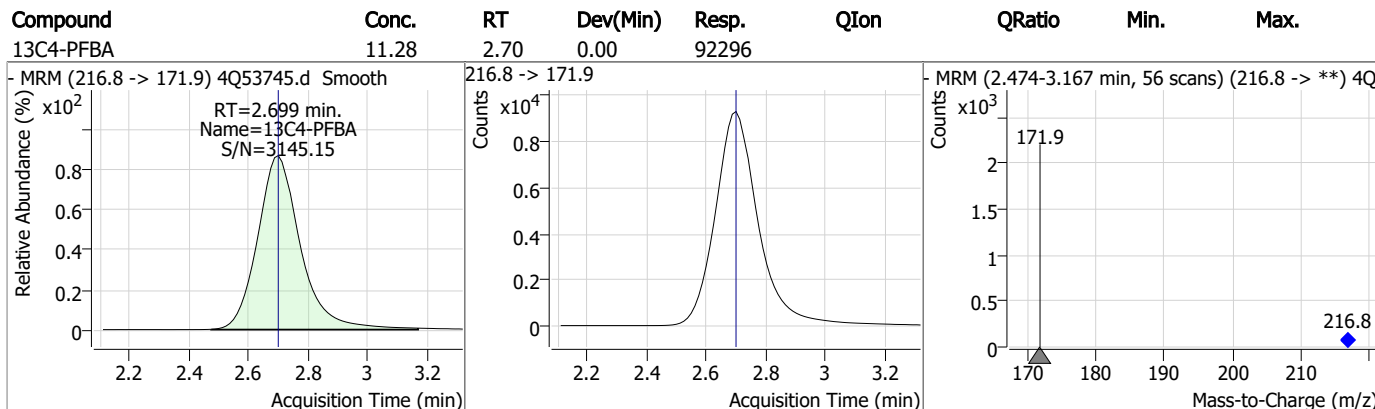
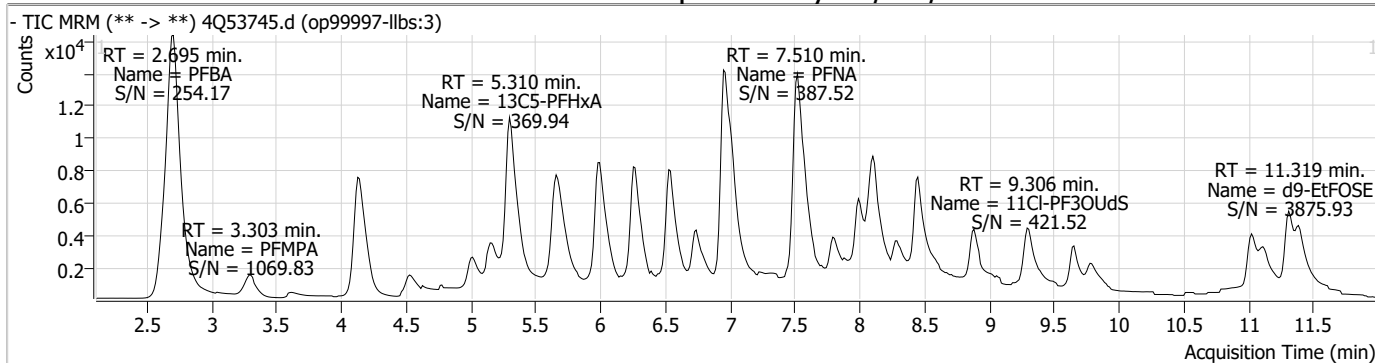
Perfluorinated Compounds by LC/MS/MS

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

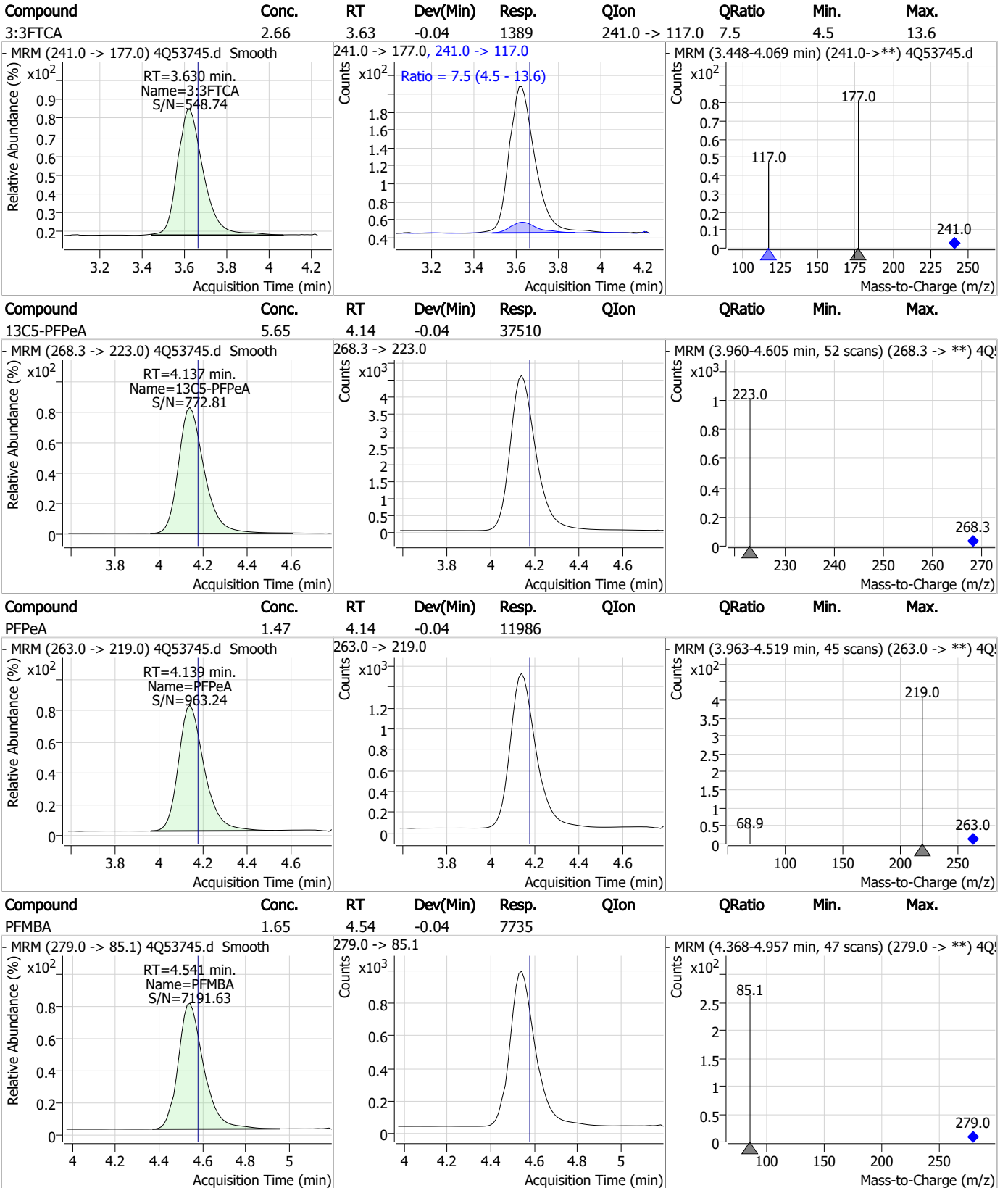
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Perfluorinated Compounds by LC/MS/MS



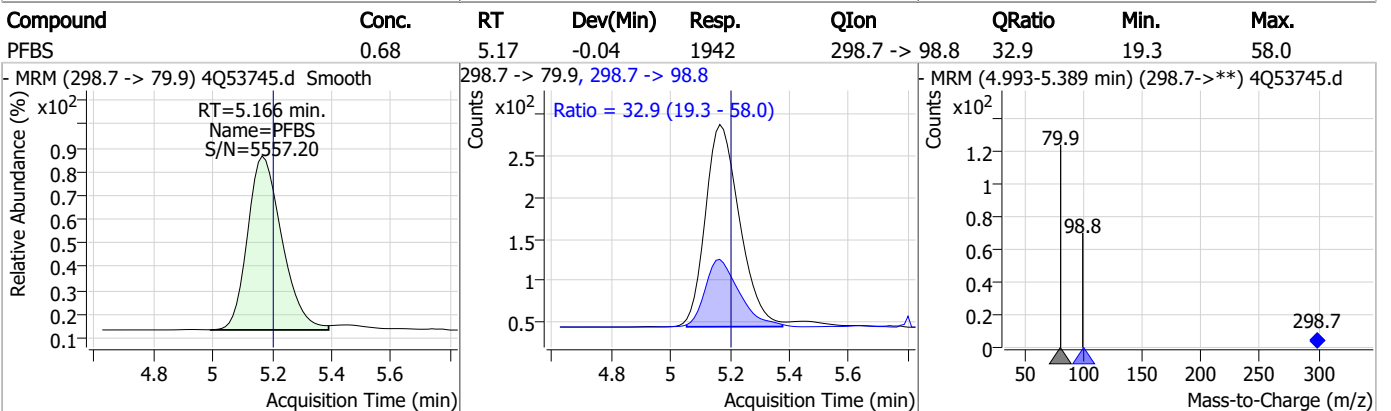
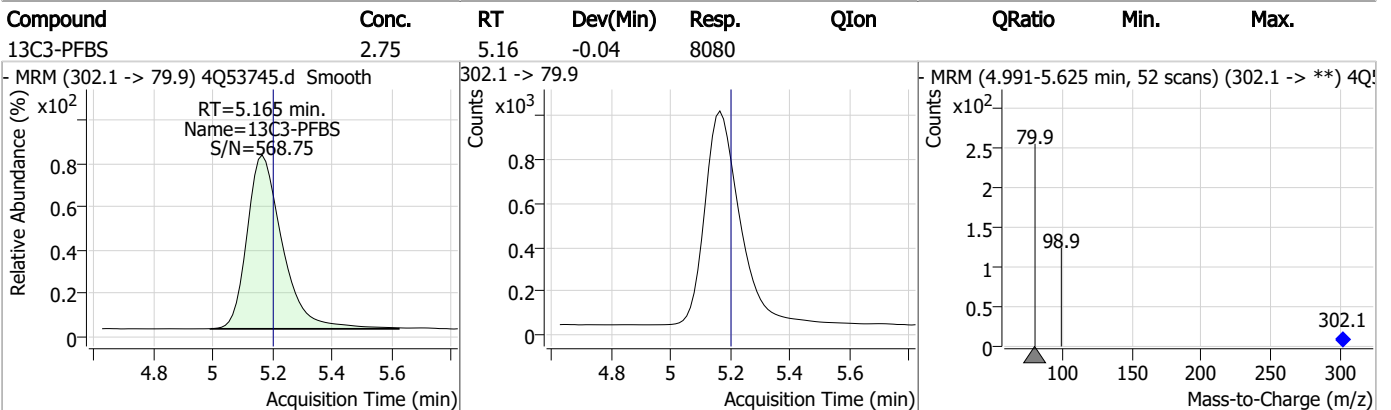
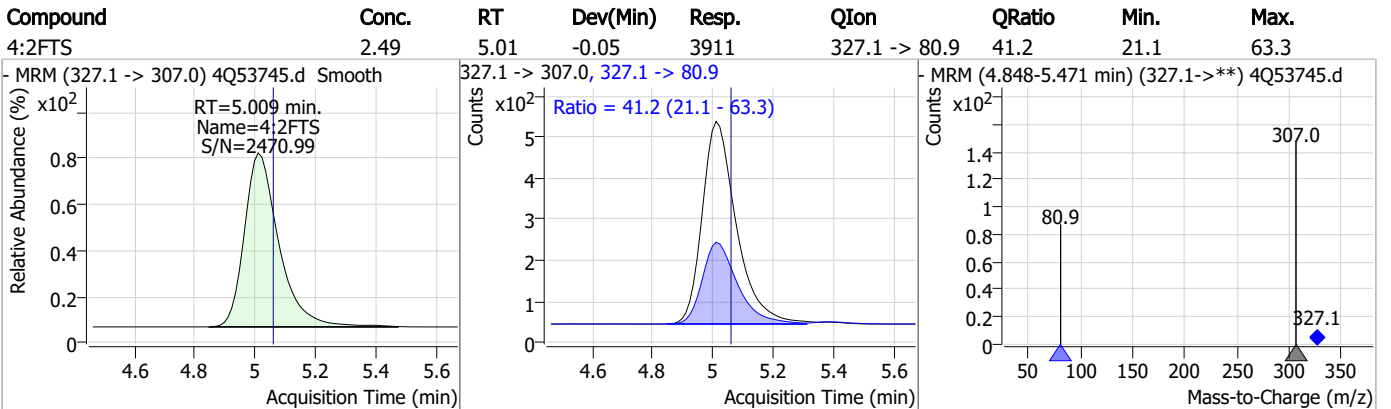
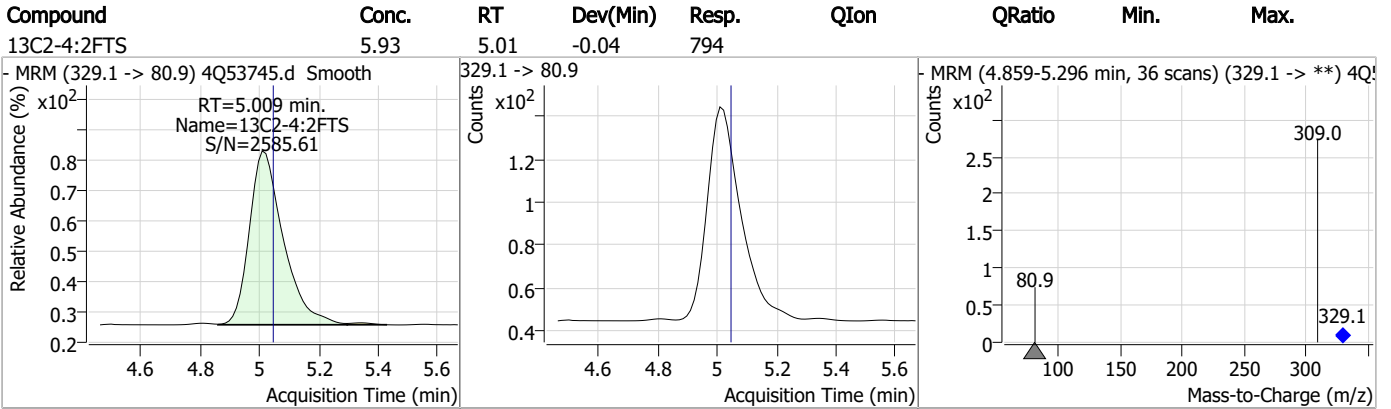
7.3.2
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Perfluorinated Compounds by LC/MS/MS



7.3.2
7

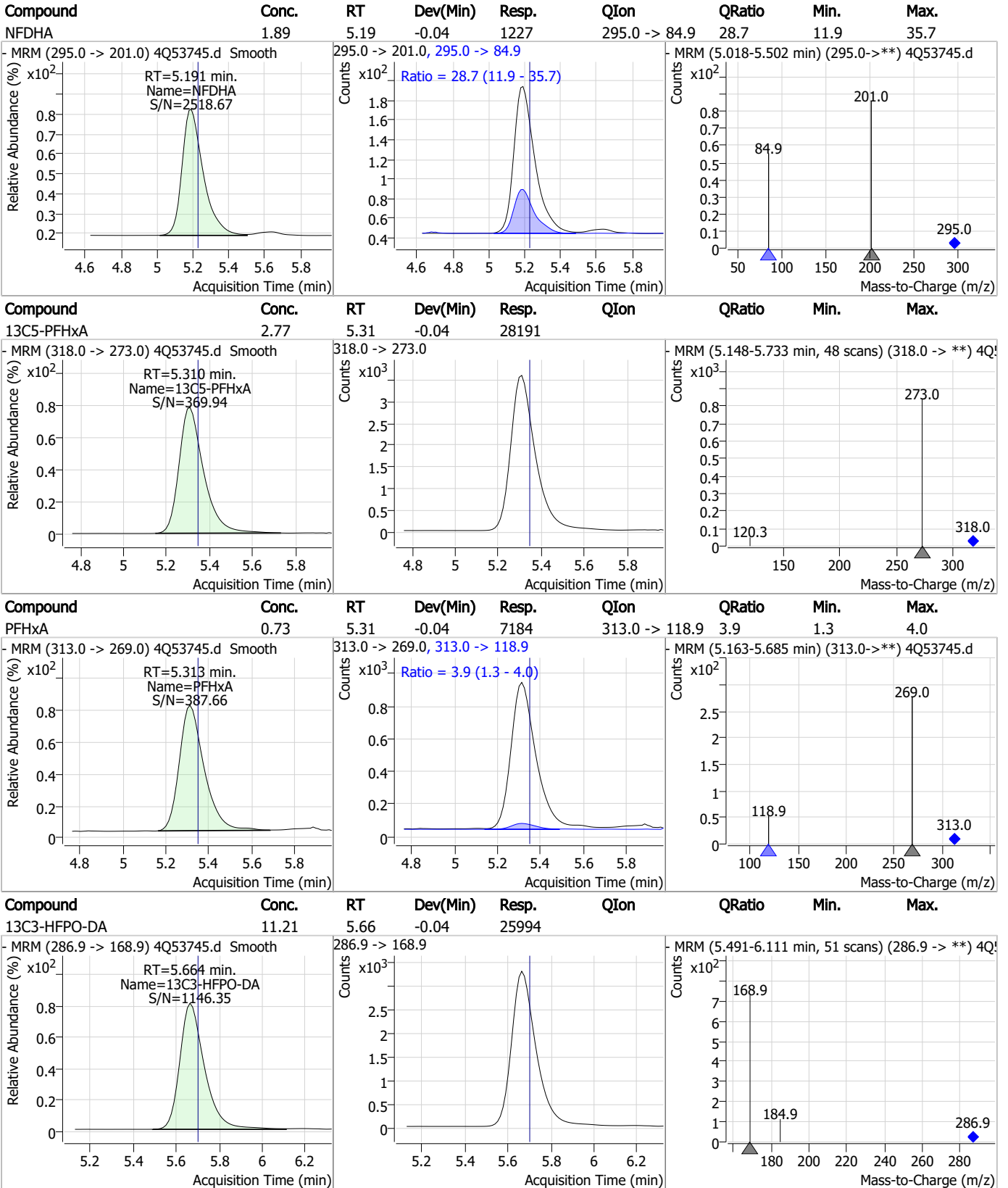
Perfluorinated Compounds by LC/MS/MS



7.3.2
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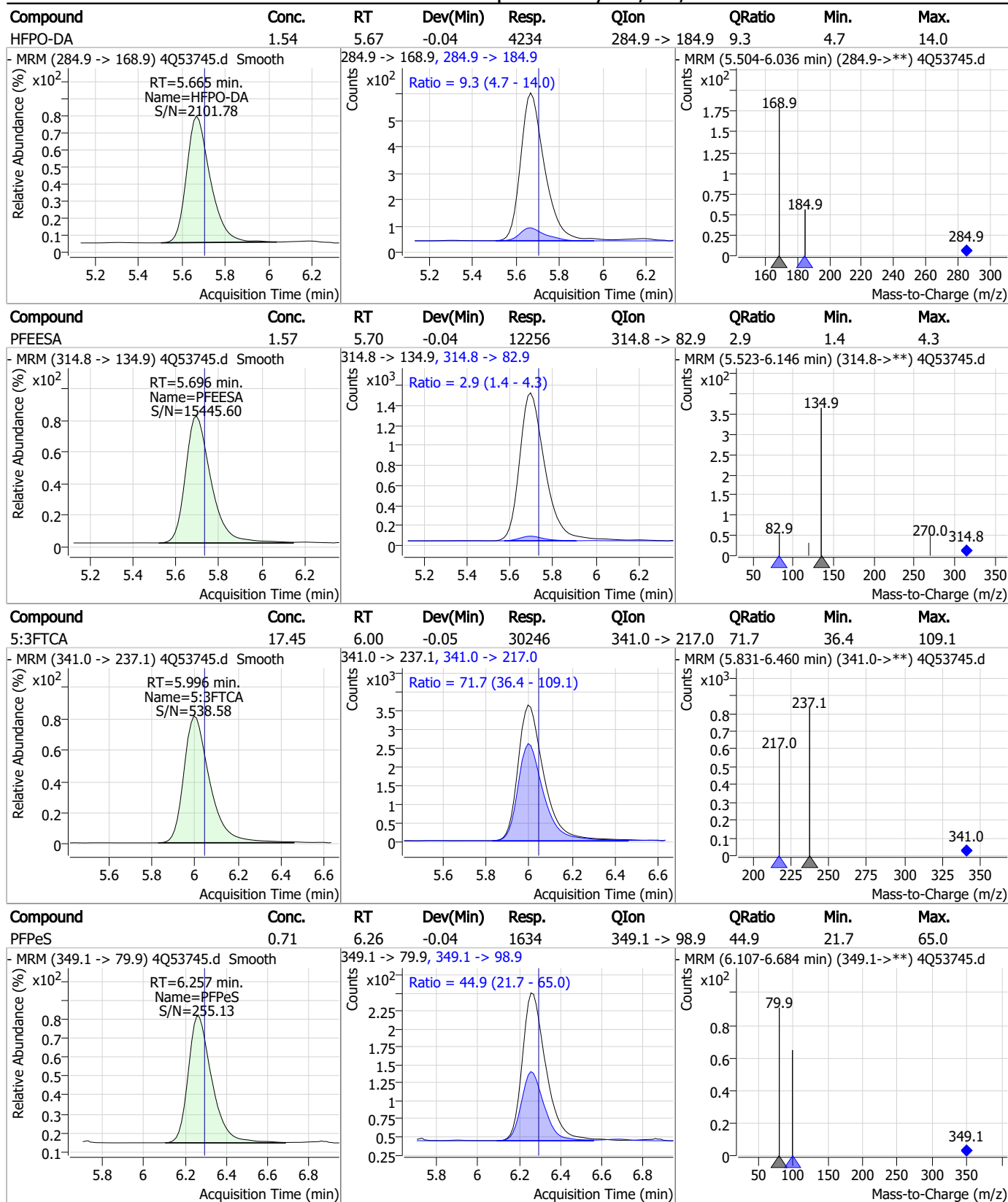


Perfluorinated Compounds by LC/MS/MS



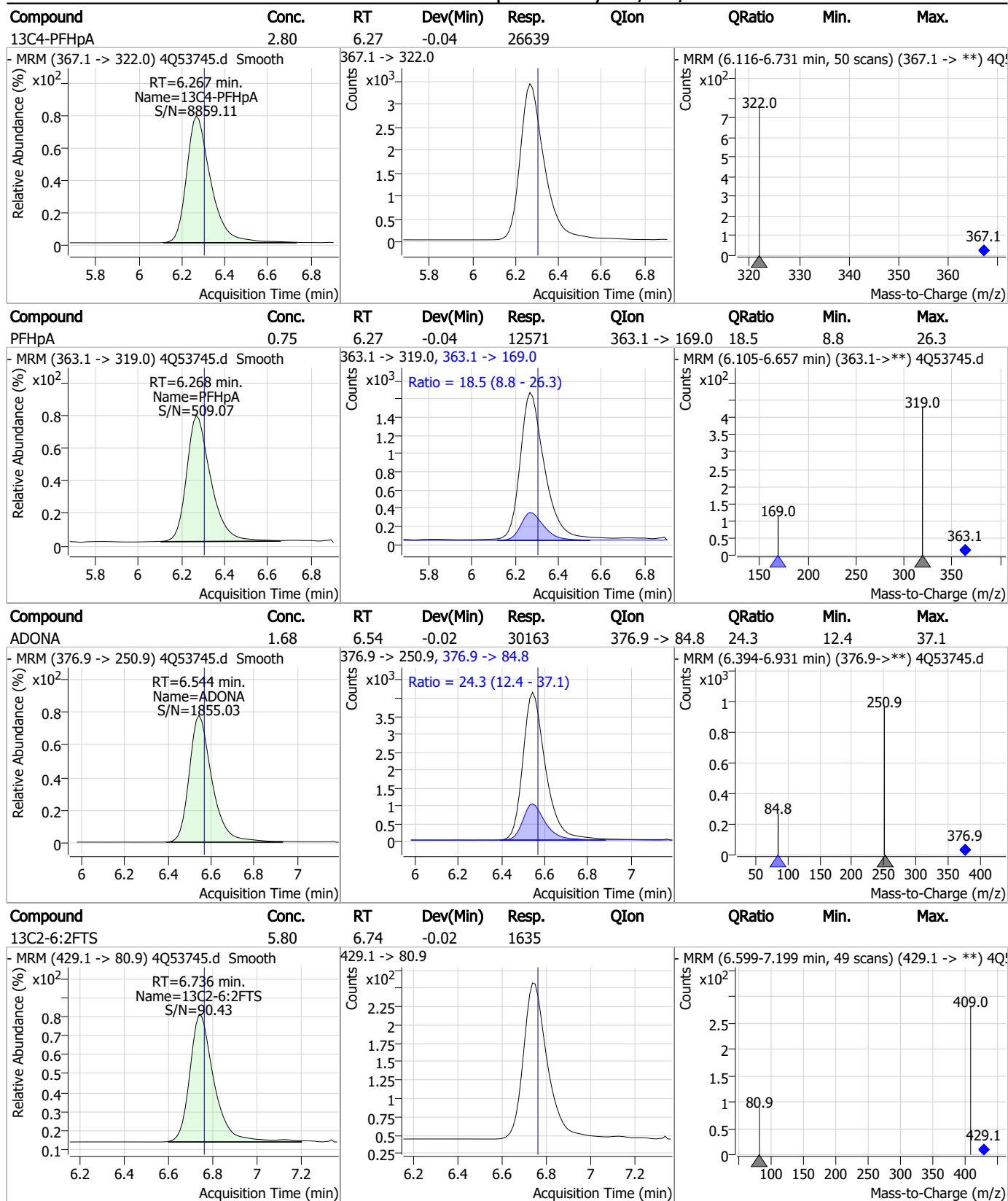
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Perfluorinated Compounds by LC/MS/MS



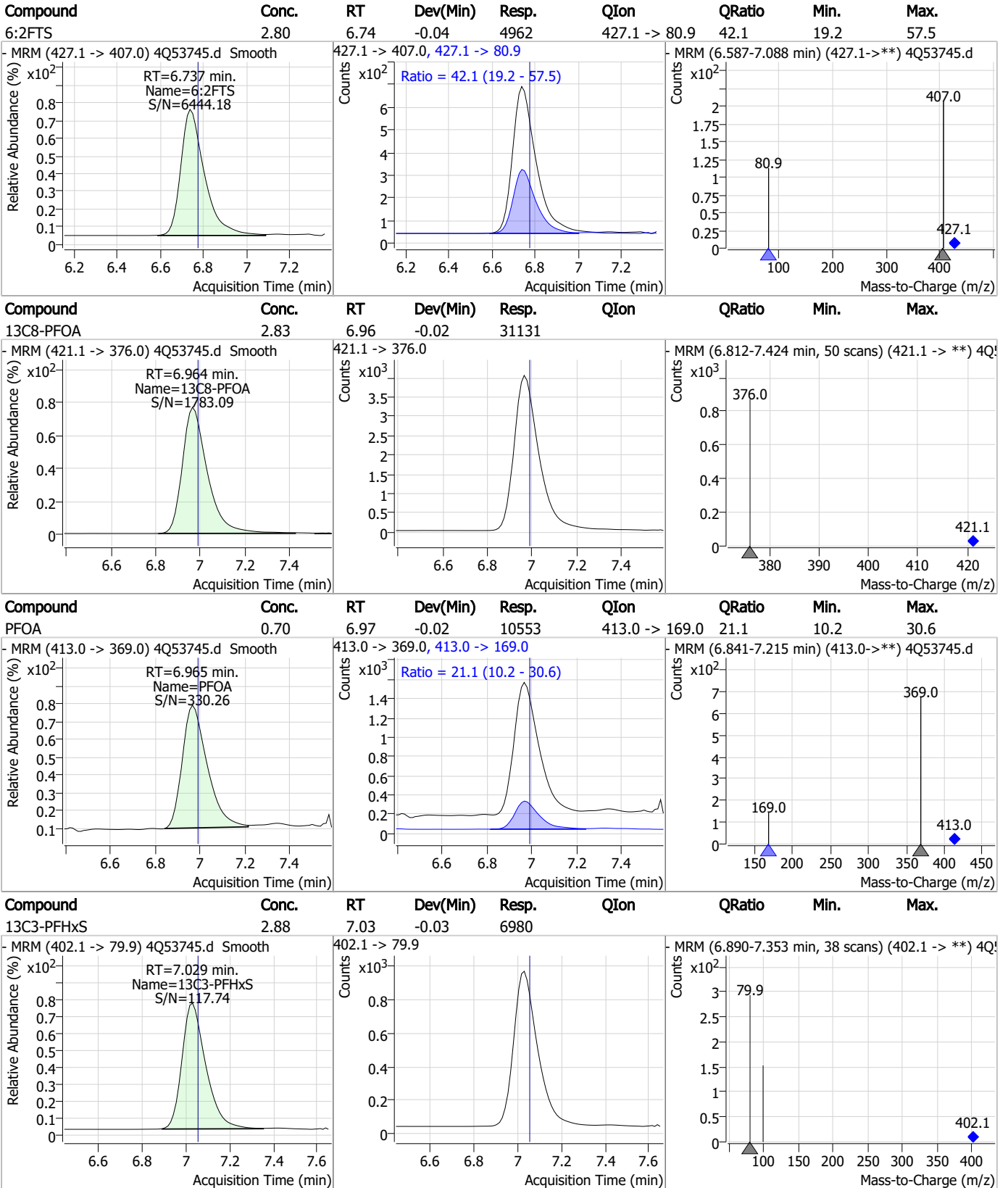
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Perfluorinated Compounds by LC/MS/MS



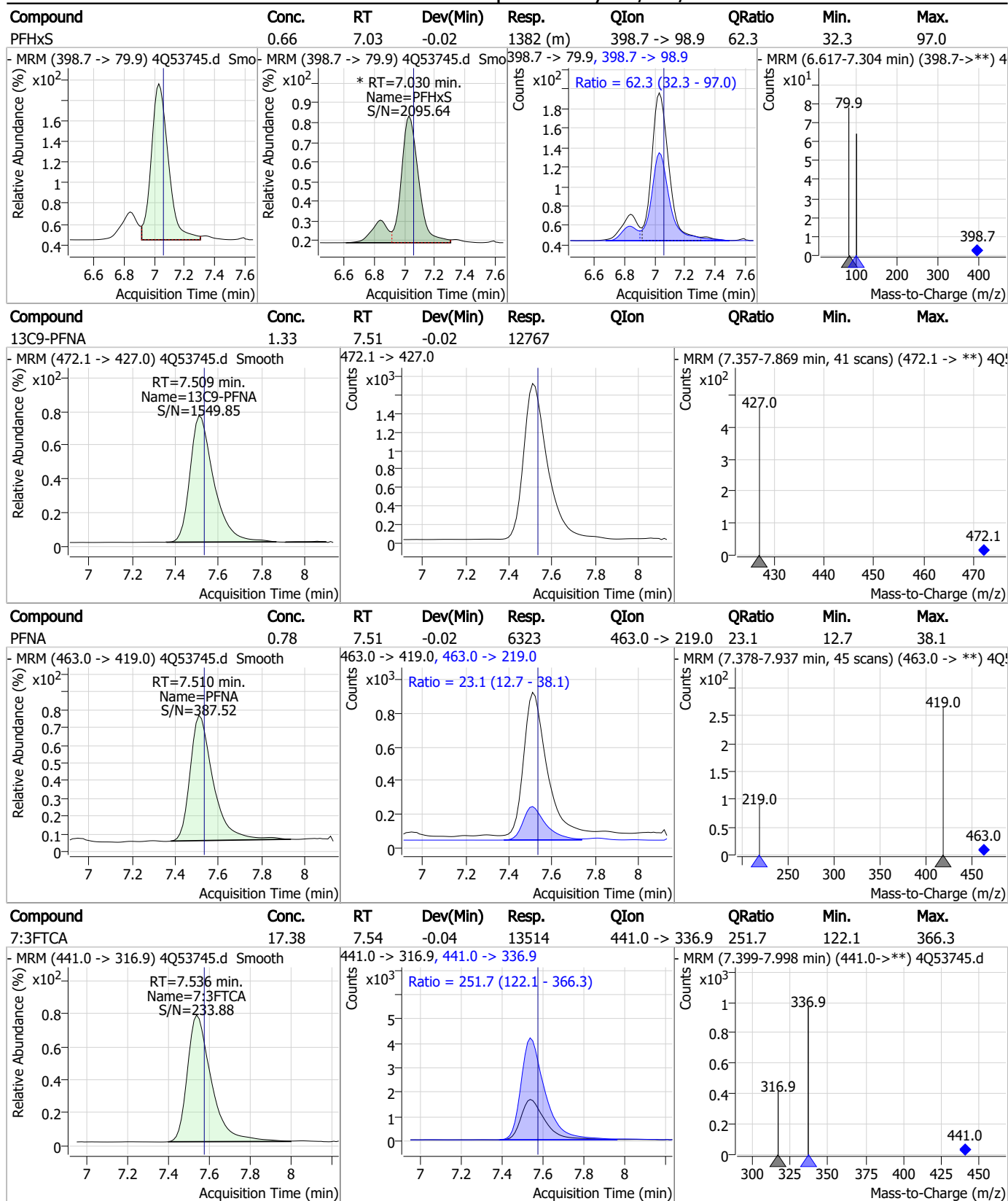
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Perfluorinated Compounds by LC/MS/MS



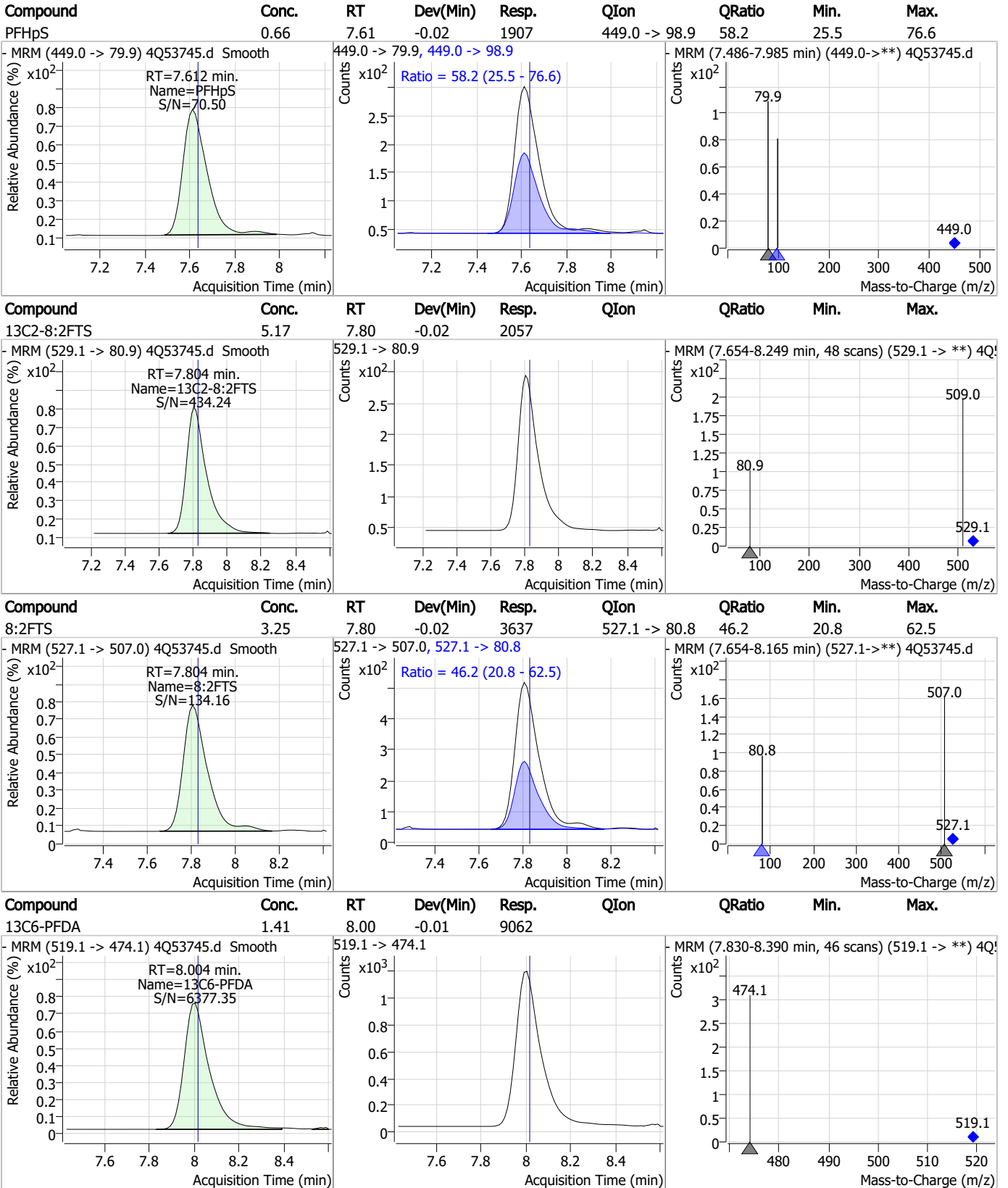
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Perfluorinated Compounds by LC/MS/MS



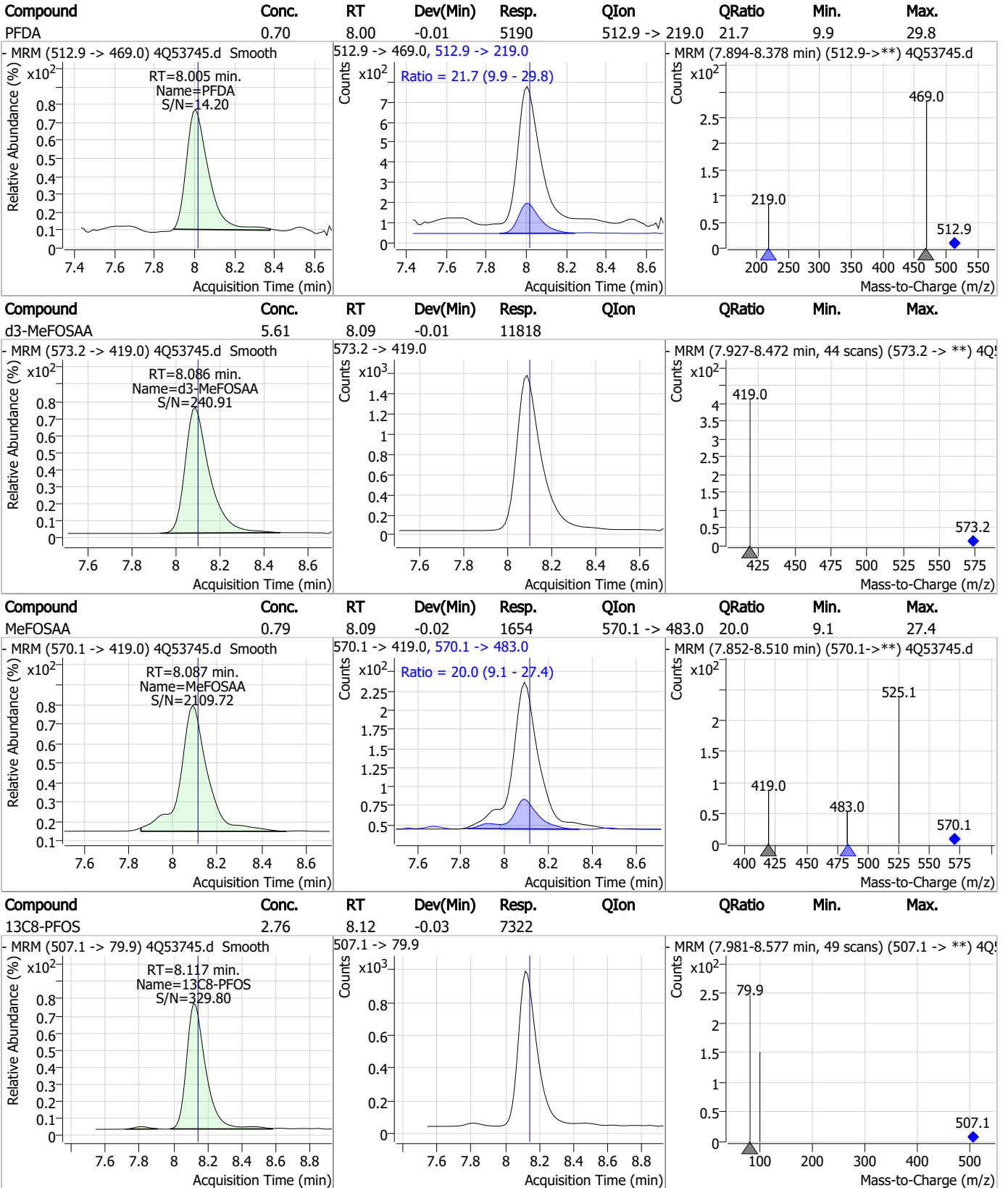
7.3.2
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Perfluorinated Compounds by LC/MS/MS



7.3.2
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Perfluorinated Compounds by LC/MS/MS

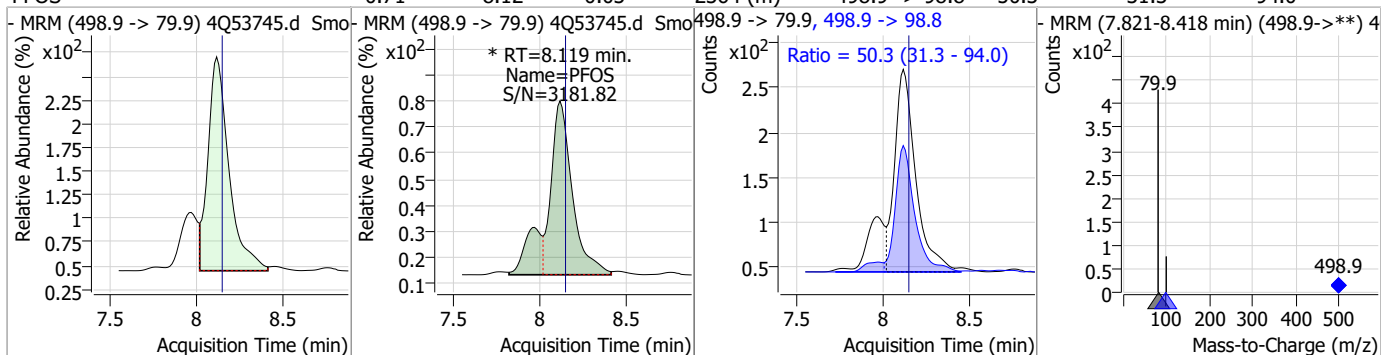


7.3.2
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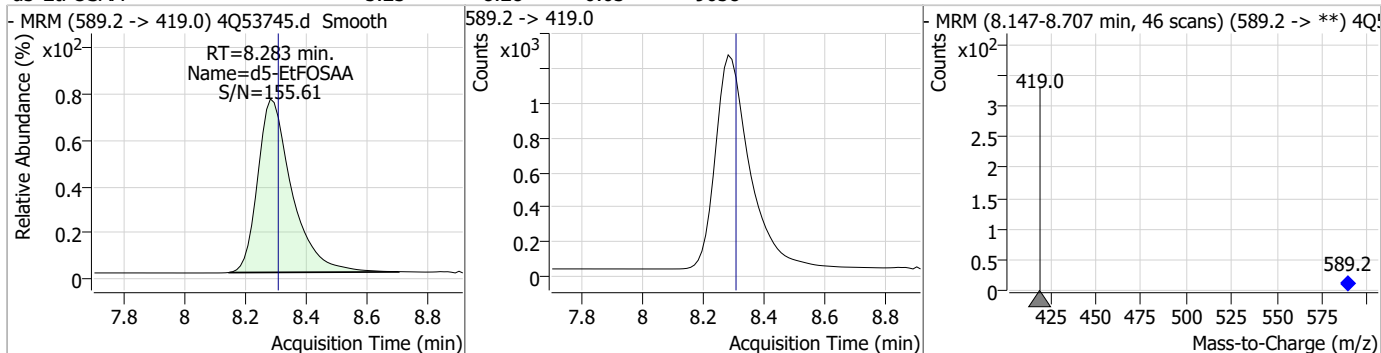


Perfluorinated Compounds by LC/MS/MS

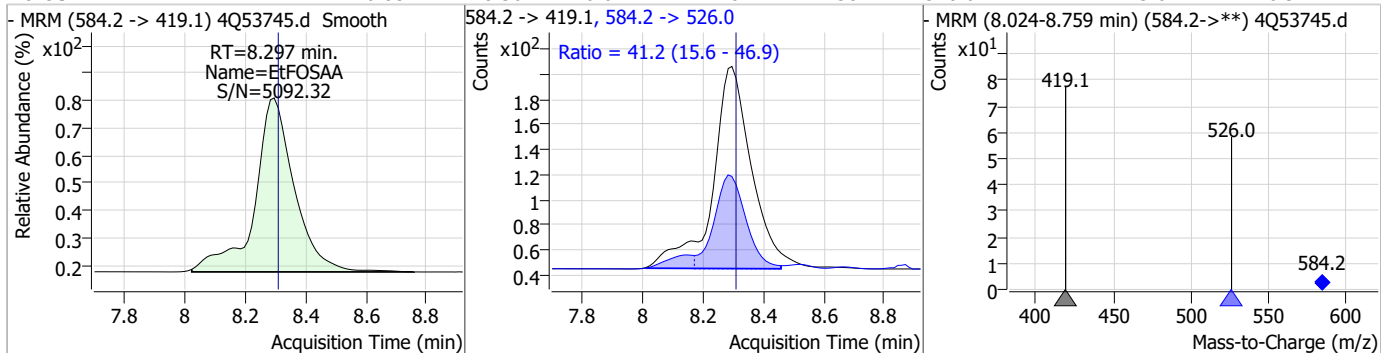
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.71	8.12	-0.03	2364 (m)	498.9 -> 98.8	50.3	31.3	94.0



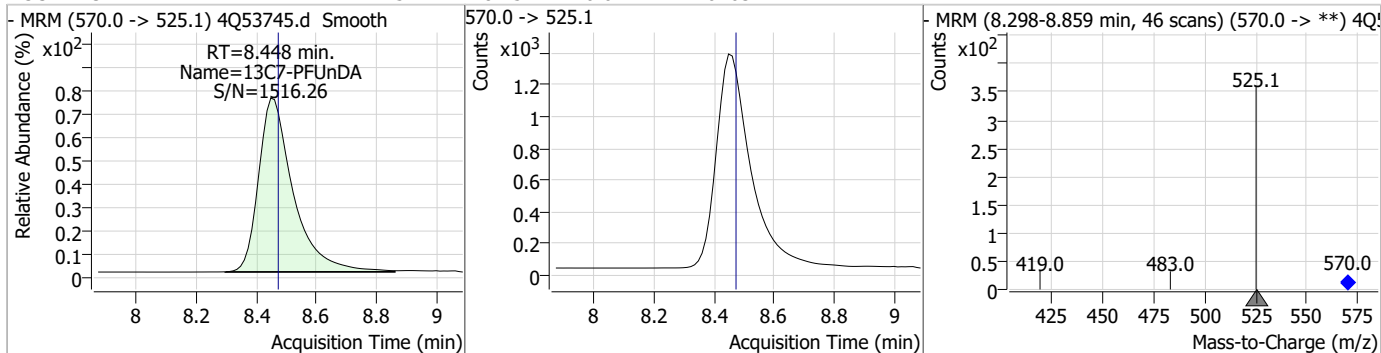
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.23	8.28	-0.03	9658				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.85	8.30	-0.01	1476	584.2 -> 526.0	41.2	15.6	46.9

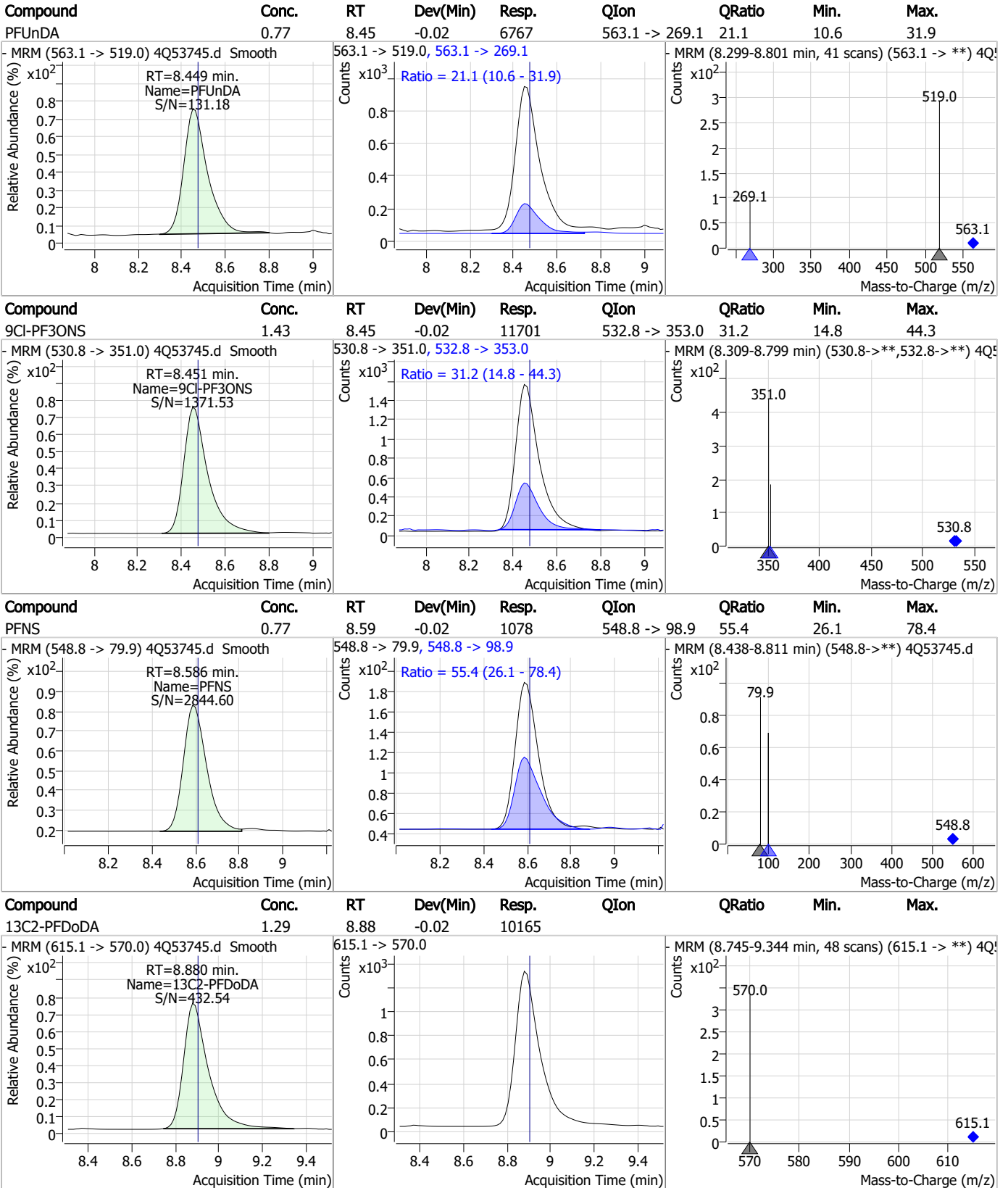


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.45	8.45	-0.02	10763				



7.3.2
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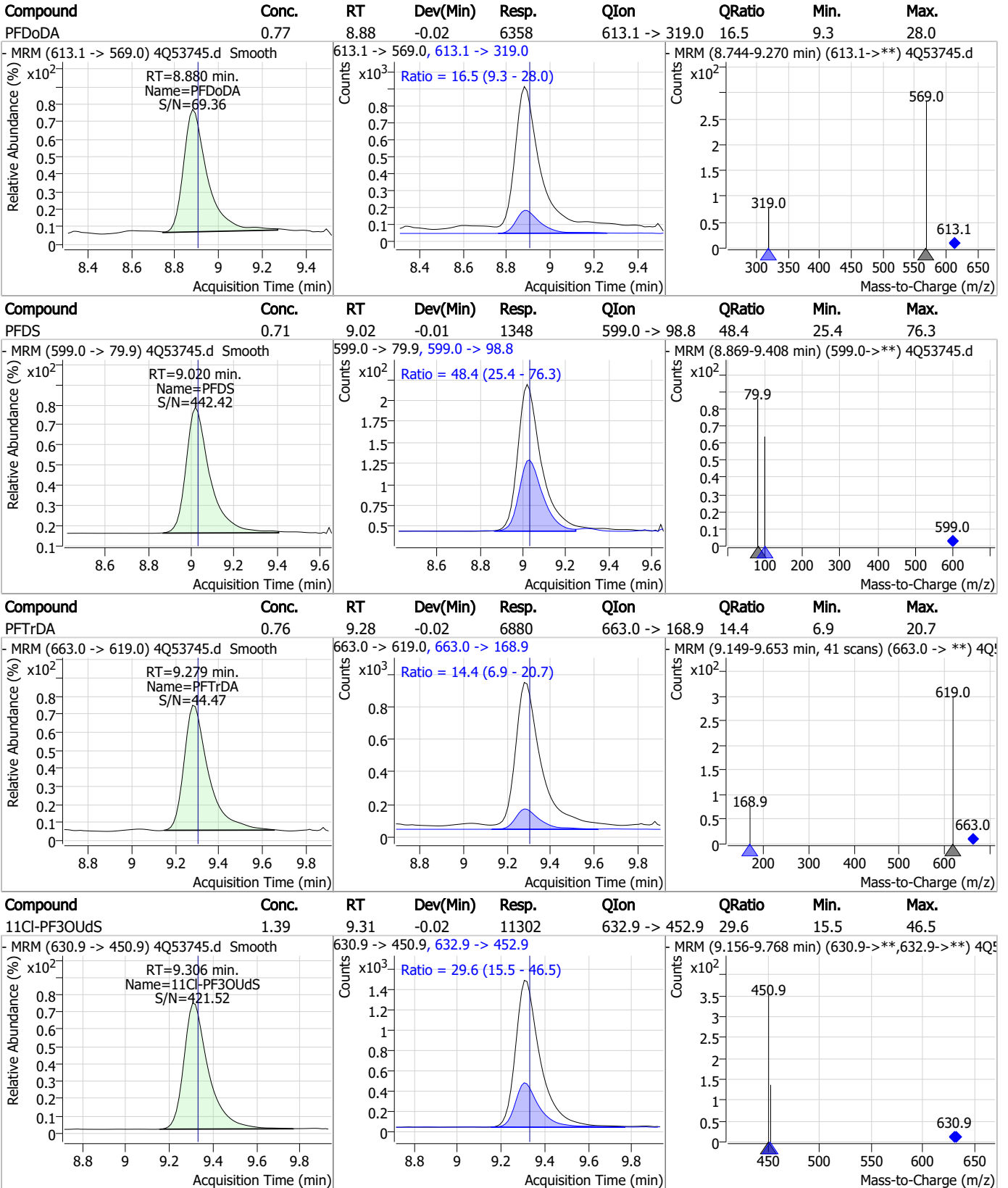
Perfluorinated Compounds by LC/MS/MS



7.3.2

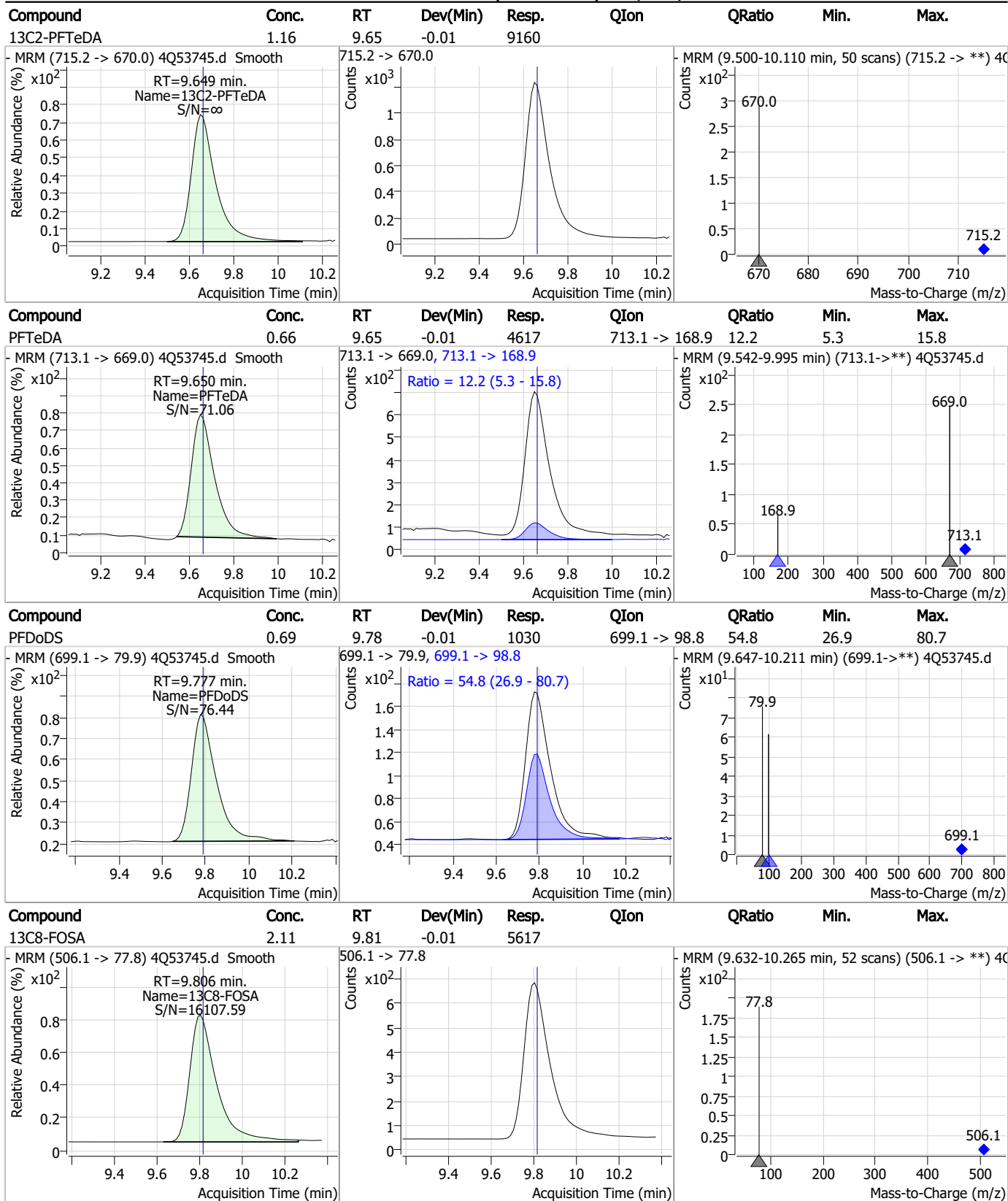
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Perfluorinated Compounds by LC/MS/MS



7.3.2
7

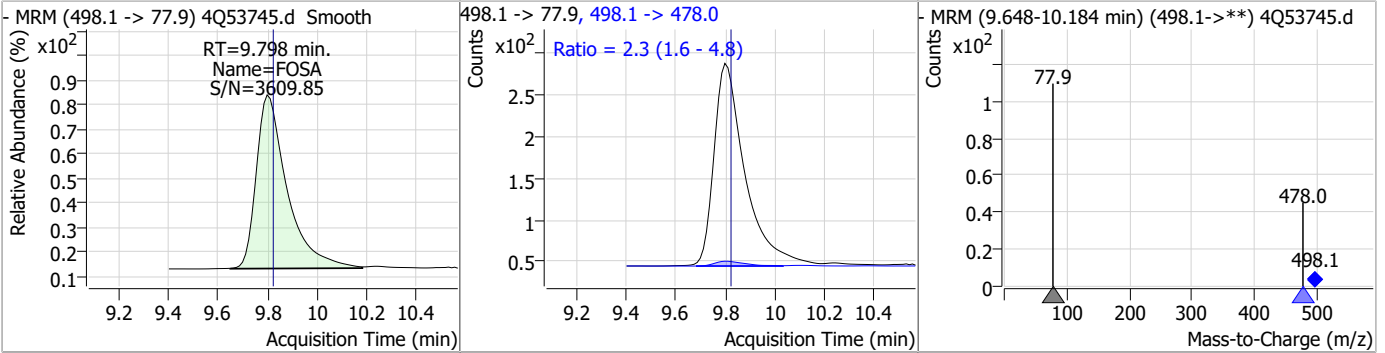
Perfluorinated Compounds by LC/MS/MS



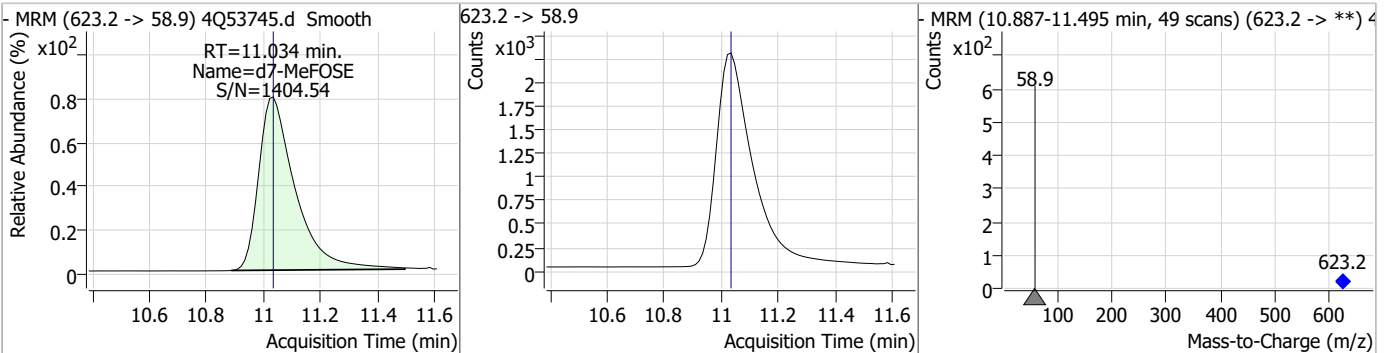
7.3.2
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Perfluorinated Compounds by LC/MS/MS

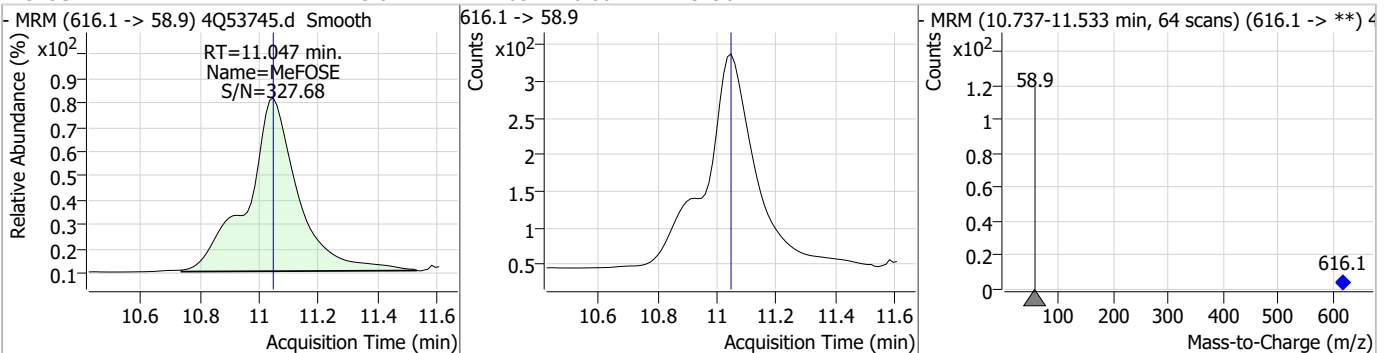
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.77	9.80	-0.02	2109	498.1 -> 478.0	2.3	1.6	4.8



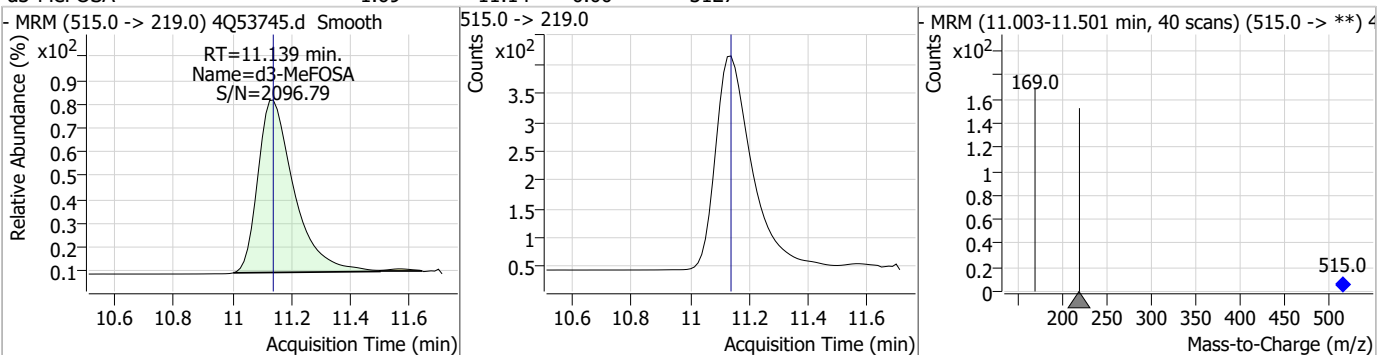
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	17.58	11.03	0.00	20131				



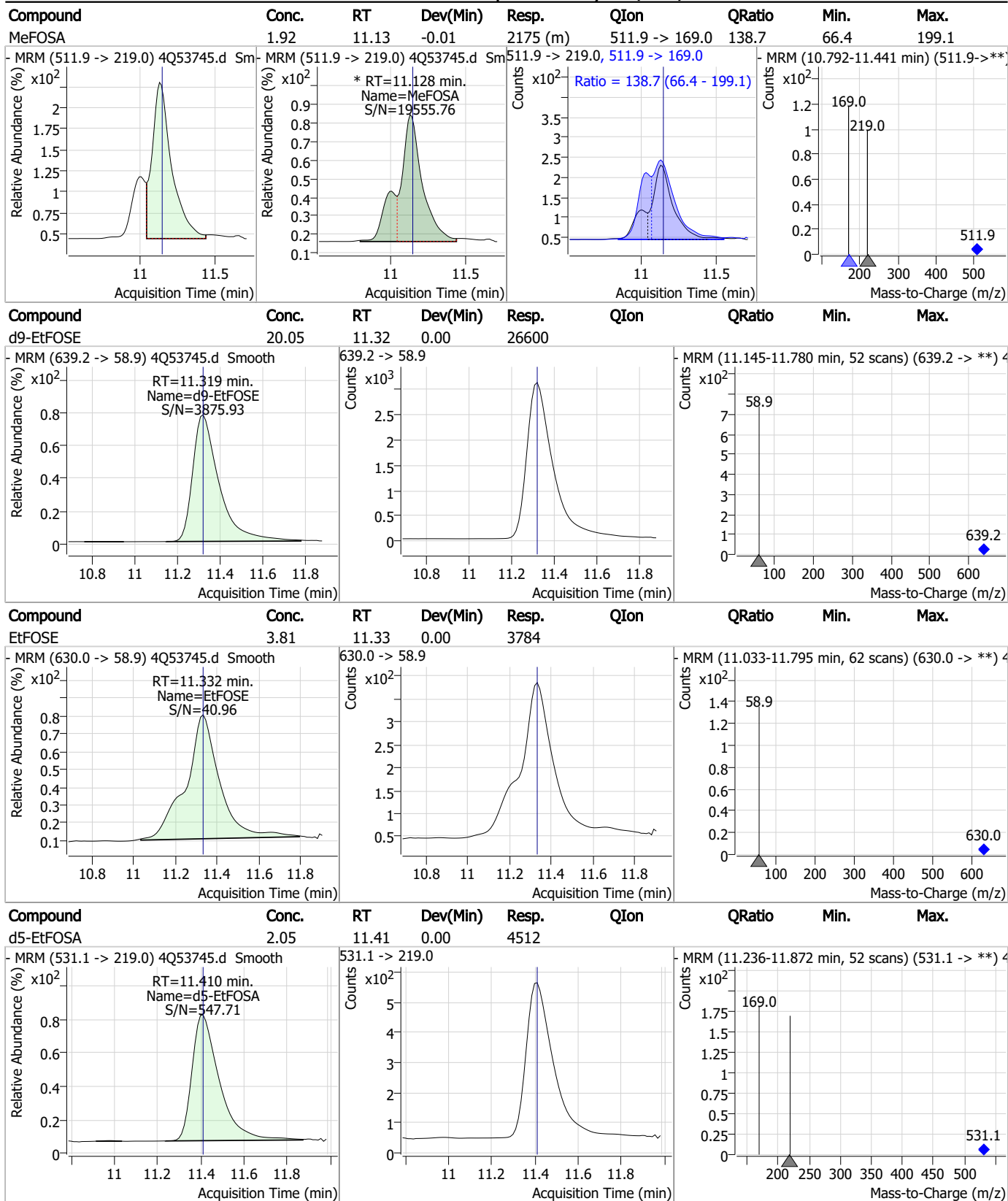
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	3.81	11.05	0.00	3496				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.69	11.14	0.00	3127				

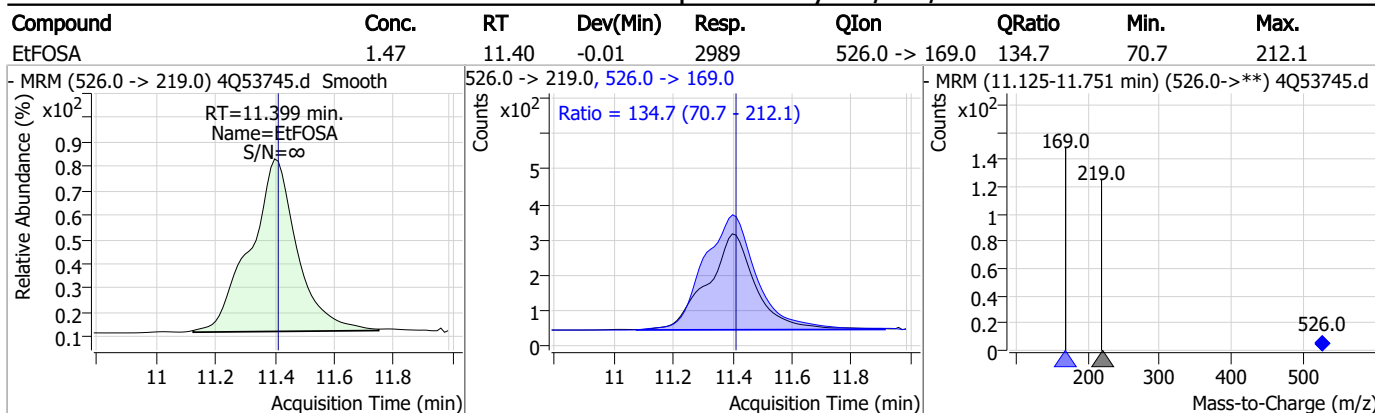


Perfluorinated Compounds by LC/MS/MS



7.3.2
7

Perfluorinated Compounds by LC/MS/MS



7.3.2
7

Manual Integration Approval Summary

Sample Number: OP99997-LLBS Method: EPA DRAFT 1633
Lab FileID: 4Q53745.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 19:26 Supervisor approved: 11/14/23 15:56 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

7.3.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53750.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 8:39:48 PM
 Sample Name : op99997-ms
 Vial : P4-D7
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP99997,S4Q785,520,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.699	216.8 -> 171.9	76974	10.00 µg/L	0.000
M5-PFPeA	4.137	268.3 -> 223.0	37661	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	27892	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	26002	2.50 µg/L	-0.037
M8-PFOA	6.952	421.1 -> 376.0	30348	2.50 µg/L	-0.037
M9-PFNA	7.509	472.1 -> 427.0	12927	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	8201	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	10060	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	9316	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	7818	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	5992	2.50 µg/L	-0.025
M3-PFBS	5.165	302.1 -> 79.9	8202	2.50 µg/L	-0.038
M3-PFHxS	7.017	402.1 -> 79.9	6908	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7031	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	590	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1332	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	1933	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	10465	5.00 µg/L	-0.025
M3-HFPO-DA	5.664	286.9 -> 168.9	26097	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	8762	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	22782	25.00 µg/L	-0.012
M9-EtFOSE	11.306	639.2 -> 58.9	28653	25.00 µg/L	-0.012
M5-EtFOSA	11.397	531.1 -> 219.0	4974	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3748	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5581	2.50 µg/L	-0.026
13C3-PFBA	2.691	216.0 -> 172.0	38916	5.00 µg/L	-0.013
18O2-PFHxS	7.016	403.0 -> 83.9	3711	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	30218	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	8639	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	11393	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	27027	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	590	4.64 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.9%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1332	4.98 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C2-8:2FTS	7.804	529.1 -> 80.9	1933	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	9316	1.19 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.6%		
13C2-PFTeDA	9.649	715.2 -> 670.0	7818	1.00 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 79.7%		
13C3-PFBS	5.165	302.1 -> 79.9	8202	2.95 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 117.9%		
13C3-PFHxS	7.017	402.1 -> 79.9	6908	3.00 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 = 120.1%		
13C4-PFBA	2.699	216.8 -> 171.9	76974	9.49 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 94.9%		
13C4-PFHpA	6.267	367.1 -> 322.0	26002	2.76 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 110.3%		
13C5-PFHxA	5.310	318.0 -> 273.0	27892	2.77 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 110.7%		
13C5-PFPeA	4.137	268.3 -> 223.0	37661	5.71 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.2%		
13C6-PFDA	8.004	519.1 -> 474.1	8201	1.29 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.2%		
13C7-PFUnDA	8.448	570.0 -> 525.1	10060	1.37 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 109.5%		
13C8-FOSA	9.794	506.1 -> 77.8	5992	2.25 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 89.9%		
13C8-PFOA	6.952	421.1 -> 376.0	30348	2.81 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 112.5%		
13C8-PFOS	8.117	507.1 -> 79.9	7031	2.64 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.6%		
13C9-PFNA	7.509	472.1 -> 427.0	12927	1.44 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 115.1%		
d3-MeFOSAA	8.074	573.2 -> 419.0	10465	4.94 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C3-HFPO-DA	5.664	286.9 -> 168.9	26097	11.35 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 113.5%		
d3-MeFOSA	11.126	515.0 -> 219.0	3748	2.01 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 80.5%		
d5-EtFOSAA	8.283	589.2 -> 419.0	8762	4.73 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.6%		
d7-MeFOSE	11.022	623.2 -> 58.9	22782	19.82 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 79.3%		
d9-EtFOSE	11.306	639.2 -> 58.9	28653	21.52 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 86.1%		
d5-EtFOSA	11.397	531.1 -> 219.0	4974	2.25 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.1%		
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	9949	8.54 µg/L	98
		327.1 -> 80.9	4321		
6:2FTS	6.737	427.1 -> 407.0	13405	9.30 µg/L	95
		427.1 -> 80.9	4732		
8:2FTS	7.804	527.1 -> 507.0	9282	8.83 µg/L	98
		527.1 -> 80.8	3987		
EtFOSAA	8.284	584.2 -> 419.1	3616	2.30 µg/L	85
		584.2 -> 526.0	1422		
FOSA	9.798	498.1 -> 77.9	6600	2.26 µg/L	99
		498.1 -> 478.0	183		
MeFOSAA	8.087	570.1 -> 419.0	4123	2.22 µg/L	94
		570.1 -> 483.0	858		
PFBA	2.695	212.8 -> 168.9	24315	8.69 µg/L	100
PFBS	5.166	298.7 -> 79.9	5339	1.83 µg/L	100
		298.7 -> 98.8	2074		
PFDA	7.992	512.9 -> 469.0	14746	2.20 µg/L	95
		512.9 -> 219.0	3272		
PFDODA	8.880	613.1 -> 569.0	17072	2.25 µg/L	99
		613.1 -> 319.0	3150		
PFDS	9.020	599.0 -> 79.9	3528	1.94 µg/L	97

7.4.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	1726			
PFHpA	6.268	363.1 -> 319.0	36463	2.24	µg/L	97
		363.1 -> 169.0	6801			
PFHpS	7.612	449.0 -> 79.9	5649	2.03	µg/L	84
		449.0 -> 98.9	3509			
PFHxA	5.300	313.0 -> 269.0	21723	2.23	µg/L	100
		313.0 -> 118.9	581			
PFHxS	7.018	398.7 -> 79.9	4516	2.17	µg/L	m 85
		398.7 -> 98.9	2395			
PFNA	7.510	463.0 -> 419.0	17499	2.12	µg/L	97
		463.0 -> 219.0	4721			
PFNS	8.586	548.8 -> 79.9	2920	2.18	µg/L	99
		548.8 -> 98.9	1507			
PFOA	6.965	413.0 -> 369.0	32323	2.20	µg/L	98
		413.0 -> 169.0	6366			
PFOS	8.119	498.9 -> 79.9	6542	2.05	µg/L	m 80
		498.9 -> 98.8	3101			
PFPeA	4.139	263.0 -> 219.0	35186	4.29	µg/L	100
PFPeS	6.257	349.1 -> 79.9	4398	1.94	µg/L	93
		349.1 -> 98.9	2092			
PFTeDA	9.650	713.1 -> 669.0	14536	2.45	µg/L	97
		713.1 -> 168.9	1674			
PFTrDA	9.279	663.0 -> 619.0	18268	2.21	µg/L	100
		663.0 -> 168.9	2519			
PFUnDA	8.449	563.1 -> 519.0	16865	2.05	µg/L	96
		563.1 -> 269.1	3925			
11CI-PF3OUdS	9.306	630.9 -> 450.9	28974	3.56	µg/L	99
		632.9 -> 452.9	8813			
9CI-PF3ONS	8.451	530.8 -> 351.0	34233	4.16	µg/L	97
		532.8 -> 353.0	9634			
ADONA	6.531	376.9 -> 250.9	89356	4.95	µg/L	98
		376.9 -> 84.8	21147			
HFPO-DA	5.665	284.9 -> 168.9	12316	4.46	µg/L	99
		284.9 -> 184.9	1122			
3:3FTCA	3.630	241.0 -> 177.0	4100	9.40	µg/L	100
		241.0 -> 117.0	367			
5:3FTCA	5.996	341.0 -> 237.1	91812	53.54	µg/L	99
		341.0 -> 217.0	65775			
7:3FTCA	7.536	441.0 -> 316.9	42612	55.39	µg/L	93
		441.0 -> 336.9	98851			
EtFOSA	11.399	526.0 -> 219.0	9442	4.21	µg/L	99
		526.0 -> 169.0	13218			
EtFOSE	11.332	630.0 -> 58.9	12009	11.22	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	6429	4.73	µg/L	94
		511.9 -> 169.0	8978			
MeFOSE	11.047	616.1 -> 58.9	10933	10.53	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	2519	1.76	µg/L	95
		699.1 -> 98.8	1443			
NFDHA	5.191	295.0 -> 201.0	3348	5.20	µg/L	89
		295.0 -> 84.9	979			
PFMBA	4.541	279.0 -> 85.1	22658	4.80	µg/L	100
PFMPA	3.290	229.0 -> 84.9	25555	4.87	µg/L	100
PFEESA	5.696	314.8 -> 134.9	35611	4.62	µg/L	98
		314.8 -> 82.9	1240			

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



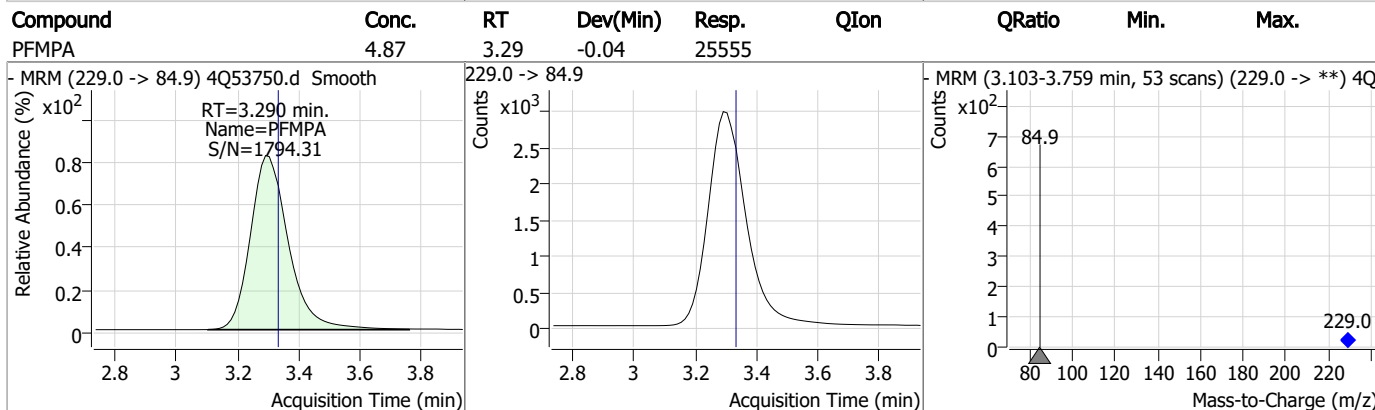
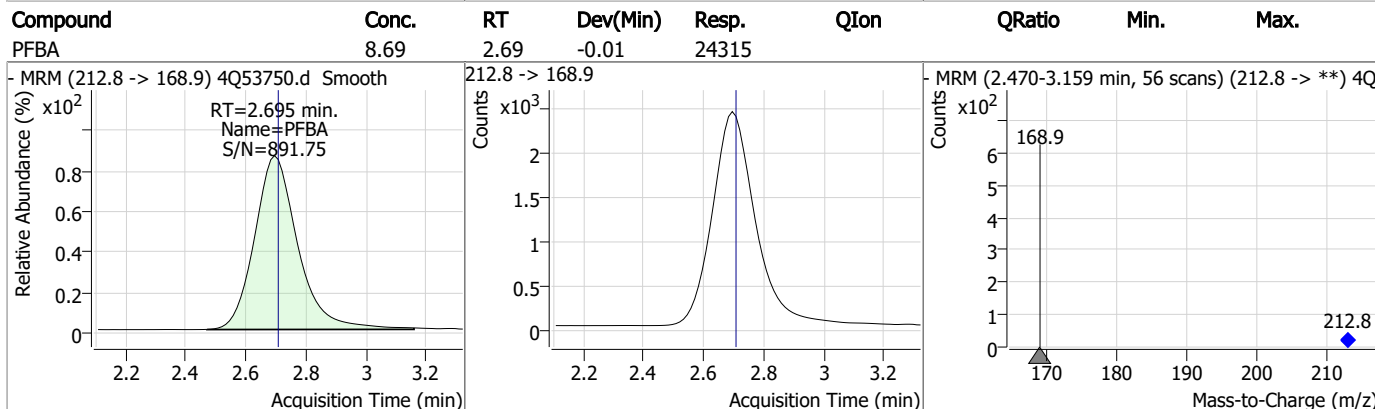
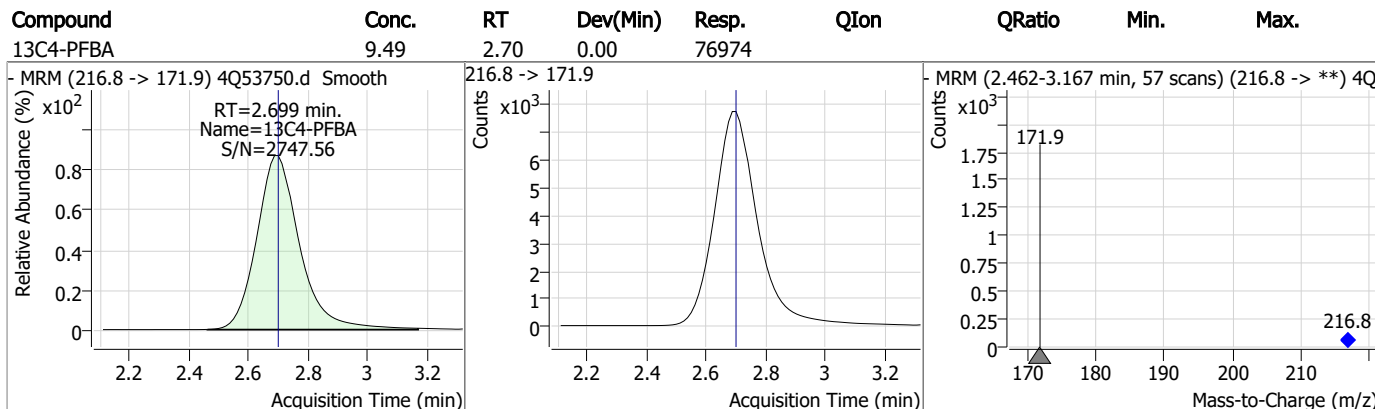
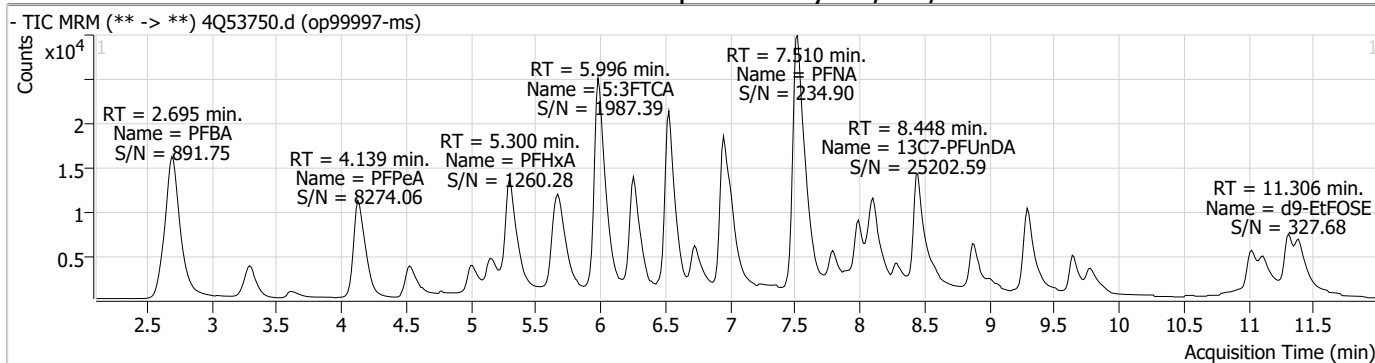
Perfluorinated Compounds by LC/MS/MS

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

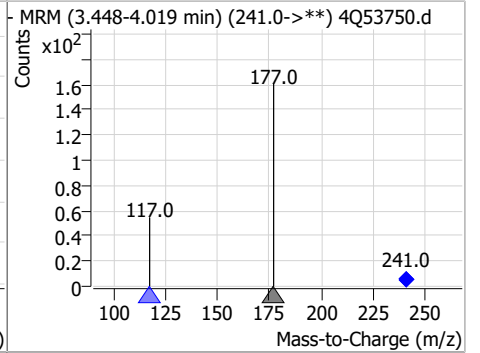
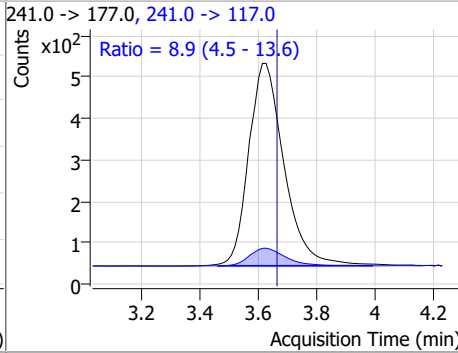
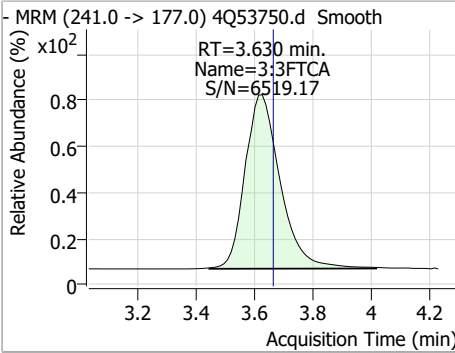
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Perfluorinated Compounds by LC/MS/MS

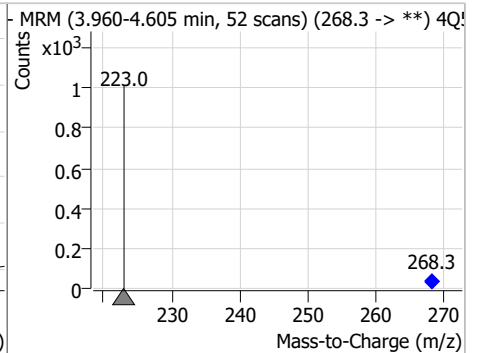
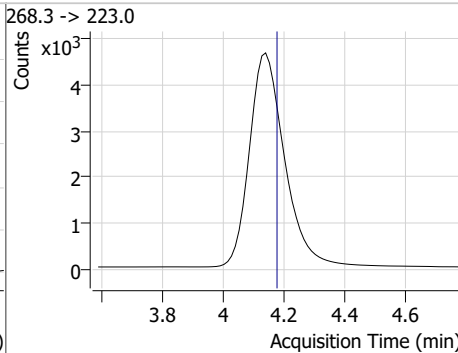
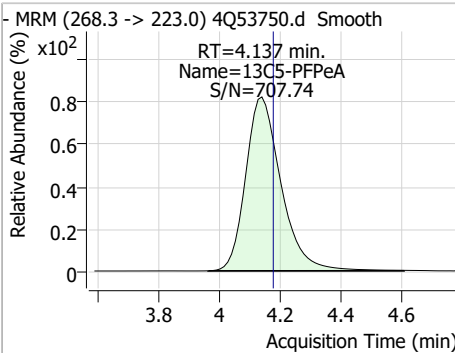


Perfluorinated Compounds by LC/MS/MS

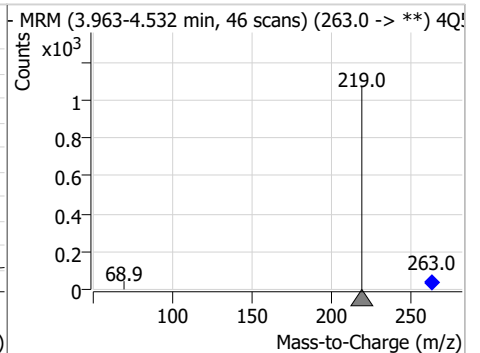
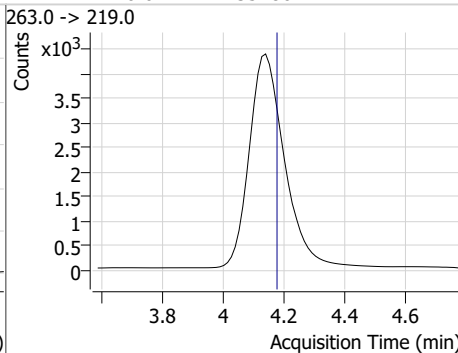
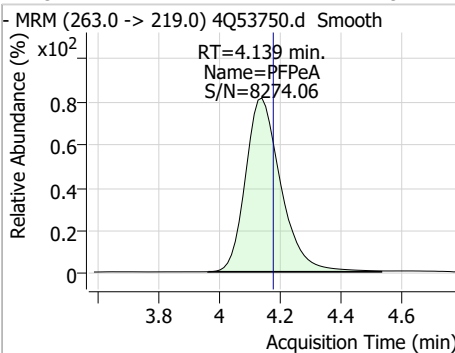
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	9.40	3.63	-0.04	4100	241.0 -> 117.0	8.9	4.5	13.6



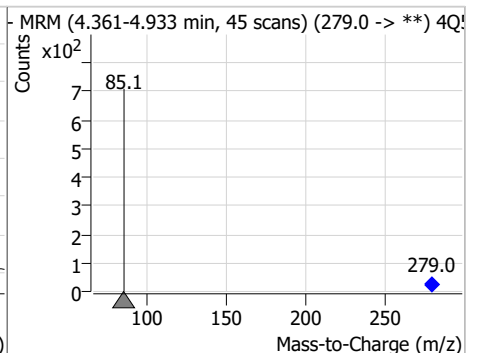
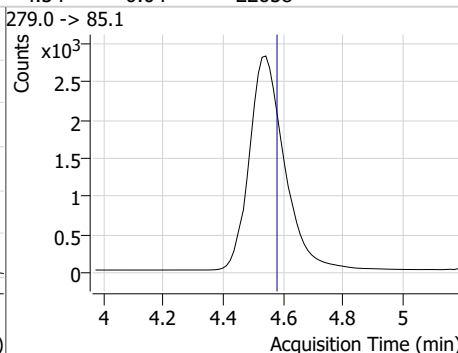
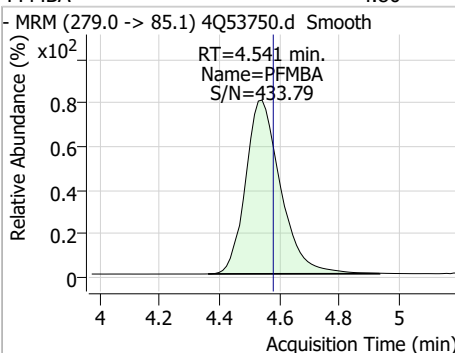
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.71	4.14	-0.04	37661				



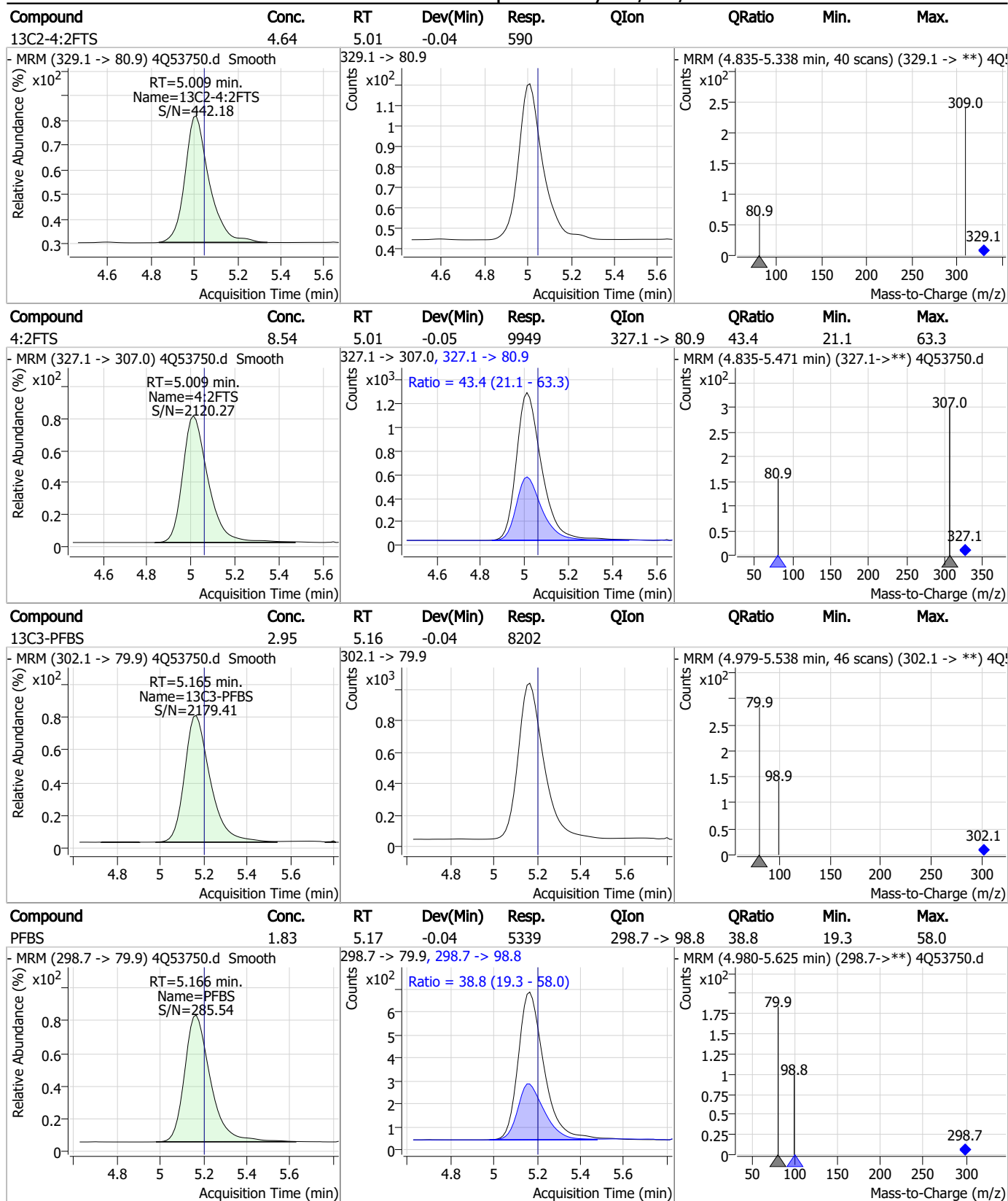
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.29	4.14	-0.04	35186				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.80	4.54	-0.04	22658				



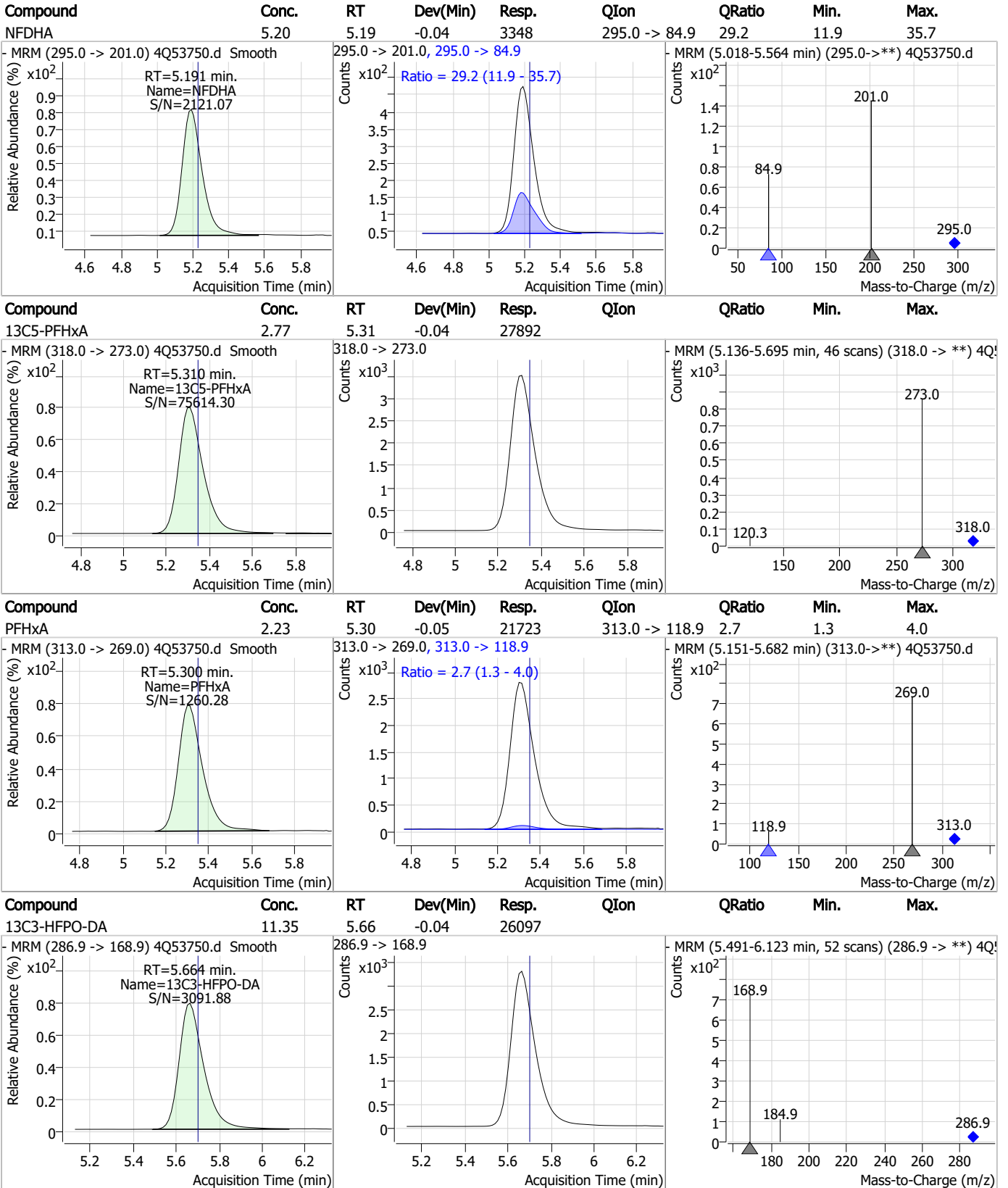
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

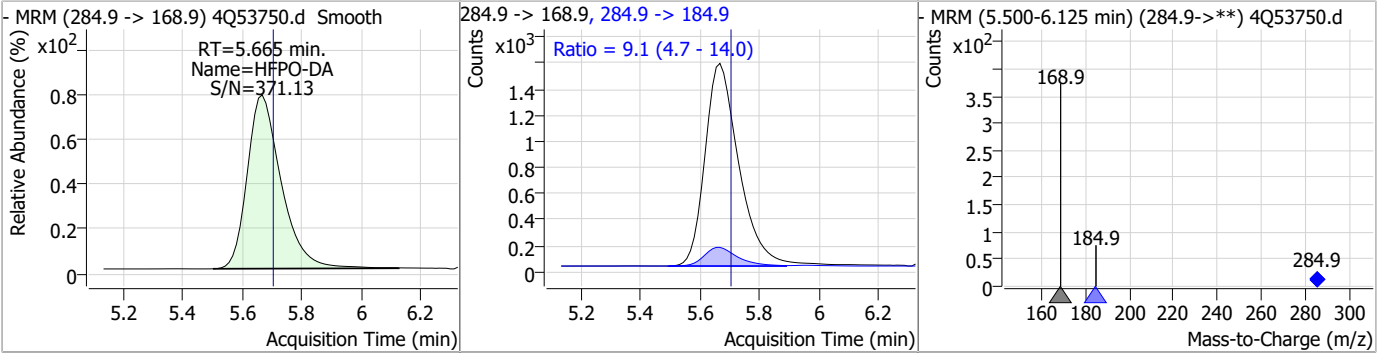


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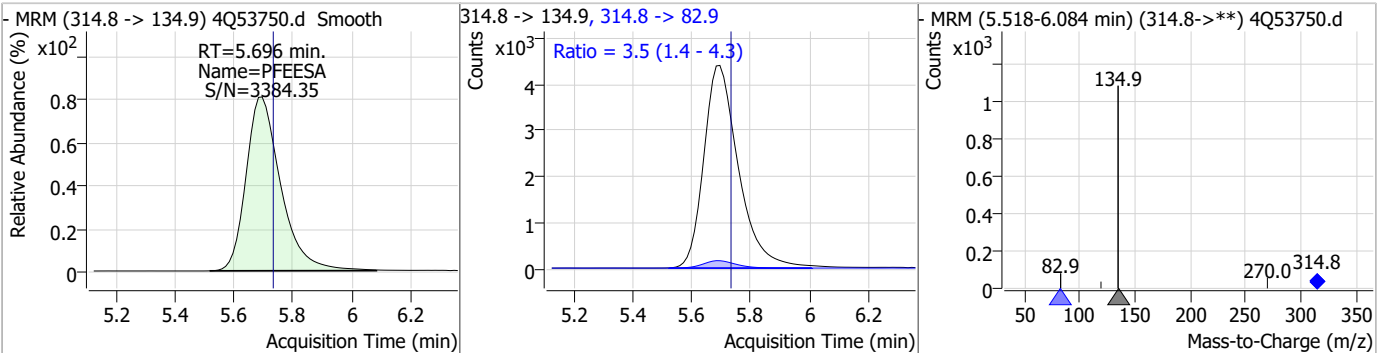
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Perfluorinated Compounds by LC/MS/MS

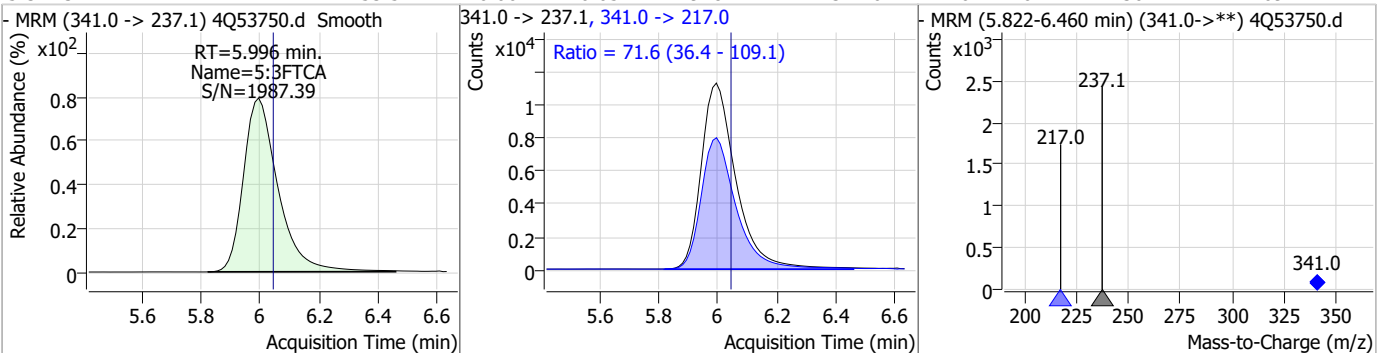
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.46	5.67	-0.04	12316	284.9 -> 184.9	9.1	4.7	14.0



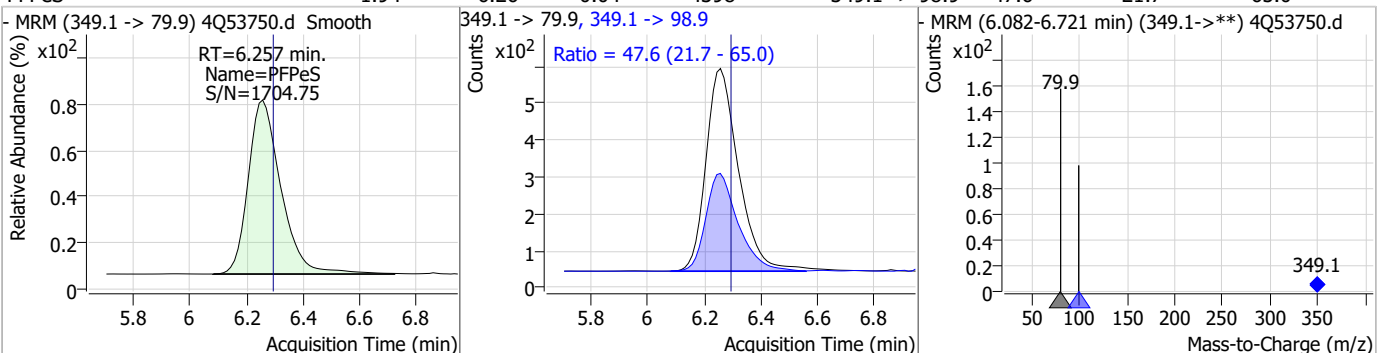
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.62	5.70	-0.04	35611	314.8 -> 82.9	3.5	1.4	4.3



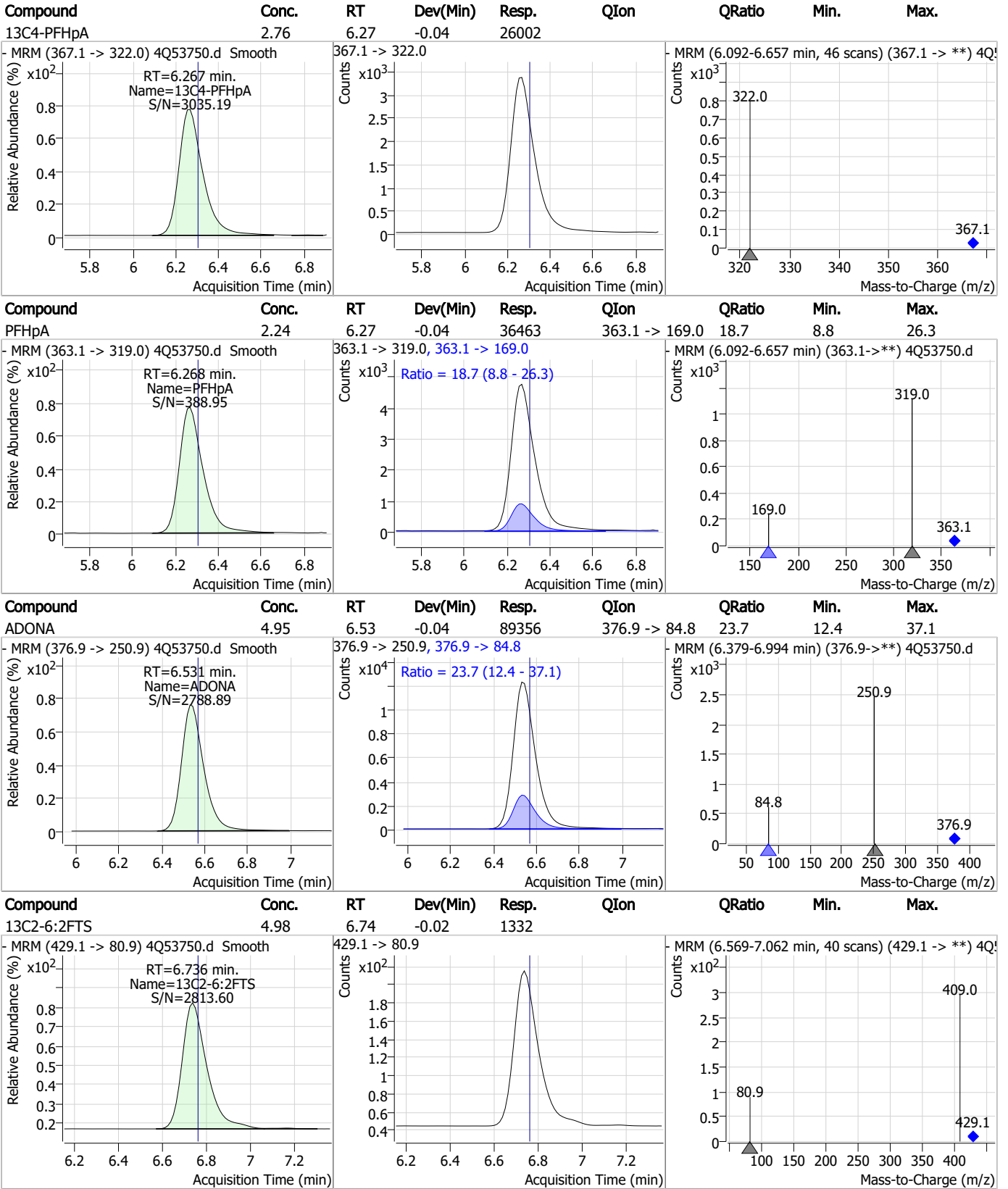
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	53.54	6.00	-0.05	91812	341.0 -> 217.0	71.6	36.4	109.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.94	6.26	-0.04	4398	349.1 -> 98.9	47.6	21.7	65.0



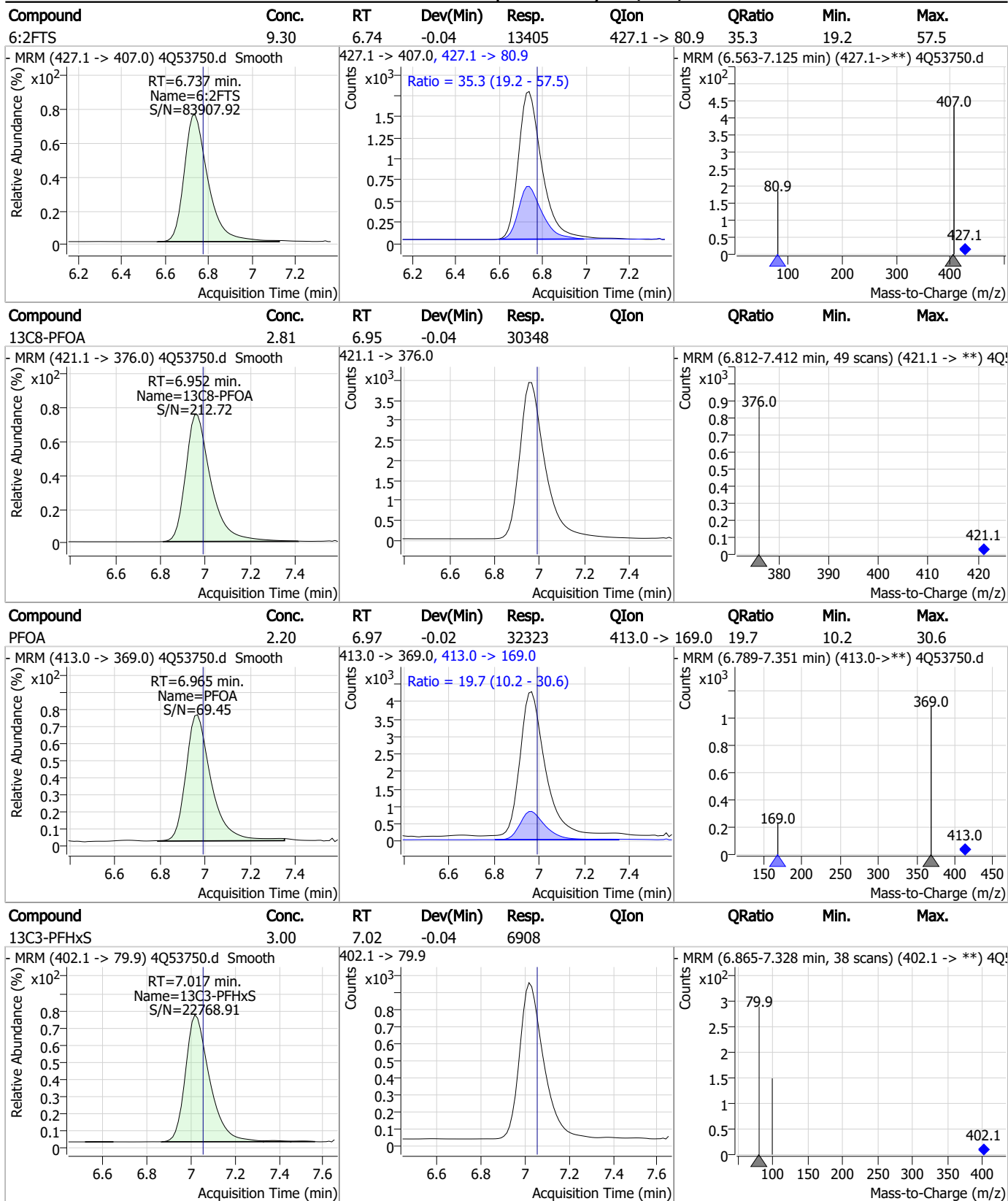
Perfluorinated Compounds by LC/MS/MS



7.4.1

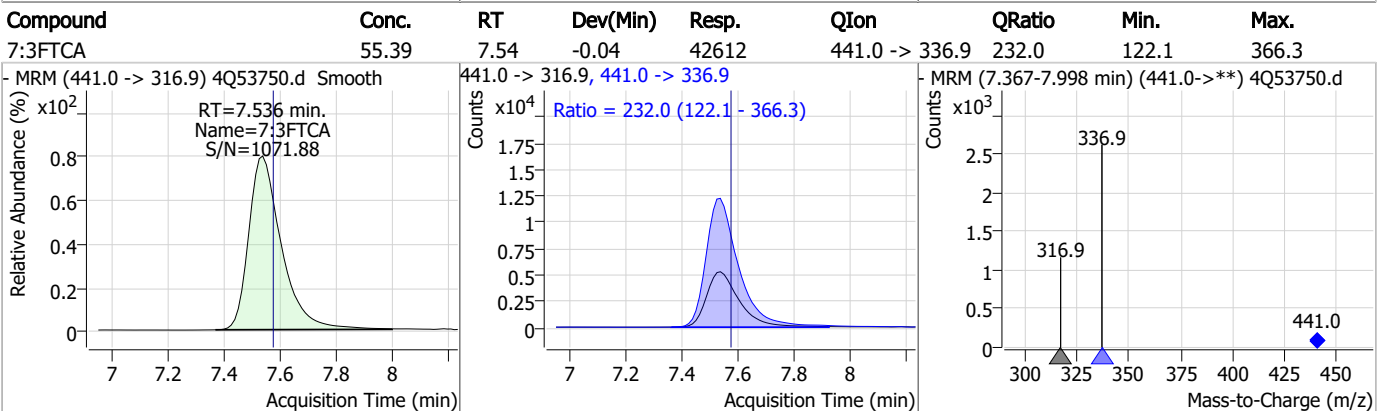
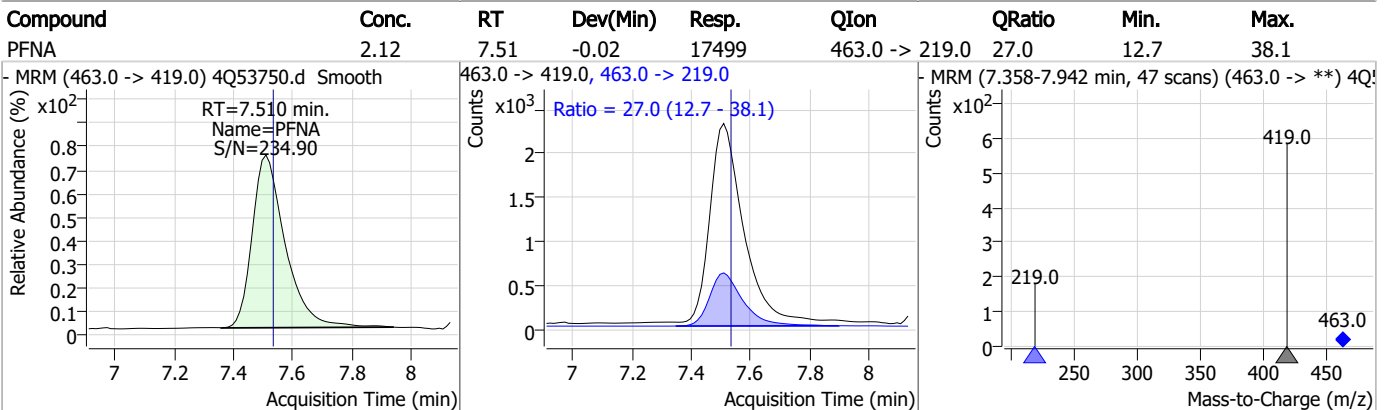
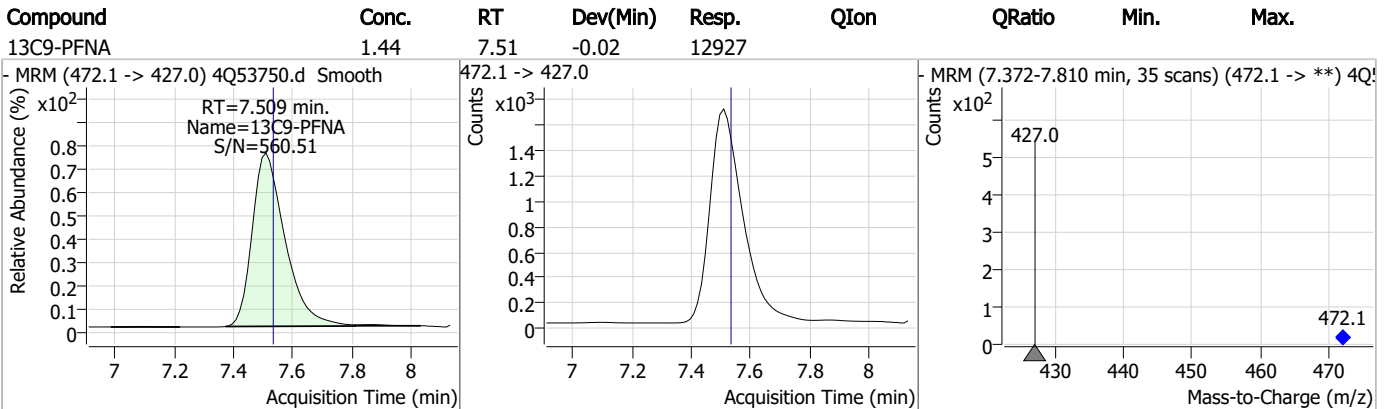
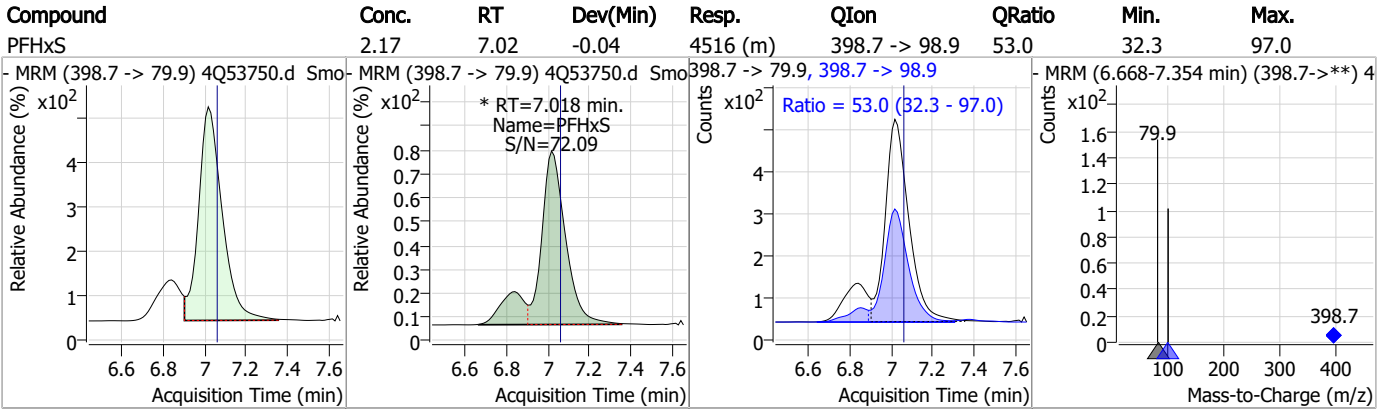
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Perfluorinated Compounds by LC/MS/MS

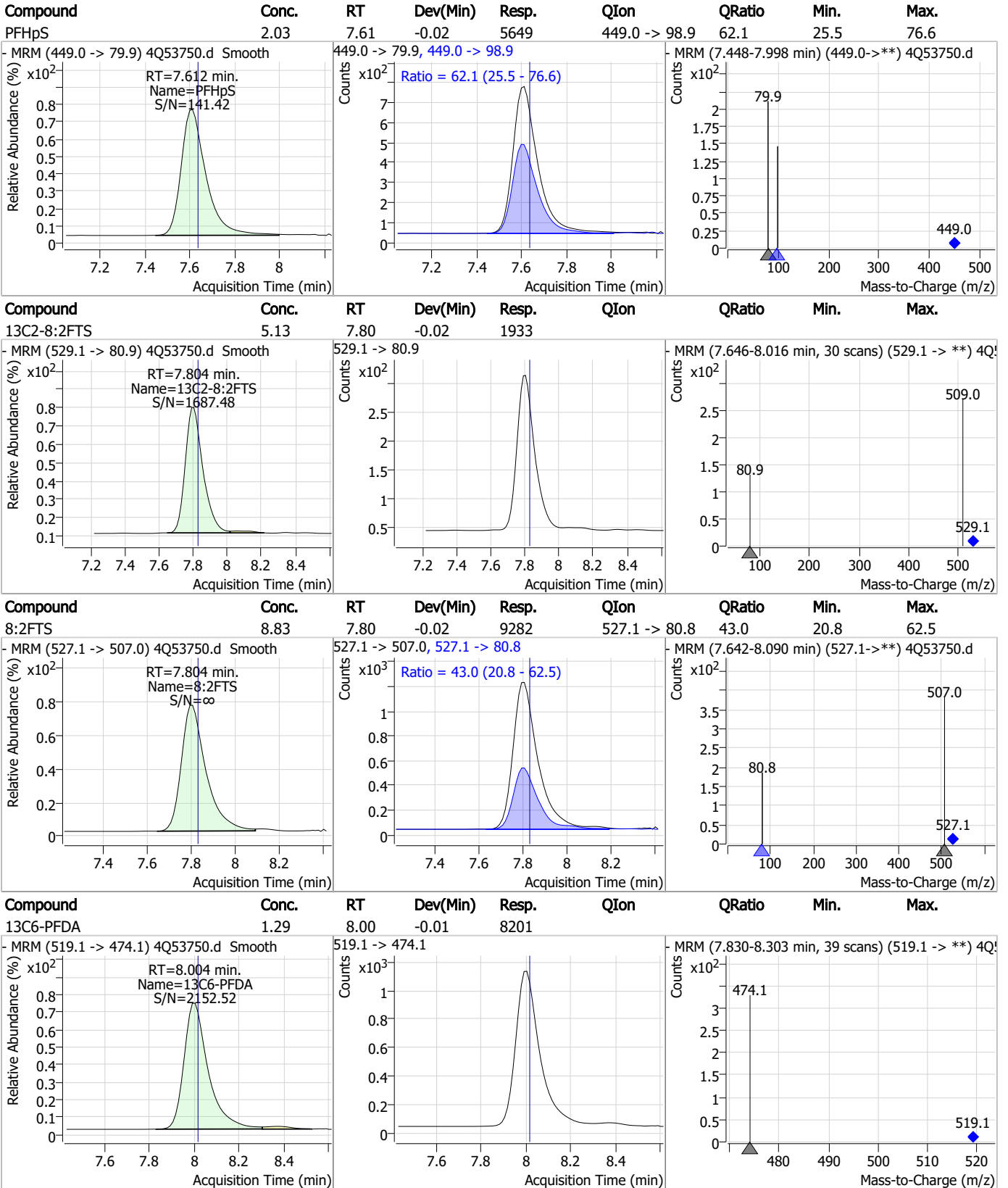


7.4.1
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Perfluorinated Compounds by LC/MS/MS



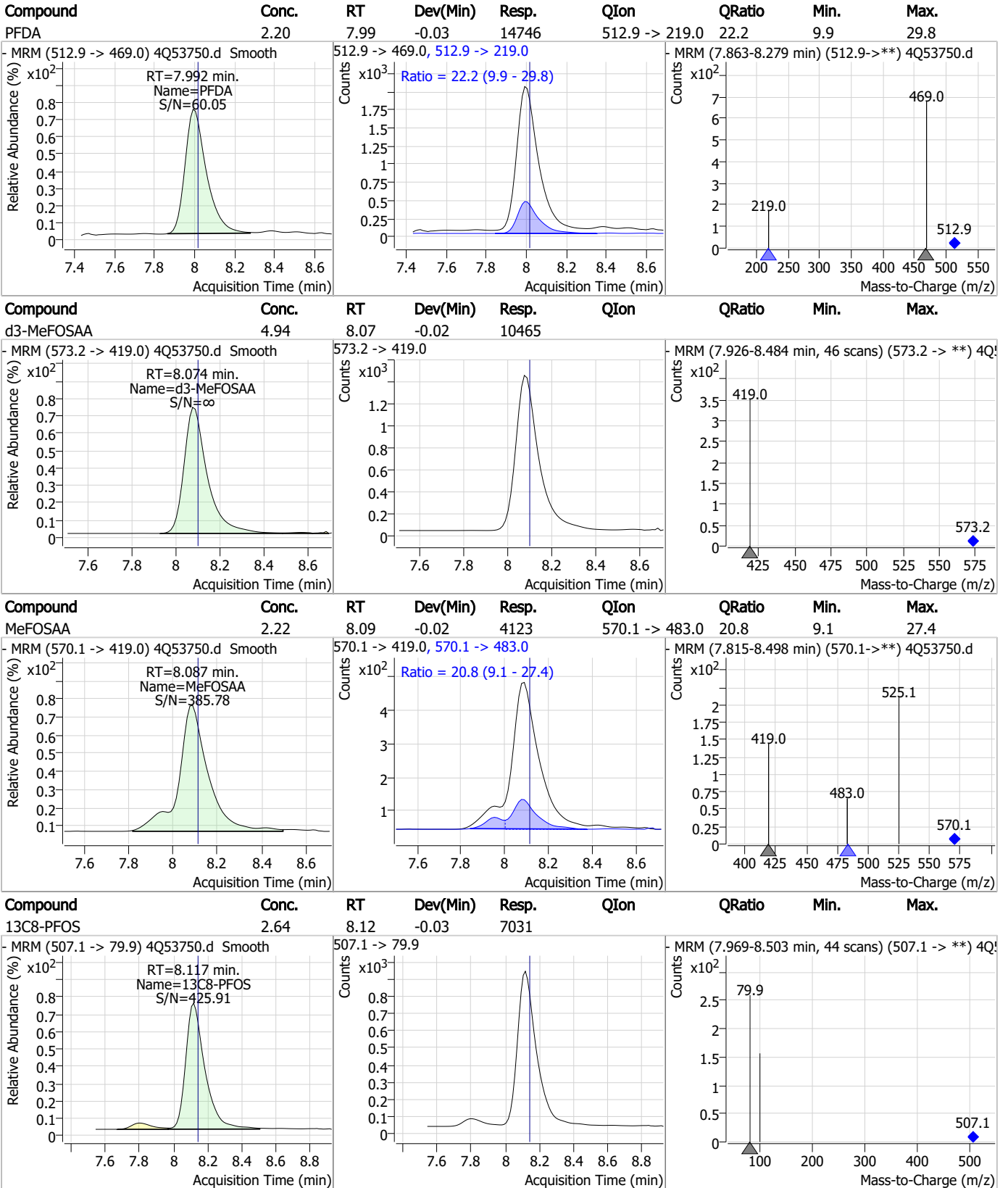
Perfluorinated Compounds by LC/MS/MS



7.4.1

7

Perfluorinated Compounds by LC/MS/MS

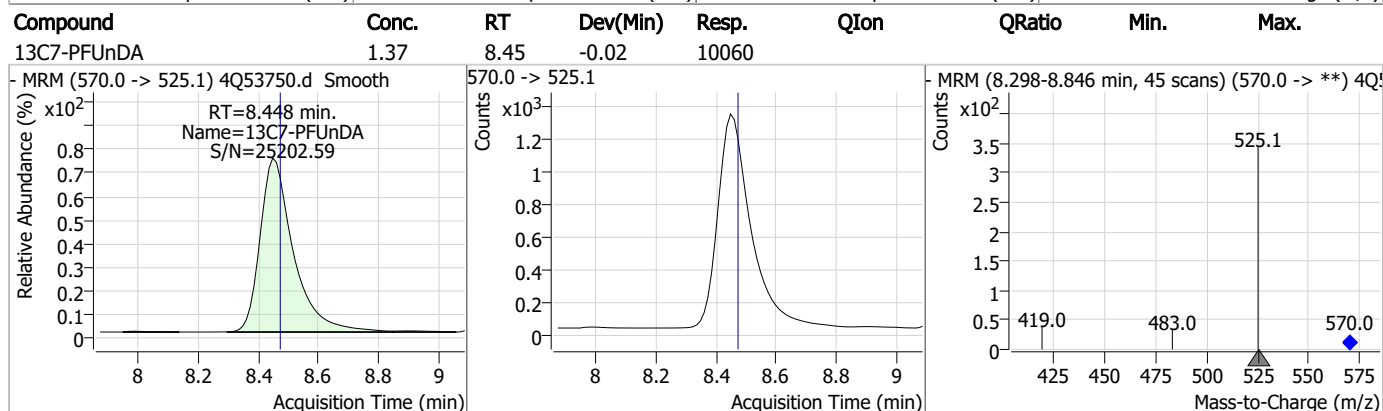
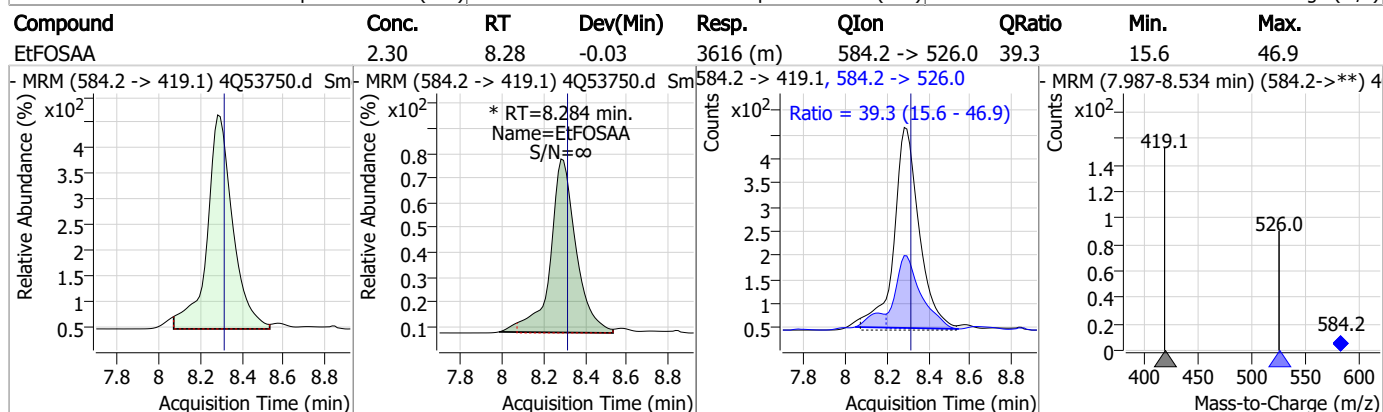
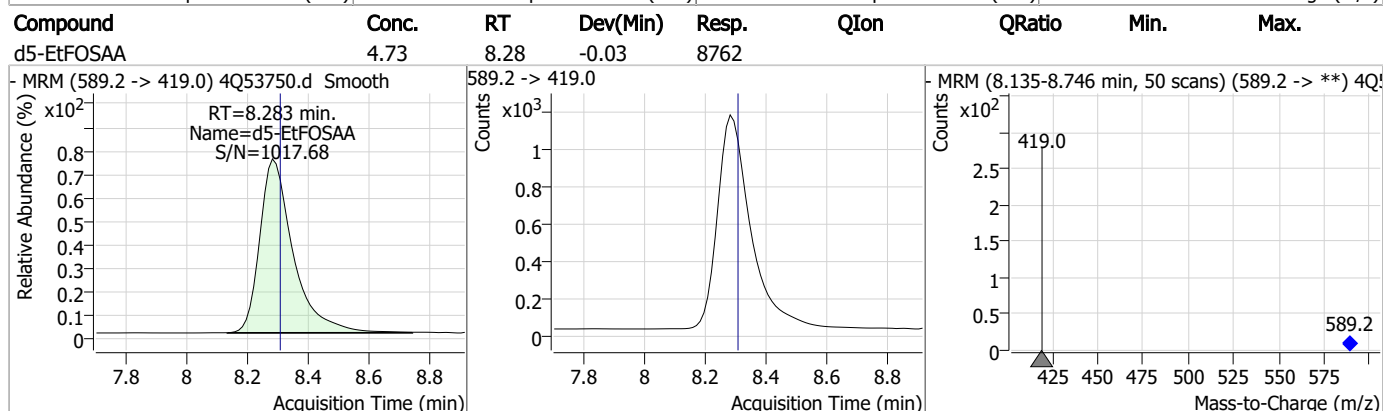
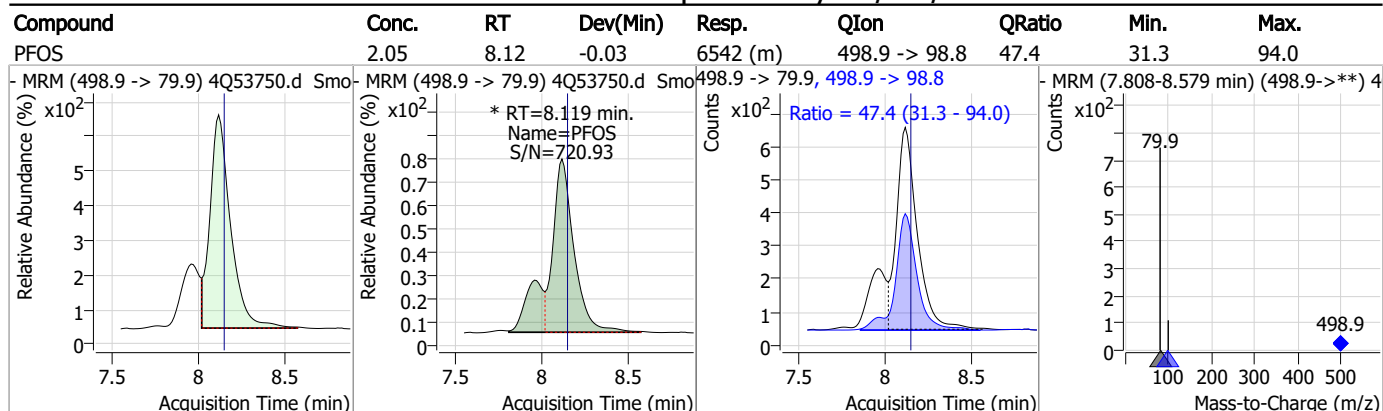


7.4.1

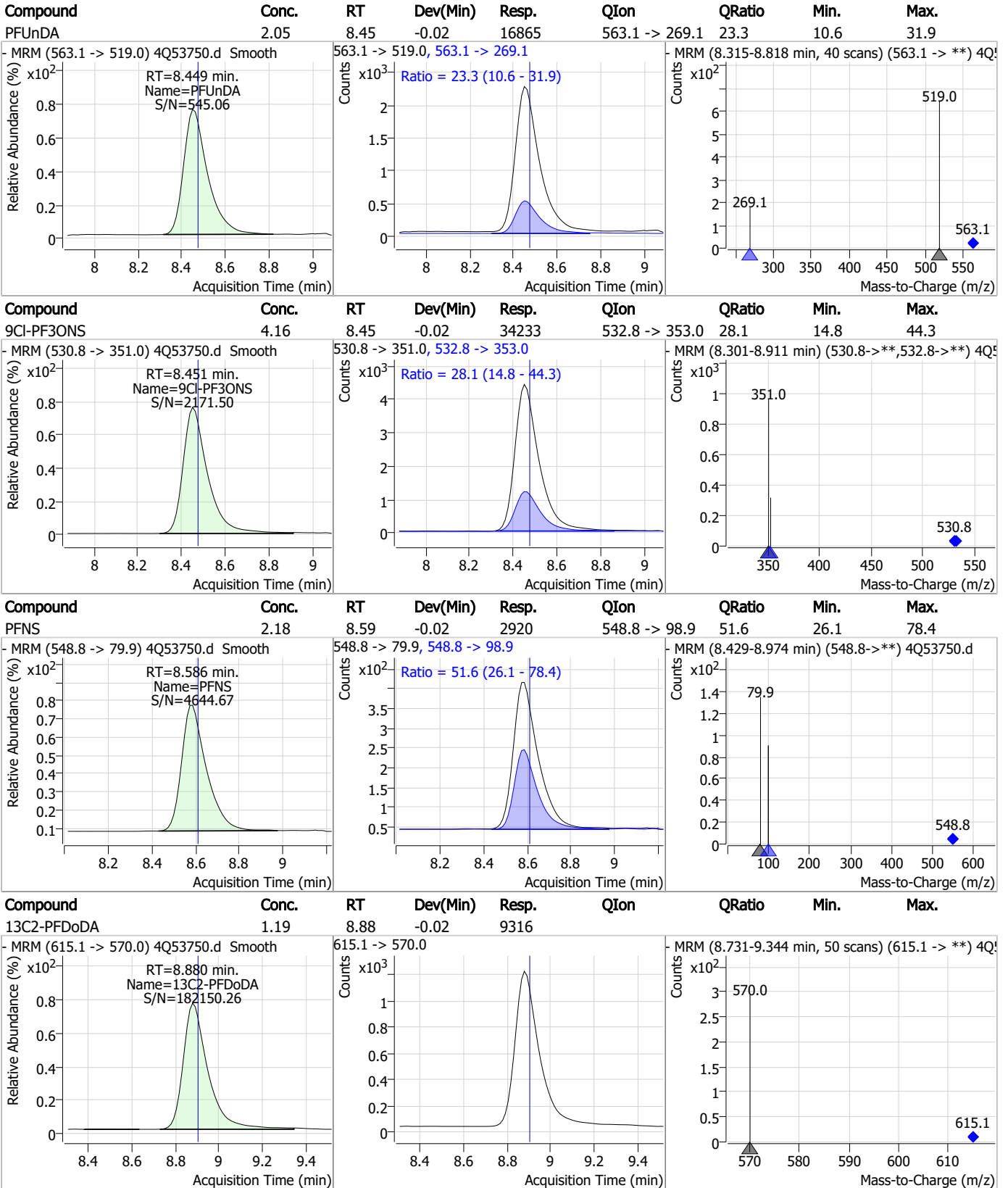
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Perfluorinated Compounds by LC/MS/MS



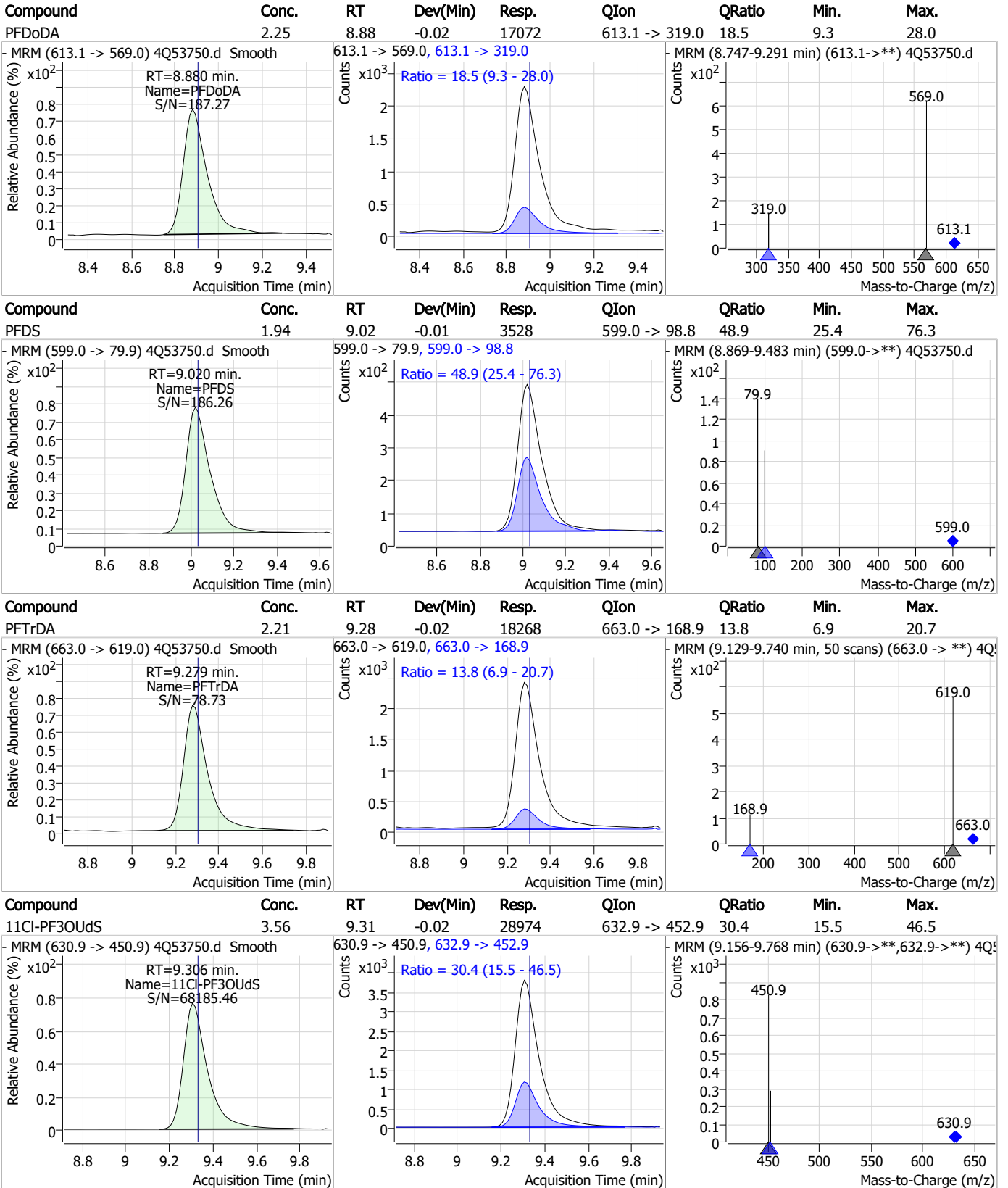
Perfluorinated Compounds by LC/MS/MS



7.4.1

7

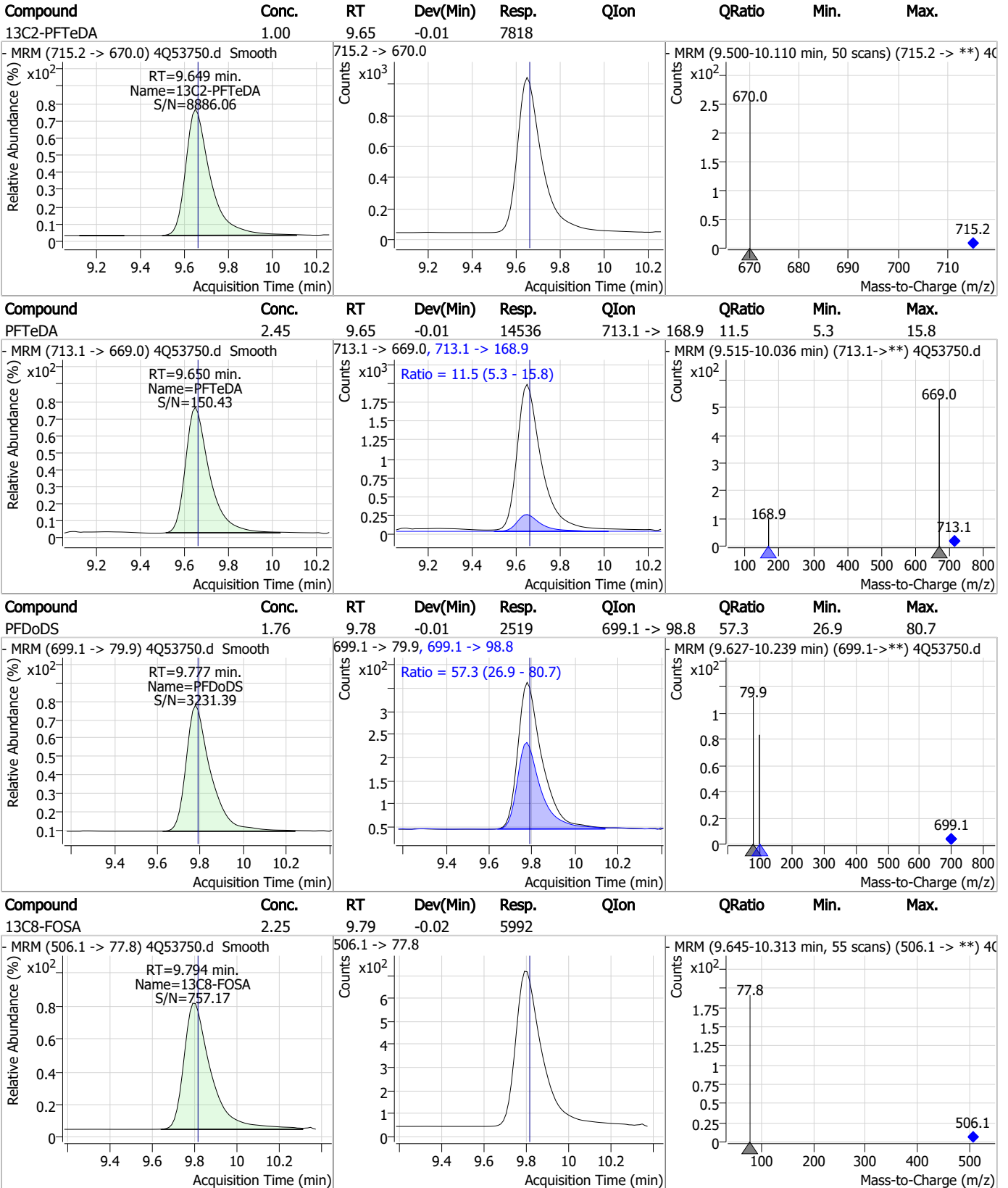
Perfluorinated Compounds by LC/MS/MS



7.4.1

7

Perfluorinated Compounds by LC/MS/MS



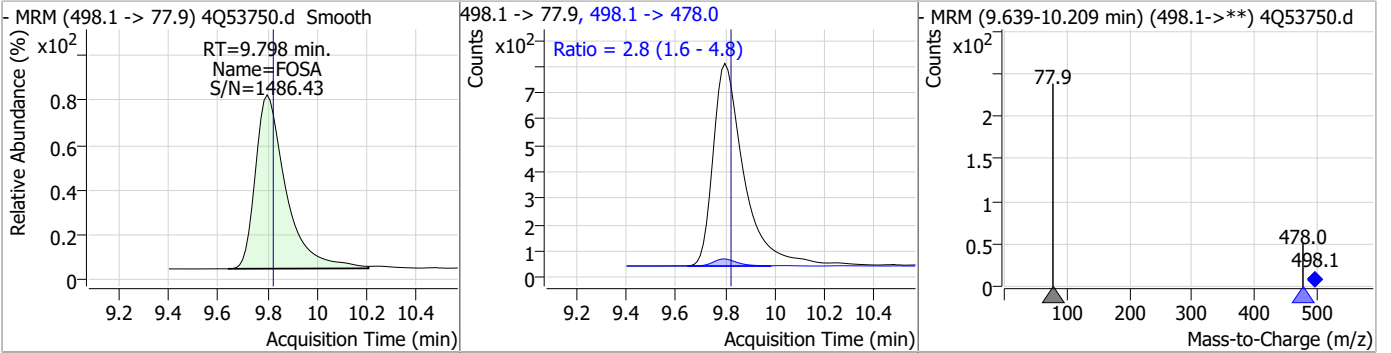
7.4.1

7

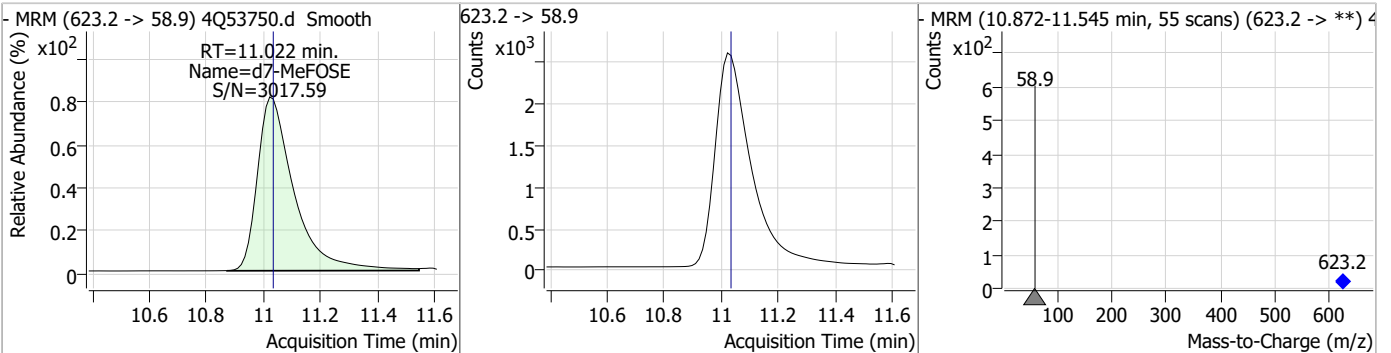


Perfluorinated Compounds by LC/MS/MS

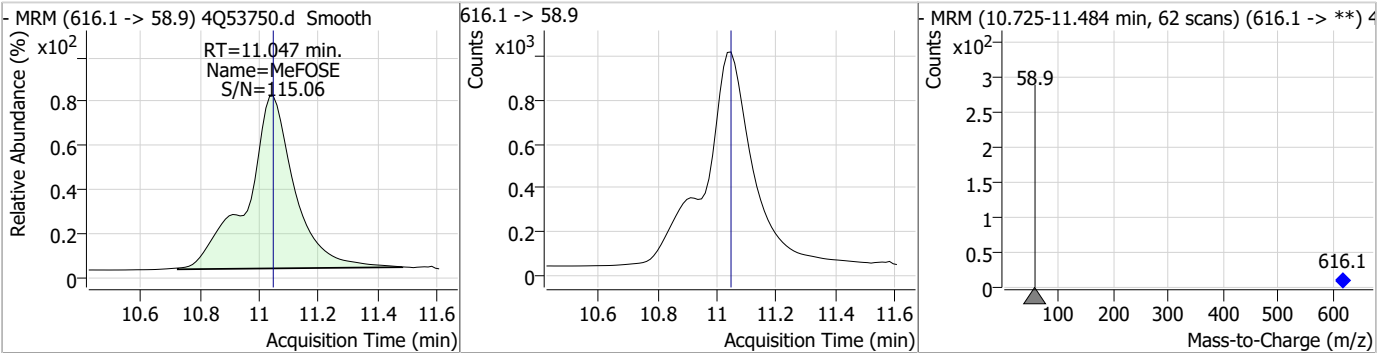
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.26	9.80	-0.02	6600	498.1 -> 478.0	2.8	1.6	4.8



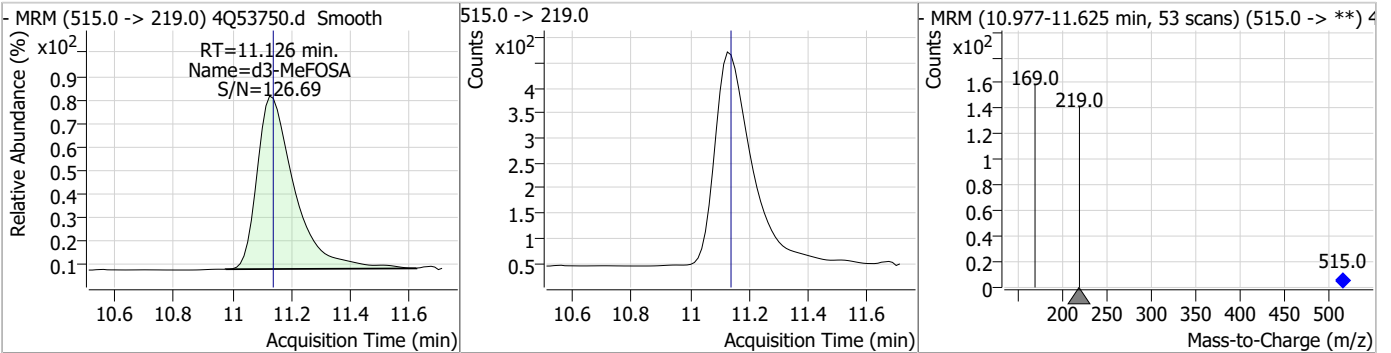
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	19.82	11.02	-0.01	22782				



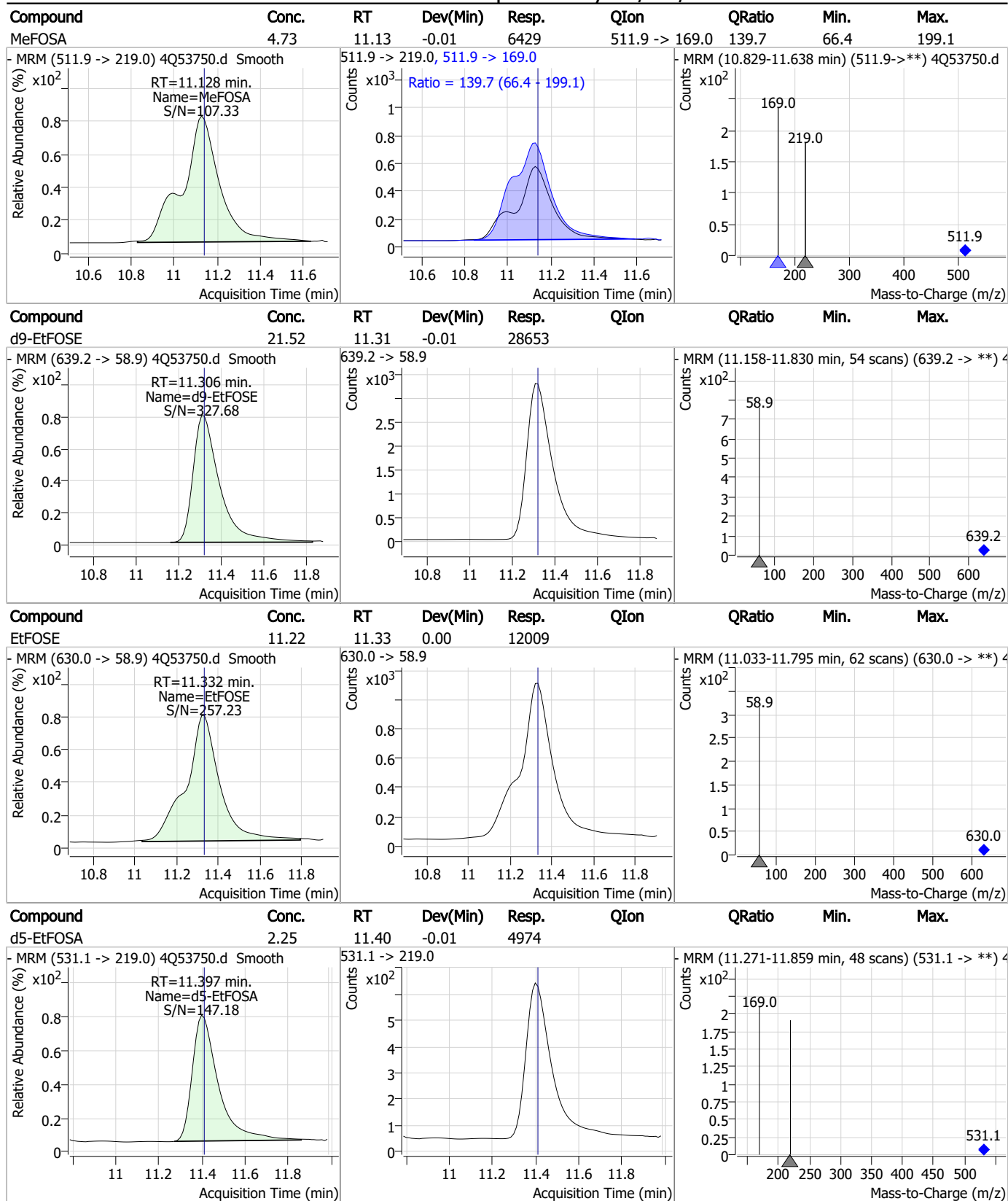
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	10.53	11.05	0.00	10933				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.01	11.13	-0.01	3748				



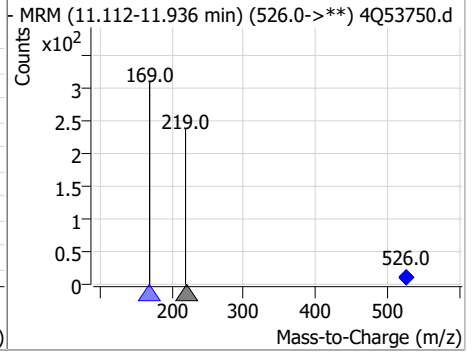
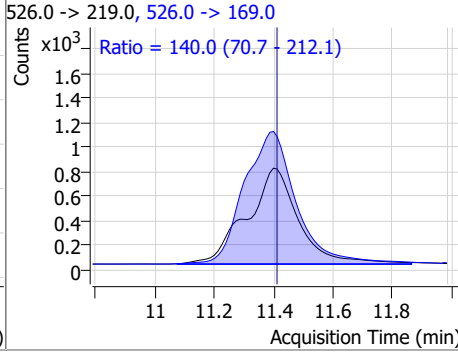
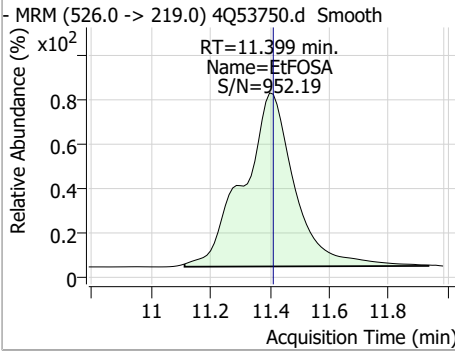
Perfluorinated Compounds by LC/MS/MS



7.4.1
7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.21	11.40	-0.01	9442	526.0 -> 169.0	140.0	70.7	212.1



7.4.1

7

Manual Integration Approval Summary

Sample Number: OP99997-MS Method: EPA DRAFT 1633
Lab FileID: 4Q53750.D Analyst approved: 11/14/23 13:57 Anna Ludwig
Injection Time: 11/13/23 20:39 Supervisor approved: 11/14/23 15:56 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

7.4.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53752.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 9:09:15 PM
 Sample Name : op99997-dup
 Vial : P4-D9
 DA Method File : 1633_111323_S4Q785.quantmethod.xml
 Batch Name : s4q785.batch.bin
 Sample Information : OP99997,S4Q785,530,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.686	216.8 -> 171.9	78057	10.00 µg/L	-0.013
M5-PFPeA	4.137	268.3 -> 223.0	33355	5.00 µg/L	-0.037
M5-PFHxA	5.310	318.0 -> 273.0	25507	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	24724	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	27812	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	11402	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	7675	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	9698	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	8463	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	7408	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	5471	2.50 µg/L	-0.025
M3-PFBS	5.165	302.1 -> 79.9	7590	2.50 µg/L	-0.038
M3-PFHxS	7.017	402.1 -> 79.9	5867	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6349	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	662	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	7.791	529.1 -> 80.9	1892	5.00 µg/L	-0.037
M3-MeFOSAA	8.074	573.2 -> 419.0	9518	5.00 µg/L	-0.025
M3-HFPO-DA	5.664	286.9 -> 168.9	23594	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	7432	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	21982	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	27276	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	4866	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	3626	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5466	2.50 µg/L	-0.026
13C3-PFBA	2.691	216.0 -> 172.0	35419	5.00 µg/L	-0.013
18O2-PFHxS	7.016	403.0 -> 83.9	3800	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	27890	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	8527	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	10466	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	24969	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	662	5.09 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1410	5.15 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C2-8:2FTS	7.791	529.1 -> 80.9	1892	4.90 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C2-PFDoDA	8.880	615.1 -> 570.0	8463	1.10 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.0%		
13C2-PFTeDA	9.649	715.2 -> 670.0	7408	0.96 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 76.5%		
13C3-PFBS	5.165	302.1 -> 79.9	7590	2.66 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.5%		
13C3-PFHxS	7.017	402.1 -> 79.9	5867	2.49 µg/L	-0.037

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 = 99.6%	
13C4-PFBA	2.686	216.8 -> 171.9	78057	10.58 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 105.8%	
13C4-PFHpA	6.267	367.1 -> 322.0	24724	2.84 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 113.5%	
13C5-PFHxA	5.310	318.0 -> 273.0	25507	2.74 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.5%	
13C5-PFPeA	4.137	268.3 -> 223.0	33355	5.48 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.5%	
13C6-PFDA	7.992	519.1 -> 474.1	7675	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C7-PFUnDA	8.448	570.0 -> 525.1	9698	1.34 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.0%	
13C8-FOSA	9.794	506.1 -> 77.8	5471	2.09 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 83.8%	
13C8-PFOA	6.964	421.1 -> 376.0	27812	2.79 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.7%	
13C8-PFOS	8.117	507.1 -> 79.9	6349	2.43 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C9-PFNA	7.509	472.1 -> 427.0	11402	1.38 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 110.5%	
d3-MeFOSAA	8.074	573.2 -> 419.0	9518	4.59 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 91.8%	
13C3-HFPO-DA	5.664	286.9 -> 168.9	23594	11.10 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 111.0%	
d3-MeFOSA	11.126	515.0 -> 219.0	3626	1.99 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 79.5%	
d5-EtFOSAA	8.283	589.2 -> 419.0	7432	4.09 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 81.9%	
d7-MeFOSE	11.022	623.2 -> 58.9	21982	19.52 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 78.1%	
d9-EtFOSE	11.319	639.2 -> 58.9	27276	20.91 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 83.7%	
d5-EtFOSA	11.397	531.1 -> 219.0	4866	2.25 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.0%	

7.5.1
7

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.	



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

7.5.1
7

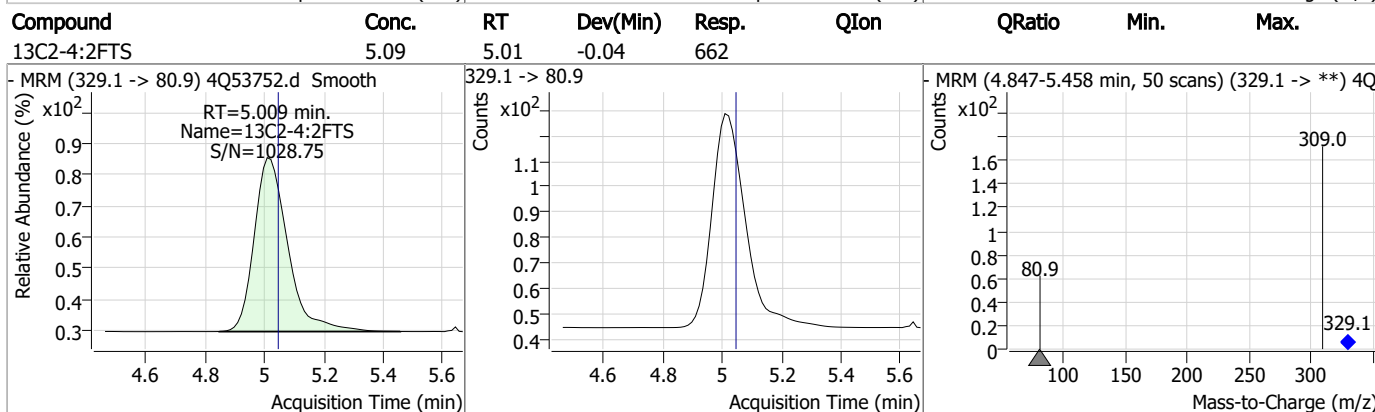
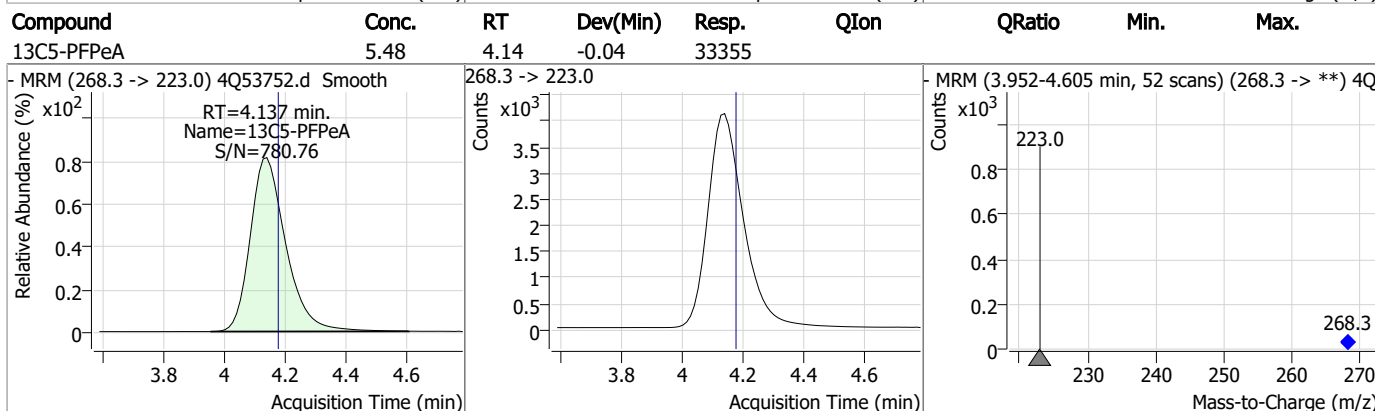
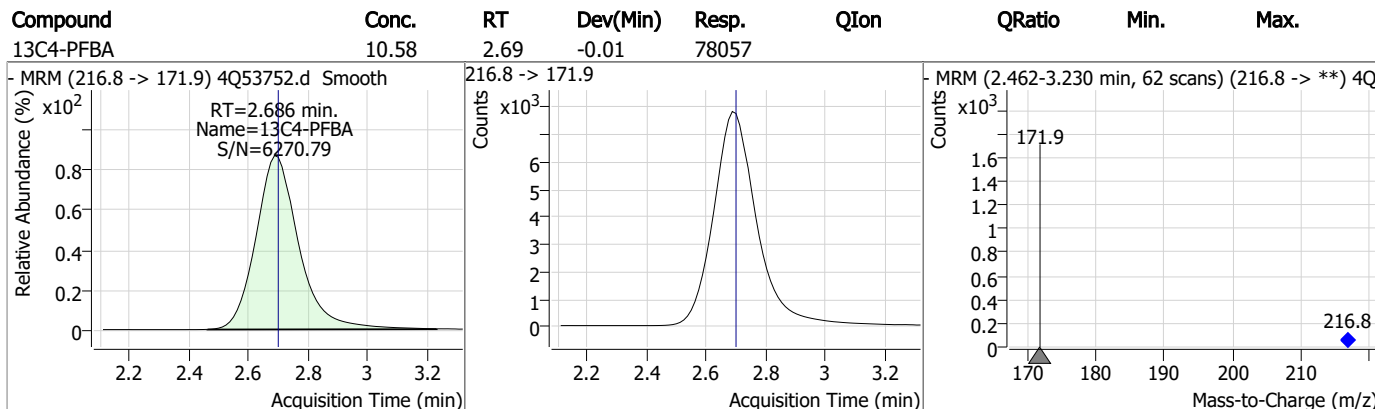
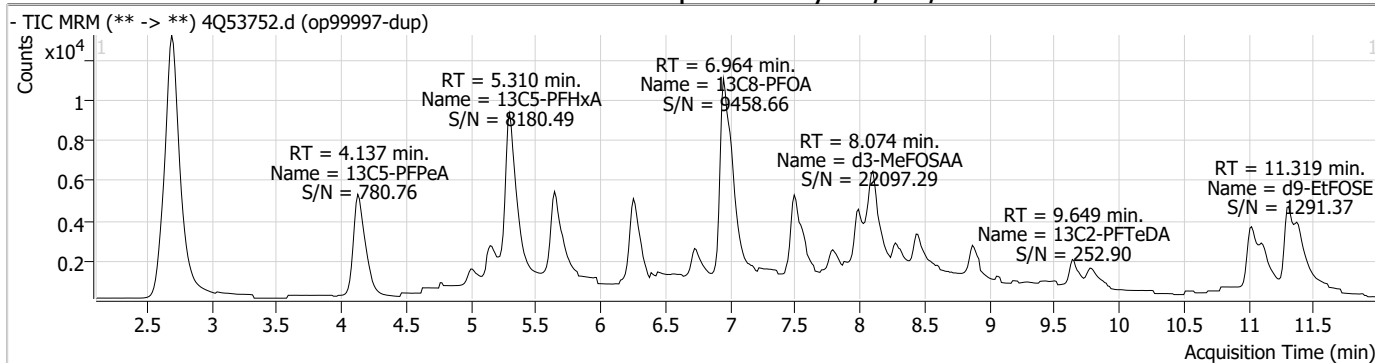
Perfluorinated Compounds by LC/MS/MS

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

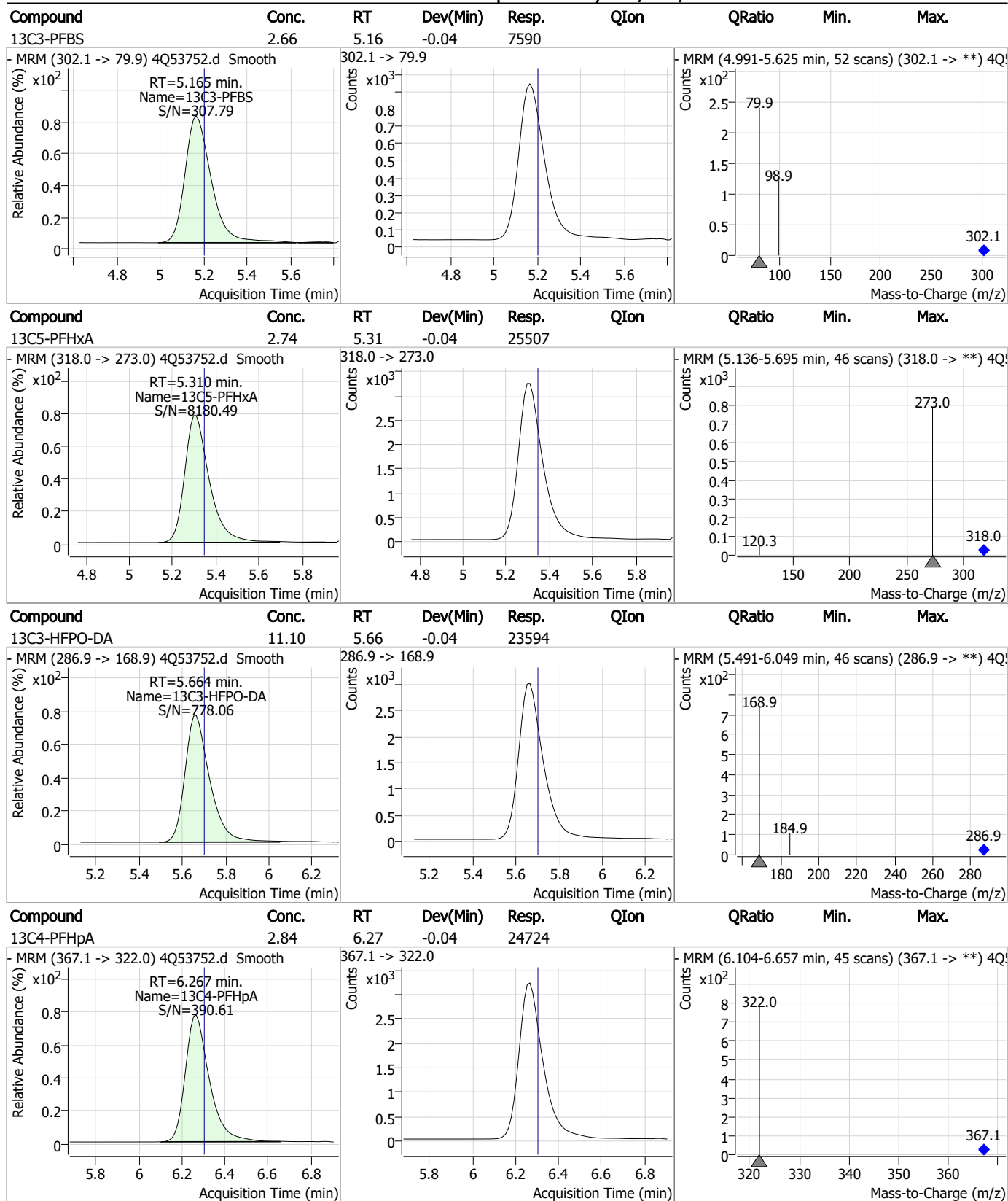
7

Perfluorinated Compounds by LC/MS/MS



7.5.1
7

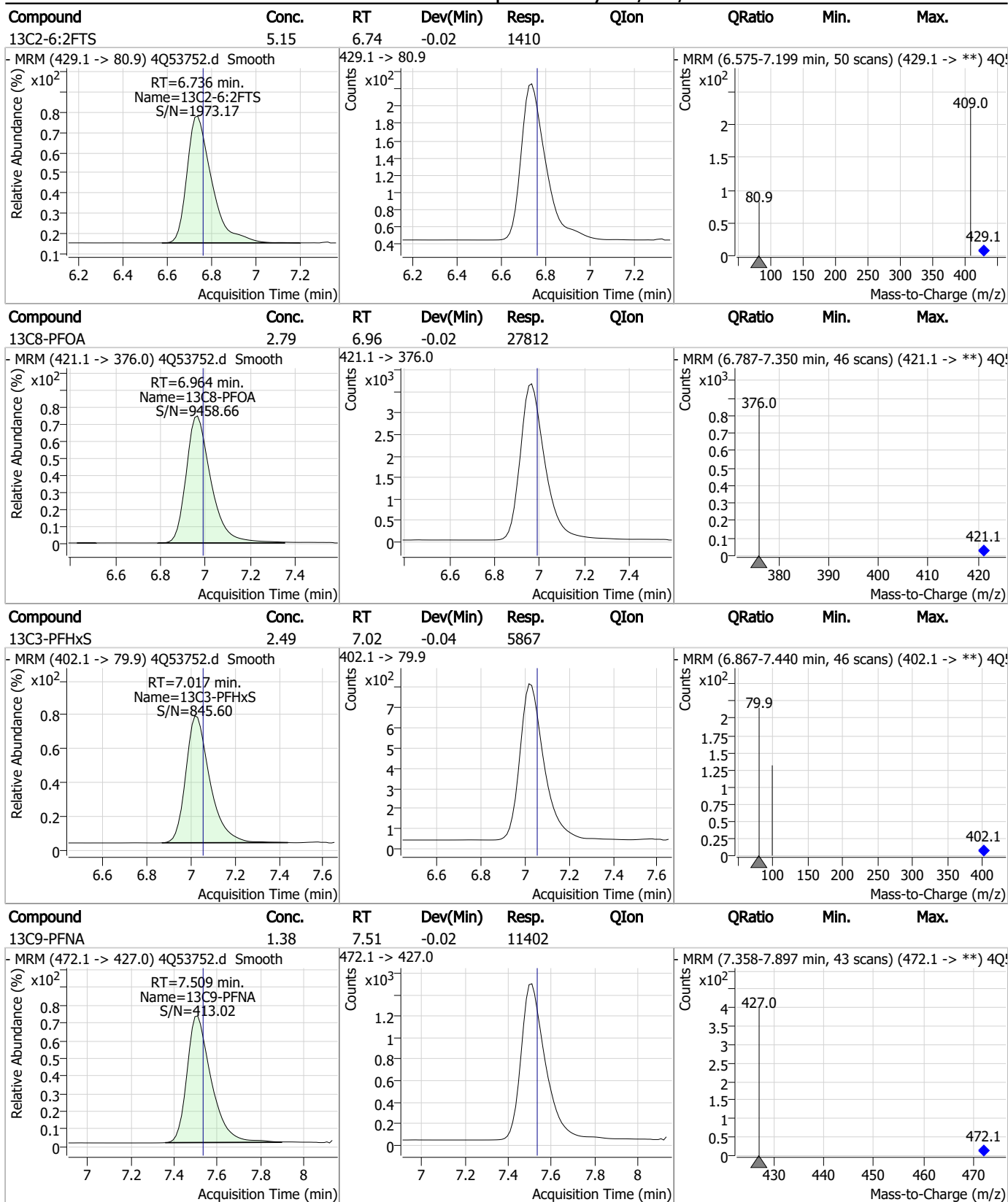
Perfluorinated Compounds by LC/MS/MS



7.5.1

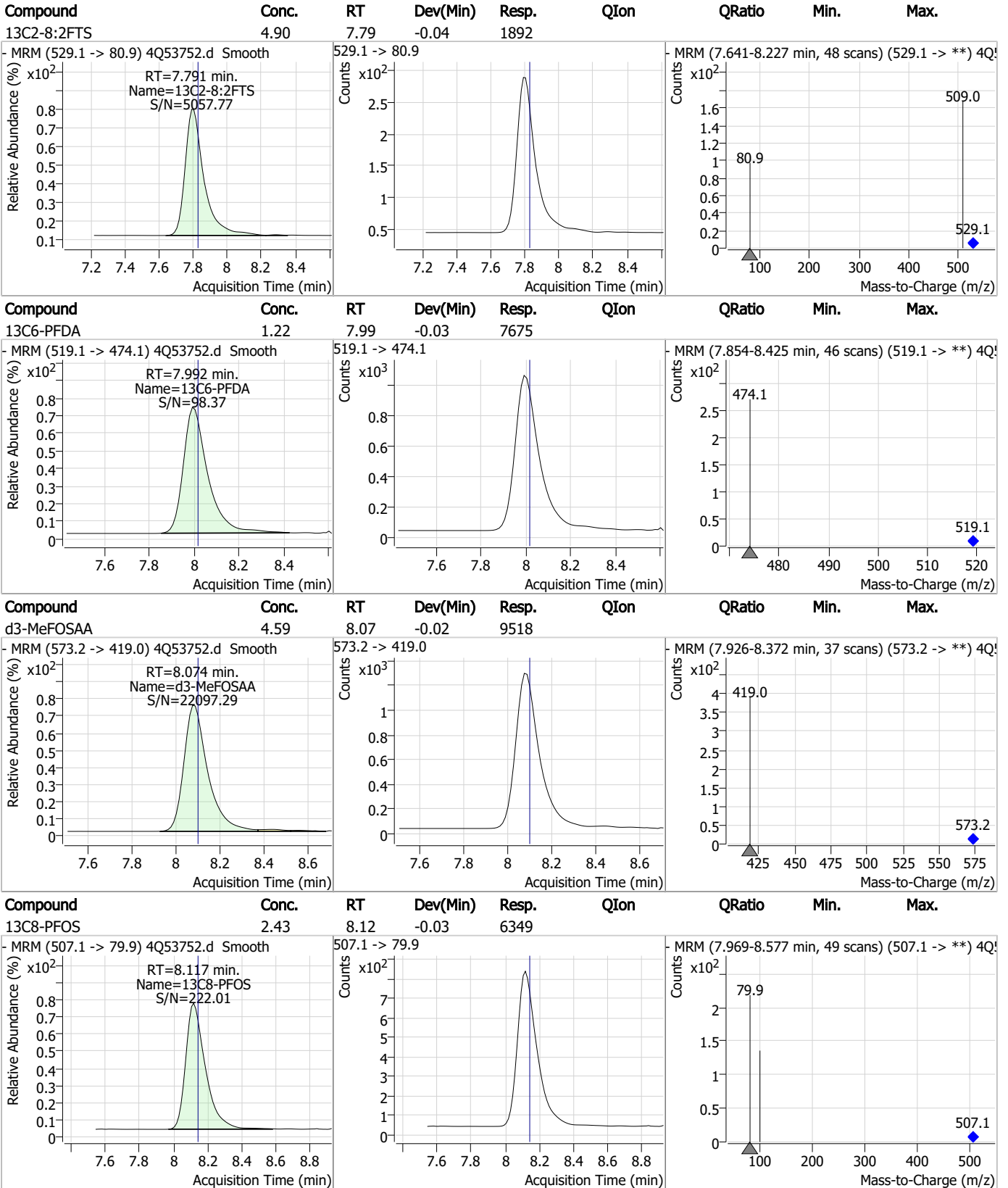
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Perfluorinated Compounds by LC/MS/MS



7.5.1
7

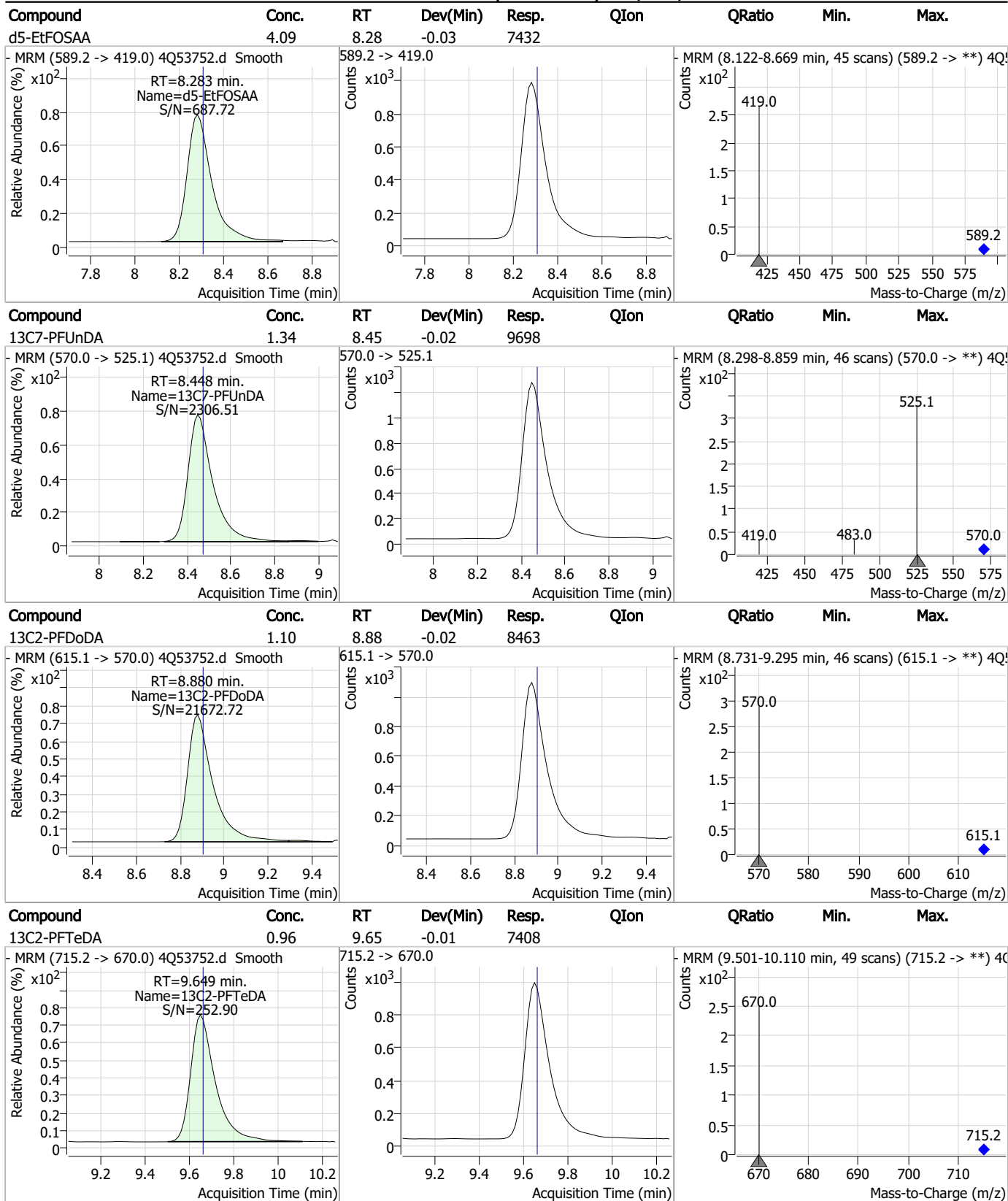
Perfluorinated Compounds by LC/MS/MS



7.5.1

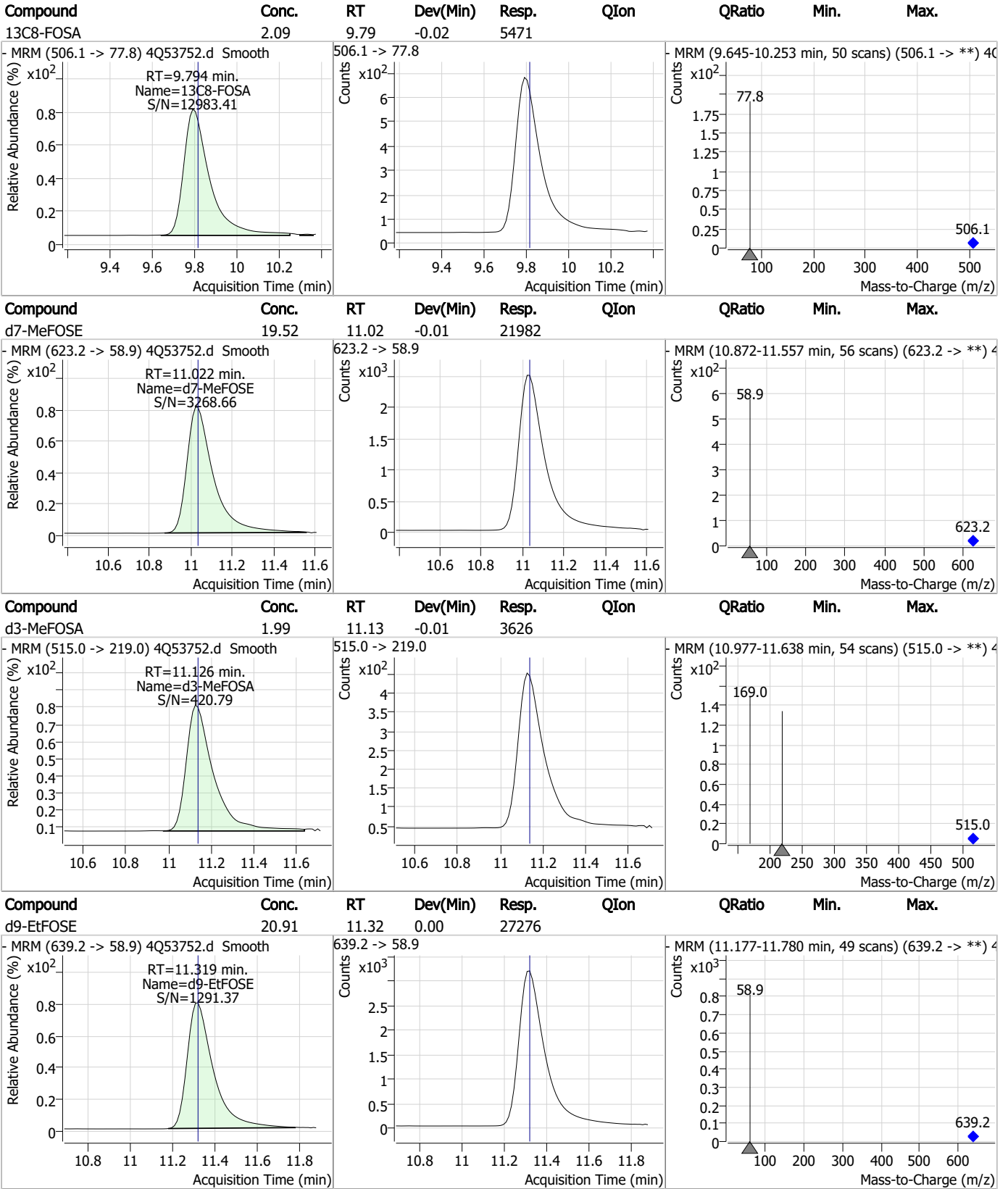
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Perfluorinated Compounds by LC/MS/MS



7.5.1
7

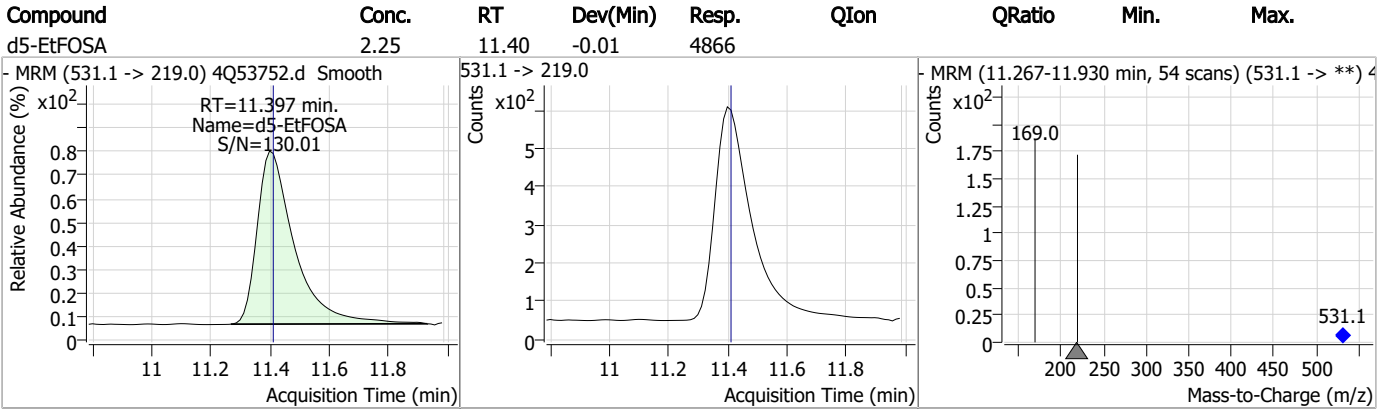
Perfluorinated Compounds by LC/MS/MS



7.5.1

7

Perfluorinated Compounds by LC/MS/MS



7.5.1

7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtie
 11/14/23 15:48

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

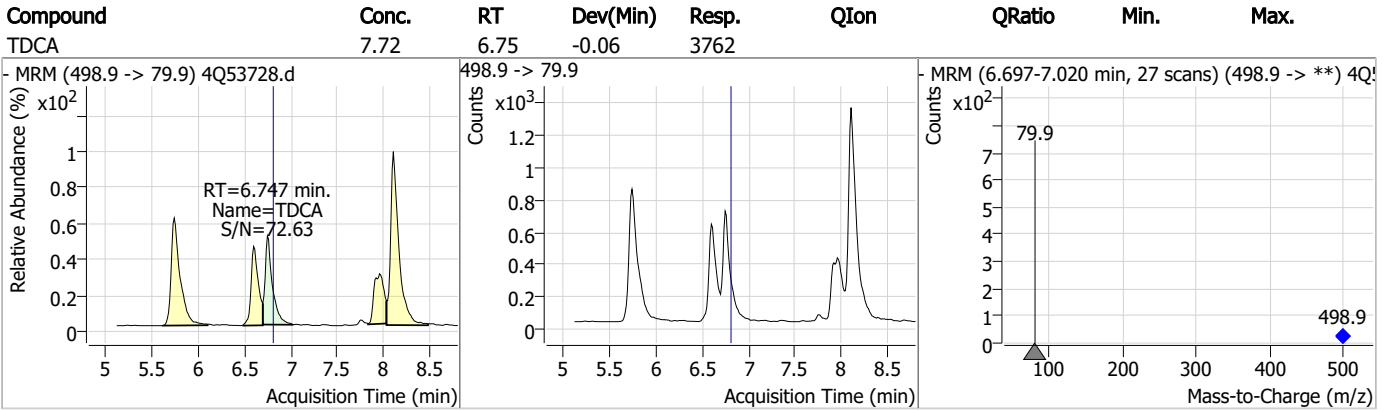
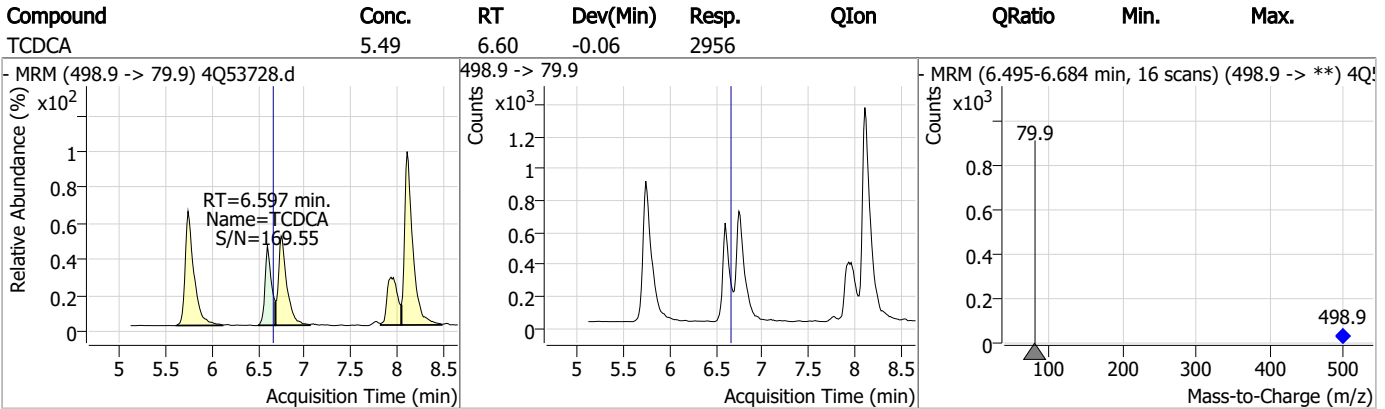
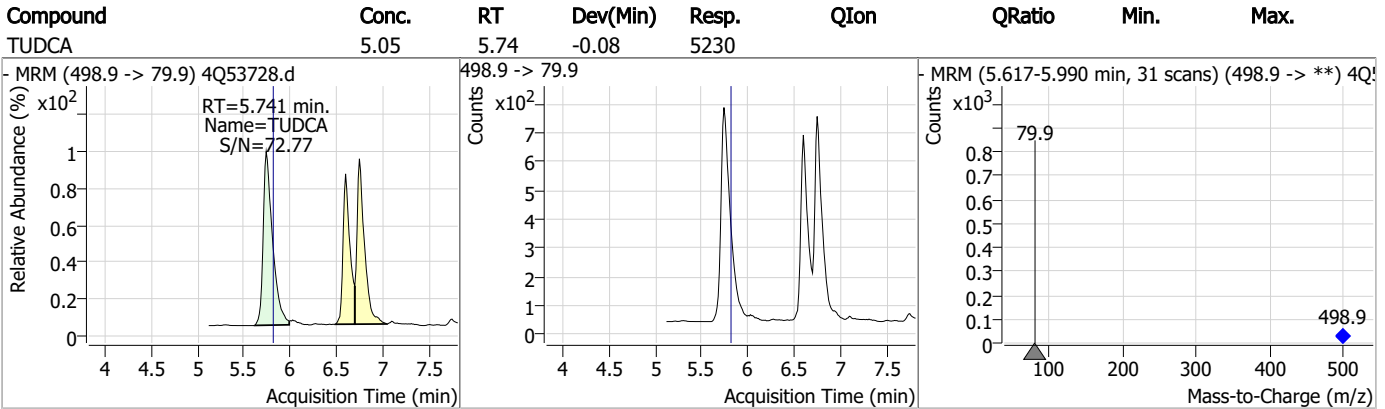
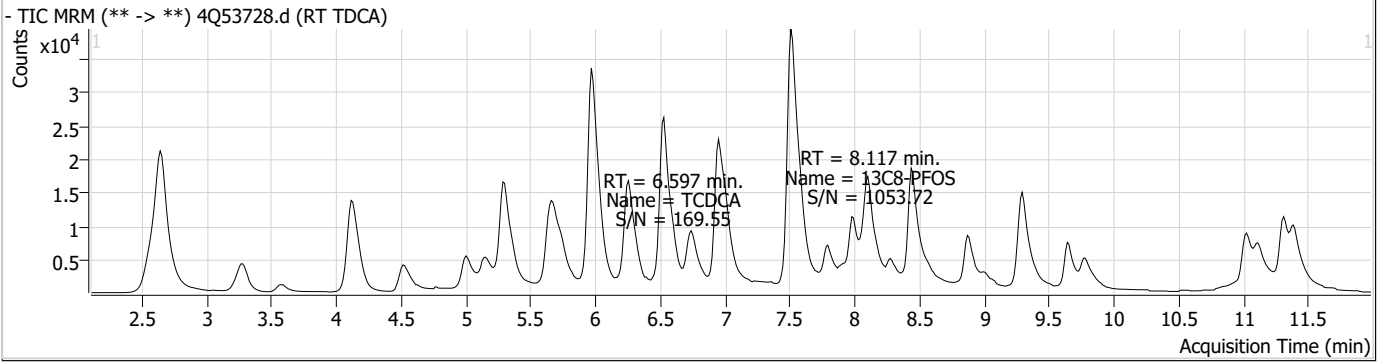
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.117	507.1 -> 79.9	11669	2.50	µg/L	-0.076	
13C4-PFOS	8.118	502.8 -> 79.9	9951	2.50	µg/L	-0.076	
System Monitoring Compounds							
13C8-PFOS	8.117	507.1 -> 79.9	11669	2.97	µg/L	-0.076	
Spiked Amount: 2.50	Range: 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

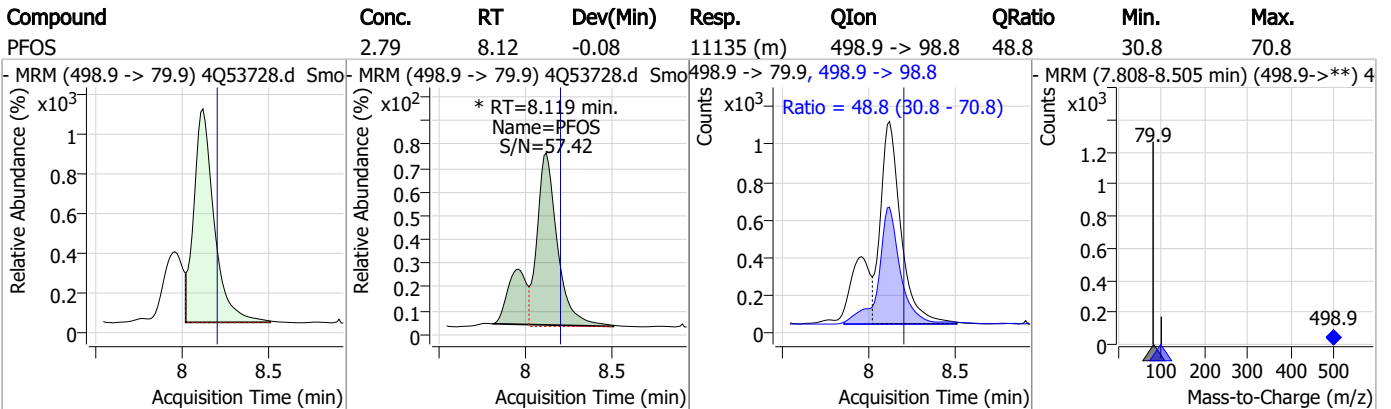
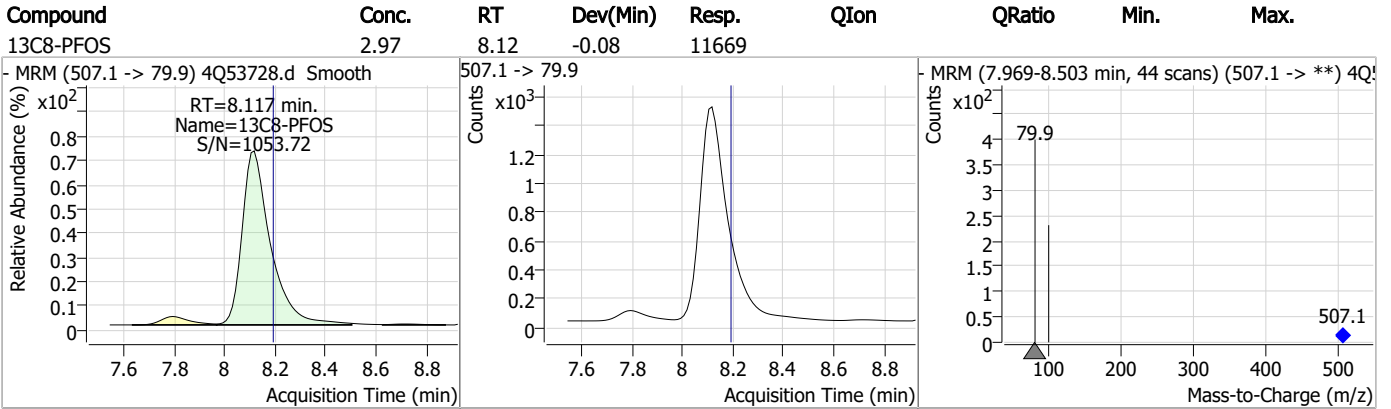
7.6.1
7



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.1
7



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

7.6.1.1
7

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

7.6.2
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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

7.6.2
7

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

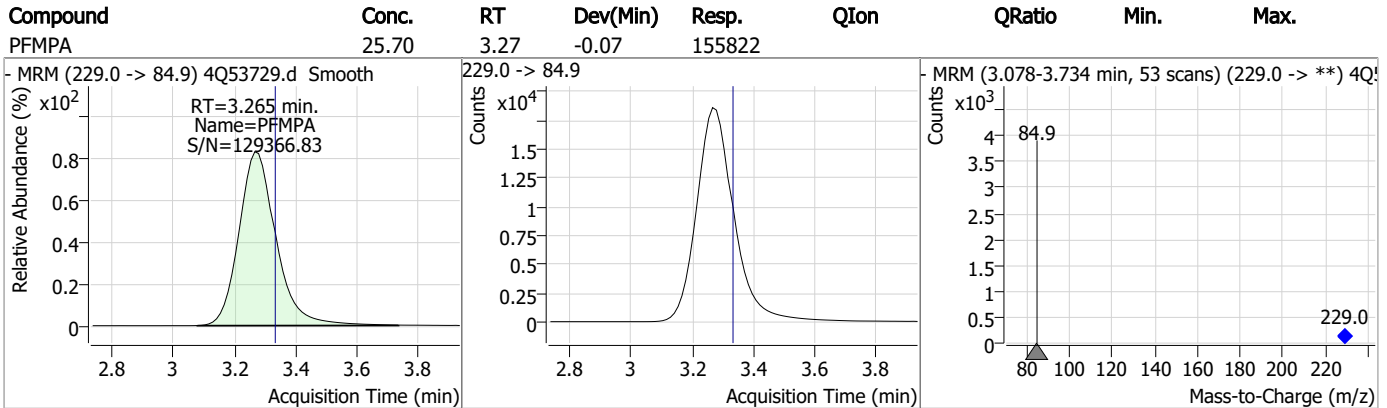
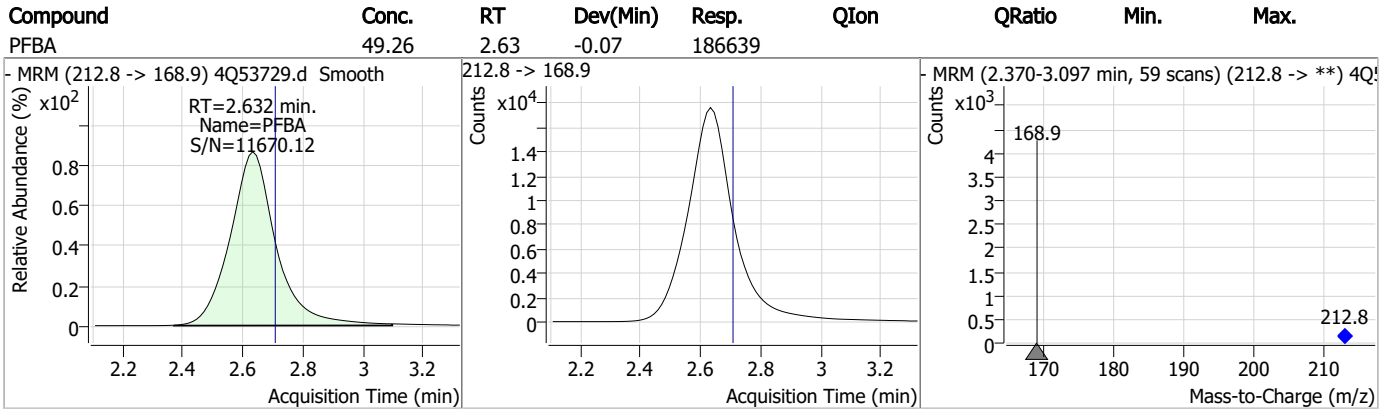
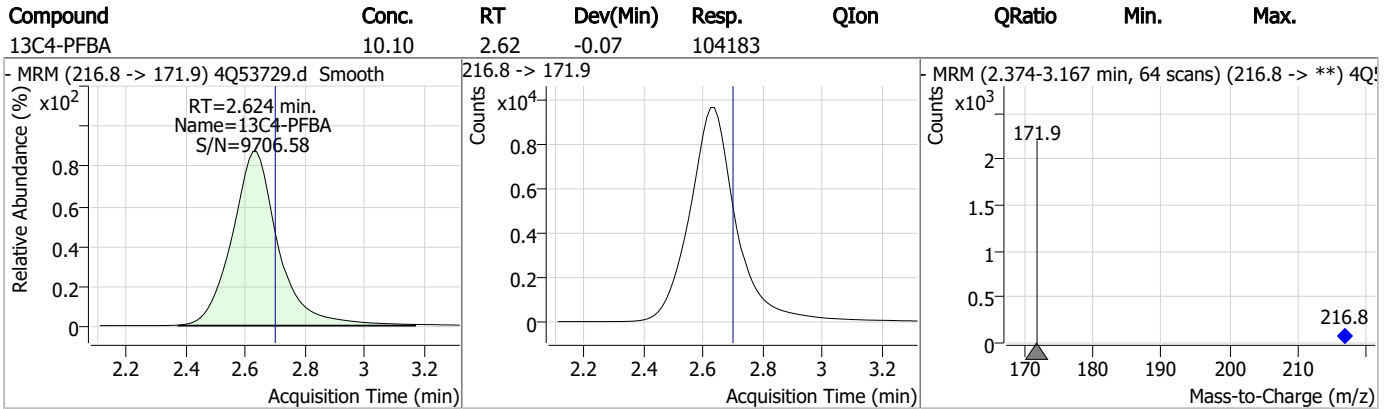
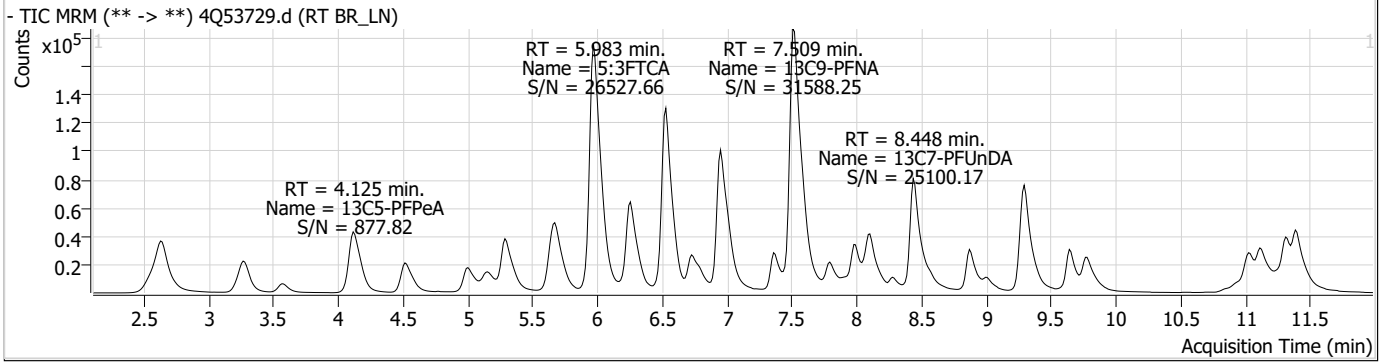
Perfluorinated Compounds by LC/MS/MS

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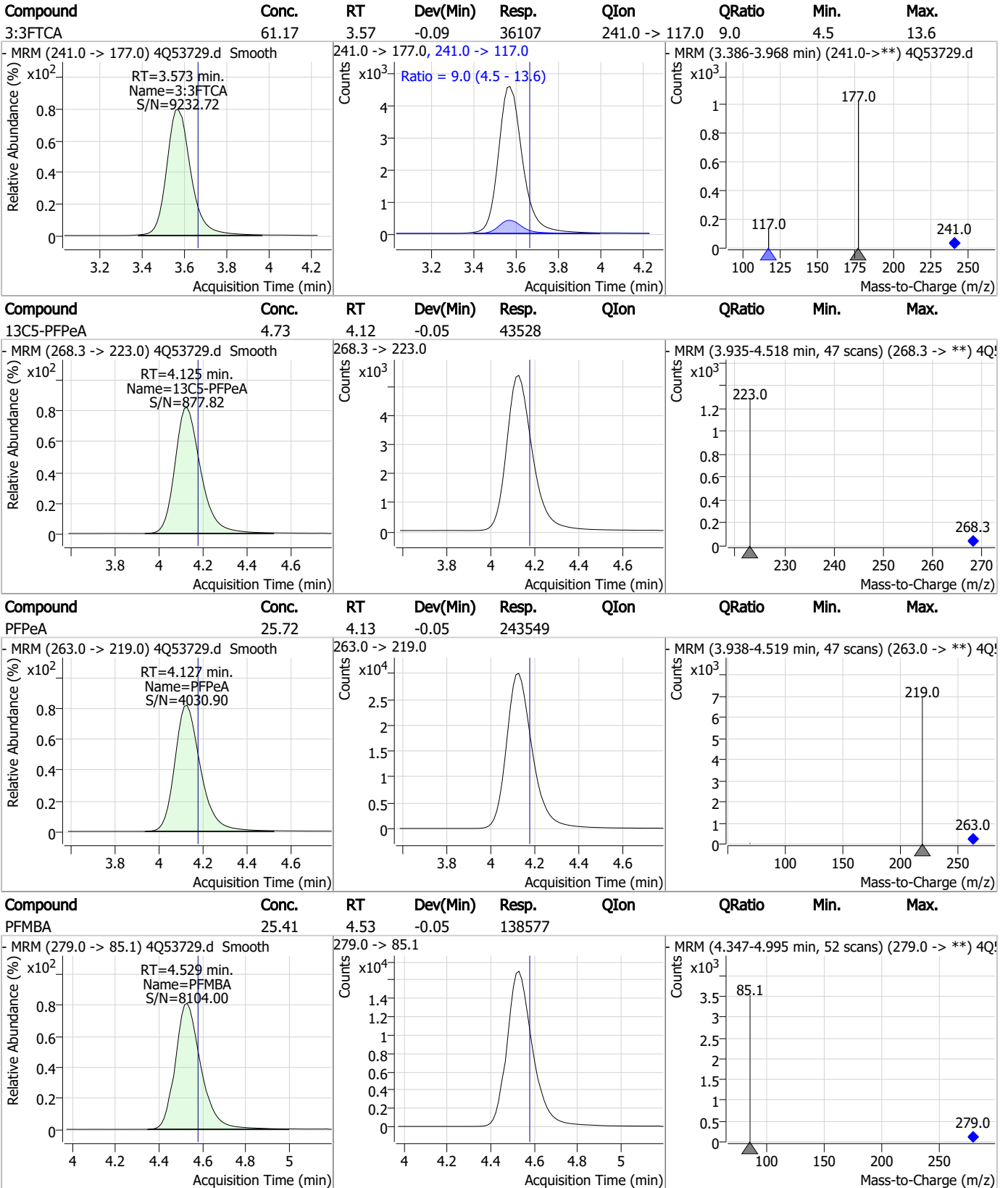
7.6.2

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Perfluorinated Compounds by LC/MS/MS



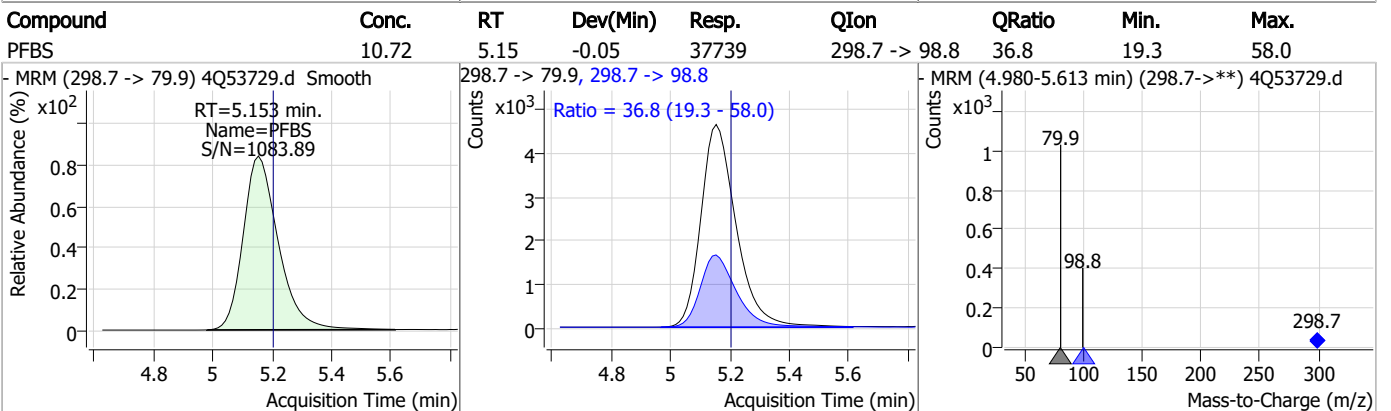
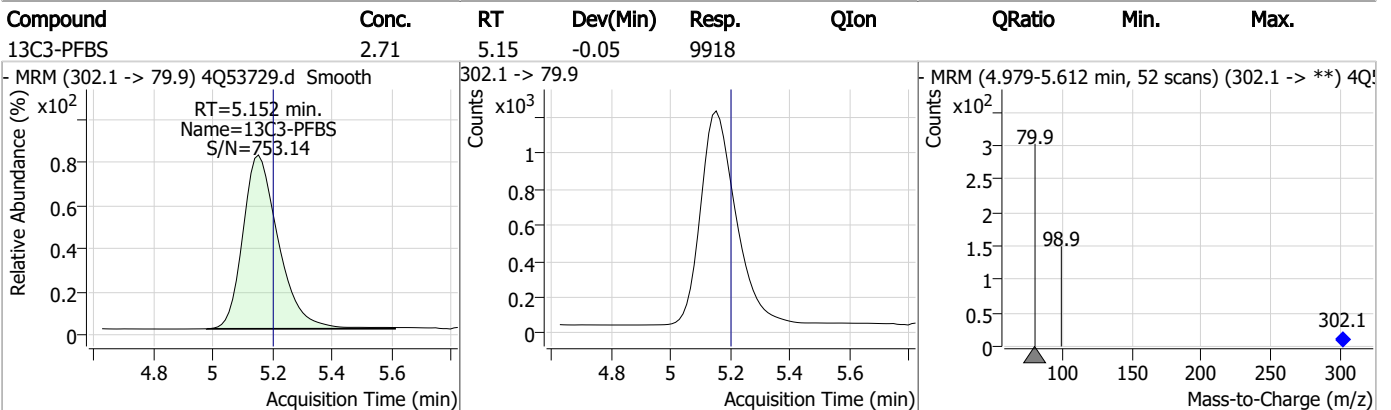
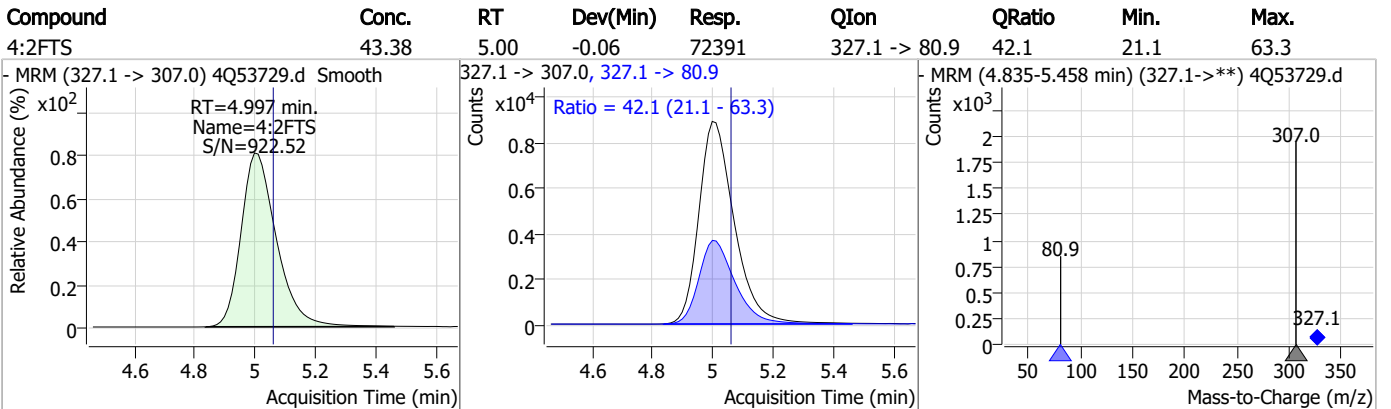
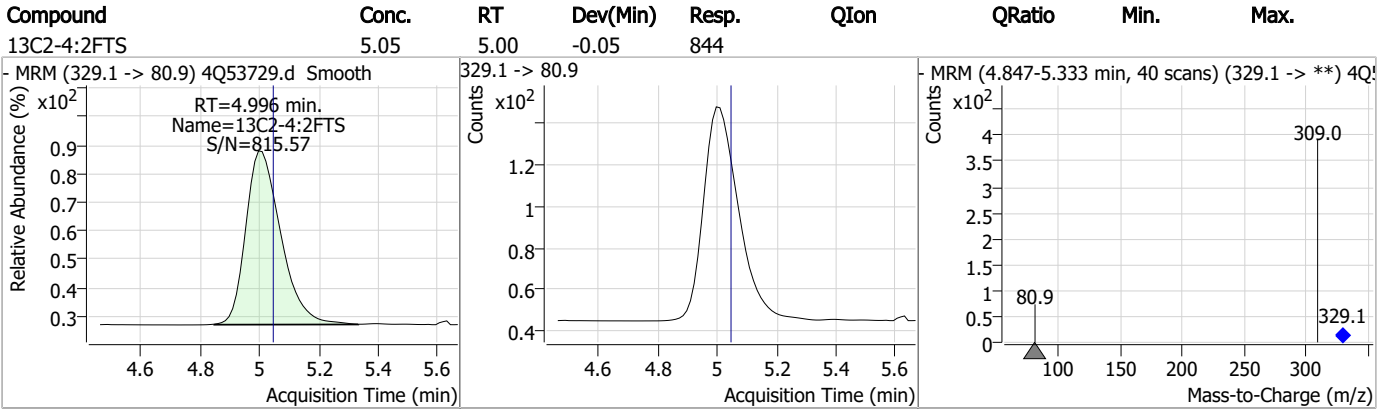
Perfluorinated Compounds by LC/MS/MS



7.6.2

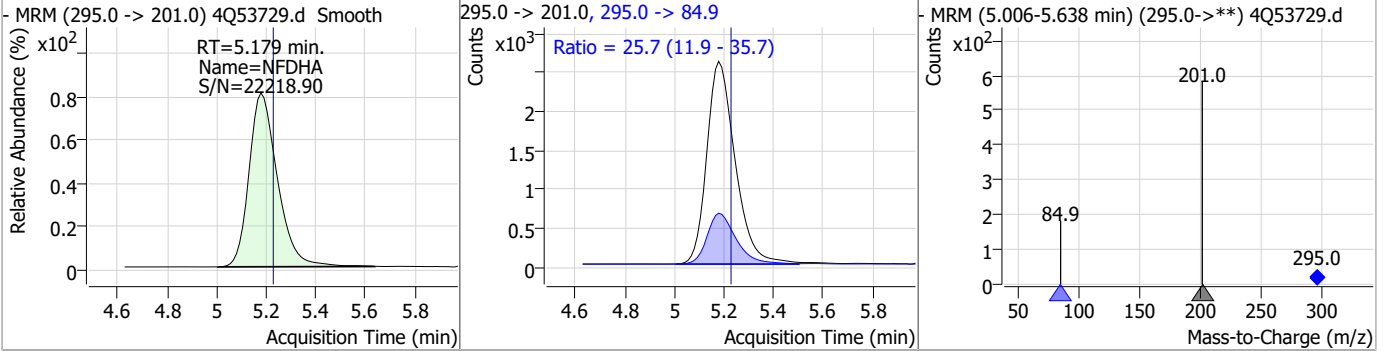
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Perfluorinated Compounds by LC/MS/MS

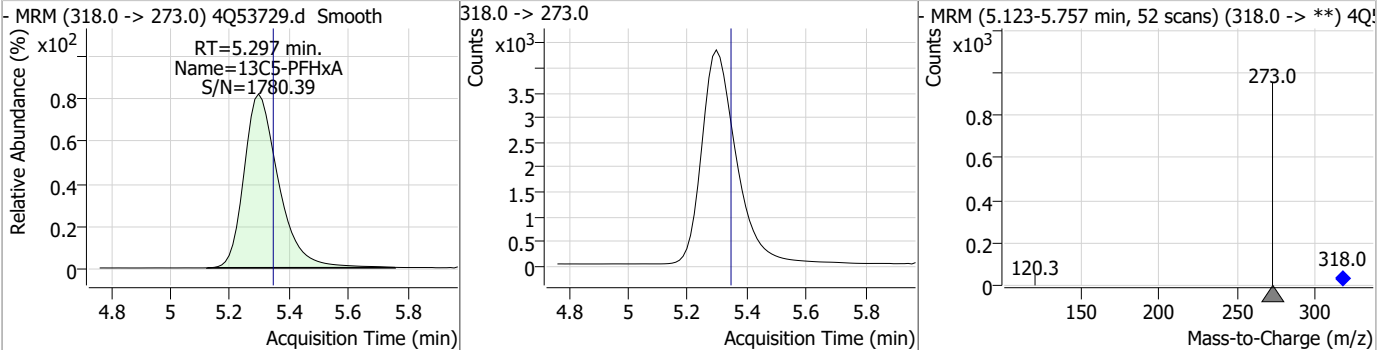


Perfluorinated Compounds by LC/MS/MS

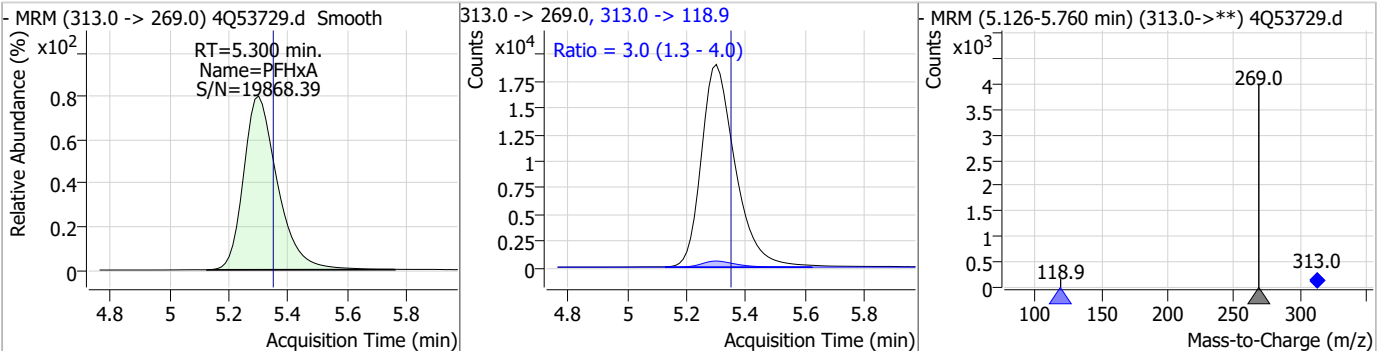
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	25.56	5.18	-0.05	20644	295.0 -> 84.9	25.7	11.9	35.7



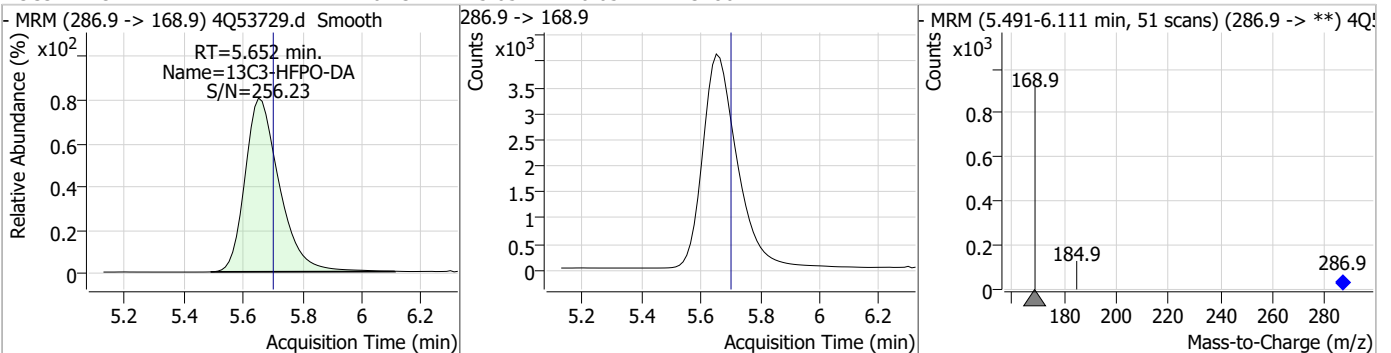
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.49	5.30	-0.05	35013				



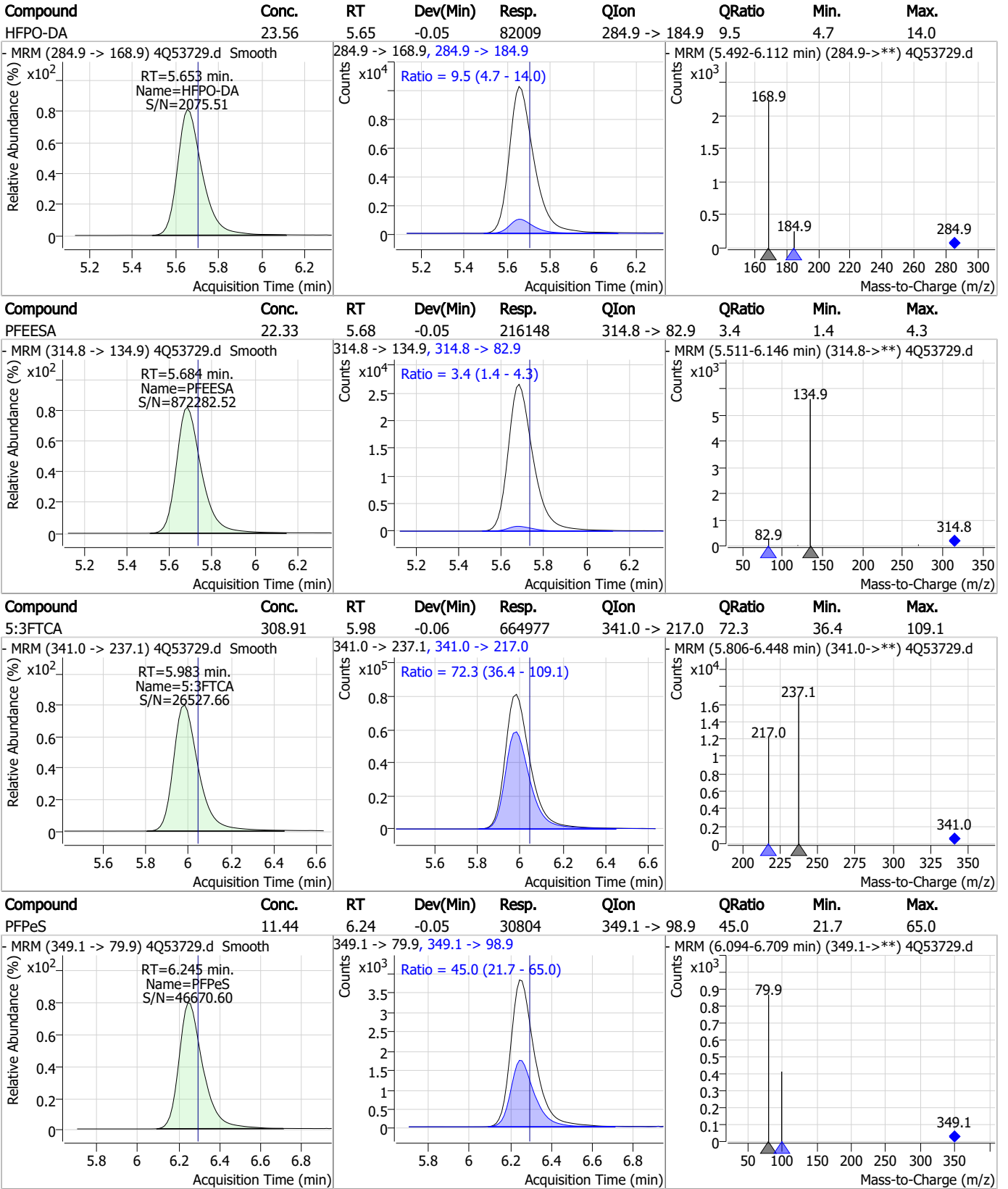
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	12.38	5.30	-0.05	151395	313.0 -> 118.9	3.0	1.3	4.0



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



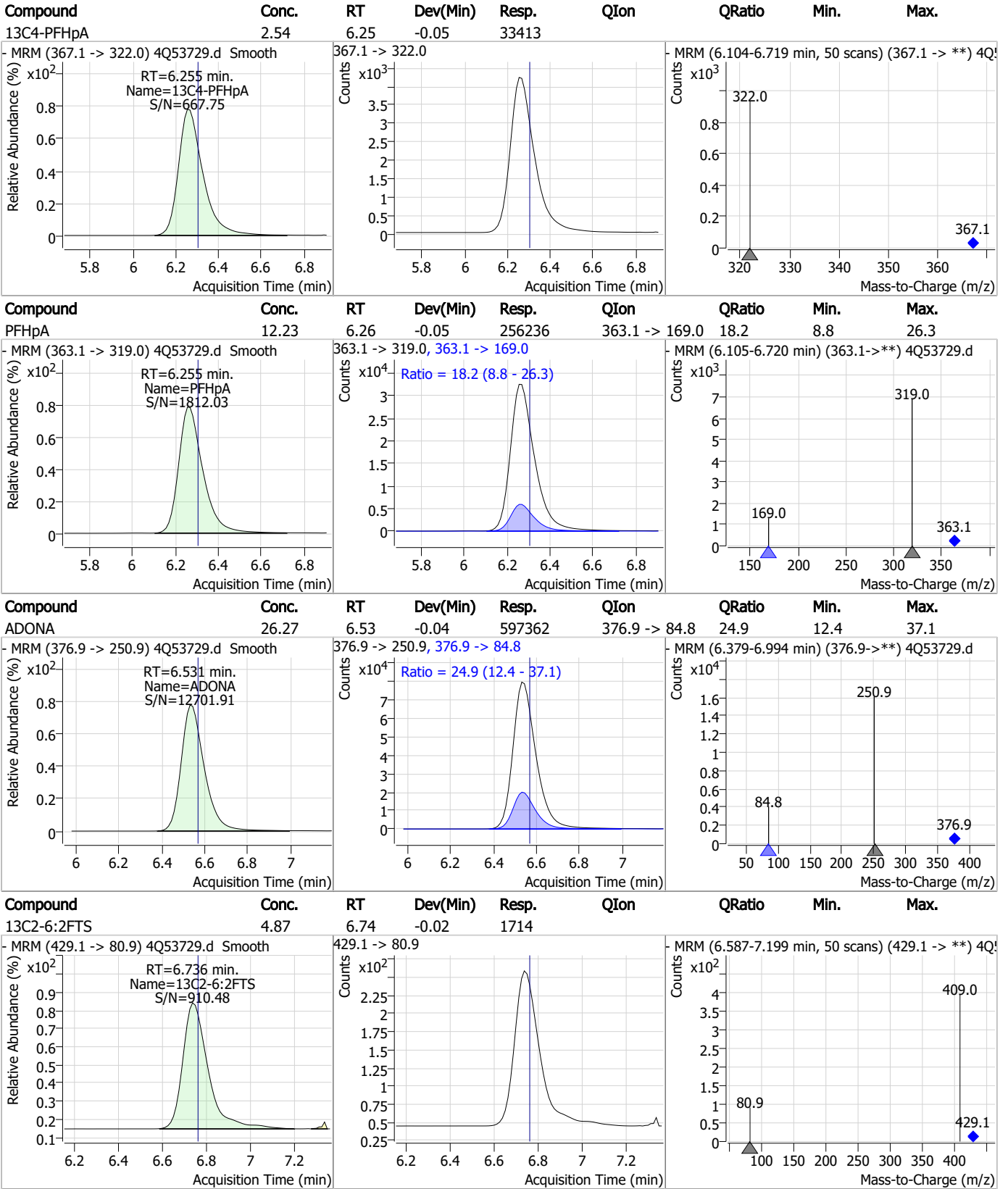
Perfluorinated Compounds by LC/MS/MS



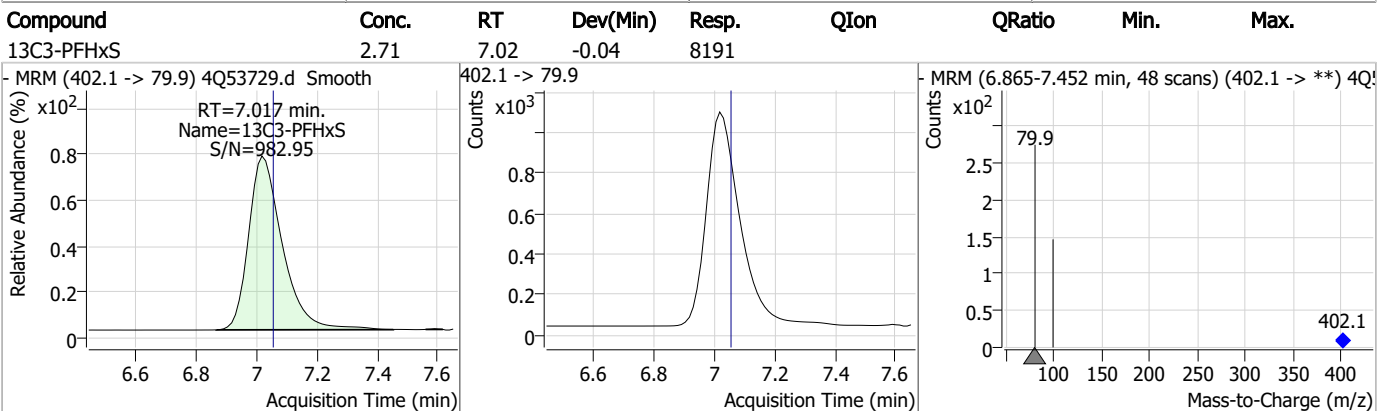
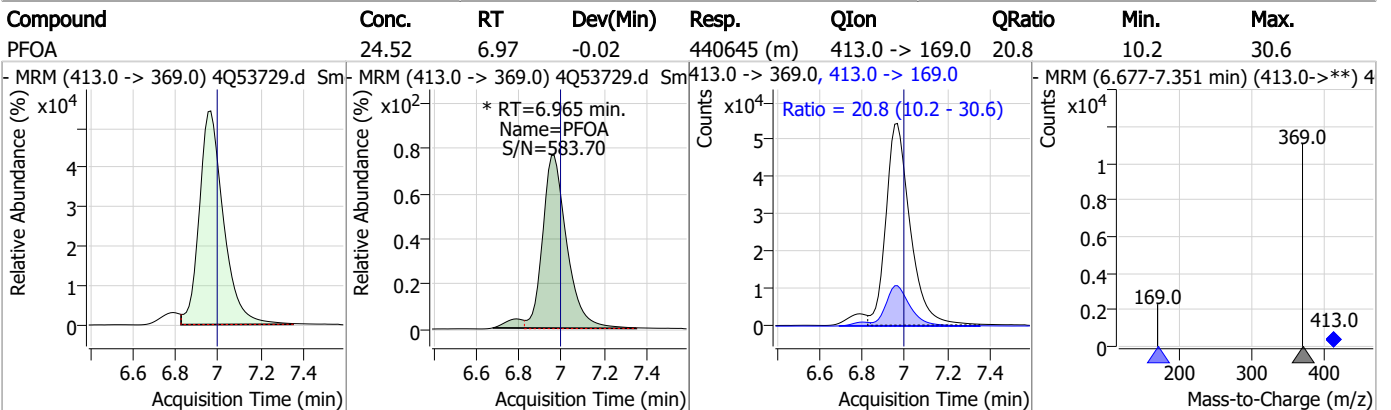
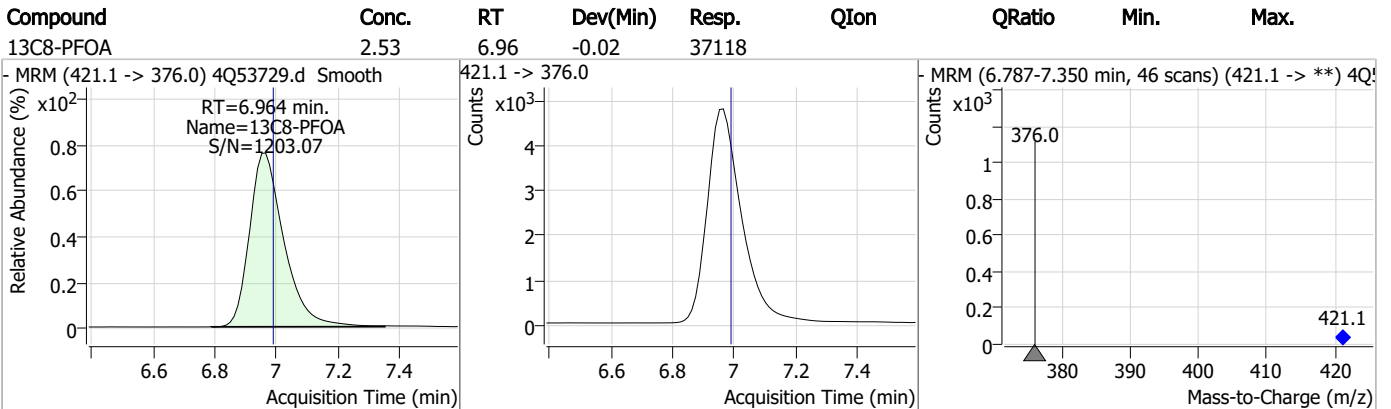
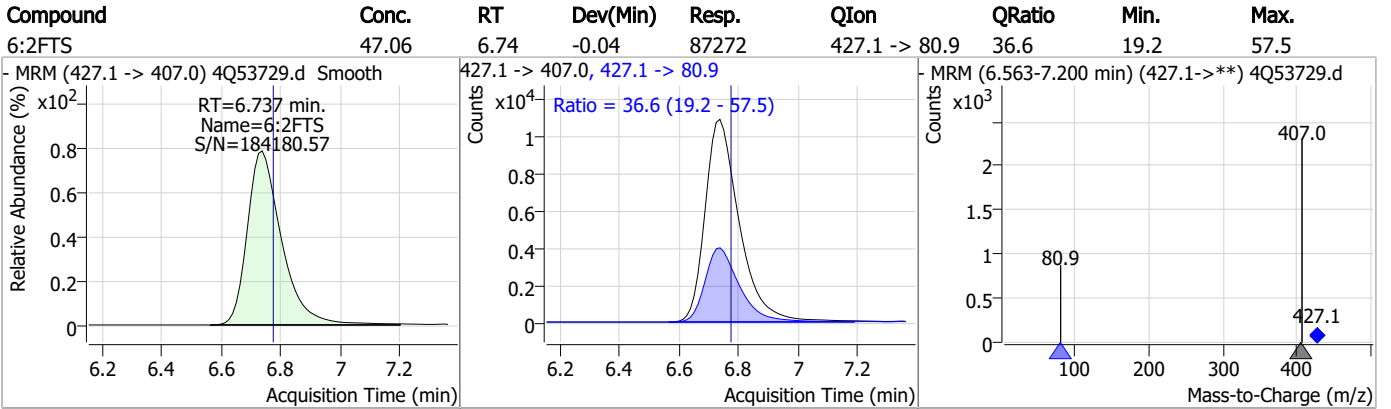
7.6.2

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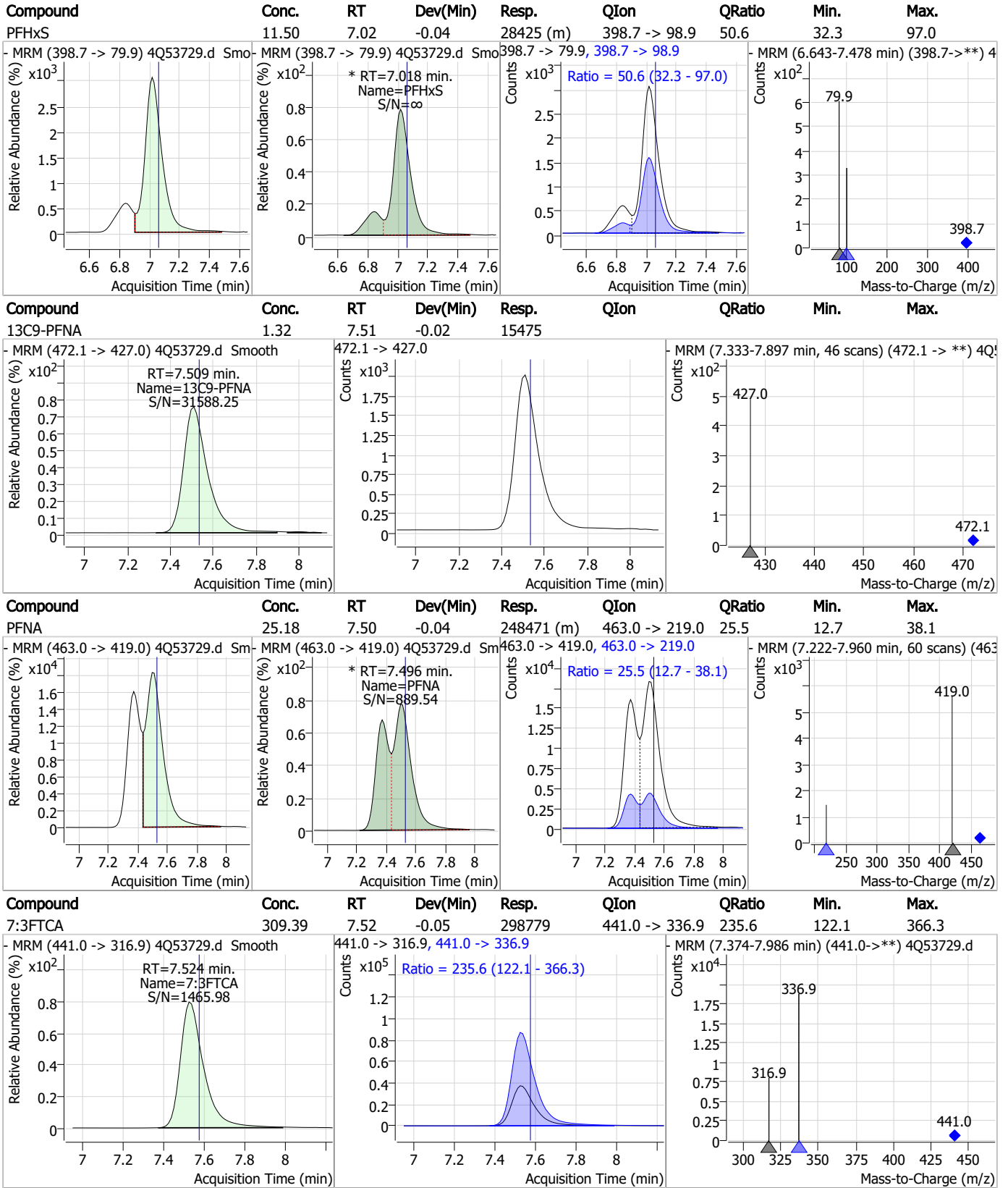
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



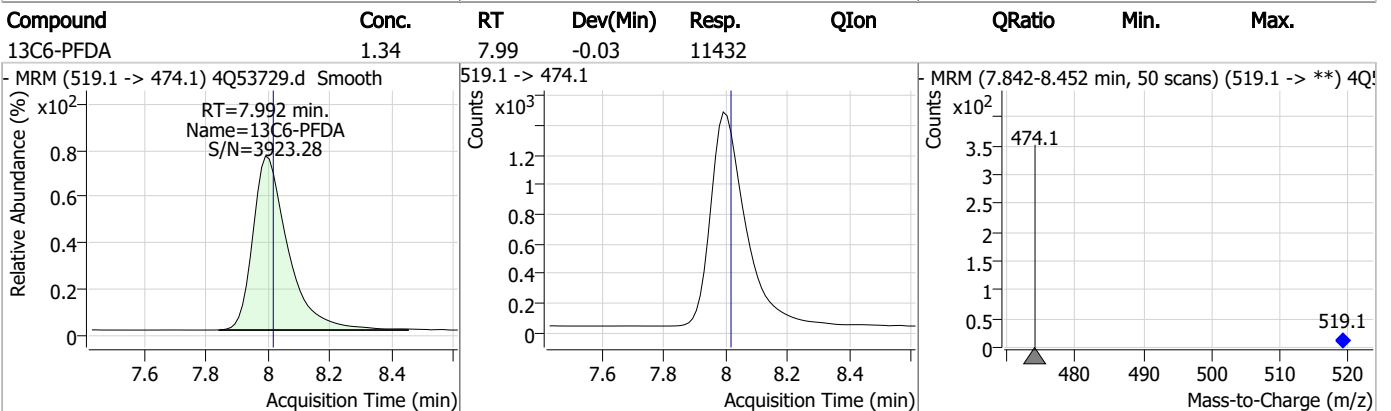
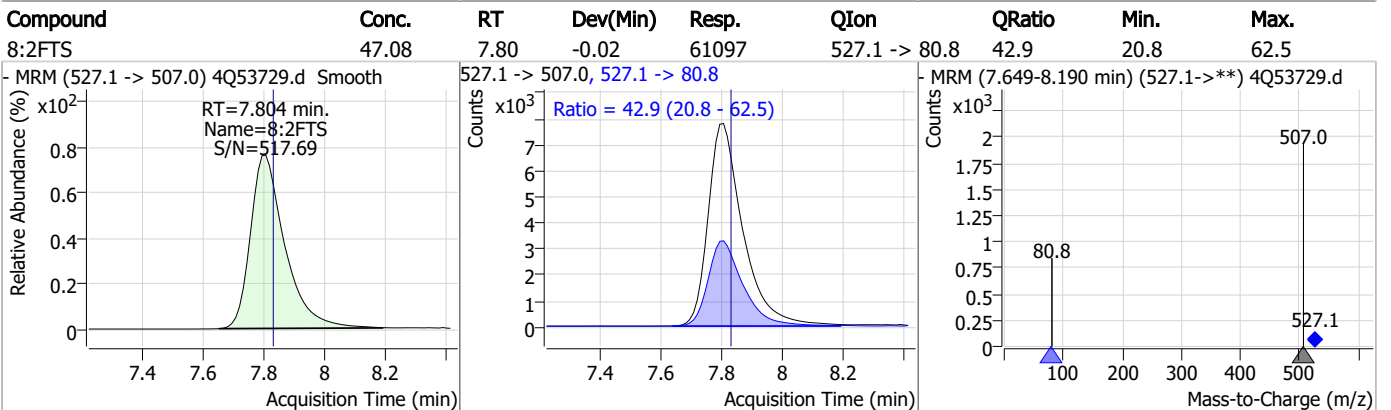
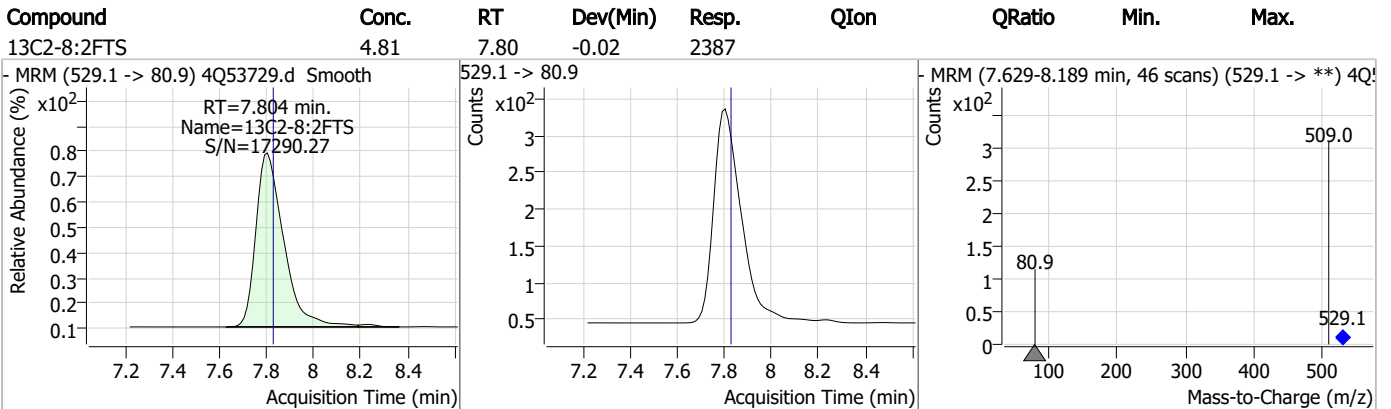
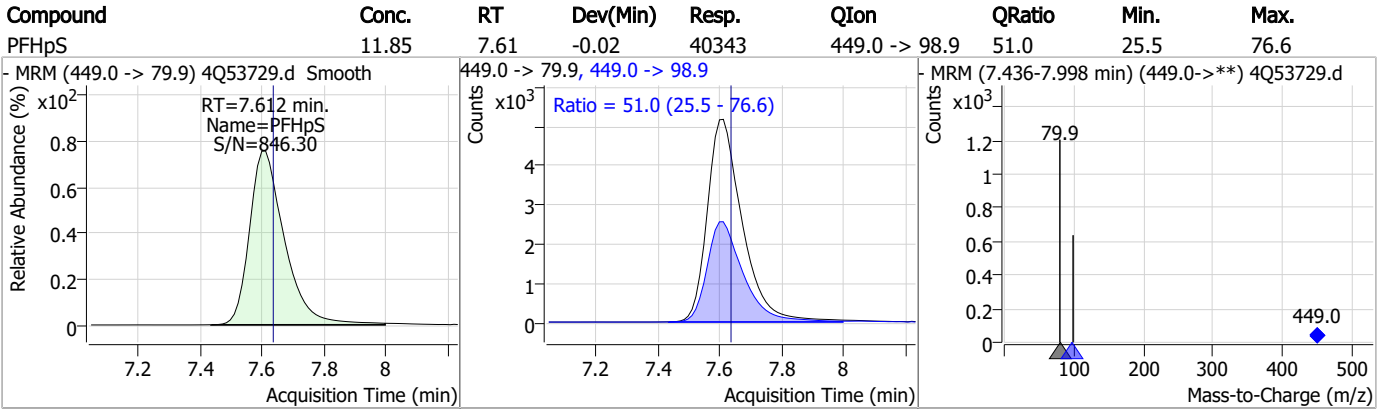
Perfluorinated Compounds by LC/MS/MS



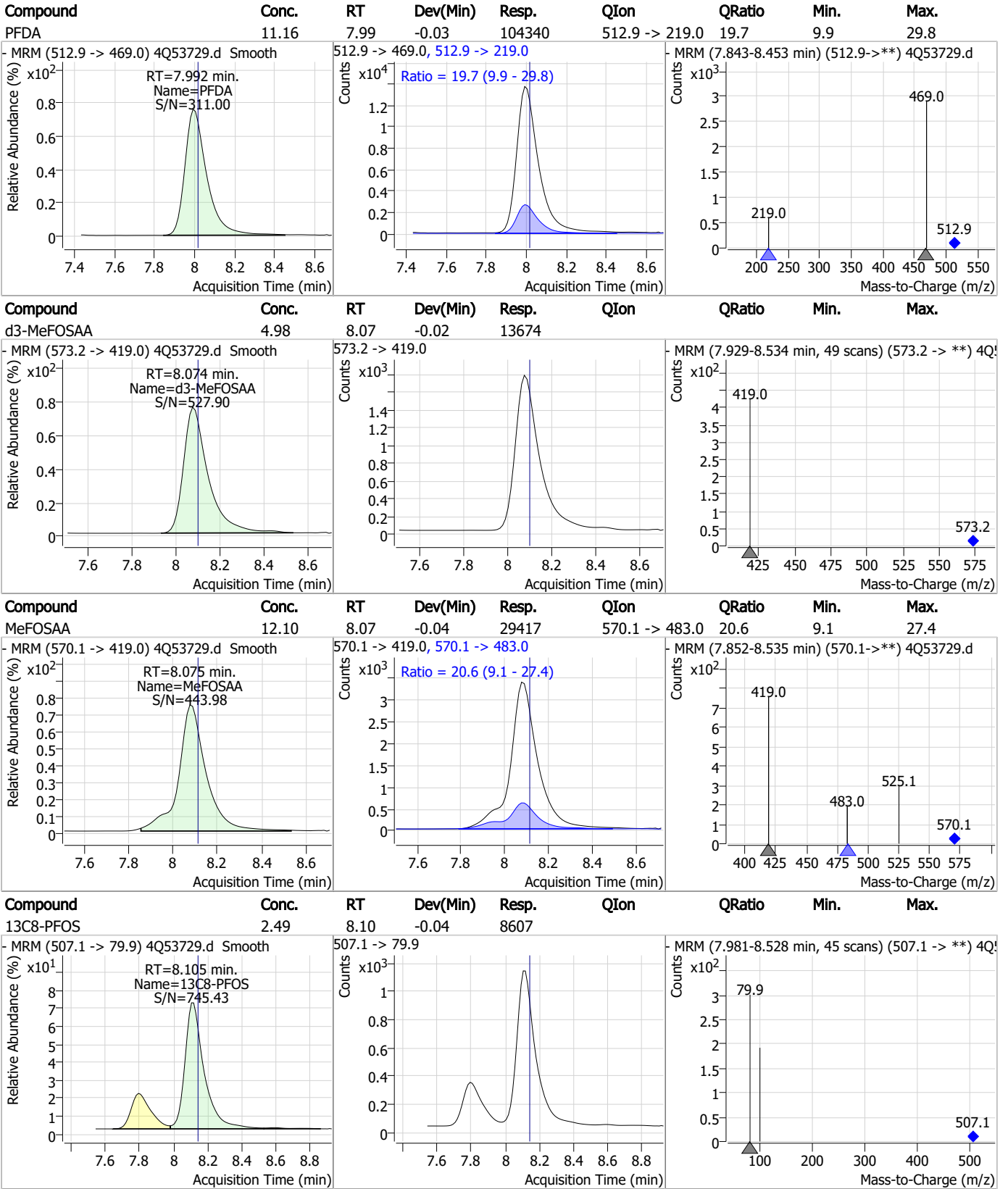
7.6.2

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Perfluorinated Compounds by LC/MS/MS



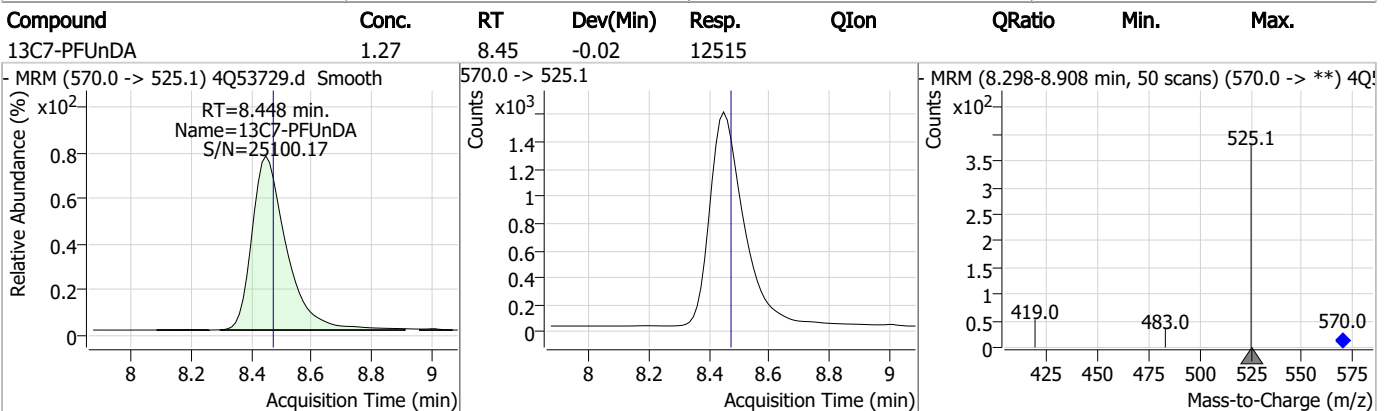
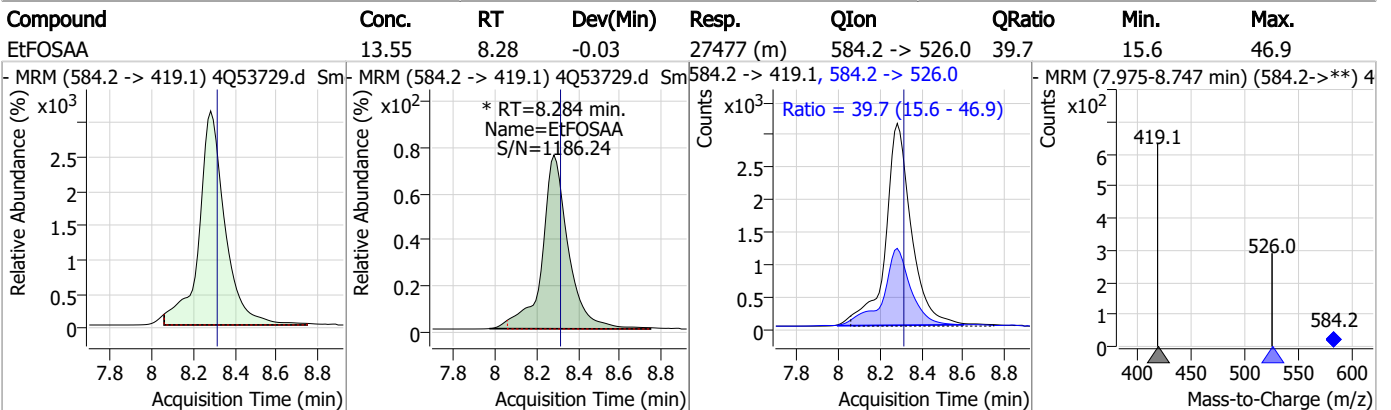
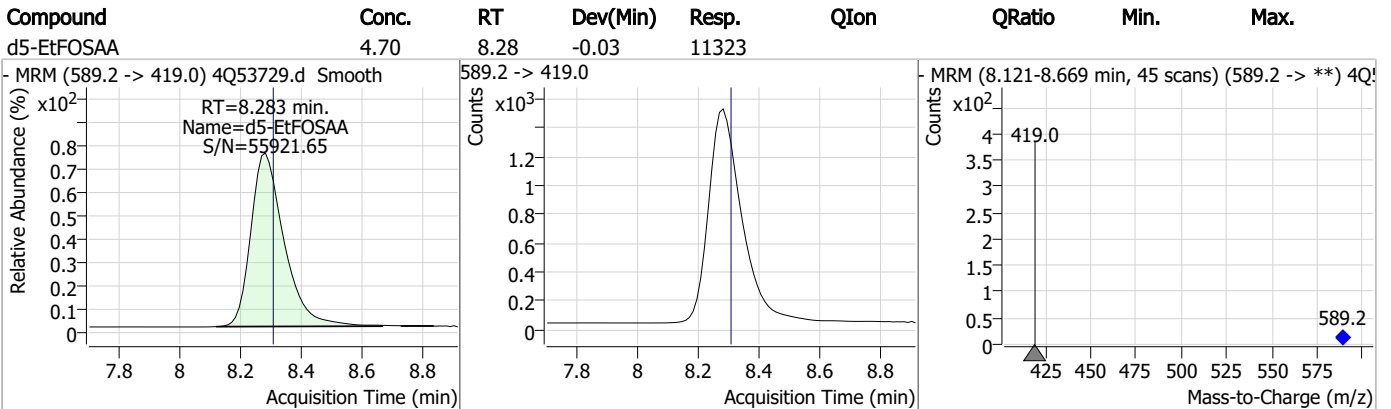
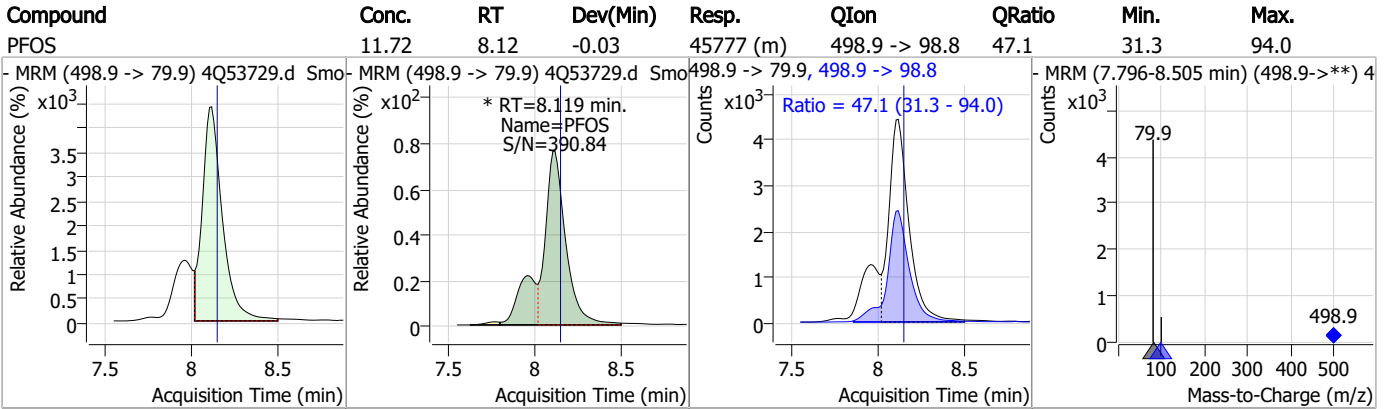
Perfluorinated Compounds by LC/MS/MS



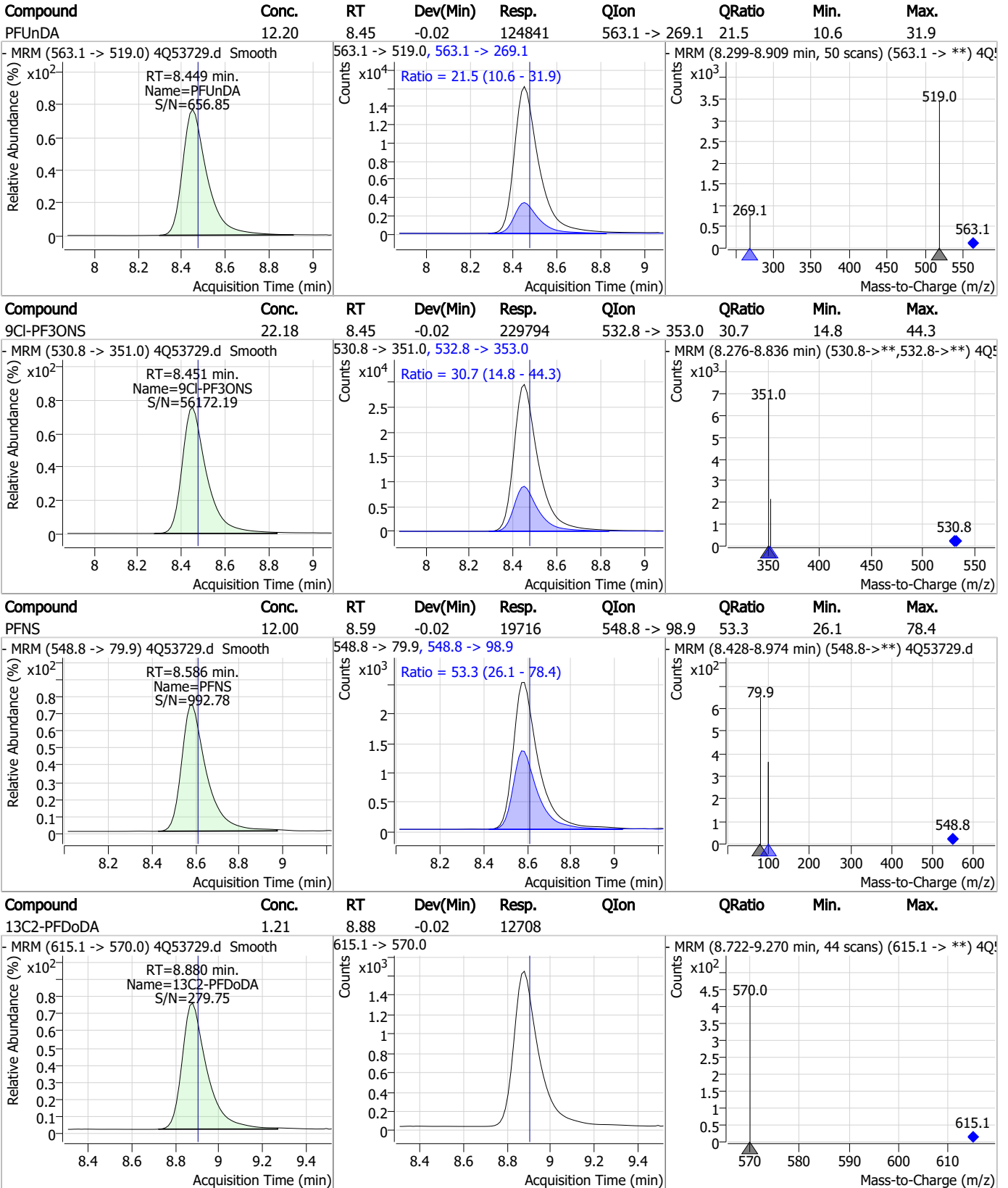
7.6.2

7

Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

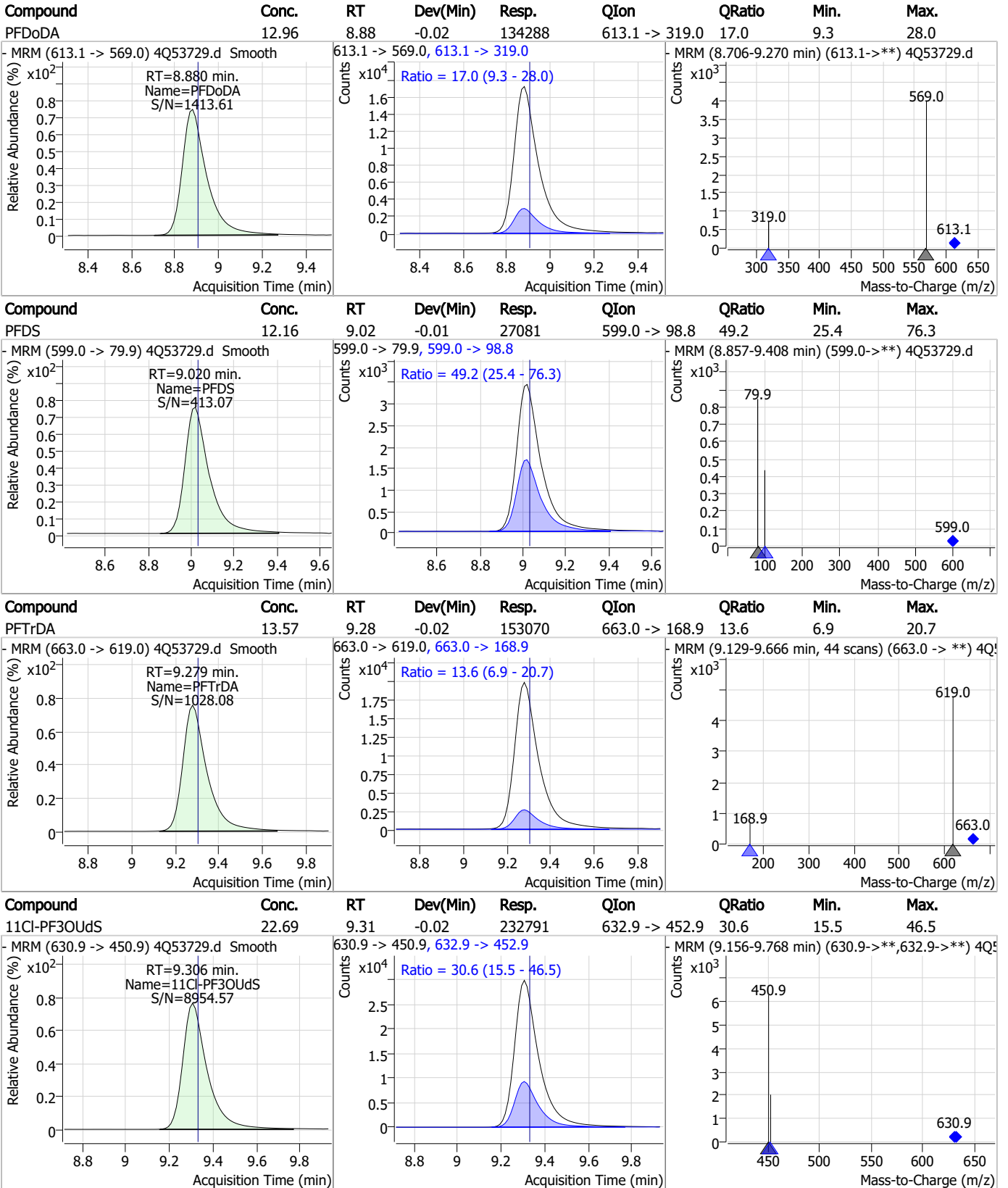


7.6.2

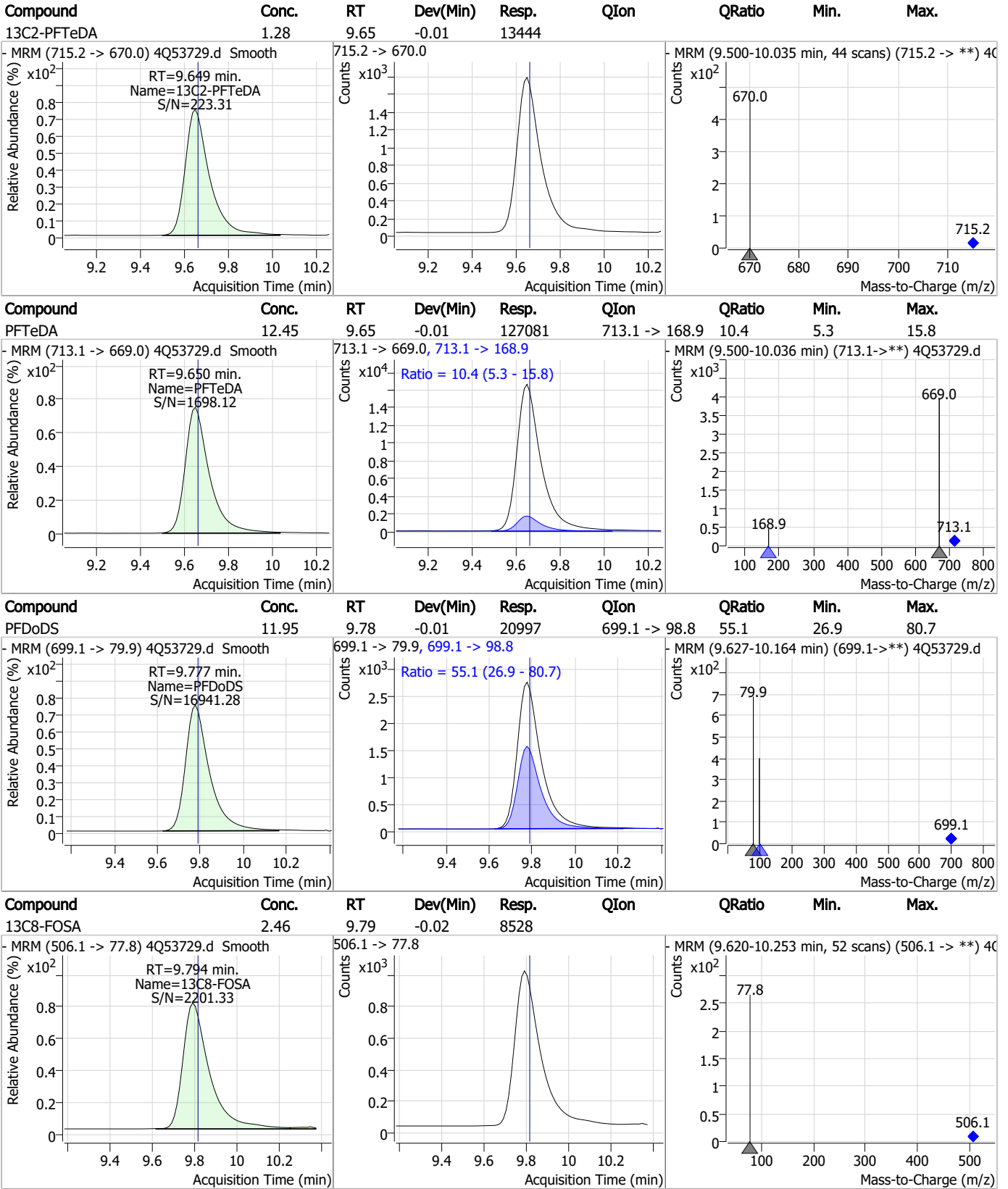
7



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



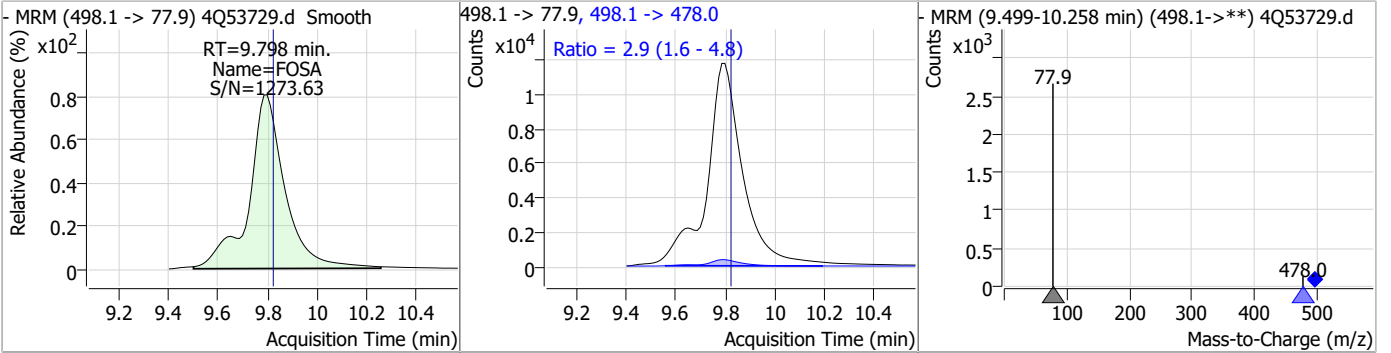
7.6.2

7

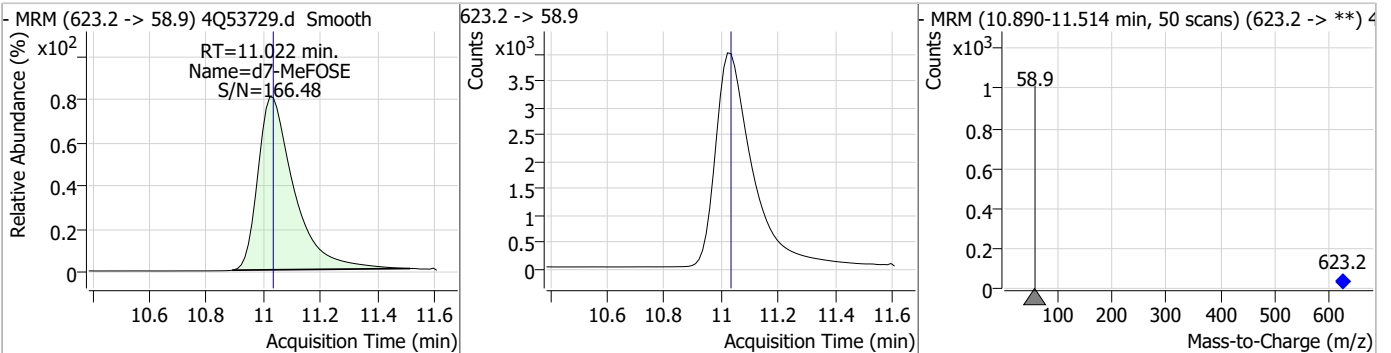


Perfluorinated Compounds by LC/MS/MS

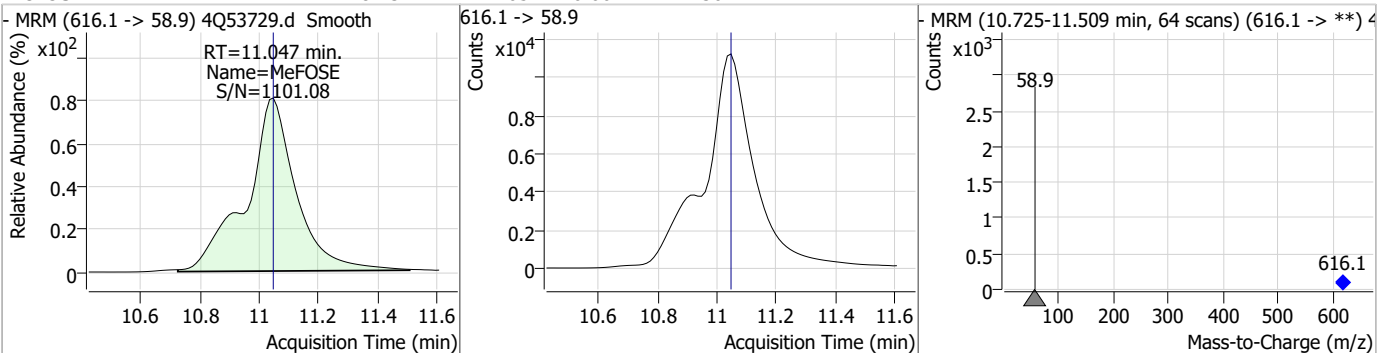
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	28.75	9.80	-0.02	119520	498.1 -> 478.0	2.9	1.6	4.8



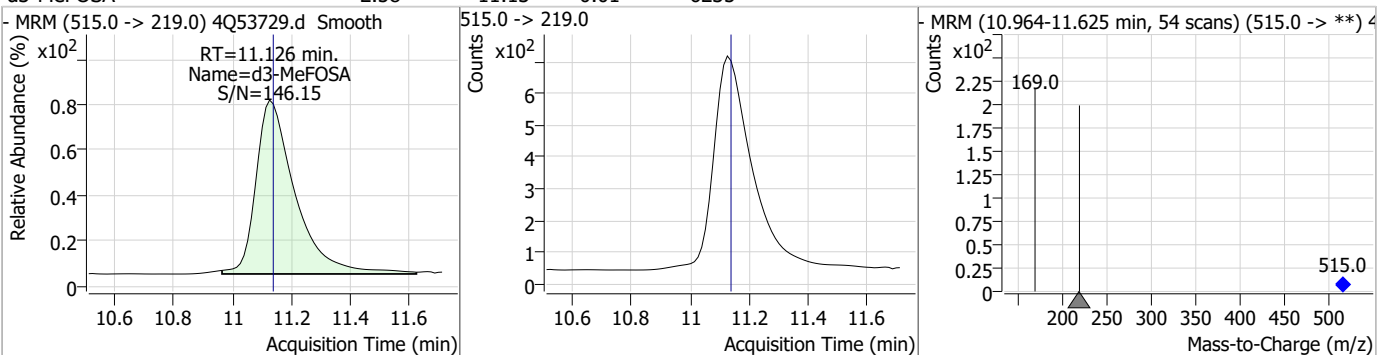
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.31	11.02	-0.01	34785				



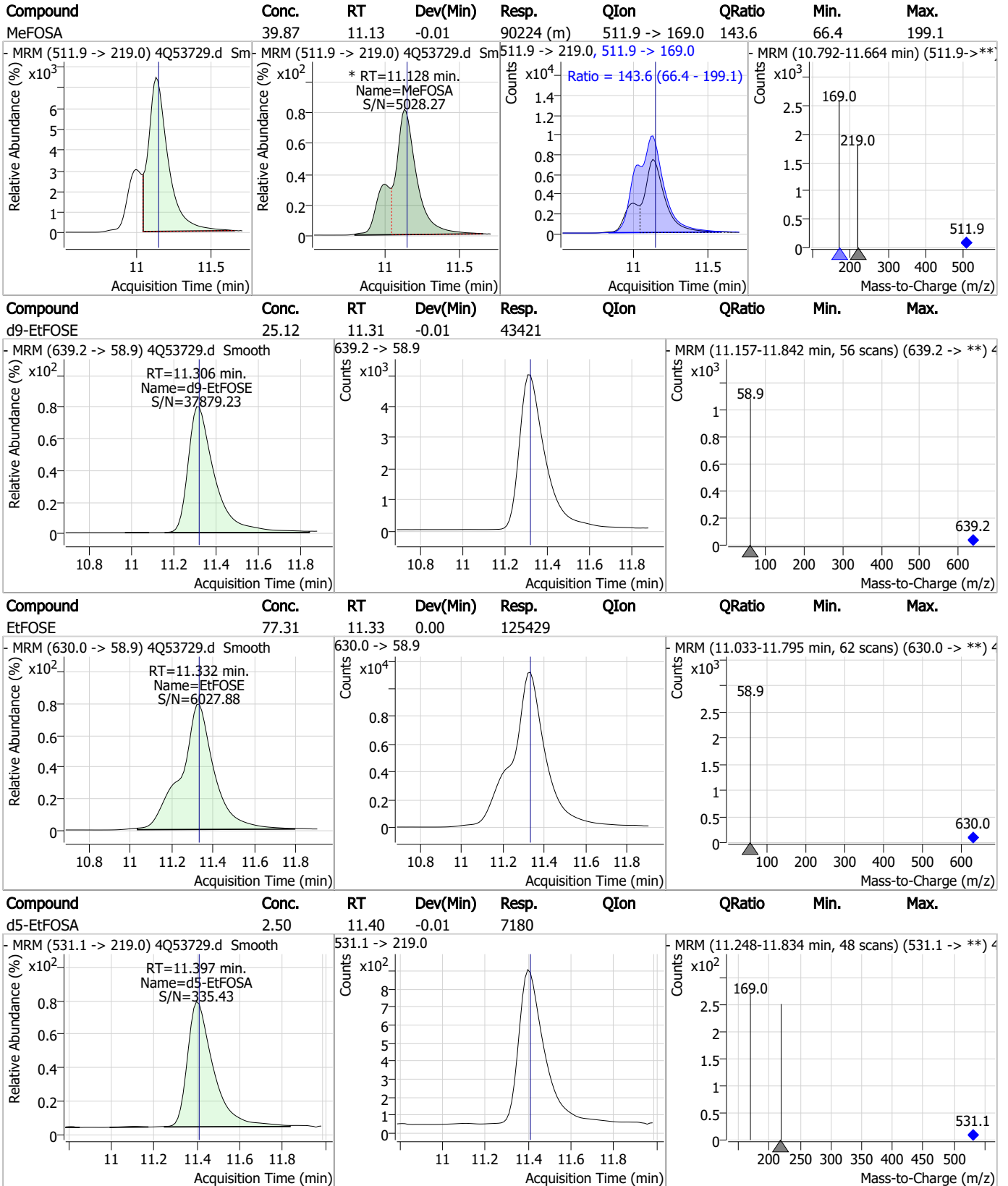
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	82.32	11.05	0.00	130471				



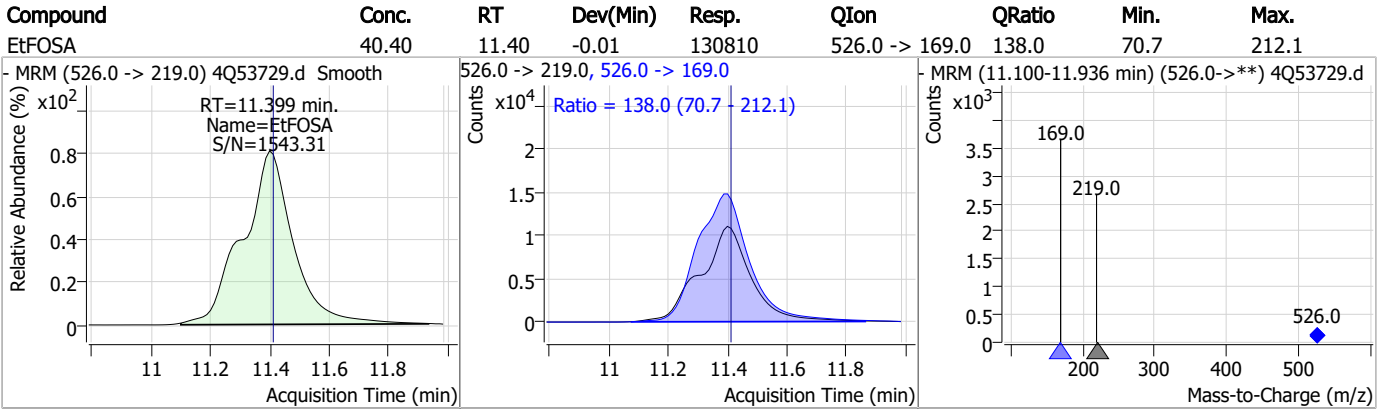
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.58	11.13	-0.01	6235				



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

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

7.7.1
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
		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
		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
		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
		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
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	#
		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

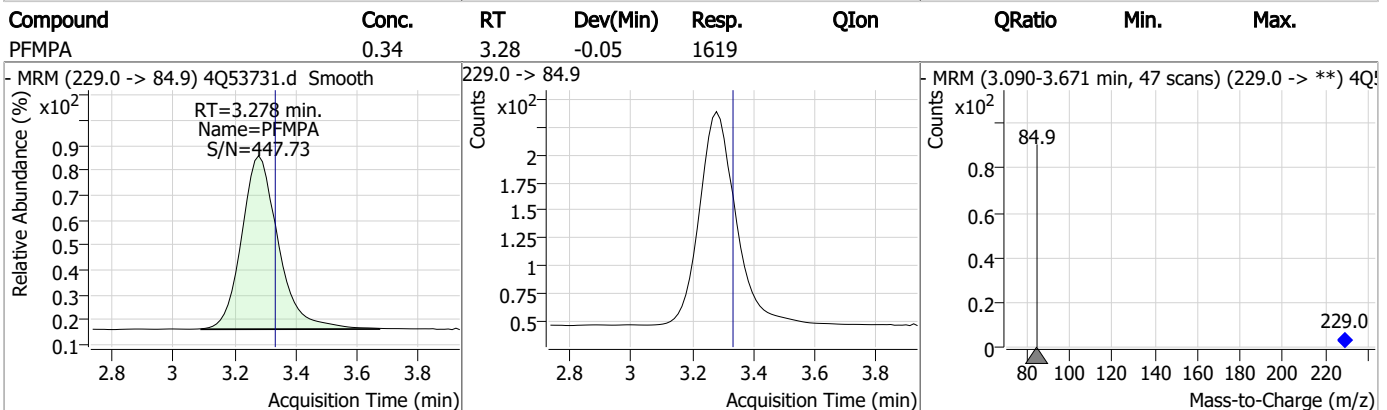
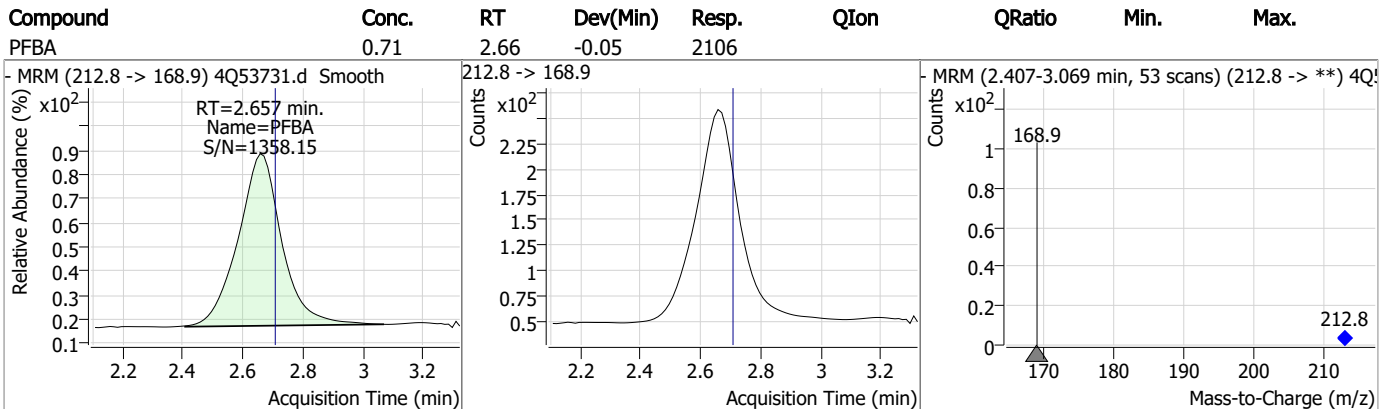
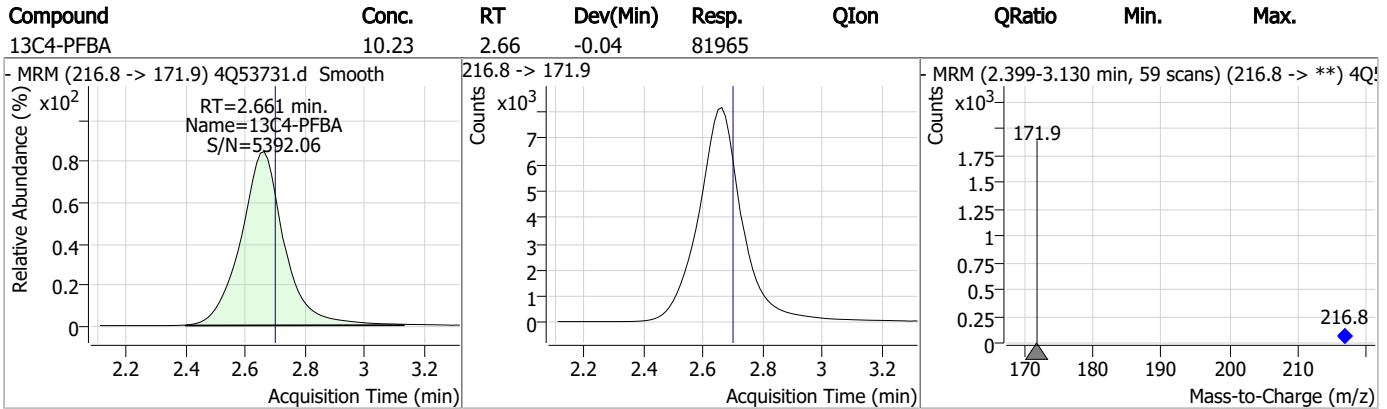
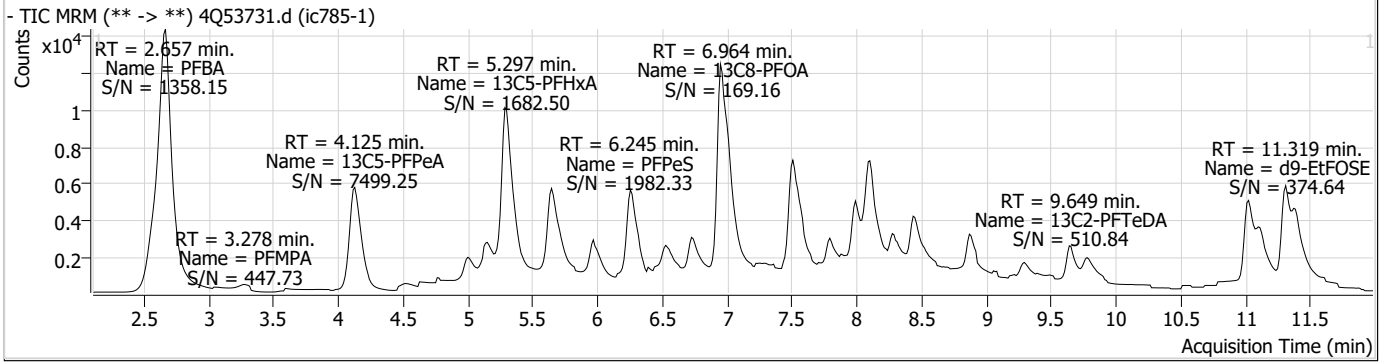
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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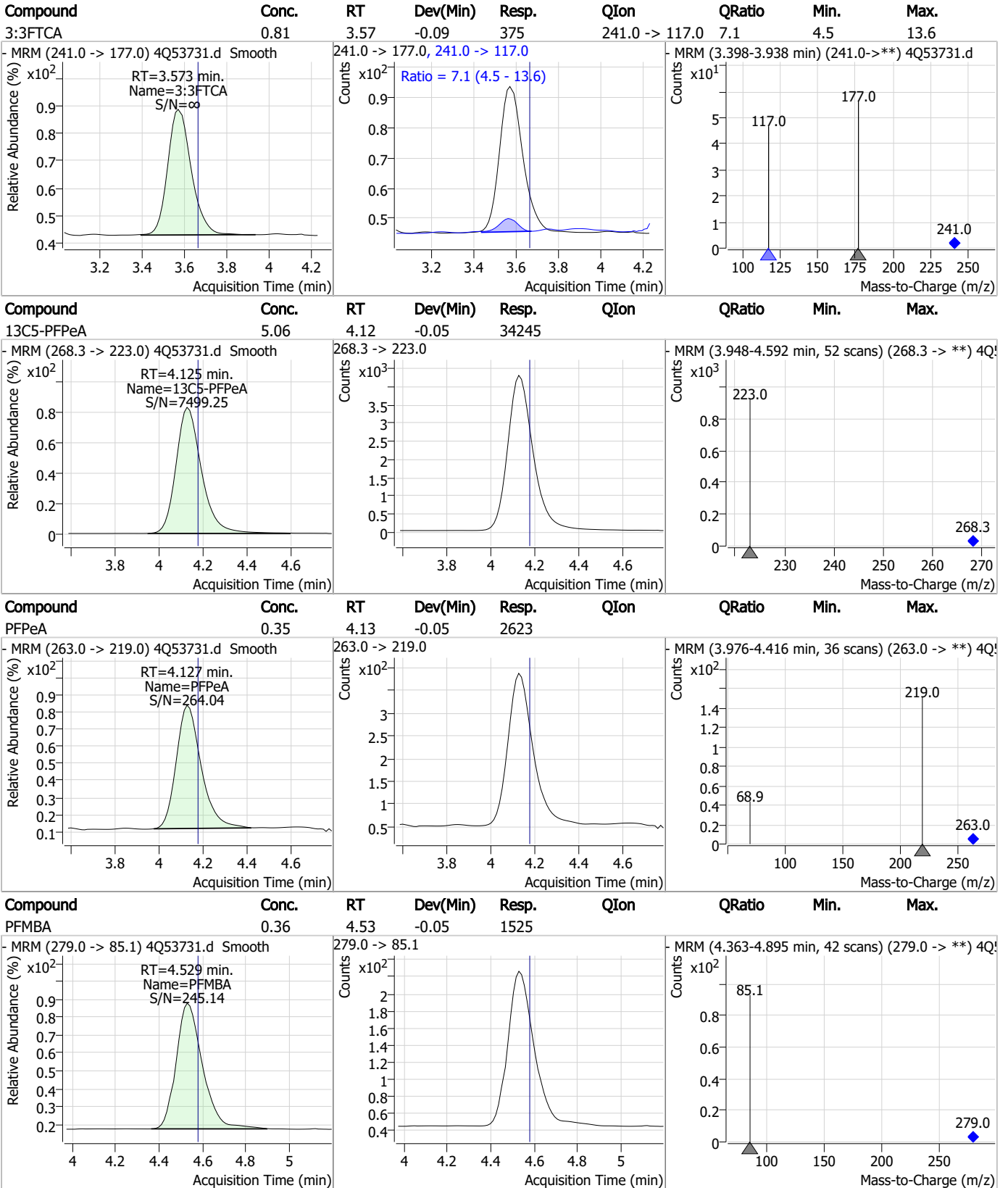
7.7.2
7



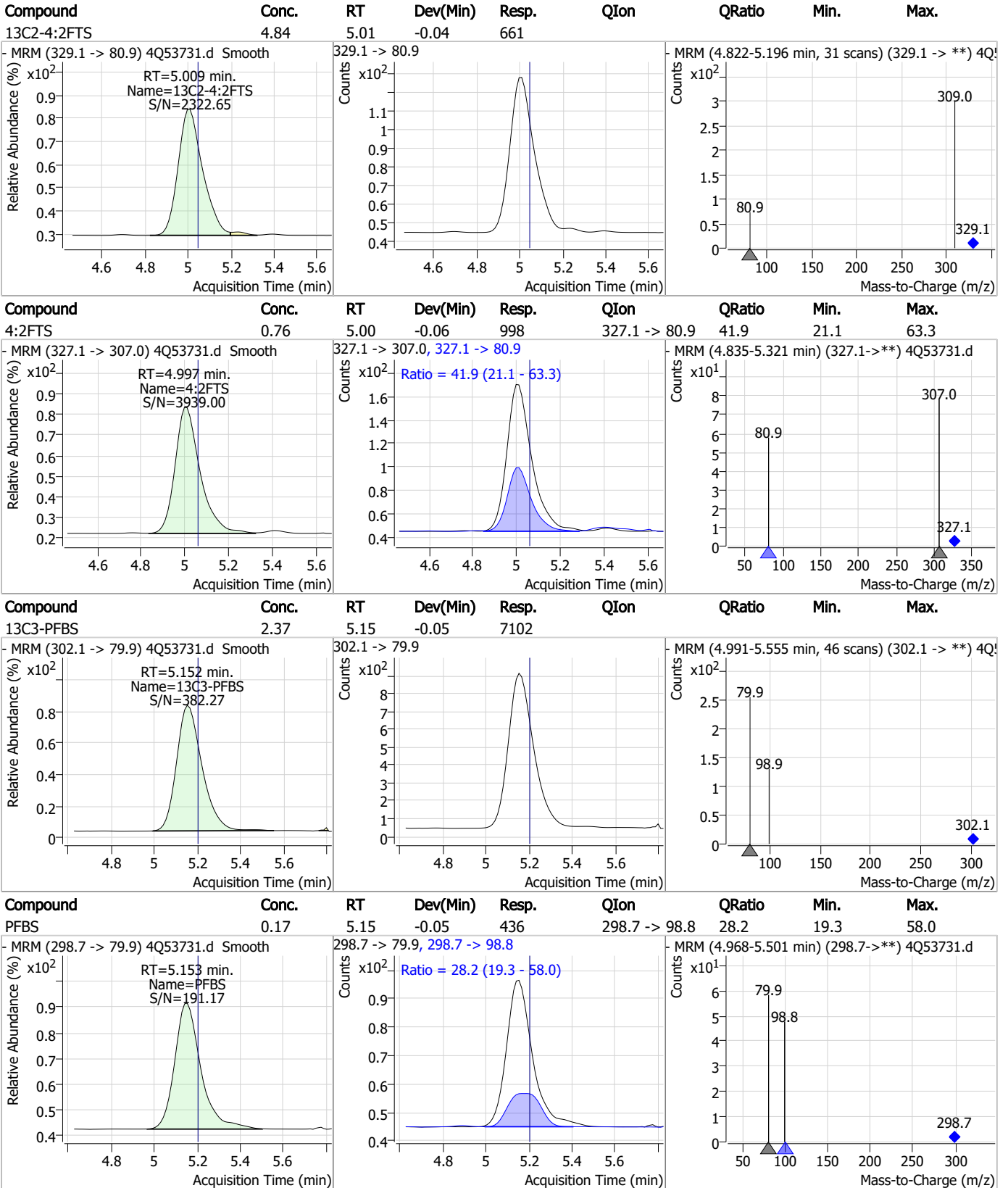
Perfluorinated Compounds by LC/MS/MS



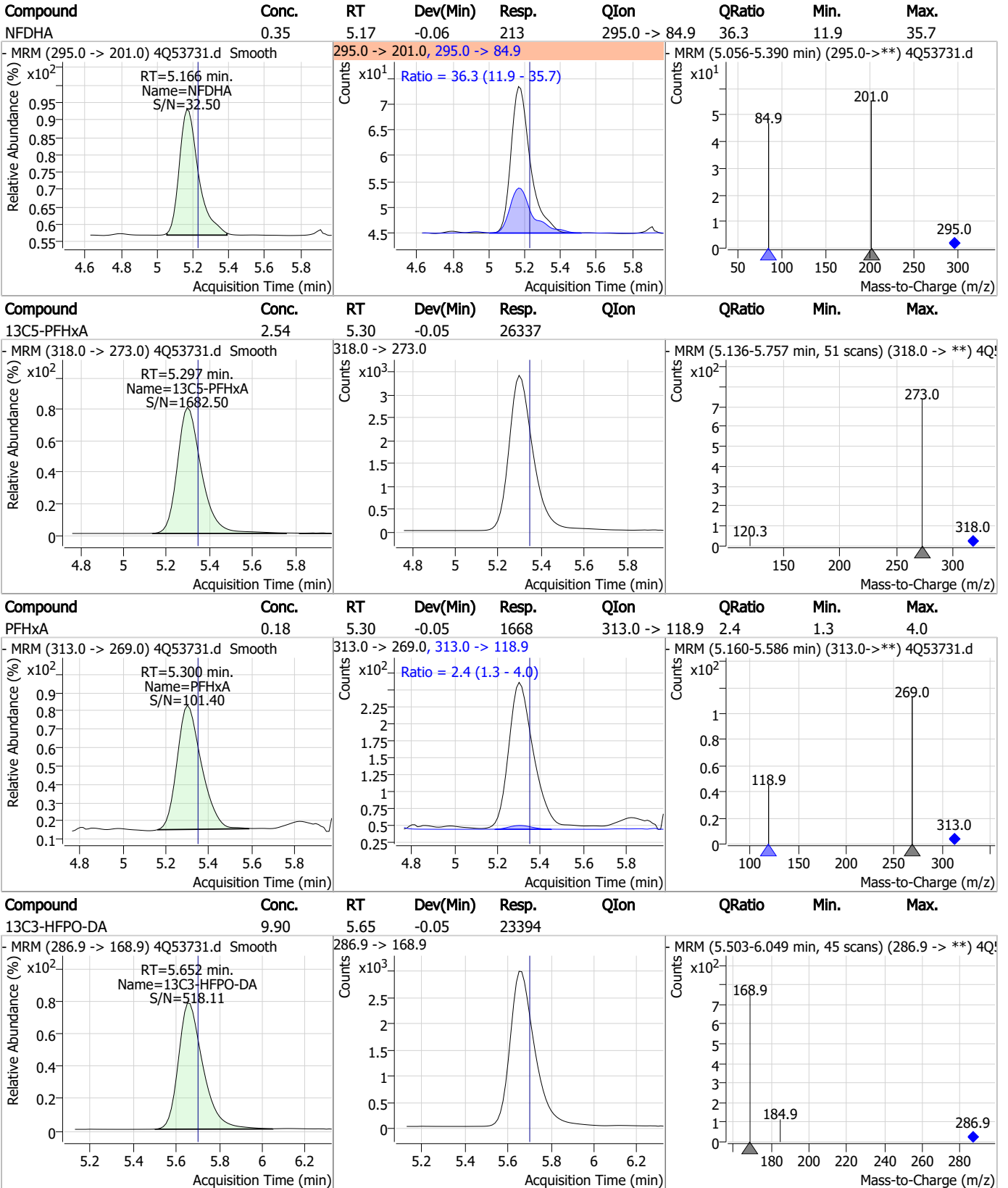
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

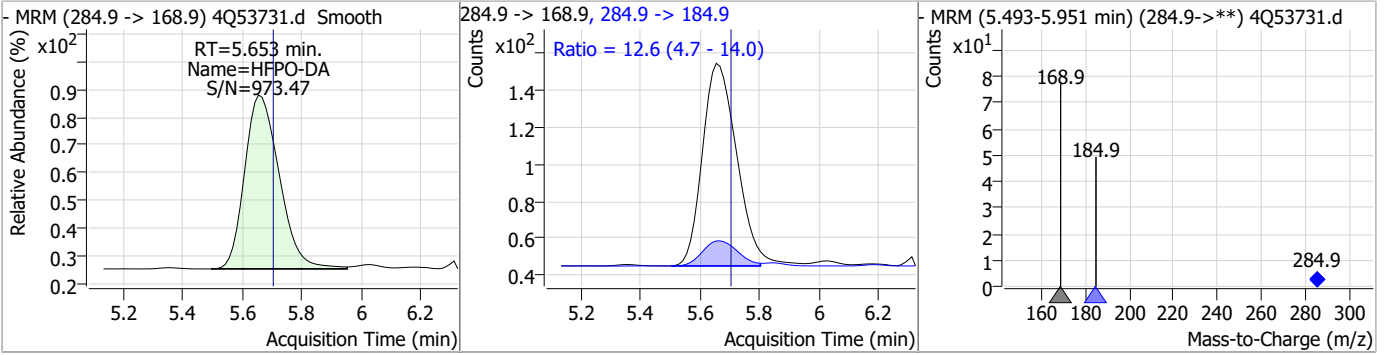


Perfluorinated Compounds by LC/MS/MS

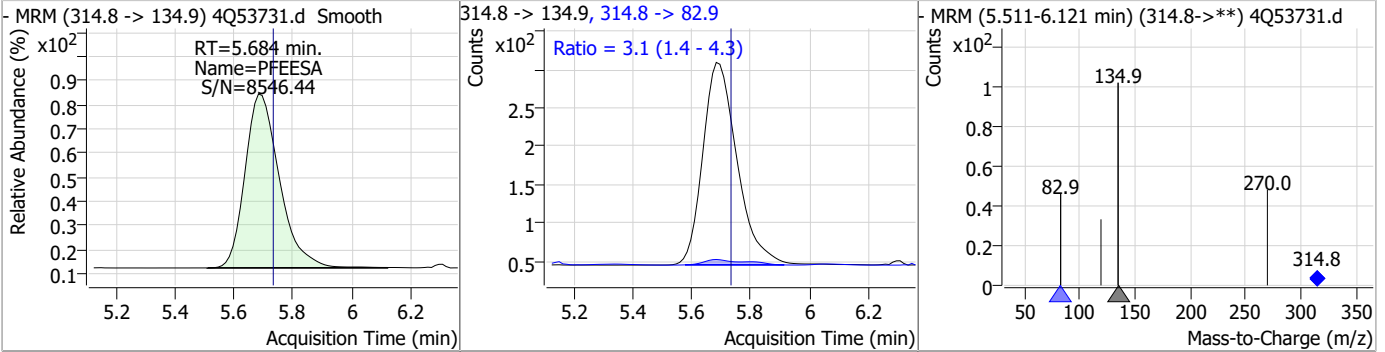


Perfluorinated Compounds by LC/MS/MS

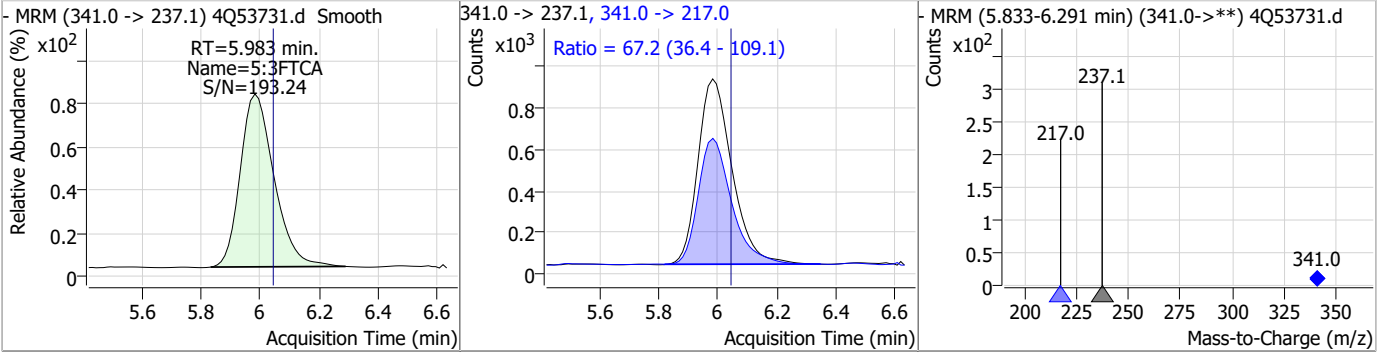
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.36	5.65	-0.05	889	284.9 -> 184.9	12.6	4.7	14.0



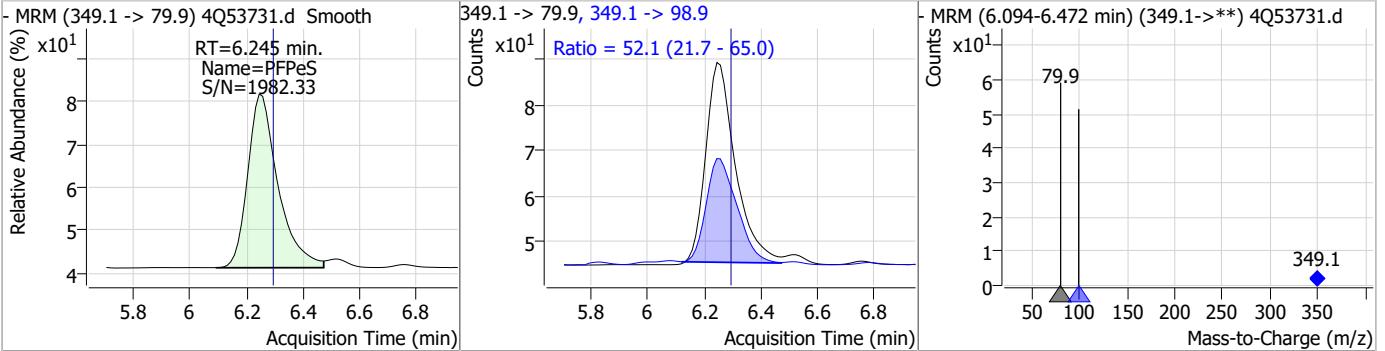
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.29	5.68	-0.05	2143	314.8 -> 82.9	3.1	1.4	4.3



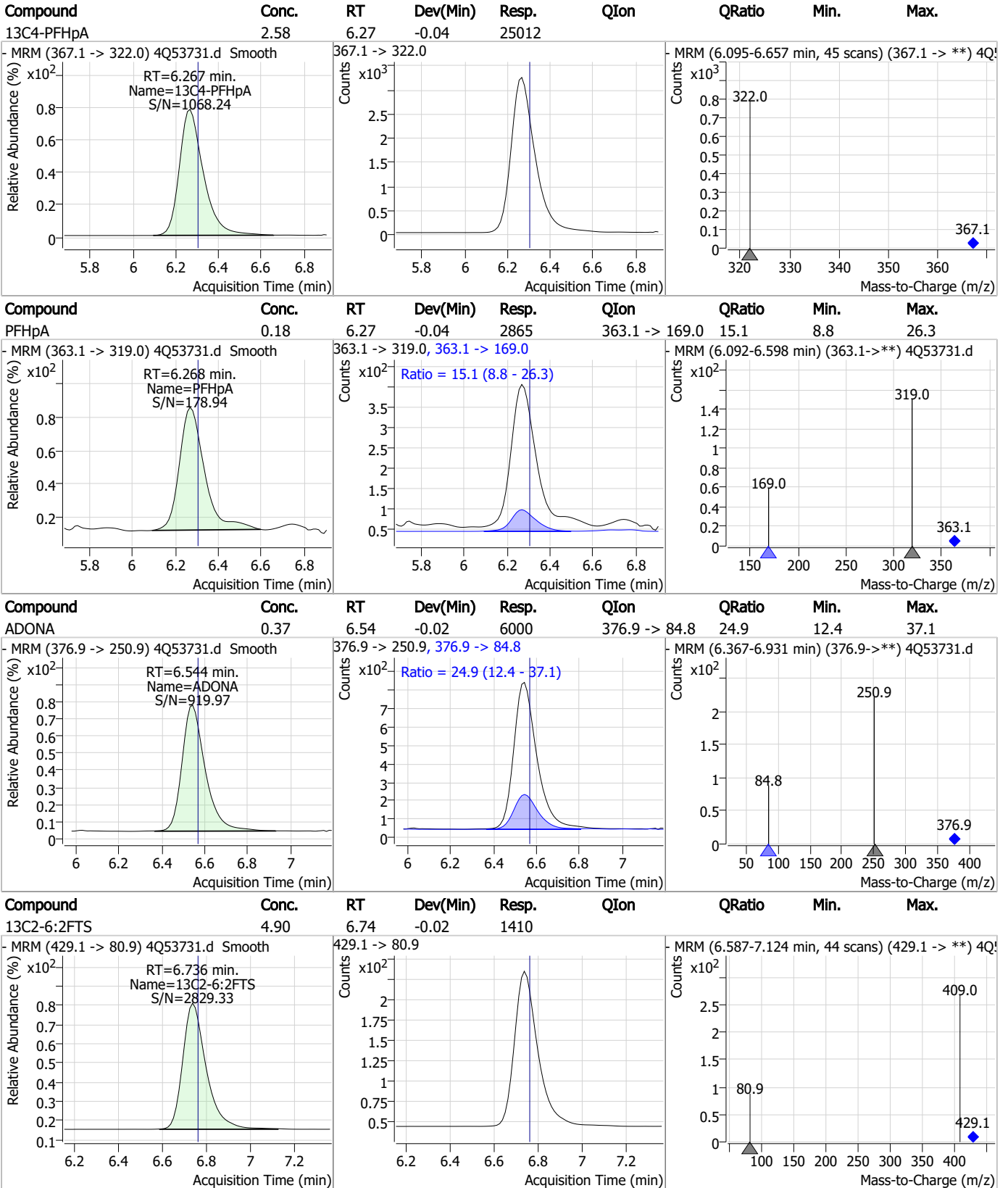
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	4.37	5.98	-0.06	7073	341.0 -> 217.0	67.2	36.4	109.1



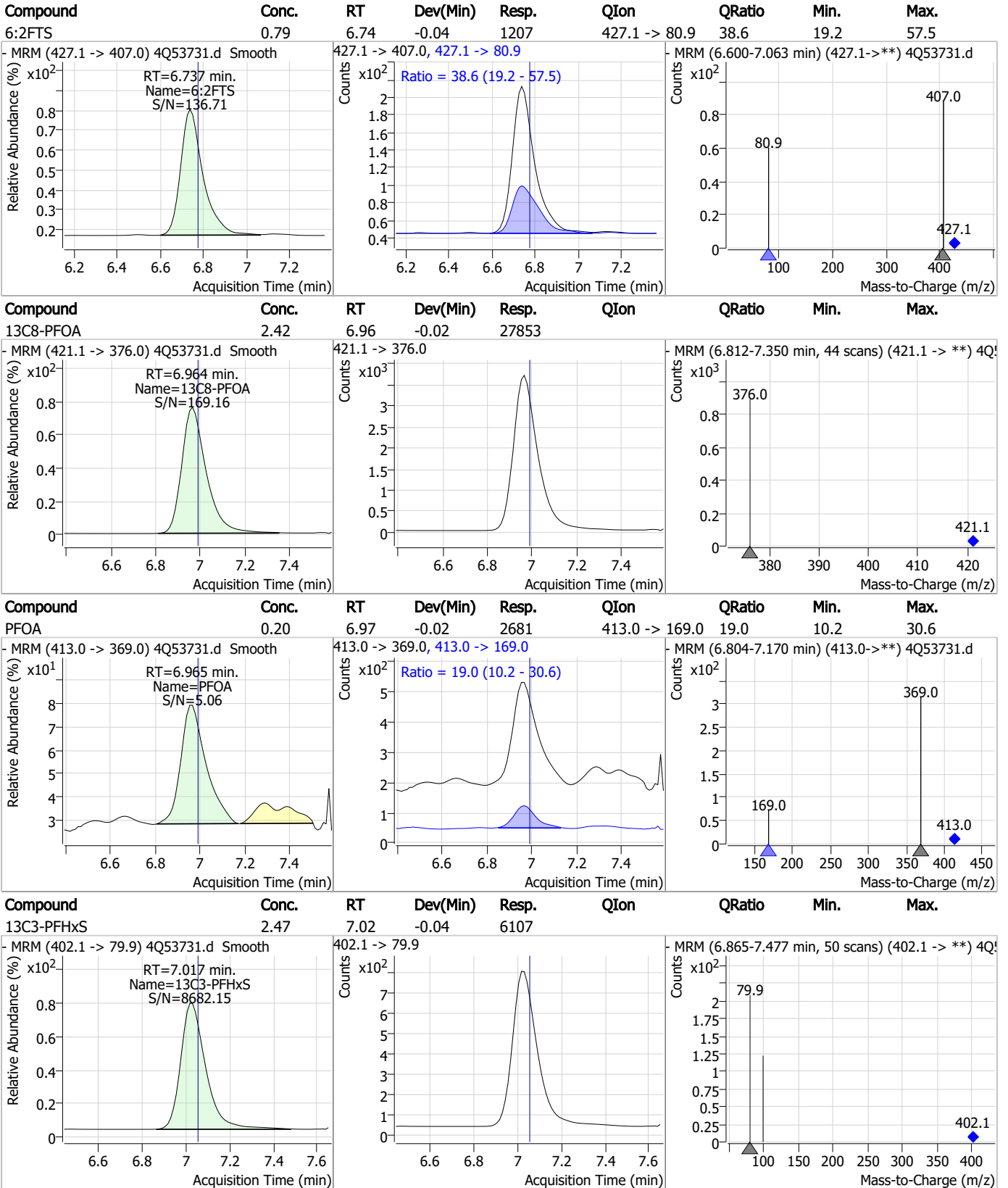
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.16	6.24	-0.05	328	349.1 -> 98.9	52.1	21.7	65.0



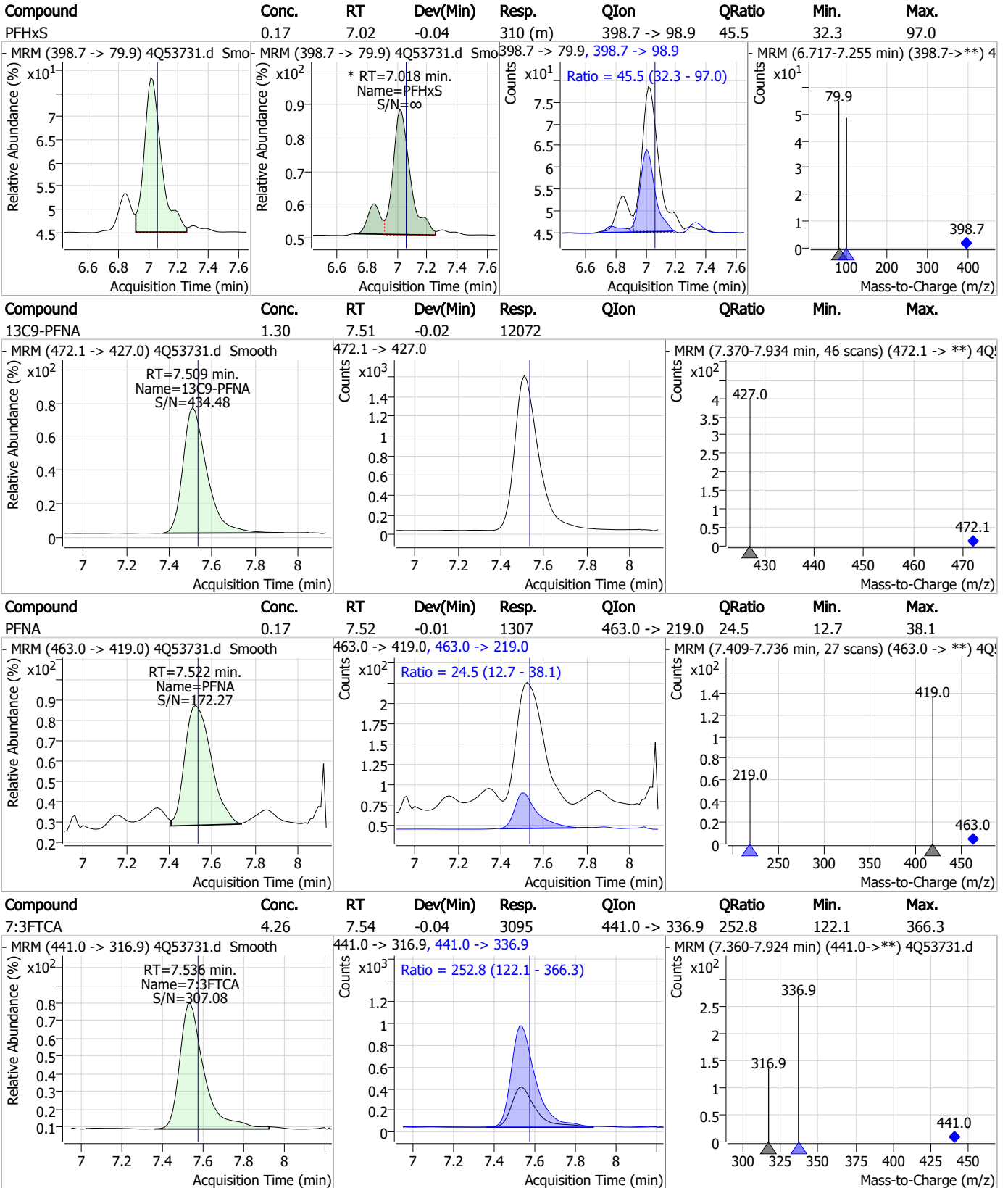
Perfluorinated Compounds by LC/MS/MS



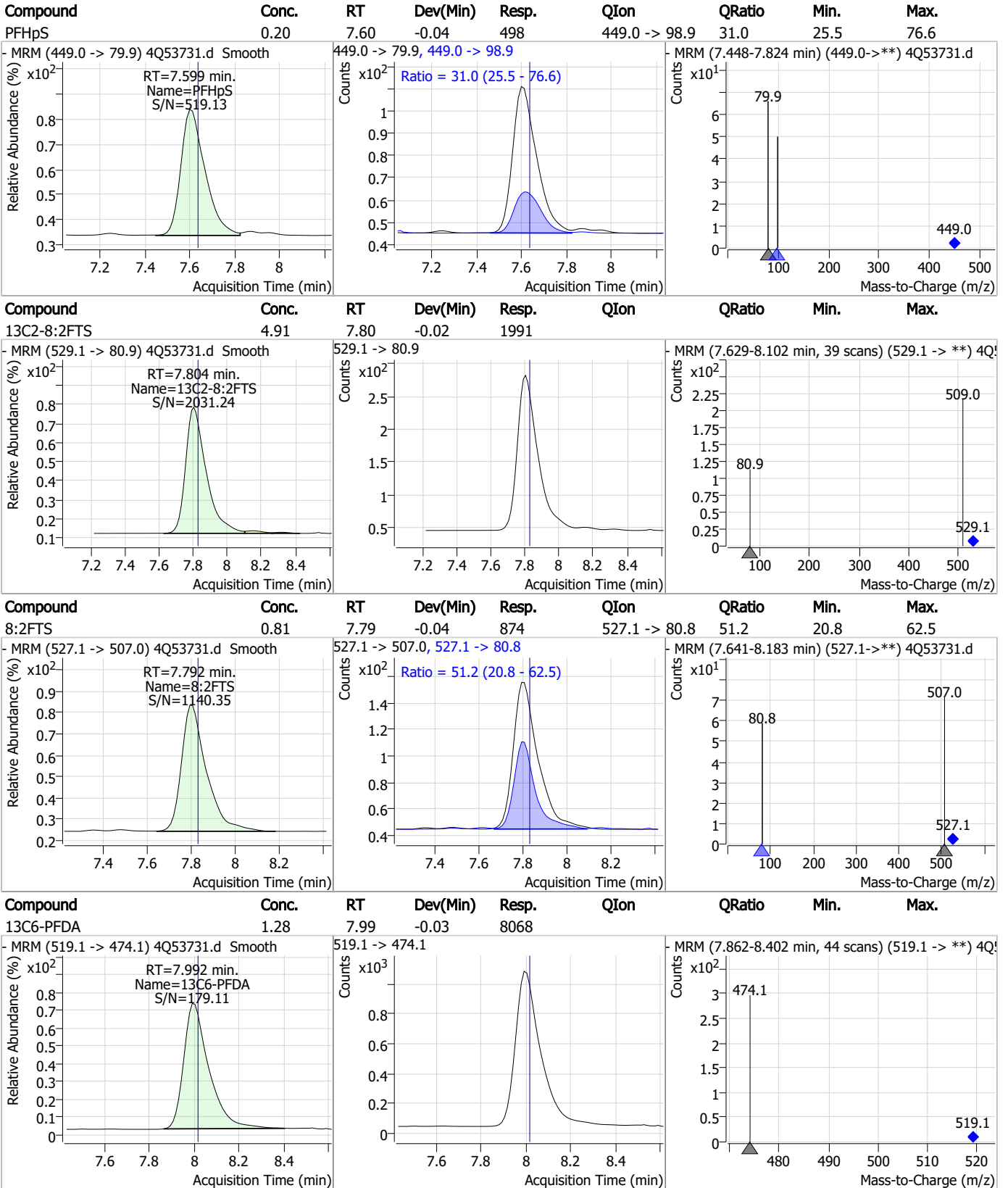
Perfluorinated Compounds by LC/MS/MS



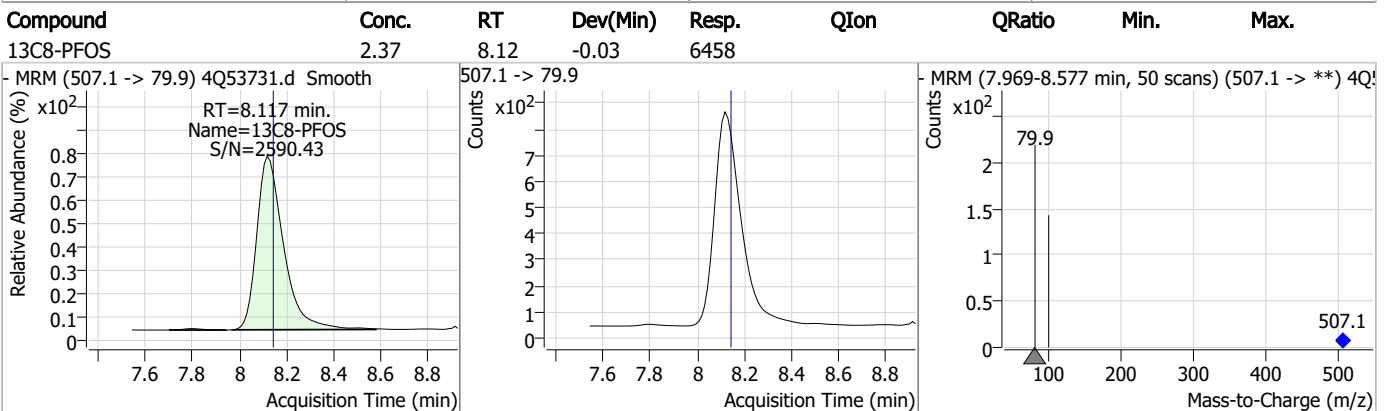
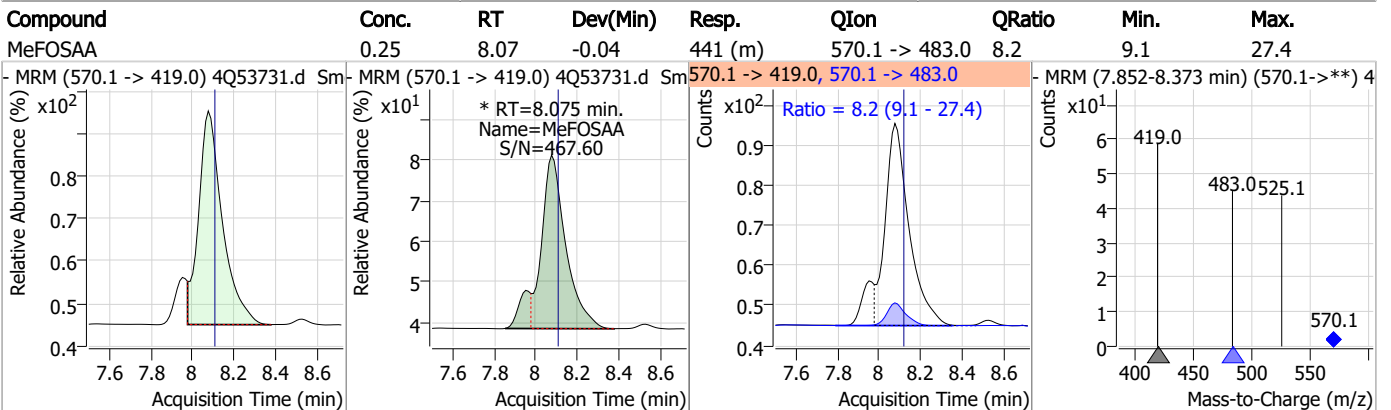
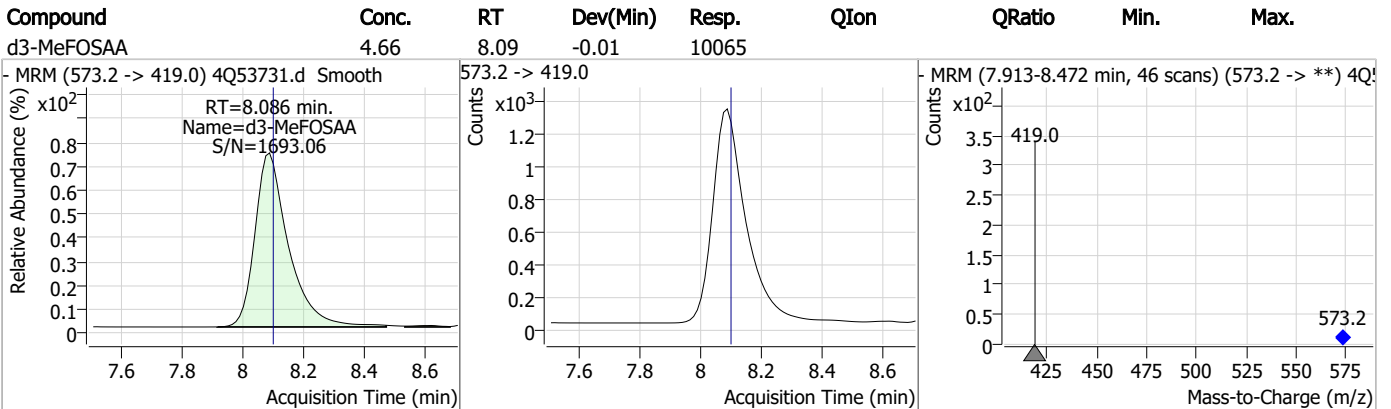
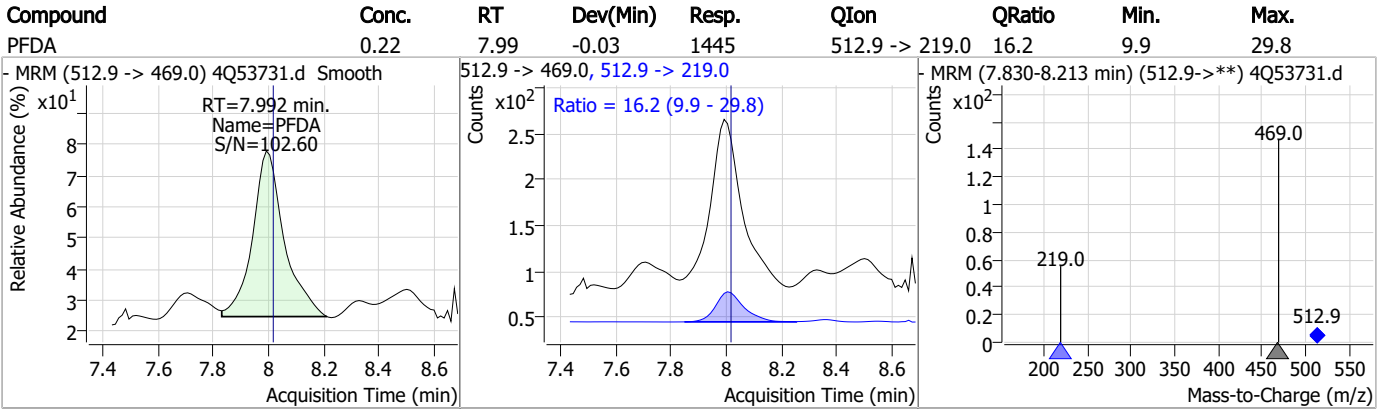
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



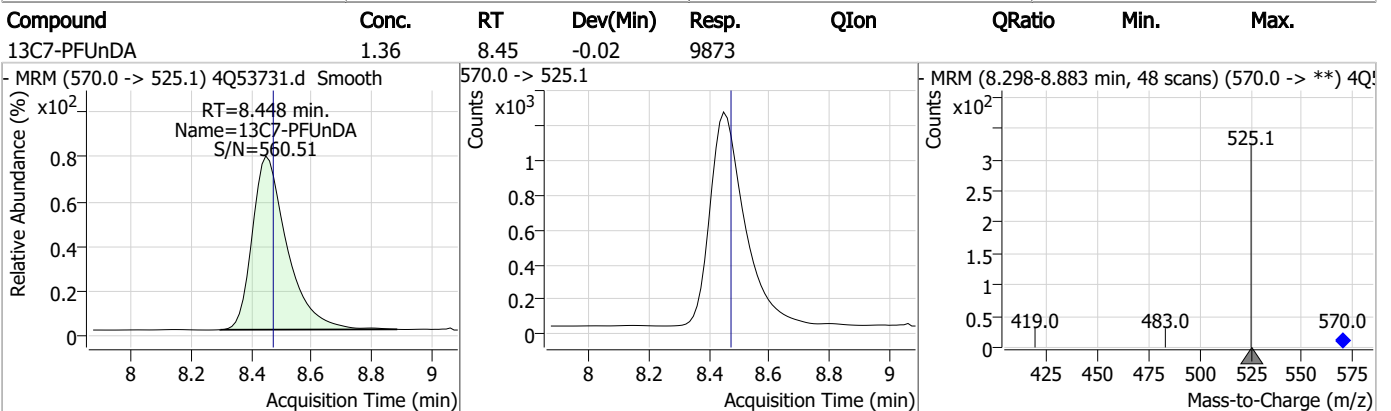
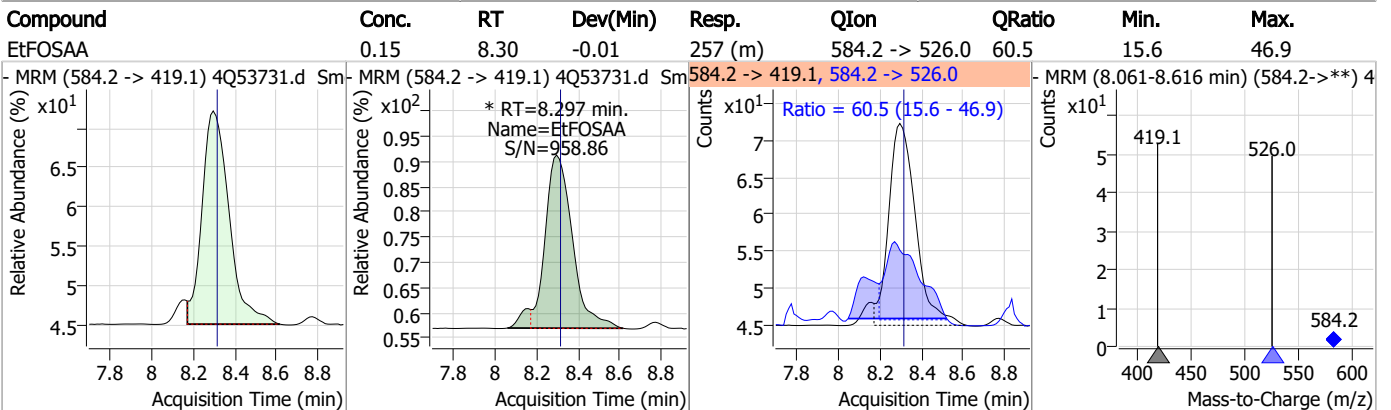
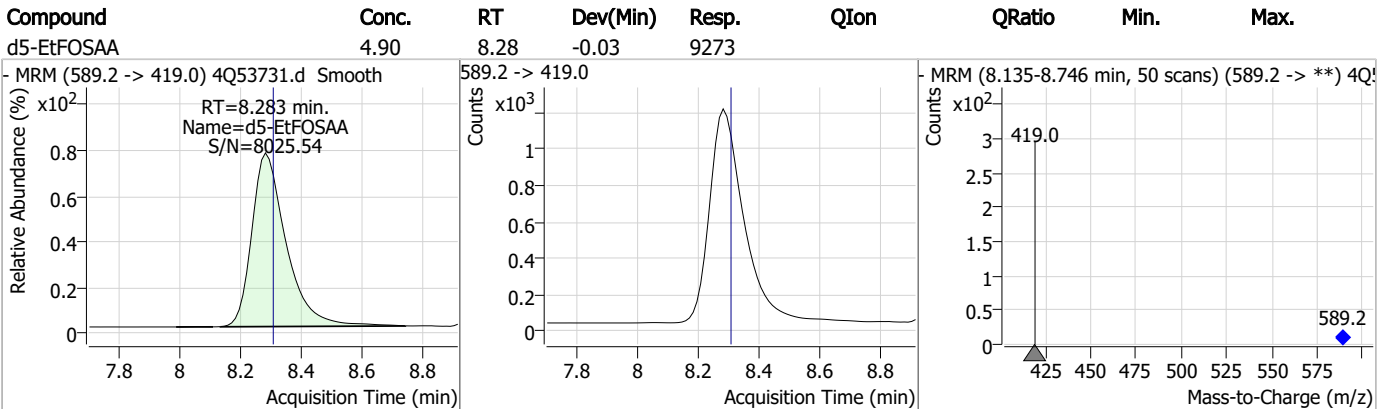
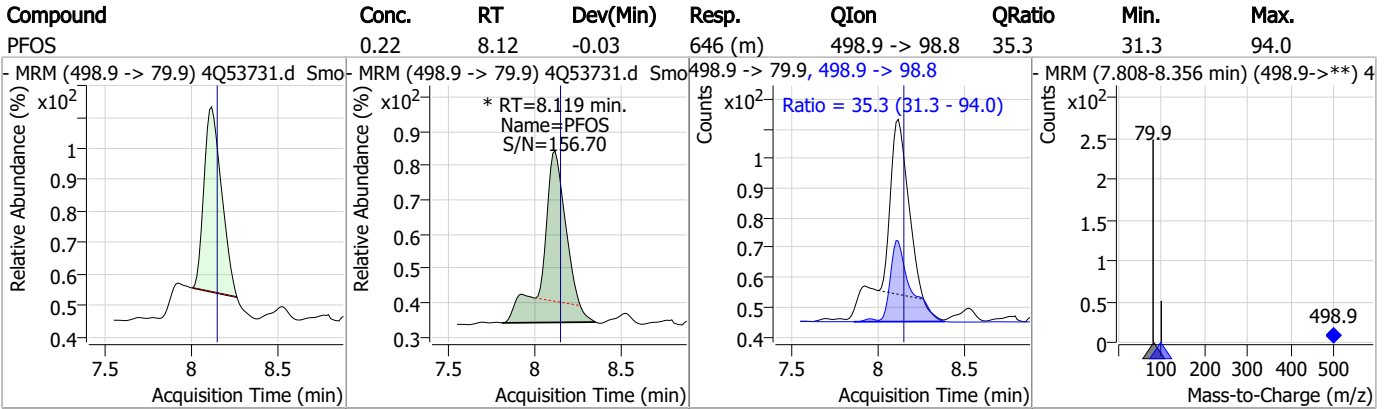
Perfluorinated Compounds by LC/MS/MS



7.7.2

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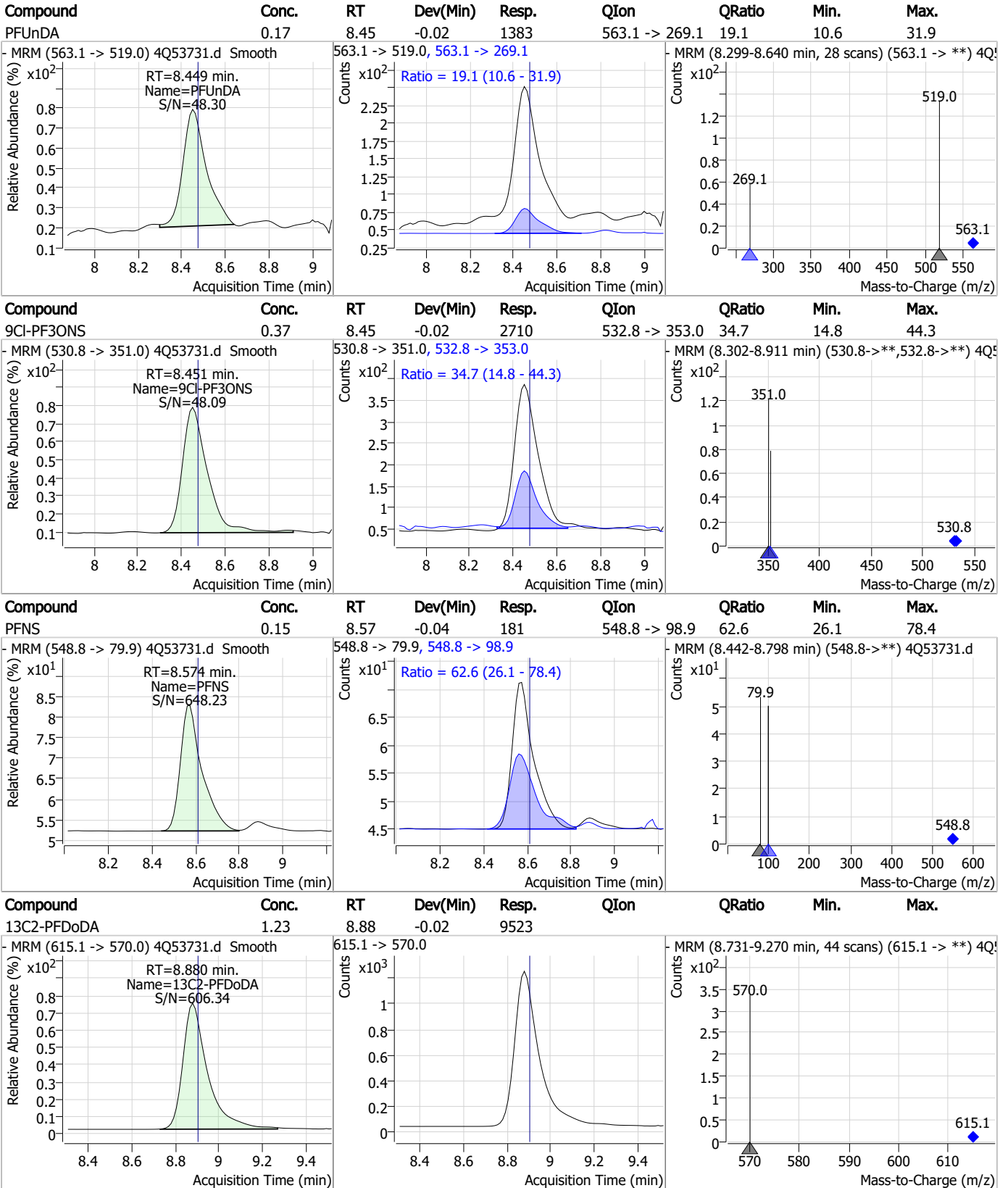
Perfluorinated Compounds by LC/MS/MS



7.7.2

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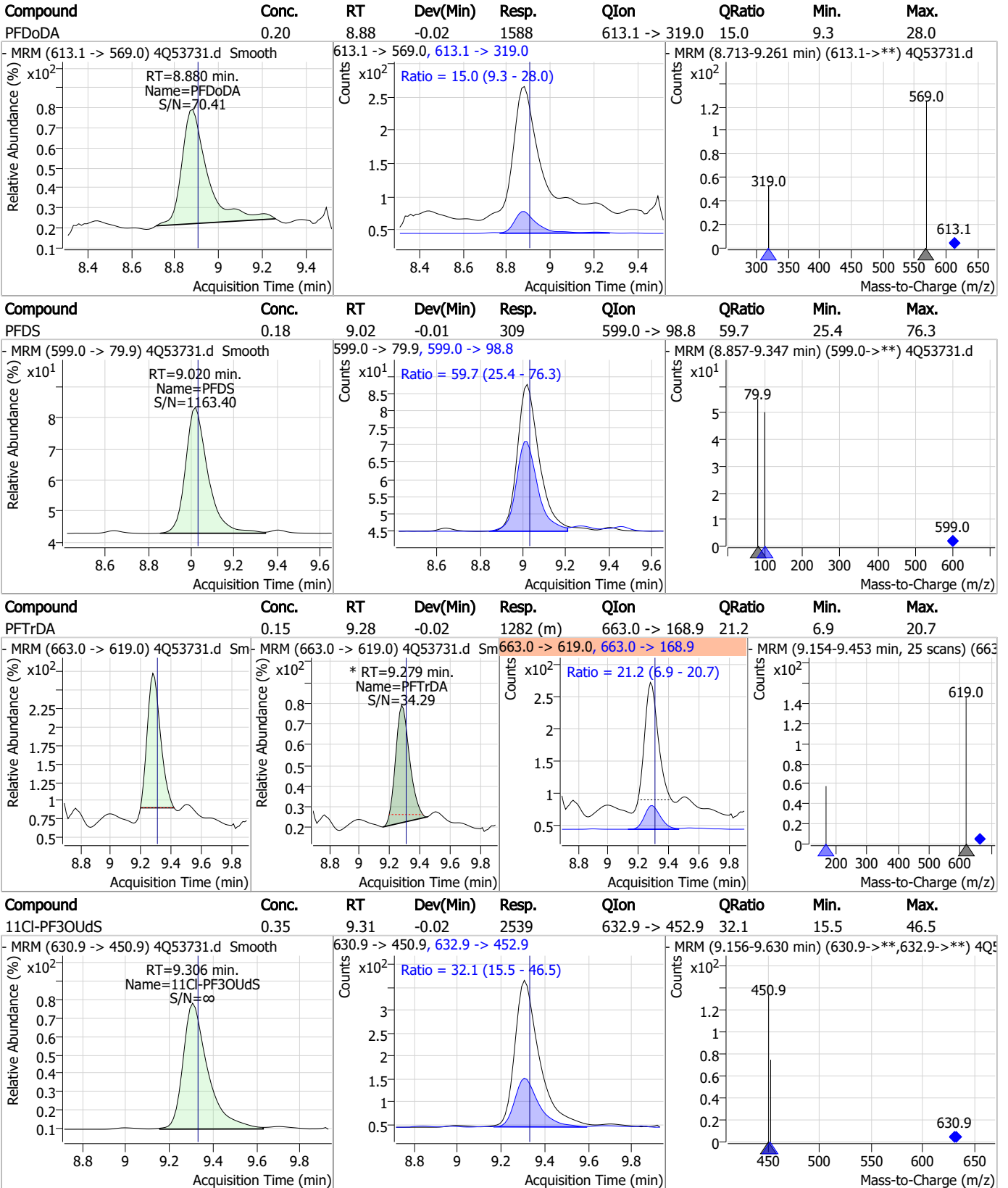
Perfluorinated Compounds by LC/MS/MS



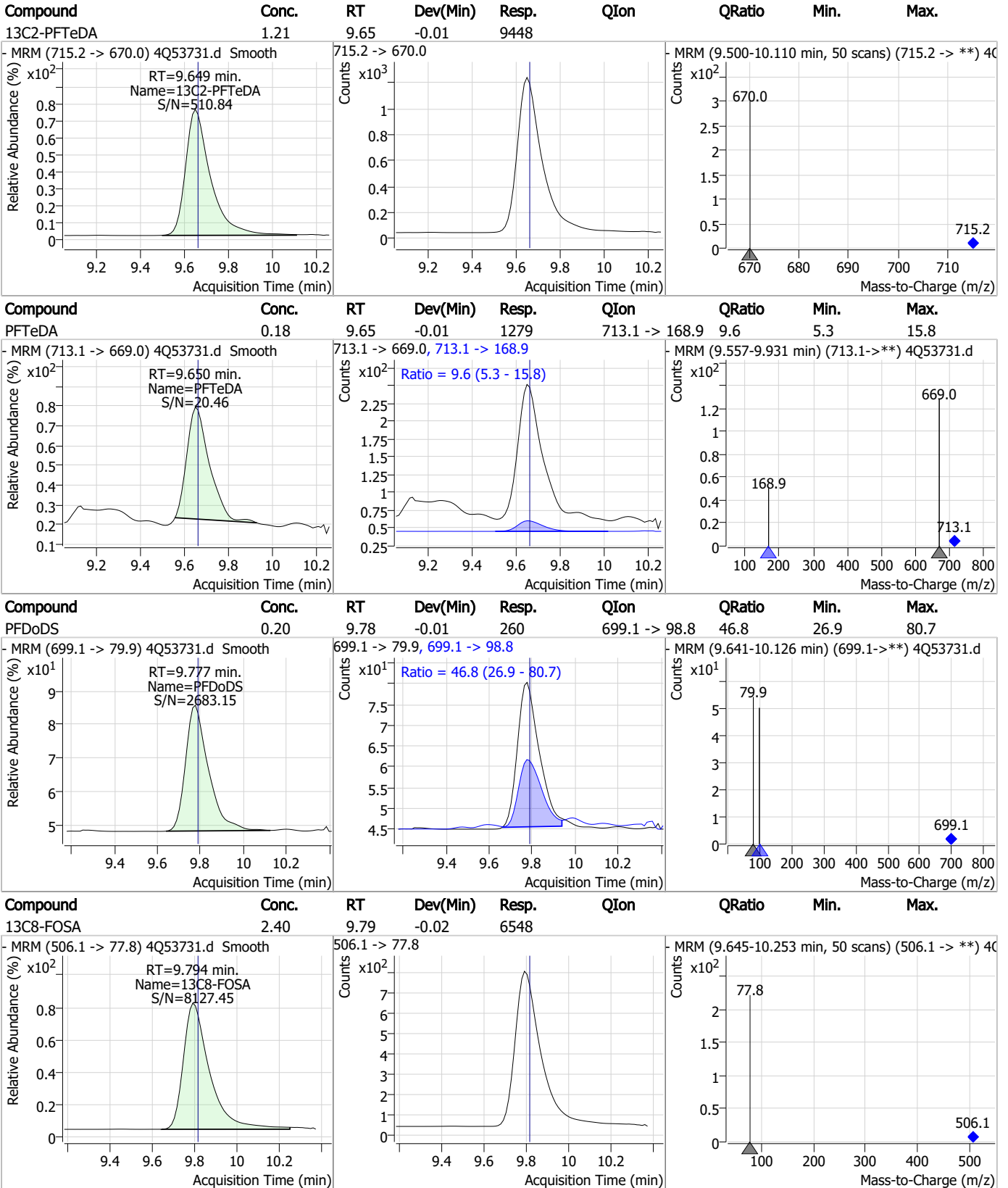
7.7.2

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

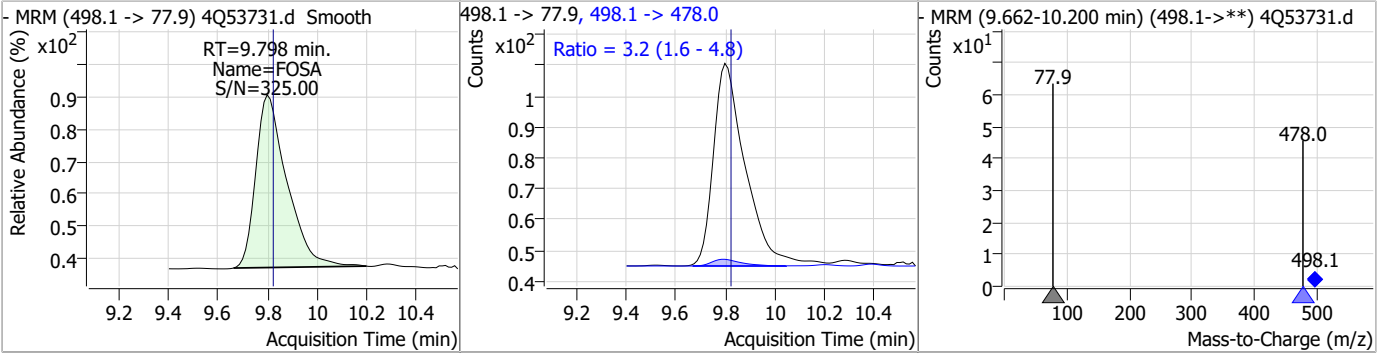


7.7.2

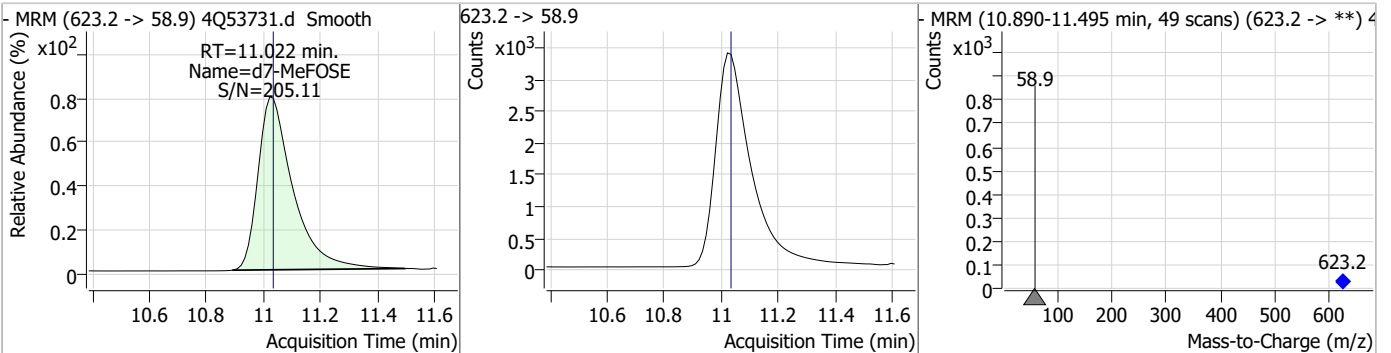
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Perfluorinated Compounds by LC/MS/MS

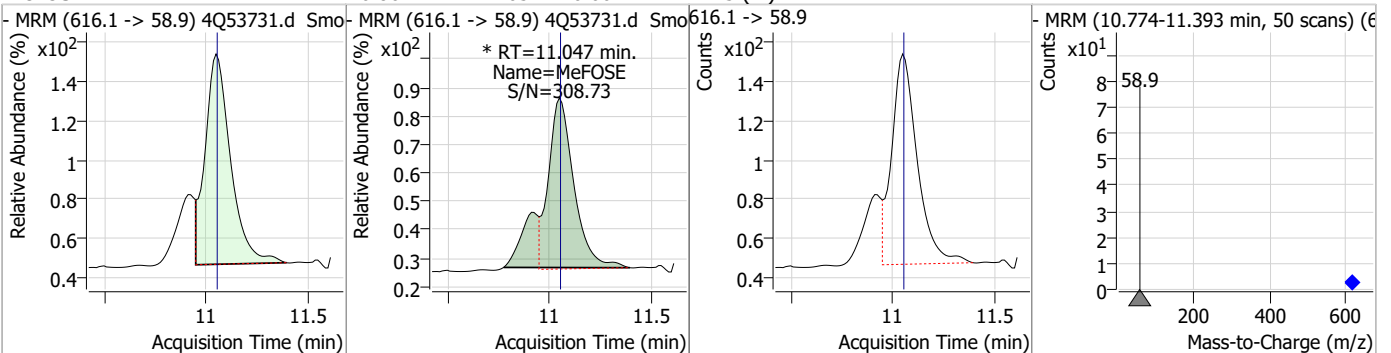
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.18	9.80	-0.02	570	498.1 -> 478.0	3.2	1.6	4.8



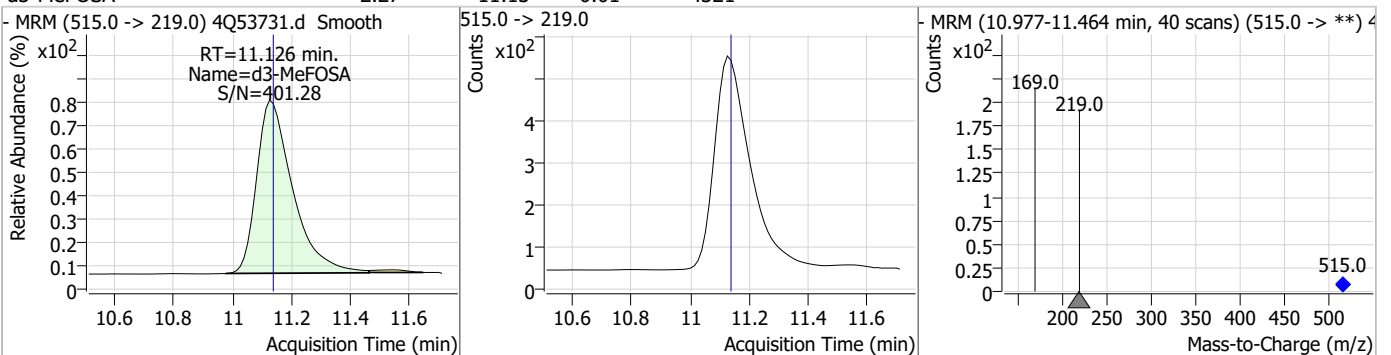
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.44	11.02	-0.01	28685				



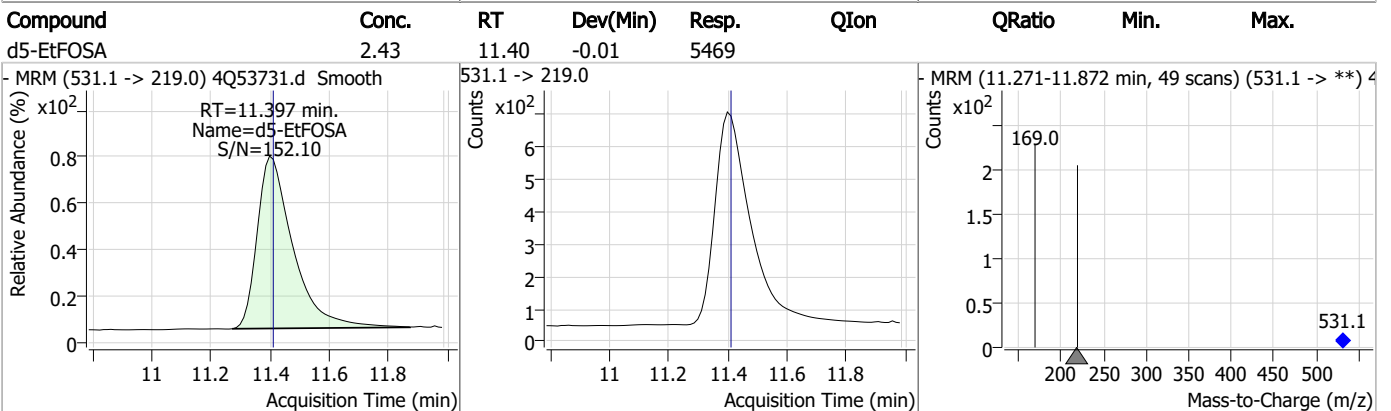
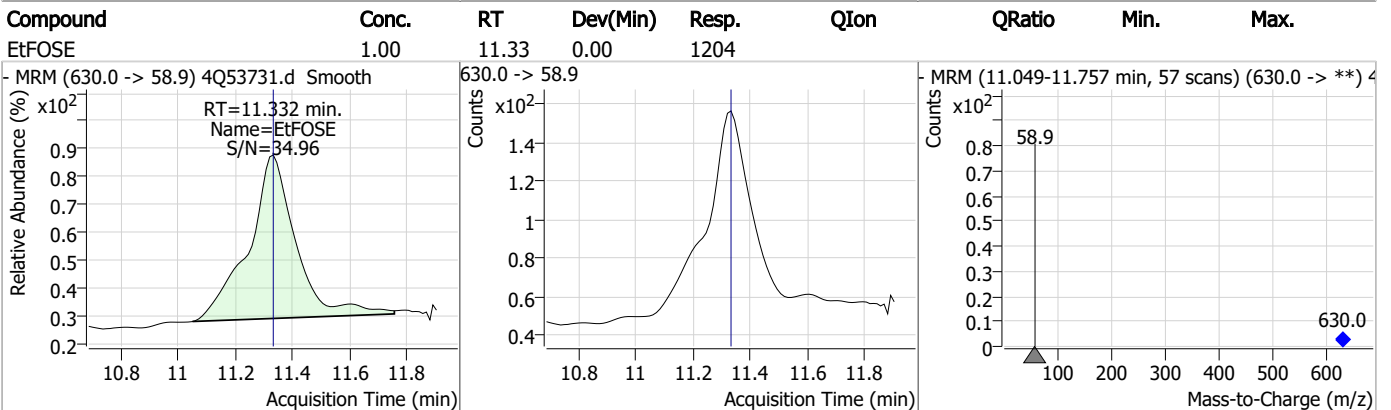
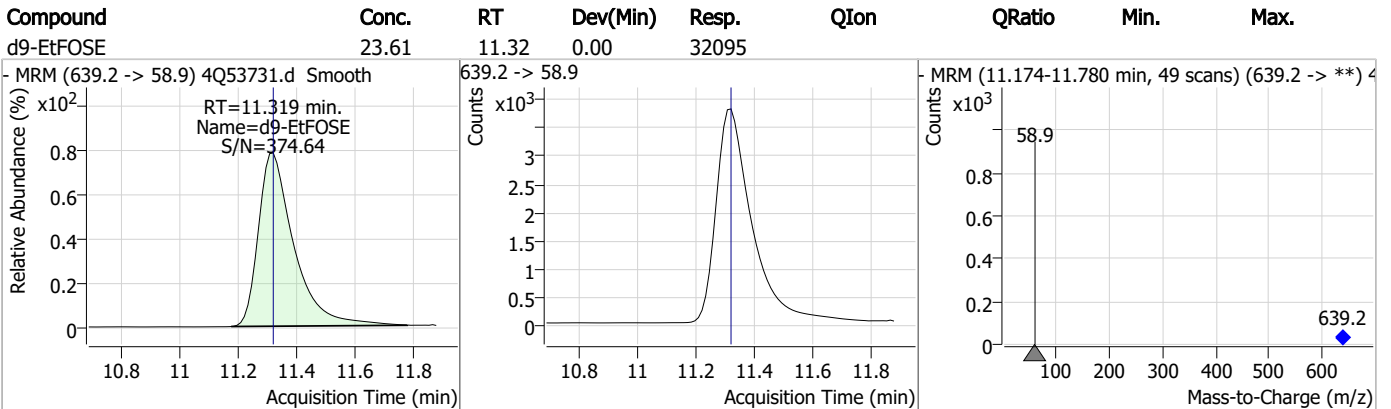
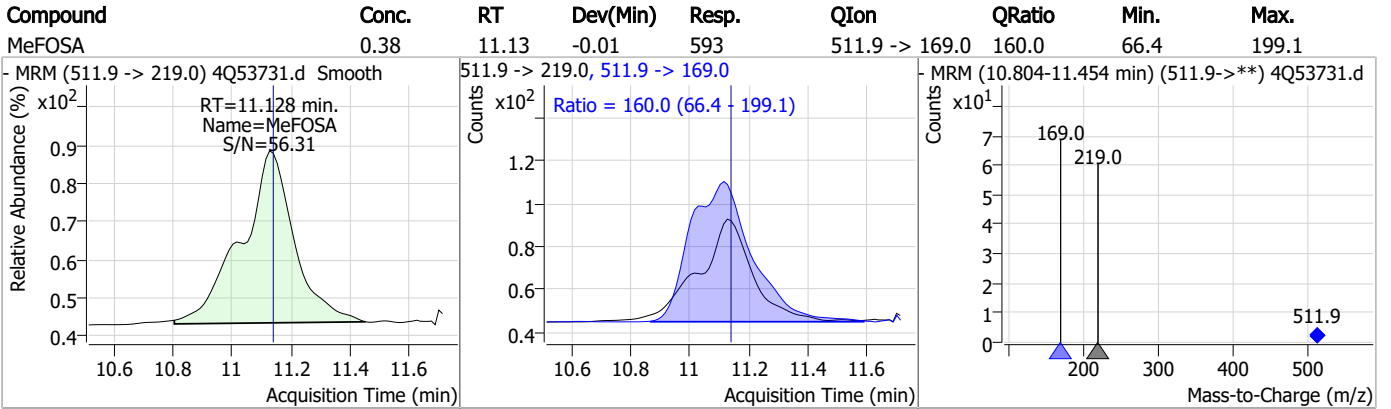
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	0.86	11.05	0.00	1125 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.27	11.13	-0.01	4321				



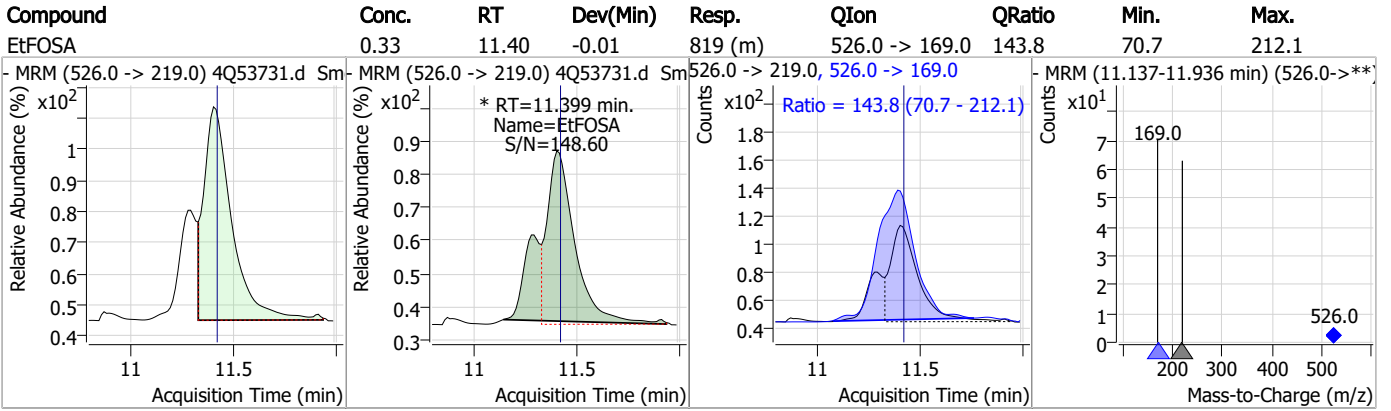
Perfluorinated Compounds by LC/MS/MS



7.7.2

7

Perfluorinated Compounds by LC/MS/MS



7.7.2

7

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
7

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)
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					QValue
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

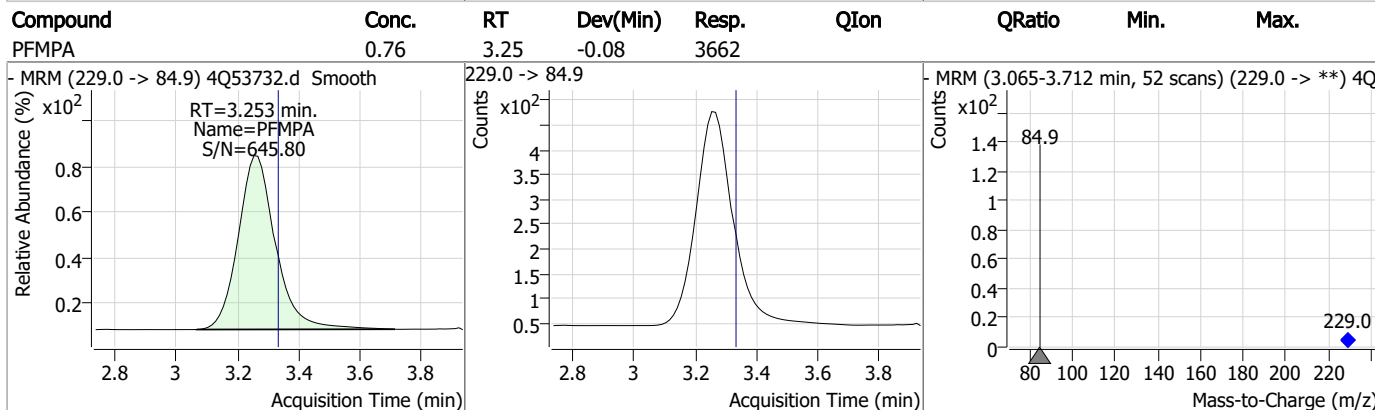
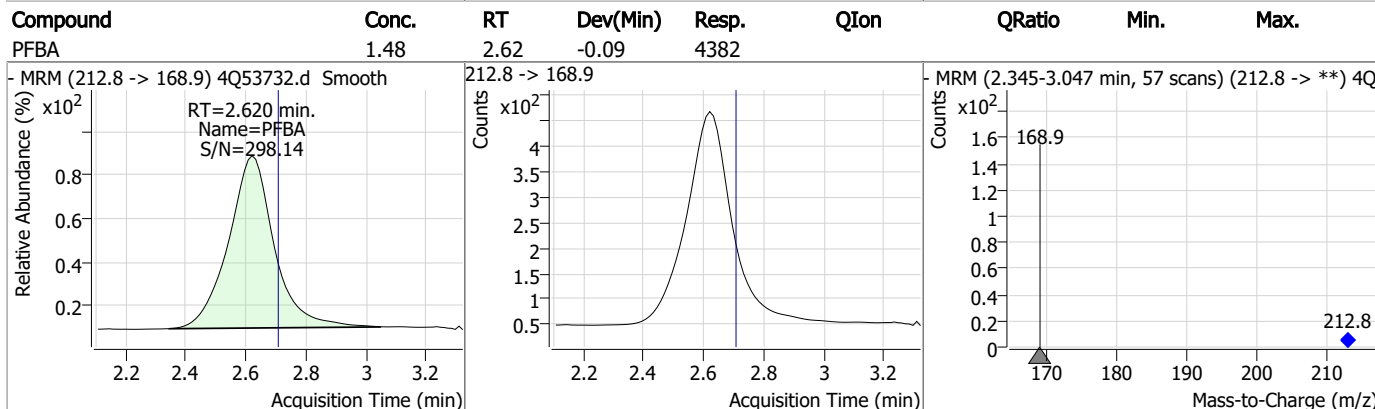
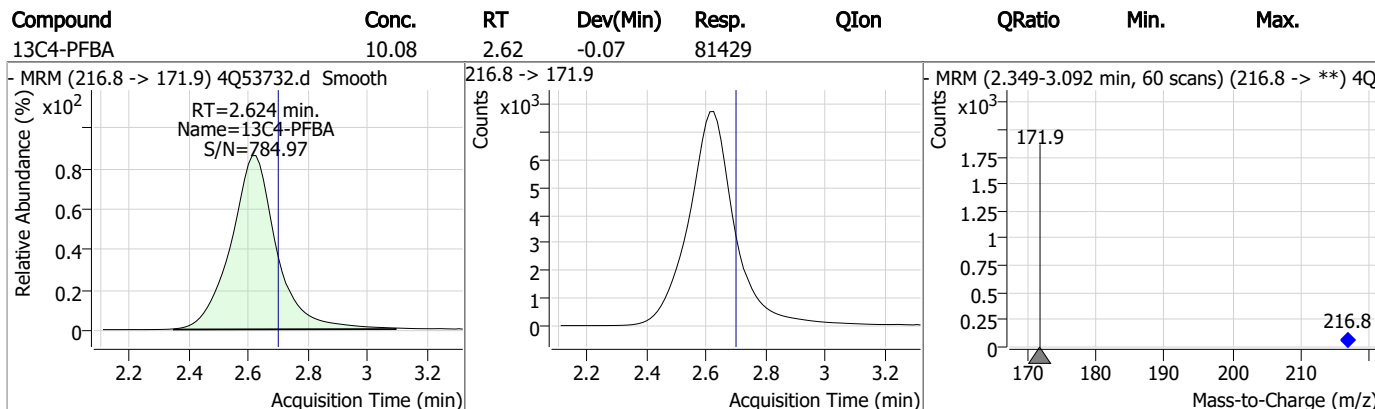
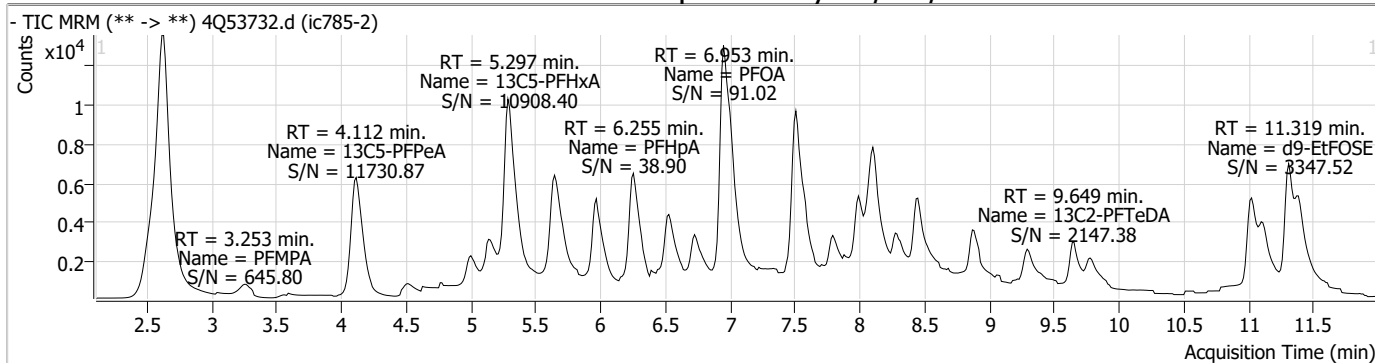
Perfluorinated Compounds by LC/MS/MS

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

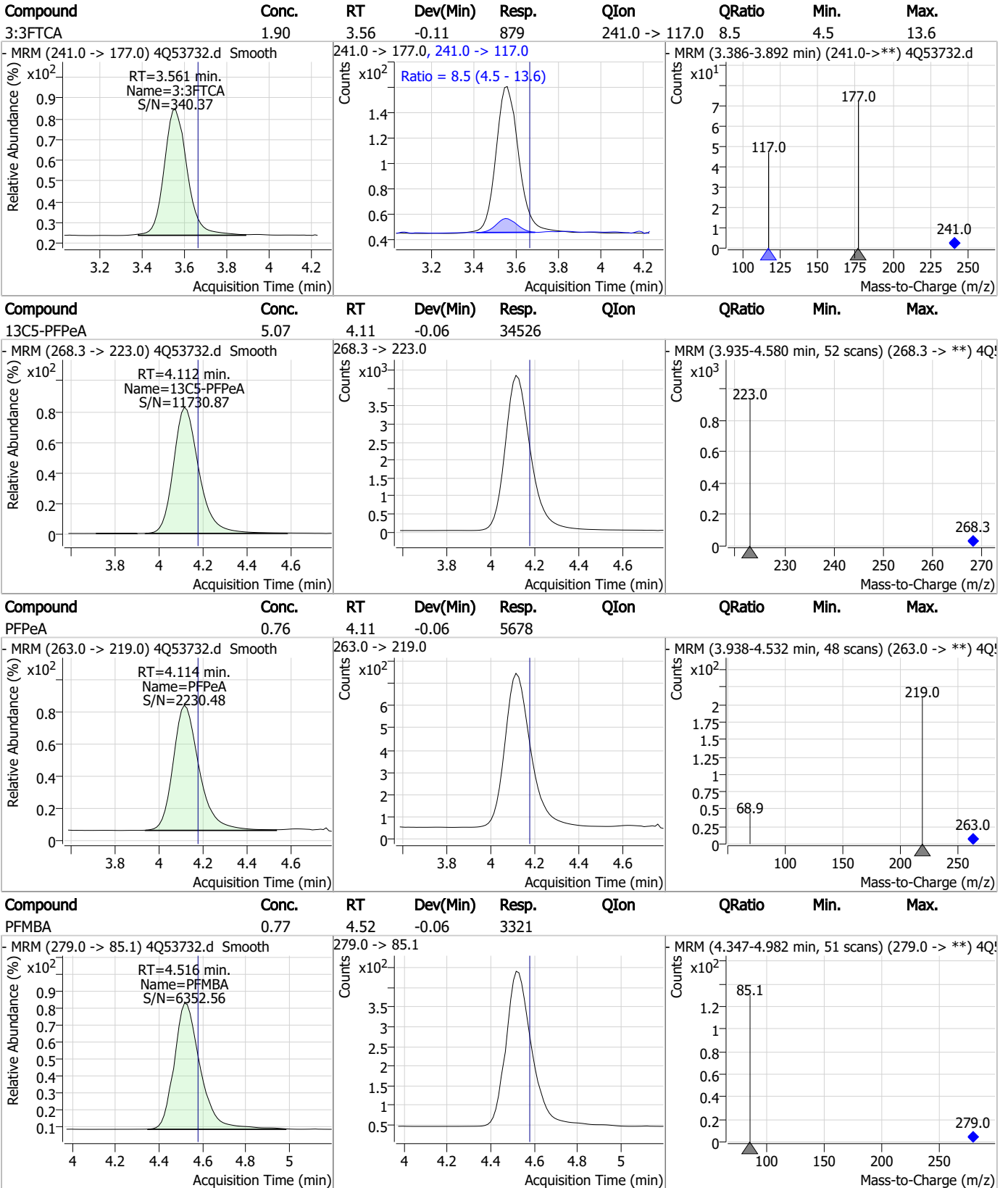
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Perfluorinated Compounds by LC/MS/MS



7.7.3
7

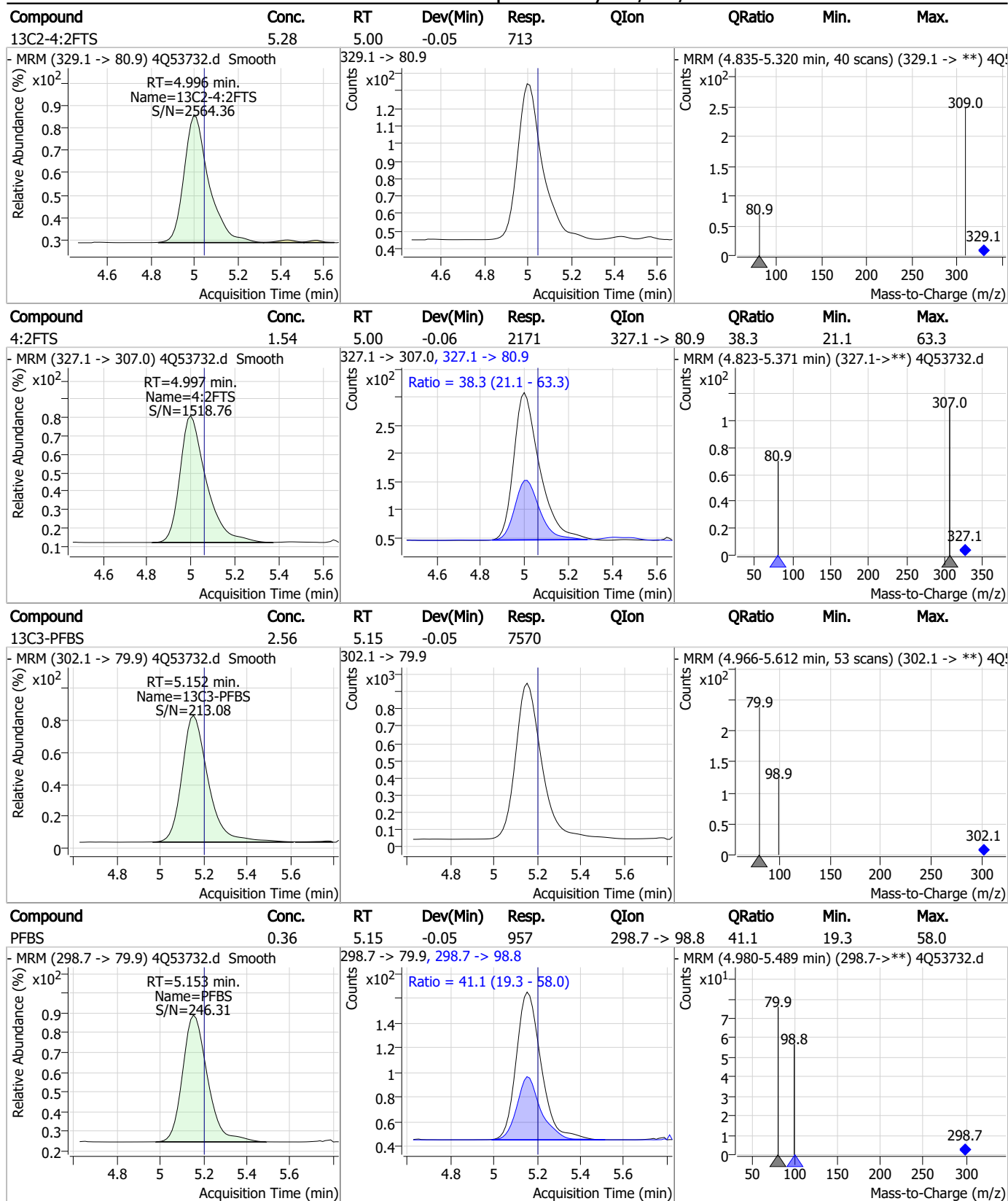
Perfluorinated Compounds by LC/MS/MS



7.7.3

7

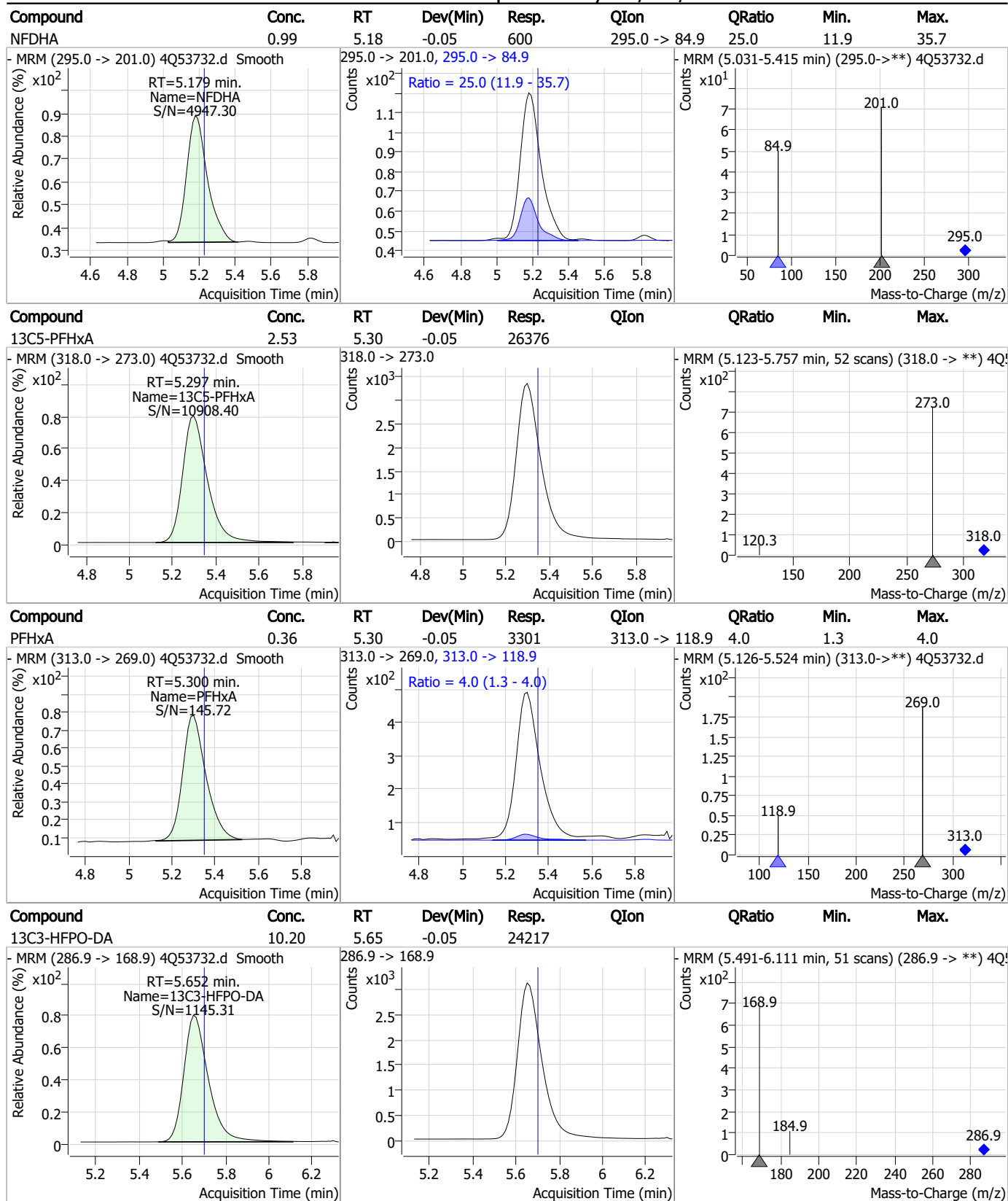
Perfluorinated Compounds by LC/MS/MS



7.7.3

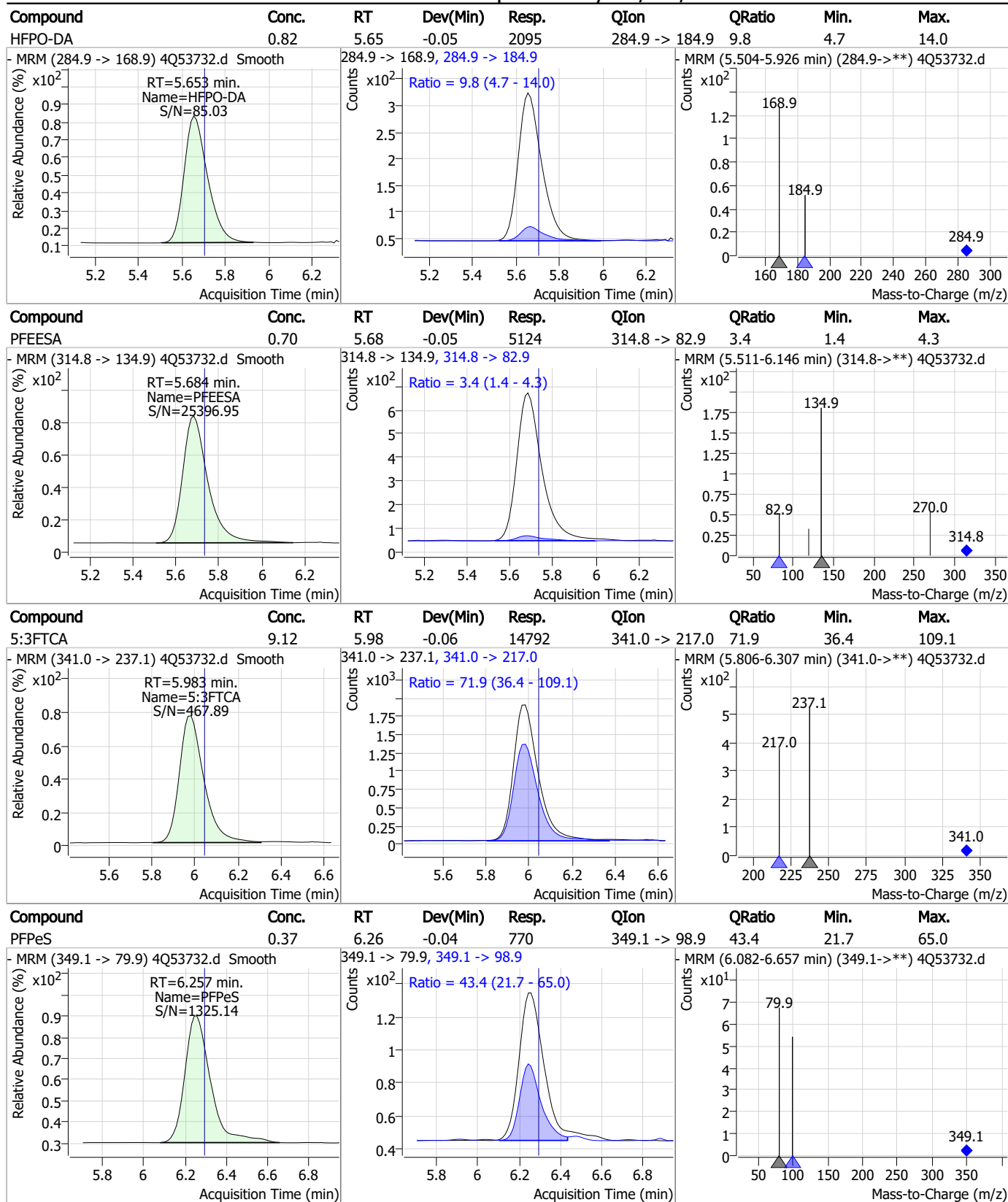
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Perfluorinated Compounds by LC/MS/MS



7.7.3
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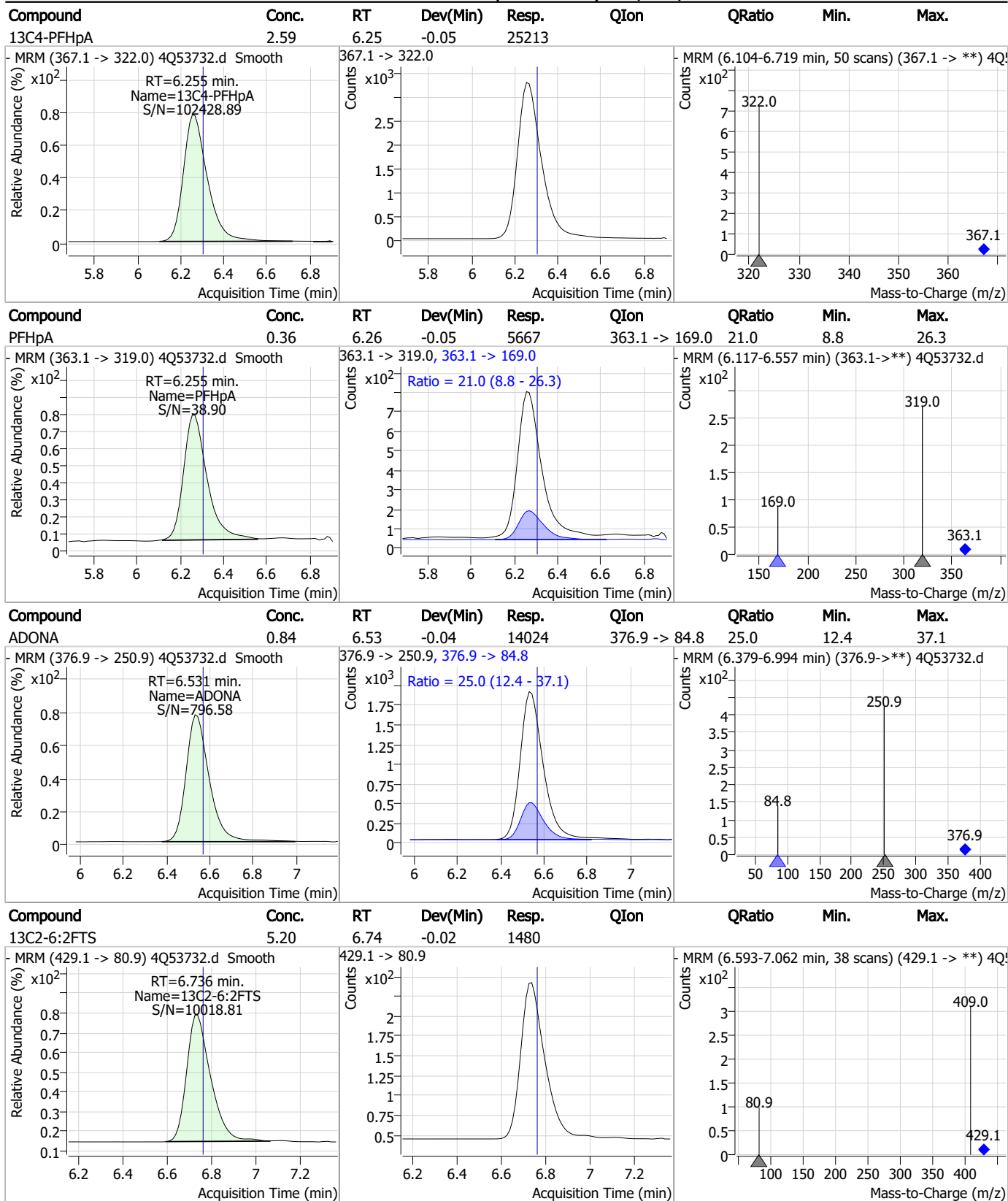
Perfluorinated Compounds by LC/MS/MS



7.7.3

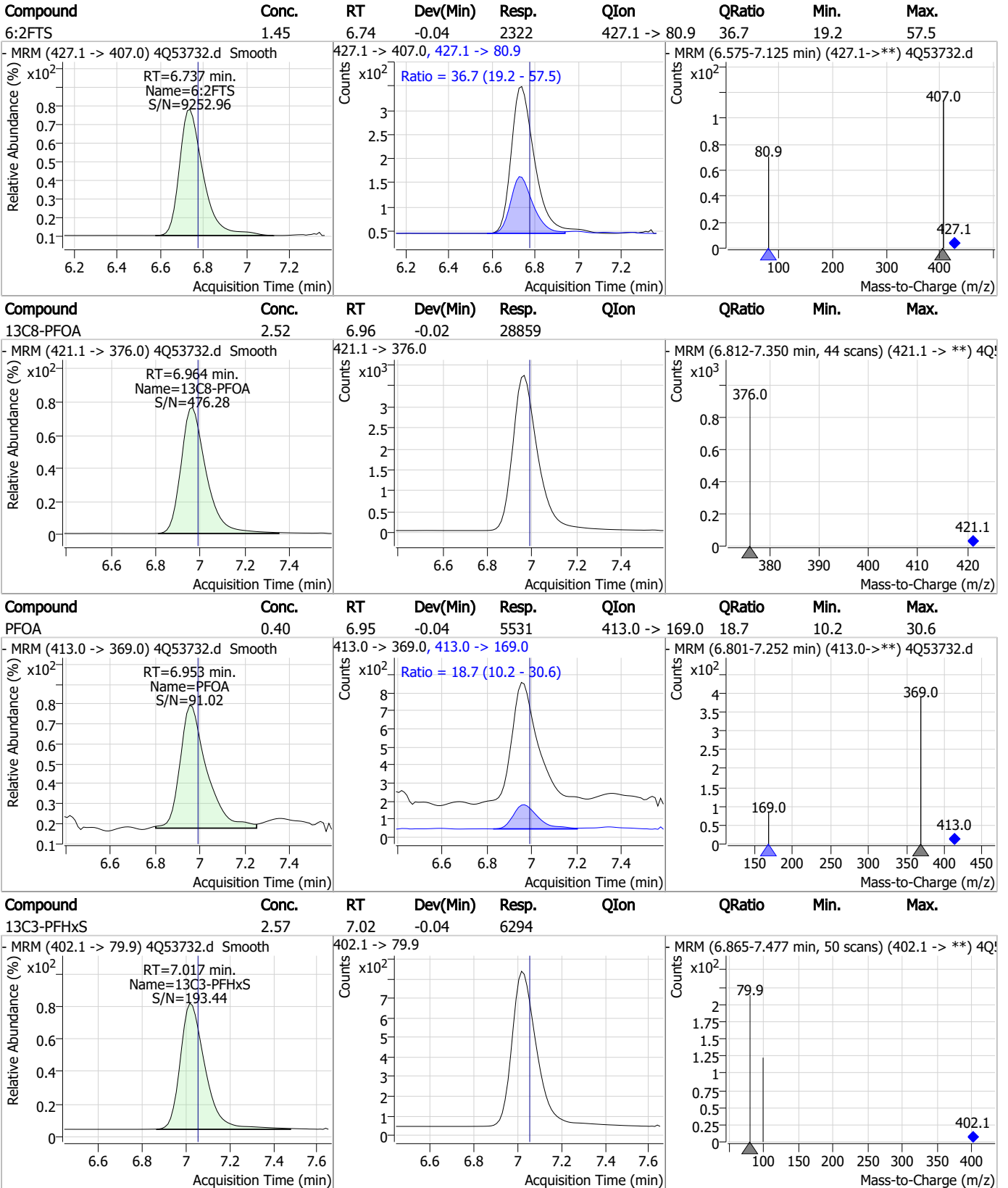
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Perfluorinated Compounds by LC/MS/MS



7.7.3
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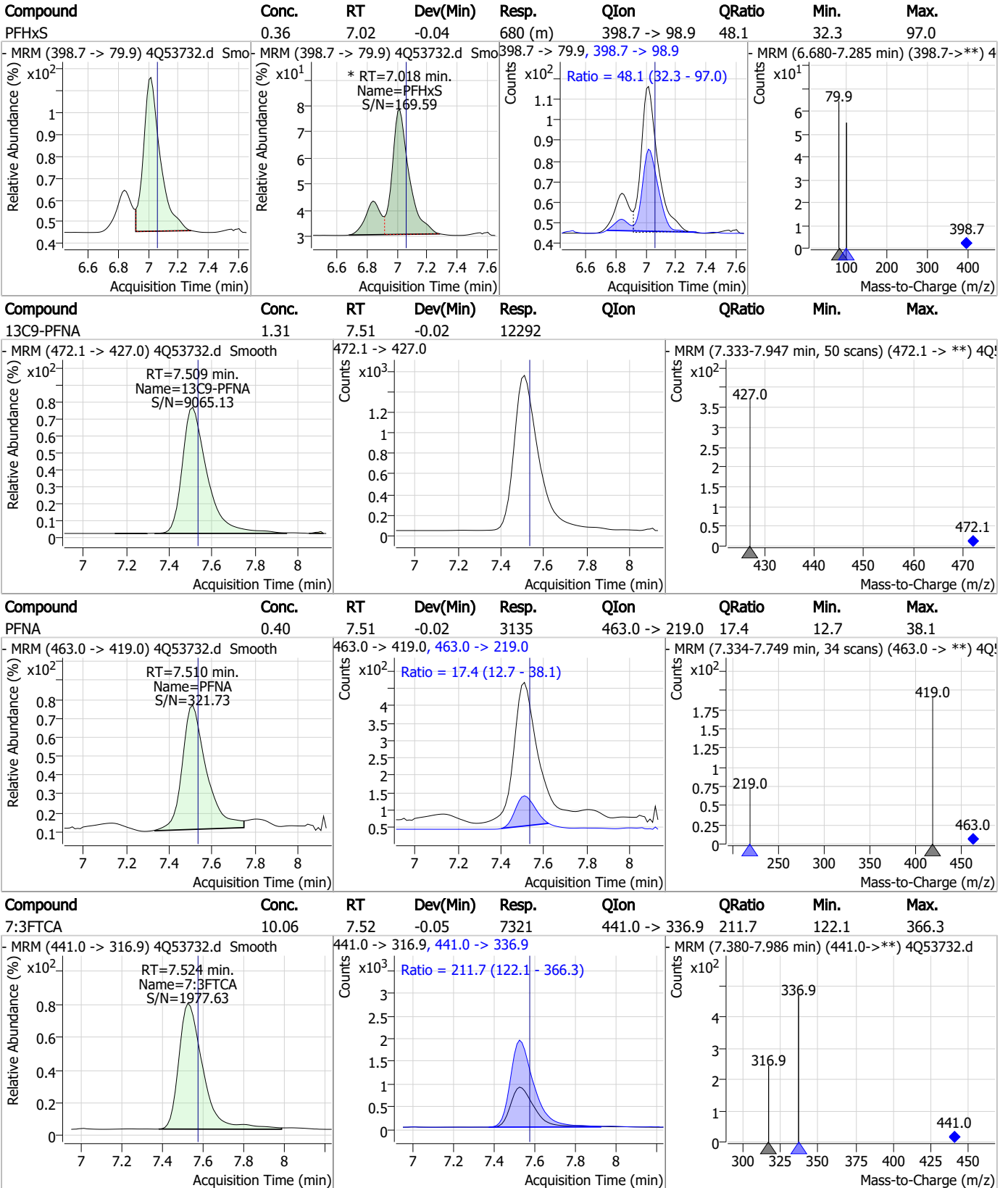
Perfluorinated Compounds by LC/MS/MS



7.7.3

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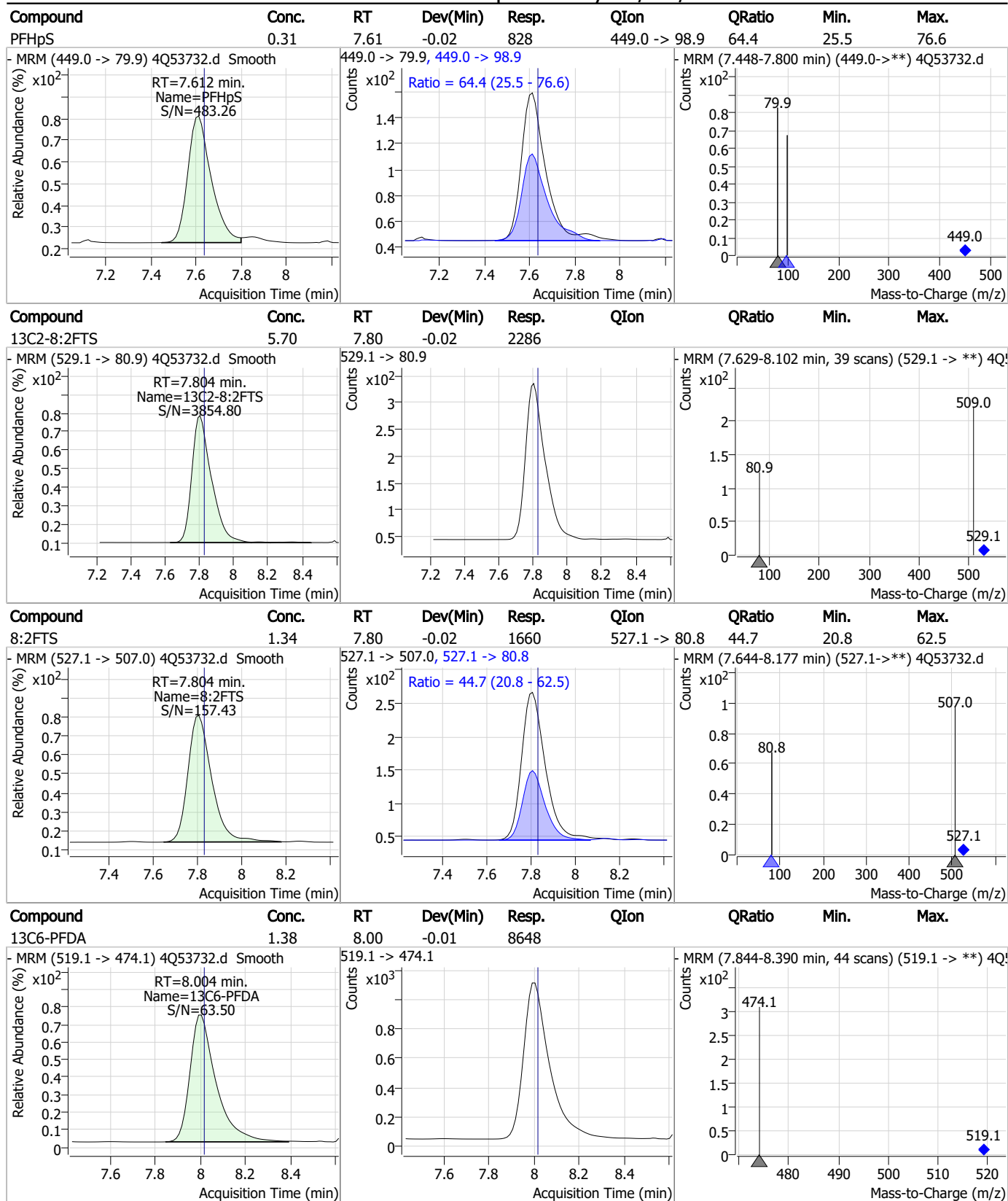
Perfluorinated Compounds by LC/MS/MS



7.7.3

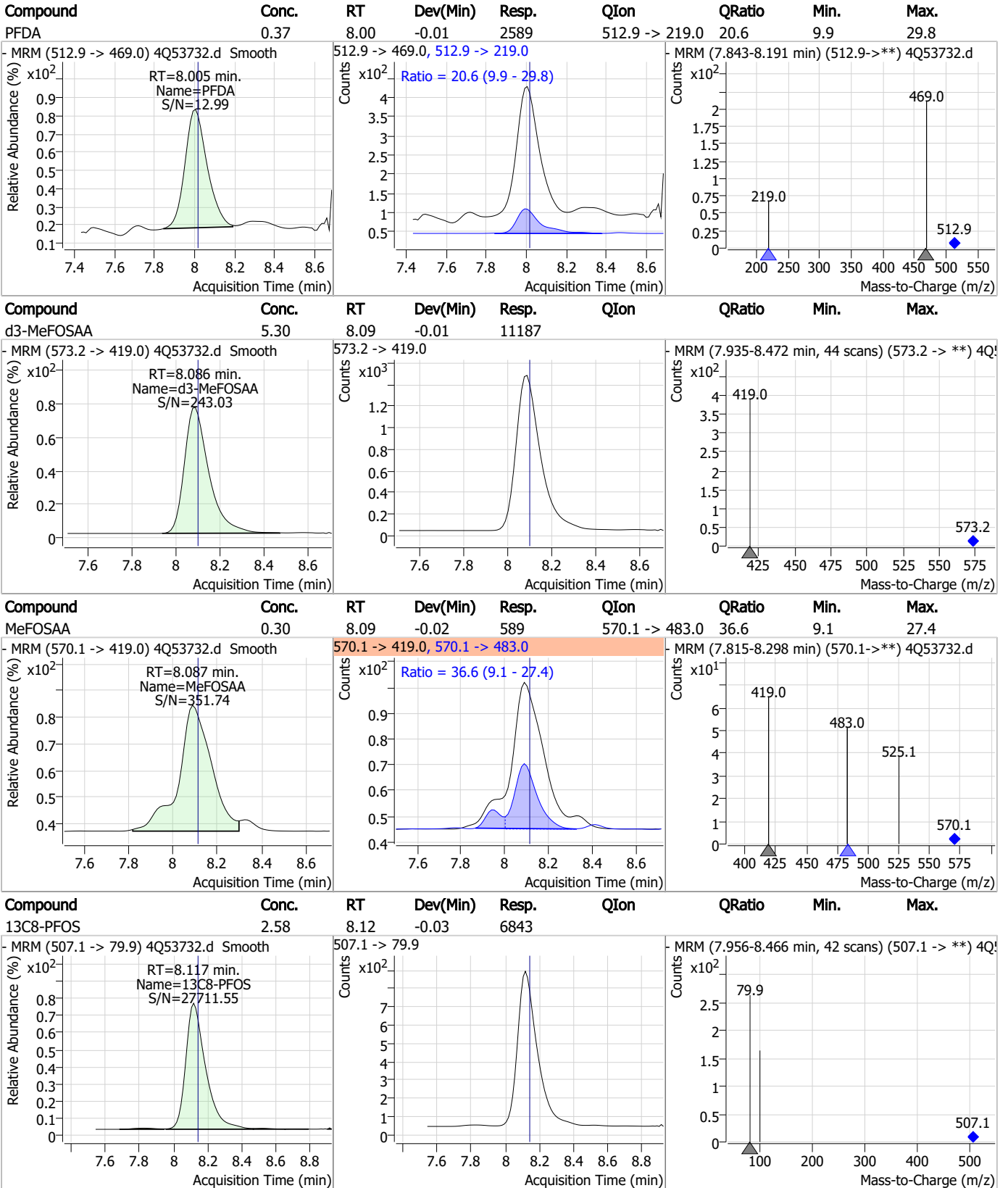
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Perfluorinated Compounds by LC/MS/MS



7.7.3
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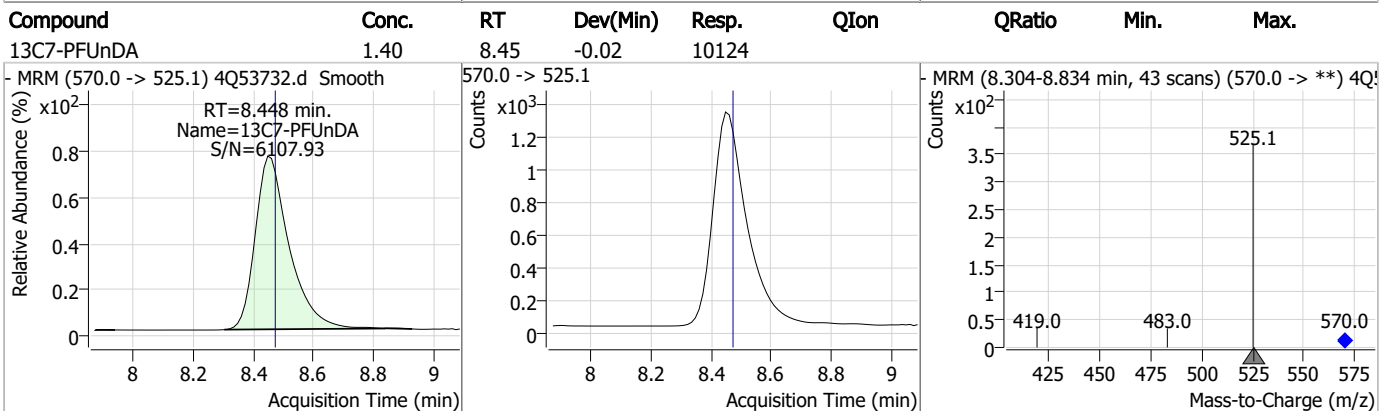
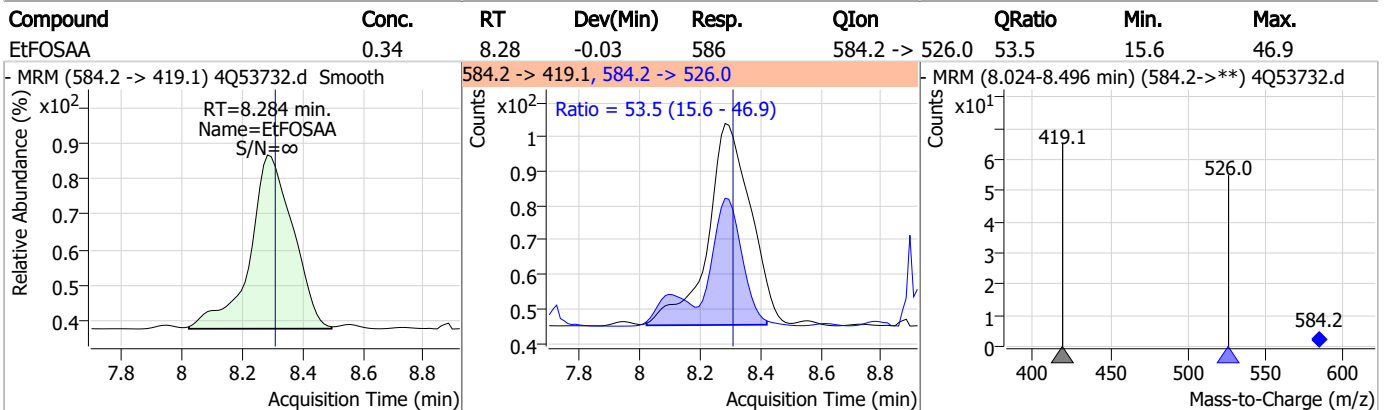
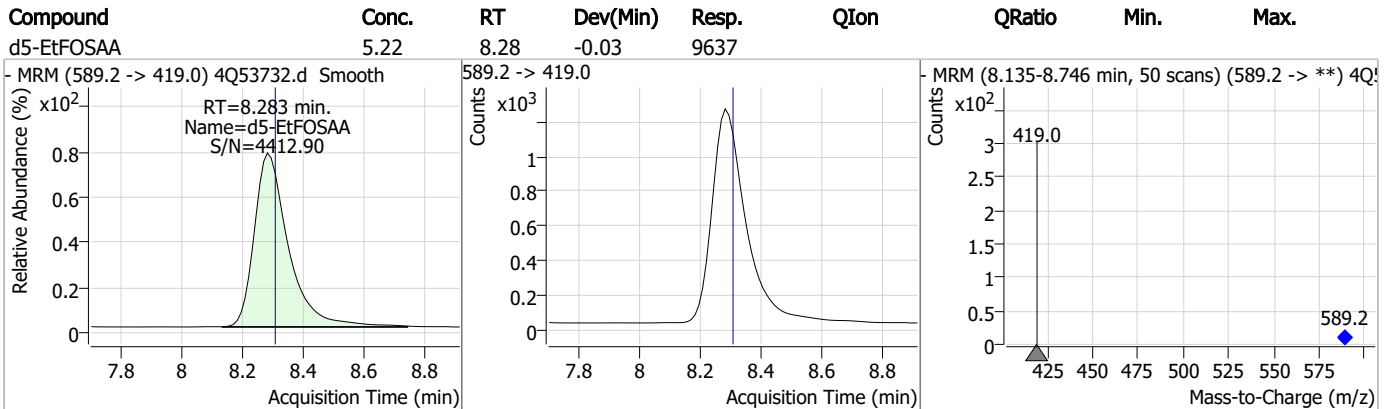
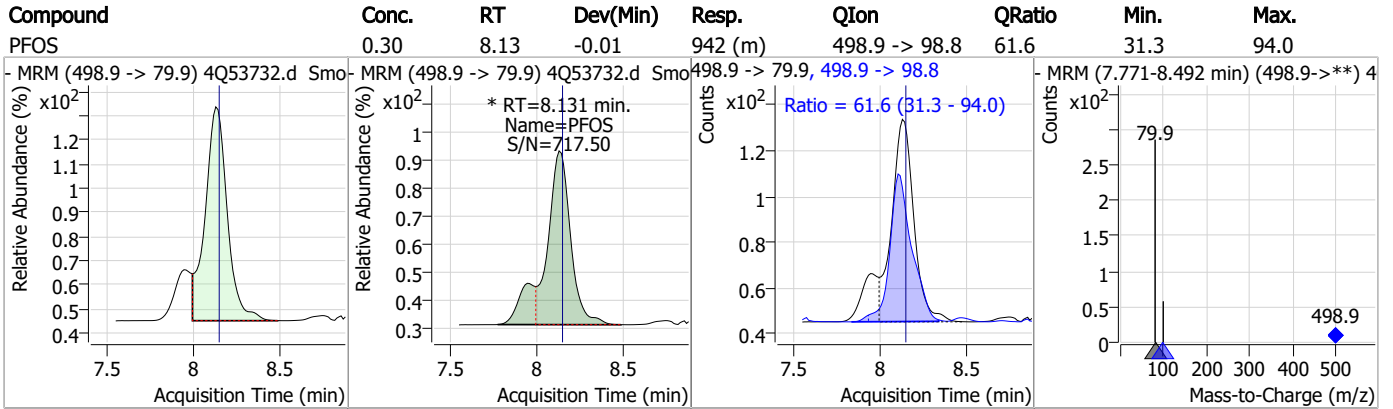
Perfluorinated Compounds by LC/MS/MS



7.7.3

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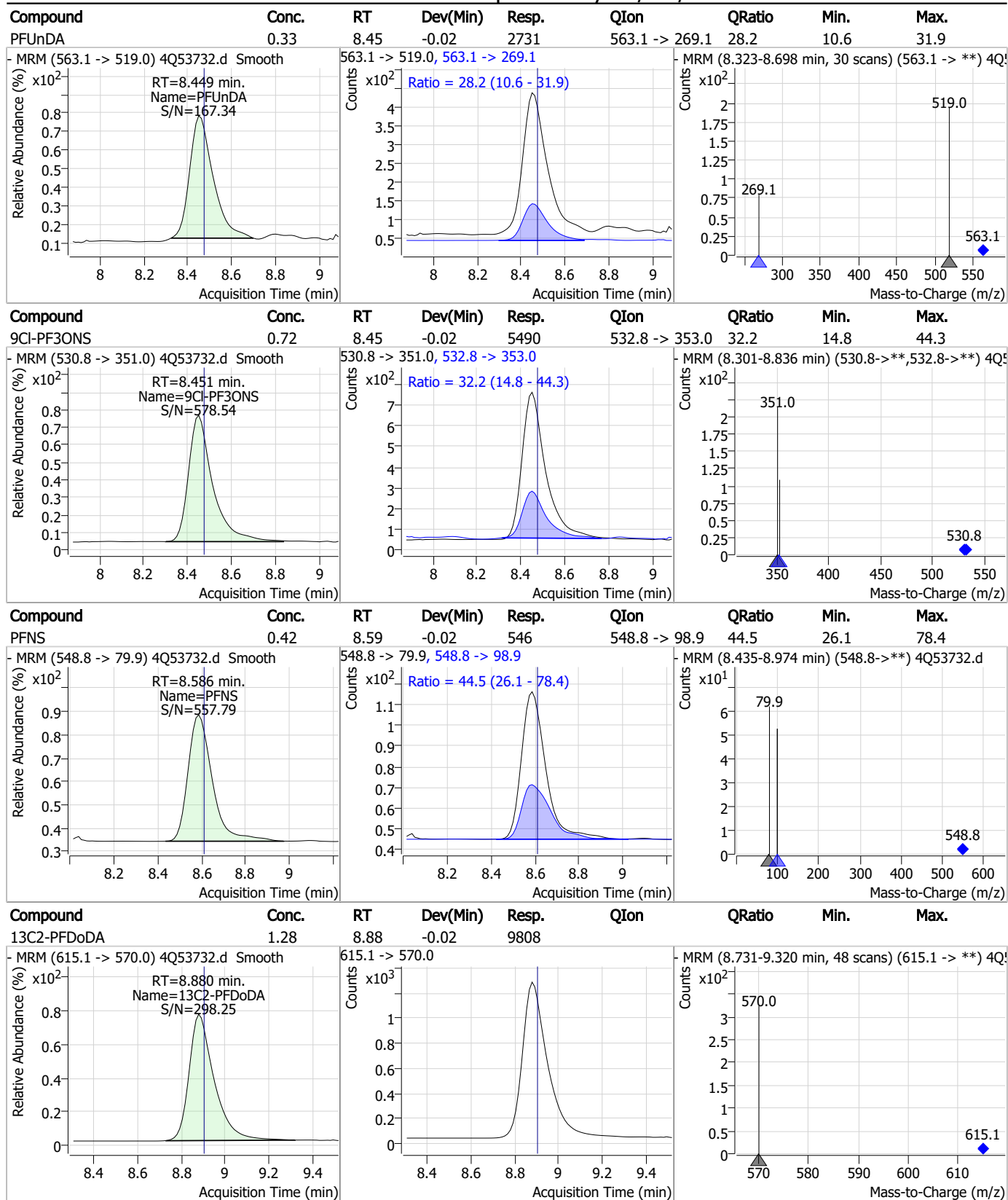
Perfluorinated Compounds by LC/MS/MS



7.7.3

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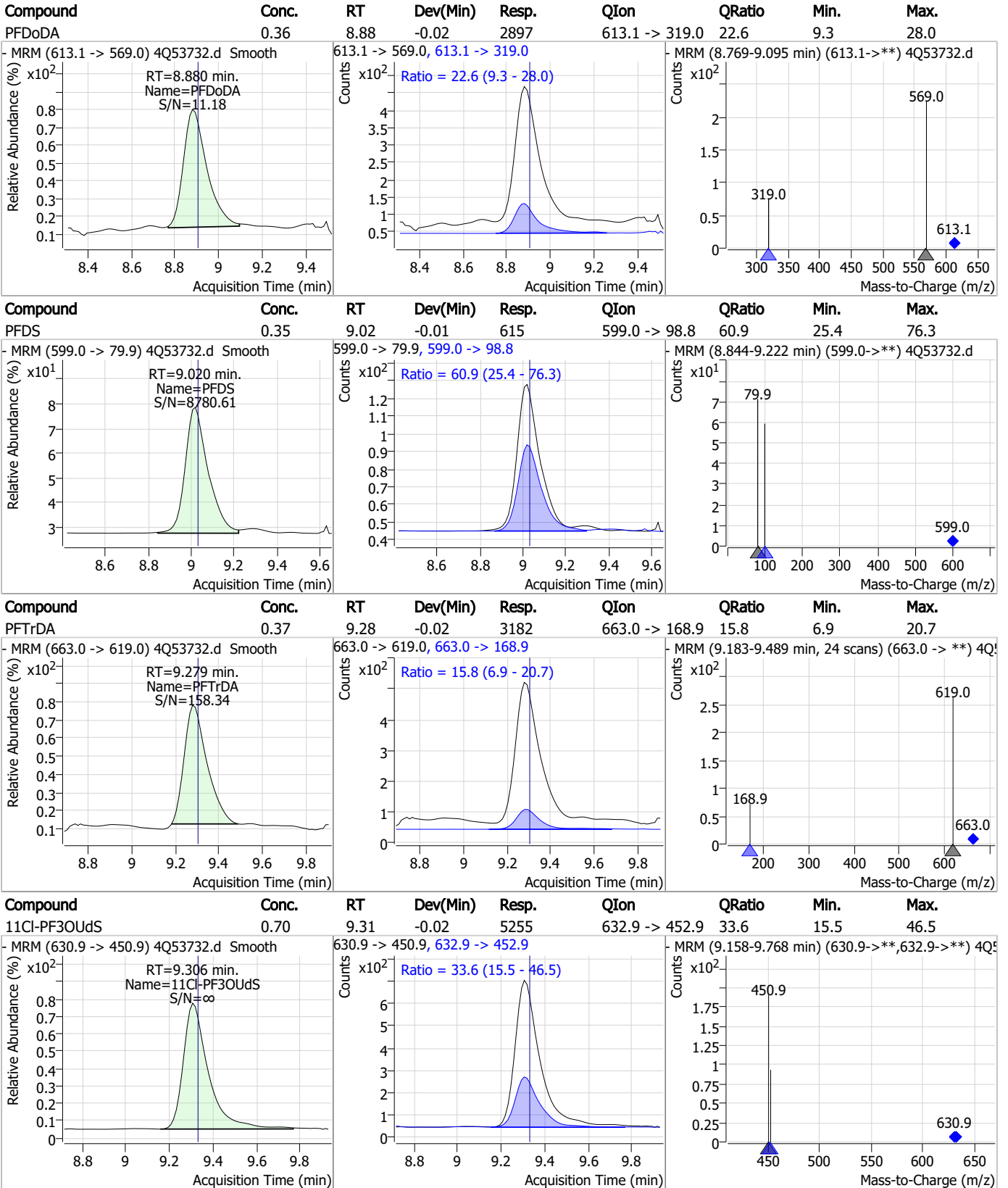
Perfluorinated Compounds by LC/MS/MS



7.7.3

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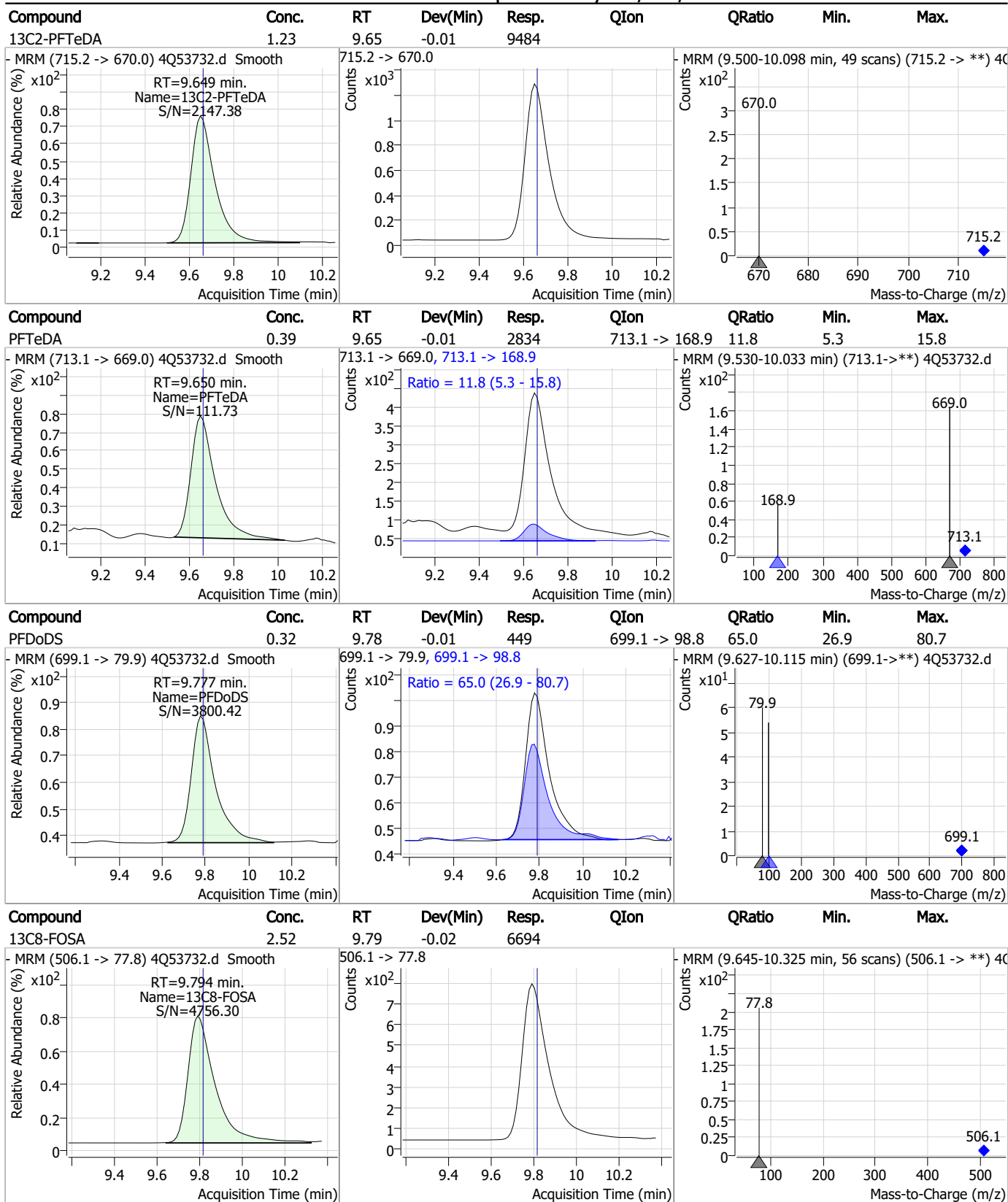
Perfluorinated Compounds by LC/MS/MS



7.7.3

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Perfluorinated Compounds by LC/MS/MS

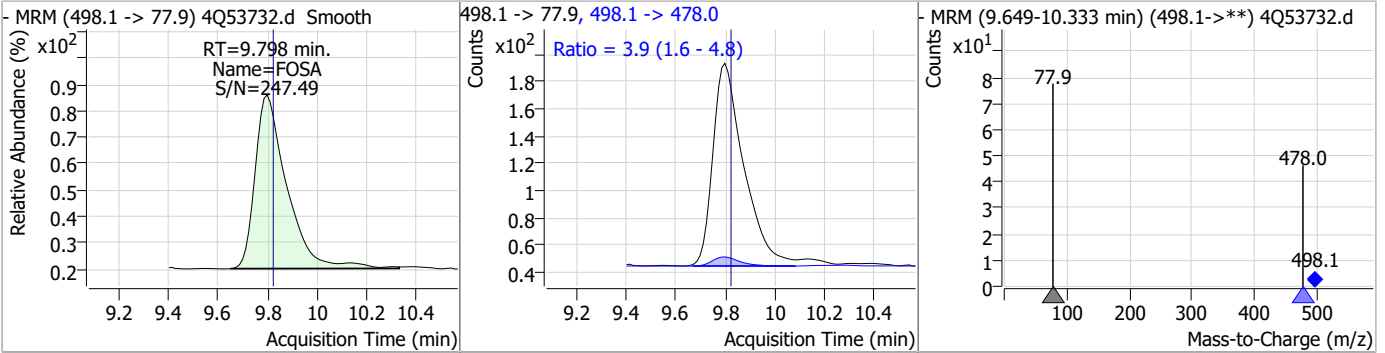


7.7.3

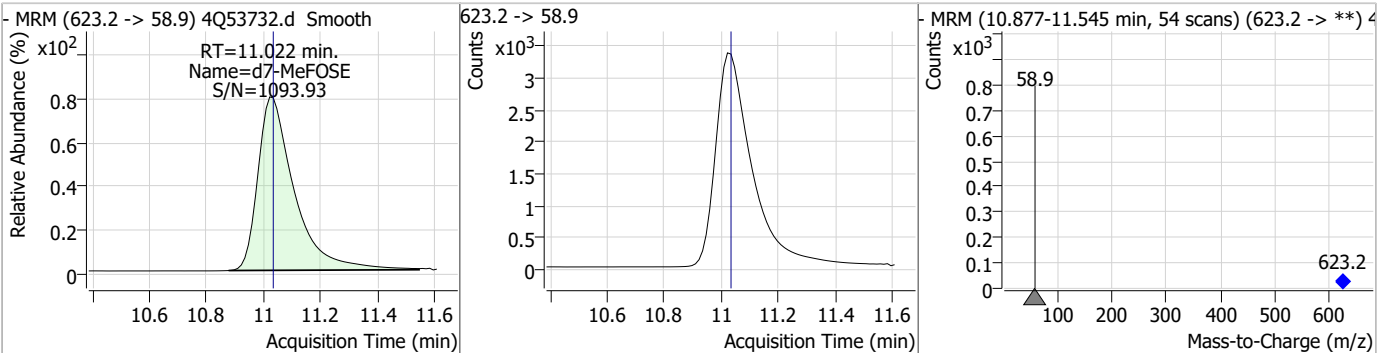
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Perfluorinated Compounds by LC/MS/MS

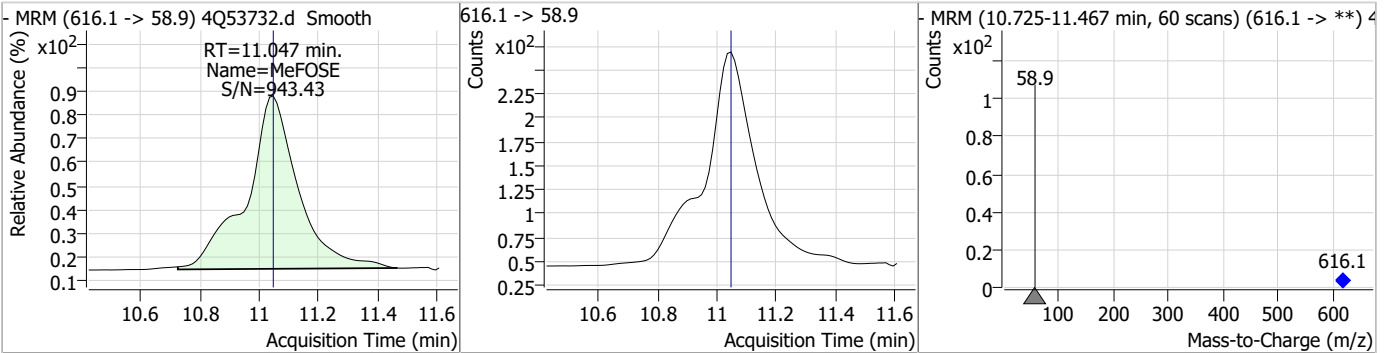
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.41	9.80	-0.02	1326	498.1 -> 478.0	3.9	1.6	4.8



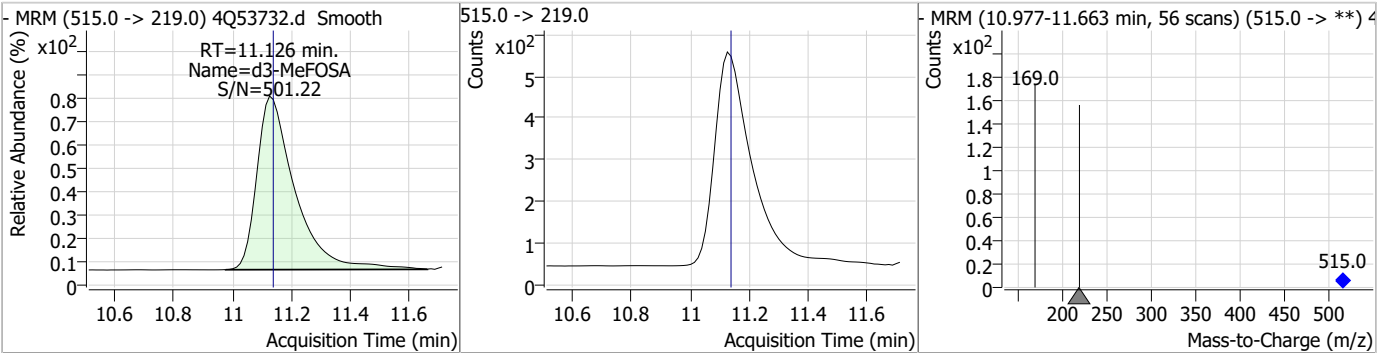
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.90	11.02	-0.01	29681				



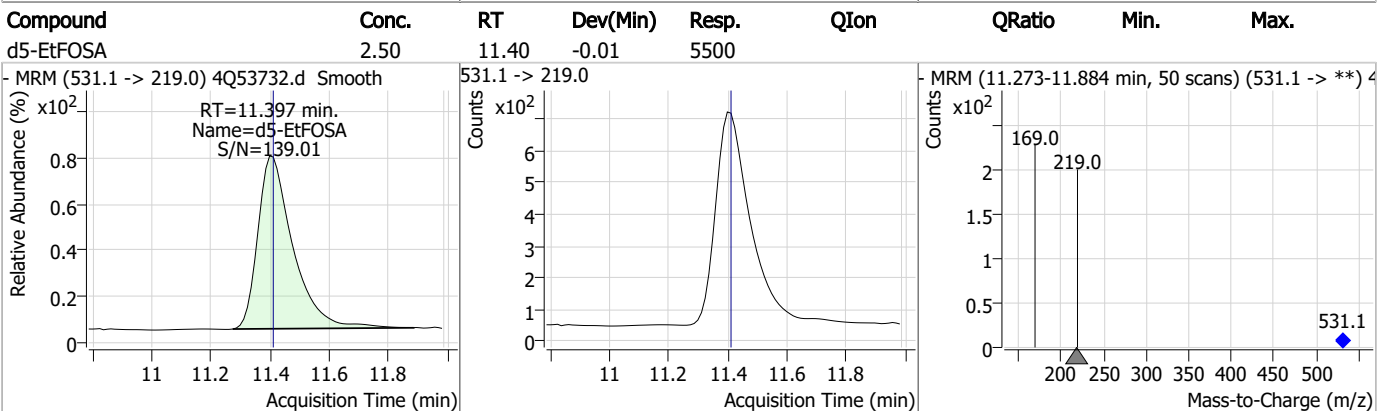
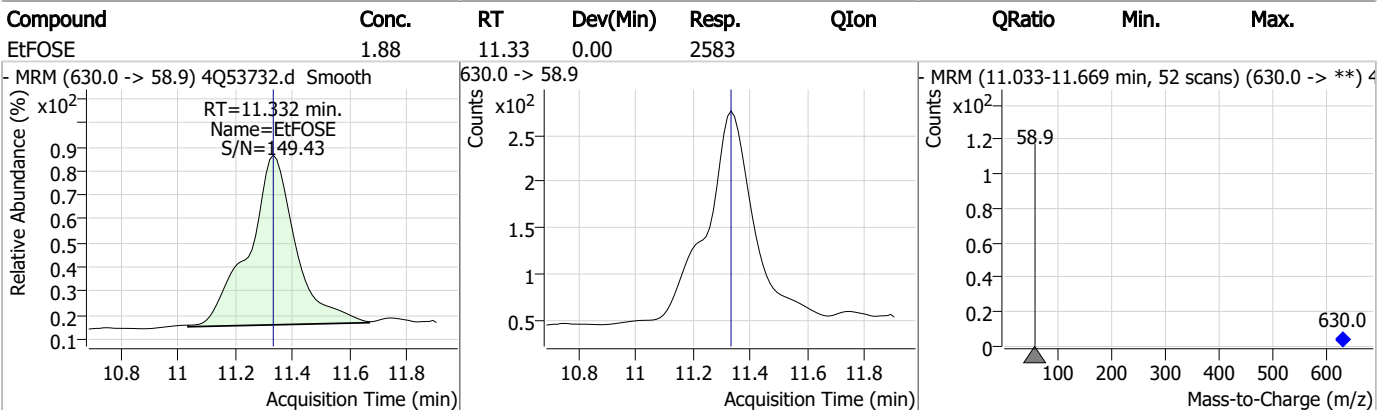
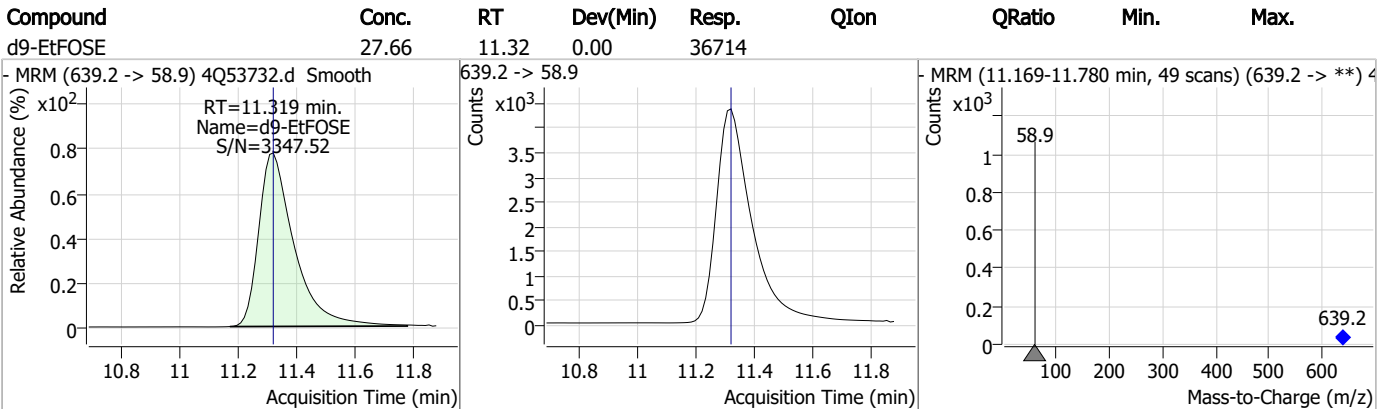
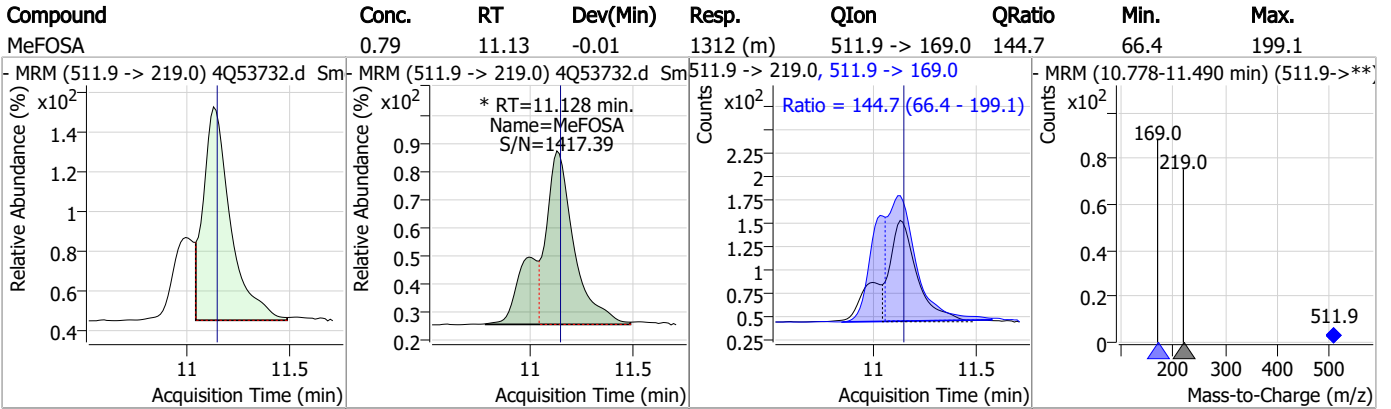
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	2.02	11.05	0.00	2728				



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

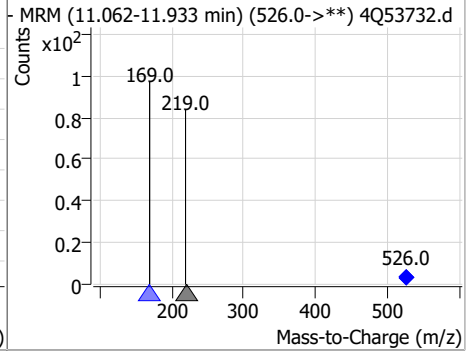
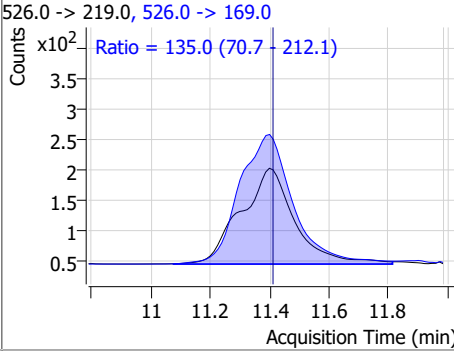
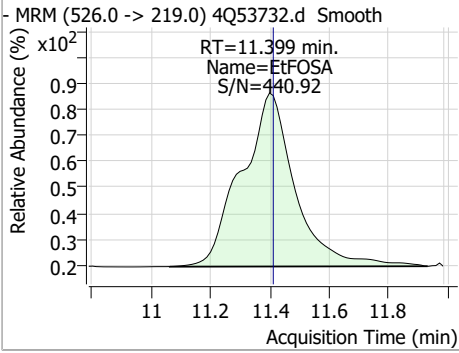


7.7.3

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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

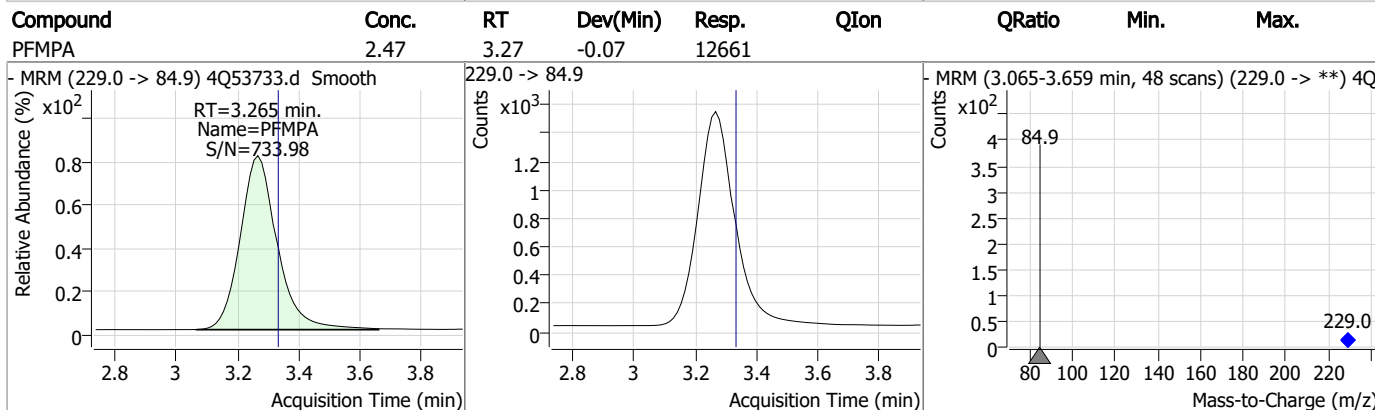
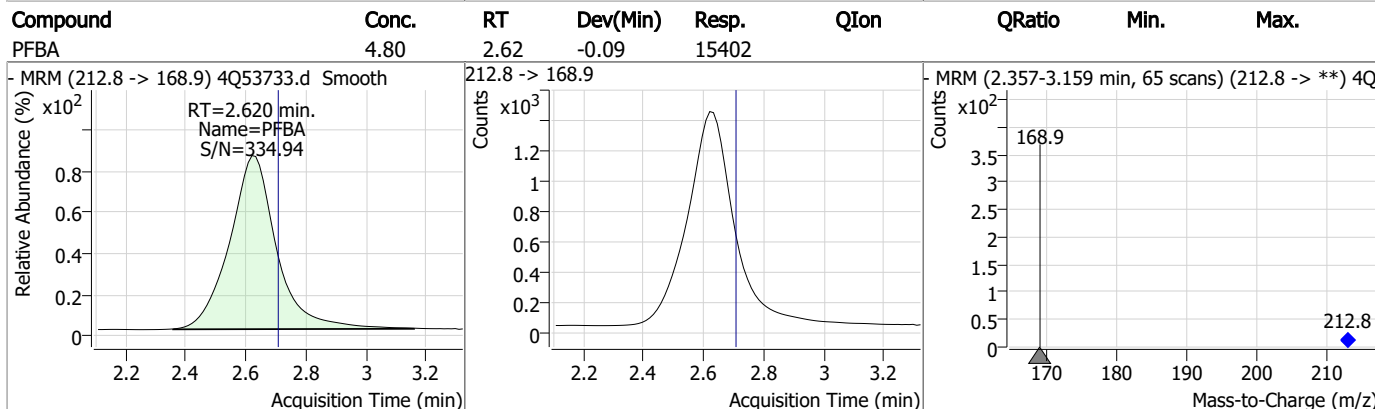
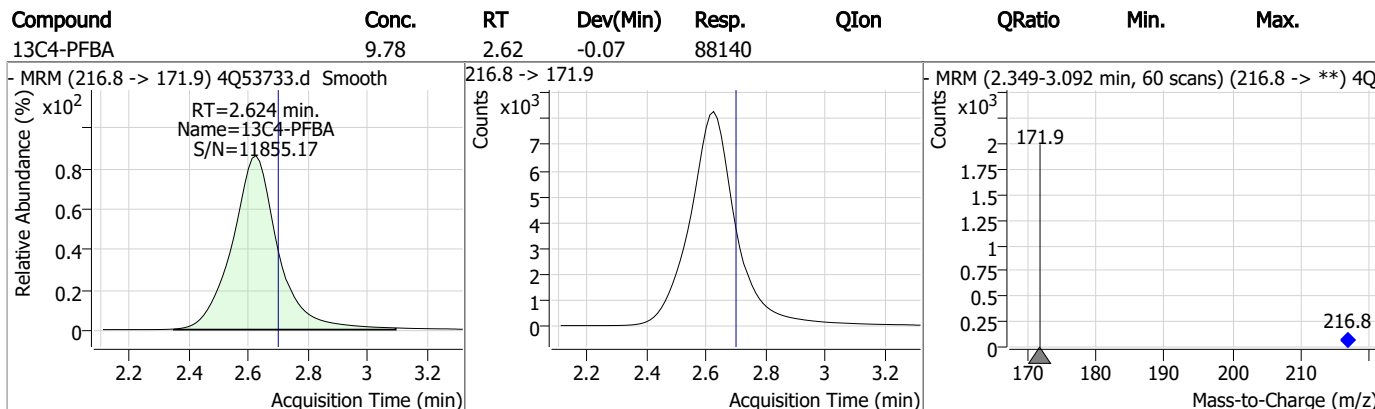
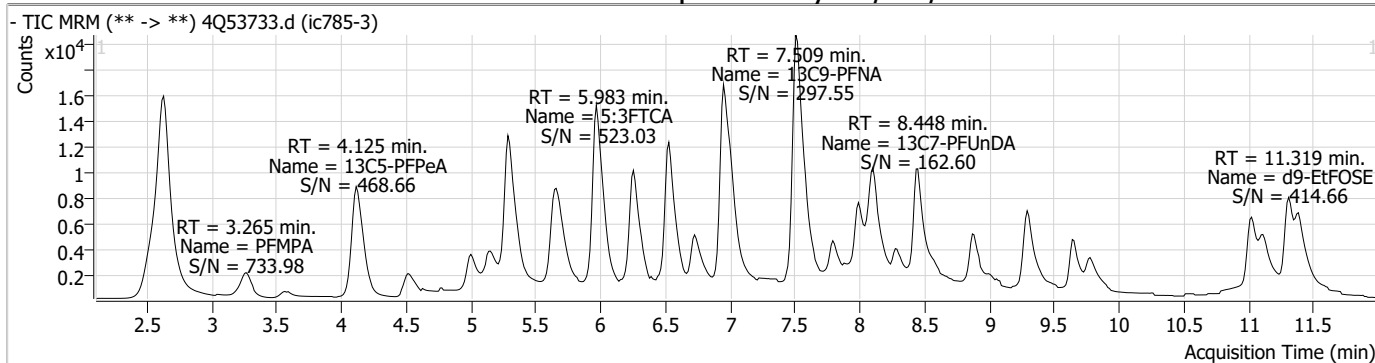
Perfluorinated Compounds by LC/MS/MS

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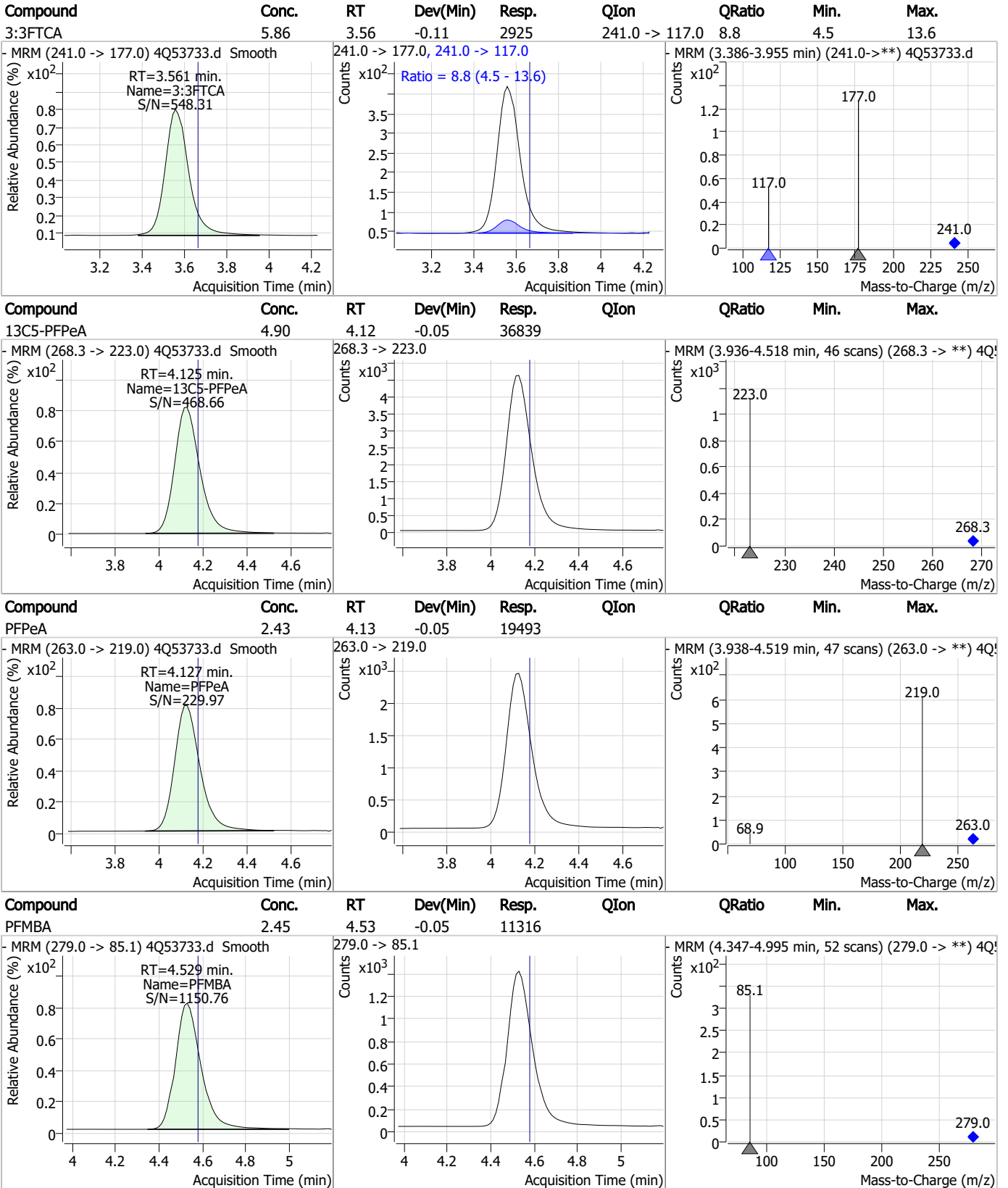
7.7.4

7

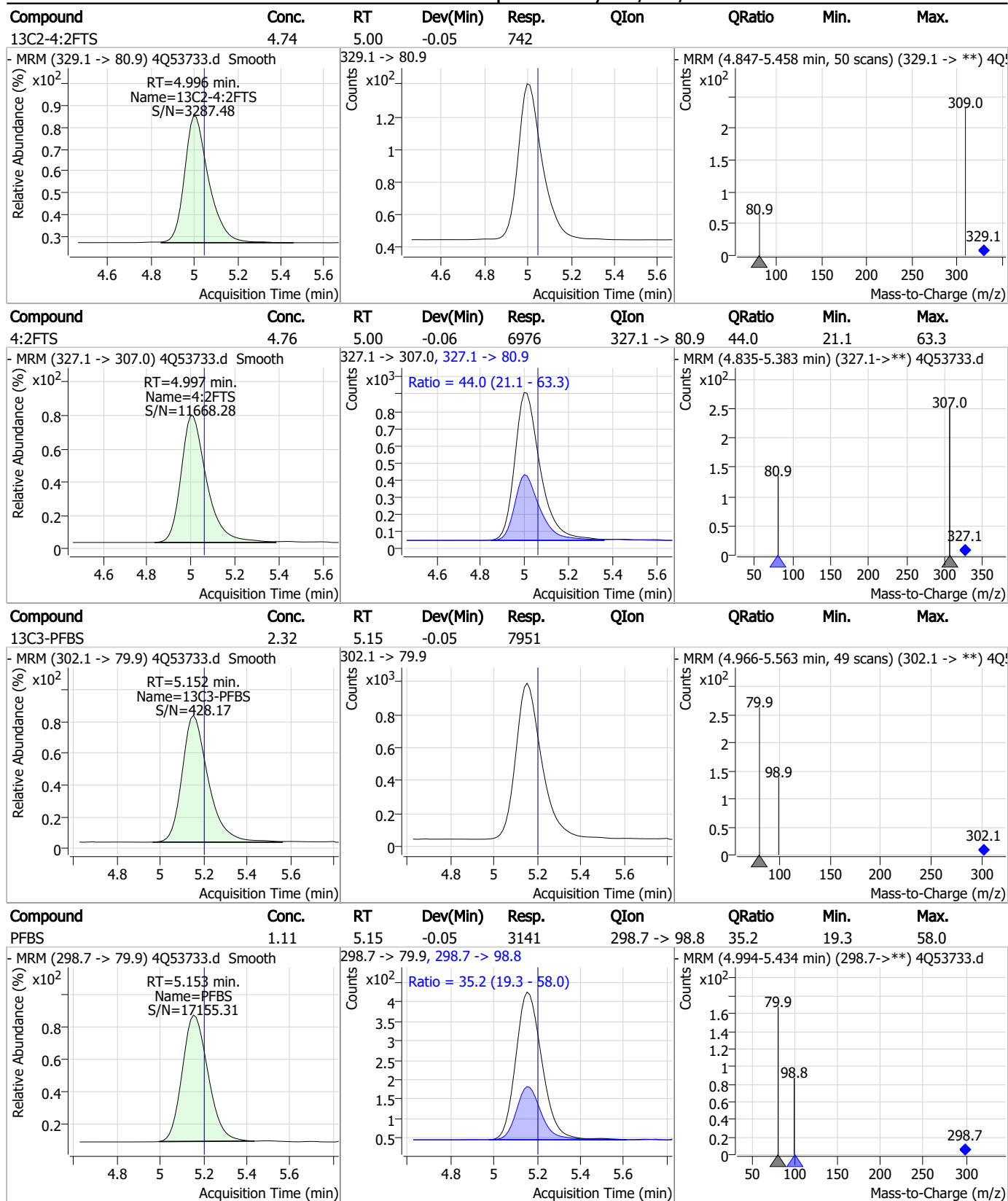
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

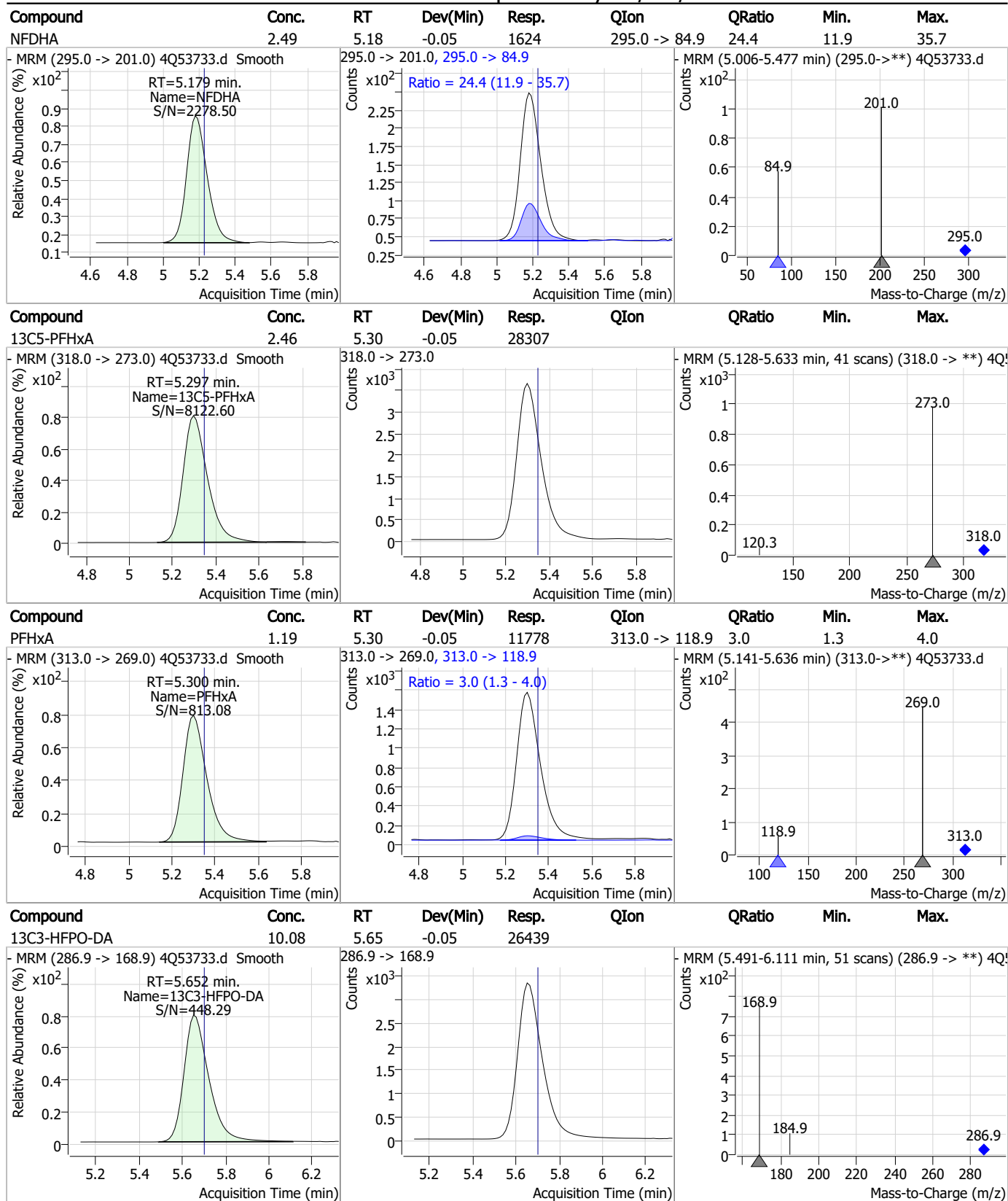


Perfluorinated Compounds by LC/MS/MS



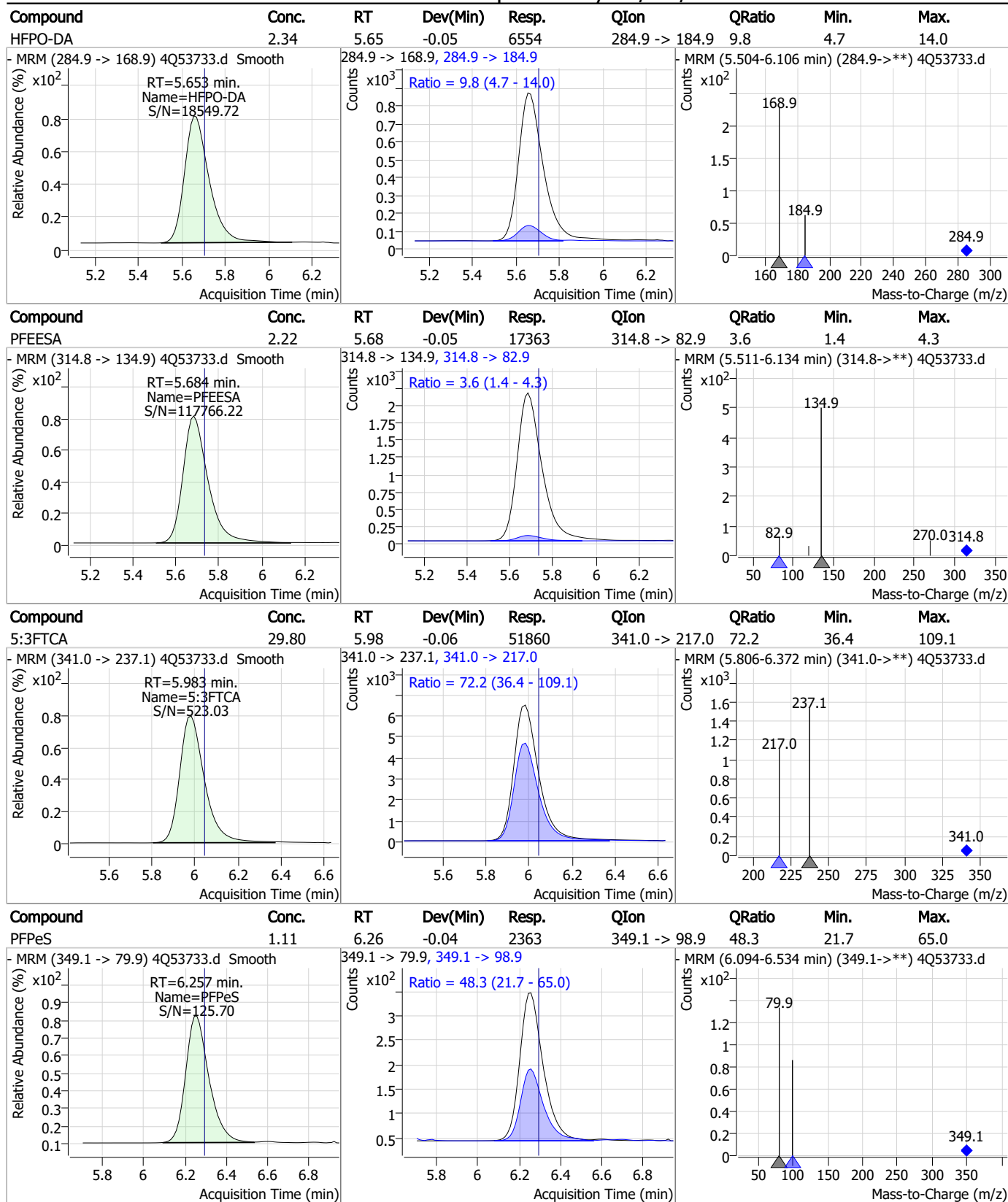
7.7.4
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Perfluorinated Compounds by LC/MS/MS



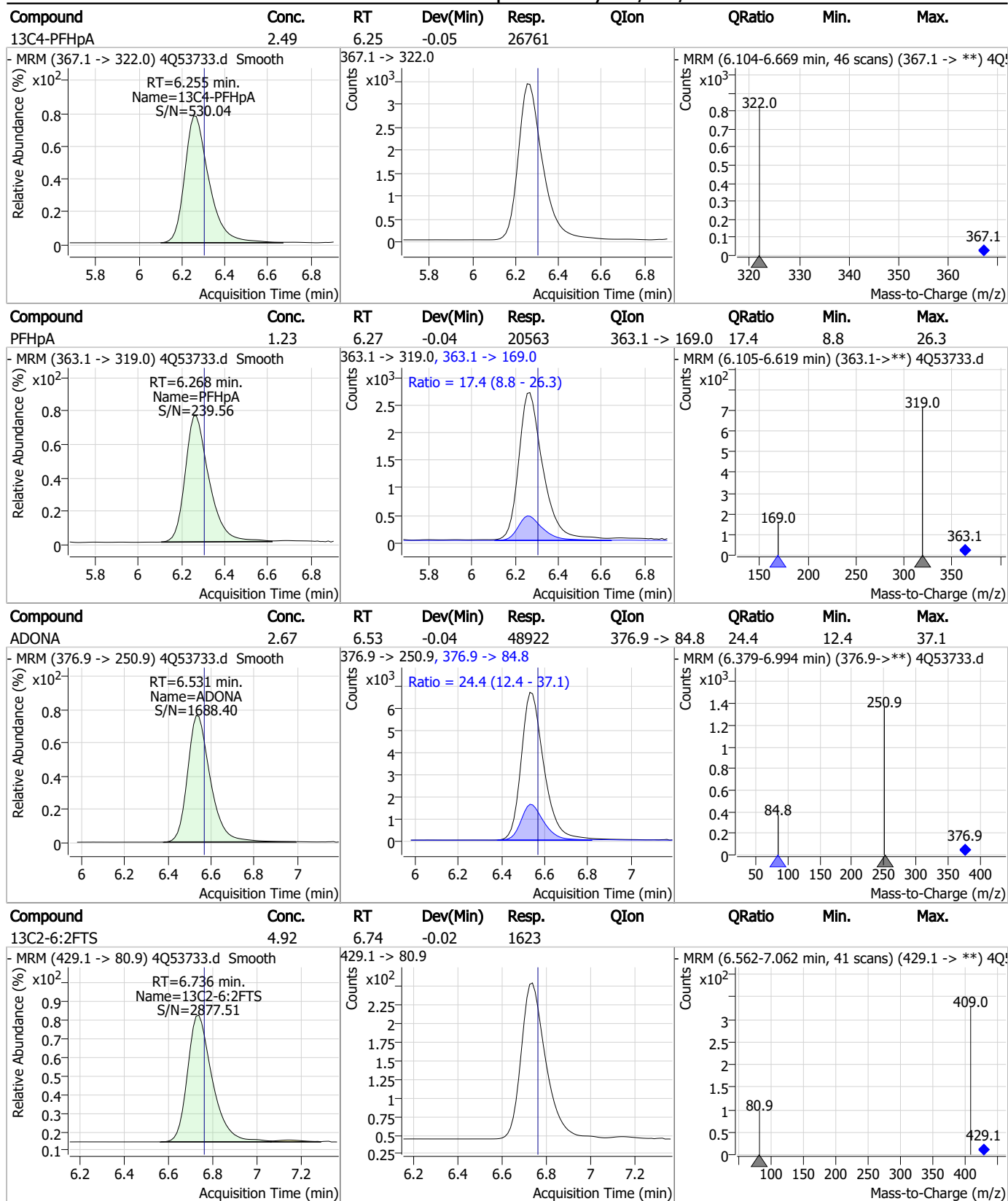
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Perfluorinated Compounds by LC/MS/MS



7.7.4
7

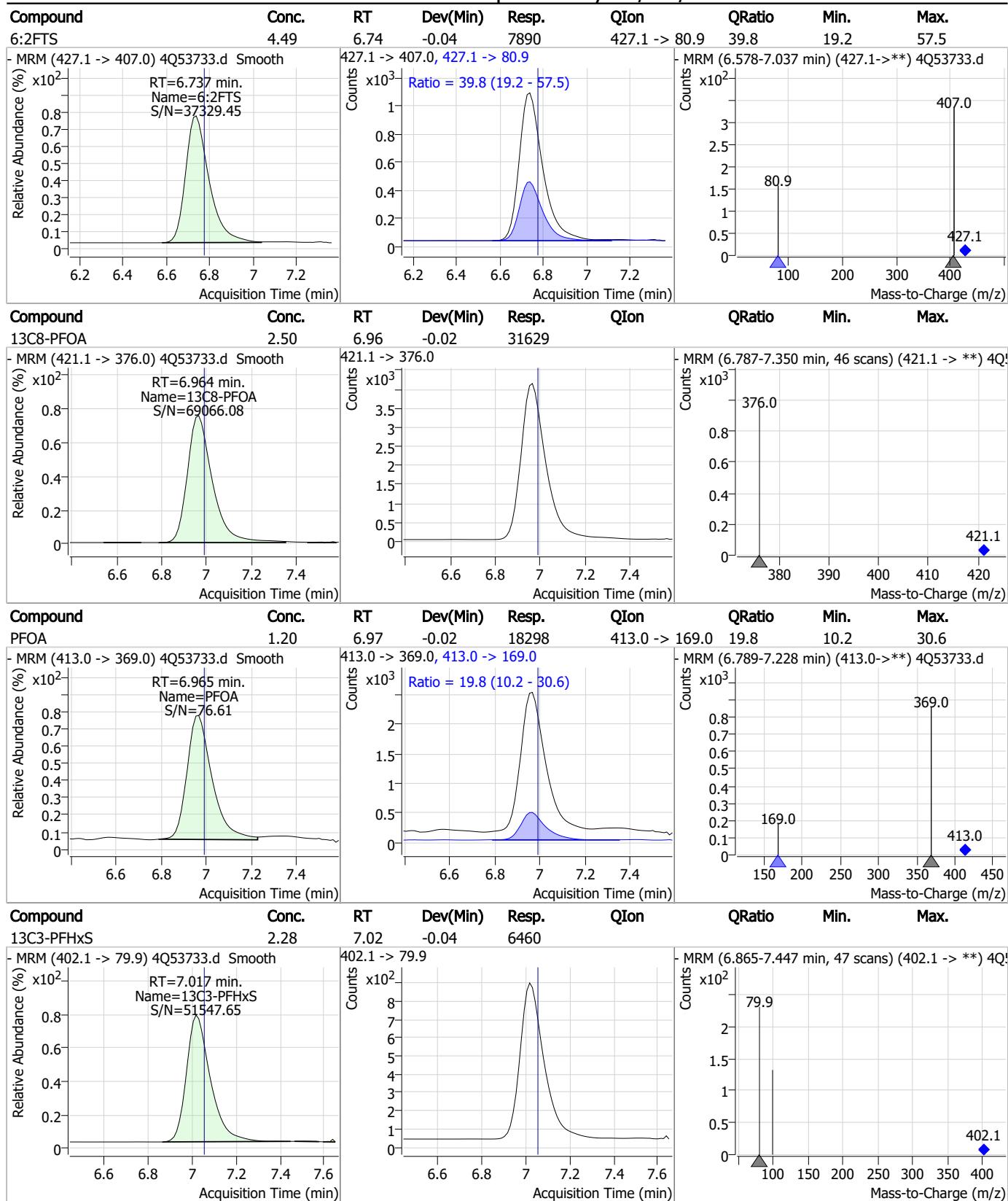
Perfluorinated Compounds by LC/MS/MS



7.7.4

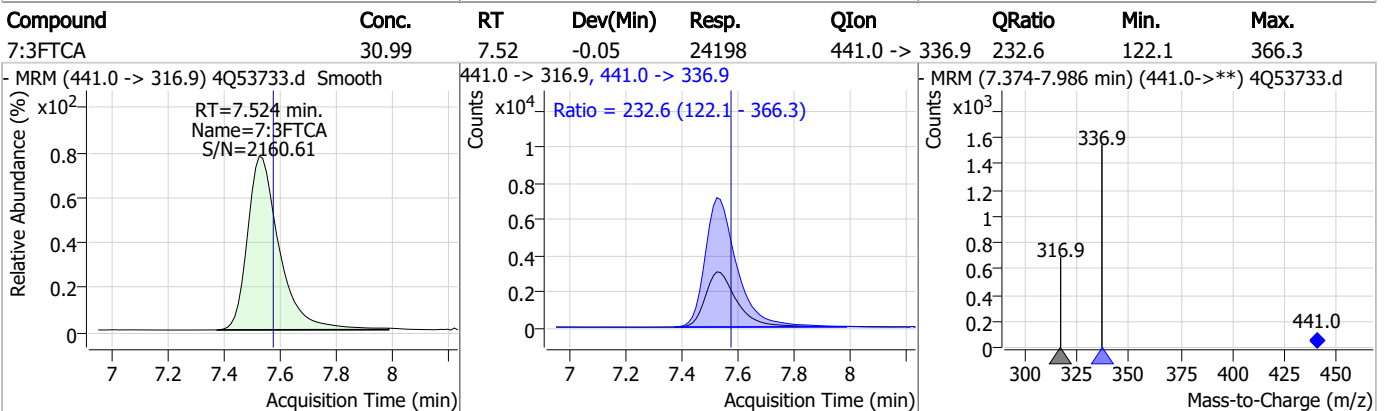
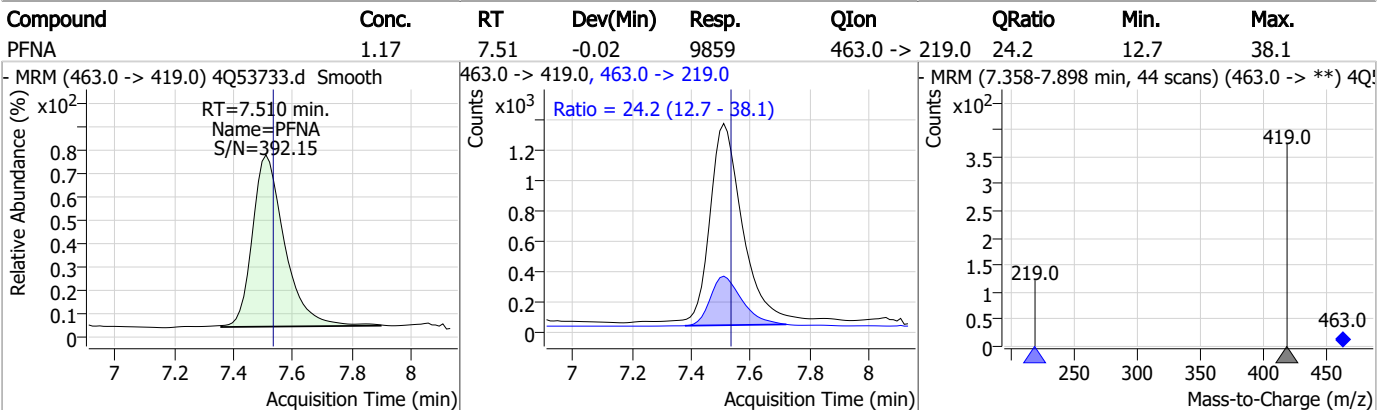
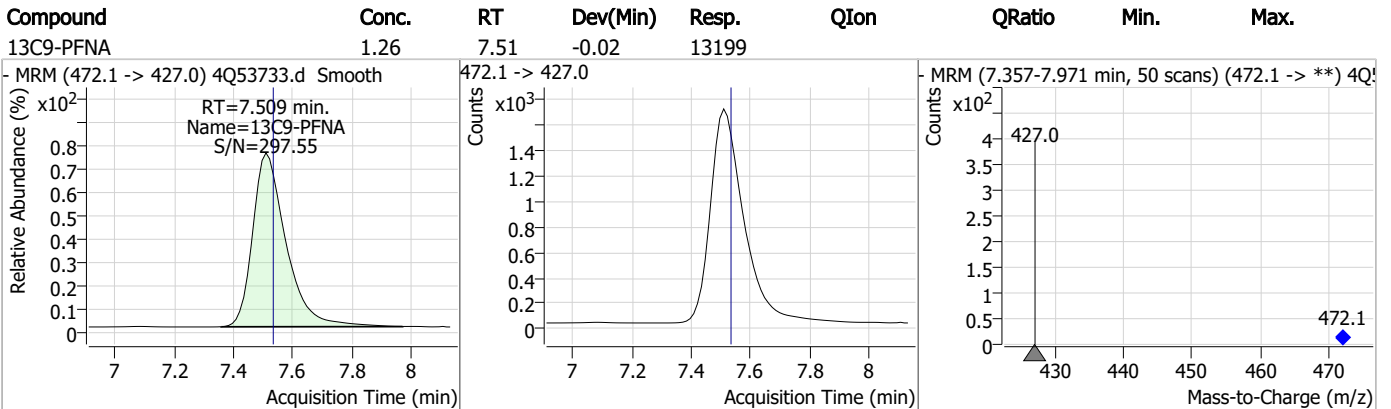
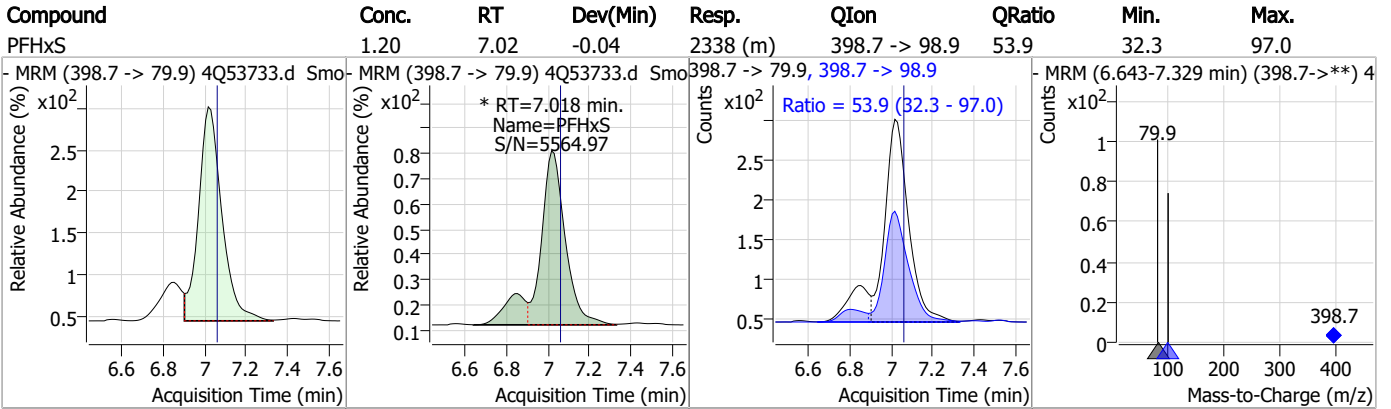
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Perfluorinated Compounds by LC/MS/MS

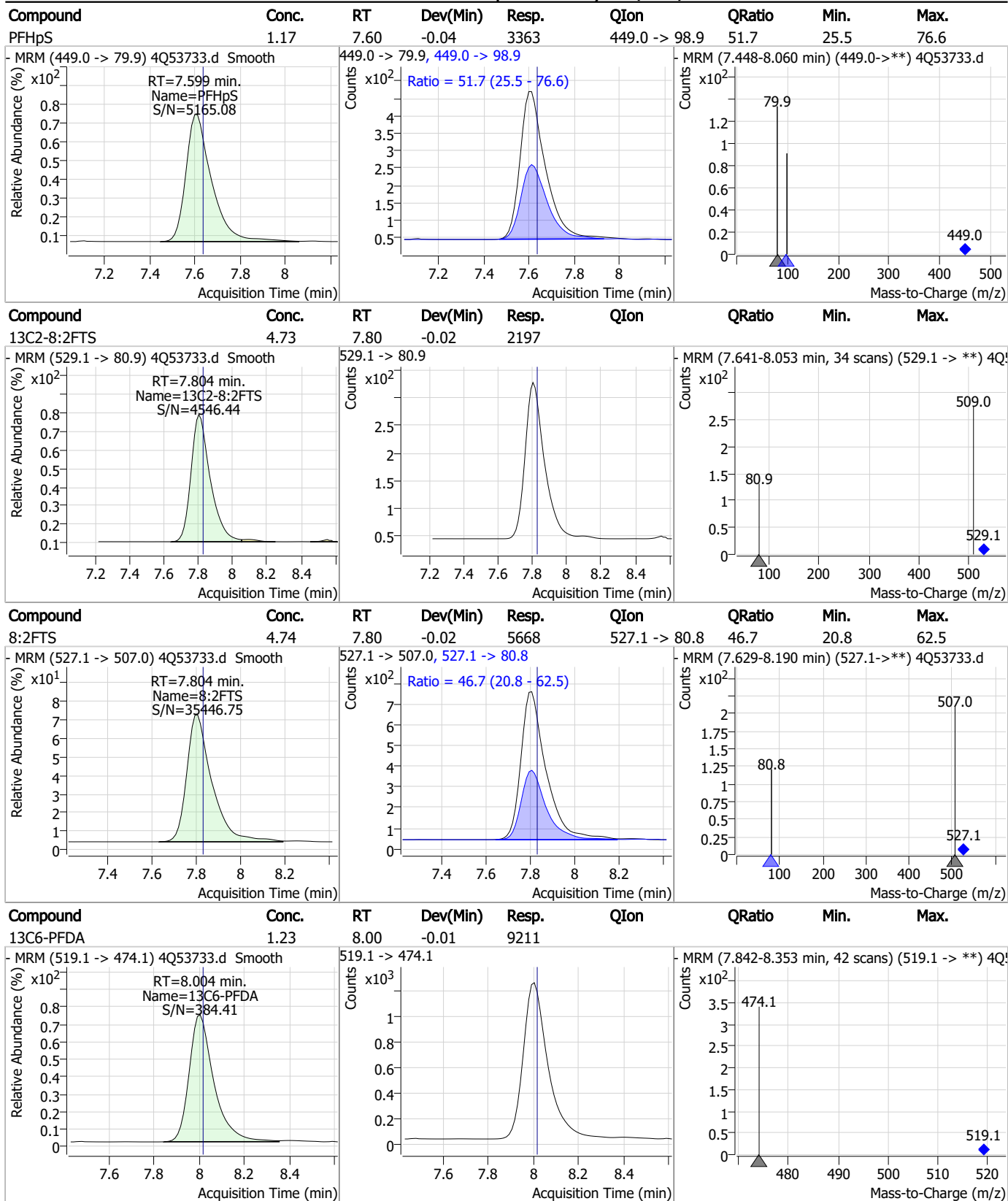


7.7.4
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Perfluorinated Compounds by LC/MS/MS

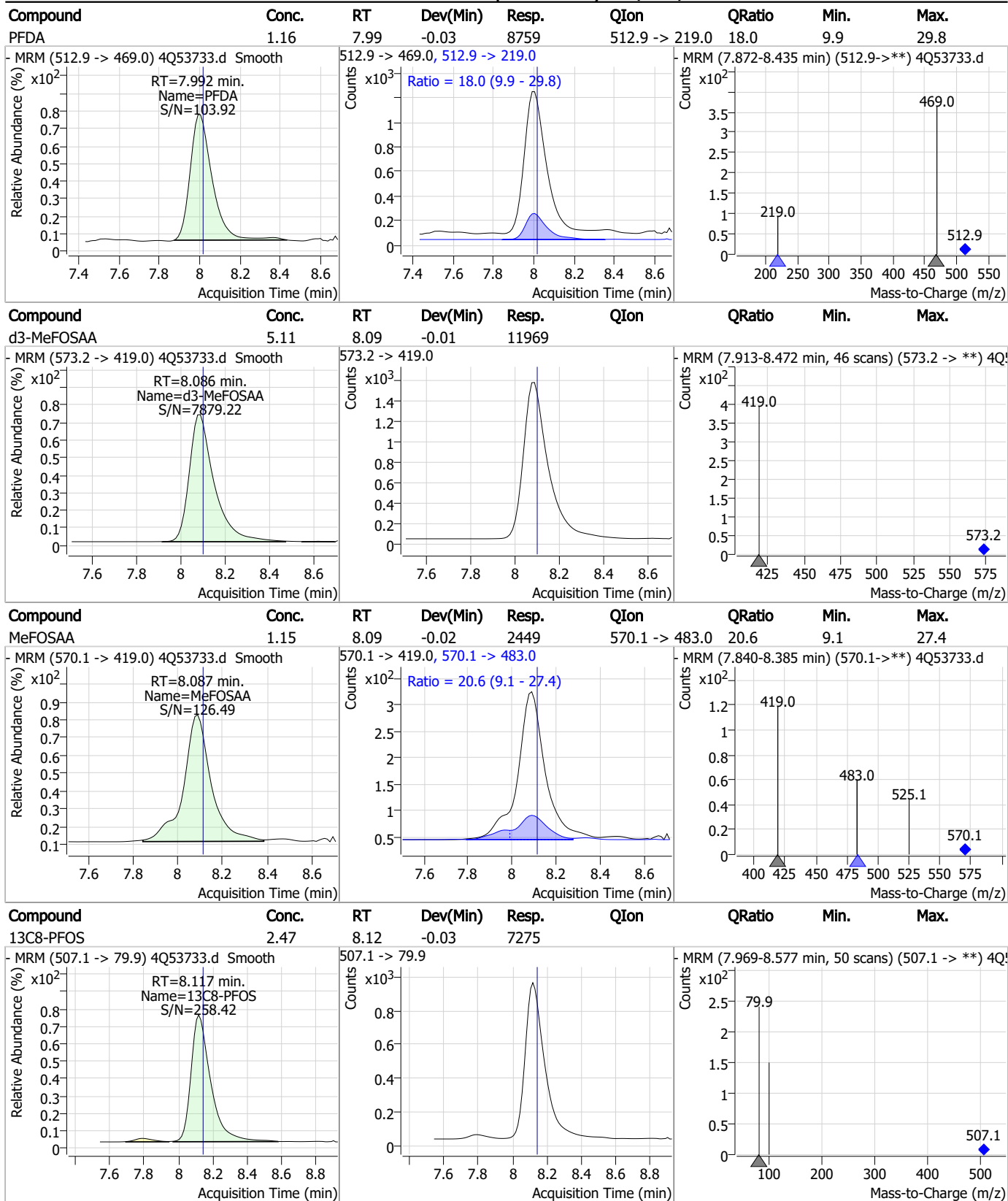


Perfluorinated Compounds by LC/MS/MS



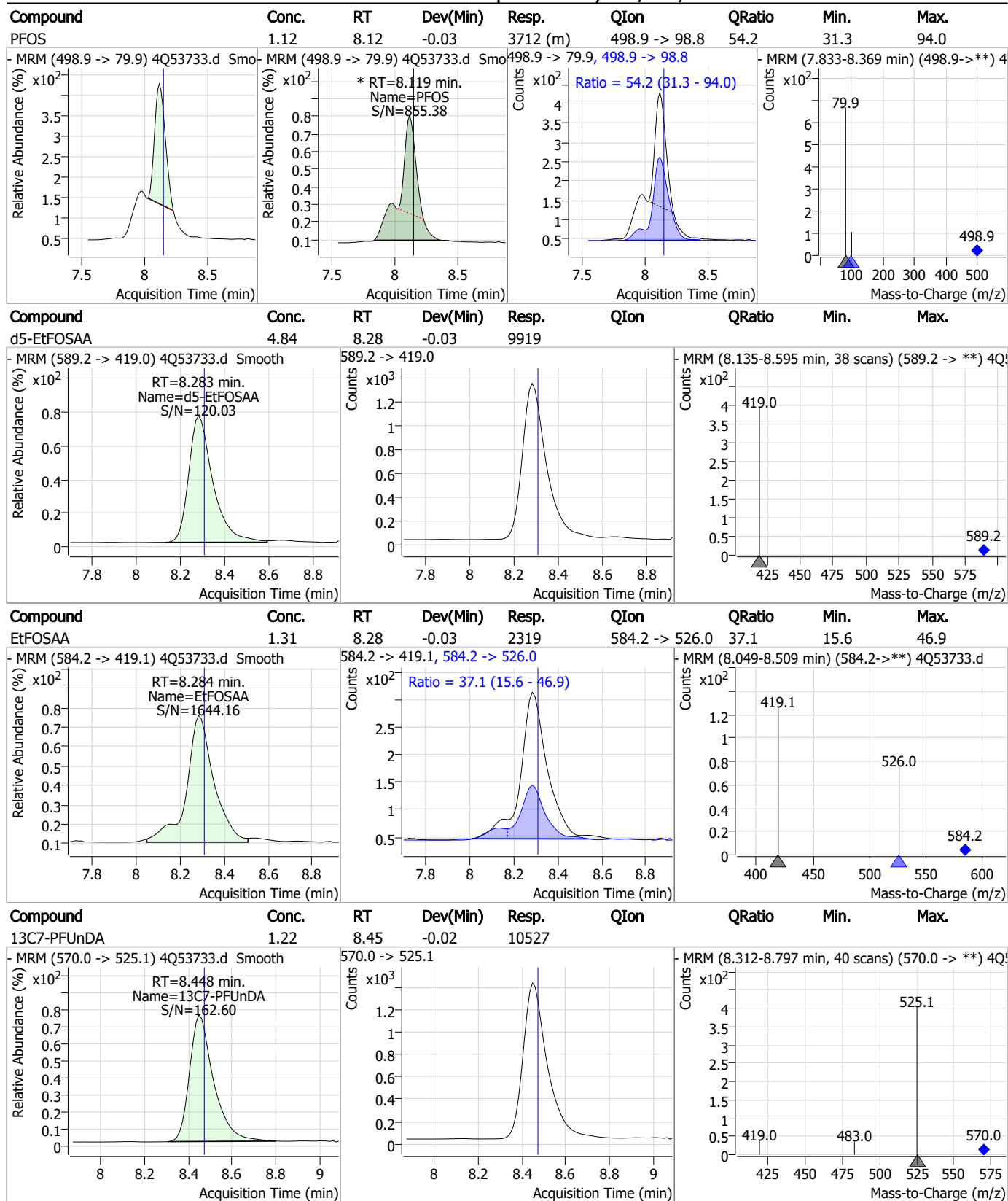
7.7.4
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Perfluorinated Compounds by LC/MS/MS



7.7.4
7

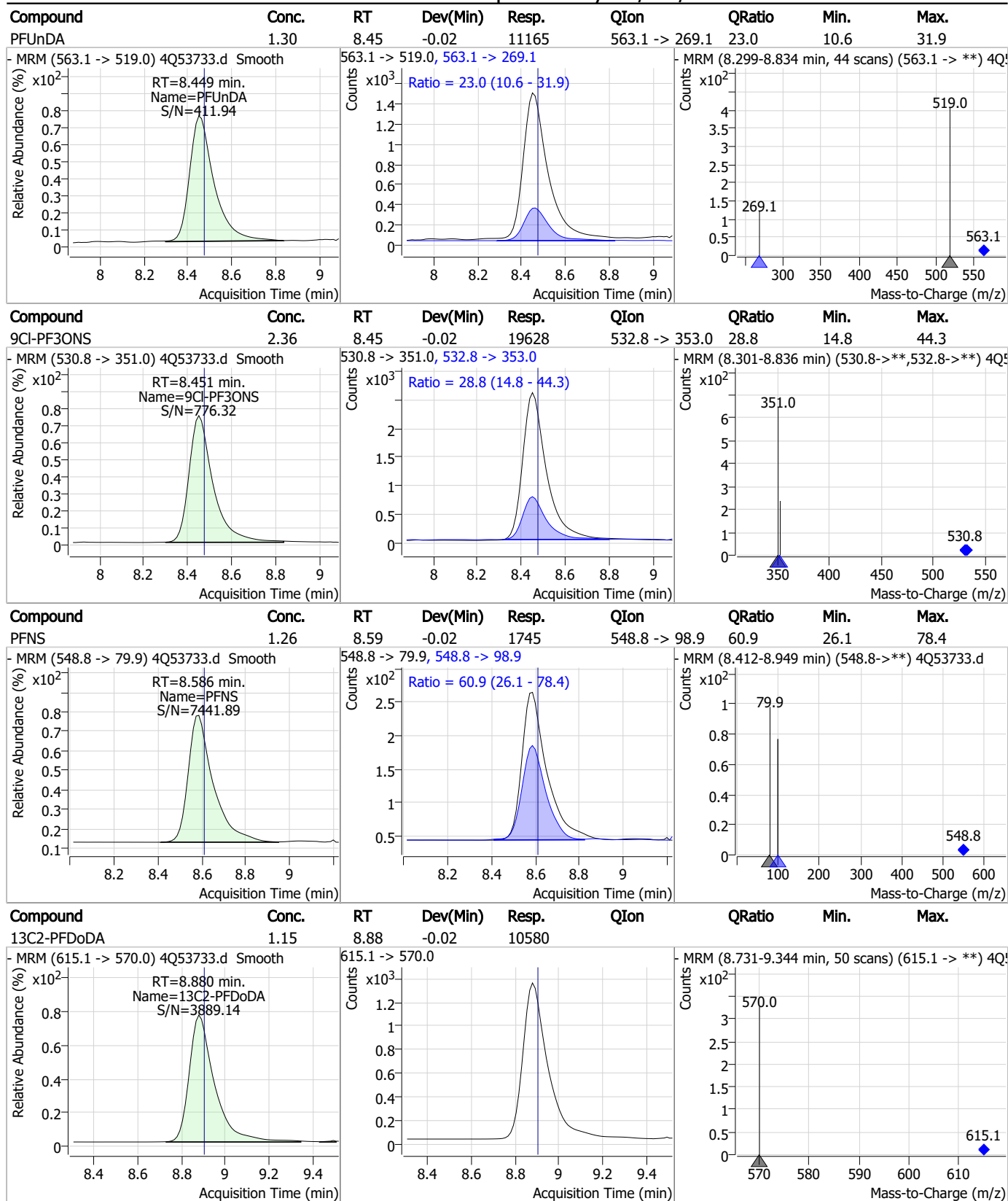
Perfluorinated Compounds by LC/MS/MS



7.7.4
7



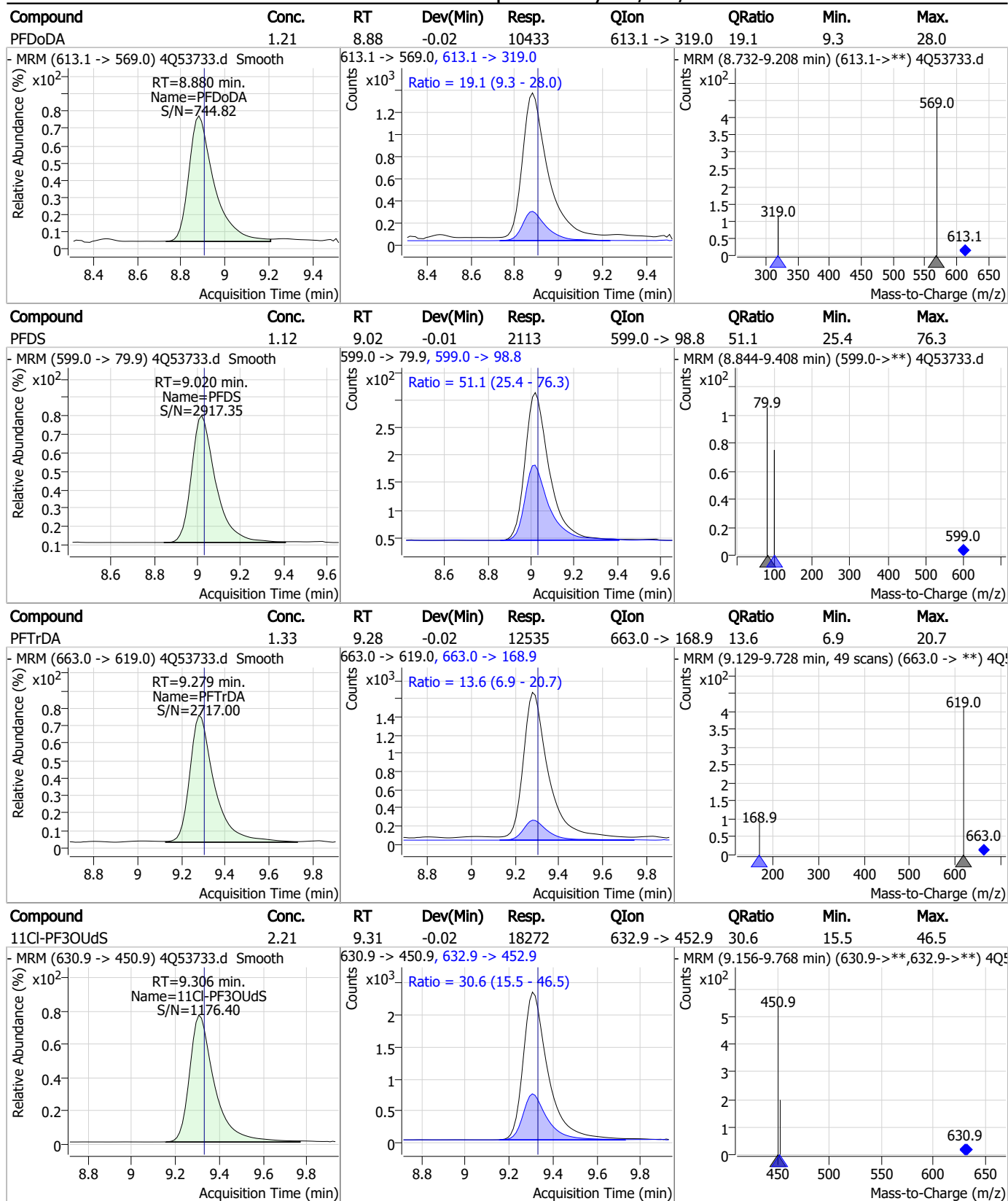
Perfluorinated Compounds by LC/MS/MS



7.7.4

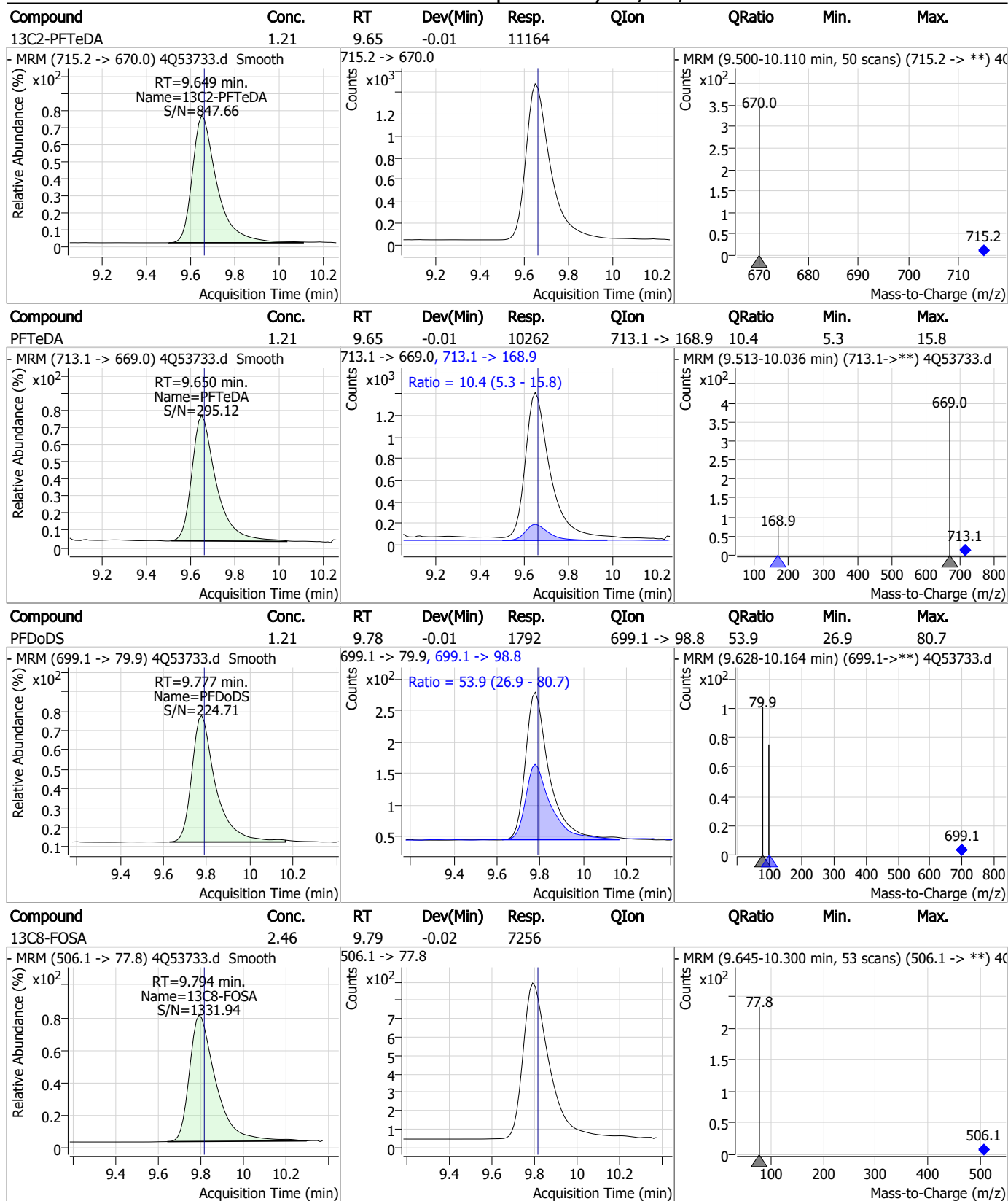
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Perfluorinated Compounds by LC/MS/MS



7.7.4
7

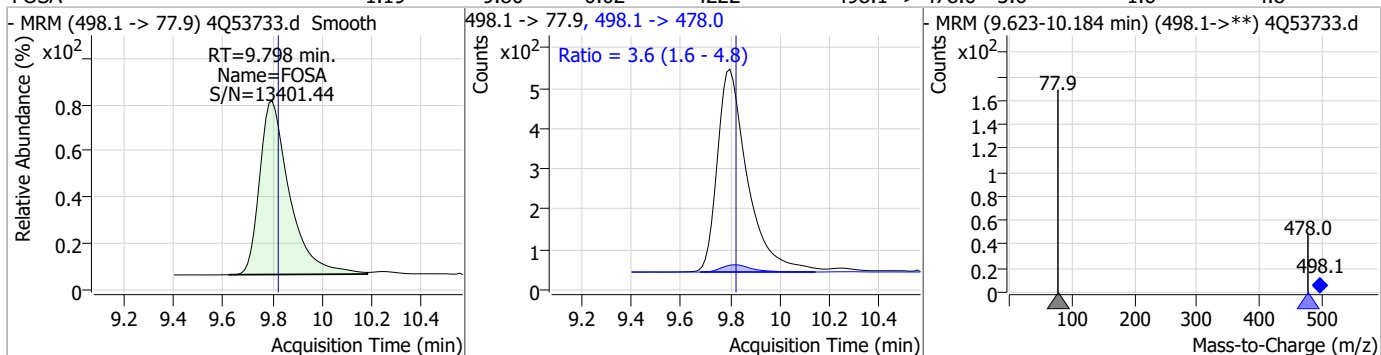
Perfluorinated Compounds by LC/MS/MS



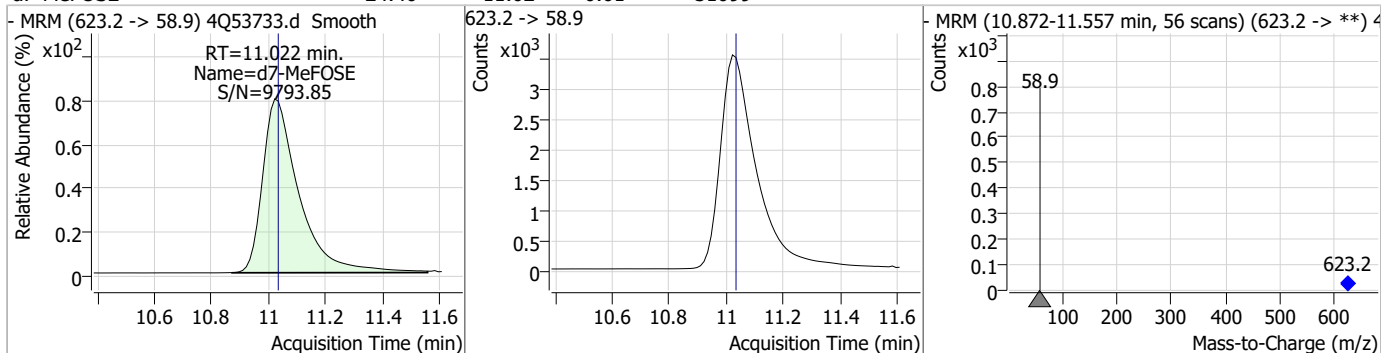
7.7.4
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Perfluorinated Compounds by LC/MS/MS

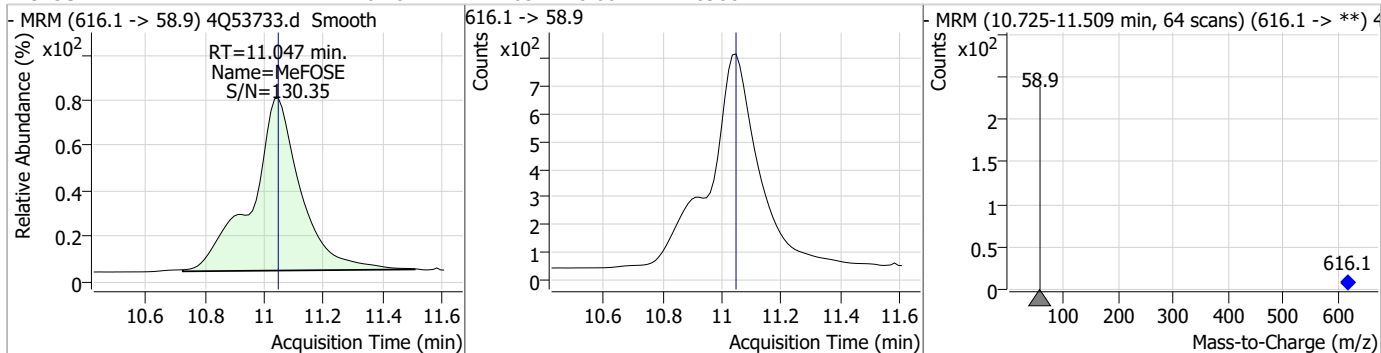
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	1.19	9.80	-0.02	4222	498.1 -> 478.0	3.6	1.6	4.8



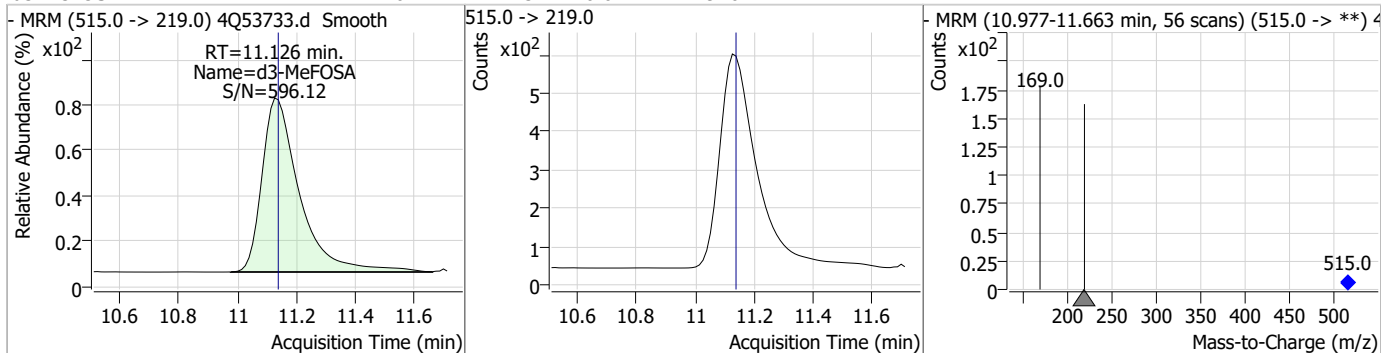
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.46	11.02	-0.01	31099				



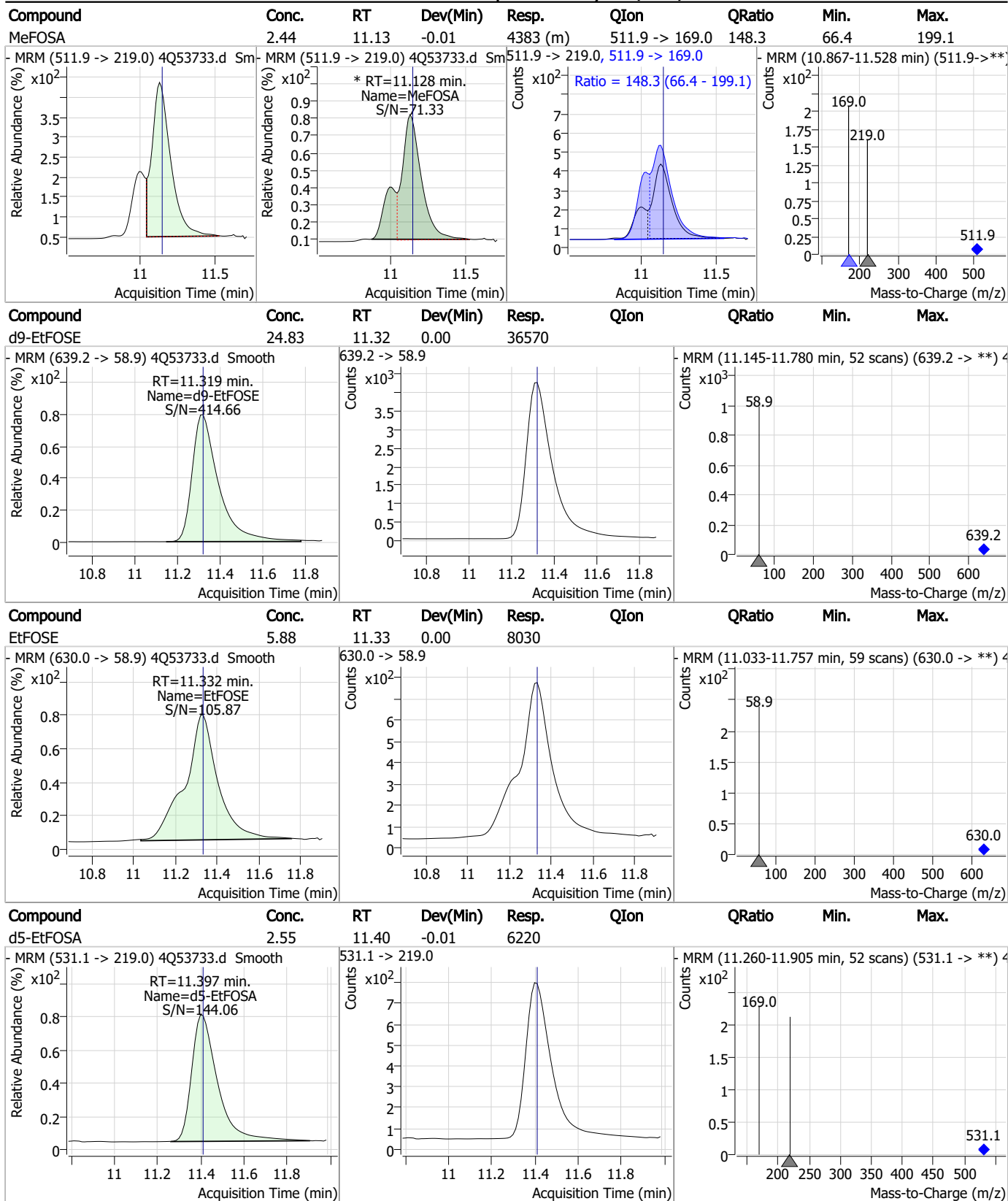
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	6.28	11.05	0.00	8900				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.40	11.13	-0.01	4946				

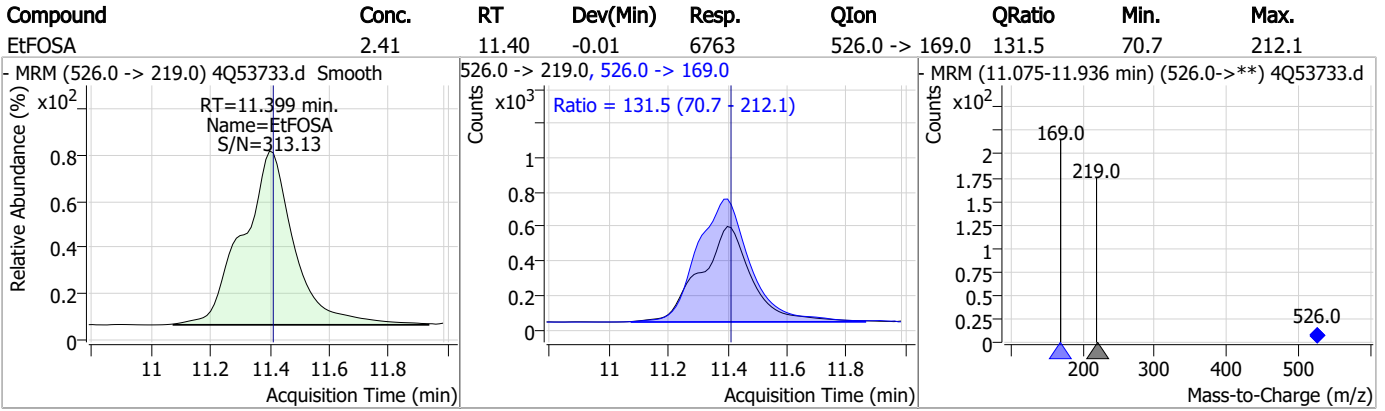


Perfluorinated Compounds by LC/MS/MS



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			
11CI-PF3OUdS	9.331	630.9 -> 450.9	37472	4.97	µg/L	100
		632.9 -> 452.9	11614			
9CI-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

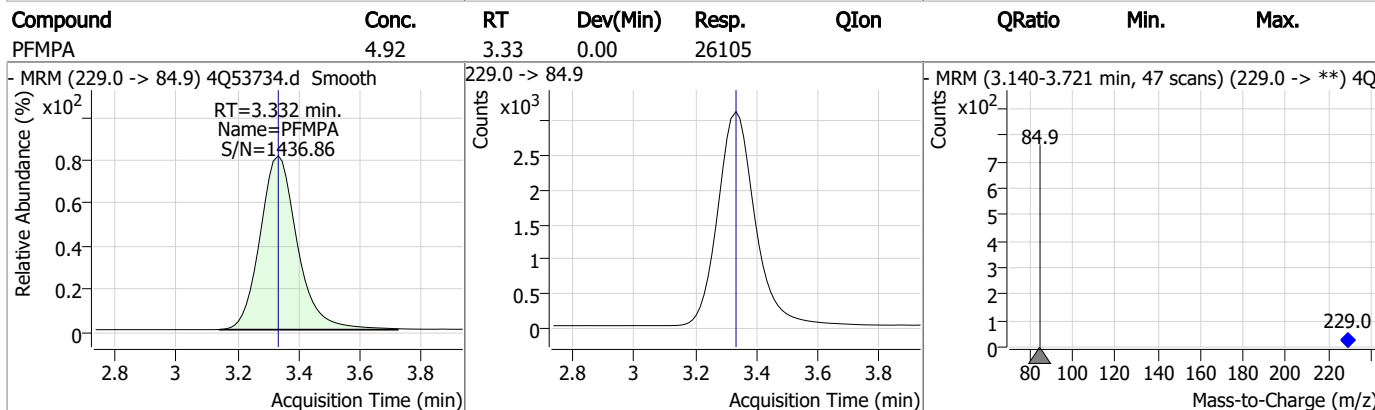
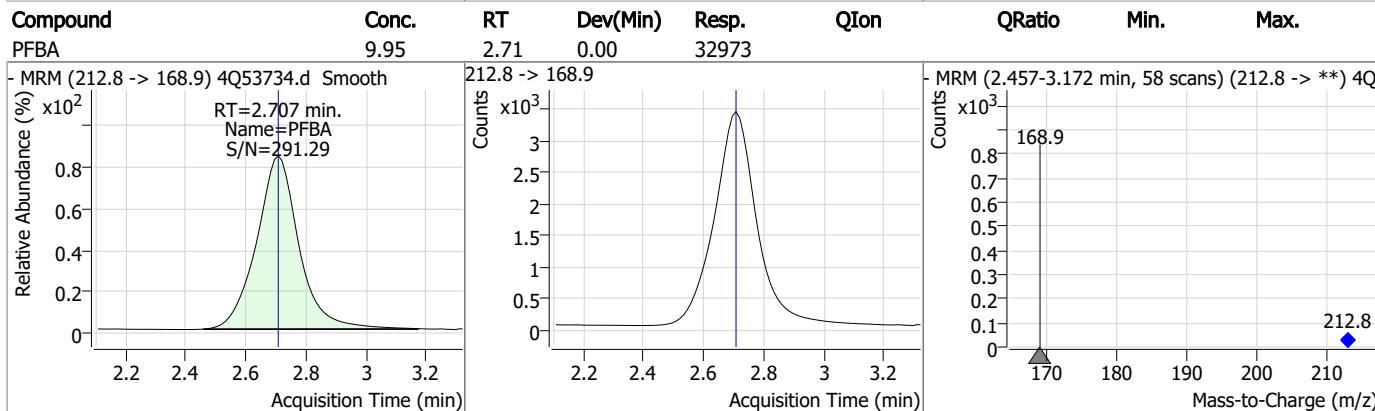
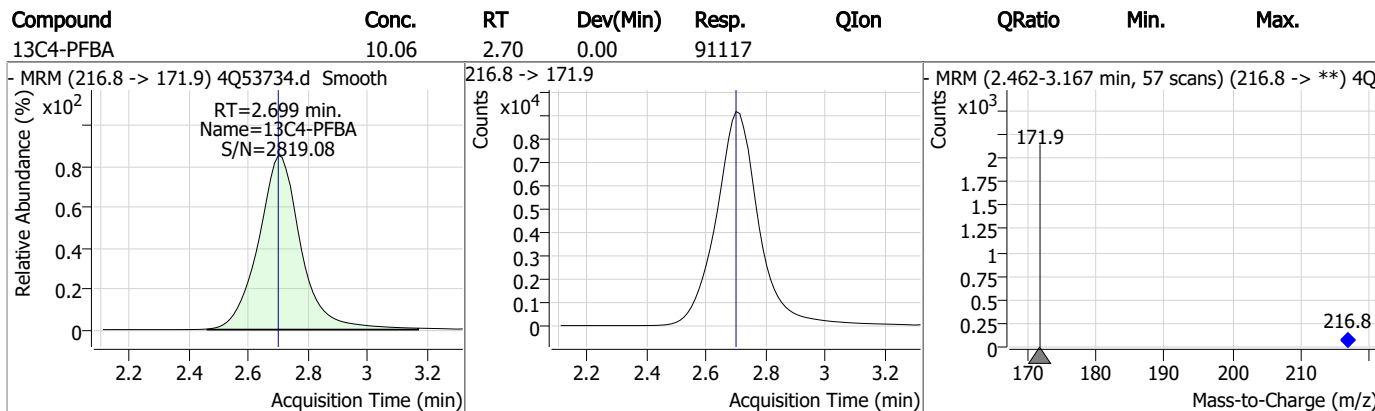
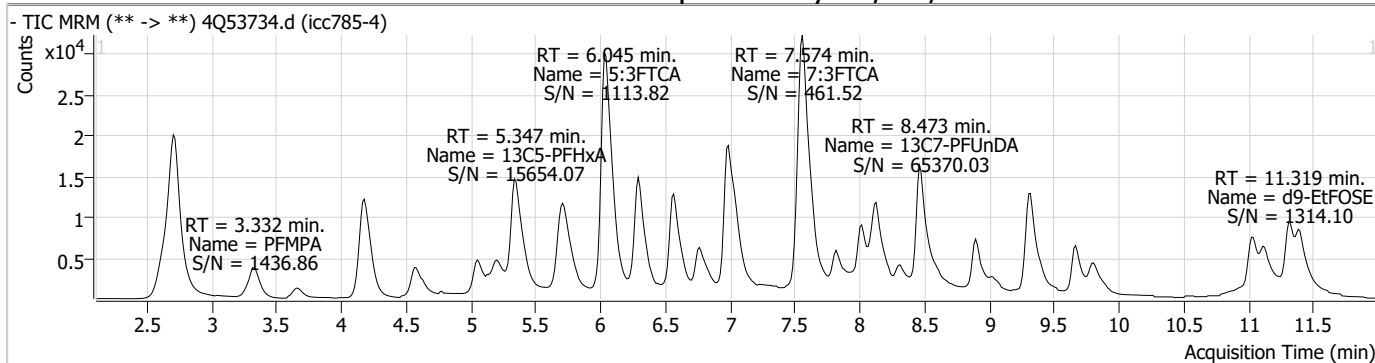
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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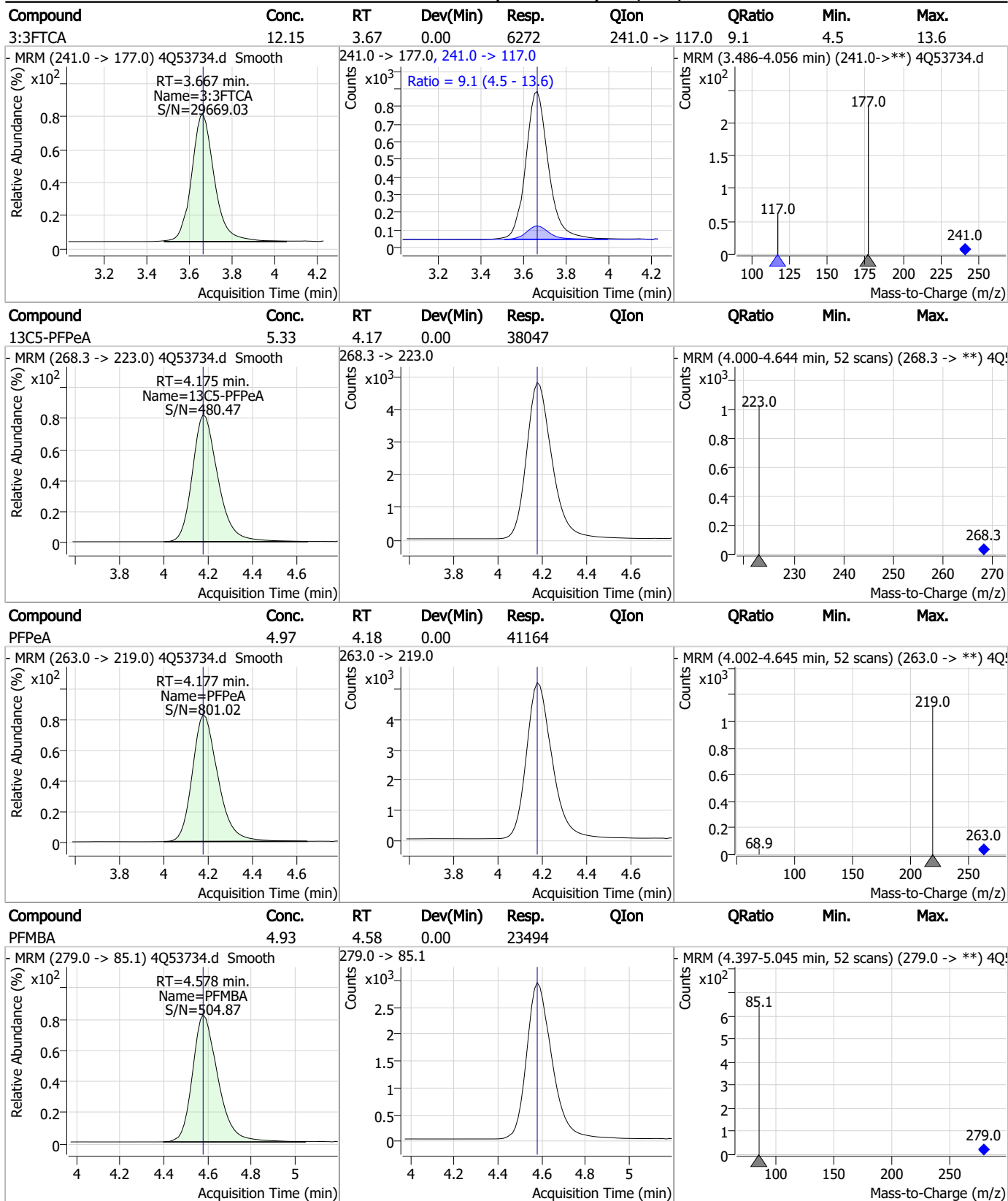
7.7.5
7



Perfluorinated Compounds by LC/MS/MS

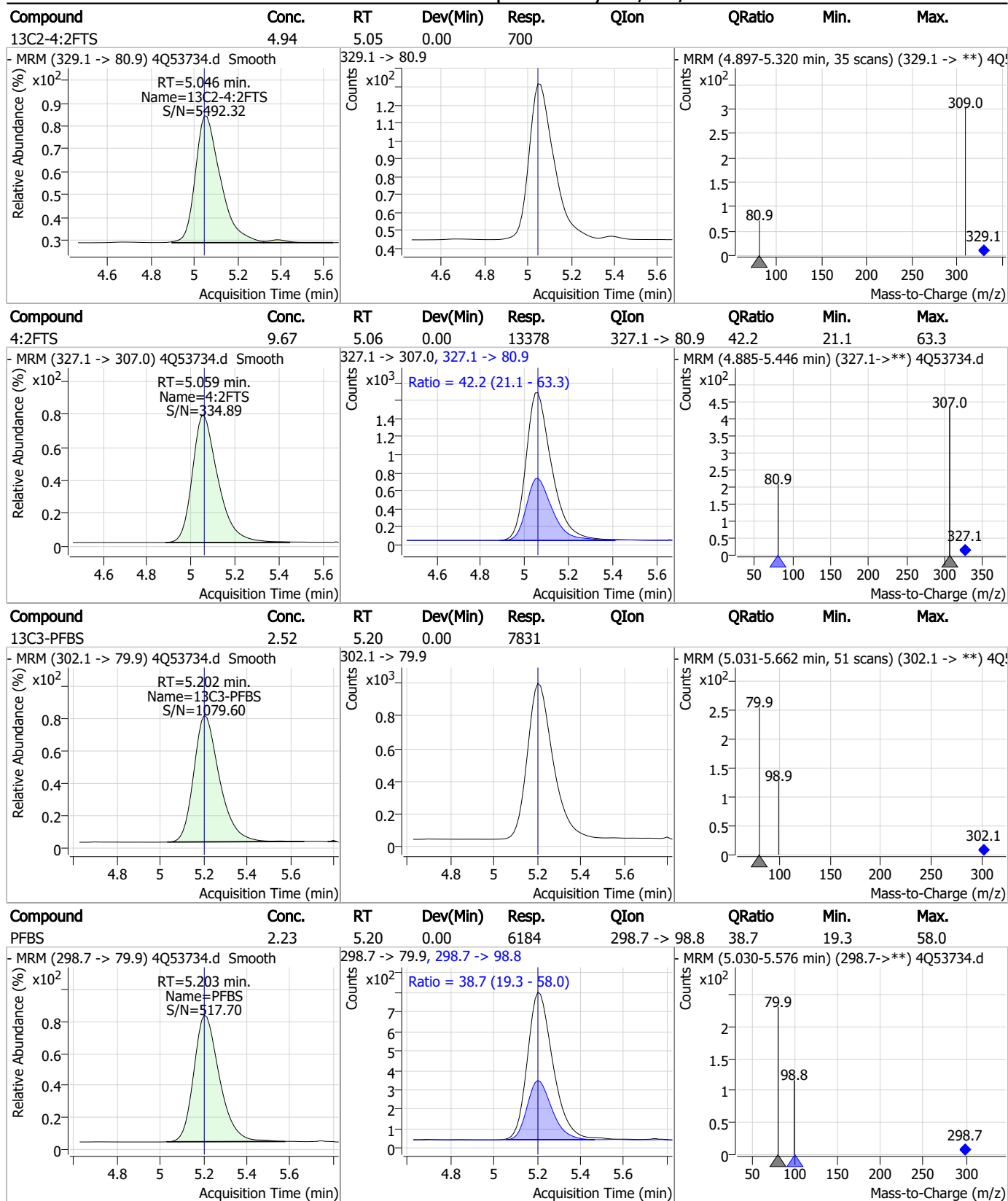


Perfluorinated Compounds by LC/MS/MS

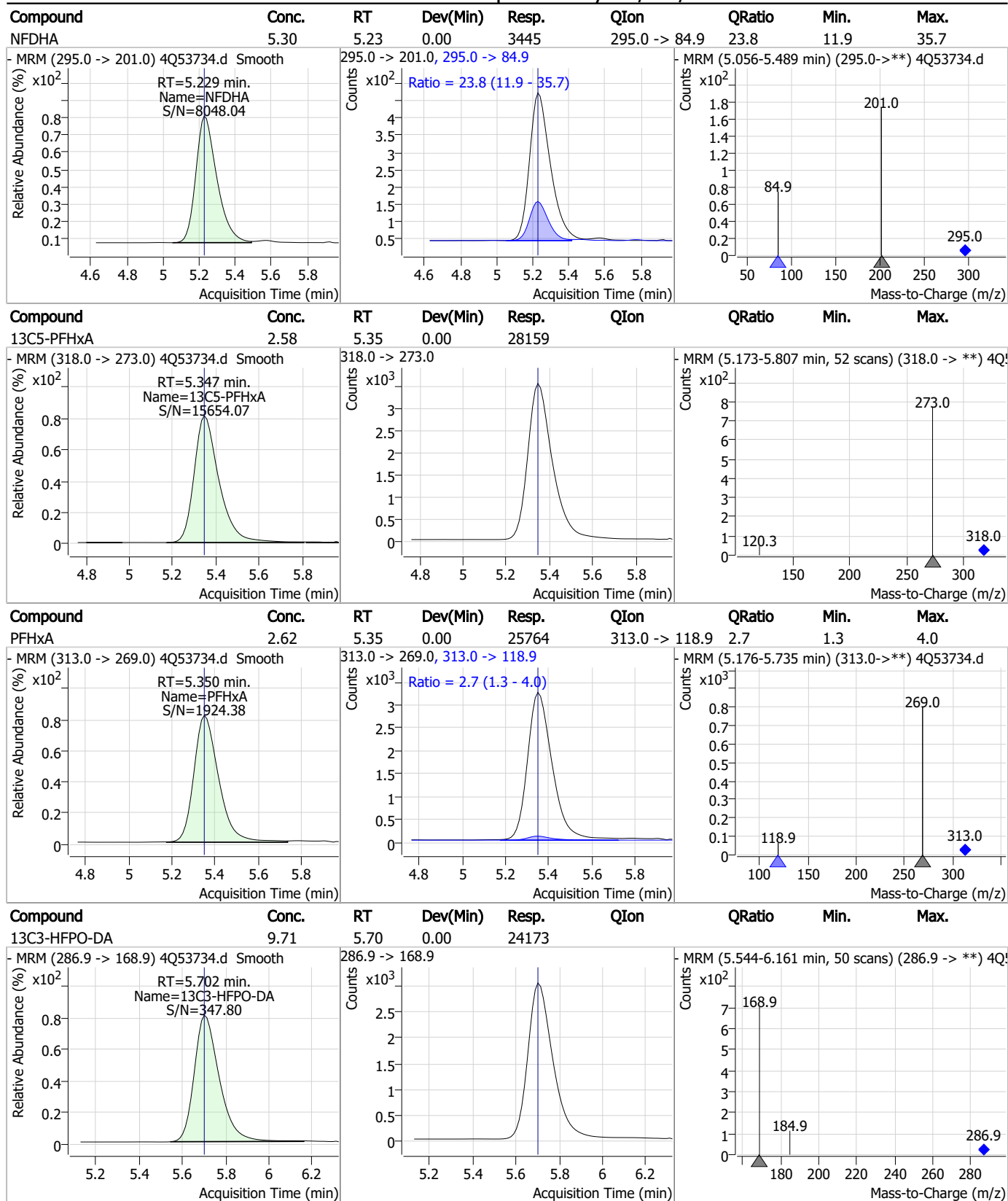


7.7.5
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Perfluorinated Compounds by LC/MS/MS

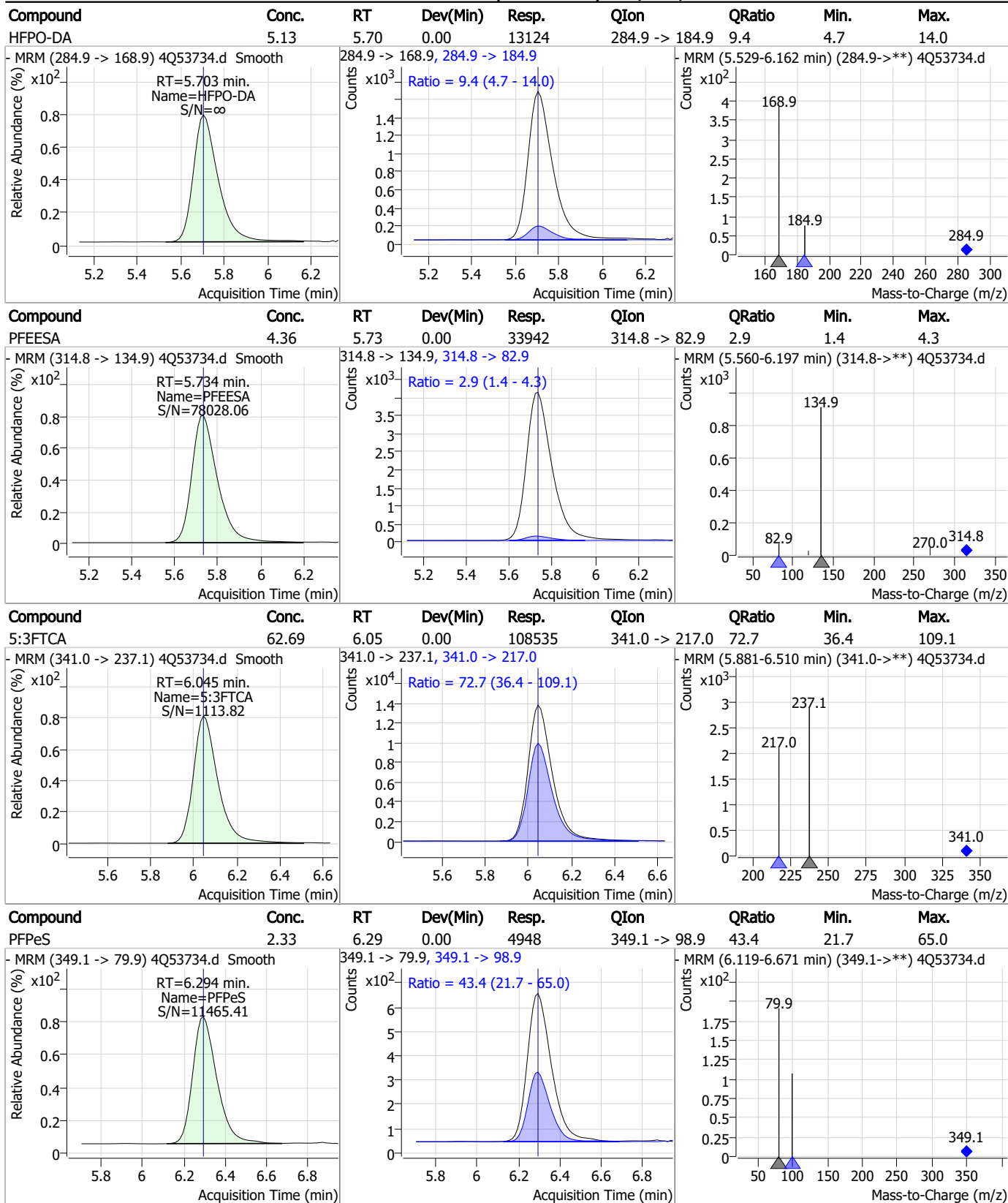


Perfluorinated Compounds by LC/MS/MS



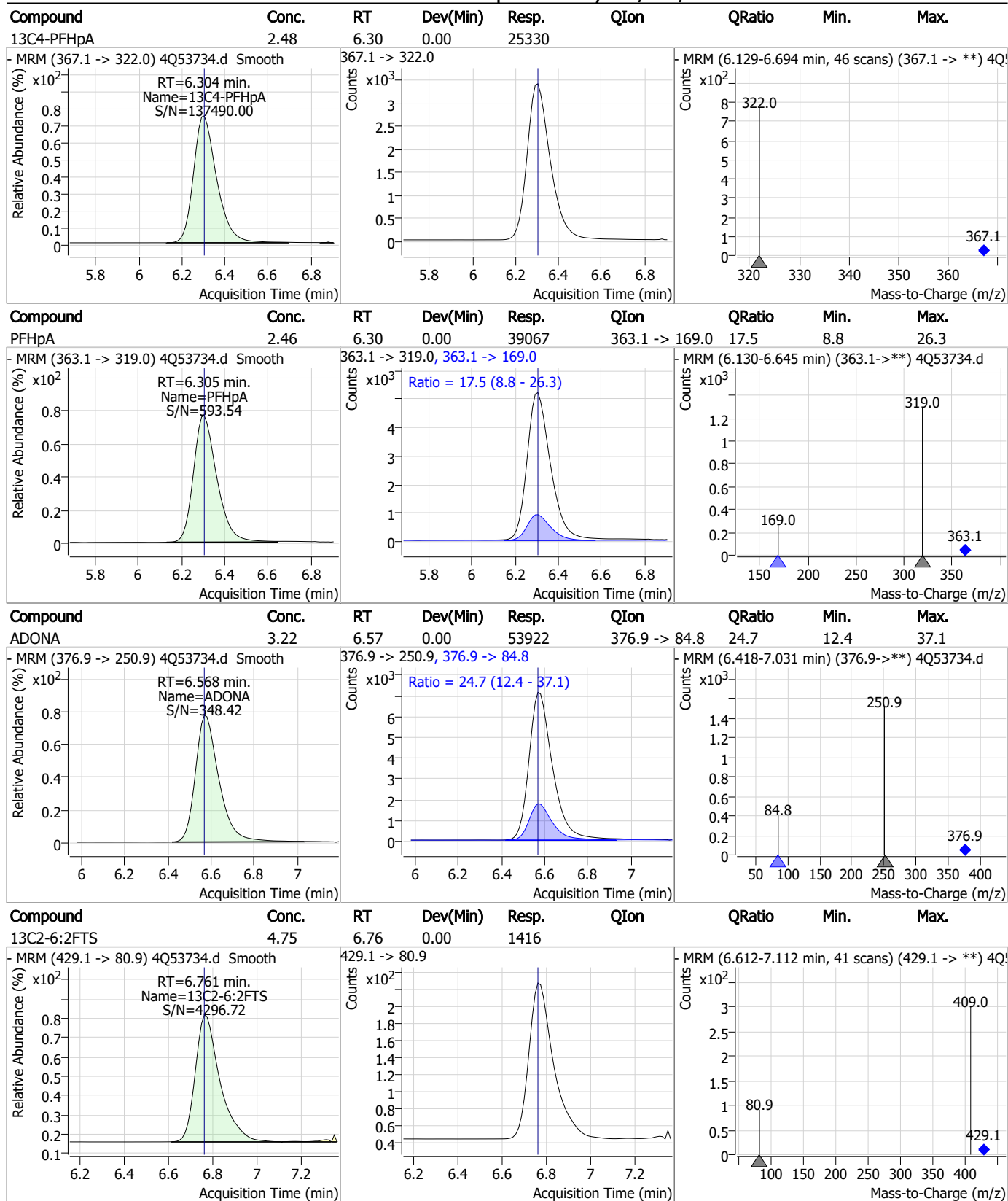
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Perfluorinated Compounds by LC/MS/MS



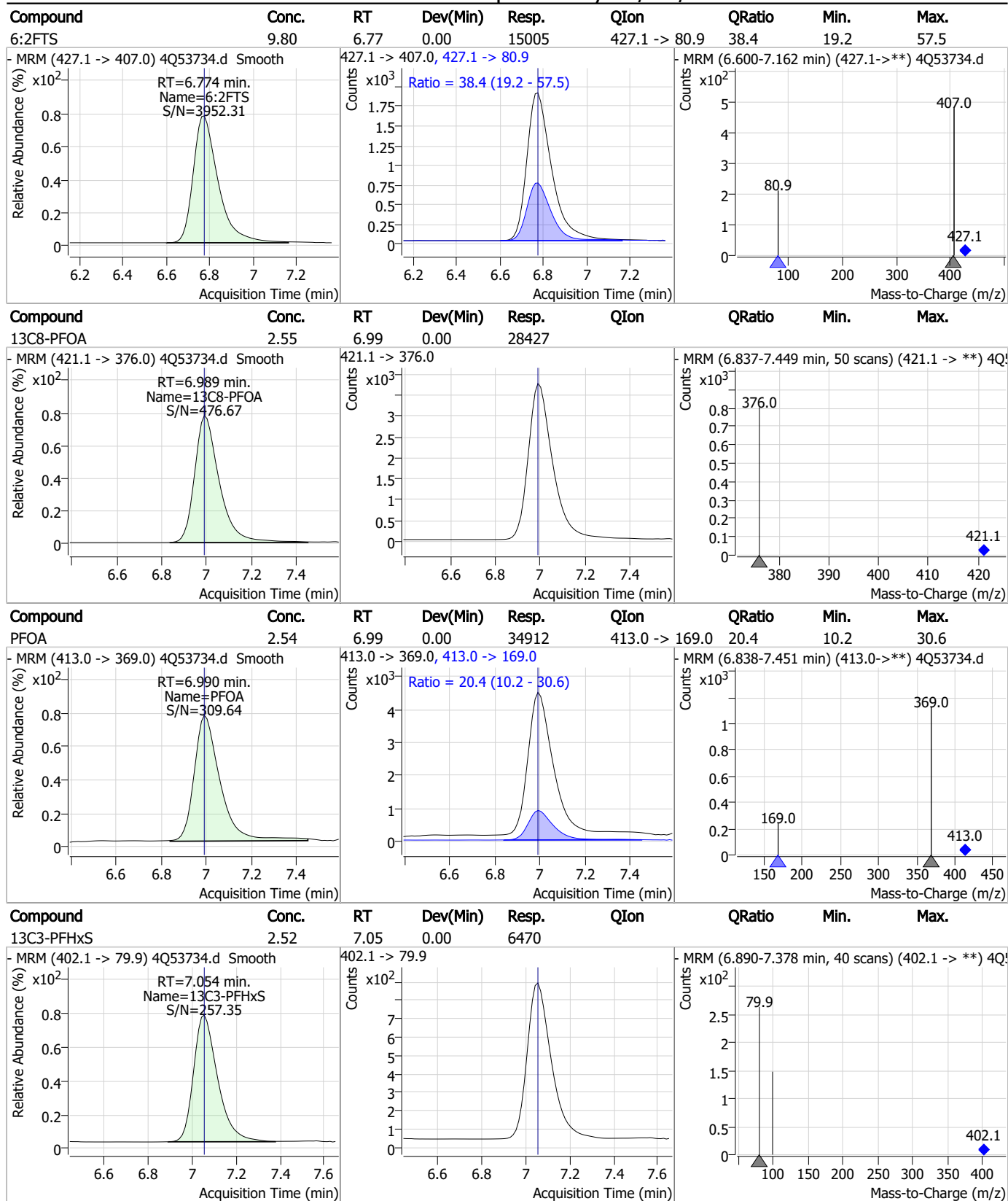
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Perfluorinated Compounds by LC/MS/MS



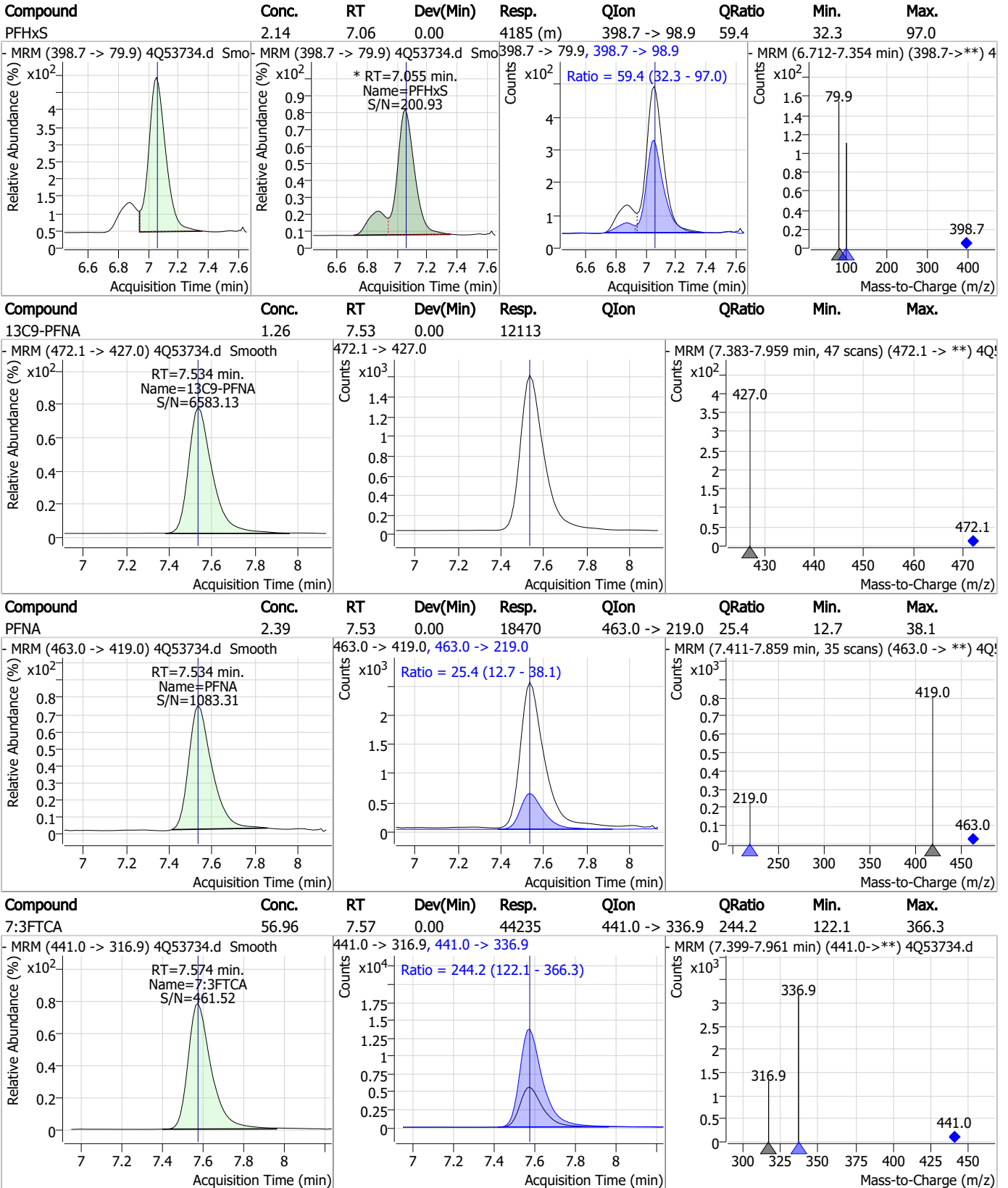
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Perfluorinated Compounds by LC/MS/MS

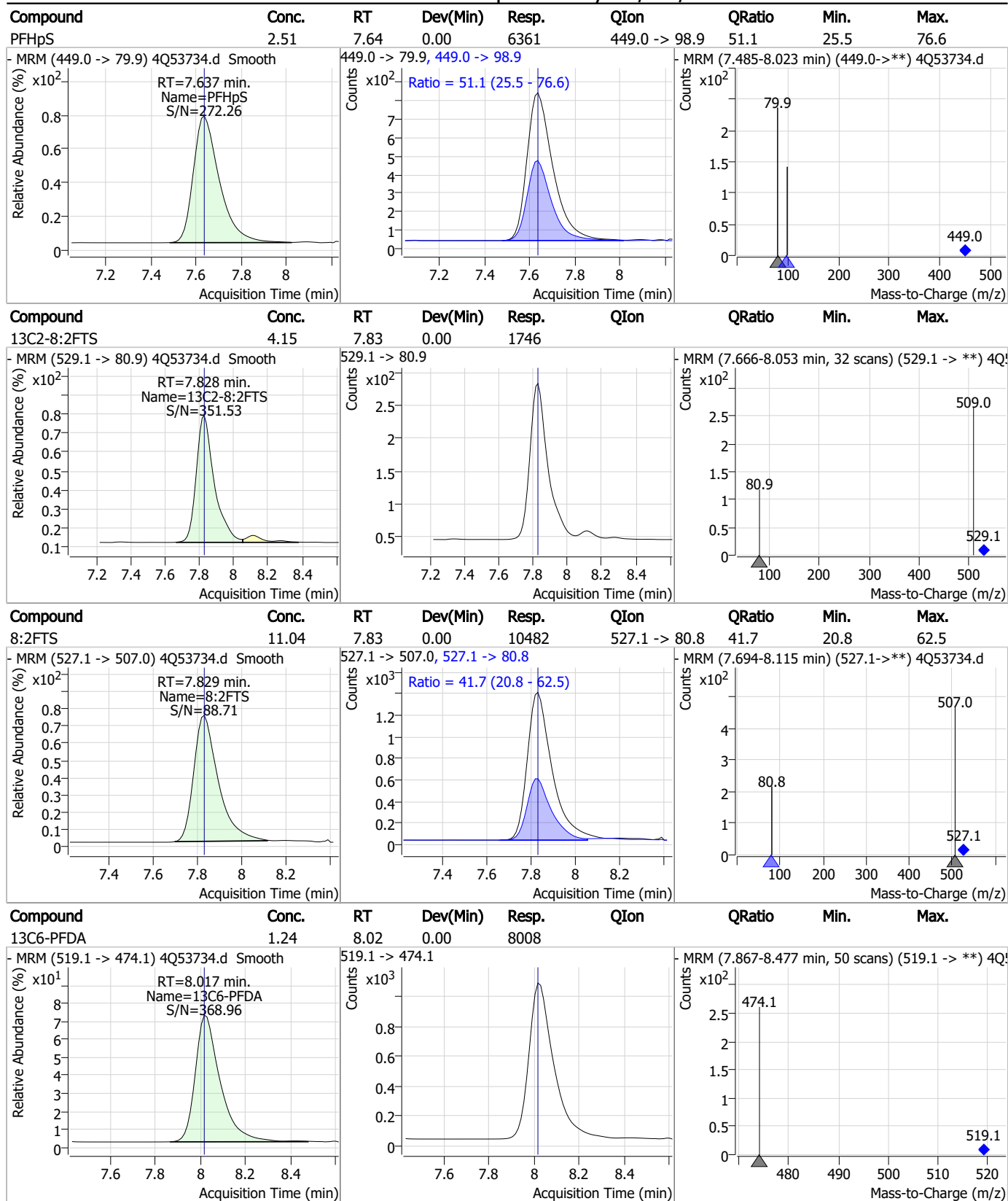


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Perfluorinated Compounds by LC/MS/MS

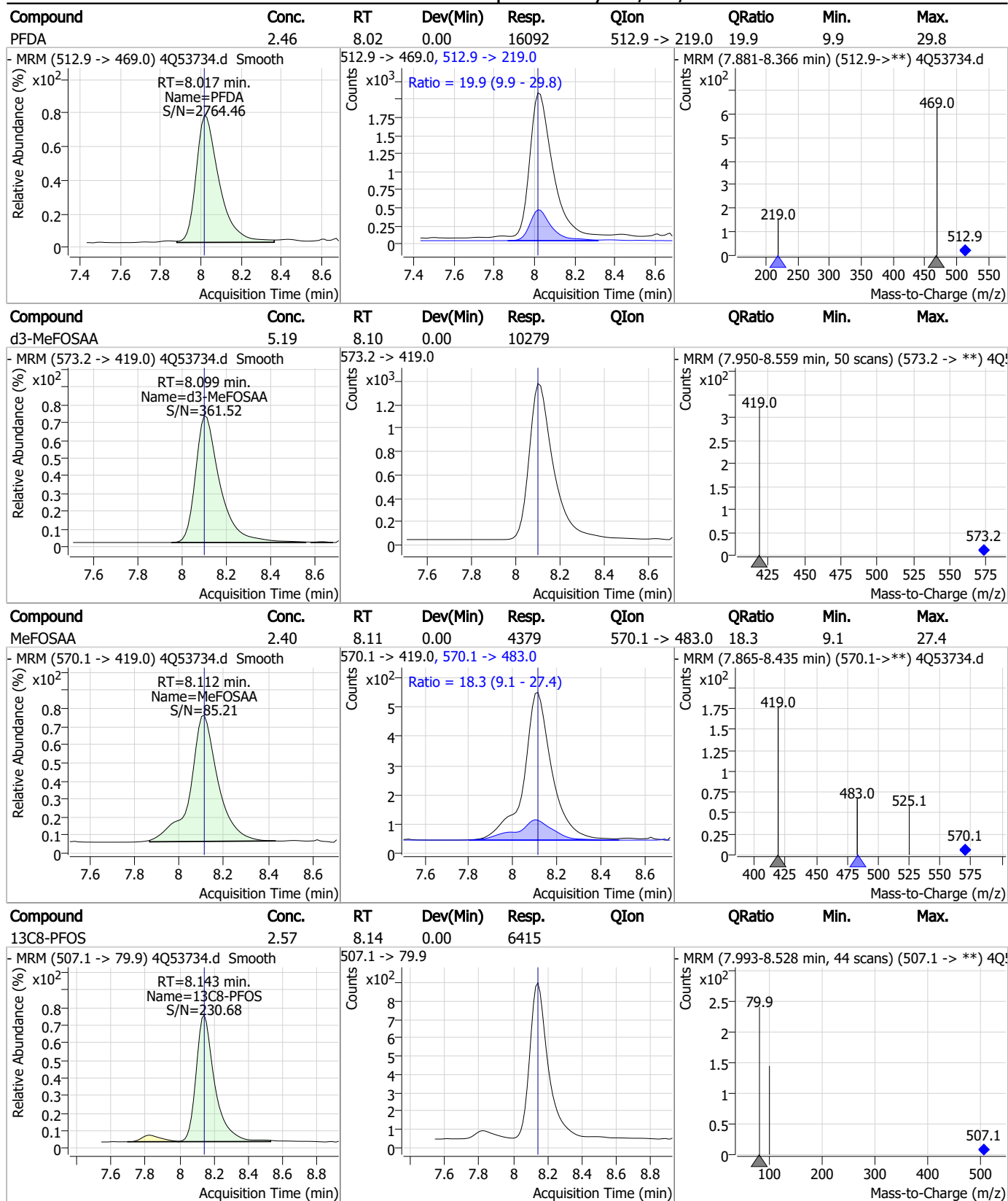


Perfluorinated Compounds by LC/MS/MS



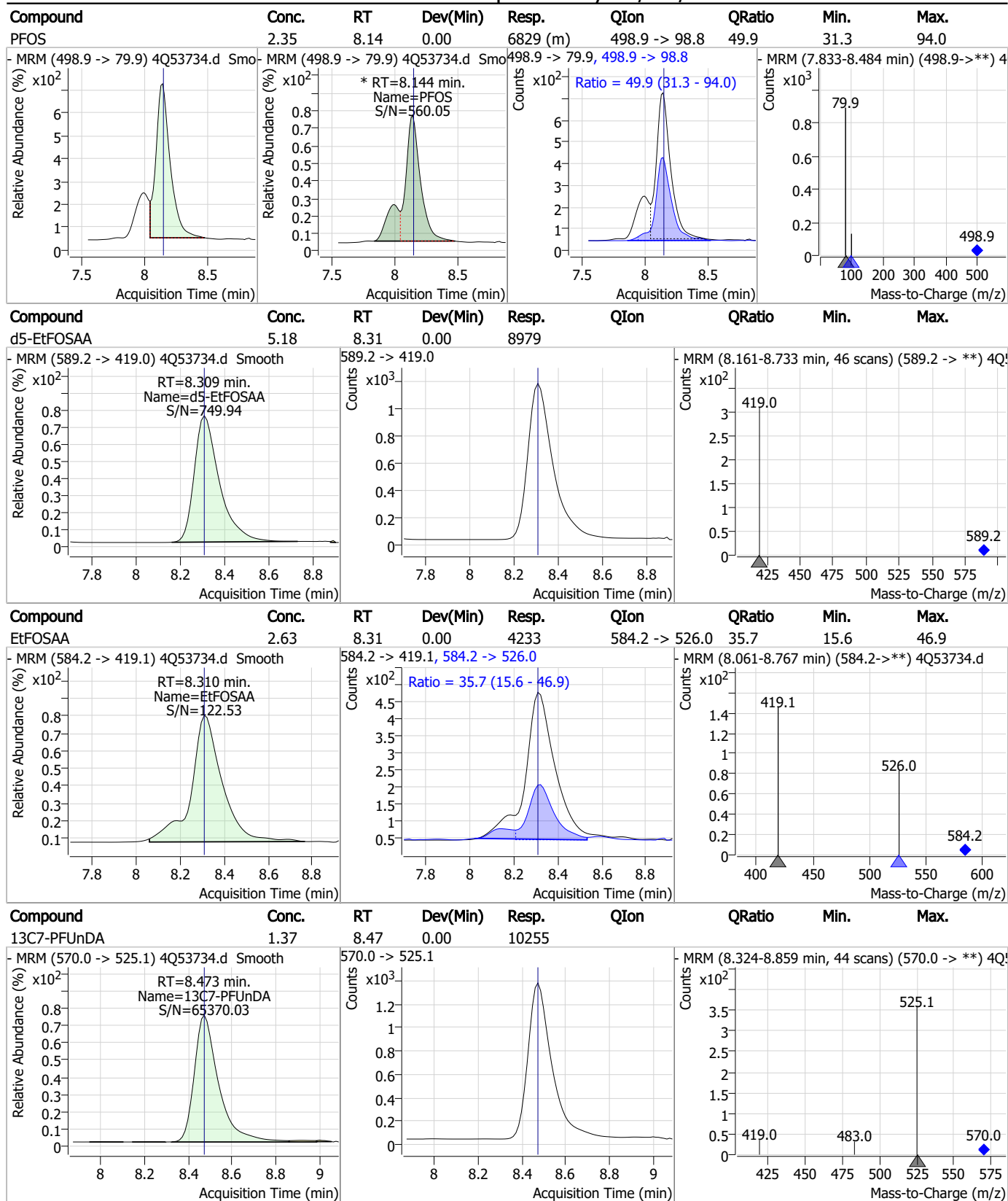
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Perfluorinated Compounds by LC/MS/MS



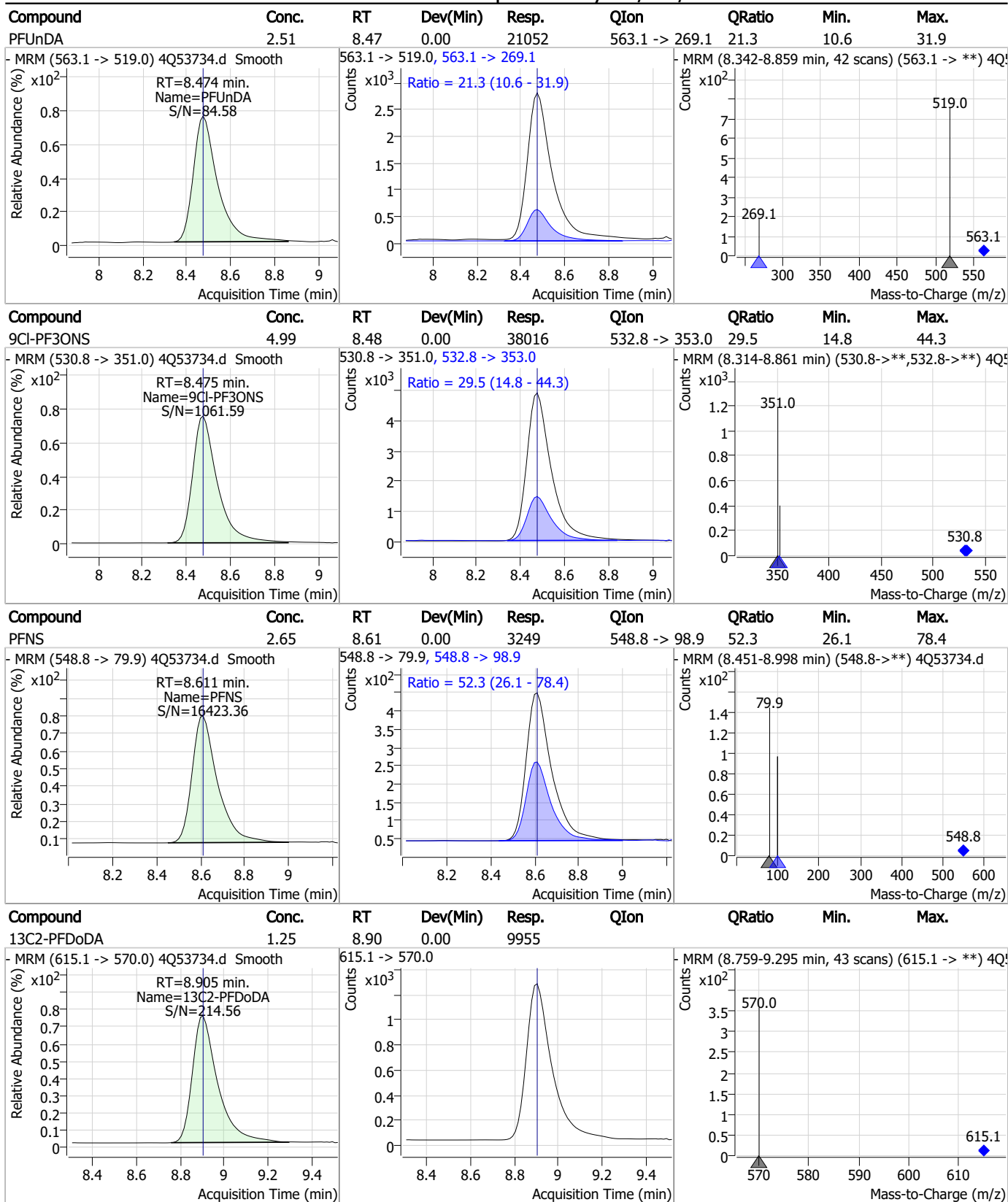
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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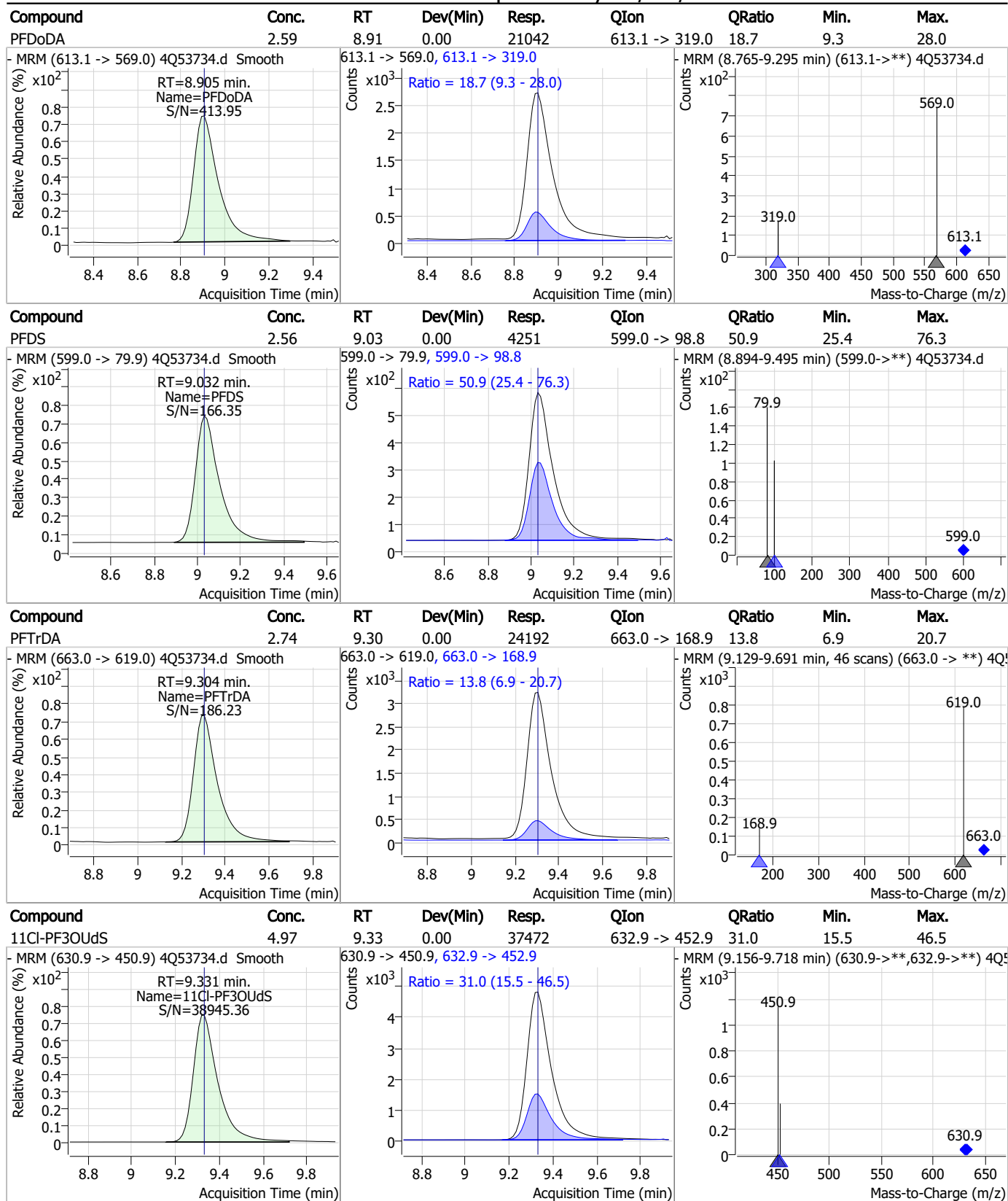
Perfluorinated Compounds by LC/MS/MS



7.7.5

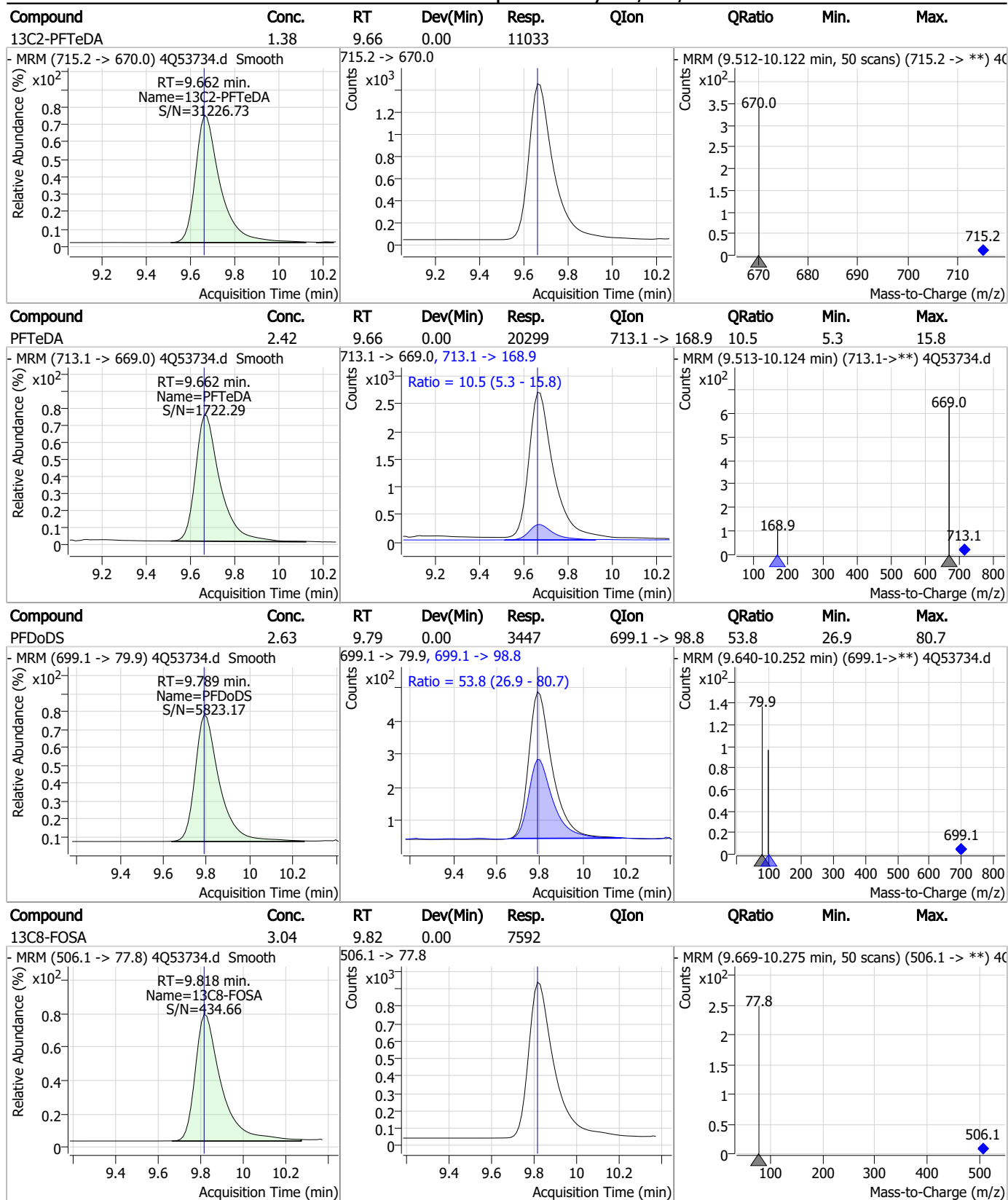
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Perfluorinated Compounds by LC/MS/MS



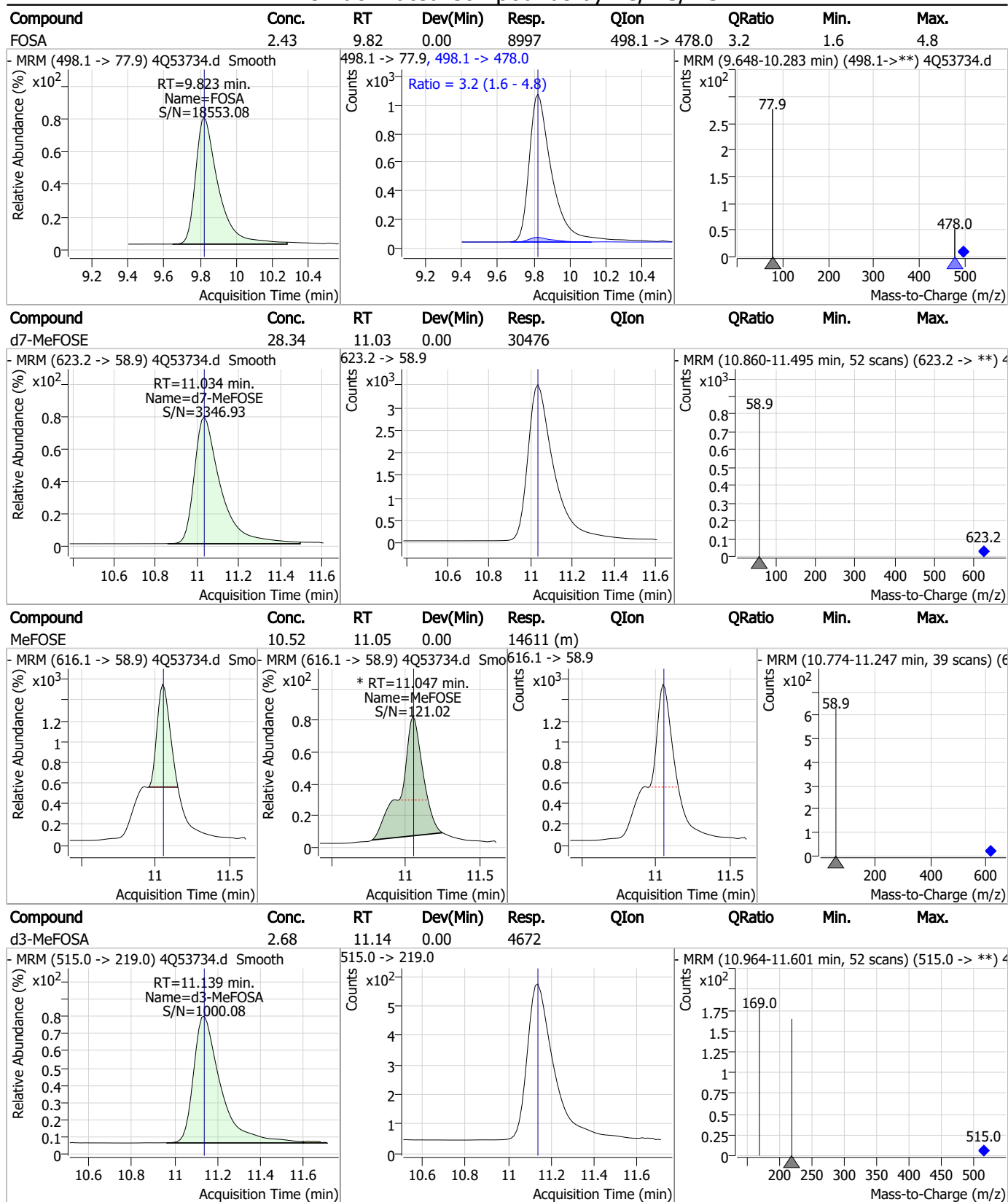
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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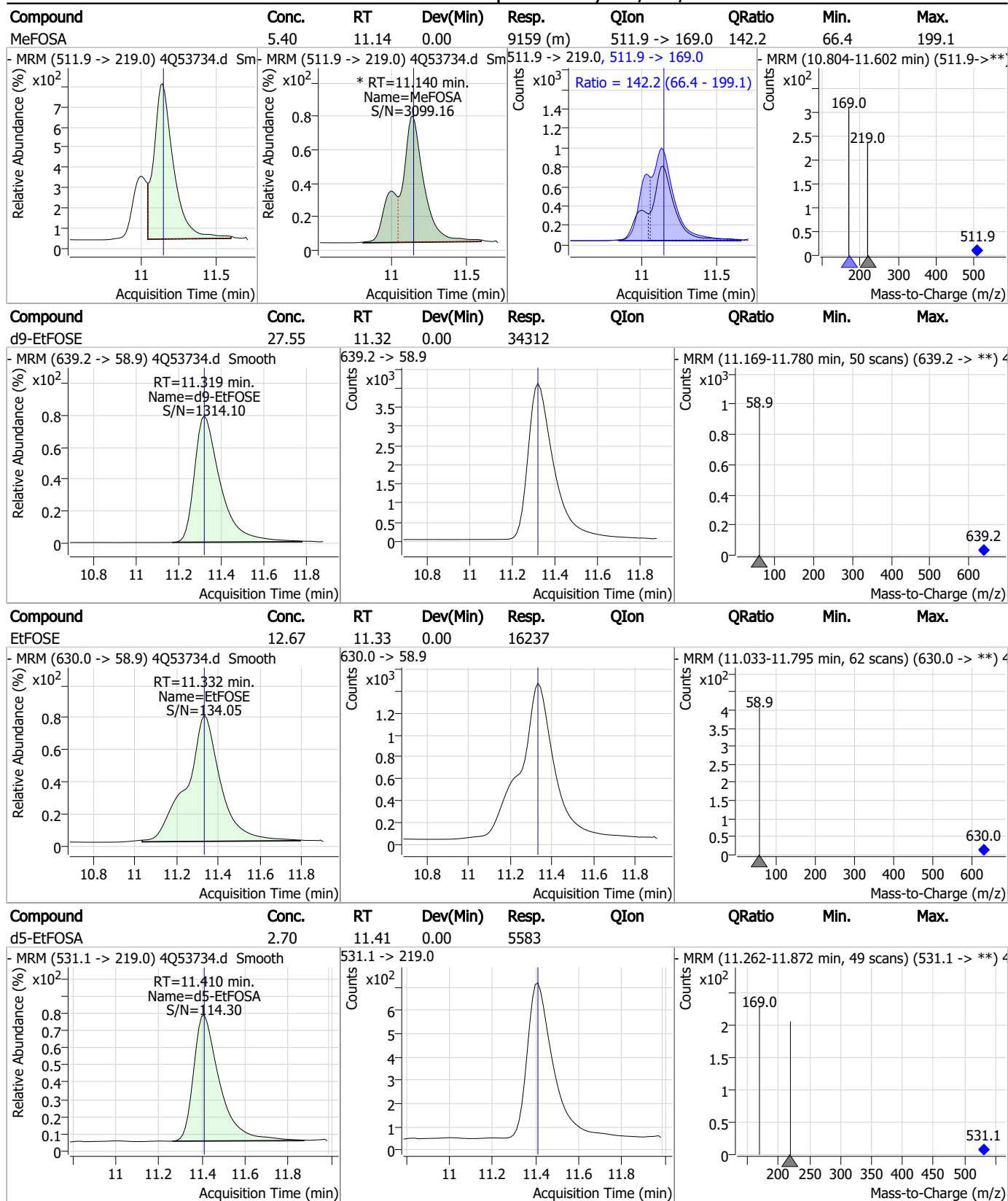
Perfluorinated Compounds by LC/MS/MS



7.7.5

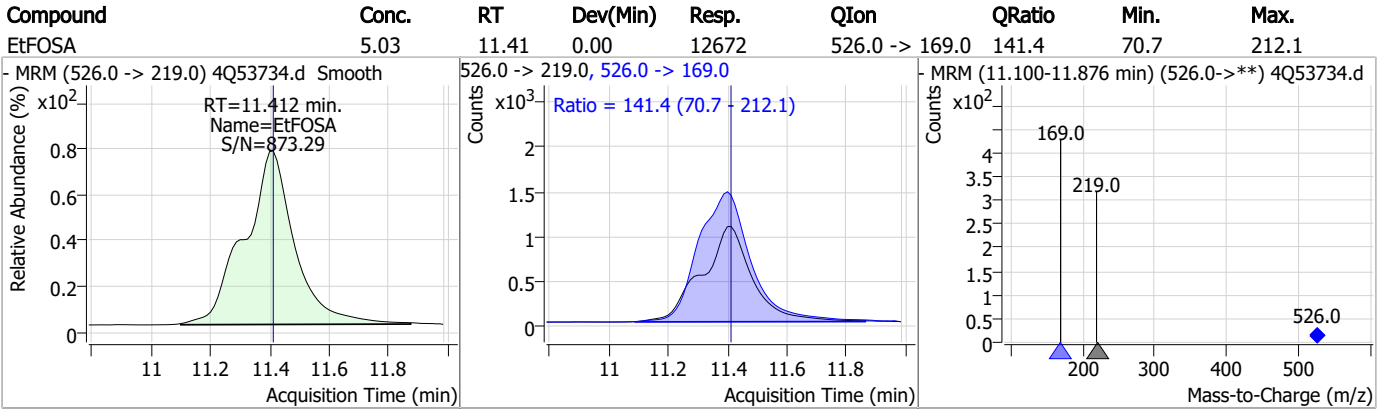
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Perfluorinated Compounds by LC/MS/MS



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 Guntie

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
MeFOSA	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

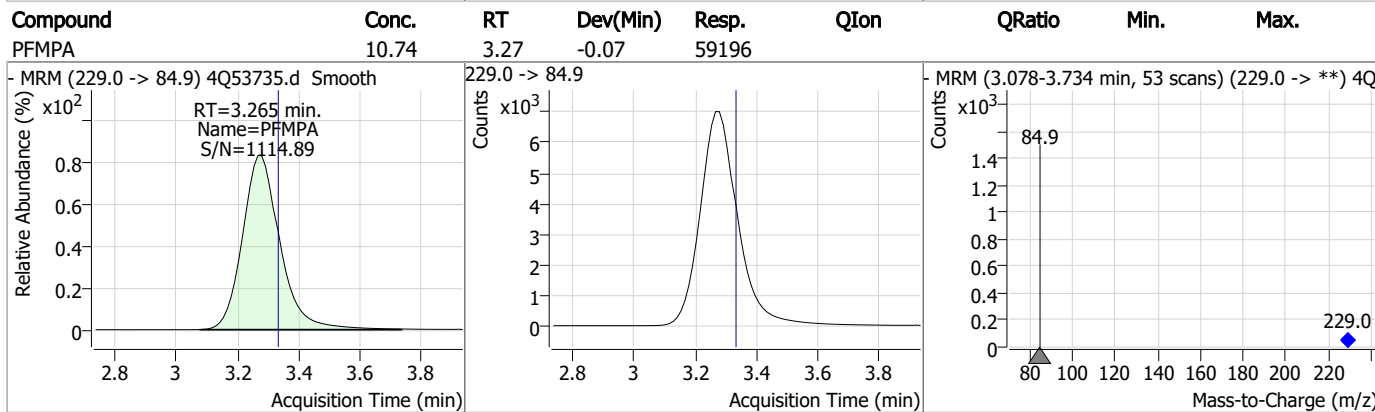
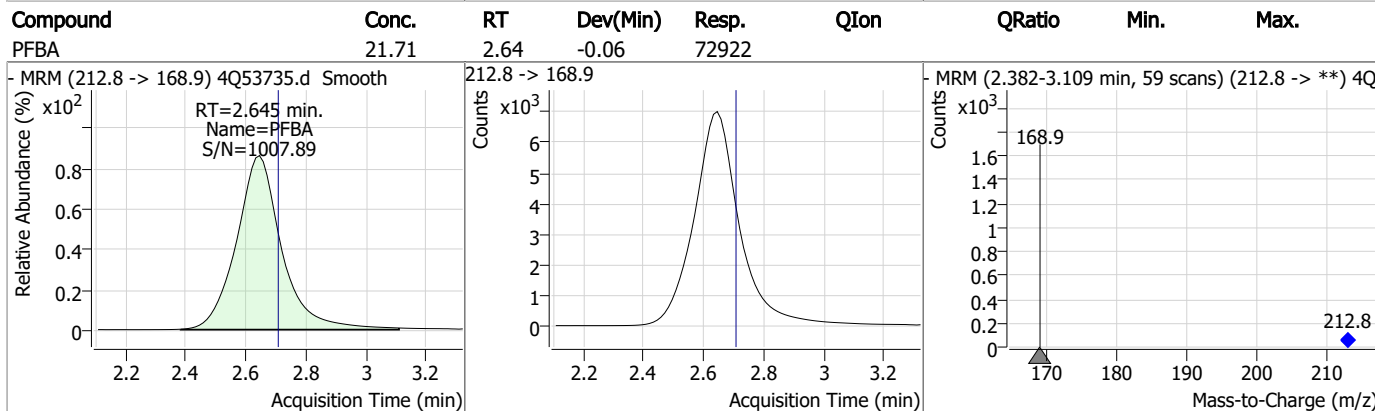
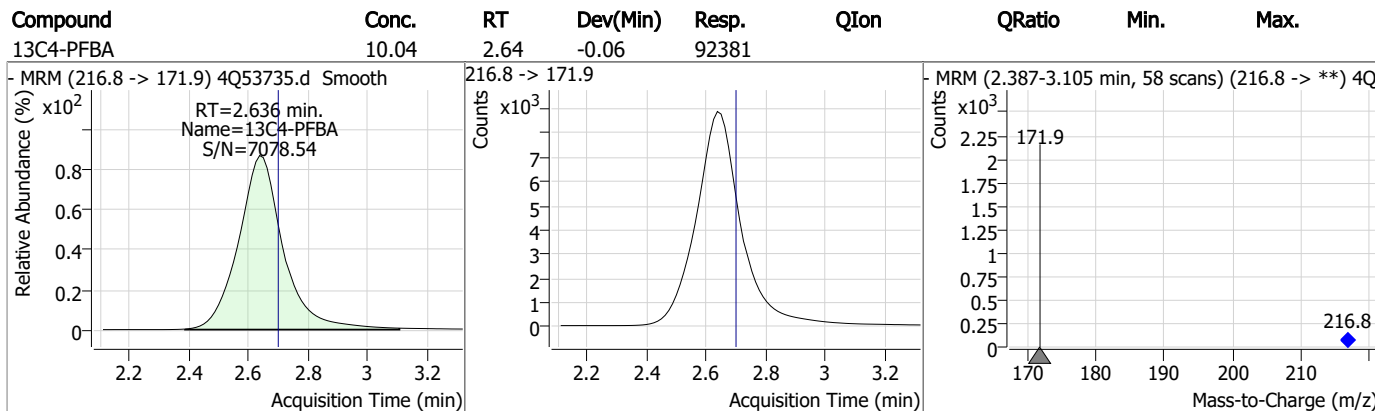
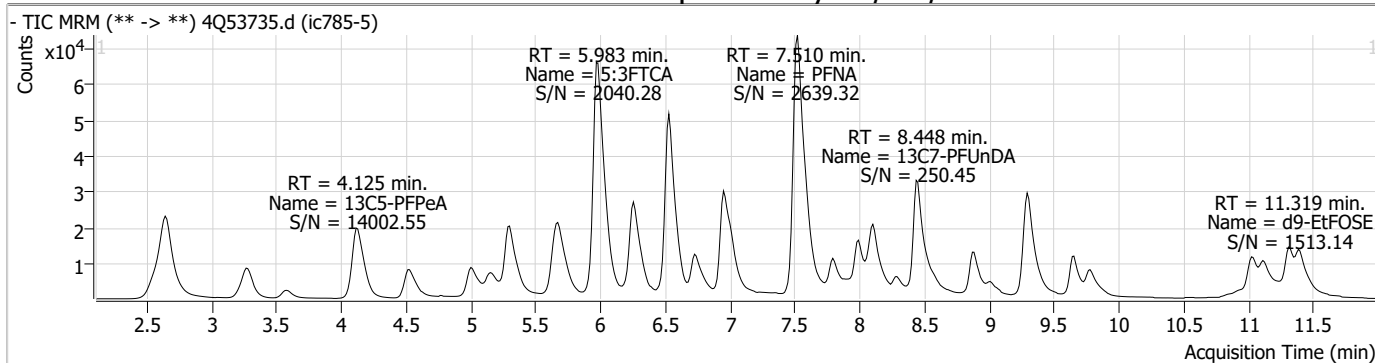
Perfluorinated Compounds by LC/MS/MS

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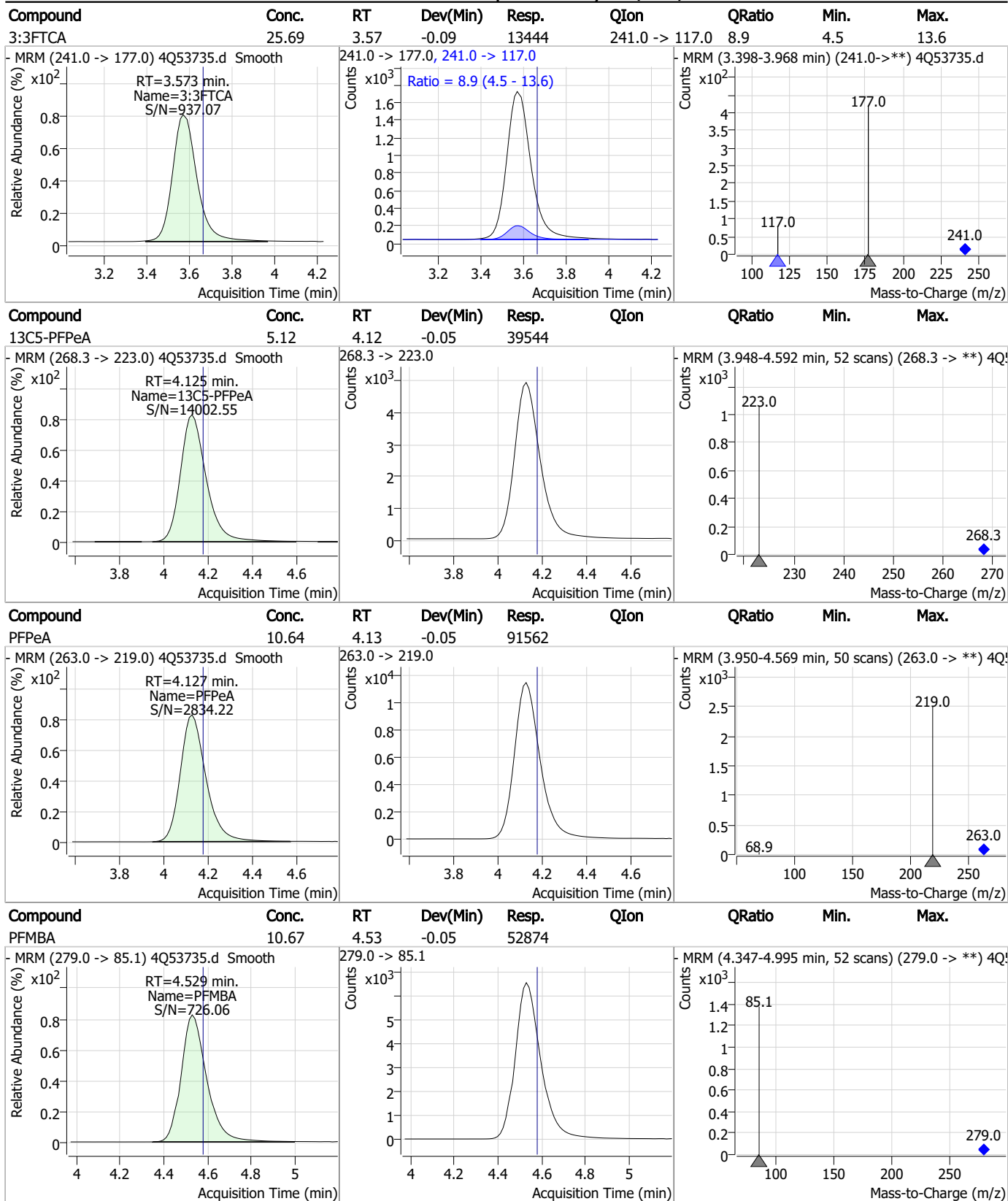
7.7.6

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Perfluorinated Compounds by LC/MS/MS

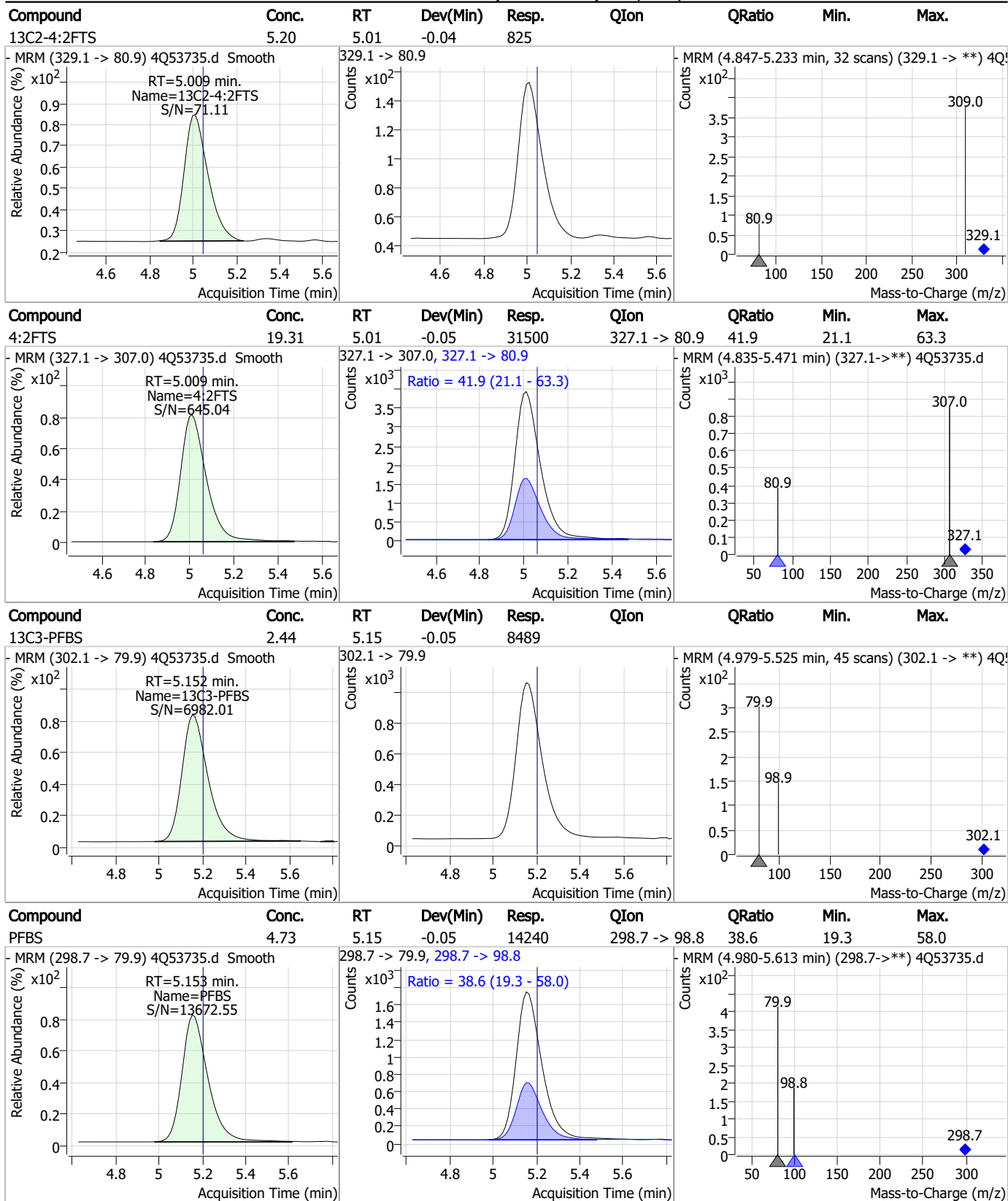


Perfluorinated Compounds by LC/MS/MS



7.7.6
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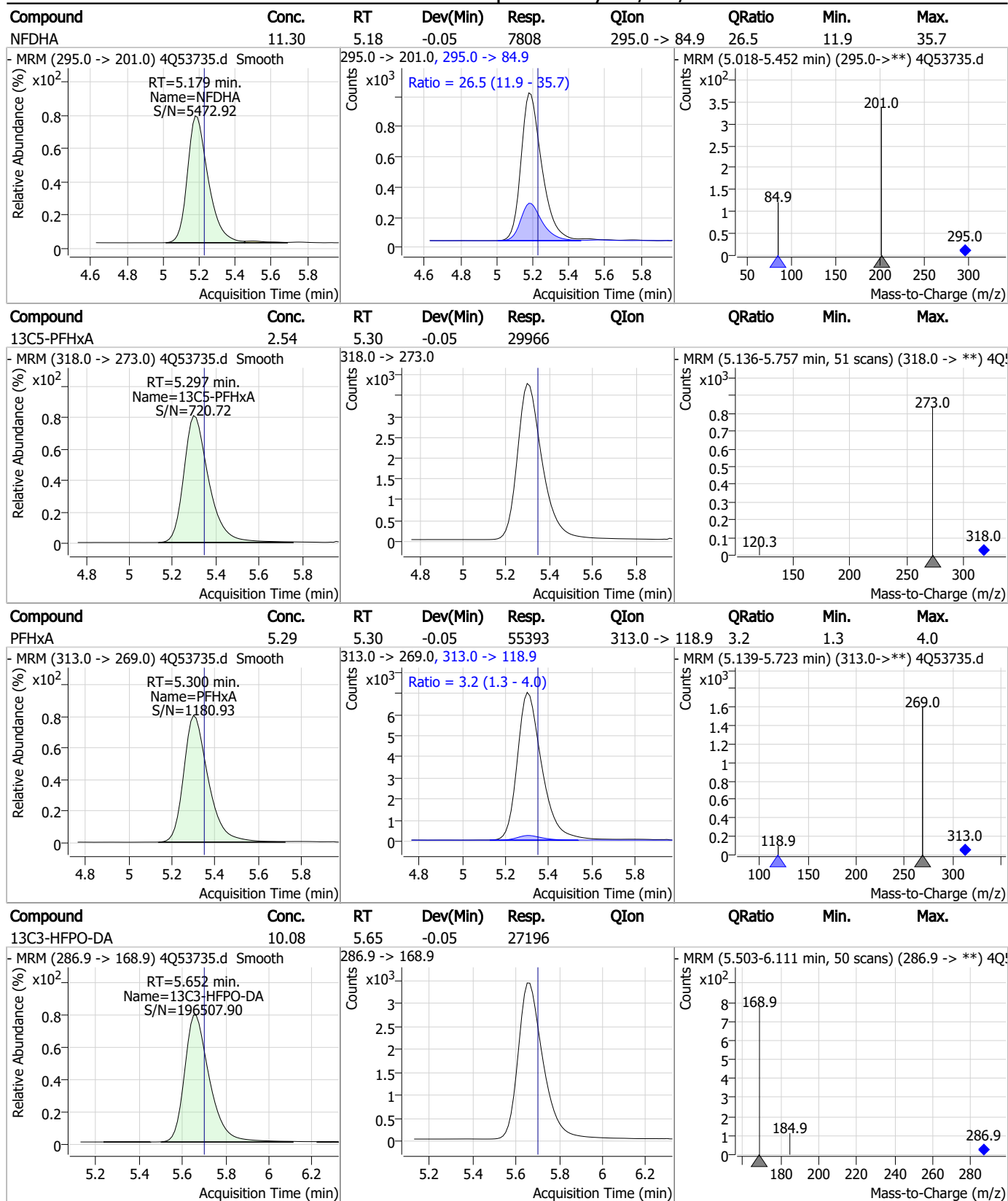
Perfluorinated Compounds by LC/MS/MS



7.7.6

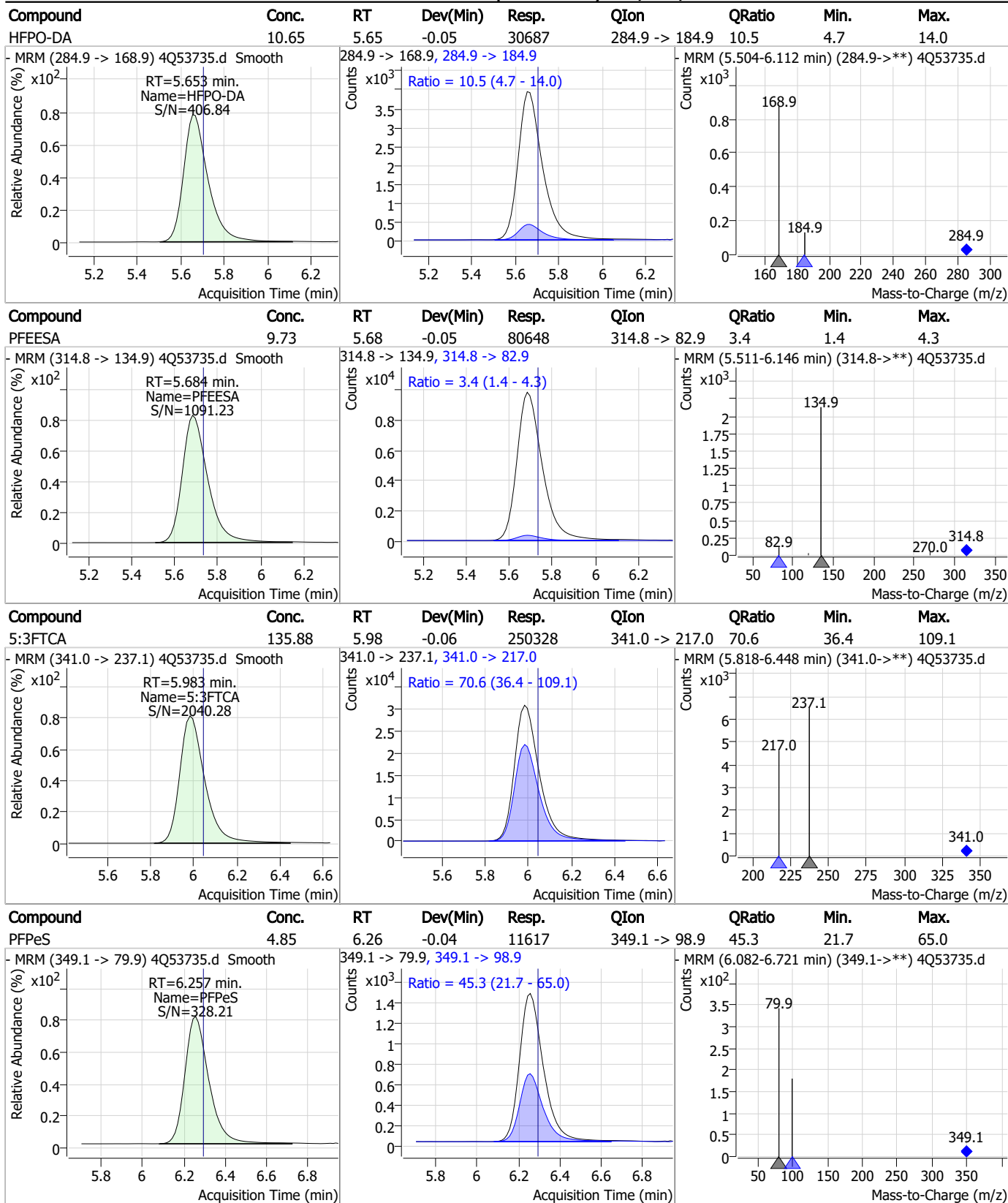
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Perfluorinated Compounds by LC/MS/MS



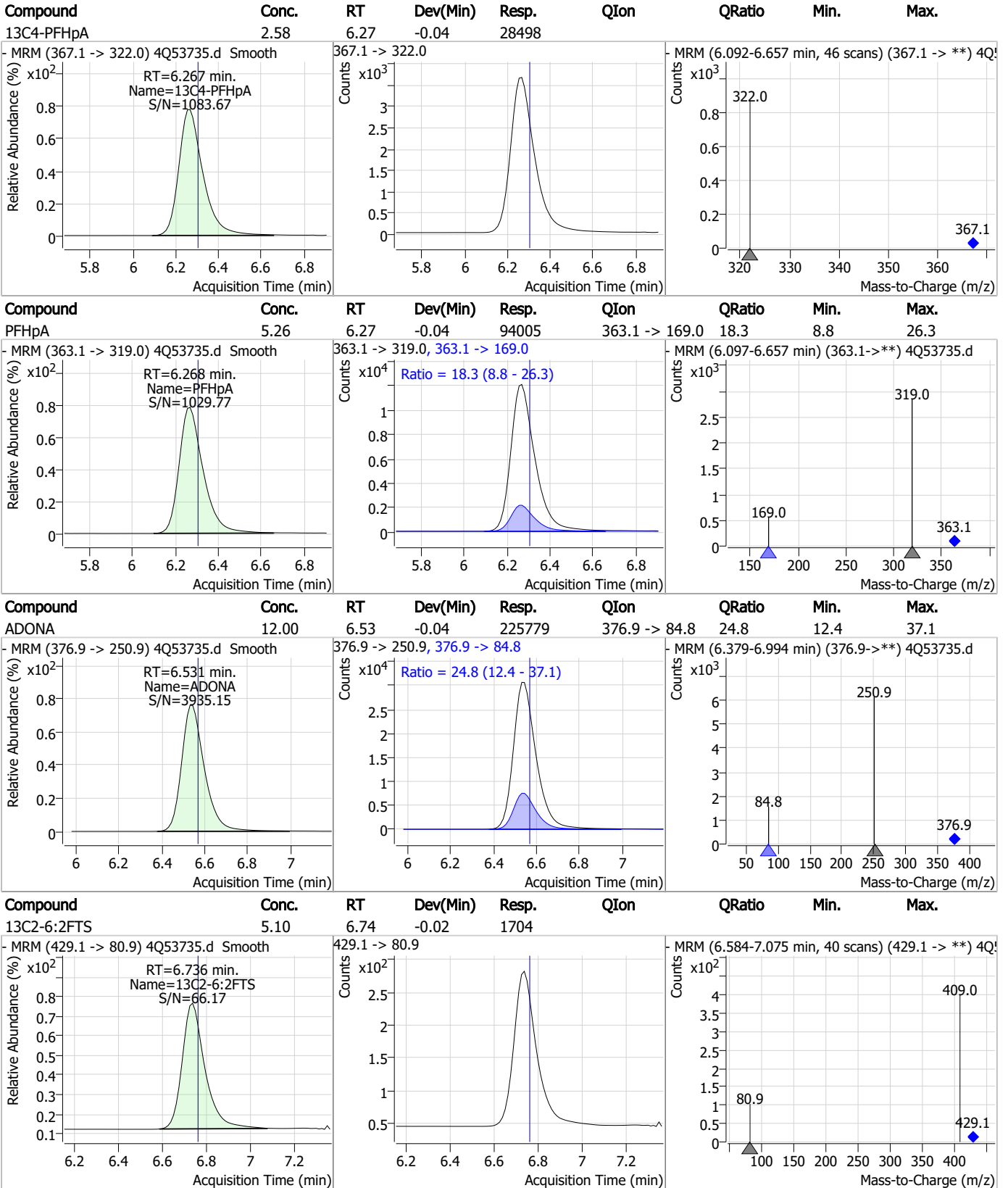
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Perfluorinated Compounds by LC/MS/MS



7.7.6
7

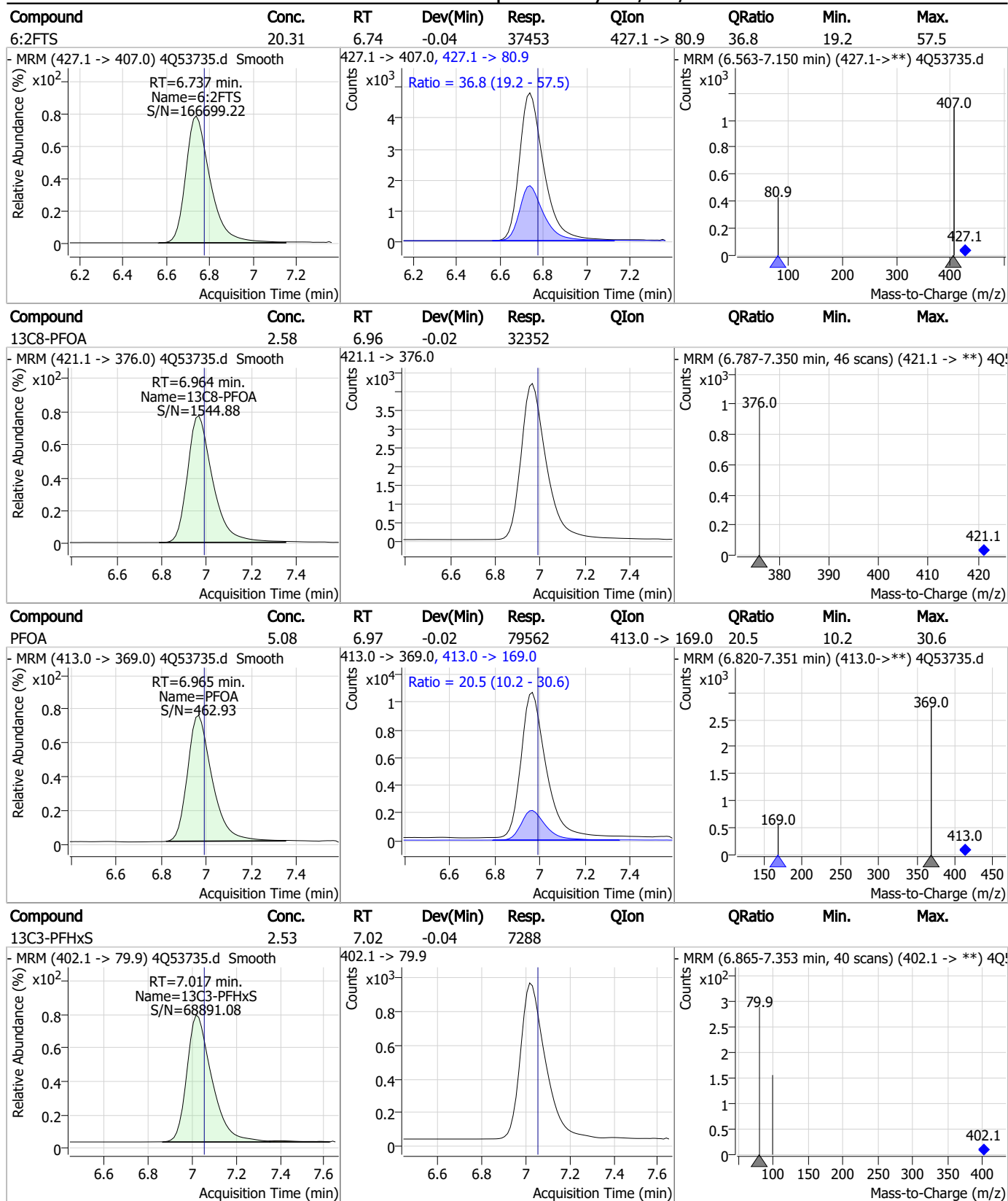
Perfluorinated Compounds by LC/MS/MS



7.7.6

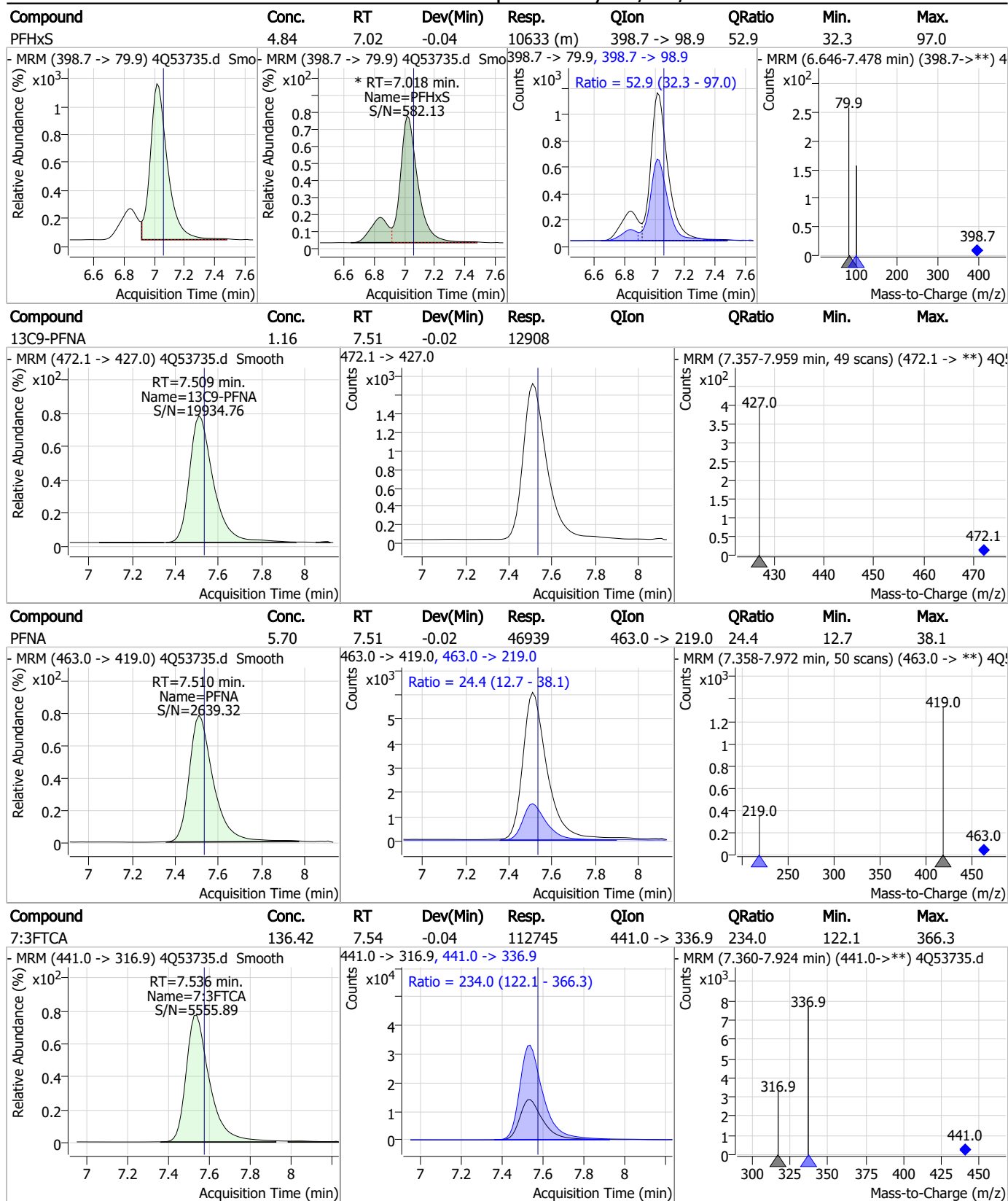
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Perfluorinated Compounds by LC/MS/MS



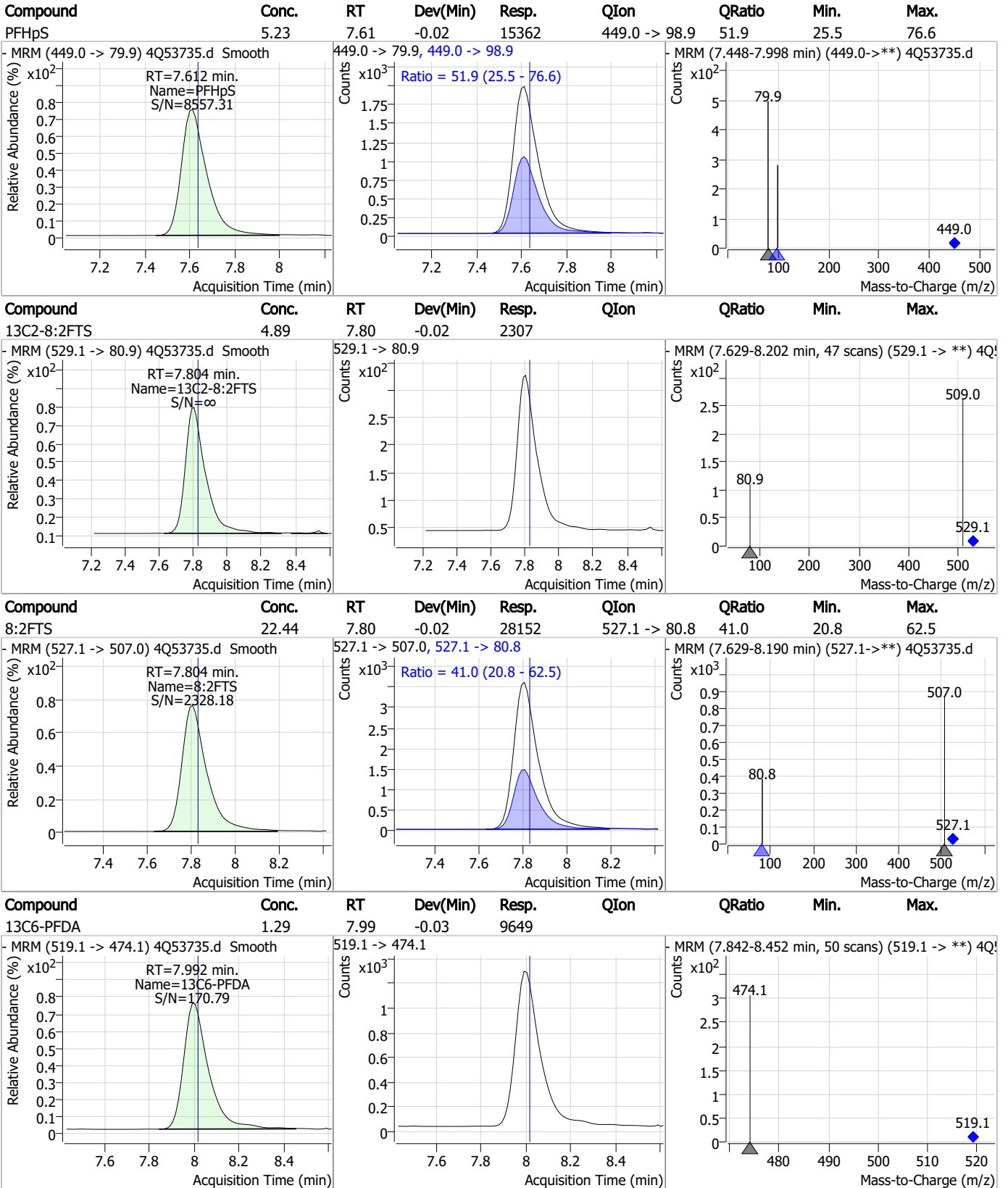
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Perfluorinated Compounds by LC/MS/MS



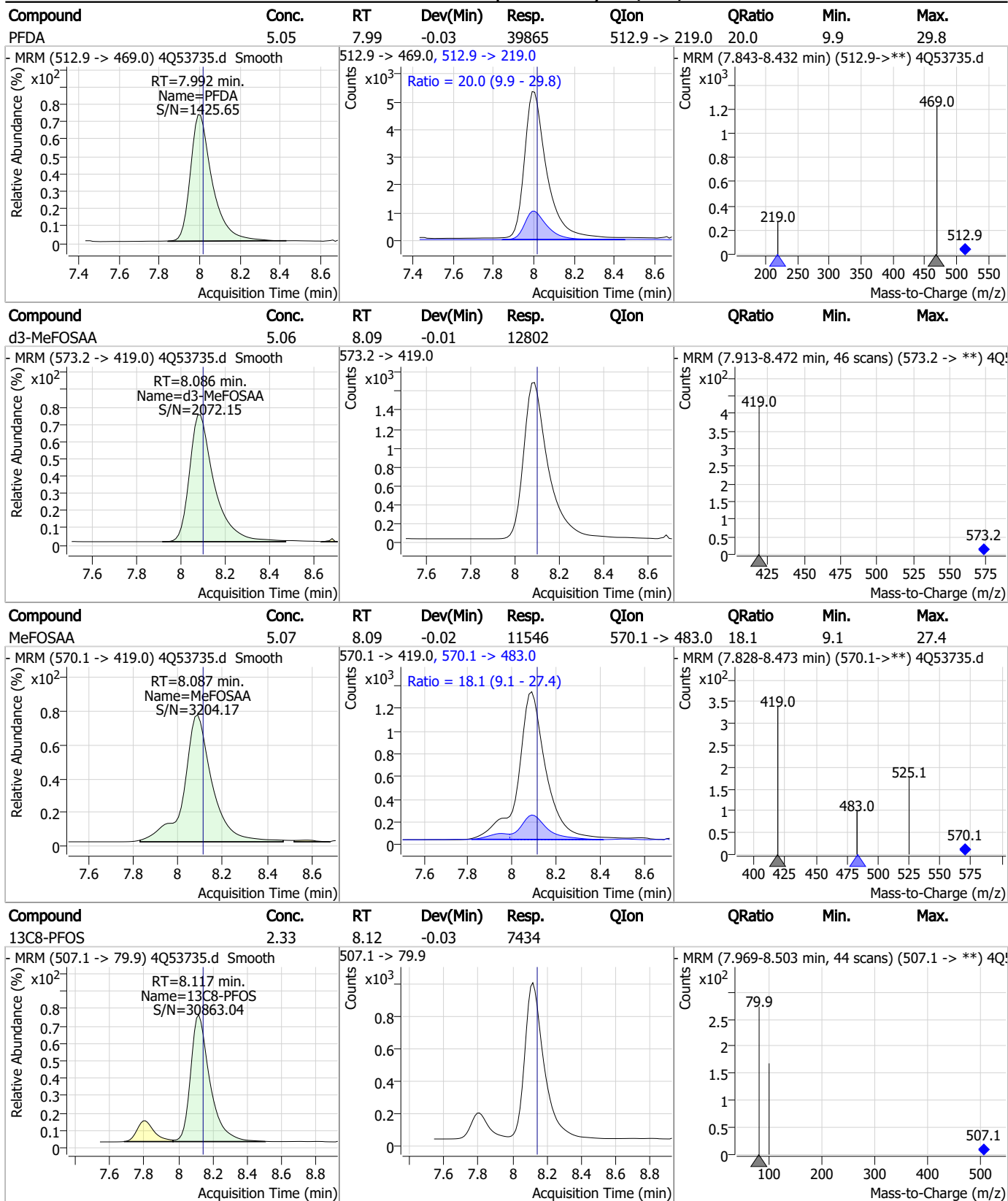
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Perfluorinated Compounds by LC/MS/MS



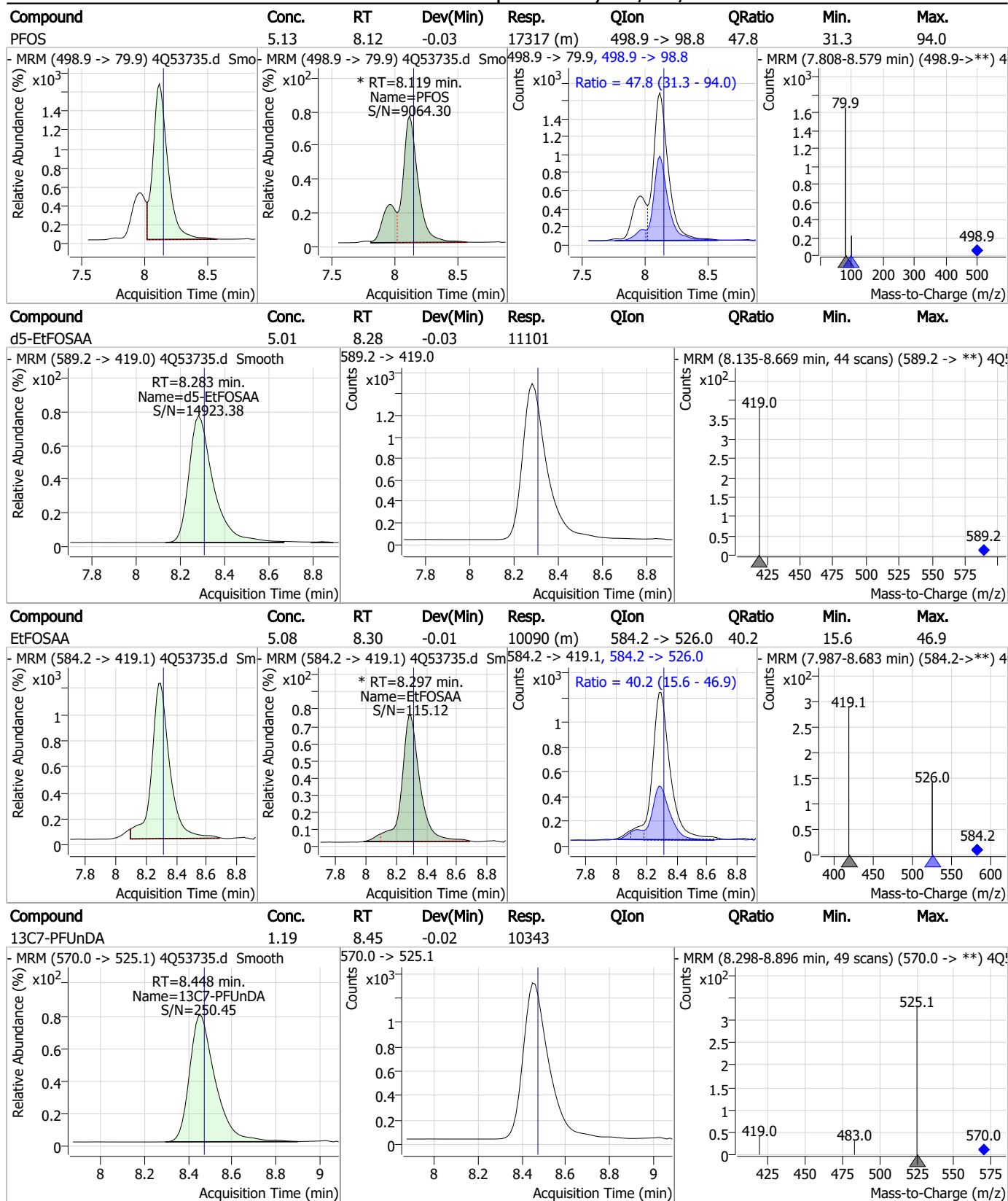
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Perfluorinated Compounds by LC/MS/MS



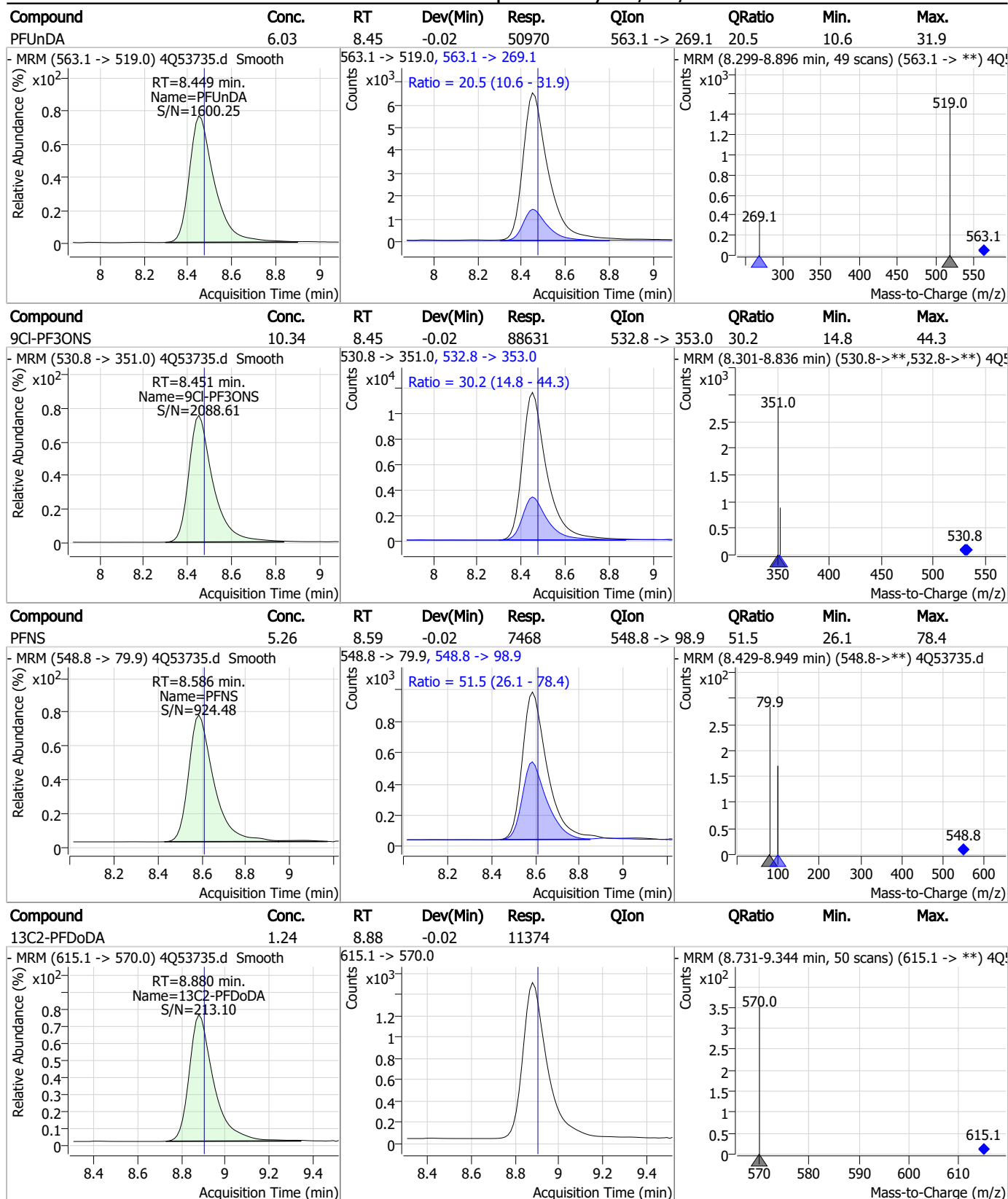
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Perfluorinated Compounds by LC/MS/MS



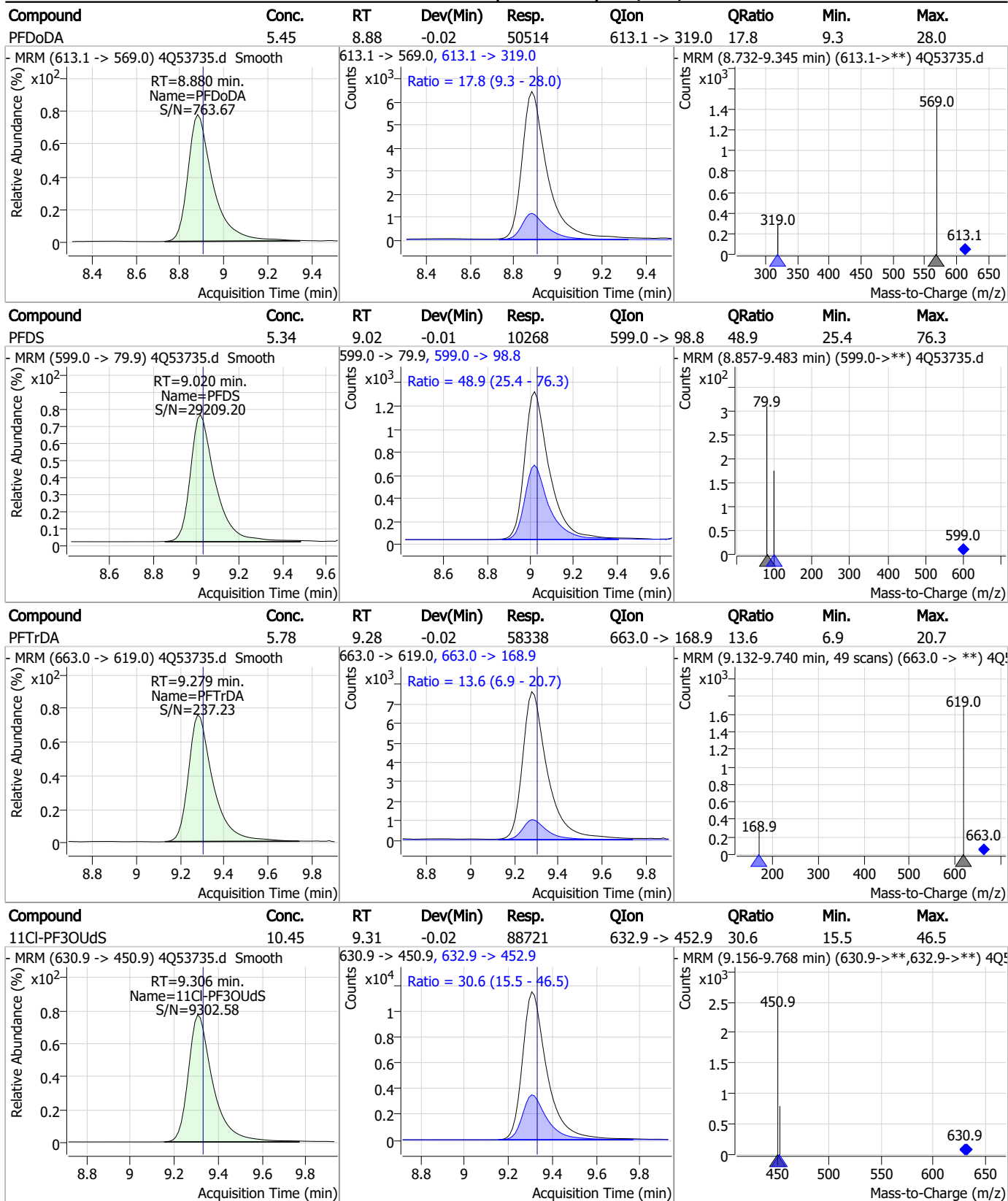
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Perfluorinated Compounds by LC/MS/MS



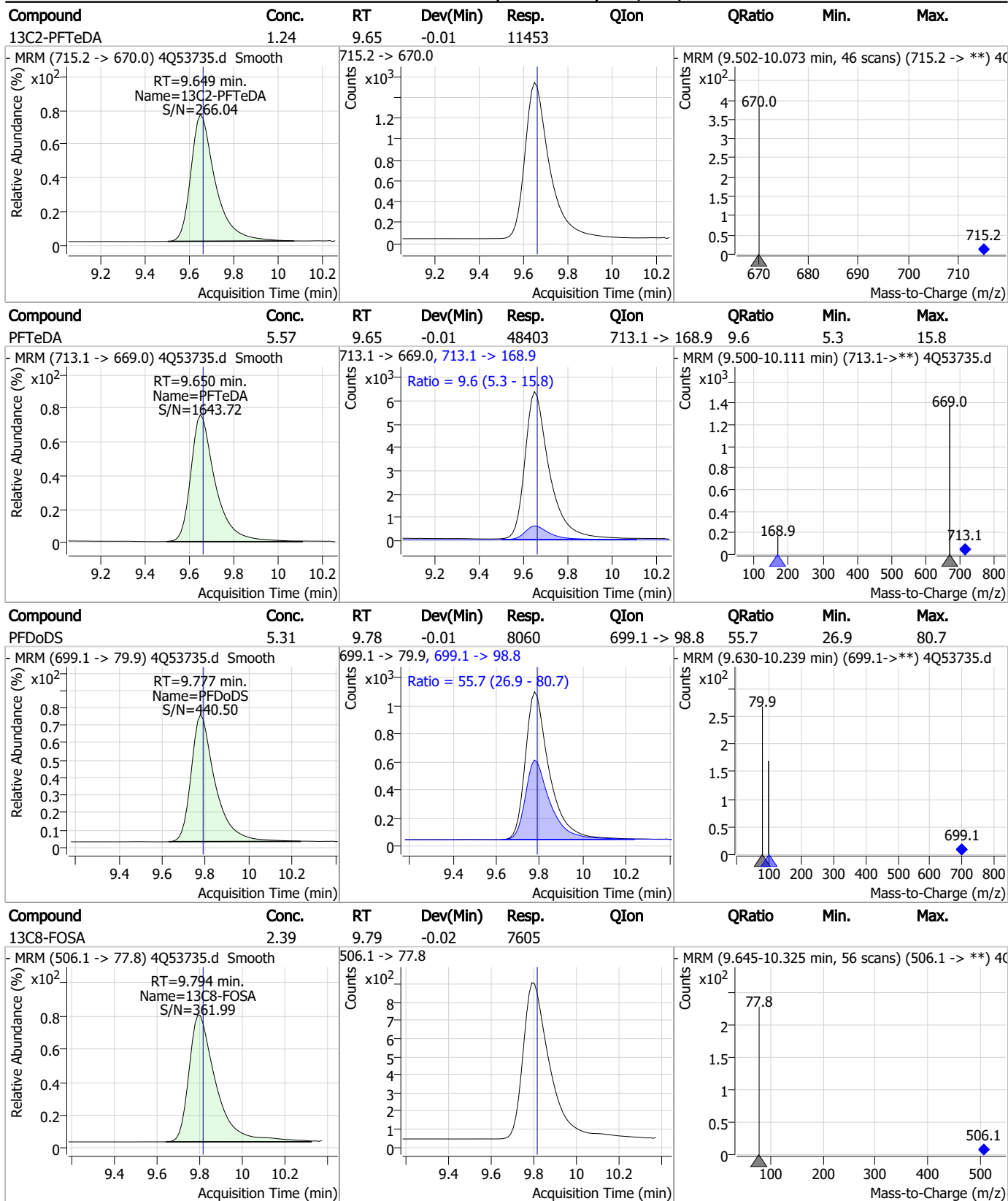
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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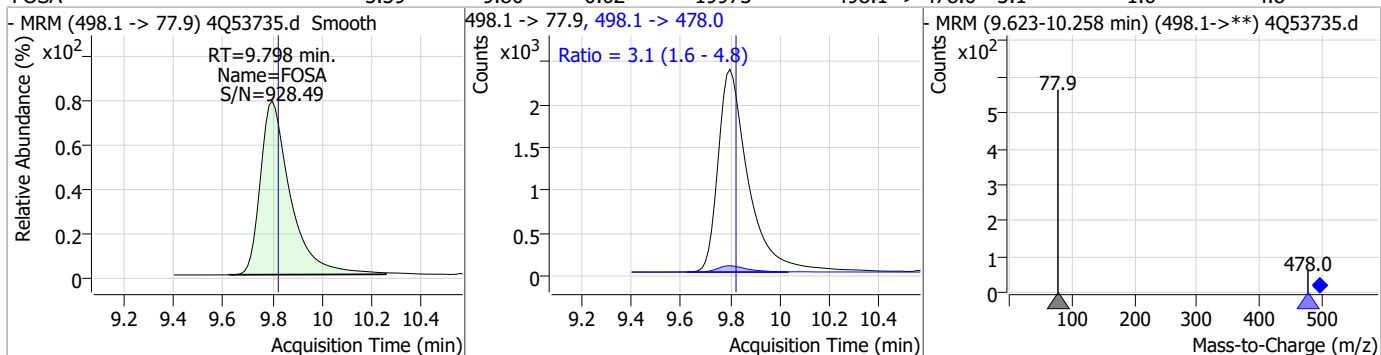
Perfluorinated Compounds by LC/MS/MS



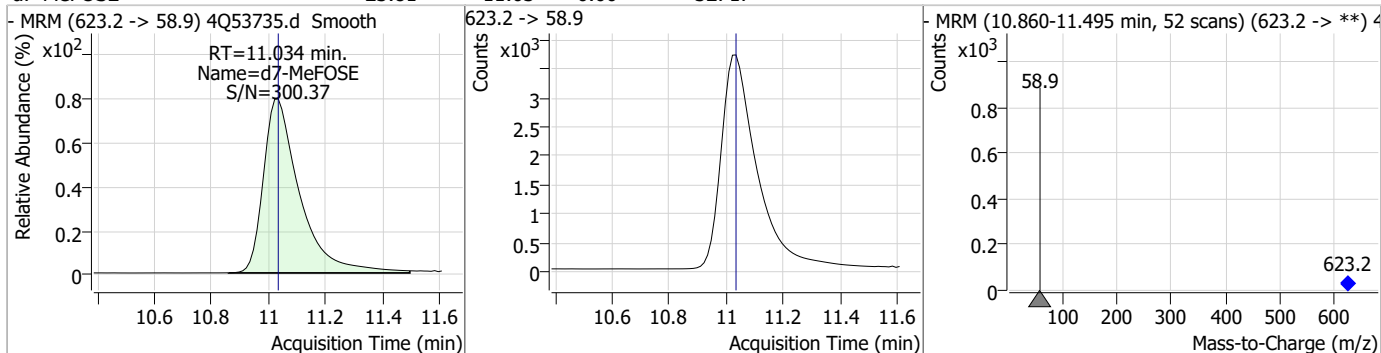
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Perfluorinated Compounds by LC/MS/MS

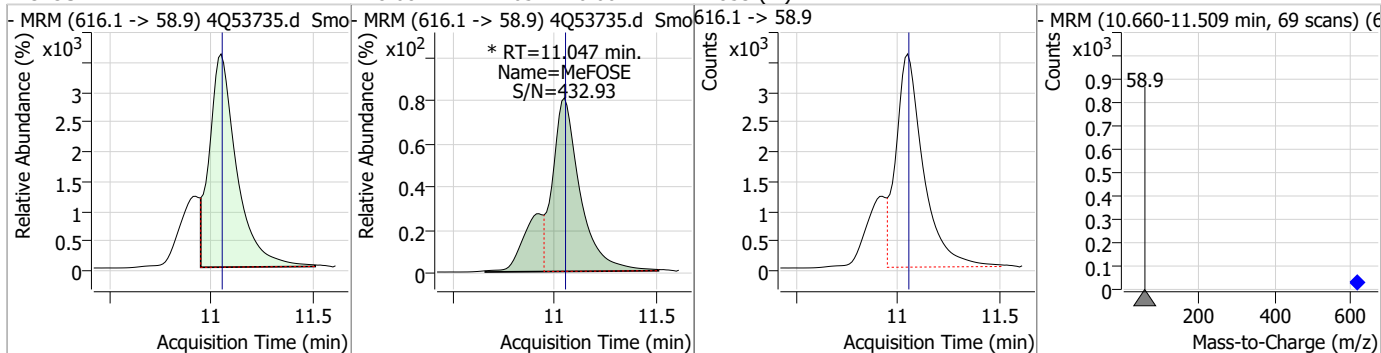
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	5.39	9.80	-0.02	19973	498.1 -> 478.0	3.1	1.6	4.8



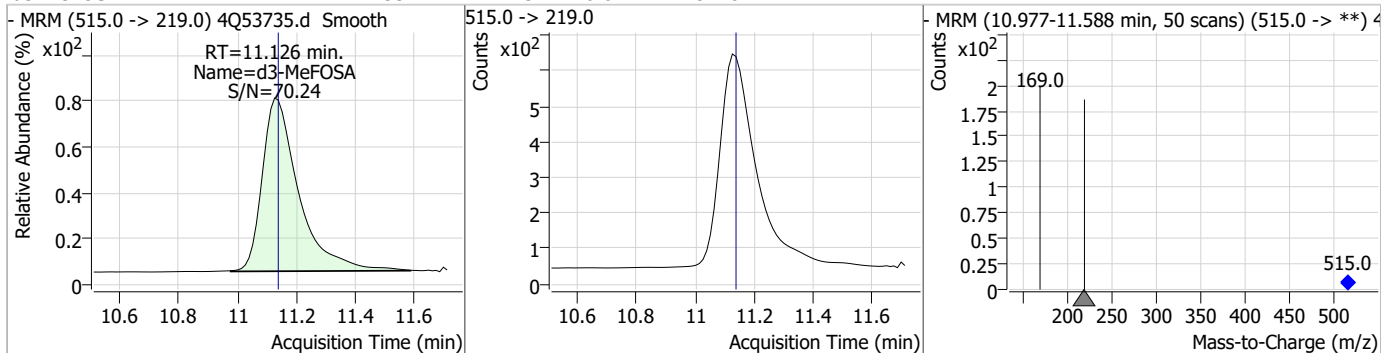
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.81	11.03	0.00	32717				



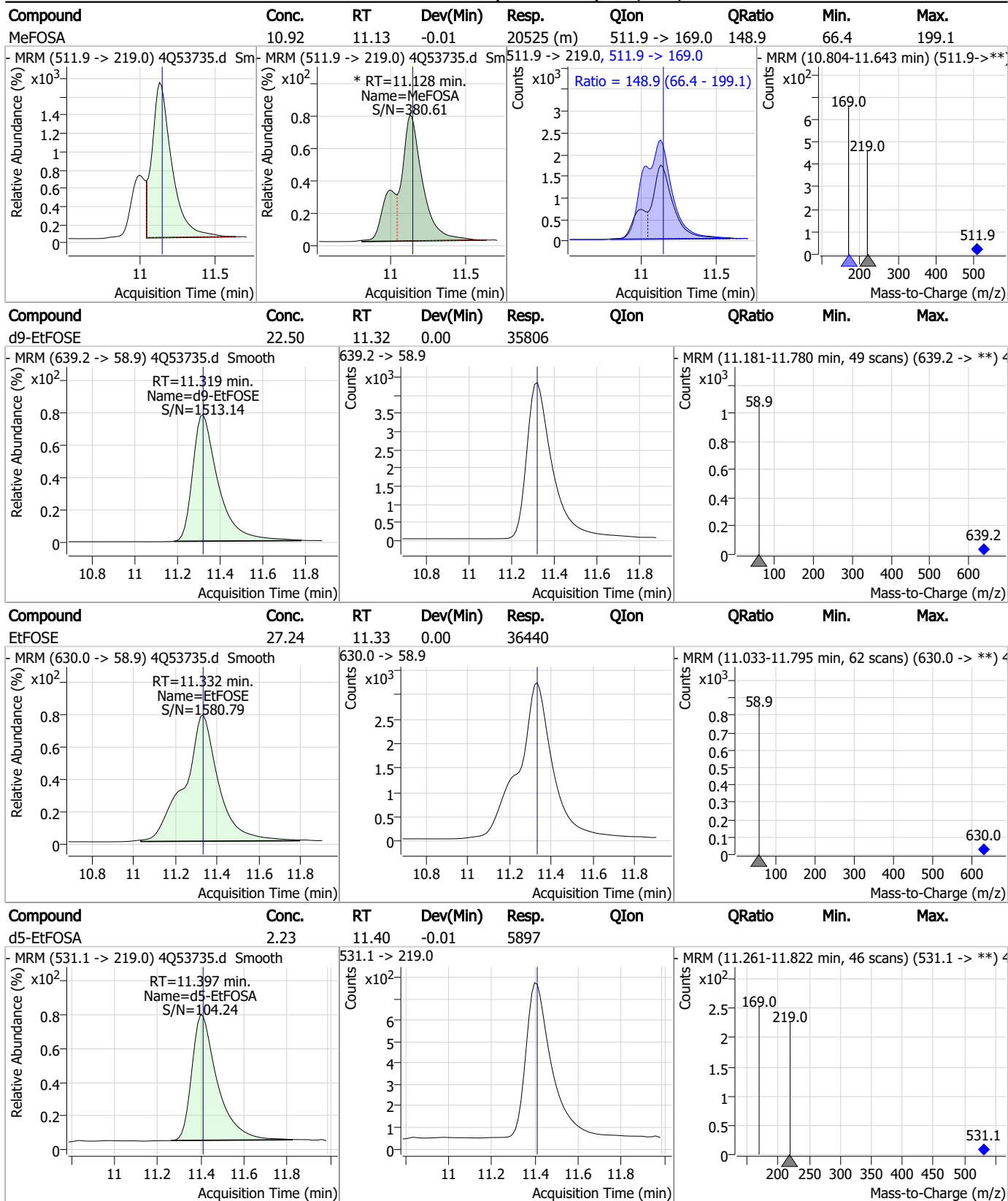
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	28.08	11.05	0.00	41853 (m)				



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

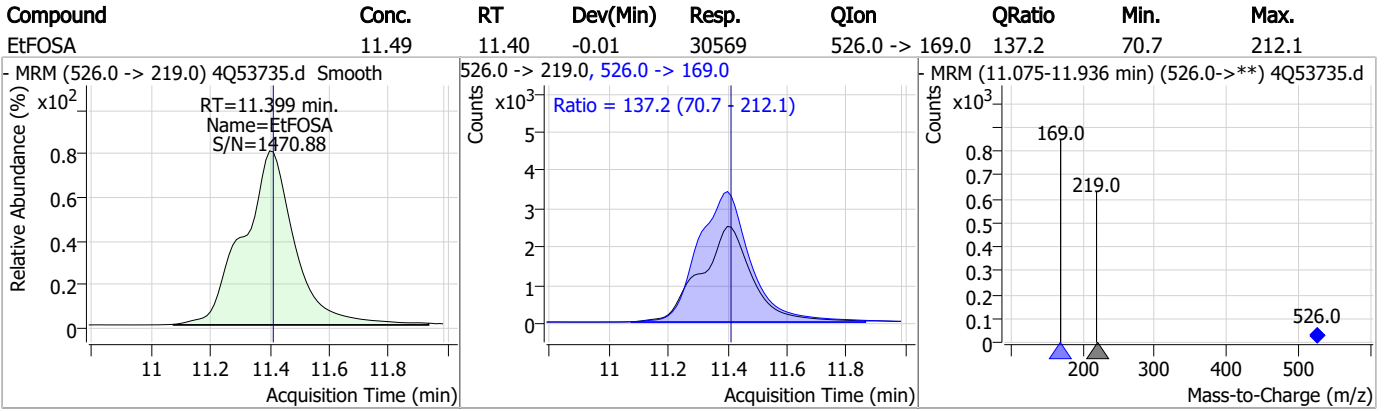


Perfluorinated Compounds by LC/MS/MS



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			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	207831	20.78	µg/L	99
		632.9 -> 452.9	63249			
9Cl-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			

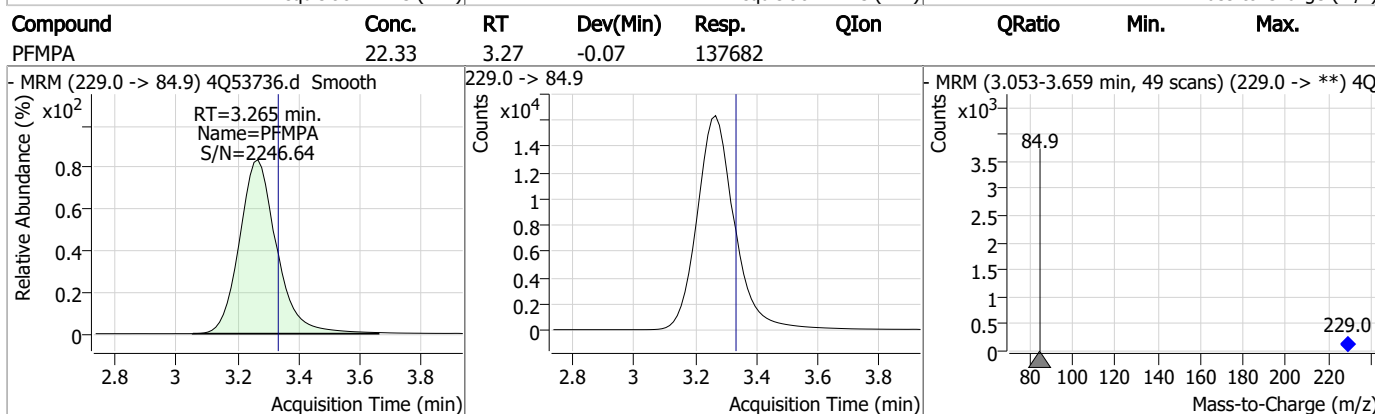
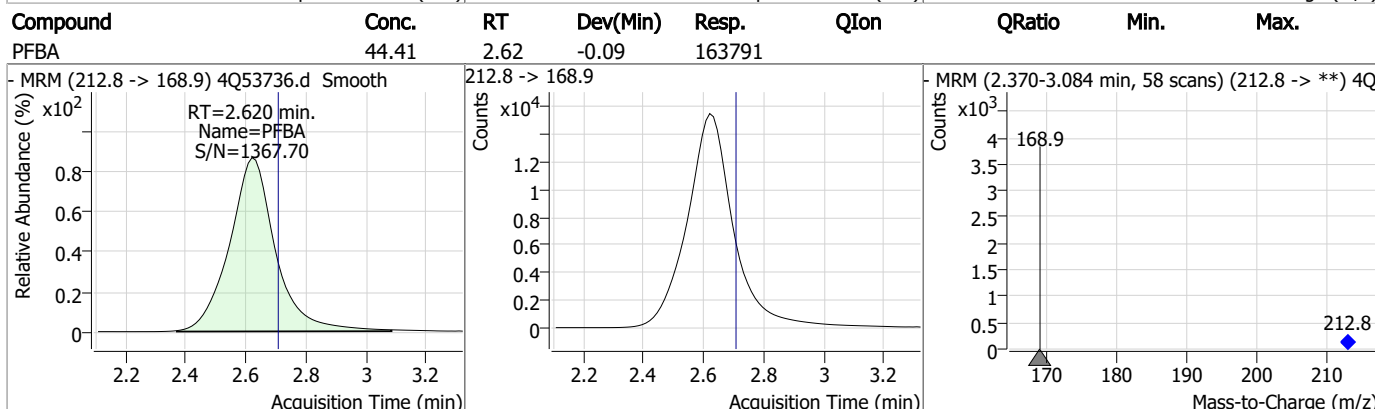
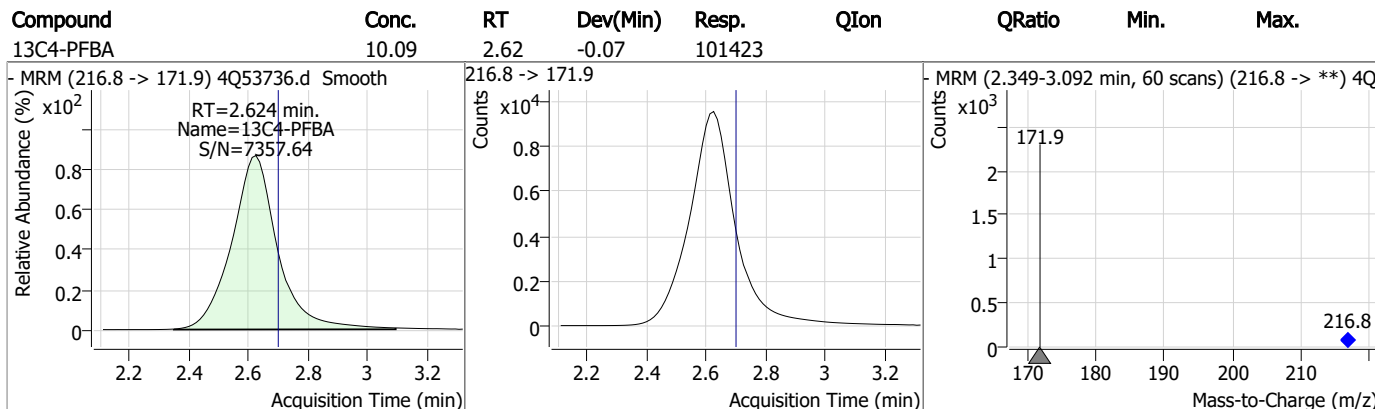
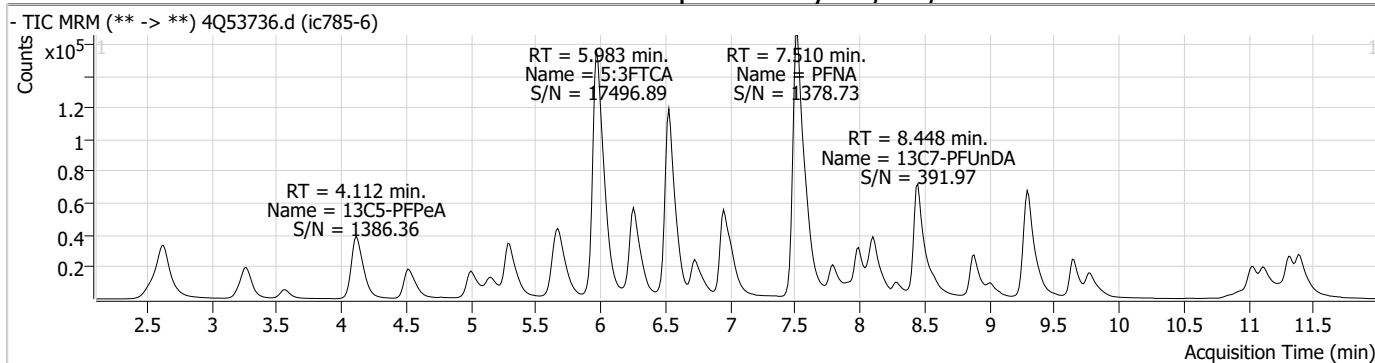
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

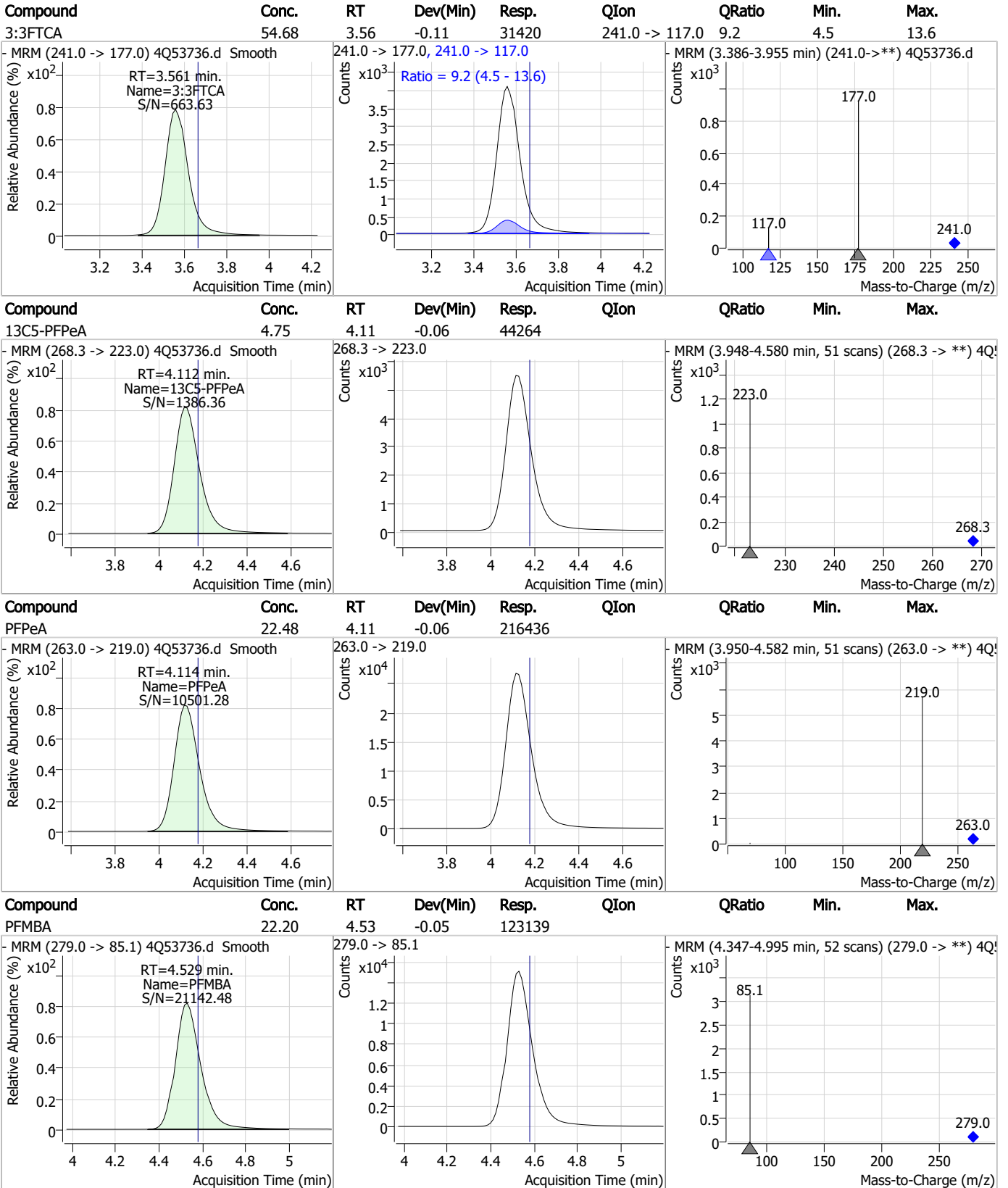
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.7
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Perfluorinated Compounds by LC/MS/MS

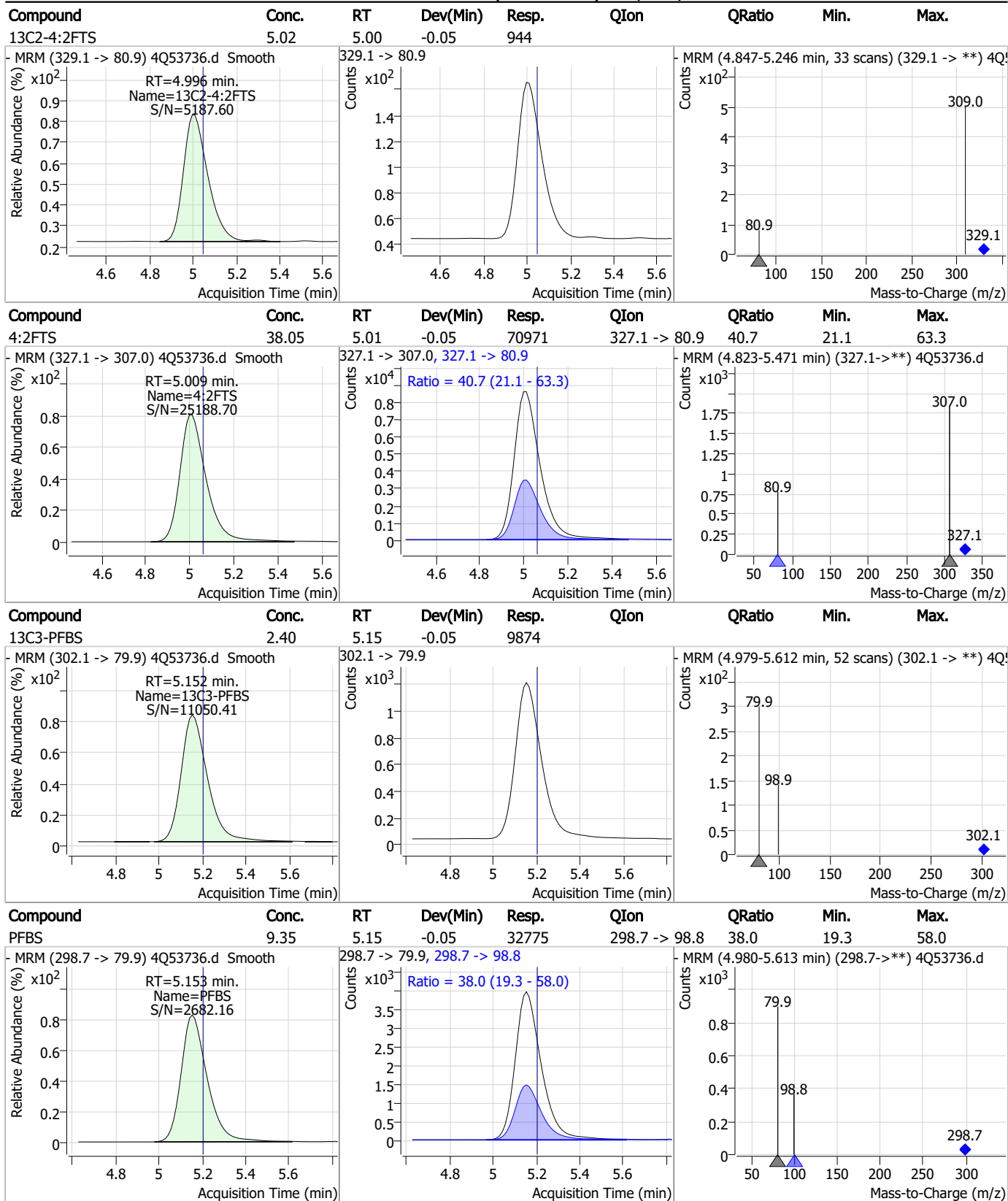


Perfluorinated Compounds by LC/MS/MS



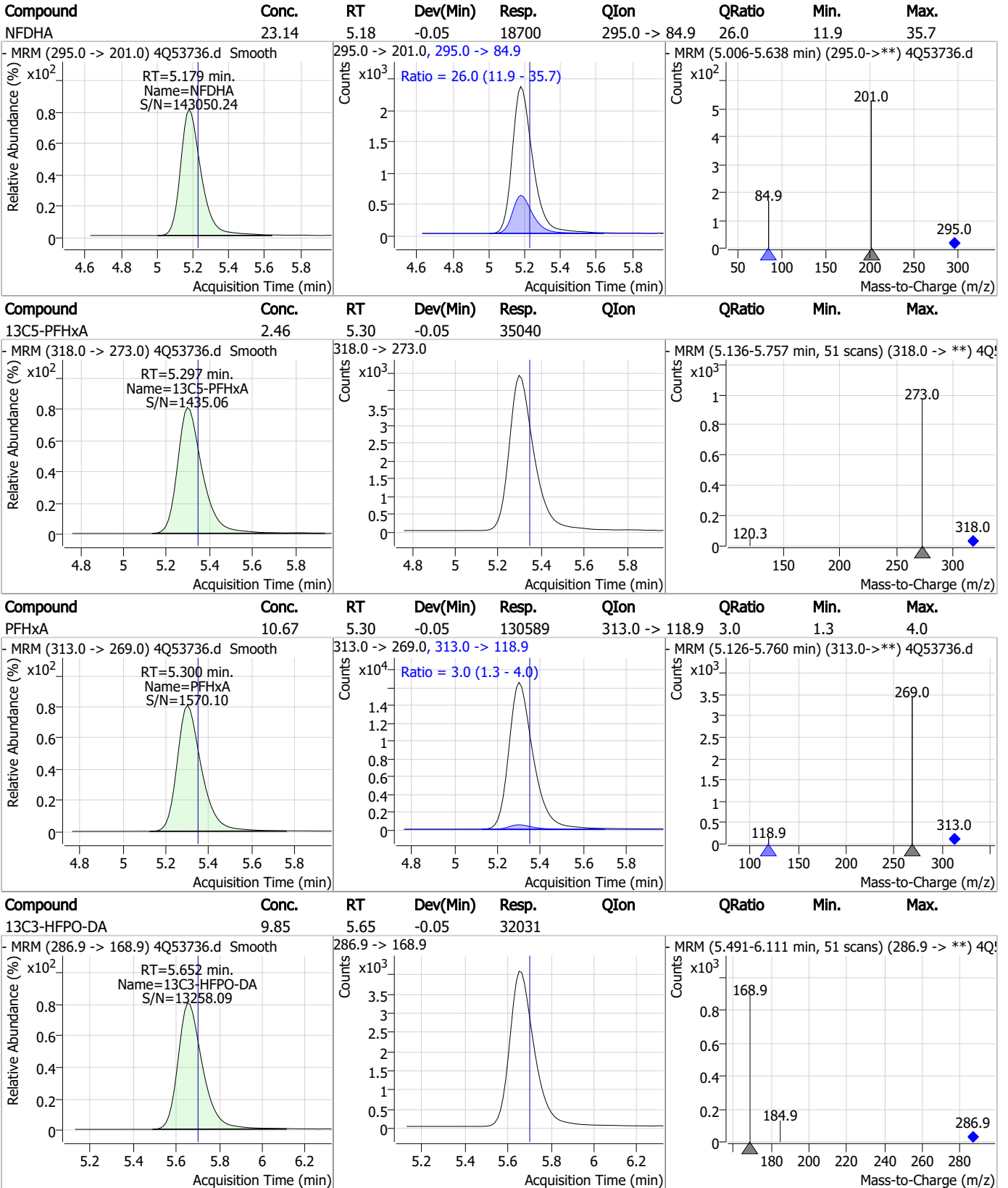
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Perfluorinated Compounds by LC/MS/MS



7.7.7
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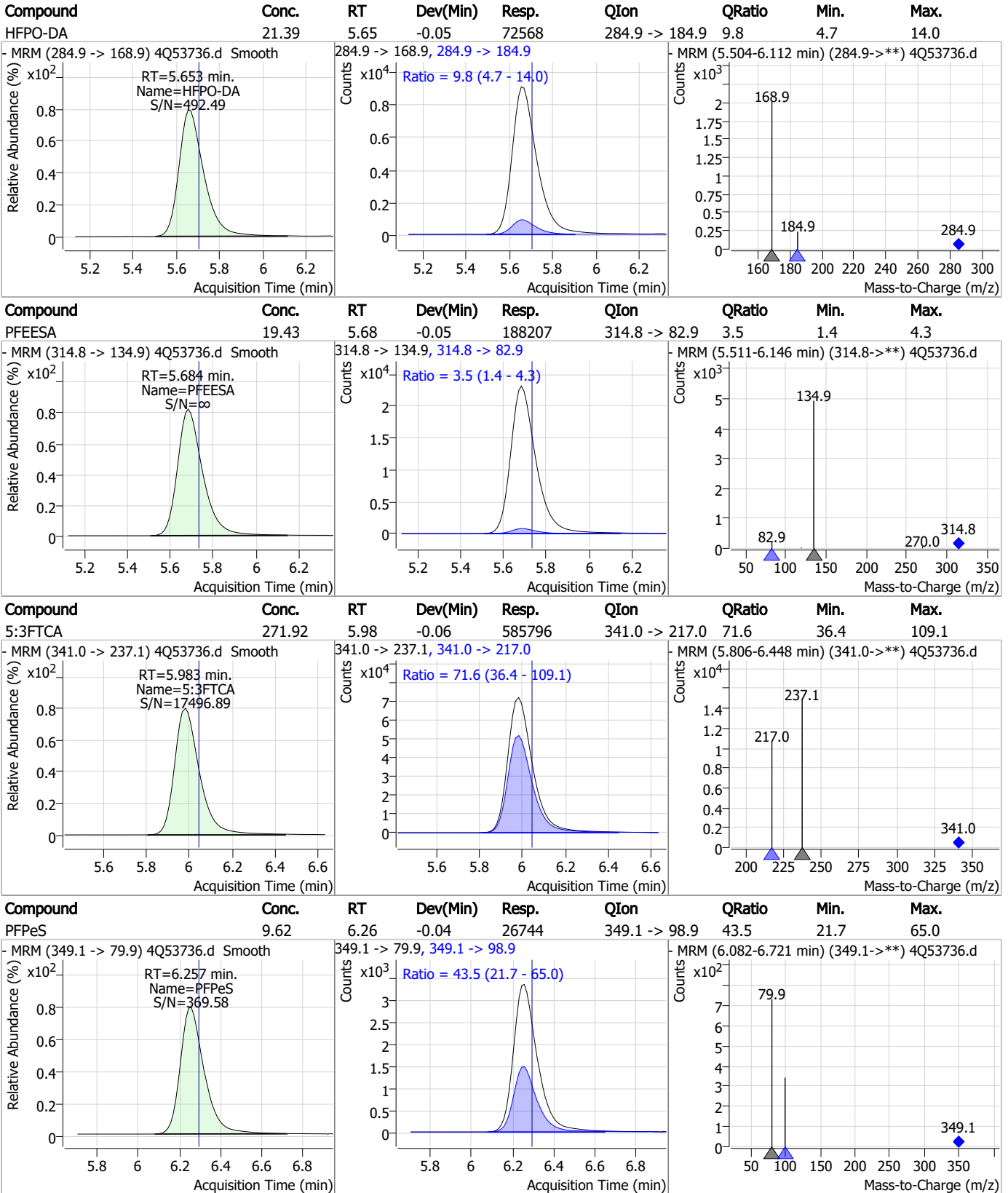
Perfluorinated Compounds by LC/MS/MS



7.7.7

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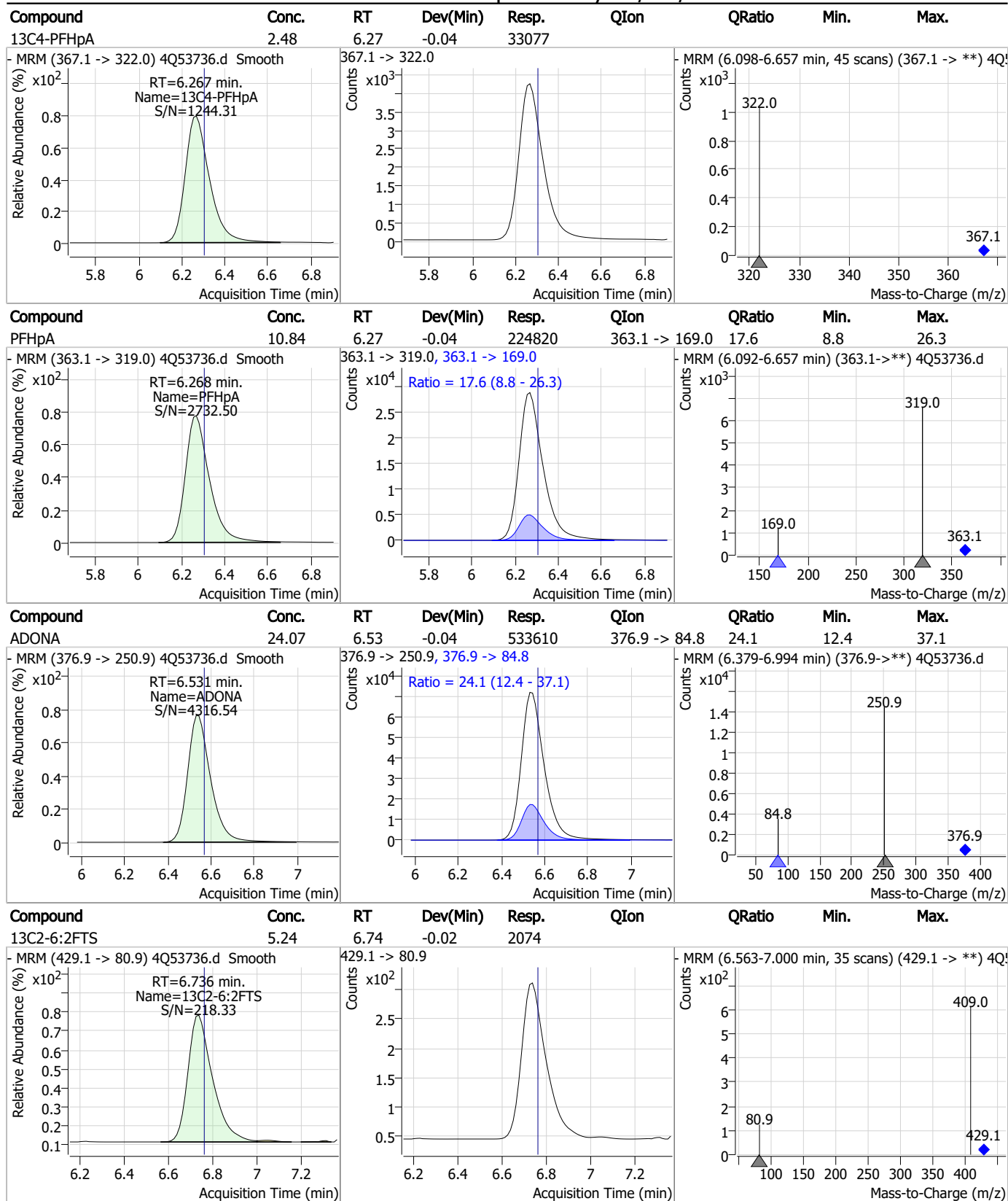
Perfluorinated Compounds by LC/MS/MS



7.7.7

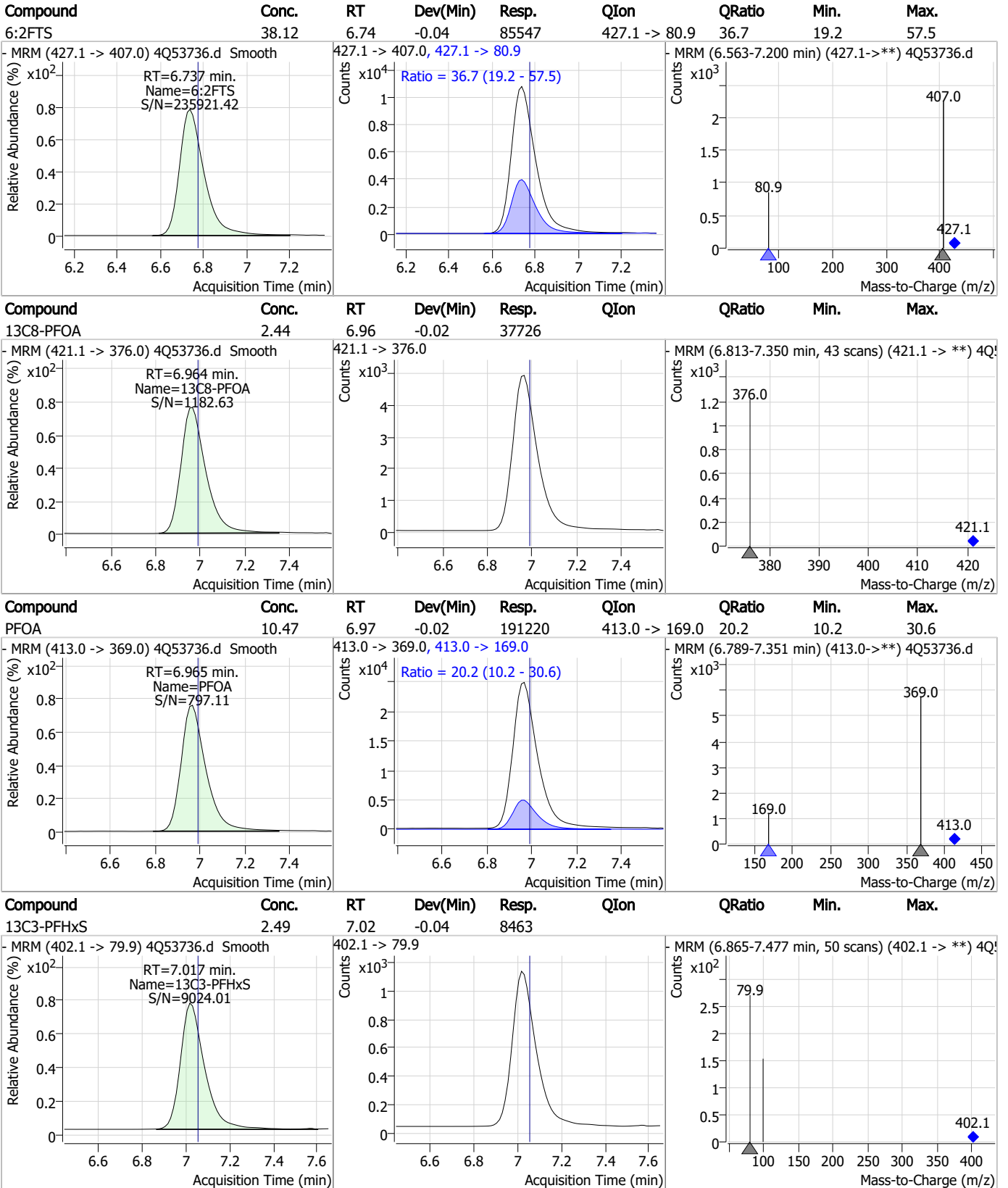
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Perfluorinated Compounds by LC/MS/MS



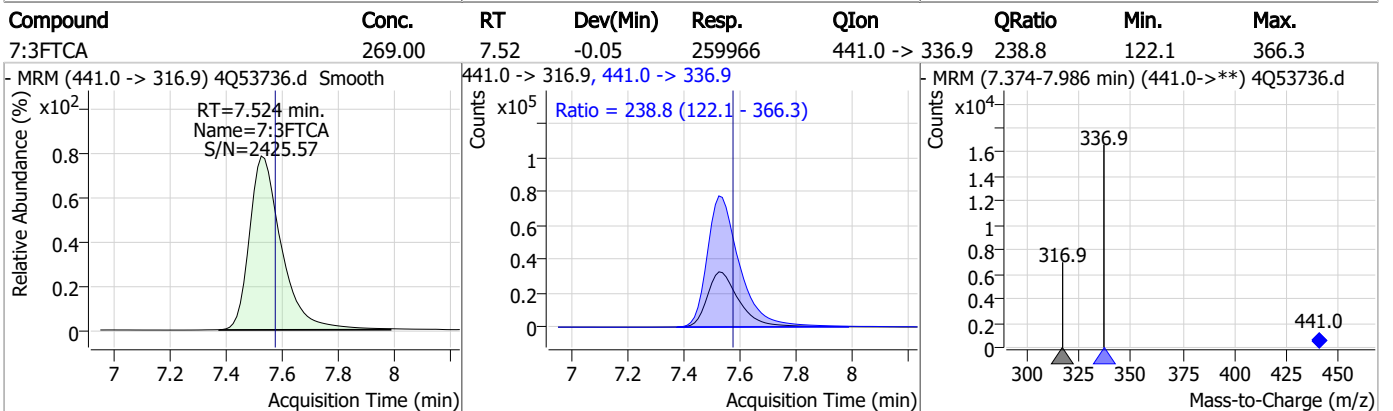
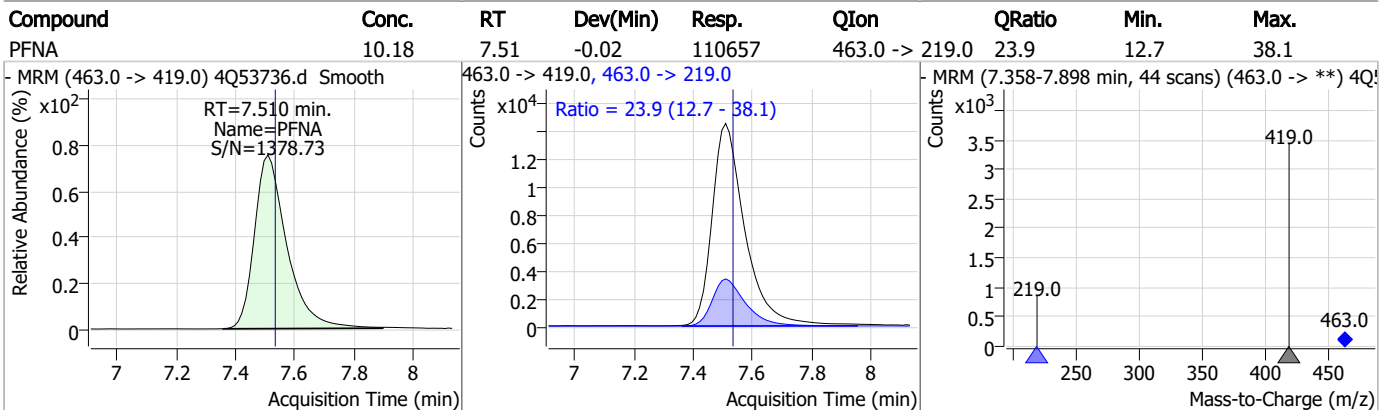
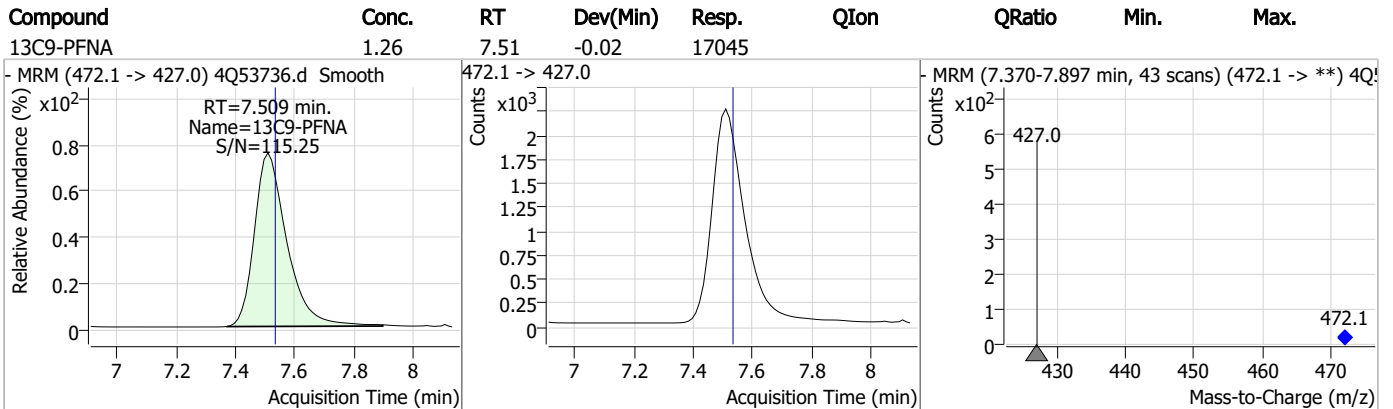
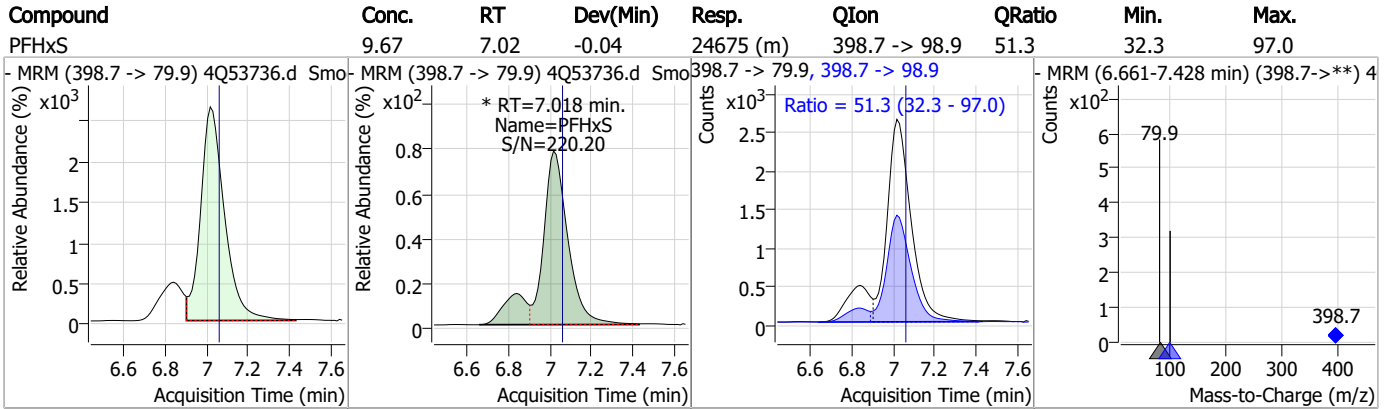
7.7.7
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Perfluorinated Compounds by LC/MS/MS

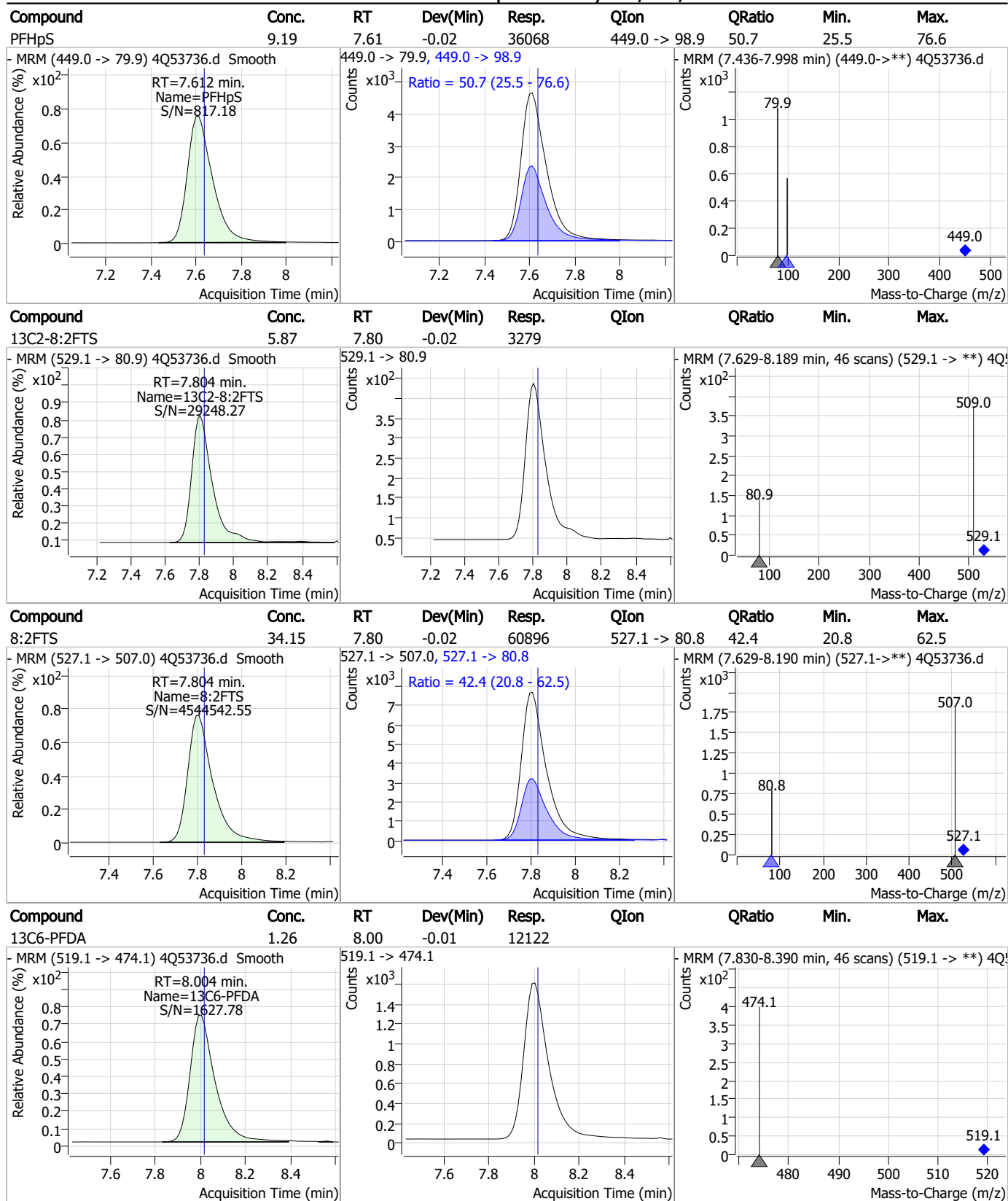


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Perfluorinated Compounds by LC/MS/MS

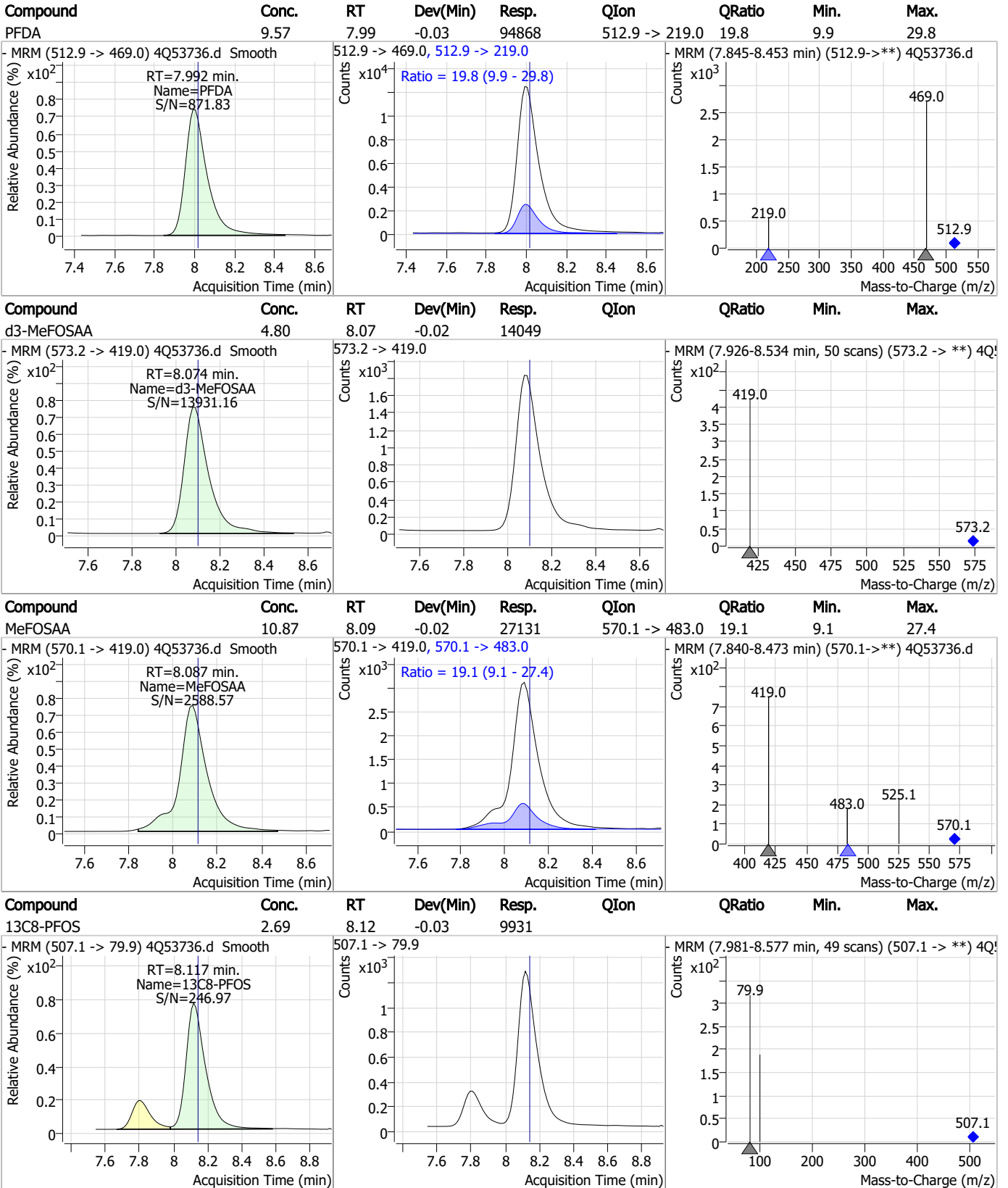


Perfluorinated Compounds by LC/MS/MS



7.7.7
7

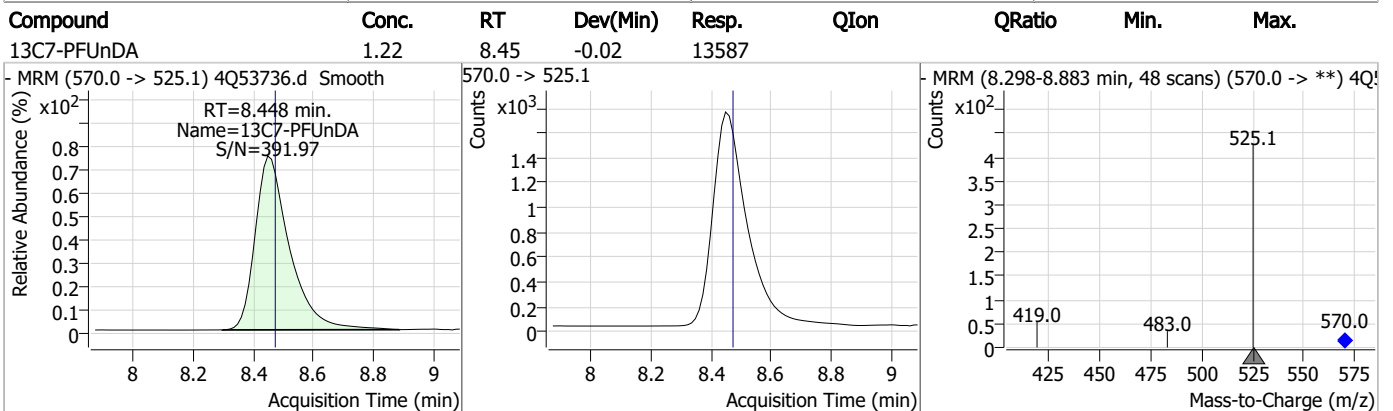
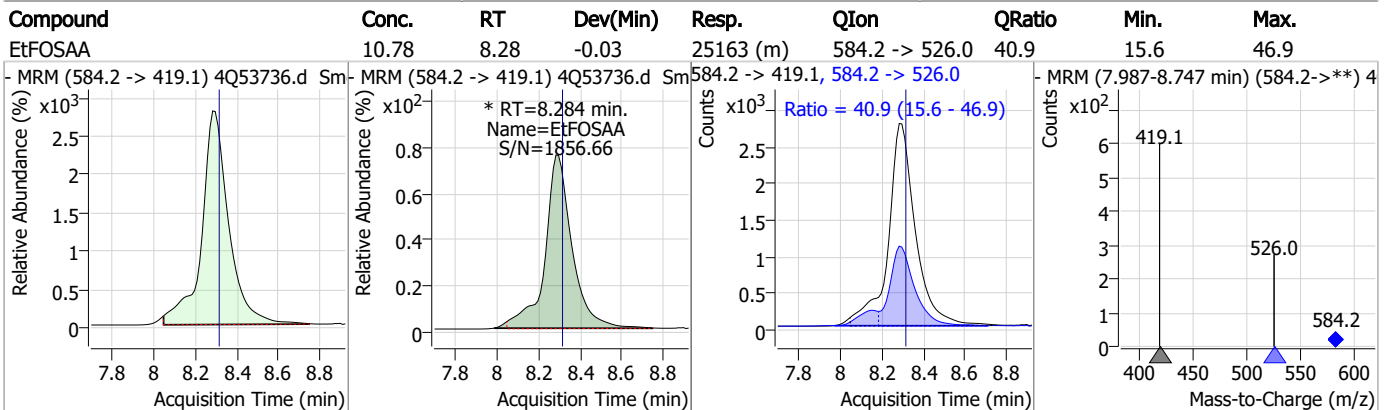
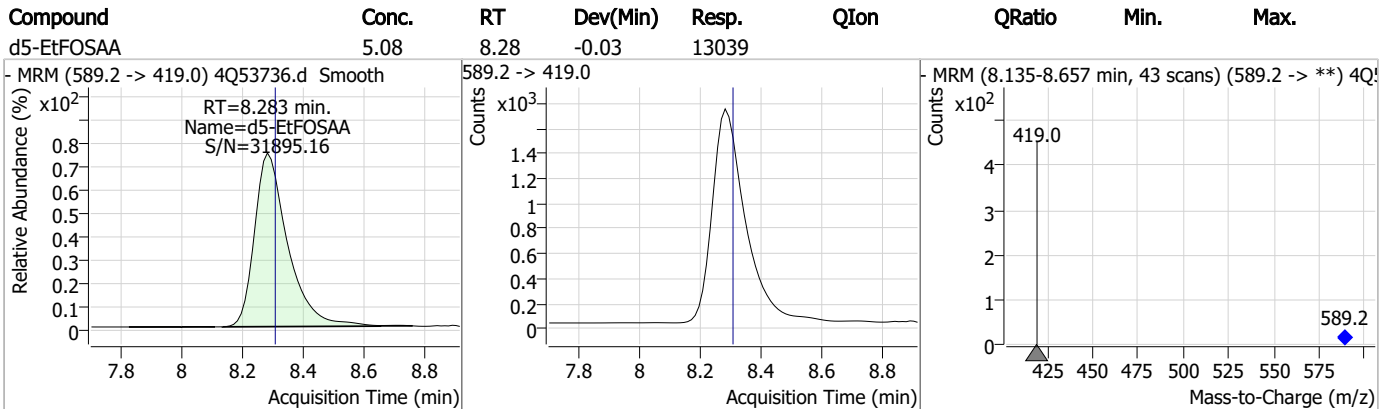
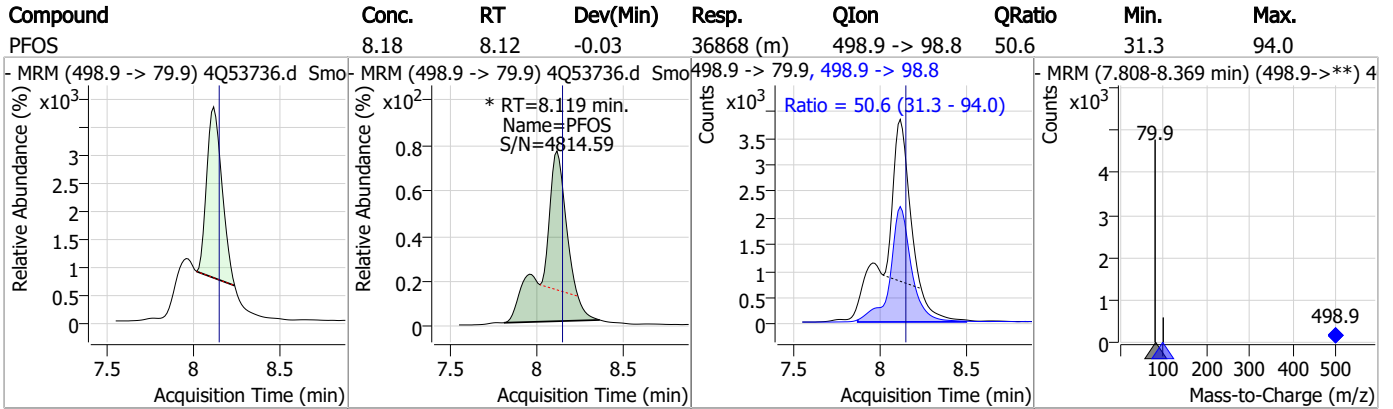
Perfluorinated Compounds by LC/MS/MS



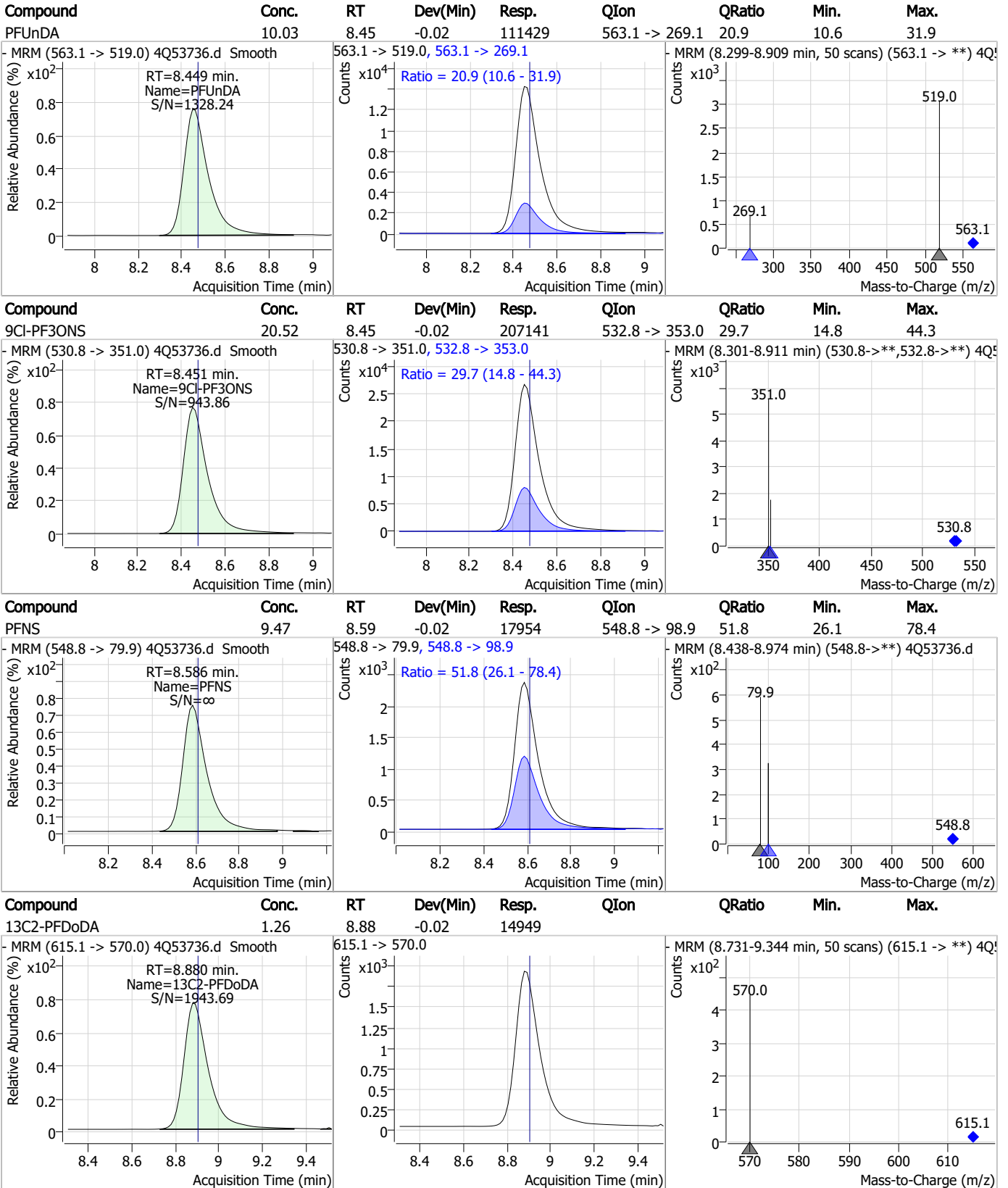
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Perfluorinated Compounds by LC/MS/MS



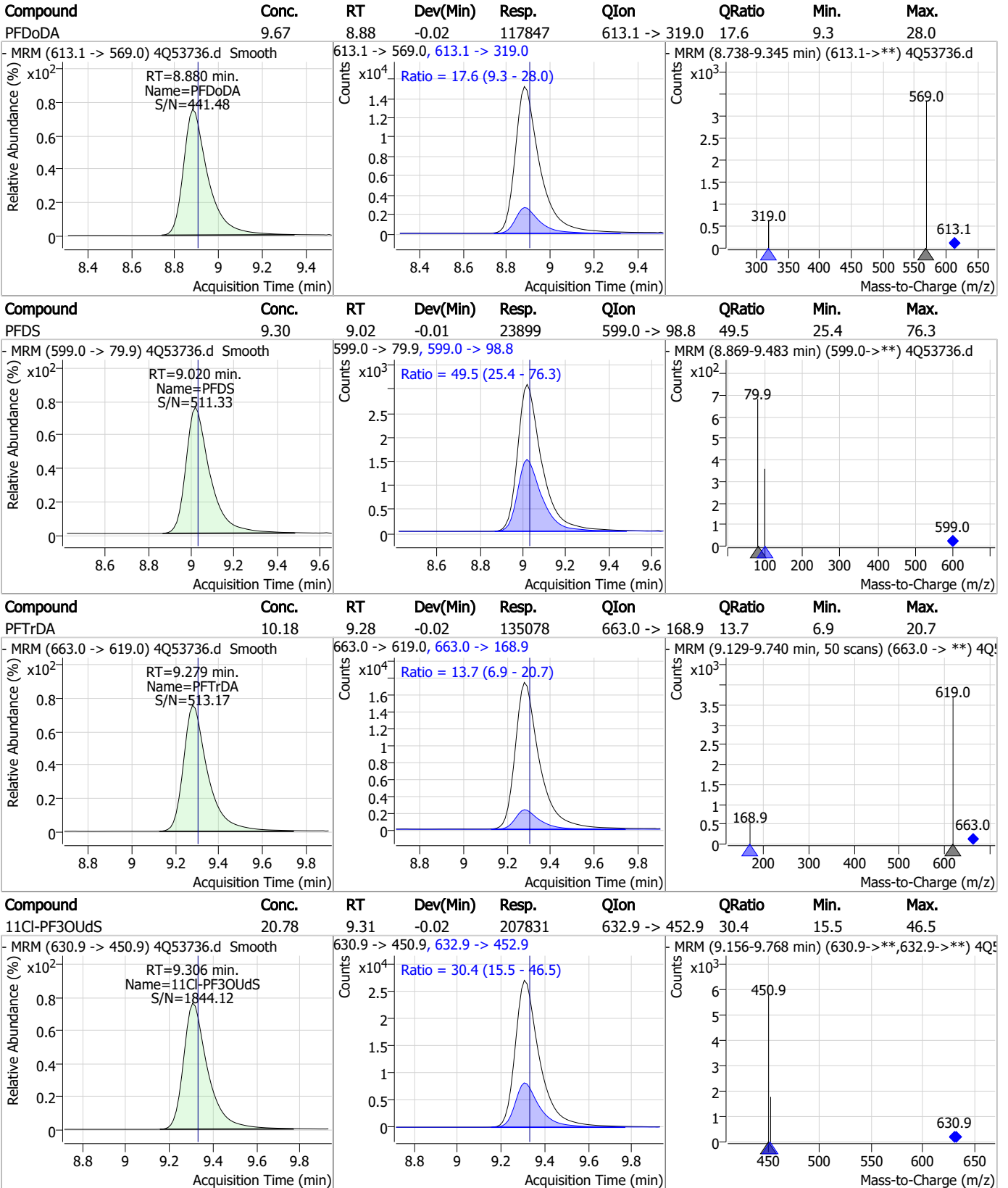
Perfluorinated Compounds by LC/MS/MS



7.7.7

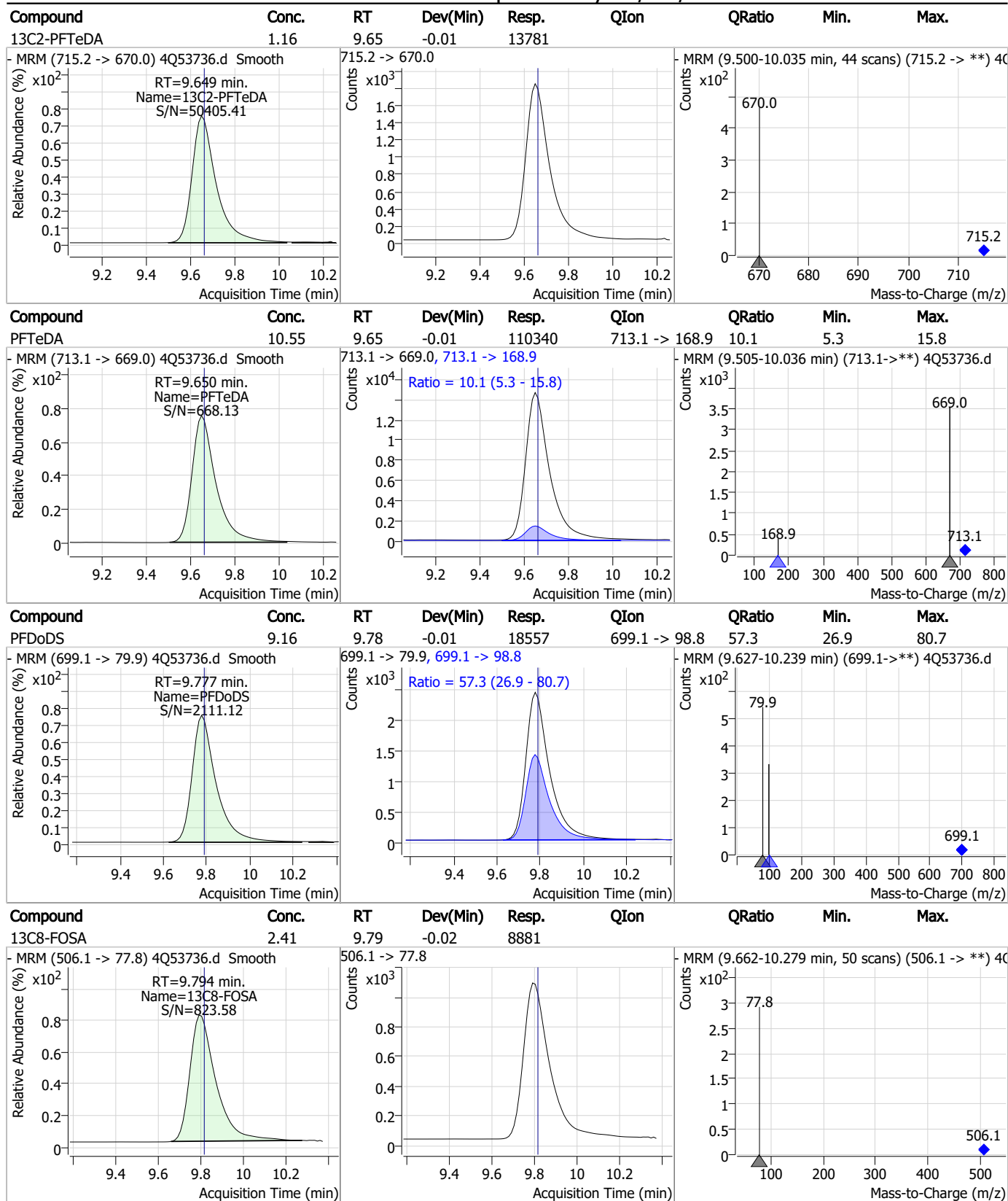
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Perfluorinated Compounds by LC/MS/MS



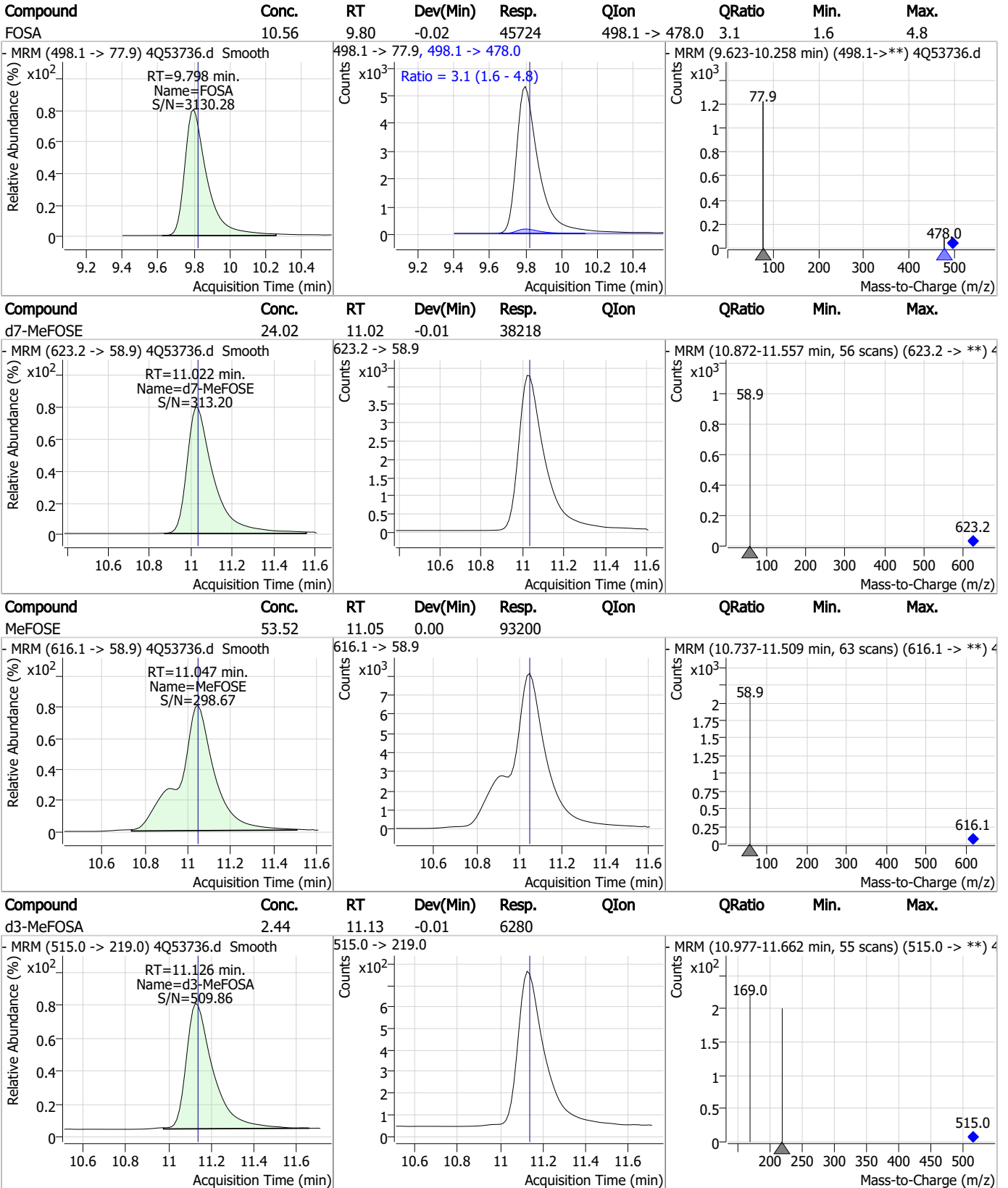
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Perfluorinated Compounds by LC/MS/MS



7.7.7
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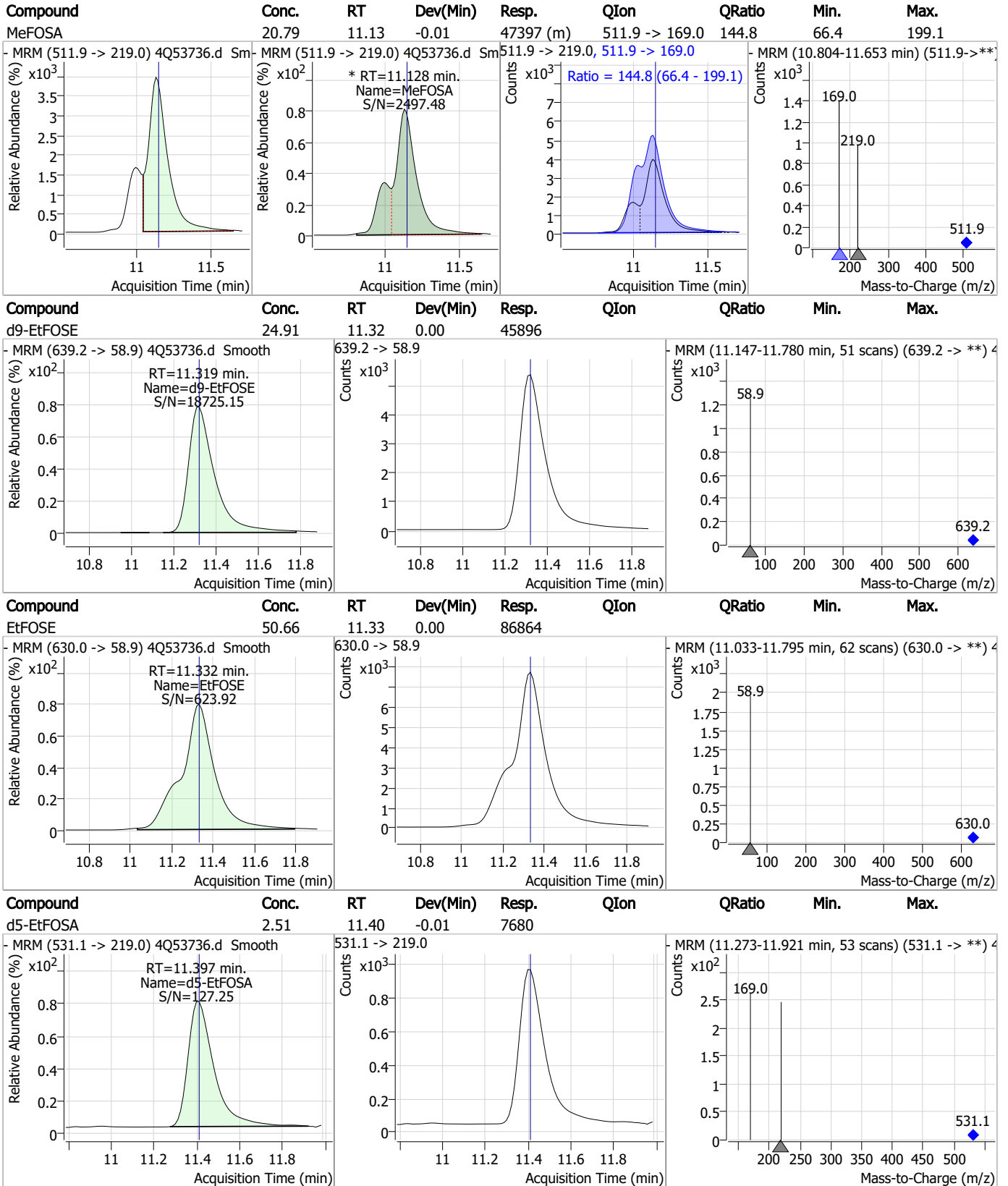
Perfluorinated Compounds by LC/MS/MS



7.7.7

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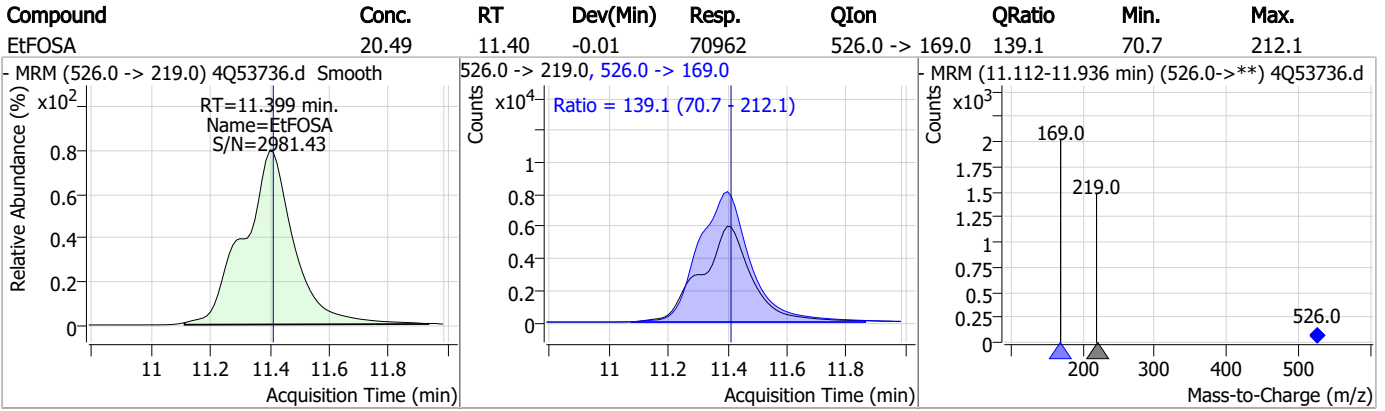
Perfluorinated Compounds by LC/MS/MS



7.7.7

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Perfluorinated Compounds by LC/MS/MS



7.7.7
7

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

7

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)
PFHpA	6.268	599.0 -> 98.8	22540	28.98	µg/L	100
		363.1 -> 319.0	427587			
PFHpS	7.612	363.1 -> 169.0	74914	26.79	µg/L	100
		449.0 -> 79.9	68816			
PFHxA	5.300	449.0 -> 98.9	35156	28.24	µg/L	99
		313.0 -> 269.0	253296			
PFHxS	7.018	313.0 -> 118.9	7671	26.11	µg/L	84
		398.7 -> 79.9	45577			
PFNA	7.510	398.7 -> 98.9	23870	28.27	µg/L	96
		463.0 -> 419.0	213932			
PFNS	8.586	463.0 -> 219.0	50327	25.84	µg/L	98
		548.8 -> 79.9	32044			
PFOA	6.965	548.8 -> 98.9	16346	27.73	µg/L	98
		413.0 -> 369.0	359828			
PFOS	8.119	413.0 -> 169.0	70823	25.71	µg/L	79
		498.9 -> 79.9	75812			
PFPeA	4.114	498.9 -> 98.8	35350	55.60	µg/L	100
		263.0 -> 219.0	409292			
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
		511.9 -> 219.0	89879			
MeFOSA	11.128	511.9 -> 169.0	131207	51.49	µg/L	89
		616.1 -> 58.9	174720			
MeFOSE	11.047	699.1 -> 79.9	35336	140.14	µg/L	100
		699.1 -> 98.8	20307			
PFDoDS	9.777	295.0 -> 201.0	32631	26.65	µg/L	95
		295.0 -> 84.9	8815			
NFDHA	5.179	279.0 -> 85.1	232804	55.10	µg/L	93
		229.0 -> 84.9	261021			
PFMBA	4.529	314.8 -> 134.9	360443	50.77	µg/L	99
		314.8 -> 82.9	11678			

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

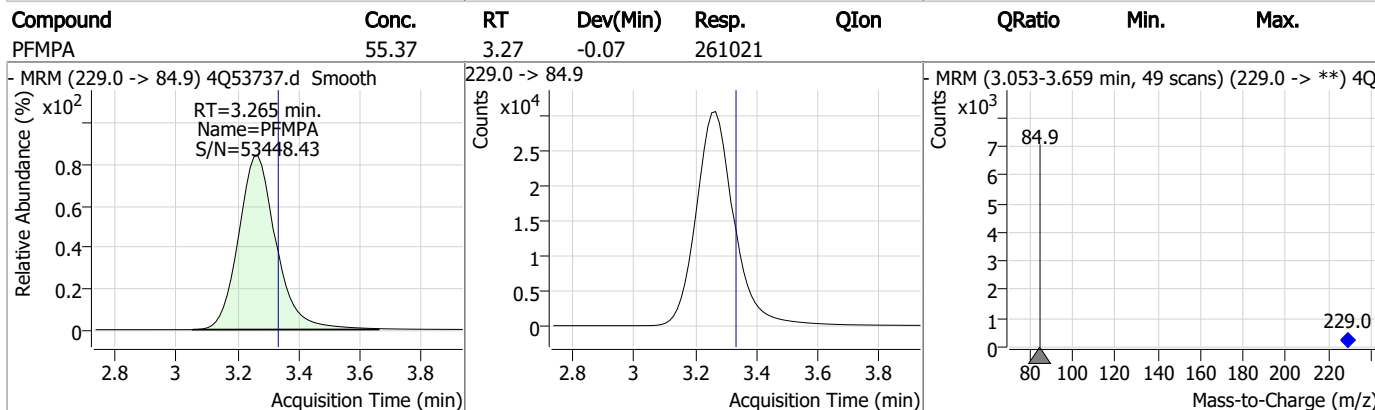
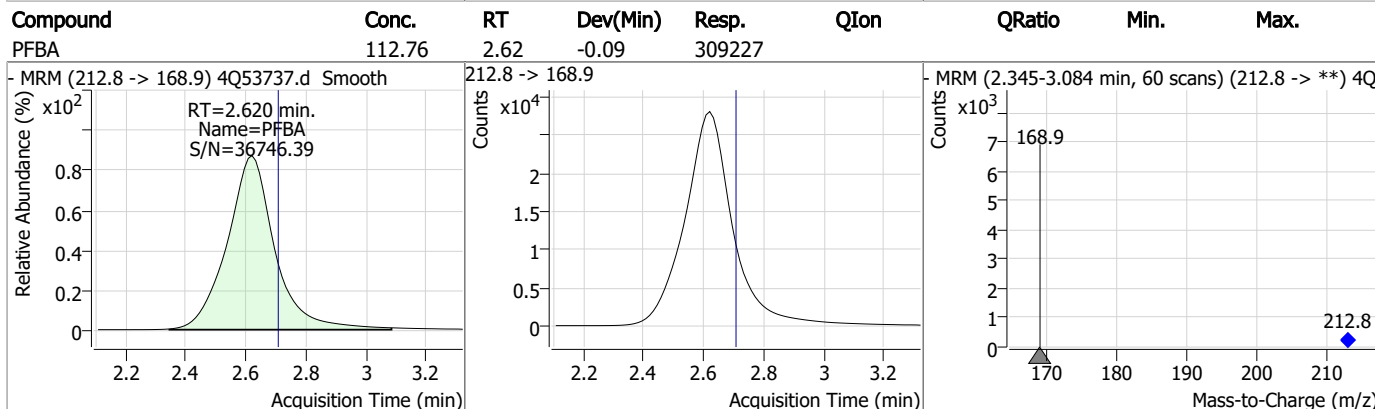
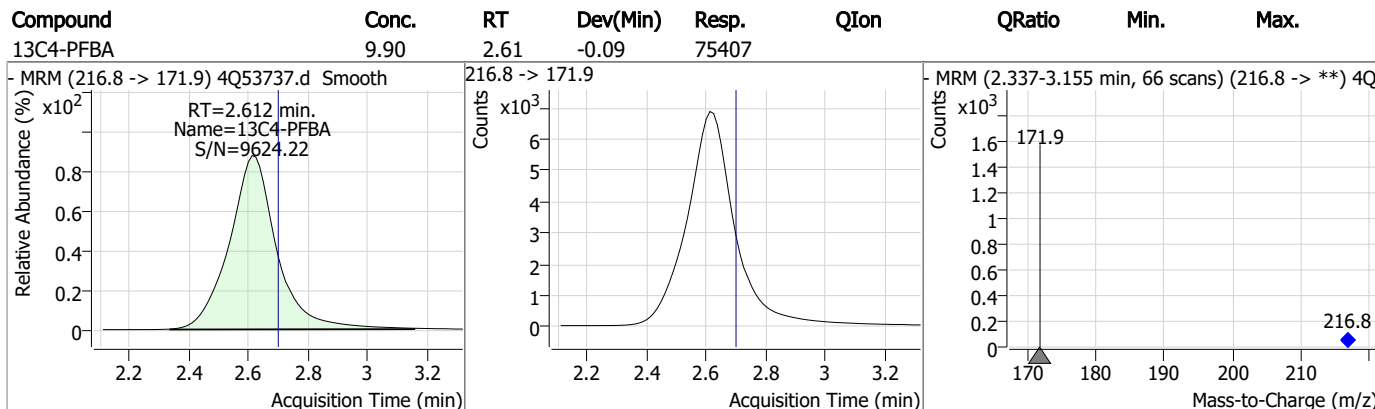
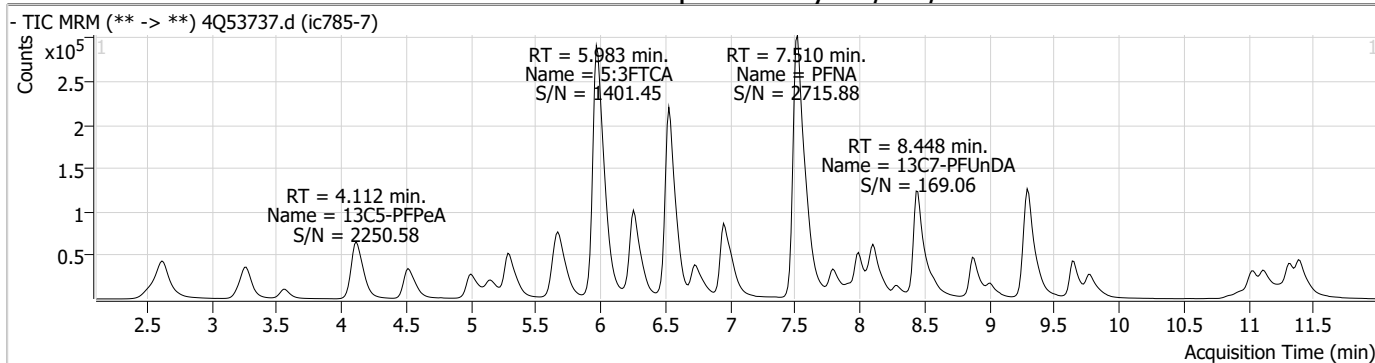
Perfluorinated Compounds by LC/MS/MS

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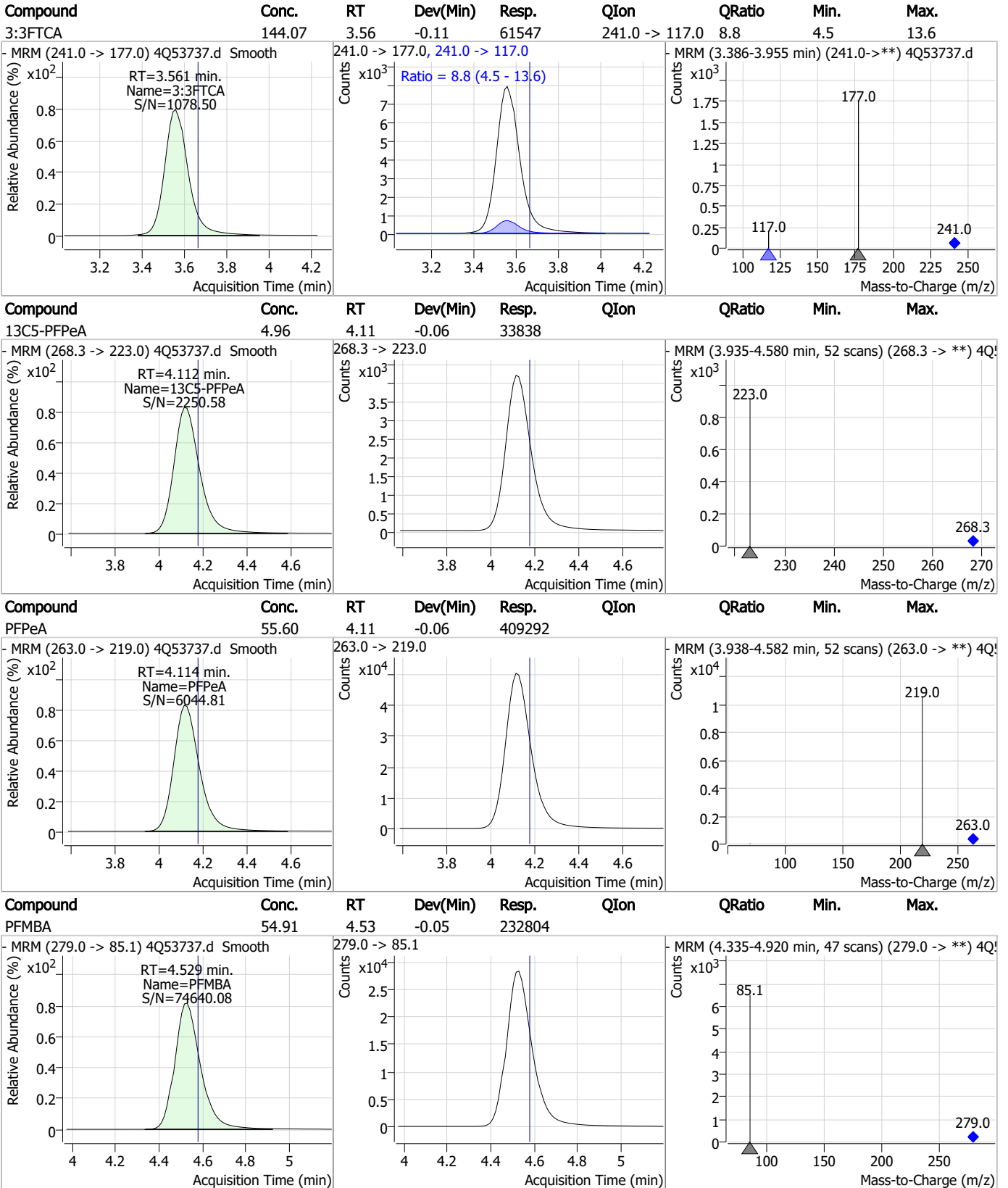


Perfluorinated Compounds by LC/MS/MS



7.7.8
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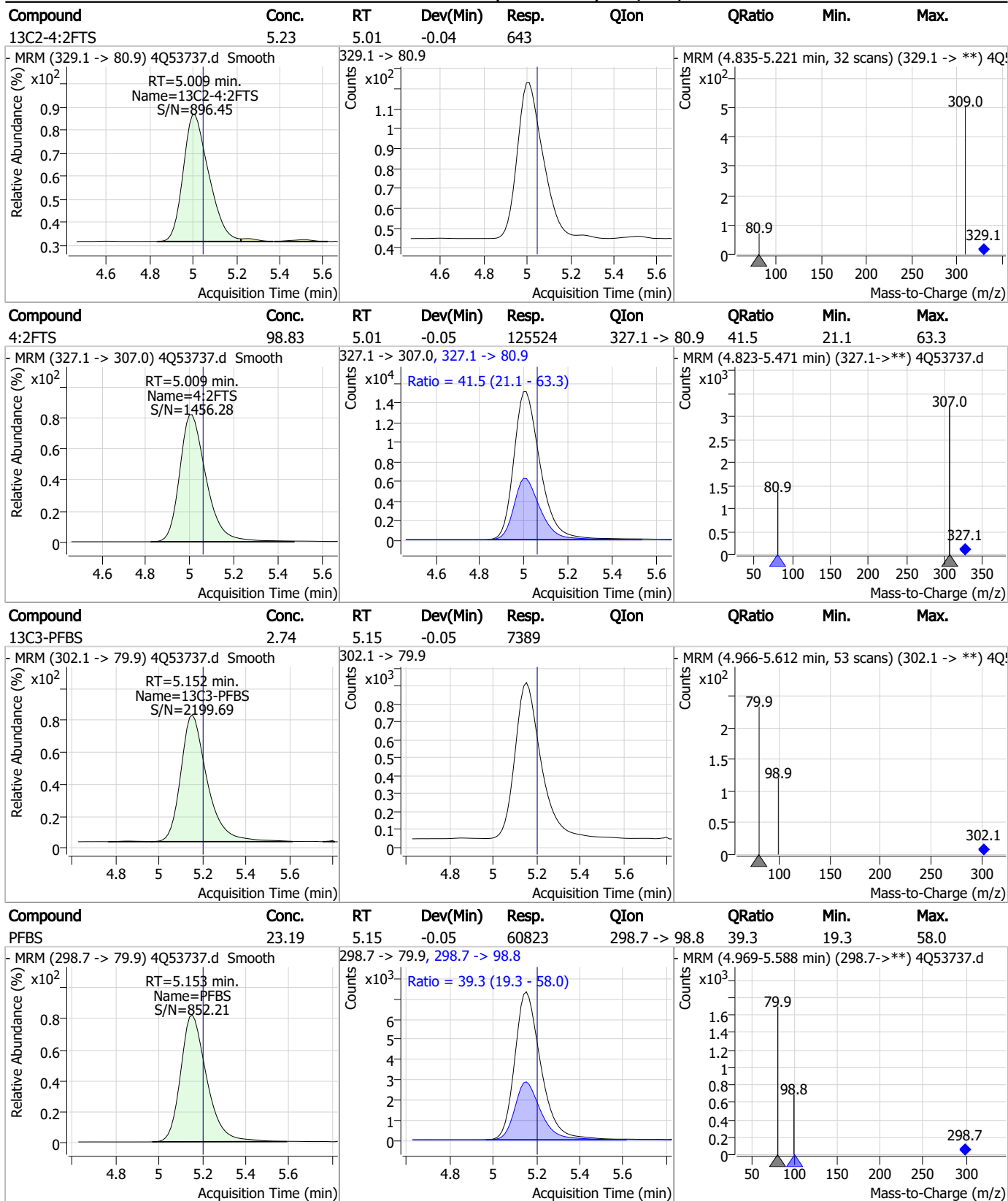
Perfluorinated Compounds by LC/MS/MS



7.7.8

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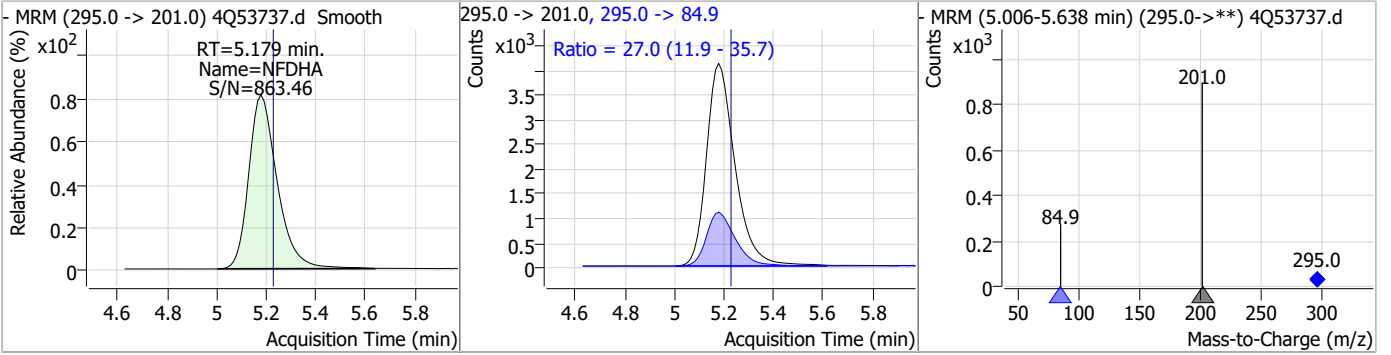
Perfluorinated Compounds by LC/MS/MS



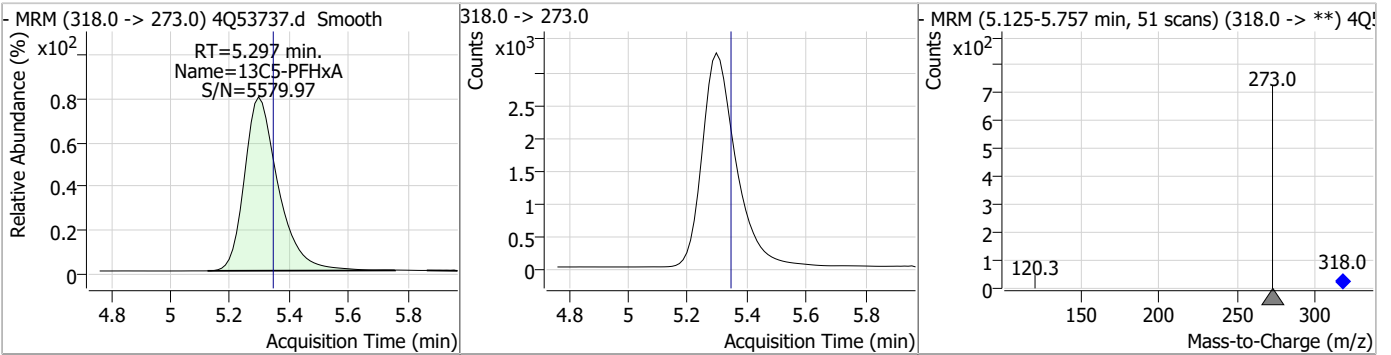
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Perfluorinated Compounds by LC/MS/MS

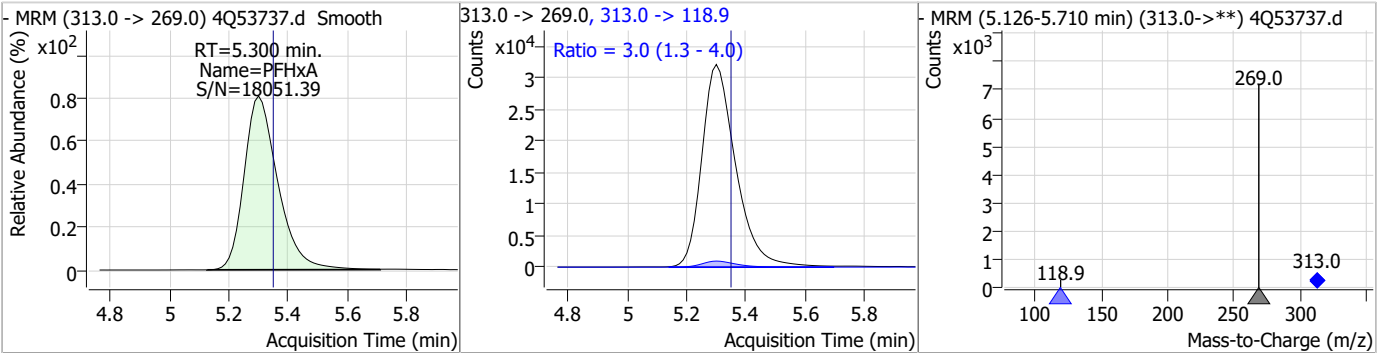
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	55.10	5.18	-0.05	32631	295.0 -> 84.9	27.0	11.9	35.7



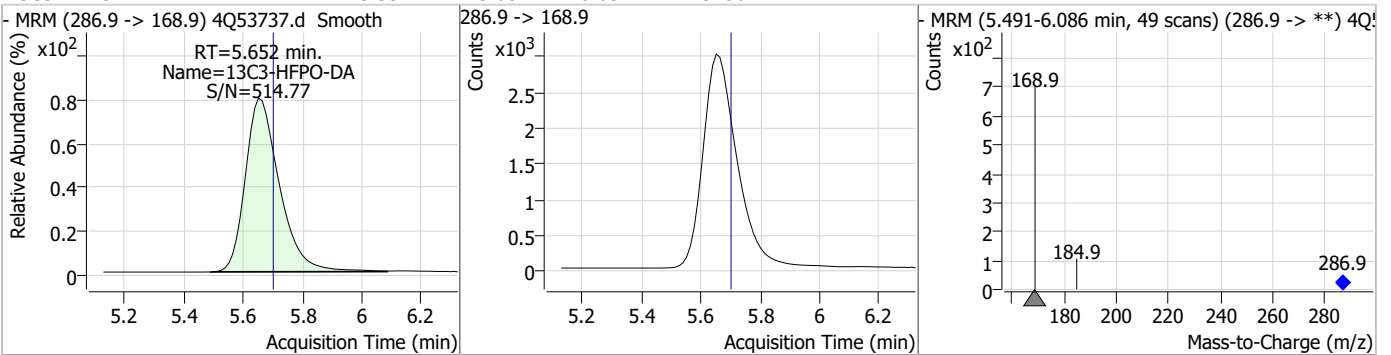
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.46	5.30	-0.05	25676				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	28.24	5.30	-0.05	253296	313.0 -> 118.9	3.0	1.3	4.0

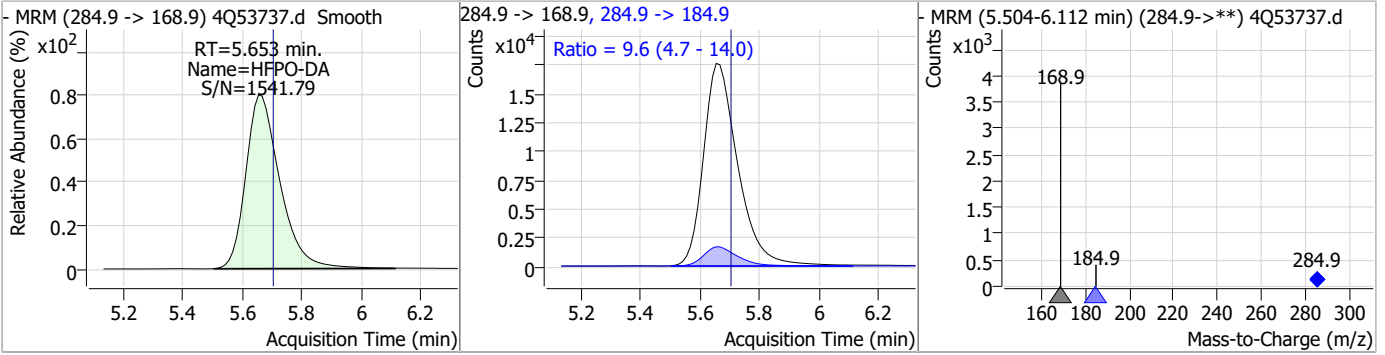


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.99	5.65	-0.05	23756				

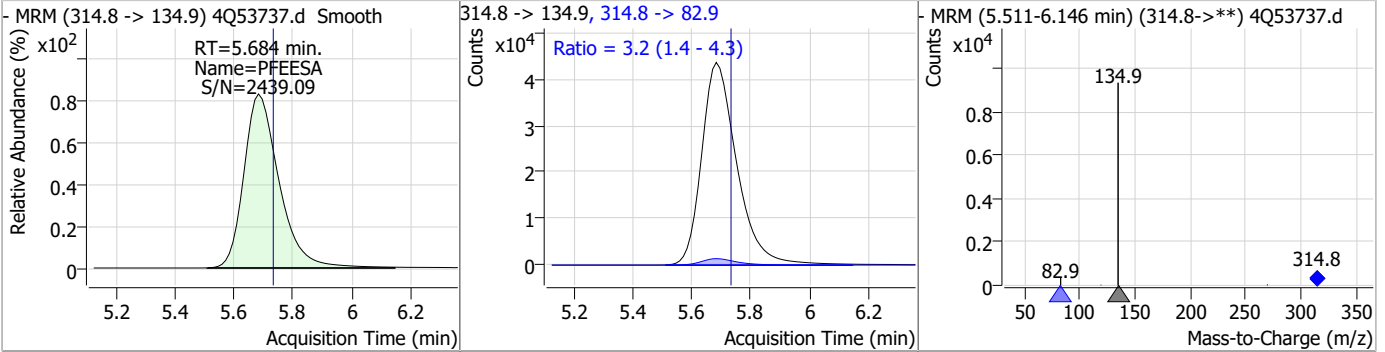


Perfluorinated Compounds by LC/MS/MS

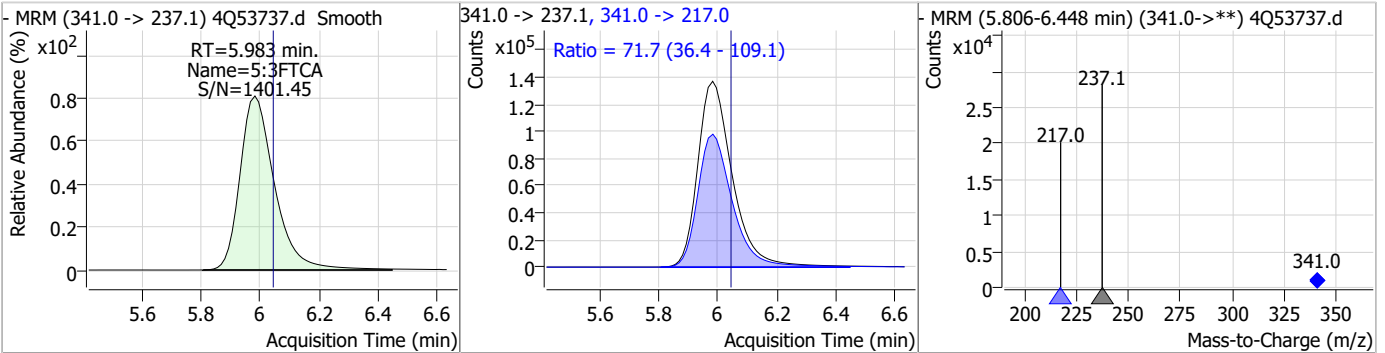
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	55.87	5.65	-0.05	140545	284.9 -> 184.9	9.6	4.7	14.0



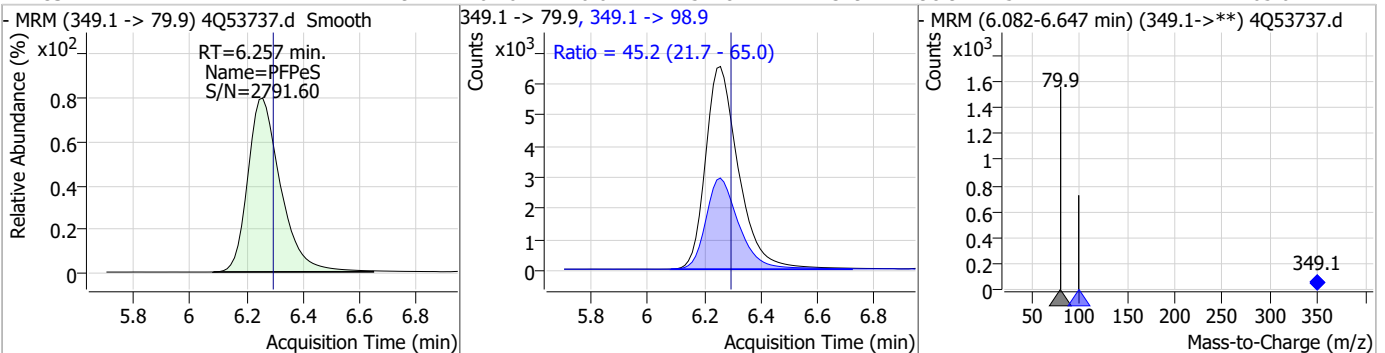
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	50.77	5.68	-0.05	360443	314.8 -> 82.9	3.2	1.4	4.3



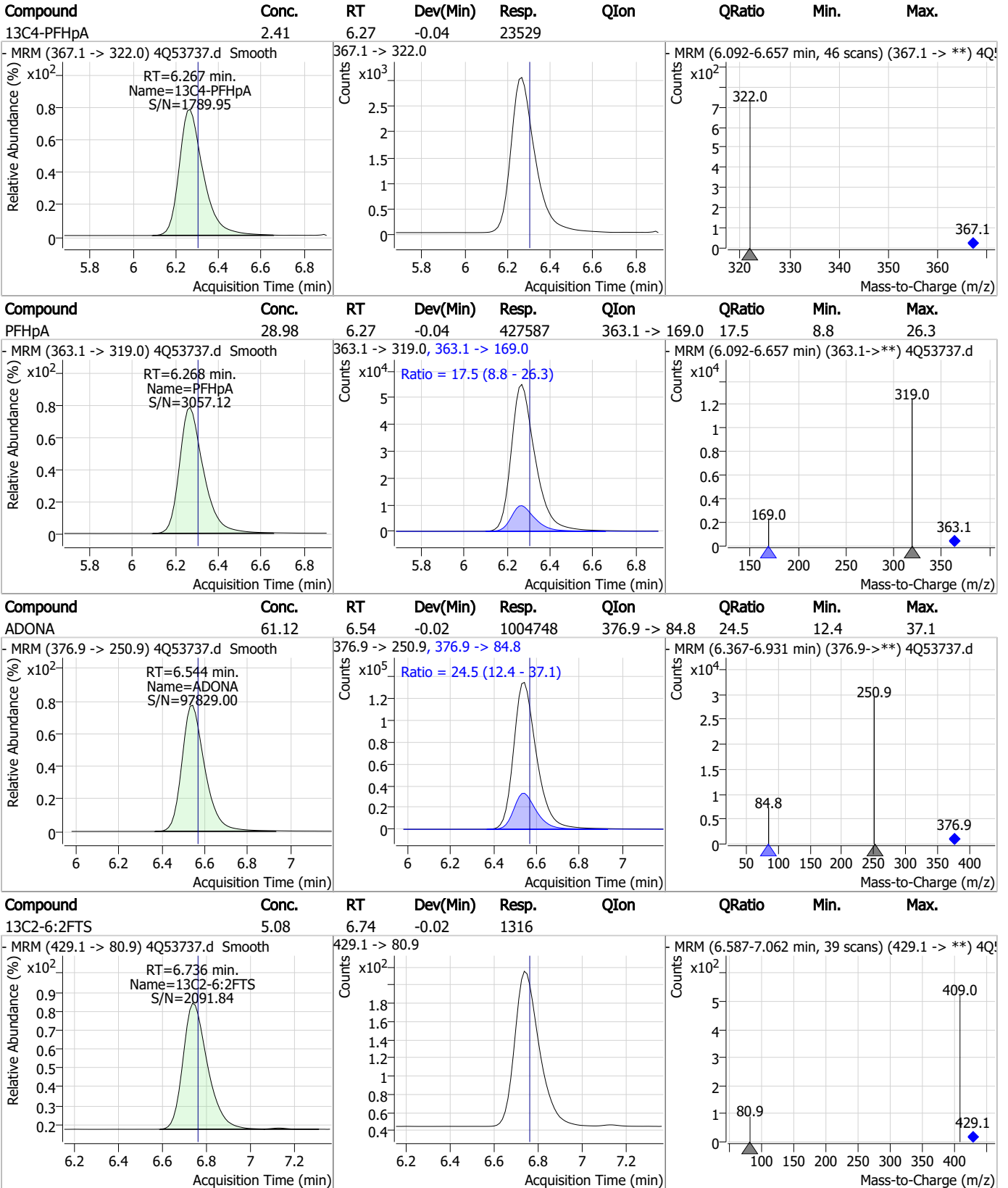
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	705.63	5.98	-0.06	1113871	341.0 -> 217.0	71.7	36.4	109.1



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



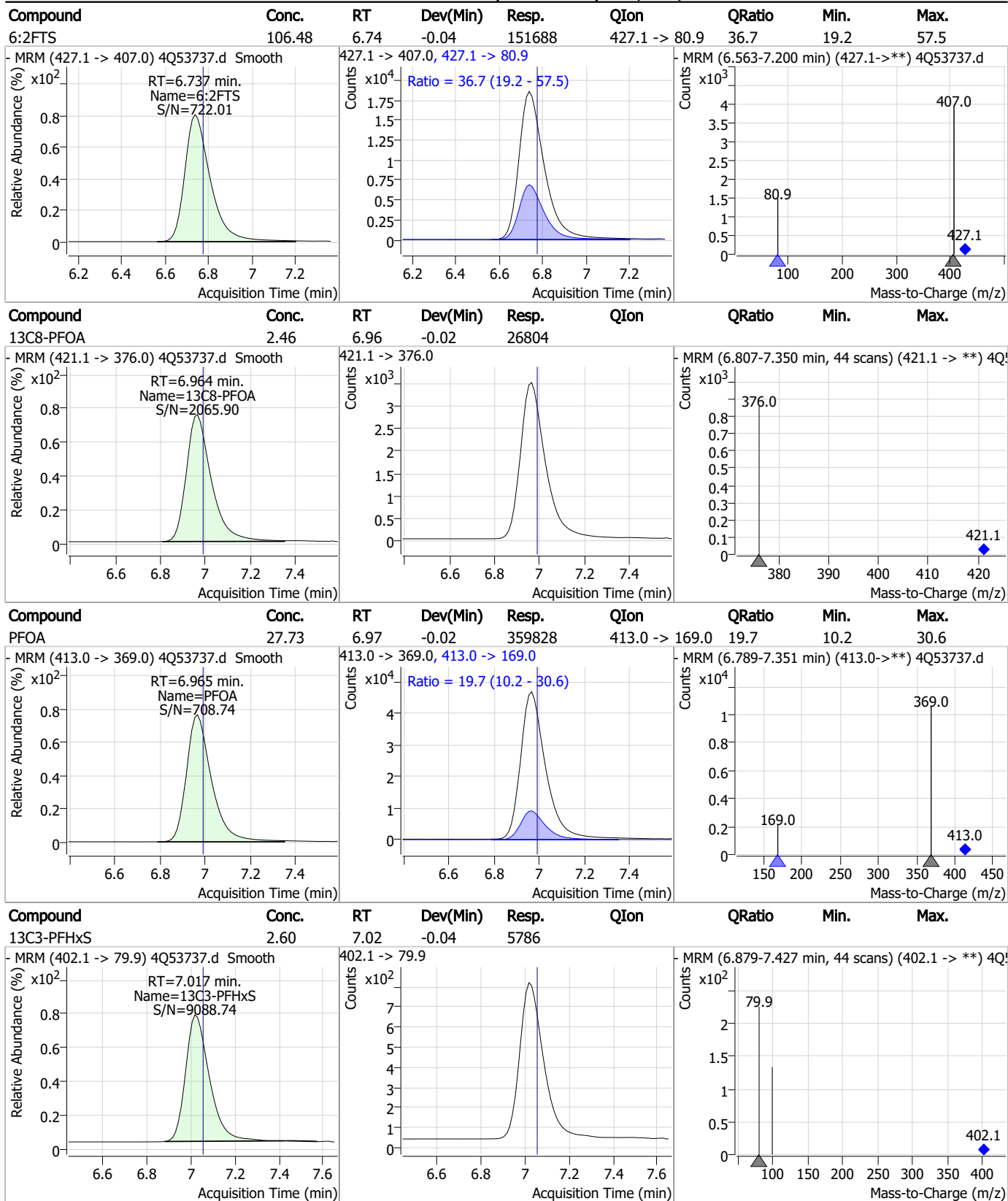
Perfluorinated Compounds by LC/MS/MS



7.7.8

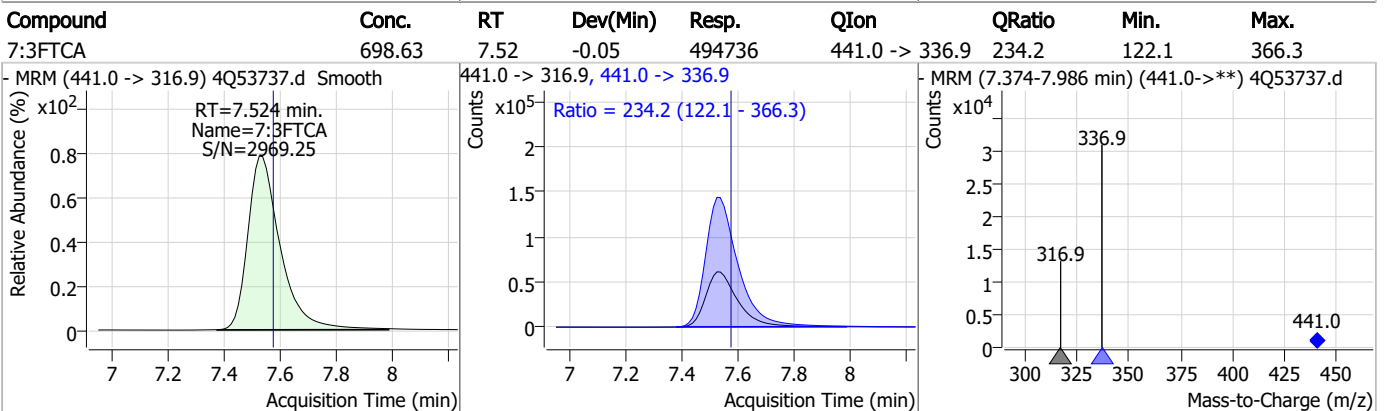
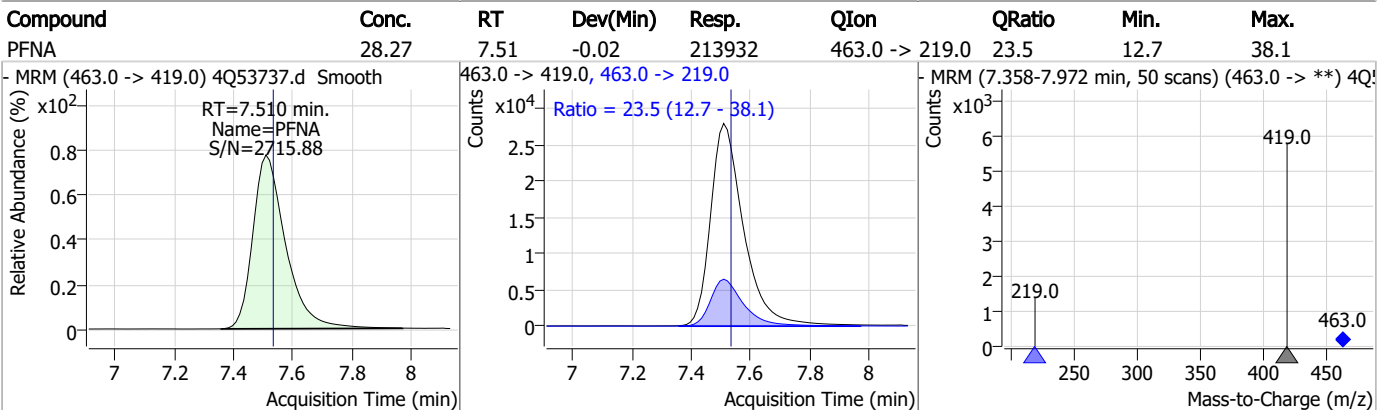
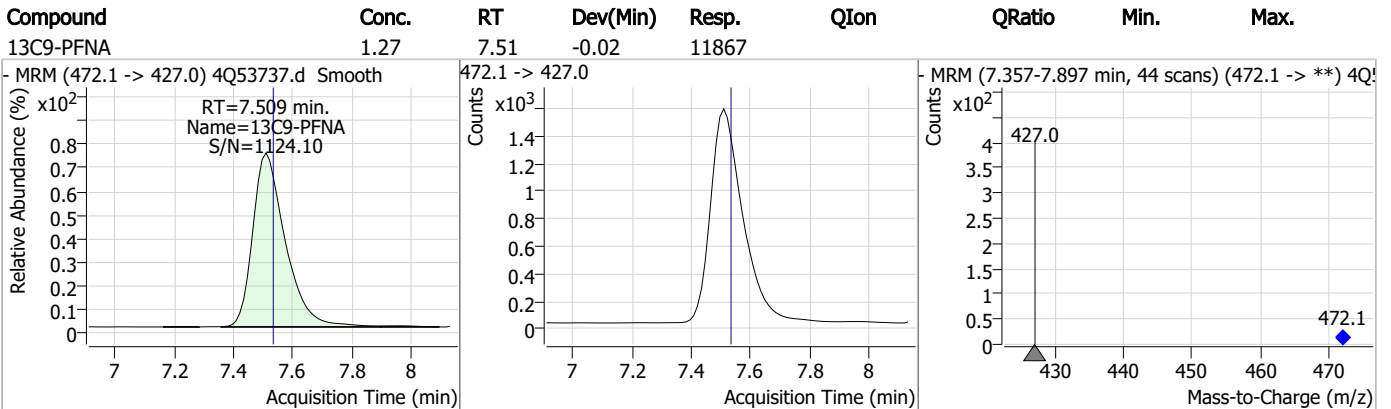
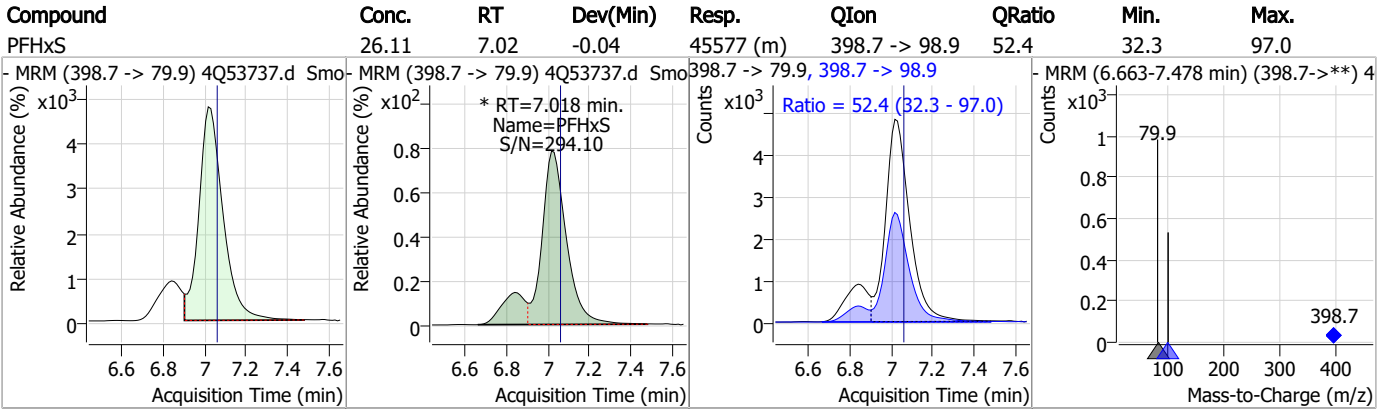
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Perfluorinated Compounds by LC/MS/MS



7.7.8
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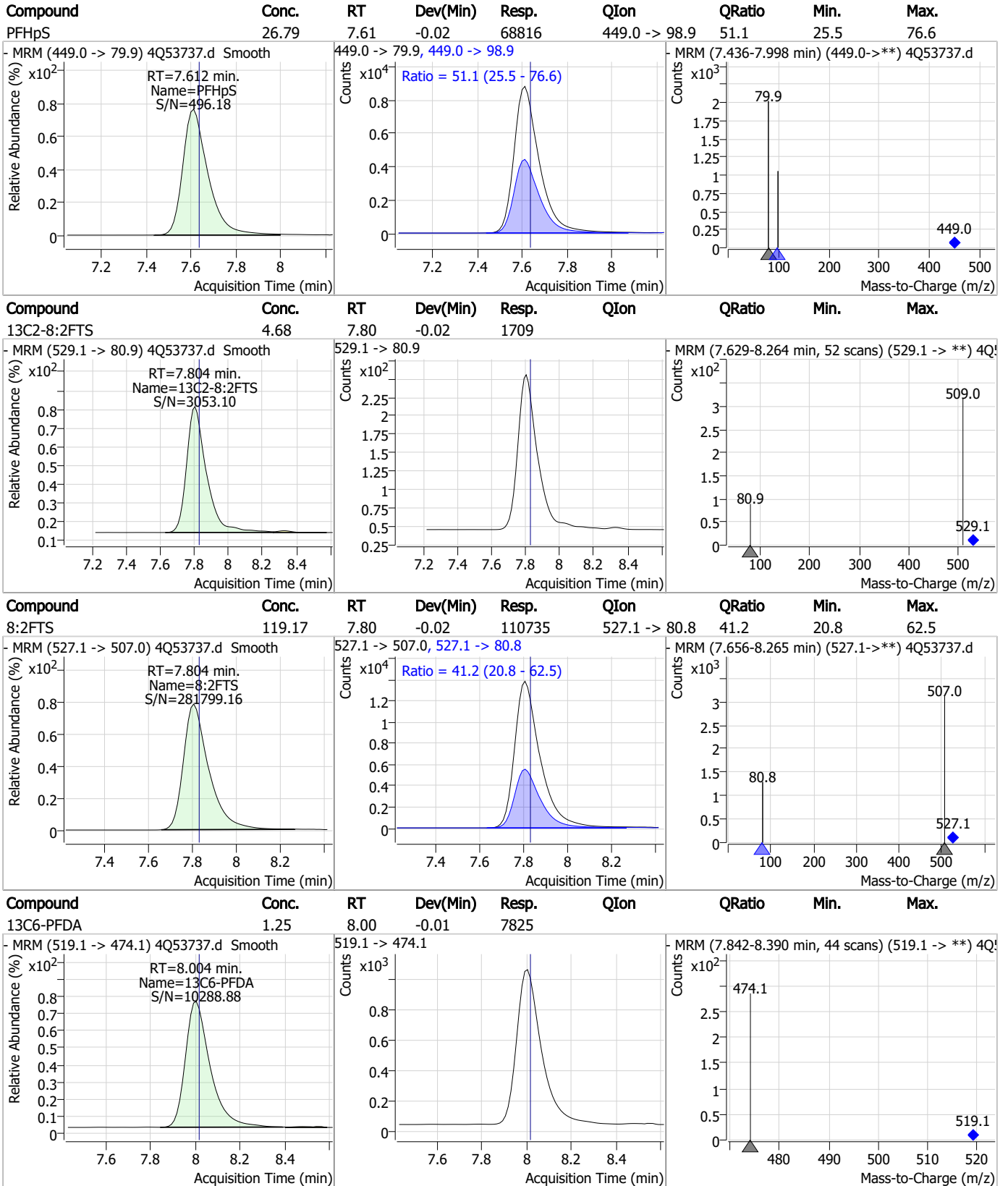
Perfluorinated Compounds by LC/MS/MS



7.7.8

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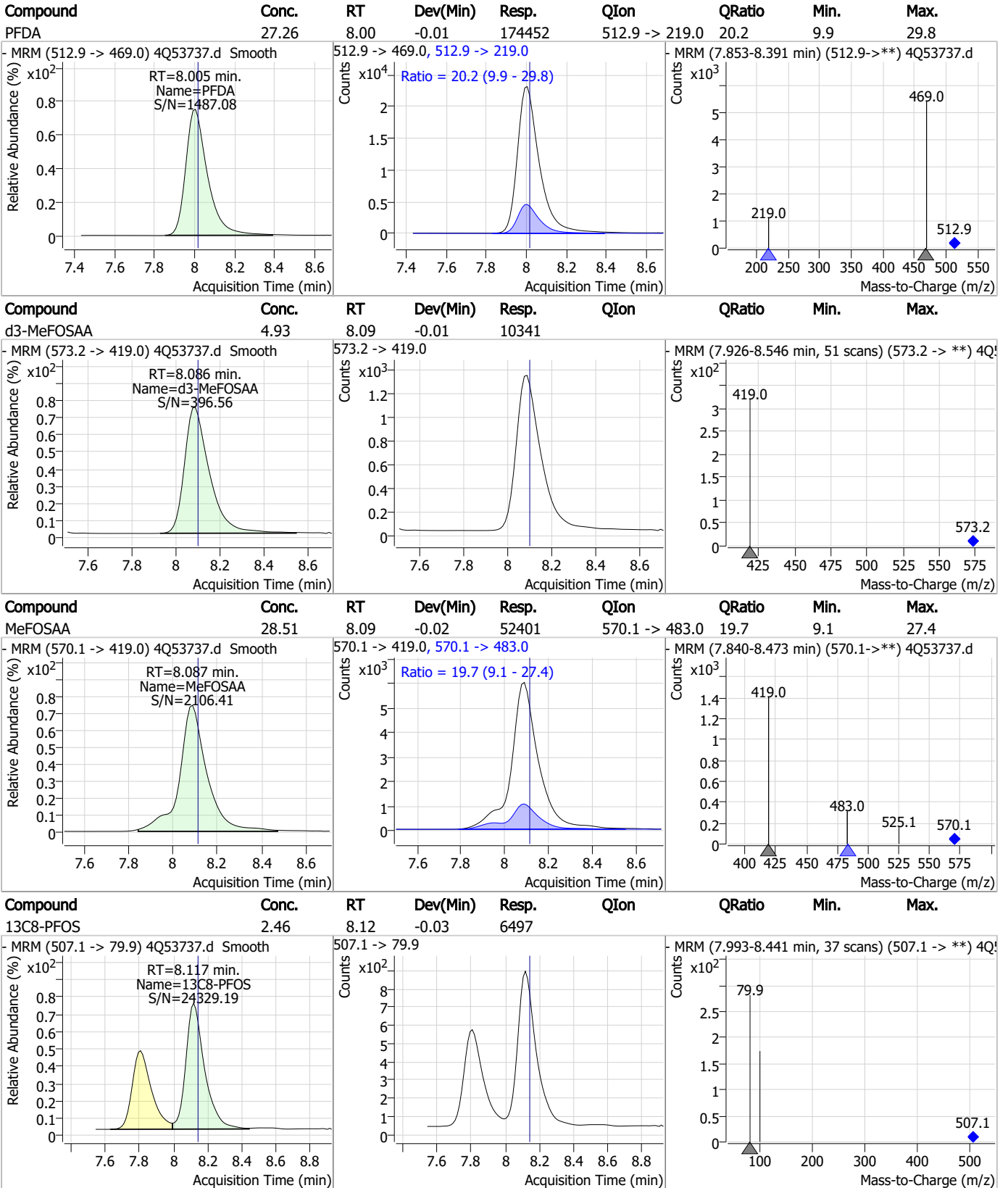
Perfluorinated Compounds by LC/MS/MS



7.7.8

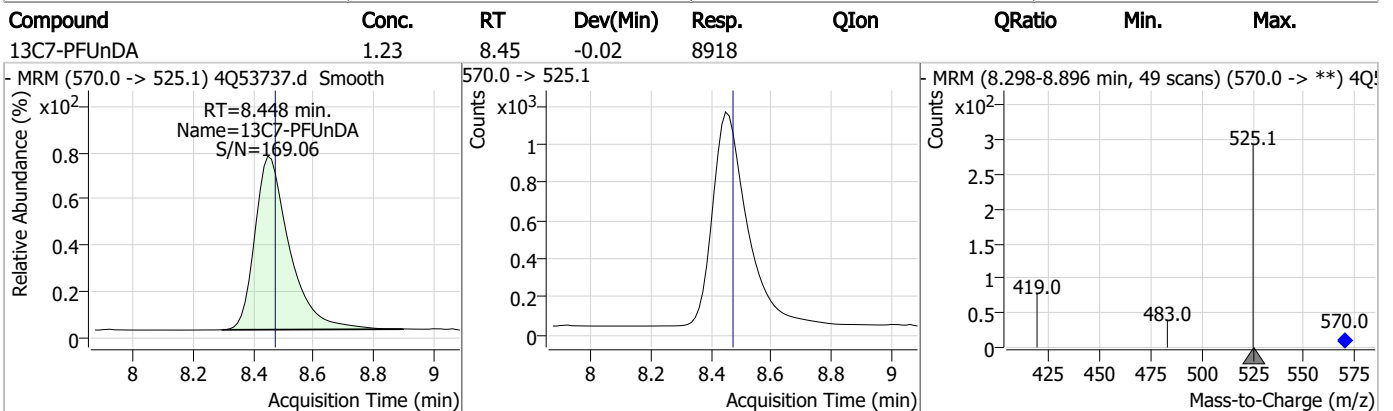
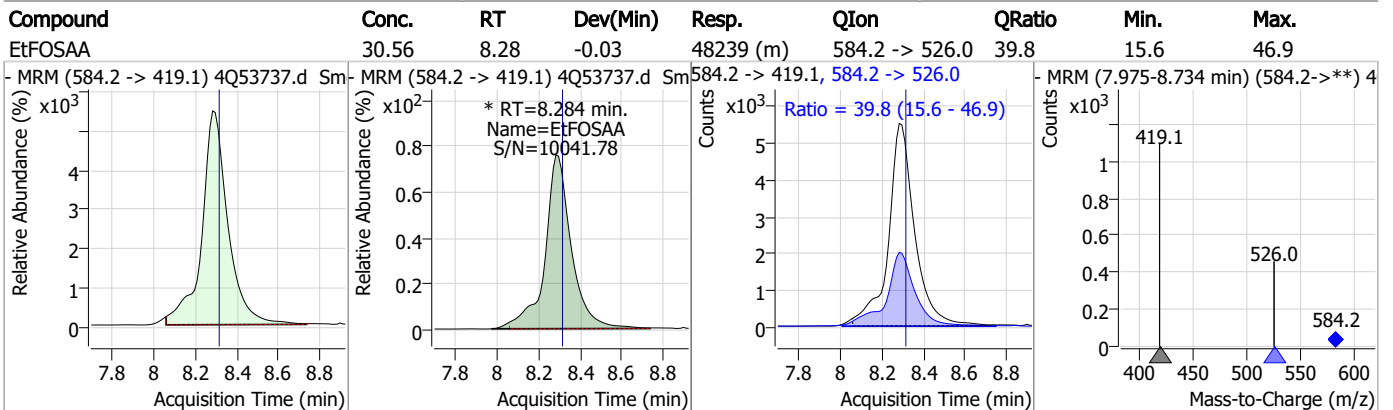
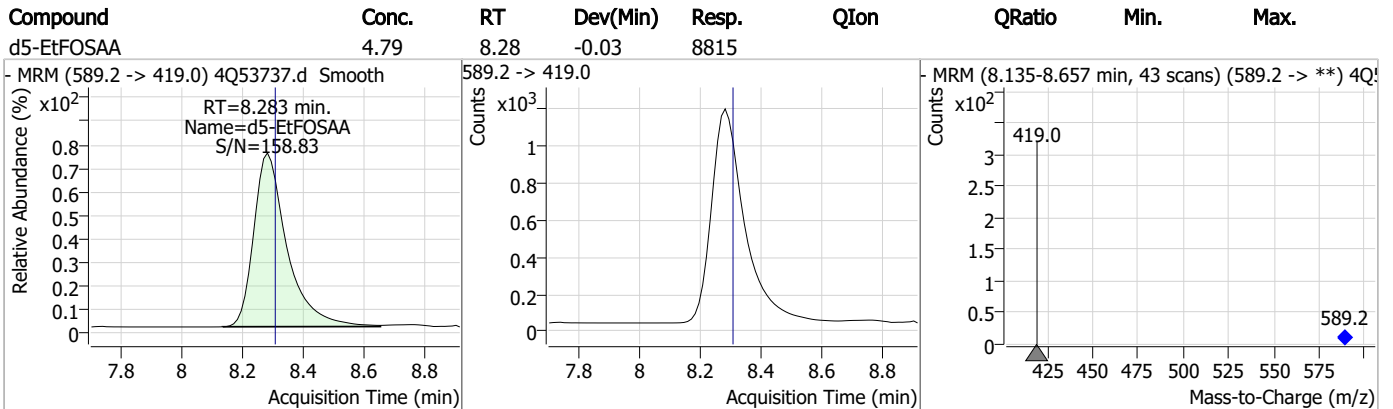
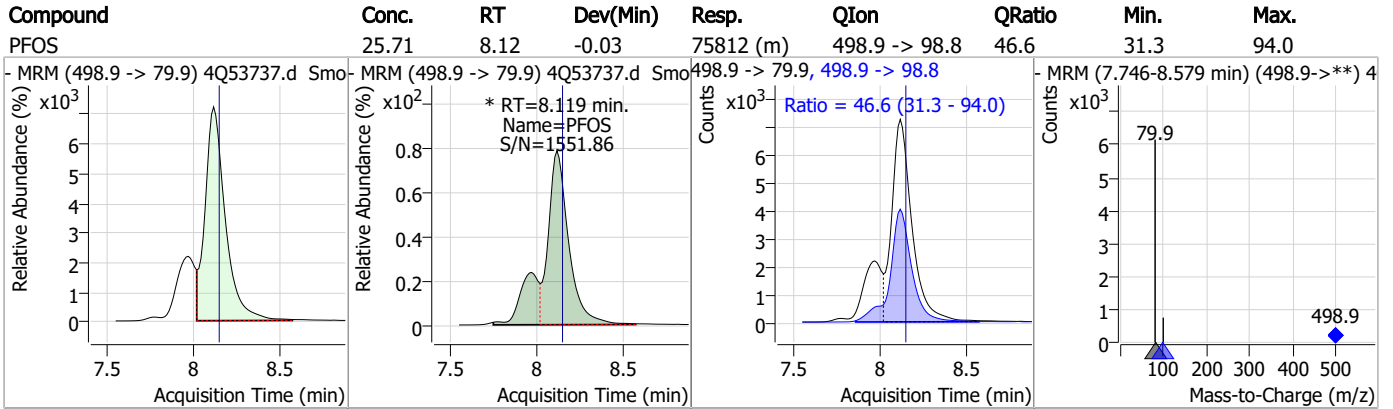
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Perfluorinated Compounds by LC/MS/MS

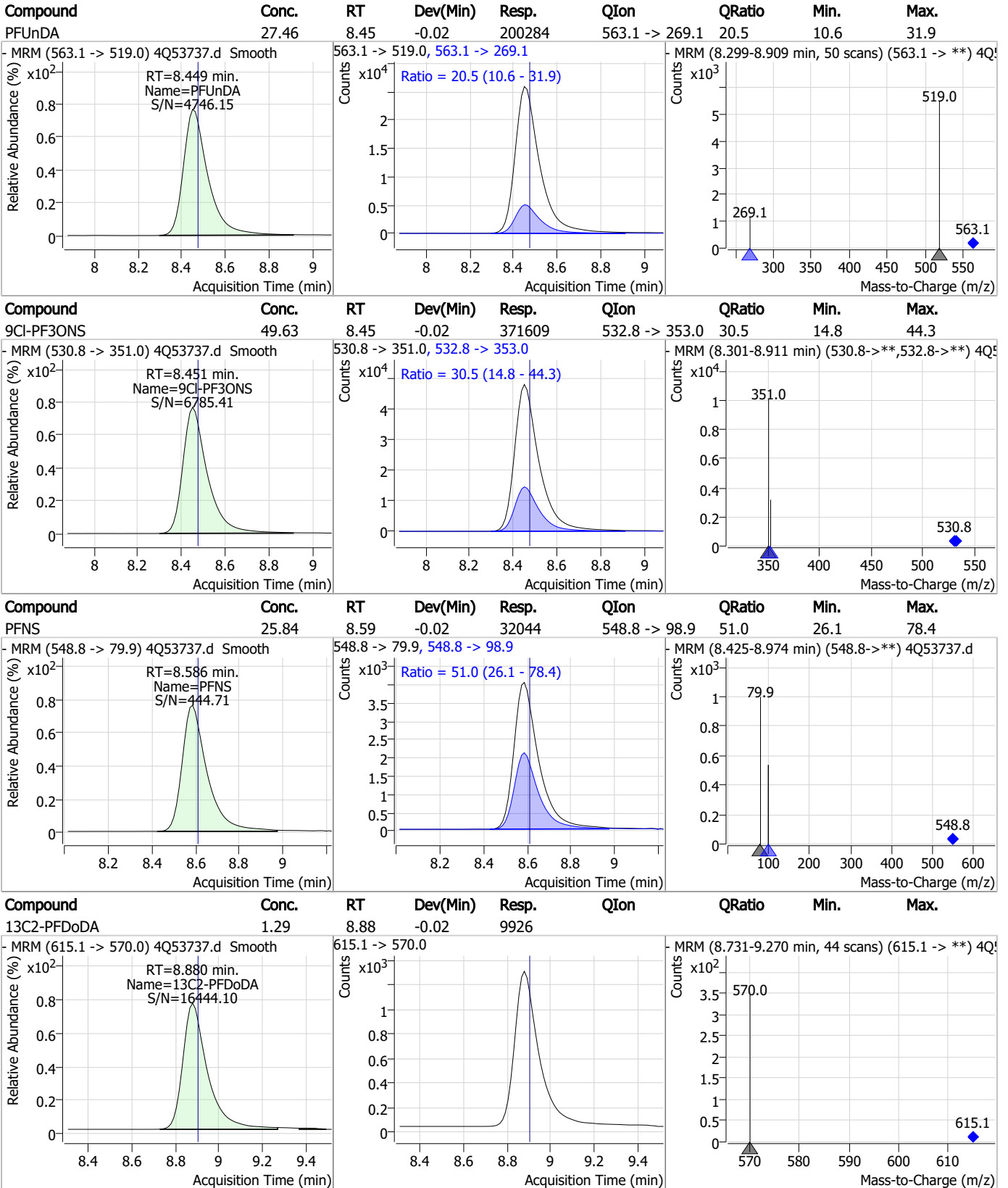


7.7.8
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Perfluorinated Compounds by LC/MS/MS



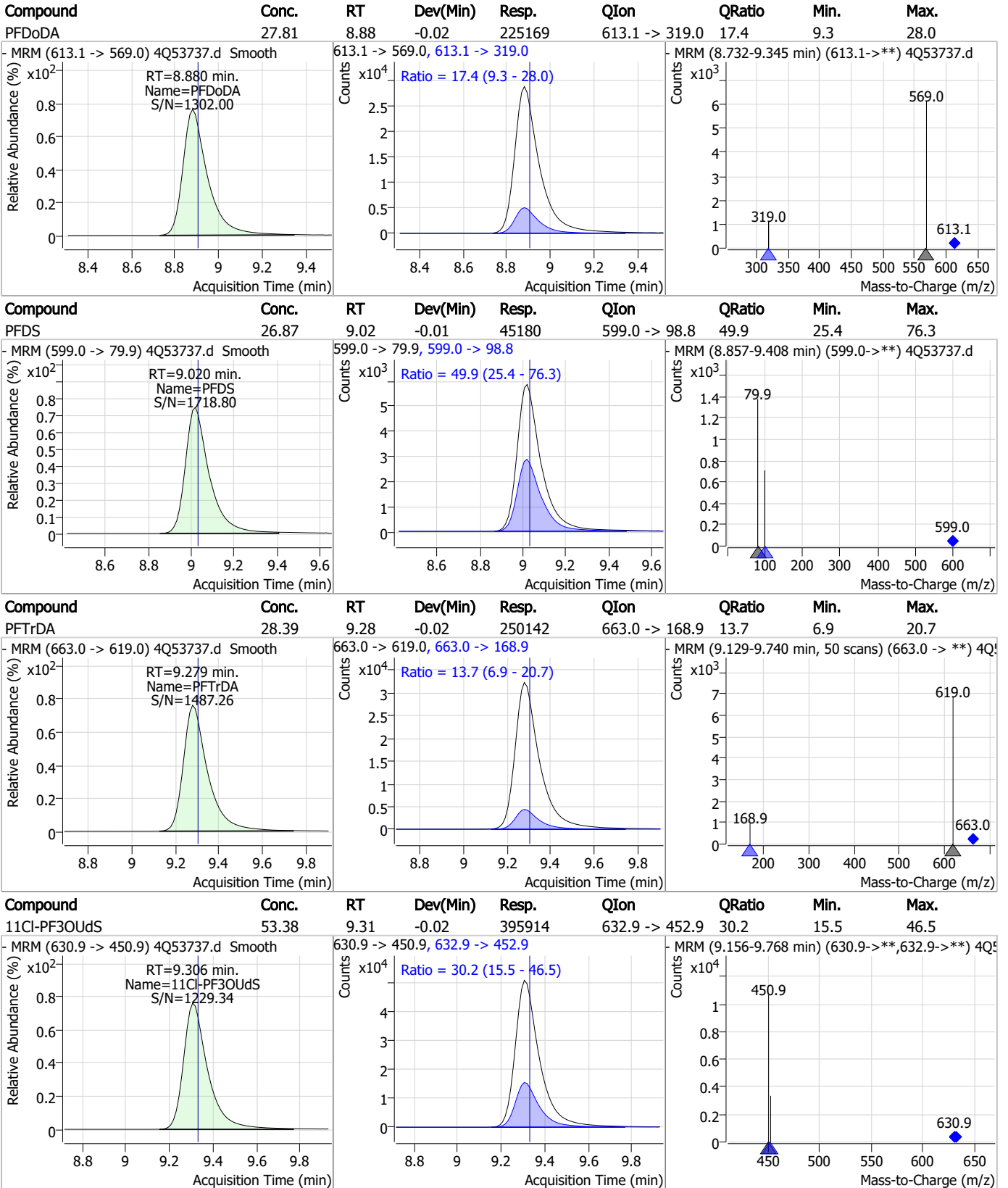
Perfluorinated Compounds by LC/MS/MS



7.7.8

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Perfluorinated Compounds by LC/MS/MS

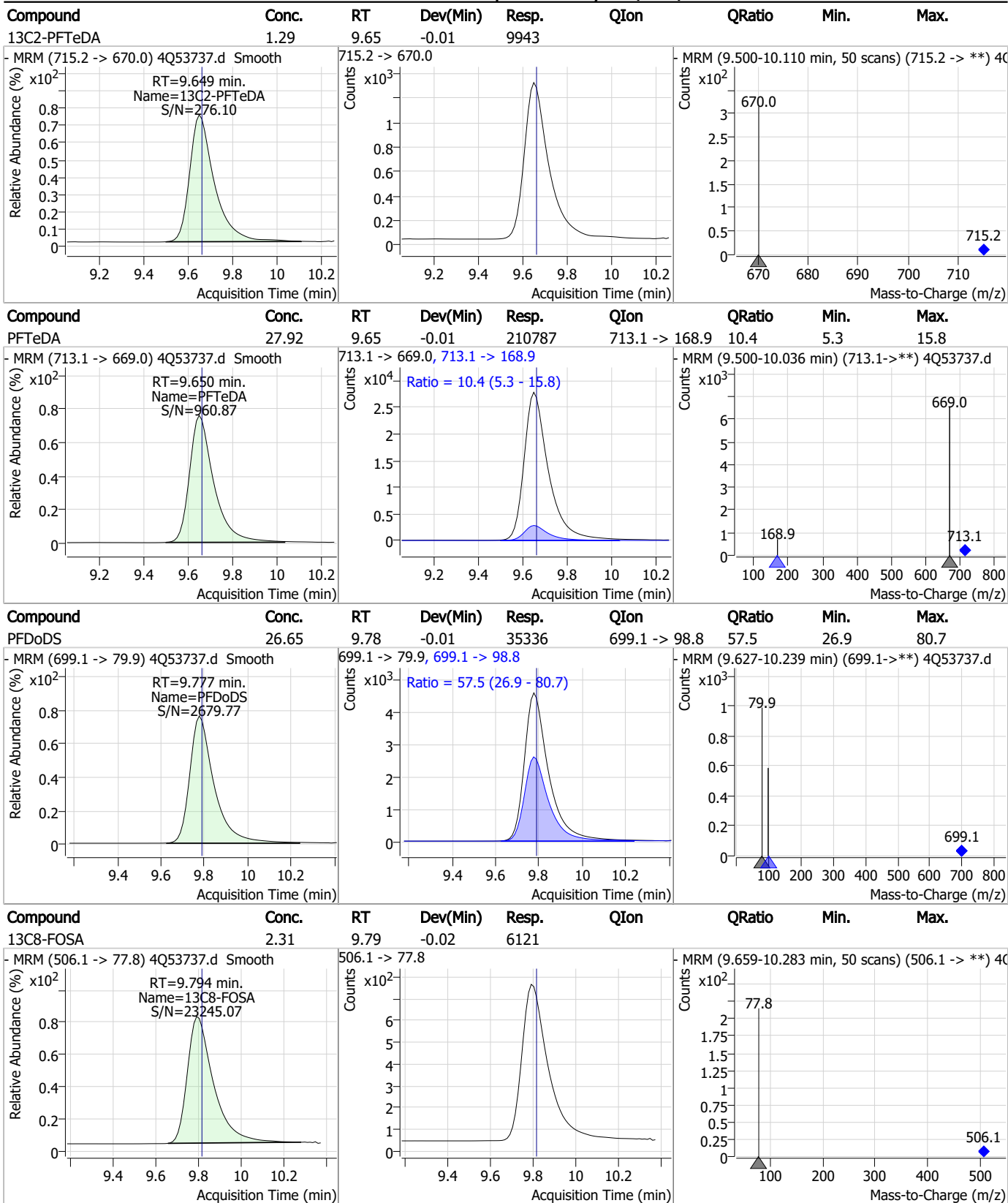


7.7.8

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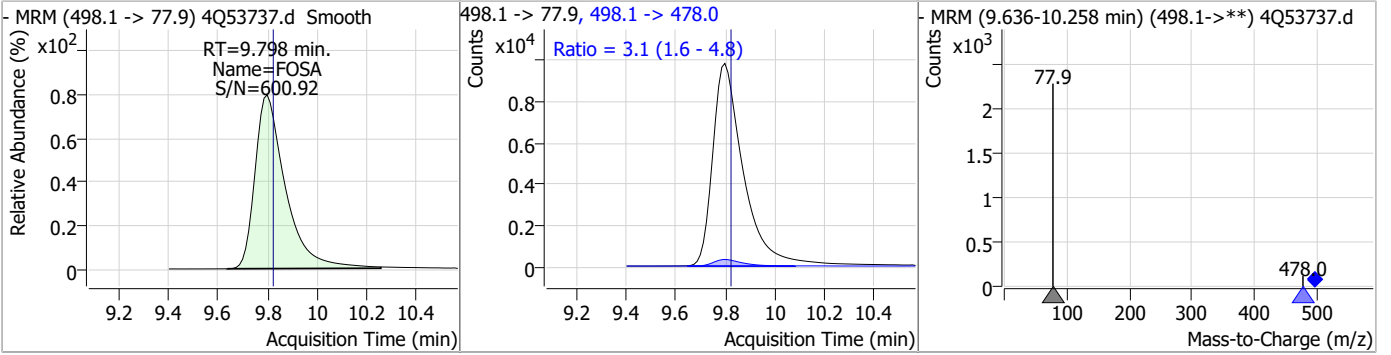
Perfluorinated Compounds by LC/MS/MS



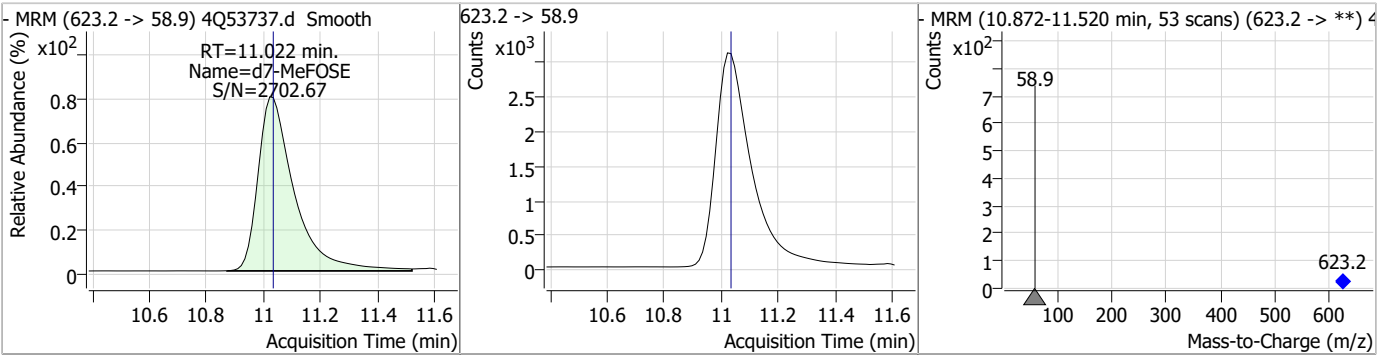
7.7.8
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Perfluorinated Compounds by LC/MS/MS

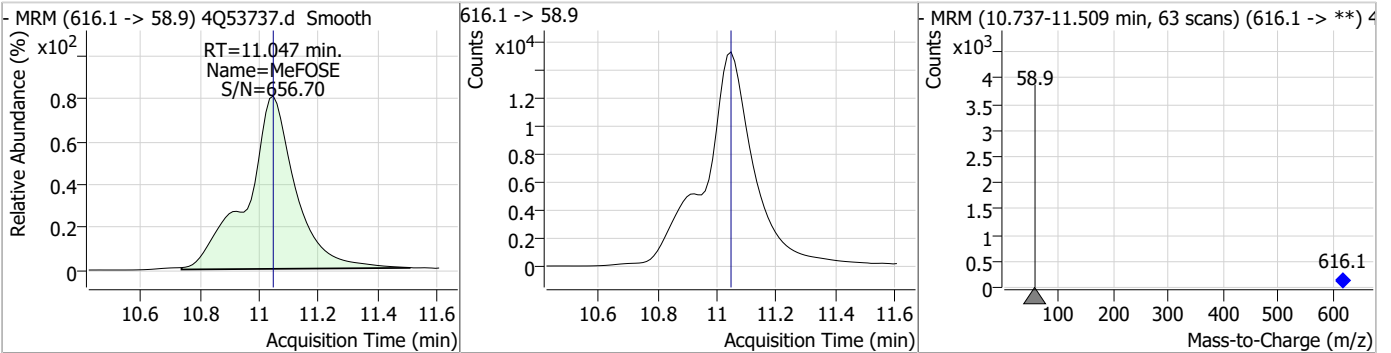
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	28.16	9.80	-0.02	84016	498.1 -> 478.0	3.1	1.6	4.8



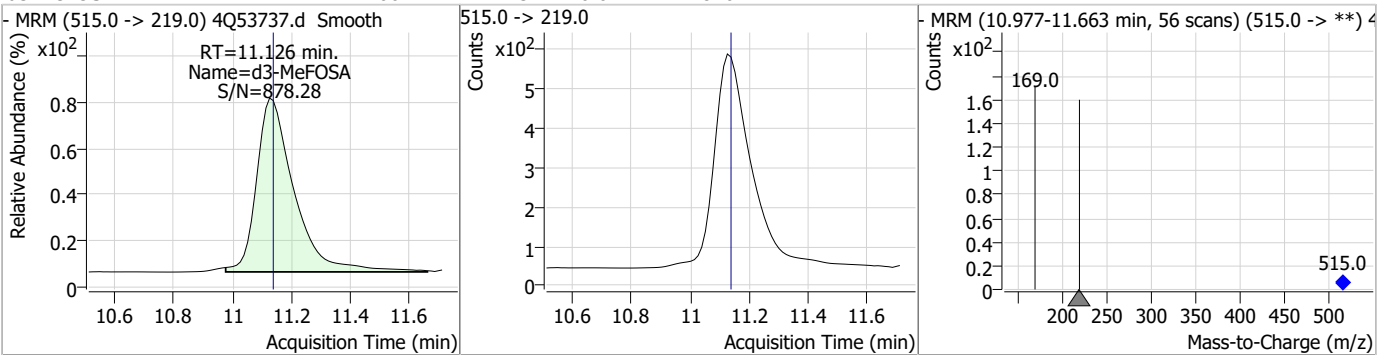
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.99	11.02	-0.01	27365	623.2 -> 58.9			



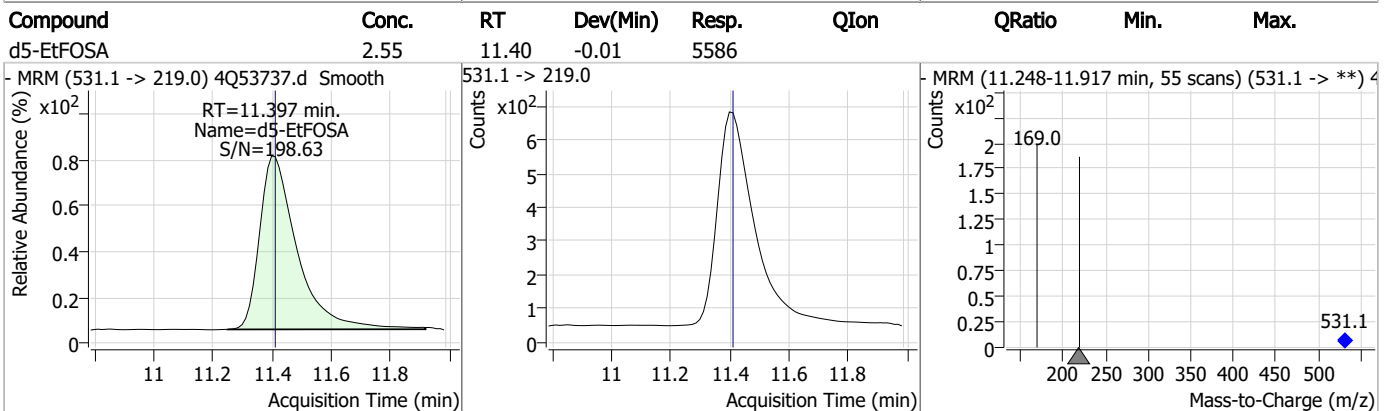
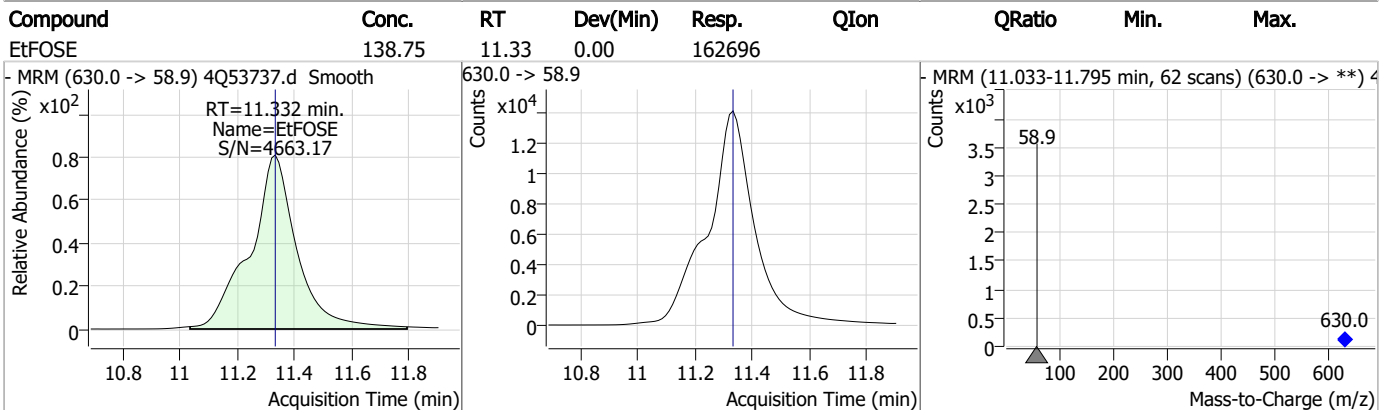
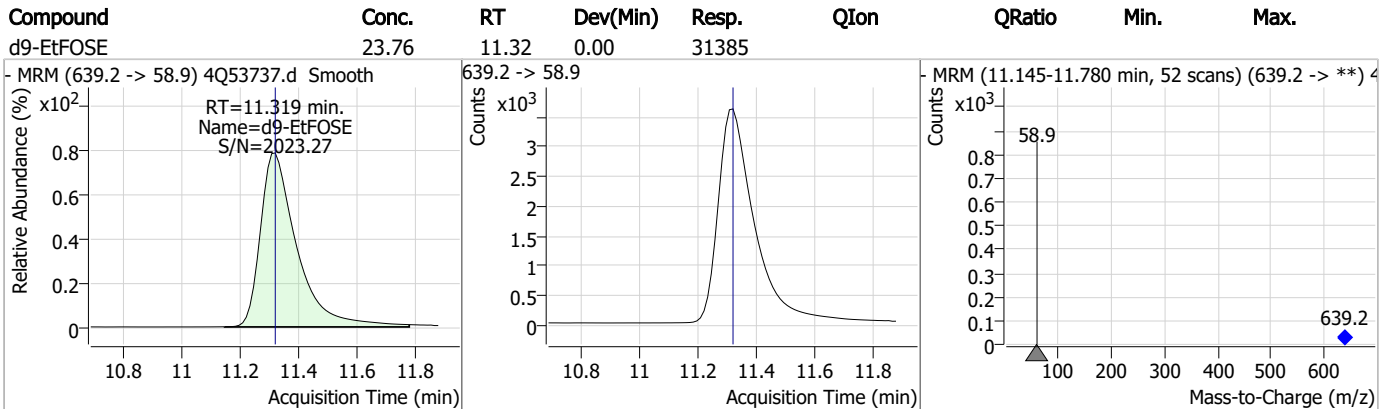
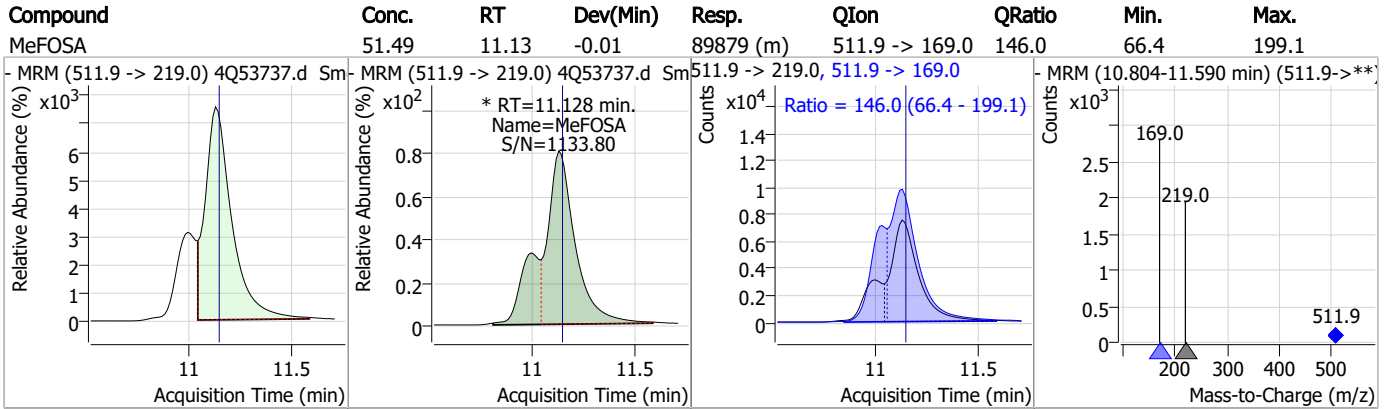
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	140.14	11.05	0.00	174720	616.1 -> 58.9			



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



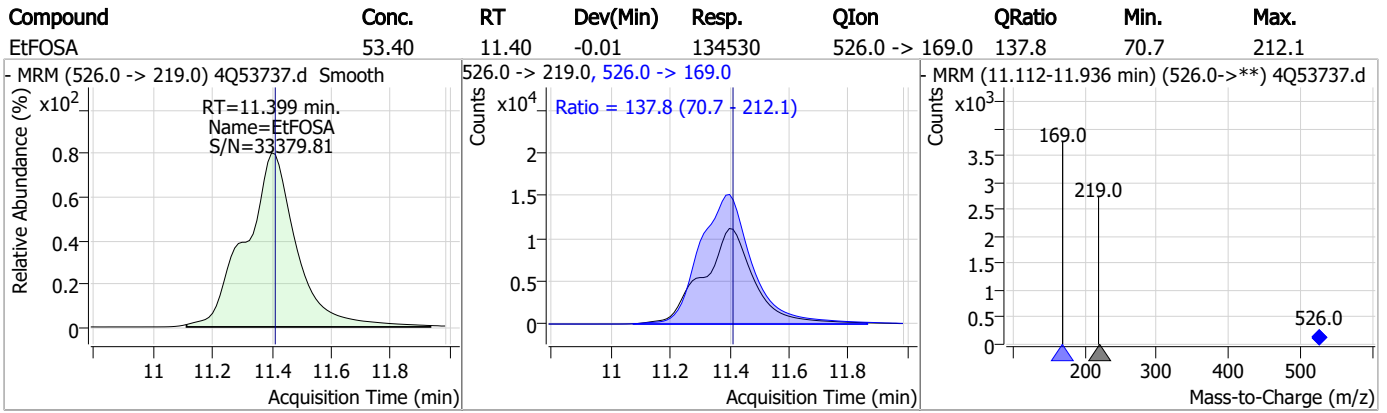
Perfluorinated Compounds by LC/MS/MS



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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 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
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

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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 = 101.4%		
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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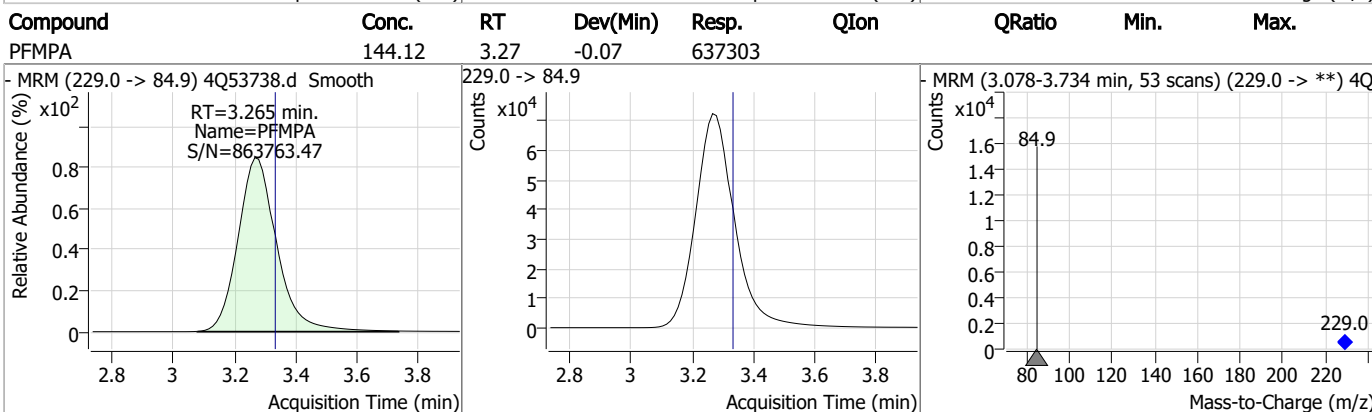
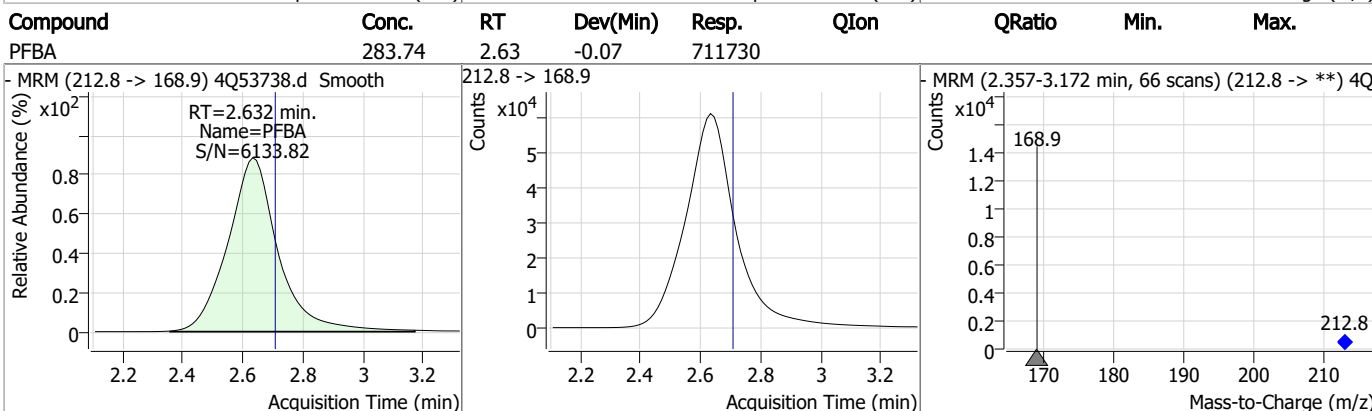
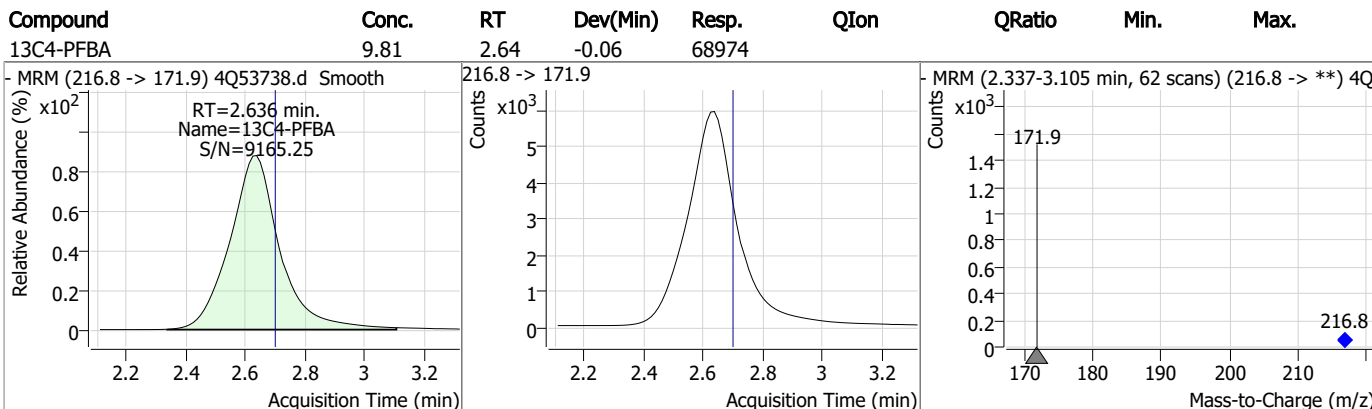
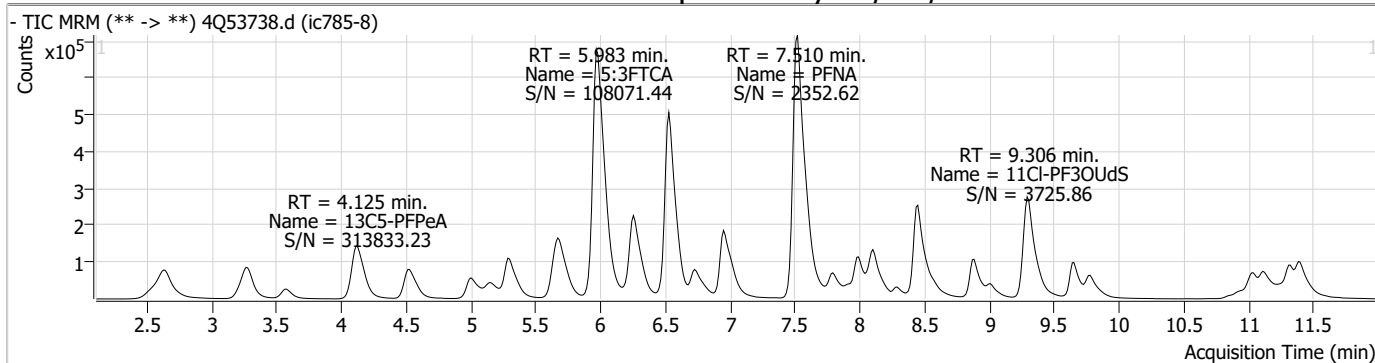
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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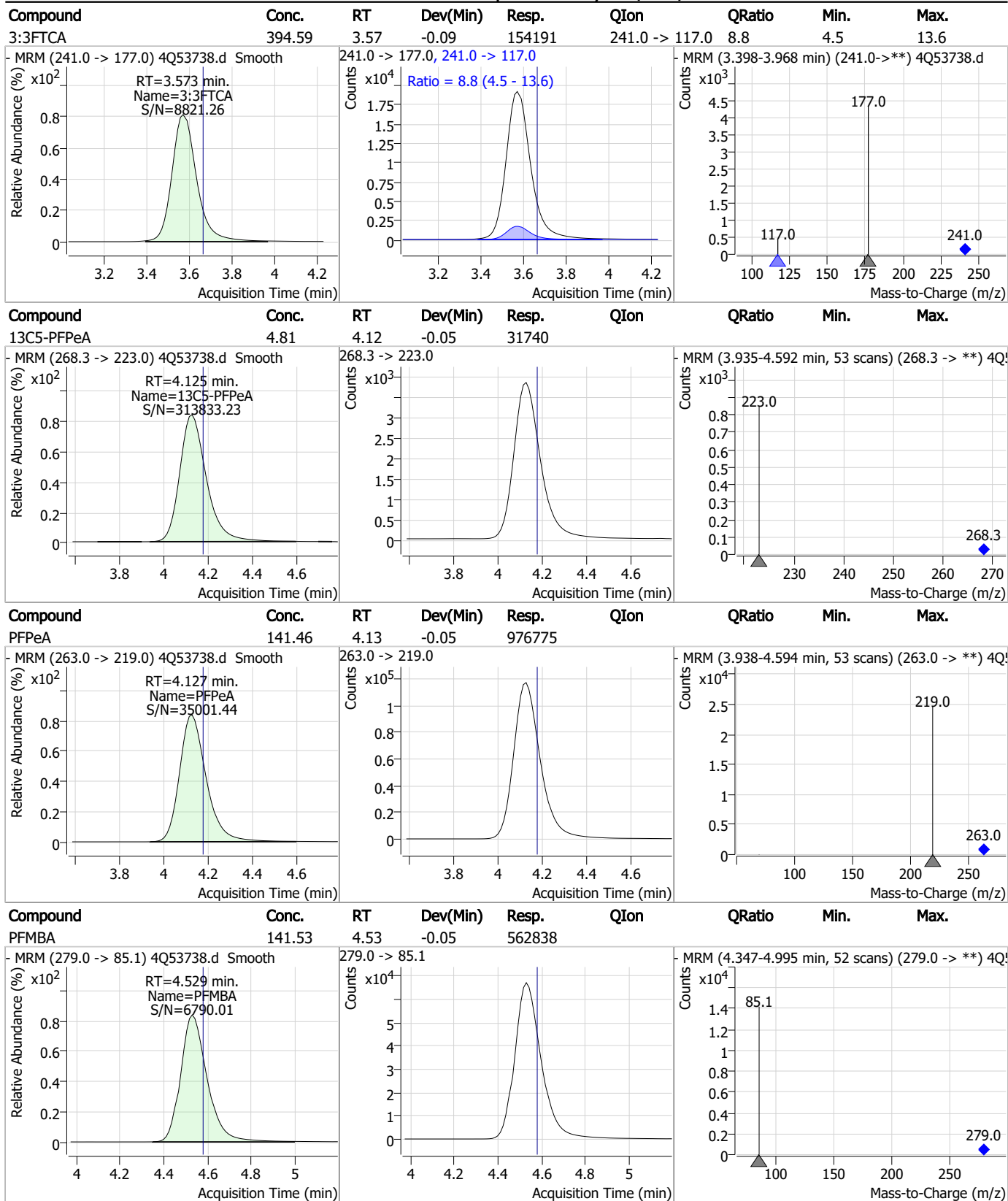
7.7.9

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Perfluorinated Compounds by LC/MS/MS

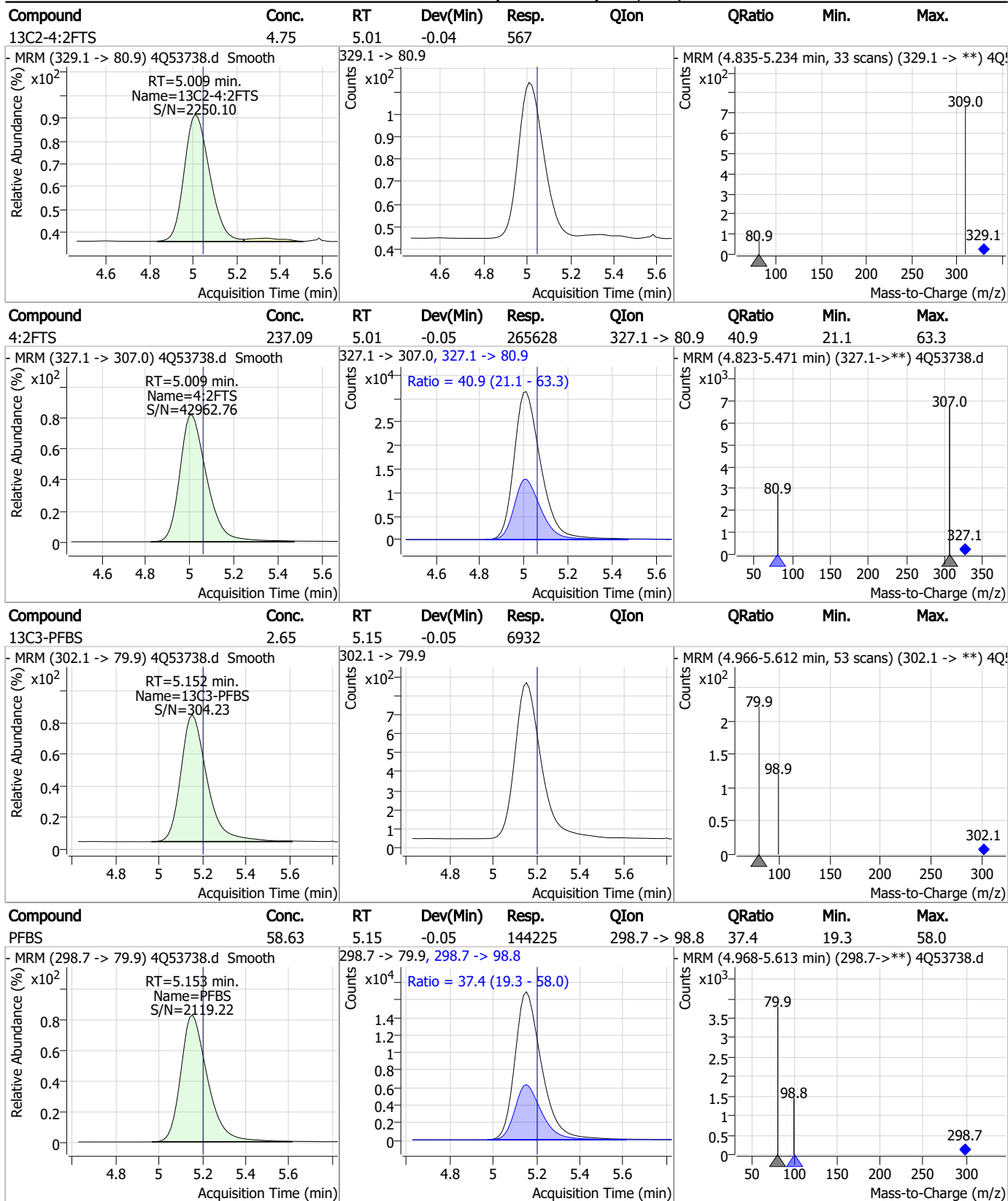


Perfluorinated Compounds by LC/MS/MS



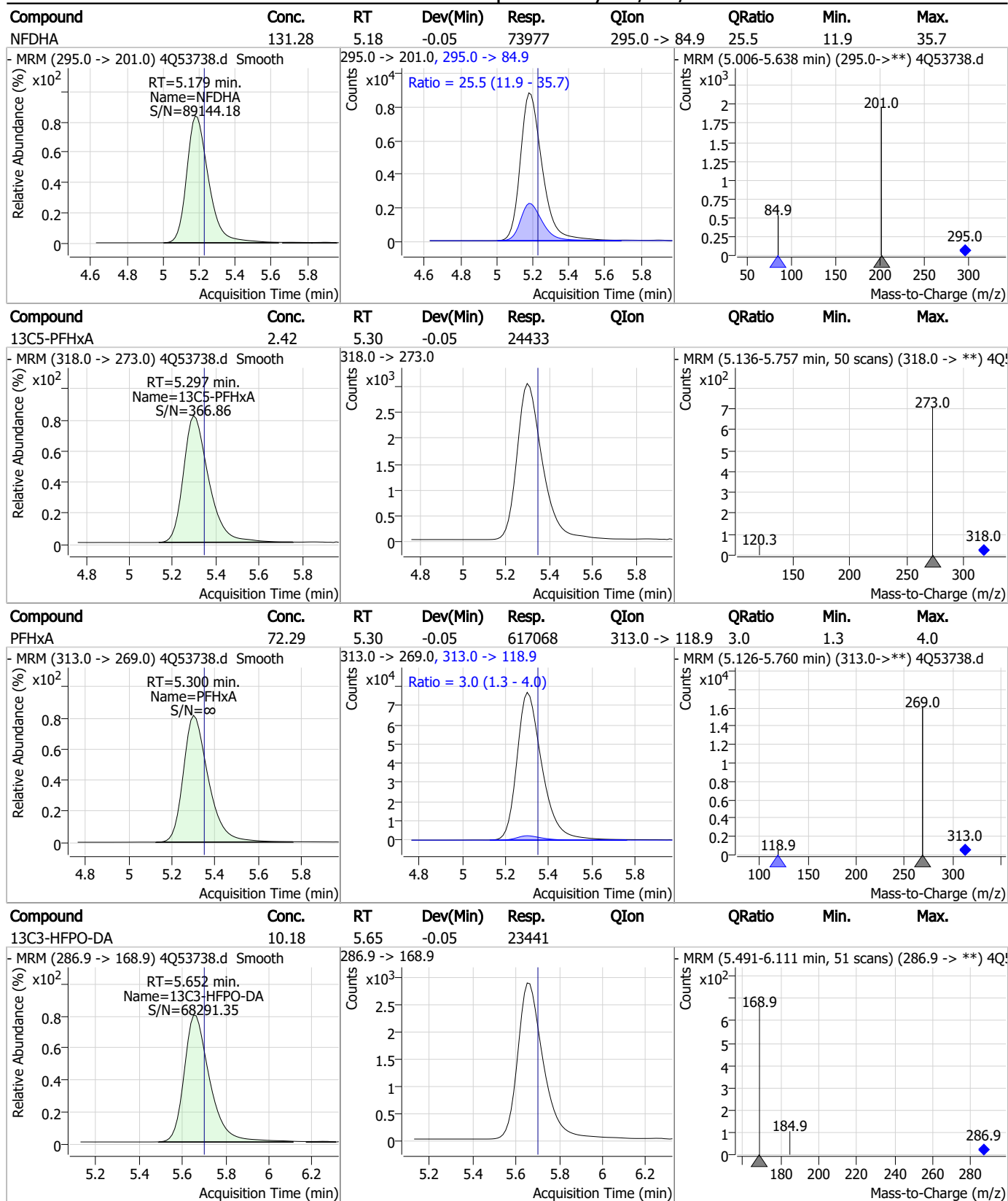
7.7.9
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Perfluorinated Compounds by LC/MS/MS



7.7.9
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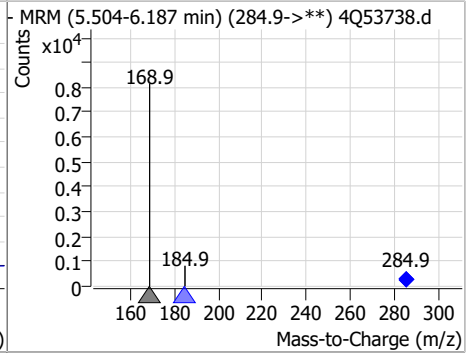
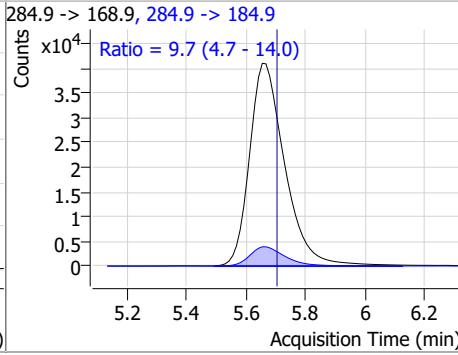
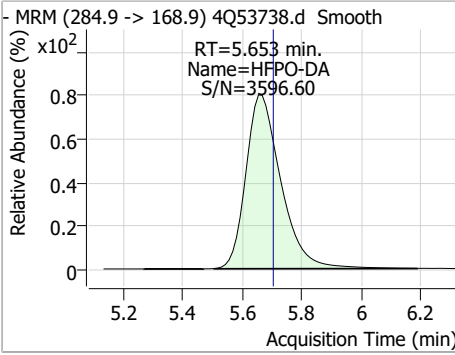
Perfluorinated Compounds by LC/MS/MS



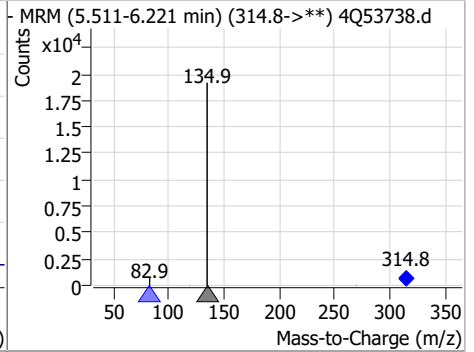
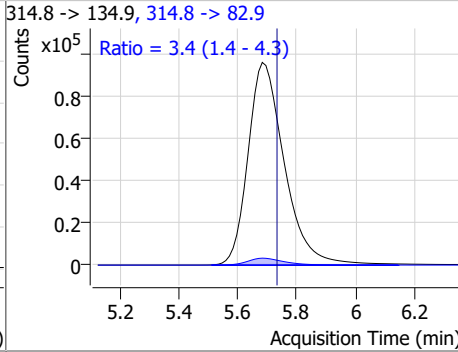
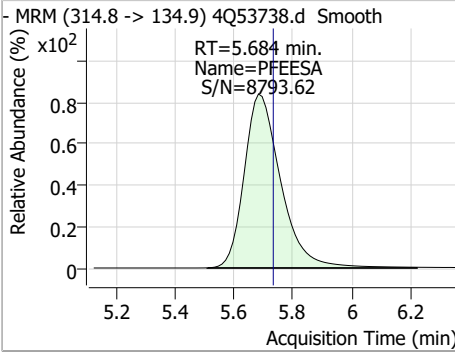
7.7.9
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Perfluorinated Compounds by LC/MS/MS

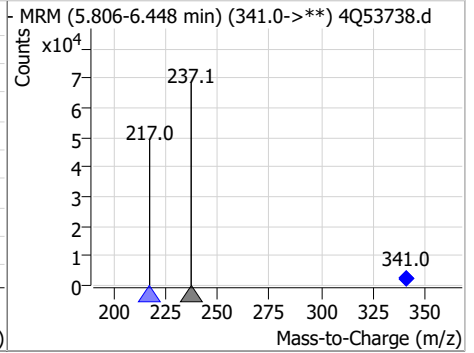
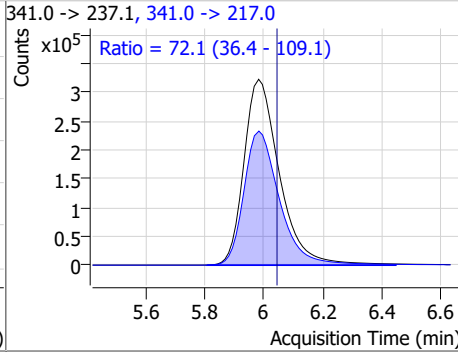
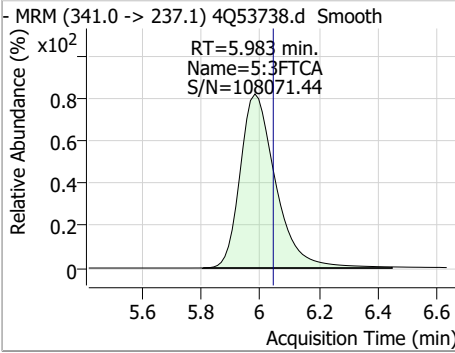
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	135.14	5.65	-0.05	335478	284.9 -> 184.9	9.7	4.7	14.0



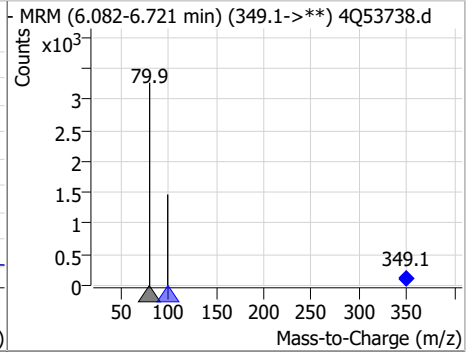
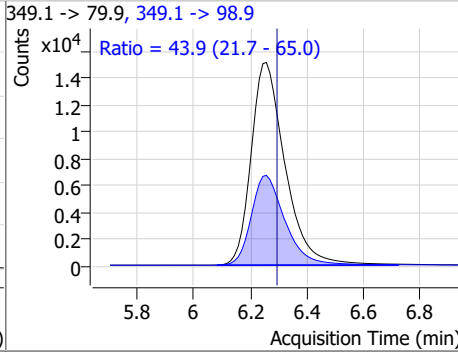
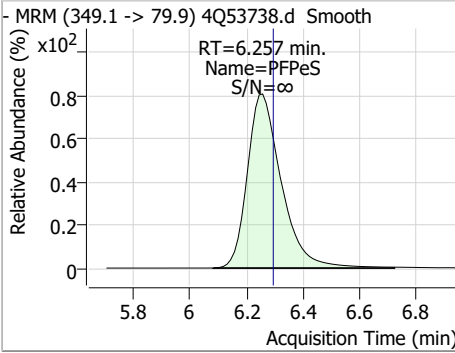
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	122.62	5.68	-0.05	828431	314.8 -> 82.9	3.4	1.4	4.3



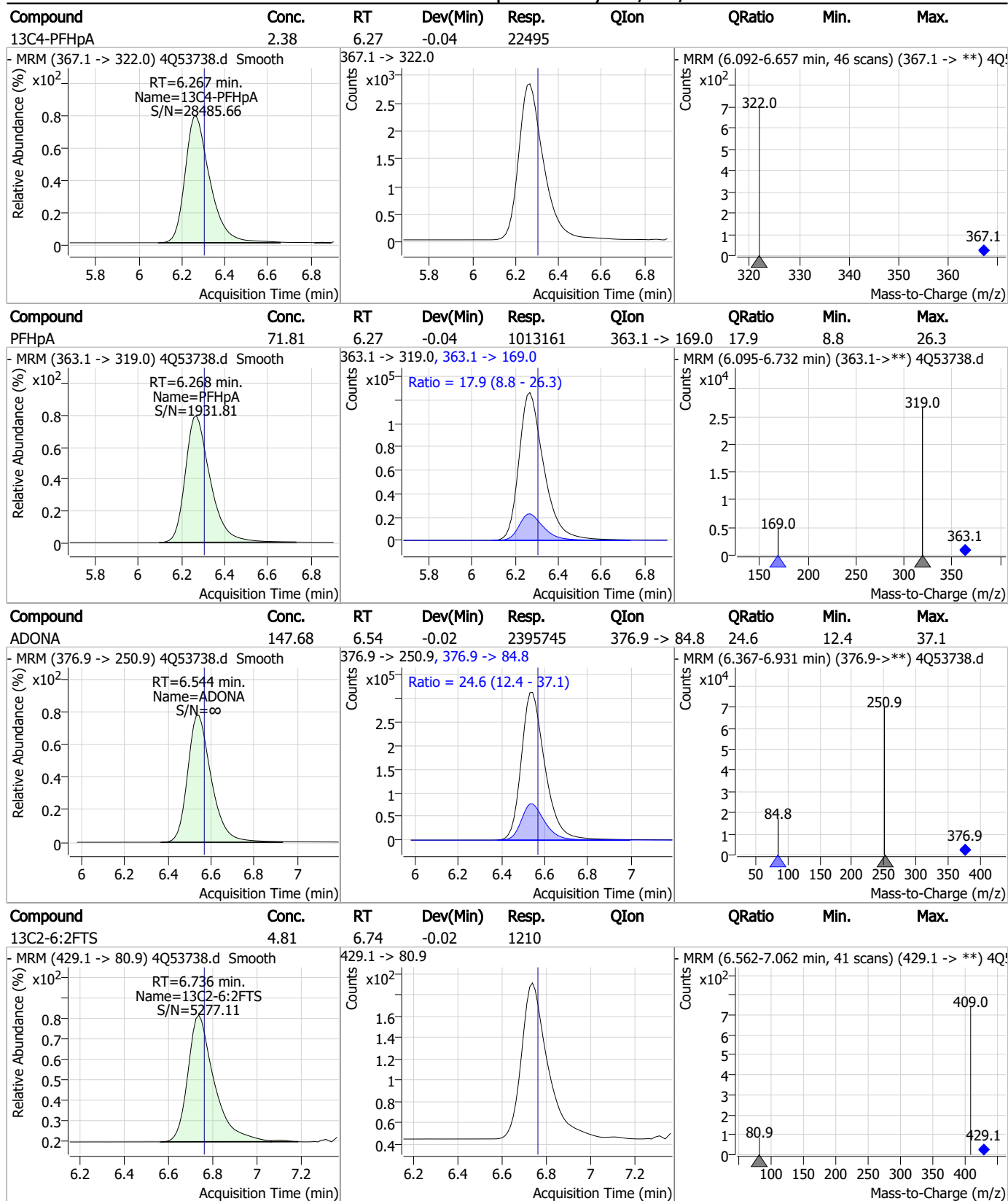
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	1801.08	5.98	-0.06	2705526	341.0 -> 217.0	72.1	36.4	109.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	69.83	6.26	-0.04	125797	349.1 -> 98.9	43.9	21.7	65.0

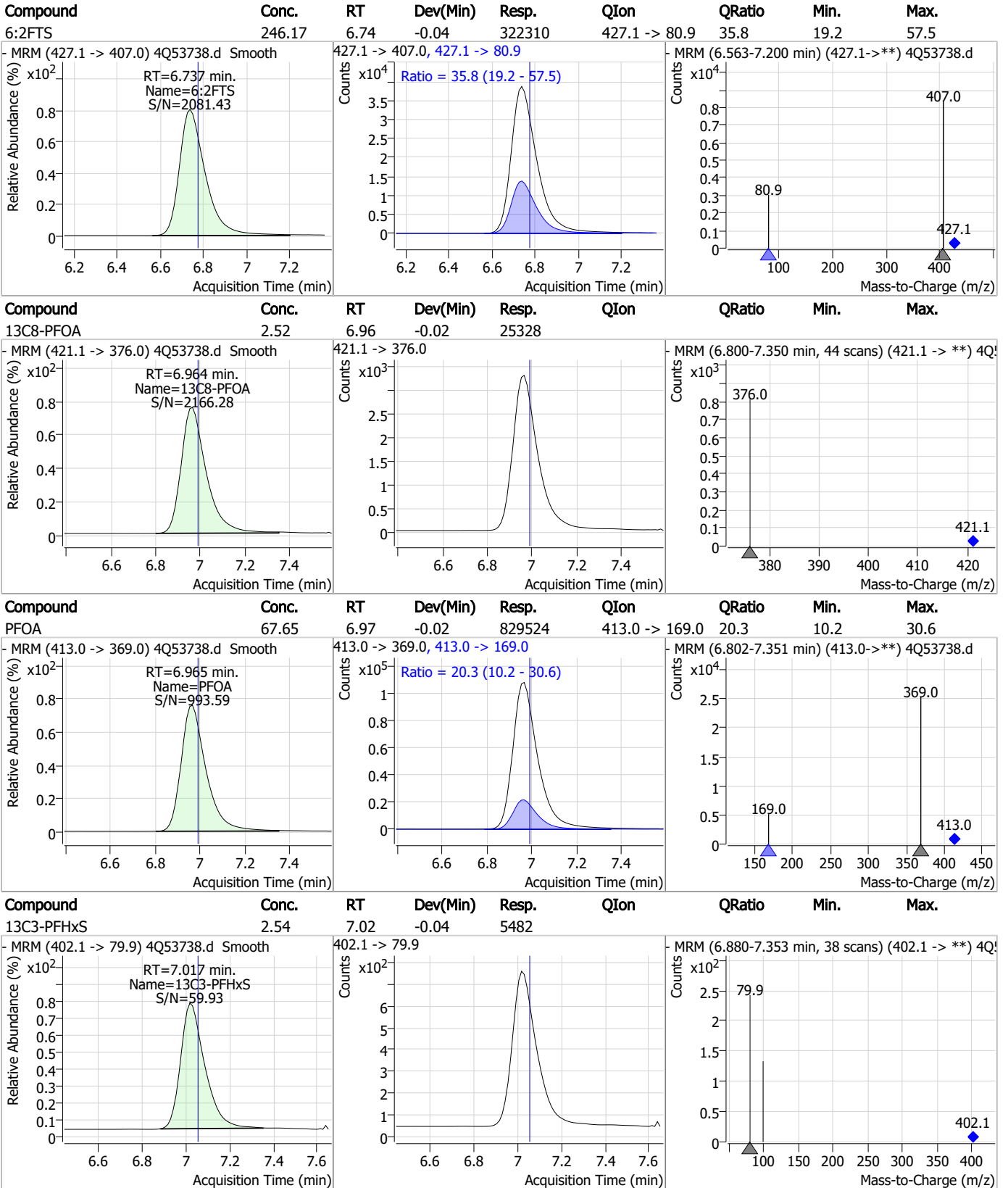


Perfluorinated Compounds by LC/MS/MS

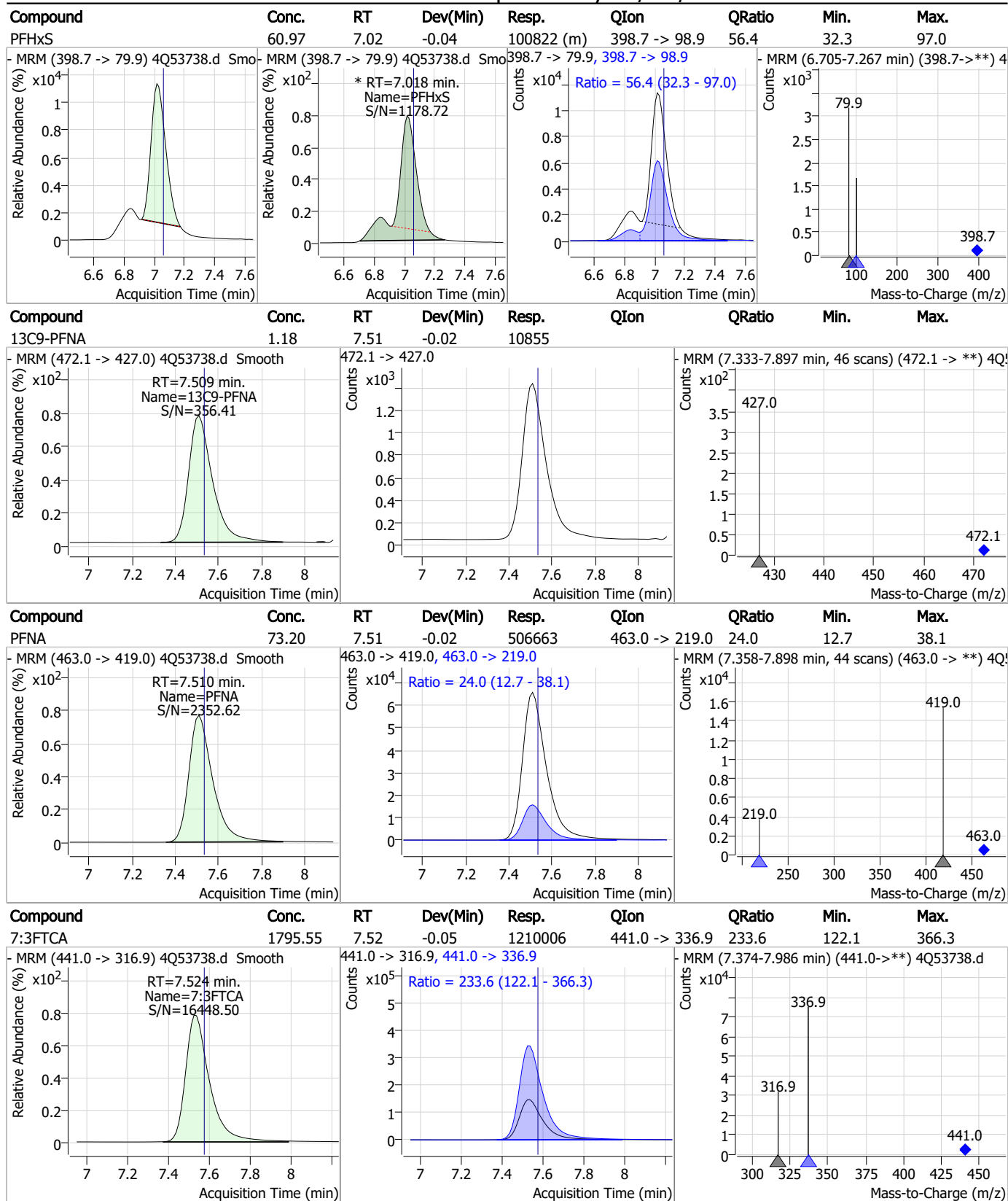


7.7.9
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Perfluorinated Compounds by LC/MS/MS

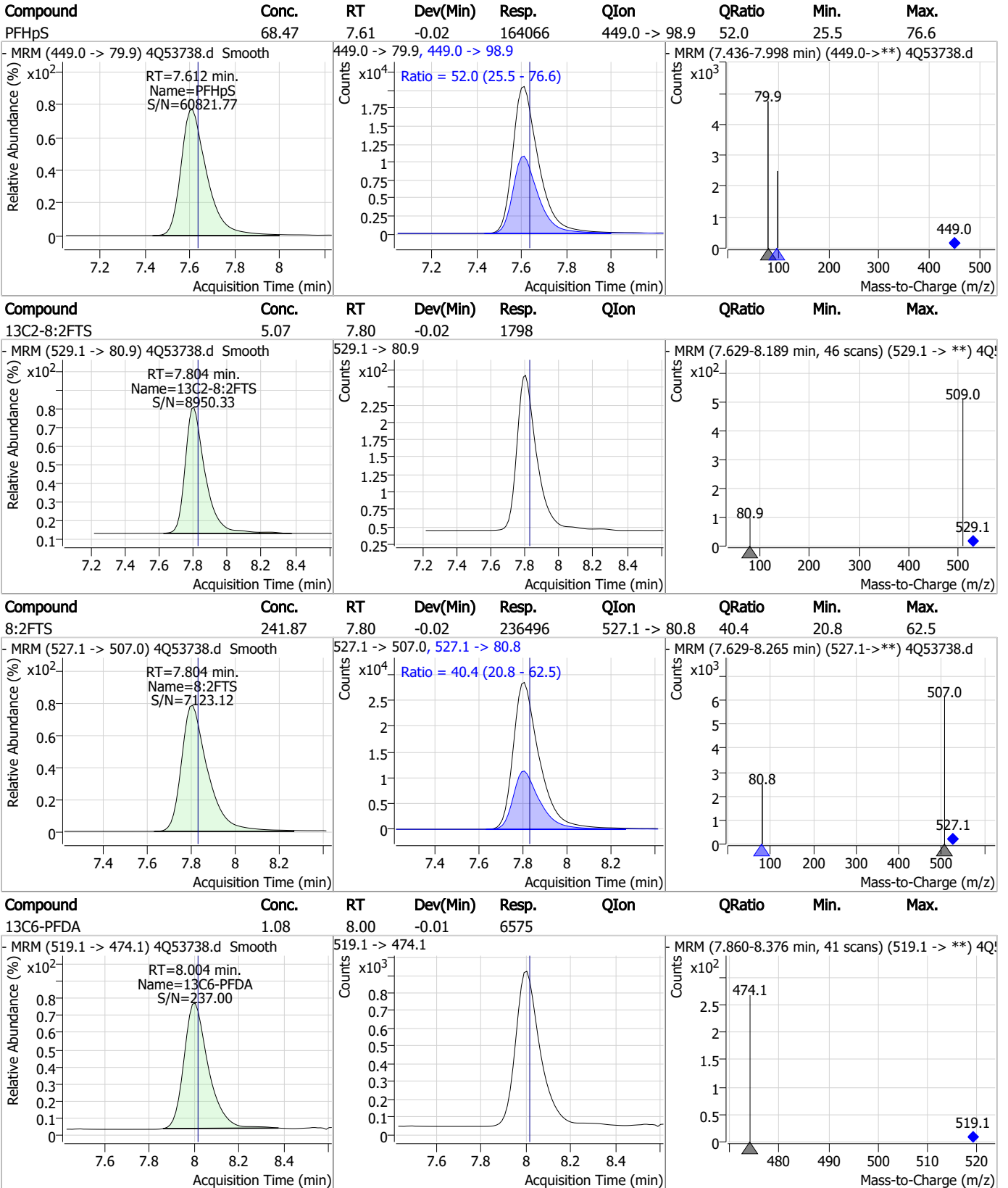


Perfluorinated Compounds by LC/MS/MS



7.7.9
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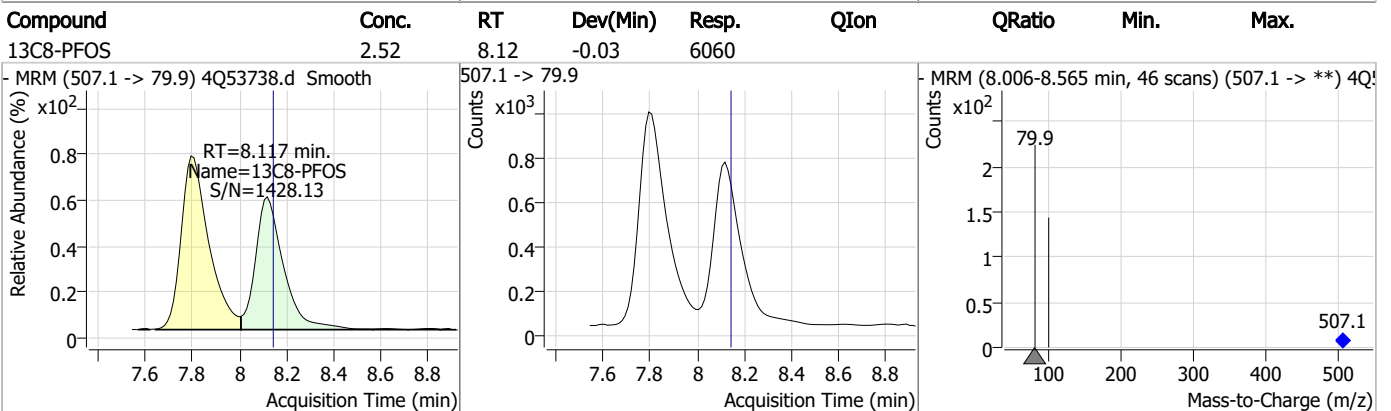
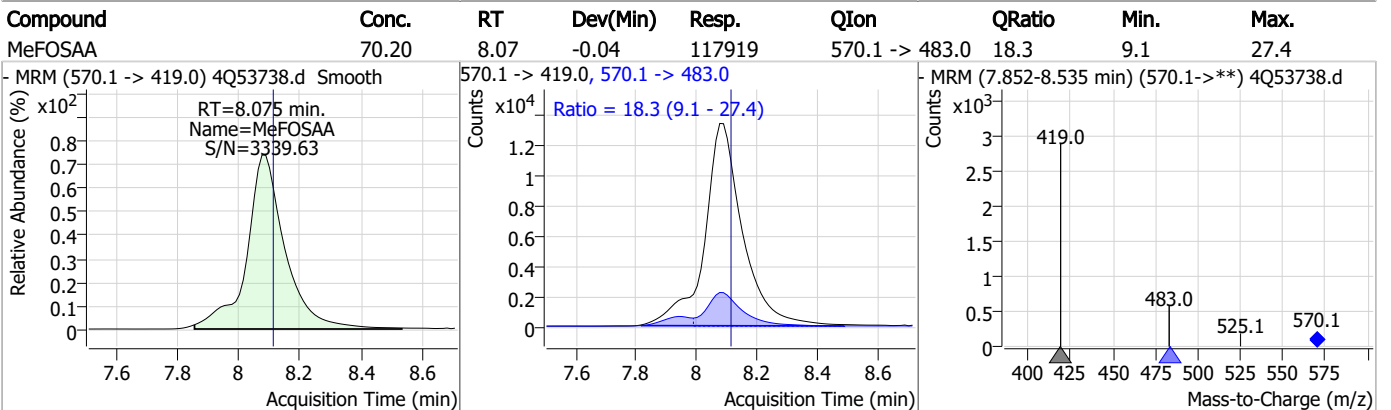
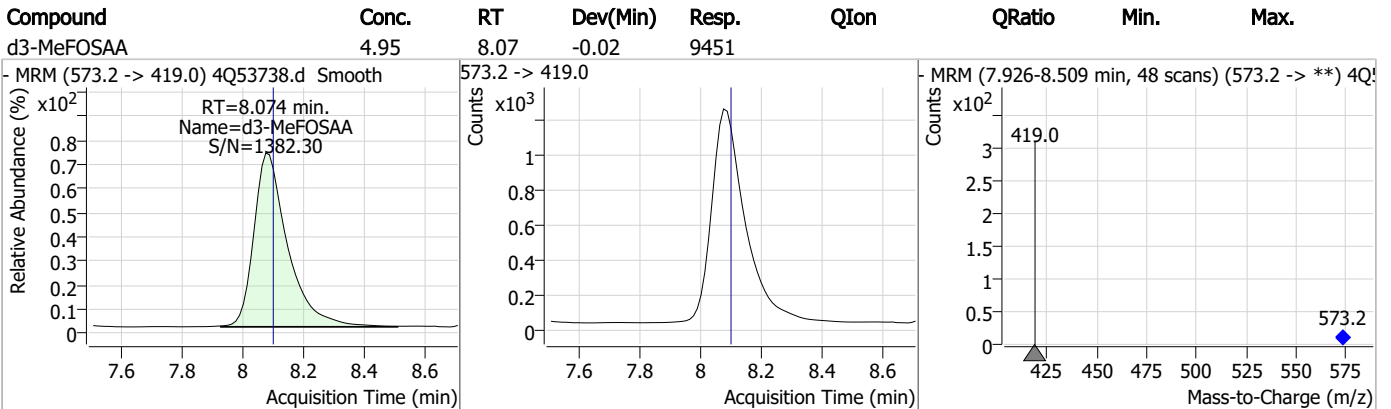
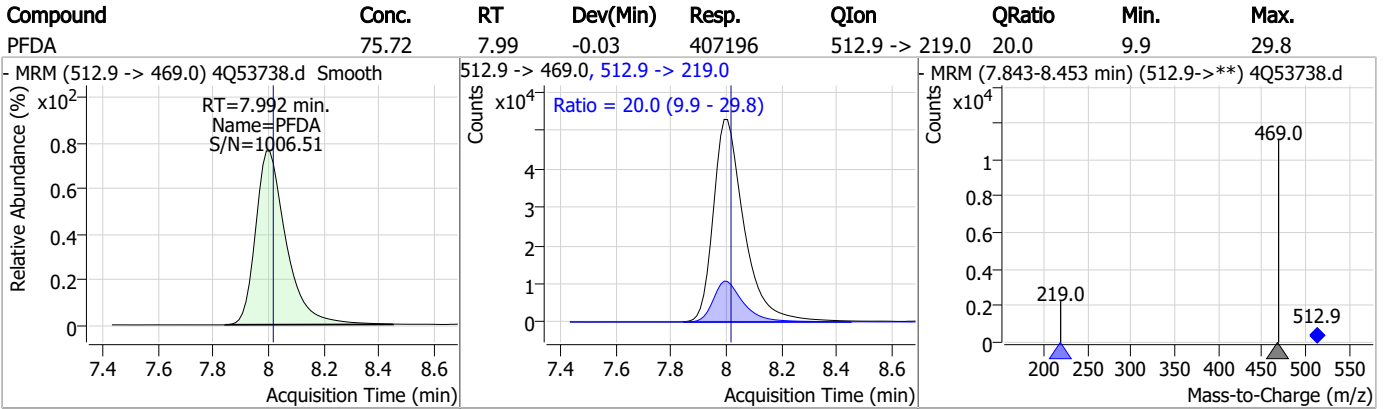
Perfluorinated Compounds by LC/MS/MS



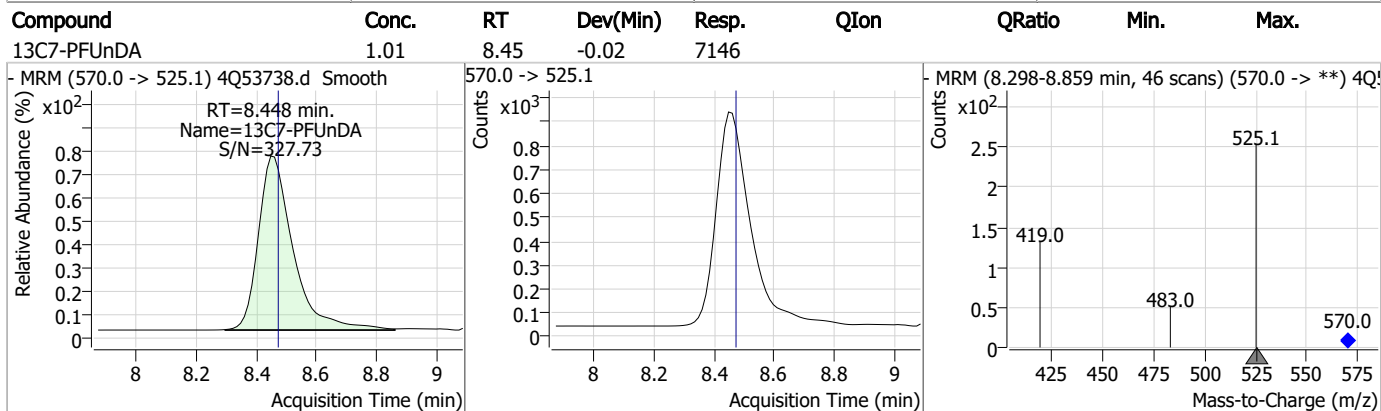
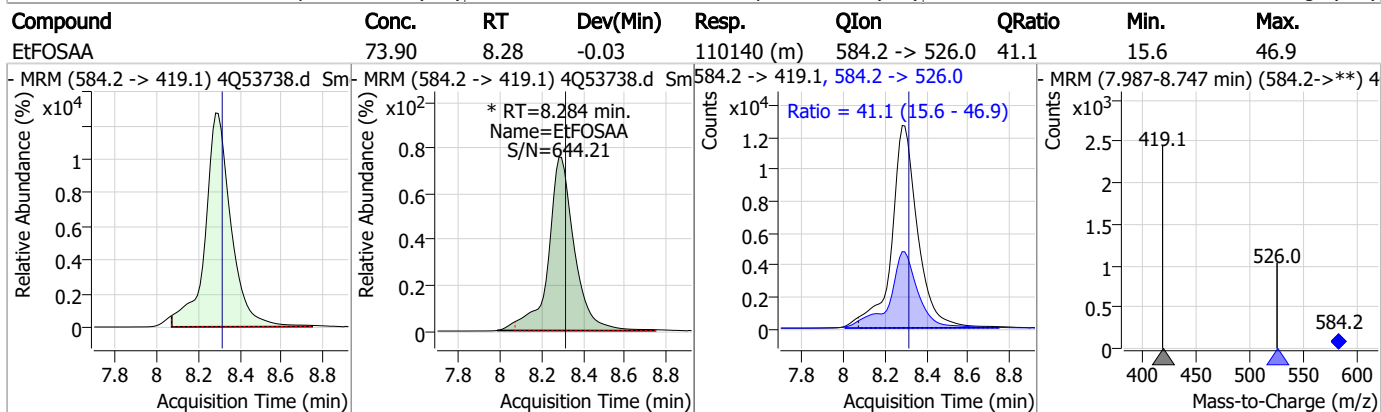
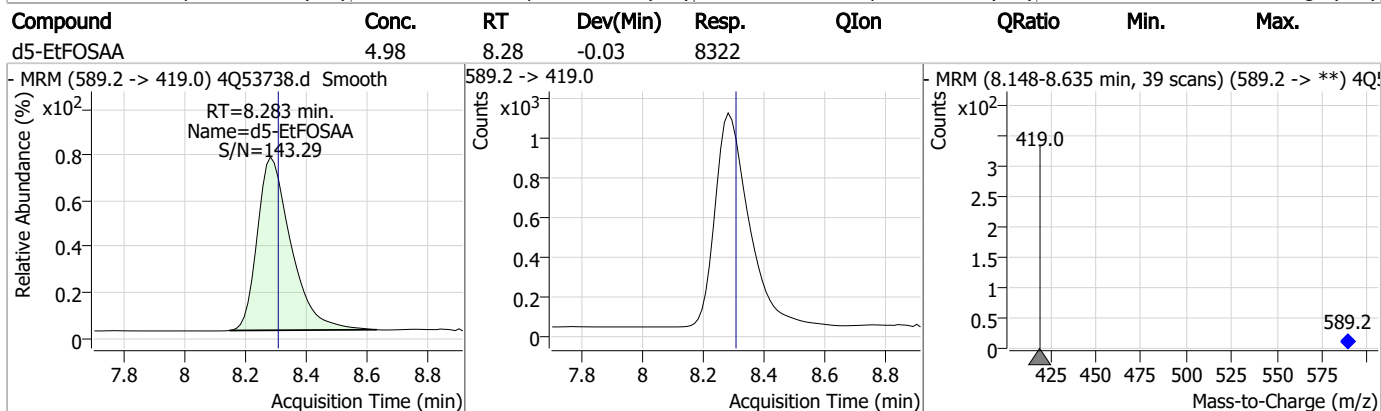
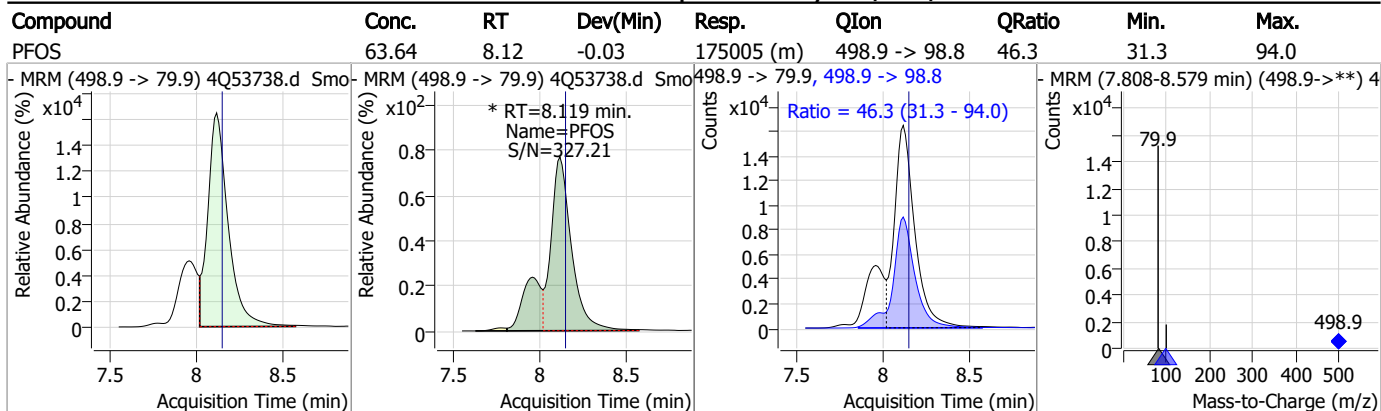
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Perfluorinated Compounds by LC/MS/MS

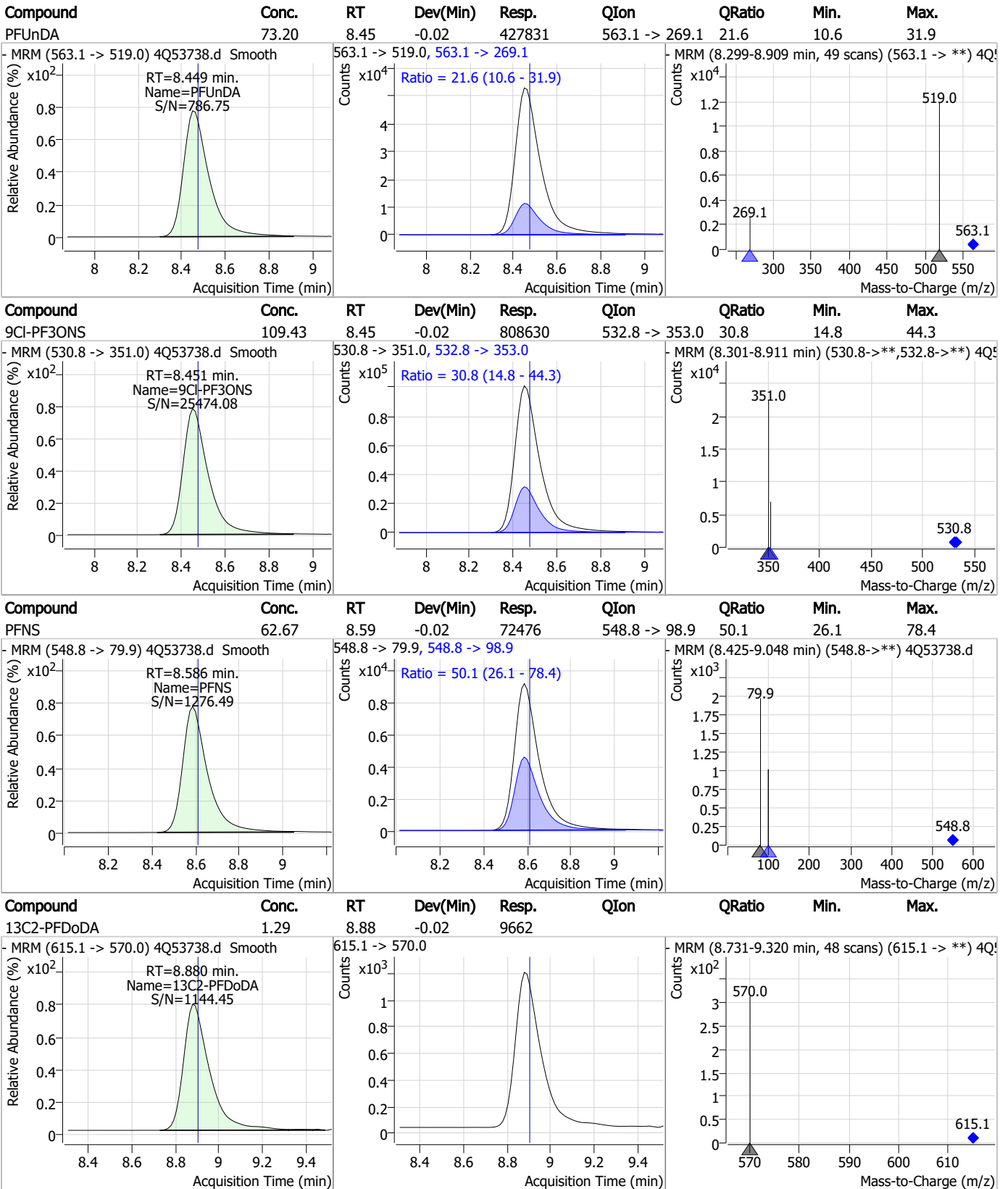


Perfluorinated Compounds by LC/MS/MS



7.7.9
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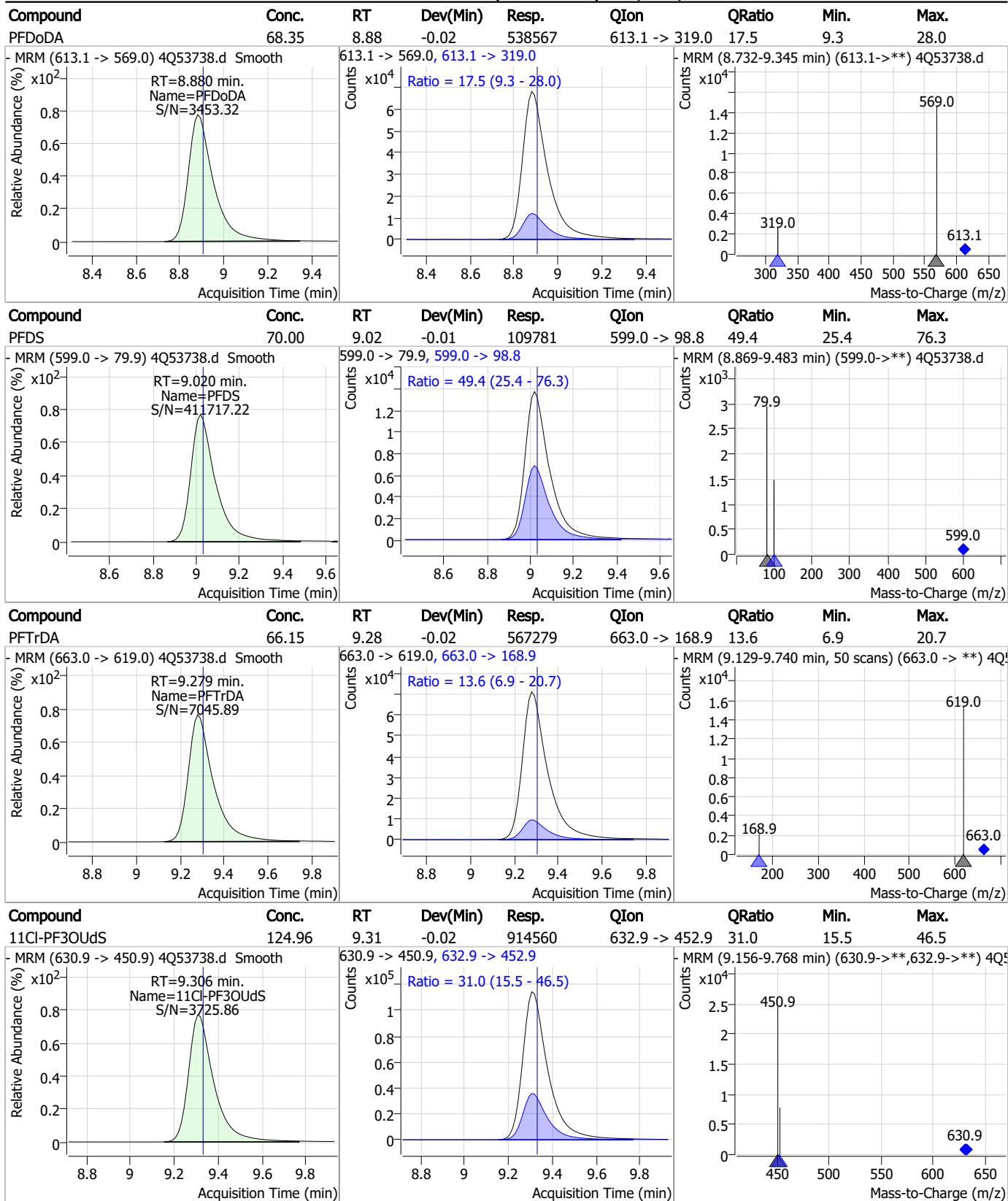
Perfluorinated Compounds by LC/MS/MS



7.7.9

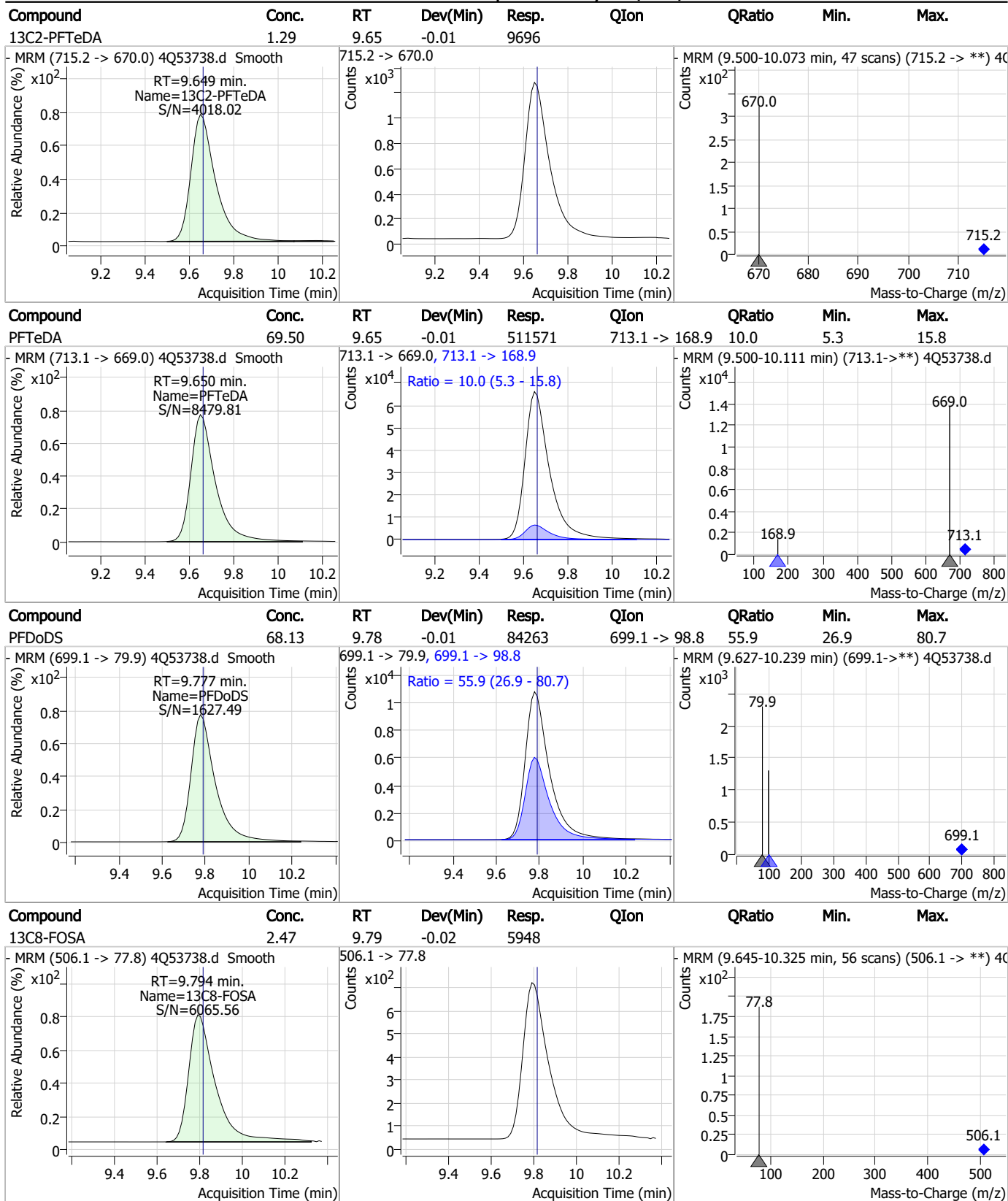
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Perfluorinated Compounds by LC/MS/MS



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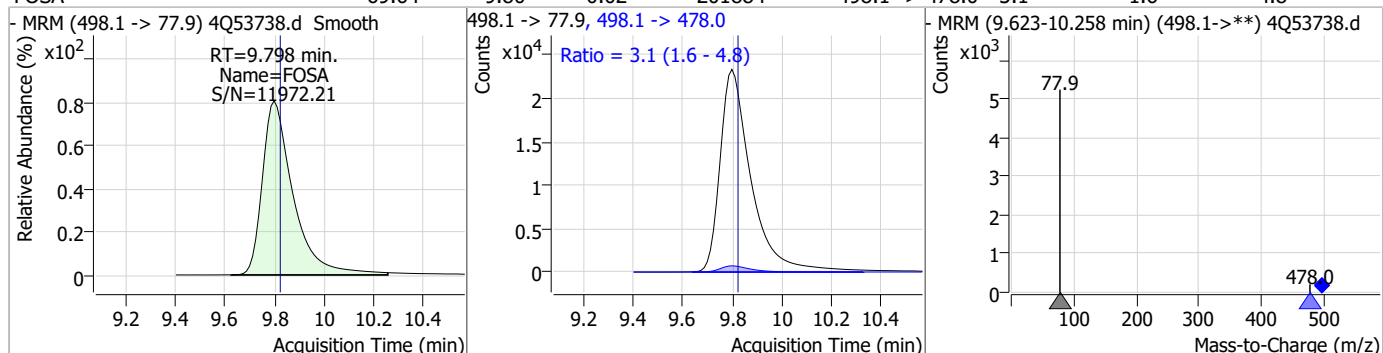
Perfluorinated Compounds by LC/MS/MS



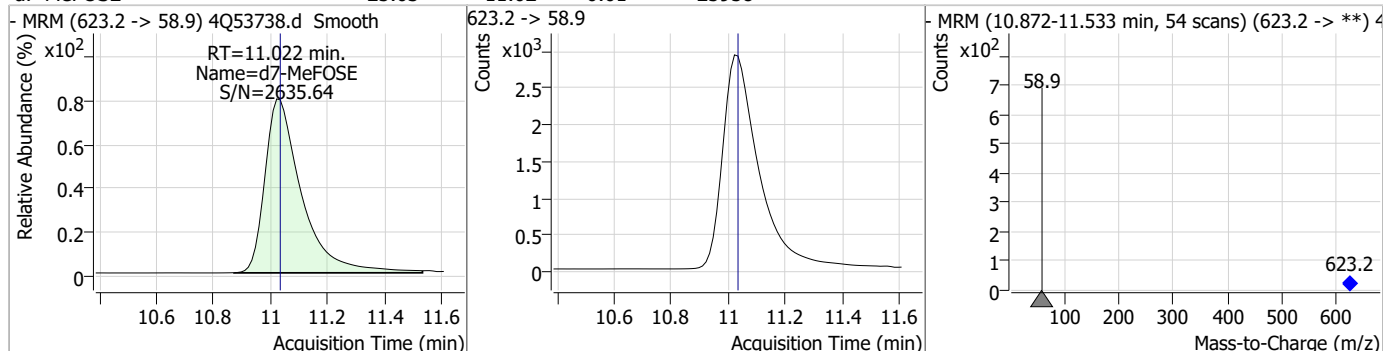
7.7.9
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Perfluorinated Compounds by LC/MS/MS

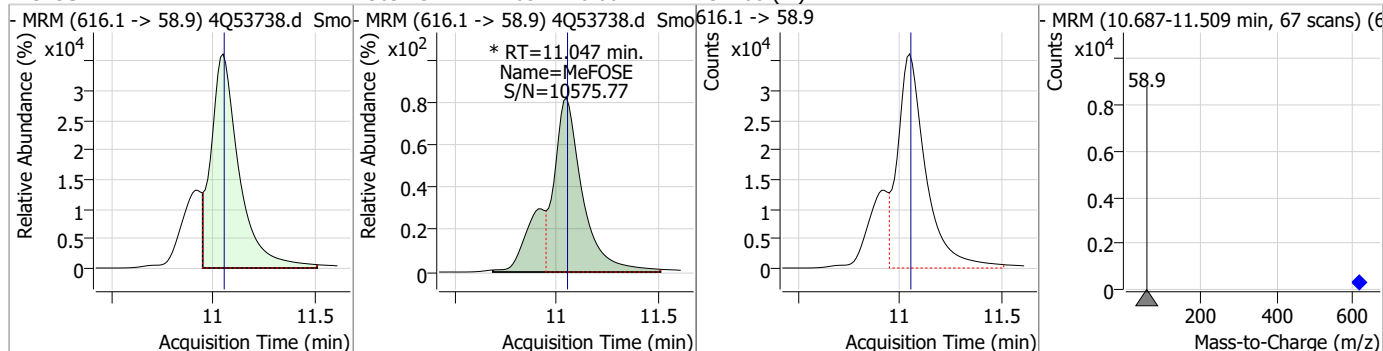
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	69.64	9.80	-0.02	201884	498.1 -> 478.0	3.1	1.6	4.8



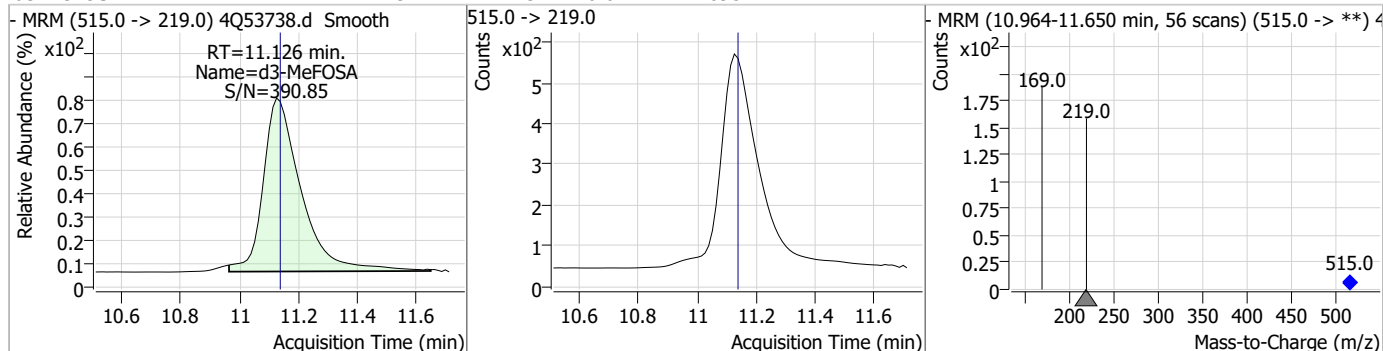
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.03	11.02	-0.01	25958				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	369.73	11.05	0.00	437268 (m)				

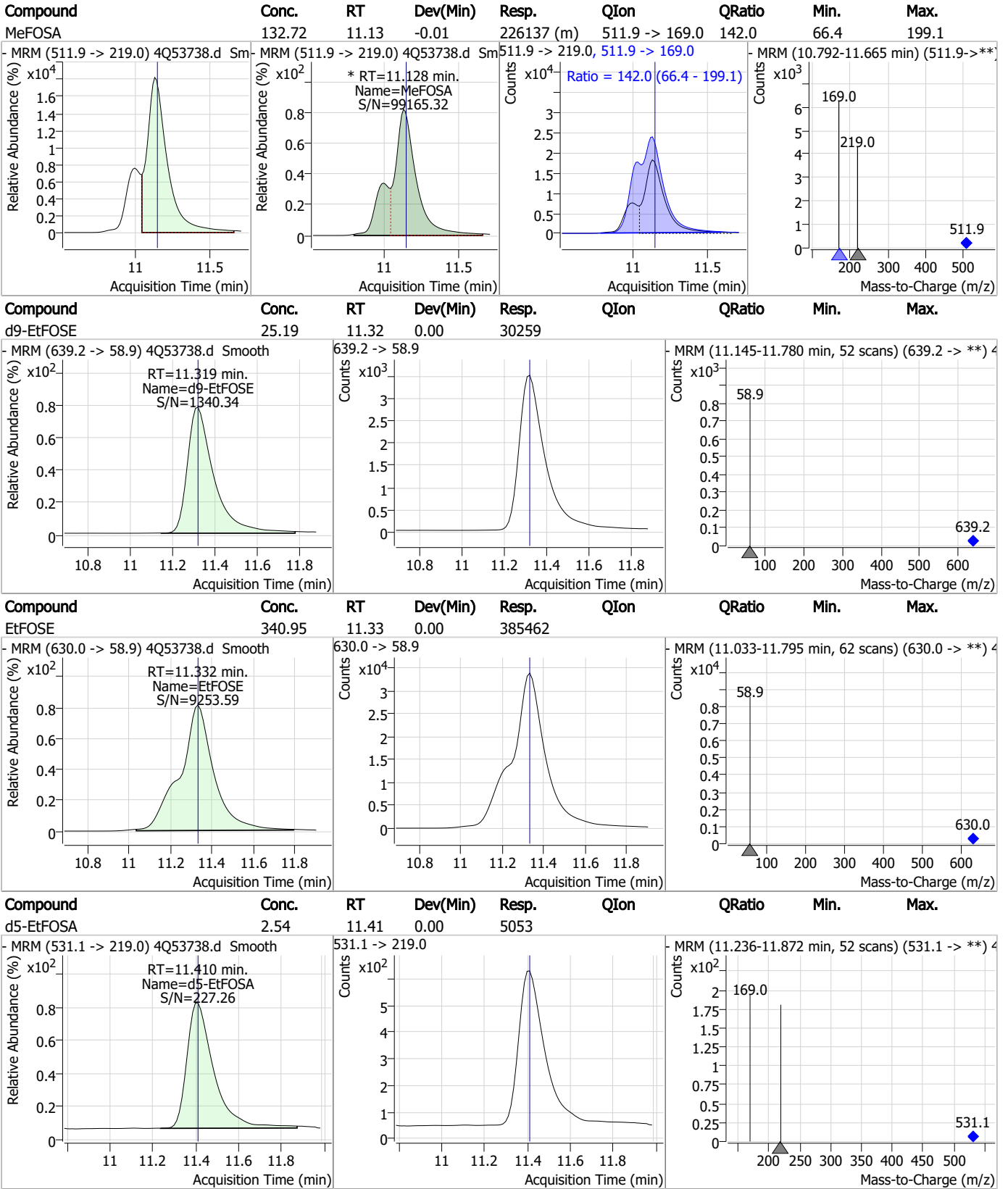


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.79	11.13	-0.01	4695				

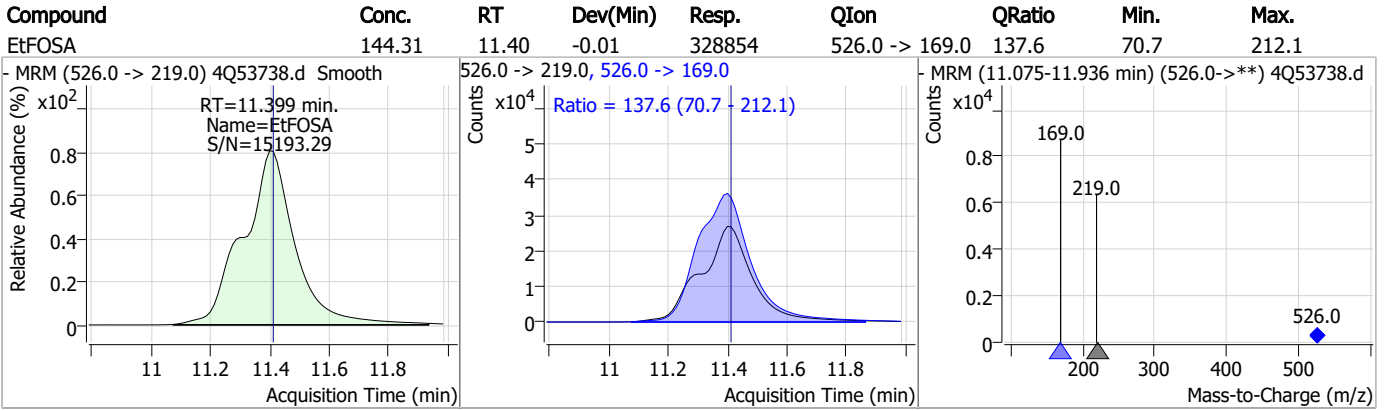


7.7.9
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



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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 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
MeFOSE	24448-09-7		11.05	Split peak
MeFOSA	31506-32-8		11.13	Split peak

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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

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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 = 94.9%		
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

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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	2419	2.48	µg/L	97
		363.1 -> 319.0	43766			
PFHpS	7.612	363.1 -> 169.0	8154	2.49	µg/L	95
		449.0 -> 79.9	7429			
PFHxA	5.300	449.0 -> 98.9	3547	2.32	µg/L	97
		313.0 -> 269.0	24623			
PFHxS	7.018	313.0 -> 118.9	923	2.55	µg/L	83
		398.7 -> 79.9	5053			
PFNA	7.510	398.7 -> 98.9	2592	2.44	µg/L	98
		463.0 -> 419.0	21232			
PFNS	8.586	463.0 -> 219.0	5203	2.38	µg/L	99
		548.8 -> 79.9	3435			
PFOA	6.965	548.8 -> 98.9	1813	2.36	µg/L	98
		413.0 -> 369.0	36189			
PFOS	8.119	413.0 -> 169.0	7700	2.15	µg/L	90
		498.9 -> 79.9	7372			
PFPeA	4.114	498.9 -> 98.8	4045	4.92	µg/L	100
		263.0 -> 219.0	41399			
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			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	39295	4.70	µg/L	100
		632.9 -> 452.9	12136			
9Cl-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
		511.9 -> 219.0	9616			
MeFOSA	11.128	511.9 -> 169.0	13744	5.48	µg/L	91
		616.1 -> 58.9	18129			
MeFOSE	11.047	699.1 -> 79.9	3715	12.66	µg/L	100
		699.1 -> 98.8	2076			
PFDoDS	9.777	295.0 -> 201.0	3611	2.41	µg/L	97
		295.0 -> 84.9	956			
NFDHA	5.179	279.0 -> 85.1	23702	5.14	µg/L	95
		229.0 -> 84.9	26450			
PFMBA	4.529	314.8 -> 134.9	36393	4.89	µg/L	100
		314.8 -> 82.9	1306			
PFMPA	3.265			4.91	µg/L	100
PFEESA	5.684			4.32	µg/L	98

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



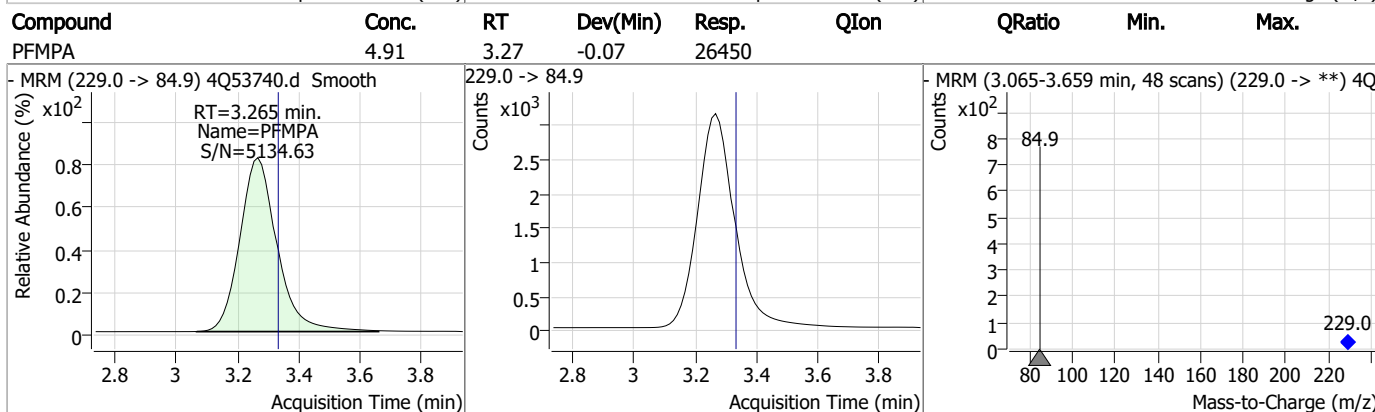
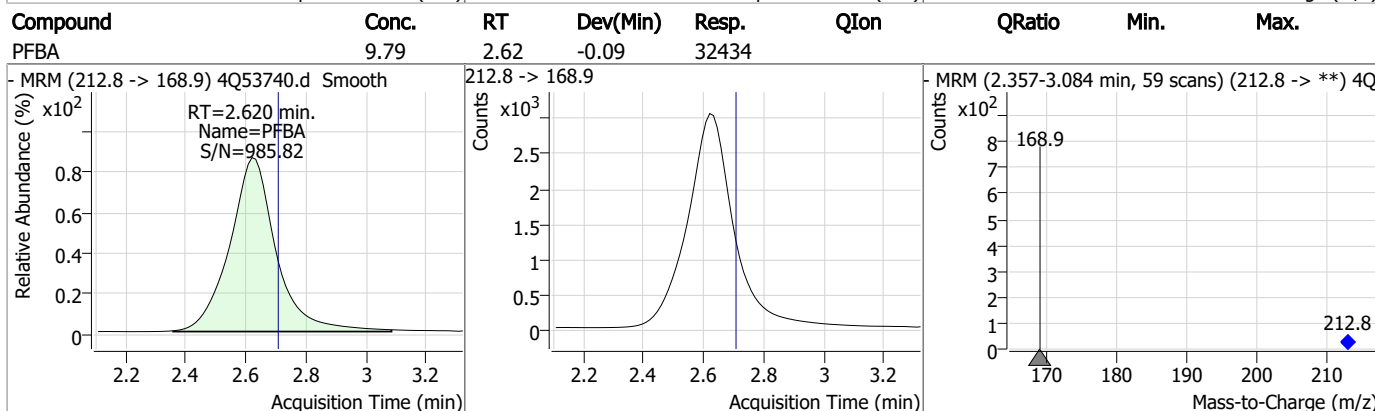
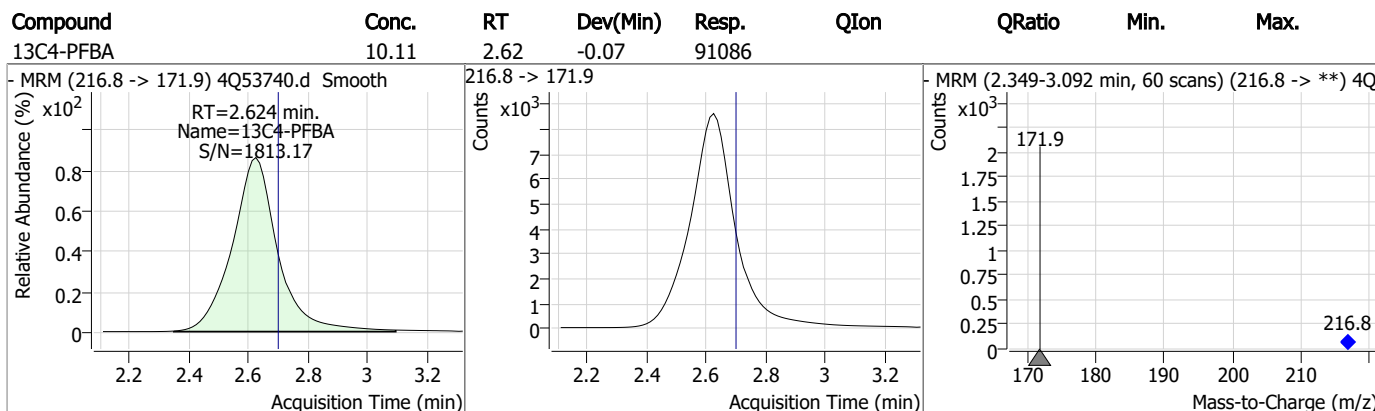
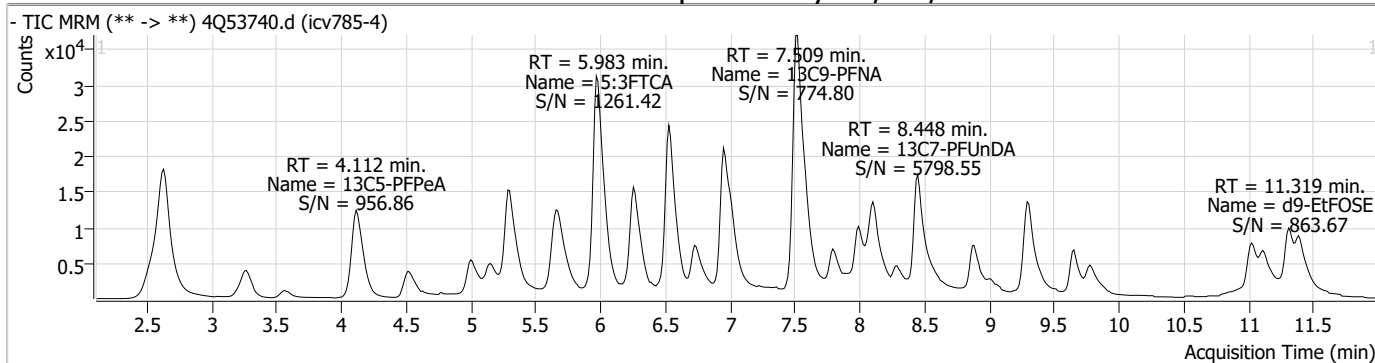
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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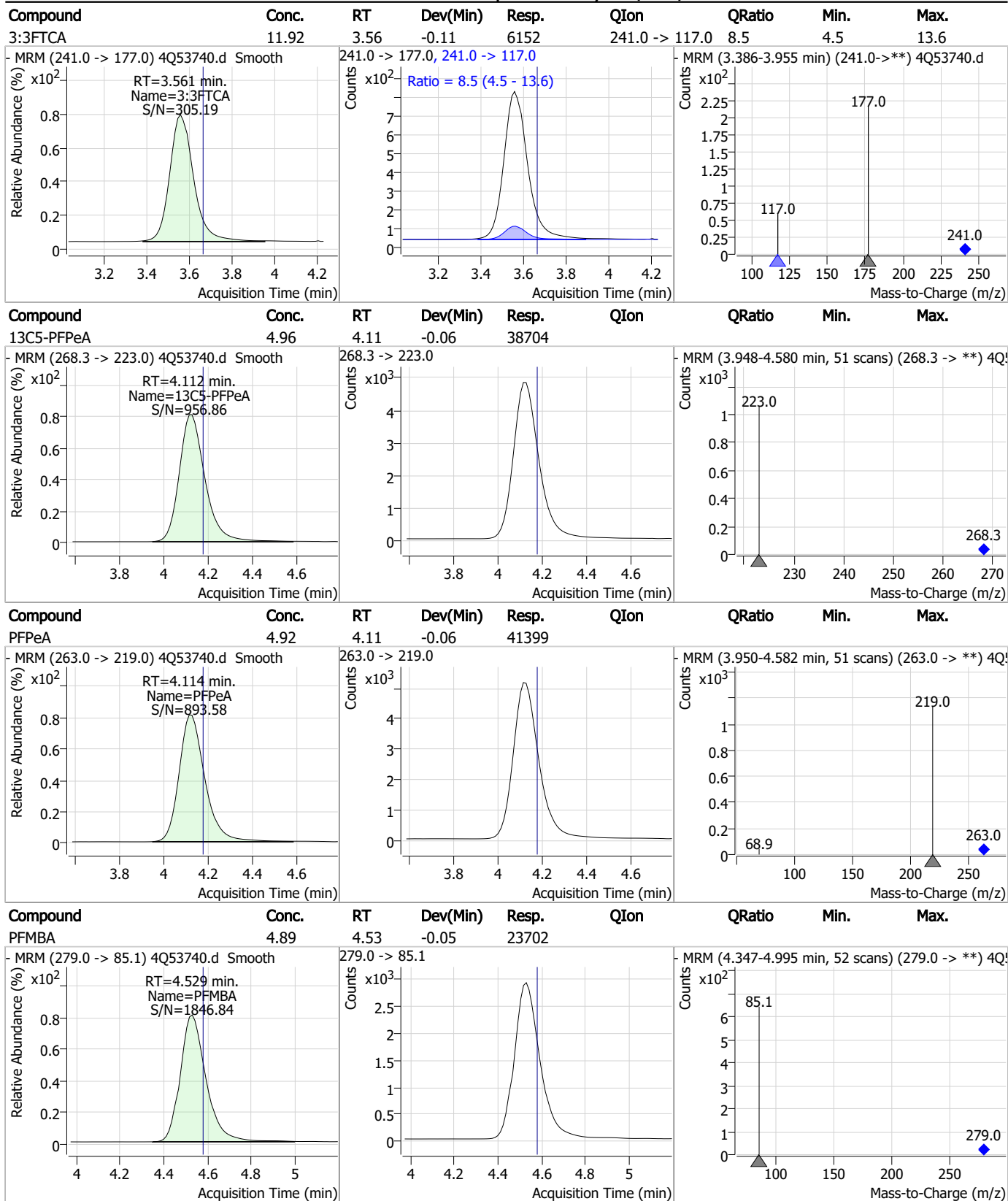
7.7.10

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Perfluorinated Compounds by LC/MS/MS

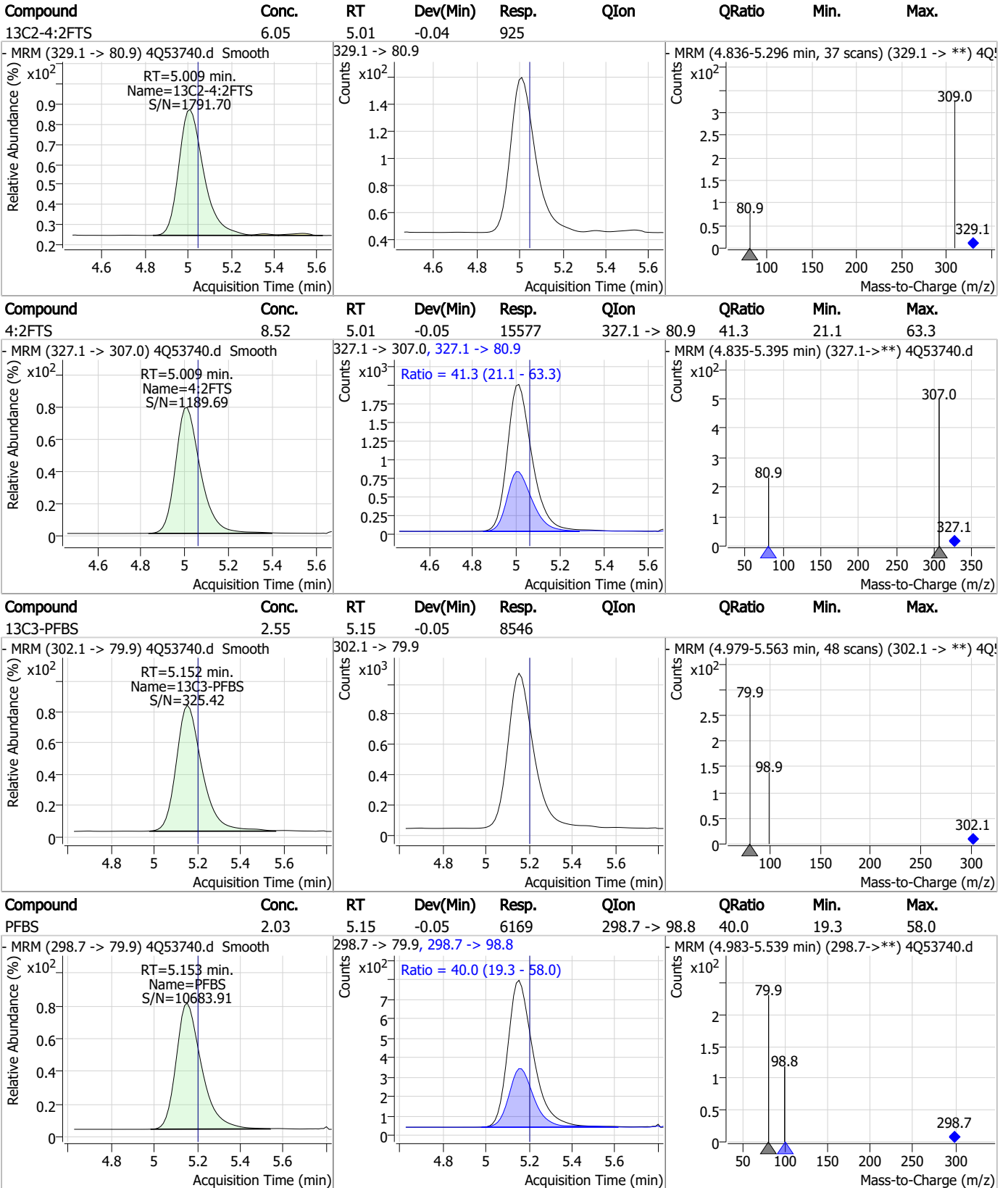


Perfluorinated Compounds by LC/MS/MS



7.7.10 7

Perfluorinated Compounds by LC/MS/MS

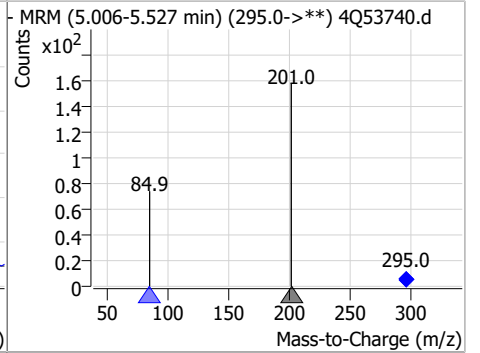
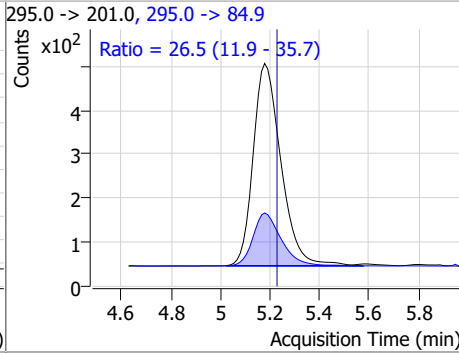
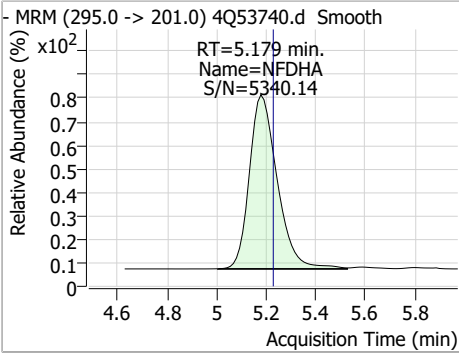


7.7.10 7

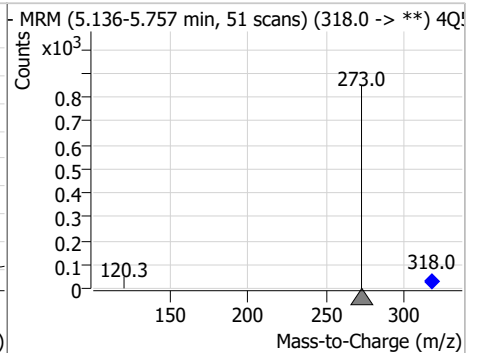
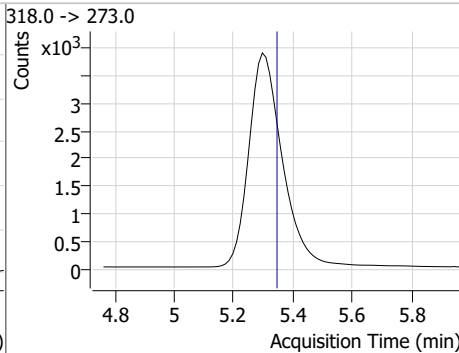
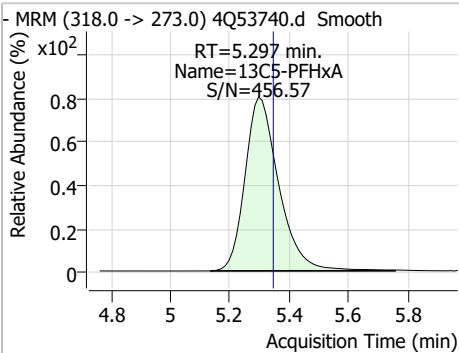


Perfluorinated Compounds by LC/MS/MS

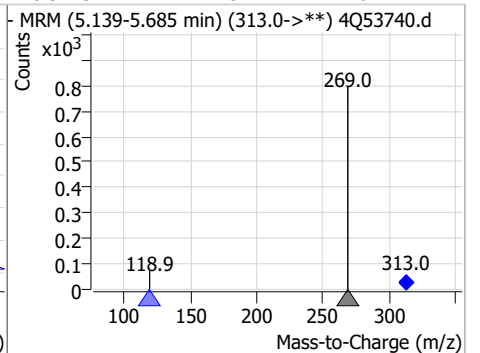
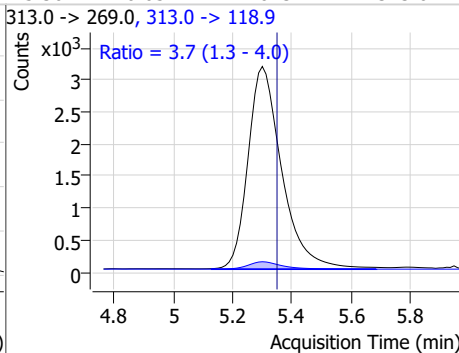
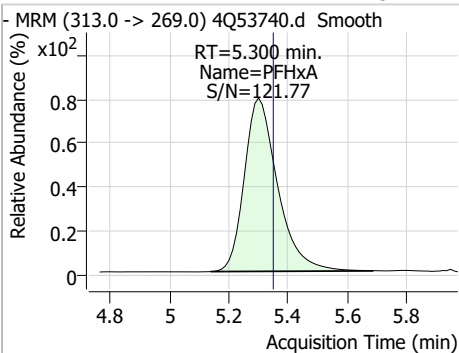
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	5.14	5.18	-0.05	3611	295.0 -> 84.9	26.5	11.9	35.7



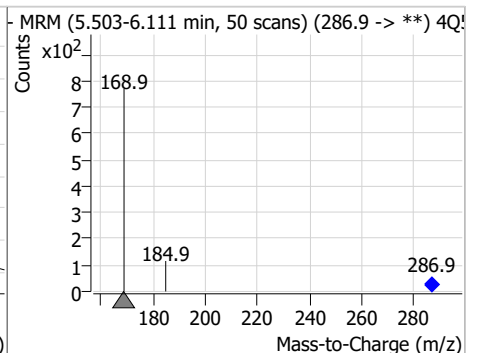
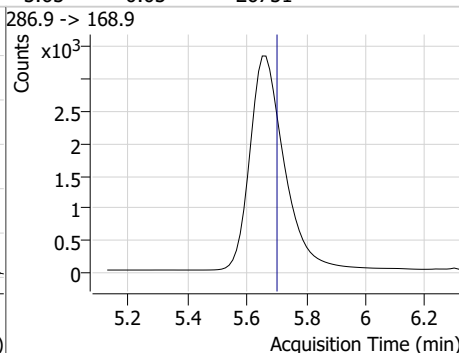
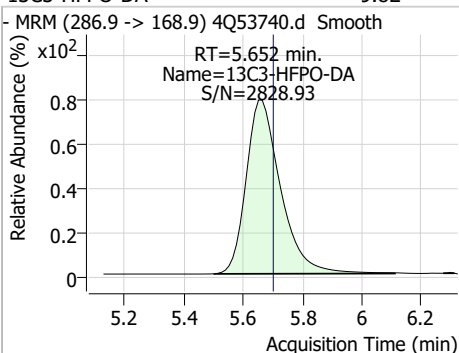
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.55	5.30	-0.05	30443				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.32	5.30	-0.05	24623	313.0 -> 118.9	3.7	1.3	4.0

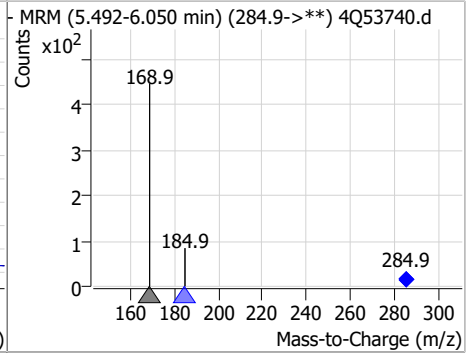
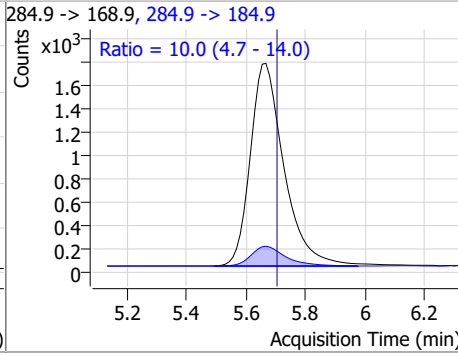
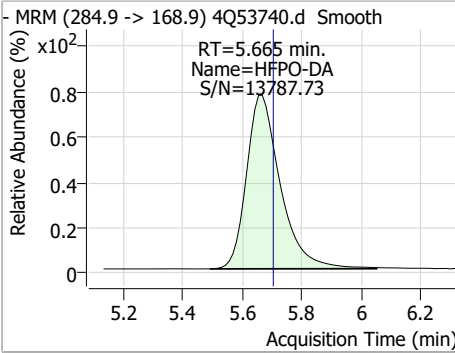


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.82	5.65	-0.05	26751				

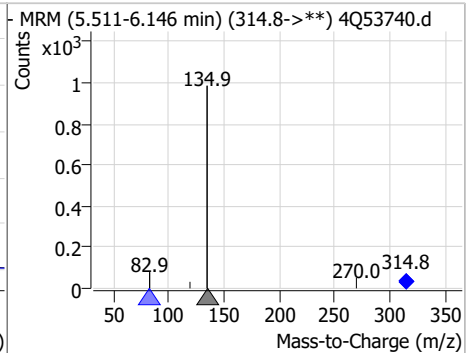
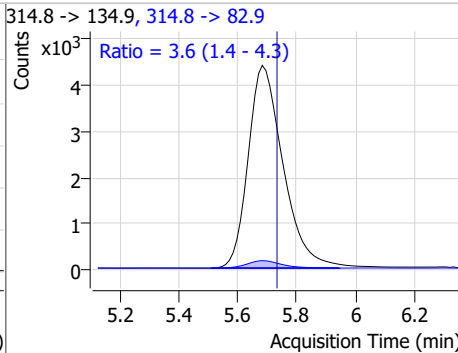
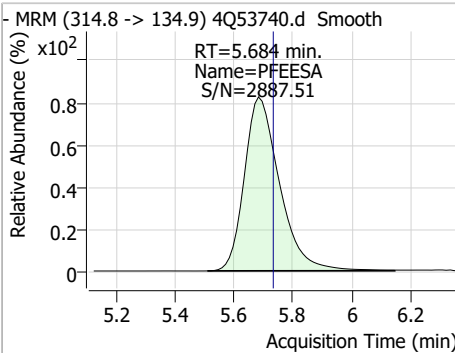


Perfluorinated Compounds by LC/MS/MS

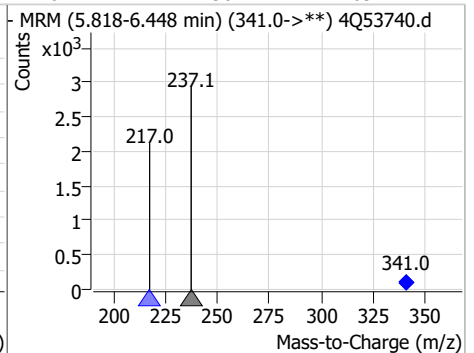
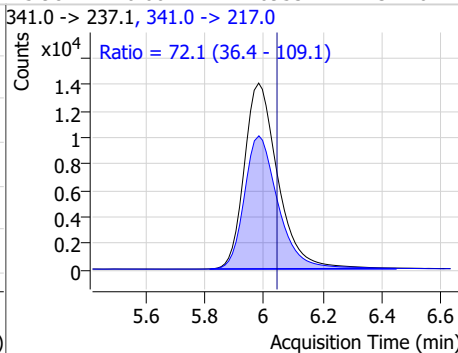
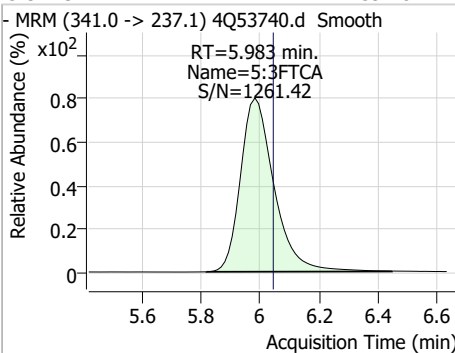
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.84	5.67	-0.04	13709	284.9 -> 184.9	10.0	4.7	14.0



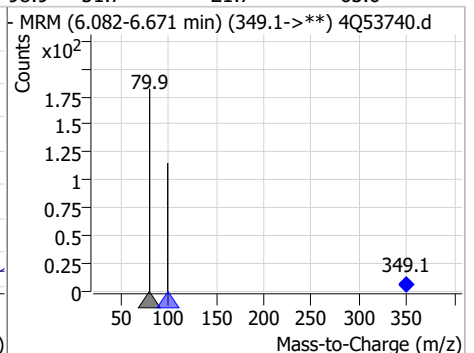
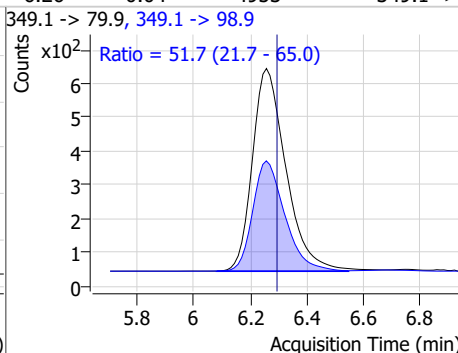
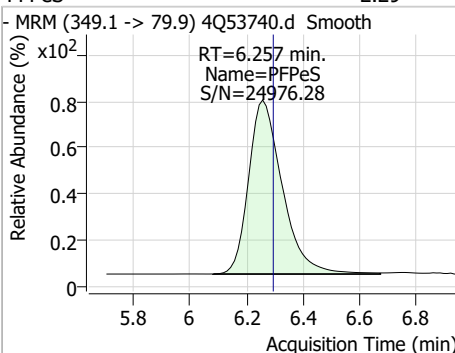
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.32	5.68	-0.05	36393	314.8 -> 82.9	3.6	1.4	4.3



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

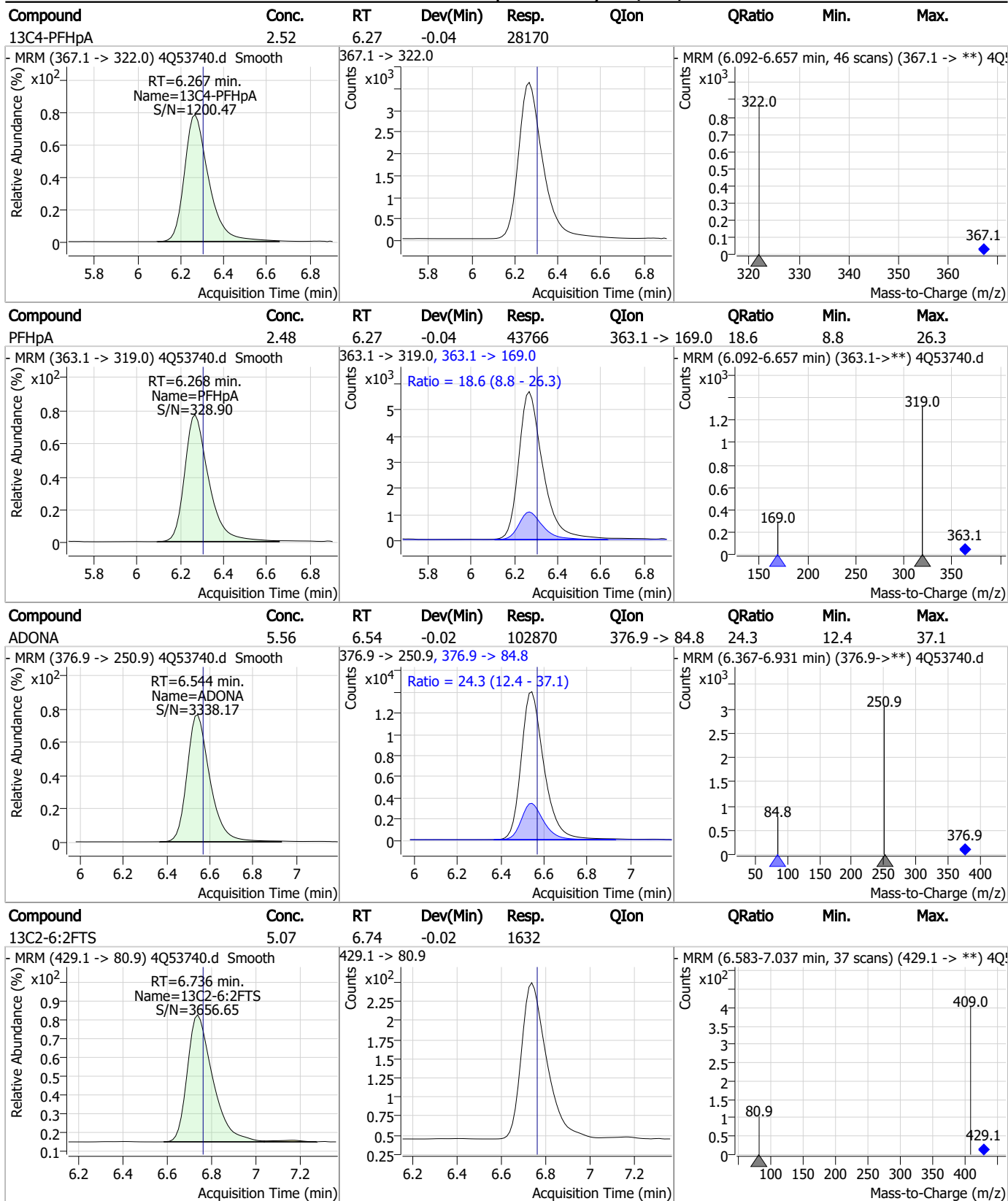


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.29	6.26	-0.04	4953	349.1 -> 98.9	51.7	21.7	65.0



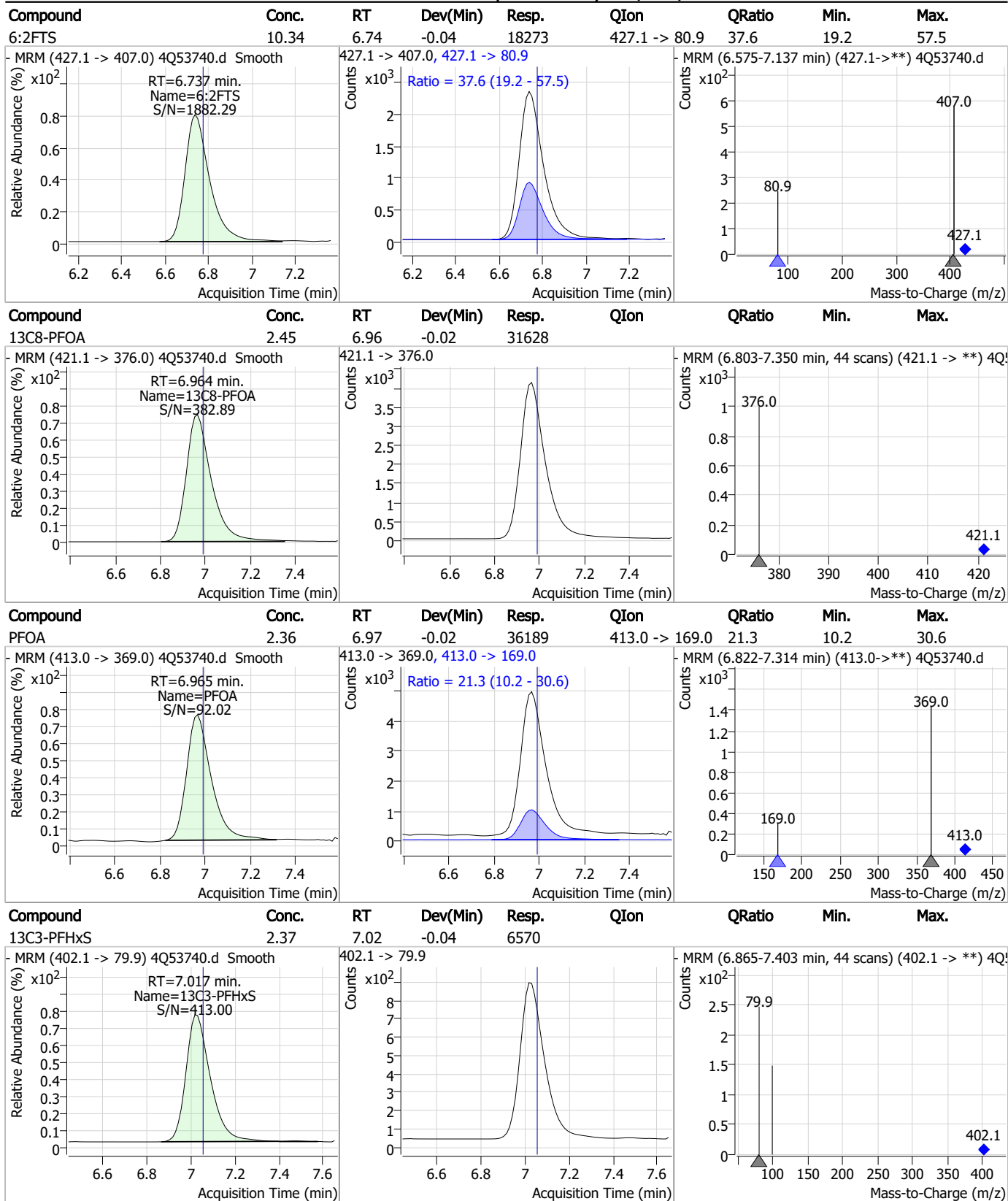
7.7.10 7

Perfluorinated Compounds by LC/MS/MS



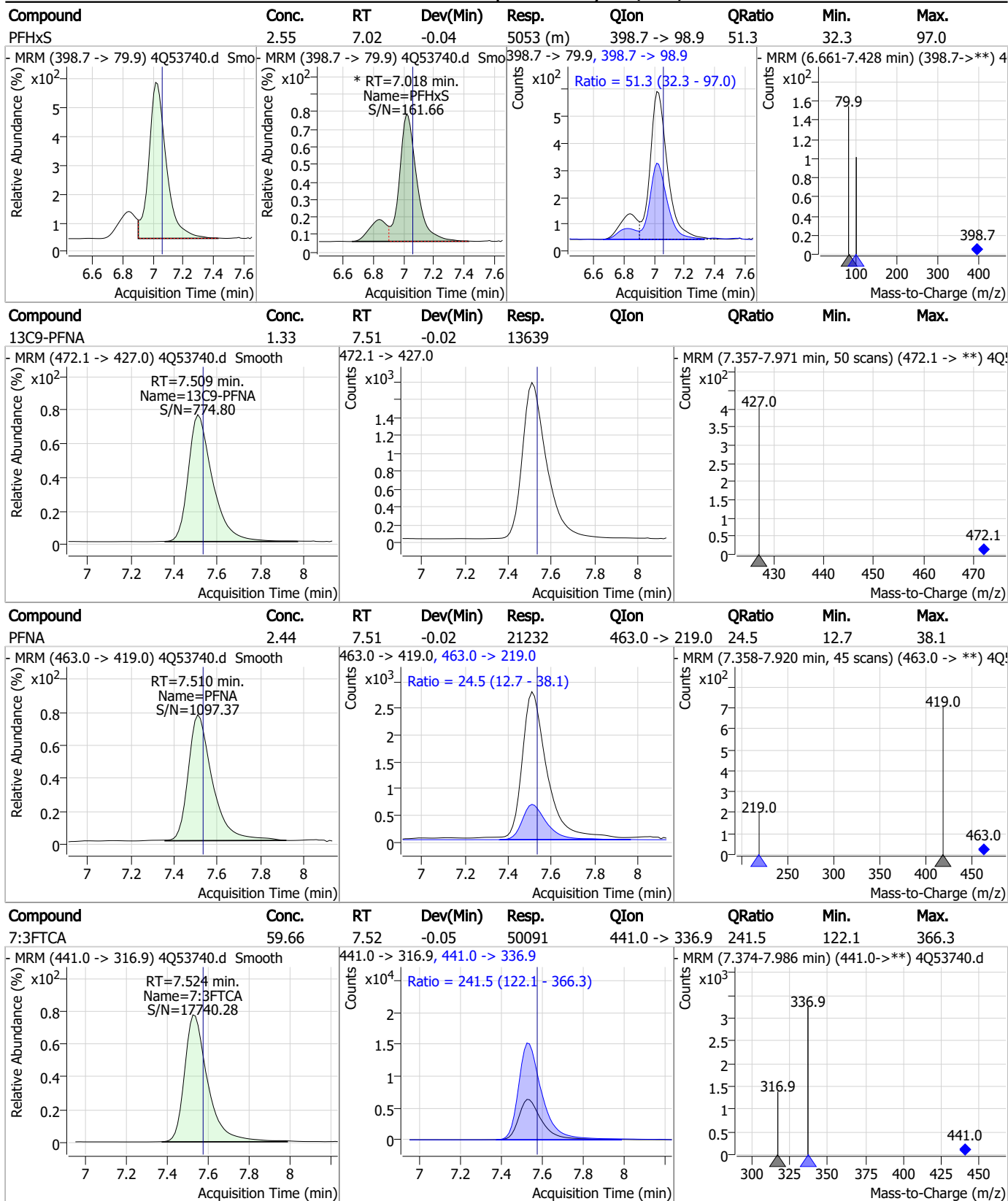
7.7.10 7

Perfluorinated Compounds by LC/MS/MS



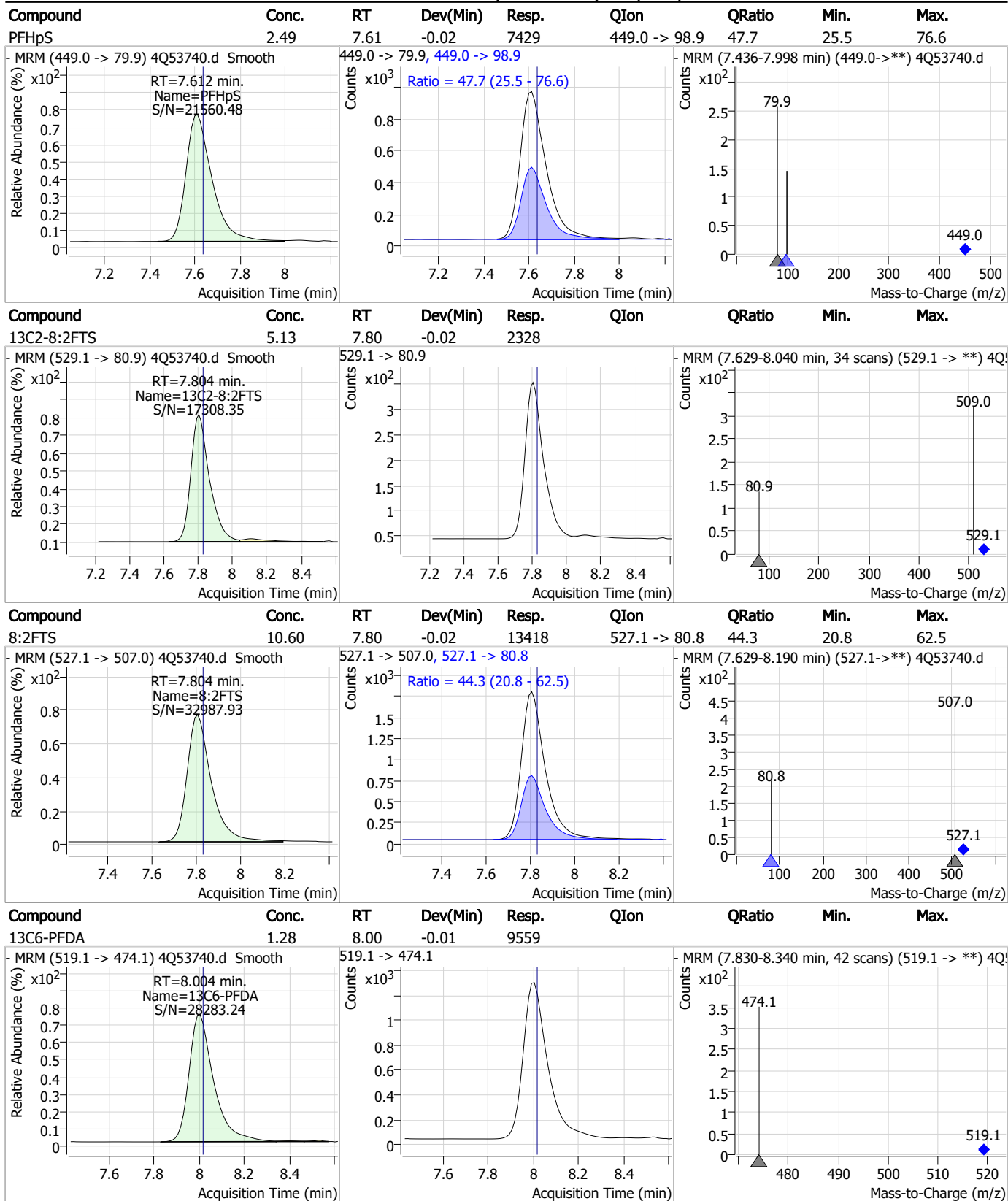
7.7.10
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Perfluorinated Compounds by LC/MS/MS



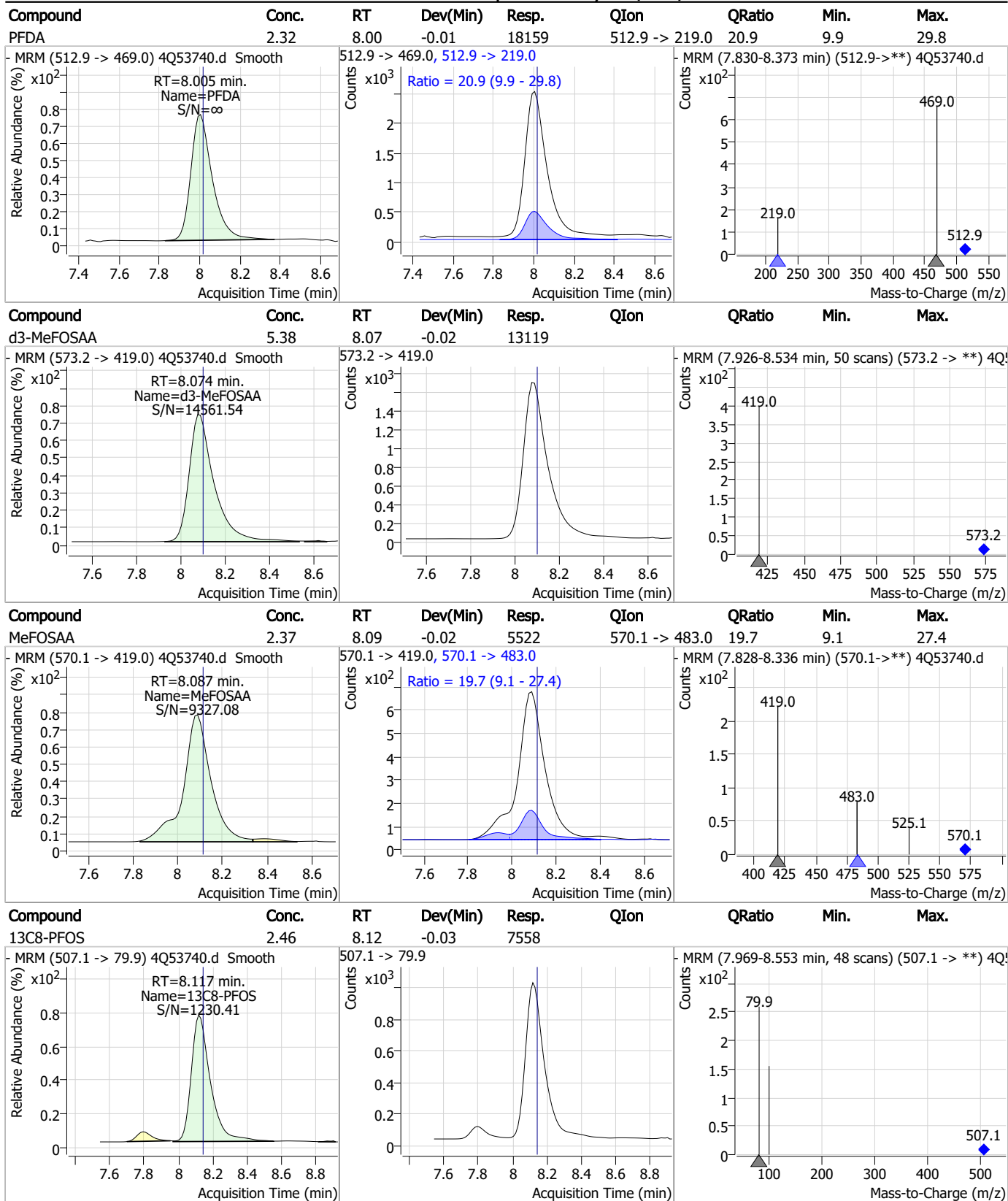
7.7.10 7

Perfluorinated Compounds by LC/MS/MS



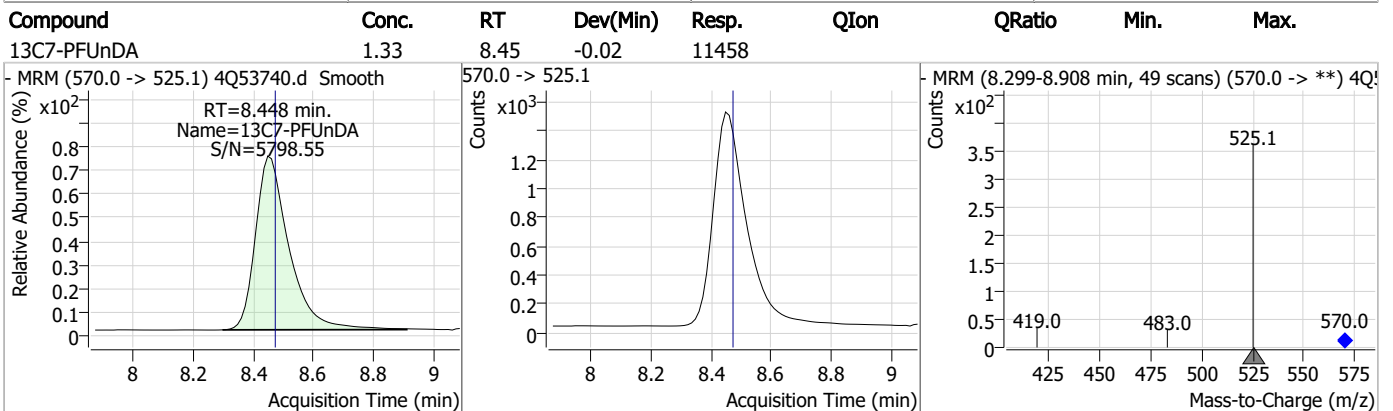
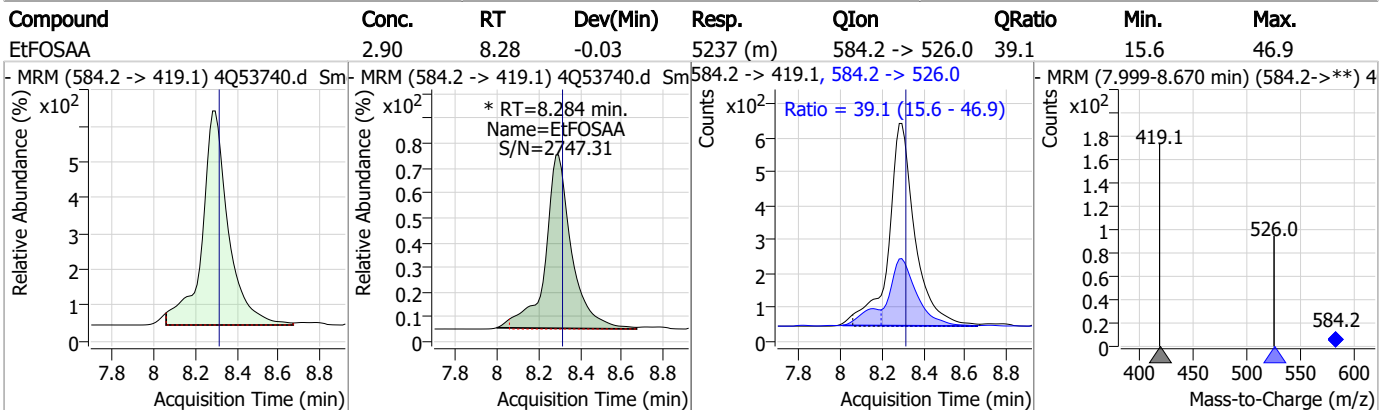
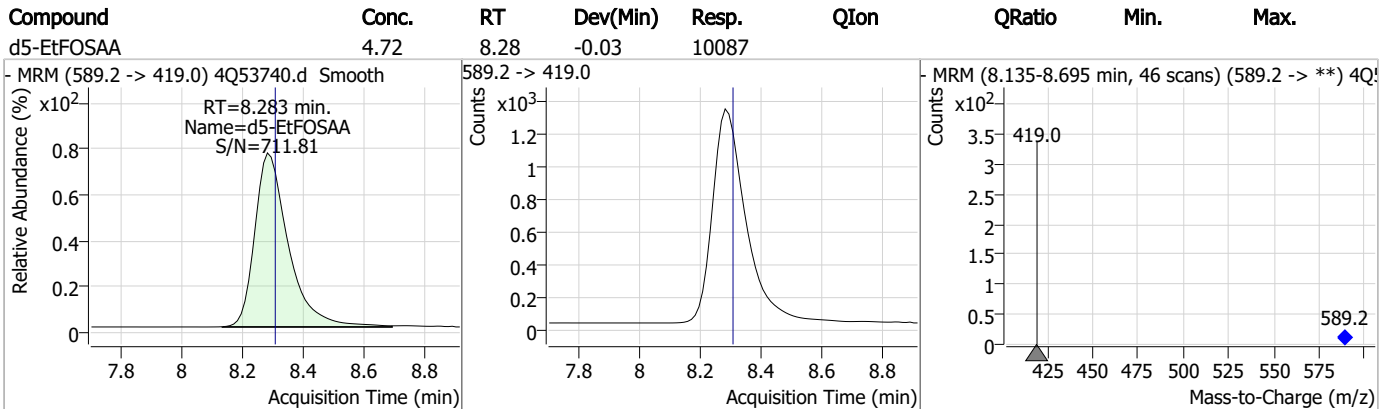
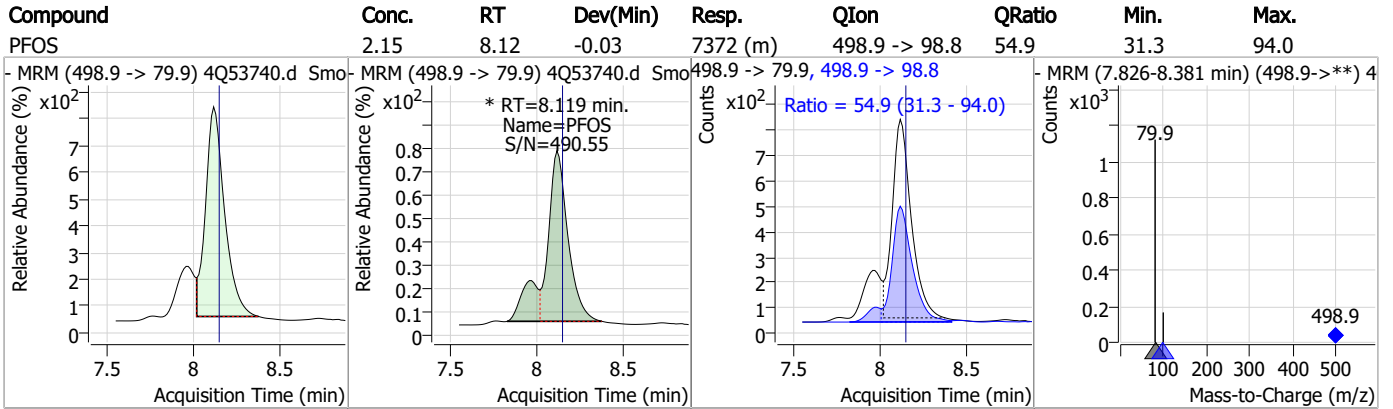
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Perfluorinated Compounds by LC/MS/MS

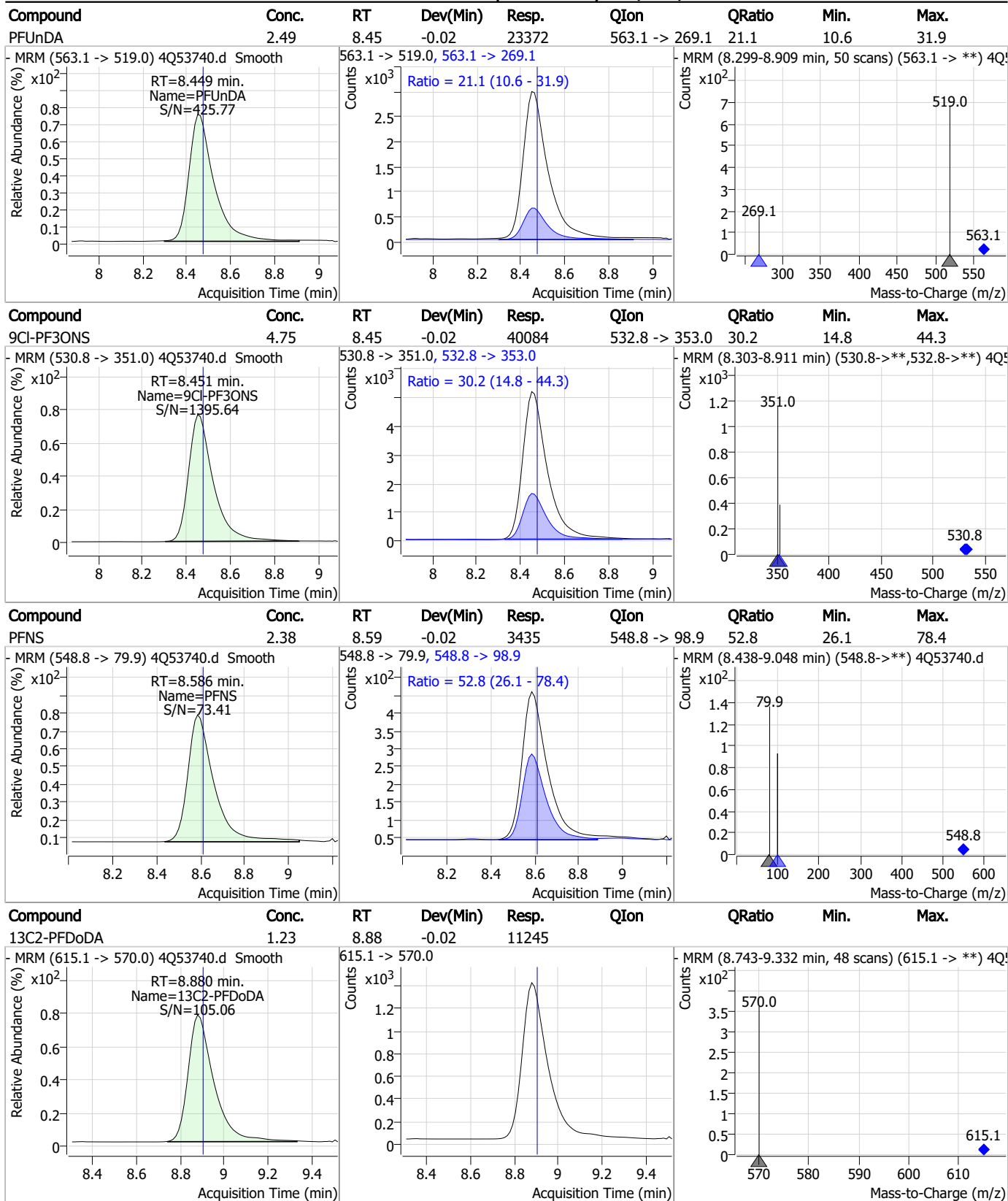


7.7.10
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Perfluorinated Compounds by LC/MS/MS

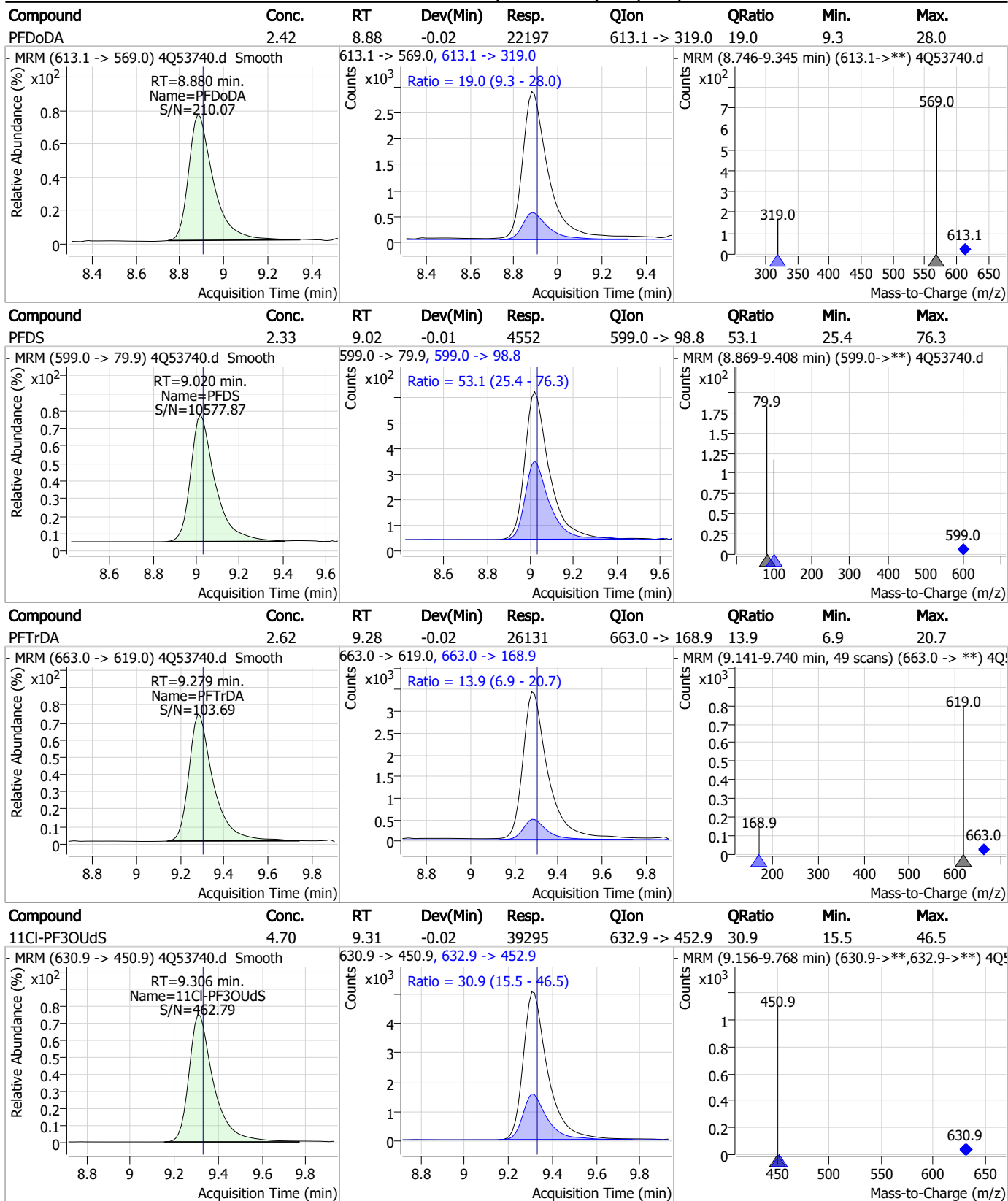


Perfluorinated Compounds by LC/MS/MS



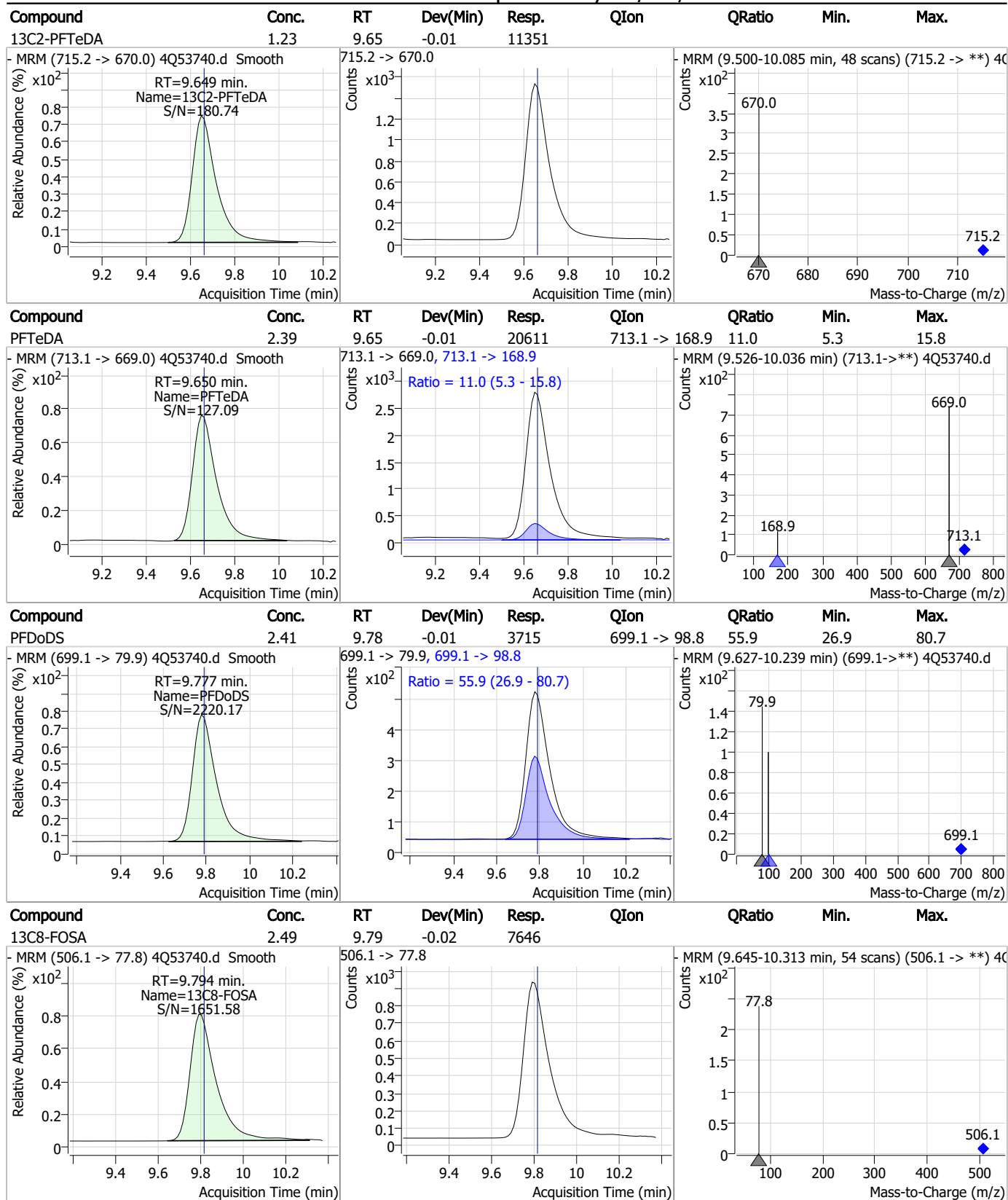
7.7.10
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Perfluorinated Compounds by LC/MS/MS



7.7.10
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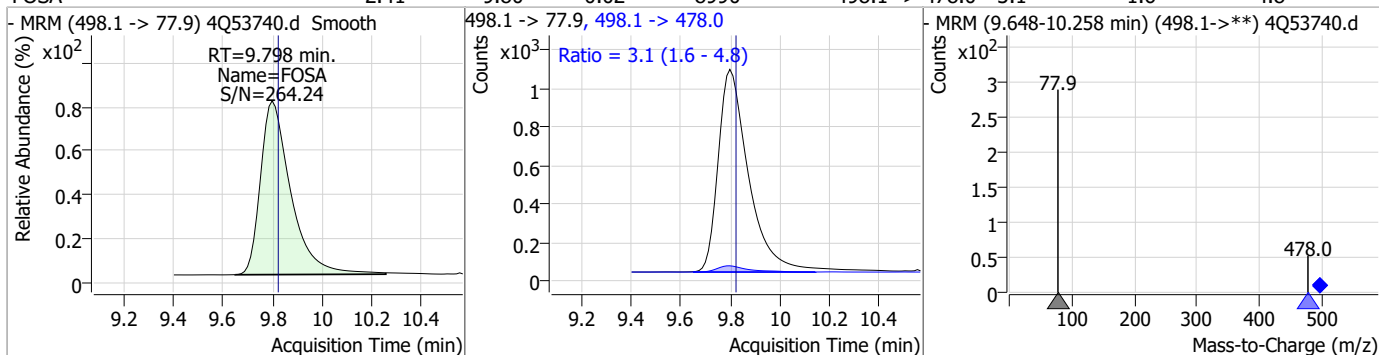
Perfluorinated Compounds by LC/MS/MS



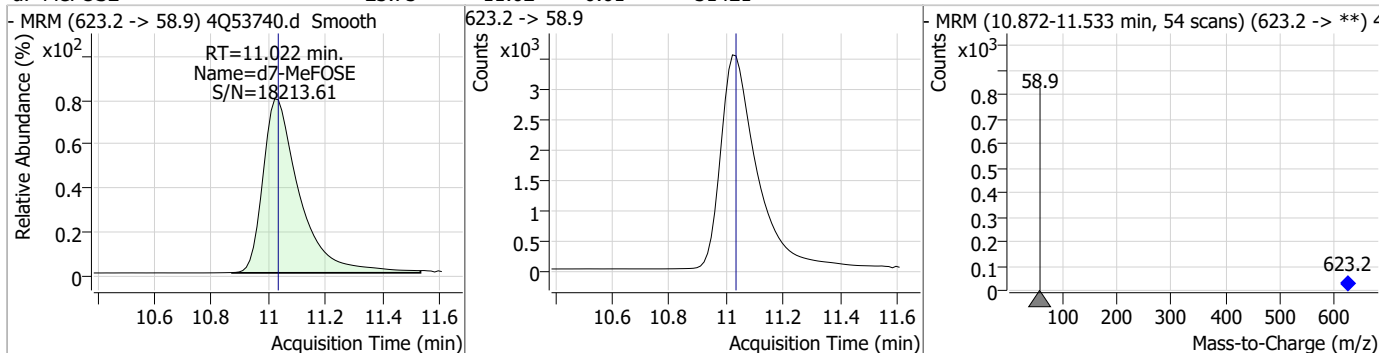
7.7.10 7

Perfluorinated Compounds by LC/MS/MS

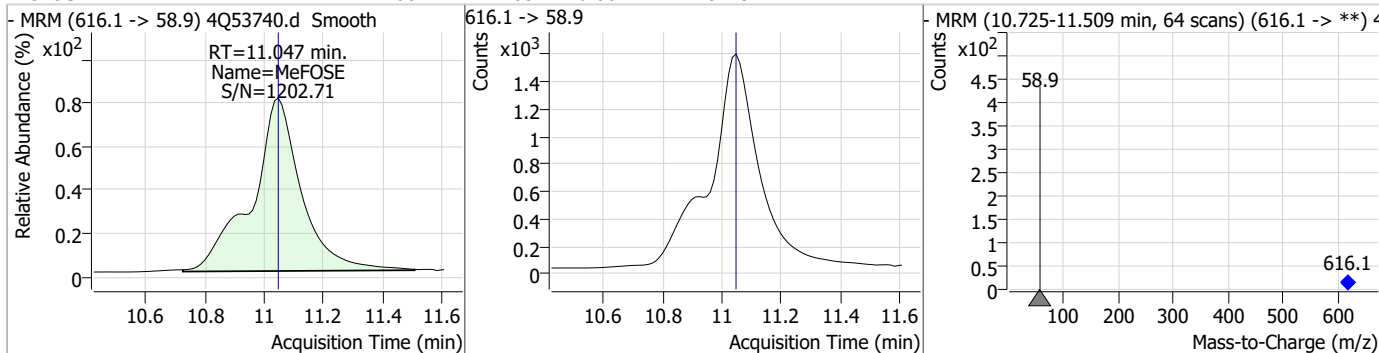
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.41	9.80	-0.02	8990	498.1 -> 478.0	3.1	1.6	4.8



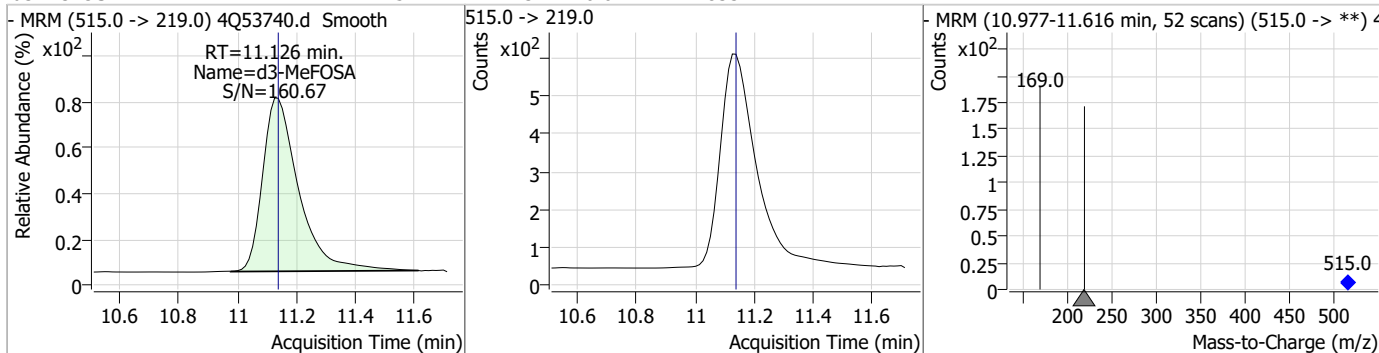
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.73	11.02	-0.01	31421				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.66	11.05	0.00	18129				

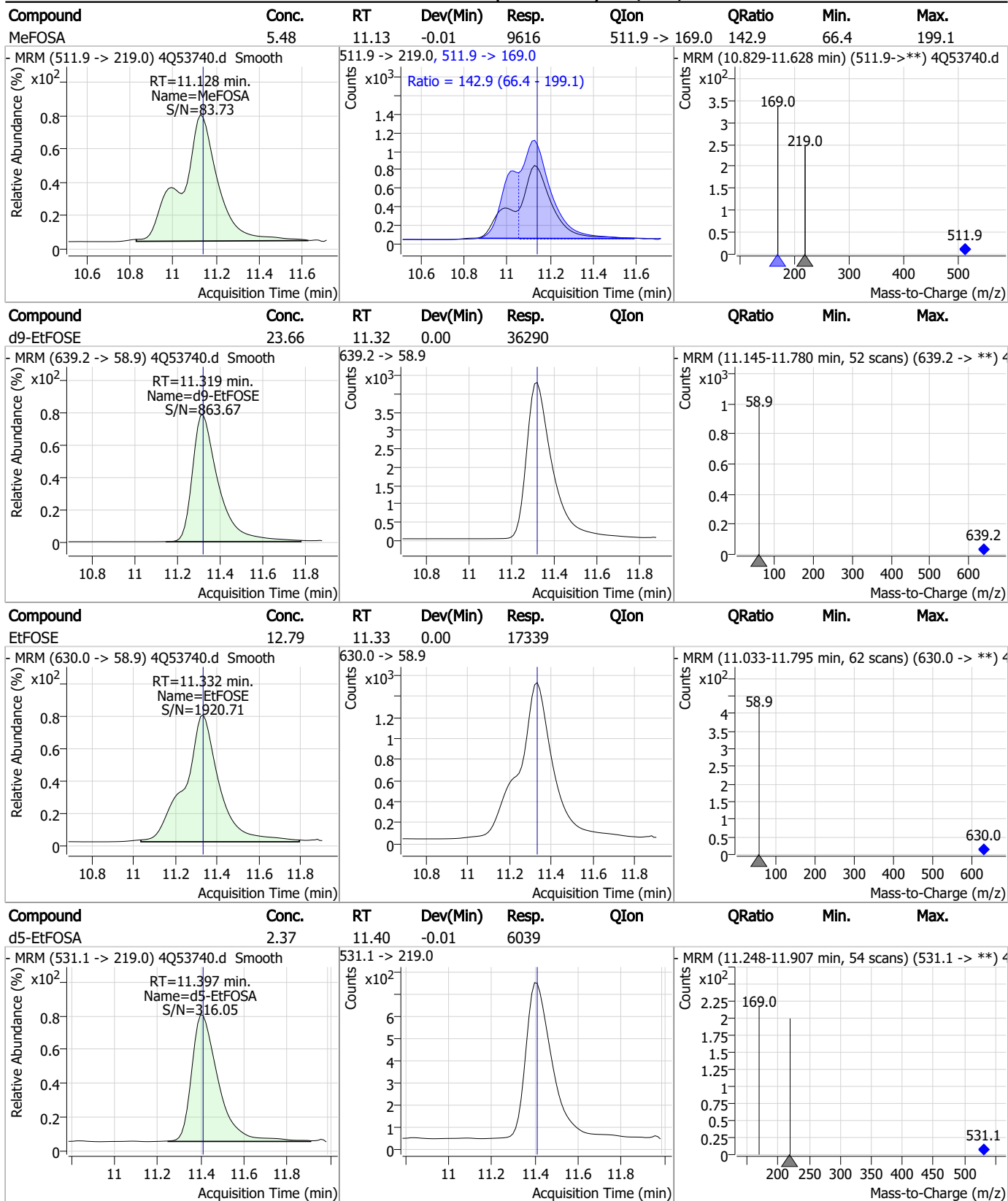


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.25	11.13	-0.01	4833				



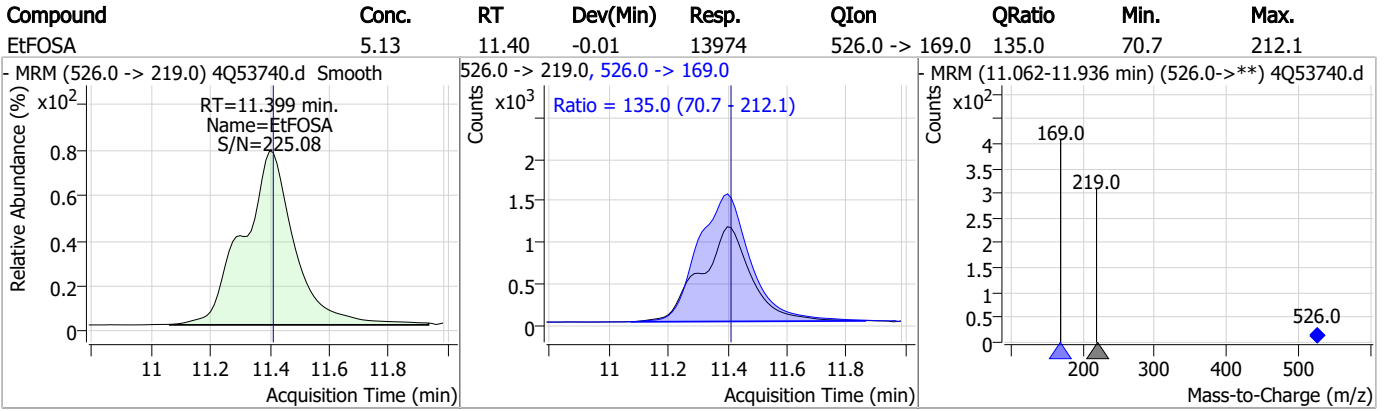
7.7.10
7

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

7

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

7.7.11
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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)
PFHpA	6.268	599.0 -> 98.8	22708	19.20	µg/L	100
		363.1 -> 319.0	407172			
PFHpS	7.612	363.1 -> 169.0	71534	17.93	µg/L	98
		449.0 -> 79.9	66588			
PFHxA	5.300	449.0 -> 98.9	35104	19.98	µg/L	99
		313.0 -> 269.0	255480			
PFHxS	7.018	313.0 -> 118.9	7731	20.35	µg/L	80
		398.7 -> 79.9	53093			
PFNA	7.510	398.7 -> 98.9	26166	21.04	µg/L	96
		463.0 -> 419.0	216665			
PFNS	8.586	463.0 -> 219.0	50650	18.01	µg/L	100
		548.8 -> 79.9	32286			
PFOA	6.965	548.8 -> 98.9	16926	17.67	µg/L	99
		413.0 -> 369.0	343611			
PFOS	8.119	413.0 -> 169.0	68741	17.25	µg/L	77
		498.9 -> 79.9	73552			
PFPeA	4.127	498.9 -> 98.8	33191	18.96	µg/L	100
		263.0 -> 219.0	201339			
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			
11CI-PF3OUdS	9.306	630.9 -> 450.9	203142	19.20	µg/L	100
		632.9 -> 452.9	62725			
9CI-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
		511.9 -> 219.0	40712			
MeFOSA	11.128	511.9 -> 169.0	47976	17.96	µg/L	87
		616.1 -> 58.9	163247			
MeFOSE	11.047	699.1 -> 79.9	33921	98.01	µg/L	100
		699.1 -> 98.8	19282			
PFDoDS	9.777	295.0 -> 201.0	17138	17.69	µg/L	96
		295.0 -> 84.9	4293			
NFDHA	5.179	279.0 -> 85.1	110466	20.30	µg/L	97
		229.0 -> 84.9	124349			
PFMBA	4.529	314.8 -> 134.9	177172	18.07	µg/L	100
		314.8 -> 82.9	6058			
PFMPA	3.265			18.29	µg/L	100
PFEESA	5.684			17.51	µg/L	98

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



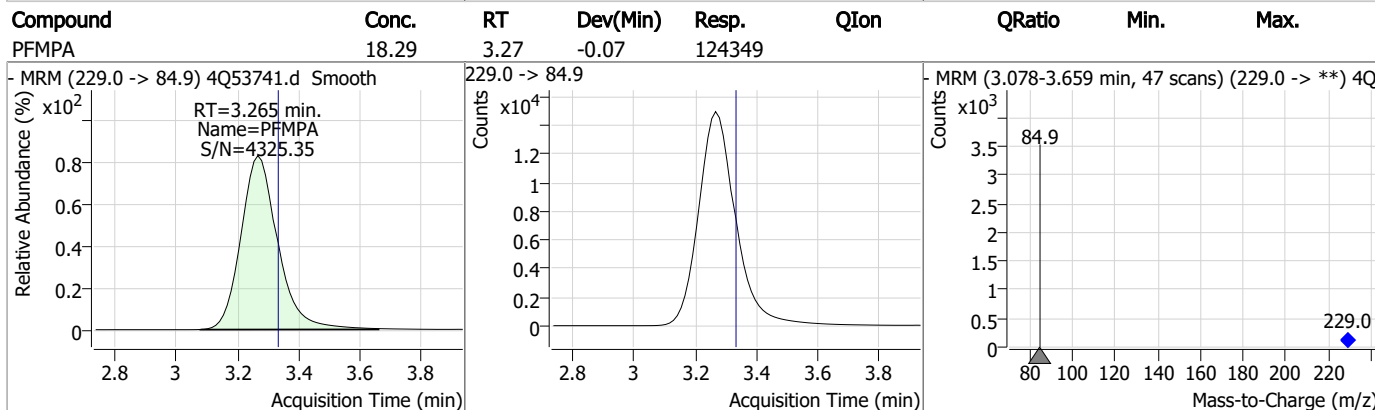
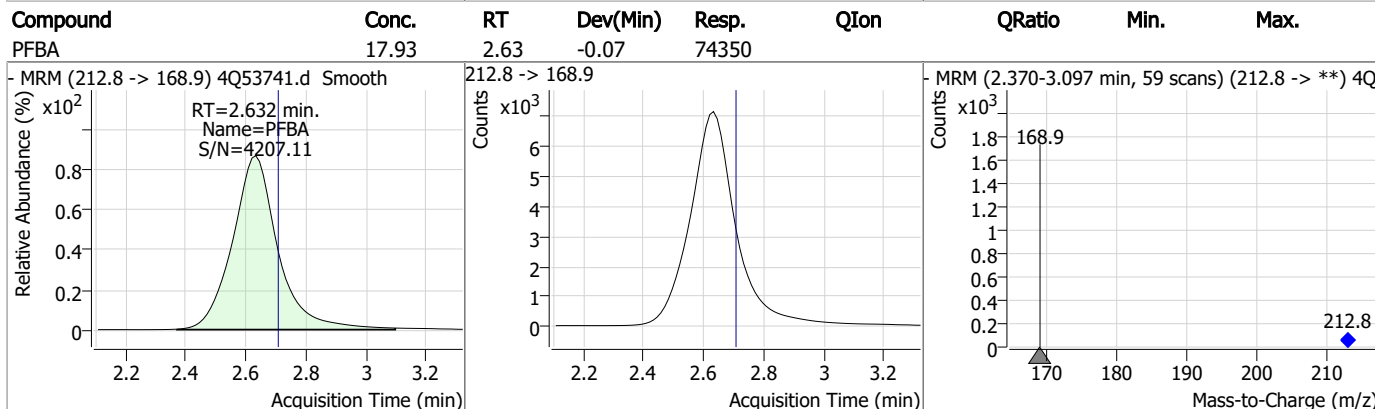
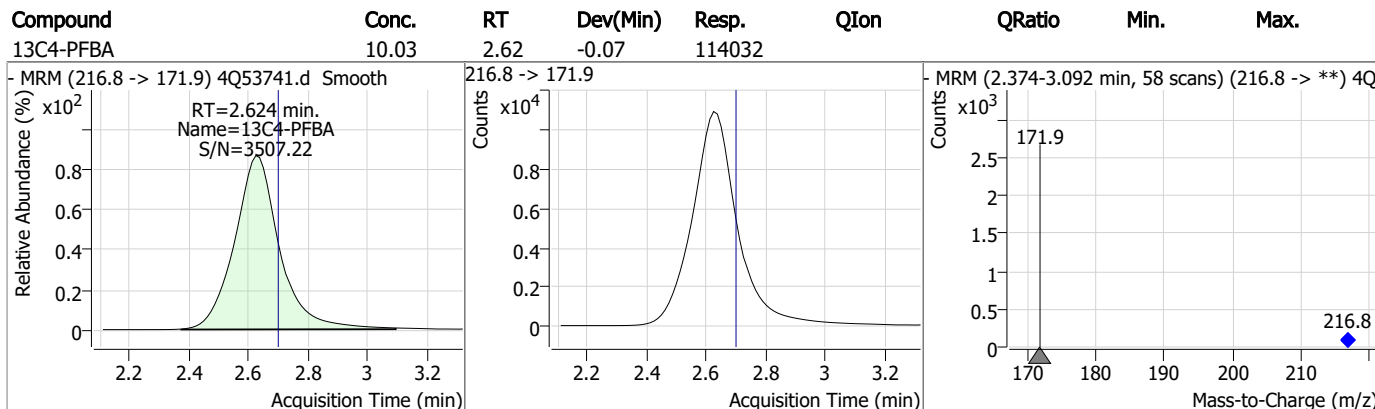
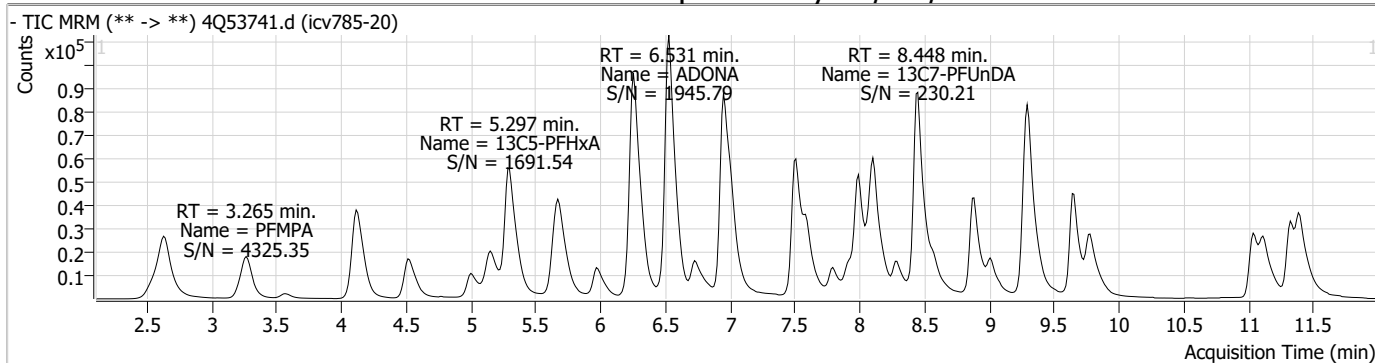
Perfluorinated Compounds by LC/MS/MS

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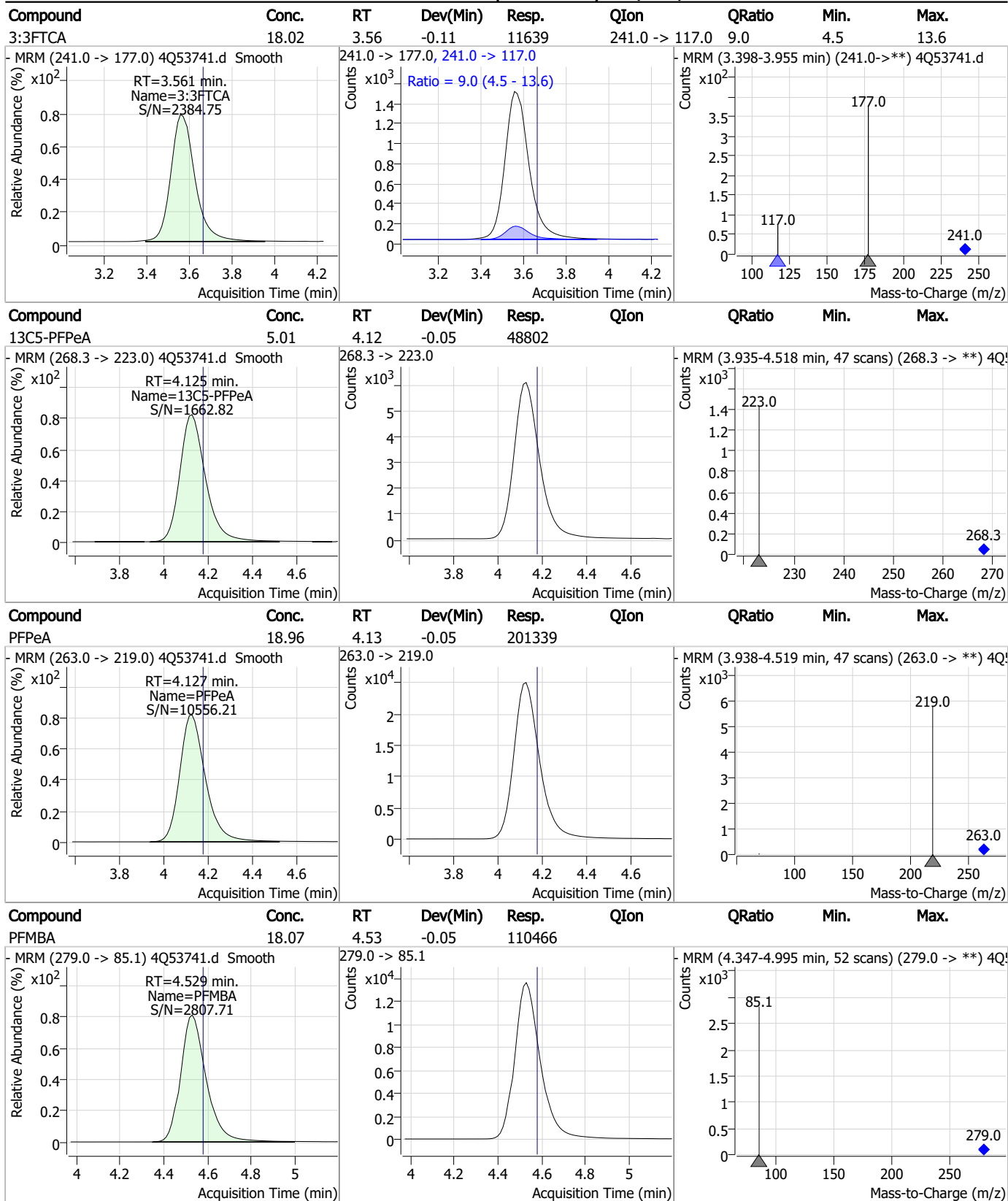
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Perfluorinated Compounds by LC/MS/MS

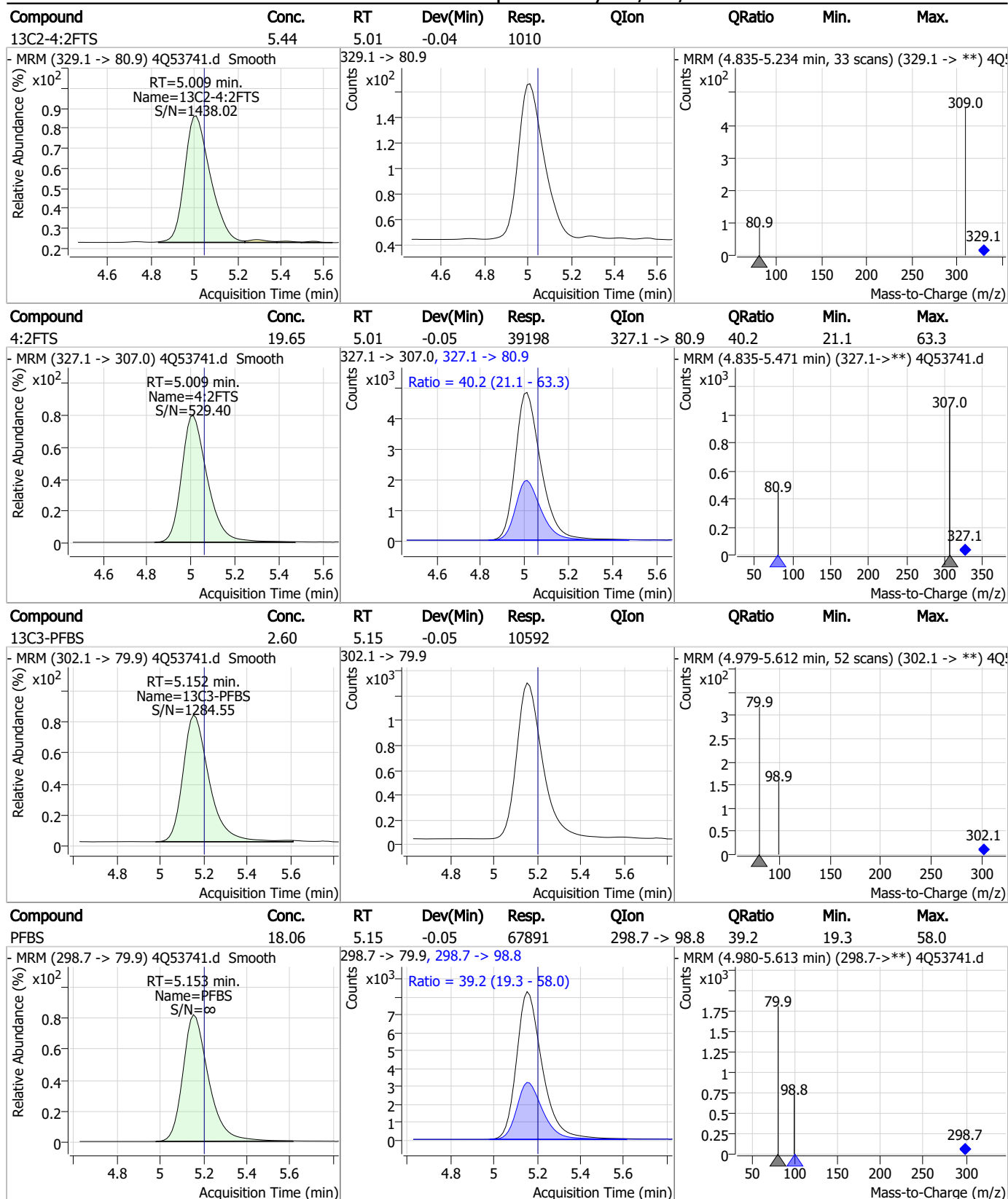


Perfluorinated Compounds by LC/MS/MS



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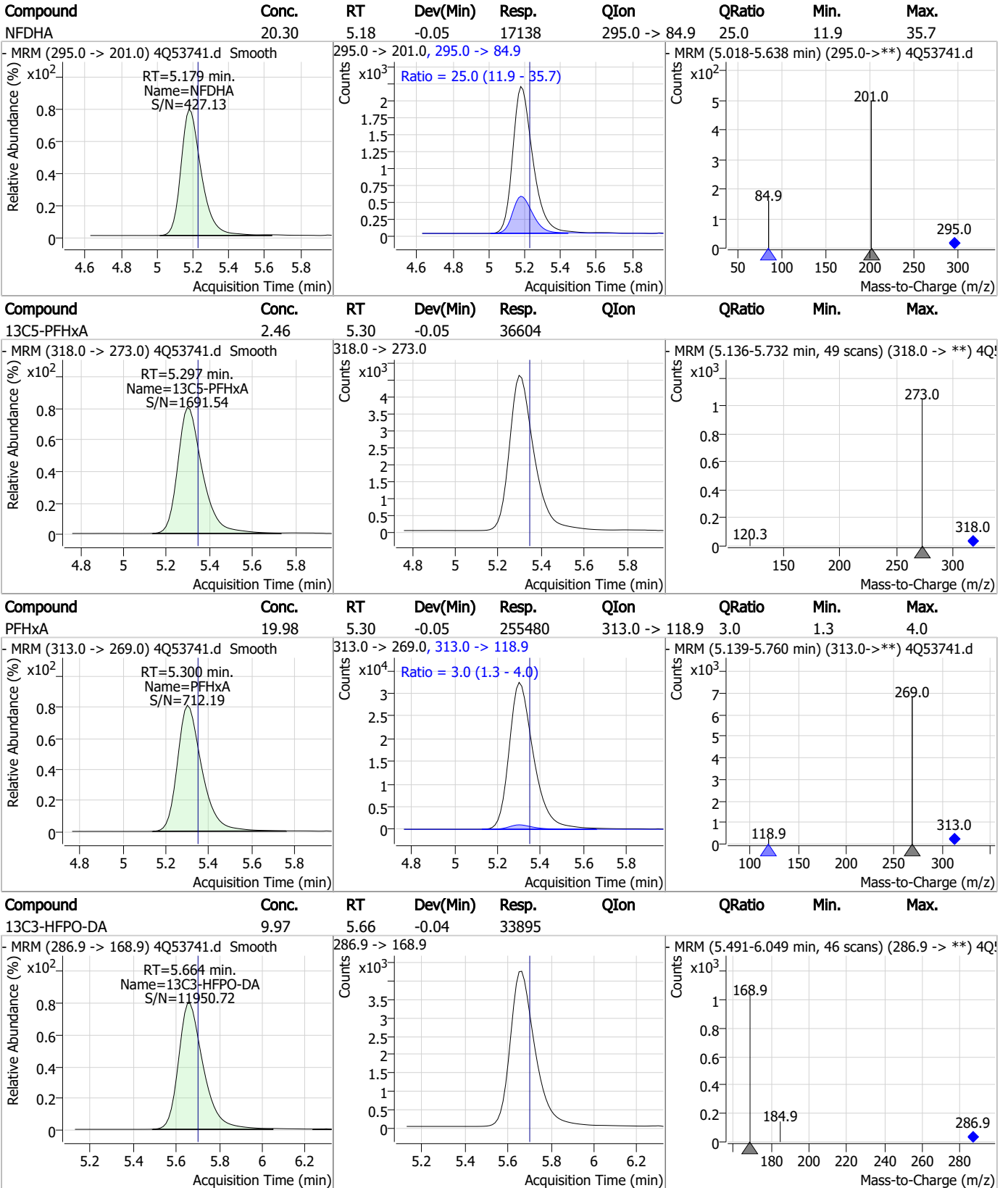
Perfluorinated Compounds by LC/MS/MS



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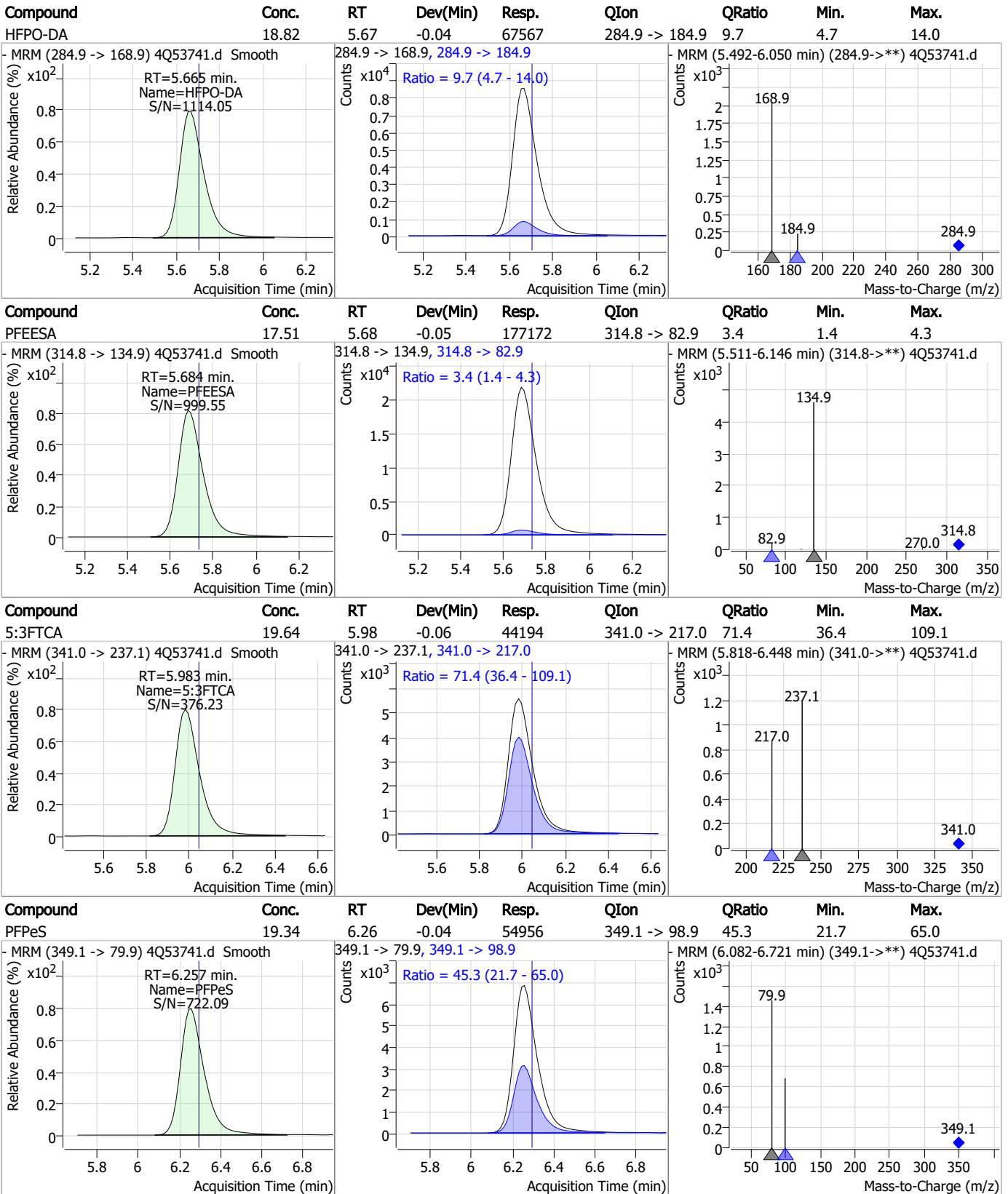
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

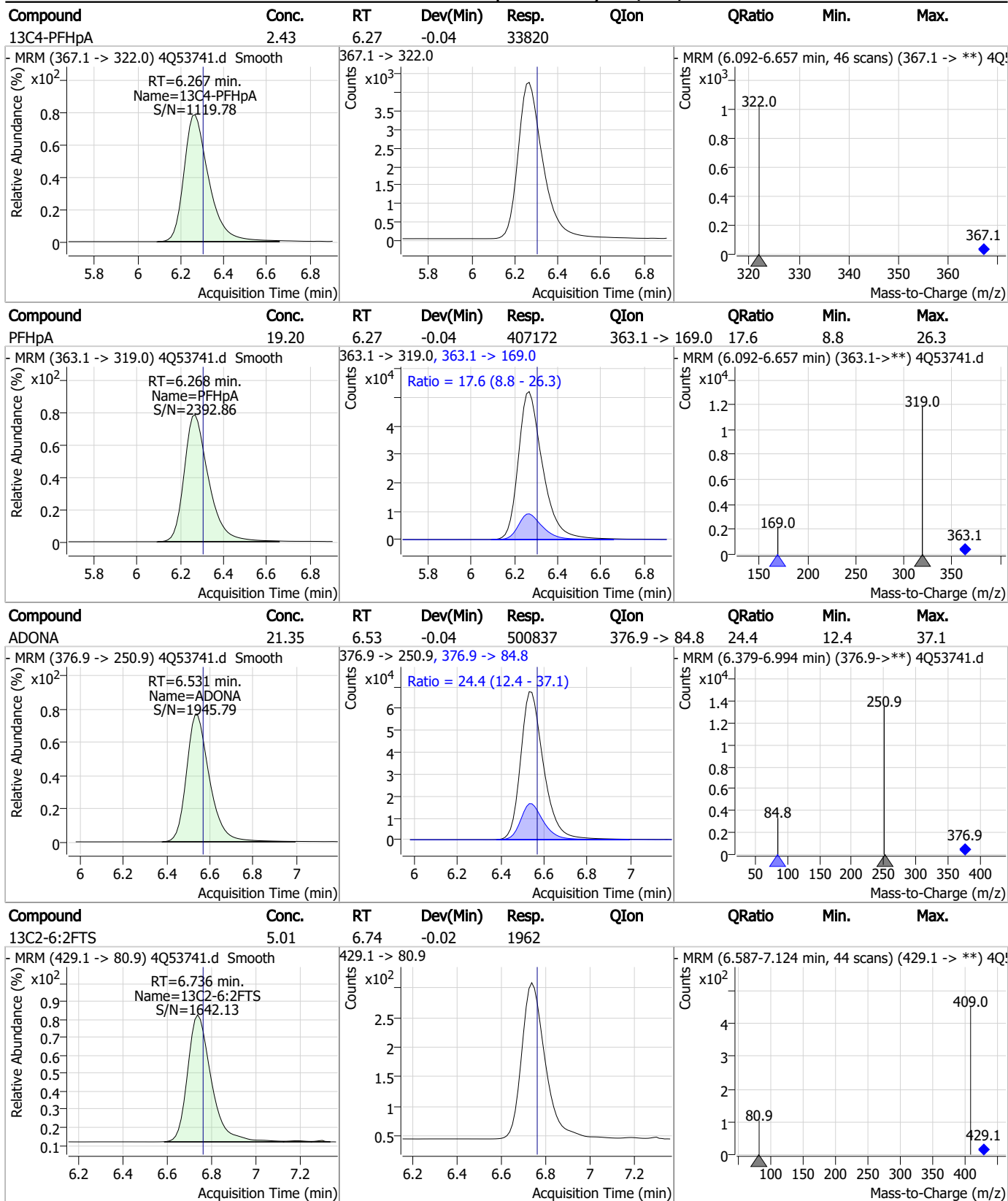


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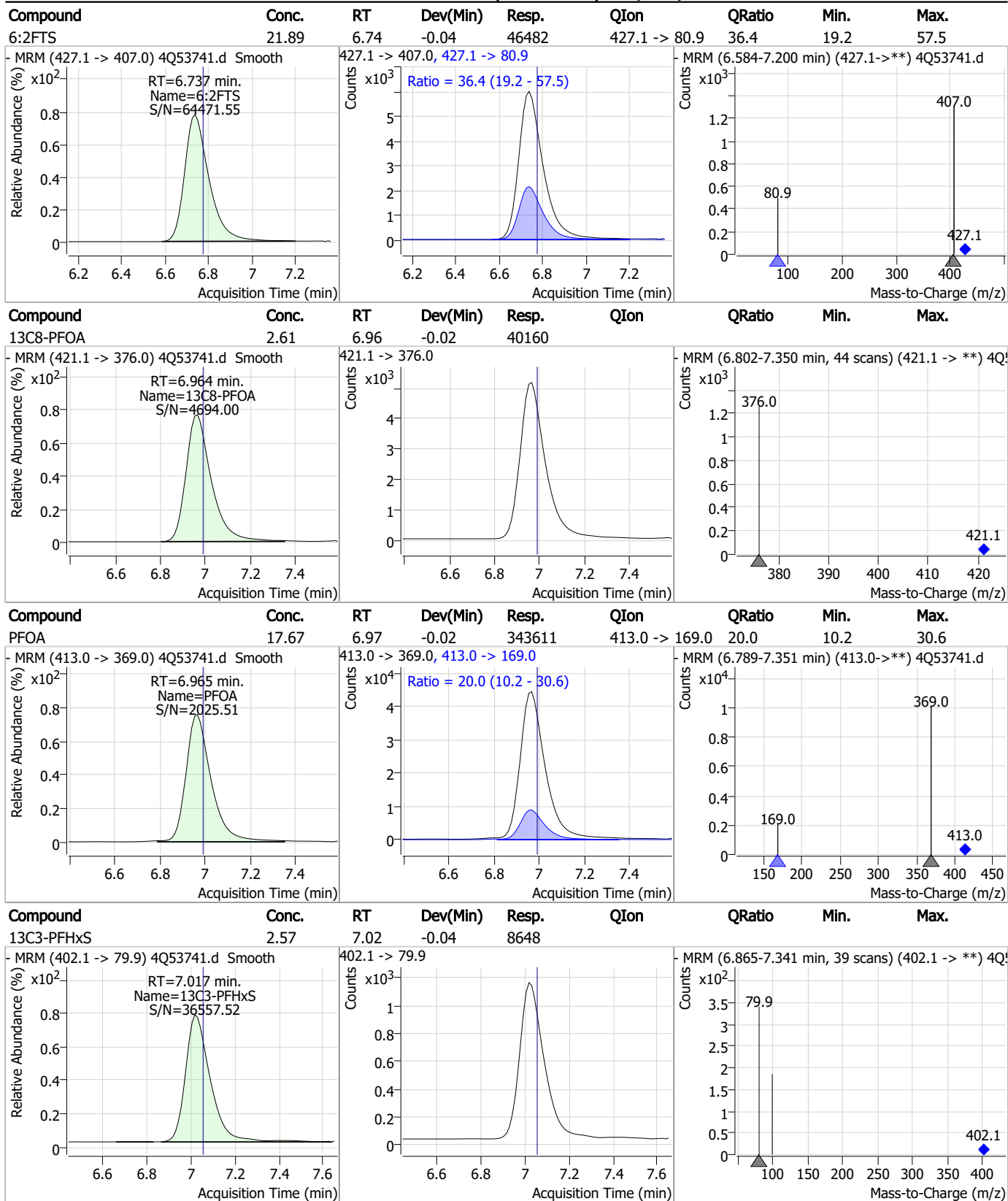


Perfluorinated Compounds by LC/MS/MS



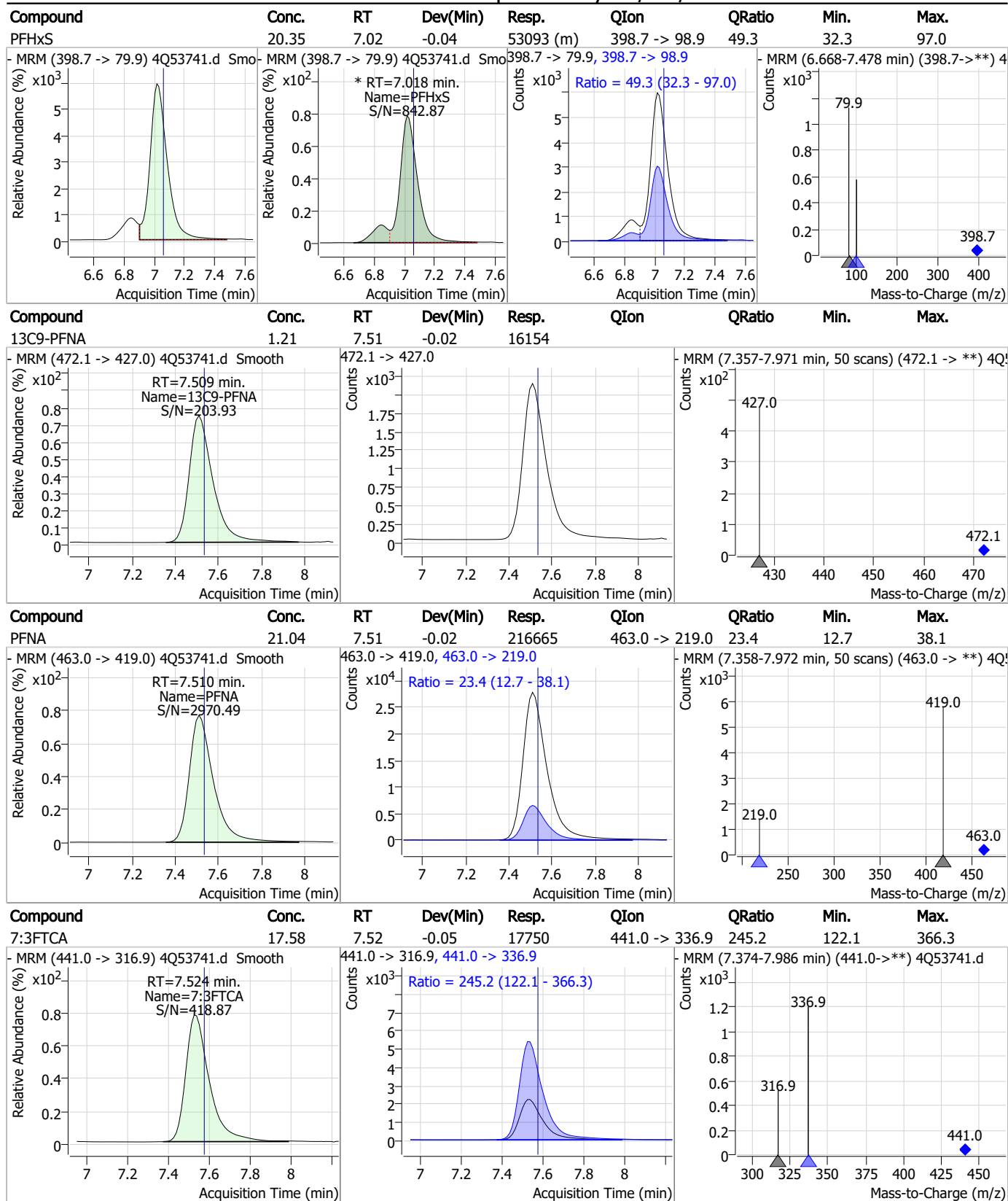
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Perfluorinated Compounds by LC/MS/MS



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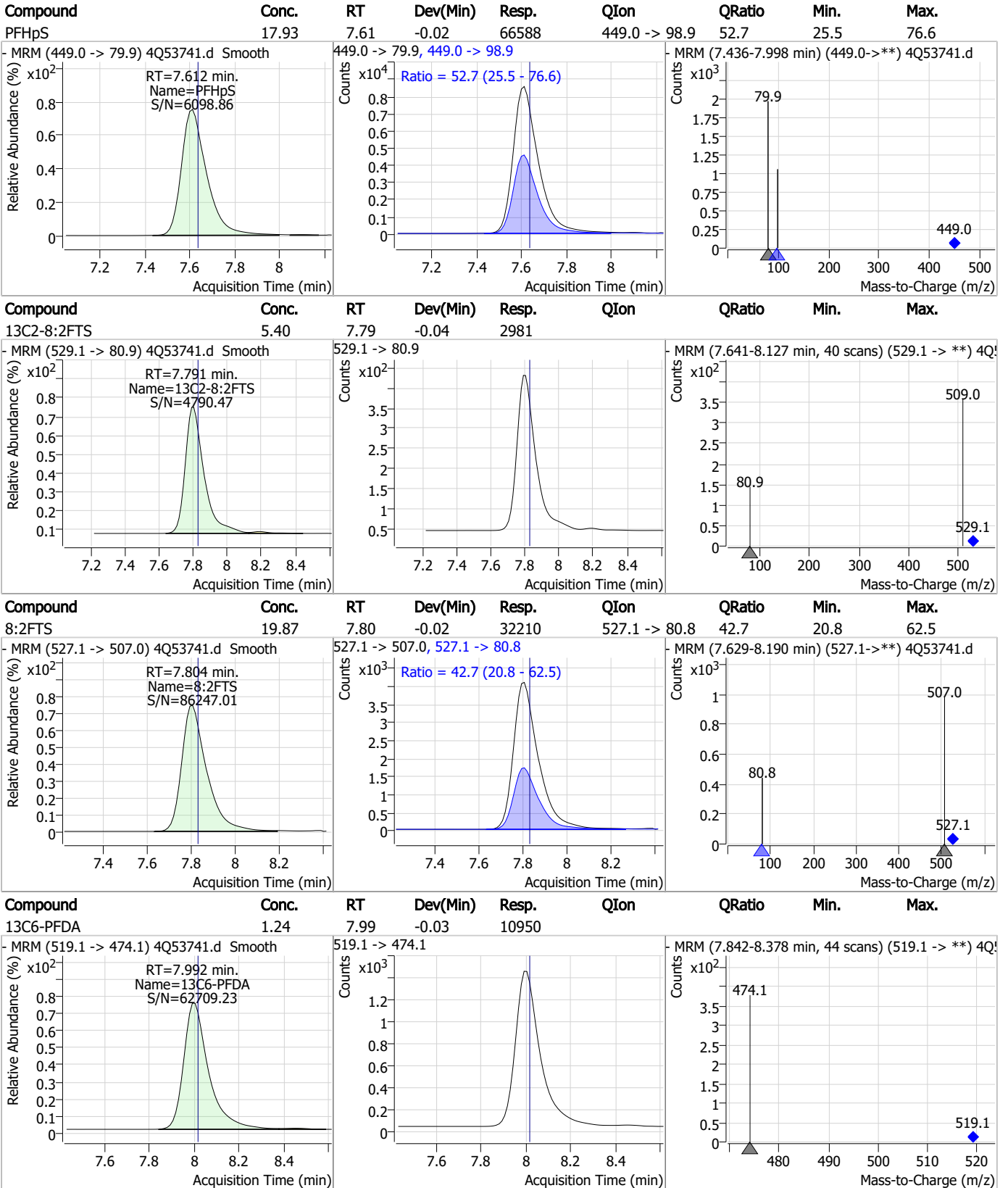
Perfluorinated Compounds by LC/MS/MS



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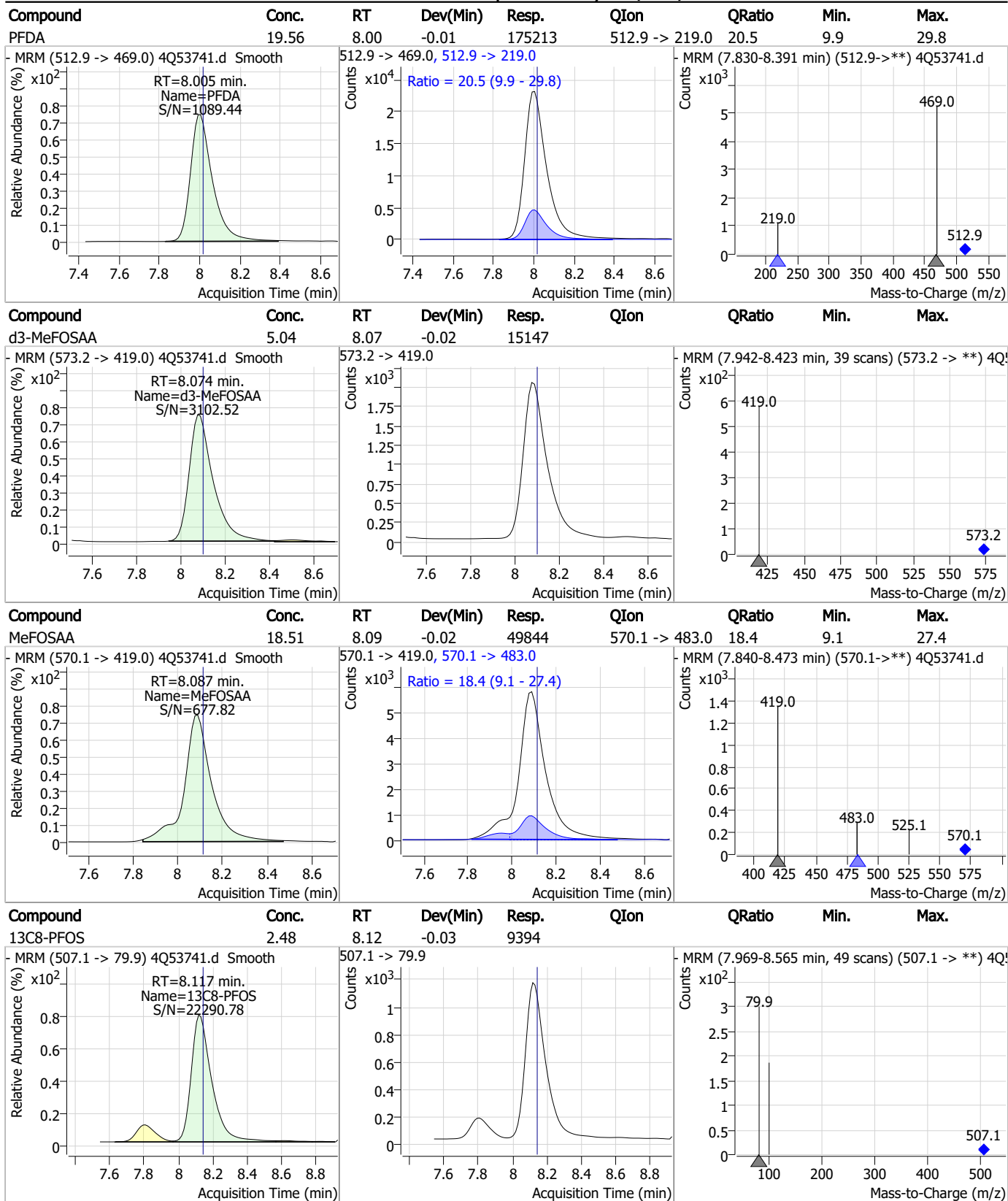
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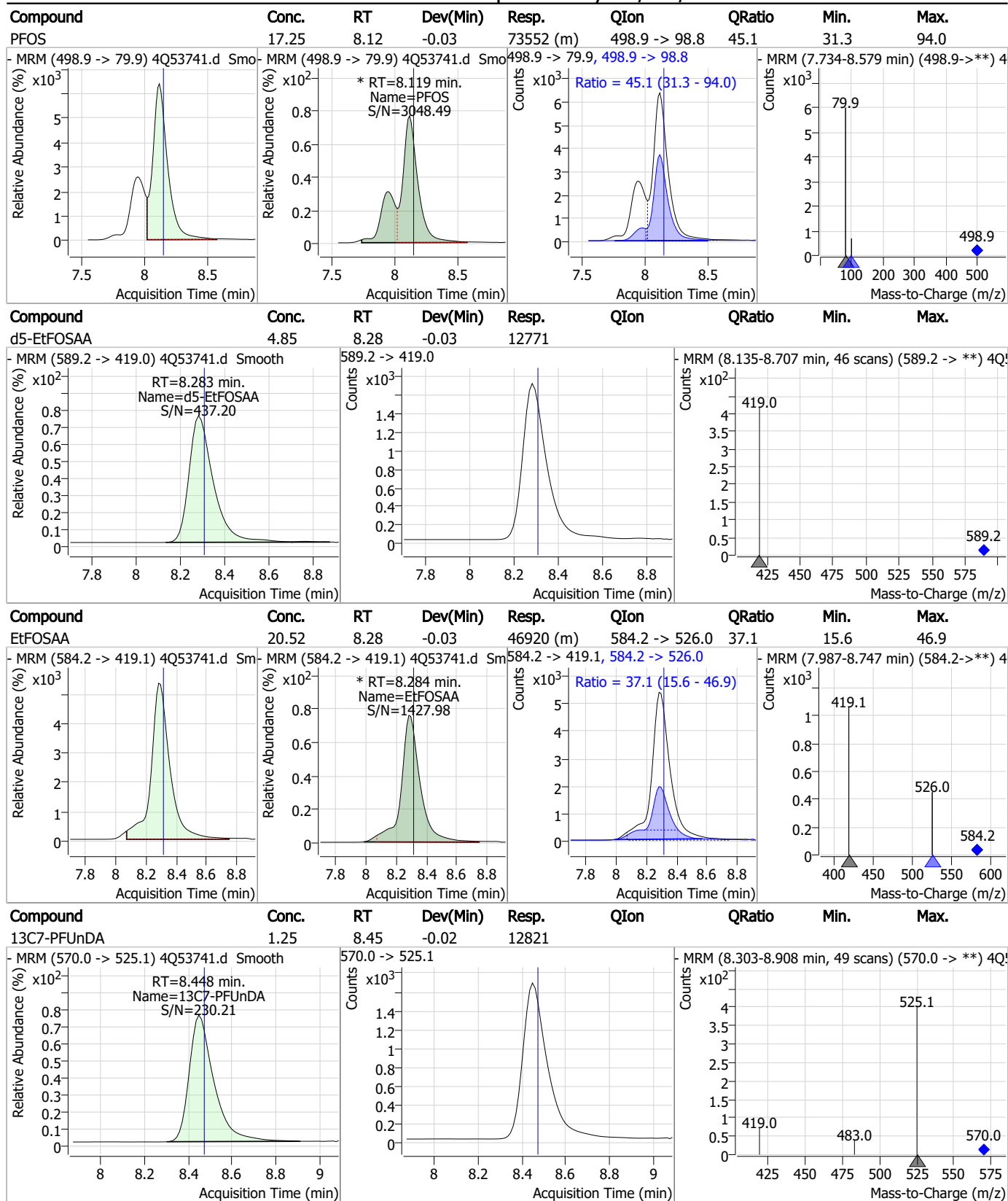
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Perfluorinated Compounds by LC/MS/MS



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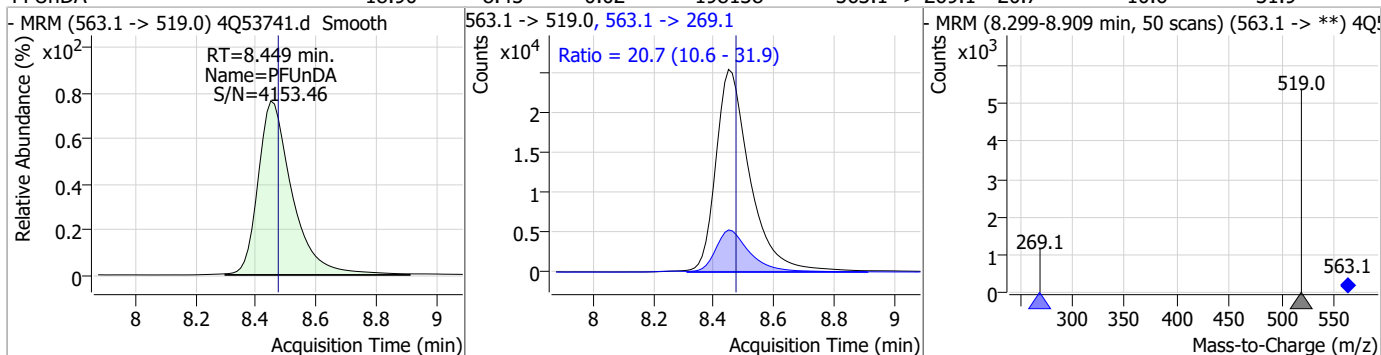
Perfluorinated Compounds by LC/MS/MS



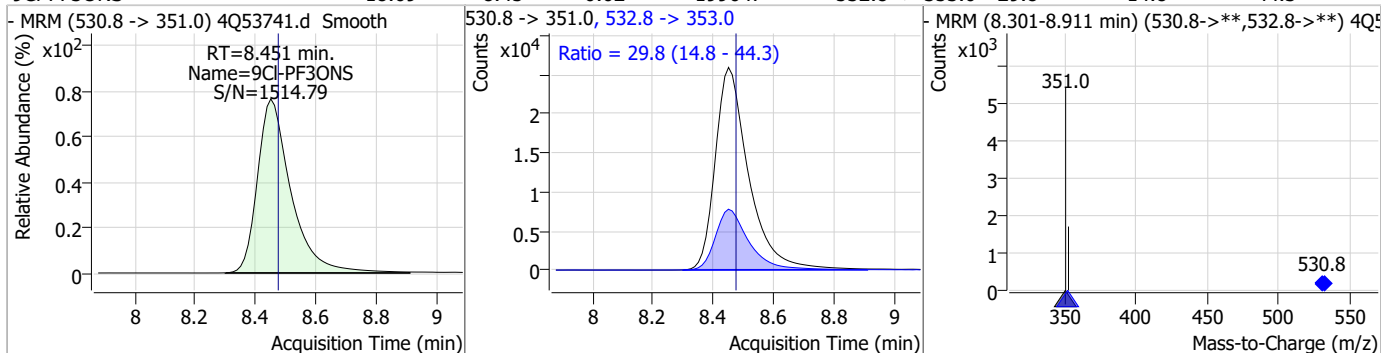
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Perfluorinated Compounds by LC/MS/MS

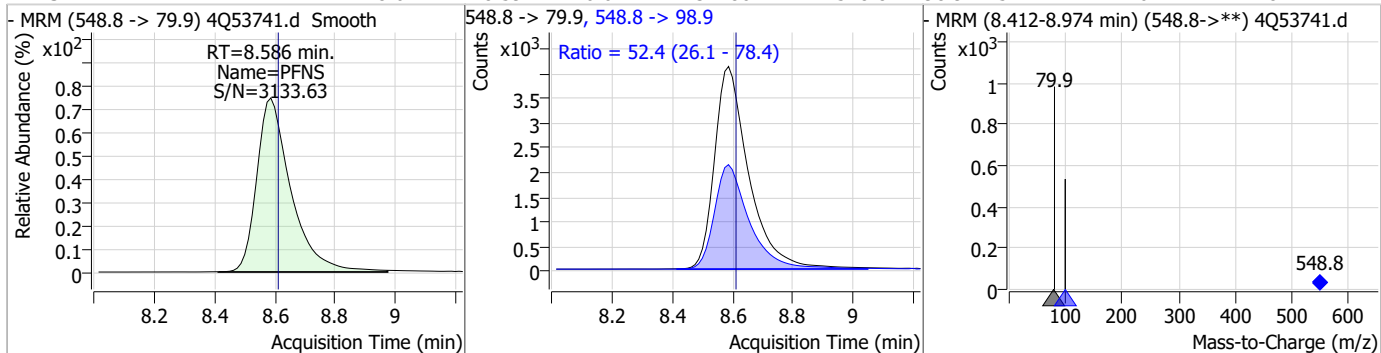
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	18.90	8.45	-0.02	198138	563.1 -> 269.1	20.7	10.6	31.9



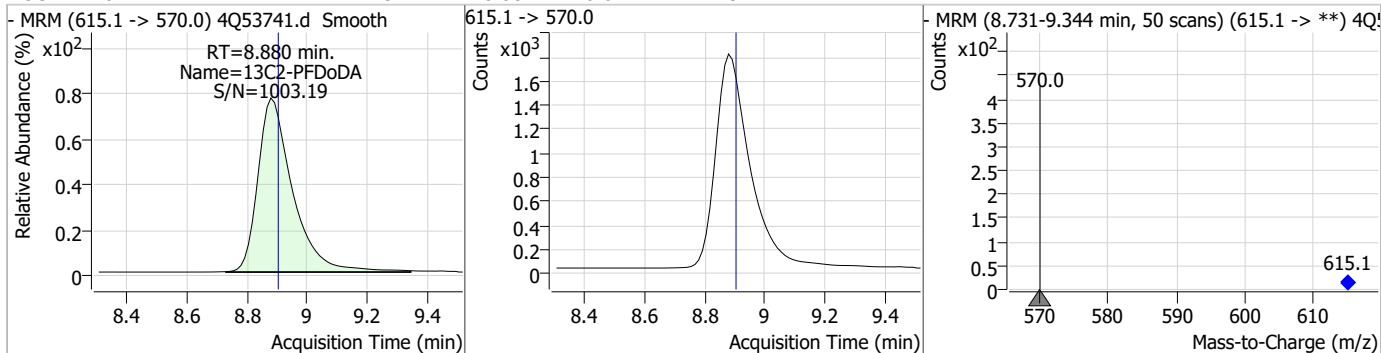
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	18.69	8.45	-0.02	199647	532.8 -> 353.0	29.8	14.8	44.3



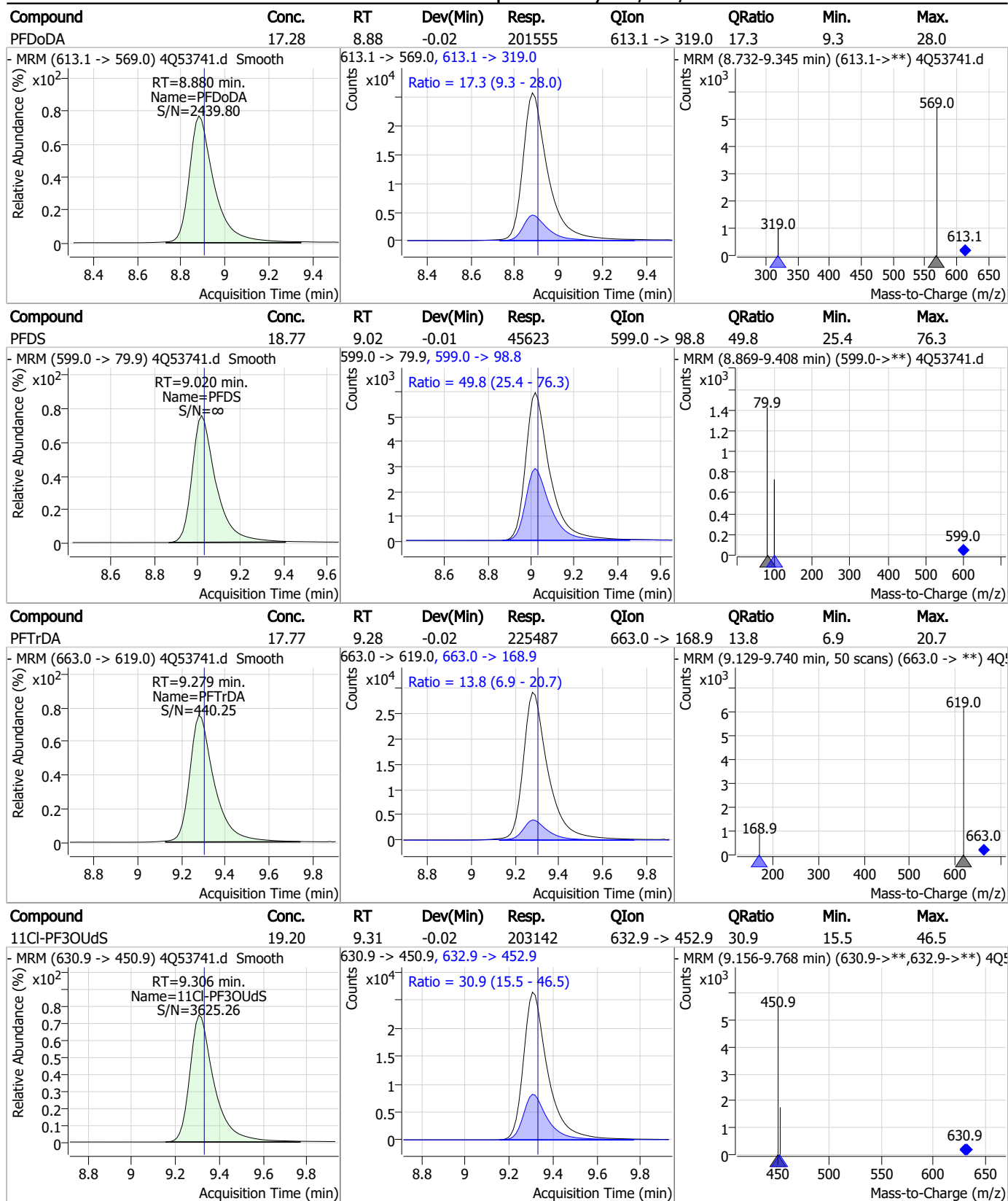
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	18.01	8.59	-0.02	32286	548.8 -> 98.9	52.4	26.1	78.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.32	8.88	-0.02	14297	615.1 -> 570.0			

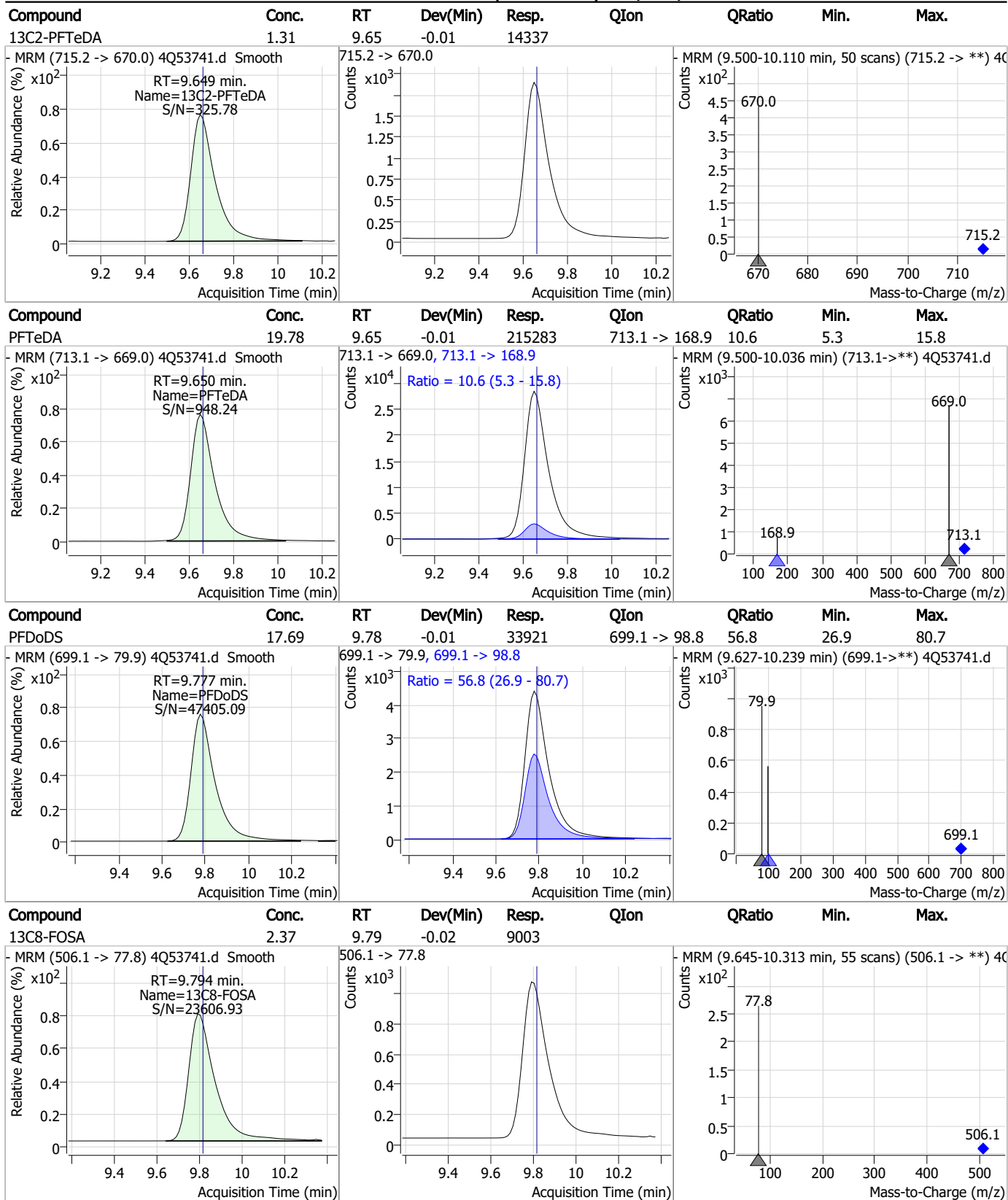


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

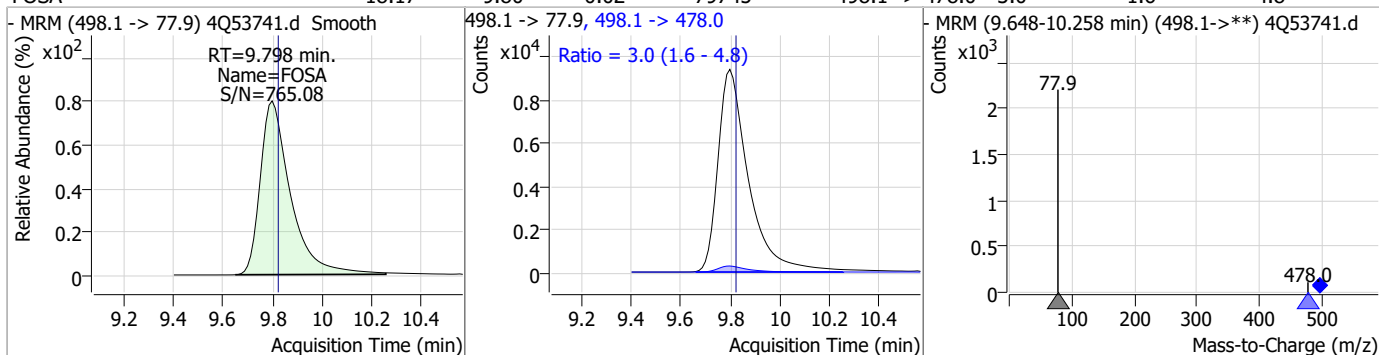


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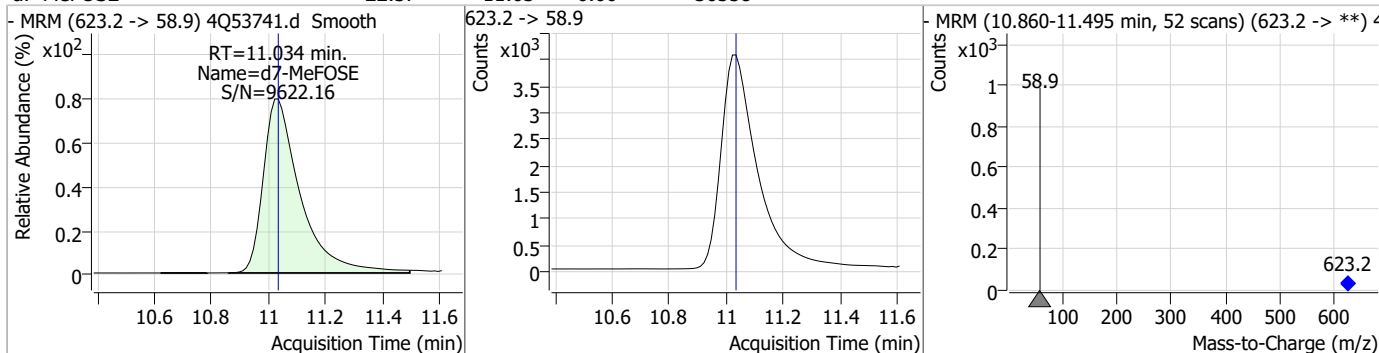
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Perfluorinated Compounds by LC/MS/MS

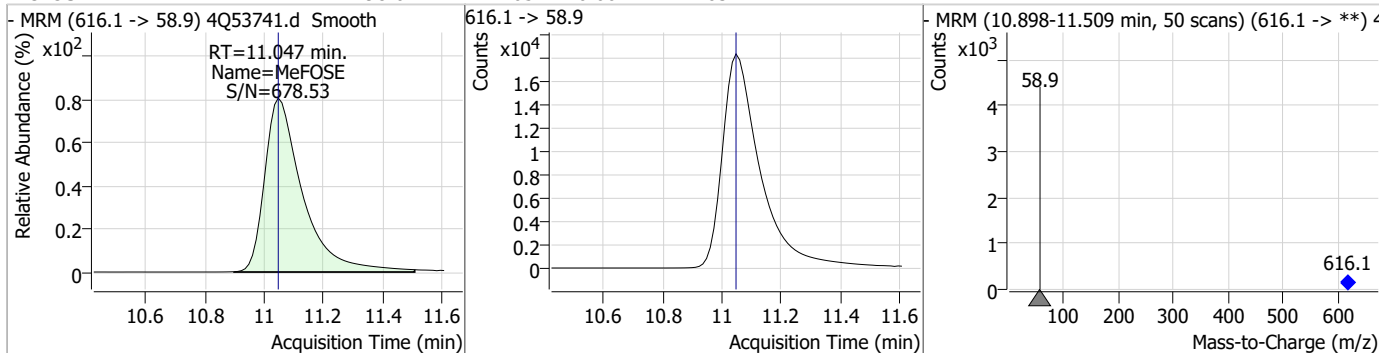
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	18.17	9.80	-0.02	79745	498.1 -> 478.0	3.0	1.6	4.8



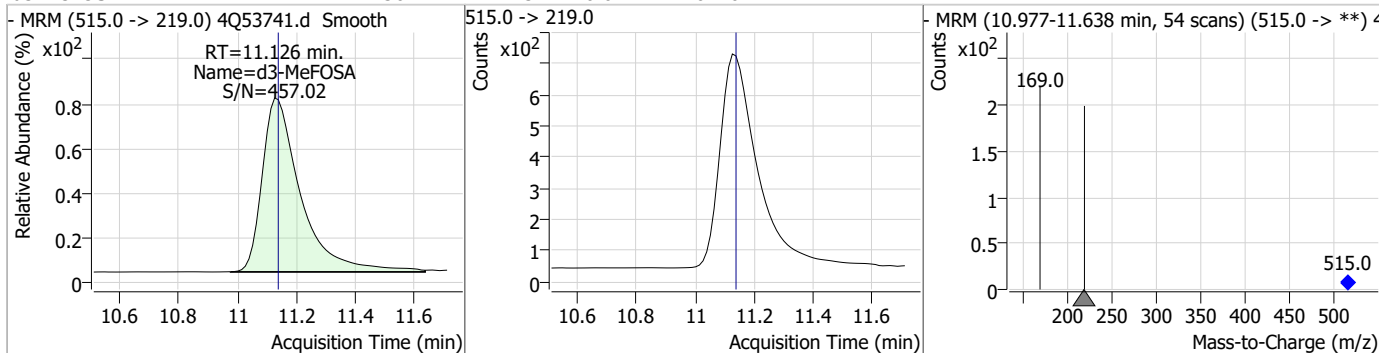
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	22.37	11.03	0.00	36558	623.2 -> 58.9			



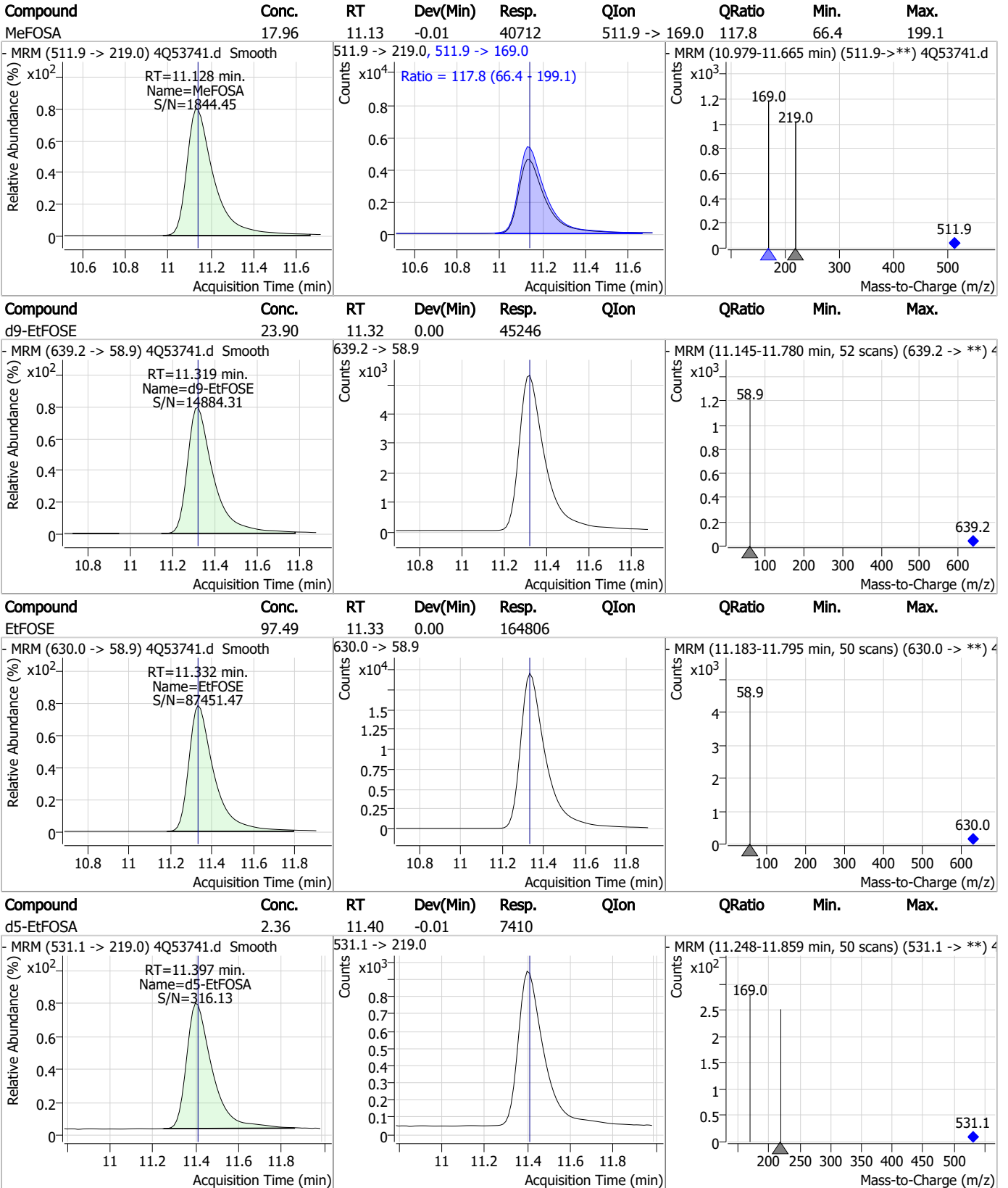
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	98.01	11.05	0.00	163247	616.1 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.36	11.13	-0.01	6246	515.0 -> 219.0			



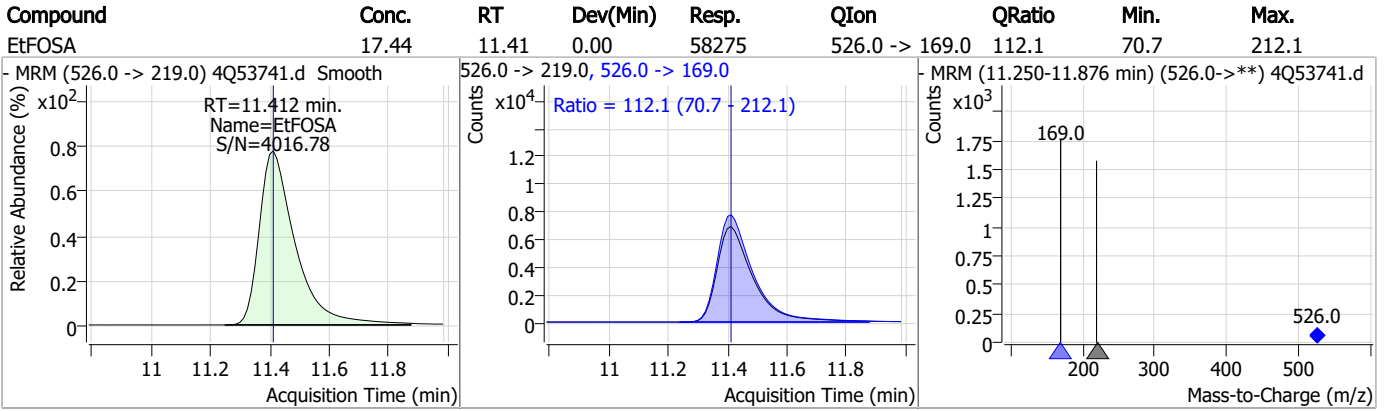
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: 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 : 4Q53742.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 6:41:50 PM
 Sample Name : cc785-4
 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	2.612	216.8 -> 171.9	84842	10.00 µg/L	-0.087
M5-PFPeA	4.125	268.3 -> 223.0	36139	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	27564	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	26800	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	31152	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	12934	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	8906	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	10367	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	10957	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	10640	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	7052	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	8123	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6884	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6927	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	880	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1651	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	12065	5.00 µg/L	-0.012
M3-HFPO-DA	5.664	286.9 -> 168.9	25339	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	9913	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	30289	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	35084	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5910	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4249	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6003	2.50 µg/L	-0.026
13C3-PFBA	2.616	216.0 -> 172.0	41260	5.00 µg/L	-0.087
18O2-PFHxS	7.028	403.0 -> 83.9	4323	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	33995	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	9541	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	12469	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	30486	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.009	329.1 -> 80.9	880	5.94 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.9%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1651	5.30 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.9%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2307	5.25 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.0%		
13C2-PFDoDA	8.880	615.1 -> 570.0	10957	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C2-PFTeDA	9.649	715.2 -> 670.0	10640	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C3-PFBS	5.152	302.1 -> 79.9	8123	2.50 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C3-PFHxS	7.017	402.1 -> 79.9	6884	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	2.612	216.8 -> 171.9	84842	9.87 µg/L	-0.087
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C4-PFHpA	6.267	367.1 -> 322.0	26800	2.52 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C5-PFHxA	5.297	318.0 -> 273.0	27564	2.42 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C5-PFPeA	4.125	268.3 -> 223.0	36139	4.86 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.2%	
13C6-PFDA	7.992	519.1 -> 474.1	8906	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C7-PFUnDA	8.448	570.0 -> 525.1	10367	1.28 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C8-FOSA	9.794	506.1 -> 77.8	7052	2.46 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C8-PFOA	6.964	421.1 -> 376.0	31152	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	6927	2.42 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C9-PFNA	7.509	472.1 -> 427.0	12934	1.32 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.2%	
d3-MeFOSAA	8.086	573.2 -> 419.0	12065	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	25339	9.77 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.7%	
d3-MeFOSA	11.126	515.0 -> 219.0	4249	2.12 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 84.9%	
d5-EtFOSAA	8.283	589.2 -> 419.0	9913	4.97 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
d7-MeFOSE	11.034	623.2 -> 58.9	30289	24.50 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.0%	
d9-EtFOSE	11.319	639.2 -> 58.9	35084	24.49 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.0%	
d5-EtFOSA	11.397	531.1 -> 219.0	5910	2.49 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
Target Compounds					QValue
4:2FTS	5.009	327.1 -> 307.0	15083	8.68 µg/L	98
		327.1 -> 80.9	6166		
6:2FTS	6.737	427.1 -> 407.0	18399	10.30 µg/L	97
		427.1 -> 80.9	6698		
8:2FTS	7.804	527.1 -> 507.0	13134	10.47 µg/L	97
		527.1 -> 80.8	5755		
EtFOSAA	8.284	584.2 -> 419.1	4578	2.58 µg/L	#m 71
		584.2 -> 526.0	2158		
FOSA	9.798	498.1 -> 77.9	8994	2.62 µg/L	100
		498.1 -> 478.0	279		
MeFOSAA	8.087	570.1 -> 419.0	5037	2.35 µg/L	98
		570.1 -> 483.0	965		
PFBA	2.620	212.8 -> 168.9	31083	10.07 µg/L	100
PFBS	5.153	298.7 -> 79.9	6036	2.09 µg/L	99
		298.7 -> 98.8	2384		
PFDA	7.992	512.9 -> 469.0	17079	2.34 µg/L	98
		512.9 -> 219.0	3548		
PFDODA	8.880	613.1 -> 569.0	21349	2.39 µg/L	98
		613.1 -> 319.0	3839		
PFDS	9.020	599.0 -> 79.9	4535	2.53 µg/L	94

7.7.12
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2134			
PFHpA	6.268	363.1 -> 319.0	41943	2.50	µg/L	98
		363.1 -> 169.0	7737			
PFHpS	7.612	449.0 -> 79.9	6800	2.48	µg/L	98
		449.0 -> 98.9	3393			
PFHxA	5.300	313.0 -> 269.0	24036	2.50	µg/L	98
		313.0 -> 118.9	792			
PFHxS	7.018	398.7 -> 79.9	4845	2.33	µg/L	m 81
		398.7 -> 98.9	2426			
PFNA	7.510	463.0 -> 419.0	21050	2.55	µg/L	98
		463.0 -> 219.0	5178			
PFNS	8.574	548.8 -> 79.9	3363	2.54	µg/L	100
		548.8 -> 98.9	1756			
PFOA	6.965	413.0 -> 369.0	36725	2.44	µg/L	100
		413.0 -> 169.0	7473			
PFOS	8.119	498.9 -> 79.9	7613	2.42	µg/L	m 84
		498.9 -> 98.8	3810			
PFPeA	4.114	263.0 -> 219.0	39852	5.07	µg/L	100
PFPeS	6.257	349.1 -> 79.9	5453	2.41	µg/L	97
		349.1 -> 98.9	2262			
PFTeDA	9.650	713.1 -> 669.0	19646	2.43	µg/L	100
		713.1 -> 168.9	2032			
PFTrDA	9.279	663.0 -> 619.0	25210	2.59	µg/L	99
		663.0 -> 168.9	3613			
PFUnDA	8.449	563.1 -> 519.0	20785	2.45	µg/L	98
		563.1 -> 269.1	4601			
11CI-PF3OUdS	9.306	630.9 -> 450.9	38194	4.83	µg/L	99
		632.9 -> 452.9	11968			
9CI-PF3ONS	8.451	530.8 -> 351.0	38471	4.82	µg/L	99
		532.8 -> 353.0	11555			
ADONA	6.544	376.9 -> 250.9	99654	5.68	µg/L	99
		376.9 -> 84.8	23872			
HFPO-DA	5.653	284.9 -> 168.9	13295	4.95	µg/L	99
		284.9 -> 184.9	1303			
3:3FTCA	3.561	241.0 -> 177.0	5705	11.87	µg/L	99
		241.0 -> 117.0	535			
5:3FTCA	5.983	341.0 -> 237.1	105533	62.27	µg/L	100
		341.0 -> 217.0	76401			
7:3FTCA	7.524	441.0 -> 316.9	47942	63.06	µg/L	98
		441.0 -> 336.9	115163			
EtFOSA	11.399	526.0 -> 219.0	13220	4.96	µg/L	99
		526.0 -> 169.0	18505			
EtFOSE	11.332	630.0 -> 58.9	16822	12.83	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	8828	5.73	µg/L	m 84
		511.9 -> 169.0	13426			
MeFOSE	11.047	616.1 -> 58.9	18351	13.30	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	3504	2.48	µg/L	95
		699.1 -> 98.8	2012			
NFDHA	5.179	295.0 -> 201.0	3514	5.53	µg/L	96
		295.0 -> 84.9	775			
PFMBA	4.529	279.0 -> 85.1	22832	5.04	µg/L	100
PFMPA	3.265	229.0 -> 84.9	25438	5.05	µg/L	100
PFEESA	5.684	314.8 -> 134.9	35021	4.60	µg/L	99
		314.8 -> 82.9	1176			

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



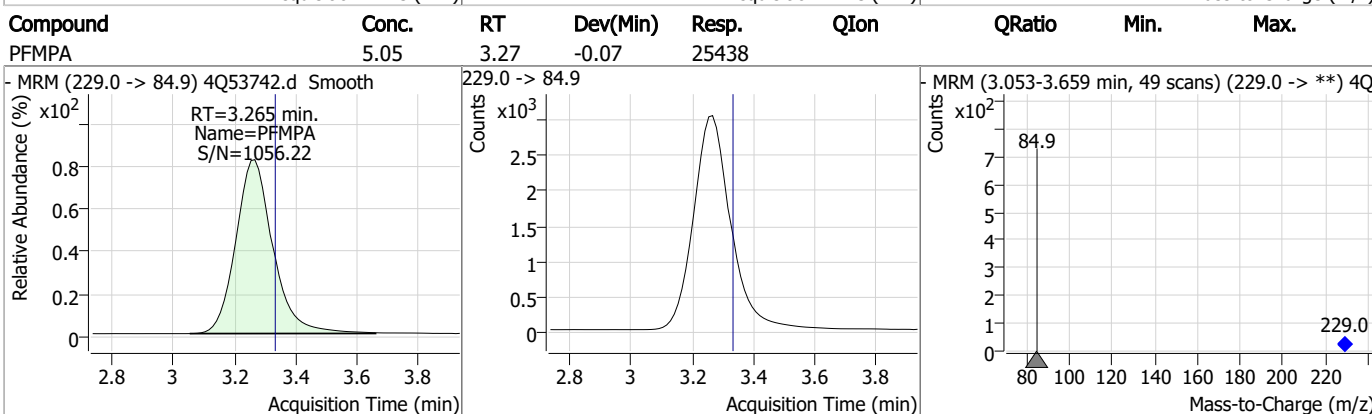
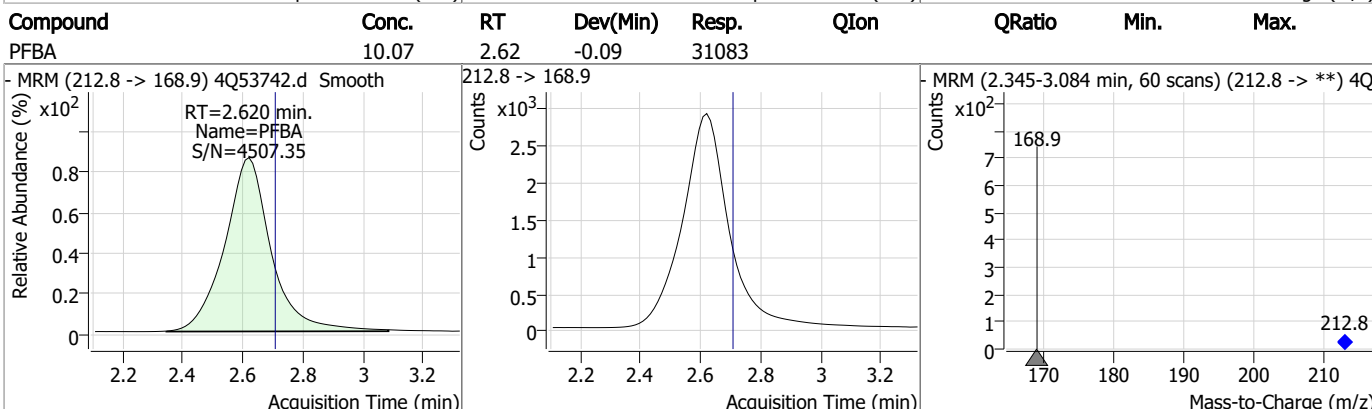
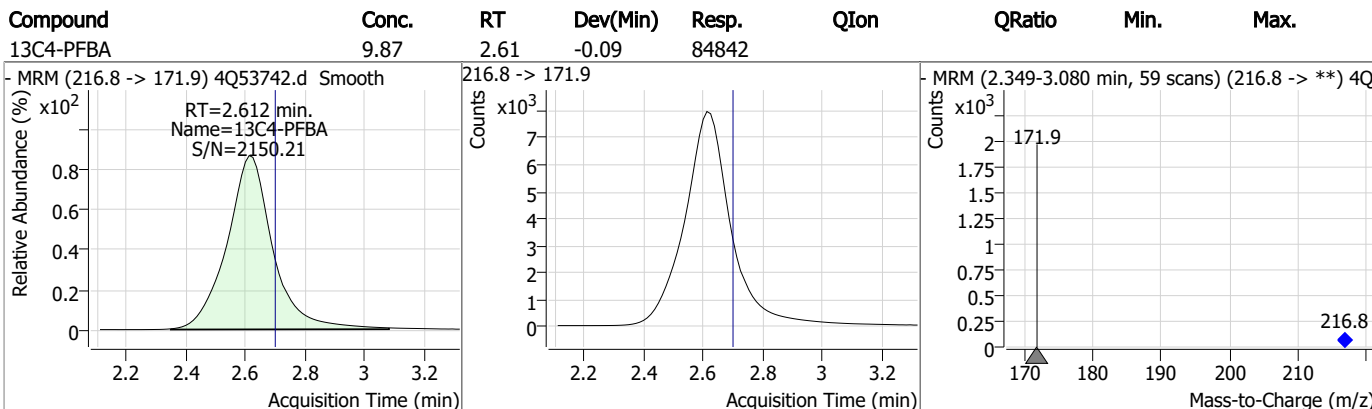
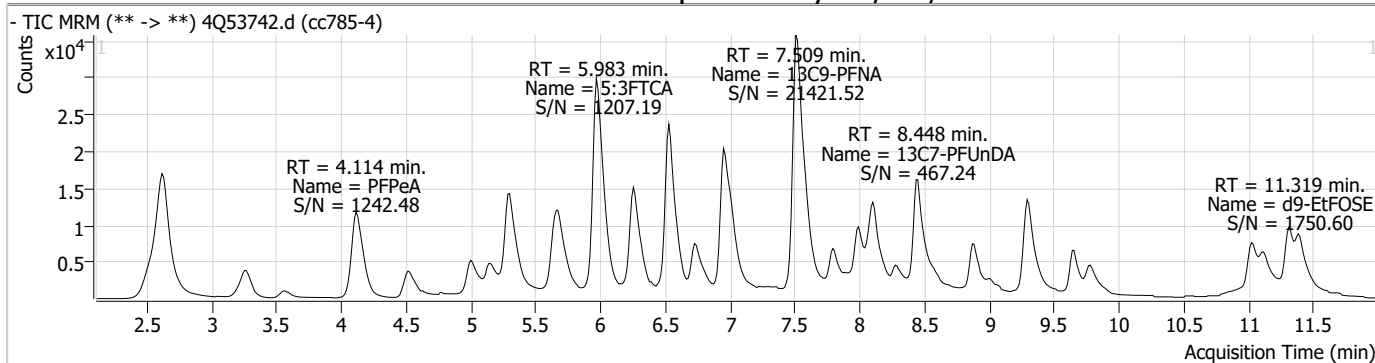
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.12

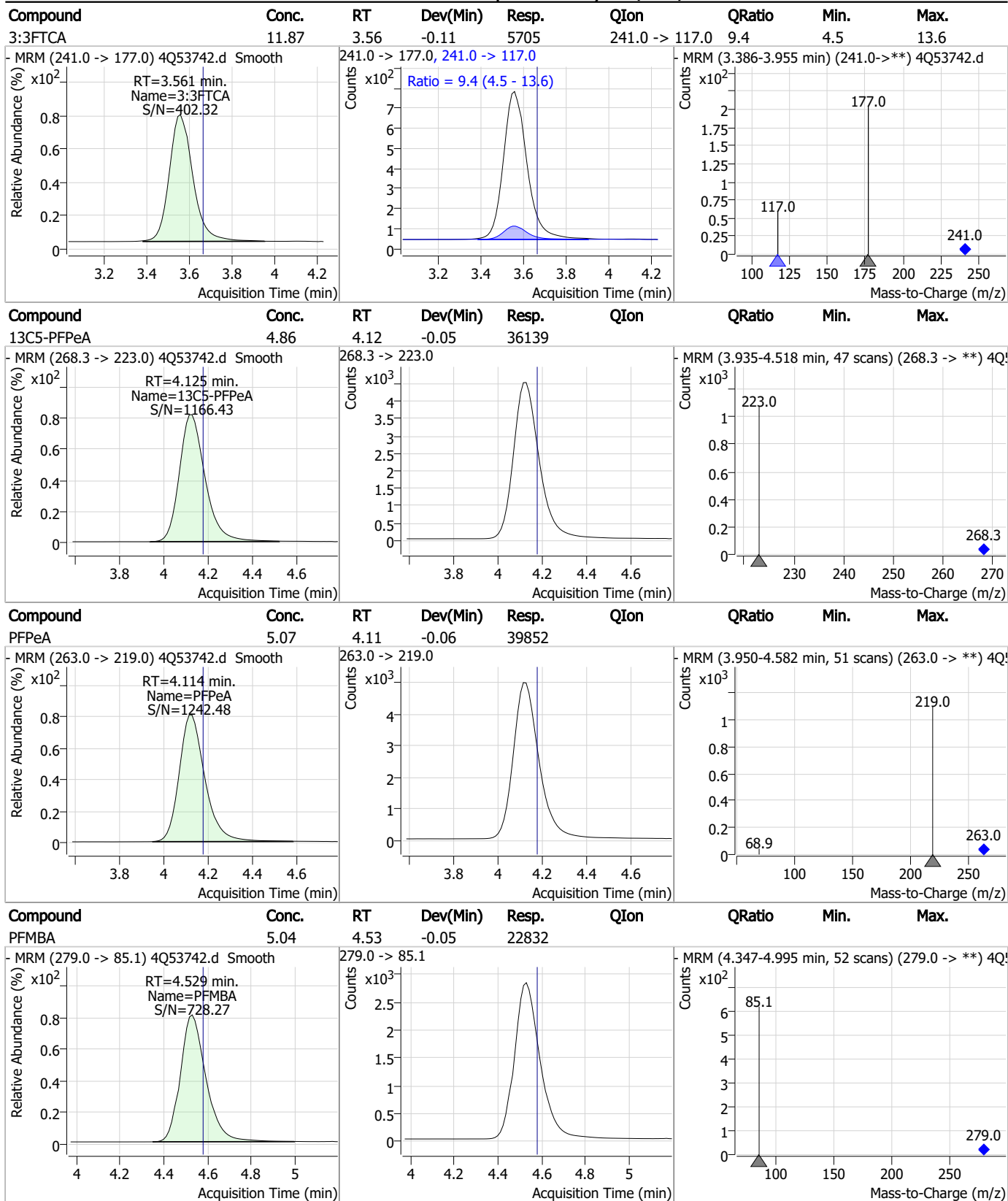
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Perfluorinated Compounds by LC/MS/MS



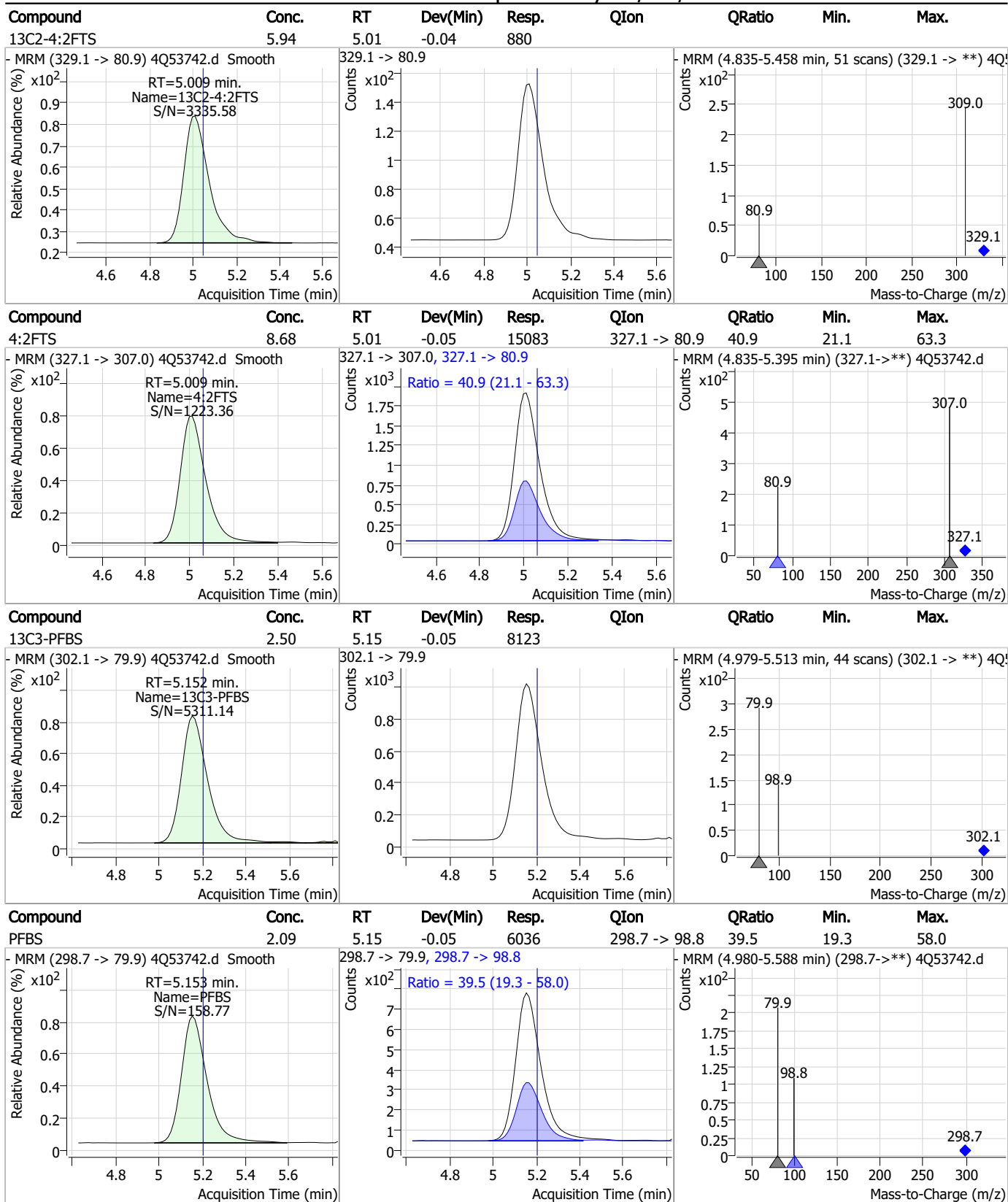
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Perfluorinated Compounds by LC/MS/MS



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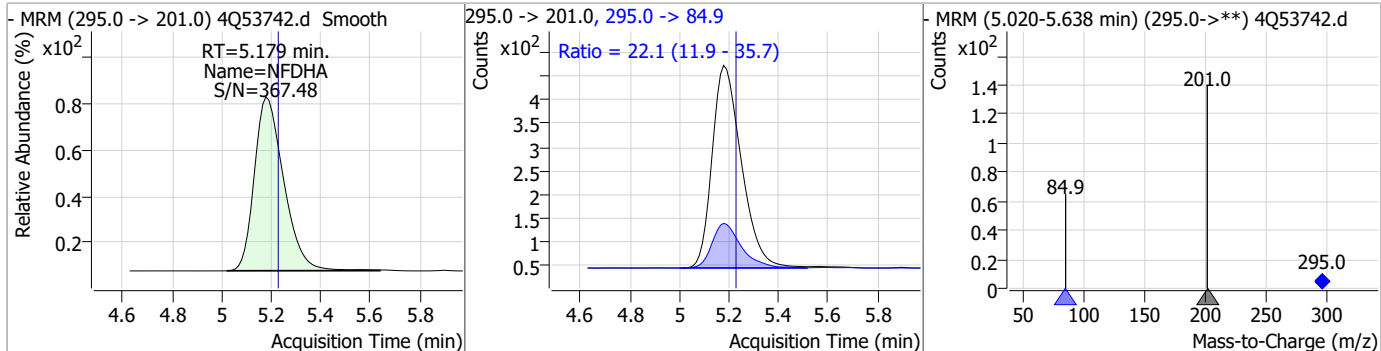
Perfluorinated Compounds by LC/MS/MS



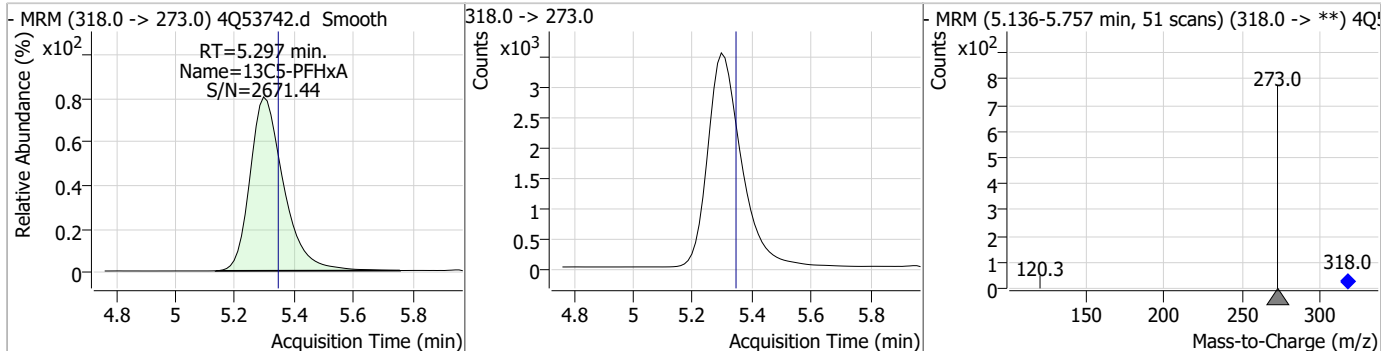
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Perfluorinated Compounds by LC/MS/MS

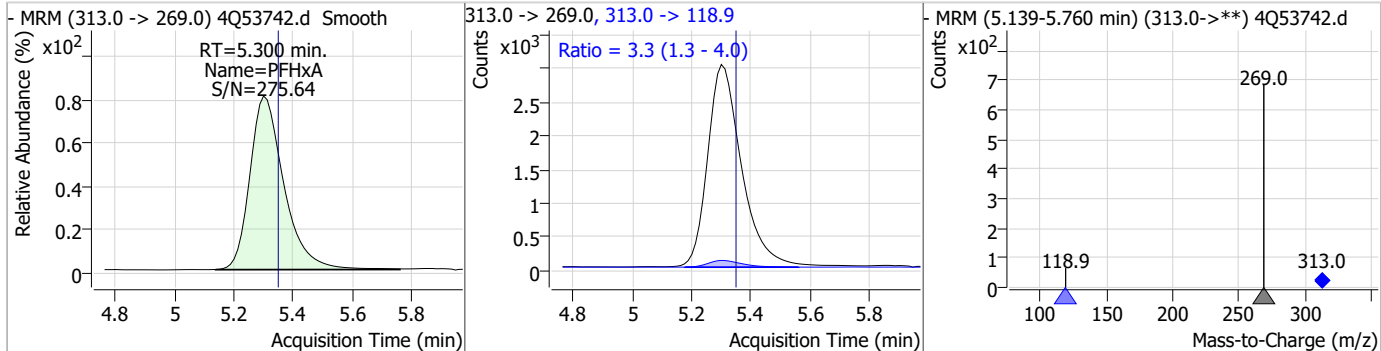
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	5.53	5.18	-0.05	3514	295.0 -> 84.9	22.1	11.9	35.7



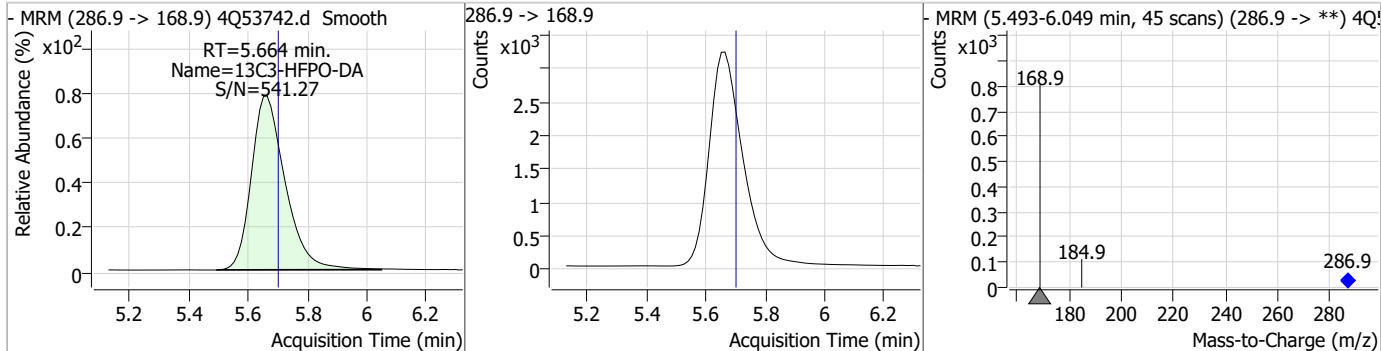
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.42	5.30	-0.05	27564				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.50	5.30	-0.05	24036	313.0 -> 118.9	3.3	1.3	4.0

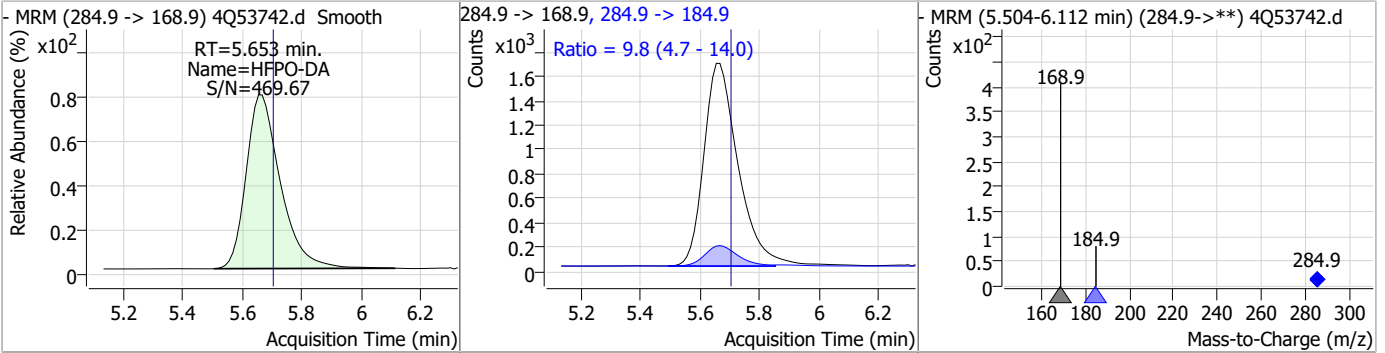


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.77	5.66	-0.04	25339				

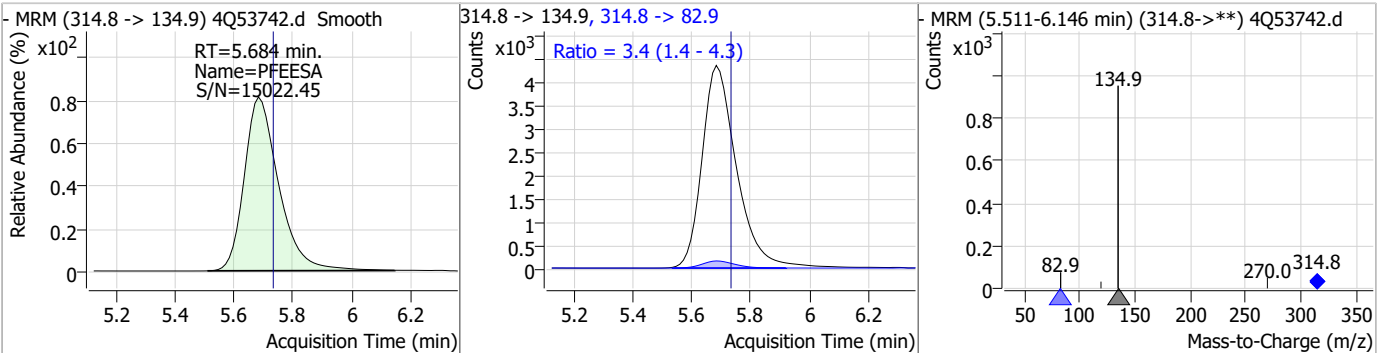


Perfluorinated Compounds by LC/MS/MS

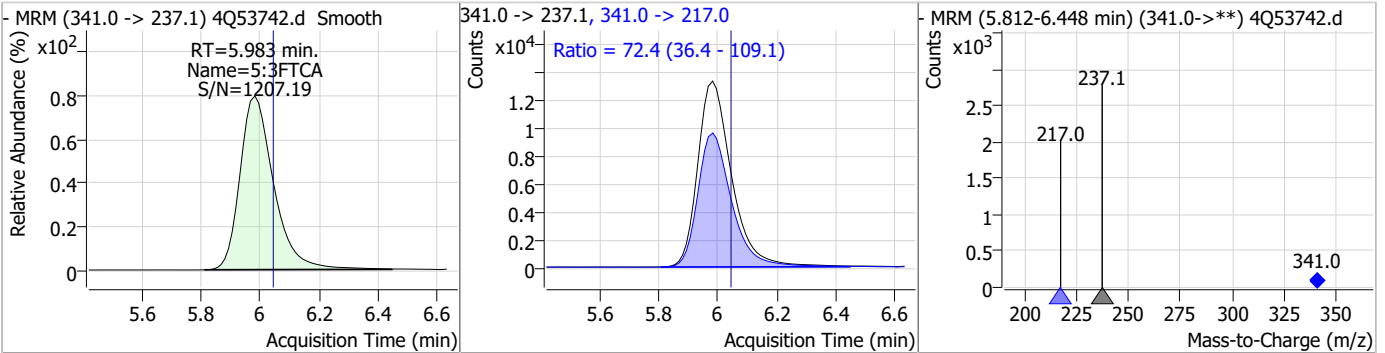
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.95	5.65	-0.05	13295	284.9 -> 184.9	9.8	4.7	14.0



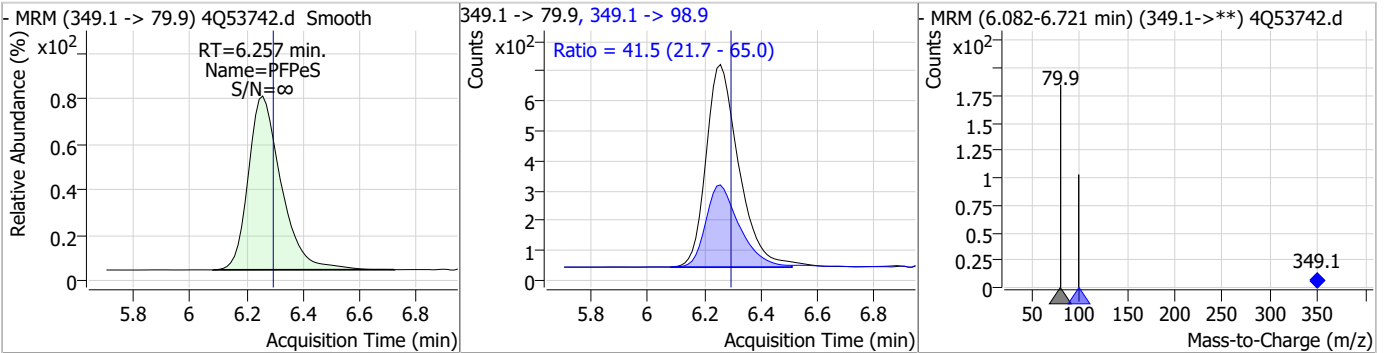
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.60	5.68	-0.05	35021	314.8 -> 82.9	3.4	1.4	4.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	62.27	5.98	-0.06	105533	341.0 -> 217.0	72.4	36.4	109.1

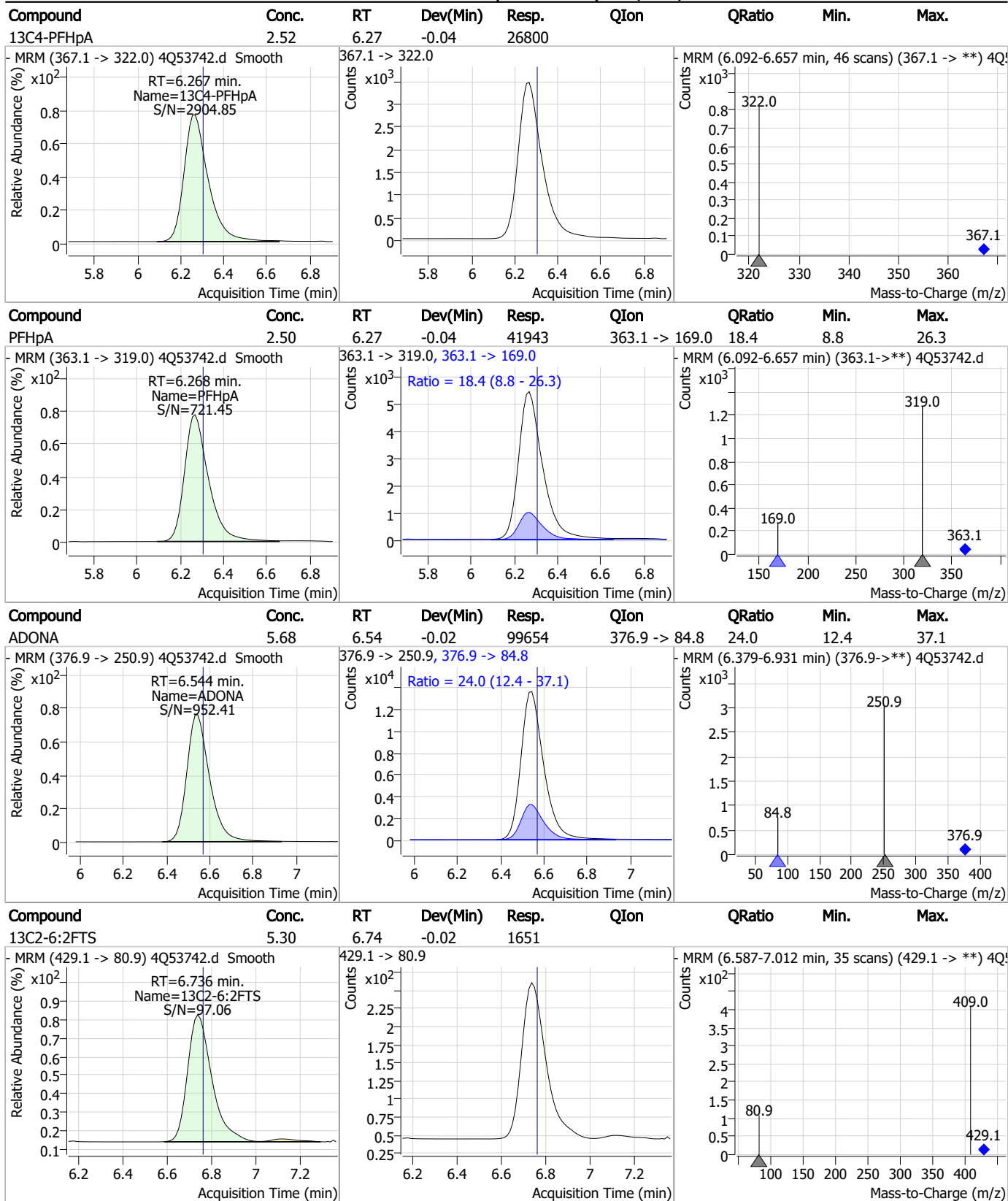


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.41	6.26	-0.04	5453	349.1 -> 98.9	41.5	21.7	65.0



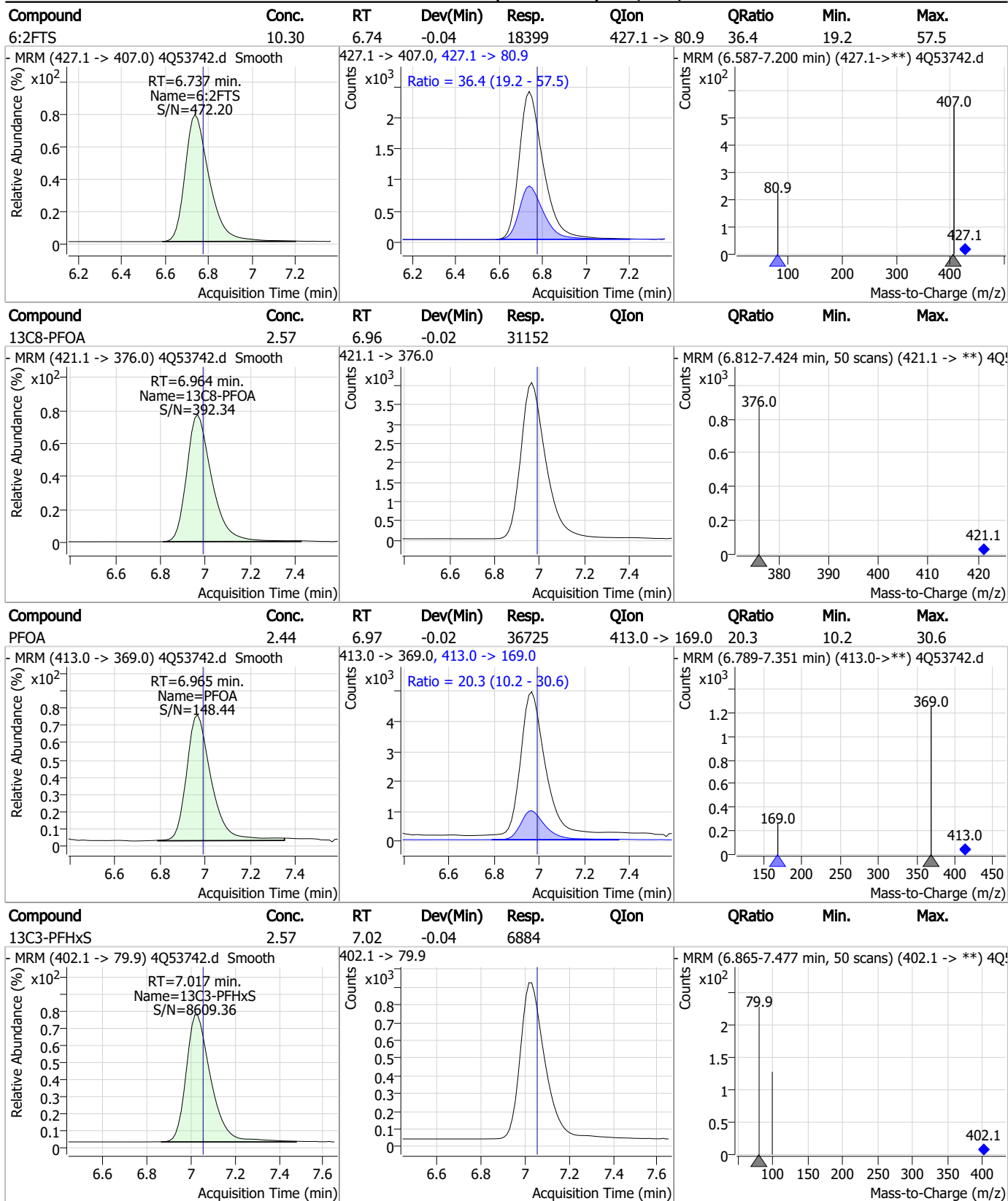
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Perfluorinated Compounds by LC/MS/MS



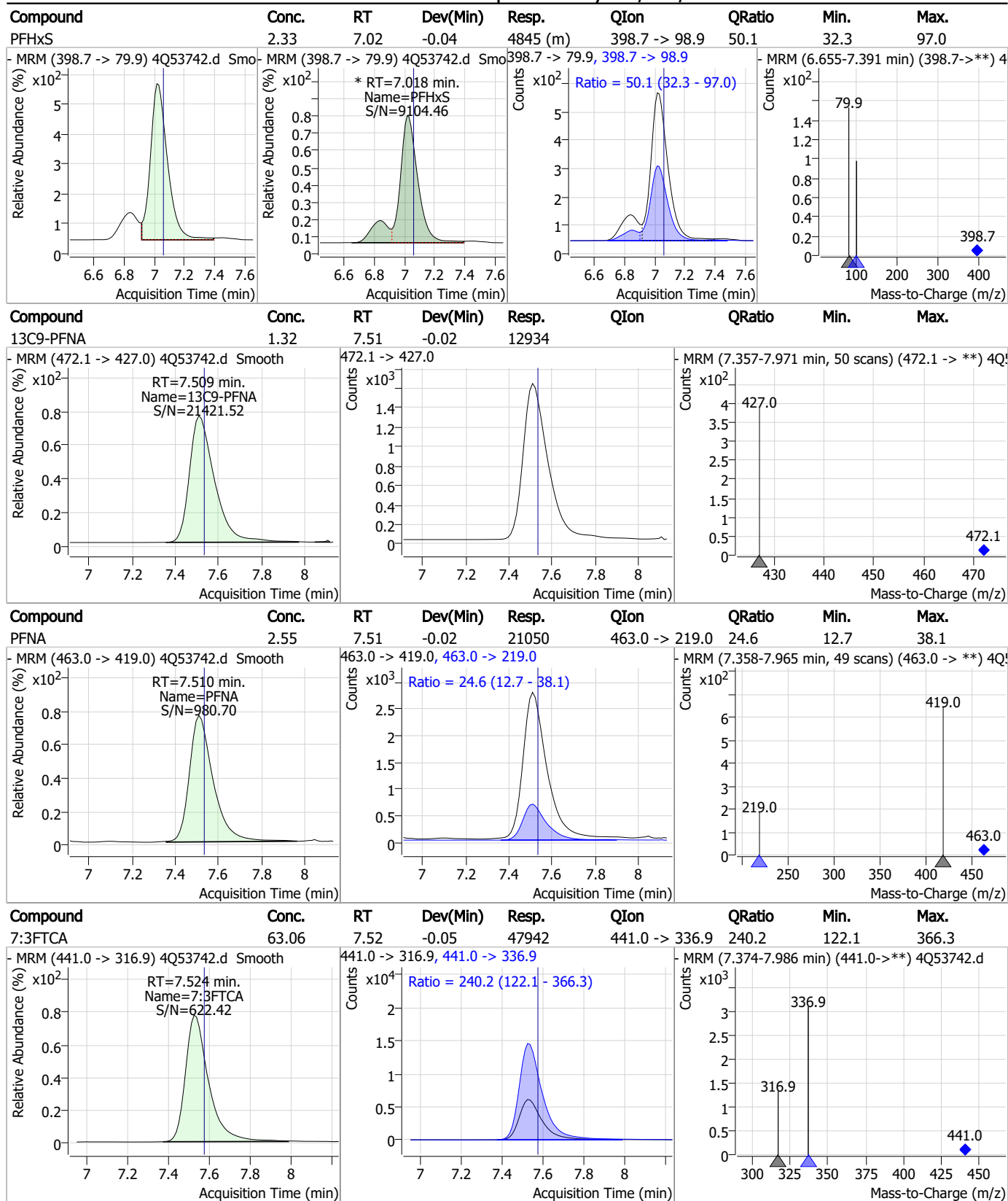
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Perfluorinated Compounds by LC/MS/MS



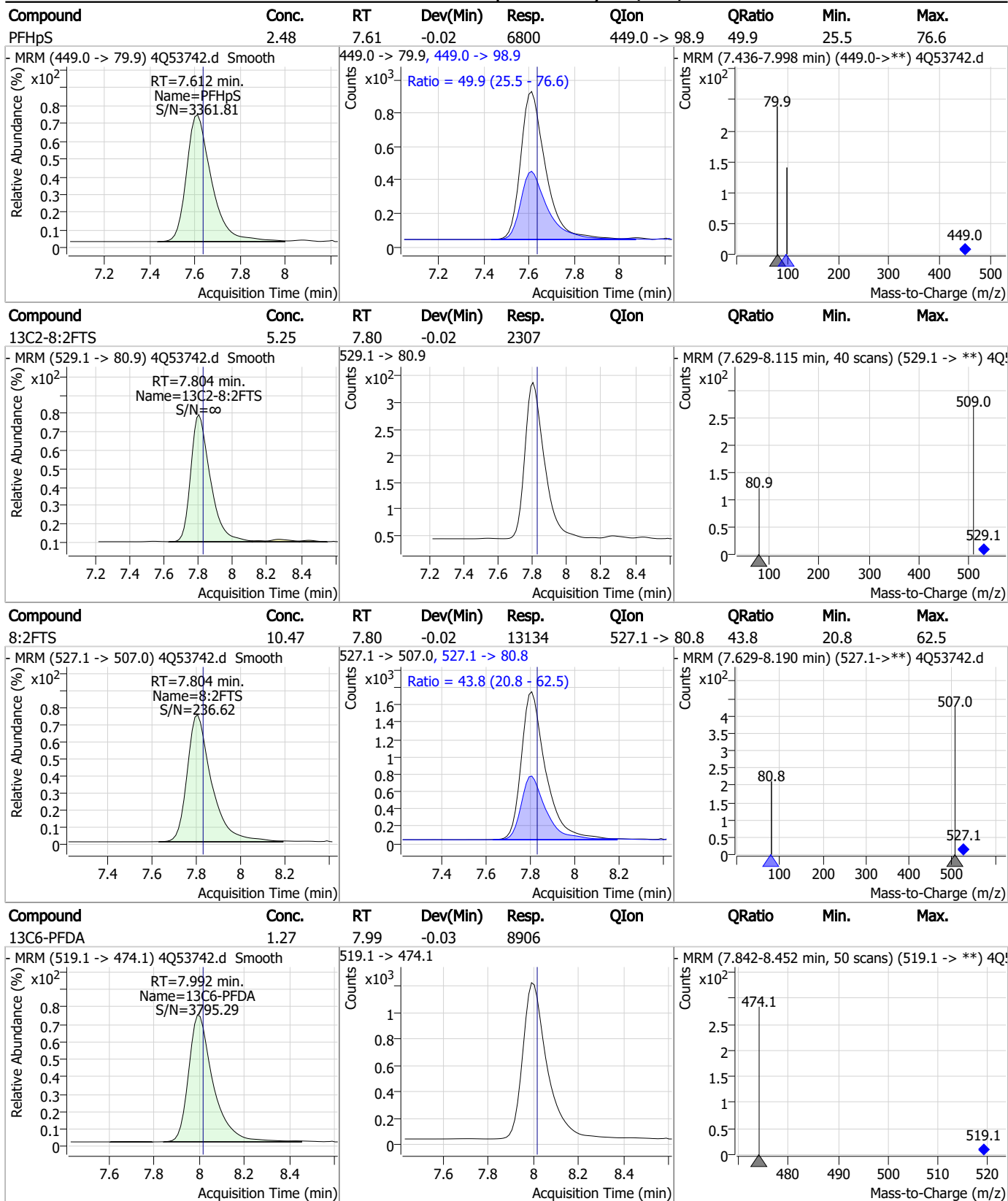
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Perfluorinated Compounds by LC/MS/MS



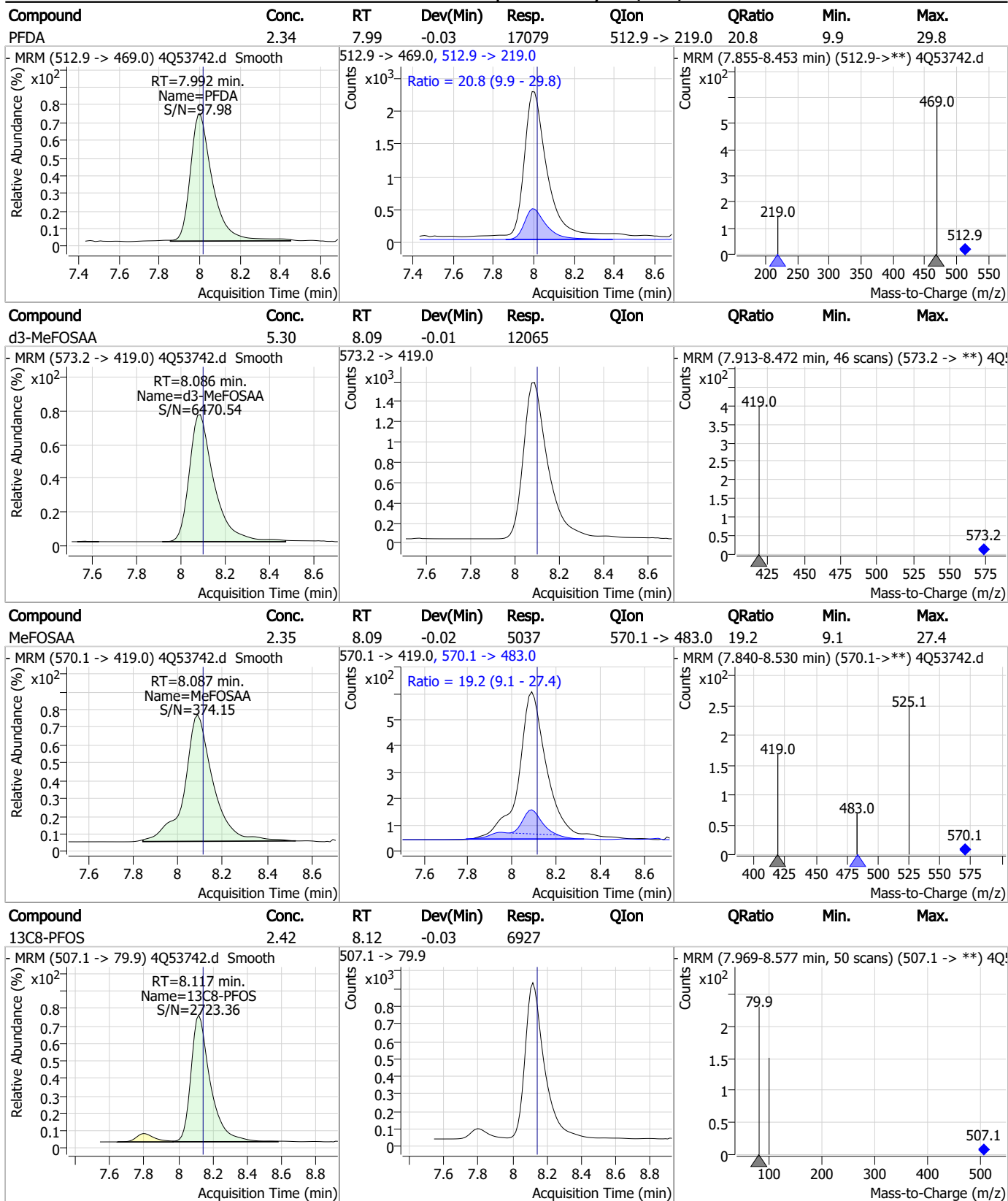
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Perfluorinated Compounds by LC/MS/MS



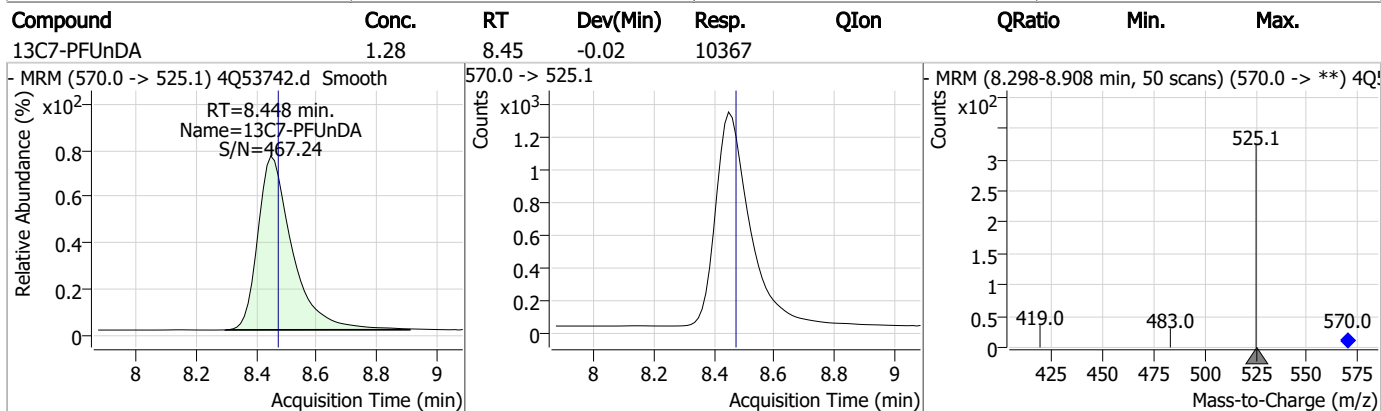
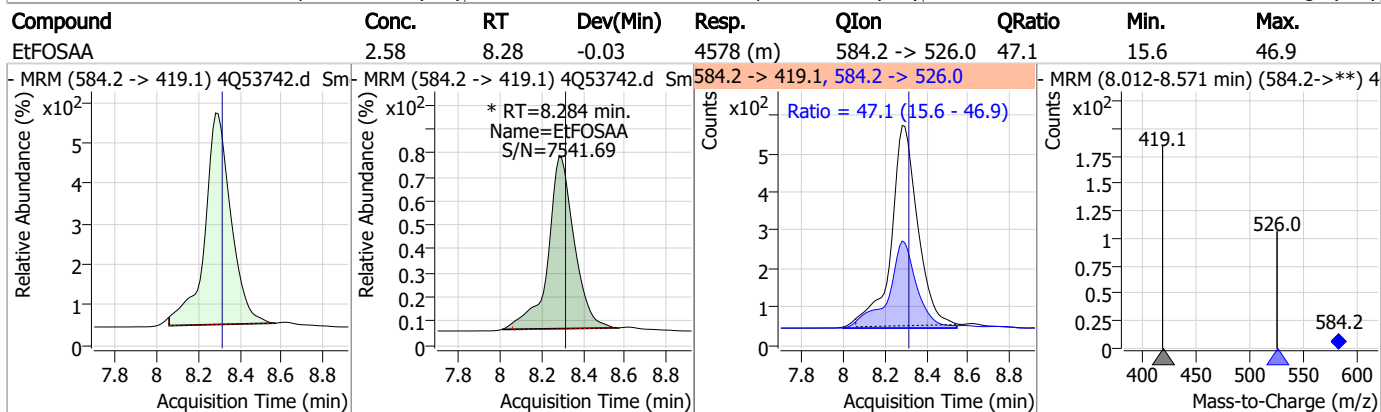
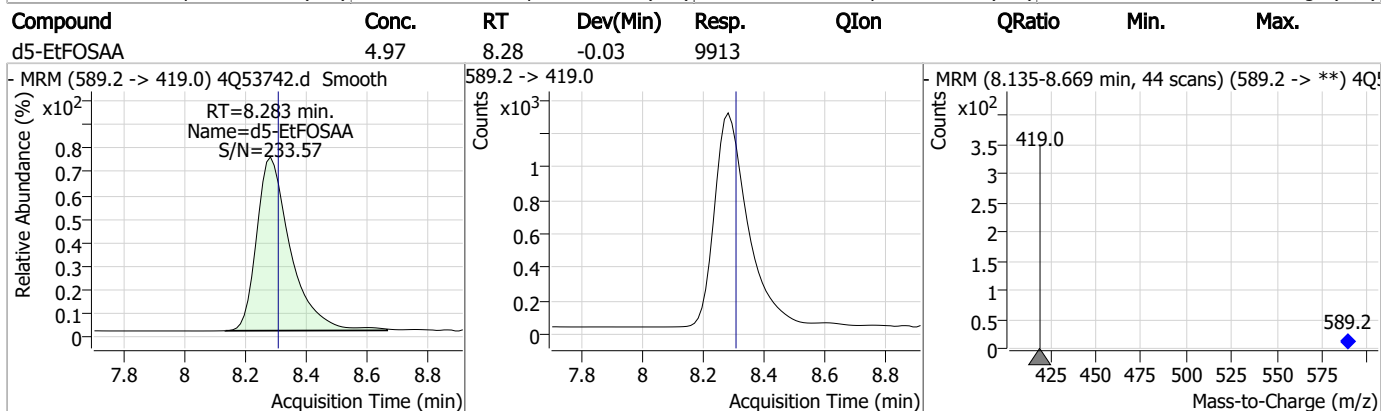
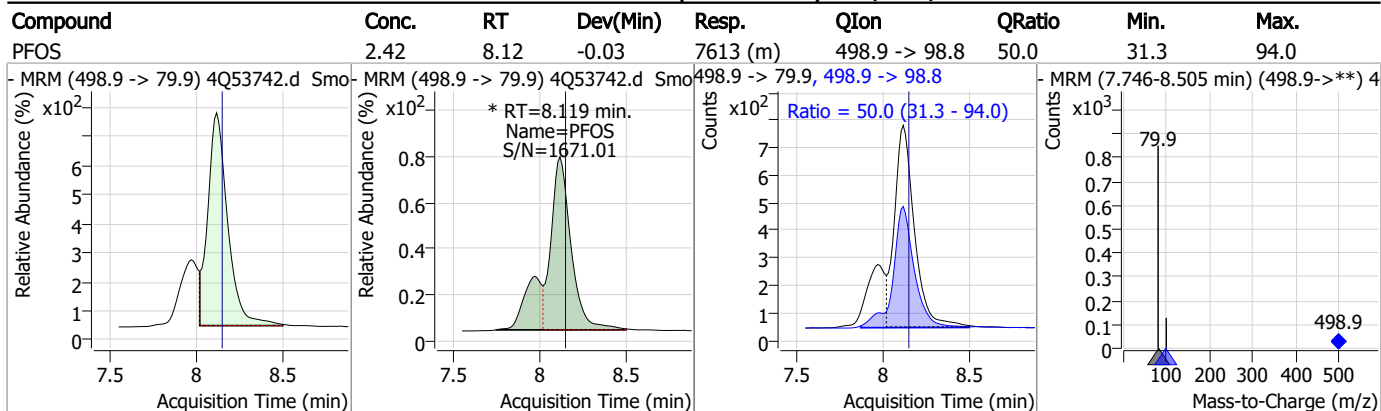
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Perfluorinated Compounds by LC/MS/MS

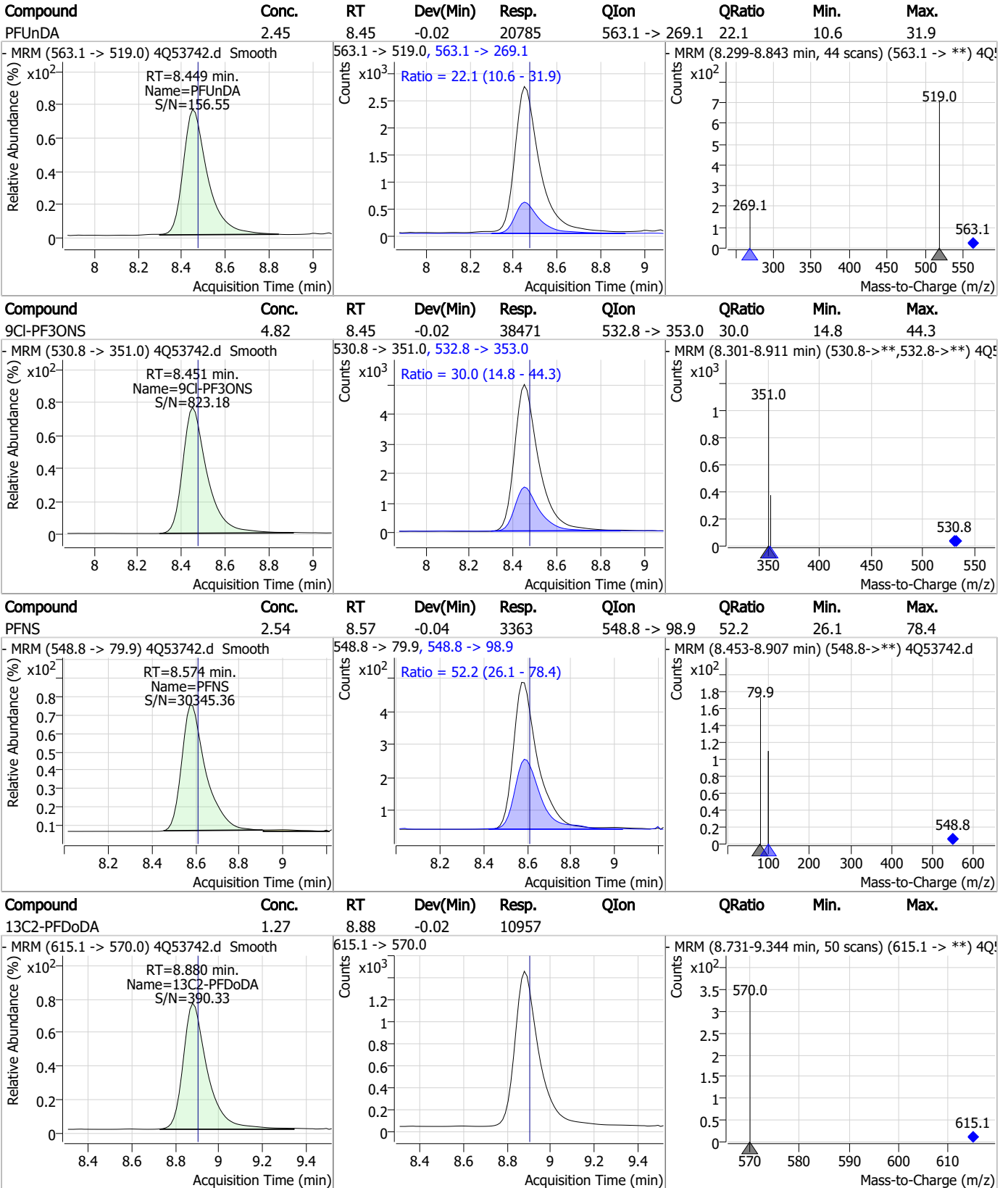


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Perfluorinated Compounds by LC/MS/MS



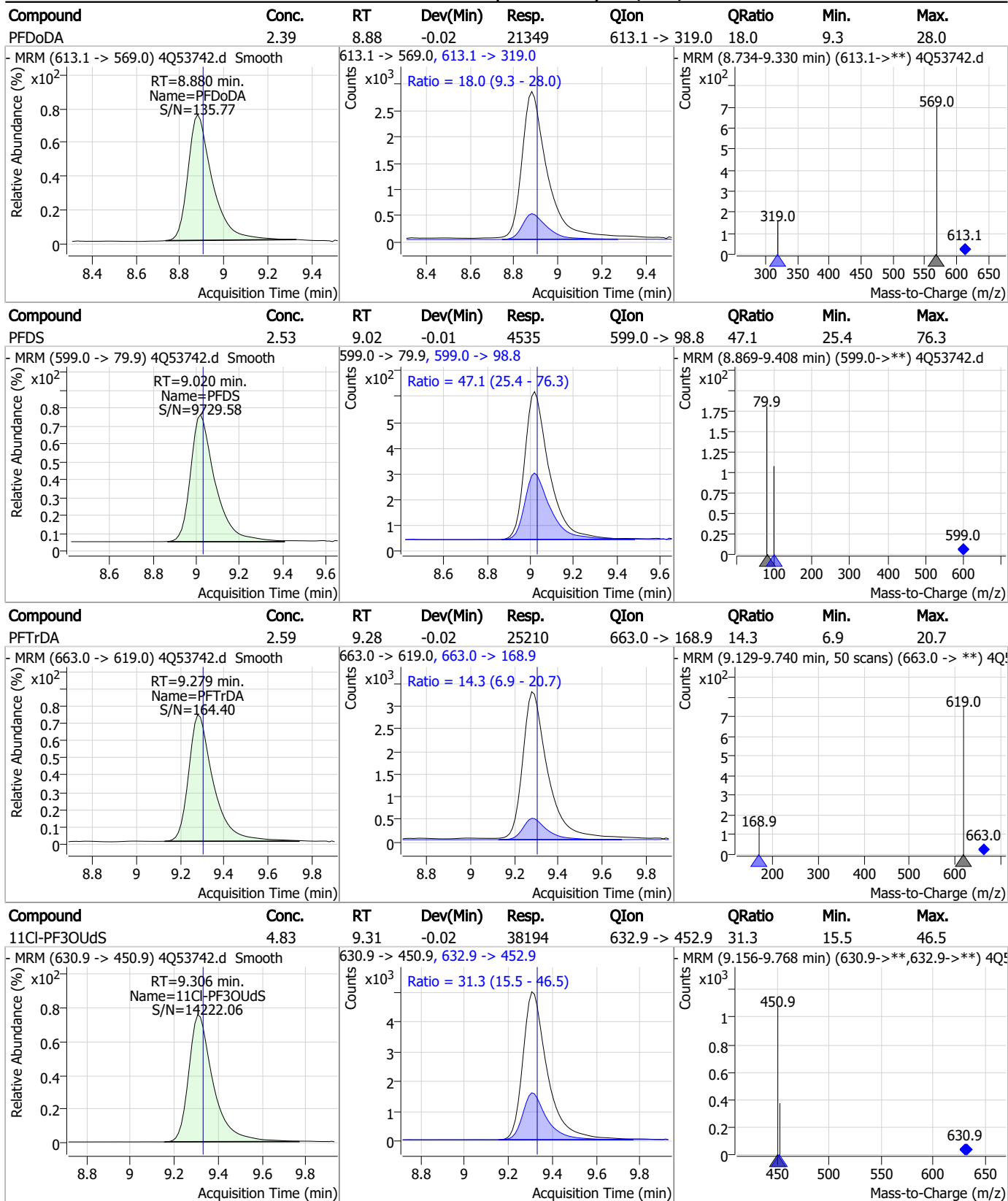
Perfluorinated Compounds by LC/MS/MS



7.7.12 7

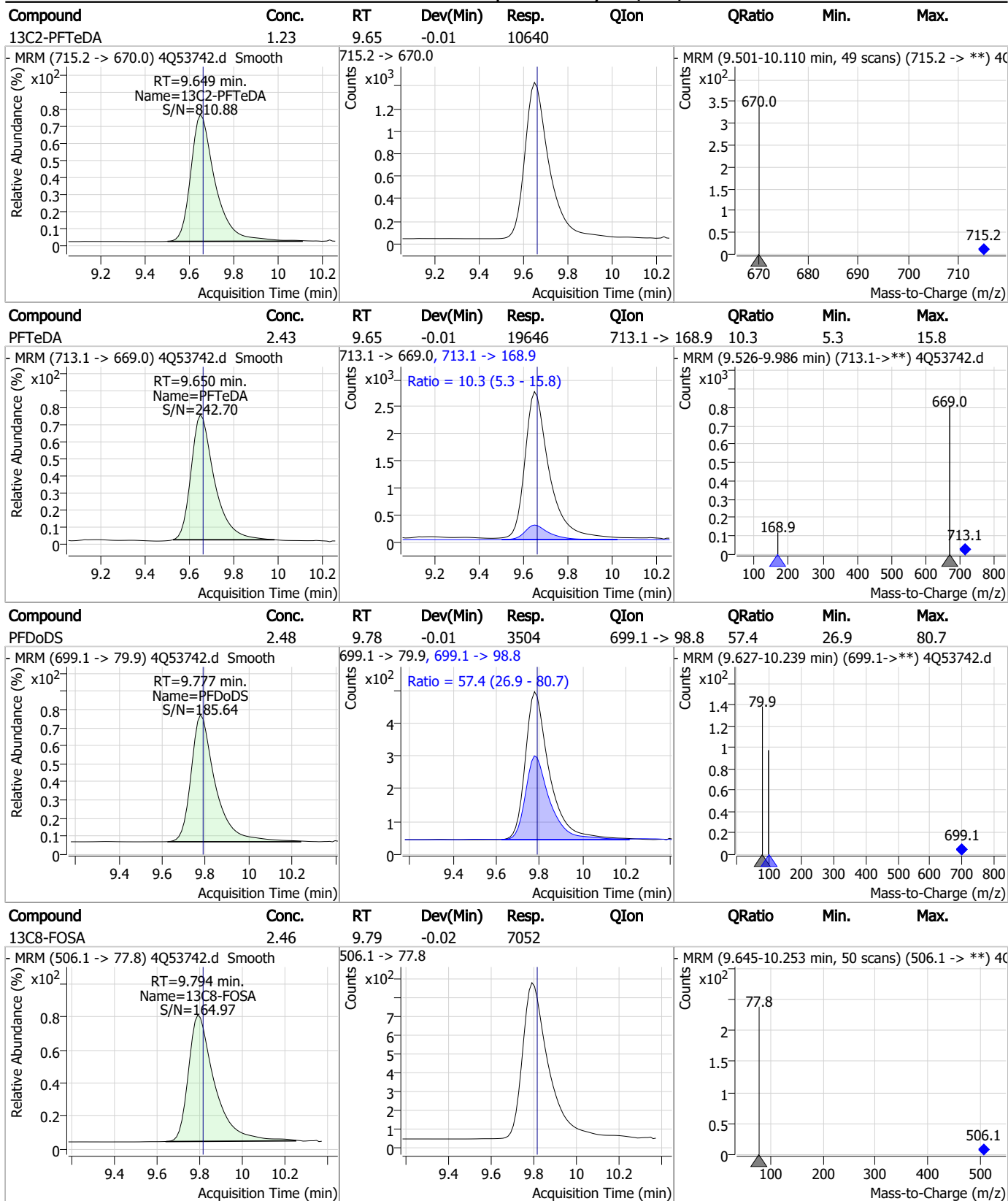


Perfluorinated Compounds by LC/MS/MS



7.7.12
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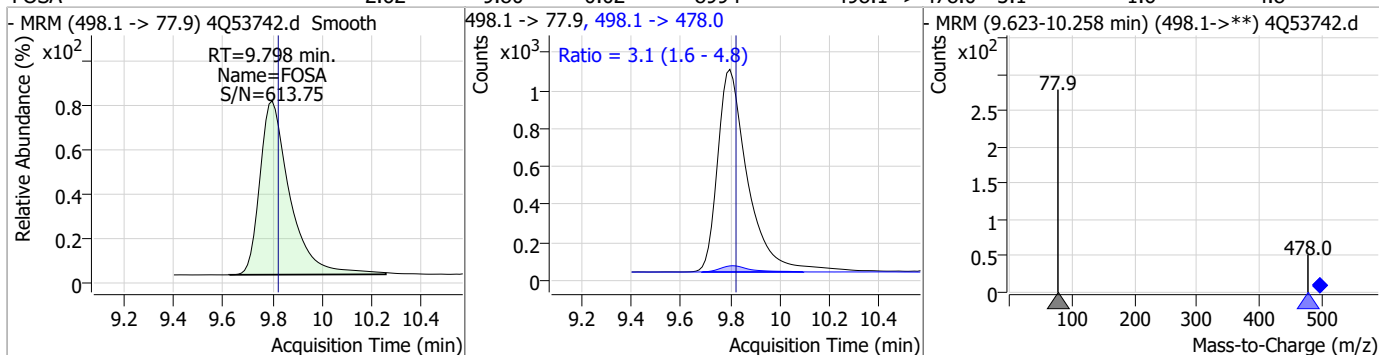
Perfluorinated Compounds by LC/MS/MS



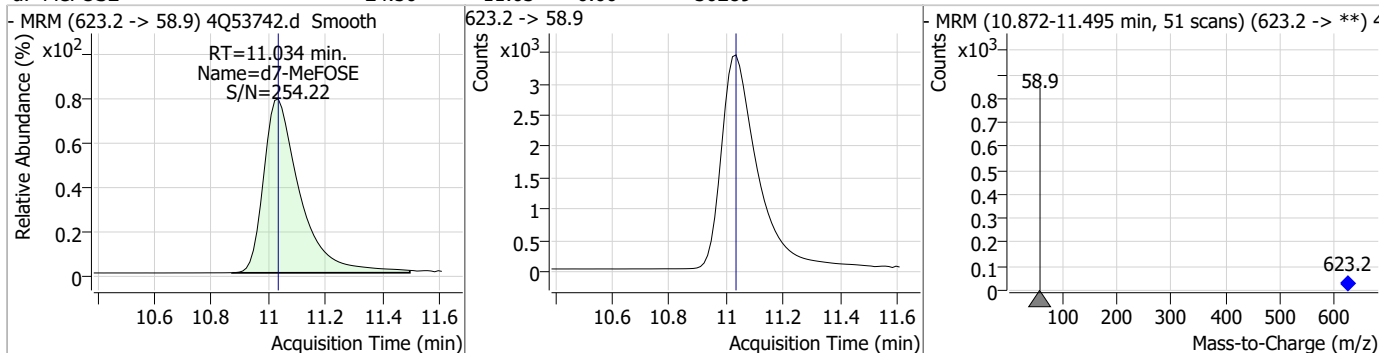
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Perfluorinated Compounds by LC/MS/MS

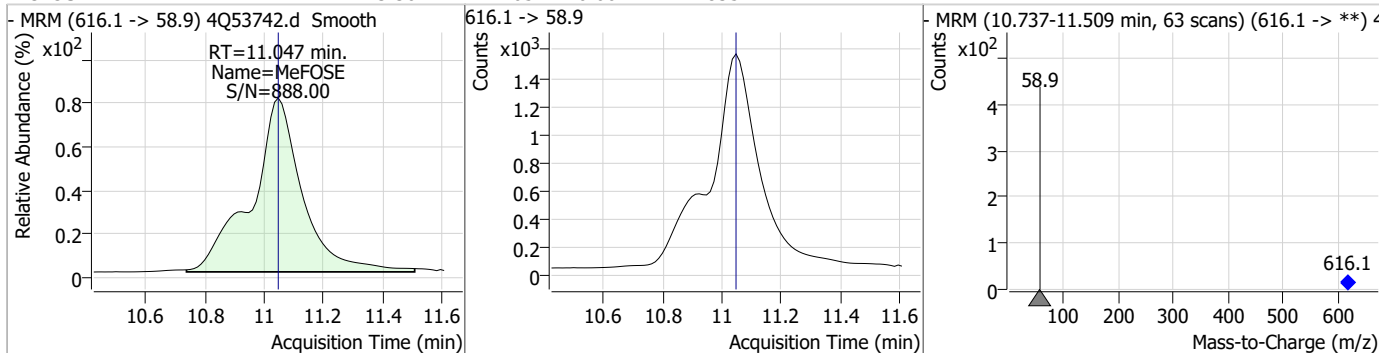
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.62	9.80	-0.02	8994	498.1 -> 478.0	3.1	1.6	4.8



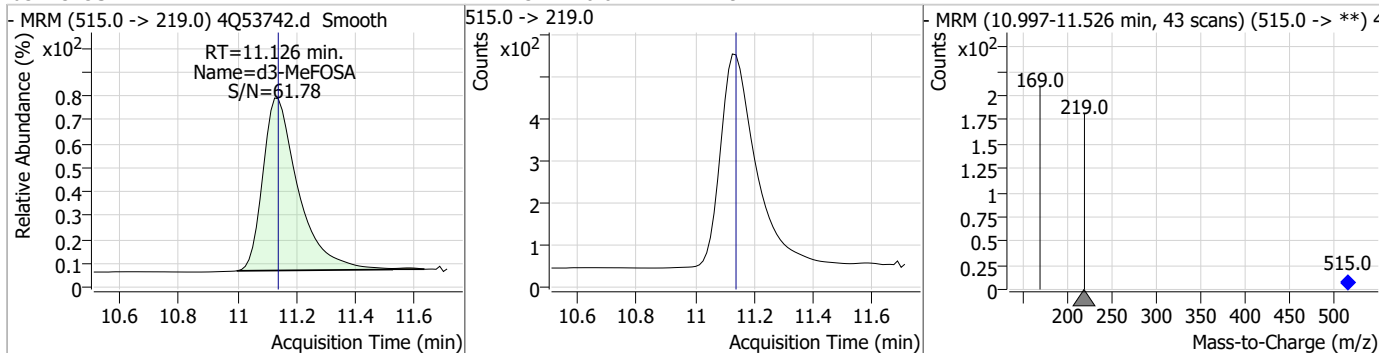
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.50	11.03	0.00	30289	623.2 -> 58.9			



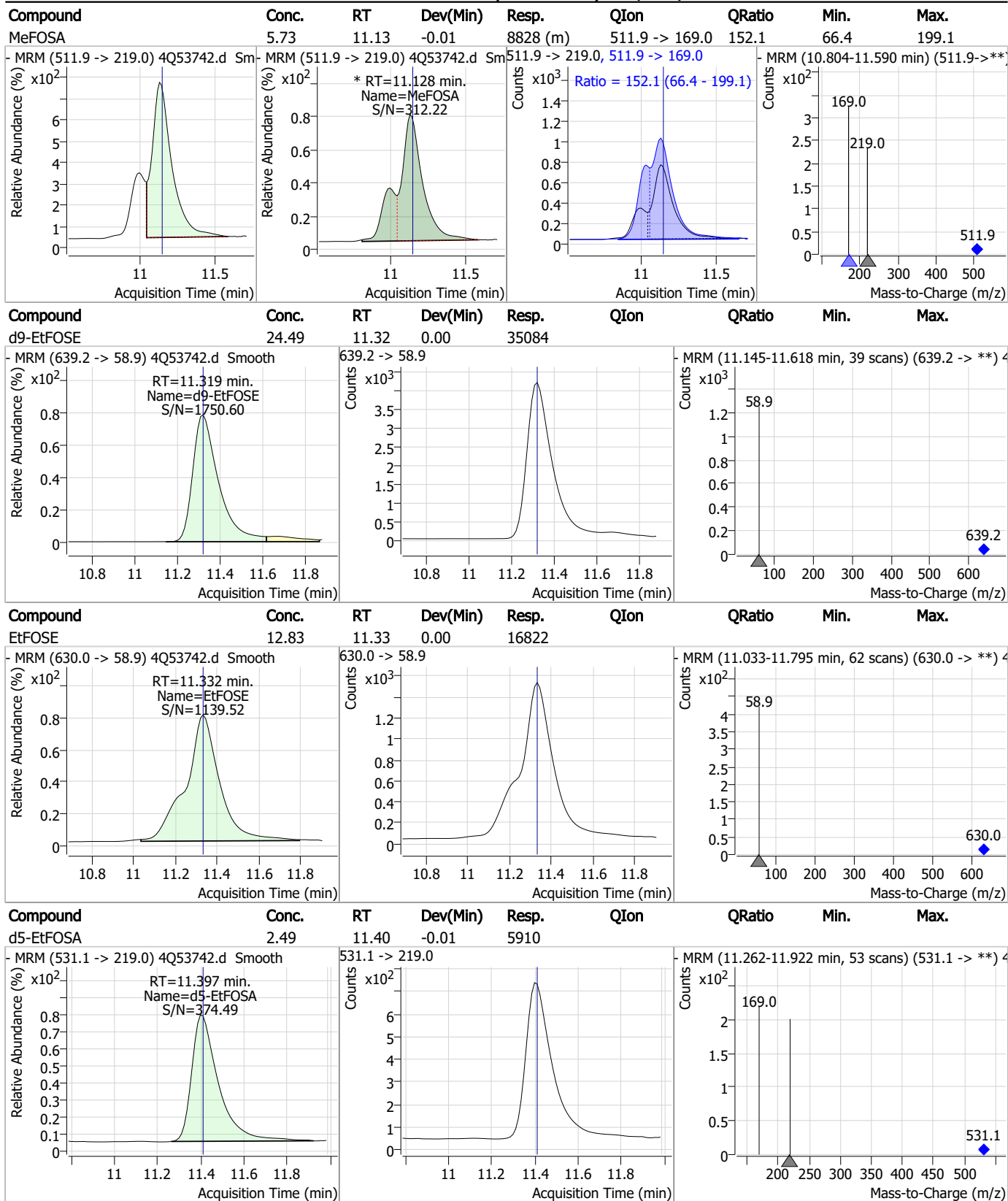
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	13.30	11.05	0.00	18351	616.1 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.12	11.13	-0.01	4249	515.0 -> 219.0			



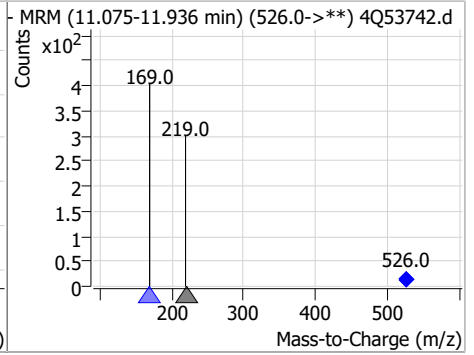
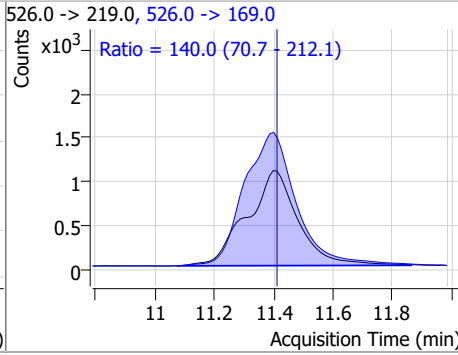
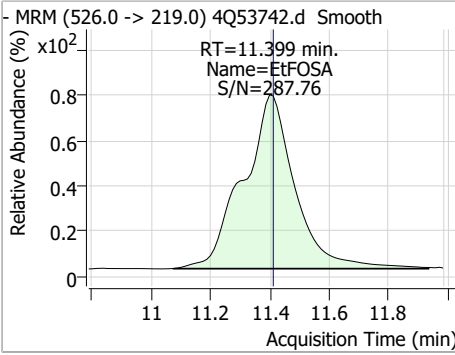
Perfluorinated Compounds by LC/MS/MS



7.7.12
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.96	11.40	-0.01	13220	526.0 -> 169.0	140.0	70.7	212.1



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Manual Integration Approval Summary

Sample Number: S4Q785-CC785 Method: EPA DRAFT 1633
Lab FileID: 4Q53742.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 18:41 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
MeFOSA	31506-32-8		11.13	Split peak

7.7.12.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53743.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 6:56:34 PM
 Sample Name : cc785-1.0LL
 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	2.612	216.8 -> 171.9	81281	10.00 µg/L	-0.087
M5-PFPeA	4.112	268.3 -> 223.0	34240	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	26658	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	23941	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	28762	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	11972	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	8881	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	10311	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	10467	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	9737	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	6868	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	7659	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6288	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	6721	2.50 µg/L	-0.026
M2-4:2FTS	4.996	329.1 -> 80.9	798	5.00 µg/L	-0.050
M2-6:2FTS	6.736	429.1 -> 80.9	1515	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2158	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	11562	5.00 µg/L	-0.012
M3-HFPO-DA	5.652	286.9 -> 168.9	23574	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	9122	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	28847	25.00 µg/L	-0.012
M9-EtFOSE	11.306	639.2 -> 58.9	32374	25.00 µg/L	-0.012
M5-EtFOSA	11.397	531.1 -> 219.0	5291	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4258	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	5609	2.50 µg/L	-0.026
13C3-PFBA	2.616	216.0 -> 172.0	38512	5.00 µg/L	-0.087
18O2-PFHxS	7.016	403.0 -> 83.9	3973	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	30801	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	8478	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	12410	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	27050	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	798	5.87 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.4%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1515	5.29 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.8%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2158	5.34 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.9%		
13C2-PFDoDA	8.880	615.1 -> 570.0	10467	1.37 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 109.5%		
13C2-PFTeDA	9.649	715.2 -> 670.0	9737	1.26 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C3-PFBS	5.152	302.1 -> 79.9	7659	2.57 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.8%		
13C3-PFHxS	7.017	402.1 -> 79.9	6288	2.55 µg/L	-0.037

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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 = 102.2%		
13C4-PFBA	2.612	216.8 -> 171.9	81281	10.13 µg/L	-0.087
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C4-PFHpA	6.267	367.1 -> 322.0	23941	2.54 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.5%		
13C5-PFHxA	5.297	318.0 -> 273.0	26658	2.64 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.7%		
13C5-PFPeA	4.112	268.3 -> 223.0	34240	5.19 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.8%		
13C6-PFDA	7.992	519.1 -> 474.1	8881	1.42 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 113.9%		
13C7-PFUnDA	8.448	570.0 -> 525.1	10311	1.43 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 114.4%		
13C8-FOSA	9.794	506.1 -> 77.8	6868	2.56 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C8-PFOA	6.964	421.1 -> 376.0	28762	2.62 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.6%		
13C8-PFOS	8.117	507.1 -> 79.9	6721	2.51 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C9-PFNA	7.509	472.1 -> 427.0	11972	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.9%		
d3-MeFOSAA	8.086	573.2 -> 419.0	11562	5.44 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.7%		
13C3-HFPO-DA	5.652	286.9 -> 168.9	23574	10.24 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 102.4%		
d3-MeFOSA	11.126	515.0 -> 219.0	4258	2.28 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.0%		
d5-EtFOSAA	8.283	589.2 -> 419.0	9122	4.90 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.9%		
d7-MeFOSE	11.022	623.2 -> 58.9	28847	24.97 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.9%		
d9-EtFOSE	11.306	639.2 -> 58.9	32374	24.19 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 96.8%		
d5-EtFOSA	11.397	531.1 -> 219.0	5291	2.38 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.3%		
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	1094	0.69 µg/L	90
		327.1 -> 80.9	392		
6:2FTS	6.737	427.1 -> 407.0	1283	0.78 µg/L	97
		427.1 -> 80.9	467		
8:2FTS	7.804	527.1 -> 507.0	880	0.75 µg/L	87
		527.1 -> 80.8	296		
EtFOSAA	8.284	584.2 -> 419.1	264	0.16 µg/L	#m 36
		584.2 -> 526.0	176		
FOSA	9.785	498.1 -> 77.9	594	0.18 µg/L	# 93
		498.1 -> 478.0	5		
MeFOSAA	8.087	570.1 -> 419.0	409	0.20 µg/L	m 90
		570.1 -> 483.0	57		
PFBA	2.620	212.8 -> 168.9	2061	0.70 µg/L	100
PFBS	5.153	298.7 -> 79.9	431	0.16 µg/L	99
		298.7 -> 98.8	170		
PFDA	8.005	512.9 -> 469.0	1208	0.17 µg/L	81
		512.9 -> 219.0	348		
PFDODA	8.880	613.1 -> 569.0	1601	0.19 µg/L	86
		613.1 -> 319.0	195		
PFDS	9.032	599.0 -> 79.9	280	0.16 µg/L	91

7.7.13
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	160	0.19	µg/L	100
		363.1 -> 319.0	2820			
PFHpS	7.612	363.1 -> 169.0	490	0.18	µg/L	98
		449.0 -> 79.9	478			
PFHxA	5.300	449.0 -> 98.9	238	0.18	µg/L	99
		313.0 -> 269.0	1675			
PFHxS	7.018	313.0 -> 118.9	52	0.17	µg/L	100
		398.7 -> 79.9	317			
PFNA	7.522	398.7 -> 98.9	205	0.17	µg/L	97
		463.0 -> 419.0	1330			
PFNS	8.586	463.0 -> 219.0	359	0.17	µg/L	92
		548.8 -> 79.9	212			
PFOA	6.965	548.8 -> 98.9	98	0.16	µg/L	95
		413.0 -> 369.0	2196			
PFOS	8.119	413.0 -> 169.0	398	0.20	µg/L	69
		498.9 -> 79.9	619			
PFPeA	4.114	498.9 -> 98.8	237	0.34	µg/L	100
		263.0 -> 219.0	2540			
PFPeS	6.257	349.1 -> 79.9	315	0.15	µg/L	75
		349.1 -> 98.9	188			
PFTeDA	9.650	713.1 -> 669.0	1380	0.19	µg/L	98
		713.1 -> 168.9	153			
PFTrDA	9.279	663.0 -> 619.0	1904	0.20	µg/L	99
		663.0 -> 168.9	254			
PFUnDA	8.449	563.1 -> 519.0	1653	0.20	µg/L	95
		563.1 -> 269.1	314			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	2489	0.34	µg/L	97
		632.9 -> 452.9	730			
9Cl-PF3ONS	8.451	530.8 -> 351.0	2385	0.32	µg/L	96
		532.8 -> 353.0	760			
ADONA	6.544	376.9 -> 250.9	6110	0.37	µg/L	99
		376.9 -> 84.8	1484			
HFPO-DA	5.665	284.9 -> 168.9	769	0.31	µg/L	98
		284.9 -> 184.9	68			
3:3FTCA	3.548	241.0 -> 177.0	392	0.85	µg/L	96
		241.0 -> 117.0	30			
5:3FTCA	5.983	341.0 -> 237.1	6623	4.04	µg/L	98
		341.0 -> 217.0	4941			
7:3FTCA	7.524	441.0 -> 316.9	3107	4.23	µg/L	99
		441.0 -> 336.9	7645			
EtFOSA	11.399	526.0 -> 219.0	1013	0.42	µg/L	69
		526.0 -> 169.0	1049			
EtFOSE	11.320	630.0 -> 58.9	1325	1.10	µg/L	100
		511.9 -> 219.0	502			
MeFOSA	11.128	511.9 -> 169.0	938	0.32	µg/L	54
		616.1 -> 58.9	1278			
MeFOSE	11.047	699.1 -> 79.9	217	0.97	µg/L	100
		699.1 -> 98.8	127			
PFDoDS	9.777	295.0 -> 201.0	241	0.16	µg/L	93
		295.0 -> 84.9	56			
NFDHA	5.179	279.0 -> 85.1	1435	0.33	µg/L	100
		229.0 -> 84.9	1706			
PFMBA	4.529	314.8 -> 134.9	2230	0.36	µg/L	100
		314.8 -> 82.9	49			
PFMPA	3.265			0.30	µg/L	98
PFEESA	5.684					

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



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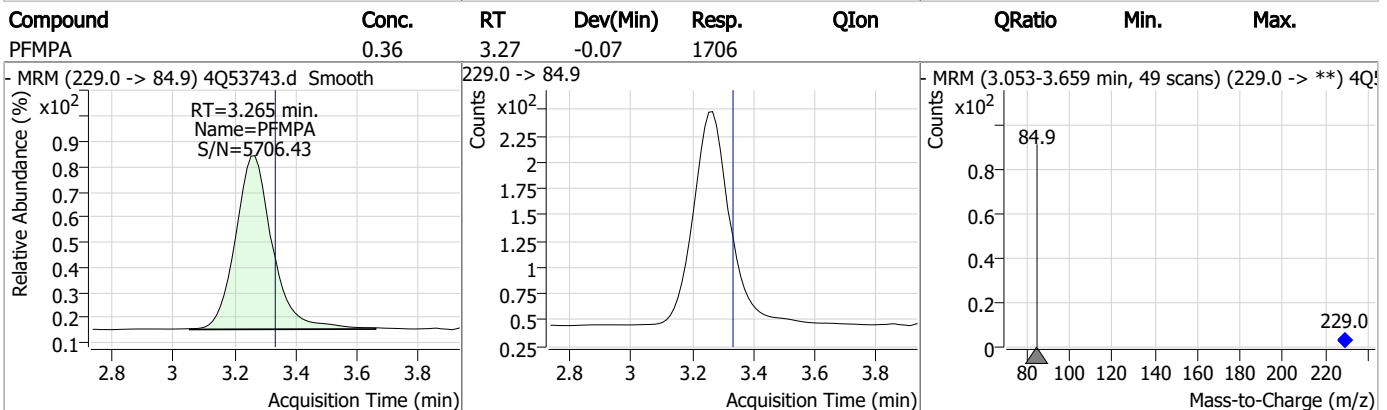
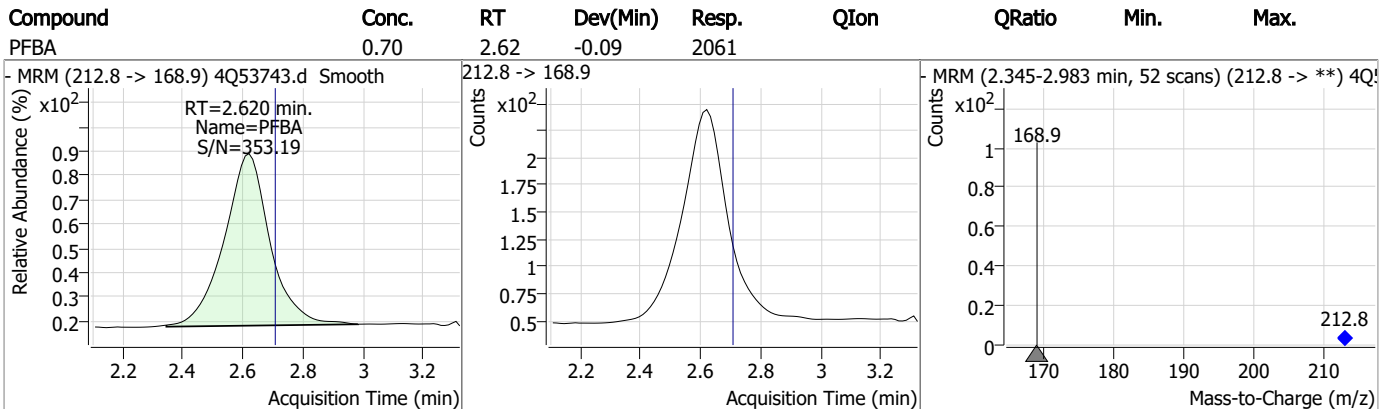
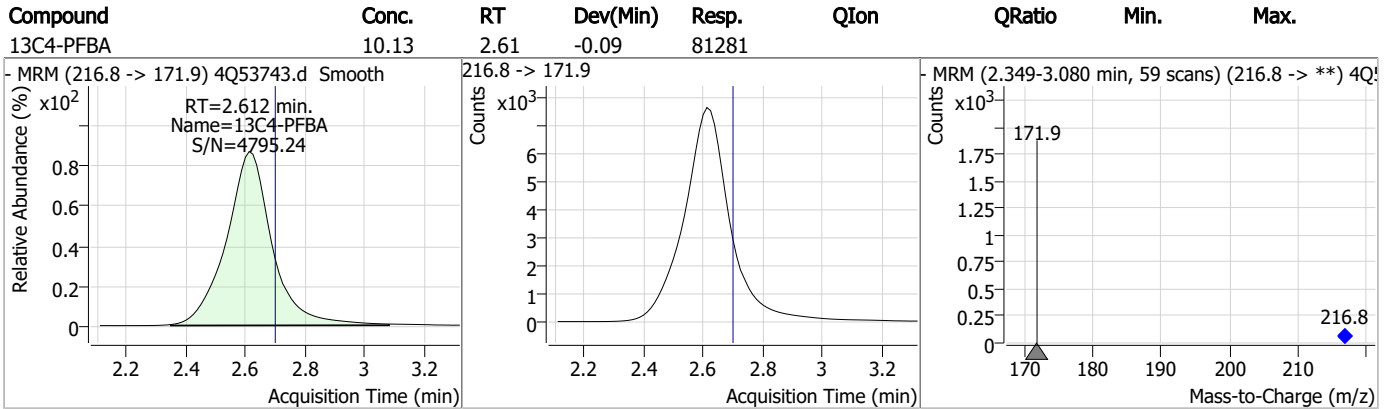
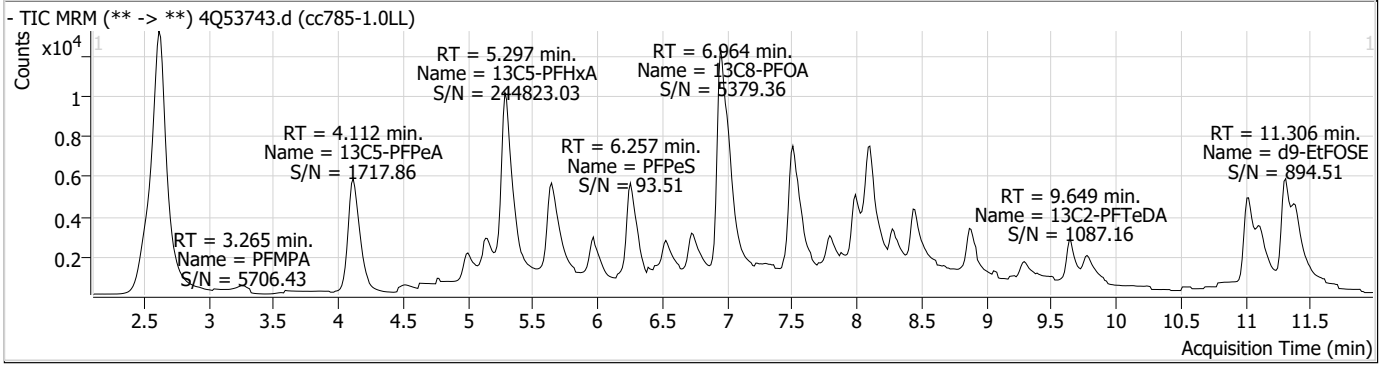
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.13

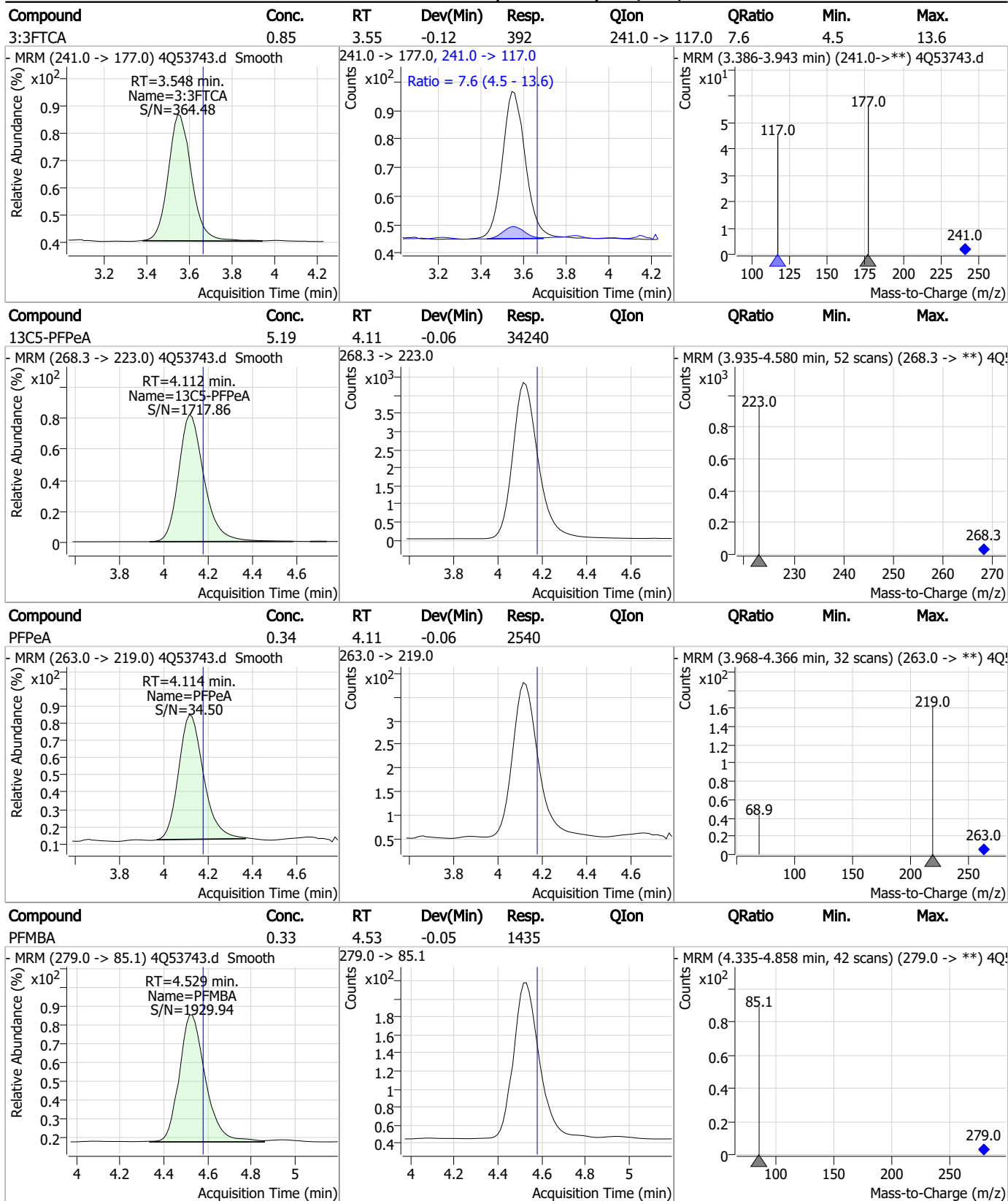
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Perfluorinated Compounds by LC/MS/MS



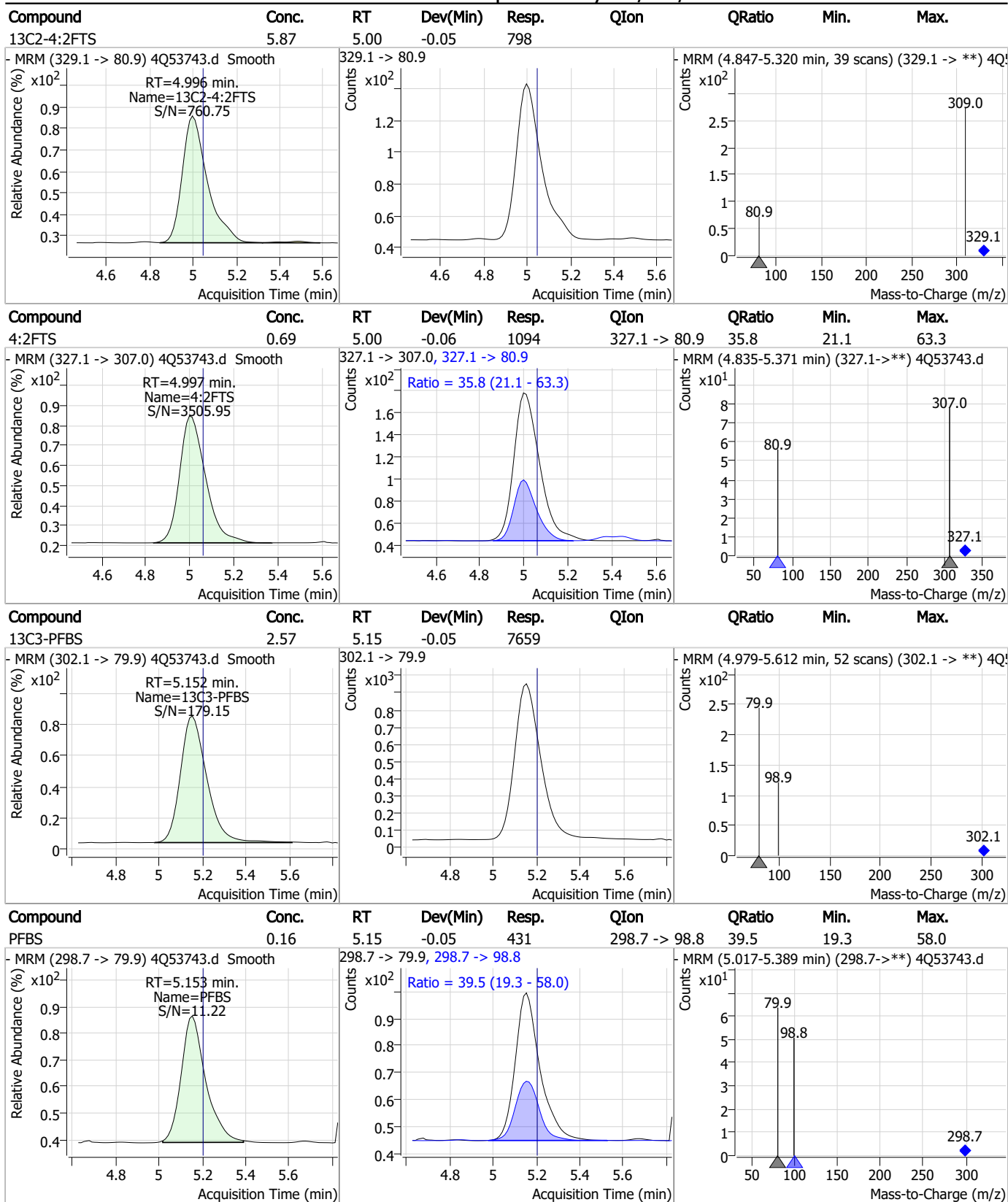
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

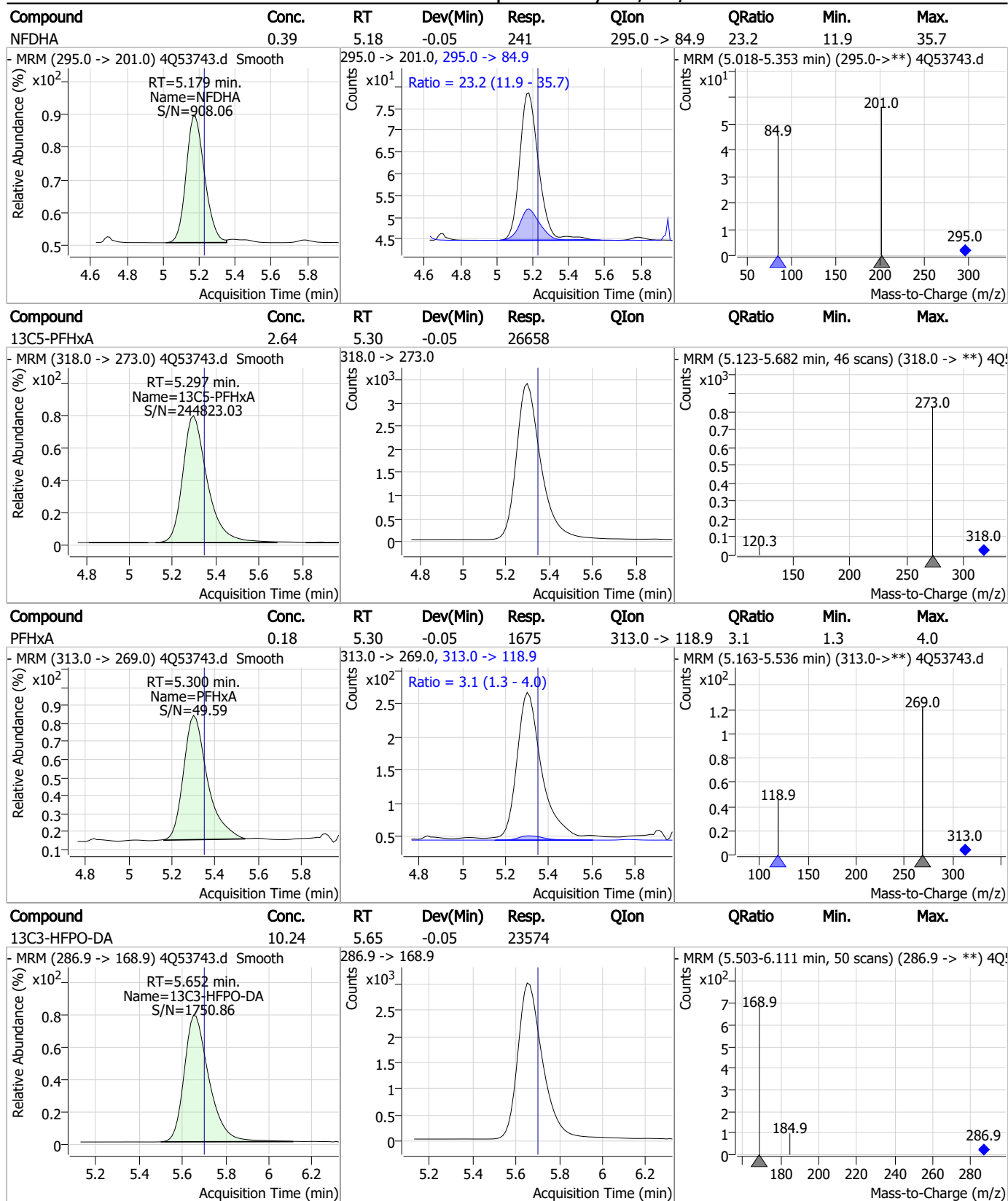


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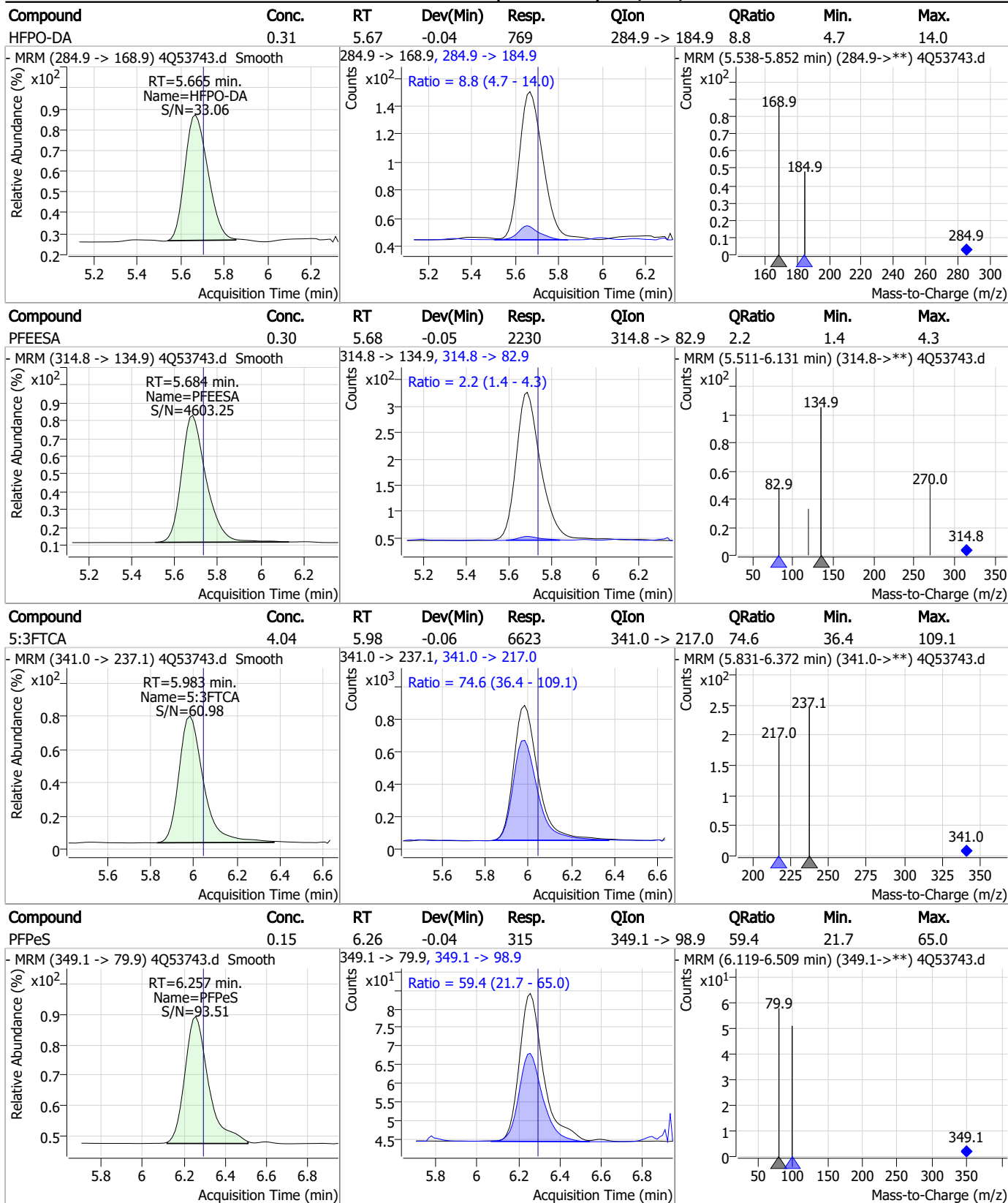
Perfluorinated Compounds by LC/MS/MS



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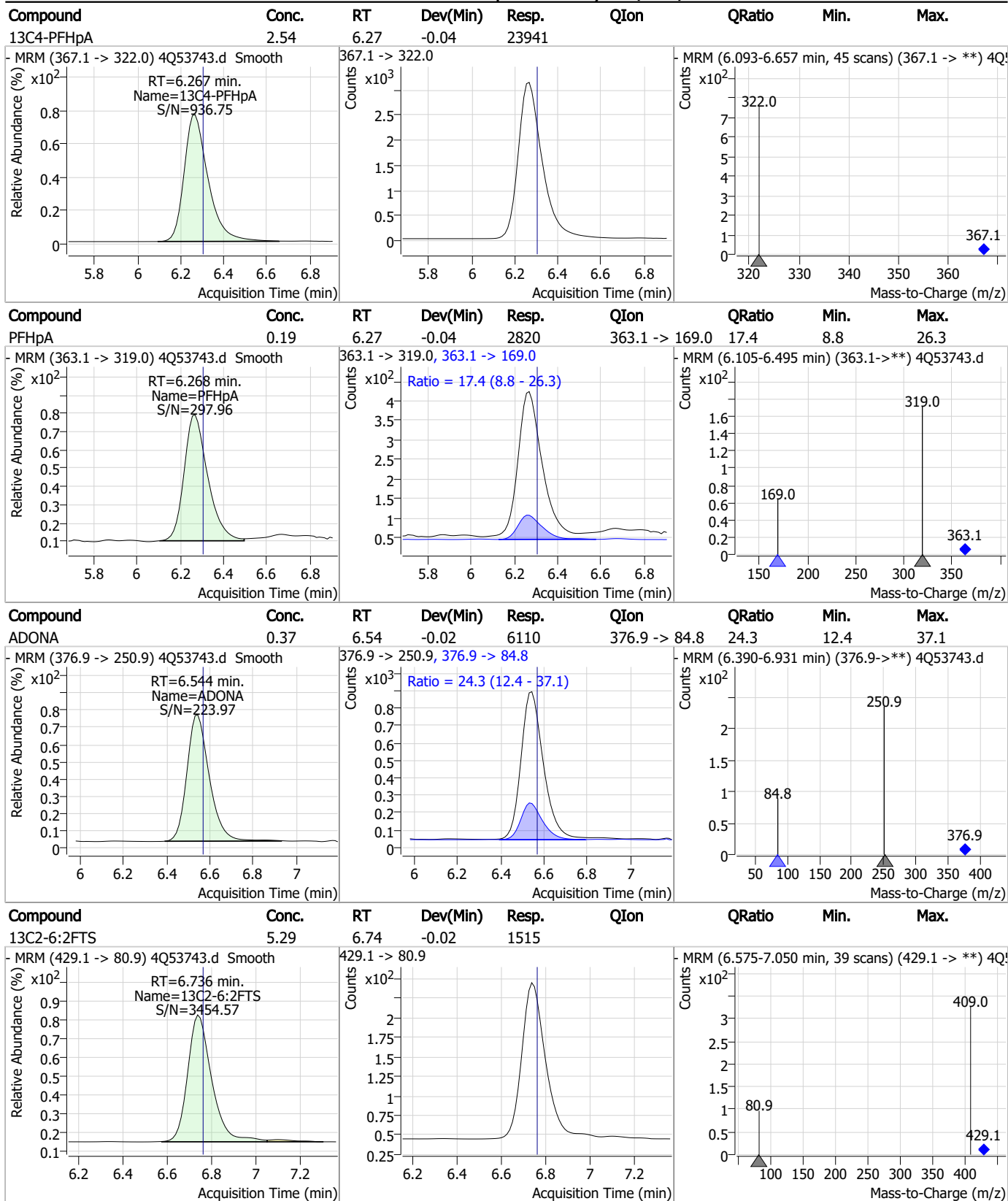
Perfluorinated Compounds by LC/MS/MS



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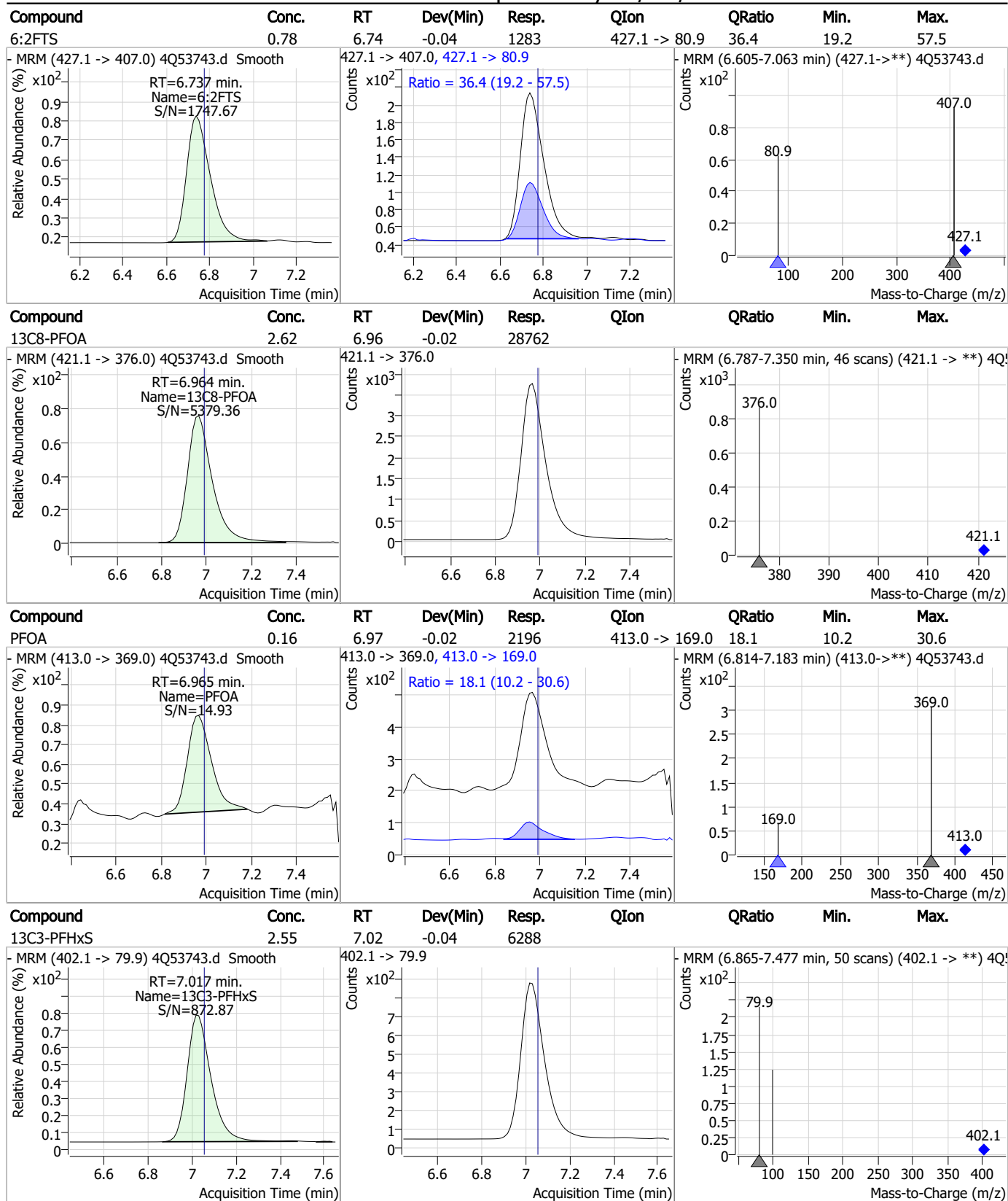
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Perfluorinated Compounds by LC/MS/MS



7.7.13
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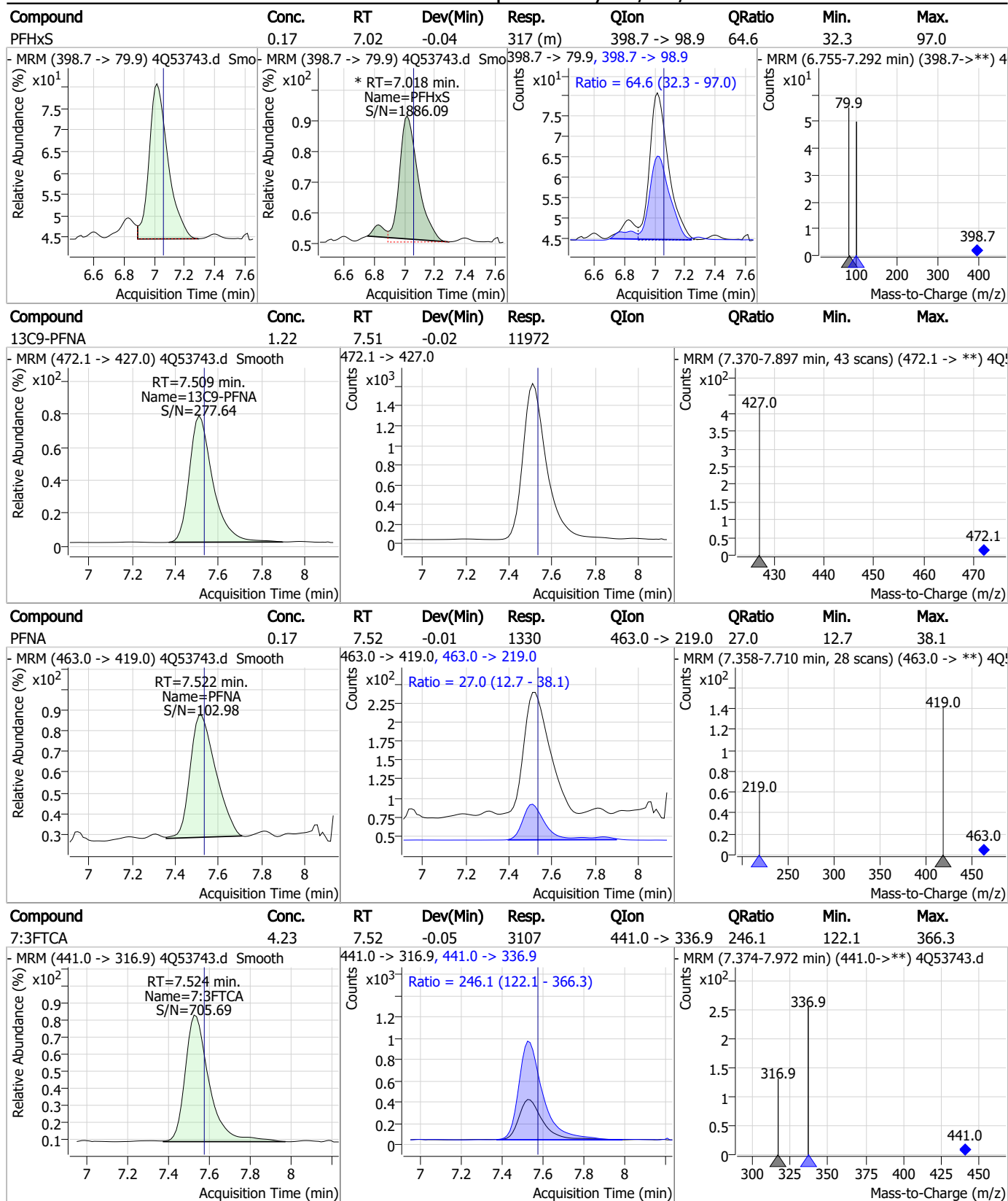
Perfluorinated Compounds by LC/MS/MS



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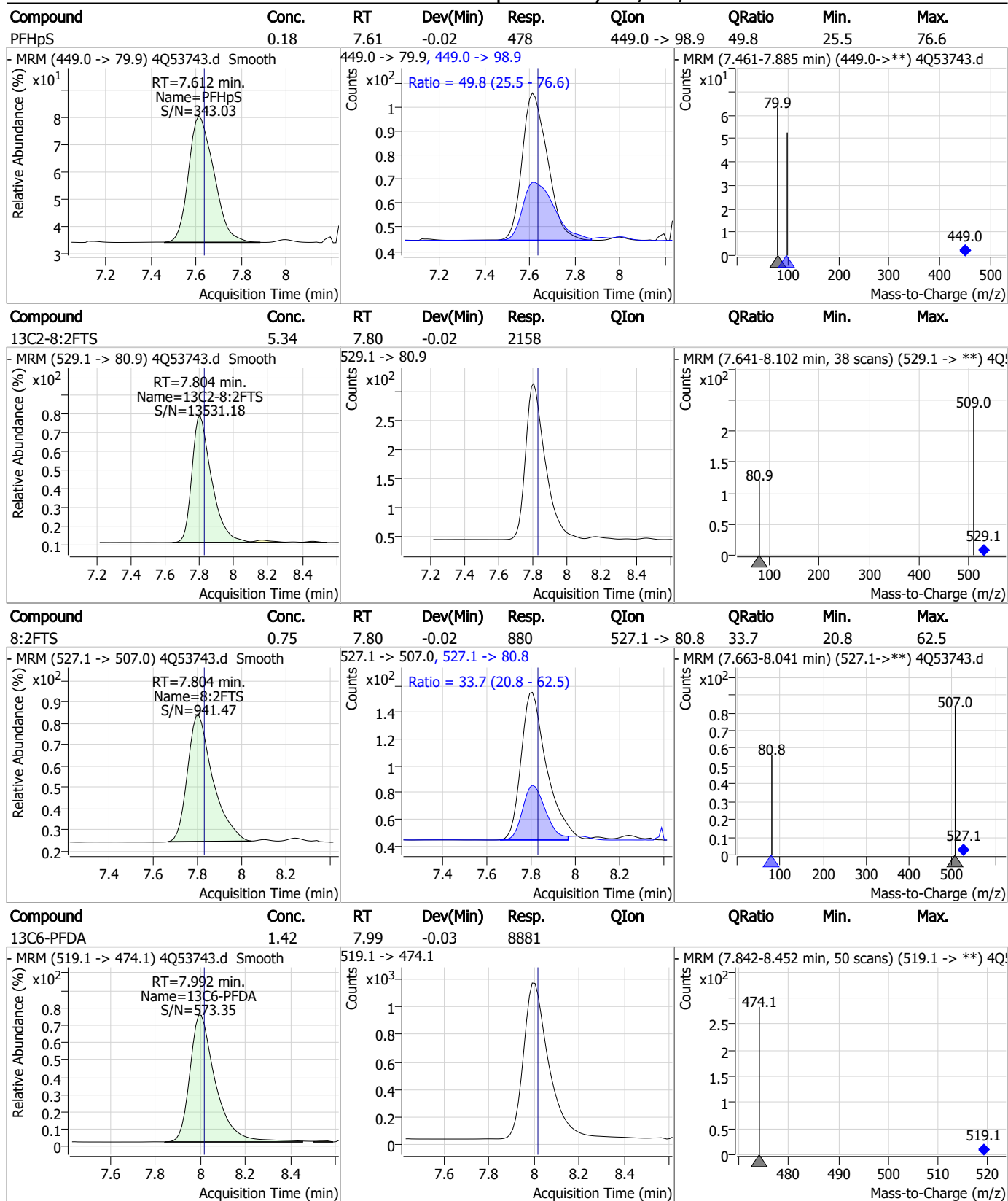
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

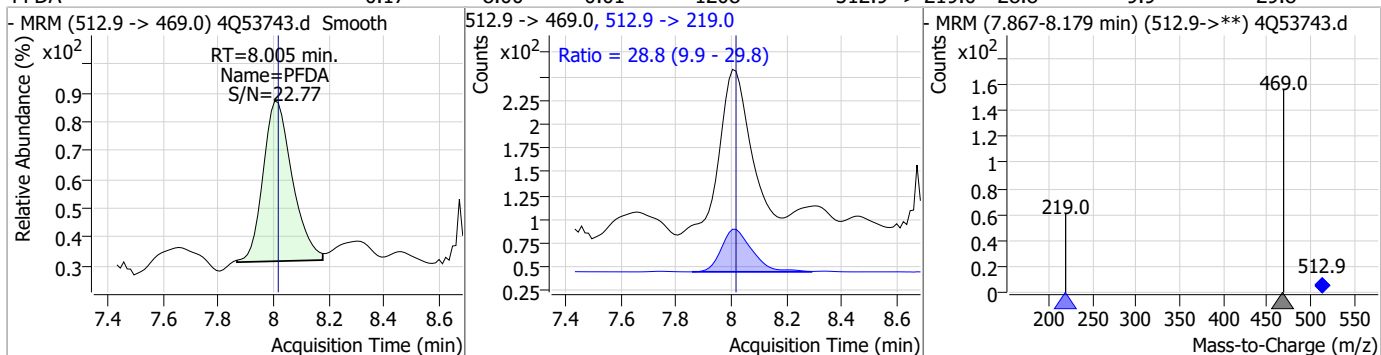


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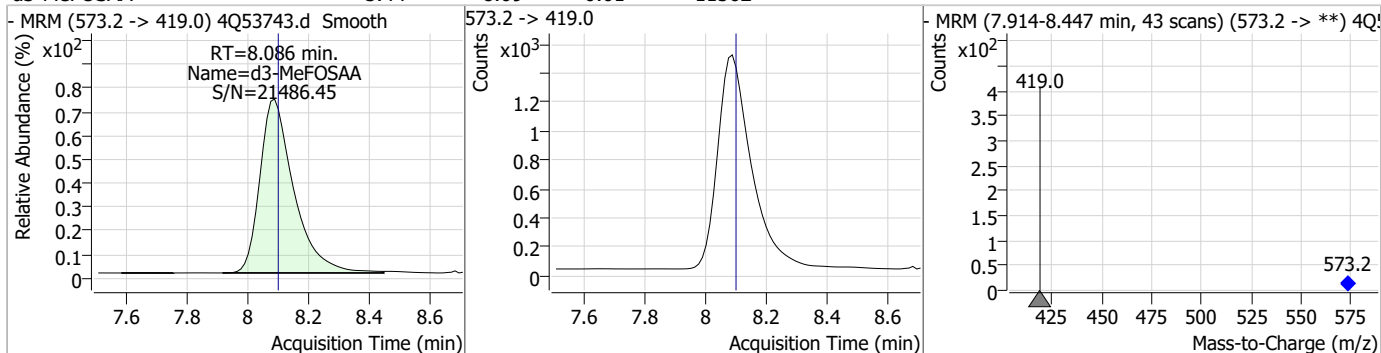
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Perfluorinated Compounds by LC/MS/MS

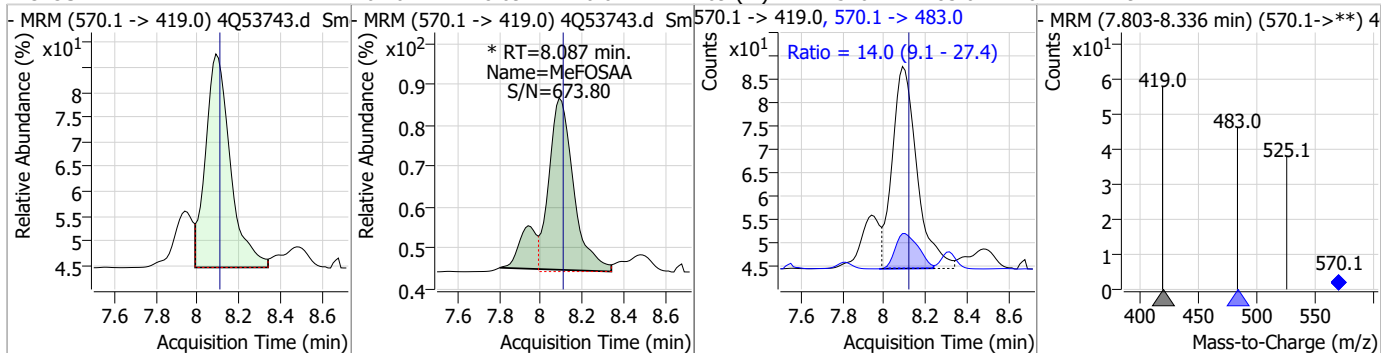
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.17	8.00	-0.01	1208	512.9 -> 219.0	28.8	9.9	29.8



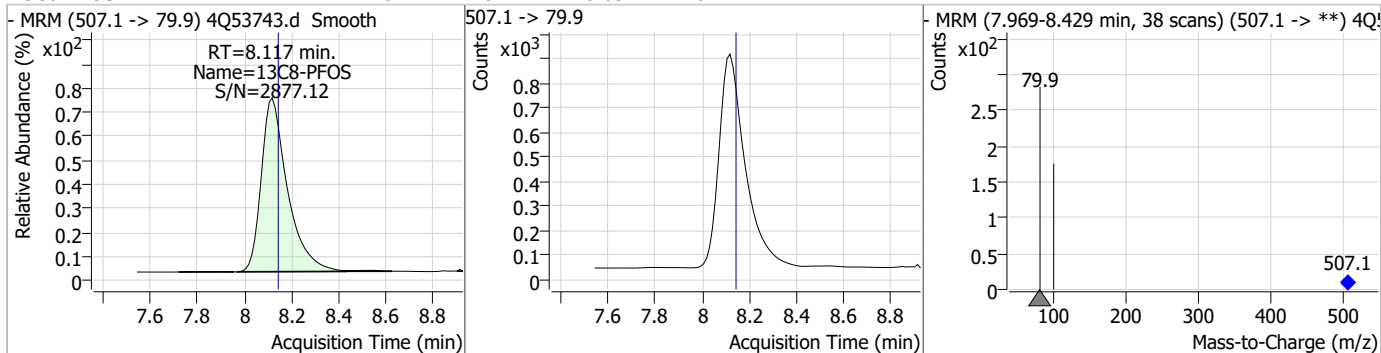
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.44	8.09	-0.01	11562				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.20	8.09	-0.02	409 (m)	570.1 -> 483.0	14.0	9.1	27.4

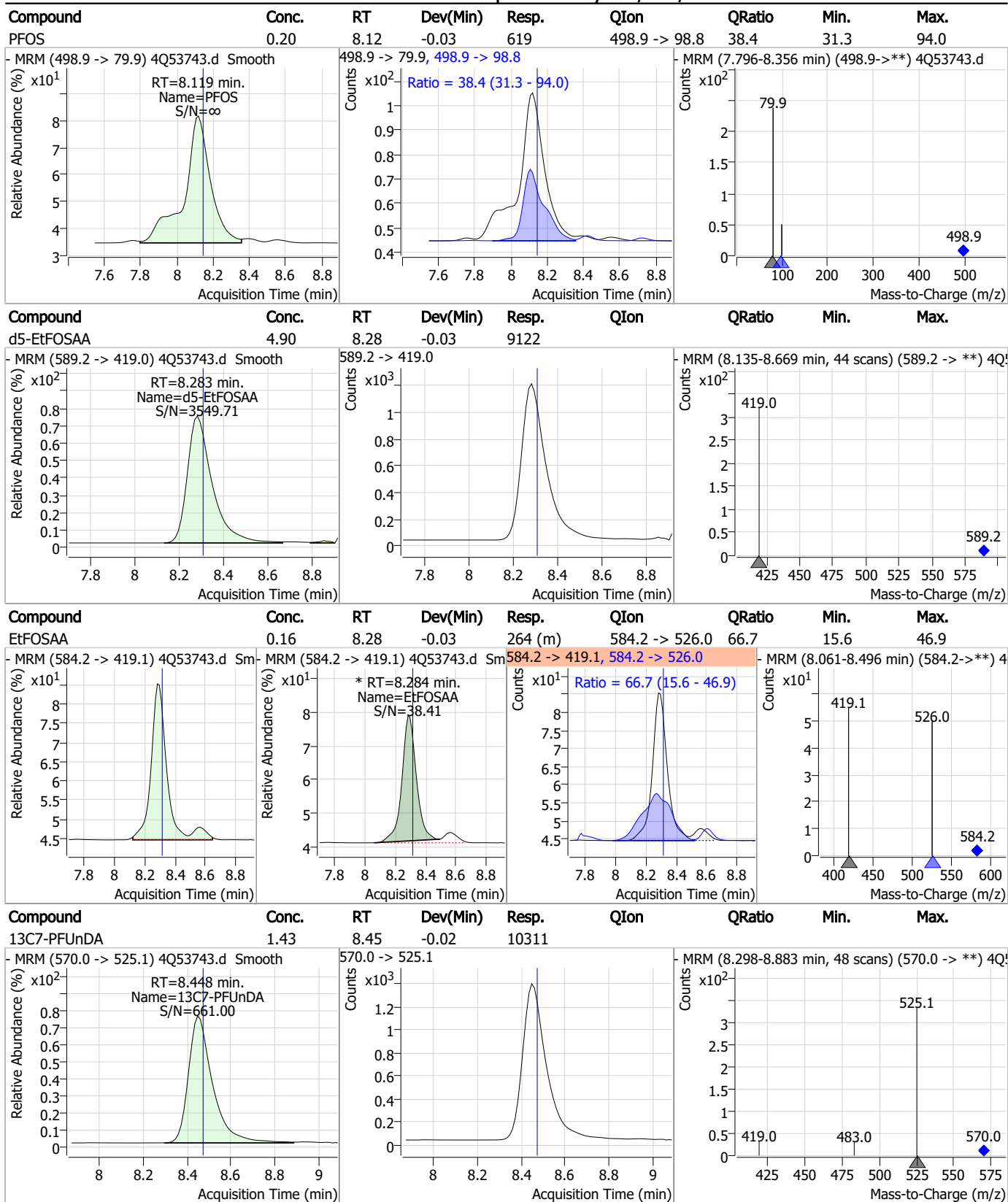


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.51	8.12	-0.03	6721				



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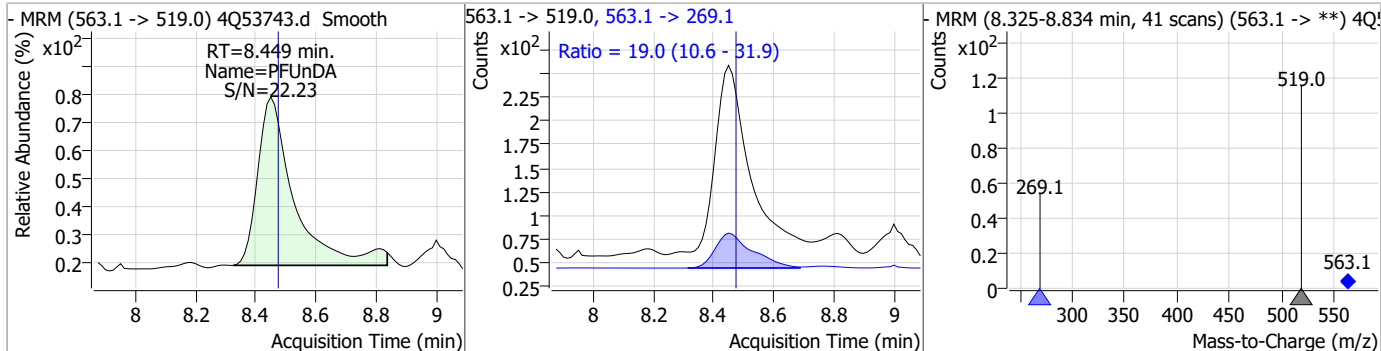
Perfluorinated Compounds by LC/MS/MS



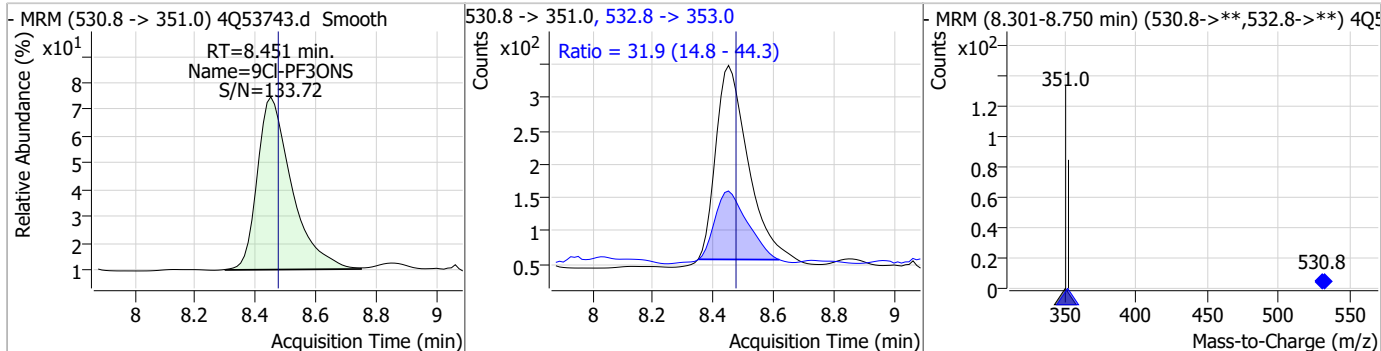
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Perfluorinated Compounds by LC/MS/MS

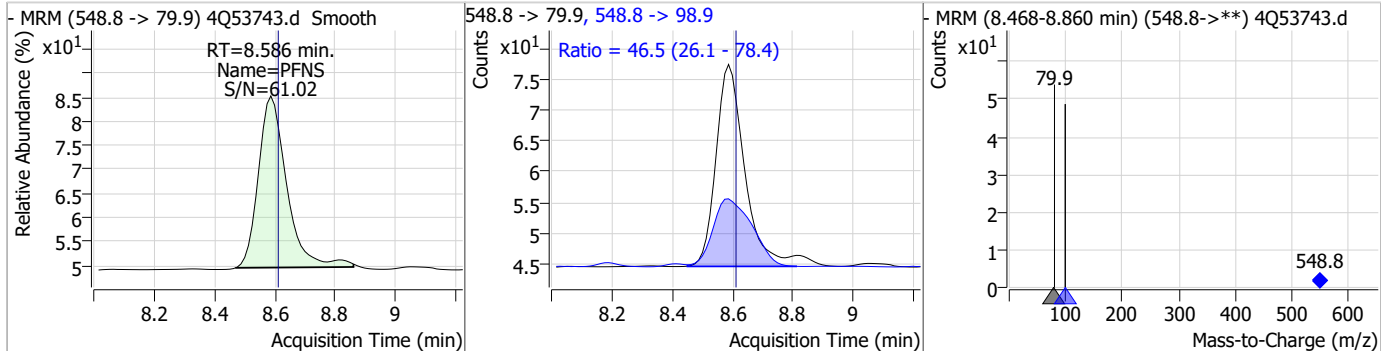
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.20	8.45	-0.02	1653	563.1 -> 269.1	19.0	10.6	31.9



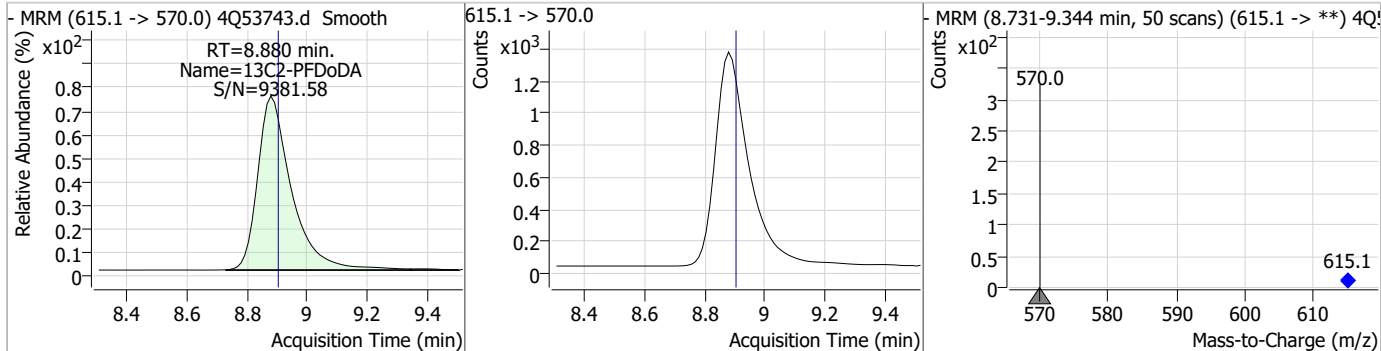
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	0.32	8.45	-0.02	2385	532.8 -> 353.0	31.9	14.8	44.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	0.17	8.59	-0.02	212	548.8 -> 98.9	46.5	26.1	78.4

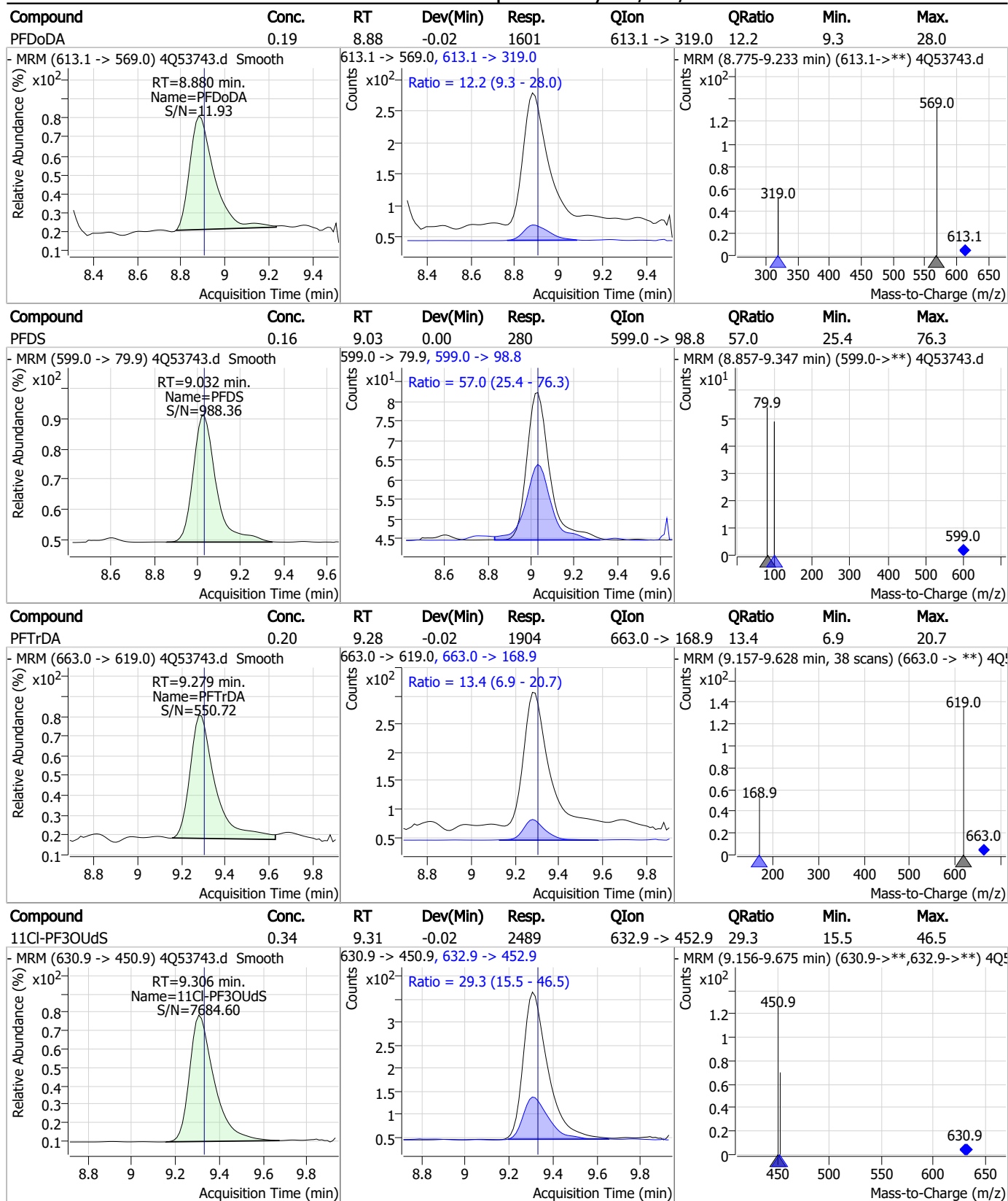


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.37	8.88	-0.02	10467				



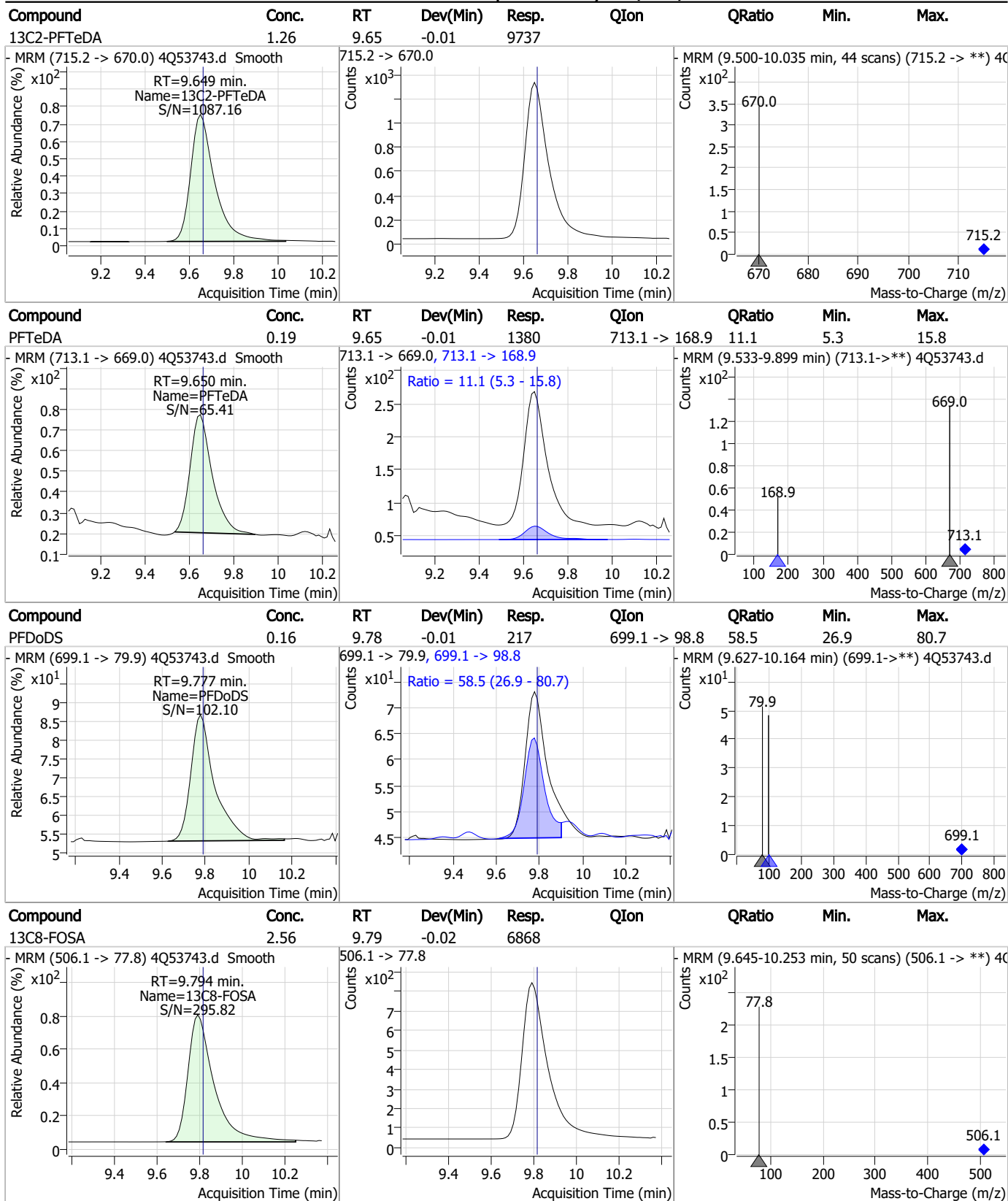
7.7.13
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Perfluorinated Compounds by LC/MS/MS



7.7.13
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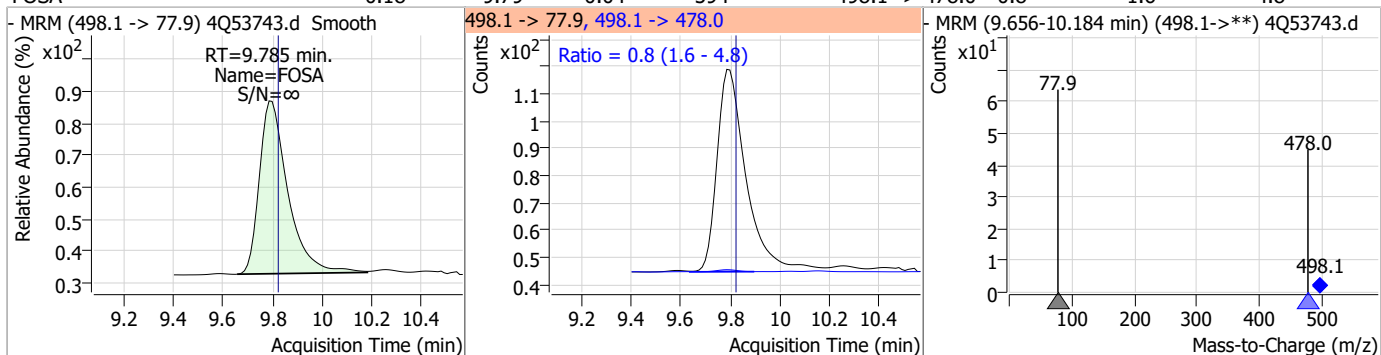
Perfluorinated Compounds by LC/MS/MS



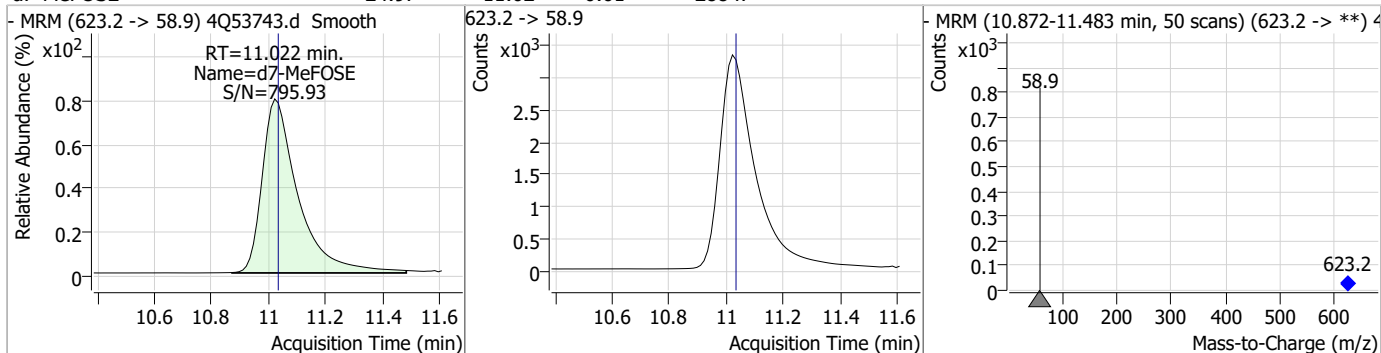
7.7.13
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Perfluorinated Compounds by LC/MS/MS

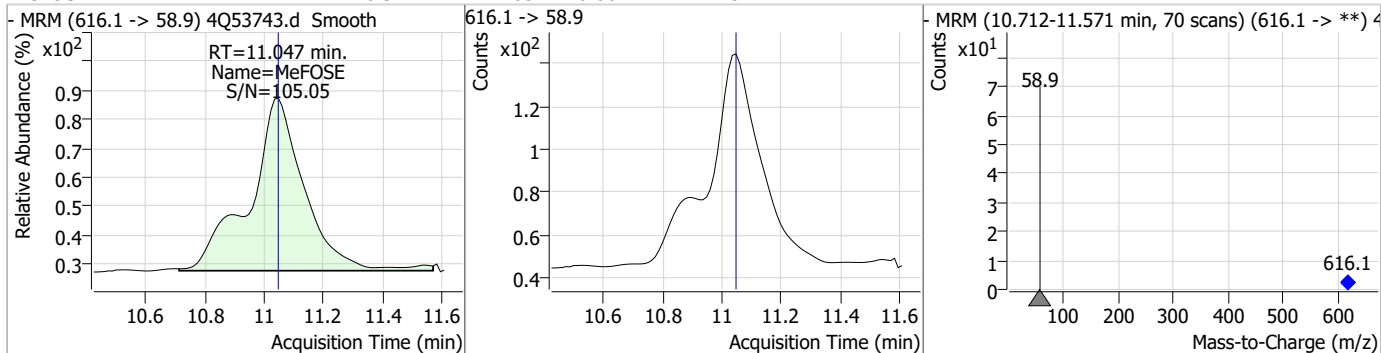
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.18	9.79	-0.04	594	498.1 -> 478.0	0.8	1.6	4.8



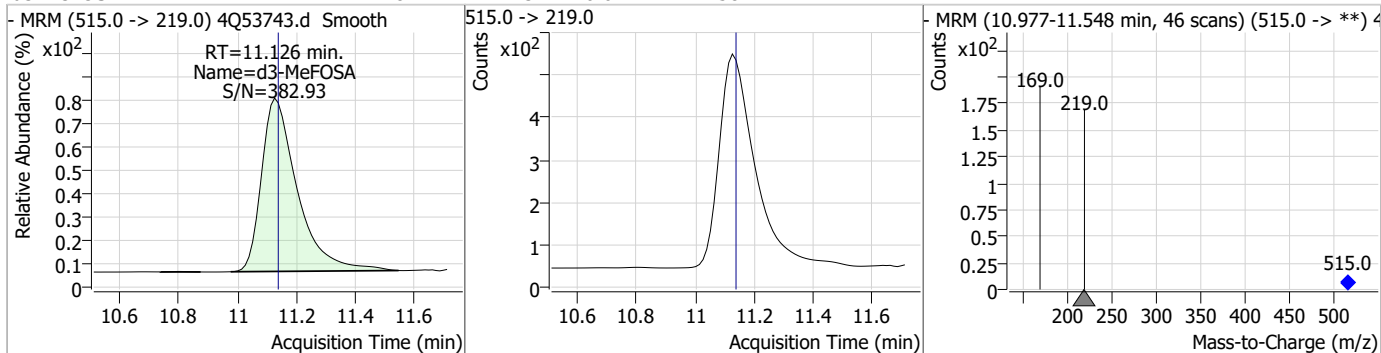
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.97	11.02	-0.01	28847				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	0.97	11.05	0.00	1278				

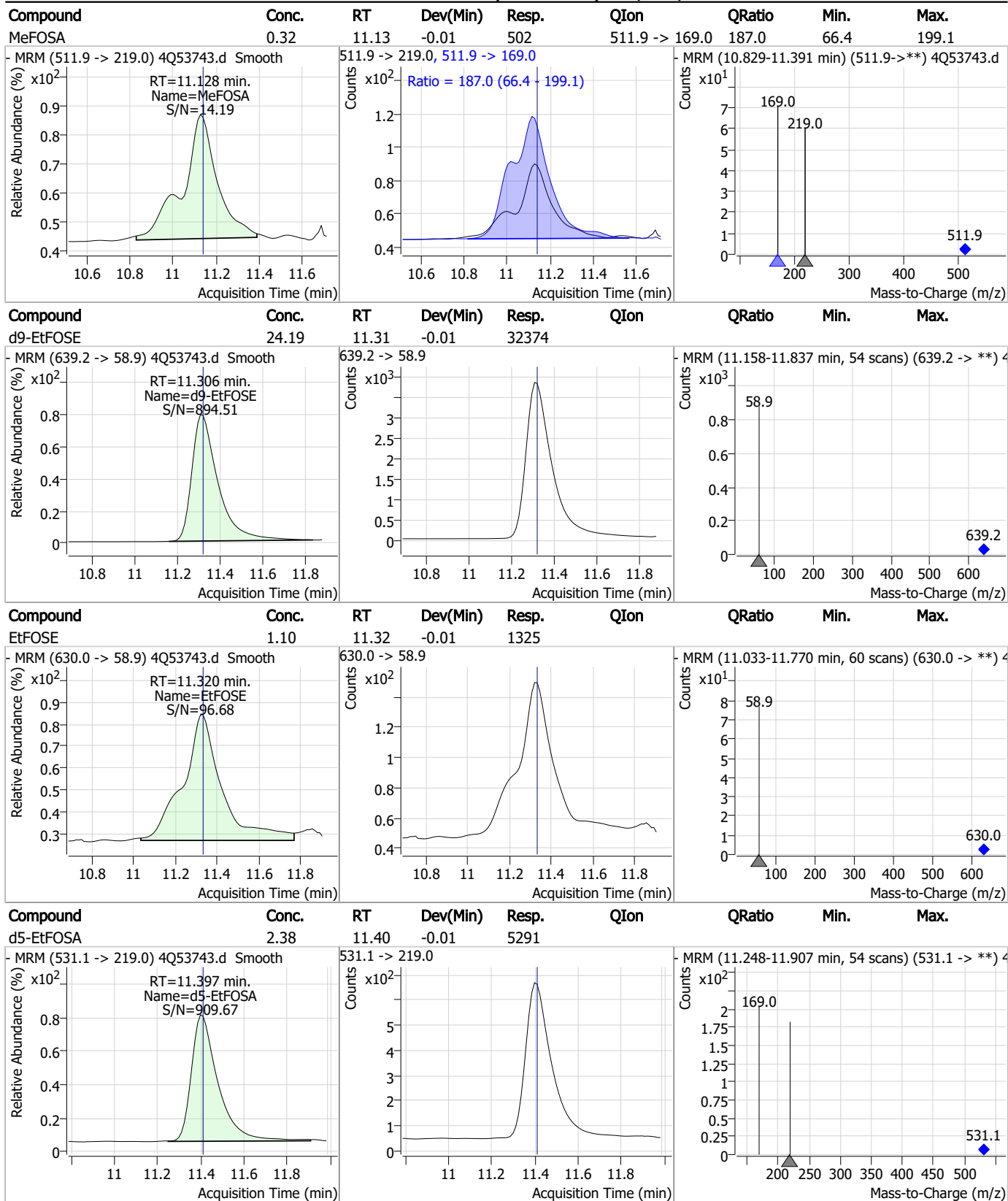


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.28	11.13	-0.01	4258				



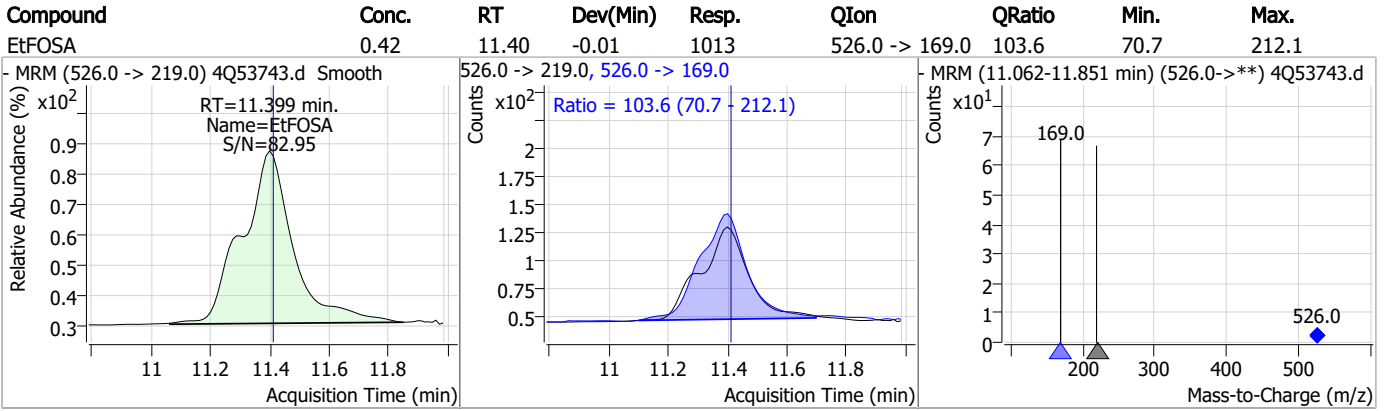
7.7.13
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Perfluorinated Compounds by LC/MS/MS



7.7.13
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Perfluorinated Compounds by LC/MS/MS



7.7.13
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Manual Integration Approval Summary

Sample Number: S4Q785-CC785 Method: EPA DRAFT 1633
Lab FileID: 4Q53743.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 18:56 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		8.09	Split peak
EtFOSAA	2991-50-6		8.28	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53754.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/13/2023 9:38:45 PM
 Sample Name : cc785-4
 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	2.612	216.8 -> 171.9	86629	10.00 µg/L	-0.087
M5-PFPeA	4.112	268.3 -> 223.0	37159	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	28510	2.50 µg/L	-0.050
M4-PFHpA	6.255	367.1 -> 322.0	26259	2.50 µg/L	-0.050
M8-PFOA	6.952	421.1 -> 376.0	30894	2.50 µg/L	-0.037
M9-PFNA	7.509	472.1 -> 427.0	12462	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	8593	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	10302	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	10527	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	11003	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	7054	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	8316	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6768	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7281	2.50 µg/L	-0.026
M2-4:2FTS	4.996	329.1 -> 80.9	746	5.00 µg/L	-0.050
M2-6:2FTS	6.724	429.1 -> 80.9	1417	5.00 µg/L	-0.037
M2-8:2FTS	7.791	529.1 -> 80.9	2018	5.00 µg/L	-0.037
M3-MeFOSAA	8.074	573.2 -> 419.0	11962	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	25599	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	9856	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	30904	25.00 µg/L	-0.012
M9-EtFOSE	11.306	639.2 -> 58.9	34978	25.00 µg/L	-0.012
M5-EtFOSA	11.397	531.1 -> 219.0	6116	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4587	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	42067	5.00 µg/L	-0.087
18O2-PFHxS	7.016	403.0 -> 83.9	4120	2.50 µg/L	-0.038
13C4-PFOA	6.952	417.1 -> 372.0	34306	2.50 µg/L	-0.037
13C2-PFDA	7.992	515.1 -> 470.1	9948	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	14031	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	30844	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	746	5.29 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.8%		
13C2-6:2FTS	6.724	429.1 -> 80.9	1417	4.77 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.4%		
13C2-8:2FTS	7.791	529.1 -> 80.9	2018	4.82 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C2-PFDoDA	8.880	615.1 -> 570.0	10527	1.17 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.8%		
13C2-PFTeDA	9.649	715.2 -> 670.0	11003	1.22 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.4%		
13C3-PFBS	5.152	302.1 -> 79.9	8316	2.69 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.6%		
13C3-PFHxS	7.017	402.1 -> 79.9	6768	2.65 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 = 106.0%		
13C4-PFBA	2.612	216.8 -> 171.9	86629	9.88 µg/L	-0.087
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C4-PFHpA	6.255	367.1 -> 322.0	26259	2.44 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C5-PFHxA	5.297	318.0 -> 273.0	28510	2.48 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C5-PFPeA	4.112	268.3 -> 223.0	37159	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	8593	1.17 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.9%		
13C7-PFUnDA	8.448	570.0 -> 525.1	10302	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	7054	2.45 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.1%		
13C8-PFOA	6.952	421.1 -> 376.0	30894	2.52 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C8-PFOS	8.117	507.1 -> 79.9	7281	2.53 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C9-PFNA	7.509	472.1 -> 427.0	12462	1.13 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 90.1%		
d3-MeFOSAA	8.074	573.2 -> 419.0	11962	5.24 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.8%		
13C3-HFPO-DA	5.652	286.9 -> 168.9	25599	9.75 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 97.5%		
d3-MeFOSA	11.126	515.0 -> 219.0	4587	2.28 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.4%		
d5-EtFOSAA	8.283	589.2 -> 419.0	9856	4.93 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.6%		
d7-MeFOSE	11.022	623.2 -> 58.9	30904	24.93 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.7%		
d9-EtFOSE	11.306	639.2 -> 58.9	34978	24.36 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 97.4%		
d5-EtFOSA	11.397	531.1 -> 219.0	6116	2.57 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.7%		
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	12819	8.69 µg/L	99
		327.1 -> 80.9	5312		
6:2FTS	6.737	427.1 -> 407.0	15535	10.13 µg/L	97
		427.1 -> 80.9	5650		
8:2FTS	7.792	527.1 -> 507.0	10653	9.71 µg/L	96
		527.1 -> 80.8	4711		
EtFOSAA	8.284	584.2 -> 419.1	4778	2.71 µg/L	m 89
		584.2 -> 526.0	1784		
FOSA	9.785	498.1 -> 77.9	8638	2.51 µg/L	99
		498.1 -> 478.0	305		
MeFOSAA	8.075	570.1 -> 419.0	4890	2.30 µg/L	91
		570.1 -> 483.0	1100		
PFBA	2.620	212.8 -> 168.9	31326	9.94 µg/L	100
PFBS	5.153	298.7 -> 79.9	6221	2.11 µg/L	94
		298.7 -> 98.8	2648		
PFDA	7.992	512.9 -> 469.0	17948	2.55 µg/L	100
		512.9 -> 219.0	3566		
PFDODA	8.880	613.1 -> 569.0	22461	2.62 µg/L	98
		613.1 -> 319.0	4023		
PFDS	9.020	599.0 -> 79.9	4533	2.41 µg/L	100

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2321			
PFHpA	6.255	363.1 -> 319.0	42066	2.55	µg/L	99
		363.1 -> 169.0	7534			
PFHpS	7.599	449.0 -> 79.9	6989	2.43	µg/L	96
		449.0 -> 98.9	3394			
PFHxA	5.300	313.0 -> 269.0	24355	2.45	µg/L	99
		313.0 -> 118.9	771			
PFHxS	7.018	398.7 -> 79.9	5011	2.45	µg/L	m 85
		398.7 -> 98.9	2664			
PFNA	7.510	463.0 -> 419.0	21068	2.65	µg/L	99
		463.0 -> 219.0	5274			
PFNS	8.574	548.8 -> 79.9	3505	2.52	µg/L	98
		548.8 -> 98.9	1782			
PFOA	6.953	413.0 -> 369.0	36107	2.41	µg/L	98
		413.0 -> 169.0	7727			
PFOS	8.119	498.9 -> 79.9	7736	2.34	µg/L	m 81
		498.9 -> 98.8	3685			
PFPeA	4.114	263.0 -> 219.0	40456	5.00	µg/L	100
PFPeS	6.257	349.1 -> 79.9	5171	2.33	µg/L	98
		349.1 -> 98.9	2295			
PFTeDA	9.650	713.1 -> 669.0	20087	2.40	µg/L	98
		713.1 -> 168.9	2258			
PFTrDA	9.279	663.0 -> 619.0	24866	2.66	µg/L	100
		663.0 -> 168.9	3469			
PFUnDA	8.449	563.1 -> 519.0	20866	2.48	µg/L	99
		563.1 -> 269.1	4574			
11CI-PF3OUdS	9.306	630.9 -> 450.9	37622	4.71	µg/L	98
		632.9 -> 452.9	12080			
9CI-PF3ONS	8.451	530.8 -> 351.0	39468	4.89	µg/L	95
		532.8 -> 353.0	12625			
ADONA	6.531	376.9 -> 250.9	101530	5.73	µg/L	98
		376.9 -> 84.8	24077			
HFPO-DA	5.653	284.9 -> 168.9	13310	4.91	µg/L	97
		284.9 -> 184.9	1382			
3:3FTCA	3.561	241.0 -> 177.0	5857	11.93	µg/L	100
		241.0 -> 117.0	529			
5:3FTCA	5.983	341.0 -> 237.1	107190	61.15	µg/L	99
		341.0 -> 217.0	77477			
7:3FTCA	7.524	441.0 -> 316.9	47157	59.97	µg/L	100
		441.0 -> 336.9	115362			
EtFOSA	11.399	526.0 -> 219.0	13145	4.77	µg/L	99
		526.0 -> 169.0	18361			
EtFOSE	11.332	630.0 -> 58.9	16218	12.41	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	8994	5.40	µg/L	m 89
		511.9 -> 169.0	13128			
MeFOSE	11.035	616.1 -> 58.9	17690	12.56	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	3768	2.54	µg/L	99
		699.1 -> 98.8	1998			
NFDHA	5.179	295.0 -> 201.0	3531	5.37	µg/L	95
		295.0 -> 84.9	927			
PFMBA	4.529	279.0 -> 85.1	22680	4.87	µg/L	100
PFMPA	3.265	229.0 -> 84.9	25785	4.98	µg/L	100
PFEESA	5.684	314.8 -> 134.9	35299	4.48	µg/L	98
		314.8 -> 82.9	1249			

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



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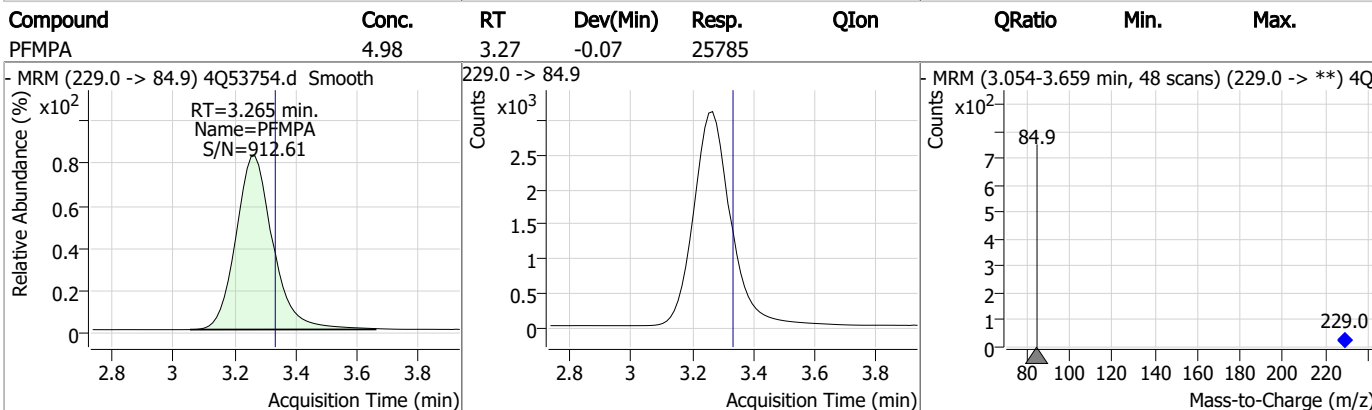
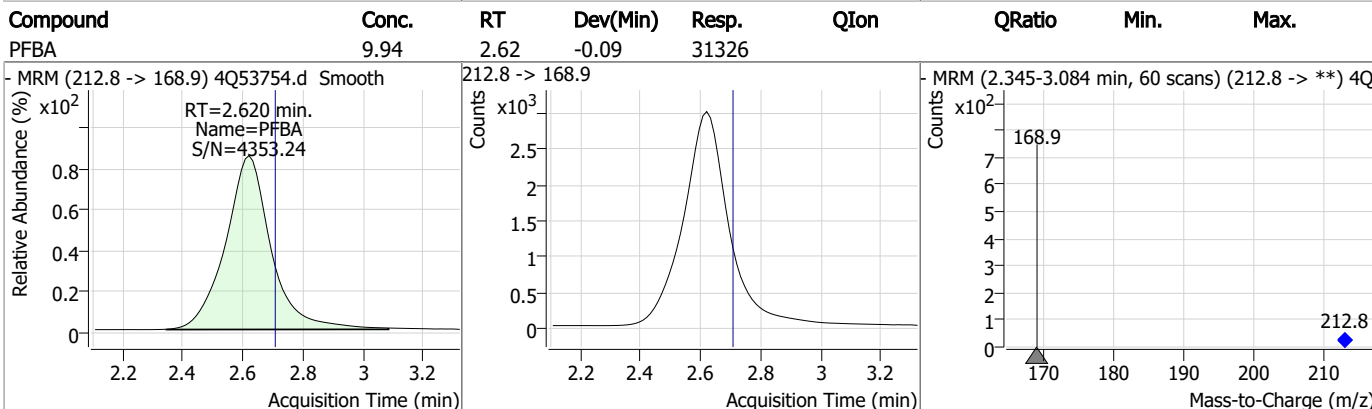
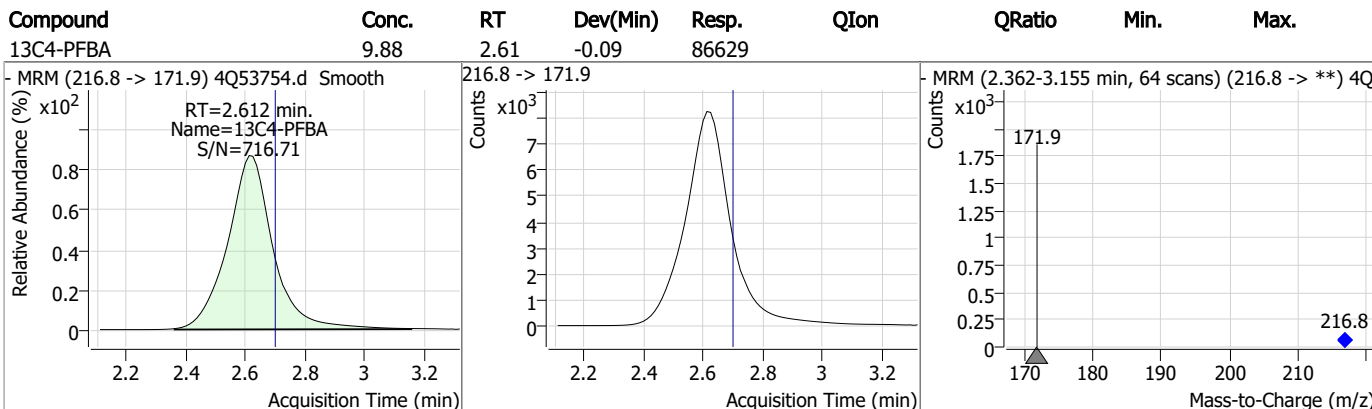
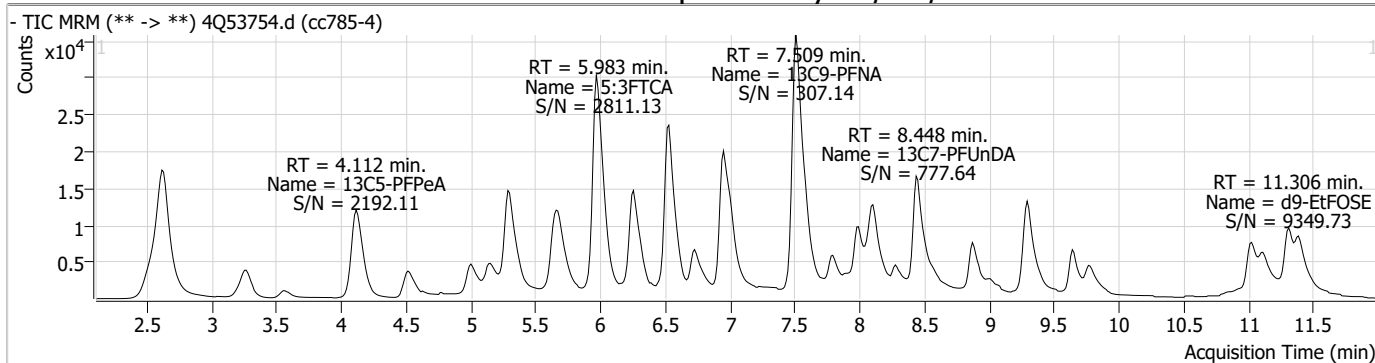
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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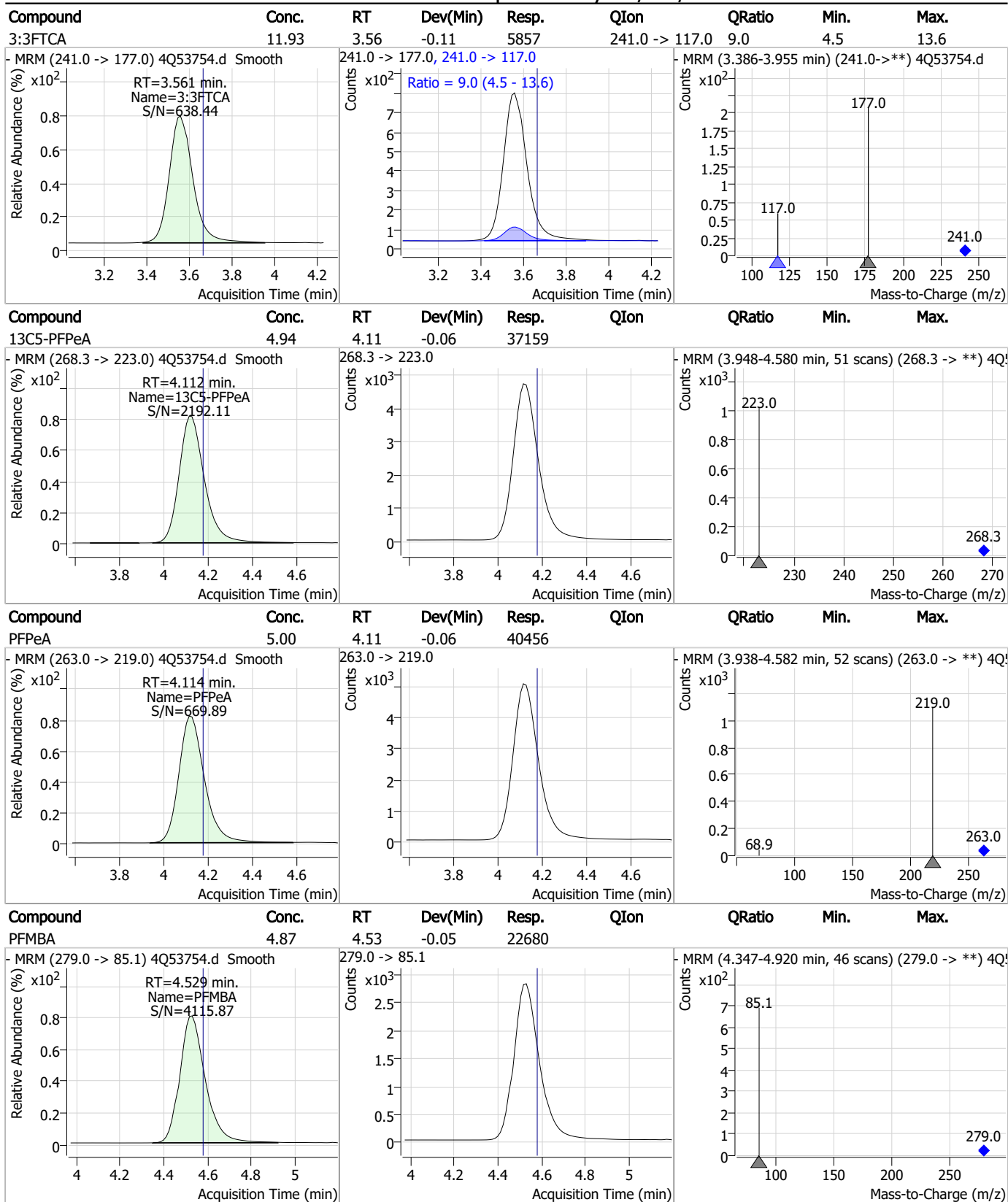
7.7.14

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Perfluorinated Compounds by LC/MS/MS



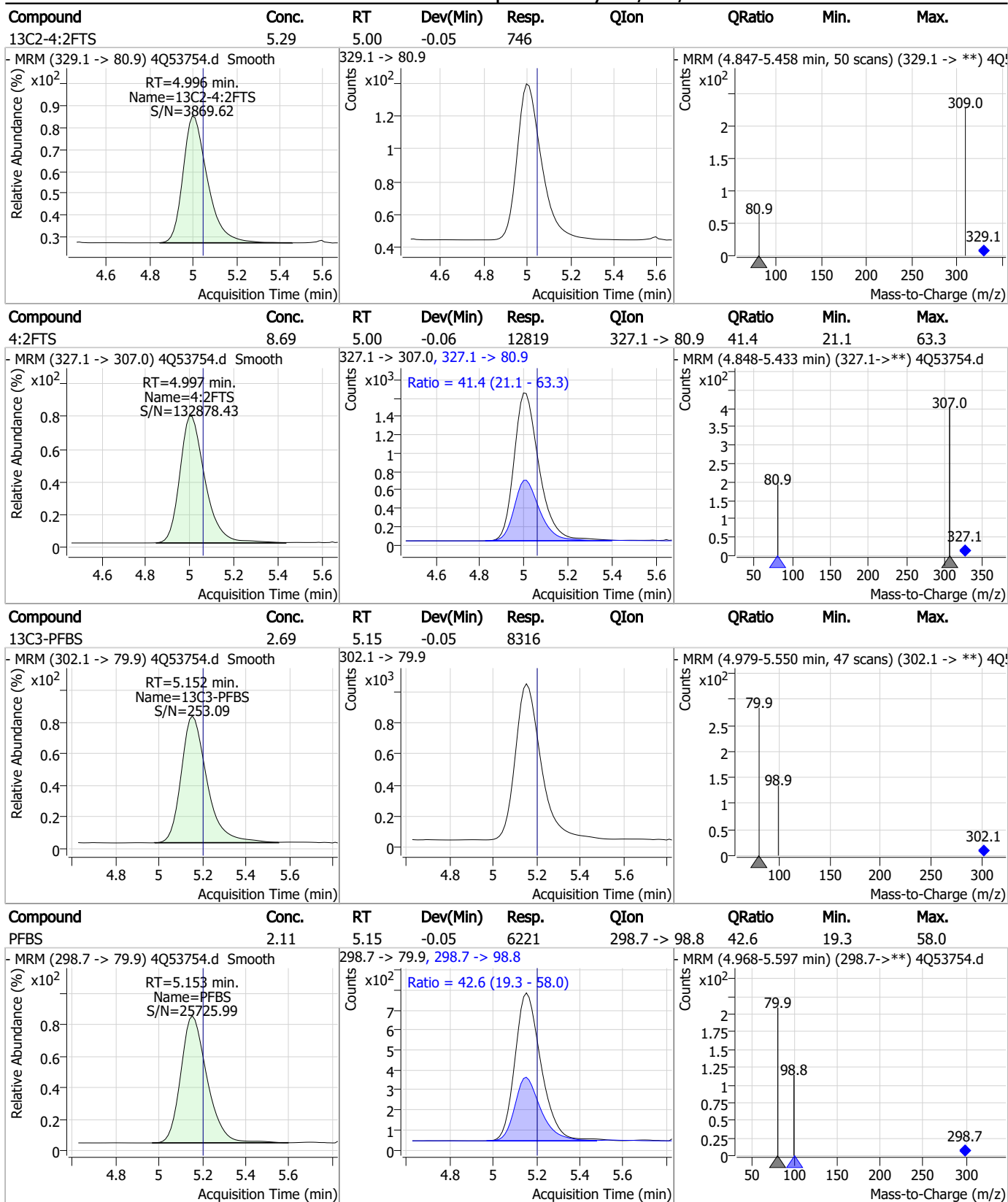
Perfluorinated Compounds by LC/MS/MS



7.7.14

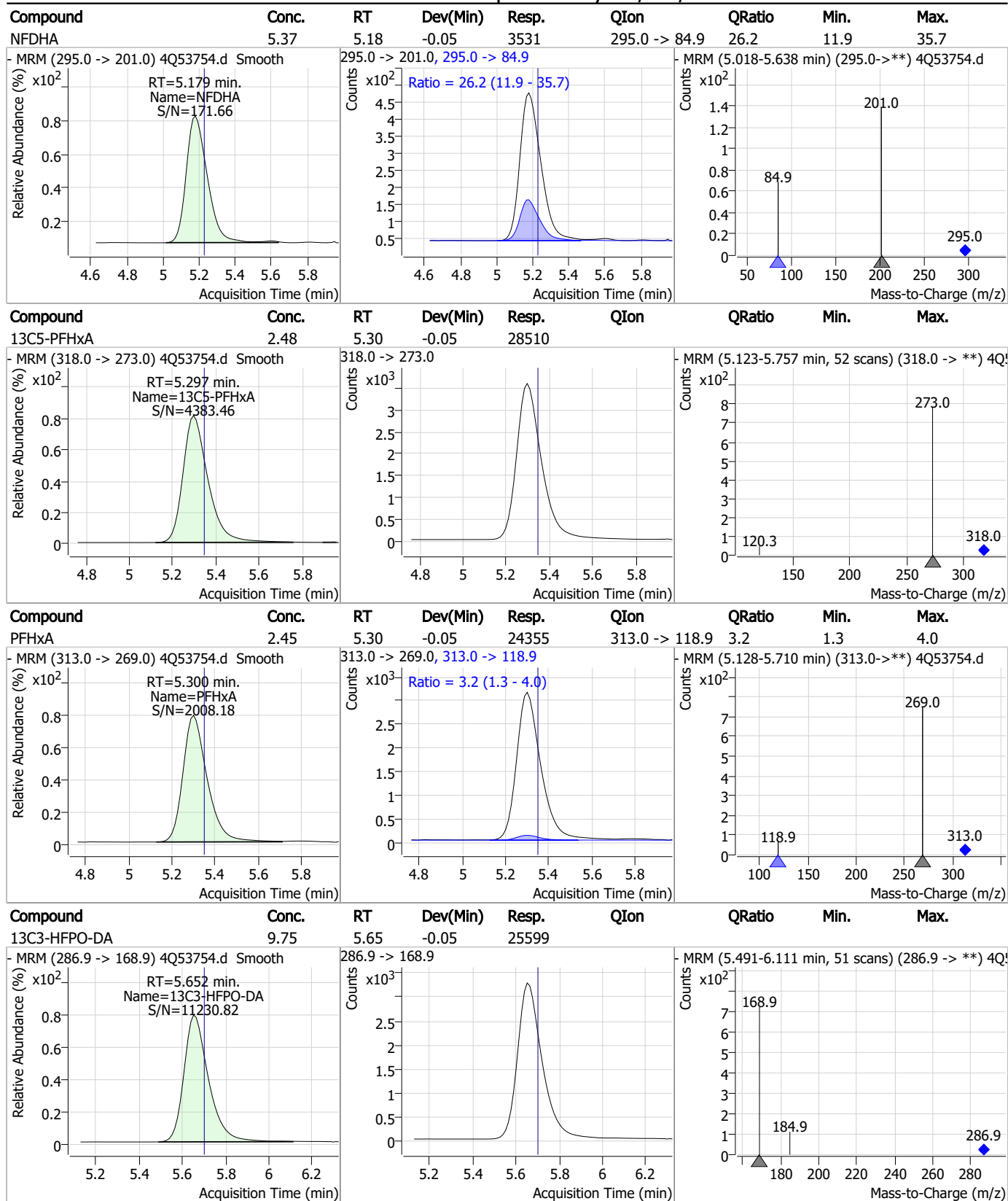
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Perfluorinated Compounds by LC/MS/MS



7.7.14
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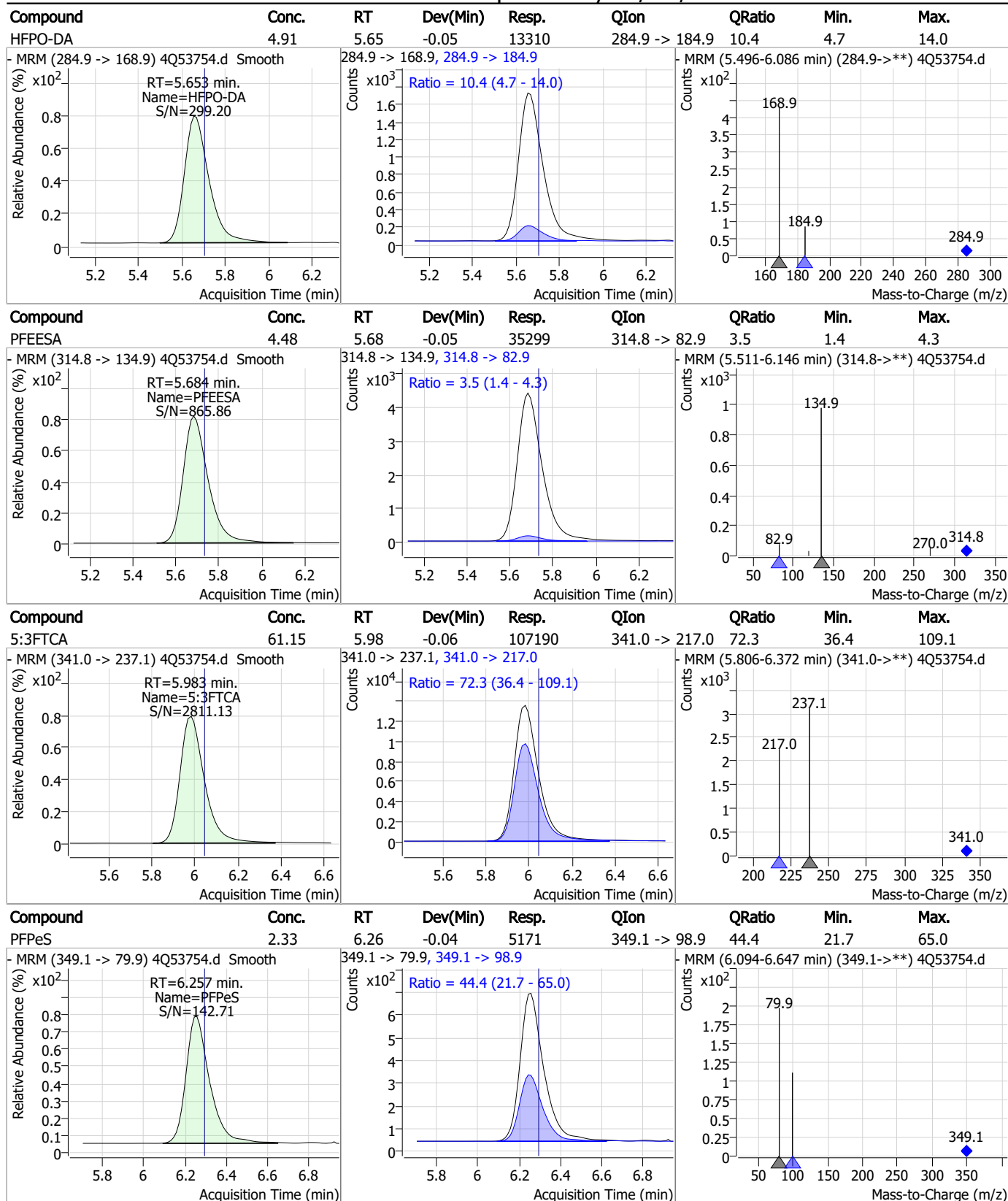
Perfluorinated Compounds by LC/MS/MS



7.7.14

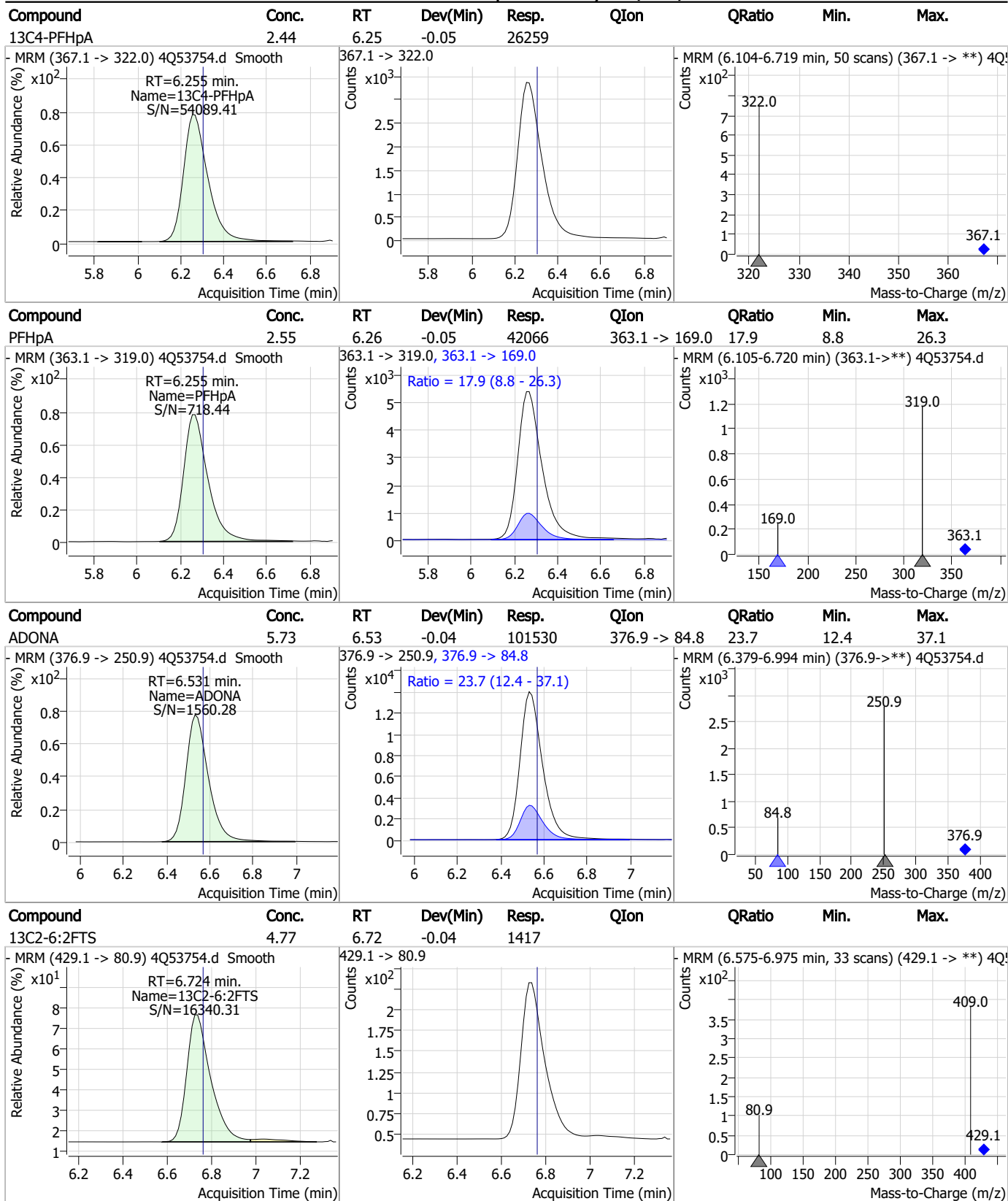


Perfluorinated Compounds by LC/MS/MS



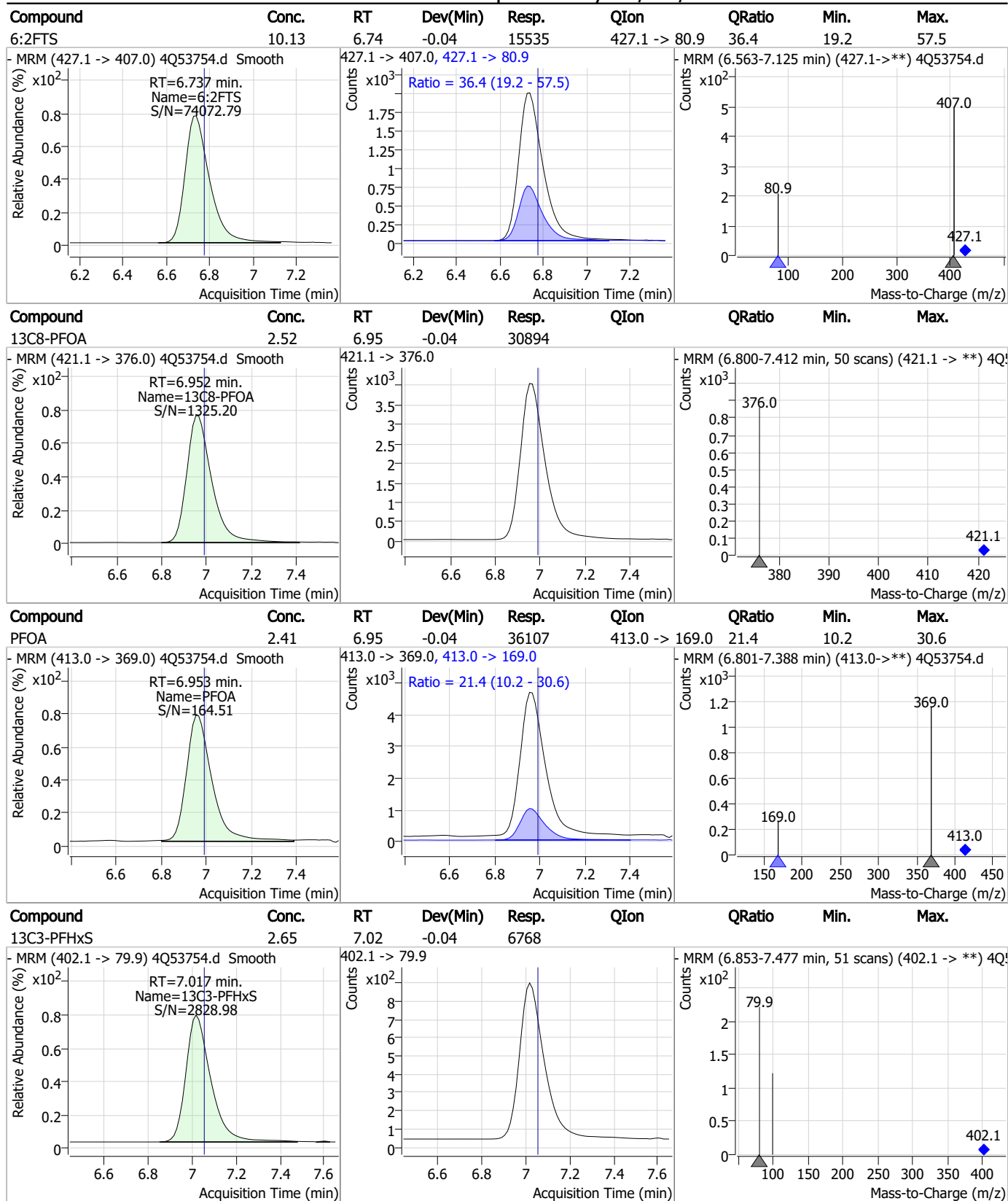
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Perfluorinated Compounds by LC/MS/MS



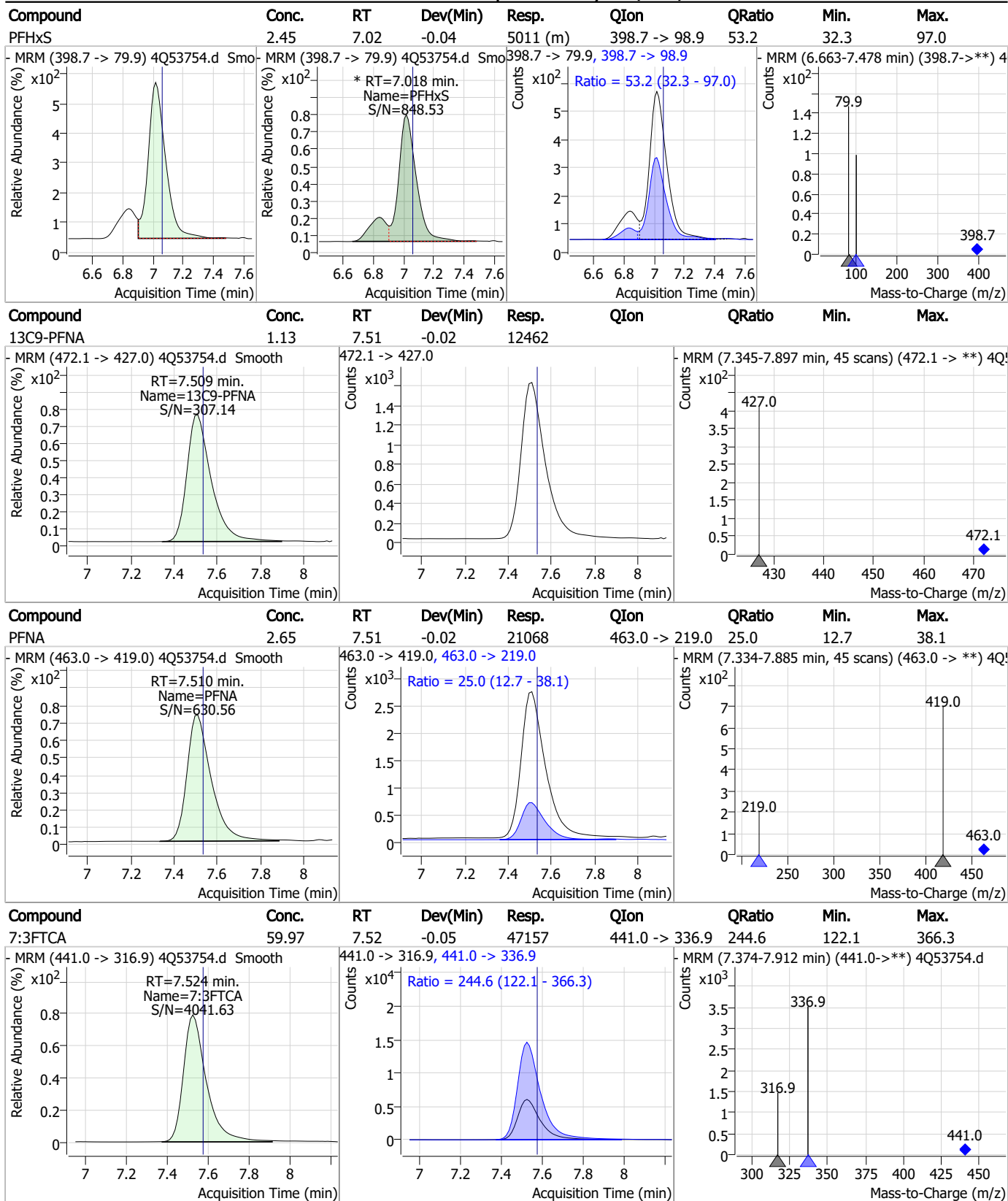
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Perfluorinated Compounds by LC/MS/MS



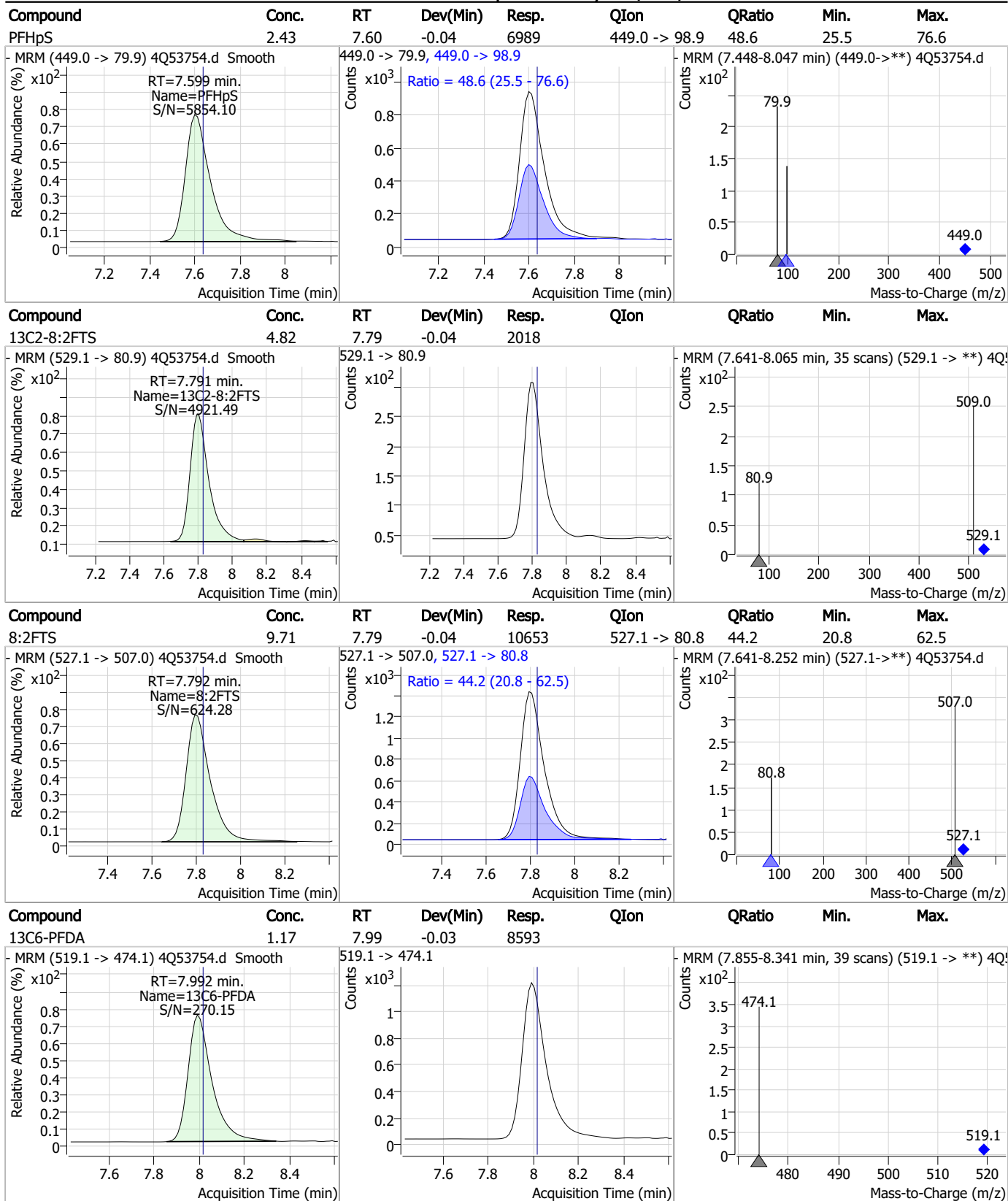
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Perfluorinated Compounds by LC/MS/MS



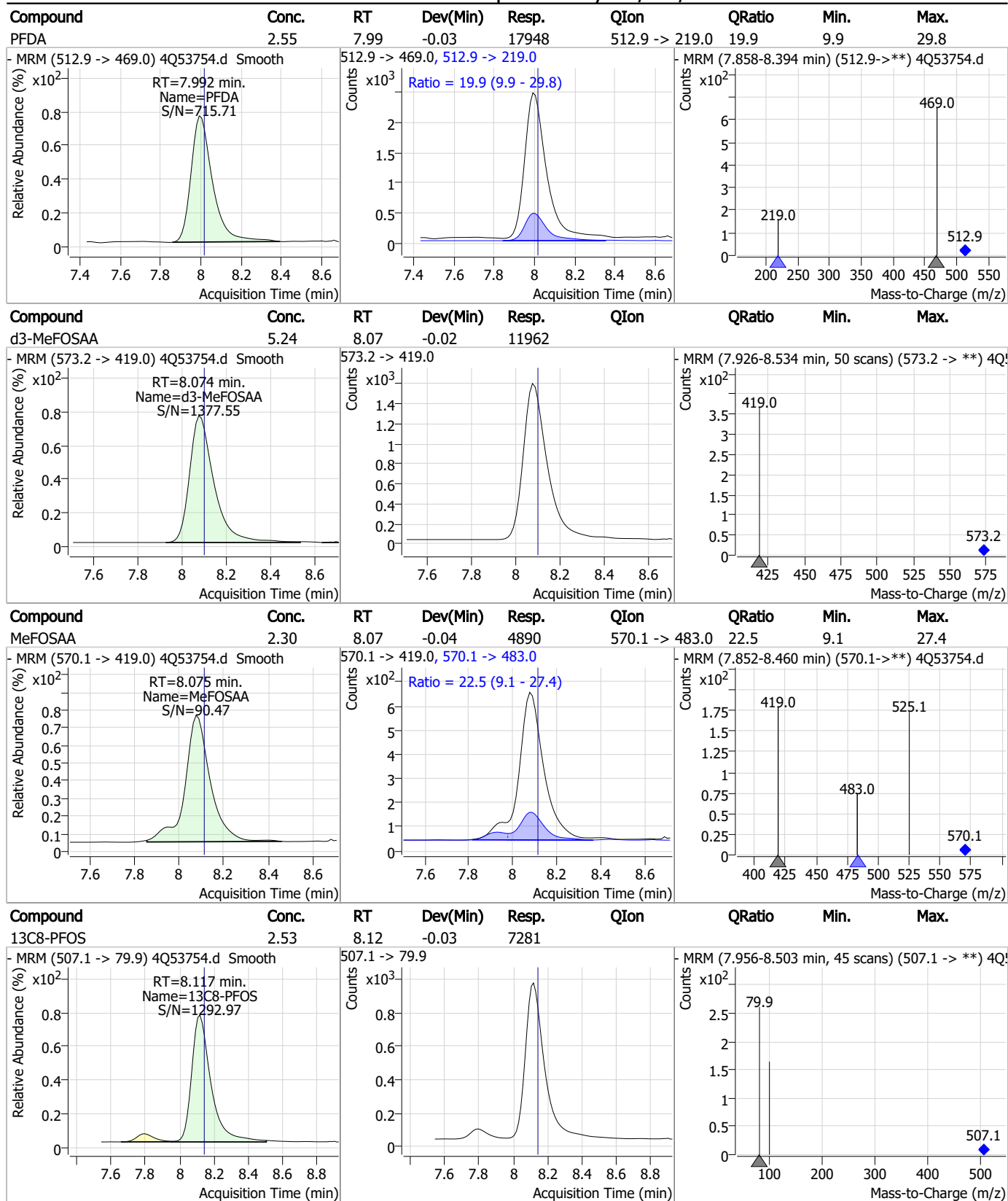
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Perfluorinated Compounds by LC/MS/MS



7.7.14

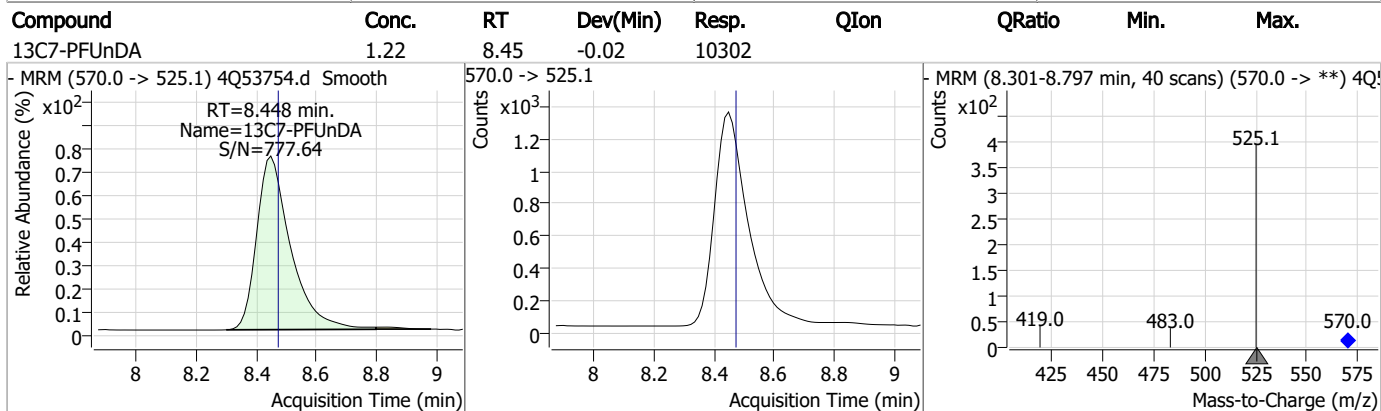
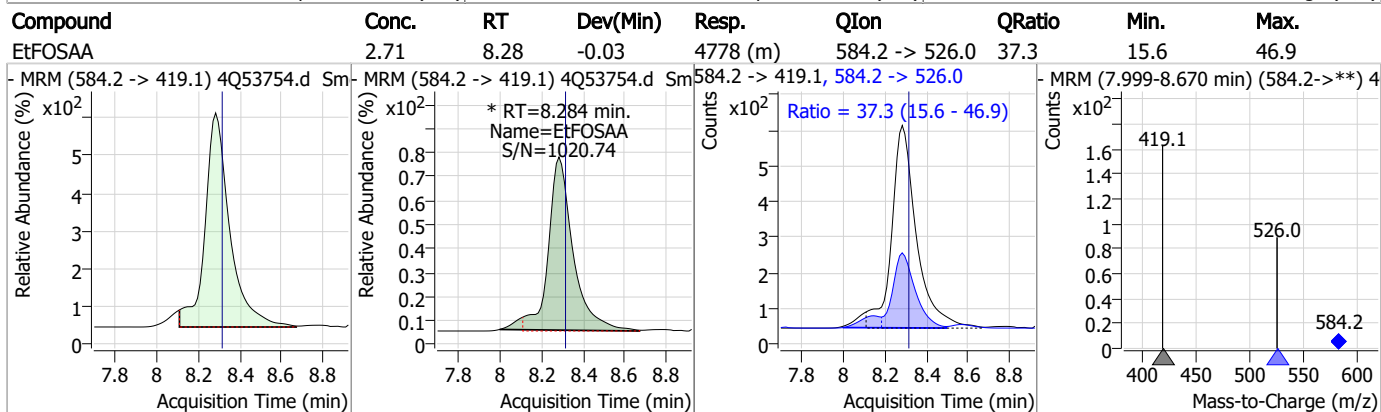
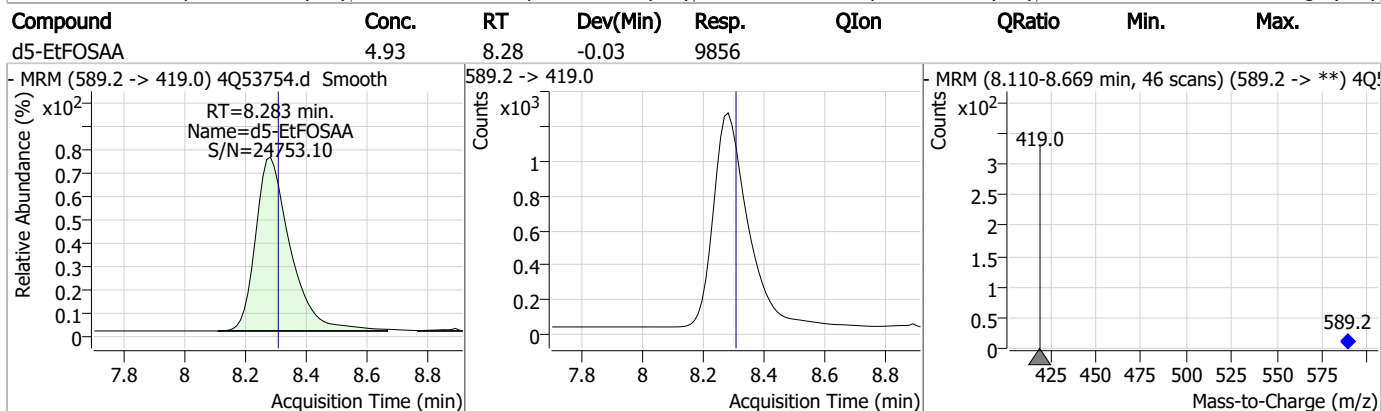
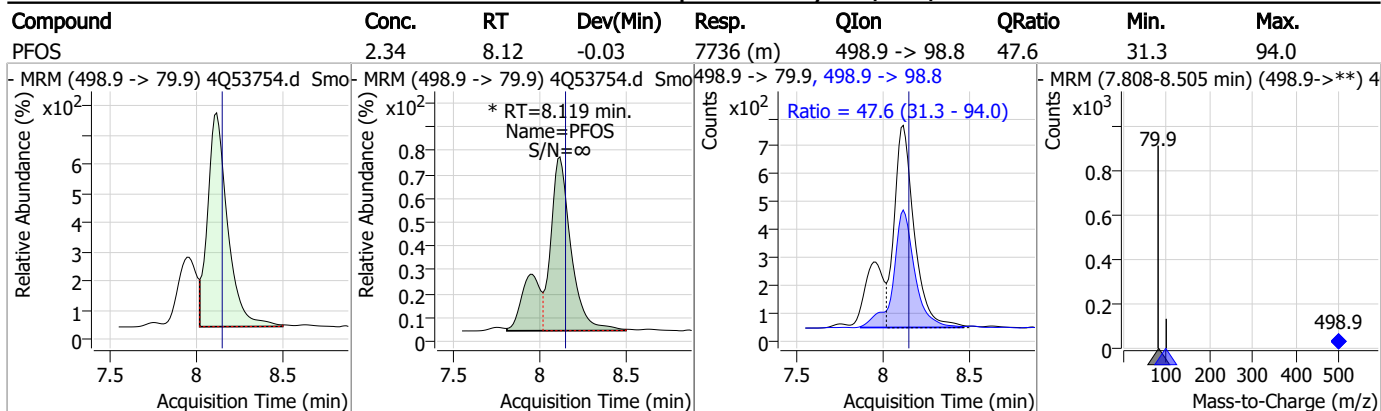
Perfluorinated Compounds by LC/MS/MS



7.7.14

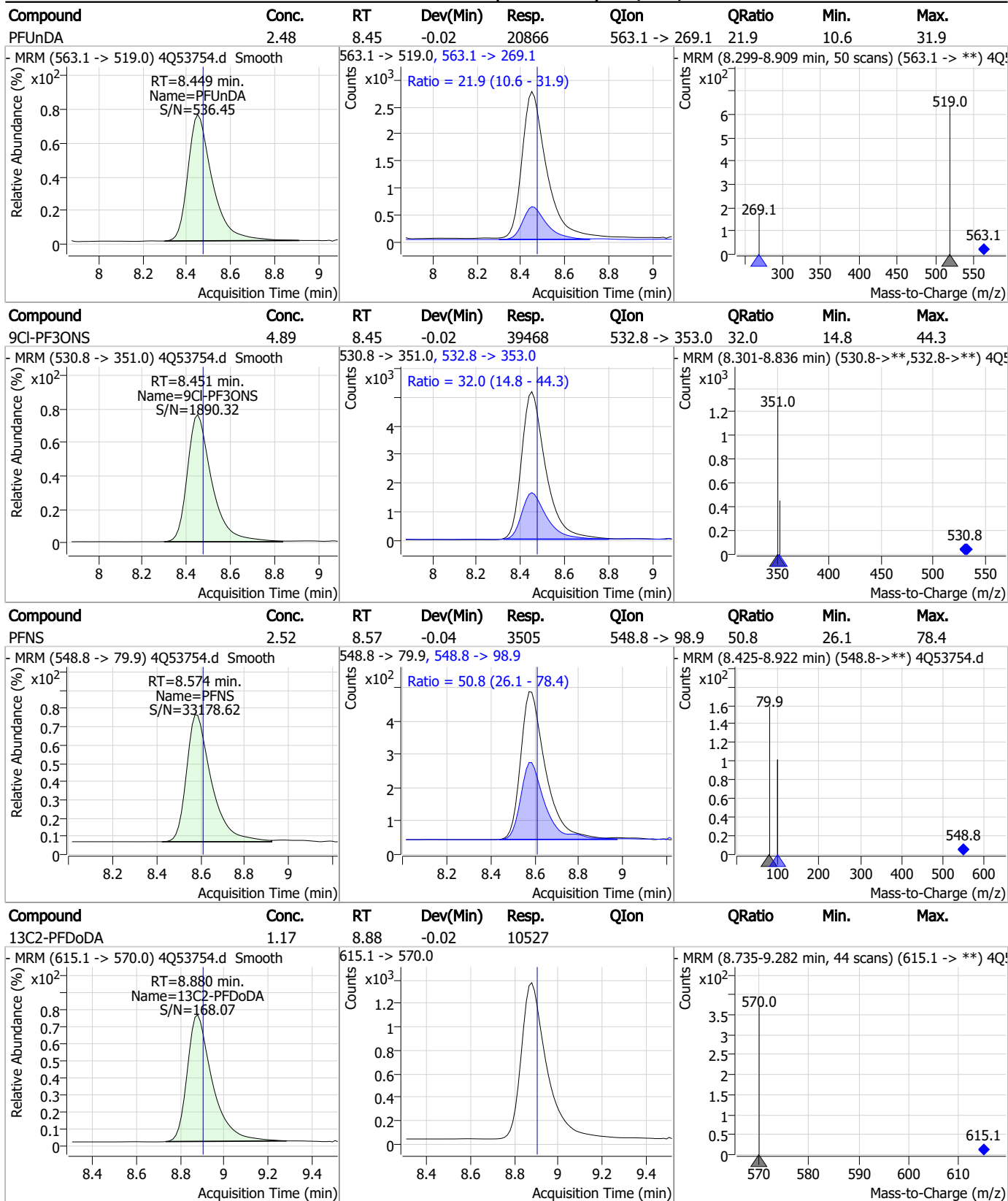
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Perfluorinated Compounds by LC/MS/MS



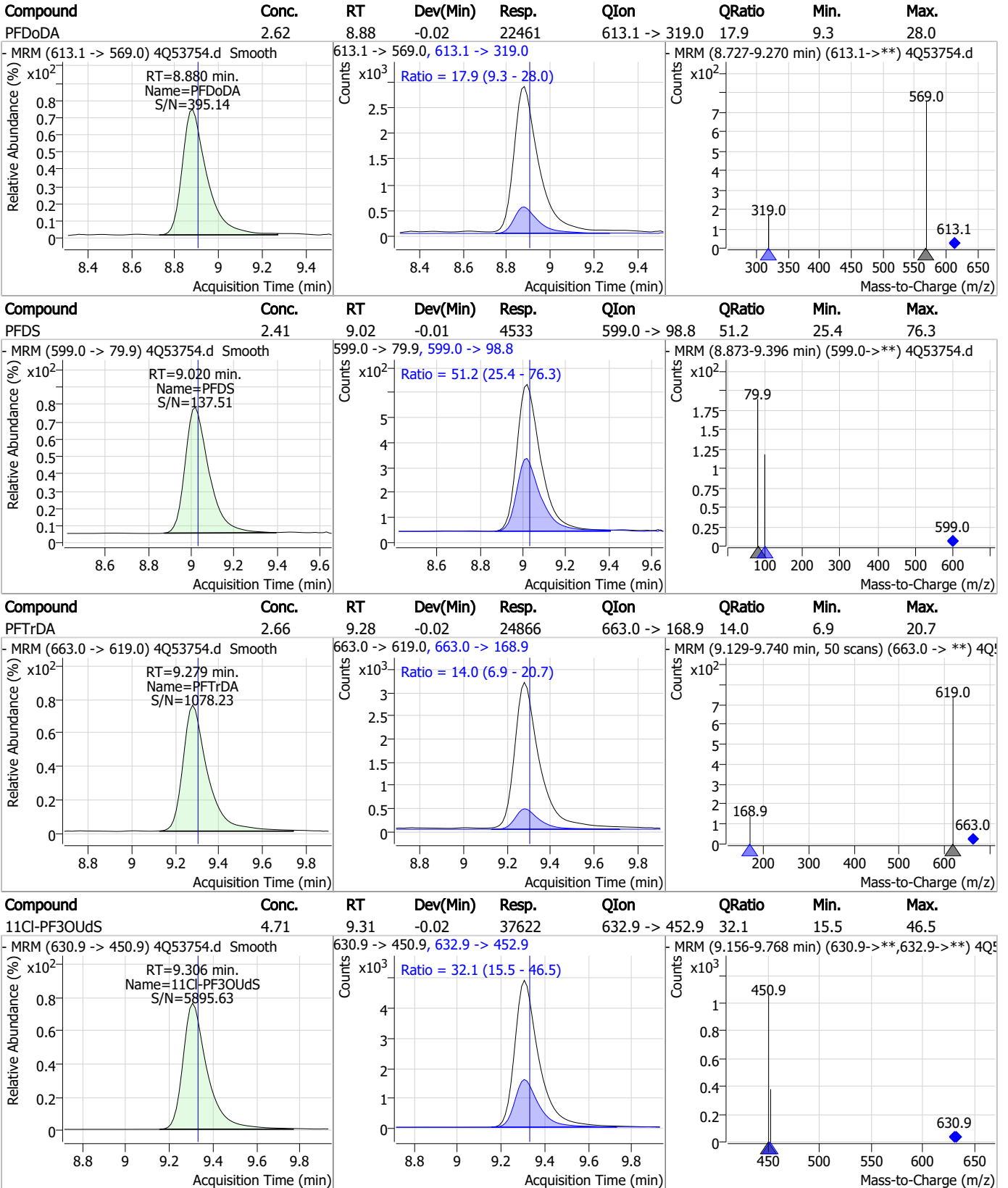
7.7.14
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Perfluorinated Compounds by LC/MS/MS



7.7.14

Perfluorinated Compounds by LC/MS/MS

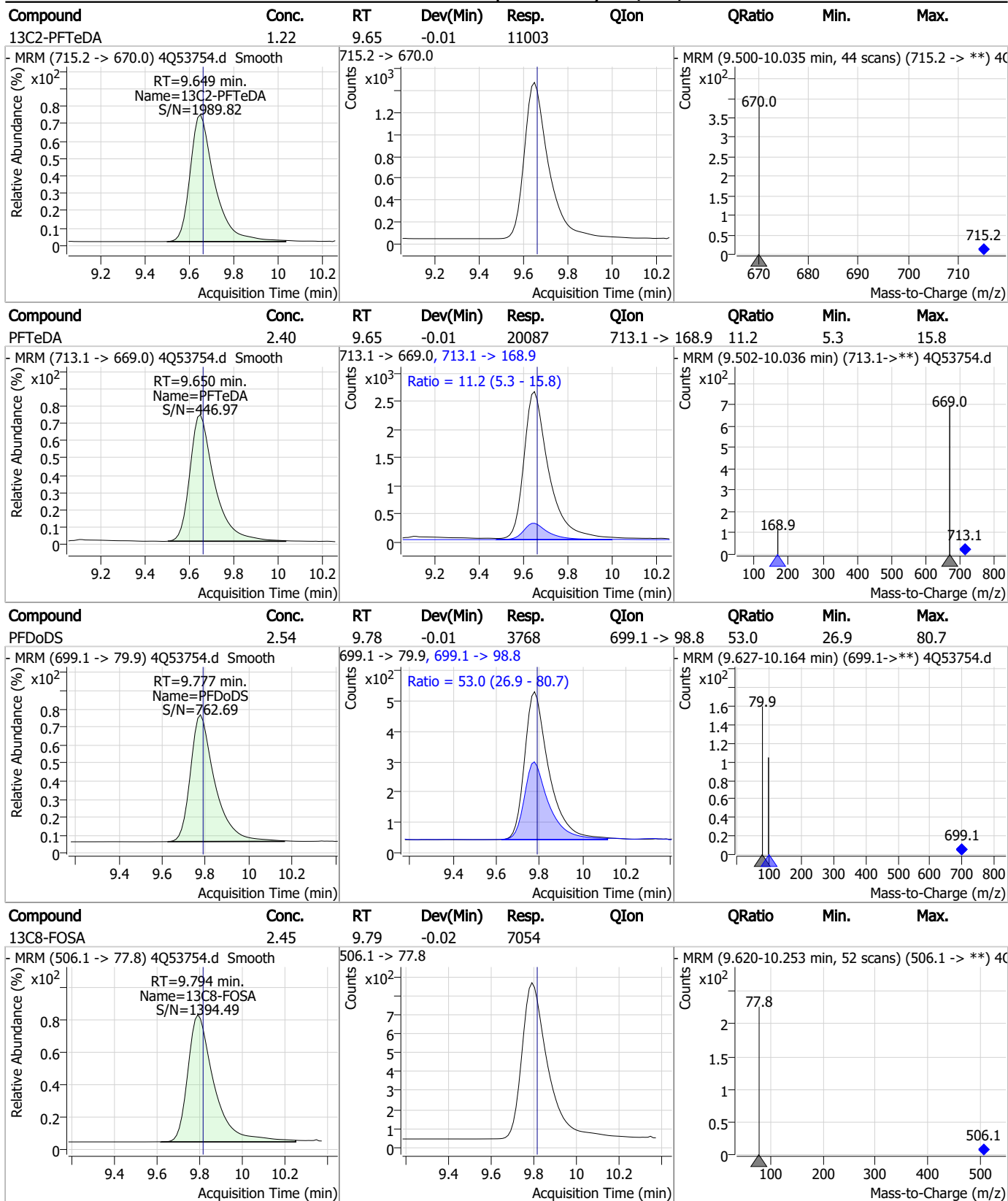


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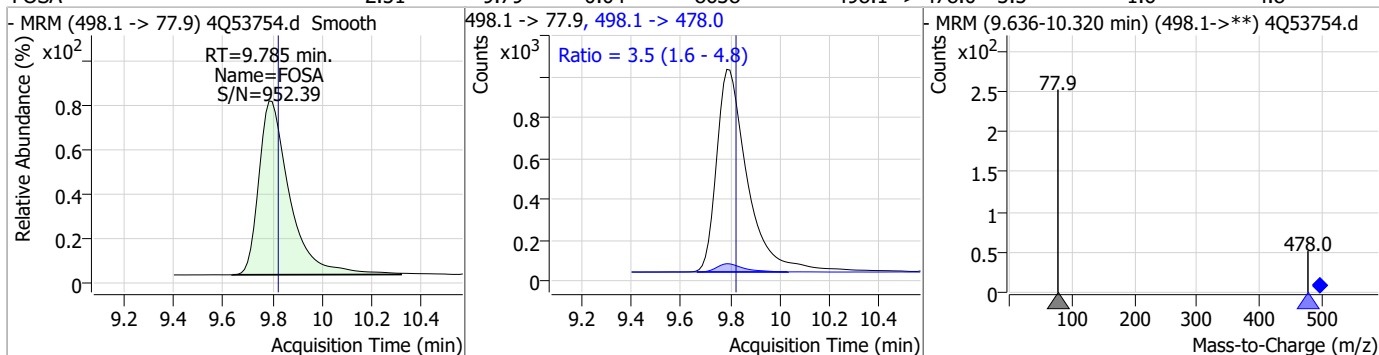
Perfluorinated Compounds by LC/MS/MS



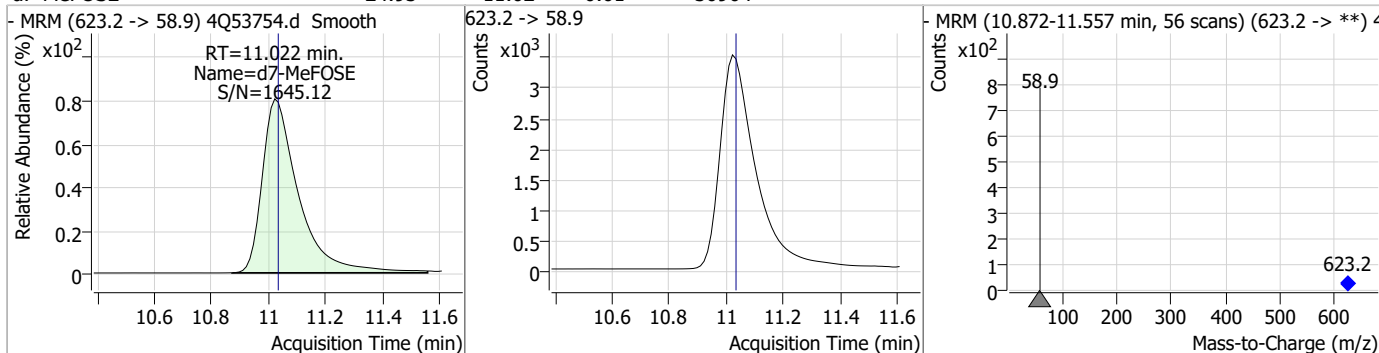
7.7.14

Perfluorinated Compounds by LC/MS/MS

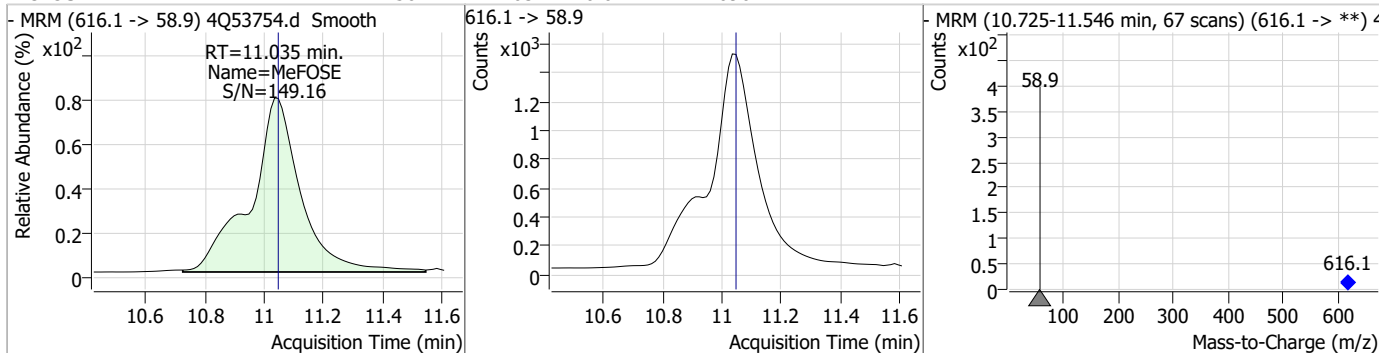
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.51	9.79	-0.04	8638	498.1 -> 478.0	3.5	1.6	4.8



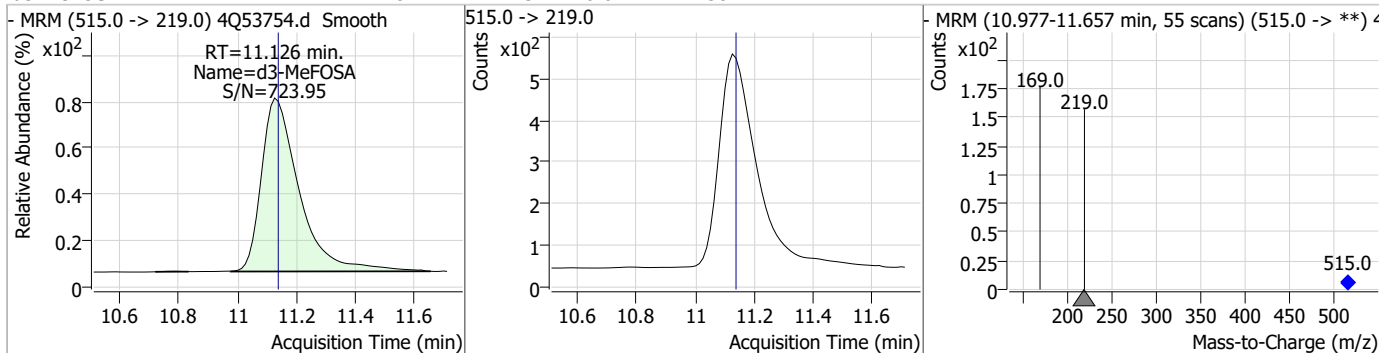
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.93	11.02	-0.01	30904				



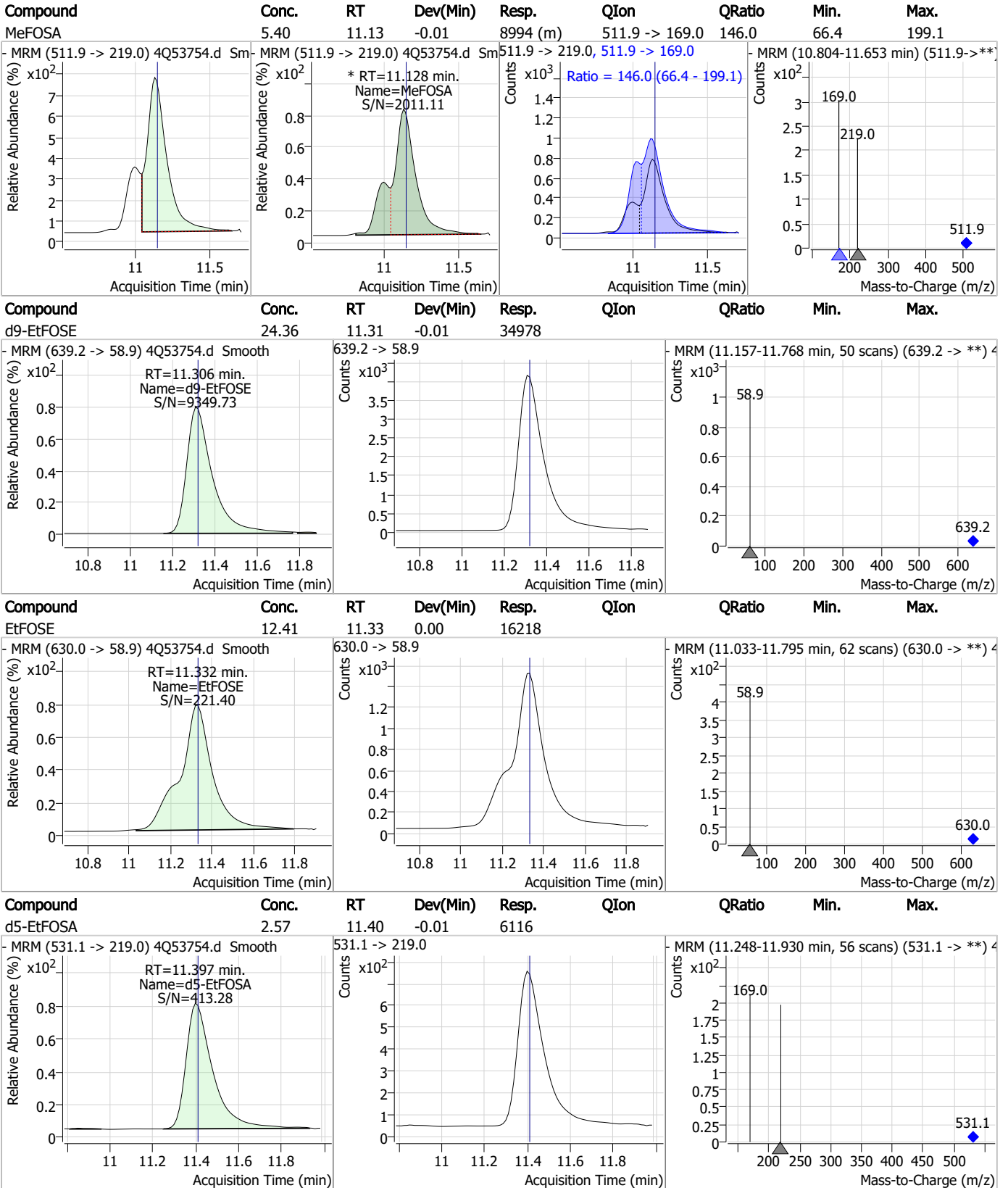
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.56	11.03	-0.01	17690				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.28	11.13	-0.01	4587				



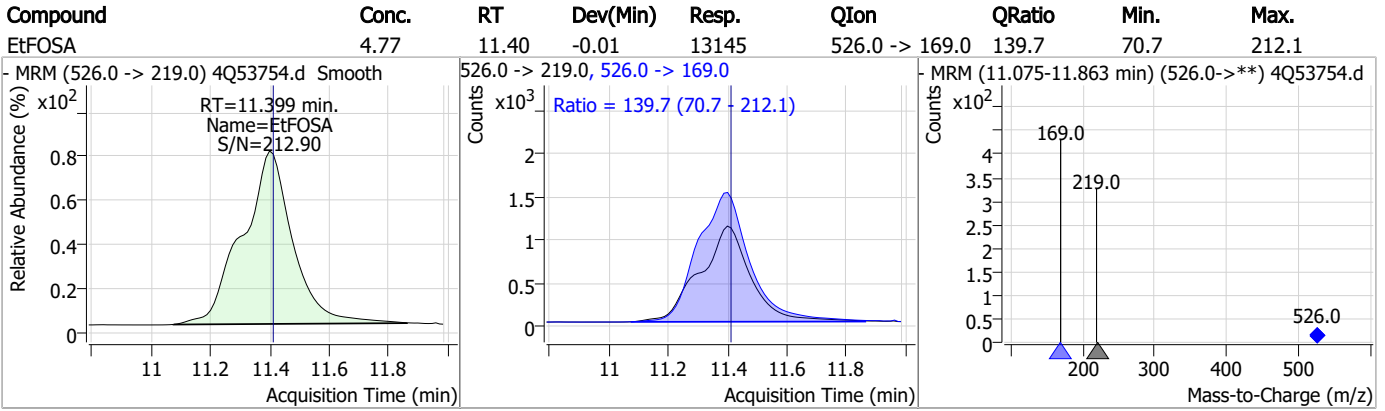
Perfluorinated Compounds by LC/MS/MS



7.7.14
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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q785-CC785 Method: EPA DRAFT 1633
Lab FileID: 4Q53754.D Analyst approved: 11/14/23 13:55 Anna Ludwig
Injection Time: 11/13/23 21:38 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
MeFOSA	31506-32-8		11.13	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53766.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 11/14/2023 12:35:58 AM
 Sample Name : cc785-4
 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	2.636	216.8 -> 171.9	87567	10.00 µg/L	-0.062
M5-PFPeA	4.125	268.3 -> 223.0	37244	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	28097	2.50 µg/L	-0.050
M4-PFHpA	6.255	367.1 -> 322.0	27427	2.50 µg/L	-0.050
M8-PFOA	6.952	421.1 -> 376.0	31671	2.50 µg/L	-0.037
M9-PFNA	7.509	472.1 -> 427.0	11463	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	8950	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	10612	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	11109	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	10457	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	7104	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	8442	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6454	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7549	2.50 µg/L	-0.026
M2-4:2FTS	4.996	329.1 -> 80.9	888	5.00 µg/L	-0.050
M2-6:2FTS	6.736	429.1 -> 80.9	1732	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2278	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	13154	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	25832	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	10403	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	30056	25.00 µg/L	-0.012
M9-EtFOSE	11.306	639.2 -> 58.9	34407	25.00 µg/L	-0.012
M5-EtFOSA	11.397	531.1 -> 219.0	6003	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4693	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6489	2.50 µg/L	-0.026
13C3-PFBA	2.641	216.0 -> 172.0	42549	5.00 µg/L	-0.062
18O2-PFHxS	7.016	403.0 -> 83.9	4412	2.50 µg/L	-0.038
13C4-PFOA	6.952	417.1 -> 372.0	34846	2.50 µg/L	-0.037
13C2-PFDA	7.992	515.1 -> 470.1	10196	1.25 µg/L	-0.038
13C5-PFNA	7.509	468.0 -> 423.0	13249	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	31285	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	4.996	329.1 -> 80.9	888	5.88 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.6%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1732	5.44 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.9%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2278	5.08 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C2-PFDoDA	8.880	615.1 -> 570.0	11109	1.21 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.6%		
13C2-PFTeDA	9.649	715.2 -> 670.0	10457	1.13 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 90.3%		
13C3-PFBS	5.152	302.1 -> 79.9	8442	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	6454	2.36 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 = 94.4%	
13C4-PFBA	2.636	216.8 -> 171.9	87567	9.88 µg/L	-0.062
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C4-PFHpA	6.255	367.1 -> 322.0	27427	2.51 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C5-PFHxA	5.297	318.0 -> 273.0	28097	2.41 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.3%	
13C5-PFPeA	4.125	268.3 -> 223.0	37244	4.88 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C6-PFDA	7.992	519.1 -> 474.1	8950	1.19 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.4%	
13C7-PFUnDA	8.448	570.0 -> 525.1	10612	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C8-FOSA	9.794	506.1 -> 77.8	7104	2.29 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.6%	
13C8-PFOA	6.952	421.1 -> 376.0	31671	2.55 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C8-PFOS	8.117	507.1 -> 79.9	7549	2.44 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.5%	
13C9-PFNA	7.509	472.1 -> 427.0	11463	1.10 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 87.8%	
d3-MeFOSAA	8.074	573.2 -> 419.0	13154	5.35 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.9%	
13C3-HFPO-DA	5.652	286.9 -> 168.9	25832	9.70 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.0%	
d3-MeFOSA	11.126	515.0 -> 219.0	4693	2.17 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 86.7%	
d5-EtFOSAA	8.283	589.2 -> 419.0	10403	4.83 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.5%	
d7-MeFOSE	11.022	623.2 -> 58.9	30056	22.48 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.9%	
d9-EtFOSE	11.306	639.2 -> 58.9	34407	22.22 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 88.9%	
d5-EtFOSA	11.397	531.1 -> 219.0	6003	2.34 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.5%	
Target Compounds					QValue
4:2FTS	4.997	327.1 -> 307.0	15210	8.67 µg/L	100
		327.1 -> 80.9	6449		
6:2FTS	6.724	427.1 -> 407.0	18811	10.04 µg/L	96
		427.1 -> 80.9	6802		
8:2FTS	7.792	527.1 -> 507.0	13174	10.63 µg/L	99
		527.1 -> 80.8	5554		
EtFOSAA	8.284	584.2 -> 419.1	5022	2.70 µg/L	82
		584.2 -> 526.0	2056		
FOSA	9.798	498.1 -> 77.9	8578	2.48 µg/L	98
		498.1 -> 478.0	321		
MeFOSAA	8.075	570.1 -> 419.0	5735	2.45 µg/L	92
		570.1 -> 483.0	1246		
PFBA	2.645	212.8 -> 168.9	31347	9.84 µg/L	100
PFBS	5.153	298.7 -> 79.9	6078	2.03 µg/L	94
		298.7 -> 98.8	2567		
PFDA	7.992	512.9 -> 469.0	18925	2.59 µg/L	99
		512.9 -> 219.0	3850		
PFDODA	8.880	613.1 -> 569.0	21560	2.38 µg/L	100
		613.1 -> 319.0	4062		
PFDS	9.020	599.0 -> 79.9	4542	2.32 µg/L	100

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2304			
PFHpA	6.255	363.1 -> 319.0	43630	2.54	µg/L	100
		363.1 -> 169.0	7708			
PFHpS	7.612	449.0 -> 79.9	7276	2.44	µg/L	97
		449.0 -> 98.9	3558			
PFHxA	5.300	313.0 -> 269.0	24699	2.52	µg/L	99
		313.0 -> 118.9	764			
PFHxS	7.018	398.7 -> 79.9	5020	2.58	µg/L	m 88
		398.7 -> 98.9	2755			
PFNA	7.510	463.0 -> 419.0	22059	3.02	µg/L	99
		463.0 -> 219.0	5486			
PFNS	8.586	548.8 -> 79.9	3703	2.57	µg/L	95
		548.8 -> 98.9	1804			
PFOA	6.953	413.0 -> 369.0	34345	2.24	µg/L	98
		413.0 -> 169.0	7276			
PFOS	8.119	498.9 -> 79.9	8143	2.38	µg/L	m 75
		498.9 -> 98.8	3541			
PFPeA	4.127	263.0 -> 219.0	40579	5.01	µg/L	100
PFPeS	6.245	349.1 -> 79.9	5413	2.55	µg/L	99
		349.1 -> 98.9	2312			
PFTeDA	9.650	713.1 -> 669.0	21203	2.67	µg/L	99
		713.1 -> 168.9	2296			
PFTrDA	9.279	663.0 -> 619.0	24389	2.47	µg/L	96
		663.0 -> 168.9	3735			
PFUnDA	8.449	563.1 -> 519.0	22537	2.60	µg/L	97
		563.1 -> 269.1	5150			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	37478	4.65	µg/L	99
		632.9 -> 452.9	11782			
9Cl-PF3ONS	8.451	530.8 -> 351.0	40399	4.96	µg/L	99
		532.8 -> 353.0	11671			
ADONA	6.531	376.9 -> 250.9	103847	5.81	µg/L	99
		376.9 -> 84.8	25037			
HFPO-DA	5.653	284.9 -> 168.9	13966	5.11	µg/L	98
		284.9 -> 184.9	1423			
3:3FTCA	3.573	241.0 -> 177.0	6014	12.12	µg/L	99
		241.0 -> 117.0	570			
5:3FTCA	5.983	341.0 -> 237.1	108778	62.97	µg/L	99
		341.0 -> 217.0	77826			
7:3FTCA	7.524	441.0 -> 316.9	48067	62.03	µg/L	98
		441.0 -> 336.9	115507			
EtFOSA	11.399	526.0 -> 219.0	13364	4.94	µg/L	99
		526.0 -> 169.0	19027			
EtFOSE	11.332	630.0 -> 58.9	16208	12.61	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	9445	5.55	µg/L	95
		511.9 -> 169.0	13137			
MeFOSE	11.047	616.1 -> 58.9	17903	13.07	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	3862	2.51	µg/L	96
		699.1 -> 98.8	2193			
NFDHA	5.179	295.0 -> 201.0	3676	5.67	µg/L	98
		295.0 -> 84.9	915			
PFMBA	4.529	279.0 -> 85.1	23244	4.98	µg/L	100
PFMPA	3.265	229.0 -> 84.9	26237	5.06	µg/L	100
PFEESA	5.684	314.8 -> 134.9	35794	4.61	µg/L	98
		314.8 -> 82.9	1226			

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



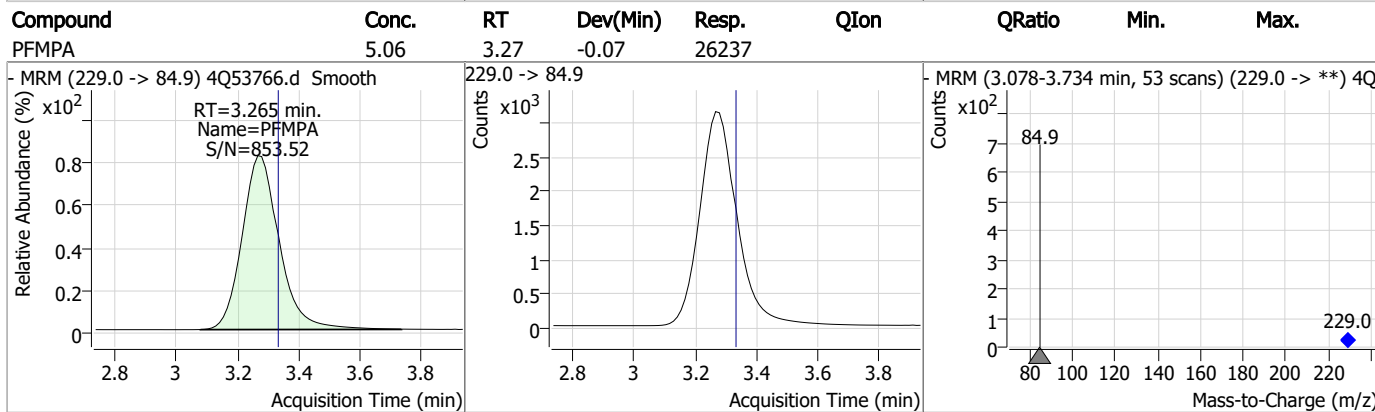
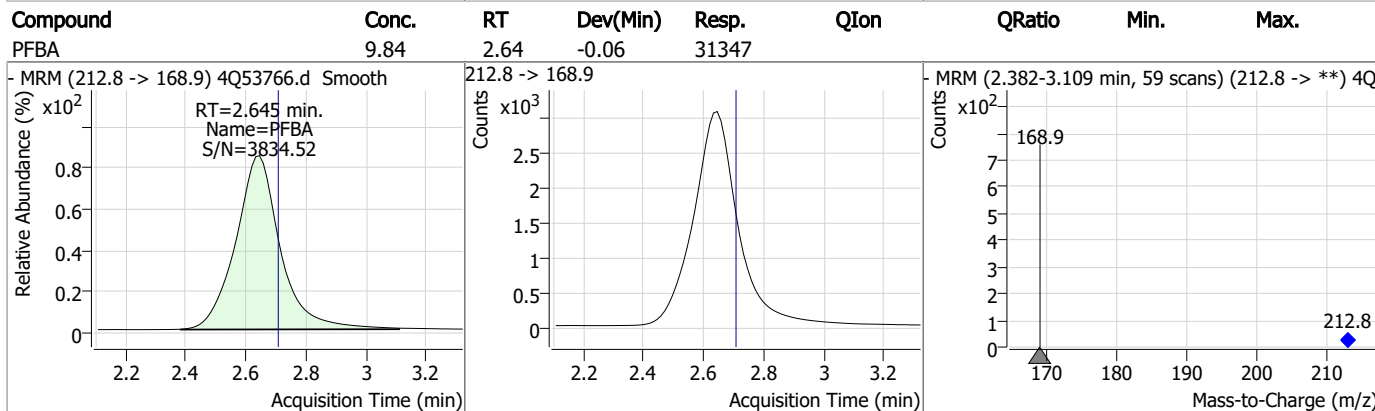
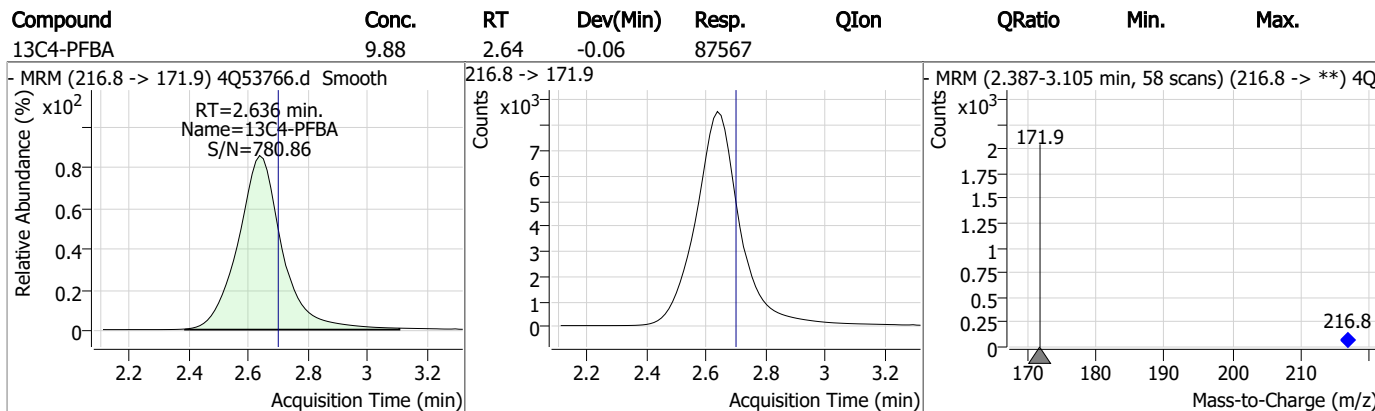
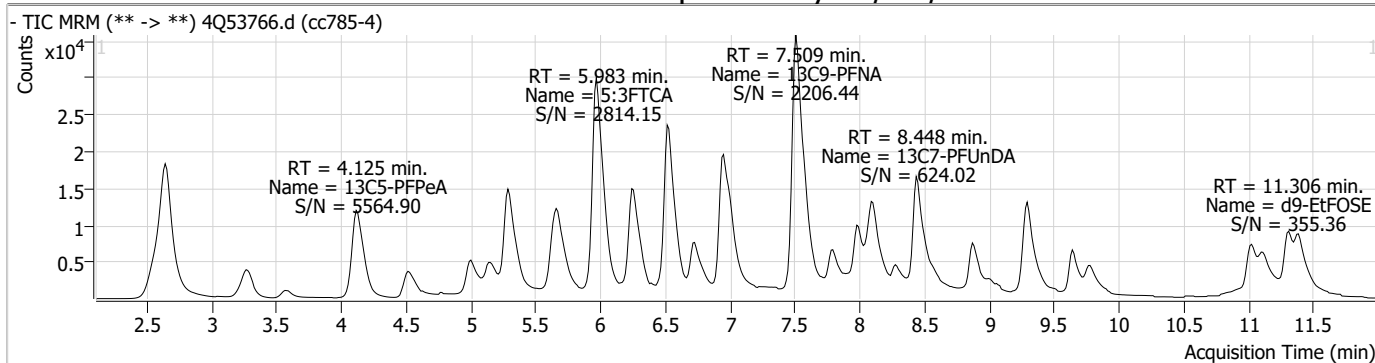
Perfluorinated Compounds by LC/MS/MS

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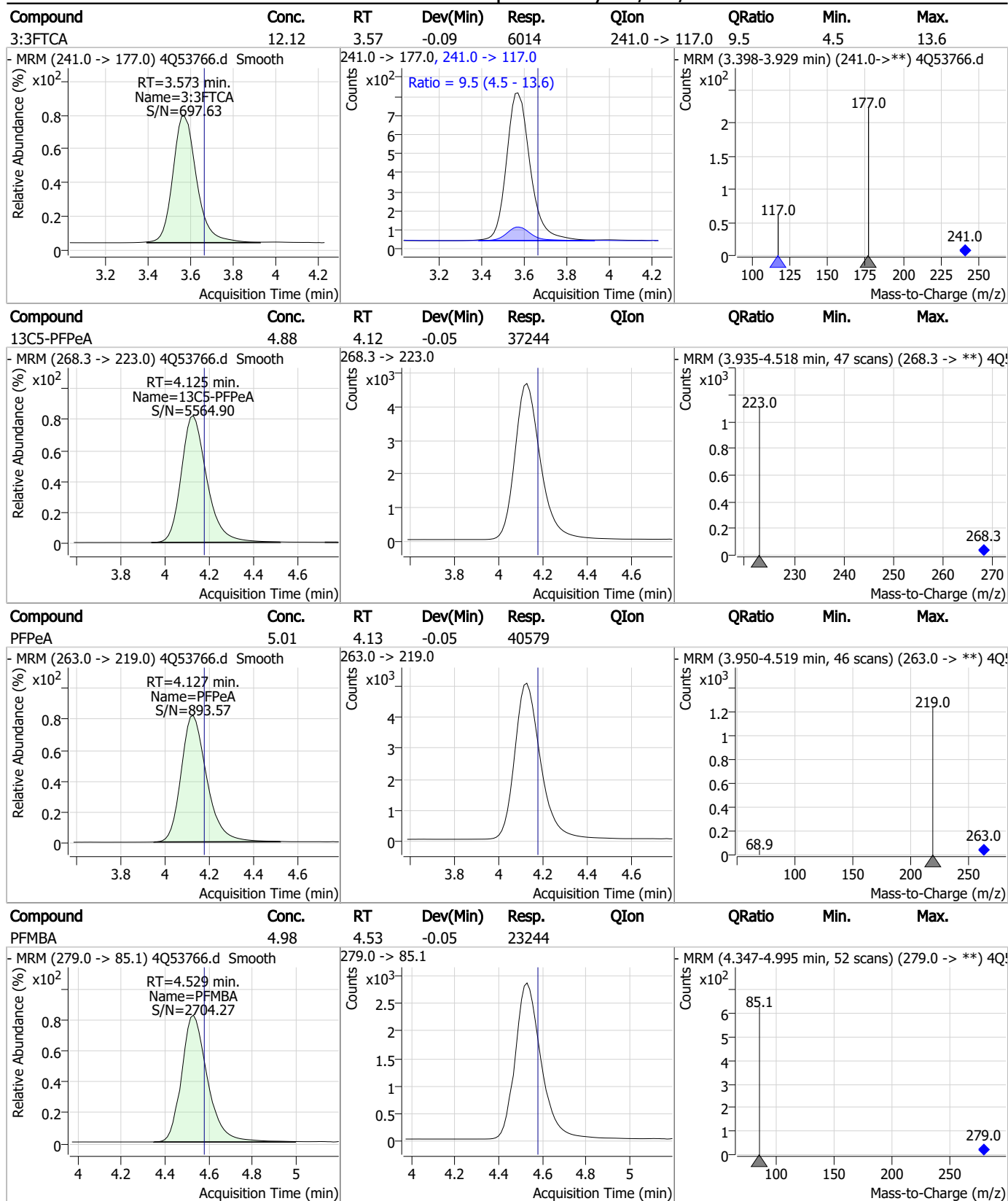
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Perfluorinated Compounds by LC/MS/MS



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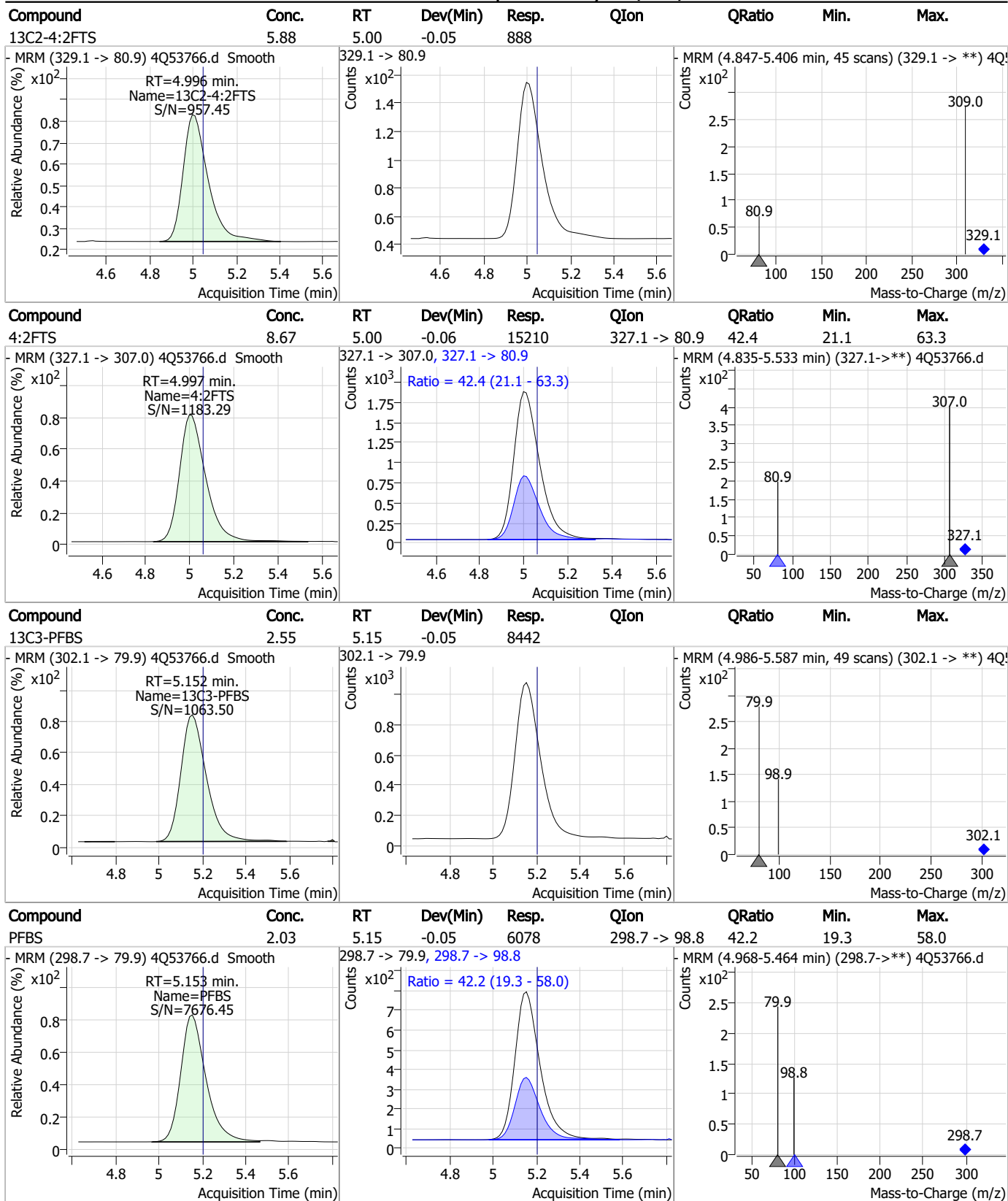
Perfluorinated Compounds by LC/MS/MS



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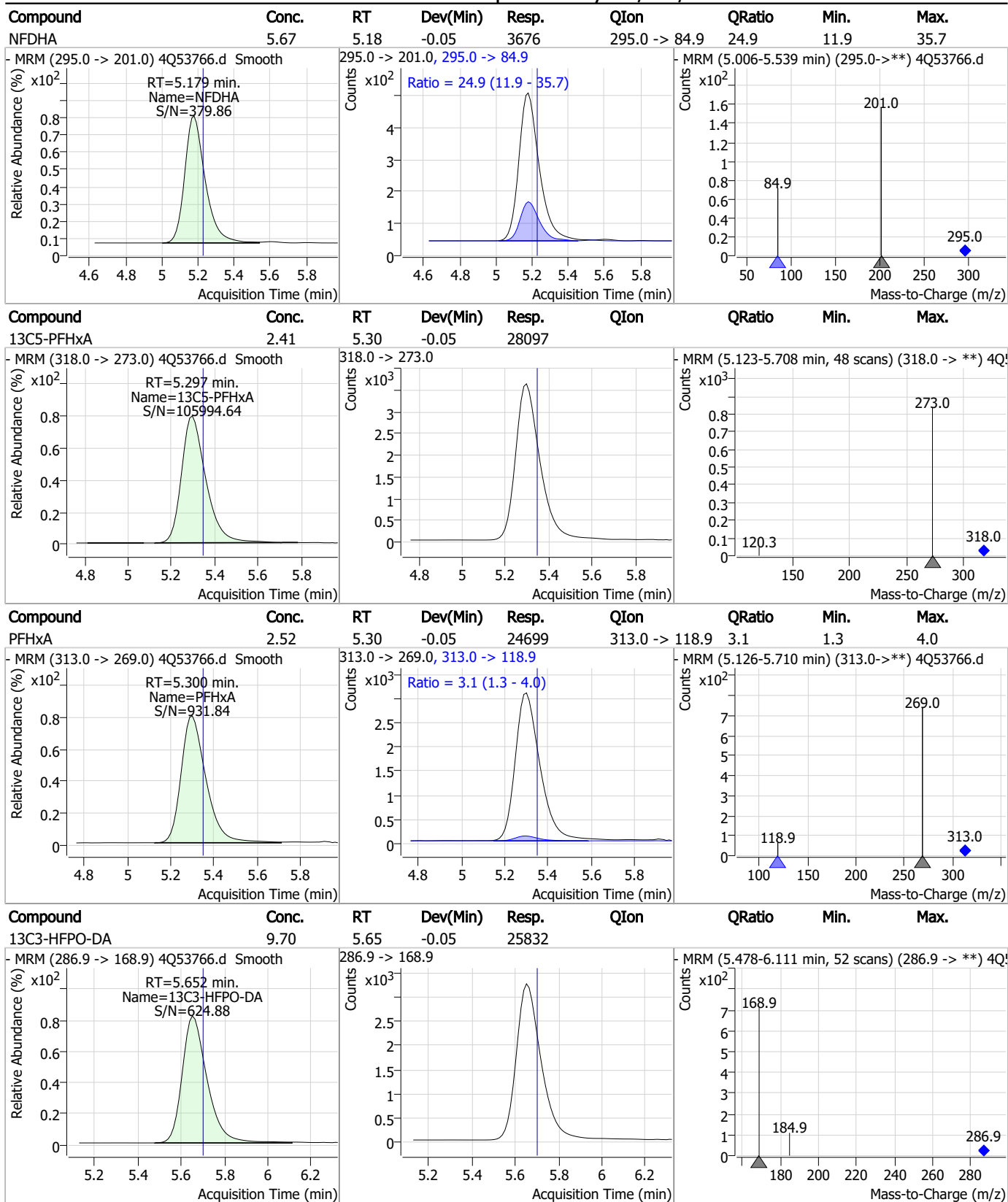


Perfluorinated Compounds by LC/MS/MS



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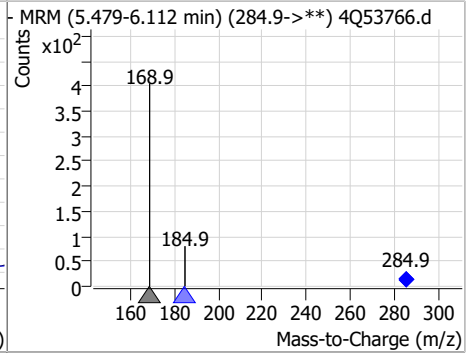
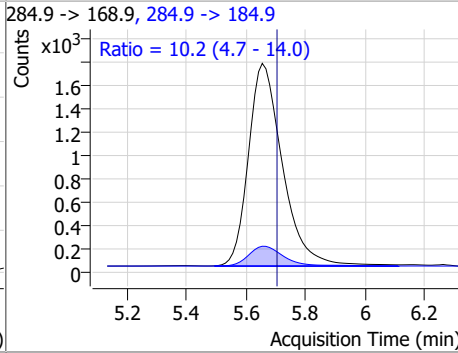
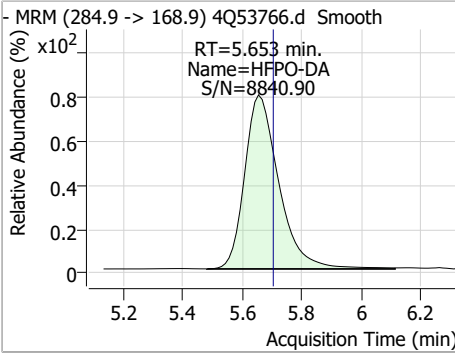
Perfluorinated Compounds by LC/MS/MS



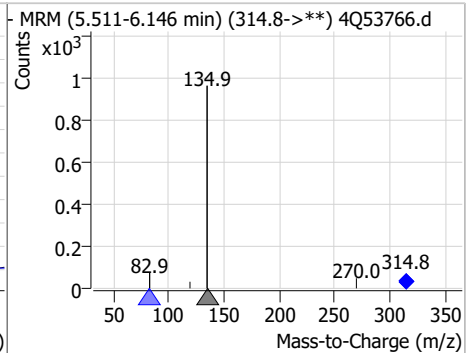
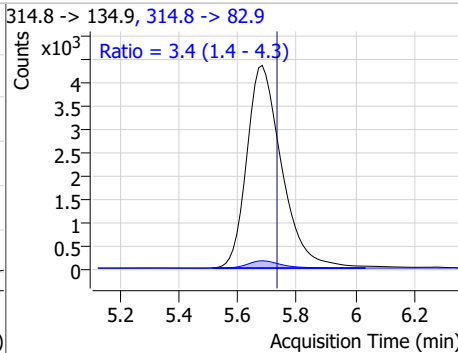
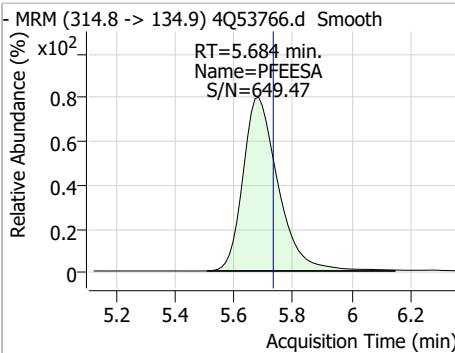
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Perfluorinated Compounds by LC/MS/MS

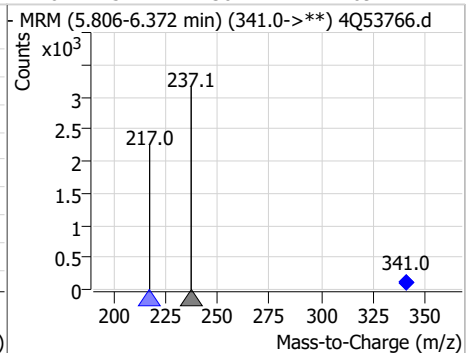
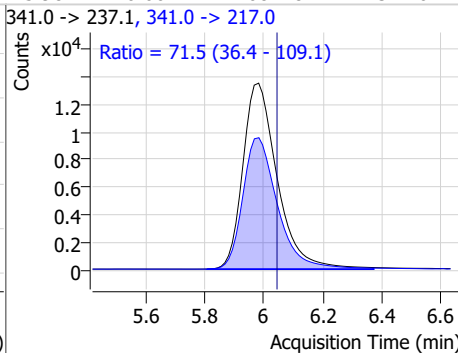
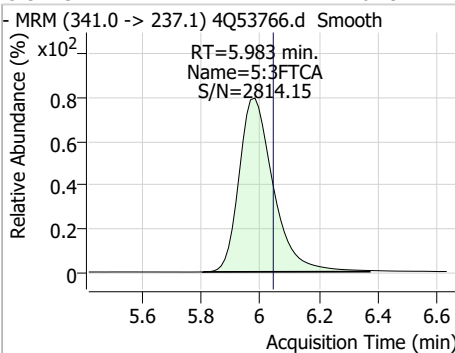
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	5.11	5.65	-0.05	13966	284.9 -> 184.9	10.2	4.7	14.0



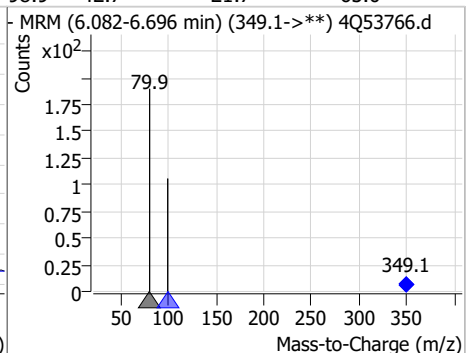
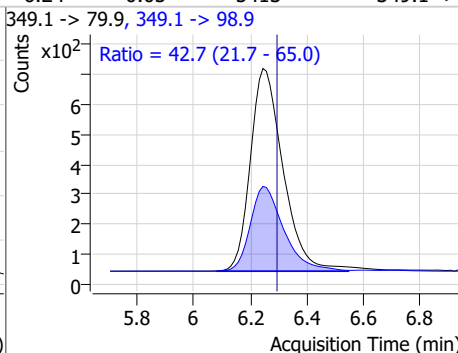
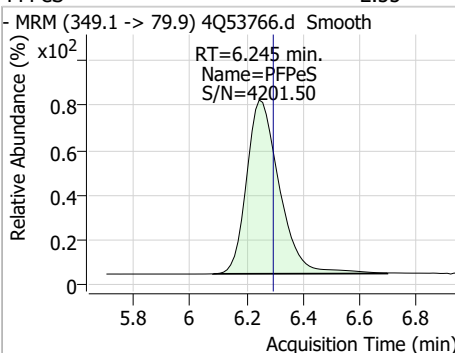
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.61	5.68	-0.05	35794	314.8 -> 82.9	3.4	1.4	4.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	62.97	5.98	-0.06	108778	341.0 -> 217.0	71.5	36.4	109.1

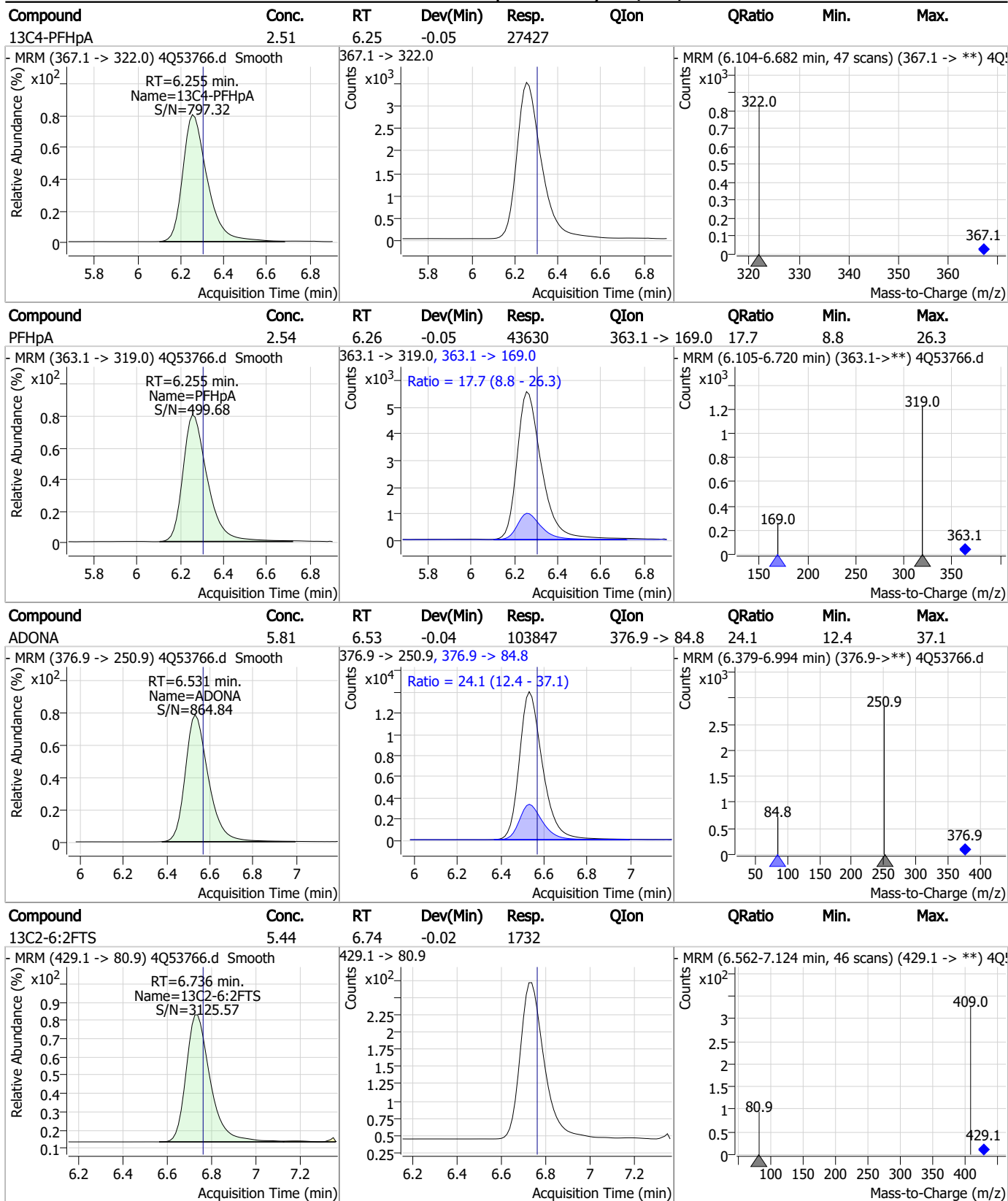


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.55	6.24	-0.05	5413	349.1 -> 98.9	42.7	21.7	65.0



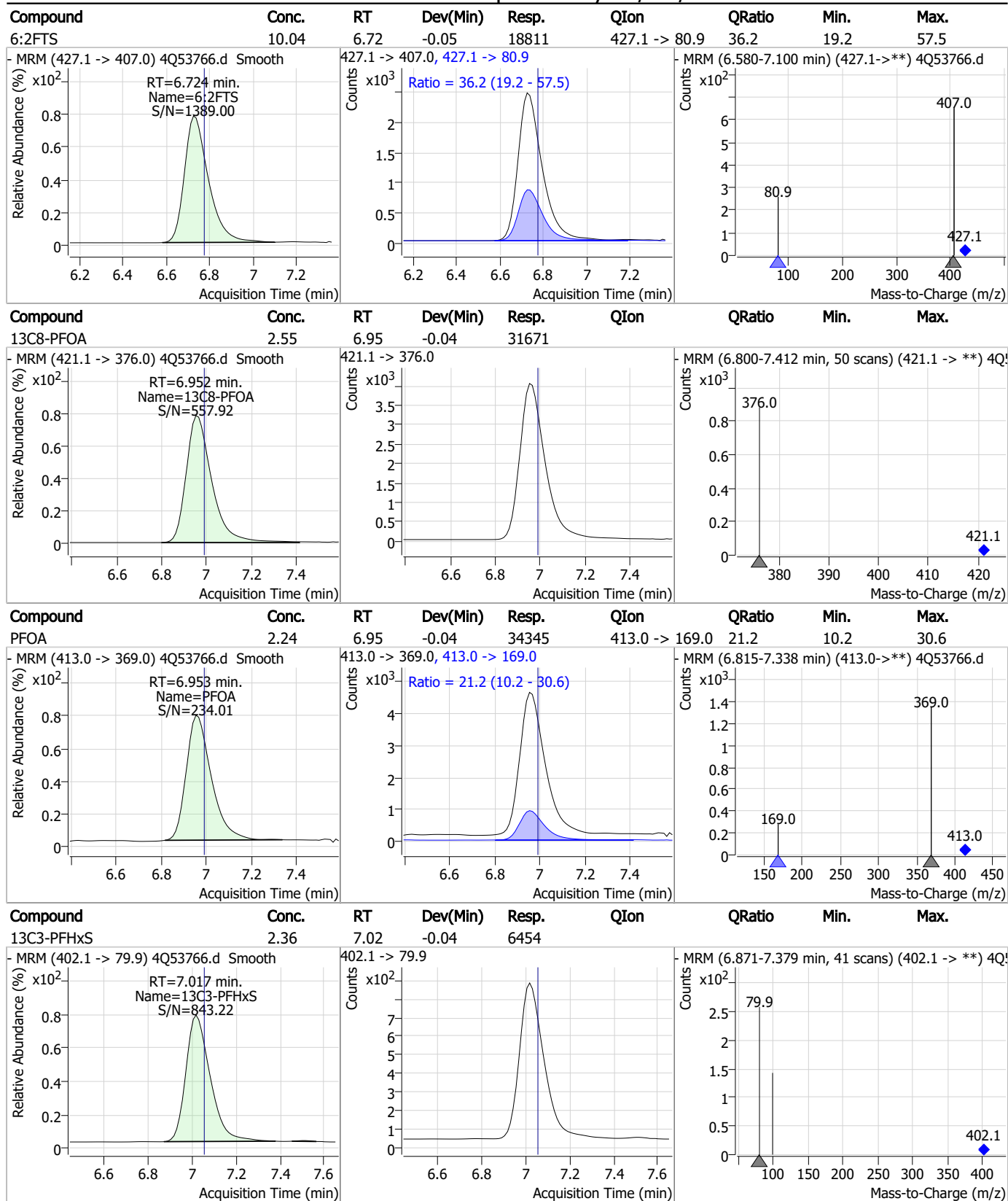
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Perfluorinated Compounds by LC/MS/MS



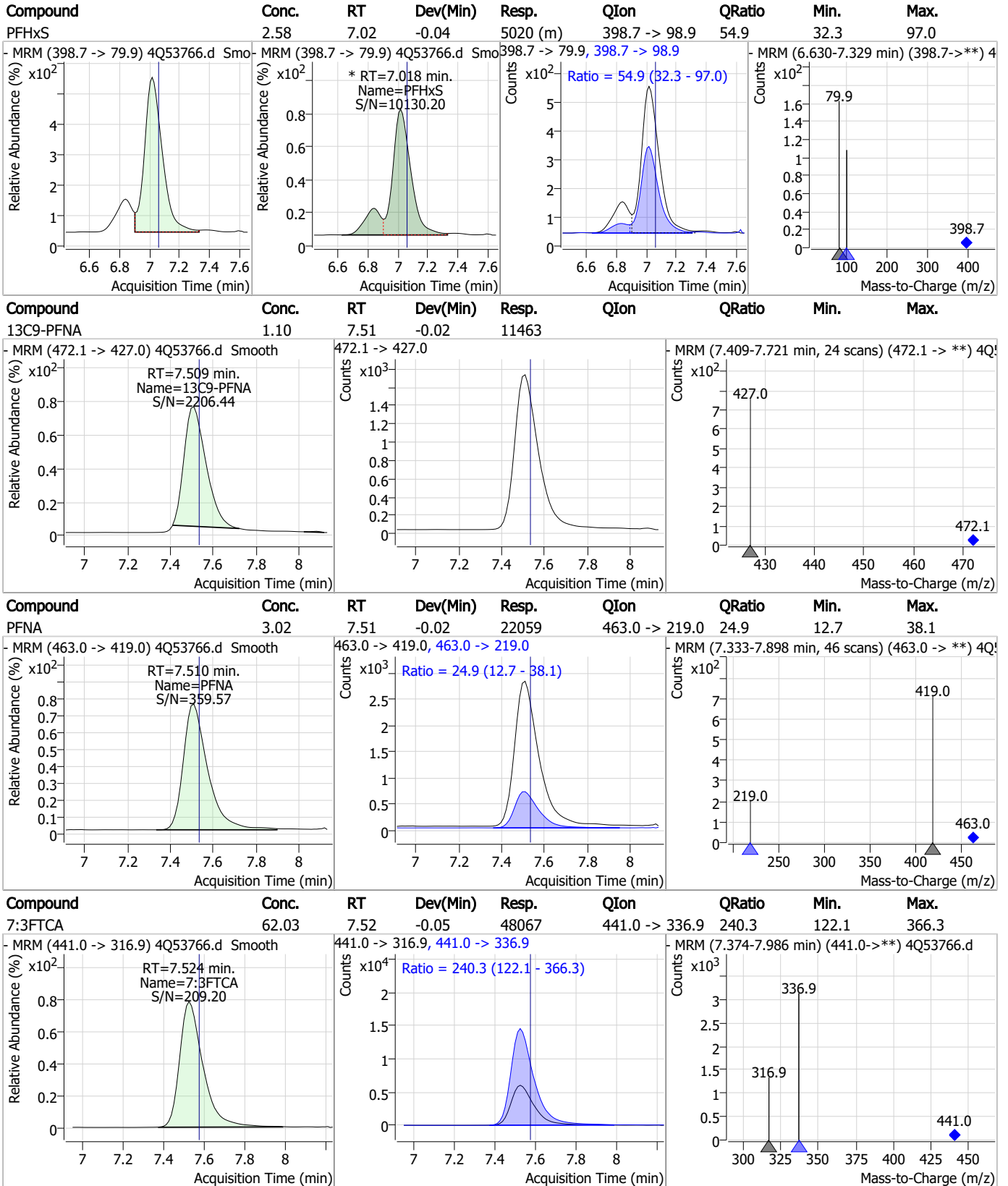
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Perfluorinated Compounds by LC/MS/MS



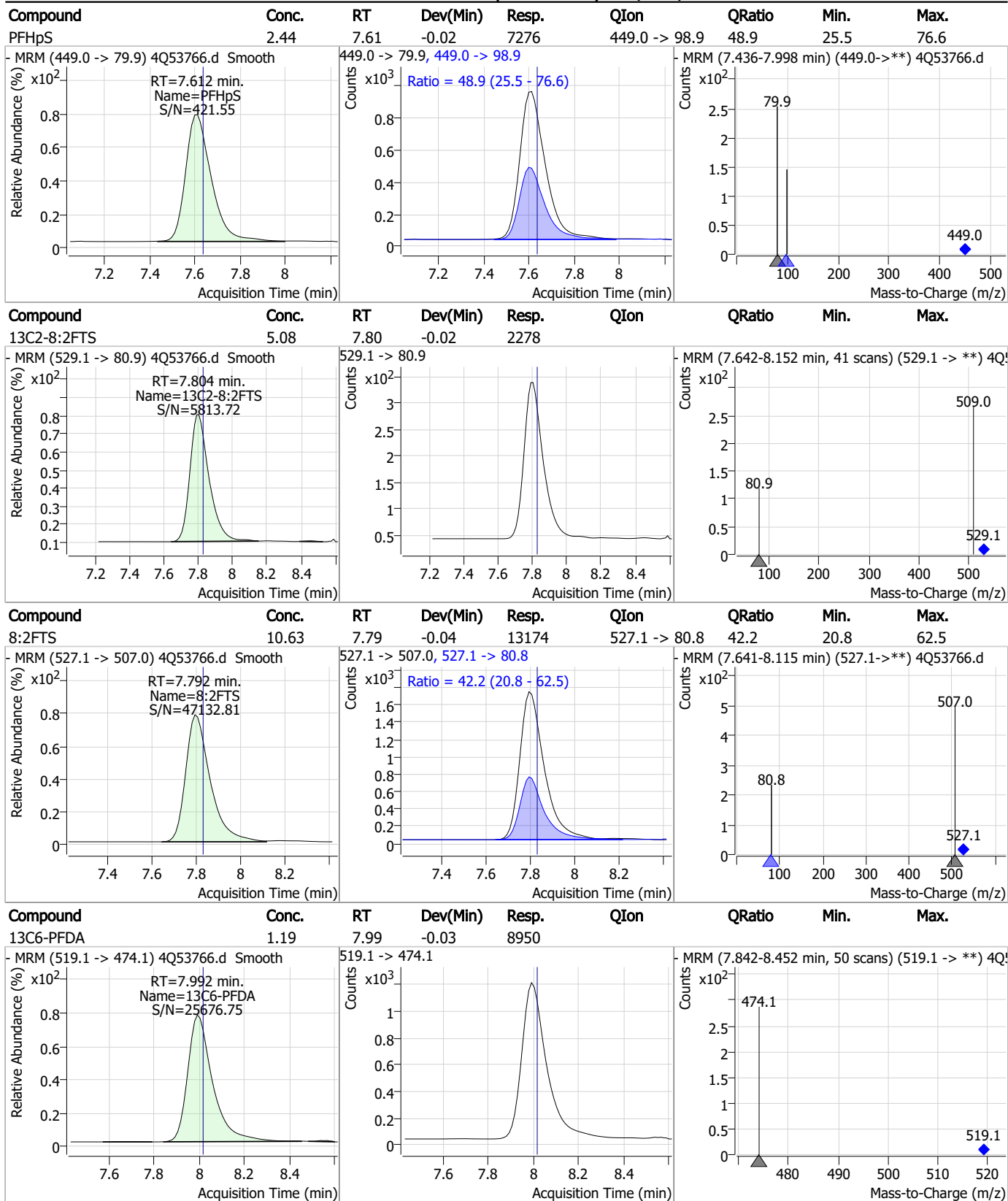
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Perfluorinated Compounds by LC/MS/MS



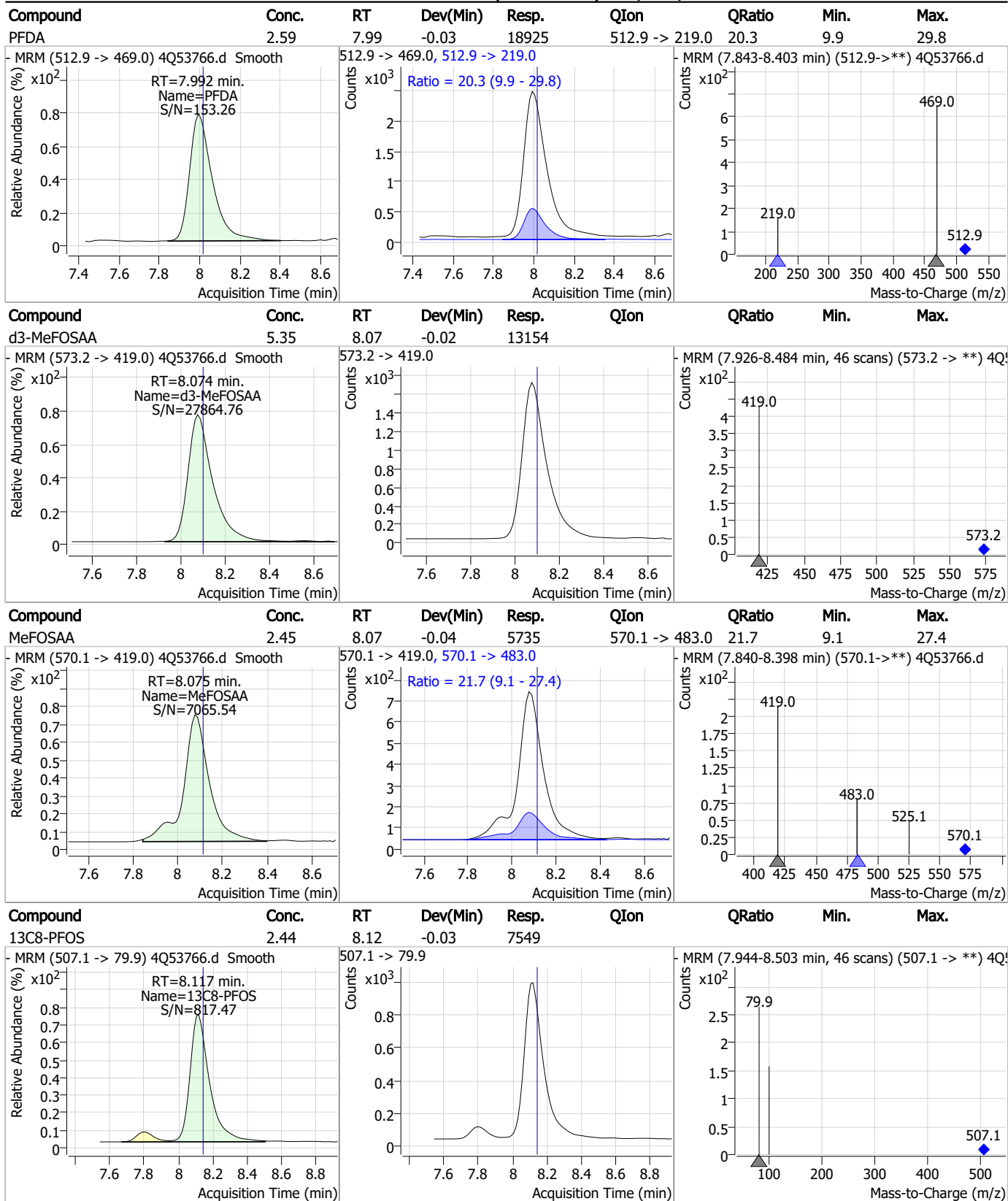
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Perfluorinated Compounds by LC/MS/MS



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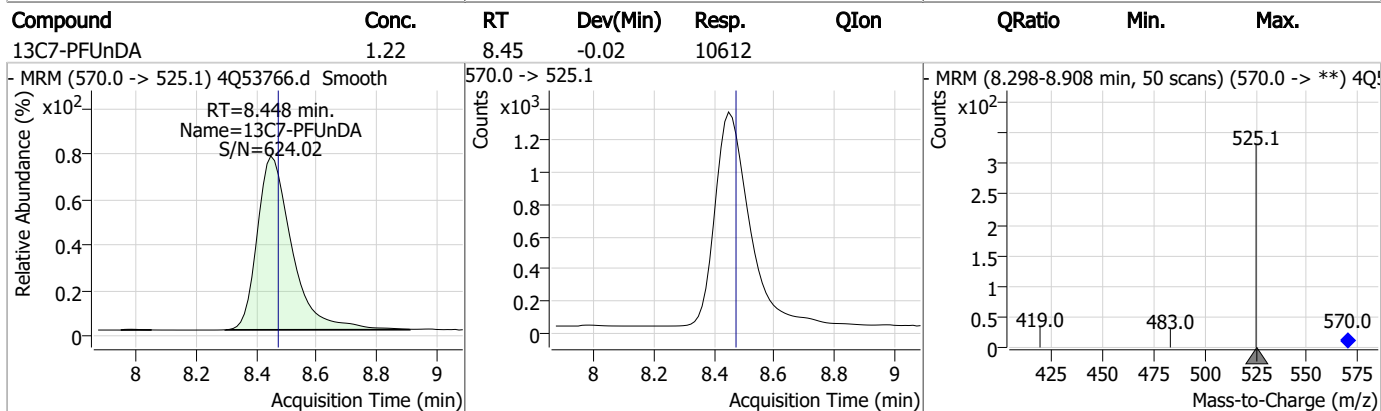
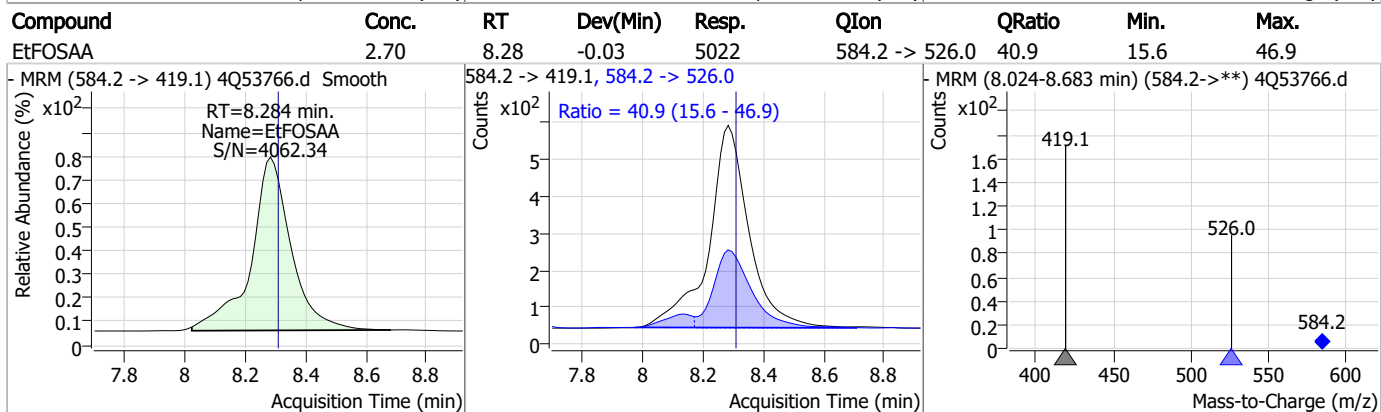
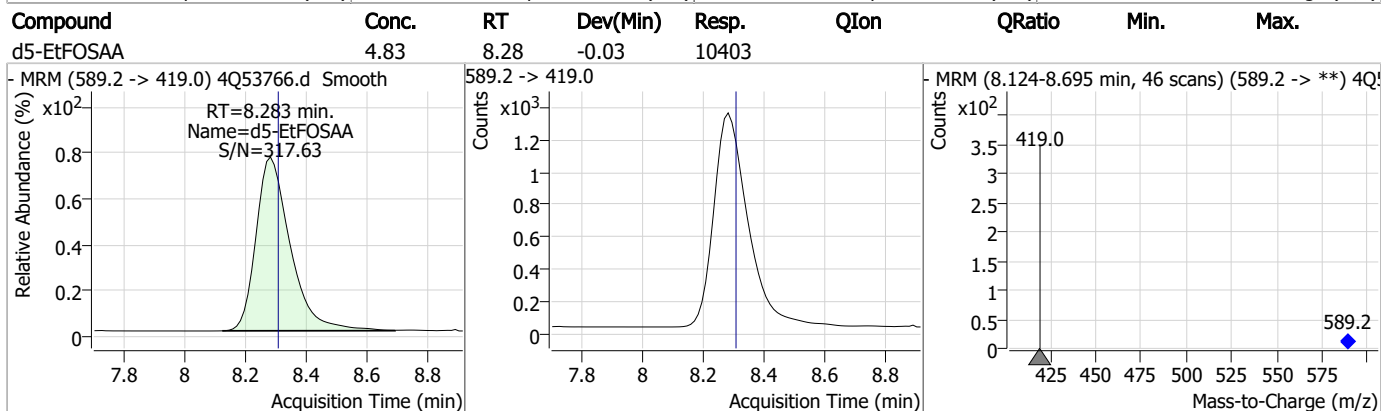
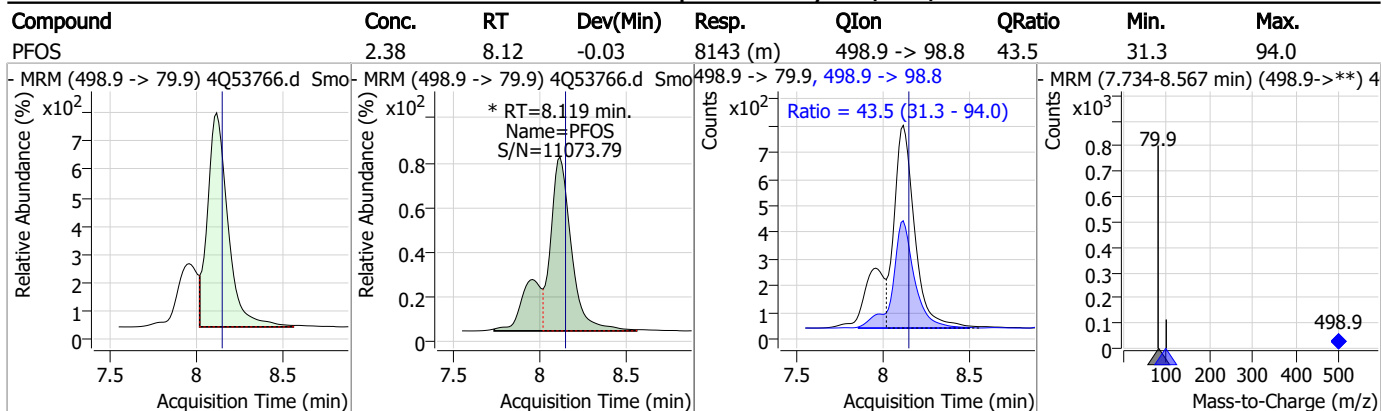
Perfluorinated Compounds by LC/MS/MS



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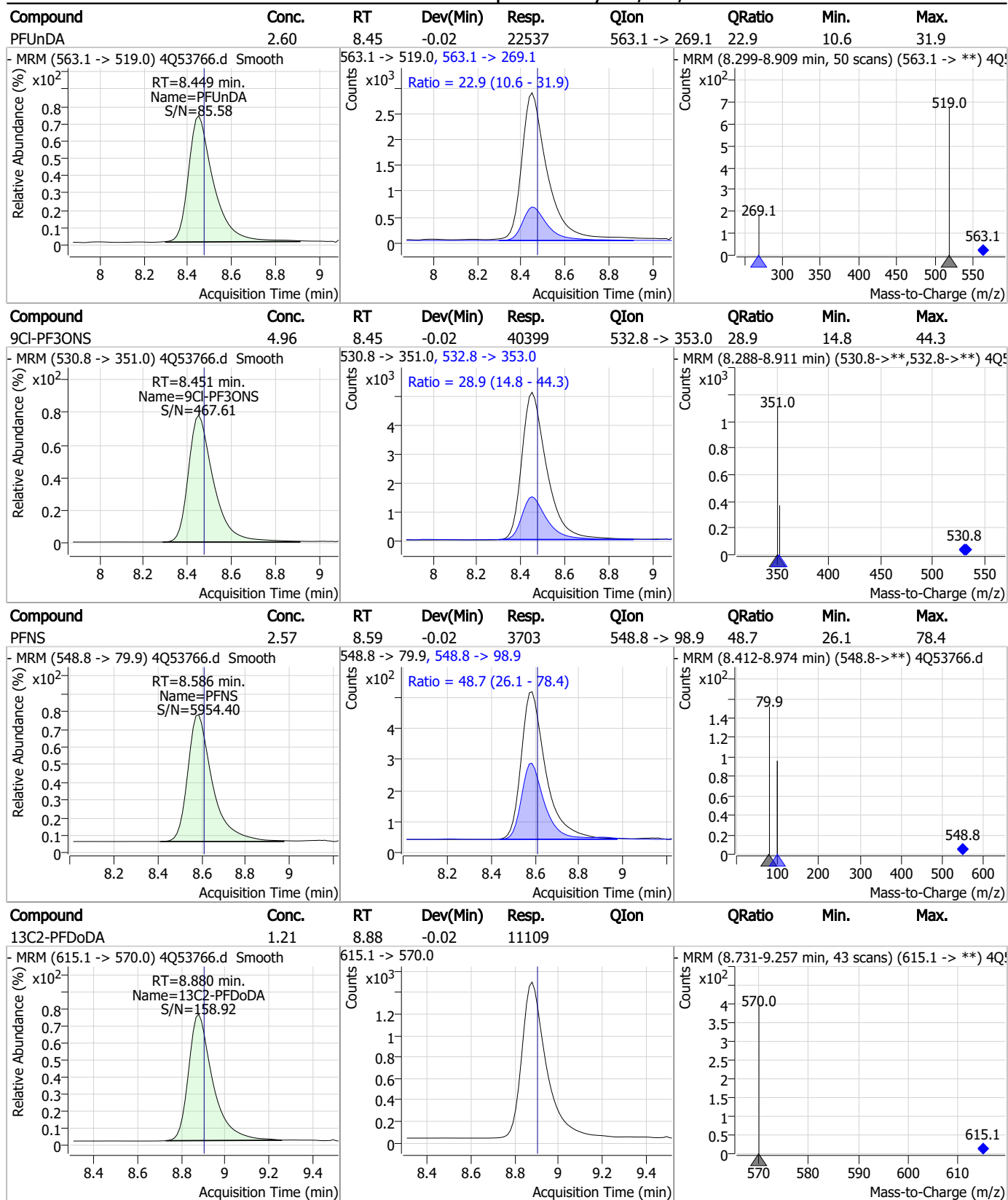


Perfluorinated Compounds by LC/MS/MS



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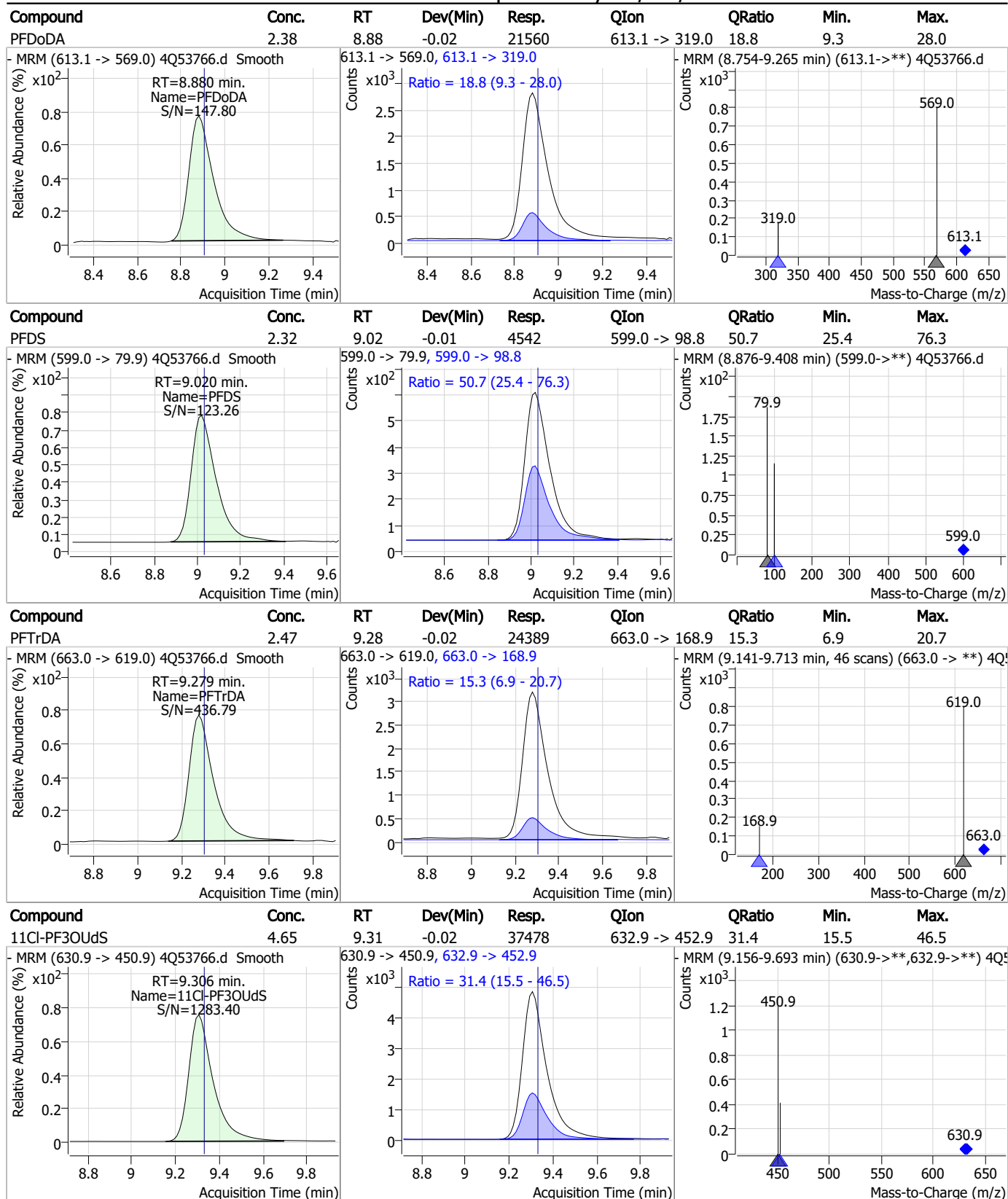
Perfluorinated Compounds by LC/MS/MS



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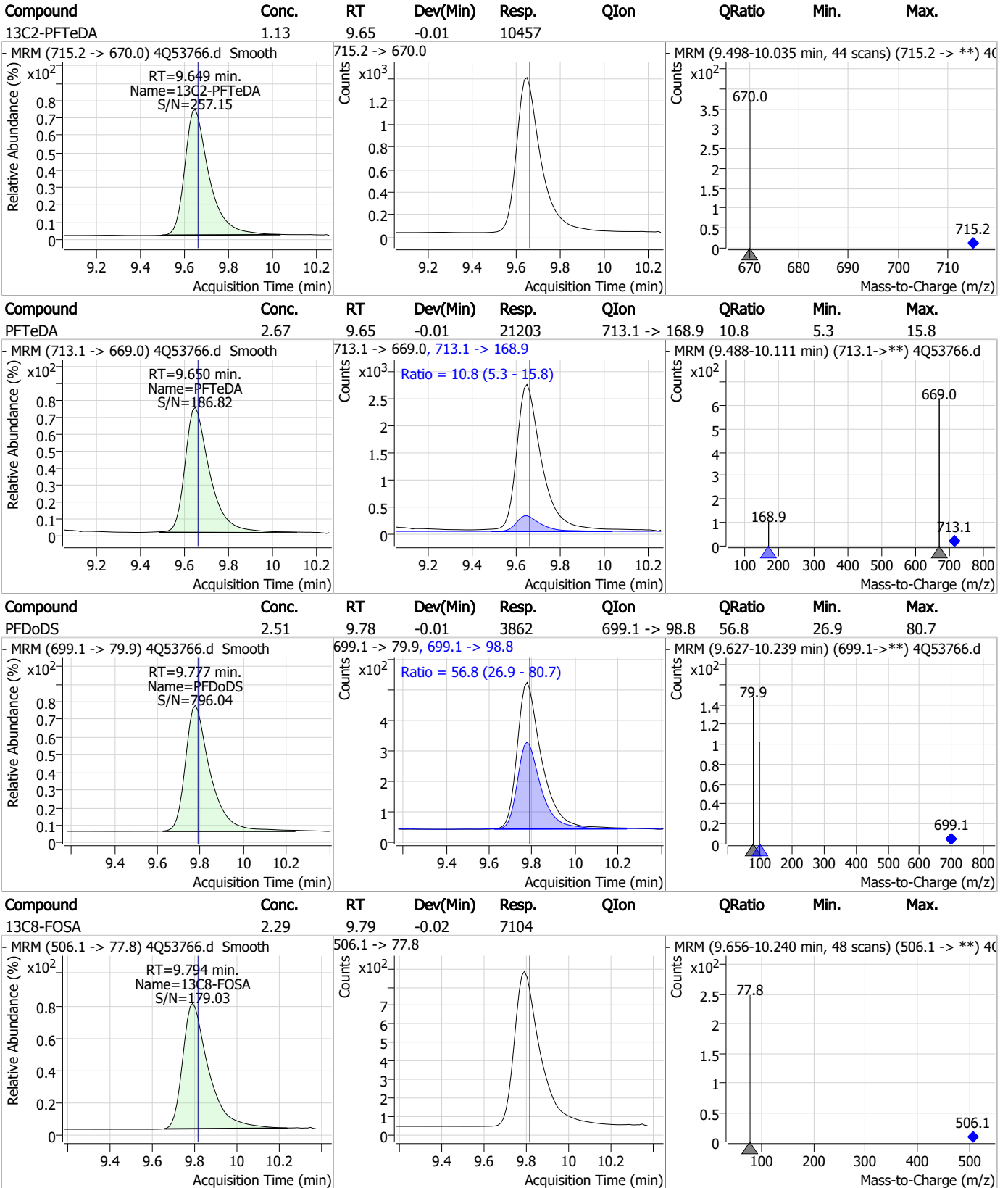
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

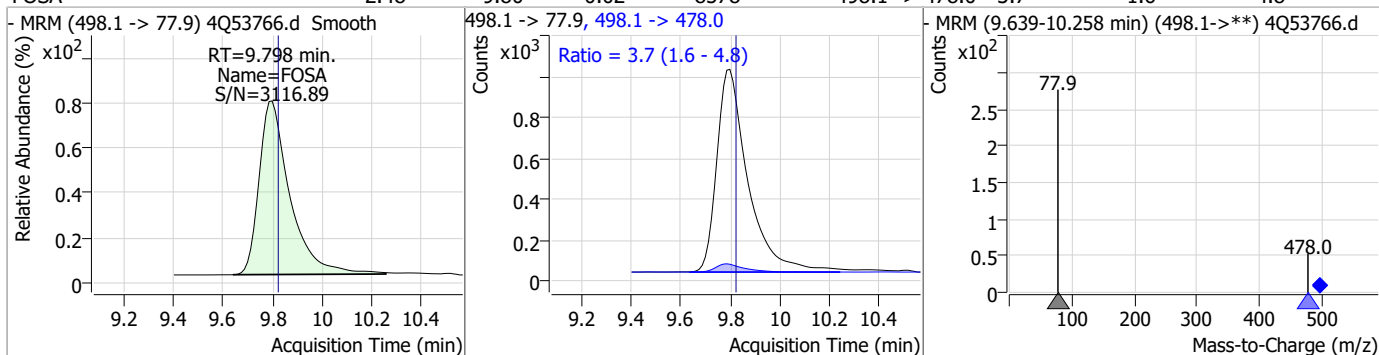


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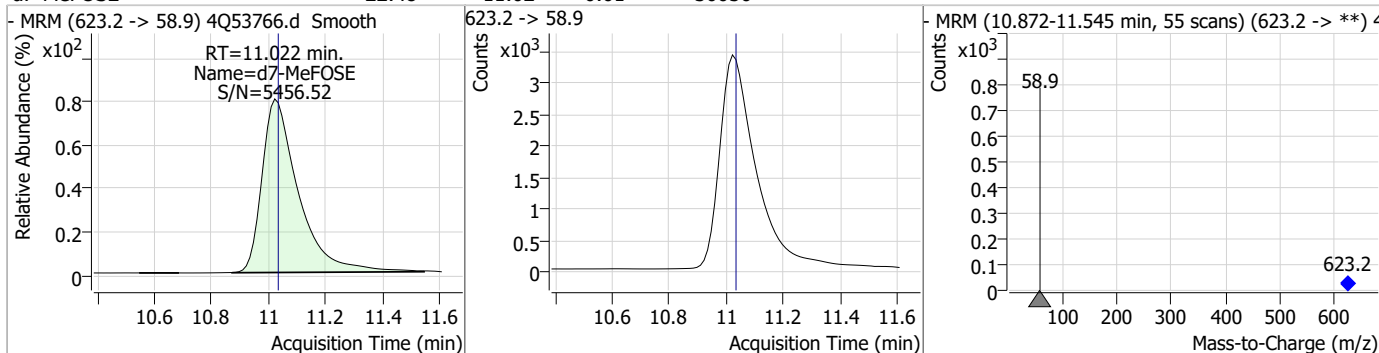


Perfluorinated Compounds by LC/MS/MS

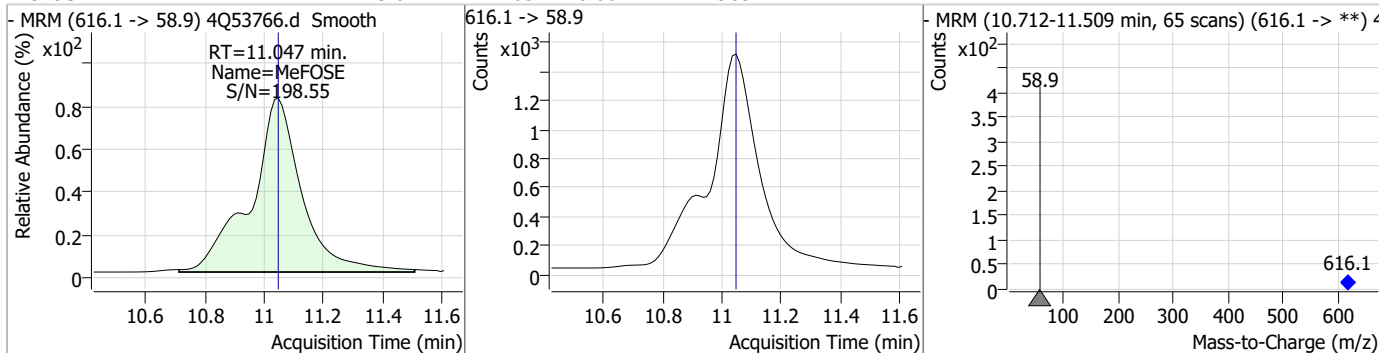
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.48	9.80	-0.02	8578	498.1 -> 478.0	3.7	1.6	4.8



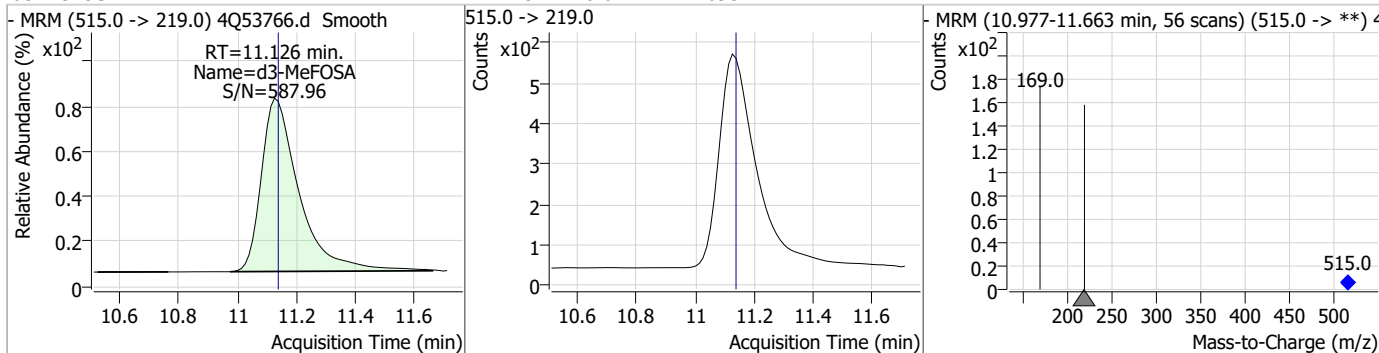
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	22.48	11.02	-0.01	30056				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	13.07	11.05	0.00	17903				



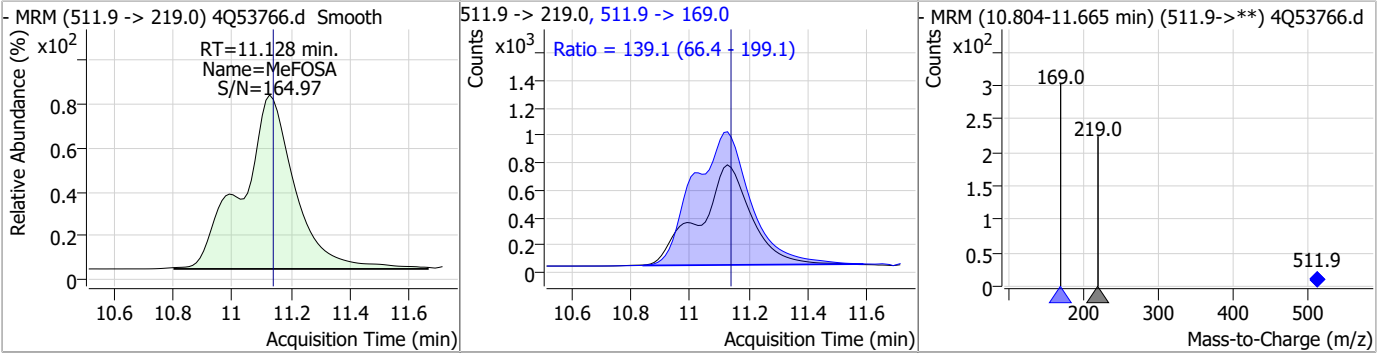
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.17	11.13	-0.01	4693				



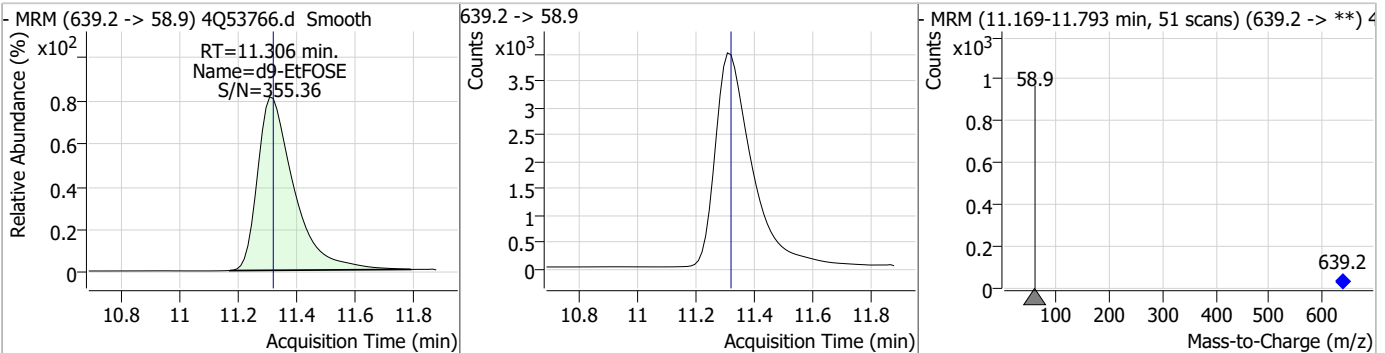
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Perfluorinated Compounds by LC/MS/MS

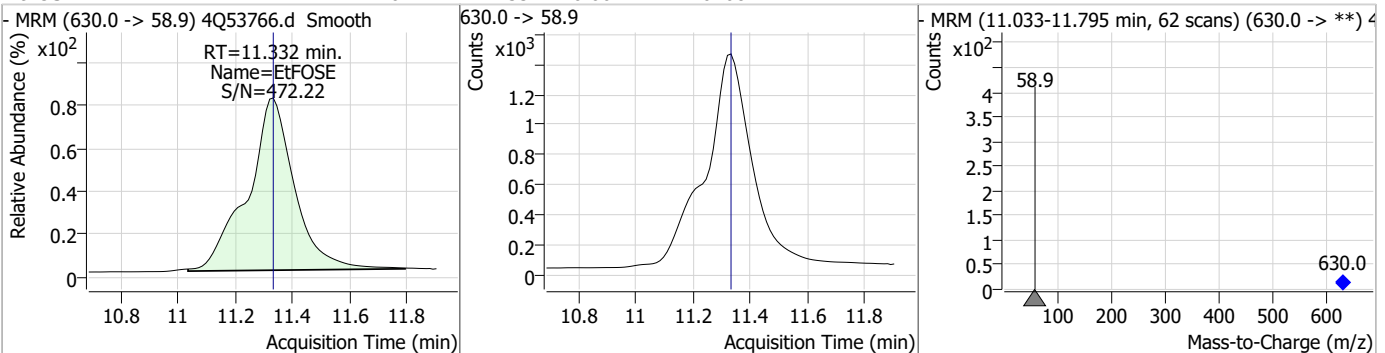
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	5.55	11.13	-0.01	9445	511.9 -> 169.0	139.1	66.4	199.1



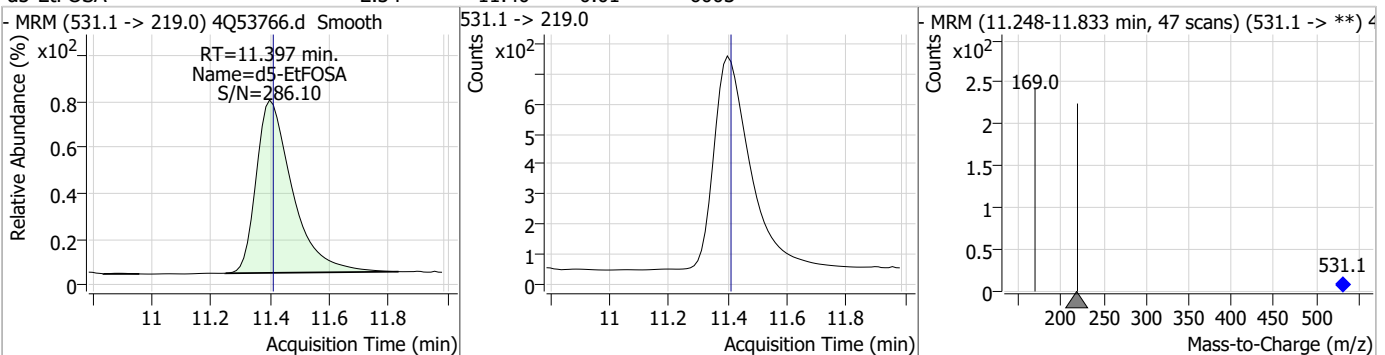
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	22.22	11.31	-0.01	34407				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.61	11.33	0.00	16208				

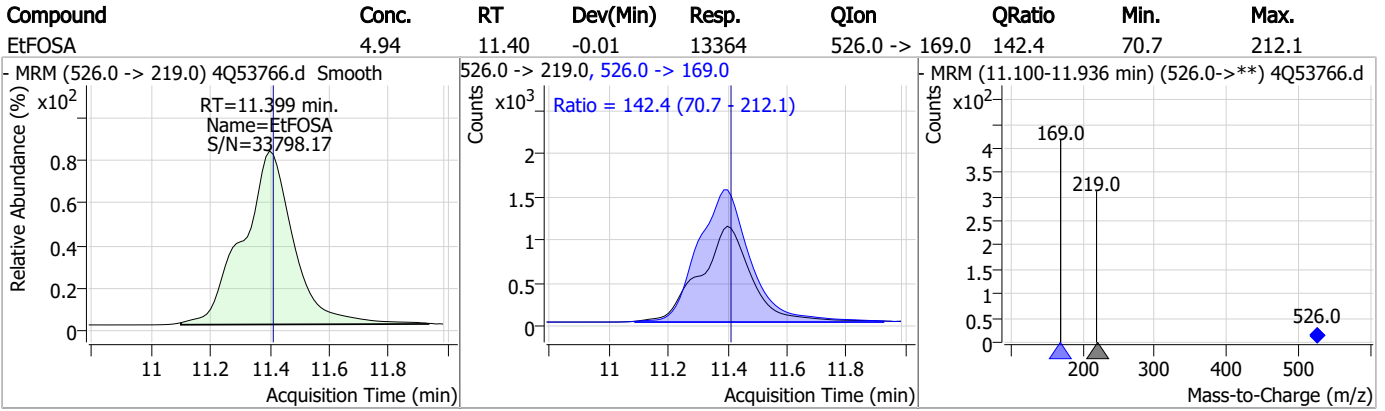


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.34	11.40	-0.01	6003				



7.7.15
7

Perfluorinated Compounds by LC/MS/MS



7.7.15
7

Manual Integration Approval Summary

Sample Number: S4Q785-CC785 Method: EPA DRAFT 1633
Lab FileID: 4Q53766.D Analyst approved: 11/14/23 14:09 Anna Ludwig
Injection Time: 11/14/23 00:35 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

7.7.15.1

7

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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.S4Q785.520,,,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

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	PFA-01 Big-Lie	Sgs Labs	n/a	12/28/23	2ppm	250uL	4 mL	125 312.5ppb	1033 1033 126880LD	9/24/23	12/28/23	MW
		11940	PFAC	Wellington	4-19-28	9/24/23	1-4 ppm	250uL		42.5 125 250ppb				
		11908	MXH			9/24/23								
		11947B	PFAC		3-24-26	9/15/24	2ppm	250uL		125ppb				
		11969	MXF			9/24/24								
		11948A	PFAC		12-1-27	9/15/24	2ppm	250uL		125ppb				
		11948B	MXG			9/24/24								
		11971	PFAC		3-28-28	9/15/24	4-20 ppm	312 uL		312 1100ppb				
		12016A	MXJ			9/24/24								
LCMS 2193	FOSE Std	11409	N-ET-FOSE	Wellington Labs	05/13/27	09/25/24	50ppm	200uL	2.0 mL	5ppb	95% MeOH 5% H2O	09/25/23	03/25/24	JR
		11410	N-Me-FOSE		05/13/27	09/25/24								
LCMS 2194	Full List 40 Spike (cont std)	11904/ 12006	PFOA- DOP (25 Comp)	Absolute	03/13/28	09/11/24	1.0 ppm	400uL	4.0 mL	100ppb	95% MeOH 5% H2O	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	PFOA- DOP (25 Comp)	Absolute	04/26/28	09/19/24	1.0 ppm	2 mL	5.0 mL	400ppb	95% MeOH 5% H2O	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
LCMS 2189A	↓	11811	M3HFP-DA	↓	04/03/26	09/06/24	50 ppm	24 μL	↓	↓	↓	↓	↓	↓
LCMS 2190	↓	11709	D-N-Me FOSA-M	↓	11/11/27	08/12/24	↓	↓	↓	↓	↓	↓	↓	↓
LCMS 2191	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 2192	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 (26884)	9/21/23	12/8/23	MJ
LCMS 2193	↓	LCMS 2154	Br-LN Et-Me	Sgs Labo	MA	12/8/23	2 ppm	250 μL	↓	312.5 ppb	↓	↓	↓	↓
LCMS 2194	↓	11947B	PFAC Mx F	Wellington Labs	3-24-26	9/15/24	2 ppm	250 μL	↓	12.5 ppb	↓	↓	↓	↓
LCMS 2195	↓	11971	PFAC Mx J	↓	3-28-28	9/15/24	4-20 ppm	250 μL	↓	312.1160 ppb	↓	↓	↓	↓
LCMS 2196	↓	11948	PFAC Mx G	↓	12/1/27	9/15/24	2 ppm	250 μL	↓	12.5 ppb	↓	↓	↓	↓
LCMS 2197	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 (18084)	9/24/23	12/28/23	MJ
LCMS 2198	↓	11498	br-N Et fosa	↓	10/7/27	12/28/23	↓	100 μL	↓	2 ppm	↓	↓	↓	↓
LCMS 2199	↓	11795	br-N Me fosa	↓	10/7/27	06/28/24	↓	250 μL	↓	5 ppm	↓	↓	↓	↓
LCMS 2200	↓	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-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 2199	List 40 Spike (cal std)	12006	PROA-POD (28 comp)	Absolute	06/26/28	09/19/24	1.0 ppm	400 µL	4.0 mL	100 ppb	95% MeOH 5% H ₂ O	10/10/23	10/18/23	JR
		LCMS 2179	40 List Add-on#1	-	-	10/18/23								
		LCMS 2158	40 List Add-on#2	-	-	02/07/24								
		LCMS 2193	PROA-POD (28 comp) ¹⁰⁻²¹⁻²³ PFC ID Std	-	-	03/25/24	5.0 ppm			500 ppb				
LCMS 2200	PFC ID Std	12006	PROA-POD (28 comp)	Absolute	06/26/28	09/19/24	1.0 ppm	400 µL	4.0 mL	100 ppb	95% MeOH 5% H ₂ O	10/06/23	03/13/24	JR
		11492	N-Me FOSA-M	Wilmington Labs	02/28/22	03/13/24	50 ppm	8 µL						
		11793	PBSA-1		02/01/28	08/05/24								
		11792	FH-SA-1		12/01/27	08/08/24								
		11332	PFCMS		03/28/27	04/16/24								
LCMS 2201A-J	PFC ID Spwy (10 ppm)	12010	MPFAC-24ES	Wilmington Labs	06/08/28	10/06/24	1.0 ppm	1.2 mL	~2.5 mL	0.5 ppm	95% MeOH 5% H ₂ O	10/06/23	04/06/24	JR
		11811	M3HFPD-DA		04/03/26	09/06/24	50 ppm	24 µL						
		11709	d-N-Me FOSA-M		11/11/27	08/12/24								

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* 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 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	MJ
		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	MJ
		11497	br-N meFosa		8/23/27			10 uL			(4930)			
		11498	br-N ETFOA		10/7/27									
		11494	br-N meFose		10/7/27									
		11495	br-N ETFOE		10/7/27									
		11502	T-PFOA		01/27/27									
		11527	IPPFNA		01/10/27									
LCMS 2158 AE	1033 Cul std. Spike	LCMS 2159 (2140)	Br-LN ET-me PFAC	SGS LABO	N/A	12/28/23	2 ppm 5 ppm	25 uL	4 mL	125 312.5 ppb	1033 mix	8/7/23	12/28/23	MJ
		11930	MXH	Wellington	4/19/28	7/31/24	1-4 ppm			62.5 125 250 ppb	2088 uL			
		11931A	PFAC		3/24/26	7-31-24	2 ppm			125 ppb				
		11931B	MXF		7-31-24	8-7-24	2 ppm			125 ppb				
		11907	PFAC		12/1/27	7-31-24	2 ppm			125 ppb				
		11932A	MXG		7-31-24	8-7-24	4-20 ppm			312 1100 ppb				
		11933A	PFAC		3-28-28	7-31-24	4-20 ppm	312 uL						
		11933B	MXJ		8-7-24	8-7-24	ppm							
					MA Confirm next page 8/7/23									

* 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 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 (26884)	9/24/23	12/28/23 14/06/23	MRW
		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 mL	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 mL	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- DOP (28comp)	Absolute	03/13/28	09/11/24	1.0 ppm	400 mL	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			500ppb				
LCMS 2195	PFC Spike	12006	PFAC- DOP (28comp)	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								

* based on date opened as specified in each SGS - Orlando SOP.

ORLD-QAC-0017-6-03-FORM-lcms std prep log.xls 030819

12087 A-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.

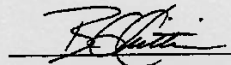
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Tab. : MPFAC-HIF-ES; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (1%)/water (<1%))

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

7.9.1
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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)

7.9.1
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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

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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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXJ0323 (1 of 5)
rev0

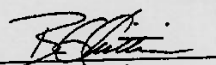
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A:

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

7



Certified Reference Material CRM

CERTIFIED WEIGHT REPORT

Part Number: 54522
Lot Number: 062623
Description: PFDA-DOD
26 components
Preparator: J.D. BUIB
Expiration Date:
Recommended Storage:
Nominal Concentration (g/mL):
NIST Test Date:

Substrate(s):
Methanol (1 mL NIST)
2-Propanol
Lot# 040720 (96%)
32500 (2%)

Formulated By: Prakash Chakraborty
Reviewed By: Pedro L. Restas
DATE: 06/26/23
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)	Final Concentration (g/L)	Uncertainty (g/L)	Final Concentration (mg/L)	Uncertainty (mg/L)	CAS#	SDS Information	
											Solvent Safety Info. On Attached PG	OSHA PEL (TWA)
1. Perfluoro-n-butanoic acid (PFBA)	99542	110452	0.02	2.00	0.017	50.1	1.00	0.02	375-29-4	N/A	N/A	
2. Perfluoro-pentanoic acid (PFPA)	99543	011723	0.02	2.00	0.017	56.3	1.00	0.02	2709-59-3	N/A	N/A	
3. Perfluoro-hexanoic acid (PFHA)	99197	071023	0.02	2.00	0.017	56.2	1.00	0.02	3073-24-4	N/A	N/A	
4. Perfluoro-heptanoic acid (PFHPA)	99198	110622	0.02	2.00	0.017	56.1	1.00	0.02	3745-24-8	N/A	N/A	
5. Perfluoro-octanoic acid (PFOPA)	99202	095522	0.02	2.00	0.017	56.2	1.00	0.02	284-871 (L)	N/A	Isolated Hexamethyl	
6. Perfluoro-nonoic acid (PFNA)	99200	110622	0.02	2.00	0.017	56.1	1.00	0.02	3745-24-8	N/A	N/A	
7. Perfluoro-decanoic acid (PFDA)	99195	110622	0.02	2.00	0.017	56.0	1.00	0.02	3069-64-9	N/A	N/A	
8. Perfluoro-undecanoic acid (PFUA)	99205	092423	0.02	2.00	0.017	56.2	1.00	0.02	2709-59-3	N/A	N/A	
9. Perfluoro-dodecanoic acid (PFDA)	99198	092423	0.02	2.00	0.017	56.1	1.00	0.02	2709-59-3	N/A	N/A	
10. Perfluoro-tridecanoic acid (PFDOA)	99204	110622	0.02	2.00	0.017	56.1	1.00	0.02	2709-59-3	N/A	N/A	
11. Perfluoro-tetradecanoic acid (PFTDA)	99203	030023	0.02	2.00	0.017	56.1	1.00	0.02	2709-59-3	N/A	N/A	
12. Perfluoro-1-iododecanolamide (PFIDA)	3677	PFDA1221	0.02	2.00	0.017	56.0	1.00	0.02	7543-91-8	N/A	N/A	
13. Methylperfluorooctanoate (PFMOA)	4162	PERFCMOA029	0.02	2.00	0.017	50.0	1.00	0.02	2553-31-9 (L)	N/A	N/A	
14. Methylperfluorodecanoate (PFMDA)	4163	PERFCMDA029	0.02	2.00	0.017	50.0	1.00	0.02	2553-31-9 (L)	N/A	N/A	
15. Methylperfluorododecanoate (PFMDA)	99194	090522	0.02	2.00	0.017	50.2	1.00	0.02	2709-59-3	N/A	N/A	
16. Perfluoro-1-pentanoic acid (PFPA)	99544	091522	0.02	2.00	0.017	56.1	1.00	0.02	2709-59-3	N/A	N/A	
17. Perfluoro-1-hexanoic acid (PFHPA)	99196	090923	0.02	2.00	0.017	56.0	1.00	0.02	355-46-1 (L)	N/A	N/A	
18. Perfluoro-1-heptanoic acid (PFHPA)	3672	LFHP0462	0.021	2.10	0.017	47.8	1.00	0.02	375-24-8	N/A	N/A	
19. Heptafluoro-1-octanoic acid (PFOSA)	99201	090923	0.02	2.00	0.017	56.1	1.00	0.02	1783-28-1 (L)	N/A	N/A	
20. Perfluoro-1-nonanoic acid (PFNA)	3957	LFNS1122	0.021	2.10	0.017	48.0	1.01	0.02	385-77-3	N/A	N/A	
21. Perfluoro-1-decanoic acid (PFDA)	3671	LPDS1122	0.021	2.10	0.017	48.2	1.01	0.02	2709-59-3	N/A	N/A	
22. 1H,1H,2H,2H-Perfluorooctane sulfonic acid (4:2 FTB)	6571	090522	0.02	2.00	0.017	58.2	1.00	0.02	2709-59-3	N/A	N/A	
23. 1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTB)	6572	091023	0.021	2.10	0.017	56.2	1.00	0.02	3073-24-4	N/A	N/A	
24. 1H,1H,1H,2H-Perfluorooctane sulfonic acid (PFPOA)	3682	PFPS0423	0.021	2.10	0.017	47.8	1.01	0.02	3073-24-4	N/A	N/A	
25. Z-Hexafluoroisopropyl-2,2,3,3-tetrafluoropropyl sulfonic acid (PFPS-DA)	99095	090523	0.02	2.00	0.017	47.2	1.00	0.02	13093-13-8	N/A	N/A	
26. 1-Chlorooctadecane-2-sulfonic acid (11D-HPOC-2S)	4166	11DPS080125	0.021	2.10	0.017	47.1	1.00	0.02	2709-59-3	N/A	N/A	
27. 9-Chlorooctadecane-2-sulfonic acid (9C-PPONS)	4164	9CPS080125	0.021	2.10	0.017	48.8	1.00	0.02	2709-59-3	N/A	N/A	
28. Dodecafluoro-3H,4,β-dioxanone sulfonic acid (ADONA)	4165	NBDON0128	0.021	2.10	0.017	47.1	1.00	0.02	918005-14-4	N/A	N/A	
Perfluorooctanoic acid (linear)*	99202	090522	0.02	2.00	0.004	49.6	0.99	0.010	335-67-1 (L)	N/A	Isolated Hexamethyl	
Perfluorodecanoic acid (branched isomer)*	99202	090522	0.02	2.00	0.004	0.5	0.01	0.001	335-67-1 (L)	N/A	Isolated Hexamethyl	
Perfluorooctanoic acid (linear)*	99196	090923	0.02	2.00	0.017	44.0	0.98	0.02	355-46-4 (L)	N/A	N/A	
Perfluorodecanoic acid (branched isomer)*	99196	090923	0.02	2.00	0.017	0.0	0.12	0.000	355-46-4 (L)	N/A	N/A	
Heptafluorooctanoic acid (linear)*	99201	090923	0.02	2.00	0.017	38.1	0.76	0.02	1783-28-1 (L)	N/A	N/A	
Heptafluorodecanoic acid (branched isomer)*	99201	090923	0.02	2.00	0.017	7.5	0.15	0.003	1783-28-1 (L)	N/A	N/A	
Heptafluorooctanoic acid (branched isomer)*	99201	090923	0.02	2.00	0.017	4.0	0.08	0.002	1783-28-1 (L)	N/A	N/A	
Heptafluorodecanoic acid (branched isomer)*	99201	090923	0.02	2.00	0.017	0.5	0.010	0.000	1783-28-1 (L)	N/A	N/A	
M-Methylperfluoro-1-octadecanecarboxylic acid (linear)*	4162	PERFCMOA042	0.02	2.00	0.017	38.0	0.72	0.04	2553-31-9 (L)	N/A	N/A	
M-Methylperfluoro-1-decanecarboxylic acid (branched)*	4162	PERFCMDA042	0.02	2.00	0.017	36.5	0.13	0.011	2553-31-9 (L)	N/A	N/A	
M-Methylperfluoro-1-tetradecanecarboxylic acid (branched)*	4162	PERFCMDA042	0.02	2.00	0.017	5.0	0.10	0.005	2553-31-9 (L)	N/A	N/A	
M-Methylperfluoro-1-octadecanecarboxylic acid (branched)*	4162	PERFCMOA042	0.02	2.00	0.017	2.5	0.05	0.000	2553-31-9 (L)	N/A	N/A	
N-Ethylperfluoro-1-octadecanecarboxylic acid (linear)*	4163	PERFCMOA022	0.02	2.00	0.017	36.5	0.73	0.04	2561-59-5 (L)	N/A	N/A	
N-Ethylperfluoro-1-decanecarboxylic acid (branched)*	4163	PERFCMDA022	0.02	2.00	0.017	7.7	0.15	0.009	2561-59-5 (L)	N/A	N/A	
N-Ethylperfluoro-1-tetradecanecarboxylic acid (branched)*	4163	PERFCMDA022	0.02	2.00	0.017	5.3	0.11	0.005	2561-59-5 (L)	N/A	N/A	
M-Ethylperfluoro-1-octadecanecarboxylic acid (branched)*	4163	PERFCMOA022	0.02	2.00	0.017	0.4	0.007	0.000	2561-59-5 (L)	N/A	N/A	

*Quantitative 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.1

1 The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
 2 All standards are certified for 95% of the stated value, unless otherwise stated.
 3 All standards, after opening amples, should be stored with caps tight and under nitrogen atmosphere.
 4 Certificates for this product are available for download from our website or by contacting our technical support team.
 5 Certificates for this product are available for download from our website or by contacting our technical support team.
 NIST Reference Material 1297, U.S. Government Printing Office, Washington, DC, 1994.

*Concentrations for branched and linear isomers are based on LCMS chromatographic analysis only.

12006
Rec'd: 09/07/23

11994
rec'd: 08/13/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPePA (5:3)

LOT NUMBER:

FPePA0722

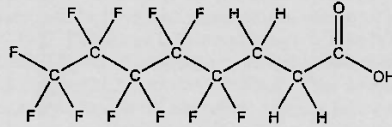
COMPOUND:

3-Perfluoropentyl propanoic acid

STRUCTURE:

CAS #:

914637-49-3



MOLECULAR FORMULA:

C₈H₅F₁₁O₂

MOLECULAR WEIGHT:

342.11

CONCENTRATION:

50.0 ± 2.5 µg/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 (C₈H₃F₁₁O₂) as an impurity determined by ¹H 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:

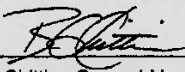
- See page 2 for further details.

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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

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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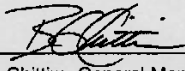
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7.9.1
7

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

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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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

PFACMXG1122 (1 of 5)
rev0

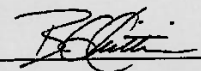
7.9.1
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Table A: PFAC-MXG; Components and Concentrations (ng/mL; ± 5% in methanol/water (<1%))

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-dioxanonanoate (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

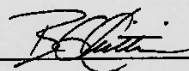
PFACMXF0323 (1 of 5)
rev0

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-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)

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-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

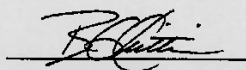
^a See Table B for percent composition of linear and branched N-MeFOSAA isomers.

^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)

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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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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11794
rec'd: 05/15/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

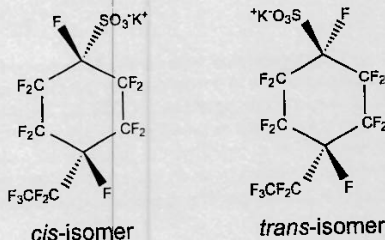
PFECHS

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

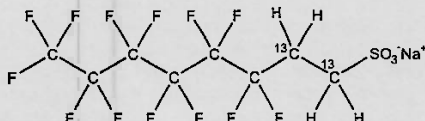


WELLINGTON LABORATORIES

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

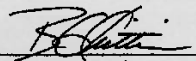
DOCUMENTATION/ DATA ATTACHED:

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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11710
rec'd: 03/17/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSA-M

LOT NUMBER:

NMeFOSA1122M

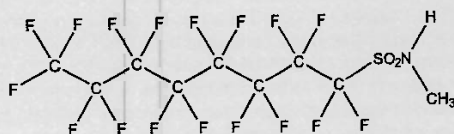
COMPOUND:

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

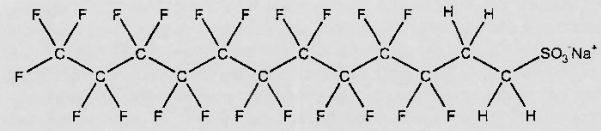


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CERTIFICATE OF ANALYSIS DOCUMENTATION

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

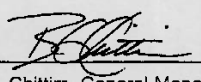
DOCUMENTATION/ DATA ATTACHED:

- 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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102FTS1122 (1 of 4)
rev0

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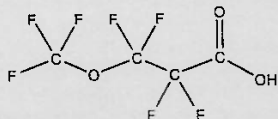
11648 Rec. 02/13/23



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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

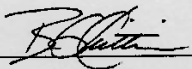
DOCUMENTATION/ DATA ATTACHED:

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

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PRODUCT CODE:

FHxSA-I

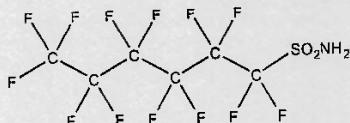
LOT NUMBER: FHxSA1221I

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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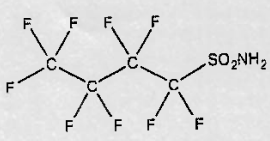
CERTIFICATE OF ANALYSIS DOCUMENTATION

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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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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**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

br-NMeFOSA

**N-Methylperfluorooctanesulfonamide
Isomeric Mix**

PRODUCT CODE: br-NMeFOSA
LOT NUMBER: brNMeFOSA0822
CONCENTRATION: 50.0 ± 2.5 µg/mL
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 08/18/2022
LAST TESTED: (mm/dd/yyyy) 08/23/2022
EXPIRY DATE: (mm/dd/yyyy) 08/23/2027
RECOMMENDED STORAGE: 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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Revision#:9, Revised 2020-12-23

brNMeFOSA0822 (1 of 6)
rev1

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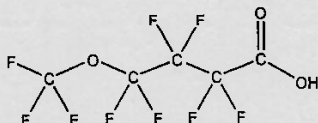
11465



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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: $C_6H_9F_9O_3$ **MOLECULAR WEIGHT:** 280.05
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$ **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:

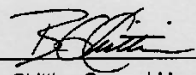
Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

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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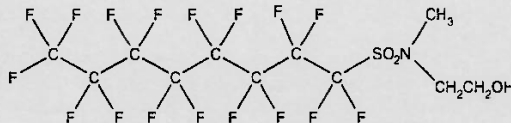
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**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

12 = 9/2/22

PRODUCT CODE: N-MeFOSE-M **LOT NUMBER:** NMeFOSE0522M
COMPOUND: 2-(N-methylperfluoro-1-octanesulfonamido)ethanol

STRUCTURE: **CAS #:** 24448-09-7



114/0

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

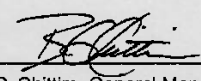
DOCUMENTATION/ DATA ATTACHED:

- 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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Form#: 27, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

NMeFOSE0522M (1 of 5)
rev0

7.9.1

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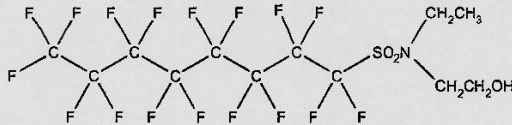
WELLINGTON LABORATORIES

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

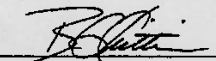
DOCUMENTATION/ DATA ATTACHED:

- 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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager **Date:** 07/13/2022
 (mm/dd/yyyy)

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11140



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFPrS

LOT NUMBER:

LPFPrS0721

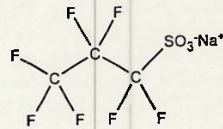
COMPOUND:

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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FPrPA(3:3FTEA) 1116 B



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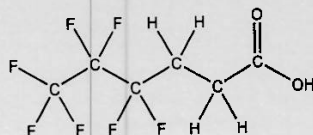
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

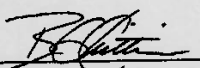
DOCUMENTATION/ DATA ATTACHED:

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

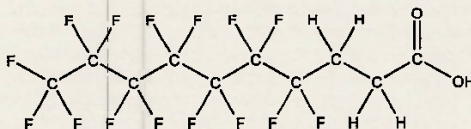
COMPOUND:

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

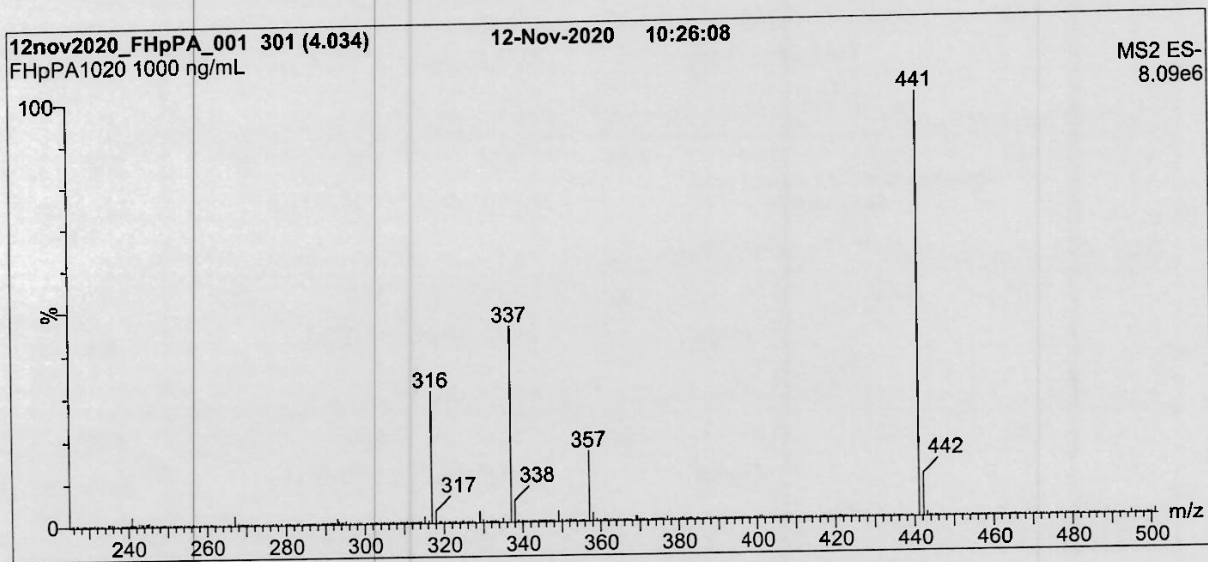
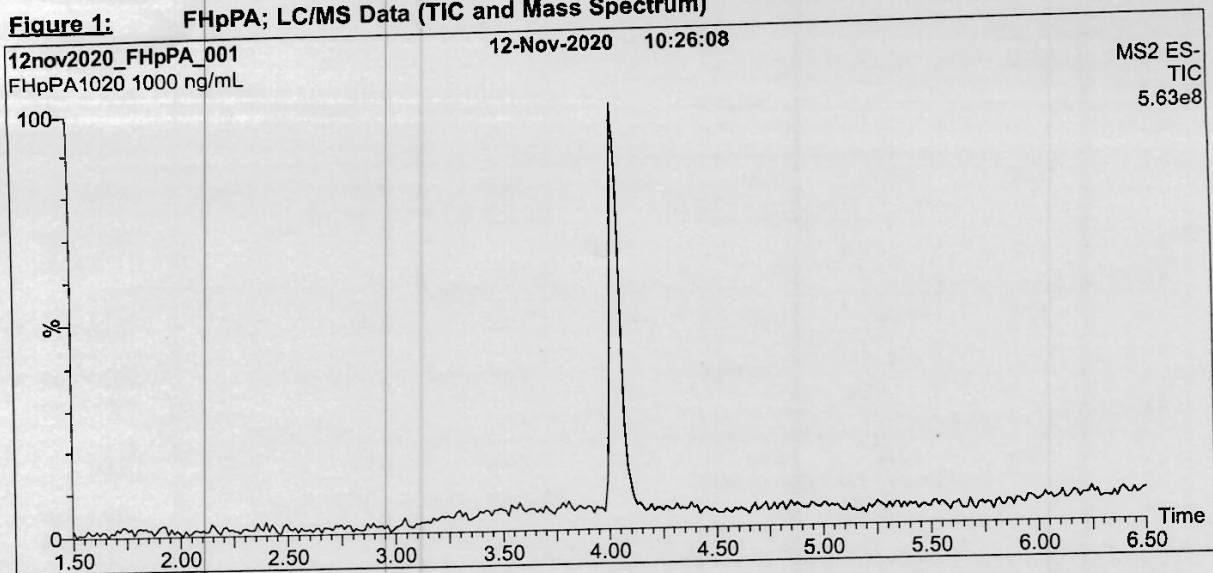
(mm/dd/yyyy)

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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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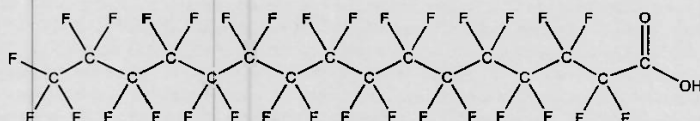
CERTIFICATE OF ANALYSIS DOCUMENTATION

10842 * NG 01/18/23

PRODUCT CODE: PFHxDA **LOT NUMBER:** PFHxDA0421

COMPOUND: Perfluoro-n-hexadecanoic acid

STRUCTURE: **CAS #:** 67905-19-5



MOLECULAR FORMULA: C₁₆H₃₁O₂ **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

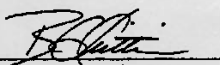
DOCUMENTATION/ DATA ATTACHED:

- 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: 
B.G. Chittim, General Manager **Date:** 05/25/2021
(mm/dd/yyyy)

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Revision#:9, Revised 2020-12-23

PFHxDA0421 (1 of 4)
rev0

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CERTIFICATE OF ANALYSIS DOCUMENTATION

10847 NS 01/18/23

PRODUCT CODE:

PFODA

LOT NUMBER:

PFODA0821

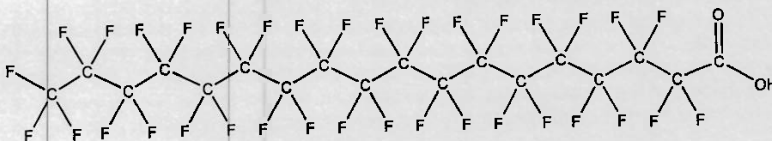
COMPOUND:

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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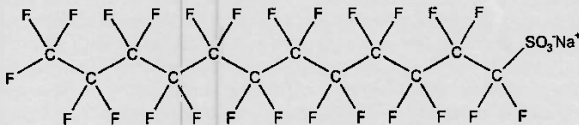
10840

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

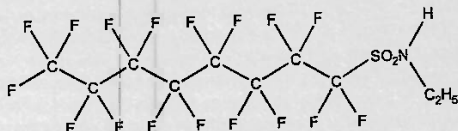
LOT NUMBER: NEtFOSA0821M

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)

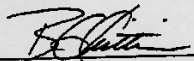
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

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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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

3,6-OPFHpA

*rec'd
WPH
8/20/21*

LOT NUMBER:

36OPFHpA0320

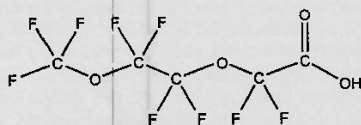
COMPOUND:

Perfluoro-3,6-dioxahexanoic acid

STRUCTURE:

CAS #:

151772-58-6



MOLECULAR FORMULA:

C₆H₂F₁₀O₄

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-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

7.9.1

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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: 11/09/23 08:40
Started (mm/dd/yy 24:00)

Method: EPA 1633 Draft (QSM) List 40

Date/Time: 11/10/23 1200
Finished (mm/dd/yy 24:00)

Balance ID: _____

Batch#: OP99997 Ext. By: GH

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
OP99997 MB		500	6	N/A	25		5	AL	
OP99997 BS		500	6						
OP99997 LLBS		500	6			200			
FC11014-1	2	520	6			60			
FC11062-1	2	530							
2	2	520							
3	2	530							
4	2	500							
5	2	540							
6	2	550	6	N/A	25		5	AL	
GH 11/01/23									
OPFC11062-2MS	3	520	6	N/A	25	200	5	AL	
OP MSD									
OPFC11062-3 DUP	3	530	6	N/A	25		5	AL	

Comments:

EIS (SURR) ID: 121336-I Conc: 250-5000 ng/mL Exp. Date: 11/02/24 Inj. By: GH Ver. By: KG
 SPIKE.1 ID: LCMS222A Conc: VARIED Exp. Date: 04/04/24 Inj. By: GH Ver. By: KG
 SPIKE.2 ID: _____ Conc: _____ Exp. Date: _____ Inj. By: _____ Ver. By: _____
 NIS (ISTD) ID: 12115 1-J Conc: 250-1000 ng/L Exp. Date: 11/02/24 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 PF 711 SPE Lot # 6752454-01
 Water Lot# OP99443 0.3M Formic Acid PF699-712 Syringe filter Lot # _____
 Acetic Acid# 194003 3% NH4OH Sol _____ pH paper Lot# 205423
 0.1M Formic PF708 PF713 5% Formic Acid _____ Carbon Lot# 99687

Relinquished By: [Signature]
 Accepted By: [Signature]

Date: 11/09/23
 Date: 11/10/23

1633 AQ extraction 042222.xls NF

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7