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Automated Report

Technical Report for

AECOM, INC.

N6274223F0104 RH Fire Suppression System

60697810

SGS Job Number: FC7724

Sampling Date: 07/07/23



Report to:

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Total number of pages in report: 804



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: FC7724

N6274223F0104 RH Fire Suppression System
Project No: 60697810

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC7724-1	07/07/23	09:30 NH	07/12/23	AQ	Ground Water	AF-RHMW12A-WGN01LF-2307
FC7724-2	07/07/23	09:30 NH	07/12/23	AQ	Ground Water	AF-RHMW12A-WGFD01LF-2307
FC7724-3	07/07/23	10:35 AG	07/12/23	AQ	Ground Water	AF-RHMW17-WGN01LF-2307
FC7724-4	07/07/23	12:55 NH	07/12/23	AQ	Ground Water	AF-RHMW16-WGN01LF-2307
FC7724-5	07/07/23	14:55 AG	07/12/23	AQ	Ground Water	AF-RHMW17D-WGN01LF-2307
FC7724-6	07/07/23	14:00 AG	07/12/23	AQ	Field Blank Water	AF-RHMW17D-WQFB01-2307

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, INC.

Job No: FC7724

Site: N6274223F0104 RH Fire Suppression System

Report Date: 7/27/2023 3:24:05 PM

On 07/12/2023, 5 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 5 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC7724 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: OP97911

Sample(s) FC7258-1MS, FC7258-2DUP were used as the QC samples indicated.

Matrix Spike Recovery(s) for Perfluoroheptanesulfonic acid, Perfluorohexanesulfonic acid, Perfluorooctanesulfonic acid are outside control limits. Outside control limits due to high level in sample relative to spike amount.

RPD(s) for Duplicate for Perfluoroheptanesulfonic acid, Perfluorononanesulfonic acid, Perfluorooctanesulfonic acid are outside control limits for sample OP97911-DUP. Probable cause is due to sample non-homogeneity.

Sample(s) FC7724-5 have surrogates outside control limits.

OP97911-MS for 13C2-4:2FTS: Outside control limits.

OP97911-MS for 13C2-6:2FTS: Outside control limits.

OP97911-MS for 13C3-PFBS: Outside control limits.

FC7724-5 for 13C2-4:2FTS: Outside control limits.

FC7724-5 for 13C4-PFBA: Outside control limits.

FC7724-5 for d3-MeFOSAA: Outside control limits.

FC7724-5 for d5-EtFOSAA: Outside control limits.

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

Narrative prepared by:

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

Summary of Hits

Job Number: FC7724
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 07/07/23



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
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FC7724-1 AF-RHMW12A-WGN01LF-2307

Perfluoropentanoic acid	2.0 J	7.3	1.8	ng/l	EPA DRAFT 1633
Perfluorohexanoic acid	0.66 J	3.6	1.8	ng/l	EPA DRAFT 1633

FC7724-2 AF-RHMW12A-WGFD01LF-2307

Perfluoropentanoic acid	1.7 J	7.4	1.9	ng/l	EPA DRAFT 1633
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FC7724-3 AF-RHMW17-WGN01LF-2307

Perfluoropentanoic acid	1.9 J	7.3	1.8	ng/l	EPA DRAFT 1633
Perfluorohexanoic acid	1.1 J	3.6	1.8	ng/l	EPA DRAFT 1633

FC7724-4 AF-RHMW16-WGN01LF-2307

No hits reported in this sample.

FC7724-5 AF-RHMW17D-WGN01LF-2307

No hits reported in this sample.

FC7724-6 AF-RHMW17D-WQFB01-2307

No hits reported in this sample.

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

Page 1 of 3

Client Sample ID:	AF-RHMW12A-WGN01LF-2307		
Lab Sample ID:	FC7724-1	Date Sampled:	07/07/23
Matrix:	AQ - Ground Water	Date Received:	07/12/23
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	4Q47577.D	1	07/19/23 15:41	AL	07/18/23 12:45	OP97911	S4Q697
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	2.0	7.3	1.8	0.85	ng/l	J
307-24-4	Perfluorohexanoic acid	0.66	3.6	1.8	0.45	ng/l	J
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	1.8 U	3.6	1.8	0.49	ng/l	
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-RHMW12A-WGN01LF-2307		
Lab Sample ID:	FC7724-1	Date Sampled:	07/07/23
Matrix:	AQ - Ground Water	Date Received:	07/12/23
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	3.6 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	60%		20-150%
	13C5-PFPeA	140%		20-150%
	13C5-PFHxA	122%		20-150%
	13C4-PFHpA	121%		20-150%
	13C8-PFOA	119%		20-150%
	13C9-PFNA	121%		20-150%
	13C6-PFDA	121%		20-150%
	13C7-PFUnDA	102%		20-150%
	13C2-PFDoDA	95%		20-150%
	13C2-PFTeDA	83%		20-150%
	13C3-PFBS	127%		20-150%
	13C3-PFHxS	123%		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-RHMW12A-WGN01LF-2307		Date Sampled: 07/07/23
Lab Sample ID: FC7724-1		Date Received: 07/12/23
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	126%		20-150%
	13C8-FOSA	120%		20-150%
	d3-MeFOSA	108%		20-150%
	d5-EtFOSA	111%		20-150%
	d3-MeFOSAA	113%		20-150%
	d5-EtFOSAA	110%		20-150%
	d7-MeFOSE	95%		20-150%
	d9-EtFOSE	101%		20-150%
	13C2-4:2FTS	139%		20-180%
	13C2-6:2FTS	116%		20-180%
	13C2-8:2FTS	104%		20-180%
	13C3-HFPO-DA	109%		20-150%

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 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-RHMW12A-WGFD01LF-2307		
Lab Sample ID:	FC7724-2	Date Sampled:	07/07/23
Matrix:	AQ - Ground Water	Date Received:	07/12/23
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	4Q47578.D	1	07/19/23 15:55	AL	07/18/23 12:45	OP97911	S4Q697
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	1.7	7.4	1.9	0.87	ng/l	J
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-RHMW12A-WGFD01LF-2307		
Lab Sample ID:	FC7724-2	Date Sampled:	07/07/23
Matrix:	AQ - Ground Water	Date Received:	07/12/23
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	3.7 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

13C4-PFBA	59%	20-150%
13C5-PFPeA	138%	20-150%
13C5-PFHxA	120%	20-150%
13C4-PFHpA	118%	20-150%
13C8-PFOA	123%	20-150%
13C9-PFNA	119%	20-150%
13C6-PFDA	121%	20-150%
13C7-PFUnDA	114%	20-150%
13C2-PFDoDA	107%	20-150%
13C2-PFTeDA	95%	20-150%
13C3-PFBS	126%	20-150%
13C3-PFHxS	117%	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

4.2
4

Report of Analysis

Client Sample ID:	AF-RHMW12A-WGFD01LF-2307	
Lab Sample ID:	FC7724-2	Date Sampled: 07/07/23
Matrix:	AQ - Ground Water	Date Received: 07/12/23
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	124%		20-150%
	13C8-FOSA	116%		20-150%
	d3-MeFOSA	118%		20-150%
	d5-EtFOSA	119%		20-150%
	d3-MeFOSAA	119%		20-150%
	d5-EtFOSAA	111%		20-150%
	d7-MeFOSE	101%		20-150%
	d9-EtFOSE	112%		20-150%
	13C2-4:2FTS	117%		20-180%
	13C2-6:2FTS	112%		20-180%
	13C2-8:2FTS	107%		20-180%
	13C3-HFPO-DA	112%		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-RHMW17-WGN01LF-2307		
Lab Sample ID:	FC7724-3	Date Sampled:	07/07/23
Matrix:	AQ - Ground Water	Date Received:	07/12/23
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	4Q47579.D	1	07/19/23 16:10	AL	07/18/23 12:45	OP97911	S4Q697
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	1.9	7.3	1.8	0.85	ng/l	J
307-24-4	Perfluorohexanoic acid	1.1	3.6	1.8	0.45	ng/l	J
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	1.8 U	3.6	1.8	0.49	ng/l	
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-RHMW17-WGN01LF-2307		
Lab Sample ID:	FC7724-3	Date Sampled:	07/07/23
Matrix:	AQ - Ground Water	Date Received:	07/12/23
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	3.6 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	116%		20-150%
	13C5-PFPeA	146%		20-150%
	13C5-PFHxA	131%		20-150%
	13C4-PFHpA	125%		20-150%
	13C8-PFOA	128%		20-150%
	13C9-PFNA	117%		20-150%
	13C6-PFDA	121%		20-150%
	13C7-PFUnDA	99%		20-150%
	13C2-PFDoDA	94%		20-150%
	13C2-PFTeDA	81%		20-150%
	13C3-PFBS	137%		20-150%
	13C3-PFHxS	126%		20-150%

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

Report of Analysis

Client Sample ID:	AF-RHMW17-WGN01LF-2307		
Lab Sample ID:	FC7724-3	Date Sampled:	07/07/23
Matrix:	AQ - Ground Water	Date Received:	07/12/23
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	114%		20-150%
	13C8-FOSA	112%		20-150%
	d3-MeFOSA	98%		20-150%
	d5-EtFOSA	103%		20-150%
	d3-MeFOSAA	105%		20-150%
	d5-EtFOSAA	97%		20-150%
	d7-MeFOSE	87%		20-150%
	d9-EtFOSE	93%		20-150%
	13C2-4:2FTS	125%		20-180%
	13C2-6:2FTS	112%		20-180%
	13C2-8:2FTS	107%		20-180%
	13C3-HFPO-DA	118%		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
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SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHMW16-WGN01LF-2307		
Lab Sample ID:	FC7724-4	Date Sampled:	07/07/23
Matrix:	AQ - Ground Water	Date Received:	07/12/23
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	4Q47580.D	1	07/19/23 16:25	AL	07/18/23 12:45	OP97911	S4Q697
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
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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	1.8 U	3.6	1.8	0.49	ng/l	
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-RHMW16-WGN01LF-2307		
Lab Sample ID:	FC7724-4	Date Sampled:	07/07/23
Matrix:	AQ - Ground Water	Date Received:	07/12/23
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	3.6 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	94%		20-150%
	13C5-PFPeA	140%		20-150%
	13C5-PFHxA	123%		20-150%
	13C4-PFHpA	123%		20-150%
	13C8-PFOA	124%		20-150%
	13C9-PFNA	122%		20-150%
	13C6-PFDA	119%		20-150%
	13C7-PFUnDA	101%		20-150%
	13C2-PFDoDA	96%		20-150%
	13C2-PFTeDA	84%		20-150%
	13C3-PFBS	126%		20-150%
	13C3-PFHxS	119%		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-RHMW16-WGN01LF-2307		Date Sampled:	07/07/23
Lab Sample ID:	FC7724-4		Date Received:	07/12/23
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	125%		20-150%
	13C8-FOSA	125%		20-150%
	d3-MeFOSA	109%		20-150%
	d5-EtFOSA	116%		20-150%
	d3-MeFOSAA	112%		20-150%
	d5-EtFOSAA	107%		20-150%
	d7-MeFOSE	104%		20-150%
	d9-EtFOSE	108%		20-150%
	13C2-4:2FTS	111%		20-180%
	13C2-6:2FTS	122%		20-180%
	13C2-8:2FTS	105%		20-180%
	13C3-HFPO-DA	116%		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-RHMW17D-WGN01LF-2307		
Lab Sample ID:	FC7724-5	Date Sampled:	07/07/23
Matrix:	AQ - Ground Water	Date Received:	07/12/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q47581.D	1	07/19/23 16:40	AL	07/18/23 12:45	OP97911	S4Q697
Run #2	4Q47584.D	1	07/19/23 17:24	AL	07/18/23 12:45	OP97911	S4Q697

	Initial Volume	Final Volume
Run #1	560 ml	5.0 ml
Run #2	65.0 ml	5.0 ml

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

375-22-4	Perfluorobutanoic acid	31 U ^a	120	31	15	ng/l	
2706-90-3	Perfluoropentanoic acid	1.8 U	7.1	1.8	0.84	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	0.89 U	3.6	0.89	0.45	ng/l	
375-95-1	Perfluorononanoic acid	1.8 U	3.6	1.8	0.54	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	0.54	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	3.6	1.8	0.54	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	3.6	1.8	0.75	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	0.62	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.8 U	3.6	1.8	0.45	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.8 U	3.6	1.8	0.48	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.8 U	3.6	1.8	0.51	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	3.6	1.8	0.57	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	62 U ^a	150	62	25	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.1 U	18	7.1	3.1	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.1 U	18	7.1	3.7	ng/l	

PERFLUOROOCCTANE SULFONAMIDES

754-91-6	PFOSA	1.8 U	3.6	1.8	0.60	ng/l	
31506-32-8	MeFOSA	3.6 U	7.1	3.6	0.89	ng/l	
4151-50-2	EtFOSA	3.6 U	7.1	3.6	0.89	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17D-WGN01LF-2307		
Lab Sample ID:	FC7724-5	Date Sampled:	07/07/23
Matrix:	AQ - Ground Water	Date Received:	07/12/23
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	31 U ^a	38	31	7.7	ng/l	
2991-50-6	EtFOSAA	31 U ^a	38	31	10	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	18 U	36	18	3.9	ng/l	
1691-99-2	EtFOSE	18 U	36	18	6.6	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.8 U	3.6	1.8	0.89	ng/l	
919005-14-4	ADONA	3.6 U	7.1	3.6	1.7	ng/l	
377-73-1	PFMPA	1.8 U	7.1	1.8	0.89	ng/l	
863090-89-5	PFMBA	3.6 U	7.1	3.6	1.0	ng/l	
151772-58-6	NFDHA	3.6 U	7.1	3.6	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.6 U	7.1	3.6	1.2	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.6 U	7.1	3.6	1.6	ng/l	
113507-82-7	PFEESA	1.8 U	7.1	1.8	0.70	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	8.9 U	18	8.9	4.0	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	18 U	89	18	7.8	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	18 U	89	18	7.0	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	5% ^b	113%	20-150%
	13C5-PFPeA	32%	127%	20-150%
	13C5-PFHxA	109%	118%	20-150%
	13C4-PFHpA	124%	112%	20-150%
	13C8-PFOA	125%	120%	20-150%
	13C9-PFNA	120%	116%	20-150%
	13C6-PFDA	120%	109%	20-150%
	13C7-PFUnDA	108%	96%	20-150%
	13C2-PFDoDA	100%	90%	20-150%
	13C2-PFTeDA	66%	72%	20-150%
	13C3-PFBS	115%	127%	20-150%
	13C3-PFHxS	113%	130%	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-RHMW17D-WGN01LF-2307	
Lab Sample ID:	FC7724-5	Date Sampled: 07/07/23
Matrix:	AQ - Ground Water	Date Received: 07/12/23
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	121%	116%	20-150%
	13C8-FOSA	122%	94%	20-150%
	d3-MeFOSA	120%	92%	20-150%
	d5-EtFOSA	127%	106%	20-150%
	d3-MeFOSAA	183% ^b	122%	20-150%
	d5-EtFOSAA	193% ^b	117%	20-150%
	d7-MeFOSE	90%	78%	20-150%
	d9-EtFOSE	99%	88%	20-150%
	13C2-4:2FTS	222% ^b	124%	20-180%
	13C2-6:2FTS	142%	112%	20-180%
	13C2-8:2FTS	157%	108%	20-180%
	13C3-HFPO-DA	88%	106%	20-150%

(a) Result is from Run# 2

(b) Outside control limits.

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

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Report of Analysis

Page 1 of 3

Client Sample ID:	AF-RHMW17D-WQFB01-2307		
Lab Sample ID:	FC7724-6	Date Sampled:	07/07/23
Matrix:	AQ - Field Blank Water	Date Received:	07/12/23
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	4Q47582.D	1	07/19/23 16:54	AL	07/18/23 12:45	OP97911	S4Q697
Run #2							

Run #	Initial Volume	Final Volume
Run #1	510 ml	5.0 ml
Run #2		

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

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	3.9 U	16	3.9	1.9	ng/l	
2706-90-3	Perfluoropentanoic acid	2.0 U	7.8	2.0	0.92	ng/l	
307-24-4	Perfluorohexanoic acid	2.0 U	3.9	2.0	0.49	ng/l	
375-85-9	Perfluoroheptanoic acid	2.0 U	3.9	2.0	0.49	ng/l	
335-67-1	Perfluorooctanoic acid	0.98 U	3.9	0.98	0.49	ng/l	
375-95-1	Perfluorononanoic acid	2.0 U	3.9	2.0	0.60	ng/l	
335-76-2	Perfluorodecanoic acid	2.0 U	3.9	2.0	0.49	ng/l	
2058-94-8	Perfluoroundecanoic acid	2.0 U	3.9	2.0	0.59	ng/l	
307-55-1	Perfluorododecanoic acid	2.0 U	3.9	2.0	0.59	ng/l	
72629-94-8	Perfluorotridecanoic acid	2.0 U	3.9	2.0	0.82	ng/l	
376-06-7	Perfluorotetradecanoic acid	2.0 U	3.9	2.0	0.49	ng/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	2.0 U	3.9	2.0	0.49	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.9 U	4.9	3.9	1.1	ng/l	
355-46-4	Perfluorohexanesulfonic acid	2.0 U	3.9	2.0	0.69	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	2.0 U	3.9	2.0	0.49	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	2.0 U	3.9	2.0	0.53	ng/l	
68259-12-1	Perfluorononanesulfonic acid	2.0 U	3.9	2.0	0.56	ng/l	
335-77-3	Perfluorodecanesulfonic acid	2.0 U	3.9	2.0	0.63	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.9 U	4.9	3.9	1.1	ng/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	7.8 U	20	7.8	3.2	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.8 U	20	7.8	3.4	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.8 U	20	7.8	4.0	ng/l	

PERFLUOROOCCTANE SULFONAMIDES

754-91-6	PFOSA	2.0 U	3.9	2.0	0.66	ng/l	
31506-32-8	MeFOSA	3.9 U	7.8	3.9	0.98	ng/l	
4151-50-2	EtFOSA	3.9 U	7.8	3.9	0.98	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW17D-WQFB01-2307		
Lab Sample ID:	FC7724-6	Date Sampled:	07/07/23
Matrix:	AQ - Field Blank Water	Date Received:	07/12/23
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	3.9 U	4.9	3.9	0.98	ng/l
2991-50-6	EtFOSAA	3.9 U	4.9	3.9	1.3	ng/l

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	20 U	39	20	4.3	ng/l
1691-99-2	EtFOSE	20 U	39	20	7.3	ng/l

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	2.0 U	3.9	2.0	0.98	ng/l
919005-14-4	ADONA	3.9 U	7.8	3.9	1.8	ng/l
377-73-1	PFMPA	2.0 U	7.8	2.0	0.98	ng/l
863090-89-5	PFMBA	3.9 U	7.8	3.9	1.1	ng/l
151772-58-6	NFDHA	3.9 U	7.8	3.9	1.2	ng/l

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.9 U	7.8	3.9	1.4	ng/l
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.9 U	7.8	3.9	1.7	ng/l
113507-82-7	PFEESA	2.0 U	7.8	2.0	0.76	ng/l

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.8 U	20	9.8	4.4	ng/l
914637-49-3	5:3 Fluorotelomer carboxylate	20 U	98	20	8.6	ng/l
812-70-4	7:3 Fluorotelomer carboxylate	20 U	98	20	7.7	ng/l

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

13C4-PFBA	129%	20-150%
13C5-PFPeA	145%	20-150%
13C5-PFHxA	130%	20-150%
13C4-PFHpA	127%	20-150%
13C8-PFOA	127%	20-150%
13C9-PFNA	123%	20-150%
13C6-PFDA	117%	20-150%
13C7-PFUnDA	109%	20-150%
13C2-PFDoDA	100%	20-150%
13C2-PFTeDA	51%	20-150%
13C3-PFBS	131%	20-150%
13C3-PFHxS	118%	20-150%

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 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.6
4

Report of Analysis

Client Sample ID:	AF-RHMW17D-WQFB01-2307		
Lab Sample ID:	FC7724-6	Date Sampled:	07/07/23
Matrix:	AQ - Field Blank Water	Date Received:	07/12/23
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	132%		20-150%
	13C8-FOSA	112%		20-150%
	d3-MeFOSA	116%		20-150%
	d5-EtFOSA	123%		20-150%
	d3-MeFOSAA	129%		20-150%
	d5-EtFOSAA	126%		20-150%
	d7-MeFOSE	101%		20-150%
	d9-EtFOSE	112%		20-150%
	13C2-4:2FTS	118%		20-180%
	13C2-6:2FTS	131%		20-180%
	13C2-8:2FTS	102%		20-180%
	13C3-HFPO-DA	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

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
Chain of Custody

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PAGE 1 OF 1

SGS - ORLANDO Quote #

SKIFF #

FC 7724

Client / Reporting Information			Project Information			Analytical Information										Matrix Codes	
Company Name: AECOM			Project Name: N6274223F0104 RH Fire Suppression System													DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge 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 Manager: Watson Tanji Email: watson.tanji@aecom.com Phone #: 303-796-4624 / 808-954-4512			Project # 60697810 Fax #														
Sampler(s) Name(s) (Printed) Sampler 1: <i>Rob Hager</i> Sampler 2: <i>Cristina Perez</i>			Client Purchase Order #			PFAS EPA Draft 1633										LAB USE ONLY	
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION			CONTAINER INFORMATION												
		DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NOISE	HCl	NH3	INCH	INCH	NACH-ZNAC	HERC4		DI WATER	MEDI
1	AF-RHMMW12A-WGN01LF-2307	7/7/23	0930	NN	GW	3		X									X
2	AF-RHMMW12A-WGFD01LF-2307	7/7/23	0930	NN	GW	3		X									X
Turnaround Time (Business days)			Data Deliverable Information			Comments / Remarks											
10 Day (Business) Approved By: / Date: 7 Day <input checked="" type="checkbox"/> 5 Day 3 Day RUSH 2 Day RUSH 1 Day RUSH Other			<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S			EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW INITIAL ASSESSMENT <i>[Signature]</i>											
Rush T/A Data Available VIA Email or Lablink			LABEL VERIFICATION 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 <i>[Signature]</i>		7/11/23 14:00	2 <i>Hunter Niska</i> AECOM		3 <i>Hunter Niska</i>		7/15/23	4 <i>Fed Ex</i>		5 <i>[Signature]</i>		6 <i>[Signature]</i>		7 <i>[Signature]</i>			
5 <i>Fed Ex</i>			6 <i>[Signature]</i> 07/12/23		7			8									

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5.2
FR #1

FC7724: Chain of Custody

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PAGE 1 OF 1

SGS - ORLANDO Quote #

SKIFF #

FC7724

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;"> <p style="text-align: center;">1205 7/17/23</p> </div>												DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe										
Address: 1001 Bishop St. ste 1600			Street																										
City: Honolulu State: HI Zip: 96813			City Honolulu State Hawaii																										
Project Contact: Katie Abbott Email: katie.abbott@aecom.com Project Manager: Watson Tanji Email: watson.tanji@aecom.com Phone #: 303-796-4624 / 808-954-4512			Project # 60697810 Fax # Client Purchase Order #																										
Sampler(s) Name(s) (Printed) Sampler 1: <u>Gavin Pua</u> Sampler 2: <u>Marc Murakita</u>			Client Purchase Order #				<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">1205 7/17/23</p> </div>												LAB USE ONLY										
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION				CONTAINER INFORMATION																							
		DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HD	HD	NH ₄	NH ₄	H ₂ SO ₄	H ₂ SO ₄	DIWATER	MEDI													
3	AF-RHMW17-WGN01LF-2307	7/17/23	1035	DGCM/AW	GW	3		X																					
Turnaround Time (Business days)			Data Deliverable Information				Comments / Remarks																						
10 Day (Business) Approved By: / Date: 7 Day <input checked="" type="checkbox"/> 5 Day 3 Day RUSH 2 Day RUSH 1 Day RUSH Other			<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S				EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW																						
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	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Date Time:	Relinquished By/Affiliation	Date Time:	Received By/Affiliation	Date Time:		
1 <u>Aracelis Gonzalez / AECOM</u>	7/17/23 14:10	2 <u>Huber Nilsen / AECOM</u>	7/17/23 14:10	3 <u>Huber Nilsen / AECOM</u>	7/17/23 14:10	4 <u>Huber Nilsen / AECOM</u>	7/17/23 14:10	5 <u>Huber Nilsen / AECOM</u>	7/17/23 14:10	6 <u>Huber Nilsen / AECOM</u>	7/17/23 14:10	7 <u>Huber Nilsen / AECOM</u>	7/17/23 14:10	8 <u>Huber Nilsen / AECOM</u>	7/17/23 14:10	9 <u>Huber Nilsen / AECOM</u>	7/17/23 14:10	10 <u>Huber Nilsen / AECOM</u>	7/17/23 14:10	11 <u>Huber Nilsen / AECOM</u>	7/17/23 14:10	12 <u>Huber Nilsen / AECOM</u>	7/17/23 14:10	13 <u>Huber Nilsen / AECOM</u>	7/17/23 14:10	14 <u>Huber Nilsen / AECOM</u>	7/17/23 14:10	15 <u>Huber Nilsen / AECOM</u>	7/17/23 14:10

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5.1
5



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Chain of Custody

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SGS - ORLANDO JOB #:

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SGS - ORLANDO Quote #

SKIFF #

FC7724

Client / Reporting Information			Project Information			Analytical Information										Matrix Codes	
Company Name: AECOM			Project Name: N6274223F0104 RH Fire Suppression System													DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe	
Address: 1001 Bishop St. ste 1600			Street														
City: Honolulu State: HI Zip: 96813			City Honolulu State Hawaii														
Project Contact: Katie Abbott Email: katie.abbott@aecom.com Project Manager: Watson Tanji Email: watson.tanji@aecom.com Phone #: 303-796-4624 / 808-954-4512			Project # 60697810 Fax #														
Sample(s) Name(s) (Printed) Sampler 1: Mike Hagan Sampler 2: Cedric Pines			Client Purchase Order #			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	PCI	NACH	HAOS	HSOC	NACH/ZNAC	D/WATER	MESH	PFAS EPA Draft 1633	LAB USE ONLY
4	AF-RHMW16-WGN01LF-2307	7/7/23	1255	NN	GW	3		X								X	
Turnaround Time (Business days)			Data Deliverable Information			Comments / Remarks											
10 Day (Business) Approved By: / Date: 7 Day <input checked="" type="checkbox"/> 5 Day 3 Day RUSH 2 Day RUSH 1 Day RUSH Other			<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S			EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW 7/7/23											
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 Mike Hagan / AECOM		7/7/23 1400		2 Cedric Pines / AECOM		3 Relinquished for client in by Mike Edmonds		7/10/23		4 [Signature] / [Affiliation]		5 [Signature] / [Affiliation]		7/12/23		8 [Signature] / [Affiliation]	

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FC7724: Chain of Custody

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SGS North America Inc - Orlando
Chain of Custody

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COC #: 2307AFSG11

PAGE 1 OF 1

SGS - ORLANDO JOB #:

SGS - ORLANDO Quote #

SKIFF #

FC7724

Client / Reporting Information		Project Information		Analytical Information												Matrix Codes						
Company Name: AECOM		Project Name: N6274223E0104 RH Fire Suppression System		<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>AN 7/7/23</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 # 60697810																				
Project Manager: Watson Tanji Email: watson.tanji@aecom.com		Fax #																				
Phone #: 303-796-4624 / 808-954-4512		Client Purchase Order #		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	NaOH	HNCO3	H2SO4	NaOH/ZnCl2	D/WATER	MEDIA	PFAS EPA Draft 1633	LAB USE ONLY					
5	AF-RHMMW17D-WGN01LF-2307	7/7/23	1455	As NM Gd	GW	3			X													
6	AF-RHMMW17D-WQFB01-2307	7/7/23	1445	As NM Gd	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										
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 Dwayne Conde/AECOM		7/7/23 1550		2 Hunter Nishikawa AECOM				3 Hunter Nishikawa AECOM		7/7/23		4 [Signature] 07/10/23 0930										
Relinquished by/Affiliation		Date Time:		Received By/Affiliation				Relinquished By/Affiliation		Date Time:		Received By/Affiliation										
5				6				7														
Lab Use Only : Cooler Temperature (s) Celsius (corrected):																						

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SGS Sample Receipt Summary

Job Number: FC7724

Client: AECOM

Project: N6274223F0104 RH Fire Suppression System

Date / Time Received: 7/12/2023 9:30:00 AM

Delivery Method: FedEx

Airbill #'s: 780948422067

Therm ID: IR 1;

Therm CF: -0.2;

of Coolers: 1

Cooler Temps (Raw Measured) °C: Cooler 1: (5.2);

Cooler Temps (Corrected) °C: Cooler 1: (5.0);

Cooler Information

Y or N

- 1. Custody Seals Present
- 2. Custody Seals Intact
- 3. Temp criteria achieved
- 4. Cooler temp verification IR Gun
- 5. Cooler media Ice (Bag)

Trip Blank Information

Y or N N/A

- 1. Trip Blank present / cooler
 - 2. Trip Blank listed on COC
- W or S N/A
- 3. Type Of TB Received

Sample Information

Y or N N/A

- 1. Sample labels present on bottles
- 2. Samples preserved properly
- 3. Sufficient volume/containers recvd for analysis:
- 4. Condition of sample Intact
- 5. Sample recvd within HT
- 6. Dates/Times/IDs on COC match Sample Label
- 7. VOCs have headspace
- 8. Bottles received for unspecified tests
- 9. Compositing instructions clear
- 10. Voa Soil Kits/Jars received past 48hrs?
- 11. % Solids Jar received?
- 12. Residual Chlorine Present?

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____
 Test Strip Lot #: pH 0-3 230320 pH 10-12 _____ Other: (Specify) pH 1.0 - 12.0 222221
 Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP

Date: 7/12/2023 9:30:00 AM

Reviewer: SP

Date: 7/17/2023

FC7724: Chain of Custody

Page 5 of 5

QC Evaluation: DOD QSM5.x Limits

Job Number: FC7724
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 07/07/23

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 FC7724

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: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q697-IBLK	4Q47561.D	1	07/19/23	AL	n/a	n/a	S4Q697

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC7724-1, FC7724-2, FC7724-3, FC7724-4, FC7724-5, FC7724-6

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	0.0011	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: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q697-IBLK	4Q47561.D	1	07/19/23	AL	n/a	n/a	S4Q697

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC7724-1, FC7724-2, FC7724-3, FC7724-4, FC7724-5, FC7724-6

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	99% 20-150%
	13C5-PFPeA	121% 20-150%
	13C5-PFHxA	101% 20-150%
	13C4-PFHpA	103% 20-150%
	13C8-PFOA	103% 20-150%
	13C9-PFNA	106% 20-150%
	13C6-PFDA	103% 20-150%
	13C7-PFUnDA	95% 20-150%
	13C2-PFDoDA	97% 20-150%
	13C2-PFTeDA	94% 20-150%
	13C3-PFBS	110% 20-150%
	13C3-PFHxS	105% 20-150%
	13C8-PFOS	113% 20-150%
	13C8-FOSA	115% 20-150%
	d3-MeFOSAA	114% 20-150%
	d5-EtFOSAA	104% 20-150%
	13C2-4:2FTS	132% 20-180%
	13C2-6:2FTS	122% 20-180%
	13C2-8:2FTS	117% 20-180%

6.1.1
6

Continuing Calibration Blank

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q697-ICCB	4Q47575.D	1	07/19/23	AL	n/a	n/a	S4Q697

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC7724-1, FC7724-2, FC7724-3, FC7724-4, FC7724-5, FC7724-6

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: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q697-ICCB	4Q47575.D	1	07/19/23	AL	n/a	n/a	S4Q697

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC7724-1, FC7724-2, FC7724-3, FC7724-4, FC7724-5, FC7724-6

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	99% 20-150%
	13C5-PFPeA	119% 20-150%
	13C5-PFHxA	97% 20-150%
	13C4-PFHpA	102% 20-150%
	13C8-PFOA	106% 20-150%
	13C9-PFNA	99% 20-150%
	13C6-PFDA	100% 20-150%
	13C7-PFUnDA	100% 20-150%
	13C2-PFDoDA	95% 20-150%
	13C2-PFTeDA	97% 20-150%
	13C3-PFBS	107% 20-150%
	13C3-PFHxS	97% 20-150%
	13C8-PFOS	115% 20-150%
	13C8-FOSA	118% 20-150%
	d3-MeFOSAA	116% 20-150%
	d5-EtFOSAA	109% 20-150%
	13C2-4:2FTS	118% 20-180%
	13C2-6:2FTS	95% 20-180%
	13C2-8:2FTS	114% 20-180%

Method Blank Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97911-MB	4Q47566.D	1	07/19/23	AL	07/18/23	OP97911	S4Q697

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC7724-1, FC7724-2, FC7724-3, FC7724-4, FC7724-5, FC7724-6

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: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97911-MB	4Q47566.D	1	07/19/23	AL	07/18/23	OP97911	S4Q697

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC7724-1, FC7724-2, FC7724-3, FC7724-4, FC7724-5, FC7724-6

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	124% 20-150%
	13C5-PFPeA	144% 20-150%
	13C5-PFHxA	127% 20-150%
	13C4-PFHpA	127% 20-150%
	13C8-PFOA	125% 20-150%
	13C9-PFNA	130% 20-150%
	13C6-PFDA	126% 20-150%
	13C7-PFUnDA	114% 20-150%
	13C2-PFDoDA	115% 20-150%
	13C2-PFTeDA	107% 20-150%
	13C3-PFBS	130% 20-150%
	13C3-PFHxS	124% 20-150%
	13C8-PFOS	136% 20-150%
	13C8-FOSA	101% 20-150%
	d3-MeFOSA	97% 20-150%
	d5-EtFOSA	113% 20-150%
	d3-MeFOSAA	132% 20-150%
	d5-EtFOSAA	125% 20-150%
	d7-MeFOSE	91% 20-150%
	d9-EtFOSE	110% 20-150%
	13C2-4:2FTS	137% 20-180%
	13C2-6:2FTS	169% 20-180%
	13C2-8:2FTS	139% 20-180%
	13C3-HFPO-DA	118% 20-150%

Instrument Blank

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q699-IBLK	4Q47713.D	1	07/21/23	AL	n/a	n/a	S4Q699

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP97911-DUP, OP97911-MS

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	0.0017	0.0080	0.0010	ug/l	J
4151-50-2	EtFOSA	0.0037	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	0.0076	0.040	0.0074	ug/l	J
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: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q699-IBLK	4Q47713.D	1	07/21/23	AL	n/a	n/a	S4Q699

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP97911-DUP, OP97911-MS

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	105% 20-150%
	13C5-PFPeA	94% 20-150%
	13C5-PFHxA	98% 20-150%
	13C4-PFHpA	97% 20-150%
	13C8-PFOA	100% 20-150%
	13C9-PFNA	96% 20-150%
	13C6-PFDA	103% 20-150%
	13C7-PFUnDA	100% 20-150%
	13C2-PFDoDA	101% 20-150%
	13C2-PFTeDA	91% 20-150%
	13C3-PFBS	98% 20-150%
	13C3-PFHxS	98% 20-150%
	13C8-PFOS	100% 20-150%
	13C8-FOSA	107% 20-150%
	d3-MeFOSAA	99% 20-150%
	d5-EtFOSAA	104% 20-150%
	13C2-4:2FTS	121% 20-180%
	13C2-6:2FTS	114% 20-180%
	13C2-8:2FTS	110% 20-180%

6.1.4
6

Blank Spike Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97911-LLBS	4Q47565.D	1	07/19/23	AL	07/18/23	OP97911	S4Q697

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC7724-1, FC7724-2, FC7724-3, FC7724-4, FC7724-5, FC7724-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.03	0.0254	85	40-150
2706-90-3	Perfluoropentanoic acid	0.015	0.0112	75	40-150
307-24-4	Perfluorohexanoic acid	0.0075	0.0062	83	40-150
375-85-9	Perfluoroheptanoic acid	0.0075	0.0058	77	40-150
335-67-1	Perfluorooctanoic acid	0.0075	0.0063	84	40-150
375-95-1	Perfluorononanoic acid	0.0075	0.0064	85	40-150
335-76-2	Perfluorodecanoic acid	0.0075	0.0064	85	40-150
2058-94-8	Perfluoroundecanoic acid	0.0075	0.0065	87	40-150
307-55-1	Perfluorododecanoic acid	0.0075	0.0062	83	40-150
72629-94-8	Perfluorotridecanoic acid	0.0075	0.0060	80	40-150
376-06-7	Perfluorotetradecanoic acid	0.0075	0.0059	79	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00665	0.0050	75	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00706	0.0060	85	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00686	0.0052	76	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00715	0.0064	90	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00696	0.0066	95	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00722	0.0055	76	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00724	0.0056	77	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.00728	0.0055	76	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0281	0.0243	86	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0285	0.0233	82	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0288	0.0251	87	40-150
754-91-6	PFOSA	0.0075	0.0062	83	40-150
31506-32-8	MeFOSA	0.015	0.0126	84	40-150
4151-50-2	EtFOSA	0.015	0.0115	77	40-150
2355-31-9	MeFOSAA	0.0075	0.0058	77	40-150
2991-50-6	EtFOSAA	0.0075	0.0070	93	40-150
24448-09-7	MeFOSE	0.0375	0.0330	88	40-150
1691-99-2	EtFOSE	0.0375	0.0266	71	40-150
13252-13-6	HFPO-DA (GenX)	0.015	0.0126	84	40-150
919005-14-4	ADONA	0.0142	0.0113	80	40-150
377-73-1	PFMPA	0.015	0.0113	75	40-150
863090-89-5	PFMBA	0.015	0.0110	73	40-150
151772-58-6	NFDHA	0.015	0.0135	90	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.014	0.0120	86	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0142	0.0111	78	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97911-LLBS	4Q47565.D	1	07/19/23	AL	07/18/23	OP97911	S4Q697

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC7724-1, FC7724-2, FC7724-3, FC7724-4, FC7724-5, FC7724-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0134	0.0110	82	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.0375	0.0252	67	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.188	0.132	70	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.188	0.142	76	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	119%	20-150%
	13C5-PFPeA	142%	20-150%
	13C5-PFHxA	124%	20-150%
	13C4-PFHpA	125%	20-150%
	13C8-PFOA	129%	20-150%
	13C9-PFNA	120%	20-150%
	13C6-PFDA	121%	20-150%
	13C7-PFUnDA	111%	20-150%
	13C2-PFDoDA	105%	20-150%
	13C2-PFTeDA	101%	20-150%
	13C3-PFBS	126%	20-150%
	13C3-PFHxS	119%	20-150%
	13C8-PFOS	120%	20-150%
	13C8-FOSA	97%	20-150%
	d3-MeFOSA	89%	20-150%
	d5-EtFOSA	103%	20-150%
	d3-MeFOSAA	114%	20-150%
	d5-EtFOSAA	110%	20-150%
	d7-MeFOSE	89%	20-150%
	d9-EtFOSE	105%	20-150%
	13C2-4:2FTS	129%	20-180%
	13C2-6:2FTS	143%	20-180%
	13C2-8:2FTS	130%	20-180%
	13C3-HFPO-DA	116%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97911-BS	4Q47564.D	1	07/19/23	AL	07/18/23	OP97911	S4Q697

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC7724-1, FC7724-2, FC7724-3, FC7724-4, FC7724-5, FC7724-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.0920	92	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0405	81	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0229	92	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0221	88	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0218	87	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0237	95	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0219	88	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0242	97	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0241	96	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0226	90	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0227	91	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0192	87	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0200	85	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0171	75	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0228	96	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0208	90	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0219	91	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0224	93	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0191	79	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.0892	95	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.0821	86	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.107	111	40-150
754-91-6	PFOSA	0.025	0.0223	89	40-150
31506-32-8	MeFOSA	0.05	0.0494	99	40-150
4151-50-2	EtFOSA	0.05	0.0413	83	40-150
2355-31-9	MeFOSAA	0.025	0.0228	91	40-150
2991-50-6	EtFOSAA	0.025	0.0257	103	40-150
24448-09-7	MeFOSE	0.125	0.116	93	40-150
1691-99-2	EtFOSE	0.125	0.0999	80	40-150
13252-13-6	HFPO-DA (GenX)	0.05	0.0472	94	40-150
919005-14-4	ADONA	0.0473	0.0426	90	40-150
377-73-1	PFMPA	0.05	0.0403	81	40-150
863090-89-5	PFMBA	0.05	0.0393	79	40-150
151772-58-6	NFDHA	0.05	0.0499	100	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0449	96	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0411	87	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97911-BS	4Q47564.D	1	07/19/23	AL	07/18/23	OP97911	S4Q697

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC7724-1, FC7724-2, FC7724-3, FC7724-4, FC7724-5, FC7724-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0414	93	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.0938	75	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.497	80	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.523	84	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	112%	20-150%
	13C5-PFPeA	136%	20-150%
	13C5-PFHxA	115%	20-150%
	13C4-PFHpA	119%	20-150%
	13C8-PFOA	121%	20-150%
	13C9-PFNA	115%	20-150%
	13C6-PFDA	113%	20-150%
	13C7-PFUnDA	108%	20-150%
	13C2-PFDoDA	103%	20-150%
	13C2-PFTeDA	95%	20-150%
	13C3-PFBS	113%	20-150%
	13C3-PFHxS	112%	20-150%
	13C8-PFOS	116%	20-150%
	13C8-FOSA	95%	20-150%
	d3-MeFOSA	82%	20-150%
	d5-EtFOSA	97%	20-150%
	d3-MeFOSAA	116%	20-150%
	d5-EtFOSAA	111%	20-150%
	d7-MeFOSE	89%	20-150%
	d9-EtFOSE	103%	20-150%
	13C2-4:2FTS	127%	20-180%
	13C2-6:2FTS	133%	20-180%
	13C2-8:2FTS	107%	20-180%
	13C3-HFPO-DA	109%	20-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97911-MS	4Q47717.D	5	07/21/23	AL	07/18/23	OP97911	S4Q699
FC7258-1	4Q47569.D	1	07/19/23	AL	07/18/23	OP97911	S4Q697
FC7258-1	4Q47716.D	5	07/21/23	AL	07/18/23	OP97911	S4Q699

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC7724-1, FC7724-2, FC7724-3, FC7724-4, FC7724-5, FC7724-6

CAS No.	Compound	FC7258-1 ug/l	Spike Q	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.0164	0.0909	0.0992	91	40-150
2706-90-3	Perfluoropentanoic acid	0.0153	0.0455	0.0576	93	40-150
307-24-4	Perfluorohexanoic acid	0.110	0.0227	0.124	62	40-150
375-85-9	Perfluoroheptanoic acid	0.0167	0.0227	0.0352	81	40-150
335-67-1	Perfluorooctanoic acid	0.117	0.0227	0.149	141	40-150
375-95-1	Perfluorononanoic acid	0.0071	0.0227	0.0243	76	40-150
335-76-2	Perfluorodecanoic acid	0.0037 U	0.0227	0.0200	88	40-150
2058-94-8	Perfluoroundecanoic acid	0.0037 U	0.0227	0.0206	91	40-150
307-55-1	Perfluorododecanoic acid	0.0037 U	0.0227	0.0242	106	40-150
72629-94-8	Perfluorotridecanoic acid	0.0037 U	0.0227	0.0210	92	40-150
376-06-7	Perfluorotetradecanoic acid	0.0037 U	0.0227	0.0223	98	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0354	0.0202	0.0537	91	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0635	0.0214	0.0729	44	40-150
355-46-4	Perfluorohexanesulfonic acid	1.80 ^b	0.0208	2.06	1252* ^a	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0556	0.0217	0.0524	-15* ^a	40-150
1763-23-1	Perfluorooctanesulfonic acid	1.86 ^b	0.0211	1.97	522* ^a	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0037 U	0.0219	0.0170	78	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0037 U	0.0219	0.0157	72	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0046 U	0.022	0.0143	65	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.019 U	0.0852	0.0658	77	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.019 U	0.0864	0.0640	74	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.019 U	0.0873	0.0790	91	40-150
754-91-6	PFOSA	0.0352 ^b	0.0227	0.0591	105	40-150
31506-32-8	MeFOSA	0.0074 U	0.0455	0.0481	106	40-150
4151-50-2	EtFOSA	0.037 U ^b	0.0455	0.0433	95	40-150
2355-31-9	MeFOSAA	0.0046 U	0.0227	0.0255	112	40-150
2991-50-6	EtFOSAA	0.0046 U	0.0227	0.0230	101	40-150
24448-09-7	MeFOSE	0.037 U	0.114	0.114	100	40-150
1691-99-2	EtFOSE	0.037 U	0.114	0.102	90	40-150
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0455	0.0364	80	40-150
919005-14-4	ADONA	0.0074 U	0.043	0.0417	97	40-150
377-73-1	PFMPA	0.0074 U	0.0455	0.0398	88	40-150
863090-89-5	PFMBA	0.0074 U	0.0455	0.0406	89	40-150
151772-58-6	NFDHA	0.0074 U	0.0455	0.0369	81	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0074 U	0.0425	0.0364	86	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0074 U	0.043	0.0328	76	40-150

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97911-MS	4Q47717.D	5	07/21/23	AL	07/18/23	OP97911	S4Q699
FC7258-1	4Q47569.D	1	07/19/23	AL	07/18/23	OP97911	S4Q697
FC7258-1	4Q47716.D	5	07/21/23	AL	07/18/23	OP97911	S4Q699

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC7724-1, FC7724-2, FC7724-3, FC7724-4, FC7724-5, FC7724-6

CAS No.	Compound	FC7258-1 ug/l	Spike Q	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0074 U	0.0405	0.0344	85	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.019 U	0.114	0.0939	83	40-150
914637-49-35-3	Fluorotelomer carboxylate	0.093 U	0.568	0.458	81	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.093 U	0.568	0.461	81	40-150

CAS No.	ID Standard Recoveries	MS	FC7258-1	FC7258-1	Limits
	13C4-PFBA	93%	97%	96%	20-150%
	13C5-PFPeA	115%	142%	110%	20-150%
	13C5-PFHxA	120%	123%	114%	20-150%
	13C4-PFHpA	121%	125%	109%	20-150%
	13C8-PFOA	111%	124%	115%	20-150%
	13C9-PFNA	101%	109%	100%	20-150%
	13C6-PFDA	99%	109%	94%	20-150%
	13C7-PFUnDA	92%	93%	88%	20-150%
	13C2-PFDoDA	76%	94%	79%	20-150%
	13C2-PFTeDA	69%	88%	71%	20-150%
	13C3-PFBS	158%* c	141%	121%	20-150%
	13C3-PFHxS	122%	106%	110%	20-150%
	13C8-PFOS	107%	125%	118%	20-150%
	13C8-FOSA	93%	165%* c	116%	20-150%
	d3-MeFOSA	83%	141%	94%	20-150%
	d5-EtFOSA	81%	151%* c	92%	20-150%
	d3-MeFOSAA	91%	134%	105%	20-150%
	d5-EtFOSAA	84%	133%	97%	20-150%
	d7-MeFOSE	71%	140%	87%	20-150%
	d9-EtFOSE	83%	143%	94%	20-150%
	13C2-4:2FTS	209%* c	156%	130%	20-180%
	13C2-6:2FTS	203%* c	158%	143%	20-180%
	13C2-8:2FTS	148%	123%	124%	20-180%
	13C3-HFPO-DA	100%	112%	98%	20-150%

- (a) Outside control limits due to high level in sample relative to spike amount.
- (b) Result is from Run #2.
- (c) Outside control limits.

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97911-DUP	4Q47719.D	10	07/21/23	AL	07/18/23	OP97911	S4Q699
FC7258-2	6Q21618.D	5	07/25/23	MV	07/18/23	OP97911	S6Q318
FC7258-2	6Q21619.D	16	07/25/23	MV	07/18/23	OP97911	S6Q318

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC7724-1, FC7724-2, FC7724-3, FC7724-4, FC7724-5, FC7724-6

CAS No.	Compound	FC7258-2 ug/l	DUP Q ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.196	0.186		5	30
2706-90-3	Perfluoropentanoic acid	0.532	0.458		15	30
307-24-4	Perfluorohexanoic acid	2.13	1.78		18	30
375-85-9	Perfluoroheptanoic acid	0.652	0.544		18	30
335-67-1	Perfluorooctanoic acid	2.29	1.91		18	30
375-95-1	Perfluorononanoic acid	0.125	0.115		8	30
335-76-2	Perfluorodecanoic acid	0.0124 J	0.0101 J		20	30
2058-94-8	Perfluoroundecanoic acid	0.020 U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.020 U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.020 U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.020 U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.308	0.247		22	30
2706-91-4	Perfluoropentanesulfonic acid	0.405	0.309		27	30
355-46-4	Perfluorohexanesulfonic acid	7.13 ^a	7.27	E	2	30
375-92-8	Perfluoroheptanesulfonic acid	0.124	0.0694		56*	30
1763-23-1	Perfluorooctanesulfonic acid	3.62 ^a	2.59		33*	30
68259-12-1	Perfluorononanesulfonic acid	0.0139 J	ND		200*	30
335-77-3	Perfluorodecanesulfonic acid	0.020 U	ND		nc	30
79780-39-5	Perfluorododecanesulfonic aci	0.026 U	ND		nc	30
757124-72-44:2	Fluorotelomer sulfonate	0.10 U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.10 U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.10 U	ND		nc	30
754-91-6	PFOSA	0.365	0.286		24	30
31506-32-8	MeFOSA	0.041 U	ND		nc	30
4151-50-2	EtFOSA	0.041 U	ND		nc	30
2355-31-9	MeFOSAA	0.026 U	ND		nc	30
2991-50-6	EtFOSAA	0.026 U	ND		nc	30
24448-09-7	MeFOSE	0.20 U	ND		nc	30
1691-99-2	EtFOSE	0.20 U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.020 U	ND		nc	30
919005-14-4	ADONA	0.041 U	ND		nc	30
377-73-1	PFMPA	0.041 U	ND		nc	30
863090-89-5	PFMBA	0.041 U	ND		nc	30
151772-58-6	NFDHA	0.041 U	ND		nc	30
756426-58-19	Cl-PF3ONS (F-53B Major)	0.041 U	ND		nc	30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.041 U	ND		nc	30

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP97911-DUP	4Q47719.D	10	07/21/23	AL	07/18/23	OP97911	S4Q699
FC7258-2	6Q21618.D	5	07/25/23	MV	07/18/23	OP97911	S6Q318
FC7258-2	6Q21619.D	16	07/25/23	MV	07/18/23	OP97911	S6Q318

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC7724-1, FC7724-2, FC7724-3, FC7724-4, FC7724-5, FC7724-6

CAS No.	Compound	FC7258-2 ug/l	DUP Q ug/l	Q	RPD	Limits
113507-82-7PFEESA		0.041 U	ND		nc	30
356-02-5	3:3 Fluorotelomer carboxylate	0.10 U	ND		nc	30
914637-49-35:3	Fluorotelomer carboxylate	0.51 U	ND		nc	30
812-70-4	7:3 Fluorotelomer carboxylate	0.51 U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC7258-2	FC7258-2	Limits
	13C4-PFBA	90%	78%	46%	20-150%
	13C5-PFPeA	109%	109%	70%	20-150%
	13C5-PFHxA	115%	107%	74%	20-150%
	13C4-PFHpA	116%	119%	75%	20-150%
	13C8-PFOA	122%	114%	82%	20-150%
	13C9-PFNA	110%	117%	82%	20-150%
	13C6-PFDA	120%	113%	89%	20-150%
	13C7-PFUnDA	102%	111%	88%	20-150%
	13C2-PFDoDA	103%	98%	67%	20-150%
	13C2-PFTeDA	78%	85%	55%	20-150%
	13C3-PFBS	117%	123%	86%	20-150%
	13C3-PFHxS	92%	100%	83%	20-150%
	13C8-PFOS	170%* b	121%	90%	20-150%
	13C8-FOSA	127%	100%	72%	20-150%
	d3-MeFOSA	106%	112%	72%	20-150%
	d5-EtFOSA	113%	109%	77%	20-150%
	d3-MeFOSAA	135%	137%	83%	20-150%
	d5-EtFOSAA	116%	115%	85%	20-150%
	d7-MeFOSE	98%	93%	63%	20-150%
	d9-EtFOSE	109%	96%	73%	20-150%
	13C2-4:2FTS	218%* b	146%	86%	20-180%
	13C2-6:2FTS	122%	136%	94%	20-180%
	13C2-8:2FTS	114%	117%	81%	20-180%
	13C3-HFPO-DA	89%	129%	77%	20-150%

(a) Result is from Run #2.

(b) Outside control limits due to dilution.

* = Outside of Control Limits.

Injection Standard Area Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q697-CC690	Injection Date:	07/19/23
Lab File ID:	4Q47562.D	Injection Time:	11:56
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	72822	2.93	45287	5.60	66953	7.24	28397	7.80	20219	8.29
Check Std ^c	60974	2.92	37449	5.56	55346	7.19	23297	7.73	17533	8.24
Upper Limit ^d	145644	3.32	90574	5.96	133906	7.59	56794	8.13	40438	8.64
Lower Limit ^e	29129	2.52	18115	5.16	26781	6.79	11359	7.33	8088	7.84

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
OP97911-BS	51159	2.92	31133	5.57	47052	7.20	19721	7.75	14495	8.24	1
OP97911-LLBS	50934	2.92	30944	5.56	45058	7.20	20145	7.75	14716	8.25	1
OP97911-MB	49210	2.92	29805	5.57	45841	7.20	18205	7.76	14085	8.24	1
ZZZZZZ	43787	2.92	31828	5.57	49418	7.20	20385	7.75	15894	8.25	1
ZZZZZZ	46305	2.90	33903	5.59	54409	7.20	23492	7.75	13292	8.22	1
FC7258-1	50823	2.92	31282	5.57	42565	7.20	21494	7.75	13250	8.25	1
ZZZZZZ	49478	2.93	30355	5.57	45999	7.20	21093	7.75	14502	8.25	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: S4Q690-ICC690 4Q47151.D 07/12/23 18:15. 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: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q697-CC690	Injection Date:	07/19/23
Lab File ID:	4Q47562.D	Injection Time:	11:56
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	5779	7.33	11807	8.43
Check Std ^c	4879	7.26	9629	8.38
Upper Limit ^d	11558	7.66	23614	8.78
Lower Limit ^e	2312	6.86	4723	7.98

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
OP97911-BS	4342	7.28	7938	8.38	1
OP97911-LLBS	4238	7.28	8371	8.38	1
OP97911-MB	4024	7.28	7587	8.39	1
ZZZZZZ	4154	7.28	8530	8.39	1
ZZZZZZ	4242	7.28	7573	8.37	1
FC7258-1	3648	7.29	5591	8.39	1
ZZZZZZ	4131	7.29	7917	8.39	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q690-ICC690 4Q47151.D 07/12/23 18:15. 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: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q697-CC690	Injection Date:	07/19/23
Lab File ID:	4Q47574.D	Injection Time:	14:53
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Initial Cal ^b	72822	2.93	45287	5.60	66953	7.24	28397	7.80	20219	8.29
Check Std ^c	61915	2.93	39173	5.57	56312	7.20	23924	7.76	17650	8.25
Upper Limit ^d	145644	3.33	90574	5.97	133906	7.60	56794	8.16	40438	8.65
Lower Limit ^e	29129	2.53	18115	5.17	26781	6.80	11359	7.36	8088	7.85

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
S4Q697-ICCB	60089	2.93	36861	5.57	54122	7.20	24228	7.76	16852	8.25	1
FC7724-1	49001	2.98	30516	5.60	45070	7.21	19035	7.76	13768	8.27	1
FC7724-2	51810	2.90	32610	5.59	48277	7.21	21023	7.77	14522	8.27	1
FC7724-3	48973	2.92	30279	5.57	44713	7.21	19231	7.77	13525	8.27	1
FC7724-4	49306	2.92	30406	5.59	44545	7.21	19390	7.77	14392	8.27	1
FC7724-5	46025	2.92	32937	5.57	48765	7.21	21901	7.77	16884	8.27	1
FC7724-6	50096	2.92	30402	5.59	44500	7.22	18990	7.77	13960	8.28	1
ZZZZZZ	52493	2.92	32088	5.59	48241	7.22	21824	7.77	14827	8.28	1
FC7724-5	52025	2.92	33419	5.59	48129	7.22	20857	7.77	15950	8.28	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: S4Q690-ICC690 4Q47151.D 07/12/23 18:15. 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: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q697-CC690	Injection Date:	07/19/23
Lab File ID:	4Q47574.D	Injection Time:	14:53
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	5779	7.33	11807	8.43
Check Std ^c	5255	7.29	9383	8.39
Upper Limit ^d	11558	7.69	23614	8.79
Lower Limit ^e	2312	6.89	4723	7.99

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
S4Q697-ICCB	4816	7.29	8827	8.39	1
FC7724-1	3893	7.30	7684	8.39	1
FC7724-2	4323	7.30	8214	8.40	1
FC7724-3	3941	7.30	8114	8.40	1
FC7724-4	4104	7.30	7654	8.40	1
FC7724-5	4225	7.30	7939	8.40	1
FC7724-6	4126	7.30	7302	8.42	1
ZZZZZZ	4315	7.30	8575	8.42	1
FC7724-5	4156	7.30	8912	8.42	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q690-ICC690 4Q47151.D 07/12/23 18:15. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 to + 100% of initial cal area.
- (d) Upper Limit = + 100% of initial standard area; Retention time + 0.4 minutes of check standard.
- (e) Lower Limit = -60% of initial standard area; Retention time -0.4 minutes of check standard.

6.5.2
6

Injection Standard Area Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q699-CC690	Injection Date:	07/21/23
Lab File ID:	4Q47714.D	Injection Time:	01:52
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	72822	2.93	45287	5.60	66953	7.24	28397	7.80	20219	8.29
Check Std ^c	66078	2.89	41157	5.57	59981	7.21	25035	7.77	18865	8.27
Upper Limit ^d	145644	3.29	90574	5.97	133906	7.61	56794	8.17	40438	8.67
Lower Limit ^e	29129	2.49	18115	5.17	26781	6.81	11359	7.37	8088	7.87

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
FC7258-1	55995	2.89	34610	5.56	47910	7.21	21660	7.77	16300	8.28	5
OP97911-MS	51970	2.89	31945	5.56	45830	7.21	21275	7.77	14650	8.27	5
OP97911-DUP	49290	2.89	32360	5.56	42770	7.21	19740	7.77	12290	8.27	10
ZZZZZZ	52950	2.89	32980	5.56	48220	7.21	19980	7.77	16560	8.25	10
ZZZZZZ	56080	2.89	34560	5.57	50630	7.21	23020	7.77	15510	8.27	10
ZZZZZZ	55730	2.90	32120	5.57	47980	7.21	20640	7.76	13850	8.27	10
ZZZZZZ	56040	2.89	36000	5.56	47540	7.21	20890	7.77	12360	8.27	10

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: S4Q690-ICC690 4Q47151.D 07/12/23 18:15. 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: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q699-CC690	Injection Date:	07/21/23
Lab File ID:	4Q47714.D	Injection Time:	01:52
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	5779	7.33	11807	8.43
Check Std ^c	5005	7.30	10615	8.40
Upper Limit ^d	11558	7.70	23614	8.80
Lower Limit ^e	2312	6.90	4723	8.00

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
FC7258-1	4455	7.30	8100	8.42	5
OP97911-MS	3490	7.32	8155	8.40	5
OP97911-DUP	4700	7.30	7210	8.42	10
ZZZZZZ	4490	7.29	8810	8.40	10
ZZZZZZ	4430	7.29	9640	8.40	10
ZZZZZZ	4690	7.30	4780	8.40	10
ZZZZZZ	4080	7.30	5950	8.40	10

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q690-ICC690 4Q47151.D 07/12/23 18:15. 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.

6.5.3
6

TDCA Retention Time Check

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q690-RT	Injection Date:	07/12/23
Lab File ID:	4Q47145.D	Injection Time:	16:47
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.431	--	--
TDCA	6.960	1.471	1.000
TCDCA	6.811	1.620	1.000
TUDCA	5.967	2.464	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
S4Q690-IC690	4Q47147.D	07/12/23	17:16	00:29	Mass Calibration Verification
S4Q690-IC690	4Q47148.D	07/12/23	17:31	00:44	Initial cal 1
S4Q690-IC690	4Q47149.D	07/12/23	17:46	00:59	Initial cal 2
S4Q690-IC690	4Q47150.D	07/12/23	18:01	01:14	Initial cal 3
S4Q690-ICC690	4Q47151.D	07/12/23	18:15	01:28	Initial cal 4
S4Q690-IC690	4Q47152.D	07/12/23	18:30	01:43	Initial cal 5
S4Q690-IC690	4Q47153.D	07/12/23	18:45	01:58	Initial cal 6
S4Q690-IC690	4Q47154.D	07/12/23	19:00	02:13	Initial cal 7
S4Q690-IC690	4Q47155.D	07/12/23	19:14	02:27	Initial cal 8
S4Q690-IBLK	4Q47156.D	07/12/23	19:29	02:42	Instrument Blank
S4Q690-IBLK	4Q47156.D	07/12/23	19:29	02:42	Instrument Blank
S4Q690-ICV690	4Q47157.D	07/12/23	19:44	02:57	Initial cal verification 4
S4Q690-ICV690	4Q47158.D	07/12/23	19:59	03:12	Initial cal verification 20
S4Q690-CC690	4Q47159.D	07/12/23	20:13	03:26	Continuing cal 4
S4Q690-CC690	4Q47160.D	07/12/23	20:28	03:41	Continuing cal 1.0LL
OP97715-BS	4Q47161.D	07/12/23	20:43	03:56	Blank Spike
OP97715-LLBS	4Q47162.D	07/12/23	20:58	04:11	Blank Spike
OP97715-MB	4Q47163.D	07/12/23	21:12	04:25	Method Blank
ZZZZZZ	4Q47164.D	07/12/23	21:27	04:40	(unrelated sample)
FC7060-19	4Q47165.D	07/12/23	21:42	04:55	(used for QC only; not part of job FC7724)
OP97715-MS	4Q47166.D	07/12/23	21:57	05:10	Matrix Spike
OP97715-MSD	4Q47167.D	07/12/23	22:11	05:24	Matrix Spike Duplicate
S4Q690-CC690	4Q47168.D	07/12/23	22:26	05:39	Continuing cal 4
S4Q690-ICCB	4Q47169.D	07/12/23	22:41	05:54	Continuing Calibration Blank
OP97747-BS	4Q47170.D	07/12/23	22:56	06:09	Blank Spike
OP97747-LLBS	4Q47171.D	07/12/23	23:10	06:23	Blank Spike
OP97747-MB	4Q47172.D	07/12/23	23:25	06:38	Method Blank
ZZZZZZ	4Q47173.D	07/12/23	23:40	06:53	(unrelated sample)
FC6935-2	4Q47174.D	07/12/23	23:55	07:08	(used for QC only; not part of job FC7724)
OP97747-MS	4Q47175.D	07/13/23	00:09	07:22	Matrix Spike
OP97747-MSD	4Q47176.D	07/13/23	00:24	07:37	Matrix Spike Duplicate
ZZZZZZ	4Q47177.D	07/13/23	00:39	07:52	(unrelated sample)
ZZZZZZ	4Q47178.D	07/13/23	00:54	08:07	(unrelated sample)
ZZZZZZ	4Q47179.D	07/13/23	01:08	08:21	(unrelated sample)

TDCA Retention Time Check

Job Number: FC7724
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q690-RT	Injection Date: 07/12/23
Lab File ID: 4Q47145.D	Injection Time: 16:47
Instrument ID: GCMS4Q	

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q690-ECC690	4Q47180.D	07/13/23	01:23	08:36	Ending cal 4
S4Q690-ICCB	4Q47181.D	07/13/23	01:38	08:51	Continuing Calibration Blank

6.6.1

6

TDCA Retention Time Check

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q697-RT	Injection Date:	07/19/23
Lab File ID:	4Q47558.D	Injection Time:	10:57
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.381	--	--
TDCA	6.923	1.458	1.000
TCDCA	6.761	1.620	1.000
TUDCA	5.918	2.463	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
S4Q697-IBLK	4Q47561.D	07/19/23	11:41	00:44	Instrument Blank
S4Q697-IBLK	4Q47561.D	07/19/23	11:41	00:44	Instrument Blank
S4Q697-CC690	4Q47562.D	07/19/23	11:56	00:59	Continuing cal 4
S4Q697-CC690	4Q47563.D	07/19/23	12:11	01:14	Continuing cal 1.0LL
OP97911-BS	4Q47564.D	07/19/23	12:25	01:28	Blank Spike
OP97911-LLBS	4Q47565.D	07/19/23	12:40	01:43	Blank Spike
OP97911-MB	4Q47566.D	07/19/23	12:55	01:58	Method Blank
ZZZZZZ	4Q47567.D	07/19/23	13:10	02:13	(unrelated sample)
ZZZZZZ	4Q47568.D	07/19/23	13:24	02:27	(unrelated sample)
FC7258-1	4Q47569.D	07/19/23	13:39	02:42	(used for QC only; not part of job FC7724)
ZZZZZZ	4Q47573.D	07/19/23	14:38	03:41	(unrelated sample)
S4Q697-CC690	4Q47574.D	07/19/23	14:53	03:56	Continuing cal 4
S4Q697-ICCB	4Q47575.D	07/19/23	15:07	04:10	Continuing Calibration Blank
FC7724-1	4Q47577.D	07/19/23	15:41	04:44	AF-RHMW12A-WGN01LF-2307
FC7724-2	4Q47578.D	07/19/23	15:55	04:58	AF-RHMW12A-WGFD01LF-2307
FC7724-3	4Q47579.D	07/19/23	16:10	05:13	AF-RHMW17-WGN01LF-2307
FC7724-4	4Q47580.D	07/19/23	16:25	05:28	AF-RHMW16-WGN01LF-2307
FC7724-5	4Q47581.D	07/19/23	16:40	05:43	AF-RHMW17D-WGN01LF-2307
FC7724-6	4Q47582.D	07/19/23	16:54	05:57	AF-RHMW17D-WQFB01-2307
ZZZZZZ	4Q47583.D	07/19/23	17:09	06:12	(unrelated sample)
FC7724-5	4Q47584.D	07/19/23	17:24	06:27	AF-RHMW17D-WGN01LF-2307
S4Q697-CC690	4Q47585.D	07/19/23	17:39	06:42	Continuing cal 4
S4Q697-ICCB	4Q47586.D	07/19/23	17:54	06:57	Continuing Calibration Blank
ZZZZZZ	4Q47587.D	07/19/23	18:08	07:11	(unrelated sample)
ZZZZZZ	4Q47588.D	07/19/23	18:23	07:26	(unrelated sample)
ZZZZZZ	4Q47589.D	07/19/23	18:38	07:41	(unrelated sample)
ZZZZZZ	4Q47590.D	07/19/23	18:52	07:55	(unrelated sample)
FC7198-7	4Q47591.D	07/19/23	19:07	08:10	(used for QC only; not part of job FC7724)
OP97881-MS	4Q47592.D	07/19/23	19:22	08:25	Matrix Spike
OP97881-MSD	4Q47593.D	07/19/23	19:37	08:40	Matrix Spike Duplicate
ZZZZZZ	4Q47594.D	07/19/23	19:51	08:54	(unrelated sample)
ZZZZZZ	4Q47595.D	07/19/23	20:06	09:09	(unrelated sample)
S4Q697-CC690	4Q47596.D	07/19/23	20:21	09:24	Continuing cal 4
S4Q697-ICCB	4Q47597.D	07/19/23	20:36	09:39	Continuing Calibration Blank

TDCA Retention Time Check

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q697-RT	Injection Date:	07/19/23
Lab File ID:	4Q47558.D	Injection Time:	10:57
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
OP97906-BS	4Q47598.D	07/19/23	20:50	09:53	Blank Spike
OP97906-LLBS	4Q47599.D	07/19/23	21:05	10:08	Blank Spike
OP97906-MB	4Q47600.D	07/19/23	21:20	10:23	Method Blank
ZZZZZZ	4Q47601.D	07/19/23	21:35	10:38	(unrelated sample)
ZZZZZZ	4Q47602.D	07/19/23	21:49	10:52	(unrelated sample)
ZZZZZZ	4Q47603.D	07/19/23	22:04	11:07	(unrelated sample)
ZZZZZZ	4Q47604.D	07/19/23	22:19	11:22	(unrelated sample)
ZZZZZZ	4Q47605.D	07/19/23	22:34	11:37	(unrelated sample)
ZZZZZZ	4Q47607.D	07/19/23	23:03	12:06	(unrelated sample)
S4Q697-CC690	4Q47608.D	07/19/23	23:18	12:21	Continuing cal 4
S4Q697-ICCB	4Q47609.D	07/19/23	23:33	12:36	Continuing Calibration Blank
ZZZZZZ	4Q47610.D	07/19/23	23:47	12:50	(unrelated sample)
ZZZZZZ	4Q47611.D	07/20/23	00:02	13:05	(unrelated sample)
FC7243-10	4Q47612.D	07/20/23	00:17	13:20	(used for QC only; not part of job FC7724)
OP97906-MS	4Q47613.D	07/20/23	00:32	13:35	Matrix Spike
OP97906-MSD	4Q47614.D	07/20/23	00:47	13:50	Matrix Spike Duplicate
ZZZZZZ	4Q47615.D	07/20/23	01:01	14:04	(unrelated sample)
ZZZZZZ	4Q47616.D	07/20/23	01:16	14:19	(unrelated sample)
ZZZZZZ	4Q47617.D	07/20/23	01:31	14:34	(unrelated sample)
ZZZZZZ	4Q47618.D	07/20/23	01:46	14:49	(unrelated sample)
ZZZZZZ	4Q47619.D	07/20/23	02:00	15:03	(unrelated sample)
S4Q697-CC690	4Q47620.D	07/20/23	02:15	15:18	Continuing cal 4
S4Q697-ICCB	4Q47621.D	07/20/23	02:30	15:33	Continuing Calibration Blank
ZZZZZZ	4Q47622.D	07/20/23	02:45	15:48	(unrelated sample)
ZZZZZZ	4Q47624.D	07/20/23	03:14	16:17	(unrelated sample)
ZZZZZZ	4Q47625.D	07/20/23	03:29	16:32	(unrelated sample)
S4Q697-ECC690	4Q47626.D	07/20/23	03:43	16:46	Ending cal 4
S4Q697-ICCB	4Q47627.D	07/20/23	03:58	17:01	Continuing Calibration Blank

6.6.2
6

TDCA Retention Time Check

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q699-RT	Injection Date:	07/21/23
Lab File ID:	4Q47710.D	Injection Time:	00:53
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.406	--	--
TDCA	6.948	1.458	1.000
TCDCA	6.786	1.620	1.000
TUDCA	5.943	2.463	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
S4Q699-IBLK	4Q47713.D	07/21/23	01:38	00:45	Instrument Blank
S4Q699-IBLK	4Q47713.D	07/21/23	01:38	00:45	Instrument Blank
S4Q699-CC690	4Q47714.D	07/21/23	01:52	00:59	Continuing cal 4
S4Q699-CC690	4Q47715.D	07/21/23	02:07	01:14	Continuing cal 1.0LL
FC7258-1	4Q47716.D	07/21/23	02:22	01:29	(used for QC only; not part of job FC7724)
OP97911-MS	4Q47717.D	07/21/23	02:37	01:44	Matrix Spike
OP97911-DUP	4Q47719.D	07/21/23	03:06	02:13	Duplicate
ZZZZZZ	4Q47720.D	07/21/23	03:21	02:28	(unrelated sample)
ZZZZZZ	4Q47721.D	07/21/23	03:36	02:43	(unrelated sample)
ZZZZZZ	4Q47722.D	07/21/23	03:50	02:57	(unrelated sample)
ZZZZZZ	4Q47724.D	07/21/23	04:20	03:27	(unrelated sample)
S4Q699-CC690	4Q47725.D	07/21/23	04:35	03:42	Continuing cal 4
S4Q699-ICCB	4Q47726.D	07/21/23	04:49	03:56	Continuing Calibration Blank
FC7243-10	4Q47727.D	07/21/23	05:04	04:11	(used for QC only; not part of job FC7724)
OP97906-MS	4Q47728.D	07/21/23	05:19	04:26	Matrix Spike
OP97906-MSD	4Q47729.D	07/21/23	05:34	04:41	Matrix Spike Duplicate
ZZZZZZ	4Q47731.D	07/21/23	06:03	05:10	(unrelated sample)
ZZZZZZ	4Q47732.D	07/21/23	06:18	05:25	(unrelated sample)
ZZZZZZ	4Q47733.D	07/21/23	06:33	05:40	(unrelated sample)
OP97940-BS	4Q47734.D	07/21/23	06:47	05:54	Blank Spike
OP97940-LLBS	4Q47735.D	07/21/23	07:02	06:09	Blank Spike
OP97940-MB	4Q47736.D	07/21/23	07:17	06:24	Method Blank
S4Q699-CC690	4Q47737.D	07/21/23	07:32	06:39	Continuing cal 4
S4Q699-ICCB	4Q47738.D	07/21/23	07:46	06:53	Continuing Calibration Blank
ZZZZZZ	4Q47739.D	07/21/23	08:01	07:08	(unrelated sample)
ZZZZZZ	4Q47740.D	07/21/23	08:16	07:23	(unrelated sample)
ZZZZZZ	4Q47741.D	07/21/23	08:31	07:38	(unrelated sample)
ZZZZZZ	4Q47742.D	07/21/23	08:45	07:52	(unrelated sample)
ZZZZZZ	4Q47743.D	07/21/23	09:00	08:07	(unrelated sample)
ZZZZZZ	4Q47744.D	07/21/23	09:15	08:22	(unrelated sample)
ZZZZZZ	4Q47745.D	07/21/23	09:30	08:37	(unrelated sample)
ZZZZZZ	4Q47746.D	07/21/23	09:44	08:51	(unrelated sample)
ZZZZZZ	4Q47747.D	07/21/23	09:59	09:06	(unrelated sample)
S4Q699-CC690	4Q47748.D	07/21/23	10:14	09:21	Continuing cal 4

TDCA Retention Time Check

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q699-RT	Injection Date:	07/21/23
Lab File ID:	4Q47710.D	Injection Time:	00:53
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q699-ICCB	4Q47749.D	07/21/23	10:29	09:36	Continuing Calibration Blank
FC7258-3	4Q47750.D	07/21/23	10:43	09:50	(used for QC only; not part of job FC7724)
FC7258-5	4Q47752.D	07/21/23	11:13	10:20	(used for QC only; not part of job FC7724)
ZZZZZZ	4Q47754.D	07/21/23	11:42	10:49	(unrelated sample)
ZZZZZZ	4Q47755.D	07/21/23	11:57	11:04	(unrelated sample)
OP97941-BS	4Q47756.D	07/21/23	12:12	11:19	Blank Spike
OP97941-LLBS	4Q47757.D	07/21/23	12:26	11:33	Blank Spike
OP97941-MB	4Q47758.D	07/21/23	12:41	11:48	Method Blank
ZZZZZZ	4Q47759.D	07/21/23	12:56	12:03	(unrelated sample)
S4Q699-CC690	4Q47760.D	07/21/23	13:11	12:18	Continuing cal 4
S4Q699-ICCB	4Q47761.D	07/21/23	13:25	12:32	Continuing Calibration Blank
ZZZZZZ	4Q47762.D	07/21/23	13:40	12:47	(unrelated sample)
ZZZZZZ	4Q47763.D	07/21/23	13:55	13:02	(unrelated sample)
ZZZZZZ	4Q47764.D	07/21/23	14:10	13:17	(unrelated sample)
ZZZZZZ	4Q47765.D	07/21/23	14:24	13:31	(unrelated sample)
ZZZZZZ	4Q47766.D	07/21/23	14:39	13:46	(unrelated sample)
ZZZZZZ	4Q47767.D	07/21/23	14:54	14:01	(unrelated sample)
ZZZZZZ	4Q47768.D	07/21/23	15:09	14:16	(unrelated sample)
ZZZZZZ	4Q47769.D	07/21/23	15:24	14:31	(unrelated sample)
ZZZZZZ	4Q47770.D	07/21/23	15:39	14:46	(unrelated sample)
ZZZZZZ	4Q47771.D	07/21/23	15:54	15:01	(unrelated sample)
S4Q699-CC690	4Q47772.D	07/21/23	16:09	15:16	Continuing cal 4
S4Q699-ICCB	4Q47773.D	07/21/23	16:23	15:30	Continuing Calibration Blank
ZZZZZZ	4Q47774.D	07/21/23	16:38	15:45	(unrelated sample)
ZZZZZZ	4Q47775.D	07/21/23	16:53	16:00	(unrelated sample)
ZZZZZZ	4Q47776.D	07/21/23	17:08	16:15	(unrelated sample)
FC7223-15	4Q47777.D	07/21/23	17:22	16:29	(used for QC only; not part of job FC7724)
OP97941-MS	4Q47778.D	07/21/23	17:37	16:44	Matrix Spike
OP97941-MSD	4Q47779.D	07/21/23	17:52	16:59	Matrix Spike Duplicate
ZZZZZZ	4Q47780.D	07/21/23	18:07	17:14	(unrelated sample)
ZZZZZZ	4Q47781.D	07/21/23	18:21	17:28	(unrelated sample)
ZZZZZZ	4Q47782.D	07/21/23	18:36	17:43	(unrelated sample)
S4Q699-ECC690	4Q47783.D	07/21/23	18:51	17:58	Ending cal 4
S4Q699-ICCB	4Q47784.D	07/21/23	19:06	18:13	Continuing Calibration Blank

6.6.3

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Ion Ratio Summary

Job Number: FC7724
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q697	Method: EPA DRAFT 1633
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Lab Sample ID	Lab File ID	Ion Ratios	
		PFPeA	PFHxA
S4Q690-ICC690	4Q47151.D	0	2.8
FC7724-1	4Q47577.D	0	3.2
FC7724-2	4Q47578.D	0	
FC7724-3	4Q47579.D	0	3.4
FC7724-4	4Q47580.D		
FC7724-5	4Q47581.D		
FC7724-6	4Q47582.D		
FC7724-5	4Q47584.D		

6.7.1

6

Isotope Dilution Standard Recovery Summary

Job Number: FC7724
 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
FC7724-1	4Q47577.D	60	140	122	121	119	121	121	102
FC7724-2	4Q47578.D	59	138	120	118	123	119	121	114
FC7724-3	4Q47579.D	116	146	131	125	128	117	121	99
FC7724-4	4Q47580.D	94	140	123	123	124	122	119	101
FC7724-5	4Q47581.D	5* a	32	109	124	125	120	120	108
FC7724-5	4Q47584.D	113	127	118	112	120	116	109	96
FC7724-6	4Q47582.D	129	145	130	127	127	123	117	109
OP97911-BS	4Q47564.D	112	136	115	119	121	115	113	108
OP97911-DUP	4Q47719.D	90	109	115	116	122	110	120	102
OP97911-LLBS	4Q47565.D	119	142	124	125	129	120	121	111
OP97911-MB	4Q47566.D	124	144	127	127	125	130	126	114
OP97911-MS	4Q47717.D	93	115	120	121	111	101	99	92
S4Q697-IBLK	4Q47561.D	99	121	101	103	103	106	103	95
S4Q697-ICCB	4Q47575.D	99	119	97	102	106	99	100	100
S4Q699-IBLK	4Q47713.D	105	94	98	97	100	96	103	100

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

(a) Outside control limits.

Isotope Dilution Standard Recovery Summary

Job Number: FC7724
 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
FC7724-1	4Q47577.D	95	83	127	123	126	120	108	111
FC7724-2	4Q47578.D	107	95	126	117	124	116	118	119
FC7724-3	4Q47579.D	94	81	137	126	114	112	98	103
FC7724-4	4Q47580.D	96	84	126	119	125	125	109	116
FC7724-5	4Q47581.D	100	66	115	113	121	122	120	127
FC7724-5	4Q47584.D	90	72	127	130	116	94	92	106
FC7724-6	4Q47582.D	100	51	131	118	132	112	116	123
OP97911-BS	4Q47564.D	103	95	113	112	116	95	82	97
OP97911-DUP	4Q47719.D	103	78	117	92	170* a	127	106	113
OP97911-LLBS	4Q47565.D	105	101	126	119	120	97	89	103
OP97911-MB	4Q47566.D	115	107	130	124	136	101	97	113
OP97911-MS	4Q47717.D	76	69	158* b	122	107	93	83	81
S4Q697-IBLK	4Q47561.D	97	94	110	105	113	115		
S4Q697-ICCB	4Q47575.D	95	97	107	97	115	118		
S4Q699-IBLK	4Q47713.D	101	91	98	98	100	107		

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%

(a) Outside control limits due to dilution.

(b) Outside control limits.

Isotope Dilution Standard Recovery Summary

Job Number: FC7724
 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
FC7724-1	4Q47577.D	113	110	95	101	139	116	104	109
FC7724-2	4Q47578.D	119	111	101	112	117	112	107	112
FC7724-3	4Q47579.D	105	97	87	93	125	112	107	118
FC7724-4	4Q47580.D	112	107	104	108	111	122	105	116
FC7724-5	4Q47581.D	183* a	193* a	90	99	222* a	142	157	88
FC7724-5	4Q47584.D	122	117	78	88	124	112	108	106
FC7724-6	4Q47582.D	129	126	101	112	118	131	102	117
OP97911-BS	4Q47564.D	116	111	89	103	127	133	107	109
OP97911-DUP	4Q47719.D	135	116	98	109	218* b	122	114	89
OP97911-LLBS	4Q47565.D	114	110	89	105	129	143	130	116
OP97911-MB	4Q47566.D	132	125	91	110	137	169	139	118
OP97911-MS	4Q47717.D	91	84	71	83	209* a	203* a	148	100
S4Q697-IBLK	4Q47561.D	114	104			132	122	117	
S4Q697-ICCB	4Q47575.D	116	109			118	95	114	
S4Q699-IBLK	4Q47713.D	99	104			121	114	110	

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%

- (a) Outside control limits.
- (b) Outside control limits due to dilution.

6.8.1
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Initial Calibration Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q690-ICC690
 Lab FileID: 4Q47151.D

Initial Calibration Report

Method Path	D:\MassHunter\methods										
Method File	1633_071223_S4Q690.quantmethod.xml										
Batch Name	D:\MassHunter\Data\071223_1633_S4Q690\QuantResults\4q690.batch.bin										
Last Calib Update	7/13/2023 12:07:20 PM										
Level Name	Calibration Files	Acq. Date-Time	Level Last Update Time					%RSD			
1	D:\MassHunter\Data\071223_1633_S4Q690\4Q47148.d	7/12/2023 5:31:33 PM	7/13/2023 12:07:20 PM								
2	D:\MassHunter\Data\071223_1633_S4Q690\4Q47149.d	7/12/2023 5:46:16 PM	7/13/2023 12:07:20 PM								
3	D:\MassHunter\Data\071223_1633_S4Q690\4Q47150.d	7/12/2023 6:01:00 PM	7/13/2023 12:07:20 PM								
4	D:\MassHunter\Data\071223_1633_S4Q690\4Q47151.d	7/12/2023 6:15:45 PM	7/13/2023 12:07:20 PM								
5	D:\MassHunter\Data\071223_1633_S4Q690\4Q47152.d	7/12/2023 6:30:30 PM	7/13/2023 12:07:20 PM								
6	D:\MassHunter\Data\071223_1633_S4Q690\4Q47153.d	7/12/2023 6:45:17 PM	7/13/2023 12:07:20 PM								
7	D:\MassHunter\Data\071223_1633_S4Q690\4Q47154.d	7/12/2023 7:00:02 PM	7/13/2023 12:07:20 PM								
8	D:\MassHunter\Data\071223_1633_S4Q690\4Q47155.d	7/12/2023 7:14:48 PM	7/13/2023 12:07:20 PM								
Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M4-PFBA	Avg RF	0.2969	0.2818	0.2768	0.2961	0.3015	0.3050	0.3261	0.3223	0.3008	5.752
T PFBA	Avg RF	0.0639	0.0619	0.0621	0.0666	0.0677	0.0699	0.0775	0.0842	0.0692	11.365
T 3:3FTCA											
I M5-PFPeA	Avg RF	0.7076	0.6832	0.6635	0.7049	0.7289	0.7317	0.7841	0.7556	0.7199	5.384
T PFMPA	Avg RF	1.3429	1.3079	1.3250	1.3888	1.4437	1.4526	1.5433	1.4751	1.4099	5.847
T PFPeA	Avg RF	0.7561	0.7139	0.7148	0.7312	0.7703	0.7739	0.8218	0.7854	0.7584	4.924
T PFMBA											
I M5-PFHxA	Avg RF	0.0561	0.0557	0.0580	0.0607	0.0571	0.0588	0.0593	0.0534	0.0574	4.015
T NFDHA	Avg RF	0.9942	0.8860	0.9105	0.9797	0.9767	0.9796	1.0550	1.0464	0.9785	5.971
T PFHxA	Avg RF	0.7177	0.7132	0.6943	0.7321	0.7525	0.7470	0.7949	0.7604	0.7390	4.280
T PFEEA	Avg RF	0.1567	0.1536	0.1509	0.1636	0.1666	0.1643	0.1743	0.1710	0.1626	5.075
T 5:3FTCA	Avg RF	0.0837	0.0840	0.0831	0.0906	0.0916	0.0924	0.0980	0.0947	0.0898	6.212
T 7:3FTCA											
I M4-PFHpA	Avg RF	1.4991	1.4098	1.4257	1.5021	1.5714	1.5784	1.6907	1.6328	1.5387	6.353
T PFHpA											
I M8-PFOA	Avg RF	1.3587	1.3044	1.2070	1.4234	1.4416	1.4840	1.5677	1.5276	1.4143	8.459
T PFOA											
I M9-PFNA	Avg RF	0.8987	0.9174	0.8783	0.8755	0.8950	0.8958	1.0366	0.9730	0.9213	6.054
T PFNA											
I M6-PFDA	Avg RF	1.2867	1.2460	1.1742	1.2093	1.3027	1.3439	1.4255	1.3998	1.2985	6.813
T PFDA											
I M7-PFUnDA	Avg RF	1.0377	0.9610	0.8739	0.9987	0.9963	0.9988	1.0957	0.9715	0.9917	6.409
T PFUnDA											
I M2-PFDODA											

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Initial Calibration Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q690-ICC690
 Lab FileID: 4Q47151.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T PFDoDA	Avg RF	0.9866	0.9728	0.9402	0.9971	1.0081	1.0615	1.0962	0.9889	1.0064	4.953
T PFTfDA	Avg RF	1.1660	1.1090	1.0749	1.0852	1.1130	1.1334	1.1682	1.0589	1.1136	3.629
I M2-PFTeDA	Avg RF	1.2431	1.1899	1.1285	1.2651	1.2833	1.3027	1.3464	1.2332	1.2490	5.424
T PFTeDA	Avg RF	1.0873	1.1209	0.9672	1.0752	1.1183	1.1158	1.1740	1.1713	1.1037	5.920
I M8-FOSA	Avg RF	1.0597	1.0623	0.9631	1.0709	1.0384	0.9992	1.0819	1.0613	1.0421	3.907
T PFBs	Avg RF	0.9129	0.9269	0.9097	0.8958	0.8734	0.9186	0.9844	0.9398	0.9202	3.558
I M3-PFHxS	Avg RF	1.1269	1.1243	1.0872	1.1021	1.0753	1.0796	1.1908	1.1255	1.1140	3.364
T PFHxS	Avg RF	1.0972	0.9231	0.9197	1.0375	1.0093	0.9687	1.0230	1.0156	0.9992	5.986
I M8-PFOS	Avg RF	1.4992	1.4241	1.1074	1.3253	1.3398	1.2823	1.3404	1.3263	1.3306	8.501
T PFHps	Avg RF	0.8696	0.6982	0.6713	0.7784	0.7853	0.7215	0.7429	0.6882	0.7444	8.744
T PFOs	Avg RF	0.6367	0.6110	0.7597	0.7697	0.7118	0.7017	0.7364	0.7247	0.7065	7.952
T PFDS	Avg RF	0.5886	0.5672	0.5019	0.5951	0.6030	0.5635	0.6218	0.6129	0.5817	6.553
I M2-4:2FTS	Avg RF	9.4018	8.7505	8.7654	9.0869	8.6566	8.4545	9.2042	8.6546	8.8718	3.643
T 4:2FTS	Avg RF	5.3983	6.7911	5.2884	5.8023	5.5499	6.0578	6.0202	5.3157	5.7779	8.809
I M2-6:2FTS	Avg RF	2.9075	2.7645	2.5339	2.8935	3.1516	2.9775	3.0584	2.6078	2.8619	7.478
T 6:2FTS	Avg RF	0.8037	0.8180	0.9492	0.8724	0.9091	0.8940	0.9519	0.9386	0.8921	6.424
I M2-8:2FTS	Avg RF	1.0428	1.0236	0.9513	1.0139	1.0252	1.0391	1.1000	1.0672	1.0329	4.169
T 8:2FTS	Avg RF	7.2509	7.1810	7.0099	7.6542	7.5098	7.6020	8.0551	7.6229	7.4857	4.401
I M3-MeFOSAA	Avg RF	3.6626	3.4536	3.5268	3.8512	3.6739	3.6515	3.6422	3.1563	3.5773	5.752
T MeFOSAA	Avg RF	2.6380	2.5155	2.5136	2.6432	2.6612	2.7171	2.9156	2.7409	2.6681	4.860
I M3-HFO-DA	Avg RF	0.6342	0.8264	0.8294	0.7886	0.7752	0.8631	0.8598	0.8714	0.8060	9.631
T HFO-DA	Avg RF	1.1239	1.0890	1.0642	1.0328	1.0367	1.0887	1.1755	1.2222	1.1041	6.041
I M7-MeFOSE	Avg RF	1.4350	1.2455	1.1367	1.1608	1.1470	1.1568	1.2224	1.1972	1.2127	8.052
T MeFOSE	Avg RF	1.4350	1.2455	1.1367	1.1608	1.1470	1.1568	1.2224	1.1972	1.2127	8.052

Generated at 12:07 PM on 7/13/2023

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Initial Calibration Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q690-ICC690
 Lab FileID: 4Q47151.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M5-EFOSA	Avg RF	1.5311	1.3063	1.1776	1.1358	1.2322	1.2353	1.3693	1.3202	1.2885	9.653
T EFOSA						ISTD					
I M3-MeFOSA	Avg RF	1.0693	1.0308	1.0369	1.0397	0.9759	0.9937	1.1673	1.0384	1.0440	5.526
T MeFOSA						ISTD					
I 13C4-PFOS						ISTD					
S d3-MeFOSAA	Avg RF	0.7854	0.9024	0.7603	0.7908	0.8671	0.8066	0.7992	0.8653	0.8221	6.037
S 13C8-PFOS	Avg RF	0.8013	0.8859	0.9107	0.8020	0.8992	0.8790	0.8620	0.9070	0.8684	5.075
S d5-EFOSAA	Avg RF	0.6637	0.7477	0.6992	0.6991	0.7647	0.6967	0.7436	0.7884	0.7254	5.790
S 13C8-FOSA	Avg RF	1.2602	1.3517	1.2836	1.2787	1.3362	1.2530	1.2649	1.3202	1.2936	2.892
S d7-MeFOSE	Avg RF	0.6389	0.7031	0.6474	0.6443	0.7102	0.6468	0.6730	0.6734	0.6671	4.140
S d3-MeFOSA	Avg RF	0.8974	1.0087	0.8893	0.9503	1.0154	0.9382	0.8609	0.9808	0.9426	6.049
S d9-EFOSE	Avg RF	0.8631	0.9557	0.8516	0.8916	0.9538	0.8919	0.8548	0.8438	0.8883	5.024
S d5-EFOSA	Avg RF	1.0224	1.1314	1.0413	1.0791	1.0676	0.9849	0.9124	0.9516	1.0238	7.003
I 13C3-PFBA						ISTD					
S 13C4-PFBA	Avg RF	0.9468	0.9509	0.9484	0.9341	0.9356	0.9445	0.9555	0.9428	0.9448	0.770
I 1802-PFHxS						ISTD					
S 13C2-4:2FTS	Avg RF	0.0568	0.0567	0.0530	0.0553	0.0544	0.0580	0.0558	0.0593	0.0562	3.540
S 13C3-PBES	Avg RF	2.0188	1.9348	1.9504	1.9109	1.8610	1.9149	1.9150	1.8048	1.9138	3.274
S 13C2-6:2FTS	Avg RF	0.1311	0.1095	0.1280	0.1271	0.1239	0.1142	0.1206	0.1297	0.1230	6.285
S 13C3-PFHxS	Avg RF	1.4868	1.4778	1.3608	1.4466	1.3795	1.3621	1.3469	1.3573	1.4022	4.154
S 13C2-8:2FTS	Avg RF	0.2126	0.2044	0.2066	0.2026	0.1792	0.1902	0.1928	0.2130	0.2002	5.907
I 13C4-PFOA						ISTD					
S 13C8-PFOA	Avg RF	0.8076	0.8274	0.8311	0.8156	0.8255	0.8029	0.8164	0.7818	0.8135	1.977
I 13C2-PFDA						ISTD					
S 13C6-PFDA	Avg RF	0.8489	0.8596	0.9307	0.9217	0.8791	0.8768	0.8233	0.7833	0.8654	5.621
S 13C7-PFUnDA	Avg RF	1.1415	1.1528	1.2046	1.1078	1.0915	1.1405	0.9871	0.9654	1.0989	7.543
S 13C2-PFDODA	Avg RF	1.1137	1.1754	1.1733	1.1546	1.1516	1.1824	1.1502	1.1935	1.1619	2.144
S 13C2-PFTeDA	Avg RF	0.8395	0.8062	0.8570	0.8220	0.7999	0.8536	0.8360	0.8929	0.8384	3.592
I 13C5-PFNA						ISTD					
S 13C9-PFNA	Avg RF	0.8396	0.8065	0.8142	0.8541	0.8673	0.8806	0.8259	0.7978	0.8357	3.567
I 13C2-PFHxA						ISTD					
S 13C5-PPeA	Avg RF	0.7036	0.7079	0.6962	0.6898	0.6780	0.6833	0.6863	0.6755	0.6901	1.695
S 13C5-PFHxA	Avg RF	1.0688	1.0867	1.0838	1.0374	1.0650	1.0775	1.0835	1.0541	1.0696	1.600
S 13C3-HPPO-DA	Avg RF	0.2715	0.2666	0.2651	0.2532	0.2684	0.2675	0.2708	0.2684	0.2664	2.157
S 13C4-PFHpA	Avg RF	0.7742	0.7784	0.7685	0.7643	0.7641	0.7706	0.7688	0.7505	0.7674	1.087

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

Initial Calibration Verification

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q690-ICV690
 Lab FileID: 4Q47157.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\071223_1633_S4Q690\s4q690.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\071223_1633_S4Q690\4Q47148.d
 2:D:\MassHunter\Data\071223_1633_S4Q690\4Q47149.d
 3:D:\MassHunter\Data\071223_1633_S4Q690\4Q47150.d
 4:D:\MassHunter\Data\071223_1633_S4Q690\4Q47151.d
 5:D:\MassHunter\Data\071223_1633_S4Q690\4Q47152.d
 6:D:\MassHunter\Data\071223_1633_S4Q690\4Q47153.d
 7:D:\MassHunter\Data\071223_1633_S4Q690\4Q47154.d
 8:D:\MassHunter\Data\071223_1633_S4Q690\4Q47155.d

Data File: 4Q47157
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.360	7.2	107.2
13C2-6:2FTS	5.000	5.531	10.6	110.6
13C2-8:2FTS	5.000	5.687	13.7	113.7
13C2-PFDoDA	1.250	1.227	-1.8	98.2
13C2-PFTeDA	1.250	1.216	-2.7	97.3
13C3-PFBS	2.500	2.610	4.4	104.4
13C3-PFHxS	2.500	2.673	6.9	106.9
13C4-PFBA	10.000	10.062	0.6	100.6
13C4-PFHpA	2.500	2.604	4.2	104.2
13C5-PFHxA	2.500	2.507	0.3	100.3
13C5-PFPeA	5.000	4.994	-0.1	99.9
13C6-PFDA	1.250	1.169	-6.4	93.6
13C7-PFUnDA	1.250	1.245	-0.4	99.6
13C8-FOSA	2.500	2.582	3.3	103.3
13C8-PFOA	2.500	2.520	0.8	100.8
13C8-PFOS	2.500	2.665	6.6	106.6
13C9-PFNA	1.250	1.267	1.4	101.4
4:2FTS	9.375	8.563	-8.7	91.3
6:2FTS	9.500	8.413	-11.4	88.6
8:2FTS	9.600	8.046	-16.2	83.8
d3-MeFOSAA	5.000	5.011	0.2	100.2
EtFOSAA	2.500	2.362	-5.5	94.5
FOSA	2.500	2.397	-4.1	95.9
MeFOSAA	2.500	2.264	-9.4	90.6
PFBA	10.000	9.371	-6.3	93.7
PFBS	2.218	2.012	-9.3	90.7
PFDA	2.500	2.489	-0.4	99.6
PFDoDA	2.500	2.304	-7.8	92.2
PFDS	2.413	2.112	-12.5	87.5
PFHpA	2.500	2.320	-7.2	92.8
PFHpS	2.383	2.153	-9.7	90.3
PFHxA	2.500	2.301	-7.9	92.1
PFHxS	2.285	2.050	-10.3	89.7
PFNA	2.500	2.292	-8.3	91.7
PFNS	2.405	2.200	-8.5	91.5
PFOA	2.500	2.410	-3.6	96.4
PFOS	2.320	1.894	-18.4	81.6

Initial Calibration Verification

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q690-ICV690
 Lab FileID: 4Q47157.D

PFPeA	5.000	4.711	-5.8	94.2
PFPeS	2.353	2.105	-10.6	89.4
PFTeDA	2.500	2.307	-7.7	92.3
PFTTrDA	2.500	2.354	-5.9	94.1
PFUnDA	2.500	2.329	-6.9	93.1
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	4.524	-4.3	95.7
13C3-HFPO-DA	10.000	9.874	-1.3	98.7
9C1-PF3ONS	4.675	4.673	-0.1	99.9
ADONA	4.725	4.529	-4.2	95.8
HFPO-DA	5.000	4.648	-7.0	93.0
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.385	-8.8	91.2
5:3FTCA	62.400	58.839	-5.7	94.3
7:3FTCA	62.400	59.590	-4.5	95.5
d3-MeFOSA	2.500	2.588	3.5	103.5
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.538	-9.2	90.8
EtFOSE	12.500	10.877	-13.0	87.0
MeFOSA	5.000	4.861	-2.8	97.2
MeFOSE	12.500	11.954	-4.4	95.6
PFDODS	2.425	2.145	-11.5	88.5
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.013	0.3	100.3
d7-MeFOSE	25.000	25.487	1.9	101.9
d9-EtFOSE	25.000	25.595	2.4	102.4
d5-EtFOSA	2.500	2.579	3.1	103.1
NFDHA	5.000	4.875	-2.5	97.5
PFMBA	5.000	4.705	-5.9	94.1
PFMPA	5.000	4.690	-6.2	93.8
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.249	-4.5	95.5

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q690-ICV690
 Lab FileID: 4Q47158.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\071223_1633_S4Q690\s4q690.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\071223_1633_S4Q690\4Q47148.d
 2:D:\MassHunter\Data\071223_1633_S4Q690\4Q47149.d
 3:D:\MassHunter\Data\071223_1633_S4Q690\4Q47150.d
 4:D:\MassHunter\Data\071223_1633_S4Q690\4Q47151.d
 5:D:\MassHunter\Data\071223_1633_S4Q690\4Q47152.d
 6:D:\MassHunter\Data\071223_1633_S4Q690\4Q47153.d
 7:D:\MassHunter\Data\071223_1633_S4Q690\4Q47154.d
 8:D:\MassHunter\Data\071223_1633_S4Q690\4Q47155.d

Data File: 4Q47158
 Type : QC
 Level : 20

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.563	11.3	111.3
13C2-6:2FTS	5.000	5.320	6.4	106.4
13C2-8:2FTS	5.000	4.979	-0.4	99.6
13C2-PFDoDA	1.250	1.238	-0.9	99.1
13C2-PFTeDA	1.250	1.243	-0.6	99.4
13C3-PFBS	2.500	2.578	3.1	103.1
13C3-PFHxS	2.500	2.587	3.5	103.5
13C4-PFBA	10.000	10.044	0.4	100.4
13C4-PFHpA	2.500	2.505	0.2	100.2
13C5-PFHxA	2.500	2.504	0.2	100.2
13C5-PFPeA	5.000	5.166	3.3	103.3
13C6-PFDA	1.250	1.339	7.1	107.1
13C7-PFUnDA	1.250	1.226	-1.9	98.1
13C8-FOSA	2.500	2.503	0.1	100.1
13C8-PFOA	2.500	2.523	0.9	100.9
13C8-PFOS	2.500	2.328	-6.9	93.1
13C9-PFNA	1.250	1.243	-0.6	99.4
4:2FTS	20.000	19.572	-2.1	97.9
6:2FTS	20.000	20.222	1.1	101.1
8:2FTS	20.000	20.739	3.7	103.7
d3-MeFOSAA	5.000	4.964	-0.7	99.3
EtFOSAA	20.000	20.128	0.6	100.6
FOSA	20.000	18.789	-6.1	93.9
MeFOSAA	20.000	20.481	2.4	102.4
PFBA	20.000	18.652	-6.7	93.3
PFBS	20.000	19.761	-1.2	98.8
PFDA	20.000	19.033	-4.8	95.2
PFDoDA	20.000	19.353	-3.2	96.8
PFDS	20.000	20.782	3.9	103.9
PFHpA	20.000	20.263	1.3	101.3
PFHpS	20.000	20.513	2.6	102.6
PFHxA	20.000	20.264	1.3	101.3
PFHxS	20.000	19.503	-2.5	97.5
PFNA	20.000	21.796	9.0	109.0
PFNS	20.000	20.306	1.5	101.5
PFOA	20.000	19.645	-1.8	98.2
PFOS	20.000	19.235	-3.8	96.2

Initial Calibration Verification

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q690-ICV690
 Lab FileID: 4Q47158.D

PFPeA	20.000	20.187	0.9	100.9
PFPeS	20.000	19.449	-2.8	97.2
PFTeDA	20.000	21.208	6.0	106.0
PFTTrDA	20.000	18.057	-9.7	90.3
PFUnDA	20.000	19.877	-0.6	99.4
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	20.638	3.2	103.2
13C3-HFPO-DA	10.000	10.058	0.6	100.6
9C1-PF3ONS	20.000	20.094	0.5	100.5
ADONA	20.000	18.177	-9.1	90.9
HFPO-DA	20.000	19.036	-4.8	95.2
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	20.000	18.081	-9.6	90.4
5:3FTCA	20.000	19.298	-3.5	96.5
7:3FTCA	20.000	19.635	-1.8	98.2
d3-MeFOSA	2.500	2.441	-2.4	97.6
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	20.000	17.370	-13.1	86.9
EtFOSE	100.000	97.572	-2.4	97.6
MeFOSA	20.000	18.358	-8.2	91.8
MeFOSE	100.000	106.212	6.2	106.2
PFDoDS	20.000	19.513	-2.4	97.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.878	-2.4	97.6
d7-MeFOSE	25.000	24.247	-3.0	97.0
d9-EtFOSE	25.000	24.501	-2.0	98.0
d5-EtFOSA	2.500	2.486	-0.6	99.4
NFDHA	20.000	19.645	-1.8	98.2
PFMBA	20.000	19.382	-3.1	96.9
PFMPA	20.000	19.131	-4.3	95.7
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	20.000	17.373	-13.1	86.9

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q697-CC690
 Lab FileID: 4Q47562.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\071923_1633_S4Q697\s4q697.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\071223_1633_S4Q690\4Q47148.d
 2:D:\MassHunter\Data\071223_1633_S4Q690\4Q47149.d
 3:D:\MassHunter\Data\071223_1633_S4Q690\4Q47150.d
 4:D:\MassHunter\Data\071223_1633_S4Q690\4Q47151.d
 5:D:\MassHunter\Data\071223_1633_S4Q690\4Q47152.d
 6:D:\MassHunter\Data\071223_1633_S4Q690\4Q47153.d
 7:D:\MassHunter\Data\071223_1633_S4Q690\4Q47154.d
 8:D:\MassHunter\Data\071223_1633_S4Q690\4Q47155.d

Data File: 4Q47562
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.177	23.5	123.5
13C2-6:2FTS	5.000	5.197	3.9	103.9
13C2-8:2FTS	5.000	5.773	15.5	115.5
13C2-PFDoDA	1.250	1.175	-6.0	94.0
13C2-PFTeDA	1.250	1.143	-8.5	91.5
13C3-PFBS	2.500	2.622	4.9	104.9
13C3-PFHxS	2.500	2.515	0.6	100.6
13C4-PFBA	10.000	9.816	-1.8	98.2
13C4-PFHpA	2.500	2.478	-0.9	99.1
13C5-PFHxA	2.500	2.475	-1.0	99.0
13C5-PFPeA	5.000	5.796	15.9	115.9
13C6-PFDA	1.250	1.298	3.9	103.9
13C7-PFUnDA	1.250	1.288	3.0	103.0
13C8-FOSA	2.500	2.724	9.0	109.0
13C8-PFOA	2.500	2.561	2.4	102.4
13C8-PFOS	2.500	2.620	4.8	104.8
13C9-PFNA	1.250	1.240	-0.8	99.2
4:2FTS	9.375	9.531	1.7	101.7
6:2FTS	9.500	10.403	9.5	109.5
8:2FTS	9.600	9.914	3.3	103.3
d3-MeFOSAA	5.000	5.227	4.5	104.5
EtFOSAA	2.500	2.968	18.7	118.7
FOSA	2.500	2.553	2.1	102.1
MeFOSAA	2.500	2.432	-2.7	97.3
PFBA	10.000	10.178	1.8	101.8
PFBS	2.218	2.137	-3.7	96.3
PFDA	2.500	2.380	-4.8	95.2
PFDoDA	2.500	2.731	9.2	109.2
PFDS	2.413	2.538	5.2	105.2
PFHpA	2.500	2.562	2.5	102.5
PFHpS	2.383	2.412	1.2	101.2
PFHxA	2.500	2.599	3.9	103.9
PFHxS	2.285	2.121	-7.2	92.8
PFNA	2.500	2.730	9.2	109.2
PFNS	2.405	2.174	-9.6	90.4
PFOA	2.500	2.546	1.8	101.8
PFOS	2.320	2.283	-1.6	98.4

Continuing Calibration Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q697-CC690
 Lab FileID: 4Q47562.D

PFPeA	5.000	4.678	-6.4	93.6
PFPeS	2.353	2.319	-1.4	98.6
PFTeDA	2.500	2.468	-1.3	98.7
PFTTrDA	2.500	2.625	5.0	105.0
PFUnDA	2.500	2.479	-0.8	99.2
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.794	1.5	101.5
13C3-HFPO-DA	10.000	9.660	-3.4	96.6
9C1-PF3ONS	4.675	4.988	6.7	106.7
ADONA	4.725	4.701	-0.5	99.5
HFPO-DA	5.000	5.143	2.9	102.9
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.655	1.4	101.4
5:3FTCA	62.400	60.450	-3.1	96.9
7:3FTCA	62.400	60.767	-2.6	97.4
d3-MeFOSA	2.500	2.553	2.1	102.1
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.286	-14.3	85.7
EtFOSE	12.500	11.234	-10.1	89.9
MeFOSA	5.000	4.719	-5.6	94.4
MeFOSE	12.500	13.304	6.4	106.4
PFDoDS	2.425	2.262	-6.7	93.3
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.889	-2.2	97.8
d7-MeFOSE	25.000	26.550	6.2	106.2
d9-EtFOSE	25.000	28.798	15.2	115.2
d5-EtFOSA	2.500	2.813	12.5	112.5
NFDHA	5.000	5.661	13.2	113.2
PFMBA	5.000	4.522	-9.6	90.4
PFMPA	5.000	4.561	-8.8	91.2
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.585	3.0	103.0

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q697-CC690
 Lab FileID: 4Q47563.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\071923_1633_S4Q697\s4q697.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\071223_1633_S4Q690\4Q47148.d
 2:D:\MassHunter\Data\071223_1633_S4Q690\4Q47149.d
 3:D:\MassHunter\Data\071223_1633_S4Q690\4Q47150.d
 4:D:\MassHunter\Data\071223_1633_S4Q690\4Q47151.d
 5:D:\MassHunter\Data\071223_1633_S4Q690\4Q47152.d
 6:D:\MassHunter\Data\071223_1633_S4Q690\4Q47153.d
 7:D:\MassHunter\Data\071223_1633_S4Q690\4Q47154.d
 8:D:\MassHunter\Data\071223_1633_S4Q690\4Q47155.d

Data File: 4Q47563
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.803	16.1	116.1
13C2-6:2FTS	5.000	6.405	28.1	128.1
13C2-8:2FTS	5.000	5.823	16.5	116.5
13C2-PFDoDA	1.250	1.150	-8.0	92.0
13C2-PFTeDA	1.250	1.154	-7.7	92.3
13C3-PFBS	2.500	2.657	6.3	106.3
13C3-PFHxS	2.500	2.435	-2.6	97.4
13C4-PFBA	10.000	9.833	-1.7	98.3
13C4-PFHpA	2.500	2.473	-1.1	98.9
13C5-PFHxA	2.500	2.479	-0.9	99.1
13C5-PFPeA	5.000	5.851	17.0	117.0
13C6-PFDA	1.250	1.283	2.7	102.7
13C7-PFUnDA	1.250	1.213	-2.9	97.1
13C8-FOSA	2.500	2.869	14.7	114.7
13C8-PFOA	2.500	2.493	-0.3	99.7
13C8-PFOS	2.500	2.633	5.3	105.3
13C9-PFNA	1.250	1.301	4.1	104.1
4:2FTS	0.750	0.819	9.2	109.2
6:2FTS	0.760	0.735	-3.2	96.8
8:2FTS	0.768	0.794	3.3	103.3
d3-MeFOSAA	5.000	5.440	8.8	108.8
EtFOSAA	0.200	0.223	11.4	111.4
FOSA	0.200	0.164	-17.8	82.2
MeFOSAA	0.200	0.239	19.5	119.5
PFBA	0.800	0.742	-7.3	92.7
PFBS	0.177	0.151	-14.9	85.1
PFDA	0.200	0.190	-5.2	94.8
PFDoDA	0.200	0.212	6.0	106.0
PFDS	0.193	0.194	0.6	100.6
PFHpA	0.200	0.182	-9.1	90.9
PFHpS	0.191	0.193	1.2	101.2
PFHxA	0.200	0.206	3.1	103.1
PFHxS	0.183	0.188	3.0	103.0
PFNA	0.200	0.187	-6.5	93.5
PFNS	0.192	0.205	6.9	106.9
PFOA	0.200	0.186	-7.1	92.9
PFOS	0.186	0.217	16.5	116.5

Continuing Calibration Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q697-CC690
 Lab FileID: 4Q47563.D

PFPeA	0.400	0.344	-14.0	86.0
PFPeS	0.188	0.202	7.4	107.4
PFTeDA	0.200	0.187	-6.6	93.4
PFTTrDA	0.200	0.195	-2.6	97.4
PFUnDA	0.200	0.179	-10.7	89.3
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	0.353	-6.5	93.5
13C3-HFPO-DA	10.000	9.779	-2.2	97.8
9C1-PF3ONS	0.374	0.355	-5.2	94.8
ADONA	0.378	0.340	-10.0	90.0
HFPO-DA	0.400	0.380	-5.0	95.0
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.944	-5.4	94.6
5:3FTCA	4.992	4.190	-16.1	83.9
7:3FTCA	4.992	4.293	-14.0	86.0
d3-MeFOSA	2.500	2.659	6.3	106.3
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.400	0.330	-17.5	82.5
EtFOSE	1.000	0.877	-12.3	87.7
MeFOSA	0.400	0.345	-13.7	86.3
MeFOSE	1.000	0.988	-1.2	98.8
PFDODS	0.194	0.176	-9.3	90.7
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.082	1.6	101.6
d7-MeFOSE	25.000	26.930	7.7	107.7
d9-EtFOSE	25.000	29.300	17.2	117.2
d5-EtFOSA	2.500	2.817	12.7	112.7
NFDHA	0.400	0.394	-1.6	98.4
PFMBA	0.400	0.320	-20.0	80.0
PFMPA	0.400	0.337	-15.8	84.2
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	0.356	0.331	-7.1	92.9

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q697-CC690
 Lab FileID: 4Q47574.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\071923_1633_S4Q697\s4q697.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\071223_1633_S4Q690\4Q47148.d
 2:D:\MassHunter\Data\071223_1633_S4Q690\4Q47149.d
 3:D:\MassHunter\Data\071223_1633_S4Q690\4Q47150.d
 4:D:\MassHunter\Data\071223_1633_S4Q690\4Q47151.d
 5:D:\MassHunter\Data\071223_1633_S4Q690\4Q47152.d
 6:D:\MassHunter\Data\071223_1633_S4Q690\4Q47153.d
 7:D:\MassHunter\Data\071223_1633_S4Q690\4Q47154.d
 8:D:\MassHunter\Data\071223_1633_S4Q690\4Q47155.d

Data File: 4Q47574
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.260	5.2	105.2
13C2-6:2FTS	5.000	4.795	-4.1	95.9
13C2-8:2FTS	5.000	4.589	-8.2	91.8
13C2-PFDoDA	1.250	1.184	-5.3	94.7
13C2-PFTeDA	1.250	1.149	-8.1	91.9
13C3-PFBS	2.500	2.493	-0.3	99.7
13C3-PFHxS	2.500	2.341	-6.4	93.6
13C4-PFBA	10.000	9.655	-3.4	96.6
13C4-PFHpA	2.500	2.307	-7.7	92.3
13C5-PFHxA	2.500	2.374	-5.0	95.0
13C5-PFPeA	5.000	5.765	15.3	115.3
13C6-PFDA	1.250	1.236	-1.1	98.9
13C7-PFUnDA	1.250	1.175	-6.0	94.0
13C8-FOSA	2.500	2.823	12.9	112.9
13C8-PFOA	2.500	2.568	2.7	102.7
13C8-PFOS	2.500	2.744	9.8	109.8
13C9-PFNA	1.250	1.293	3.4	103.4
4:2FTS	9.375	9.558	2.0	102.0
6:2FTS	9.500	9.895	4.2	104.2
8:2FTS	9.600	10.327	7.6	107.6
d3-MeFOSAA	5.000	5.436	8.7	108.7
EtFOSAA	2.500	2.662	6.5	106.5
FOSA	2.500	2.423	-3.1	96.9
MeFOSAA	2.500	2.563	2.5	102.5
PFBA	10.000	10.378	3.8	103.8
PFBS	2.218	2.080	-6.2	93.8
PFDA	2.500	2.511	0.4	100.4
PFDoDA	2.500	2.715	8.6	108.6
PFDS	2.413	2.438	1.0	101.0
PFHpA	2.500	2.606	4.2	104.2
PFHpS	2.383	2.485	4.3	104.3
PFHxA	2.500	2.494	-0.2	99.8
PFHxS	2.285	2.157	-5.6	94.4
PFNA	2.500	2.532	1.3	101.3
PFNS	2.405	2.213	-8.0	92.0
PFOA	2.500	2.554	2.2	102.2
PFOS	2.320	2.207	-4.8	95.2

Continuing Calibration Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q697-CC690
 Lab FileID: 4Q47574.D

PFPeA	5.000	4.488	-10.2	89.8
PFPeS	2.353	2.278	-3.2	96.8
PFTeDA	2.500	2.546	1.8	101.8
PFTTrDA	2.500	2.566	2.6	102.6
PFUnDA	2.500	2.687	7.5	107.5
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.761	0.8	100.8
13C3-HFPO-DA	10.000	9.102	-9.0	91.0
9C1-PF3ONS	4.675	4.980	6.5	106.5
ADONA	4.725	4.854	2.7	102.7
HFPO-DA	5.000	5.166	3.3	103.3
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.785	2.4	102.4
5:3FTCA	62.400	61.282	-1.8	98.2
7:3FTCA	62.400	63.024	1.0	101.0
d3-MeFOSA	2.500	2.547	1.9	101.9
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.312	-13.8	86.2
EtFOSE	12.500	10.630	-15.0	85.0
MeFOSA	5.000	4.937	-1.3	98.7
MeFOSE	12.500	13.150	5.2	105.2
PFDoDS	2.425	2.344	-3.4	96.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.195	3.9	103.9
d7-MeFOSE	25.000	25.072	0.3	100.3
d9-EtFOSE	25.000	26.669	6.7	106.7
d5-EtFOSA	2.500	2.802	12.1	112.1
NFDHA	5.000	5.543	10.9	110.9
PFMBA	5.000	4.360	-12.8	87.2
PFMPA	5.000	4.477	-10.5	89.5
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.635	4.2	104.2

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q697-CC690
 Lab FileID: 4Q47585.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\071923_1633_S4Q697\s4q697.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\071223_1633_S4Q690\4Q47148.d
 2:D:\MassHunter\Data\071223_1633_S4Q690\4Q47149.d
 3:D:\MassHunter\Data\071223_1633_S4Q690\4Q47150.d
 4:D:\MassHunter\Data\071223_1633_S4Q690\4Q47151.d
 5:D:\MassHunter\Data\071223_1633_S4Q690\4Q47152.d
 6:D:\MassHunter\Data\071223_1633_S4Q690\4Q47153.d
 7:D:\MassHunter\Data\071223_1633_S4Q690\4Q47154.d
 8:D:\MassHunter\Data\071223_1633_S4Q690\4Q47155.d

Data File: 4Q47585
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.515	10.3	110.3
13C2-6:2FTS	5.000	5.030	0.6	100.6
13C2-8:2FTS	5.000	4.754	-4.9	95.1
13C2-PFDoDA	1.250	1.256	0.5	100.5
13C2-PFTeDA	1.250	1.201	-3.9	96.1
13C3-PFBS	2.500	2.668	6.7	106.7
13C3-PFHxS	2.500	2.735	9.4	109.4
13C4-PFBA	10.000	9.904	-1.0	99.0
13C4-PFHpA	2.500	2.397	-4.1	95.9
13C5-PFHxA	2.500	2.456	-1.8	98.2
13C5-PFPeA	5.000	5.444	8.9	108.9
13C6-PFDA	1.250	1.317	5.4	105.4
13C7-PFUnDA	1.250	1.271	1.7	101.7
13C8-FOSA	2.500	2.633	5.3	105.3
13C8-PFOA	2.500	2.618	4.7	104.7
13C8-PFOS	2.500	2.561	2.5	102.5
13C9-PFNA	1.250	1.234	-1.3	98.7
4:2FTS	9.375	8.658	-7.7	92.3
6:2FTS	9.500	9.329	-1.8	98.2
8:2FTS	9.600	10.076	5.0	105.0
d3-MeFOSAA	5.000	5.192	3.8	103.8
EtFOSAA	2.500	2.570	2.8	102.8
FOSA	2.500	2.474	-1.0	99.0
MeFOSAA	2.500	2.526	1.0	101.0
PFBA	10.000	10.303	3.0	103.0
PFBS	2.218	2.216	-0.1	99.9
PFDA	2.500	2.458	-1.7	98.3
PFDoDA	2.500	2.700	8.0	108.0
PFDS	2.413	2.645	9.6	109.6
PFHpA	2.500	2.506	0.2	100.2
PFHpS	2.383	2.452	2.9	102.9
PFHxA	2.500	2.576	3.0	103.0
PFHxS	2.285	2.057	-10.0	90.0
PFNA	2.500	2.630	5.2	105.2
PFNS	2.405	2.395	-0.4	99.6
PFOA	2.500	2.541	1.7	101.7
PFOS	2.320	2.207	-4.9	95.1

Continuing Calibration Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q697-CC690
 Lab FileID: 4Q47585.D

PFPeA	5.000	4.860	-2.8	97.2
PFPeS	2.353	2.220	-5.7	94.3
PFTeDA	2.500	2.494	-0.2	99.8
PFTTrDA	2.500	2.525	1.0	101.0
PFUnDA	2.500	2.616	4.6	104.6
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDODA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.983	5.5	105.5
13C3-HFPO-DA	10.000	9.318	-6.8	93.2
9C1-PF3ONS	4.675	5.214	11.5	111.5
ADONA	4.725	4.793	1.4	101.4
HFPO-DA	5.000	5.248	5.0	105.0
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.505	0.2	100.2
5:3FTCA	62.400	61.671	-1.2	98.8
7:3FTCA	62.400	62.695	0.5	100.5
d3-MeFOSA	2.500	2.534	1.4	101.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.483	-10.3	89.7
EtFOSE	12.500	11.548	-7.6	92.4
MeFOSA	5.000	4.779	-4.4	95.6
MeFOSE	12.500	13.112	4.9	104.9
PFDODS	2.425	2.487	2.6	102.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.068	1.4	101.4
d7-MeFOSE	25.000	25.037	0.1	100.1
d9-EtFOSE	25.000	25.095	0.4	100.4
d5-EtFOSA	2.500	2.649	6.0	106.0
NFDHA	5.000	5.661	13.2	113.2
PFMBA	5.000	4.730	-5.4	94.6
PFMPA	5.000	4.824	-3.5	96.5
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.648	4.4	104.4

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q699-CC690
 Lab FileID: 4Q47714.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\071923_1633_S4Q697\s4q699.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\071223_1633_S4Q690\4Q47148.d
 2:D:\MassHunter\Data\071223_1633_S4Q690\4Q47149.d
 3:D:\MassHunter\Data\071223_1633_S4Q690\4Q47150.d
 4:D:\MassHunter\Data\071223_1633_S4Q690\4Q47151.d
 5:D:\MassHunter\Data\071223_1633_S4Q690\4Q47152.d
 6:D:\MassHunter\Data\071223_1633_S4Q690\4Q47153.d
 7:D:\MassHunter\Data\071223_1633_S4Q690\4Q47154.d
 8:D:\MassHunter\Data\071223_1633_S4Q690\4Q47155.d

Data File: 4Q47714
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.695	# 33.9	133.9
13C2-6:2FTS	5.000	5.950	19.0	119.0
13C2-8:2FTS	5.000	5.399	8.0	108.0
13C2-PFDoDA	1.250	1.176	-6.0	94.0
13C2-PFTeDA	1.250	1.088	-13.0	87.0
13C3-PFBS	2.500	2.561	2.4	102.4
13C3-PFHxS	2.500	2.628	5.1	105.1
13C4-PFBA	10.000	10.185	1.8	101.8
13C4-PFHpA	2.500	2.403	-3.9	96.1
13C5-PFHxA	2.500	2.388	-4.5	95.5
13C5-PFPeA	5.000	4.674	-6.5	93.5
13C6-PFDA	1.250	1.181	-5.5	94.5
13C7-PFUnDA	1.250	1.167	-6.6	93.4
13C8-FOSA	2.500	2.548	1.9	101.9
13C8-PFOA	2.500	2.417	-3.3	96.7
13C8-PFOS	2.500	2.752	10.1	110.1
13C9-PFNA	1.250	1.266	1.3	101.3
4:2FTS	9.375	8.603	-8.2	91.8
6:2FTS	9.500	9.853	3.7	103.7
8:2FTS	9.600	10.476	9.1	109.1
d3-MeFOSAA	5.000	5.114	2.3	102.3
EtFOSAA	2.500	2.379	-4.8	95.2
FOSA	2.500	2.431	-2.8	97.2
MeFOSAA	2.500	2.541	1.6	101.6
PFBA	10.000	9.842	-1.6	98.4
PFBS	2.218	2.307	4.0	104.0
PFDA	2.500	2.592	3.7	103.7
PFDoDA	2.500	2.568	2.7	102.7
PFDS	2.413	2.062	-14.5	85.5
PFHpA	2.500	2.468	-1.3	98.7
PFHpS	2.383	2.084	-12.5	87.5
PFHxA	2.500	2.449	-2.0	98.0
PFHxS	2.285	2.132	-6.7	93.3
PFNA	2.500	2.466	-1.3	98.7
PFNS	2.405	2.118	-11.9	88.1
PFOA	2.500	2.554	2.2	102.2
PFOS	2.320	2.010	-13.3	86.7

Continuing Calibration Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q699-CC690
 Lab FileID: 4Q47714.D

PFPeA	5.000	5.218	4.4	104.4
PFPeS	2.353	2.105	-10.6	89.4
PFTeDA	2.500	2.519	0.8	100.8
PFTTrDA	2.500	2.435	-2.6	97.4
PFUnDA	2.500	2.591	3.6	103.6
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	5.179	9.6	109.6
13C3-HFPO-DA	10.000	8.407	-15.9	84.1
9C1-PF3ONS	4.675	5.558	18.9	118.9
ADONA	4.725	5.252	11.1	111.1
HFPO-DA	5.000	5.033	0.7	100.7
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.586	0.9	100.9
5:3FTCA	62.400	62.865	0.7	100.7
7:3FTCA	62.400	64.076	2.7	102.7
d3-MeFOSA	2.500	2.361	-5.5	94.5
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.907	-1.9	98.1
EtFOSE	12.500	11.503	-8.0	92.0
MeFOSA	5.000	4.748	-5.0	95.0
MeFOSE	12.500	13.033	4.3	104.3
PFDoDS	2.425	2.015	-16.9	83.1
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.079	1.6	101.6
d7-MeFOSE	25.000	22.414	-10.3	89.7
d9-EtFOSE	25.000	25.712	2.8	102.8
d5-EtFOSA	2.500	2.327	-6.9	93.1
NFDHA	5.000	4.742	-5.2	94.8
PFMBA	5.000	5.173	3.5	103.5
PFMPA	5.000	5.270	5.4	105.4
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.472	0.5	100.5

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q699-CC690
 Lab FileID: 4Q47715.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\071923_1633_S4Q697\s4q699.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\071223_1633_S4Q690\4Q47148.d
 2:D:\MassHunter\Data\071223_1633_S4Q690\4Q47149.d
 3:D:\MassHunter\Data\071223_1633_S4Q690\4Q47150.d
 4:D:\MassHunter\Data\071223_1633_S4Q690\4Q47151.d
 5:D:\MassHunter\Data\071223_1633_S4Q690\4Q47152.d
 6:D:\MassHunter\Data\071223_1633_S4Q690\4Q47153.d
 7:D:\MassHunter\Data\071223_1633_S4Q690\4Q47154.d
 8:D:\MassHunter\Data\071223_1633_S4Q690\4Q47155.d

Data File: 4Q47715
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.502	# 30.0	130.0
13C2-6:2FTS	5.000	6.233	24.7	124.7
13C2-8:2FTS	5.000	5.518	10.4	110.4
13C2-PFDoDA	1.250	1.162	-7.1	92.9
13C2-PFTeDA	1.250	1.108	-11.4	88.6
13C3-PFBS	2.500	2.704	8.2	108.2
13C3-PFHxS	2.500	2.527	1.1	101.1
13C4-PFBA	10.000	10.419	4.2	104.2
13C4-PFHpA	2.500	2.542	1.7	101.7
13C5-PFHxA	2.500	2.557	2.3	102.3
13C5-PFPeA	5.000	5.005	0.1	100.1
13C6-PFDA	1.250	1.305	4.4	104.4
13C7-PFUnDA	1.250	1.260	0.8	100.8
13C8-FOSA	2.500	2.608	4.3	104.3
13C8-PFOA	2.500	2.529	1.1	101.1
13C8-PFOS	2.500	2.779	11.2	111.2
13C9-PFNA	1.250	1.166	-6.7	93.3
4:2FTS	0.750	0.759	1.2	101.2
6:2FTS	0.760	0.655	-13.8	86.2
8:2FTS	0.768	0.804	4.7	104.7
d3-MeFOSAA	5.000	5.250	5.0	105.0
EtFOSAA	0.200	0.259	29.3	129.3
FOSA	0.200	0.177	-11.5	88.5
MeFOSAA	0.200	0.203	1.6	101.6
PFBA	0.800	0.753	-5.9	94.1
PFBS	0.177	0.195	10.3	110.3
PFDA	0.200	0.202	0.9	100.9
PFDoDA	0.200	0.193	-3.3	96.7
PFDS	0.193	0.170	-12.0	88.0
PFHpA	0.200	0.188	-5.8	94.2
PFHpS	0.191	0.154	-19.4	80.6
PFHxA	0.200	0.185	-7.3	92.7
PFHxS	0.183	0.212	15.6	115.6
PFNA	0.200	0.179	-10.5	89.5
PFNS	0.192	0.160	-16.9	83.1
PFOA	0.200	0.183	-8.3	91.7
PFOS	0.186	0.194	4.1	104.1

Continuing Calibration Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q699-CC690
 Lab FileID: 4Q47715.D

PFPeA	0.400	0.377	-5.7	94.3
PFPeS	0.188	0.166	-11.7	88.3
PFTeDA	0.200	0.211	5.6	105.6
PFTTrDA	0.200	0.190	-5.2	94.8
PFUnDA	0.200	0.179	-10.5	89.5
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	0.378	0.366	-3.2	96.8
13C3-HFPO-DA	10.000	8.692	-13.1	86.9
9C1-PF3ONS	0.374	0.416	11.3	111.3
ADONA	0.378	0.402	6.5	106.5
HFPO-DA	0.400	0.414	3.4	103.4
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.919	-7.9	92.1
5:3FTCA	4.992	4.504	-9.8	90.2
7:3FTCA	4.992	5.010	0.4	100.4
d3-MeFOSA	2.500	2.391	-4.4	95.6
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.400	0.362	-9.5	90.5
EtFOSE	1.000	0.858	-14.2	85.8
MeFOSA	0.400	0.409	2.3	102.3
MeFOSE	1.000	0.919	-8.1	91.9
PFDoDS	0.194	0.160	-17.7	82.3
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.082	1.6	101.6
d7-MeFOSE	25.000	23.947	-4.2	95.8
d9-EtFOSE	25.000	24.516	-1.9	98.1
d5-EtFOSA	2.500	2.504	0.2	100.2
NFDHA	0.400	0.341	-14.9	85.1
PFMBA	0.400	0.384	-4.0	96.0
PFMPA	0.400	0.402	0.5	100.5
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	0.356	0.346	-2.8	97.2

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q699-CC690
 Lab FileID: 4Q47725.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\071923_1633_S4Q697\s4q699.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\071223_1633_S4Q690\4Q47148.d
 2:D:\MassHunter\Data\071223_1633_S4Q690\4Q47149.d
 3:D:\MassHunter\Data\071223_1633_S4Q690\4Q47150.d
 4:D:\MassHunter\Data\071223_1633_S4Q690\4Q47151.d
 5:D:\MassHunter\Data\071223_1633_S4Q690\4Q47152.d
 6:D:\MassHunter\Data\071223_1633_S4Q690\4Q47153.d
 7:D:\MassHunter\Data\071223_1633_S4Q690\4Q47154.d
 8:D:\MassHunter\Data\071223_1633_S4Q690\4Q47155.d

Data File: 4Q47725
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.122	22.4	122.4
13C2-6:2FTS	5.000	5.730	14.6	114.6
13C2-8:2FTS	5.000	5.268	5.4	105.4
13C2-PFDoDA	1.250	1.220	-2.4	97.6
13C2-PFTeDA	1.250	1.137	-9.1	90.9
13C3-PFBS	2.500	2.517	0.7	100.7
13C3-PFHxS	2.500	2.561	2.4	102.4
13C4-PFBA	10.000	10.234	2.3	102.3
13C4-PFHpA	2.500	2.491	-0.4	99.6
13C5-PFHxA	2.500	2.509	0.4	100.4
13C5-PFPeA	5.000	4.944	-1.1	98.9
13C6-PFDA	1.250	1.233	-1.4	98.6
13C7-PFUnDA	1.250	1.270	1.6	101.6
13C8-FOSA	2.500	2.627	5.1	105.1
13C8-PFOA	2.500	2.439	-2.4	97.6
13C8-PFOS	2.500	2.639	5.6	105.6
13C9-PFNA	1.250	1.220	-2.4	97.6
4:2FTS	9.375	9.089	-3.1	96.9
6:2FTS	9.500	9.525	0.3	100.3
8:2FTS	9.600	10.676	11.2	111.2
d3-MeFOSAA	5.000	5.048	1.0	101.0
EtFOSAA	2.500	2.657	6.3	106.3
FOSA	2.500	2.375	-5.0	95.0
MeFOSAA	2.500	2.504	0.2	100.2
PFBA	10.000	9.863	-1.4	98.6
PFBS	2.218	2.117	-4.6	95.4
PFDA	2.500	2.541	1.6	101.6
PFDoDA	2.500	2.537	1.5	101.5
PFDS	2.413	2.216	-8.2	91.8
PFHpA	2.500	2.413	-3.5	96.5
PFHpS	2.383	2.209	-7.3	92.7
PFHxA	2.500	2.388	-4.5	95.5
PFHxS	2.285	1.997	-12.6	87.4
PFNA	2.500	2.521	0.8	100.8
PFNS	2.405	2.349	-2.3	97.7
PFOA	2.500	2.502	0.1	100.1
PFOS	2.320	2.232	-3.8	96.2

Continuing Calibration Summary

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q699-CC690
 Lab FileID: 4Q47725.D

PFPeA	5.000	5.101	2.0	102.0
PFPeS	2.353	2.103	-10.6	89.4
PFTeDA	2.500	2.570	2.8	102.8
PFTTrDA	2.500	2.439	-2.4	97.6
PFUnDA	2.500	2.497	-0.1	99.9
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	5.088	7.7	107.7
13C3-HFPO-DA	10.000	8.602	-14.0	86.0
9C1-PF3ONS	4.675	5.510	17.9	117.9
ADONA	4.725	5.234	10.8	110.8
HFPO-DA	5.000	5.044	0.9	100.9
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.336	-1.2	98.8
5:3FTCA	62.400	62.776	0.6	100.6
7:3FTCA	62.400	64.324	3.1	103.1
d3-MeFOSA	2.500	2.346	-6.1	93.9
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.743	-5.1	94.9
EtFOSE	12.500	11.484	-8.1	91.9
MeFOSA	5.000	4.880	-2.4	97.6
MeFOSE	12.500	13.068	4.5	104.5
PFDoDS	2.425	2.154	-11.2	88.8
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.069	1.4	101.4
d7-MeFOSE	25.000	22.755	-9.0	91.0
d9-EtFOSE	25.000	23.827	-4.7	95.3
d5-EtFOSA	2.500	2.335	-6.6	93.4
NFDHA	5.000	4.638	-7.2	92.8
PFMBA	5.000	5.041	0.8	100.8
PFMPA	5.000	5.182	3.6	103.6
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.378	-1.6	98.4

CC Criteria: +/- 30%

Run Sequence Report

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q690	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
S4Q690-RT	4Q47145.D	07/12/23 16:47	n/a	Retention Time Marker
S4Q690-RT	4Q47146.D	07/12/23 17:02	n/a	Retention Time Marker
S4Q690-IC690	4Q47147.D	07/12/23 17:16	n/a	Mass Calibration Verification
S4Q690-IC690	4Q47148.D	07/12/23 17:31	n/a	Initial cal 1
S4Q690-IC690	4Q47149.D	07/12/23 17:46	n/a	Initial cal 2
S4Q690-IC690	4Q47150.D	07/12/23 18:01	n/a	Initial cal 3
S4Q690-ICC690	4Q47151.D	07/12/23 18:15	n/a	Initial cal 4
S4Q690-IC690	4Q47152.D	07/12/23 18:30	n/a	Initial cal 5
S4Q690-IC690	4Q47153.D	07/12/23 18:45	n/a	Initial cal 6
S4Q690-IC690	4Q47154.D	07/12/23 19:00	n/a	Initial cal 7
S4Q690-IC690	4Q47155.D	07/12/23 19:14	n/a	Initial cal 8
S4Q690-IBLK	4Q47156.D	07/12/23 19:29	n/a	Instrument Blank
S4Q690-IBLK	4Q47156.D	07/12/23 19:29	n/a	Instrument Blank
S4Q690-ICV690	4Q47157.D	07/12/23 19:44	n/a	Initial cal verification 4
S4Q690-ICV690	4Q47158.D	07/12/23 19:59	n/a	Initial cal verification 20
S4Q690-CC690	4Q47159.D	07/12/23 20:13	n/a	Continuing cal 4
S4Q690-CC690	4Q47160.D	07/12/23 20:28	n/a	Continuing cal 1.0LL
OP97715-BS	4Q47161.D	07/12/23 20:43	OP97715	Blank Spike
OP97715-LLBS	4Q47162.D	07/12/23 20:58	OP97715	Blank Spike
OP97715-MB	4Q47163.D	07/12/23 21:12	OP97715	Method Blank
ZZZZZZ	4Q47164.D	07/12/23 21:27	OP97715	(unrelated sample)
FC7060-19	4Q47165.D	07/12/23 21:42	OP97715	(used for QC only; not part of job FC7724)
OP97715-MS	4Q47166.D	07/12/23 21:57	OP97715	Matrix Spike
OP97715-MSD	4Q47167.D	07/12/23 22:11	OP97715	Matrix Spike Duplicate
S4Q690-CC690	4Q47168.D	07/12/23 22:26	n/a	Continuing cal 4
S4Q690-ICCB	4Q47169.D	07/12/23 22:41	n/a	Continuing Calibration Blank
OP97747-BS	4Q47170.D	07/12/23 22:56	OP97747	Blank Spike
OP97747-LLBS	4Q47171.D	07/12/23 23:10	OP97747	Blank Spike
OP97747-MB	4Q47172.D	07/12/23 23:25	OP97747	Method Blank
ZZZZZZ	4Q47173.D	07/12/23 23:40	OP97747	(unrelated sample)
FC6935-2	4Q47174.D	07/12/23 23:55	OP97747	(used for QC only; not part of job FC7724)
OP97747-MS	4Q47175.D	07/13/23 00:09	OP97747	Matrix Spike
OP97747-MSD	4Q47176.D	07/13/23 00:24	OP97747	Matrix Spike Duplicate
ZZZZZZ	4Q47177.D	07/13/23 00:39	OP97747	(unrelated sample)
ZZZZZZ	4Q47178.D	07/13/23 00:54	OP97747	(unrelated sample)
ZZZZZZ	4Q47179.D	07/13/23 01:08	OP97747	(unrelated sample)
S4Q690-ECC690	4Q47180.D	07/13/23 01:23	n/a	Ending cal 4
S4Q690-ICCB	4Q47181.D	07/13/23 01:38	n/a	Continuing Calibration Blank

Run Sequence Report

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q697	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q		
Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q697-RT	4Q47558.D	07/19/23 10:57	n/a	Retention Time Marker
S4Q697-RT	4Q47559.D	07/19/23 11:12	n/a	Retention Time Marker
S4Q697-IBLK	4Q47561.D	07/19/23 11:41	n/a	Instrument Blank
S4Q697-IBLK	4Q47561.D	07/19/23 11:41	n/a	Instrument Blank
S4Q697-CC690	4Q47562.D	07/19/23 11:56	n/a	Continuing cal 4
S4Q697-CC690	4Q47563.D	07/19/23 12:11	n/a	Continuing cal 1.0LL
OP97911-BS	4Q47564.D	07/19/23 12:25	OP97911	Blank Spike
OP97911-LLBS	4Q47565.D	07/19/23 12:40	OP97911	Blank Spike
OP97911-MB	4Q47566.D	07/19/23 12:55	OP97911	Method Blank
ZZZZZZ	4Q47567.D	07/19/23 13:10	OP97911	(unrelated sample)
ZZZZZZ	4Q47568.D	07/19/23 13:24	OP97911	(unrelated sample)
FC7258-1	4Q47569.D	07/19/23 13:39	OP97911	(used for QC only; not part of job FC7724)
ZZZZZZ	4Q47573.D	07/19/23 14:38	OP97911	(unrelated sample)
S4Q697-CC690	4Q47574.D	07/19/23 14:53	n/a	Continuing cal 4
S4Q697-ICCB	4Q47575.D	07/19/23 15:07	n/a	Continuing Calibration Blank
FC7724-1	4Q47577.D	07/19/23 15:41	OP97911	AF-RHMW12A-WGN01LF-2307
FC7724-2	4Q47578.D	07/19/23 15:55	OP97911	AF-RHMW12A-WGFD01LF-2307
FC7724-3	4Q47579.D	07/19/23 16:10	OP97911	AF-RHMW17-WGN01LF-2307
FC7724-4	4Q47580.D	07/19/23 16:25	OP97911	AF-RHMW16-WGN01LF-2307
FC7724-5	4Q47581.D	07/19/23 16:40	OP97911	AF-RHMW17D-WGN01LF-2307
FC7724-6	4Q47582.D	07/19/23 16:54	OP97911	AF-RHMW17D-WQFB01-2307
ZZZZZZ	4Q47583.D	07/19/23 17:09	OP97911	(unrelated sample)
FC7724-5	4Q47584.D	07/19/23 17:24	OP97911	AF-RHMW17D-WGN01LF-2307
S4Q697-CC690	4Q47585.D	07/19/23 17:39	n/a	Continuing cal 4
S4Q697-ICCB	4Q47586.D	07/19/23 17:54	n/a	Continuing Calibration Blank
ZZZZZZ	4Q47587.D	07/19/23 18:08	OP97881	(unrelated sample)
ZZZZZZ	4Q47588.D	07/19/23 18:23	OP97881	(unrelated sample)
ZZZZZZ	4Q47589.D	07/19/23 18:38	OP97881	(unrelated sample)
ZZZZZZ	4Q47590.D	07/19/23 18:52	OP97881	(unrelated sample)
FC7198-7	4Q47591.D	07/19/23 19:07	OP97881	(used for QC only; not part of job FC7724)
OP97881-MS	4Q47592.D	07/19/23 19:22	OP97881	Matrix Spike
OP97881-MSD	4Q47593.D	07/19/23 19:37	OP97881	Matrix Spike Duplicate
ZZZZZZ	4Q47594.D	07/19/23 19:51	OP97881	(unrelated sample)
ZZZZZZ	4Q47595.D	07/19/23 20:06	OP97881	(unrelated sample)
S4Q697-CC690	4Q47596.D	07/19/23 20:21	n/a	Continuing cal 4
S4Q697-ICCB	4Q47597.D	07/19/23 20:36	n/a	Continuing Calibration Blank
OP97906-BS	4Q47598.D	07/19/23 20:50	OP97906	Blank Spike
OP97906-LLBS	4Q47599.D	07/19/23 21:05	OP97906	Blank Spike
OP97906-MB	4Q47600.D	07/19/23 21:20	OP97906	Method Blank
ZZZZZZ	4Q47601.D	07/19/23 21:35	OP97906	(unrelated sample)
ZZZZZZ	4Q47602.D	07/19/23 21:49	OP97906	(unrelated sample)
ZZZZZZ	4Q47603.D	07/19/23 22:04	OP97906	(unrelated sample)
ZZZZZZ	4Q47604.D	07/19/23 22:19	OP97906	(unrelated sample)
ZZZZZZ	4Q47605.D	07/19/23 22:34	OP97906	(unrelated sample)
ZZZZZZ	4Q47607.D	07/19/23 23:03	OP97906	(unrelated sample)
S4Q697-CC690	4Q47608.D	07/19/23 23:18	n/a	Continuing cal 4

Run Sequence Report

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q697	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
S4Q697-ICCB	4Q47609.D	07/19/23 23:33	n/a	Continuing Calibration Blank
ZZZZZZ	4Q47610.D	07/19/23 23:47	OP97906	(unrelated sample)
ZZZZZZ	4Q47611.D	07/20/23 00:02	OP97906	(unrelated sample)
FC7243-10	4Q47612.D	07/20/23 00:17	OP97906	(used for QC only; not part of job FC7724)
OP97906-MS	4Q47613.D	07/20/23 00:32	OP97906	Matrix Spike
OP97906-MSD	4Q47614.D	07/20/23 00:47	OP97906	Matrix Spike Duplicate
ZZZZZZ	4Q47615.D	07/20/23 01:01	OP97906	(unrelated sample)
ZZZZZZ	4Q47616.D	07/20/23 01:16	OP97906	(unrelated sample)
ZZZZZZ	4Q47617.D	07/20/23 01:31	OP97906	(unrelated sample)
ZZZZZZ	4Q47618.D	07/20/23 01:46	OP97906	(unrelated sample)
ZZZZZZ	4Q47619.D	07/20/23 02:00	OP97906	(unrelated sample)
S4Q697-CC690	4Q47620.D	07/20/23 02:15	n/a	Continuing cal 4
S4Q697-ICCB	4Q47621.D	07/20/23 02:30	n/a	Continuing Calibration Blank
ZZZZZZ	4Q47622.D	07/20/23 02:45	OP97906	(unrelated sample)
ZZZZZZ	4Q47624.D	07/20/23 03:14	OP97906	(unrelated sample)
ZZZZZZ	4Q47625.D	07/20/23 03:29	OP97906	(unrelated sample)
S4Q697-ECC690	4Q47626.D	07/20/23 03:43	n/a	Ending cal 4
S4Q697-ICCB	4Q47627.D	07/20/23 03:58	n/a	Continuing Calibration Blank

6.10.2

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Run Sequence Report

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q699	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q		
Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q699-RT	4Q47710.D	07/21/23 00:53	n/a	Retention Time Marker
S4Q699-RT	4Q47711.D	07/21/23 01:08	n/a	Retention Time Marker
S4Q699-IBLK	4Q47713.D	07/21/23 01:38	n/a	Instrument Blank
S4Q699-IBLK	4Q47713.D	07/21/23 01:38	n/a	Instrument Blank
S4Q699-CC690	4Q47714.D	07/21/23 01:52	n/a	Continuing cal 4
S4Q699-CC690	4Q47715.D	07/21/23 02:07	n/a	Continuing cal 1.0LL
FC7258-1	4Q47716.D	07/21/23 02:22	OP97911	(used for QC only; not part of job FC7724)
OP97911-MS	4Q47717.D	07/21/23 02:37	OP97911	Matrix Spike
OP97911-DUP	4Q47719.D	07/21/23 03:06	OP97911	Duplicate
ZZZZZZ	4Q47720.D	07/21/23 03:21	OP97911	(unrelated sample)
ZZZZZZ	4Q47721.D	07/21/23 03:36	OP97906	(unrelated sample)
ZZZZZZ	4Q47722.D	07/21/23 03:50	OP97906	(unrelated sample)
ZZZZZZ	4Q47724.D	07/21/23 04:20	OP97906	(unrelated sample)
S4Q699-CC690	4Q47725.D	07/21/23 04:35	n/a	Continuing cal 4
S4Q699-ICCB	4Q47726.D	07/21/23 04:49	n/a	Continuing Calibration Blank
FC7243-10	4Q47727.D	07/21/23 05:04	OP97906	(used for QC only; not part of job FC7724)
OP97906-MS	4Q47728.D	07/21/23 05:19	OP97906	Matrix Spike
OP97906-MSD	4Q47729.D	07/21/23 05:34	OP97906	Matrix Spike Duplicate
ZZZZZZ	4Q47731.D	07/21/23 06:03	OP97906	(unrelated sample)
ZZZZZZ	4Q47732.D	07/21/23 06:18	OP97906	(unrelated sample)
ZZZZZZ	4Q47733.D	07/21/23 06:33	OP97906	(unrelated sample)
OP97940-BS	4Q47734.D	07/21/23 06:47	OP97940	Blank Spike
OP97940-LLBS	4Q47735.D	07/21/23 07:02	OP97940	Blank Spike
OP97940-MB	4Q47736.D	07/21/23 07:17	OP97940	Method Blank
S4Q699-CC690	4Q47737.D	07/21/23 07:32	n/a	Continuing cal 4
S4Q699-ICCB	4Q47738.D	07/21/23 07:46	n/a	Continuing Calibration Blank
ZZZZZZ	4Q47739.D	07/21/23 08:01	OP97940	(unrelated sample)
ZZZZZZ	4Q47740.D	07/21/23 08:16	OP97940	(unrelated sample)
ZZZZZZ	4Q47741.D	07/21/23 08:31	OP97940	(unrelated sample)
ZZZZZZ	4Q47742.D	07/21/23 08:45	OP97940	(unrelated sample)
ZZZZZZ	4Q47743.D	07/21/23 09:00	OP97940	(unrelated sample)
ZZZZZZ	4Q47744.D	07/21/23 09:15	OP97940	(unrelated sample)
ZZZZZZ	4Q47745.D	07/21/23 09:30	OP97940	(unrelated sample)
ZZZZZZ	4Q47746.D	07/21/23 09:44	OP97940	(unrelated sample)
ZZZZZZ	4Q47747.D	07/21/23 09:59	OP97940	(unrelated sample)
S4Q699-CC690	4Q47748.D	07/21/23 10:14	n/a	Continuing cal 4
S4Q699-ICCB	4Q47749.D	07/21/23 10:29	n/a	Continuing Calibration Blank
FC7258-3	4Q47750.D	07/21/23 10:43	OP97940	(used for QC only; not part of job FC7724)
FC7258-5	4Q47752.D	07/21/23 11:13	OP97940	(used for QC only; not part of job FC7724)
ZZZZZZ	4Q47754.D	07/21/23 11:42	OP97940	(unrelated sample)
ZZZZZZ	4Q47755.D	07/21/23 11:57	OP97940	(unrelated sample)
OP97941-BS	4Q47756.D	07/21/23 12:12	OP97941	Blank Spike
OP97941-LLBS	4Q47757.D	07/21/23 12:26	OP97941	Blank Spike
OP97941-MB	4Q47758.D	07/21/23 12:41	OP97941	Method Blank
ZZZZZZ	4Q47759.D	07/21/23 12:56	OP97941	(unrelated sample)
S4Q699-CC690	4Q47760.D	07/21/23 13:11	n/a	Continuing cal 4

Run Sequence Report

Job Number: FC7724
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q699	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
S4Q699-ICCB	4Q47761.D	07/21/23 13:25	n/a	Continuing Calibration Blank
ZZZZZZ	4Q47762.D	07/21/23 13:40	OP97941	(unrelated sample)
ZZZZZZ	4Q47763.D	07/21/23 13:55	OP97941	(unrelated sample)
ZZZZZZ	4Q47764.D	07/21/23 14:10	OP97941	(unrelated sample)
ZZZZZZ	4Q47765.D	07/21/23 14:24	OP97941	(unrelated sample)
ZZZZZZ	4Q47766.D	07/21/23 14:39	OP97941	(unrelated sample)
ZZZZZZ	4Q47767.D	07/21/23 14:54	OP97941	(unrelated sample)
ZZZZZZ	4Q47768.D	07/21/23 15:09	OP97941	(unrelated sample)
ZZZZZZ	4Q47769.D	07/21/23 15:24	OP97941	(unrelated sample)
ZZZZZZ	4Q47770.D	07/21/23 15:39	OP97941	(unrelated sample)
ZZZZZZ	4Q47771.D	07/21/23 15:54	OP97941	(unrelated sample)
S4Q699-CC690	4Q47772.D	07/21/23 16:09	n/a	Continuing cal 4
S4Q699-ICCB	4Q47773.D	07/21/23 16:23	n/a	Continuing Calibration Blank
ZZZZZZ	4Q47774.D	07/21/23 16:38	OP97941	(unrelated sample)
ZZZZZZ	4Q47775.D	07/21/23 16:53	OP97941	(unrelated sample)
ZZZZZZ	4Q47776.D	07/21/23 17:08	OP97941	(unrelated sample)
FC7223-15	4Q47777.D	07/21/23 17:22	OP97941	(used for QC only; not part of job FC7724)
OP97941-MS	4Q47778.D	07/21/23 17:37	OP97941	Matrix Spike
OP97941-MSD	4Q47779.D	07/21/23 17:52	OP97941	Matrix Spike Duplicate
ZZZZZZ	4Q47780.D	07/21/23 18:07	OP97941	(unrelated sample)
ZZZZZZ	4Q47781.D	07/21/23 18:21	OP97941	(unrelated sample)
ZZZZZZ	4Q47782.D	07/21/23 18:36	OP97906	(unrelated sample)
S4Q699-ECC690	4Q47783.D	07/21/23 18:51	n/a	Ending cal 4
S4Q699-ICCB	4Q47784.D	07/21/23 19:06	n/a	Continuing Calibration Blank

6.10.3
6

MS Semi-volatiles

Raw Data

Manual Integrations
APPROVED
 (compounds with "m" flag)
 Natasha Gumtie
 07/20/23 15:46

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47577.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 3:41:13 PM
 Sample Name : fc7724-1
 Vial : P2-F1
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q697.batch.bin
 Sample Information : OP97911,S4Q697,550,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.986	216.8 -> 171.9	55689	10.00 µg/L	0.075
M5-PFPeA	4.425	268.3 -> 223.0	58883	5.00 µg/L	0.037
M5-PFHxA	5.598	318.0 -> 273.0	39901	2.50 µg/L	0.000
M4-PFHpA	6.543	367.1 -> 322.0	28336	2.50 µg/L	-0.012
M8-PFOA	7.211	421.1 -> 376.0	43639	2.50 µg/L	-0.025
M9-PFNA	7.759	472.1 -> 427.0	19315	1.25 µg/L	-0.025
M6-PFDA	8.266	519.1 -> 474.1	14379	1.25 µg/L	-0.026
M7-PFUnDA	8.723	570.0 -> 525.1	15507	1.25 µg/L	-0.037
M2-PFDoDA	9.157	615.1 -> 570.0	15183	1.25 µg/L	-0.037
M2-PFTeDA	9.925	715.2 -> 670.0	9634	1.25 µg/L	-0.037
M8-FOSA	9.884	506.1 -> 77.8	11905	2.50 µg/L	-0.025
M3-PFBS	5.479	302.1 -> 79.9	9481	2.50 µg/L	0.000
M3-PFHxS	7.290	402.1 -> 79.9	6715	2.50 µg/L	-0.027
M8-PFOS	8.405	507.1 -> 79.9	8386	2.50 µg/L	-0.025
M2-4:2FTS	5.284	329.1 -> 80.9	609	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	1114	5.00 µg/L	-0.025
M2-8:2FTS	8.053	529.1 -> 80.9	1628	5.00 µg/L	-0.025
M3-MeFOSAA	8.324	573.2 -> 419.0	14308	5.00 µg/L	-0.037
M3-HFPO-DA	5.965	286.9 -> 168.9	35525	10.00 µg/L	0.000
M5-EtFOSAA	8.534	589.2 -> 419.0	12231	5.00 µg/L	-0.037
M7-MeFOSE	11.047	623.2 -> 58.9	48781	25.00 µg/L	-0.012
M9-EtFOSE	11.332	639.2 -> 58.9	68768	25.00 µg/L	-0.012
M5-EtFOSA	11.423	531.1 -> 219.0	8707	2.50 µg/L	0.000
M3-MeFOSA	11.152	515.0 -> 219.0	7851	2.50 µg/L	-0.012
13C4-PFOS	8.393	502.8 -> 79.9	7684	2.50 µg/L	-0.037
13C3-PFBA	2.978	216.0 -> 172.0	49001	5.00 µg/L	0.062
18O2-PFHxS	7.303	403.0 -> 83.9	3893	2.50 µg/L	-0.012
13C4-PFOA	7.212	417.1 -> 372.0	45070	2.50 µg/L	-0.025
13C2-PFDA	8.266	515.1 -> 470.1	13768	1.25 µg/L	-0.026
13C5-PFNA	7.759	468.0 -> 423.0	19035	1.25 µg/L	-0.025
13C2-PFHxA	5.599	315.1 -> 270.0	30516	2.50 µg/L	0.000

System Monitoring Compounds

13C2-4:2FTS	5.284	329.1 -> 80.9	609	6.97 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 139.4%		
13C2-6:2FTS	6.974	429.1 -> 80.9	1114	5.81 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.3%		
13C2-8:2FTS	8.053	529.1 -> 80.9	1628	5.22 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.4%		
13C2-PFDoDA	9.157	615.1 -> 570.0	15183	1.19 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.9%		
13C2-PFTeDA	9.925	715.2 -> 670.0	9634	1.04 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 83.5%		
13C3-PFBS	5.479	302.1 -> 79.9	9481	3.18 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 127.3%		
13C3-PFHxS	7.290	402.1 -> 79.9	6715	3.08 µg/L	-0.027

7.1.1
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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 = 123.0%		
13C4-PFBA	2.986	216.8 -> 171.9	55689	6.01 µg/L	0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 60.1%		
13C4-PFHpA	6.543	367.1 -> 322.0	28336	3.02 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 121.0%		
13C5-PFHxA	5.598	318.0 -> 273.0	39901	3.06 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 122.2%		
13C5-PFPeA	4.425	268.3 -> 223.0	58883	6.99 µg/L	0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 139.8%		
13C6-PFDA	8.266	519.1 -> 474.1	14379	1.51 µg/L	-0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 120.7%		
13C7-PFUnDA	8.723	570.0 -> 525.1	15507	1.28 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C8-FOSA	9.884	506.1 -> 77.8	11905	2.99 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 119.8%		
13C8-PFOA	7.211	421.1 -> 376.0	43639	2.98 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 119.0%		
13C8-PFOS	8.405	507.1 -> 79.9	8386	3.14 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 125.7%		
13C9-PFNA	7.759	472.1 -> 427.0	19315	1.52 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 121.4%		
d3-MeFOSAA	8.324	573.2 -> 419.0	14308	5.66 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.2%		
13C3-HFPO-DA	5.965	286.9 -> 168.9	35525	10.92 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 109.2%		
d3-MeFOSA	11.152	515.0 -> 219.0	7851	2.71 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.4%		
d5-EtFOSAA	8.534	589.2 -> 419.0	12231	5.49 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.7%		
d7-MeFOSE	11.047	623.2 -> 58.9	48781	23.79 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 95.2%		
d9-EtFOSE	11.332	639.2 -> 58.9	68768	25.19 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.7%		
d5-EtFOSA	11.423	531.1 -> 219.0	8707	2.77 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 110.7%		

Target Compounds

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	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	5.601	449.0 -> 98.9	1140	0.07	µg/L	99
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	36	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	4.427	498.9 -> 98.8	3730	0.22	µg/L	m
		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

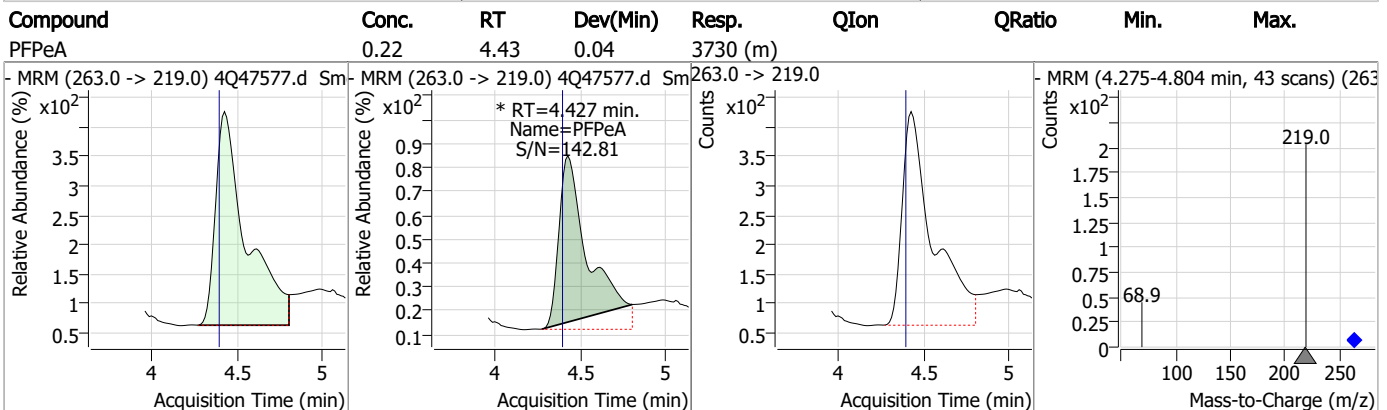
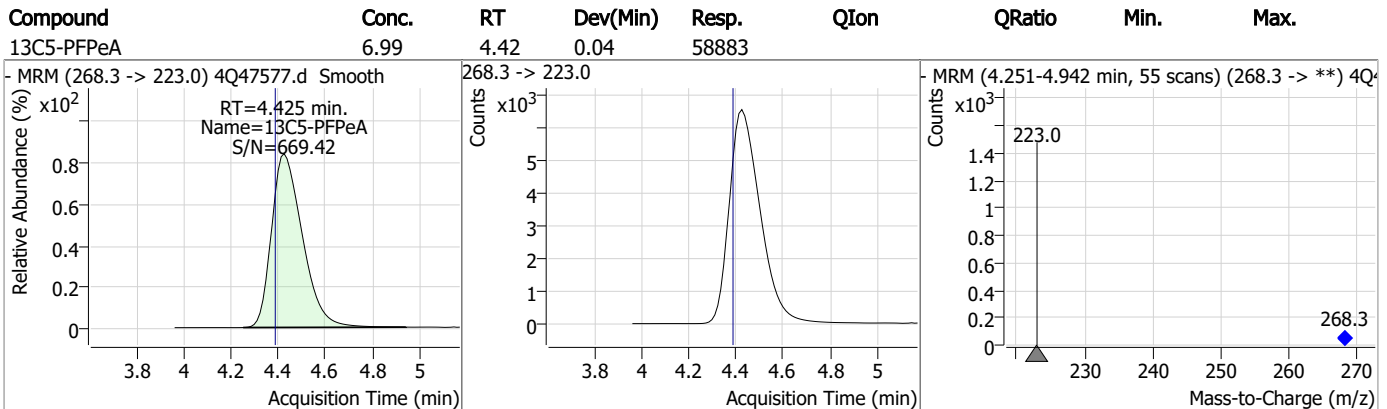
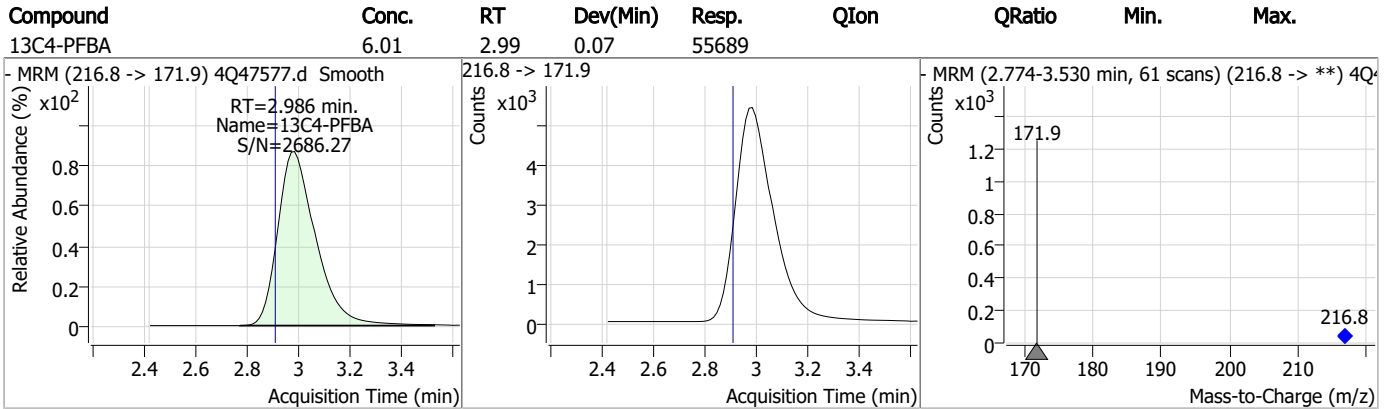
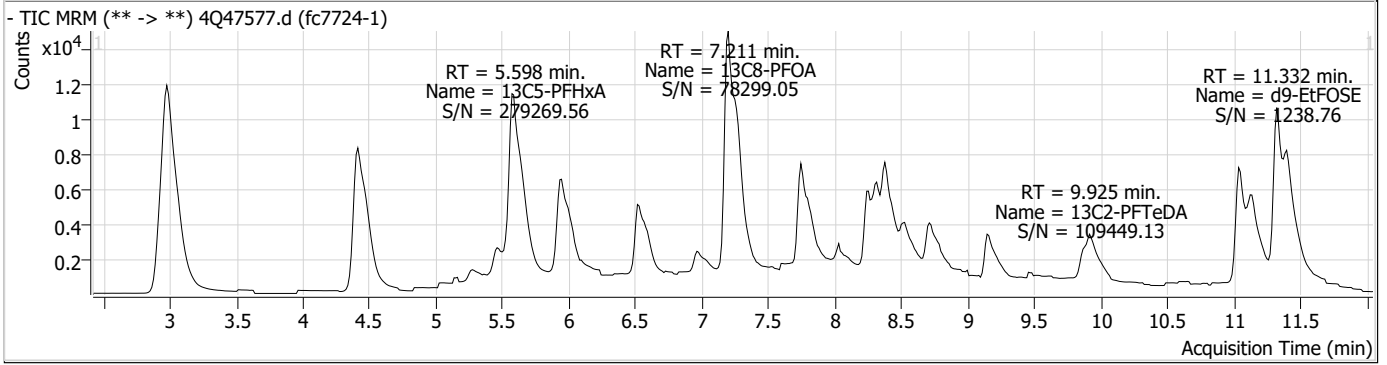
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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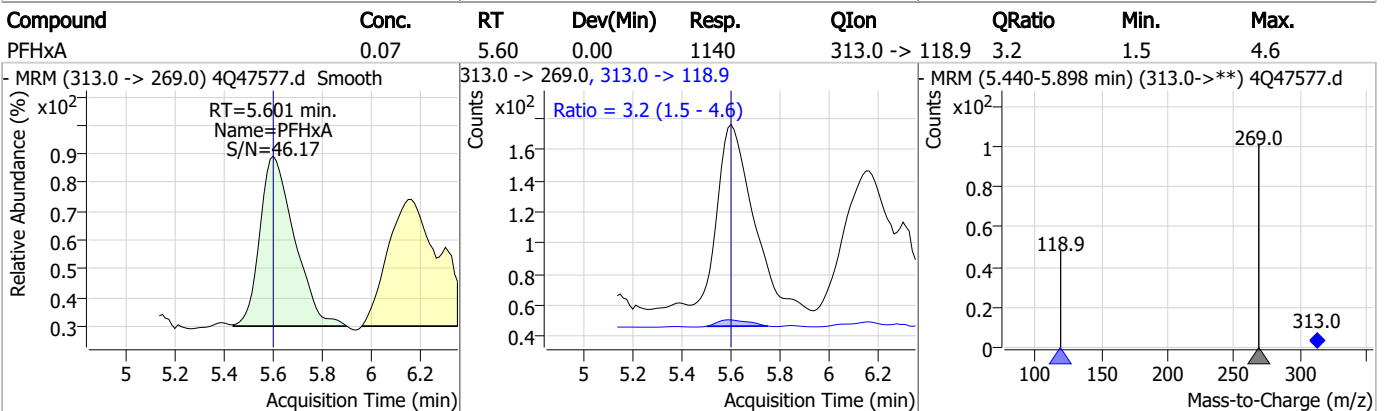
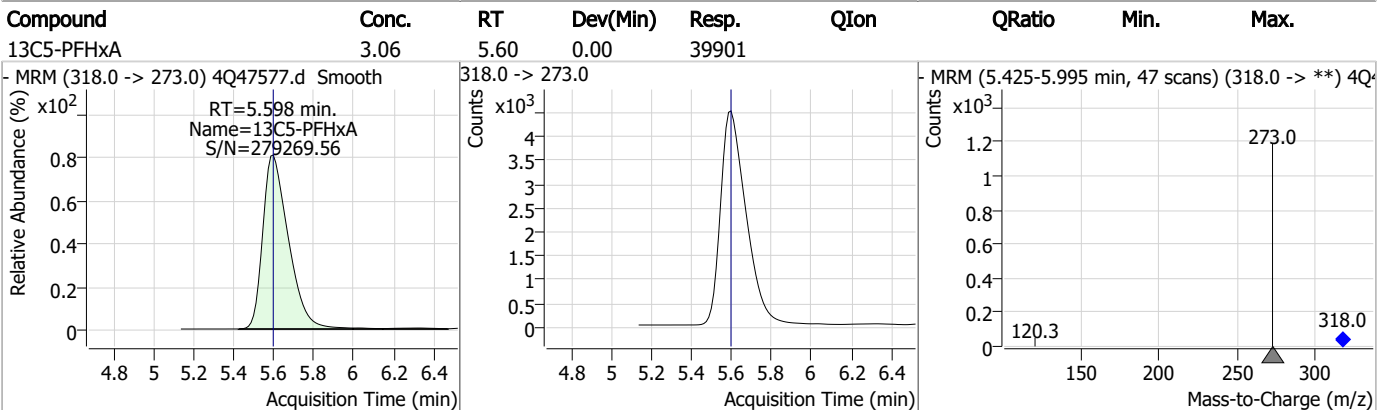
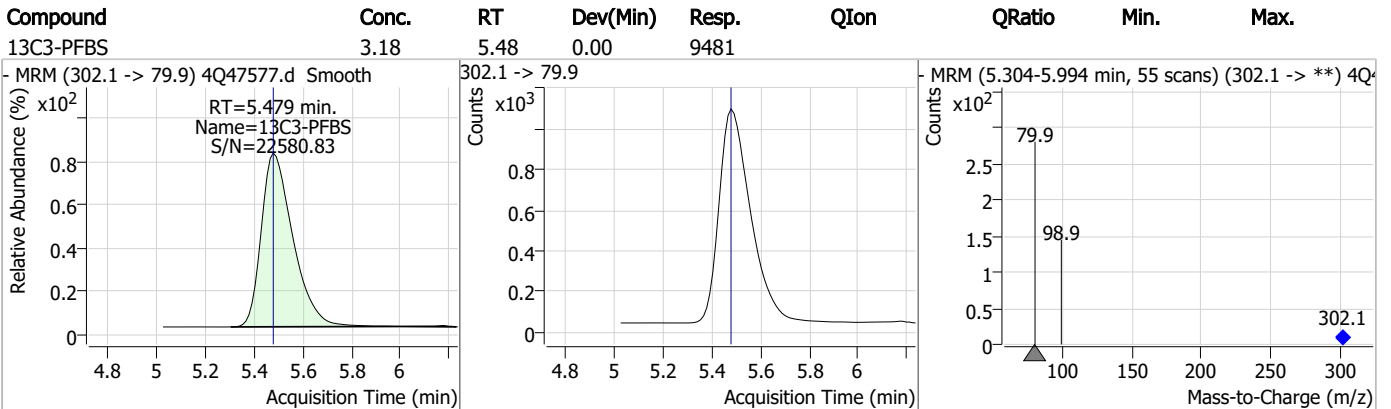
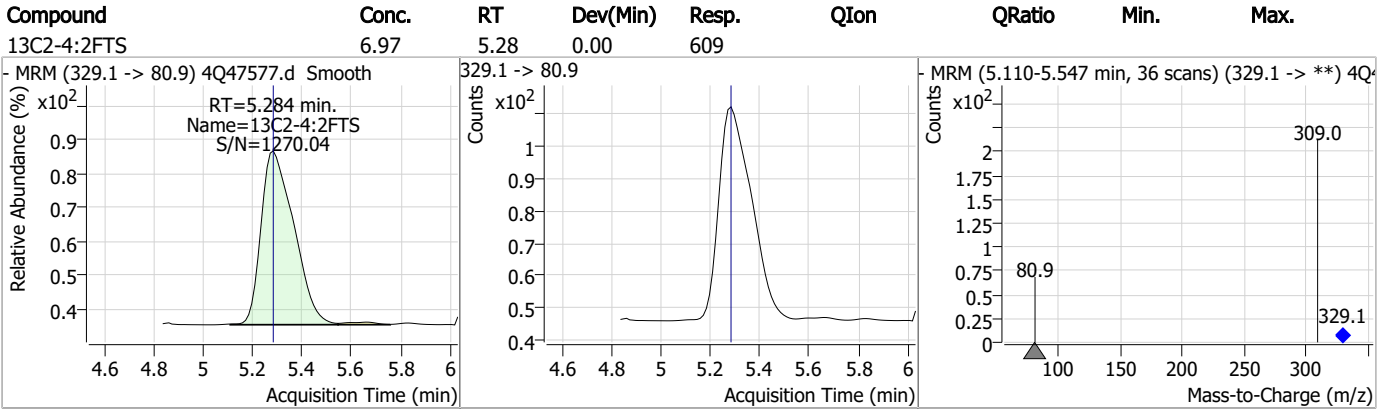
7.1.1
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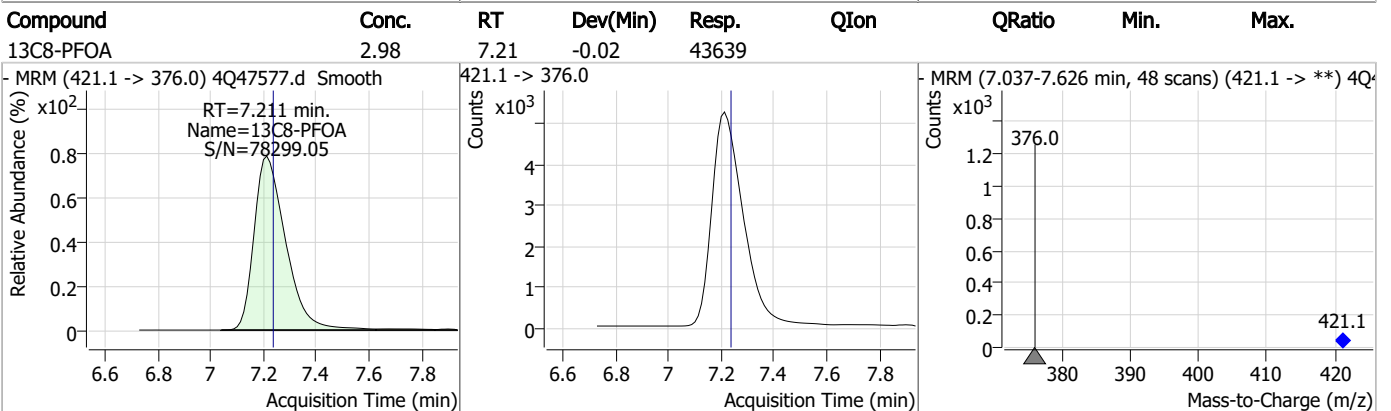
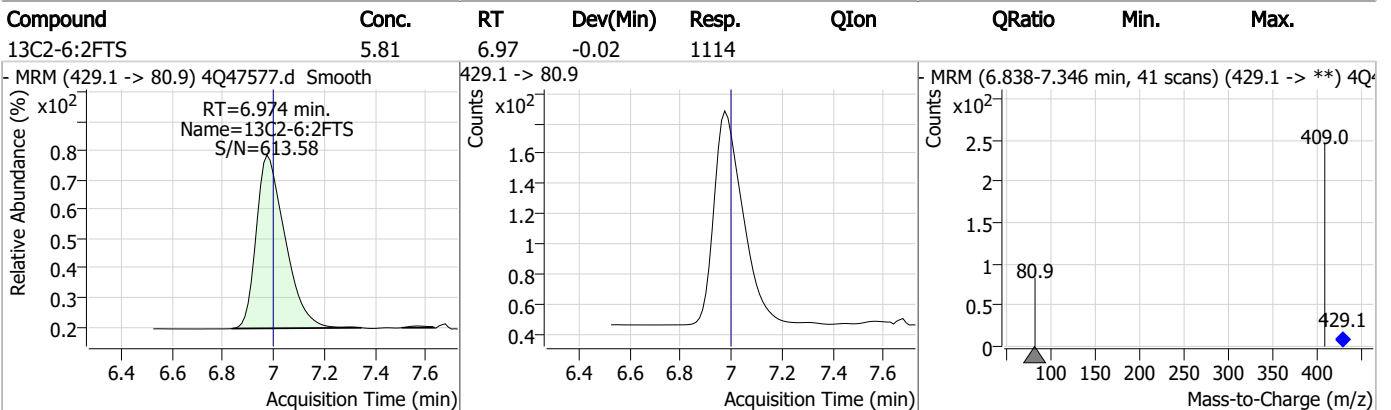
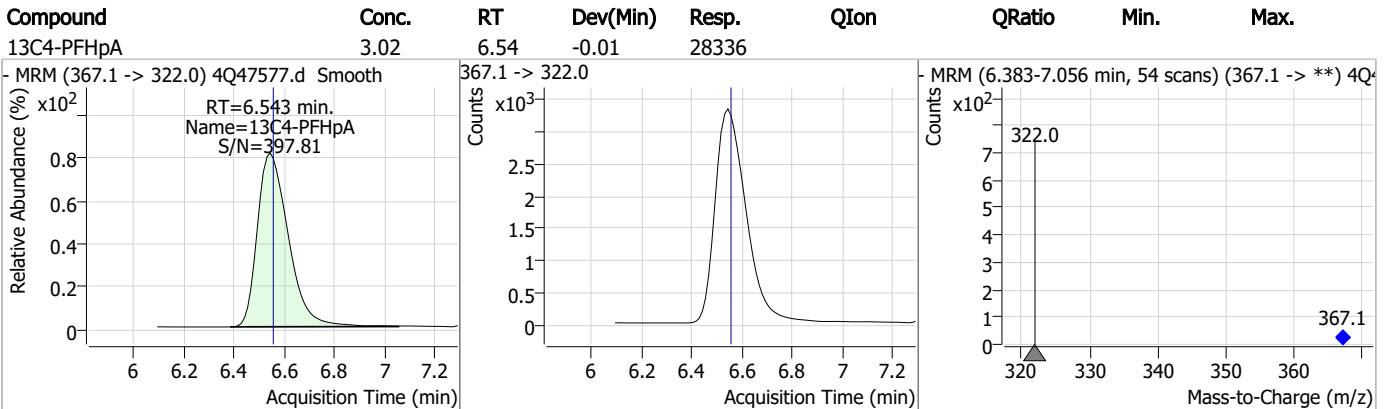
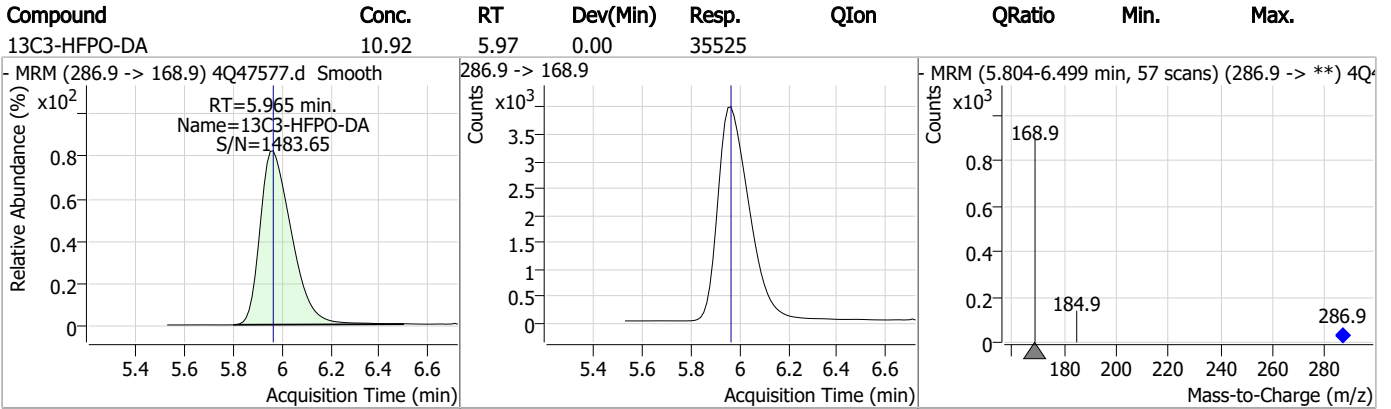
Perfluorinated Compounds by LC/MS/MS



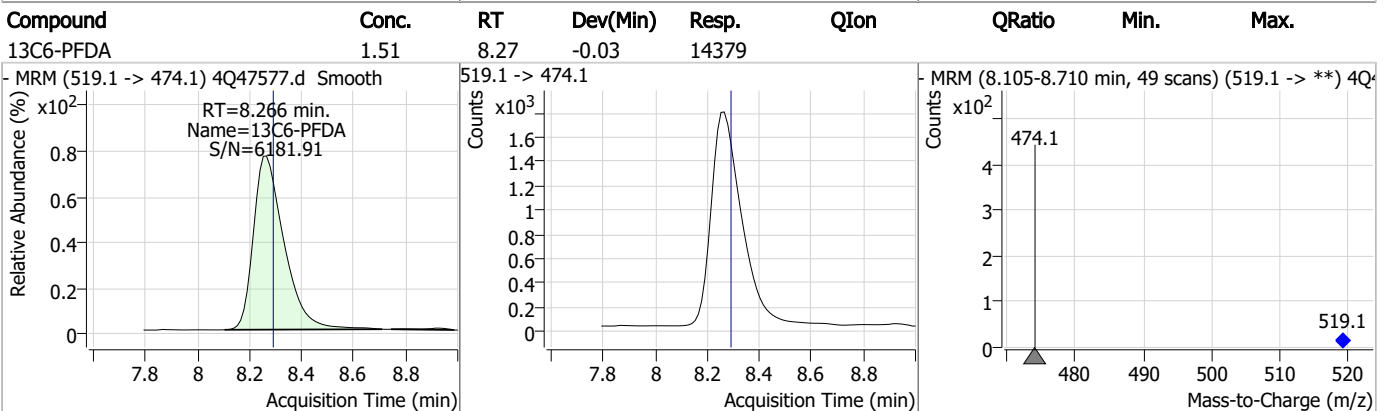
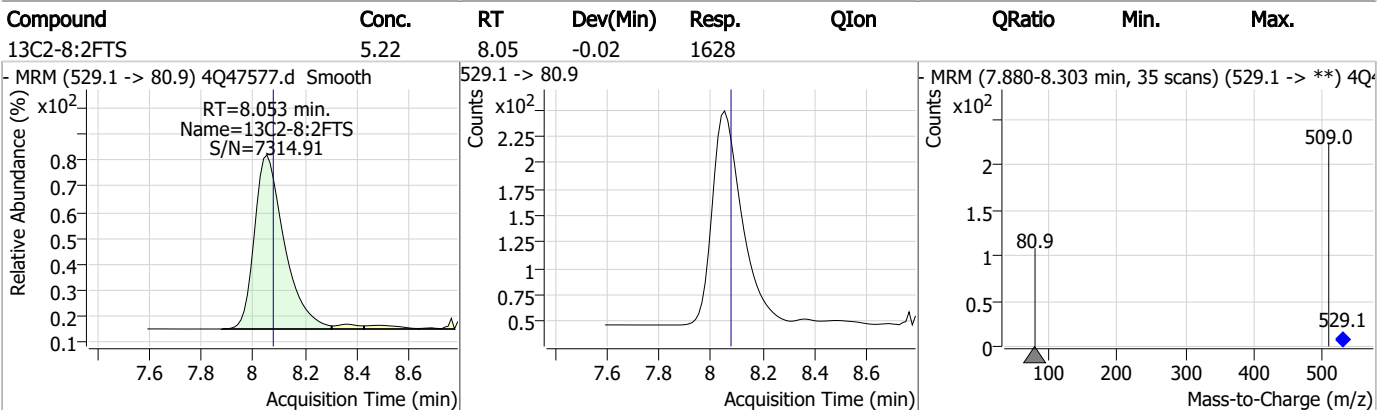
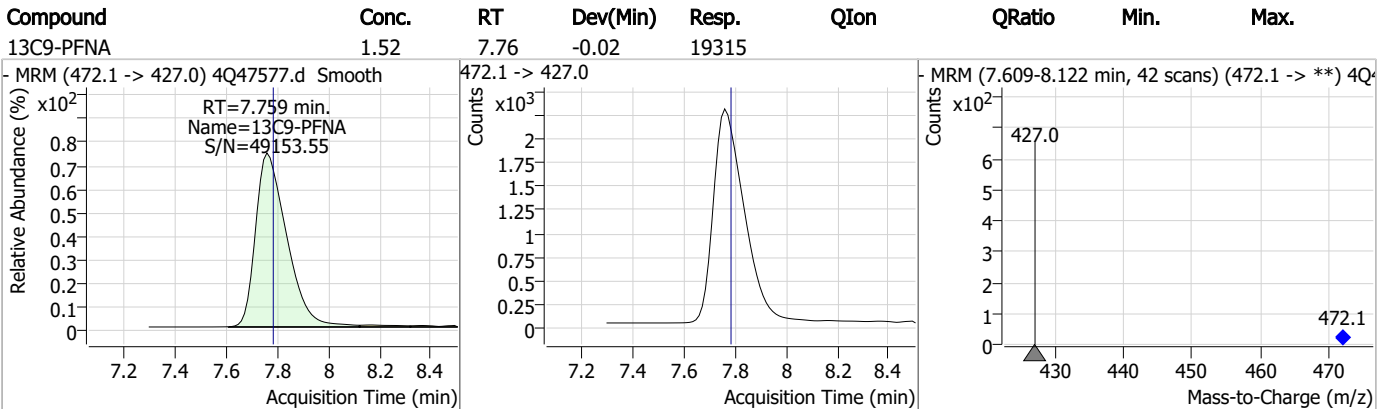
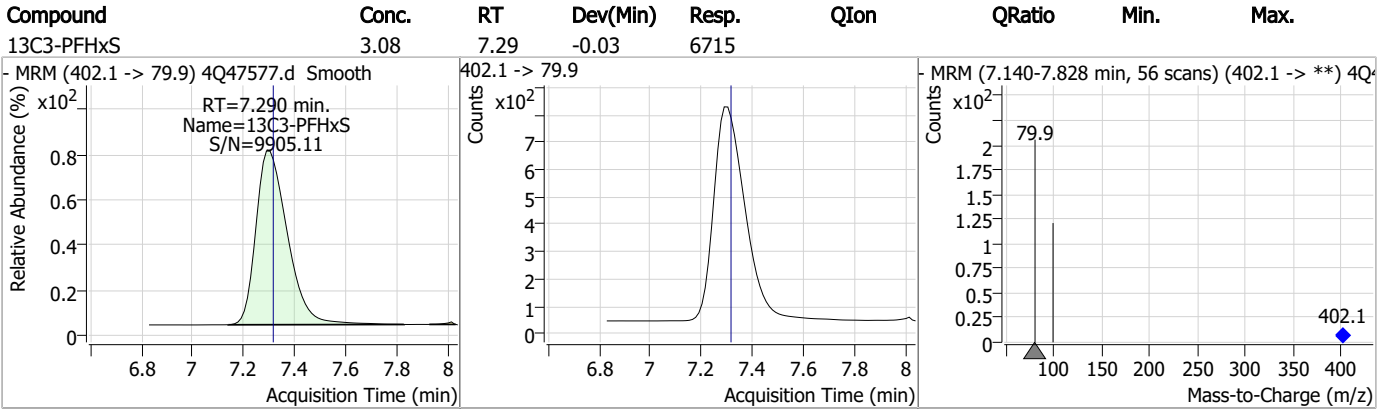
Perfluorinated Compounds by LC/MS/MS



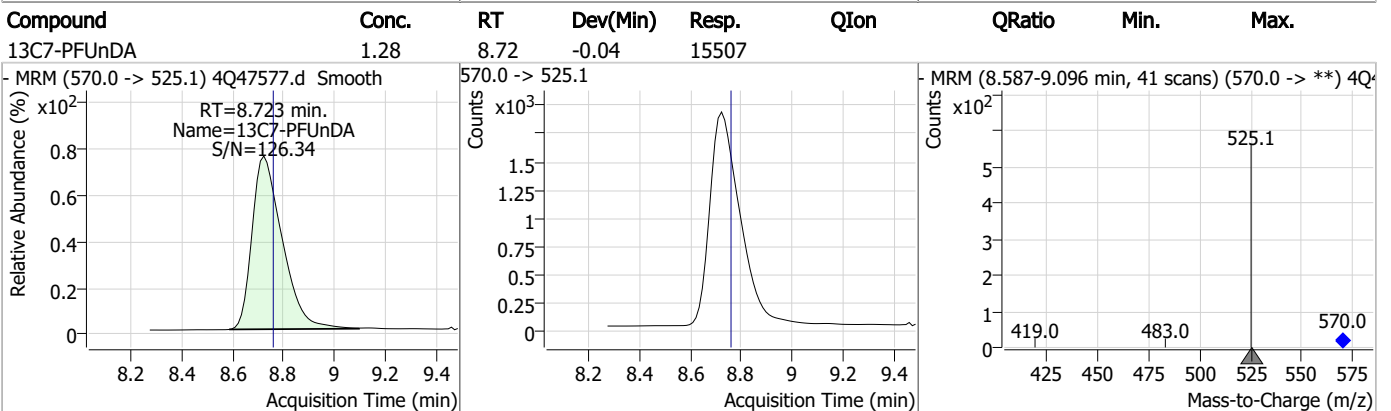
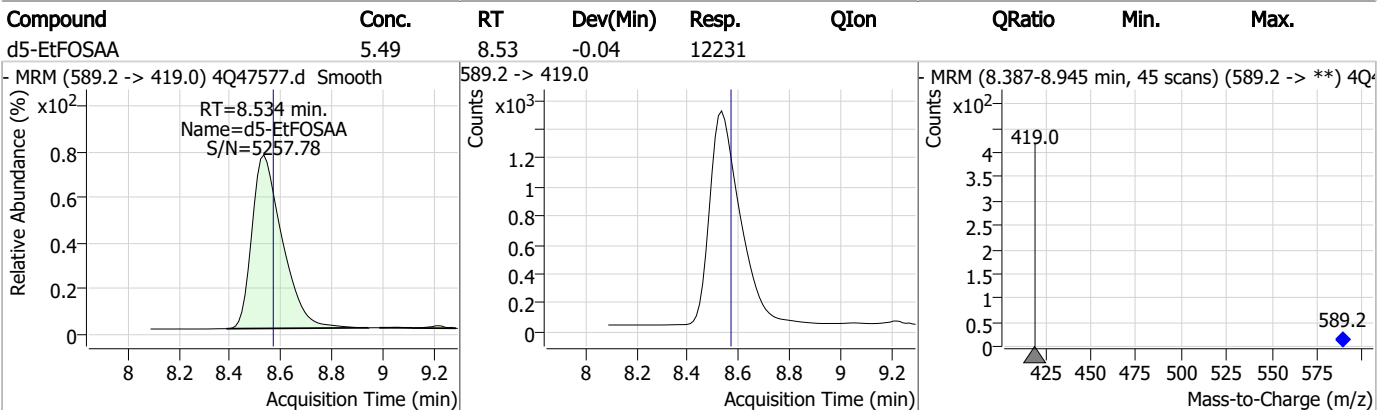
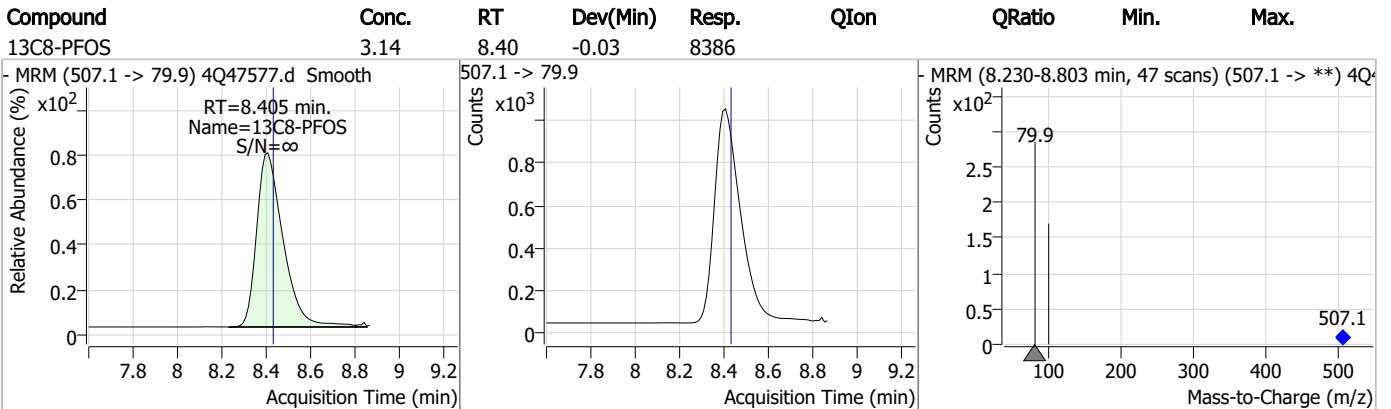
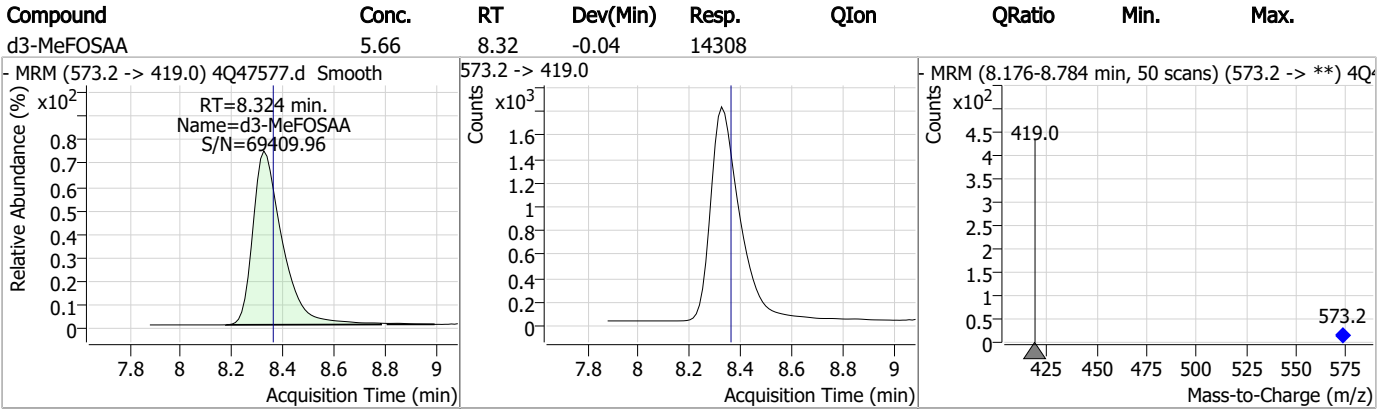
Perfluorinated Compounds by LC/MS/MS



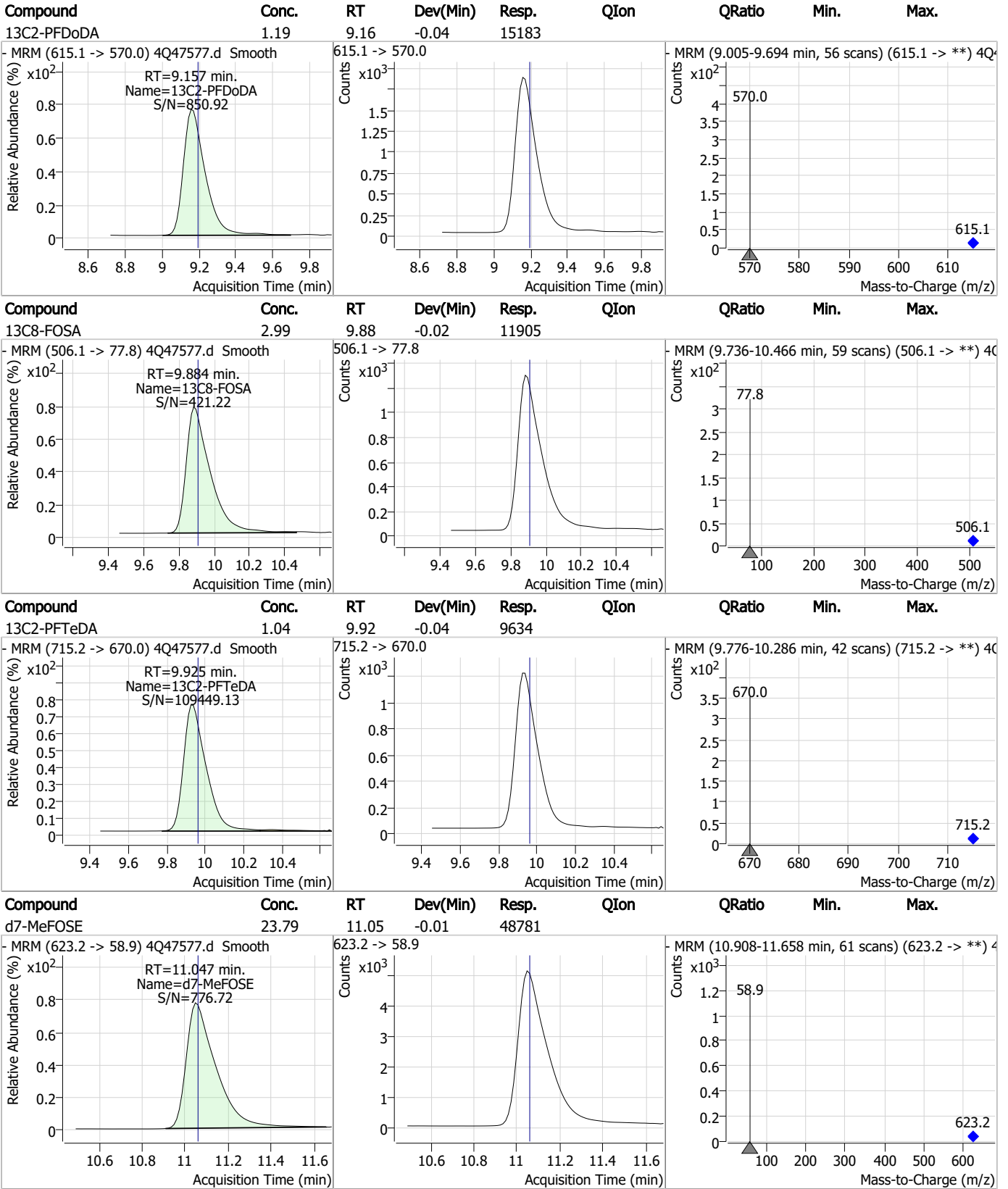
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



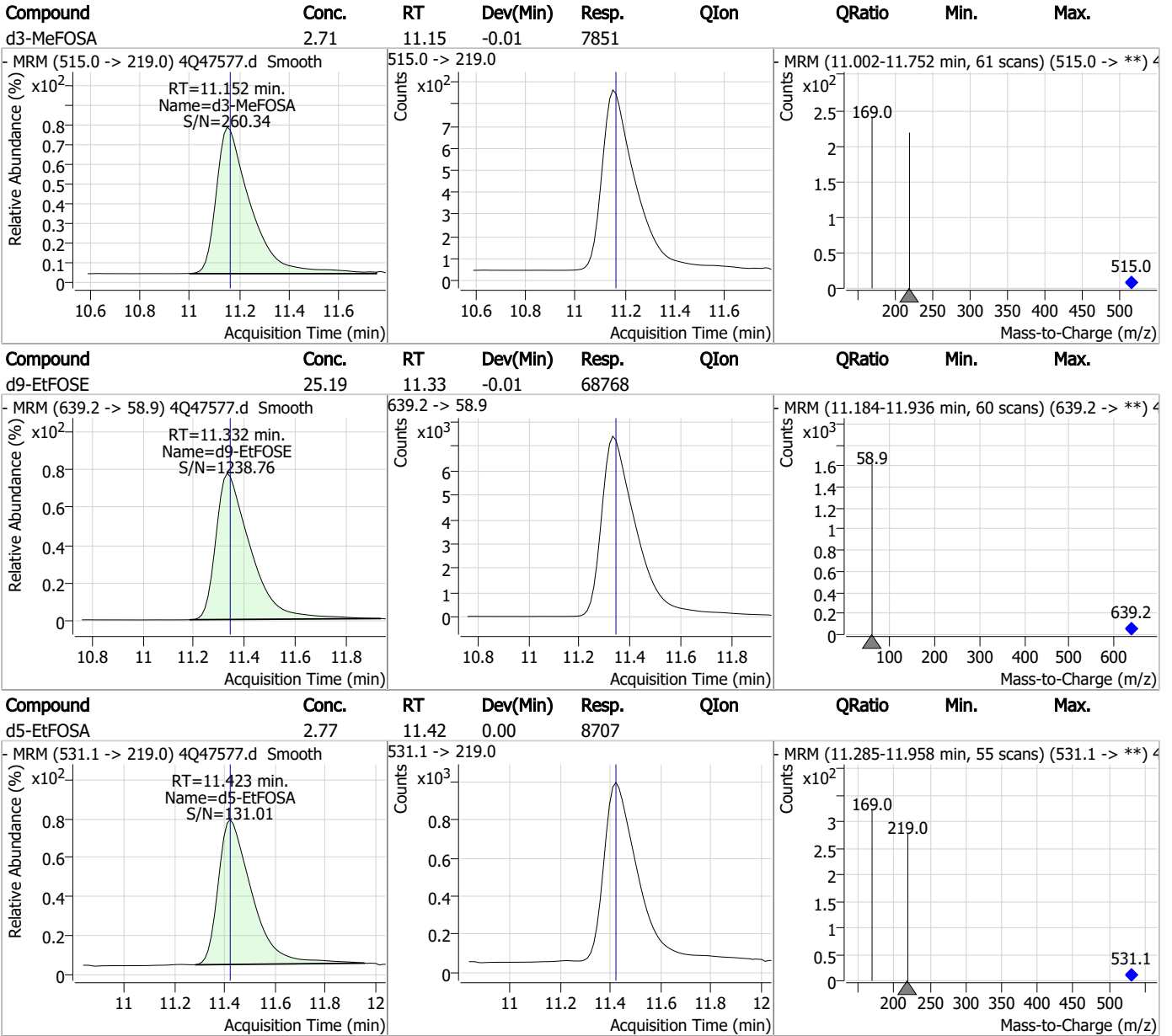
Perfluorinated Compounds by LC/MS/MS



7.1.1
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Perfluorinated Compounds by LC/MS/MS



7.1.1

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Manual Integration Approval Summary

Sample Number: FC7724-1 Method: EPA DRAFT 1633
Lab FileID: 4Q47577.D Analyst approved: 07/20/23 12:54 Anna Ludwig
Injection Time: 07/19/23 15:41 Supervisor approved: 07/20/23 15:46 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoropentanoic acid	2706-90-3		4.43	Poor instrument integration

7.1.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47578.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 3:55:58 PM
 Sample Name : fc7724-2
 Vial : P2-F2
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q697.batch.bin
 Sample Information : OP97911,S4Q697,540,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	57480	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	61981	5.00 µg/L	0.000
M5-PFHxA	5.585	318.0 -> 273.0	41744	2.50 µg/L	-0.012
M4-PFHpA	6.543	367.1 -> 322.0	29458	2.50 µg/L	-0.012
M8-PFOA	7.211	421.1 -> 376.0	48362	2.50 µg/L	-0.025
M9-PFNA	7.771	472.1 -> 427.0	20849	1.25 µg/L	-0.012
M6-PFDA	8.266	519.1 -> 474.1	15219	1.25 µg/L	-0.026
M7-PFUnDA	8.735	570.0 -> 525.1	18133	1.25 µg/L	-0.025
M2-PFDoDA	9.169	615.1 -> 570.0	18003	1.25 µg/L	-0.025
M2-PFTeDA	9.937	715.2 -> 670.0	11582	1.25 µg/L	-0.025
M8-FOSA	9.896	506.1 -> 77.8	12326	2.50 µg/L	-0.012
M3-PFBS	5.466	302.1 -> 79.9	10400	2.50 µg/L	-0.012
M3-PFHxS	7.304	402.1 -> 79.9	7095	2.50 µg/L	-0.012
M8-PFOS	8.405	507.1 -> 79.9	8833	2.50 µg/L	-0.025
M2-4:2FTS	5.272	329.1 -> 80.9	570	5.00 µg/L	-0.012
M2-6:2FTS	6.986	429.1 -> 80.9	1195	5.00 µg/L	-0.012
M2-8:2FTS	8.066	529.1 -> 80.9	1859	5.00 µg/L	-0.012
M3-MeFOSAA	8.337	573.2 -> 419.0	16105	5.00 µg/L	-0.025
M3-HFPO-DA	5.953	286.9 -> 168.9	38907	10.00 µg/L	-0.012
M5-EtFOSAA	8.546	589.2 -> 419.0	13223	5.00 µg/L	-0.025
M7-MeFOSE	11.059	623.2 -> 58.9	55599	25.00 µg/L	0.000
M9-EtFOSE	11.332	639.2 -> 58.9	81865	25.00 µg/L	-0.012
M5-EtFOSA	11.423	531.1 -> 219.0	10034	2.50 µg/L	0.000
M3-MeFOSA	11.164	515.0 -> 219.0	9161	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	8214	2.50 µg/L	-0.025
13C3-PFBA	2.903	216.0 -> 172.0	51810	5.00 µg/L	-0.012
18O2-PFHxS	7.303	403.0 -> 83.9	4323	2.50 µg/L	-0.012
13C4-PFOA	7.212	417.1 -> 372.0	48277	2.50 µg/L	-0.025
13C2-PFDA	8.266	515.1 -> 470.1	14522	1.25 µg/L	-0.026
13C5-PFNA	7.772	468.0 -> 423.0	21023	1.25 µg/L	-0.012
13C2-PFHxA	5.586	315.1 -> 270.0	32610	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.272	329.1 -> 80.9	570	5.87 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.3%		
13C2-6:2FTS	6.986	429.1 -> 80.9	1195	5.62 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.3%		
13C2-8:2FTS	8.066	529.1 -> 80.9	1859	5.37 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.4%		
13C2-PFDoDA	9.169	615.1 -> 570.0	18003	1.33 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.7%		
13C2-PFTeDA	9.937	715.2 -> 670.0	11582	1.19 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.1%		
13C3-PFBS	5.466	302.1 -> 79.9	10400	3.14 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 125.7%		
13C3-PFHxS	7.304	402.1 -> 79.9	7095	2.93 µg/L	-0.012

7.12
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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 = 117.0%	
13C4-PFBA	2.911	216.8 -> 171.9	57480	5.87 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 58.7%	
13C4-PFHpA	6.543	367.1 -> 322.0	29458	2.94 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 117.7%	
13C5-PFHxA	5.585	318.0 -> 273.0	41744	2.99 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 119.7%	
13C5-PFPeA	4.387	268.3 -> 223.0	61981	6.89 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 137.7%	
13C6-PFDA	8.266	519.1 -> 474.1	15219	1.51 µg/L	-0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 121.1%	
13C7-PFUnDA	8.735	570.0 -> 525.1	18133	1.42 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 113.6%	
13C8-FOSA	9.896	506.1 -> 77.8	12326	2.90 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 116.0%	
13C8-PFOA	7.211	421.1 -> 376.0	48362	3.08 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 123.1%	
13C8-PFOS	8.405	507.1 -> 79.9	8833	3.10 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 123.8%	
13C9-PFNA	7.771	472.1 -> 427.0	20849	1.48 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 118.7%	
d3-MeFOSAA	8.337	573.2 -> 419.0	16105	5.96 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 119.2%	
13C3-HFPO-DA	5.953	286.9 -> 168.9	38907	11.19 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 111.9%	
d3-MeFOSA	11.164	515.0 -> 219.0	9161	2.96 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 118.3%	
d5-EtFOSAA	8.546	589.2 -> 419.0	13223	5.55 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 111.0%	
d7-MeFOSE	11.059	623.2 -> 58.9	55599	25.36 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.5%	
d9-EtFOSE	11.332	639.2 -> 58.9	81865	28.05 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 112.2%	
d5-EtFOSA	11.423	531.1 -> 219.0	10034	2.98 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 119.3%	

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)
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	4.389	498.9 -> 98.8	3128	0.18 µg/L	100
		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

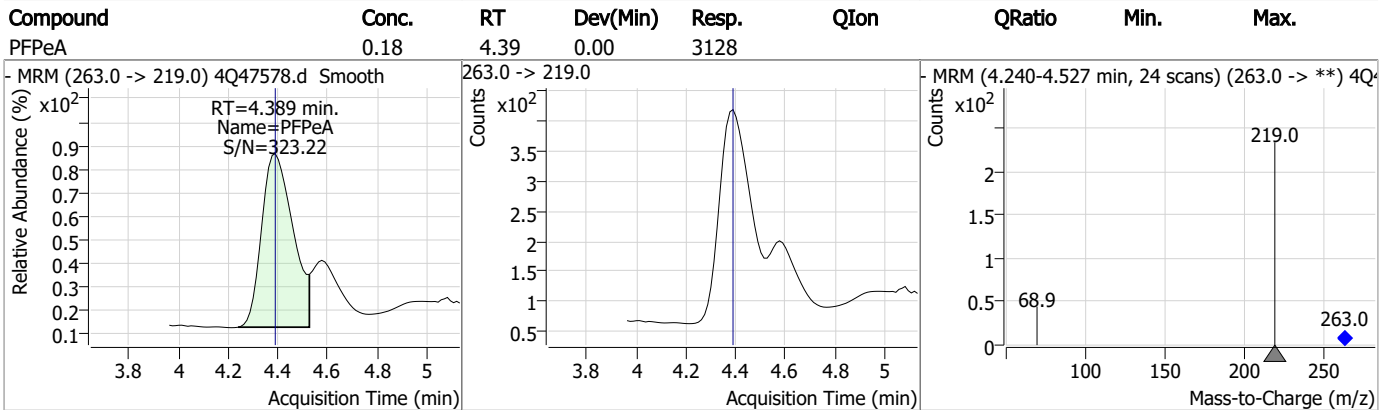
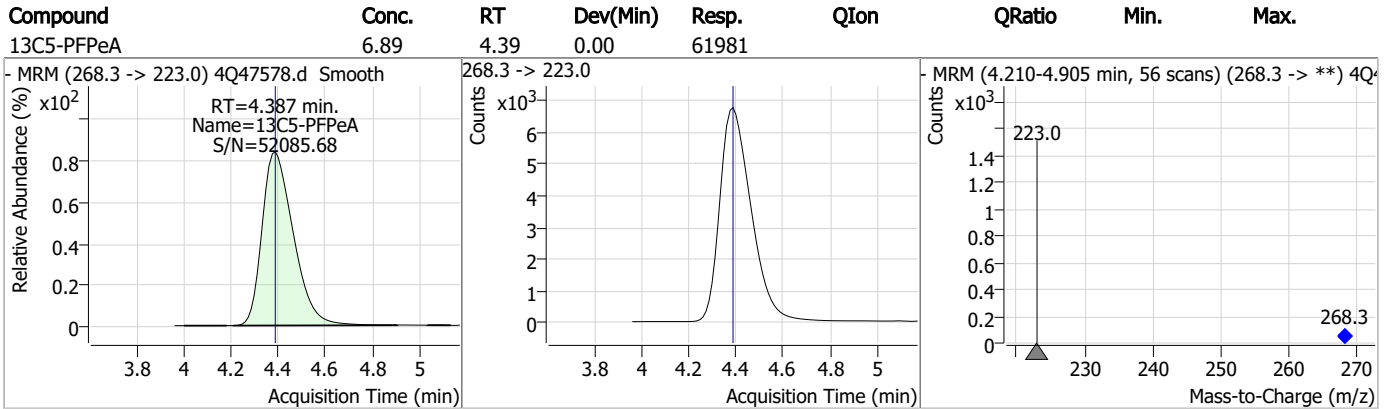
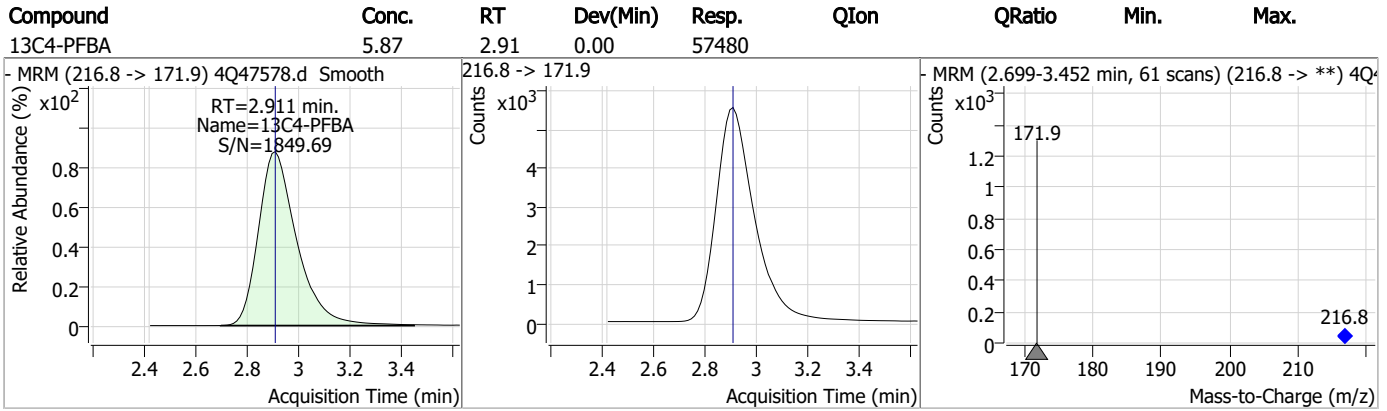
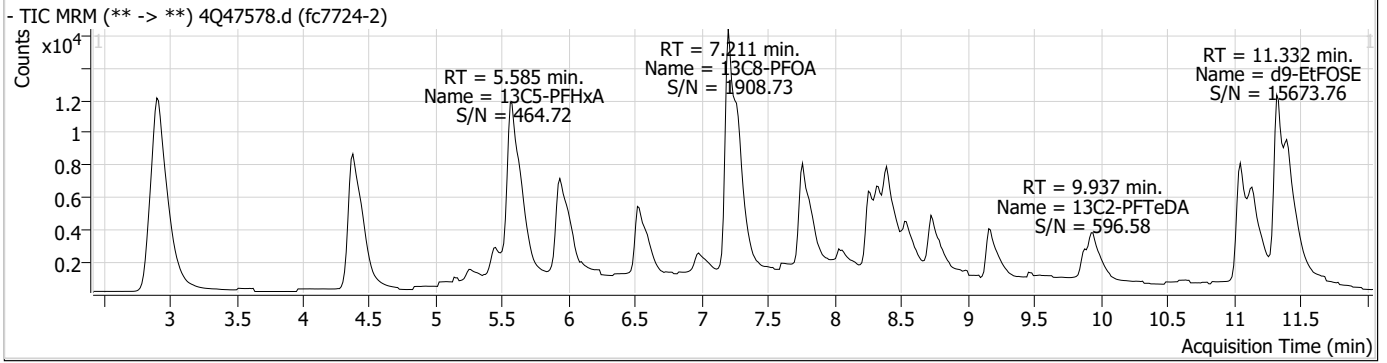
Perfluorinated Compounds by LC/MS/MS

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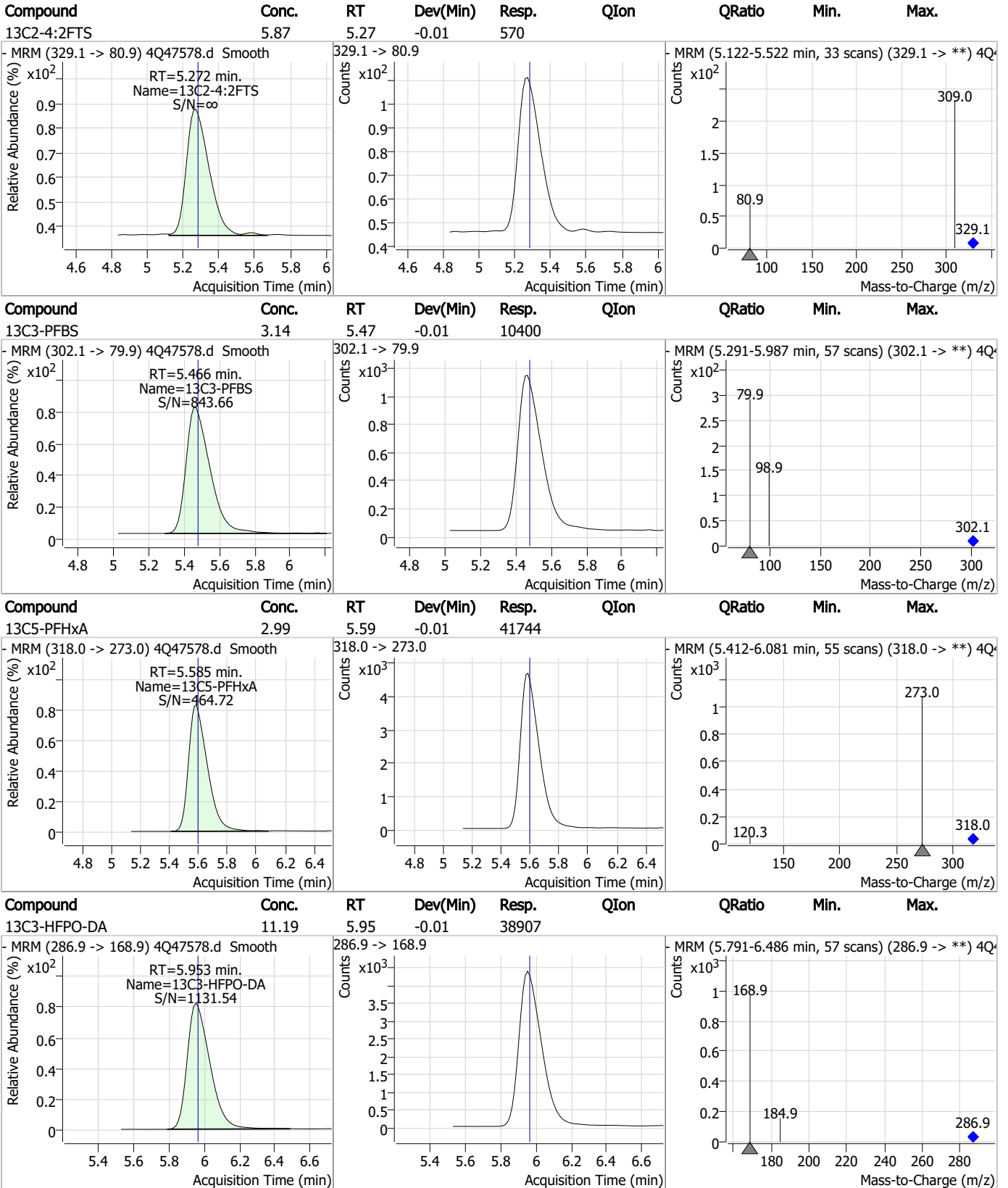
7.1.2

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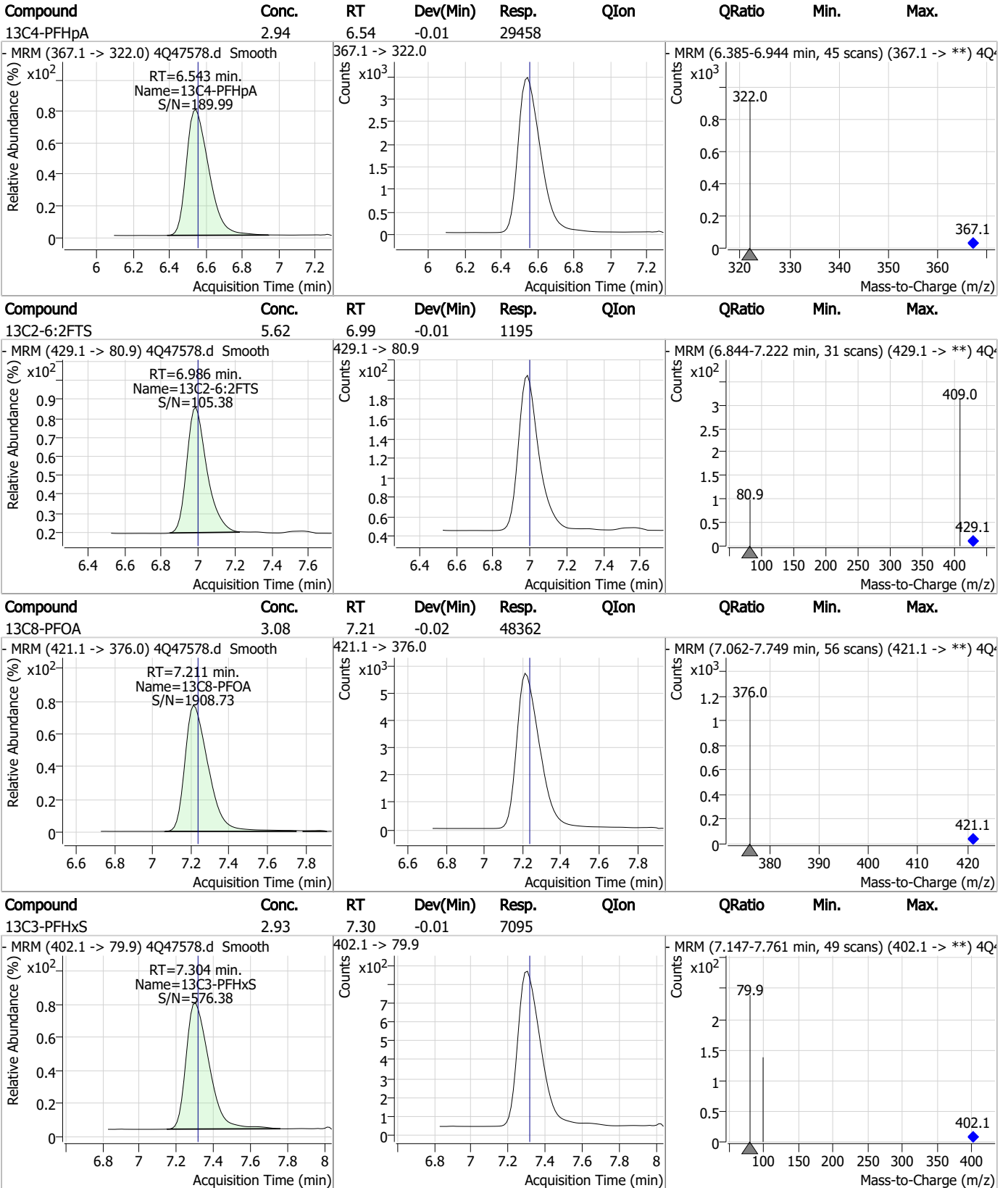
Perfluorinated Compounds by LC/MS/MS



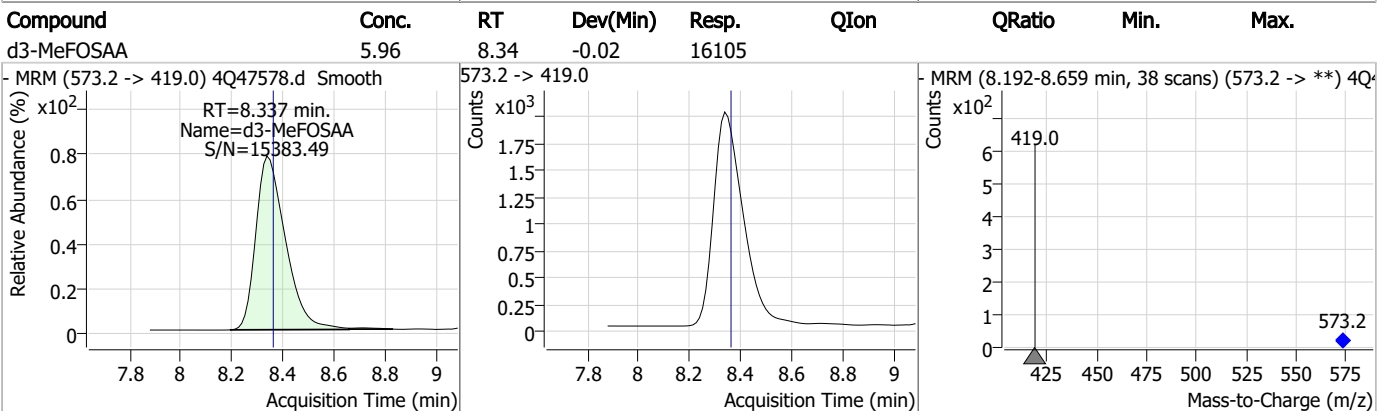
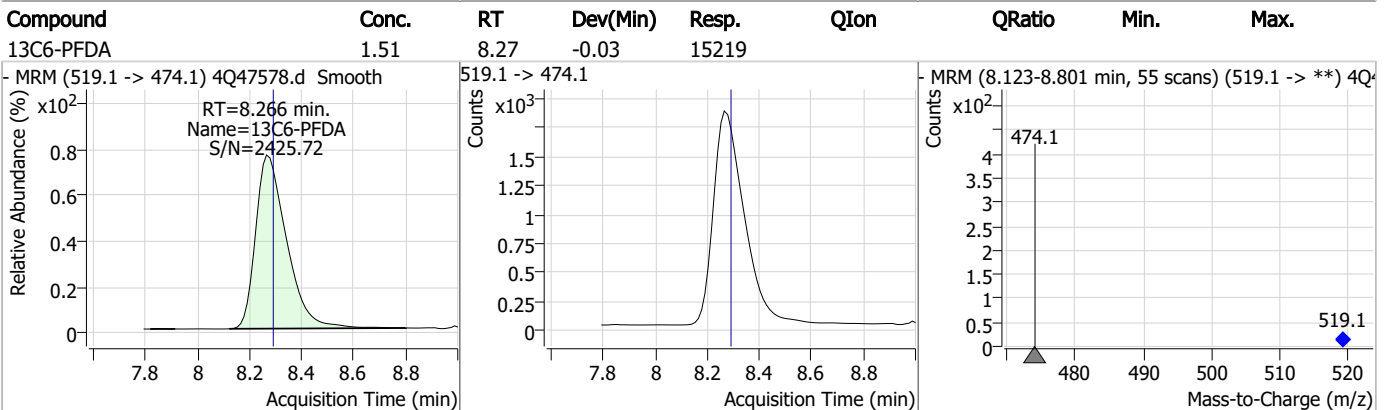
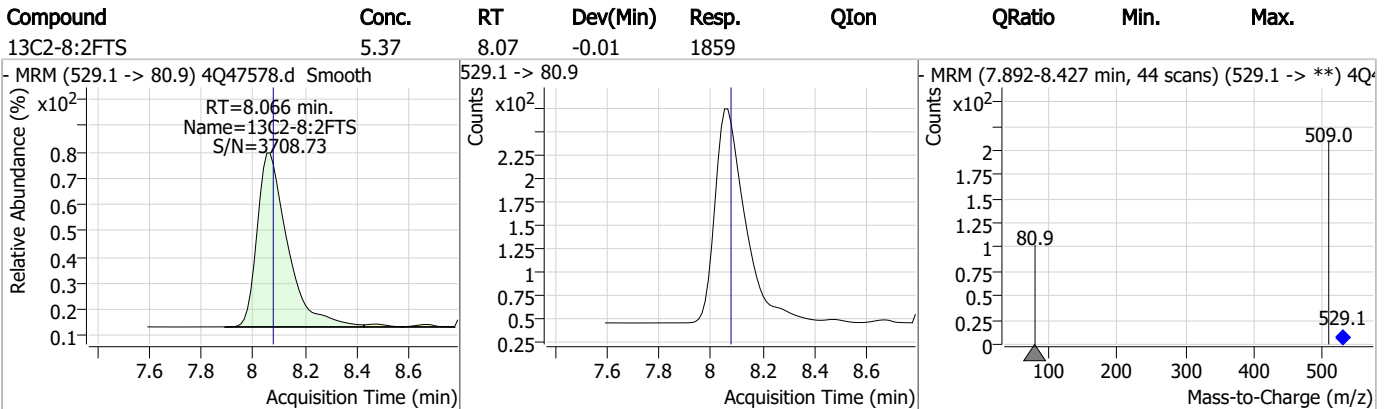
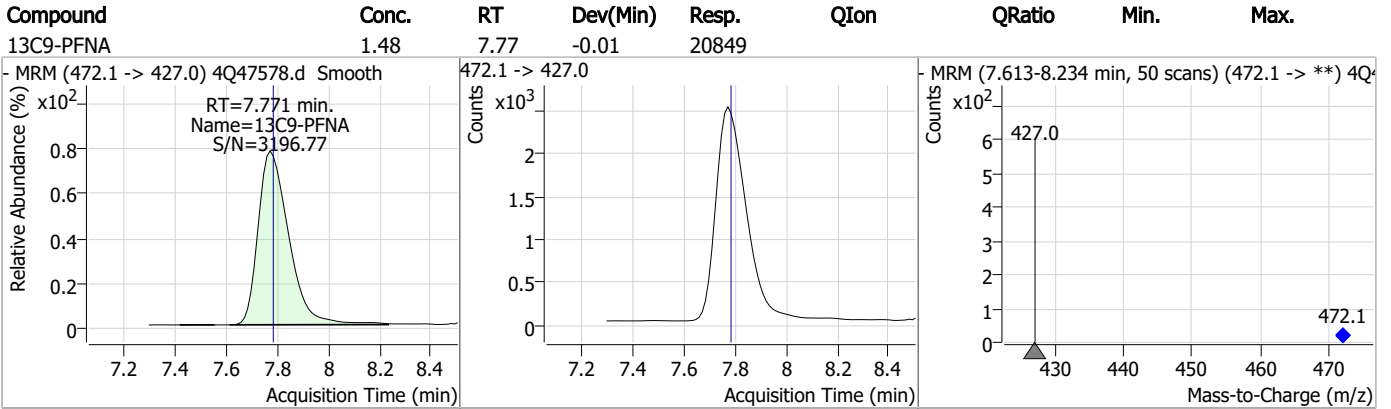
Perfluorinated Compounds by LC/MS/MS



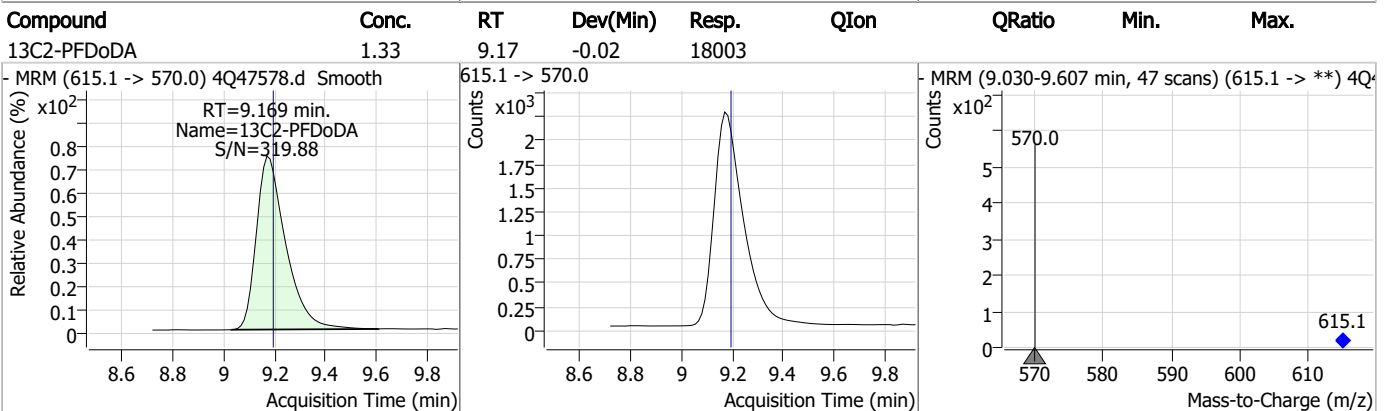
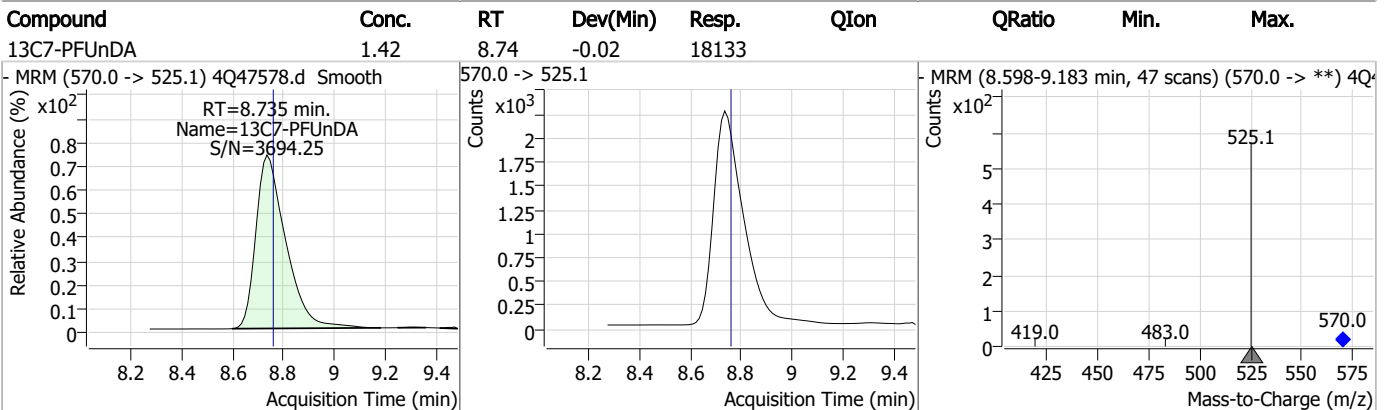
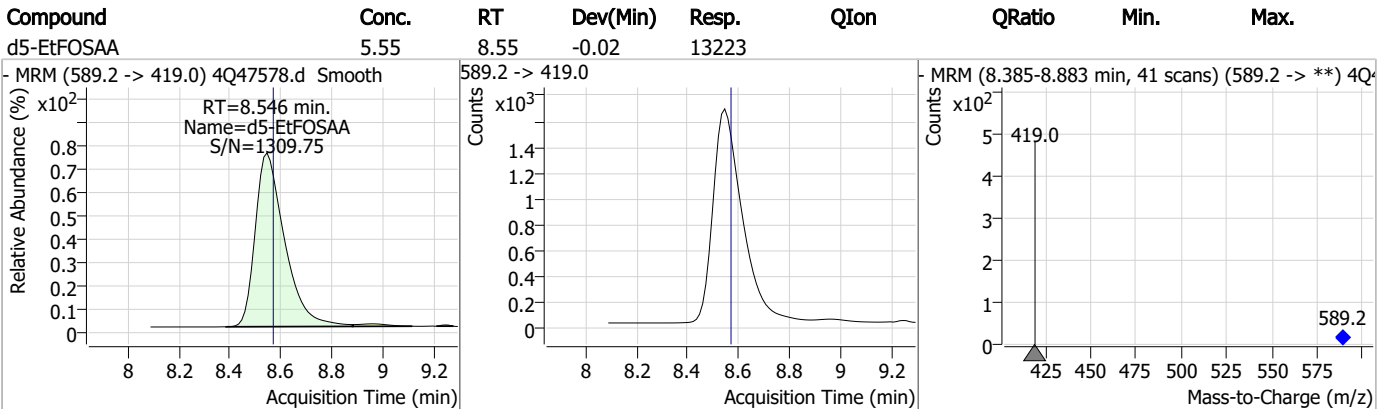
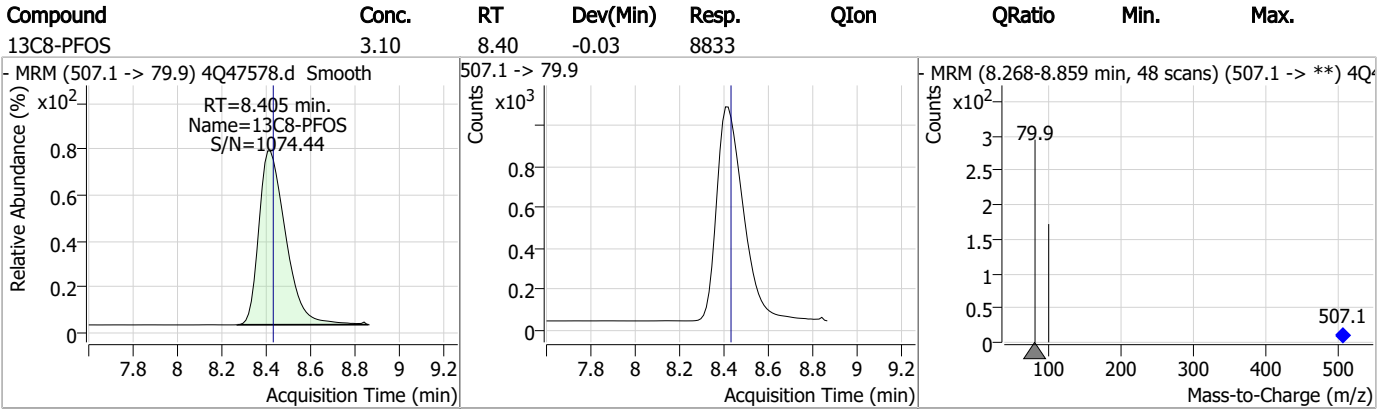
Perfluorinated Compounds by LC/MS/MS



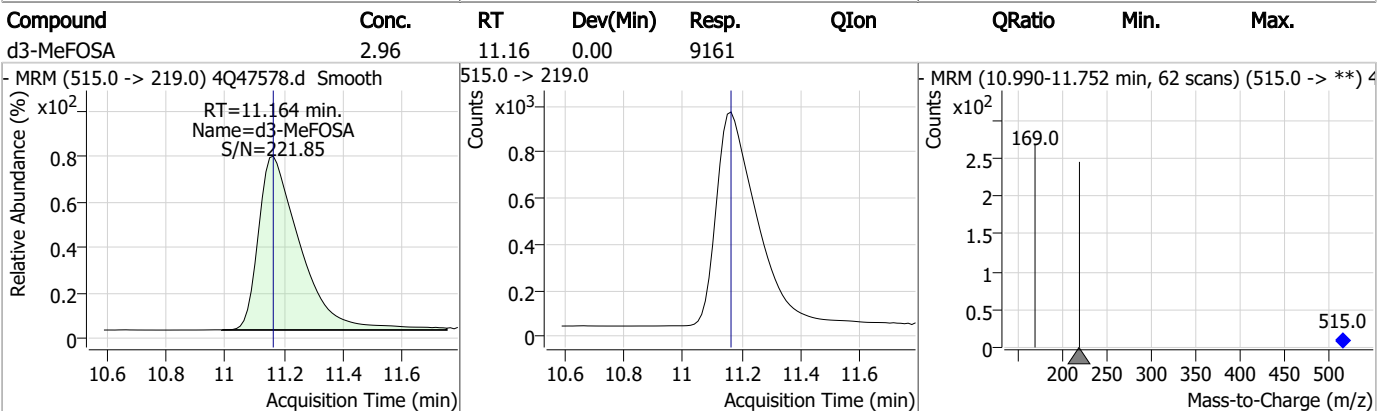
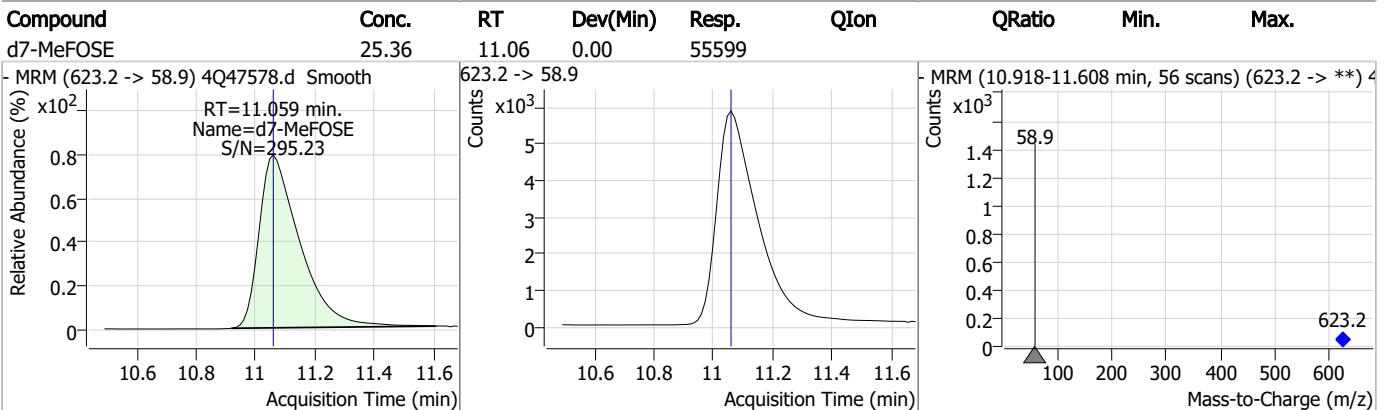
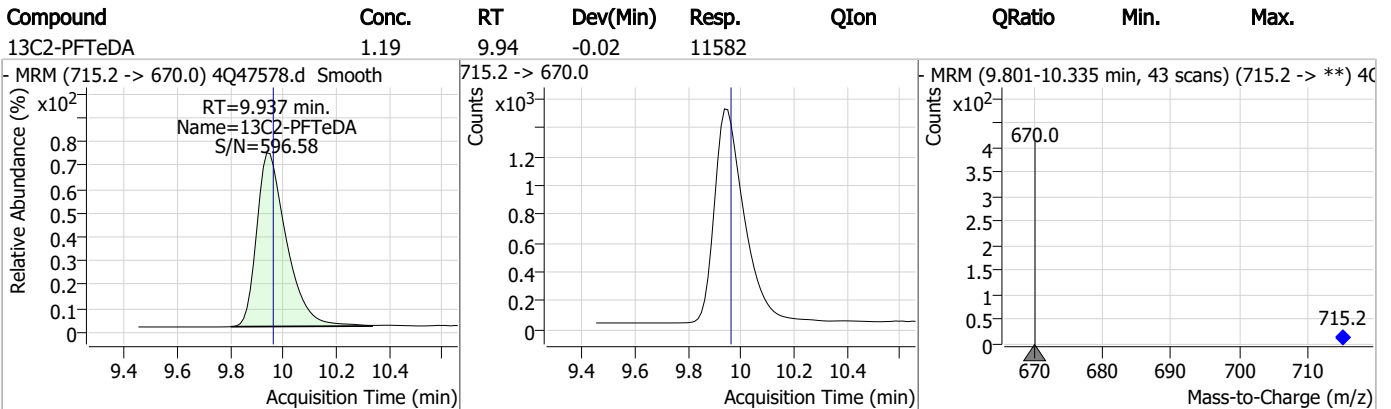
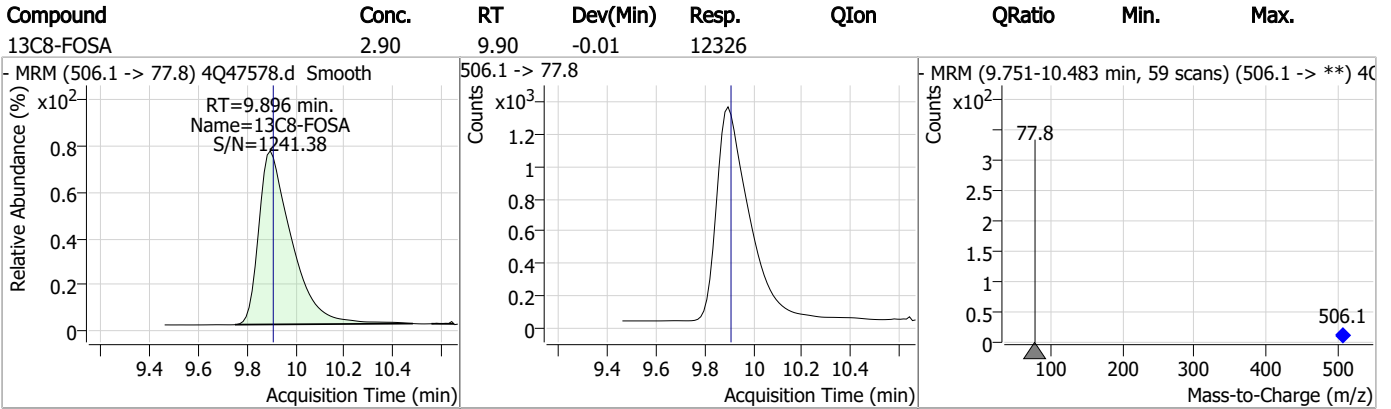
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

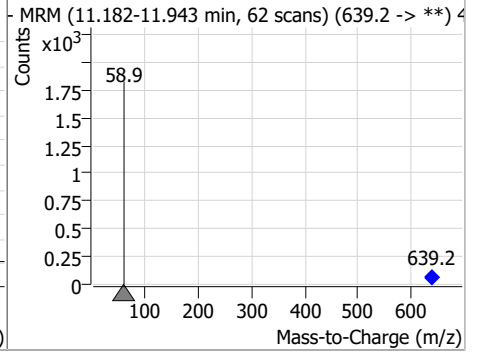
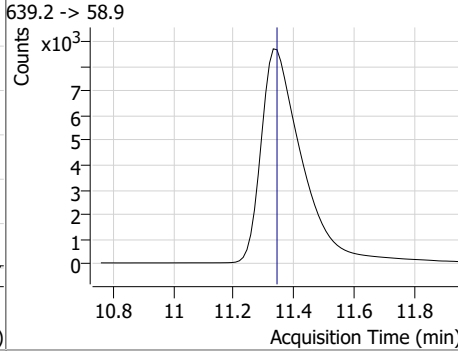
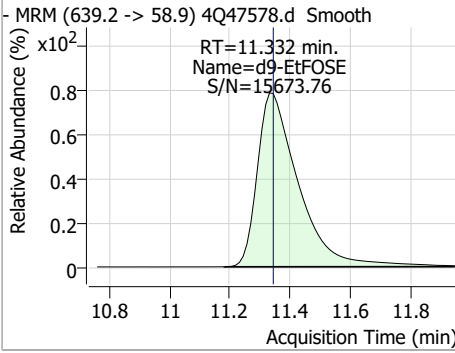


Perfluorinated Compounds by LC/MS/MS

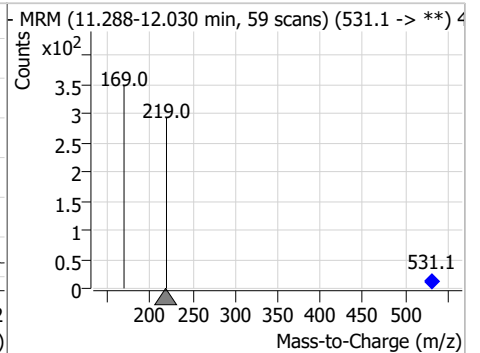
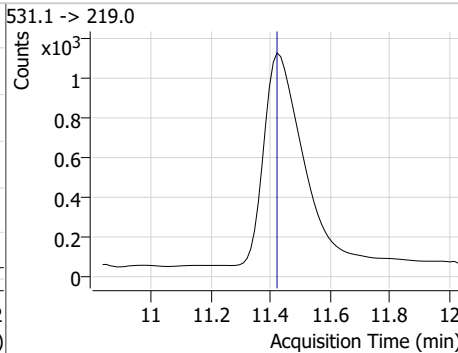
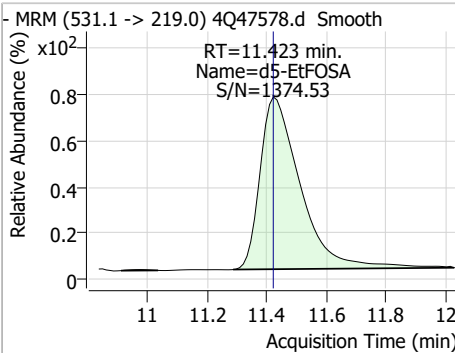


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	28.05	11.33	-0.01	81865				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOFA	2.98	11.42	0.00	10034				



7.1.2

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47579.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 4:10:43 PM
 Sample Name : fc7724-3
 Vial : P2-F3
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q697.batch.bin
 Sample Information : OP97911,S4Q697,550,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	106962	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	60898	5.00 µg/L	0.000
M5-PFHxA	5.585	318.0 -> 273.0	42458	2.50 µg/L	-0.012
M4-PFHpA	6.543	367.1 -> 322.0	29035	2.50 µg/L	-0.012
M8-PFOA	7.211	421.1 -> 376.0	46509	2.50 µg/L	-0.025
M9-PFNA	7.771	472.1 -> 427.0	18750	1.25 µg/L	-0.012
M6-PFDA	8.266	519.1 -> 474.1	14187	1.25 µg/L	-0.026
M7-PFUnDA	8.735	570.0 -> 525.1	14688	1.25 µg/L	-0.025
M2-PFDoDA	9.169	615.1 -> 570.0	14803	1.25 µg/L	-0.025
M2-PFTeDA	9.937	715.2 -> 670.0	9152	1.25 µg/L	-0.025
M8-FOSA	9.896	506.1 -> 77.8	11746	2.50 µg/L	-0.012
M3-PFBS	5.466	302.1 -> 79.9	10304	2.50 µg/L	-0.012
M3-PFHxS	7.304	402.1 -> 79.9	6958	2.50 µg/L	-0.012
M8-PFOS	8.405	507.1 -> 79.9	8026	2.50 µg/L	-0.025
M2-4:2FTS	5.272	329.1 -> 80.9	555	5.00 µg/L	-0.012
M2-6:2FTS	6.986	429.1 -> 80.9	1083	5.00 µg/L	-0.012
M2-8:2FTS	8.066	529.1 -> 80.9	1683	5.00 µg/L	-0.012
M3-MeFOSAA	8.337	573.2 -> 419.0	13994	5.00 µg/L	-0.025
M3-HFPO-DA	5.953	286.9 -> 168.9	38201	10.00 µg/L	-0.012
M5-EtFOSAA	8.546	589.2 -> 419.0	11435	5.00 µg/L	-0.025
M7-MeFOSE	11.059	623.2 -> 58.9	46854	25.00 µg/L	0.000
M9-EtFOSE	11.332	639.2 -> 58.9	66698	25.00 µg/L	-0.012
M5-EtFOSA	11.423	531.1 -> 219.0	8546	2.50 µg/L	0.000
M3-MeFOSA	11.164	515.0 -> 219.0	7518	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	8114	2.50 µg/L	-0.025
13C3-PFBA	2.916	216.0 -> 172.0	48973	5.00 µg/L	0.000
18O2-PFHxS	7.303	403.0 -> 83.9	3941	2.50 µg/L	-0.012
13C4-PFOA	7.212	417.1 -> 372.0	44713	2.50 µg/L	-0.025
13C2-PFDA	8.266	515.1 -> 470.1	13525	1.25 µg/L	-0.026
13C5-PFNA	7.772	468.0 -> 423.0	19231	1.25 µg/L	-0.012
13C2-PFHxA	5.574	315.1 -> 270.0	30279	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.272	329.1 -> 80.9	555	6.27 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 125.4%		
13C2-6:2FTS	6.986	429.1 -> 80.9	1083	5.58 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.7%		
13C2-8:2FTS	8.066	529.1 -> 80.9	1683	5.33 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.7%		
13C2-PFDoDA	9.169	615.1 -> 570.0	14803	1.18 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.2%		
13C2-PFTeDA	9.937	715.2 -> 670.0	9152	1.01 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 80.7%		
13C3-PFBS	5.466	302.1 -> 79.9	10304	3.42 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 136.6%		
13C3-PFHxS	7.304	402.1 -> 79.9	6958	3.15 µg/L	-0.012

7.1.3
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 125.9%	
13C4-PFBA	2.911	216.8 -> 171.9	106962	11.56 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 115.6%	
13C4-PFHpA	6.543	367.1 -> 322.0	29035	3.12 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 125.0%	
13C5-PFHxA	5.585	318.0 -> 273.0	42458	3.28 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 131.1%	
13C5-PFPeA	4.387	268.3 -> 223.0	60898	7.29 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 145.7%	
13C6-PFDA	8.266	519.1 -> 474.1	14187	1.52 µg/L	-0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 121.2%	
13C7-PFUnDA	8.735	570.0 -> 525.1	14688	1.24 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C8-FOSA	9.896	506.1 -> 77.8	11746	2.80 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.9%	
13C8-PFOA	7.211	421.1 -> 376.0	46509	3.20 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 127.9%	
13C8-PFOS	8.405	507.1 -> 79.9	8026	2.85 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 113.9%	
13C9-PFNA	7.771	472.1 -> 427.0	18750	1.46 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 116.7%	
d3-MeFOSAA	8.337	573.2 -> 419.0	13994	5.24 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.9%	
13C3-HFPO-DA	5.953	286.9 -> 168.9	38201	11.84 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 118.4%	
d3-MeFOSA	11.164	515.0 -> 219.0	7518	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
d5-EtFOSAA	8.546	589.2 -> 419.0	11435	4.86 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.1%	
d7-MeFOSE	11.059	623.2 -> 58.9	46854	21.64 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 86.6%	
d9-EtFOSE	11.332	639.2 -> 58.9	66698	23.13 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 92.5%	
d5-EtFOSA	11.423	531.1 -> 219.0	8546	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.9%	

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	5.576	449.0 -> 98.9	2041	0.12 µg/L	99
		313.0 -> 269.0			
PFHxS	-	313.0 -> 118.9	70	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	4.389	498.9 -> 98.8	3564	0.21 µg/L	100
		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

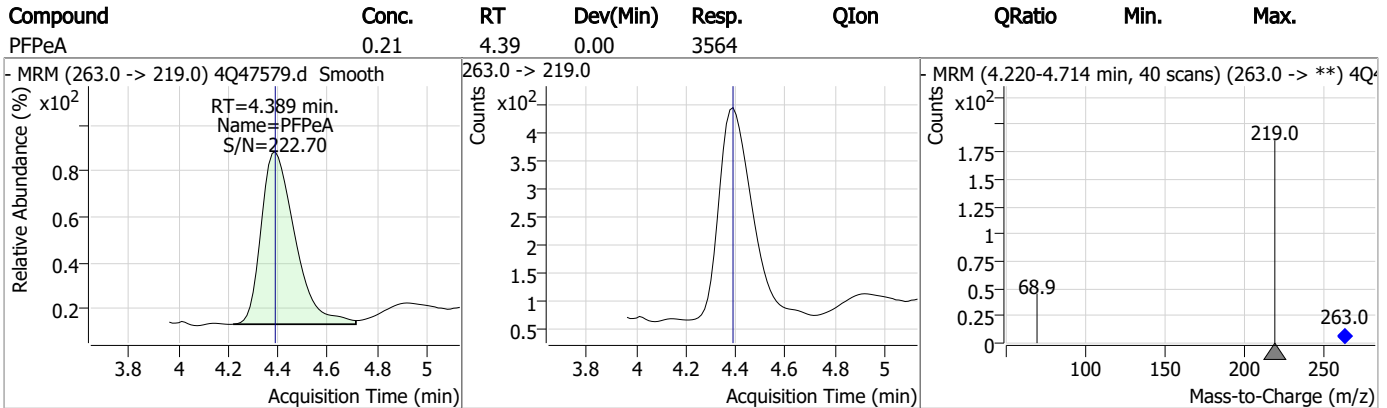
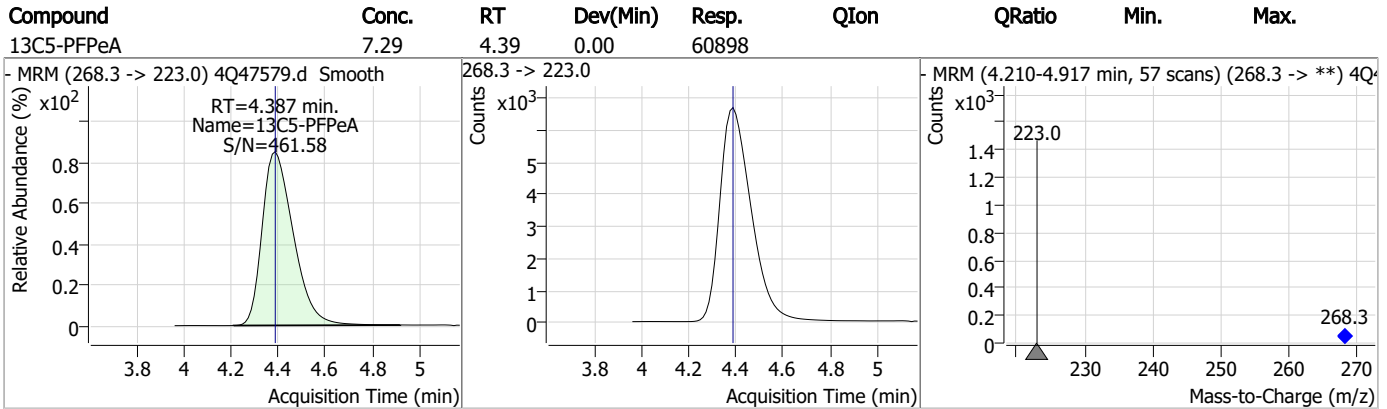
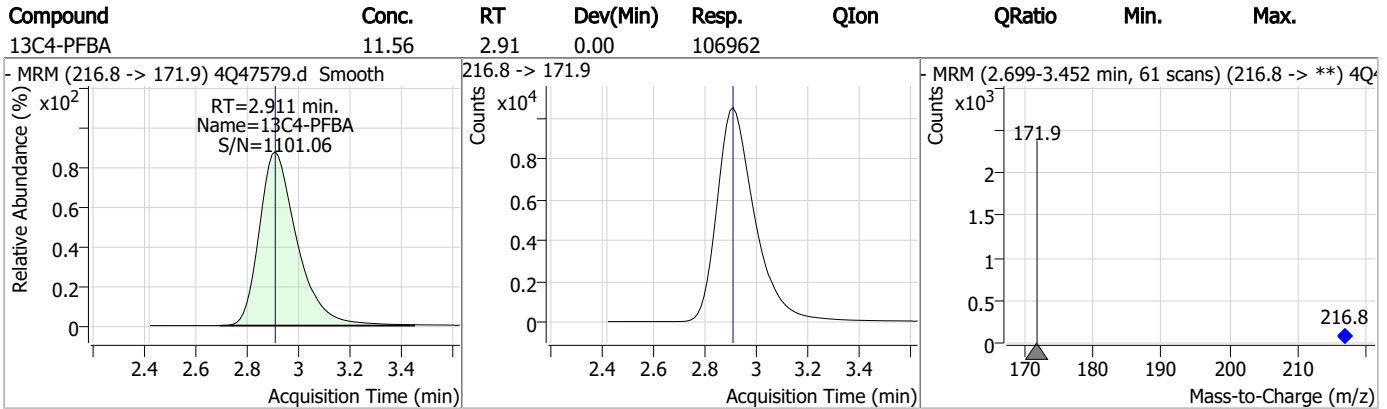
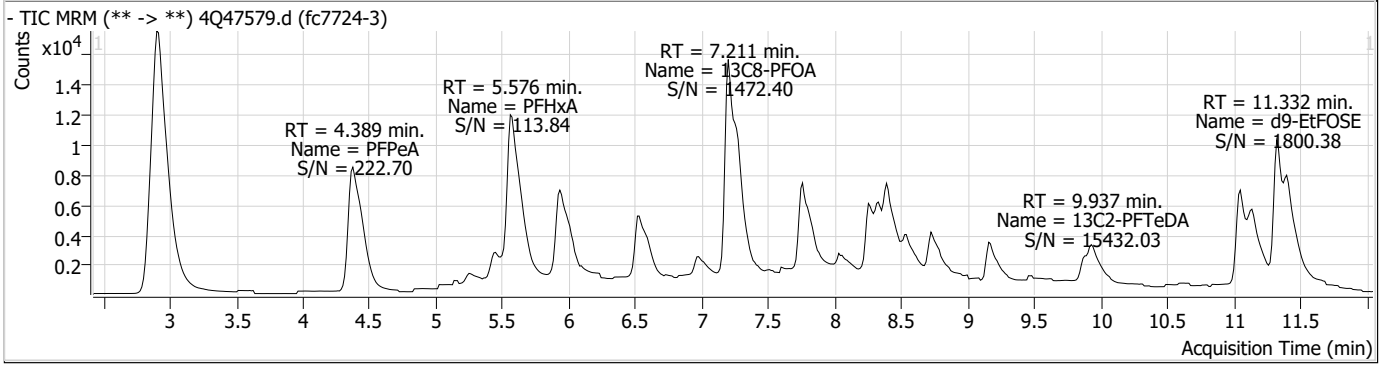
Perfluorinated Compounds by LC/MS/MS

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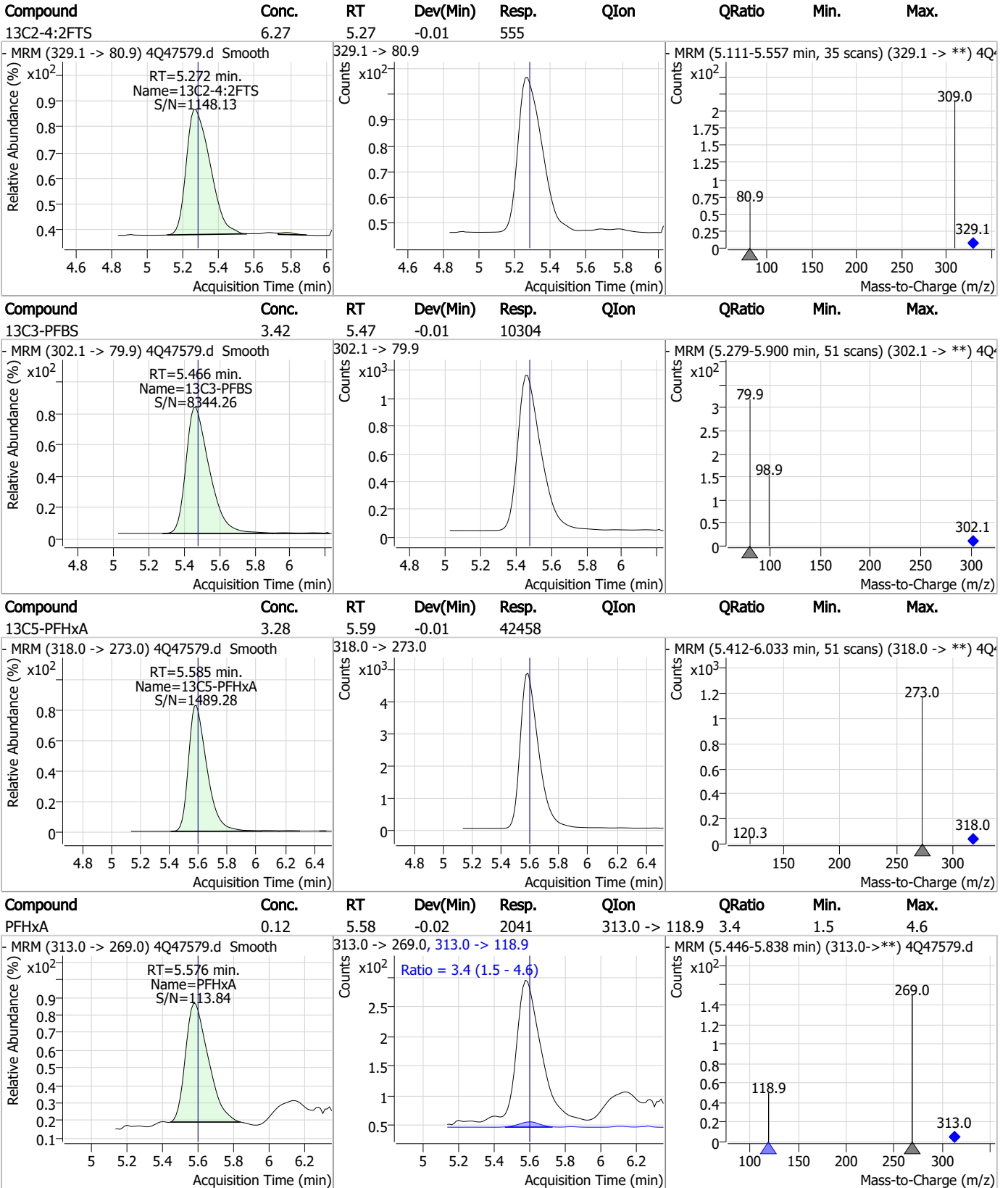
7.1.3
7



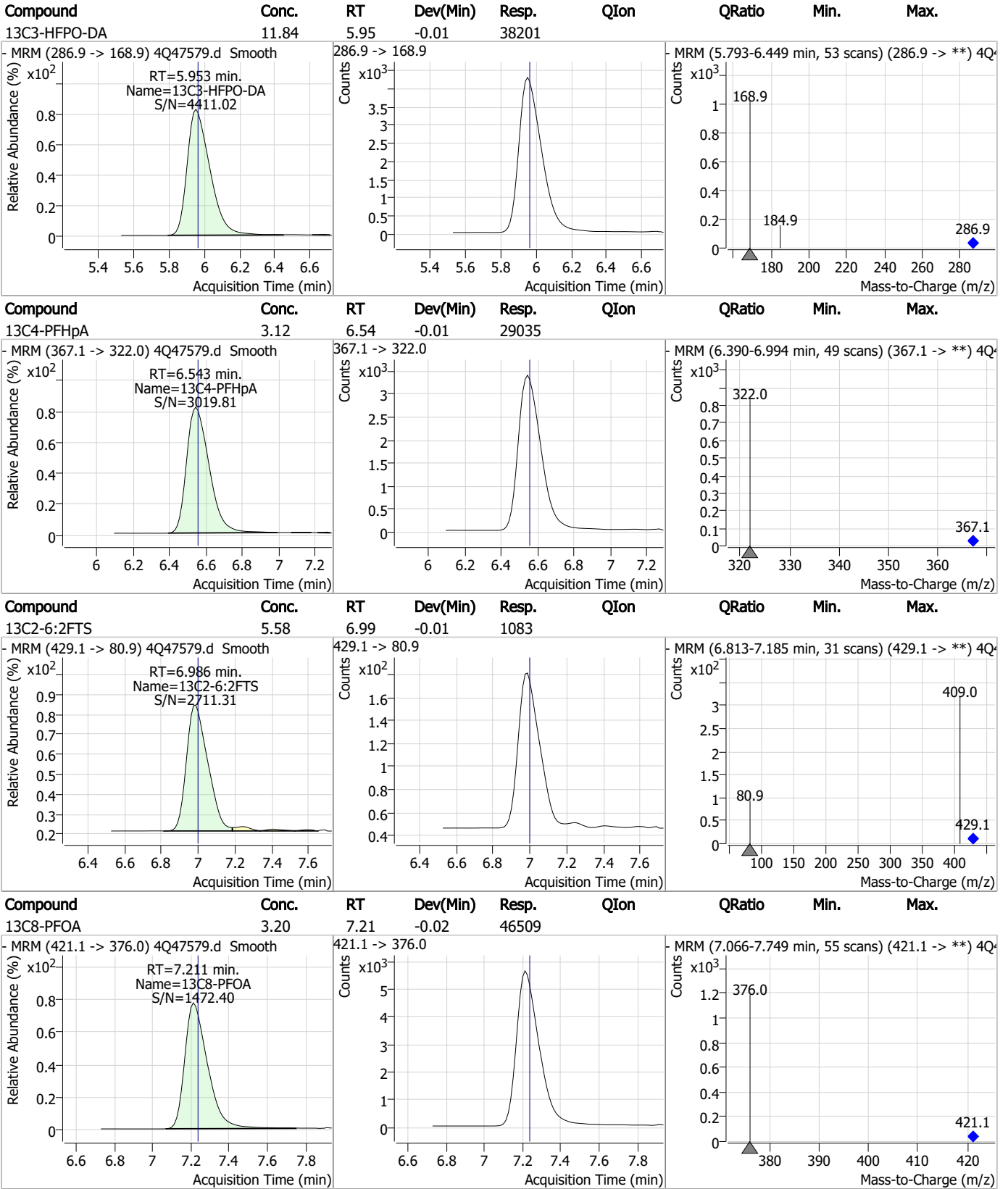
Perfluorinated Compounds by LC/MS/MS



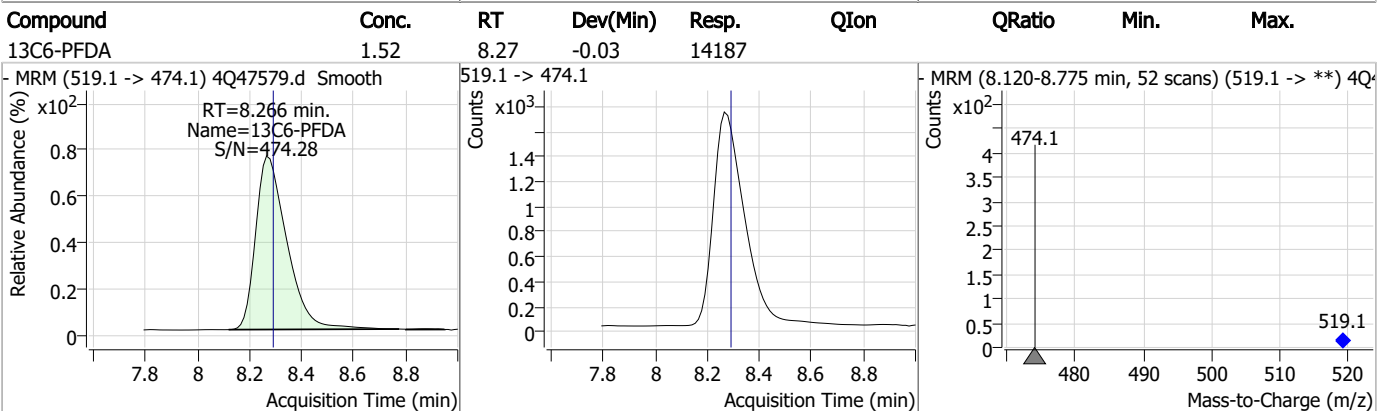
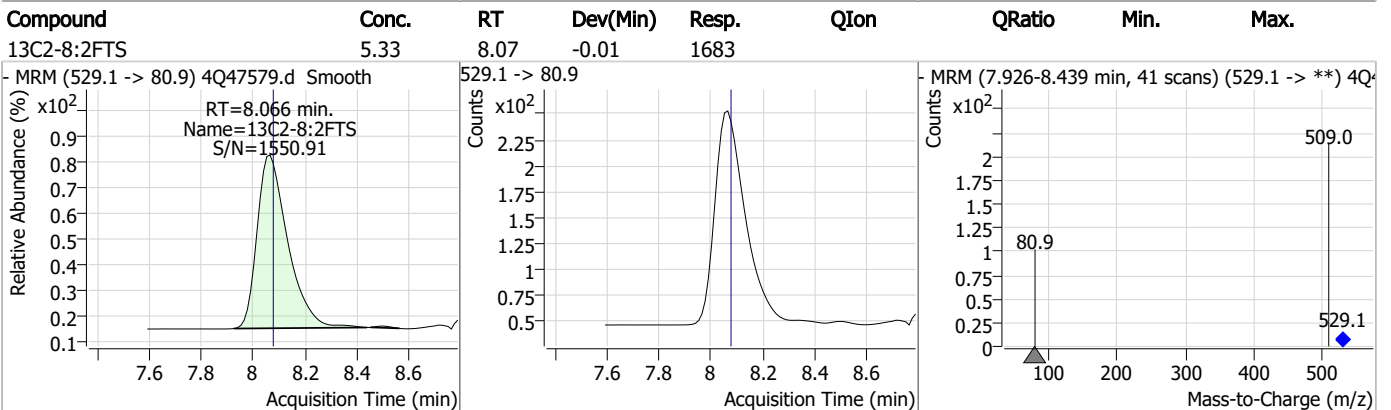
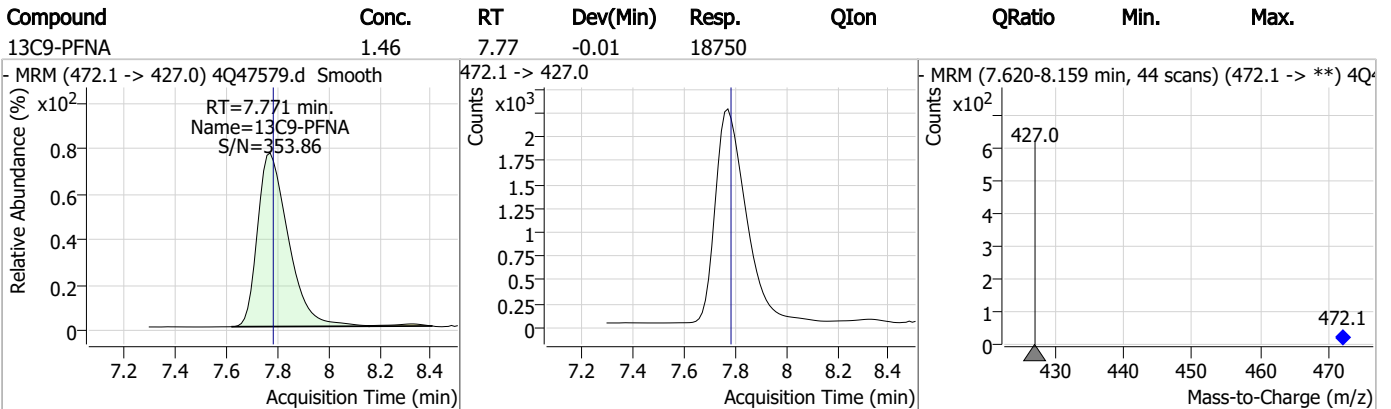
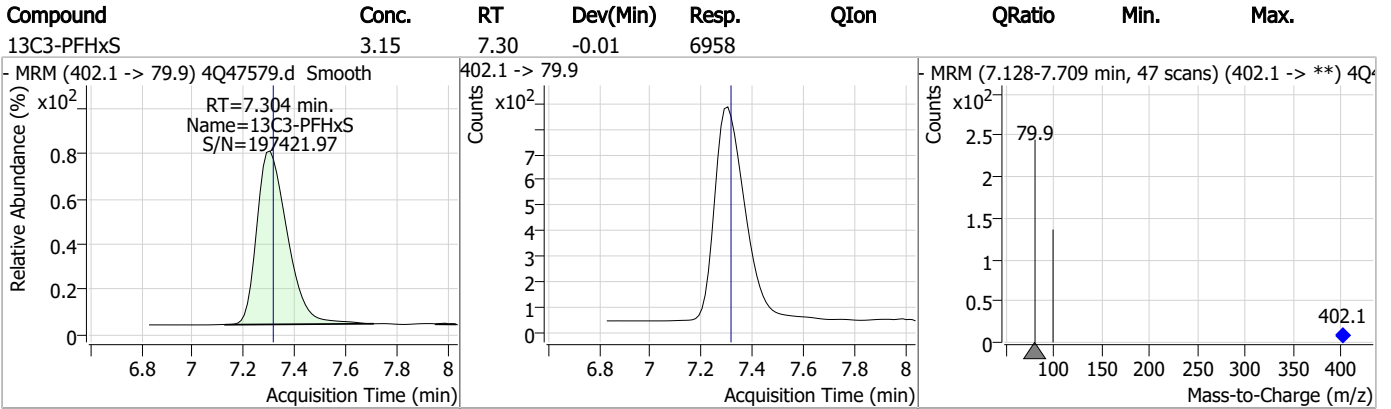
Perfluorinated Compounds by LC/MS/MS



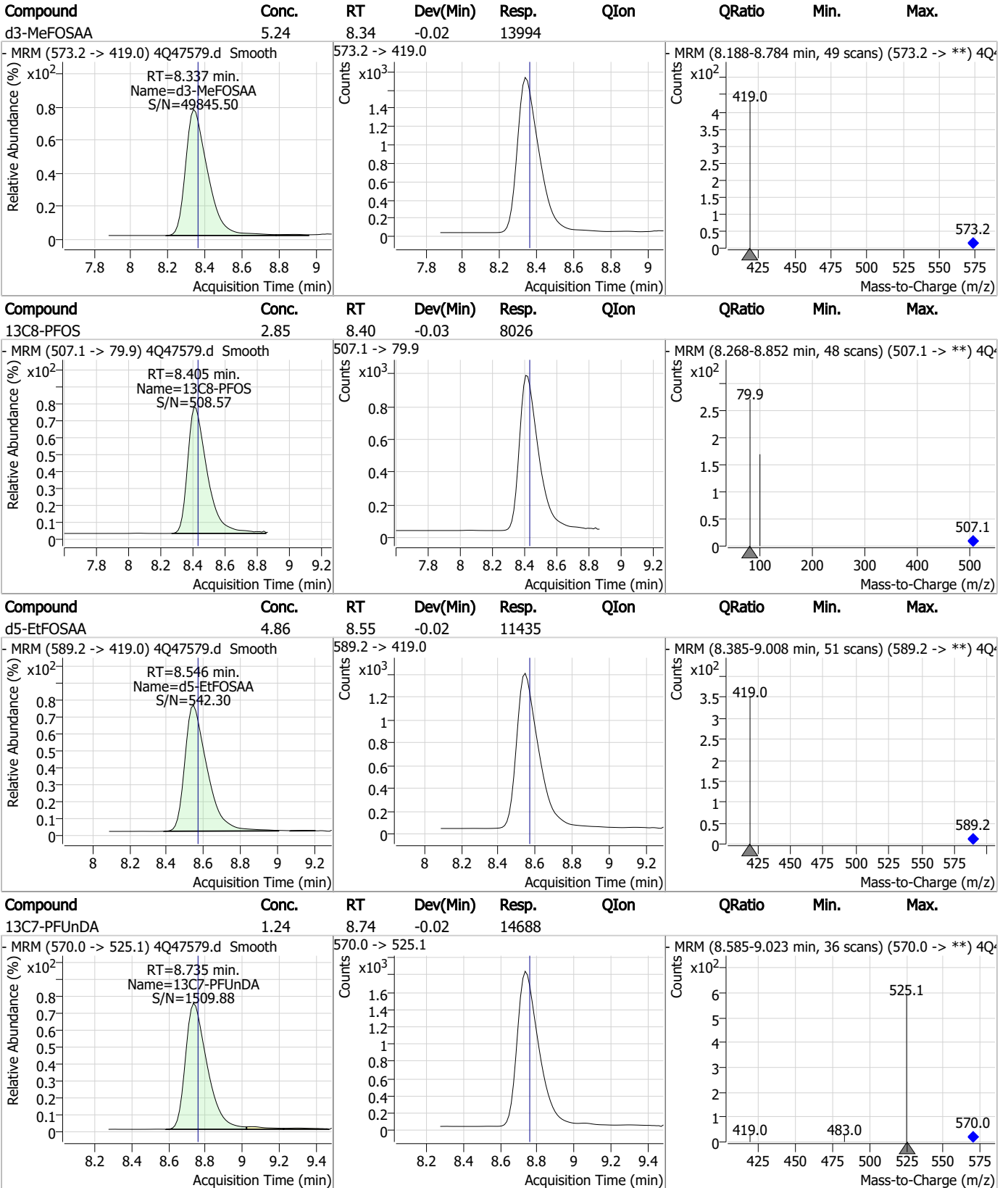
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



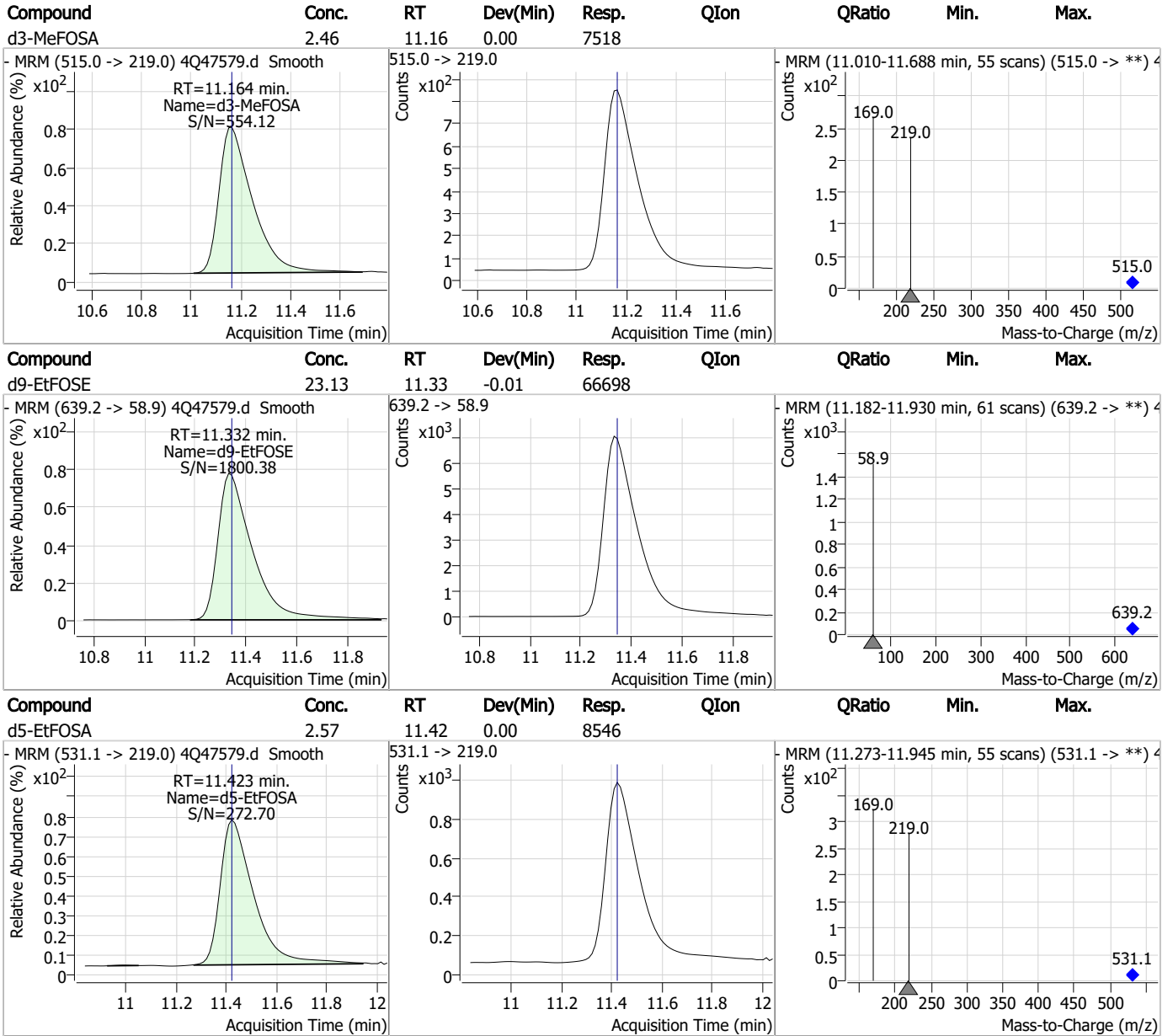
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.18	9.17	-0.02	14803				
13C8-FOSA	2.80	9.90	-0.01	11746				
13C2-PFTeDA	1.01	9.94	-0.02	9152				
d7-MeFOSE	21.64	11.06	0.00	46854				

Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47580.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 4:25:26 PM
 Sample Name : fc7724-4
 Vial : P2-F4
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q697.batch.bin
 Sample Information : OP97911,S4Q697,550,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	87896	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	58769	5.00 µg/L	0.000
M5-PFHxA	5.585	318.0 -> 273.0	40072	2.50 µg/L	-0.012
M4-PFHpA	6.543	367.1 -> 322.0	28620	2.50 µg/L	-0.012
M8-PFOA	7.211	421.1 -> 376.0	45061	2.50 µg/L	-0.025
M9-PFNA	7.771	472.1 -> 427.0	19690	1.25 µg/L	-0.012
M6-PFDA	8.266	519.1 -> 474.1	14842	1.25 µg/L	-0.026
M7-PFUnDA	8.735	570.0 -> 525.1	15927	1.25 µg/L	-0.025
M2-PFDoDA	9.169	615.1 -> 570.0	16007	1.25 µg/L	-0.025
M2-PFTeDA	9.937	715.2 -> 670.0	10141	1.25 µg/L	-0.025
M8-FOSA	9.896	506.1 -> 77.8	12330	2.50 µg/L	-0.012
M3-PFBS	5.466	302.1 -> 79.9	9933	2.50 µg/L	-0.012
M3-PFHxS	7.304	402.1 -> 79.9	6858	2.50 µg/L	-0.012
M8-PFOS	8.405	507.1 -> 79.9	8291	2.50 µg/L	-0.025
M2-4:2FTS	5.259	329.1 -> 80.9	513	5.00 µg/L	-0.025
M2-6:2FTS	6.986	429.1 -> 80.9	1228	5.00 µg/L	-0.012
M2-8:2FTS	8.053	529.1 -> 80.9	1724	5.00 µg/L	-0.025
M3-MeFOSAA	8.337	573.2 -> 419.0	14130	5.00 µg/L	-0.025
M3-HFPO-DA	5.953	286.9 -> 168.9	37487	10.00 µg/L	-0.012
M5-EtFOSAA	8.546	589.2 -> 419.0	11918	5.00 µg/L	-0.025
M7-MeFOSE	11.047	623.2 -> 58.9	52920	25.00 µg/L	-0.012
M9-EtFOSE	11.332	639.2 -> 58.9	73370	25.00 µg/L	-0.012
M5-EtFOSA	11.423	531.1 -> 219.0	9129	2.50 µg/L	0.000
M3-MeFOSA	11.152	515.0 -> 219.0	7842	2.50 µg/L	-0.012
13C4-PFOS	8.405	502.8 -> 79.9	7654	2.50 µg/L	-0.025
13C3-PFBA	2.916	216.0 -> 172.0	49306	5.00 µg/L	0.000
18O2-PFHxS	7.303	403.0 -> 83.9	4104	2.50 µg/L	-0.012
13C4-PFOA	7.212	417.1 -> 372.0	44545	2.50 µg/L	-0.025
13C2-PFDA	8.266	515.1 -> 470.1	14392	1.25 µg/L	-0.026
13C5-PFNA	7.772	468.0 -> 423.0	19390	1.25 µg/L	-0.012
13C2-PFHxA	5.586	315.1 -> 270.0	30406	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.259	329.1 -> 80.9	513	5.57 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.3%		
13C2-6:2FTS	6.986	429.1 -> 80.9	1228	6.08 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.6%		
13C2-8:2FTS	8.053	529.1 -> 80.9	1724	5.25 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.9%		
13C2-PFDoDA	9.169	615.1 -> 570.0	16007	1.20 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.7%		
13C2-PFTeDA	9.937	715.2 -> 670.0	10141	1.05 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 84.0%		
13C3-PFBS	5.466	302.1 -> 79.9	9933	3.16 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 126.5%		
13C3-PFHxS	7.304	402.1 -> 79.9	6858	2.98 µg/L	-0.012



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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 119.2%	
13C4-PFBA	2.911	216.8 -> 171.9	87896	9.43 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.3%	
13C4-PFHpA	6.543	367.1 -> 322.0	28620	3.07 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 122.7%	
13C5-PFHxA	5.585	318.0 -> 273.0	40072	3.08 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 123.2%	
13C5-PFPeA	4.387	268.3 -> 223.0	58769	7.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 140.0%	
13C6-PFDA	8.266	519.1 -> 474.1	14842	1.49 µg/L	-0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 119.2%	
13C7-PFUnDA	8.735	570.0 -> 525.1	15927	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C8-FOSA	9.896	506.1 -> 77.8	12330	3.11 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 124.5%	
13C8-PFOA	7.211	421.1 -> 376.0	45061	3.11 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 124.3%	
13C8-PFOS	8.405	507.1 -> 79.9	8291	3.12 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 124.7%	
13C9-PFNA	7.771	472.1 -> 427.0	19690	1.52 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 121.5%	
d3-MeFOSAA	8.337	573.2 -> 419.0	14130	5.61 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 112.3%	
13C3-HFPO-DA	5.953	286.9 -> 168.9	37487	11.57 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 115.7%	
d3-MeFOSA	11.152	515.0 -> 219.0	7842	2.72 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.7%	
d5-EtFOSAA	8.546	589.2 -> 419.0	11918	5.37 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.3%	
d7-MeFOSE	11.047	623.2 -> 58.9	52920	25.91 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.6%	
d9-EtFOSE	11.332	639.2 -> 58.9	73370	26.98 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 107.9%	
d5-EtFOSA	11.423	531.1 -> 219.0	9129	2.91 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 116.5%	

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7

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



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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



7.1.4
7

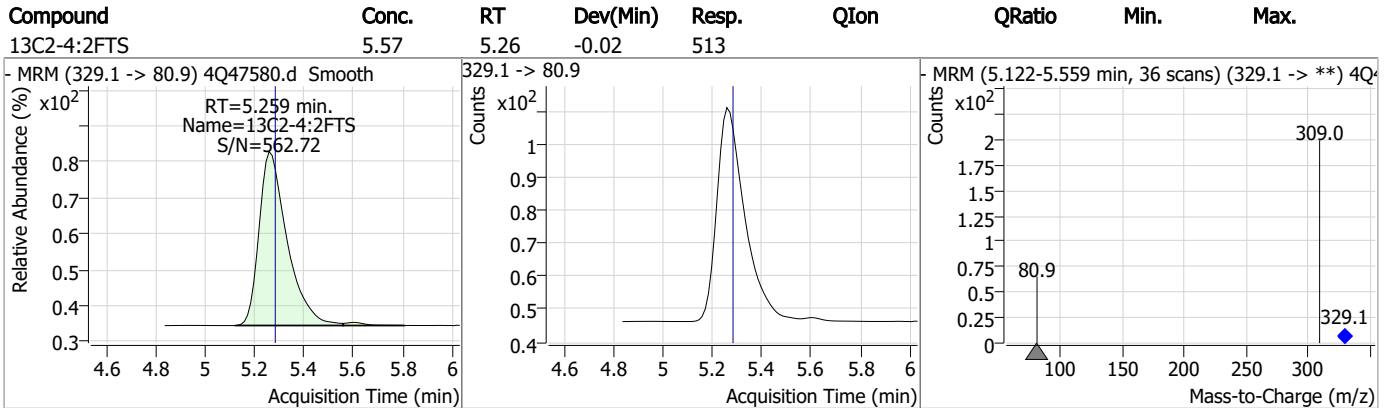
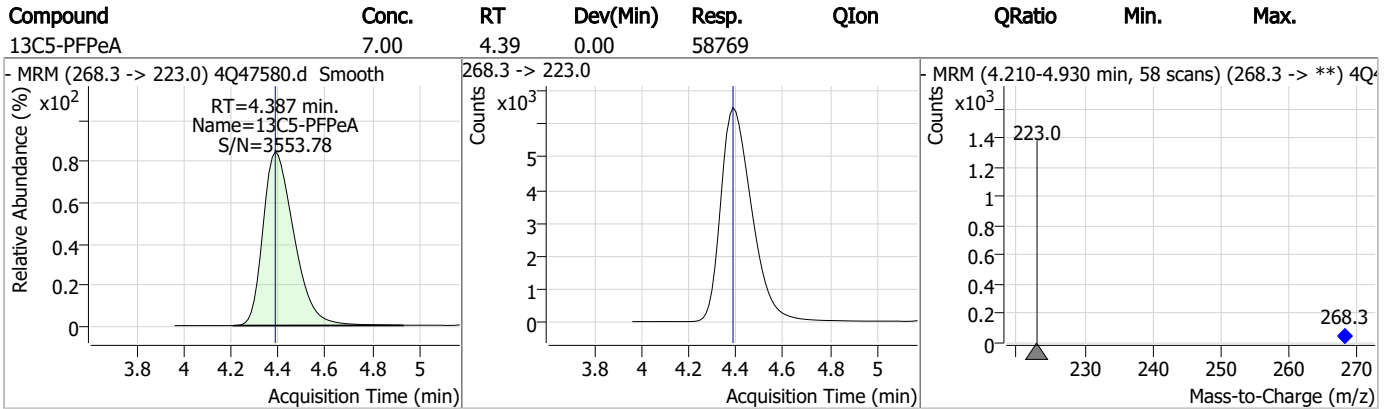
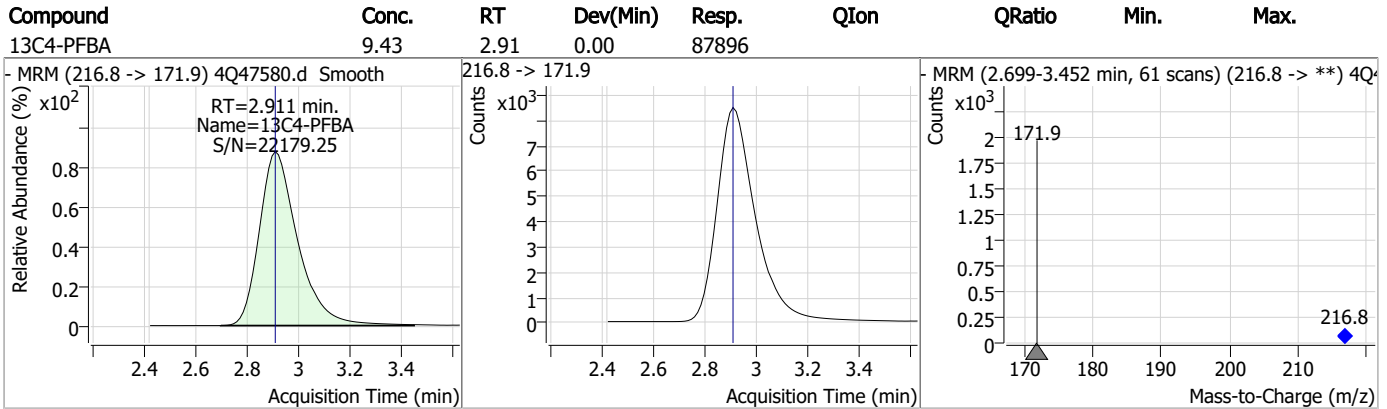
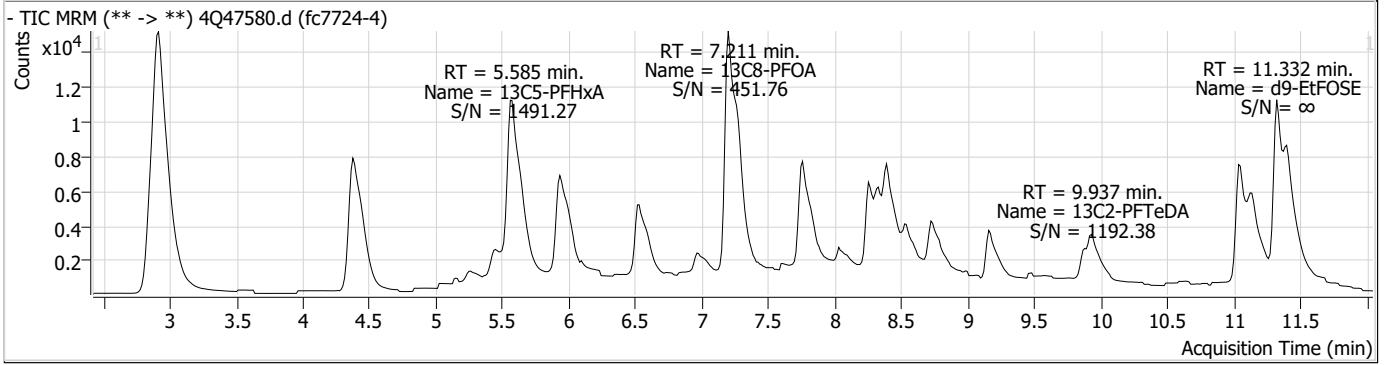
Perfluorinated Compounds by LC/MS/MS

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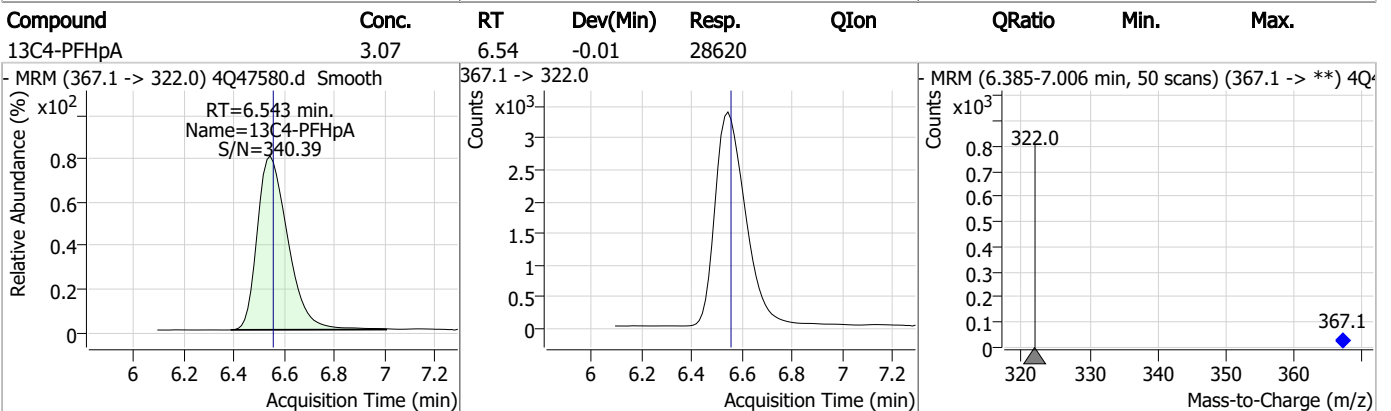
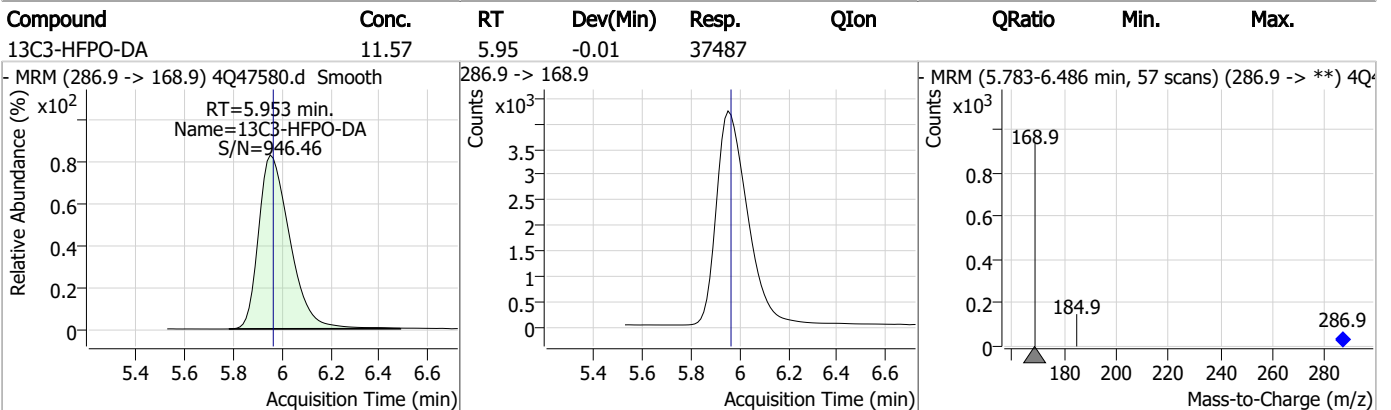
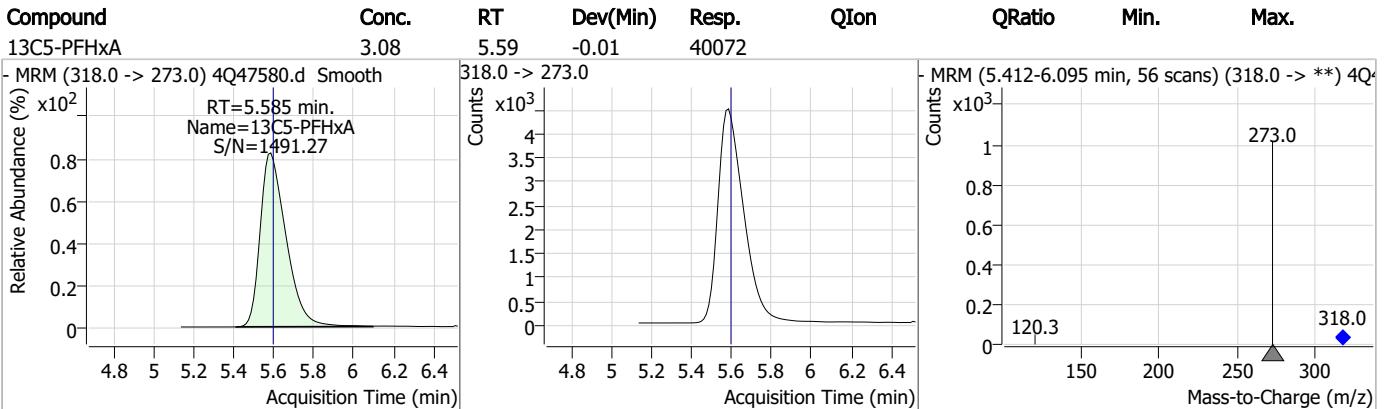
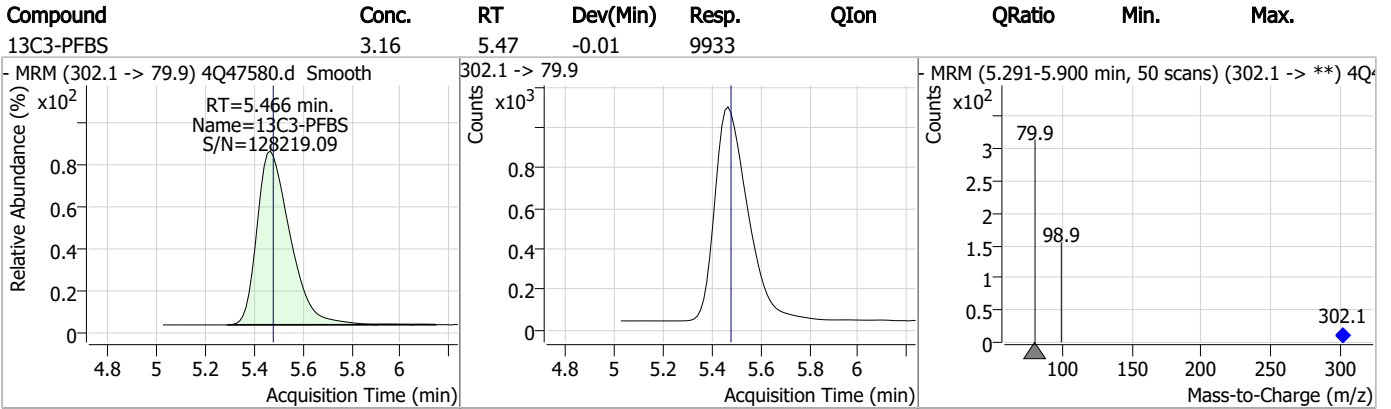
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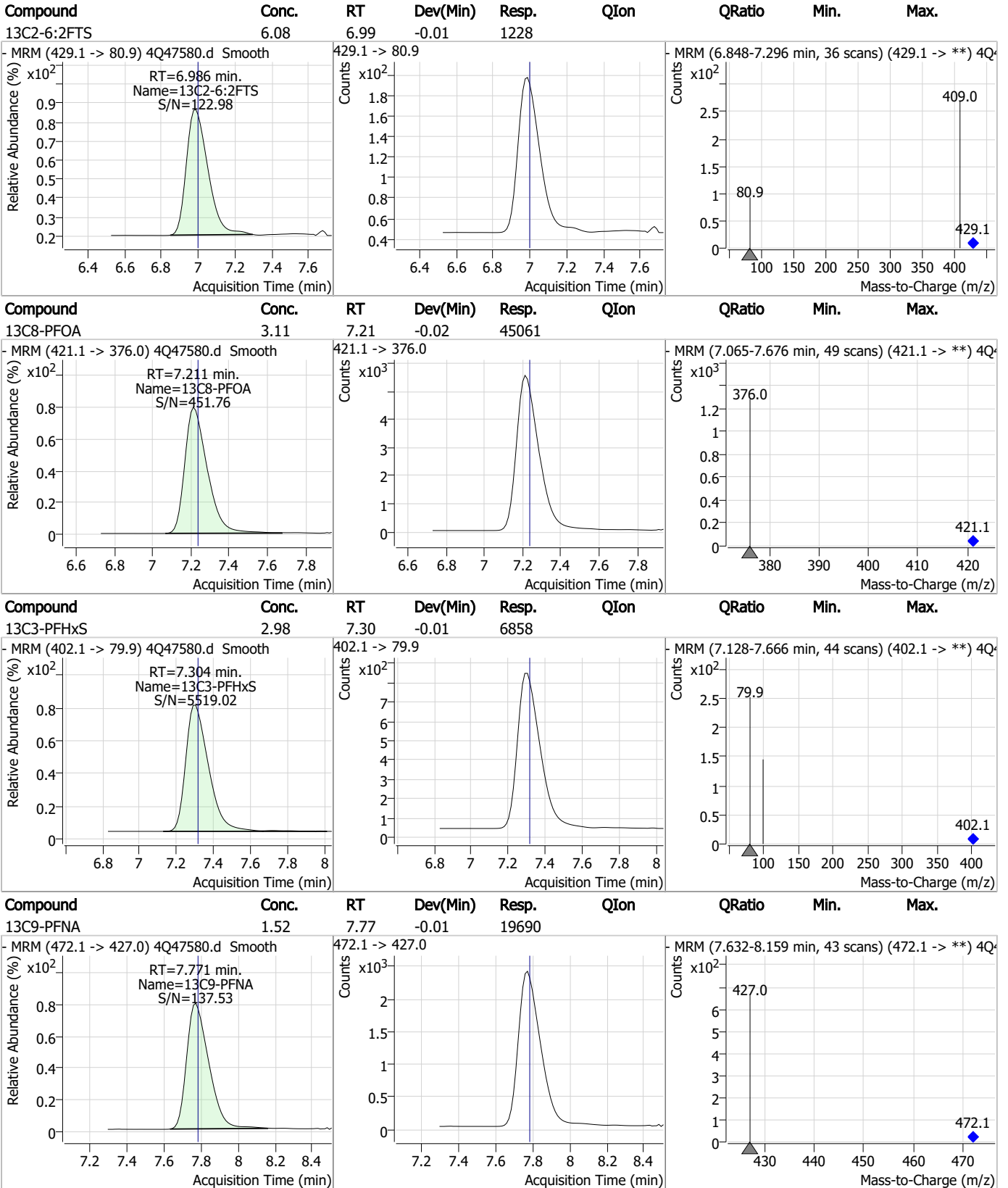
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

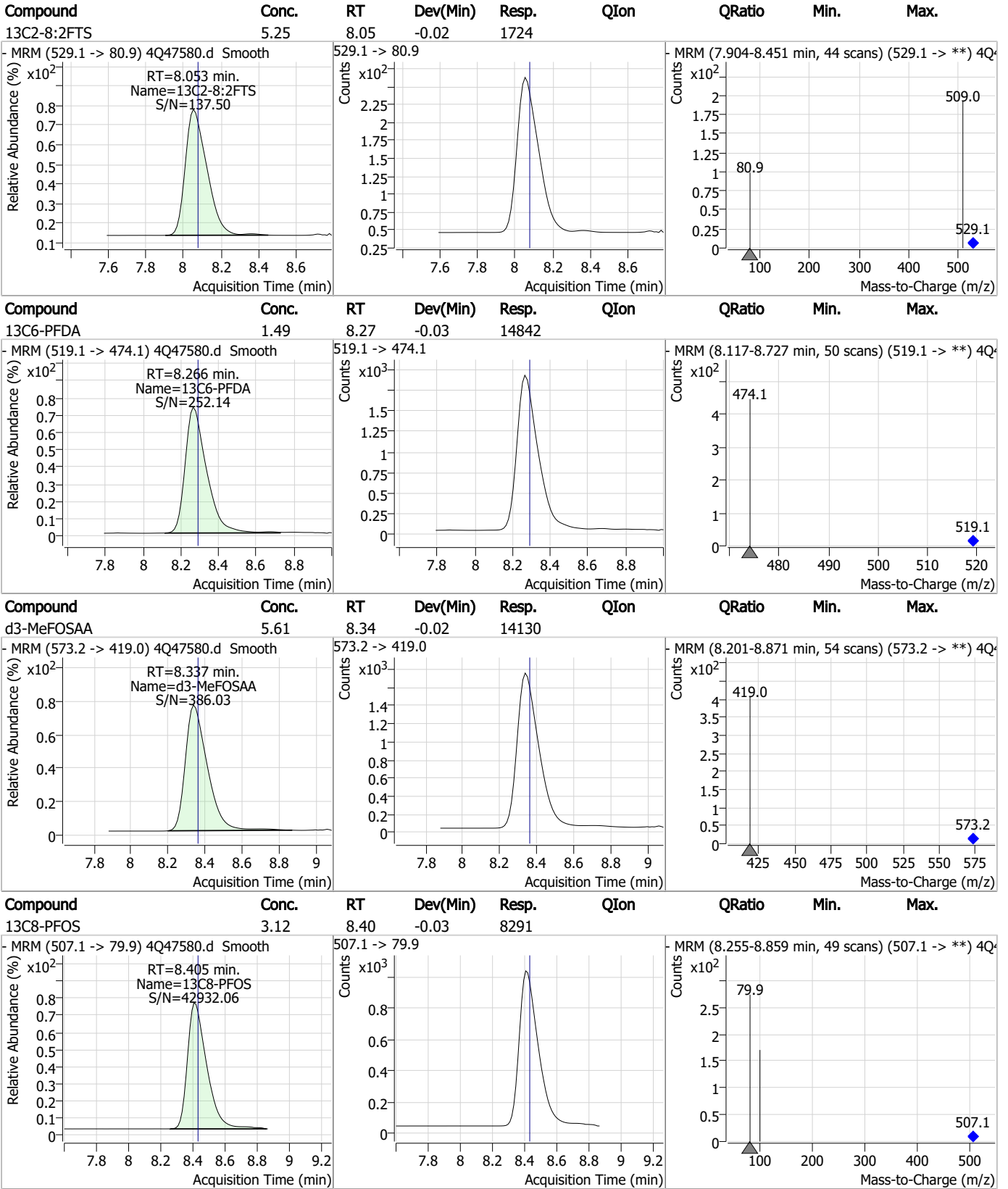


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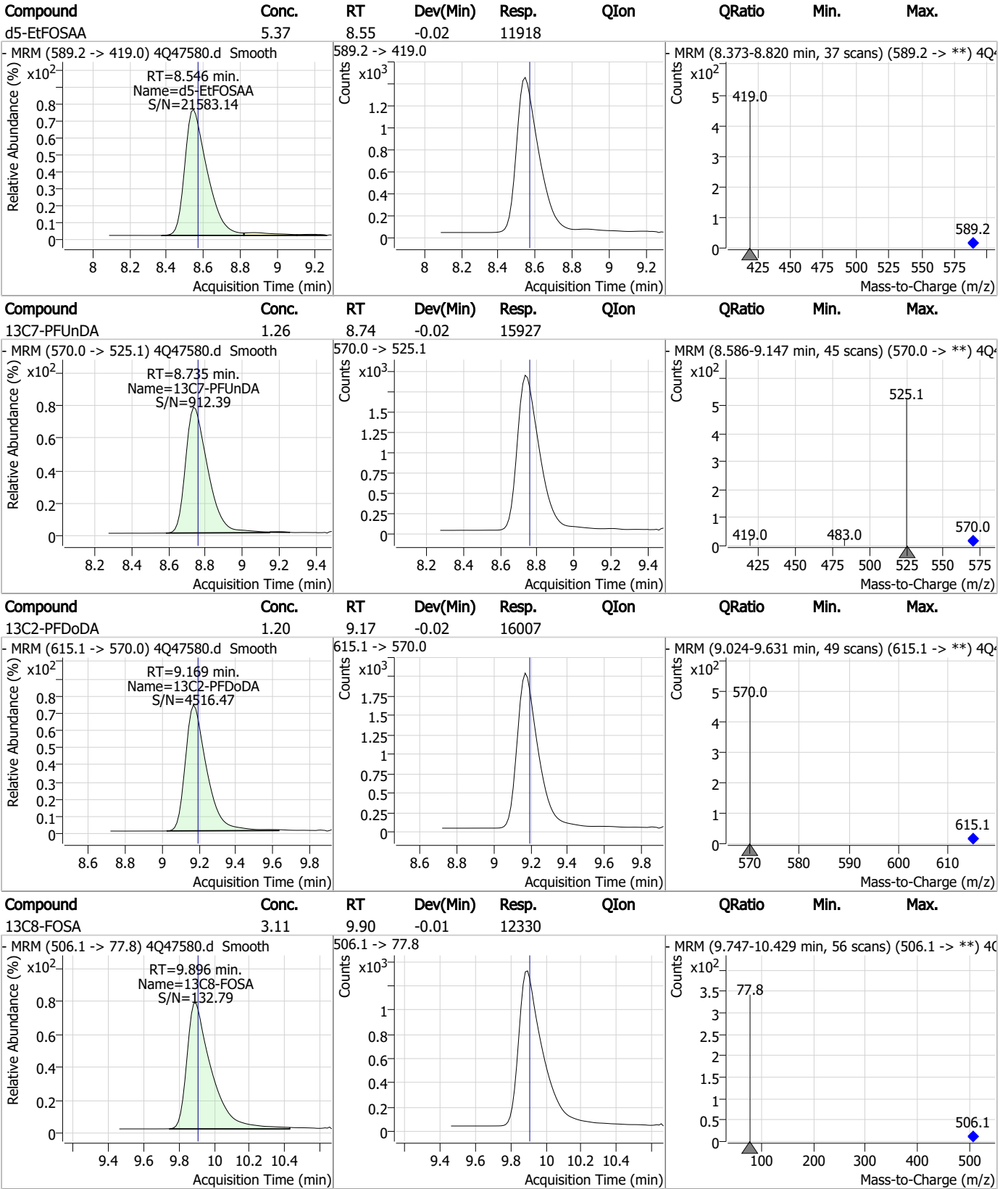
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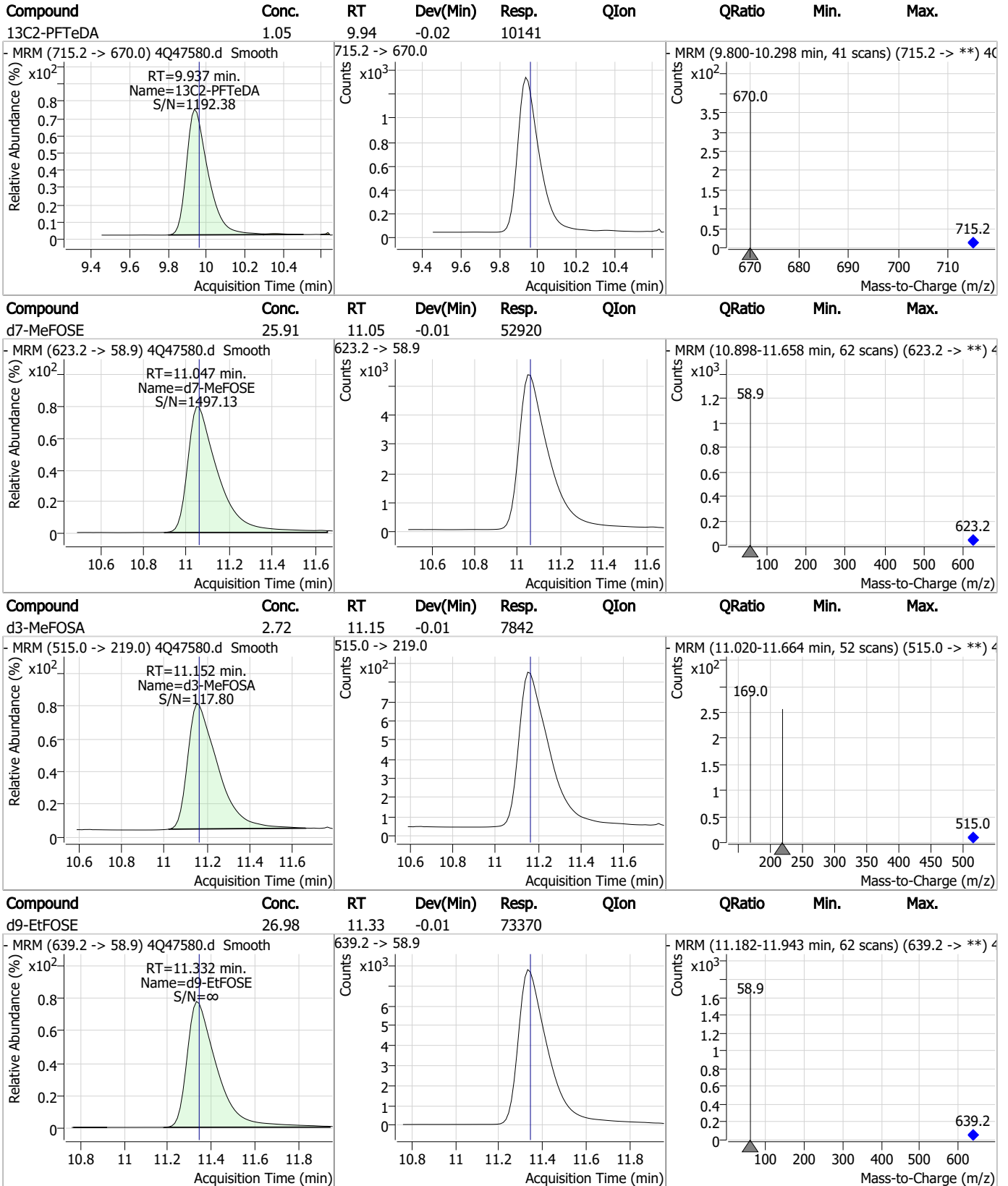
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

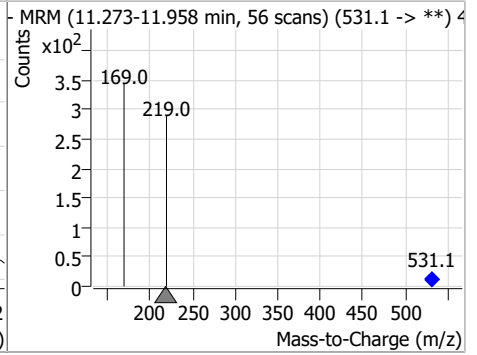
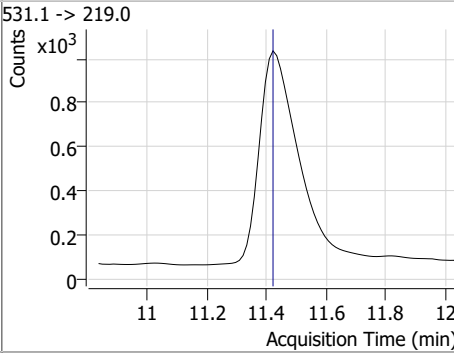
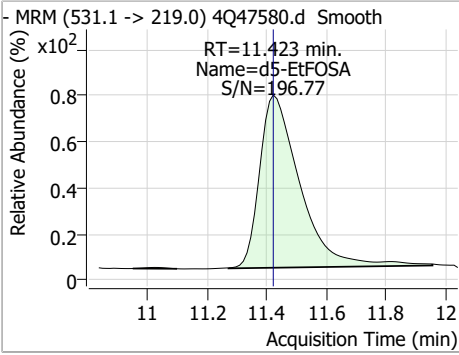


7.1.4

7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.91	11.42	0.00	9129				



7.1.4
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47581.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 4:40:12 PM
 Sample Name : fc7724-5
 Vial : P2-F5
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q697.batch.bin
 Sample Information : OP97911,S4Q697,560,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	4067	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	14642	5.00 µg/L	0.000
M5-PFHxA	5.573	318.0 -> 273.0	38551	2.50 µg/L	-0.025
M4-PFHpA	6.543	367.1 -> 322.0	31287	2.50 µg/L	-0.012
M8-PFOA	7.211	421.1 -> 376.0	49724	2.50 µg/L	-0.025
M9-PFNA	7.771	472.1 -> 427.0	21877	1.25 µg/L	-0.012
M6-PFDA	8.266	519.1 -> 474.1	17468	1.25 µg/L	-0.026
M7-PFUnDA	8.735	570.0 -> 525.1	20128	1.25 µg/L	-0.025
M2-PFDoDA	9.181	615.1 -> 570.0	19535	1.25 µg/L	-0.012
M2-PFTeDA	9.950	715.2 -> 670.0	9326	1.25 µg/L	-0.012
M8-FOSA	9.896	506.1 -> 77.8	12483	2.50 µg/L	-0.012
M3-PFBS	5.466	302.1 -> 79.9	9313	2.50 µg/L	-0.012
M3-PFHxS	7.304	402.1 -> 79.9	6678	2.50 µg/L	-0.012
M8-PFOS	8.405	507.1 -> 79.9	8320	2.50 µg/L	-0.025
M2-4:2FTS	5.297	329.1 -> 80.9	1051	5.00 µg/L	0.012
M2-6:2FTS	6.986	429.1 -> 80.9	1480	5.00 µg/L	-0.012
M2-8:2FTS	8.066	529.1 -> 80.9	2650	5.00 µg/L	-0.012
M3-MeFOSAA	8.337	573.2 -> 419.0	23933	5.00 µg/L	-0.025
M3-HFPO-DA	5.953	286.9 -> 168.9	30777	10.00 µg/L	-0.012
M5-EtFOSAA	8.546	589.2 -> 419.0	22200	5.00 µg/L	-0.025
M7-MeFOSE	11.059	623.2 -> 58.9	47706	25.00 µg/L	0.000
M9-EtFOSE	11.344	639.2 -> 58.9	69680	25.00 µg/L	0.000
M5-EtFOSA	11.423	531.1 -> 219.0	10315	2.50 µg/L	0.000
M3-MeFOSA	11.164	515.0 -> 219.0	9015	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	7939	2.50 µg/L	-0.025
13C3-PFBA	2.916	216.0 -> 172.0	46025	5.00 µg/L	0.000
18O2-PFHxS	7.303	403.0 -> 83.9	4225	2.50 µg/L	-0.012
13C4-PFOA	7.212	417.1 -> 372.0	48765	2.50 µg/L	-0.025
13C2-PFDA	8.266	515.1 -> 470.1	16884	1.25 µg/L	-0.026
13C5-PFNA	7.772	468.0 -> 423.0	21901	1.25 µg/L	-0.012
13C2-PFHxA	5.574	315.1 -> 270.0	32937	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.297	329.1 -> 80.9	1051	11.08 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 221.6%		
13C2-6:2FTS	6.986	429.1 -> 80.9	1480	7.12 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 142.3%		
13C2-8:2FTS	8.066	529.1 -> 80.9	2650	7.83 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 156.7%		
13C2-PFDoDA	9.181	615.1 -> 570.0	19535	1.24 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C2-PFTeDA	9.950	715.2 -> 670.0	9326	0.82 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 65.9%		
13C3-PFBS	5.466	302.1 -> 79.9	9313	2.88 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 115.2%		
13C3-PFHxS	7.304	402.1 -> 79.9	6678	2.82 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 112.7%		
13C4-PFBA	2.911	216.8 -> 171.9	4067	0.47 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 4.7%		
13C4-PFHpA	6.543	367.1 -> 322.0	31287	3.09 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 123.8%		
13C5-PFHxA	5.573	318.0 -> 273.0	38551	2.74 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.4%		
13C5-PFPeA	4.387	268.3 -> 223.0	14642	1.61 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 32.2%		
13C6-PFDA	8.266	519.1 -> 474.1	17468	1.49 µg/L	-0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 119.5%		
13C7-PFUnDA	8.735	570.0 -> 525.1	20128	1.36 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.5%		
13C8-FOSA	9.896	506.1 -> 77.8	12483	3.04 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 121.6%		
13C8-PFOA	7.211	421.1 -> 376.0	49724	3.13 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 125.3%		
13C8-PFOS	8.405	507.1 -> 79.9	8320	3.02 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 120.7%		
13C9-PFNA	7.771	472.1 -> 427.0	21877	1.49 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 119.5%		
d3-MeFOSAA	8.337	573.2 -> 419.0	23933	9.17 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 183.3%		
13C3-HFPO-DA	5.953	286.9 -> 168.9	30777	8.77 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 87.7%		
d3-MeFOSA	11.164	515.0 -> 219.0	9015	3.01 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 120.5%		
d5-EtFOSAA	8.546	589.2 -> 419.0	22200	9.64 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 192.8%		
d7-MeFOSE	11.059	623.2 -> 58.9	47706	22.52 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 90.1%		
d9-EtFOSE	11.344	639.2 -> 58.9	69680	24.70 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 98.8%		
d5-EtFOSA	11.423	531.1 -> 219.0	10315	3.17 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 126.9%		

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

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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	8.074	363.1 -> 169.0	0		µg/L	m
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	0	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	8.083	413.0 -> 169.0	0		µg/L	m
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	0	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	8.736	563.1 -> 519.0	0		µg/L	m
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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



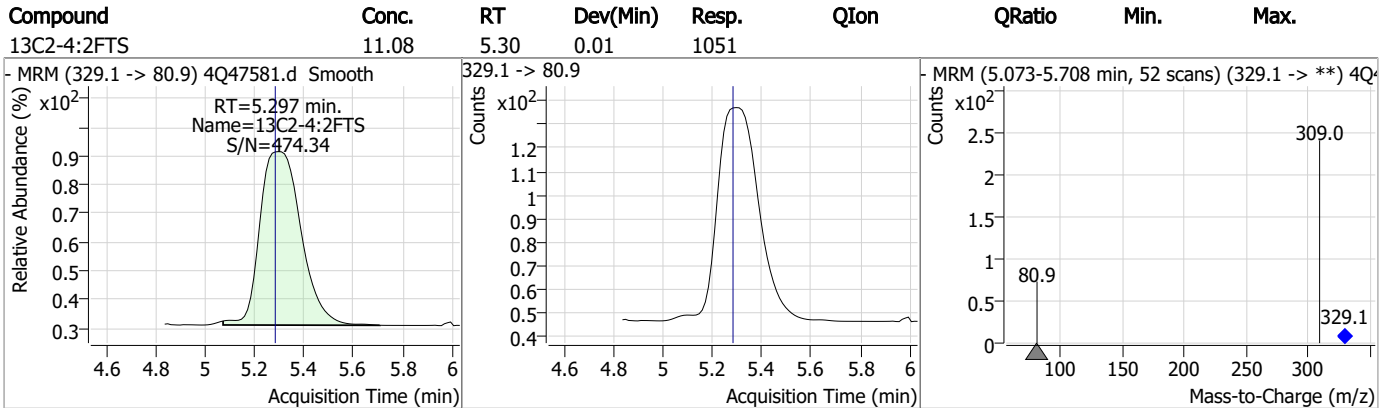
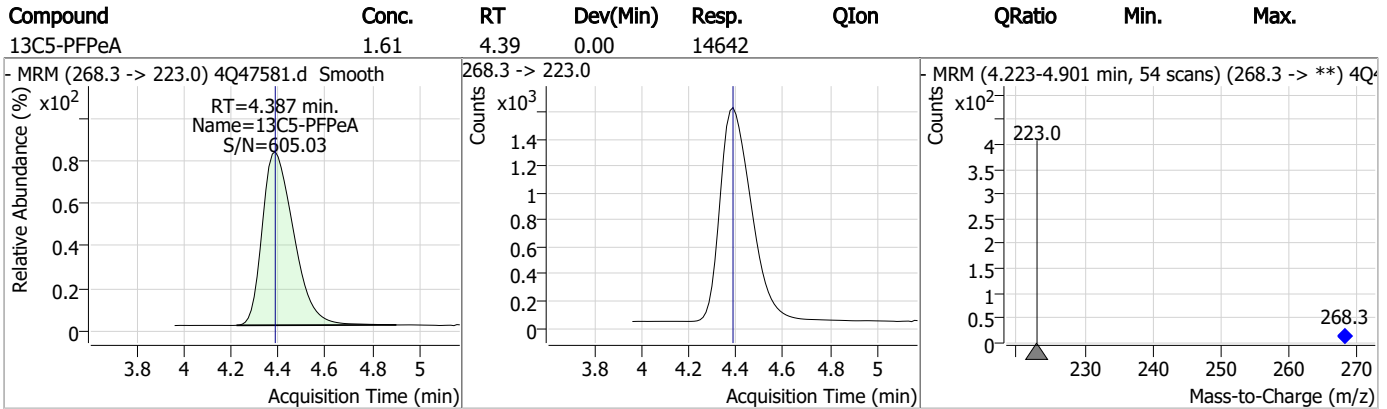
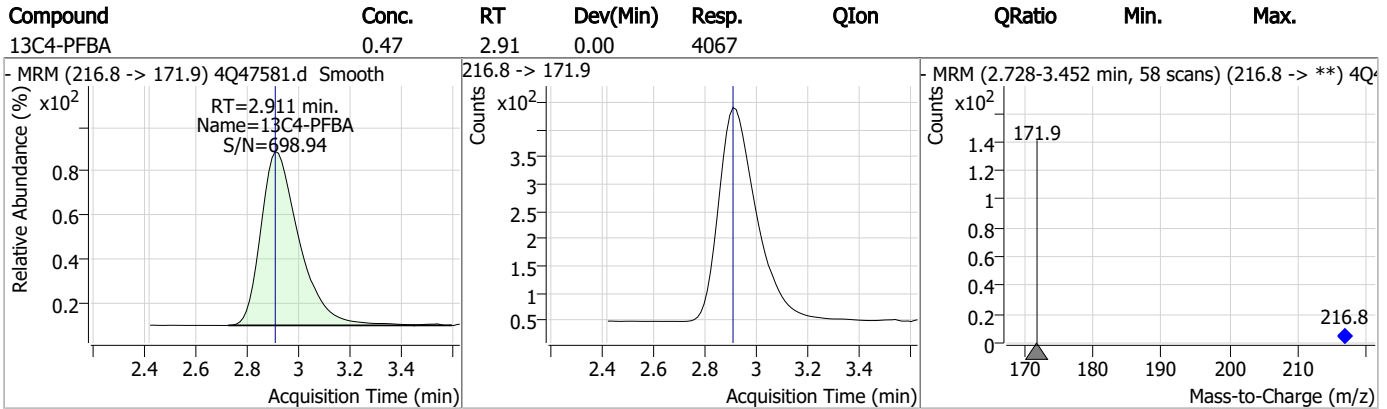
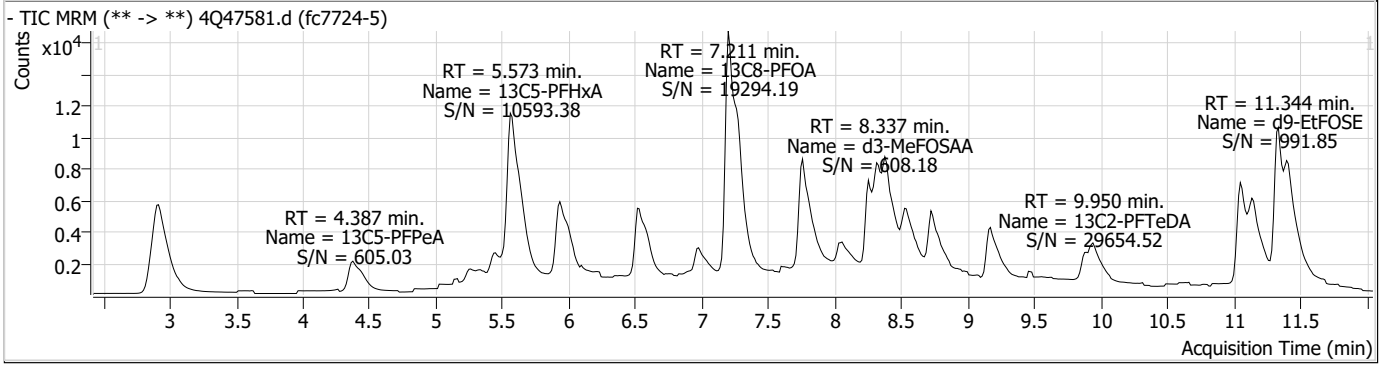
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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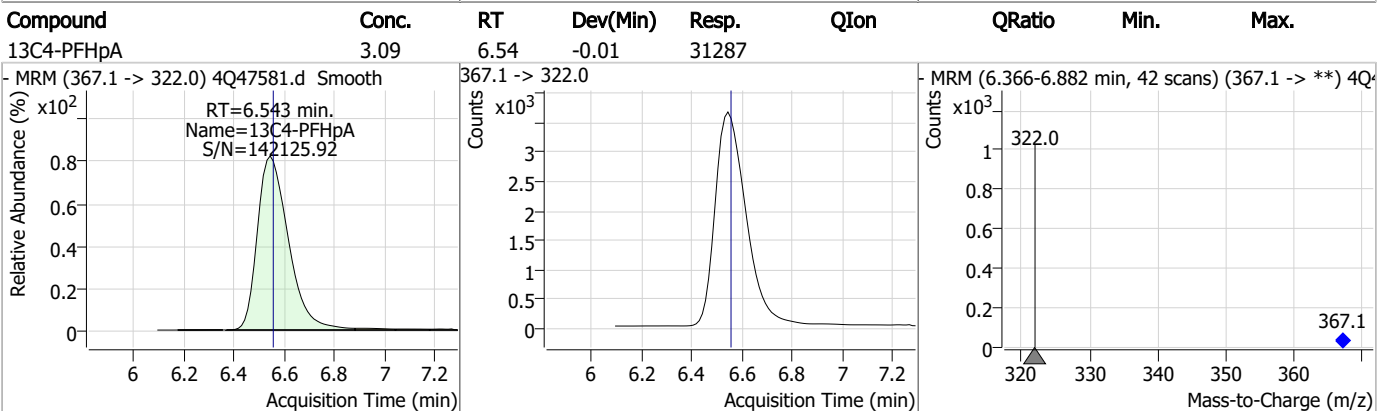
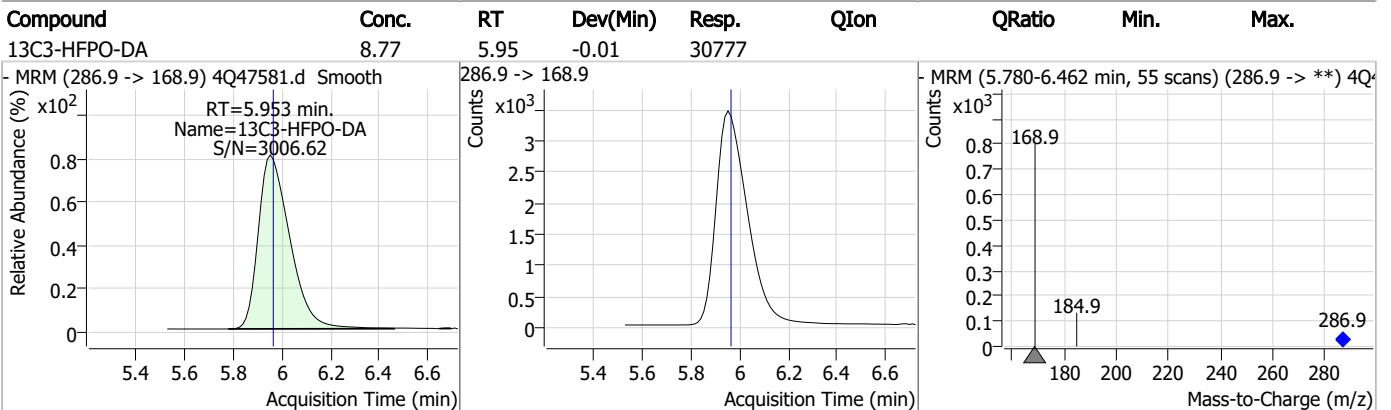
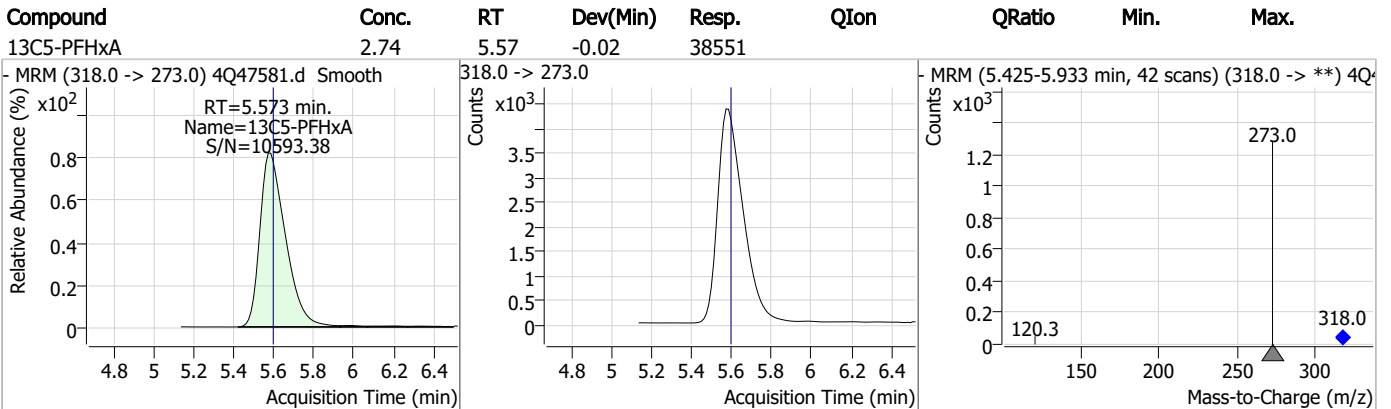
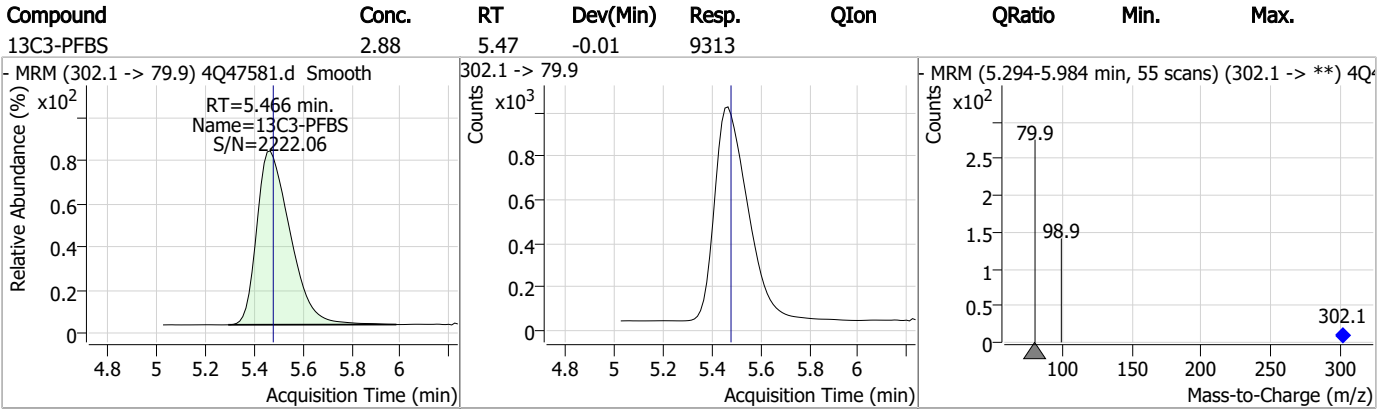
7.1.5
7



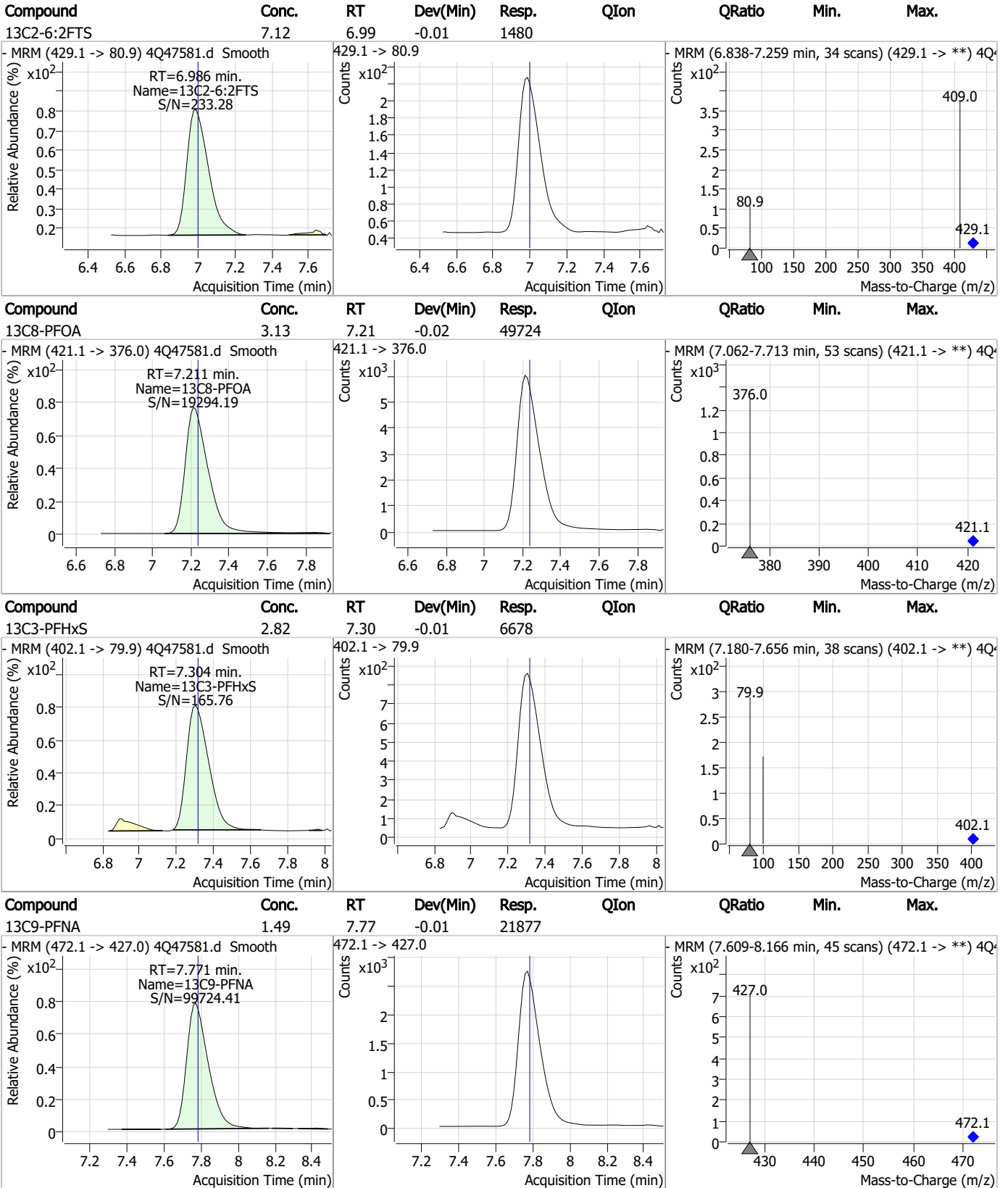
Perfluorinated Compounds by LC/MS/MS



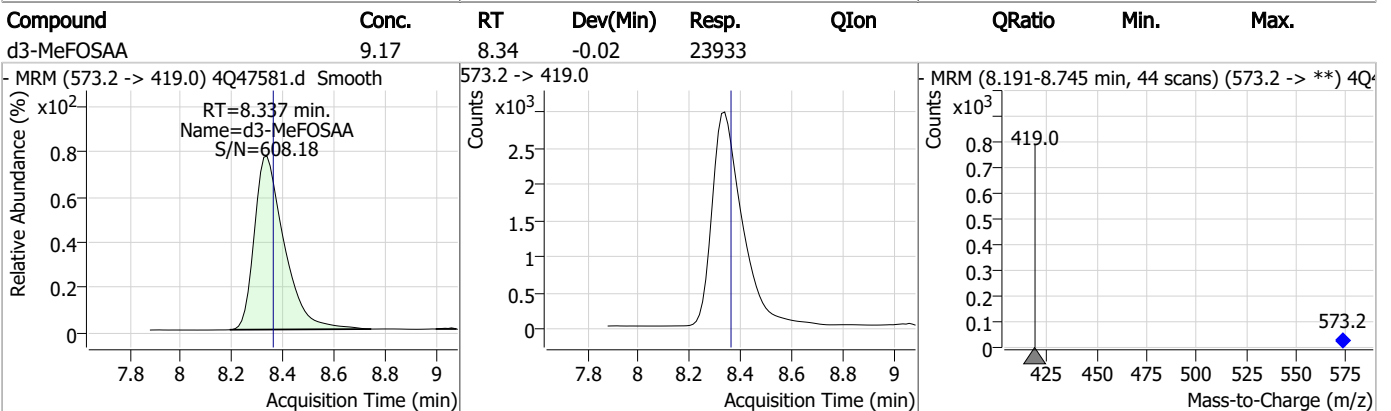
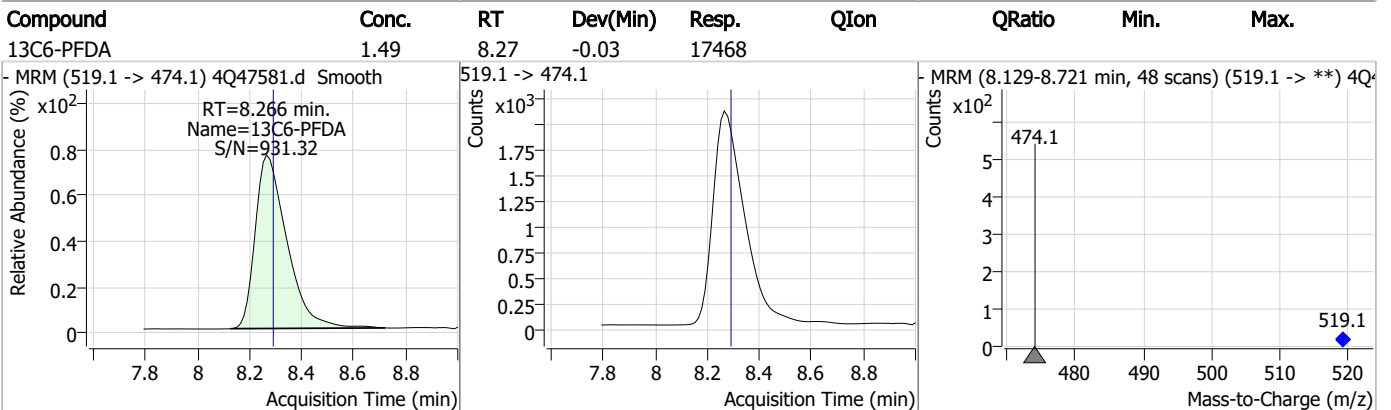
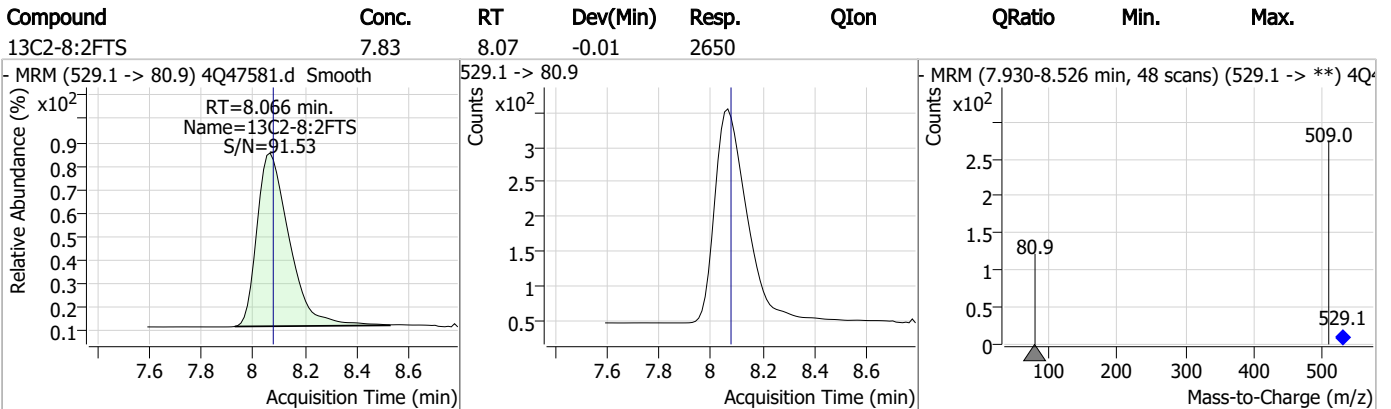
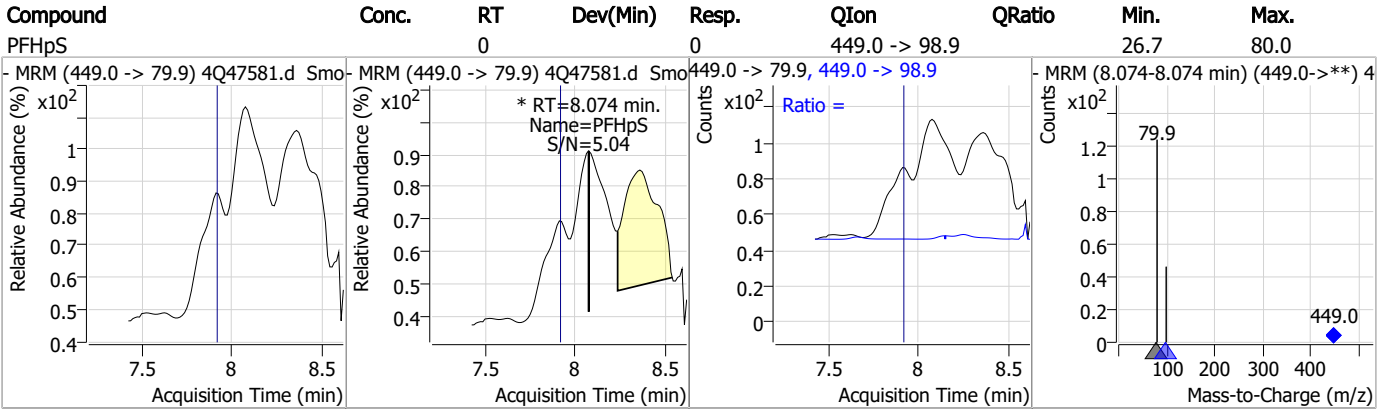
Perfluorinated Compounds by LC/MS/MS



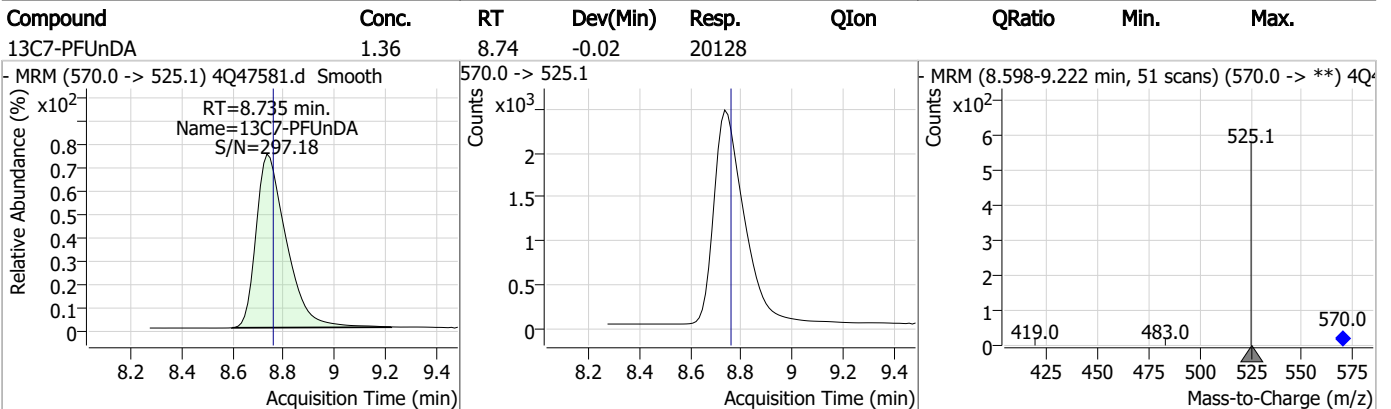
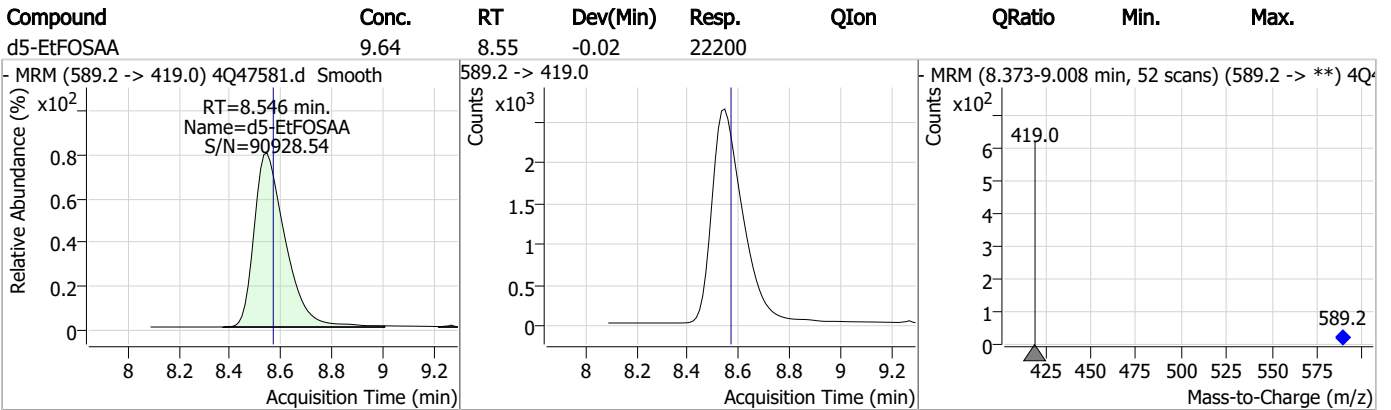
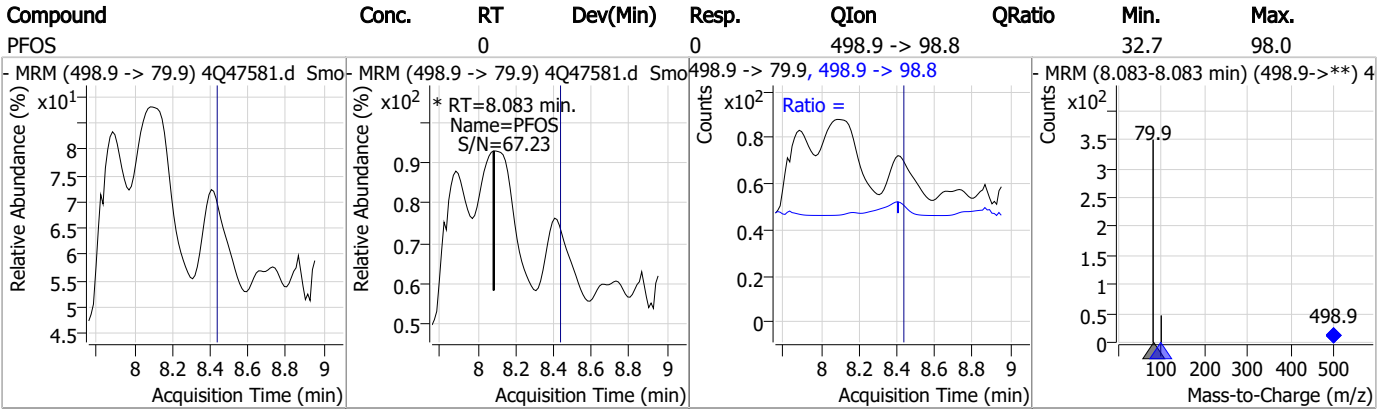
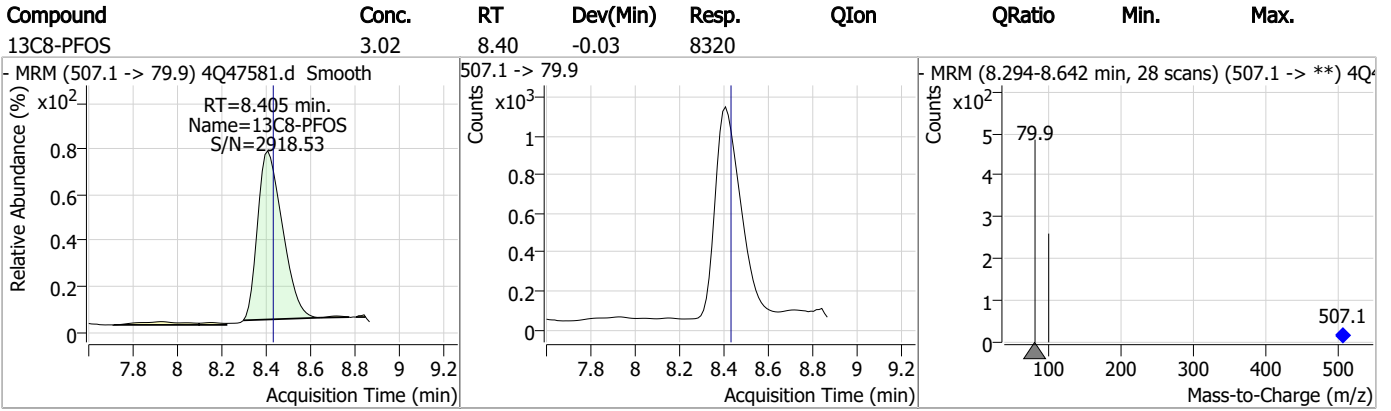
Perfluorinated Compounds by LC/MS/MS



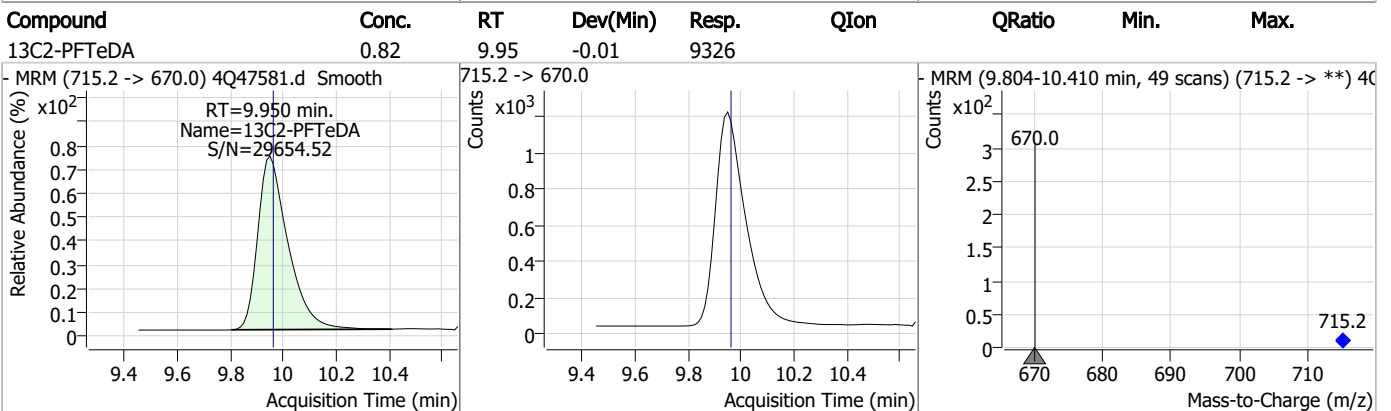
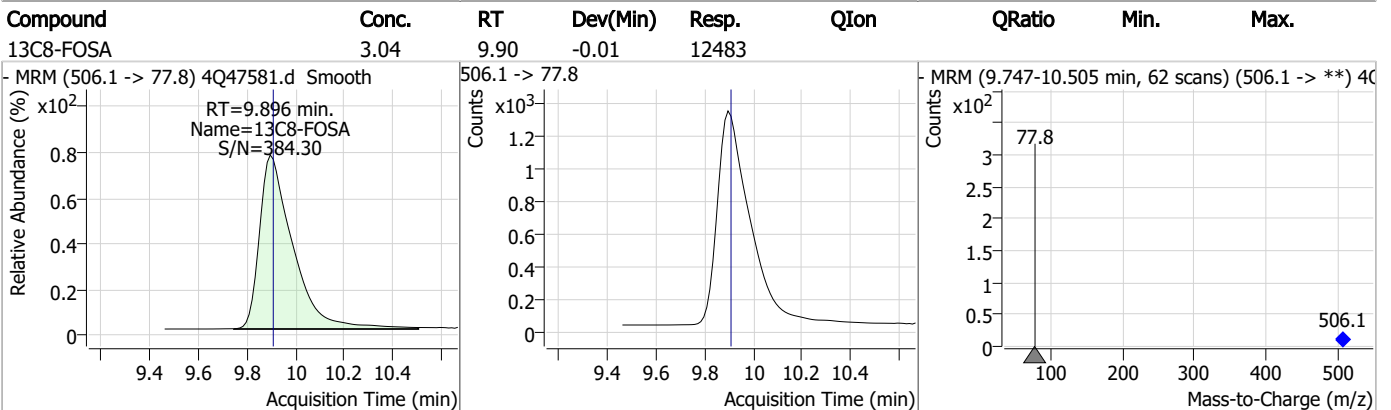
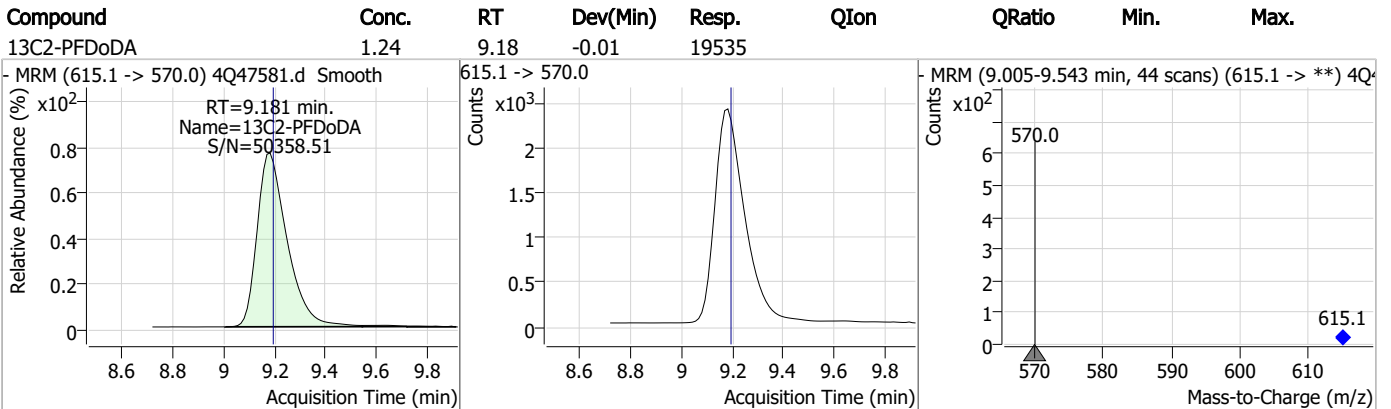
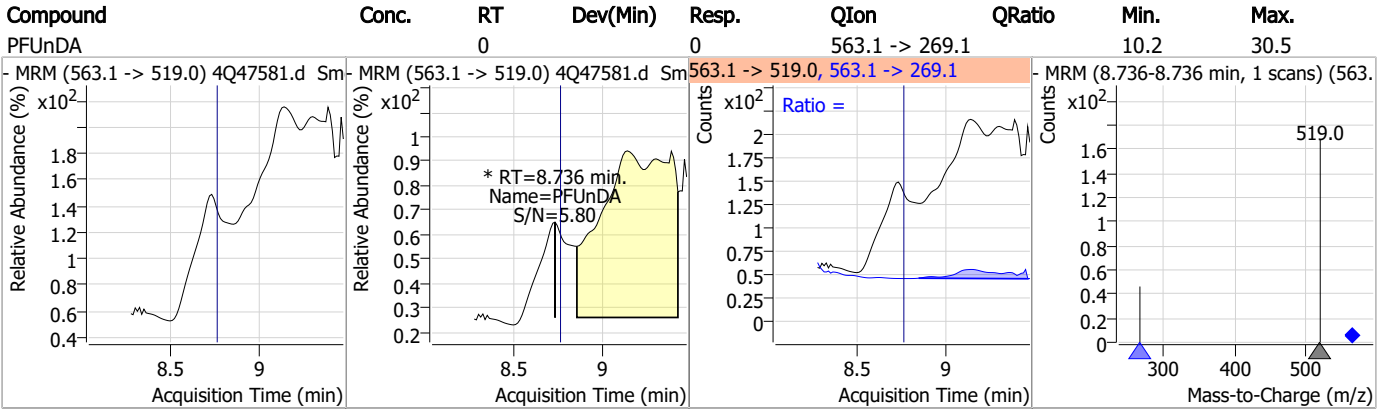
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

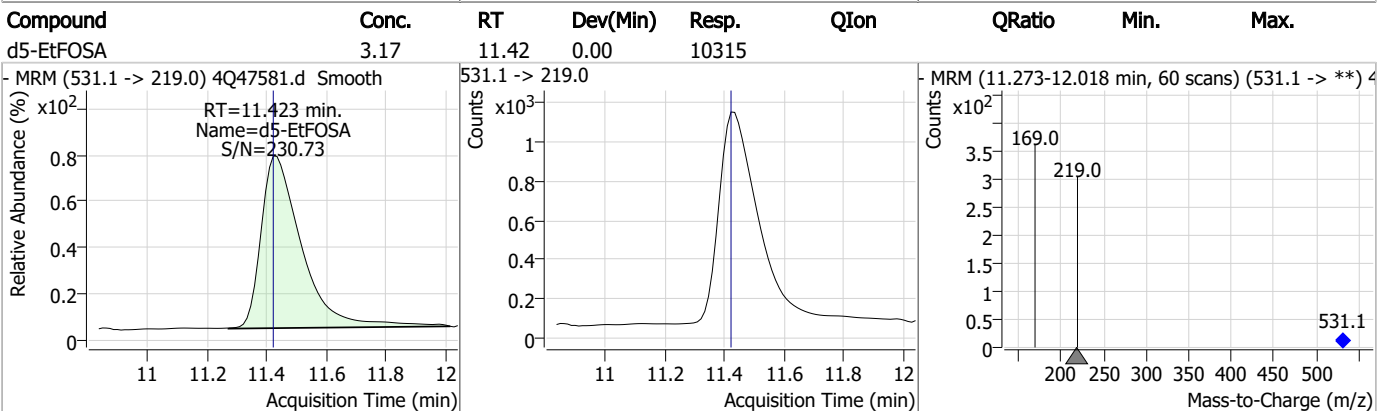
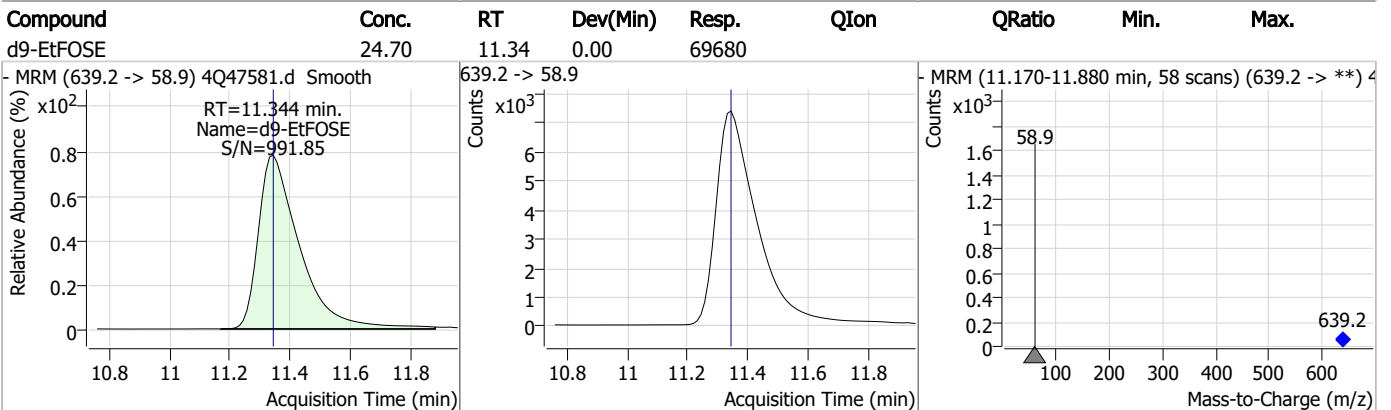
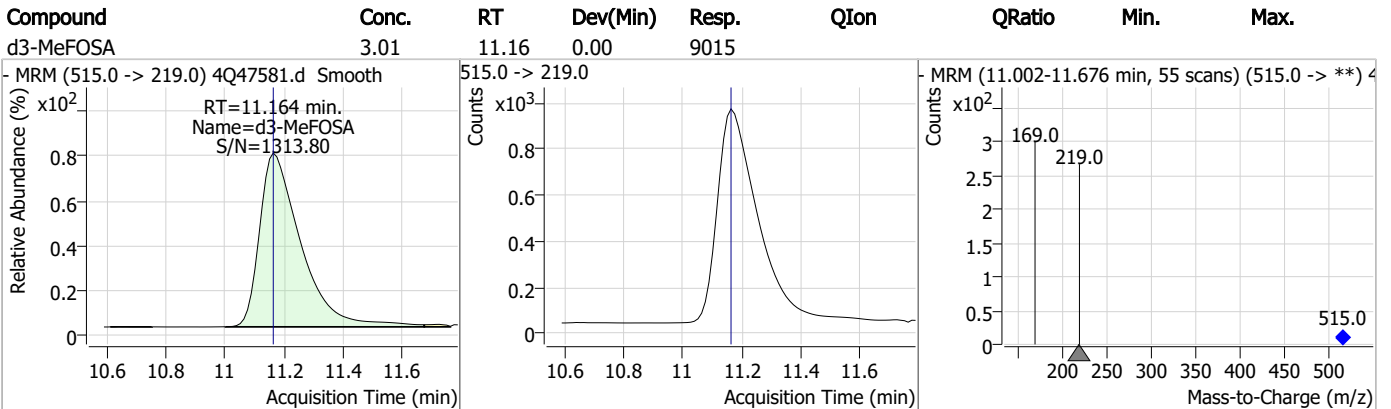
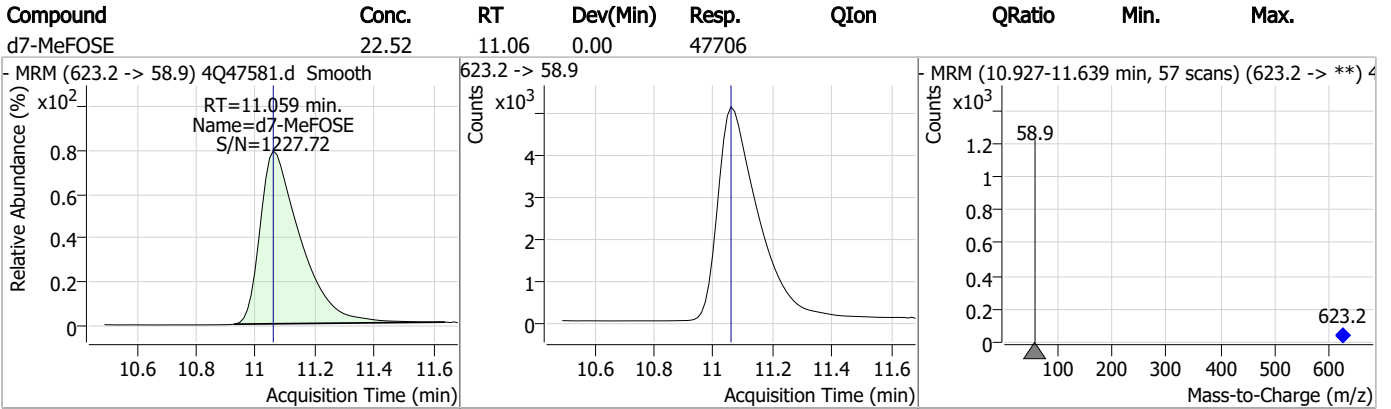


7.1.5

7



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47584.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 5:24:29 PM
 Sample Name : fc7724-5
 Vial : P2-F8
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q697.batch.bin
 Sample Information : OP97911,S4Q697,65,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	111195	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	58800	5.00 µg/L	0.000
M5-PFHxA	5.585	318.0 -> 273.0	42248	2.50 µg/L	-0.012
M4-PFHpA	6.543	367.1 -> 322.0	28627	2.50 µg/L	-0.012
M8-PFOA	7.224	421.1 -> 376.0	46828	2.50 µg/L	-0.012
M9-PFNA	7.771	472.1 -> 427.0	20137	1.25 µg/L	-0.012
M6-PFDA	8.279	519.1 -> 474.1	15106	1.25 µg/L	-0.012
M7-PFUnDA	8.735	570.0 -> 525.1	16750	1.25 µg/L	-0.025
M2-PFDoDA	9.181	615.1 -> 570.0	16685	1.25 µg/L	-0.012
M2-PFTeDA	9.950	715.2 -> 670.0	9694	1.25 µg/L	-0.012
M8-FOSA	9.896	506.1 -> 77.8	10862	2.50 µg/L	-0.012
M3-PFBS	5.466	302.1 -> 79.9	10115	2.50 µg/L	-0.012
M3-PFHxS	7.304	402.1 -> 79.9	7549	2.50 µg/L	-0.012
M8-PFOS	8.417	507.1 -> 79.9	8943	2.50 µg/L	-0.013
M2-4:2FTS	5.272	329.1 -> 80.9	581	5.00 µg/L	-0.012
M2-6:2FTS	6.999	429.1 -> 80.9	1141	5.00 µg/L	0.000
M2-8:2FTS	8.066	529.1 -> 80.9	1803	5.00 µg/L	-0.012
M3-MeFOSAA	8.337	573.2 -> 419.0	17833	5.00 µg/L	-0.025
M3-HFPO-DA	5.953	286.9 -> 168.9	37715	10.00 µg/L	-0.012
M5-EtFOSAA	8.546	589.2 -> 419.0	15087	5.00 µg/L	-0.025
M7-MeFOSE	11.059	623.2 -> 58.9	46625	25.00 µg/L	0.000
M9-EtFOSE	11.344	639.2 -> 58.9	69597	25.00 µg/L	0.000
M5-EtFOSA	11.435	531.1 -> 219.0	9703	2.50 µg/L	0.012
M3-MeFOSA	11.164	515.0 -> 219.0	7749	2.50 µg/L	0.000
13C4-PFOS	8.418	502.8 -> 79.9	8912	2.50 µg/L	-0.013
13C3-PFBA	2.916	216.0 -> 172.0	52025	5.00 µg/L	0.000
18O2-PFHxS	7.303	403.0 -> 83.9	4156	2.50 µg/L	-0.012
13C4-PFOA	7.224	417.1 -> 372.0	48129	2.50 µg/L	-0.012
13C2-PFDA	8.280	515.1 -> 470.1	15950	1.25 µg/L	-0.012
13C5-PFNA	7.772	468.0 -> 423.0	20857	1.25 µg/L	-0.012
13C2-PFHxA	5.586	315.1 -> 270.0	33419	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.272	329.1 -> 80.9	581	6.22 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 124.5%		
13C2-6:2FTS	6.999	429.1 -> 80.9	1141	5.58 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.6%		
13C2-8:2FTS	8.066	529.1 -> 80.9	1803	5.42 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.4%		
13C2-PFDoDA	9.181	615.1 -> 570.0	16685	1.13 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 90.0%		
13C2-PFTeDA	9.950	715.2 -> 670.0	9694	0.91 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 72.5%		
13C3-PFBS	5.466	302.1 -> 79.9	10115	3.18 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 127.2%		
13C3-PFHxS	7.304	402.1 -> 79.9	7549	3.24 µg/L	-0.012

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 129.5%	
13C4-PFBA	2.911	216.8 -> 171.9	111195	11.31 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 113.1%	
13C4-PFHpA	6.543	367.1 -> 322.0	28627	2.79 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.6%	
13C5-PFHxA	5.585	318.0 -> 273.0	42248	2.95 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 118.2%	
13C5-PFPeA	4.387	268.3 -> 223.0	58800	6.37 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 127.5%	
13C6-PFDA	8.279	519.1 -> 474.1	15106	1.37 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.4%	
13C7-PFUnDA	8.735	570.0 -> 525.1	16750	1.19 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.6%	
13C8-FOSA	9.896	506.1 -> 77.8	10862	2.36 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.2%	
13C8-PFOA	7.224	421.1 -> 376.0	46828	2.99 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 119.6%	
13C8-PFOS	8.417	507.1 -> 79.9	8943	2.89 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 115.6%	
13C9-PFNA	7.771	472.1 -> 427.0	20137	1.44 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 115.5%	
d3-MeFOSAA	8.337	573.2 -> 419.0	17833	6.08 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 121.7%	
13C3-HFPO-DA	5.953	286.9 -> 168.9	37715	10.59 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 105.9%	
d3-MeFOSA	11.164	515.0 -> 219.0	7749	2.31 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.2%	
d5-EtFOSAA	8.546	589.2 -> 419.0	15087	5.83 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 116.7%	
d7-MeFOSE	11.059	623.2 -> 58.9	46625	19.60 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 78.4%	
d9-EtFOSE	11.344	639.2 -> 58.9	69597	21.98 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 87.9%	
d5-EtFOSA	11.435	531.1 -> 219.0	9703	2.66 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.3%	

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)
		599.0 -> 98.8				
PFHpA	-	363.1 -> 319.0	-	N.D.		
		363.1 -> 169.0				
PFHpS	8.397	449.0 -> 79.9	0	µg/L	m	1
		449.0 -> 98.9	0			
PFHxA	-	313.0 -> 269.0	-	N.D.		
		313.0 -> 118.9				
PFHxS	-	398.7 -> 79.9	-	N.D.		
		398.7 -> 98.9				
PFNA	-	463.0 -> 419.0	-	N.D.		
		463.0 -> 219.0				
PFNS	-	548.8 -> 79.9	-	N.D.		
		548.8 -> 98.9				
PFOA	-	413.0 -> 369.0	-	N.D.		
		413.0 -> 169.0				
PFOS	8.394	498.9 -> 79.9	495	0.10 µg/L	#m	23
		498.9 -> 98.8	21			
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

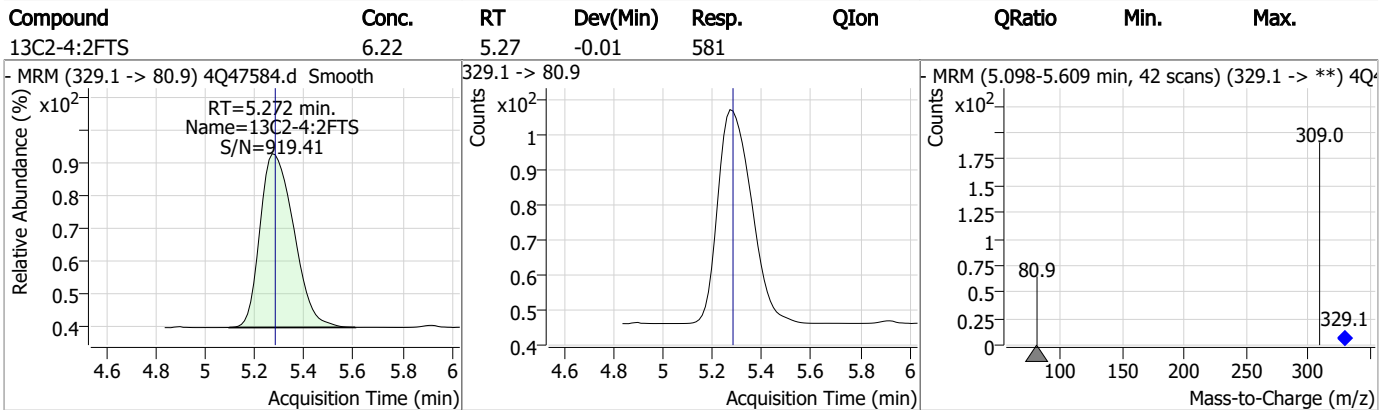
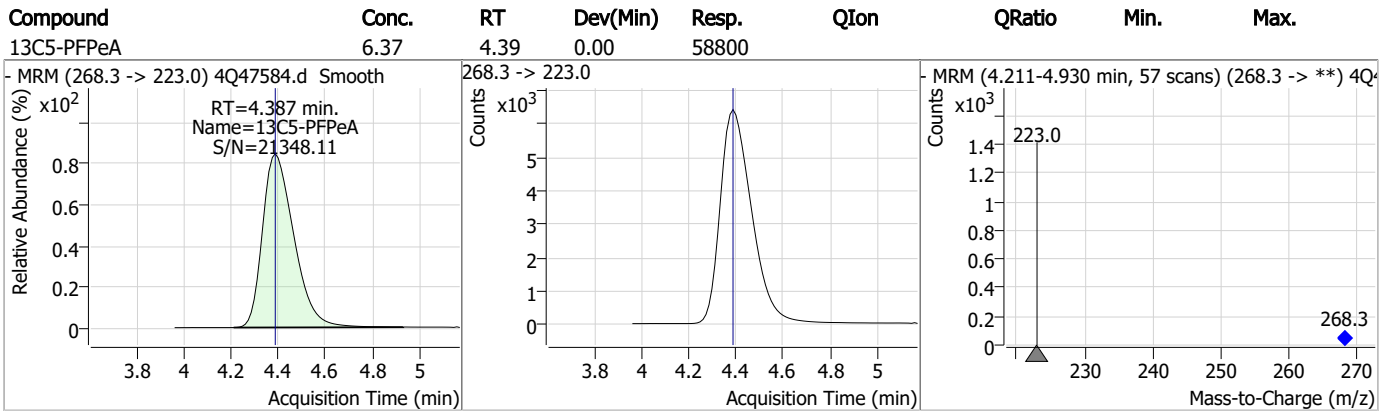
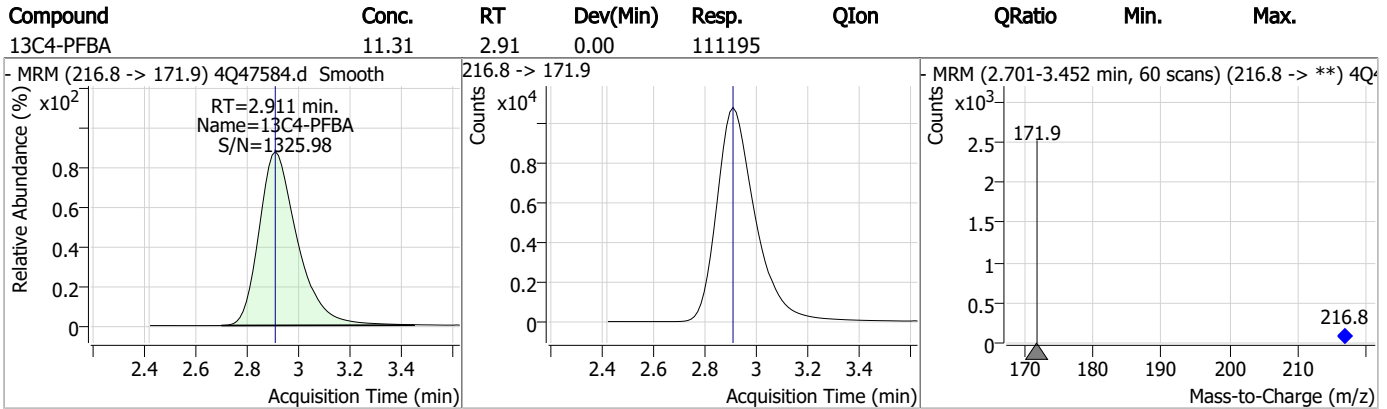
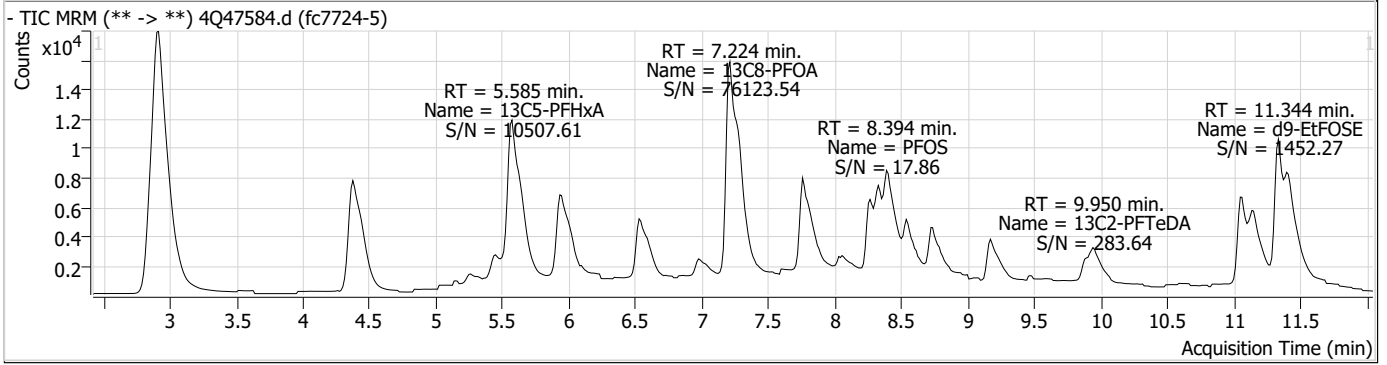
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.1.6

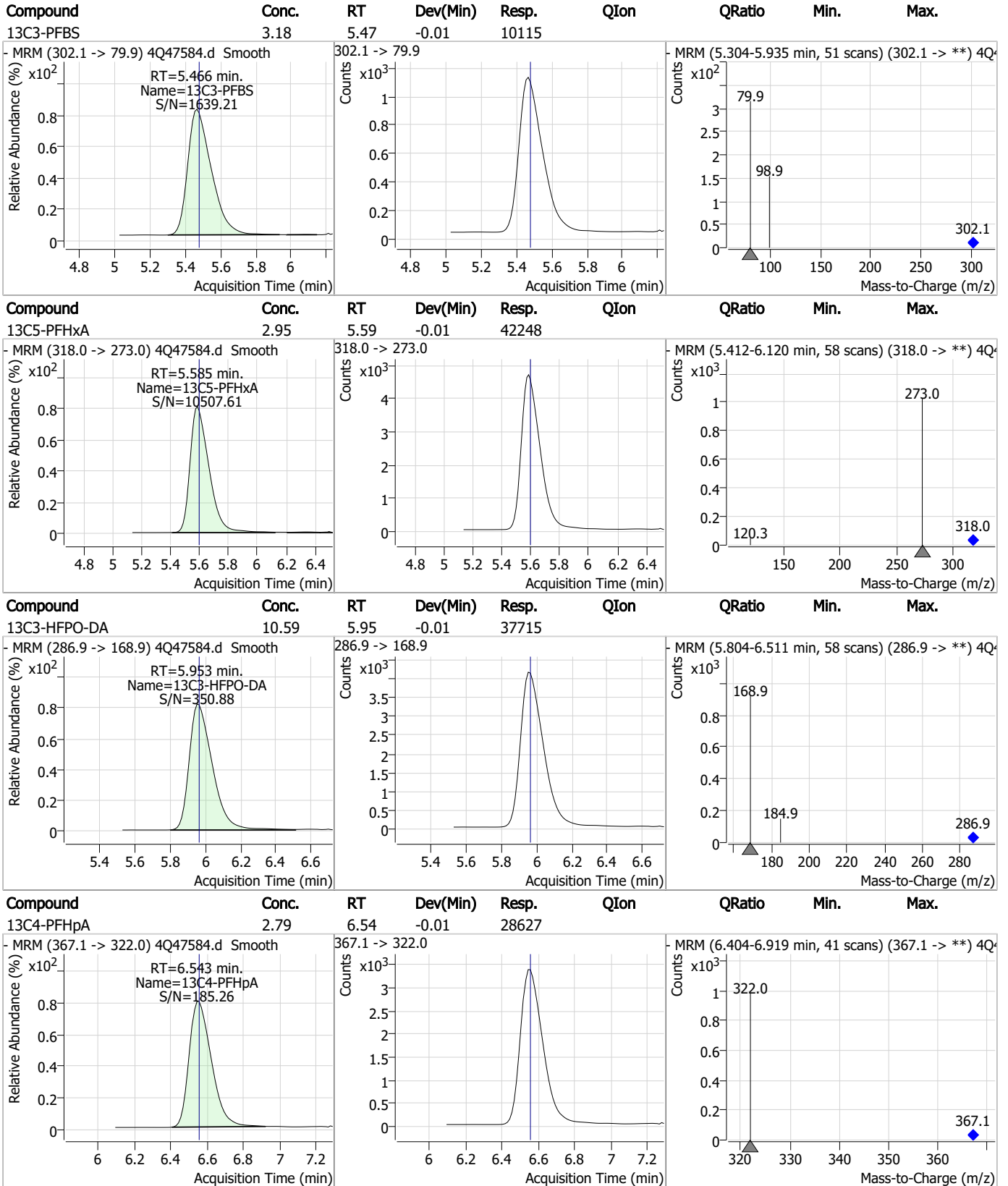
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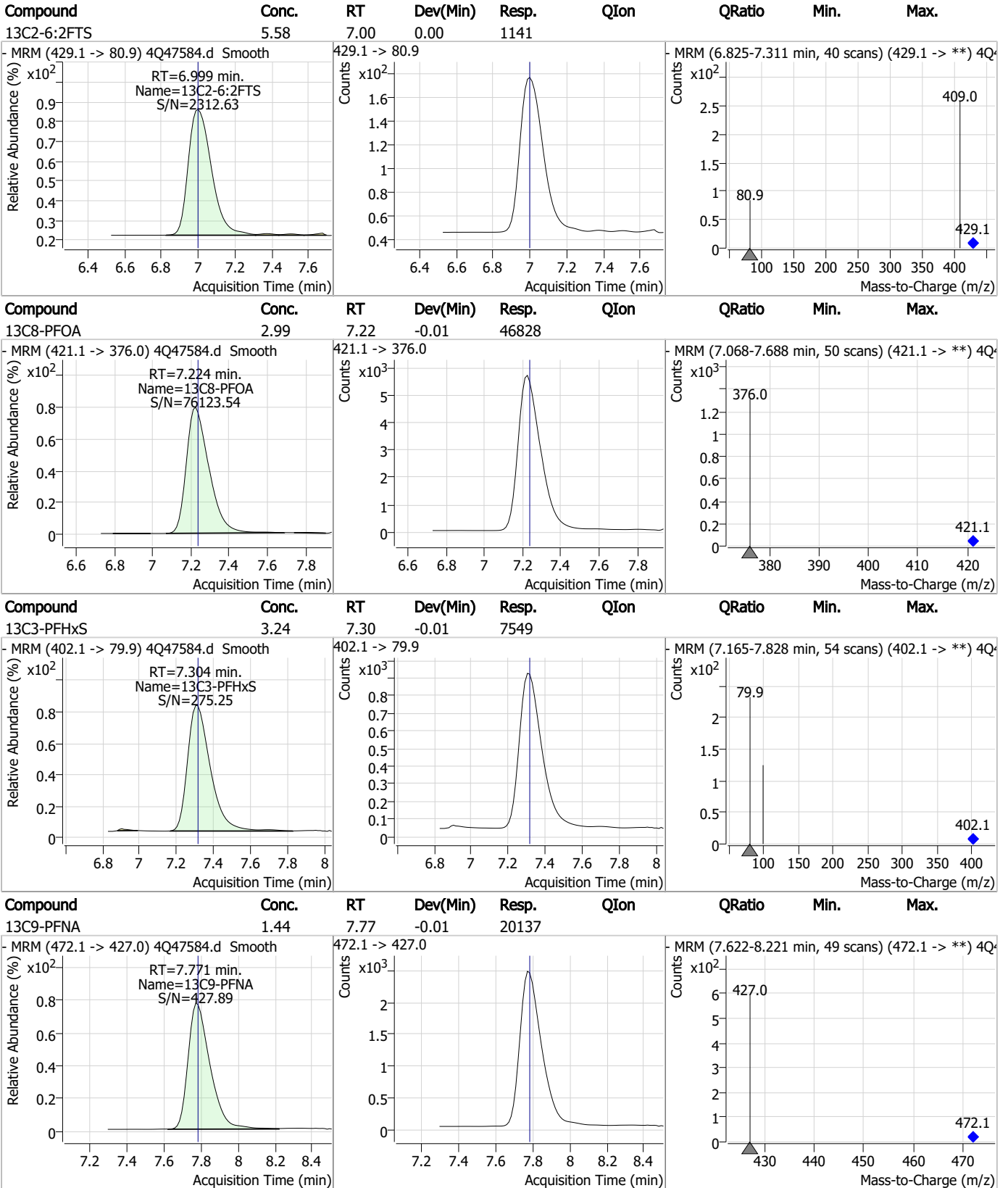
Perfluorinated Compounds by LC/MS/MS



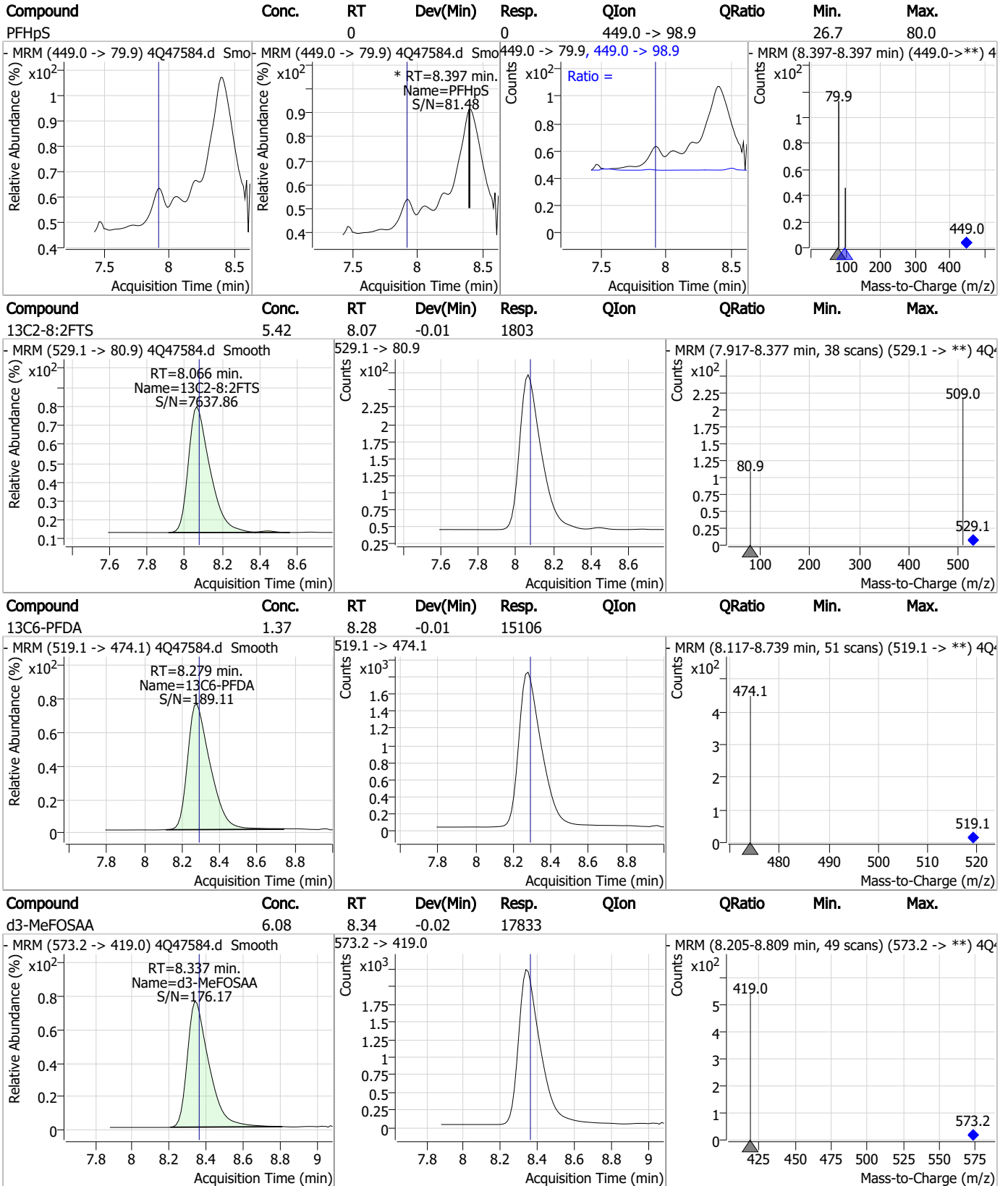
Perfluorinated Compounds by LC/MS/MS



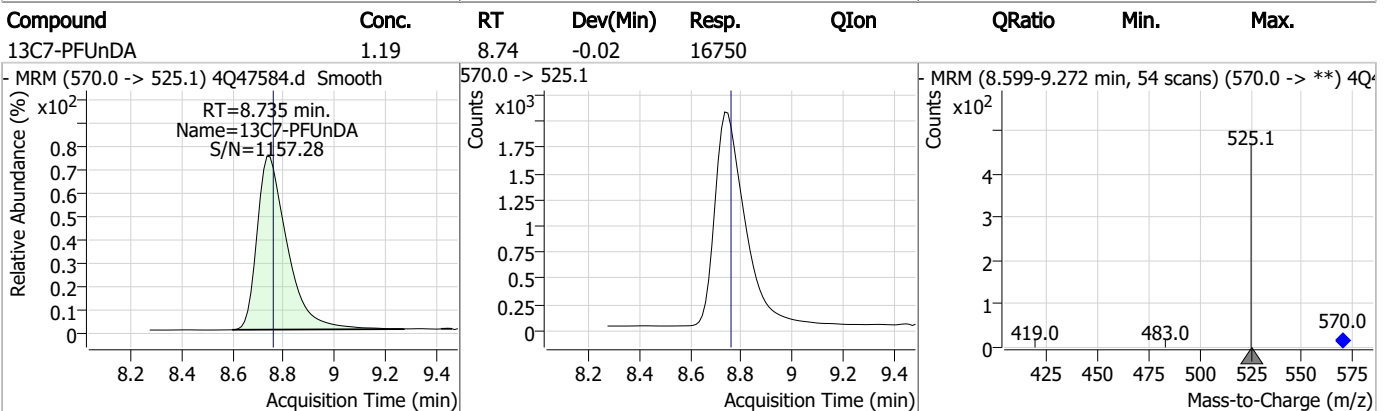
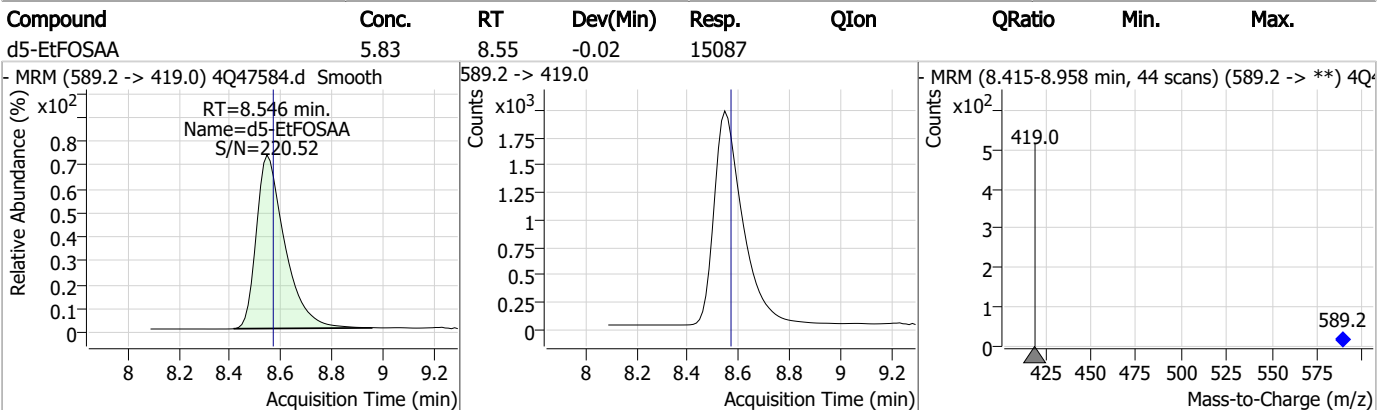
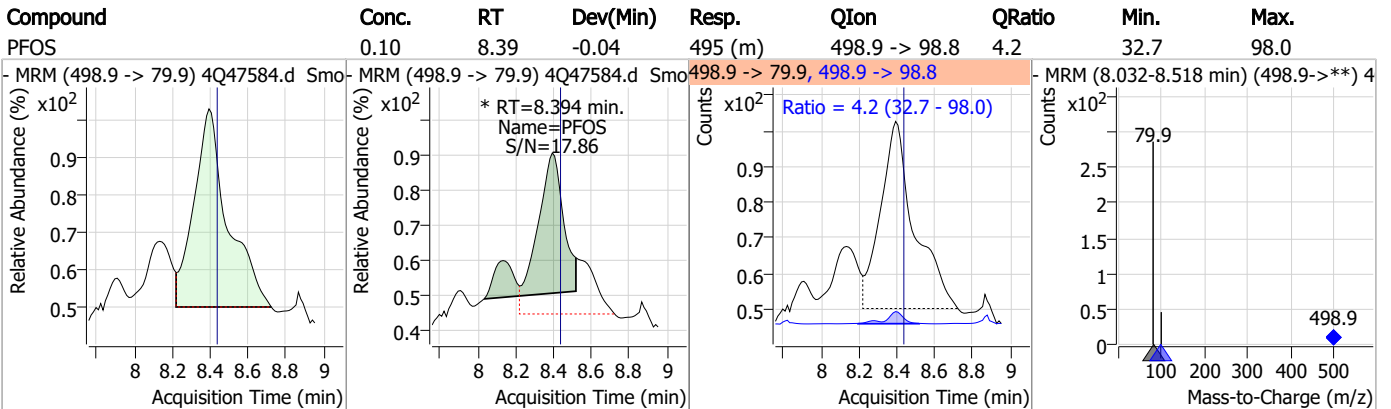
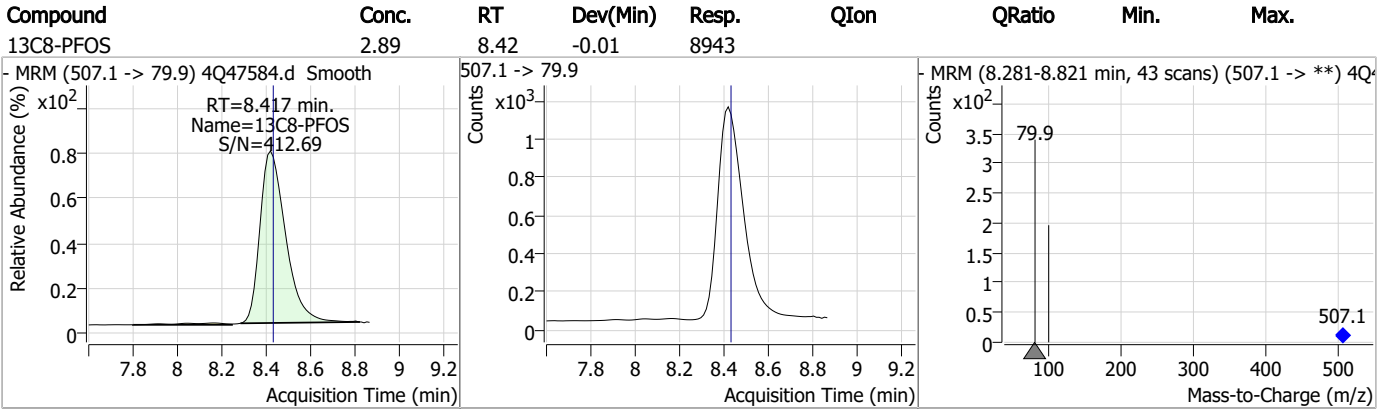
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

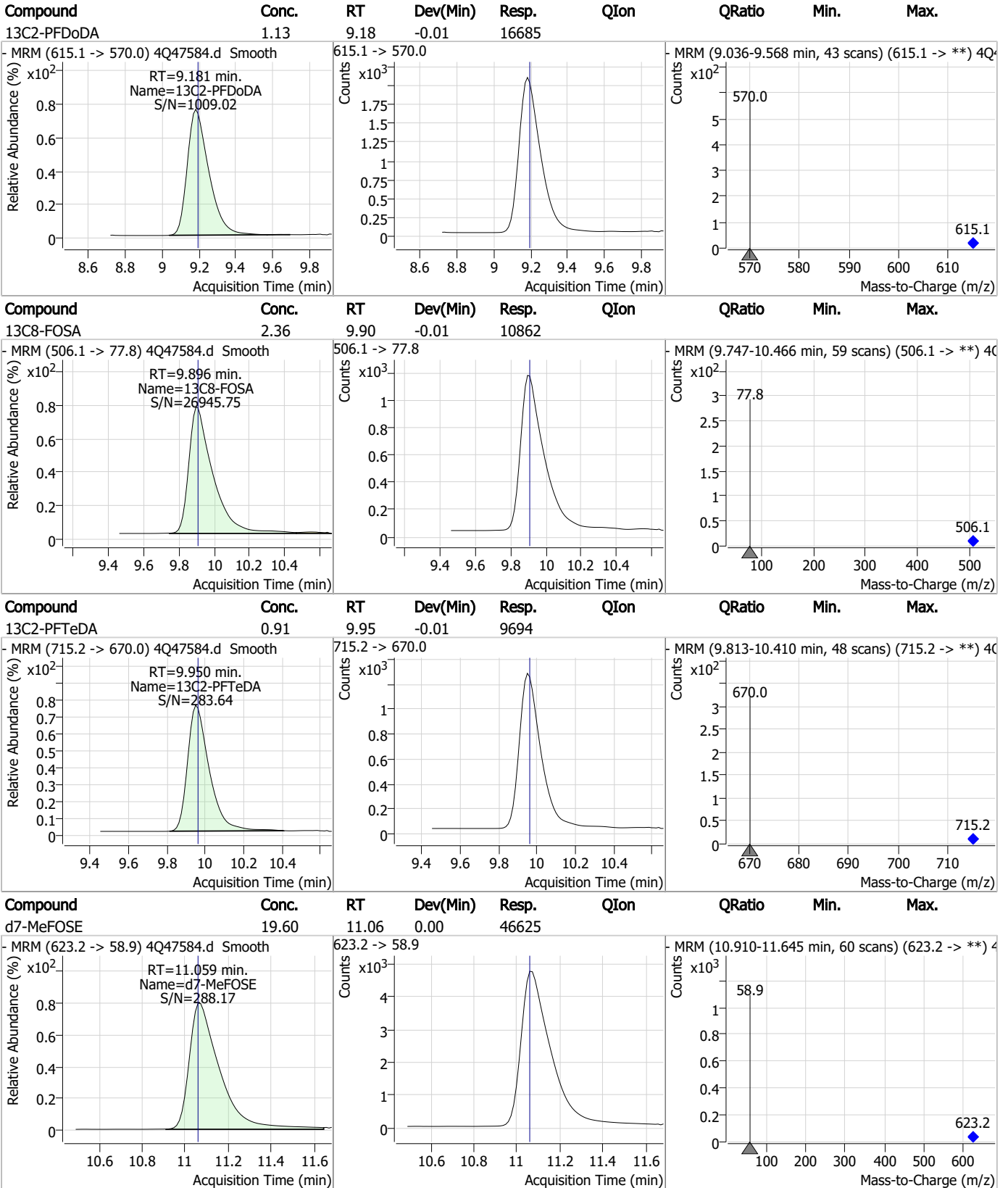


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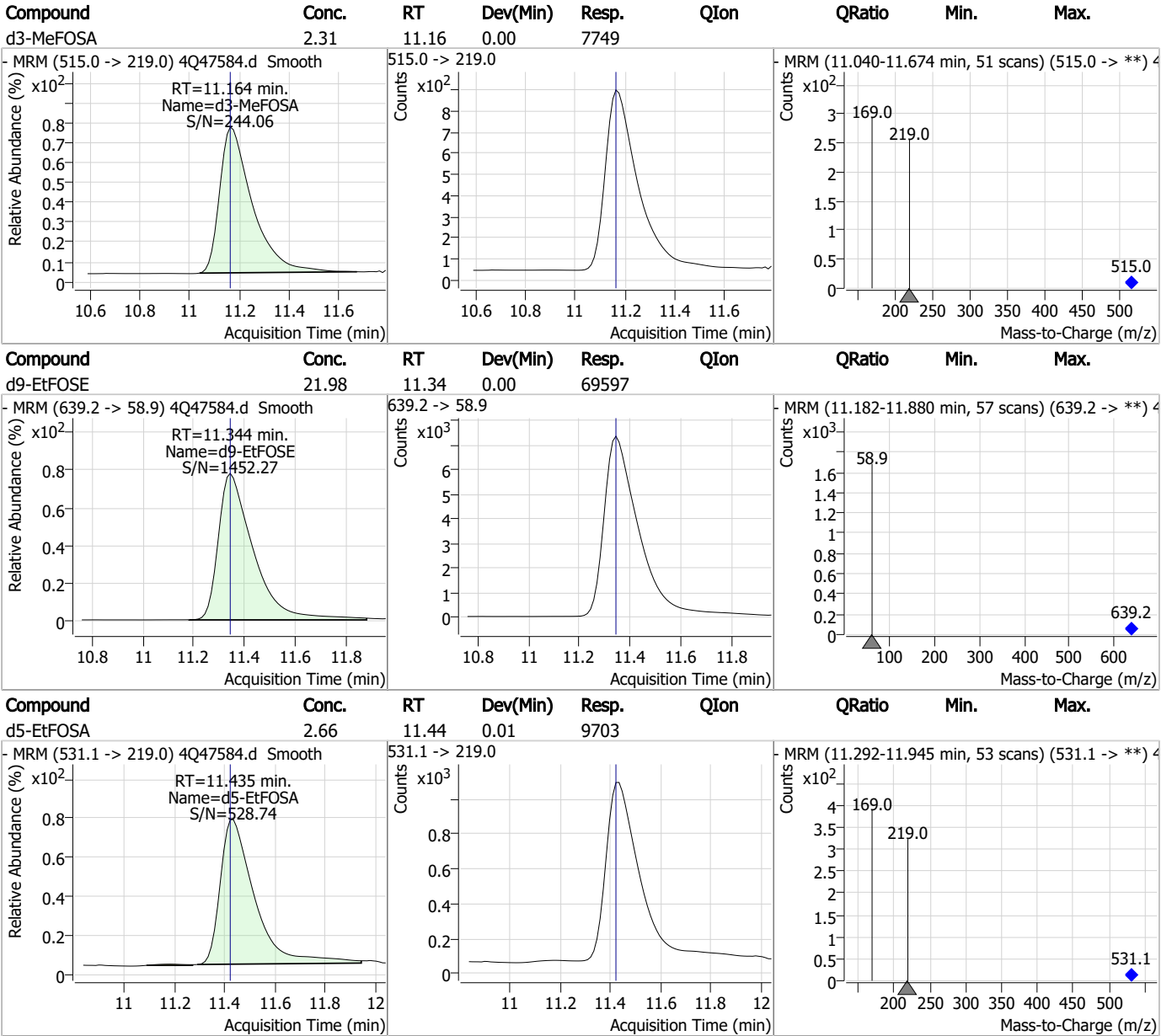
7



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Manual Integration Approval Summary

Sample Number: FC7724-5 Method: EPA DRAFT 1633
Lab FileID: 4Q47584.D Analyst approved: 07/20/23 12:56 Anna Ludwig
Injection Time: 07/19/23 17:24 Supervisor approved: 07/20/23 15:46 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.39	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47582.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 4:54:57 PM
 Sample Name : fc7724-6
 Vial : P2-F6
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q697.batch.bin
 Sample Information : OP97911,S4Q697,510,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	122295	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	60638	5.00 µg/L	0.000
M5-PFHxA	5.585	318.0 -> 273.0	42156	2.50 µg/L	-0.012
M4-PFHpA	6.543	367.1 -> 322.0	29746	2.50 µg/L	-0.012
M8-PFOA	7.224	421.1 -> 376.0	45909	2.50 µg/L	-0.012
M9-PFNA	7.771	472.1 -> 427.0	19527	1.25 µg/L	-0.012
M6-PFDA	8.279	519.1 -> 474.1	14137	1.25 µg/L	-0.012
M7-PFUnDA	8.735	570.0 -> 525.1	16719	1.25 µg/L	-0.025
M2-PFDoDA	9.181	615.1 -> 570.0	16185	1.25 µg/L	-0.012
M2-PFTeDA	9.950	715.2 -> 670.0	5989	1.25 µg/L	-0.012
M8-FOSA	9.896	506.1 -> 77.8	10607	2.50 µg/L	-0.012
M3-PFBS	5.466	302.1 -> 79.9	10378	2.50 µg/L	-0.012
M3-PFHxS	7.304	402.1 -> 79.9	6834	2.50 µg/L	-0.012
M8-PFOS	8.417	507.1 -> 79.9	8399	2.50 µg/L	-0.013
M2-4:2FTS	5.272	329.1 -> 80.9	545	5.00 µg/L	-0.012
M2-6:2FTS	6.986	429.1 -> 80.9	1329	5.00 µg/L	-0.012
M2-8:2FTS	8.066	529.1 -> 80.9	1679	5.00 µg/L	-0.012
M3-MeFOSAA	8.337	573.2 -> 419.0	15482	5.00 µg/L	-0.025
M3-HFPO-DA	5.953	286.9 -> 168.9	37758	10.00 µg/L	-0.012
M5-EtFOSAA	8.546	589.2 -> 419.0	13368	5.00 µg/L	-0.025
M7-MeFOSE	11.059	623.2 -> 58.9	48999	25.00 µg/L	0.000
M9-EtFOSE	11.344	639.2 -> 58.9	72670	25.00 µg/L	0.000
M5-EtFOSA	11.423	531.1 -> 219.0	9165	2.50 µg/L	0.000
M3-MeFOSA	11.164	515.0 -> 219.0	8010	2.50 µg/L	0.000
13C4-PFOS	8.418	502.8 -> 79.9	7302	2.50 µg/L	-0.013
13C3-PFBA	2.916	216.0 -> 172.0	50096	5.00 µg/L	0.000
18O2-PFHxS	7.303	403.0 -> 83.9	4126	2.50 µg/L	-0.012
13C4-PFOA	7.224	417.1 -> 372.0	44500	2.50 µg/L	-0.012
13C2-PFDA	8.280	515.1 -> 470.1	13960	1.25 µg/L	-0.012
13C5-PFNA	7.772	468.0 -> 423.0	18990	1.25 µg/L	-0.012
13C2-PFHxA	5.586	315.1 -> 270.0	30402	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.272	329.1 -> 80.9	545	5.88 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.6%		
13C2-6:2FTS	6.986	429.1 -> 80.9	1329	6.55 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.9%		
13C2-8:2FTS	8.066	529.1 -> 80.9	1679	5.08 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.7%		
13C2-PFDoDA	9.181	615.1 -> 570.0	16185	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C2-PFTeDA	9.950	715.2 -> 670.0	5989	0.64 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 51.2%		
13C3-PFBS	5.466	302.1 -> 79.9	10378	3.29 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 131.4%		
13C3-PFHxS	7.304	402.1 -> 79.9	6834	2.95 µg/L	-0.012



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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 118.1%	
13C4-PFBA	2.911	216.8 -> 171.9	122295	12.92 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 129.2%	
13C4-PFHpA	6.543	367.1 -> 322.0	29746	3.19 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 127.5%	
13C5-PFHxA	5.585	318.0 -> 273.0	42156	3.24 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 129.6%	
13C5-PFPeA	4.387	268.3 -> 223.0	60638	7.23 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 144.5%	
13C6-PFDA	8.279	519.1 -> 474.1	14137	1.46 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 117.0%	
13C7-PFUnDA	8.735	570.0 -> 525.1	16719	1.36 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.0%	
13C8-FOSA	9.896	506.1 -> 77.8	10607	2.81 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.3%	
13C8-PFOA	7.224	421.1 -> 376.0	45909	3.17 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 126.8%	
13C8-PFOS	8.417	507.1 -> 79.9	8399	3.31 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 132.5%	
13C9-PFNA	7.771	472.1 -> 427.0	19527	1.54 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 123.0%	
d3-MeFOSAA	8.337	573.2 -> 419.0	15482	6.45 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 128.9%	
13C3-HFPO-DA	5.953	286.9 -> 168.9	37758	11.65 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 116.5%	
d3-MeFOSA	11.164	515.0 -> 219.0	8010	2.91 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 116.4%	
d5-EtFOSAA	8.546	589.2 -> 419.0	13368	6.31 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 126.2%	
d7-MeFOSE	11.059	623.2 -> 58.9	48999	25.15 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
d9-EtFOSE	11.344	639.2 -> 58.9	72670	28.01 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 112.0%	
d5-EtFOSA	11.423	531.1 -> 219.0	9165	3.06 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 122.6%	

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.	



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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

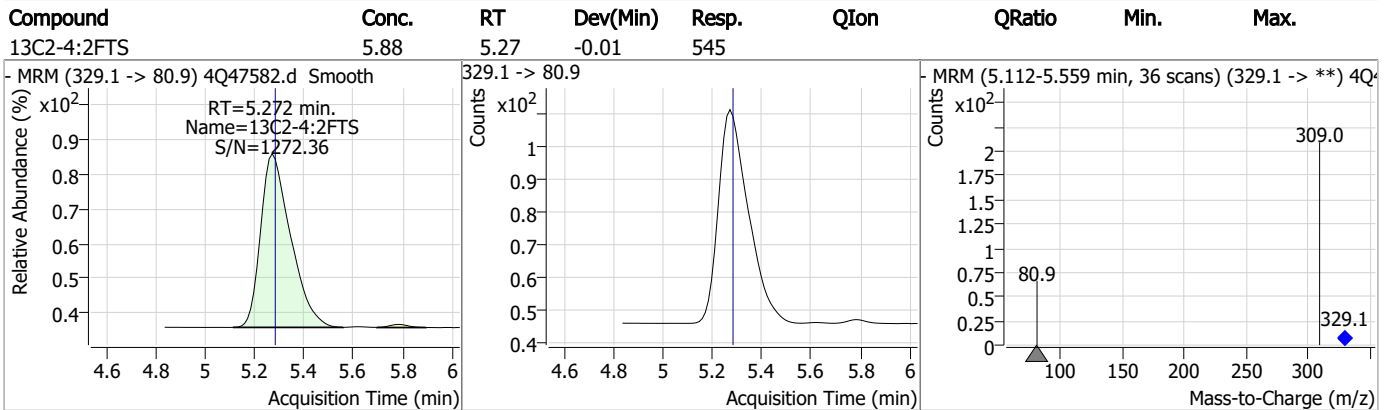
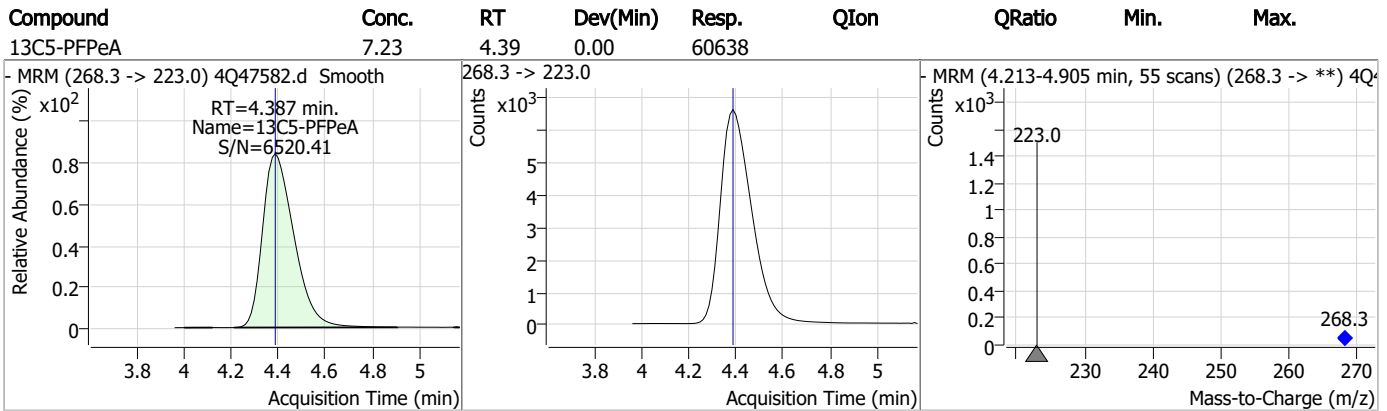
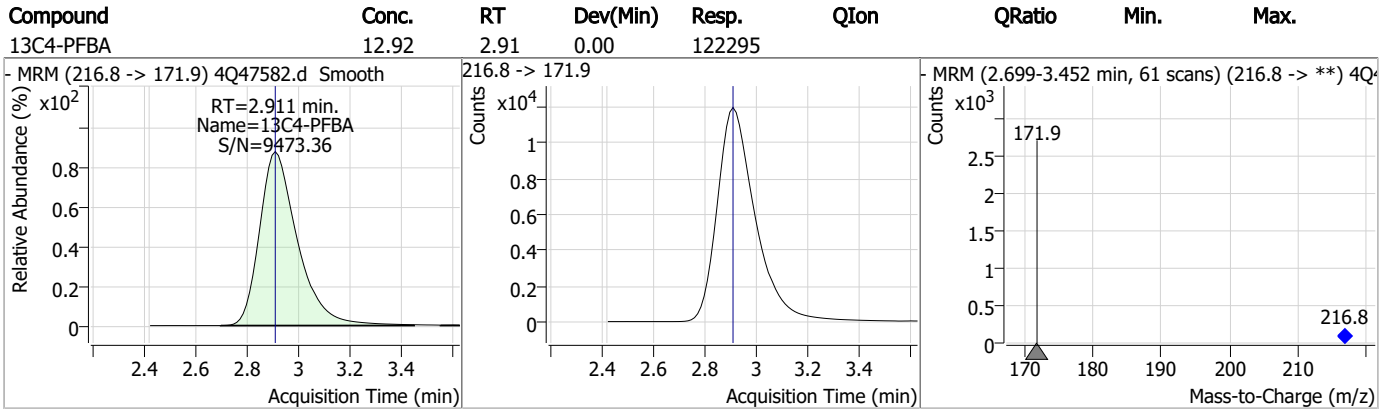
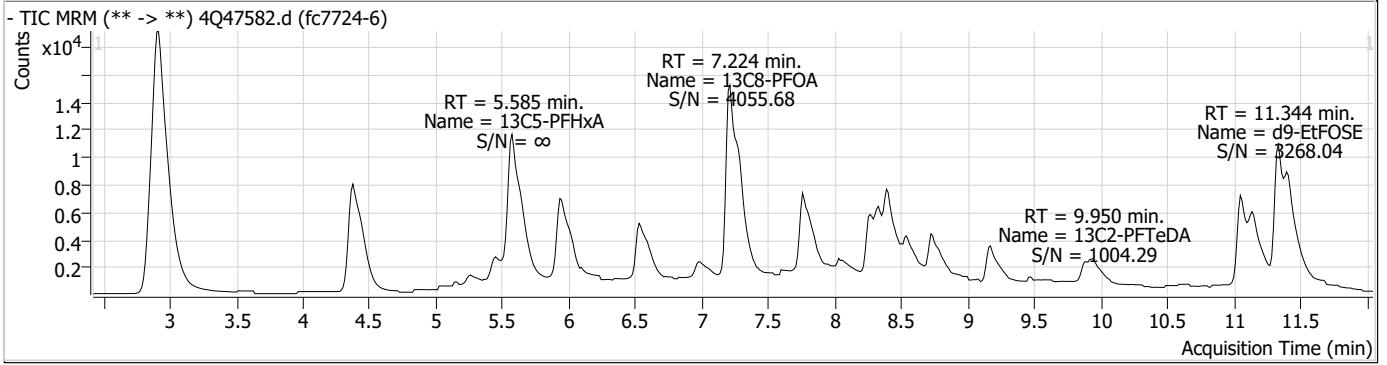
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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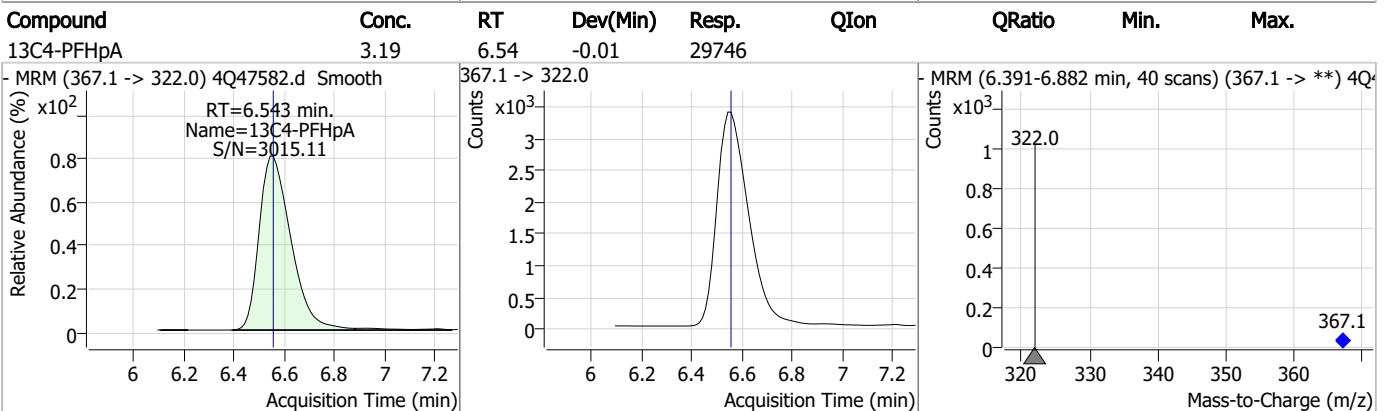
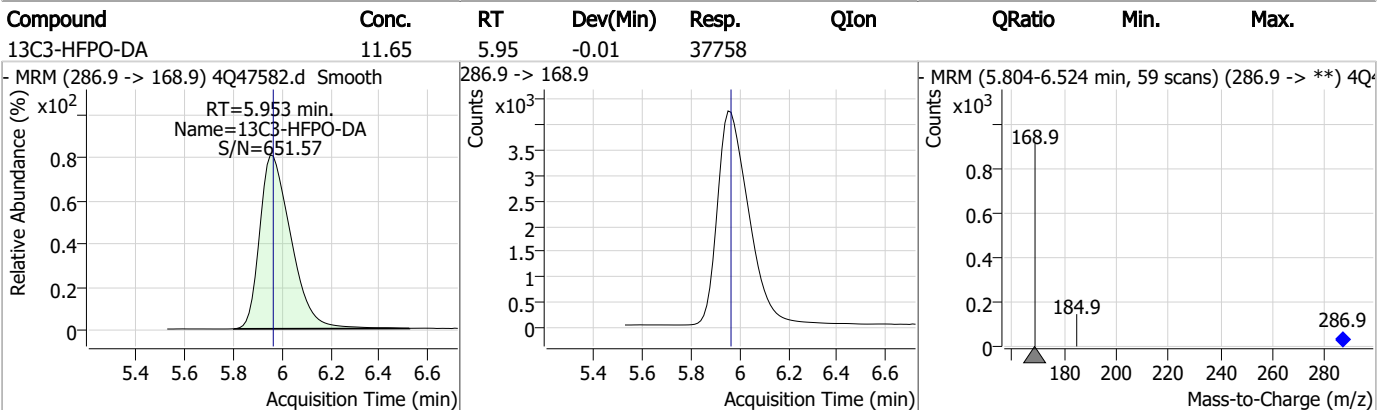
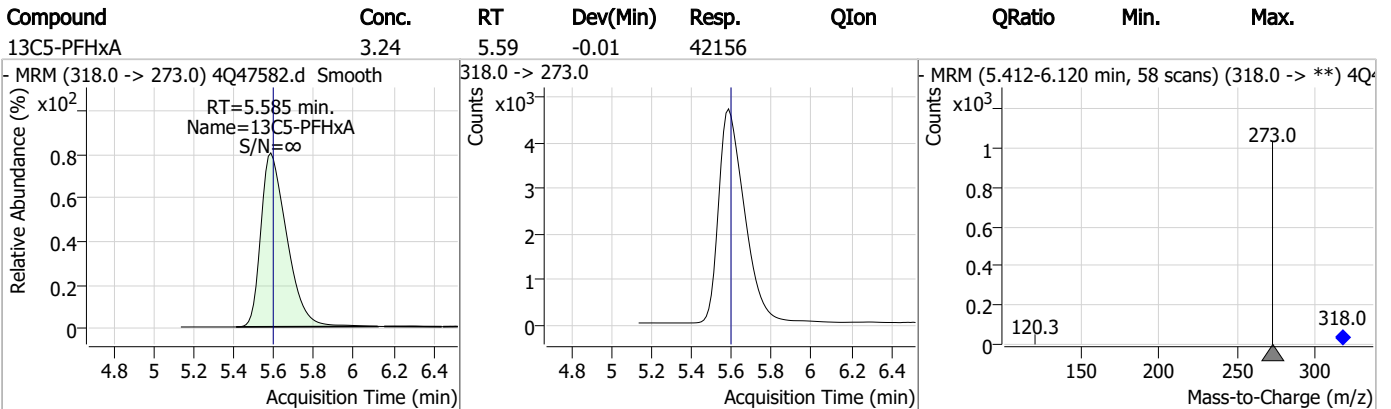
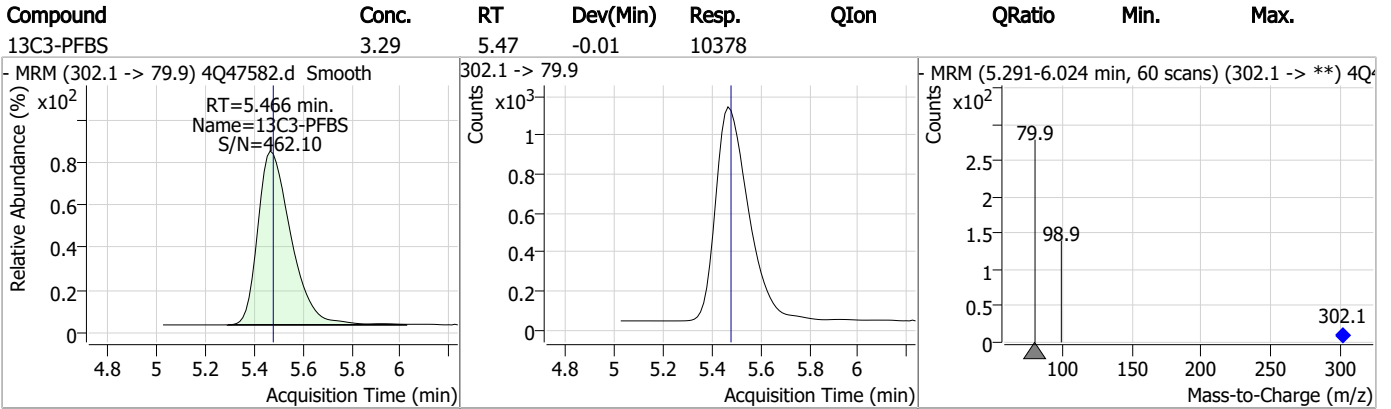
7.1.7
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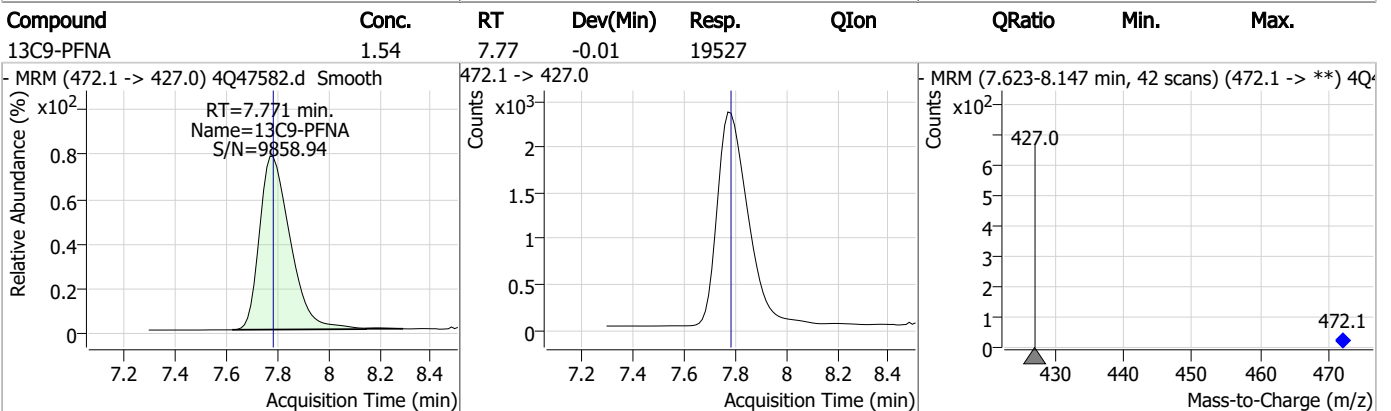
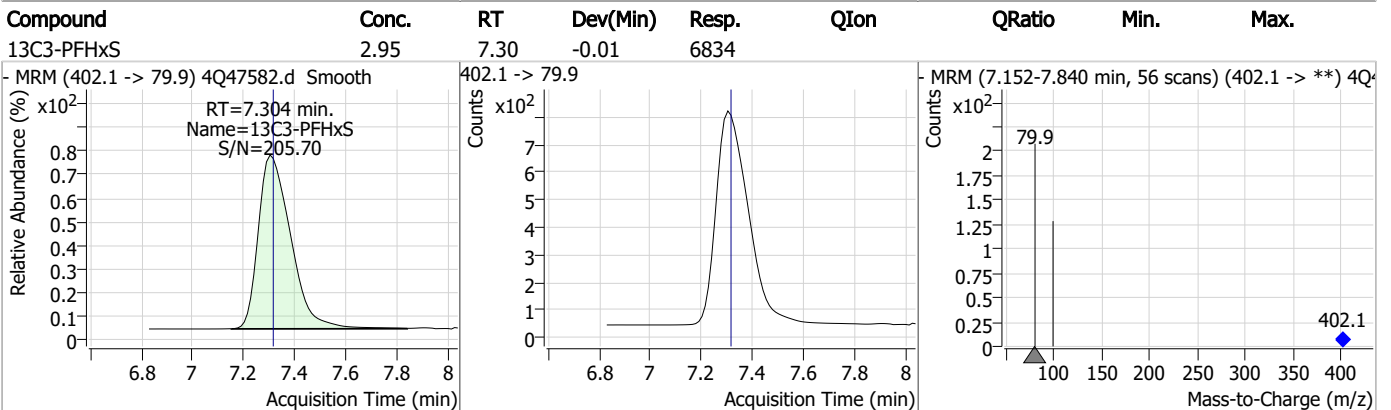
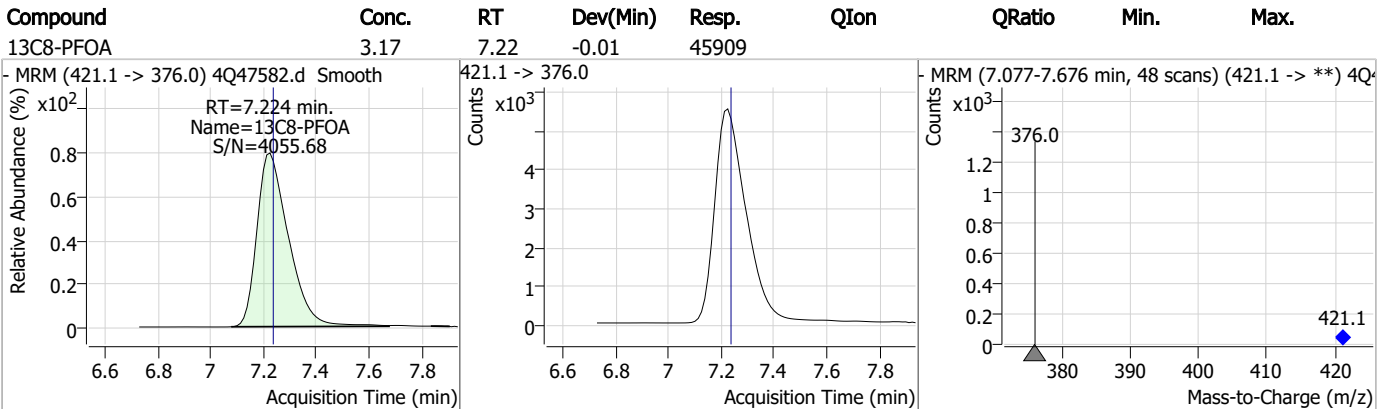
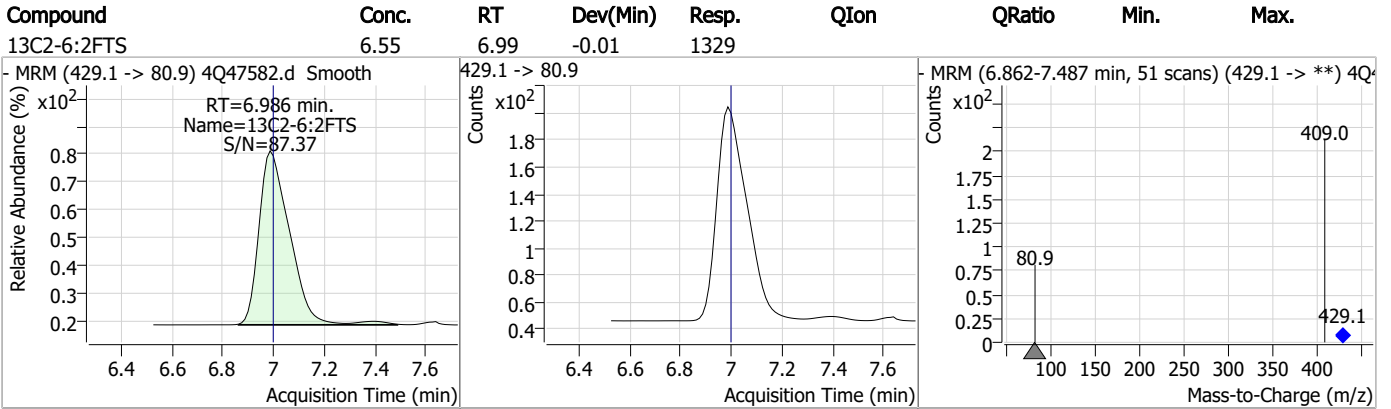
Perfluorinated Compounds by LC/MS/MS



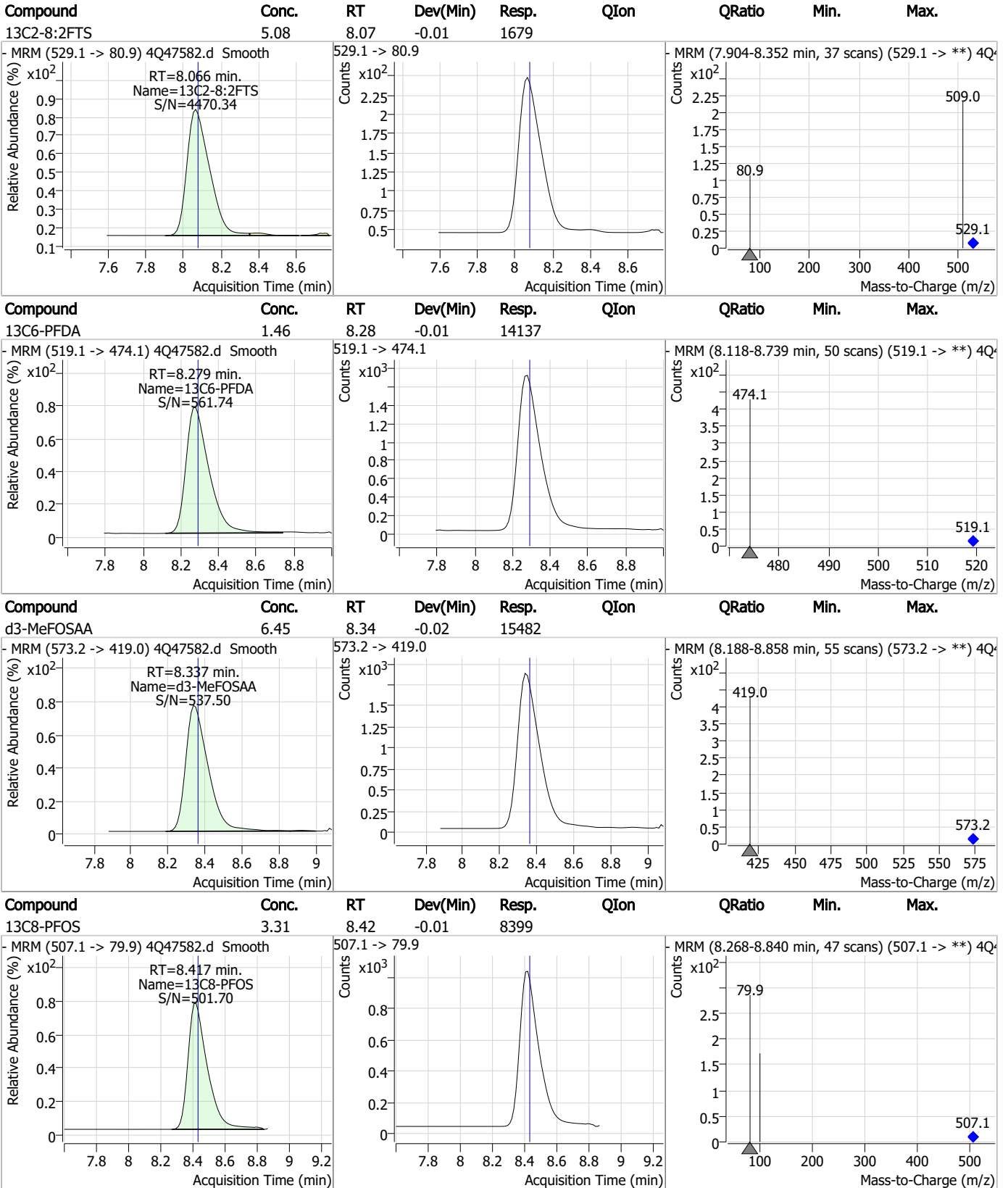
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

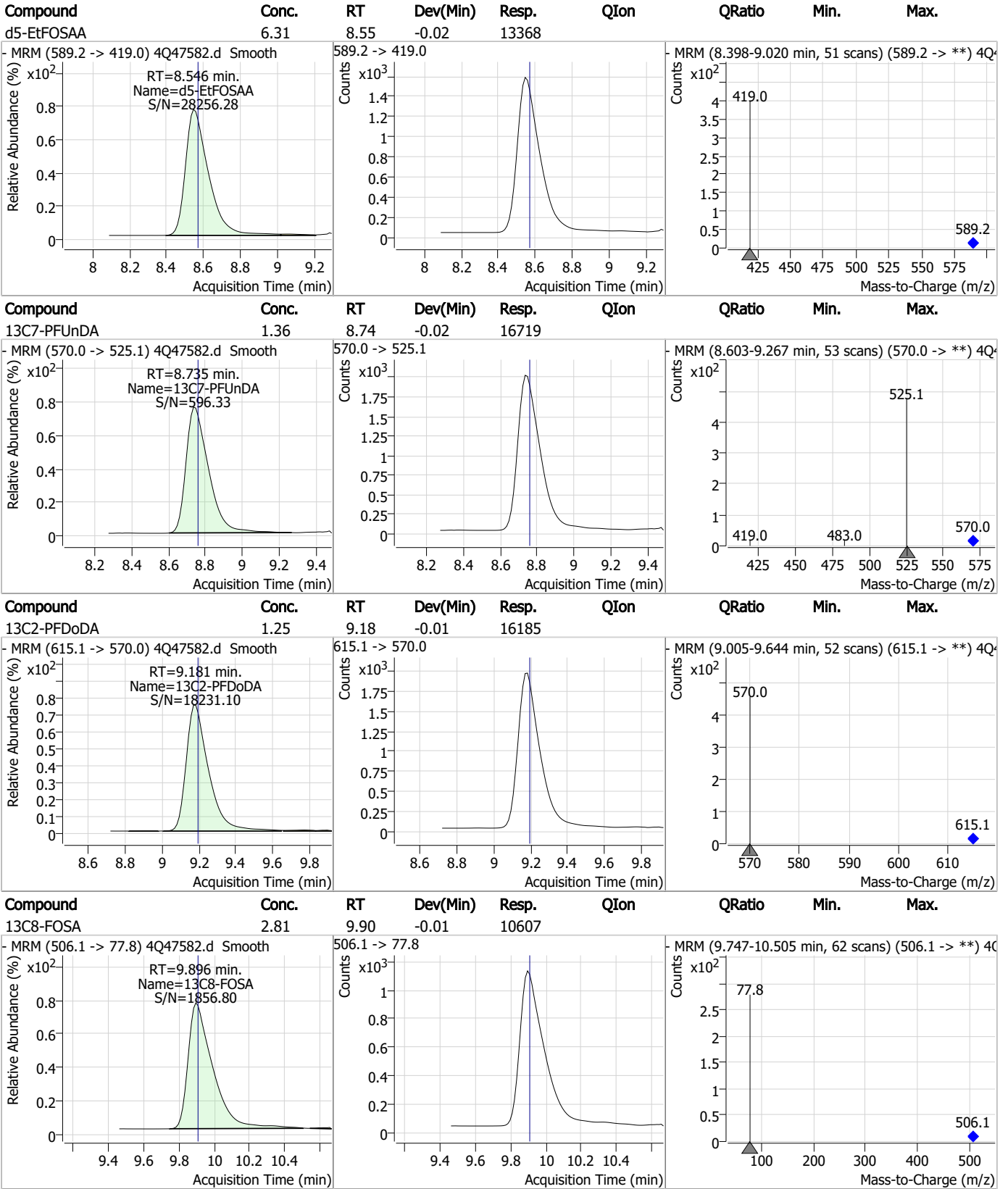


Perfluorinated Compounds by LC/MS/MS



7.1.7
7

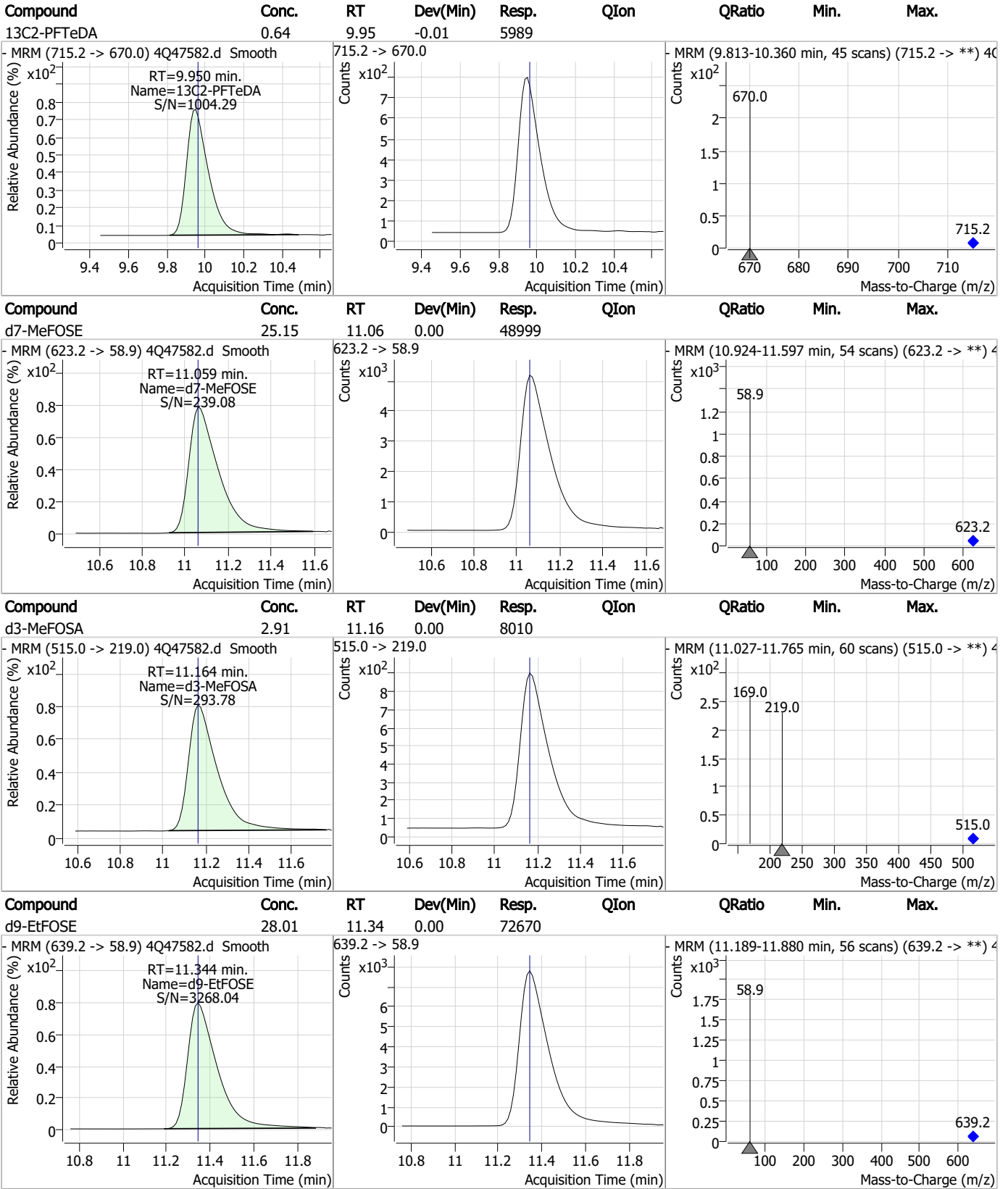
Perfluorinated Compounds by LC/MS/MS



7.1.7

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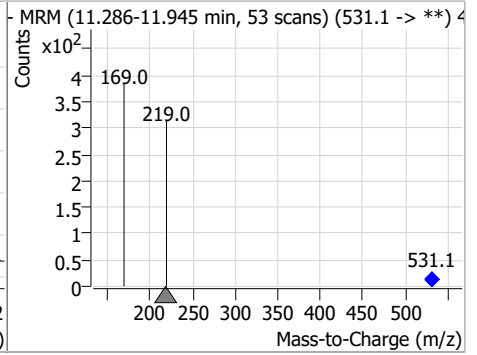
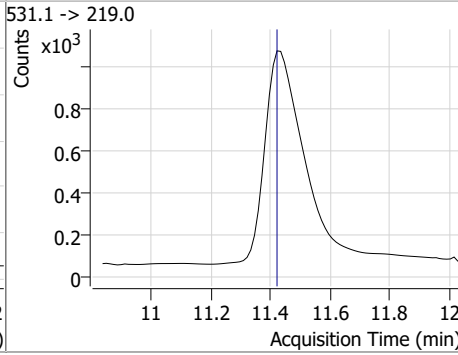
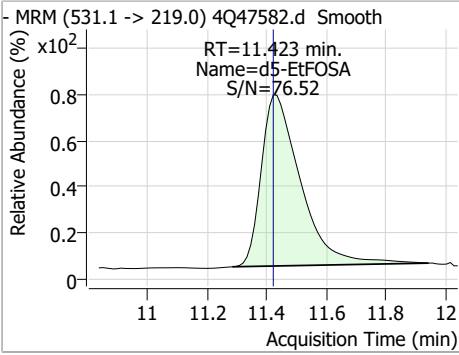
Perfluorinated Compounds by LC/MS/MS



7.1.7
7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	3.06	11.42	0.00	9165				



7.17
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47566.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 12:55:18 PM
 Sample Name : op97911-mb
 Vial : P2-E1
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q697.batch.bin
 Sample Information : OP97911,S4Q697,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	114966	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	59298	5.00 µg/L	0.000
M5-PFHxA	5.573	318.0 -> 273.0	40489	2.50 µg/L	-0.025
M4-PFHpA	6.530	367.1 -> 322.0	29121	2.50 µg/L	-0.025
M8-PFOA	7.199	421.1 -> 376.0	46525	2.50 µg/L	-0.037
M9-PFNA	7.746	472.1 -> 427.0	19840	1.25 µg/L	-0.038
M6-PFDA	8.241	519.1 -> 474.1	15322	1.25 µg/L	-0.051
M7-PFUnDA	8.710	570.0 -> 525.1	17681	1.25 µg/L	-0.050
M2-PFDoDA	9.143	615.1 -> 570.0	18800	1.25 µg/L	-0.051
M2-PFTeDA	9.925	715.2 -> 670.0	12642	1.25 µg/L	-0.037
M8-FOSA	9.871	506.1 -> 77.8	9951	2.50 µg/L	-0.037
M3-PFBS	5.454	302.1 -> 79.9	9983	2.50 µg/L	-0.025
M3-PFHxS	7.290	402.1 -> 79.9	7009	2.50 µg/L	-0.027
M8-PFOS	8.392	507.1 -> 79.9	8956	2.50 µg/L	-0.037
M2-4:2FTS	5.259	329.1 -> 80.9	620	5.00 µg/L	-0.025
M2-6:2FTS	6.962	429.1 -> 80.9	1677	5.00 µg/L	-0.037
M2-8:2FTS	8.041	529.1 -> 80.9	2236	5.00 µg/L	-0.037
M3-MeFOSAA	8.312	573.2 -> 419.0	16452	5.00 µg/L	-0.049
M3-HFPO-DA	5.940	286.9 -> 168.9	37595	10.00 µg/L	-0.025
M5-EtFOSAA	8.521	589.2 -> 419.0	13711	5.00 µg/L	-0.050
M7-MeFOSE	11.047	623.2 -> 58.9	46283	25.00 µg/L	-0.012
M9-EtFOSE	11.332	639.2 -> 58.9	74440	25.00 µg/L	-0.012
M5-EtFOSA	11.423	531.1 -> 219.0	8792	2.50 µg/L	0.000
M3-MeFOSA	11.152	515.0 -> 219.0	6932	2.50 µg/L	-0.012
13C4-PFOS	8.393	502.8 -> 79.9	7587	2.50 µg/L	-0.037
13C3-PFBA	2.916	216.0 -> 172.0	49210	5.00 µg/L	0.000
18O2-PFHxS	7.276	403.0 -> 83.9	4024	2.50 µg/L	-0.039
13C4-PFOA	7.200	417.1 -> 372.0	45841	2.50 µg/L	-0.037
13C2-PFDA	8.241	515.1 -> 470.1	14085	1.25 µg/L	-0.051
13C5-PFNA	7.759	468.0 -> 423.0	18205	1.25 µg/L	-0.025
13C2-PFHxA	5.574	315.1 -> 270.0	29805	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.259	329.1 -> 80.9	620	6.86 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 137.3%		
13C2-6:2FTS	6.962	429.1 -> 80.9	1677	8.47 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 169.4%		
13C2-8:2FTS	8.041	529.1 -> 80.9	2236	6.94 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 138.8%		
13C2-PFDoDA	9.143	615.1 -> 570.0	18800	1.44 µg/L	-0.051
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 114.9%		
13C2-PFTeDA	9.925	715.2 -> 670.0	12642	1.34 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.1%		
13C3-PFBS	5.454	302.1 -> 79.9	9983	3.24 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 129.6%		
13C3-PFHxS	7.290	402.1 -> 79.9	7009	3.11 µg/L	-0.027

7.2.1
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 = 124.2%	
13C4-PFBA	2.911	216.8 -> 171.9	114966	12.36 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 123.6%	
13C4-PFHpA	6.530	367.1 -> 322.0	29121	3.18 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 127.3%	
13C5-PFHxA	5.573	318.0 -> 273.0	40489	3.18 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 127.0%	
13C5-PFPeA	4.387	268.3 -> 223.0	59298	7.21 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 144.2%	
13C6-PFDA	8.241	519.1 -> 474.1	15322	1.57 µg/L	-0.051
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 125.7%	
13C7-PFUnDA	8.710	570.0 -> 525.1	17681	1.43 µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 114.2%	
13C8-FOSA	9.871	506.1 -> 77.8	9951	2.53 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C8-PFOA	7.199	421.1 -> 376.0	46525	3.12 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 124.8%	
13C8-PFOS	8.392	507.1 -> 79.9	8956	3.40 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 135.9%	
13C9-PFNA	7.746	472.1 -> 427.0	19840	1.63 µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 130.4%	
d3-MeFOSAA	8.312	573.2 -> 419.0	16452	6.59 µg/L	-0.049
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 131.9%	
13C3-HFPO-DA	5.940	286.9 -> 168.9	37595	11.84 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 118.4%	
d3-MeFOSA	11.152	515.0 -> 219.0	6932	2.42 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.9%	
d5-EtFOSAA	8.521	589.2 -> 419.0	13711	6.23 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 124.6%	
d7-MeFOSE	11.047	623.2 -> 58.9	46283	22.86 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 91.4%	
d9-EtFOSE	11.332	639.2 -> 58.9	74440	27.62 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 110.5%	
d5-EtFOSA	11.423	531.1 -> 219.0	8792	2.83 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 113.2%	

Target Compounds

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



7.2.1
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	7.552	548.8 -> 98.9	0	µg/L	m	1
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	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

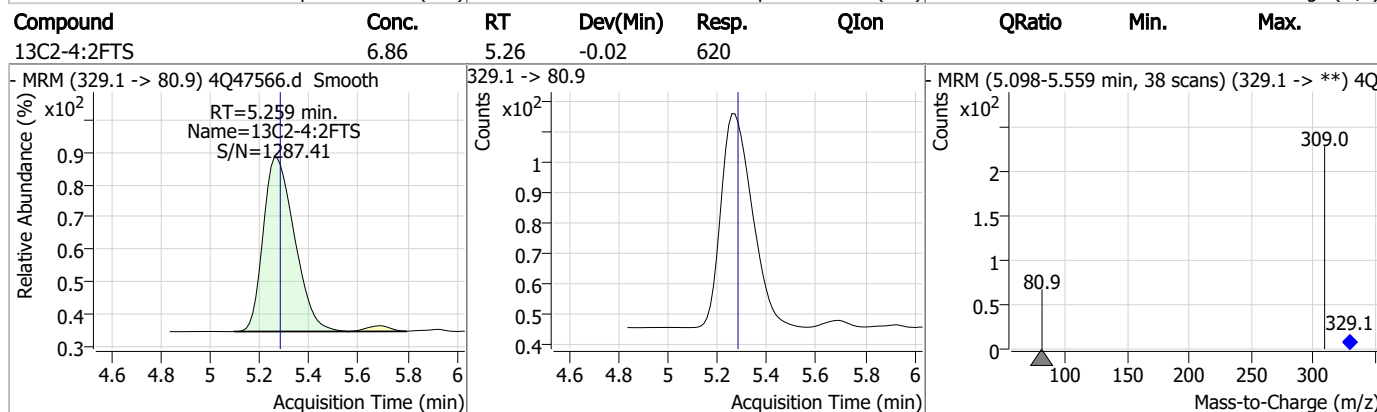
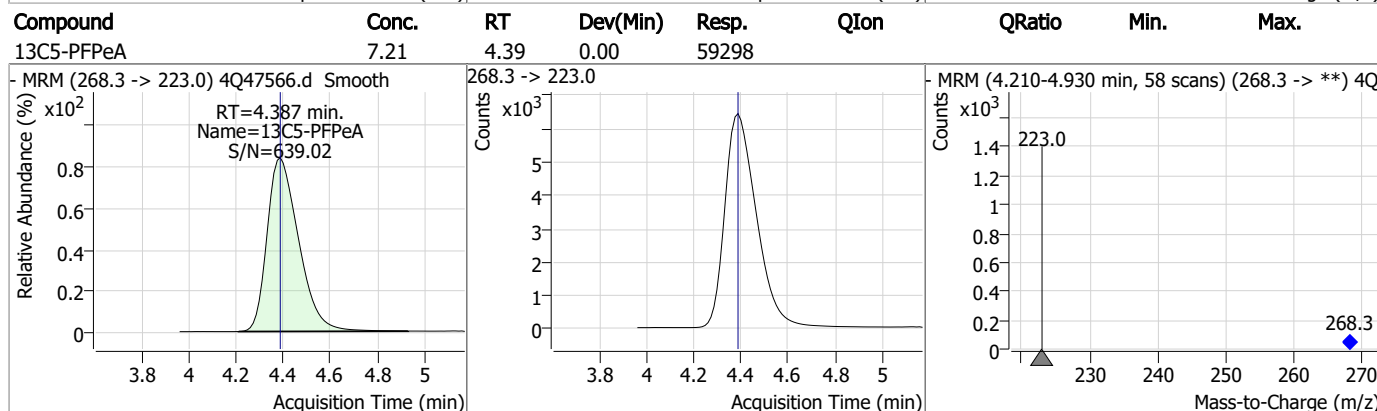
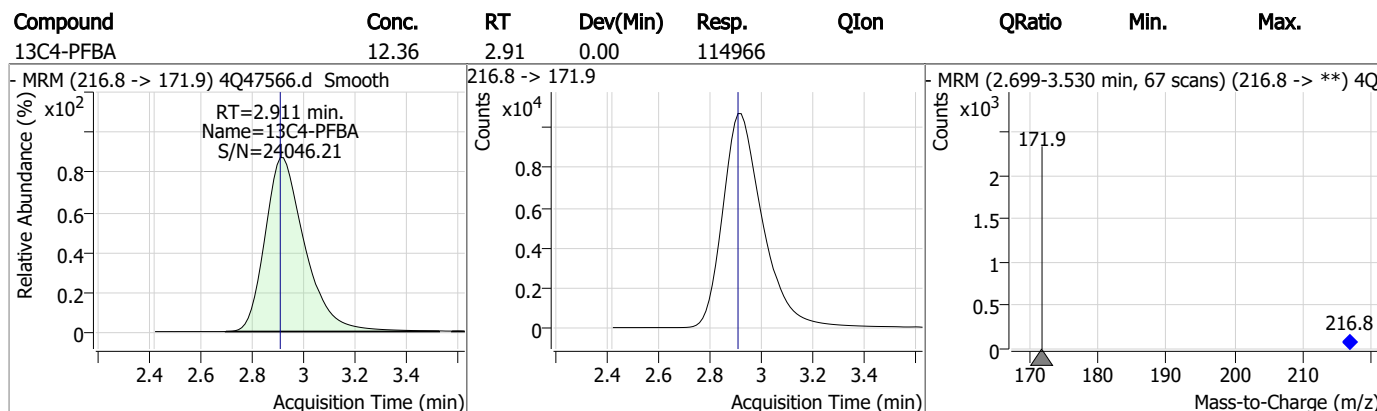
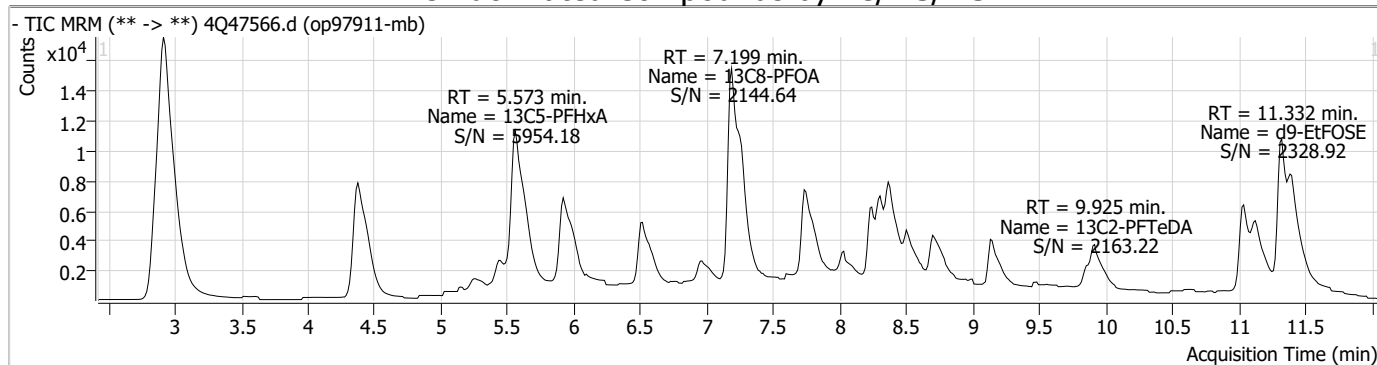
Perfluorinated Compounds by LC/MS/MS

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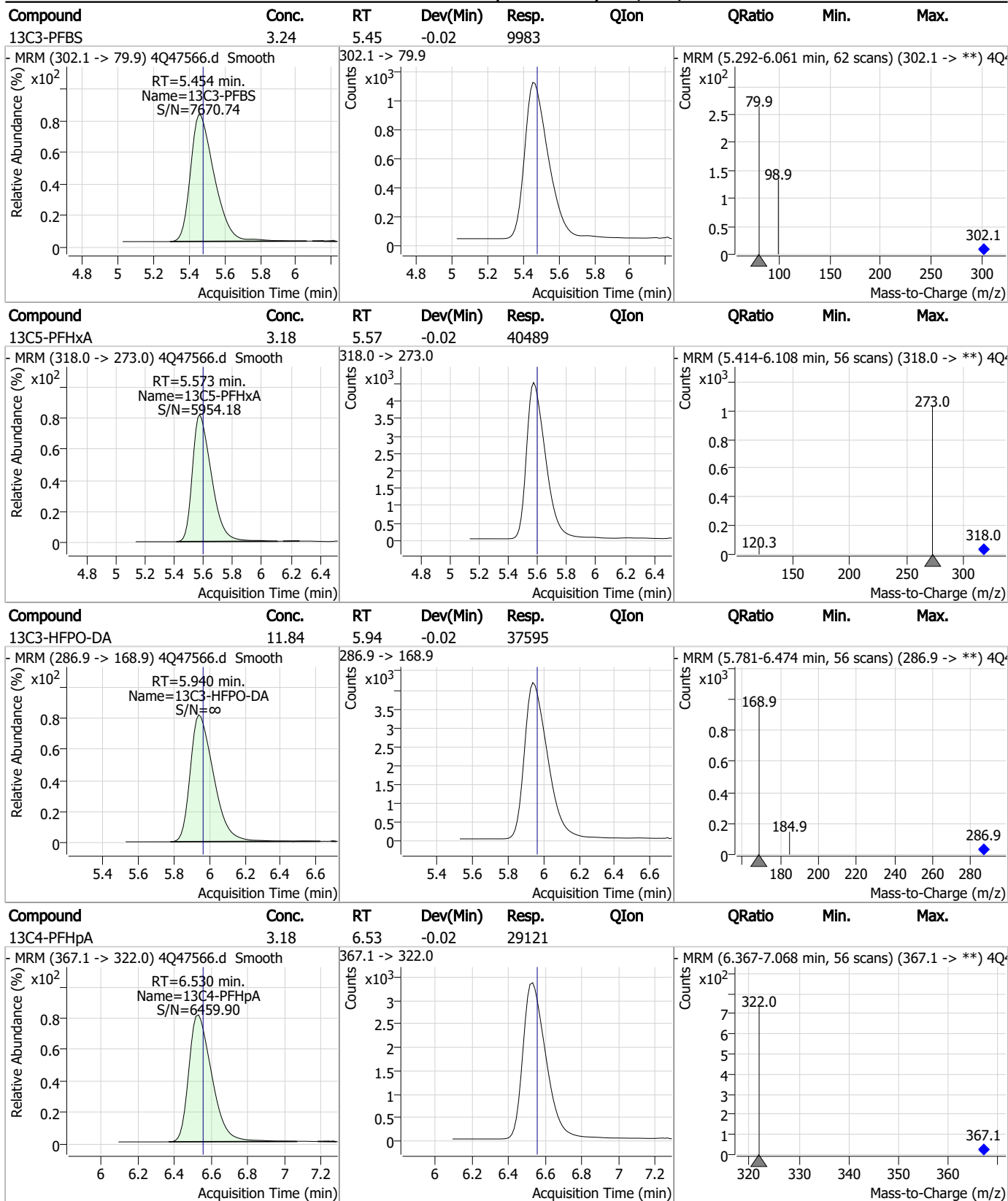
7.2.1

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Perfluorinated Compounds by LC/MS/MS



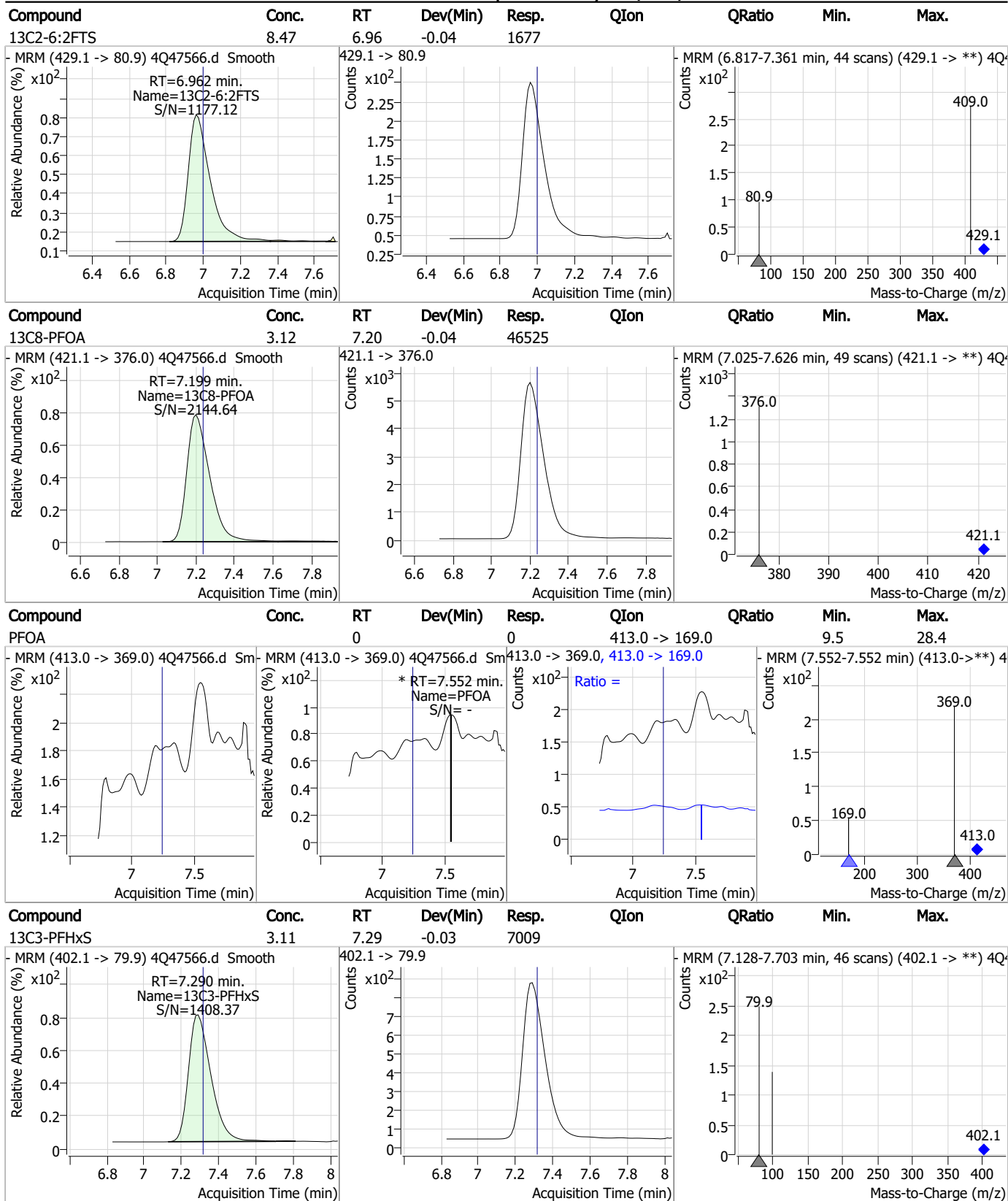
Perfluorinated Compounds by LC/MS/MS



7.2.1
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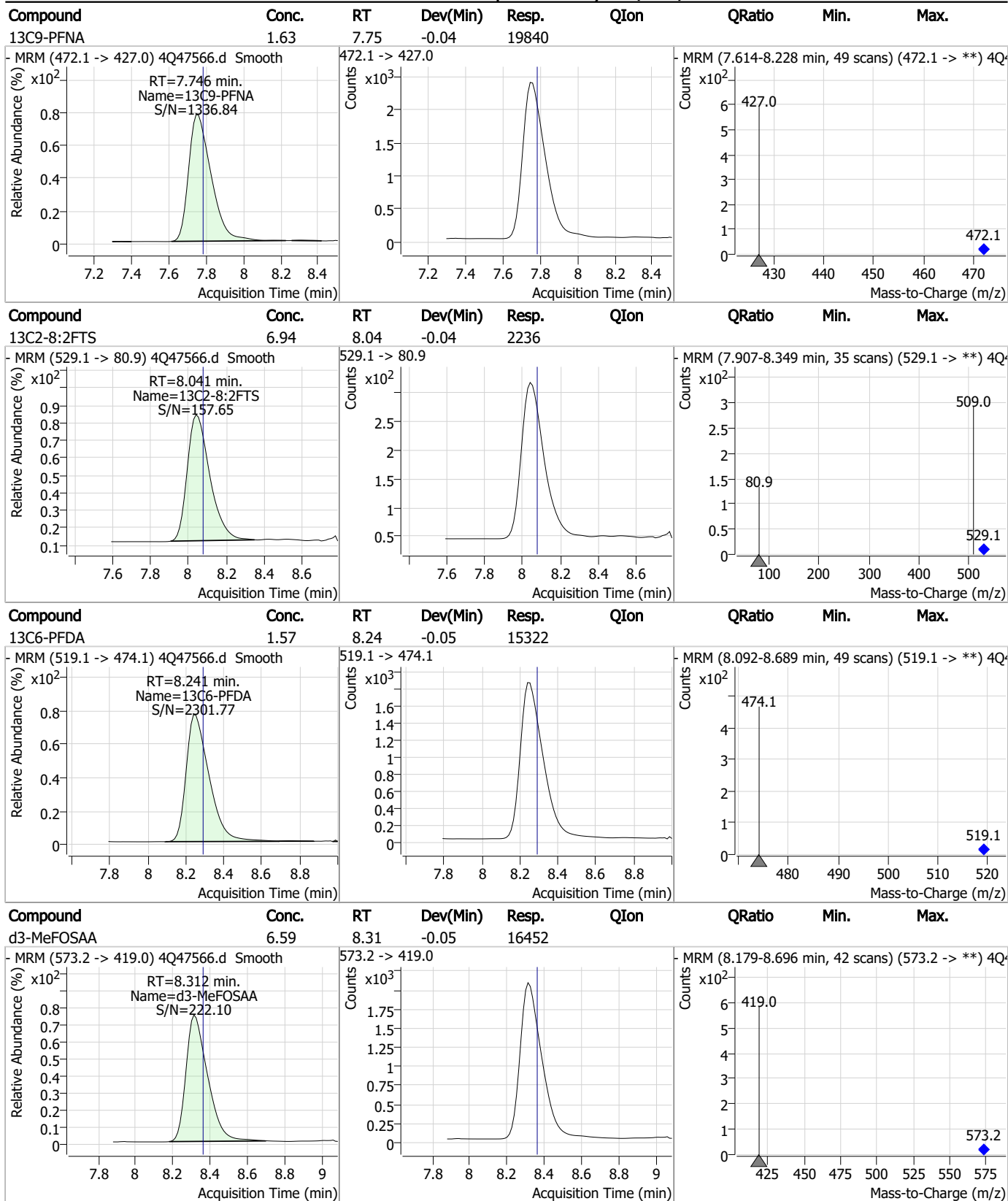


Perfluorinated Compounds by LC/MS/MS



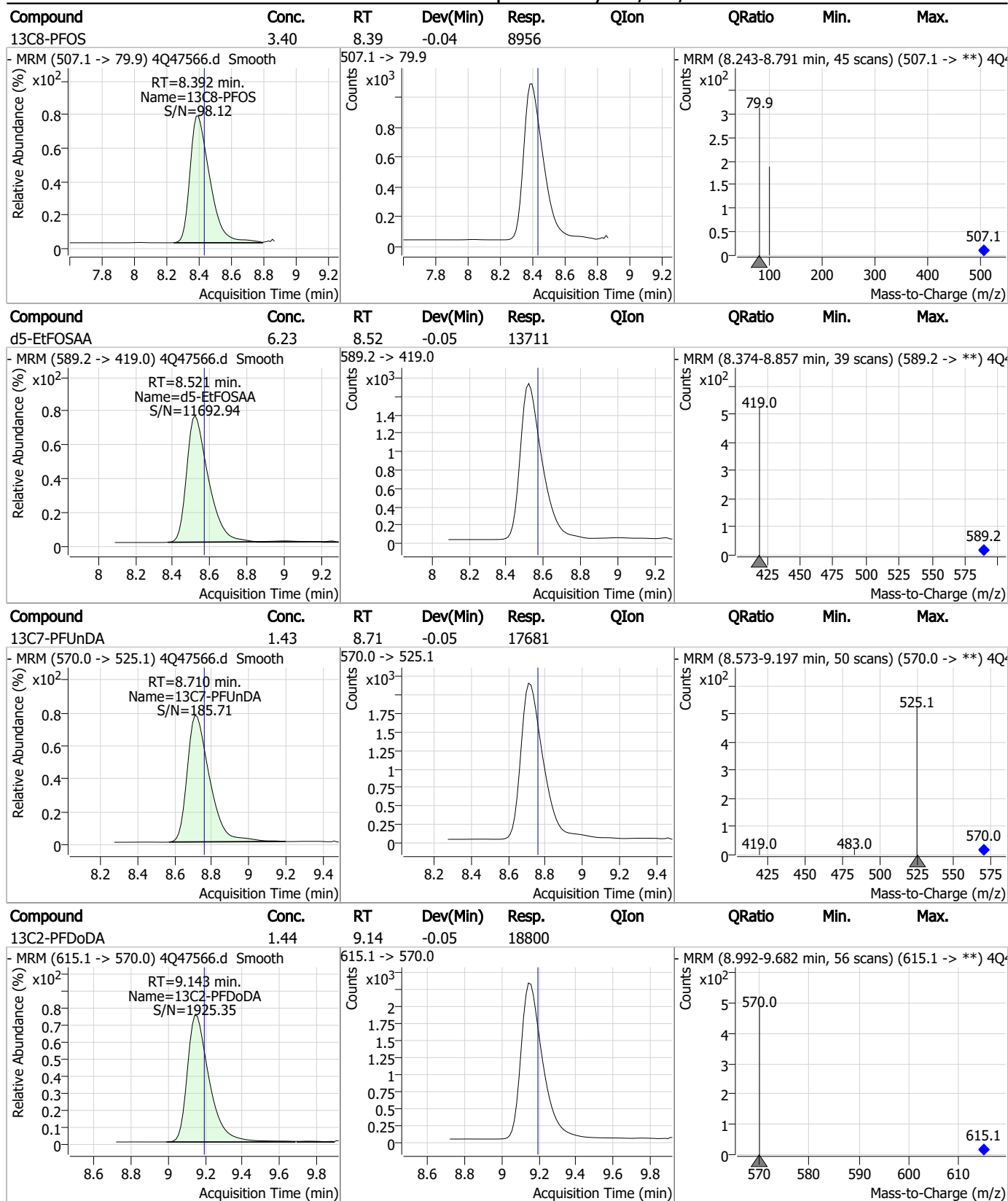
7.2.1
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Perfluorinated Compounds by LC/MS/MS



7.2.1
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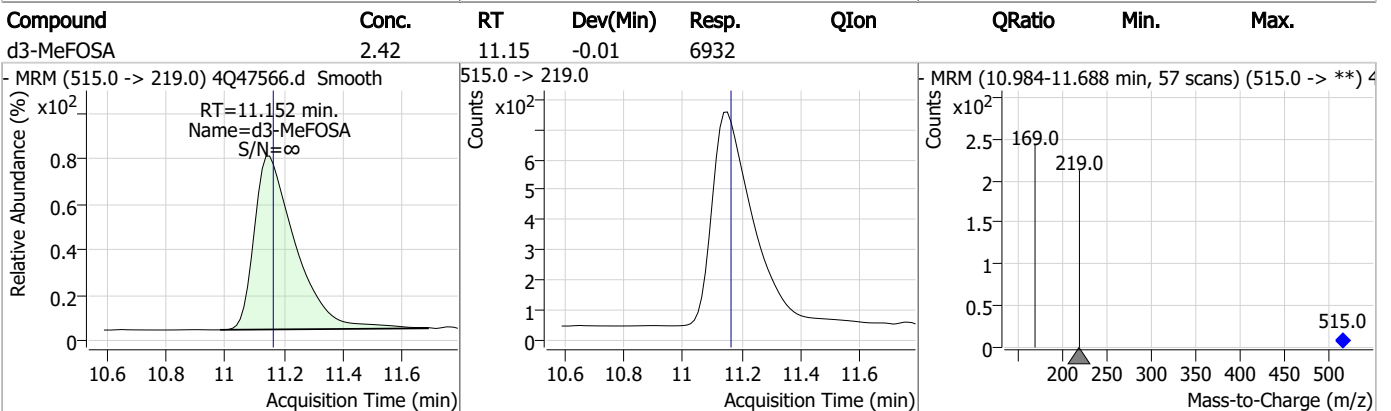
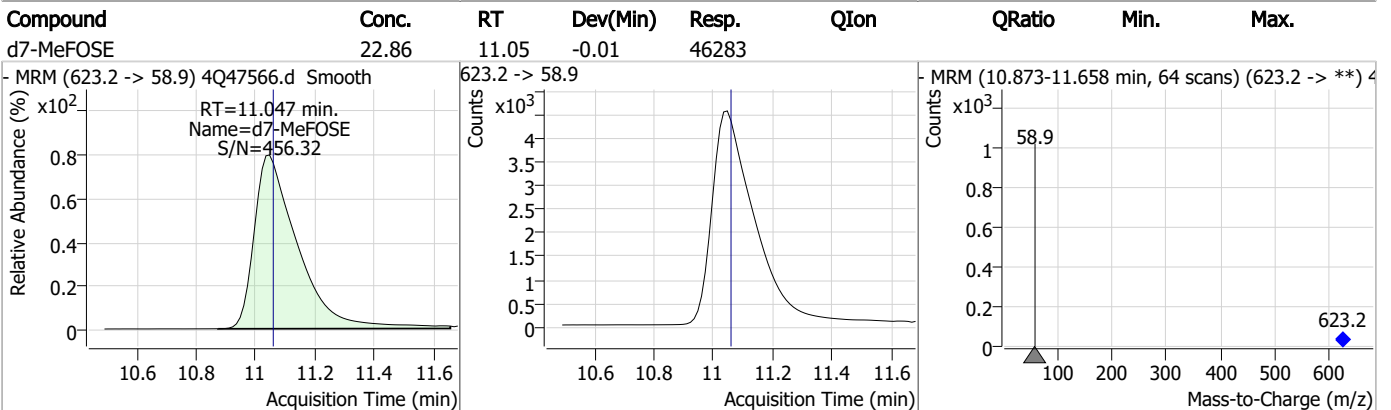
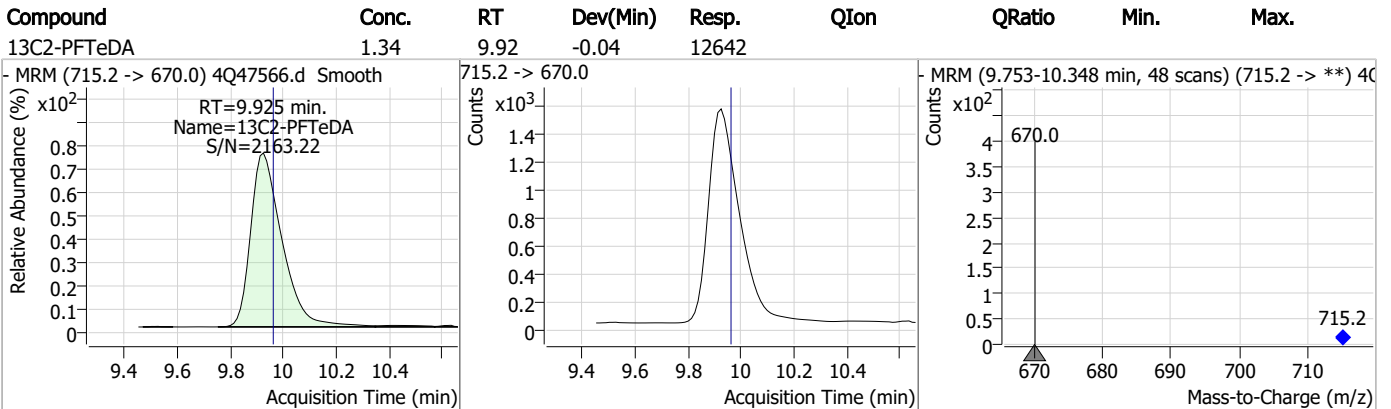
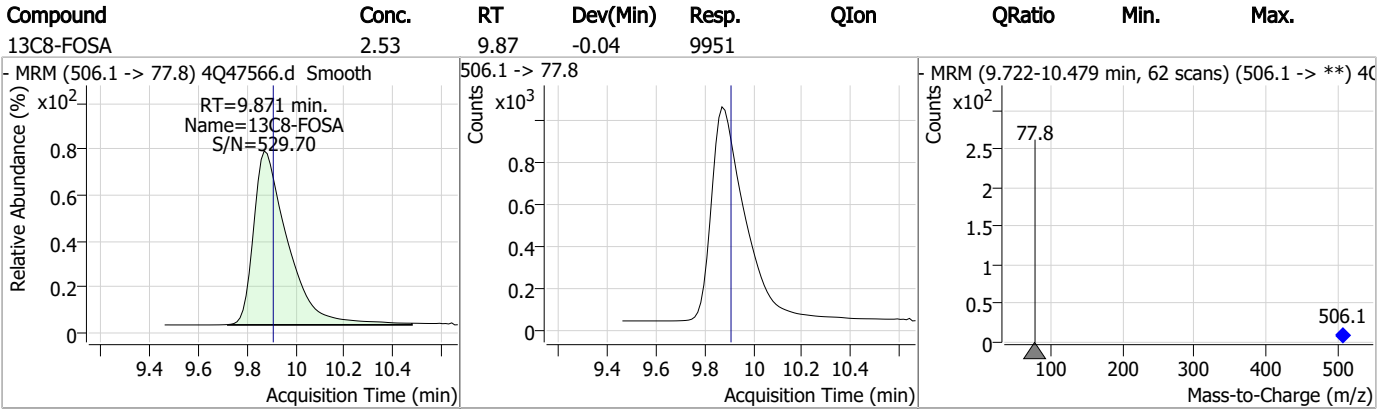
Perfluorinated Compounds by LC/MS/MS



7.2.1
7

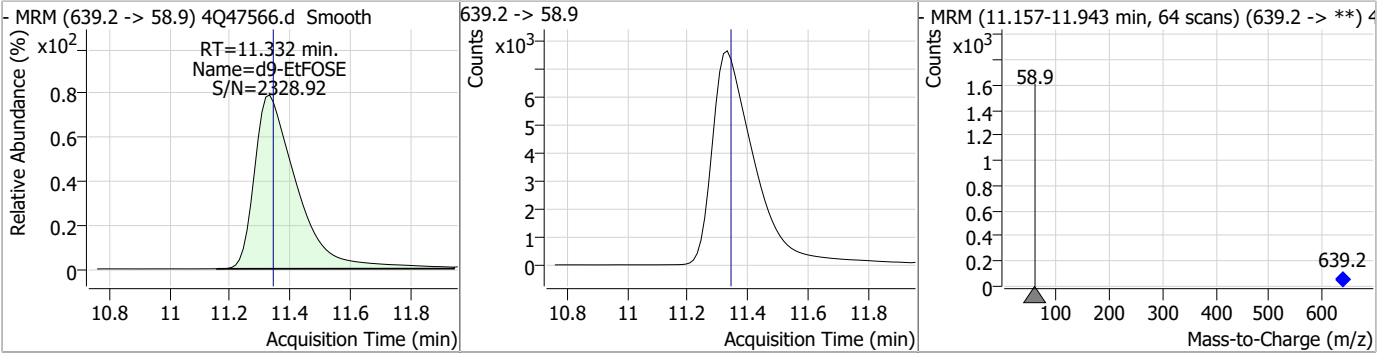


Perfluorinated Compounds by LC/MS/MS

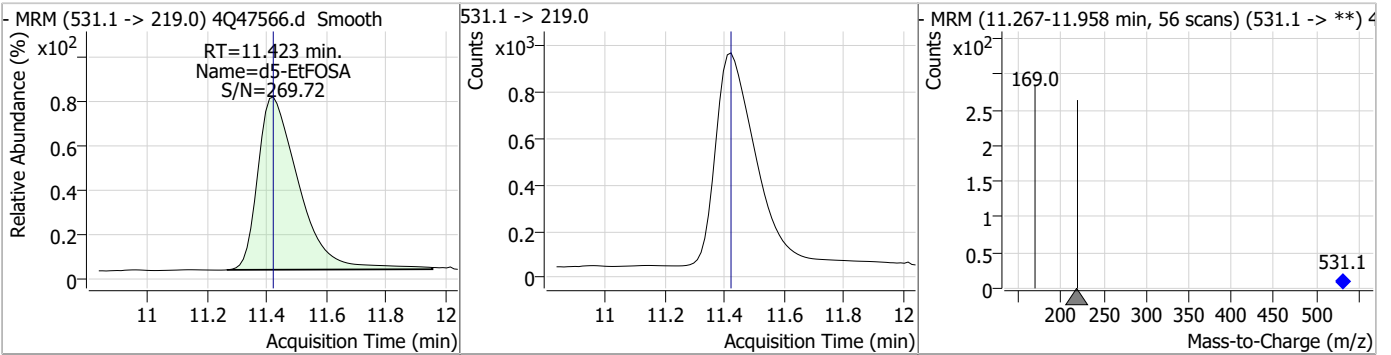


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	27.62	11.33	-0.01	74440				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.83	11.42	0.00	8792				



7.2.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47561.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 11:41:31 AM
 Sample Name : iblk
 Vial : P1-A1
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q697.batch.bin
 Sample Information : OP97749,S4Q697,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	107848	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	59052	5.00 µg/L	-0.012
M5-PFHxA	5.573	318.0 -> 273.0	38054	2.50 µg/L	-0.025
M4-PFHpA	6.515	367.1 -> 322.0	27823	2.50 µg/L	-0.040
M8-PFOA	7.199	421.1 -> 376.0	44977	2.50 µg/L	-0.037
M9-PFNA	7.746	472.1 -> 427.0	19886	1.25 µg/L	-0.038
M6-PFDA	8.253	519.1 -> 474.1	15039	1.25 µg/L	-0.038
M7-PFUnDA	8.723	570.0 -> 525.1	17656	1.25 µg/L	-0.037
M2-PFDoDA	9.157	615.1 -> 570.0	18986	1.25 µg/L	-0.037
M2-PFTeDA	9.925	715.2 -> 670.0	13273	1.25 µg/L	-0.037
M8-FOSA	9.884	506.1 -> 77.8	13234	2.50 µg/L	-0.025
M3-PFBS	5.454	302.1 -> 79.9	9330	2.50 µg/L	-0.025
M3-PFHxS	7.277	402.1 -> 79.9	6530	2.50 µg/L	-0.039
M8-PFOS	8.392	507.1 -> 79.9	8711	2.50 µg/L	-0.037
M2-4:2FTS	5.247	329.1 -> 80.9	657	5.00 µg/L	-0.037
M2-6:2FTS	6.962	429.1 -> 80.9	1331	5.00 µg/L	-0.037
M2-8:2FTS	8.041	529.1 -> 80.9	2073	5.00 µg/L	-0.037
M3-MeFOSAA	8.324	573.2 -> 419.0	16757	5.00 µg/L	-0.037
M3-HFPO-DA	5.940	286.9 -> 168.9	37464	10.00 µg/L	-0.025
M5-EtFOSAA	8.521	589.2 -> 419.0	13445	5.00 µg/L	-0.050
M7-MeFOSE	11.047	623.2 -> 58.9	66350	25.00 µg/L	-0.012
M9-EtFOSE	11.332	639.2 -> 58.9	92520	25.00 µg/L	-0.012
M5-EtFOSA	11.423	531.1 -> 219.0	10280	2.50 µg/L	0.000
M3-MeFOSA	11.152	515.0 -> 219.0	8734	2.50 µg/L	-0.012
13C4-PFOS	8.393	502.8 -> 79.9	8907	2.50 µg/L	-0.037
13C3-PFBA	2.916	216.0 -> 172.0	57898	5.00 µg/L	0.000
18O2-PFHxS	7.288	403.0 -> 83.9	4444	2.50 µg/L	-0.027
13C4-PFOA	7.200	417.1 -> 372.0	53576	2.50 µg/L	-0.037
13C2-PFDA	8.254	515.1 -> 470.1	16915	1.25 µg/L	-0.038
13C5-PFNA	7.746	468.0 -> 423.0	22532	1.25 µg/L	-0.038
13C2-PFHxA	5.574	315.1 -> 270.0	35280	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	657	6.58 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 131.6%		
13C2-6:2FTS	6.962	429.1 -> 80.9	1331	6.08 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.7%		
13C2-8:2FTS	8.041	529.1 -> 80.9	2073	5.83 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.5%		
13C2-PFDoDA	9.157	615.1 -> 570.0	18986	1.21 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.6%		
13C2-PFTeDA	9.925	715.2 -> 670.0	13273	1.17 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.6%		
13C3-PFBS	5.454	302.1 -> 79.9	9330	2.74 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.7%		
13C3-PFHxS	7.277	402.1 -> 79.9	6530	2.62 µg/L	-0.039

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.8%	
13C4-PFBA	2.911	216.8 -> 171.9	107848	9.86 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C4-PFHpA	6.515	367.1 -> 322.0	27823	2.57 µg/L	-0.040
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.8%	
13C5-PFHxA	5.573	318.0 -> 273.0	38054	2.52 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C5-PFPeA	4.375	268.3 -> 223.0	59052	6.06 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 121.3%	
13C6-PFDA	8.253	519.1 -> 474.1	15039	1.28 µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C7-PFUnDA	8.723	570.0 -> 525.1	17656	1.19 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.0%	
13C8-FOSA	9.884	506.1 -> 77.8	13234	2.87 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 114.9%	
13C8-PFOA	7.199	421.1 -> 376.0	44977	2.58 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.2%	
13C8-PFOS	8.392	507.1 -> 79.9	8711	2.82 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.6%	
13C9-PFNA	7.746	472.1 -> 427.0	19886	1.32 µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.6%	
d3-MeFOSAA	8.324	573.2 -> 419.0	16757	5.72 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.4%	
13C3-HFPO-DA	5.940	286.9 -> 168.9	37464	9.96 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.6%	
d3-MeFOSA	11.152	515.0 -> 219.0	8734	2.60 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.0%	
d5-EtFOSAA	8.521	589.2 -> 419.0	13445	5.20 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.0%	
d7-MeFOSE	11.047	623.2 -> 58.9	66350	27.91 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 111.7%	
d9-EtFOSE	11.332	639.2 -> 58.9	92520	29.23 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 116.9%	
d5-EtFOSA	11.423	531.1 -> 219.0	10280	2.82 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.7%	

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

7.2.2
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	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	11.399	526.0 -> 219.0	587	0.11 µg/L	m	73
		526.0 -> 169.0	625			
EtFOSE	-	630.0 -> 58.9	-	N.D.		
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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



7.2.2
7

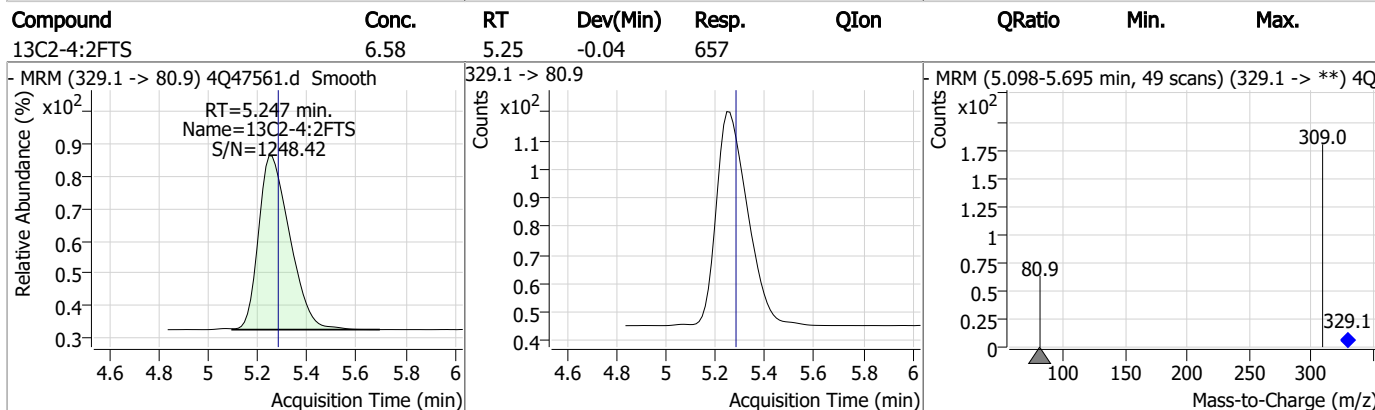
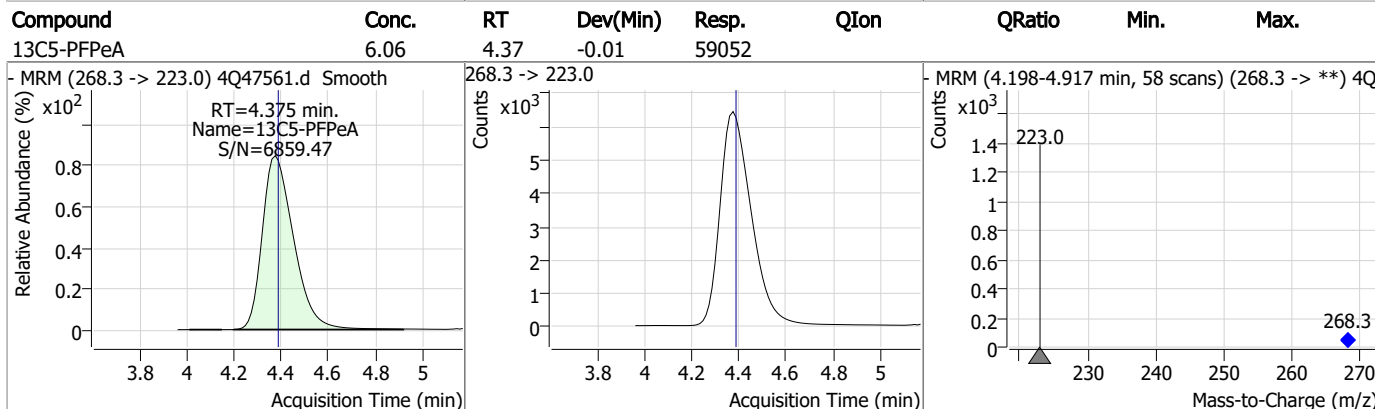
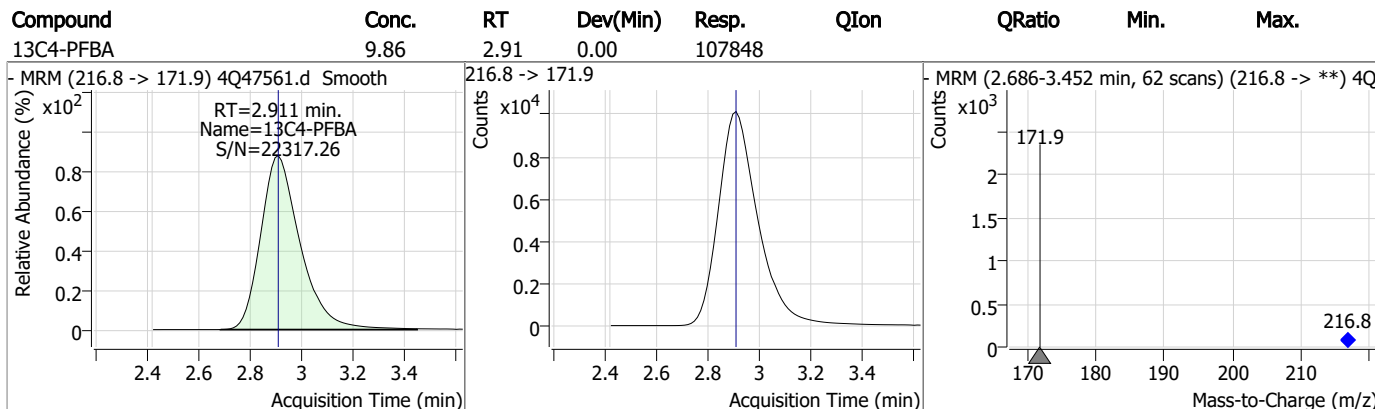
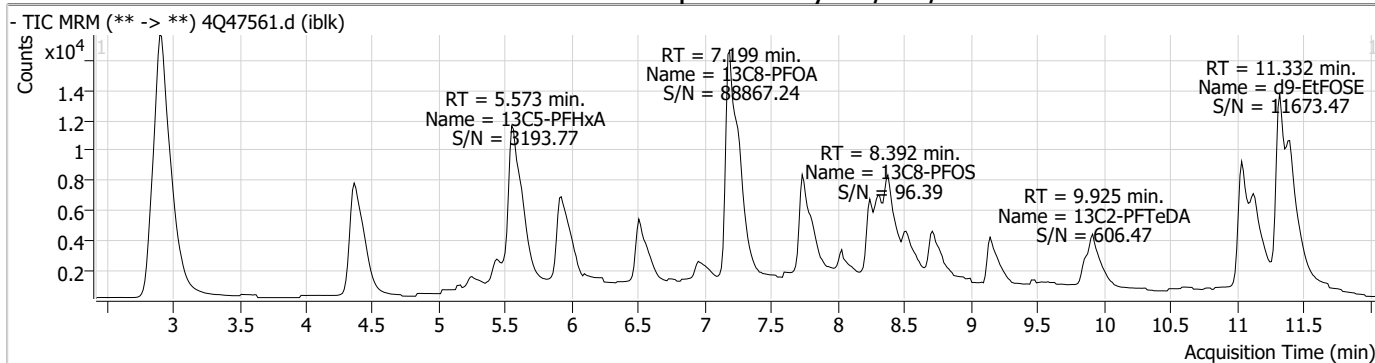
Perfluorinated Compounds by LC/MS/MS

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

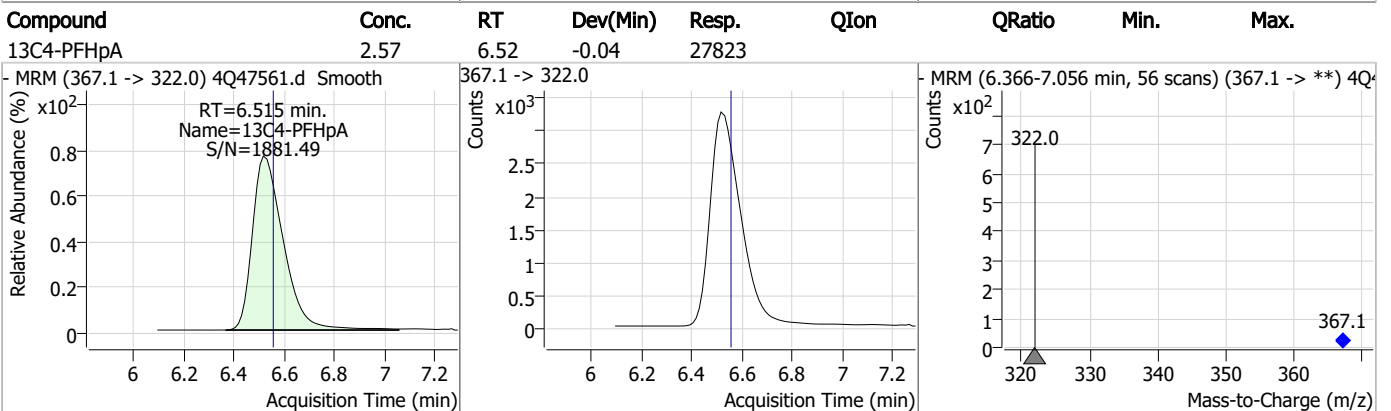
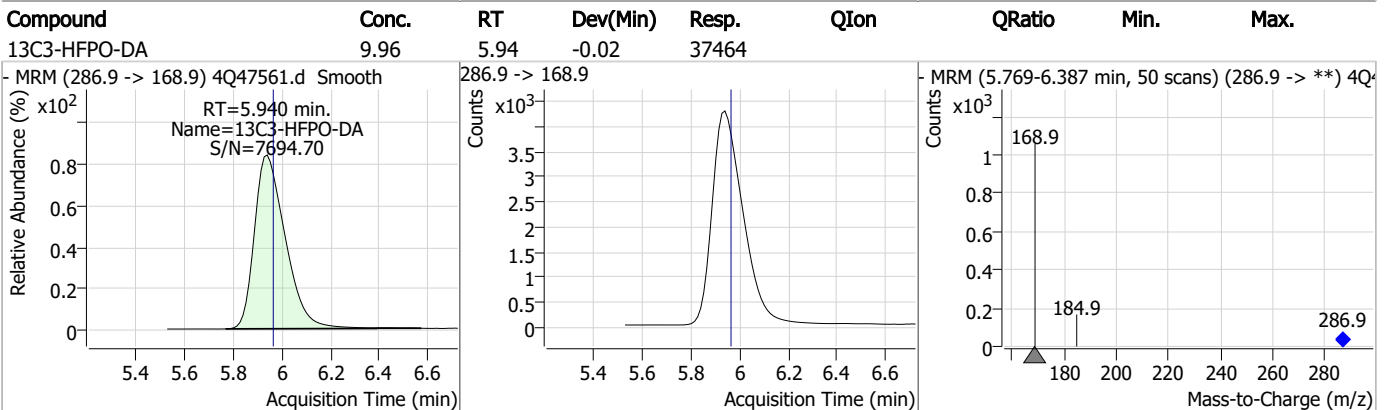
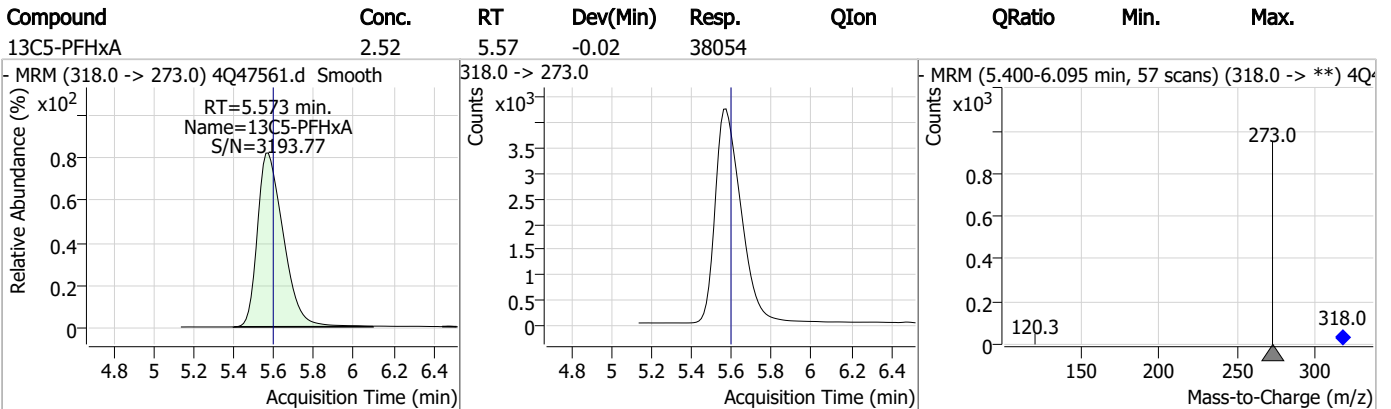
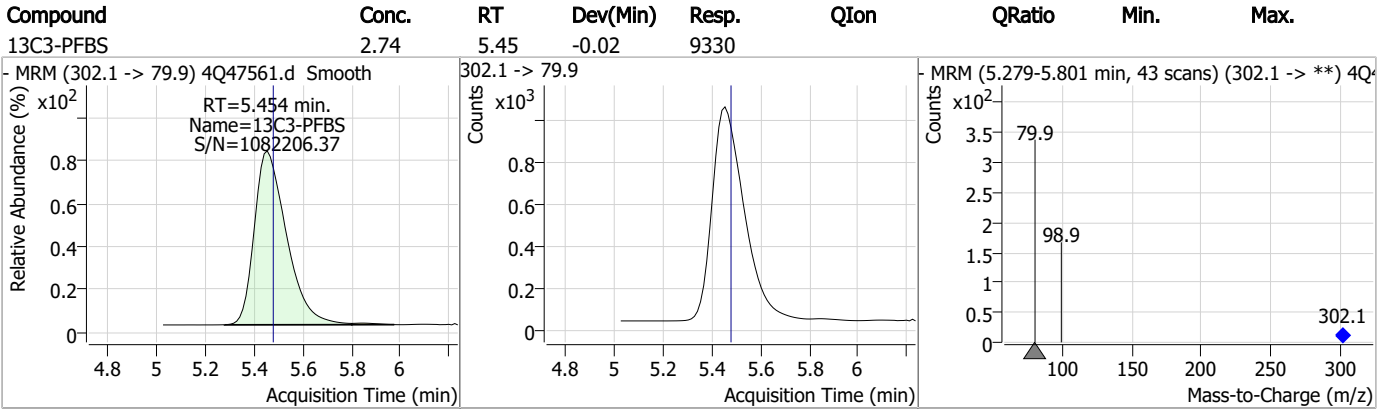
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Perfluorinated Compounds by LC/MS/MS

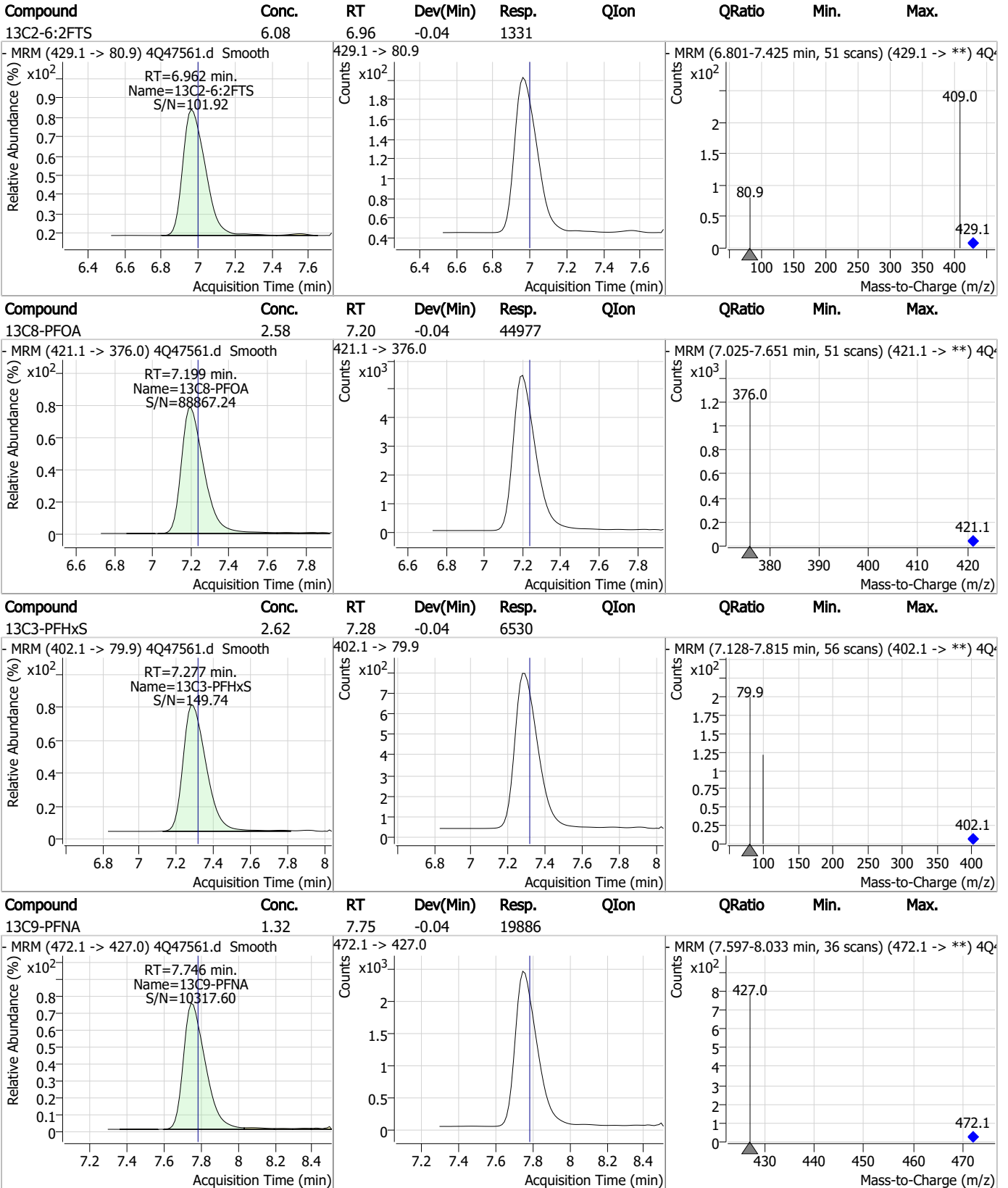


7.2.2
7

Perfluorinated Compounds by LC/MS/MS



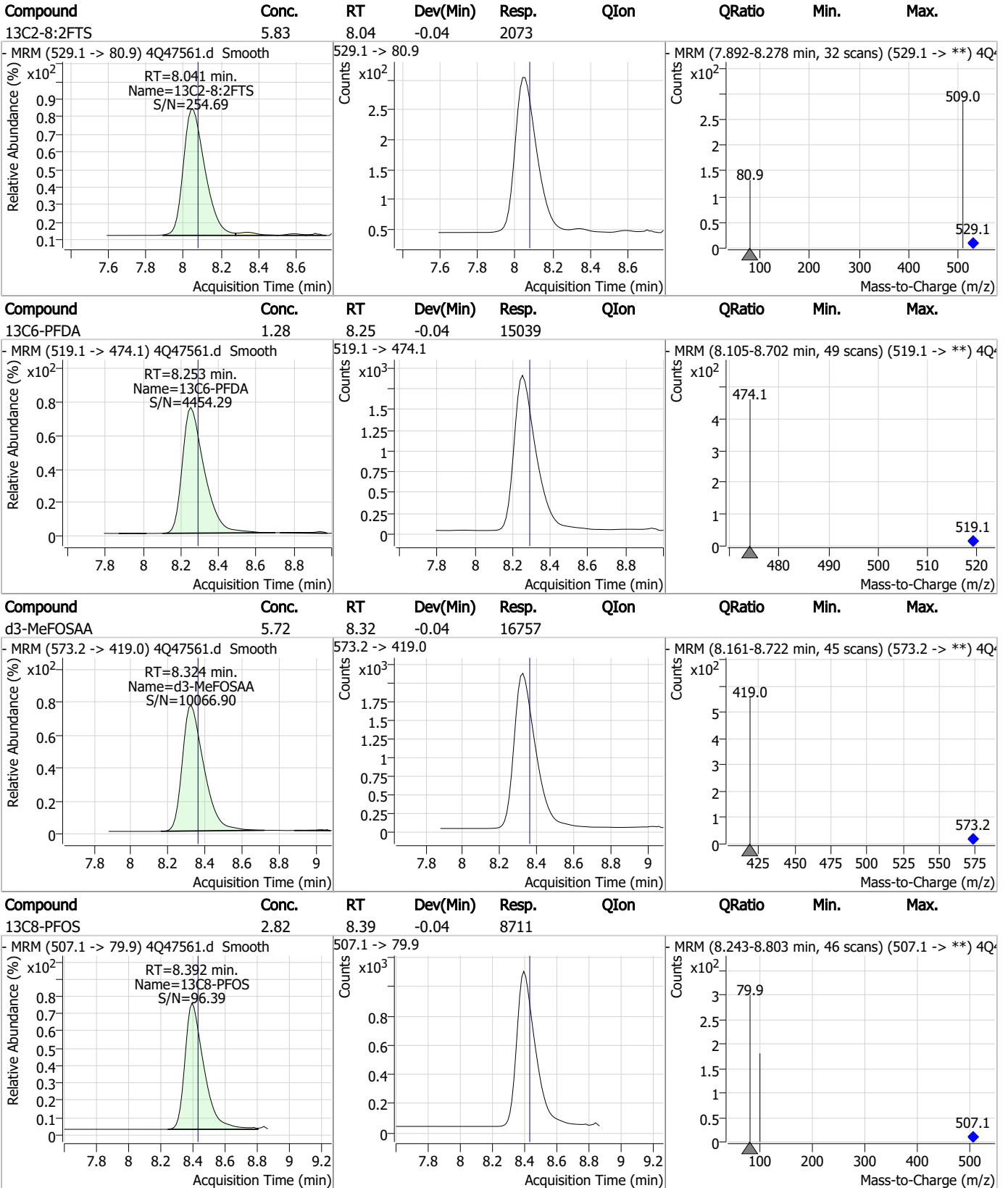
Perfluorinated Compounds by LC/MS/MS



7.2.2

7

Perfluorinated Compounds by LC/MS/MS

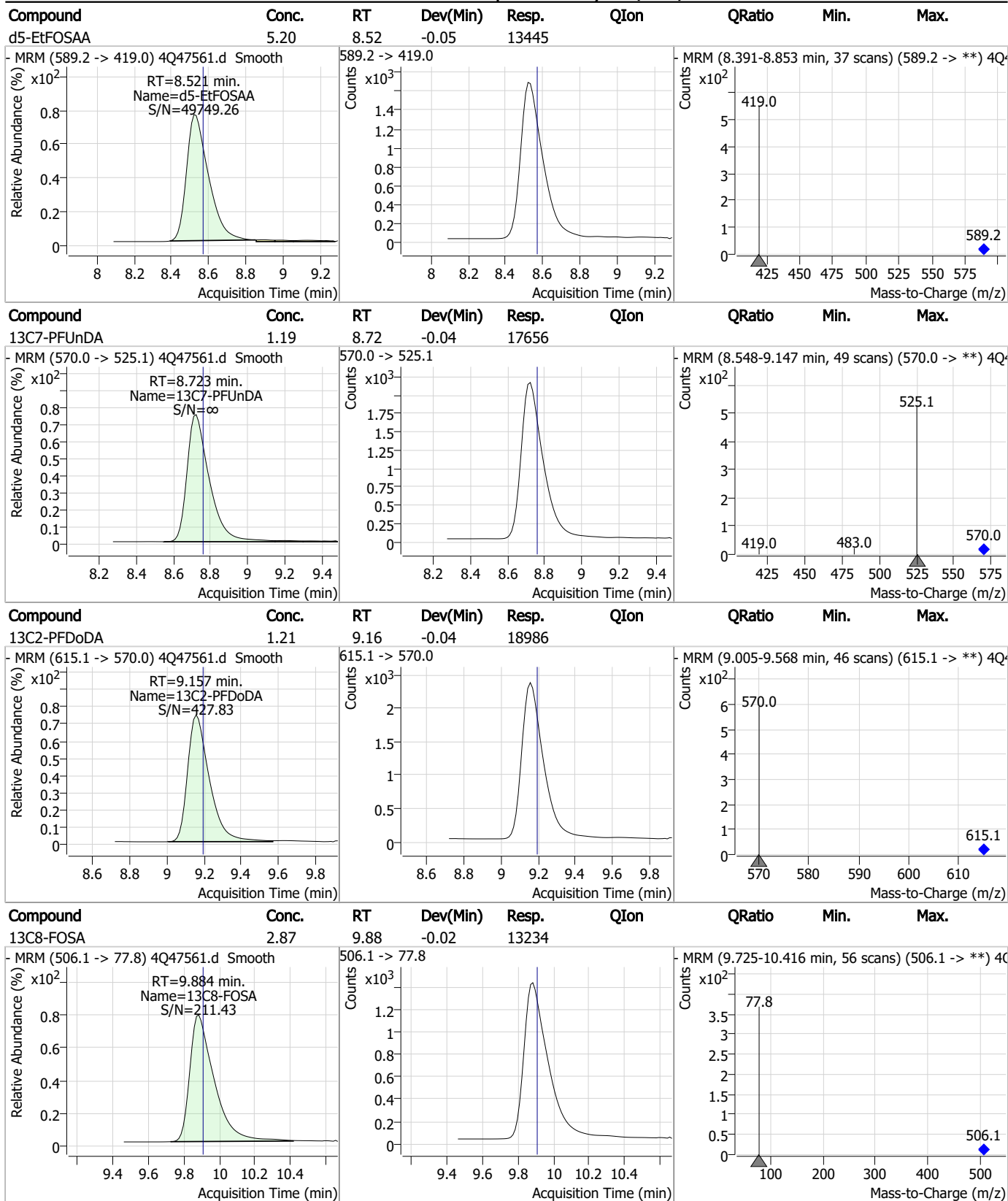


7.2.2

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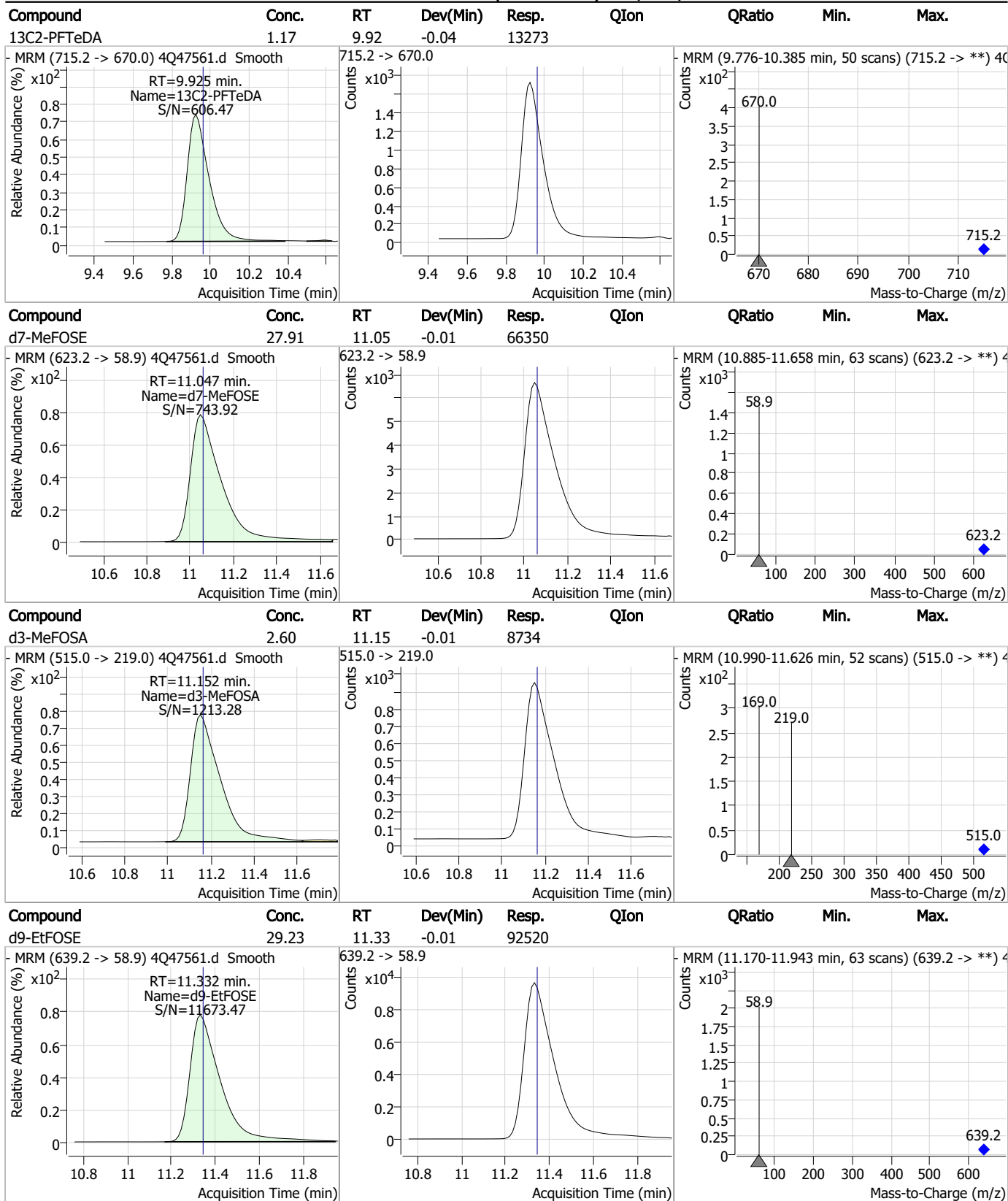


Perfluorinated Compounds by LC/MS/MS



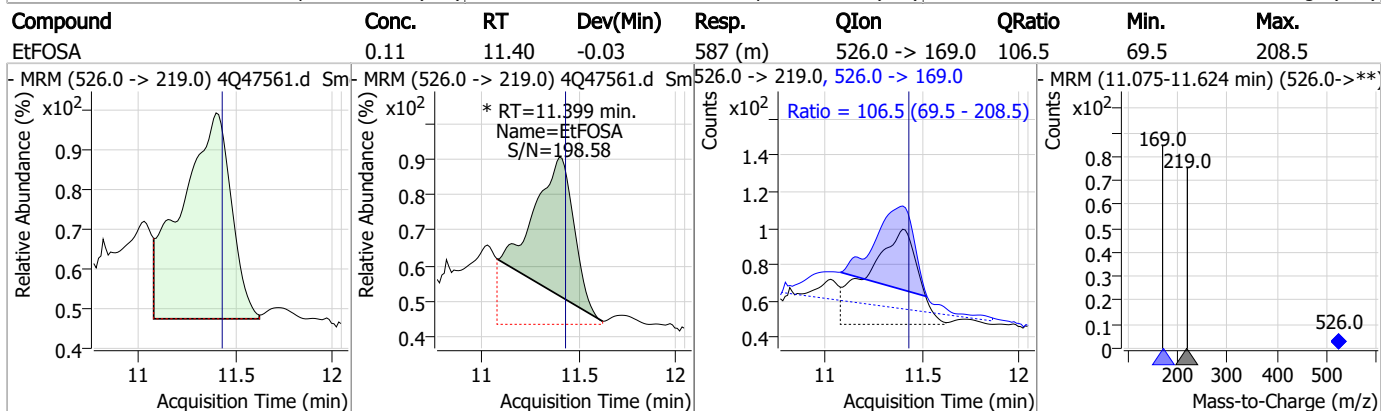
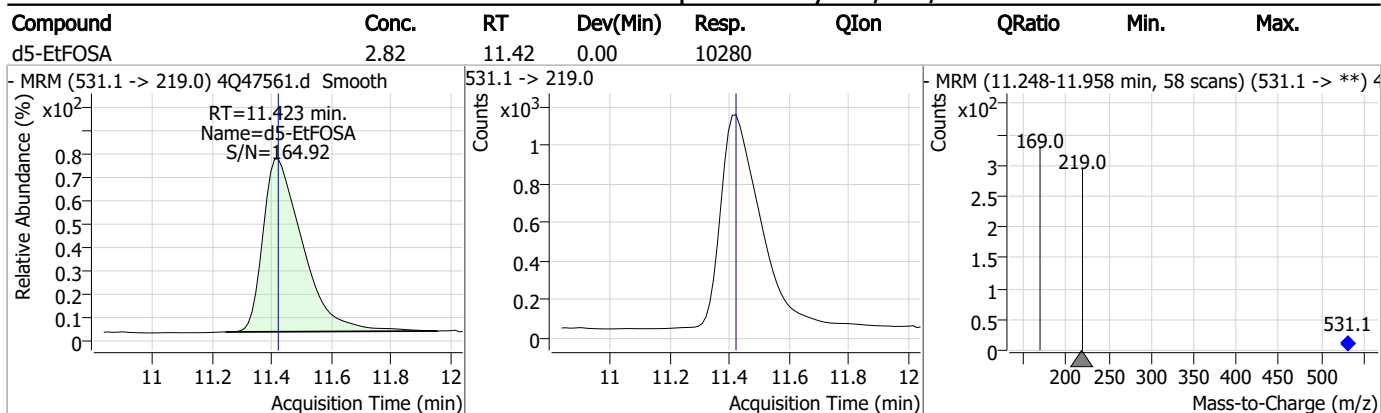
7.2.2
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Perfluorinated Compounds by LC/MS/MS



7.2.2
7

Perfluorinated Compounds by LC/MS/MS



7.22
7

Manual Integration Approval Summary

Sample Number: S4Q697-IBLK Method: EPA DRAFT 1633
Lab FileID: 4Q47561.D Analyst approved: 07/20/23 12:46 Anna Ludwig
Injection Time: 07/19/23 11:41 Supervisor approved: 07/20/23 15:43 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
EiFOSA	4151-50-2		11.40	Split peak

7.2.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47575.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 3:07:58 PM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q697.batch.bin
 Sample Information : OP97749,S4Q697,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	112101	10.00 µg/L	0.012
M5-PFPeA	4.387	268.3 -> 223.0	60368	5.00 µg/L	0.000
M5-PFHxA	5.573	318.0 -> 273.0	38179	2.50 µg/L	-0.025
M4-PFHpA	6.530	367.1 -> 322.0	28772	2.50 µg/L	-0.025
M8-PFOA	7.199	421.1 -> 376.0	46786	2.50 µg/L	-0.037
M9-PFNA	7.759	472.1 -> 427.0	20067	1.25 µg/L	-0.025
M6-PFDA	8.253	519.1 -> 474.1	14581	1.25 µg/L	-0.038
M7-PFUnDA	8.710	570.0 -> 525.1	18569	1.25 µg/L	-0.050
M2-PFDoDA	9.157	615.1 -> 570.0	18678	1.25 µg/L	-0.037
M2-PFTeDA	9.925	715.2 -> 670.0	13673	1.25 µg/L	-0.037
M8-FOSA	9.871	506.1 -> 77.8	13487	2.50 µg/L	-0.037
M3-PFBS	5.454	302.1 -> 79.9	9849	2.50 µg/L	-0.025
M3-PFHxS	7.290	402.1 -> 79.9	6532	2.50 µg/L	-0.027
M8-PFOS	8.392	507.1 -> 79.9	8836	2.50 µg/L	-0.037
M2-4:2FTS	5.259	329.1 -> 80.9	639	5.00 µg/L	-0.025
M2-6:2FTS	6.974	429.1 -> 80.9	1129	5.00 µg/L	-0.025
M2-8:2FTS	8.041	529.1 -> 80.9	2189	5.00 µg/L	-0.037
M3-MeFOSAA	8.324	573.2 -> 419.0	16795	5.00 µg/L	-0.037
M3-HFPO-DA	5.940	286.9 -> 168.9	36445	10.00 µg/L	-0.025
M5-EtFOSAA	8.534	589.2 -> 419.0	14004	5.00 µg/L	-0.037
M7-MeFOSE	11.035	623.2 -> 58.9	60952	25.00 µg/L	-0.025
M9-EtFOSE	11.319	639.2 -> 58.9	86115	25.00 µg/L	-0.025
M5-EtFOSA	11.411	531.1 -> 219.0	10763	2.50 µg/L	-0.012
M3-MeFOSA	11.139	515.0 -> 219.0	9052	2.50 µg/L	-0.025
13C4-PFOS	8.393	502.8 -> 79.9	8827	2.50 µg/L	-0.037
13C3-PFBA	2.928	216.0 -> 172.0	60089	5.00 µg/L	0.013
18O2-PFHxS	7.288	403.0 -> 83.9	4816	2.50 µg/L	-0.027
13C4-PFOA	7.200	417.1 -> 372.0	54122	2.50 µg/L	-0.037
13C2-PFDA	8.254	515.1 -> 470.1	16852	1.25 µg/L	-0.038
13C5-PFNA	7.759	468.0 -> 423.0	24228	1.25 µg/L	-0.025
13C2-PFHxA	5.574	315.1 -> 270.0	36861	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.259	329.1 -> 80.9	639	5.91 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.2%		
13C2-6:2FTS	6.974	429.1 -> 80.9	1129	4.77 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.3%		
13C2-8:2FTS	8.041	529.1 -> 80.9	2189	5.68 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.6%		
13C2-PFDoDA	9.157	615.1 -> 570.0	18678	1.19 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.4%		
13C2-PFTeDA	9.925	715.2 -> 670.0	13673	1.21 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.8%		
13C3-PFBS	5.454	302.1 -> 79.9	9849	2.67 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.9%		
13C3-PFHxS	7.290	402.1 -> 79.9	6532	2.42 µg/L	-0.027

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 = 96.7%	
13C4-PFBA	2.924	216.8 -> 171.9	112101	9.87 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C4-PFHpA	6.530	367.1 -> 322.0	28772	2.54 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C5-PFHxA	5.573	318.0 -> 273.0	38179	2.42 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.8%	
13C5-PFPeA	4.387	268.3 -> 223.0	60368	5.93 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 118.7%	
13C6-PFDA	8.253	519.1 -> 474.1	14581	1.25 µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C7-PFUnDA	8.710	570.0 -> 525.1	18569	1.25 µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C8-FOSA	9.871	506.1 -> 77.8	13487	2.95 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 118.1%	
13C8-PFOA	7.199	421.1 -> 376.0	46786	2.66 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.3%	
13C8-PFOS	8.392	507.1 -> 79.9	8836	2.88 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 115.3%	
13C9-PFNA	7.759	472.1 -> 427.0	20067	1.24 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.1%	
d3-MeFOSAA	8.324	573.2 -> 419.0	16795	5.79 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 115.7%	
13C3-HFPO-DA	5.940	286.9 -> 168.9	36445	9.28 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 92.8%	
d3-MeFOSA	11.139	515.0 -> 219.0	9052	2.72 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.8%	
d5-EtFOSAA	8.534	589.2 -> 419.0	14004	5.47 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.4%	
d7-MeFOSE	11.035	623.2 -> 58.9	60952	25.88 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.5%	
d9-EtFOSE	11.319	639.2 -> 58.9	86115	27.46 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 109.8%	
d5-EtFOSA	11.411	531.1 -> 219.0	10763	2.98 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 119.1%	

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.	

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

7.2.3
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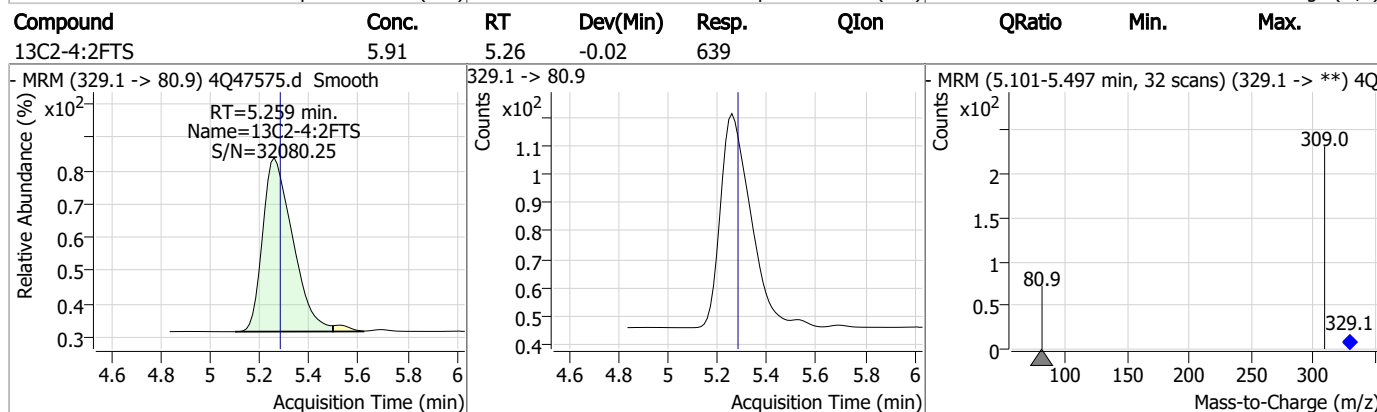
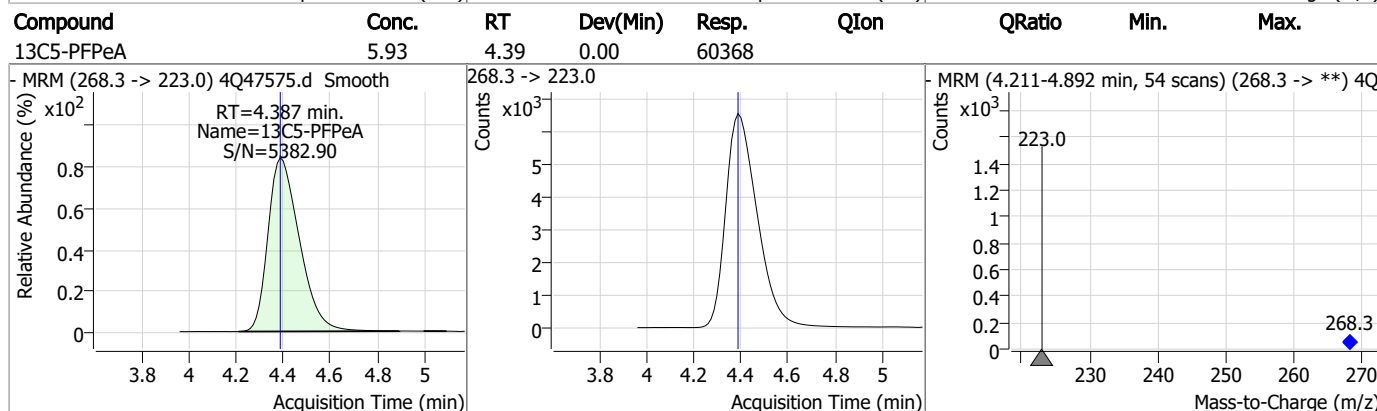
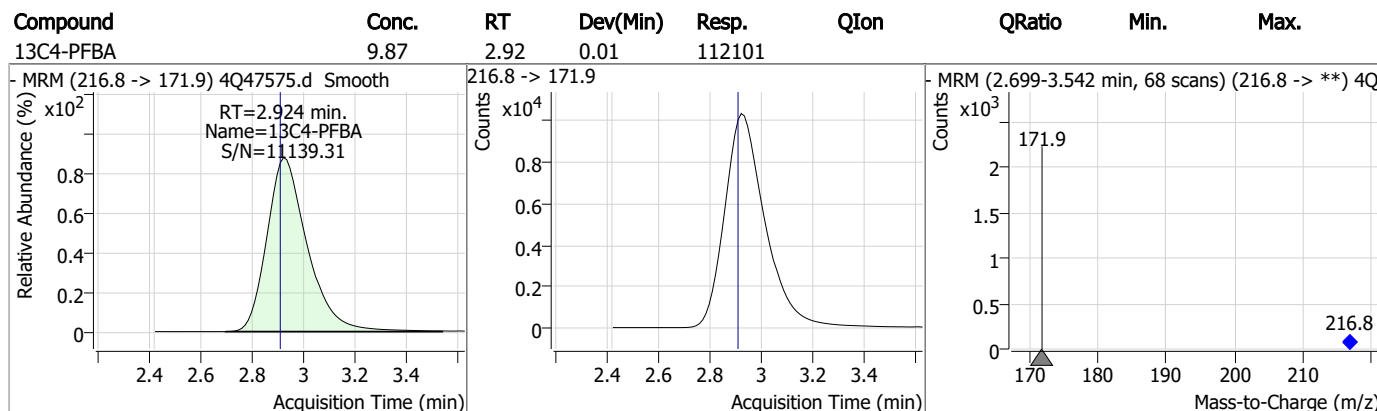
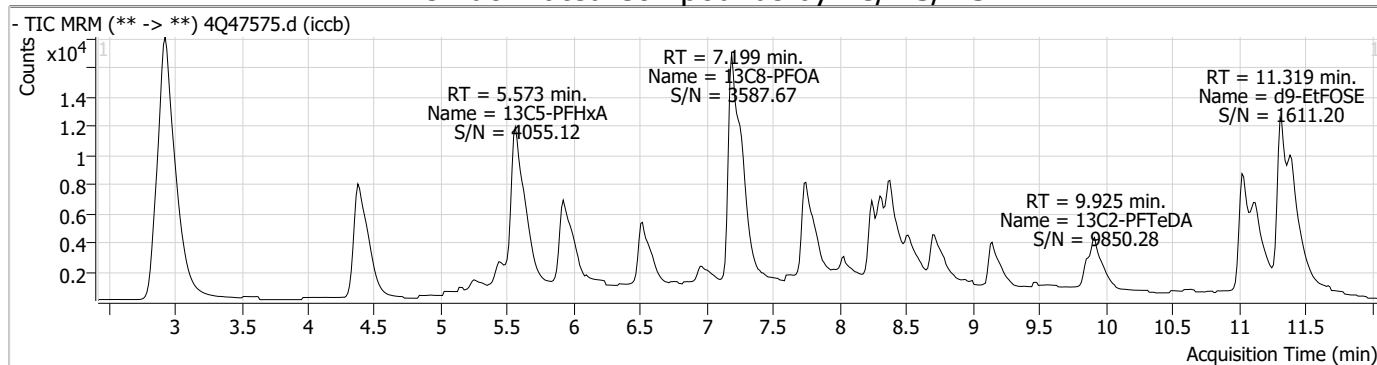
Perfluorinated Compounds by LC/MS/MS

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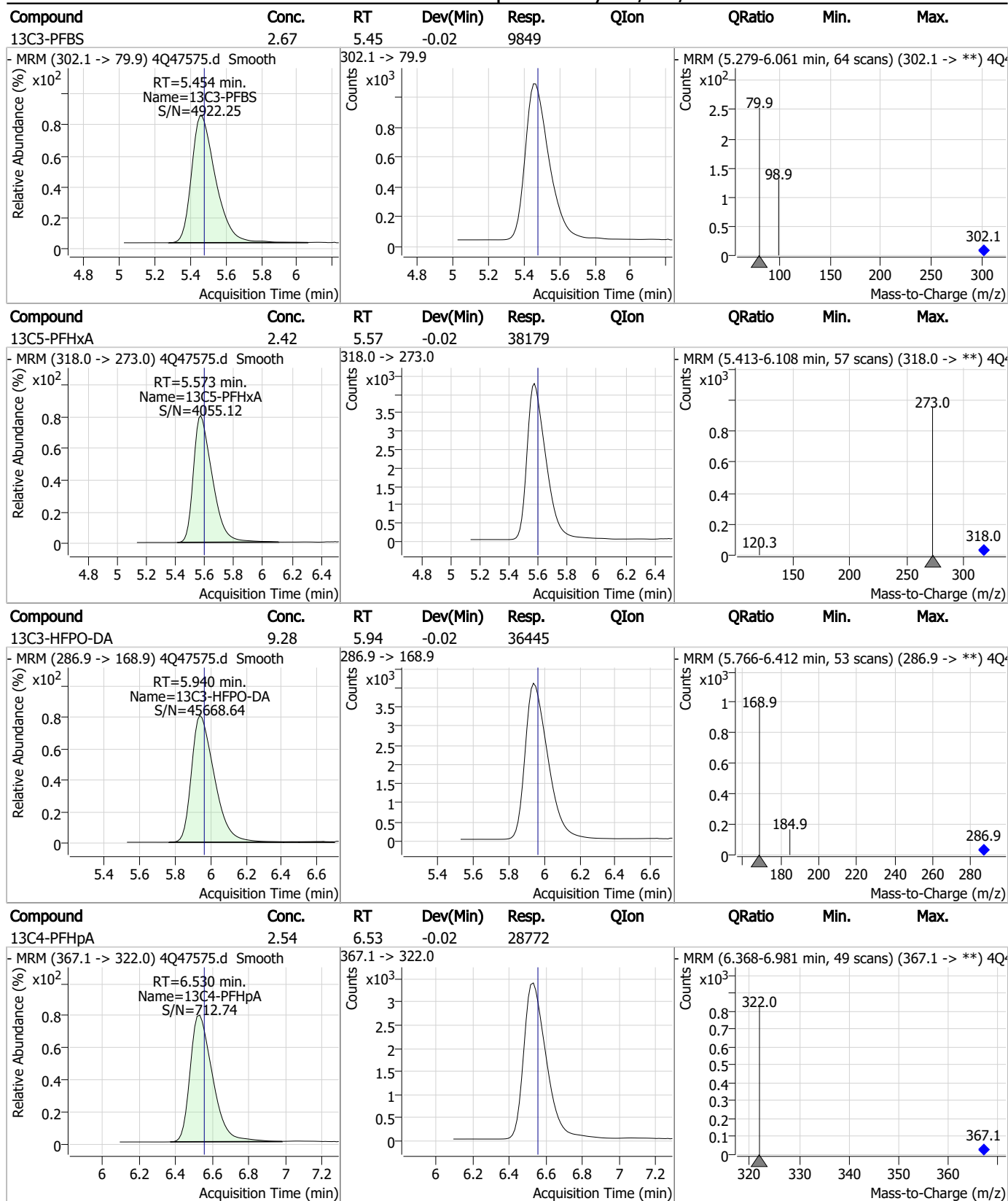
7.2.3

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Perfluorinated Compounds by LC/MS/MS



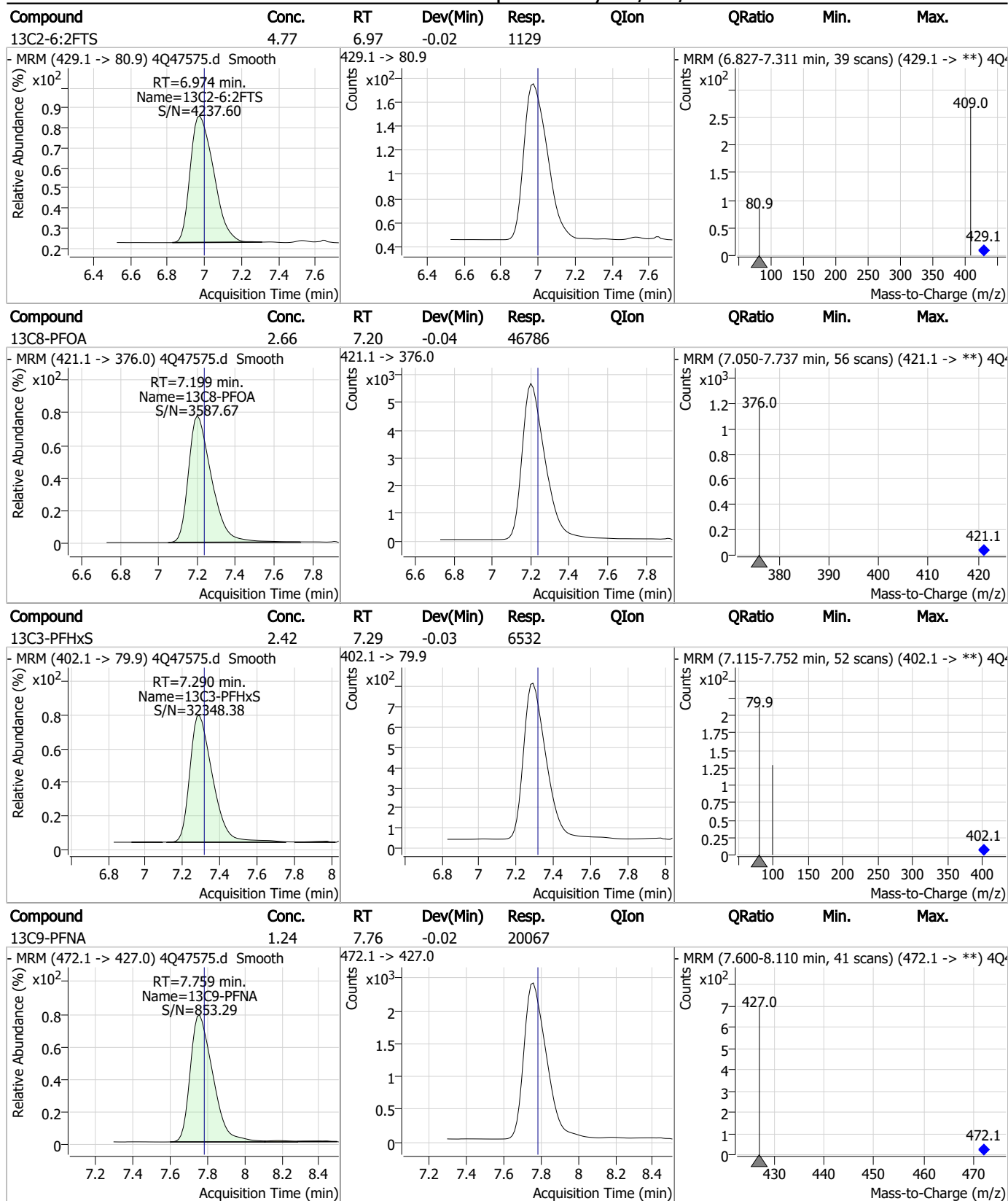
Perfluorinated Compounds by LC/MS/MS



7.2.3
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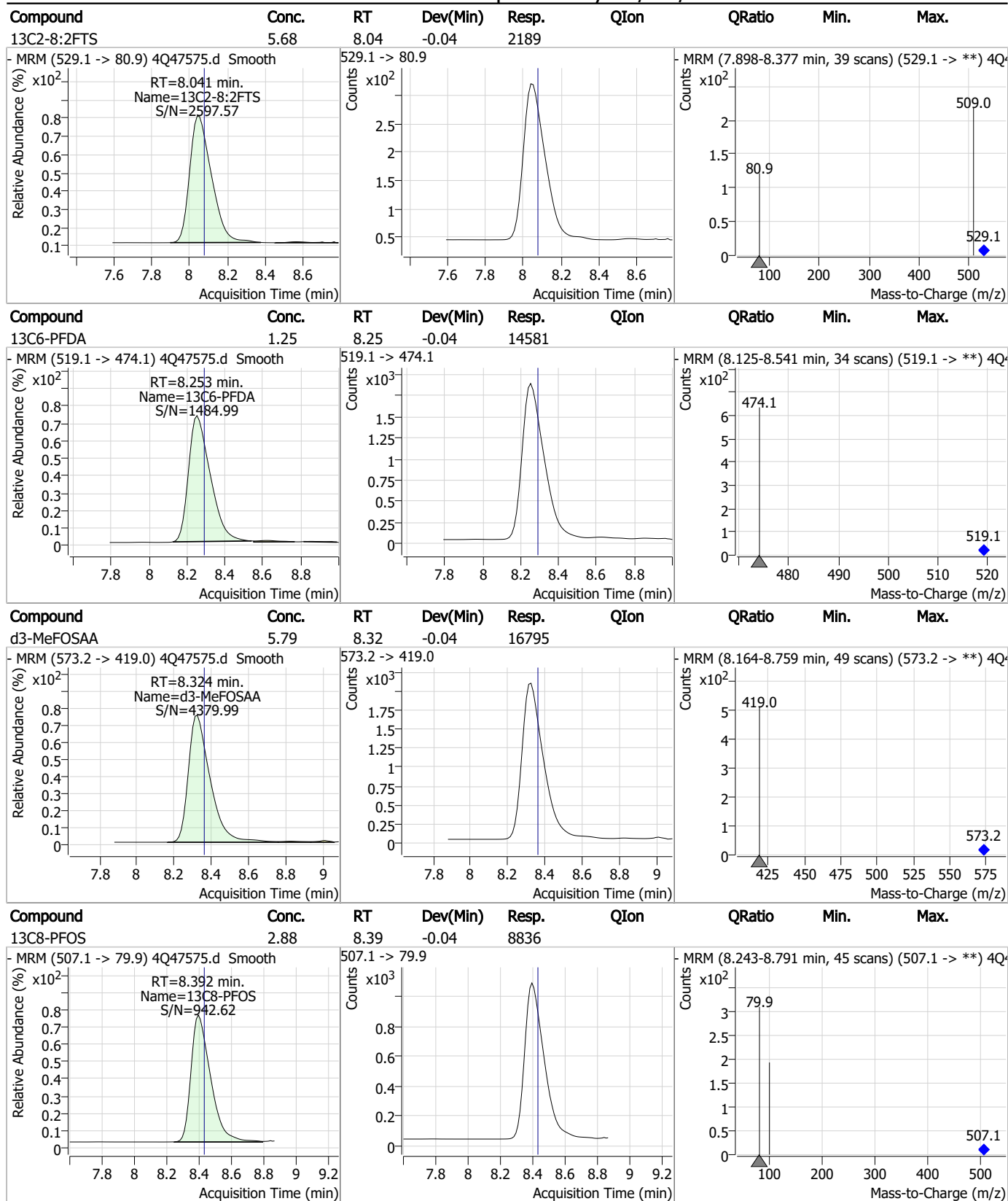


Perfluorinated Compounds by LC/MS/MS



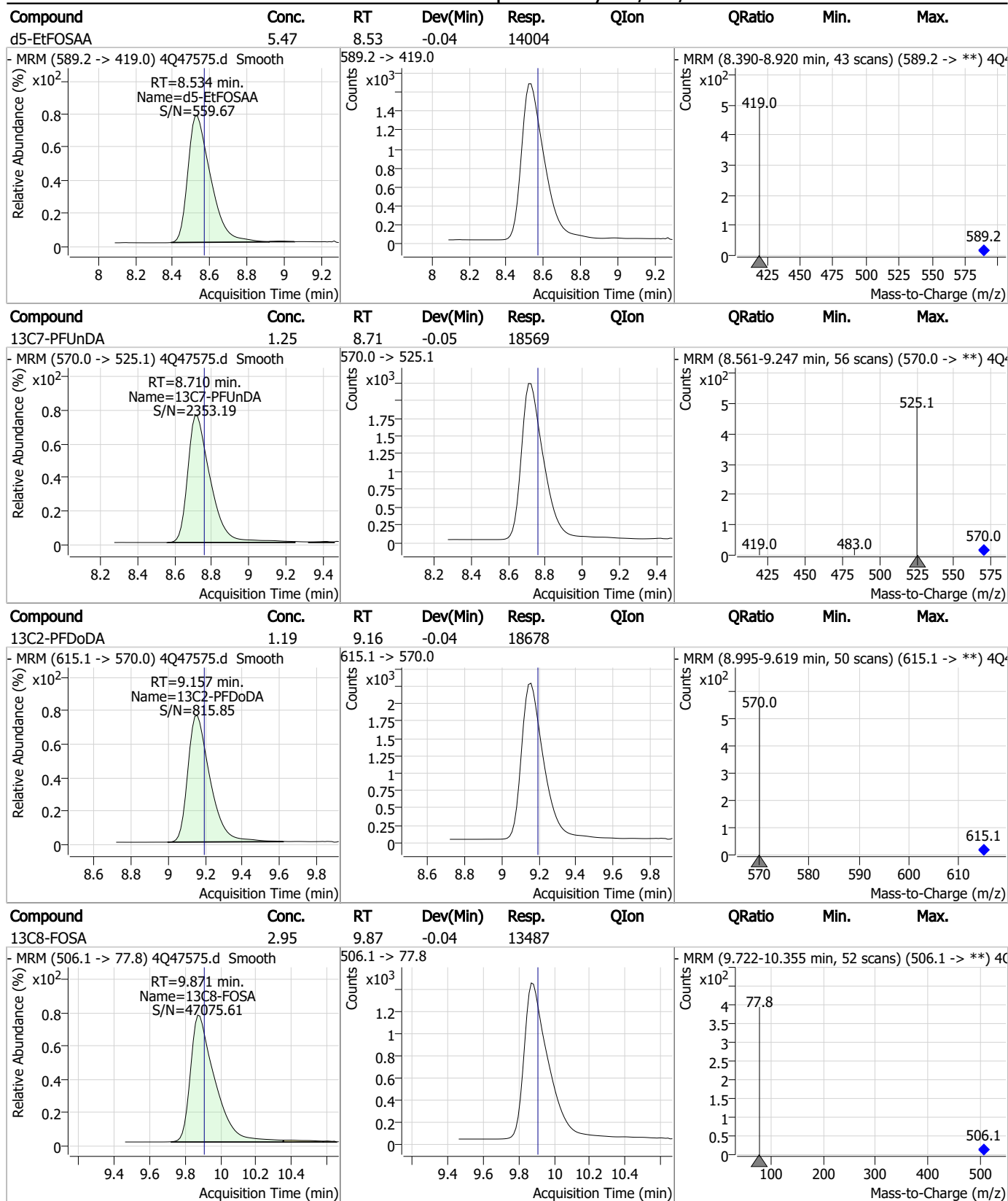
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Perfluorinated Compounds by LC/MS/MS



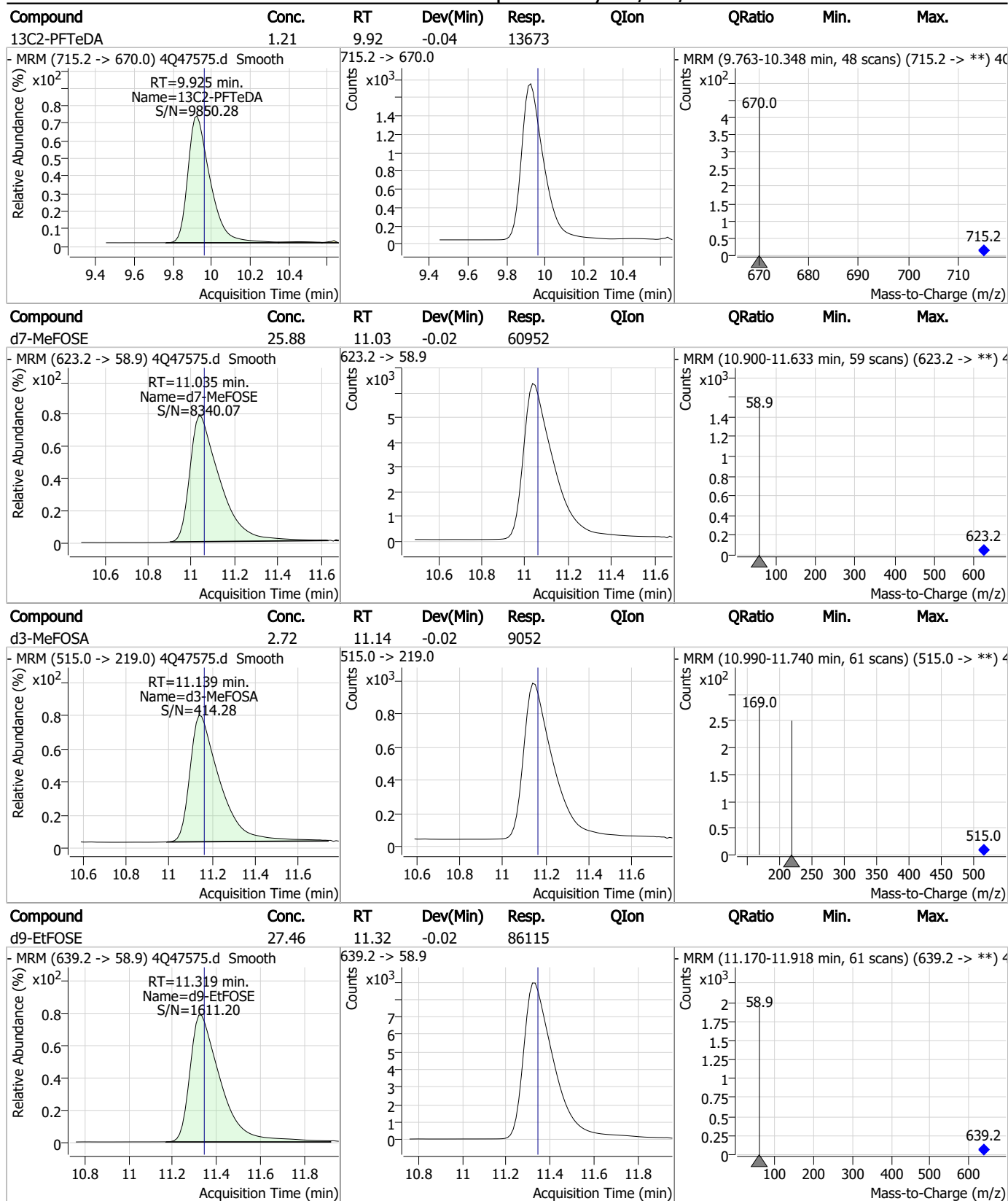
7.2.3
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Perfluorinated Compounds by LC/MS/MS



7.2.3
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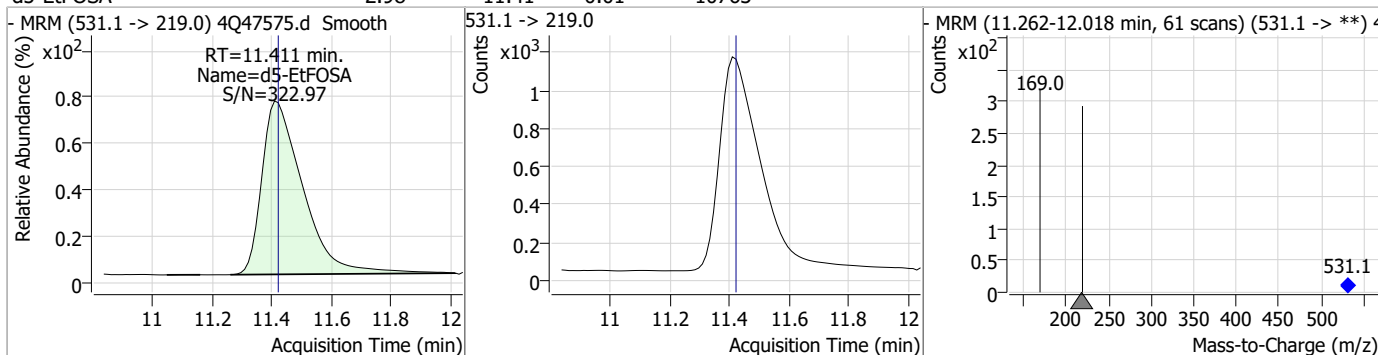
Perfluorinated Compounds by LC/MS/MS



7.2.3
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.98	11.41	-0.01	10763				



7.2.3

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47713.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/21/2023 1:38:09 AM
 Sample Name : iblk
 Vial : P1-A1
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q699.batch.bin
 Sample Information : OP97749,S4Q699,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.899	216.8 -> 171.9	138117	10.00 µg/L	-0.013
M5-PFPeA	4.360	268.3 -> 223.0	56219	5.00 µg/L	-0.027
M5-PFHxA	5.561	318.0 -> 273.0	45184	2.50 µg/L	-0.037
M4-PFHpA	6.530	367.1 -> 322.0	32233	2.50 µg/L	-0.025
M8-PFOA	7.211	421.1 -> 376.0	50895	2.50 µg/L	-0.025
M9-PFNA	7.771	472.1 -> 427.0	21895	1.25 µg/L	-0.012
M6-PFDA	8.266	519.1 -> 474.1	17240	1.25 µg/L	-0.026
M7-PFUnDA	8.735	570.0 -> 525.1	21379	1.25 µg/L	-0.025
M2-PFDoDA	9.169	615.1 -> 570.0	22669	1.25 µg/L	-0.025
M2-PFTeDA	9.950	715.2 -> 670.0	14741	1.25 µg/L	-0.012
M8-FOSA	9.921	506.1 -> 77.8	15071	2.50 µg/L	0.012
M3-PFBS	5.441	302.1 -> 79.9	10517	2.50 µg/L	-0.037
M3-PFHxS	7.304	402.1 -> 79.9	7694	2.50 µg/L	-0.012
M8-PFOS	8.405	507.1 -> 79.9	9474	2.50 µg/L	-0.025
M2-4:2FTS	5.247	329.1 -> 80.9	760	5.00 µg/L	-0.037
M2-6:2FTS	6.986	429.1 -> 80.9	1576	5.00 µg/L	-0.012
M2-8:2FTS	8.066	529.1 -> 80.9	2481	5.00 µg/L	-0.012
M3-MeFOSAA	8.337	573.2 -> 419.0	17697	5.00 µg/L	-0.025
M3-HFPO-DA	5.940	286.9 -> 168.9	39906	10.00 µg/L	-0.025
M5-EtFOSAA	8.546	589.2 -> 419.0	16449	5.00 µg/L	-0.025
M7-MeFOSE	11.059	623.2 -> 58.9	66470	25.00 µg/L	0.000
M9-EtFOSE	11.332	639.2 -> 58.9	93566	25.00 µg/L	-0.012
M5-EtFOSA	11.423	531.1 -> 219.0	10862	2.50 µg/L	0.000
M3-MeFOSA	11.164	515.0 -> 219.0	10281	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	10912	2.50 µg/L	-0.025
13C3-PFBA	2.891	216.0 -> 172.0	69939	5.00 µg/L	-0.025
18O2-PFHxS	7.303	403.0 -> 83.9	5610	2.50 µg/L	-0.012
13C4-PFOA	7.212	417.1 -> 372.0	62265	2.50 µg/L	-0.025
13C2-PFDA	8.266	515.1 -> 470.1	19390	1.25 µg/L	-0.026
13C5-PFNA	7.772	468.0 -> 423.0	27211	1.25 µg/L	-0.012
13C2-PFHxA	5.562	315.1 -> 270.0	43115	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	760	6.03 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 120.7%		
13C2-6:2FTS	6.986	429.1 -> 80.9	1576	5.71 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.2%		
13C2-8:2FTS	8.066	529.1 -> 80.9	2481	5.52 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.4%		
13C2-PFDoDA	9.169	615.1 -> 570.0	22669	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C2-PFTeDA	9.950	715.2 -> 670.0	14741	1.13 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 90.7%		
13C3-PFBS	5.441	302.1 -> 79.9	10517	2.45 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C3-PFHxS	7.304	402.1 -> 79.9	7694	2.45 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C4-PFBA	2.899	216.8 -> 171.9	138117	10.45 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 104.5%	
13C4-PFHpA	6.530	367.1 -> 322.0	32233	2.44 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.4%	
13C5-PFHxA	5.561	318.0 -> 273.0	45184	2.45 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C5-PFPeA	4.360	268.3 -> 223.0	56219	4.72 µg/L	-0.027
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.5%	
13C6-PFDA	8.266	519.1 -> 474.1	17240	1.28 µg/L	-0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C7-PFUnDA	8.735	570.0 -> 525.1	21379	1.25 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C8-FOSA	9.921	506.1 -> 77.8	15071	2.67 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.8%	
13C8-PFOA	7.211	421.1 -> 376.0	50895	2.51 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C8-PFOS	8.405	507.1 -> 79.9	9474	2.50 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C9-PFNA	7.771	472.1 -> 427.0	21895	1.20 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.3%	
d3-MeFOSAA	8.337	573.2 -> 419.0	17697	4.93 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C3-HFPO-DA	5.940	286.9 -> 168.9	39906	8.68 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 86.8%	
d3-MeFOSA	11.164	515.0 -> 219.0	10281	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
d5-EtFOSAA	8.546	589.2 -> 419.0	16449	5.20 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.9%	
d7-MeFOSE	11.059	623.2 -> 58.9	66470	22.83 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 91.3%	
d9-EtFOSE	11.332	639.2 -> 58.9	93566	24.13 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.5%	
d5-EtFOSA	11.423	531.1 -> 219.0	10862	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.2%	

Target Compounds

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

7.2.4
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	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	11.425	526.0 -> 219.0	2055	0.37 µg/L	m	85
		526.0 -> 169.0	3237			
EtFOSE	11.357	630.0 -> 58.9	3427	0.76 µg/L	m	100
		511.9 -> 219.0	748	0.17 µg/L	m	77
MeFOSA	11.153	511.9 -> 169.0	1191			
		616.1 -> 58.9	913	0.31 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

7.2.4
7

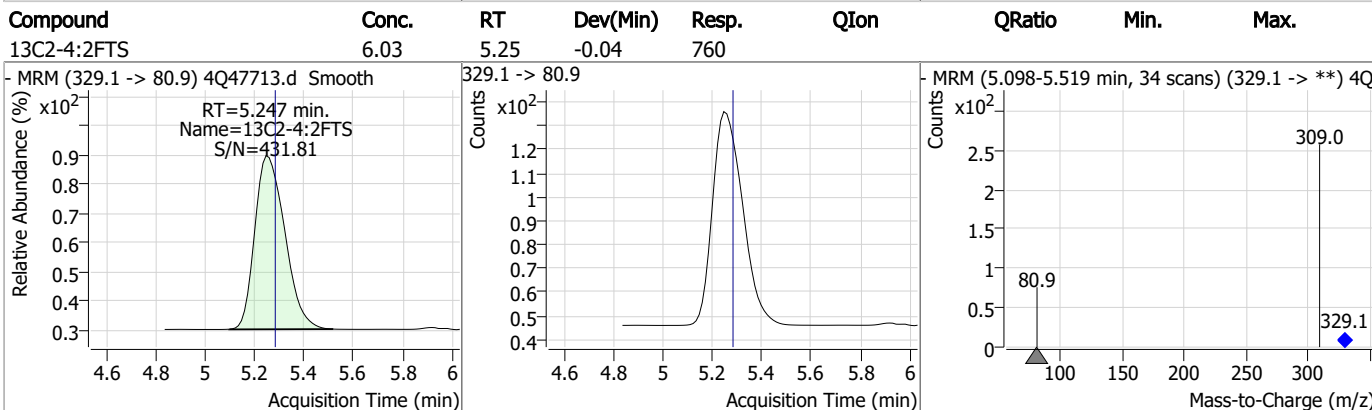
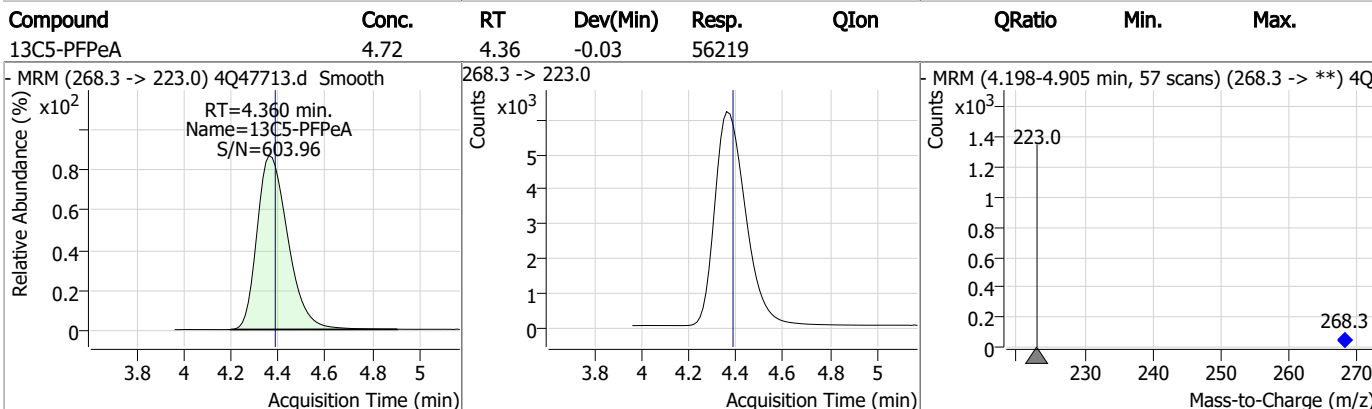
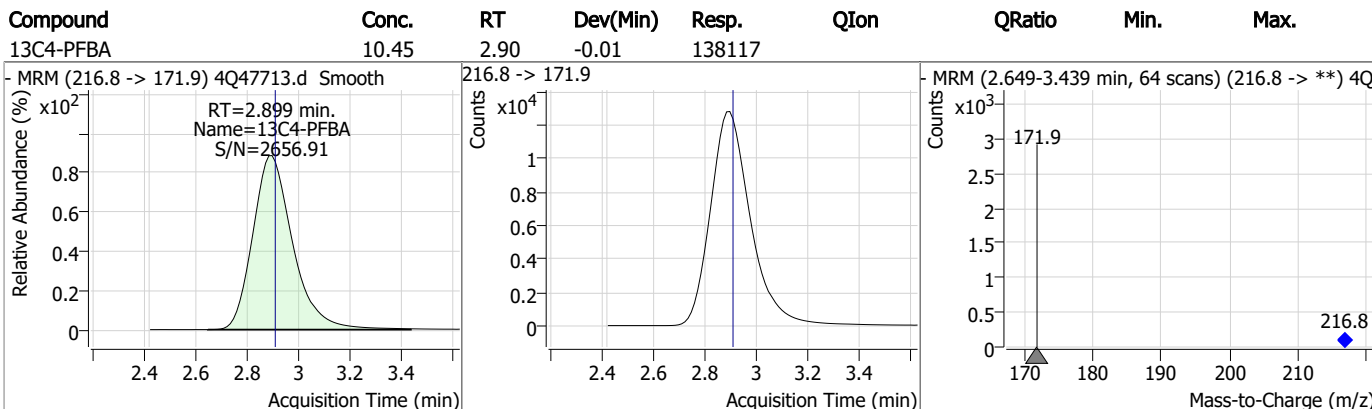
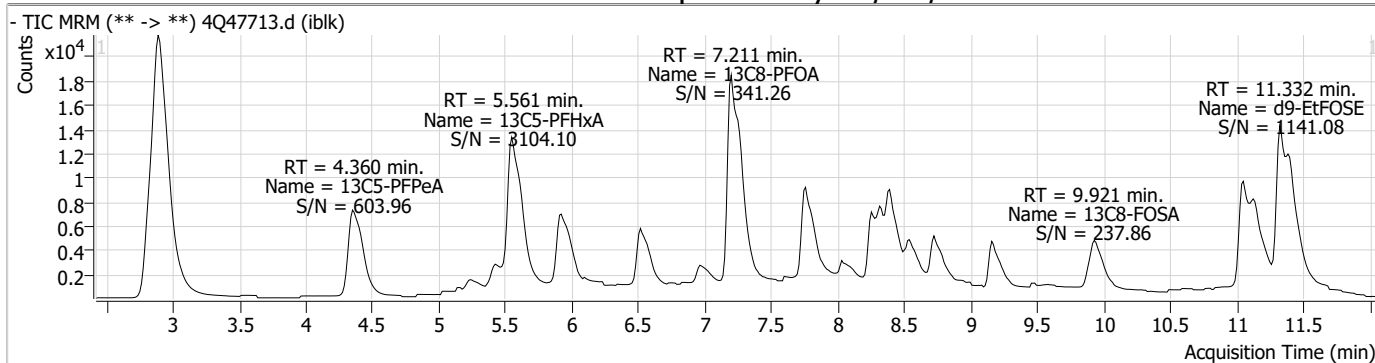
Perfluorinated Compounds by LC/MS/MS

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

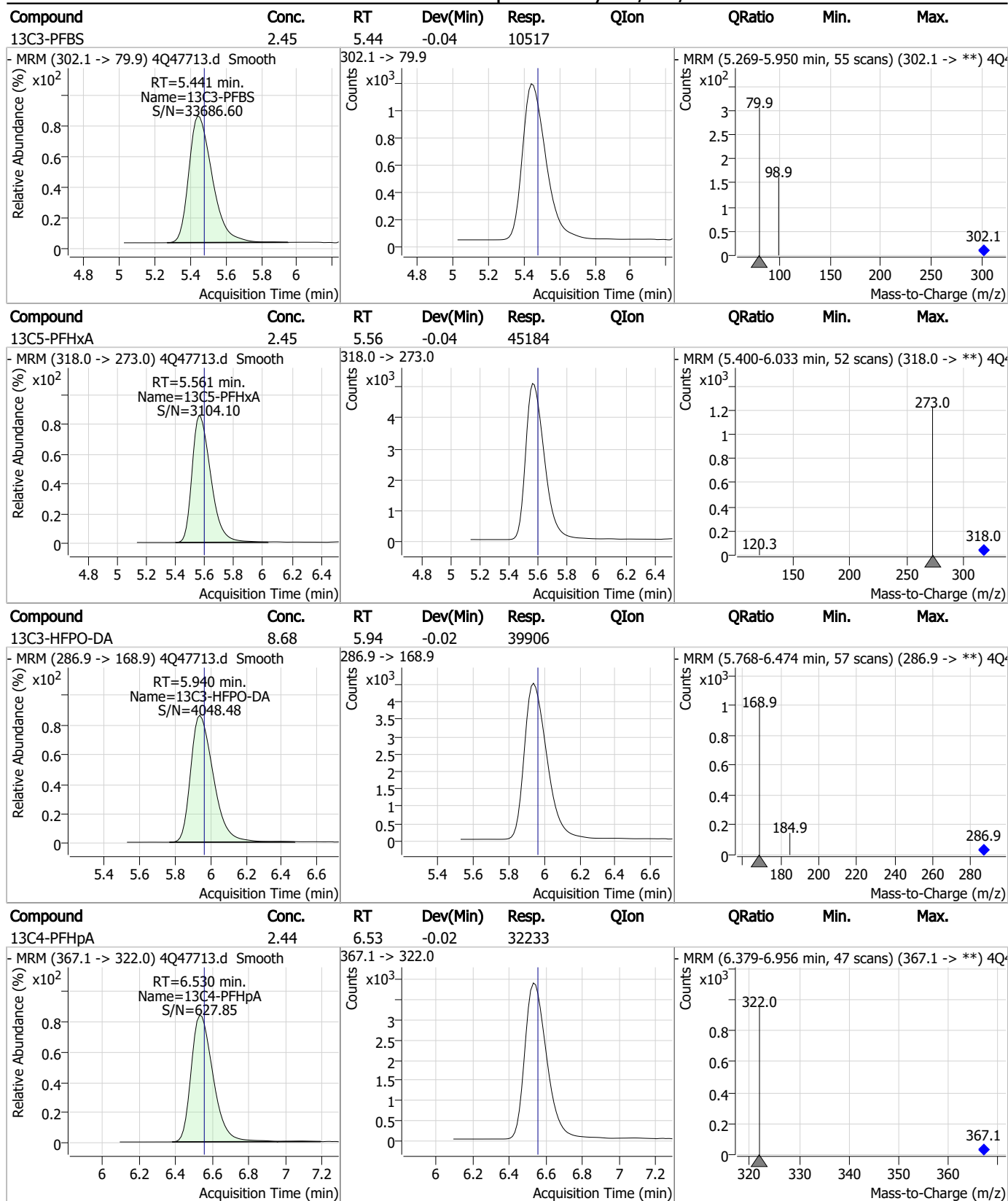
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Perfluorinated Compounds by LC/MS/MS



7.2.4
7

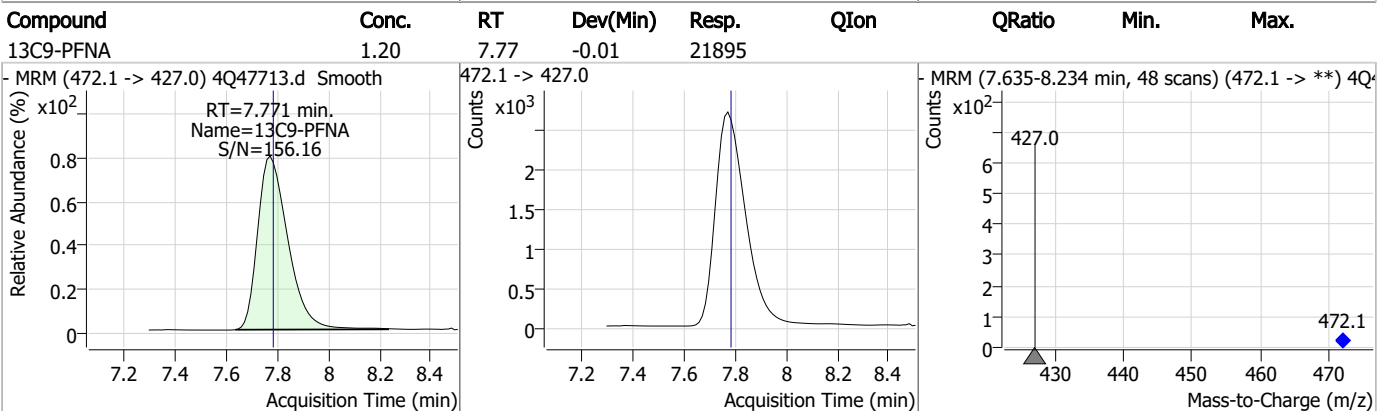
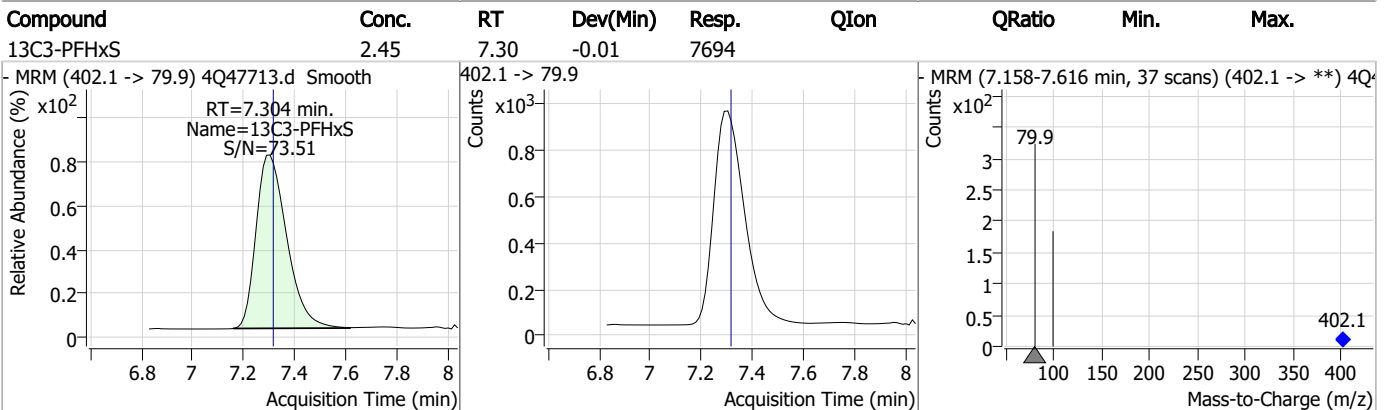
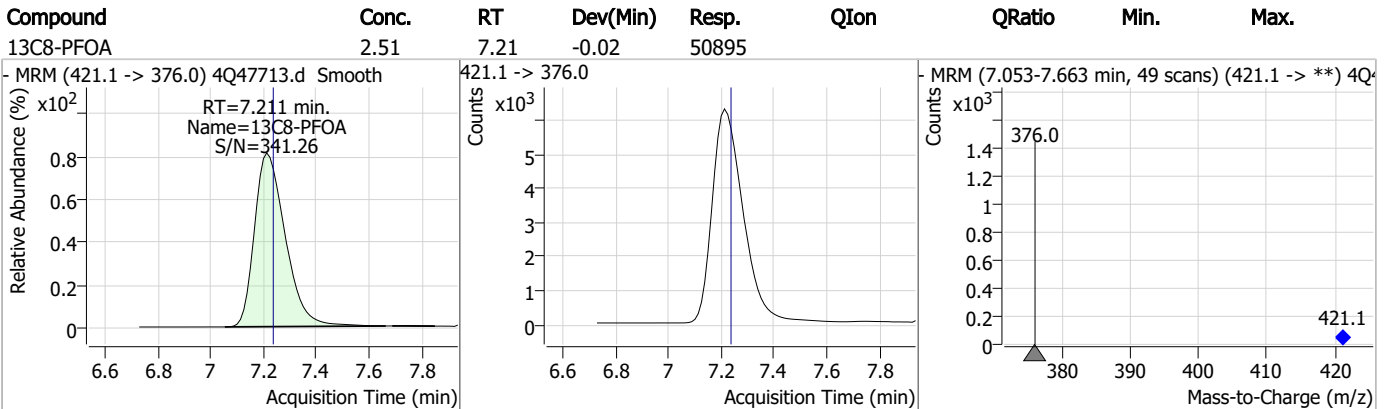
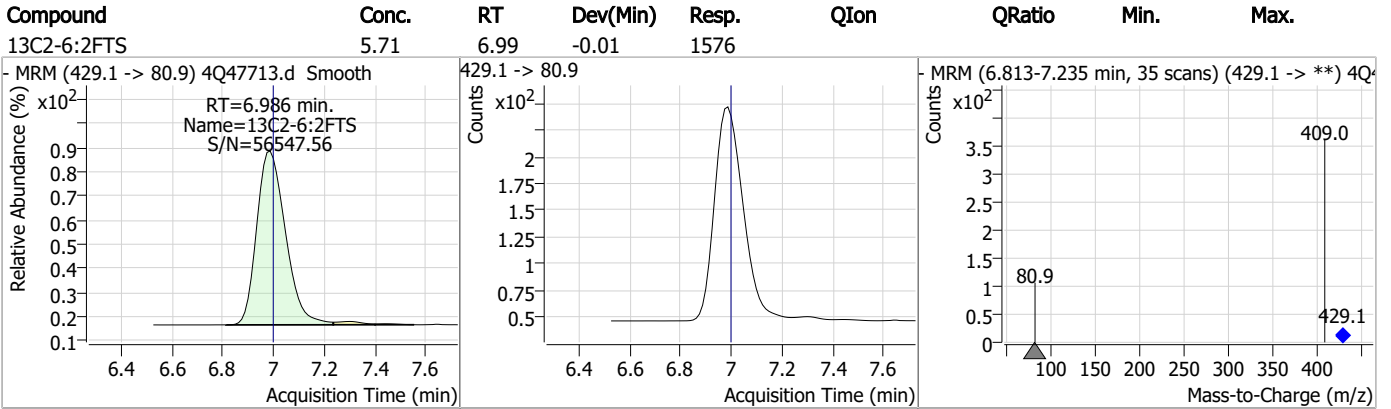
Perfluorinated Compounds by LC/MS/MS



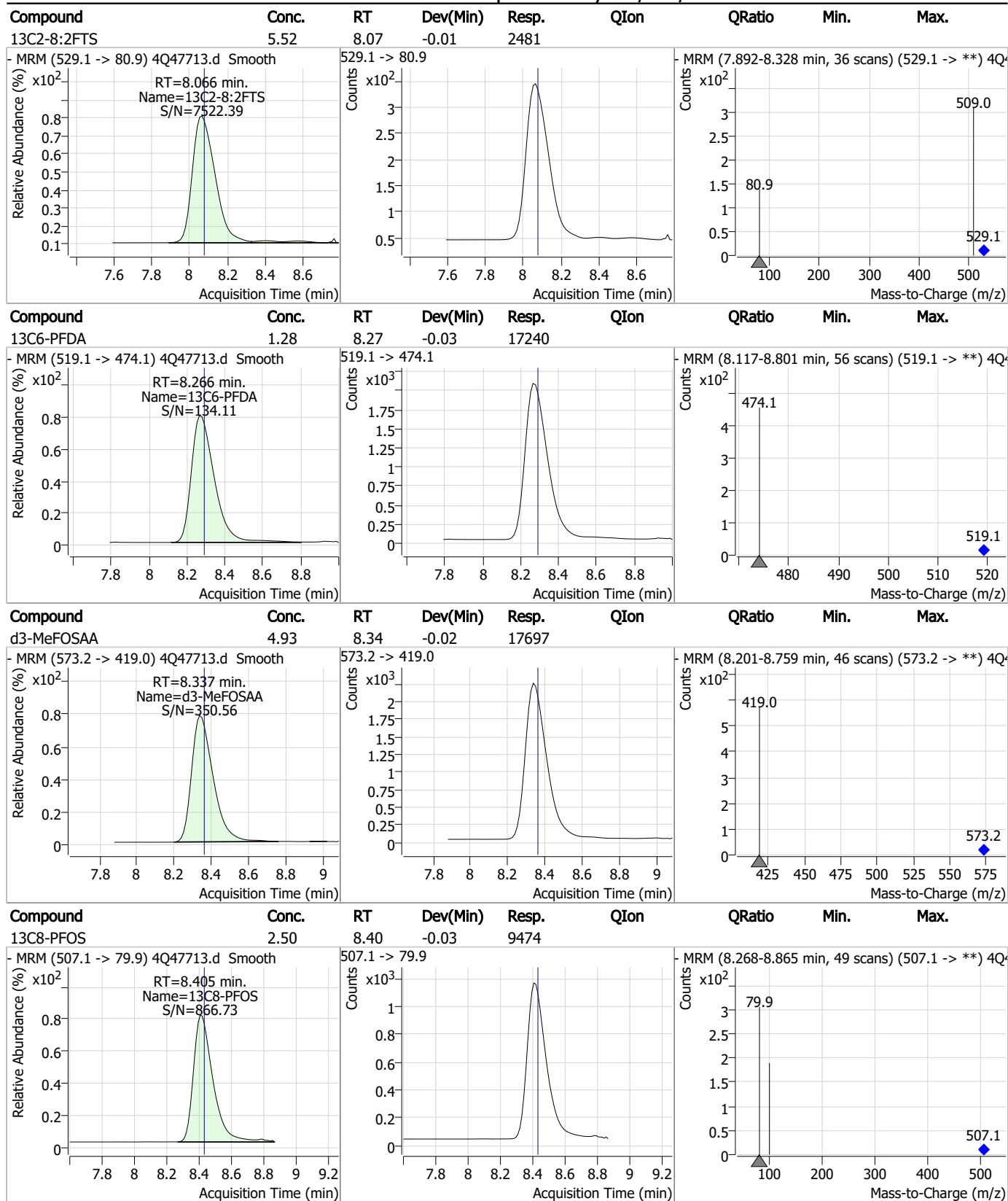
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Perfluorinated Compounds by LC/MS/MS



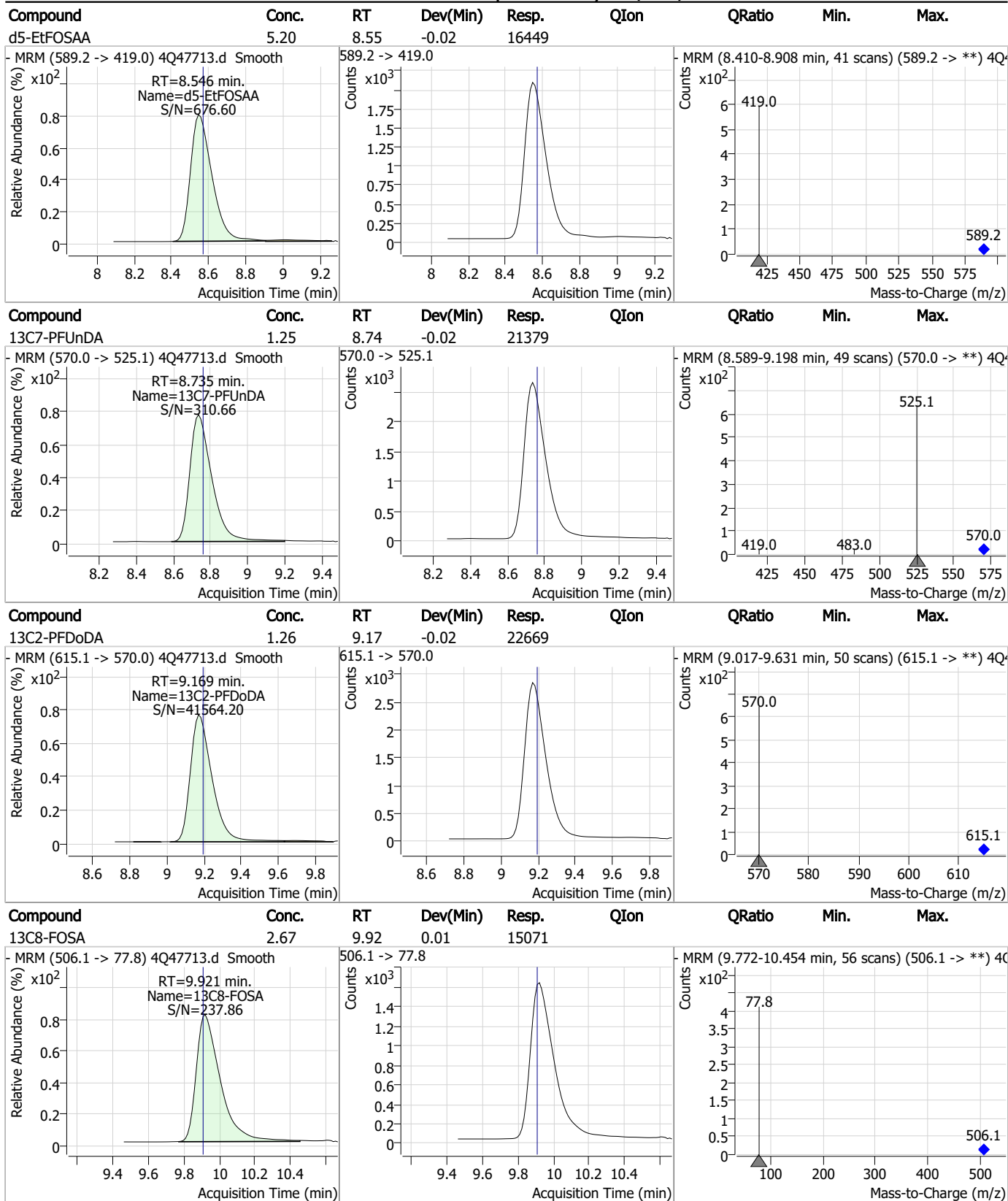
Perfluorinated Compounds by LC/MS/MS



7.2.4

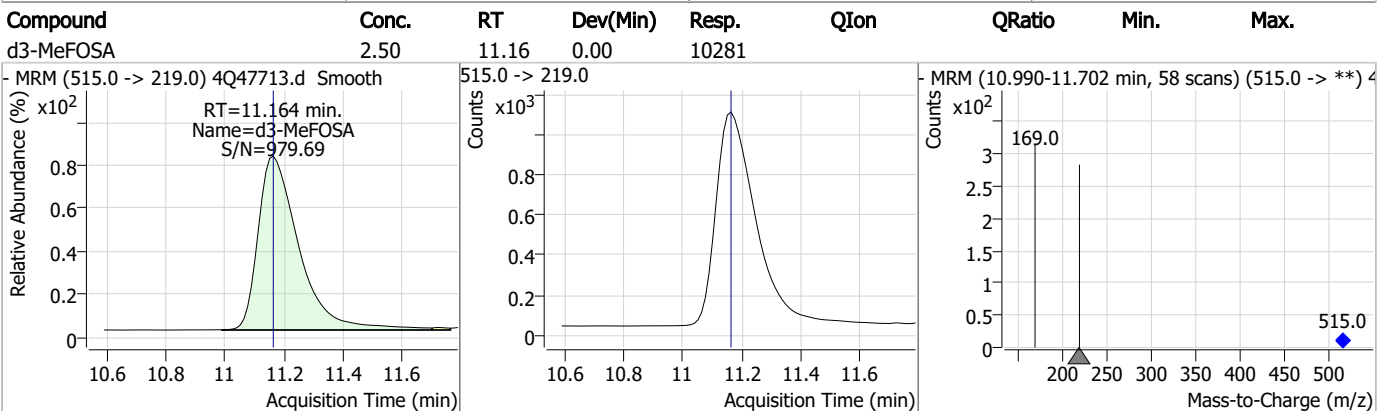
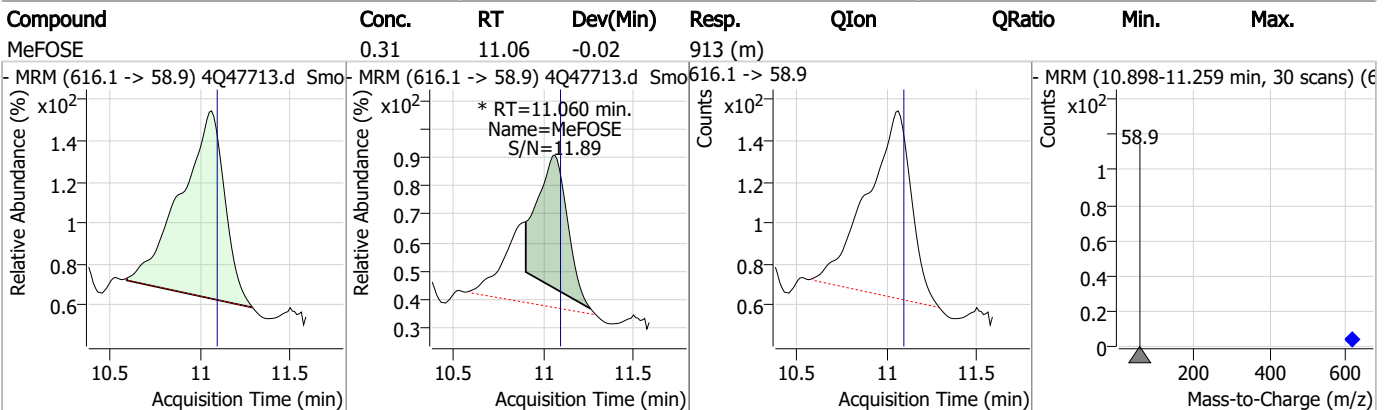
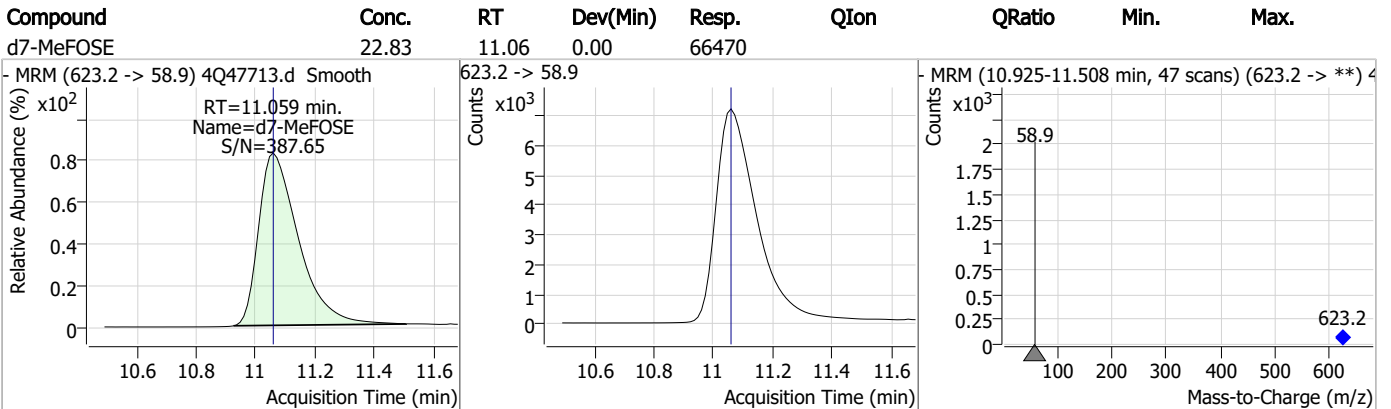
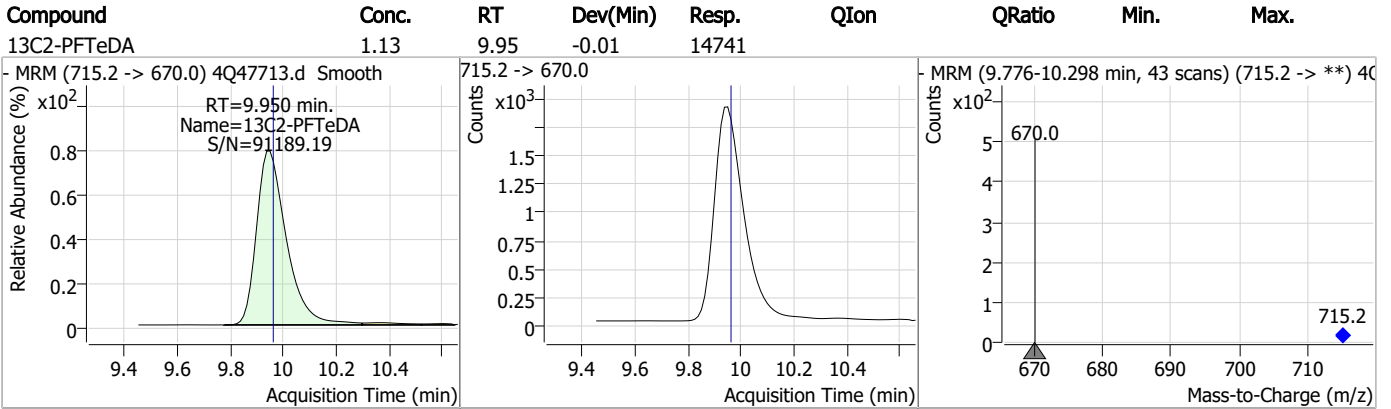
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Perfluorinated Compounds by LC/MS/MS

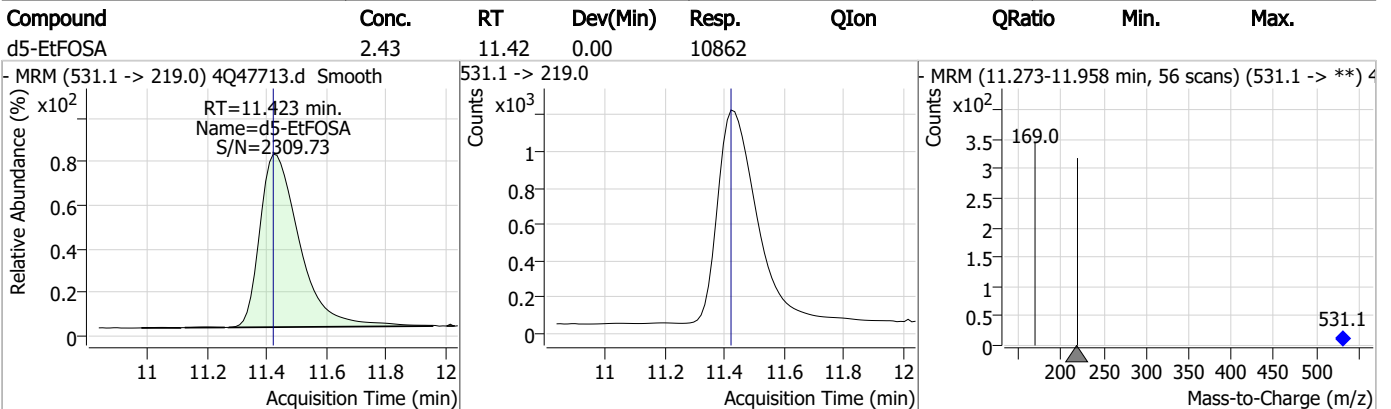
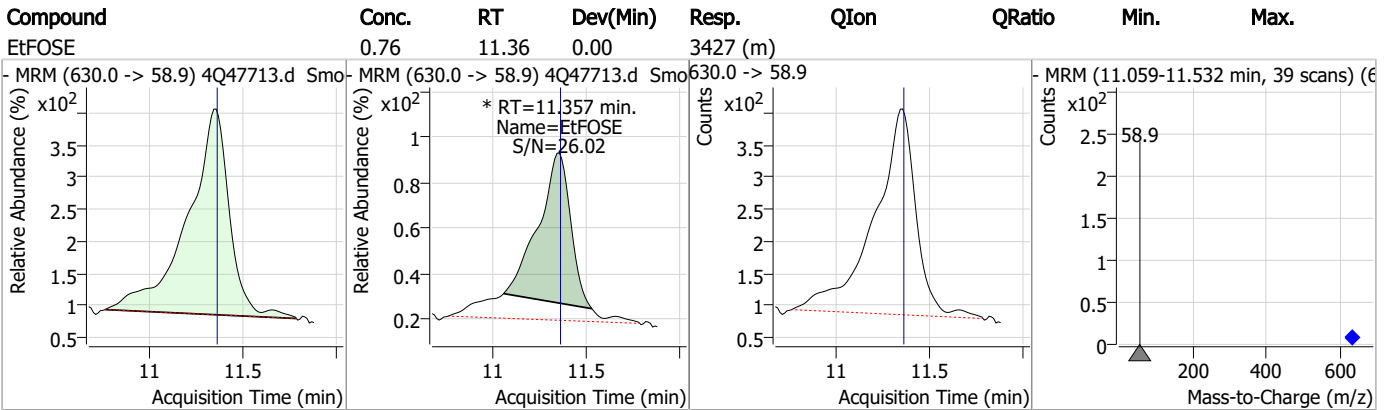
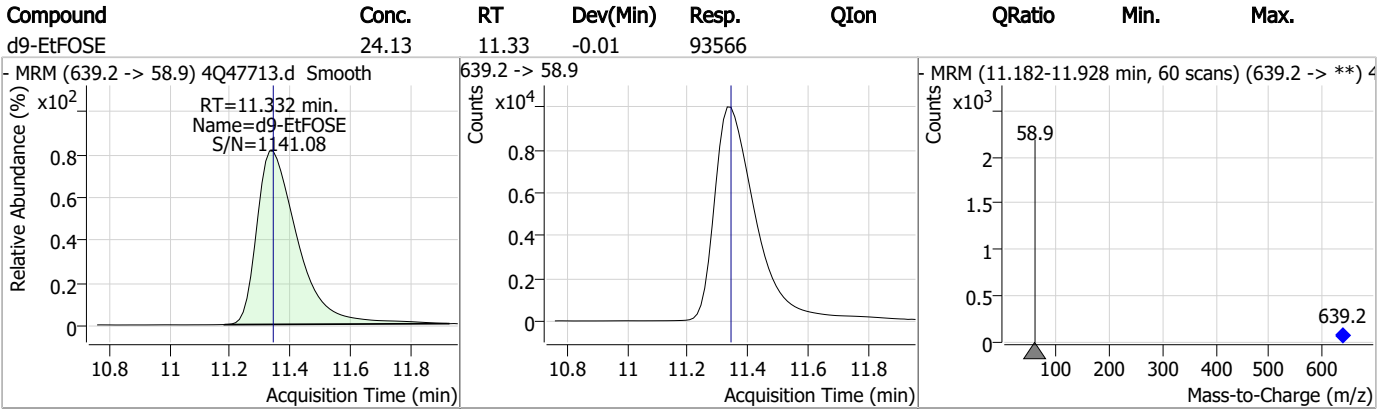
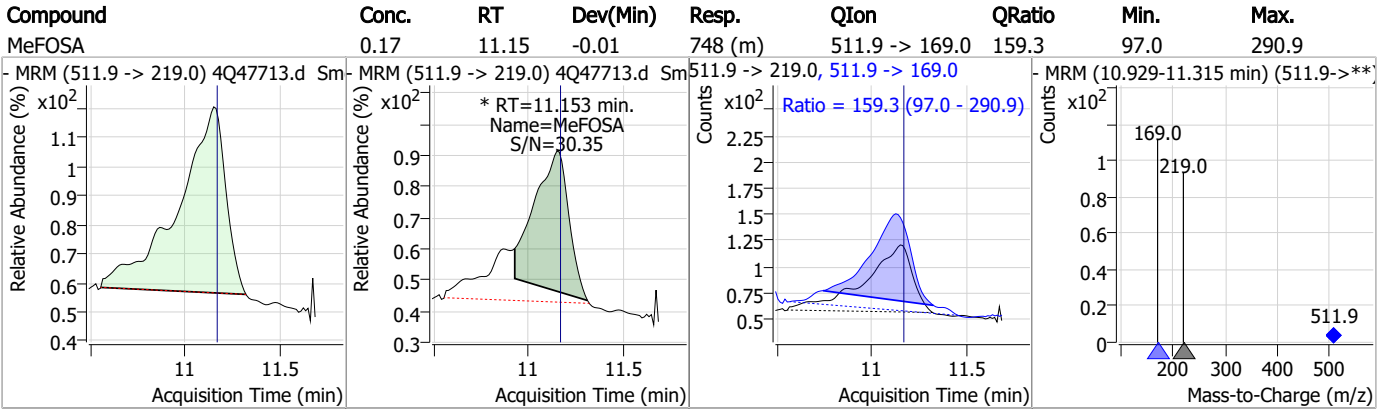


7.2.4
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

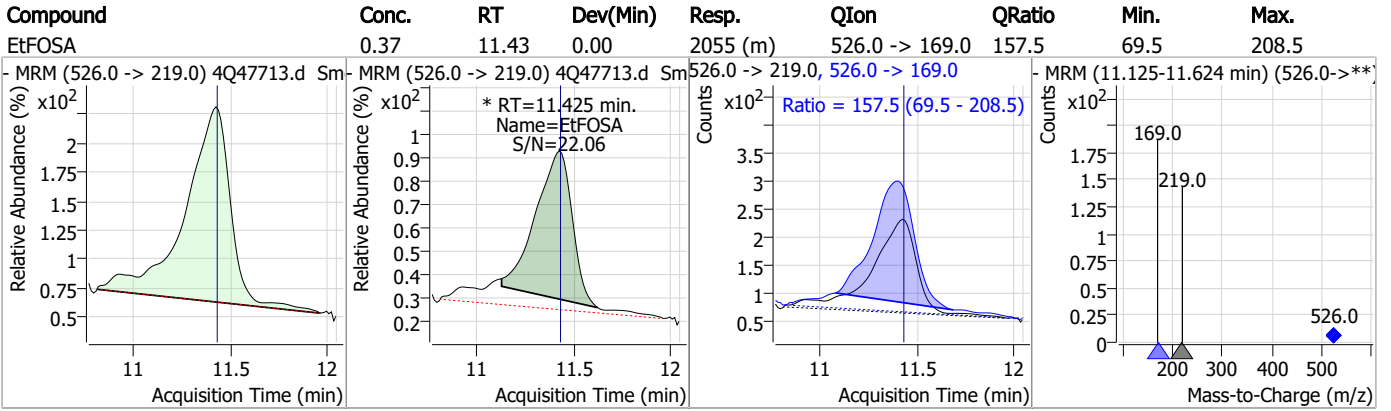


7.24

7



Perfluorinated Compounds by LC/MS/MS



7.2.4

7

Manual Integration Approval Summary

Sample Number: S4Q699-IBLK Method: EPA DRAFT 1633
Lab FileID: 4Q47713.D Analyst approved: 07/23/23 11:07 Anna Ludwig
Injection Time: 07/21/23 01:38 Supervisor approved: 07/24/23 09:53 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
EtFOSE	1691-99-2		11.36	Split peak
EtFOSA	4151-50-2		11.43	Split peak

7.2.4.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47564.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 12:25:46 PM
 Sample Name : op97911-bs
 Vial : P2-D8
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q697.batch.bin
 Sample Information : OP97911,S4Q697,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	108408	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	58296	5.00 µg/L	-0.012
M5-PFHxA	5.573	318.0 -> 273.0	38352	2.50 µg/L	-0.025
M4-PFHpA	6.515	367.1 -> 322.0	28522	2.50 µg/L	-0.040
M8-PFOA	7.199	421.1 -> 376.0	46352	2.50 µg/L	-0.037
M9-PFNA	7.746	472.1 -> 427.0	18998	1.25 µg/L	-0.038
M6-PFDA	8.241	519.1 -> 474.1	14142	1.25 µg/L	-0.051
M7-PFUnDA	8.710	570.0 -> 525.1	17254	1.25 µg/L	-0.050
M2-PFDoDA	9.143	615.1 -> 570.0	17328	1.25 µg/L	-0.051
M2-PFTeDA	9.912	715.2 -> 670.0	11550	1.25 µg/L	-0.050
M8-FOSA	9.871	506.1 -> 77.8	9722	2.50 µg/L	-0.037
M3-PFBS	5.454	302.1 -> 79.9	9363	2.50 µg/L	-0.025
M3-PFHxS	7.277	402.1 -> 79.9	6810	2.50 µg/L	-0.039
M8-PFOS	8.380	507.1 -> 79.9	7995	2.50 µg/L	-0.050
M2-4:2FTS	5.259	329.1 -> 80.9	619	5.00 µg/L	-0.025
M2-6:2FTS	6.974	429.1 -> 80.9	1416	5.00 µg/L	-0.025
M2-8:2FTS	8.041	529.1 -> 80.9	1867	5.00 µg/L	-0.037
M3-MeFOSAA	8.312	573.2 -> 419.0	15190	5.00 µg/L	-0.049
M3-HFPO-DA	5.940	286.9 -> 168.9	36251	10.00 µg/L	-0.025
M5-EtFOSAA	8.521	589.2 -> 419.0	12785	5.00 µg/L	-0.050
M7-MeFOSE	11.047	623.2 -> 58.9	47201	25.00 µg/L	-0.012
M9-EtFOSE	11.332	639.2 -> 58.9	72352	25.00 µg/L	-0.012
M5-EtFOSA	11.423	531.1 -> 219.0	7883	2.50 µg/L	0.000
M3-MeFOSA	11.152	515.0 -> 219.0	6120	2.50 µg/L	-0.012
13C4-PFOS	8.380	502.8 -> 79.9	7938	2.50 µg/L	-0.050
13C3-PFBA	2.916	216.0 -> 172.0	51159	5.00 µg/L	0.000
18O2-PFHxS	7.276	403.0 -> 83.9	4342	2.50 µg/L	-0.039
13C4-PFOA	7.200	417.1 -> 372.0	47052	2.50 µg/L	-0.037
13C2-PFDA	8.241	515.1 -> 470.1	14495	1.25 µg/L	-0.051
13C5-PFNA	7.746	468.0 -> 423.0	19721	1.25 µg/L	-0.038
13C2-PFHxA	5.574	315.1 -> 270.0	31133	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.259	329.1 -> 80.9	619	6.35 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 126.9%		
13C2-6:2FTS	6.974	429.1 -> 80.9	1416	6.63 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 132.6%		
13C2-8:2FTS	8.041	529.1 -> 80.9	1867	5.37 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.4%		
13C2-PFDoDA	9.143	615.1 -> 570.0	17328	1.29 µg/L	-0.051
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C2-PFTeDA	9.912	715.2 -> 670.0	11550	1.19 µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.0%		
13C3-PFBS	5.454	302.1 -> 79.9	9363	2.82 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 112.7%		
13C3-PFHxS	7.277	402.1 -> 79.9	6810	2.80 µg/L	-0.039

7.31
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 = 111.8%	
13C4-PFBA	2.911	216.8 -> 171.9	108408	11.21 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 112.1%	
13C4-PFHpA	6.515	367.1 -> 322.0	28522	2.98 µg/L	-0.040
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 119.4%	
13C5-PFHxA	5.573	318.0 -> 273.0	38352	2.88 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 115.2%	
13C5-PFPeA	4.375	268.3 -> 223.0	58296	6.78 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 135.7%	
13C6-PFDA	8.241	519.1 -> 474.1	14142	1.41 µg/L	-0.051
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 112.7%	
13C7-PFUnDA	8.710	570.0 -> 525.1	17254	1.35 µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.3%	
13C8-FOSA	9.871	506.1 -> 77.8	9722	2.37 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.7%	
13C8-PFOA	7.199	421.1 -> 376.0	46352	3.03 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 121.1%	
13C8-PFOS	8.380	507.1 -> 79.9	7995	2.90 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 116.0%	
13C9-PFNA	7.746	472.1 -> 427.0	18998	1.44 µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 115.3%	
d3-MeFOSAA	8.312	573.2 -> 419.0	15190	5.82 µg/L	-0.049
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 116.4%	
13C3-HFPO-DA	5.940	286.9 -> 168.9	36251	10.93 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 109.3%	
d3-MeFOSA	11.152	515.0 -> 219.0	6120	2.04 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 81.8%	
d5-EtFOSAA	8.521	589.2 -> 419.0	12785	5.55 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 111.0%	
d7-MeFOSE	11.047	623.2 -> 58.9	47201	22.28 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.1%	
d9-EtFOSE	11.332	639.2 -> 58.9	72352	25.65 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.6%	
d5-EtFOSA	11.423	531.1 -> 219.0	7883	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	9793	8.92 µg/L	96
		327.1 -> 80.9	4169		
6:2FTS	6.962	427.1 -> 407.0	13438	8.21 µg/L	99
		427.1 -> 80.9	5247		
8:2FTS	8.041	527.1 -> 507.0	11452	10.72 µg/L	100
		527.1 -> 80.8	4651		
EtFOSAA	8.522	584.2 -> 419.1	5297	2.57 µg/L	m 82
		584.2 -> 526.0	2038		
FOSA	9.862	498.1 -> 77.9	9566	2.23 µg/L	100
		498.1 -> 478.0	276		
MeFOSAA	8.313	570.1 -> 419.0	6189	2.28 µg/L	93
		570.1 -> 483.0	1146		
PFBA	2.920	212.8 -> 168.9	29987	9.20 µg/L	100
PFBS	5.455	298.7 -> 79.9	7496	1.92 µg/L	93
		298.7 -> 98.8	2692		
PFDA	8.242	512.9 -> 469.0	32198	2.19 µg/L	100
		512.9 -> 219.0	6426		
PFDoDA	9.143	613.1 -> 569.0	33661	2.41 µg/L	98
		613.1 -> 319.0	5172		
PFDS	9.296	599.0 -> 79.9	5068	2.24 µg/L	99

7.3.1
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.531	599.0 -> 98.8	2520	2.21	µg/L	100
		363.1 -> 319.0	38852			
PFHpS	7.873	363.1 -> 169.0	6793	2.28	µg/L	96
		449.0 -> 79.9	7294			
PFHxA	5.576	449.0 -> 98.9	4104	2.29	µg/L	99
		313.0 -> 269.0	34449			
PFHxS	7.278	313.0 -> 118.9	1127	1.71	µg/L	98
		398.7 -> 79.9	5195			
PFNA	7.747	398.7 -> 98.9	3039	2.37	µg/L	99
		463.0 -> 419.0	33146			
PFNS	8.861	463.0 -> 219.0	7527	2.19	µg/L	94
		548.8 -> 79.9	5222			
PFOA	7.201	548.8 -> 98.9	2457	2.18	µg/L	99
		413.0 -> 369.0	57141			
PFOS	8.381	413.0 -> 169.0	11118	2.08	µg/L	83
		498.9 -> 79.9	8853			
PFPeA	4.377	498.9 -> 98.8	4585	4.05	µg/L	100
		263.0 -> 219.0	66577			
PFPeS	6.545	349.1 -> 79.9	5018	2.00	µg/L	96
		349.1 -> 98.9	2263			
PFTeDA	9.913	713.1 -> 669.0	26147	2.27	µg/L	99
		713.1 -> 168.9	2608			
PFTrDA	9.541	663.0 -> 619.0	34893	2.26	µg/L	96
		663.0 -> 168.9	4111			
PFUnDA	8.710	563.1 -> 519.0	33136	2.42	µg/L	95
		563.1 -> 269.1	5936			
11Cl-PF3OUdS	9.580	630.9 -> 450.9	39733	4.11	µg/L	98
		632.9 -> 452.9	11958			
9Cl-PF3ONS	8.725	530.8 -> 351.0	58227	4.49	µg/L	98
		532.8 -> 353.0	18075			
ADONA	6.794	376.9 -> 250.9	115722	4.26	µg/L	99
		376.9 -> 84.8	30471			
HFPO-DA	5.941	284.9 -> 168.9	17687	4.72	µg/L	99
		284.9 -> 184.9	2078			
3:3FTCA	3.861	241.0 -> 177.0	7039	9.38	µg/L	98
		241.0 -> 117.0	666			
5:3FTCA	6.256	341.0 -> 237.1	124080	49.74	µg/L	100
		341.0 -> 217.0	86614			
7:3FTCA	7.737	441.0 -> 316.9	72073	52.34	µg/L	99
		441.0 -> 336.9	170454			
EtFOSA	11.425	526.0 -> 219.0	16792	4.13	µg/L	97
		526.0 -> 169.0	24022			
EtFOSE	11.345	630.0 -> 58.9	35064	9.99	µg/L	100
		511.9 -> 219.0	12624			
MeFOSA	11.153	511.9 -> 169.0	18324	4.94	µg/L	67
		616.1 -> 58.9	24174			
MeFOSE	11.060	699.1 -> 79.9	3559	11.60	µg/L	100
		699.1 -> 98.8	2107			
PFDoDS	10.052	295.0 -> 201.0	4392	4.99	µg/L	95
		295.0 -> 84.9	1173			
NFDHA	5.456	279.0 -> 85.1	34767	3.93	µg/L	100
		229.0 -> 84.9	33815			
PFMBA	3.515	314.8 -> 134.9	46929	4.03	µg/L	100
		314.8 -> 82.9	1615			
PFEESA	5.997			4.14	µg/L	100

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

7.3.1
7

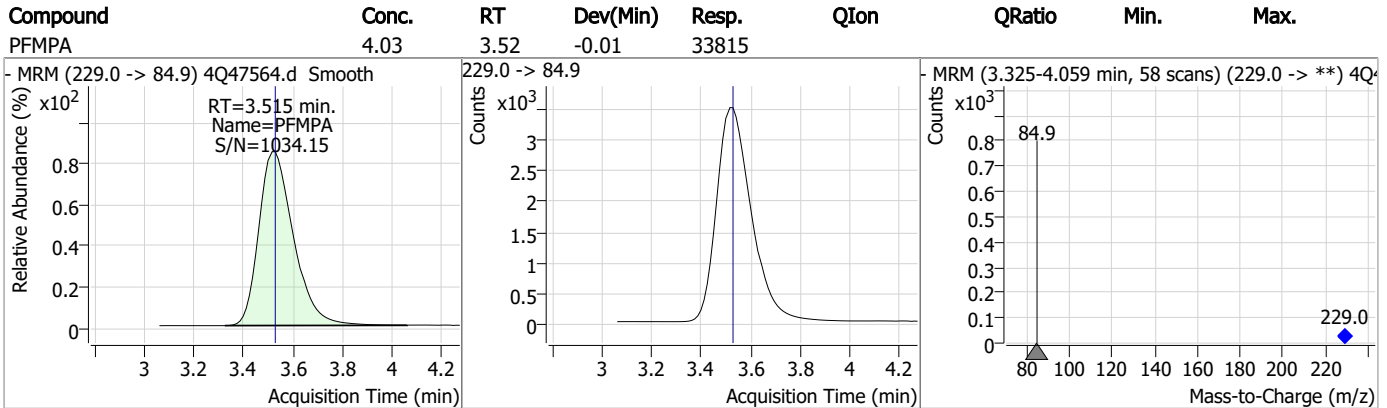
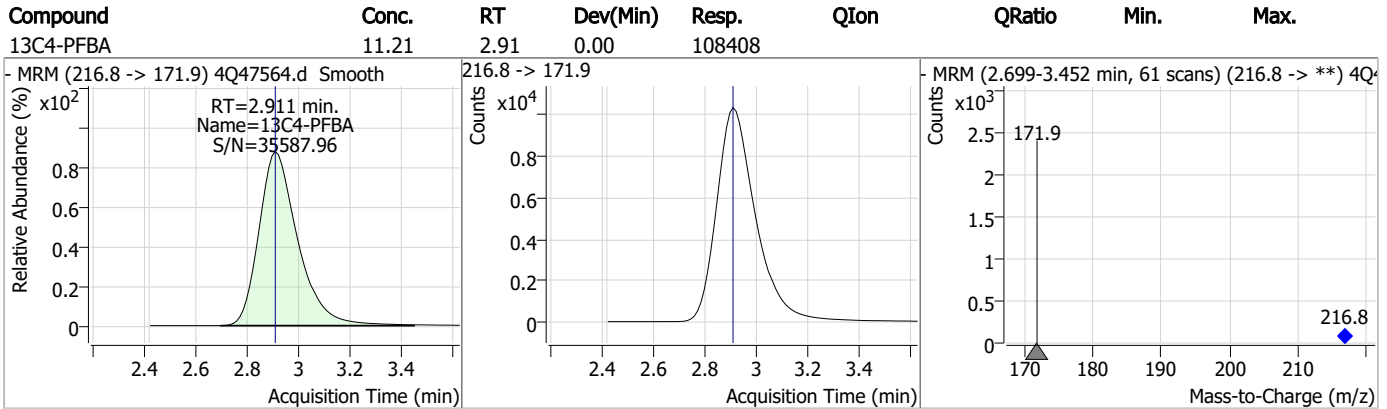
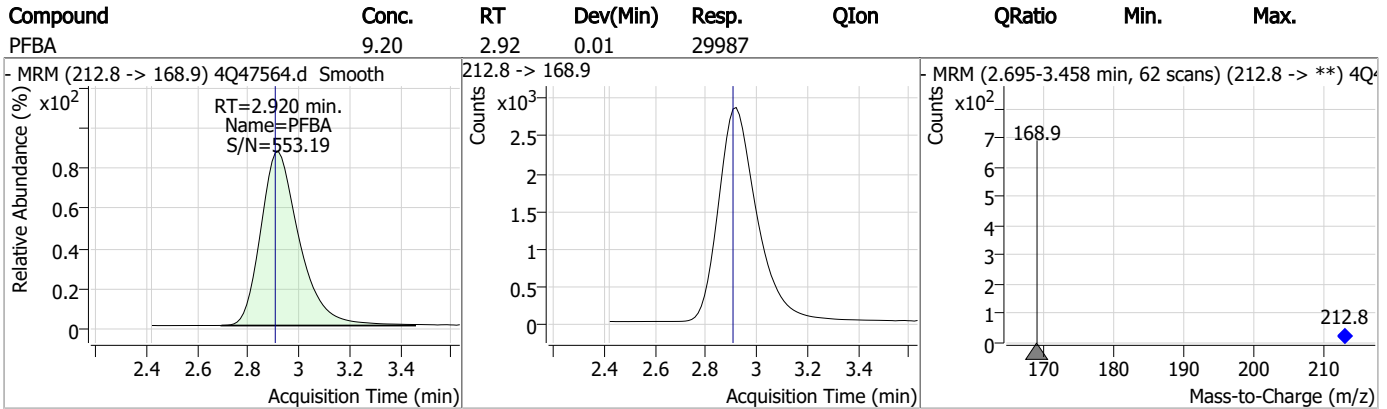
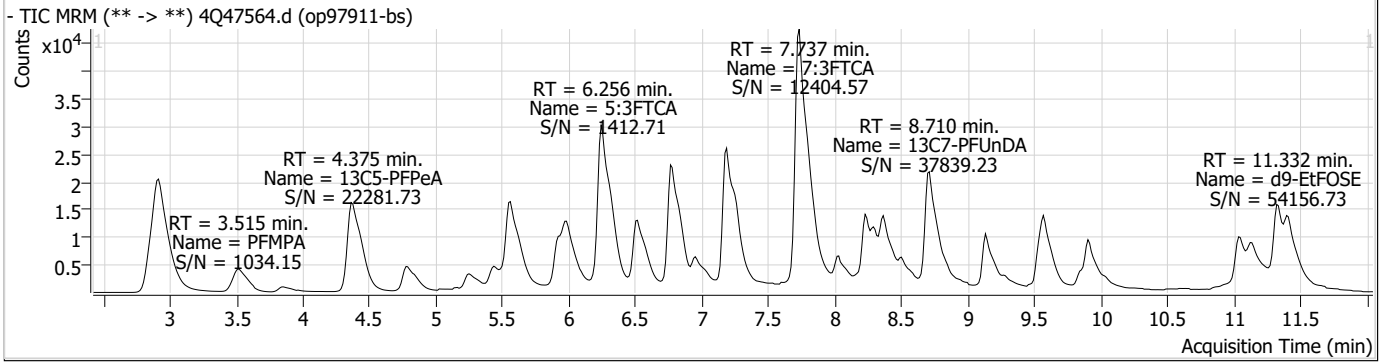
Perfluorinated Compounds by LC/MS/MS

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

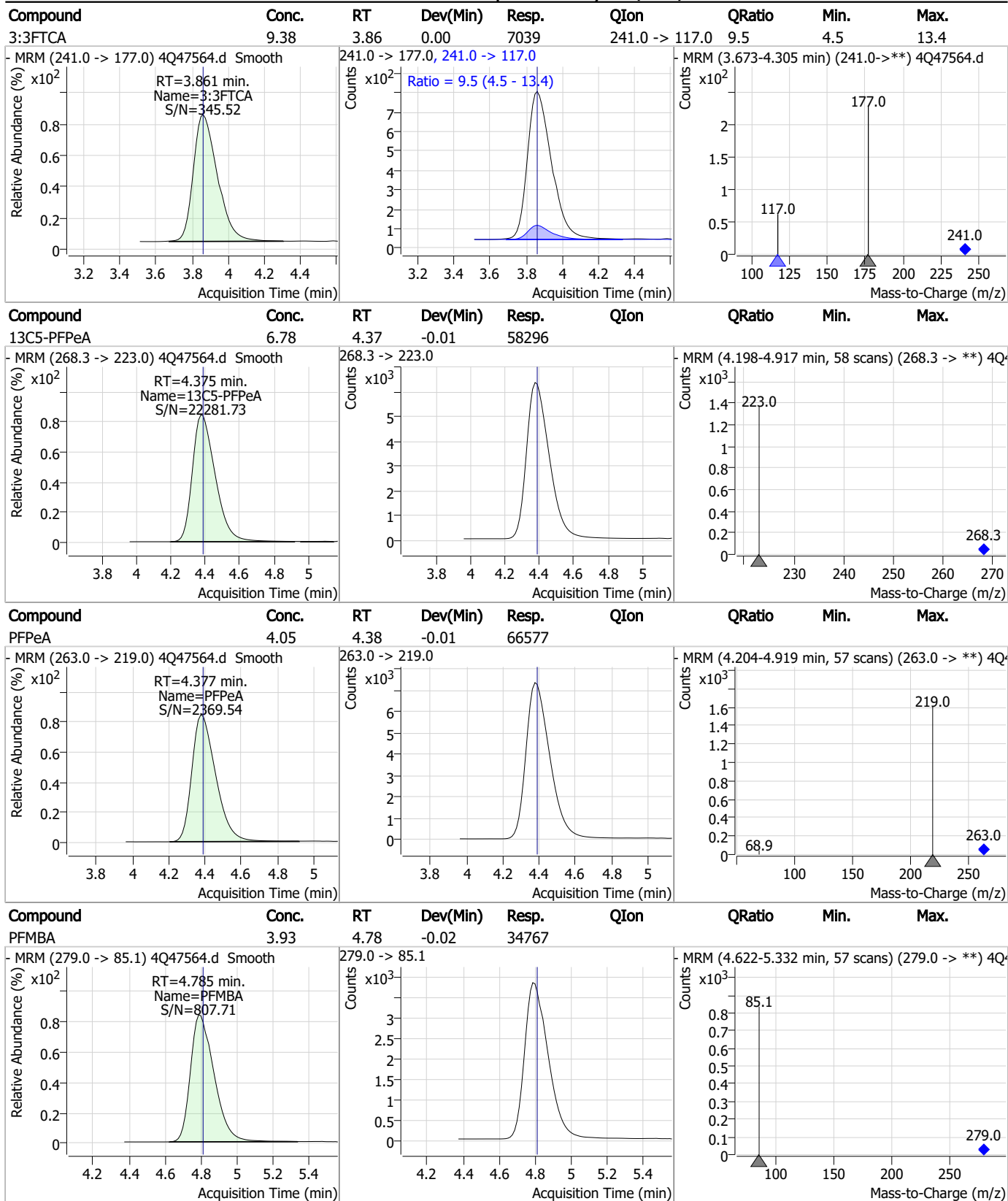
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Perfluorinated Compounds by LC/MS/MS



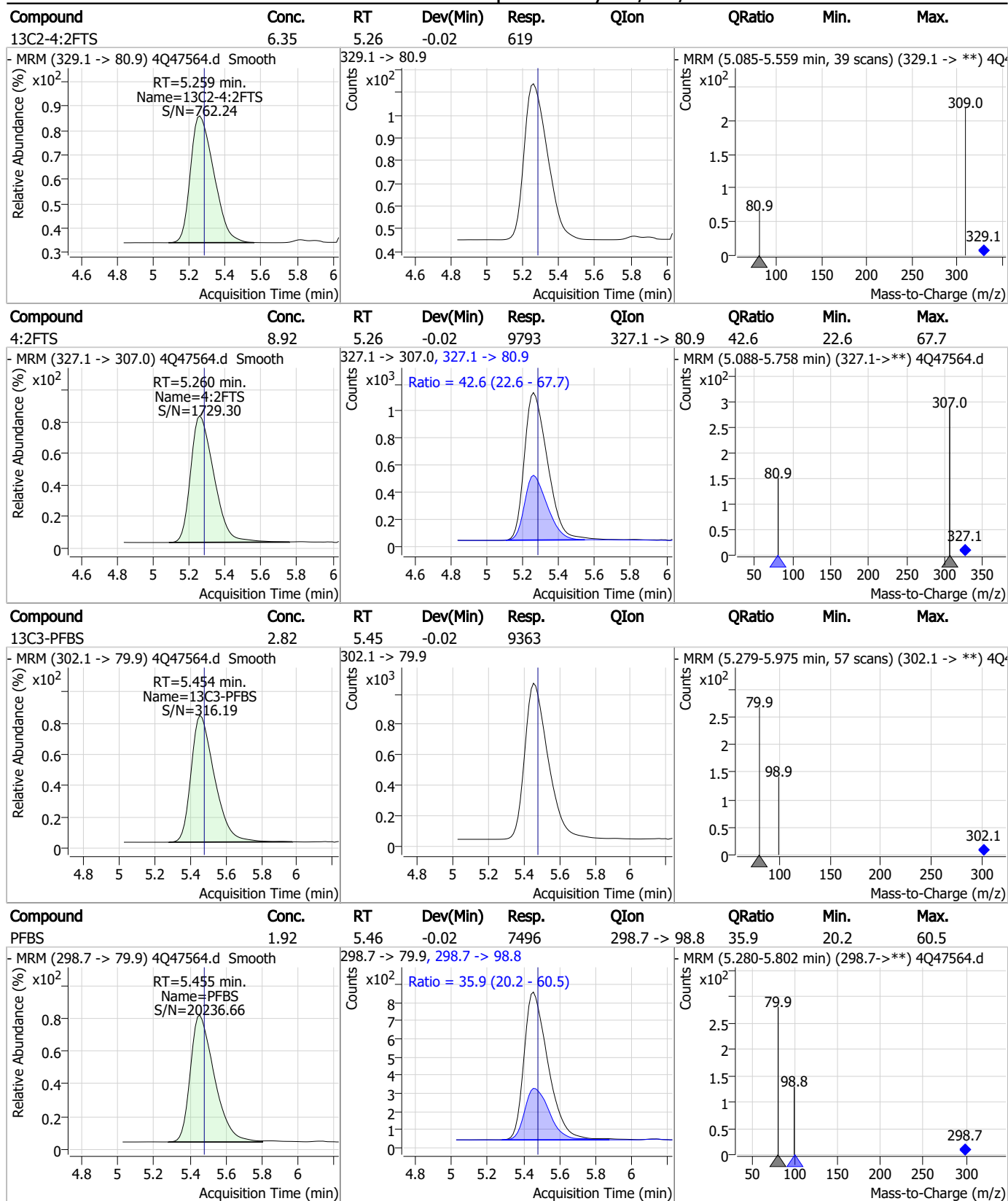
7.3.1
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Perfluorinated Compounds by LC/MS/MS



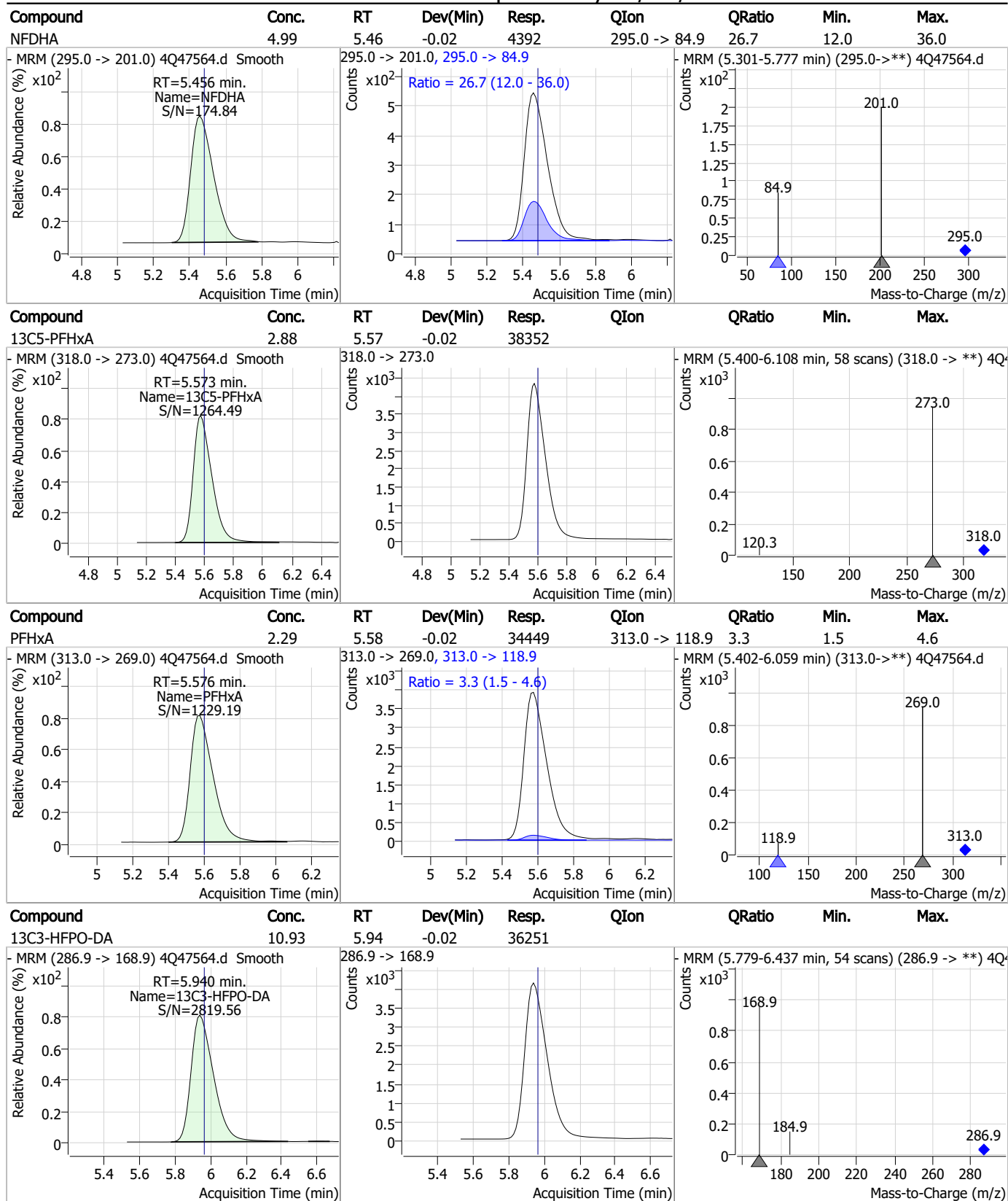
7.3.1
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Perfluorinated Compounds by LC/MS/MS



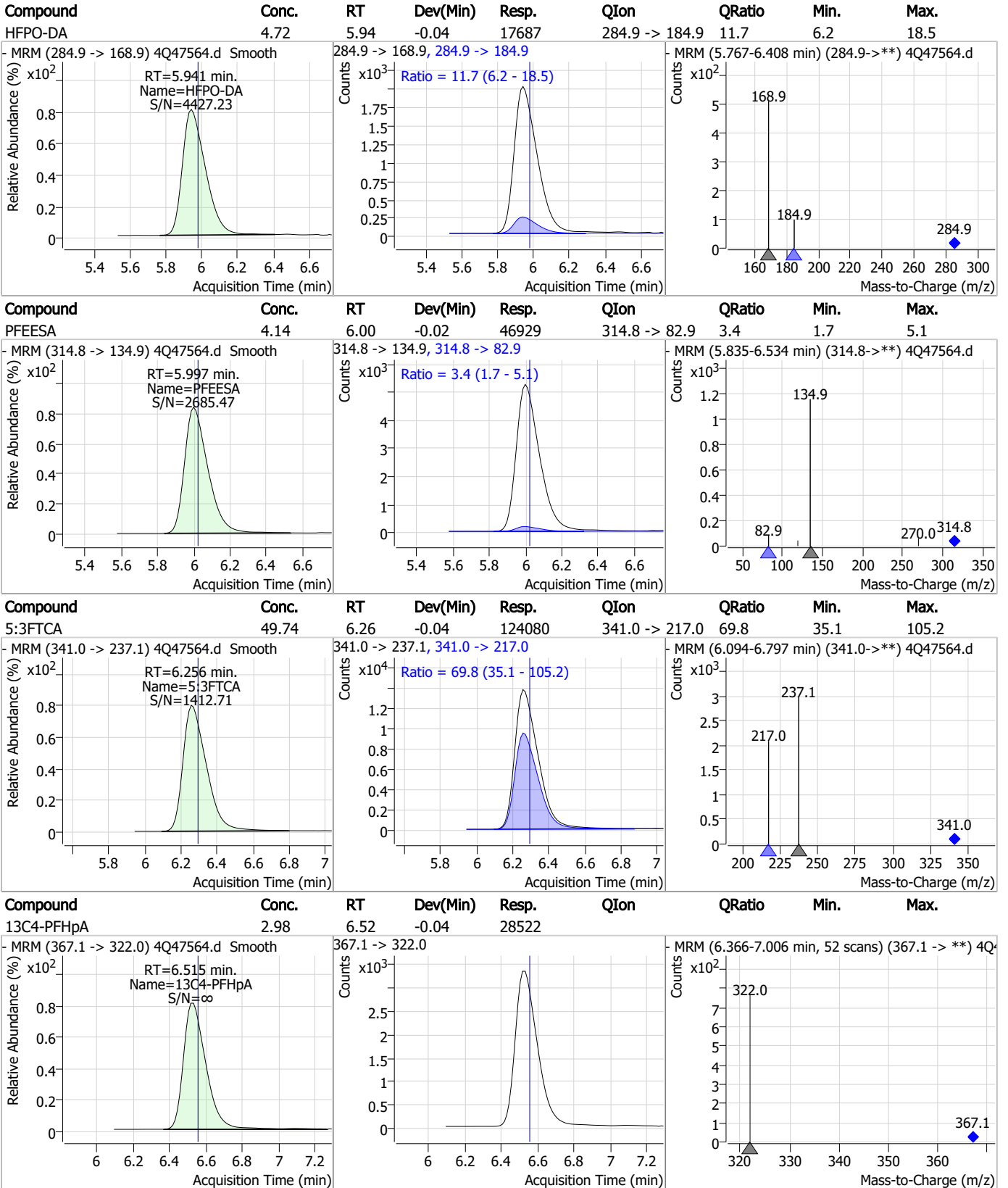
7.3.1
7

Perfluorinated Compounds by LC/MS/MS



7.3.1
7

Perfluorinated Compounds by LC/MS/MS

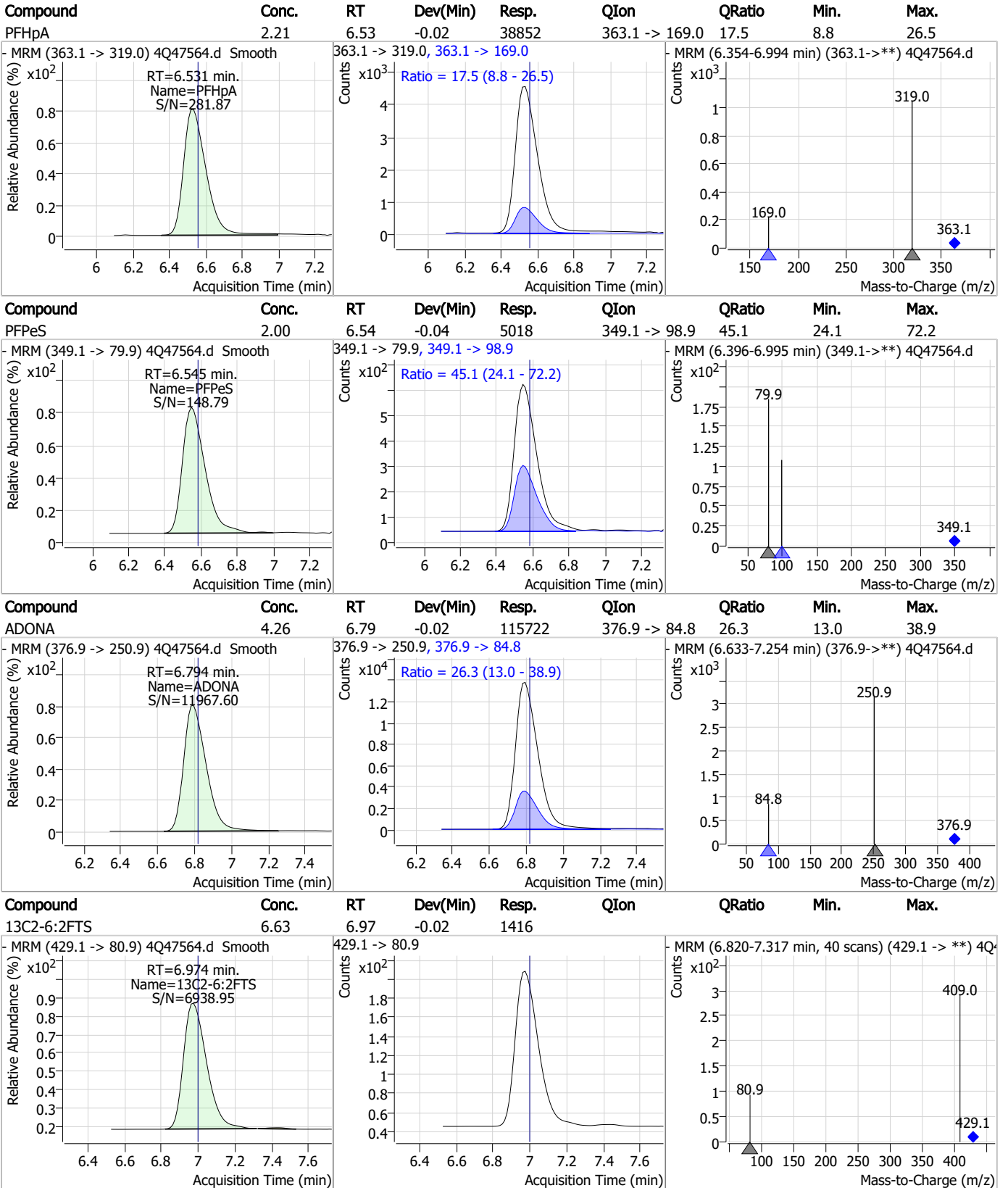


7.3.1

7



Perfluorinated Compounds by LC/MS/MS

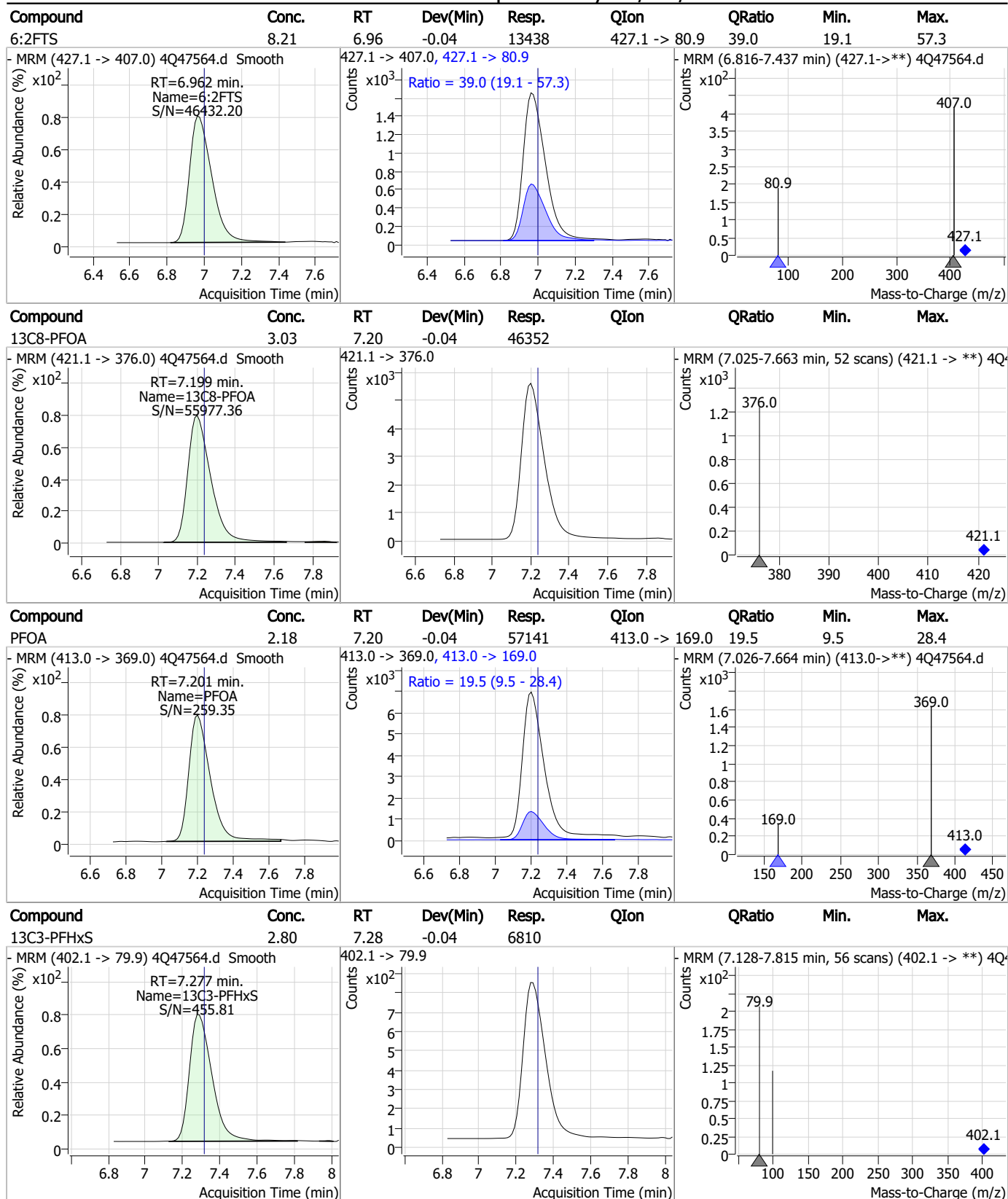


7.3.1

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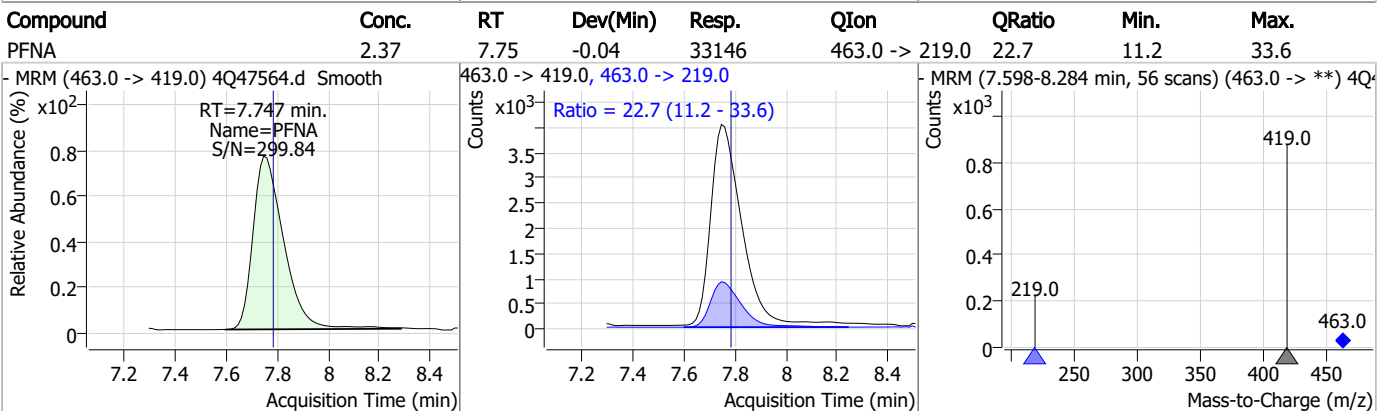
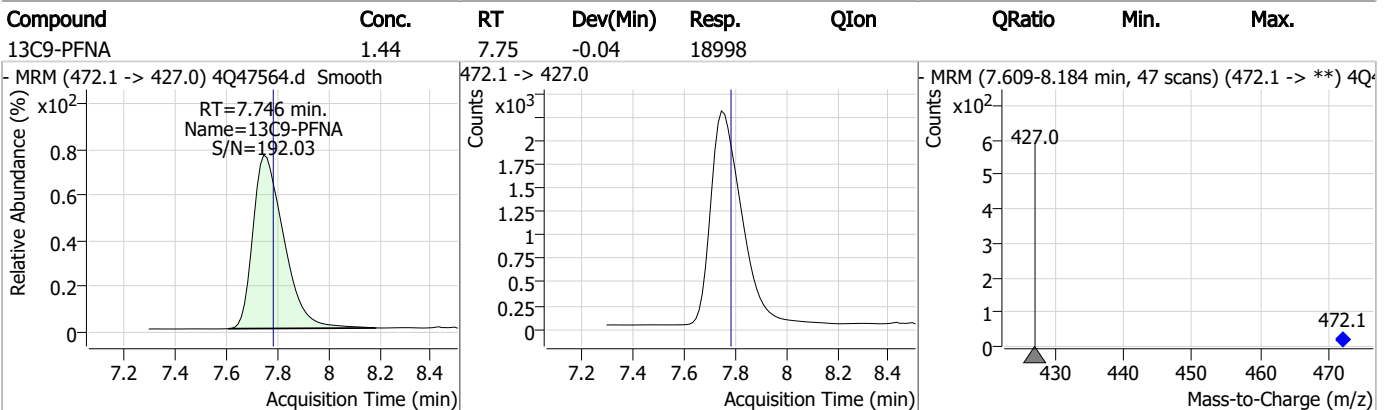
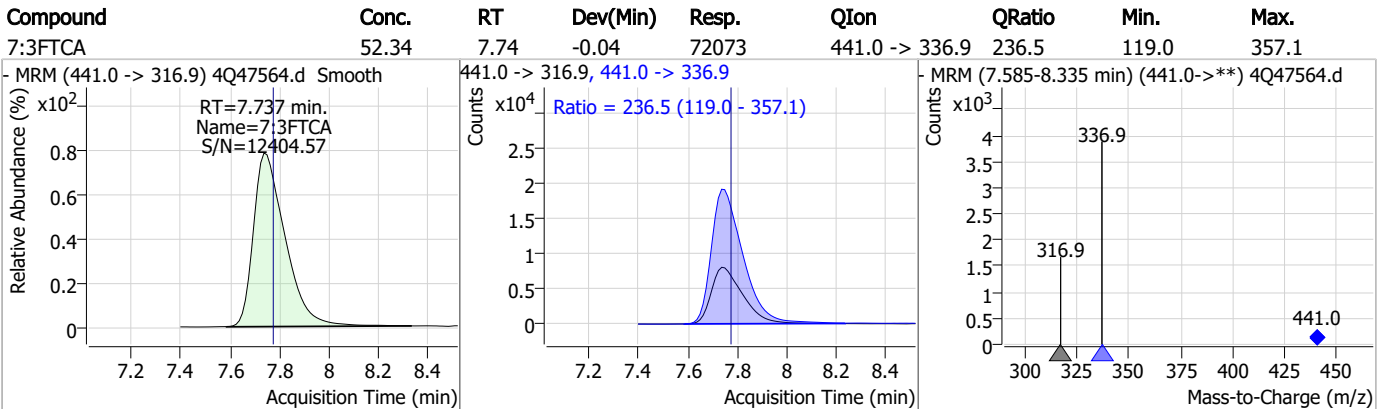
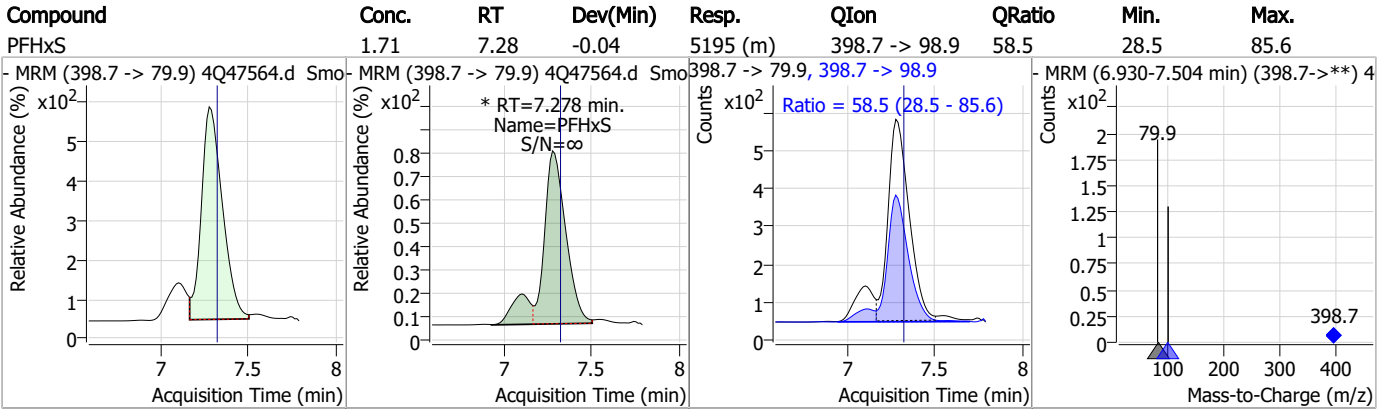


Perfluorinated Compounds by LC/MS/MS

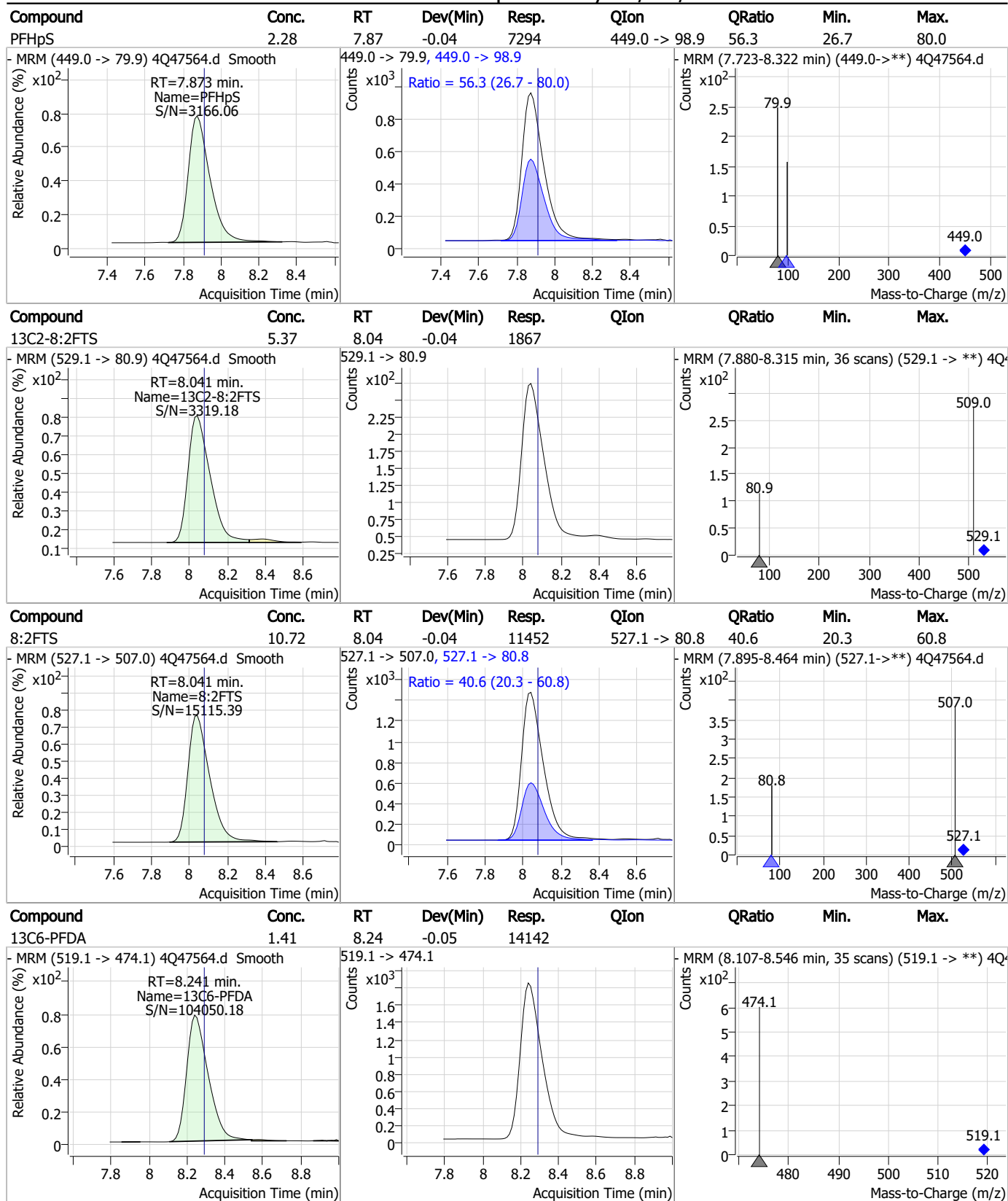


7.3.1
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Perfluorinated Compounds by LC/MS/MS

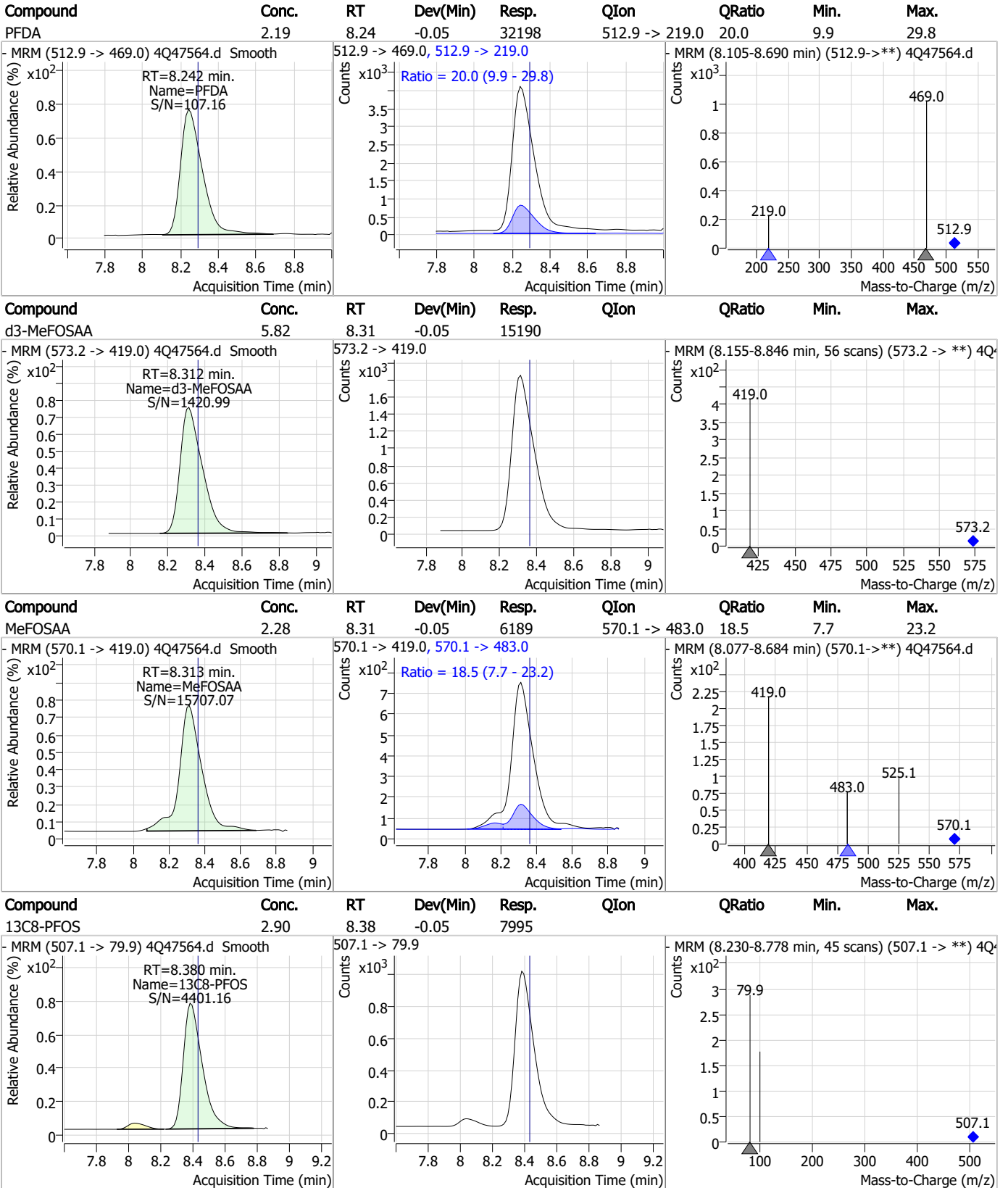


Perfluorinated Compounds by LC/MS/MS



7.3.1
7

Perfluorinated Compounds by LC/MS/MS

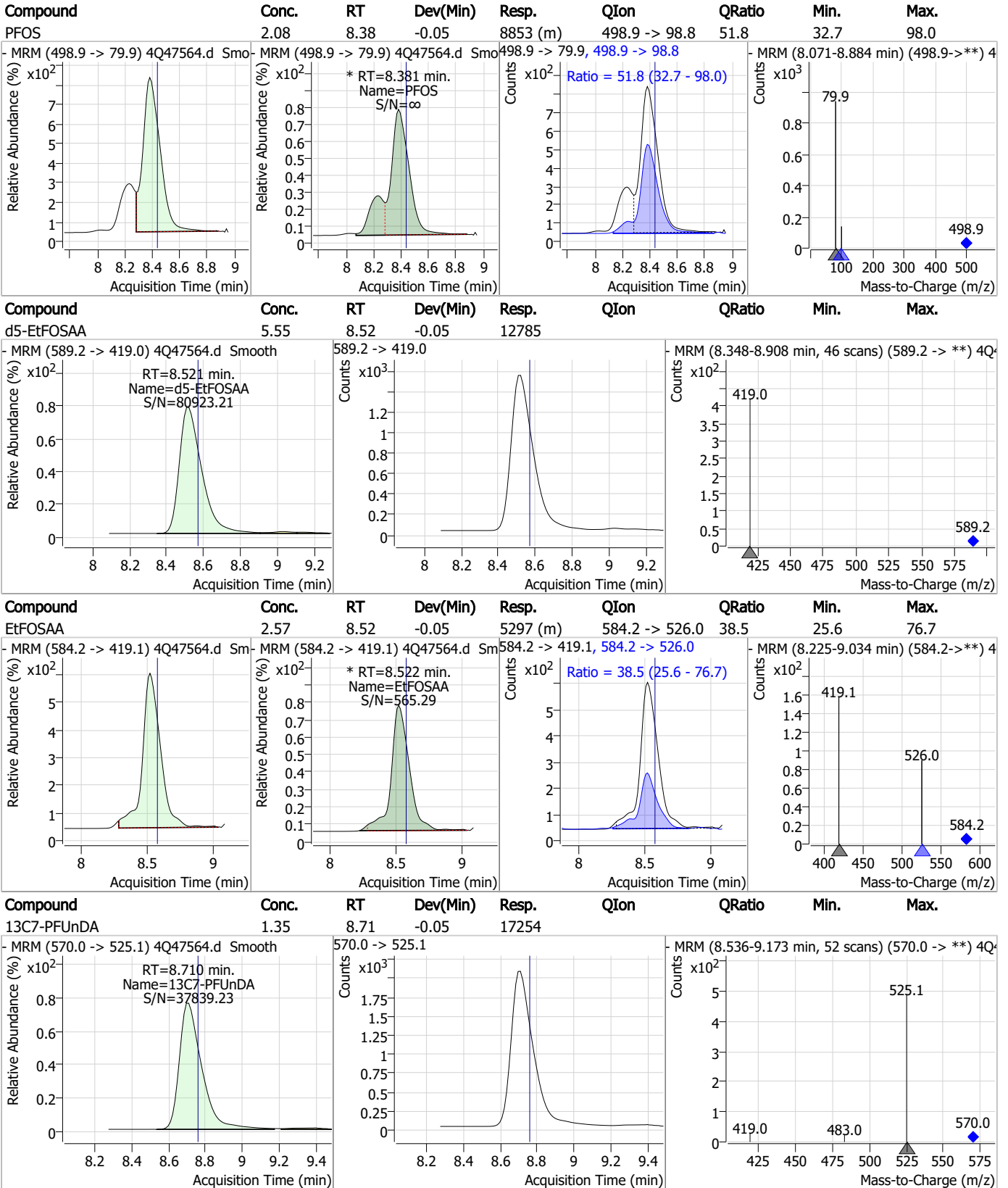


7.3.1

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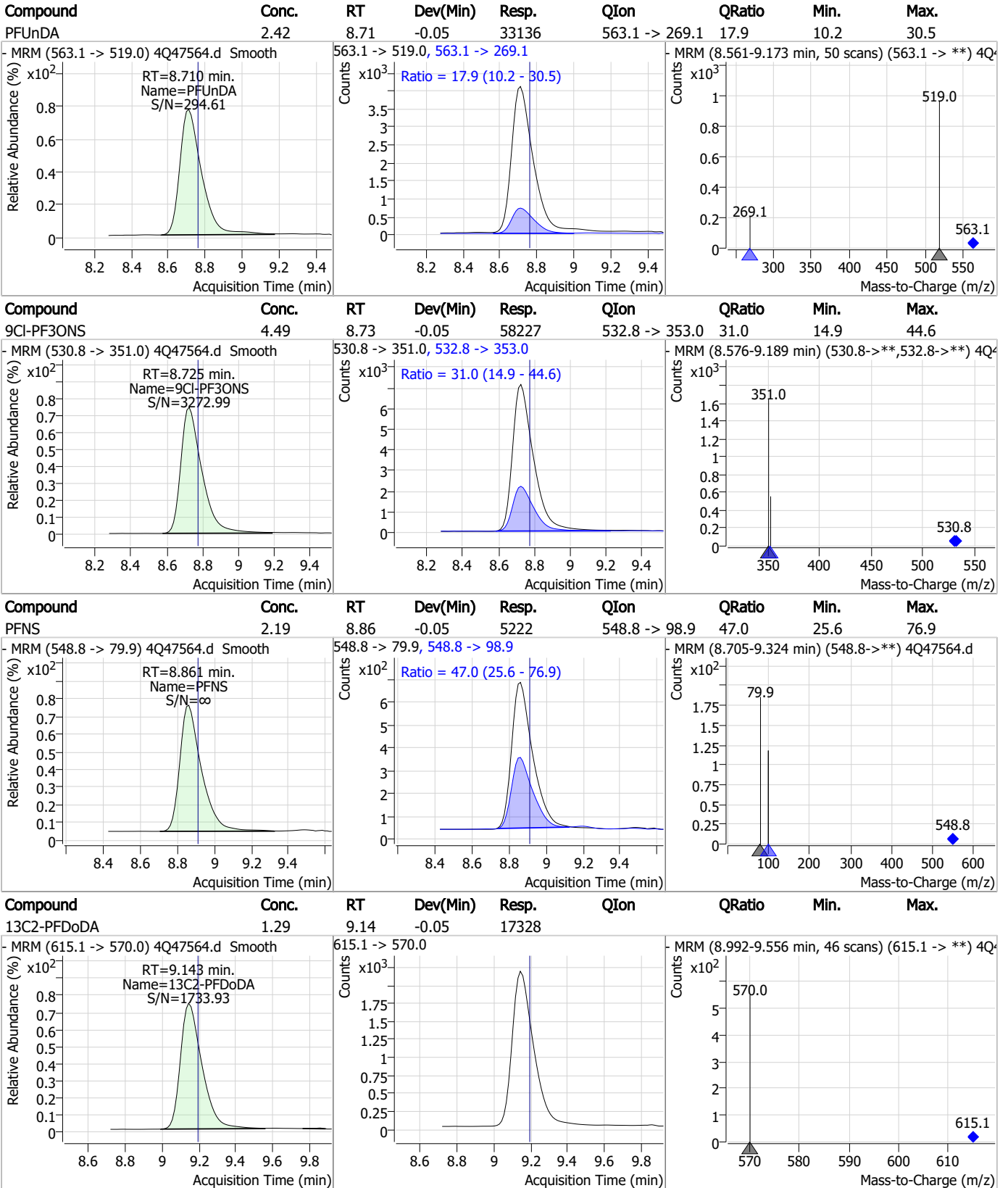
Perfluorinated Compounds by LC/MS/MS



7.3.1

7

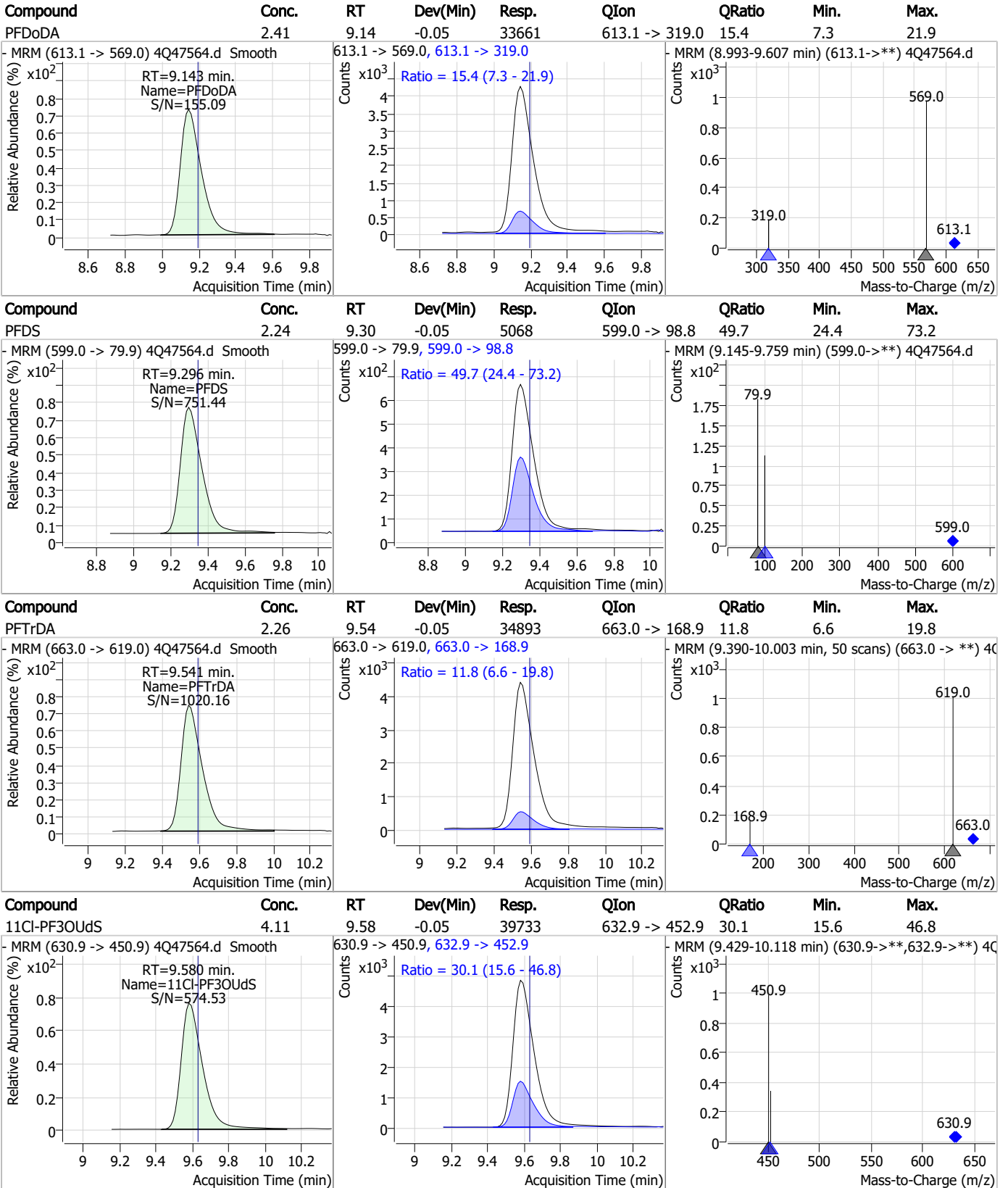
Perfluorinated Compounds by LC/MS/MS



7.3.1

7

Perfluorinated Compounds by LC/MS/MS



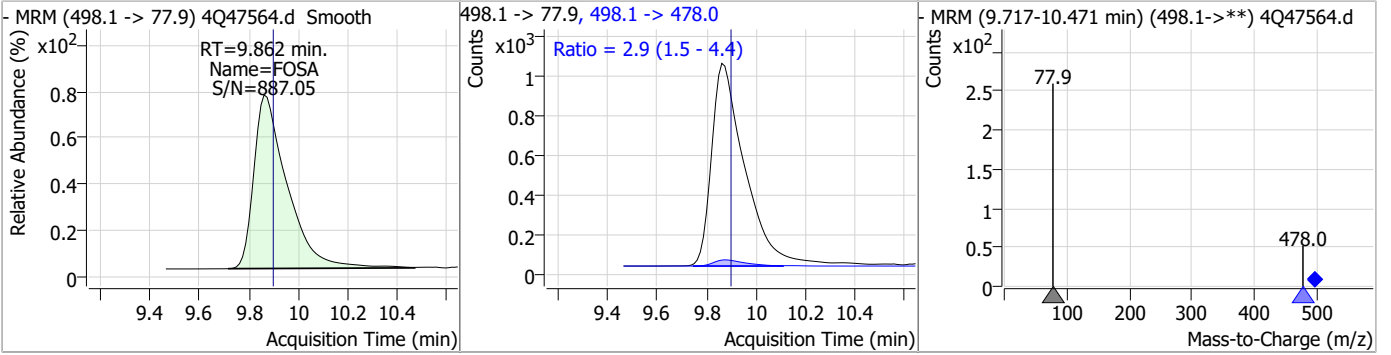
7.3.1

7

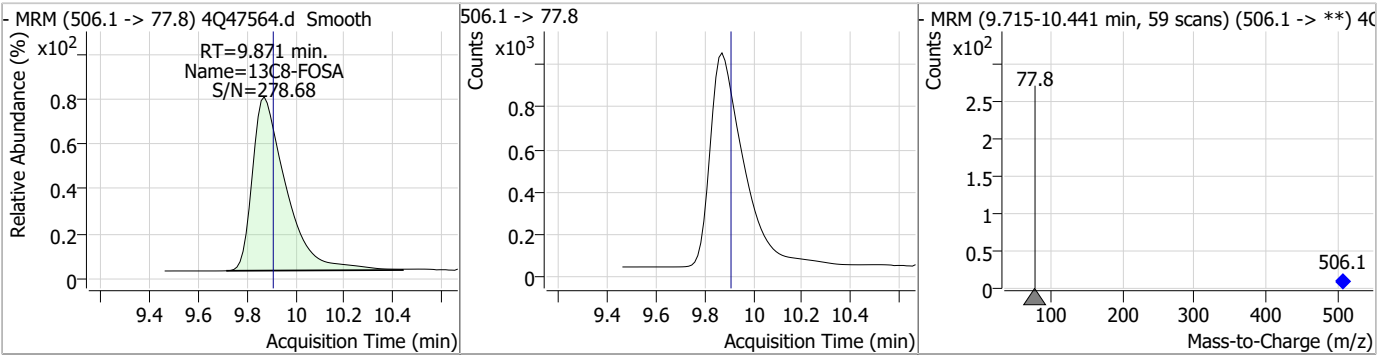


Perfluorinated Compounds by LC/MS/MS

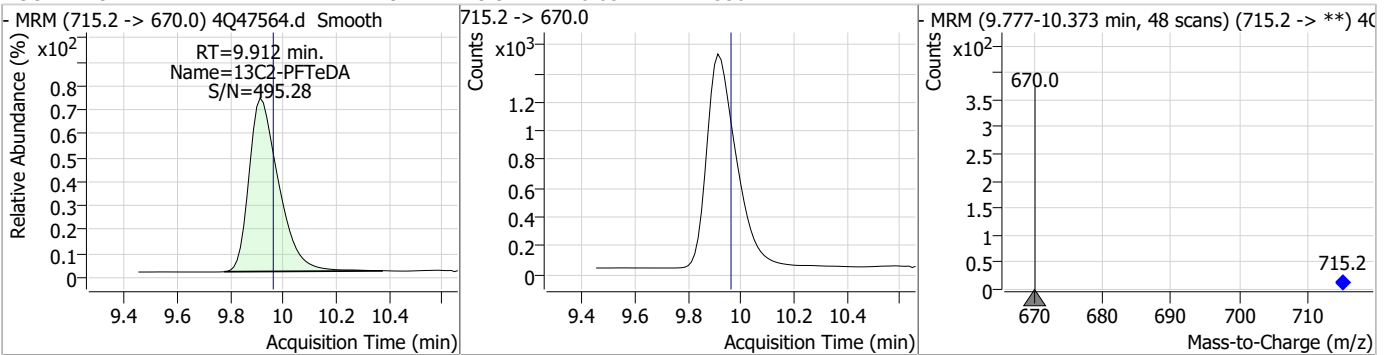
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.23	9.86	-0.04	9566	498.1 -> 478.0	2.9	1.5	4.4



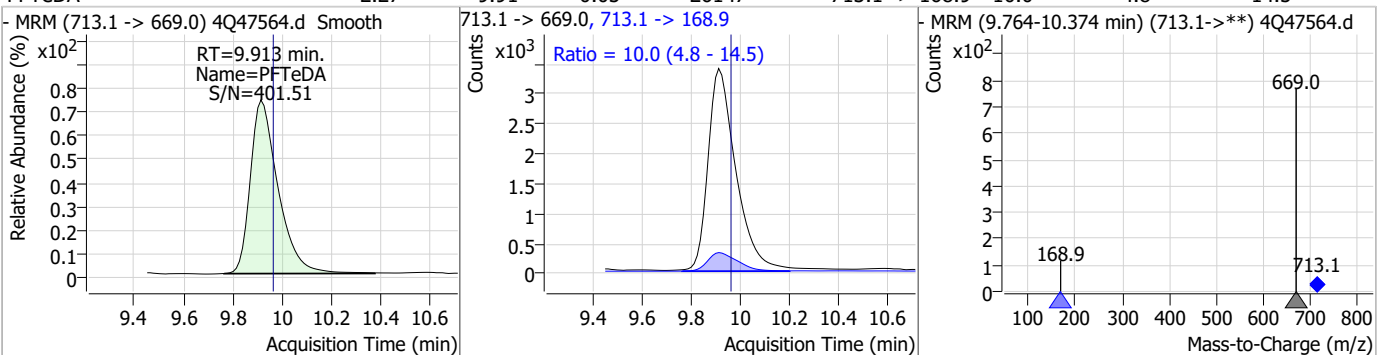
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.37	9.87	-0.04	9722				



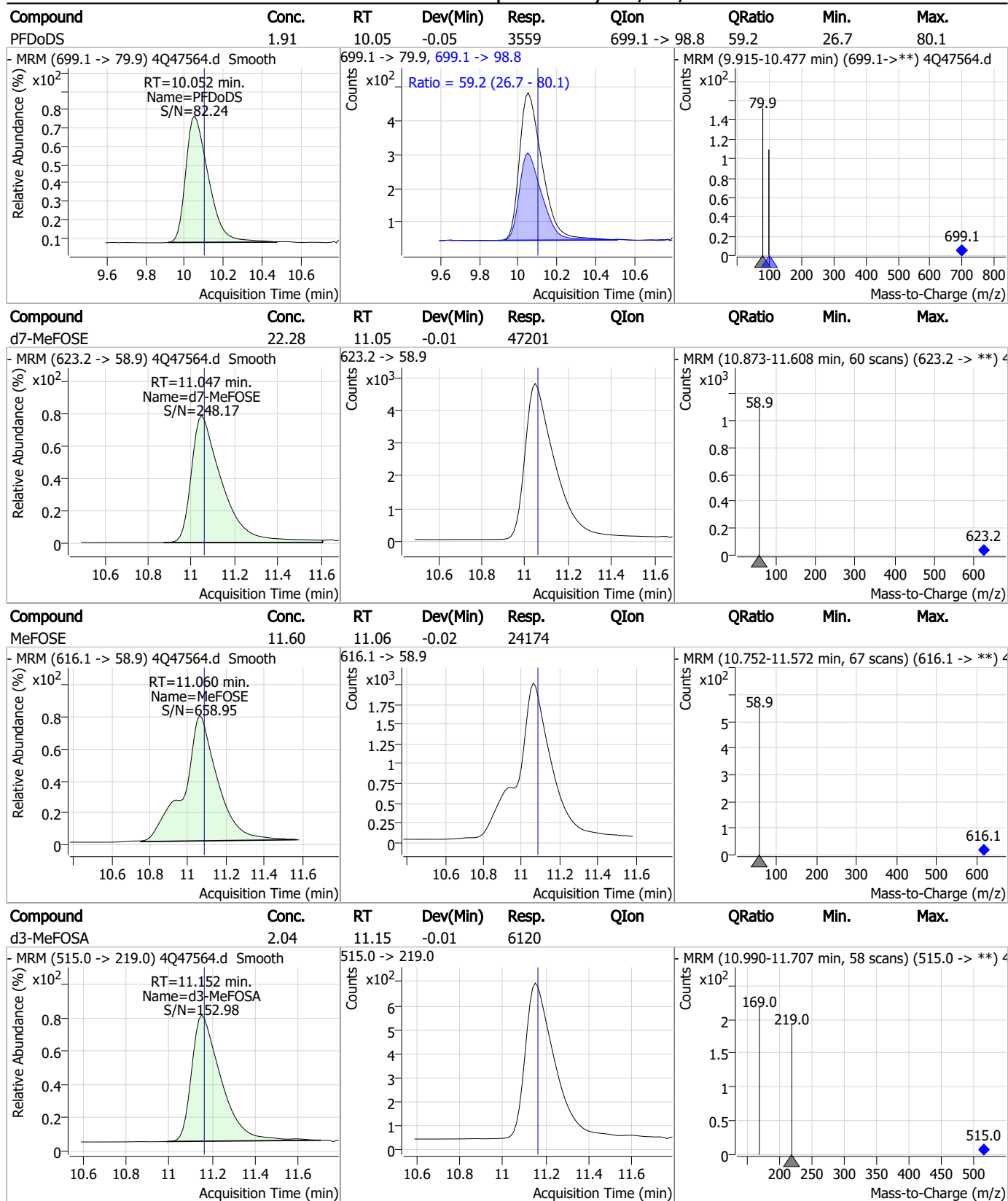
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.19	9.91	-0.05	11550				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.27	9.91	-0.05	26147	713.1 -> 168.9	10.0	4.8	14.5



Perfluorinated Compounds by LC/MS/MS

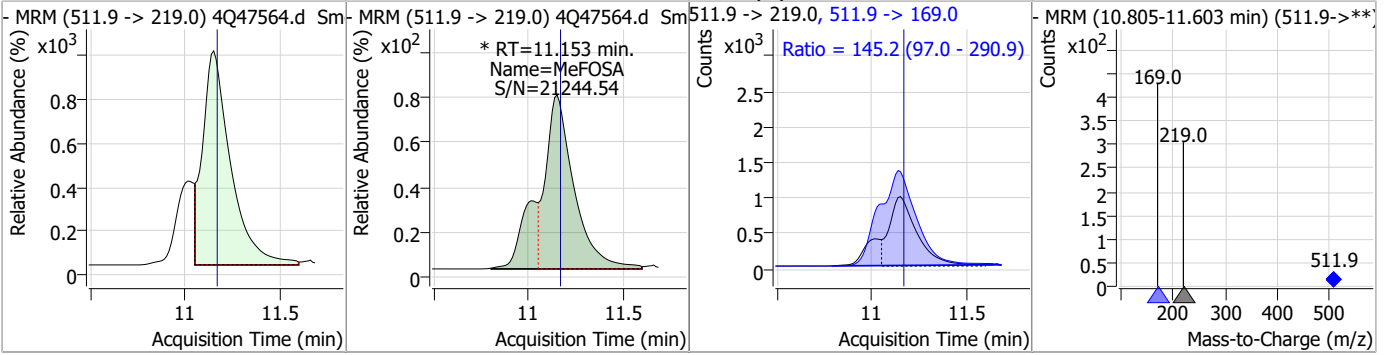


7.3.1

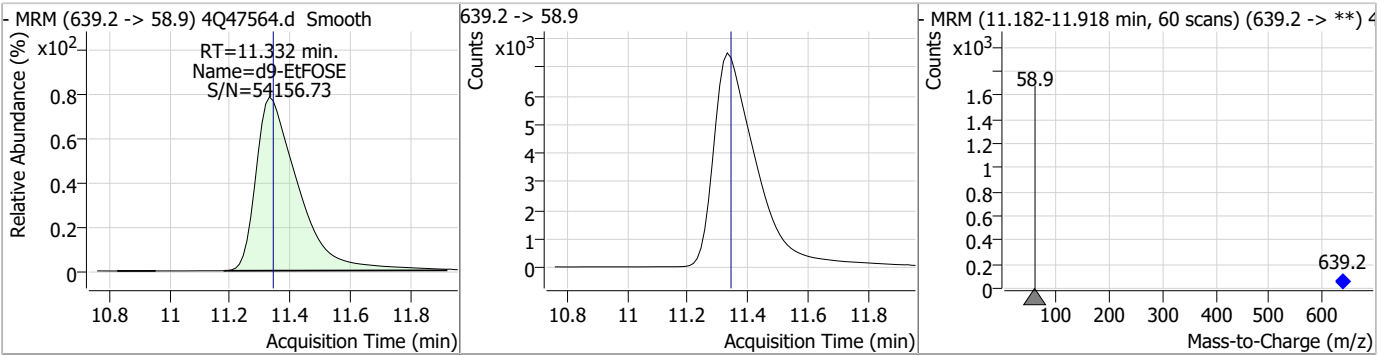
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Perfluorinated Compounds by LC/MS/MS

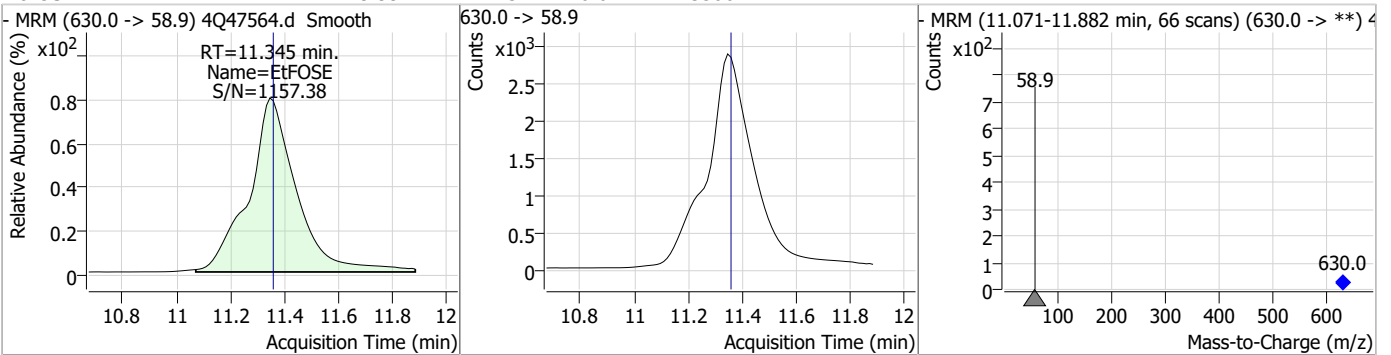
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.94	11.15	-0.01	12624 (m)	511.9 -> 169.0	145.2	97.0	290.9



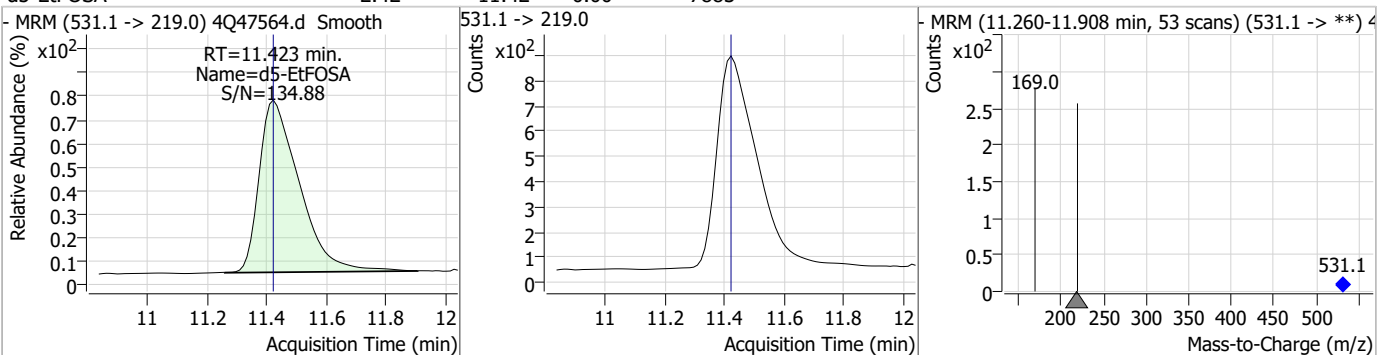
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.65	11.33	-0.01	72352				



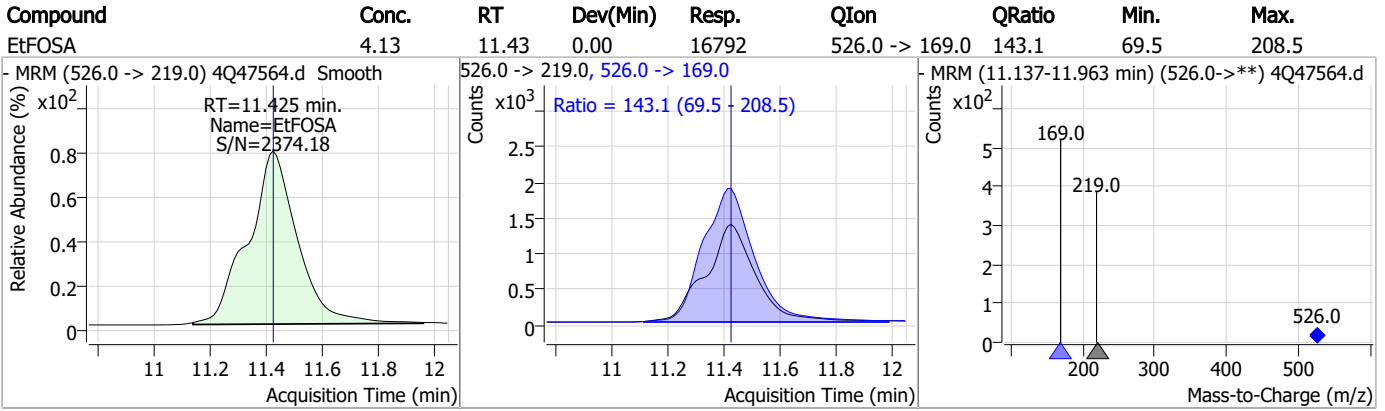
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	9.99	11.34	-0.01	35064				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.42	11.42	0.00	7883				



Perfluorinated Compounds by LC/MS/MS



7.3.1

7

Manual Integration Approval Summary

Sample Number: OP97911-BS Method: EPA DRAFT 1633
Lab FileID: 4Q47564.D Analyst approved: 07/20/23 12:46 Anna Ludwig
Injection Time: 07/19/23 12:25 Supervisor approved: 07/20/23 15:46 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.28	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.38	Split peak
EtFOSAA	2991-50-6		8.52	Split peak
MeFOSA	31506-32-8		11.15	Split peak

7.3.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47565.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 12:40:33 PM
 Sample Name : op97911-llbs:3
 Vial : P2-D9
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q697.batch.bin
 Sample Information : OP97911,S4Q697,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	114509	10.00 µg/L	0.012
M5-PFPeA	4.387	268.3 -> 223.0	60586	5.00 µg/L	0.000
M5-PFHxA	5.561	318.0 -> 273.0	40906	2.50 µg/L	-0.037
M4-PFHpA	6.515	367.1 -> 322.0	29764	2.50 µg/L	-0.040
M8-PFOA	7.199	421.1 -> 376.0	47161	2.50 µg/L	-0.037
M9-PFNA	7.746	472.1 -> 427.0	20180	1.25 µg/L	-0.038
M6-PFDA	8.253	519.1 -> 474.1	15410	1.25 µg/L	-0.038
M7-PFUnDA	8.710	570.0 -> 525.1	17956	1.25 µg/L	-0.050
M2-PFDoDA	9.143	615.1 -> 570.0	17996	1.25 µg/L	-0.051
M2-PFTeDA	9.912	715.2 -> 670.0	12435	1.25 µg/L	-0.050
M8-FOSA	9.871	506.1 -> 77.8	10515	2.50 µg/L	-0.037
M3-PFBS	5.454	302.1 -> 79.9	10186	2.50 µg/L	-0.025
M3-PFHxS	7.277	402.1 -> 79.9	7056	2.50 µg/L	-0.039
M8-PFOS	8.392	507.1 -> 79.9	8754	2.50 µg/L	-0.037
M2-4:2FTS	5.259	329.1 -> 80.9	614	5.00 µg/L	-0.025
M2-6:2FTS	6.974	429.1 -> 80.9	1494	5.00 µg/L	-0.025
M2-8:2FTS	8.041	529.1 -> 80.9	2206	5.00 µg/L	-0.037
M3-MeFOSAA	8.312	573.2 -> 419.0	15716	5.00 µg/L	-0.049
M3-HFPO-DA	5.928	286.9 -> 168.9	38348	10.00 µg/L	-0.037
M5-EtFOSAA	8.521	589.2 -> 419.0	13327	5.00 µg/L	-0.050
M7-MeFOSE	11.035	623.2 -> 58.9	49638	25.00 µg/L	-0.025
M9-EtFOSE	11.319	639.2 -> 58.9	77806	25.00 µg/L	-0.025
M5-EtFOSA	11.411	531.1 -> 219.0	8817	2.50 µg/L	-0.012
M3-MeFOSA	11.139	515.0 -> 219.0	7034	2.50 µg/L	-0.025
13C4-PFOS	8.380	502.8 -> 79.9	8371	2.50 µg/L	-0.050
13C3-PFBA	2.916	216.0 -> 172.0	50934	5.00 µg/L	0.000
18O2-PFHxS	7.276	403.0 -> 83.9	4238	2.50 µg/L	-0.039
13C4-PFOA	7.200	417.1 -> 372.0	45058	2.50 µg/L	-0.037
13C2-PFDA	8.254	515.1 -> 470.1	14716	1.25 µg/L	-0.038
13C5-PFNA	7.746	468.0 -> 423.0	20145	1.25 µg/L	-0.038
13C2-PFHxA	5.562	315.1 -> 270.0	30944	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.259	329.1 -> 80.9	614	6.45 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 129.1%		
13C2-6:2FTS	6.974	429.1 -> 80.9	1494	7.17 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 143.3%		
13C2-8:2FTS	8.041	529.1 -> 80.9	2206	6.50 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.0%		
13C2-PFDoDA	9.143	615.1 -> 570.0	17996	1.32 µg/L	-0.051
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.3%		
13C2-PFTeDA	9.912	715.2 -> 670.0	12435	1.26 µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C3-PFBS	5.454	302.1 -> 79.9	10186	3.14 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 125.6%		
13C3-PFHxS	7.277	402.1 -> 79.9	7056	2.97 µg/L	-0.039

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 = 118.7%	
13C4-PFBA	2.924	216.8 -> 171.9	114509	11.90 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 119.0%	
13C4-PFHpA	6.515	367.1 -> 322.0	29764	3.13 µg/L	-0.040
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 125.3%	
13C5-PFHxA	5.561	318.0 -> 273.0	40906	3.09 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 123.6%	
13C5-PFPeA	4.387	268.3 -> 223.0	60586	7.09 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 141.9%	
13C6-PFDA	8.253	519.1 -> 474.1	15410	1.51 µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 121.0%	
13C7-PFUnDA	8.710	570.0 -> 525.1	17956	1.39 µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 111.0%	
13C8-FOSA	9.871	506.1 -> 77.8	10515	2.43 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.1%	
13C8-PFOA	7.199	421.1 -> 376.0	47161	3.22 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 128.7%	
13C8-PFOS	8.392	507.1 -> 79.9	8754	3.01 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 120.4%	
13C9-PFNA	7.746	472.1 -> 427.0	20180	1.50 µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 119.9%	
d3-MeFOSAA	8.312	573.2 -> 419.0	15716	5.71 µg/L	-0.049
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.2%	
13C3-HFPO-DA	5.928	286.9 -> 168.9	38348	11.63 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 116.3%	
d3-MeFOSA	11.139	515.0 -> 219.0	7034	2.23 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.1%	
d5-EtFOSAA	8.521	589.2 -> 419.0	13327	5.49 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.7%	
d7-MeFOSE	11.035	623.2 -> 58.9	49638	22.22 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 88.9%	
d9-EtFOSE	11.319	639.2 -> 58.9	77806	26.16 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 104.6%	
d5-EtFOSA	11.411	531.1 -> 219.0	8817	2.57 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.9%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	2649	2.43 µg/L	97
		327.1 -> 80.9	1145		
6:2FTS	6.962	427.1 -> 407.0	4031	2.33 µg/L	94
		427.1 -> 80.9	1406		
8:2FTS	8.041	527.1 -> 507.0	3169	2.51 µg/L	91
		527.1 -> 80.8	1460		
EtFOSAA	8.522	584.2 -> 419.1	1504	0.70 µg/L	m 88
		584.2 -> 526.0	897		
FOSA	9.874	498.1 -> 77.9	2893	0.62 µg/L	97
		498.1 -> 478.0	54		
MeFOSAA	8.313	570.1 -> 419.0	1637	0.58 µg/L	m 82
		570.1 -> 483.0	374		
PFBA	2.920	212.8 -> 168.9	8739	2.54 µg/L	100
PFBS	5.455	298.7 -> 79.9	2115	0.50 µg/L	100
		298.7 -> 98.8	852		
PFDA	8.254	512.9 -> 469.0	10228	0.64 µg/L	92
		512.9 -> 219.0	1652		
PFDODA	9.143	613.1 -> 569.0	9006	0.62 µg/L	96
		613.1 -> 319.0	1472		
PFDS	9.296	599.0 -> 79.9	1377	0.56 µg/L	94

7.3.2
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	733			
PFHpA	6.516	363.1 -> 319.0	10626	0.58	µg/L	98
		363.1 -> 169.0	1976			
PFHpS	7.873	449.0 -> 79.9	2240	0.64	µg/L	99
		449.0 -> 98.9	1185			
PFHxA	5.563	313.0 -> 269.0	9854	0.62	µg/L	99
		313.0 -> 118.9	333			
PFHxS	7.291	398.7 -> 79.9	1622	0.52	µg/L	m 97
		398.7 -> 98.9	890			
PFNA	7.747	463.0 -> 419.0	9505	0.64	µg/L	98
		463.0 -> 219.0	2211			
PFNS	8.861	548.8 -> 79.9	1441	0.55	µg/L	96
		548.8 -> 98.9	778			
PFOA	7.188	413.0 -> 369.0	16790	0.63	µg/L	97
		413.0 -> 169.0	3428			
PFOS	8.394	498.9 -> 79.9	3089	0.66	µg/L	m 73
		498.9 -> 98.8	1361			
PFPeA	4.377	263.0 -> 219.0	19111	1.12	µg/L	100
PFPeS	6.545	349.1 -> 79.9	1560	0.60	µg/L	83
		349.1 -> 98.9	576			
PFTeDA	9.913	713.1 -> 669.0	7313	0.59	µg/L	98
		713.1 -> 168.9	764			
PFTrDA	9.553	663.0 -> 619.0	9548	0.60	µg/L	99
		663.0 -> 168.9	1207			
PFUnDA	8.710	563.1 -> 519.0	9201	0.65	µg/L	93
		563.1 -> 269.1	2176			
11Cl-PF3OUdS	9.580	630.9 -> 450.9	11373	1.11	µg/L	96
		632.9 -> 452.9	3327			
9Cl-PF3ONS	8.725	530.8 -> 351.0	16455	1.20	µg/L	97
		532.8 -> 353.0	5175			
ADONA	6.780	376.9 -> 250.9	32540	1.13	µg/L	99
		376.9 -> 84.8	8608			
HFPO-DA	5.941	284.9 -> 168.9	4991	1.26	µg/L	98
		284.9 -> 184.9	584			
3:3FTCA	3.861	241.0 -> 177.0	1996	2.52	µg/L	99
		241.0 -> 117.0	173			
5:3FTCA	6.256	341.0 -> 237.1	35218	13.24	µg/L	99
		341.0 -> 217.0	24561			
7:3FTCA	7.737	441.0 -> 316.9	20890	14.22	µg/L	97
		441.0 -> 336.9	48798			
EtFOSA	11.413	526.0 -> 219.0	5235	1.15	µg/L	97
		526.0 -> 169.0	7061			
EtFOSE	11.332	630.0 -> 58.9	10058	2.66	µg/L	100
MeFOSA	11.141	511.9 -> 219.0	3702	1.26	µg/L	78
		511.9 -> 169.0	5952			
MeFOSE	11.060	616.1 -> 58.9	7227	3.30	µg/L	100
PFDoDS	10.052	699.1 -> 79.9	1127	0.55	µg/L	95
		699.1 -> 98.8	646			
NFDHA	5.456	295.0 -> 201.0	1272	1.35	µg/L	93
		295.0 -> 84.9	346			
PFMBA	4.785	279.0 -> 85.1	10139	1.10	µg/L	100
PFMPA	3.528	229.0 -> 84.9	9825	1.13	µg/L	100
PFEESA	5.997	314.8 -> 134.9	13333	1.10	µg/L	100
		314.8 -> 82.9	457			

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

7.3.2
7

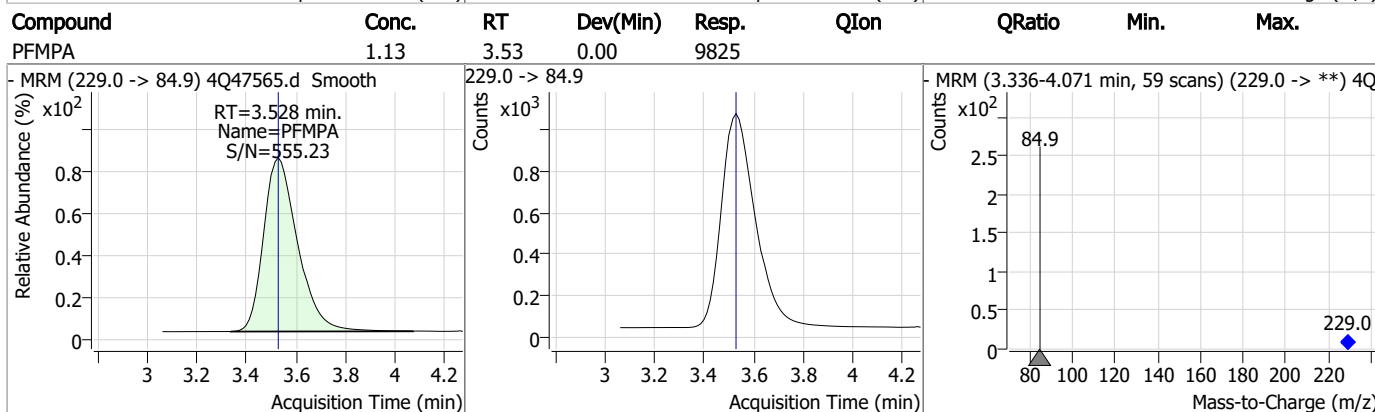
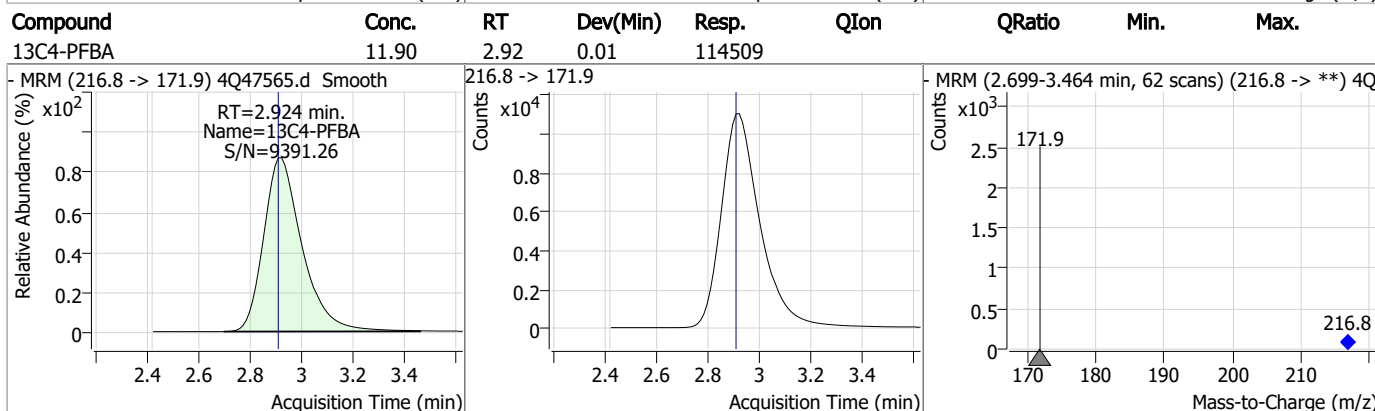
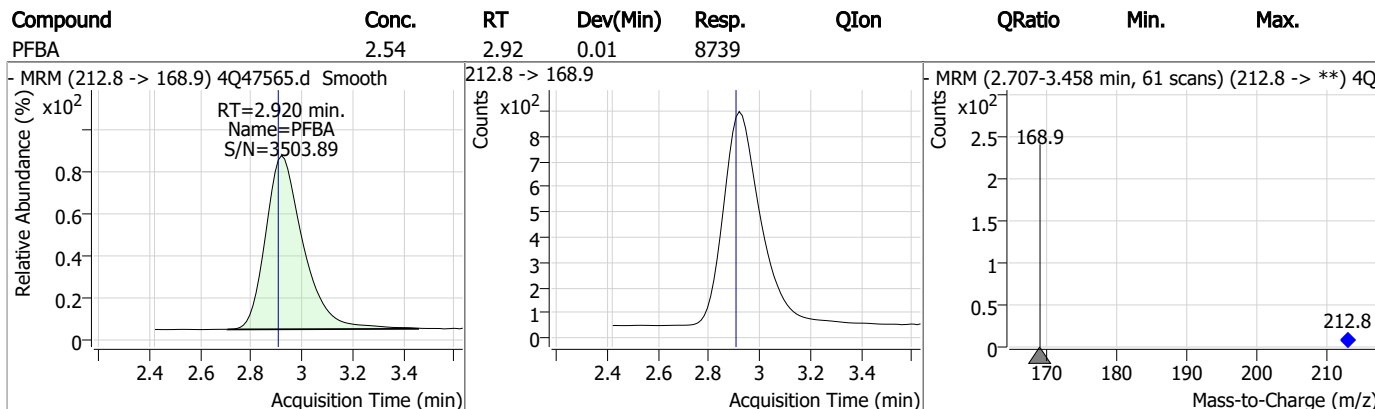
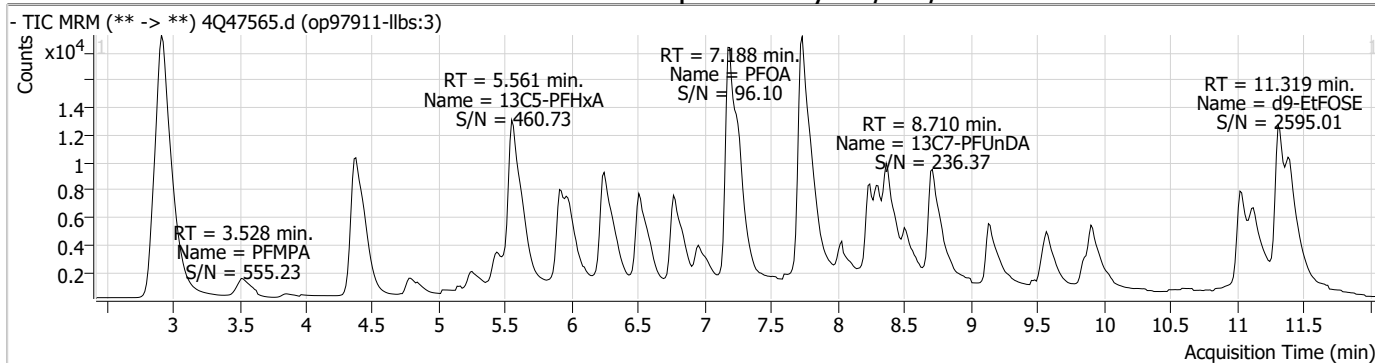
Perfluorinated Compounds by LC/MS/MS

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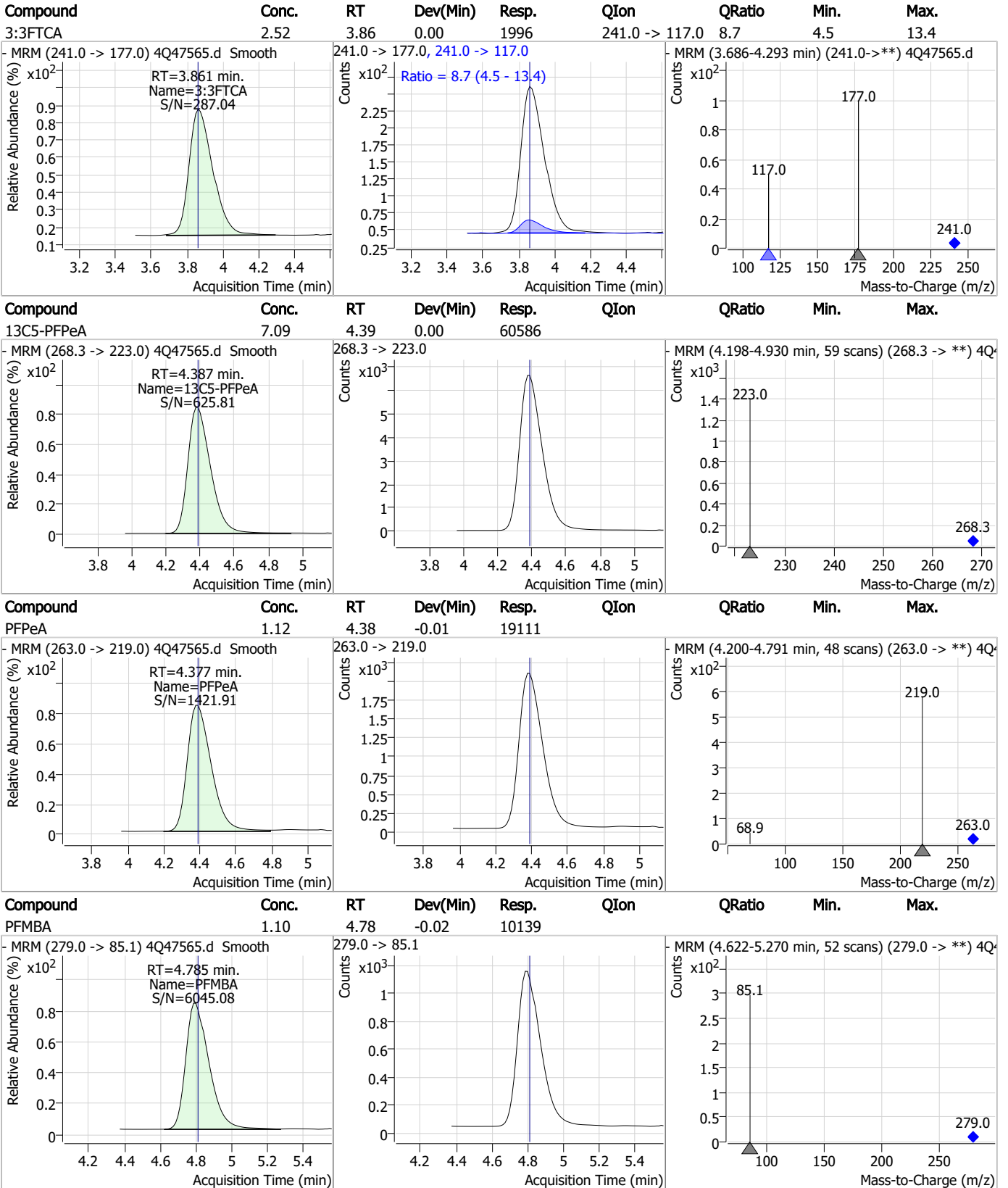
7.3.2

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Perfluorinated Compounds by LC/MS/MS



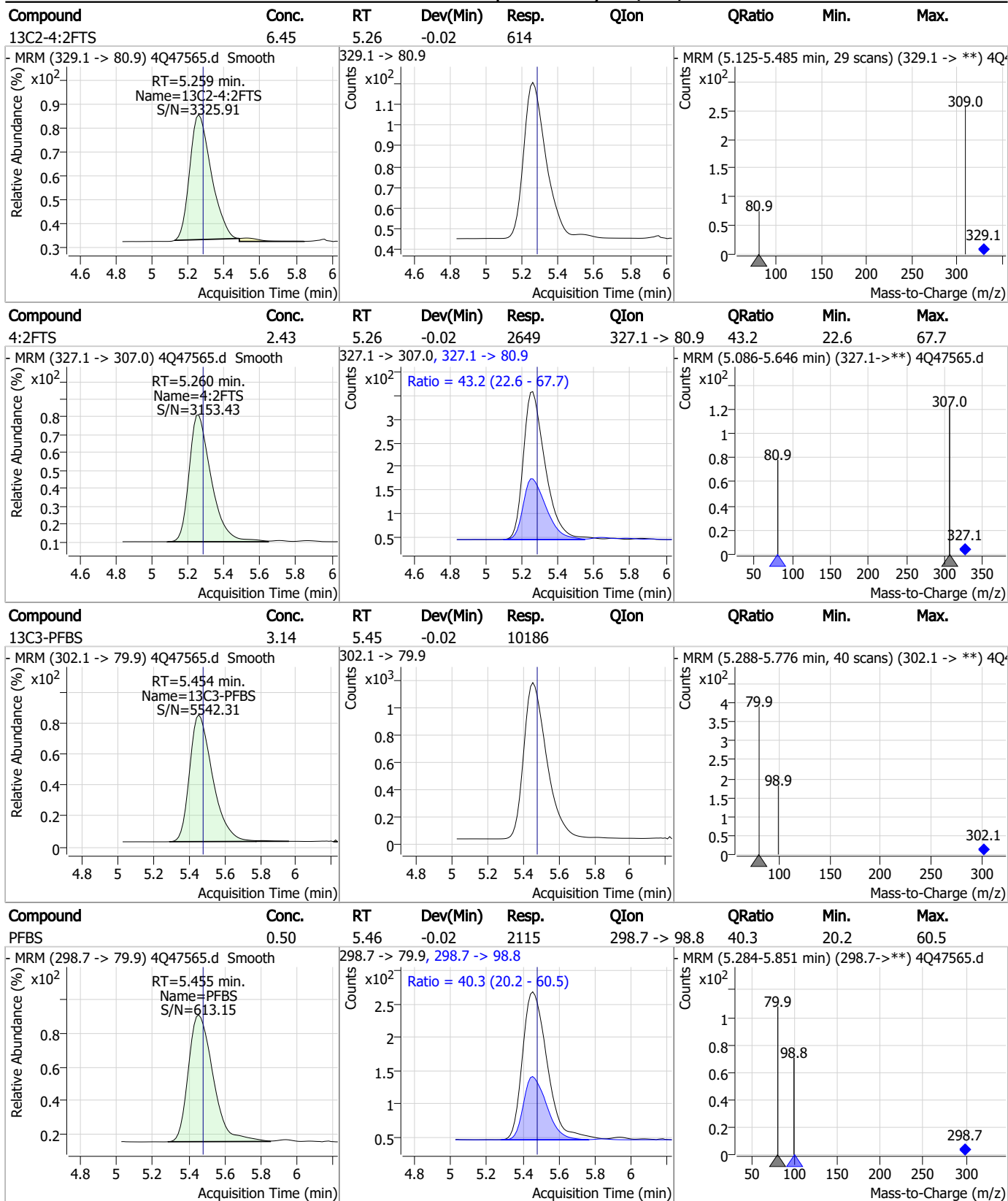
Perfluorinated Compounds by LC/MS/MS



7.3.2
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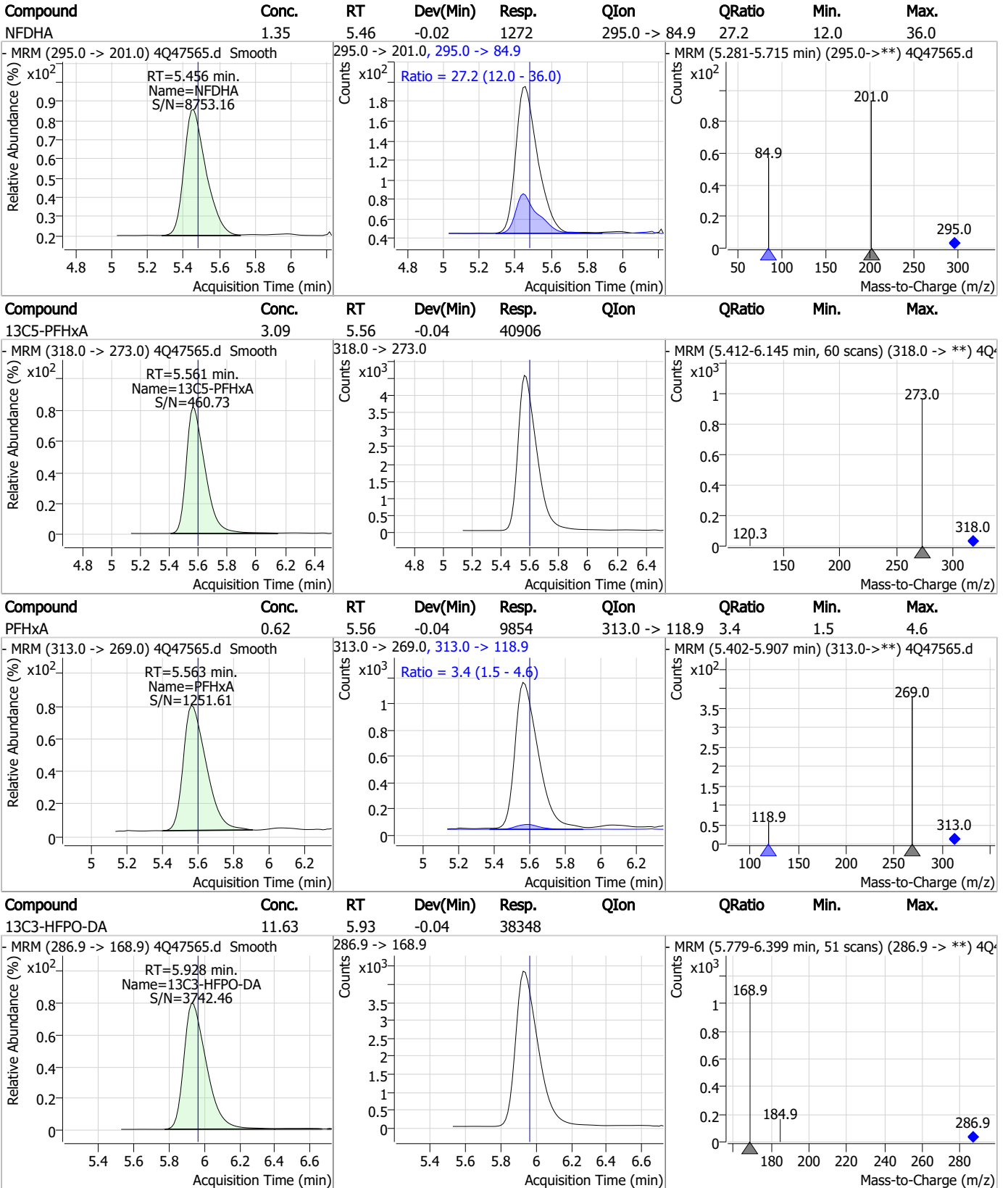


Perfluorinated Compounds by LC/MS/MS



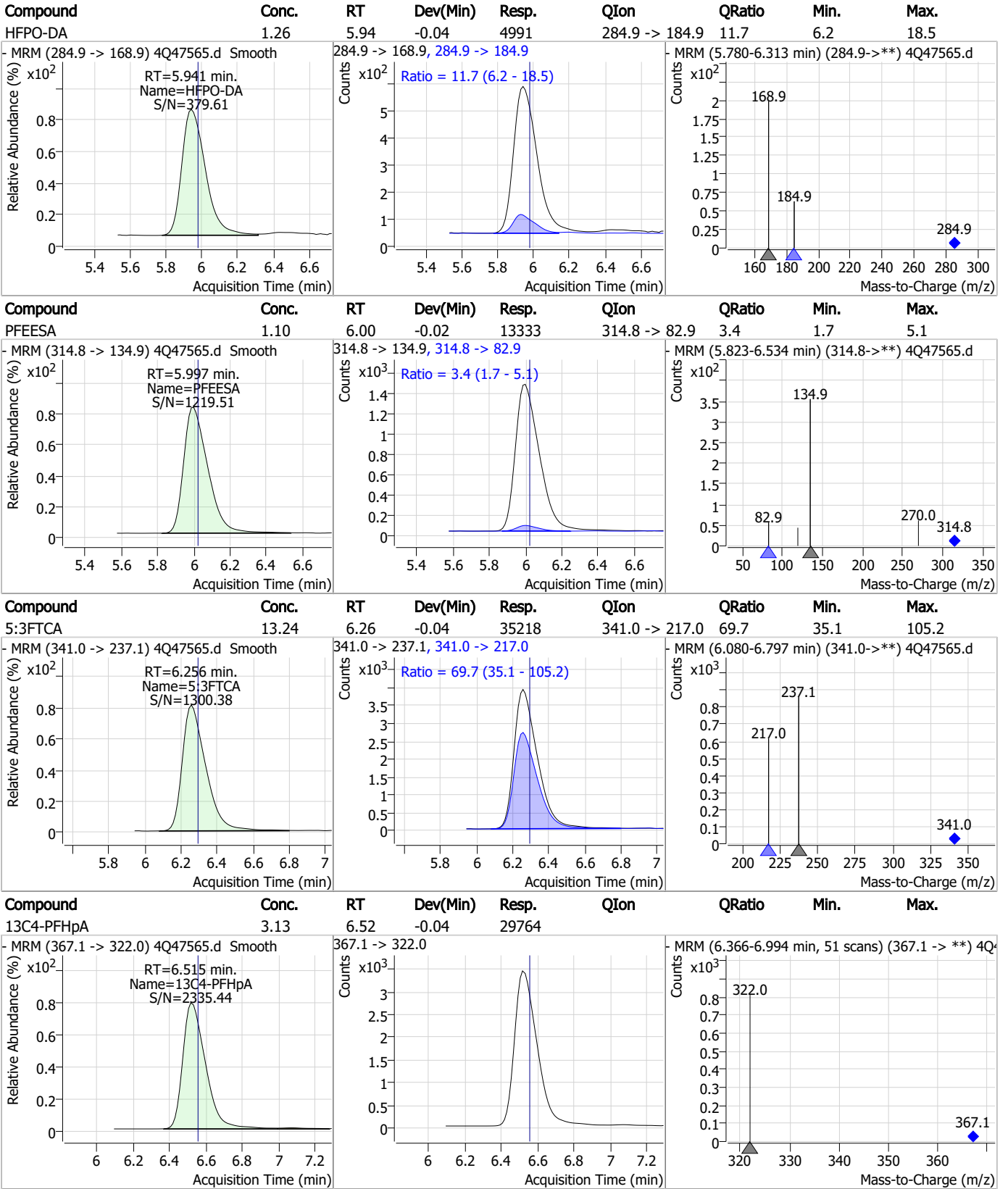
7.3.2
7

Perfluorinated Compounds by LC/MS/MS



7.3.2
7

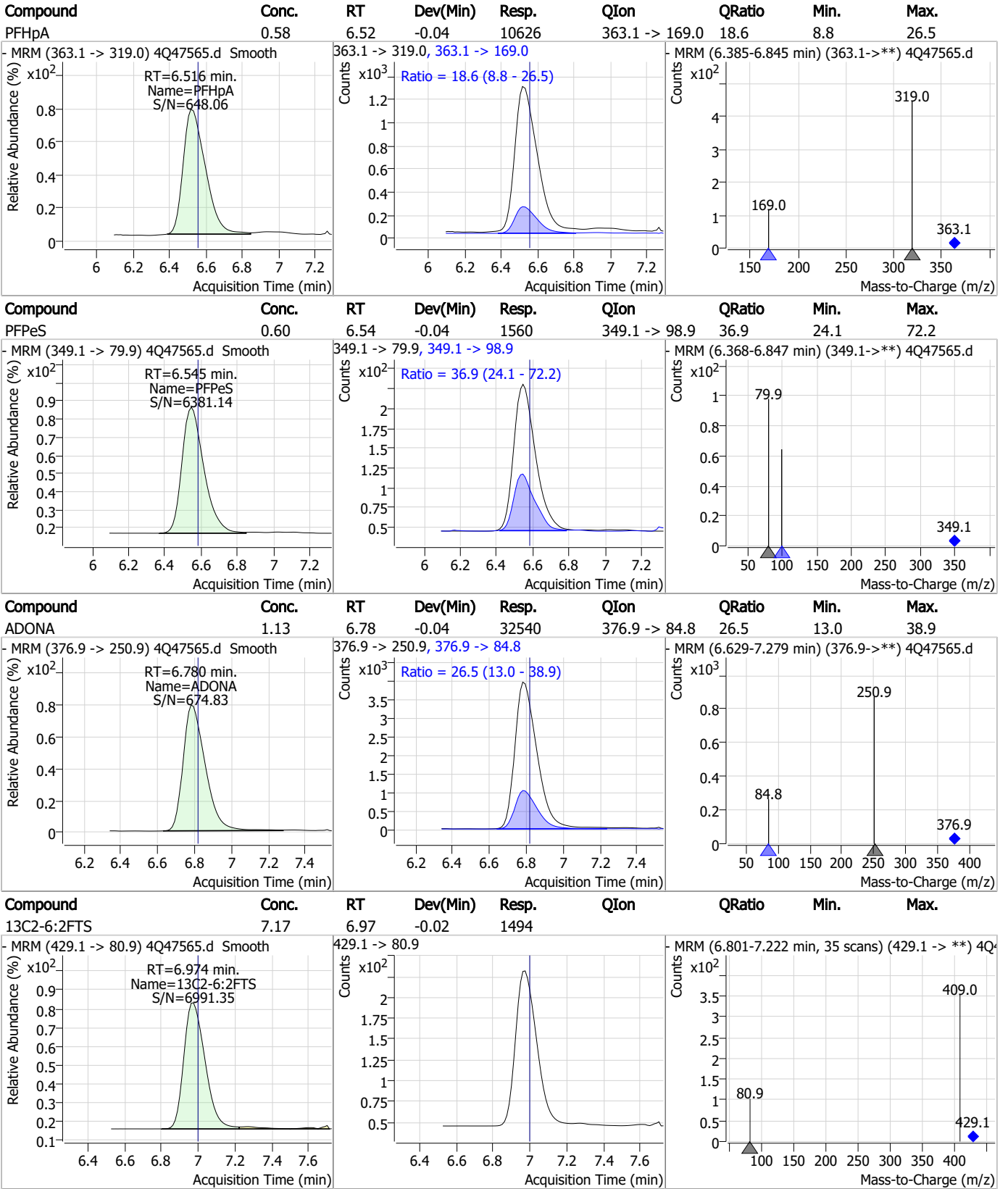
Perfluorinated Compounds by LC/MS/MS



7.3.2
7

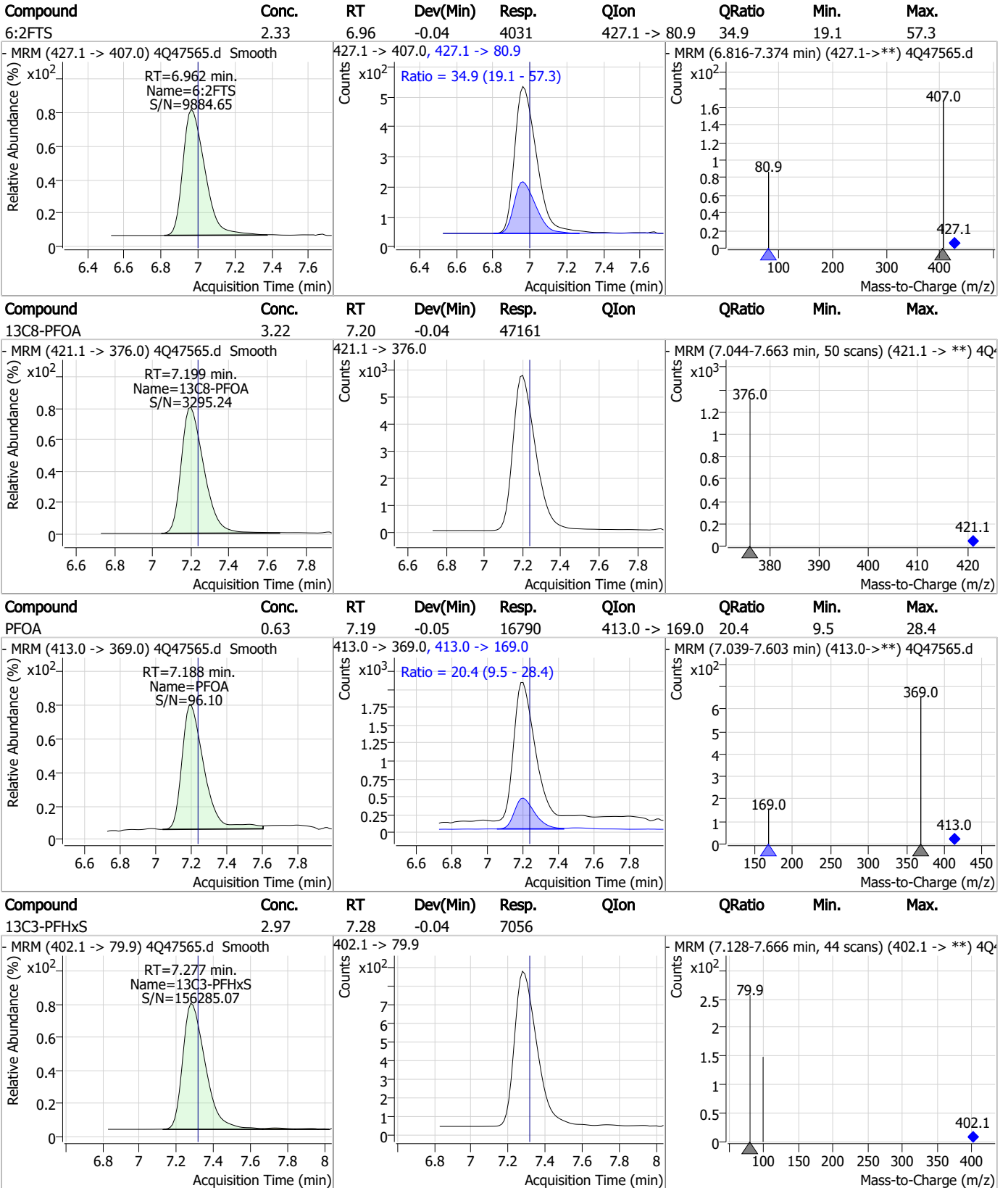


Perfluorinated Compounds by LC/MS/MS



7.3.2
7

Perfluorinated Compounds by LC/MS/MS

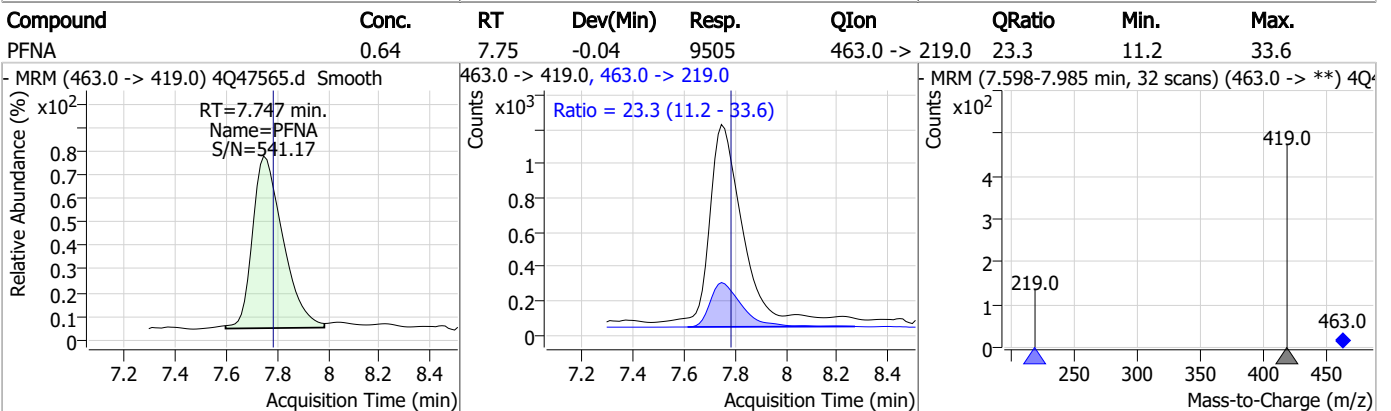
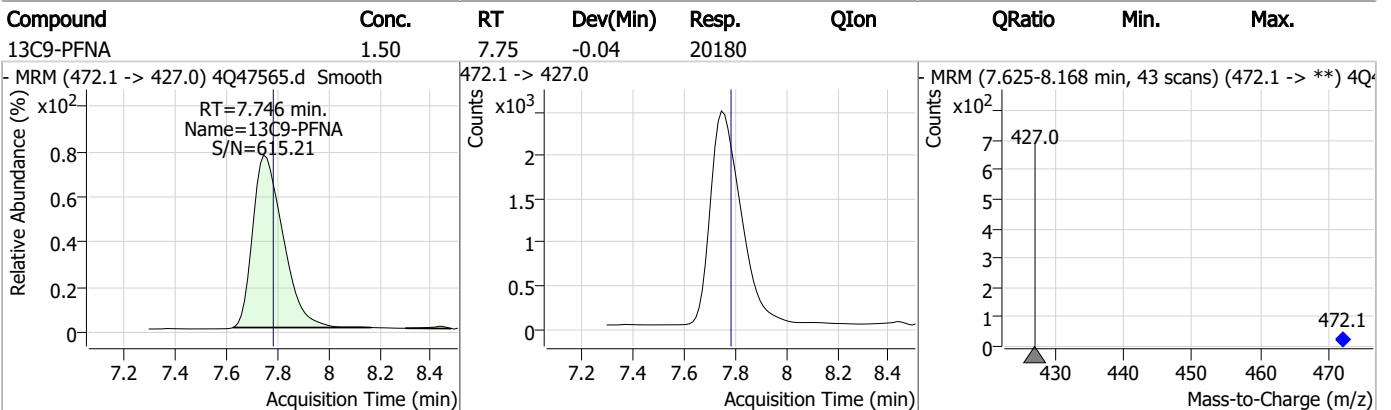
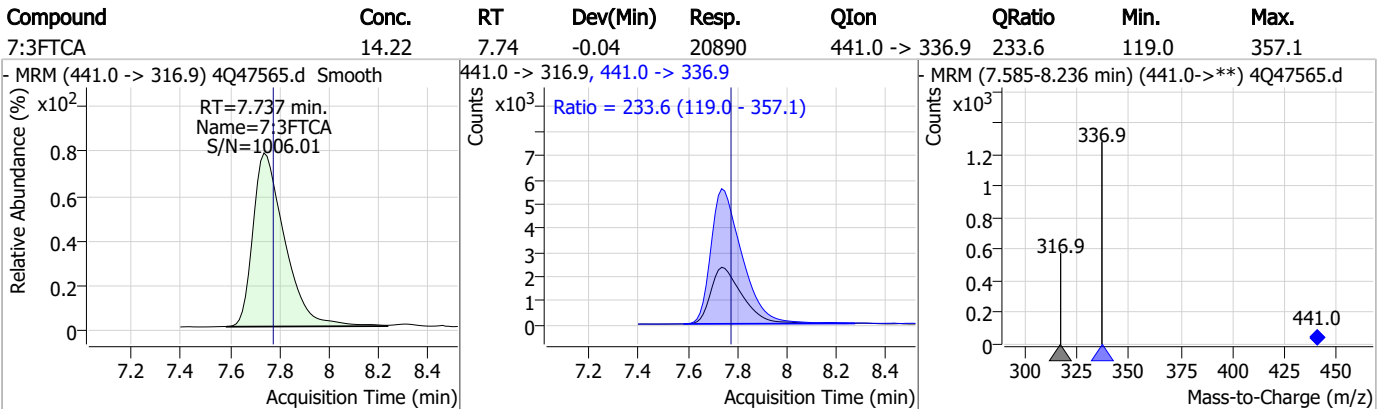
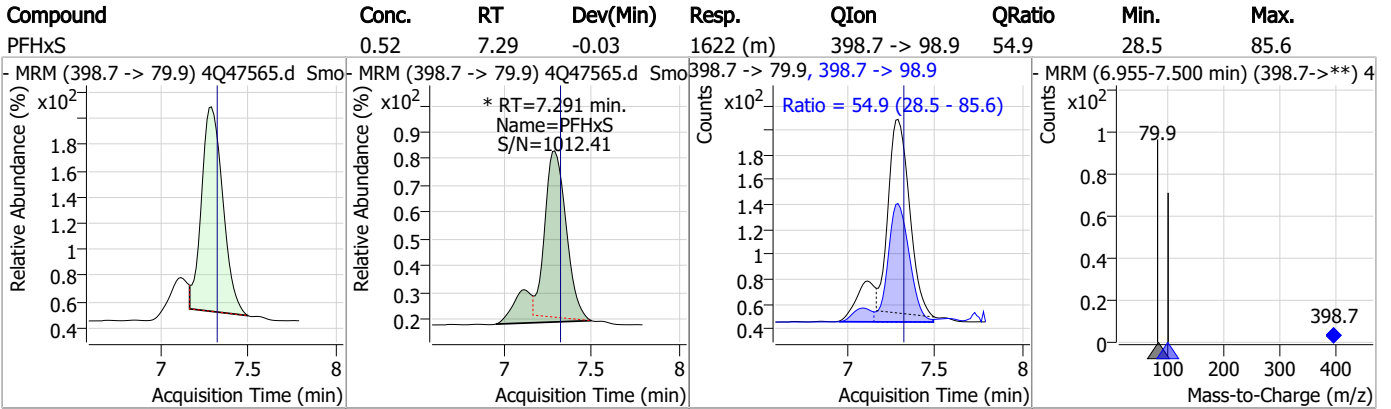


7.3.2

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Perfluorinated Compounds by LC/MS/MS

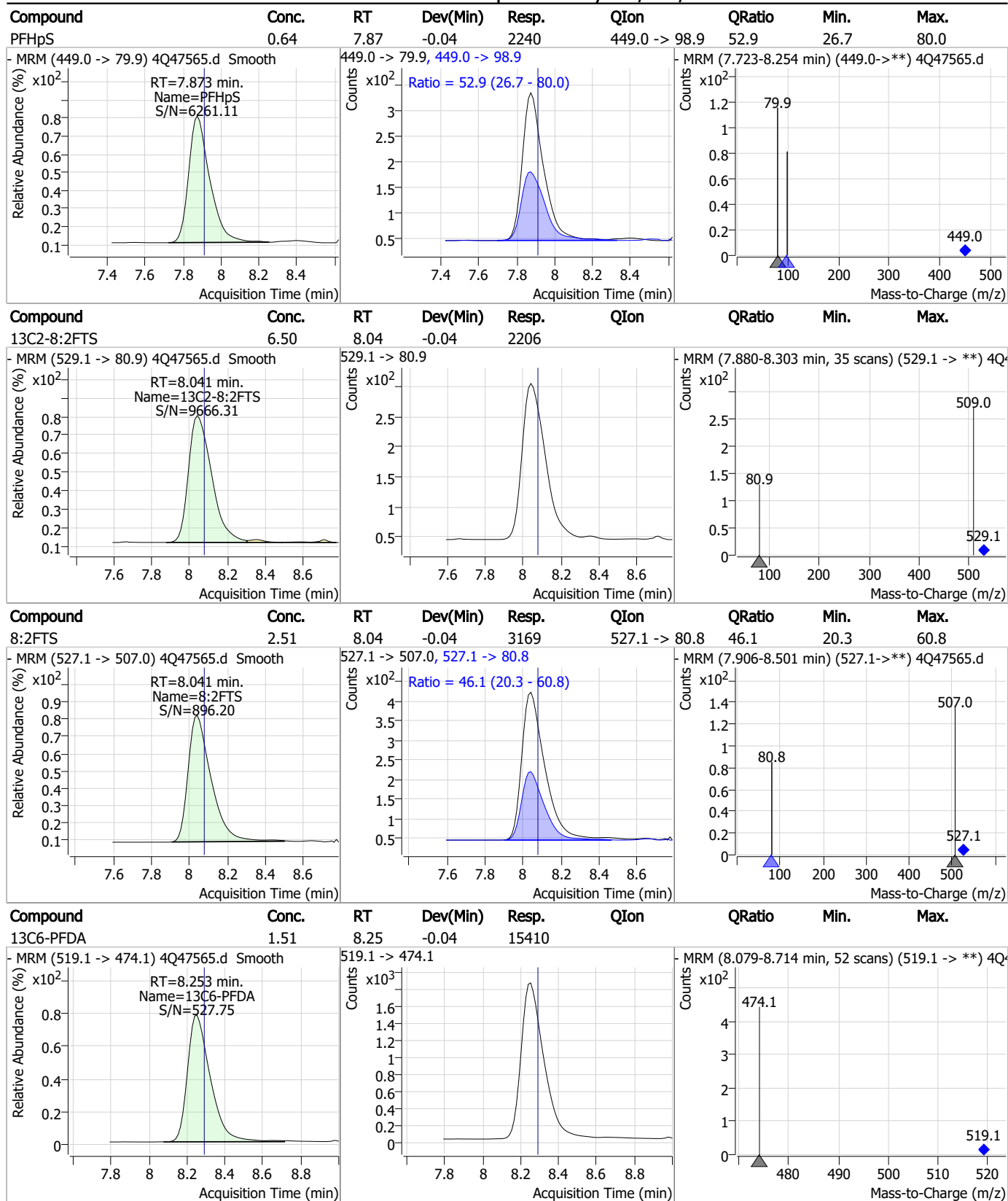


7.3.2

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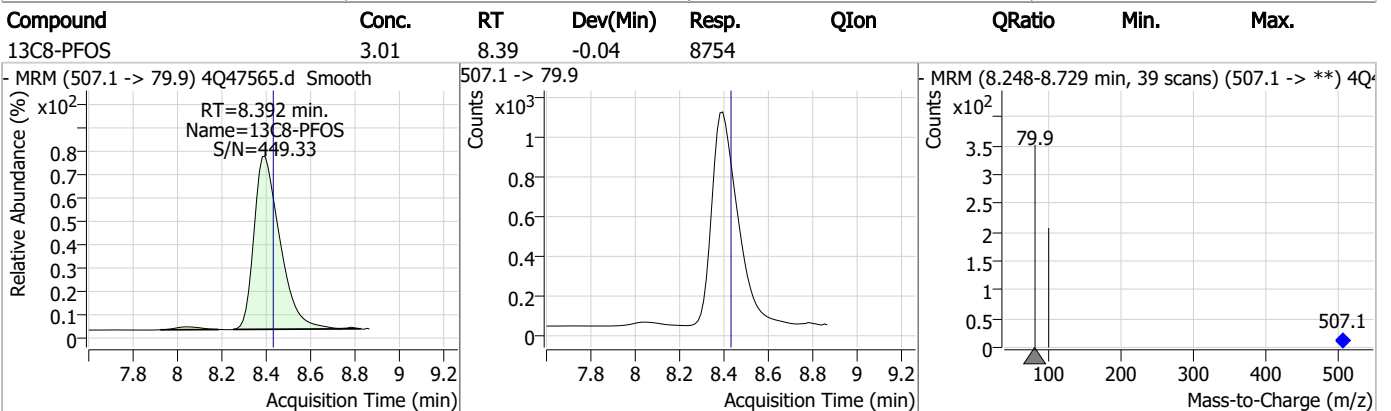
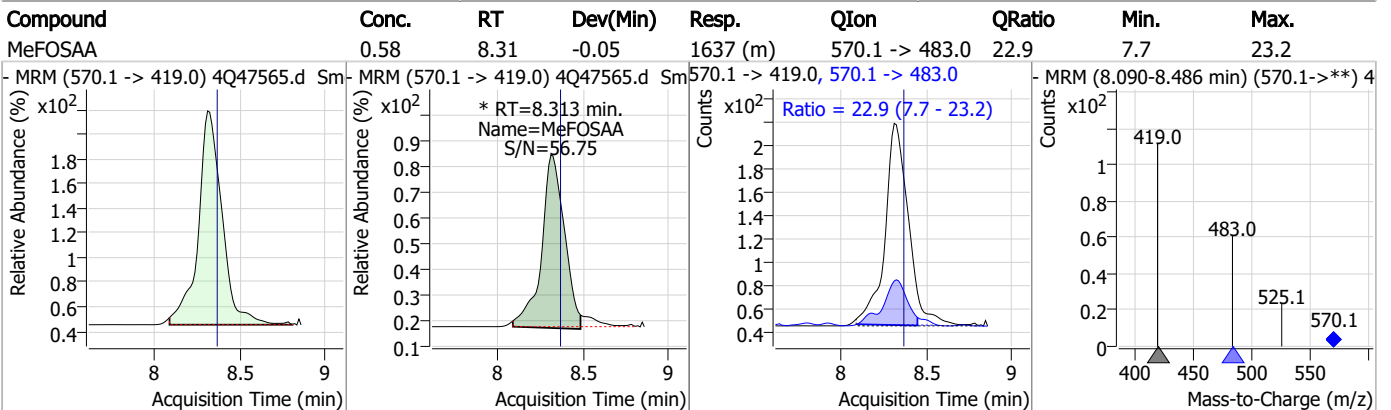
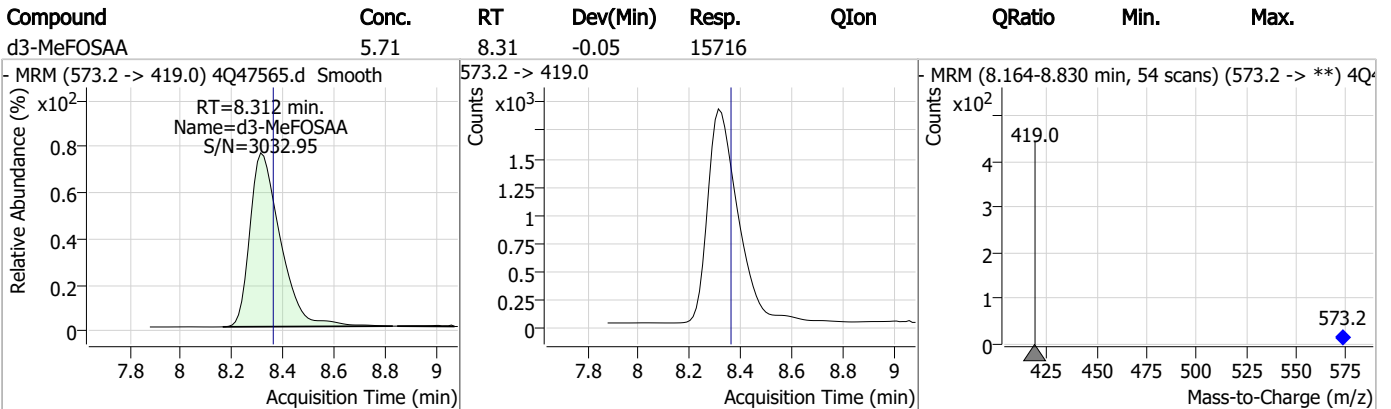
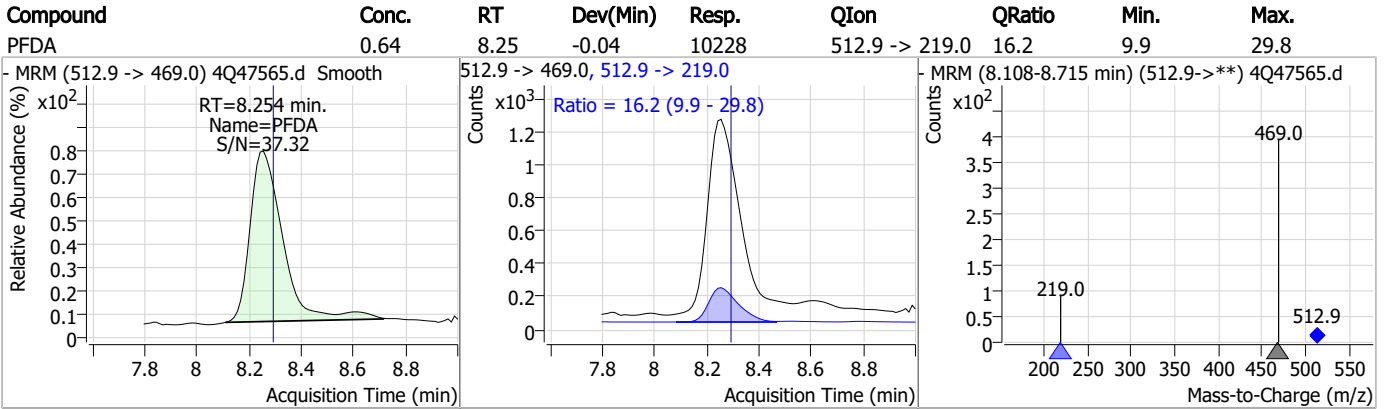


Perfluorinated Compounds by LC/MS/MS



7.3.2
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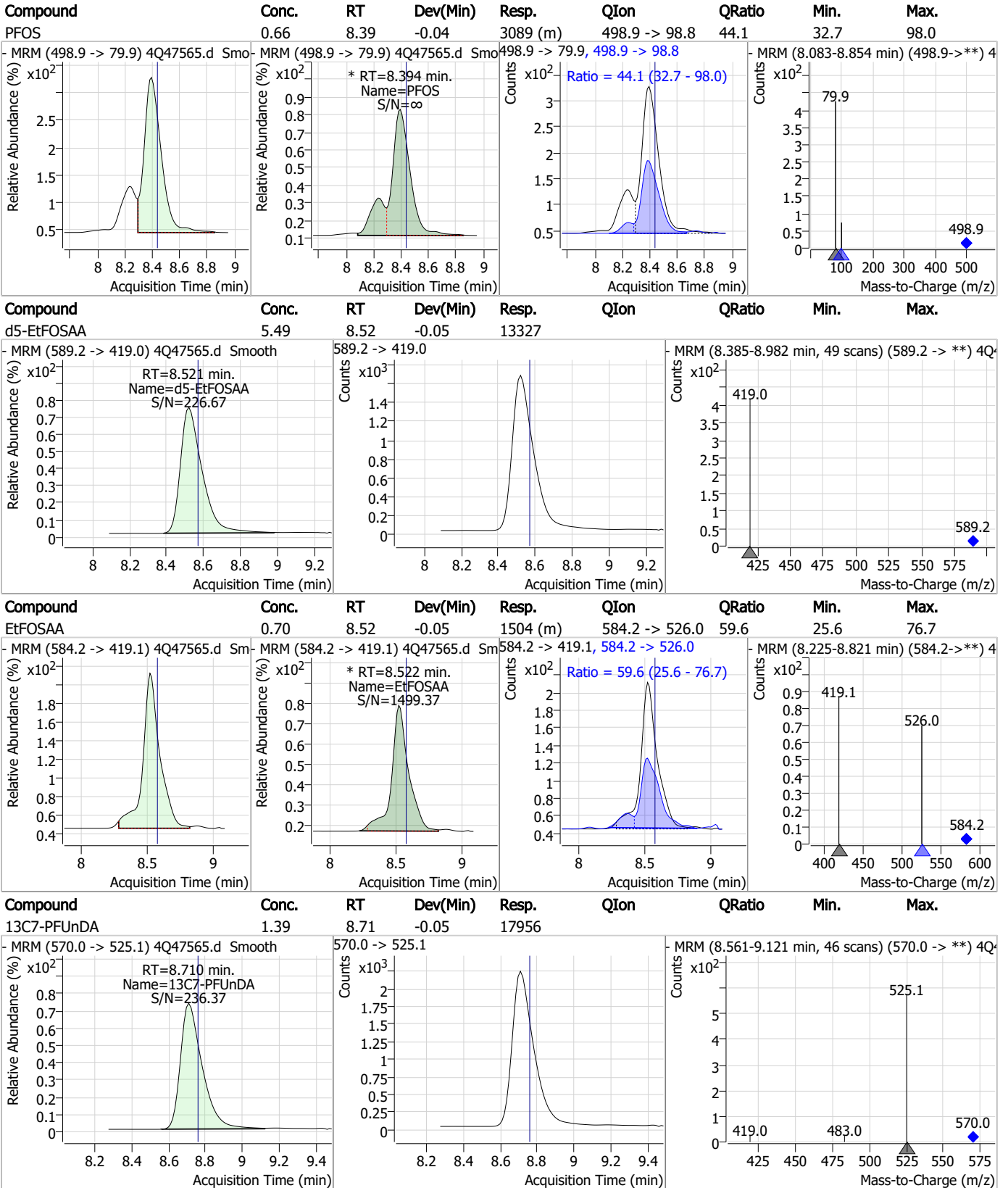
Perfluorinated Compounds by LC/MS/MS



7.3.2

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Perfluorinated Compounds by LC/MS/MS

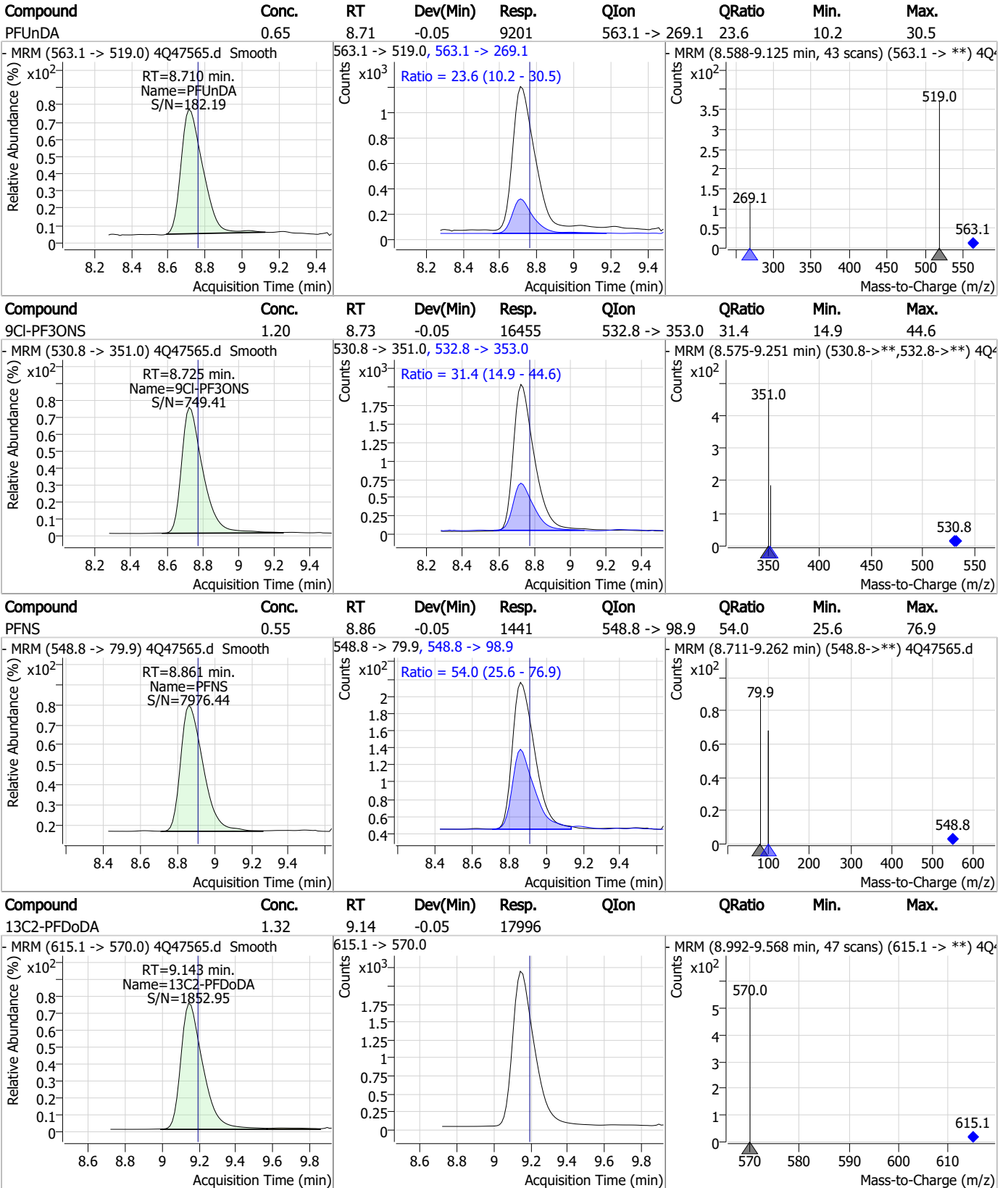


7.3.2

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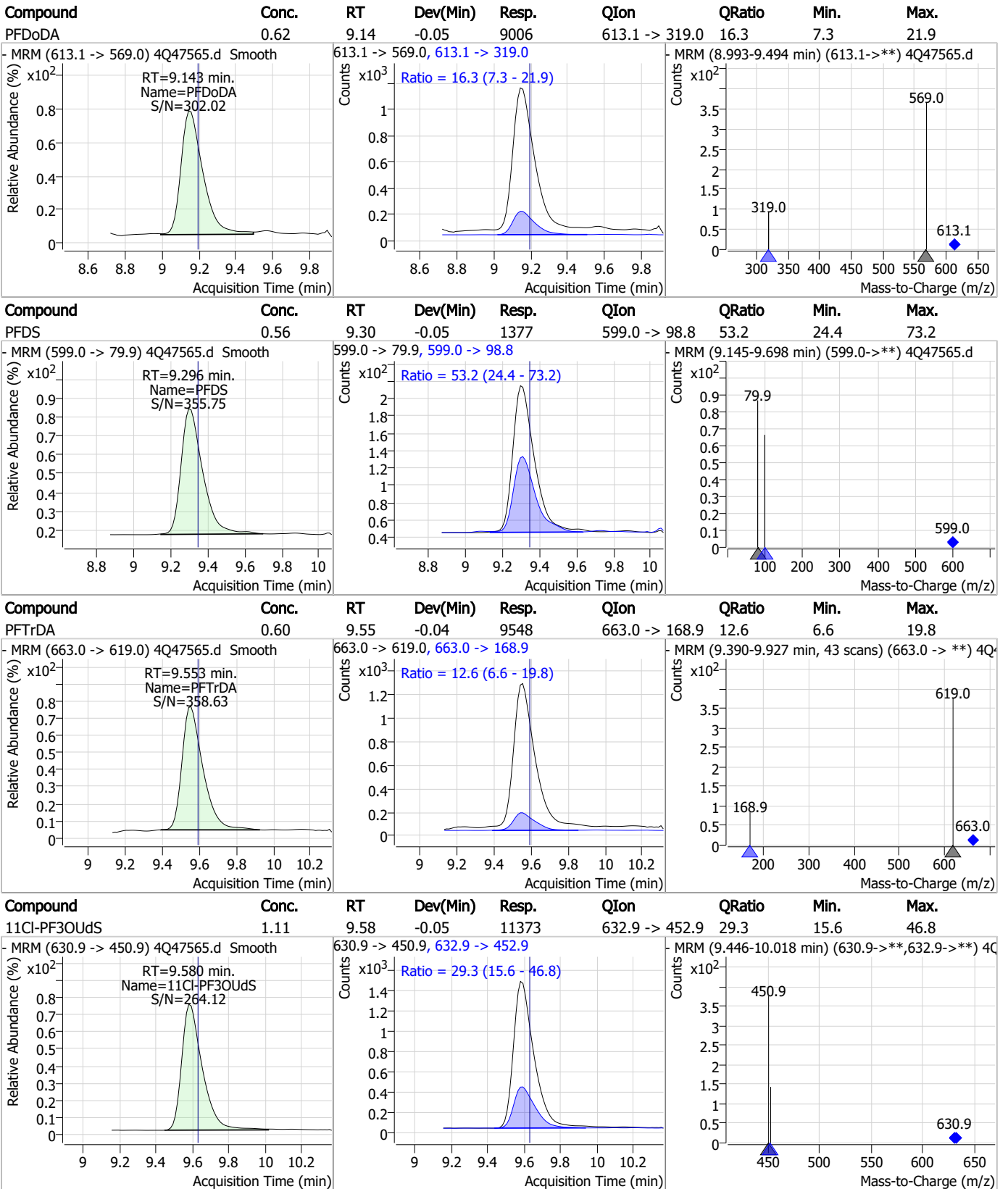
Perfluorinated Compounds by LC/MS/MS



7.3.2

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Perfluorinated Compounds by LC/MS/MS

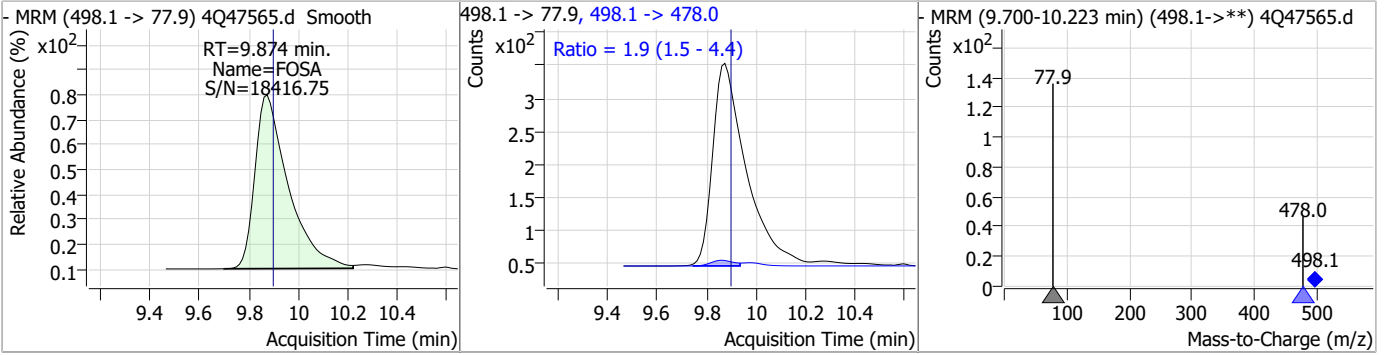


7.3.2
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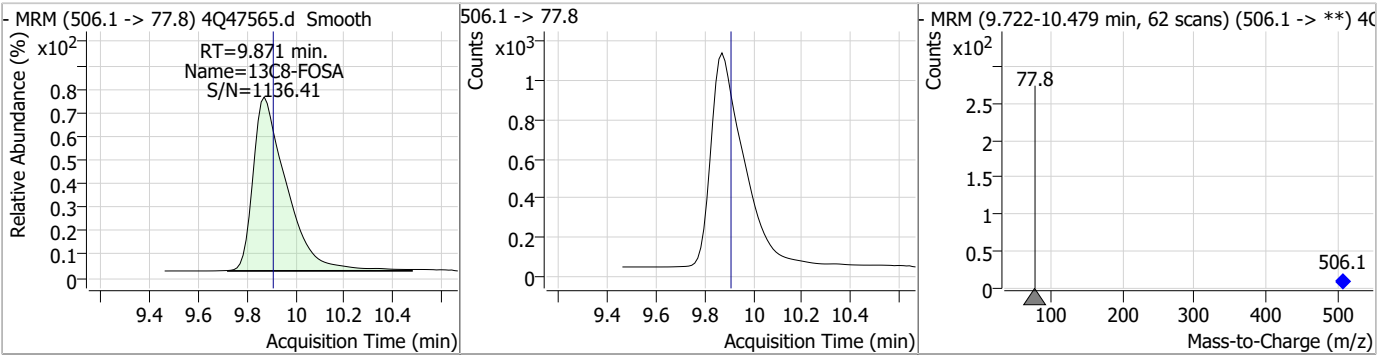


Perfluorinated Compounds by LC/MS/MS

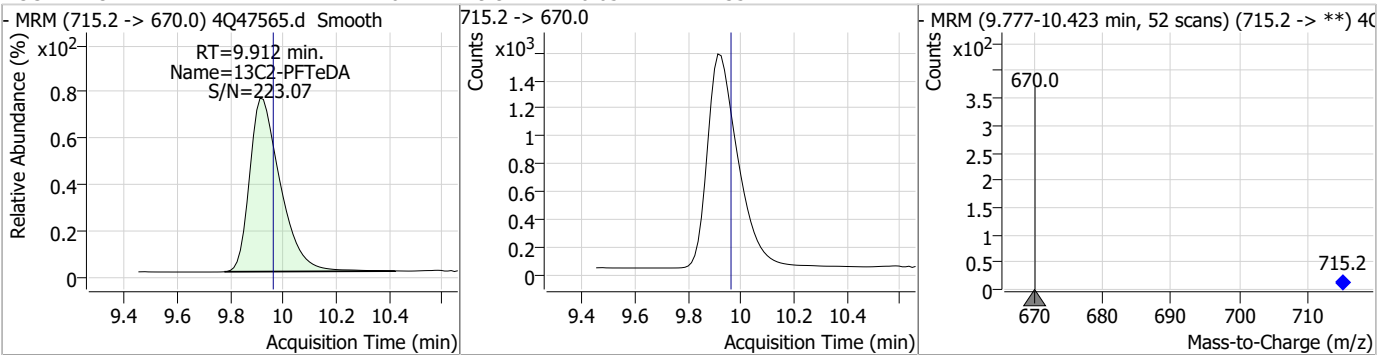
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.62	9.87	-0.02	2893	498.1 -> 478.0	1.9	1.5	4.4



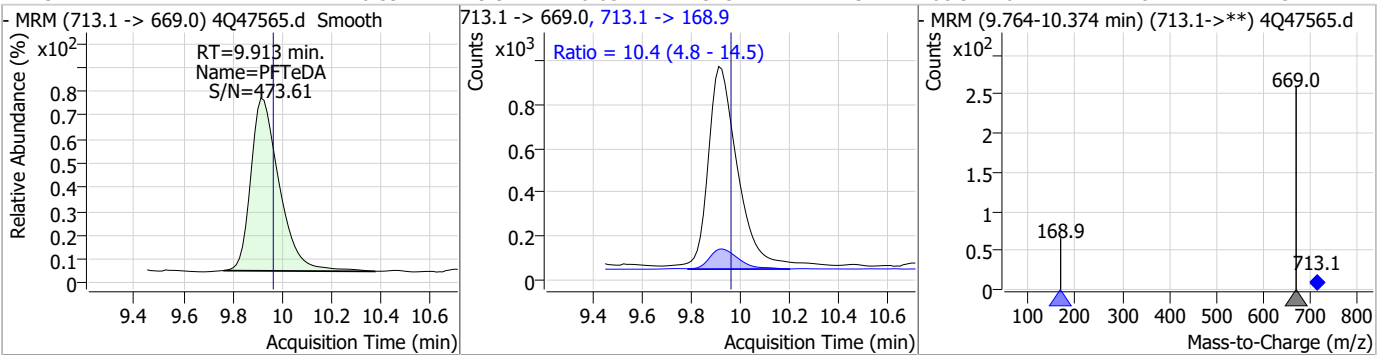
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.43	9.87	-0.04	10515				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.26	9.91	-0.05	12435				

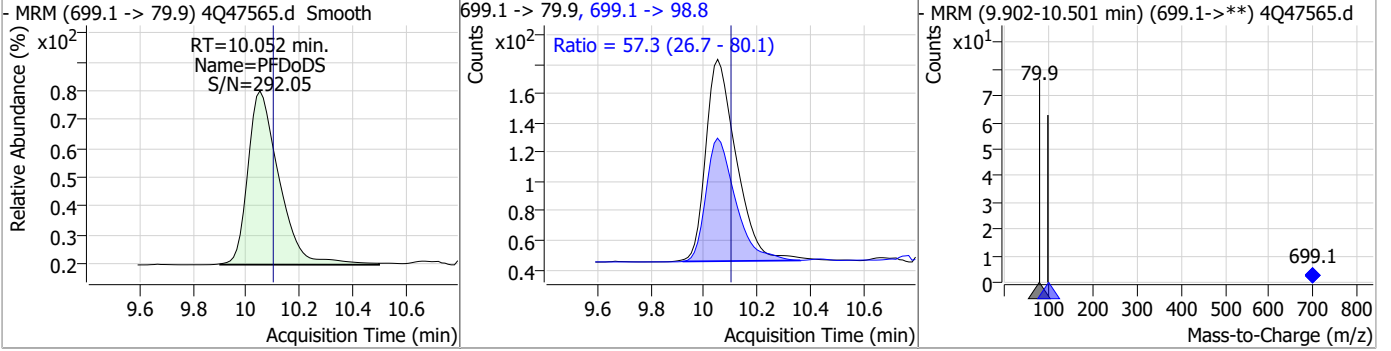


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.59	9.91	-0.05	7313	713.1 -> 168.9	10.4	4.8	14.5

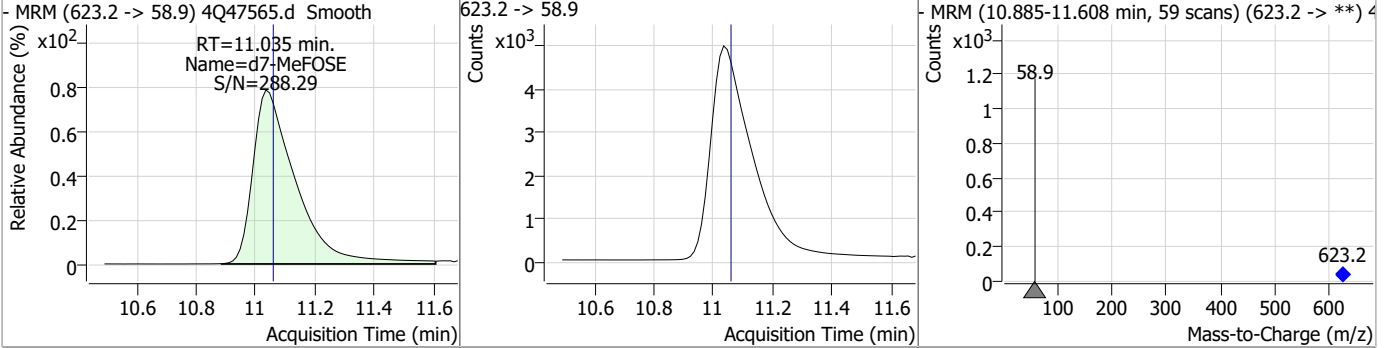


Perfluorinated Compounds by LC/MS/MS

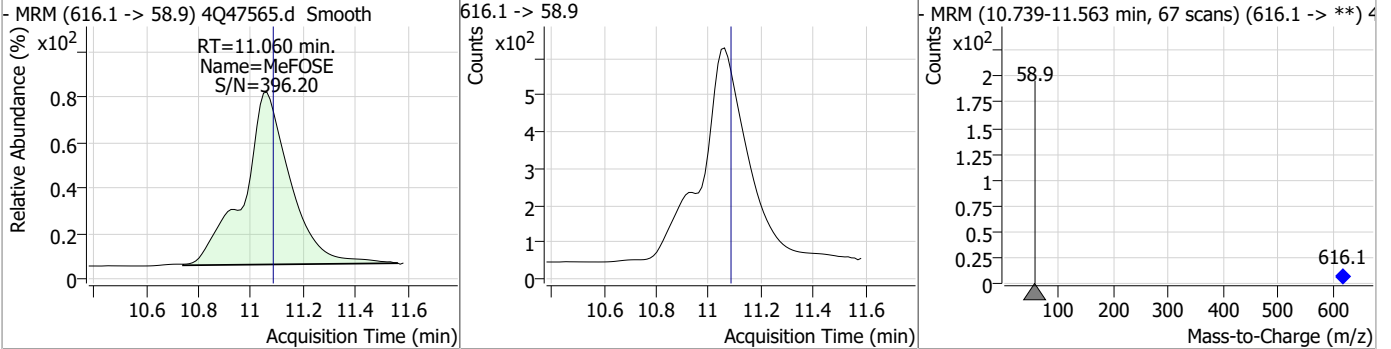
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PfDoDS	0.55	10.05	-0.05	1127	699.1 -> 98.8	57.3	26.7	80.1



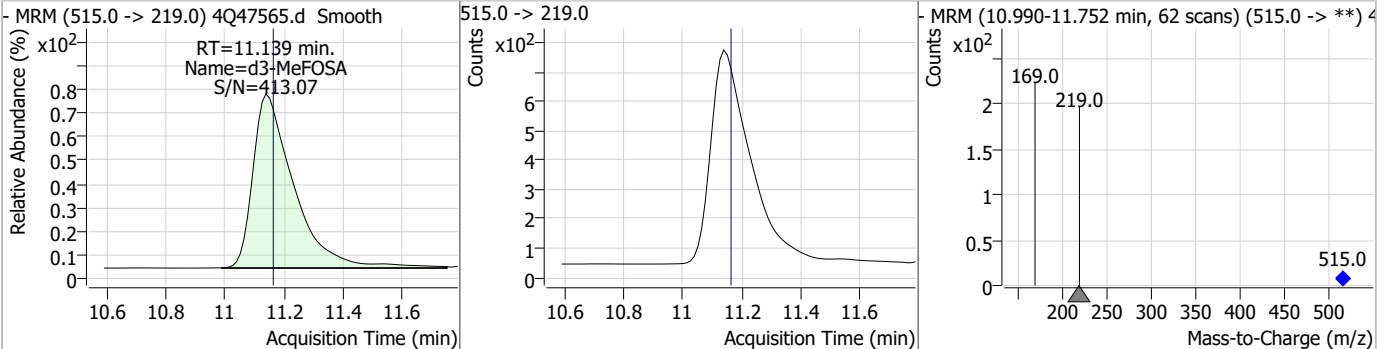
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	22.22	11.03	-0.02	49638				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	3.30	11.06	-0.02	7227				

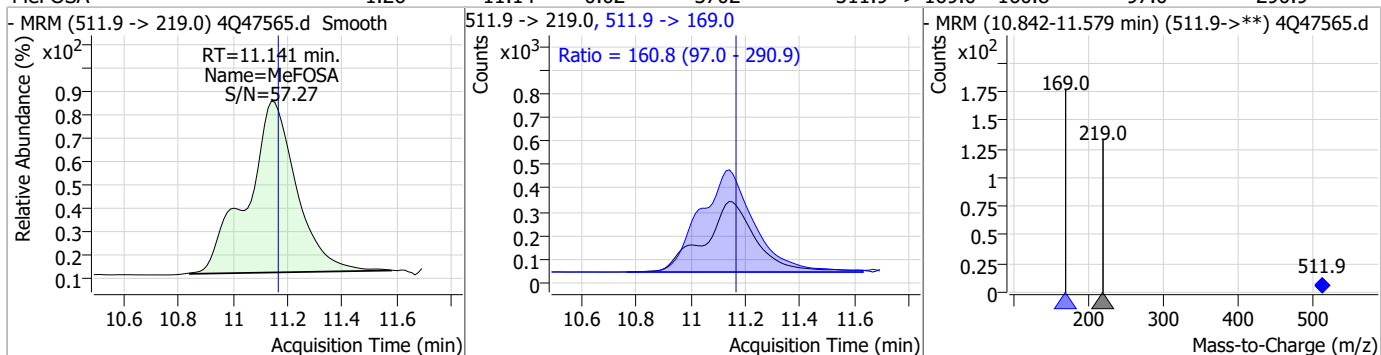


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.23	11.14	-0.02	7034				

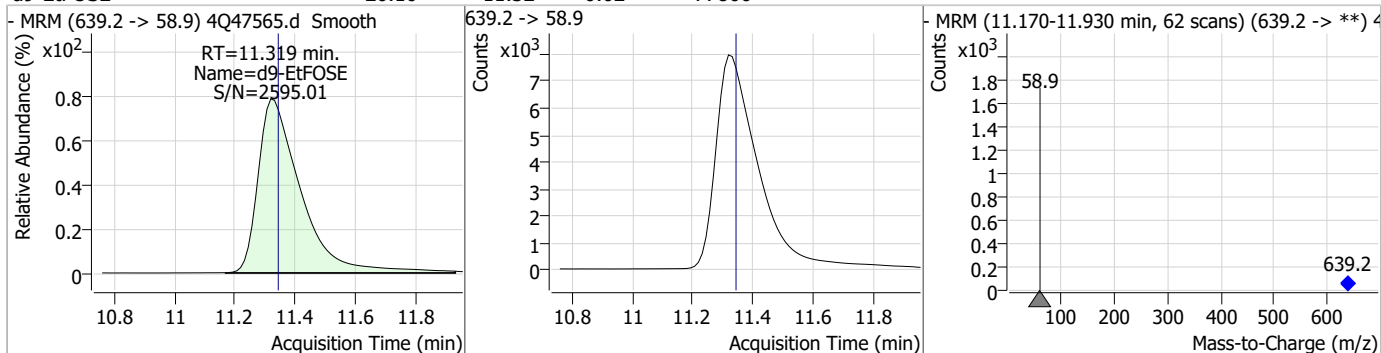


Perfluorinated Compounds by LC/MS/MS

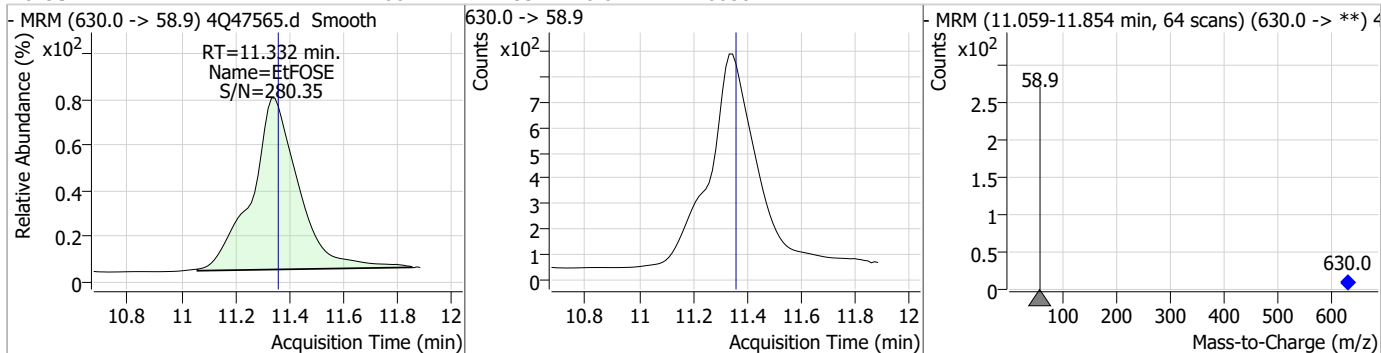
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	1.26	11.14	-0.02	3702	511.9 -> 169.0	160.8	97.0	290.9



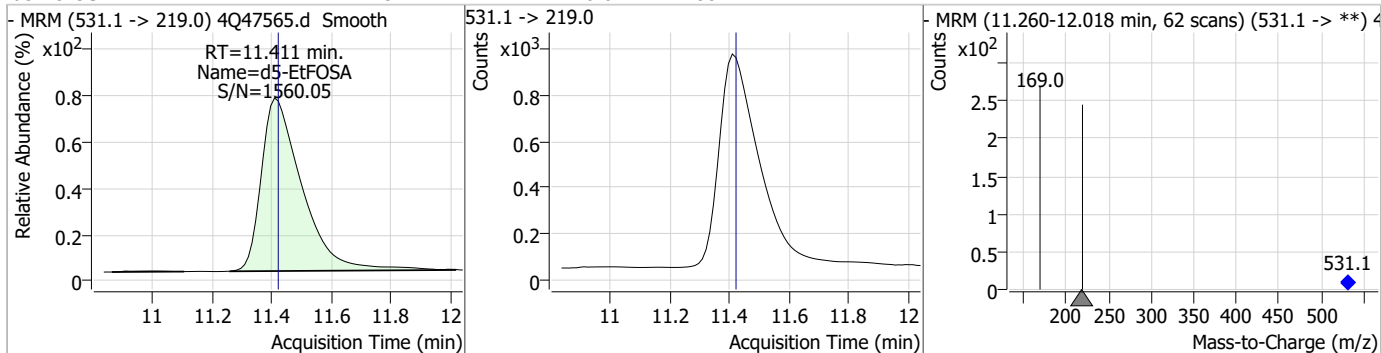
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	26.16	11.32	-0.02	77806				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	2.66	11.33	-0.02	10058				



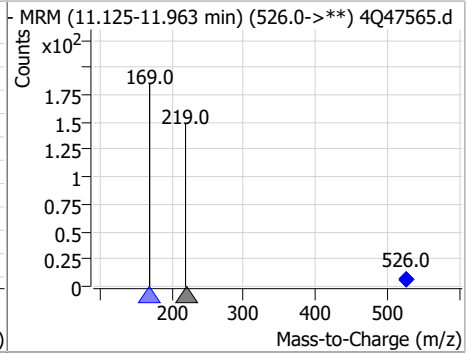
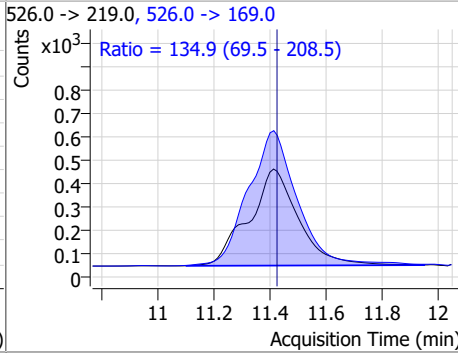
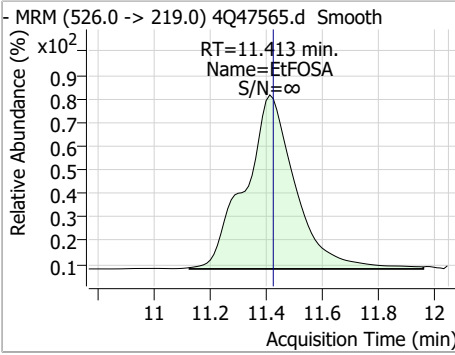
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.57	11.41	-0.01	8817				



7.3.2
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	1.15	11.41	-0.01	5235	526.0 -> 169.0	134.9	69.5	208.5



7.3.2

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Manual Integration Approval Summary

Sample Number: OP97911-LLBS Method: EPA DRAFT 1633
Lab FileID: 4Q47565.D Analyst approved: 07/20/23 12:46 Anna Ludwig
Injection Time: 07/19/23 12:40 Supervisor approved: 07/20/23 15:46 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.31	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.39	Split peak
EtFOSAA	2991-50-6		8.52	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47717.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/21/2023 2:37:10 AM
 Sample Name : op97911-ms
 Vial : P4-C9
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q699.batch.bin
 Sample Information : OP97911,S4Q699,550,,,5.0,5,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.886	216.8 -> 171.9	18356	2.00 µg/L	-0.025
M5-PFPeA	4.360	268.3 -> 223.0	10161	1.00 µg/L	-0.027
M5-PFHxA	5.573	318.0 -> 273.0	8169	0.50 µg/L	-0.025
M4-PFHpA	6.530	367.1 -> 322.0	5923	0.50 µg/L	-0.025
M8-PFOA	7.211	421.1 -> 376.0	8291	0.50 µg/L	-0.025
M9-PFNA	7.771	472.1 -> 427.0	3600	0.25 µg/L	-0.012
M6-PFDA	8.266	519.1 -> 474.1	2505	0.25 µg/L	-0.026
M7-PFUnDA	8.735	570.0 -> 525.1	2958	0.25 µg/L	-0.025
M2-PFDoDA	9.169	615.1 -> 570.0	2604	0.25 µg/L	-0.025
M2-PFTeDA	9.937	715.2 -> 670.0	1694	0.25 µg/L	-0.025
M8-FOSA	9.921	506.1 -> 77.8	1952	0.50 µg/L	0.012
M3-PFBS	5.441	302.1 -> 79.9	2110	0.50 µg/L	-0.037
M3-PFHxS	7.304	402.1 -> 79.9	1193	0.50 µg/L	-0.012
M8-PFOS	8.405	507.1 -> 79.9	1517	0.50 µg/L	-0.025
M2-4:2FTS	5.259	329.1 -> 80.9	164	1.00 µg/L	-0.025
M2-6:2FTS	6.974	429.1 -> 80.9	348	1.00 µg/L	-0.025
M2-8:2FTS	8.053	529.1 -> 80.9	413	1.00 µg/L	-0.025
M3-MeFOSAA	8.337	573.2 -> 419.0	2451	1.00 µg/L	-0.025
M3-HFPO-DA	5.940	286.9 -> 168.9	6797	2.00 µg/L	-0.025
M5-EtFOSAA	8.546	589.2 -> 419.0	1980	1.00 µg/L	-0.025
M7-MeFOSE	11.059	623.2 -> 58.9	7777	5.00 µg/L	0.000
M9-EtFOSE	11.332	639.2 -> 58.9	12001	5.00 µg/L	-0.012
M5-EtFOSA	11.435	531.1 -> 219.0	1354	0.50 µg/L	0.012
M3-MeFOSA	11.164	515.0 -> 219.0	1276	0.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	1631	0.50 µg/L	-0.025
13C3-PFBA	2.891	216.0 -> 172.0	10394	1.00 µg/L	-0.025
18O2-PFHxS	7.315	403.0 -> 83.9	698	0.50 µg/L	0.000
13C4-PFOA	7.212	417.1 -> 372.0	9166	0.50 µg/L	-0.025
13C2-PFDA	8.266	515.1 -> 470.1	2930	0.25 µg/L	-0.026
13C5-PFNA	7.772	468.0 -> 423.0	4255	0.25 µg/L	-0.012
13C2-PFHxA	5.562	315.1 -> 270.0	6389	0.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.259	329.1 -> 80.9	164	2.09 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 41.8%		
13C2-6:2FTS	6.974	429.1 -> 80.9	348	2.03 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 40.5%		
13C2-8:2FTS	8.053	529.1 -> 80.9	413	1.48 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 29.5%		
13C2-PFDoDA	9.169	615.1 -> 570.0	2604	0.19 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 15.3%		
13C2-PFTeDA	9.937	715.2 -> 670.0	1694	0.17 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 13.8%		
13C3-PFBS	5.441	302.1 -> 79.9	2110	0.79 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 31.6%		
13C3-PFHxS	7.304	402.1 -> 79.9	1193	0.61 µg/L	-0.012

7.4.1
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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 = 24.4%	
13C4-PFBA	2.886	216.8 -> 171.9	18356	1.87 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 18.7%	
13C4-PFHpA	6.530	367.1 -> 322.0	5923	0.60 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 24.2%	
13C5-PFHxA	5.573	318.0 -> 273.0	8169	0.60 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 23.9%	
13C5-PFPeA	4.360	268.3 -> 223.0	10161	1.15 µg/L	-0.027
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 23.0%	
13C6-PFDA	8.266	519.1 -> 474.1	2505	0.25 µg/L	-0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 19.8%	
13C7-PFUnDA	8.735	570.0 -> 525.1	2958	0.23 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 18.4%	
13C8-FOSA	9.921	506.1 -> 77.8	1952	0.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 18.5%	
13C8-PFOA	7.211	421.1 -> 376.0	8291	0.56 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 22.2%	
13C8-PFOS	8.405	507.1 -> 79.9	1517	0.54 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 21.4%	
13C9-PFNA	7.771	472.1 -> 427.0	3600	0.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 20.2%	
d3-MeFOSAA	8.337	573.2 -> 419.0	2451	0.91 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 18.3%	
13C3-HFPO-DA	5.940	286.9 -> 168.9	6797	2.00 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 20.0%	
d3-MeFOSA	11.164	515.0 -> 219.0	1276	0.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 16.6%	
d5-EtFOSAA	8.546	589.2 -> 419.0	1980	0.84 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 16.7%	
d7-MeFOSE	11.059	623.2 -> 58.9	7777	3.57 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 14.3%	
d9-EtFOSE	11.332	639.2 -> 58.9	12001	4.14 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 16.6%	
d5-EtFOSA	11.435	531.1 -> 219.0	1354	0.41 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 16.2%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	2106	1.45 µg/L	93
		327.1 -> 80.9	858		
6:2FTS	6.974	427.1 -> 407.0	2832	1.41 µg/L	88
		427.1 -> 80.9	884		
8:2FTS	8.054	527.1 -> 507.0	2053	1.74 µg/L	98
		527.1 -> 80.8	807		
EtFOSAA	8.559	584.2 -> 419.1	808	0.51 µg/L	m 94
		584.2 -> 526.0	379		
FOSA	9.912	498.1 -> 77.9	5603	1.30 µg/L	99
		498.1 -> 478.0	184		
MeFOSAA	8.338	570.1 -> 419.0	1226	0.56 µg/L	m 93
		570.1 -> 483.0	227		
PFBA	2.895	212.8 -> 168.9	6023	2.18 µg/L	100
PFBS	5.443	298.7 -> 79.9	5194	1.18 µg/L	m 93
		298.7 -> 98.8	1883		
PFDA	8.266	512.9 -> 469.0	5724	0.44 µg/L	98
		512.9 -> 219.0	1195		
PFDODA	9.170	613.1 -> 569.0	5585	0.53 µg/L	98
		613.1 -> 319.0	868		
PFDS	9.321	599.0 -> 79.9	739	0.34 µg/L	94

7.4.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.543	599.0 -> 98.8	391	0.78	µg/L	m
		363.1 -> 319.0	14128			
PFHpS	7.886	363.1 -> 169.0	2513	1.15	µg/L	m
		449.0 -> 79.9	3493			
PFHxA	5.563	449.0 -> 98.9	1829	2.72	µg/L	100
		313.0 -> 269.0	43514			
PFHxS	7.291	313.0 -> 118.9	1350	45.39	µg/L	m
		398.7 -> 79.9	120654			
PFNA	7.772	398.7 -> 98.9	59635	0.54	µg/L	94
		463.0 -> 419.0	7105			
PFNS	8.887	463.0 -> 219.0	1808	0.37	µg/L	90
		548.8 -> 79.9	846			
PFOA	7.213	548.8 -> 98.9	493	3.27	µg/L	m
		413.0 -> 369.0	76637			
PFOS	8.406	413.0 -> 169.0	15533	43.25	µg/L	m
		498.9 -> 79.9	174621			
PFPeA	4.363	498.9 -> 98.8	76554	1.27	µg/L	100
		263.0 -> 219.0	18156			
PFPeS	6.545	349.1 -> 79.9	3520	1.60	µg/L	m
		349.1 -> 98.9	1643			
PFTeDA	9.950	713.1 -> 669.0	4154	0.49	µg/L	100
		713.1 -> 168.9	404			
PFTrDA	9.578	663.0 -> 619.0	5346	0.46	µg/L	98
		663.0 -> 168.9	654			
PFUnDA	8.736	563.1 -> 519.0	5319	0.45	µg/L	97
		563.1 -> 269.1	1153			
11Cl-PF3OUdS	9.606	630.9 -> 450.9	6546	0.72	µg/L	97
		632.9 -> 452.9	1925			
9Cl-PF3ONS	8.750	530.8 -> 351.0	9742	0.80	µg/L	97
		532.8 -> 353.0	3034			
ADONA	6.806	376.9 -> 250.9	23317	0.92	µg/L	99
		376.9 -> 84.8	5940			
HFPO-DA	5.941	284.9 -> 168.9	2810	0.80	µg/L	96
		284.9 -> 184.9	392			
3:3FTCA	3.873	241.0 -> 177.0	1313	2.07	µg/L	99
		241.0 -> 117.0	124			
5:3FTCA	6.294	341.0 -> 237.1	26769	10.08	µg/L	99
		341.0 -> 217.0	18921			
7:3FTCA	7.787	441.0 -> 316.9	14860	10.13	µg/L	99
		441.0 -> 336.9	35024			
EtFOSA	11.425	526.0 -> 219.0	3327	0.95	µg/L	98
		526.0 -> 169.0	4718			
EtFOSE	11.345	630.0 -> 58.9	6509	2.24	µg/L	100
		511.9 -> 219.0	2822			
MeFOSA	11.153	511.9 -> 169.0	3799	1.06	µg/L	60
		616.1 -> 58.9	4298			
MeFOSE	11.073	699.1 -> 79.9	554	2.50	µg/L	100
		699.1 -> 98.8	432			
PFDoDS	10.077	295.0 -> 201.0	762	0.31	µg/L	65
		295.0 -> 84.9	260			
NFDHA	5.456	279.0 -> 85.1	6888	0.89	µg/L	100
		229.0 -> 84.9	6399			
PFMBA	4.785	314.8 -> 134.9	9135	0.87	µg/L	100
		314.8 -> 82.9	317			
PFMPA	3.499			0.76	µg/L	100
PFEESA	5.997					

7.4.1
7

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



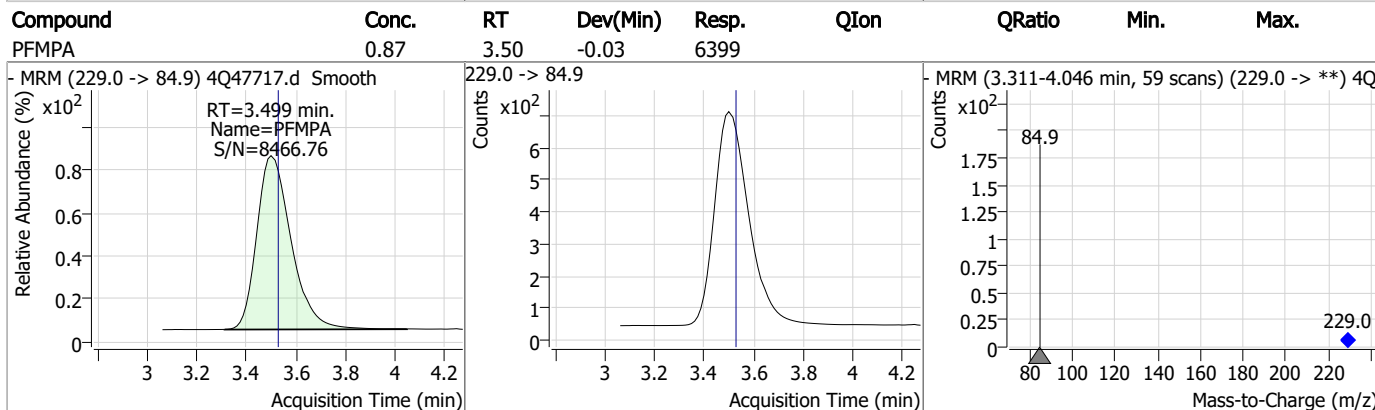
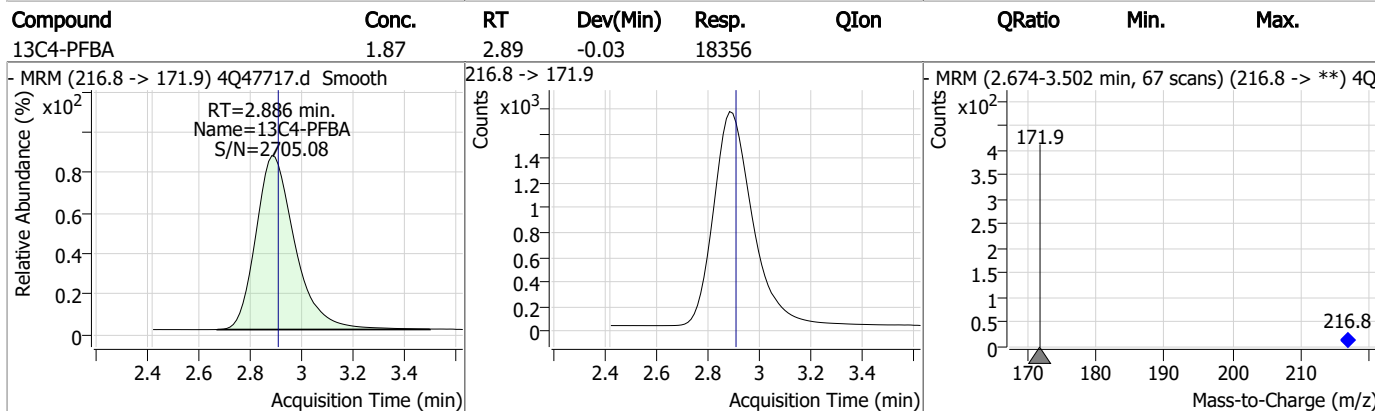
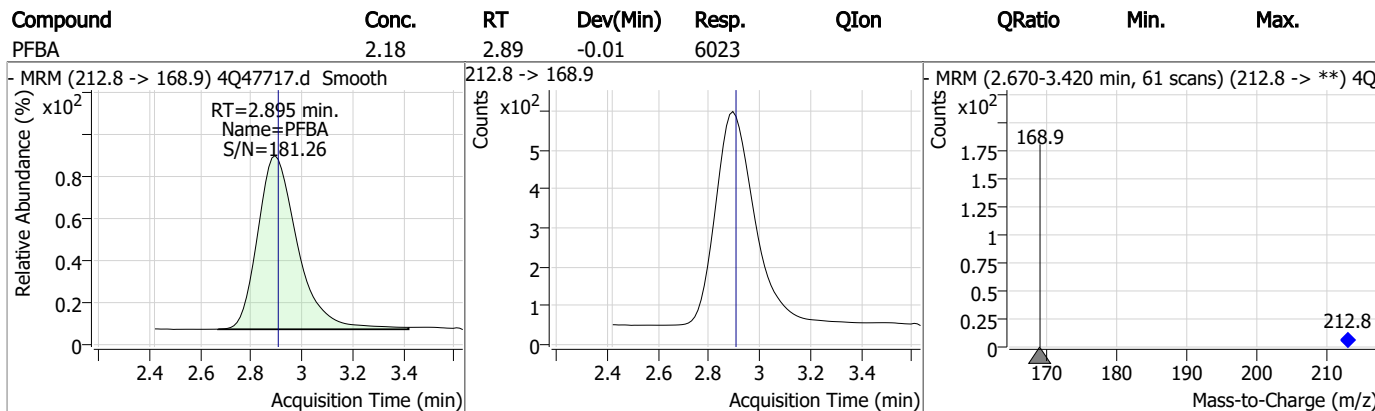
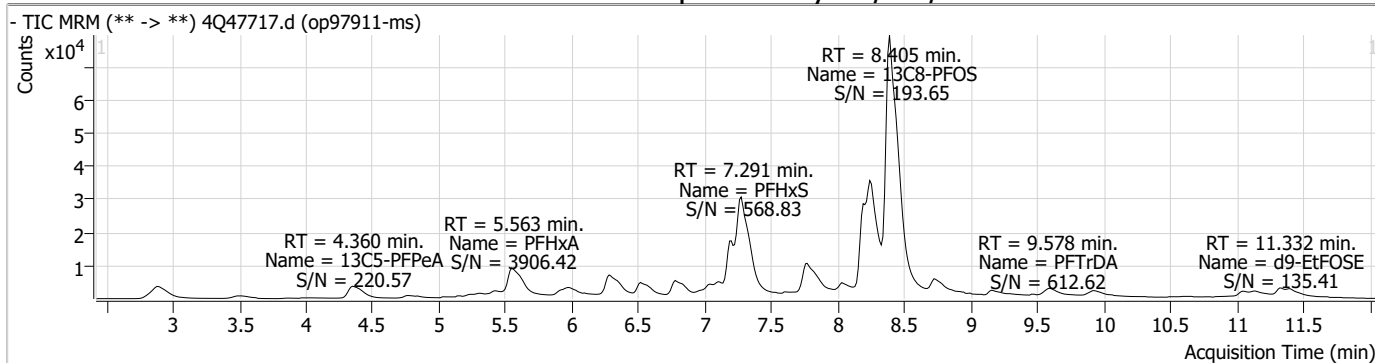
Perfluorinated Compounds by LC/MS/MS

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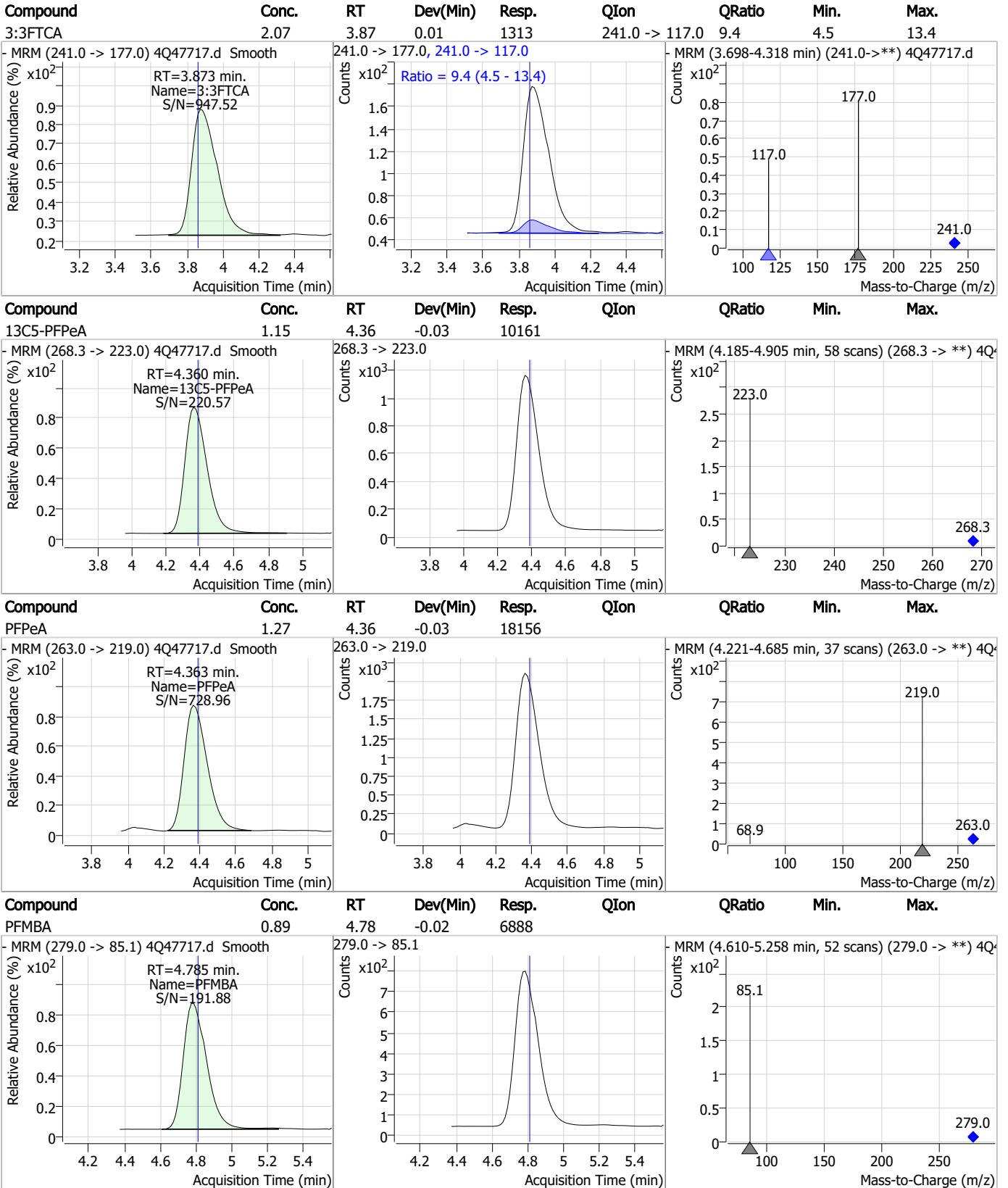
7.4.1

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Perfluorinated Compounds by LC/MS/MS



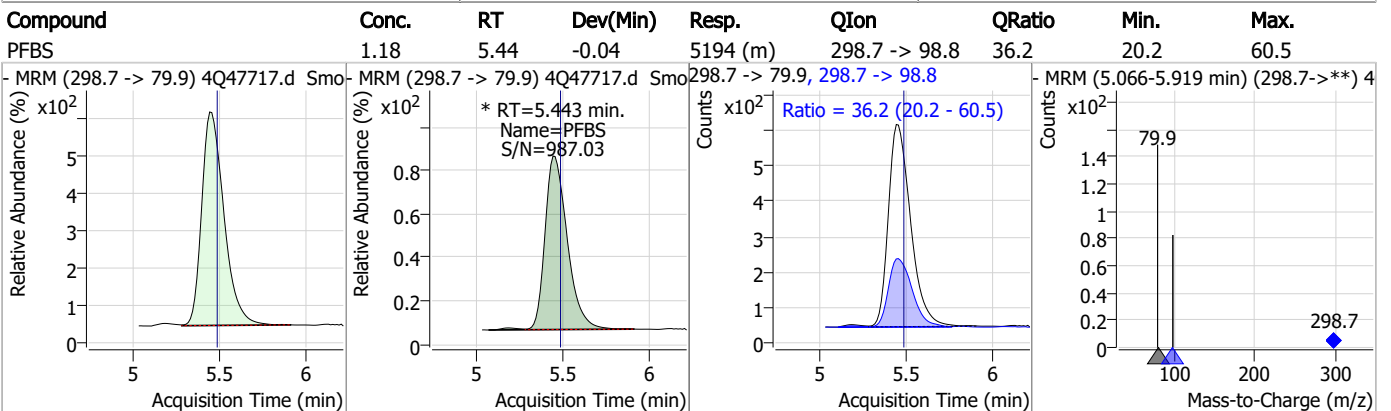
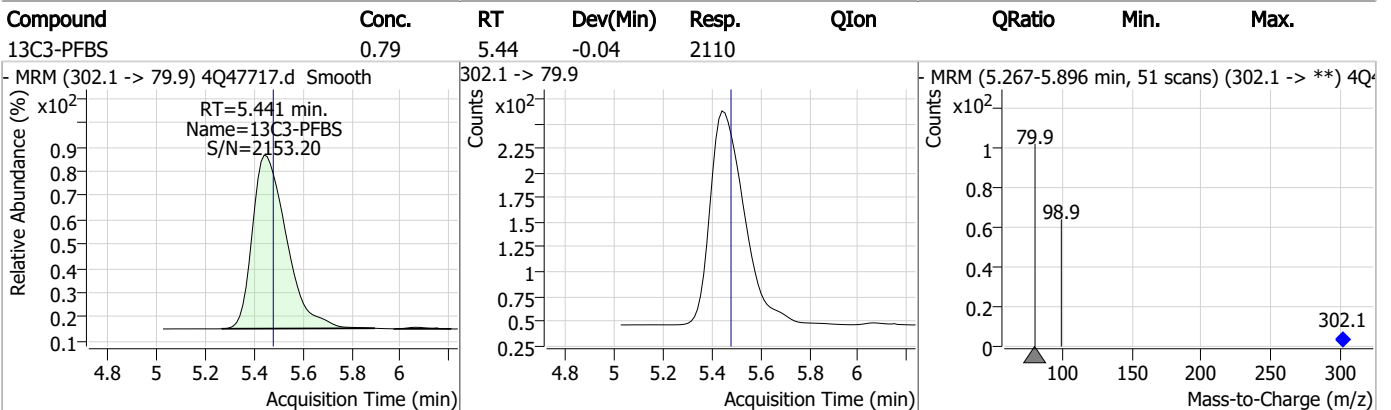
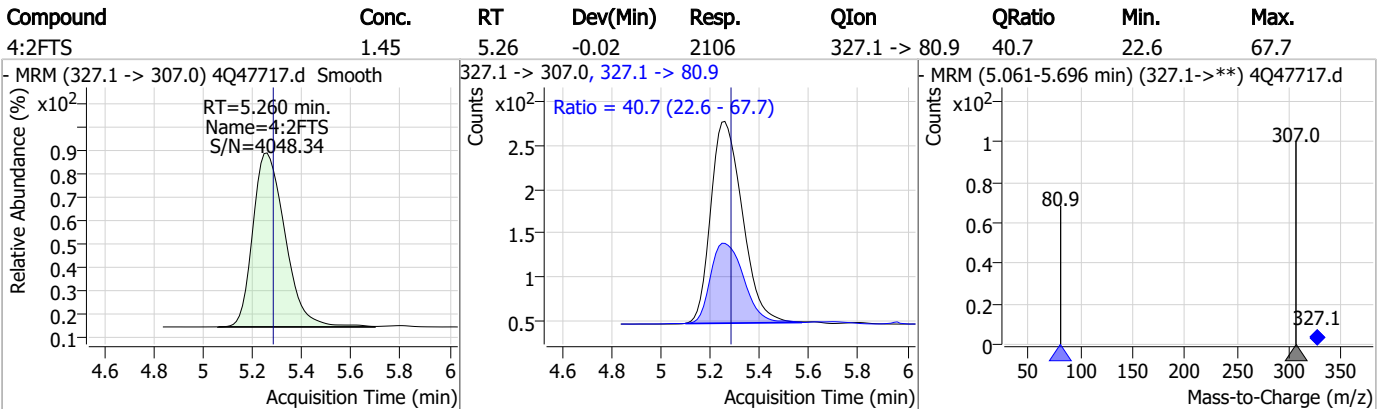
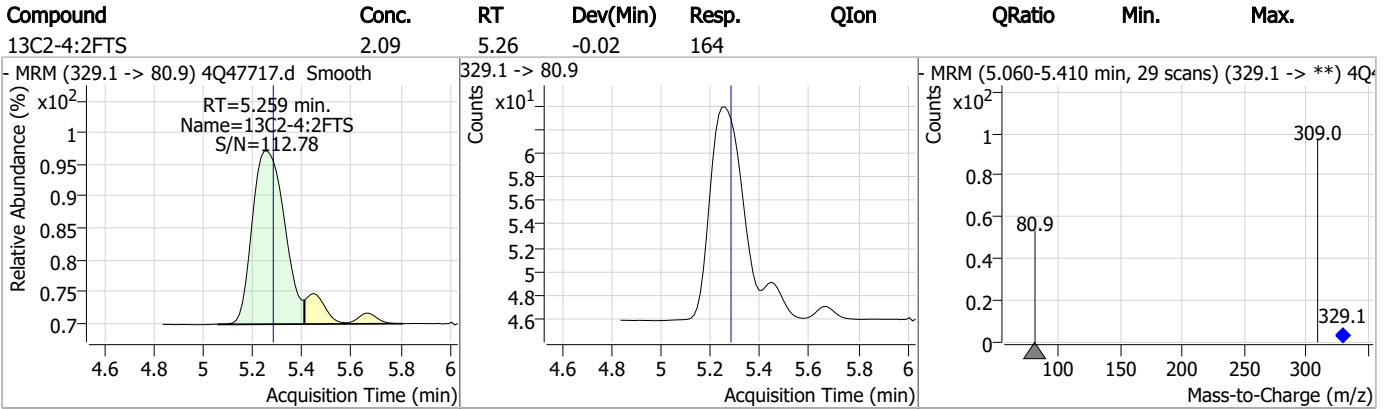
Perfluorinated Compounds by LC/MS/MS



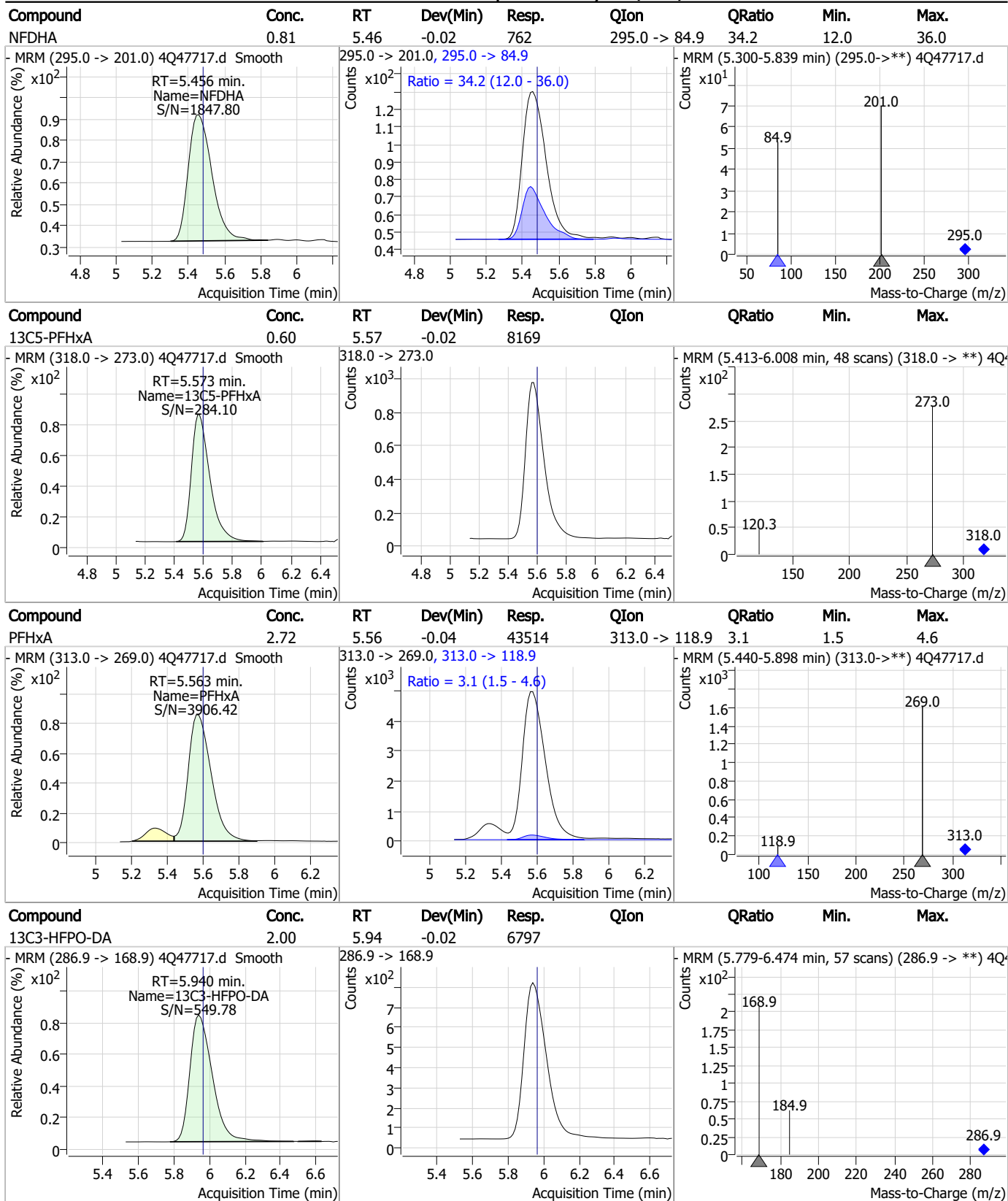
7.4.1

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Perfluorinated Compounds by LC/MS/MS

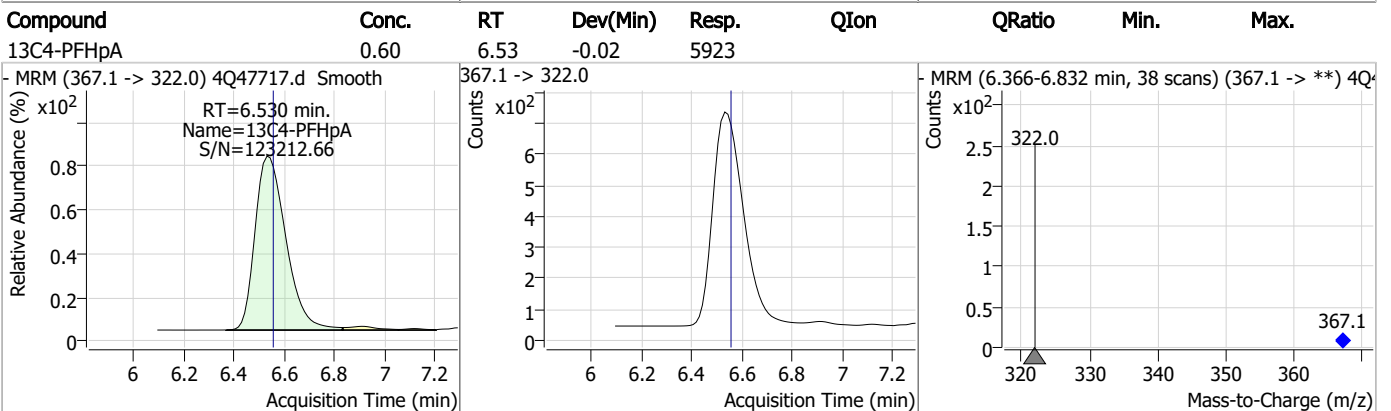
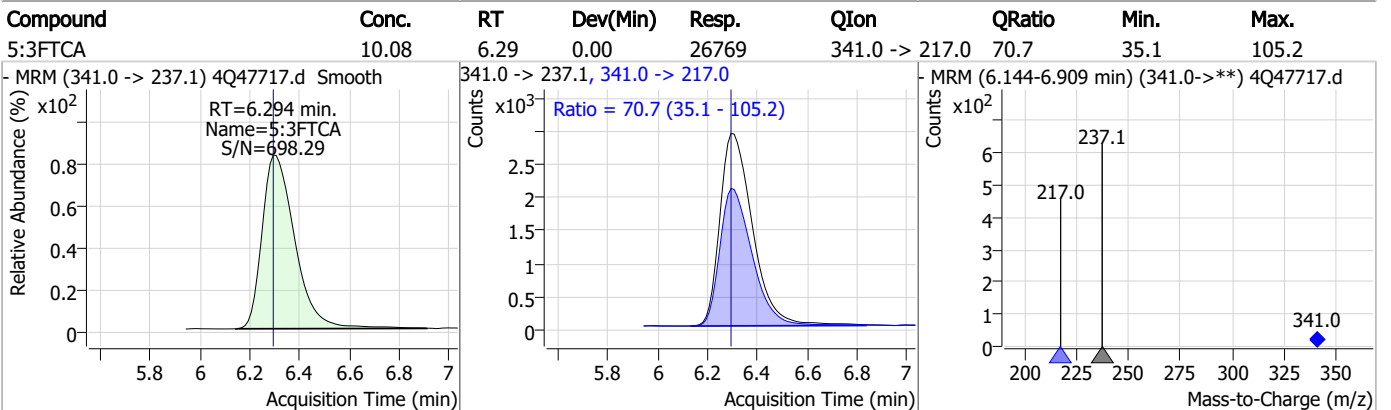
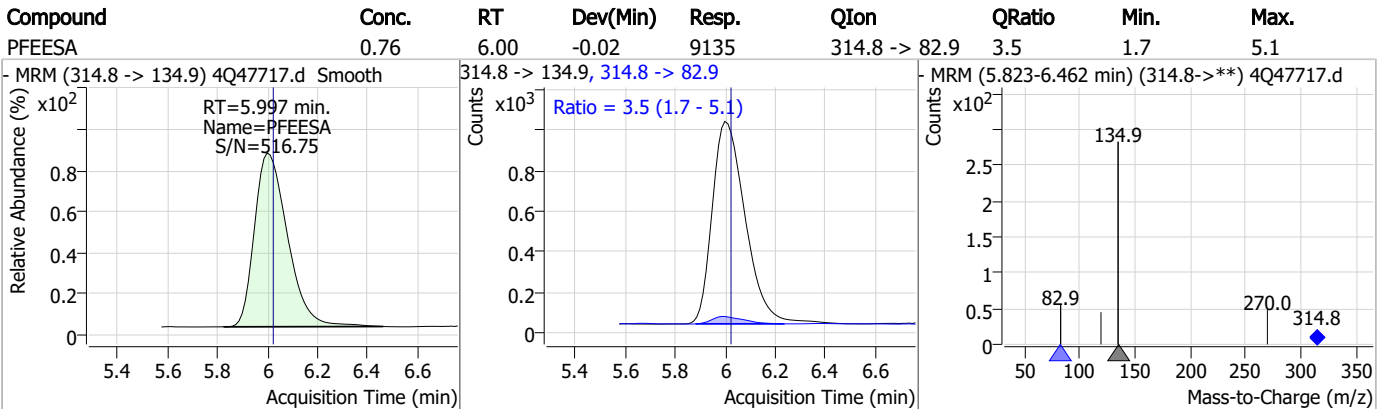
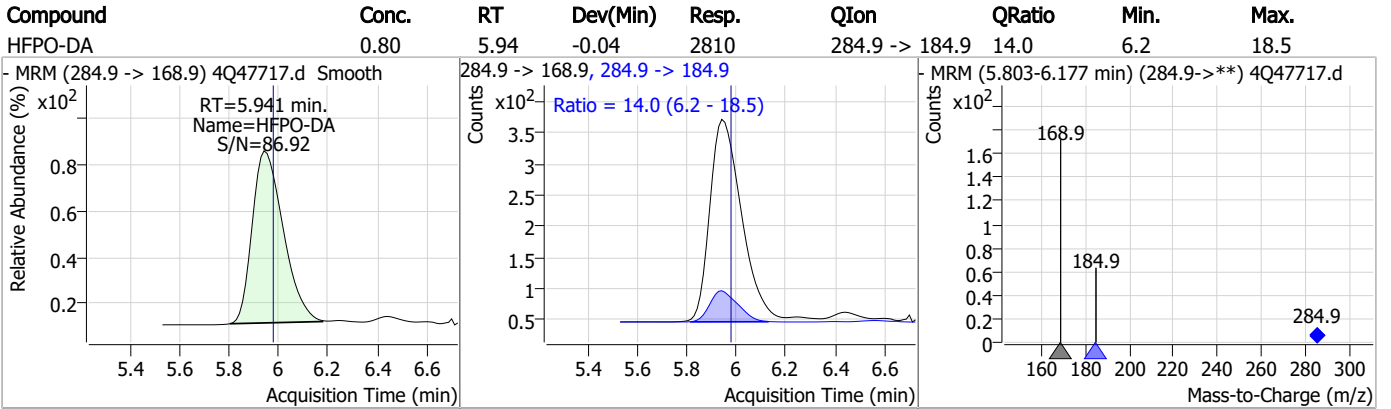


Perfluorinated Compounds by LC/MS/MS



7.4.1
7

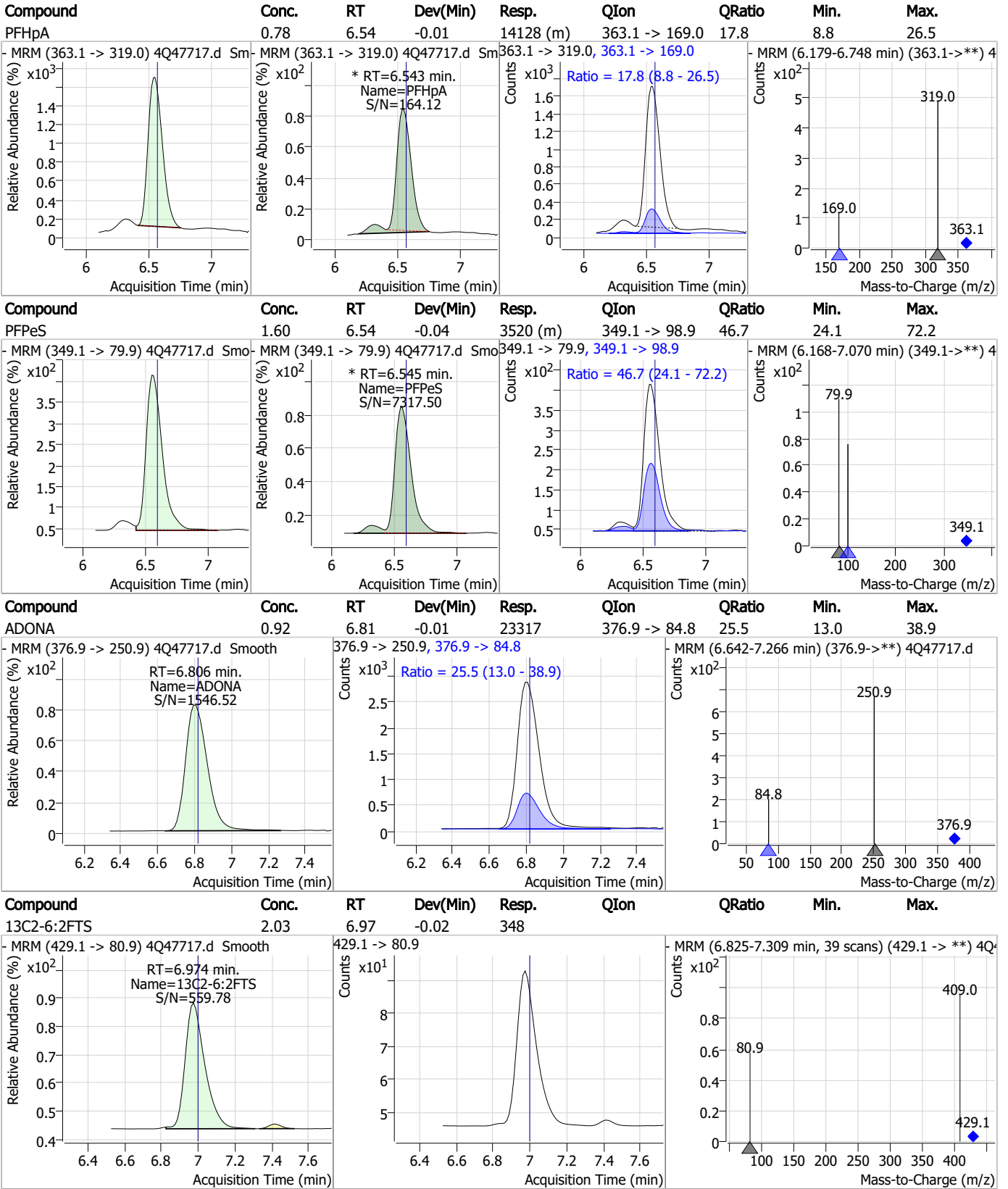
Perfluorinated Compounds by LC/MS/MS



7.4.1

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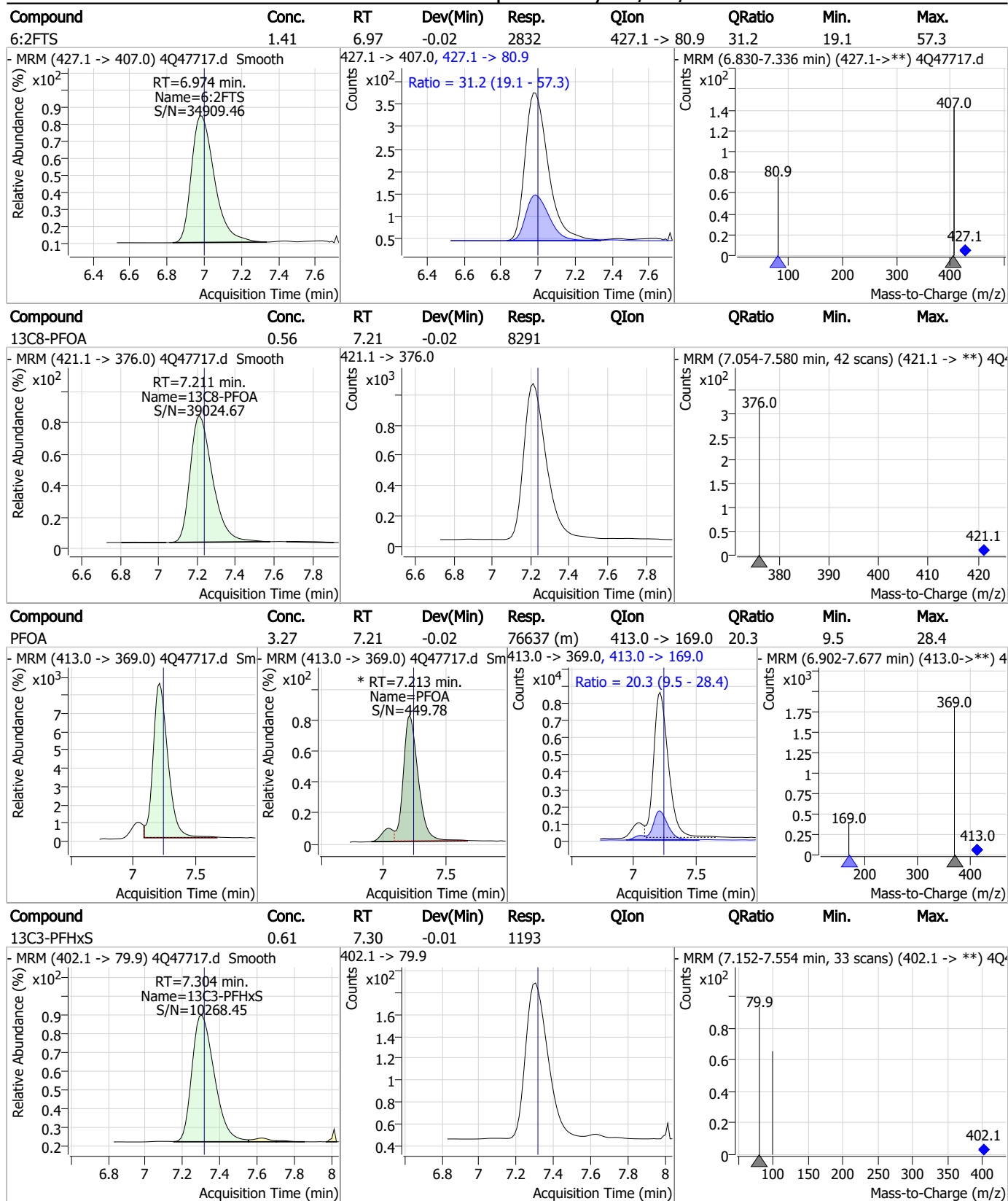
Perfluorinated Compounds by LC/MS/MS



7.4.1

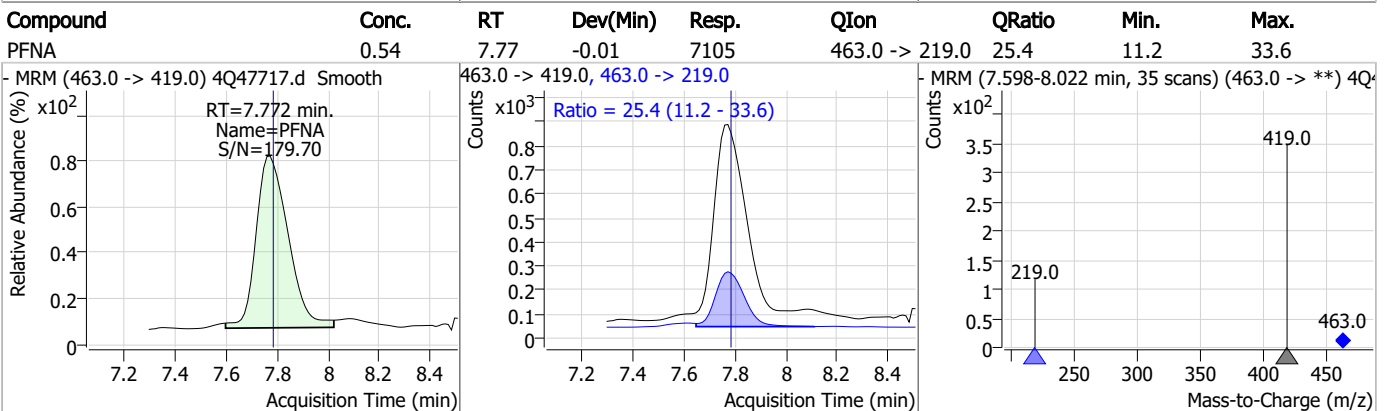
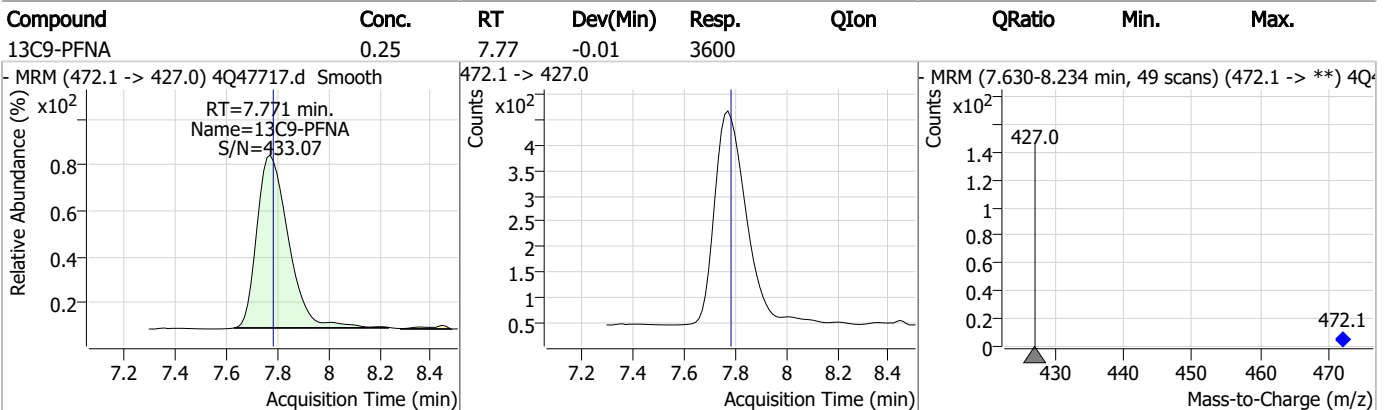
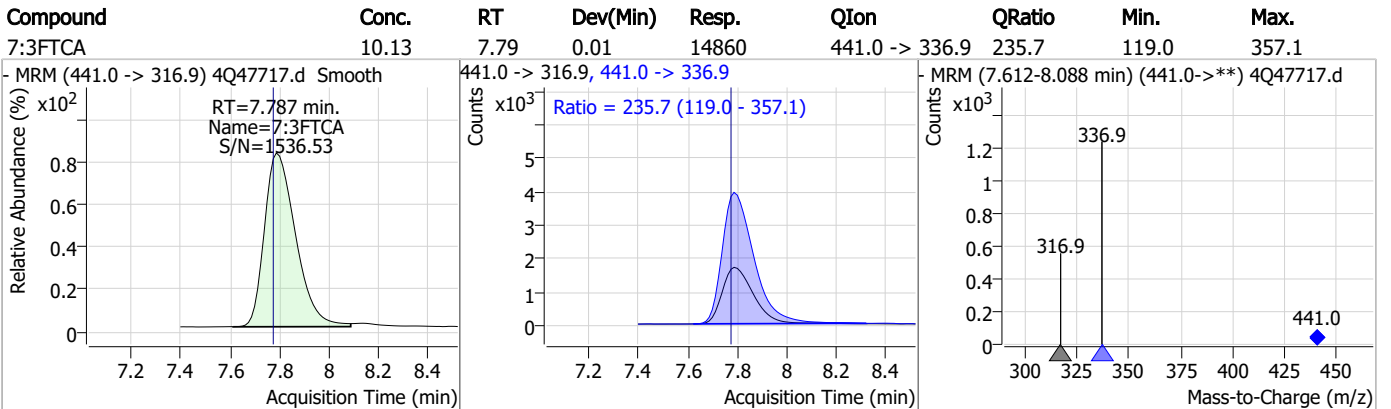
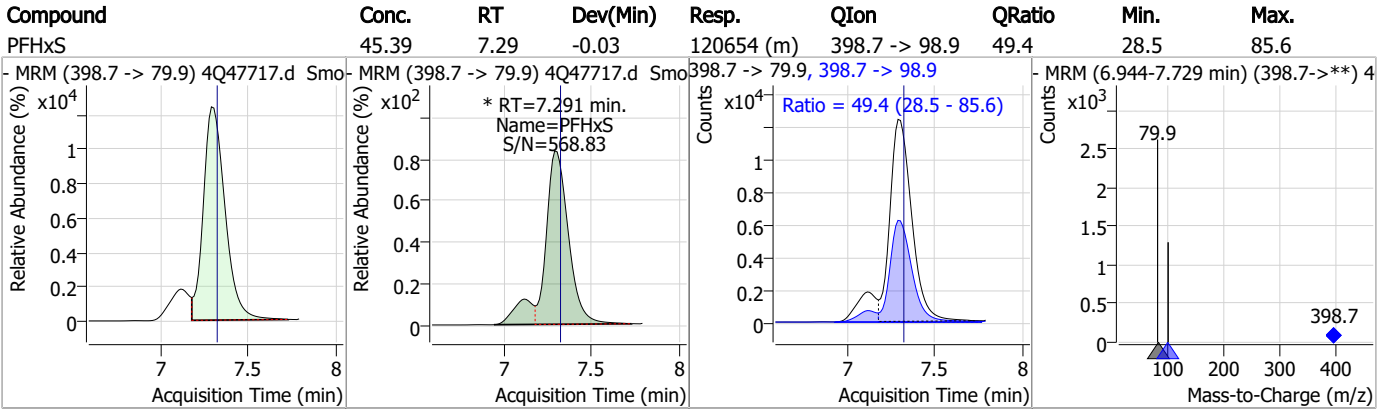
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Perfluorinated Compounds by LC/MS/MS

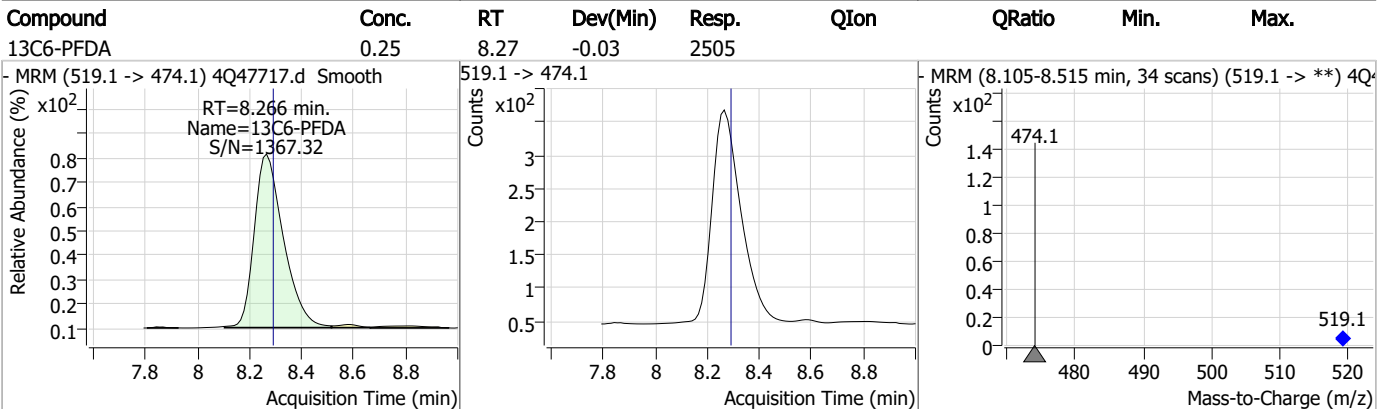
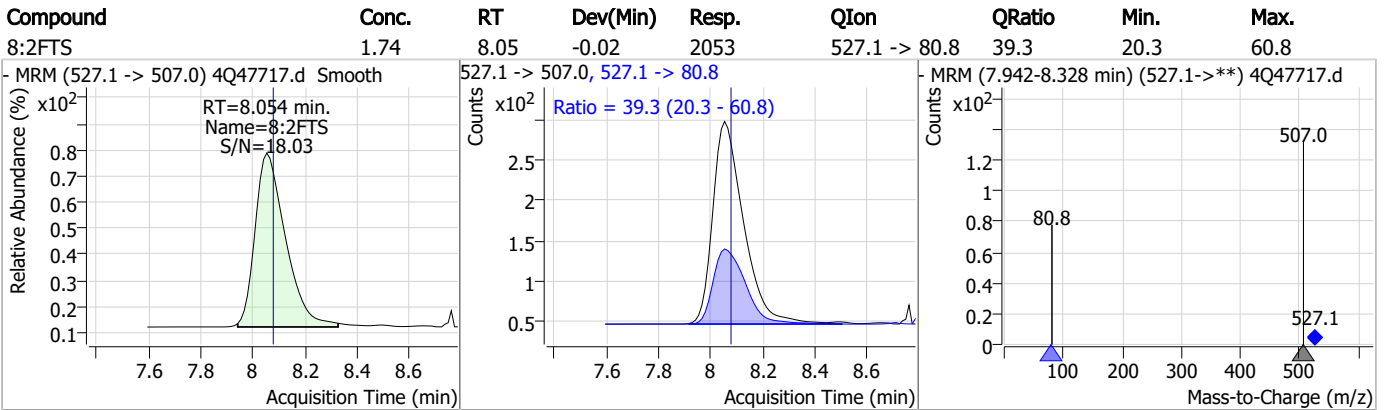
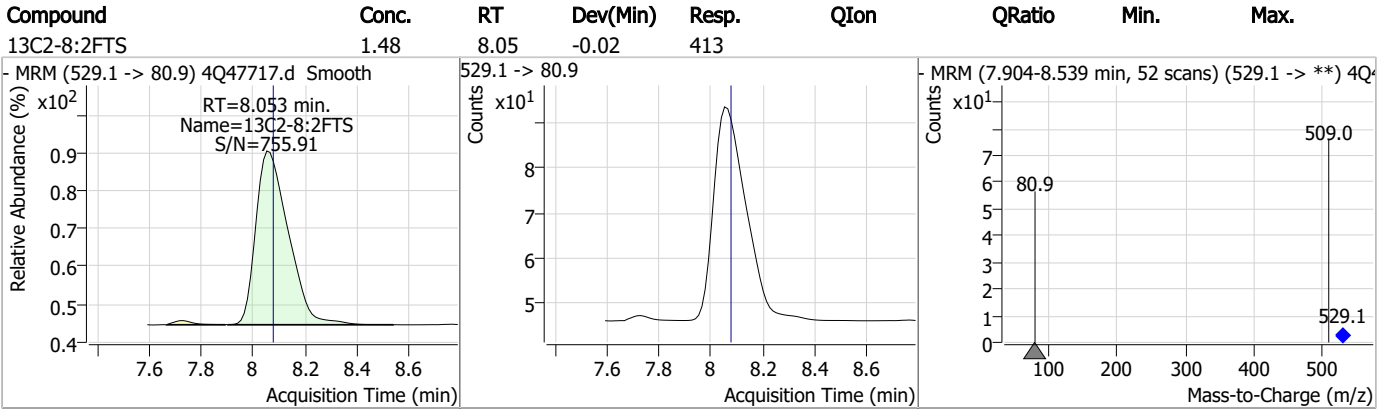
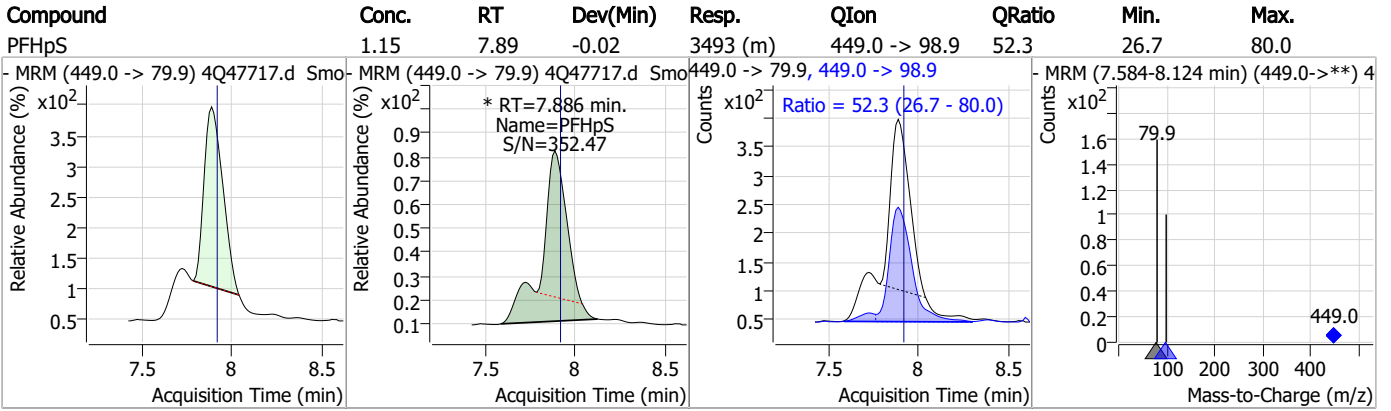


7.4.1
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Perfluorinated Compounds by LC/MS/MS

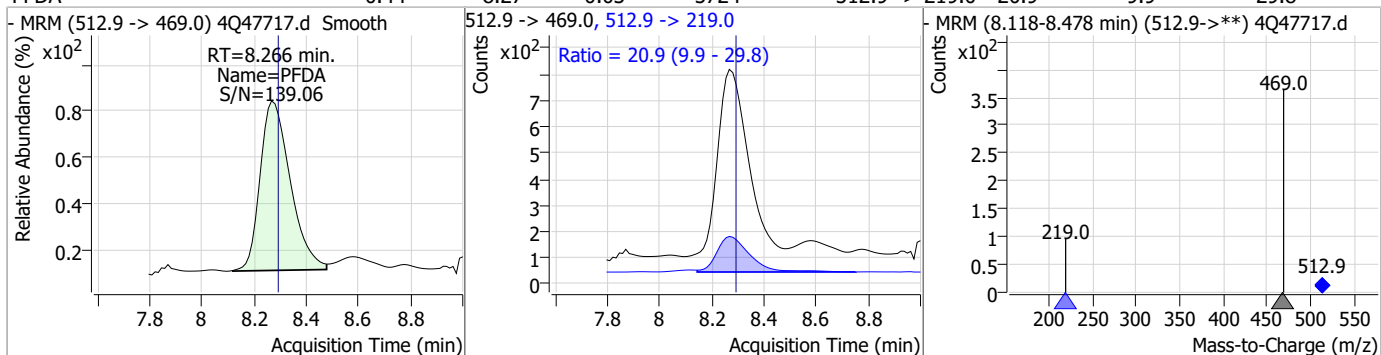


Perfluorinated Compounds by LC/MS/MS

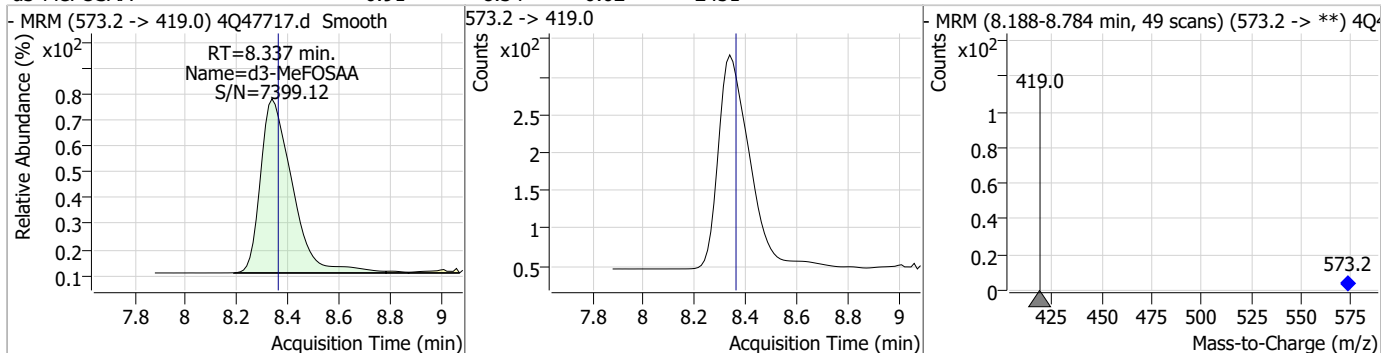


Perfluorinated Compounds by LC/MS/MS

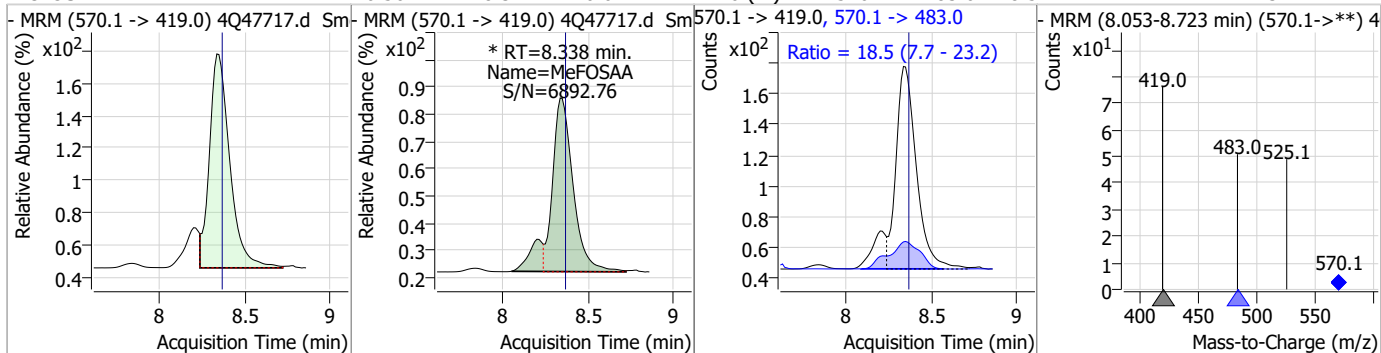
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.44	8.27	-0.03	5724	512.9 -> 219.0	20.9	9.9	29.8



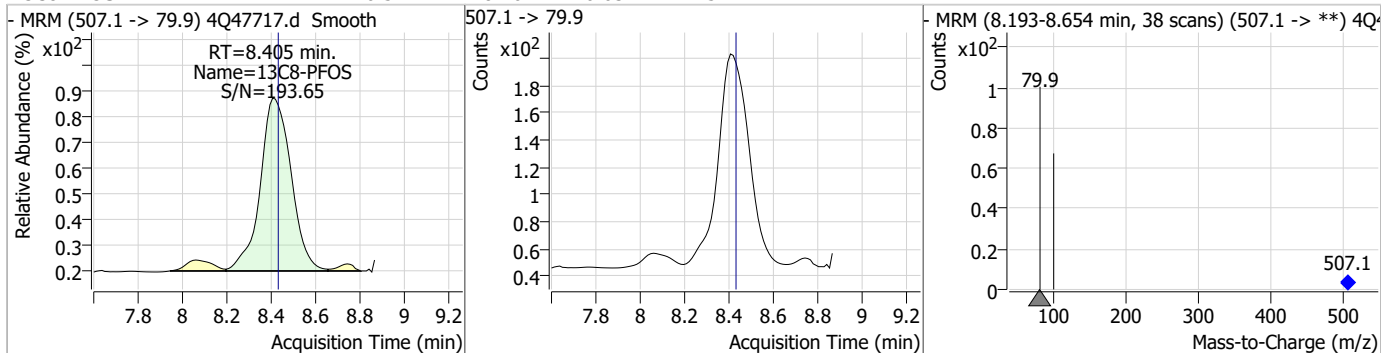
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	0.91	8.34	-0.02	2451				



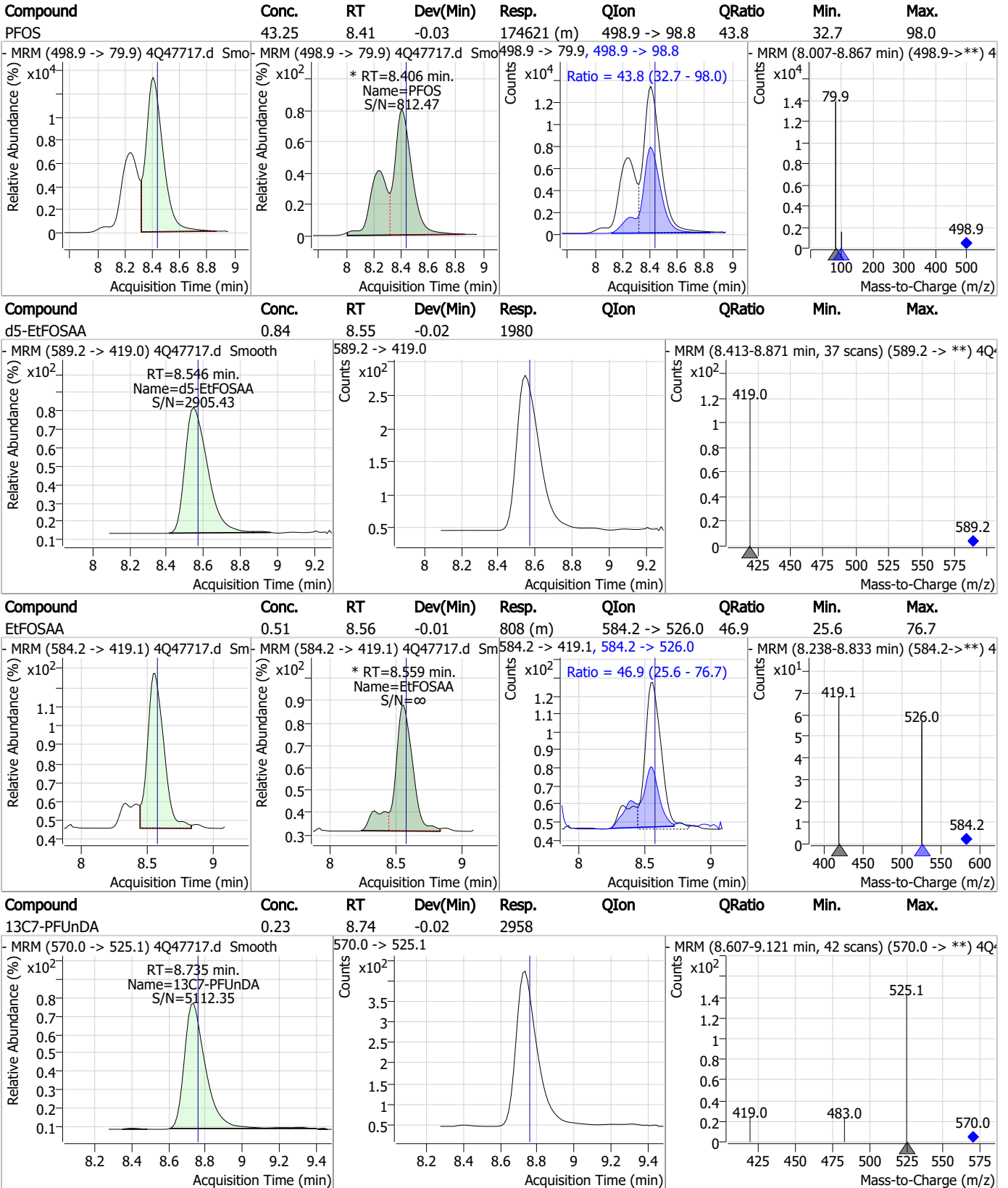
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.56	8.34	-0.02	1226 (m)	570.1 -> 483.0	18.5	7.7	23.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	0.54	8.40	-0.03	1517				



Perfluorinated Compounds by LC/MS/MS

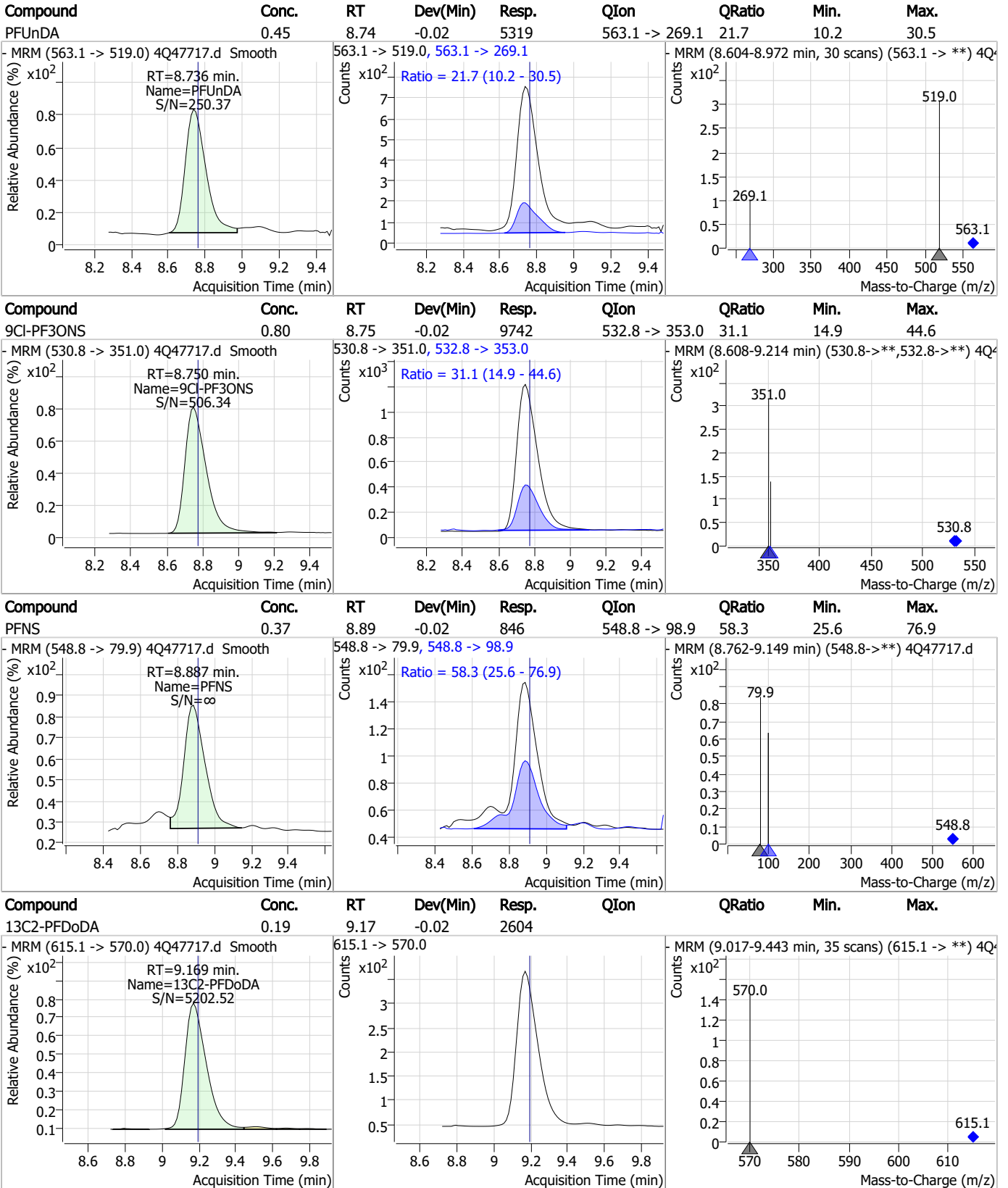


7.4.1

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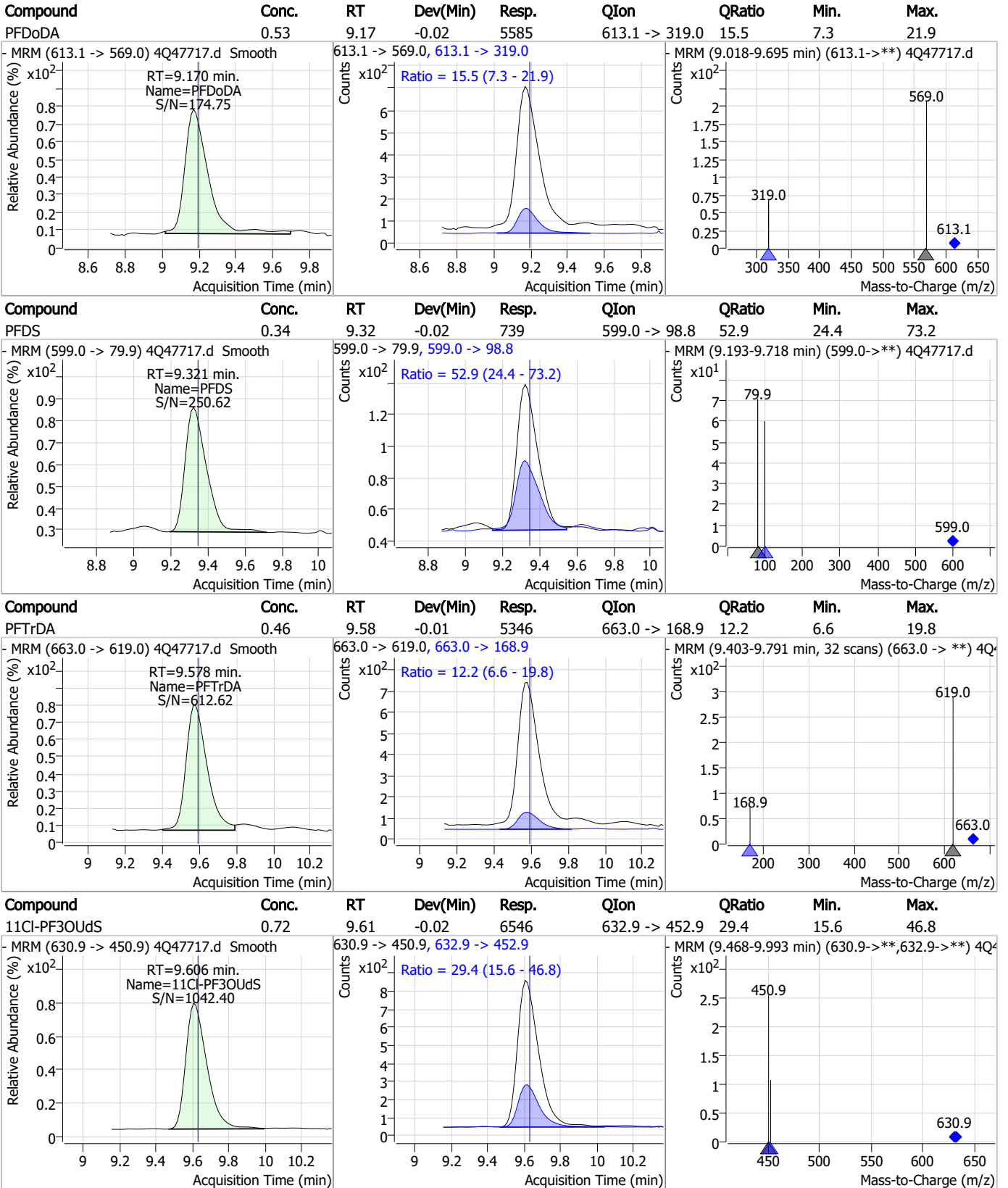
Perfluorinated Compounds by LC/MS/MS



7.4.1

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Perfluorinated Compounds by LC/MS/MS



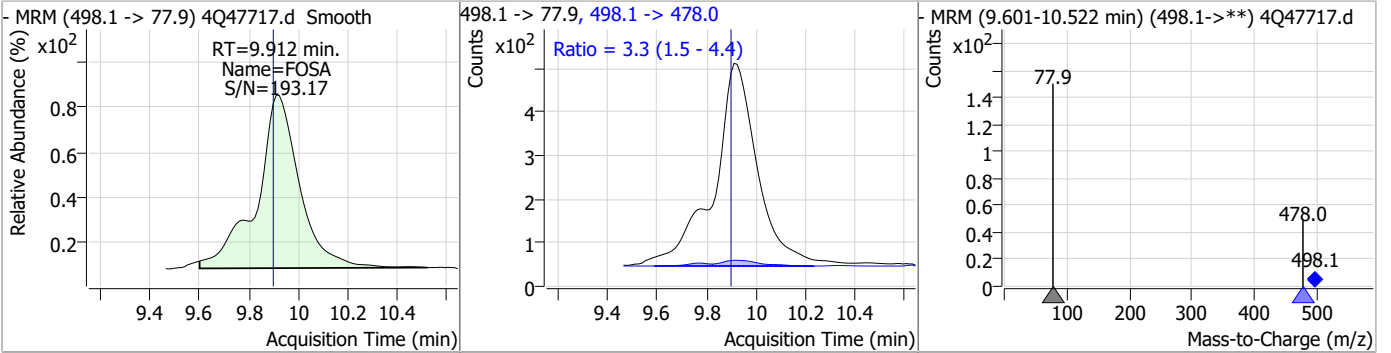
7.4.1

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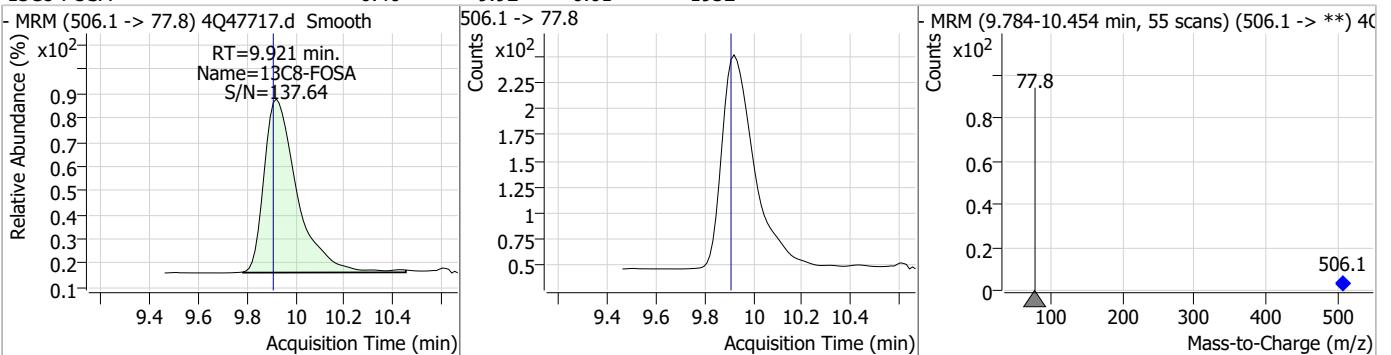


Perfluorinated Compounds by LC/MS/MS

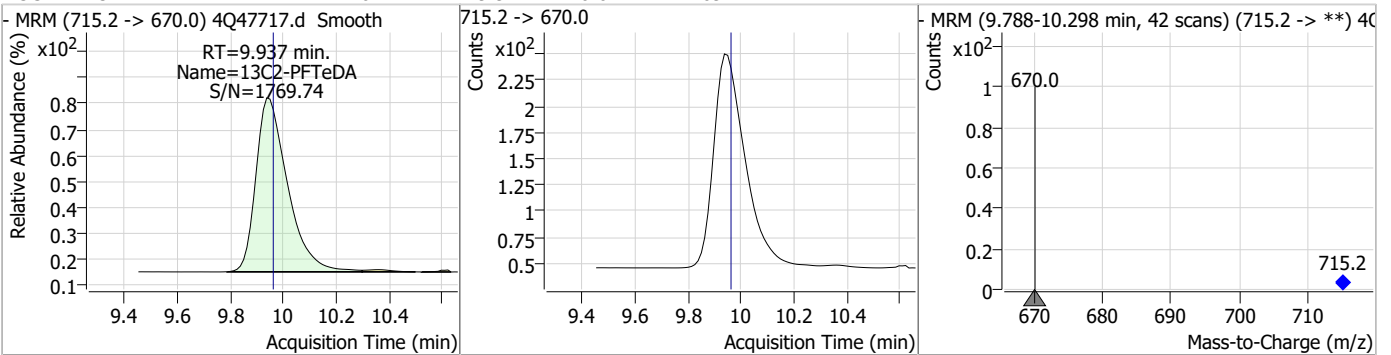
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	1.30	9.91	0.01	5603	498.1 -> 478.0	3.3	1.5	4.4



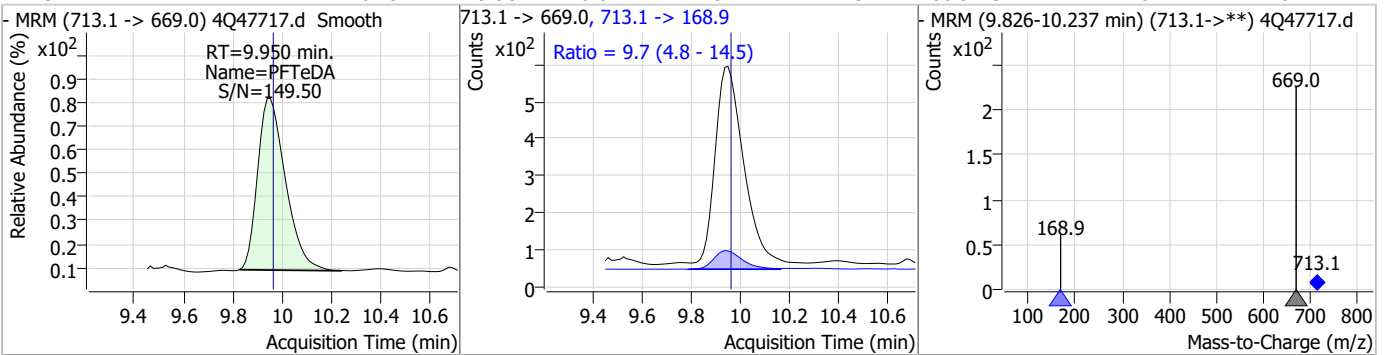
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	0.46	9.92	0.01	1952				



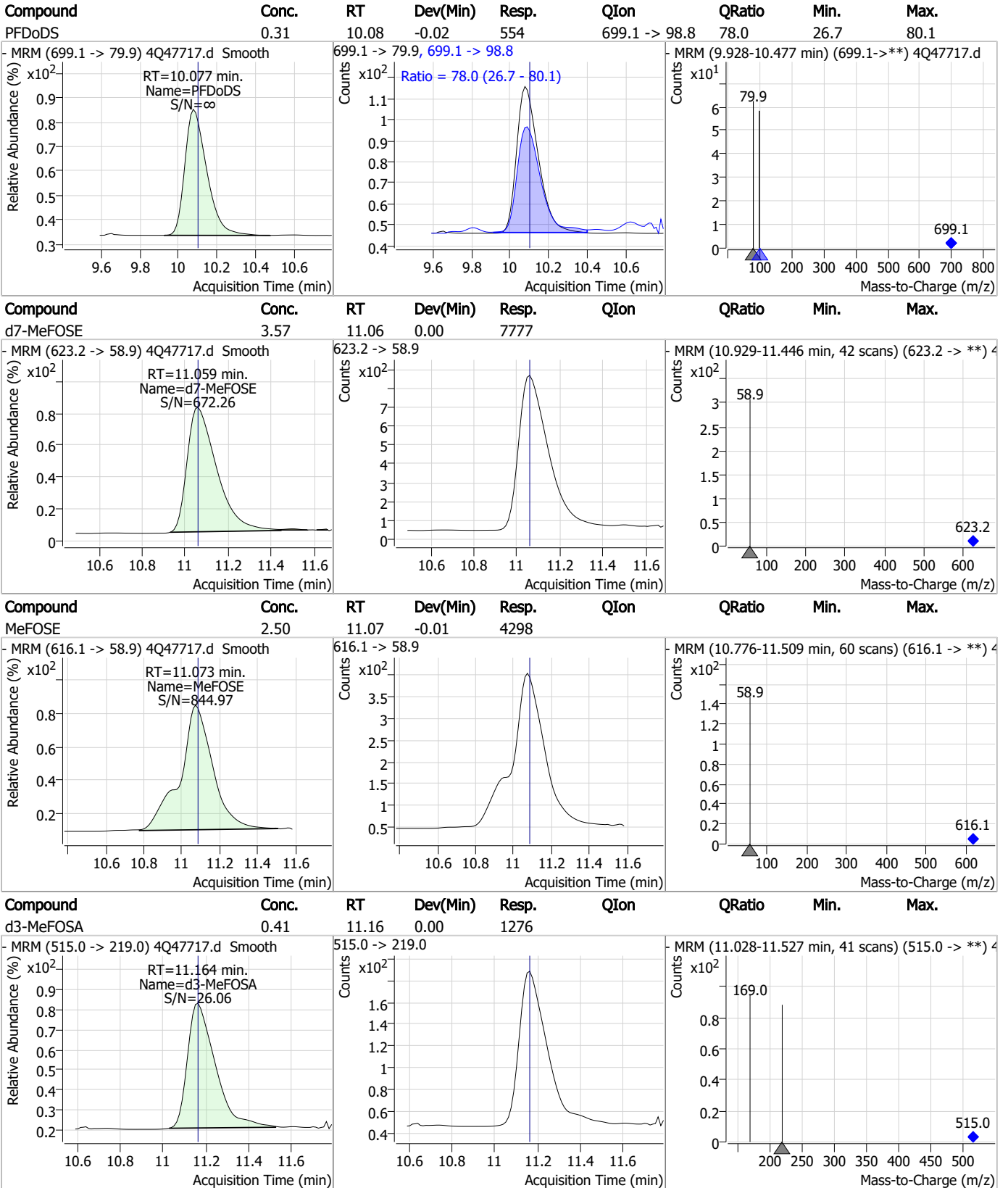
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	0.17	9.94	-0.02	1694				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.49	9.95	-0.01	4154	713.1 -> 168.9	9.7	4.8	14.5



Perfluorinated Compounds by LC/MS/MS

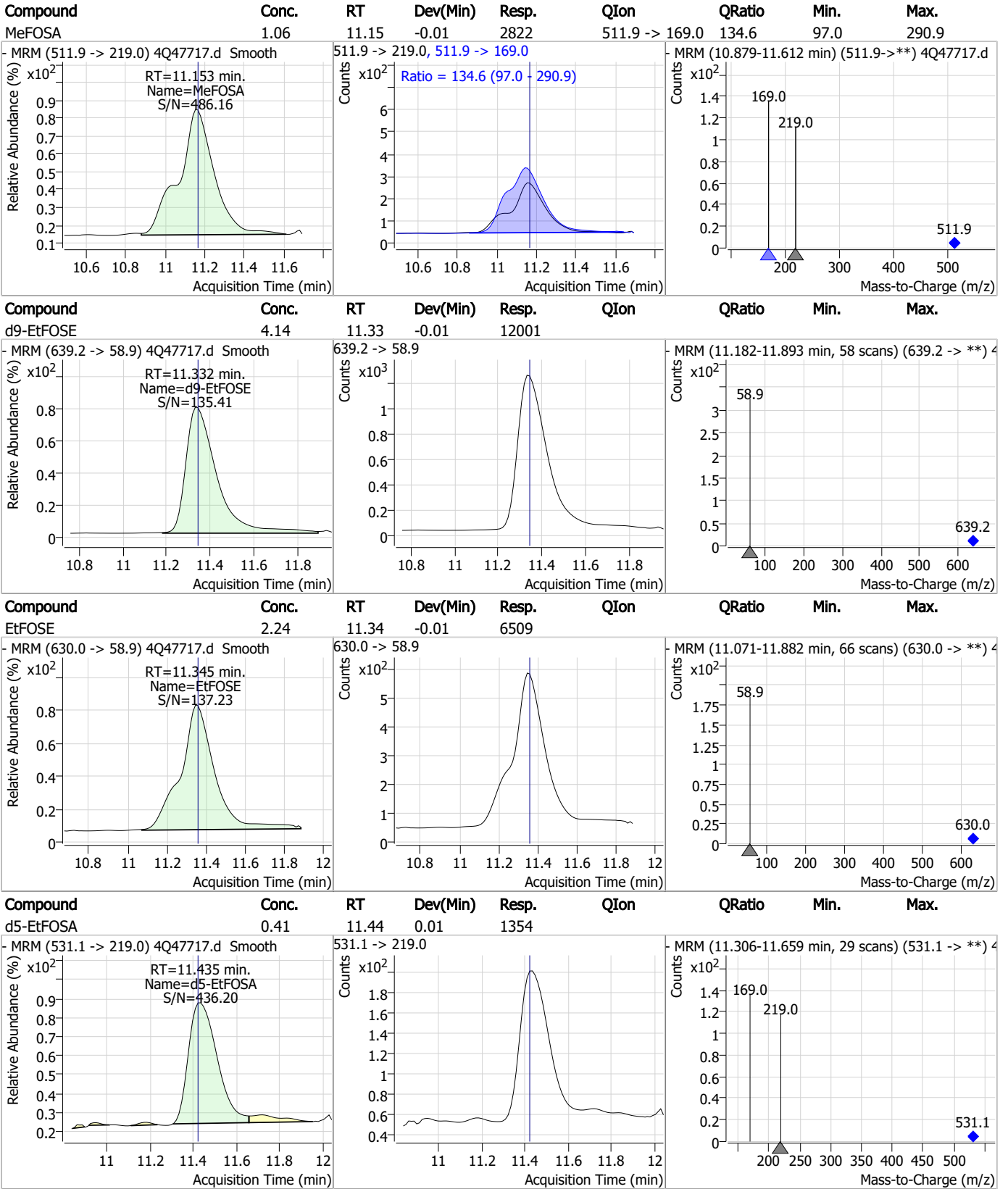


7.4.1

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Perfluorinated Compounds by LC/MS/MS

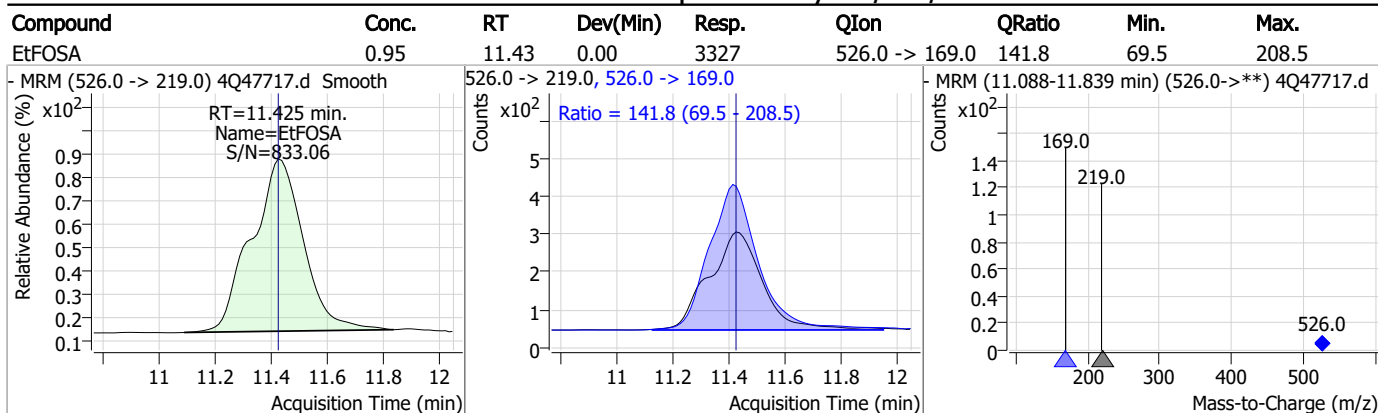


7.4.1

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Perfluorinated Compounds by LC/MS/MS



7.4.1

7

Manual Integration Approval Summary

Sample Number: OP97911-MS Method: EPA DRAFT 1633
Lab FileID: 4Q47717.D Analyst approved: 07/23/23 11:10 Anna Ludwig
Injection Time: 07/21/23 02:37 Supervisor approved: 07/24/23 09:56 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorobutanesulfonic acid	375-73-5		5.44	Split peak
Perfluoroheptanoic acid	375-85-9		6.54	Split peak
Perfluoropentanesulfonic acid	2706-91-4		6.54	Split peak
Perfluorooctanoic acid	335-67-1		7.21	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluoroheptanesulfonic acid	375-92-8		7.89	Split peak
MeFOSAA	2355-31-9		8.34	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak
EtFOSAA	2991-50-6		8.56	Split peak

7.4.1.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47719.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/21/2023 3:06:37 AM
 Sample Name : op97911-dup
 Vial : P4-D2
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q699.batch.bin
 Sample Information : OP97911,S4Q699,500,,,5.0,10,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.886	216.8 -> 171.9	8341	1.00 µg/L	-0.025
M5-PFPeA	4.360	268.3 -> 223.0	4875	0.50 µg/L	-0.027
M5-PFHxA	5.561	318.0 -> 273.0	3995	0.25 µg/L	-0.037
M4-PFHpA	6.530	367.1 -> 322.0	2878	0.25 µg/L	-0.025
M8-PFOA	7.211	421.1 -> 376.0	4230	0.25 µg/L	-0.025
M9-PFNA	7.771	472.1 -> 427.0	1810	0.13 µg/L	-0.012
M6-PFDA	8.266	519.1 -> 474.1	1275	0.13 µg/L	-0.026
M7-PFUnDA	8.735	570.0 -> 525.1	1383	0.13 µg/L	-0.025
M2-PFDoDA	9.169	615.1 -> 570.0	1477	0.13 µg/L	-0.025
M2-PFTeDA	9.937	715.2 -> 670.0	801	0.13 µg/L	-0.025
M8-FOSA	9.909	506.1 -> 77.8	1184	0.25 µg/L	0.000
M3-PFBS	5.441	302.1 -> 79.9	1055	0.25 µg/L	-0.037
M3-PFHxS	7.304	402.1 -> 79.9	607	0.25 µg/L	-0.012
M8-PFOS	8.405	507.1 -> 79.9	1063	0.25 µg/L	-0.025
M2-4:2FTS	5.259	329.1 -> 80.9	115	0.50 µg/L	-0.025
M2-6:2FTS	6.986	429.1 -> 80.9	141	0.50 µg/L	-0.012
M2-8:2FTS	8.066	529.1 -> 80.9	214	0.50 µg/L	-0.012
M3-MeFOSAA	8.337	573.2 -> 419.0	1604	0.50 µg/L	-0.025
M3-HFPO-DA	5.940	286.9 -> 168.9	3081	1.00 µg/L	-0.025
M5-EtFOSAA	8.546	589.2 -> 419.0	1212	0.50 µg/L	-0.025
M7-MeFOSE	11.059	623.2 -> 58.9	4714	2.50 µg/L	0.000
M9-EtFOSE	11.344	639.2 -> 58.9	6996	2.50 µg/L	0.000
M5-EtFOSA	11.423	531.1 -> 219.0	836	0.25 µg/L	0.000
M3-MeFOSA	11.152	515.0 -> 219.0	720	0.25 µg/L	-0.012
13C4-PFOS	8.418	502.8 -> 79.9	721	0.25 µg/L	-0.013
13C3-PFBA	2.891	216.0 -> 172.0	4929	0.50 µg/L	-0.025
18O2-PFHxS	7.303	403.0 -> 83.9	470	0.25 µg/L	-0.012
13C4-PFOA	7.212	417.1 -> 372.0	4277	0.25 µg/L	-0.025
13C2-PFDA	8.266	515.1 -> 470.1	1229	0.13 µg/L	-0.026
13C5-PFNA	7.772	468.0 -> 423.0	1974	0.13 µg/L	-0.012
13C2-PFHxA	5.562	315.1 -> 270.0	3236	0.25 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.259	329.1 -> 80.9	115	1.09 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 21.8%		
13C2-6:2FTS	6.986	429.1 -> 80.9	141	0.61 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 12.2%		
13C2-8:2FTS	8.066	529.1 -> 80.9	214	0.57 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 11.4%		
13C2-PFDoDA	9.169	615.1 -> 570.0	1477	0.13 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 10.3%		
13C2-PFTeDA	9.937	715.2 -> 670.0	801	0.10 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 7.8%		
13C3-PFBS	5.441	302.1 -> 79.9	1055	0.29 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 11.7%		
13C3-PFHxS	7.304	402.1 -> 79.9	607	0.23 µg/L	-0.012

7.5.1
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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 = 9.2%		
13C4-PFBA	2.886	216.8 -> 171.9	8341	0.90 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 9.0%		
13C4-PFHpA	6.530	367.1 -> 322.0	2878	0.29 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 11.6%		
13C5-PFHxA	5.561	318.0 -> 273.0	3995	0.29 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 11.5%		
13C5-PFPeA	4.360	268.3 -> 223.0	4875	0.55 µg/L	-0.027
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 10.9%		
13C6-PFDA	8.266	519.1 -> 474.1	1275	0.15 µg/L	-0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 12.0%		
13C7-PFUnDA	8.735	570.0 -> 525.1	1383	0.13 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 10.2%		
13C8-FOSA	9.909	506.1 -> 77.8	1184	0.32 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 12.7%		
13C8-PFOA	7.211	421.1 -> 376.0	4230	0.30 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 12.2%		
13C8-PFOS	8.405	507.1 -> 79.9	1063	0.42 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 17.0%		
13C9-PFNA	7.771	472.1 -> 427.0	1810	0.14 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 11.0%		
d3-MeFOSAA	8.337	573.2 -> 419.0	1604	0.68 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 13.5%		
13C3-HFPO-DA	5.940	286.9 -> 168.9	3081	0.89 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 8.9%		
d3-MeFOSA	11.152	515.0 -> 219.0	720	0.26 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 10.6%		
d5-EtFOSAA	8.546	589.2 -> 419.0	1212	0.58 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 11.6%		
d7-MeFOSE	11.059	623.2 -> 58.9	4714	2.45 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 9.8%		
d9-EtFOSE	11.344	639.2 -> 58.9	6996	2.73 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 10.9%		
d5-EtFOSA	11.423	531.1 -> 219.0	836	0.28 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 11.3%		

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	9.912	498.1 -> 77.9	14944	2.86 µg/L	m 96
		498.1 -> 478.0	609		
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	2.895	212.8 -> 168.9	4670	1.86 µg/L	100
PFBS	5.443	298.7 -> 79.9	10846	2.47 µg/L	m 96
		298.7 -> 98.8	4072		
PFDA	8.266	512.9 -> 469.0	1343	0.10 µg/L	m 82
		512.9 -> 219.0	381		
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



7.5.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.531	599.0 -> 98.8				
		363.1 -> 319.0	96335	5.44 µg/L	m	99
PFHpS	7.886	363.1 -> 169.0	17571			
		449.0 -> 79.9	2945	0.69 µg/L	m	91
PFHxA	5.563	449.0 -> 98.9	1379			
		313.0 -> 269.0	278592	17.82 µg/L		100
PFHxS	7.291	313.0 -> 118.9	8478			
		398.7 -> 79.9	196508	72.70 µg/L	m	89
PFNA	7.772	398.7 -> 98.9	96240			
		463.0 -> 419.0	15278	1.14 µg/L	m	97
PFNS	8.724	463.0 -> 219.0	3646			
		548.8 -> 79.9	0	µg/L	m	1
PFOA	7.213	548.8 -> 98.9	0			
		413.0 -> 369.0	458025	19.14 µg/L	m	95
PFOS	8.406	413.0 -> 169.0	97654			
		498.9 -> 79.9	146249	25.86 µg/L	m	74
PFPeA	4.363	498.9 -> 98.8	65604			
		263.0 -> 219.0	62933	4.58 µg/L		100
PFPeS	6.545	349.1 -> 79.9	6894	3.09 µg/L	m	97
		349.1 -> 98.9	3183			
PFTeDA	-	713.1 -> 669.0	-	N.D.		
PFTrDA	-	713.1 -> 168.9				
		663.0 -> 619.0	-	N.D.		
PFUnDA	-	663.0 -> 168.9				
		563.1 -> 519.0	-	N.D.		
11Cl-PF3OUdS	-	563.1 -> 269.1				
		630.9 -> 450.9	-	N.D.		
9Cl-PF3ONS	-	632.9 -> 452.9				
		530.8 -> 351.0	-	N.D.		
ADONA	-	532.8 -> 353.0				
		376.9 -> 250.9	-	N.D.		
HFPO-DA	-	376.9 -> 84.8				
		284.9 -> 168.9	-	N.D.		
3:3FTCA	-	284.9 -> 184.9				
		241.0 -> 177.0	-	N.D.		
5:3FTCA	-	241.0 -> 117.0				
		341.0 -> 237.1	-	N.D.		
7:3FTCA	-	341.0 -> 217.0				
		441.0 -> 316.9	-	N.D.		
EtFOSA	-	441.0 -> 336.9				
		526.0 -> 219.0	-	N.D.		
EtFOSE	-	526.0 -> 169.0				
		630.0 -> 58.9	-	N.D.		
MeFOSA	-	511.9 -> 219.0				
		511.9 -> 169.0	-	N.D.		
MeFOSE	-	616.1 -> 58.9				
		699.1 -> 79.9	-	N.D.		
PFDoDS	-	699.1 -> 98.8				
		295.0 -> 201.0	-	N.D.		
NFDHA	-	295.0 -> 84.9				
		279.0 -> 85.1	-	N.D.		
PFMBA	-	229.0 -> 84.9				
PFMPA	-	314.8 -> 134.9				
PFEESA	-	314.8 -> 82.9				

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

7.5.1
7

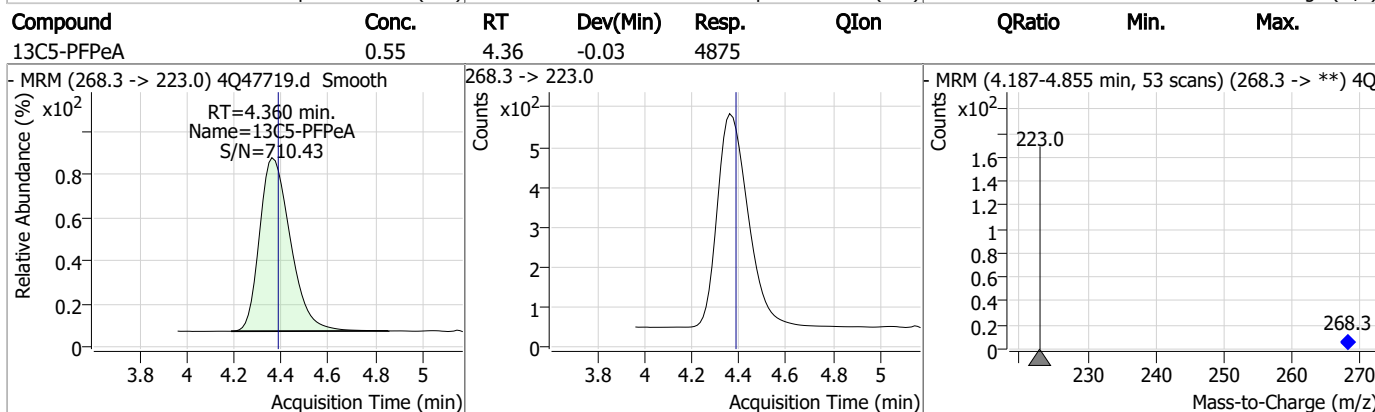
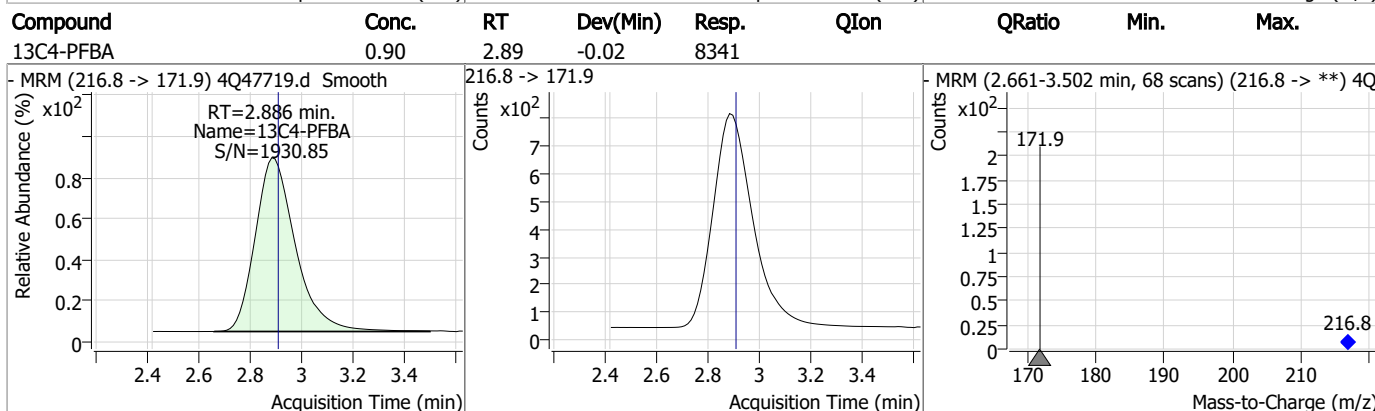
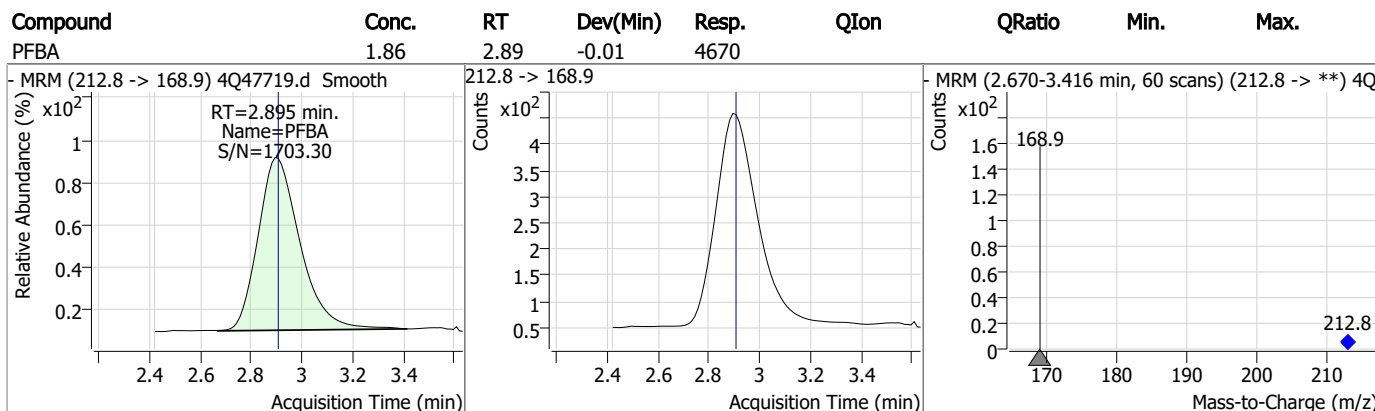
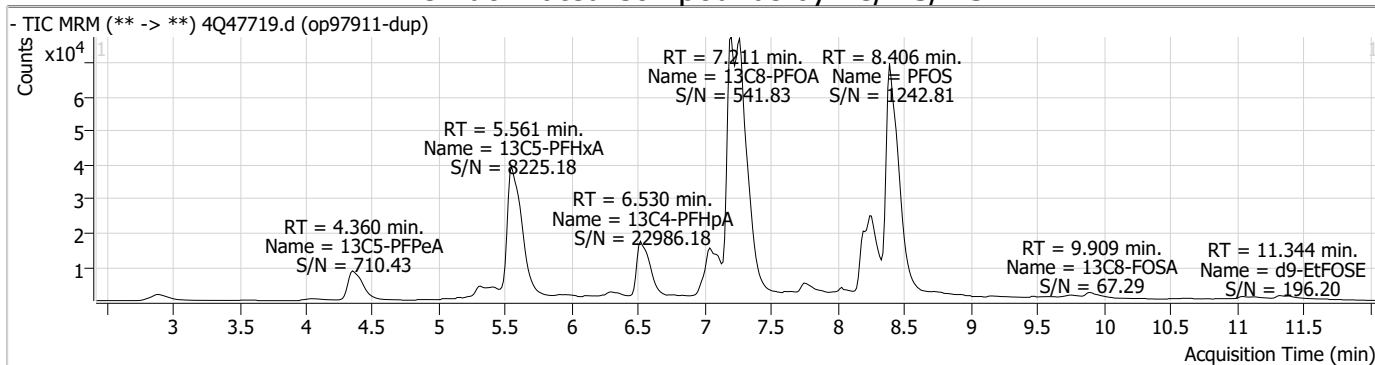
Perfluorinated Compounds by LC/MS/MS

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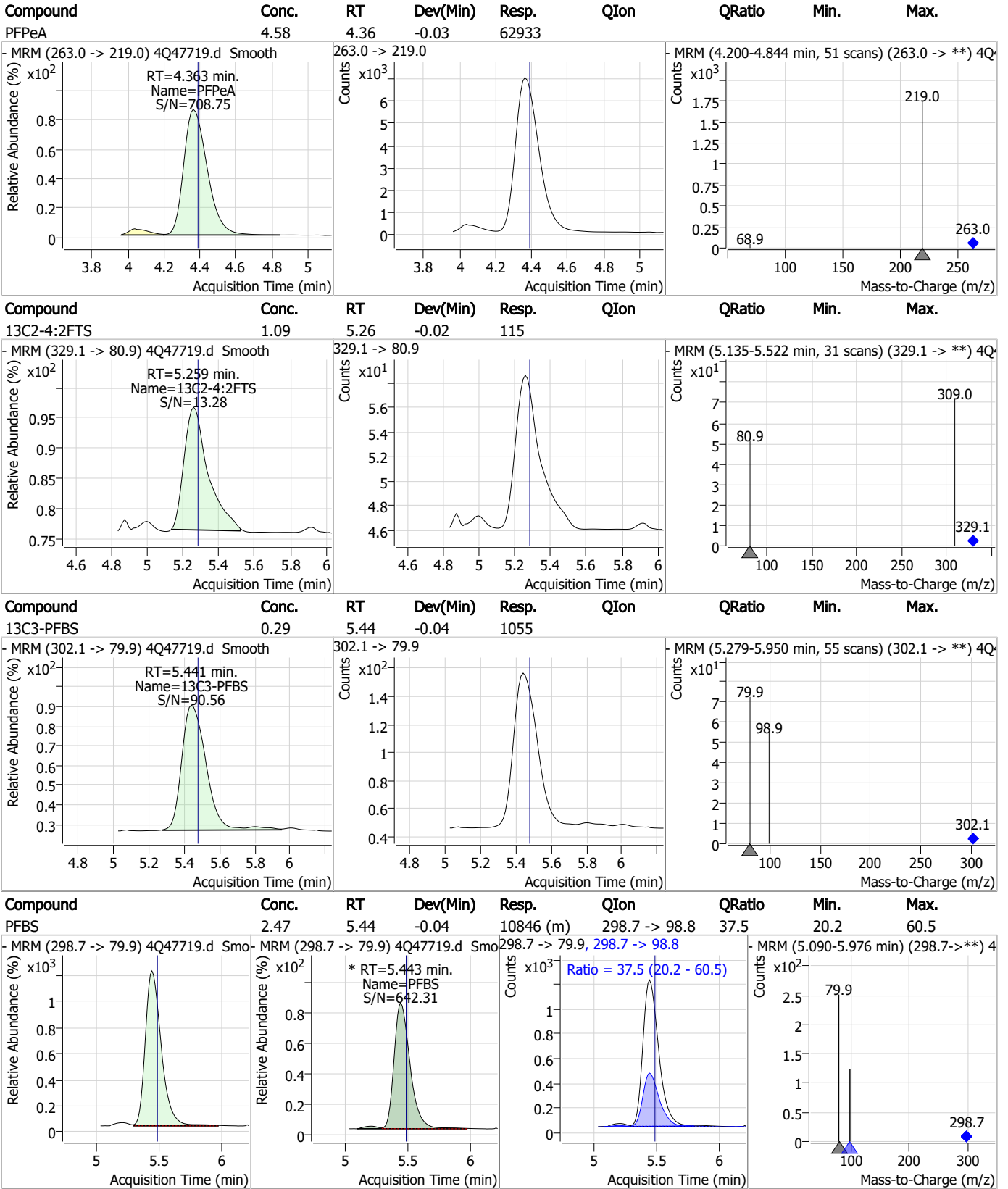
7.5.1

7

Perfluorinated Compounds by LC/MS/MS



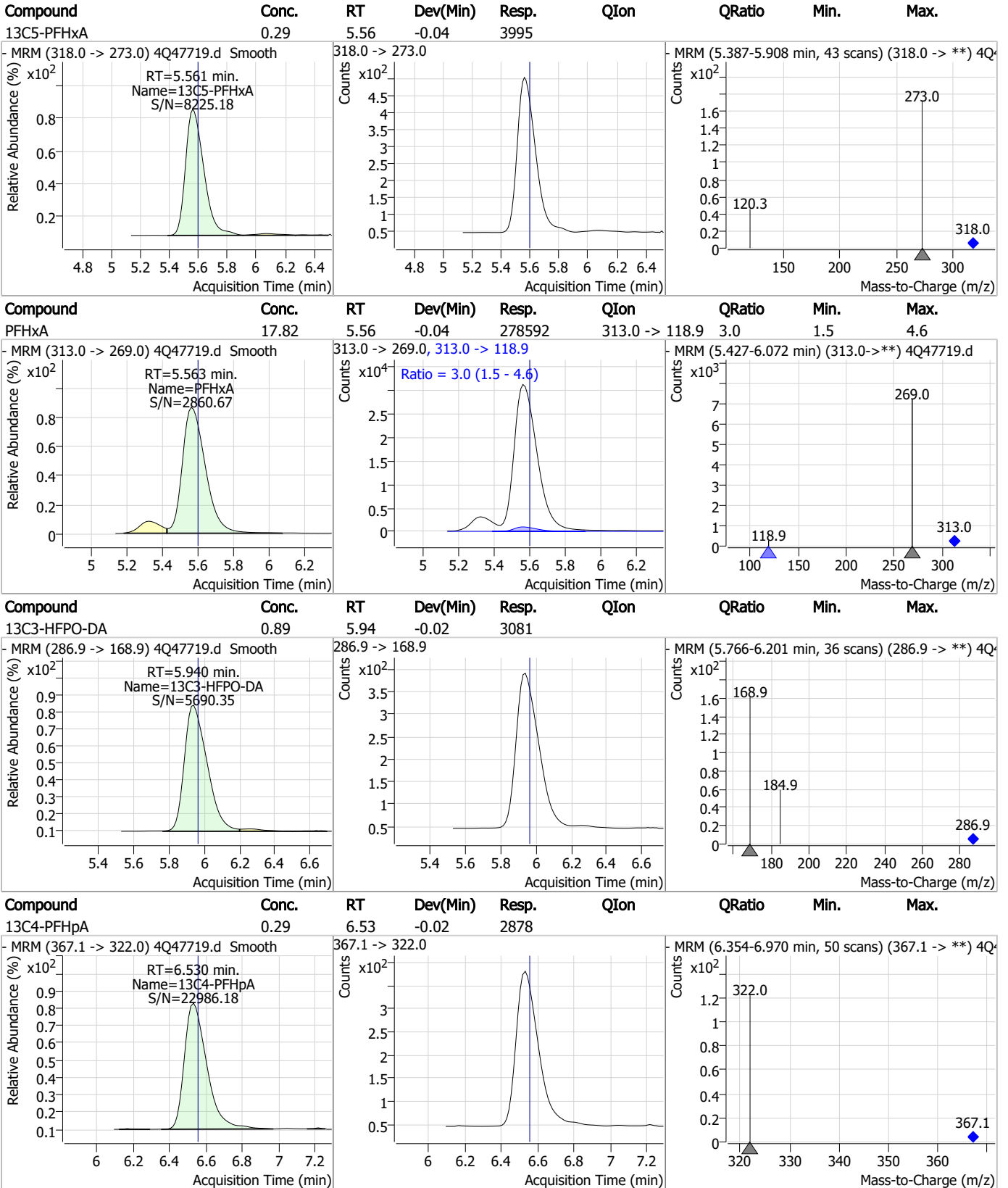
Perfluorinated Compounds by LC/MS/MS



7.5.1

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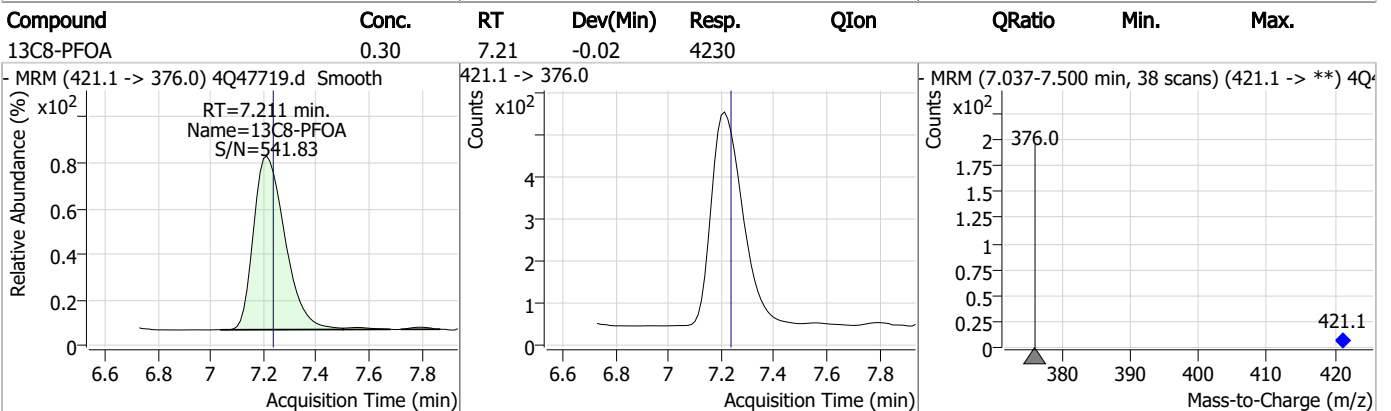
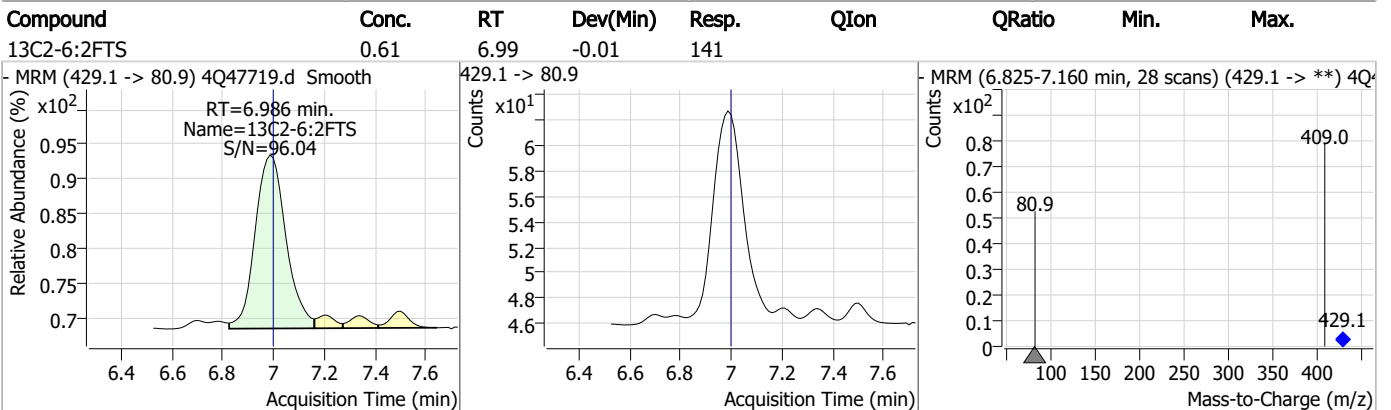
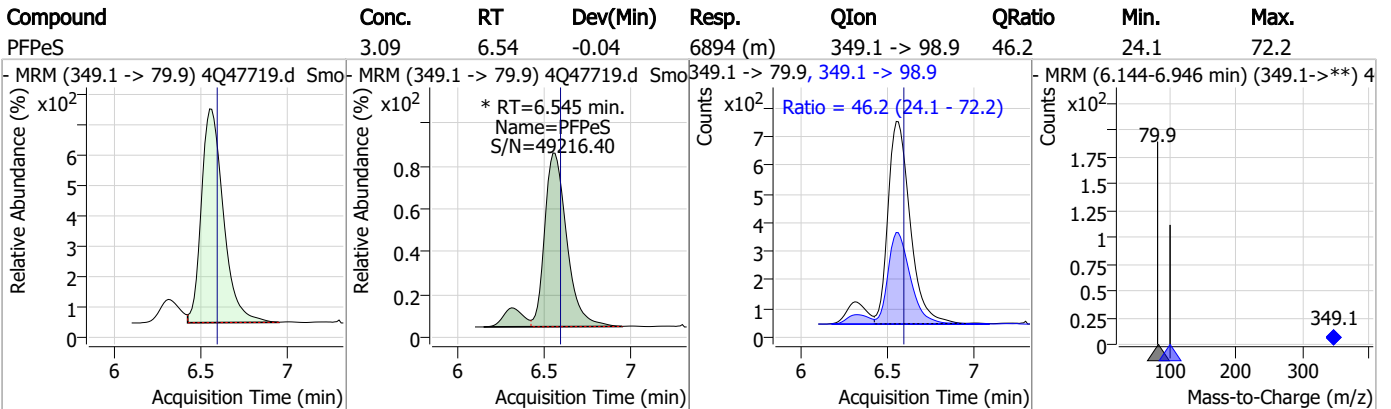
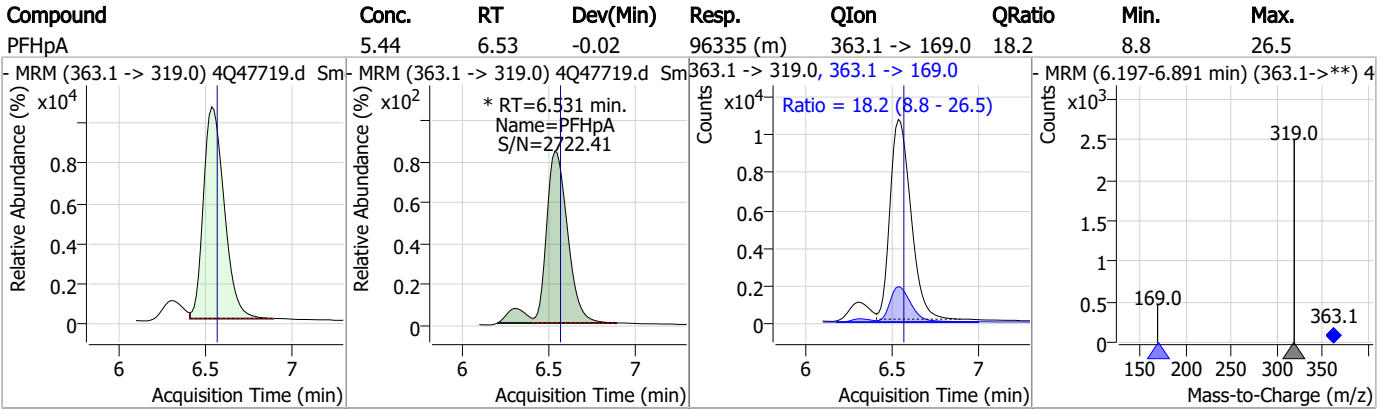
Perfluorinated Compounds by LC/MS/MS



7.5.1

7

Perfluorinated Compounds by LC/MS/MS

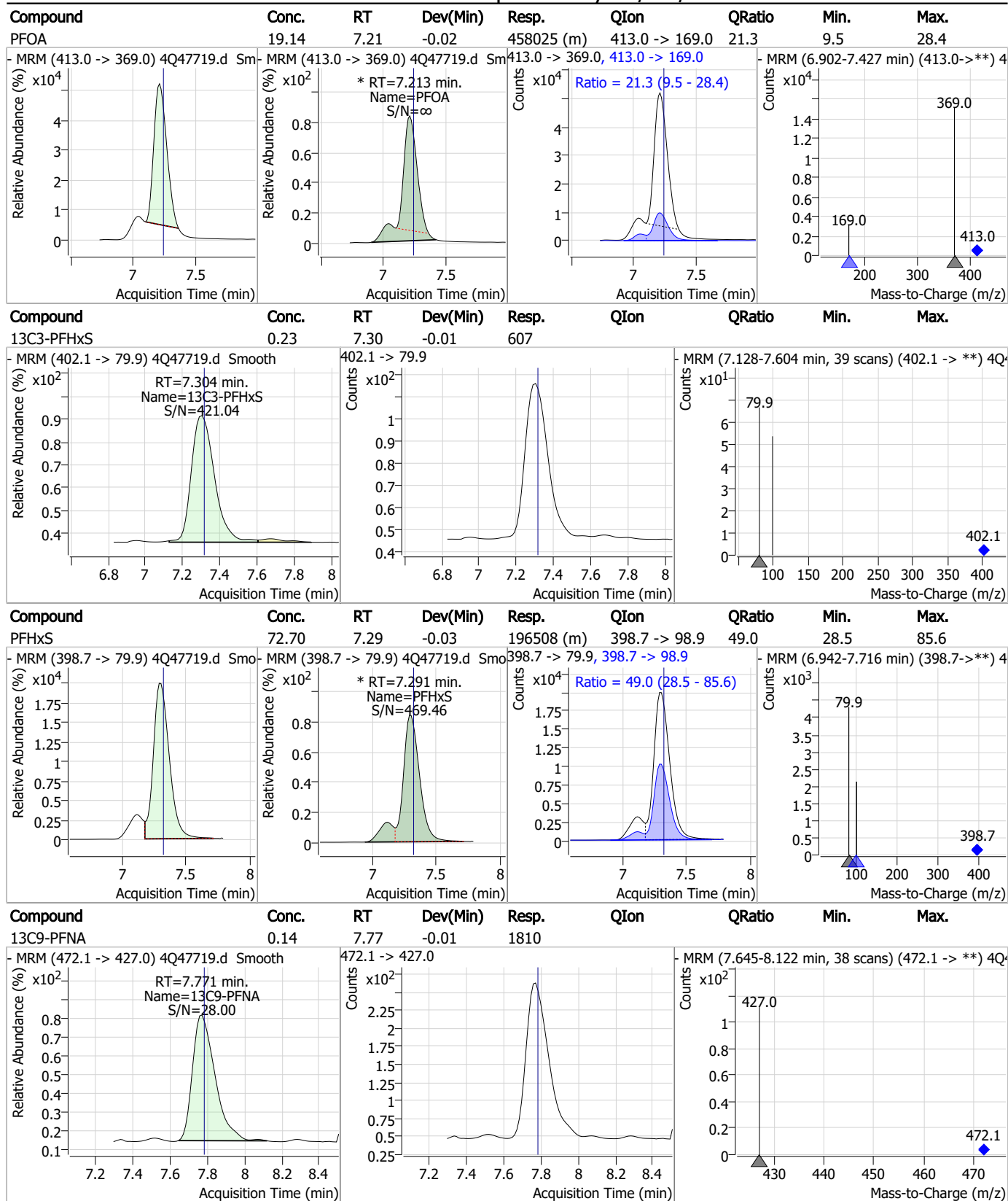


7.5.1

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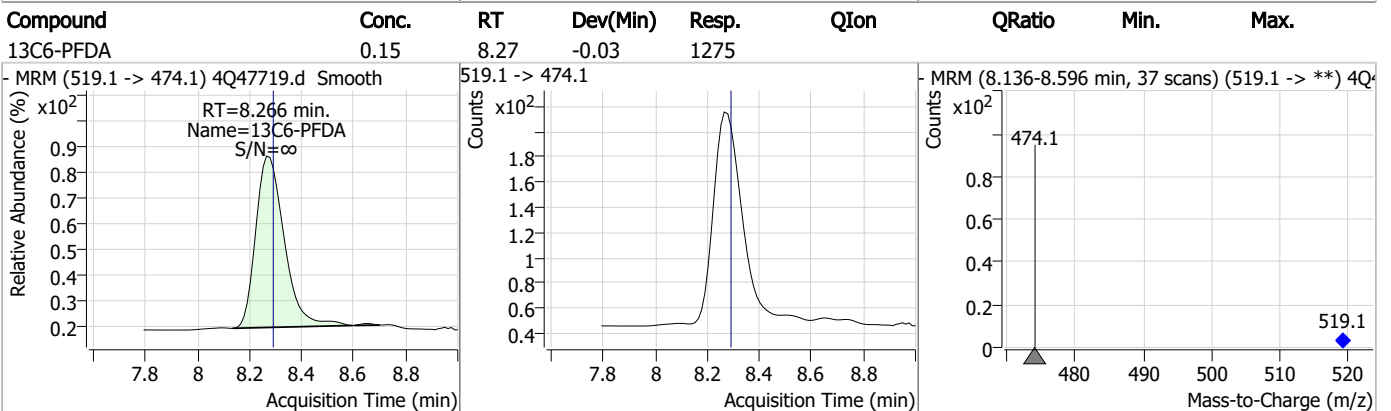
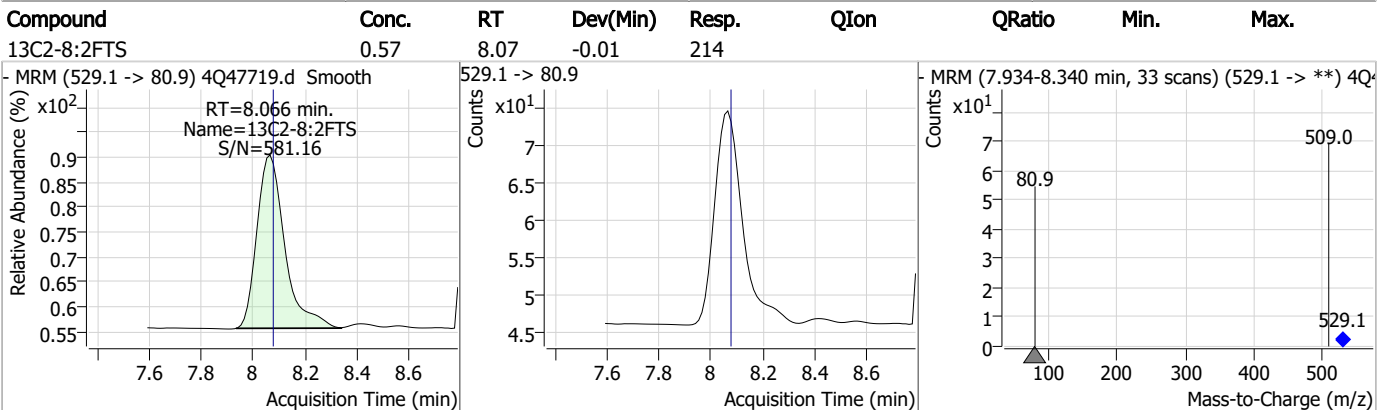
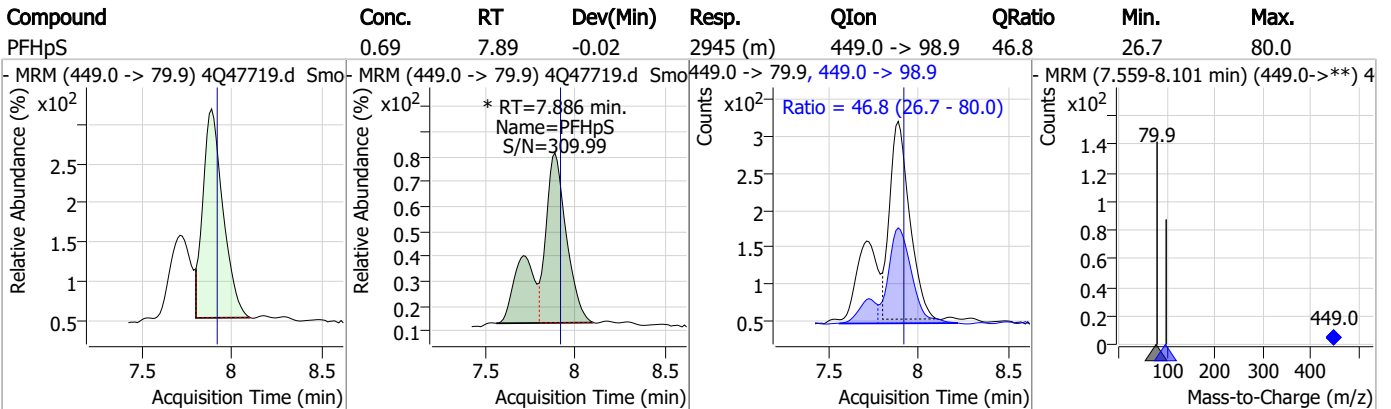
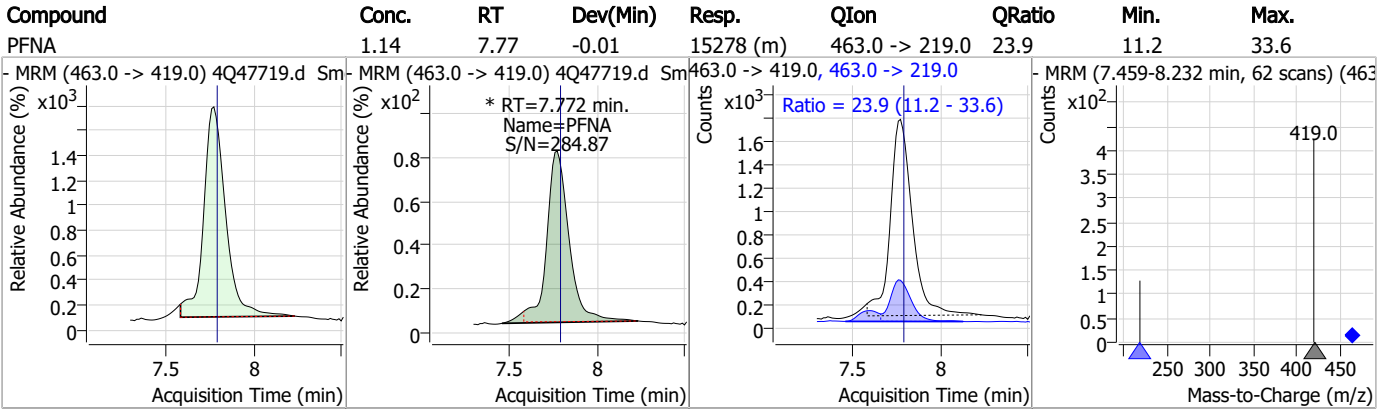


Perfluorinated Compounds by LC/MS/MS



7.5.1
7

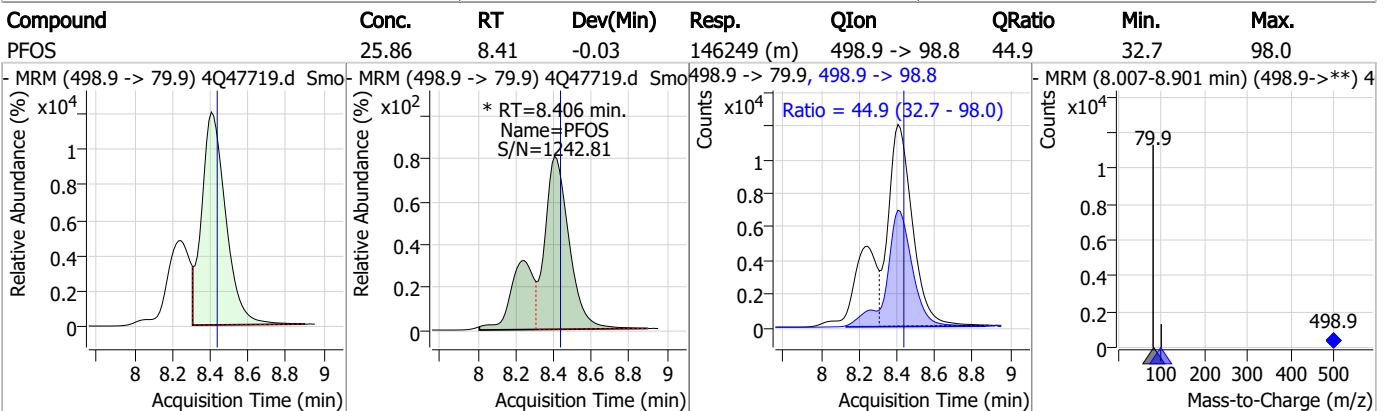
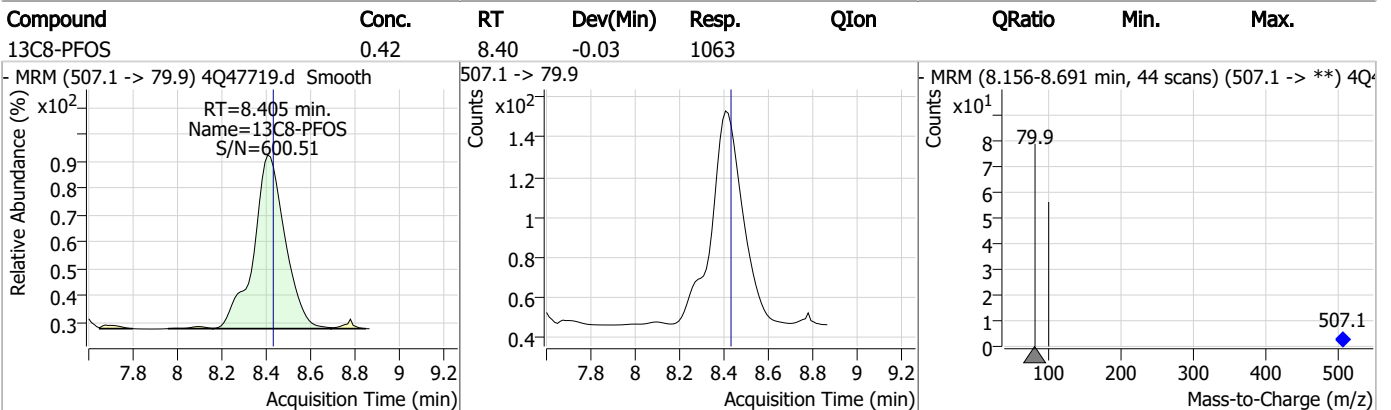
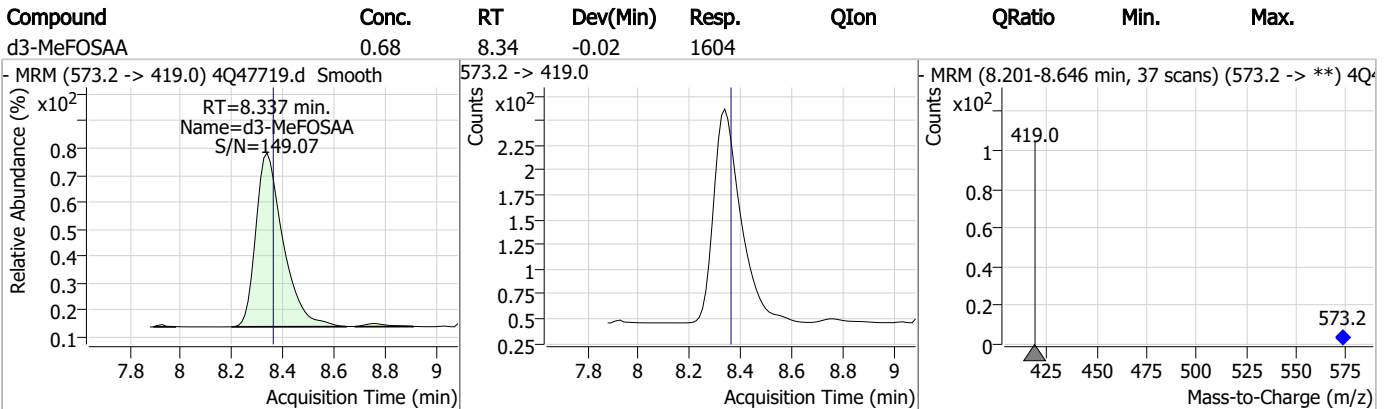
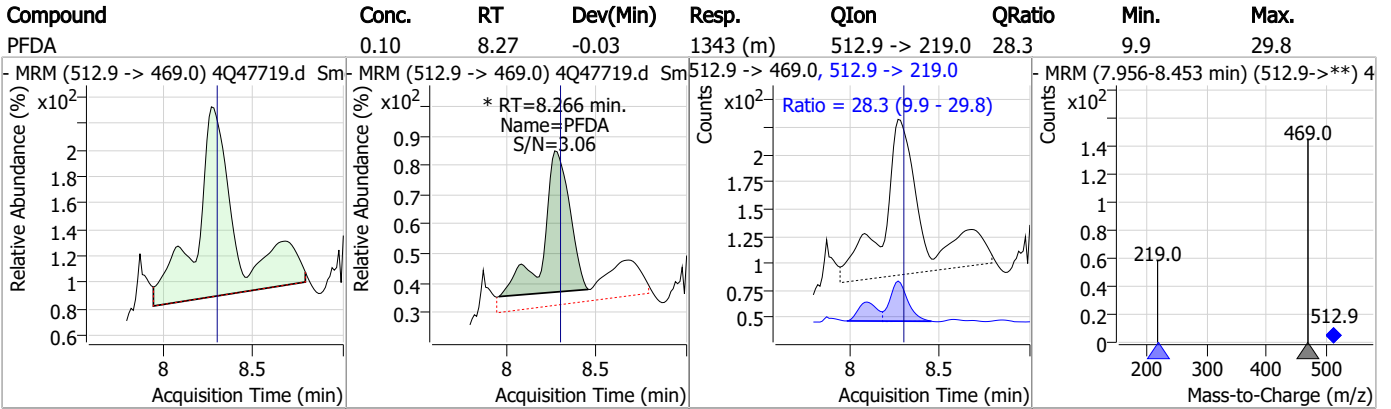
Perfluorinated Compounds by LC/MS/MS



7.5.1

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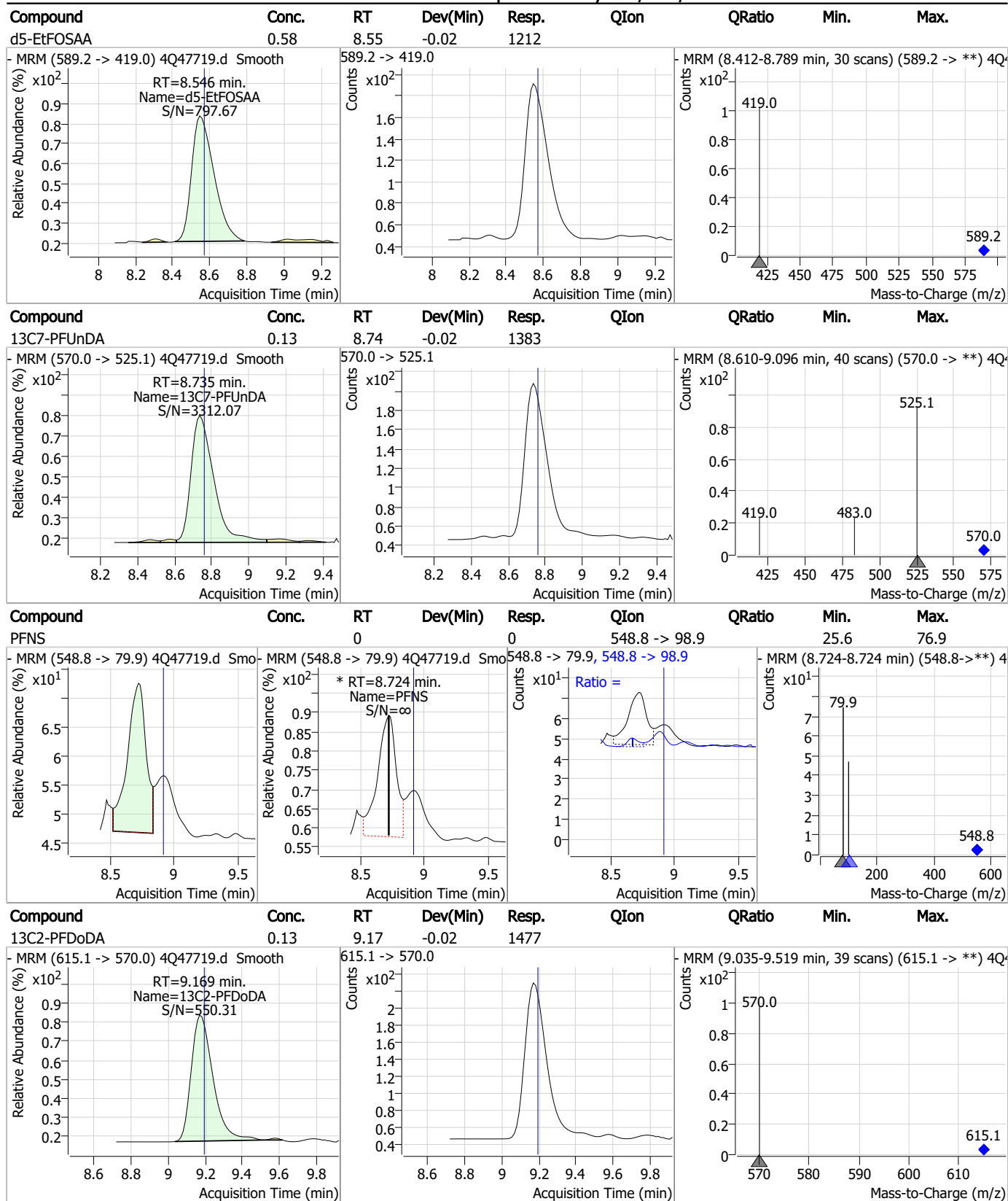
Perfluorinated Compounds by LC/MS/MS



7.5.1

7

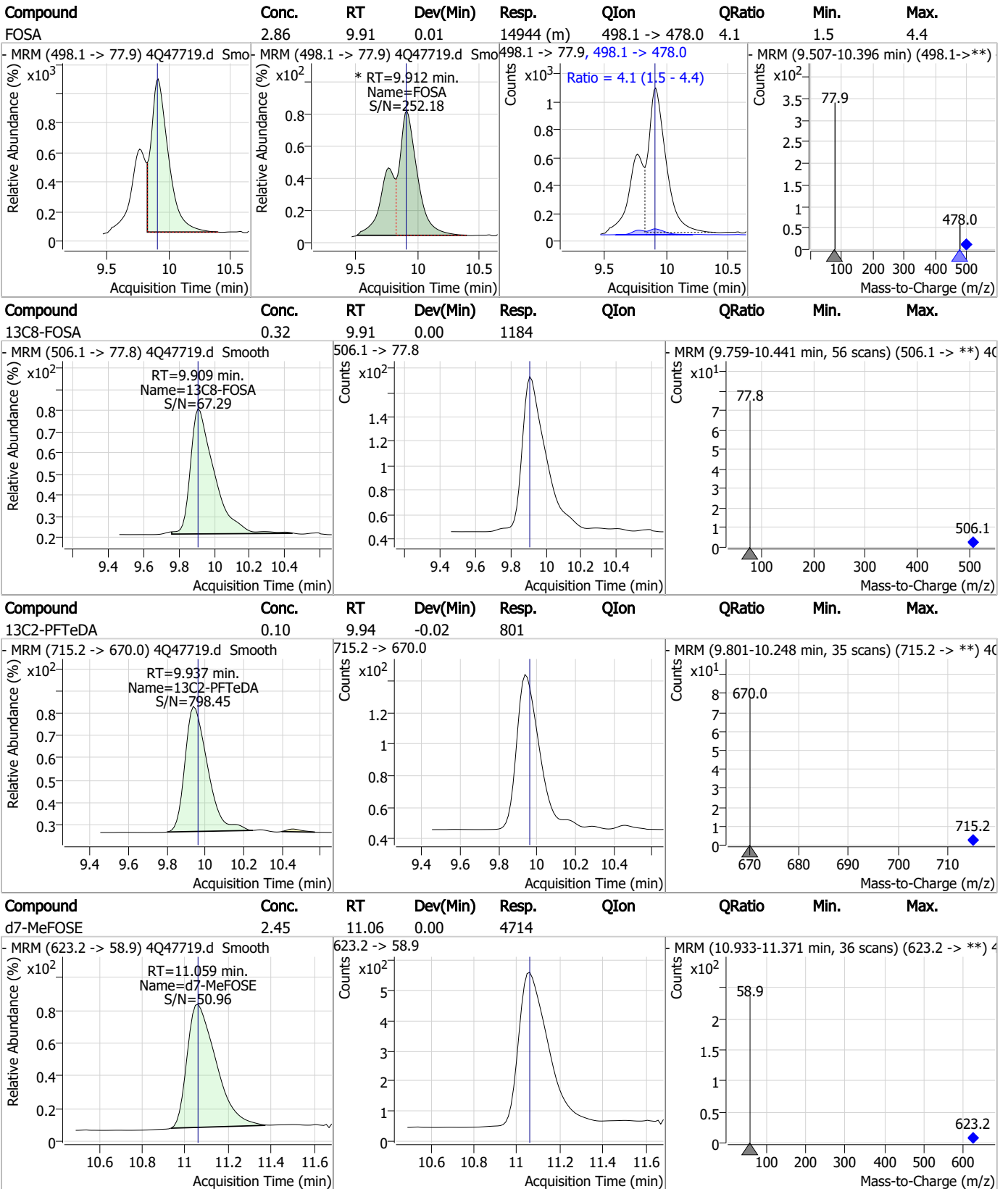
Perfluorinated Compounds by LC/MS/MS



7.5.1
7



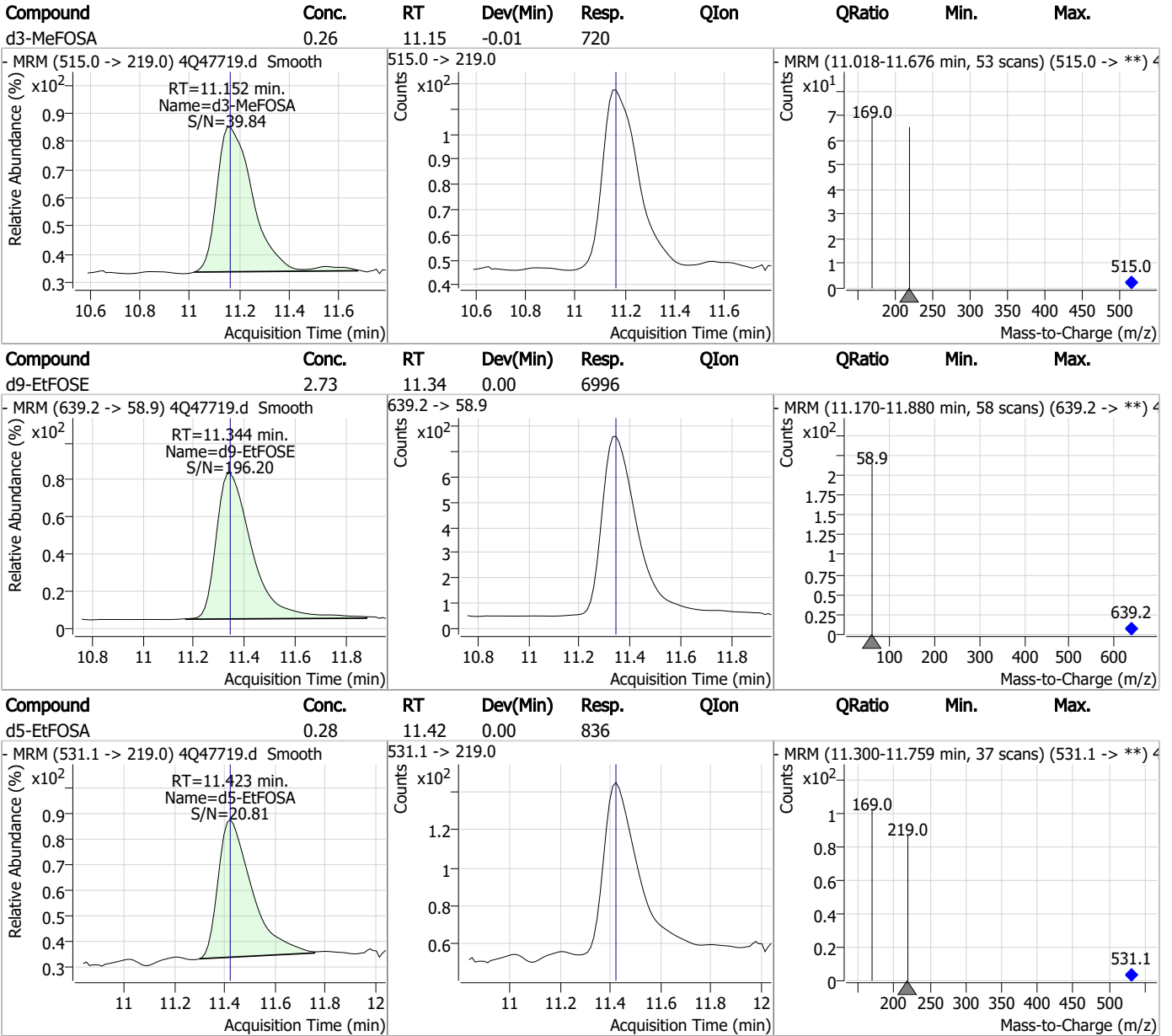
Perfluorinated Compounds by LC/MS/MS



7.5.1

7

Perfluorinated Compounds by LC/MS/MS



7.5.1

7

Manual Integration Approval Summary

Sample Number: OP97911-DUP
 Lab FileID: 4Q47719.D
 Injection Time: 07/21/23 03:06

Method: EPA DRAFT 1633
 Analyst approved: 07/27/23 15:03 Norman Farmer
 Supervisor approved: 07/27/23 15:08 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorobutanesulfonic acid	375-73-5		5.44	Split peak
Perfluoroheptanoic acid	375-85-9		6.53	Split peak
Perfluoropentanesulfonic acid	2706-91-4		6.54	Split peak
Perfluorooctanoic acid	335-67-1		7.21	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluorononanoic acid	375-95-1		7.77	Split peak
Perfluoroheptanesulfonic acid	375-92-8		7.89	Split peak
Perfluorodecanoic acid	335-76-2		8.27	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak
PFOSA	754-91-6		9.91	Split peak

7.5.1.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)
 Natasha Gumtie
 07/14/23 09:30

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47145.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/12/2023 4:47:20 PM
 Sample Name : RT TDCA
 Vial : P1-B1
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q690_TDCA.batch.bin
 Sample Information : OP97325,S4Q690,500,,,5.0,1,water

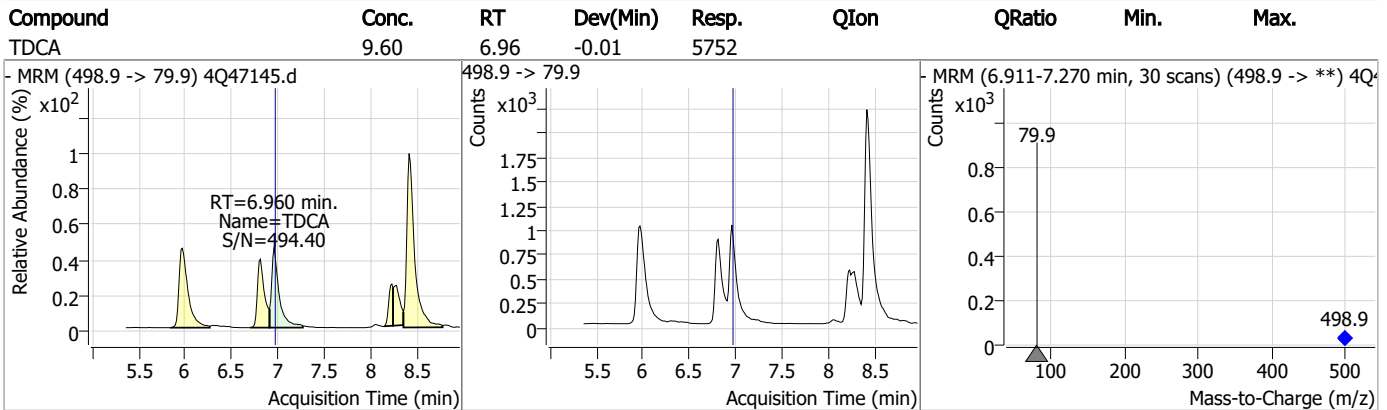
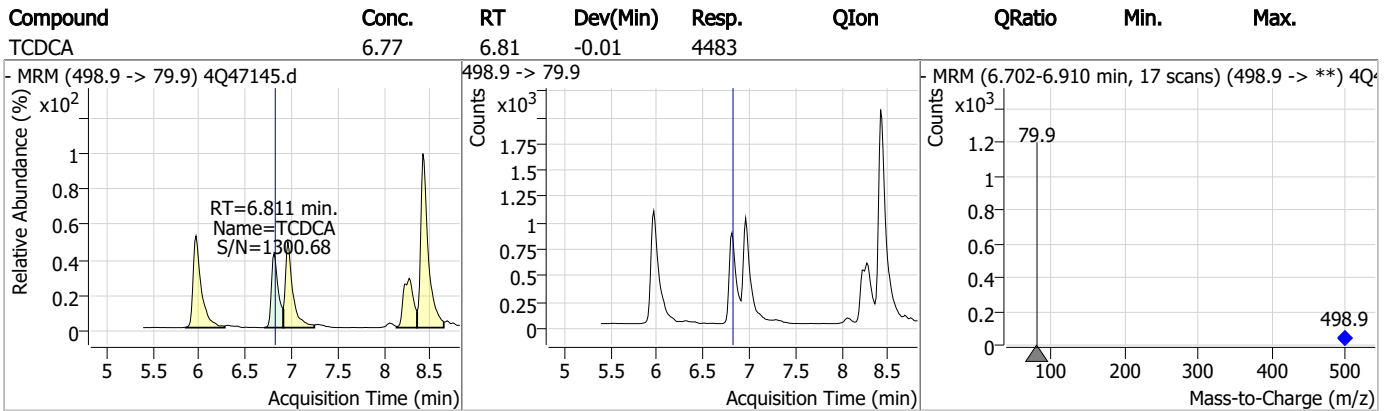
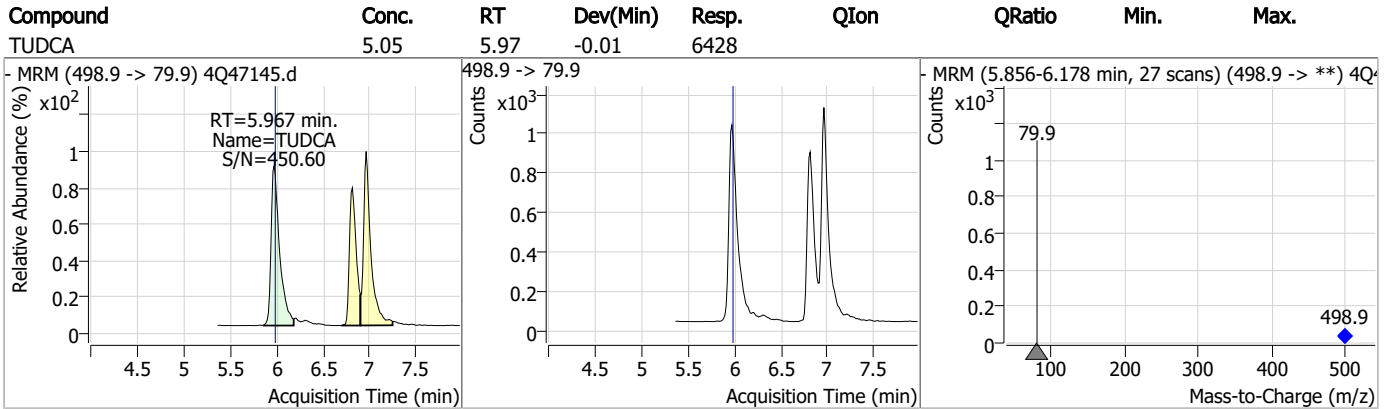
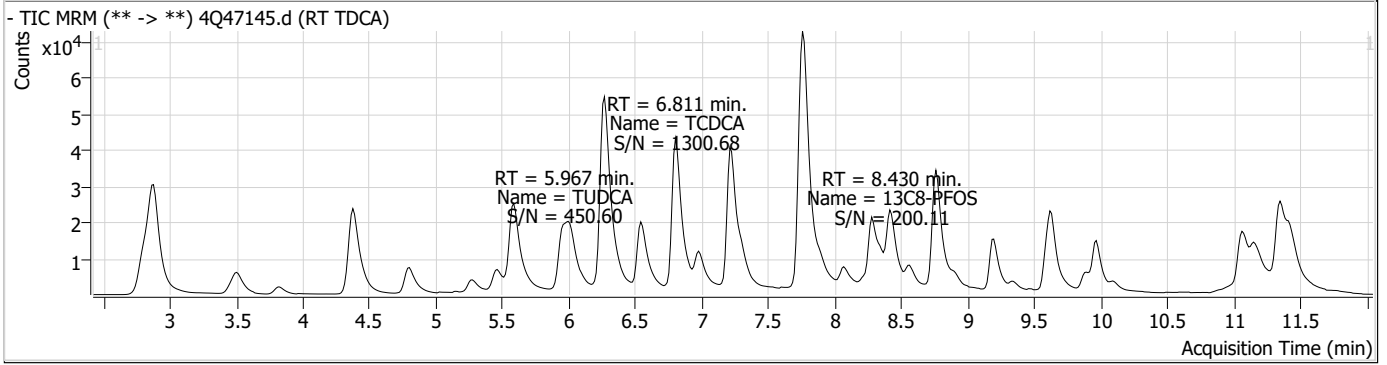
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.430	507.1 -> 79.9	14343	2.50	µg/L	-0.012	
13C4-PFOS	8.430	502.8 -> 79.9	16937	2.50	µg/L	-0.012	
System Monitoring Compounds							
13C8-PFOS	8.430	507.1 -> 79.9	14343	2.15	µg/L	-0.012	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 85.9%				
Target Compounds							
PFOS	8.431	498.9 -> 79.9	15885	3.24	µg/L	m	94
		498.9 -> 98.8	7970				
TCDCa	6.811	498.9 -> 79.9	4483	6.77	ng/ml		100
TDCA	6.960	498.9 -> 79.9	5752	9.60	ng/ml		100
TUDCA	5.967	498.9 -> 79.9	6428	5.05	ng/ml		100

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

7.6.1
7



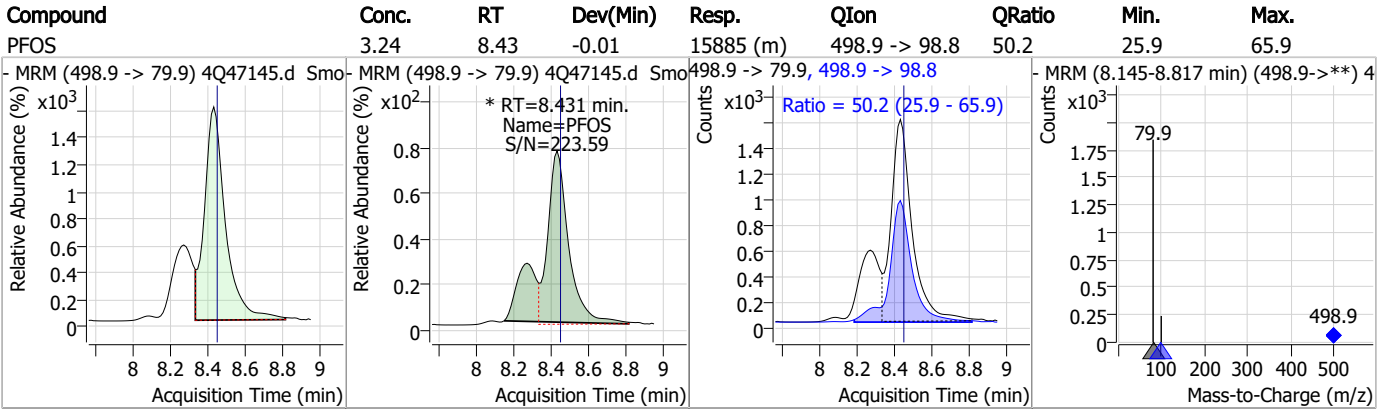
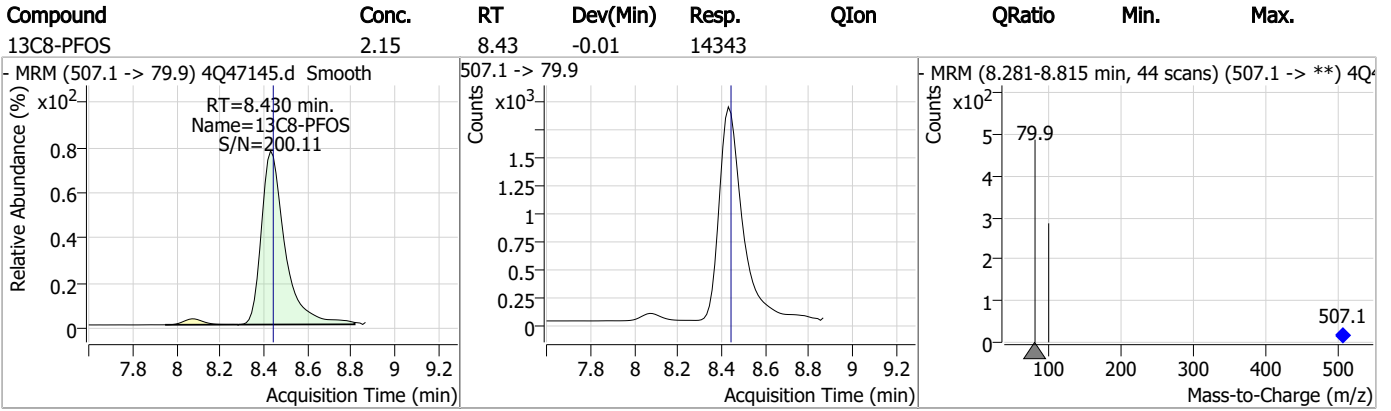
Perfluorinated Compounds by LC/MS/MS



7.6.1

7

Perfluorinated Compounds by LC/MS/MS



7.6.1
7



Manual Integration Approval Summary

Sample Number: S4Q690-RT Method: EPA DRAFT 1633
Lab FileID: 4Q47145.D Analyst approved: 07/13/23 14:35 Anna Ludwig
Injection Time: 07/12/23 16:47 Supervisor approved: 07/14/23 09:30 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.43	Split peak

7.6.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47146.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/12/2023 5:02:06 PM
 Sample Name : RT br/lr
 Vial : P1-B2
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q690.batch.bin
 Sample Information : OP97325,S4Q690,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.874	216.8 -> 171.9	137546	10.00 µg/L	-0.050
M5-PFPeA	4.387	268.3 -> 223.0	62250	5.00 µg/L	-0.012
M5-PFHxA	5.598	318.0 -> 273.0	50459	2.50 µg/L	0.000
M4-PFHpA	6.555	367.1 -> 322.0	34326	2.50 µg/L	0.000
M8-PFOA	7.224	421.1 -> 376.0	53207	2.50 µg/L	-0.012
M9-PFNA	7.784	472.1 -> 427.0	22658	1.25 µg/L	-0.014
M6-PFDA	8.292	519.1 -> 474.1	18123	1.25 µg/L	0.000
M7-PFUnDA	8.760	570.0 -> 525.1	23435	1.25 µg/L	0.000
M2-PFDoDA	9.194	615.1 -> 570.0	23310	1.25 µg/L	0.000
M2-PFTeDA	9.974	715.2 -> 670.0	16916	1.25 µg/L	0.000
M8-FOSA	9.909	506.1 -> 77.8	15822	2.50 µg/L	0.000
M3-PFBS	5.479	302.1 -> 79.9	11373	2.50 µg/L	0.000
M3-PFHxS	7.316	402.1 -> 79.9	8280	2.50 µg/L	-0.013
M8-PFOS	8.430	507.1 -> 79.9	10222	2.50 µg/L	-0.012
M2-4:2FTS	5.272	329.1 -> 80.9	663	5.00 µg/L	-0.012
M2-6:2FTS	6.999	429.1 -> 80.9	1364	5.00 µg/L	0.000
M2-8:2FTS	8.078	529.1 -> 80.9	2098	5.00 µg/L	0.000
M3-MeFOSAA	8.362	573.2 -> 419.0	18685	5.00 µg/L	0.000
M3-HFPO-DA	5.965	286.9 -> 168.9	51292	10.00 µg/L	-0.012
M5-EtFOSAA	8.558	589.2 -> 419.0	16801	5.00 µg/L	-0.012
M7-MeFOSE	11.059	623.2 -> 58.9	77296	25.00 µg/L	-0.012
M9-EtFOSE	11.344	639.2 -> 58.9	98834	25.00 µg/L	-0.012
M5-EtFOSA	11.435	531.1 -> 219.0	11253	2.50 µg/L	0.000
M3-MeFOSA	11.164	515.0 -> 219.0	11021	2.50 µg/L	-0.012
13C4-PFOS	8.430	502.8 -> 79.9	11818	2.50 µg/L	0.000
13C3-PFBA	2.866	216.0 -> 172.0	71891	5.00 µg/L	-0.062
18O2-PFHxS	7.315	403.0 -> 83.9	5633	2.50 µg/L	-0.013
13C4-PFOA	7.224	417.1 -> 372.0	65203	2.50 µg/L	-0.012
13C2-PFDA	8.292	515.1 -> 470.1	20198	1.25 µg/L	0.000
13C5-PFNA	7.784	468.0 -> 423.0	25168	1.25 µg/L	-0.014
13C2-PFHxA	5.599	315.1 -> 270.0	45755	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.272	329.1 -> 80.9	663	5.24 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.8%		
13C2-6:2FTS	6.999	429.1 -> 80.9	1364	4.92 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C2-8:2FTS	8.078	529.1 -> 80.9	2098	4.65 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.0%		
13C2-PFDoDA	9.194	615.1 -> 570.0	23310	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C2-PFTeDA	9.974	715.2 -> 670.0	16916	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C3-PFBS	5.479	302.1 -> 79.9	11373	2.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C3-PFHxS	7.316	402.1 -> 79.9	8280	2.62 µg/L	-0.013

7.6.2
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	2.874	216.8 -> 171.9	137546	10.12 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C4-PFHpA	6.555	367.1 -> 322.0	34326	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C5-PFHxA	5.598	318.0 -> 273.0	50459	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C5-PFPeA	4.387	268.3 -> 223.0	62250	4.93 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C6-PFDA	8.292	519.1 -> 474.1	18123	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C7-PFUnDA	8.760	570.0 -> 525.1	23435	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C8-FOSA	9.909	506.1 -> 77.8	15822	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.5%	
13C8-PFOA	7.224	421.1 -> 376.0	53207	2.51 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C8-PFOS	8.430	507.1 -> 79.9	10222	2.49 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C9-PFNA	7.784	472.1 -> 427.0	22658	1.35 µg/L	-0.014
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.7%	
d3-MeFOSAA	8.362	573.2 -> 419.0	18685	4.81 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.2%	
13C3-HFPO-DA	5.965	286.9 -> 168.9	51292	10.52 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 105.2%	
d3-MeFOSA	11.164	515.0 -> 219.0	11021	2.47 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
d5-EtFOSAA	8.558	589.2 -> 419.0	16801	4.90 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.0%	
d7-MeFOSE	11.059	623.2 -> 58.9	77296	24.51 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.0%	
d9-EtFOSE	11.344	639.2 -> 58.9	98834	23.54 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 94.2%	
d5-EtFOSA	11.435	531.1 -> 219.0	11253	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.0%	
Target Compounds					QValue
4:2FTS	5.272	327.1 -> 307.0	55300	47.01 µg/L	94
		327.1 -> 80.9	22229		
6:2FTS	6.999	427.1 -> 407.0	77143	48.94 µg/L	99
		427.1 -> 80.9	29156		
8:2FTS	8.079	527.1 -> 507.0	62372	51.95 µg/L	89
		527.1 -> 80.8	25522		
EtFOSAA	8.572	584.2 -> 419.1	36288	13.40 µg/L	m 95
		584.2 -> 526.0	16118		
FOSA	9.899	498.1 -> 77.9	200720	28.73 µg/L	m 99
		498.1 -> 478.0	6487		
MeFOSAA	8.362	570.1 -> 419.0	43439	13.03 µg/L	m 98
		570.1 -> 483.0	8562		
PFBA	2.870	212.8 -> 168.9	212011	51.24 µg/L	100
PFBS	5.480	298.7 -> 79.9	53016	11.18 µg/L	94
		298.7 -> 98.8	20753		
PFDA	8.292	512.9 -> 469.0	245495	13.04 µg/L	99
		512.9 -> 219.0	47861		
PFDoDA	9.194	613.1 -> 569.0	249845	13.31 µg/L	98
		613.1 -> 319.0	41059		
PFDS	9.346	599.0 -> 79.9	35723	12.37 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.556	599.0 -> 98.8	18679	13.43	µg/L	98
		363.1 -> 319.0	283795			
PFHpS	7.911	363.1 -> 169.0	50758	11.91	µg/L	94
		449.0 -> 79.9	48668			
PFHxA	5.601	449.0 -> 98.9	26509	12.77	µg/L	99
		313.0 -> 269.0	252114			
PFHxS	7.317	313.0 -> 118.9	7327	11.32	µg/L	m
		398.7 -> 79.9	41775			
PFNA	7.785	398.7 -> 98.9	22287	26.78	µg/L	m
		463.0 -> 419.0	447165			
PFNS	8.911	463.0 -> 219.0	114587	12.60	µg/L	100
		548.8 -> 79.9	38345			
PFOA	7.225	548.8 -> 98.9	20515	28.45	µg/L	m
		413.0 -> 369.0	856316			
PFOS	8.431	413.0 -> 169.0	174584	10.35	µg/L	m
		498.9 -> 79.9	56295			
PFPeA	4.389	498.9 -> 98.8	33017	26.79	µg/L	100
		263.0 -> 219.0	470271			
PFPeS	6.570	349.1 -> 79.9	36008	11.82	µg/L	100
		349.1 -> 98.9	16615			
PFTeDA	9.975	713.1 -> 669.0	222113	13.14	µg/L	100
		713.1 -> 168.9	22405			
PFTrDA	9.604	663.0 -> 619.0	272544	13.12	µg/L	98
		663.0 -> 168.9	34051			
PFUnDA	8.760	563.1 -> 519.0	228061	12.27	µg/L	98
		563.1 -> 269.1	46817			
11CI-PF3OUdS	9.631	630.9 -> 450.9	325425	23.78	µg/L	100
		632.9 -> 452.9	99347			
9CI-PF3ONS	8.775	530.8 -> 351.0	424025	23.11	µg/L	98
		532.8 -> 353.0	130873			
ADONA	6.818	376.9 -> 250.9	910068	23.70	µg/L	99
		376.9 -> 84.8	228085			
HFPO-DA	5.966	284.9 -> 168.9	137104	25.88	µg/L	98
		284.9 -> 184.9	14763			
3:3FTCA	3.823	241.0 -> 177.0	61152	64.23	µg/L	98
		241.0 -> 117.0	5447			
5:3FTCA	6.281	341.0 -> 237.1	1038320	316.35	µg/L	99
		341.0 -> 217.0	729764			
7:3FTCA	7.762	441.0 -> 316.9	561049	309.70	µg/L	99
		441.0 -> 336.9	1319326			
EtFOSA	11.437	526.0 -> 219.0	242851	41.87	µg/L	100
		526.0 -> 169.0	332928			
EtFOSE	11.357	630.0 -> 58.9	384975	80.30	µg/L	100
		511.9 -> 219.0	201372			
MeFOSA	11.166	511.9 -> 169.0	285056	43.75	µg/L	m
		616.1 -> 58.9	265208			
MeFOSE	11.085	699.1 -> 79.9	29816	77.69	µg/L	100
		699.1 -> 98.8	17215			
PFDoDS	10.102	295.0 -> 201.0	31000	26.76	µg/L	97
		295.0 -> 84.9	7385			
NFDHA	5.468	279.0 -> 85.1	249298	26.40	µg/L	100
		229.0 -> 84.9	232870			
PFMBA	3.499	314.8 -> 134.9	342153	22.94	µg/L	99
		314.8 -> 82.9	10591			

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

7.6.2
7

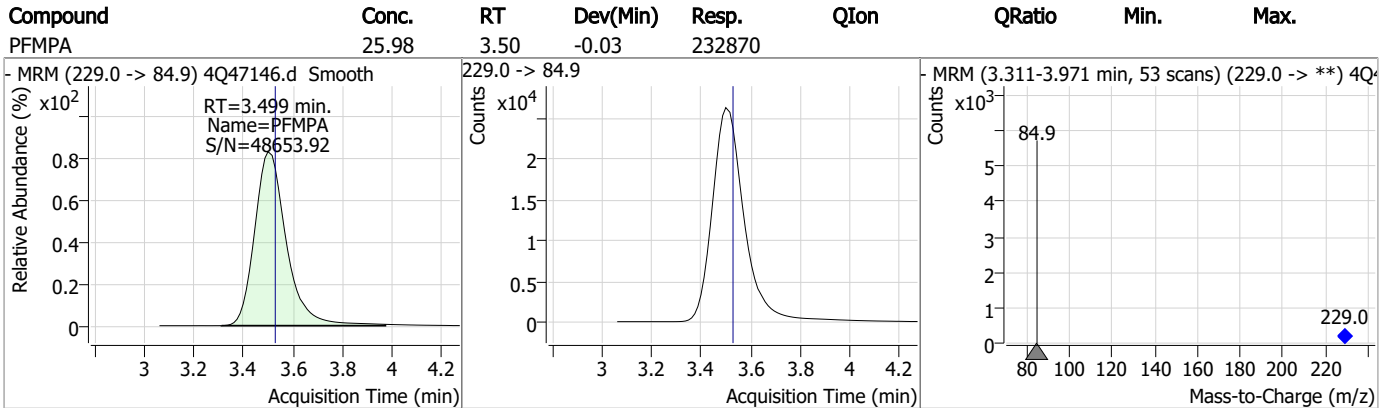
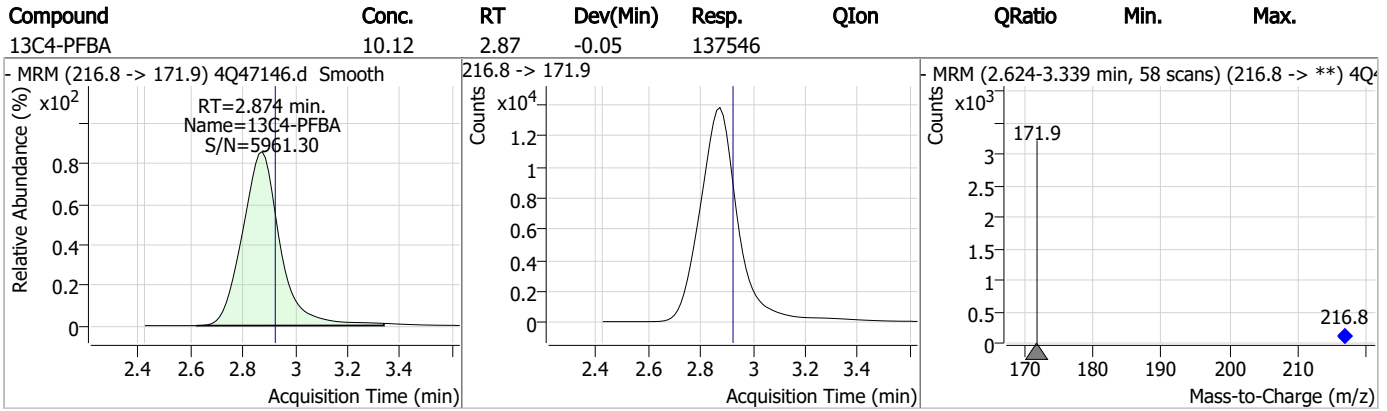
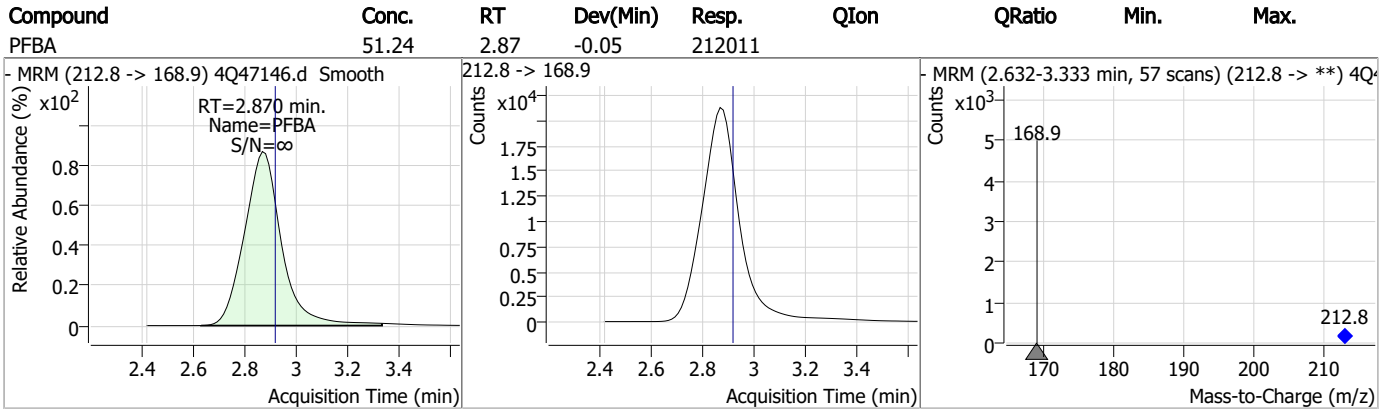
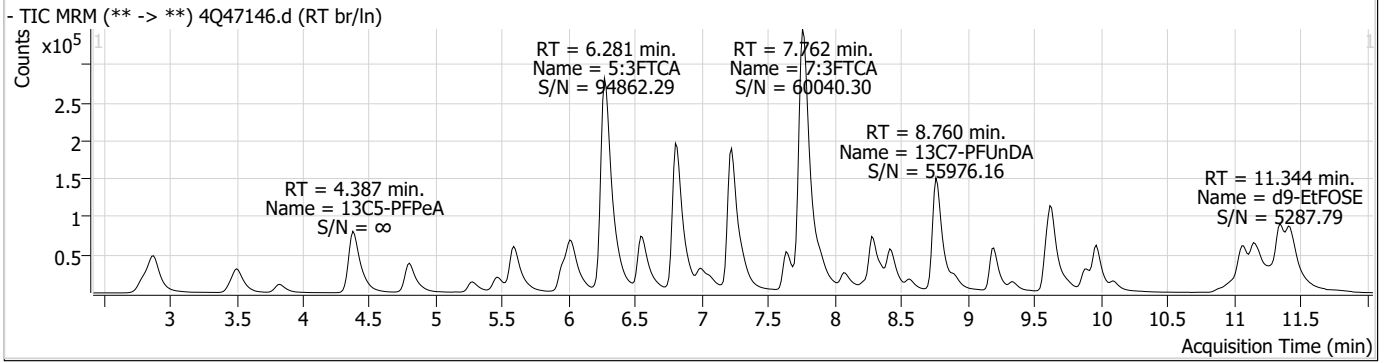
Perfluorinated Compounds by LC/MS/MS

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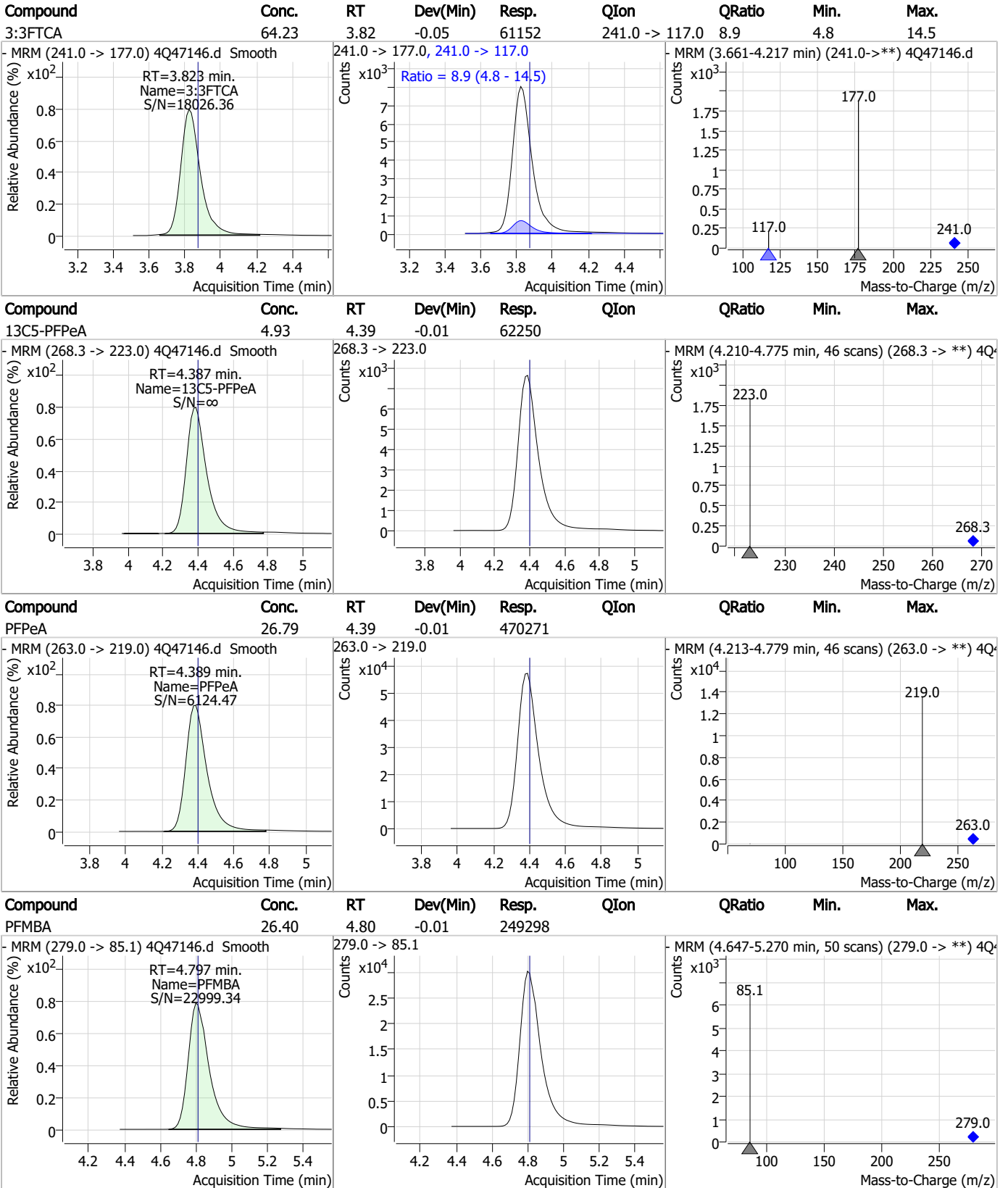
7.6.2

7

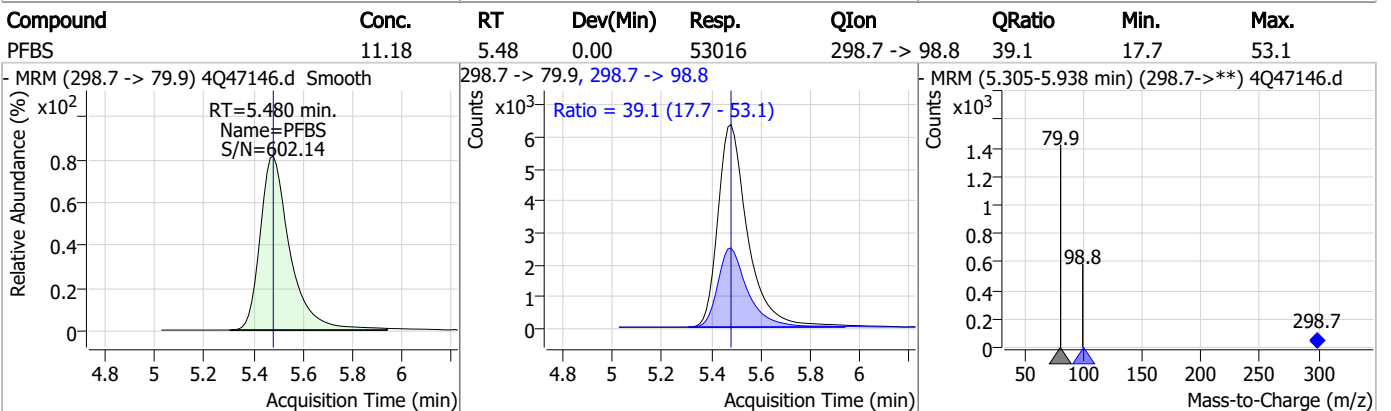
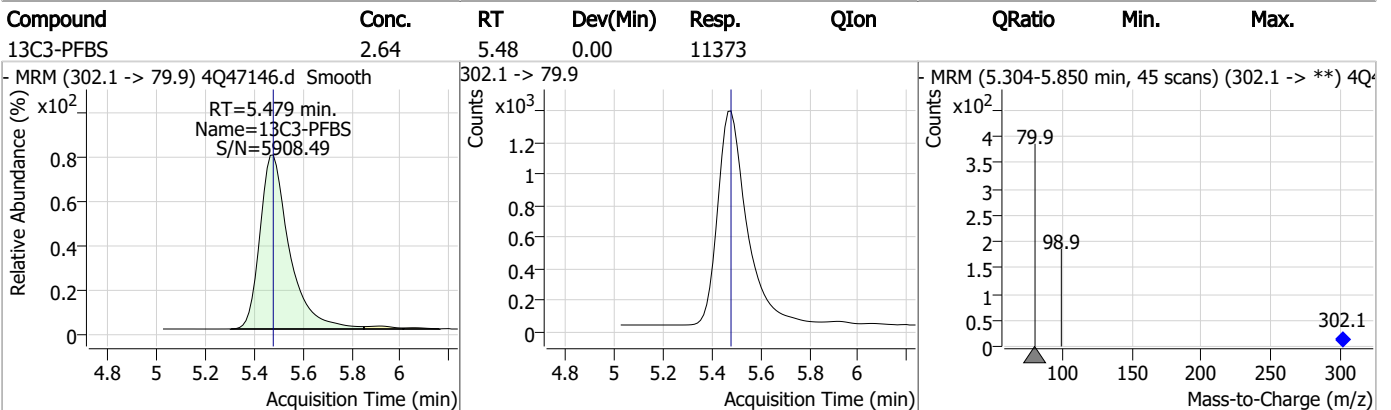
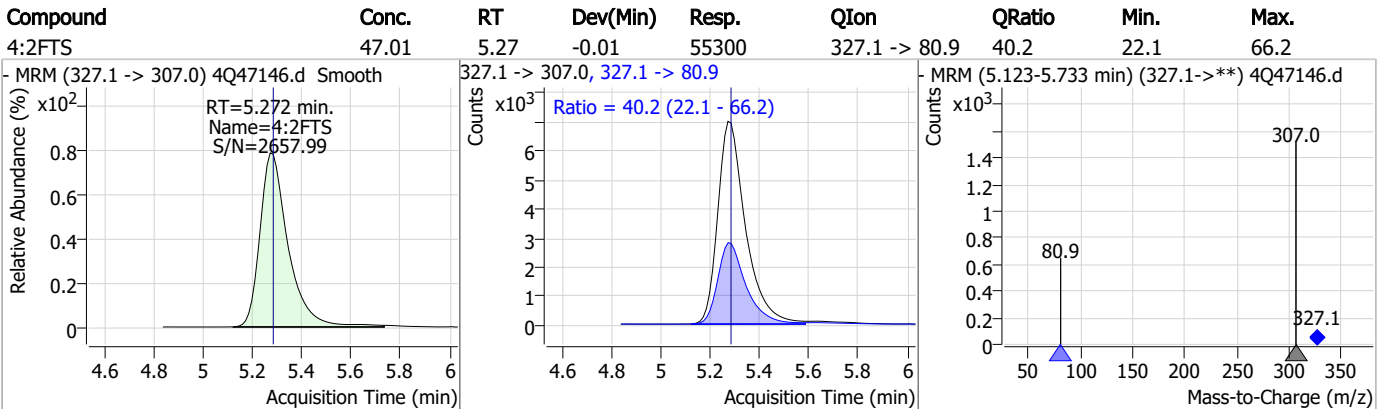
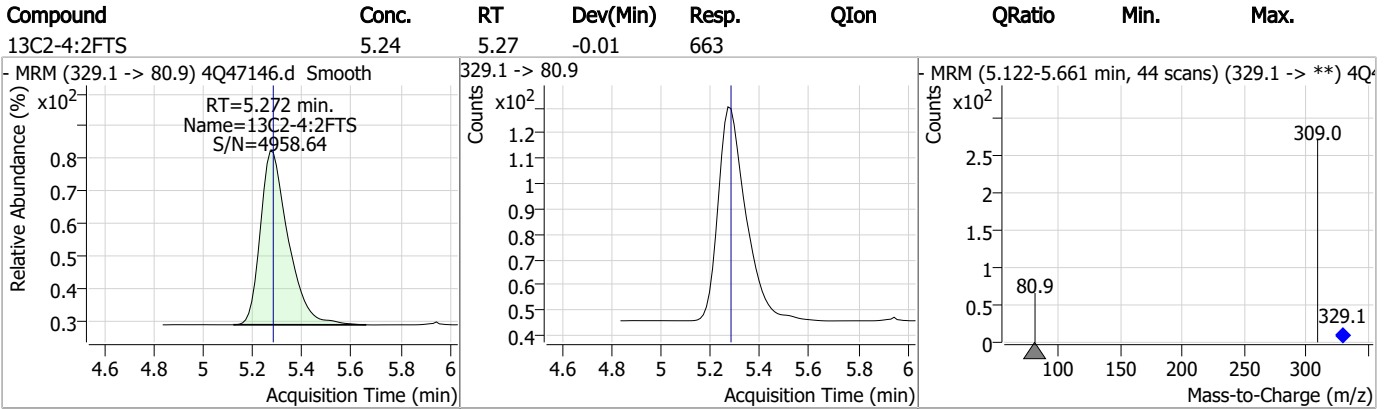
Perfluorinated Compounds by LC/MS/MS



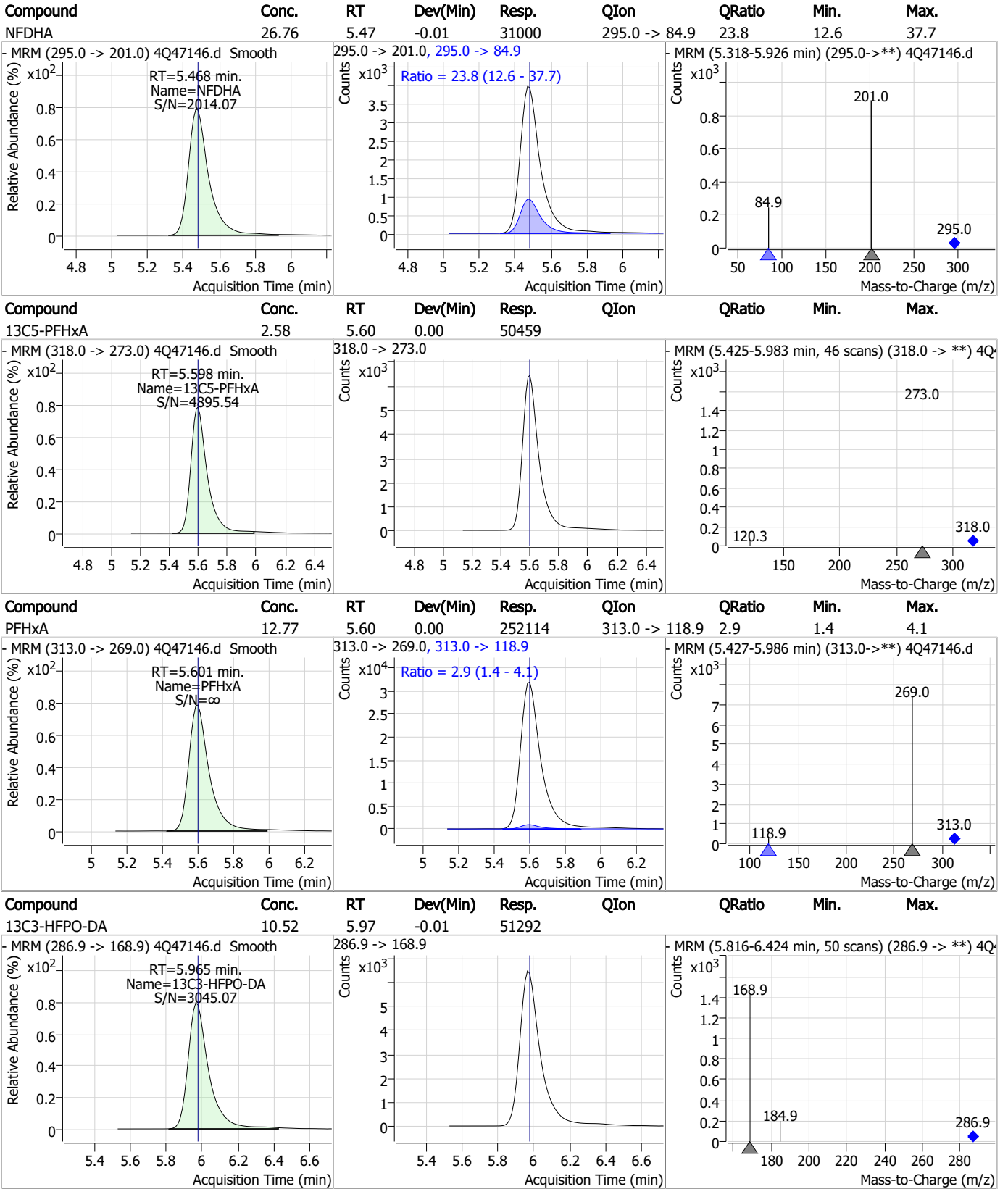
Perfluorinated Compounds by LC/MS/MS



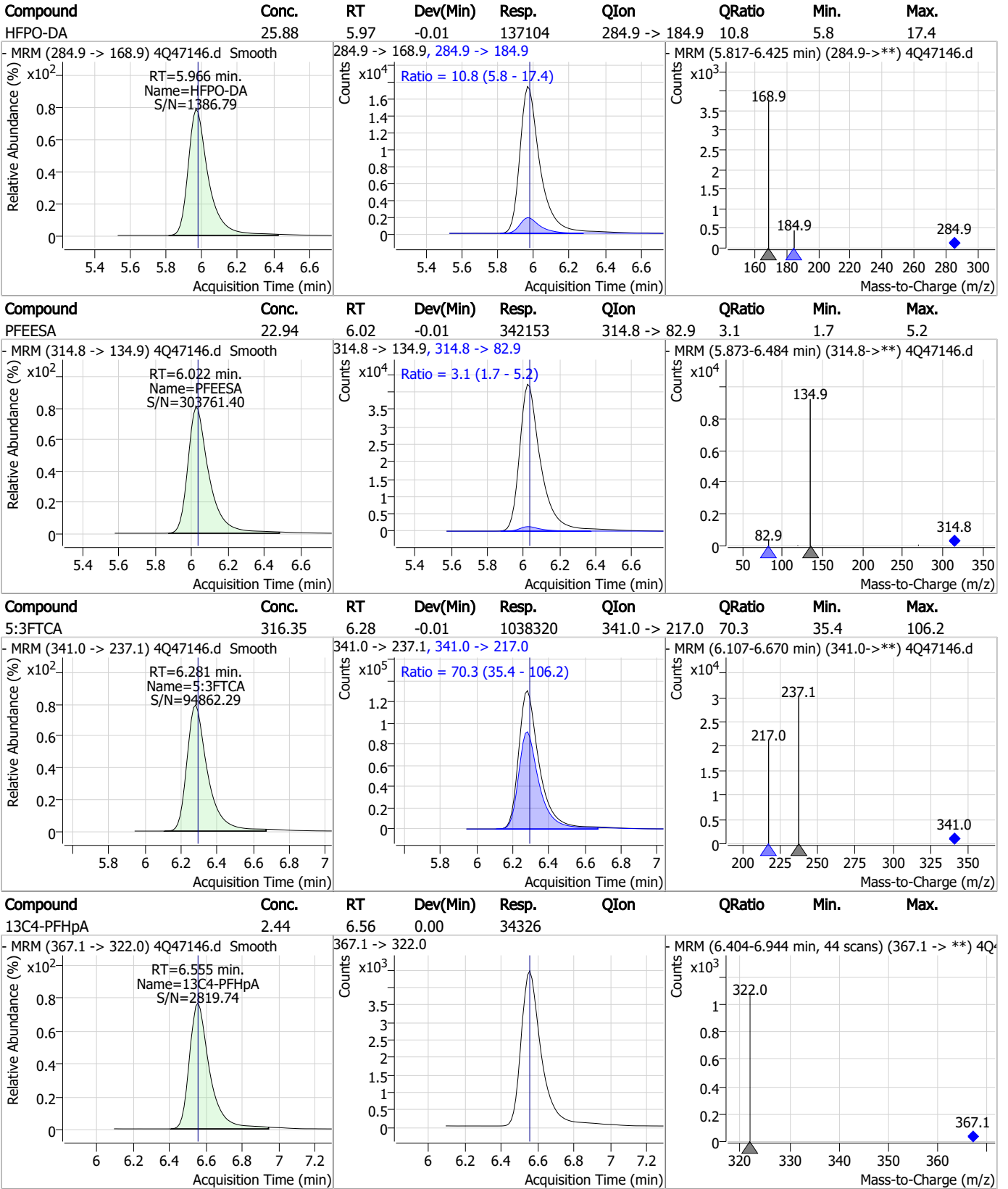
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



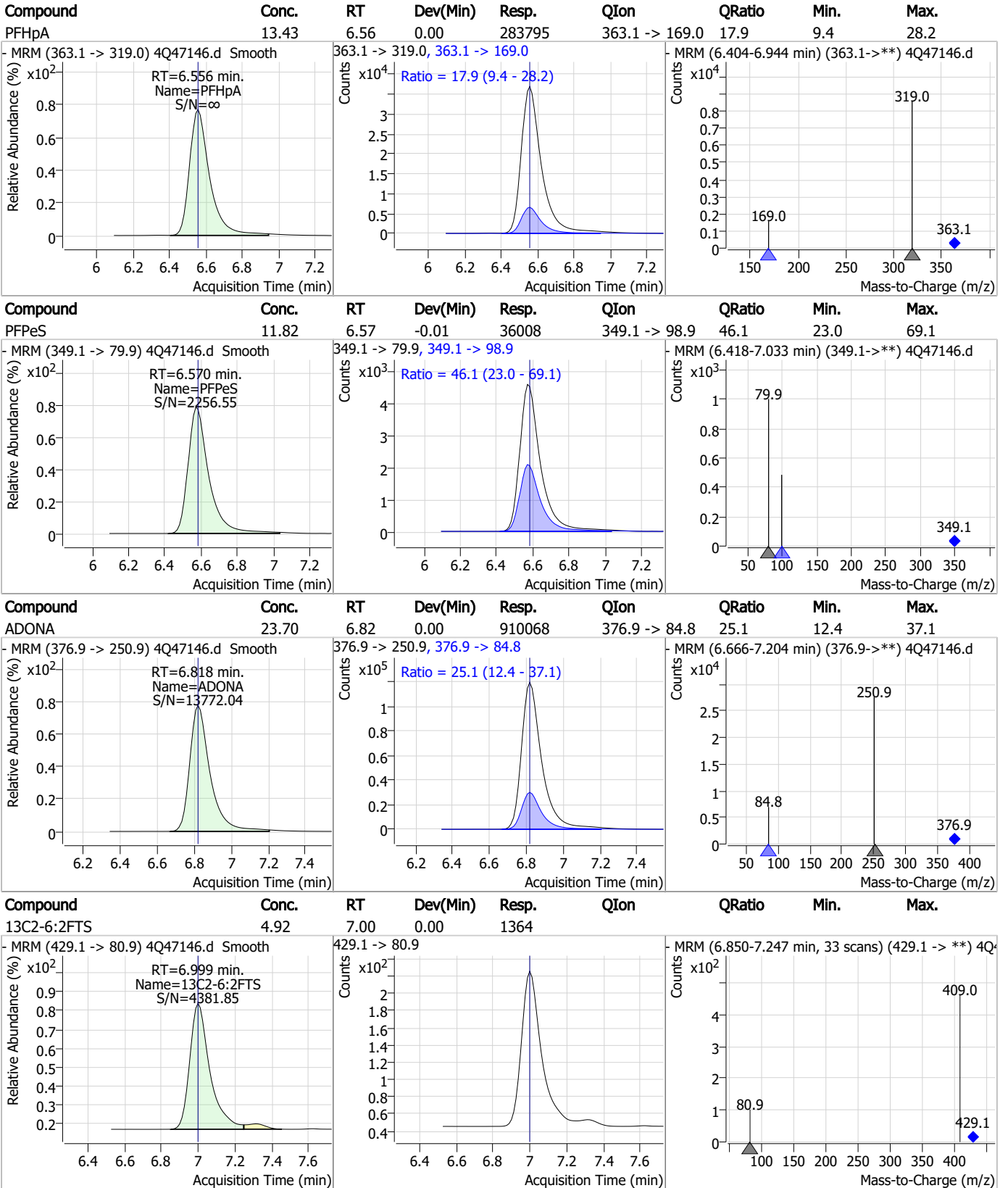
Perfluorinated Compounds by LC/MS/MS



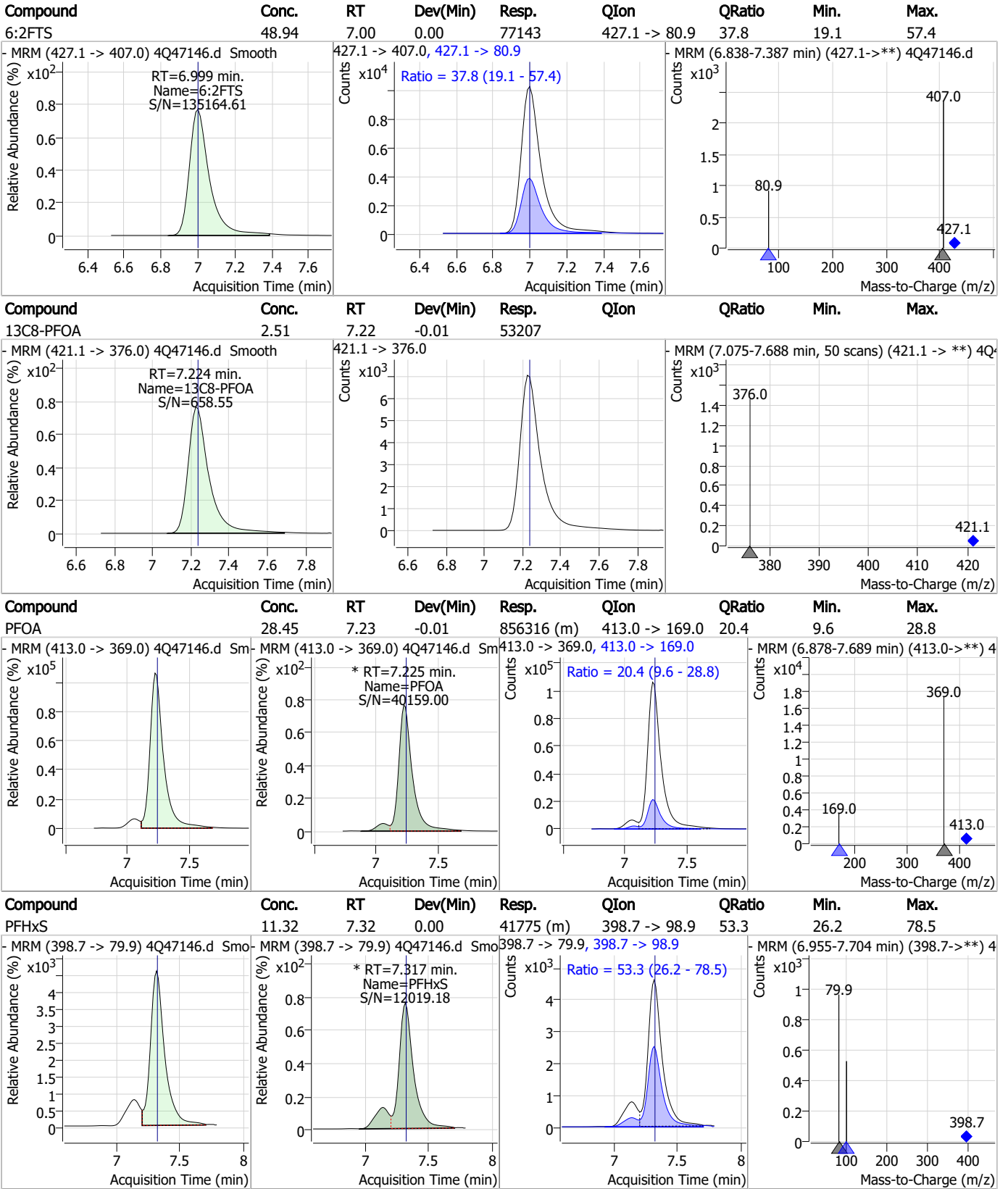
7.6.2

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

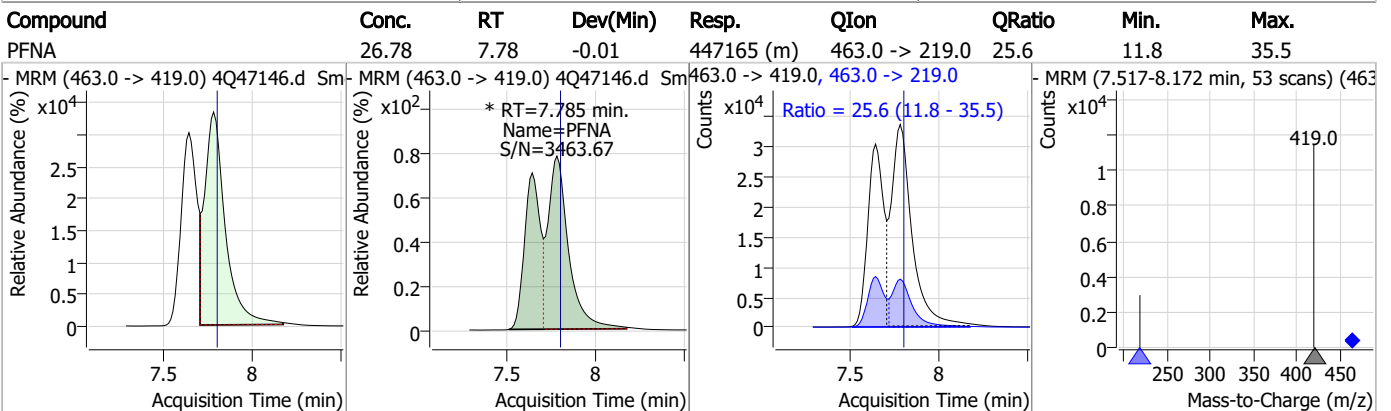
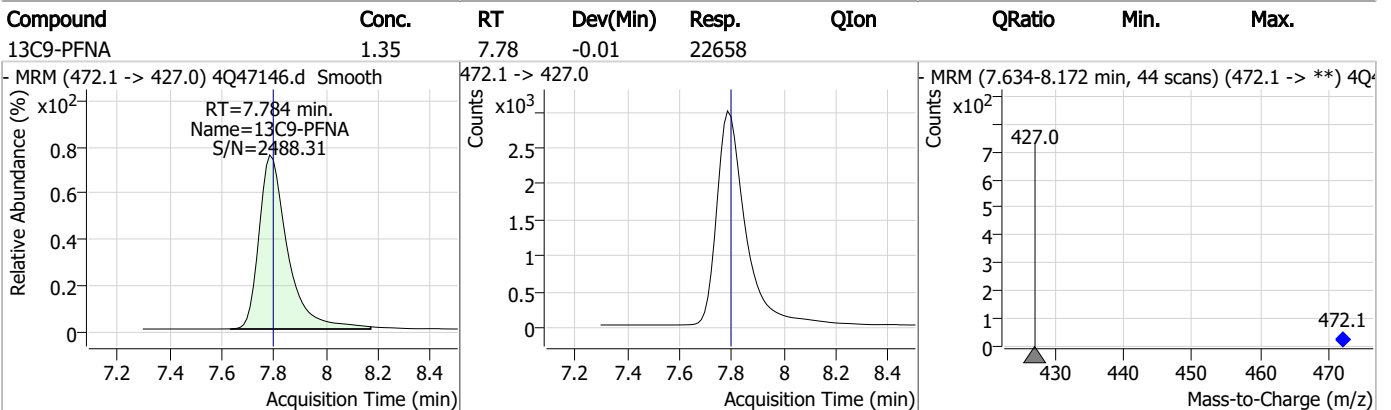
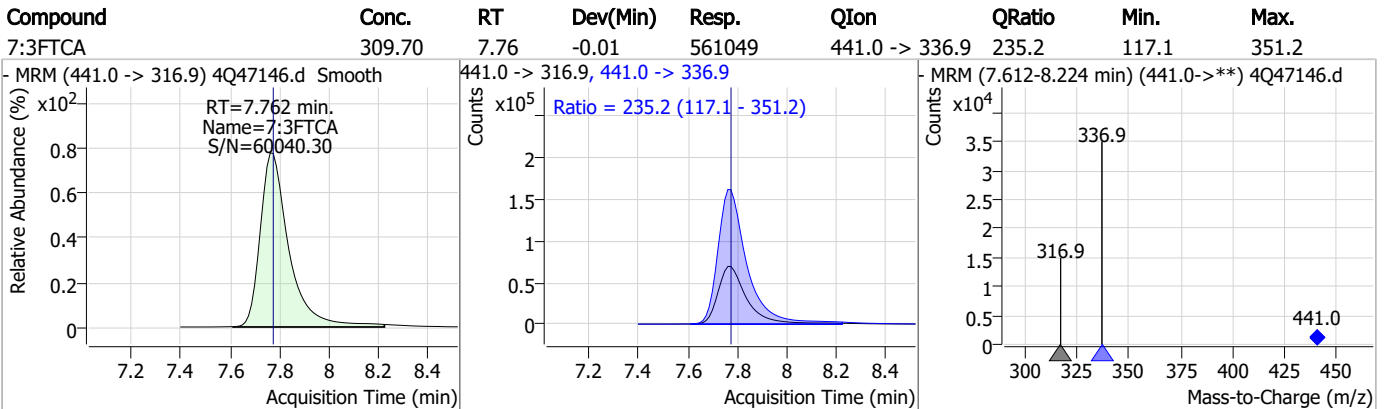
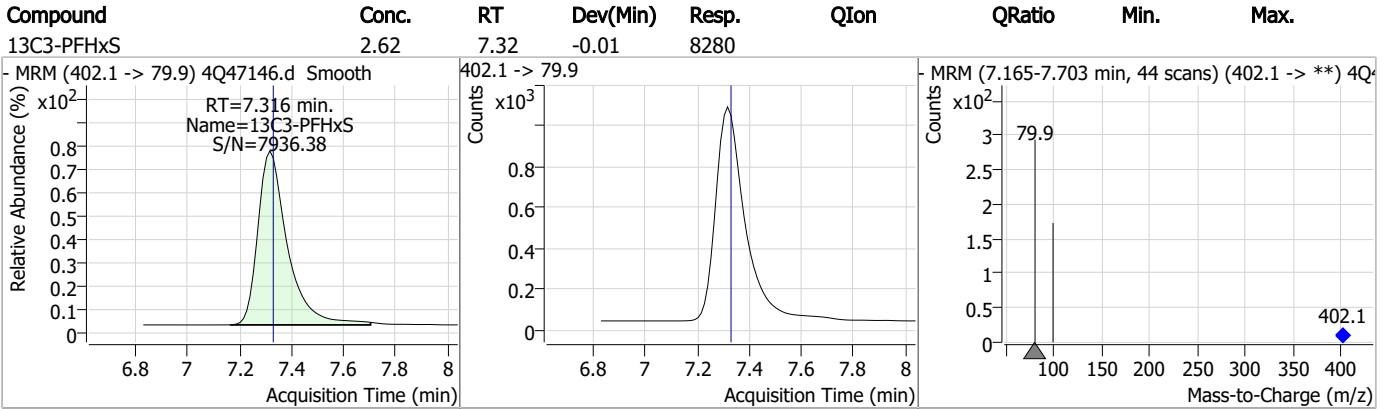


7.6.2

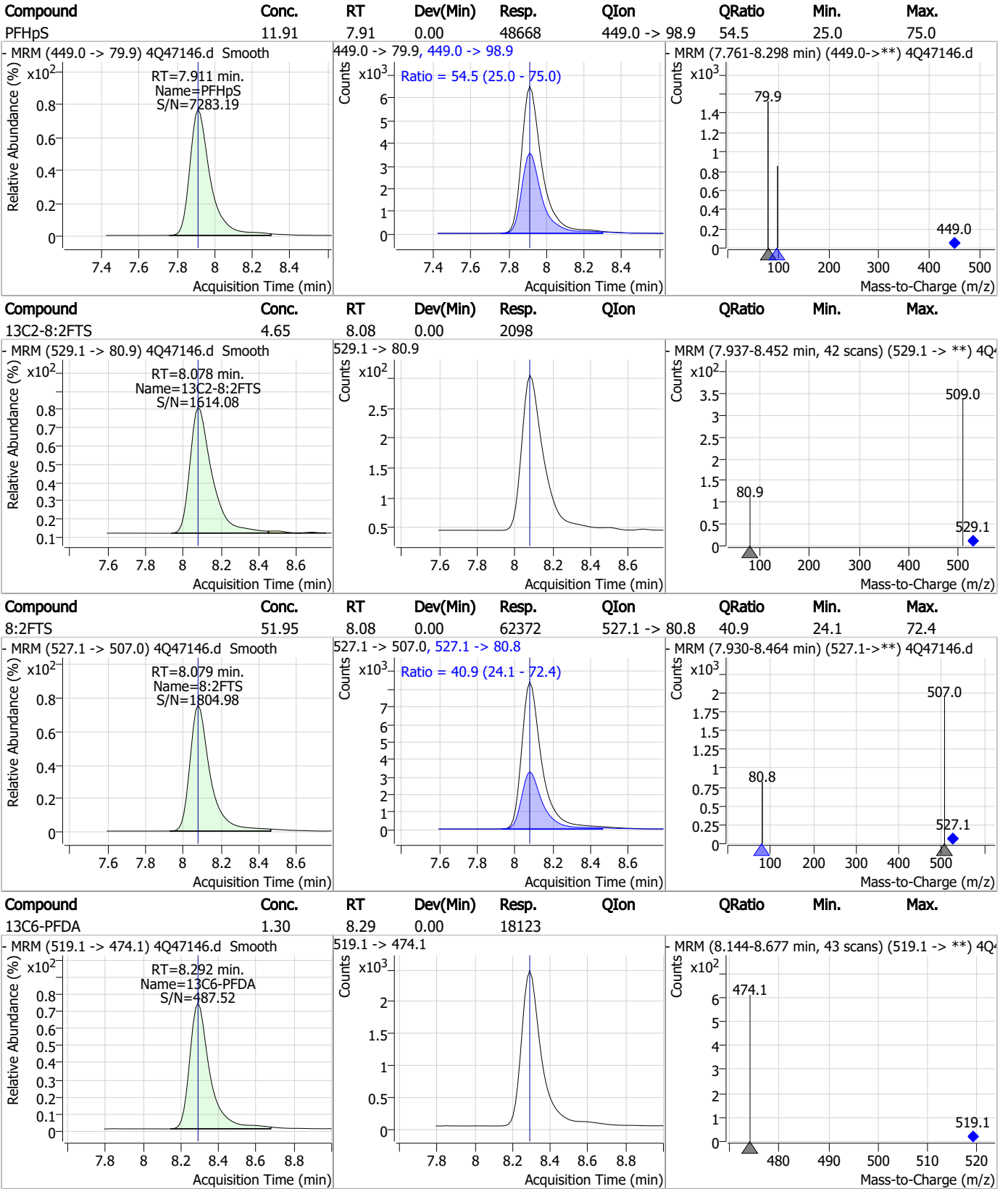
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

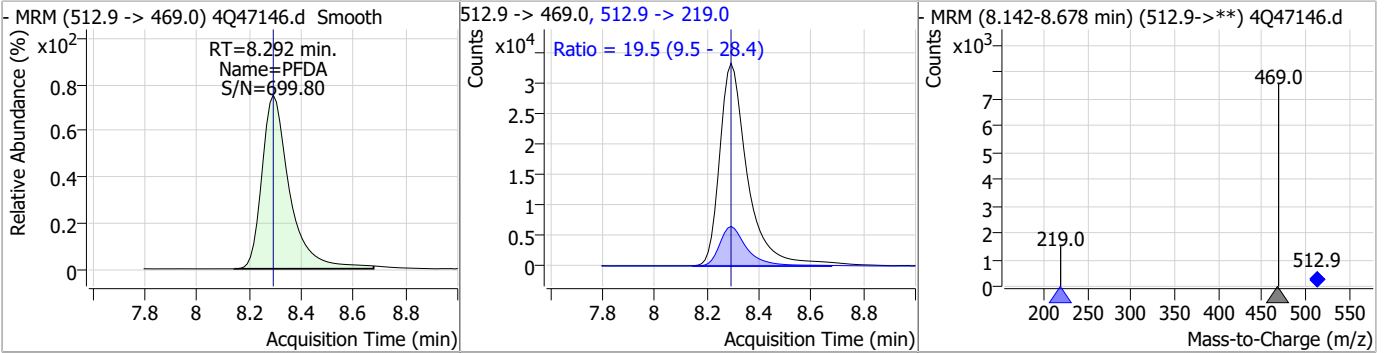


7.6.2

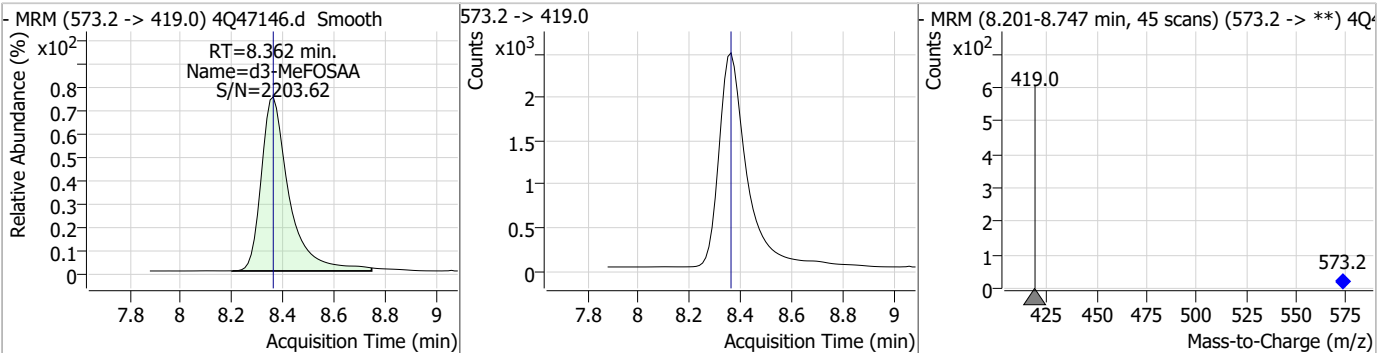
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Perfluorinated Compounds by LC/MS/MS

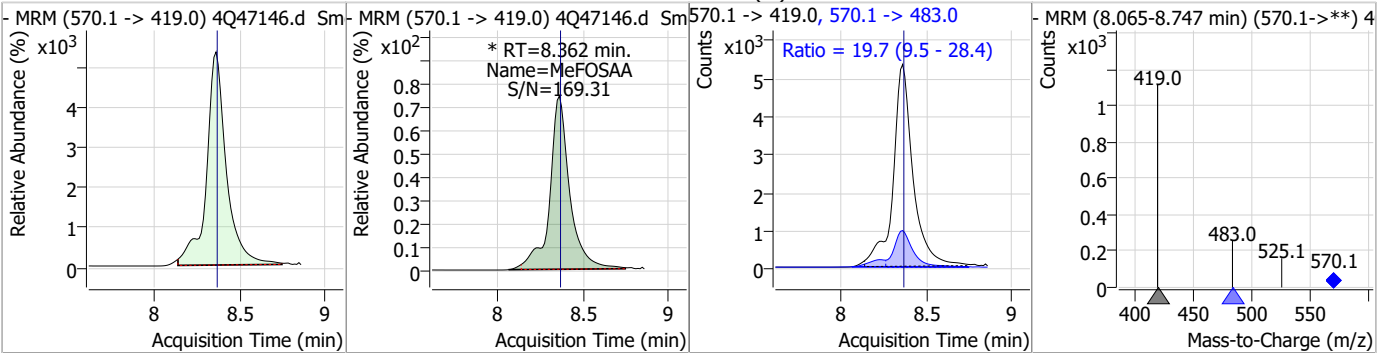
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	13.04	8.29	0.00	245495	512.9 -> 219.0	19.5	9.5	28.4



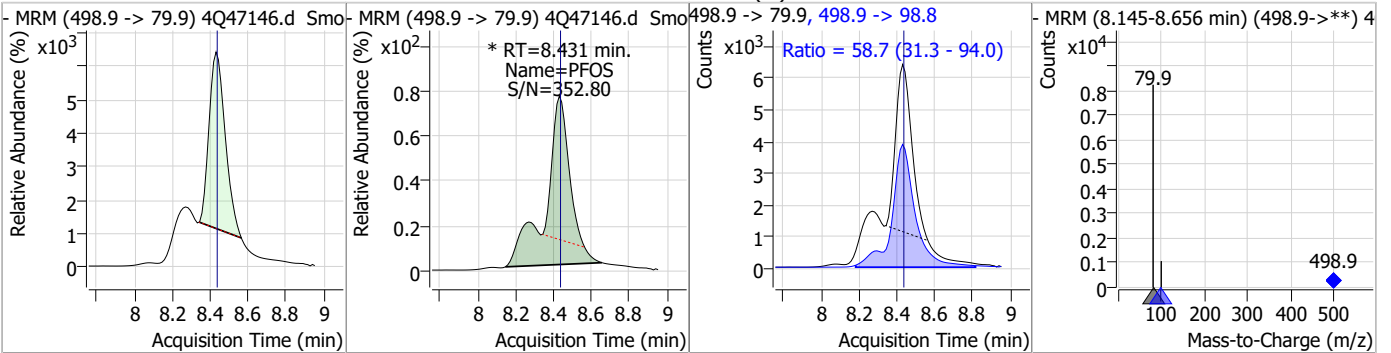
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.81	8.36	0.00	18685				



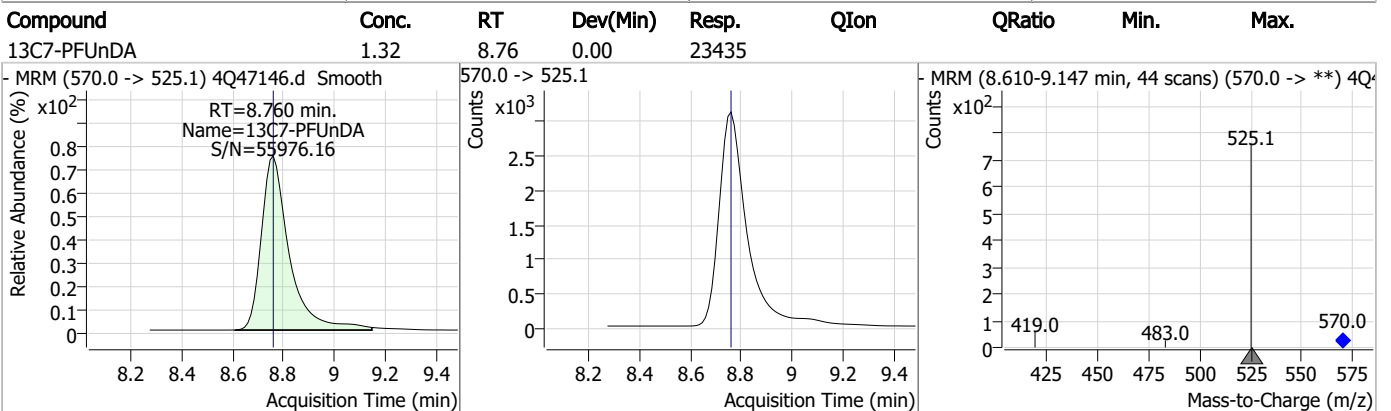
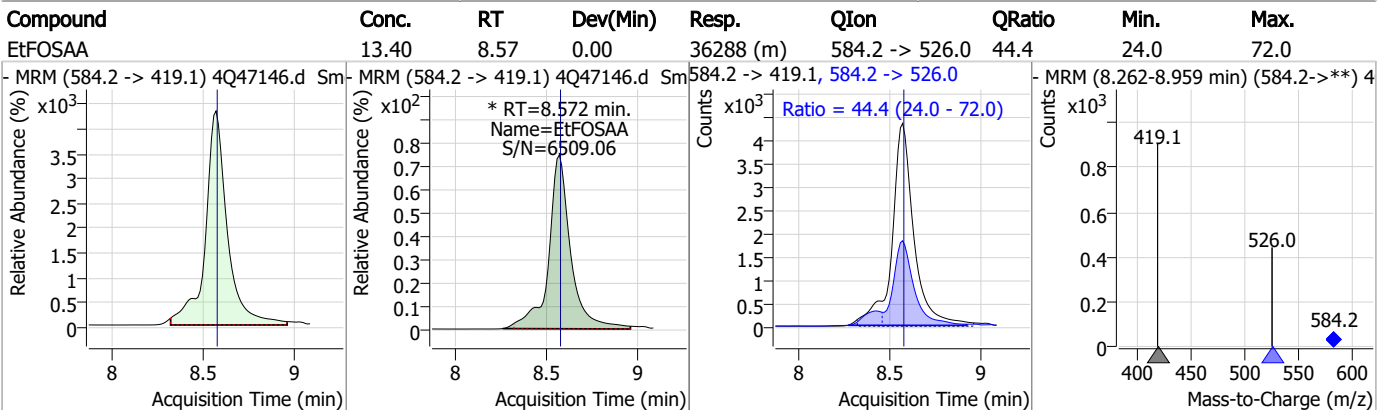
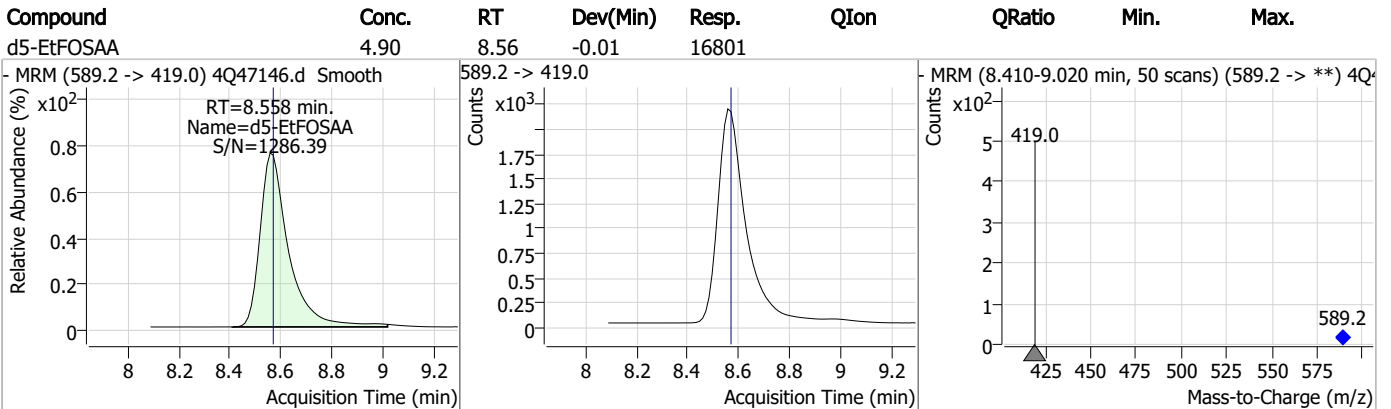
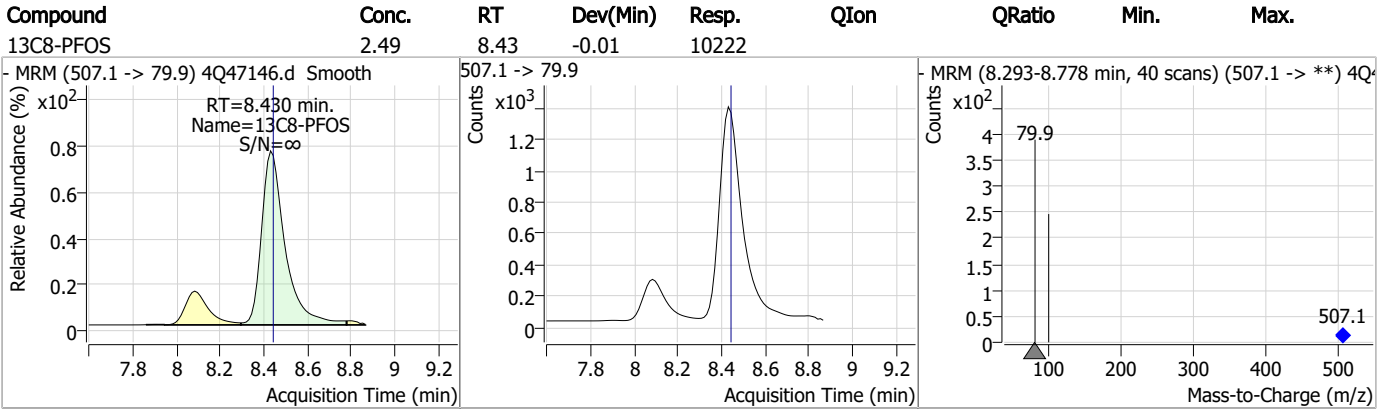
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	13.03	8.36	0.00	43439 (m)	570.1 -> 483.0	19.7	9.5	28.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	10.35	8.43	0.00	56295 (m)	498.9 -> 98.8	58.7	31.3	94.0

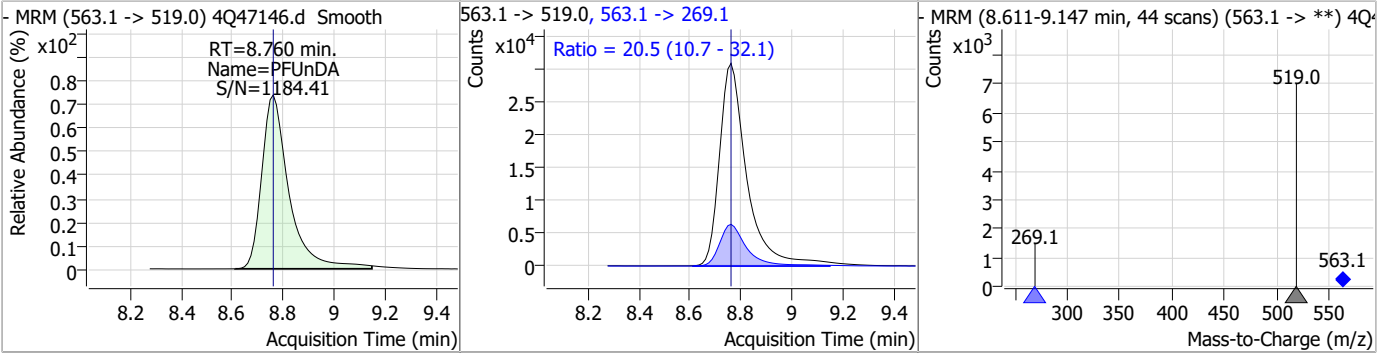


Perfluorinated Compounds by LC/MS/MS

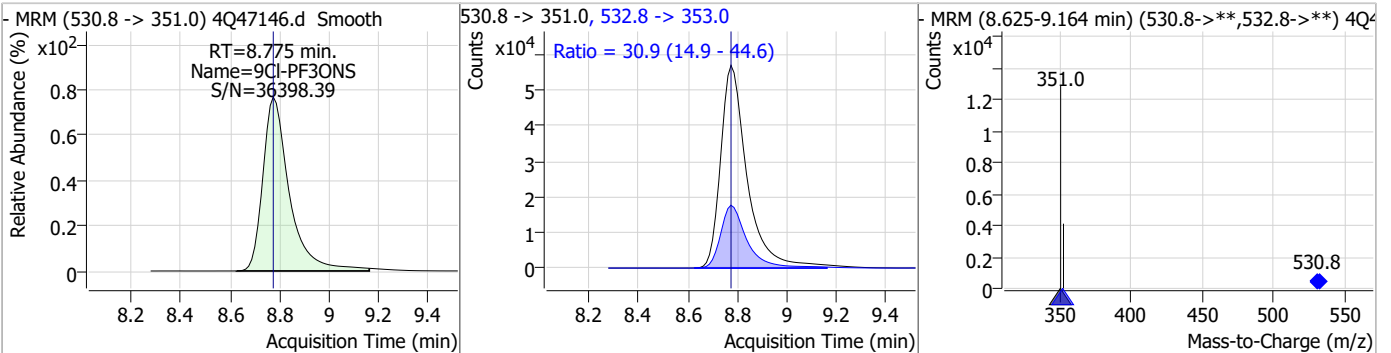


Perfluorinated Compounds by LC/MS/MS

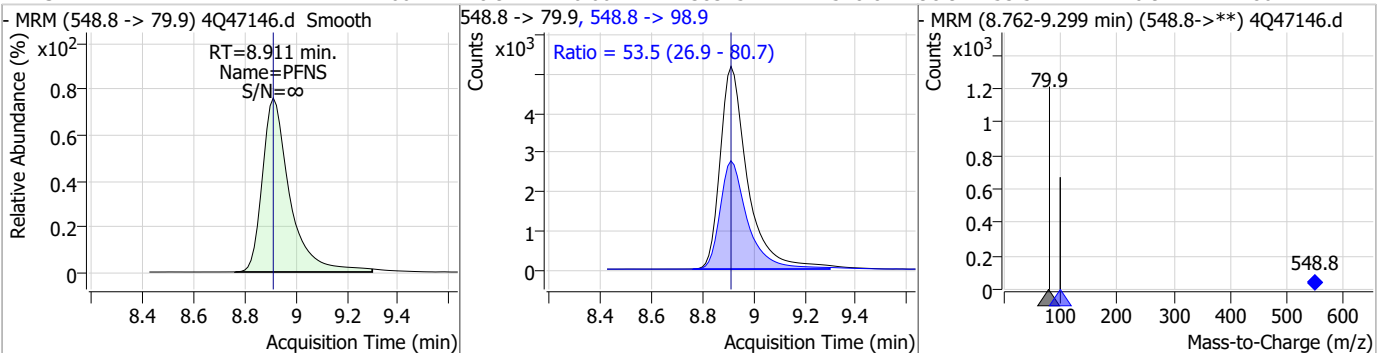
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	12.27	8.76	0.00	228061	563.1 -> 269.1	20.5	10.7	32.1



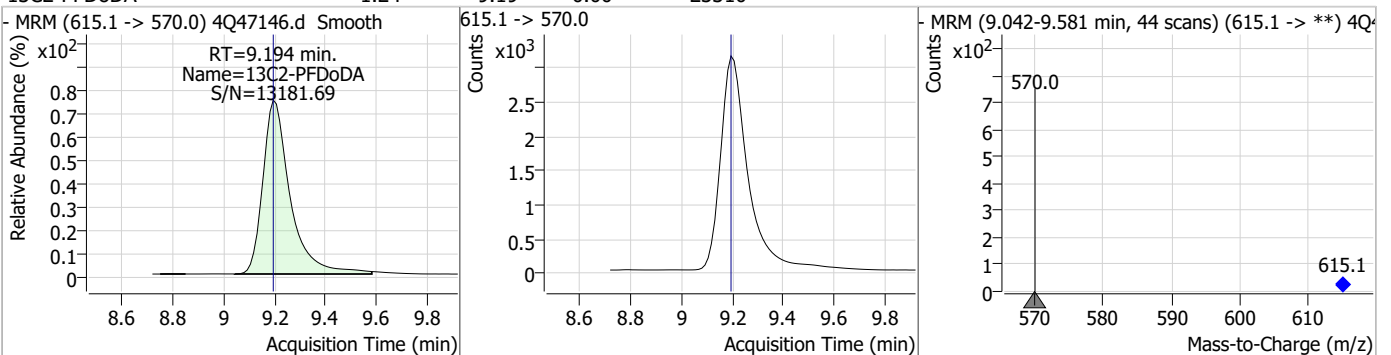
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	23.11	8.77	0.00	424025	532.8 -> 353.0	30.9	14.9	44.6



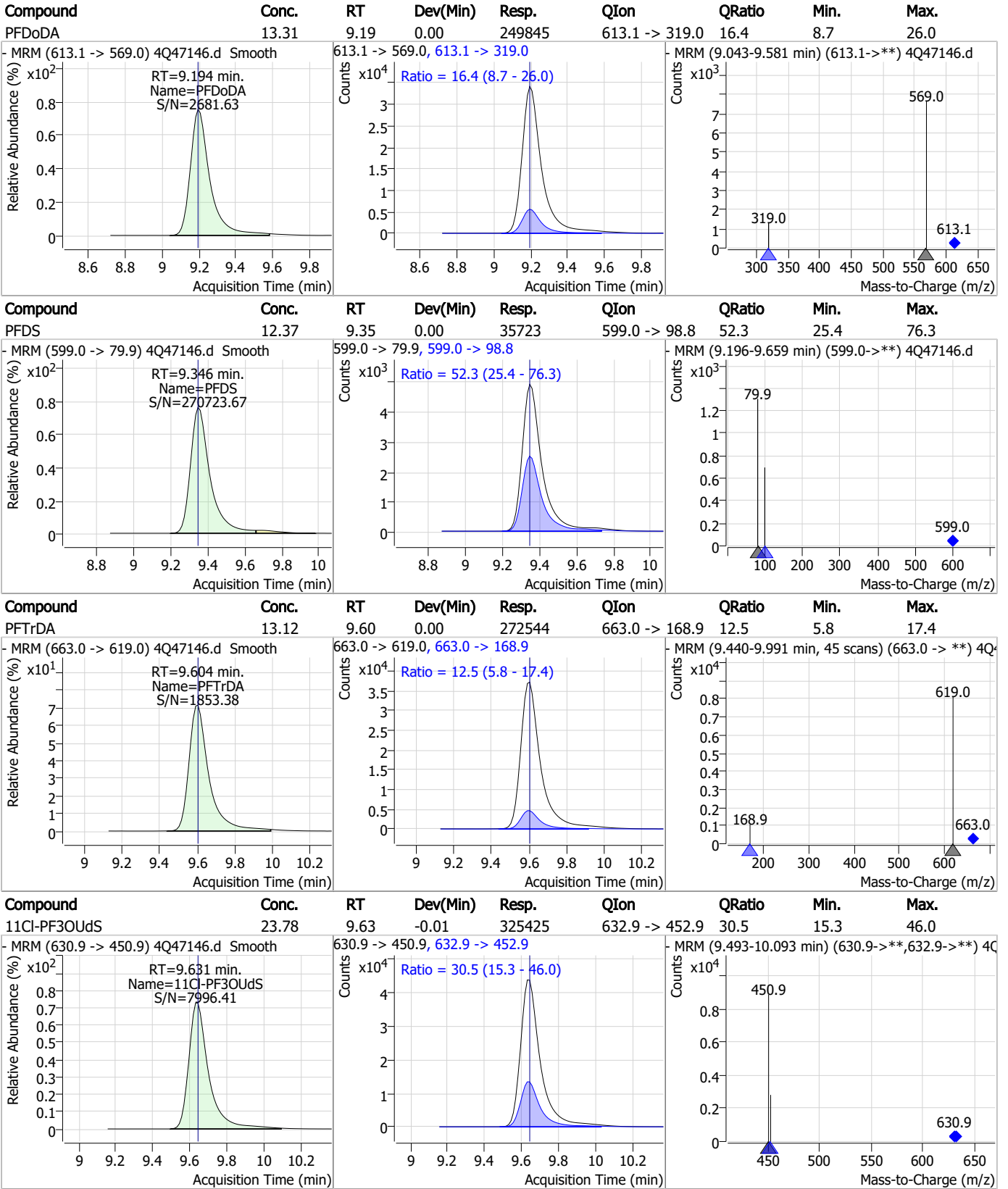
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	12.60	8.91	0.00	38345	548.8 -> 98.9	53.5	26.9	80.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.24	9.19	0.00	23310	615.1 -> 570.0			



Perfluorinated Compounds by LC/MS/MS

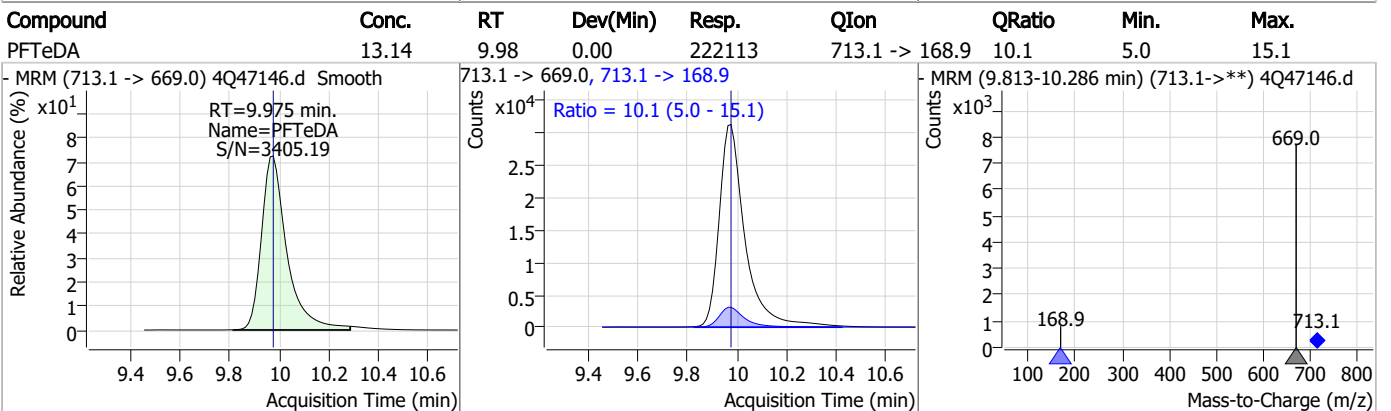
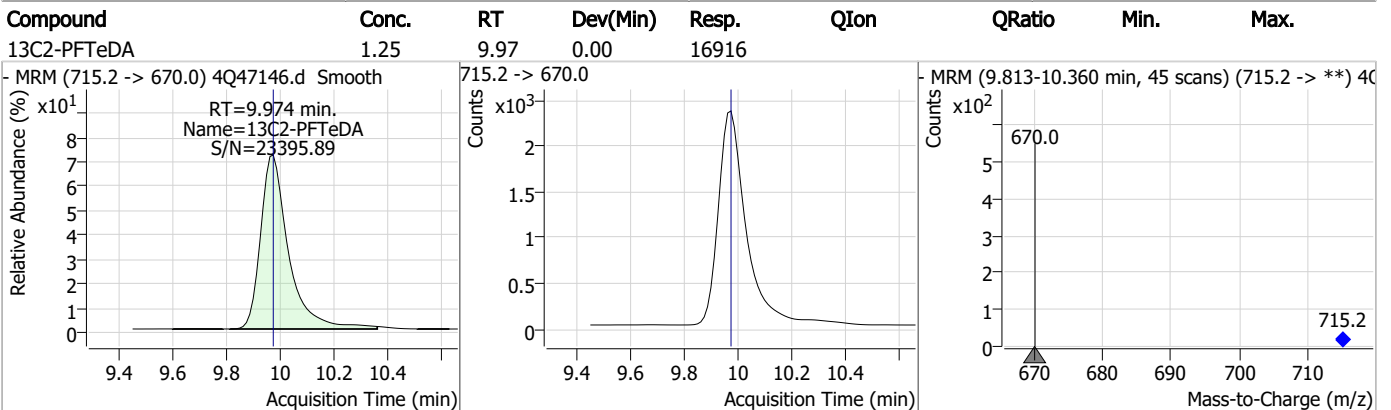
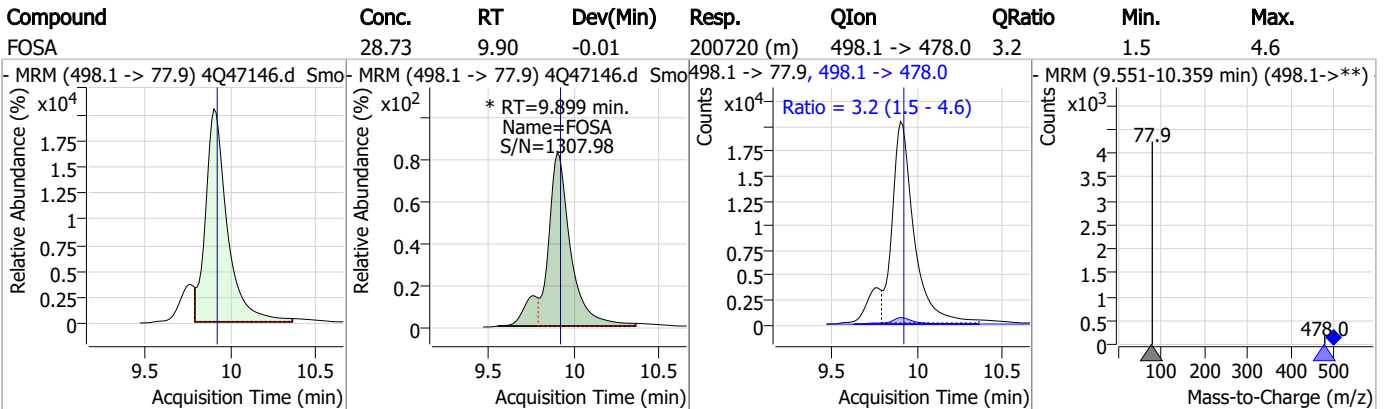
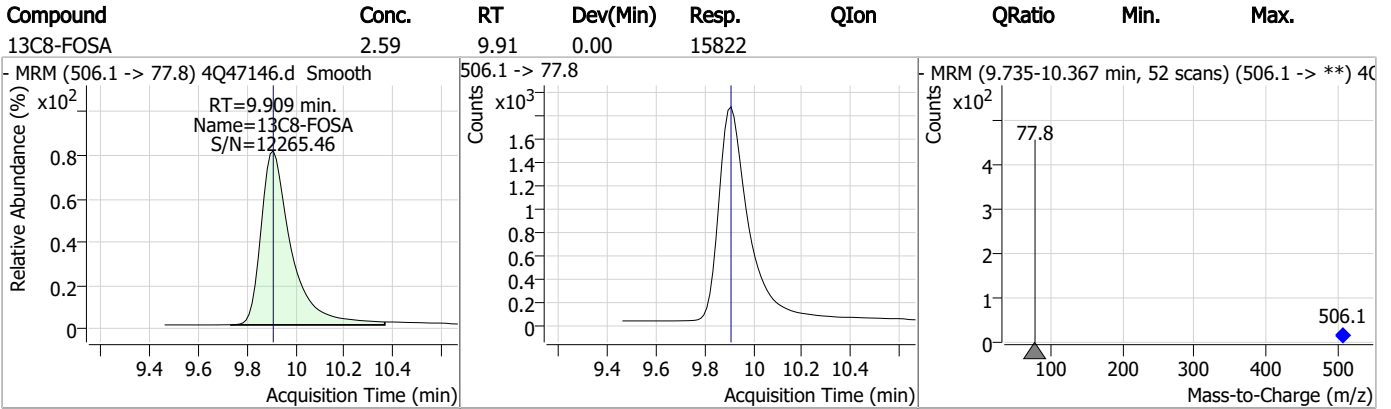


7.6.2

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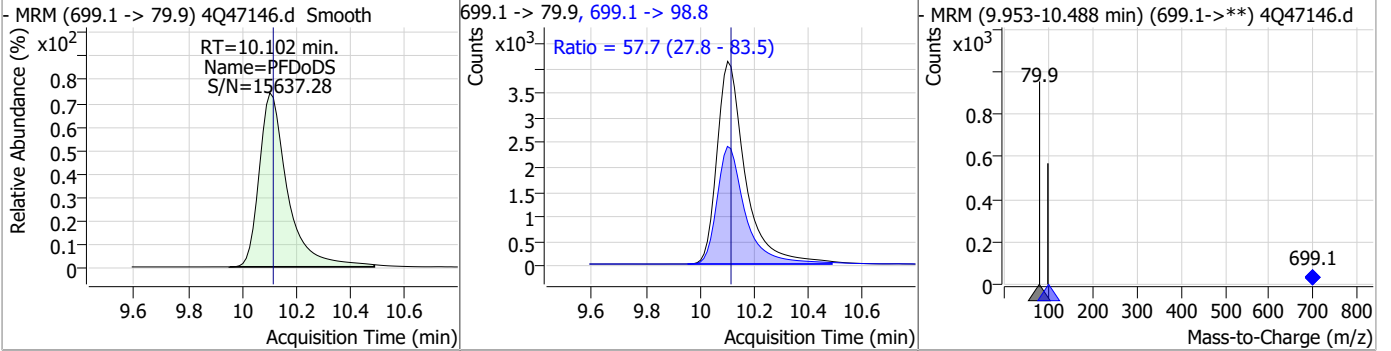


Perfluorinated Compounds by LC/MS/MS

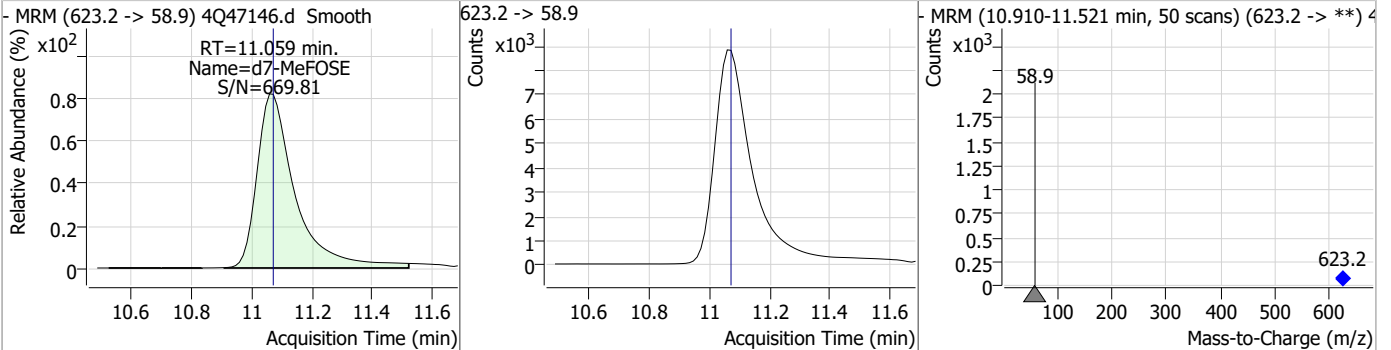


Perfluorinated Compounds by LC/MS/MS

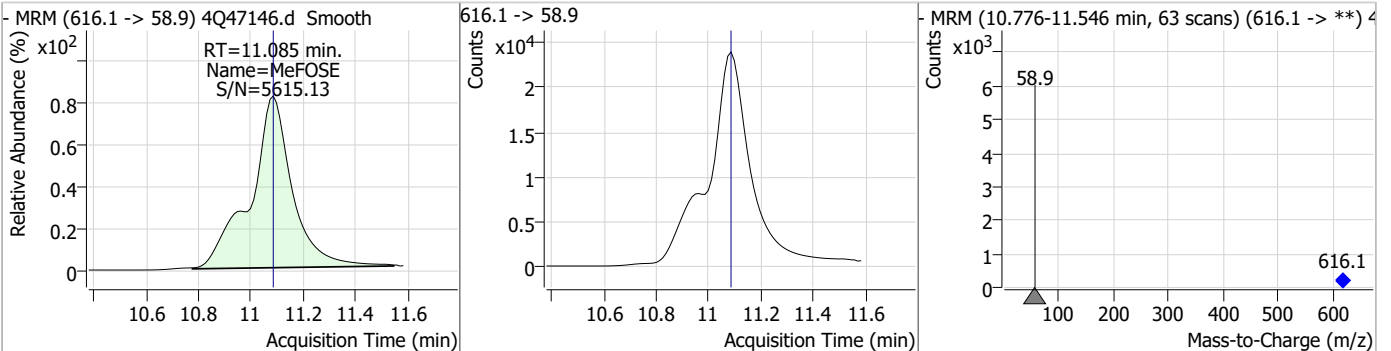
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	12.53	10.10	-0.01	29816	699.1 -> 98.8	57.7	27.8	83.5



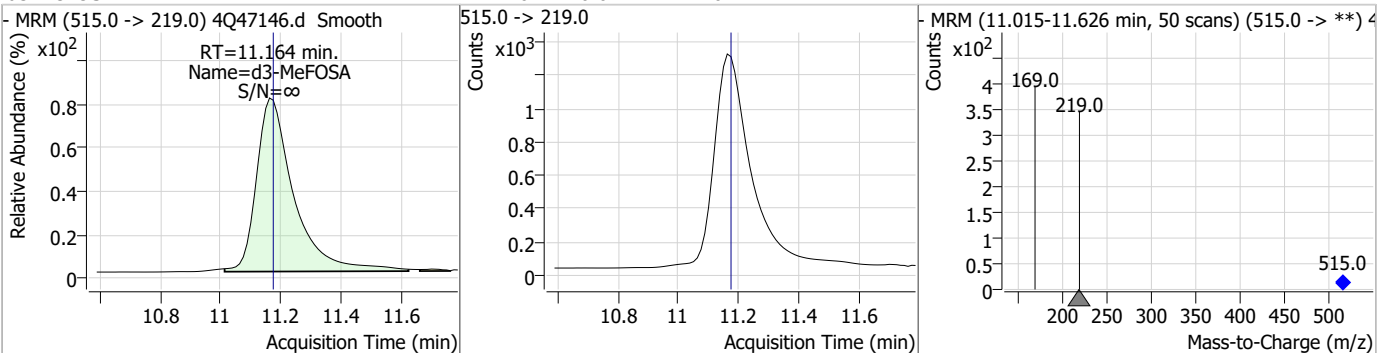
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.51	11.06	-0.01	77296				



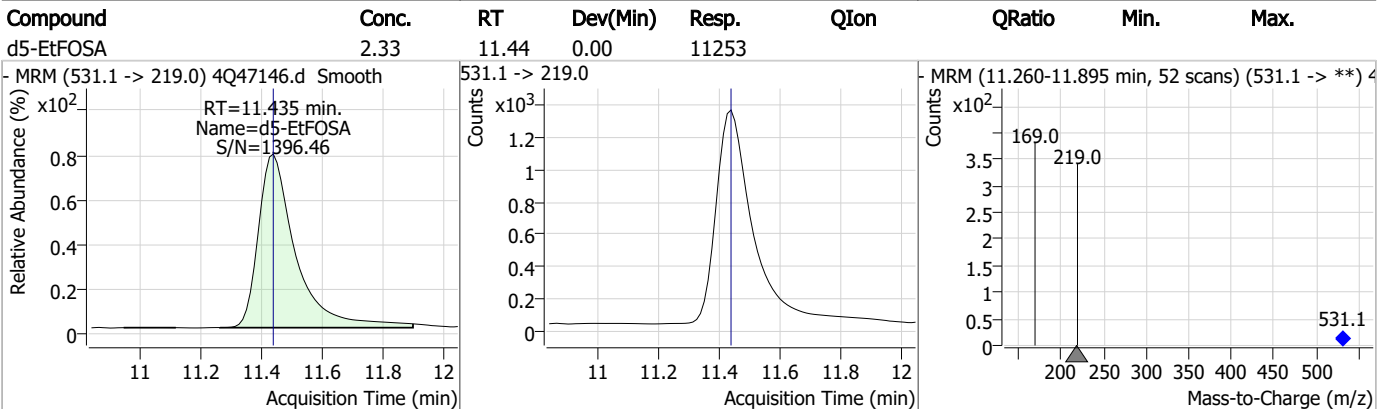
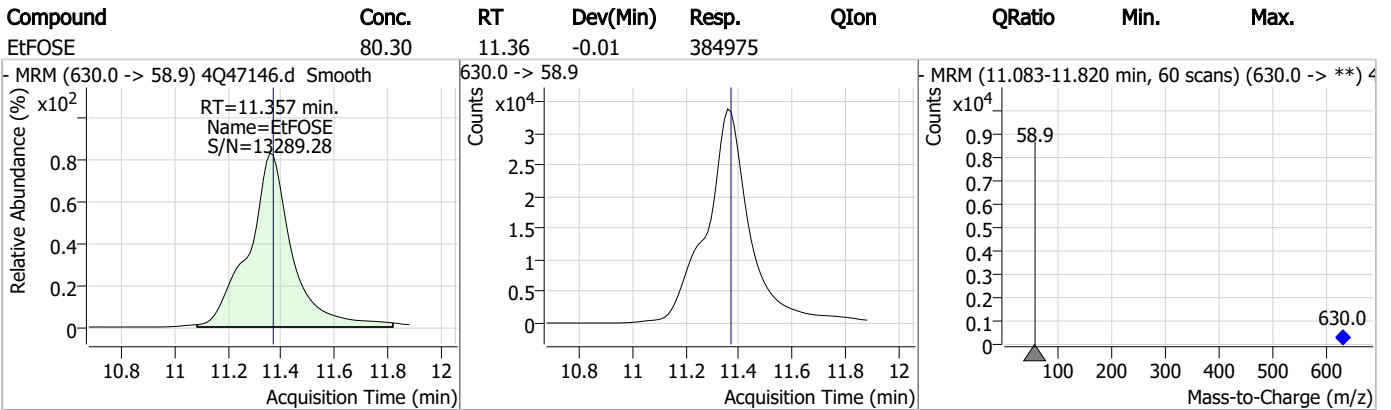
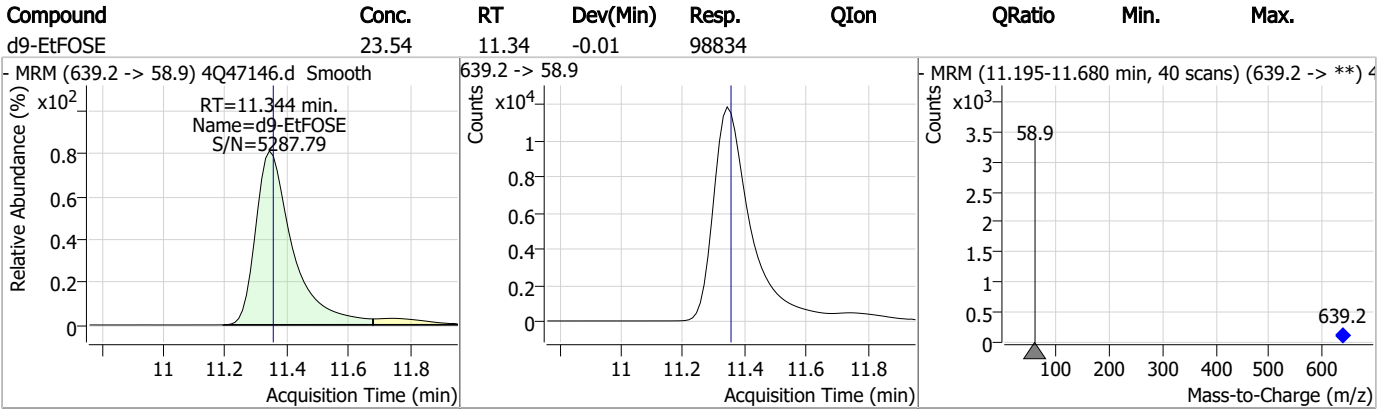
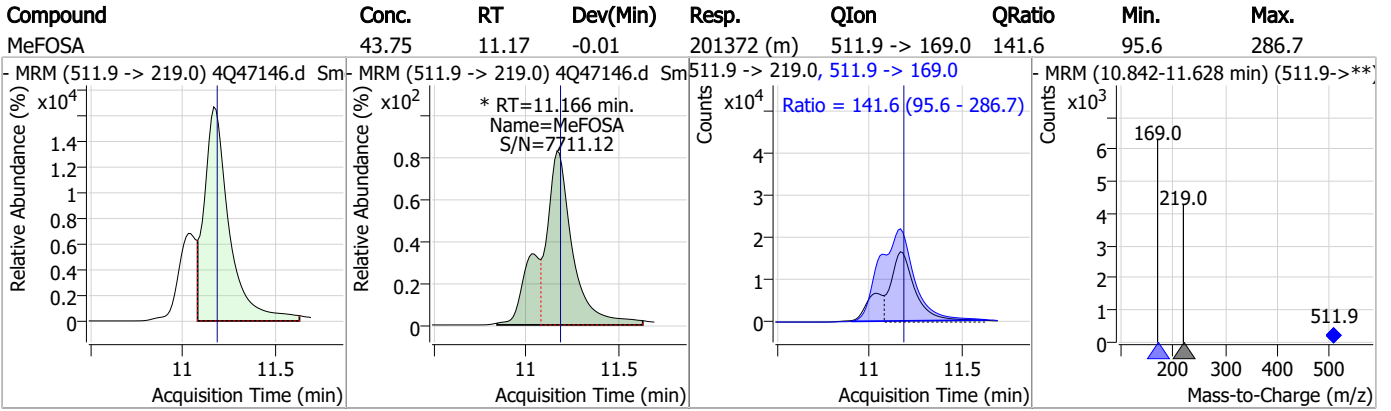
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	77.69	11.09	0.00	265208				



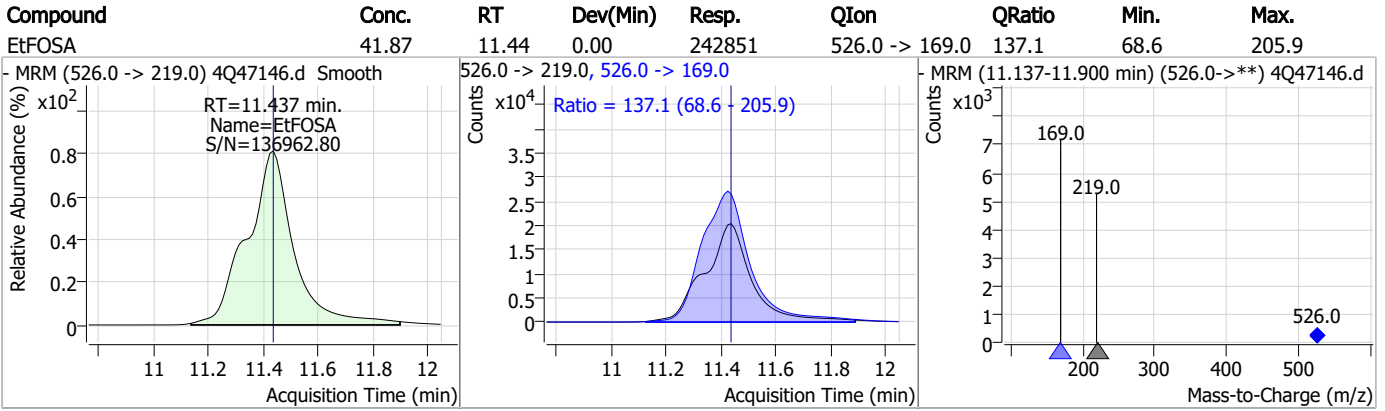
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.47	11.16	-0.01	11021				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.2

7

Manual Integration Approval Summary

Sample Number: S4Q690-RT Method: EPA DRAFT 1633
Lab FileID: 4Q47146.D Analyst approved: 07/13/23 14:35 Anna Ludwig
Injection Time: 07/12/23 17:02 Supervisor approved: 07/14/23 09:30 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.22	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
Perfluorononanoic acid	375-95-1		7.79	Split peak
MeFOSAA	2355-31-9		8.36	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.43	Split peak
EtFOSAA	2991-50-6		8.57	Split peak
PFOSA	754-91-6		9.90	Split peak
MeFOSA	31506-32-8		11.17	Split peak

7.6.2.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtie
 07/20/23 15:43

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47558.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 10:57:16 AM
 Sample Name : RT TDCA
 Vial : P1-B1
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q697_TDCA.batch.bin
 Sample Information : OP97749,S4Q697,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.380	507.1 -> 79.9	15592	2.50	µg/L	-0.012	
13C4-PFOS	8.380	502.8 -> 79.9	16162	2.50	µg/L	0.000	
System Monitoring Compounds							
13C8-PFOS	8.380	507.1 -> 79.9	15592	2.45	µg/L	-0.012	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.9%				
Target Compounds							
PFOS	8.381	498.9 -> 79.9	16612	3.12	µg/L	m	78
		498.9 -> 98.8	8106				
TCDCa	6.761	498.9 -> 79.9	3399	4.73	ng/ml		100
TDCA	6.923	498.9 -> 79.9	4299	6.60	ng/ml		100
TUDCA	5.918	498.9 -> 79.9	5295	3.83	ng/ml		100

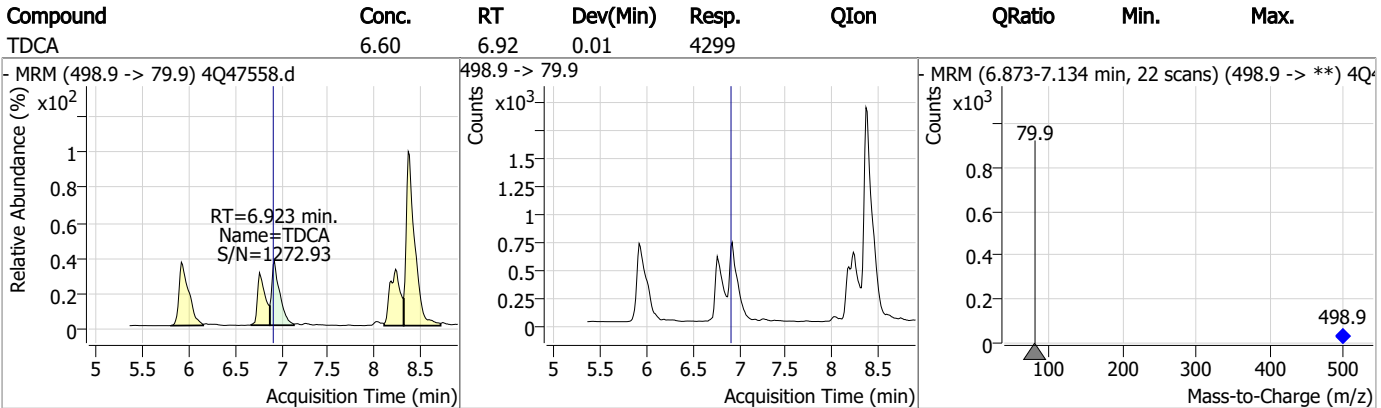
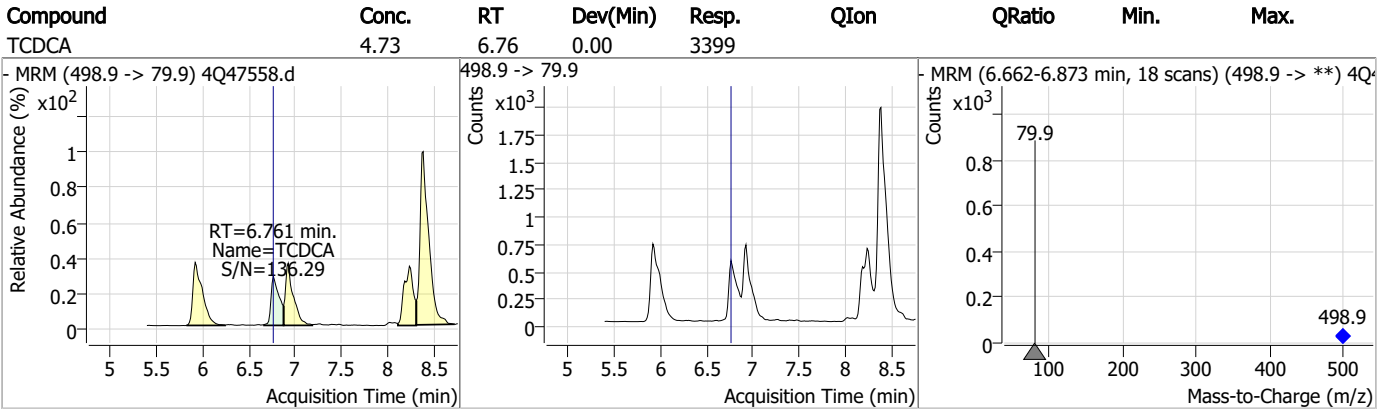
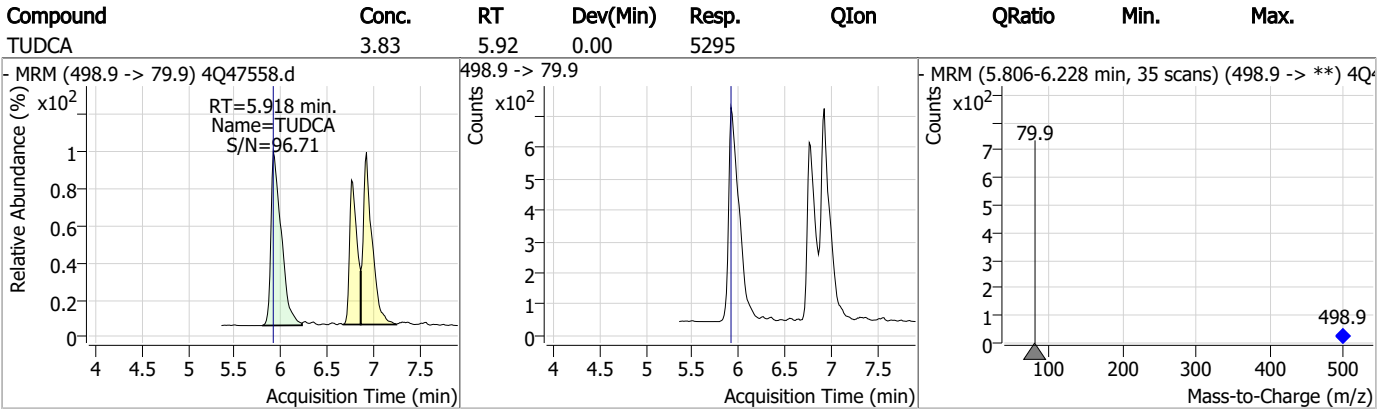
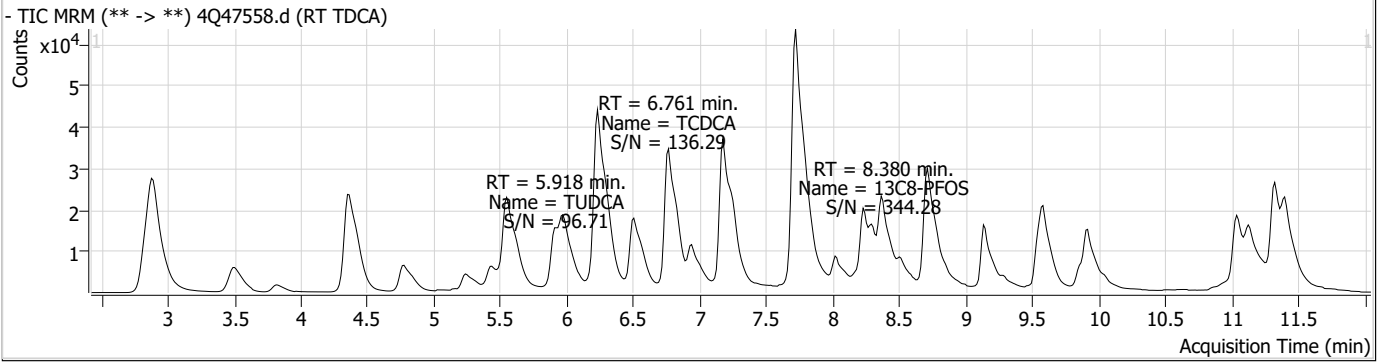
= Qualifier out of range, m = manually integrated, + = Area summed

7.6.3

7

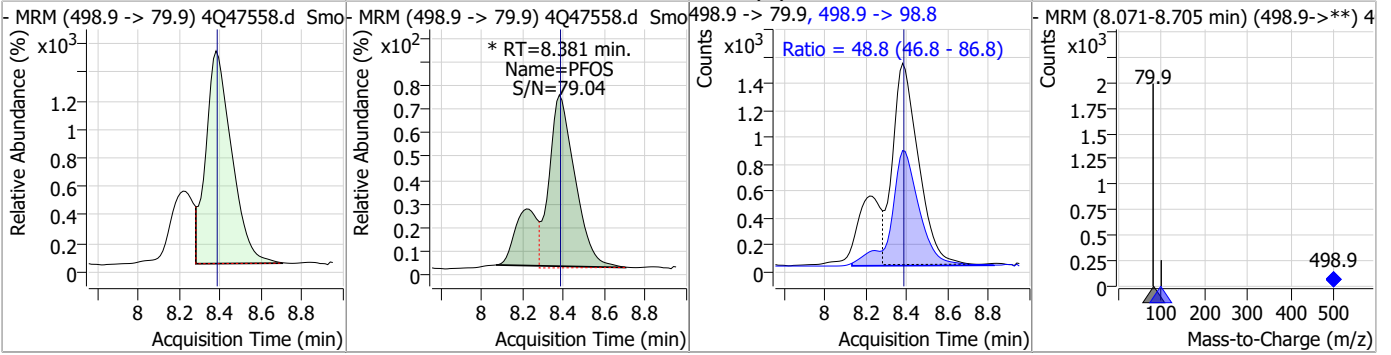


Perfluorinated Compounds by LC/MS/MS

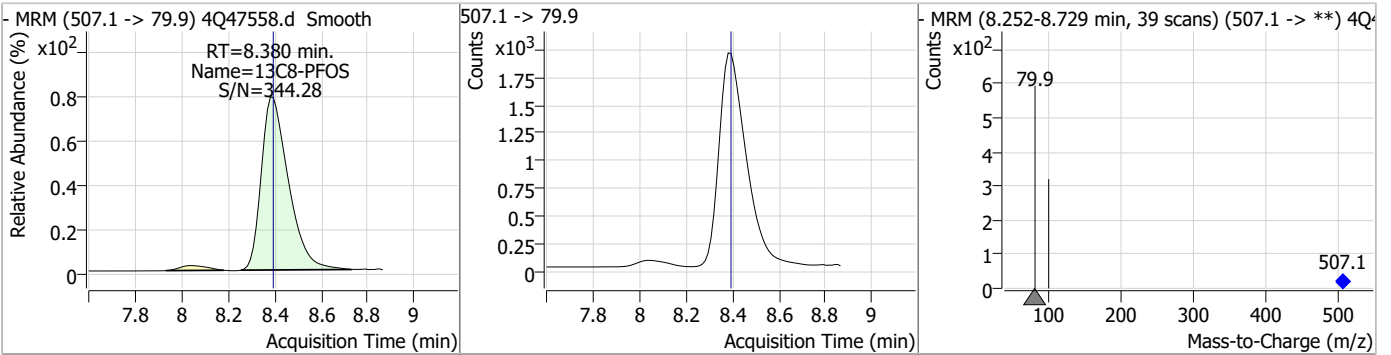


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	3.12	8.38	0.00	16612 (m)	498.9 -> 98.8	48.8	46.8	86.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.45	8.38	-0.01	15592				



7.6.3

7

Manual Integration Approval Summary

Sample Number: S4Q697-RT Method: EPA DRAFT 1633
Lab FileID: 4Q47558.D Analyst approved: 07/20/23 12:46 Anna Ludwig
Injection Time: 07/19/23 10:57 Supervisor approved: 07/20/23 15:43 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.38	Split peak

7.6.3.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47559.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 11:12:00 AM
 Sample Name : RT br/lr
 Vial : P1-B2
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q697.batch.bin
 Sample Information : OP97749,S4Q697,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.874	216.8 -> 171.9	100520	10.00 µg/L	-0.037
M5-PFPeA	4.360	268.3 -> 223.0	63405	5.00 µg/L	-0.027
M5-PFHxA	5.548	318.0 -> 273.0	39042	2.50 µg/L	-0.050
M4-PFHpA	6.490	367.1 -> 322.0	29011	2.50 µg/L	-0.065
M8-PFOA	7.174	421.1 -> 376.0	45158	2.50 µg/L	-0.062
M9-PFNA	7.734	472.1 -> 427.0	21206	1.25 µg/L	-0.050
M6-PFDA	8.241	519.1 -> 474.1	15645	1.25 µg/L	-0.051
M7-PFUnDA	8.710	570.0 -> 525.1	17762	1.25 µg/L	-0.050
M2-PFDoDA	9.143	615.1 -> 570.0	20060	1.25 µg/L	-0.051
M2-PFTeDA	9.925	715.2 -> 670.0	14992	1.25 µg/L	-0.037
M8-FOSA	9.871	506.1 -> 77.8	14427	2.50 µg/L	-0.037
M3-PFBS	5.429	302.1 -> 79.9	9887	2.50 µg/L	-0.050
M3-PFHxS	7.265	402.1 -> 79.9	6833	2.50 µg/L	-0.051
M8-PFOS	8.380	507.1 -> 79.9	8897	2.50 µg/L	-0.050
M2-4:2FTS	5.234	329.1 -> 80.9	628	5.00 µg/L	-0.050
M2-6:2FTS	6.937	429.1 -> 80.9	1265	5.00 µg/L	-0.062
M2-8:2FTS	8.028	529.1 -> 80.9	2088	5.00 µg/L	-0.050
M3-MeFOSAA	8.312	573.2 -> 419.0	17588	5.00 µg/L	-0.049
M3-HFPO-DA	5.903	286.9 -> 168.9	40278	10.00 µg/L	-0.062
M5-EtFOSAA	8.509	589.2 -> 419.0	14325	5.00 µg/L	-0.062
M7-MeFOSE	11.047	623.2 -> 58.9	68351	25.00 µg/L	-0.012
M9-EtFOSE	11.332	639.2 -> 58.9	87265	25.00 µg/L	-0.012
M5-EtFOSA	11.423	531.1 -> 219.0	9641	2.50 µg/L	0.000
M3-MeFOSA	11.152	515.0 -> 219.0	8569	2.50 µg/L	-0.012
13C4-PFOS	8.380	502.8 -> 79.9	8950	2.50 µg/L	-0.050
13C3-PFBA	2.866	216.0 -> 172.0	56346	5.00 µg/L	-0.050
18O2-PFHxS	7.264	403.0 -> 83.9	4851	2.50 µg/L	-0.051
13C4-PFOA	7.175	417.1 -> 372.0	55155	2.50 µg/L	-0.062
13C2-PFDA	8.241	515.1 -> 470.1	17450	1.25 µg/L	-0.051
13C5-PFNA	7.734	468.0 -> 423.0	21978	1.25 µg/L	-0.050
13C2-PFHxA	5.549	315.1 -> 270.0	37387	2.50 µg/L	-0.050
System Monitoring Compounds					
13C2-4:2FTS	5.234	329.1 -> 80.9	628	5.77 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.4%		
13C2-6:2FTS	6.937	429.1 -> 80.9	1265	5.30 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.9%		
13C2-8:2FTS	8.028	529.1 -> 80.9	2088	5.37 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.5%		
13C2-PFDoDA	9.143	615.1 -> 570.0	20060	1.24 µg/L	-0.051
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C2-PFTeDA	9.925	715.2 -> 670.0	14992	1.28 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C3-PFBS	5.429	302.1 -> 79.9	9887	2.66 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.5%		
13C3-PFHxS	7.265	402.1 -> 79.9	6833	2.51 µg/L	-0.051

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C4-PFBA	2.874	216.8 -> 171.9	100520	9.44 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.4%	
13C4-PFHpA	6.490	367.1 -> 322.0	29011	2.53 µg/L	-0.065
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C5-PFHxA	5.548	318.0 -> 273.0	39042	2.44 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C5-PFPeA	4.360	268.3 -> 223.0	63405	6.14 µg/L	-0.027
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 122.9%	
13C6-PFDA	8.241	519.1 -> 474.1	15645	1.29 µg/L	-0.051
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C7-PFUnDA	8.710	570.0 -> 525.1	17762	1.16 µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.6%	
13C8-FOSA	9.871	506.1 -> 77.8	14427	3.12 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 124.6%	
13C8-PFOA	7.174	421.1 -> 376.0	45158	2.52 µg/L	-0.062
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C8-PFOS	8.380	507.1 -> 79.9	8897	2.86 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 114.5%	
13C9-PFNA	7.734	472.1 -> 427.0	21206	1.44 µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 115.4%	
d3-MeFOSAA	8.312	573.2 -> 419.0	17588	5.98 µg/L	-0.049
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 119.5%	
13C3-HFPO-DA	5.903	286.9 -> 168.9	40278	10.11 µg/L	-0.062
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
d3-MeFOSA	11.152	515.0 -> 219.0	8569	2.54 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
d5-EtFOSAA	8.509	589.2 -> 419.0	14325	5.52 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 110.3%	
d7-MeFOSE	11.047	623.2 -> 58.9	68351	28.62 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 114.5%	
d9-EtFOSE	11.332	639.2 -> 58.9	87265	27.44 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 109.8%	
d5-EtFOSA	11.423	531.1 -> 219.0	9641	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.2%	
Target Compounds					QValue
4:2FTS	5.235	327.1 -> 307.0	53678	48.13 µg/L	94
		327.1 -> 80.9	22233		
6:2FTS	6.937	427.1 -> 407.0	71699	49.06 µg/L	99
		427.1 -> 80.9	27668		
8:2FTS	8.028	527.1 -> 507.0	61620	51.57 µg/L	100
		527.1 -> 80.8	25186		
EtFOSAA	8.522	584.2 -> 419.1	31652	13.71 µg/L	91
		584.2 -> 526.0	14207		
FOSA	9.874	498.1 -> 77.9	175491	27.55 µg/L	99
		498.1 -> 478.0	5545		
MeFOSAA	8.313	570.1 -> 419.0	37811	12.05 µg/L	88
		570.1 -> 483.0	7788		
PFBA	2.870	212.8 -> 168.9	156758	51.84 µg/L	100
PFBS	5.430	298.7 -> 79.9	39915	9.69 µg/L	98
		298.7 -> 98.8	15485		
PFDA	8.242	512.9 -> 469.0	188774	11.62 µg/L	98
		512.9 -> 219.0	35570		
PFDoDA	9.143	613.1 -> 569.0	214192	13.26 µg/L	97
		613.1 -> 319.0	33673		
PFDS	9.308	599.0 -> 79.9	30887	12.28 µg/L	96

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.491	599.0 -> 98.8	15903	13.00	µg/L	100
		363.1 -> 319.0	232119			
PFHpS	7.861	363.1 -> 169.0	41046	12.28	µg/L	98
		449.0 -> 79.9	43671			
PFHxA	5.550	449.0 -> 98.9	22684	13.21	µg/L	100
		313.0 -> 269.0	201884			
PFHxS	7.253	313.0 -> 118.9	5938	10.31	µg/L	92
		398.7 -> 79.9	31375			
PFNA	7.735	398.7 -> 98.9	16110	24.12	µg/L	96
		463.0 -> 419.0	376943			
PFNS	8.861	463.0 -> 219.0	91199	10.34	µg/L	95
		548.8 -> 79.9	27391			
PFOA	7.176	548.8 -> 98.9	14987	26.06	µg/L	97
		413.0 -> 369.0	665848			
PFOS	8.381	413.0 -> 169.0	135133	11.10	µg/L	79
		498.9 -> 79.9	52580			
PFPeA	4.363	498.9 -> 98.8	25397	22.27	µg/L	100
		263.0 -> 219.0	398177			
PFPeS	6.517	349.1 -> 79.9	29890	11.89	µg/L	93
		349.1 -> 98.9	12949			
PFTeDA	9.925	713.1 -> 669.0	187023	12.48	µg/L	99
		713.1 -> 168.9	17667			
PFTrDA	9.553	663.0 -> 619.0	233487	13.07	µg/L	97
		663.0 -> 168.9	27623			
PFUnDA	8.710	563.1 -> 519.0	193295	13.72	µg/L	100
		563.1 -> 269.1	39149			
11Cl-PF3OUdS	9.594	630.9 -> 450.9	251154	23.37	µg/L	99
		632.9 -> 452.9	76560			
9Cl-PF3ONS	8.725	530.8 -> 351.0	316942	22.00	µg/L	98
		532.8 -> 353.0	96733			
ADONA	6.756	376.9 -> 250.9	676031	22.42	µg/L	100
		376.9 -> 84.8	173648			
HFPO-DA	5.904	284.9 -> 168.9	107131	25.75	µg/L	98
		284.9 -> 184.9	12461			
3:3FTCA	3.811	241.0 -> 177.0	48339	69.47	µg/L	99
		241.0 -> 117.0	4391			
5:3FTCA	6.218	341.0 -> 237.1	752754	296.41	µg/L	99
		341.0 -> 217.0	532220			
7:3FTCA	7.723	441.0 -> 316.9	409378	292.06	µg/L	96
		441.0 -> 336.9	947284			
EtFOSA	11.413	526.0 -> 219.0	180085	36.24	µg/L	100
		526.0 -> 169.0	250331			
EtFOSE	11.345	630.0 -> 58.9	286768	67.75	µg/L	100
		511.9 -> 219.0	141591			
MeFOSA	11.153	511.9 -> 169.0	214821	39.57	µg/L	72
		616.1 -> 58.9	236880			
MeFOSE	11.060	699.1 -> 79.9	23877	78.47	µg/L	100
		699.1 -> 98.8	13367			
PFDoDS	10.064	295.0 -> 201.0	26262	11.53	µg/L	96
		295.0 -> 84.9	6737			
NFDHA	5.431	279.0 -> 85.1	200464	29.30	µg/L	97
		229.0 -> 84.9	194432			
PFMBA	4.772	314.8 -> 134.9	266360	20.84	µg/L	100
		314.8 -> 82.9	8979			
PFMPA	3.499			21.30	µg/L	100
PFEESA	5.973			23.08	µg/L	100

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

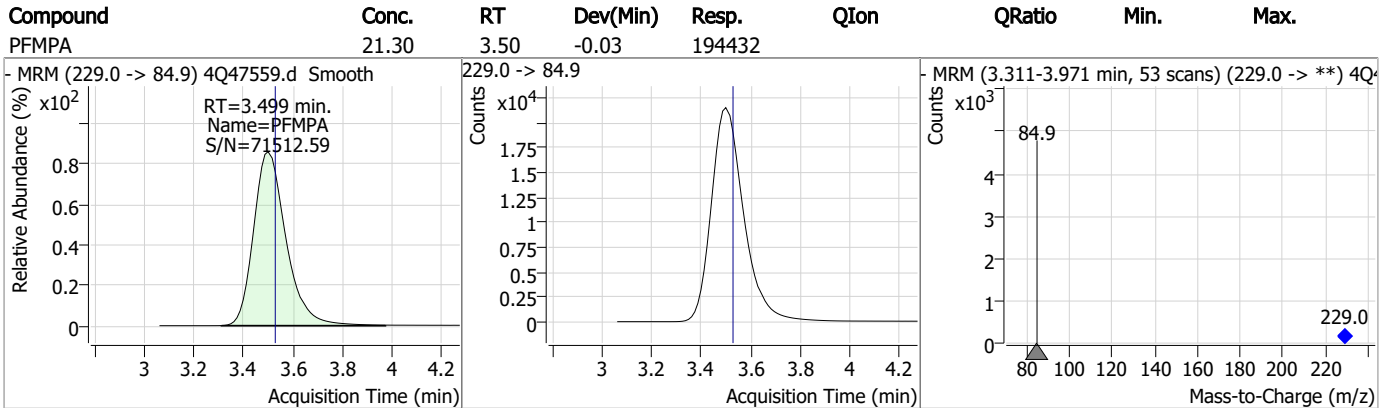
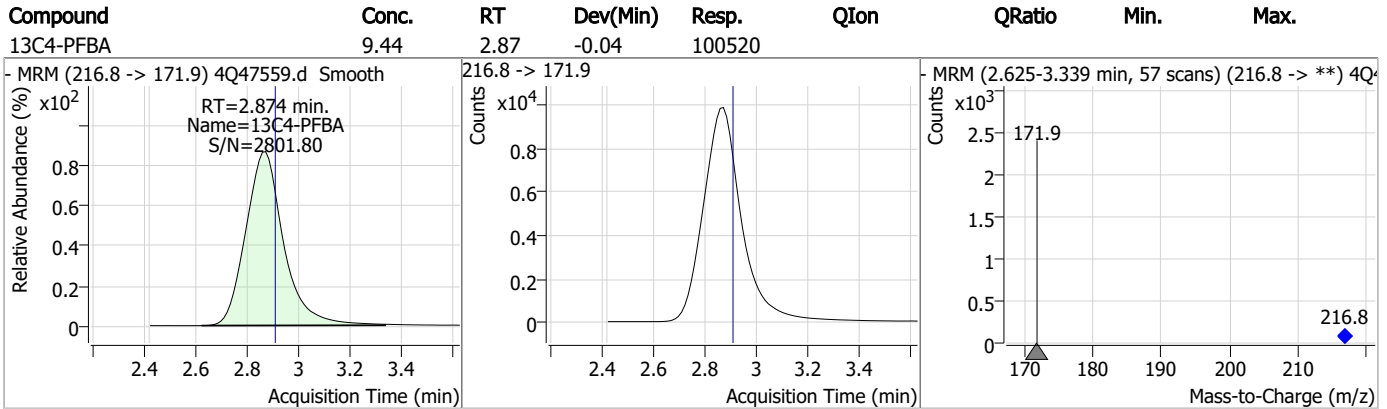
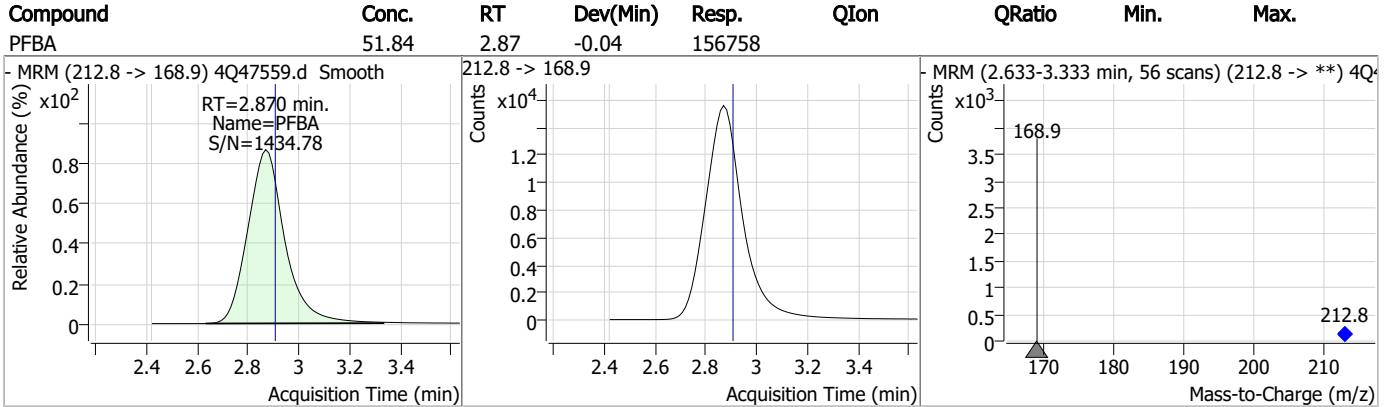
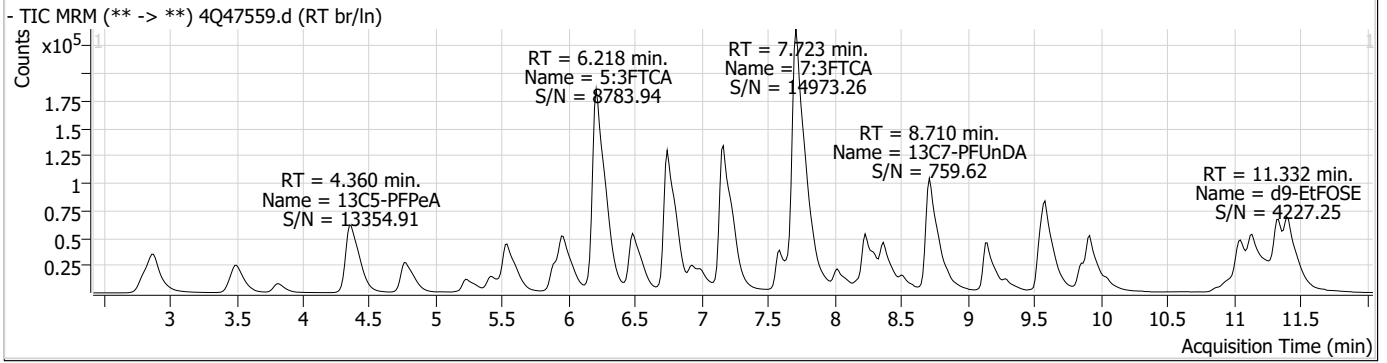
Perfluorinated Compounds by LC/MS/MS

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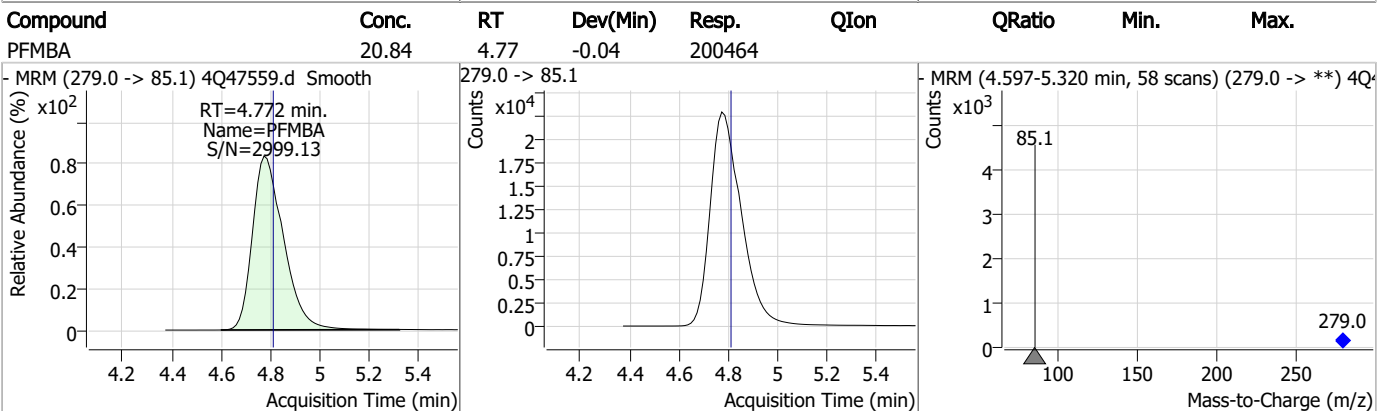
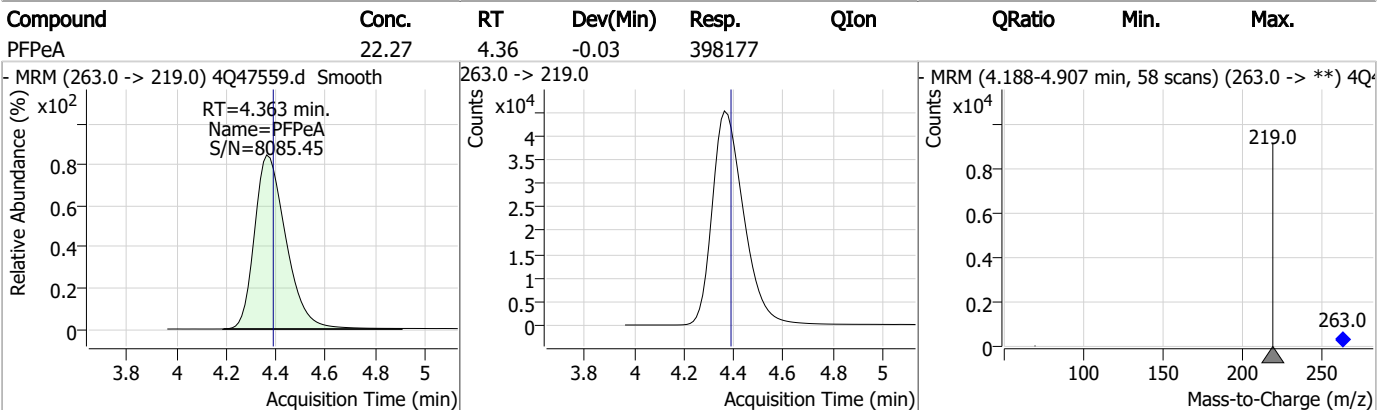
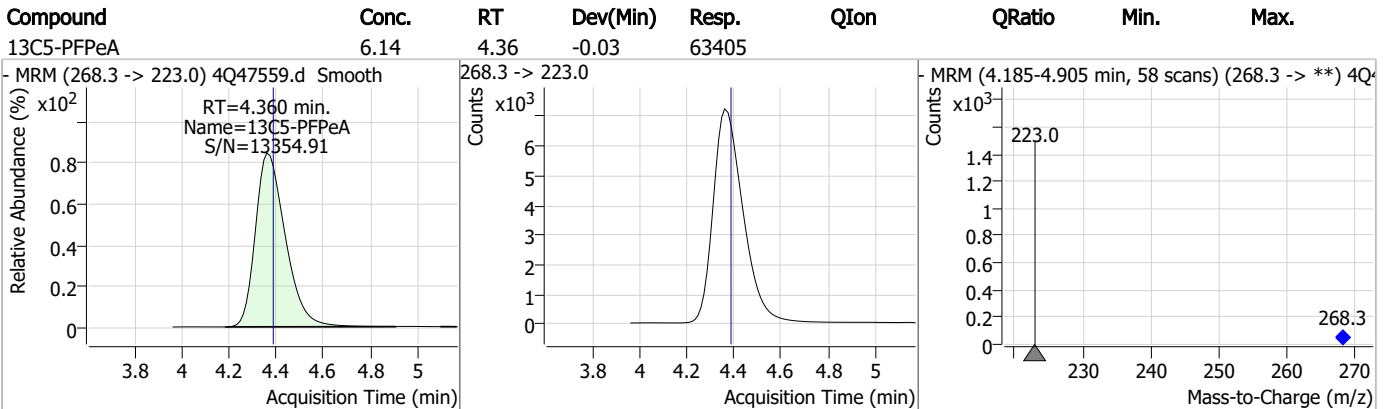
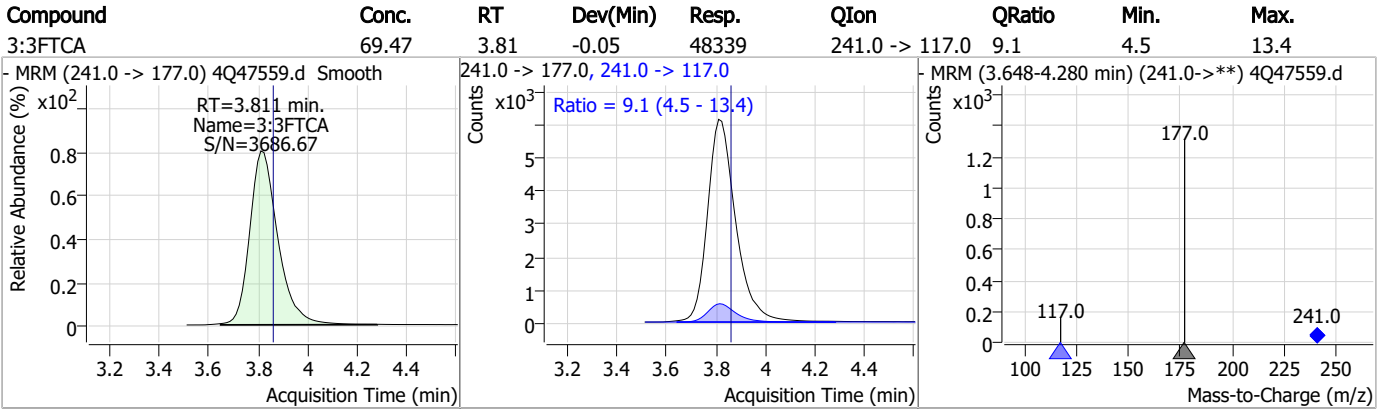
7.6.4

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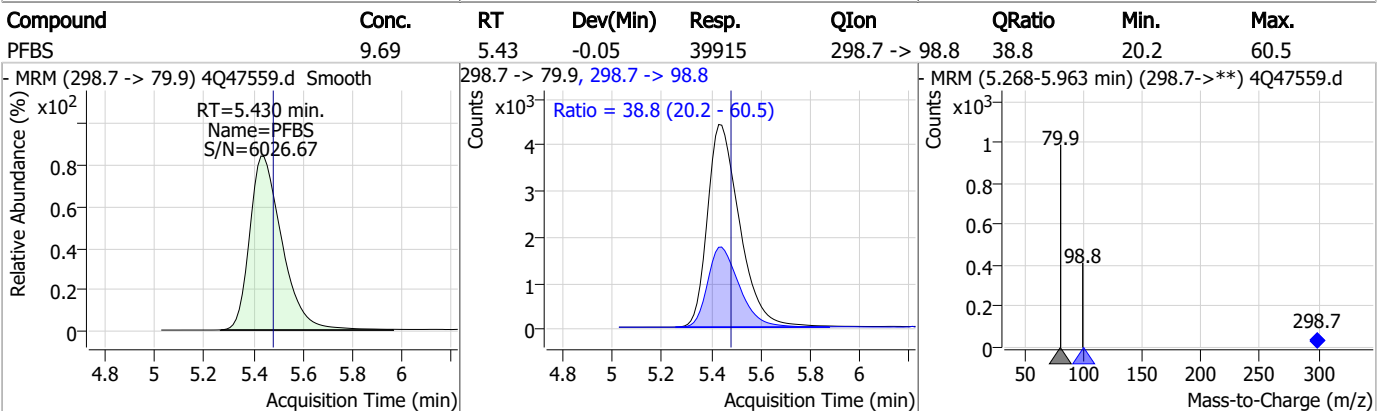
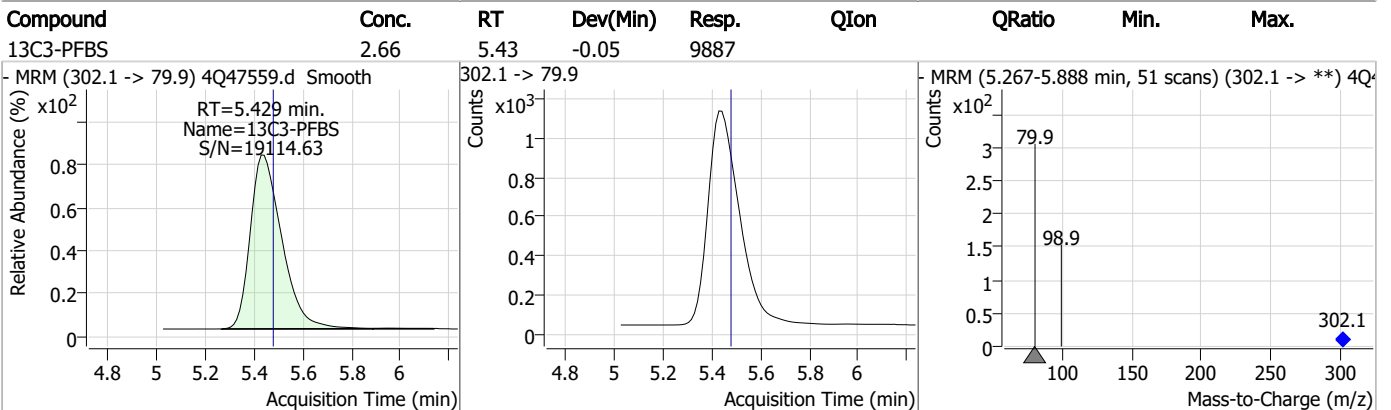
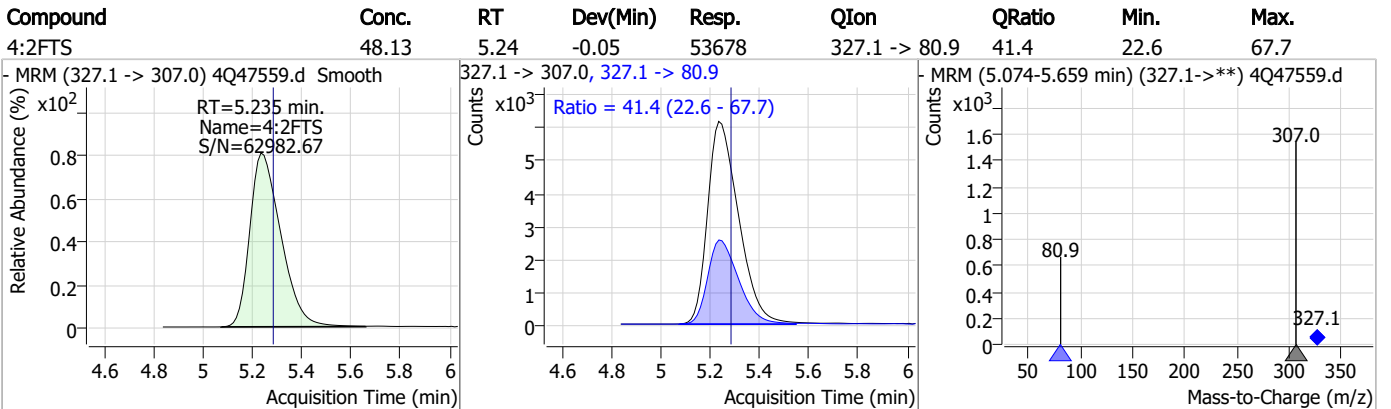
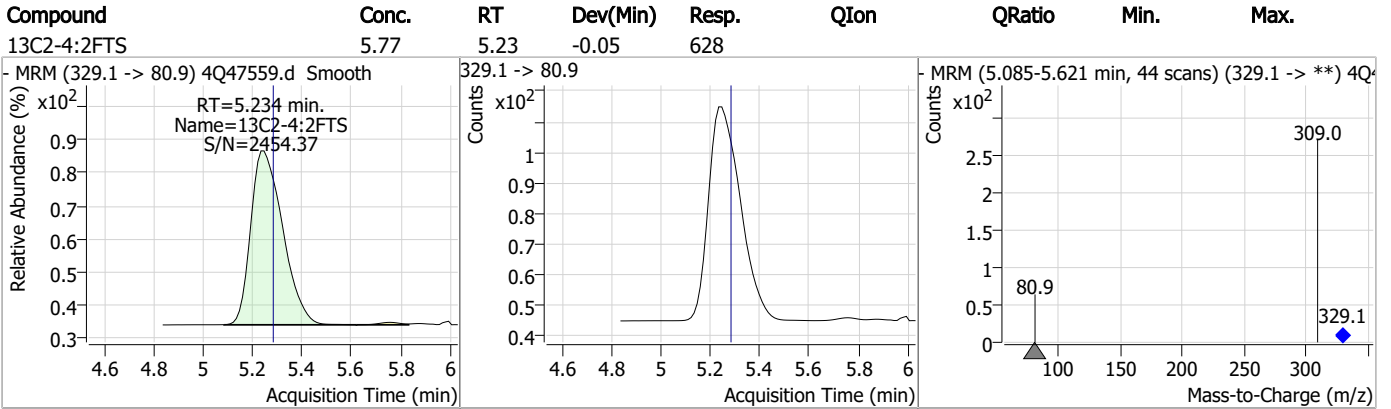
Perfluorinated Compounds by LC/MS/MS



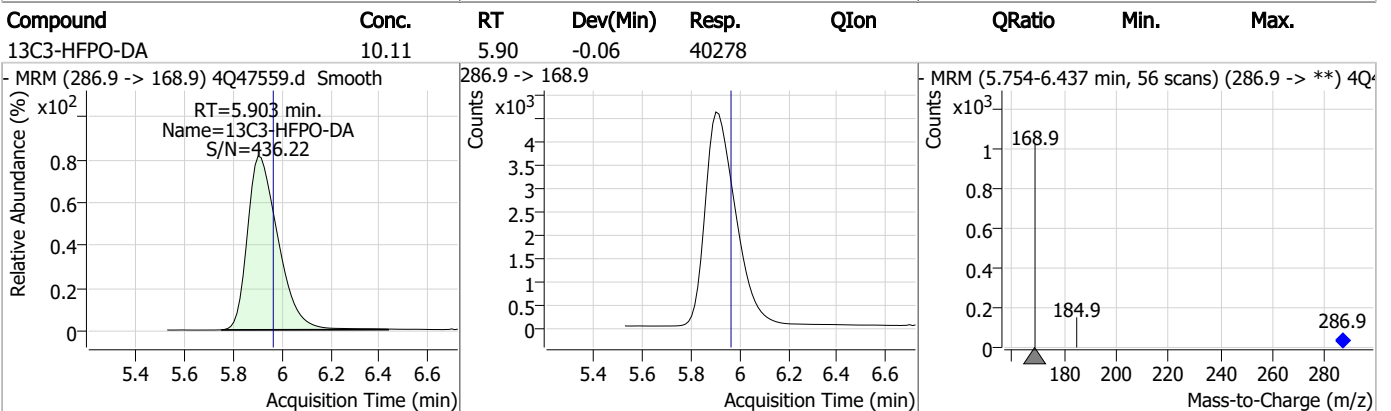
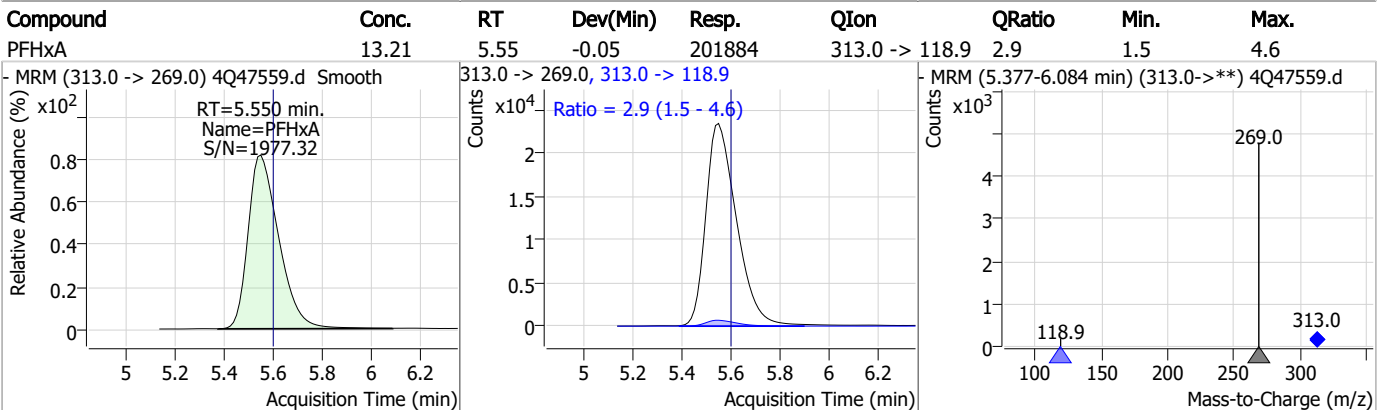
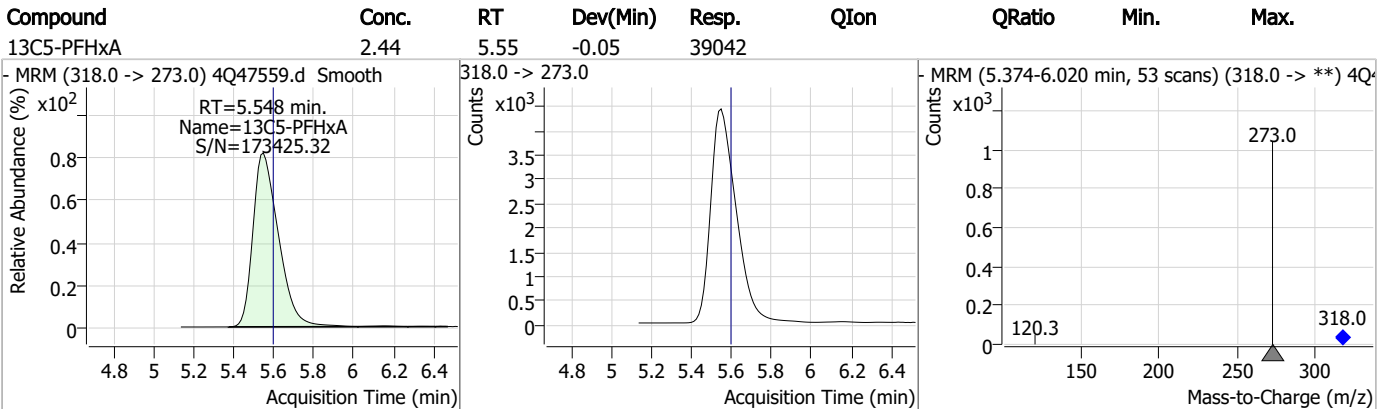
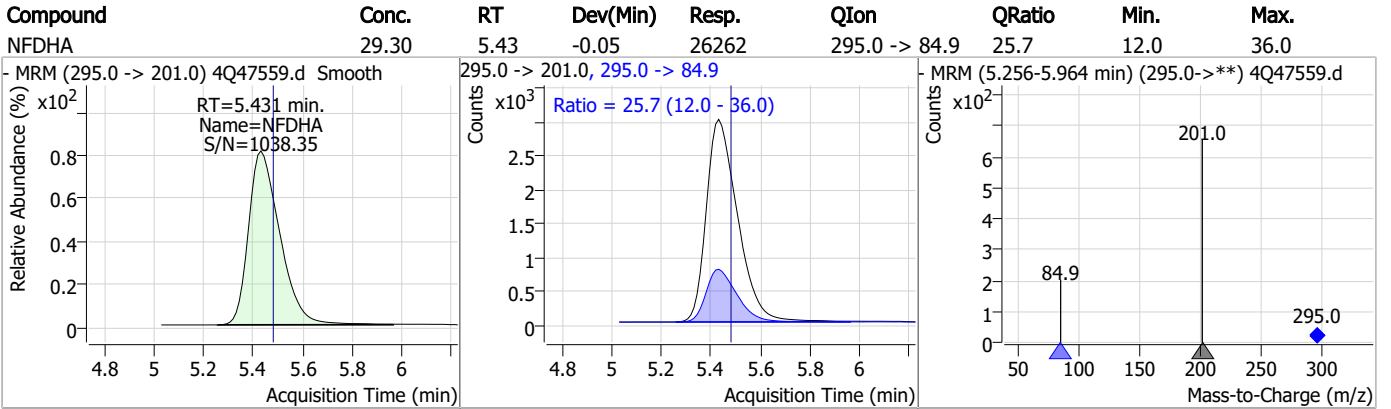
Perfluorinated Compounds by LC/MS/MS



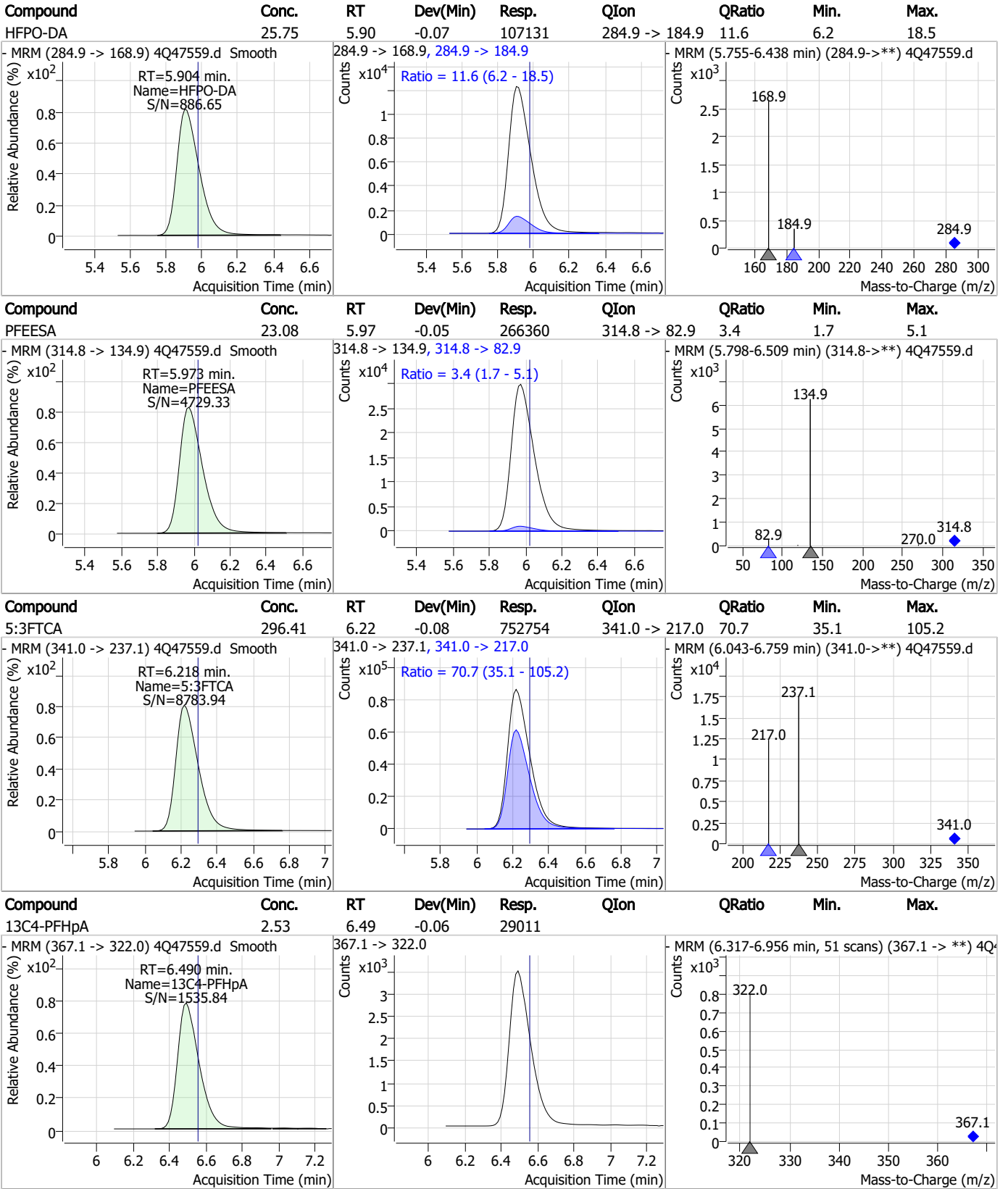
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

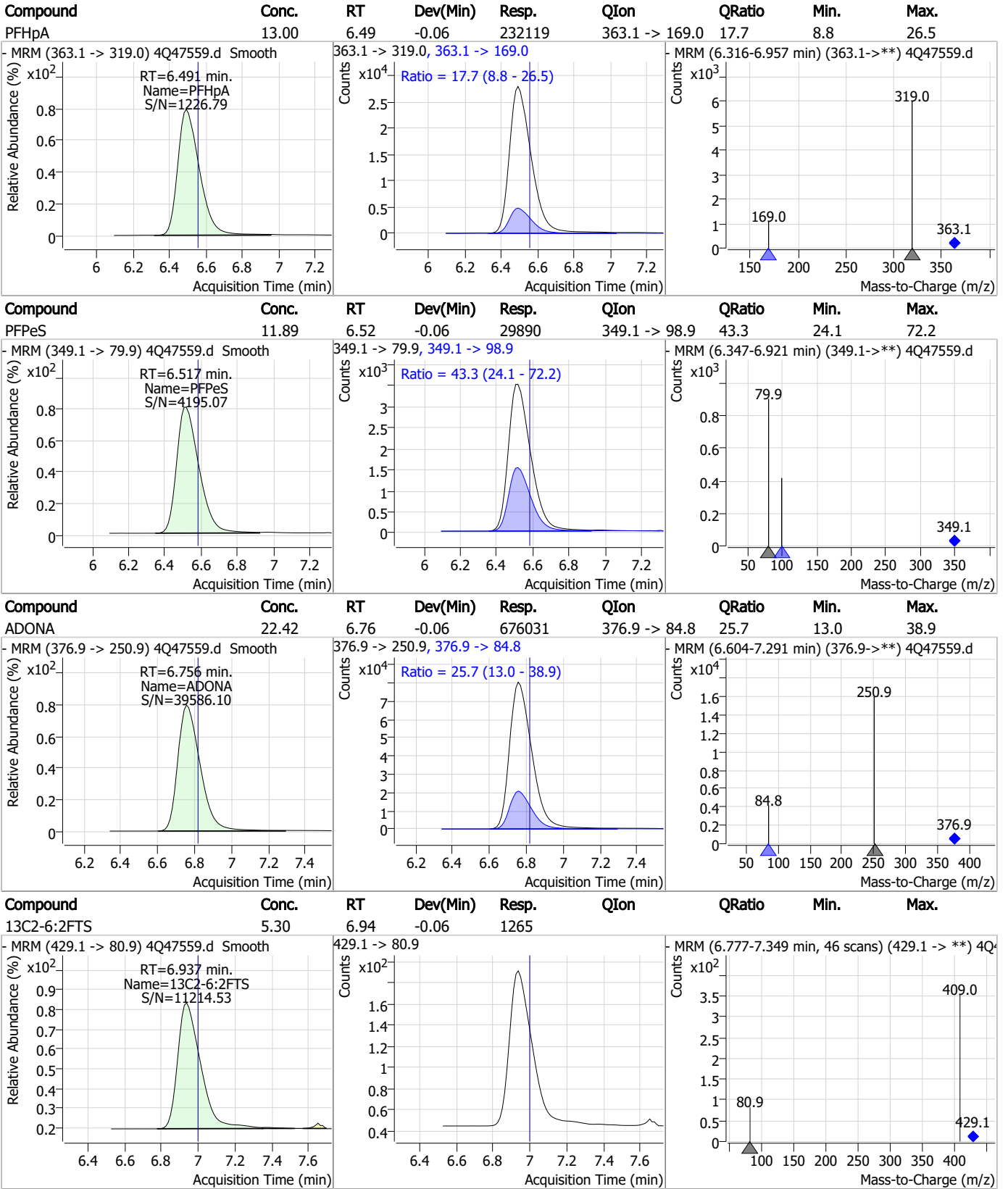


7.6.4

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Perfluorinated Compounds by LC/MS/MS

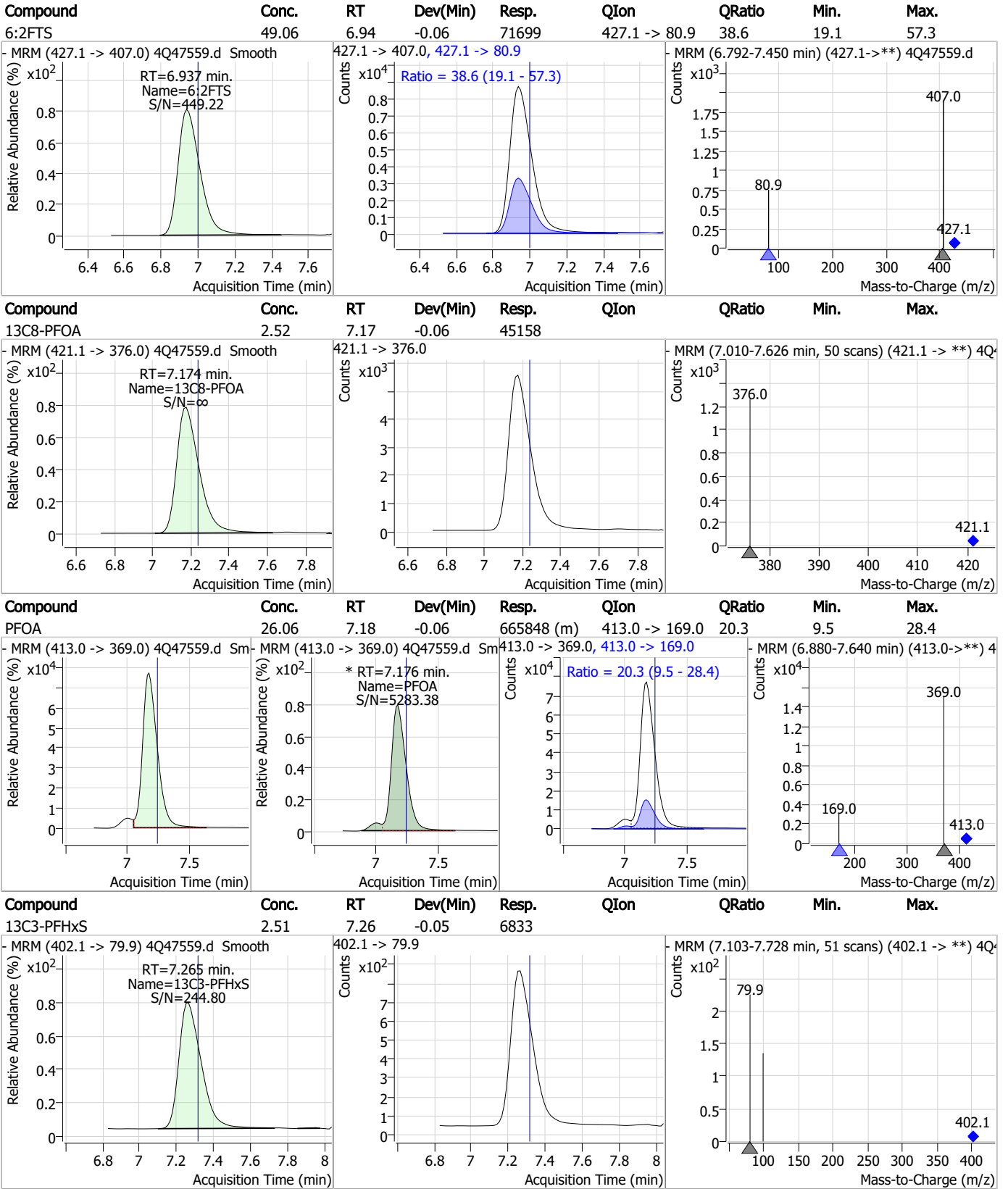


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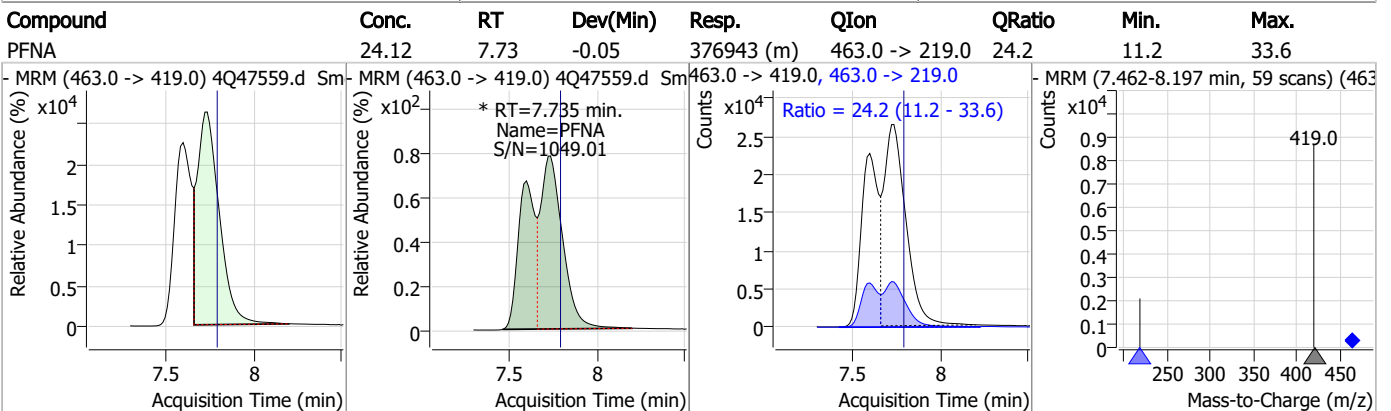
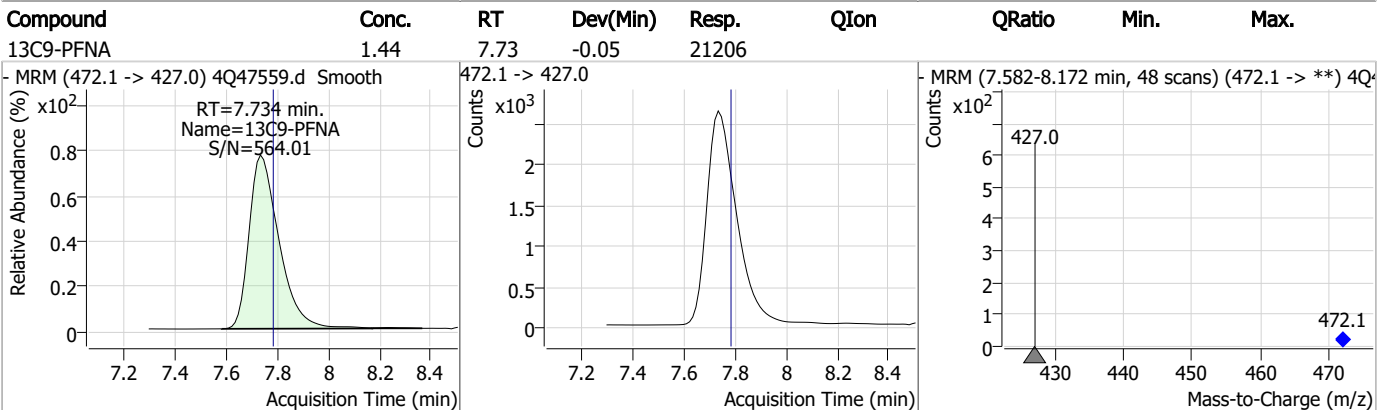
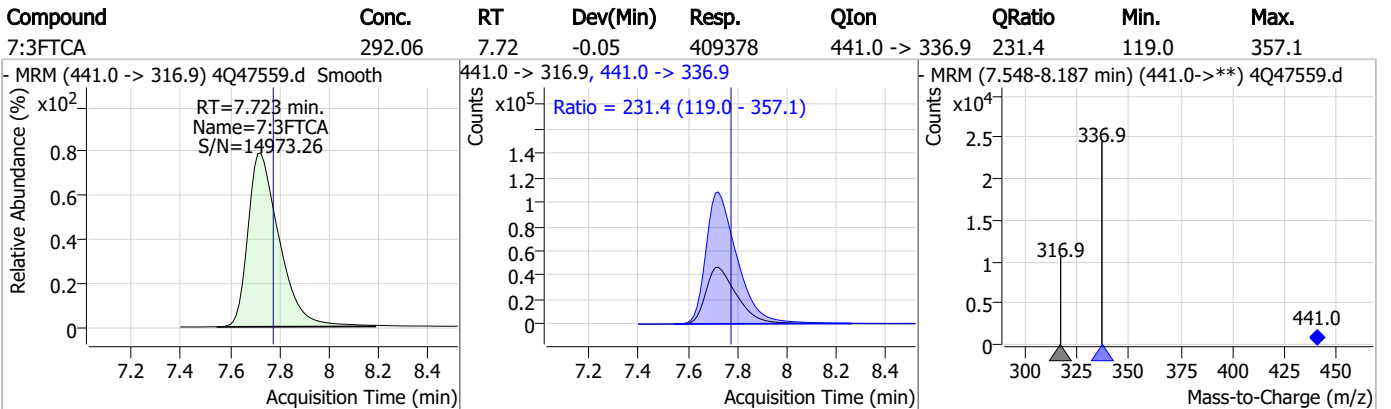
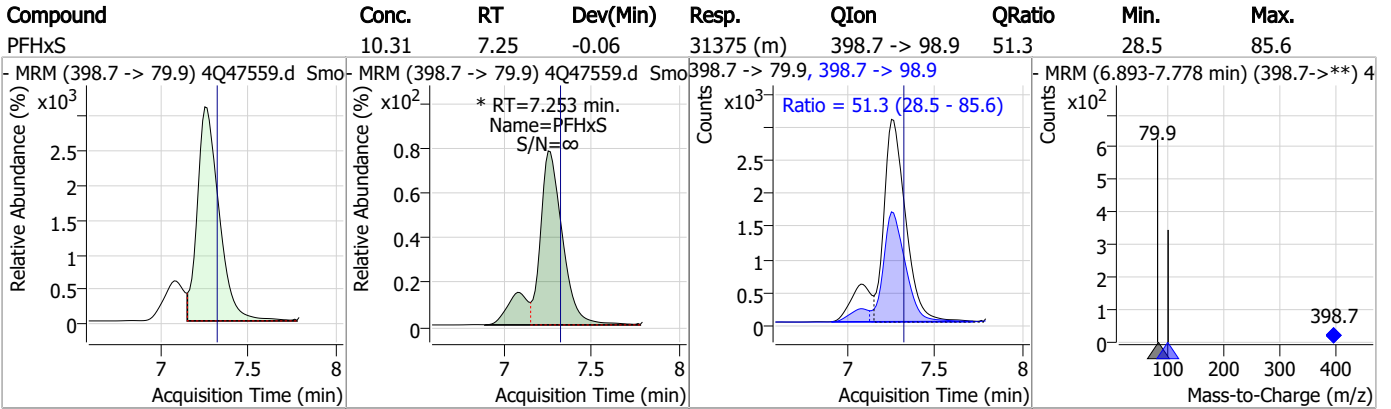
Perfluorinated Compounds by LC/MS/MS



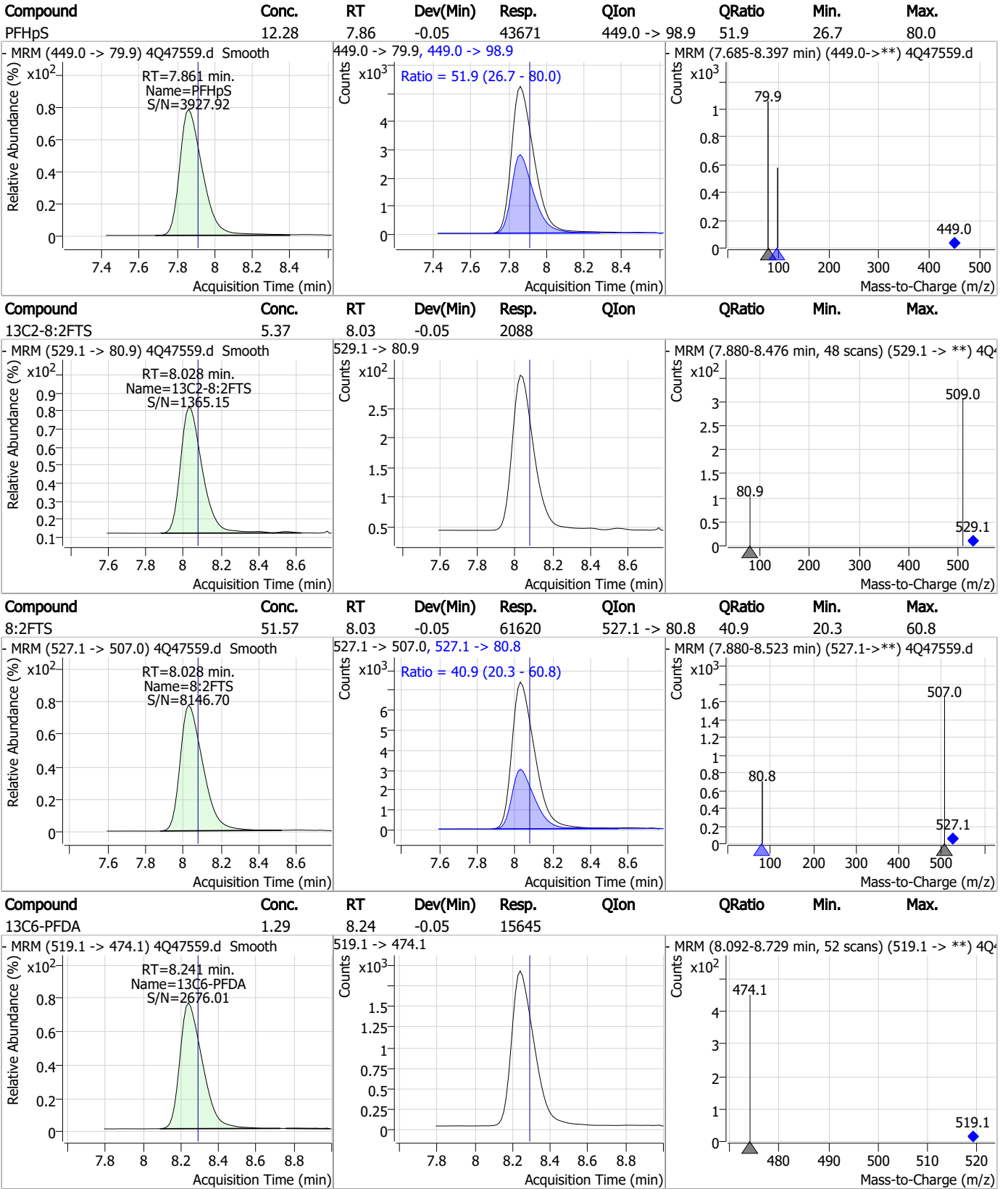
7.6.4

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

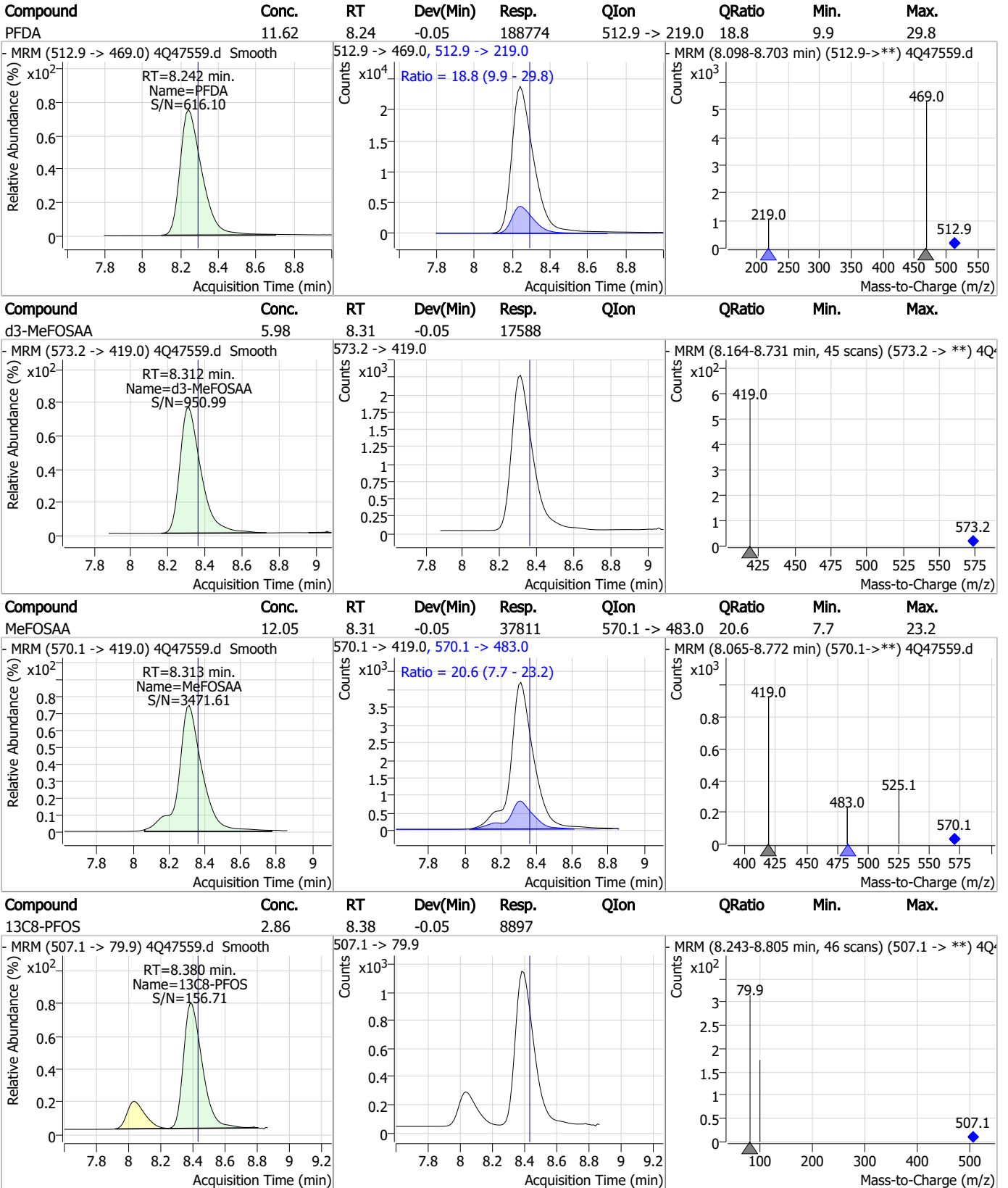


7.6.4

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Perfluorinated Compounds by LC/MS/MS

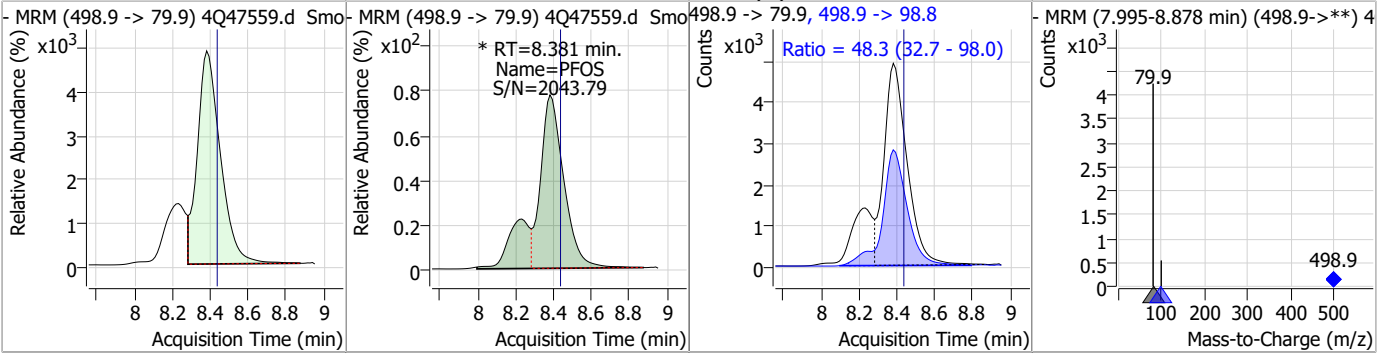


7.6.4

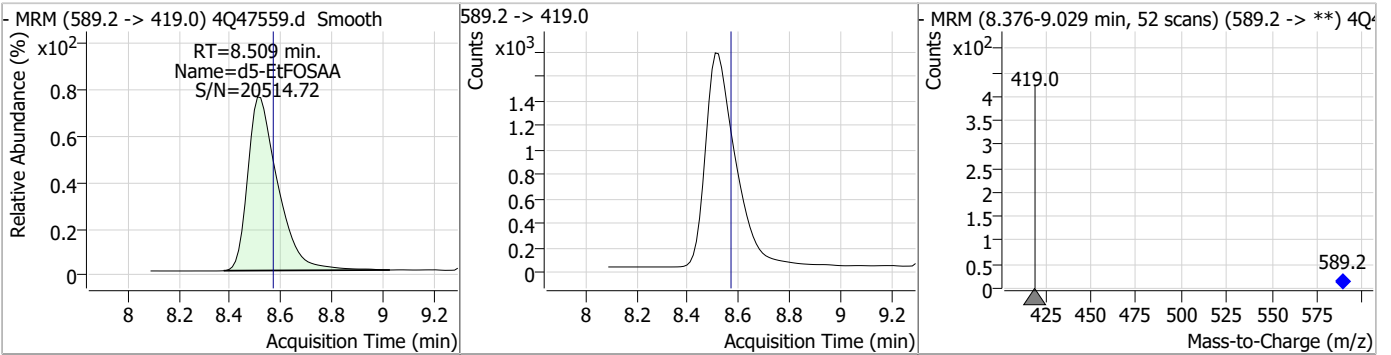
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Perfluorinated Compounds by LC/MS/MS

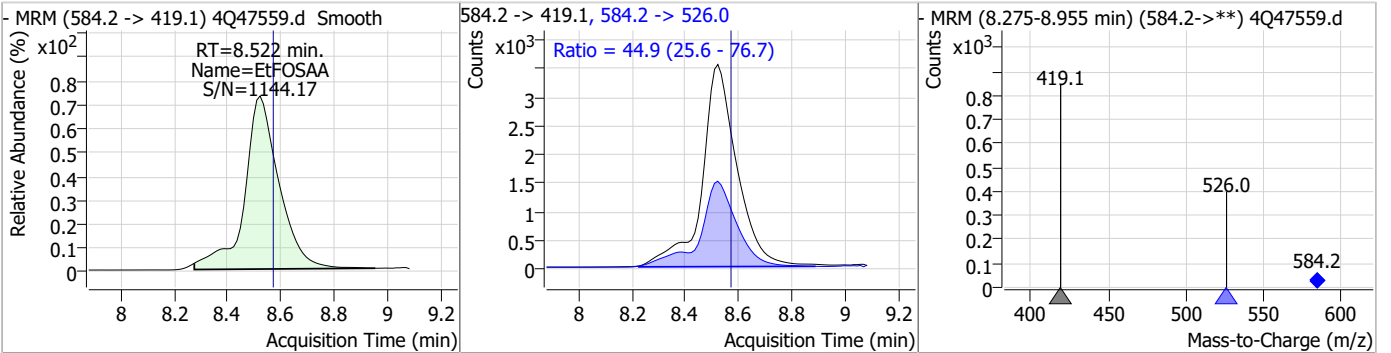
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	11.10	8.38	-0.05	52580 (m)	498.9 -> 98.8	48.3	32.7	98.0



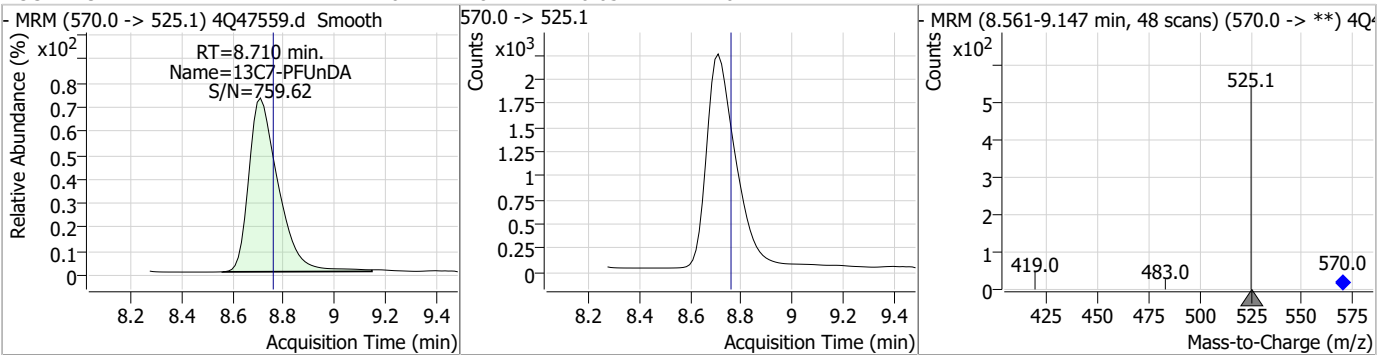
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.52	8.51	-0.06	14325				



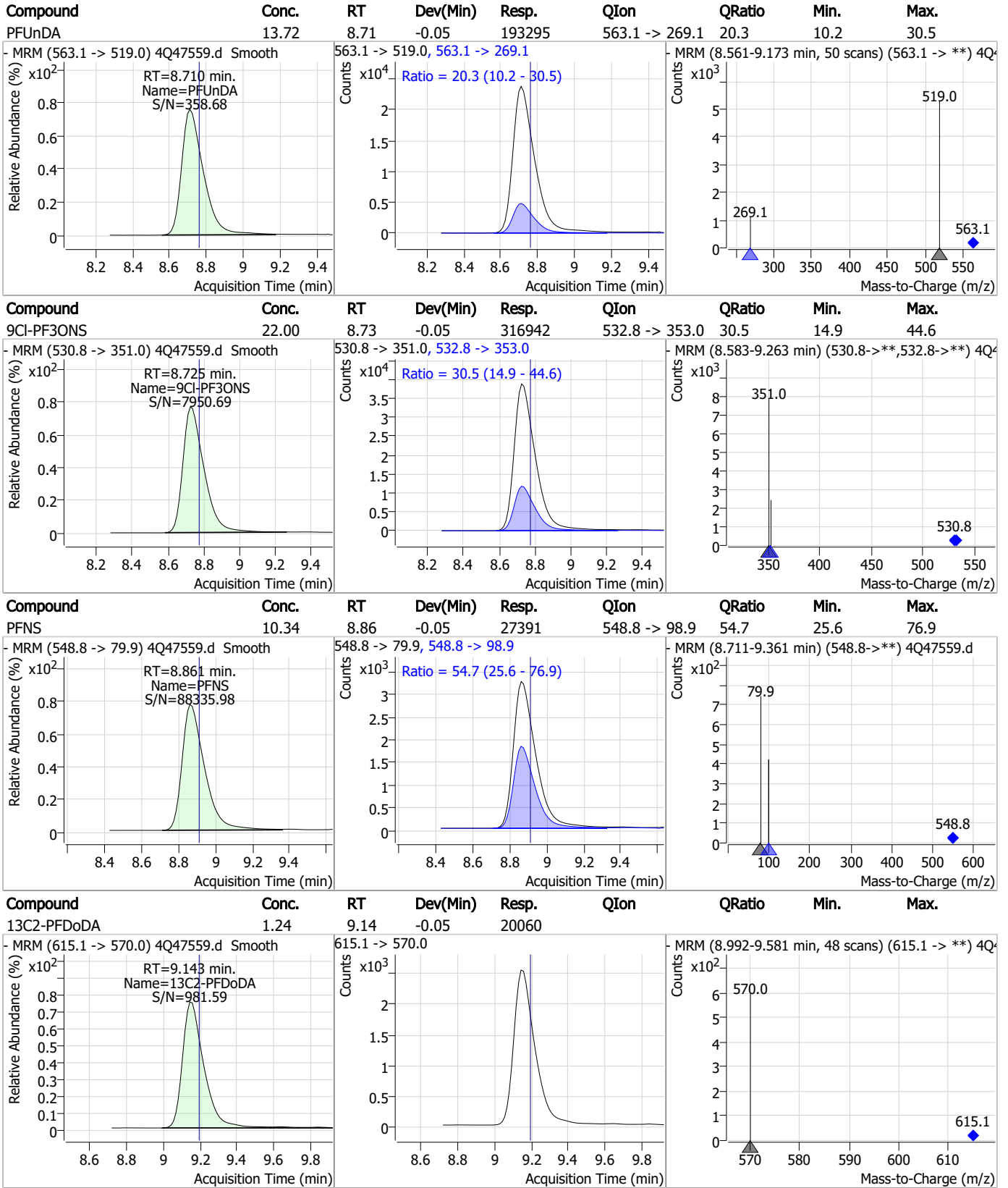
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	13.71	8.52	-0.05	31652	584.2 -> 526.0	44.9	25.6	76.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.16	8.71	-0.05	17762				



Perfluorinated Compounds by LC/MS/MS



7.6.4

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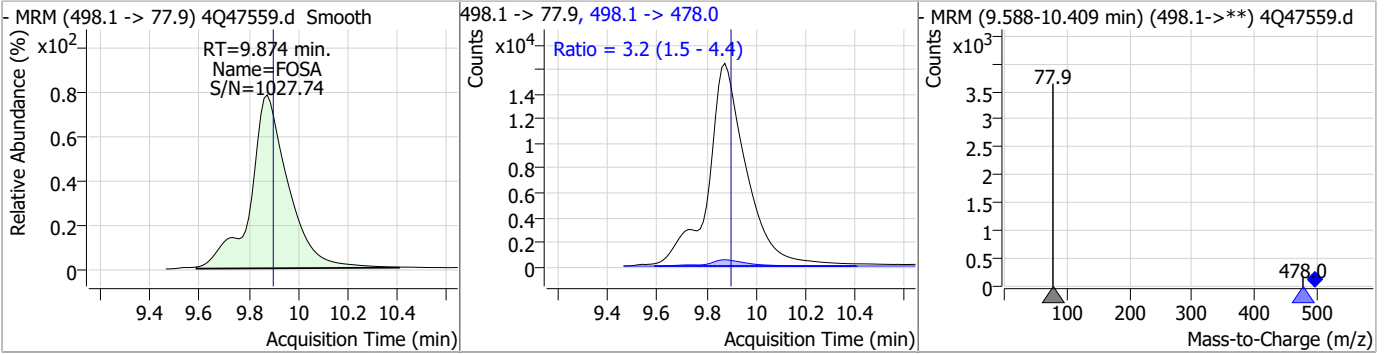


Perfluorinated Compounds by LC/MS/MS

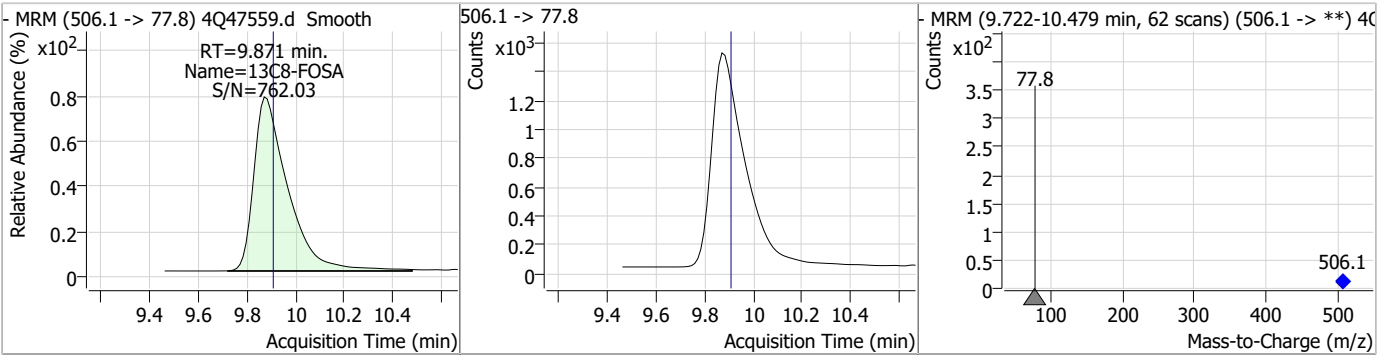
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	13.26	9.14	-0.05	214192	613.1 -> 319.0	15.7	7.3	21.9
PFDS	12.28	9.31	-0.04	30887	599.0 -> 98.8	51.5	24.4	73.2
PFTrDA	13.07	9.55	-0.04	233487	663.0 -> 168.9	11.8	6.6	19.8
11Cl-PF3OUdS	23.37	9.59	-0.04	251154	632.9 -> 452.9	30.5	15.6	46.8

Perfluorinated Compounds by LC/MS/MS

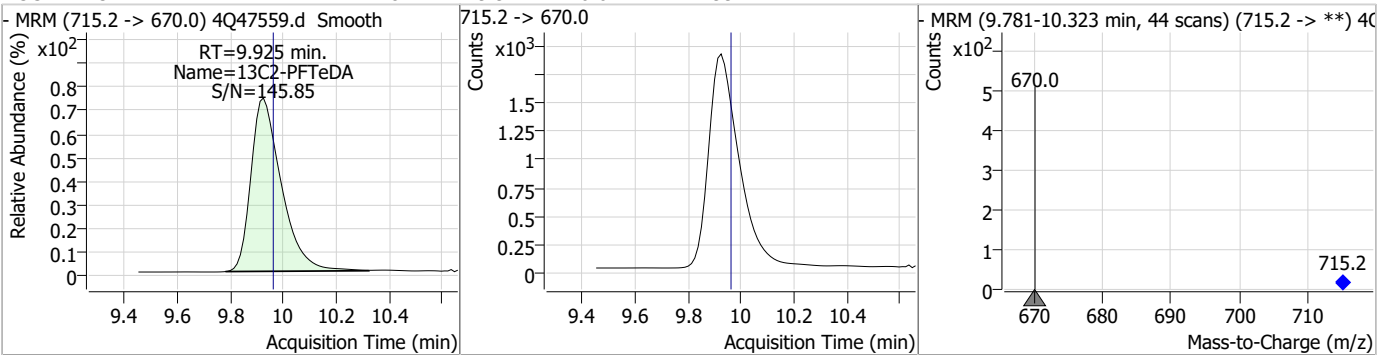
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	27.55	9.87	-0.02	175491	498.1 -> 478.0	3.2	1.5	4.4



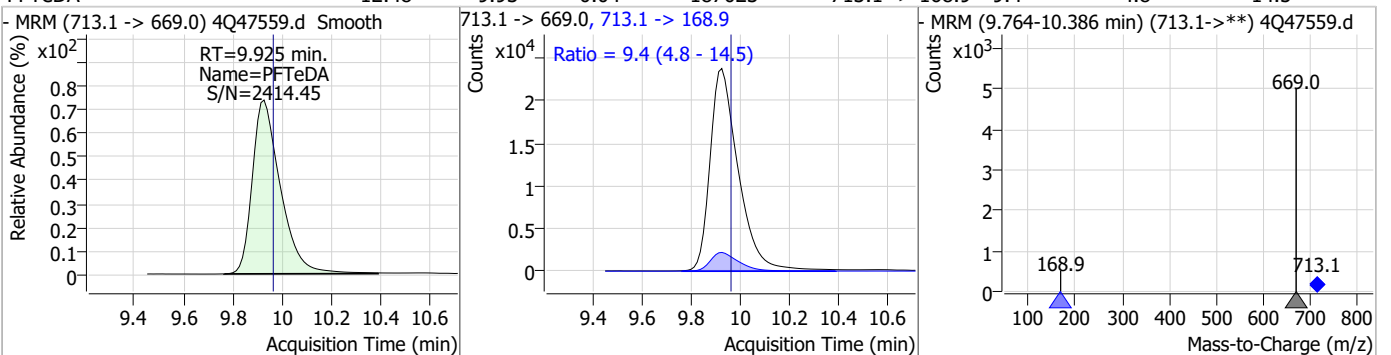
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	3.12	9.87	-0.04	14427				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.28	9.92	-0.04	14992				

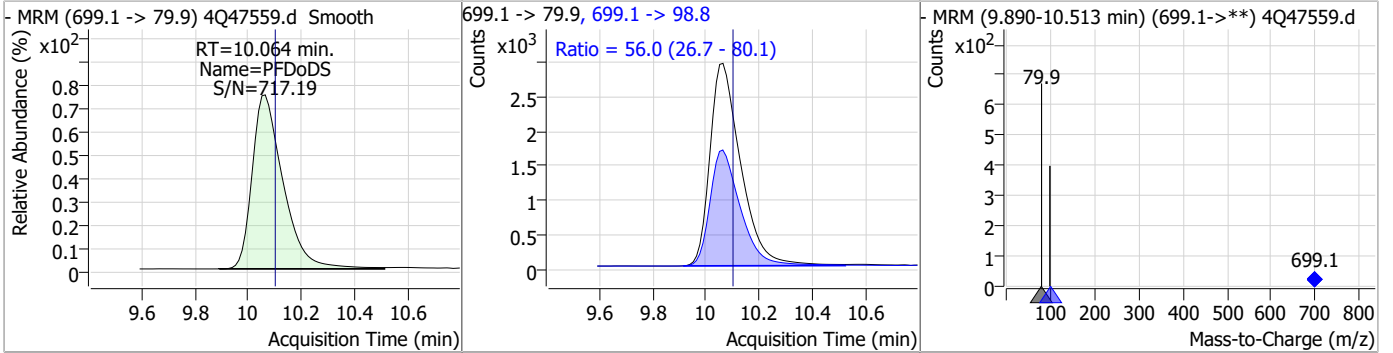


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	12.48	9.93	-0.04	187023	713.1 -> 168.9	9.4	4.8	14.5

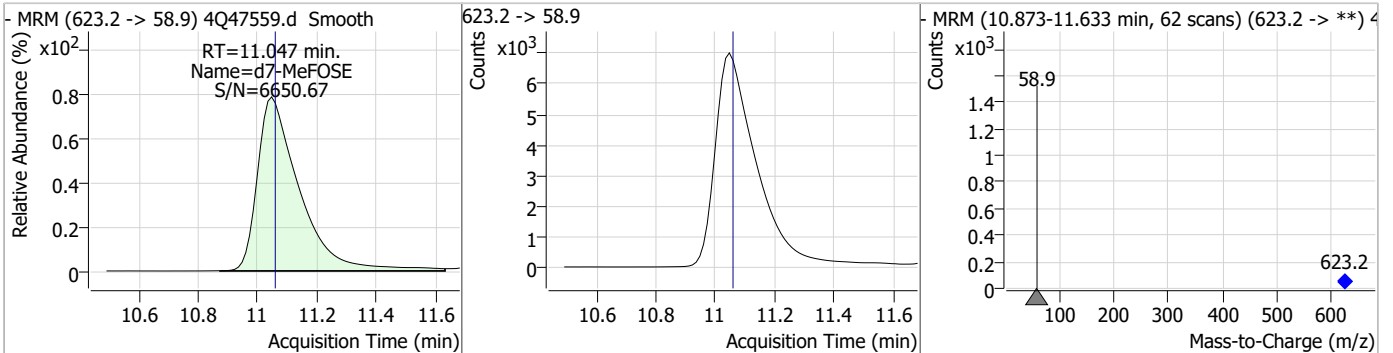


Perfluorinated Compounds by LC/MS/MS

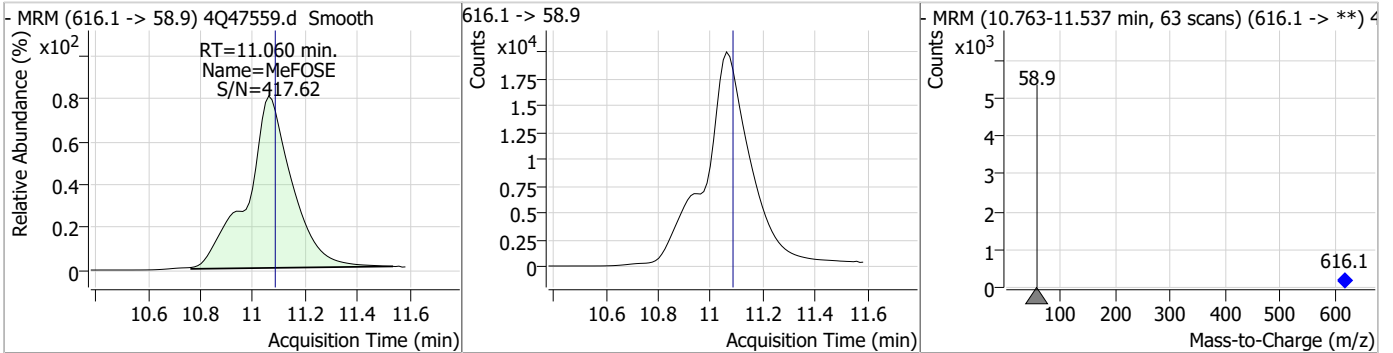
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	11.53	10.06	-0.04	23877	699.1 -> 98.8	56.0	26.7	80.1



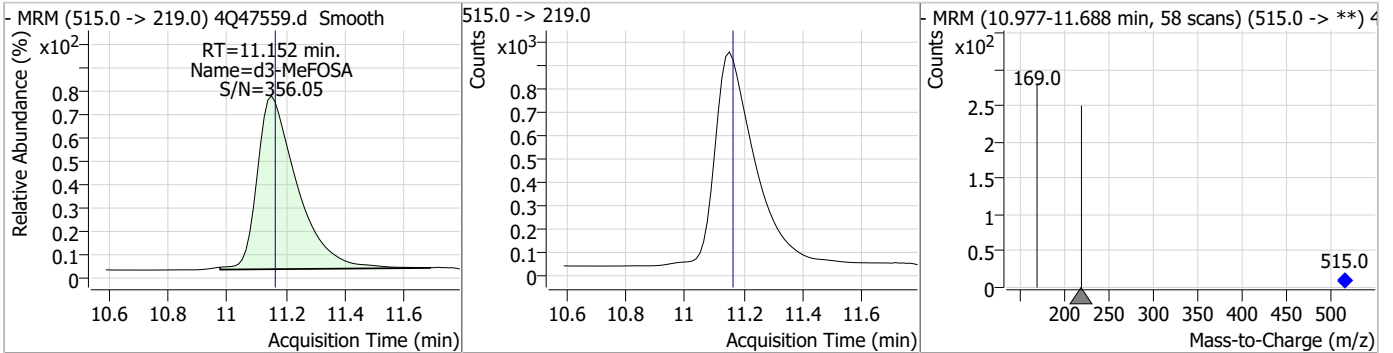
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	28.62	11.05	-0.01	68351				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	78.47	11.06	-0.02	236880				

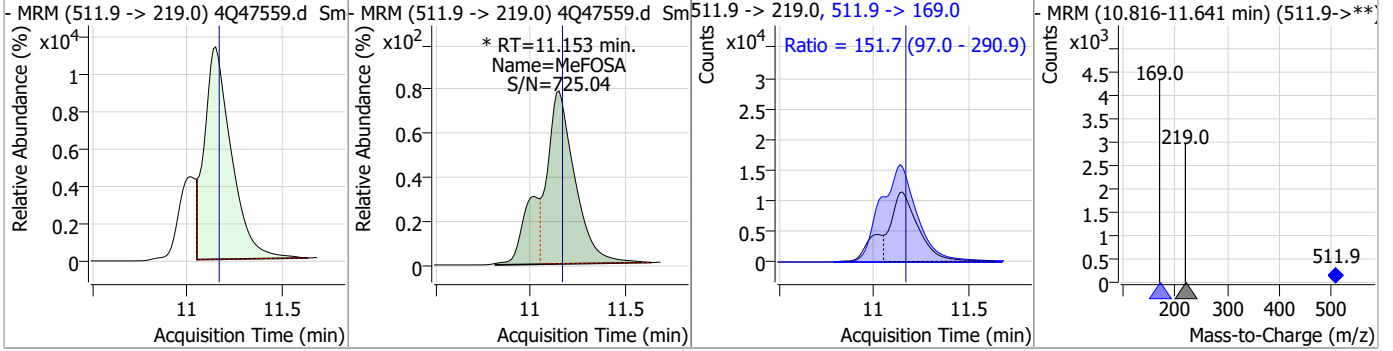


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.54	11.15	-0.01	8569				

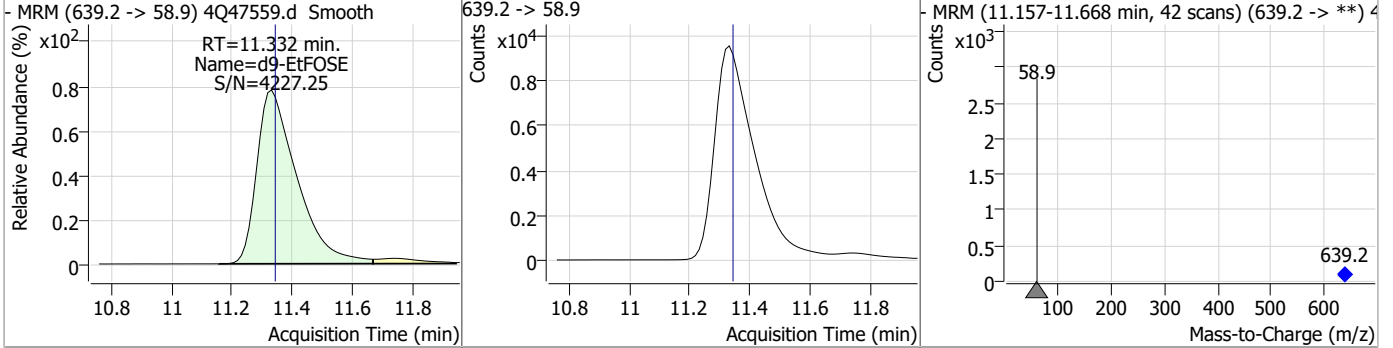


Perfluorinated Compounds by LC/MS/MS

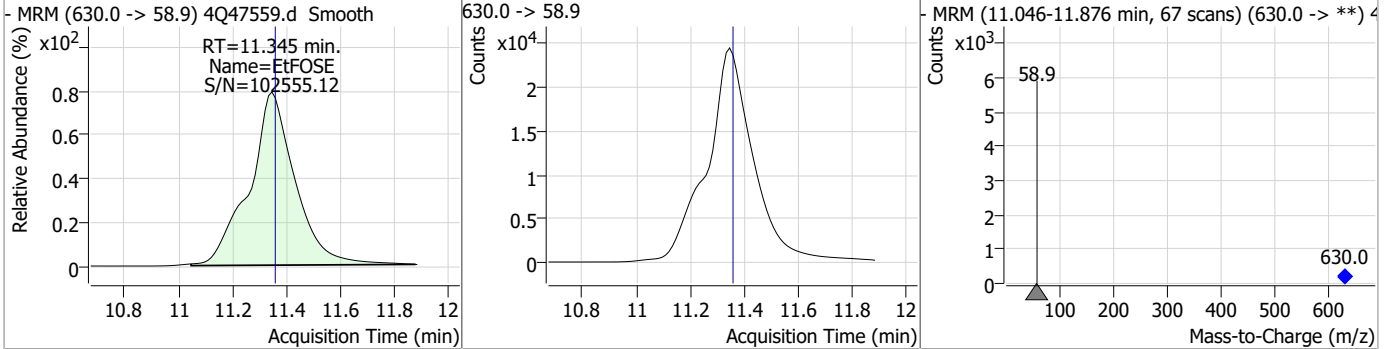
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	39.57	11.15	-0.01	141591 (m)	511.9 -> 169.0	151.7	97.0	290.9



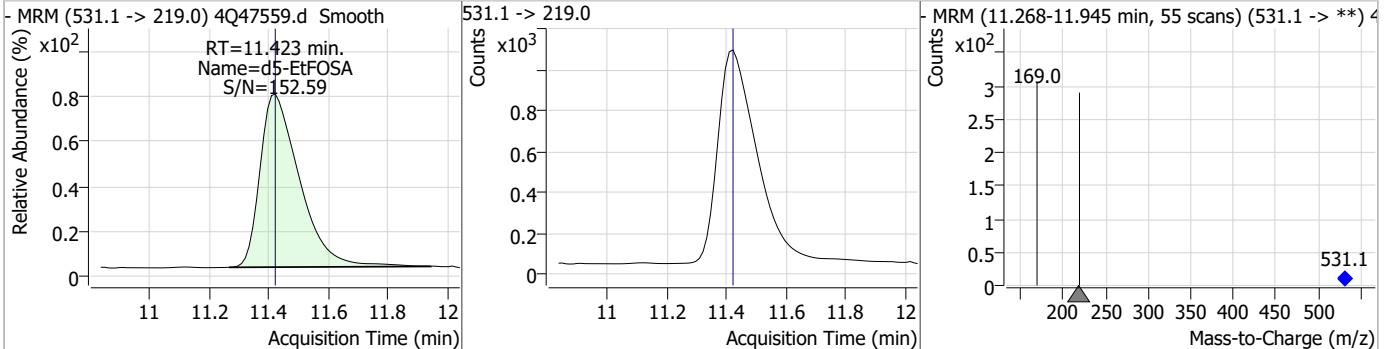
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	27.44	11.33	-0.01	87265				



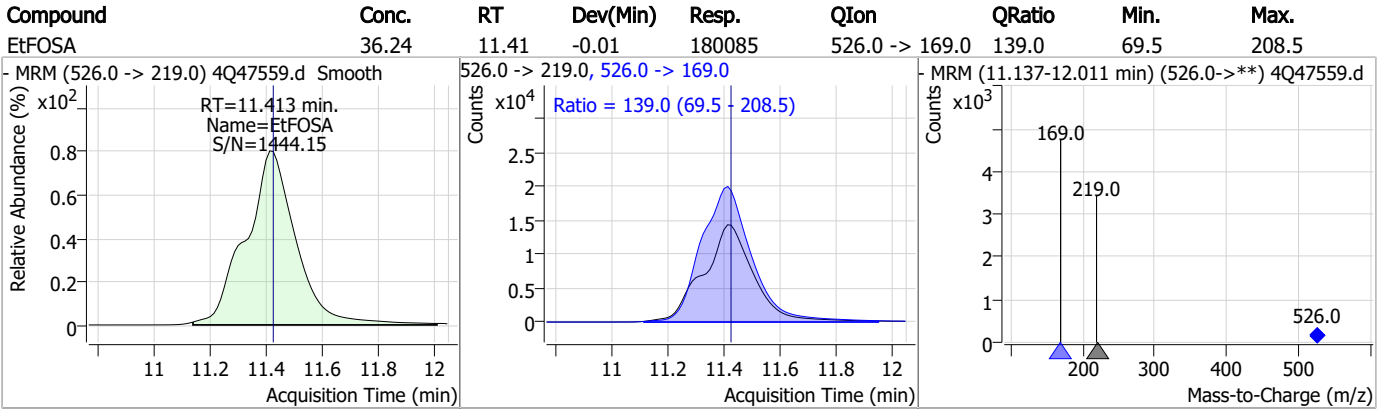
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	67.75	11.34	-0.01	286768				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.63	11.42	0.00	9641				



Perfluorinated Compounds by LC/MS/MS



7.6.4

7

Manual Integration Approval Summary

Sample Number: S4Q697-RT Method: EPA DRAFT 1633
Lab FileID: 4Q47559.D Analyst approved: 07/20/23 12:46 Anna Ludwig
Injection Time: 07/19/23 11:12 Supervisor approved: 07/20/23 15:43 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.18	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
Perfluorononanoic acid	375-95-1		7.74	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.38	Split peak
MeFOSA	31506-32-8		11.15	Split peak

7.6.4.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtie
 07/24/23 09:53

Perfluorinated Compounds by LC/MS/MS

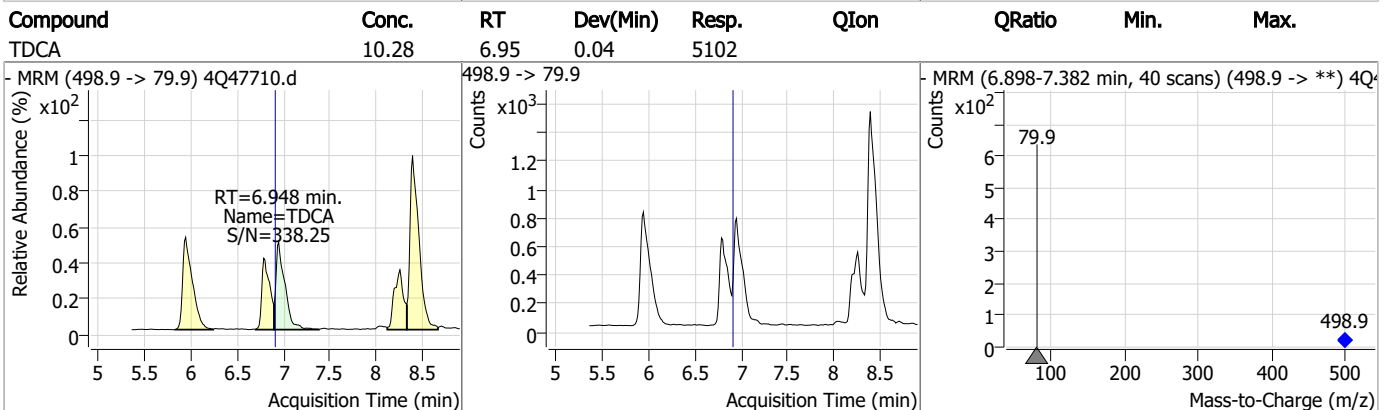
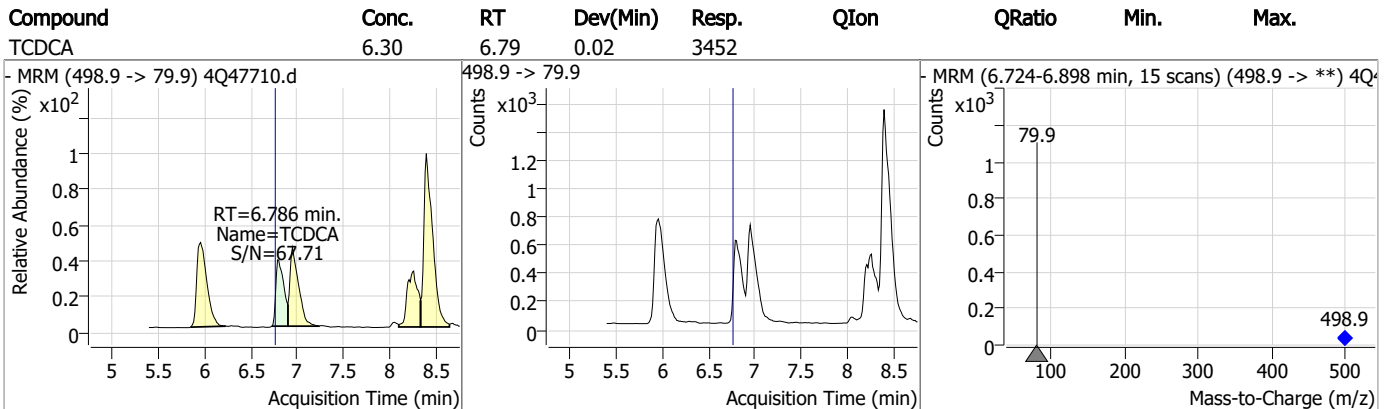
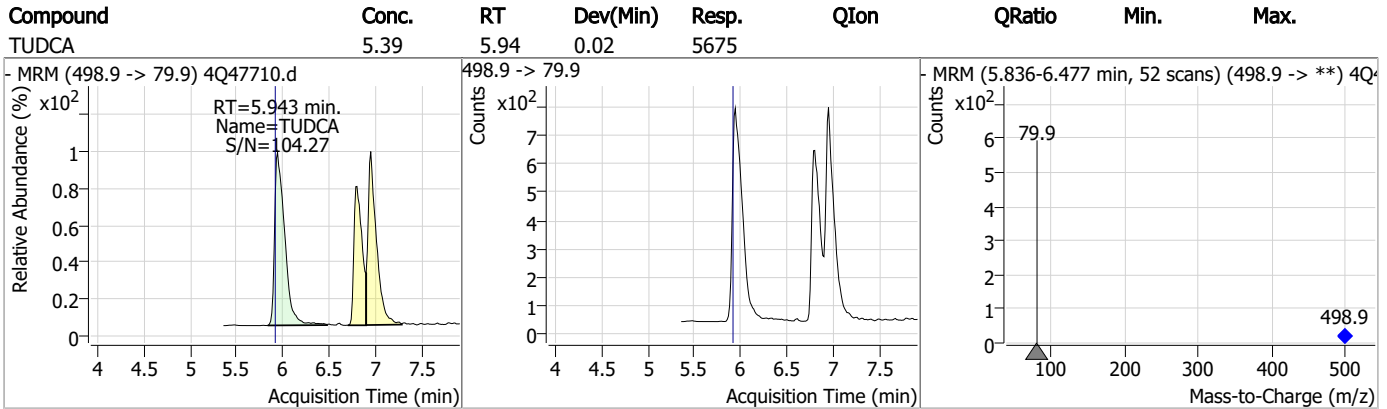
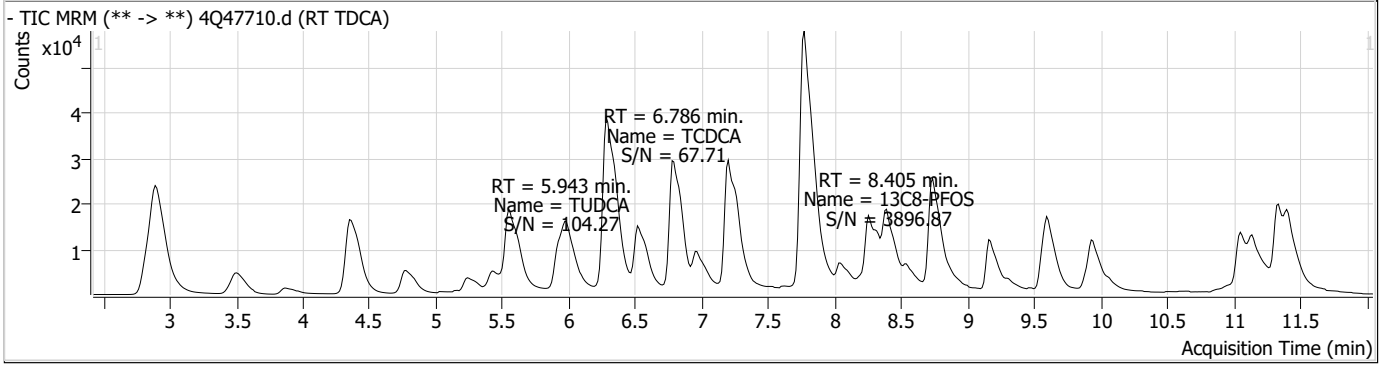
Data File : 4Q47710.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/21/2023 12:53:53 AM
 Sample Name : RT TDCA
 Vial : P1-B1
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q699_TDCA.batch.bin
 Sample Information : OP97749,S4Q699,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.405	507.1 -> 79.9	11876	2.50	µg/L	0.012	
13C4-PFOS	8.405	502.8 -> 79.9	14525	2.50	µg/L	0.025	
System Monitoring Compounds							
13C8-PFOS	8.405	507.1 -> 79.9	11876	2.07	µg/L	0.012	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 83.0%				
Target Compounds							
PFOS	8.406	498.9 -> 79.9 498.9 -> 98.8	13146 6616	3.24	µg/L	m	79
TCDCa	6.786	498.9 -> 79.9	3452	6.30	ng/ml		100
TDCA	6.948	498.9 -> 79.9	5102	10.28	ng/ml		100
TUDCA	5.943	498.9 -> 79.9	5675	5.39	ng/ml		100

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

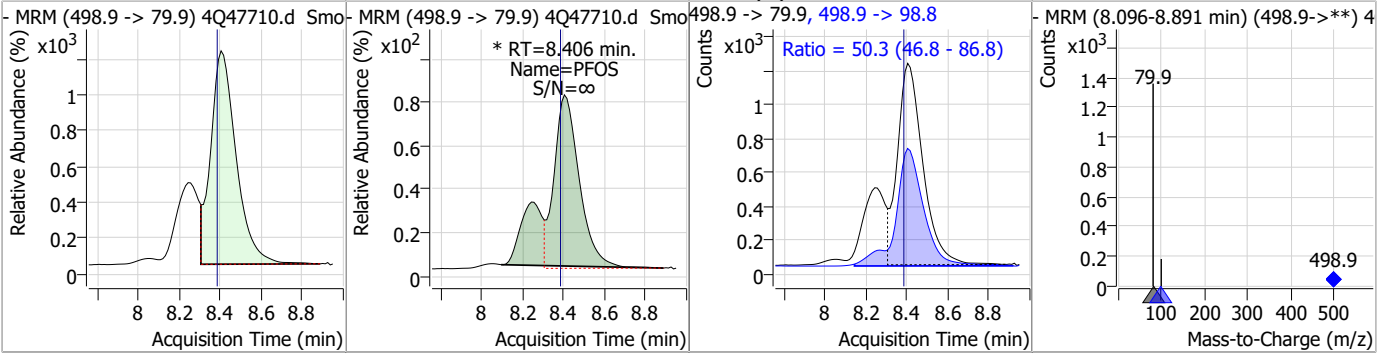
7.6.5
7

Perfluorinated Compounds by LC/MS/MS

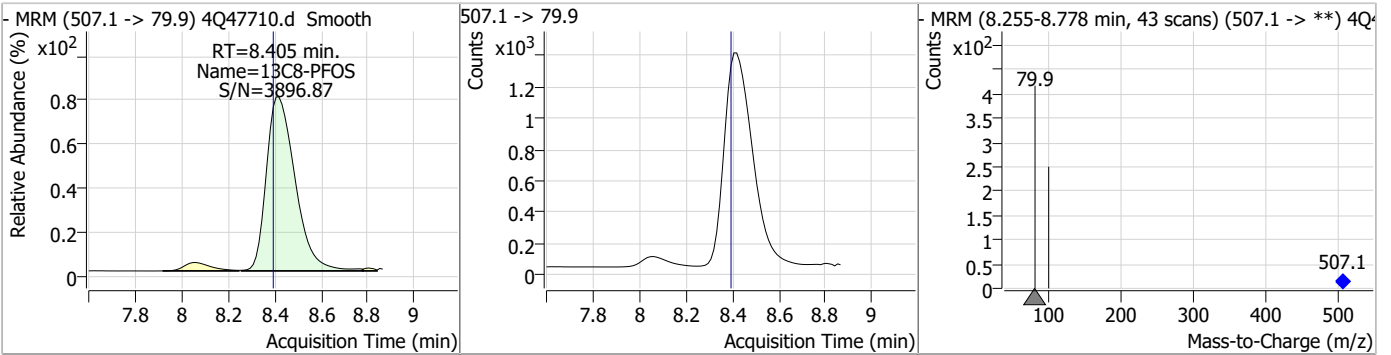


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	3.24	8.41	0.02	13146 (m)	498.9 -> 98.8	50.3	46.8	86.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.07	8.40	0.01	11876				



7.6.5

7

Manual Integration Approval Summary

Sample Number: S4Q699-RT Method: EPA DRAFT 1633
Lab FileID: 4Q47710.D Analyst approved: 07/23/23 11:07 Anna Ludwig
Injection Time: 07/21/23 00:53 Supervisor approved: 07/24/23 09:53 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak

7.6.5.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47711.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/21/2023 1:08:37 AM
 Sample Name : RT br/lr
 Vial : P1-B2
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q699.batch.bin
 Sample Information : OP97749,S4Q699,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.836	216.8 -> 171.9	124160	10.00 µg/L	-0.075
M5-PFPeA	4.348	268.3 -> 223.0	54364	5.00 µg/L	-0.040
M5-PFHxA	5.561	318.0 -> 273.0	44212	2.50 µg/L	-0.037
M4-PFHpA	6.530	367.1 -> 322.0	31903	2.50 µg/L	-0.025
M8-PFOA	7.211	421.1 -> 376.0	48286	2.50 µg/L	-0.025
M9-PFNA	7.771	472.1 -> 427.0	22435	1.25 µg/L	-0.012
M6-PFDA	8.266	519.1 -> 474.1	16494	1.25 µg/L	-0.026
M7-PFUnDA	8.735	570.0 -> 525.1	19910	1.25 µg/L	-0.025
M2-PFDoDA	9.169	615.1 -> 570.0	22078	1.25 µg/L	-0.025
M2-PFTeDA	9.950	715.2 -> 670.0	14701	1.25 µg/L	-0.012
M8-FOSA	9.921	506.1 -> 77.8	14557	2.50 µg/L	0.012
M3-PFBS	5.441	302.1 -> 79.9	10416	2.50 µg/L	-0.037
M3-PFHxS	7.304	402.1 -> 79.9	7484	2.50 µg/L	-0.012
M8-PFOS	8.405	507.1 -> 79.9	9425	2.50 µg/L	-0.025
M2-4:2FTS	5.247	329.1 -> 80.9	769	5.00 µg/L	-0.037
M2-6:2FTS	6.986	429.1 -> 80.9	1358	5.00 µg/L	-0.012
M2-8:2FTS	8.066	529.1 -> 80.9	1982	5.00 µg/L	-0.012
M3-MeFOSAA	8.337	573.2 -> 419.0	17337	5.00 µg/L	-0.025
M3-HFPO-DA	5.928	286.9 -> 168.9	39023	10.00 µg/L	-0.037
M5-EtFOSAA	8.546	589.2 -> 419.0	15921	5.00 µg/L	-0.025
M7-MeFOSE	11.059	623.2 -> 58.9	68404	25.00 µg/L	0.000
M9-EtFOSE	11.344	639.2 -> 58.9	87067	25.00 µg/L	0.000
M5-EtFOSA	11.423	531.1 -> 219.0	9189	2.50 µg/L	0.000
M3-MeFOSA	11.164	515.0 -> 219.0	9745	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	11019	2.50 µg/L	-0.025
13C3-PFBA	2.841	216.0 -> 172.0	63478	5.00 µg/L	-0.075
18O2-PFHxS	7.289	403.0 -> 83.9	5236	2.50 µg/L	-0.027
13C4-PFOA	7.212	417.1 -> 372.0	60086	2.50 µg/L	-0.025
13C2-PFDA	8.266	515.1 -> 470.1	17427	1.25 µg/L	-0.026
13C5-PFNA	7.772	468.0 -> 423.0	26041	1.25 µg/L	-0.012
13C2-PFHxA	5.562	315.1 -> 270.0	41392	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	769	6.54 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.7%		
13C2-6:2FTS	6.986	429.1 -> 80.9	1358	5.27 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.4%		
13C2-8:2FTS	8.066	529.1 -> 80.9	1982	4.73 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.5%		
13C2-PFDoDA	9.169	615.1 -> 570.0	22078	1.36 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 109.0%		
13C2-PFTeDA	9.950	715.2 -> 670.0	14701	1.26 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C3-PFBS	5.441	302.1 -> 79.9	10416	2.60 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.9%		
13C3-PFHxS	7.304	402.1 -> 79.9	7484	2.55 µg/L	-0.012

7.6.6
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C4-PFBA	2.836	216.8 -> 171.9	124160	10.35 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.5%	
13C4-PFHpA	6.530	367.1 -> 322.0	31903	2.51 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C5-PFHxA	5.561	318.0 -> 273.0	44212	2.50 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C5-PFPeA	4.348	268.3 -> 223.0	54364	4.76 µg/L	-0.040
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.2%	
13C6-PFDA	8.266	519.1 -> 474.1	16494	1.37 µg/L	-0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.4%	
13C7-PFUnDA	8.735	570.0 -> 525.1	19910	1.30 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.0%	
13C8-FOSA	9.921	506.1 -> 77.8	14557	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C8-PFOA	7.211	421.1 -> 376.0	48286	2.47 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C8-PFOS	8.405	507.1 -> 79.9	9425	2.46 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C9-PFNA	7.771	472.1 -> 427.0	22435	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.1%	
d3-MeFOSAA	8.337	573.2 -> 419.0	17337	4.78 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.7%	
13C3-HFPO-DA	5.928	286.9 -> 168.9	39023	8.85 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 88.5%	
d3-MeFOSA	11.164	515.0 -> 219.0	9745	2.35 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.8%	
d5-EtFOSAA	8.546	589.2 -> 419.0	15921	4.98 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.6%	
d7-MeFOSE	11.059	623.2 -> 58.9	68404	23.26 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 93.1%	
d9-EtFOSE	11.344	639.2 -> 58.9	87067	22.24 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.0%	
d5-EtFOSA	11.423	531.1 -> 219.0	9189	2.04 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 81.5%	
Target Compounds					QValue
4:2FTS	5.247	327.1 -> 307.0	59046	43.28 µg/L	96
		327.1 -> 80.9	25076		
6:2FTS	6.974	427.1 -> 407.0	82499	52.57 µg/L	94
		427.1 -> 80.9	28571		
8:2FTS	8.054	527.1 -> 507.0	67743	59.73 µg/L	98
		527.1 -> 80.8	26627		
EtFOSAA	8.547	584.2 -> 419.1	31994	12.47 µg/L	97
		584.2 -> 526.0	16962		
FOSA	9.912	498.1 -> 77.9	181908	28.30 µg/L	99
		498.1 -> 478.0	6040		
MeFOSAA	8.338	570.1 -> 419.0	41993	13.58 µg/L	88
		570.1 -> 483.0	8551		
PFBA	2.832	212.8 -> 168.9	194295	52.02 µg/L	100
PFBS	5.443	298.7 -> 79.9	50372	11.60 µg/L	98
		298.7 -> 98.8	19820		
PFDA	8.266	512.9 -> 469.0	221317	12.92 µg/L	97
		512.9 -> 219.0	41257		
PFDoDA	9.170	613.1 -> 569.0	239830	13.49 µg/L	98
		613.1 -> 319.0	36789		
PFDS	9.321	599.0 -> 79.9	31441	11.80 µg/L	96

7.6.6
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.531	599.0 -> 98.8	16238	12.74	µg/L	99
		363.1 -> 319.0	250172			
PFHpS	7.886	363.1 -> 169.0	43184	11.62	µg/L	98
		449.0 -> 79.9	43764			
PFHxA	5.563	449.0 -> 98.9	22682	12.80	µg/L	100
		313.0 -> 269.0	221440			
PFHxS	7.291	313.0 -> 118.9	6405	11.49	µg/L	m
		398.7 -> 79.9	38308			
PFNA	7.760	398.7 -> 98.9	20179	24.40	µg/L	m
		463.0 -> 419.0	403480			
PFNS	8.887	463.0 -> 219.0	101648	11.79	µg/L	99
		548.8 -> 79.9	33092			
PFOA	7.213	548.8 -> 98.9	17245	27.61	µg/L	m
		413.0 -> 369.0	754191			
PFOS	8.406	413.0 -> 169.0	149165	11.60	µg/L	m
		498.9 -> 79.9	58204			
PFPeA	4.350	498.9 -> 98.8	29093	27.38	µg/L	100
		263.0 -> 219.0	419722			
PFPeS	6.545	349.1 -> 79.9	30943	11.23	µg/L	98
		349.1 -> 98.9	14490			
PFTeDA	9.938	713.1 -> 669.0	200078	13.62	µg/L	99
		713.1 -> 168.9	18469			
PFTrDA	9.578	663.0 -> 619.0	240619	12.23	µg/L	97
		663.0 -> 168.9	29066			
PFUnDA	8.736	563.1 -> 519.0	212259	13.44	µg/L	100
		563.1 -> 269.1	43025			
11Cl-PF3OUdS	9.618	630.9 -> 450.9	279007	26.80	µg/L	99
		632.9 -> 452.9	86047			
9Cl-PF3ONS	8.750	530.8 -> 351.0	380189	27.24	µg/L	97
		532.8 -> 353.0	118547			
ADONA	6.794	376.9 -> 250.9	782671	26.79	µg/L	100
		376.9 -> 84.8	203898			
HFPO-DA	5.941	284.9 -> 168.9	105896	26.27	µg/L	97
		284.9 -> 184.9	11622			
3:3FTCA	3.823	241.0 -> 177.0	58451	68.01	µg/L	99
		241.0 -> 117.0	5012			
5:3FTCA	6.281	341.0 -> 237.1	953996	331.73	µg/L	100
		341.0 -> 217.0	673068			
7:3FTCA	7.787	441.0 -> 316.9	517082	325.76	µg/L	98
		441.0 -> 336.9	1209666			
EtFOSA	11.425	526.0 -> 219.0	201744	42.60	µg/L	99
		526.0 -> 169.0	278573			
EtFOSE	11.357	630.0 -> 58.9	328732	77.84	µg/L	100
		511.9 -> 219.0	160689			
MeFOSA	11.166	511.9 -> 169.0	248002	39.48	µg/L	73
		616.1 -> 58.9	226726			
MeFOSE	11.073	699.1 -> 79.9	25970	75.05	µg/L	100
		699.1 -> 98.8	14679			
PFDoDS	10.077	295.0 -> 201.0	24099	11.84	µg/L	96
		295.0 -> 84.9	6044			
NFDHA	5.443	279.0 -> 85.1	223206	23.75	µg/L	98
		229.0 -> 84.9	211029			
PFMBA	4.772	314.8 -> 134.9	298839	27.07	µg/L	100
		314.8 -> 82.9	9995			
PFMPA	3.474			26.96	µg/L	100
PFEESA	5.985			22.87	µg/L	100

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

7.6.6
7

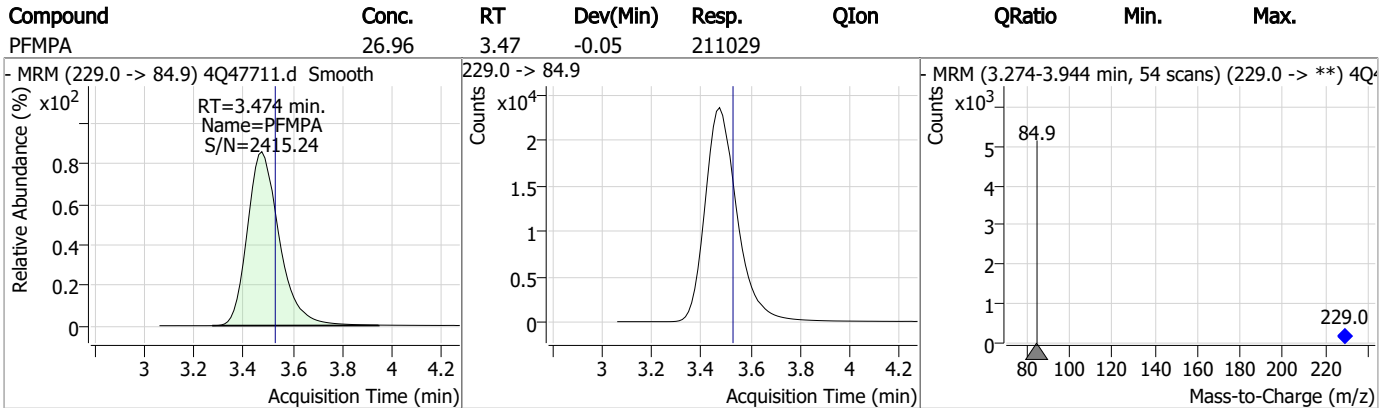
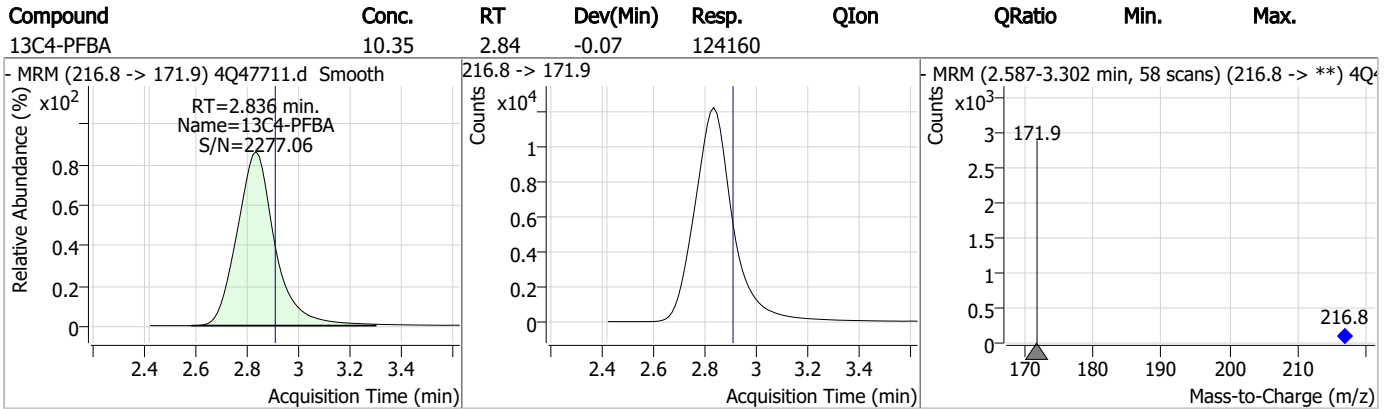
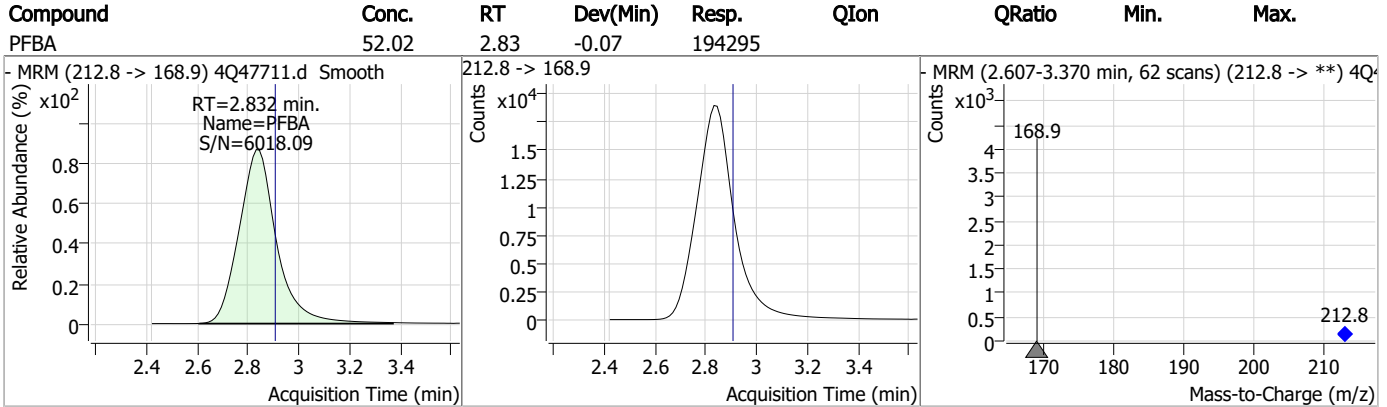
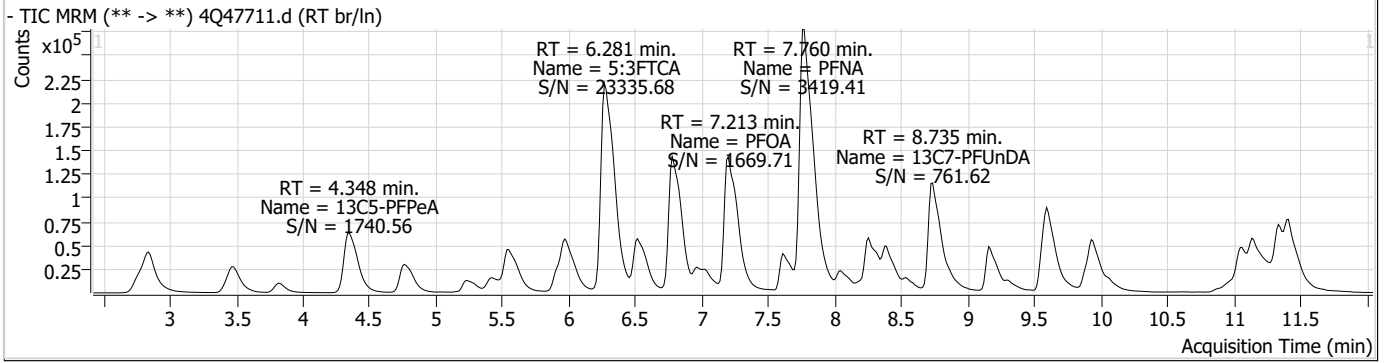
Perfluorinated Compounds by LC/MS/MS

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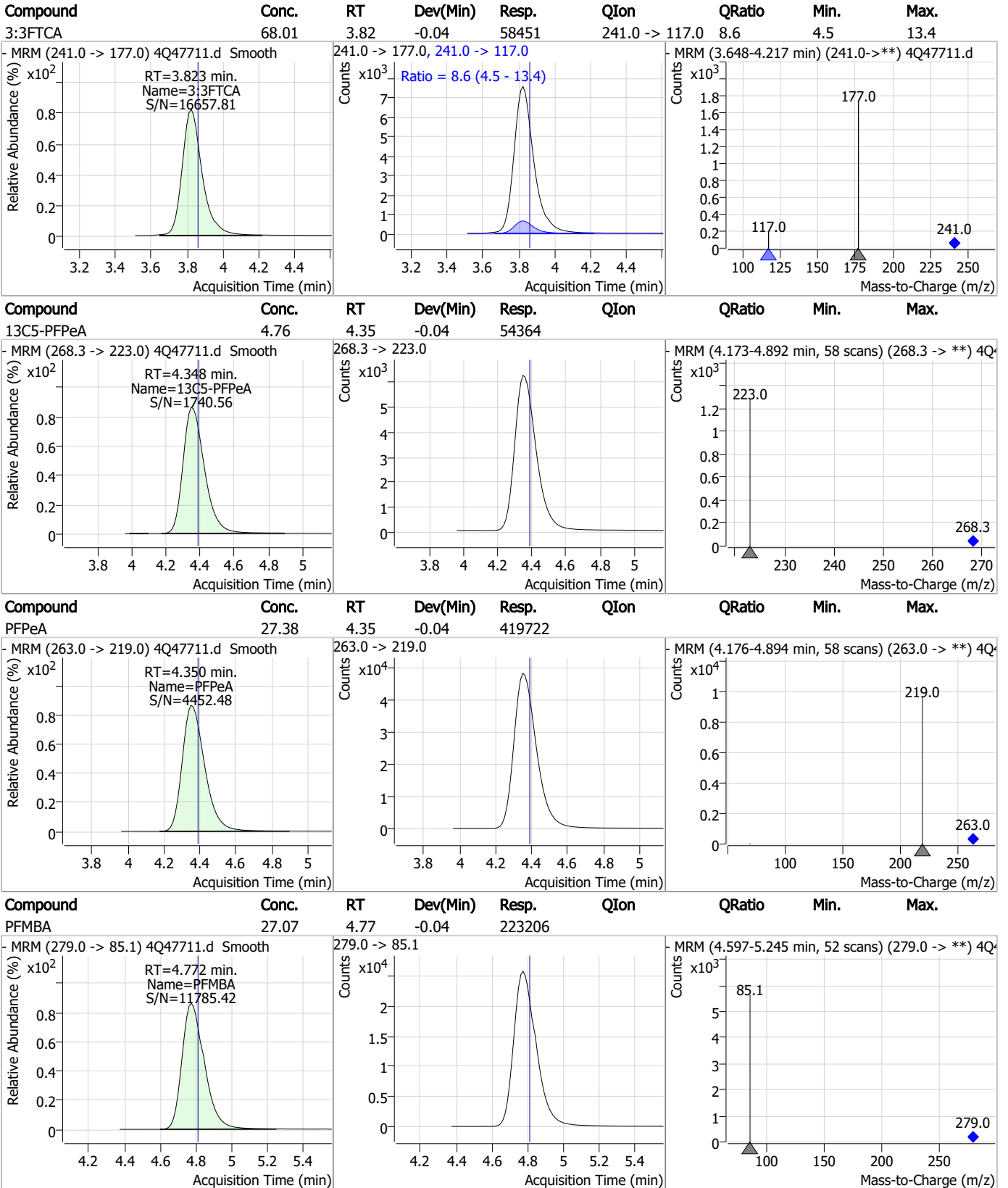
7.6.6

7

Perfluorinated Compounds by LC/MS/MS

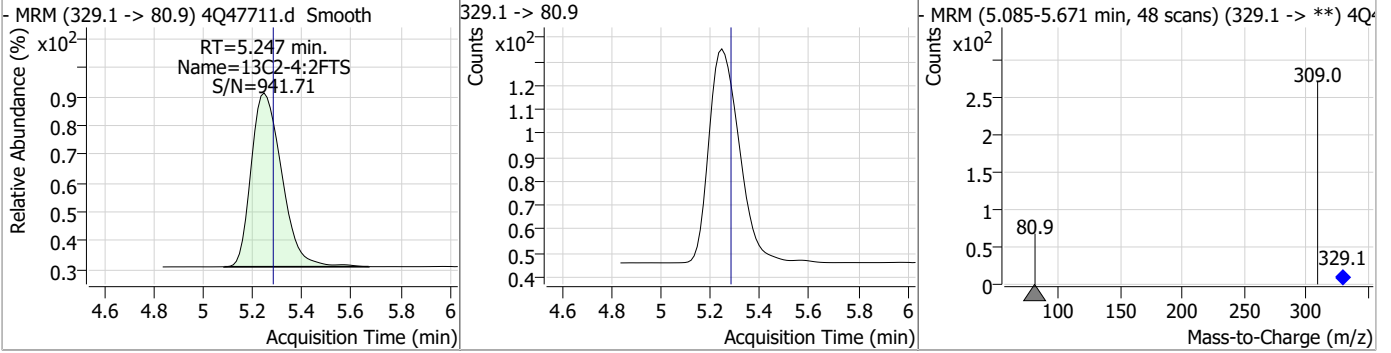


Perfluorinated Compounds by LC/MS/MS

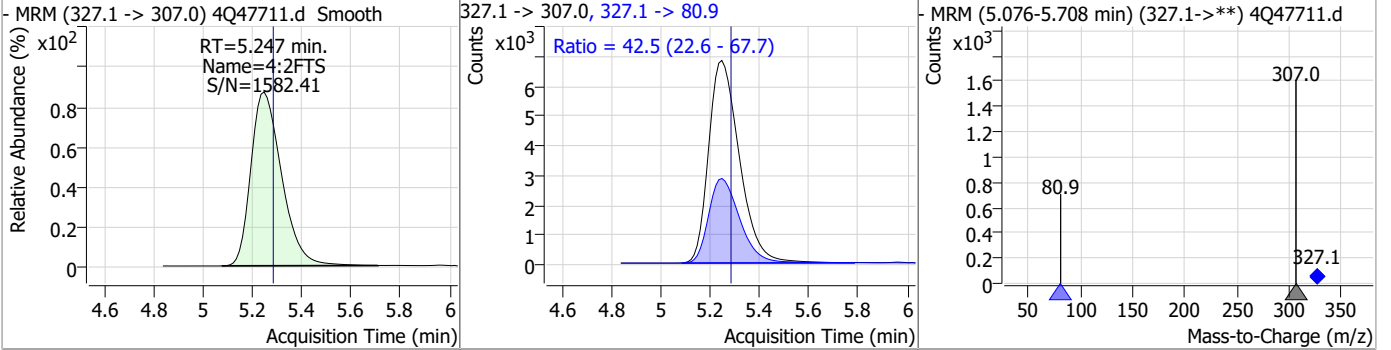


Perfluorinated Compounds by LC/MS/MS

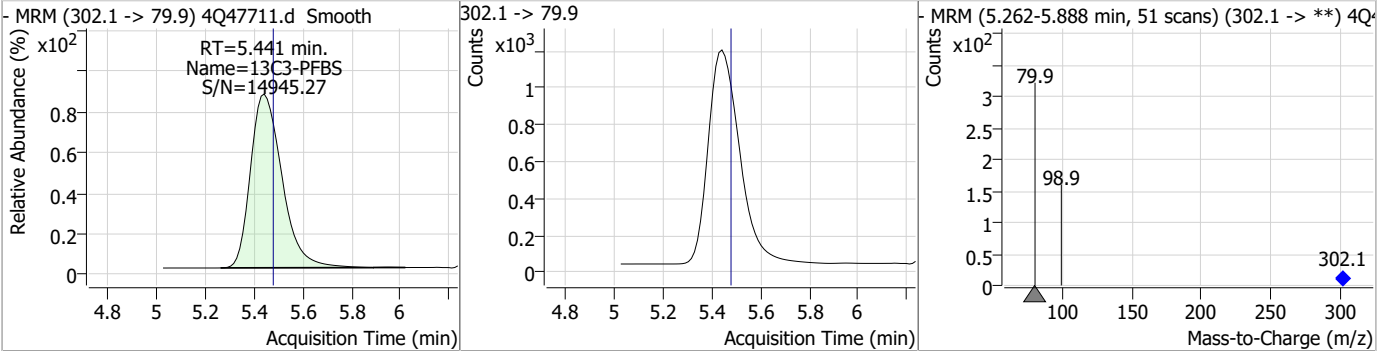
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	6.54	5.25	-0.04	769				



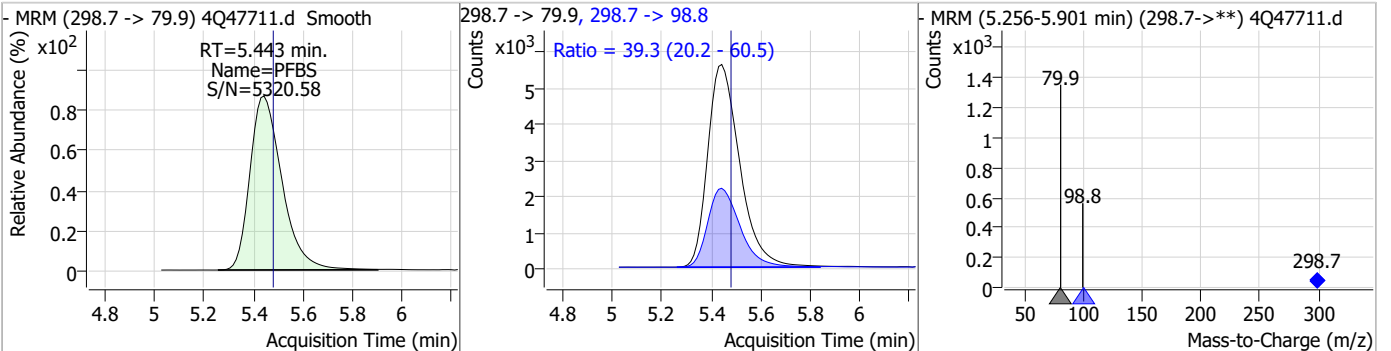
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
4:2FTS	43.28	5.25	-0.04	59046	327.1 -> 80.9	42.5	22.6	67.7



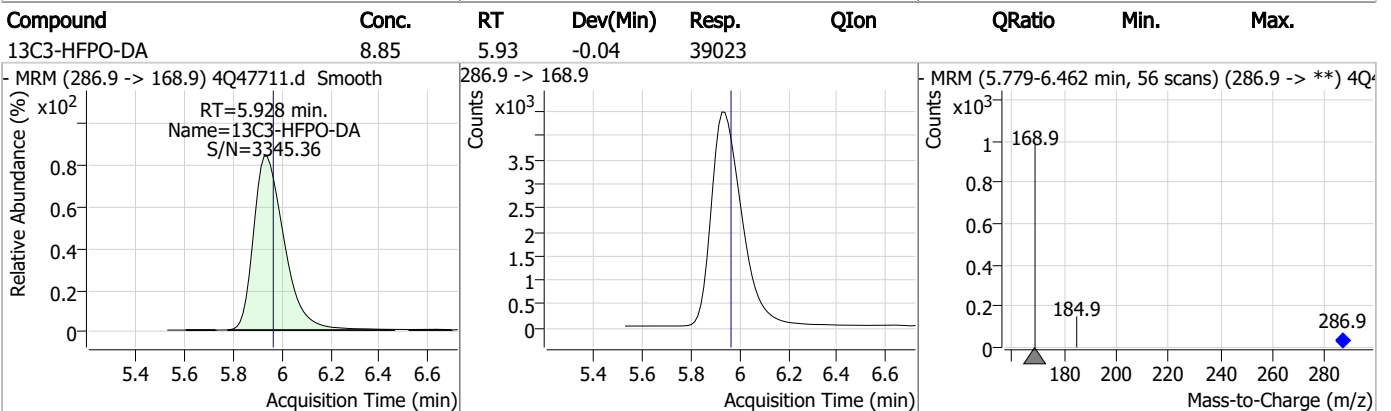
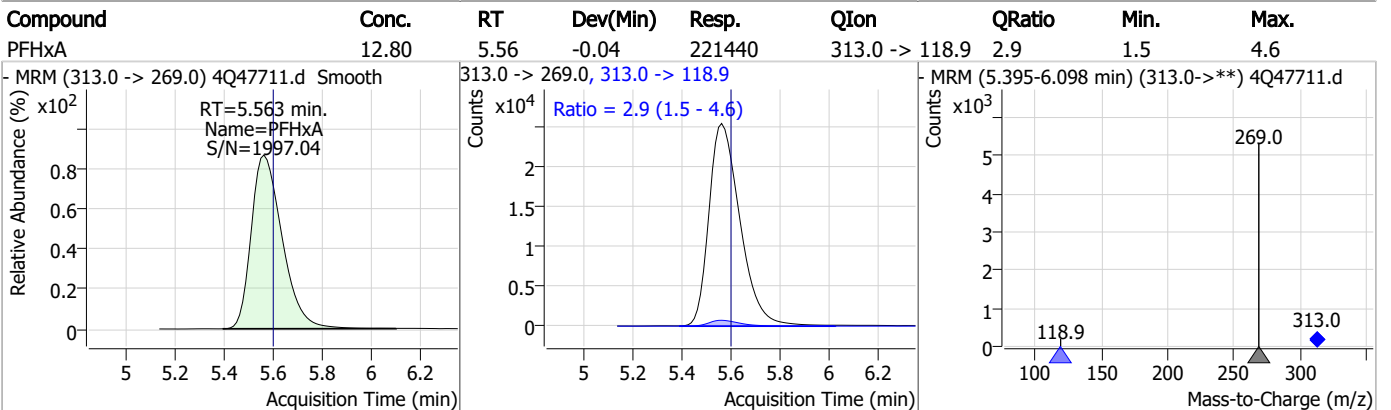
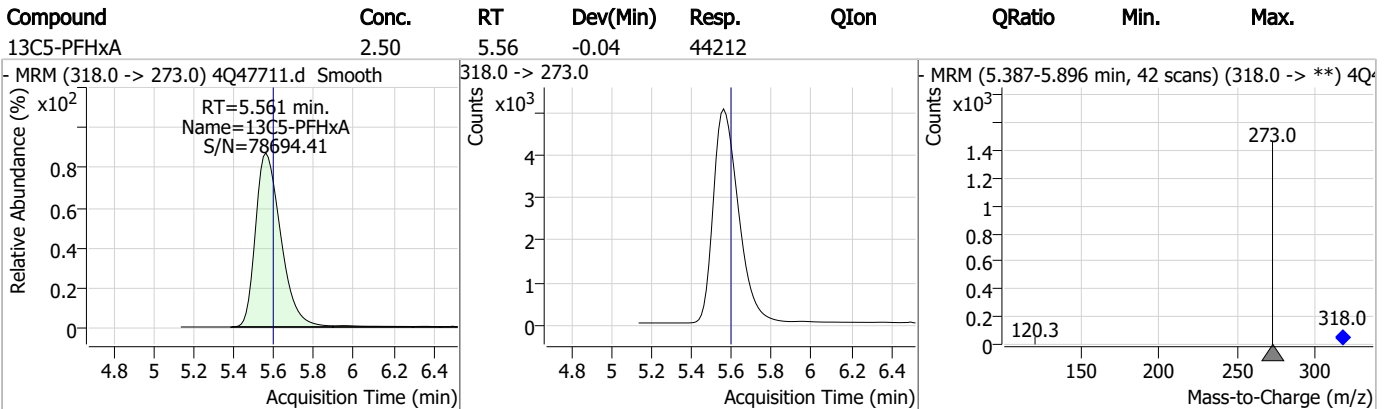
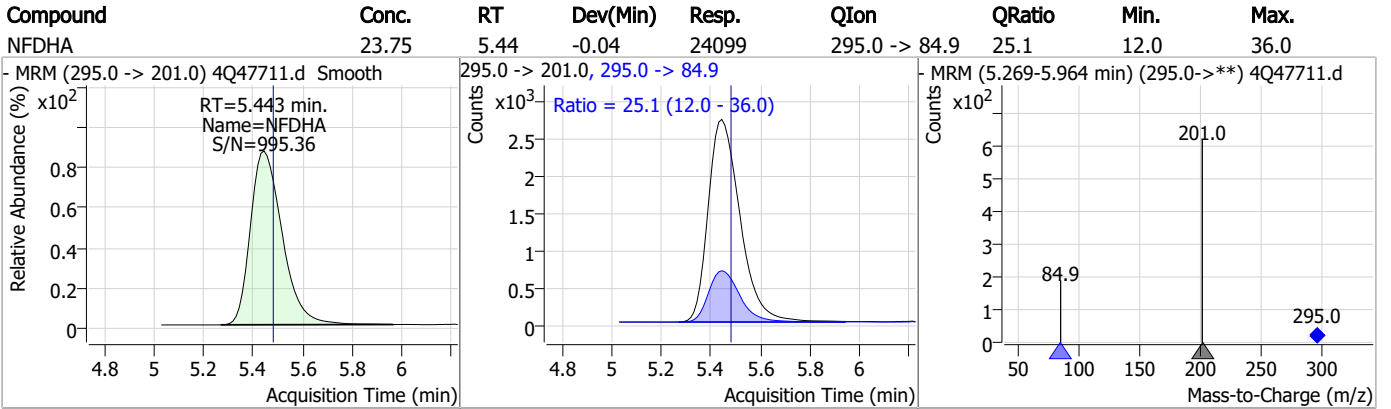
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	2.60	5.44	-0.04	10416				



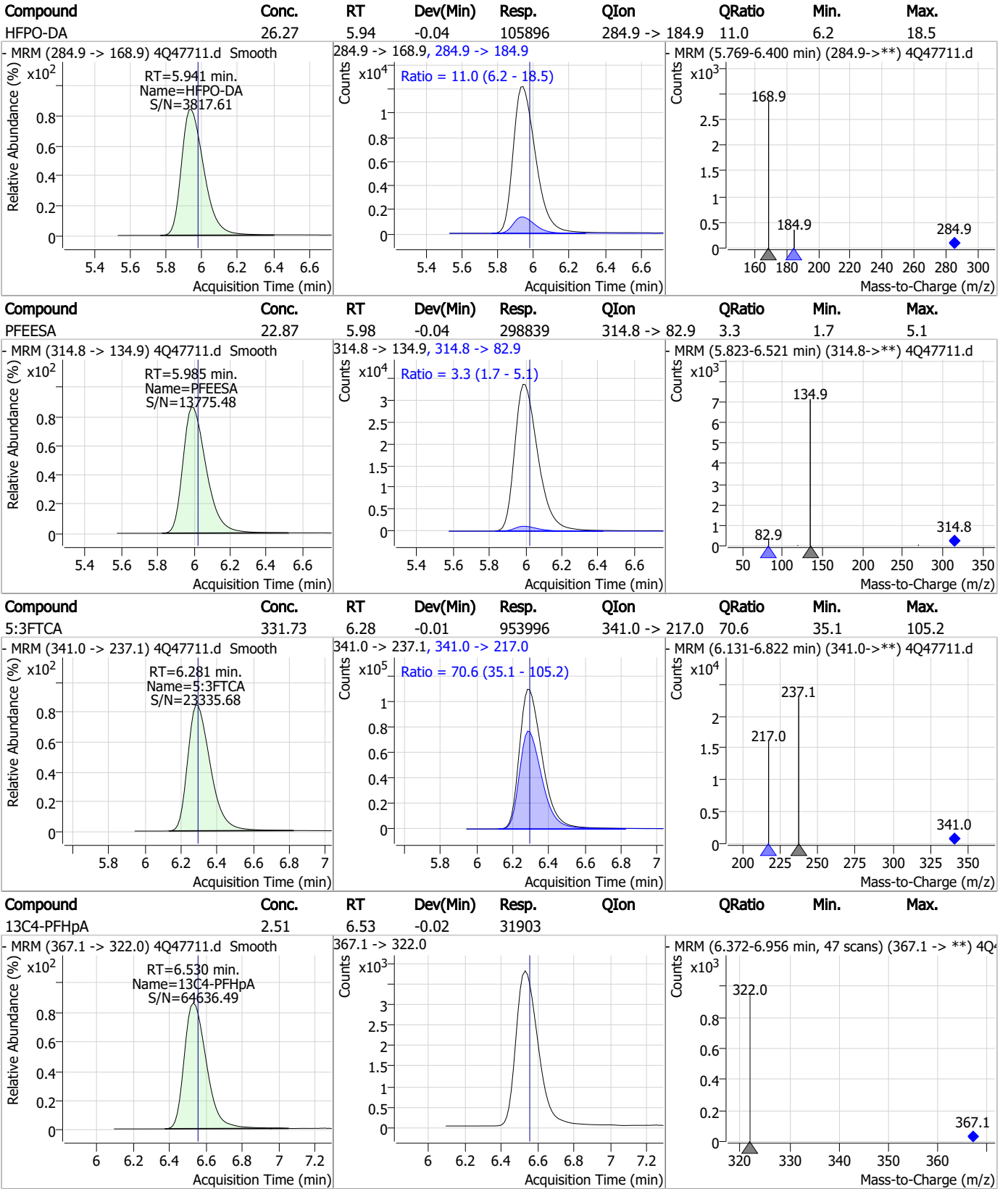
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	11.60	5.44	-0.04	50372	298.7 -> 98.8	39.3	20.2	60.5



Perfluorinated Compounds by LC/MS/MS



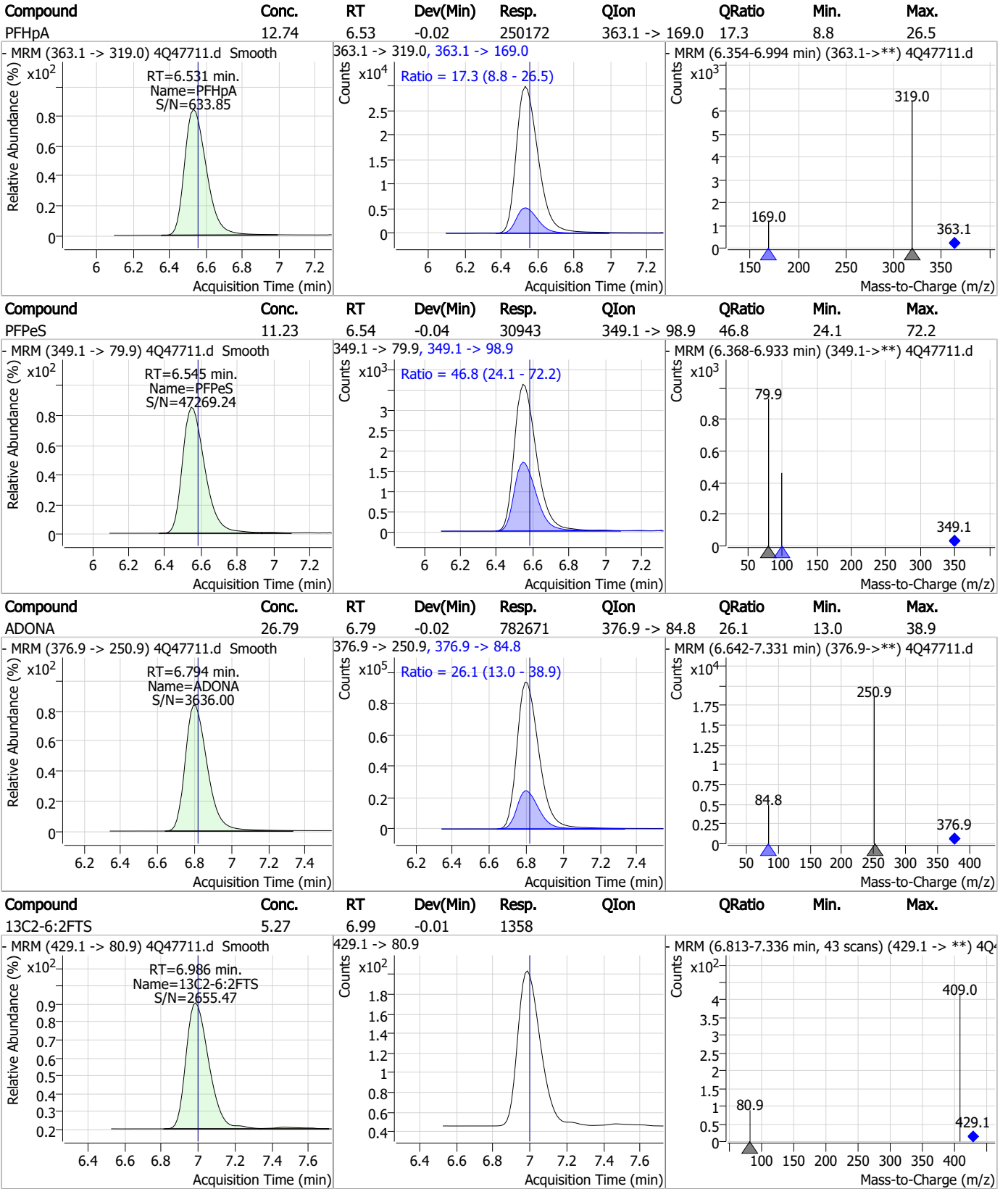
Perfluorinated Compounds by LC/MS/MS



7.6.6

7

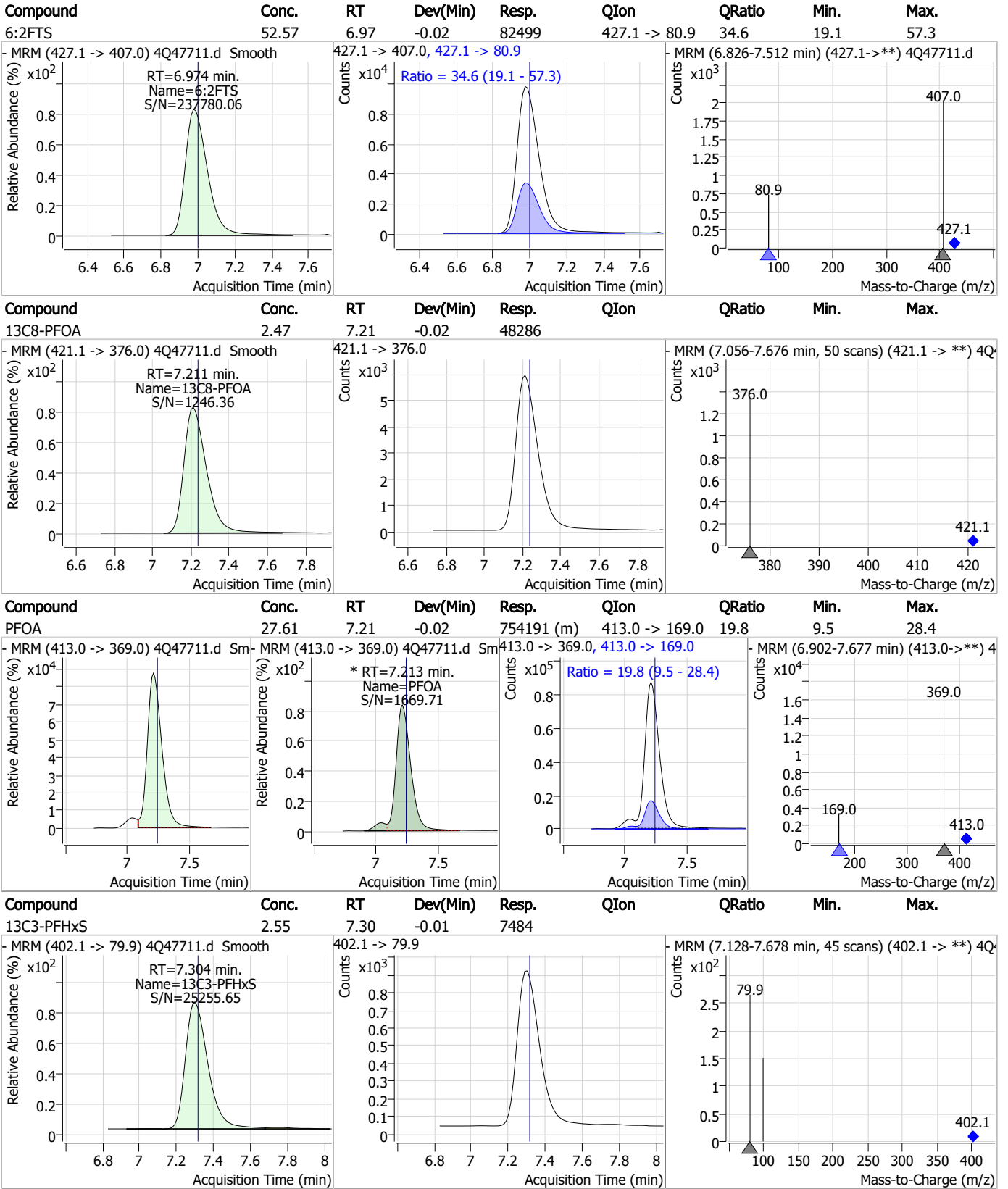
Perfluorinated Compounds by LC/MS/MS



7.6.6
7



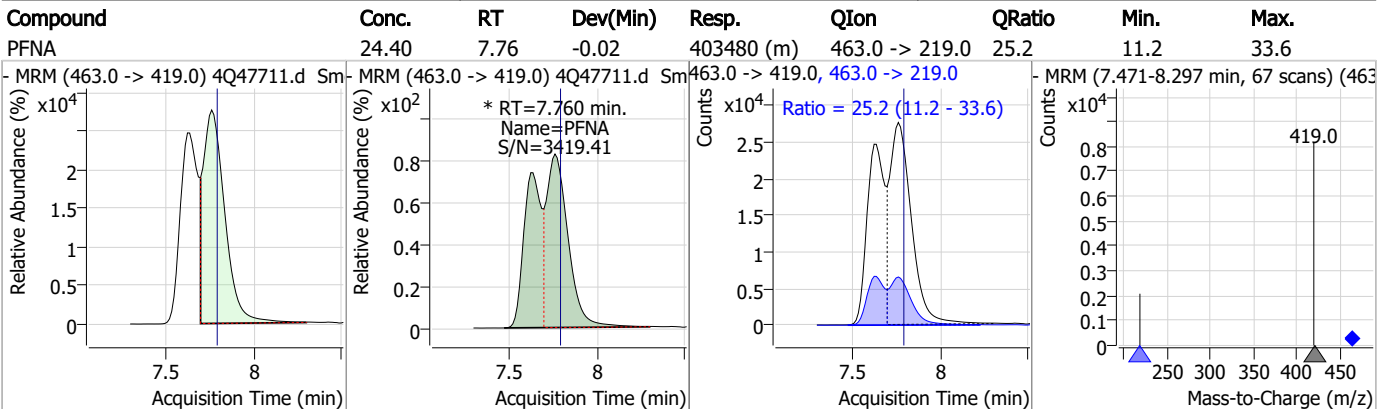
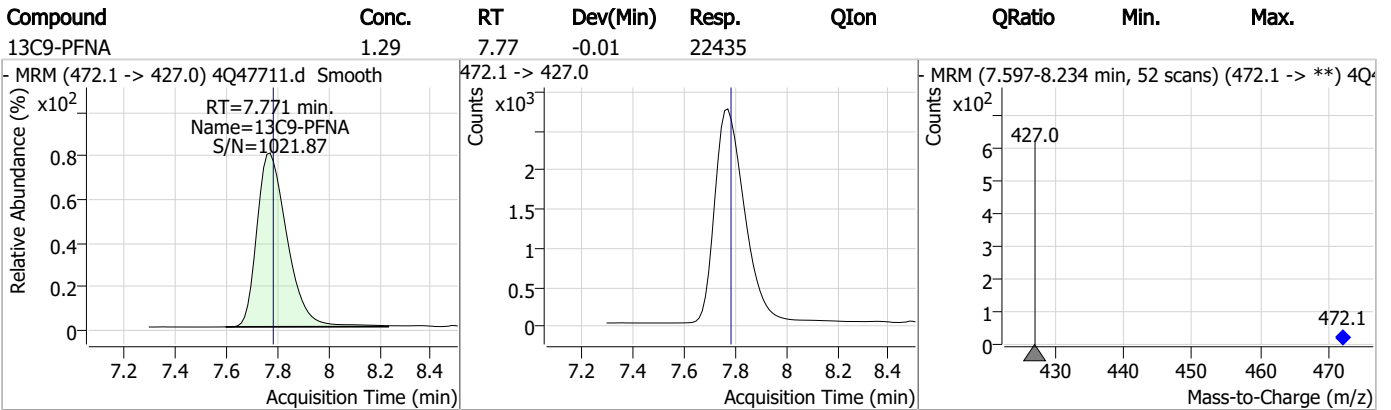
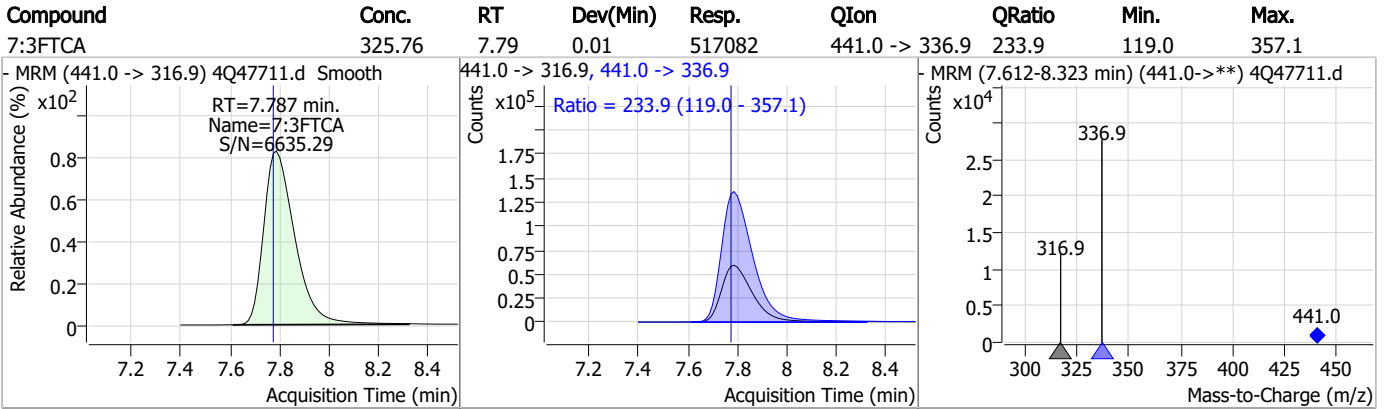
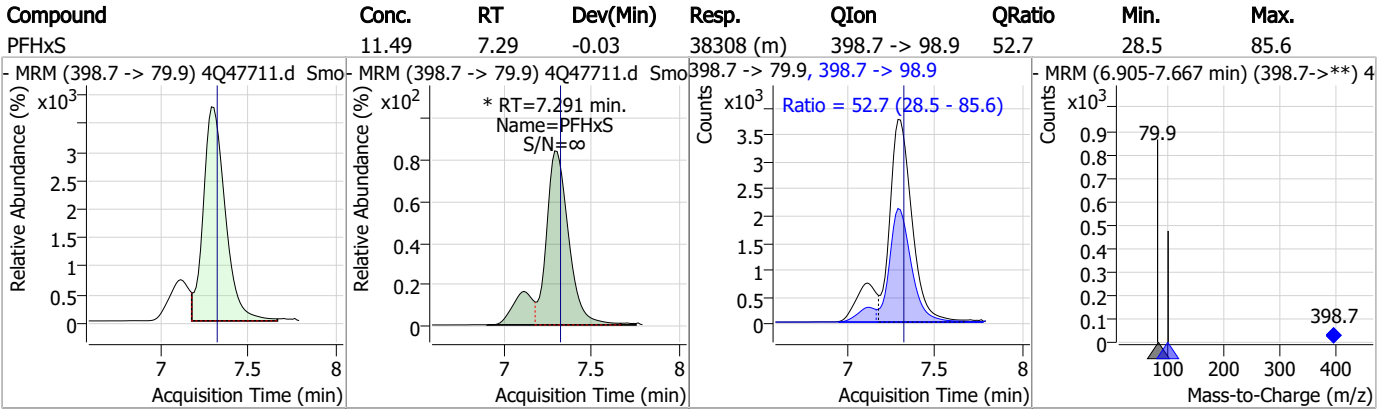
Perfluorinated Compounds by LC/MS/MS



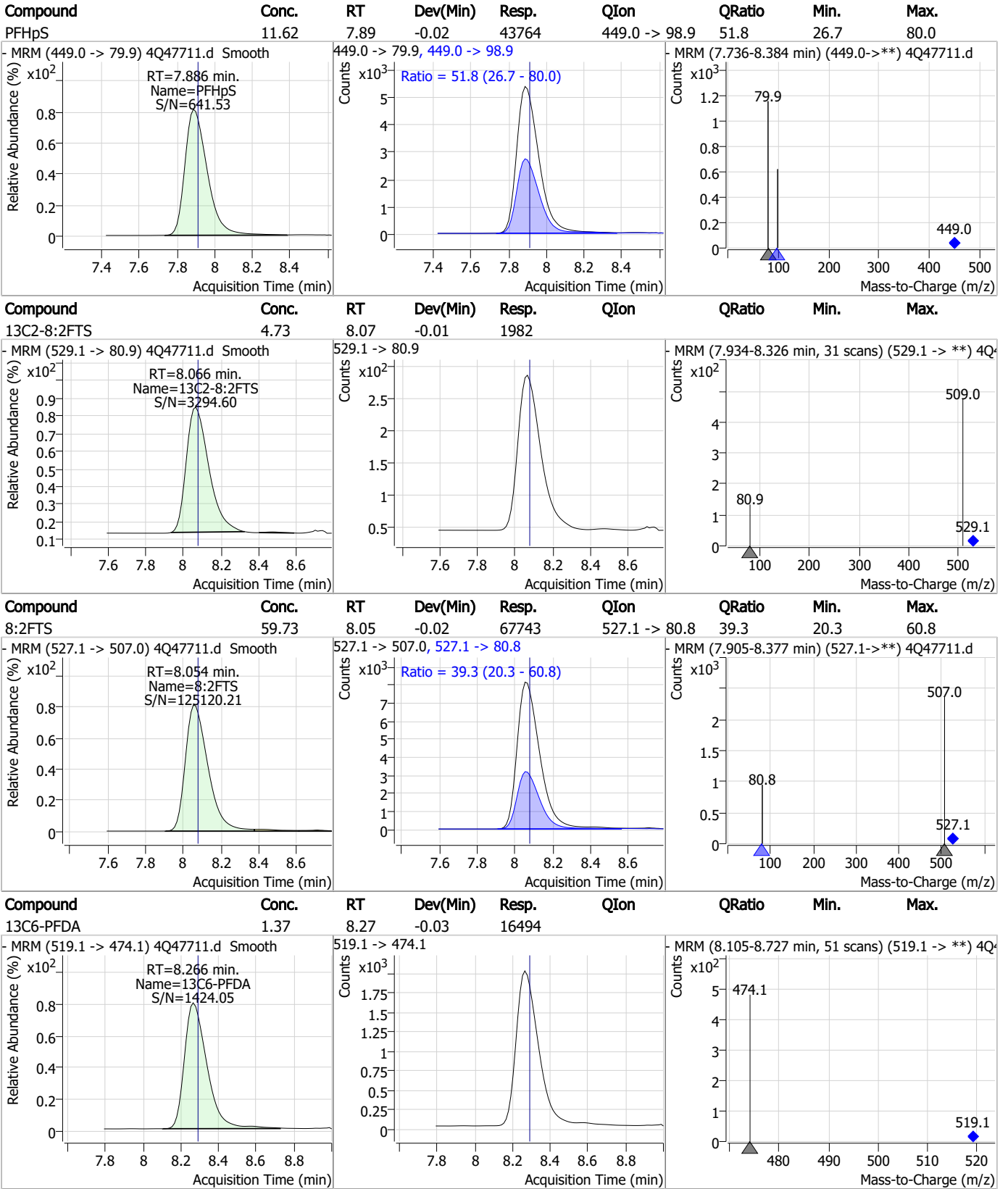
7.6.6
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

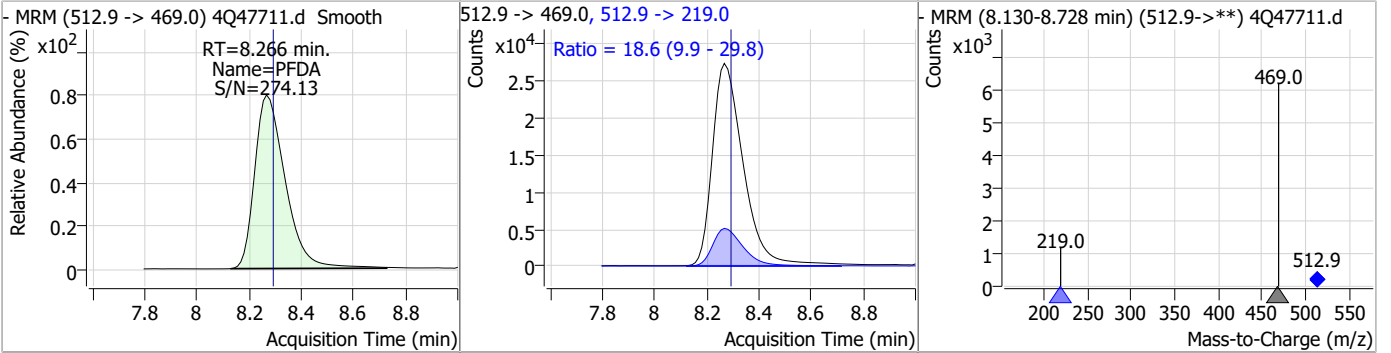


7.6.6

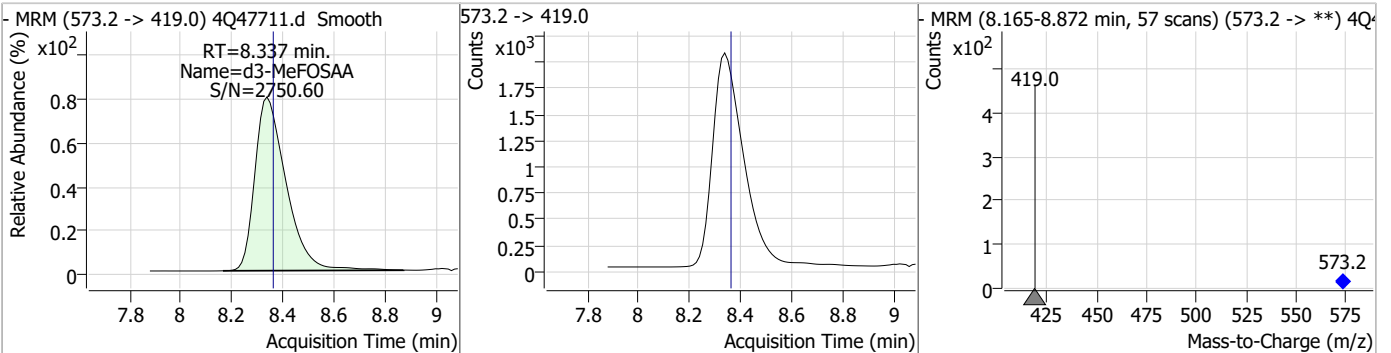
7

Perfluorinated Compounds by LC/MS/MS

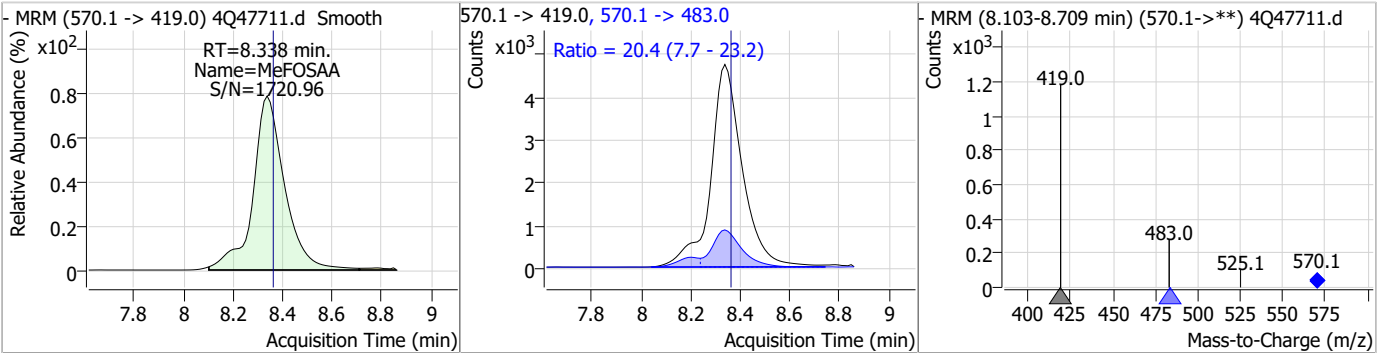
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	12.92	8.27	-0.03	221317	512.9 -> 219.0	18.6	9.9	29.8



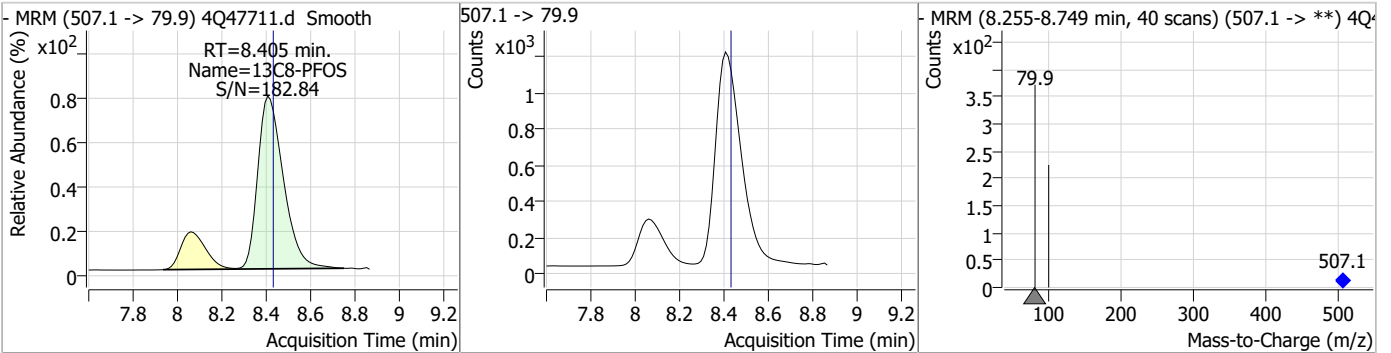
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.78	8.34	-0.02	17337				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	13.58	8.34	-0.02	41993	570.1 -> 483.0	20.4	7.7	23.2

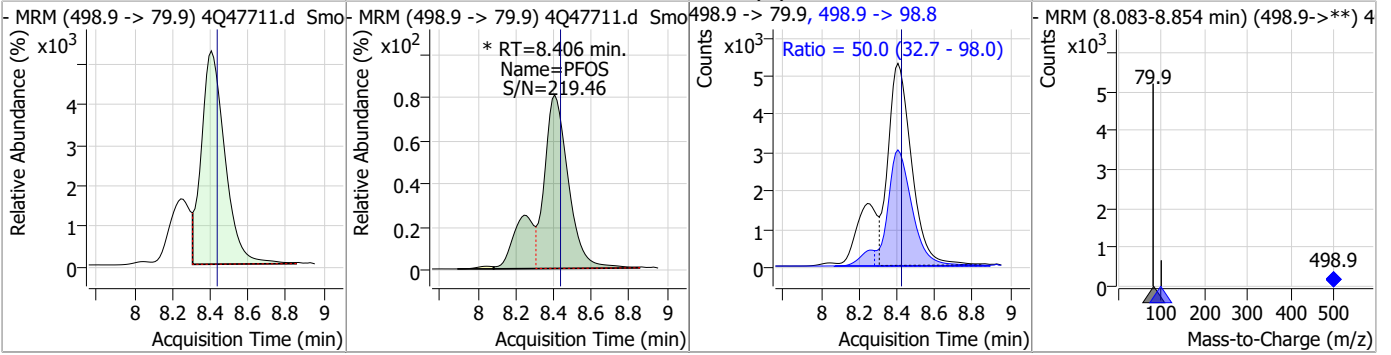


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.46	8.40	-0.03	9425				

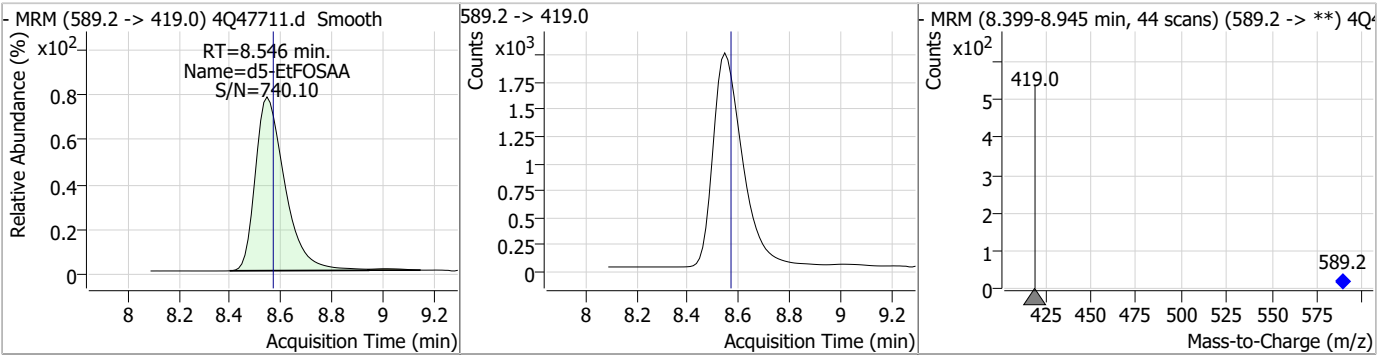


Perfluorinated Compounds by LC/MS/MS

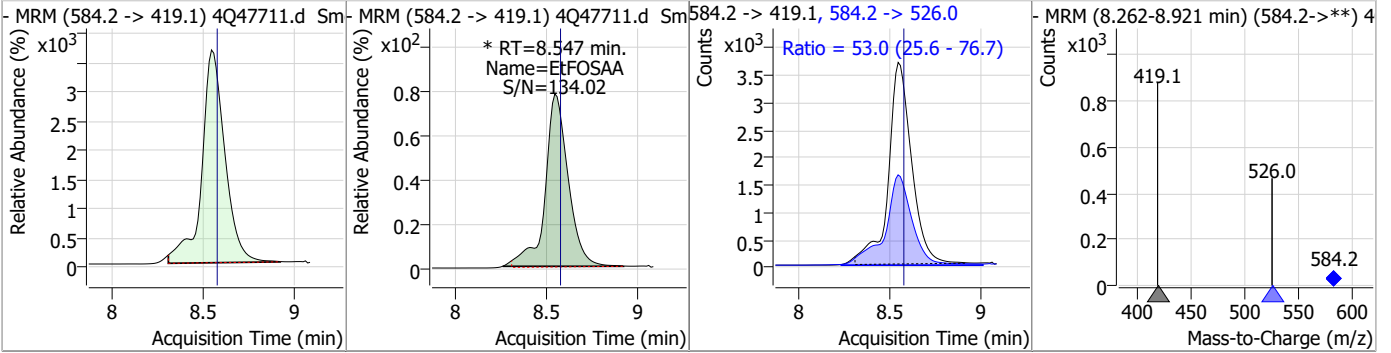
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	11.60	8.41	-0.02	58204 (m)	498.9 -> 98.8	50.0	32.7	98.0



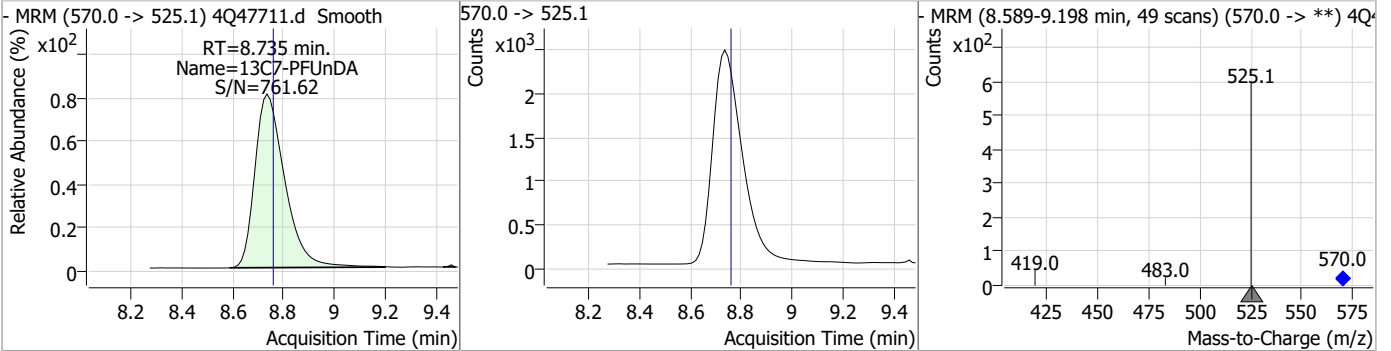
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.98	8.55	-0.02	15921	589.2 -> 419.0	53.0	25.6	76.7



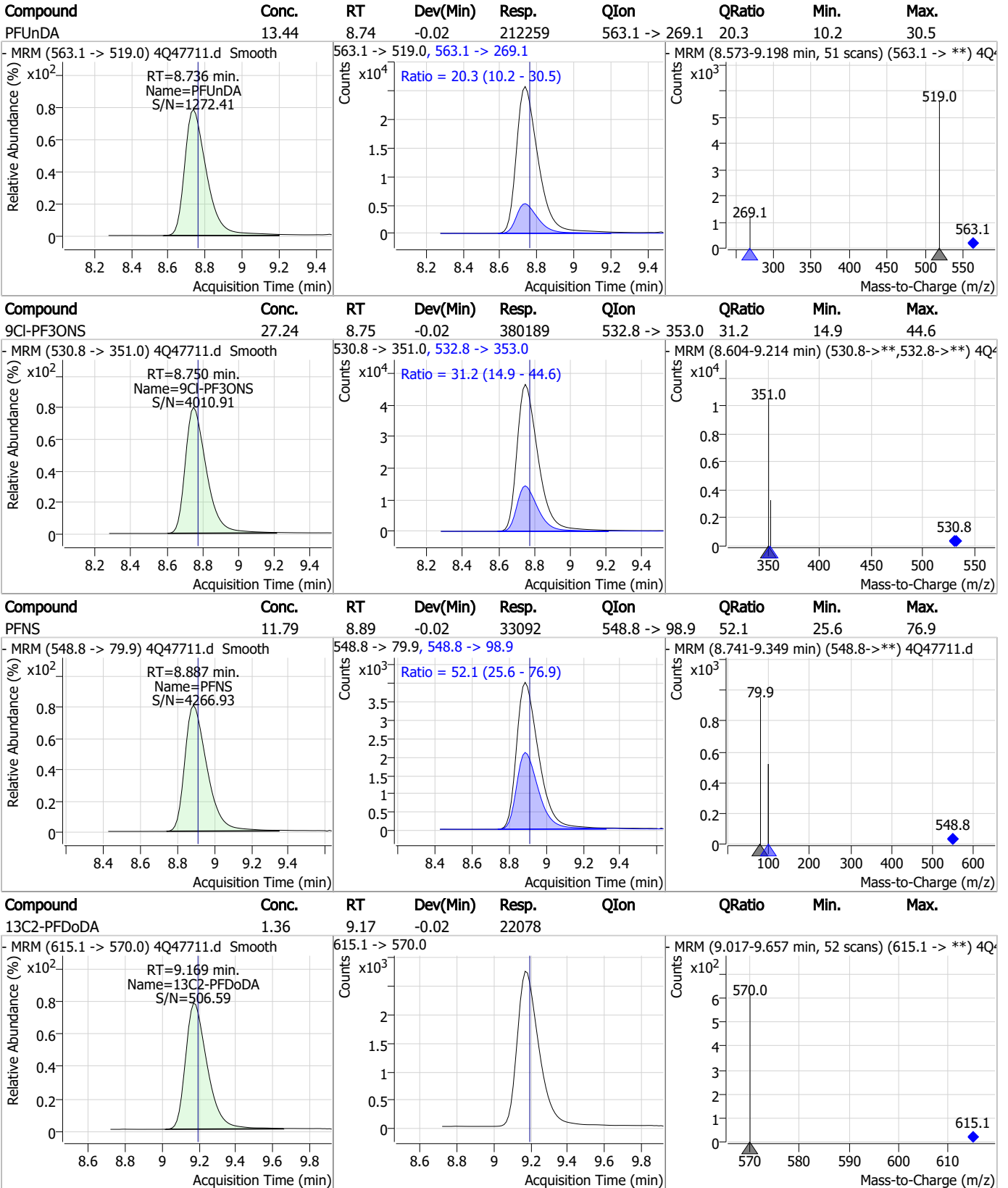
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	12.47	8.55	-0.02	31994 (m)	584.2 -> 526.0	53.0	25.6	76.7



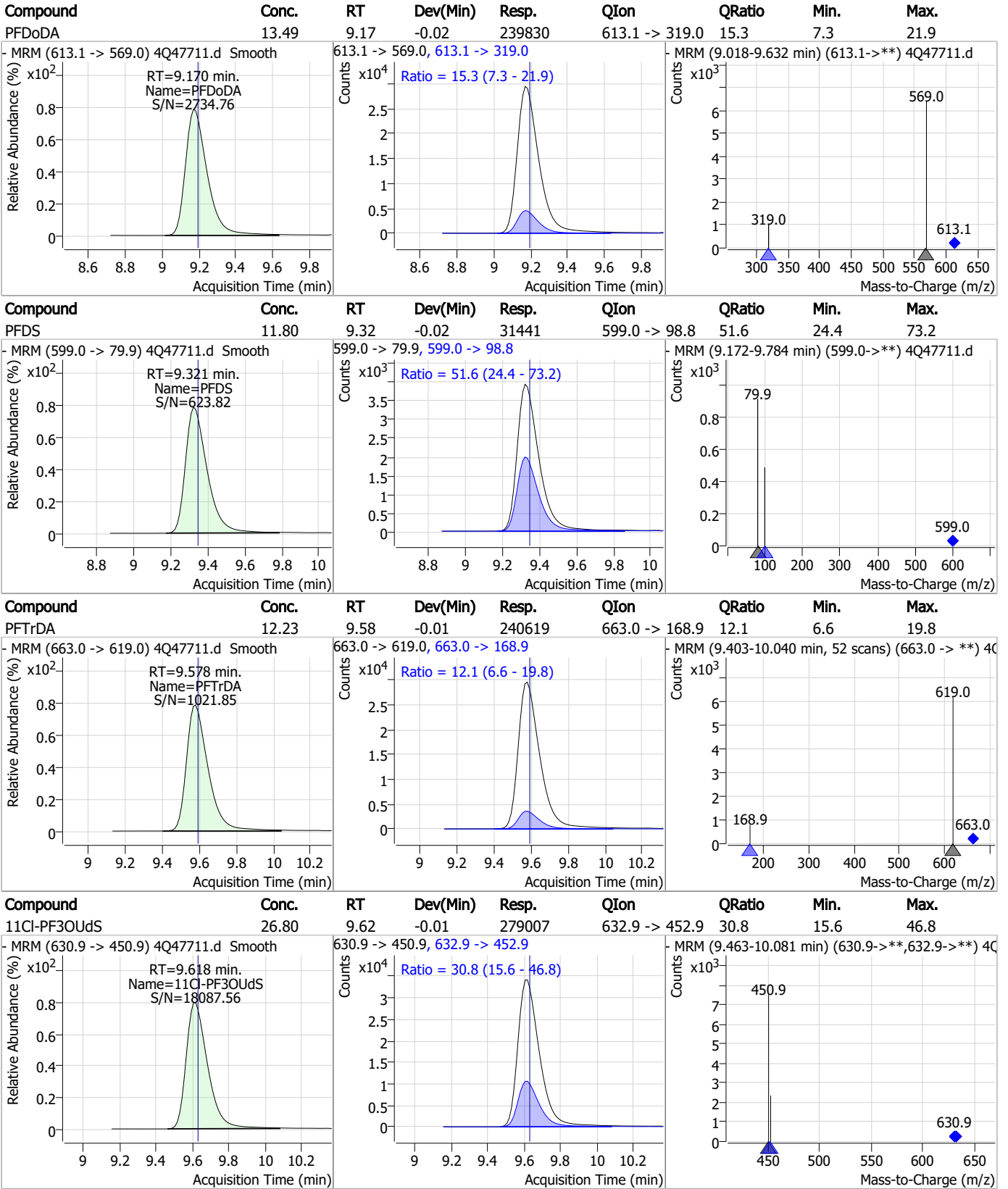
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.30	8.74	-0.02	19910	570.0 -> 525.1	53.0	25.6	76.7



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

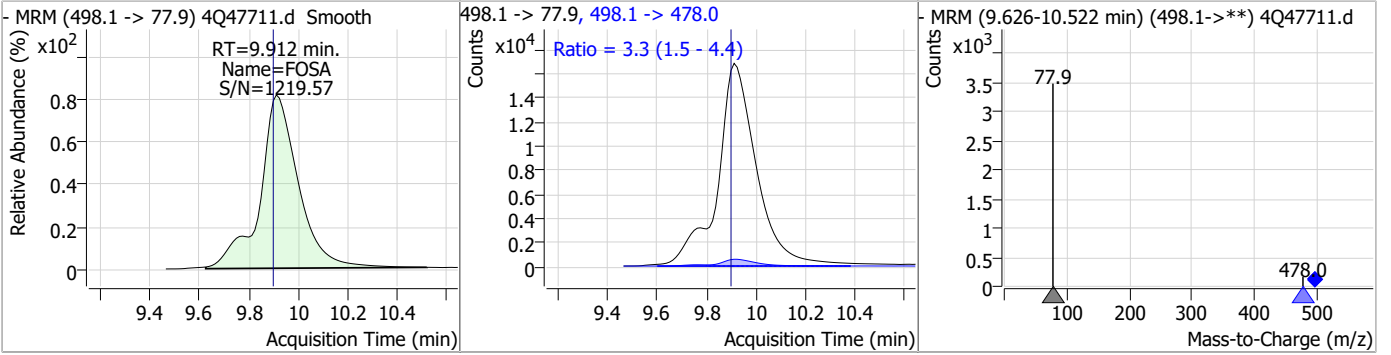


7.6.6

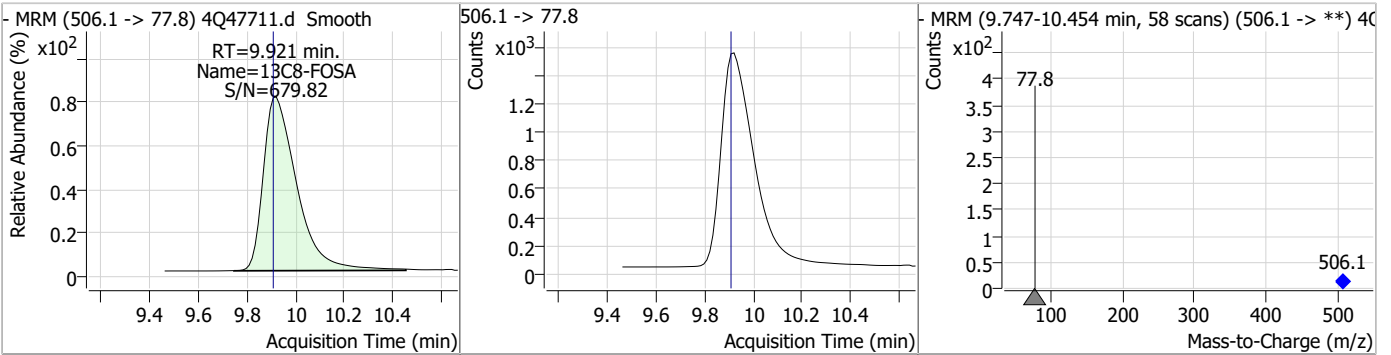
7

Perfluorinated Compounds by LC/MS/MS

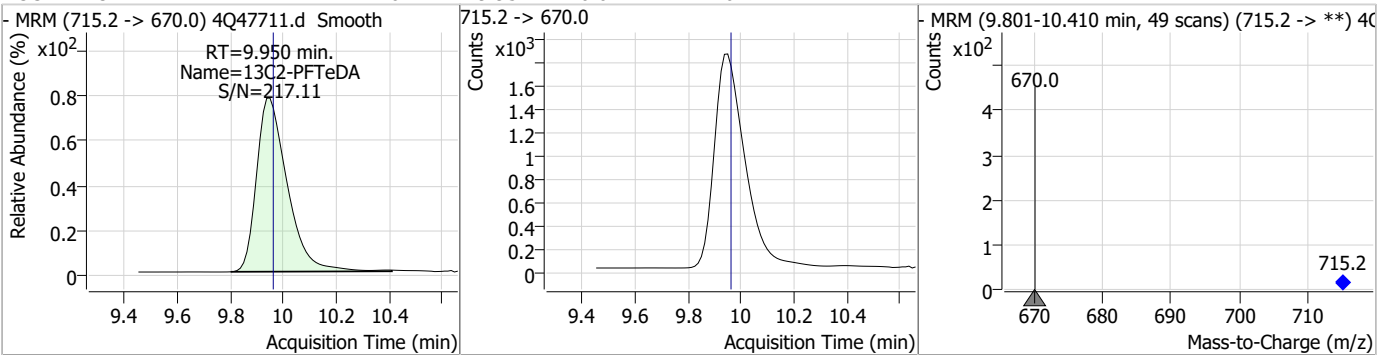
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	28.30	9.91	0.01	181908	498.1 -> 478.0	3.3	1.5	4.4



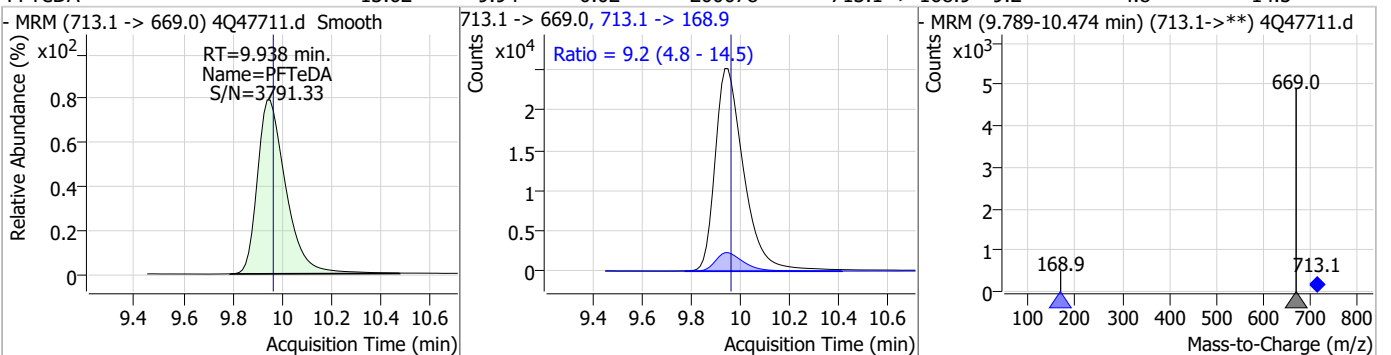
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.55	9.92	0.01	14557				



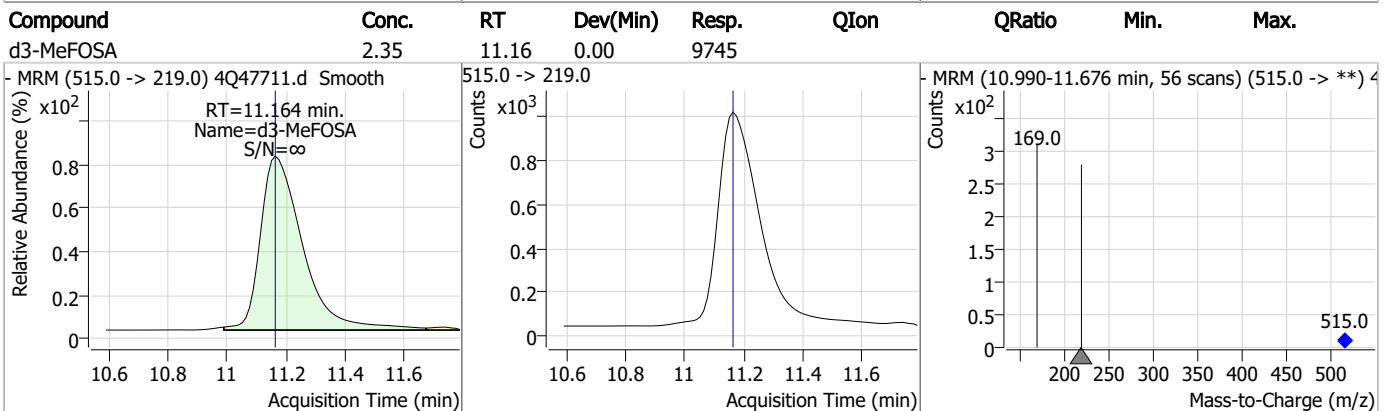
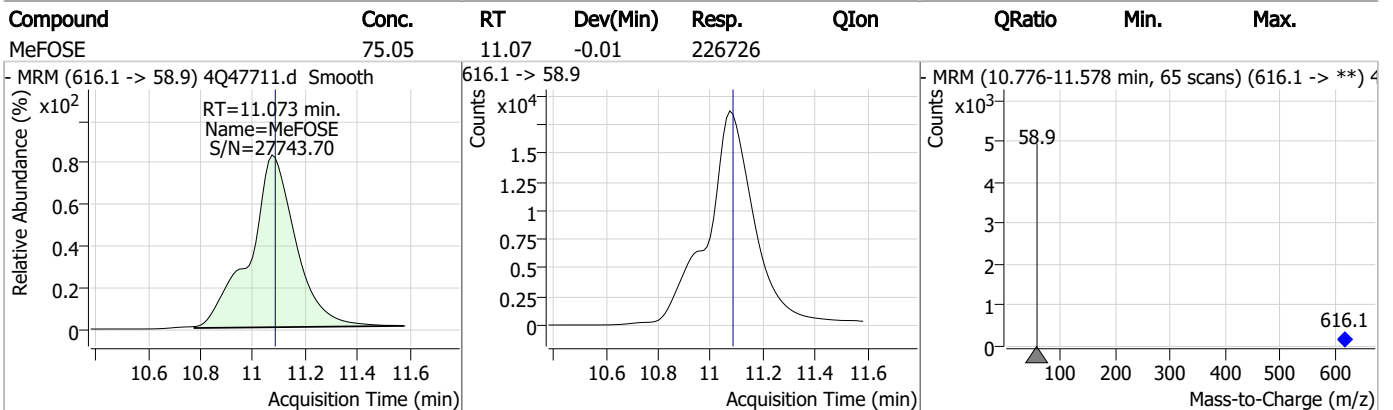
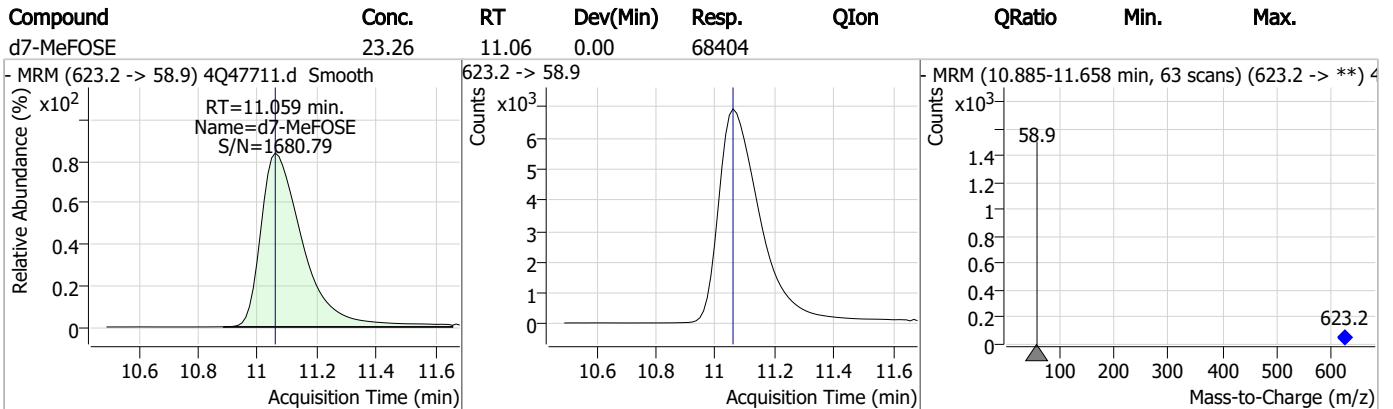
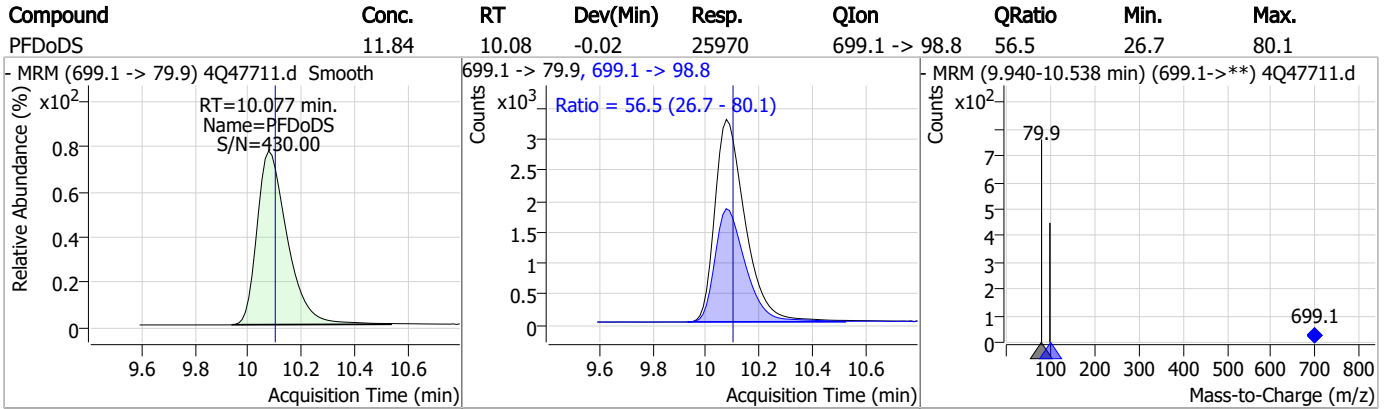
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.26	9.95	-0.01	14701				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	13.62	9.94	-0.02	200078	713.1 -> 168.9	9.2	4.8	14.5

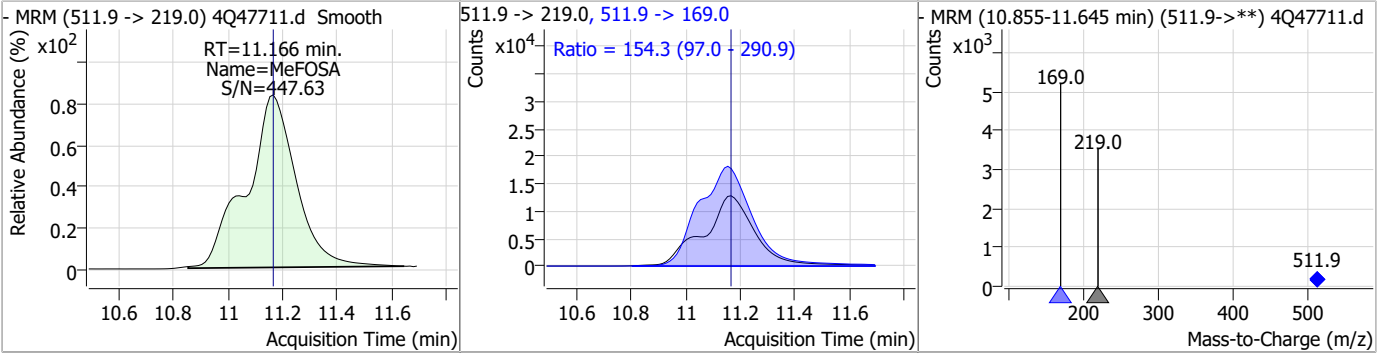


Perfluorinated Compounds by LC/MS/MS

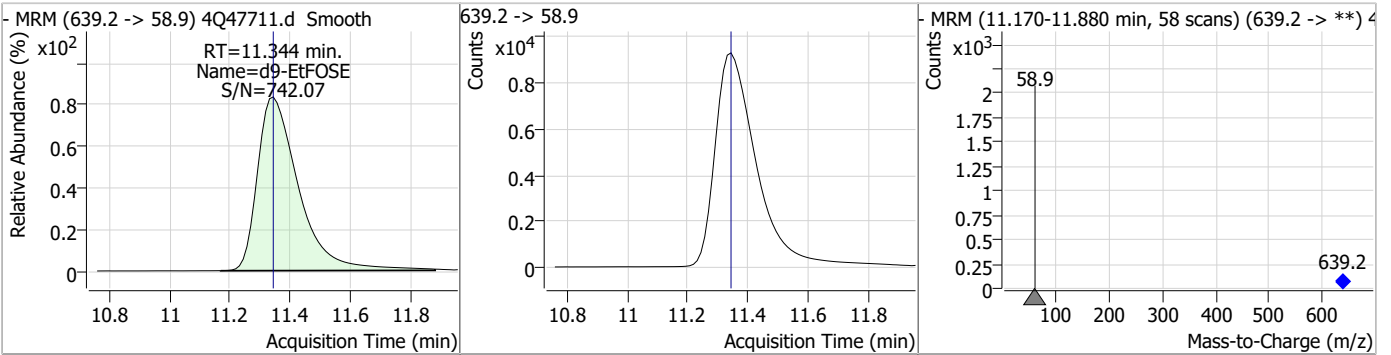


Perfluorinated Compounds by LC/MS/MS

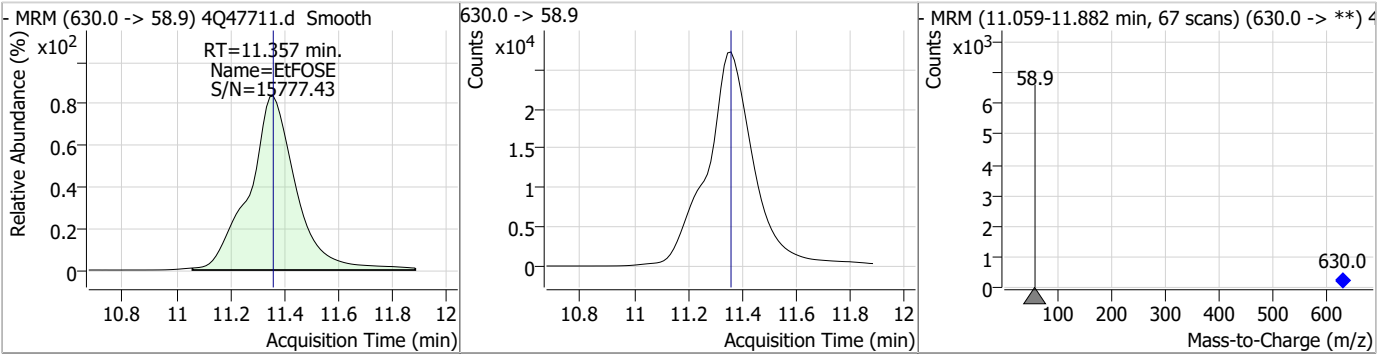
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	39.48	11.17	0.00	160689	511.9 -> 169.0	154.3	97.0	290.9



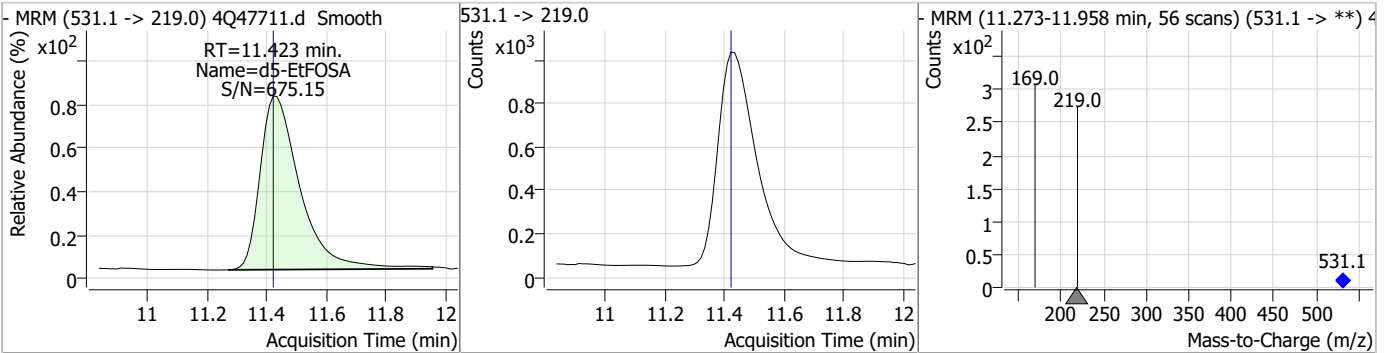
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	22.24	11.34	0.00	87067				



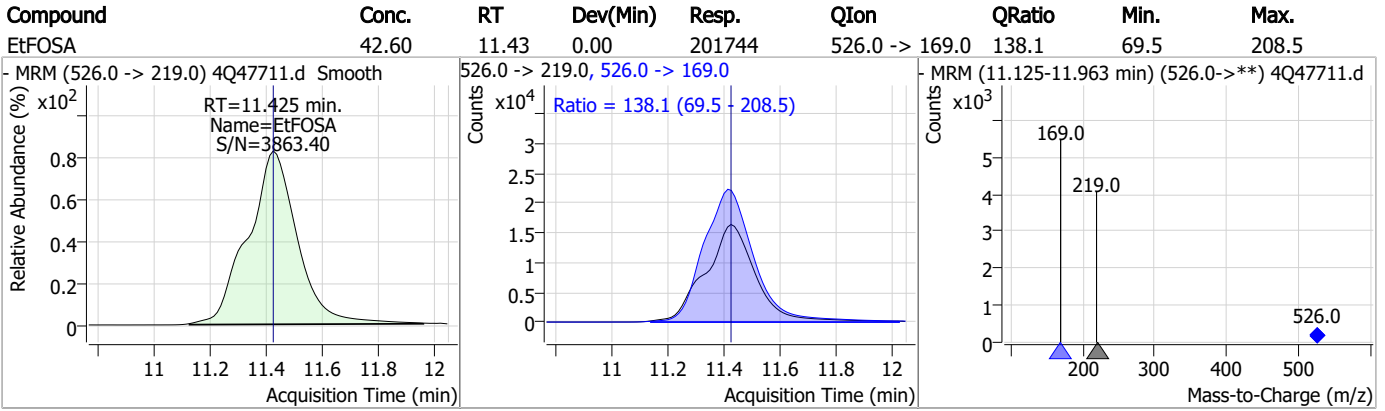
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	77.84	11.36	0.00	328732				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.04	11.42	0.00	9189				



Perfluorinated Compounds by LC/MS/MS



Manual Integration Approval Summary

Sample Number: S4Q699-RT Method: EPA DRAFT 1633
Lab FileID: 4Q47711.D Analyst approved: 07/23/23 11:07 Anna Ludwig
Injection Time: 07/21/23 01:08 Supervisor approved: 07/24/23 09:53 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.21	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluorononanoic acid	375-95-1		7.76	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak
EtFOSAA	2991-50-6		8.55	Split peak

7.6.6.1
7

QQQ Check Tune Report



Instrument Name LCMS4-Q
MS Model G6470A
MS Instrument Serial SG2004G105
Software_Firmware Version 10.0.142, FW: A.00.08.100
Tune Date & Time 03 July 2023 10:13:45
Data Path D:\MassHunter\Tune\QQQ\G6470A\atunes.TUNE.XML
Ion Source AJS ESI
Ionization Mode AJS ESI
Tuned Resolution All
Vacuum Pressure 1.75E+0 [R] (Torr); 3.56E-5 [H] (Torr)

Source Parameters

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

7.7.1

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	112.94	-0.05	Pass	0.70	0.77	0.07	Pass	239922
302.00	301.96	-0.04	Pass	0.70	0.72	0.02	Pass	106360
601.98	601.89	-0.09	Pass	0.70	0.74	0.04	Pass	258159
1033.99	1033.82	-0.17	Pass	0.70	0.71	0.01	Pass	403819
1633.95	1633.71	-0.24	Adjust	0.70	0.68	-0.02	Pass	831756
2233.91	2233.52	-0.39	Adjust	0.70	0.70	0.00	Pass	314327

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	59712
112.99	112.98	-0.01	Pass	0.70	0.70	0.00	Pass	170142
302.00	301.98	-0.02	Pass	0.70	0.68	-0.02	Pass	115292
601.98	601.91	-0.07	Pass	0.70	0.67	-0.03	Pass	224618
1033.99	1033.89	-0.10	Pass	0.70	0.65	-0.05	Pass	297607
1633.95	1633.76	-0.19	Pass	0.70	0.65	-0.05	Pass	457781
2233.91	2233.61	-0.30	Pass	0.70	0.65	-0.05	Pass	325087

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.96	-0.03	Pass	1.20	1.29	0.09	Pass	284714
302.00	301.90	-0.10	Pass	1.20	1.35	0.15	Pass	145151
601.98	601.81	-0.17	Pass	1.20	1.49	0.29	Pass	410263
1033.99	1033.74	-0.25	Pass	1.20	1.54	0.34	Pass	788166
1633.95	1633.65	-0.30	Pass	1.20	1.40	0.20	Pass	2041119
2233.91	2233.50	-0.41	Pass	1.20	1.29	0.09	Pass	1233204

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	1.06	-0.14	Pass	80338
112.99	112.97	-0.02	Pass	1.20	1.17	-0.03	Pass	236159
302.00	301.96	-0.04	Pass	1.20	1.38	0.18	Pass	165069
601.98	601.88	-0.10	Pass	1.20	1.43	0.23	Pass	418167
1033.99	1033.82	-0.17	Pass	1.20	1.44	0.24	Pass	641319
1633.95	1633.70	-0.25	Pass	1.20	1.35	0.15	Pass	1671690
2233.91	2233.59	-0.32	Pass	1.20	1.12	-0.08	Pass	1074479

Analyzer: MS1 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.92	-0.07	Pass	2.50	2.51	0.01	Pass	340326
302.00	301.89	-0.11	Pass	2.50	2.53	0.03	Pass	184110
601.98	601.78	-0.20	Pass	2.50	2.71	0.21	Pass	524371
1033.99	1033.75	-0.24	Pass	2.50	2.74	0.24	Pass	1236362
1633.95	1633.65	-0.30	Pass	2.50	2.50	0.00	Pass	4050879
2233.91	2233.41	-0.50	Pass	2.50	2.38	-0.12	Pass	3211553

Analyzer: MS2 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.04	0.04	Pass	2.50	2.36	-0.14	Pass	99721
112.99	112.95	-0.04	Pass	2.50	2.45	-0.05	Pass	310741
302.00	301.95	-0.05	Pass	2.50	2.60	0.10	Pass	211085
601.98	601.90	-0.08	Pass	2.50	2.66	0.16	Pass	560209
1033.99	1033.83	-0.16	Pass	2.50	2.65	0.15	Pass	1020319
1633.95	1633.70	-0.25	Pass	2.50	2.44	-0.06	Pass	3260920
2233.91	2233.61	-0.30	Pass	2.50	2.19	-0.31	Pass	2953756

7.7.1
7



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47148.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/12/2023 5:31:33 PM
 Sample Name : ic690-1
 Vial : P1-A2
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q690.batch.bin
 Sample Information : OP97325,S4Q690,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.861	216.8 -> 171.9	147426	10.00 µg/L	-0.062
M5-PFPeA	4.375	268.3 -> 223.0	65808	5.00 µg/L	-0.025
M5-PFHxA	5.585	318.0 -> 273.0	49980	2.50 µg/L	-0.012
M4-PFHpA	6.555	367.1 -> 322.0	36204	2.50 µg/L	0.000
M8-PFOA	7.236	421.1 -> 376.0	56577	2.50 µg/L	0.000
M9-PFNA	7.784	472.1 -> 427.0	24568	1.25 µg/L	-0.014
M6-PFDA	8.292	519.1 -> 474.1	18016	1.25 µg/L	0.000
M7-PFUnDA	8.760	570.0 -> 525.1	24227	1.25 µg/L	0.000
M2-PFDoDA	9.194	615.1 -> 570.0	23637	1.25 µg/L	0.000
M2-PFTeDA	9.962	715.2 -> 670.0	17817	1.25 µg/L	-0.012
M8-FOSA	9.909	506.1 -> 77.8	16499	2.50 µg/L	0.000
M3-PFBS	5.466	302.1 -> 79.9	11671	2.50 µg/L	-0.012
M3-PFHxS	7.316	402.1 -> 79.9	8595	2.50 µg/L	-0.013
M8-PFOS	8.430	507.1 -> 79.9	10491	2.50 µg/L	-0.012
M2-4:2FTS	5.272	329.1 -> 80.9	656	5.00 µg/L	-0.012
M2-6:2FTS	6.999	429.1 -> 80.9	1516	5.00 µg/L	0.000
M2-8:2FTS	8.078	529.1 -> 80.9	2458	5.00 µg/L	0.000
M3-MeFOSAA	8.349	573.2 -> 419.0	20565	5.00 µg/L	-0.012
M3-HFPO-DA	5.965	286.9 -> 168.9	50790	10.00 µg/L	-0.012
M5-EtFOSAA	8.558	589.2 -> 419.0	17378	5.00 µg/L	-0.012
M7-MeFOSE	11.072	623.2 -> 58.9	83645	25.00 µg/L	0.000
M9-EtFOSE	11.344	639.2 -> 58.9	113005	25.00 µg/L	-0.012
M5-EtFOSA	11.435	531.1 -> 219.0	13385	2.50 µg/L	0.000
M3-MeFOSA	11.176	515.0 -> 219.0	11749	2.50 µg/L	0.000
13C4-PFOS	8.430	502.8 -> 79.9	13092	2.50 µg/L	0.000
13C3-PFBA	2.866	216.0 -> 172.0	77851	5.00 µg/L	-0.062
18O2-PFHxS	7.328	403.0 -> 83.9	5781	2.50 µg/L	0.000
13C4-PFOA	7.237	417.1 -> 372.0	70051	2.50 µg/L	0.000
13C2-PFDA	8.292	515.1 -> 470.1	21224	1.25 µg/L	0.000
13C5-PFNA	7.784	468.0 -> 423.0	29262	1.25 µg/L	-0.014
13C2-PFHxA	5.586	315.1 -> 270.0	46762	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.272	329.1 -> 80.9	656	5.05 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C2-6:2FTS	6.999	429.1 -> 80.9	1516	5.33 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.6%		
13C2-8:2FTS	8.078	529.1 -> 80.9	2458	5.31 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.2%		
13C2-PFDoDA	9.194	615.1 -> 570.0	23637	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C2-PFTeDA	9.962	715.2 -> 670.0	17817	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C3-PFBS	5.466	302.1 -> 79.9	11671	2.64 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C3-PFHxS	7.316	402.1 -> 79.9	8595	2.65 µg/L	-0.013

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	2.861	216.8 -> 171.9	147426	10.02 µg/L	-0.062
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C4-PFHpA	6.555	367.1 -> 322.0	36204	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C5-PFHxA	5.585	318.0 -> 273.0	49980	2.50 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C5-PFPeA	4.375	268.3 -> 223.0	65808	5.10 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C6-PFDA	8.292	519.1 -> 474.1	18016	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C7-PFUnDA	8.760	570.0 -> 525.1	24227	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.9%	
13C8-FOSA	9.909	506.1 -> 77.8	16499	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.4%	
13C8-PFOA	7.236	421.1 -> 376.0	56577	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C8-PFOS	8.430	507.1 -> 79.9	10491	2.31 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.3%	
13C9-PFNA	7.784	472.1 -> 427.0	24568	1.26 µg/L	-0.014
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.5%	
d3-MeFOSAA	8.349	573.2 -> 419.0	20565	4.78 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.5%	
13C3-HFPO-DA	5.965	286.9 -> 168.9	50790	10.19 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.9%	
d3-MeFOSA	11.176	515.0 -> 219.0	11749	2.38 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.2%	
d5-EtFOSAA	8.558	589.2 -> 419.0	17378	4.57 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 91.5%	
d7-MeFOSE	11.072	623.2 -> 58.9	83645	23.94 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.8%	
d9-EtFOSE	11.344	639.2 -> 58.9	113005	24.29 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.2%	
d5-EtFOSA	11.435	531.1 -> 219.0	13385	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
Target Compounds					QValue
4:2FTS	5.272	327.1 -> 307.0	926	0.79 µg/L	98
		327.1 -> 80.9	418		
6:2FTS	6.999	427.1 -> 407.0	1244	0.71 µg/L	97
		427.1 -> 80.9	455		
8:2FTS	8.079	527.1 -> 507.0	1098	0.78 µg/L	82
		527.1 -> 80.8	393		
EtFOSAA	8.572	584.2 -> 419.1	441	0.16 µg/L	m 73
		584.2 -> 526.0	292		
FOSA	9.899	498.1 -> 77.9	1435	0.20 µg/L	97
		498.1 -> 478.0	58		
MeFOSAA	8.362	570.1 -> 419.0	661	0.18 µg/L	m 94
		570.1 -> 483.0	141		
PFBA	2.870	212.8 -> 168.9	3502	0.79 µg/L	100
PFBS	5.480	298.7 -> 79.9	876	0.18 µg/L	95
		298.7 -> 98.8	285		
PFDA	8.292	512.9 -> 469.0	3709	0.20 µg/L	98
		512.9 -> 219.0	731		
PFDoDA	9.194	613.1 -> 569.0	3731	0.20 µg/L	96
		613.1 -> 319.0	708		
PFDS	9.346	599.0 -> 79.9	516	0.17 µg/L	99

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	267			
PFHpA	6.556	363.1 -> 319.0	4342	0.19	µg/L	98
		363.1 -> 169.0	862			
PFHpS	7.911	449.0 -> 79.9	879	0.21	µg/L	89
		449.0 -> 98.9	374			
PFHxA	5.588	313.0 -> 269.0	3975	0.20	µg/L	96
		313.0 -> 118.9	160			
PFHxS	7.317	398.7 -> 79.9	709	0.19	µg/L	m 96
		398.7 -> 98.9	389			
PFNA	7.785	463.0 -> 419.0	3533	0.20	µg/L	89
		463.0 -> 219.0	1023			
PFNS	8.911	548.8 -> 79.9	701	0.22	µg/L	90
		548.8 -> 98.9	327			
PFOA	7.225	413.0 -> 369.0	6149	0.19	µg/L	83
		413.0 -> 169.0	1645			
PFOS	8.431	498.9 -> 79.9	1170	0.21	µg/L	m 82
		498.9 -> 98.8	572			
PFPeA	4.377	263.0 -> 219.0	7070	0.38	µg/L	100
PFPeS	6.570	349.1 -> 79.9	590	0.19	µg/L	94
		349.1 -> 98.9	296			
PFTeDA	9.963	713.1 -> 669.0	3544	0.20	µg/L	99
		713.1 -> 168.9	370			
PFTrDA	9.604	663.0 -> 619.0	4410	0.21	µg/L	100
		663.0 -> 168.9	513			
PFUnDA	8.760	563.1 -> 519.0	4023	0.21	µg/L	96
		563.1 -> 269.1	790			
11Cl-PF3OUdS	9.644	630.9 -> 450.9	5065	0.37	µg/L	91
		632.9 -> 452.9	1314			
9Cl-PF3ONS	8.775	530.8 -> 351.0	6957	0.38	µg/L	98
		532.8 -> 353.0	2126			
ADONA	6.818	376.9 -> 250.9	13921	0.37	µg/L	99
		376.9 -> 84.8	3482			
HFPO-DA	5.966	284.9 -> 168.9	2119	0.40	µg/L	95
		284.9 -> 184.9	202			
3:3FTCA	3.823	241.0 -> 177.0	941	0.92	µg/L	100
		241.0 -> 117.0	91			
5:3FTCA	6.281	341.0 -> 237.1	15637	4.81	µg/L	99
		341.0 -> 217.0	10982			
7:3FTCA	7.774	441.0 -> 316.9	8349	4.65	µg/L	96
		441.0 -> 336.9	20107			
EtFOSA	11.437	526.0 -> 219.0	3279	0.48	µg/L	90
		526.0 -> 169.0	4115			
EtFOSE	11.370	630.0 -> 58.9	6487	1.18	µg/L	100
MeFOSA	11.178	511.9 -> 219.0	2010	0.41	µg/L	77
		511.9 -> 169.0	3166			
MeFOSE	11.085	616.1 -> 58.9	3760	1.02	µg/L	100
PFDoDS	10.102	699.1 -> 79.9	479	0.20	µg/L	94
		699.1 -> 98.8	246			
NFDHA	5.481	295.0 -> 201.0	448	0.39	µg/L	88
		295.0 -> 84.9	87			
PFMBA	4.797	279.0 -> 85.1	3981	0.40	µg/L	100
PFMPA	3.499	229.0 -> 84.9	3725	0.39	µg/L	100
PFEESA	6.022	314.8 -> 134.9	5108	0.35	µg/L	100
		314.8 -> 82.9	179			

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

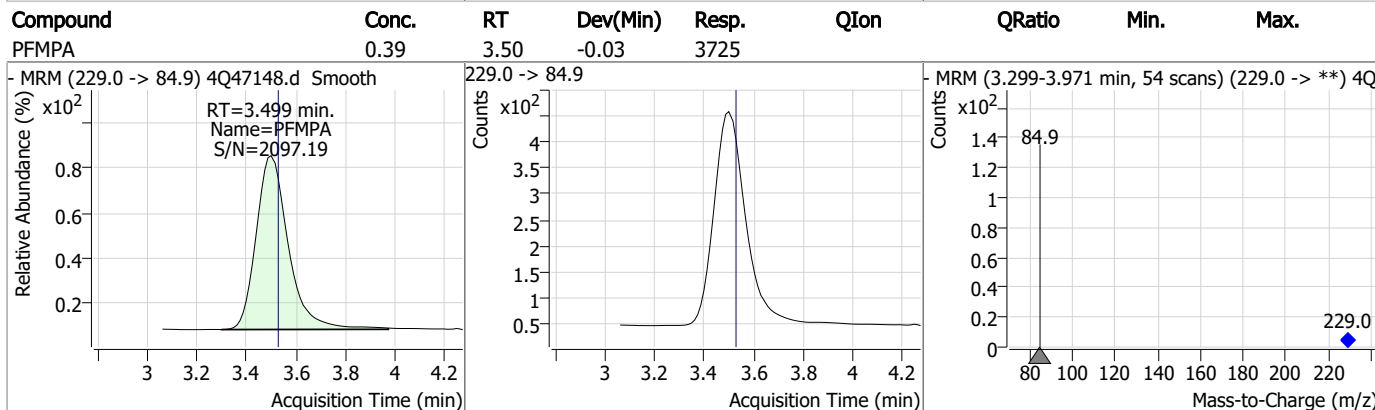
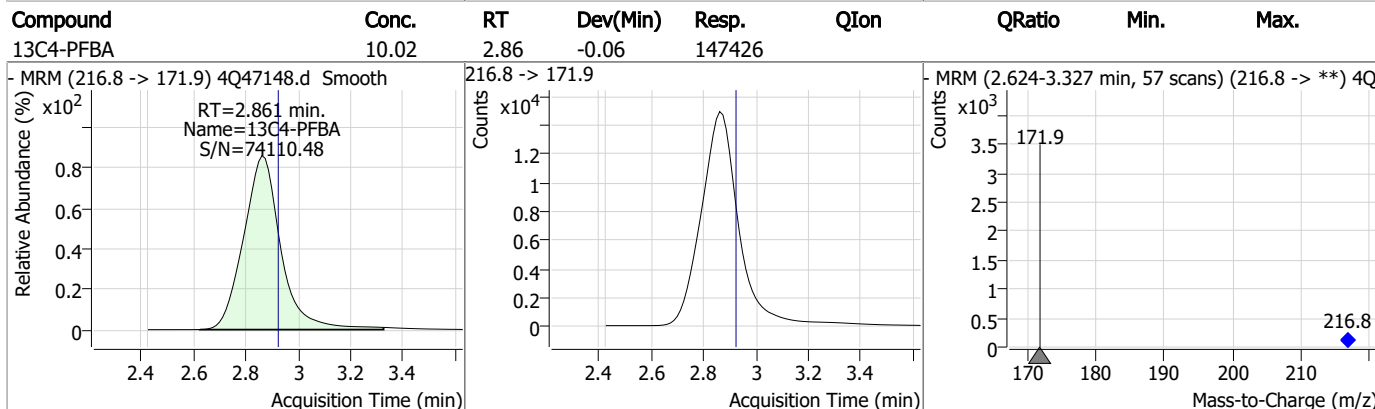
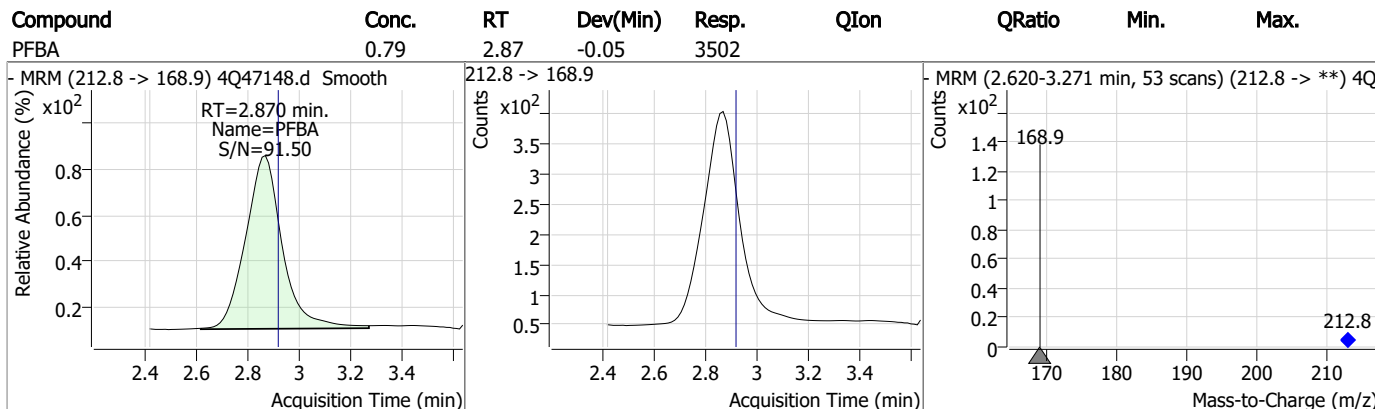
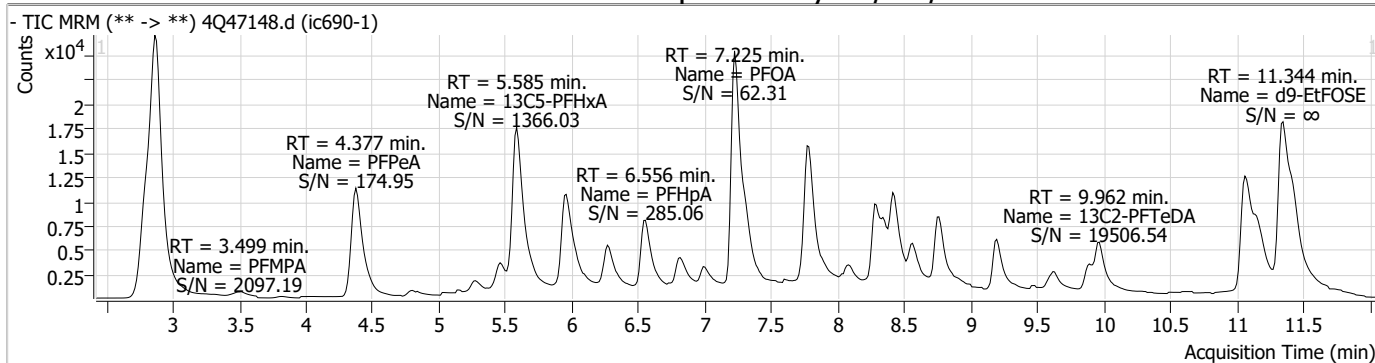
Perfluorinated Compounds by LC/MS/MS

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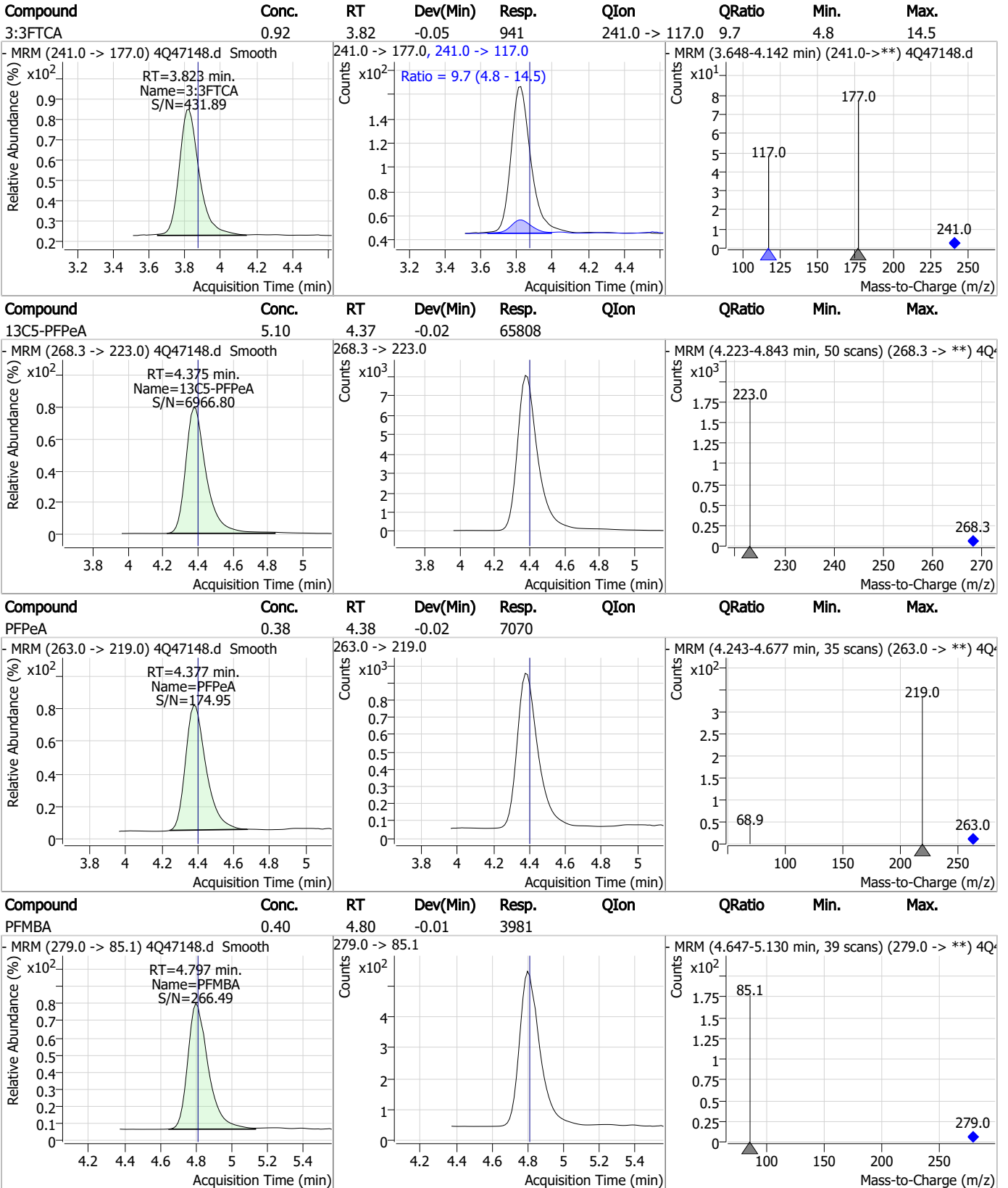


Perfluorinated Compounds by LC/MS/MS



7.7.2
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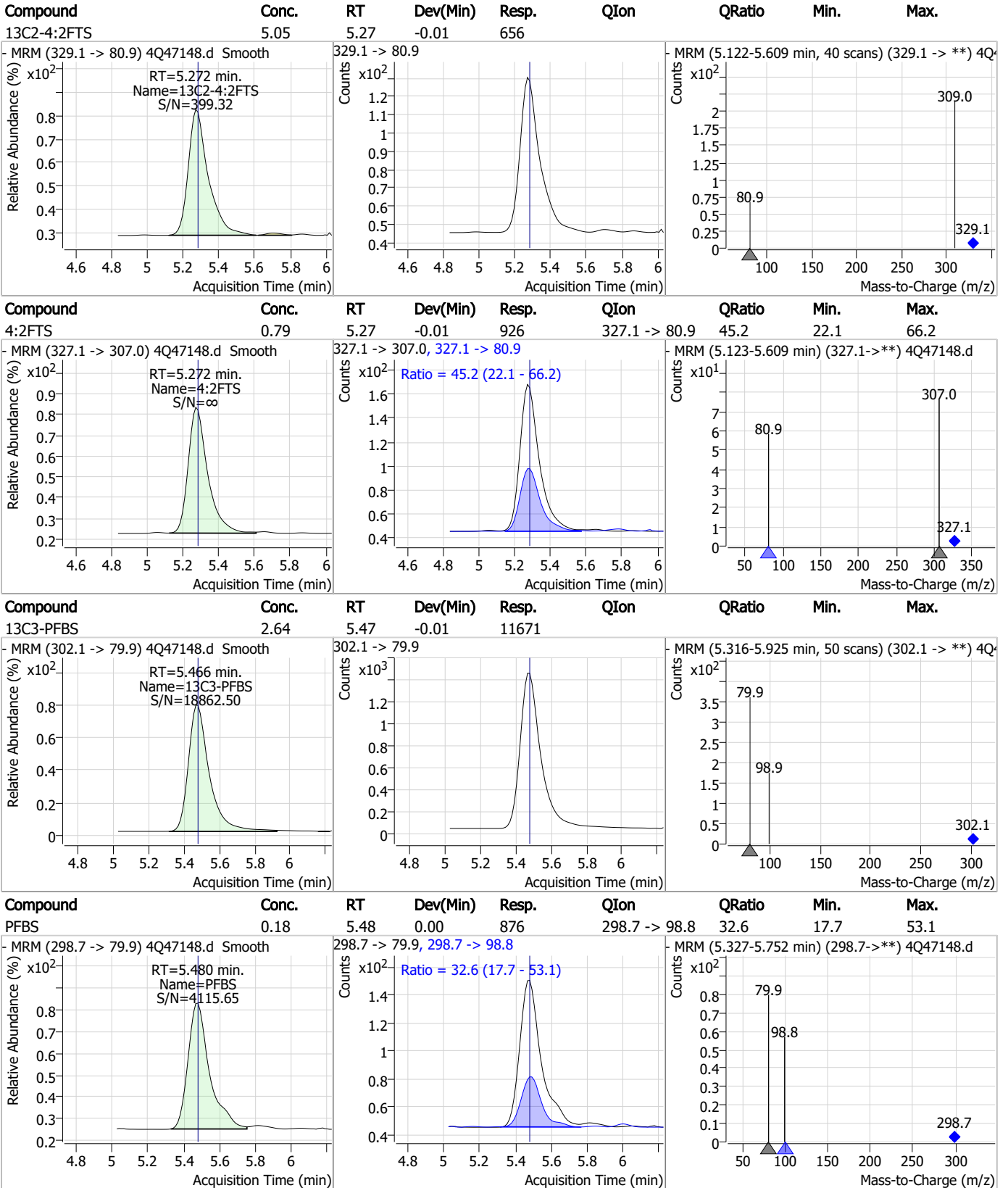
Perfluorinated Compounds by LC/MS/MS



7.7.2

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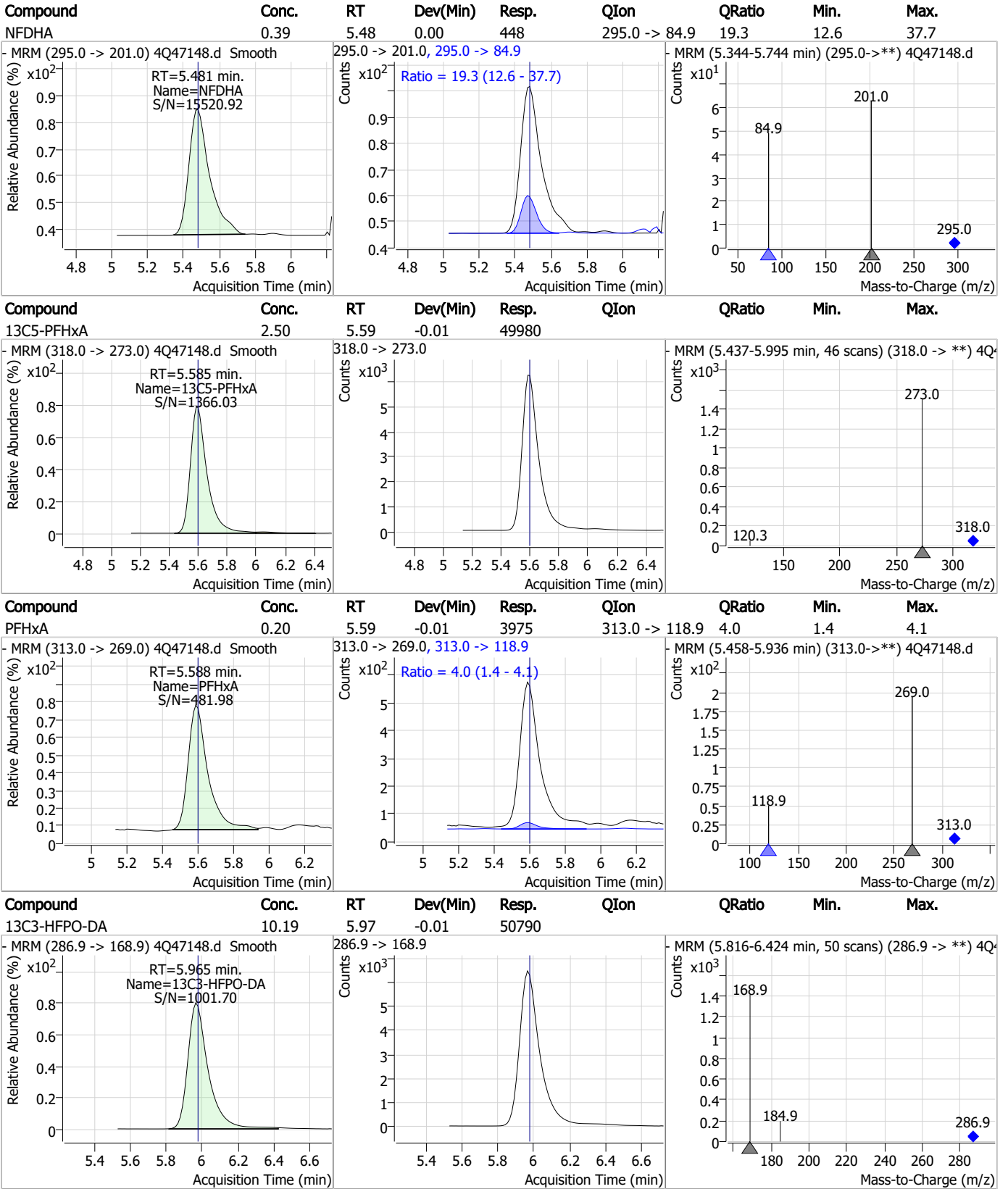
Perfluorinated Compounds by LC/MS/MS



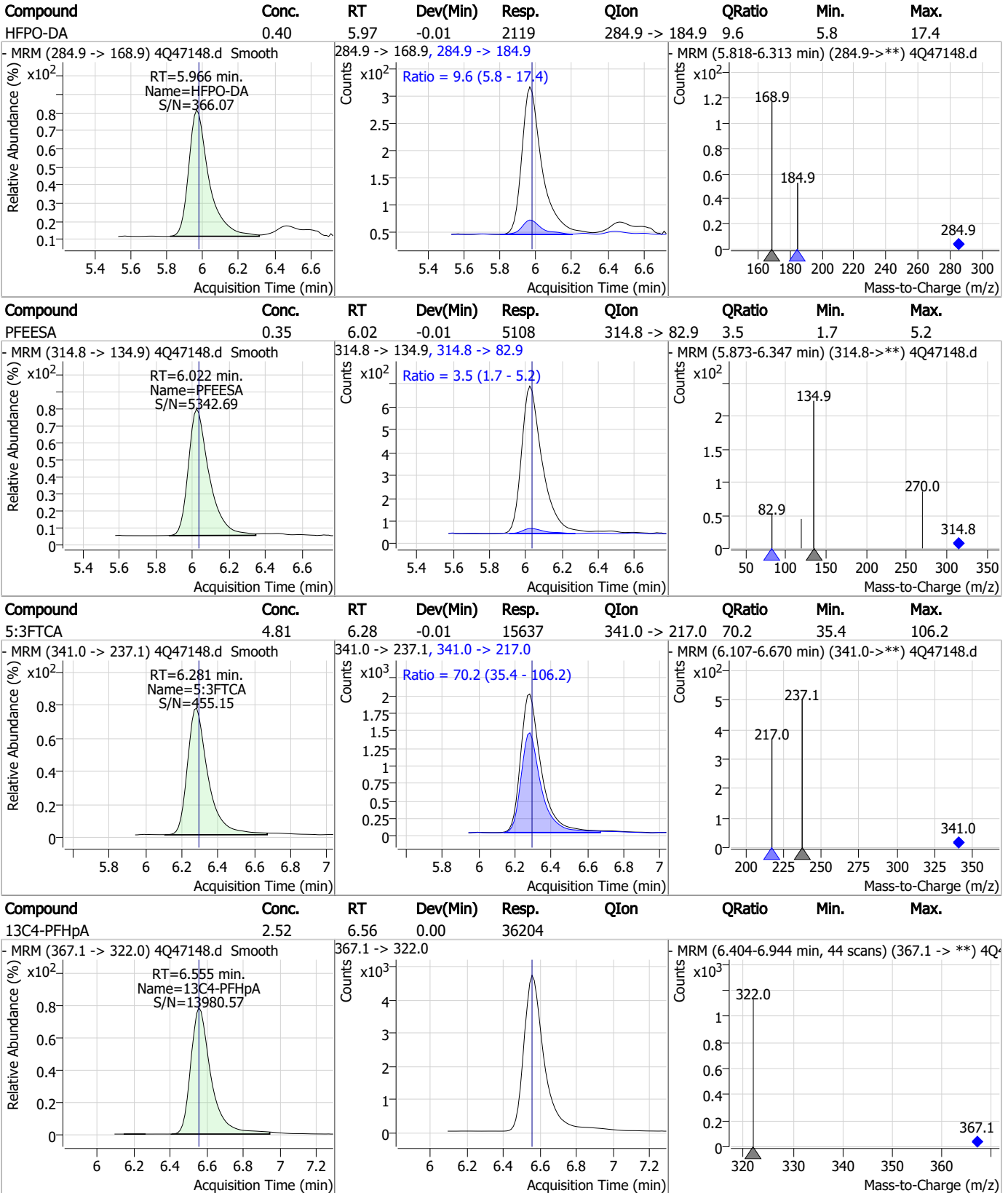
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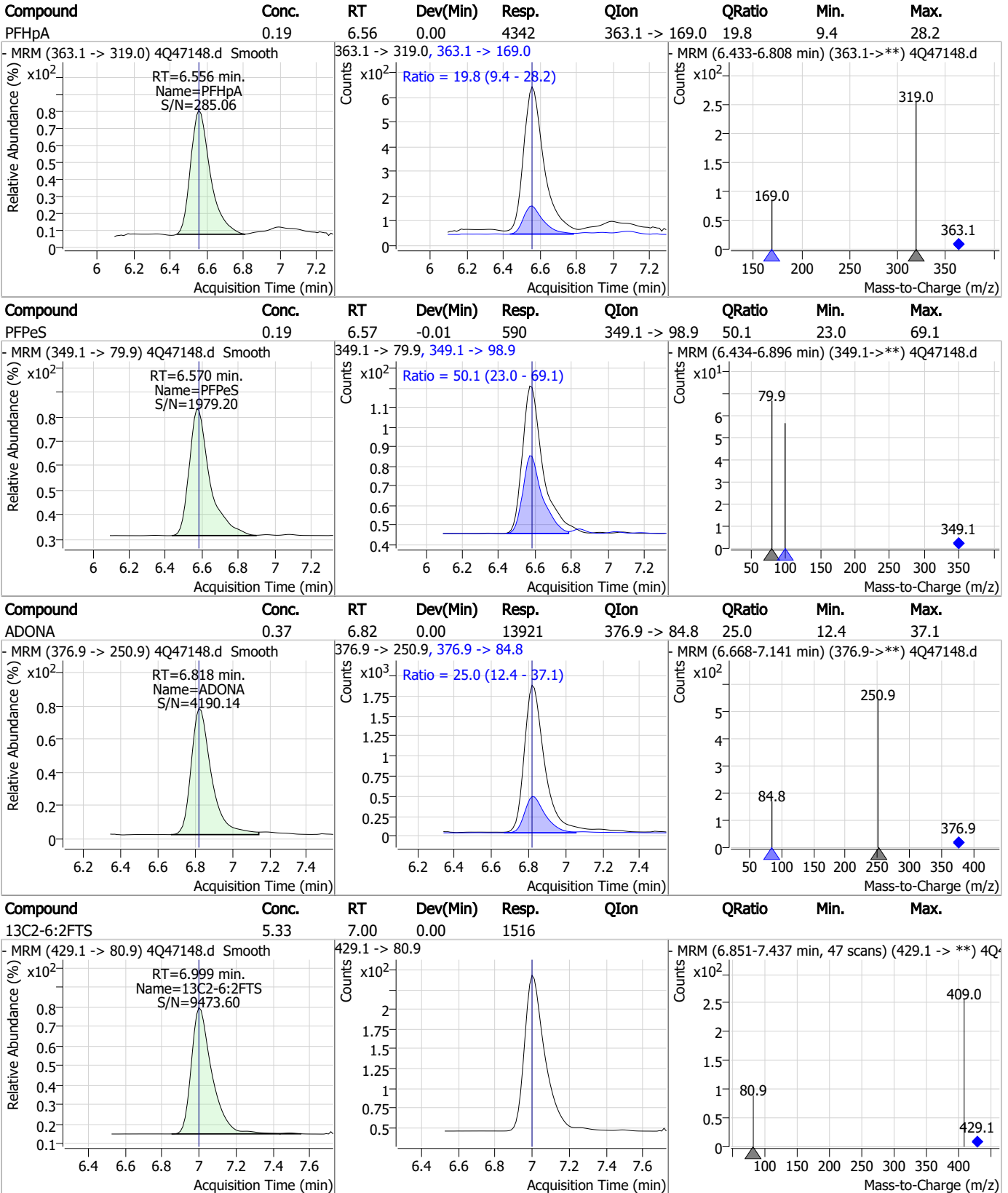
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



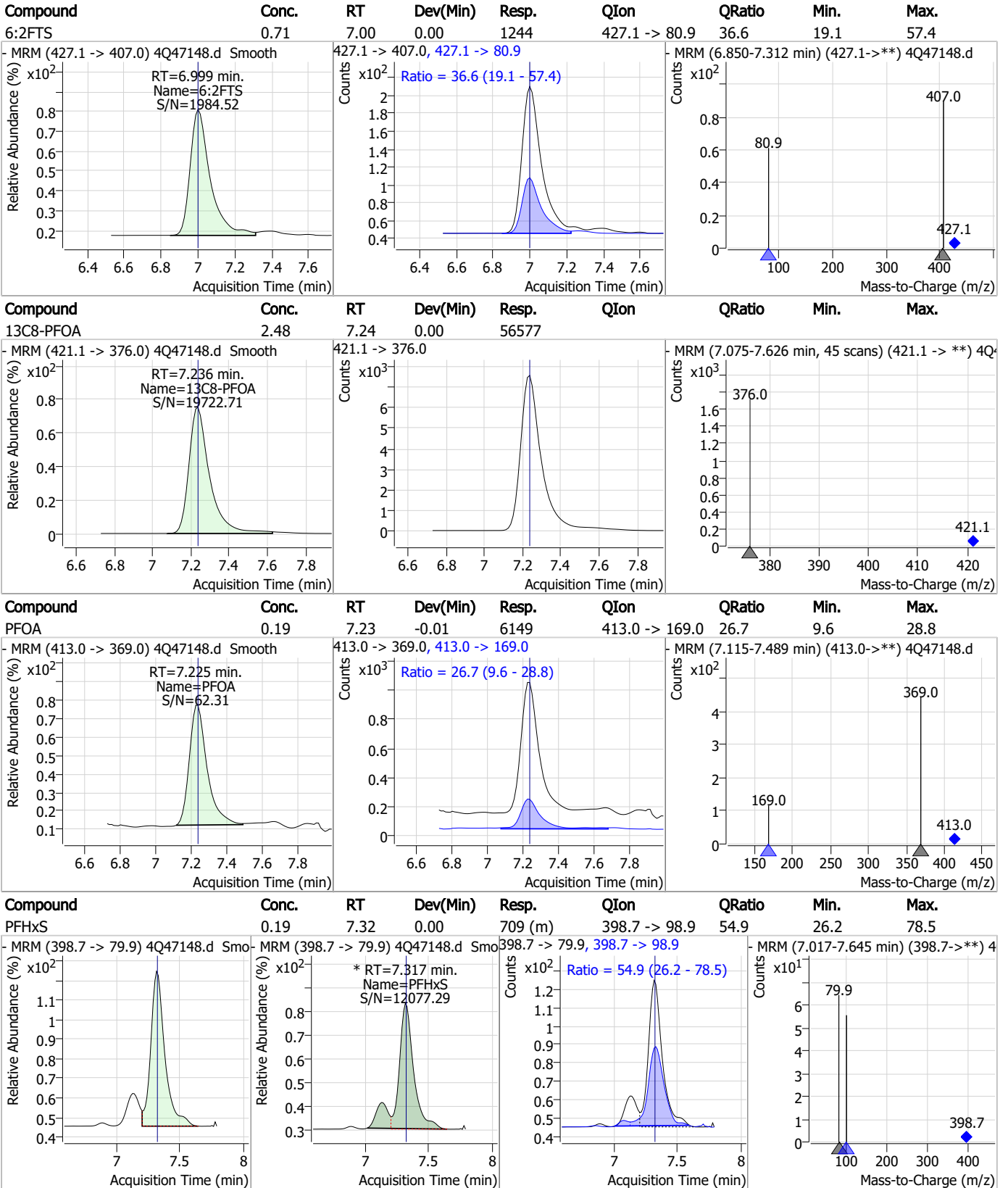
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

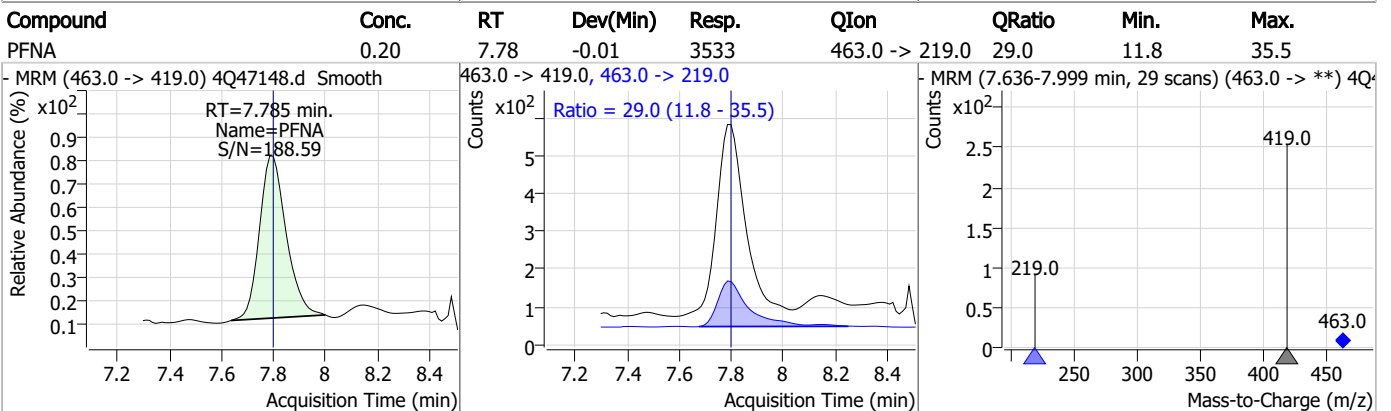
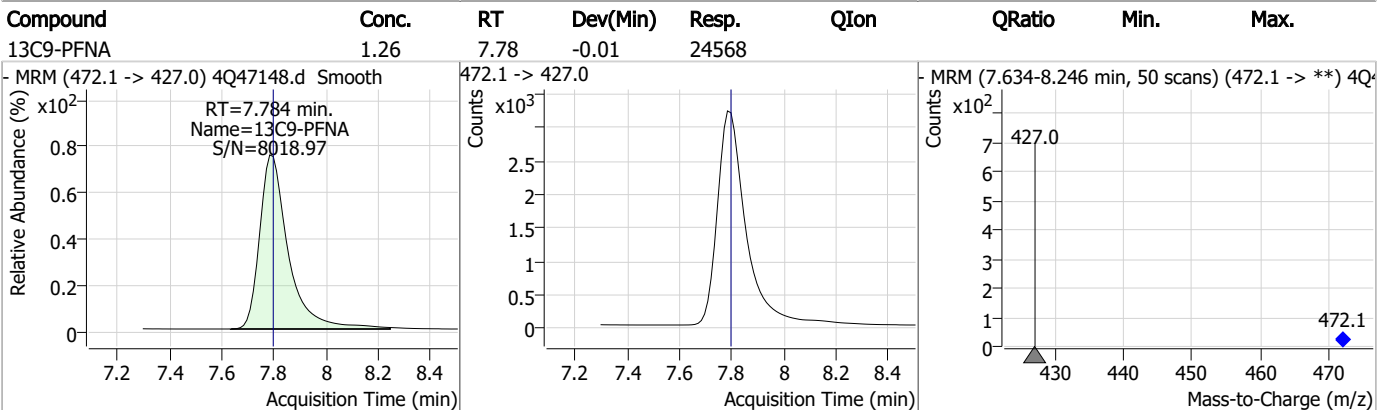
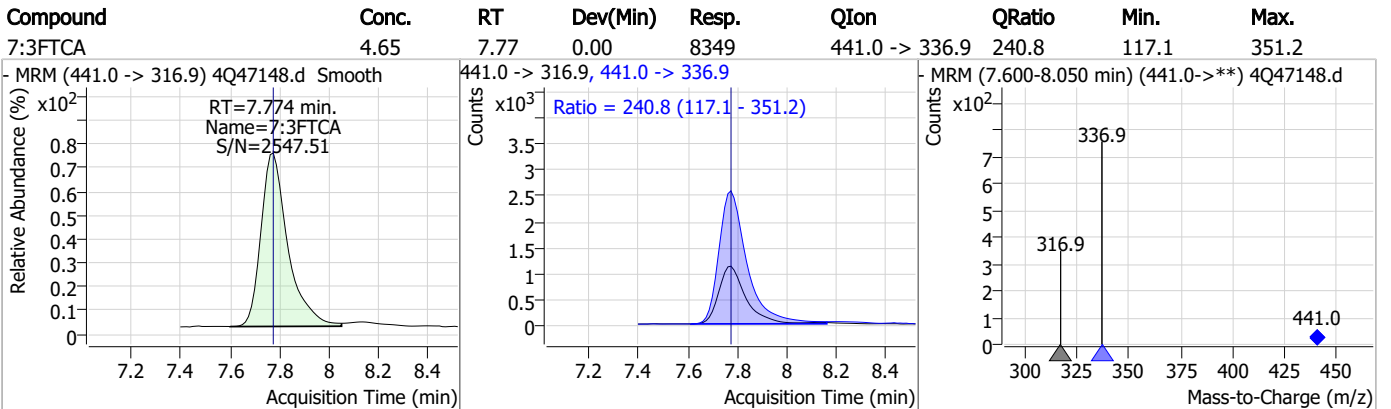
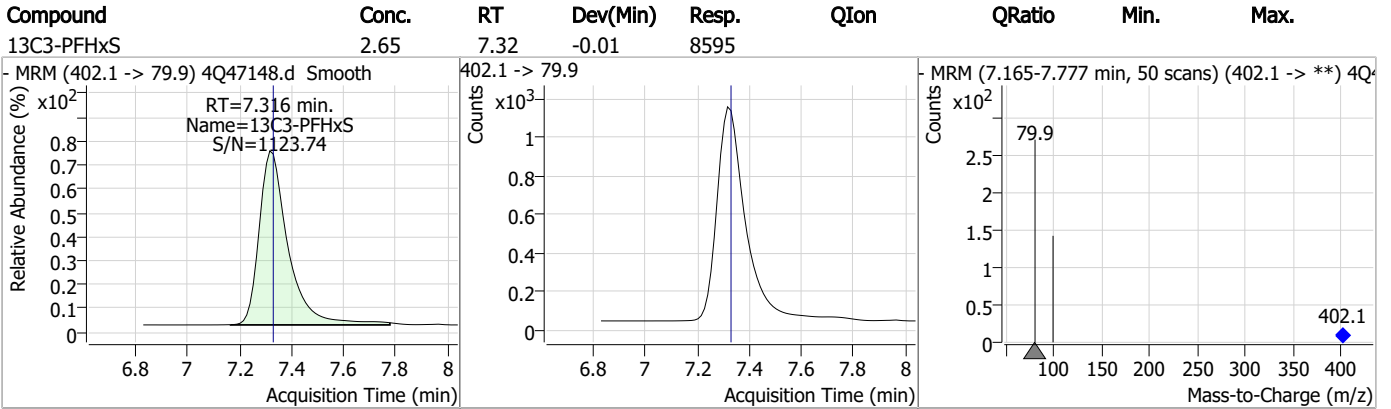


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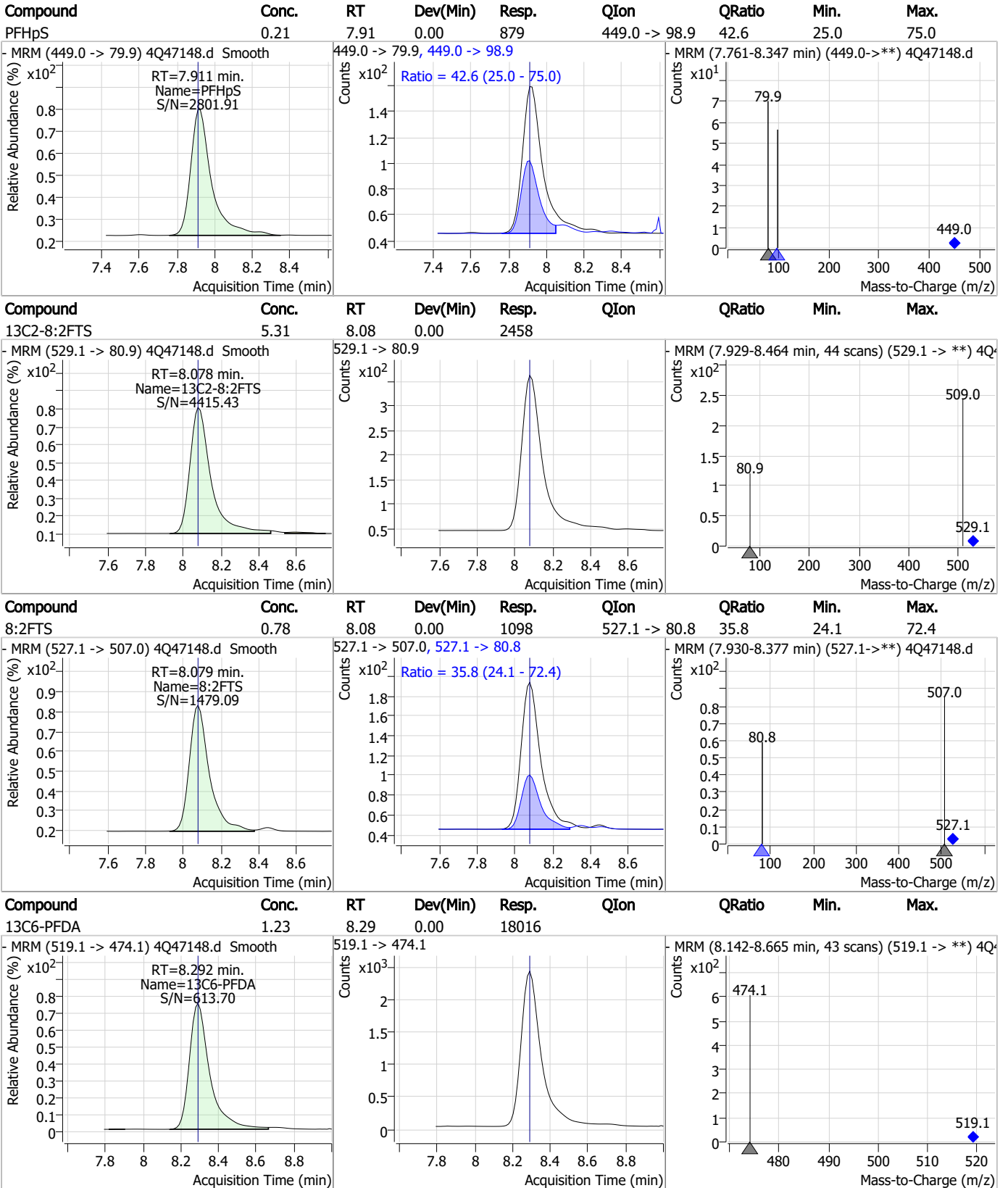
Perfluorinated Compounds by LC/MS/MS



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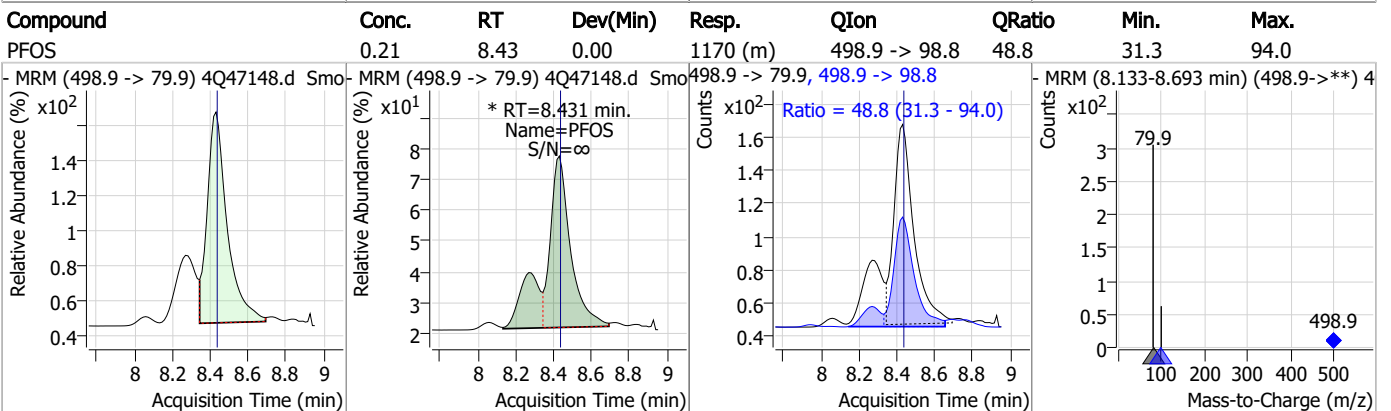
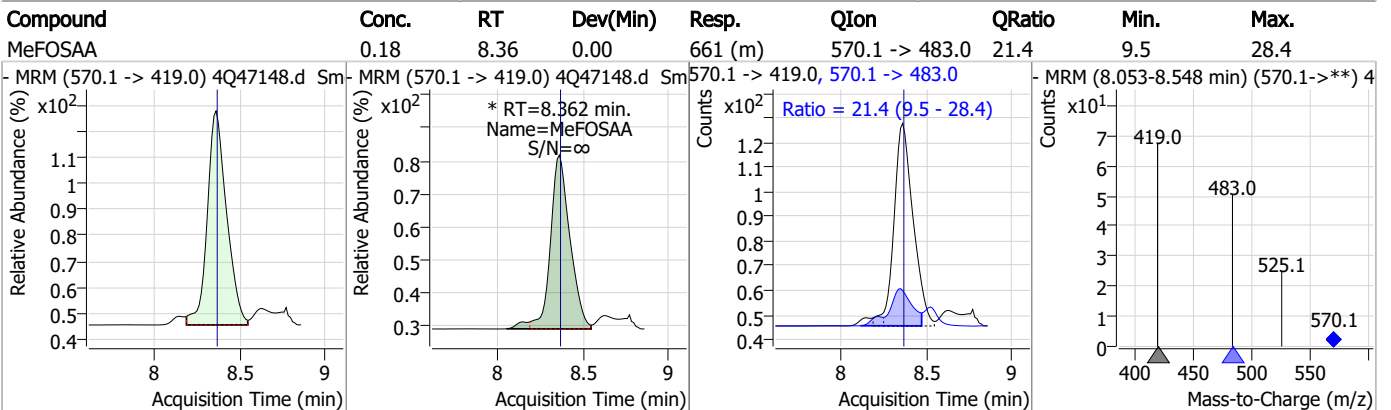
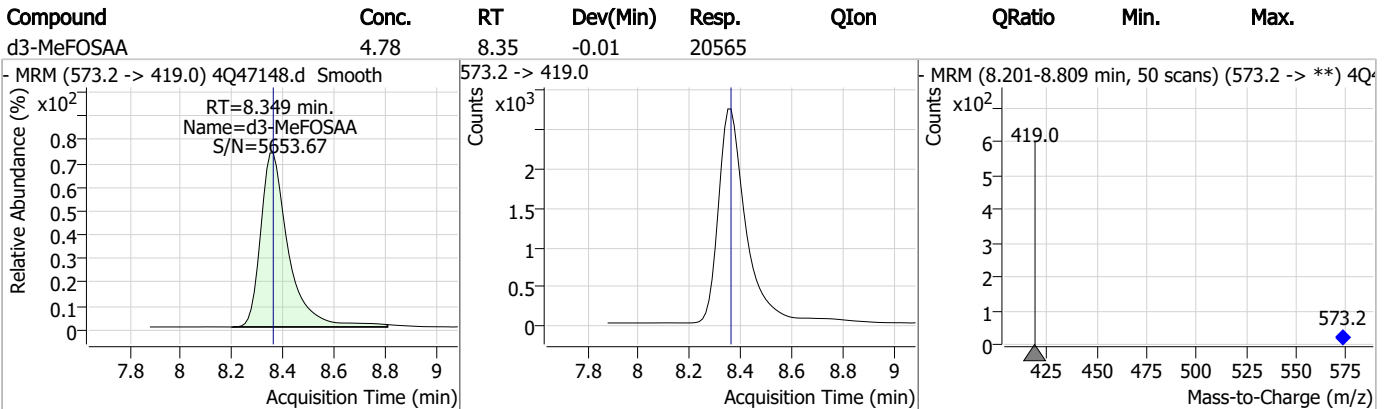
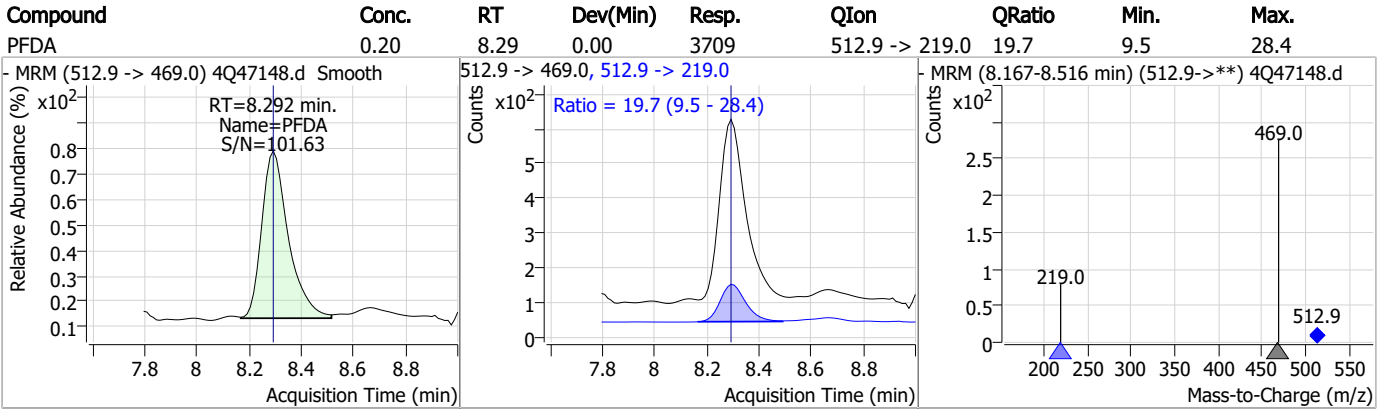
Perfluorinated Compounds by LC/MS/MS



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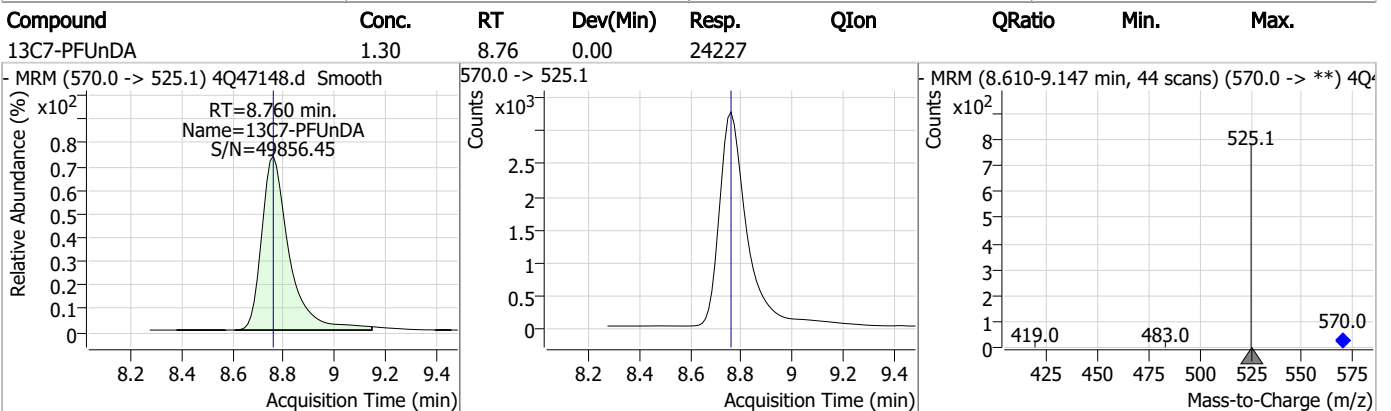
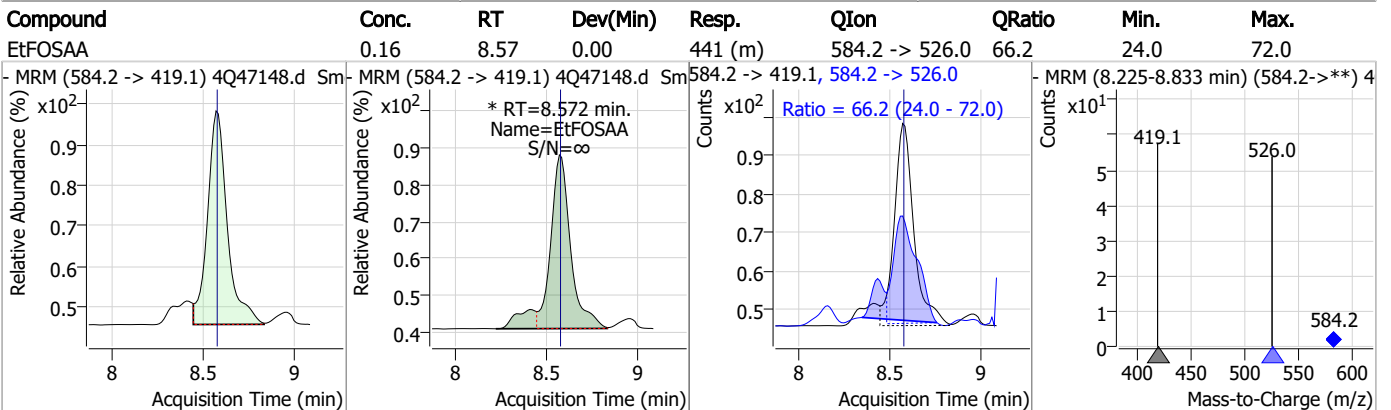
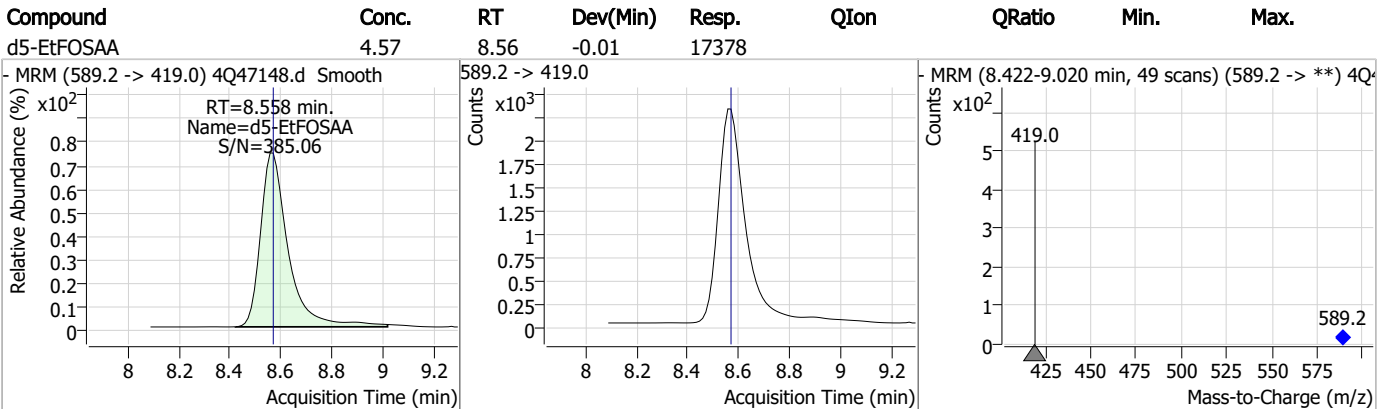
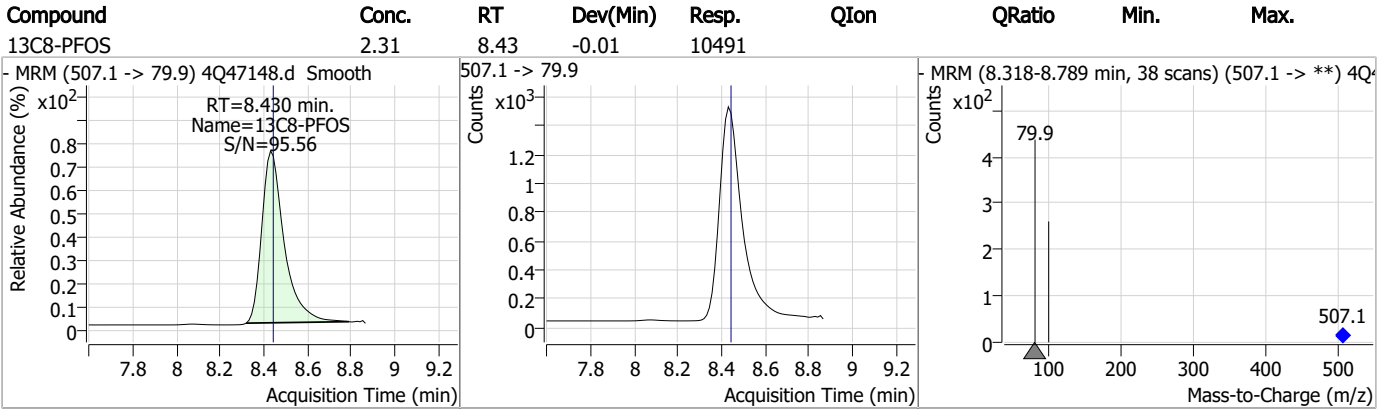
Perfluorinated Compounds by LC/MS/MS



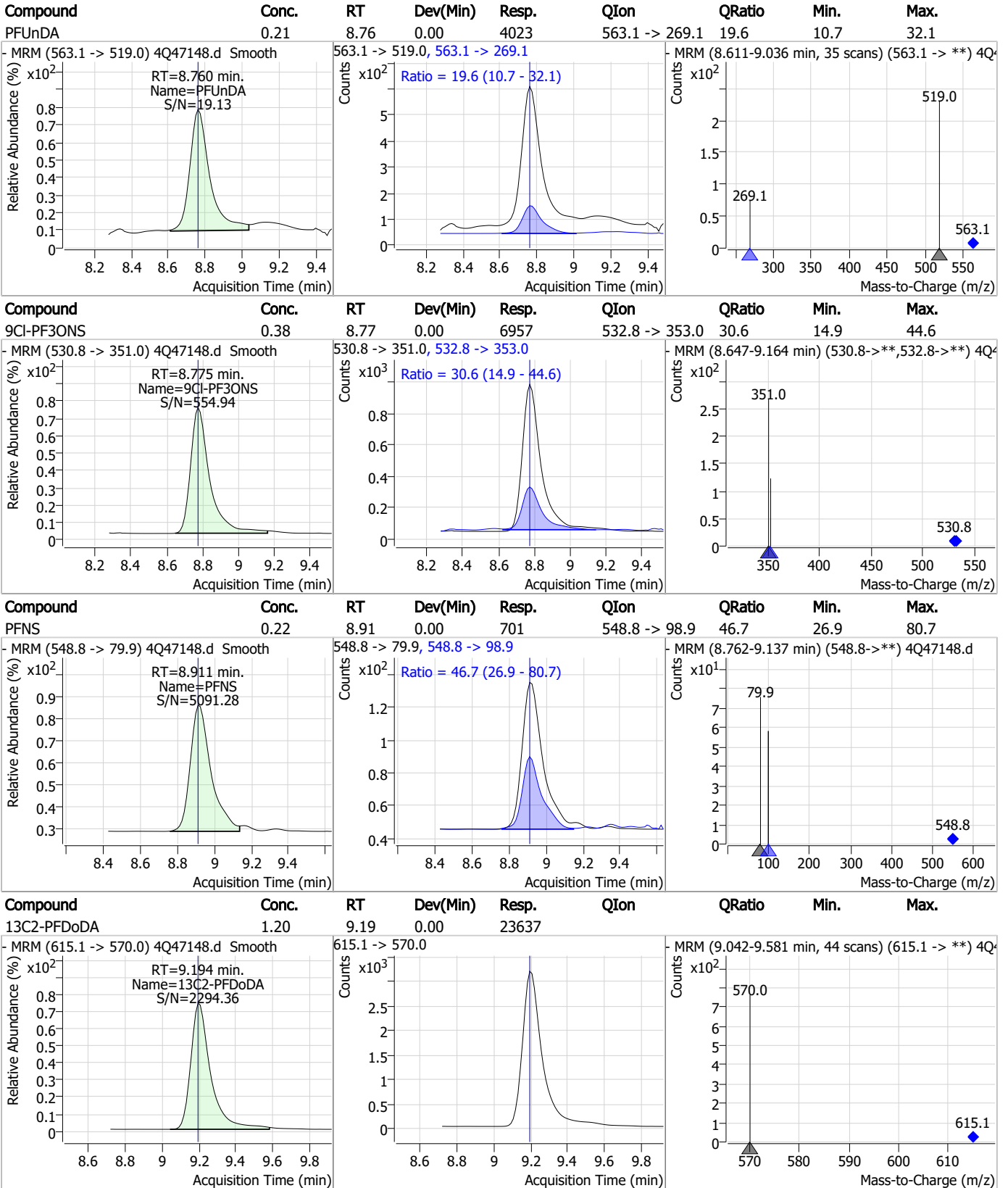
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

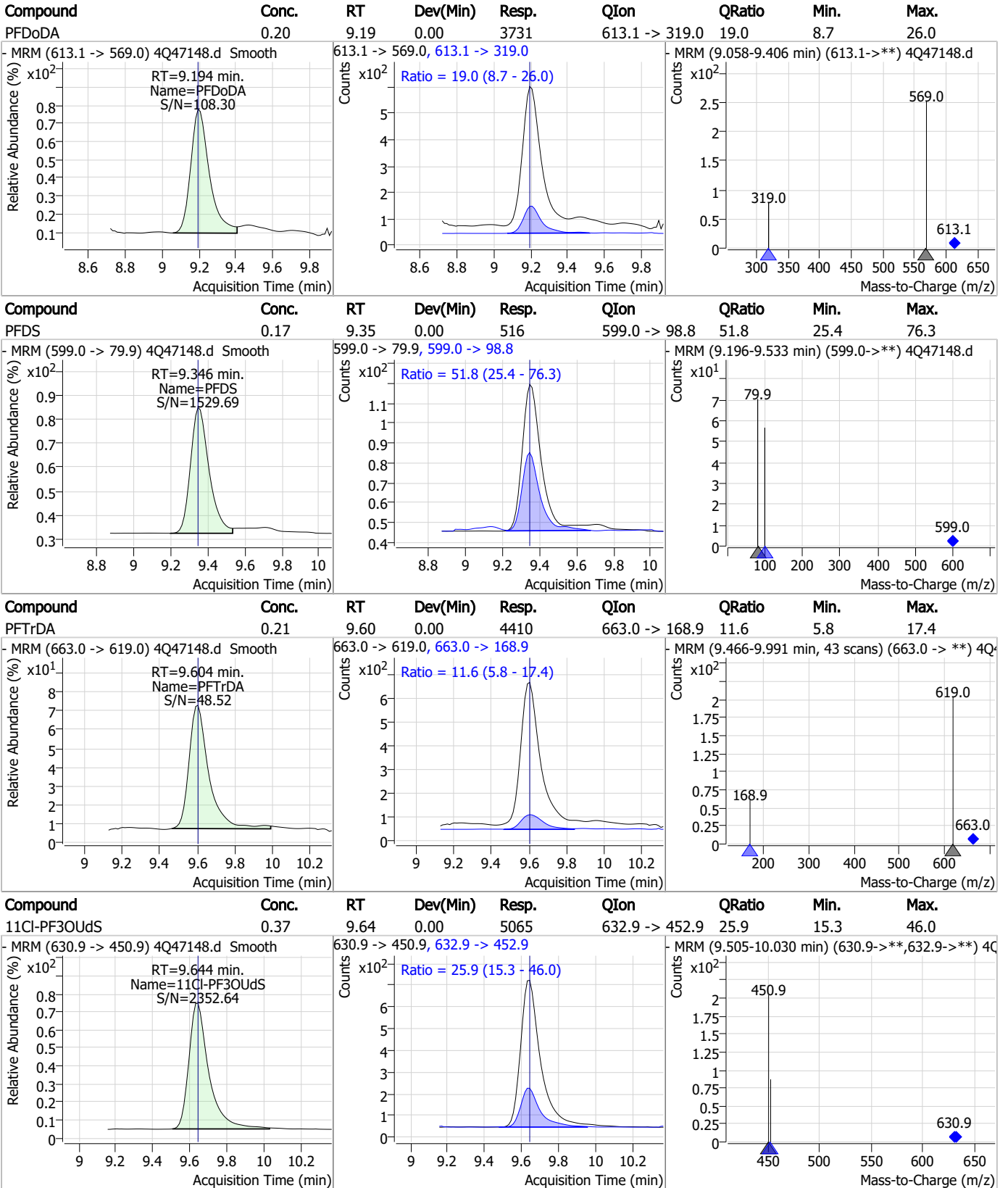


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Perfluorinated Compounds by LC/MS/MS

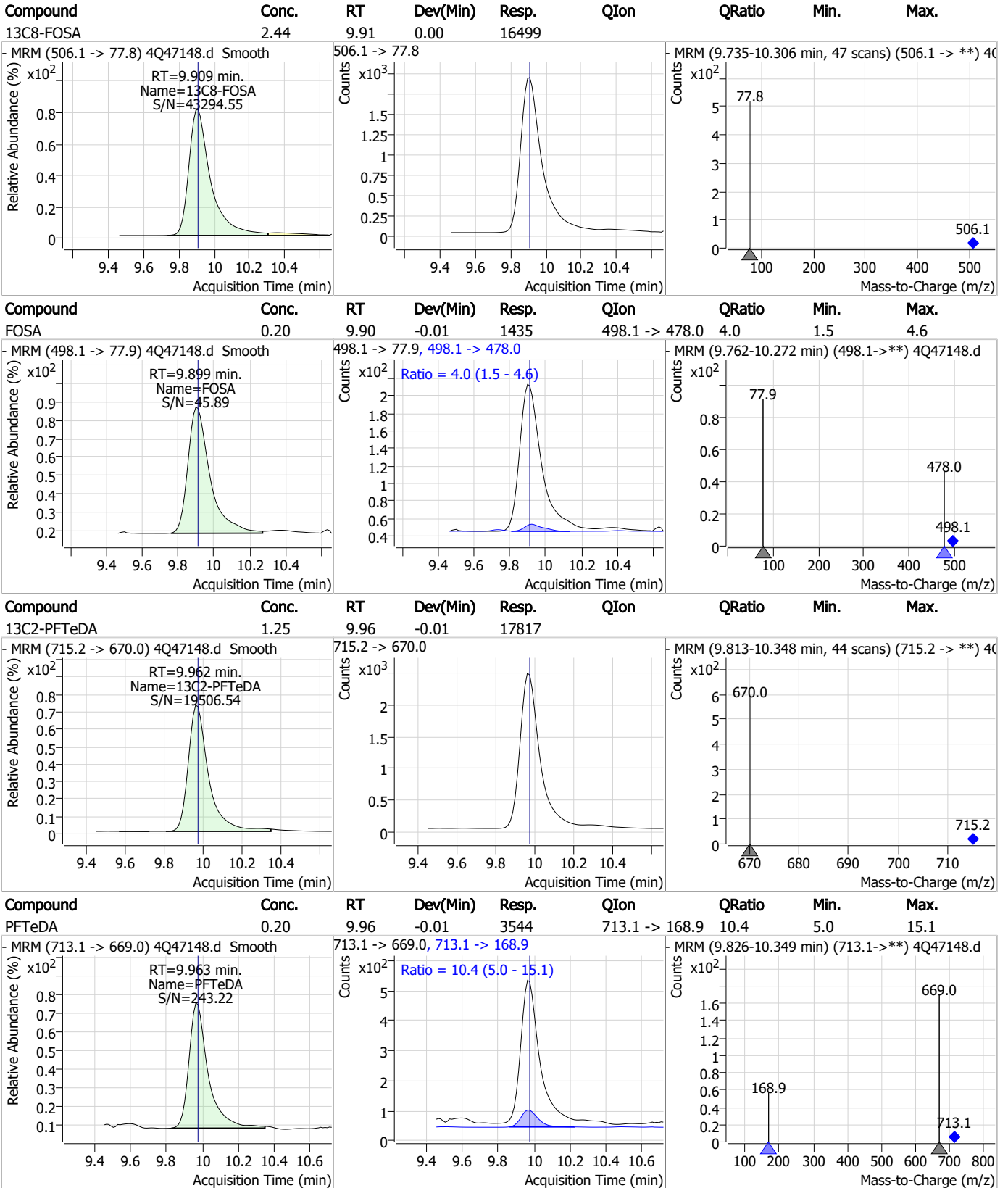


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Perfluorinated Compounds by LC/MS/MS

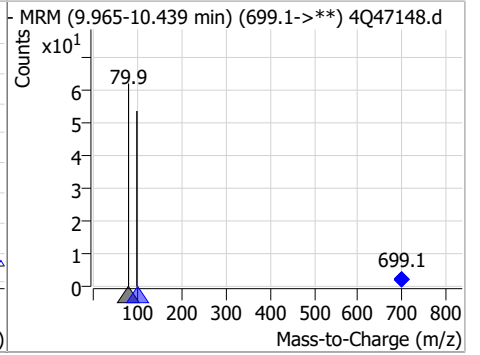
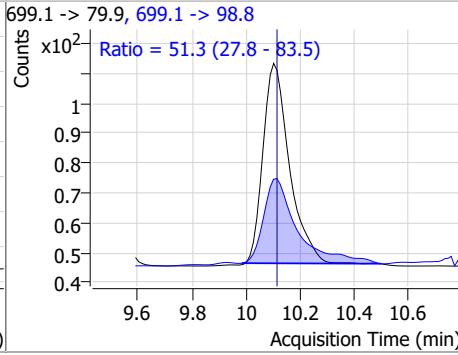
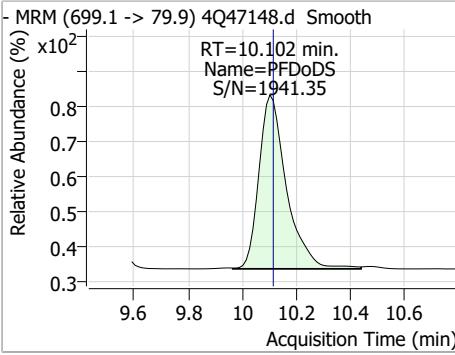


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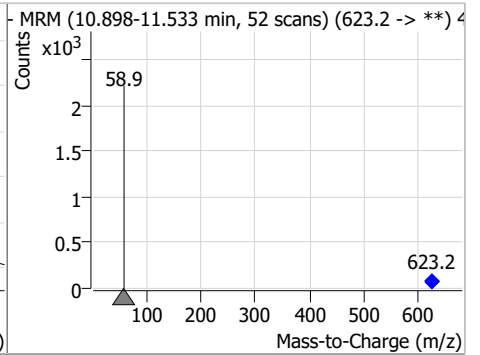
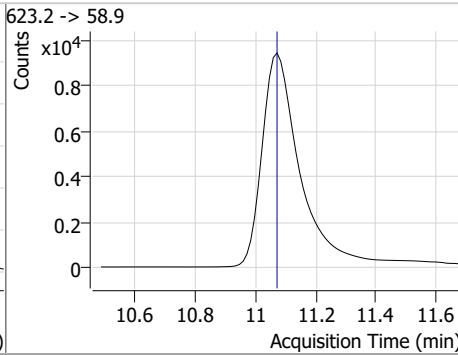
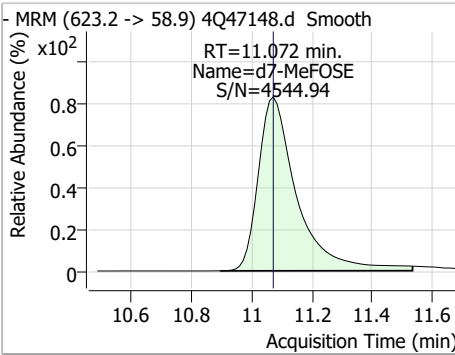
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Perfluorinated Compounds by LC/MS/MS

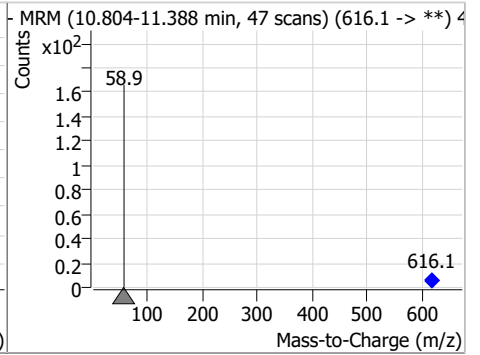
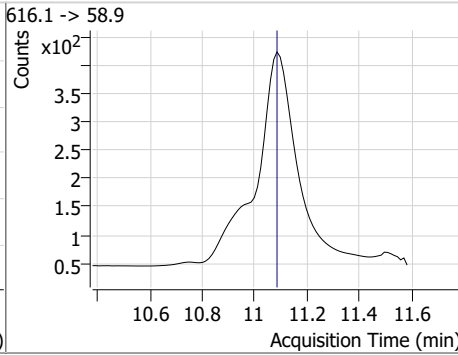
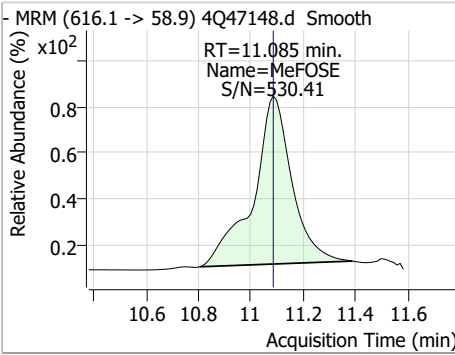
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.20	10.10	-0.01	479	699.1 -> 98.8	51.3	27.8	83.5



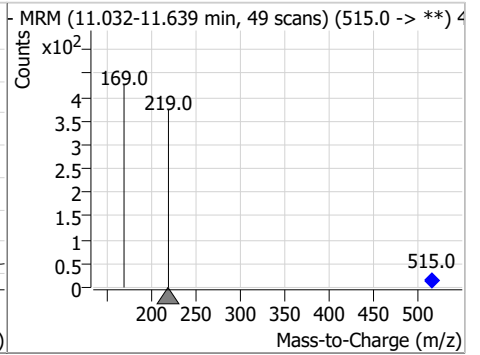
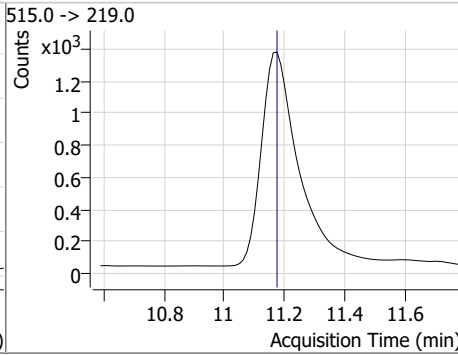
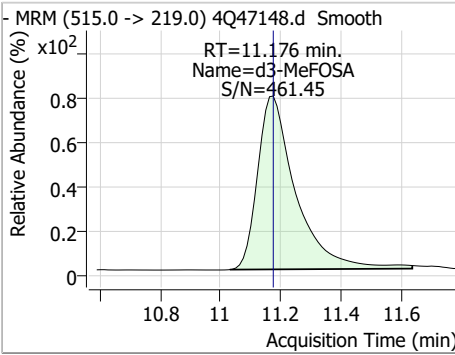
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.94	11.07	0.00	83645	623.2 -> 58.9			



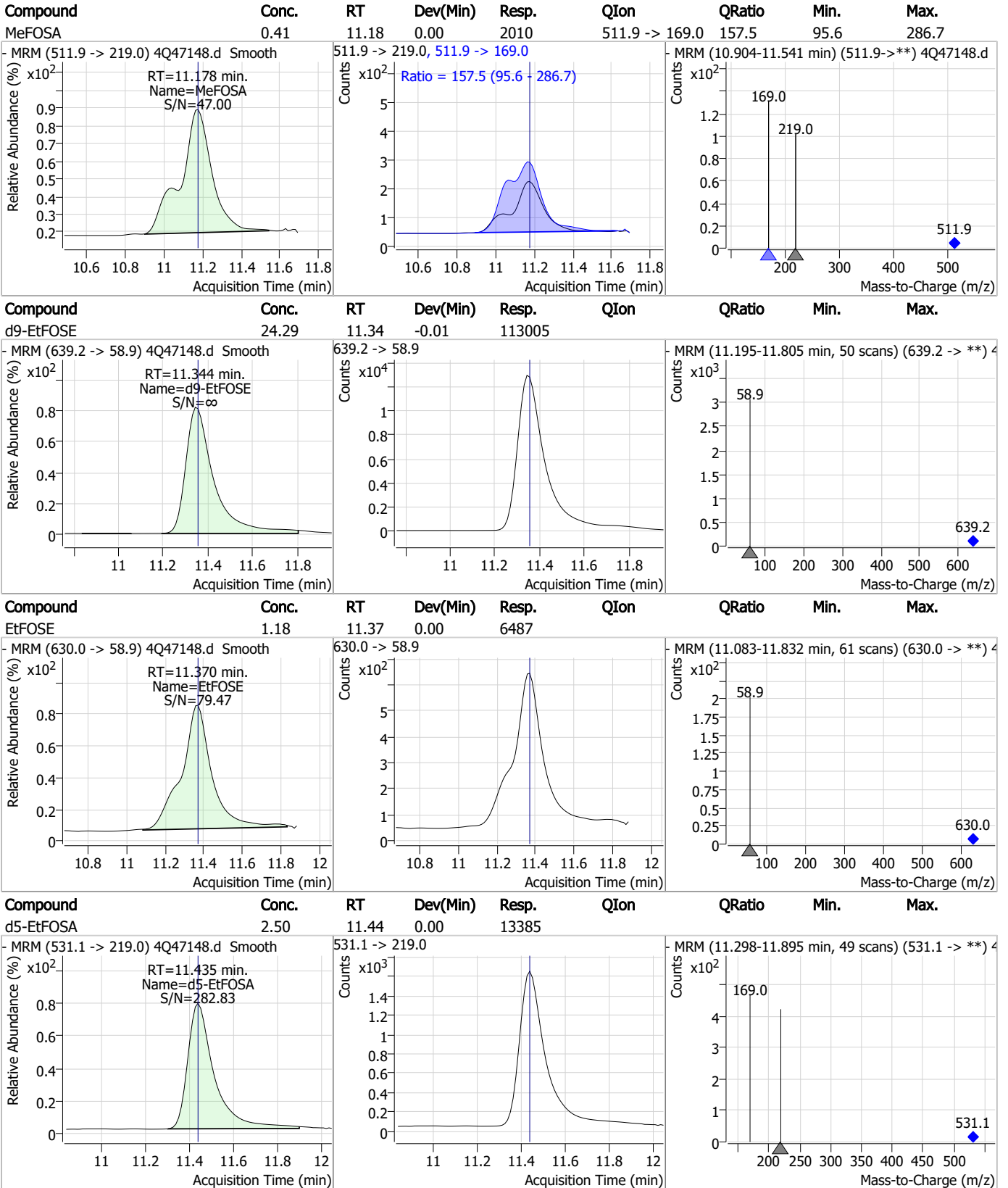
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	1.02	11.09	0.00	3760	616.1 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.38	11.18	0.00	11749	515.0 -> 169.0			



Perfluorinated Compounds by LC/MS/MS

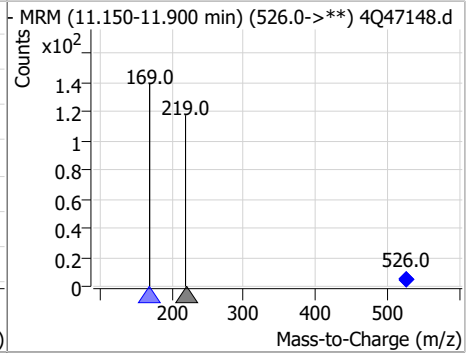
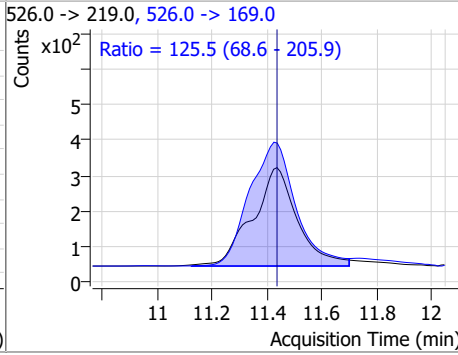
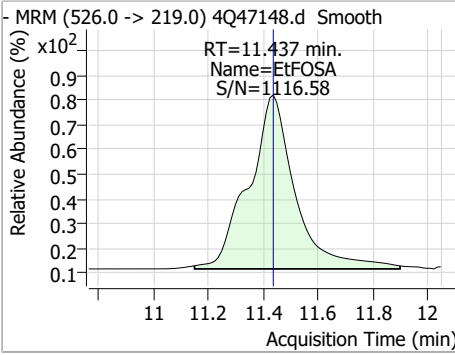


7.7.2

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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOsa	0.48	11.44	0.00	3279	526.0 -> 169.0	125.5	68.6	205.9



7.7.2

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Manual Integration Approval Summary

Sample Number: S4Q690-IC690 Method: EPA DRAFT 1633
Lab FileID: 4Q47148.D Analyst approved: 07/13/23 14:35 Anna Ludwig
Injection Time: 07/12/23 17:31 Supervisor approved: 07/14/23 09:30 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
MeFOSAA	2355-31-9		8.36	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.43	Split peak
EtFOSAA	2991-50-6		8.57	Split peak

7.7.2.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47149.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/12/2023 5:46:16 PM
 Sample Name : ic690-2
 Vial : P1-A3
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q690.batch.bin
 Sample Information : OP97325,S4Q690,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.861	216.8 -> 171.9	136659	10.00 µg/L	-0.062
M5-PFPeA	4.375	268.3 -> 223.0	61542	5.00 µg/L	-0.025
M5-PFHxA	5.598	318.0 -> 273.0	47237	2.50 µg/L	0.000
M4-PFHpA	6.555	367.1 -> 322.0	33837	2.50 µg/L	0.000
M8-PFOA	7.236	421.1 -> 376.0	53429	2.50 µg/L	0.000
M9-PFNA	7.784	472.1 -> 427.0	22862	1.25 µg/L	-0.014
M6-PFDA	8.292	519.1 -> 474.1	16646	1.25 µg/L	0.000
M7-PFUnDA	8.760	570.0 -> 525.1	22324	1.25 µg/L	0.000
M2-PFDoDA	9.194	615.1 -> 570.0	22761	1.25 µg/L	0.000
M2-PFTeDA	9.962	715.2 -> 670.0	15612	1.25 µg/L	-0.012
M8-FOSA	9.896	506.1 -> 77.8	14810	2.50 µg/L	-0.012
M3-PFBS	5.479	302.1 -> 79.9	10567	2.50 µg/L	0.000
M3-PFHxS	7.316	402.1 -> 79.9	8071	2.50 µg/L	-0.013
M8-PFOS	8.430	507.1 -> 79.9	9706	2.50 µg/L	-0.012
M2-4:2FTS	5.284	329.1 -> 80.9	619	5.00 µg/L	0.000
M2-6:2FTS	6.999	429.1 -> 80.9	1196	5.00 µg/L	0.000
M2-8:2FTS	8.078	529.1 -> 80.9	2233	5.00 µg/L	0.000
M3-MeFOSAA	8.362	573.2 -> 419.0	19773	5.00 µg/L	0.000
M3-HFPO-DA	5.965	286.9 -> 168.9	46352	10.00 µg/L	-0.012
M5-EtFOSAA	8.558	589.2 -> 419.0	16384	5.00 µg/L	-0.012
M7-MeFOSE	11.072	623.2 -> 58.9	77033	25.00 µg/L	0.000
M9-EtFOSE	11.356	639.2 -> 58.9	104709	25.00 µg/L	0.000
M5-EtFOSA	11.435	531.1 -> 219.0	12396	2.50 µg/L	0.000
M3-MeFOSA	11.176	515.0 -> 219.0	11052	2.50 µg/L	0.000
13C4-PFOS	8.430	502.8 -> 79.9	10957	2.50 µg/L	0.000
13C3-PFBA	2.866	216.0 -> 172.0	71860	5.00 µg/L	-0.062
18O2-PFHxS	7.315	403.0 -> 83.9	5462	2.50 µg/L	-0.013
13C4-PFOA	7.237	417.1 -> 372.0	64575	2.50 µg/L	0.000
13C2-PFDA	8.292	515.1 -> 470.1	19364	1.25 µg/L	0.000
13C5-PFNA	7.784	468.0 -> 423.0	28347	1.25 µg/L	-0.014
13C2-PFHxA	5.599	315.1 -> 270.0	43467	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.284	329.1 -> 80.9	619	5.05 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C2-6:2FTS	6.999	429.1 -> 80.9	1196	4.45 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.0%		
13C2-8:2FTS	8.078	529.1 -> 80.9	2233	5.11 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.1%		
13C2-PFDoDA	9.194	615.1 -> 570.0	22761	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C2-PFTeDA	9.962	715.2 -> 670.0	15612	1.20 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C3-PFBS	5.479	302.1 -> 79.9	10567	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C3-PFHxS	7.316	402.1 -> 79.9	8071	2.63 µg/L	-0.013

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.4%	
13C4-PFBA	2.861	216.8 -> 171.9	136659	10.06 µg/L	-0.062
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C4-PFHpA	6.555	367.1 -> 322.0	33837	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C5-PFHxA	5.598	318.0 -> 273.0	47237	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C5-PFPeA	4.375	268.3 -> 223.0	61542	5.13 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C6-PFDA	8.292	519.1 -> 474.1	16646	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C7-PFUnDA	8.760	570.0 -> 525.1	22324	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.9%	
13C8-FOSA	9.896	506.1 -> 77.8	14810	2.61 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.5%	
13C8-PFOA	7.236	421.1 -> 376.0	53429	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C8-PFOS	8.430	507.1 -> 79.9	9706	2.55 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C9-PFNA	7.784	472.1 -> 427.0	22862	1.21 µg/L	-0.014
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.5%	
d3-MeFOSAA	8.362	573.2 -> 419.0	19773	5.49 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.8%	
13C3-HFPO-DA	5.965	286.9 -> 168.9	46352	10.01 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
d3-MeFOSA	11.176	515.0 -> 219.0	11052	2.68 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.0%	
d5-EtFOSAA	8.558	589.2 -> 419.0	16384	5.15 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.1%	
d7-MeFOSE	11.072	623.2 -> 58.9	77033	26.35 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 105.4%	
d9-EtFOSE	11.356	639.2 -> 58.9	104709	26.90 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 107.6%	
d5-EtFOSA	11.435	531.1 -> 219.0	12396	2.76 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.5%	
Target Compounds					QValue
4:2FTS	5.285	327.1 -> 307.0	1625	1.48 µg/L	99
		327.1 -> 80.9	707		
6:2FTS	6.999	427.1 -> 407.0	2470	1.79 µg/L	95
		427.1 -> 80.9	865		
8:2FTS	8.079	527.1 -> 507.0	1896	1.48 µg/L	90
		527.1 -> 80.8	790		
EtFOSAA	8.572	584.2 -> 419.1	1083	0.41 µg/L	m 93
		584.2 -> 526.0	469		
FOSA	9.899	498.1 -> 77.9	2656	0.41 µg/L	99
		498.1 -> 478.0	87		
MeFOSAA	8.362	570.1 -> 419.0	1294	0.37 µg/L	m 88
		570.1 -> 483.0	316		
PFBA	2.870	212.8 -> 168.9	6162	1.50 µg/L	100
PFBS	5.467	298.7 -> 79.9	1594	0.36 µg/L	95
		298.7 -> 98.8	607		
PFDA	8.292	512.9 -> 469.0	6637	0.38 µg/L	93
		512.9 -> 219.0	1469		
PFDODA	9.194	613.1 -> 569.0	7085	0.39 µg/L	97
		613.1 -> 319.0	1128		
PFDS	9.346	599.0 -> 79.9	1139	0.42 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	579			
PFHpA	6.556	363.1 -> 319.0	7632	0.37	µg/L	99
		363.1 -> 169.0	1401			
PFHpS	7.911	449.0 -> 79.9	1366	0.35	µg/L	89
		449.0 -> 98.9	790			
PFHxA	5.601	313.0 -> 269.0	6696	0.36	µg/L	97
		313.0 -> 118.9	249			
PFHxS	7.317	398.7 -> 79.9	1329	0.37	µg/L	m 88
		398.7 -> 98.9	582			
PFNA	7.785	463.0 -> 419.0	6712	0.40	µg/L	97
		463.0 -> 219.0	1702			
PFNS	8.911	548.8 -> 79.9	1044	0.36	µg/L	93
		548.8 -> 98.9	612			
PFOA	7.225	413.0 -> 369.0	11151	0.37	µg/L	98
		413.0 -> 169.0	2262			
PFOS	8.431	498.9 -> 79.9	2051	0.40	µg/L	m 88
		498.9 -> 98.8	1099			
PFPeA	4.377	263.0 -> 219.0	12878	0.74	µg/L	100
PFPeS	6.570	349.1 -> 79.9	1125	0.38	µg/L	100
		349.1 -> 98.9	516			
PFTeDA	9.963	713.1 -> 669.0	5944	0.38	µg/L	99
		713.1 -> 168.9	583			
PFTrDA	9.592	663.0 -> 619.0	8077	0.40	µg/L	99
		663.0 -> 168.9	910			
PFUnDA	8.760	563.1 -> 519.0	6865	0.39	µg/L	96
		563.1 -> 269.1	1337			
11CI-PF3OUdS	9.631	630.9 -> 450.9	8815	0.71	µg/L	97
		632.9 -> 452.9	2829			
9CI-PF3ONS	8.775	530.8 -> 351.0	11974	0.72	µg/L	97
		532.8 -> 353.0	3768			
ADONA	6.818	376.9 -> 250.9	25164	0.73	µg/L	98
		376.9 -> 84.8	6522			
HFPO-DA	5.966	284.9 -> 168.9	3796	0.79	µg/L	94
		284.9 -> 184.9	359			
3:3FTCA	3.811	241.0 -> 177.0	1690	1.79	µg/L	98
		241.0 -> 117.0	154			
5:3FTCA	6.281	341.0 -> 237.1	28799	9.37	µg/L	100
		341.0 -> 217.0	20448			
7:3FTCA	7.774	441.0 -> 316.9	15754	9.29	µg/L	100
		441.0 -> 336.9	36979			
EtFOSA	11.437	526.0 -> 219.0	5182	0.81	µg/L	97
		526.0 -> 169.0	6950			
EtFOSE	11.370	630.0 -> 58.9	10433	2.05	µg/L	100
MeFOSA	11.178	511.9 -> 219.0	3646	0.79	µg/L	m 76
		511.9 -> 169.0	5656			
MeFOSE	11.085	616.1 -> 58.9	6711	1.97	µg/L	100
PFDoDS	10.102	699.1 -> 79.9	854	0.38	µg/L	94
		699.1 -> 98.8	438			
NFDHA	5.468	295.0 -> 201.0	842	0.78	µg/L	94
		295.0 -> 84.9	186			
PFMBA	4.797	279.0 -> 85.1	7030	0.75	µg/L	100
PFMPA	3.499	229.0 -> 84.9	6727	0.76	µg/L	100
PFEESA	6.022	314.8 -> 134.9	9595	0.69	µg/L	99
		314.8 -> 82.9	363			

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

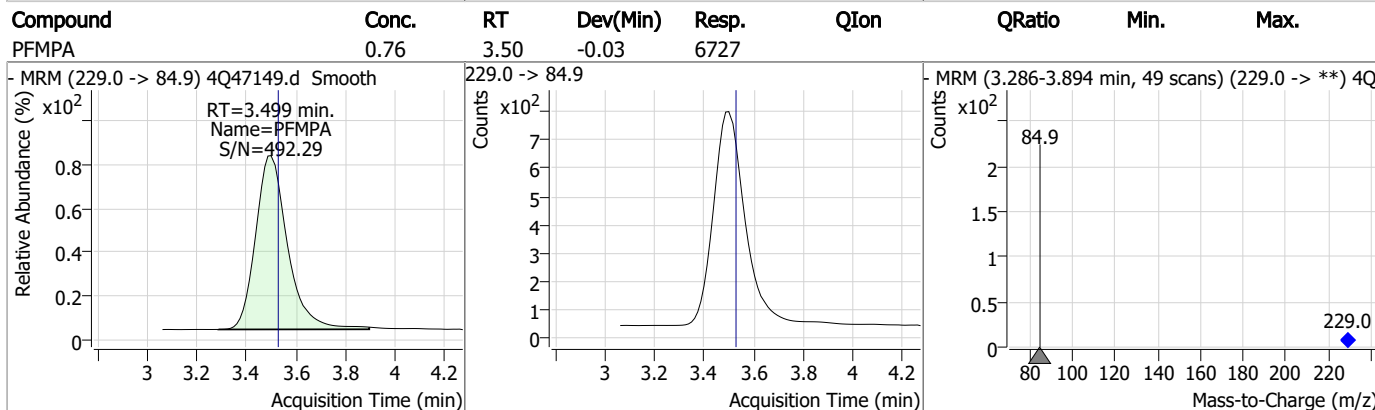
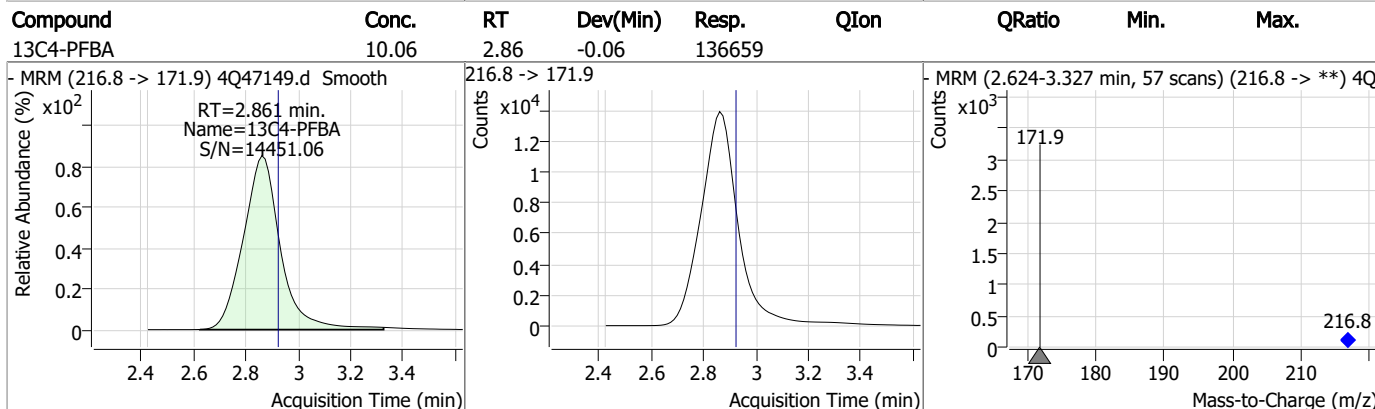
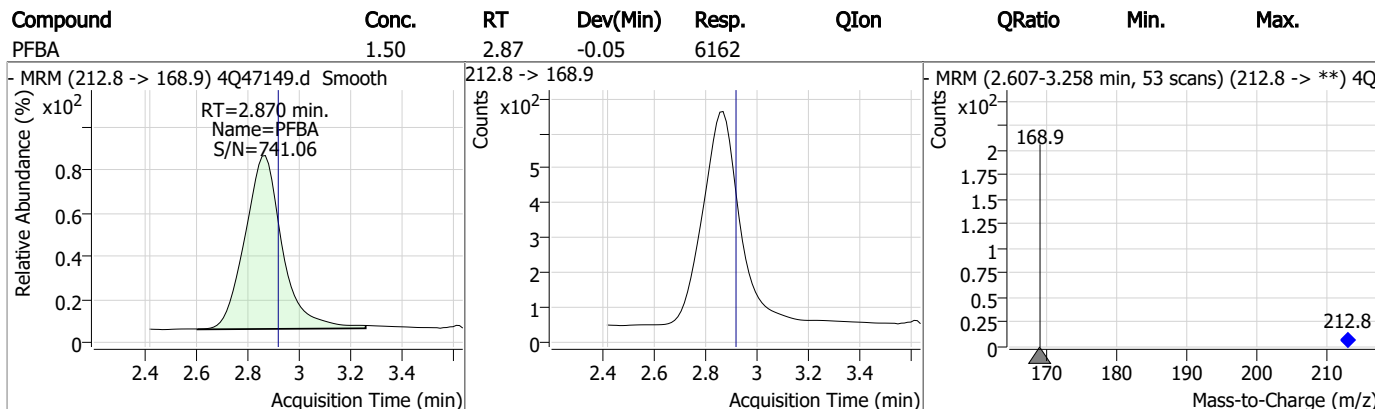
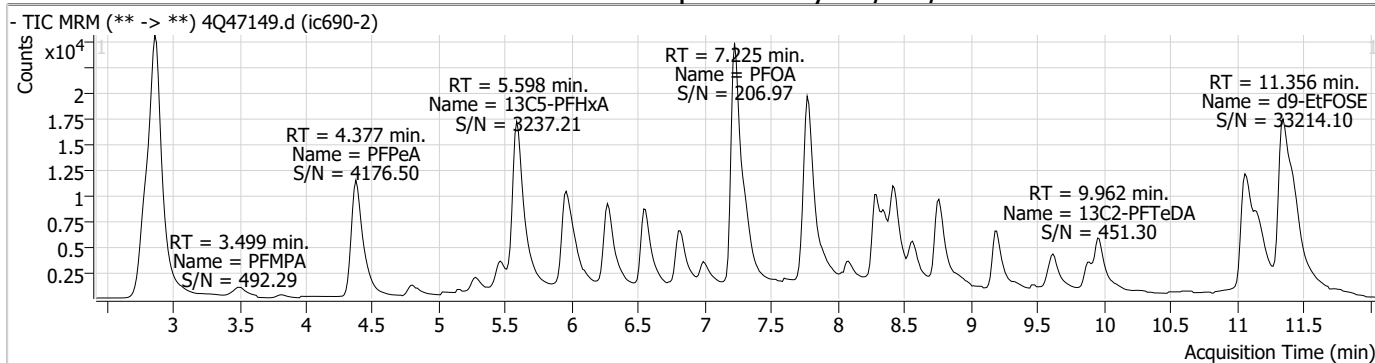
Perfluorinated Compounds by LC/MS/MS

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

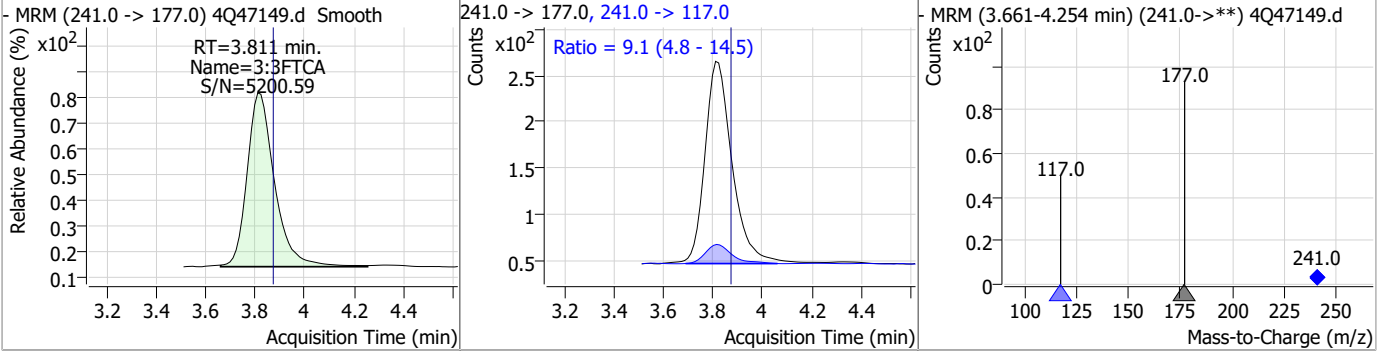
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Perfluorinated Compounds by LC/MS/MS

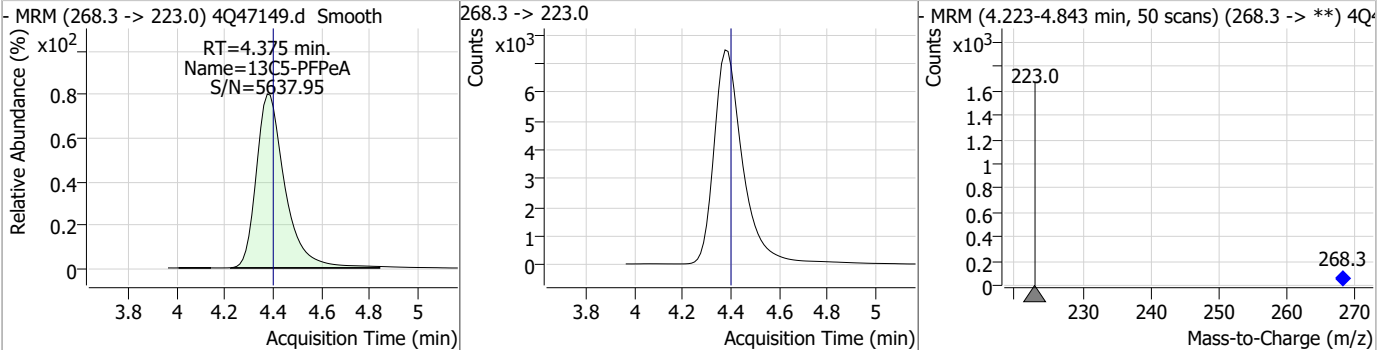


Perfluorinated Compounds by LC/MS/MS

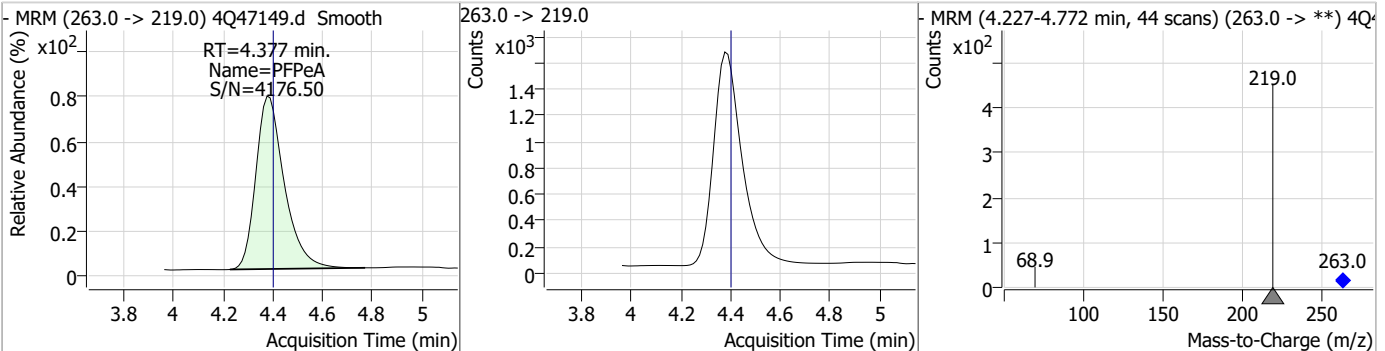
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	1.79	3.81	-0.06	1690	241.0 -> 117.0	9.1	4.8	14.5



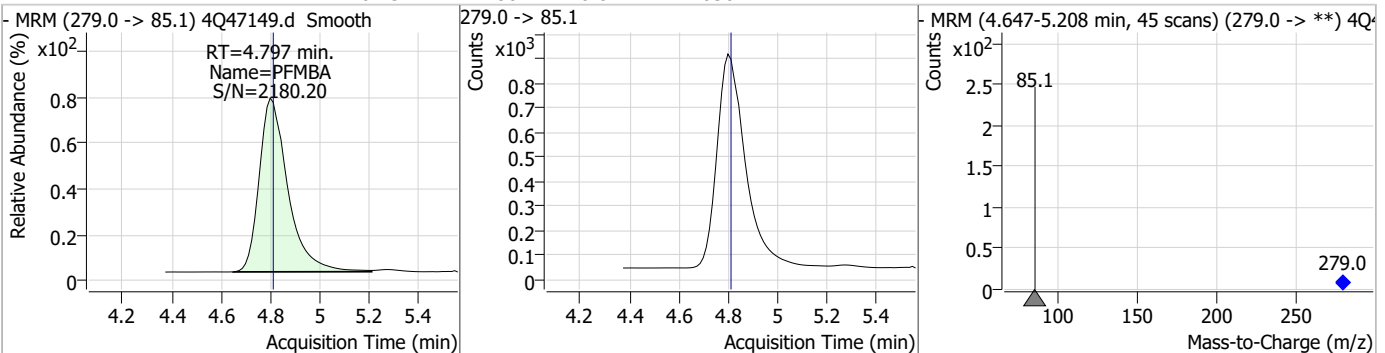
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.13	4.37	-0.02	61542				



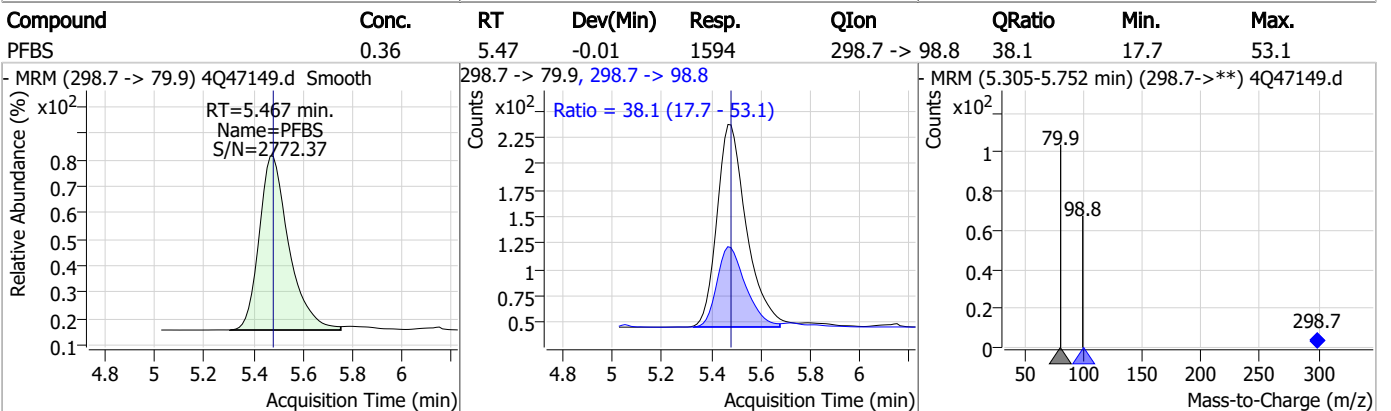
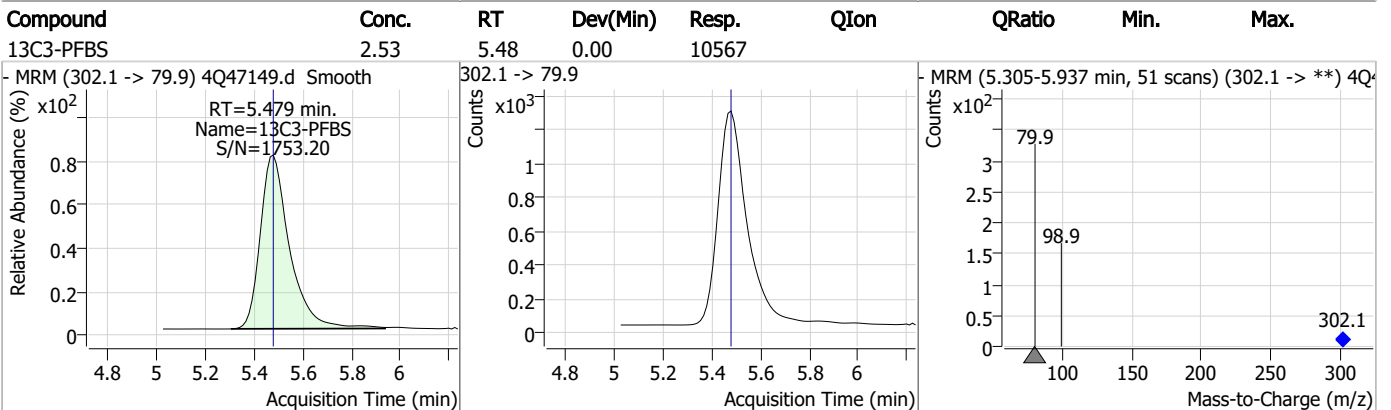
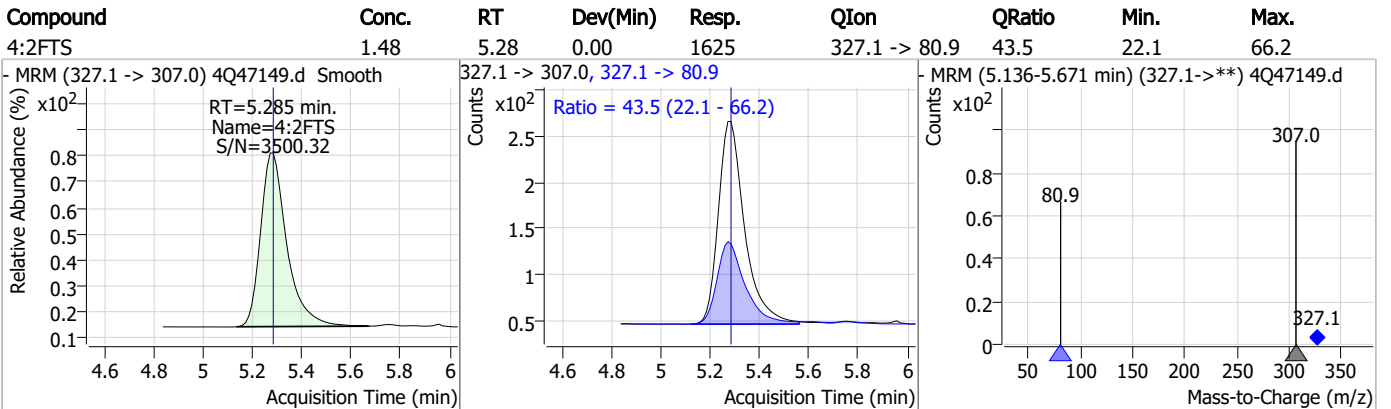
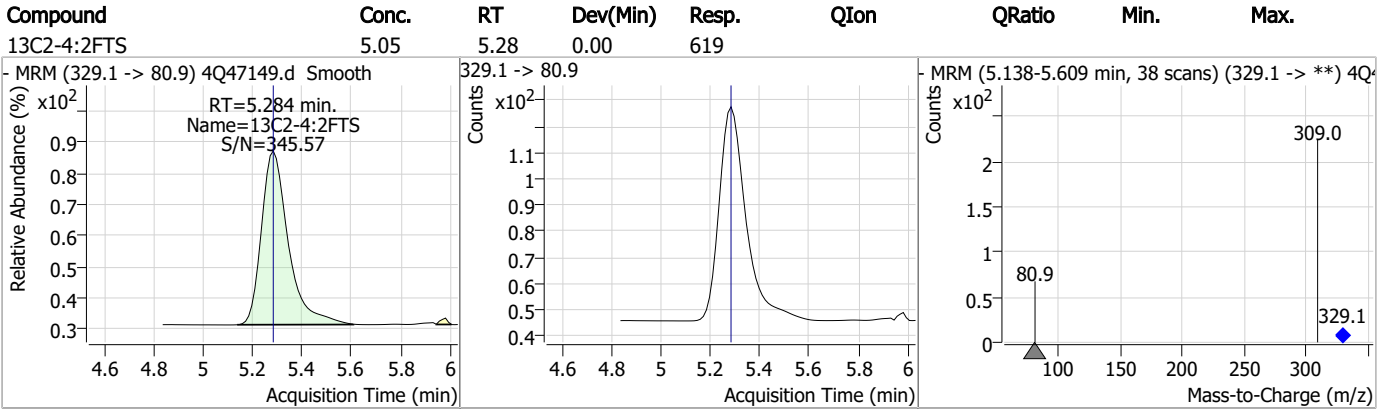
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	0.74	4.38	-0.02	12878				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	0.75	4.80	-0.01	7030				



Perfluorinated Compounds by LC/MS/MS

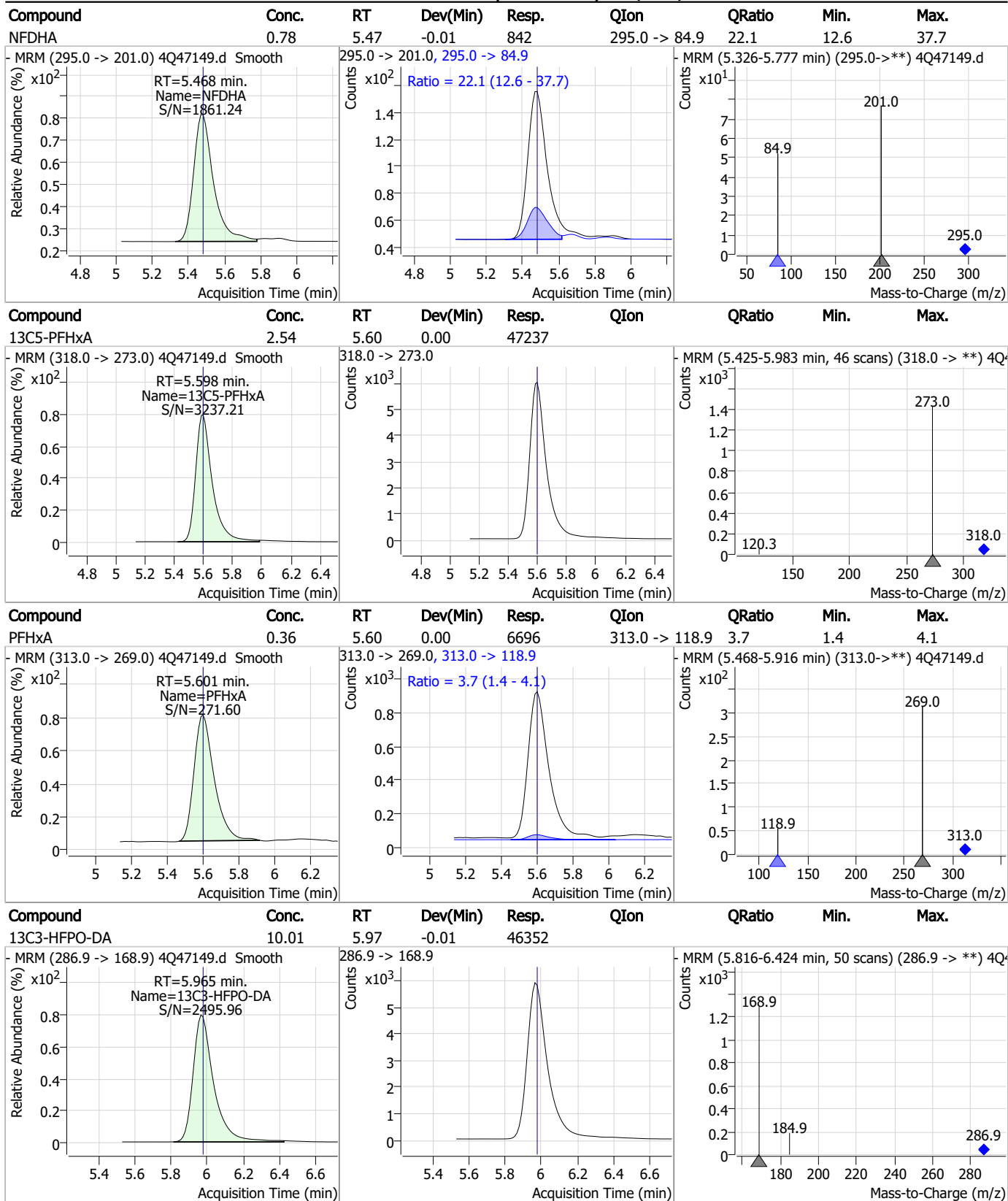


7.7.3

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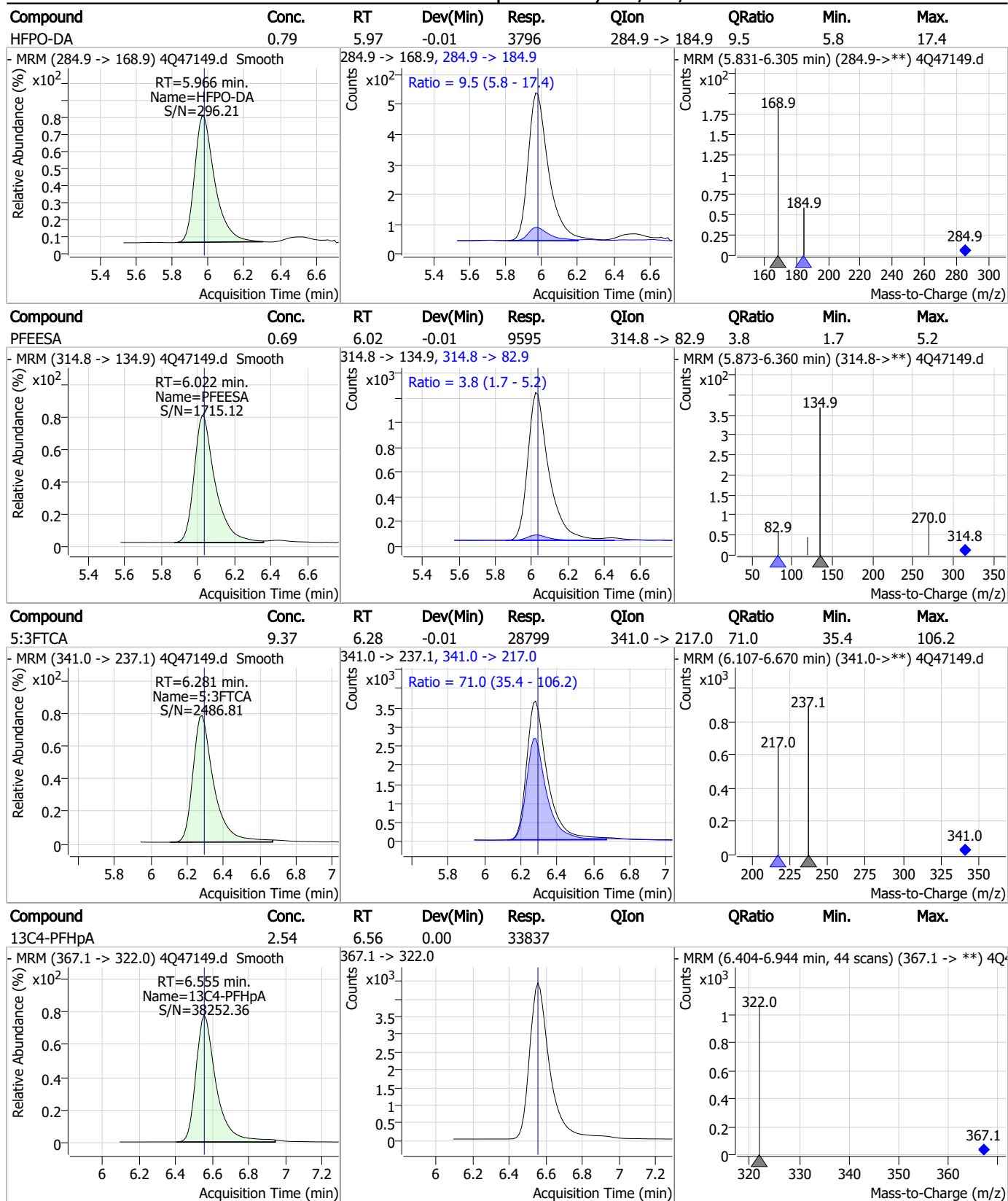


Perfluorinated Compounds by LC/MS/MS



7.7.3
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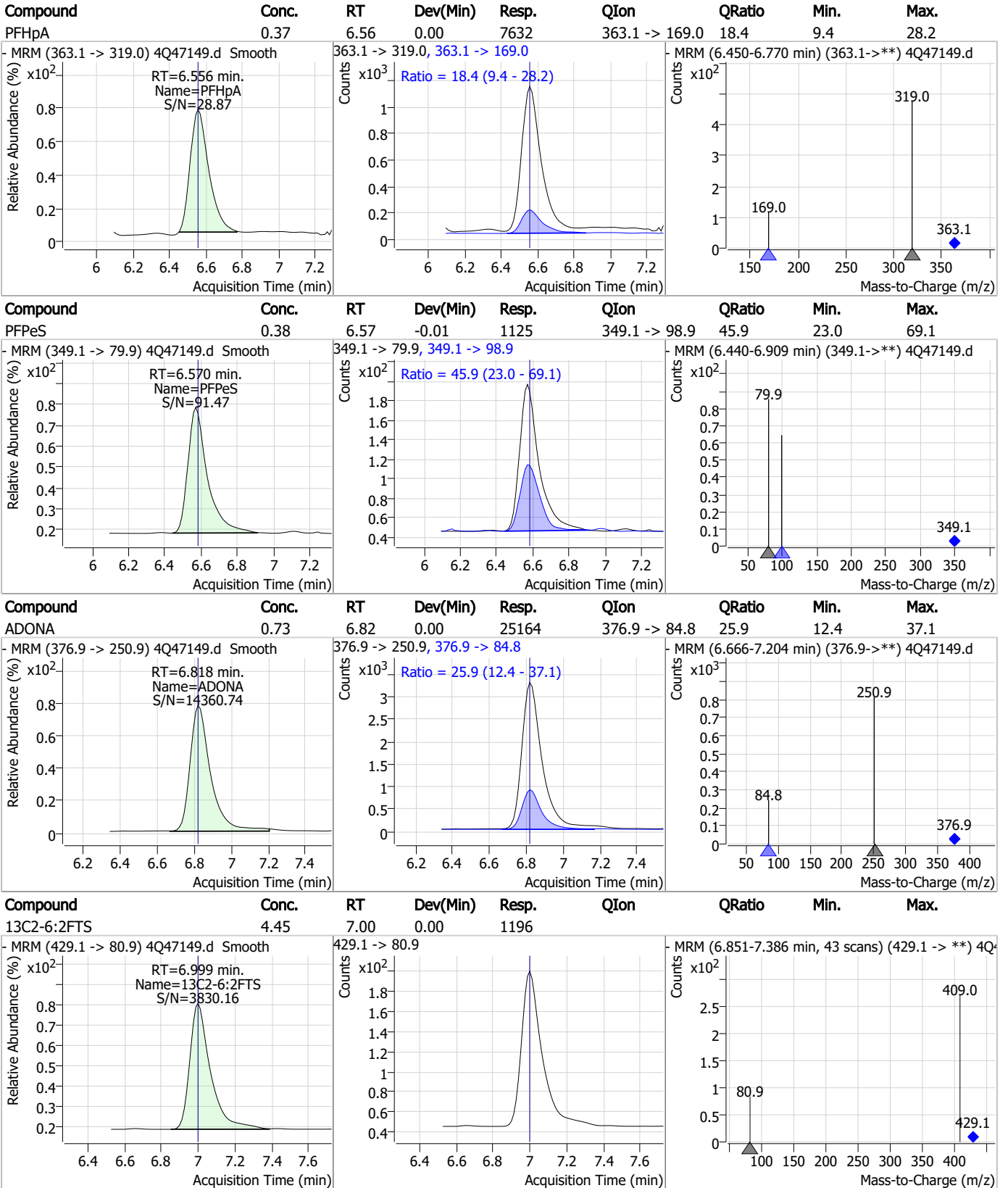
Perfluorinated Compounds by LC/MS/MS



7.7.3
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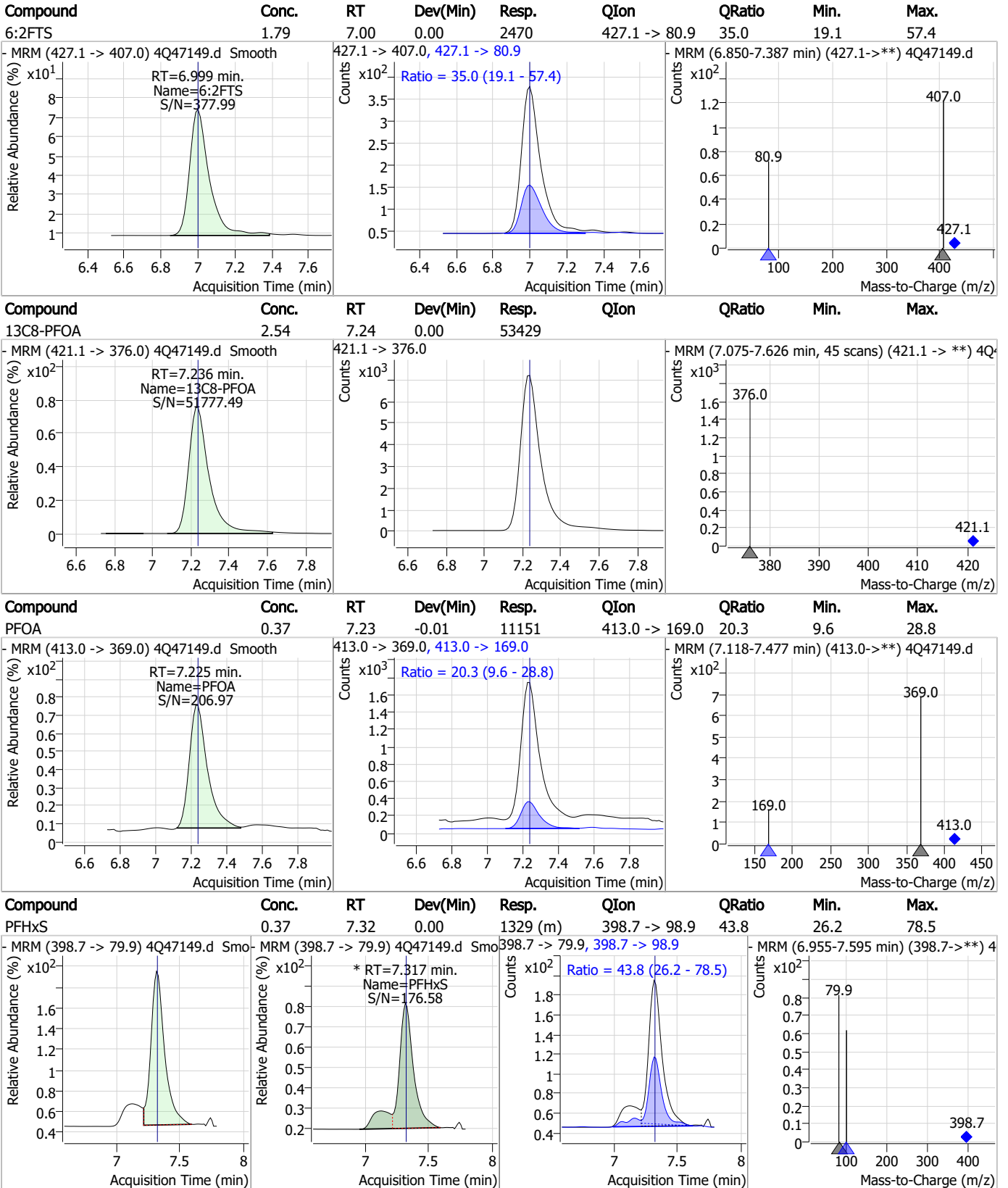
Perfluorinated Compounds by LC/MS/MS



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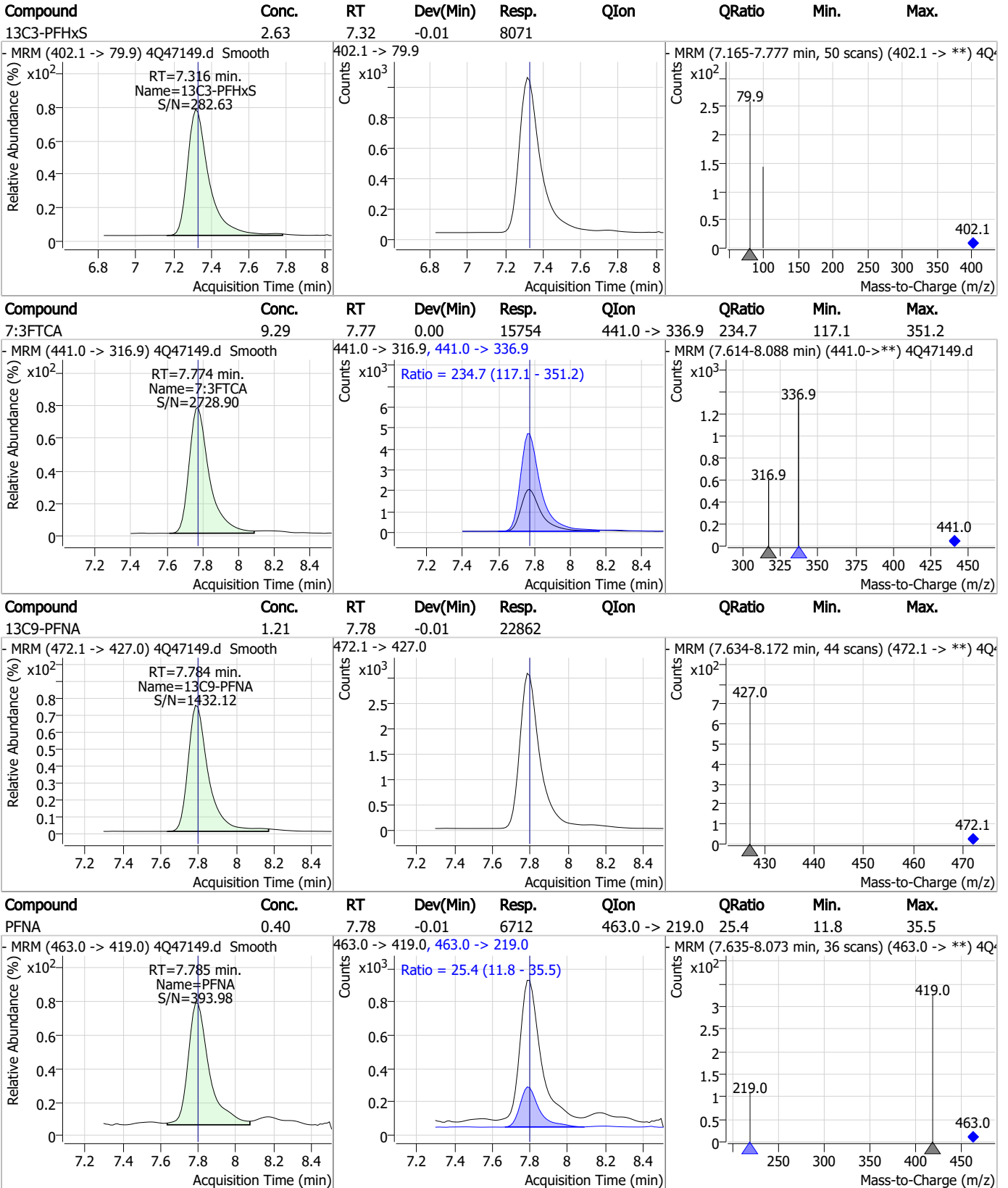
Perfluorinated Compounds by LC/MS/MS



7.7.3

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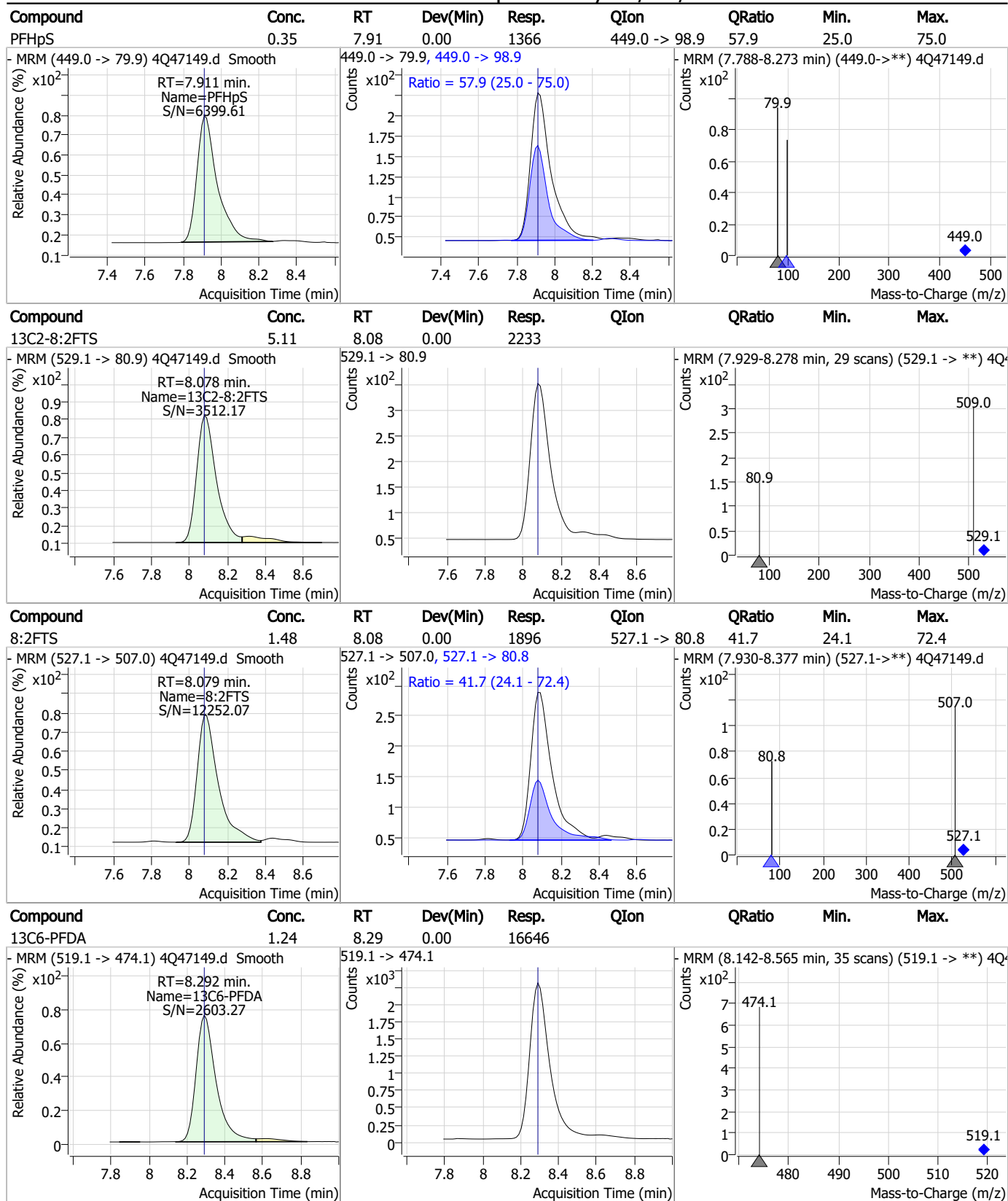
Perfluorinated Compounds by LC/MS/MS



7.7.3

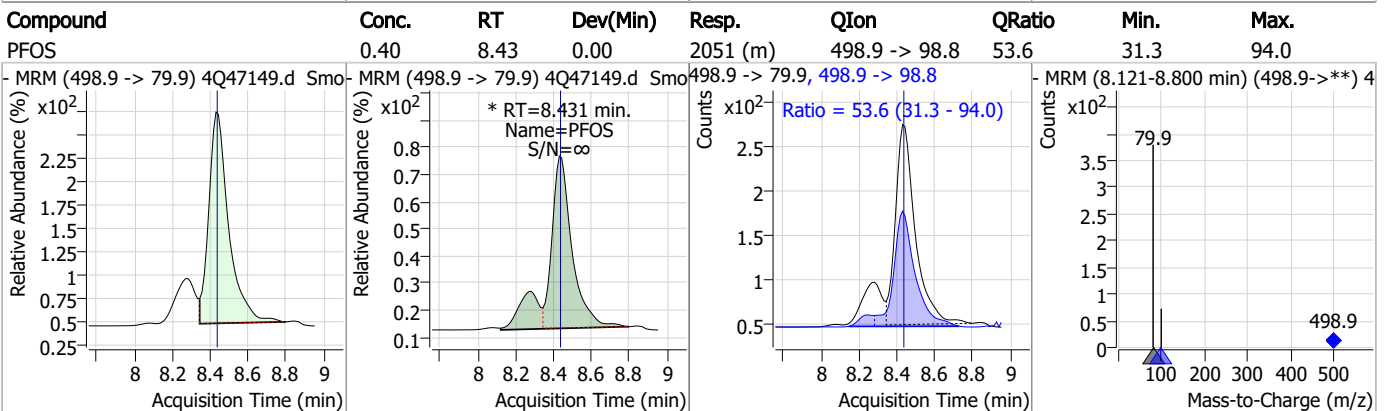
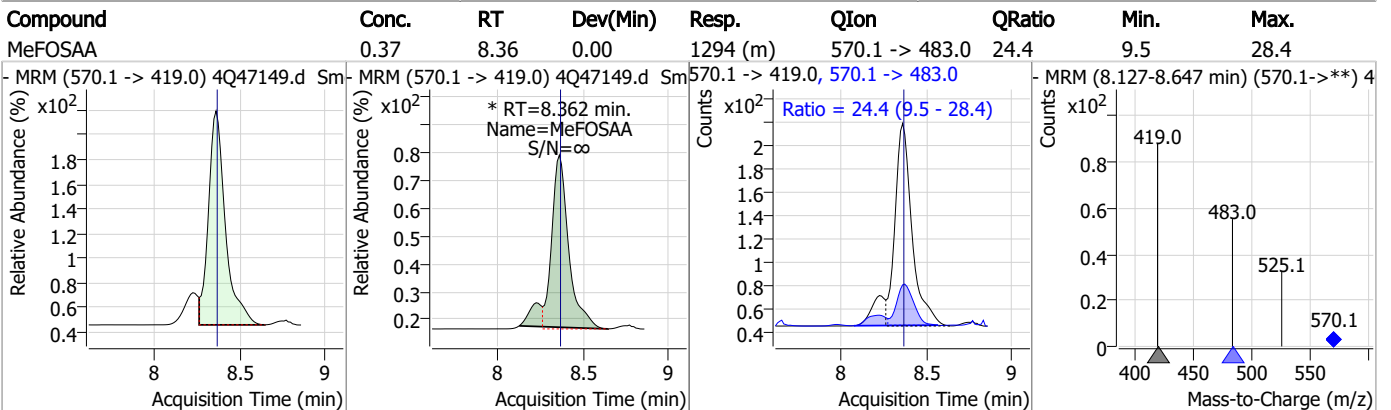
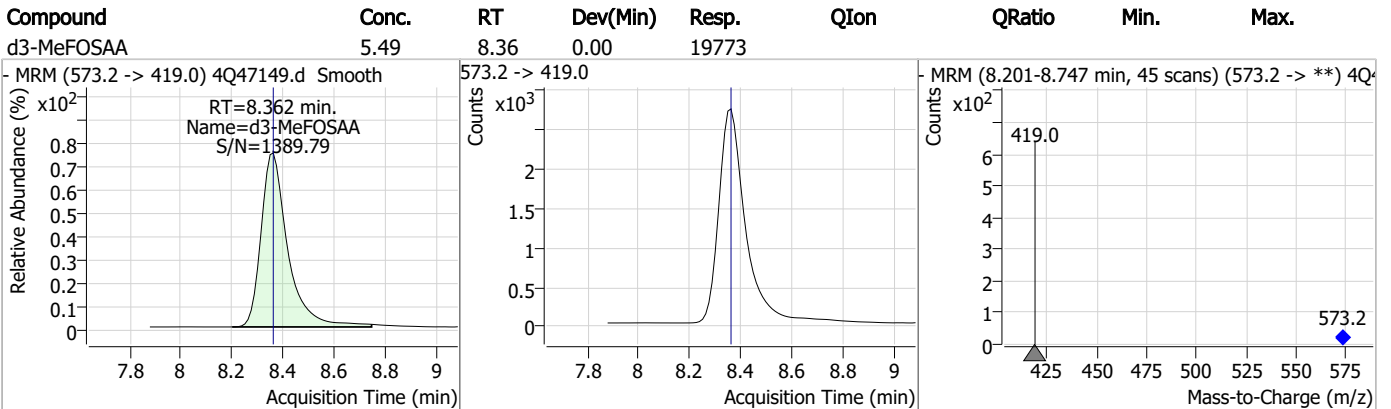
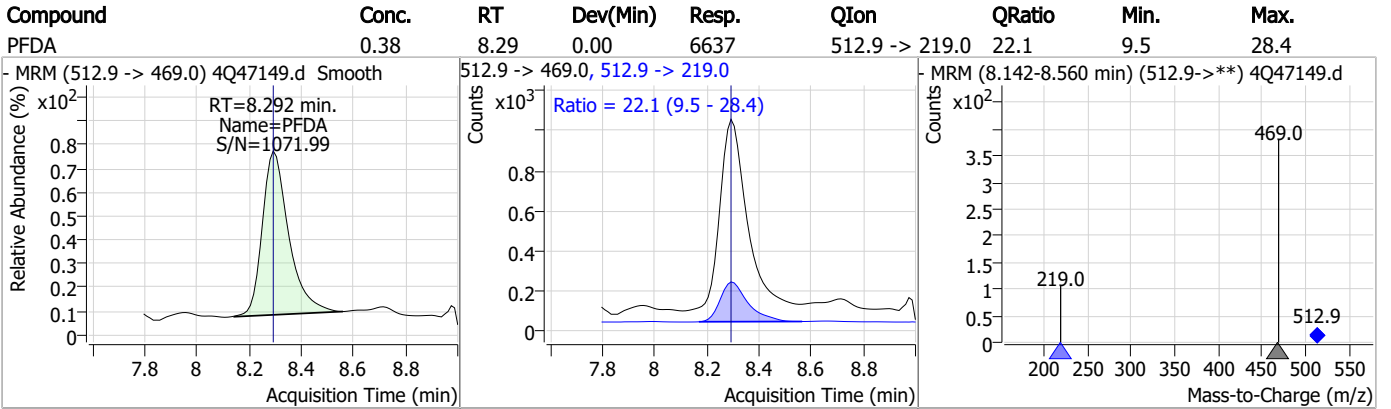
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Perfluorinated Compounds by LC/MS/MS



7.7.3
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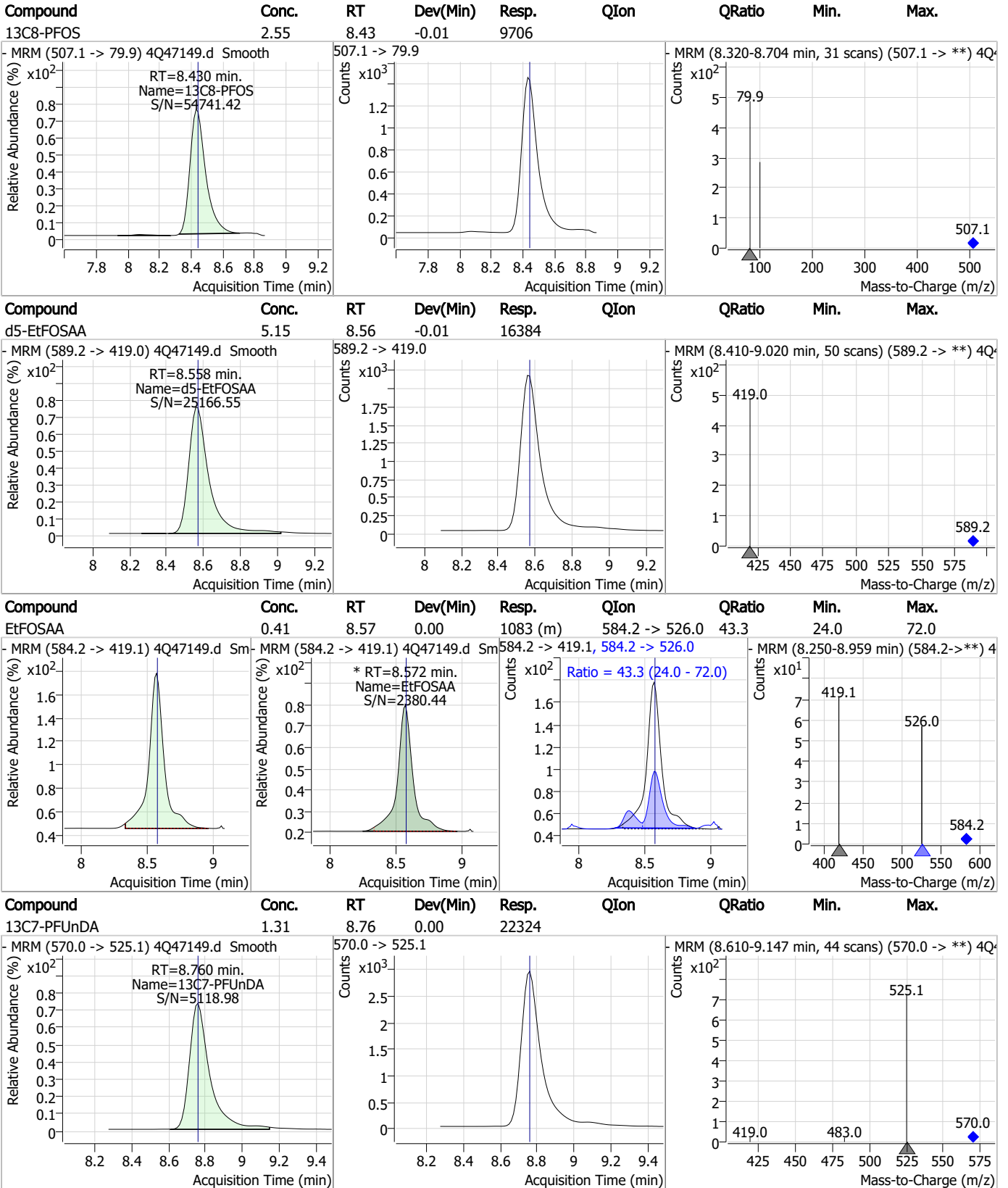
Perfluorinated Compounds by LC/MS/MS



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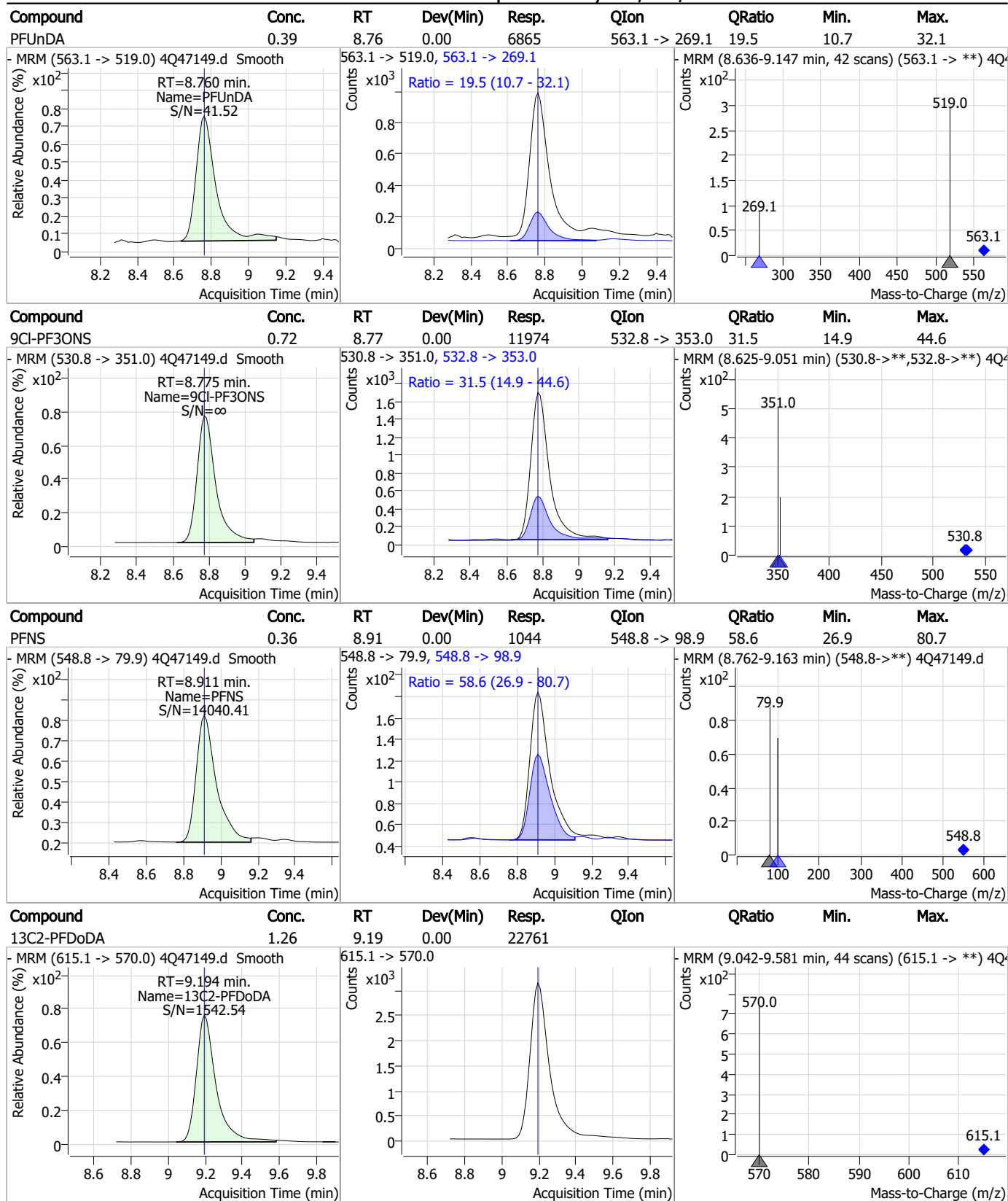
Perfluorinated Compounds by LC/MS/MS



7.7.3

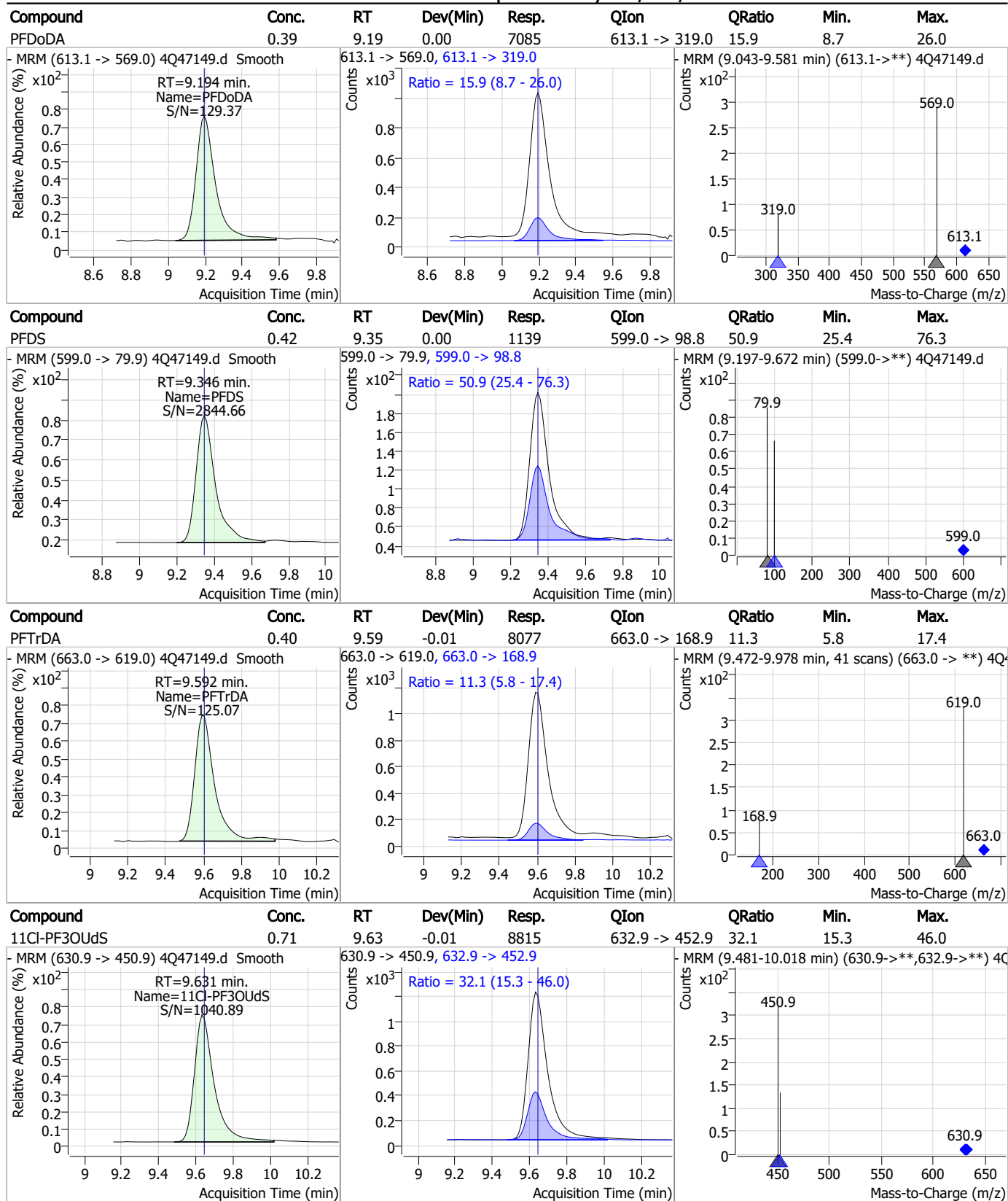
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Perfluorinated Compounds by LC/MS/MS



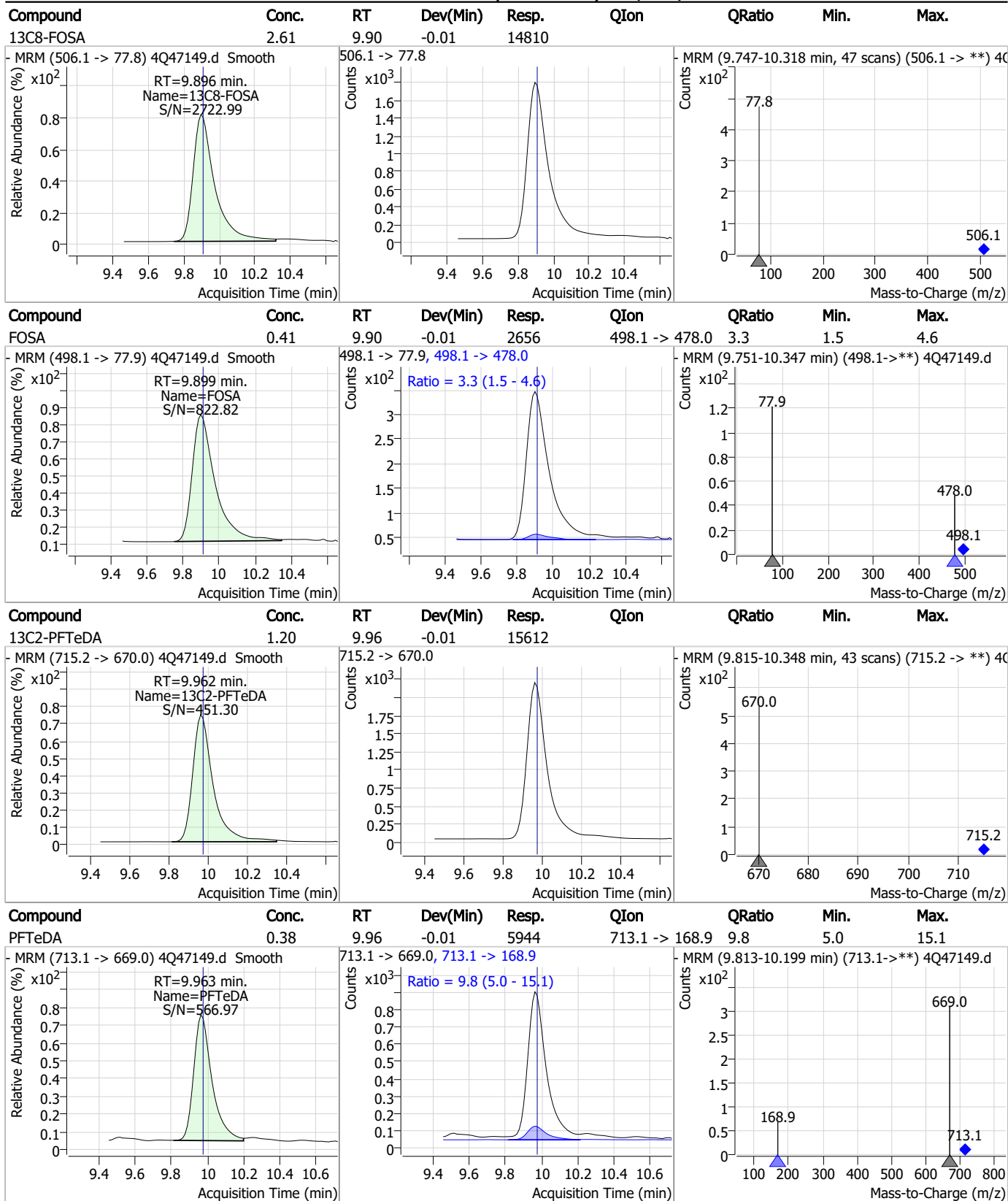
7.7.3
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Perfluorinated Compounds by LC/MS/MS



7.7.3
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Perfluorinated Compounds by LC/MS/MS

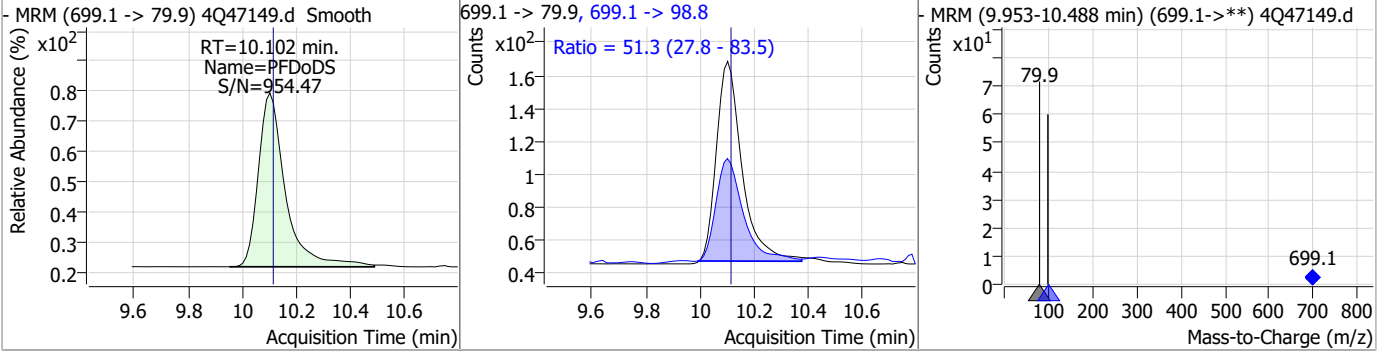


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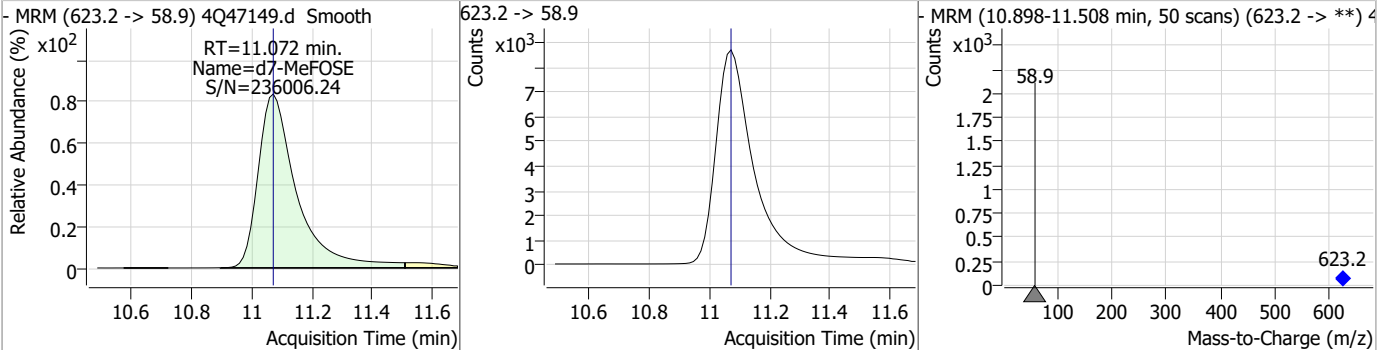
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Perfluorinated Compounds by LC/MS/MS

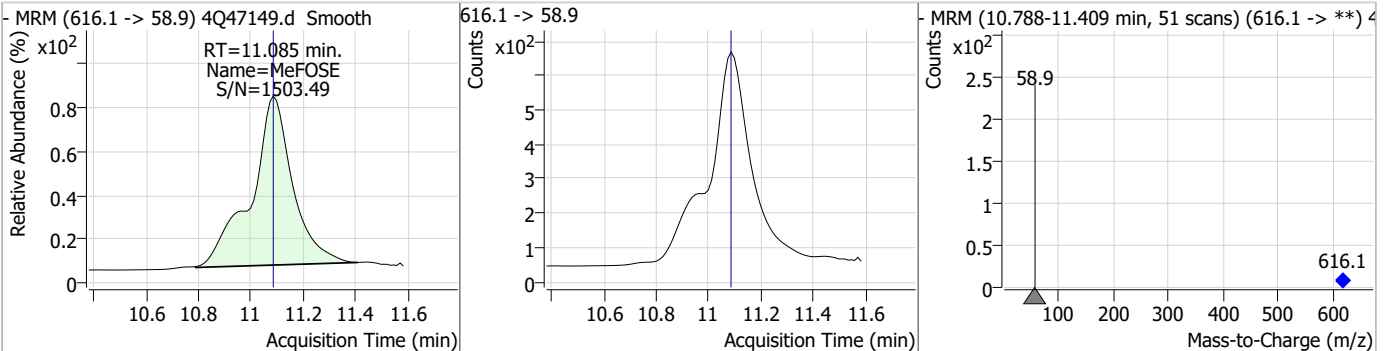
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.38	10.10	-0.01	854	699.1 -> 98.8	51.3	27.8	83.5



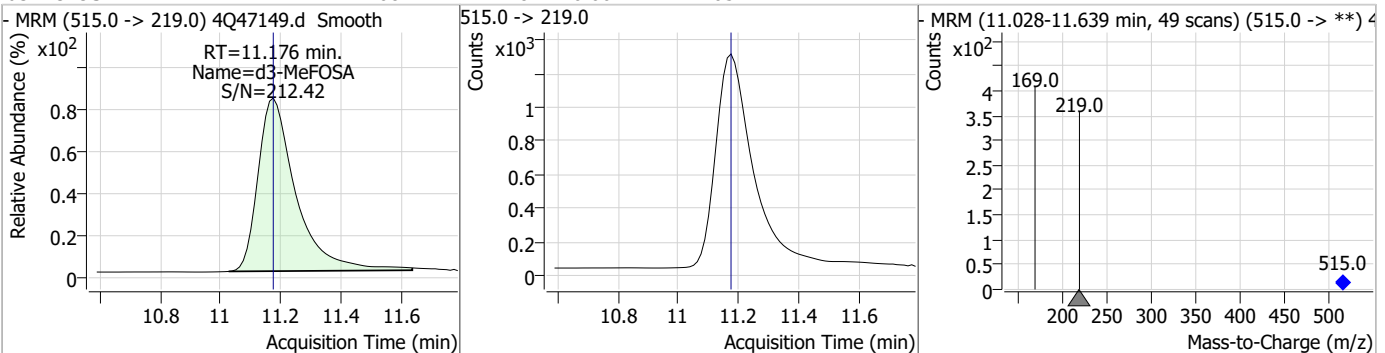
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.35	11.07	0.00	77033				



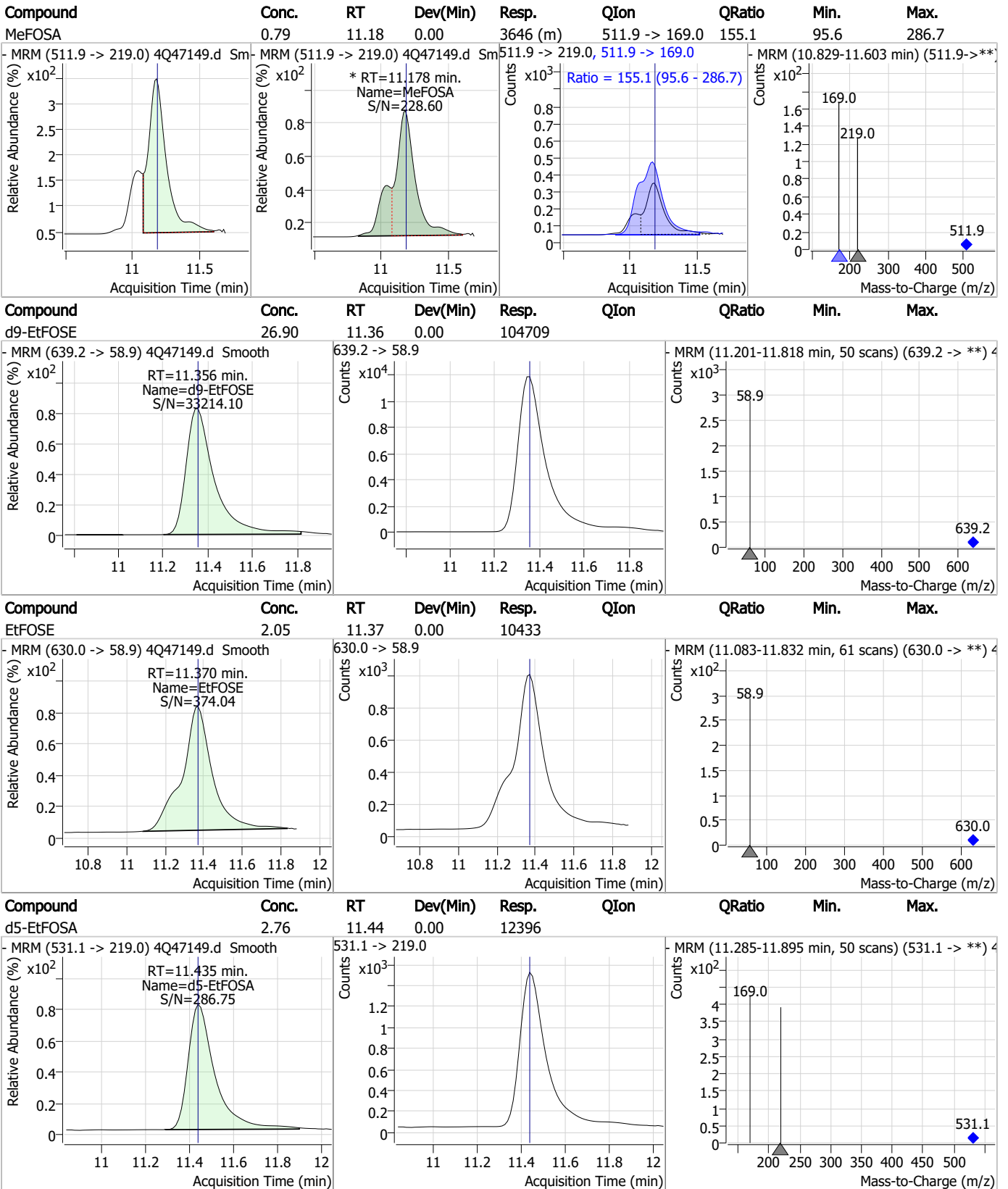
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	1.97	11.09	0.00	6711				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.68	11.18	0.00	11052				



Perfluorinated Compounds by LC/MS/MS

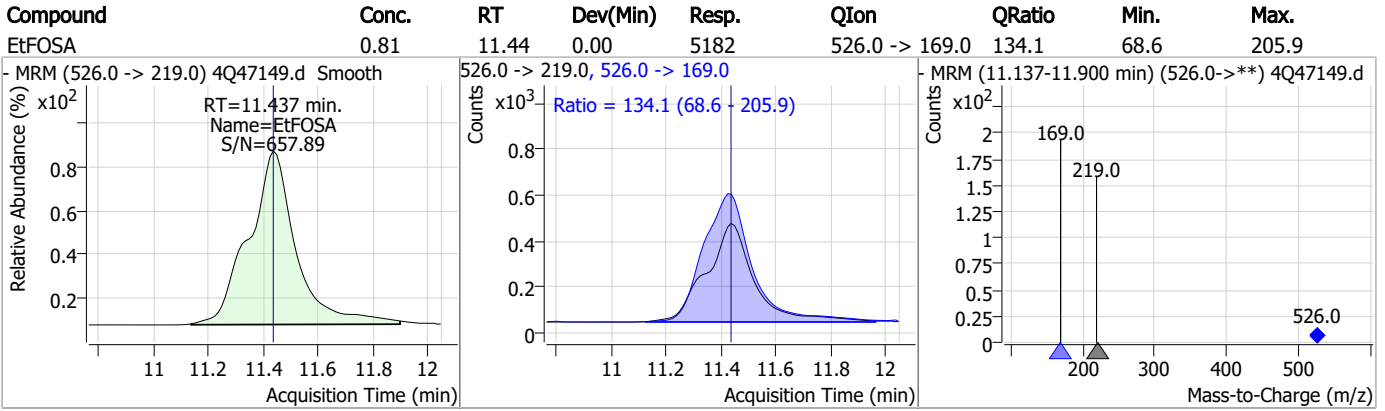


7.7.3

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Perfluorinated Compounds by LC/MS/MS



7.7.3

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Manual Integration Approval Summary

Sample Number: S4Q690-IC690 Method: EPA DRAFT 1633
Lab FileID: 4Q47149.D Analyst approved: 07/13/23 14:35 Anna Ludwig
Injection Time: 07/12/23 17:46 Supervisor approved: 07/14/23 09:30 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
MeFOSAA	2355-31-9		8.36	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.43	Split peak
EtFOSAA	2991-50-6		8.57	Split peak
MeFOSA	31506-32-8		11.18	Split peak

7.7.3.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47150.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/12/2023 6:01:00 PM
 Sample Name : ic690-3
 Vial : P1-A4
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q690.batch.bin
 Sample Information : OP97325,S4Q690,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.861	216.8 -> 171.9	142907	10.00 µg/L	-0.062
M5-PFPeA	4.375	268.3 -> 223.0	63881	5.00 µg/L	-0.025
M5-PFHxA	5.585	318.0 -> 273.0	49726	2.50 µg/L	-0.012
M4-PFHpA	6.555	367.1 -> 322.0	35259	2.50 µg/L	0.000
M8-PFOA	7.224	421.1 -> 376.0	56624	2.50 µg/L	-0.012
M9-PFNA	7.784	472.1 -> 427.0	23665	1.25 µg/L	-0.014
M6-PFDA	8.292	519.1 -> 474.1	18766	1.25 µg/L	0.000
M7-PFUnDA	8.760	570.0 -> 525.1	24289	1.25 µg/L	0.000
M2-PFDoDA	9.194	615.1 -> 570.0	23658	1.25 µg/L	0.000
M2-PFTeDA	9.974	715.2 -> 670.0	17281	1.25 µg/L	0.000
M8-FOSA	9.909	506.1 -> 77.8	15783	2.50 µg/L	0.000
M3-PFBS	5.466	302.1 -> 79.9	11488	2.50 µg/L	-0.012
M3-PFHxS	7.316	402.1 -> 79.9	8015	2.50 µg/L	-0.013
M8-PFOS	8.430	507.1 -> 79.9	11197	2.50 µg/L	-0.012
M2-4:2FTS	5.272	329.1 -> 80.9	624	5.00 µg/L	-0.012
M2-6:2FTS	6.999	429.1 -> 80.9	1508	5.00 µg/L	0.000
M2-8:2FTS	8.078	529.1 -> 80.9	2434	5.00 µg/L	0.000
M3-MeFOSAA	8.362	573.2 -> 419.0	18697	5.00 µg/L	0.000
M3-HFPO-DA	5.965	286.9 -> 168.9	48659	10.00 µg/L	-0.012
M5-EtFOSAA	8.558	589.2 -> 419.0	17195	5.00 µg/L	-0.012
M7-MeFOSE	11.072	623.2 -> 58.9	79609	25.00 µg/L	0.000
M9-EtFOSE	11.356	639.2 -> 58.9	104710	25.00 µg/L	0.000
M5-EtFOSA	11.435	531.1 -> 219.0	12803	2.50 µg/L	0.000
M3-MeFOSA	11.176	515.0 -> 219.0	10935	2.50 µg/L	0.000
13C4-PFOS	8.430	502.8 -> 79.9	12296	2.50 µg/L	0.000
13C3-PFBA	2.866	216.0 -> 172.0	75338	5.00 µg/L	-0.062
18O2-PFHxS	7.315	403.0 -> 83.9	5890	2.50 µg/L	-0.013
13C4-PFOA	7.224	417.1 -> 372.0	68130	2.50 µg/L	-0.012
13C2-PFDA	8.292	515.1 -> 470.1	20163	1.25 µg/L	0.000
13C5-PFNA	7.784	468.0 -> 423.0	29067	1.25 µg/L	-0.014
13C2-PFHxA	5.586	315.1 -> 270.0	45881	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.272	329.1 -> 80.9	624	4.72 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.4%		
13C2-6:2FTS	6.999	429.1 -> 80.9	1508	5.20 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C2-8:2FTS	8.078	529.1 -> 80.9	2434	5.16 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.2%		
13C2-PFDoDA	9.194	615.1 -> 570.0	23658	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C2-PFTeDA	9.974	715.2 -> 670.0	17281	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C3-PFBS	5.466	302.1 -> 79.9	11488	2.55 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C3-PFHxS	7.316	402.1 -> 79.9	8015	2.43 µg/L	-0.013

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.0%		
13C4-PFBA	2.861	216.8 -> 171.9	142907	10.04 µg/L	-0.062
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C4-PFHpA	6.555	367.1 -> 322.0	35259	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C5-PFHxA	5.585	318.0 -> 273.0	49726	2.53 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C5-PFPeA	4.375	268.3 -> 223.0	63881	5.04 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C6-PFDA	8.292	519.1 -> 474.1	18766	1.34 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.5%		
13C7-PFUnDA	8.760	570.0 -> 525.1	24289	1.37 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 109.6%		
13C8-FOSA	9.909	506.1 -> 77.8	15783	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C8-PFOA	7.224	421.1 -> 376.0	56624	2.55 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C8-PFOS	8.430	507.1 -> 79.9	11197	2.62 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.9%		
13C9-PFNA	7.784	472.1 -> 427.0	23665	1.22 µg/L	-0.014
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.4%		
d3-MeFOSAA	8.362	573.2 -> 419.0	18697	4.62 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.5%		
13C3-HFPO-DA	5.965	286.9 -> 168.9	48659	9.95 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.5%		
d3-MeFOSA	11.176	515.0 -> 219.0	10935	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.3%		
d5-EtFOSAA	8.558	589.2 -> 419.0	17195	4.82 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.4%		
d7-MeFOSE	11.072	623.2 -> 58.9	79609	24.26 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 97.0%		
d9-EtFOSE	11.356	639.2 -> 58.9	104710	23.97 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 95.9%		
d5-EtFOSA	11.435	531.1 -> 219.0	12803	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.7%		
Target Compounds					QValue
4:2FTS	5.272	327.1 -> 307.0	5132	4.63 µg/L	93
		327.1 -> 80.9	2025		
6:2FTS	6.999	427.1 -> 407.0	7574	4.35 µg/L	98
		427.1 -> 80.9	2796		
8:2FTS	8.079	527.1 -> 507.0	5921	4.25 µg/L	99
		527.1 -> 80.8	2904		
EtFOSAA	8.572	584.2 -> 419.1	3565	1.29 µg/L	m 94
		584.2 -> 526.0	1578		
FOSA	9.899	498.1 -> 77.9	7633	1.10 µg/L	98
		498.1 -> 478.0	275		
MeFOSAA	8.362	570.1 -> 419.0	4437	1.33 µg/L	m 91
		570.1 -> 483.0	653		
PFBA	2.870	212.8 -> 168.9	19778	4.60 µg/L	100
PFBS	5.467	298.7 -> 79.9	4908	1.02 µg/L	92
		298.7 -> 98.8	1976		
PFDA	8.292	512.9 -> 469.0	22035	1.13 µg/L	97
		512.9 -> 219.0	4442		
PFDODA	9.194	613.1 -> 569.0	22244	1.17 µg/L	97
		613.1 -> 319.0	3585		
PFDS	9.346	599.0 -> 79.9	3300	1.04 µg/L	99

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	1709			
PFHpA	6.556	363.1 -> 319.0	25135	1.16	µg/L	99
		363.1 -> 169.0	4603			
PFHpS	7.911	449.0 -> 79.9	4906	1.10	µg/L	95
		449.0 -> 98.9	2625			
PFHxA	5.588	313.0 -> 269.0	22638	1.16	µg/L	99
		313.0 -> 118.9	683			
PFHxS	7.317	398.7 -> 79.9	3984	1.12	µg/L	m 99
		398.7 -> 98.9	2116			
PFNA	7.785	463.0 -> 419.0	20784	1.19	µg/L	97
		463.0 -> 219.0	4650			
PFNS	8.911	548.8 -> 79.9	3617	1.08	µg/L	98
		548.8 -> 98.9	1886			
PFOA	7.225	413.0 -> 369.0	34172	1.07	µg/L	97
		413.0 -> 169.0	7068			
PFOS	8.431	498.9 -> 79.9	5754	0.97	µg/L	m 86
		498.9 -> 98.8	2980			
PFPeA	4.377	263.0 -> 219.0	42320	2.35	µg/L	100
PFPeS	6.570	349.1 -> 79.9	3430	1.16	µg/L	96
		349.1 -> 98.9	1476			
PFTeDA	9.975	713.1 -> 669.0	19501	1.13	µg/L	99
		713.1 -> 168.9	2011			
PFTrDA	9.604	663.0 -> 619.0	25429	1.21	µg/L	97
		663.0 -> 168.9	3241			
PFUnDA	8.760	563.1 -> 519.0	21226	1.10	µg/L	98
		563.1 -> 269.1	4385			
11CI-PF3OUdS	9.644	630.9 -> 450.9	28895	2.23	µg/L	99
		632.9 -> 452.9	8927			
9CI-PF3ONS	8.775	530.8 -> 351.0	40114	2.30	µg/L	99
		532.8 -> 353.0	11741			
ADONA	6.818	376.9 -> 250.9	80584	2.21	µg/L	99
		376.9 -> 84.8	20249			
HFPO-DA	5.966	284.9 -> 168.9	11572	2.30	µg/L	98
		284.9 -> 184.9	1238			
3:3FTCA	3.823	241.0 -> 177.0	5539	5.60	µg/L	98
		241.0 -> 117.0	498			
5:3FTCA	6.269	341.0 -> 237.1	93670	28.96	µg/L	100
		341.0 -> 217.0	66201			
7:3FTCA	7.762	441.0 -> 316.9	51548	28.87	µg/L	99
		441.0 -> 336.9	121435			
EtFOSA	11.438	526.0 -> 219.0	15078	2.28	µg/L	96
		526.0 -> 169.0	19925			
EtFOSE	11.370	630.0 -> 58.9	29757	5.86	µg/L	100
MeFOSA	11.178	511.9 -> 219.0	11338	2.48	µg/L	69
		511.9 -> 169.0	16537			
MeFOSE	11.085	616.1 -> 58.9	21179	6.02	µg/L	100
PFDoDS	10.115	699.1 -> 79.9	2727	1.05	µg/L	98
		699.1 -> 98.8	1560			
NFDHA	5.468	295.0 -> 201.0	2883	2.53	µg/L	96
		295.0 -> 84.9	672			
PFMBA	4.797	279.0 -> 85.1	22831	2.36	µg/L	100
PFMPA	3.499	229.0 -> 84.9	21193	2.30	µg/L	100
PFEESA	6.022	314.8 -> 134.9	30725	2.09	µg/L	99
		314.8 -> 82.9	969			

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

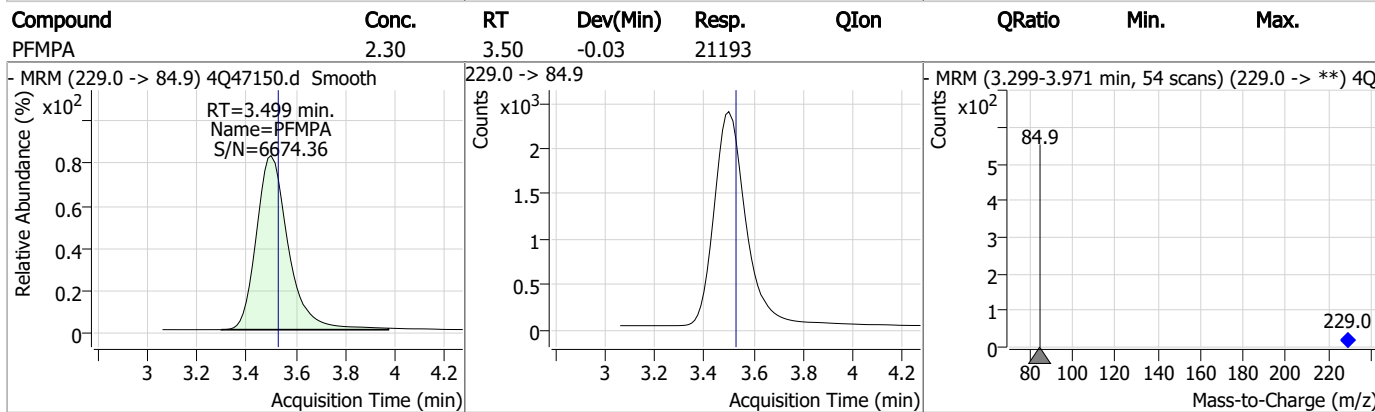
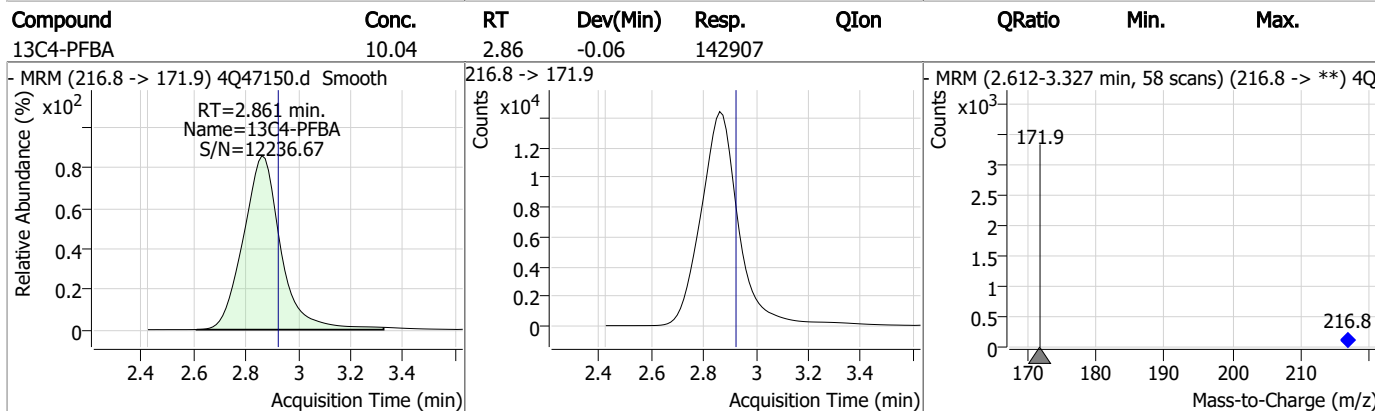
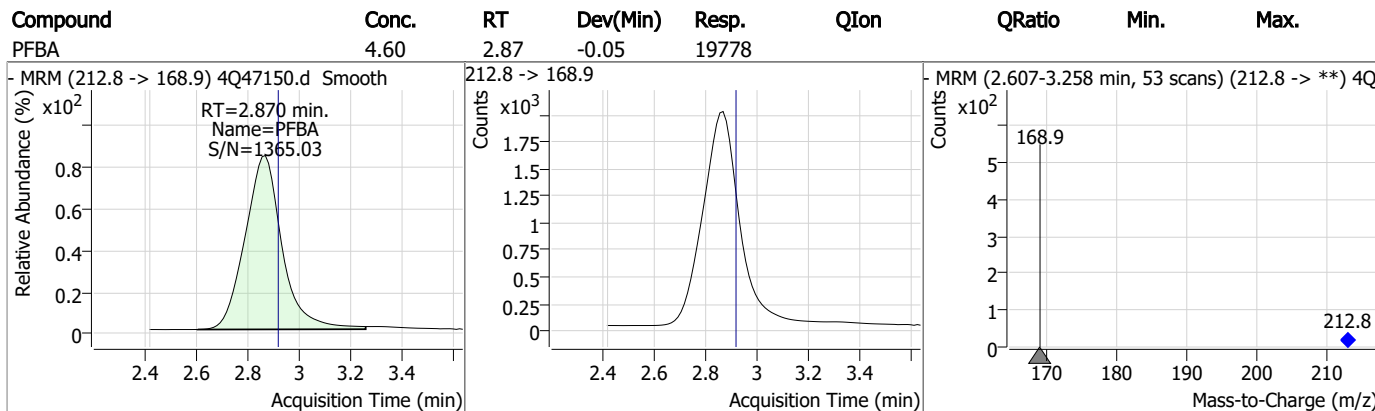
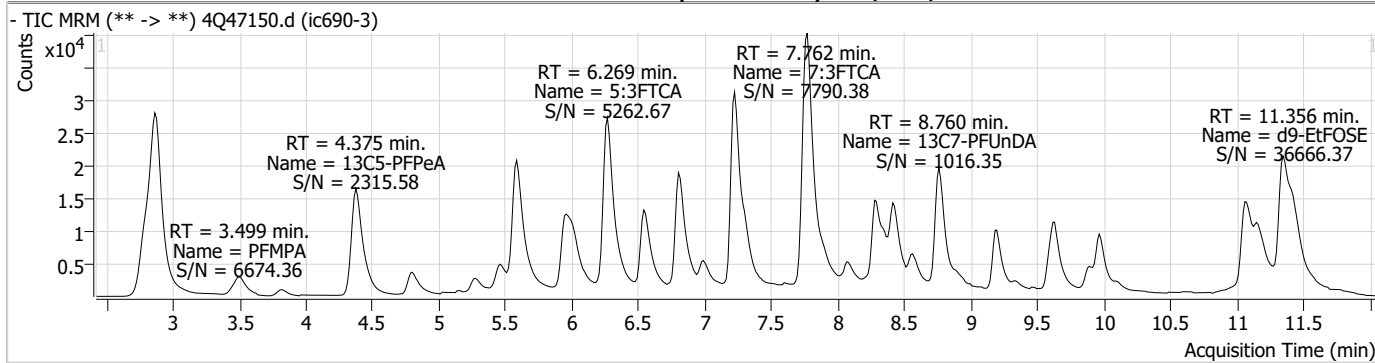
Perfluorinated Compounds by LC/MS/MS

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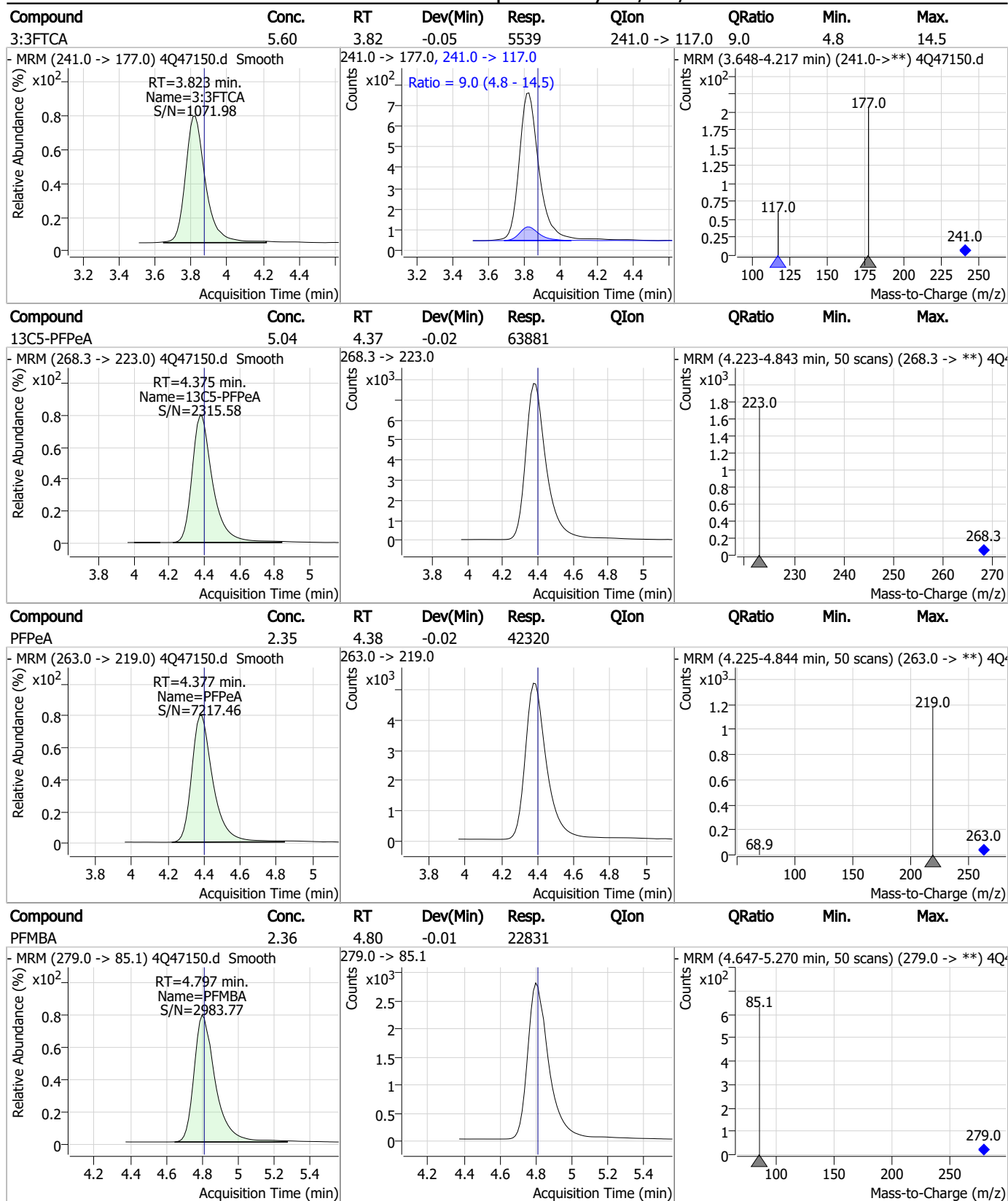
7.7.4

7

Perfluorinated Compounds by LC/MS/MS

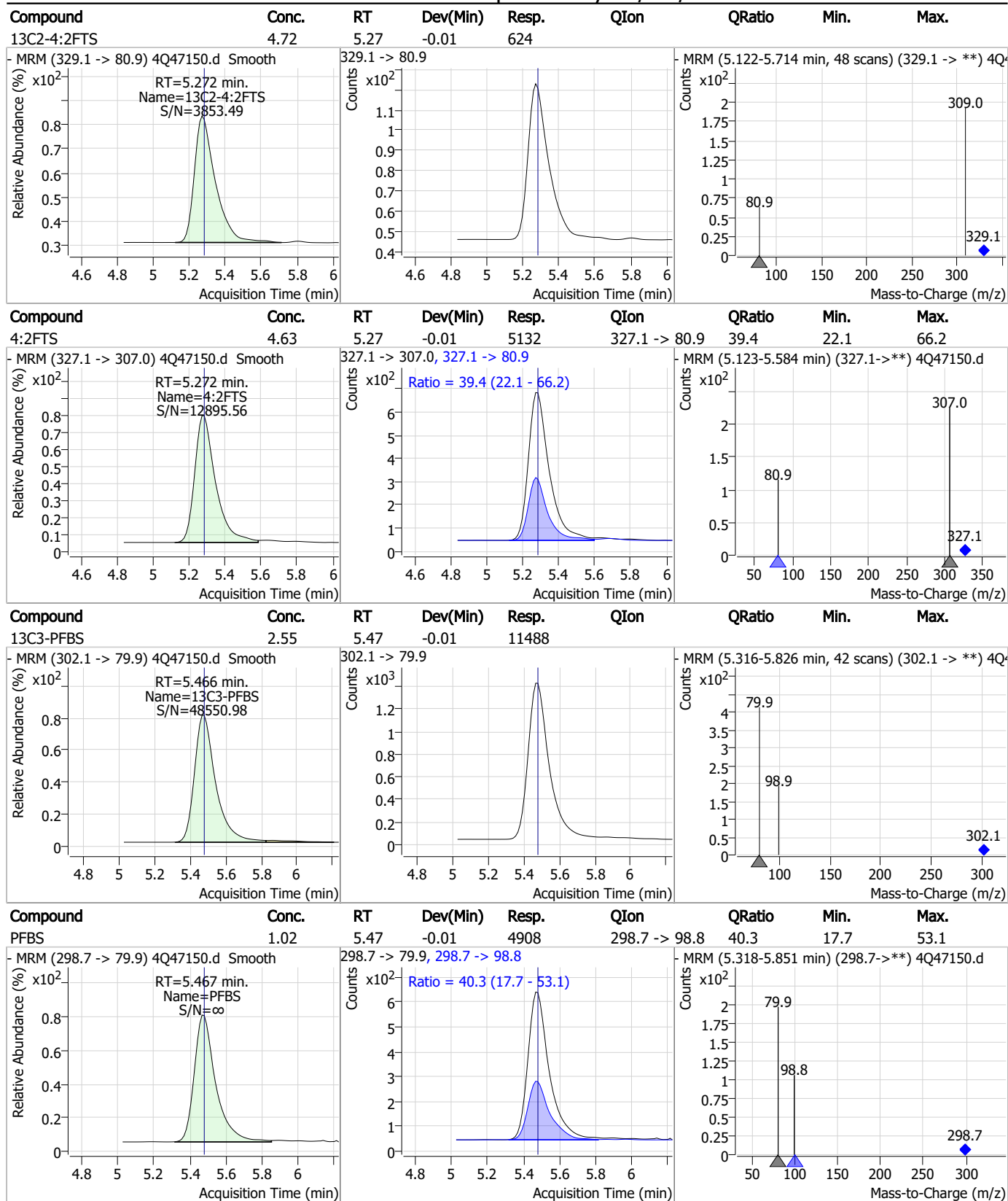


Perfluorinated Compounds by LC/MS/MS



7.7.4
7

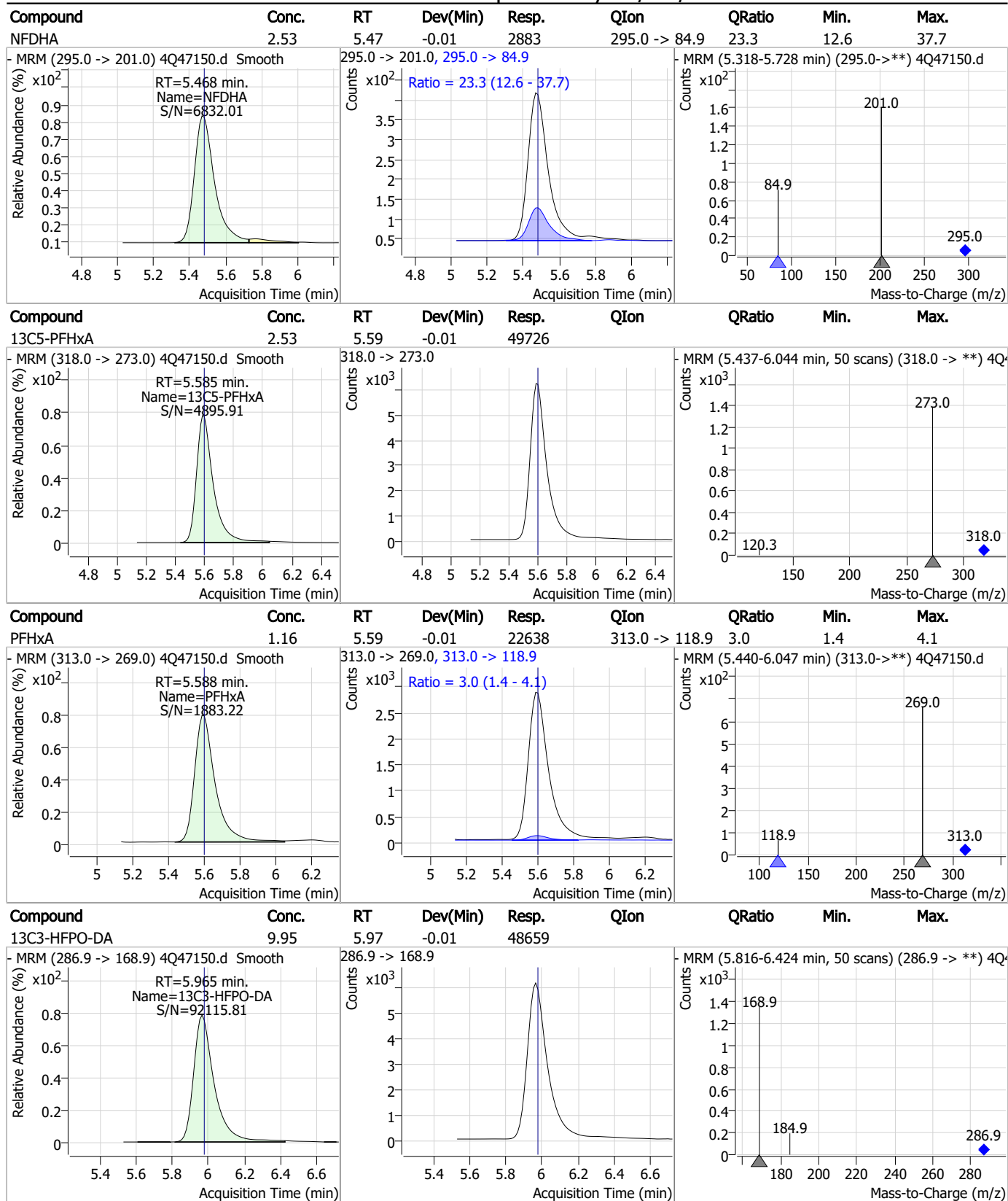
Perfluorinated Compounds by LC/MS/MS



7.7.4

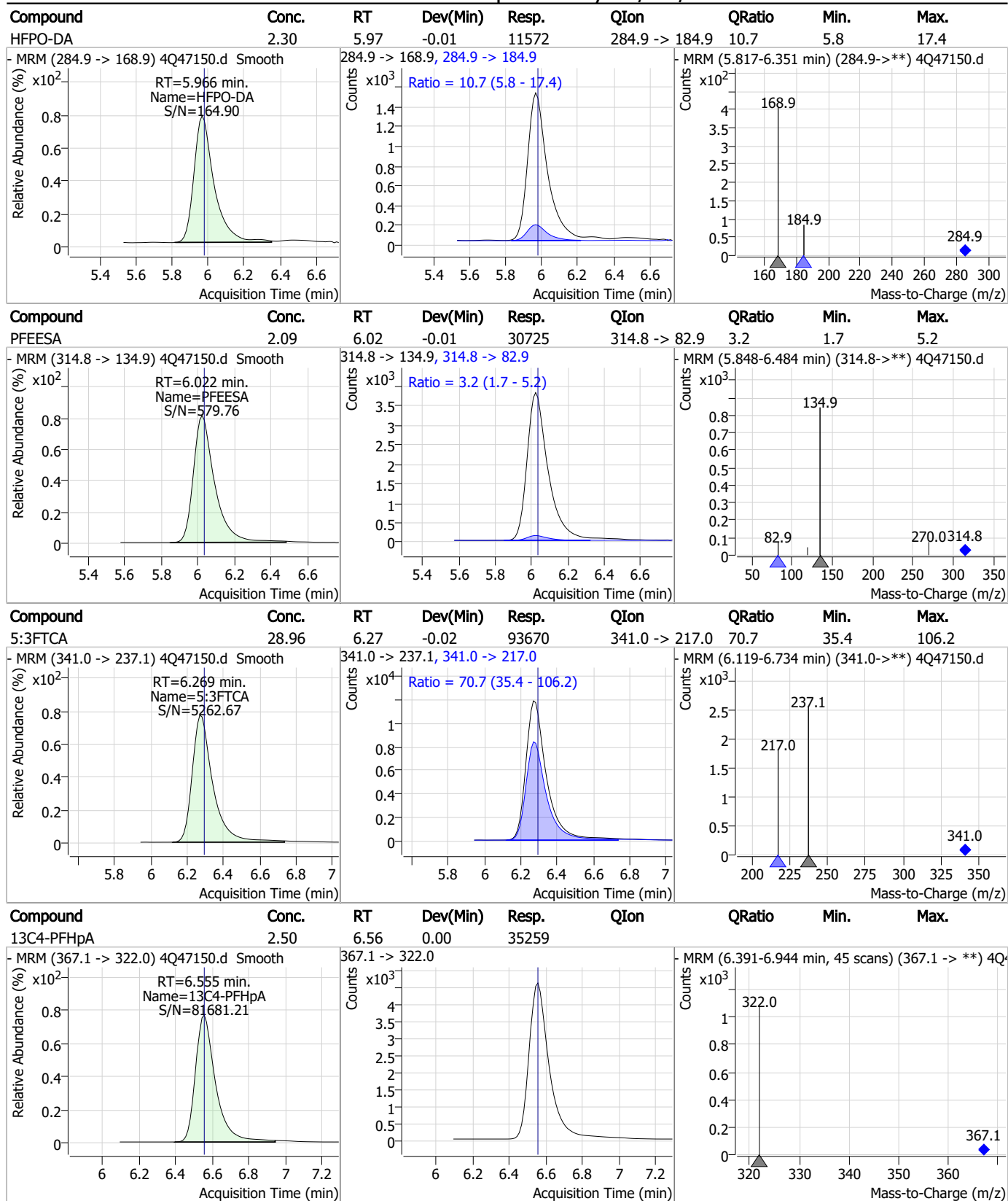
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Perfluorinated Compounds by LC/MS/MS



7.7.4
7

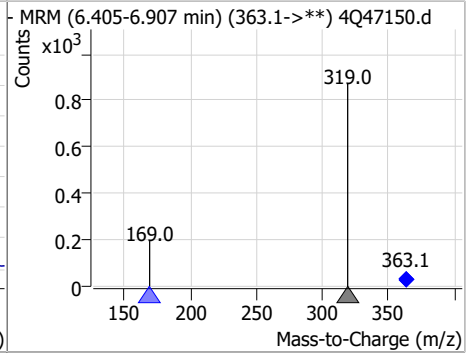
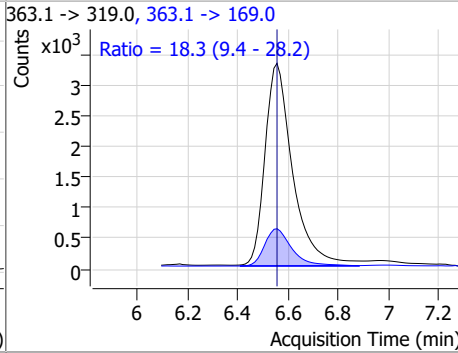
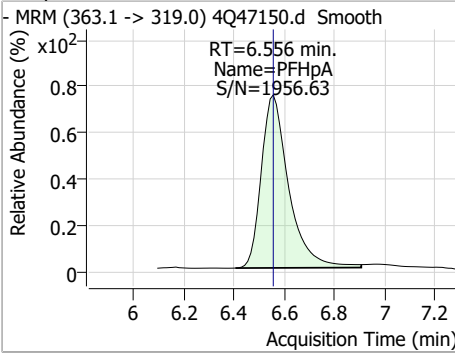
Perfluorinated Compounds by LC/MS/MS



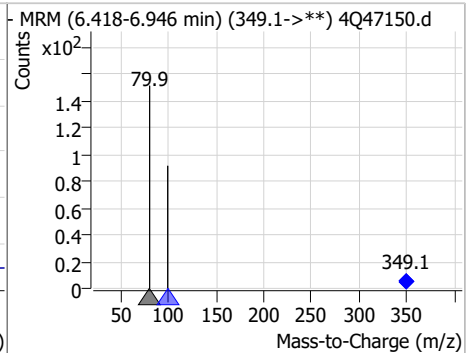
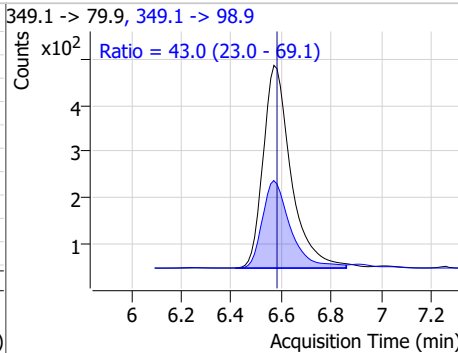
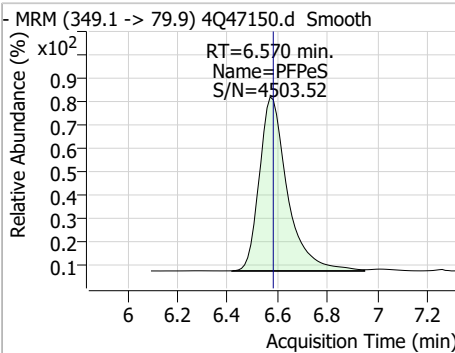
7.7.4
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Perfluorinated Compounds by LC/MS/MS

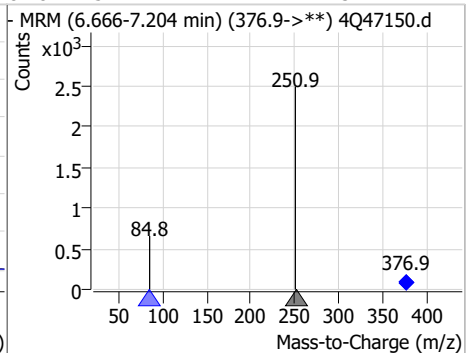
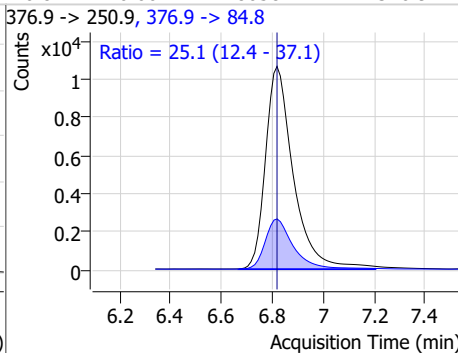
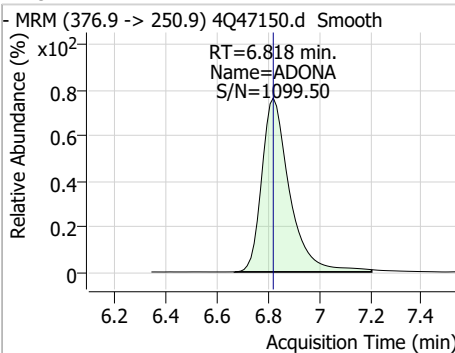
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	1.16	6.56	0.00	25135	363.1 -> 169.0	18.3	9.4	28.2



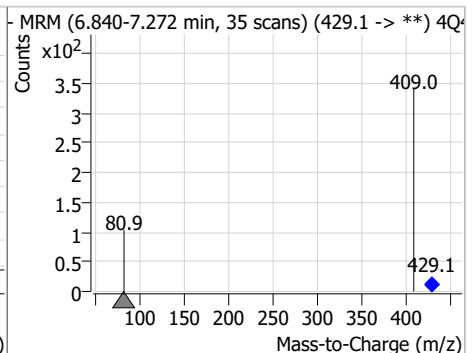
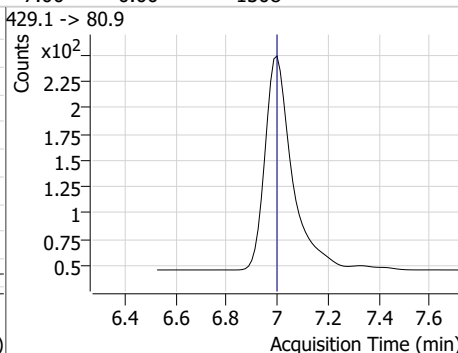
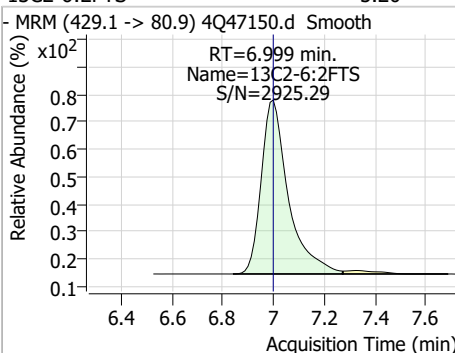
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	1.16	6.57	-0.01	3430	349.1 -> 98.9	43.0	23.0	69.1



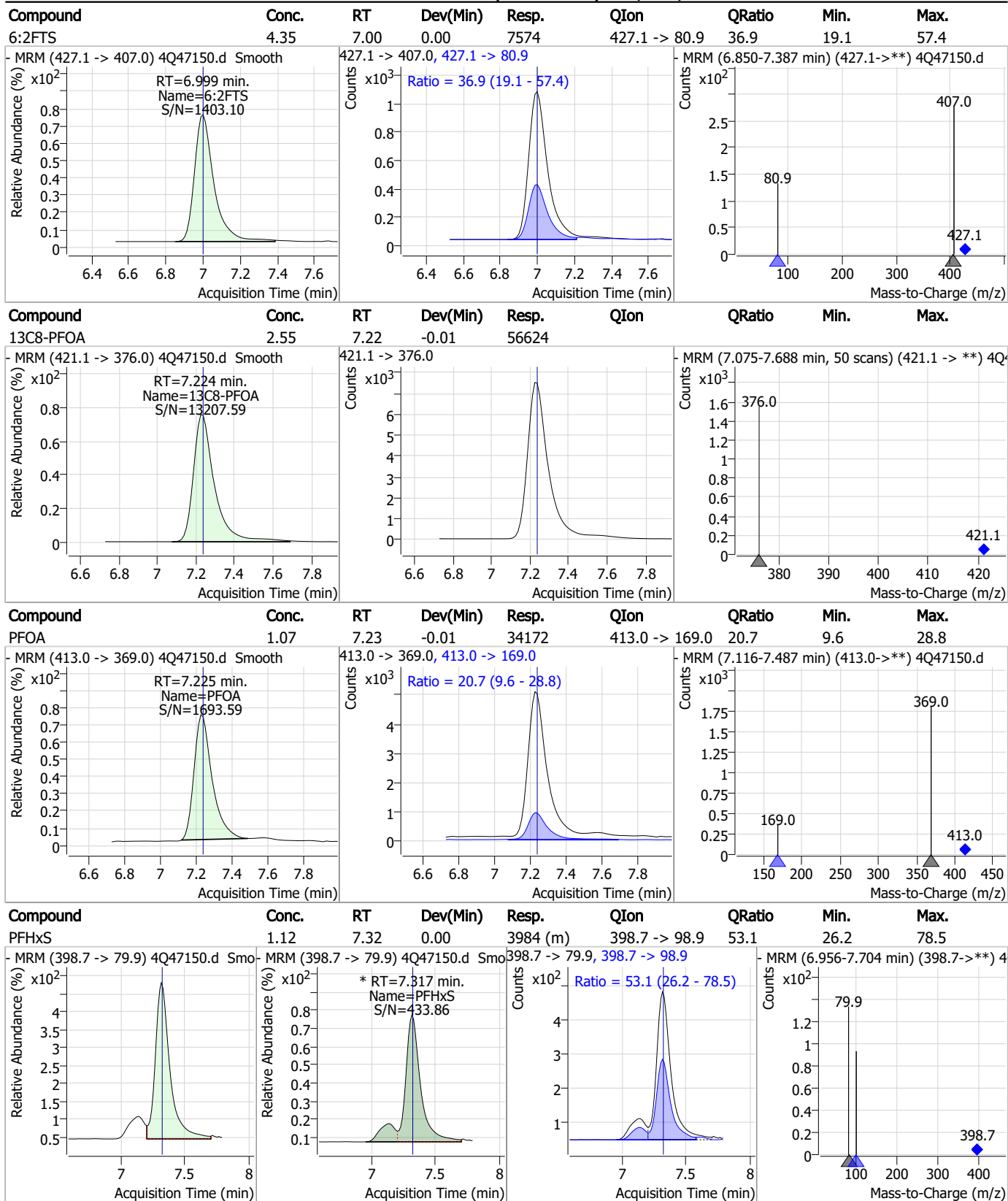
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	2.21	6.82	0.00	80584	376.9 -> 84.8	25.1	12.4	37.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	5.20	7.00	0.00	1508	429.1 -> 80.9			

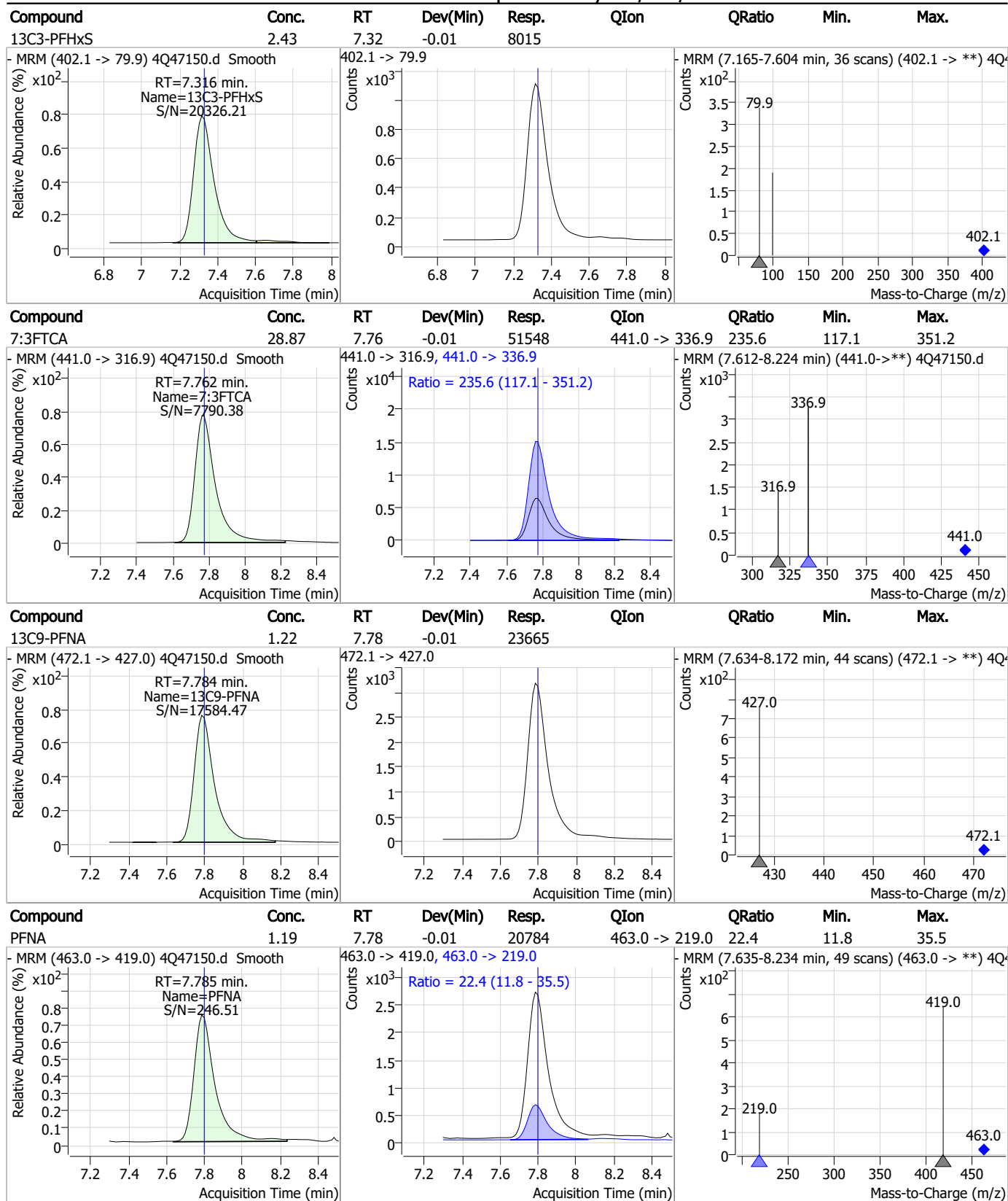


Perfluorinated Compounds by LC/MS/MS



7.7.4
7

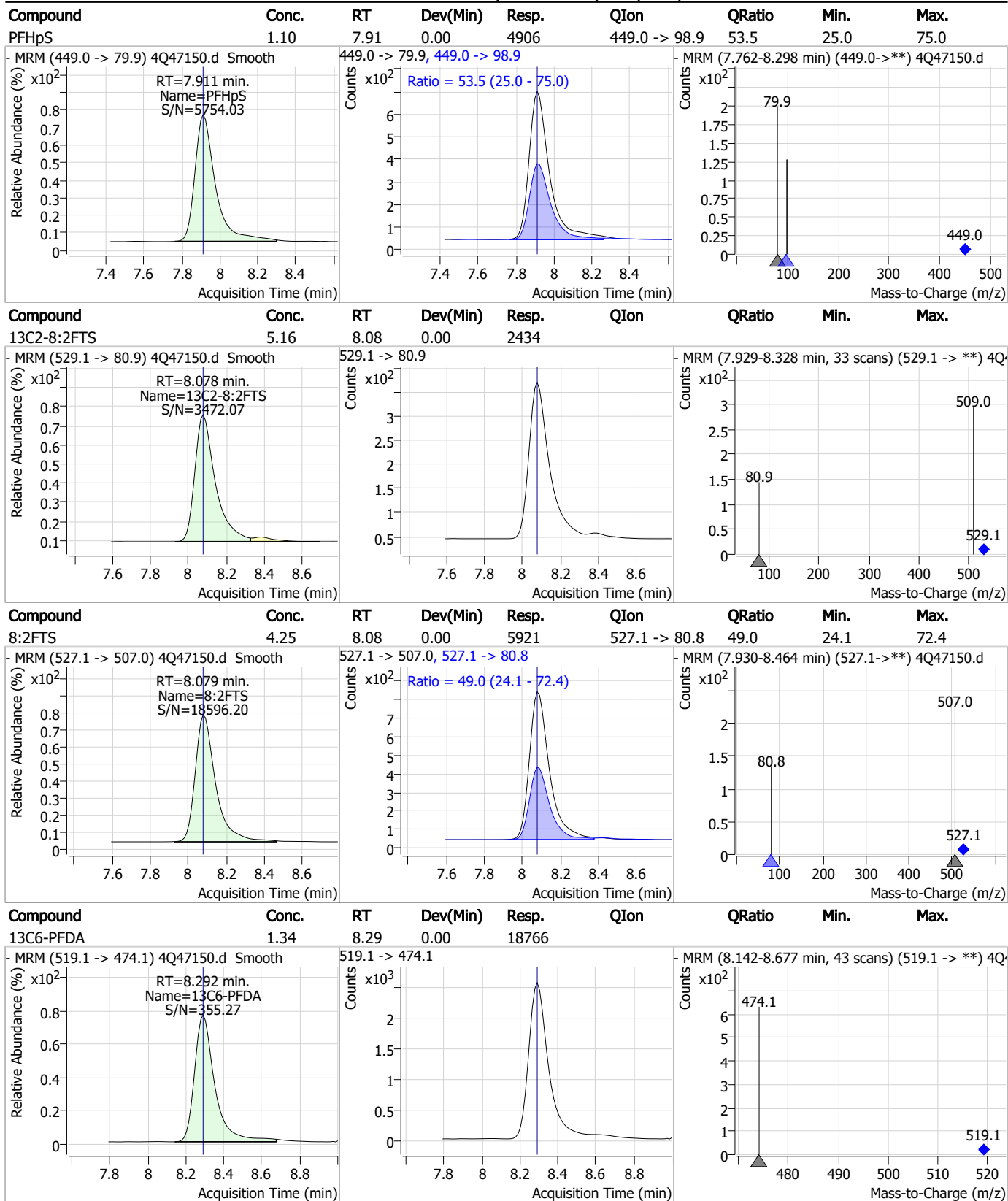
Perfluorinated Compounds by LC/MS/MS



7.7.4

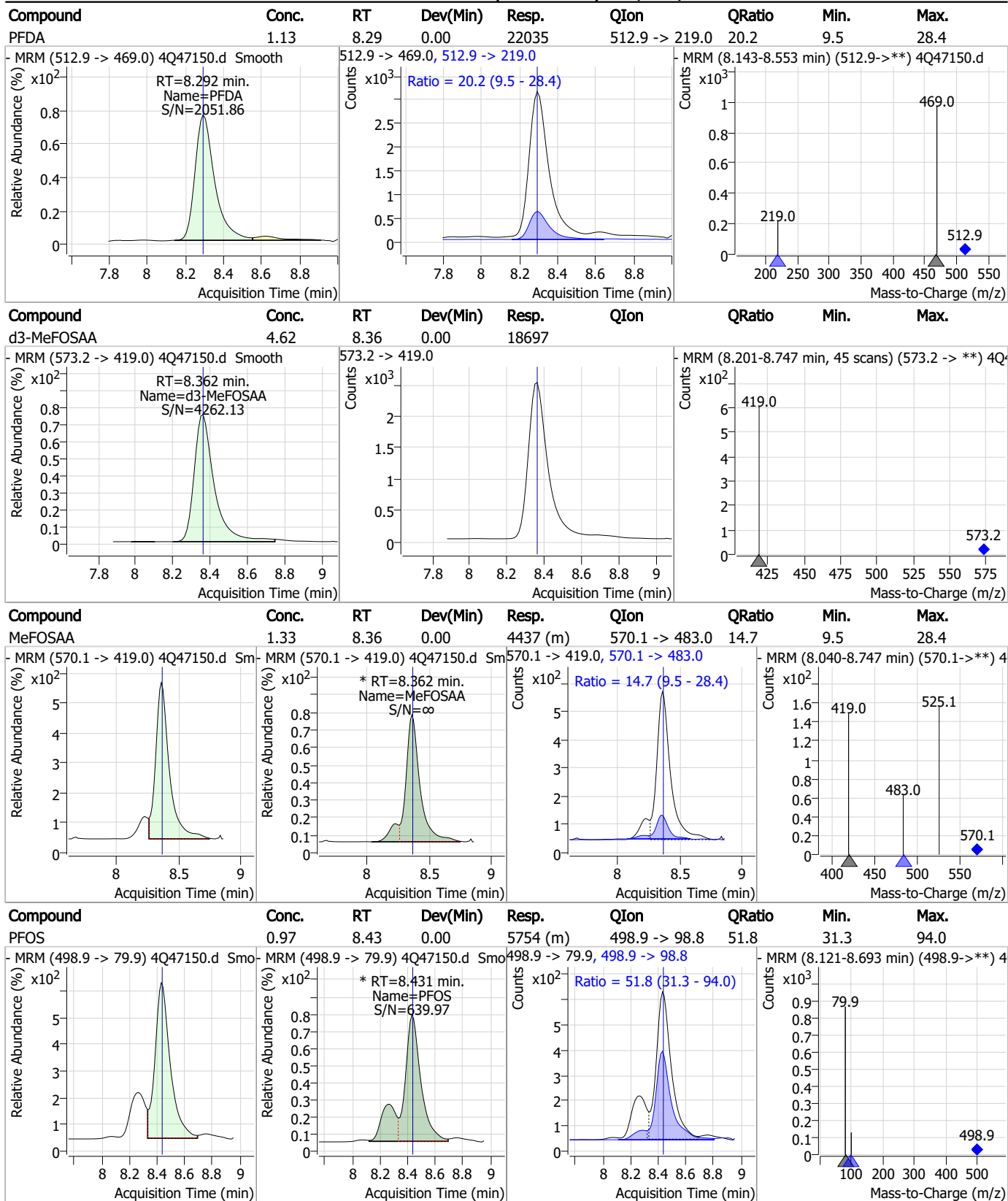
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Perfluorinated Compounds by LC/MS/MS



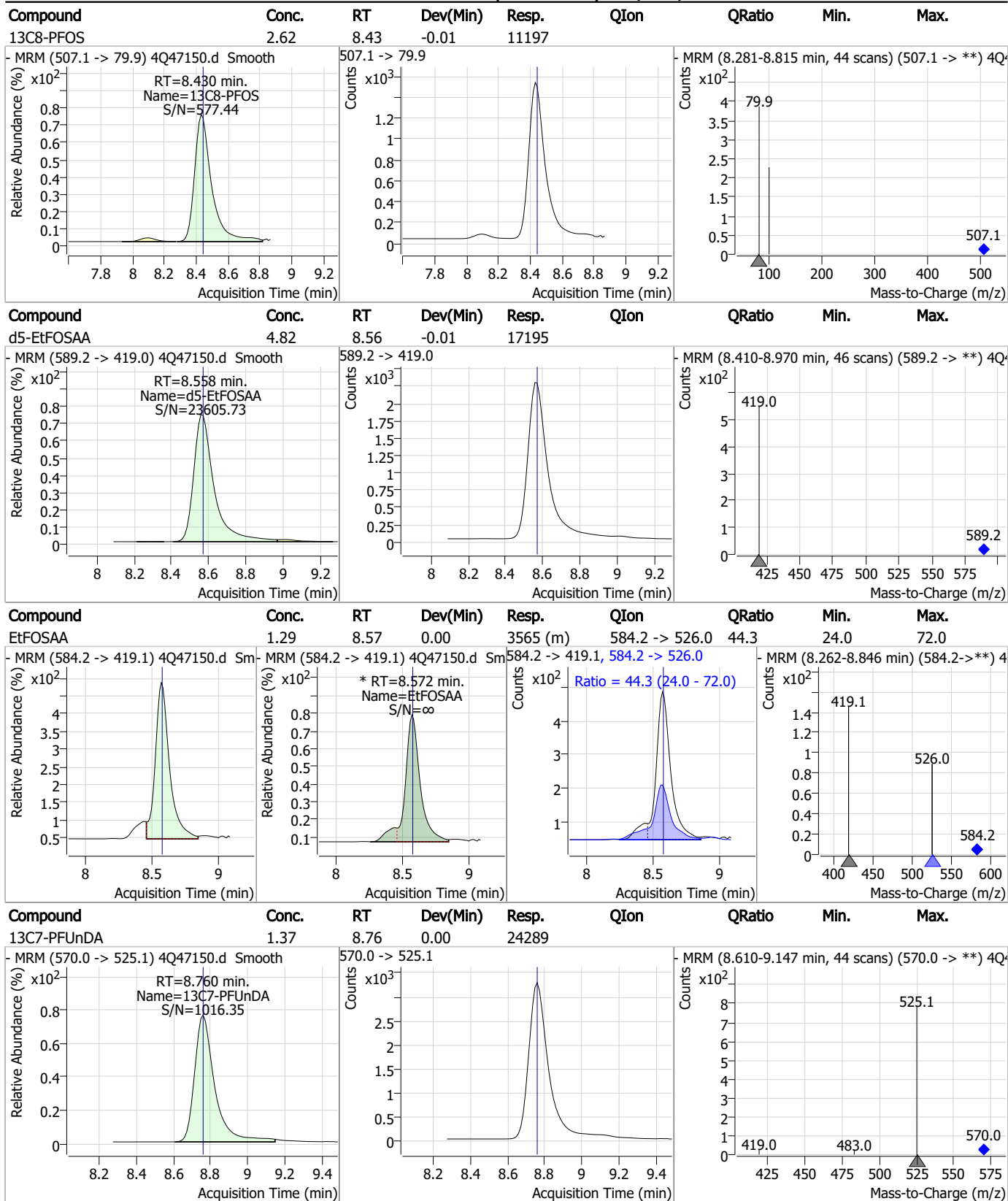
7.7.4
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Perfluorinated Compounds by LC/MS/MS



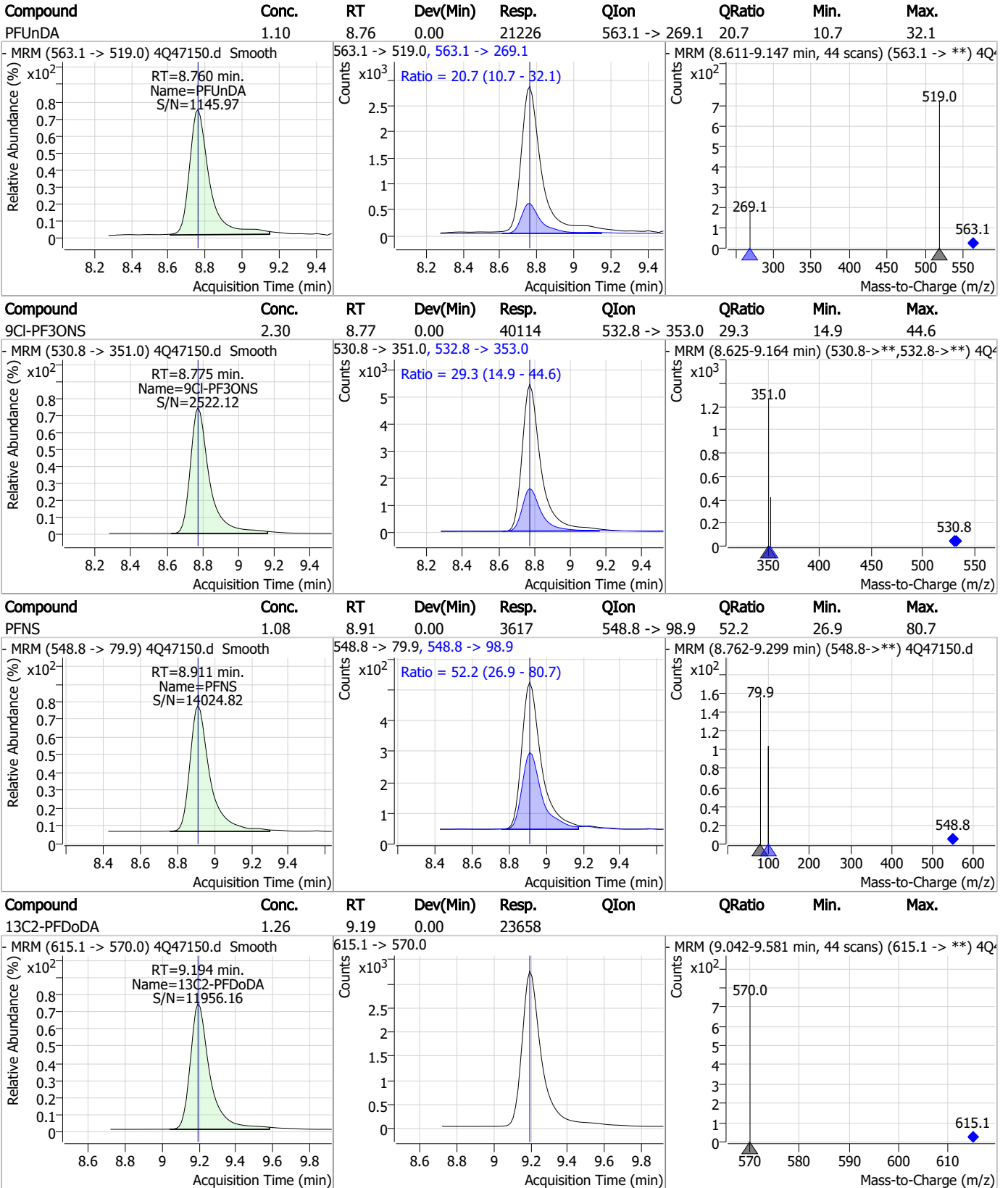
7.7.4
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Perfluorinated Compounds by LC/MS/MS

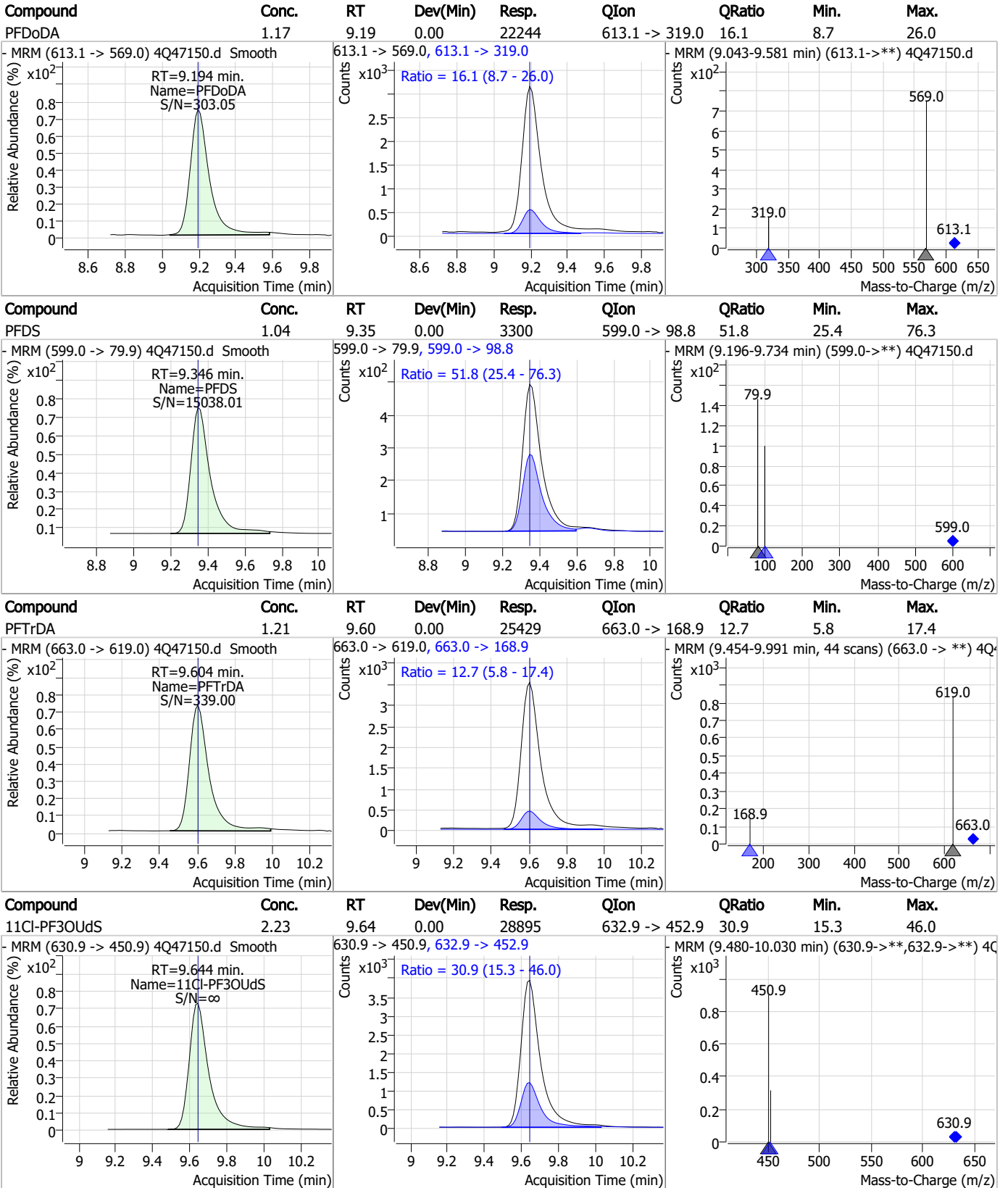


7.7.4
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Perfluorinated Compounds by LC/MS/MS



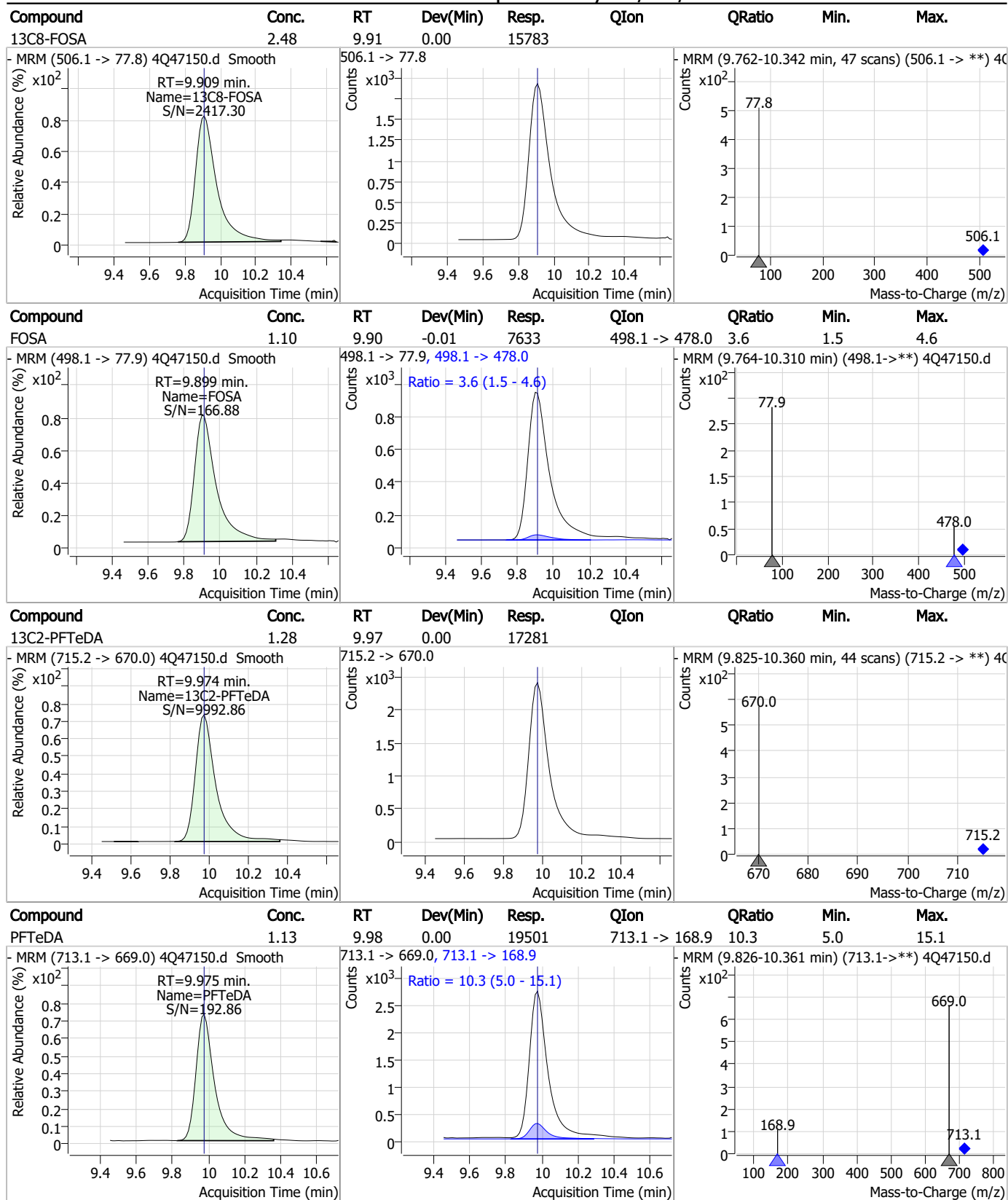
Perfluorinated Compounds by LC/MS/MS



7.7.4

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Perfluorinated Compounds by LC/MS/MS

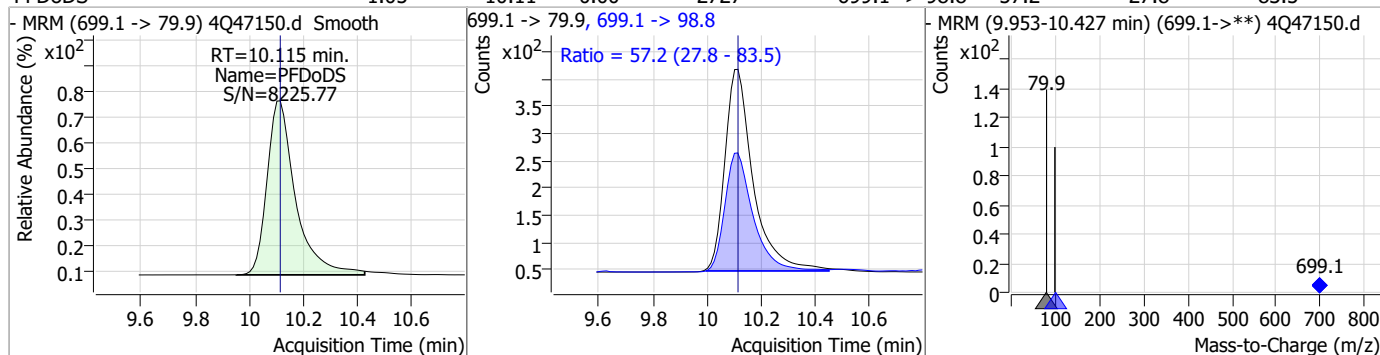


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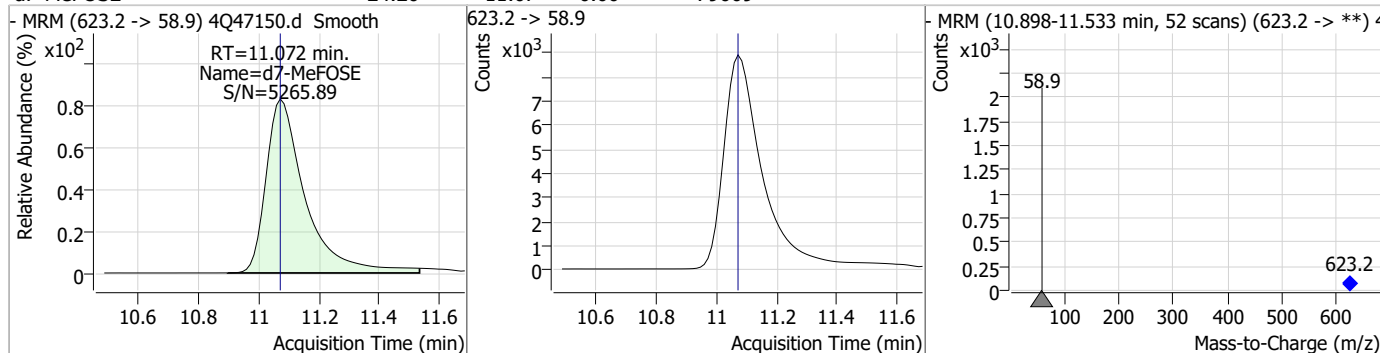
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Perfluorinated Compounds by LC/MS/MS

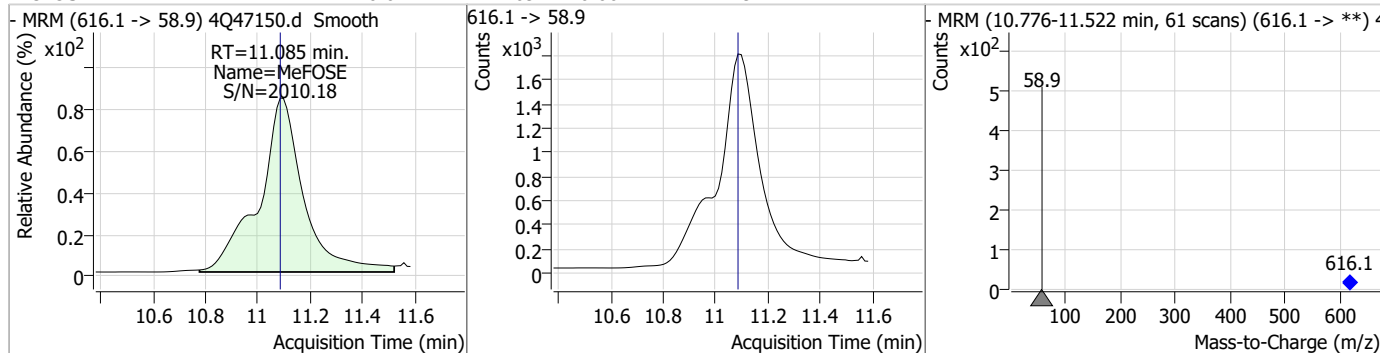
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	1.05	10.11	0.00	2727	699.1 -> 98.8	57.2	27.8	83.5



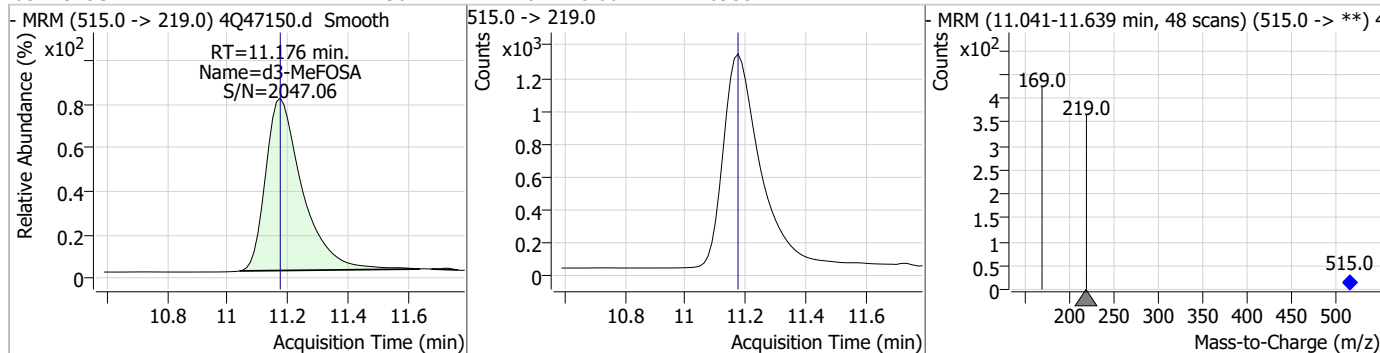
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.26	11.07	0.00	79609				



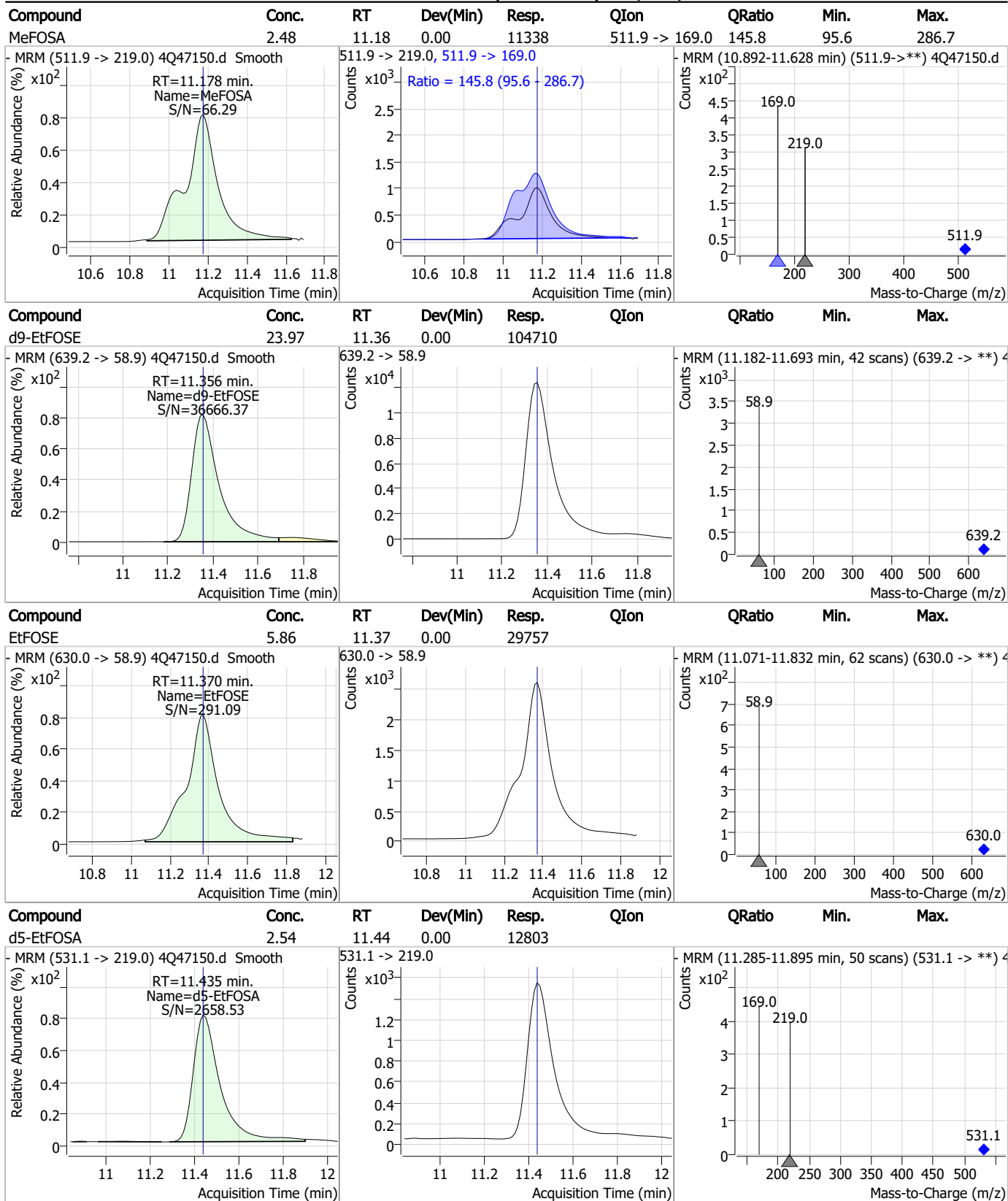
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	6.02	11.09	0.00	21179				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.36	11.18	0.00	10935				



Perfluorinated Compounds by LC/MS/MS



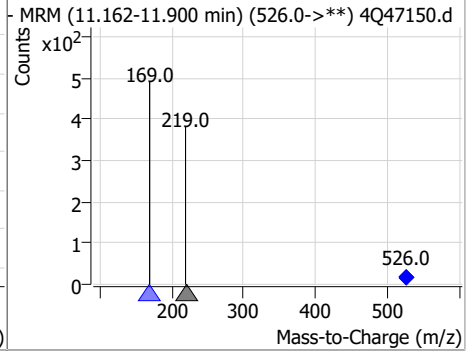
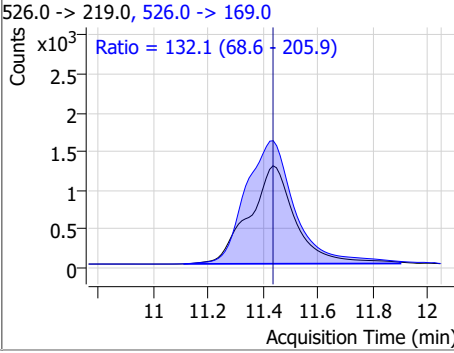
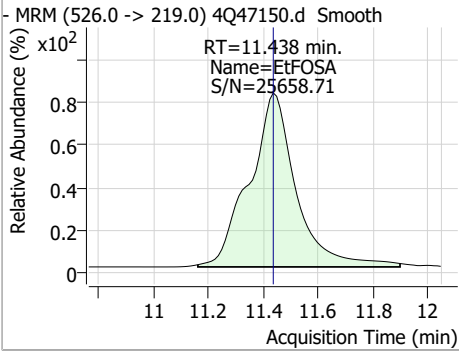
7.7.4

7



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	2.28	11.44	0.00	15078	526.0 -> 169.0	132.1	68.6	205.9



7.7.4

7

Manual Integration Approval Summary

Sample Number: S4Q690-IC690 Method: EPA DRAFT 1633
Lab FileID: 4Q47150.D Analyst approved: 07/13/23 14:35 Anna Ludwig
Injection Time: 07/12/23 18:01 Supervisor approved: 07/14/23 09:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
MeFOSAA	2355-31-9		8.36	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.43	Split peak
EtFOSAA	2991-50-6		8.57	Split peak

7.7.4.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47151.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/12/2023 6:15:45 PM
 Sample Name : icc690-4
 Vial : P1-A5
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q690.batch.bin
 Sample Information : OP97325,S4Q690,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	148233	10.00 µg/L	0.000
M5-PFPeA	4.400	268.3 -> 223.0	66788	5.00 µg/L	0.000
M5-PFHxA	5.598	318.0 -> 273.0	50224	2.50 µg/L	0.000
M4-PFHpA	6.555	367.1 -> 322.0	37003	2.50 µg/L	0.000
M8-PFOA	7.236	421.1 -> 376.0	57802	2.50 µg/L	0.000
M9-PFNA	7.797	472.1 -> 427.0	25213	1.25 µg/L	0.000
M6-PFDA	8.292	519.1 -> 474.1	19183	1.25 µg/L	0.000
M7-PFUnDA	8.760	570.0 -> 525.1	23056	1.25 µg/L	0.000
M2-PFDoDA	9.194	615.1 -> 570.0	24031	1.25 µg/L	0.000
M2-PFTeDA	9.974	715.2 -> 670.0	17107	1.25 µg/L	0.000
M8-FOSA	9.909	506.1 -> 77.8	16135	2.50 µg/L	0.000
M3-PFBS	5.479	302.1 -> 79.9	11311	2.50 µg/L	0.000
M3-PFHxS	7.329	402.1 -> 79.9	8563	2.50 µg/L	0.000
M8-PFOS	8.442	507.1 -> 79.9	10119	2.50 µg/L	0.000
M2-4:2FTS	5.284	329.1 -> 80.9	655	5.00 µg/L	0.000
M2-6:2FTS	6.999	429.1 -> 80.9	1505	5.00 µg/L	0.000
M2-8:2FTS	8.078	529.1 -> 80.9	2399	5.00 µg/L	0.000
M3-MeFOSAA	8.362	573.2 -> 419.0	19957	5.00 µg/L	0.000
M3-HFPO-DA	5.978	286.9 -> 168.9	49027	10.00 µg/L	0.000
M5-EtFOSAA	8.571	589.2 -> 419.0	17642	5.00 µg/L	0.000
M7-MeFOSE	11.072	623.2 -> 58.9	81295	25.00 µg/L	0.000
M9-EtFOSE	11.356	639.2 -> 58.9	112501	25.00 µg/L	0.000
M5-EtFOSA	11.435	531.1 -> 219.0	13615	2.50 µg/L	0.000
M3-MeFOSA	11.176	515.0 -> 219.0	11991	2.50 µg/L	0.000
13C4-PFOS	8.430	502.8 -> 79.9	12618	2.50 µg/L	0.000
13C3-PFBA	2.928	216.0 -> 172.0	79343	5.00 µg/L	0.000
18O2-PFHxS	7.328	403.0 -> 83.9	5920	2.50 µg/L	0.000
13C4-PFOA	7.237	417.1 -> 372.0	70870	2.50 µg/L	0.000
13C2-PFDA	8.292	515.1 -> 470.1	20813	1.25 µg/L	0.000
13C5-PFNA	7.798	468.0 -> 423.0	29519	1.25 µg/L	0.000
13C2-PFHxA	5.599	315.1 -> 270.0	48411	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.284	329.1 -> 80.9	655	4.93 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C2-6:2FTS	6.999	429.1 -> 80.9	1505	5.17 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.3%		
13C2-8:2FTS	8.078	529.1 -> 80.9	2399	5.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C2-PFDoDA	9.194	615.1 -> 570.0	24031	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C2-PFTeDA	9.974	715.2 -> 670.0	17107	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C3-PFBS	5.479	302.1 -> 79.9	11311	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C3-PFHxS	7.329	402.1 -> 79.9	8563	2.58 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 = 103.2%	
13C4-PFBA	2.924	216.8 -> 171.9	148233	9.89 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C4-PFHpA	6.555	367.1 -> 322.0	37003	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C5-PFHxA	5.598	318.0 -> 273.0	50224	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C5-PFPeA	4.400	268.3 -> 223.0	66788	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C6-PFDA	8.292	519.1 -> 474.1	19183	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.5%	
13C7-PFUnDA	8.760	570.0 -> 525.1	23056	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C8-FOSA	9.909	506.1 -> 77.8	16135	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C8-PFOA	7.236	421.1 -> 376.0	57802	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C8-PFOS	8.442	507.1 -> 79.9	10119	2.31 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.4%	
13C9-PFNA	7.797	472.1 -> 427.0	25213	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.2%	
d3-MeFOSAA	8.362	573.2 -> 419.0	19957	4.81 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.2%	
13C3-HFPO-DA	5.978	286.9 -> 168.9	49027	9.50 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 95.0%	
d3-MeFOSA	11.176	515.0 -> 219.0	11991	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
d5-EtFOSAA	8.571	589.2 -> 419.0	17642	4.82 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.4%	
d7-MeFOSE	11.072	623.2 -> 58.9	81295	24.14 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.6%	
d9-EtFOSE	11.356	639.2 -> 58.9	112501	25.09 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
d5-EtFOSA	11.435	531.1 -> 219.0	13615	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.4%	
Target Compounds					QValue
4:2FTS	5.285	327.1 -> 307.0	11164	9.60 µg/L	100
		327.1 -> 80.9	4911		
6:2FTS	6.999	427.1 -> 407.0	16592	9.54 µg/L	98
		427.1 -> 80.9	6123		
8:2FTS	8.079	527.1 -> 507.0	13326	9.71 µg/L	90
		527.1 -> 80.8	5570		
EtFOSAA	8.572	584.2 -> 419.1	6956	2.45 µg/L	m 96
		584.2 -> 526.0	3539		
FOSA	9.912	498.1 -> 77.9	17348	2.44 µg/L	100
		498.1 -> 478.0	543		
MeFOSAA	8.362	570.1 -> 419.0	8705	2.44 µg/L	100
		570.1 -> 483.0	1628		
PFBA	2.920	212.8 -> 168.9	43892	9.84 µg/L	100
PFBS	5.480	298.7 -> 79.9	10747	2.28 µg/L	94
		298.7 -> 98.8	4184		
PFDA	8.292	512.9 -> 469.0	46397	2.33 µg/L	98
		512.9 -> 219.0	9212		
PFDODA	9.194	613.1 -> 569.0	47925	2.48 µg/L	98
		613.1 -> 319.0	7957		
PFDS	9.346	599.0 -> 79.9	7518	2.63 µg/L	95

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	3568			
PFHpA	6.556	363.1 -> 319.0	55582	2.44	µg/L	97
		363.1 -> 169.0	9585			
PFHpS	7.911	449.0 -> 79.9	10007	2.47	µg/L	94
		449.0 -> 98.9	5399			
PFHxA	5.601	313.0 -> 269.0	49206	2.50	µg/L	100
		313.0 -> 118.9	1378			
PFHxS	7.317	398.7 -> 79.9	8626	2.26	µg/L	m 98
		398.7 -> 98.9	4371			
PFNA	7.798	463.0 -> 419.0	44147	2.38	µg/L	98
		463.0 -> 219.0	10857			
PFNS	8.911	548.8 -> 79.9	7577	2.51	µg/L	99
		548.8 -> 98.9	4108			
PFOA	7.238	413.0 -> 369.0	82278	2.52	µg/L	99
		413.0 -> 169.0	15985			
PFOS	8.431	498.9 -> 79.9	12445	2.31	µg/L	m 83
		498.9 -> 98.8	6136			
PFPeA	4.402	263.0 -> 219.0	92756	4.93	µg/L	100
PFPeS	6.582	349.1 -> 79.9	7220	2.29	µg/L	94
		349.1 -> 98.9	3024			
PFTeDA	9.975	713.1 -> 669.0	43284	2.53	µg/L	99
		713.1 -> 168.9	4457			
PFTrDA	9.604	663.0 -> 619.0	52157	2.44	µg/L	98
		663.0 -> 168.9	6502			
PFUnDA	8.760	563.1 -> 519.0	46050	2.52	µg/L	98
		563.1 -> 269.1	10189			
11Cl-PF3OUdS	9.644	630.9 -> 450.9	61229	4.68	µg/L	98
		632.9 -> 452.9	19286			
9Cl-PF3ONS	8.775	530.8 -> 351.0	88270	5.03	µg/L	98
		532.8 -> 353.0	27154			
ADONA	6.818	376.9 -> 250.9	177311	4.83	µg/L	99
		376.9 -> 84.8	44784			
HFPO-DA	5.978	284.9 -> 168.9	24853	4.91	µg/L	98
		284.9 -> 184.9	2721			
3:3FTCA	3.873	241.0 -> 177.0	12313	12.00	µg/L	97
		241.0 -> 117.0	1078			
5:3FTCA	6.294	341.0 -> 237.1	205057	62.77	µg/L	99
		341.0 -> 217.0	142996			
7:3FTCA	7.774	441.0 -> 316.9	113552	62.97	µg/L	97
		441.0 -> 336.9	271538			
EtFOSA	11.438	526.0 -> 219.0	30930	4.41	µg/L	100
		526.0 -> 169.0	42463			
EtFOSE	11.370	630.0 -> 58.9	65296	11.97	µg/L	100
MeFOSA	11.178	511.9 -> 219.0	24934	4.98	µg/L	m 66
		511.9 -> 169.0	35203			
MeFOSE	11.085	616.1 -> 58.9	41979	11.69	µg/L	100
PFDoDS	10.115	699.1 -> 79.9	5841	2.48	µg/L	97
		699.1 -> 98.8	3369			
NFDHA	5.481	295.0 -> 201.0	6100	5.29	µg/L	98
		295.0 -> 84.9	1464			
PFMBA	4.810	279.0 -> 85.1	48836	4.82	µg/L	100
PFMPA	3.528	229.0 -> 84.9	47080	4.90	µg/L	100
PFEESA	6.035	314.8 -> 134.9	65447	4.41	µg/L	100
		314.8 -> 82.9	2261			

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

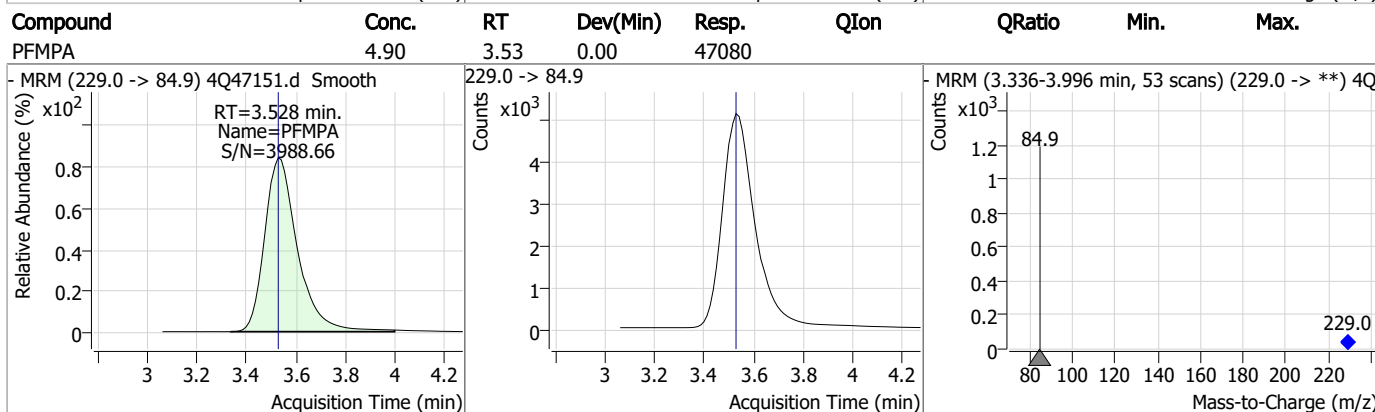
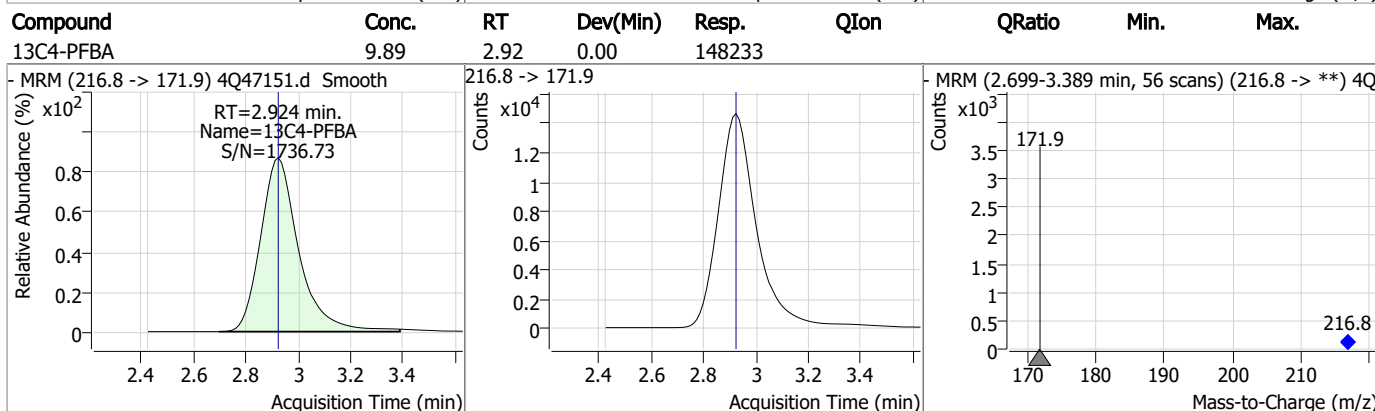
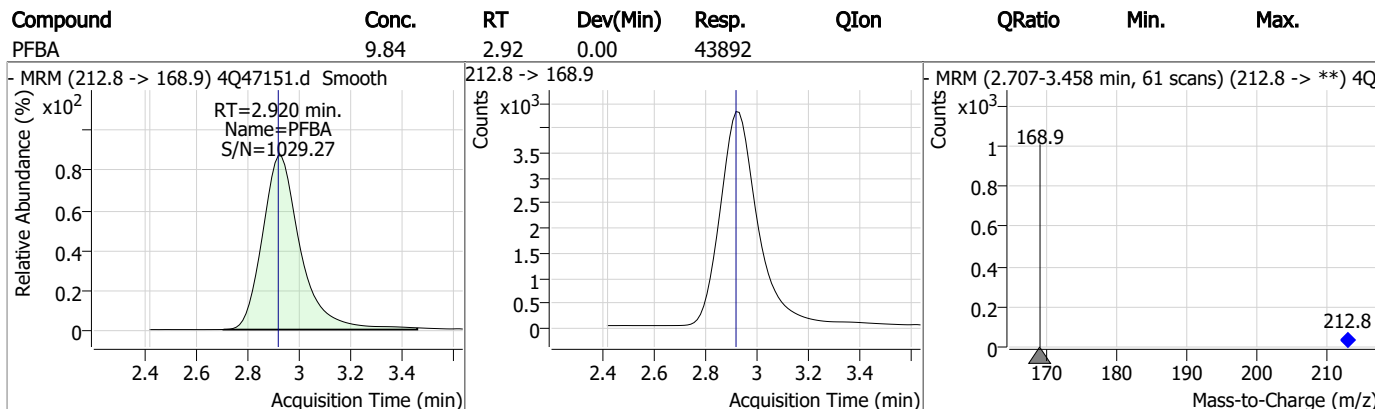
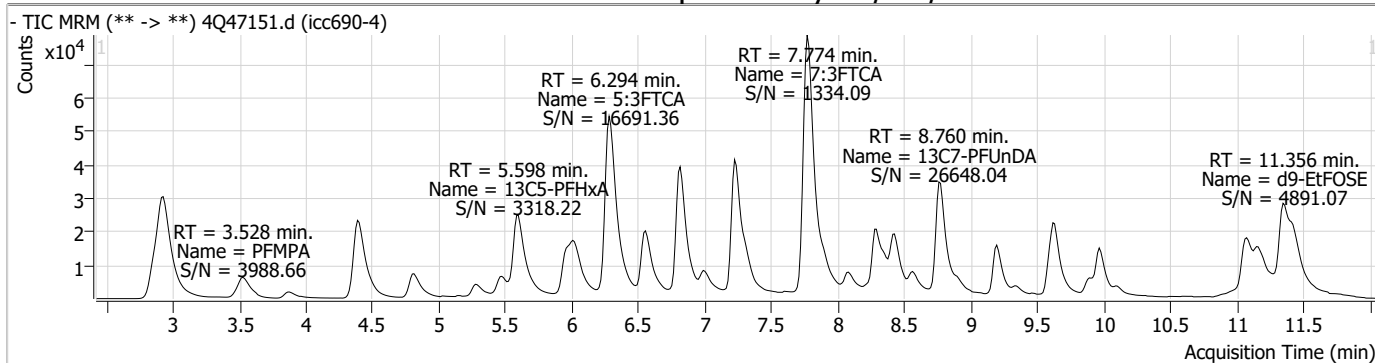
Perfluorinated Compounds by LC/MS/MS

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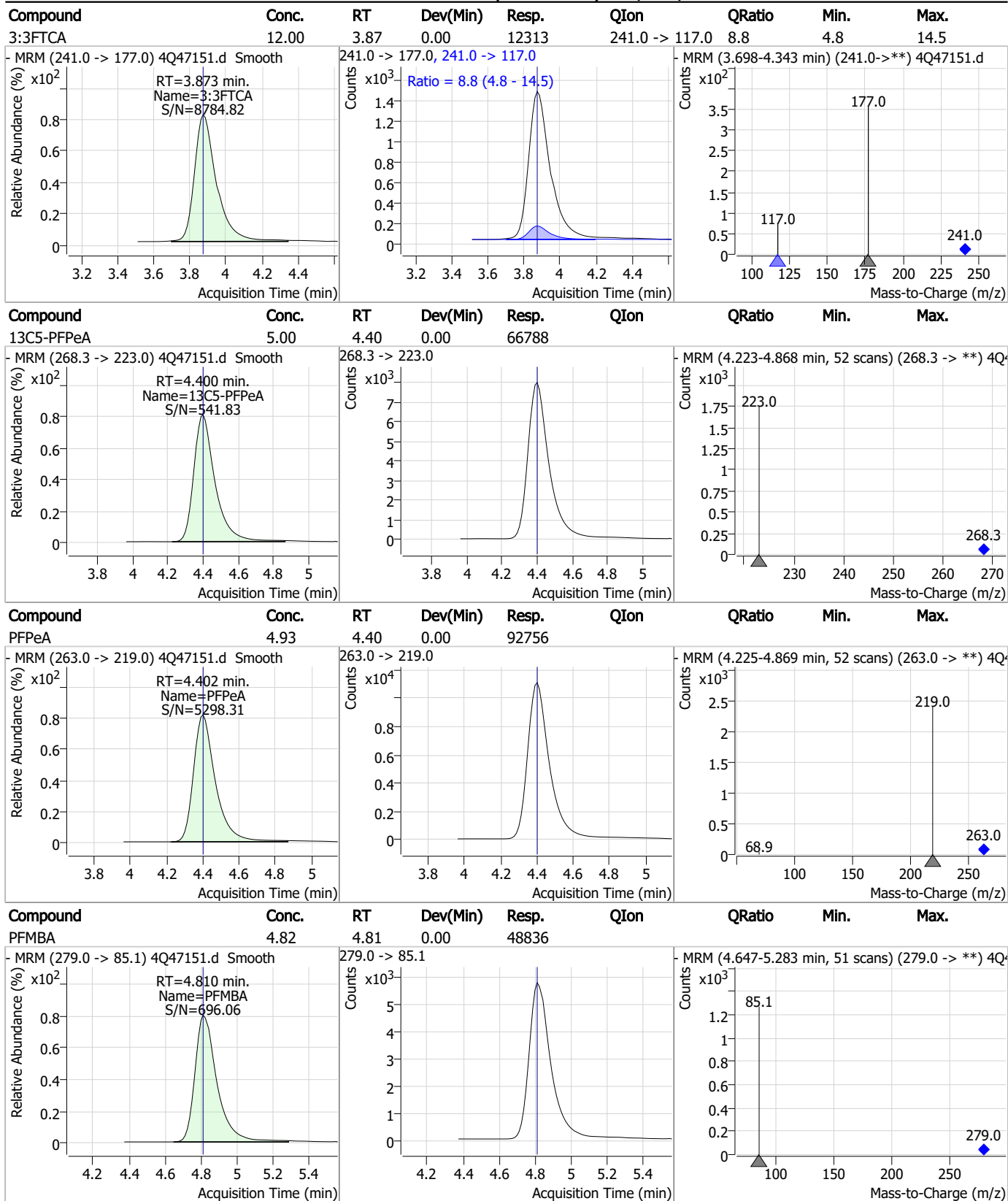
7.7.5
7



Perfluorinated Compounds by LC/MS/MS

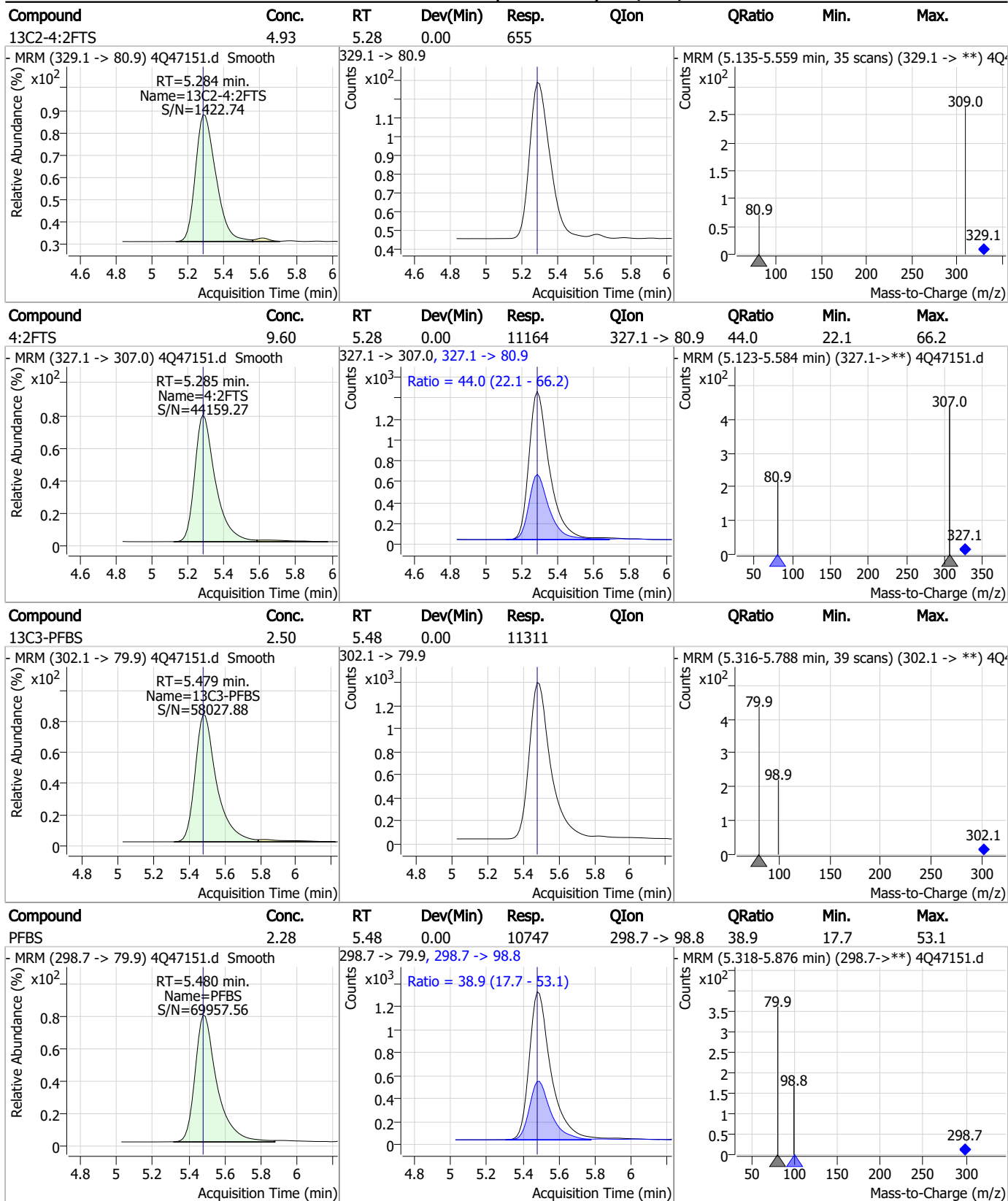


Perfluorinated Compounds by LC/MS/MS



7.7.5
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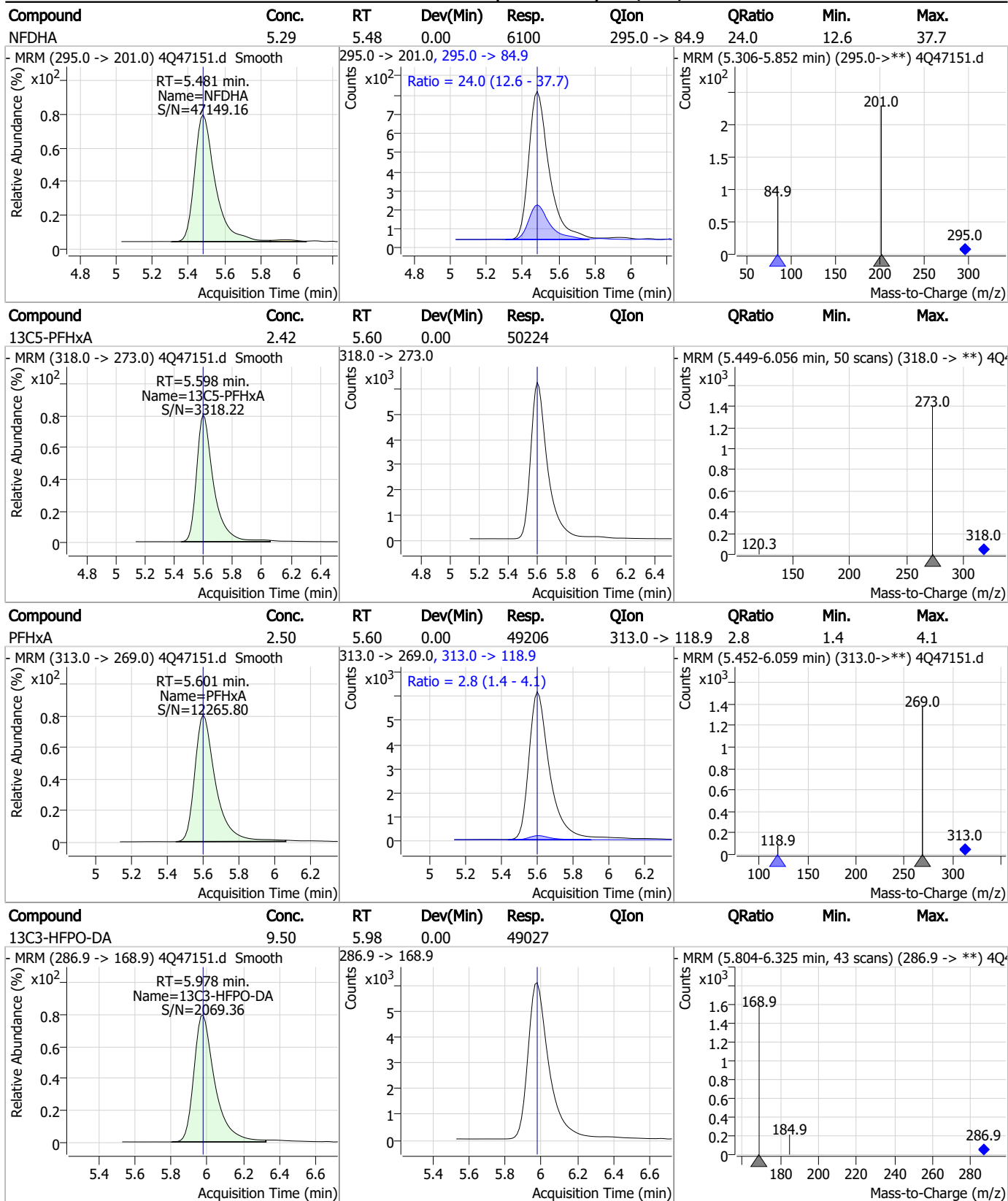
Perfluorinated Compounds by LC/MS/MS



7.7.5

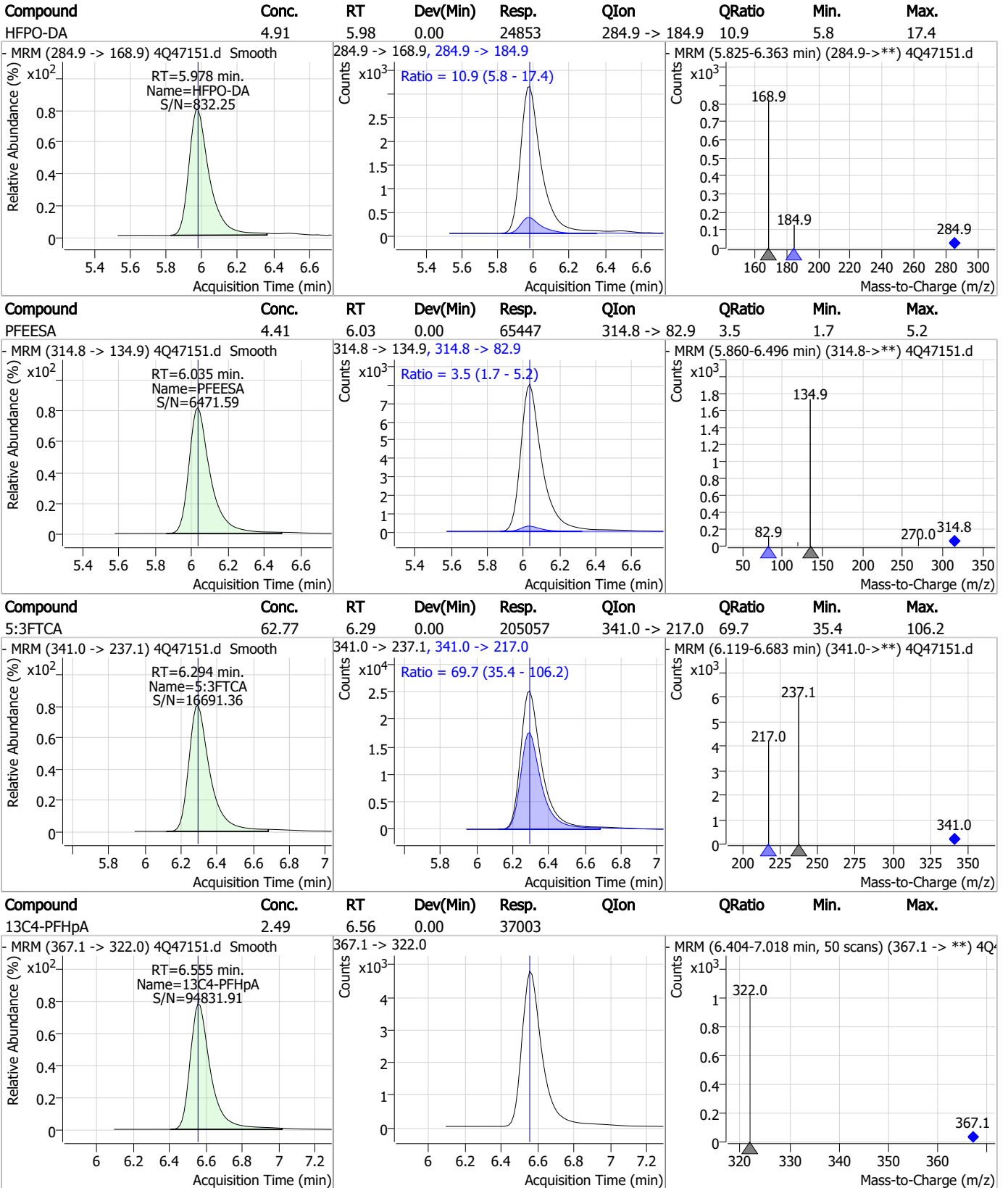
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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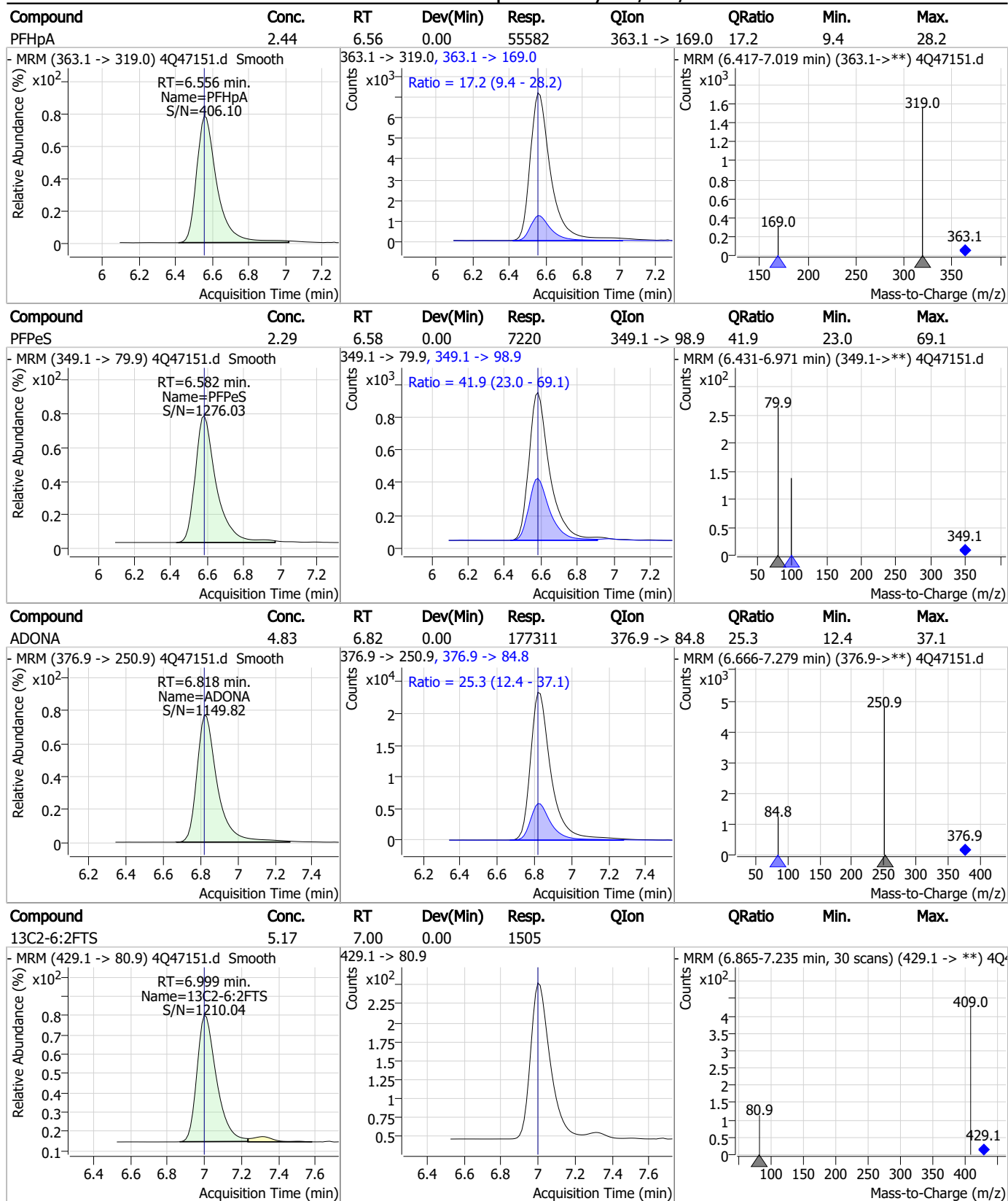
Perfluorinated Compounds by LC/MS/MS



7.7.5

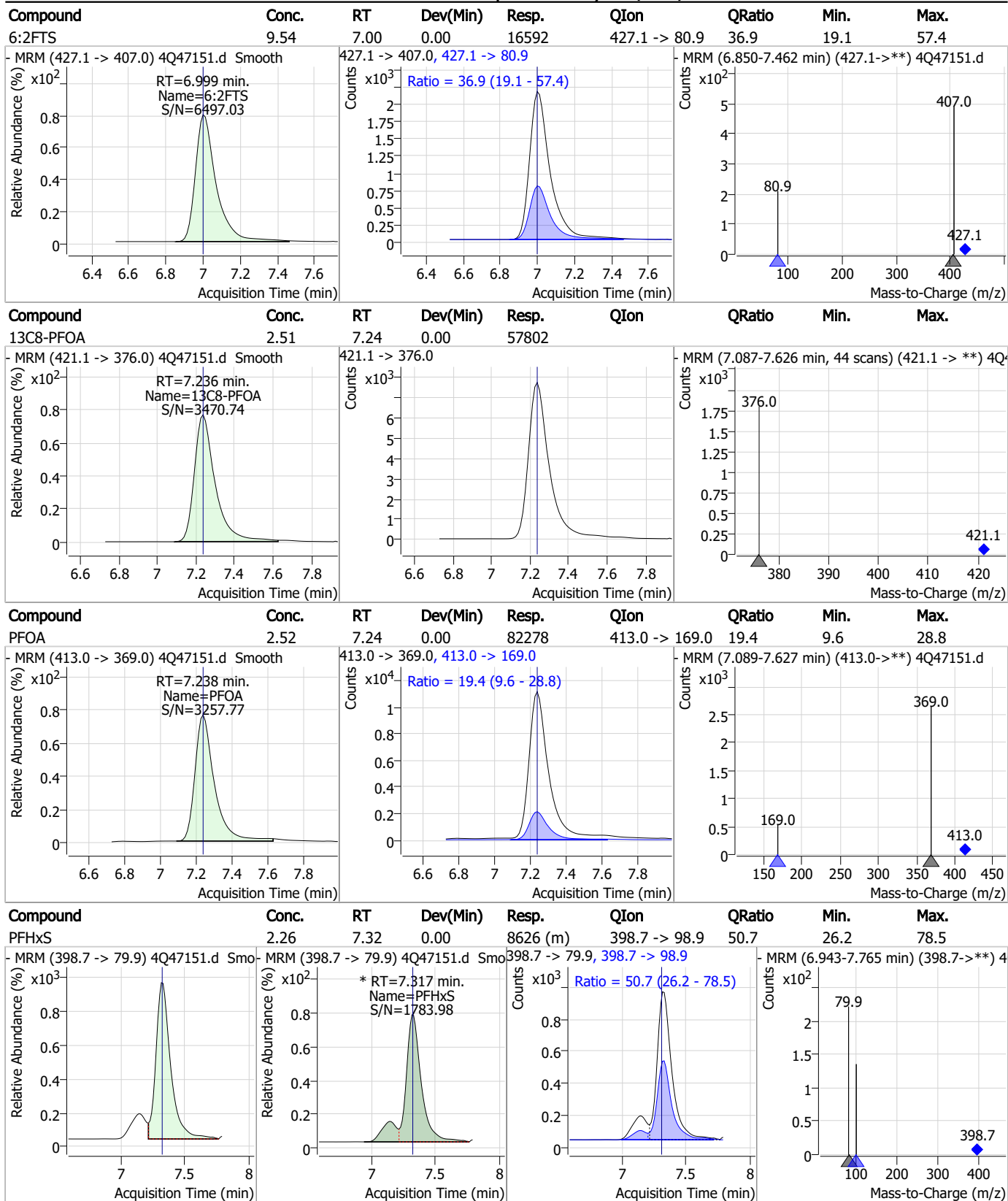
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Perfluorinated Compounds by LC/MS/MS



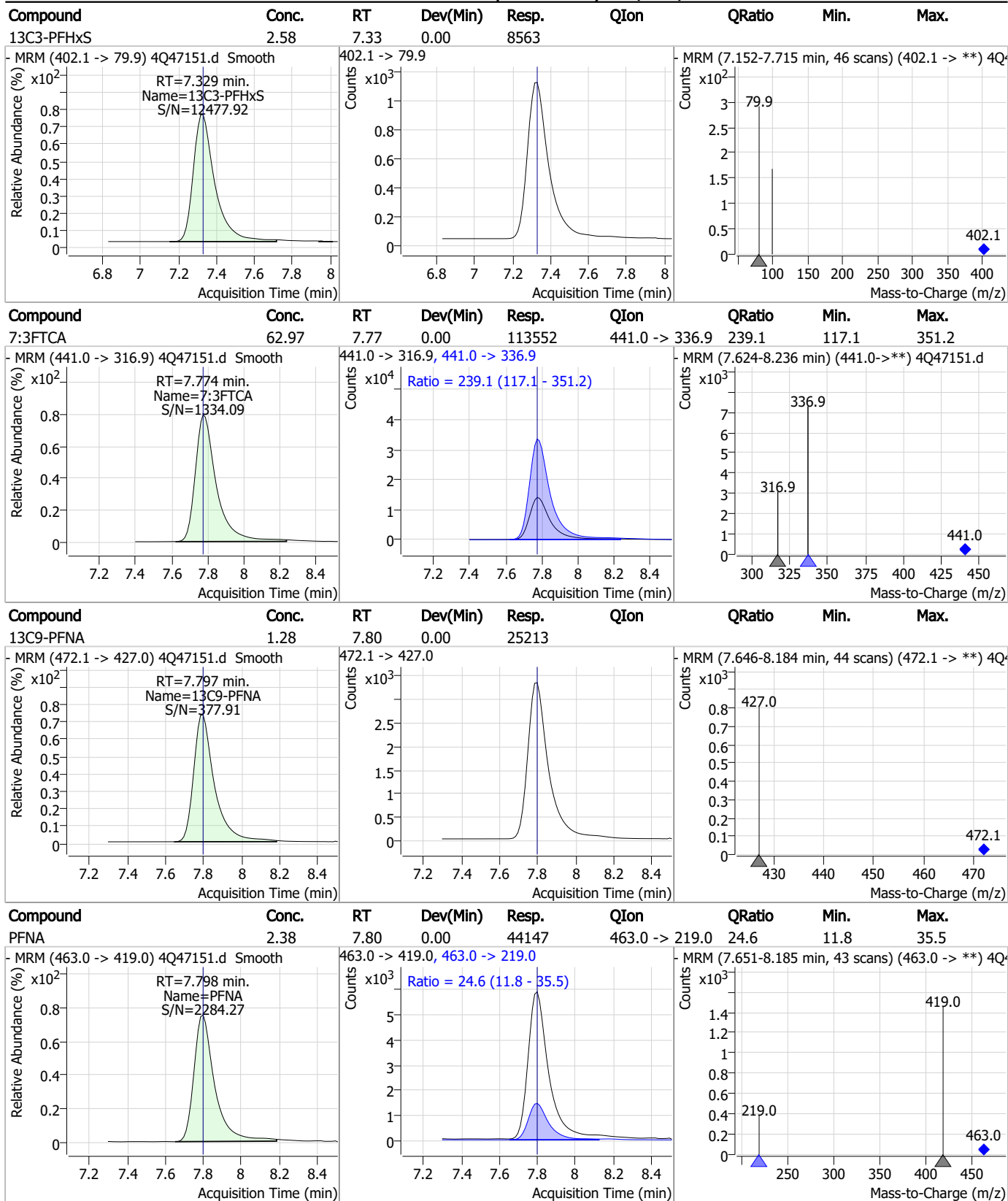
7.7.5
7

Perfluorinated Compounds by LC/MS/MS



7.7.5
7

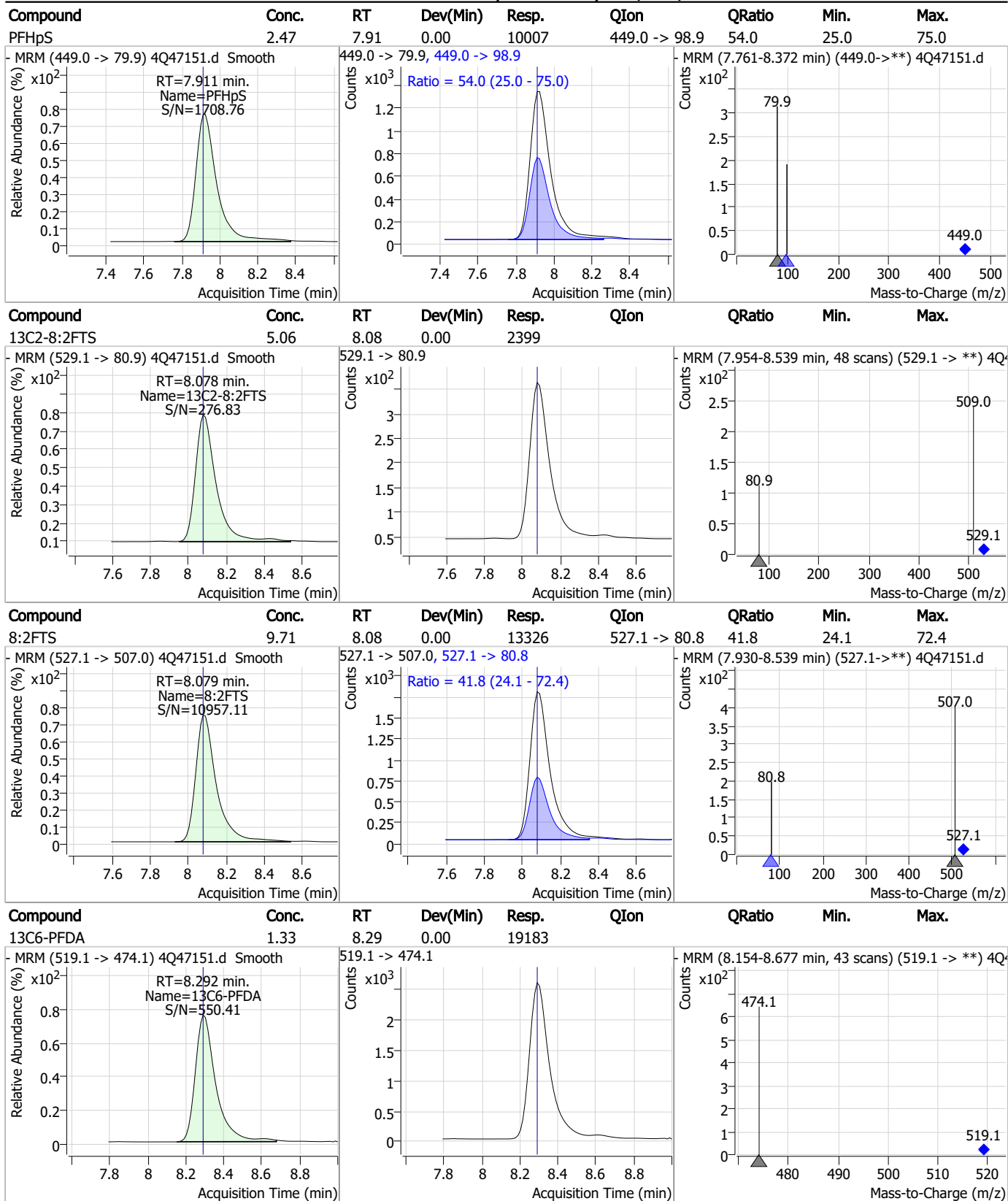
Perfluorinated Compounds by LC/MS/MS



7.7.5

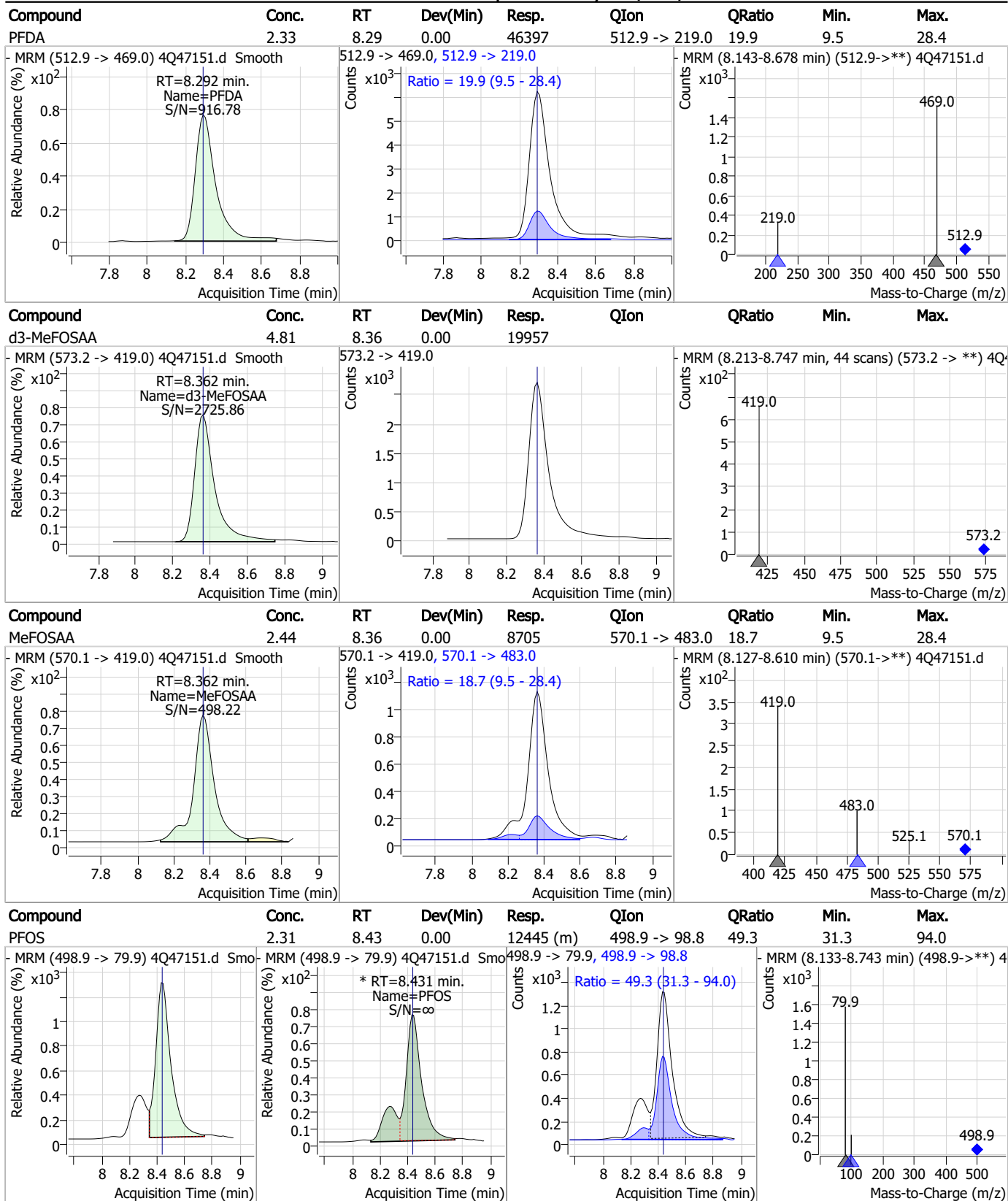
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Perfluorinated Compounds by LC/MS/MS



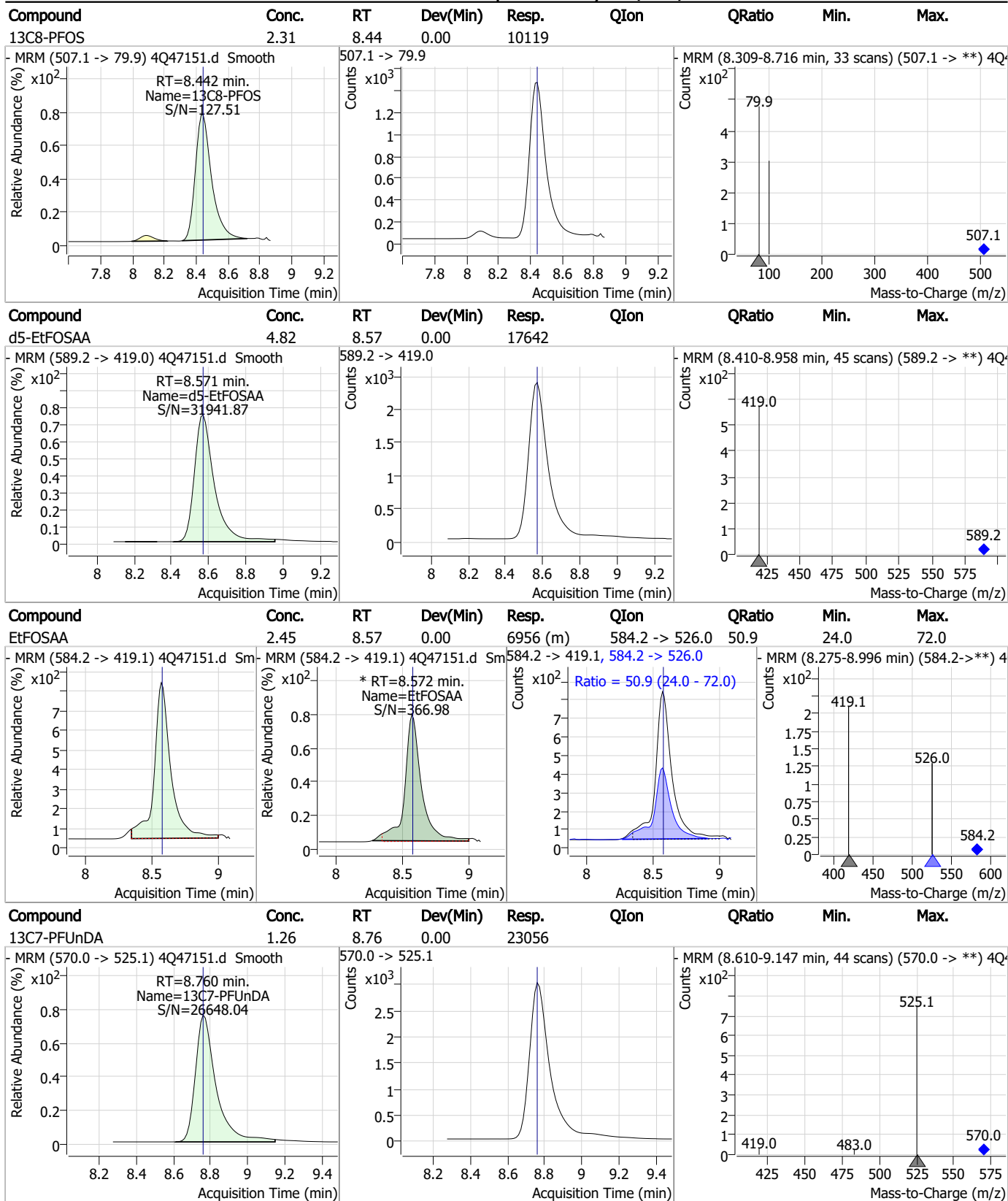
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Perfluorinated Compounds by LC/MS/MS



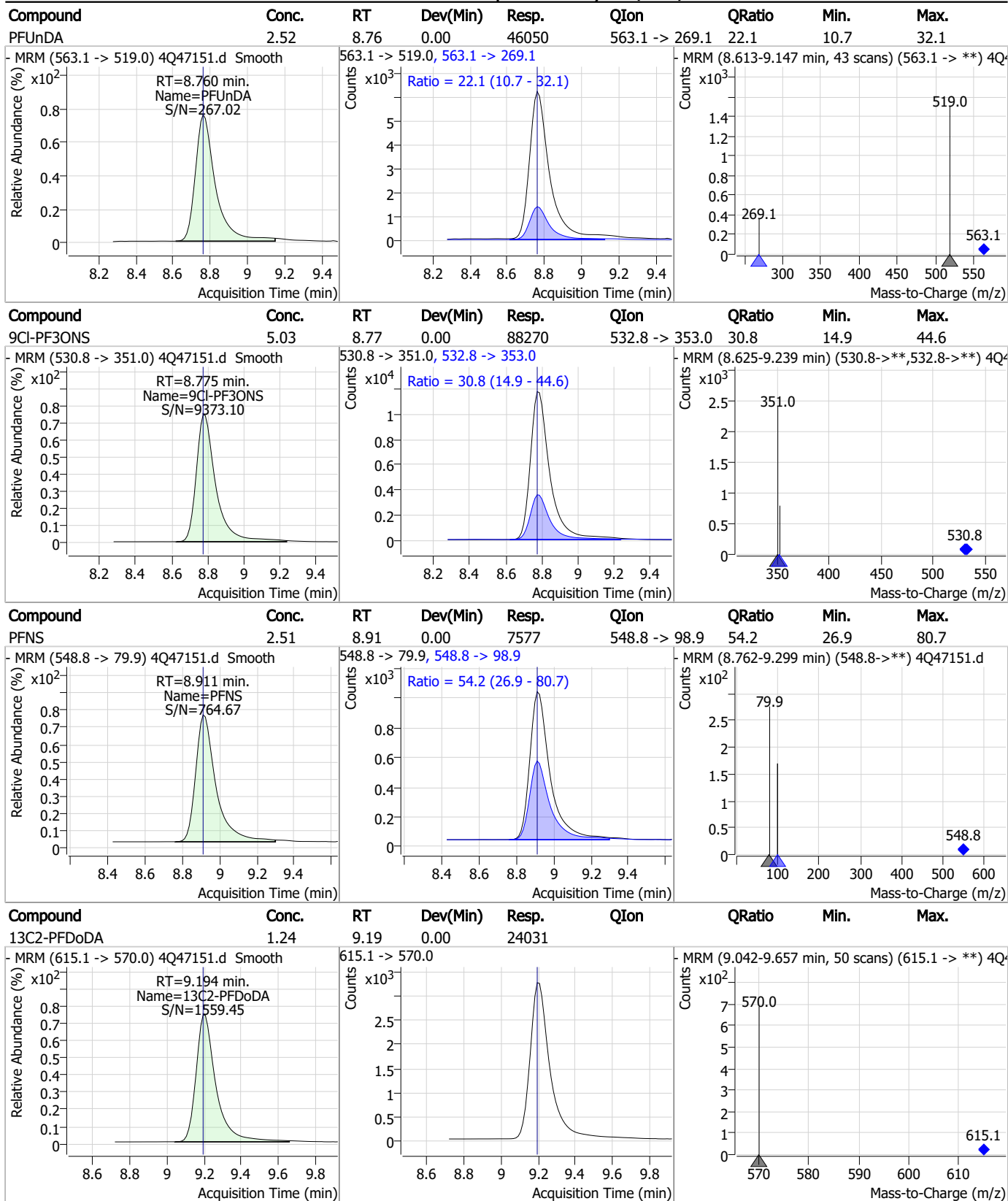
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Perfluorinated Compounds by LC/MS/MS



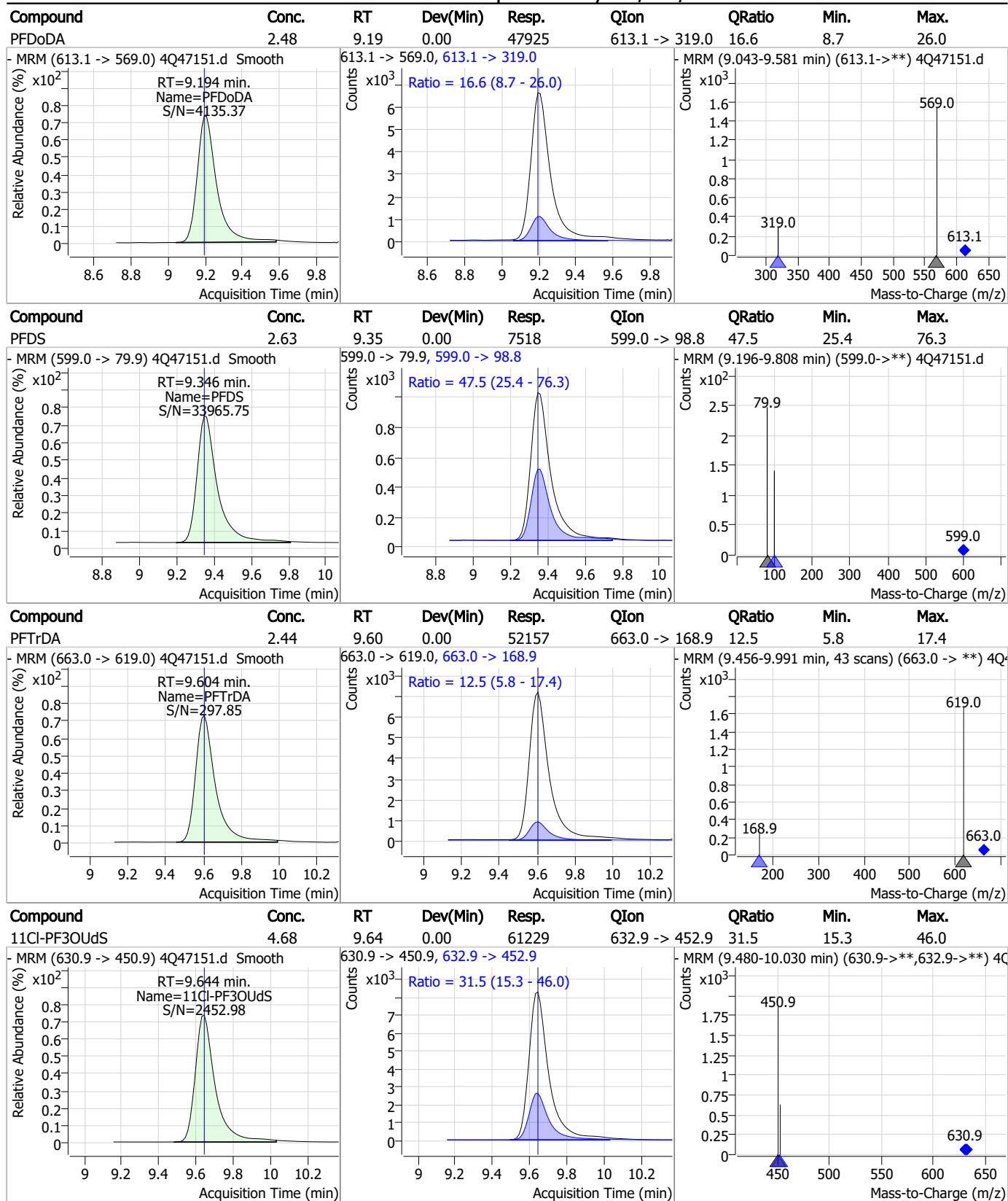
7.7.5
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Perfluorinated Compounds by LC/MS/MS



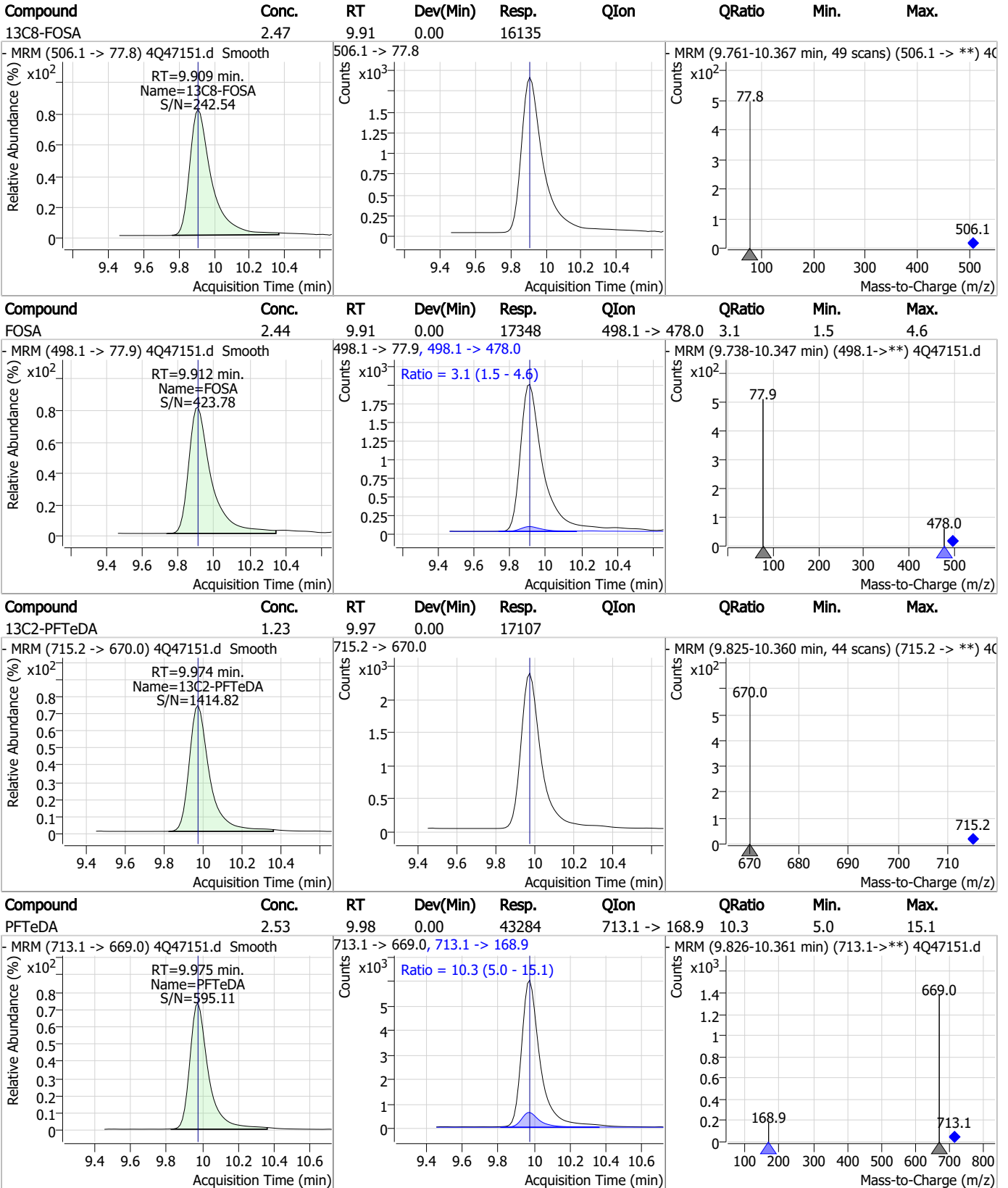
7.7.5
7

Perfluorinated Compounds by LC/MS/MS



7.7.5
7

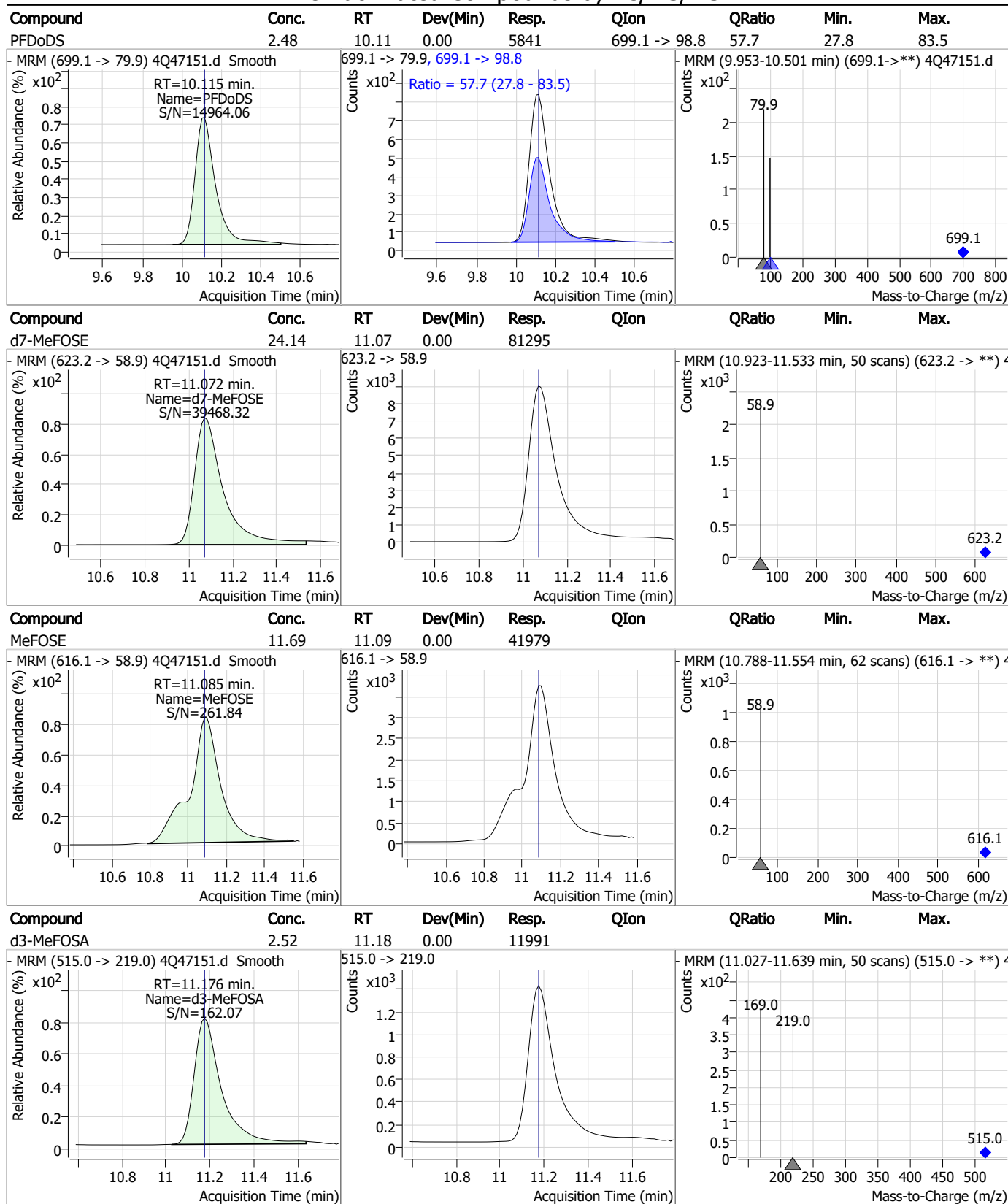
Perfluorinated Compounds by LC/MS/MS



7.7.5

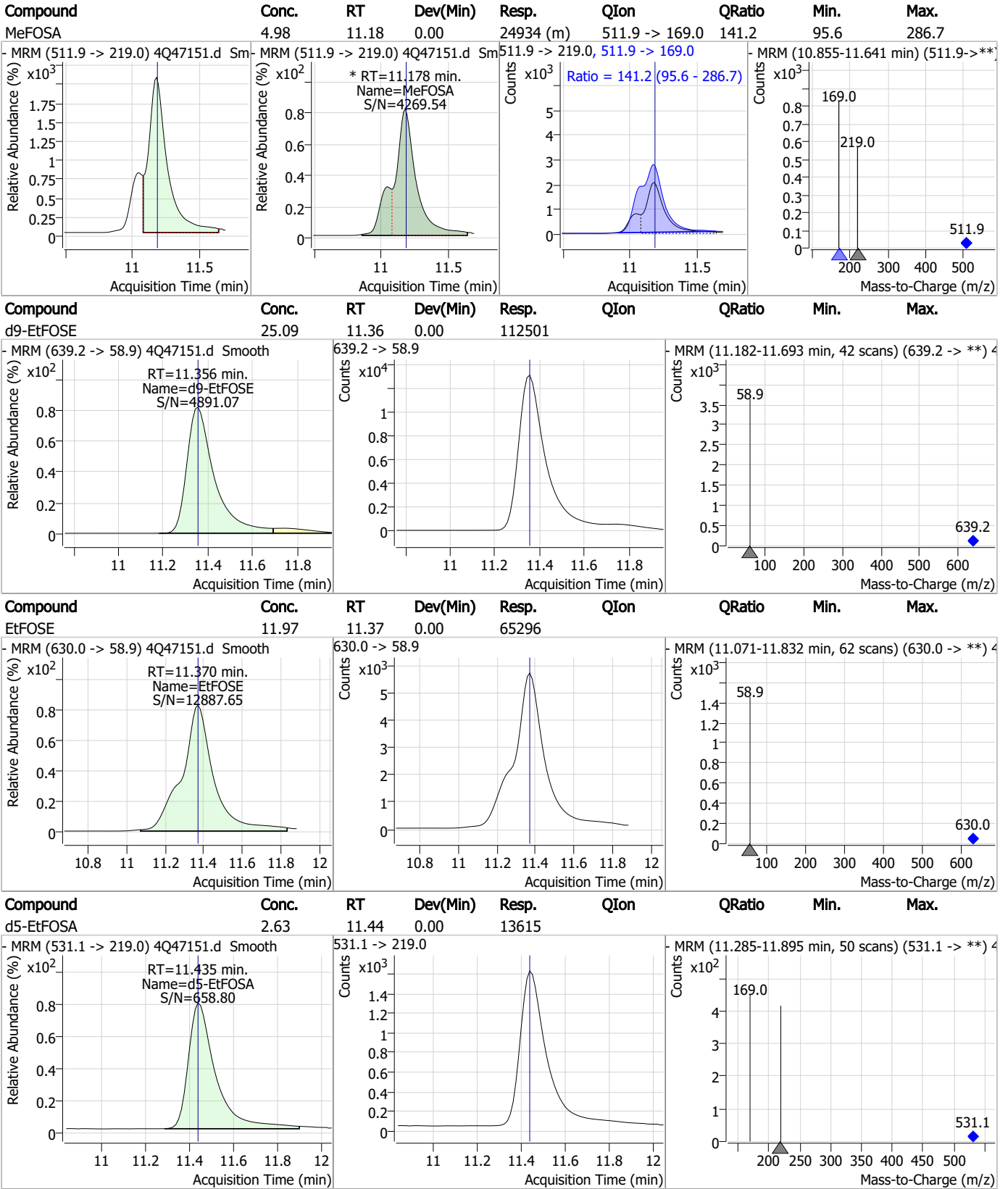
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Perfluorinated Compounds by LC/MS/MS



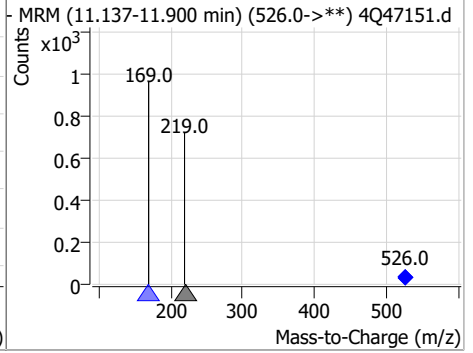
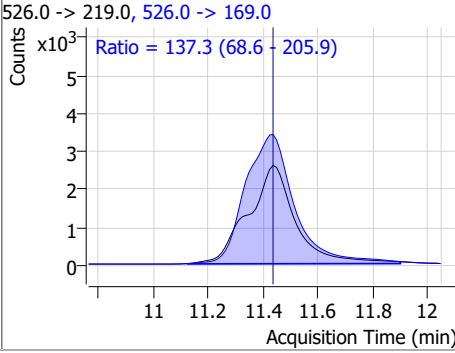
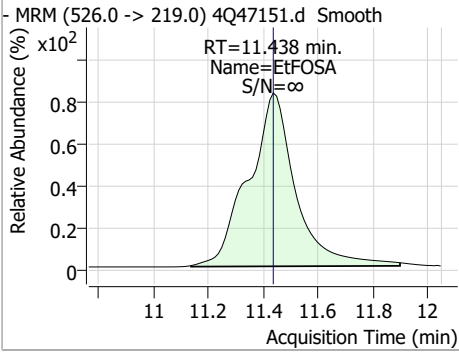
7.7.5
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.41	11.44	0.00	30930	526.0 -> 169.0	137.3	68.6	205.9



7.7.5

7

Manual Integration Approval Summary

Sample Number: S4Q690-ICC690 Method: EPA DRAFT 1633
Lab FileID: 4Q47151.D Analyst approved: 07/13/23 14:35 Anna Ludwig
Injection Time: 07/12/23 18:15 Supervisor approved: 07/14/23 09:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.43	Split peak
EtFOSAA	2991-50-6		8.57	Split peak
MeFOSA	31506-32-8		11.18	Split peak

7.7.5.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47152.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/12/2023 6:30:30 PM
 Sample Name : ic690-5
 Vial : P1-A6
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q690.batch.bin
 Sample Information : OP97325,S4Q690,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.874	216.8 -> 171.9	142351	10.00 µg/L	-0.050
M5-PFPeA	4.387	268.3 -> 223.0	63089	5.00 µg/L	-0.012
M5-PFHxA	5.598	318.0 -> 273.0	49548	2.50 µg/L	0.000
M4-PFHpA	6.555	367.1 -> 322.0	35550	2.50 µg/L	0.000
M8-PFOA	7.236	421.1 -> 376.0	56415	2.50 µg/L	0.000
M9-PFNA	7.784	472.1 -> 427.0	24135	1.25 µg/L	-0.014
M6-PFDA	8.292	519.1 -> 474.1	18358	1.25 µg/L	0.000
M7-PFUnDA	8.760	570.0 -> 525.1	22791	1.25 µg/L	0.000
M2-PFDoDA	9.194	615.1 -> 570.0	24048	1.25 µg/L	0.000
M2-PFTeDA	9.974	715.2 -> 670.0	16703	1.25 µg/L	0.000
M8-FOSA	9.909	506.1 -> 77.8	15358	2.50 µg/L	0.000
M3-PFBS	5.479	302.1 -> 79.9	11411	2.50 µg/L	0.000
M3-PFHxS	7.316	402.1 -> 79.9	8458	2.50 µg/L	-0.013
M8-PFOS	8.430	507.1 -> 79.9	10336	2.50 µg/L	-0.012
M2-4:2FTS	5.284	329.1 -> 80.9	667	5.00 µg/L	0.000
M2-6:2FTS	6.999	429.1 -> 80.9	1520	5.00 µg/L	0.000
M2-8:2FTS	8.078	529.1 -> 80.9	2198	5.00 µg/L	0.000
M3-MeFOSAA	8.362	573.2 -> 419.0	19933	5.00 µg/L	0.000
M3-HFPO-DA	5.965	286.9 -> 168.9	49957	10.00 µg/L	-0.012
M5-EtFOSAA	8.558	589.2 -> 419.0	17578	5.00 µg/L	-0.012
M7-MeFOSE	11.072	623.2 -> 58.9	81631	25.00 µg/L	0.000
M9-EtFOSE	11.344	639.2 -> 58.9	109633	25.00 µg/L	-0.012
M5-EtFOSA	11.435	531.1 -> 219.0	12271	2.50 µg/L	0.000
M3-MeFOSA	11.176	515.0 -> 219.0	11671	2.50 µg/L	0.000
13C4-PFOS	8.430	502.8 -> 79.9	11494	2.50 µg/L	0.000
13C3-PFBA	2.866	216.0 -> 172.0	76071	5.00 µg/L	-0.062
18O2-PFHxS	7.315	403.0 -> 83.9	6132	2.50 µg/L	-0.013
13C4-PFOA	7.237	417.1 -> 372.0	68343	2.50 µg/L	0.000
13C2-PFDA	8.292	515.1 -> 470.1	20882	1.25 µg/L	0.000
13C5-PFNA	7.784	468.0 -> 423.0	27829	1.25 µg/L	-0.014
13C2-PFHxA	5.599	315.1 -> 270.0	46526	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.284	329.1 -> 80.9	667	4.84 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.8%		
13C2-6:2FTS	6.999	429.1 -> 80.9	1520	5.04 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C2-8:2FTS	8.078	529.1 -> 80.9	2198	4.48 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.5%		
13C2-PFDoDA	9.194	615.1 -> 570.0	24048	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C2-PFTeDA	9.974	715.2 -> 670.0	16703	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.4%		
13C3-PFBS	5.479	302.1 -> 79.9	11411	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C3-PFHxS	7.316	402.1 -> 79.9	8458	2.46 µg/L	-0.013

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C4-PFBA	2.874	216.8 -> 171.9	142351	9.90 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C4-PFHpA	6.555	367.1 -> 322.0	35550	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C5-PFHxA	5.598	318.0 -> 273.0	49548	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C5-PFPeA	4.387	268.3 -> 223.0	63089	4.91 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C6-PFDA	8.292	519.1 -> 474.1	18358	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C7-PFUnDA	8.760	570.0 -> 525.1	22791	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C8-FOSA	9.909	506.1 -> 77.8	15358	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C8-PFOA	7.236	421.1 -> 376.0	56415	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C8-PFOS	8.430	507.1 -> 79.9	10336	2.59 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C9-PFNA	7.784	472.1 -> 427.0	24135	1.30 µg/L	-0.014
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.8%	
d3-MeFOSAA	8.362	573.2 -> 419.0	19933	5.27 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.5%	
13C3-HFPO-DA	5.965	286.9 -> 168.9	49957	10.07 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.7%	
d3-MeFOSA	11.176	515.0 -> 219.0	11671	2.69 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.7%	
d5-EtFOSAA	8.558	589.2 -> 419.0	17578	5.27 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.4%	
d7-MeFOSE	11.072	623.2 -> 58.9	81631	26.61 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 106.5%	
d9-EtFOSE	11.344	639.2 -> 58.9	109633	26.84 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 107.4%	
d5-EtFOSA	11.435	531.1 -> 219.0	12271	2.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.3%	
Target Compounds					QValue
4:2FTS	5.272	327.1 -> 307.0	21645	18.30 µg/L	96
		327.1 -> 80.9	8937		
6:2FTS	6.999	427.1 -> 407.0	32051	18.25 µg/L	99
		427.1 -> 80.9	12170		
8:2FTS	8.079	527.1 -> 507.0	26596	21.14 µg/L	88
		527.1 -> 80.8	10633		
EtFOSAA	8.572	584.2 -> 419.1	13626	4.81 µg/L	m 99
		584.2 -> 526.0	6426		
FOSA	9.899	498.1 -> 77.9	34349	5.07 µg/L	100
		498.1 -> 478.0	1040		
MeFOSAA	8.362	570.1 -> 419.0	18121	5.10 µg/L	97
		570.1 -> 483.0	3695		
PFBA	2.870	212.8 -> 168.9	85825	20.04 µg/L	100
PFBS	5.480	298.7 -> 79.9	21021	4.42 µg/L	93
		298.7 -> 98.8	8260		
PFDA	8.292	512.9 -> 469.0	95662	5.02 µg/L	99
		512.9 -> 219.0	18800		
PFDODA	9.194	613.1 -> 569.0	96974	5.01 µg/L	97
		613.1 -> 319.0	15701		
PFDS	9.346	599.0 -> 79.9	14199	4.86 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	7229			
PFHpA	6.556	363.1 -> 319.0	111730	5.11	µg/L	98
		363.1 -> 169.0	19868			
PFHpS	7.911	449.0 -> 79.9	19883	4.81	µg/L	95
		449.0 -> 98.9	10650			
PFHxA	5.601	313.0 -> 269.0	96790	4.99	µg/L	99
		313.0 -> 118.9	2854			
PFHxS	7.317	398.7 -> 79.9	16626	4.41	µg/L	m 96
		398.7 -> 98.9	8254			
PFNA	7.785	463.0 -> 419.0	86404	4.86	µg/L	97
		463.0 -> 219.0	21737			
PFNS	8.911	548.8 -> 79.9	15616	5.07	µg/L	97
		548.8 -> 98.9	8072			
PFOA	7.238	413.0 -> 369.0	162652	5.10	µg/L	100
		413.0 -> 169.0	31068			
PFOS	8.431	498.9 -> 79.9	25703	4.67	µg/L	m 83
		498.9 -> 98.8	12816			
PFPeA	4.389	263.0 -> 219.0	182168	10.24	µg/L	100
PFPeS	6.582	349.1 -> 79.9	13904	4.47	µg/L	97
		349.1 -> 98.9	6696			
PFTeDA	9.963	713.1 -> 669.0	85738	5.14	µg/L	99
		713.1 -> 168.9	8356			
PFTrDA	9.604	663.0 -> 619.0	107056	5.00	µg/L	97
		663.0 -> 168.9	13473			
PFUnDA	8.760	563.1 -> 519.0	90831	5.02	µg/L	99
		563.1 -> 269.1	19930			
11Cl-PF3OUdS	9.631	630.9 -> 450.9	125635	9.43	µg/L	99
		632.9 -> 452.9	37636			
9Cl-PF3ONS	8.775	530.8 -> 351.0	171607	9.60	µg/L	100
		532.8 -> 353.0	51218			
ADONA	6.818	376.9 -> 250.9	354534	9.48	µg/L	100
		376.9 -> 84.8	88031			
HFPO-DA	5.966	284.9 -> 168.9	51216	9.93	µg/L	100
		284.9 -> 184.9	5871			
3:3FTCA	3.823	241.0 -> 177.0	24049	24.40	µg/L	98
		241.0 -> 117.0	2150			
5:3FTCA	6.281	341.0 -> 237.1	412026	127.84	µg/L	99
		341.0 -> 217.0	287626			
7:3FTCA	7.774	441.0 -> 316.9	226549	127.35	µg/L	100
		441.0 -> 336.9	530071			
EtFOSA	11.437	526.0 -> 219.0	60484	9.56	µg/L	98
		526.0 -> 169.0	84374			
EtFOSE	11.370	630.0 -> 58.9	125748	23.65	µg/L	100
MeFOSA	11.178	511.9 -> 219.0	45559	9.35	µg/L	79
		511.9 -> 169.0	73335			
MeFOSE	11.085	616.1 -> 58.9	84627	23.47	µg/L	100
PFDoDS	10.102	699.1 -> 79.9	12091	5.03	µg/L	100
		699.1 -> 98.8	6742			
NFDHA	5.481	295.0 -> 201.0	11319	9.95	µg/L	99
		295.0 -> 84.9	2790			
PFMBA	4.797	279.0 -> 85.1	97190	10.16	µg/L	100
PFMPA	3.499	229.0 -> 84.9	91977	10.13	µg/L	100
PFEESA	6.022	314.8 -> 134.9	132741	9.06	µg/L	99
		314.8 -> 82.9	4053			

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

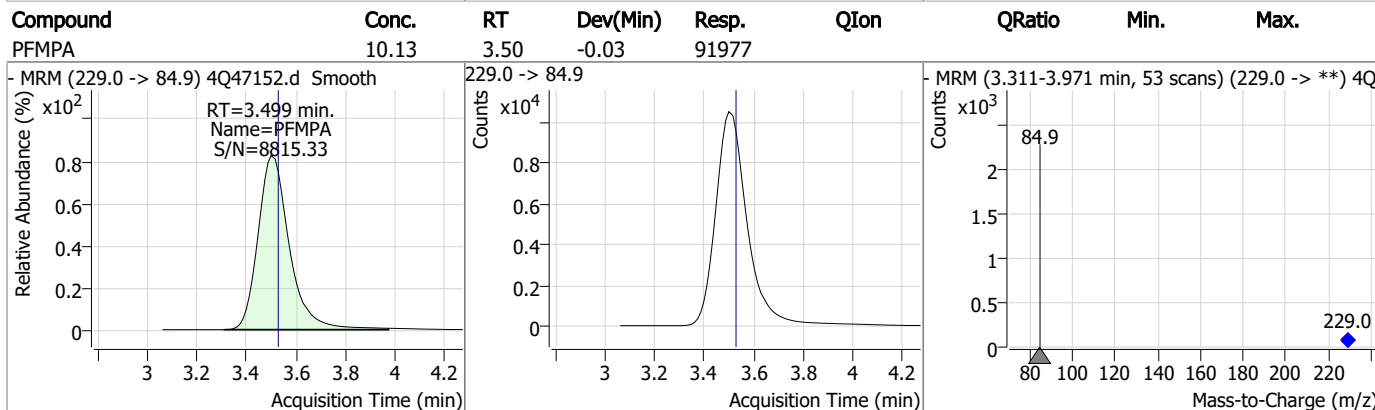
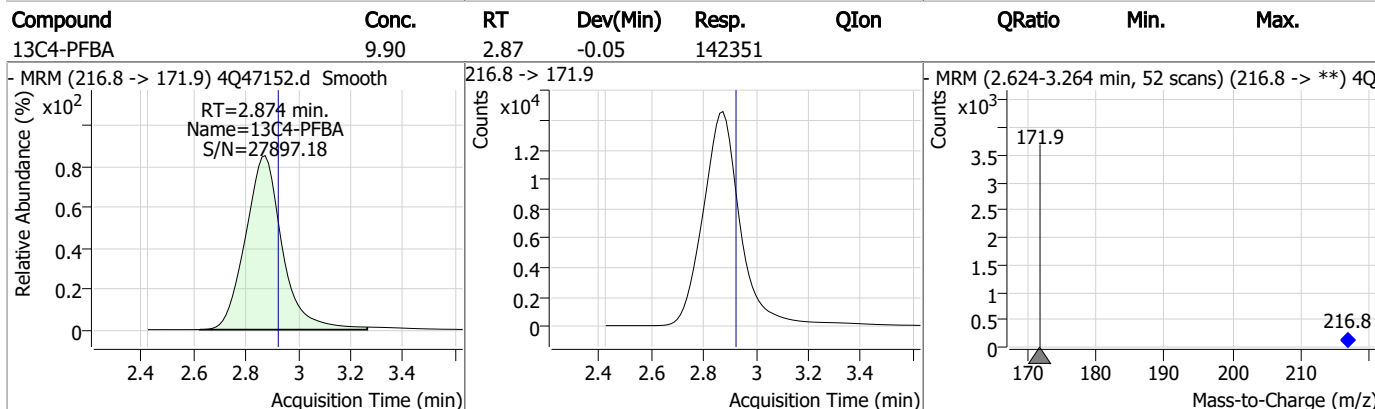
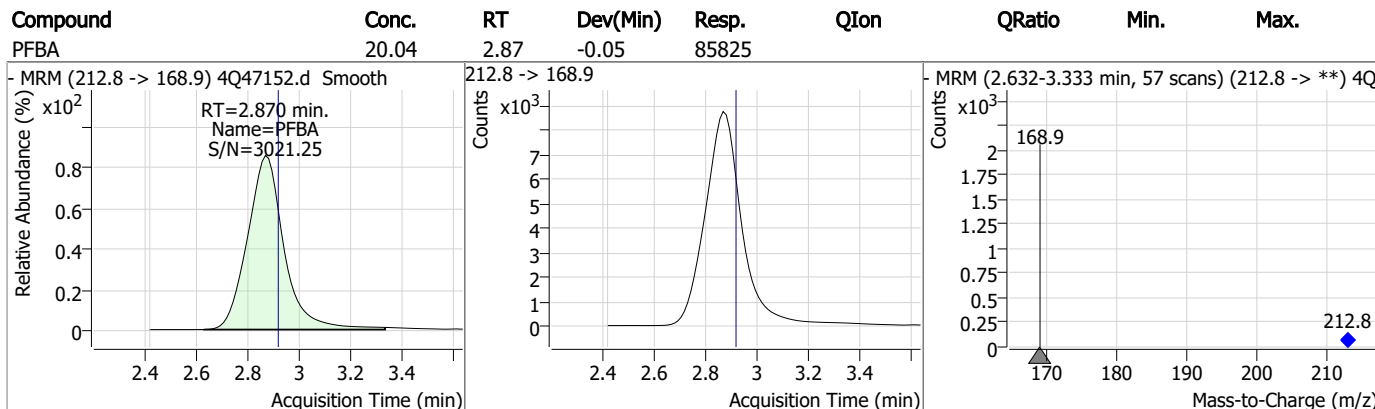
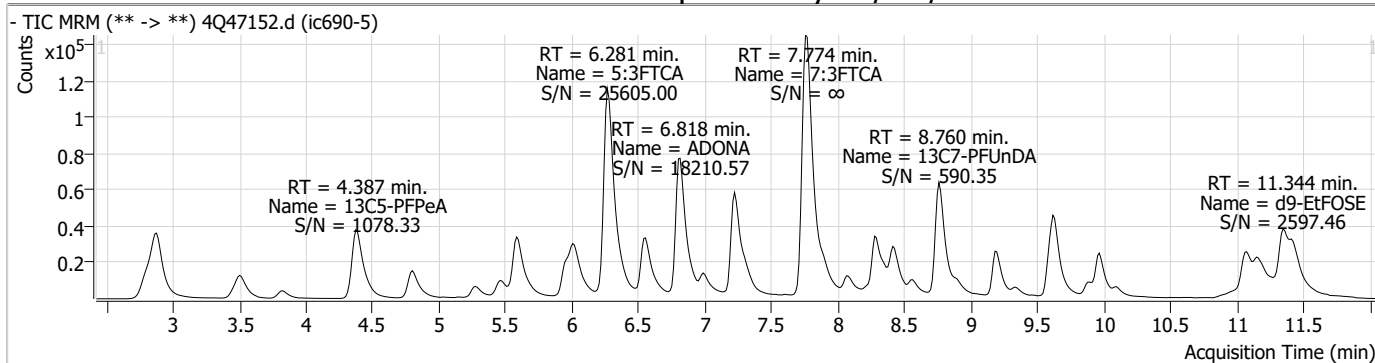
Perfluorinated Compounds by LC/MS/MS

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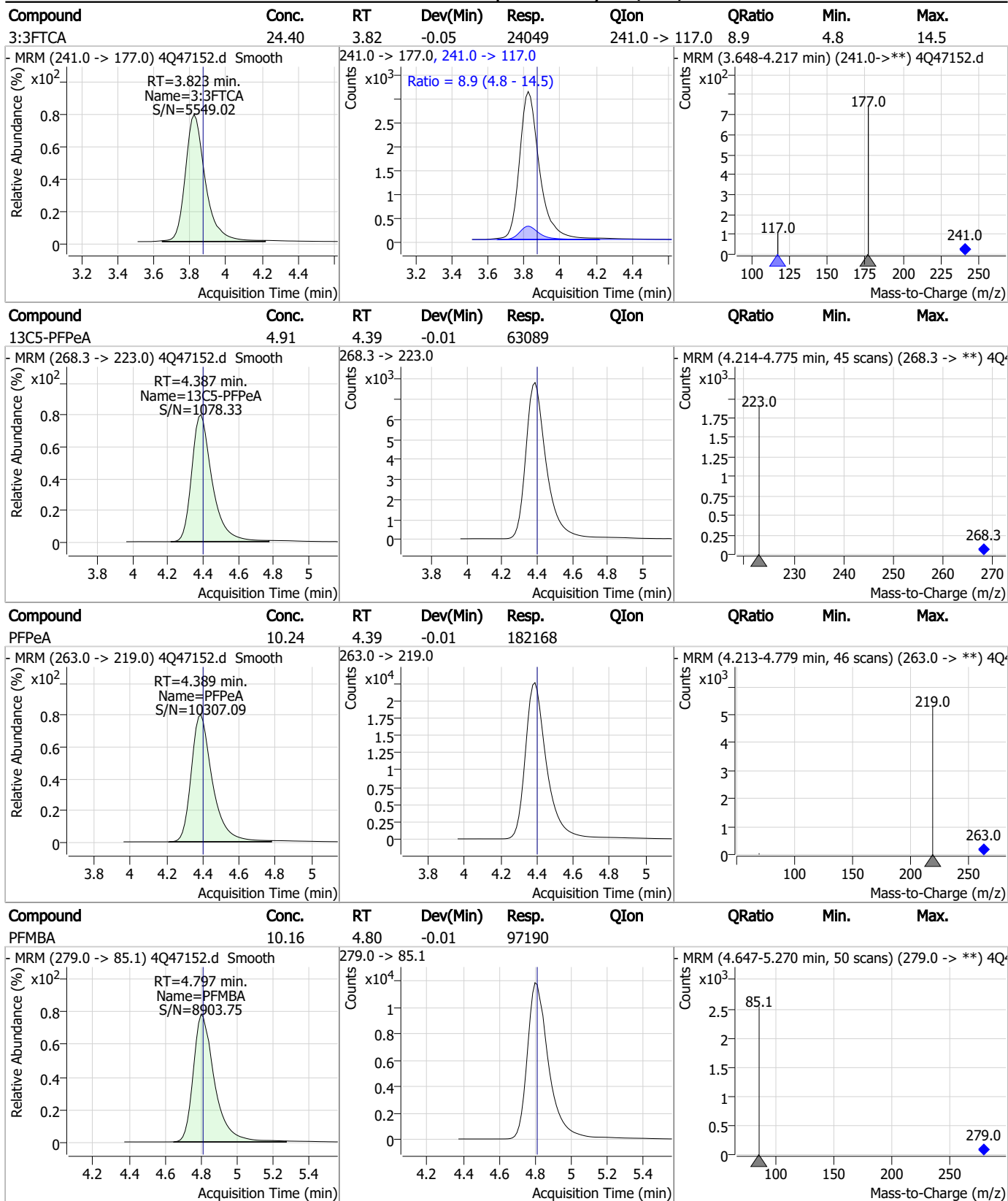
7.7.6

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Perfluorinated Compounds by LC/MS/MS

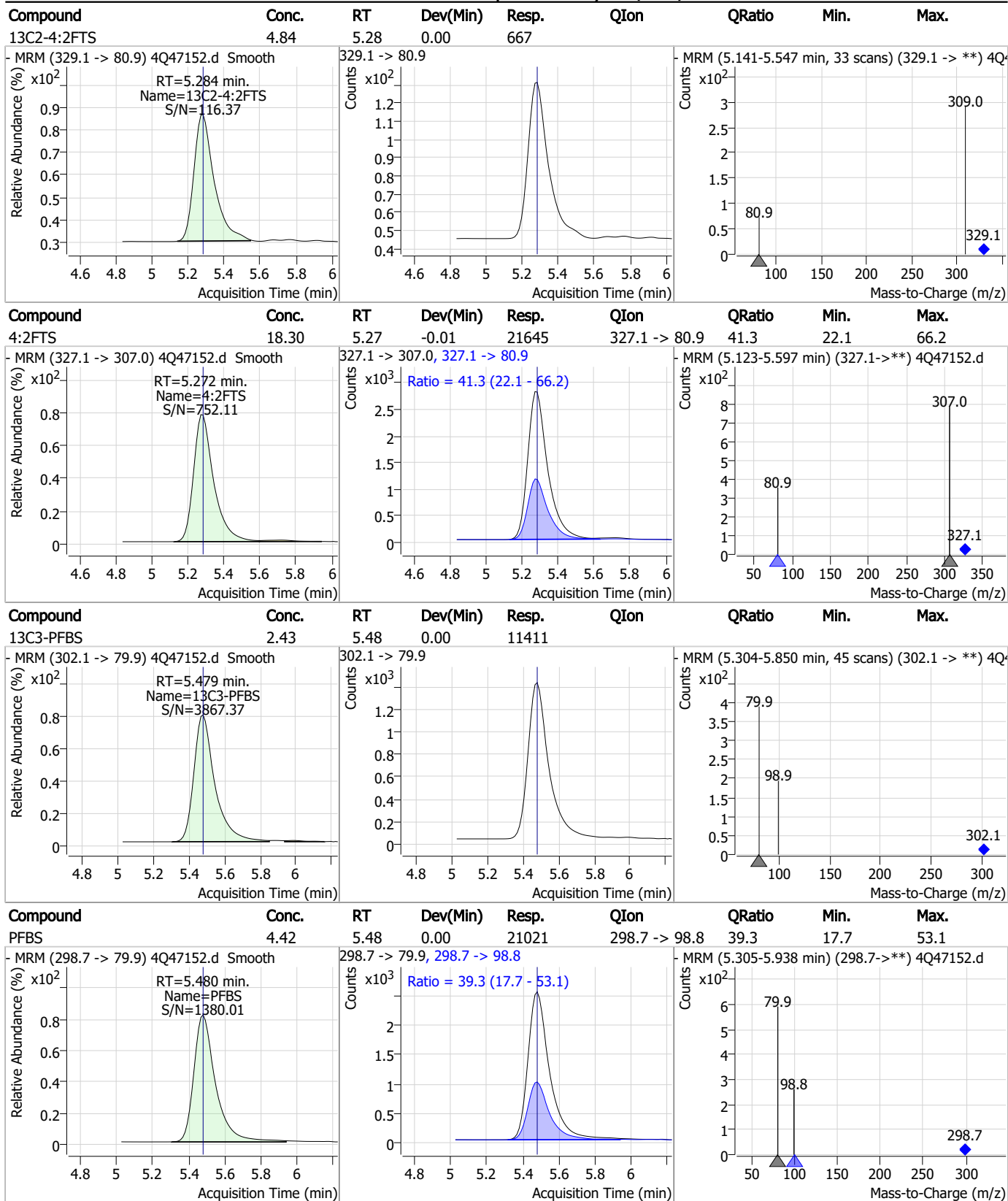


Perfluorinated Compounds by LC/MS/MS



7.7.6
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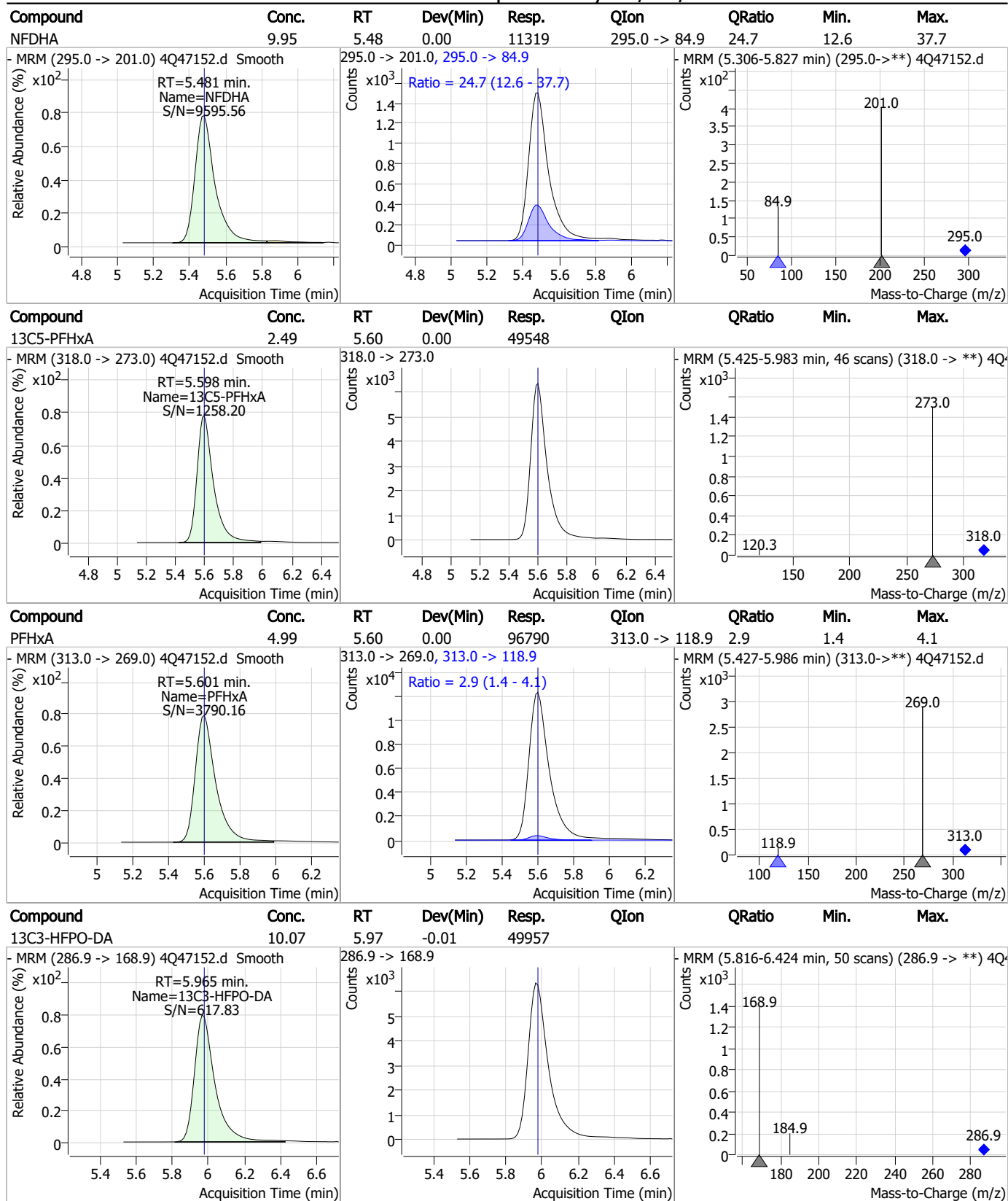
Perfluorinated Compounds by LC/MS/MS



7.7.6

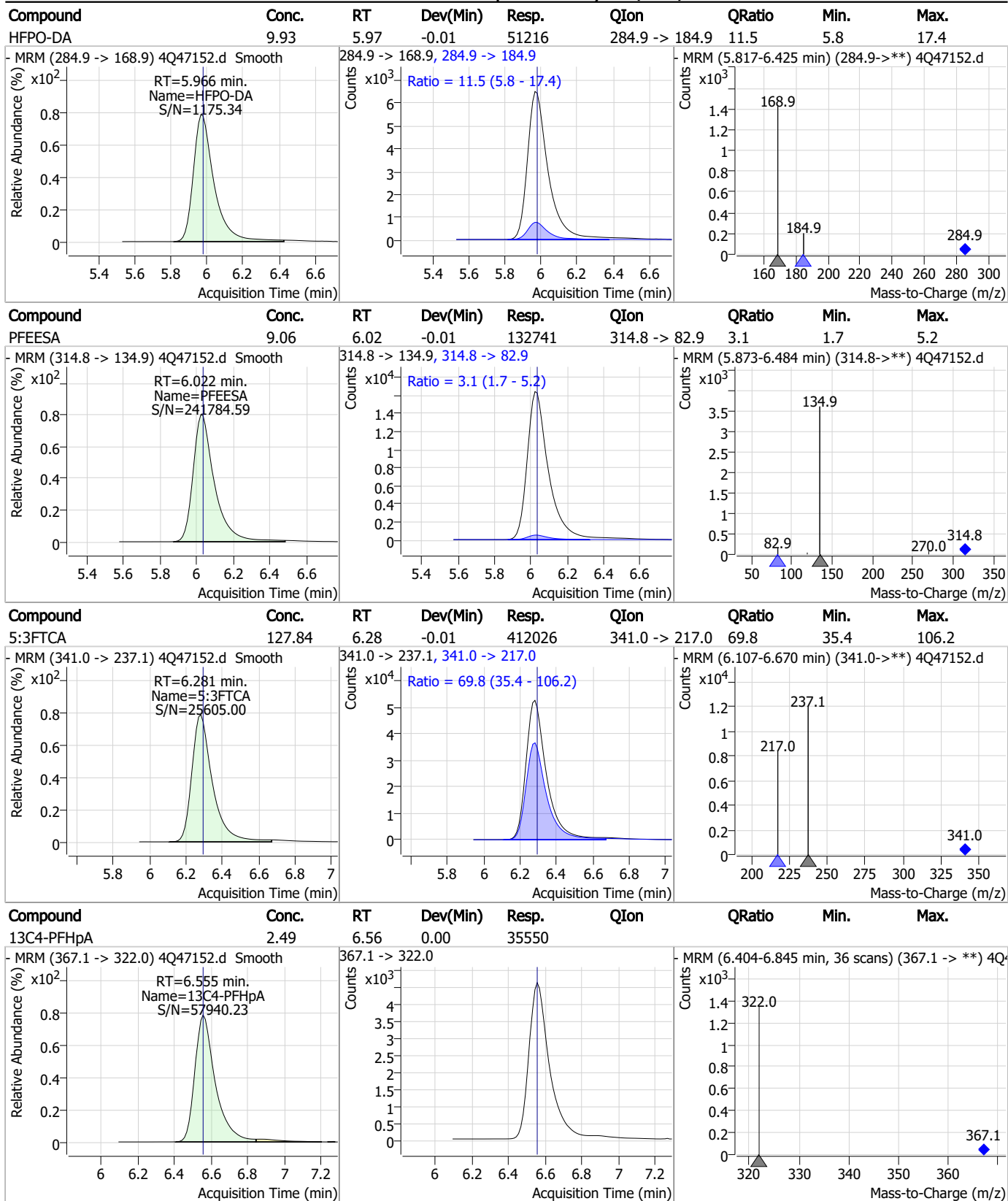
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Perfluorinated Compounds by LC/MS/MS



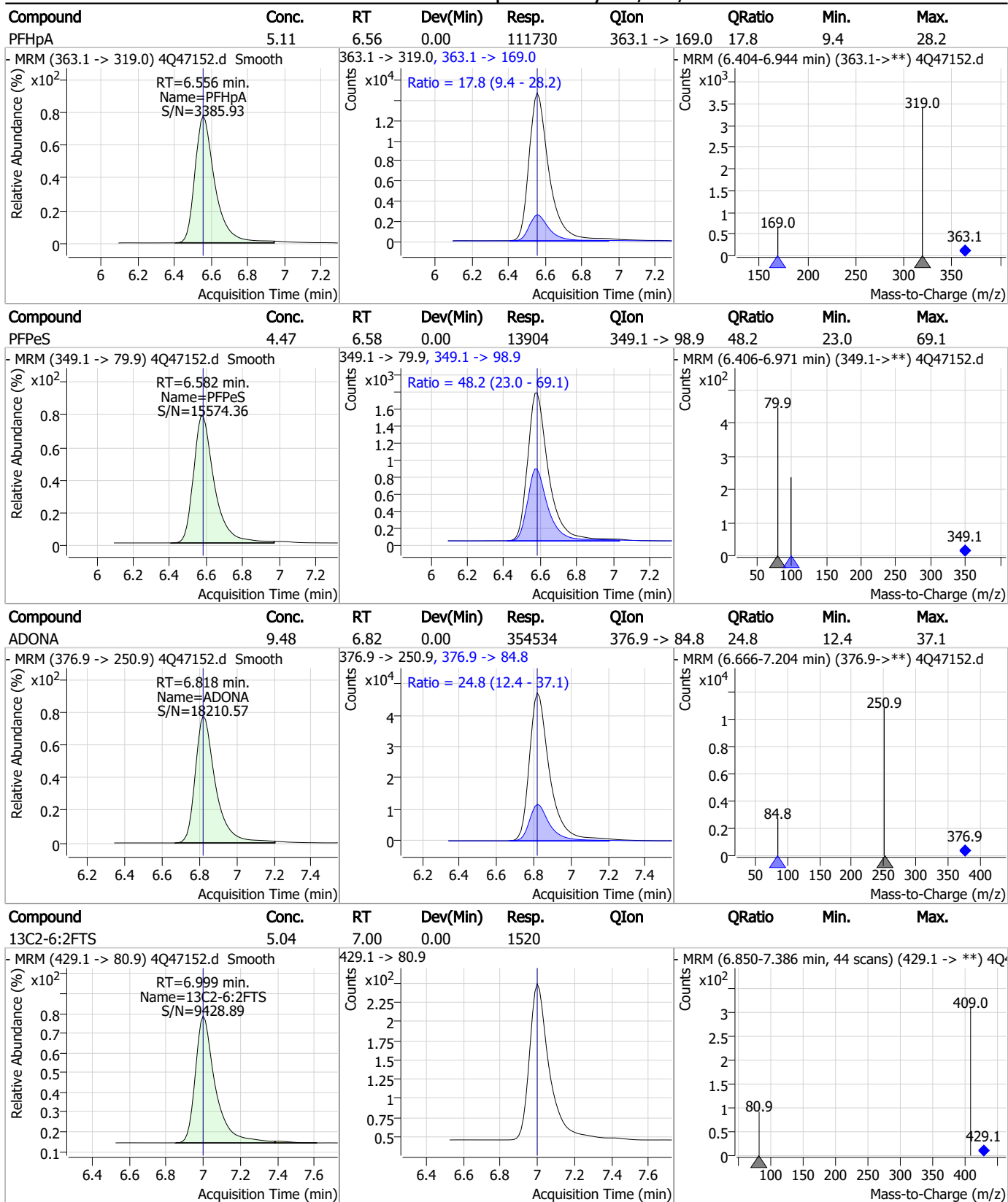
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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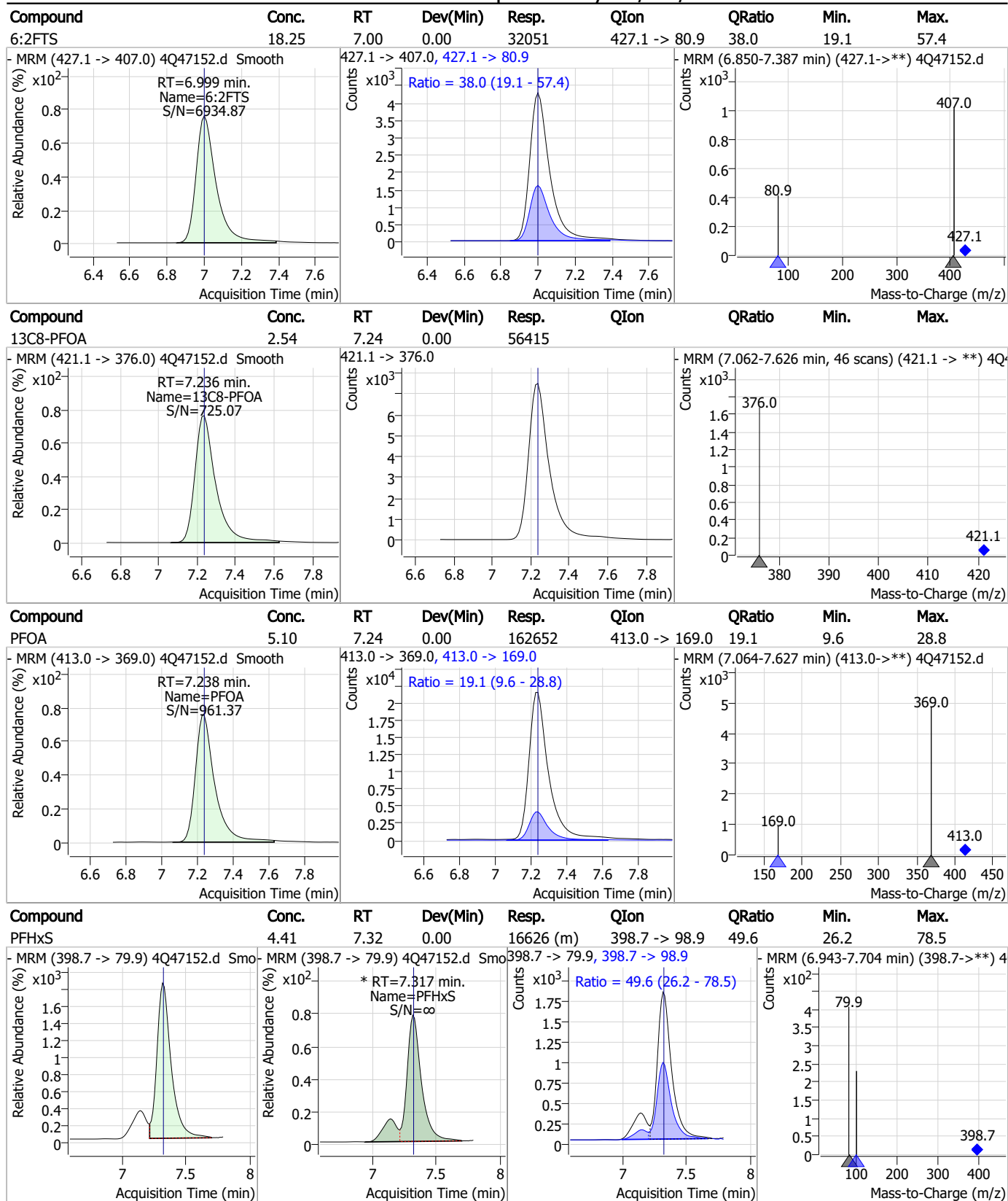
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7.7.6

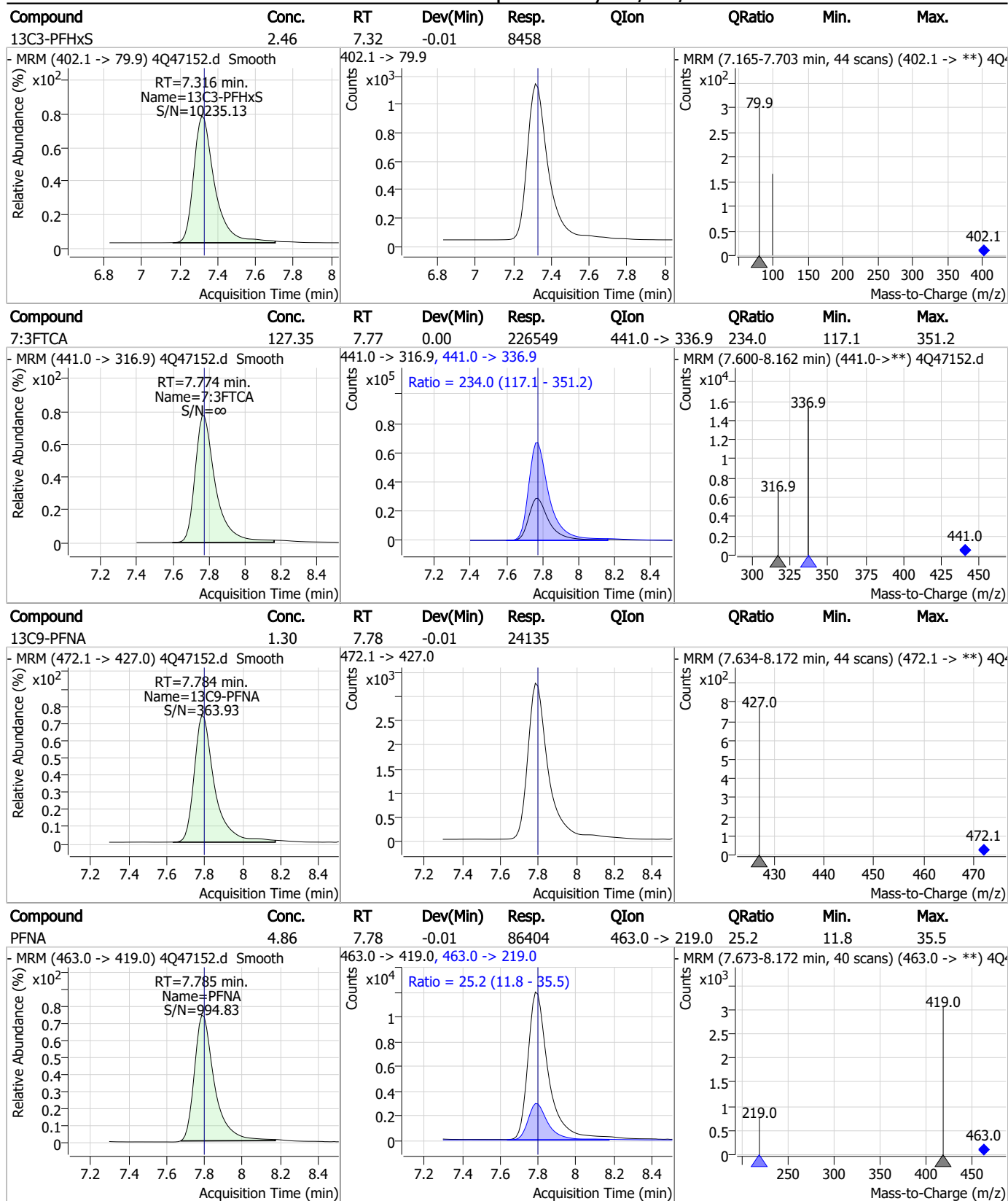
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Perfluorinated Compounds by LC/MS/MS



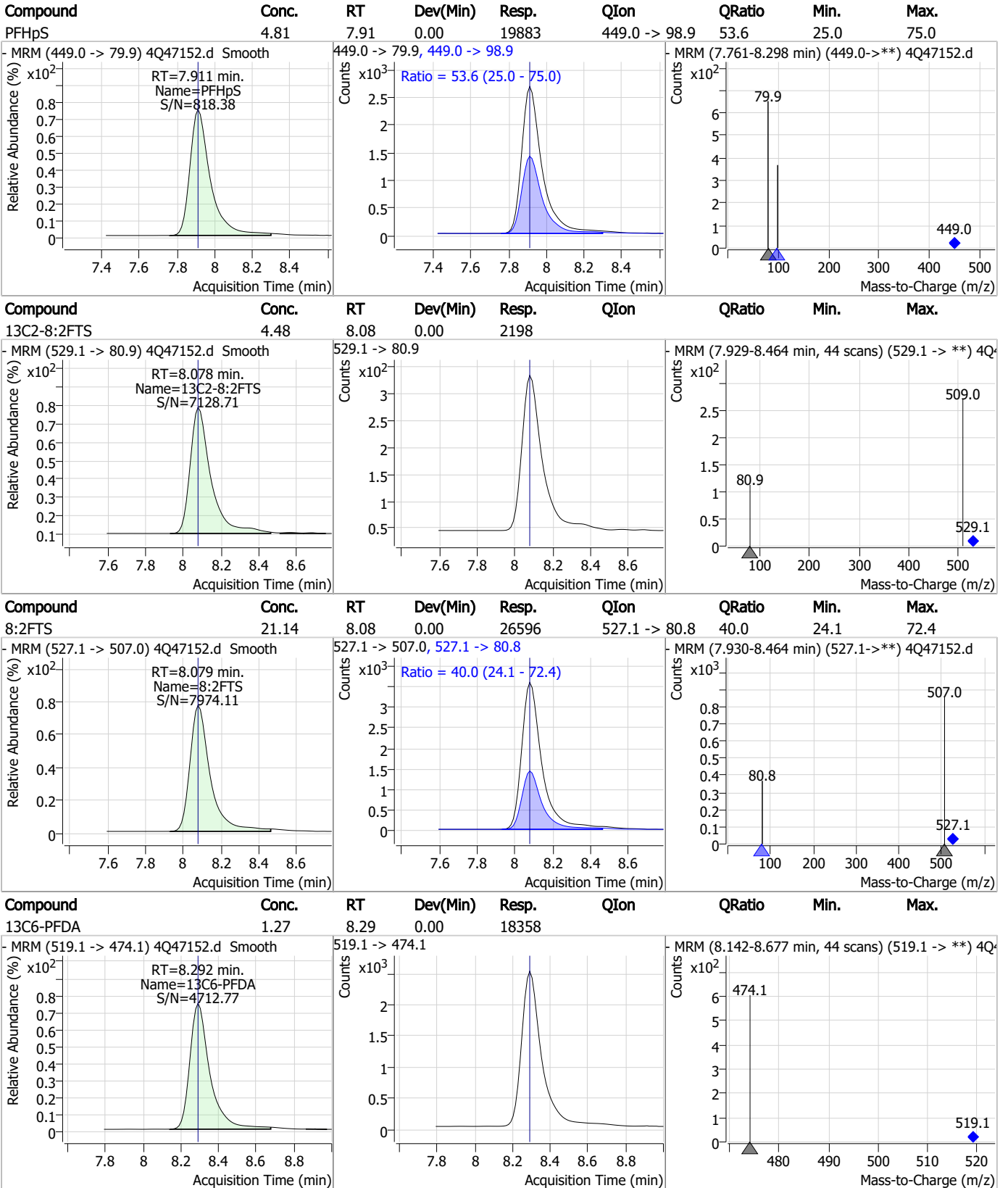
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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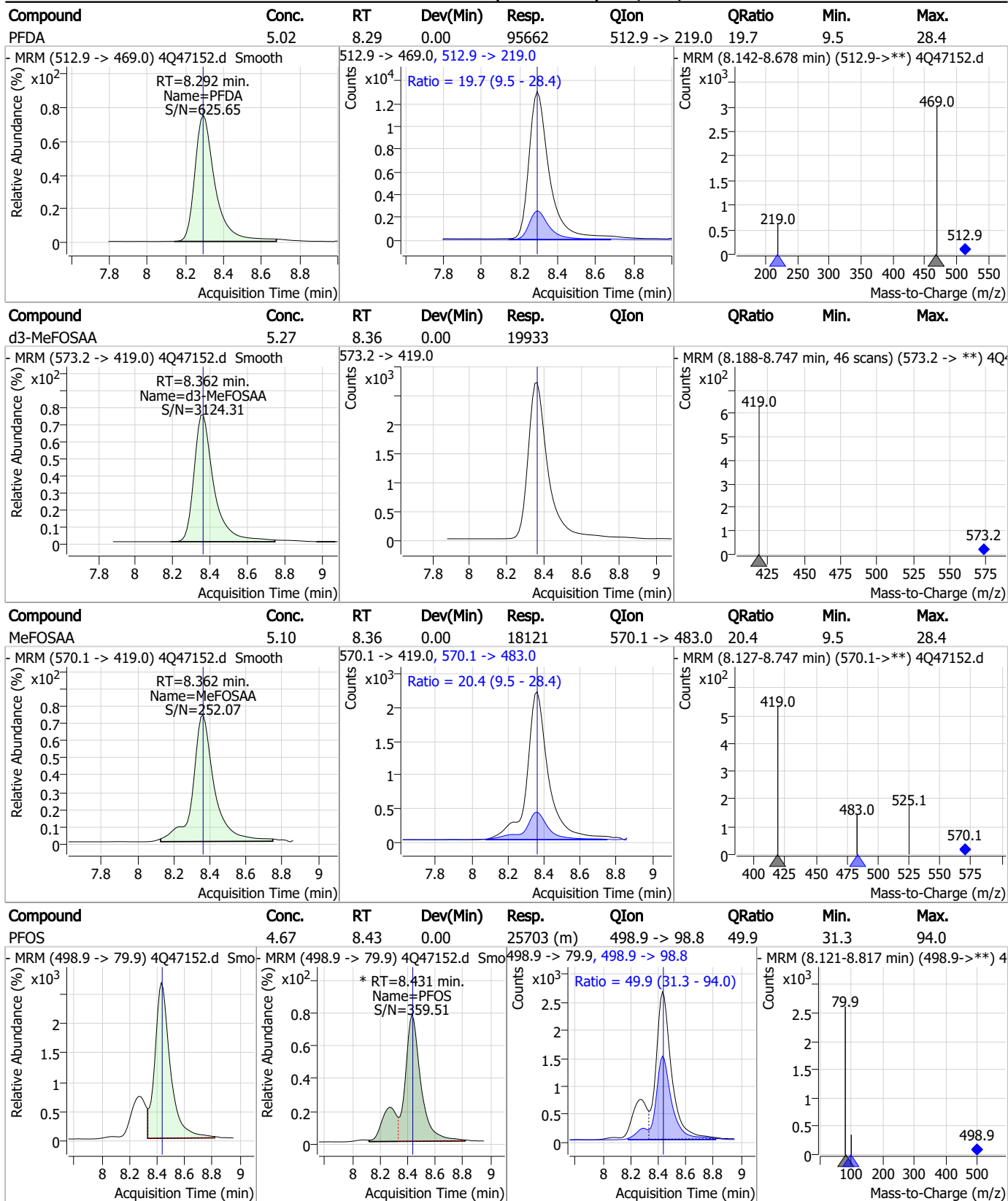
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7.7.6

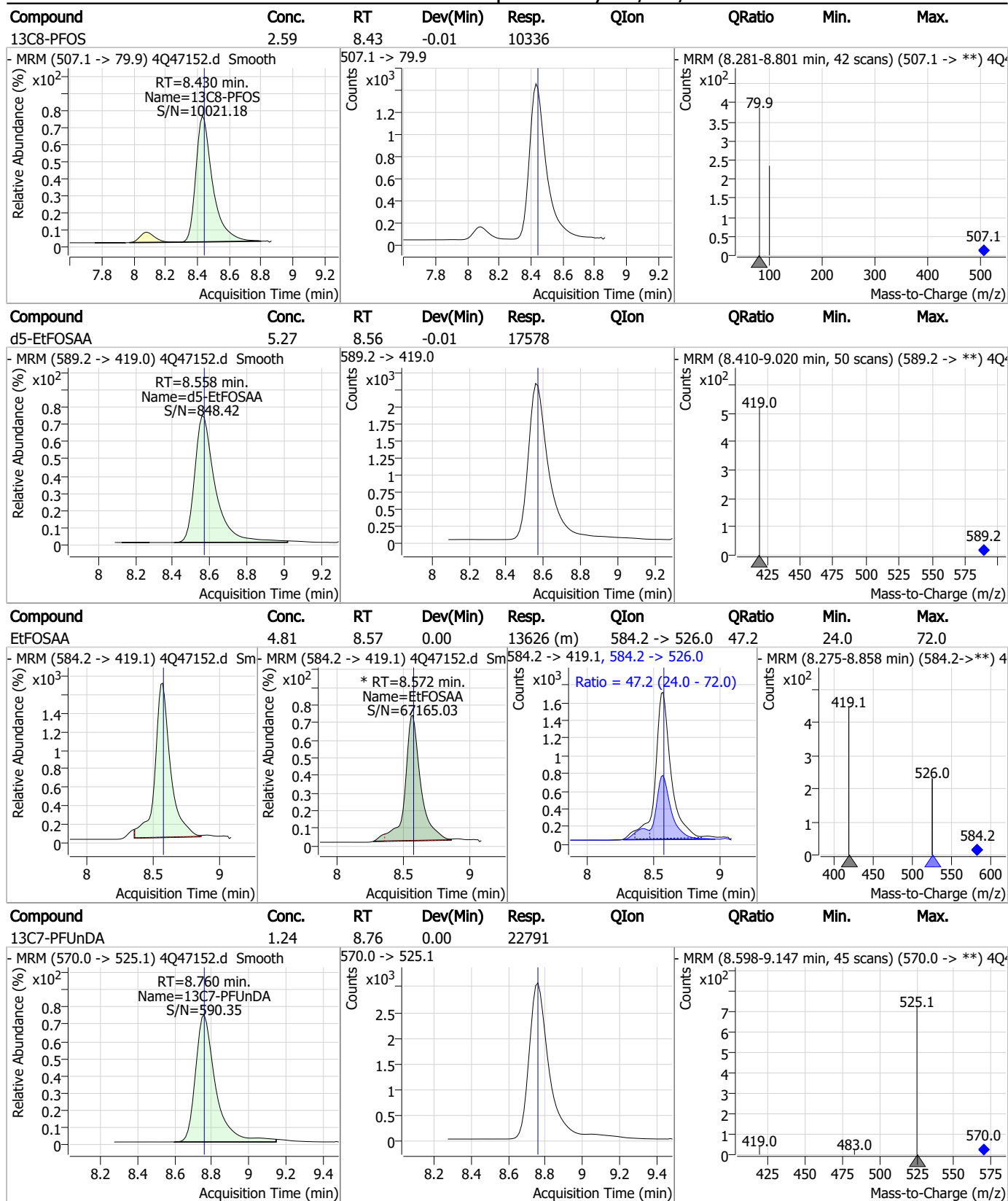
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Perfluorinated Compounds by LC/MS/MS



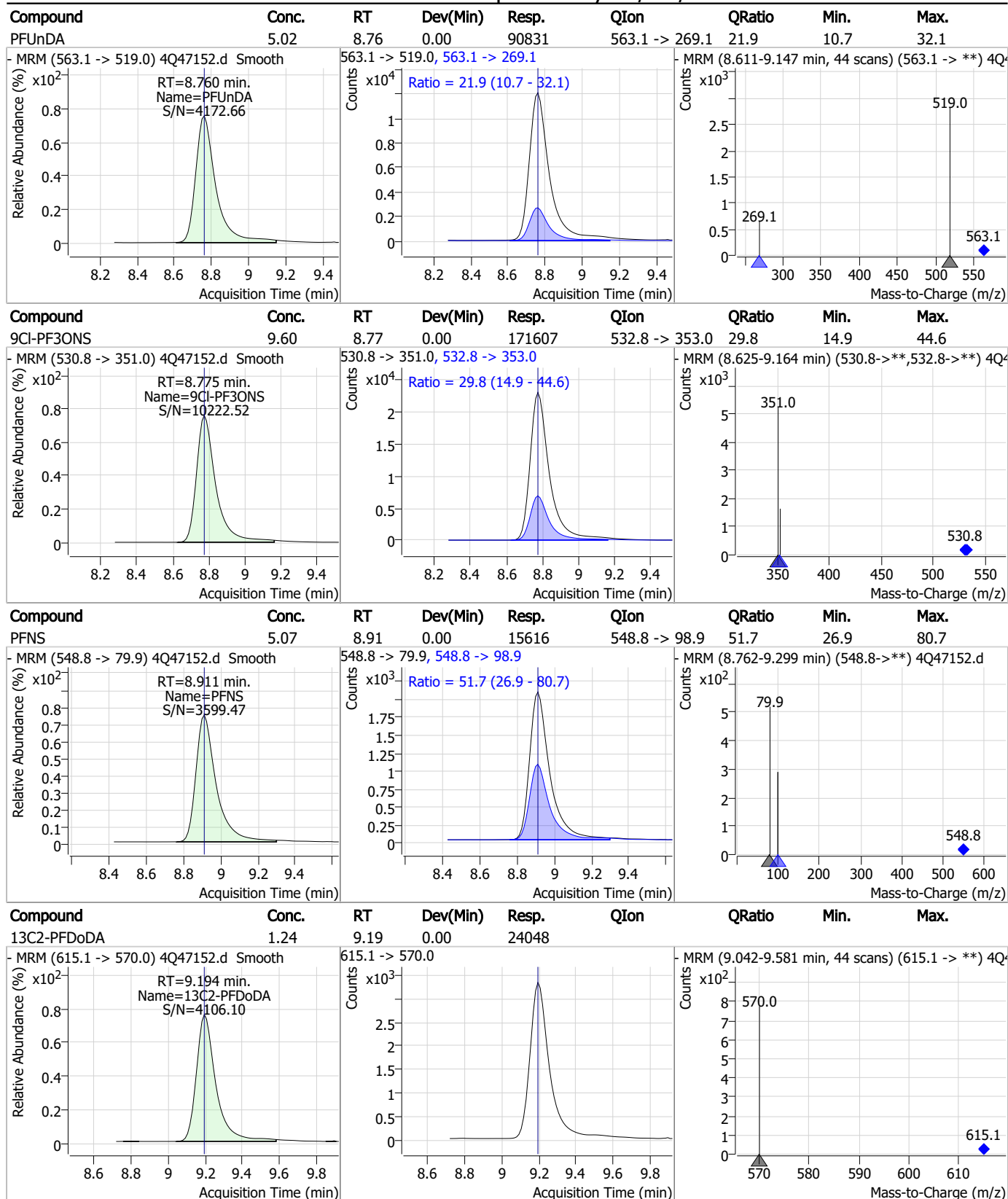
7.7.6
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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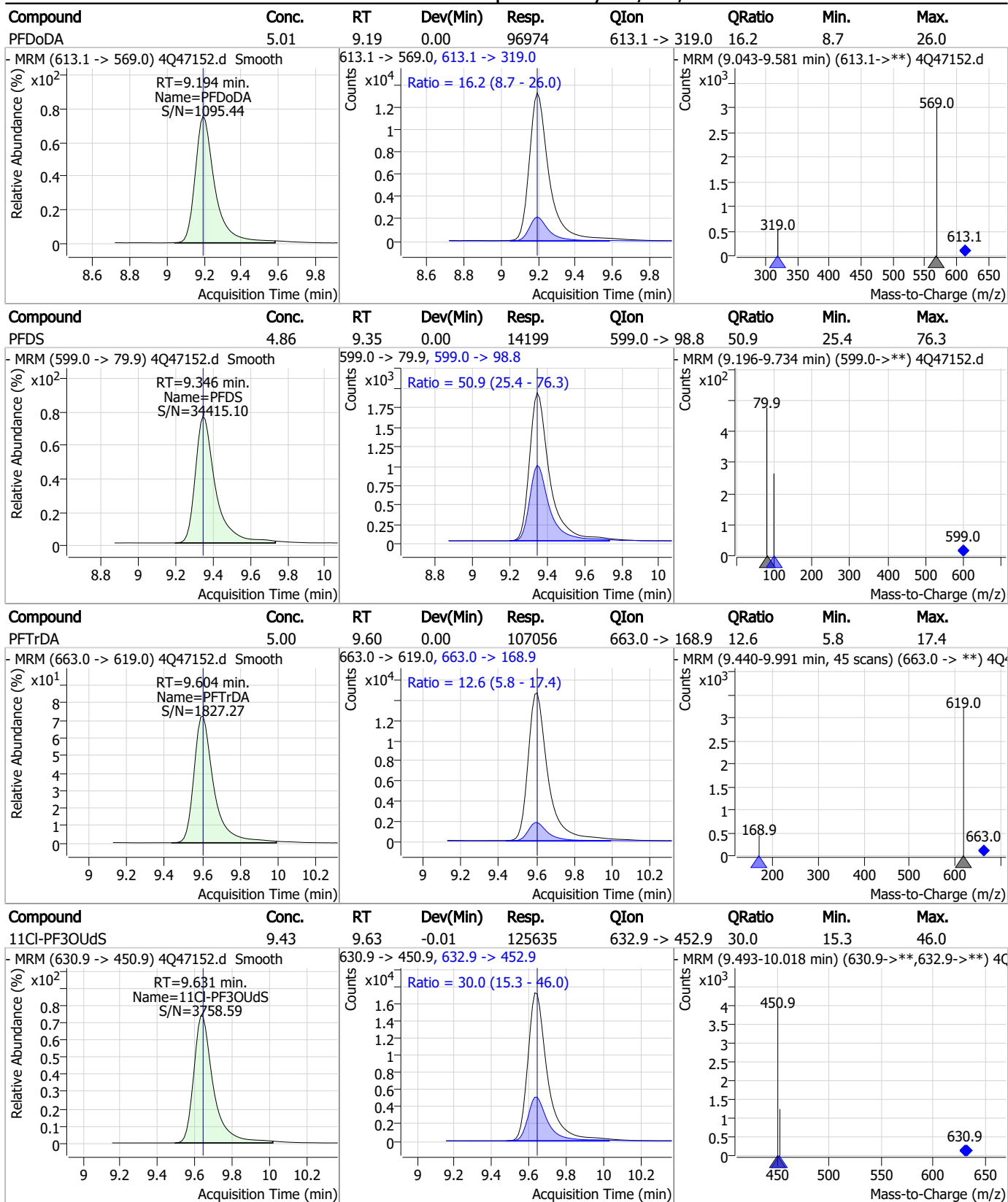
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7.7.6

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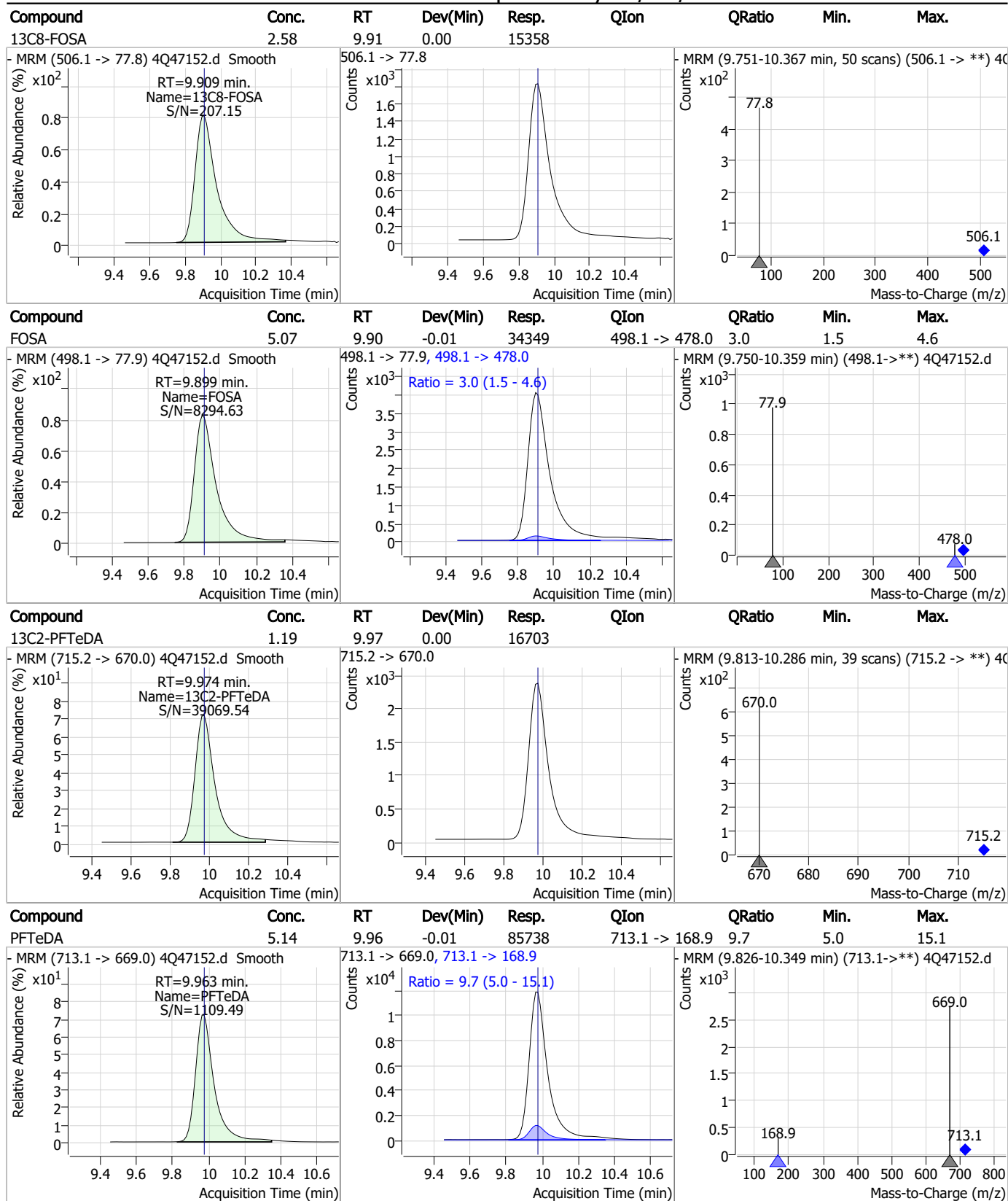
Perfluorinated Compounds by LC/MS/MS



7.7.6

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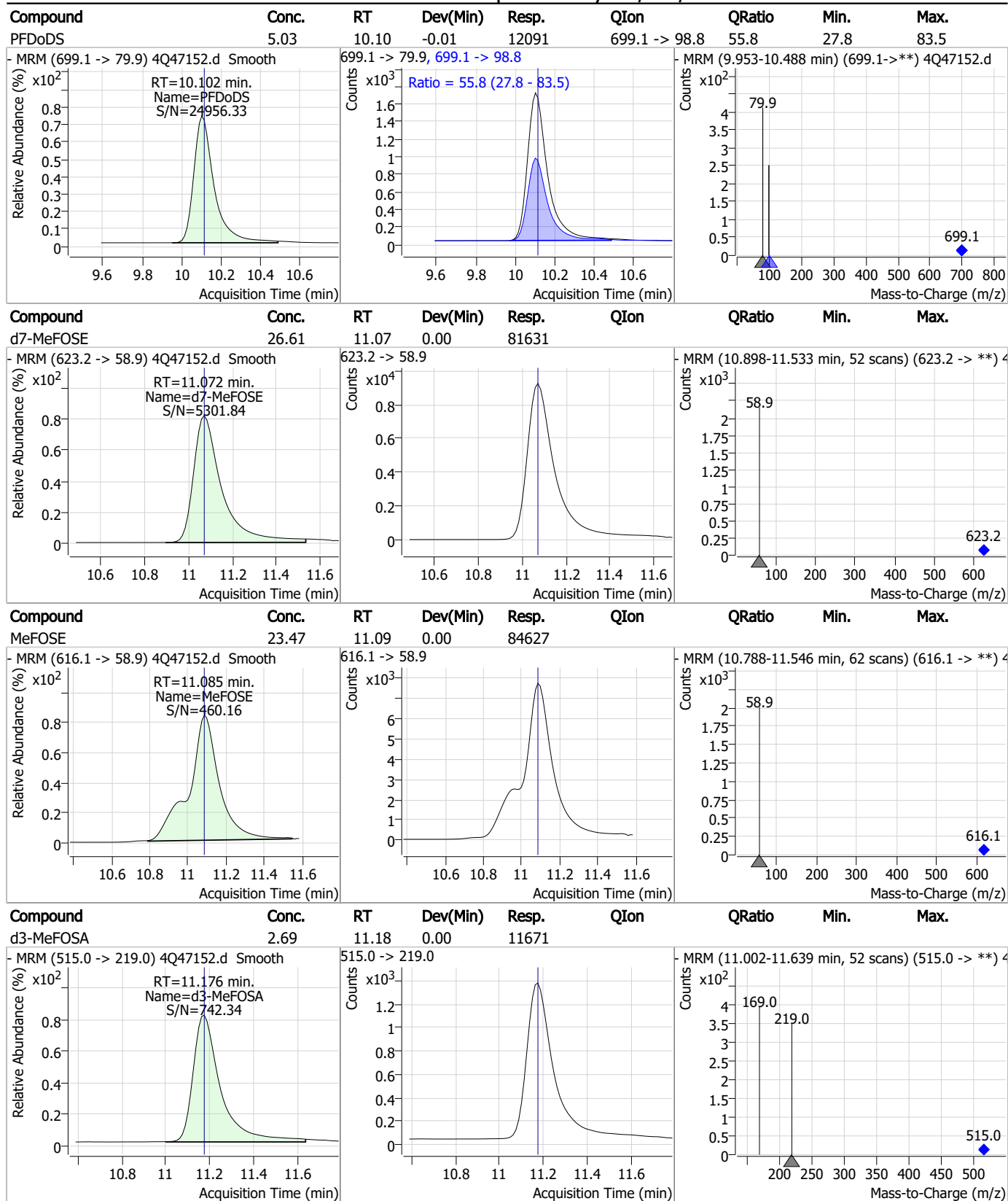
Perfluorinated Compounds by LC/MS/MS



7.7.6
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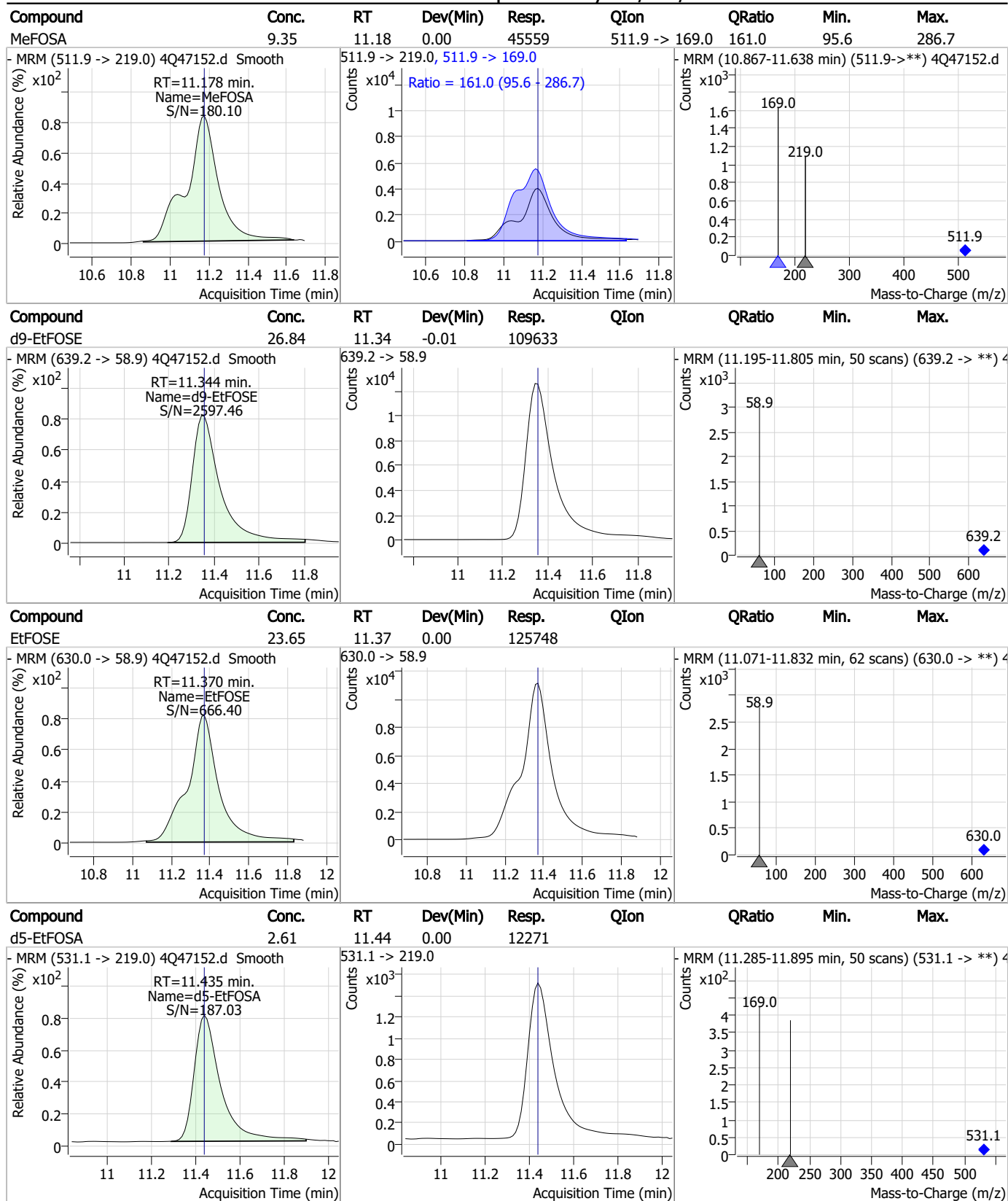


Perfluorinated Compounds by LC/MS/MS



7.7.6
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Perfluorinated Compounds by LC/MS/MS

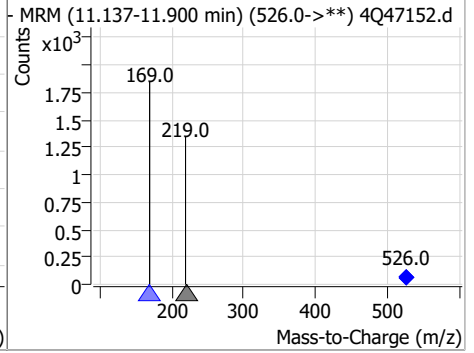
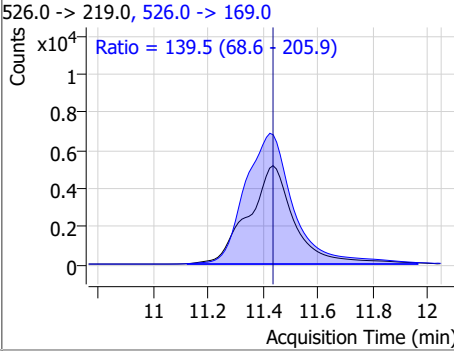
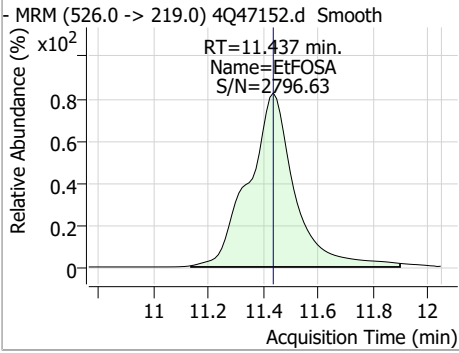


7.7.6

7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	9.56	11.44	0.00	60484	526.0 -> 169.0	139.5	68.6	205.9



7.7.6

7

Manual Integration Approval Summary

Sample Number: S4Q690-IC690 Method: EPA DRAFT 1633
Lab FileID: 4Q47152.D Analyst approved: 07/13/23 14:35 Anna Ludwig
Injection Time: 07/12/23 18:30 Supervisor approved: 07/14/23 09:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.43	Split peak
EtFOSAA	2991-50-6		8.57	Split peak

7.7.6.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47153.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/12/2023 6:45:17 PM
 Sample Name : ic690-6
 Vial : P1-A7
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q690.batch.bin
 Sample Information : OP97325,S4Q690,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.874	216.8 -> 171.9	139193	10.00 µg/L	-0.050
M5-PFPeA	4.387	268.3 -> 223.0	62776	5.00 µg/L	-0.012
M5-PFHxA	5.598	318.0 -> 273.0	49499	2.50 µg/L	0.000
M4-PFHpA	6.555	367.1 -> 322.0	35399	2.50 µg/L	0.000
M8-PFOA	7.224	421.1 -> 376.0	55125	2.50 µg/L	-0.012
M9-PFNA	7.784	472.1 -> 427.0	25047	1.25 µg/L	-0.014
M6-PFDA	8.292	519.1 -> 474.1	17464	1.25 µg/L	0.000
M7-PFUnDA	8.760	570.0 -> 525.1	22718	1.25 µg/L	0.000
M2-PFDoDA	9.194	615.1 -> 570.0	23551	1.25 µg/L	0.000
M2-PFTeDA	9.974	715.2 -> 670.0	17003	1.25 µg/L	0.000
M8-FOSA	9.909	506.1 -> 77.8	15173	2.50 µg/L	0.000
M3-PFBS	5.479	302.1 -> 79.9	11424	2.50 µg/L	0.000
M3-PFHxS	7.316	402.1 -> 79.9	8126	2.50 µg/L	-0.013
M8-PFOS	8.430	507.1 -> 79.9	10644	2.50 µg/L	-0.012
M2-4:2FTS	5.284	329.1 -> 80.9	692	5.00 µg/L	0.000
M2-6:2FTS	6.999	429.1 -> 80.9	1363	5.00 µg/L	0.000
M2-8:2FTS	8.078	529.1 -> 80.9	2269	5.00 µg/L	0.000
M3-MeFOSAA	8.362	573.2 -> 419.0	19536	5.00 µg/L	0.000
M3-HFPO-DA	5.965	286.9 -> 168.9	49161	10.00 µg/L	-0.012
M5-EtFOSAA	8.558	589.2 -> 419.0	16874	5.00 µg/L	-0.012
M7-MeFOSE	11.072	623.2 -> 58.9	78328	25.00 µg/L	0.000
M9-EtFOSE	11.344	639.2 -> 58.9	108005	25.00 µg/L	-0.012
M5-EtFOSA	11.435	531.1 -> 219.0	11926	2.50 µg/L	0.000
M3-MeFOSA	11.176	515.0 -> 219.0	11361	2.50 µg/L	0.000
13C4-PFOS	8.430	502.8 -> 79.9	12109	2.50 µg/L	0.000
13C3-PFBA	2.866	216.0 -> 172.0	73686	5.00 µg/L	-0.062
18O2-PFHxS	7.315	403.0 -> 83.9	5966	2.50 µg/L	-0.013
13C4-PFOA	7.224	417.1 -> 372.0	68661	2.50 µg/L	-0.012
13C2-PFDA	8.292	515.1 -> 470.1	19919	1.25 µg/L	0.000
13C5-PFNA	7.784	468.0 -> 423.0	28442	1.25 µg/L	-0.014
13C2-PFHxA	5.599	315.1 -> 270.0	45938	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.284	329.1 -> 80.9	692	5.16 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.3%		
13C2-6:2FTS	6.999	429.1 -> 80.9	1363	4.64 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.8%		
13C2-8:2FTS	8.078	529.1 -> 80.9	2269	4.75 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.0%		
13C2-PFDoDA	9.194	615.1 -> 570.0	23551	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C2-PFTeDA	9.974	715.2 -> 670.0	17003	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C3-PFBS	5.479	302.1 -> 79.9	11424	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C3-PFHxS	7.316	402.1 -> 79.9	8126	2.43 µg/L	-0.013

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C4-PFBA	2.874	216.8 -> 171.9	139193	10.00 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C4-PFHpA	6.555	367.1 -> 322.0	35399	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C5-PFHxA	5.598	318.0 -> 273.0	49499	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C5-PFPeA	4.387	268.3 -> 223.0	62776	4.95 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C6-PFDA	8.292	519.1 -> 474.1	17464	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C7-PFUnDA	8.760	570.0 -> 525.1	22718	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.8%		
13C8-FOSA	9.909	506.1 -> 77.8	15173	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C8-PFOA	7.224	421.1 -> 376.0	55125	2.47 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C8-PFOS	8.430	507.1 -> 79.9	10644	2.53 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C9-PFNA	7.784	472.1 -> 427.0	25047	1.32 µg/L	-0.014
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.4%		
d3-MeFOSAA	8.362	573.2 -> 419.0	19536	4.91 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.1%		
13C3-HFPO-DA	5.965	286.9 -> 168.9	49161	10.04 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.4%		
d3-MeFOSA	11.176	515.0 -> 219.0	11361	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.5%		
d5-EtFOSAA	8.558	589.2 -> 419.0	16874	4.80 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.0%		
d7-MeFOSE	11.072	623.2 -> 58.9	78328	24.24 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 97.0%		
d9-EtFOSE	11.344	639.2 -> 58.9	108005	25.10 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.4%		
d5-EtFOSA	11.435	531.1 -> 219.0	11926	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.2%		
Target Compounds					QValue
4:2FTS	5.272	327.1 -> 307.0	54849	44.67 µg/L	96
		327.1 -> 80.9	22738		
6:2FTS	6.999	427.1 -> 407.0	78417	49.80 µg/L	98
		427.1 -> 80.9	29049		
8:2FTS	8.079	527.1 -> 507.0	64865	49.94 µg/L	89
		527.1 -> 80.8	26568		
EtFOSAA	8.572	584.2 -> 419.1	36410	13.39 µg/L	94
		584.2 -> 526.0	15897		
FOSA	9.899	498.1 -> 77.9	84655	12.64 µg/L	100
		498.1 -> 478.0	2668		
MeFOSAA	8.362	570.1 -> 419.0	43664	12.53 µg/L	100
		570.1 -> 483.0	8320		
PFBA	2.870	212.8 -> 168.9	212303	50.70 µg/L	100
PFBS	5.480	298.7 -> 79.9	50624	10.63 µg/L	92
		298.7 -> 98.8	20308		
PFDA	8.292	512.9 -> 469.0	234697	12.94 µg/L	98
		512.9 -> 219.0	46774		
PFDoDA	9.194	613.1 -> 569.0	250006	13.18 µg/L	98
		613.1 -> 319.0	40587		
PFDS	9.346	599.0 -> 79.9	36041	11.98 µg/L	99

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	18124			
PFHpA	6.556	363.1 -> 319.0	279361	12.82	µg/L	97
		363.1 -> 169.0	48820			
PFHpS	7.911	449.0 -> 79.9	49131	11.55	µg/L	98
		449.0 -> 98.9	25321			
PFHxA	5.601	313.0 -> 269.0	242454	12.51	µg/L	99
		313.0 -> 118.9	7419			
PFHxS	7.317	398.7 -> 79.9	40092	11.07	µg/L	m 99
		398.7 -> 98.9	21152			
PFNA	7.785	463.0 -> 419.0	224378	12.15	µg/L	99
		463.0 -> 219.0	54101			
PFNS	8.911	548.8 -> 79.9	36941	11.66	µg/L	100
		548.8 -> 98.9	19777			
PFOA	7.225	413.0 -> 369.0	409024	13.12	µg/L	99
		413.0 -> 169.0	80058			
PFOS	8.431	498.9 -> 79.9	63330	11.18	µg/L	m 84
		498.9 -> 98.8	31656			
PFPeA	4.389	263.0 -> 219.0	455939	25.76	µg/L	100
PFPeS	6.570	349.1 -> 79.9	35120	11.74	µg/L	98
		349.1 -> 98.9	15739			
PFTeDA	9.975	713.1 -> 669.0	221504	13.04	µg/L	99
		713.1 -> 168.9	21431			
PFTrDA	9.604	663.0 -> 619.0	266929	12.72	µg/L	98
		663.0 -> 168.9	33472			
PFUnDA	8.760	563.1 -> 519.0	226902	12.59	µg/L	98
		563.1 -> 269.1	46788			
11Cl-PF3OUdS	9.644	630.9 -> 450.9	315573	24.06	µg/L	100
		632.9 -> 452.9	96089			
9Cl-PF3ONS	8.775	530.8 -> 351.0	419601	23.86	µg/L	97
		532.8 -> 353.0	131149			
ADONA	6.818	376.9 -> 250.9	882915	23.99	µg/L	100
		376.9 -> 84.8	219656			
HFPO-DA	5.966	284.9 -> 168.9	127711	25.15	µg/L	98
		284.9 -> 184.9	13824			
3:3FTCA	3.823	241.0 -> 177.0	60718	63.02	µg/L	97
		241.0 -> 117.0	5297			
5:3FTCA	6.281	341.0 -> 237.1	1014767	315.17	µg/L	100
		341.0 -> 217.0	719878			
7:3FTCA	7.762	441.0 -> 316.9	570874	321.23	µg/L	100
		441.0 -> 336.9	1332795			
EtFOSA	11.438	526.0 -> 219.0	147319	23.97	µg/L	100
		526.0 -> 169.0	202080			
EtFOSE	11.357	630.0 -> 58.9	312341	59.62	µg/L	100
MeFOSA	11.178	511.9 -> 219.0	112898	23.80	µg/L	71
		511.9 -> 169.0	168453			
MeFOSE	11.085	616.1 -> 58.9	213195	61.63	µg/L	100
PFDoS	10.102	699.1 -> 79.9	29089	11.74	µg/L	97
		699.1 -> 98.8	16822			
NFDHA	5.481	295.0 -> 201.0	29104	25.61	µg/L	97
		295.0 -> 84.9	6833			
PFMBA	4.797	279.0 -> 85.1	242907	25.51	µg/L	100
PFMPA	3.499	229.0 -> 84.9	229675	25.41	µg/L	100
PFEESA	6.022	314.8 -> 134.9	329094	22.49	µg/L	99
		314.8 -> 82.9	10716			

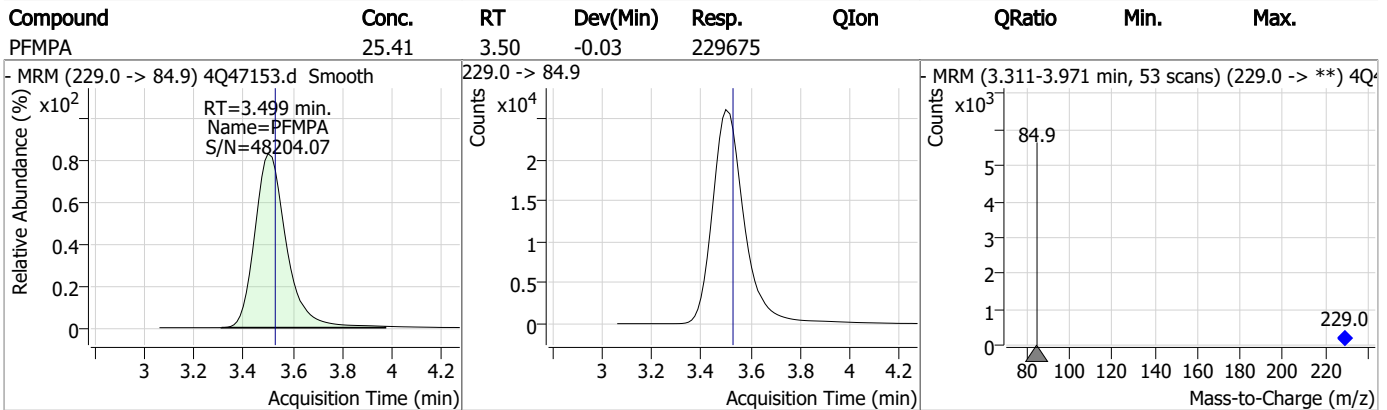
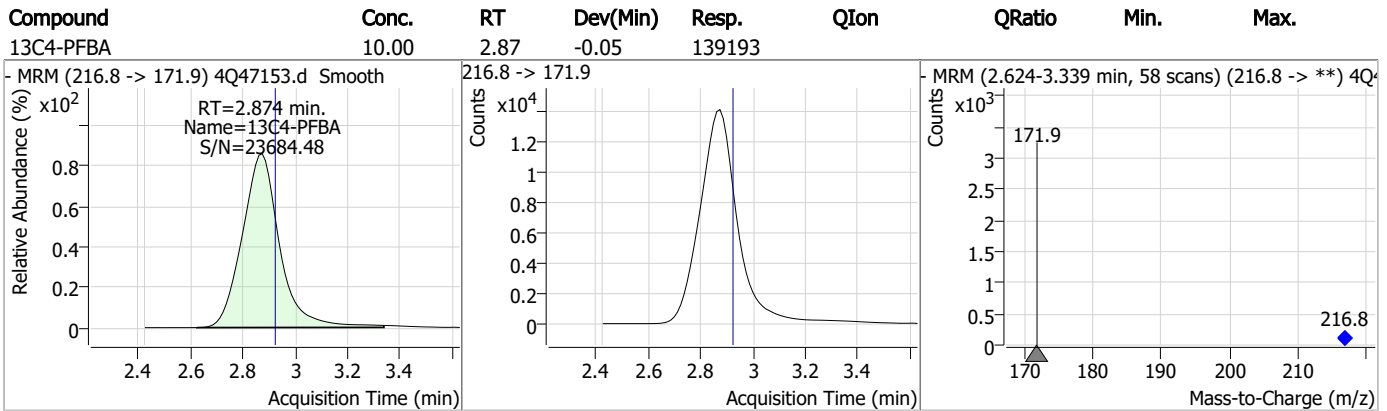
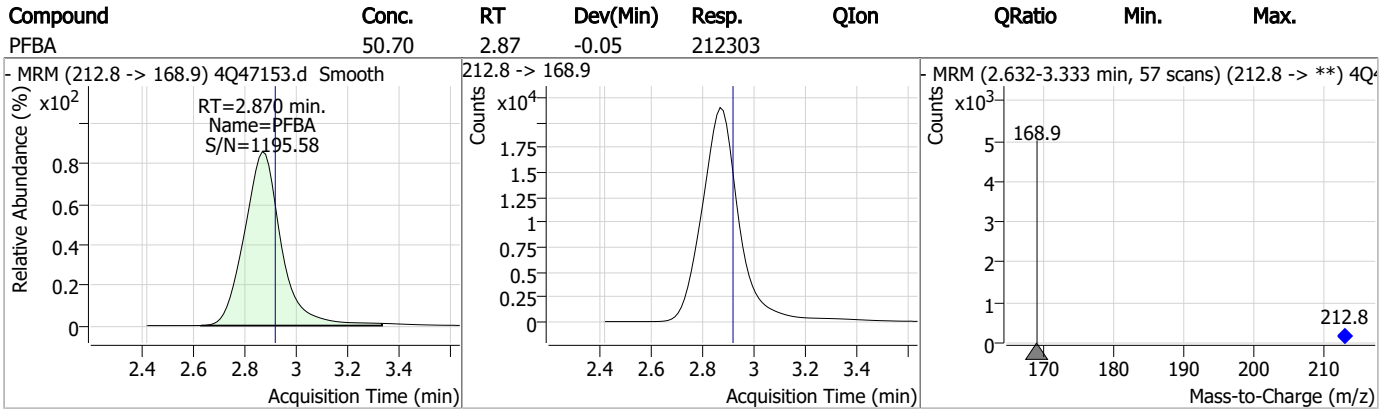
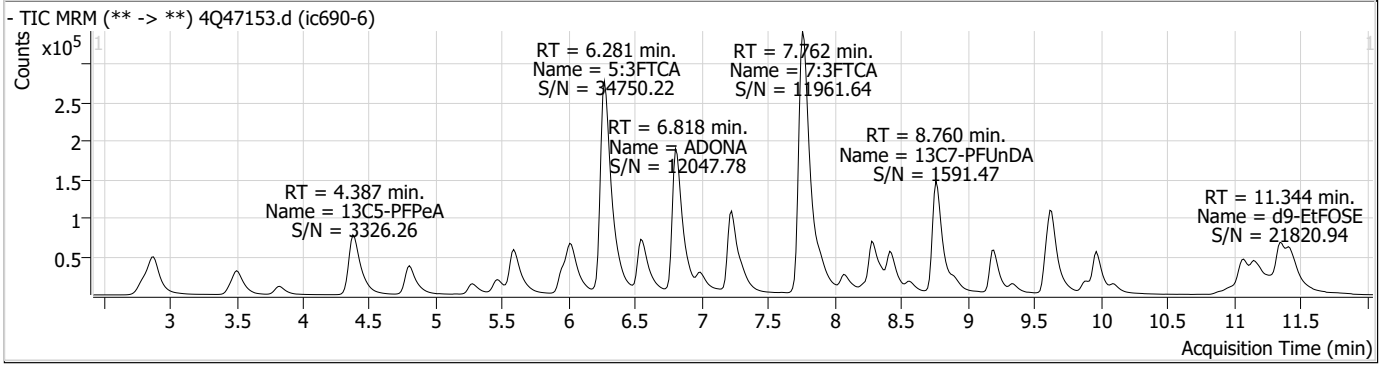
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

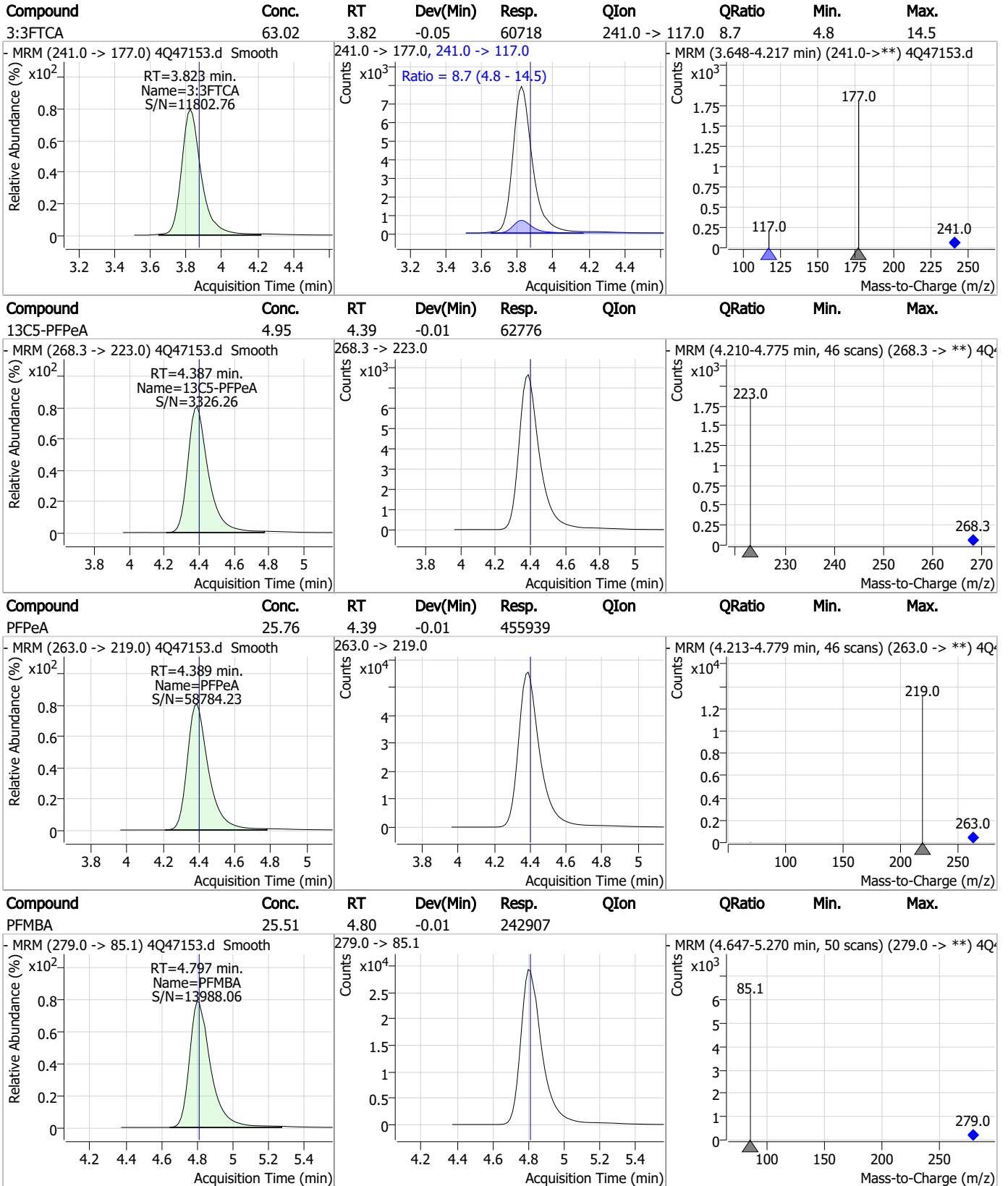
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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Perfluorinated Compounds by LC/MS/MS



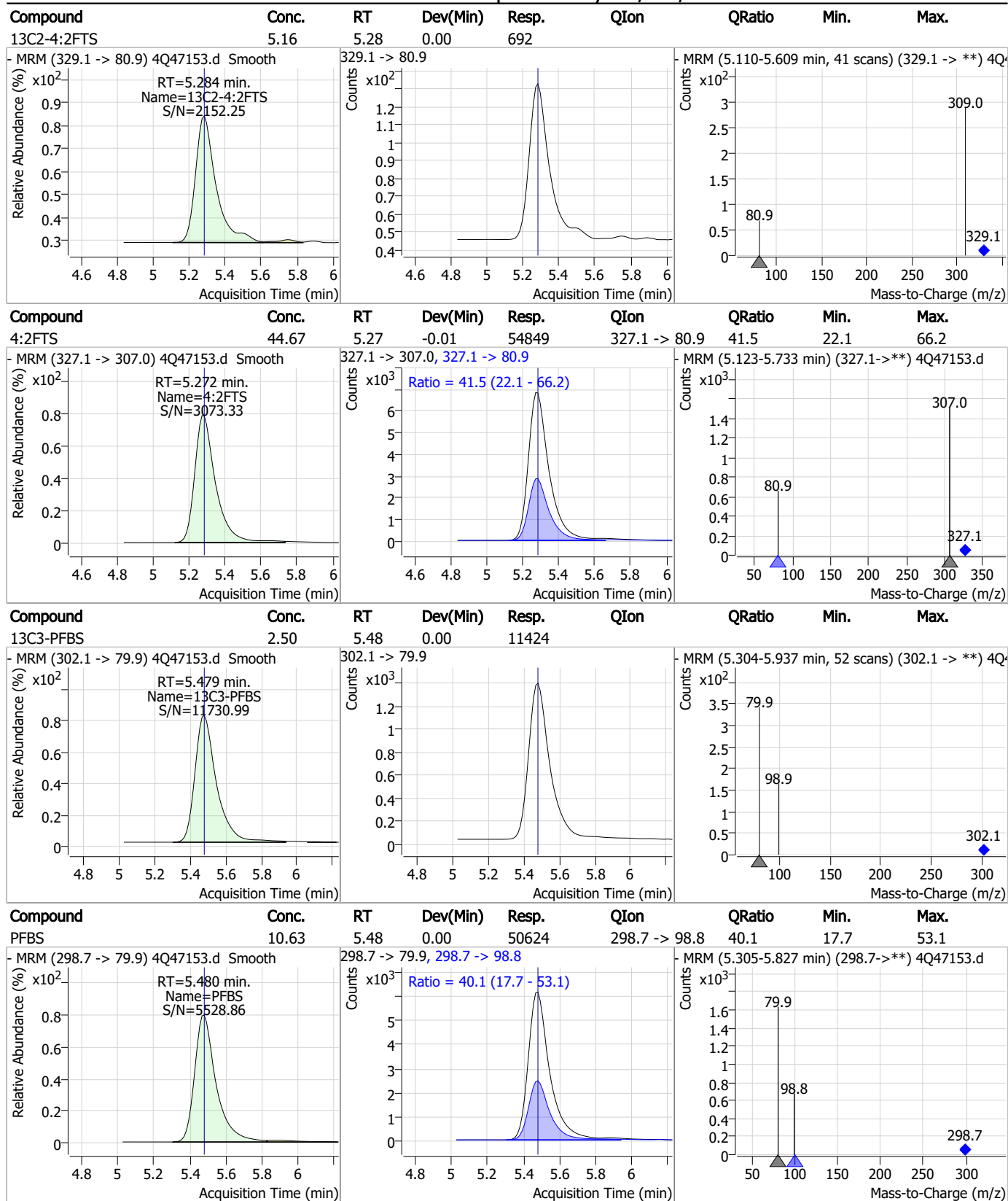
Perfluorinated Compounds by LC/MS/MS



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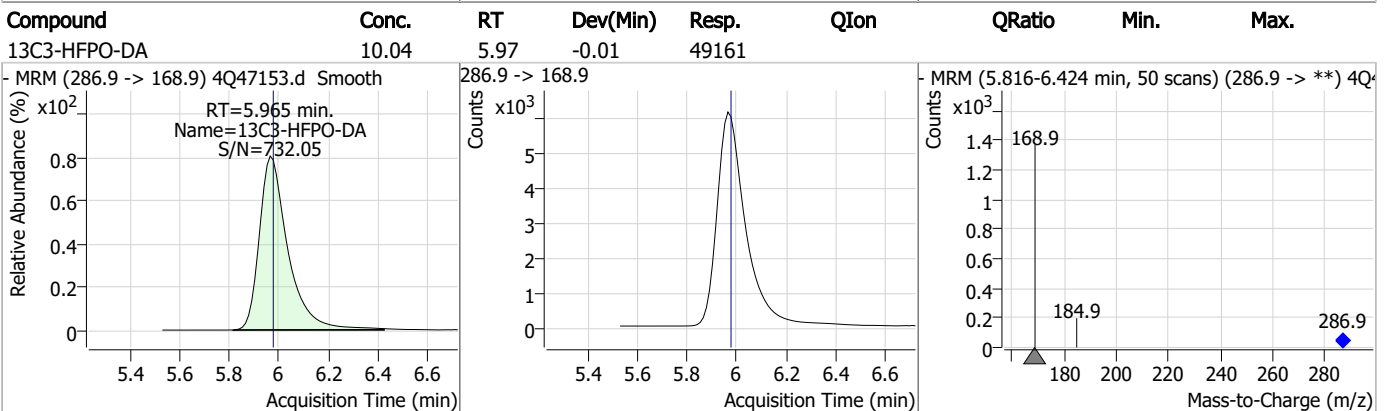
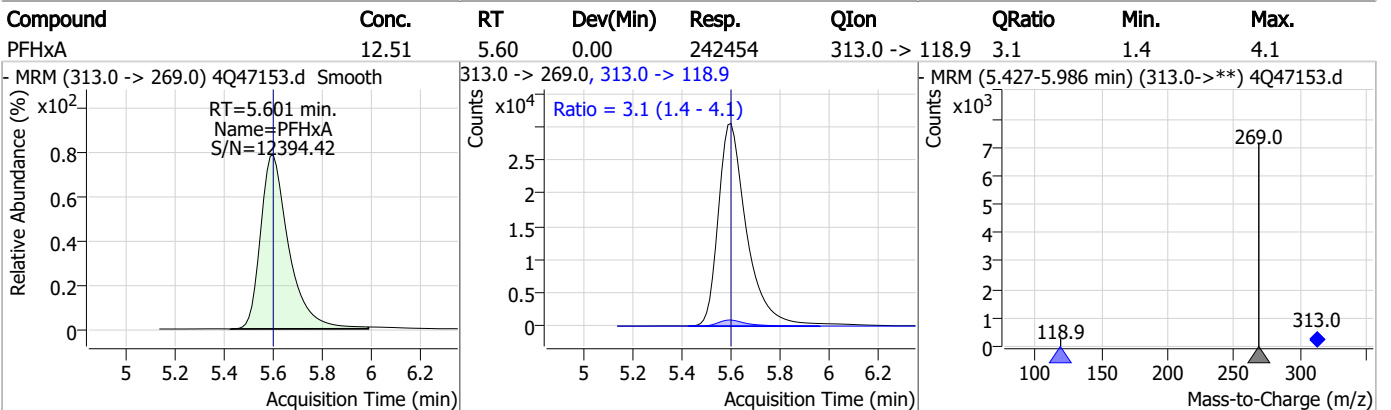
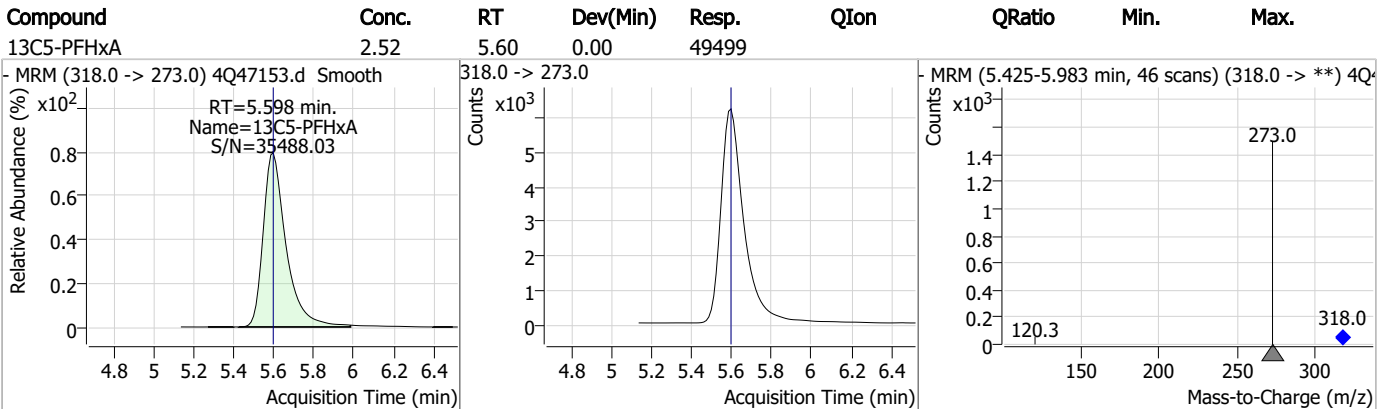
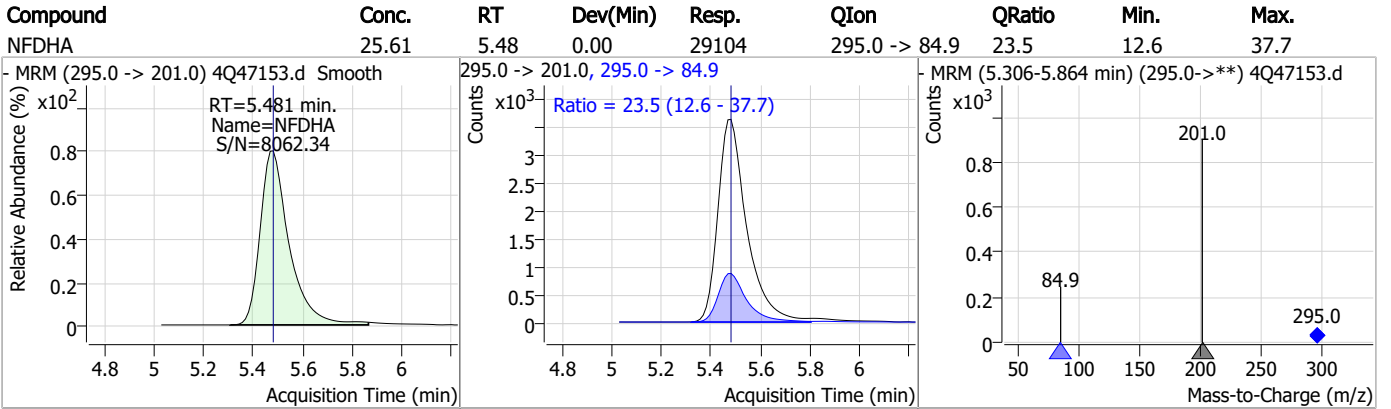


Perfluorinated Compounds by LC/MS/MS

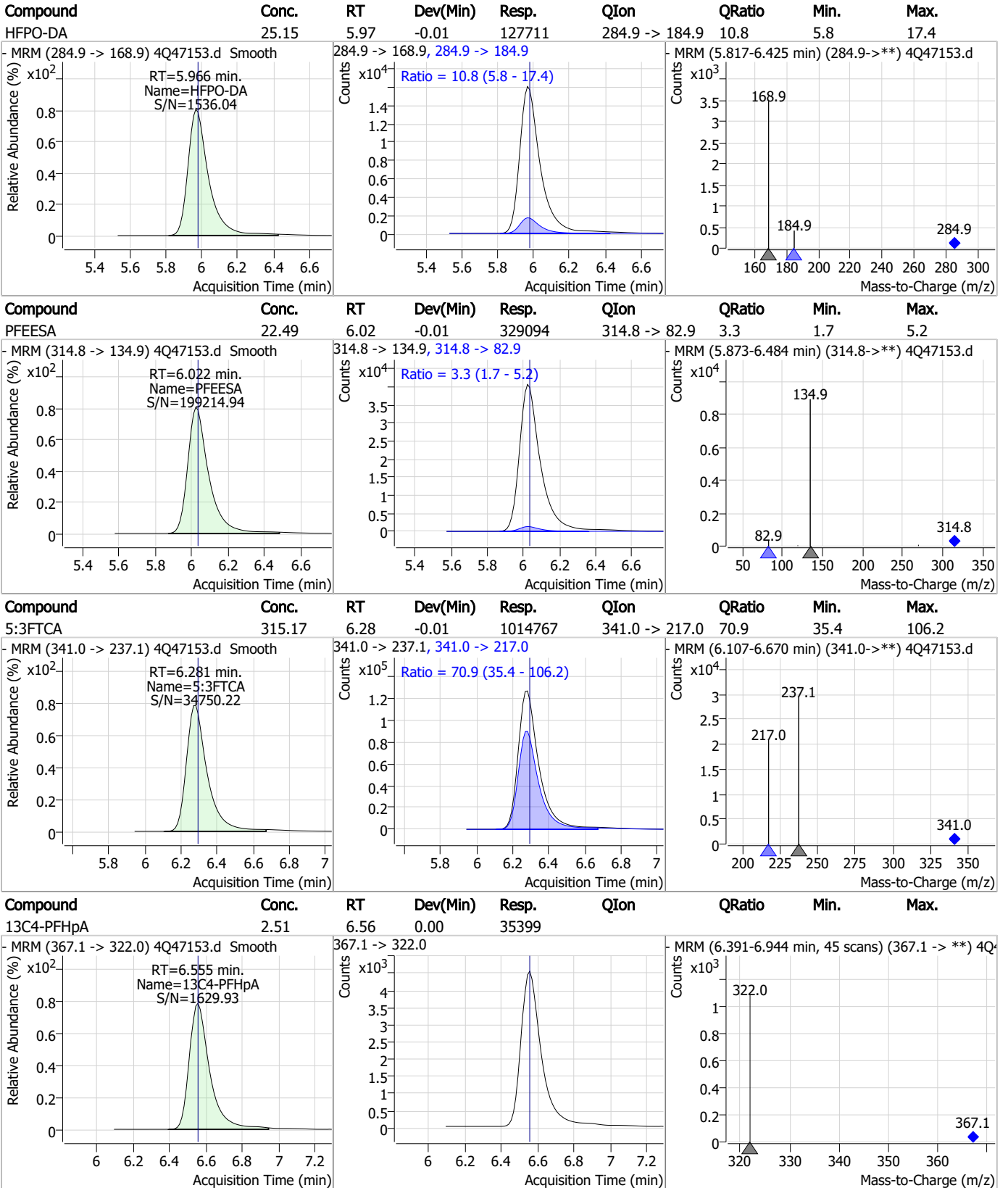


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Perfluorinated Compounds by LC/MS/MS



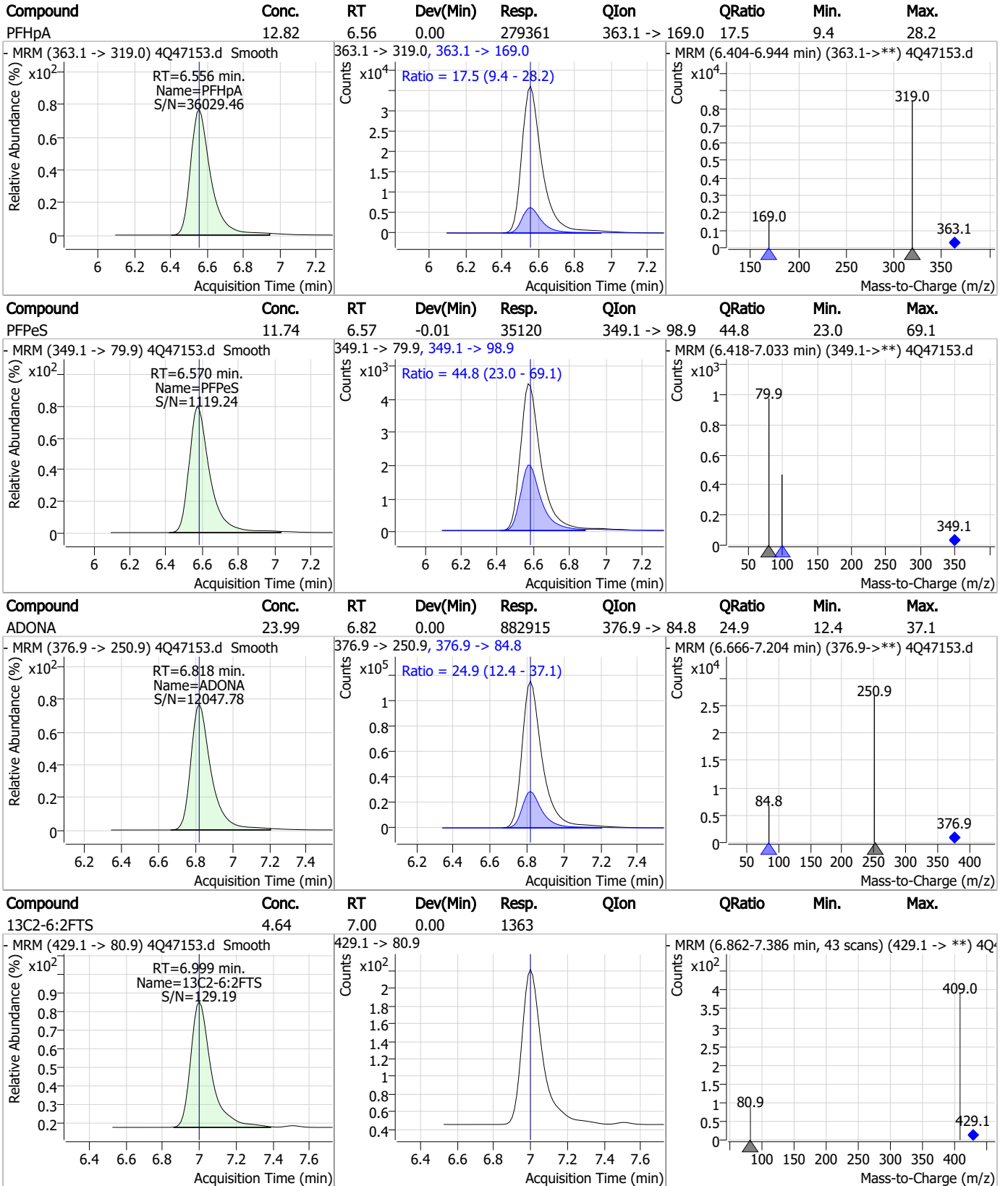
Perfluorinated Compounds by LC/MS/MS



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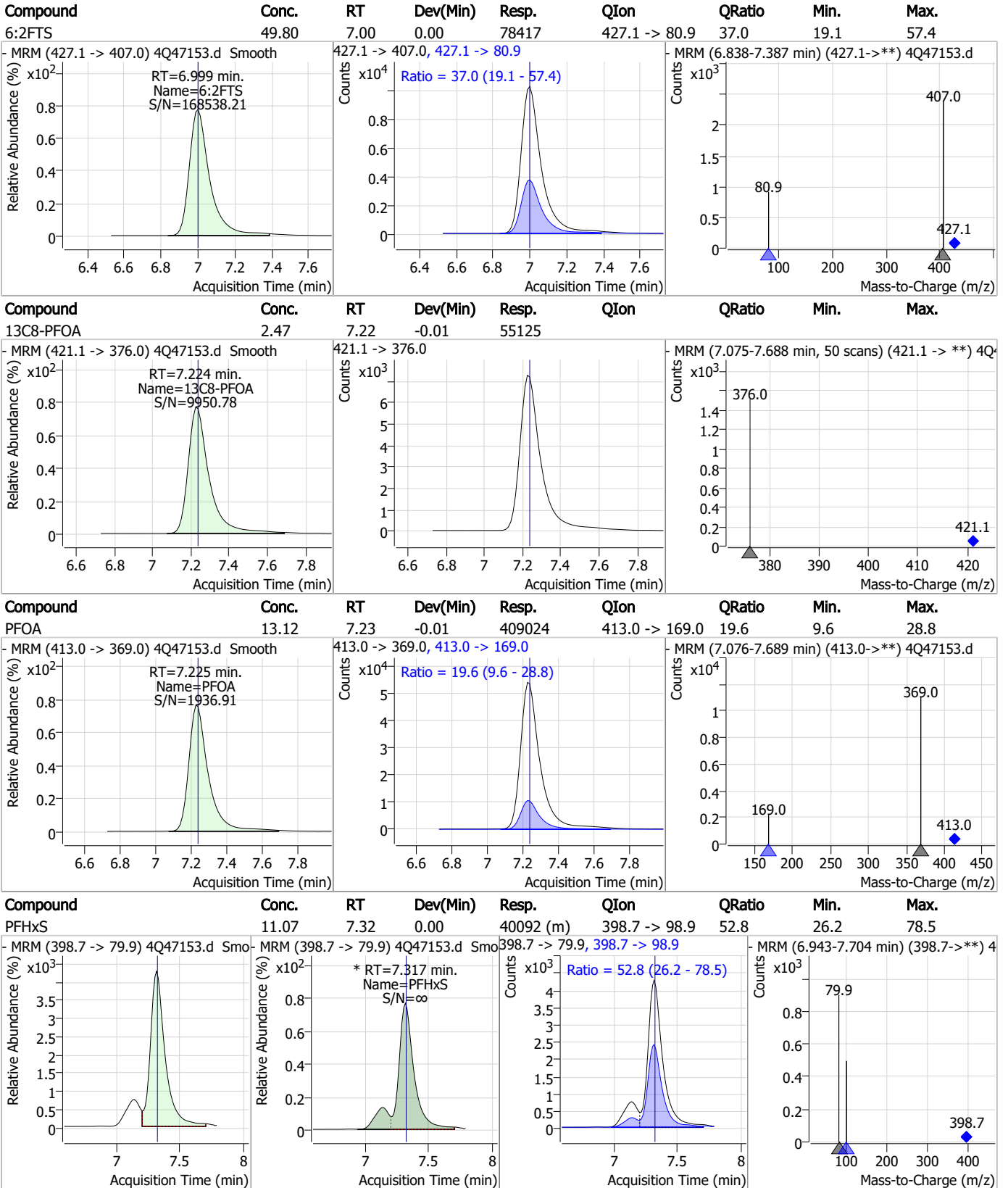
Perfluorinated Compounds by LC/MS/MS



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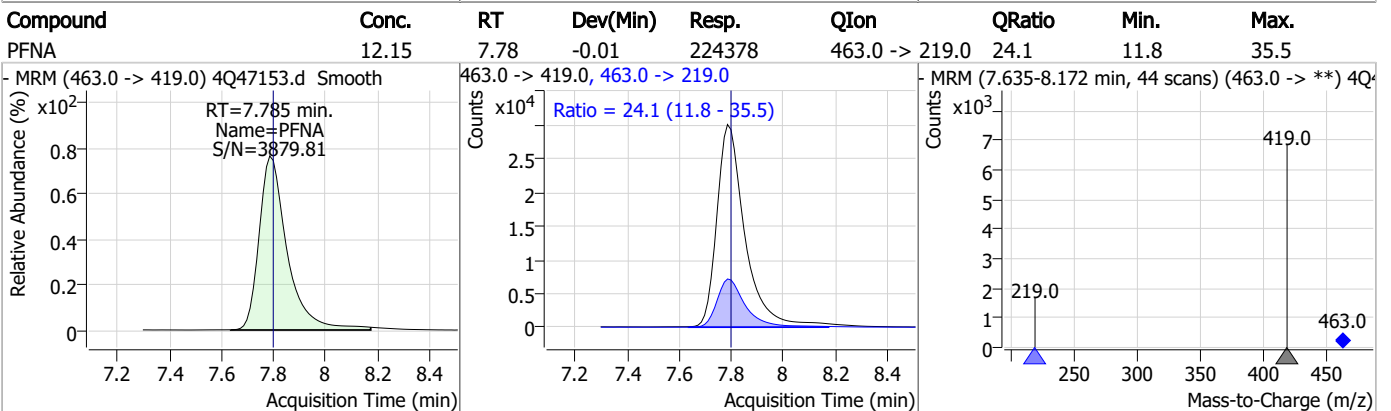
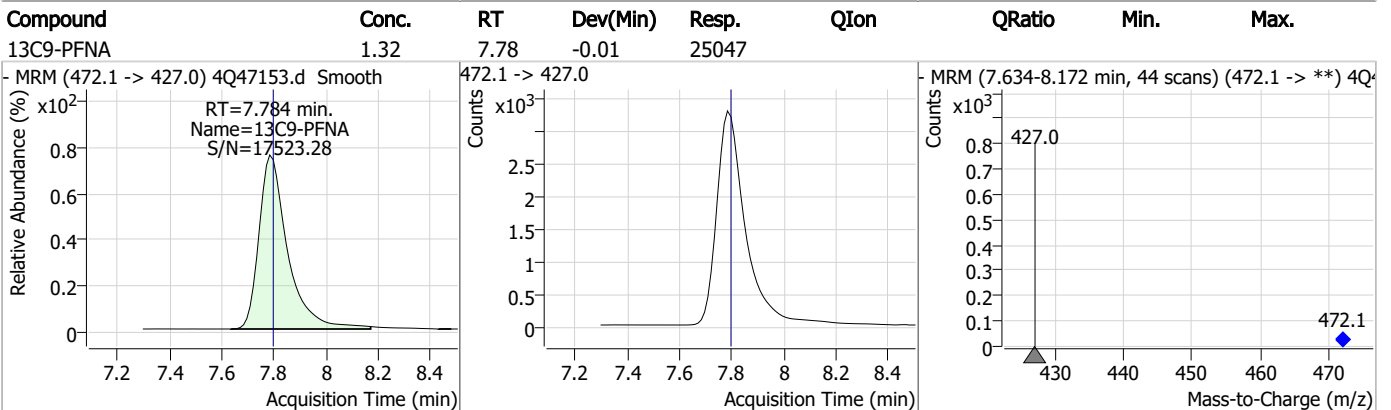
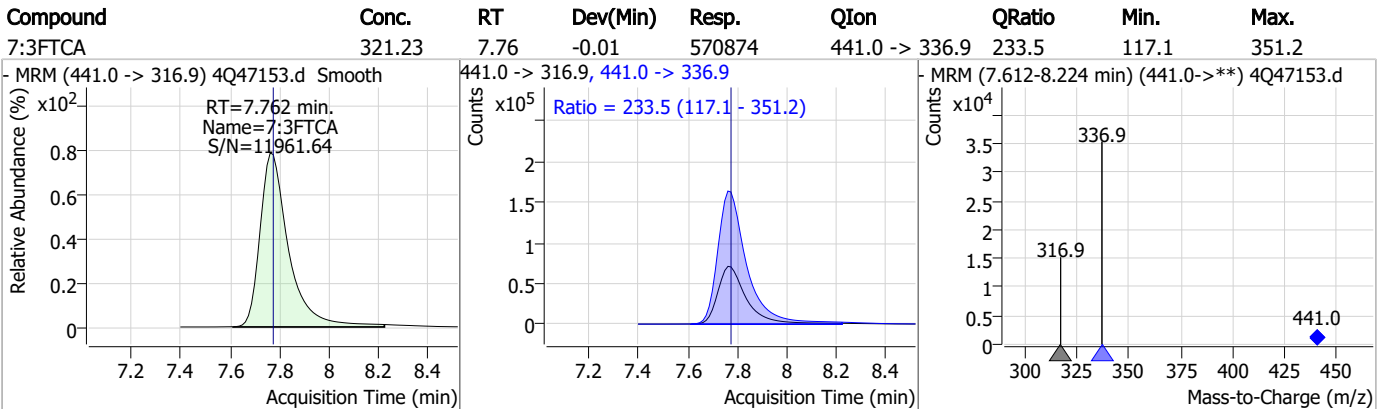
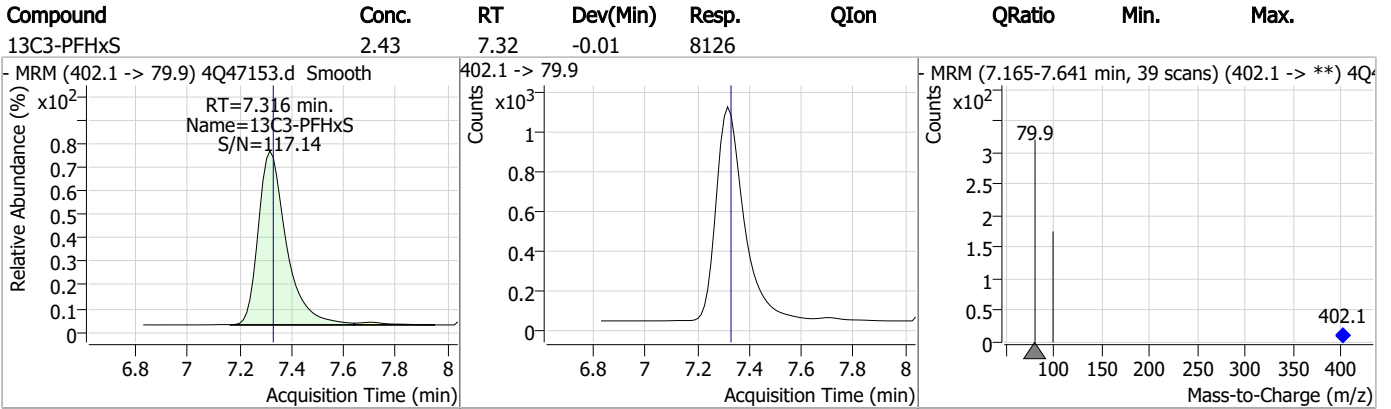
Perfluorinated Compounds by LC/MS/MS



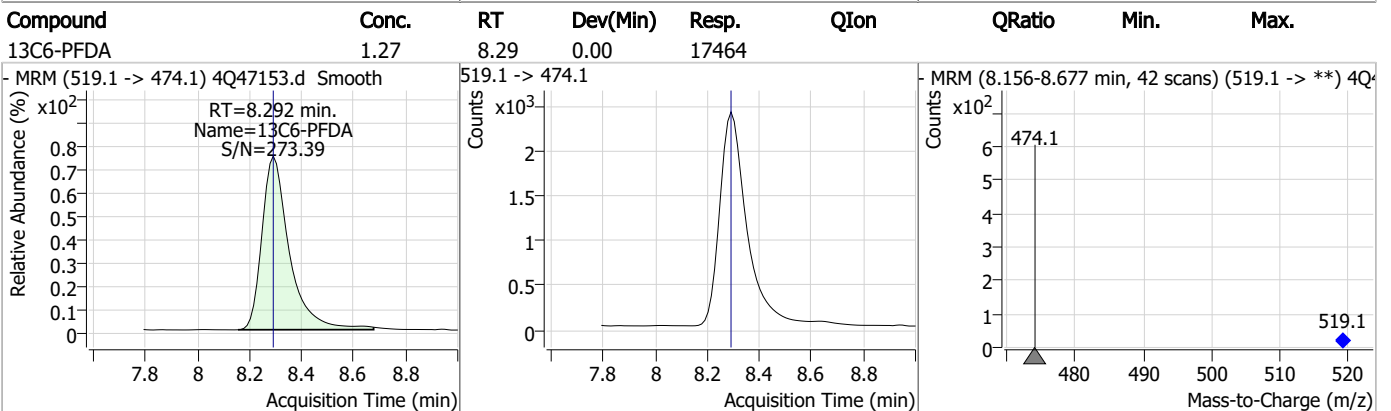
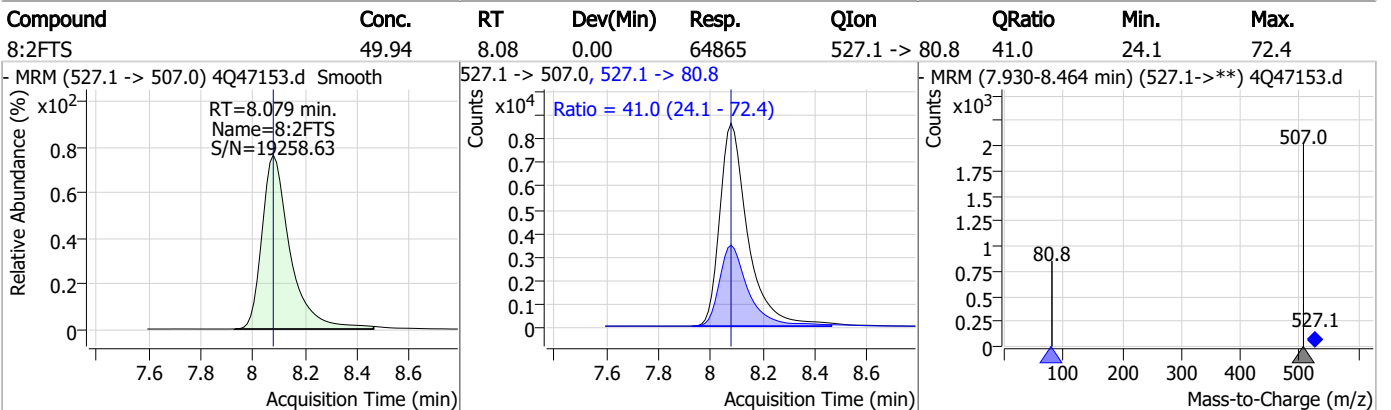
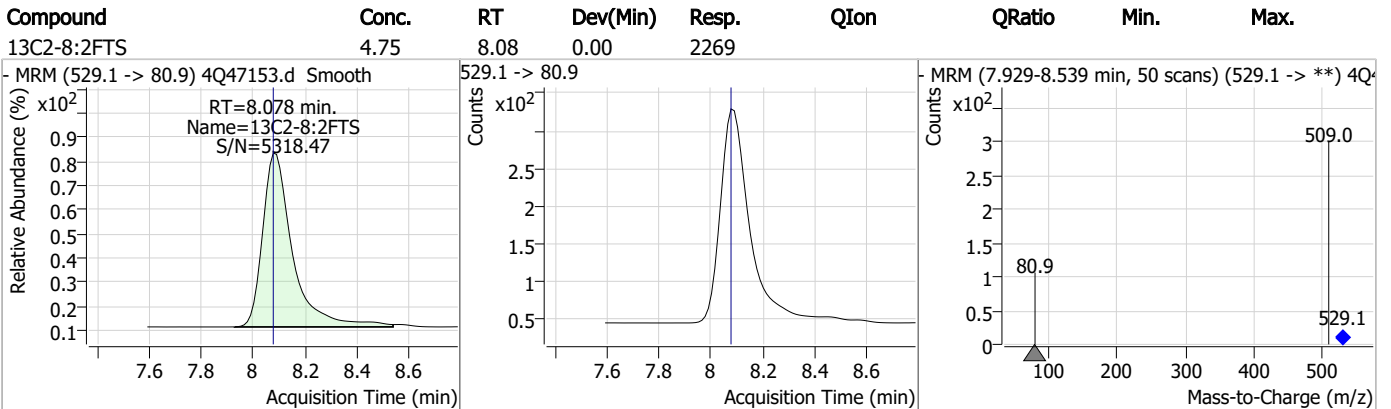
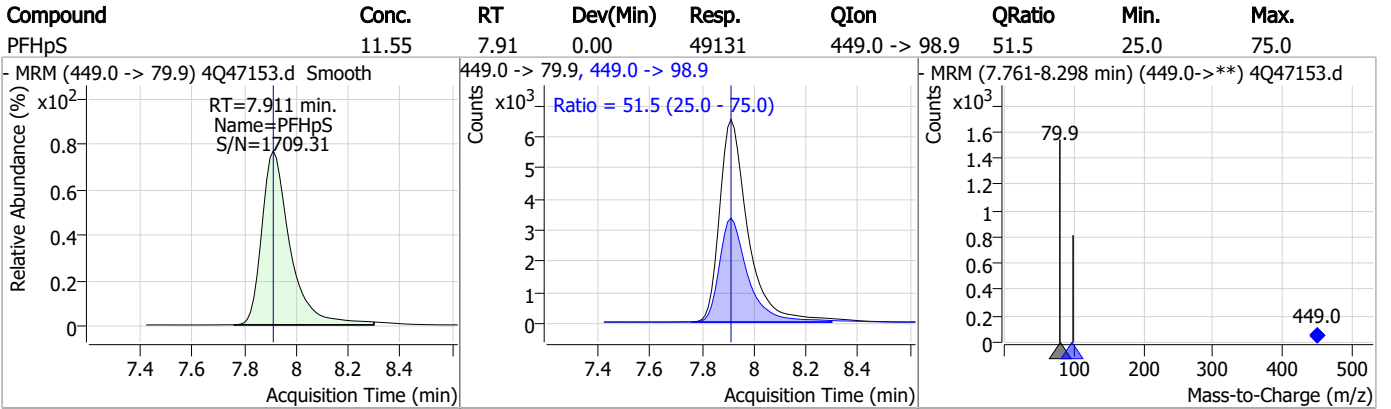
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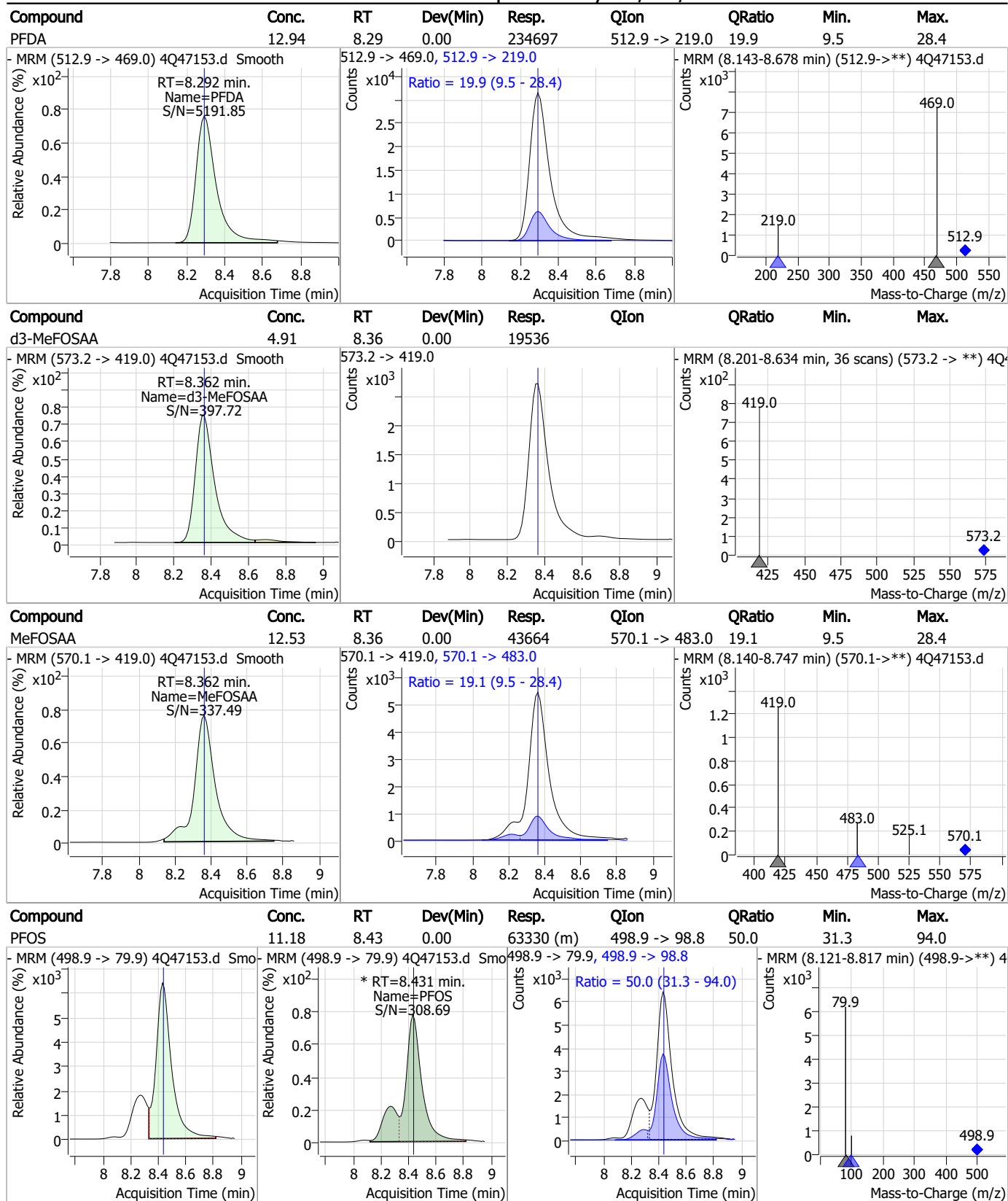
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

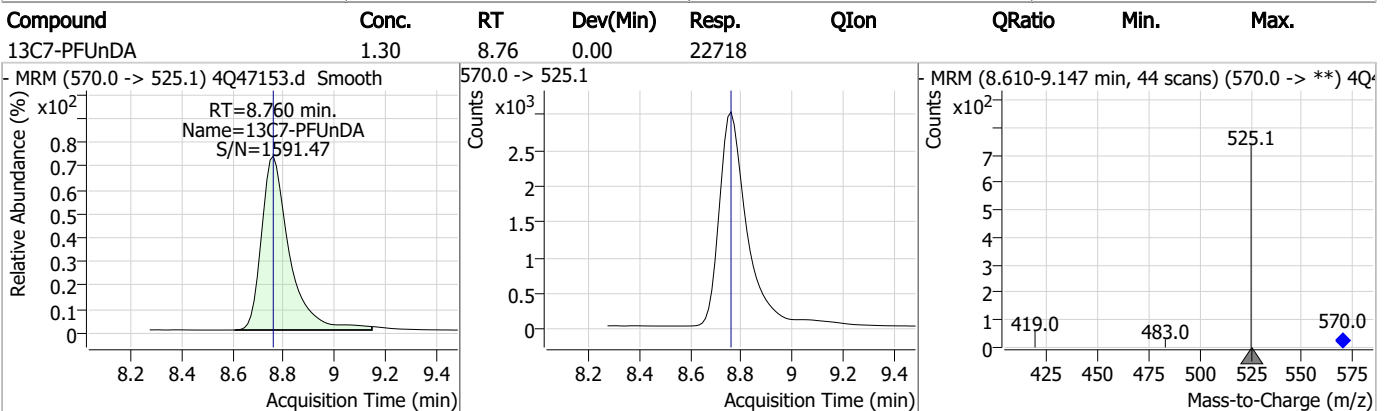
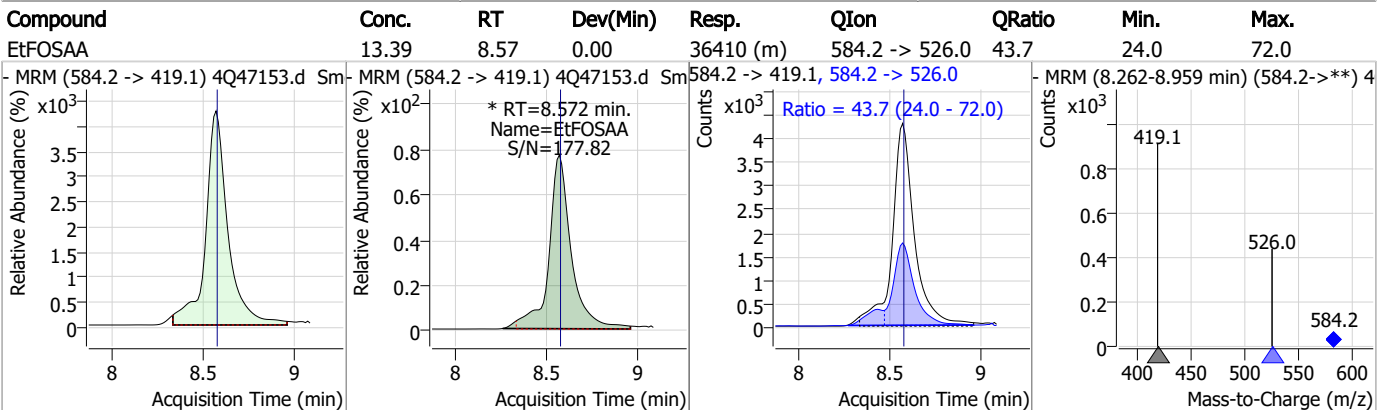
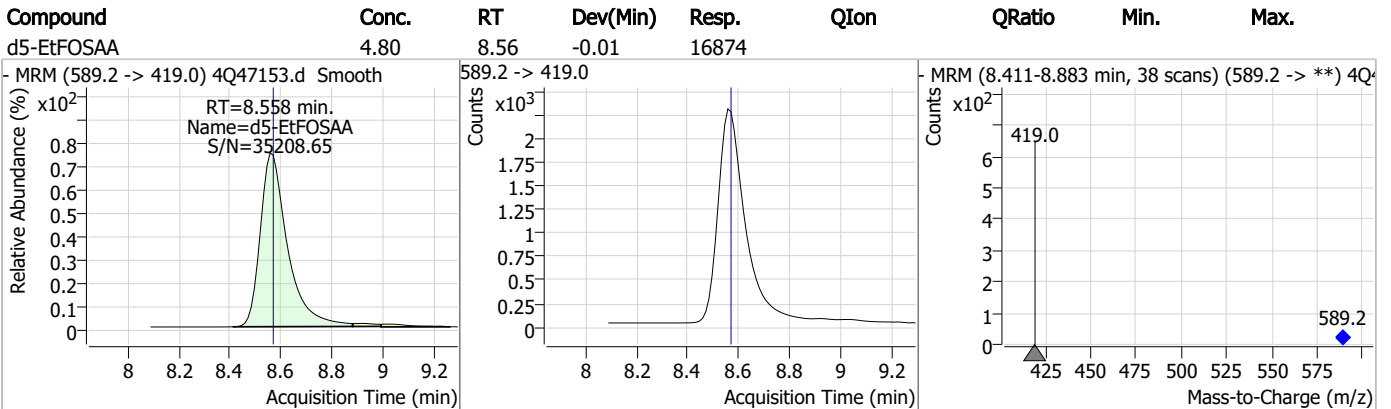
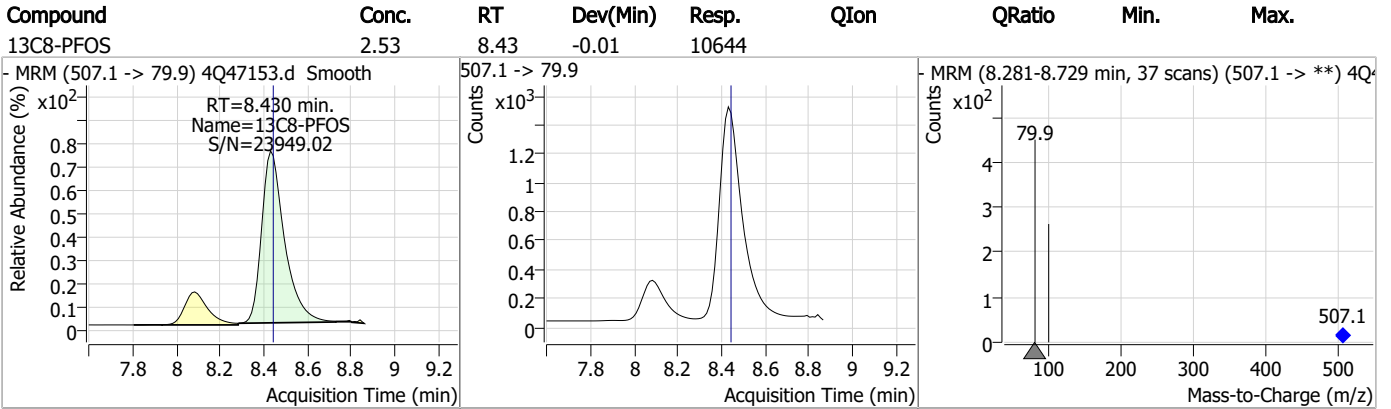


Perfluorinated Compounds by LC/MS/MS

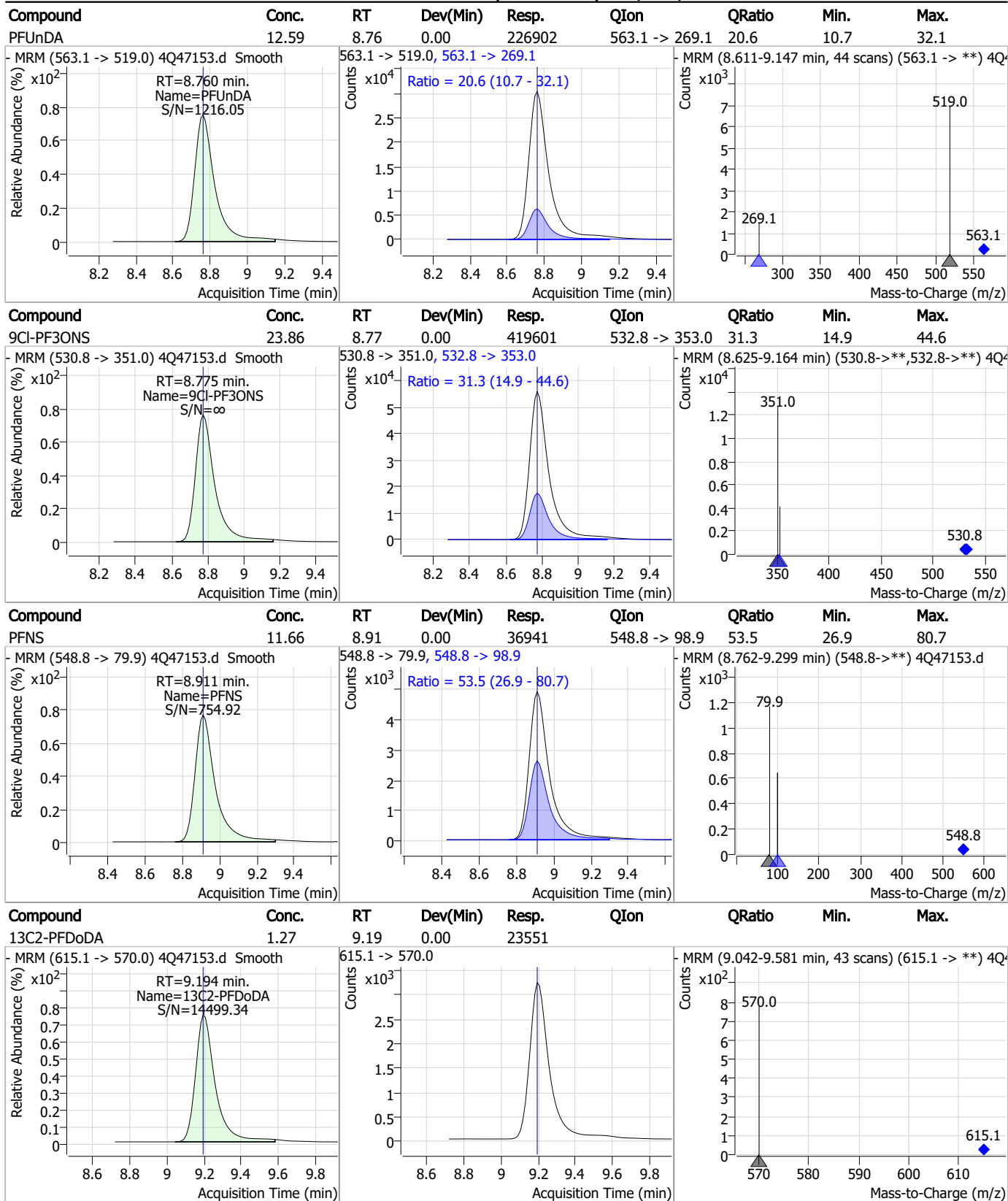


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Perfluorinated Compounds by LC/MS/MS

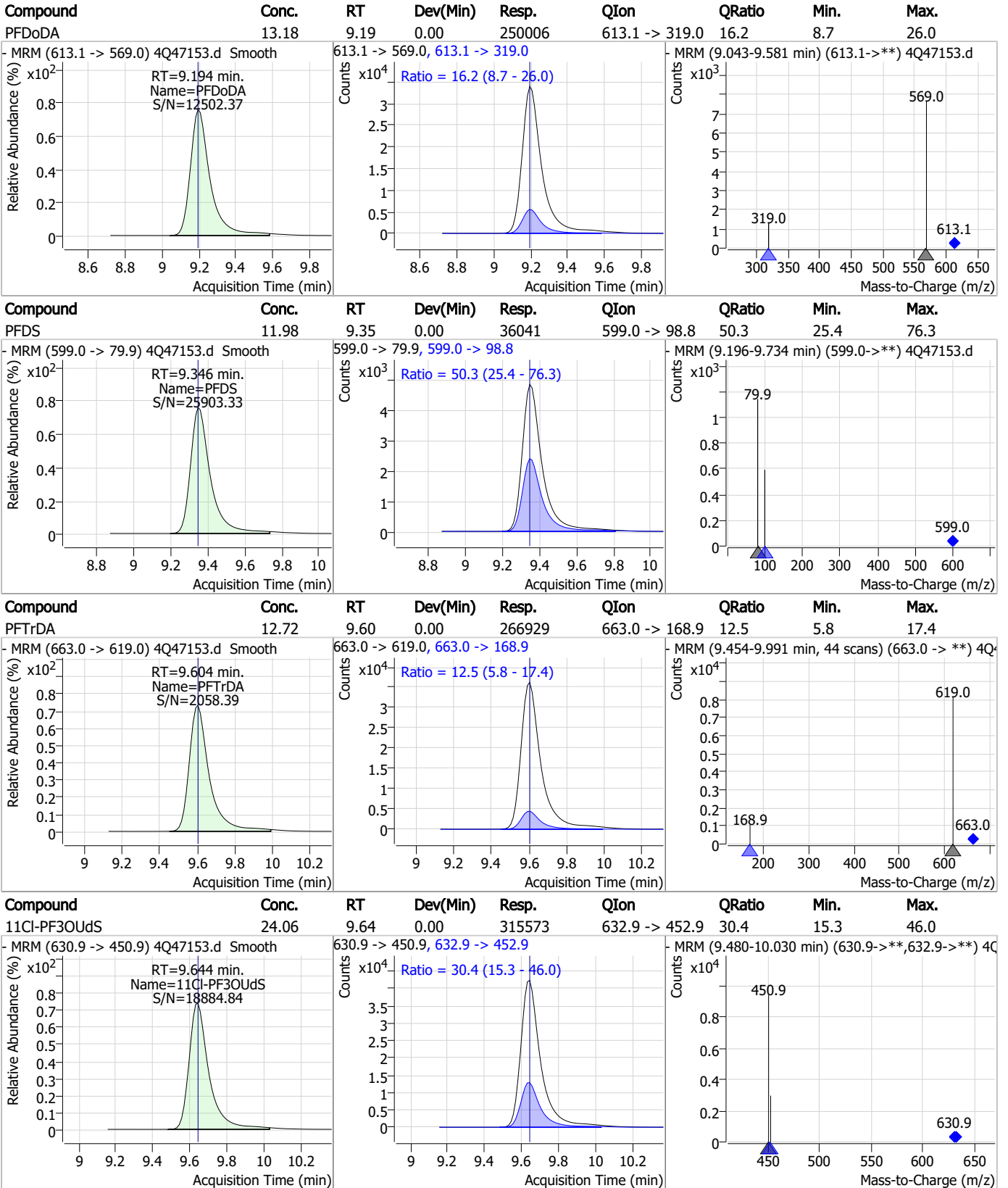


Perfluorinated Compounds by LC/MS/MS



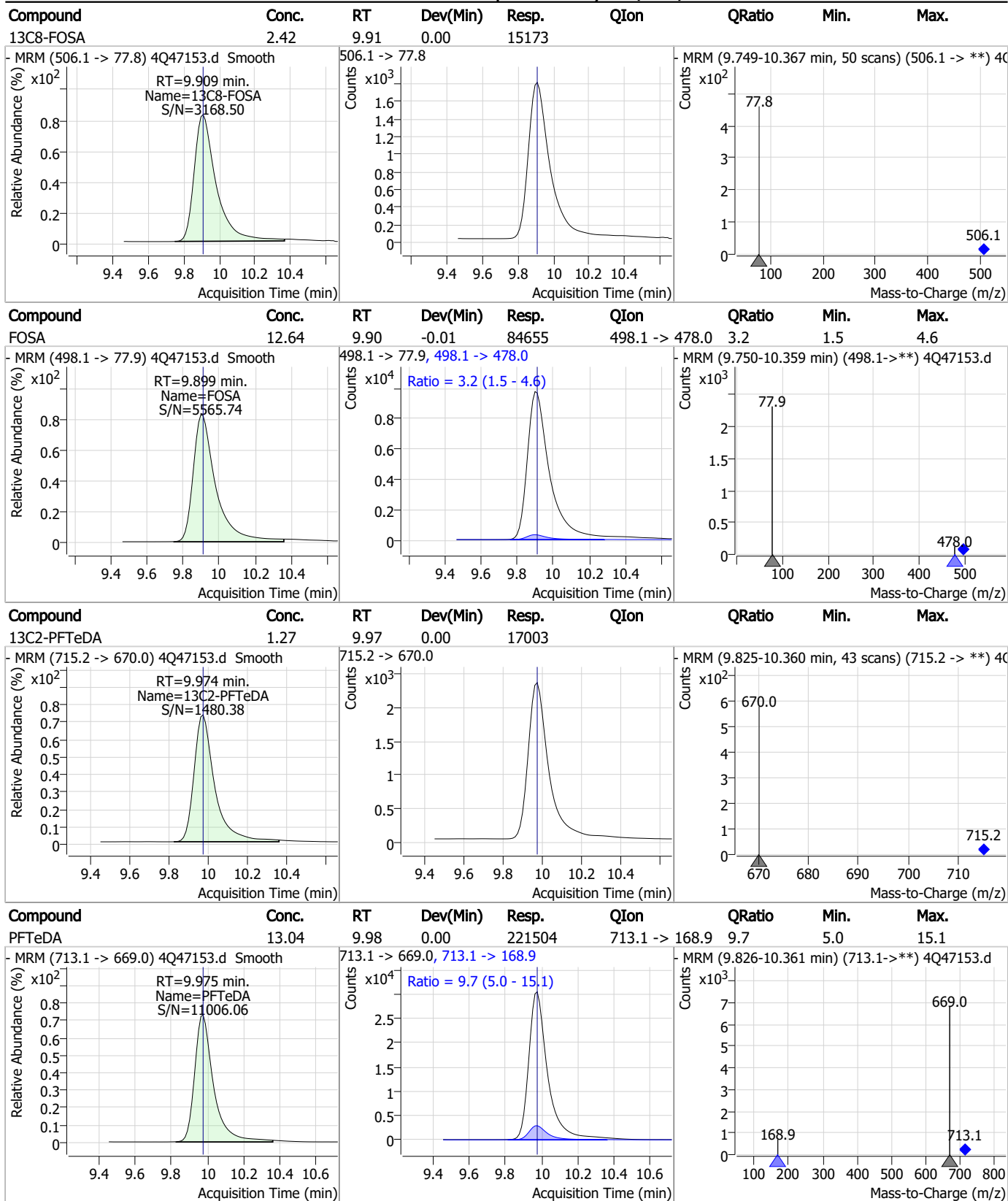
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Perfluorinated Compounds by LC/MS/MS



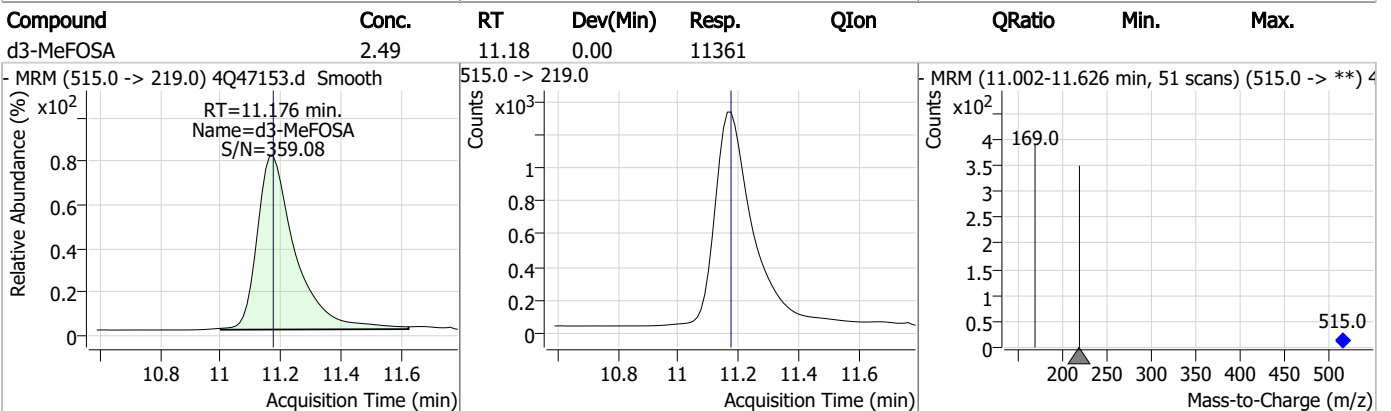
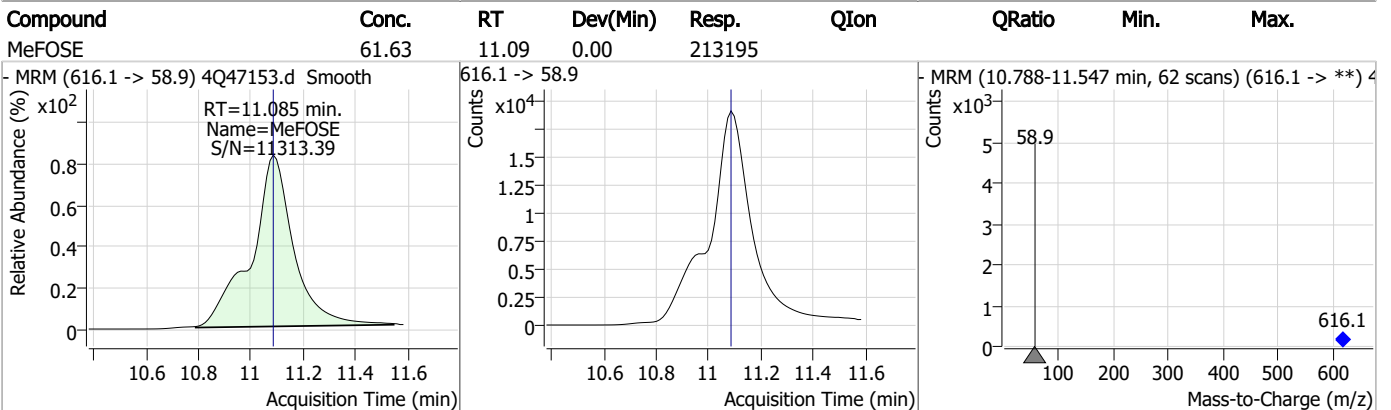
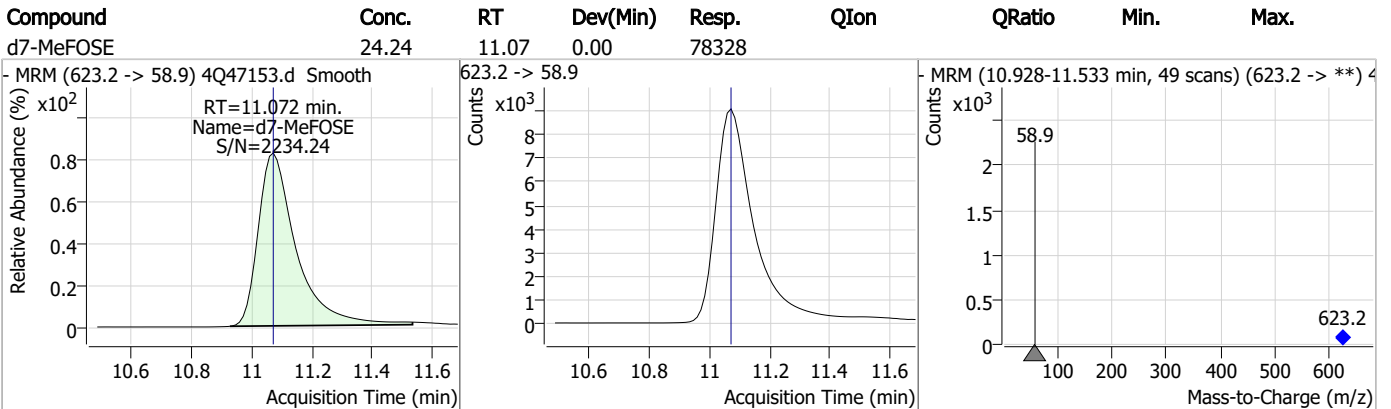
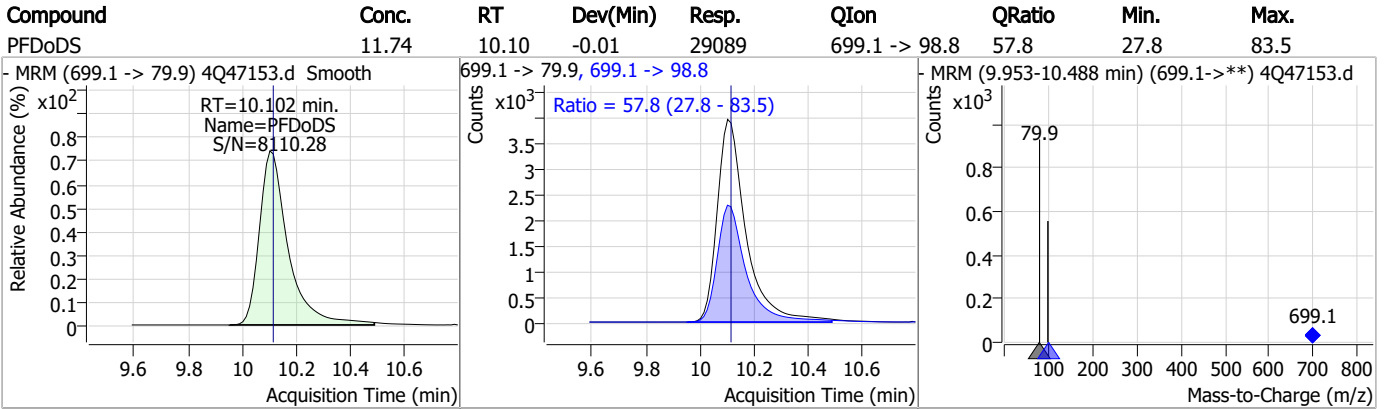
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Perfluorinated Compounds by LC/MS/MS

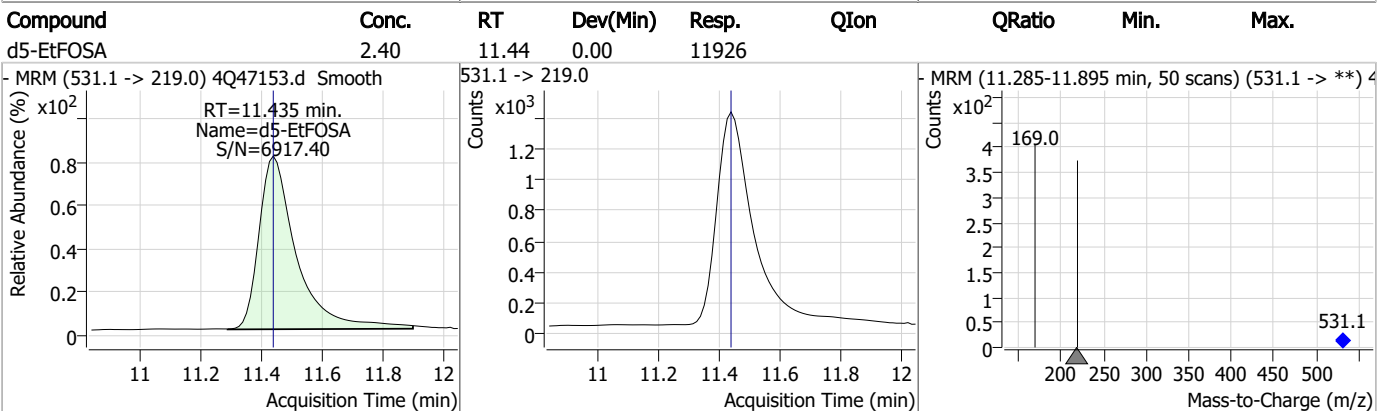
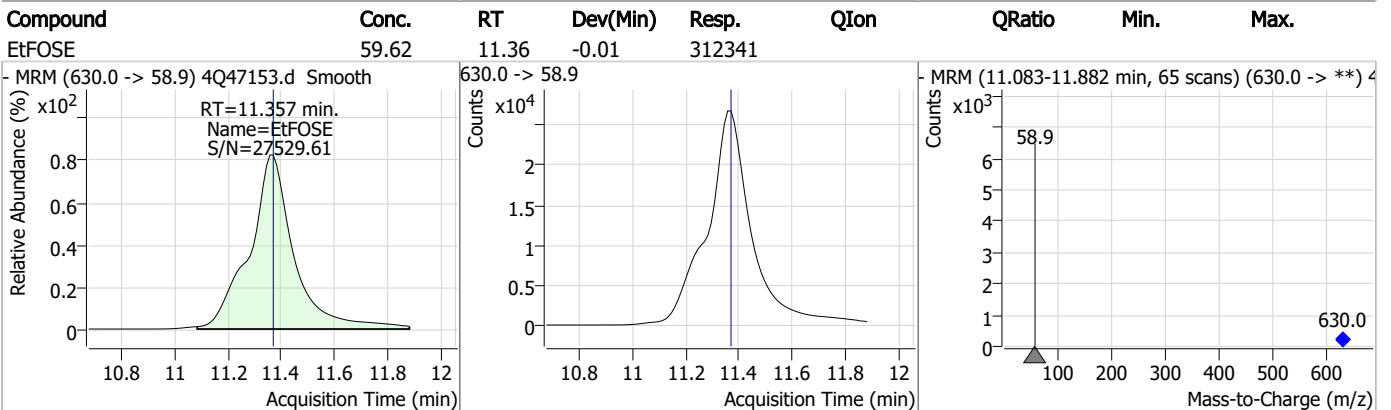
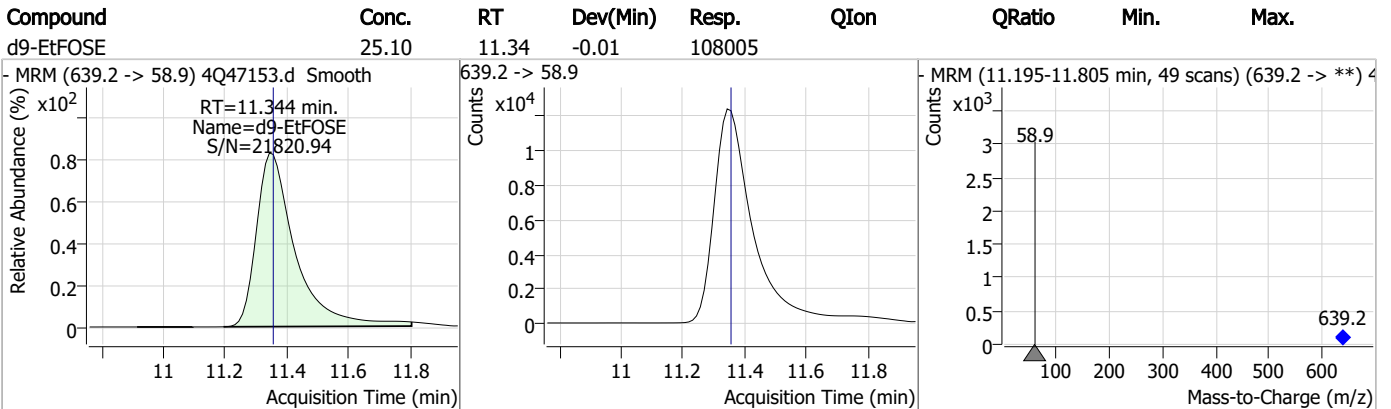
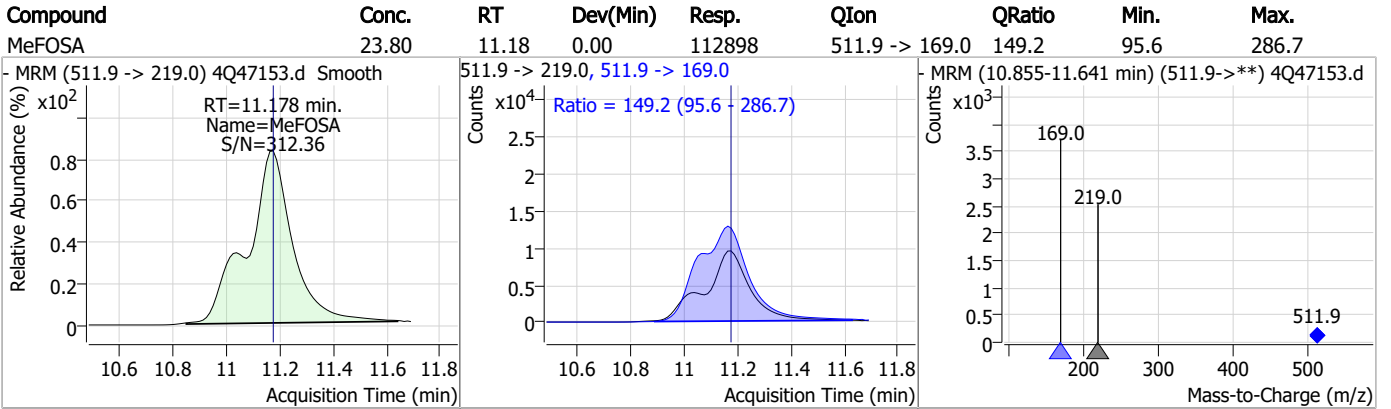


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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

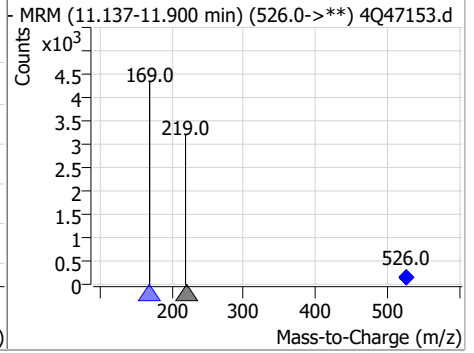
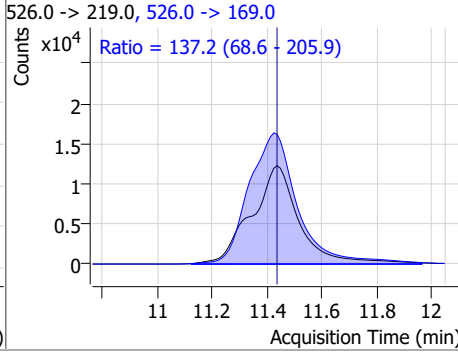
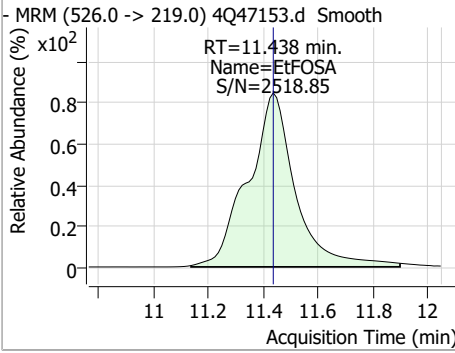


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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOFA	23.97	11.44	0.00	147319	526.0 -> 169.0	137.2	68.6	205.9



7.7.7
7

Manual Integration Approval Summary

Sample Number: S4Q690-IC690 Method: EPA DRAFT 1633
Lab FileID: 4Q47153.D Analyst approved: 07/13/23 14:35 Anna Ludwig
Injection Time: 07/12/23 18:45 Supervisor approved: 07/14/23 09:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.43	Split peak
EtFOSAA	2991-50-6		8.57	Split peak

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Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtje
 07/14/23 09:30

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47154.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/12/2023 7:00:02 PM
 Sample Name : ic690-7
 Vial : P1-A8
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q690.batch.bin
 Sample Information : OP97325,S4Q690,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.861	216.8 -> 171.9	126767	10.00 µg/L	-0.062
M5-PFPeA	4.387	268.3 -> 223.0	58173	5.00 µg/L	-0.012
M5-PFHxA	5.598	318.0 -> 273.0	45920	2.50 µg/L	0.000
M4-PFHpA	6.555	367.1 -> 322.0	32581	2.50 µg/L	0.000
M8-PFOA	7.236	421.1 -> 376.0	50785	2.50 µg/L	0.000
M9-PFNA	7.784	472.1 -> 427.0	22111	1.25 µg/L	-0.014
M6-PFDA	8.292	519.1 -> 474.1	16244	1.25 µg/L	0.000
M7-PFUnDA	8.760	570.0 -> 525.1	19476	1.25 µg/L	0.000
M2-PFDoDA	9.194	615.1 -> 570.0	22695	1.25 µg/L	0.000
M2-PFTeDA	9.962	715.2 -> 670.0	16495	1.25 µg/L	-0.012
M8-FOSA	9.909	506.1 -> 77.8	14419	2.50 µg/L	0.000
M3-PFBS	5.479	302.1 -> 79.9	10632	2.50 µg/L	0.000
M3-PFHxS	7.316	402.1 -> 79.9	7478	2.50 µg/L	-0.013
M8-PFOS	8.430	507.1 -> 79.9	9825	2.50 µg/L	-0.012
M2-4:2FTS	5.284	329.1 -> 80.9	619	5.00 µg/L	0.000
M2-6:2FTS	6.999	429.1 -> 80.9	1339	5.00 µg/L	0.000
M2-8:2FTS	8.078	529.1 -> 80.9	2141	5.00 µg/L	0.000
M3-MeFOSAA	8.362	573.2 -> 419.0	18220	5.00 µg/L	0.000
M3-HFPO-DA	5.965	286.9 -> 168.9	45901	10.00 µg/L	-0.012
M5-EtFOSAA	8.558	589.2 -> 419.0	16953	5.00 µg/L	-0.012
M7-MeFOSE	11.072	623.2 -> 58.9	76712	25.00 µg/L	0.000
M9-EtFOSE	11.356	639.2 -> 58.9	97434	25.00 µg/L	0.000
M5-EtFOSA	11.435	531.1 -> 219.0	10401	2.50 µg/L	0.000
M3-MeFOSA	11.176	515.0 -> 219.0	9814	2.50 µg/L	0.000
13C4-PFOS	8.430	502.8 -> 79.9	11399	2.50 µg/L	0.000
13C3-PFBA	2.866	216.0 -> 172.0	66335	5.00 µg/L	-0.062
18O2-PFHxS	7.315	403.0 -> 83.9	5552	2.50 µg/L	-0.013
13C4-PFOA	7.237	417.1 -> 372.0	62207	2.50 µg/L	0.000
13C2-PFDA	8.292	515.1 -> 470.1	19731	1.25 µg/L	0.000
13C5-PFNA	7.784	468.0 -> 423.0	26773	1.25 µg/L	-0.014
13C2-PFHxA	5.599	315.1 -> 270.0	42379	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.284	329.1 -> 80.9	619	4.97 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C2-6:2FTS	6.999	429.1 -> 80.9	1339	4.90 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C2-8:2FTS	8.078	529.1 -> 80.9	2141	4.82 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C2-PFDoDA	9.194	615.1 -> 570.0	22695	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C2-PFTeDA	9.962	715.2 -> 670.0	16495	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.7%		
13C3-PFBS	5.479	302.1 -> 79.9	10632	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C3-PFHxS	7.316	402.1 -> 79.9	7478	2.40 µg/L	-0.013

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.1%	
13C4-PFBA	2.861	216.8 -> 171.9	126767	10.11 µg/L	-0.062
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C4-PFHpA	6.555	367.1 -> 322.0	32581	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C5-PFHxA	5.598	318.0 -> 273.0	45920	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C5-PFPeA	4.387	268.3 -> 223.0	58173	4.97 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C6-PFDA	8.292	519.1 -> 474.1	16244	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.1%	
13C7-PFUnDA	8.760	570.0 -> 525.1	19476	1.12 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 89.8%	
13C8-FOSA	9.909	506.1 -> 77.8	14419	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C8-PFOA	7.236	421.1 -> 376.0	50785	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C8-PFOS	8.430	507.1 -> 79.9	9825	2.48 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C9-PFNA	7.784	472.1 -> 427.0	22111	1.24 µg/L	-0.014
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.8%	
d3-MeFOSAA	8.362	573.2 -> 419.0	18220	4.86 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.2%	
13C3-HFPO-DA	5.965	286.9 -> 168.9	45901	10.16 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
d3-MeFOSA	11.176	515.0 -> 219.0	9814	2.28 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.3%	
d5-EtFOSAA	8.558	589.2 -> 419.0	16953	5.13 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.5%	
d7-MeFOSE	11.072	623.2 -> 58.9	76712	25.22 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
d9-EtFOSE	11.356	639.2 -> 58.9	97434	24.06 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.2%	
d5-EtFOSA	11.435	531.1 -> 219.0	10401	2.23 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.1%	
Target Compounds					QValue
4:2FTS	5.272	327.1 -> 307.0	106887	97.26 µg/L	96
		327.1 -> 80.9	44640		
6:2FTS	6.999	427.1 -> 407.0	153191	98.98 µg/L	97
		427.1 -> 80.9	55448		
8:2FTS	8.079	527.1 -> 507.0	125703	102.59 µg/L	88
		527.1 -> 80.8	50176		
EtFOSAA	8.572	584.2 -> 419.1	72881	26.67 µg/L	m 95
		584.2 -> 526.0	32666		
FOSA	9.899	498.1 -> 77.9	169273	26.59 µg/L	100
		498.1 -> 478.0	4846		
MeFOSAA	8.362	570.1 -> 419.0	86718	26.68 µg/L	m 99
		570.1 -> 483.0	16138		
PFBA	2.870	212.8 -> 168.9	413339	108.39 µg/L	100
PFBS	5.480	298.7 -> 79.9	102028	23.02 µg/L	94
		298.7 -> 98.8	39627		
PFDA	8.292	512.9 -> 469.0	463123	27.44 µg/L	99
		512.9 -> 219.0	89826		
PFDoDA	9.194	613.1 -> 569.0	497551	27.23 µg/L	97
		613.1 -> 319.0	79657		
PFDS	9.346	599.0 -> 79.9	69822	25.15 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	36362			
PFHpA	6.556	363.1 -> 319.0	550835	27.47	µg/L	98
		363.1 -> 169.0	97761			
PFHpS	7.911	449.0 -> 79.9	95785	24.39	µg/L	94
		449.0 -> 98.9	51913			
PFHxA	5.601	313.0 -> 269.0	484439	26.95	µg/L	99
		313.0 -> 118.9	14764			
PFHxS	7.317	398.7 -> 79.9	81387	24.43	µg/L	m 98
		398.7 -> 98.9	41437			
PFNA	7.785	463.0 -> 419.0	458399	28.13	µg/L	99
		463.0 -> 219.0	106120			
PFNS	8.911	548.8 -> 79.9	70217	24.00	µg/L	98
		548.8 -> 98.9	36961			
PFOA	7.238	413.0 -> 369.0	796152	27.71	µg/L	100
		413.0 -> 169.0	153992			
PFOS	8.431	498.9 -> 79.9	122212	23.37	µg/L	m 83
		498.9 -> 98.8	60726			
PFPeA	4.389	263.0 -> 219.0	897772	54.73	µg/L	100
PFPeS	6.570	349.1 -> 79.9	69273	25.17	µg/L	100
		349.1 -> 98.9	31914			
PFTeDA	9.963	713.1 -> 669.0	444176	26.95	µg/L	99
		713.1 -> 168.9	43206			
PFTrDA	9.604	663.0 -> 619.0	530244	26.23	µg/L	98
		663.0 -> 168.9	65041			
PFUnDA	8.760	563.1 -> 519.0	426780	27.62	µg/L	100
		563.1 -> 269.1	91219			
11CI-PF3OUdS	9.631	630.9 -> 450.9	632339	51.63	µg/L	100
		632.9 -> 452.9	192397			
9CI-PF3ONS	8.775	530.8 -> 351.0	781571	47.60	µg/L	98
		532.8 -> 353.0	241304			
ADONA	6.818	376.9 -> 250.9	1746995	50.84	µg/L	99
		376.9 -> 84.8	440625			
HFPO-DA	5.966	284.9 -> 168.9	252445	53.25	µg/L	99
		284.9 -> 184.9	28658			
3:3FTCA	3.823	241.0 -> 177.0	122591	139.70	µg/L	97
		241.0 -> 117.0	10686			
5:3FTCA	6.281	341.0 -> 237.1	1997452	668.74	µg/L	100
		341.0 -> 217.0	1422049			
7:3FTCA	7.774	441.0 -> 316.9	1122731	681.01	µg/L	99
		441.0 -> 336.9	2616210			
EtFOSA	11.438	526.0 -> 219.0	284842	53.14	µg/L	99
		526.0 -> 169.0	387671			
EtFOSE	11.370	630.0 -> 58.9	595517	126.00	µg/L	100
MeFOSA	11.178	511.9 -> 219.0	229116	55.91	µg/L	m 73
		511.9 -> 169.0	345563			
MeFOSE	11.085	616.1 -> 58.9	450886	133.08	µg/L	100
PFDoS	10.102	699.1 -> 79.9	59261	25.92	µg/L	97
		699.1 -> 98.8	34266			
NFDHA	5.468	295.0 -> 201.0	54423	51.63	µg/L	98
		295.0 -> 84.9	13180			
PFMBA	4.797	279.0 -> 85.1	478091	54.18	µg/L	100
PFMPA	3.499	229.0 -> 84.9	456113	54.45	µg/L	100
PFEESA	6.022	314.8 -> 134.9	649752	47.87	µg/L	99
		314.8 -> 82.9	20734			

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

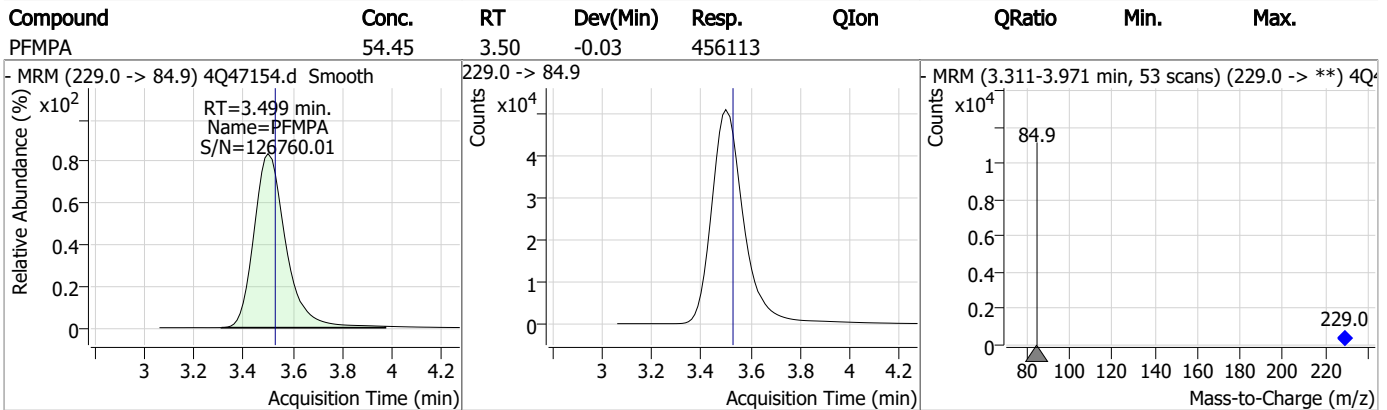
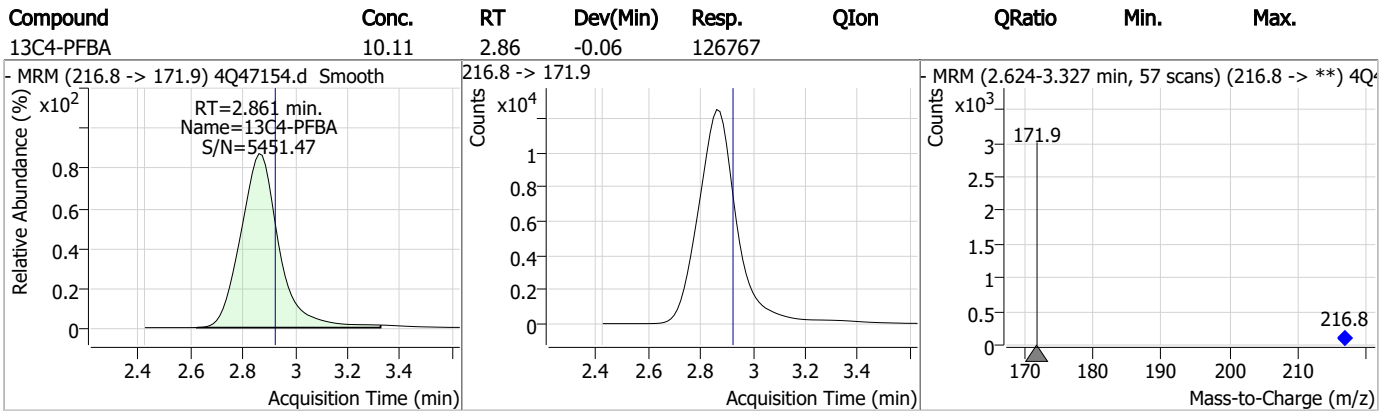
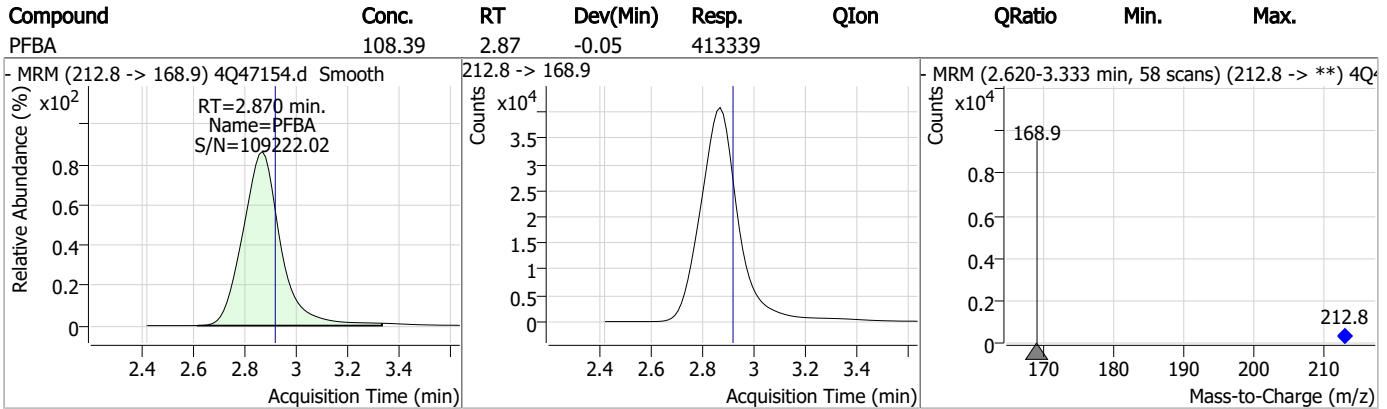
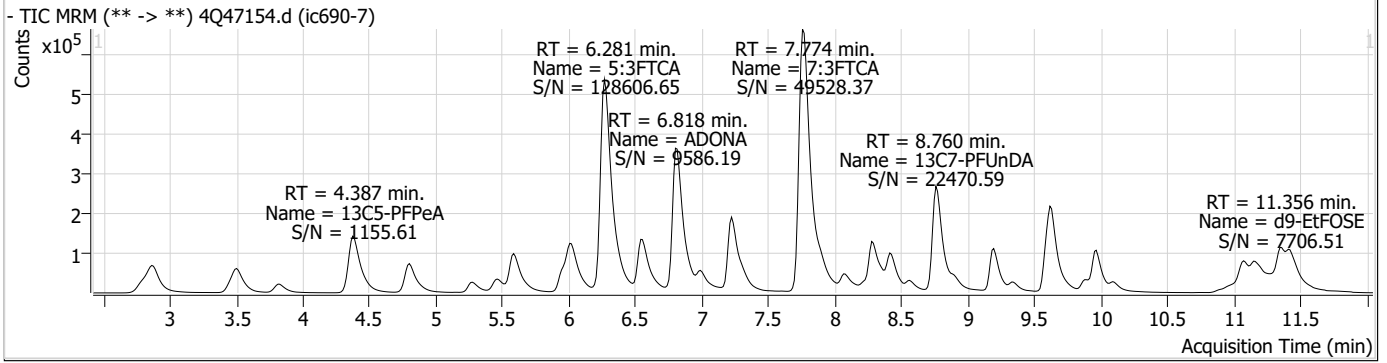
Perfluorinated Compounds by LC/MS/MS

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

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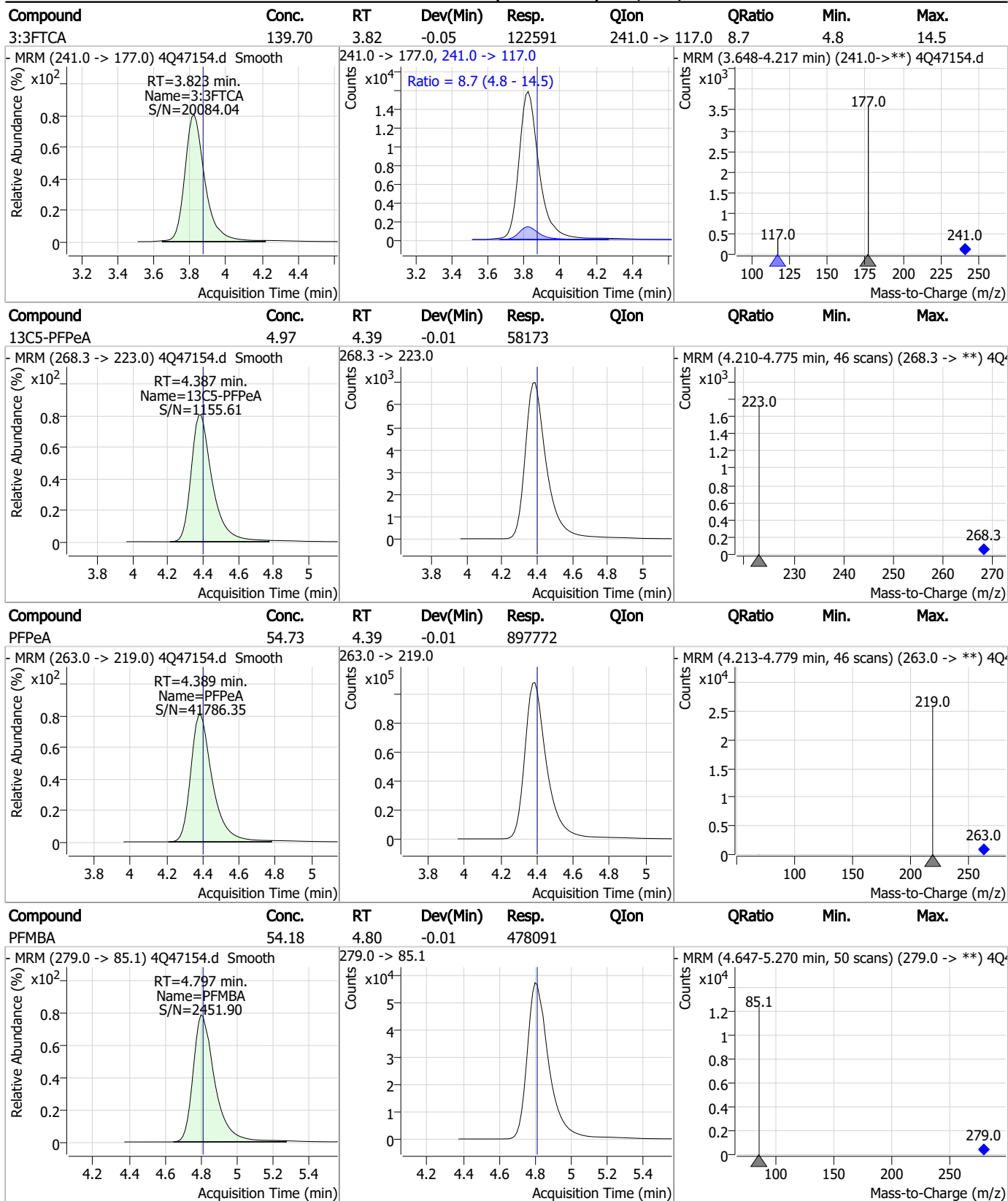
Perfluorinated Compounds by LC/MS/MS



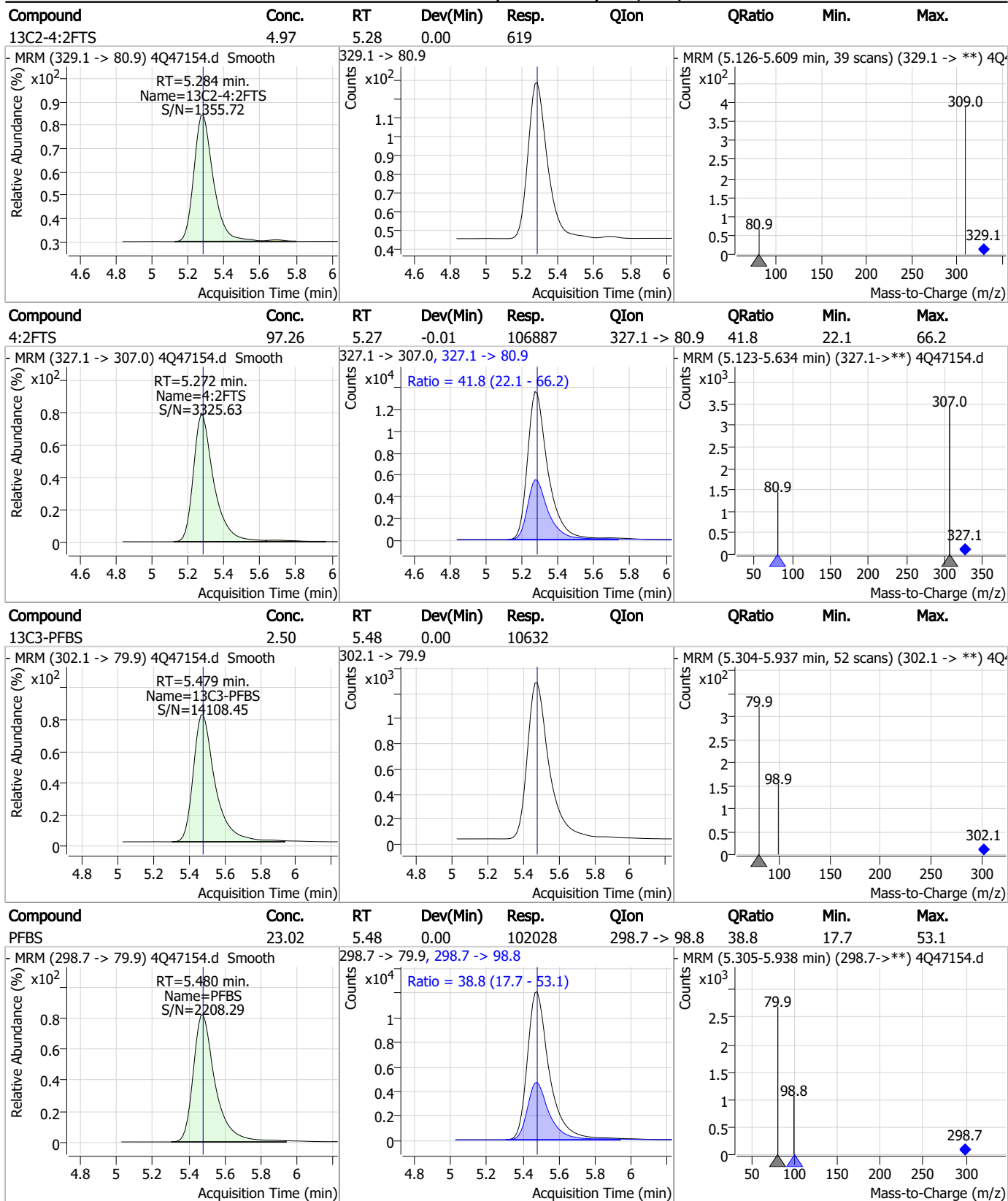
7.7.8

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Perfluorinated Compounds by LC/MS/MS



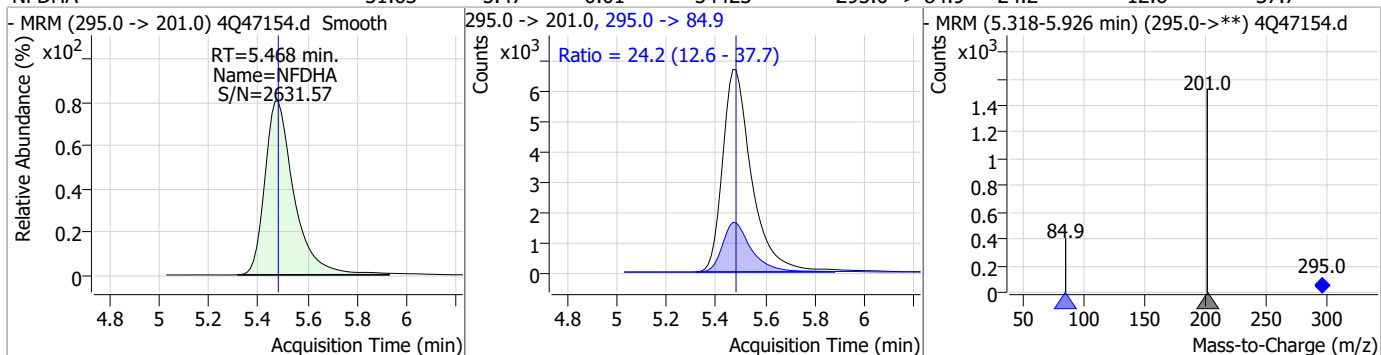
Perfluorinated Compounds by LC/MS/MS



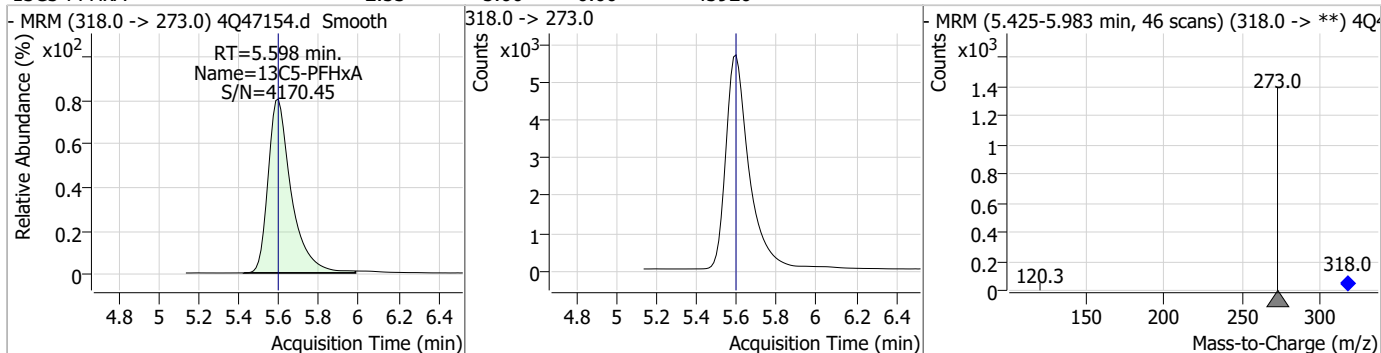
7.7.8
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Perfluorinated Compounds by LC/MS/MS

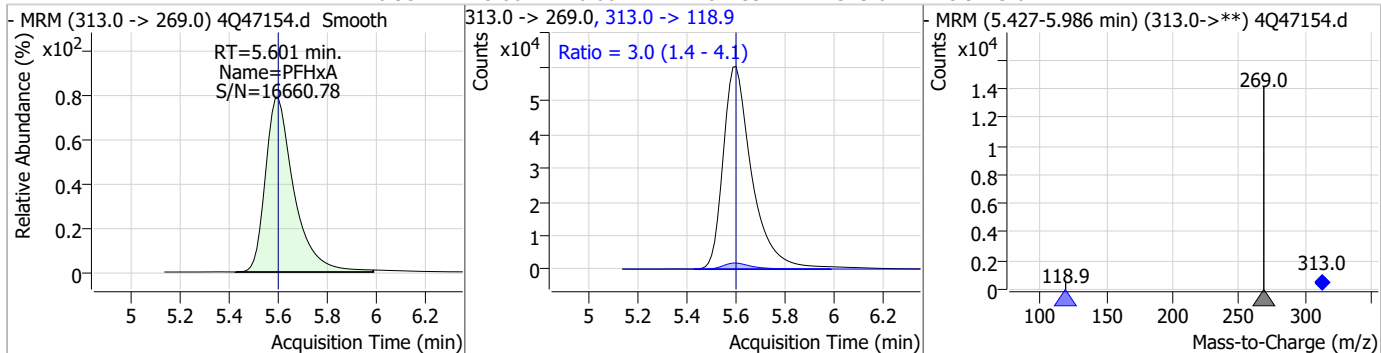
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	51.63	5.47	-0.01	54423	295.0 -> 84.9	24.2	12.6	37.7



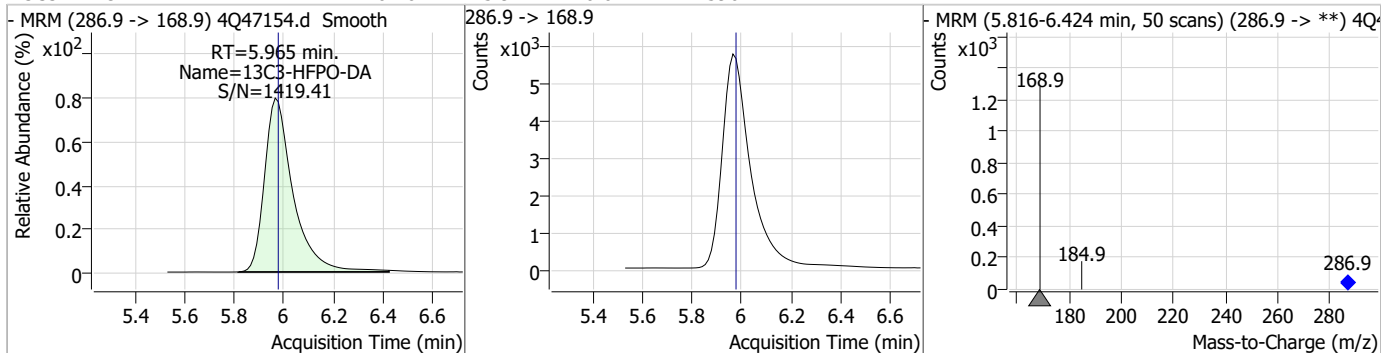
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.53	5.60	0.00	45920				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	26.95	5.60	0.00	484439	313.0 -> 118.9	3.0	1.4	4.1

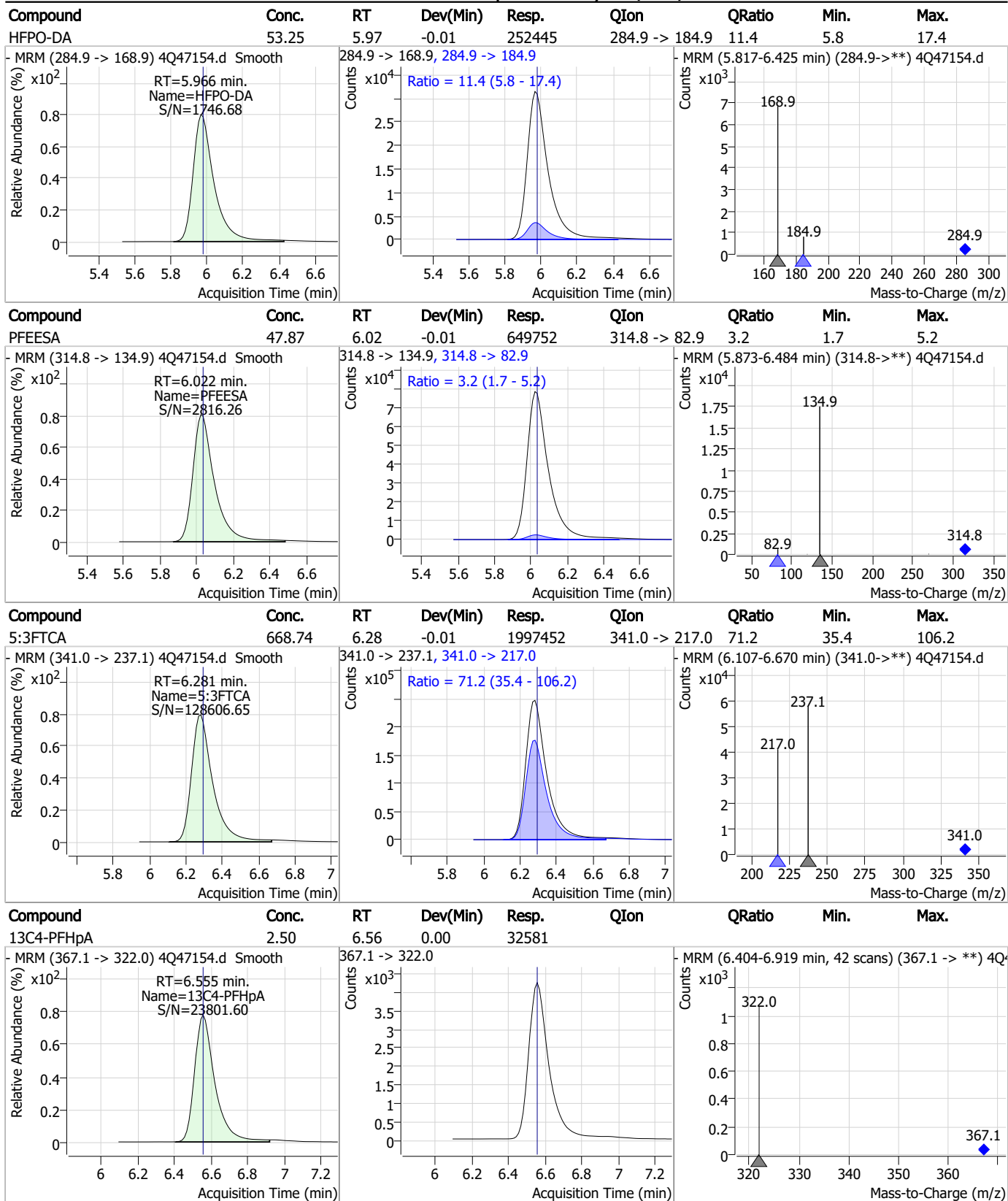


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.16	5.97	-0.01	45901				



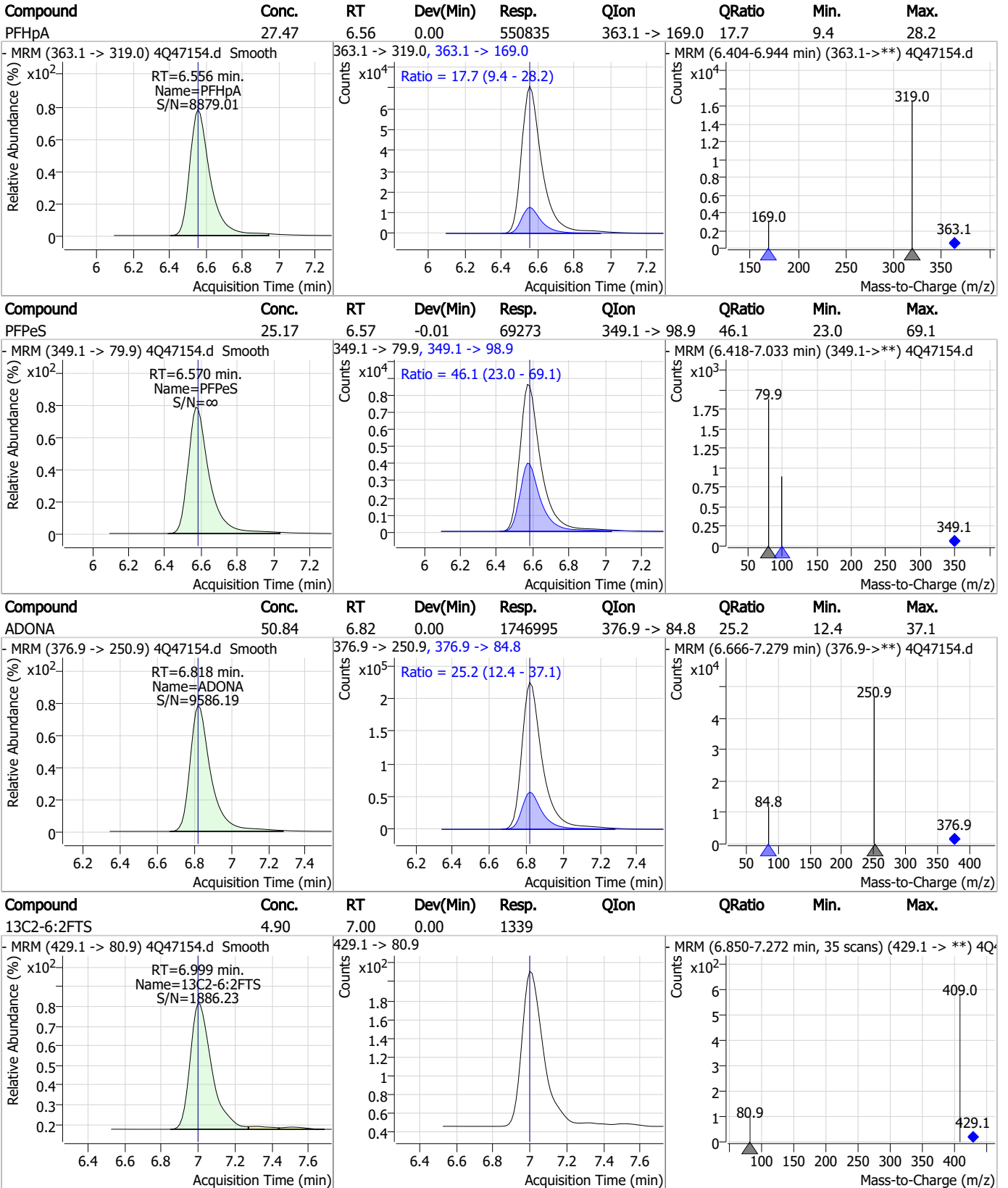
7.7.8
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Perfluorinated Compounds by LC/MS/MS



7.7.8
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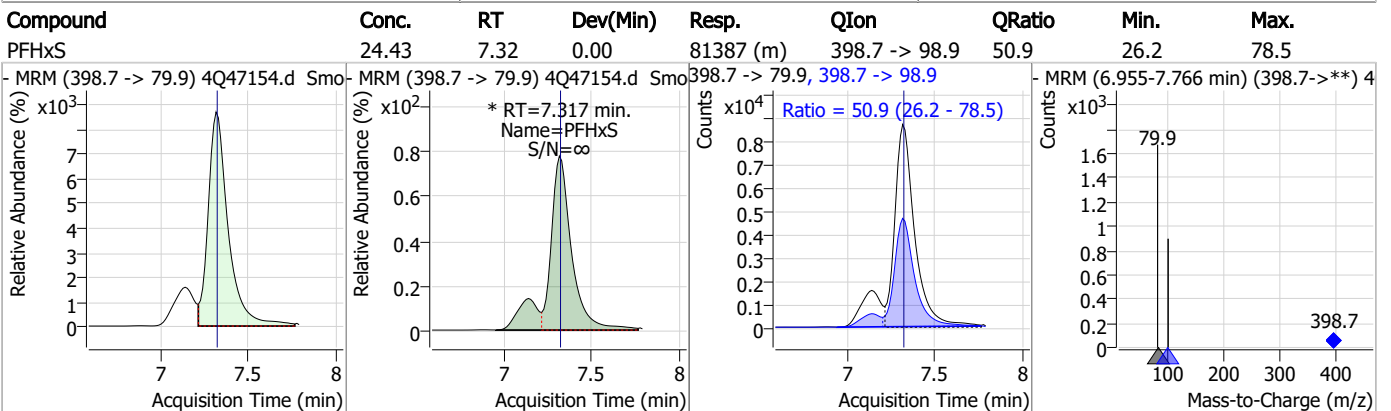
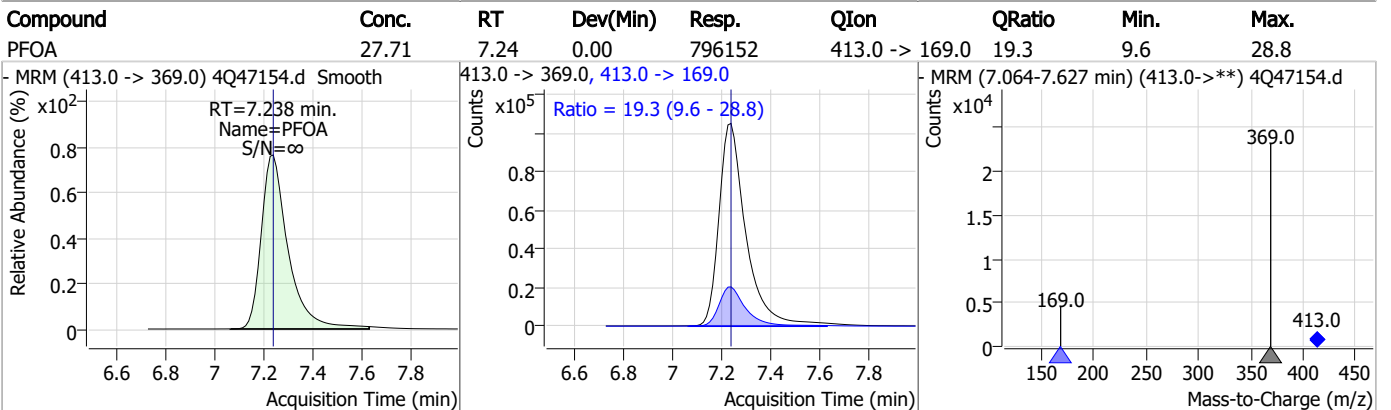
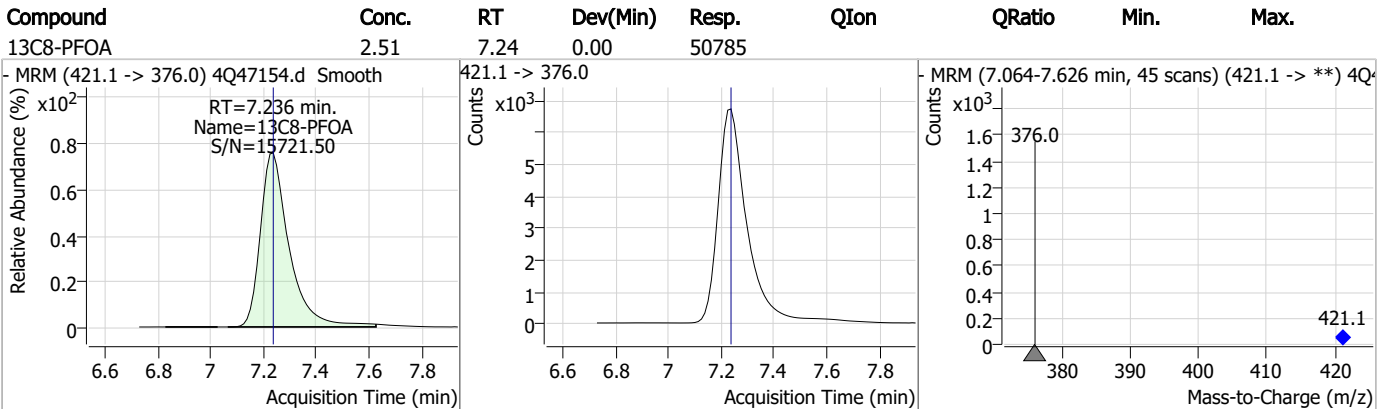
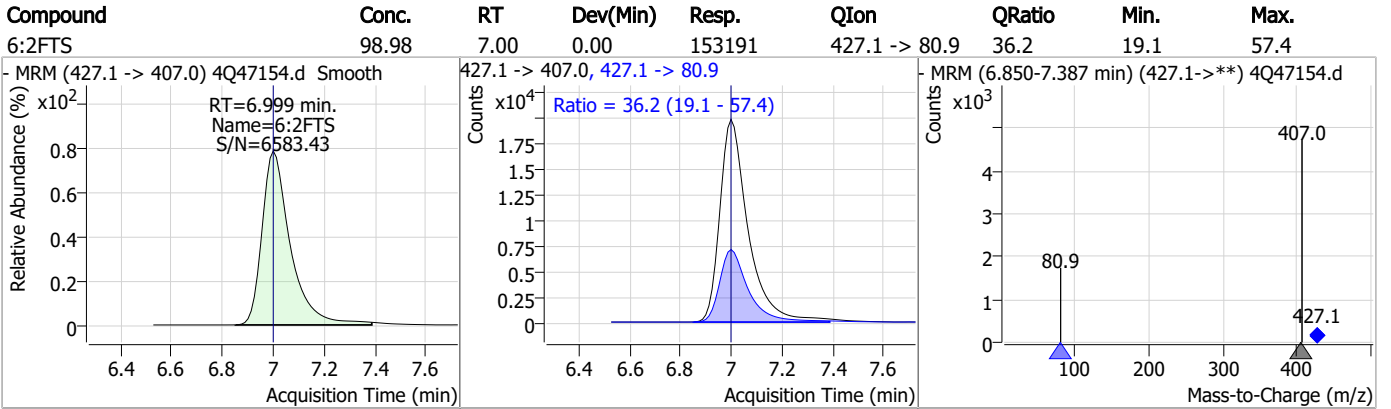
Perfluorinated Compounds by LC/MS/MS



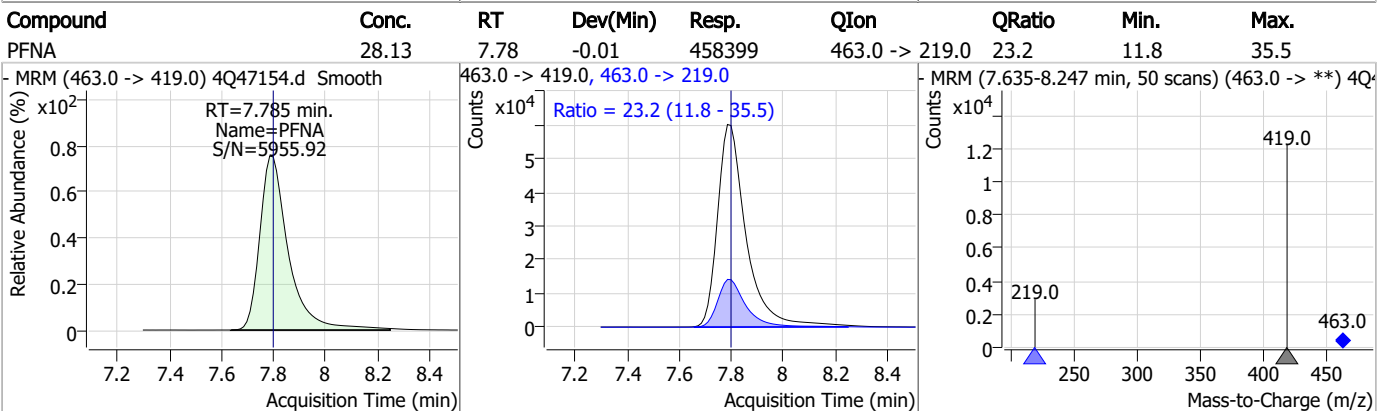
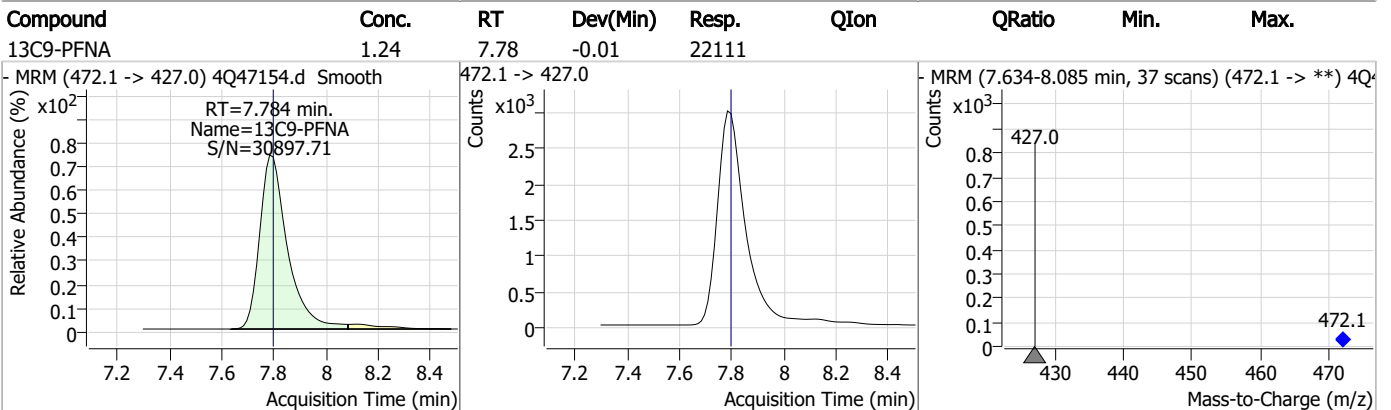
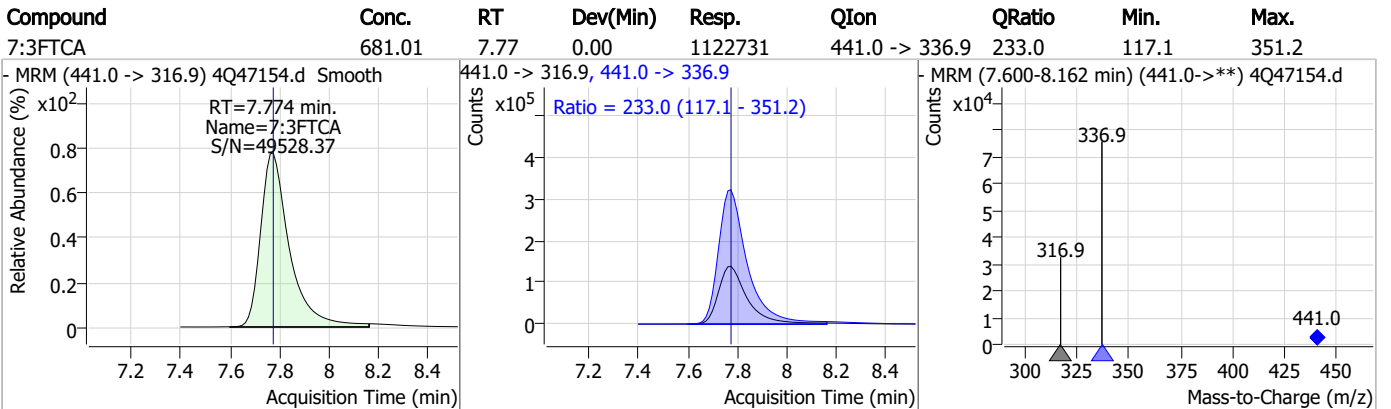
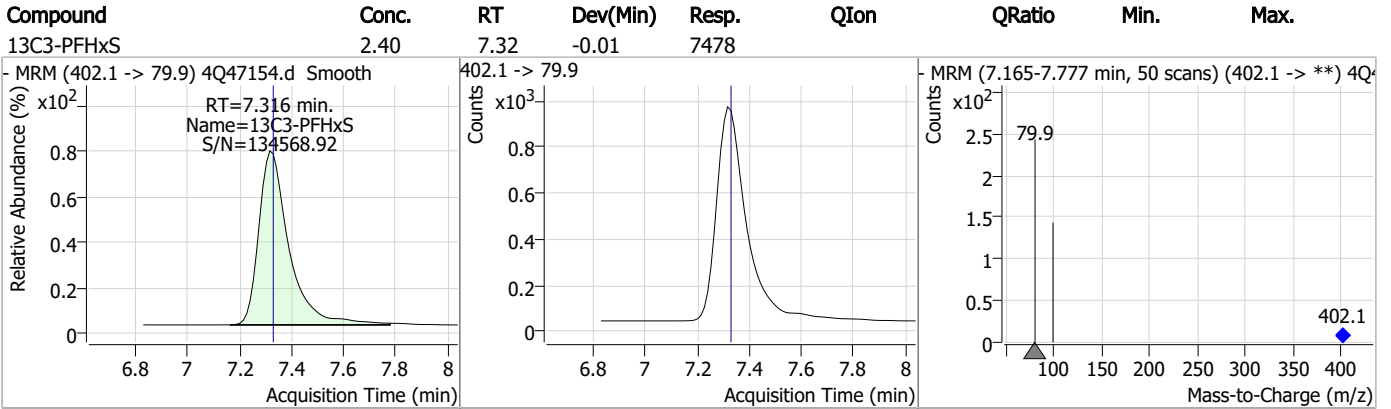
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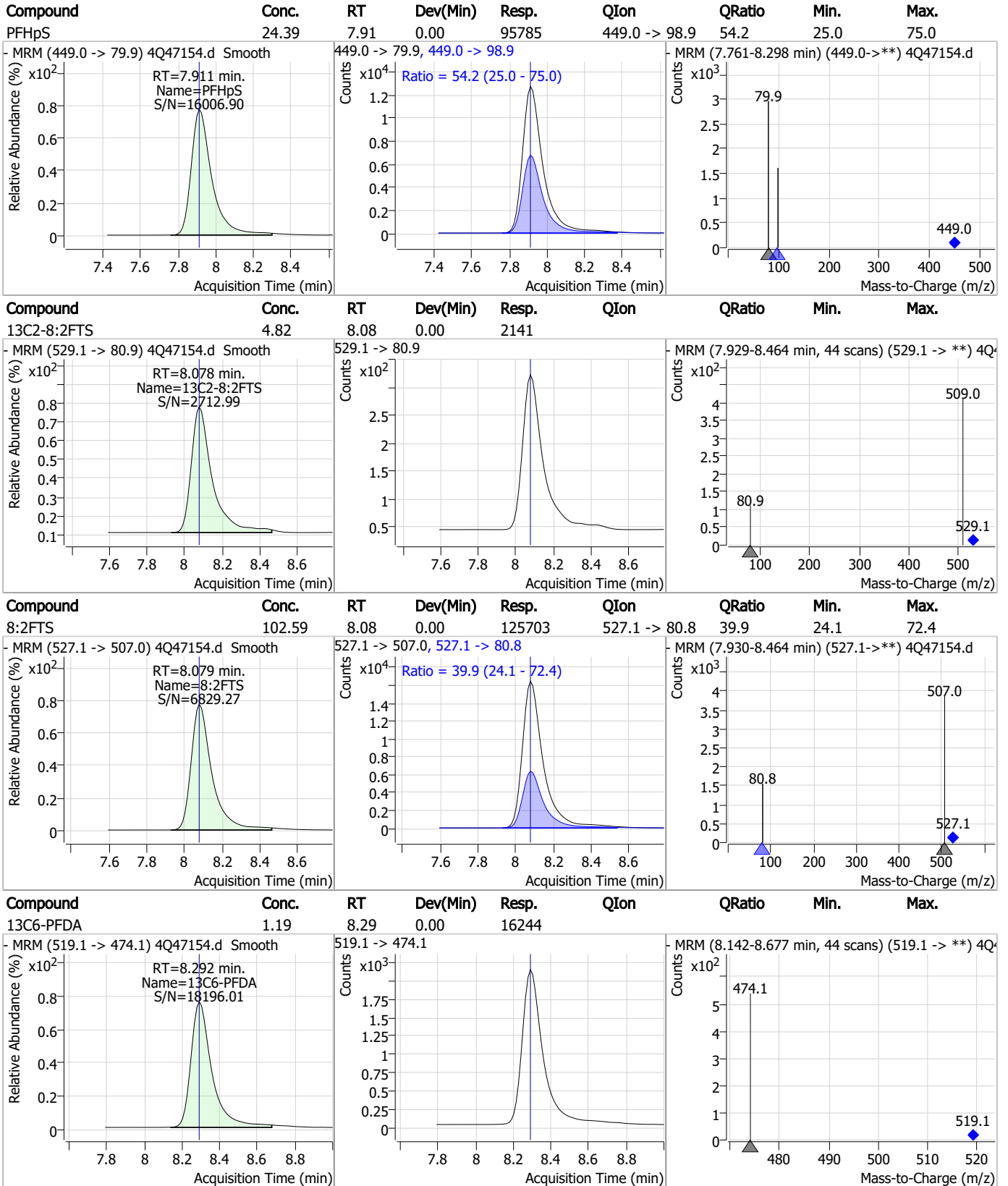
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



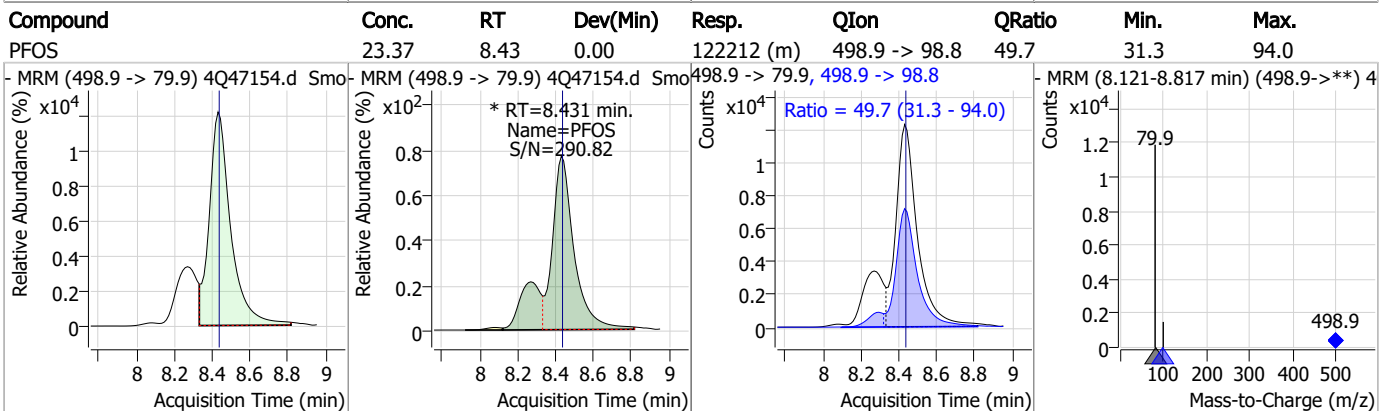
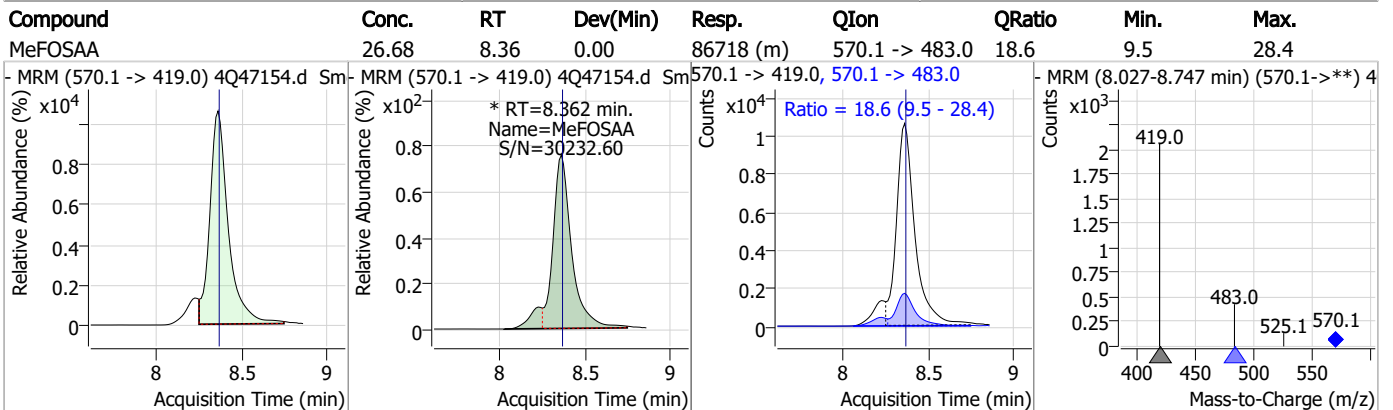
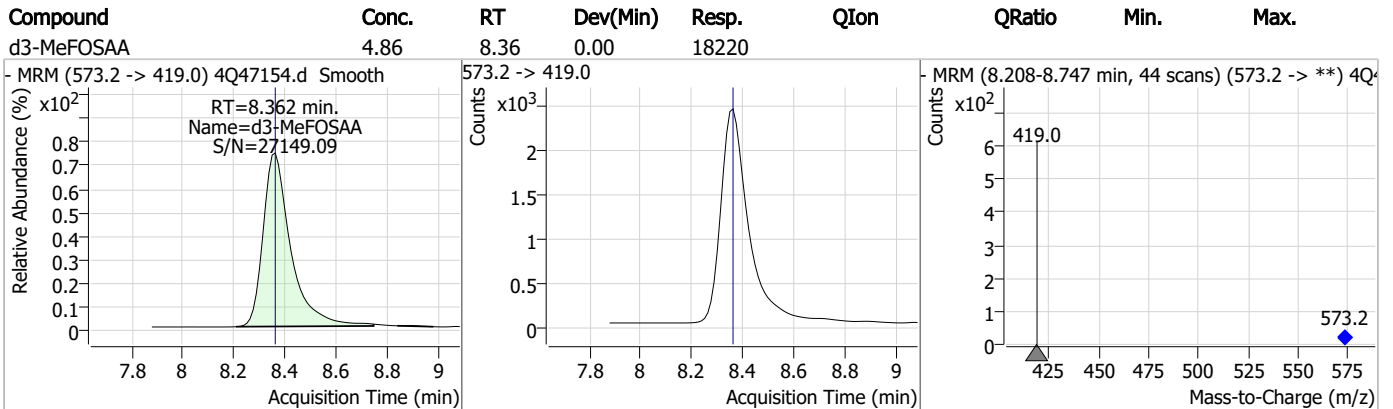
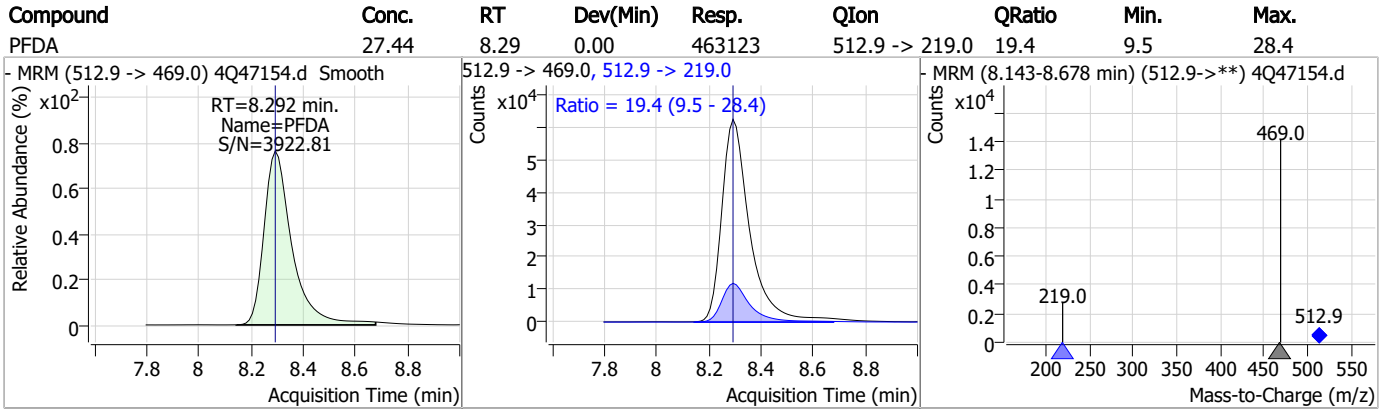
Perfluorinated Compounds by LC/MS/MS



7.7.8

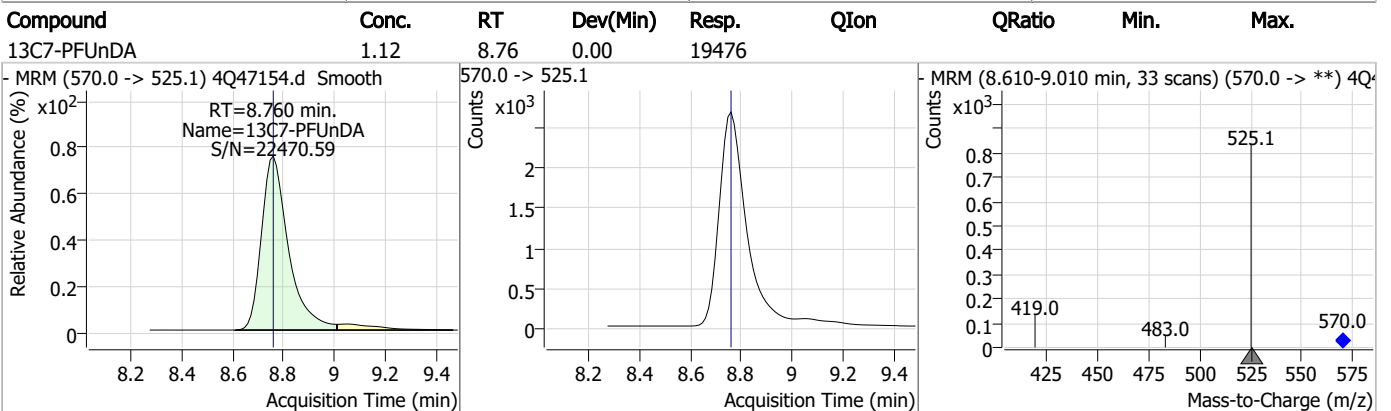
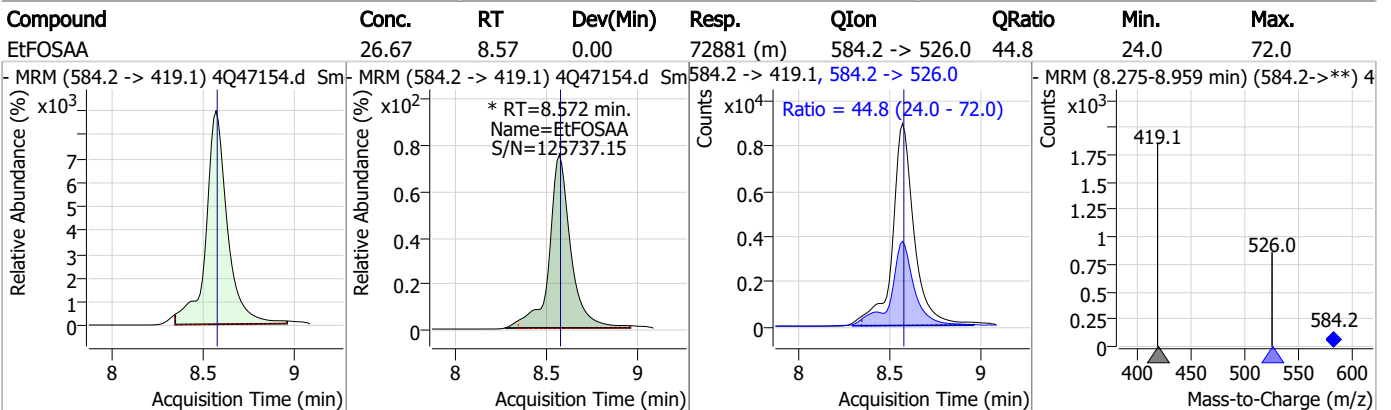
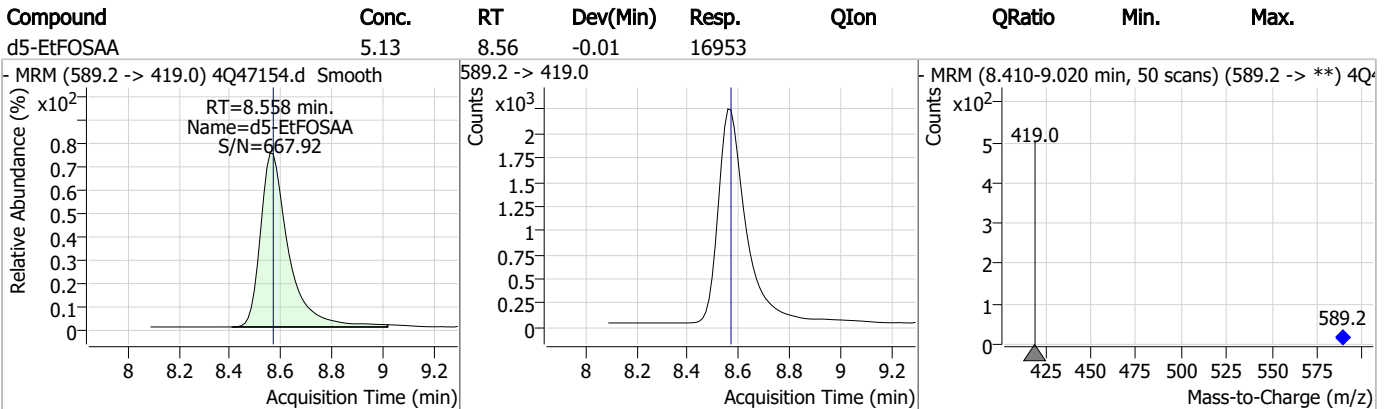
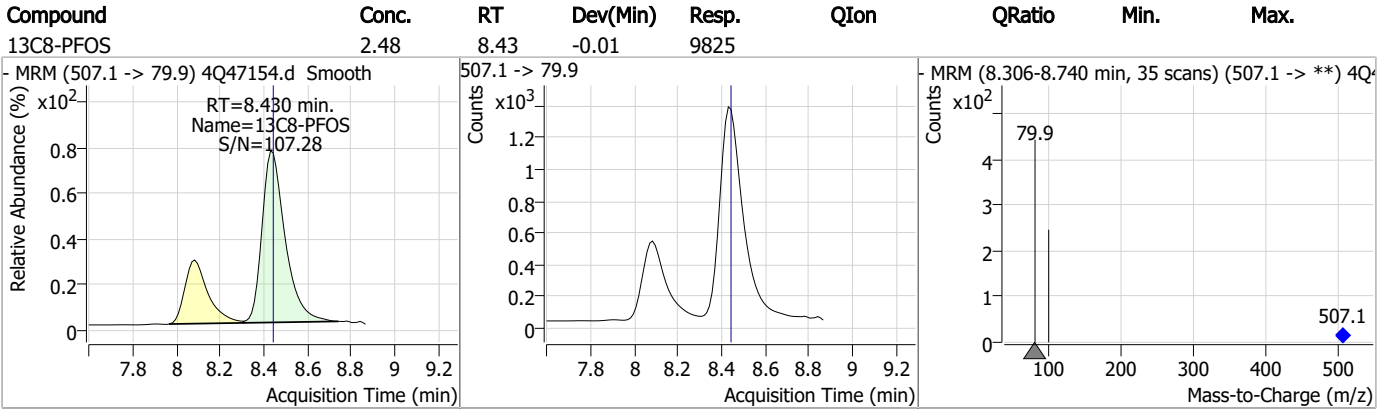
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Perfluorinated Compounds by LC/MS/MS

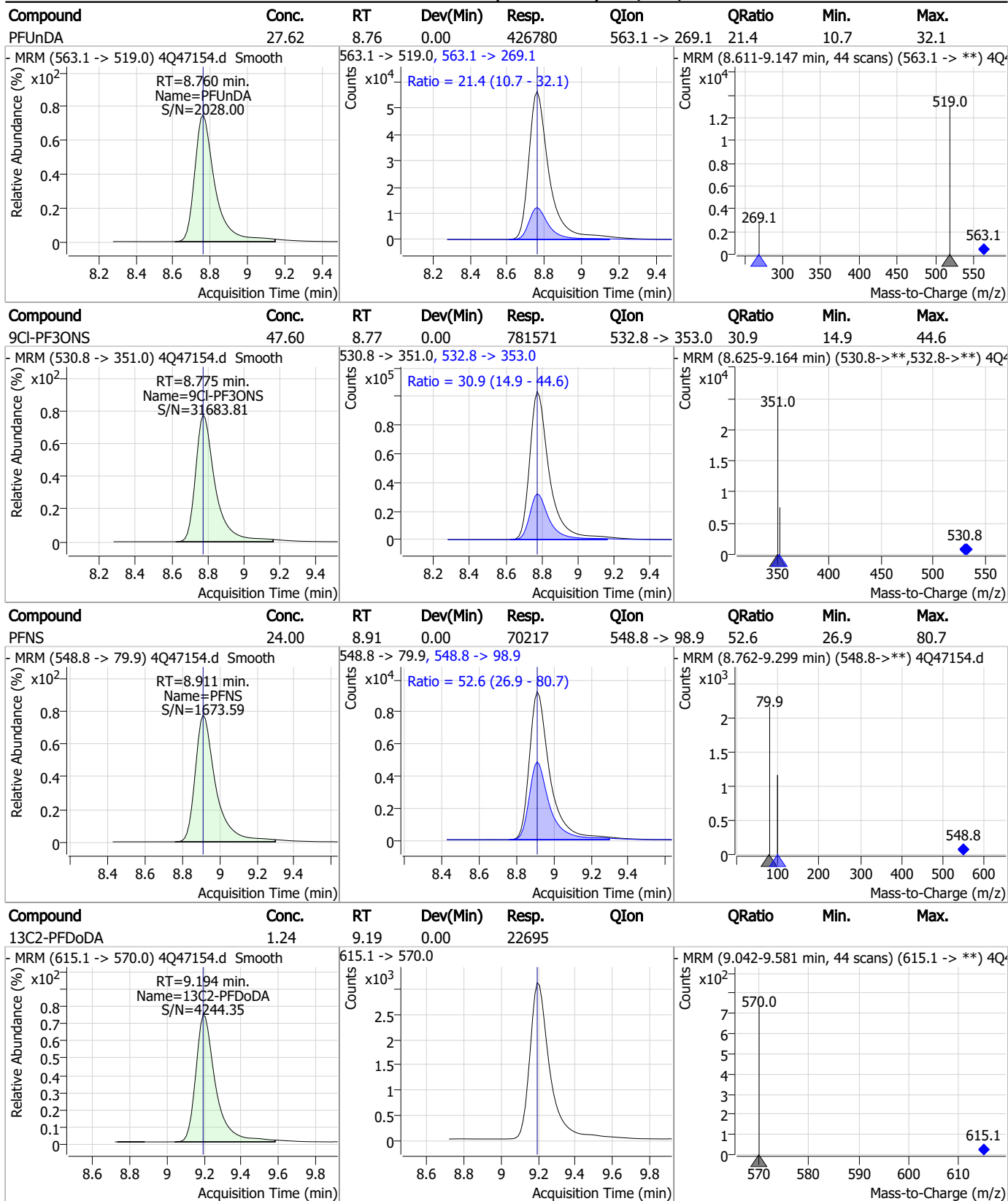


7.7.8
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Perfluorinated Compounds by LC/MS/MS

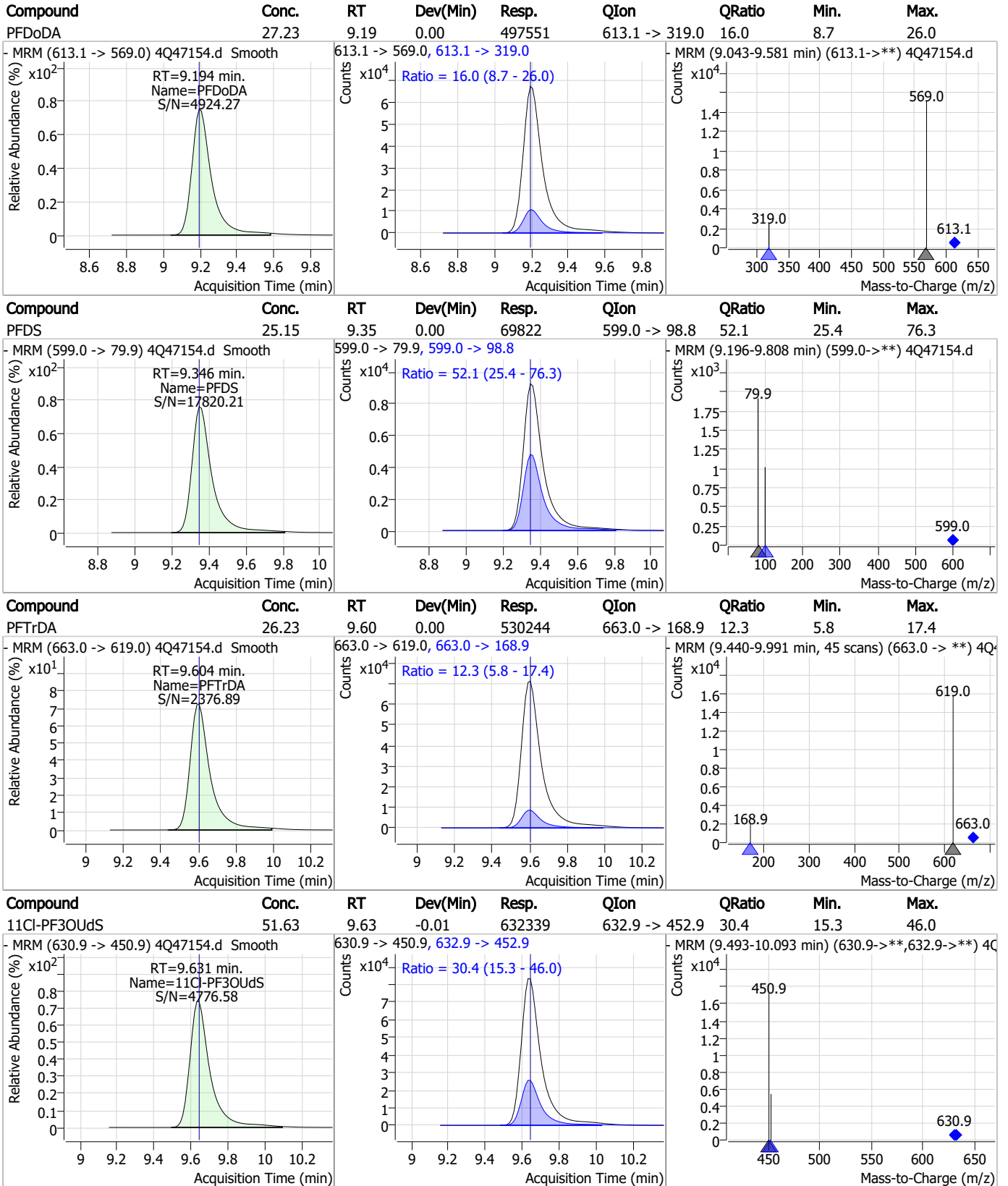


Perfluorinated Compounds by LC/MS/MS



7.7.8
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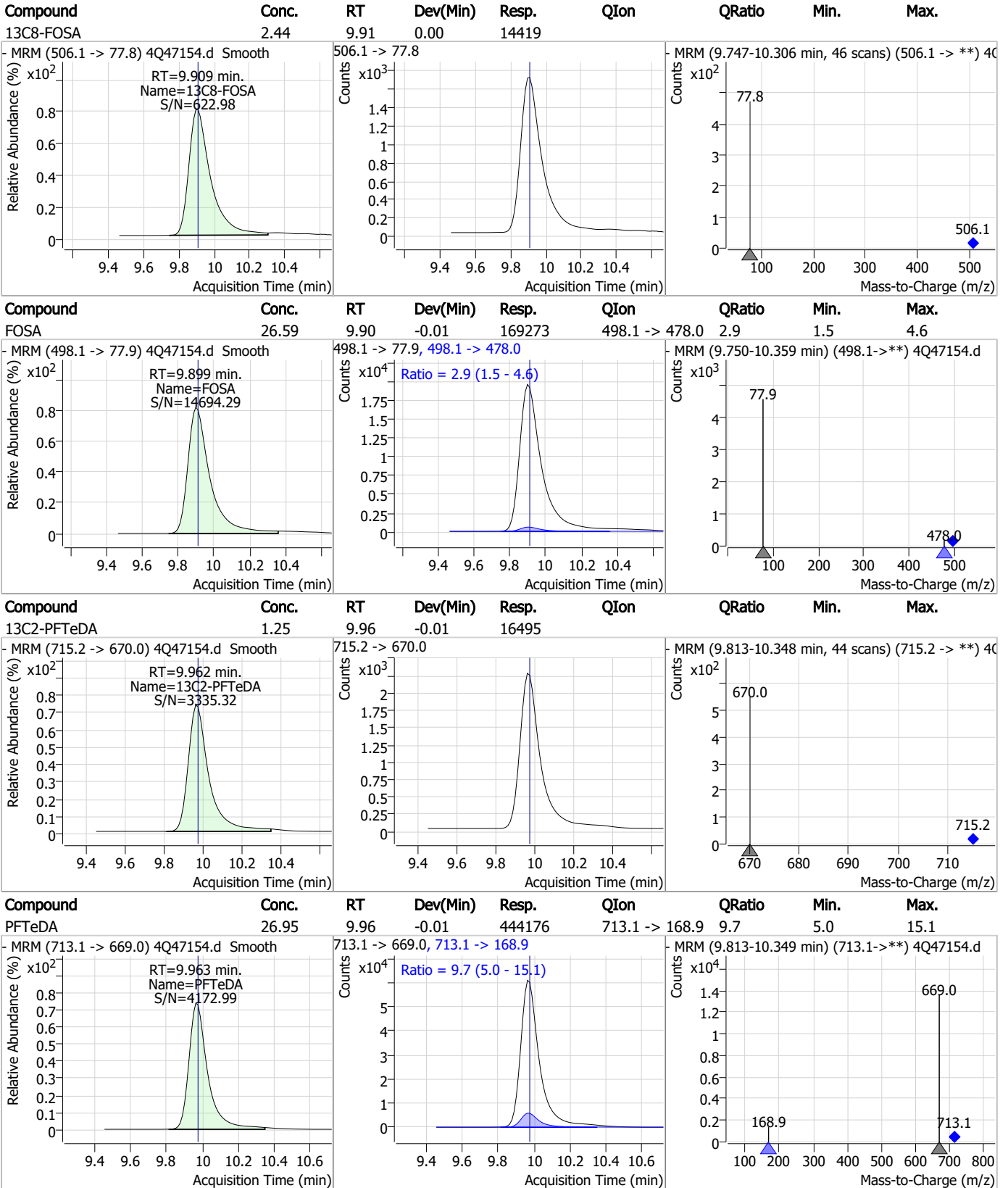
Perfluorinated Compounds by LC/MS/MS



7.7.8

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Perfluorinated Compounds by LC/MS/MS



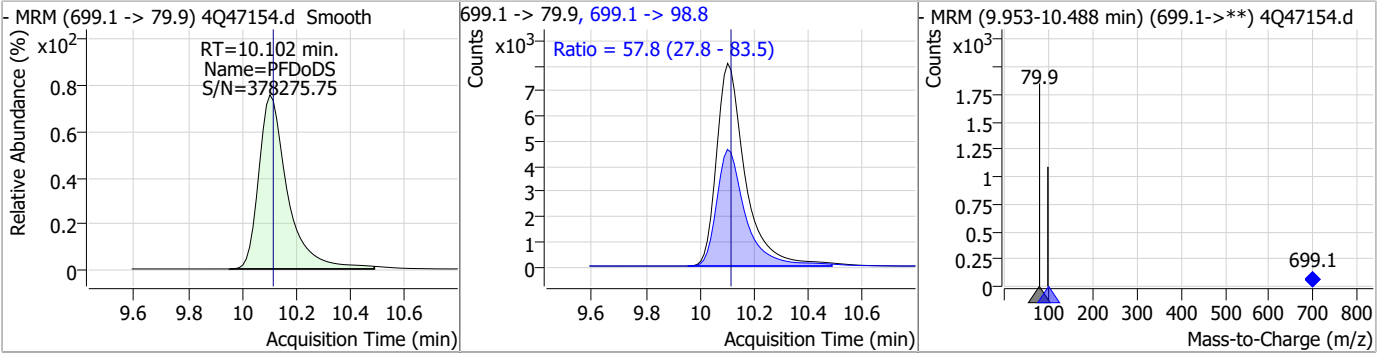
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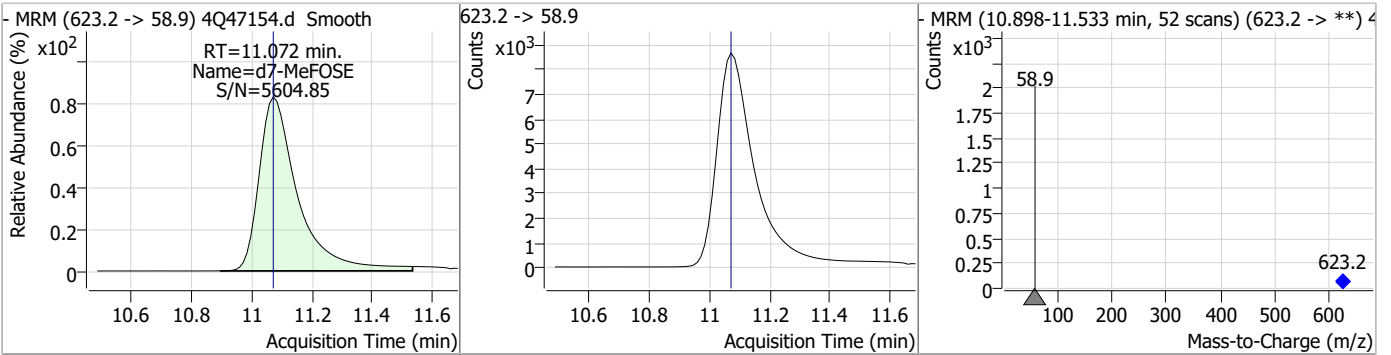


Perfluorinated Compounds by LC/MS/MS

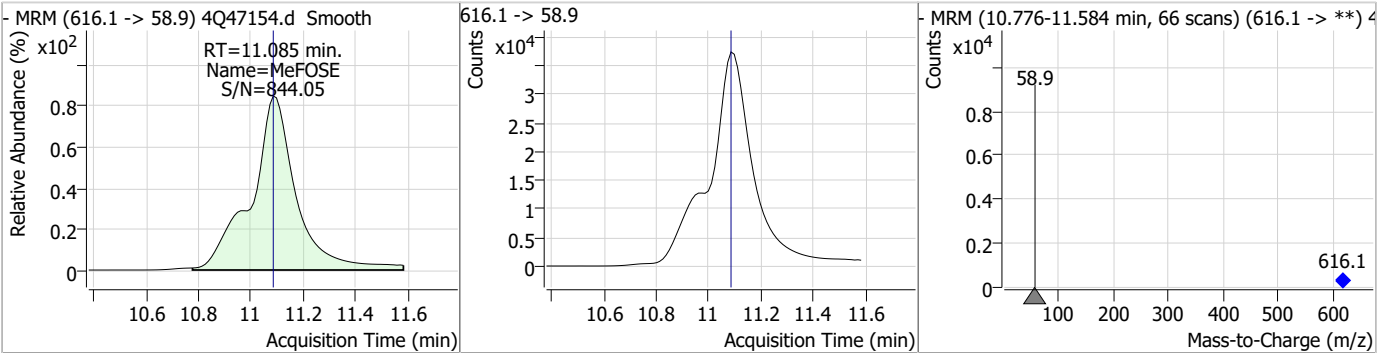
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	25.92	10.10	-0.01	59261	699.1 -> 98.8	57.8	27.8	83.5



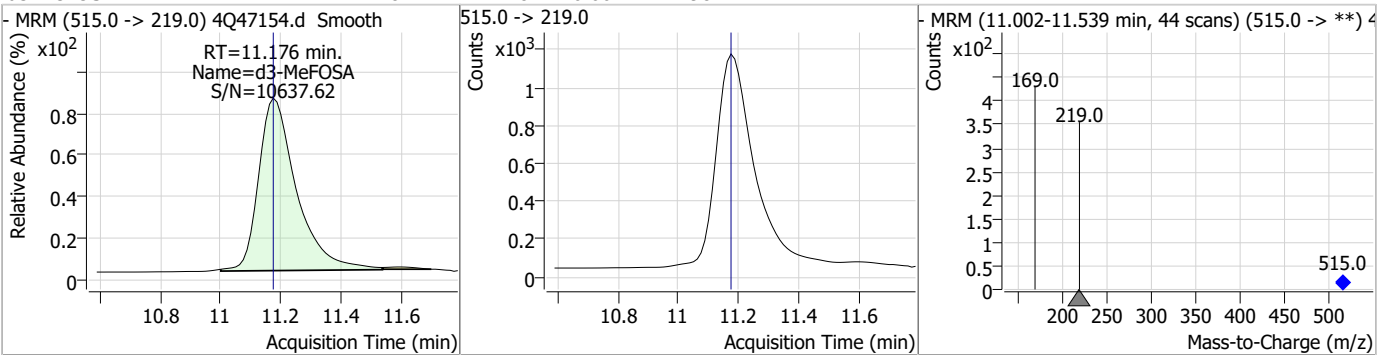
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.22	11.07	0.00	76712				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	133.08	11.09	0.00	450886				

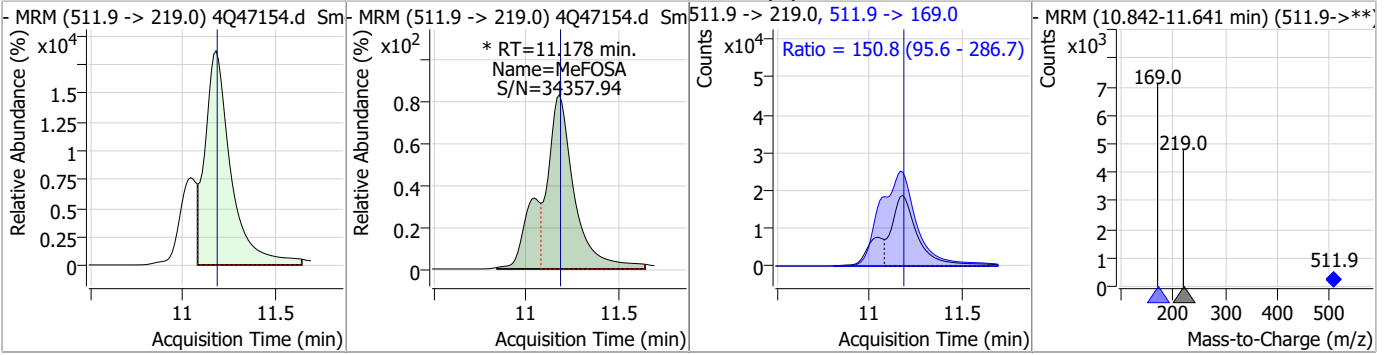


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.28	11.18	0.00	9814				

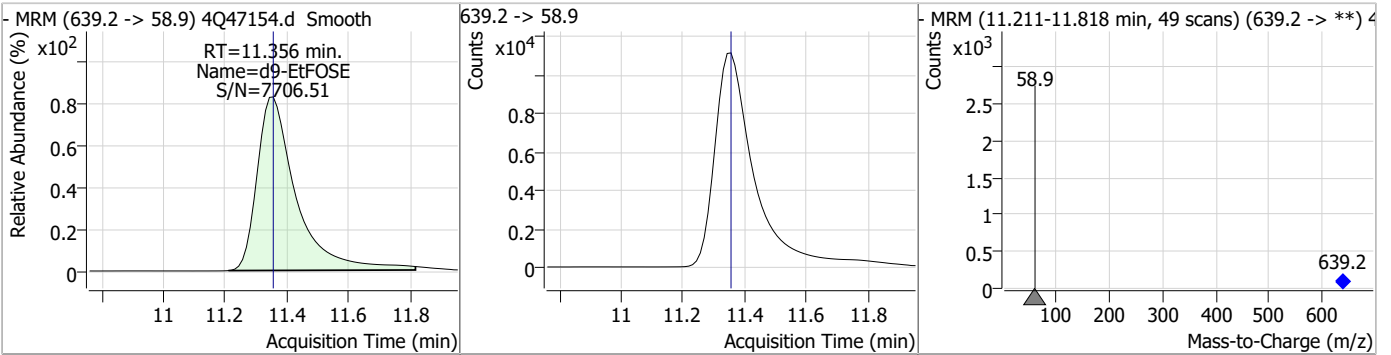


Perfluorinated Compounds by LC/MS/MS

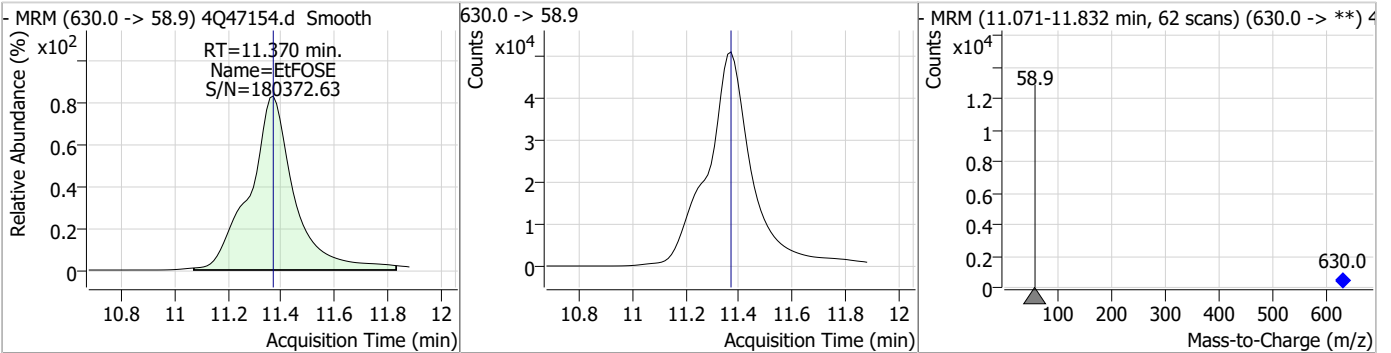
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	55.91	11.18	0.00	229116 (m)	511.9 -> 169.0	150.8	95.6	286.7



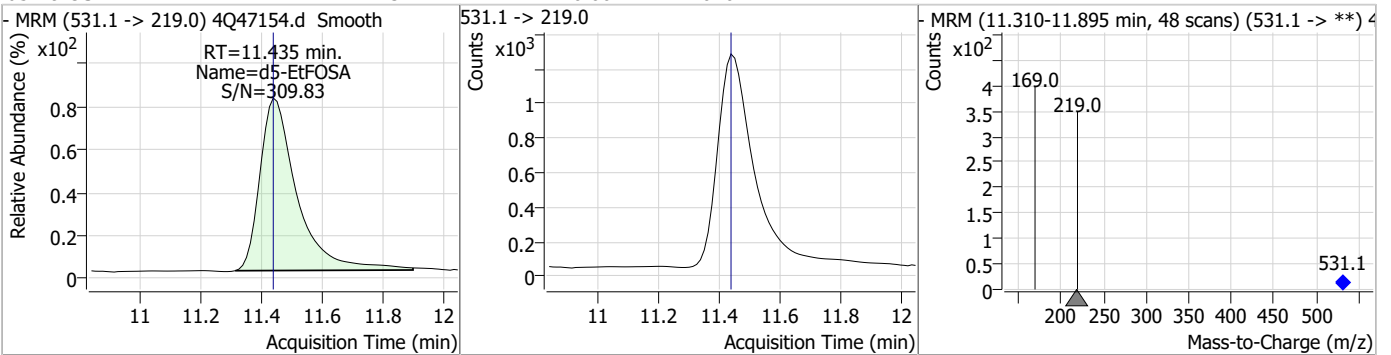
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.06	11.36	0.00	97434				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	126.00	11.37	0.00	595517				



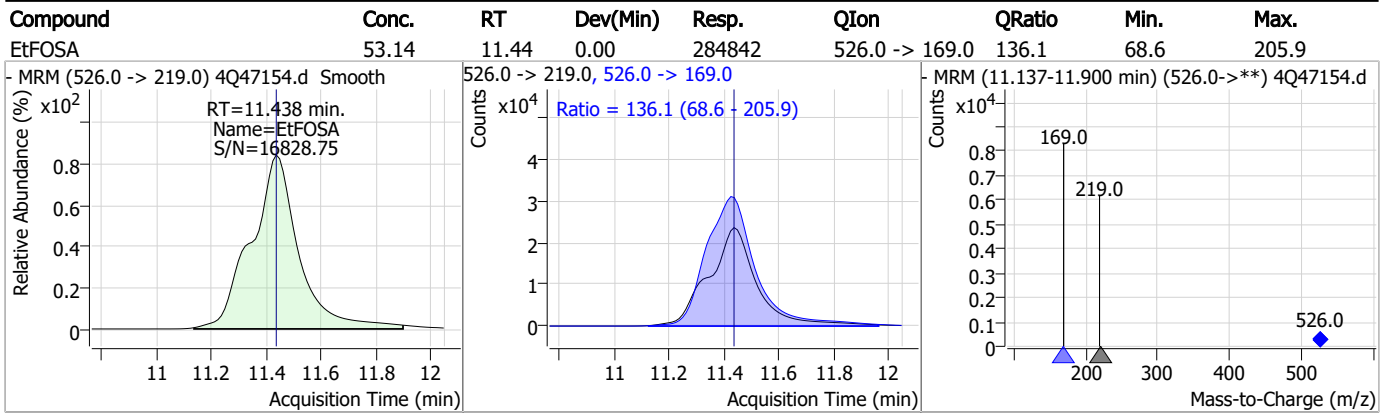
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.23	11.44	0.00	10401				



7.7.8

7

Perfluorinated Compounds by LC/MS/MS



7.7.8
7

Manual Integration Approval Summary

Sample Number: S4Q690-IC690 Method: EPA DRAFT 1633
Lab FileID: 4Q47154.D Analyst approved: 07/13/23 14:35 Anna Ludwig
Injection Time: 07/12/23 19:00 Supervisor approved: 07/14/23 09:30 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
MeFOSAA	2355-31-9		8.36	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.43	Split peak
EtFOSAA	2991-50-6		8.57	Split peak
MeFOSA	31506-32-8		11.18	Split peak

7.7.8.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47155.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/12/2023 7:14:48 PM
 Sample Name : ic690-8
 Vial : P1-A9
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q690.batch.bin
 Sample Information : OP97325,S4Q690,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.874	216.8 -> 171.9	117083	10.00 µg/L	-0.050
M5-PFPeA	4.387	268.3 -> 223.0	57997	5.00 µg/L	-0.012
M5-PFHxA	5.598	318.0 -> 273.0	45251	2.50 µg/L	0.000
M4-PFHpA	6.555	367.1 -> 322.0	32220	2.50 µg/L	0.000
M8-PFOA	7.236	421.1 -> 376.0	49084	2.50 µg/L	0.000
M9-PFNA	7.784	472.1 -> 427.0	22291	1.25 µg/L	-0.014
M6-PFDA	8.292	519.1 -> 474.1	15395	1.25 µg/L	0.000
M7-PFUnDA	8.760	570.0 -> 525.1	18973	1.25 µg/L	0.000
M2-PFDoDA	9.194	615.1 -> 570.0	23455	1.25 µg/L	0.000
M2-PFTeDA	9.974	715.2 -> 670.0	17548	1.25 µg/L	0.000
M8-FOSA	9.909	506.1 -> 77.8	13847	2.50 µg/L	0.000
M3-PFBS	5.479	302.1 -> 79.9	9977	2.50 µg/L	0.000
M3-PFHxS	7.316	402.1 -> 79.9	7503	2.50 µg/L	-0.013
M8-PFOS	8.442	507.1 -> 79.9	9513	2.50 µg/L	0.000
M2-4:2FTS	5.272	329.1 -> 80.9	655	5.00 µg/L	-0.012
M2-6:2FTS	6.999	429.1 -> 80.9	1434	5.00 µg/L	0.000
M2-8:2FTS	8.078	529.1 -> 80.9	2355	5.00 µg/L	0.000
M3-MeFOSAA	8.362	573.2 -> 419.0	18152	5.00 µg/L	0.000
M3-HFPO-DA	5.965	286.9 -> 168.9	46082	10.00 µg/L	-0.012
M5-EtFOSAA	8.571	589.2 -> 419.0	16538	5.00 µg/L	0.000
M7-MeFOSE	11.072	623.2 -> 58.9	70634	25.00 µg/L	0.000
M9-EtFOSE	11.357	639.2 -> 58.9	88499	25.00 µg/L	0.000
M5-EtFOSA	11.435	531.1 -> 219.0	9981	2.50 µg/L	0.000
M3-MeFOSA	11.176	515.0 -> 219.0	10287	2.50 µg/L	0.000
13C4-PFOS	8.430	502.8 -> 79.9	10489	2.50 µg/L	0.000
13C3-PFBA	2.866	216.0 -> 172.0	62094	5.00 µg/L	-0.062
18O2-PFHxS	7.328	403.0 -> 83.9	5528	2.50 µg/L	0.000
13C4-PFOA	7.237	417.1 -> 372.0	62783	2.50 µg/L	0.000
13C2-PFDA	8.292	515.1 -> 470.1	19653	1.25 µg/L	0.000
13C5-PFNA	7.798	468.0 -> 423.0	27940	1.25 µg/L	0.000
13C2-PFHxA	5.599	315.1 -> 270.0	42930	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.272	329.1 -> 80.9	655	5.28 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.6%		
13C2-6:2FTS	6.999	429.1 -> 80.9	1434	5.27 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.4%		
13C2-8:2FTS	8.078	529.1 -> 80.9	2355	5.32 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.4%		
13C2-PFDoDA	9.194	615.1 -> 570.0	23455	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.7%		
13C2-PFTeDA	9.974	715.2 -> 670.0	17548	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.5%		
13C3-PFBS	5.479	302.1 -> 79.9	9977	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.3%		
13C3-PFHxS	7.316	402.1 -> 79.9	7503	2.42 µg/L	-0.013

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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	2.874	216.8 -> 171.9	117083	9.98 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C4-PFHpA	6.555	367.1 -> 322.0	32220	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C5-PFHxA	5.598	318.0 -> 273.0	45251	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C5-PFPeA	4.387	268.3 -> 223.0	57997	4.89 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C6-PFDA	8.292	519.1 -> 474.1	15395	1.13 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 90.5%	
13C7-PFUnDA	8.760	570.0 -> 525.1	18973	1.10 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 87.9%	
13C8-FOSA	9.909	506.1 -> 77.8	13847	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C8-PFOA	7.236	421.1 -> 376.0	49084	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.1%	
13C8-PFOS	8.442	507.1 -> 79.9	9513	2.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.4%	
13C9-PFNA	7.784	472.1 -> 427.0	22291	1.19 µg/L	-0.014
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.5%	
d3-MeFOSAA	8.362	573.2 -> 419.0	18152	5.26 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.3%	
13C3-HFPO-DA	5.965	286.9 -> 168.9	46082	10.07 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.7%	
d3-MeFOSA	11.176	515.0 -> 219.0	10287	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.0%	
d5-EtFOSAA	8.571	589.2 -> 419.0	16538	5.43 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.7%	
d7-MeFOSE	11.072	623.2 -> 58.9	70634	25.24 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
d9-EtFOSE	11.357	639.2 -> 58.9	88499	23.75 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.0%	
d5-EtFOSA	11.435	531.1 -> 219.0	9981	2.32 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.9%	
Target Compounds					QValue
4:2FTS	5.285	327.1 -> 307.0	265885	228.64 µg/L	95
		327.1 -> 80.9	108516		
6:2FTS	6.999	427.1 -> 407.0	362148	218.50 µg/L	95
		427.1 -> 80.9	126913		
8:2FTS	8.079	527.1 -> 507.0	294778	218.70 µg/L	85
		527.1 -> 80.8	111613		
EtFOSAA	8.572	584.2 -> 419.1	180145	67.57 µg/L	m 96
		584.2 -> 526.0	81293		
FOSA	9.912	498.1 -> 77.9	405451	66.32 µg/L	100
		498.1 -> 478.0	11951		
MeFOSAA	8.362	570.1 -> 419.0	212981	65.76 µg/L	99
		570.1 -> 483.0	39266		
PFBA	2.870	212.8 -> 168.9	943532	267.90 µg/L	100
PFBS	5.480	298.7 -> 79.9	234803	56.46 µg/L	94
		298.7 -> 98.8	90666		
PFDA	8.292	512.9 -> 469.0	1077499	67.38 µg/L	98
		512.9 -> 219.0	216011		
PFDoDA	9.194	613.1 -> 569.0	1159738	61.41 µg/L	99
		613.1 -> 319.0	194347		
PFDS	9.358	599.0 -> 79.9	166319	61.87 µg/L	100

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.556	599.0 -> 98.8	84279	66.32	µg/L	98
		363.1 -> 319.0	1315202			
PFHpS	7.911	363.1 -> 169.0	235582	60.54	µg/L	94
		449.0 -> 79.9	230180			
PFHxA	5.601	449.0 -> 98.9	124533	66.84	µg/L	99
		313.0 -> 269.0	1183786			
PFHxS	7.317	313.0 -> 118.9	35648	57.72	µg/L	98
		398.7 -> 79.9	192953			
PFNA	7.798	398.7 -> 98.9	103228	66.01	µg/L	99
		463.0 -> 419.0	1084453			
PFNS	8.911	463.0 -> 219.0	260901	55.59	µg/L	99
		548.8 -> 79.9	157459			
PFOA	7.238	548.8 -> 98.9	84034	67.51	µg/L	99
		413.0 -> 369.0	1874486			
PFOS	8.431	413.0 -> 169.0	369611	57.81	µg/L	83
		498.9 -> 79.9	292716			
PFPeA	4.389	498.9 -> 98.8	145414	130.78	µg/L	100
		263.0 -> 219.0	2138746			
PFPeS	6.582	349.1 -> 79.9	165876	60.06	µg/L	99
		349.1 -> 98.9	75315			
PFTeDA	9.975	713.1 -> 669.0	1081999	61.71	µg/L	99
		713.1 -> 168.9	105933			
PFTrDA	9.604	663.0 -> 619.0	1241898	59.43	µg/L	98
		663.0 -> 168.9	153317			
PFUnDA	8.760	563.1 -> 519.0	921648	61.23	µg/L	99
		563.1 -> 269.1	191200			
11Cl-PF3OUdS	9.644	630.9 -> 450.9	1491953	121.34	µg/L	99
		632.9 -> 452.9	460962			
9Cl-PF3ONS	8.775	530.8 -> 351.0	1699924	103.12	µg/L	98
		532.8 -> 353.0	524973			
ADONA	6.818	376.9 -> 250.9	4149466	120.29	µg/L	99
		376.9 -> 84.8	1054075			
HFPO-DA	5.966	284.9 -> 168.9	614727	129.15	µg/L	99
		284.9 -> 184.9	68418			
3:3FTCA	3.823	241.0 -> 177.0	307461	379.35	µg/L	97
		241.0 -> 117.0	26636			
5:3FTCA	6.281	341.0 -> 237.1	4827106	1639.99	µg/L	100
		341.0 -> 217.0	3433667			
7:3FTCA	7.774	441.0 -> 316.9	2674874	1646.47	µg/L	99
		441.0 -> 336.9	6238806			
EtFOSA	11.438	526.0 -> 219.0	658832	128.08	µg/L	99
		526.0 -> 169.0	893357			
EtFOSE	11.370	630.0 -> 58.9	1324421	308.52	µg/L	100
		511.9 -> 219.0	534112			
MeFOSA	11.178	511.9 -> 169.0	802649	124.33	µg/L	72
		616.1 -> 58.9	1079144			
MeFOSE	11.085	699.1 -> 79.9	141382	345.93	µg/L	100
		699.1 -> 98.8	82131			
PFDoDS	10.115	295.0 -> 201.0	120924	63.87	µg/L	97
		295.0 -> 84.9	28509			
NFDHA	5.481	279.0 -> 85.1	1138786	116.41	µg/L	97
		229.0 -> 84.9	1095560			
PFMBA	4.810	314.8 -> 134.9	1531156	129.45	µg/L	100
		314.8 -> 82.9	48463			
PFMPA	3.499			131.19	µg/L	100
PFEESA	6.022			114.47	µg/L	99

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

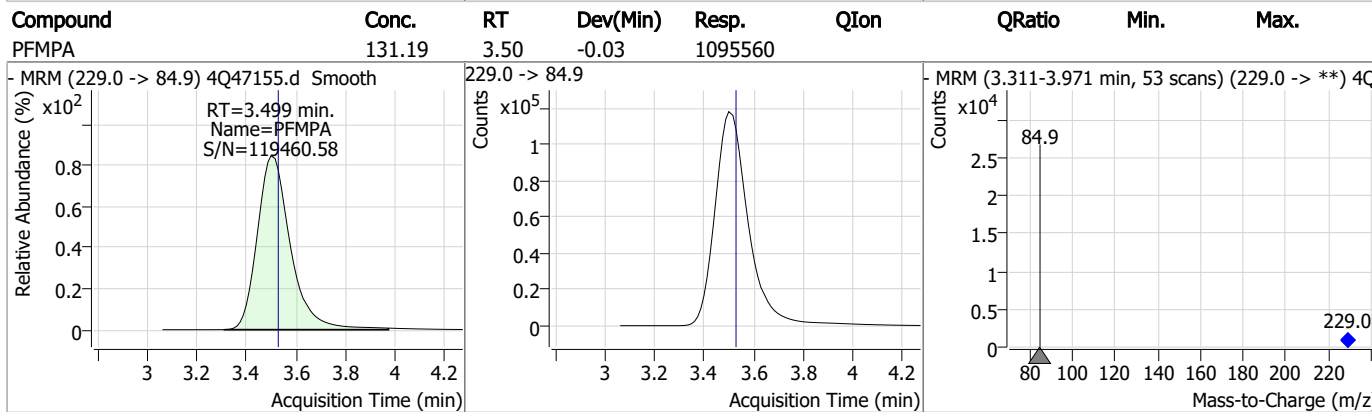
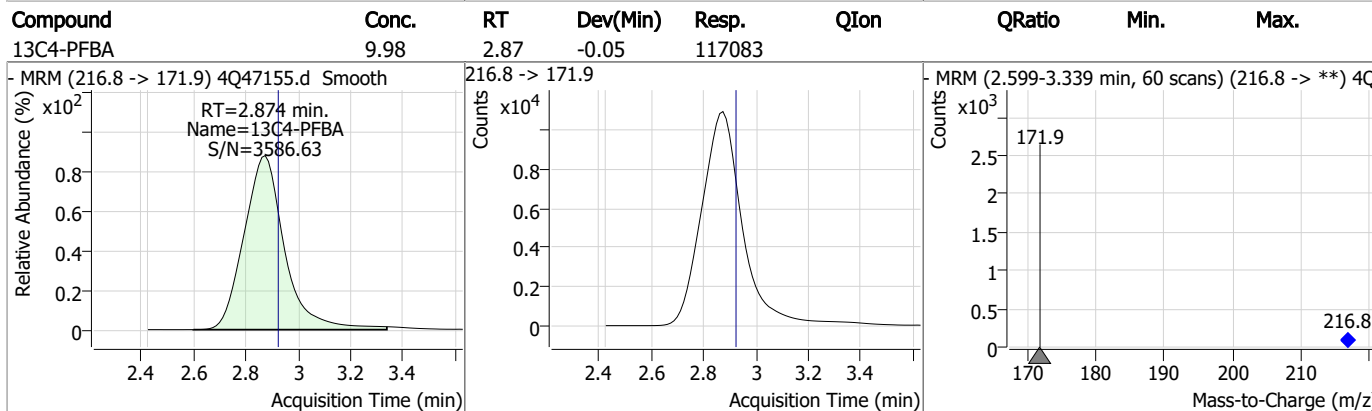
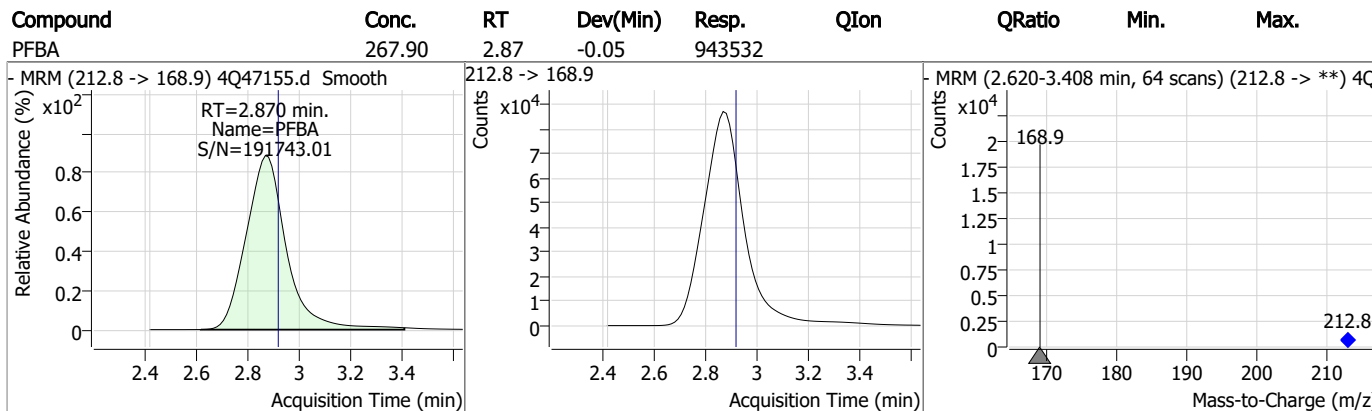
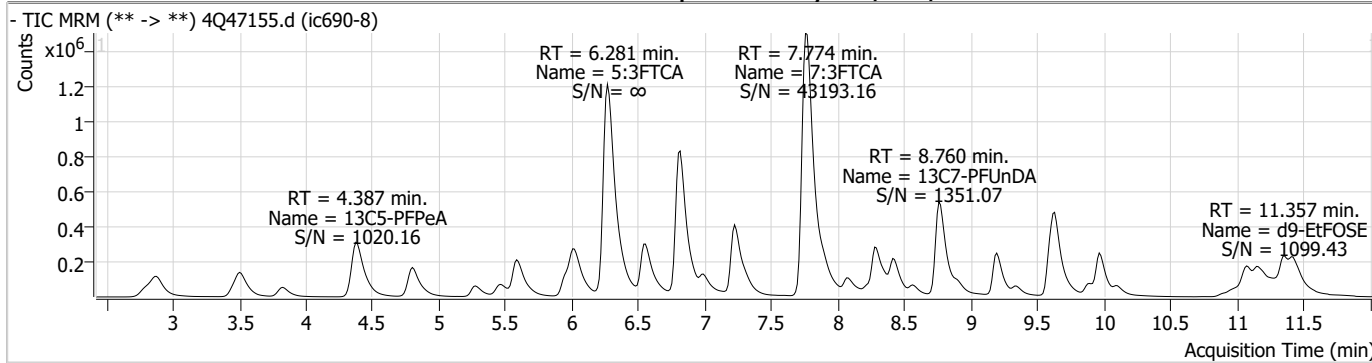
Perfluorinated Compounds by LC/MS/MS

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

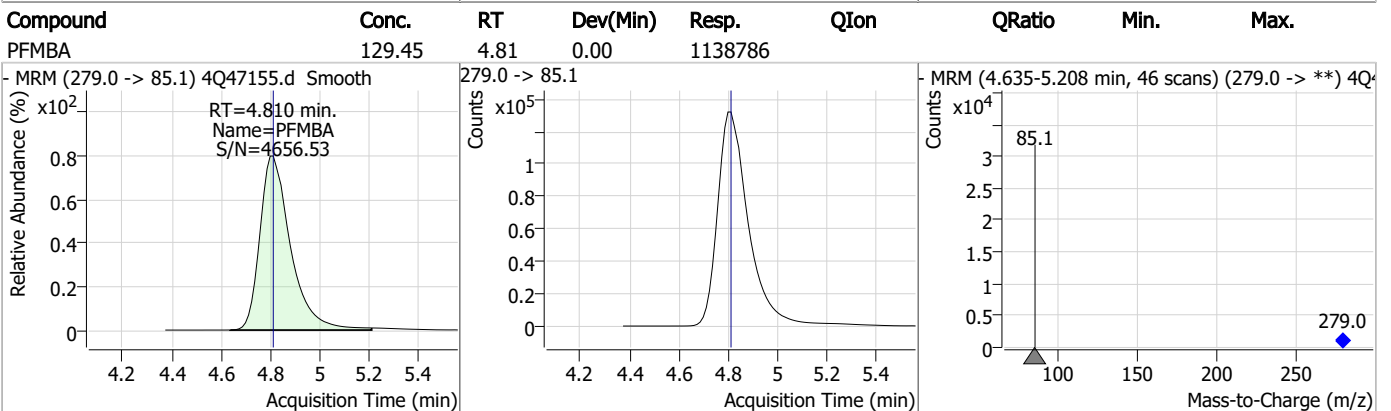
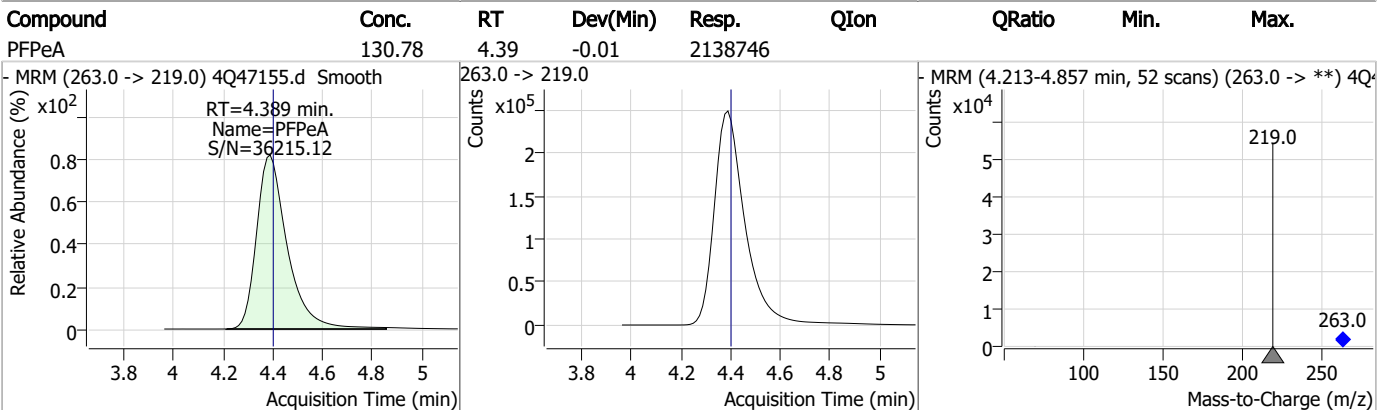
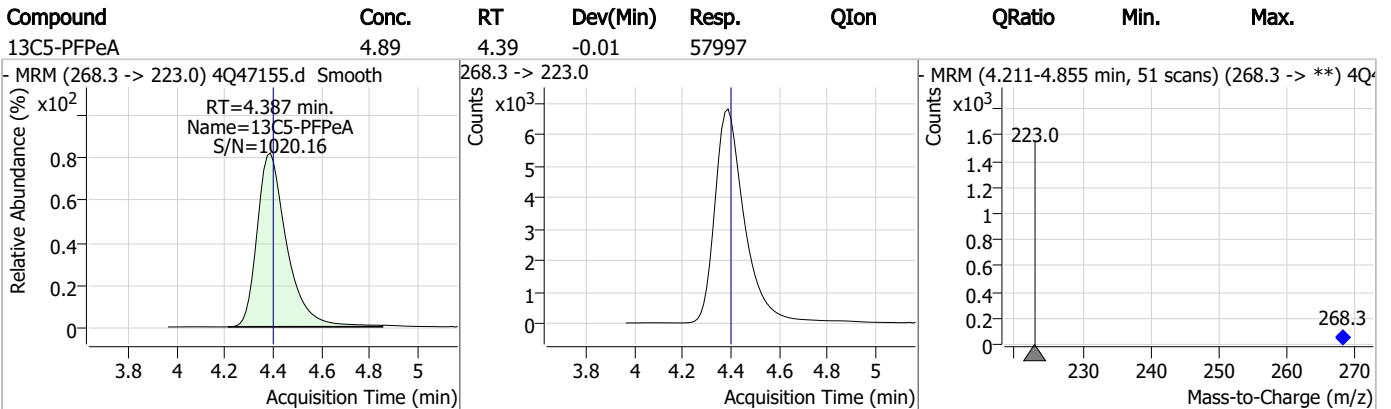
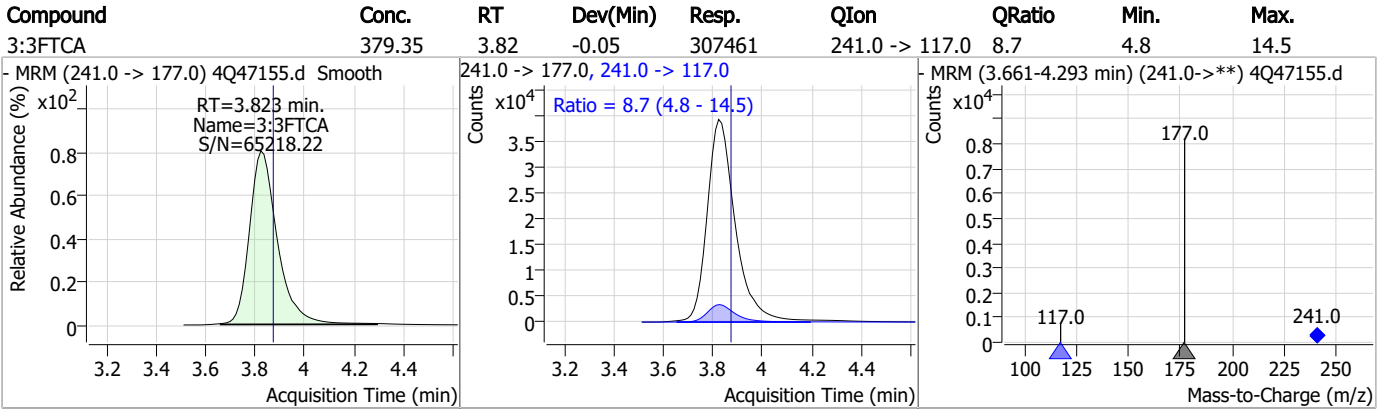
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Perfluorinated Compounds by LC/MS/MS



7.7.9
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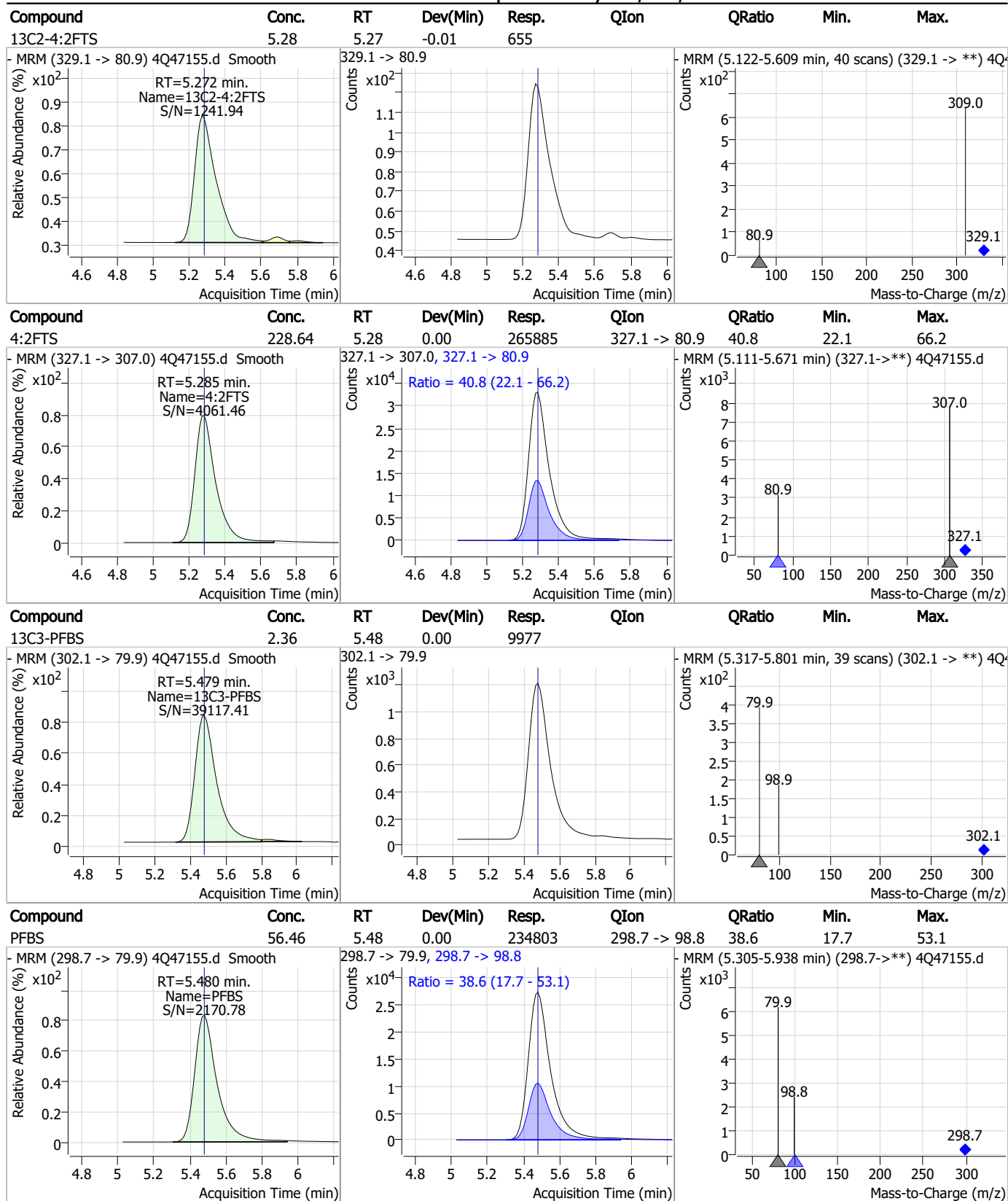
Perfluorinated Compounds by LC/MS/MS



7.7.9

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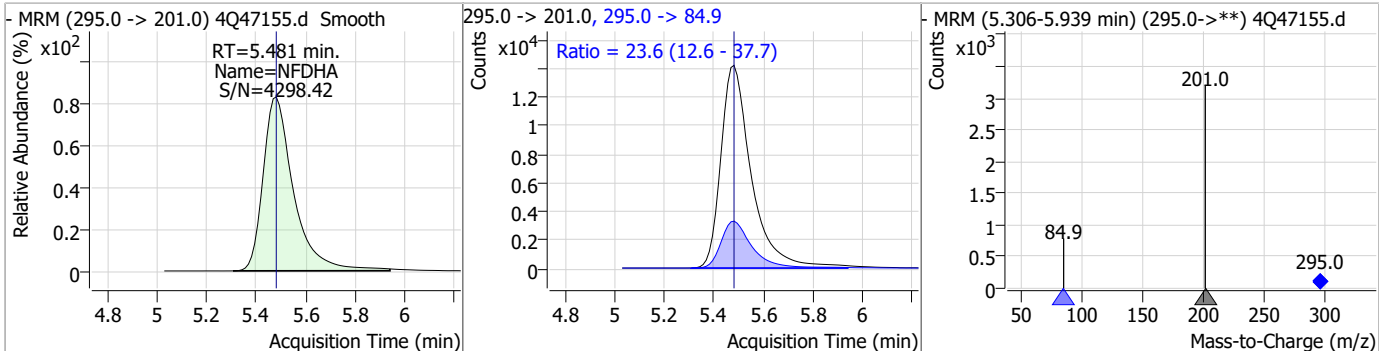
Perfluorinated Compounds by LC/MS/MS



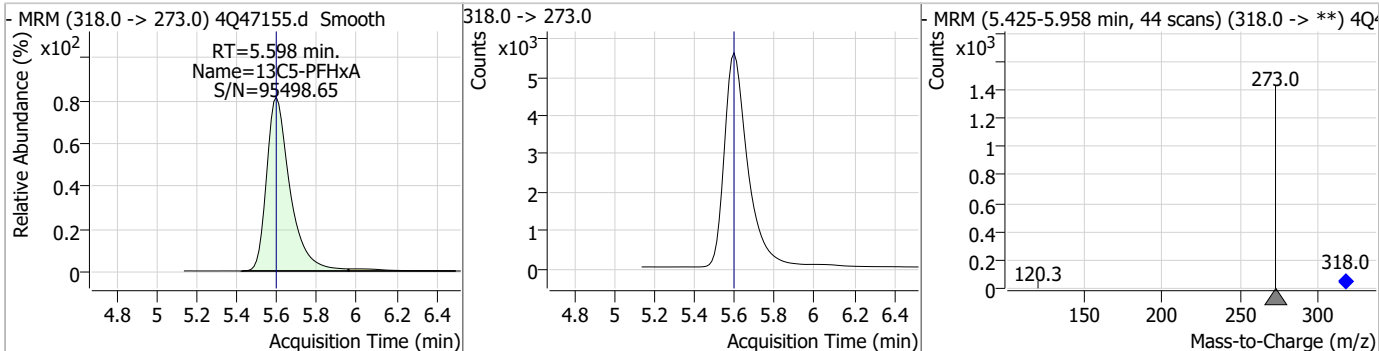
7.7.9
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Perfluorinated Compounds by LC/MS/MS

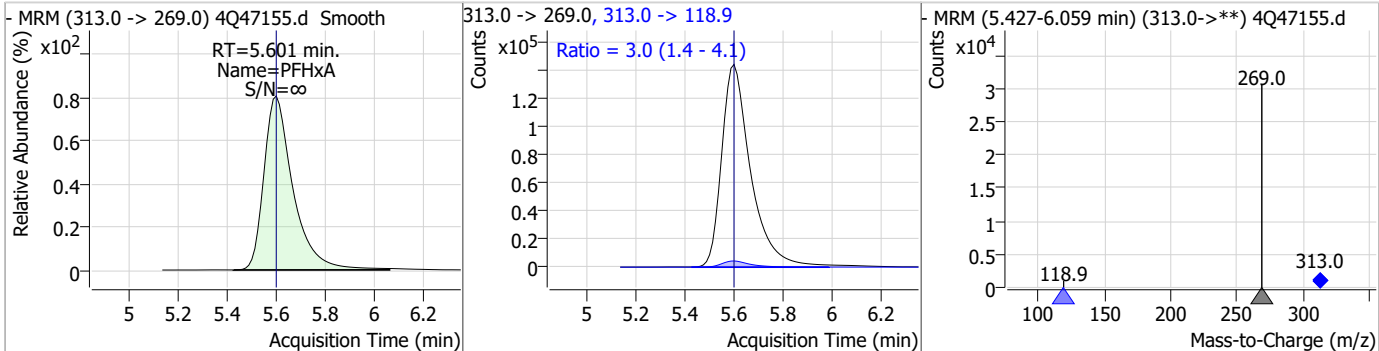
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	116.41	5.48	0.00	120924	295.0 -> 84.9	23.6	12.6	37.7



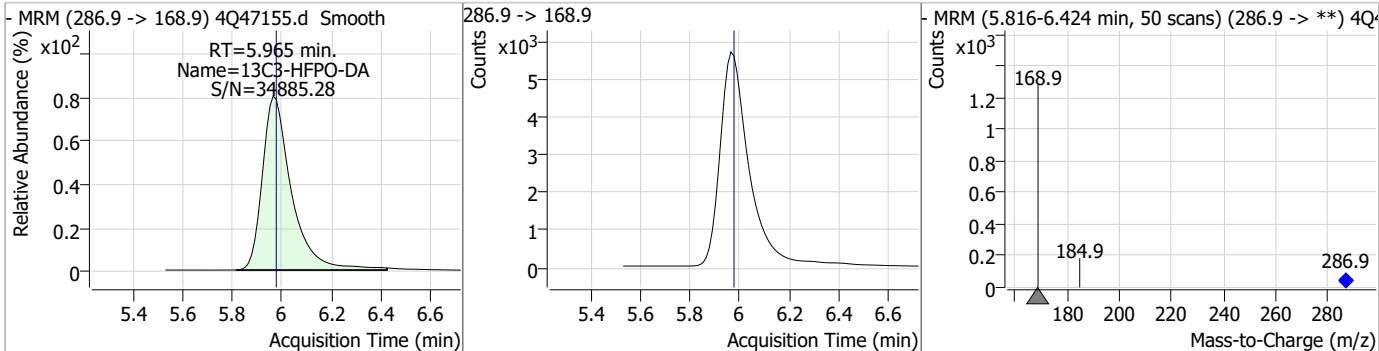
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.46	5.60	0.00	45251				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	66.84	5.60	0.00	1183786	313.0 -> 118.9	3.0	1.4	4.1



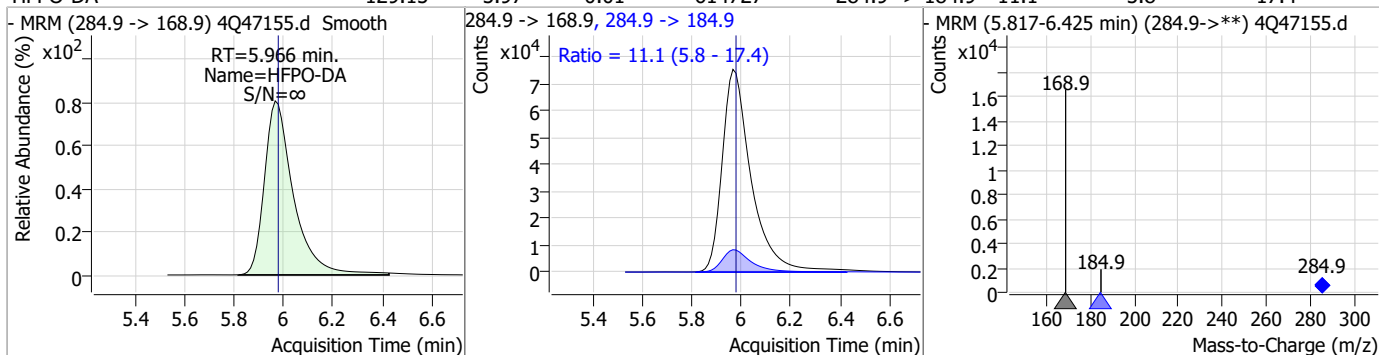
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.07	5.97	-0.01	46082				



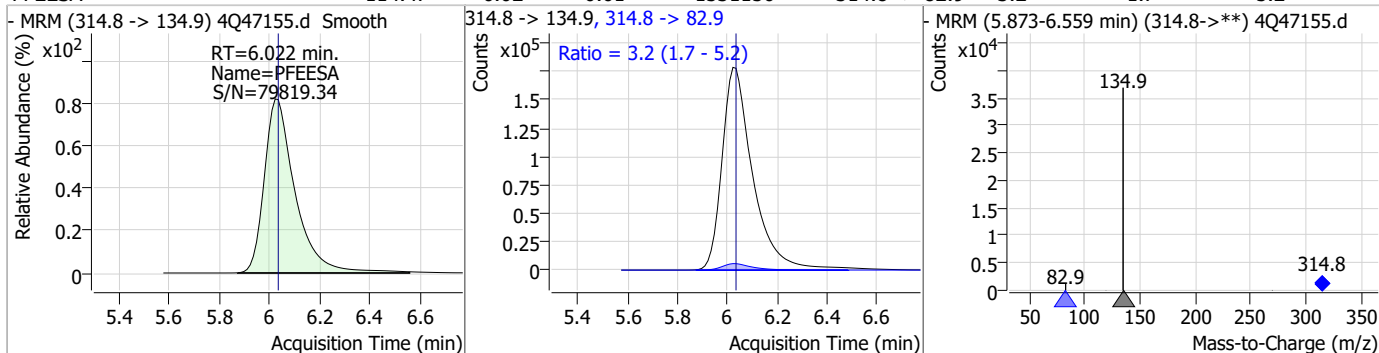
7.7.9
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Perfluorinated Compounds by LC/MS/MS

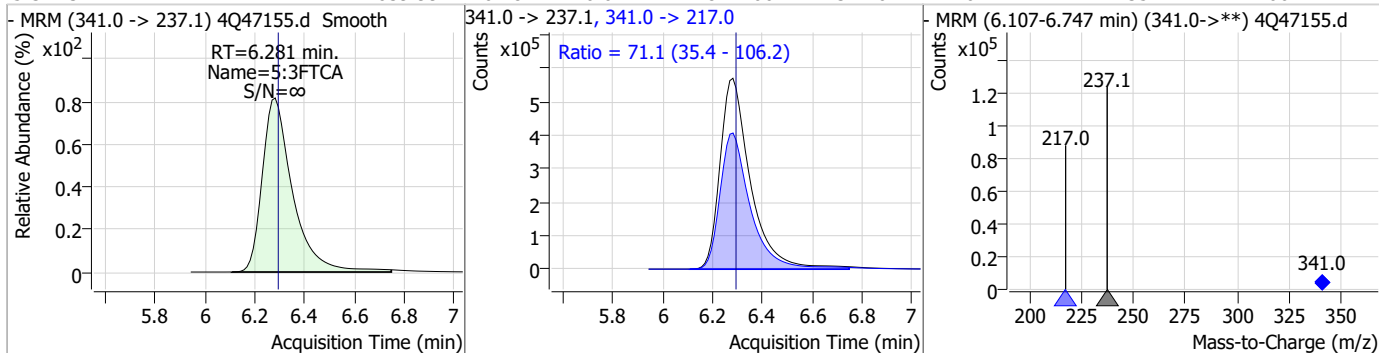
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	129.15	5.97	-0.01	614727	284.9 -> 184.9	11.1	5.8	17.4



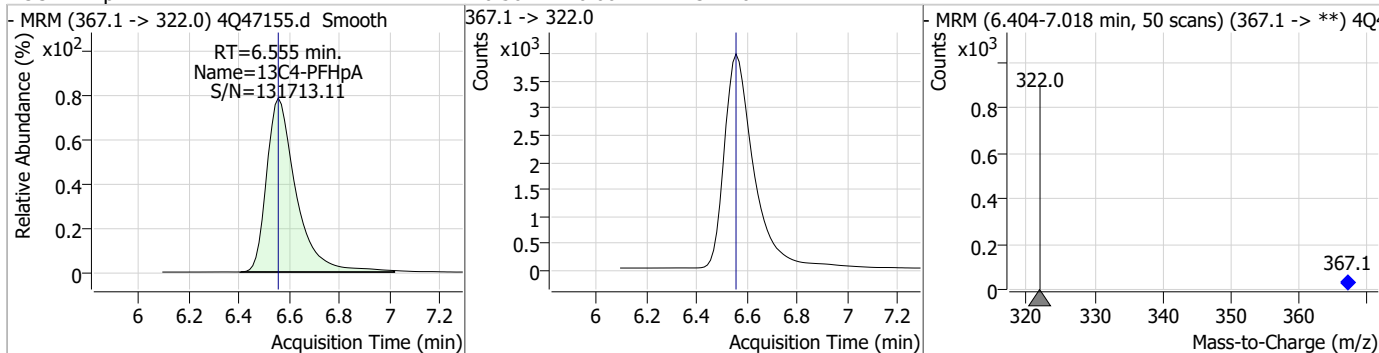
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	114.47	6.02	-0.01	1531156	314.8 -> 82.9	3.2	1.7	5.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	1639.99	6.28	-0.01	4827106	341.0 -> 217.0	71.1	35.4	106.2



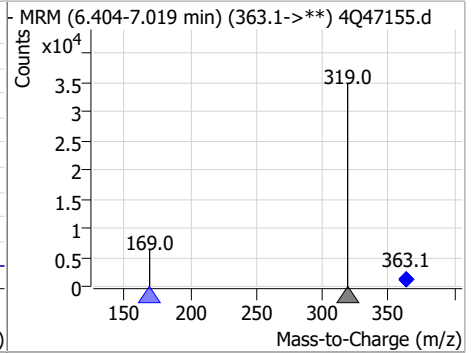
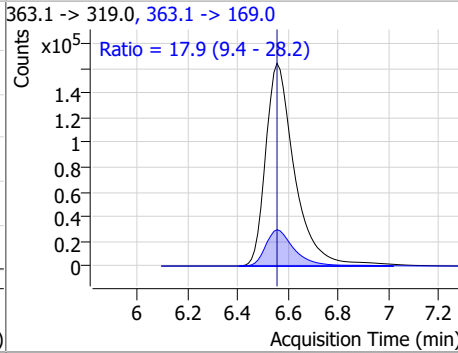
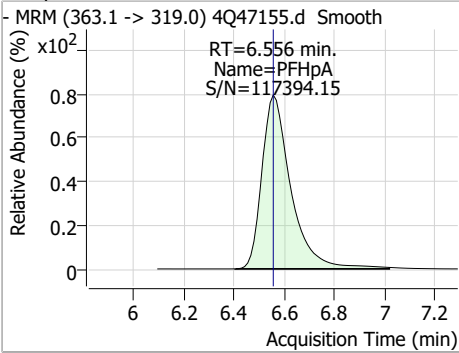
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.44	6.56	0.00	32220				



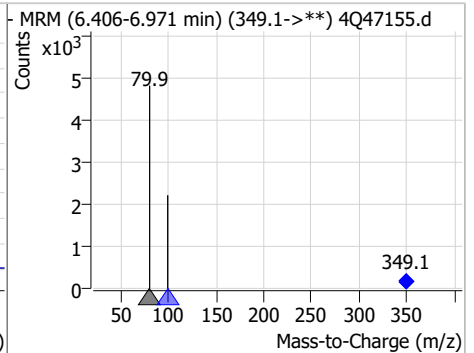
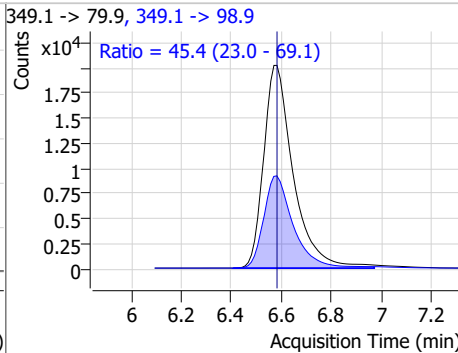
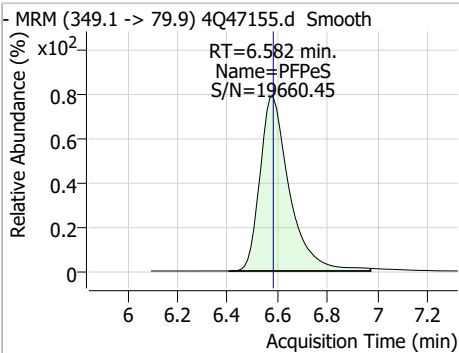
7.7.9
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Perfluorinated Compounds by LC/MS/MS

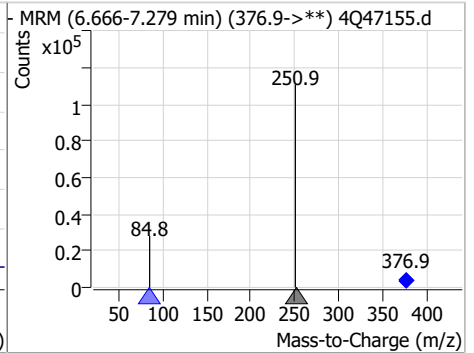
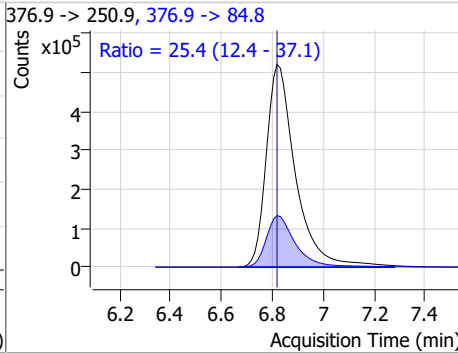
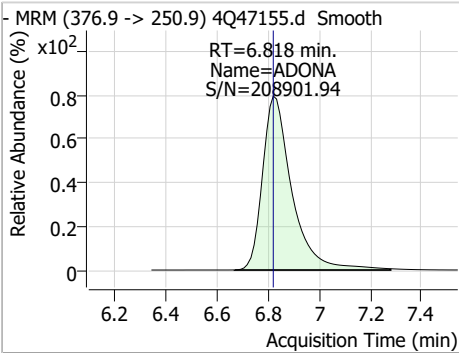
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	66.32	6.56	0.00	1315202	363.1 -> 169.0	17.9	9.4	28.2



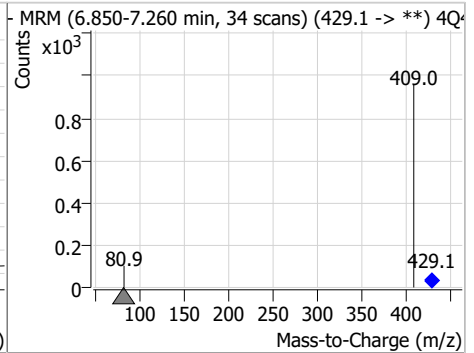
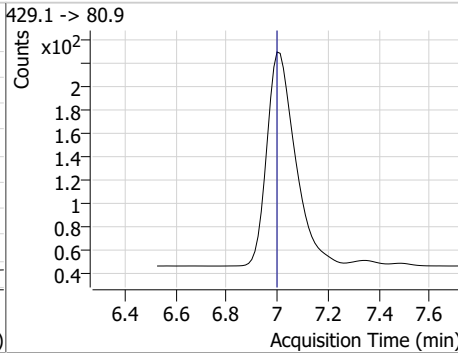
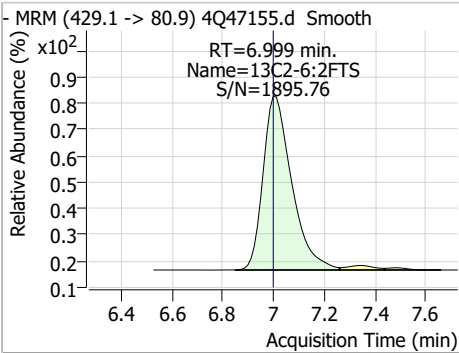
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	60.06	6.58	0.00	165876	349.1 -> 98.9	45.4	23.0	69.1



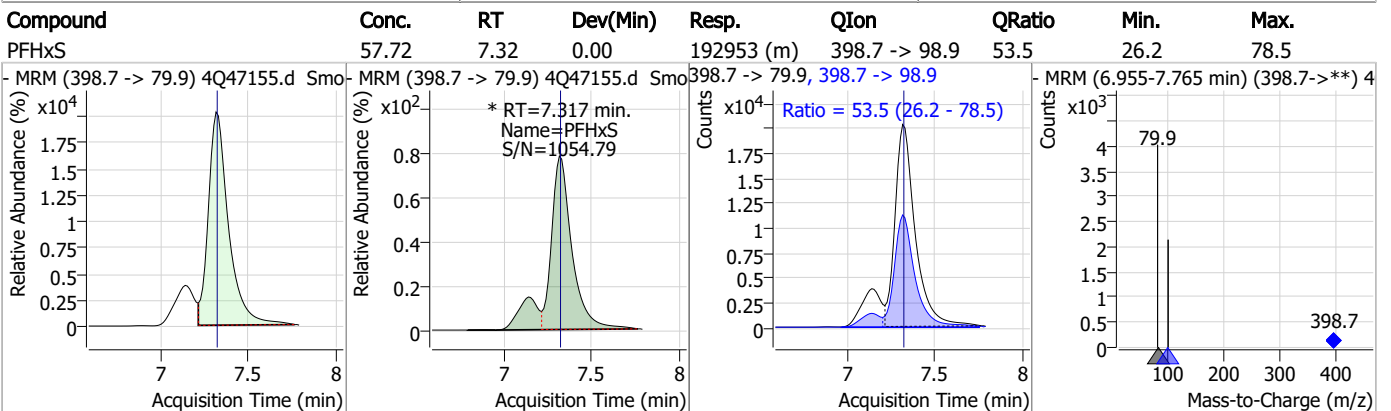
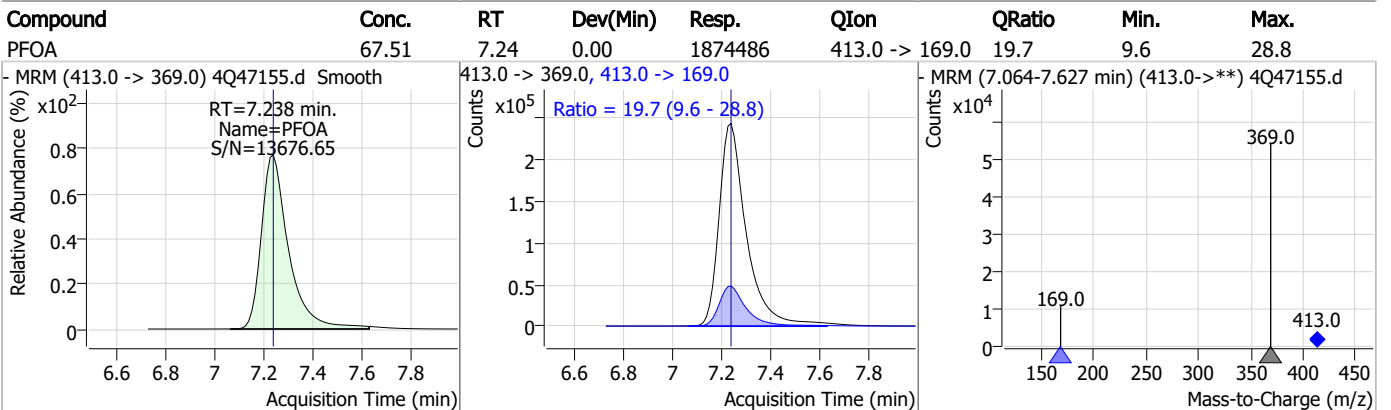
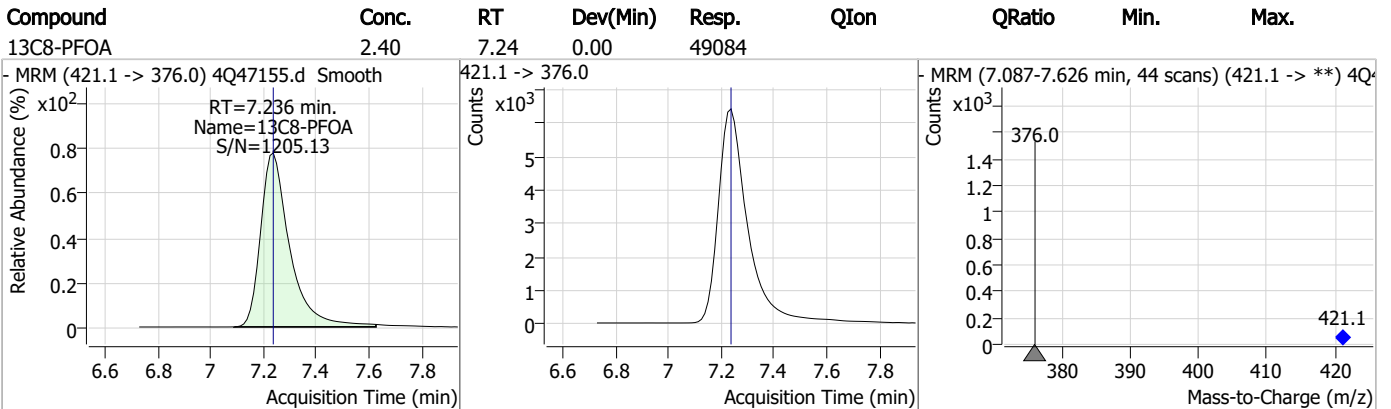
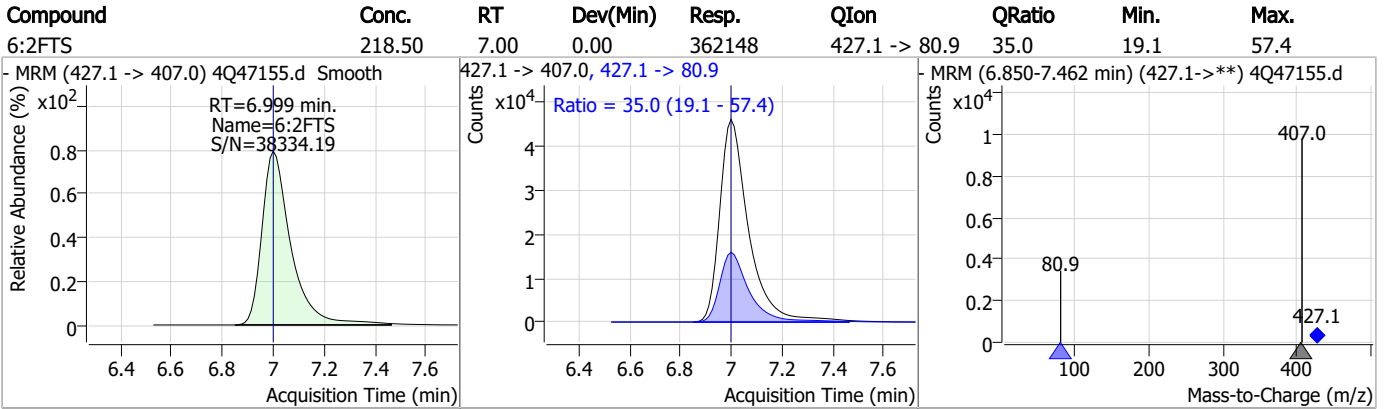
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	120.29	6.82	0.00	4149466	376.9 -> 84.8	25.4	12.4	37.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	5.27	7.00	0.00	1434				



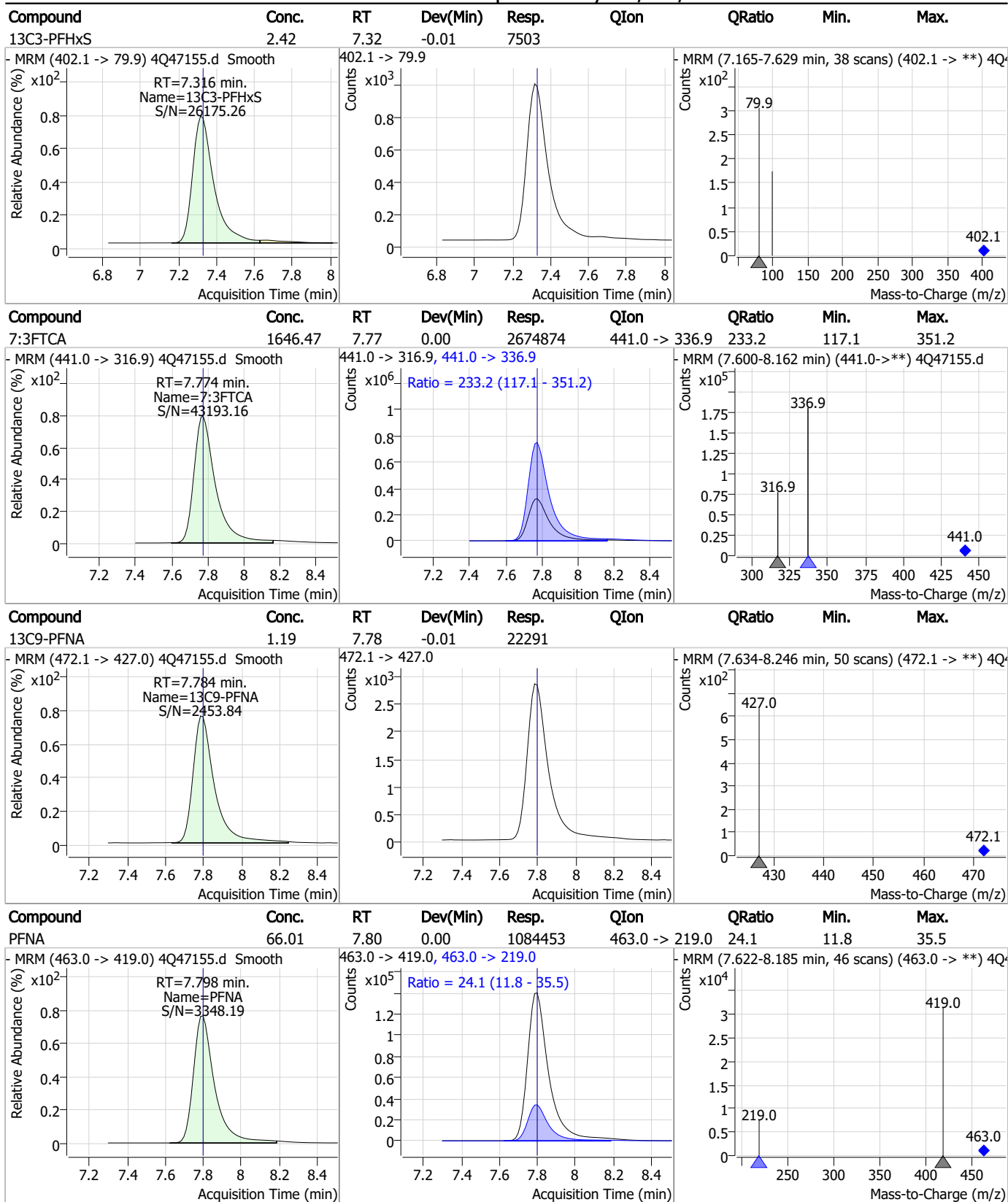
Perfluorinated Compounds by LC/MS/MS



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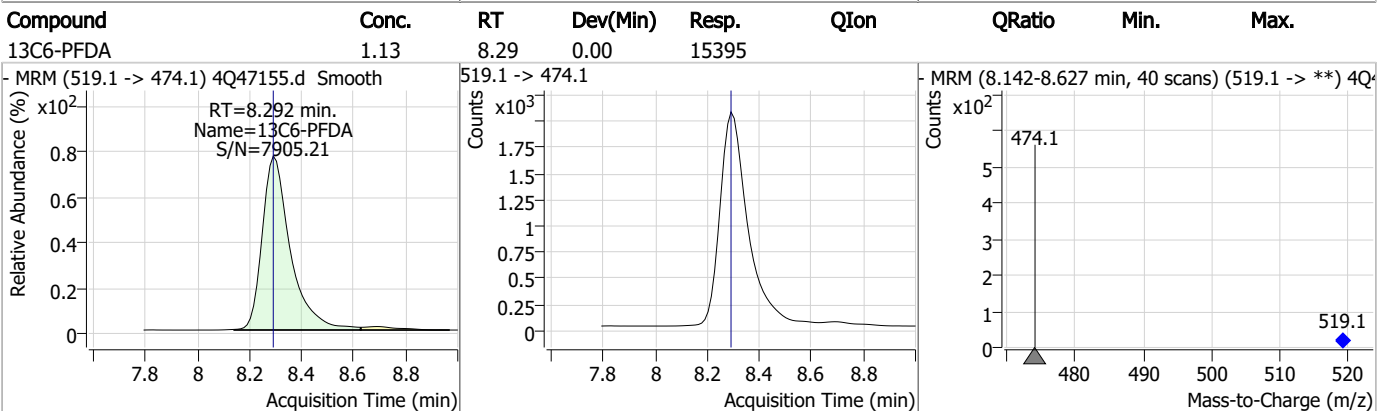
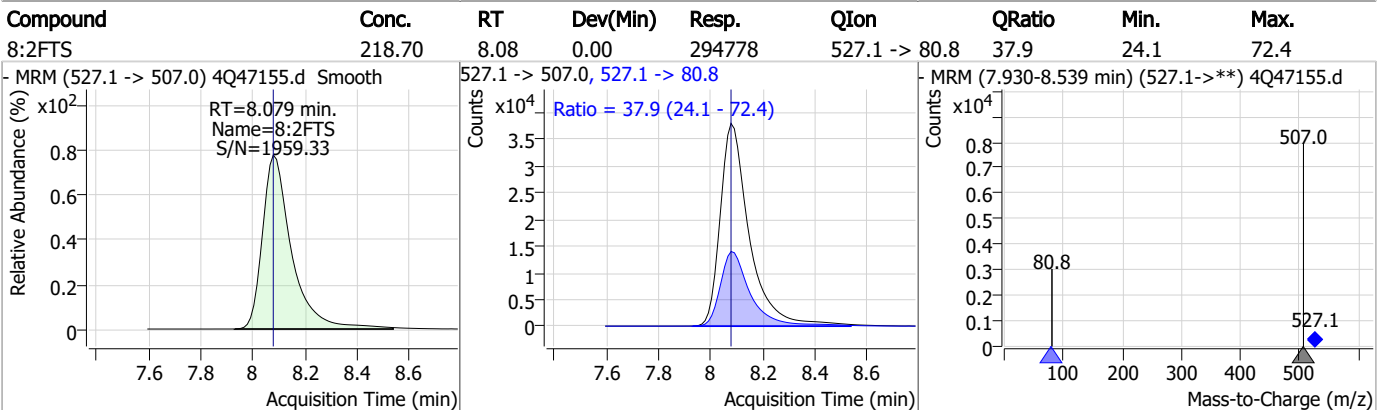
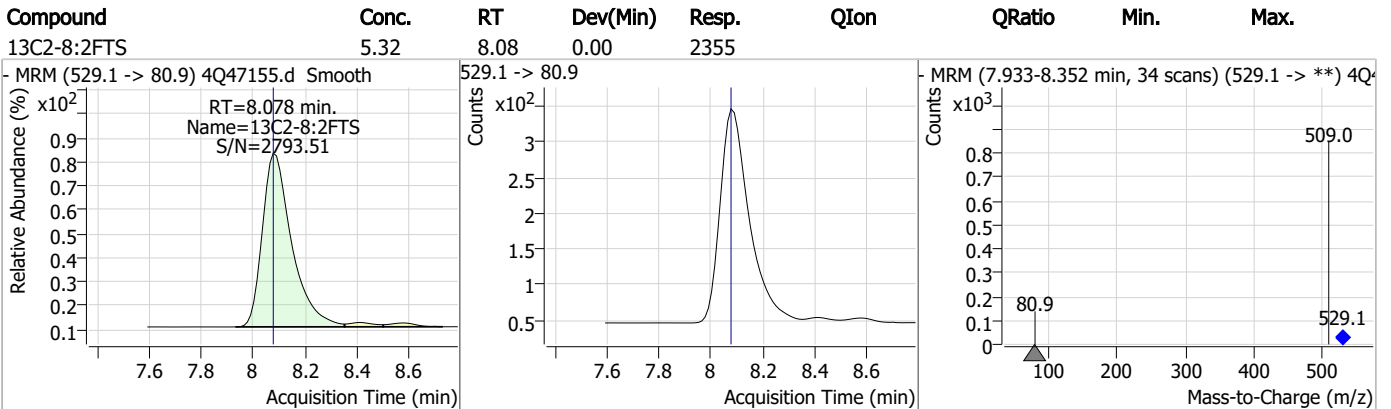
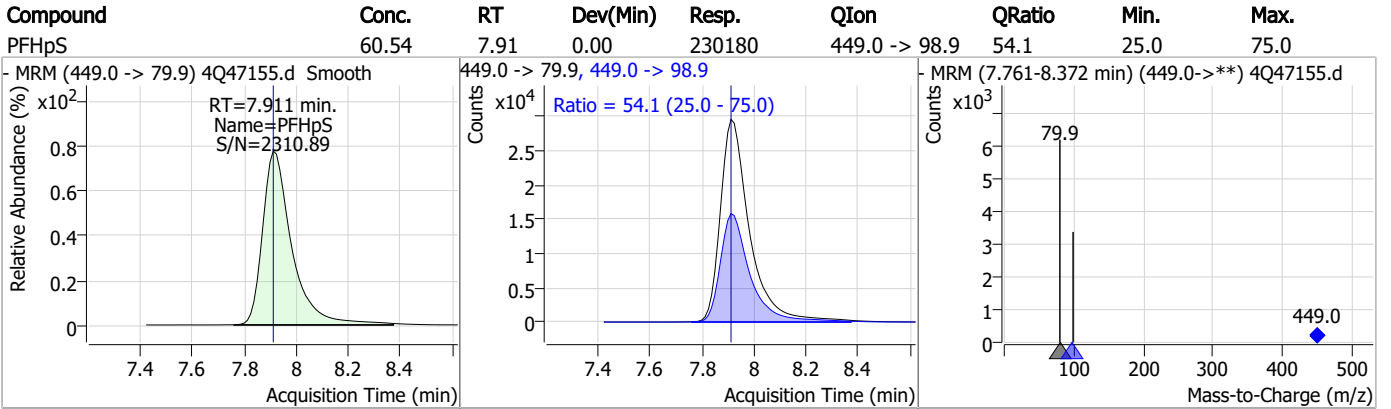
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Perfluorinated Compounds by LC/MS/MS

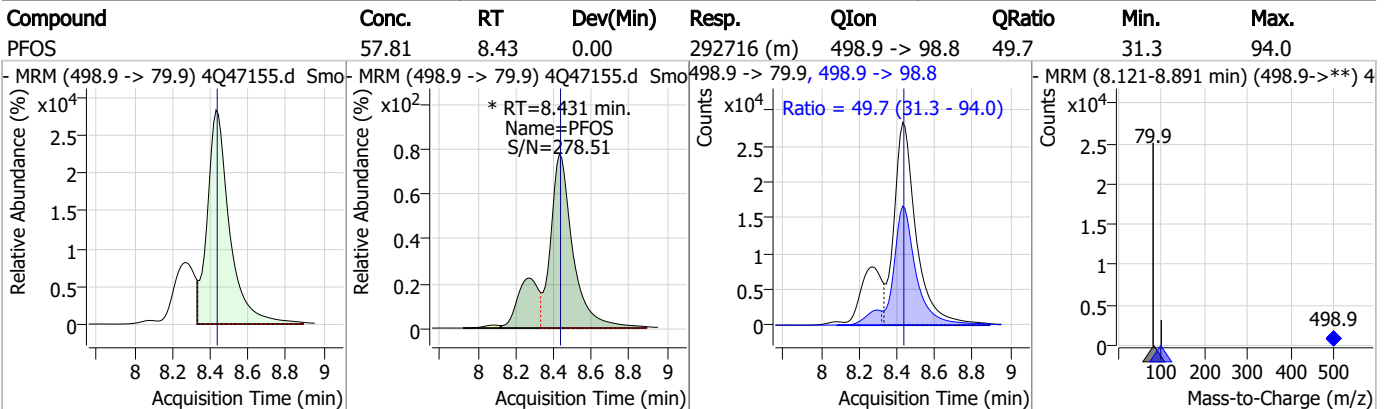
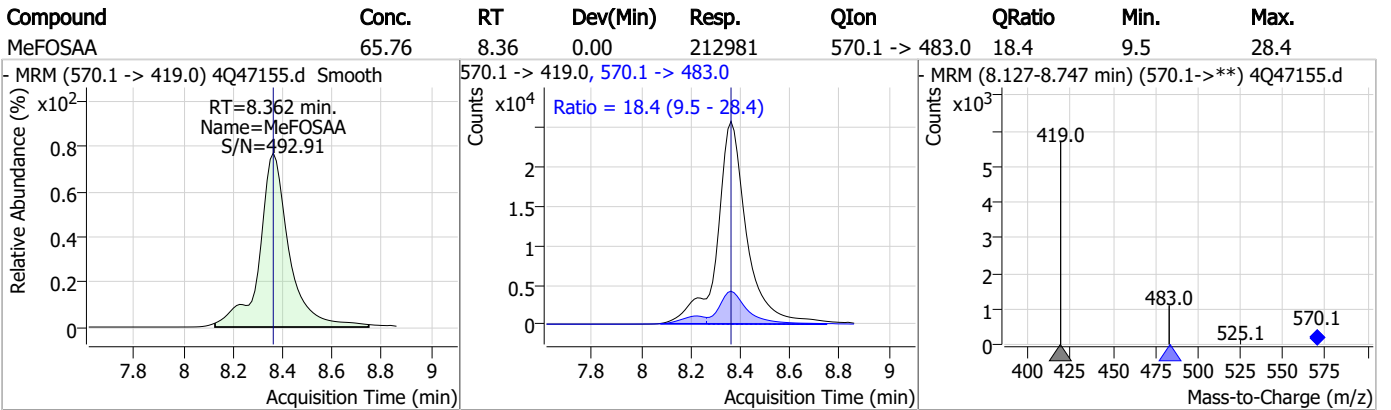
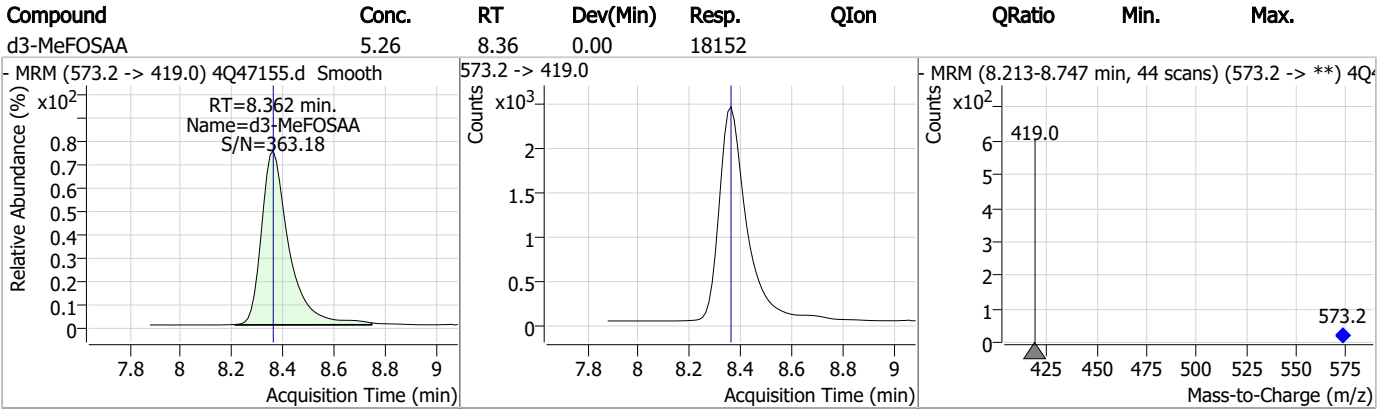
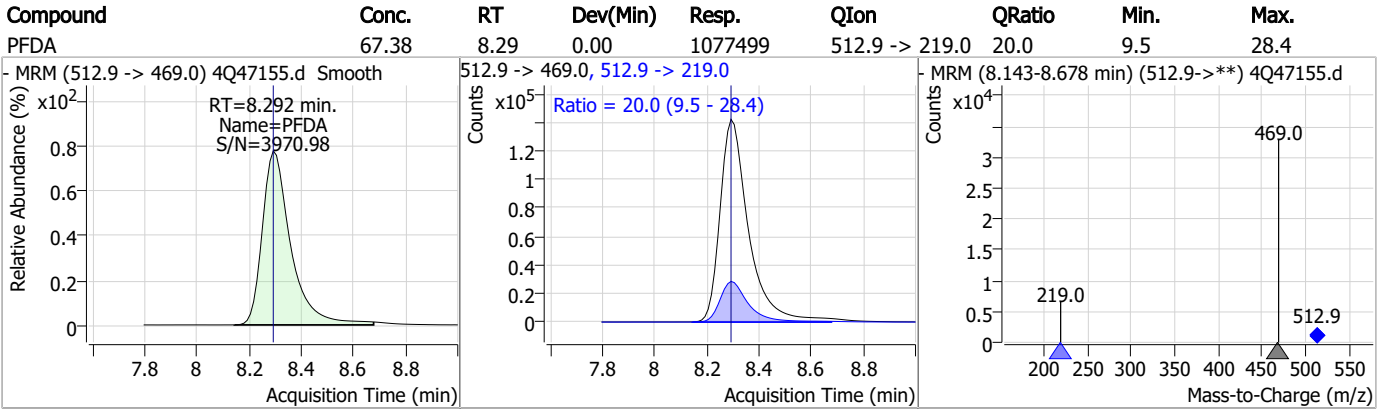


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Perfluorinated Compounds by LC/MS/MS



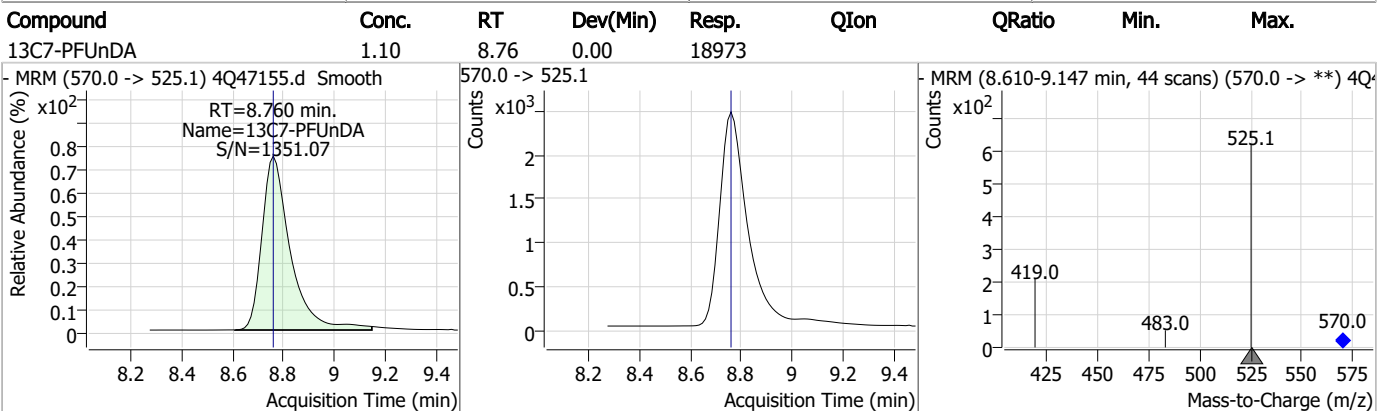
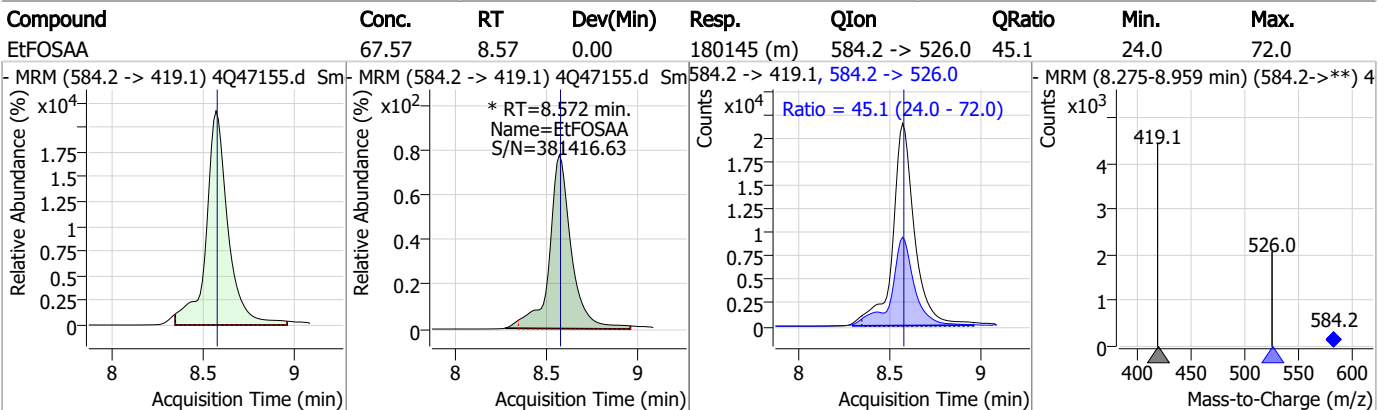
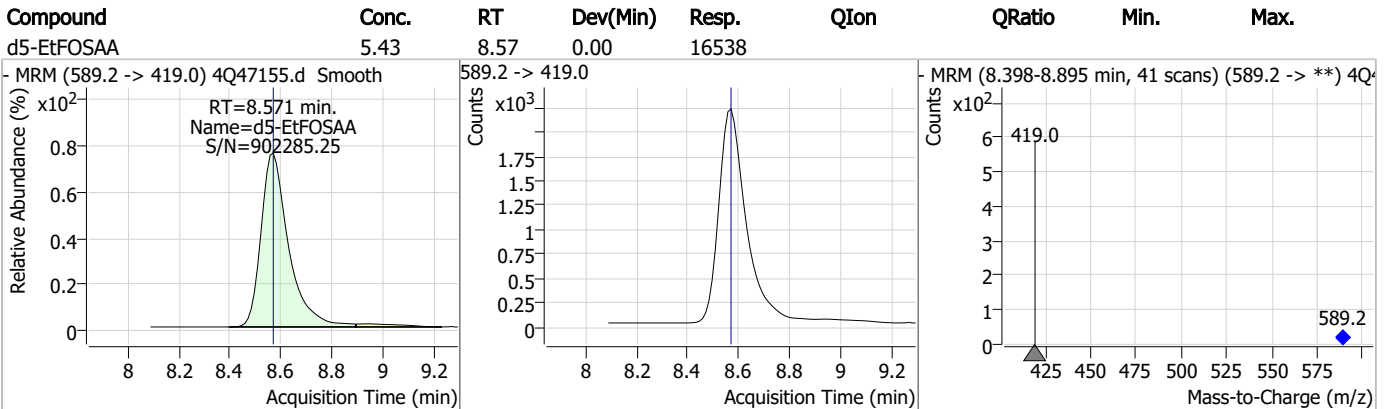
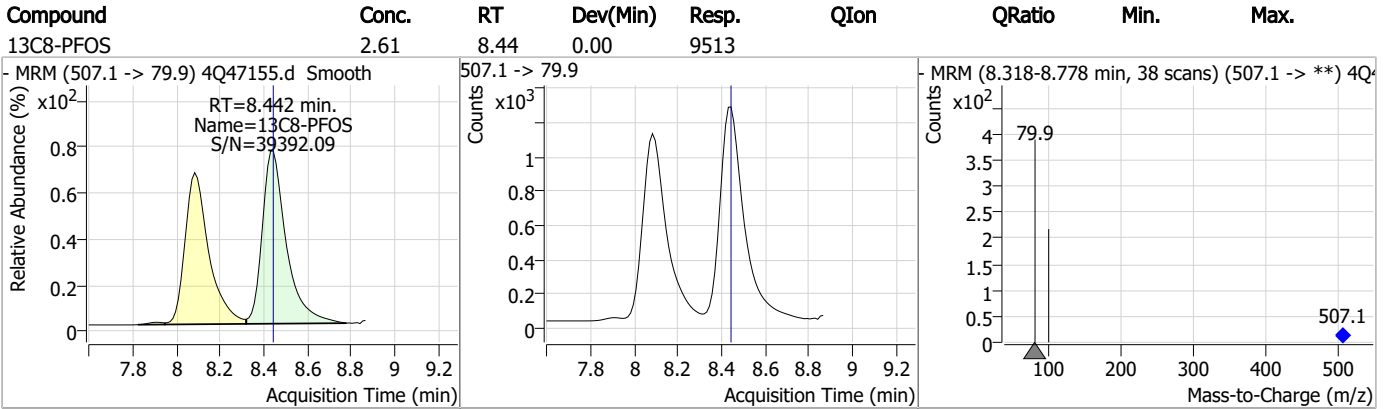
Perfluorinated Compounds by LC/MS/MS



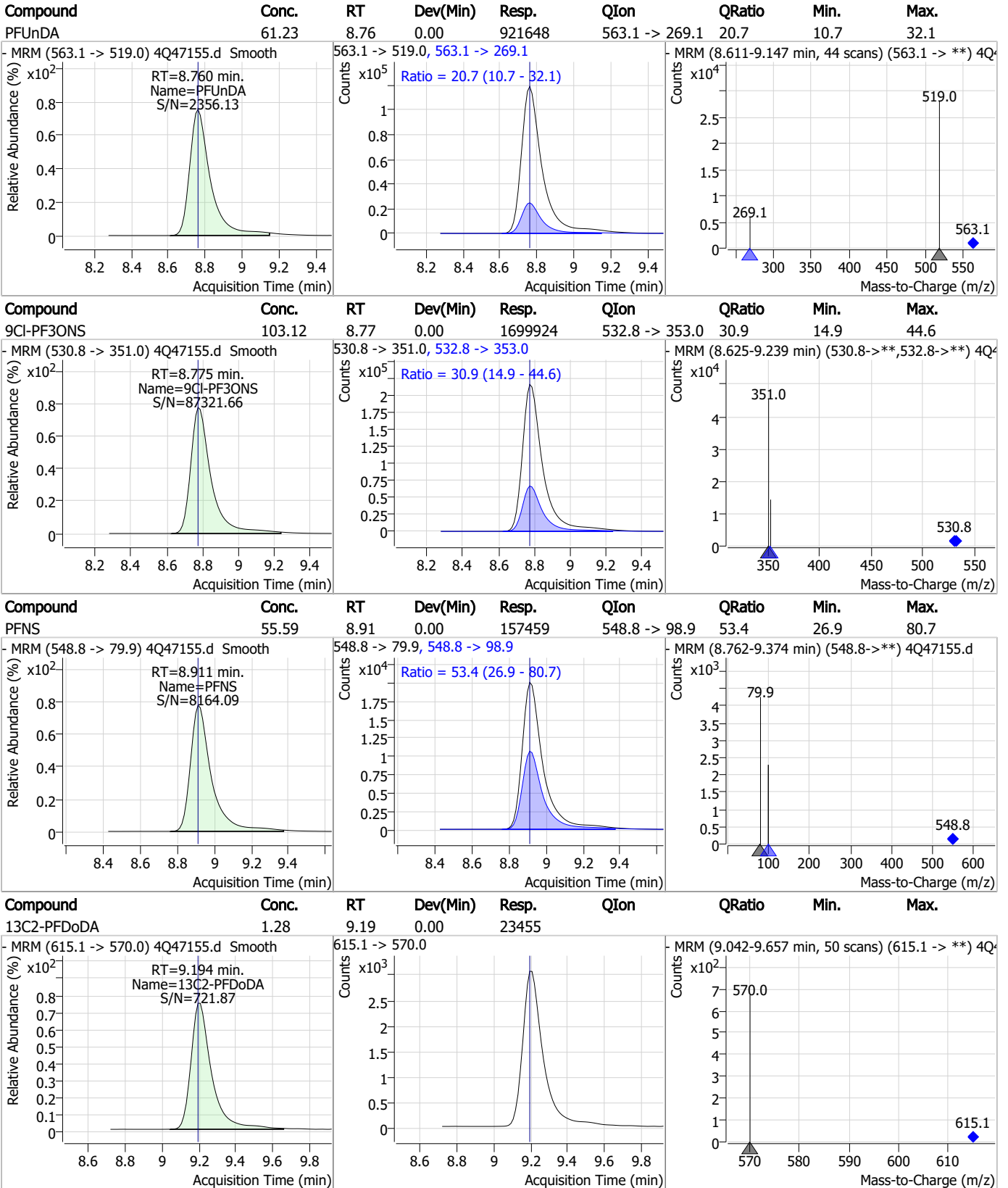
7.7.9

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

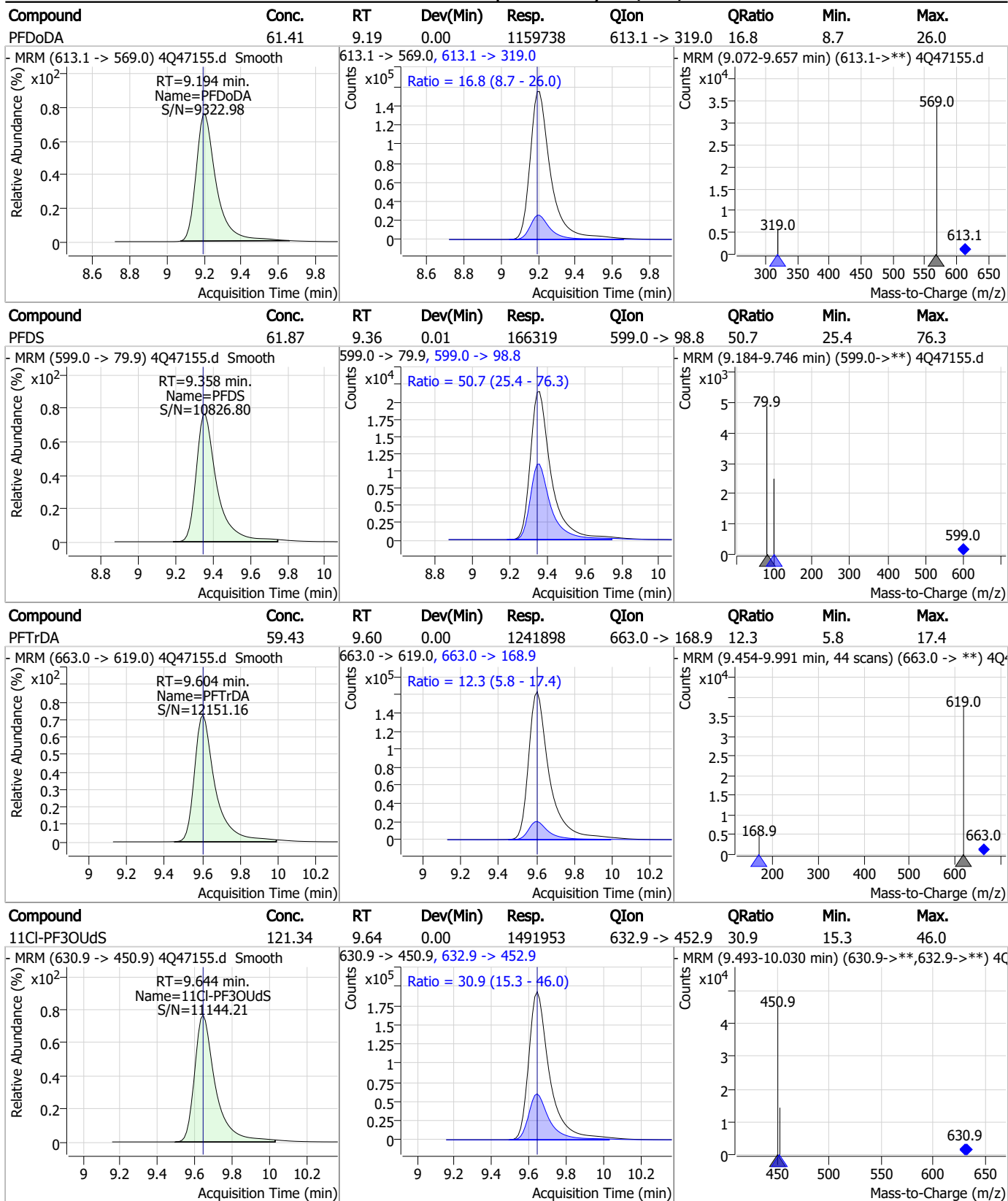


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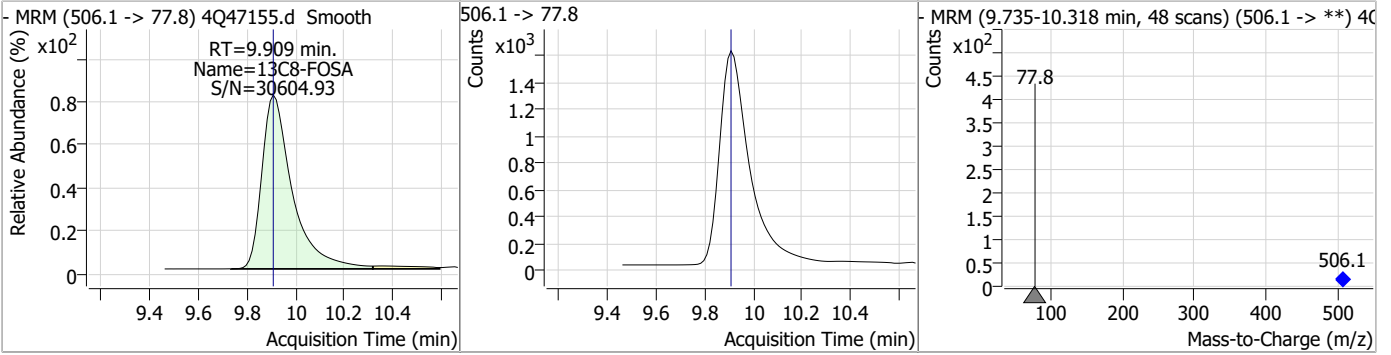
Perfluorinated Compounds by LC/MS/MS



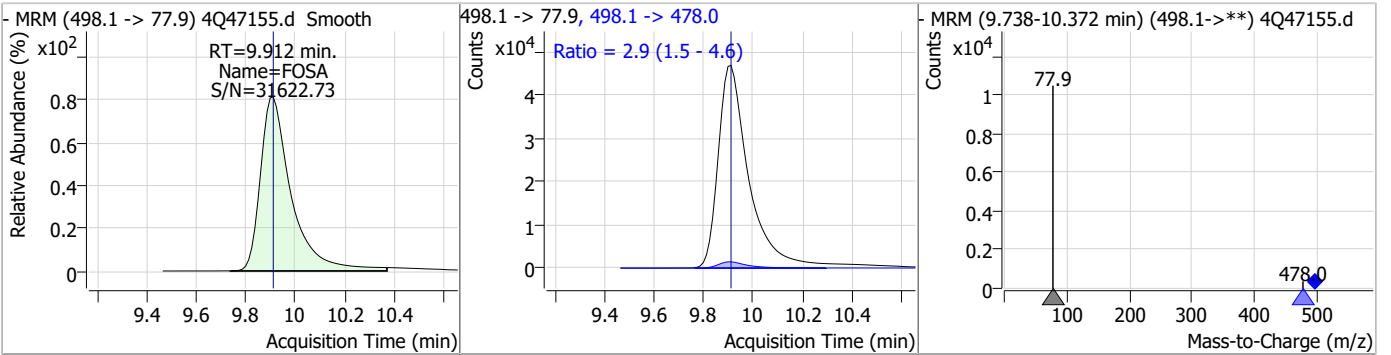
7.7.9
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Perfluorinated Compounds by LC/MS/MS

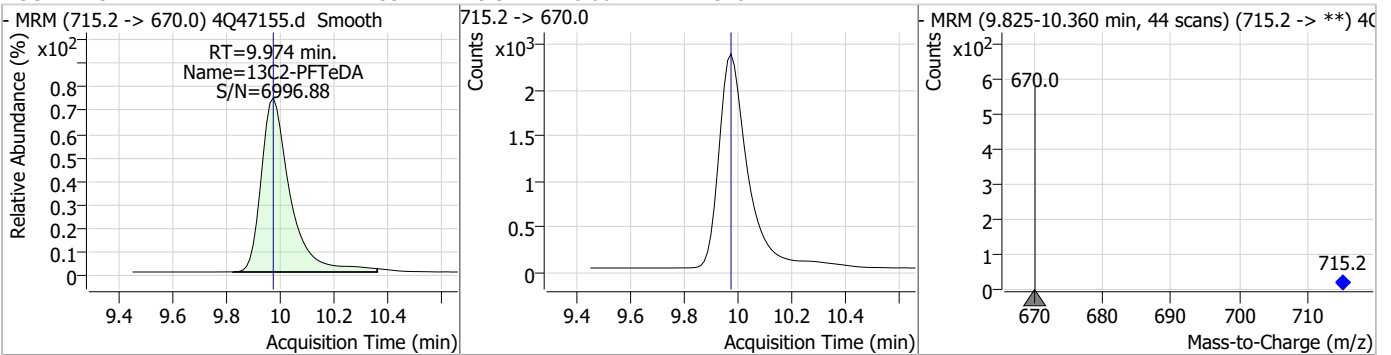
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.55	9.91	0.00	13847				



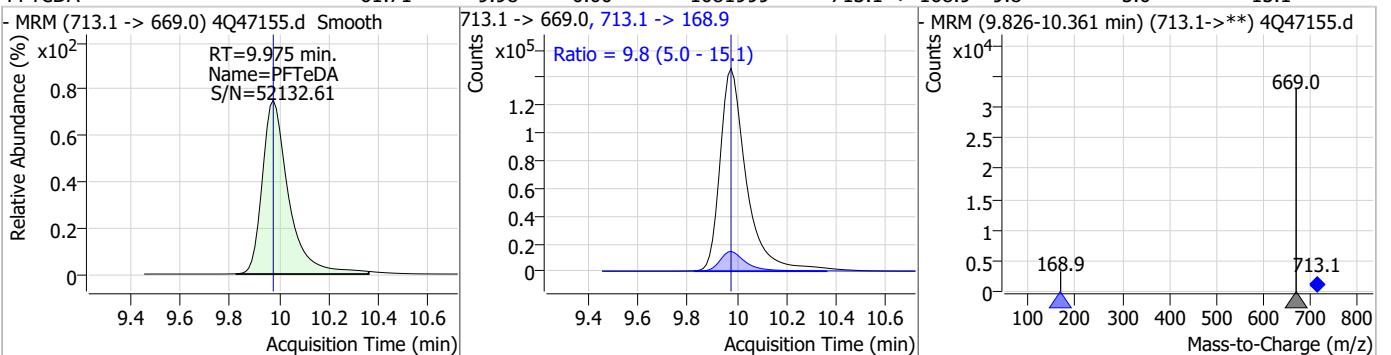
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	66.32	9.91	0.00	405451	498.1 -> 478.0	2.9	1.5	4.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.33	9.97	0.00	17548				

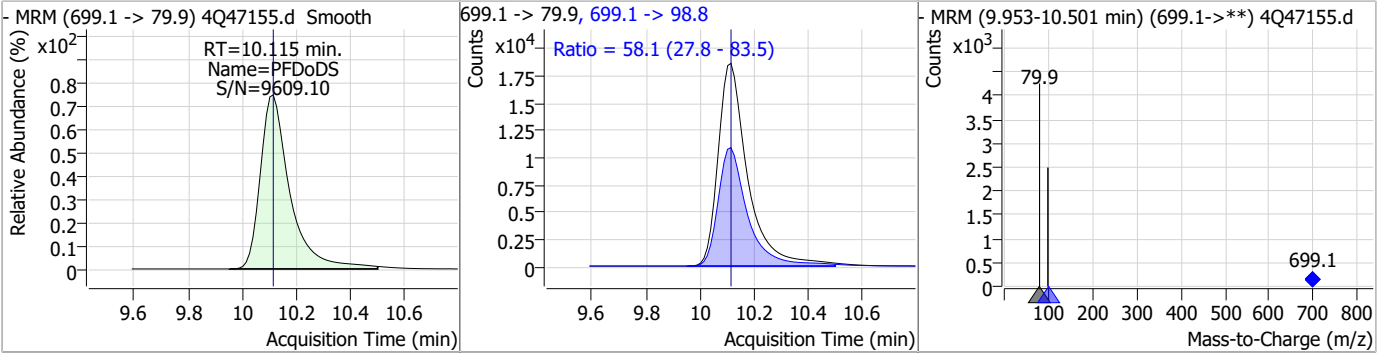


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	61.71	9.98	0.00	1081999	713.1 -> 168.9	9.8	5.0	15.1

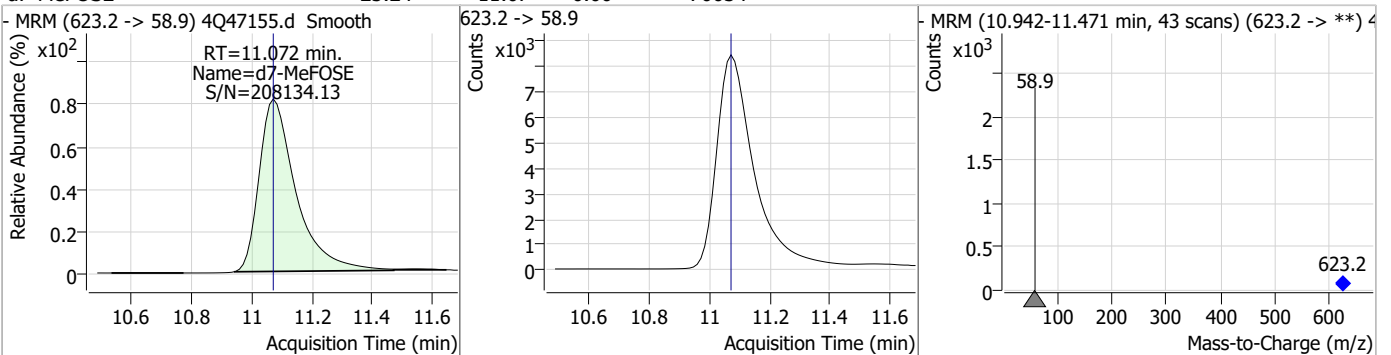


Perfluorinated Compounds by LC/MS/MS

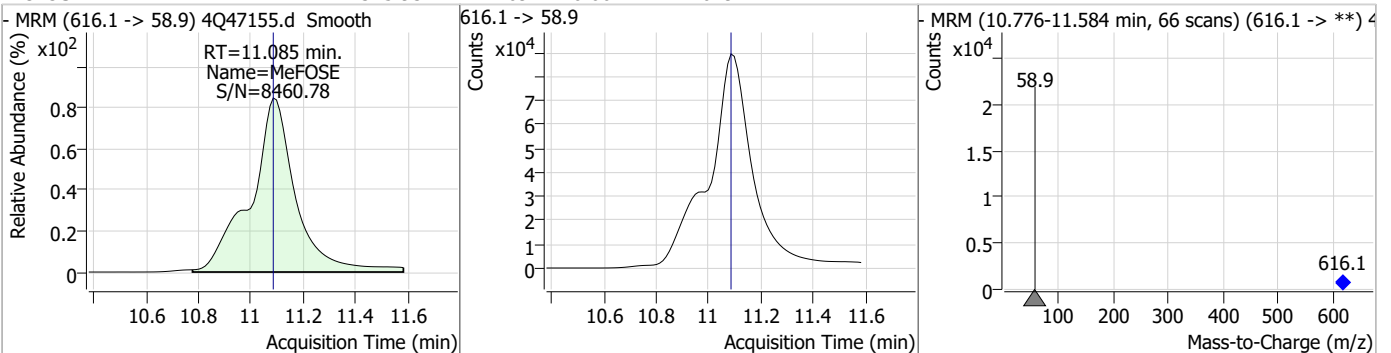
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	63.87	10.11	0.00	141382	699.1 -> 98.8	58.1	27.8	83.5



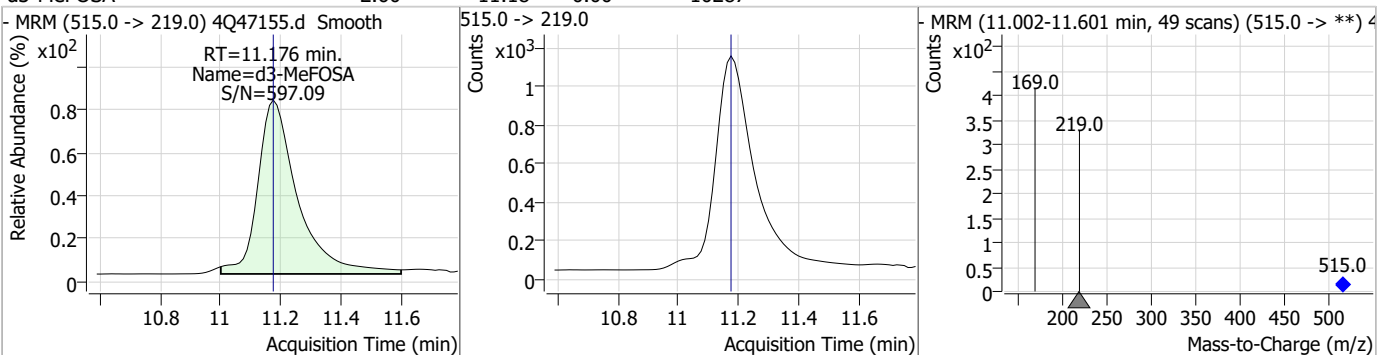
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.24	11.07	0.00	70634				



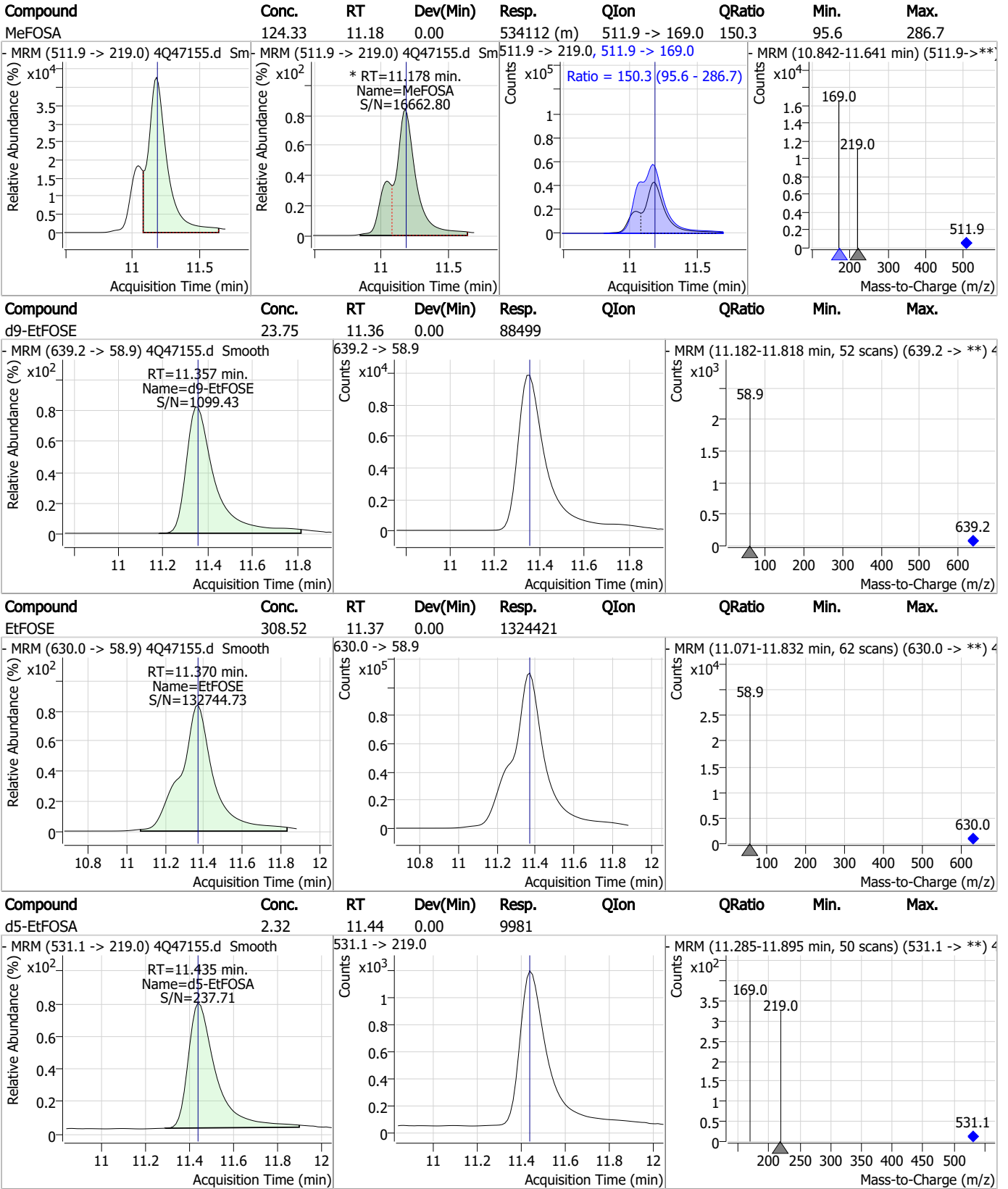
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	345.93	11.09	0.00	1079144				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.60	11.18	0.00	10287				



Perfluorinated Compounds by LC/MS/MS

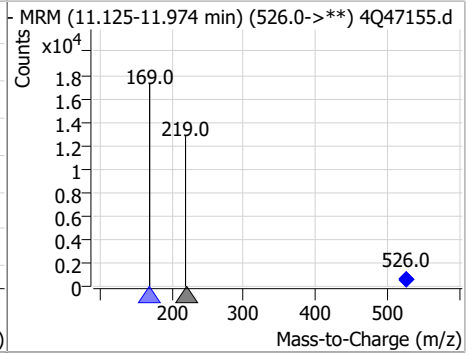
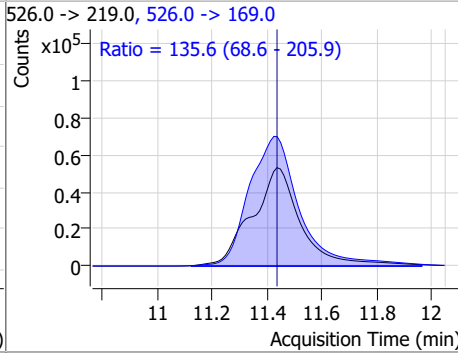
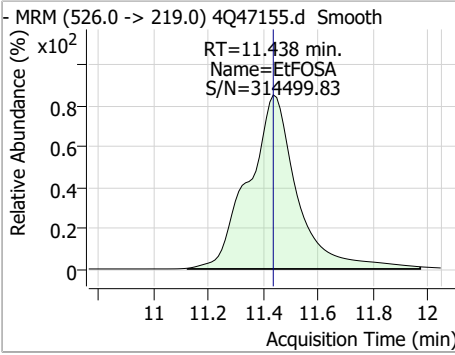


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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOsa	128.08	11.44	0.00	658832	526.0 -> 169.0	135.6	68.6	205.9



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Manual Integration Approval Summary

Sample Number: S4Q690-IC690 Method: EPA DRAFT 1633
Lab FileID: 4Q47155.D Analyst approved: 07/13/23 14:35 Anna Ludwig
Injection Time: 07/12/23 19:14 Supervisor approved: 07/14/23 09:30 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.43	Split peak
EtFOSAA	2991-50-6		8.57	Split peak
MeFOSA	31506-32-8		11.18	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47157.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/12/2023 7:44:21 PM
 Sample Name : icv690-4
 Vial : P1-B3
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q690.batch.bin
 Sample Information : OP97325,S4Q690,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.874	216.8 -> 171.9	147497	10.00 µg/L	-0.050
M5-PFPeA	4.387	268.3 -> 223.0	65281	5.00 µg/L	-0.012
M5-PFHxA	5.598	318.0 -> 273.0	50797	2.50 µg/L	0.000
M4-PFHpA	6.555	367.1 -> 322.0	37858	2.50 µg/L	0.000
M8-PFOA	7.236	421.1 -> 376.0	57680	2.50 µg/L	0.000
M9-PFNA	7.797	472.1 -> 427.0	25235	1.25 µg/L	0.000
M6-PFDA	8.292	519.1 -> 474.1	17802	1.25 µg/L	0.000
M7-PFUnDA	8.760	570.0 -> 525.1	24076	1.25 µg/L	0.000
M2-PFDoDA	9.194	615.1 -> 570.0	25075	1.25 µg/L	0.000
M2-PFTeDA	9.974	715.2 -> 670.0	17930	1.25 µg/L	0.000
M8-FOSA	9.909	506.1 -> 77.8	16258	2.50 µg/L	0.000
M3-PFBS	5.479	302.1 -> 79.9	11724	2.50 µg/L	0.000
M3-PFHxS	7.316	402.1 -> 79.9	8796	2.50 µg/L	-0.013
M8-PFOS	8.430	507.1 -> 79.9	11262	2.50 µg/L	-0.012
M2-4:2FTS	5.272	329.1 -> 80.9	706	5.00 µg/L	-0.012
M2-6:2FTS	6.999	429.1 -> 80.9	1597	5.00 µg/L	0.000
M2-8:2FTS	8.078	529.1 -> 80.9	2672	5.00 µg/L	0.000
M3-MeFOSAA	8.362	573.2 -> 419.0	20052	5.00 µg/L	0.000
M3-HFPO-DA	5.965	286.9 -> 168.9	49831	10.00 µg/L	-0.012
M5-EtFOSAA	8.571	589.2 -> 419.0	17699	5.00 µg/L	0.000
M7-MeFOSE	11.072	623.2 -> 58.9	82755	25.00 µg/L	0.000
M9-EtFOSE	11.356	639.2 -> 58.9	110653	25.00 µg/L	0.000
M5-EtFOSA	11.435	531.1 -> 219.0	12849	2.50 µg/L	0.000
M3-MeFOSA	11.176	515.0 -> 219.0	11875	2.50 µg/L	0.000
13C4-PFOS	8.430	502.8 -> 79.9	12167	2.50 µg/L	0.000
13C3-PFBA	2.878	216.0 -> 172.0	77571	5.00 µg/L	-0.050
18O2-PFHxS	7.328	403.0 -> 83.9	5867	2.50 µg/L	0.000
13C4-PFOA	7.237	417.1 -> 372.0	70330	2.50 µg/L	0.000
13C2-PFDA	8.292	515.1 -> 470.1	21989	1.25 µg/L	0.000
13C5-PFNA	7.798	468.0 -> 423.0	29788	1.25 µg/L	0.000
13C2-PFHxA	5.599	315.1 -> 270.0	47353	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.272	329.1 -> 80.9	706	5.36 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.2%		
13C2-6:2FTS	6.999	429.1 -> 80.9	1597	5.53 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.6%		
13C2-8:2FTS	8.078	529.1 -> 80.9	2672	5.69 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.7%		
13C2-PFDoDA	9.194	615.1 -> 570.0	25075	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C2-PFTeDA	9.974	715.2 -> 670.0	17930	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C3-PFBS	5.479	302.1 -> 79.9	11724	2.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.4%		
13C3-PFHxS	7.316	402.1 -> 79.9	8796	2.67 µg/L	-0.013

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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	2.874	216.8 -> 171.9	147497	10.06 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C4-PFHpA	6.555	367.1 -> 322.0	37858	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.2%	
13C5-PFHxA	5.598	318.0 -> 273.0	50797	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C5-PFPeA	4.387	268.3 -> 223.0	65281	4.99 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C6-PFDA	8.292	519.1 -> 474.1	17802	1.17 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.6%	
13C7-PFUnDA	8.760	570.0 -> 525.1	24076	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C8-FOSA	9.909	506.1 -> 77.8	16258	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C8-PFOA	7.236	421.1 -> 376.0	57680	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C8-PFOS	8.430	507.1 -> 79.9	11262	2.66 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.6%	
13C9-PFNA	7.797	472.1 -> 427.0	25235	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.4%	
d3-MeFOSAA	8.362	573.2 -> 419.0	20052	5.01 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C3-HFPO-DA	5.965	286.9 -> 168.9	49831	9.87 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
d3-MeFOSA	11.176	515.0 -> 219.0	11875	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.5%	
d5-EtFOSAA	8.571	589.2 -> 419.0	17699	5.01 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
d7-MeFOSE	11.072	623.2 -> 58.9	82755	25.49 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.9%	
d9-EtFOSE	11.356	639.2 -> 58.9	110653	25.60 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
d5-EtFOSA	11.435	531.1 -> 219.0	12849	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.1%	
Target Compounds					QValue
4:2FTS	5.272	327.1 -> 307.0	10733	8.56 µg/L	97
		327.1 -> 80.9	4520		
6:2FTS	6.999	427.1 -> 407.0	15527	8.41 µg/L	98
		427.1 -> 80.9	6133		
8:2FTS	8.079	527.1 -> 507.0	12305	8.05 µg/L	97
		527.1 -> 80.8	5678		
EtFOSAA	8.572	584.2 -> 419.1	6739	2.36 µg/L	m 96
		584.2 -> 526.0	3069		
FOSA	9.912	498.1 -> 77.9	17206	2.40 µg/L	100
		498.1 -> 478.0	515		
MeFOSAA	8.362	570.1 -> 419.0	8100	2.26 µg/L	m 97
		570.1 -> 483.0	1412		
PFBA	2.870	212.8 -> 168.9	41579	9.37 µg/L	100
PFBS	5.480	298.7 -> 79.9	9832	2.01 µg/L	89
		298.7 -> 98.8	4094		
PFDA	8.292	512.9 -> 469.0	46036	2.49 µg/L	99
		512.9 -> 219.0	8942		
PFDODA	9.194	613.1 -> 569.0	46512	2.30 µg/L	98
		613.1 -> 319.0	7644		
PFDS	9.346	599.0 -> 79.9	6720	2.11 µg/L	93

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	3729			
PFHpA	6.556	363.1 -> 319.0	54048	2.32	µg/L	98
		363.1 -> 169.0	9792			
PFHpS	7.911	449.0 -> 79.9	9690	2.15	µg/L	99
		449.0 -> 98.9	4902			
PFHxA	5.601	313.0 -> 269.0	45755	2.30	µg/L	99
		313.0 -> 118.9	1392			
PFHxS	7.317	398.7 -> 79.9	8034	2.05	µg/L	m 94
		398.7 -> 98.9	4526			
PFNA	7.798	463.0 -> 419.0	42631	2.29	µg/L	98
		463.0 -> 219.0	10428			
PFNS	8.911	548.8 -> 79.9	7377	2.20	µg/L	97
		548.8 -> 98.9	3803			
PFOA	7.238	413.0 -> 369.0	78648	2.41	µg/L	98
		413.0 -> 169.0	15849			
PFOS	8.431	498.9 -> 79.9	11351	1.89	µg/L	m 91
		498.9 -> 98.8	6355			
PFPeA	4.389	263.0 -> 219.0	86712	4.71	µg/L	100
PFPeS	6.582	349.1 -> 79.9	6814	2.10	µg/L	97
		349.1 -> 98.9	3261			
PFTeDA	9.975	713.1 -> 669.0	41337	2.31	µg/L	99
		713.1 -> 168.9	4210			
PFTrDA	9.604	663.0 -> 619.0	52578	2.35	µg/L	97
		663.0 -> 168.9	6649			
PFUnDA	8.760	563.1 -> 519.0	44477	2.33	µg/L	99
		563.1 -> 269.1	9796			
11Cl-PF3OUdS	9.644	630.9 -> 450.9	60146	4.52	µg/L	99
		632.9 -> 452.9	18081			
9Cl-PF3ONS	8.775	530.8 -> 351.0	83292	4.67	µg/L	97
		532.8 -> 353.0	25987			
ADONA	6.818	376.9 -> 250.9	168924	4.53	µg/L	98
		376.9 -> 84.8	43228			
HFPO-DA	5.966	284.9 -> 168.9	23924	4.65	µg/L	98
		284.9 -> 184.9	2972			
3:3FTCA	3.823	241.0 -> 177.0	11624	11.39	µg/L	99
		241.0 -> 117.0	1063			
5:3FTCA	6.281	341.0 -> 237.1	194410	58.84	µg/L	99
		341.0 -> 217.0	136599			
7:3FTCA	7.774	441.0 -> 316.9	108675	59.59	µg/L	98
		441.0 -> 336.9	258937			
EtFOSA	11.437	526.0 -> 219.0	30053	4.54	µg/L	99
		526.0 -> 169.0	41466			
EtFOSE	11.370	630.0 -> 58.9	58382	10.88	µg/L	100
MeFOSA	11.178	511.9 -> 219.0	24106	4.86	µg/L	69
		511.9 -> 169.0	35087			
MeFOSE	11.085	616.1 -> 58.9	43690	11.95	µg/L	100
PFDoDS	10.102	699.1 -> 79.9	5622	2.15	µg/L	97
		699.1 -> 98.8	3268			
NFDHA	5.481	295.0 -> 201.0	5684	4.87	µg/L	96
		295.0 -> 84.9	1299			
PFMBA	4.797	279.0 -> 85.1	46590	4.71	µg/L	100
PFMPA	3.499	229.0 -> 84.9	44083	4.69	µg/L	100
PFEESA	6.022	314.8 -> 134.9	63797	4.25	µg/L	99
		314.8 -> 82.9	1971			

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

7.7.10
7



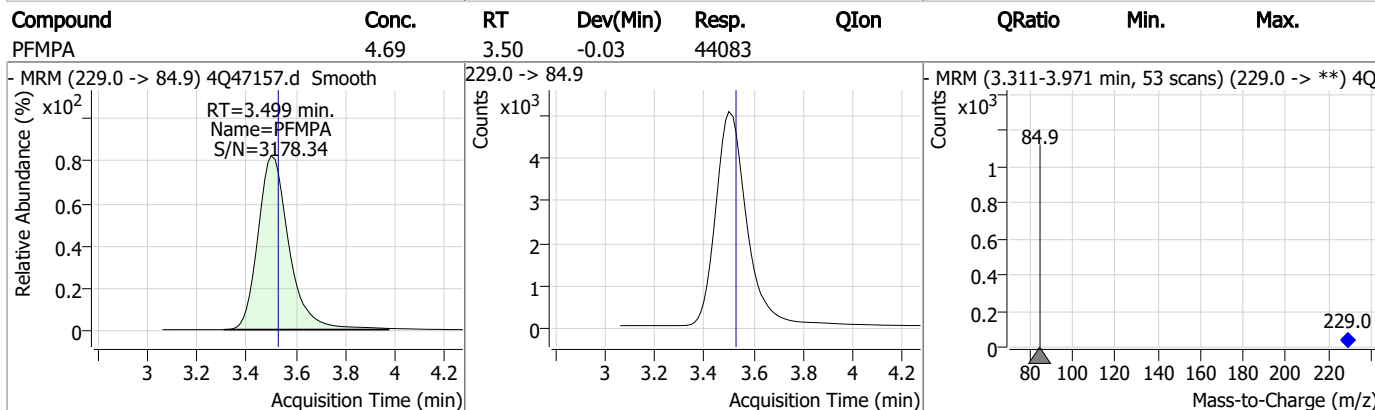
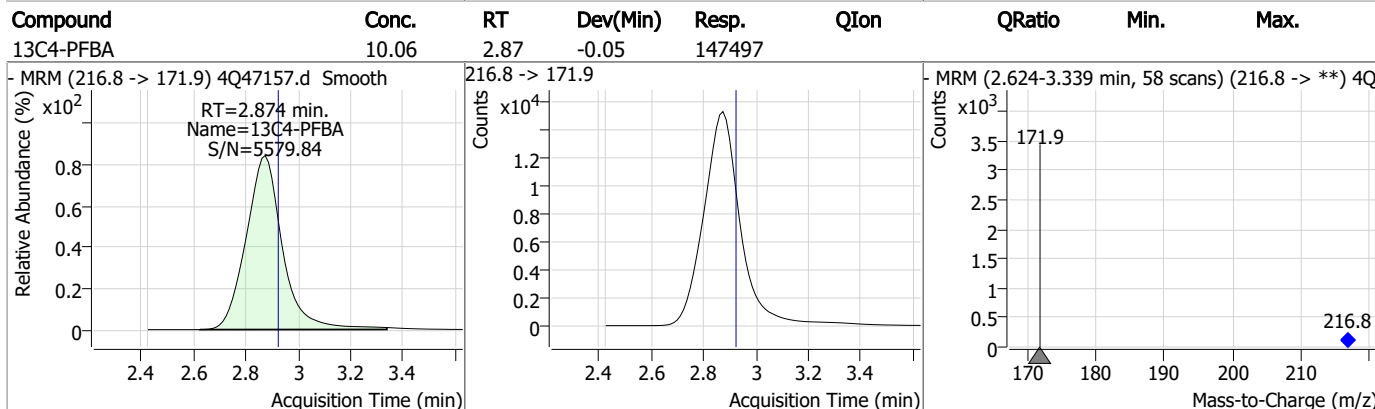
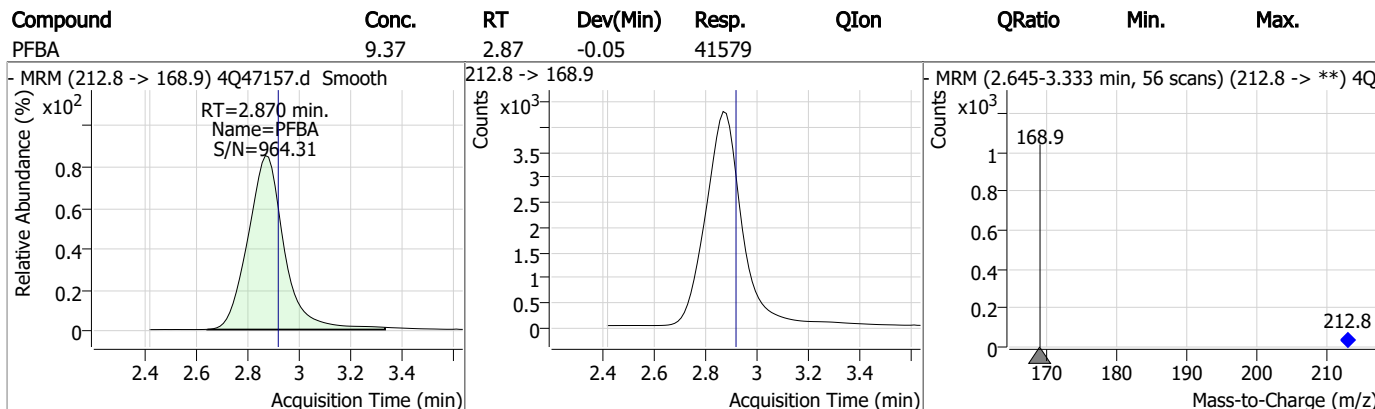
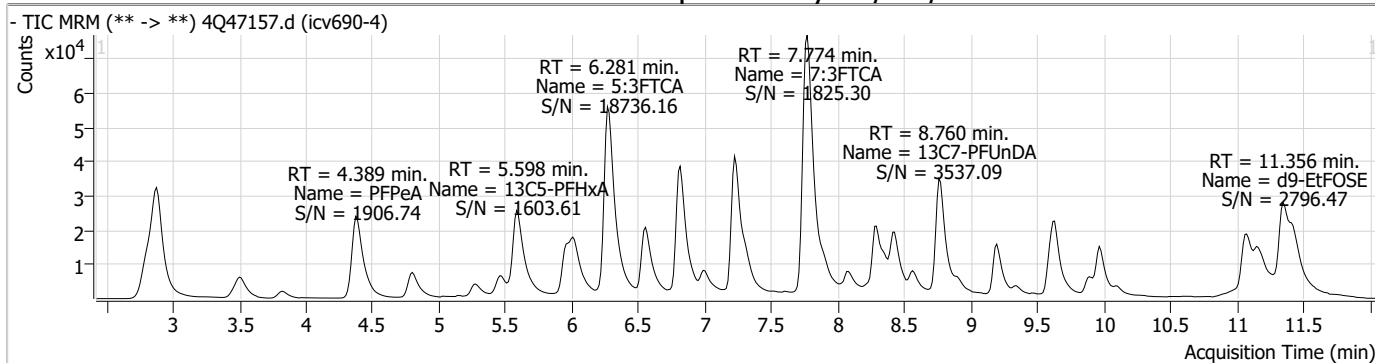
Perfluorinated Compounds by LC/MS/MS

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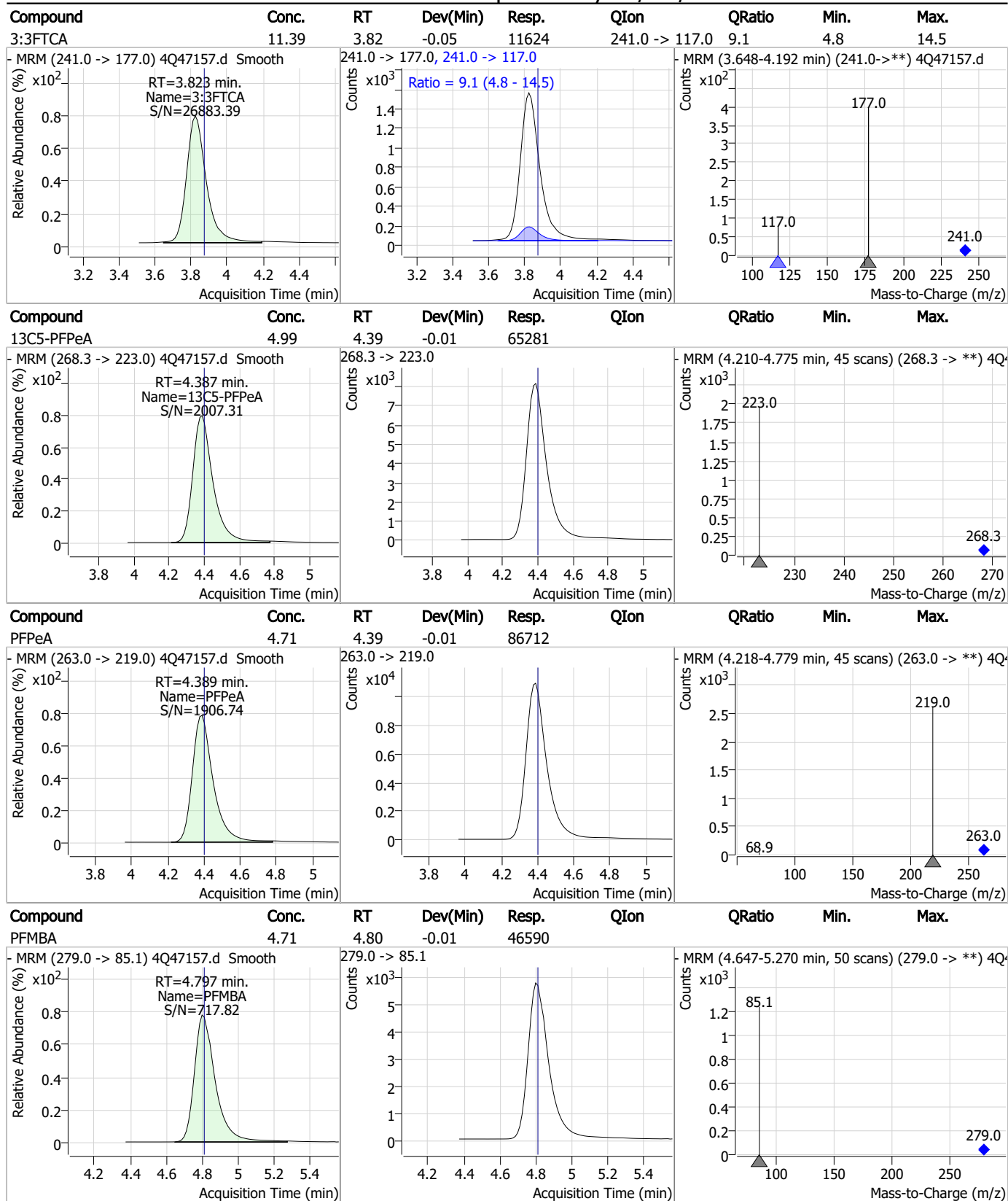
7.7.10

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Perfluorinated Compounds by LC/MS/MS

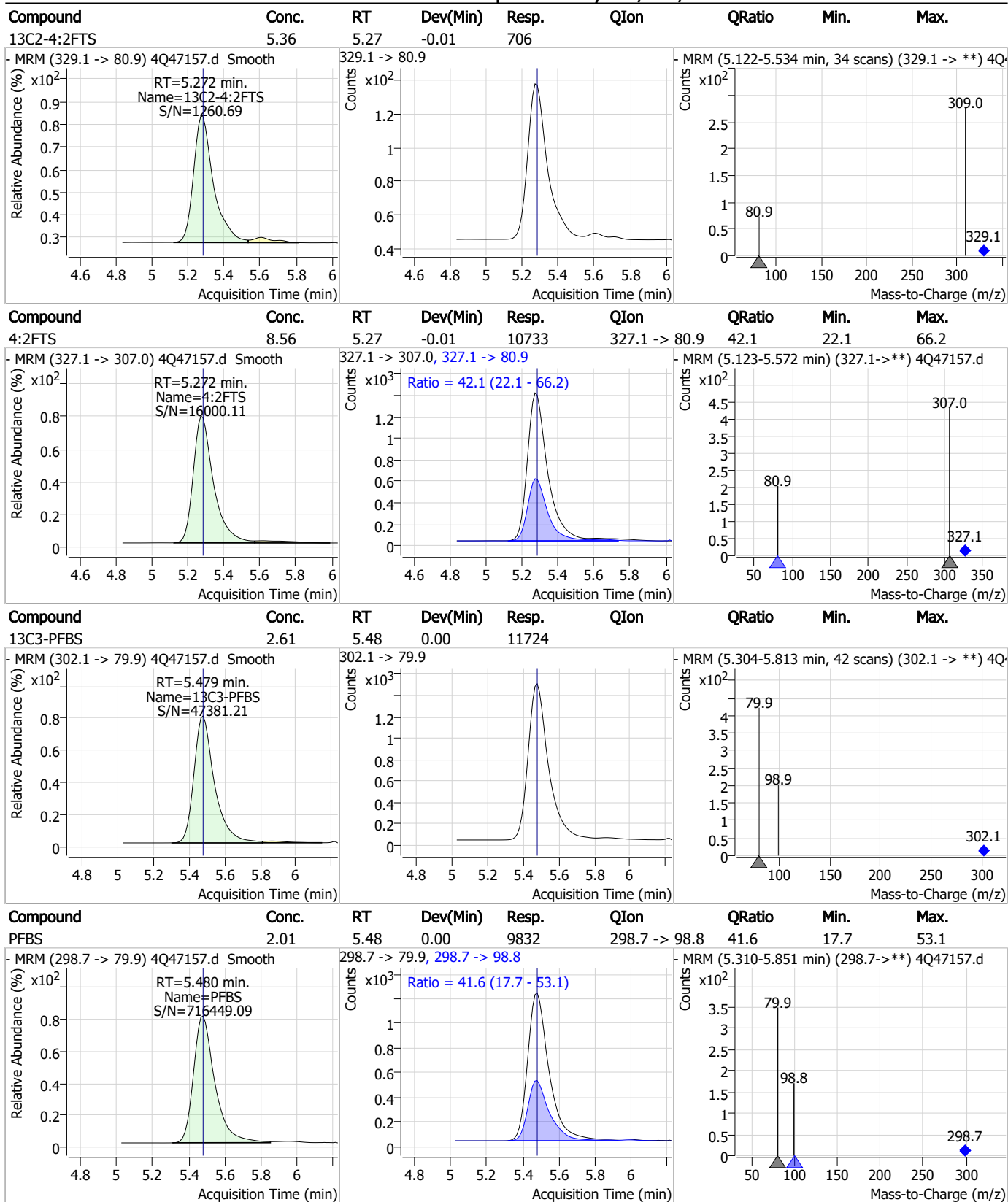


Perfluorinated Compounds by LC/MS/MS



7.7.10 7

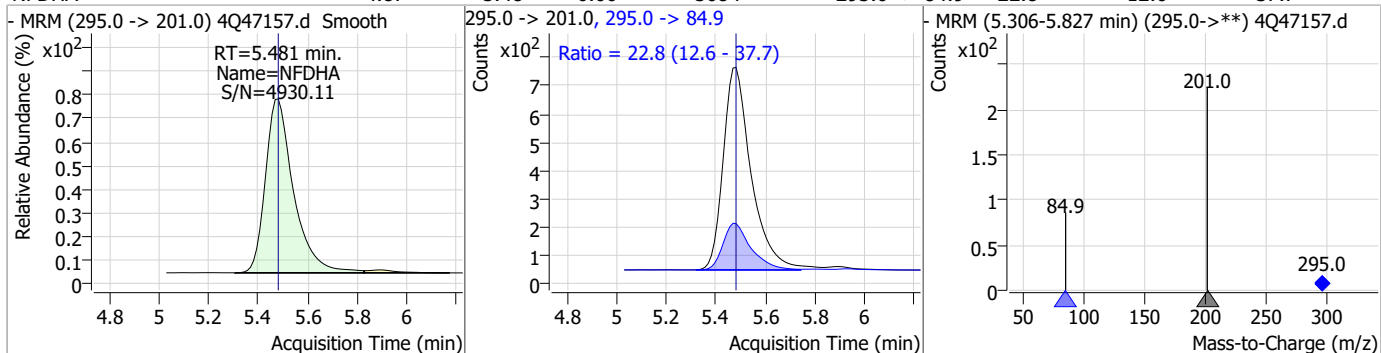
Perfluorinated Compounds by LC/MS/MS



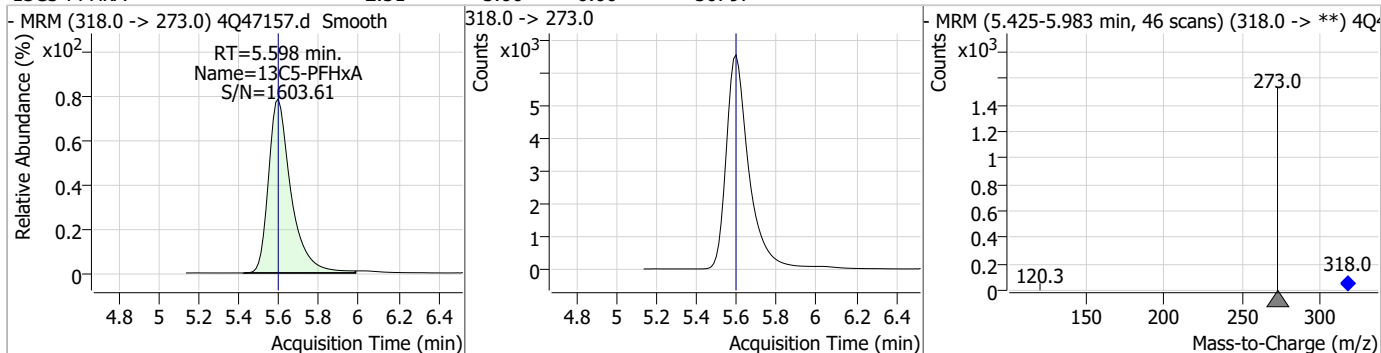
7.7.10 7

Perfluorinated Compounds by LC/MS/MS

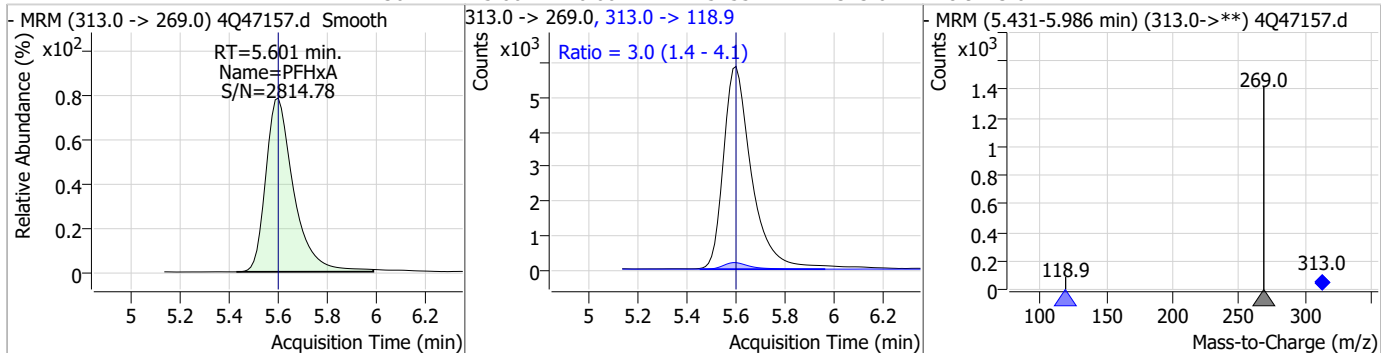
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	4.87	5.48	0.00	5684	295.0 -> 84.9	22.8	12.6	37.7



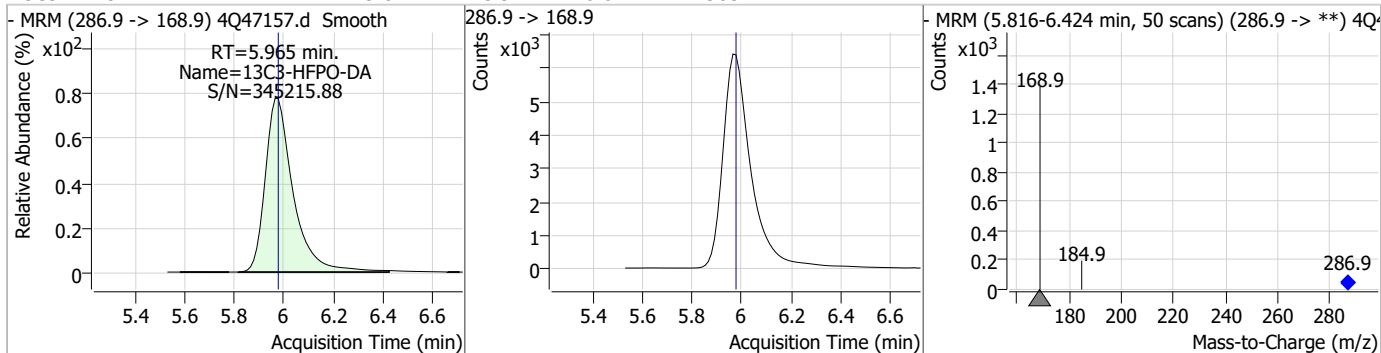
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.51	5.60	0.00	50797	318.0 -> 273.0	3.0	1.4	4.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.30	5.60	0.00	45755	313.0 -> 118.9	3.0	1.4	4.1

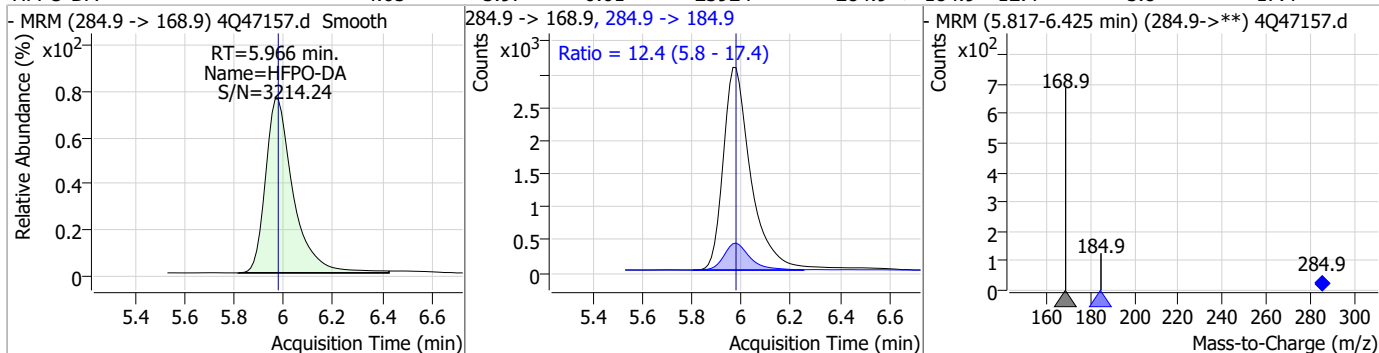


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.87	5.97	-0.01	49831	286.9 -> 168.9	3.0	1.4	4.1

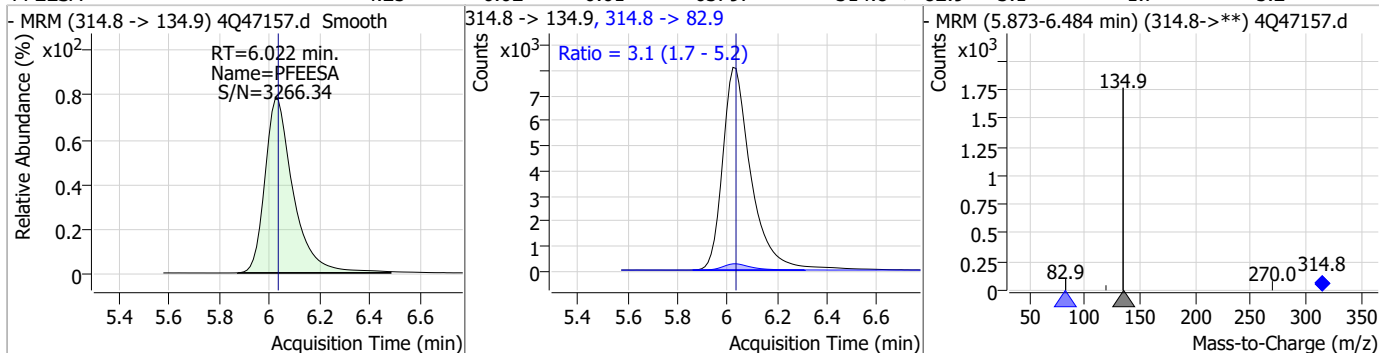


Perfluorinated Compounds by LC/MS/MS

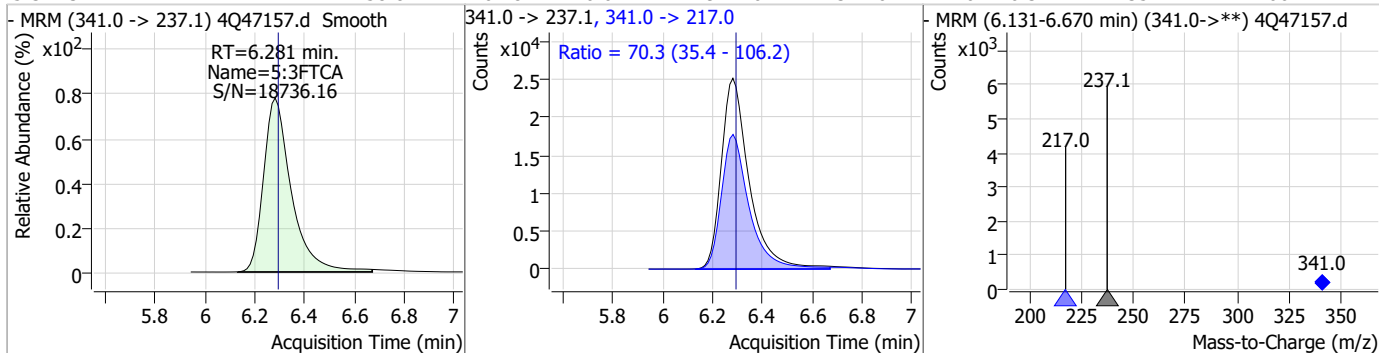
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.65	5.97	-0.01	23924	284.9 -> 184.9	12.4	5.8	17.4



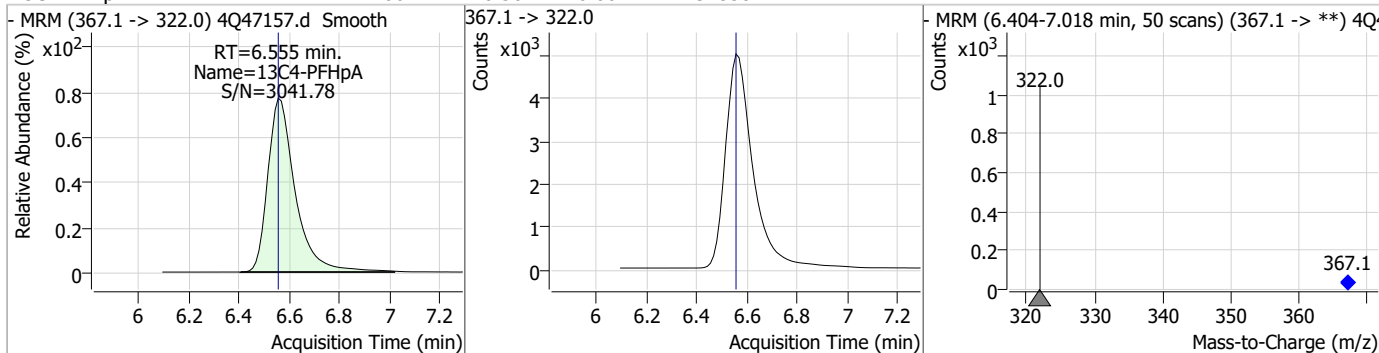
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.25	6.02	-0.01	63797	314.8 -> 82.9	3.1	1.7	5.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	58.84	6.28	-0.01	194410	341.0 -> 217.0	70.3	35.4	106.2

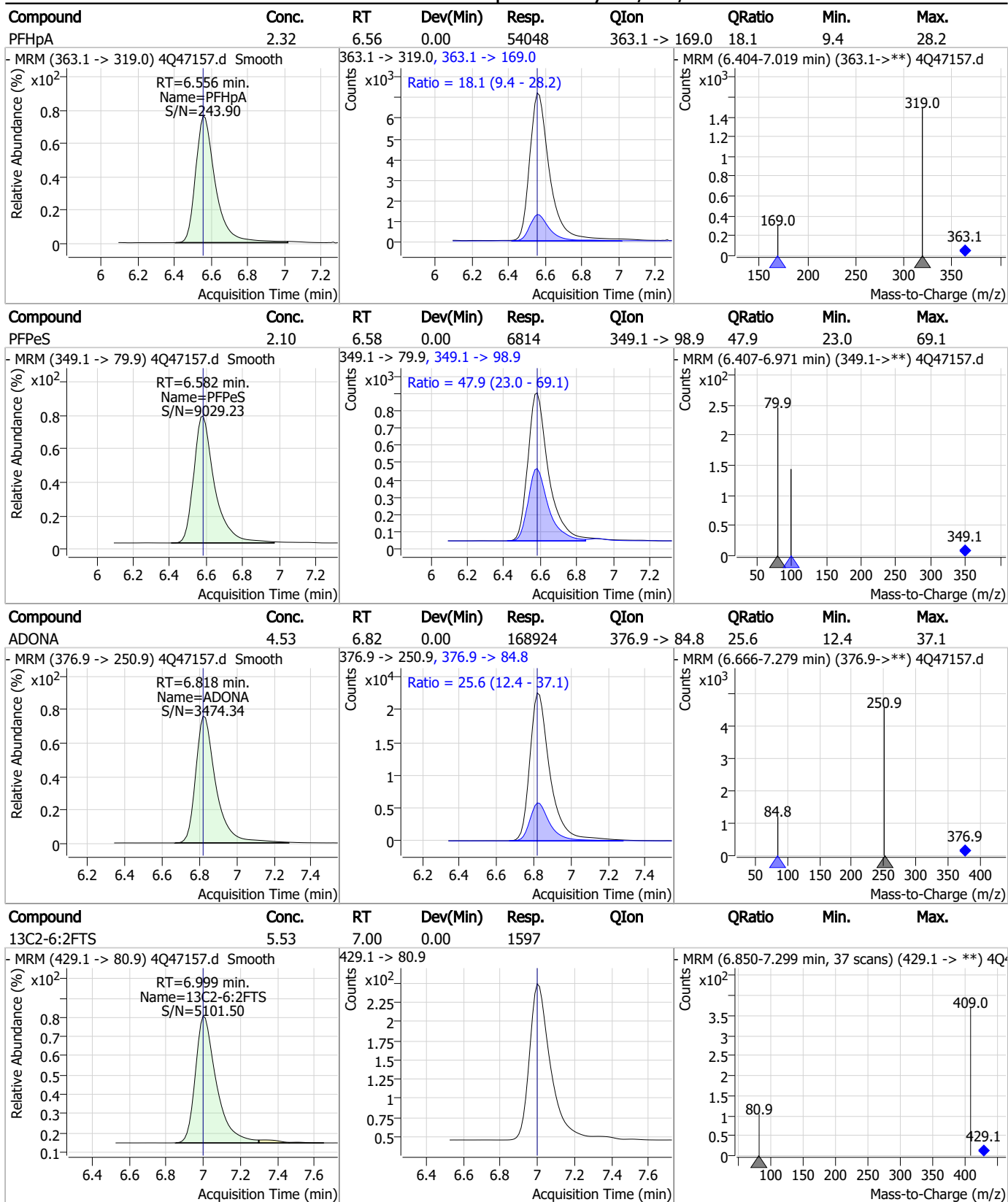


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.60	6.56	0.00	37858	367.1 -> 322.0			



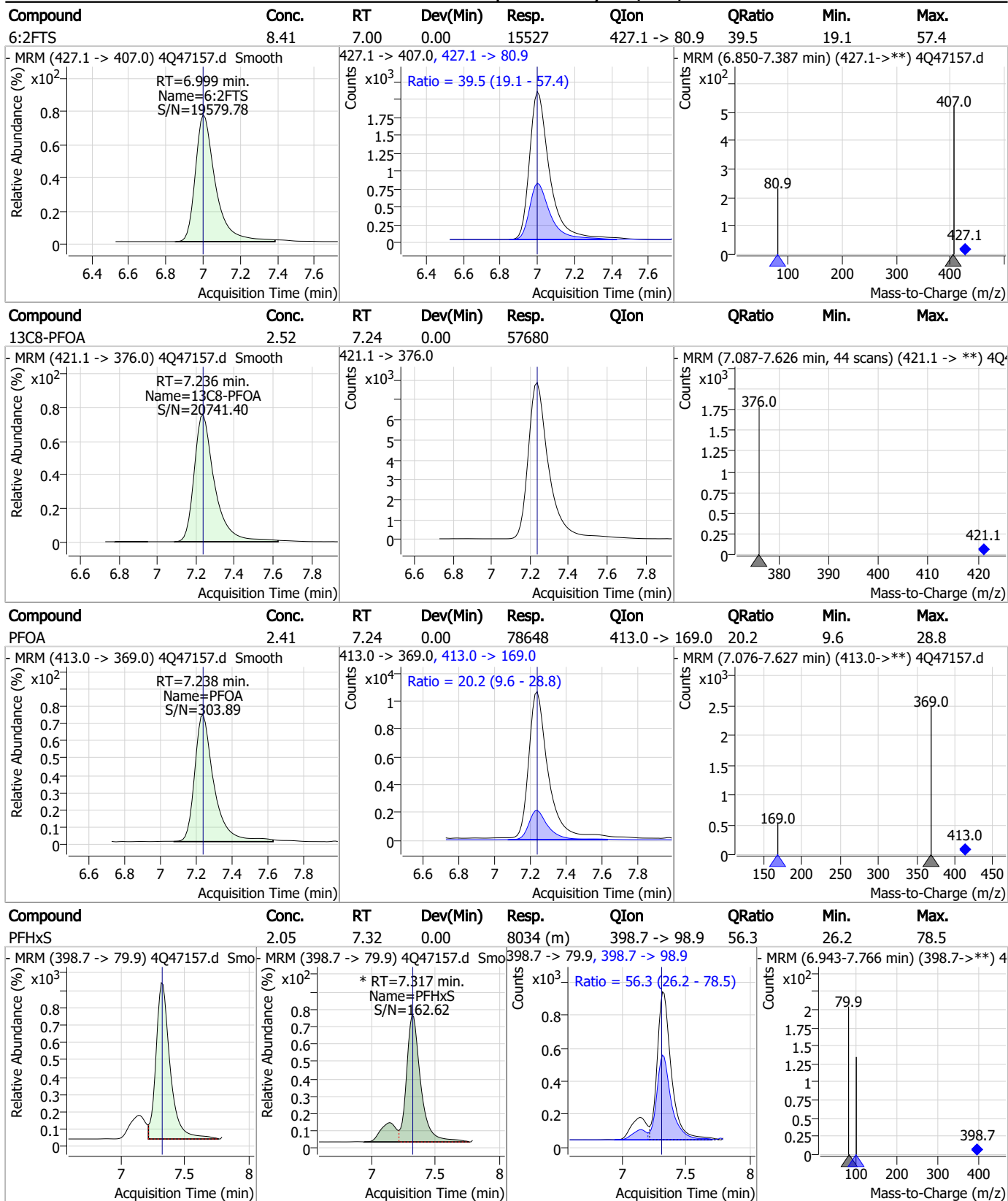
7.7.10
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Perfluorinated Compounds by LC/MS/MS



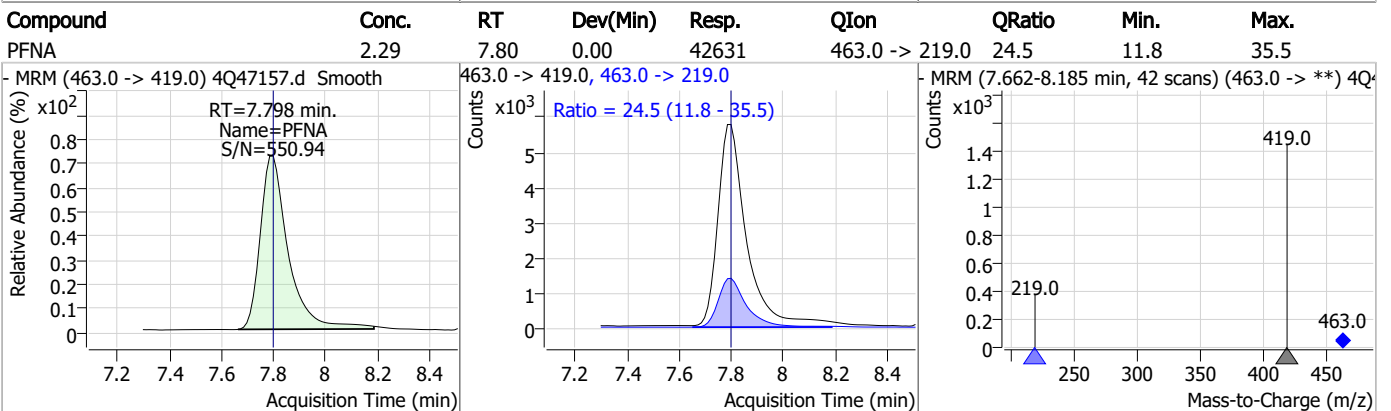
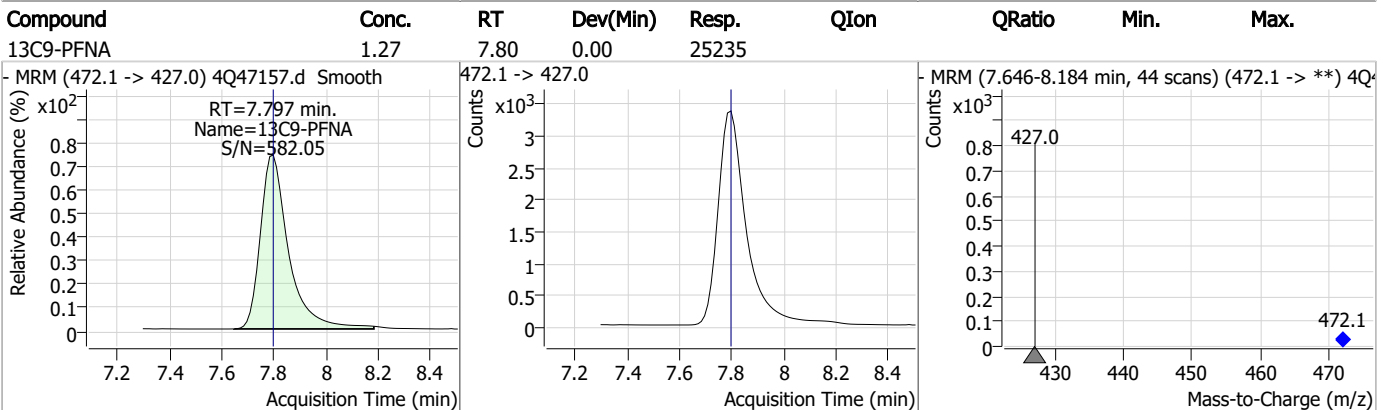
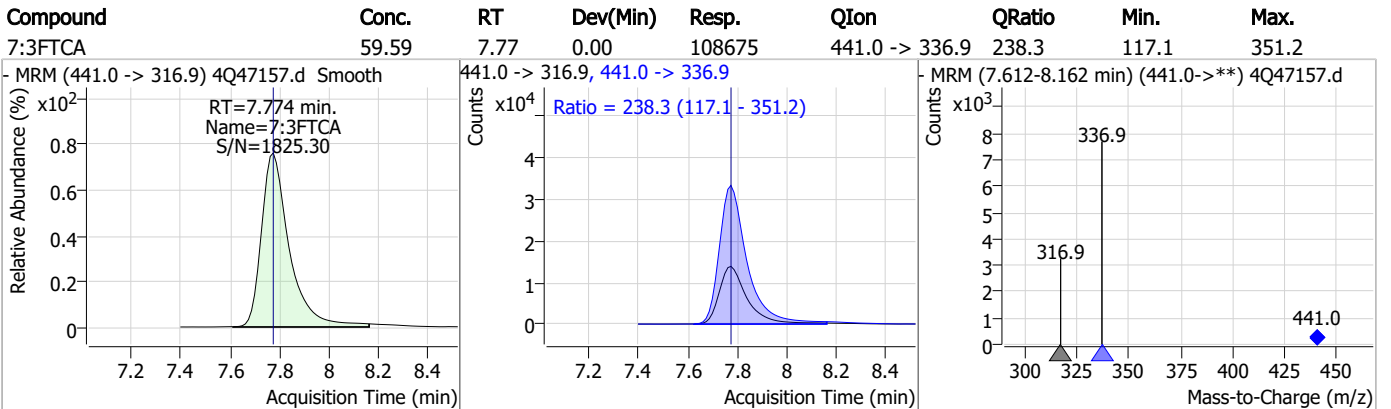
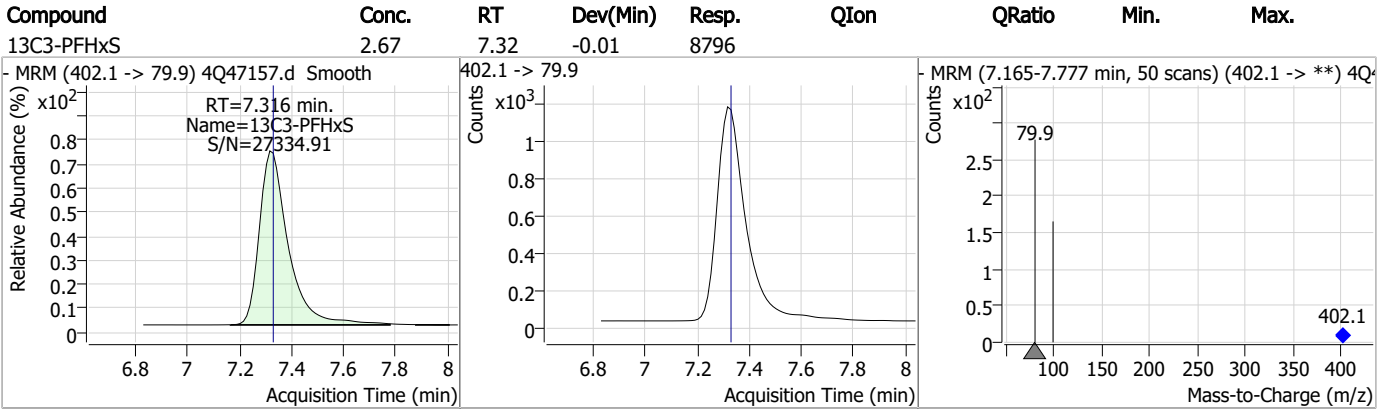
7.7.10 7

Perfluorinated Compounds by LC/MS/MS



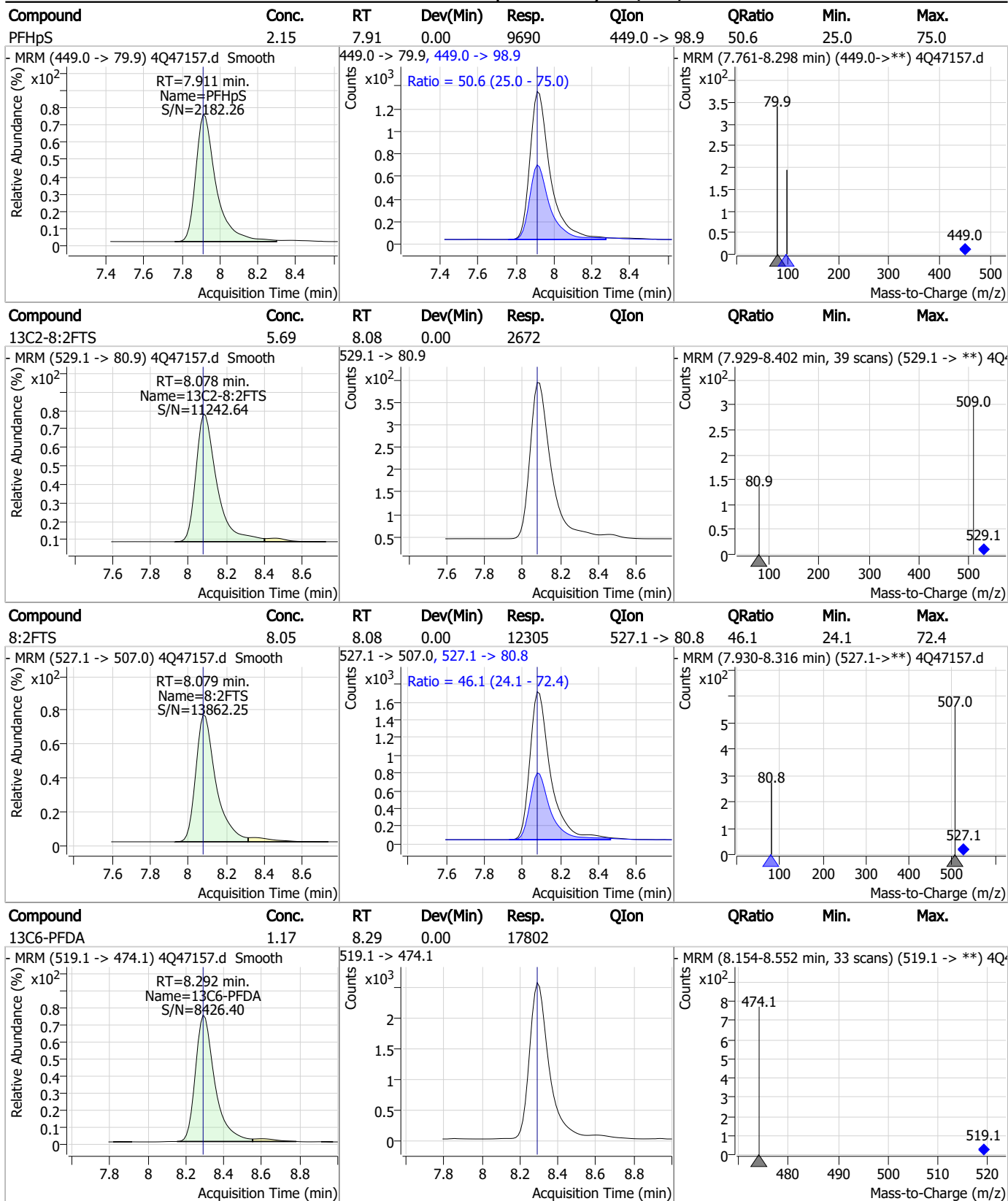
7.7.10 7

Perfluorinated Compounds by LC/MS/MS



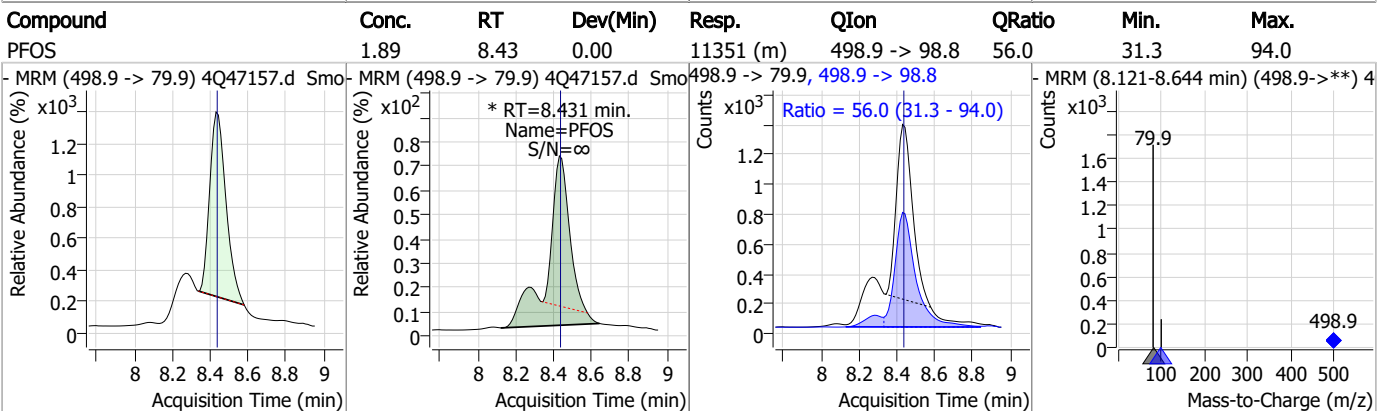
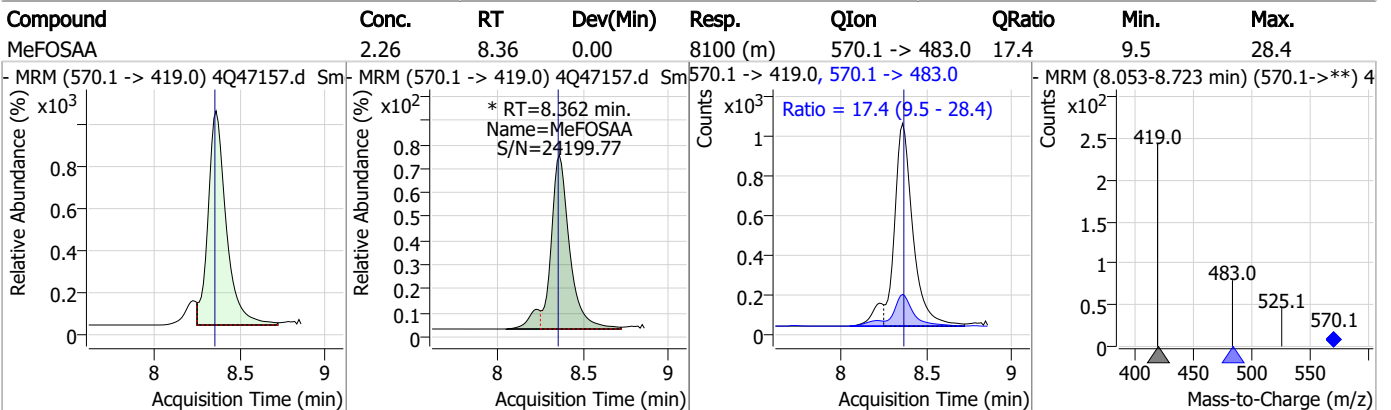
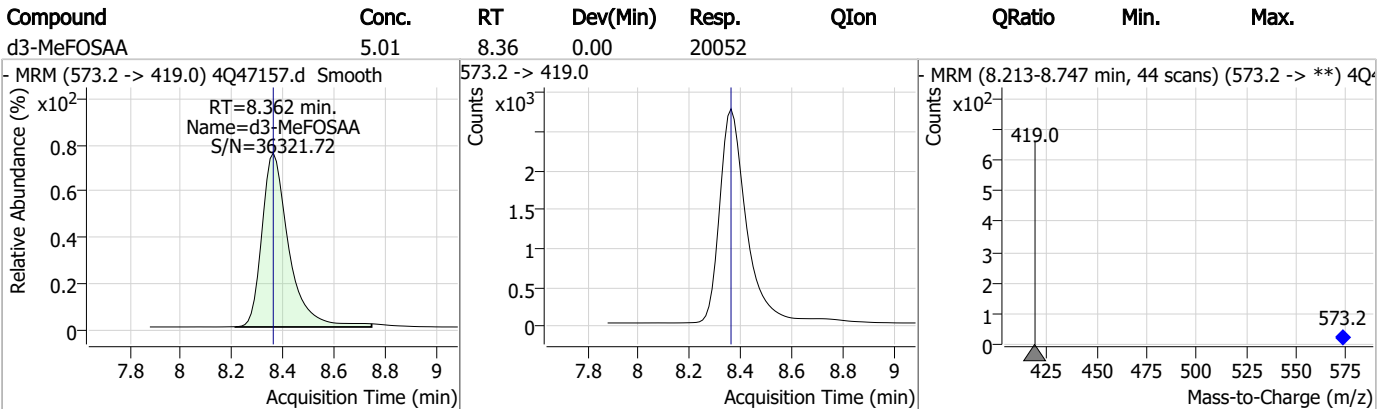
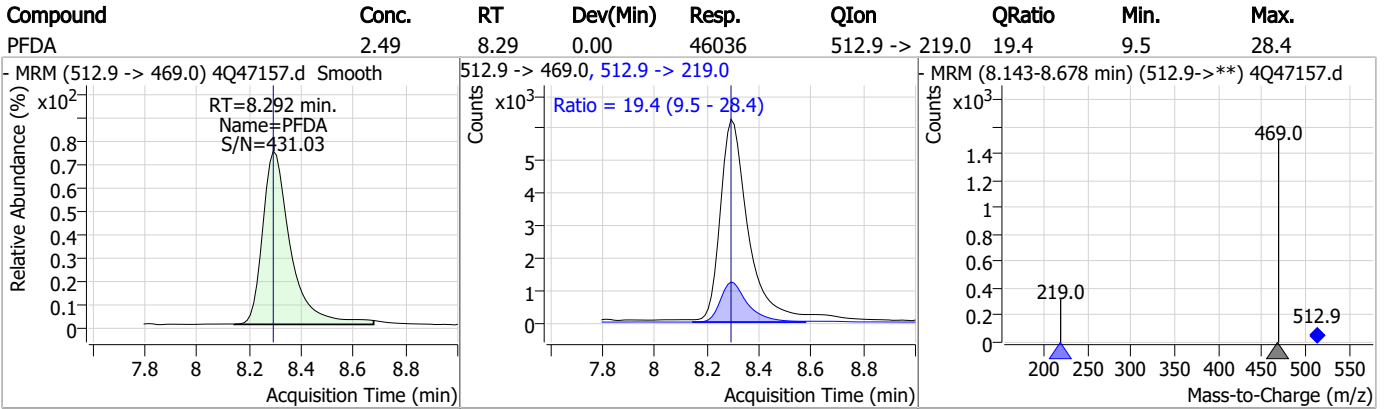
7.7.10 7

Perfluorinated Compounds by LC/MS/MS



7.7.10
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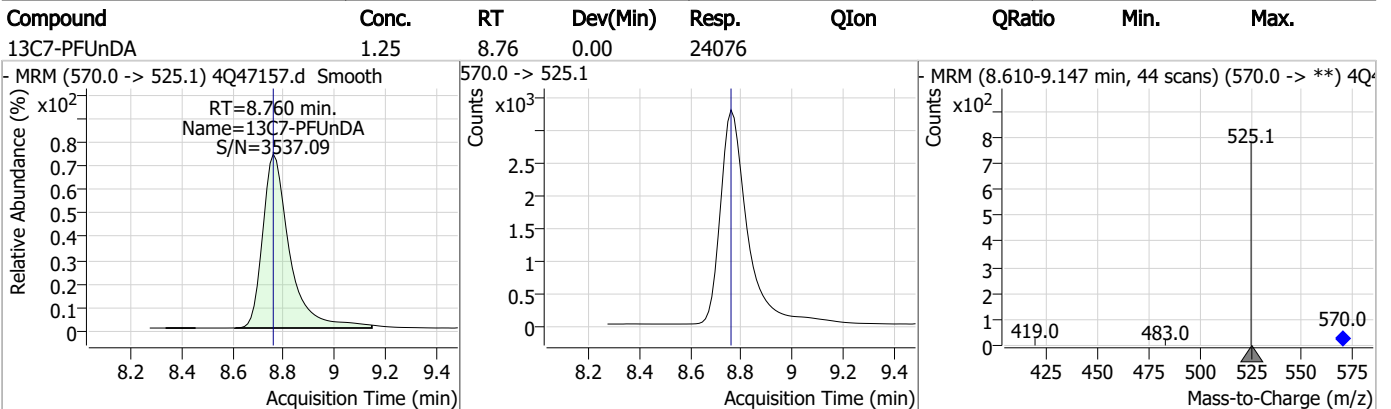
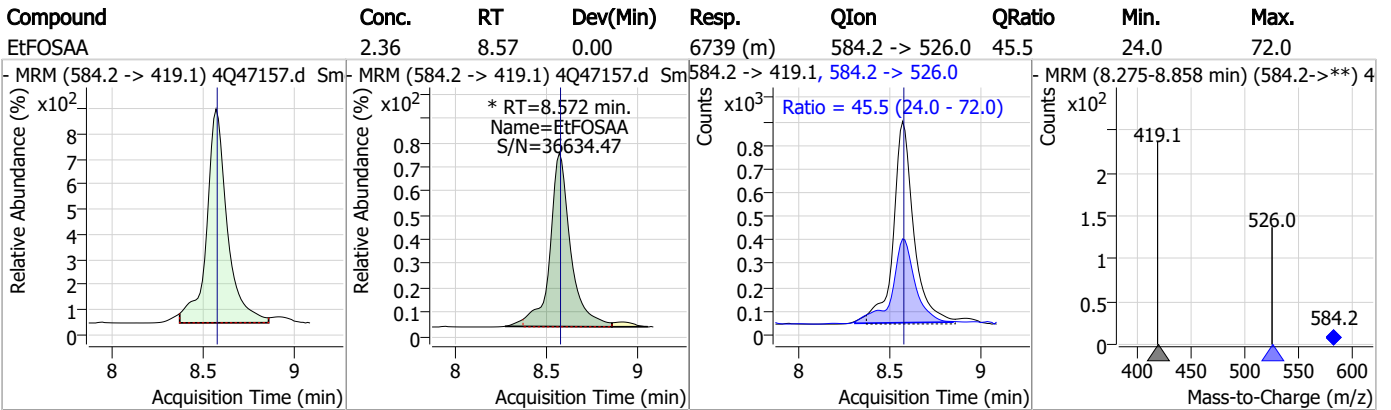
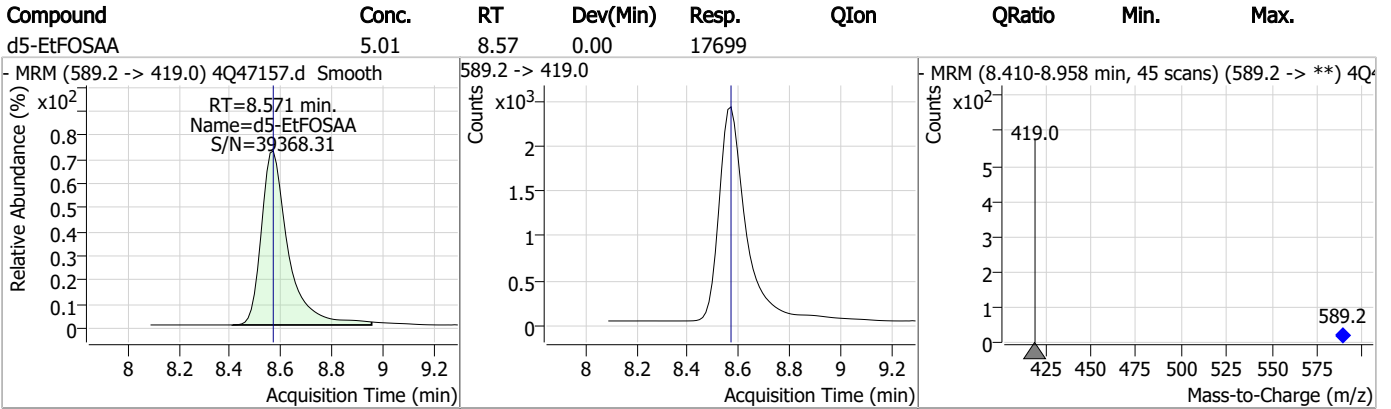
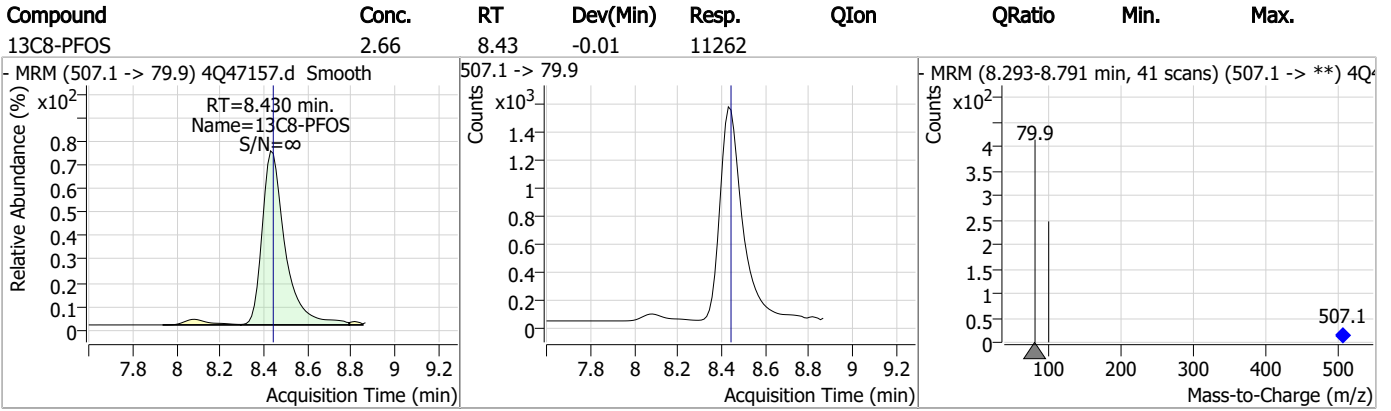
Perfluorinated Compounds by LC/MS/MS



7.7.10
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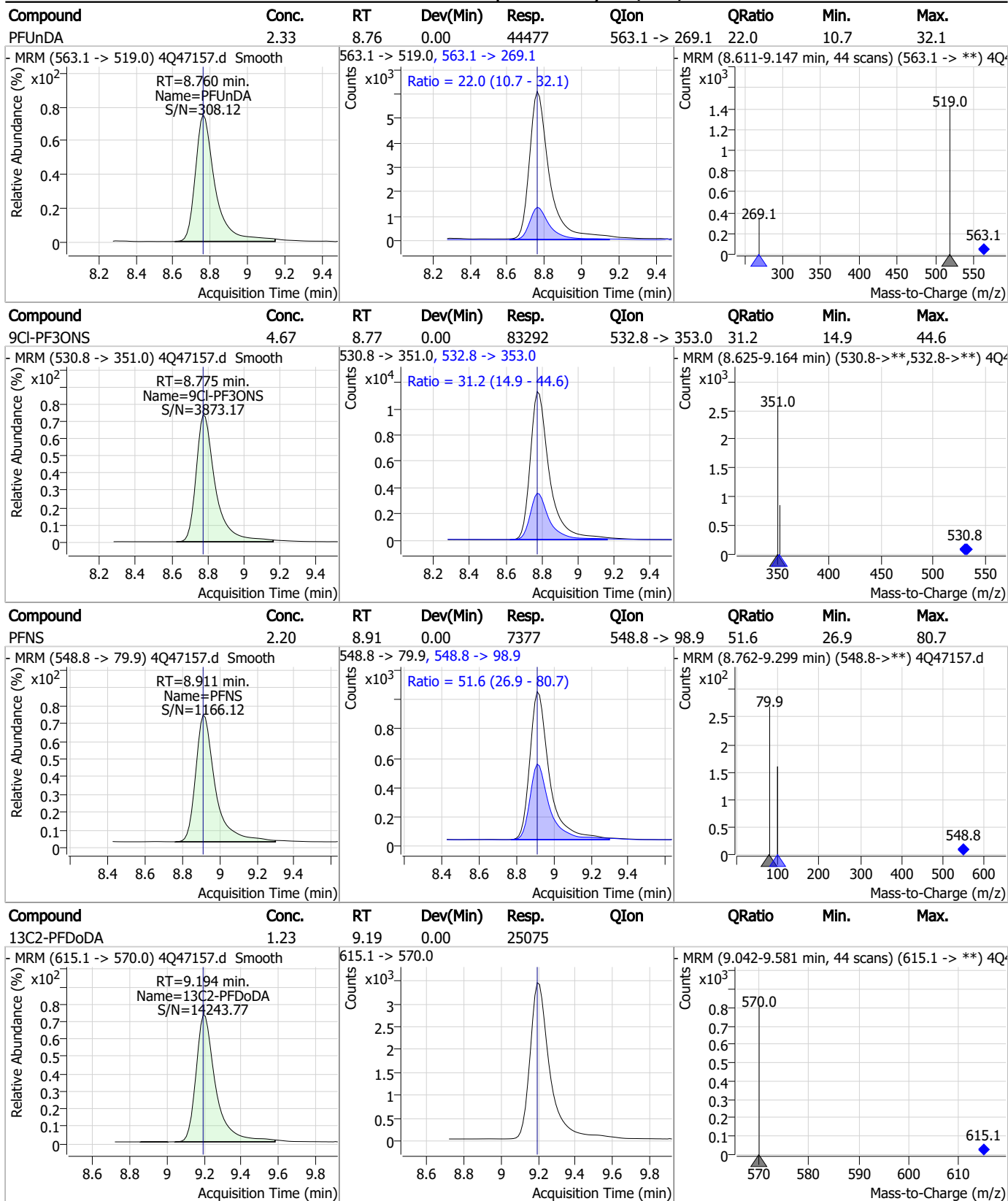
Perfluorinated Compounds by LC/MS/MS



7.7.10
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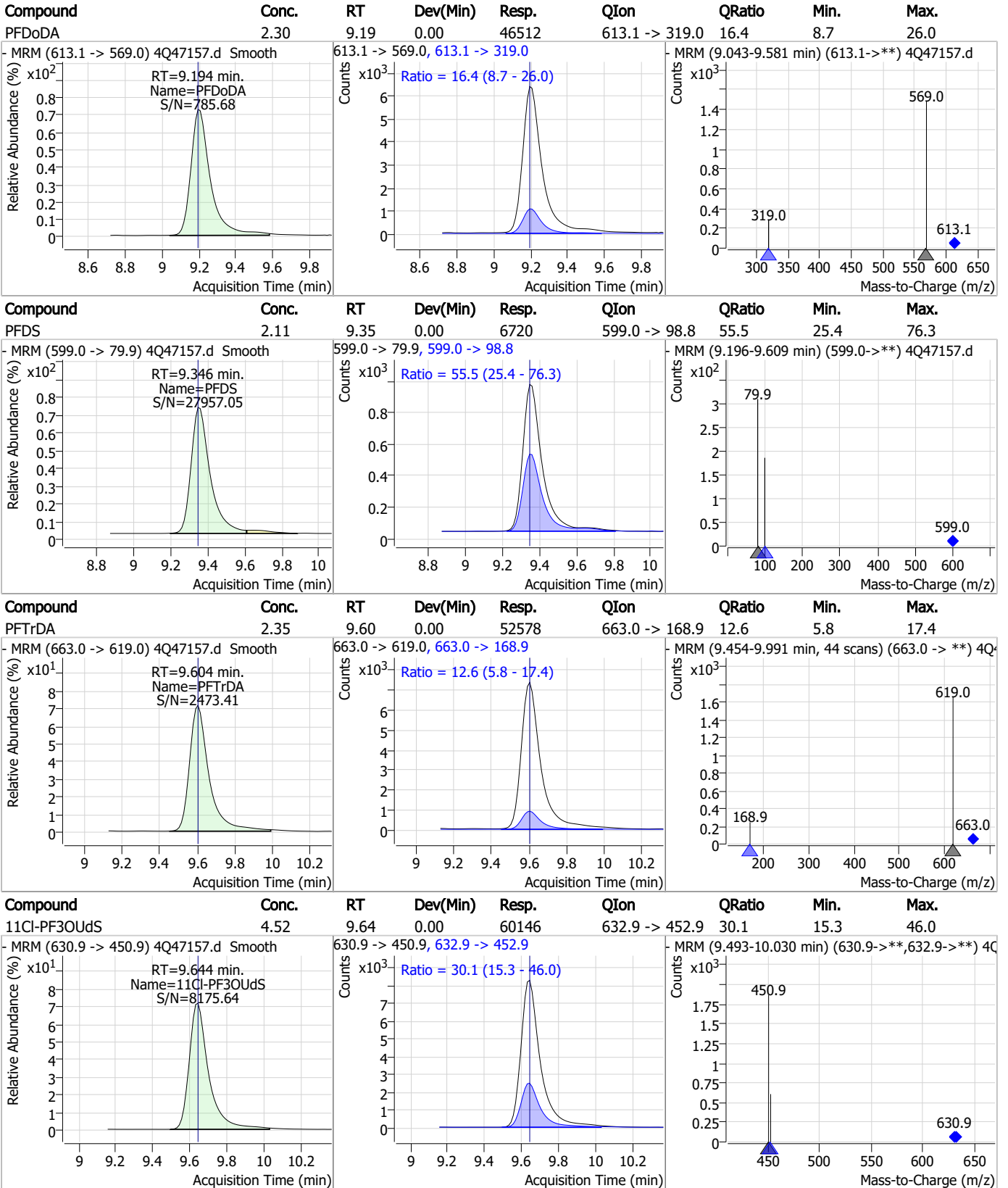


Perfluorinated Compounds by LC/MS/MS



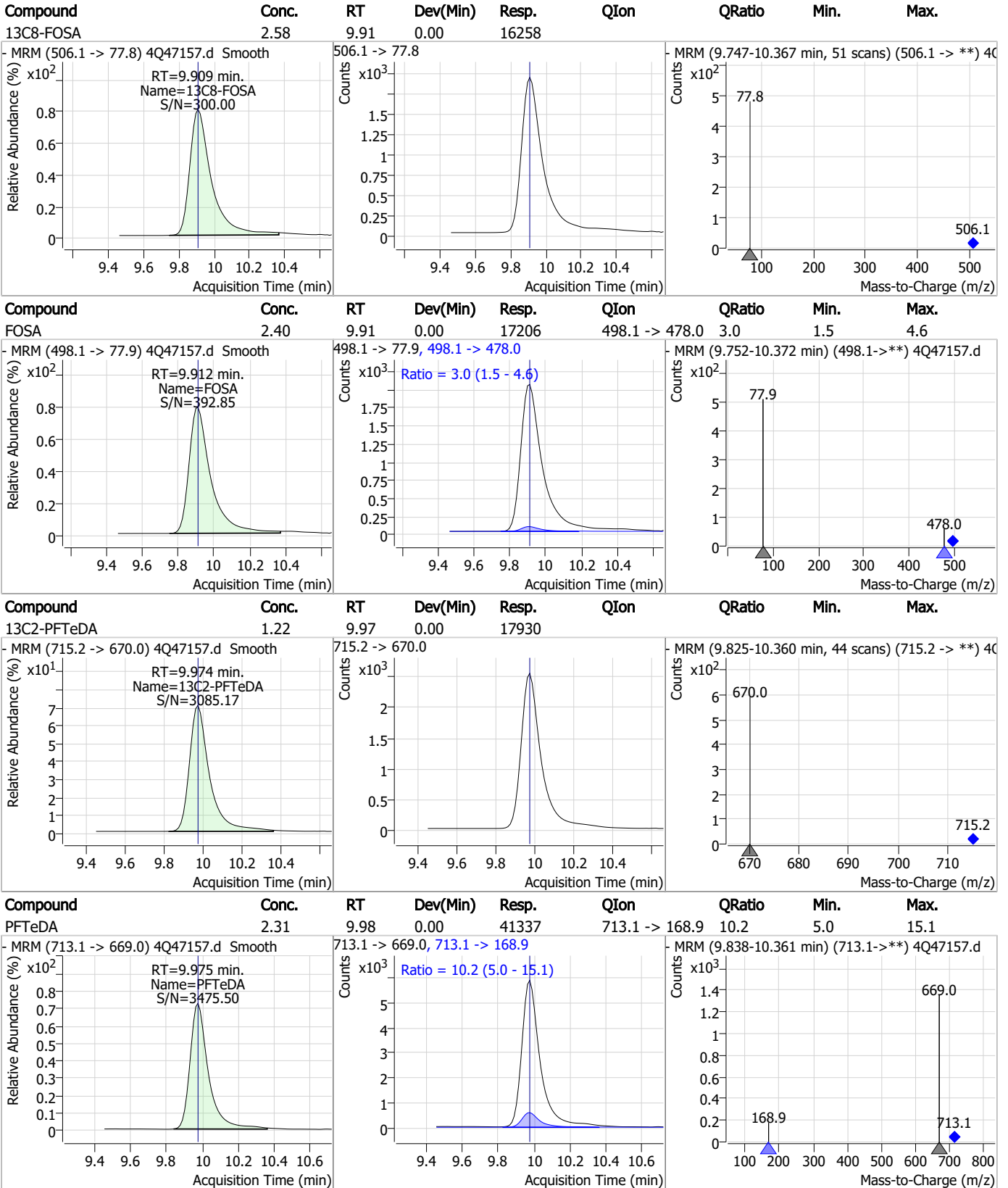
7.7.10
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Perfluorinated Compounds by LC/MS/MS



7.7.10 7

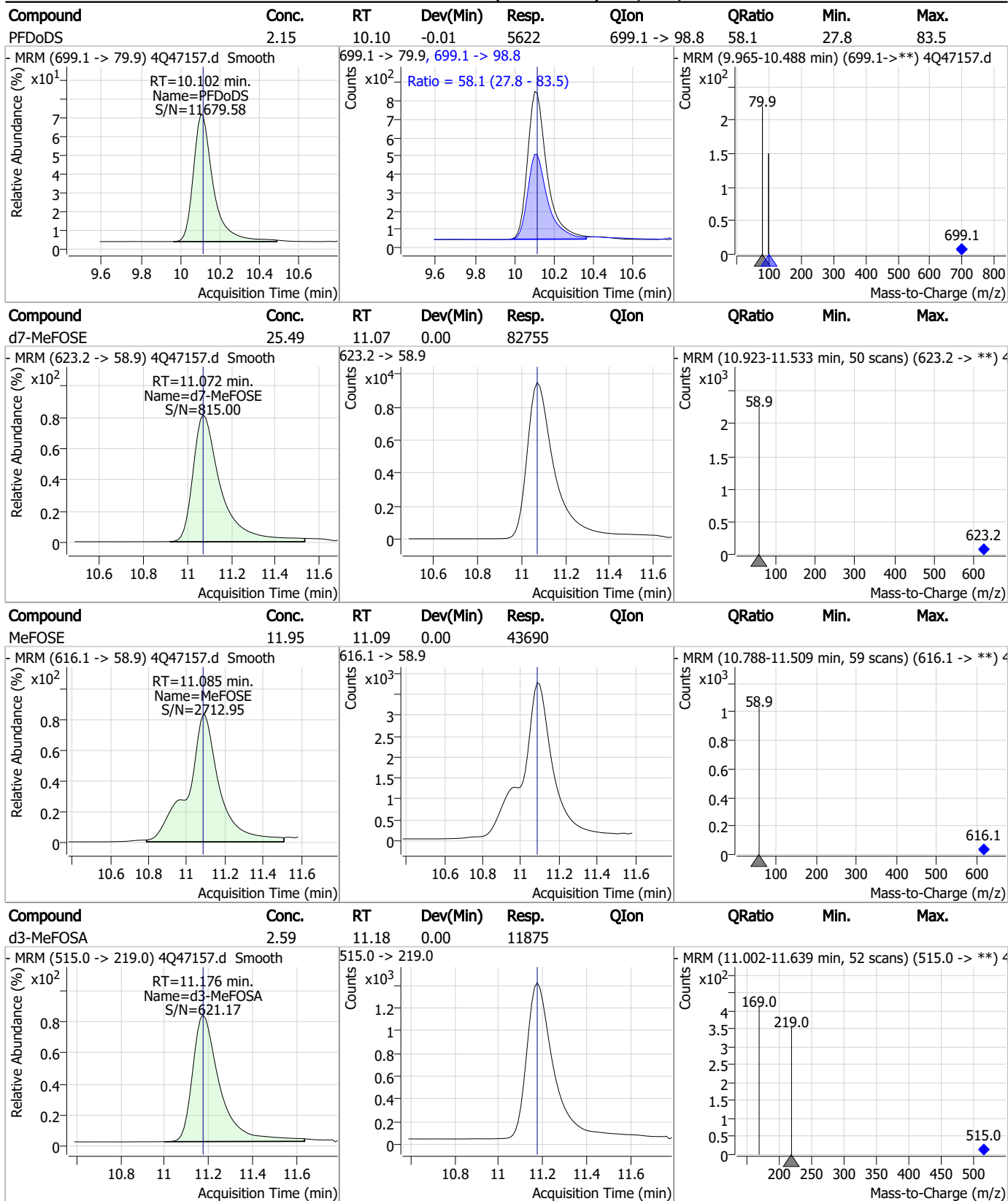
Perfluorinated Compounds by LC/MS/MS



7.7.10 7

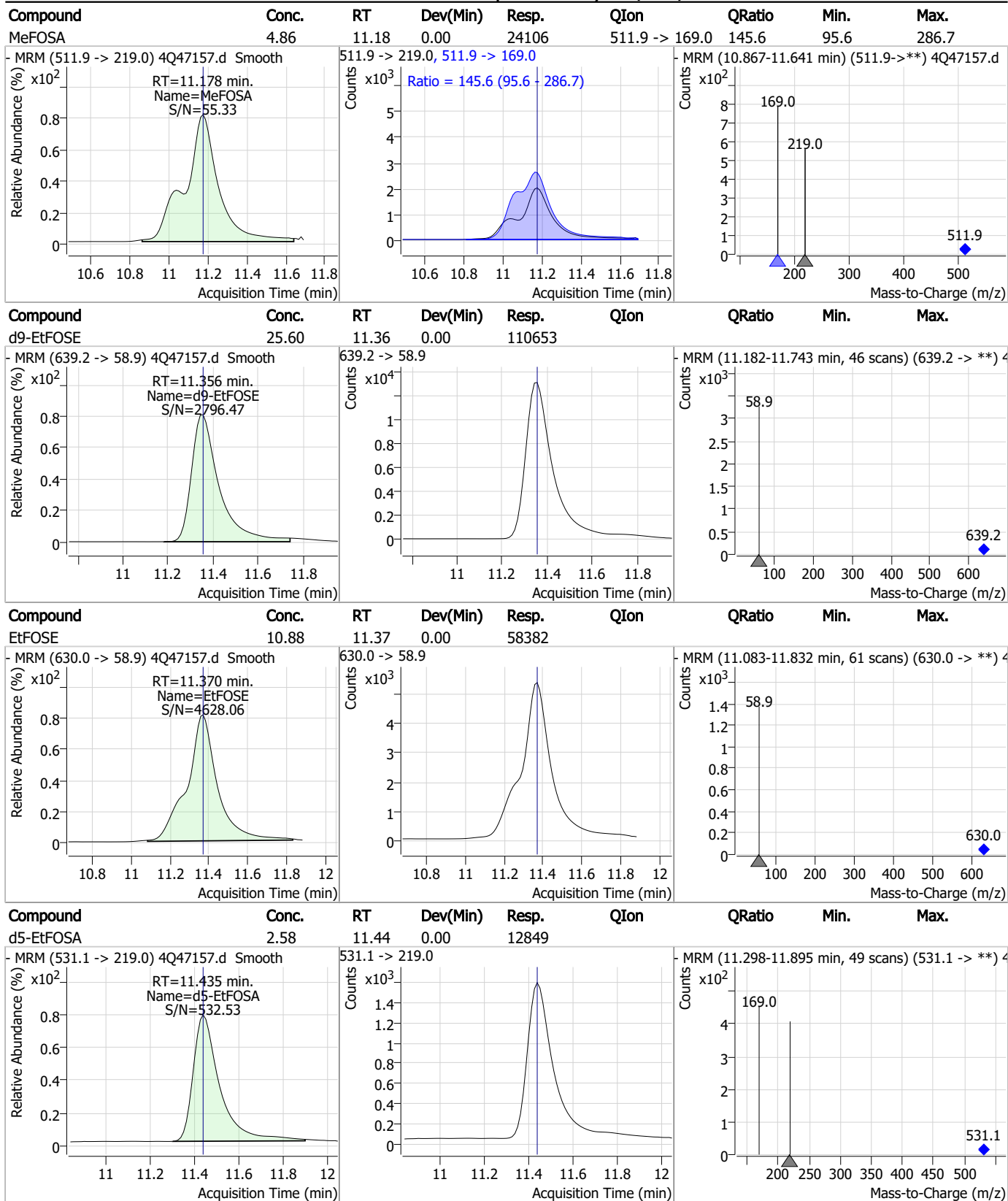


Perfluorinated Compounds by LC/MS/MS



7.7.10
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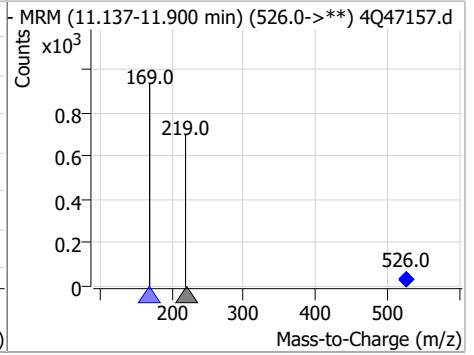
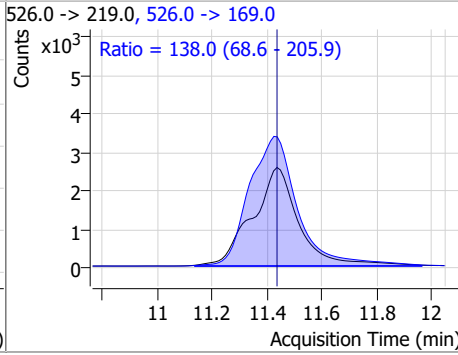
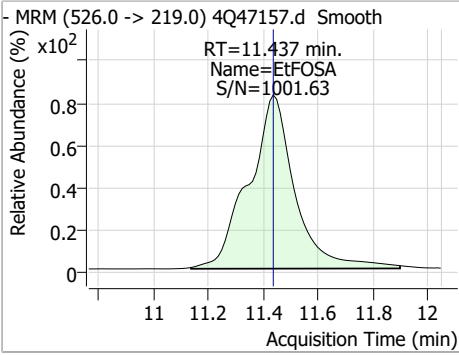
Perfluorinated Compounds by LC/MS/MS



7.7.10
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOsa	4.54	11.44	0.00	30053	526.0 -> 169.0	138.0	68.6	205.9



7.7.10
7

Manual Integration Approval Summary

Sample Number: S4Q690-ICV690 Method: EPA DRAFT 1633
Lab FileID: 4Q47157.D Analyst approved: 07/13/23 14:35 Anna Ludwig
Injection Time: 07/12/23 19:44 Supervisor approved: 07/14/23 09:30 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
MeFOSAA	2355-31-9		8.36	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.43	Split peak
EtFOSAA	2991-50-6		8.57	Split peak

7.7.10.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47158.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/12/2023 7:59:04 PM
 Sample Name : icv690-20
 Vial : P1-B4
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q690.batch.bin
 Sample Information : OP97325,S4Q690,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.861	216.8 -> 171.9	146453	10.00 µg/L	-0.062
M5-PFPeA	4.387	268.3 -> 223.0	65441	5.00 µg/L	-0.012
M5-PFHxA	5.598	318.0 -> 273.0	49164	2.50 µg/L	0.000
M4-PFHpA	6.555	367.1 -> 322.0	35288	2.50 µg/L	0.000
M8-PFOA	7.236	421.1 -> 376.0	55831	2.50 µg/L	0.000
M9-PFNA	7.797	472.1 -> 427.0	23411	1.25 µg/L	0.000
M6-PFDA	8.292	519.1 -> 474.1	19131	1.25 µg/L	0.000
M7-PFUnDA	8.760	570.0 -> 525.1	22240	1.25 µg/L	0.000
M2-PFDoDA	9.206	615.1 -> 570.0	23749	1.25 µg/L	0.012
M2-PFTeDA	9.974	715.2 -> 670.0	17203	1.25 µg/L	0.000
M8-FOSA	9.909	506.1 -> 77.8	15751	2.50 µg/L	0.000
M3-PFBS	5.479	302.1 -> 79.9	11395	2.50 µg/L	0.000
M3-PFHxS	7.329	402.1 -> 79.9	8378	2.50 µg/L	0.000
M8-PFOS	8.442	507.1 -> 79.9	9835	2.50 µg/L	0.000
M2-4:2FTS	5.284	329.1 -> 80.9	721	5.00 µg/L	0.000
M2-6:2FTS	6.999	429.1 -> 80.9	1512	5.00 µg/L	0.000
M2-8:2FTS	8.078	529.1 -> 80.9	2302	5.00 µg/L	0.000
M3-MeFOSAA	8.362	573.2 -> 419.0	19854	5.00 µg/L	0.000
M3-HFPO-DA	5.965	286.9 -> 168.9	49191	10.00 µg/L	-0.012
M5-EtFOSAA	8.571	589.2 -> 419.0	17216	5.00 µg/L	0.000
M7-MeFOSE	11.072	623.2 -> 58.9	78696	25.00 µg/L	0.000
M9-EtFOSE	11.356	639.2 -> 58.9	105878	25.00 µg/L	0.000
M5-EtFOSA	11.435	531.1 -> 219.0	12381	2.50 µg/L	0.000
M3-MeFOSA	11.176	515.0 -> 219.0	11195	2.50 µg/L	0.000
13C4-PFOS	8.443	502.8 -> 79.9	12162	2.50 µg/L	0.012
13C3-PFBA	2.866	216.0 -> 172.0	77160	5.00 µg/L	-0.062
18O2-PFHxS	7.328	403.0 -> 83.9	5774	2.50 µg/L	0.000
13C4-PFOA	7.237	417.1 -> 372.0	68000	2.50 µg/L	0.000
13C2-PFDA	8.292	515.1 -> 470.1	20633	1.25 µg/L	0.000
13C5-PFNA	7.798	468.0 -> 423.0	28181	1.25 µg/L	0.000
13C2-PFHxA	5.599	315.1 -> 270.0	45890	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.284	329.1 -> 80.9	721	5.56 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.3%		
13C2-6:2FTS	6.999	429.1 -> 80.9	1512	5.32 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.4%		
13C2-8:2FTS	8.078	529.1 -> 80.9	2302	4.98 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C2-PFDoDA	9.206	615.1 -> 570.0	23749	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C2-PFTeDA	9.974	715.2 -> 670.0	17203	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C3-PFBS	5.479	302.1 -> 79.9	11395	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C3-PFHxS	7.329	402.1 -> 79.9	8378	2.59 µg/L	0.000

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 = 103.5%	
13C4-PFBA	2.861	216.8 -> 171.9	146453	10.04 µg/L	-0.062
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C4-PFHpA	6.555	367.1 -> 322.0	35288	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C5-PFHxA	5.598	318.0 -> 273.0	49164	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C5-PFPeA	4.387	268.3 -> 223.0	65441	5.17 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C6-PFDA	8.292	519.1 -> 474.1	19131	1.34 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.1%	
13C7-PFUnDA	8.760	570.0 -> 525.1	22240	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C8-FOSA	9.909	506.1 -> 77.8	15751	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C8-PFOA	7.236	421.1 -> 376.0	55831	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C8-PFOS	8.442	507.1 -> 79.9	9835	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.1%	
13C9-PFNA	7.797	472.1 -> 427.0	23411	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.4%	
d3-MeFOSAA	8.362	573.2 -> 419.0	19854	4.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C3-HFPO-DA	5.965	286.9 -> 168.9	49191	10.06 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
d3-MeFOSA	11.176	515.0 -> 219.0	11195	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
d5-EtFOSAA	8.571	589.2 -> 419.0	17216	4.88 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.6%	
d7-MeFOSE	11.072	623.2 -> 58.9	78696	24.25 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.0%	
d9-EtFOSE	11.356	639.2 -> 58.9	105878	24.50 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.0%	
d5-EtFOSA	11.435	531.1 -> 219.0	12381	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%	
Target Compounds					QValue
4:2FTS	5.285	327.1 -> 307.0	25054	19.57 µg/L	96
		327.1 -> 80.9	10465		
6:2FTS	6.999	427.1 -> 407.0	35323	20.22 µg/L	97
		427.1 -> 80.9	12955		
8:2FTS	8.079	527.1 -> 507.0	27326	20.74 µg/L	91
		527.1 -> 80.8	11516		
EtFOSAA	8.572	584.2 -> 419.1	55858	20.13 µg/L	97
		584.2 -> 526.0	25572	m	
FOSA	9.912	498.1 -> 77.9	130661	18.79 µg/L	100
		498.1 -> 478.0	3924		
MeFOSAA	8.362	570.1 -> 419.0	72553	20.48 µg/L	98
		570.1 -> 483.0	13071		
PFBA	2.870	212.8 -> 168.9	82173	18.65 µg/L	100
PFBS	5.480	298.7 -> 79.9	93863	19.76 µg/L	94
		298.7 -> 98.8	36606		
PFDA	8.292	512.9 -> 469.0	378253	19.03 µg/L	97
		512.9 -> 219.0	77035		
PFDoDA	9.207	613.1 -> 569.0	370043	19.35 µg/L	98
		613.1 -> 319.0	60323		
PFDS	9.358	599.0 -> 79.9	57761	20.78 µg/L	99

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	29786			
PFHpA	6.556	363.1 -> 319.0	440116	20.26	µg/L	98
		363.1 -> 169.0	78052			
PFHpS	7.911	449.0 -> 79.9	80638	20.51	µg/L	97
		449.0 -> 98.9	42076			
PFHxA	5.601	313.0 -> 269.0	389955	20.26	µg/L	99
		313.0 -> 118.9	12080			
PFHxS	7.317	398.7 -> 79.9	72807	19.50	µg/L	m 99
		398.7 -> 98.9	37561			
PFNA	7.798	463.0 -> 419.0	376069	21.80	µg/L	100
		463.0 -> 219.0	89865			
PFNS	8.911	548.8 -> 79.9	59469	20.31	µg/L	100
		548.8 -> 98.9	32137			
PFOA	7.238	413.0 -> 369.0	620467	19.64	µg/L	99
		413.0 -> 169.0	121980			
PFOS	8.431	498.9 -> 79.9	100691	19.24	µg/L	m 74
		498.9 -> 98.8	42957			
PFPeA	4.389	263.0 -> 219.0	372506	20.19	µg/L	100
PFPeS	6.582	349.1 -> 79.9	59976	19.45	µg/L	99
		349.1 -> 98.9	27900			
PFTeDA	9.975	713.1 -> 669.0	364563	21.21	µg/L	99
		713.1 -> 168.9	35194			
PFTrDA	9.604	663.0 -> 619.0	382020	18.06	µg/L	98
		663.0 -> 168.9	47173			
PFUnDA	8.760	563.1 -> 519.0	350714	19.88	µg/L	98
		563.1 -> 269.1	72444			
11Cl-PF3OUdS	9.644	630.9 -> 450.9	270872	20.64	µg/L	99
		632.9 -> 452.9	82127			
9Cl-PF3ONS	8.787	530.8 -> 351.0	353596	20.09	µg/L	98
		532.8 -> 353.0	109587			
ADONA	6.818	376.9 -> 250.9	669330	18.18	µg/L	99
		376.9 -> 84.8	169345			
HFPO-DA	5.978	284.9 -> 168.9	96718	19.04	µg/L	99
		284.9 -> 184.9	10917			
3:3FTCA	3.823	241.0 -> 177.0	18331	18.08	µg/L	98
		241.0 -> 117.0	1641			
5:3FTCA	6.281	341.0 -> 237.1	61714	19.30	µg/L	98
		341.0 -> 217.0	44577			
7:3FTCA	7.774	441.0 -> 316.9	34658	19.63	µg/L	93
		441.0 -> 336.9	76915			
EtFOSA	11.450	526.0 -> 219.0	110841	17.37	µg/L	79
		526.0 -> 169.0	124401			
EtFOSE	11.370	630.0 -> 58.9	501115	97.57	µg/L	100
MeFOSA	11.178	511.9 -> 219.0	85824	18.36	µg/L	48
		511.9 -> 169.0	98843			
MeFOSE	11.098	616.1 -> 58.9	369153	106.21	µg/L	100
PFDoS	10.102	699.1 -> 79.9	44658	19.51	µg/L	97
		699.1 -> 98.8	25962			
NFDHA	5.481	295.0 -> 201.0	22171	19.65	µg/L	100
		295.0 -> 84.9	5611			
PFMBA	4.797	279.0 -> 85.1	192395	19.38	µg/L	100
PFMPA	3.499	229.0 -> 84.9	180264	19.13	µg/L	100
PFEESA	6.022	314.8 -> 134.9	252481	17.37	µg/L	99
		314.8 -> 82.9	8271			

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



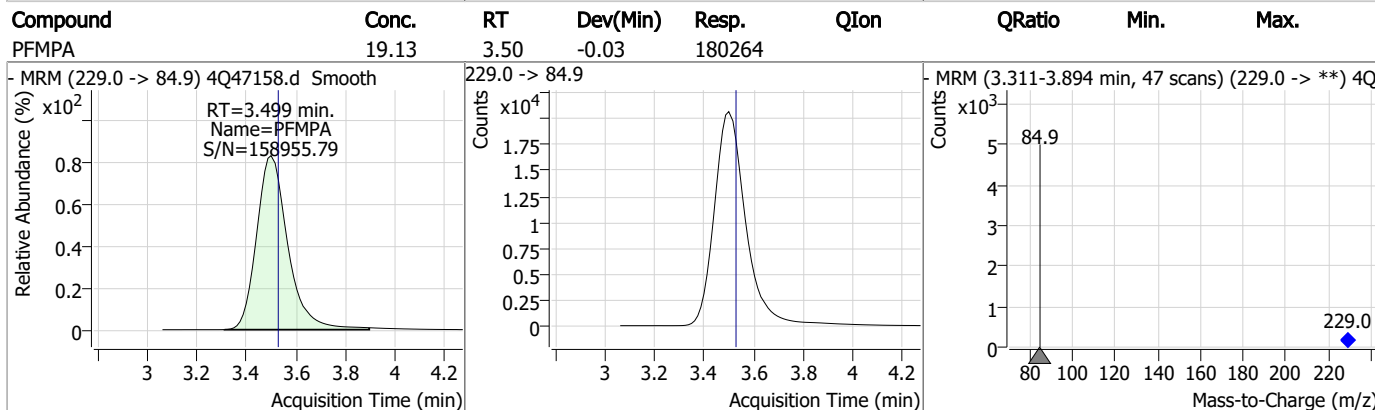
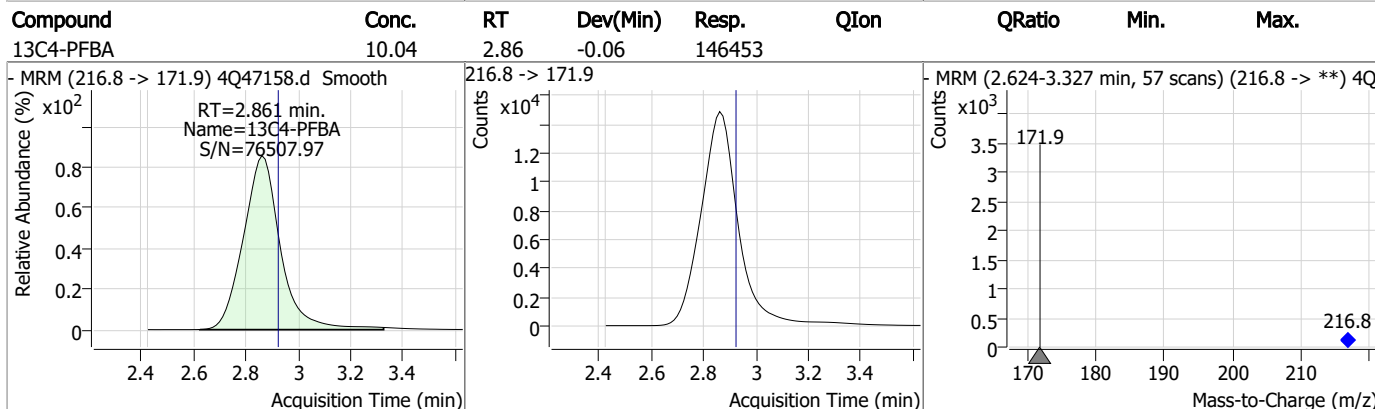
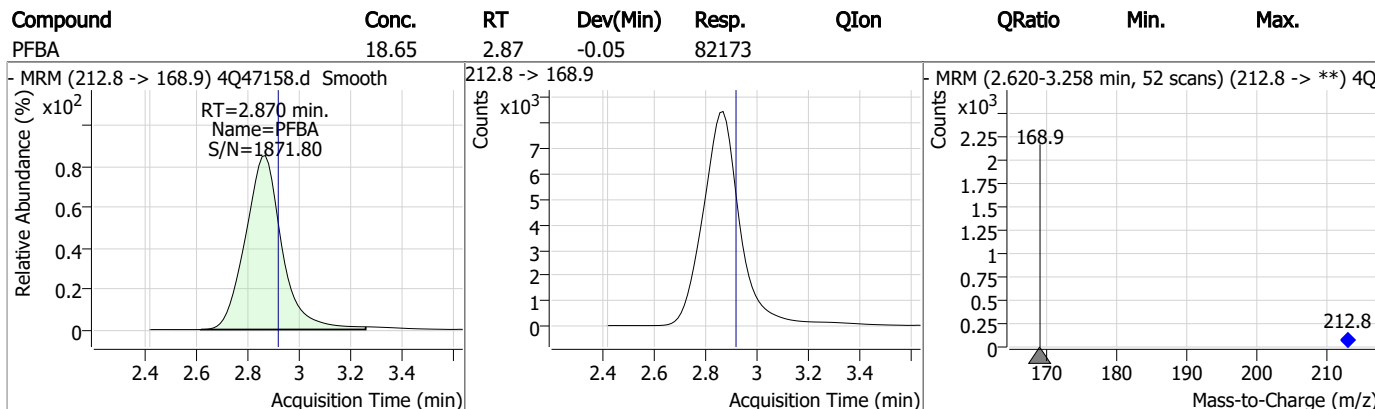
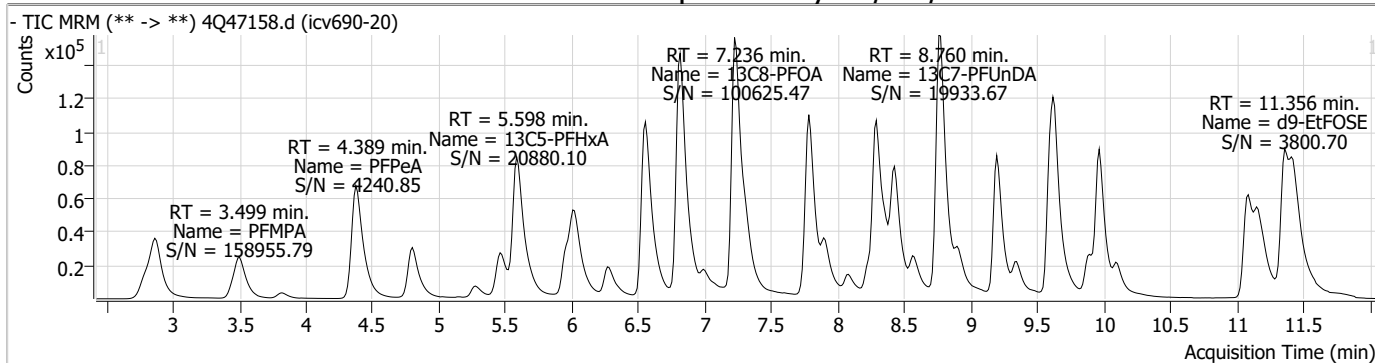
Perfluorinated Compounds by LC/MS/MS

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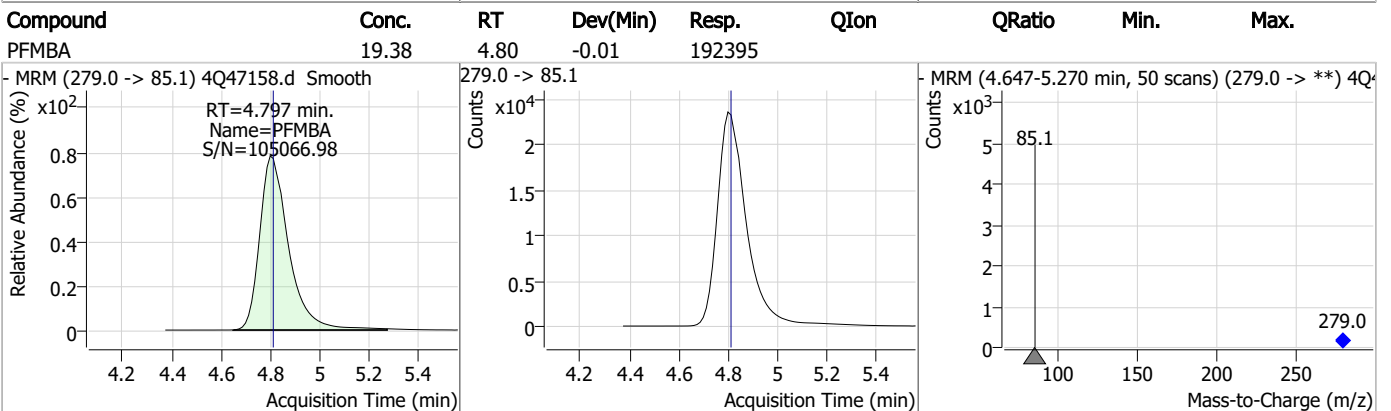
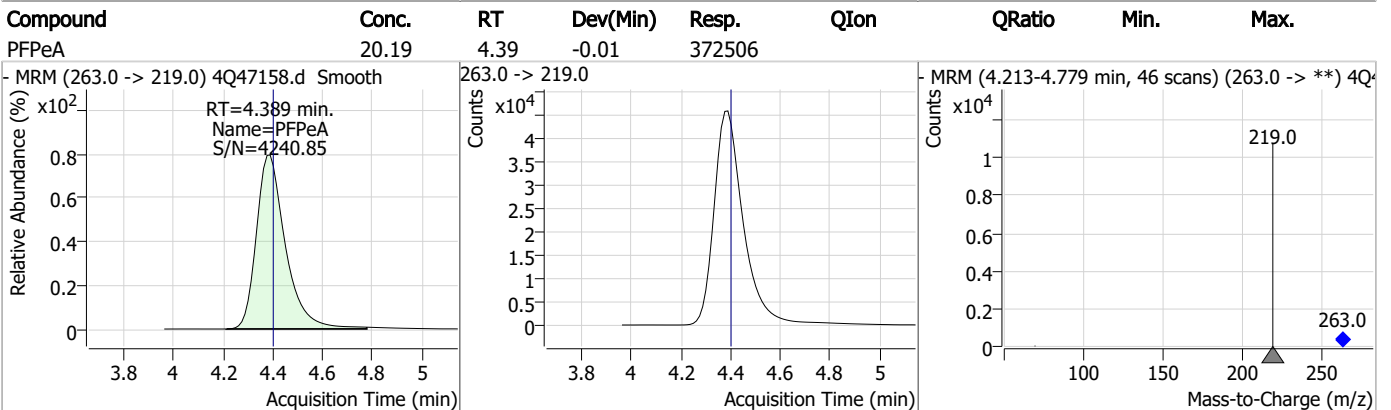
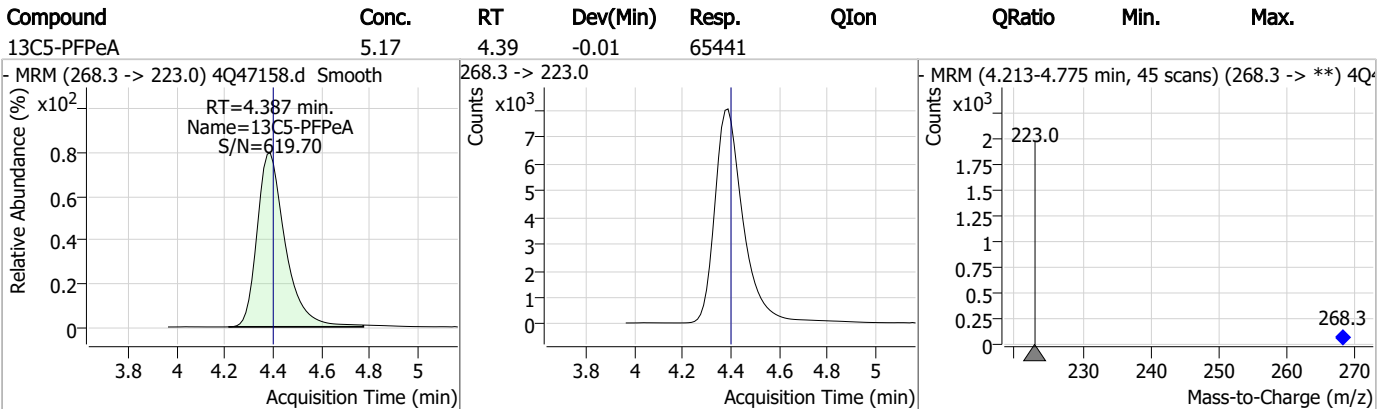
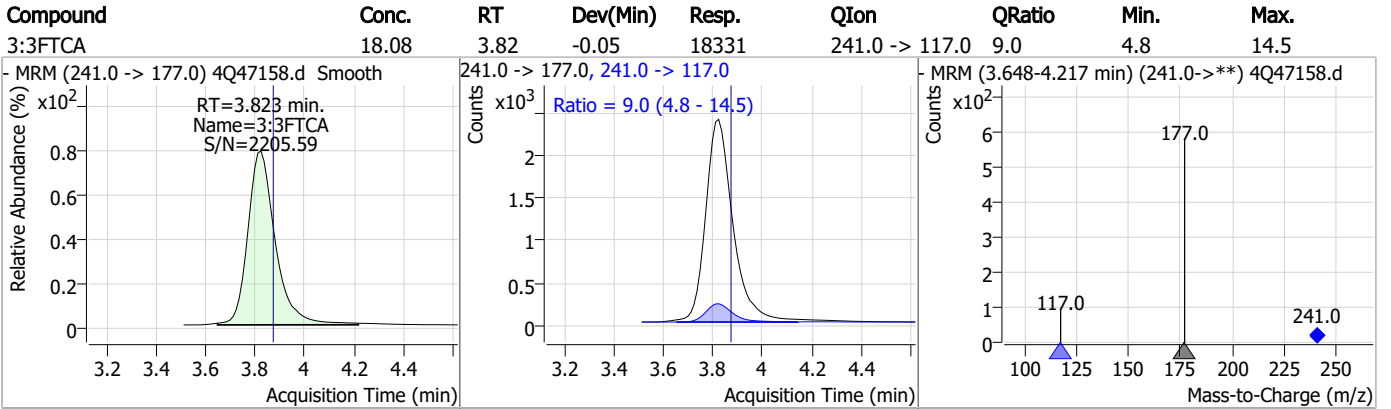
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Perfluorinated Compounds by LC/MS/MS



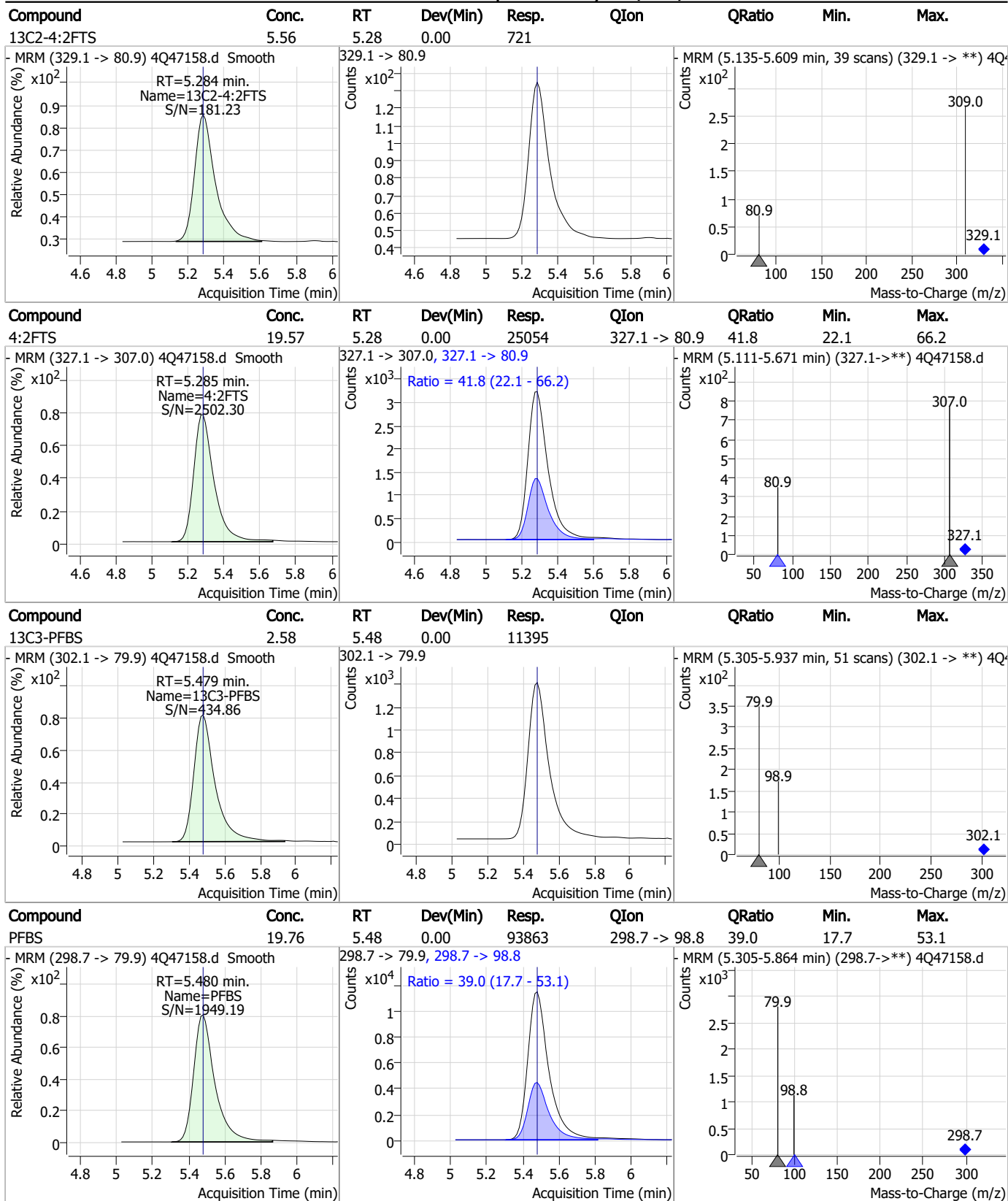
Perfluorinated Compounds by LC/MS/MS



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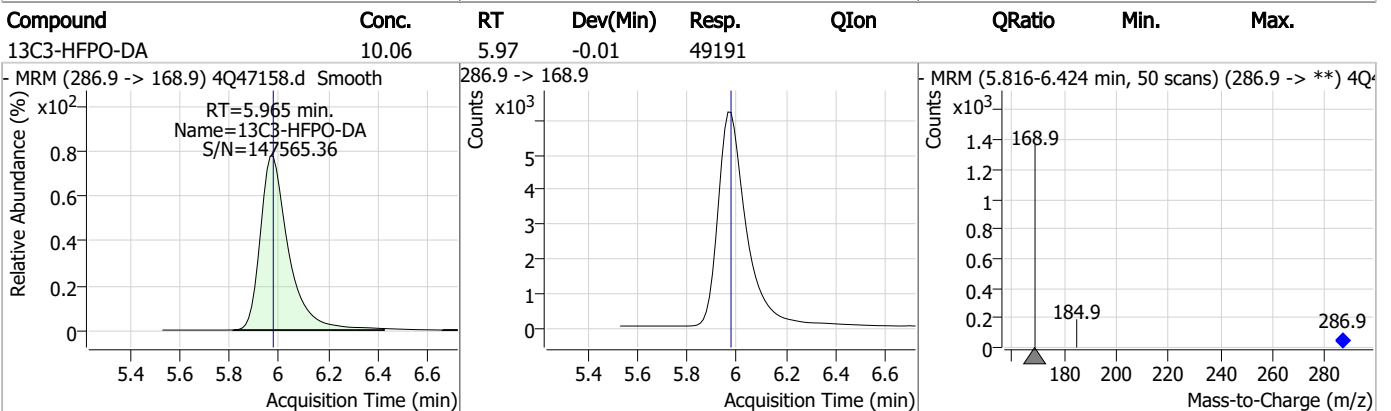
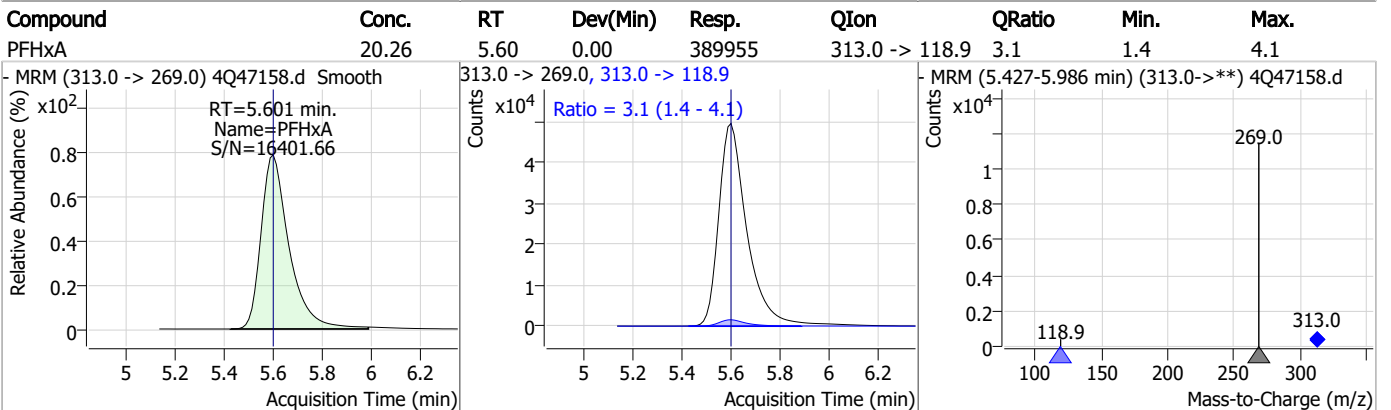
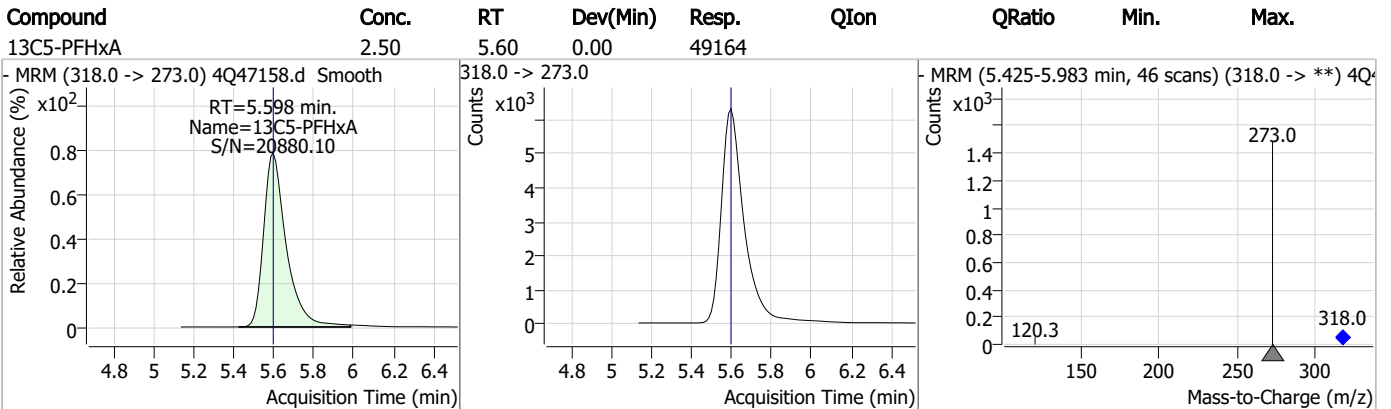
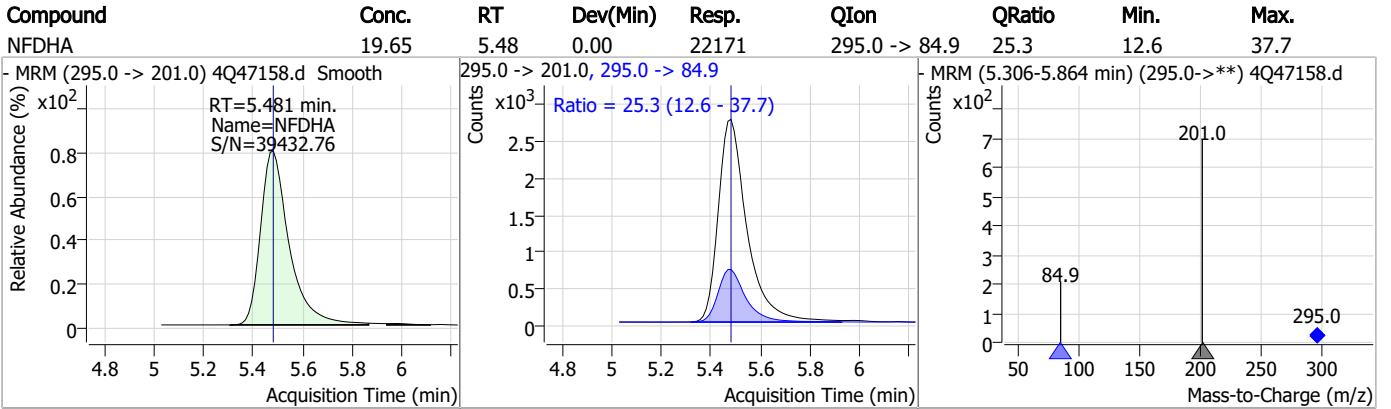
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Perfluorinated Compounds by LC/MS/MS



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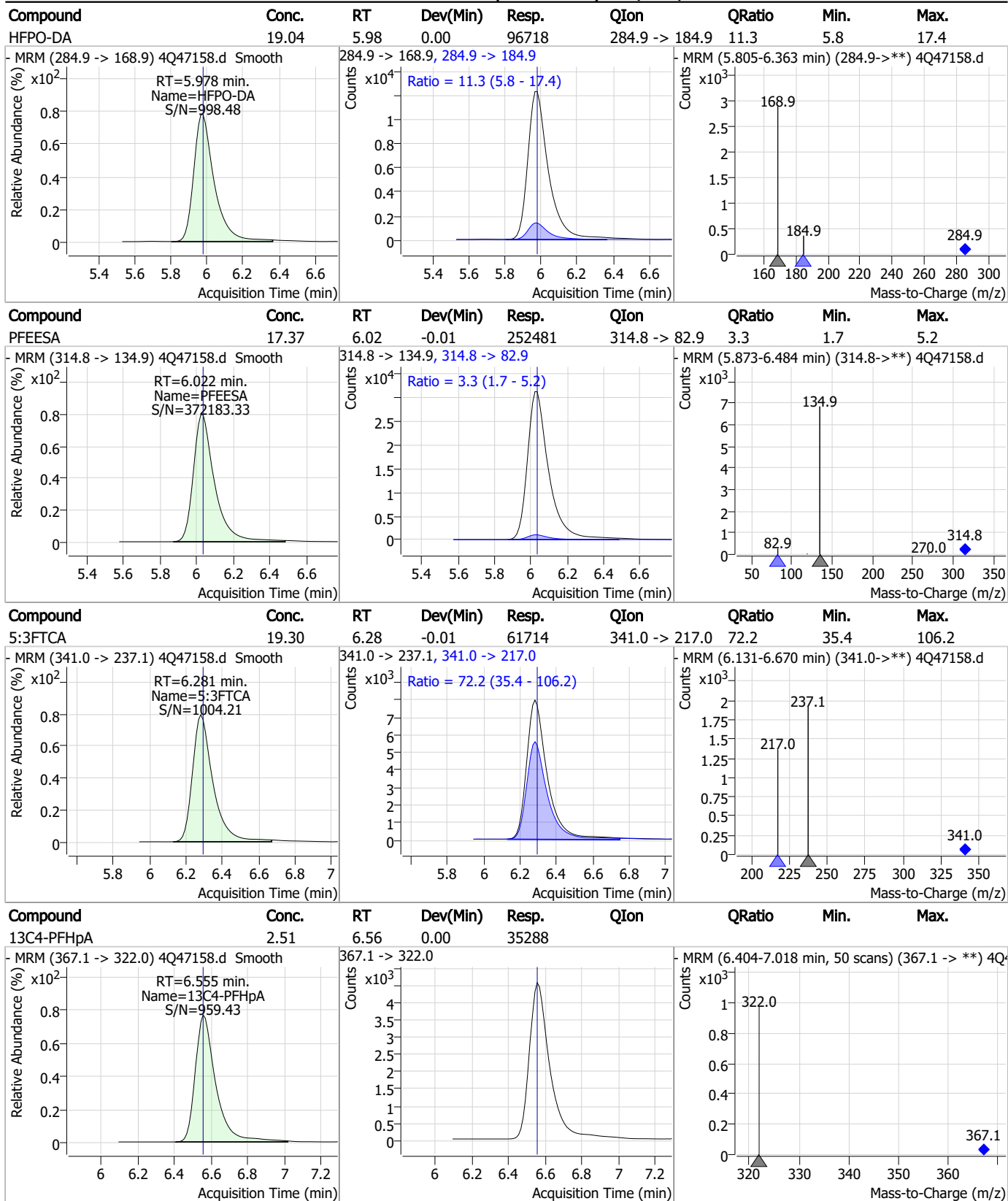
Perfluorinated Compounds by LC/MS/MS



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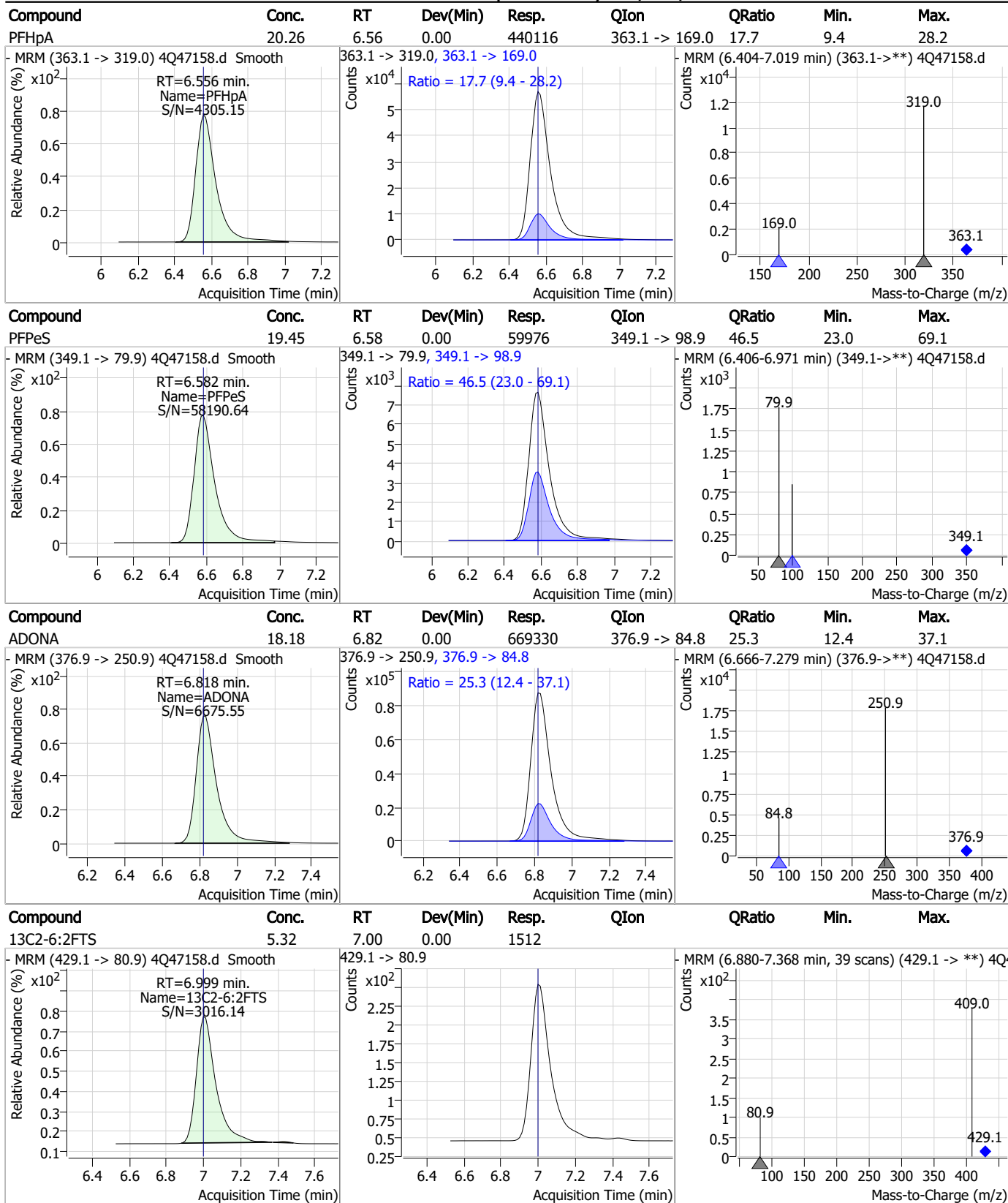


Perfluorinated Compounds by LC/MS/MS



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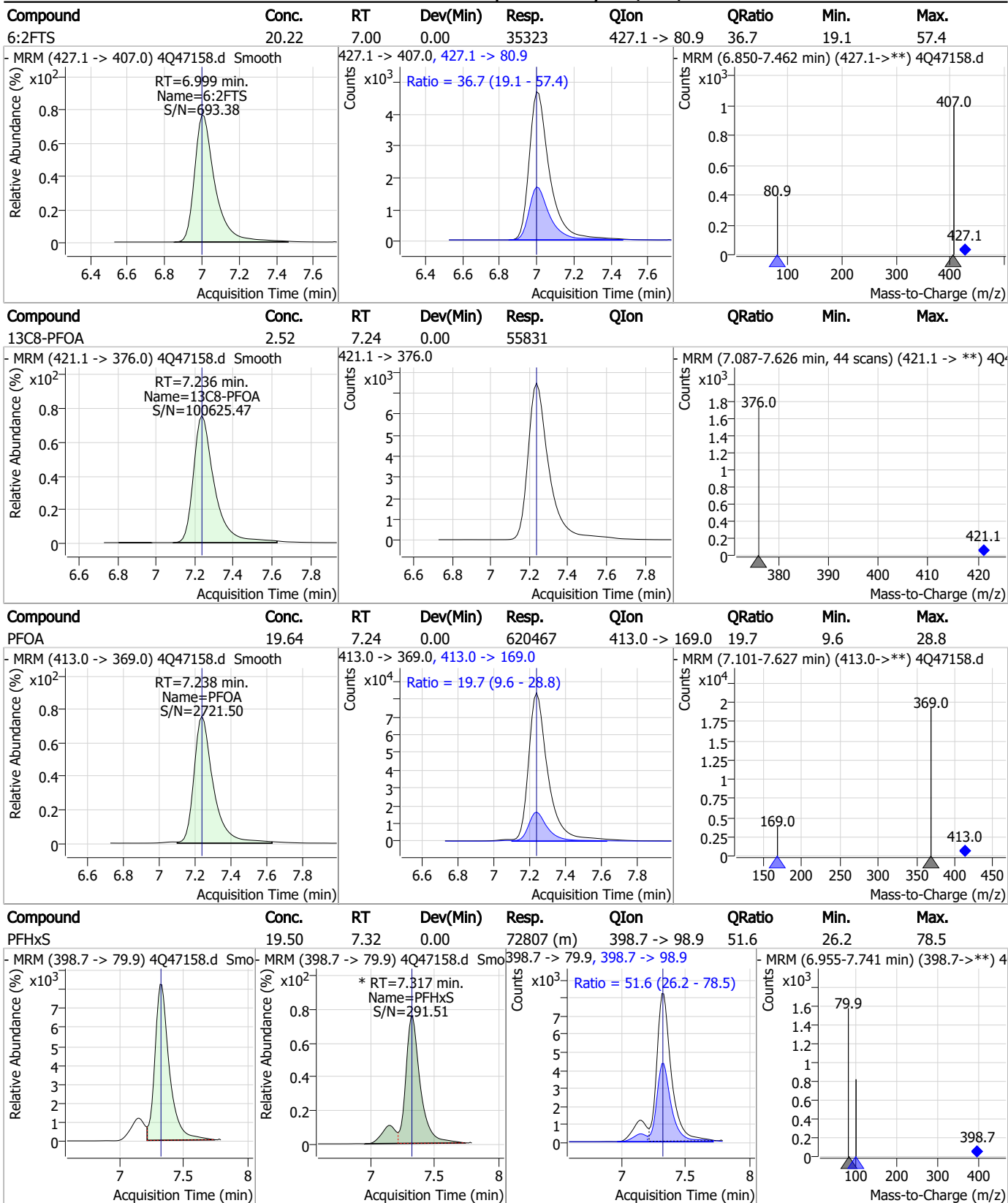
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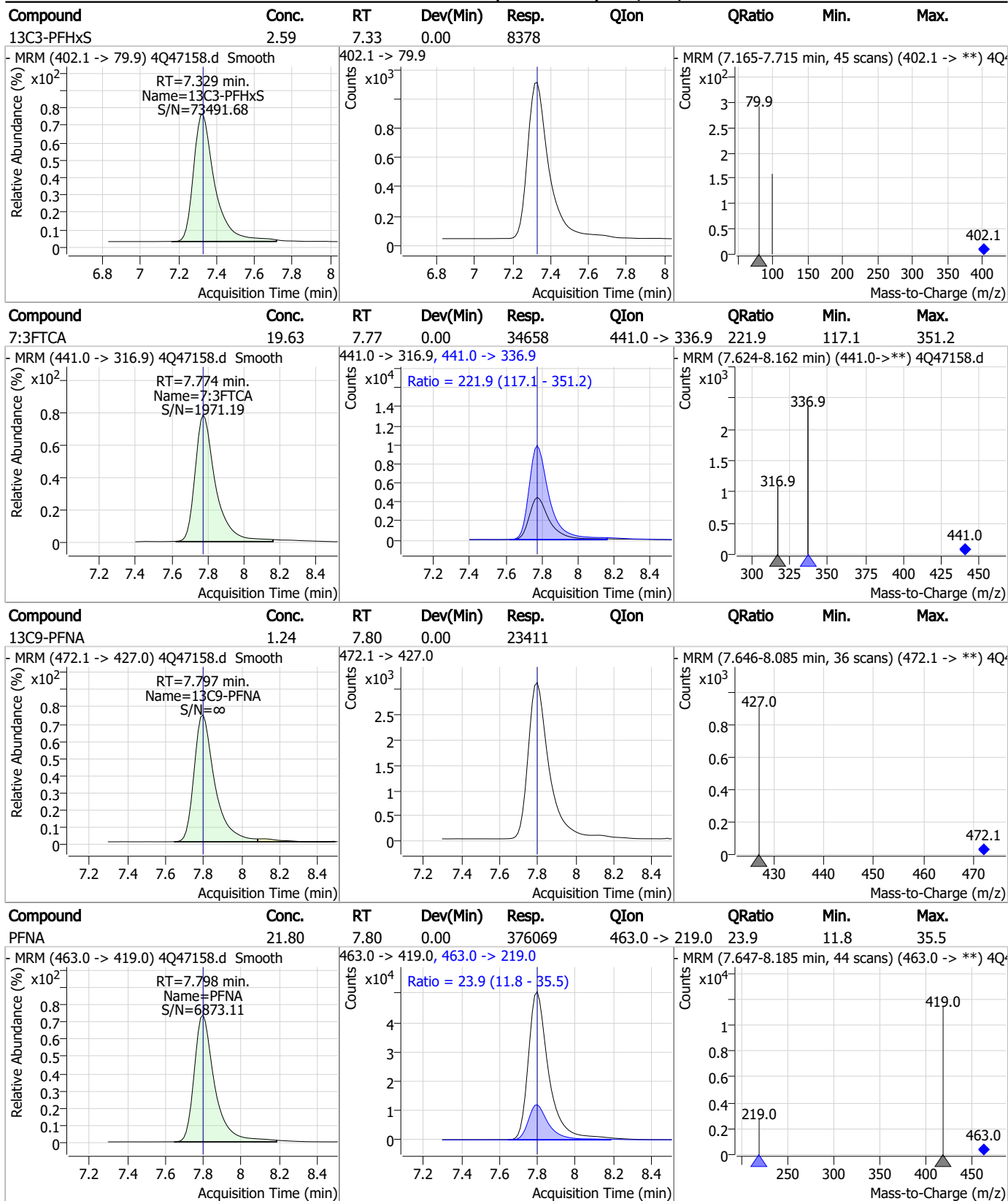
Perfluorinated Compounds by LC/MS/MS



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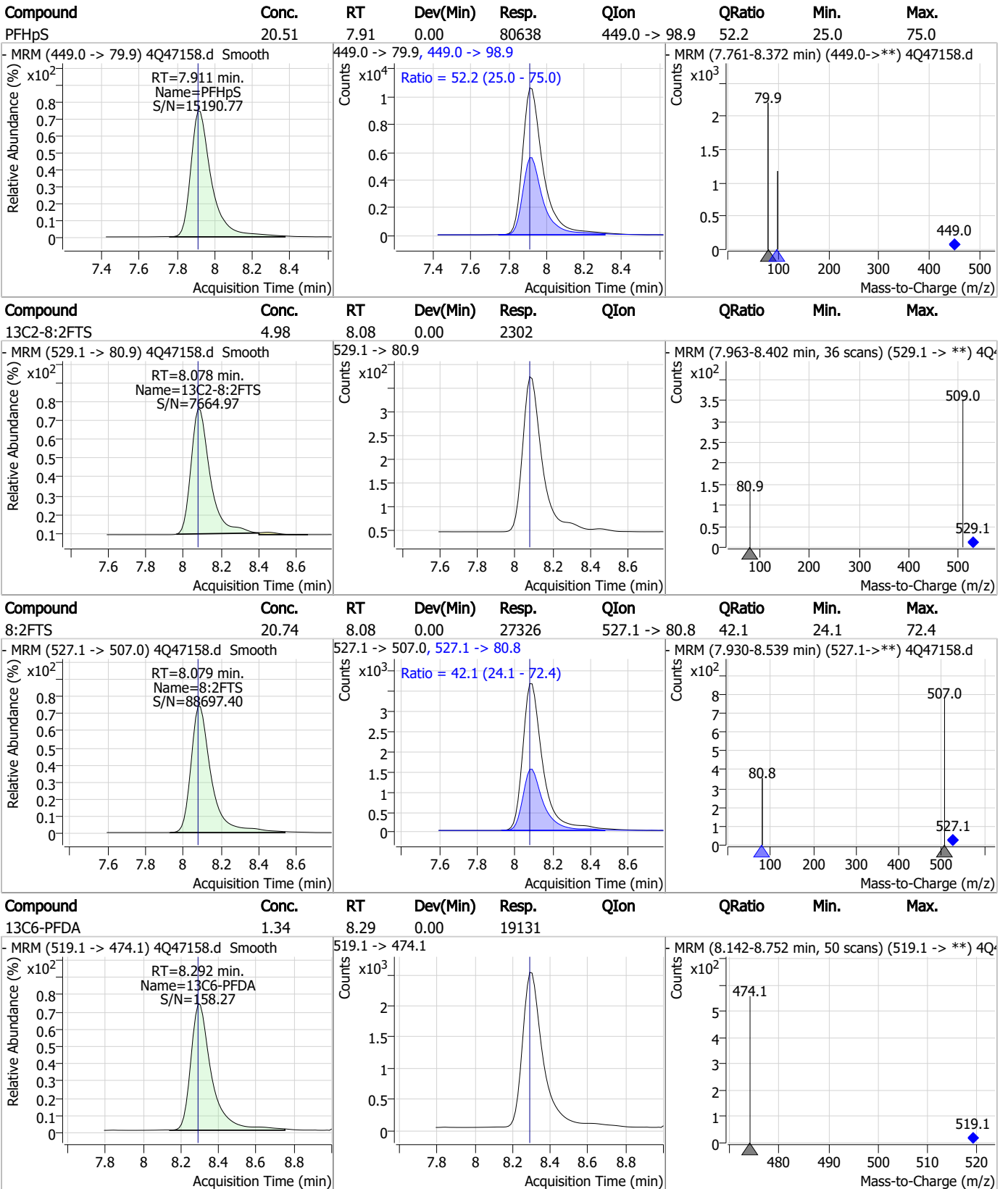


Perfluorinated Compounds by LC/MS/MS



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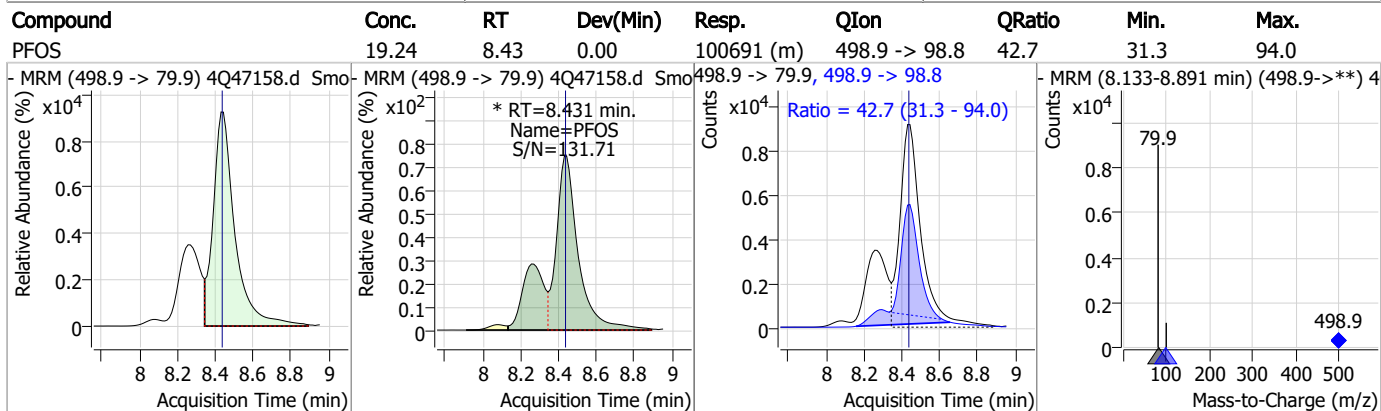
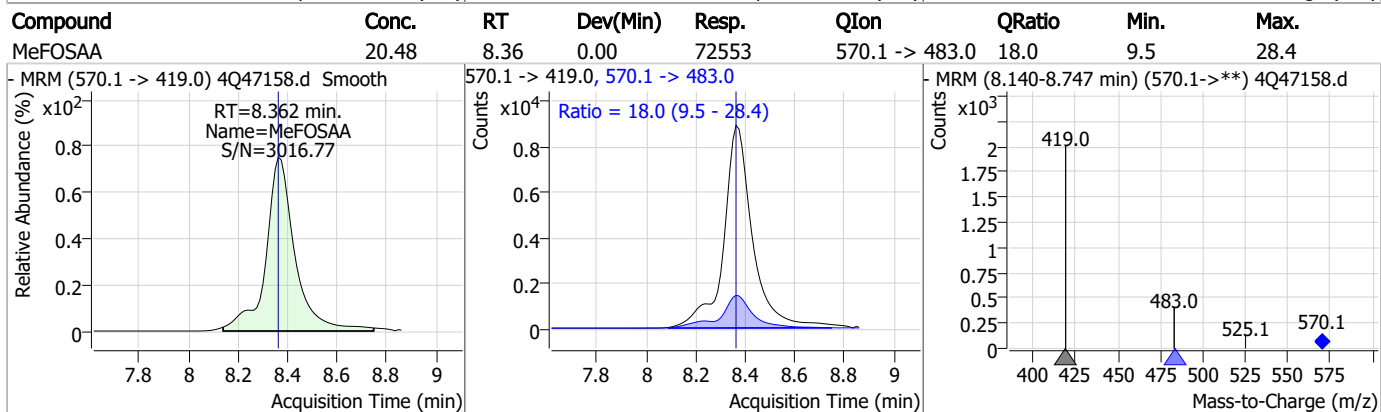
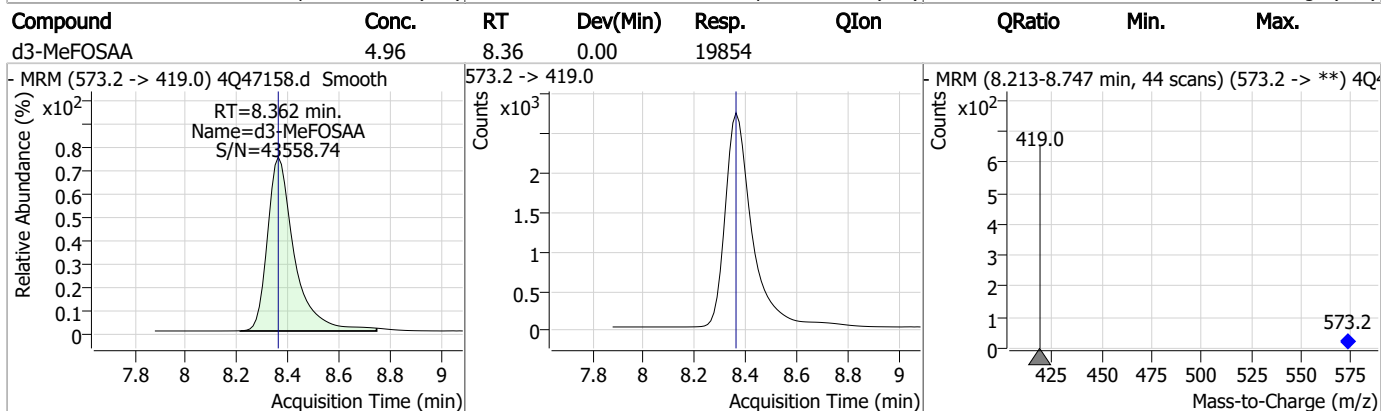
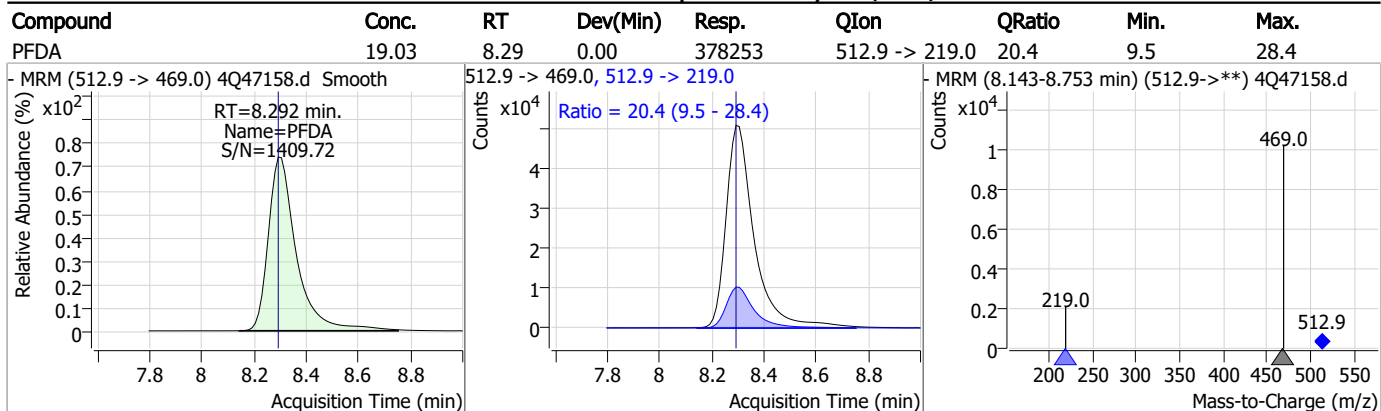
Perfluorinated Compounds by LC/MS/MS



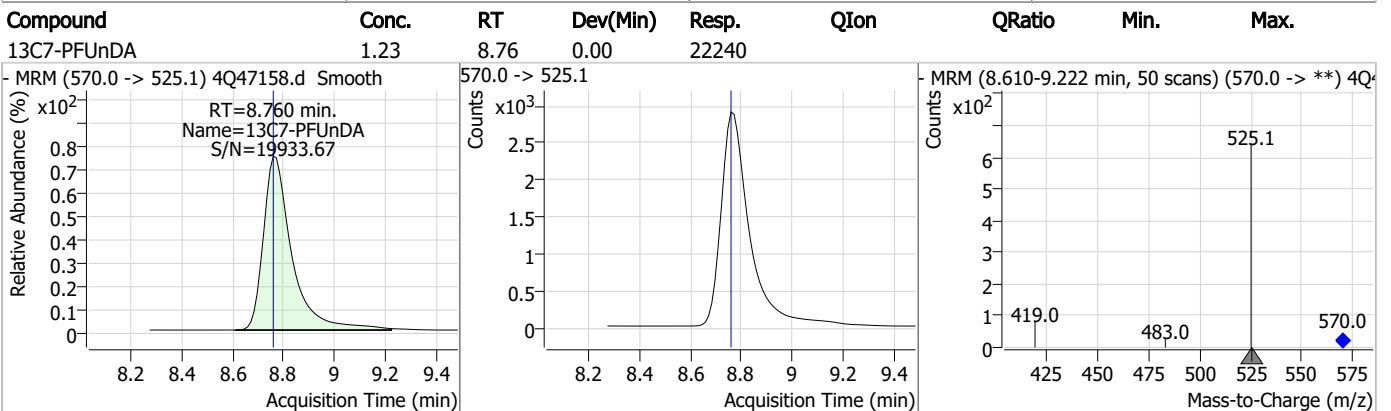
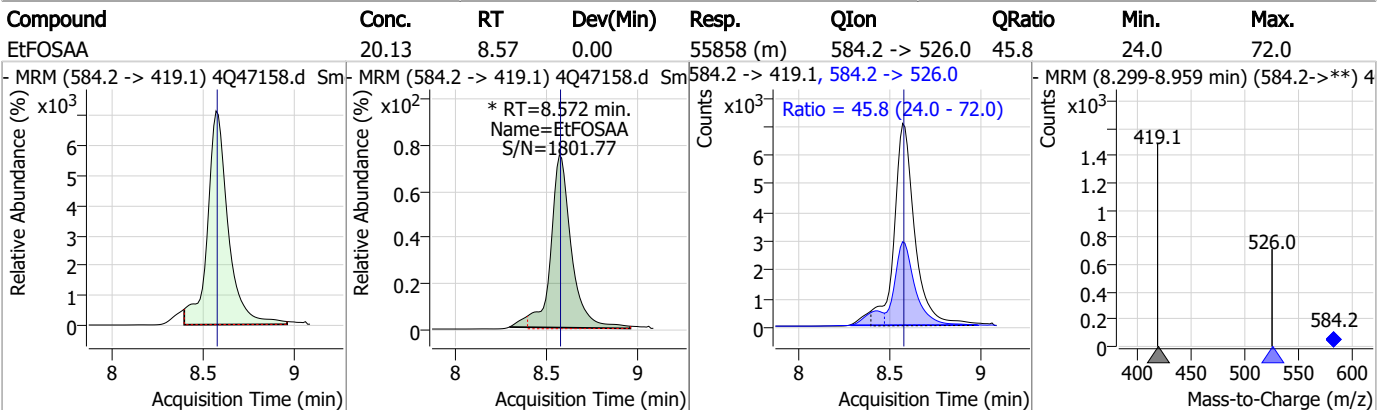
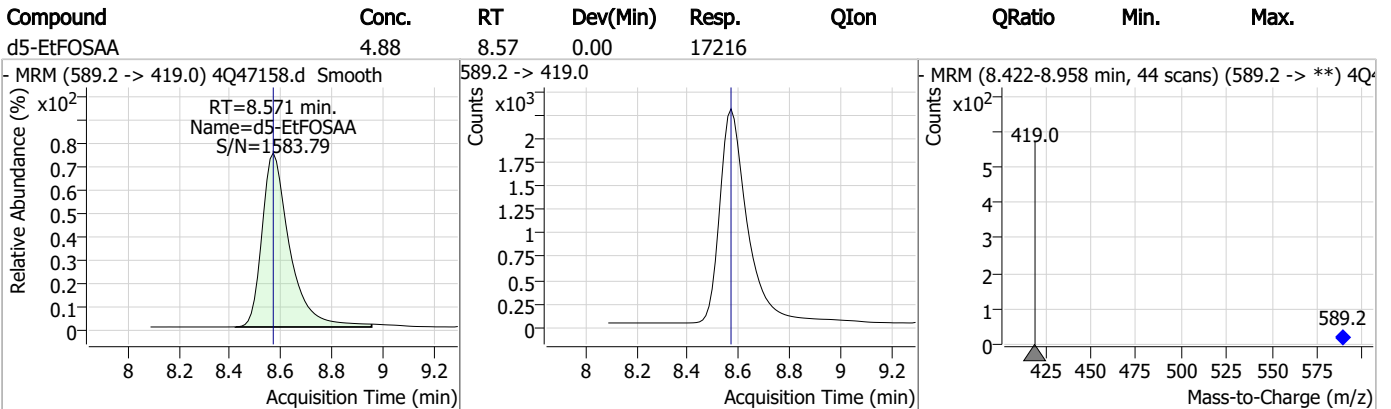
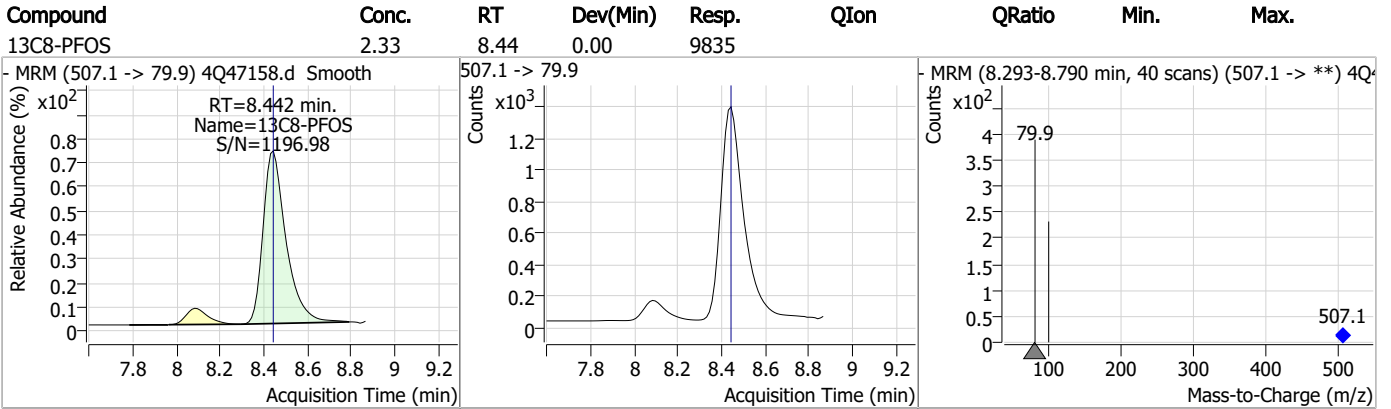
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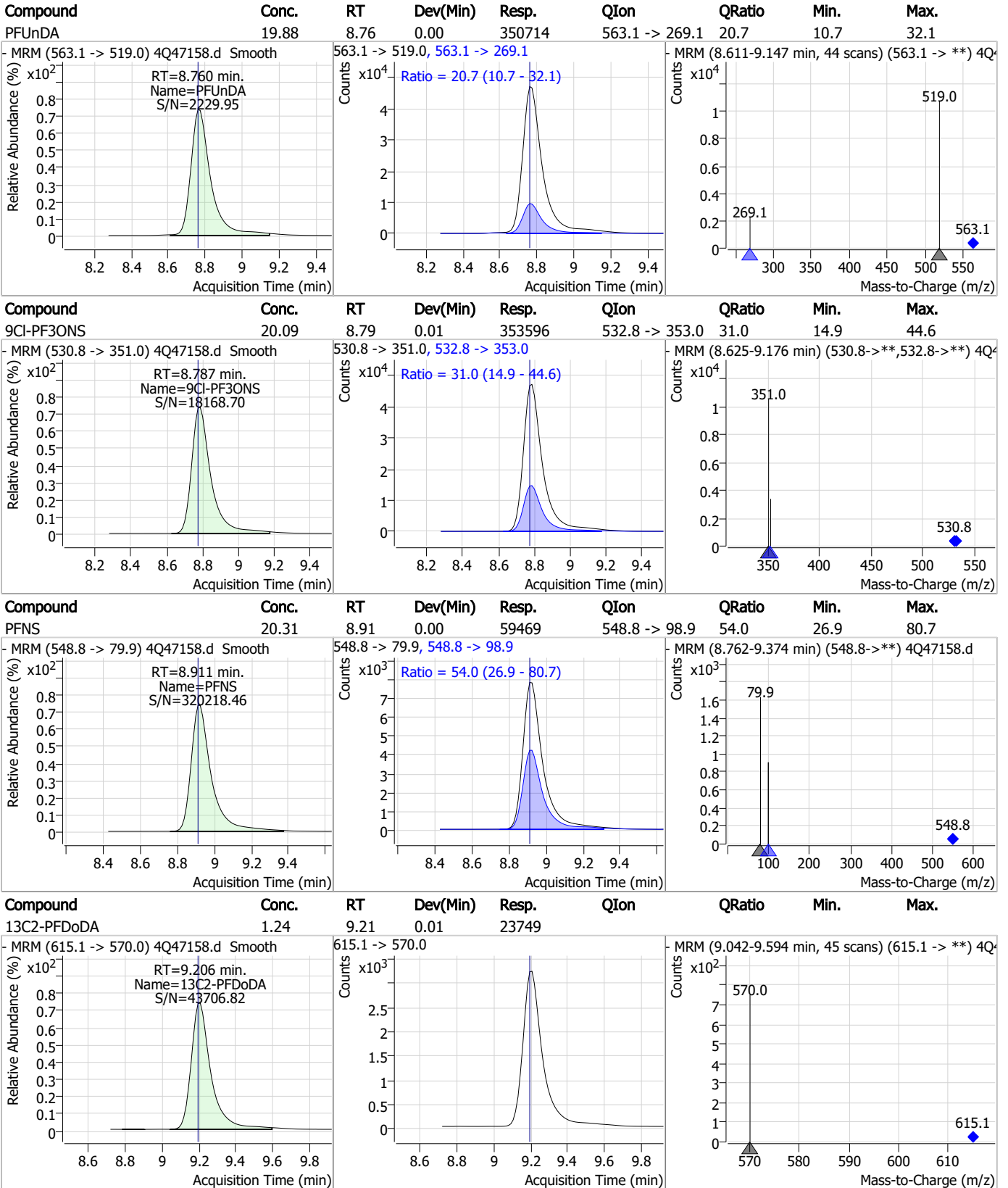
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

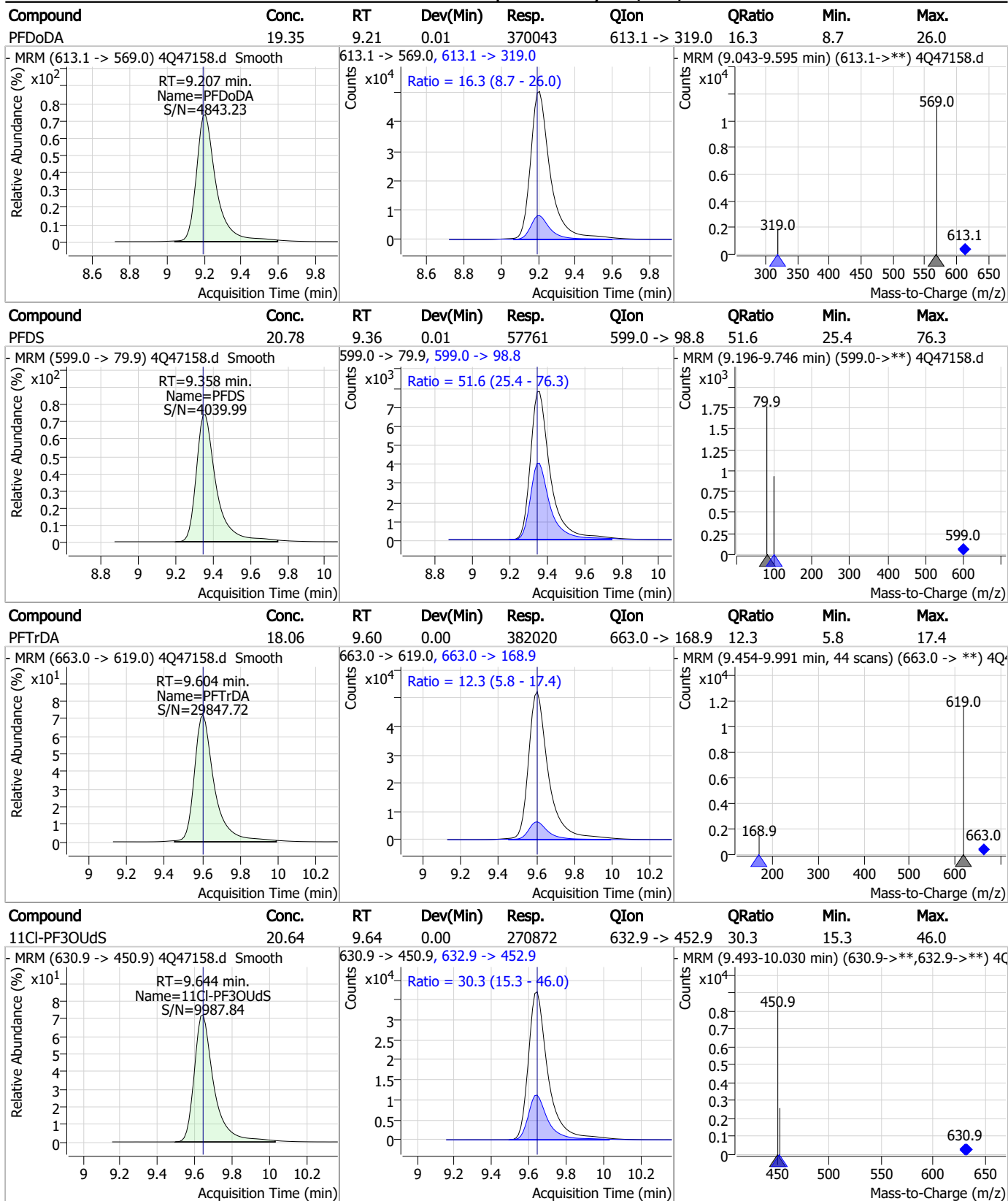


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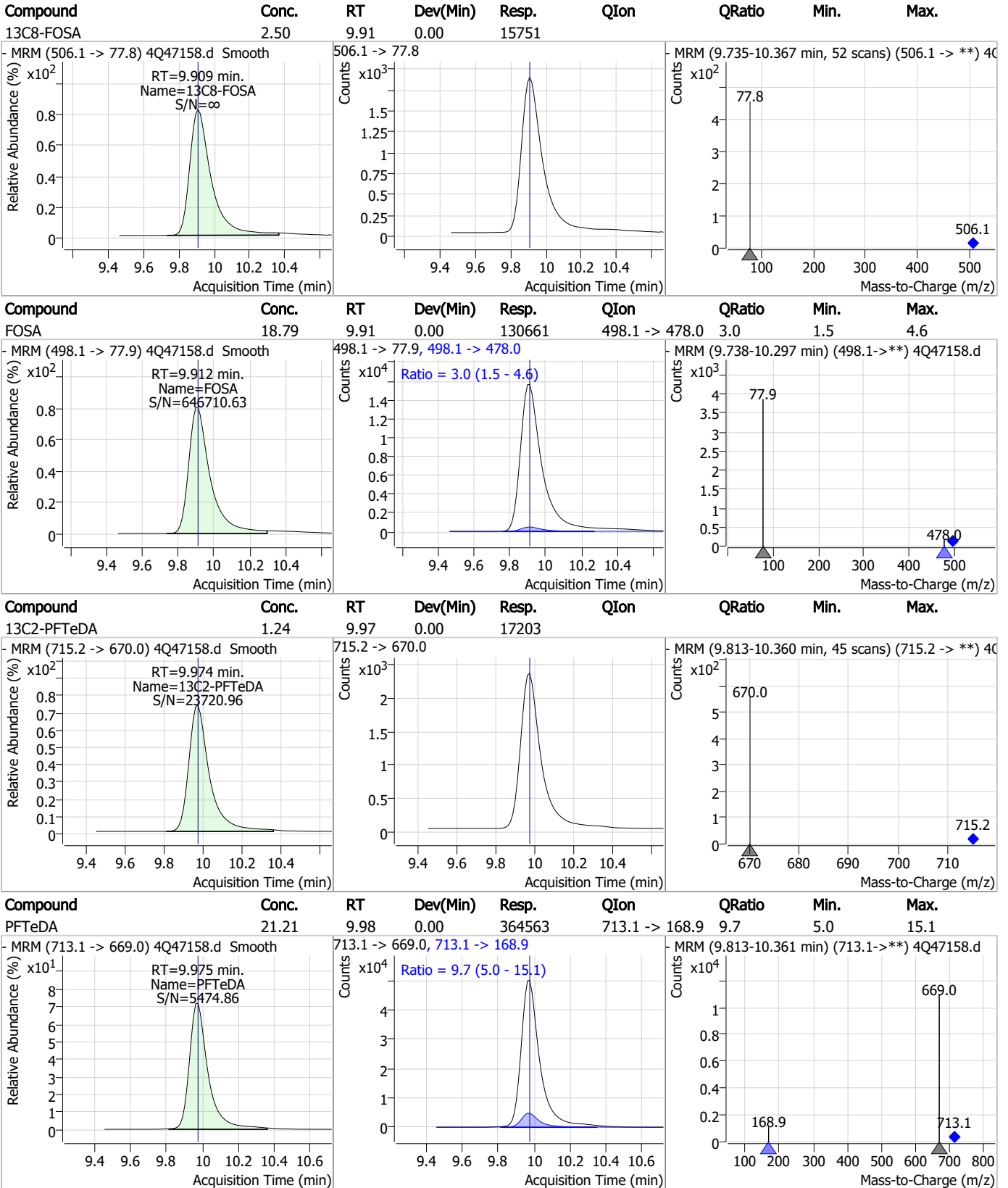
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

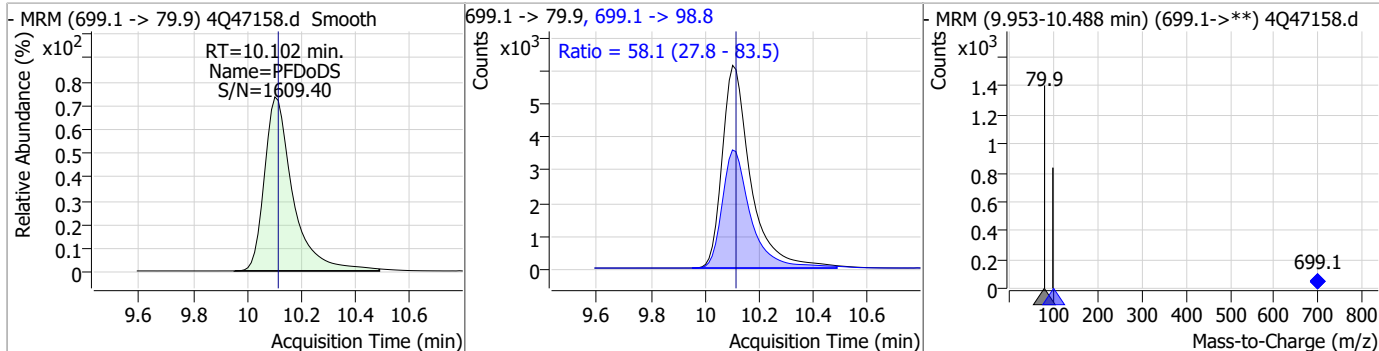


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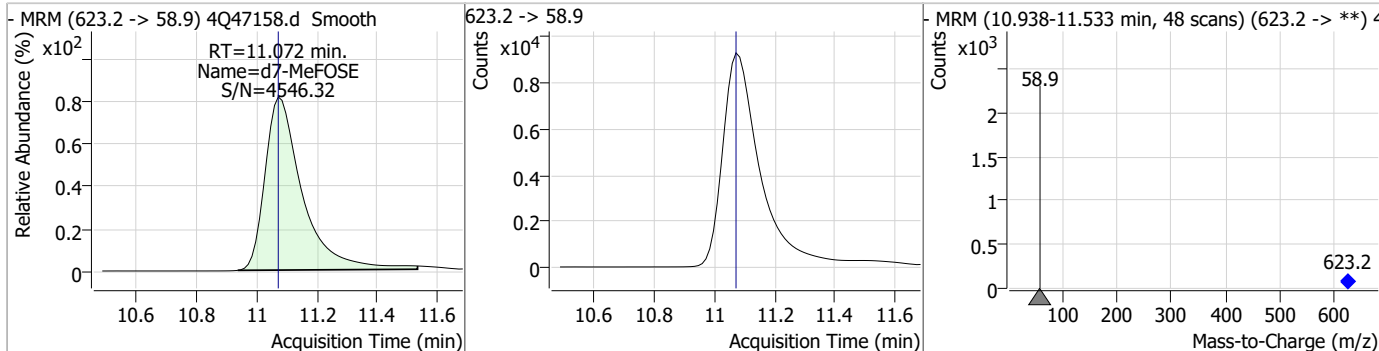
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Perfluorinated Compounds by LC/MS/MS

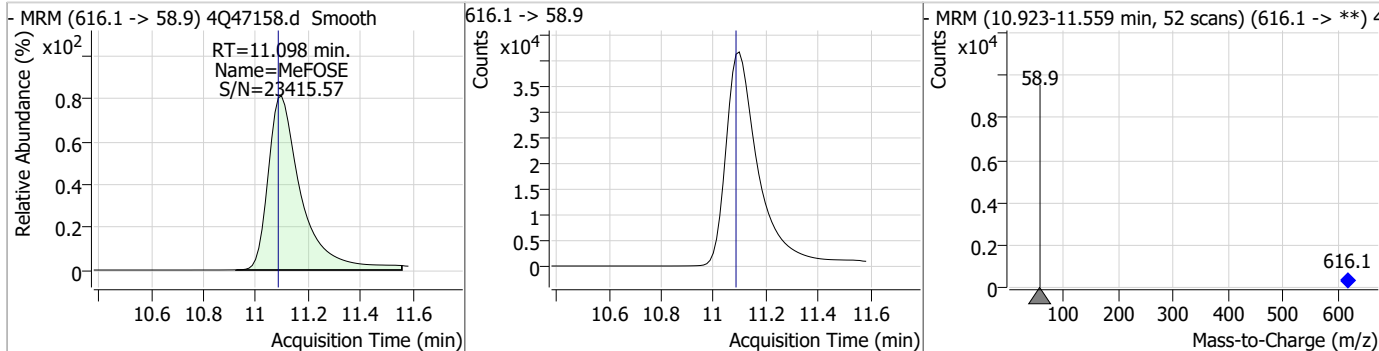
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	19.51	10.10	-0.01	44658	699.1 -> 98.8	58.1	27.8	83.5



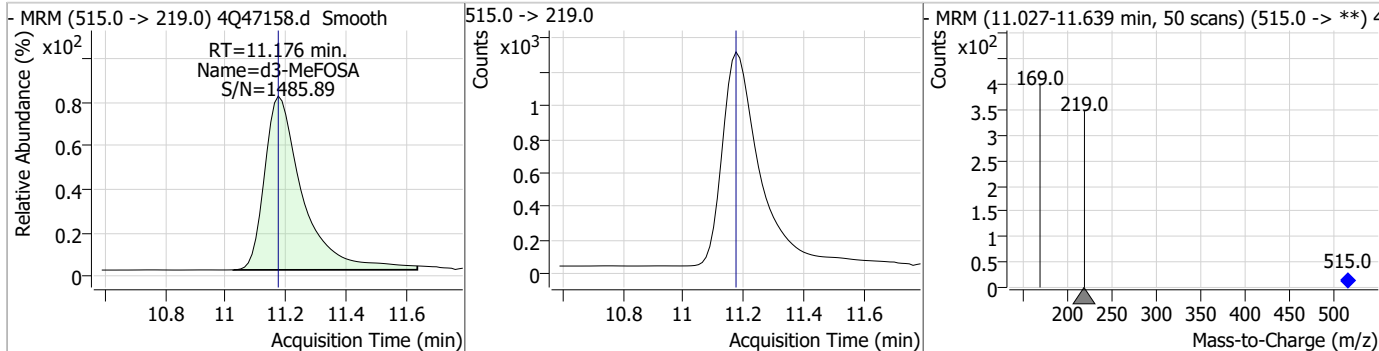
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.25	11.07	0.00	78696				



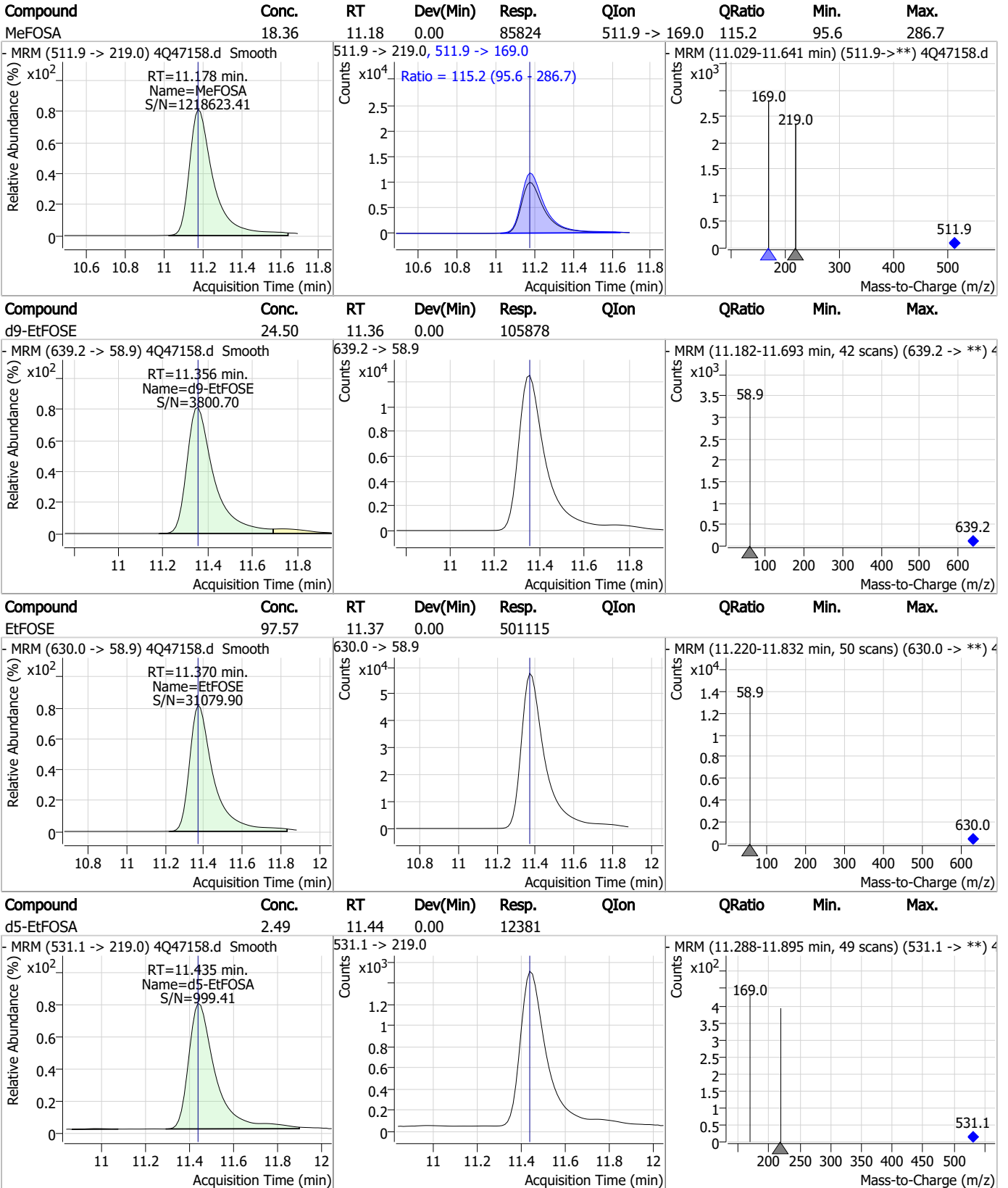
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	106.21	11.10	0.01	369153				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.44	11.18	0.00	11195				



Perfluorinated Compounds by LC/MS/MS



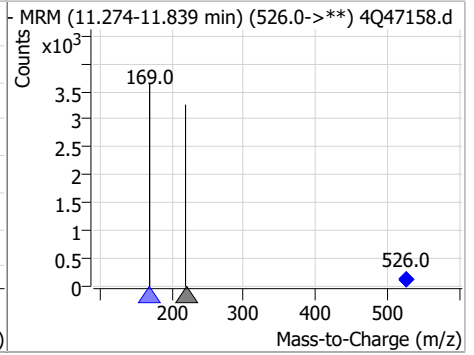
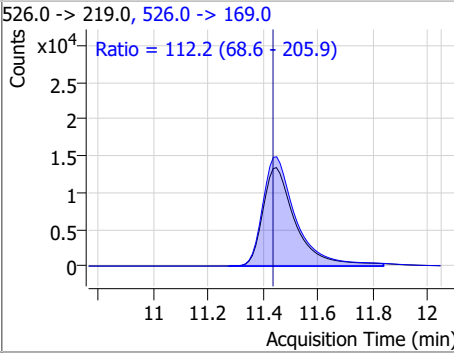
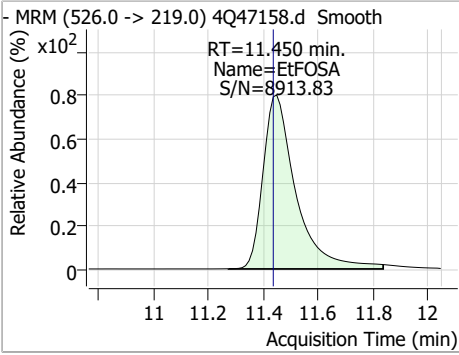
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	17.37	11.45	0.01	110841	526.0 -> 169.0	112.2	68.6	205.9



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Manual Integration Approval Summary

Sample Number: S4Q690-ICV690 Method: EPA DRAFT 1633
Lab FileID: 4Q47158.D Analyst approved: 07/13/23 14:35 Anna Ludwig
Injection Time: 07/12/23 19:59 Supervisor approved: 07/14/23 09:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.43	Split peak
EtFOSAA	2991-50-6		8.57	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47562.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 11:56:19 AM
 Sample Name : cc690-4
 Vial : P1-A5
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q697.batch.bin
 Sample Information : OP97749,S4Q697,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	113107	10.00 µg/L	0.000
M5-PFPeA	4.387	268.3 -> 223.0	59911	5.00 µg/L	0.000
M5-PFHxA	5.561	318.0 -> 273.0	39658	2.50 µg/L	-0.037
M4-PFHpA	6.515	367.1 -> 322.0	28484	2.50 µg/L	-0.040
M8-PFOA	7.187	421.1 -> 376.0	46125	2.50 µg/L	-0.050
M9-PFNA	7.734	472.1 -> 427.0	19321	1.25 µg/L	-0.050
M6-PFDA	8.241	519.1 -> 474.1	15762	1.25 µg/L	-0.051
M7-PFUnDA	8.710	570.0 -> 525.1	19853	1.25 µg/L	-0.050
M2-PFDoDA	9.143	615.1 -> 570.0	19142	1.25 µg/L	-0.051
M2-PFTeDA	9.912	715.2 -> 670.0	13447	1.25 µg/L	-0.050
M8-FOSA	9.871	506.1 -> 77.8	13574	2.50 µg/L	-0.037
M3-PFBS	5.454	302.1 -> 79.9	9794	2.50 µg/L	-0.025
M3-PFHxS	7.265	402.1 -> 79.9	6884	2.50 µg/L	-0.051
M8-PFOS	8.380	507.1 -> 79.9	8762	2.50 µg/L	-0.050
M2-4:2FTS	5.259	329.1 -> 80.9	677	5.00 µg/L	-0.025
M2-6:2FTS	6.949	429.1 -> 80.9	1248	5.00 µg/L	-0.050
M2-8:2FTS	8.028	529.1 -> 80.9	2256	5.00 µg/L	-0.050
M3-MeFOSAA	8.312	573.2 -> 419.0	16553	5.00 µg/L	-0.049
M3-HFPO-DA	5.928	286.9 -> 168.9	38556	10.00 µg/L	-0.037
M5-EtFOSAA	8.521	589.2 -> 419.0	13660	5.00 µg/L	-0.049
M7-MeFOSE	11.035	623.2 -> 58.9	68224	25.00 µg/L	-0.025
M9-EtFOSE	11.319	639.2 -> 58.9	98528	25.00 µg/L	-0.025
M5-EtFOSA	11.411	531.1 -> 219.0	11093	2.50 µg/L	-0.012
M3-MeFOSA	11.139	515.0 -> 219.0	9269	2.50 µg/L	-0.025
13C4-PFOS	8.380	502.8 -> 79.9	9629	2.50 µg/L	-0.050
13C3-PFBA	2.916	216.0 -> 172.0	60974	5.00 µg/L	0.000
18O2-PFHxS	7.264	403.0 -> 83.9	4879	2.50 µg/L	-0.051
13C4-PFOA	7.187	417.1 -> 372.0	55346	2.50 µg/L	-0.050
13C2-PFDA	8.241	515.1 -> 470.1	17533	1.25 µg/L	-0.051
13C5-PFNA	7.734	468.0 -> 423.0	23297	1.25 µg/L	-0.050
13C2-PFHxA	5.562	315.1 -> 270.0	37449	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.259	329.1 -> 80.9	677	6.18 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.5%		
13C2-6:2FTS	6.949	429.1 -> 80.9	1248	5.20 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.9%		
13C2-8:2FTS	8.028	529.1 -> 80.9	2256	5.77 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.5%		
13C2-PFDoDA	9.143	615.1 -> 570.0	19142	1.17 µg/L	-0.051
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.0%		
13C2-PFTeDA	9.912	715.2 -> 670.0	13447	1.14 µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.5%		
13C3-PFBS	5.454	302.1 -> 79.9	9794	2.62 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.9%		
13C3-PFHxS	7.265	402.1 -> 79.9	6884	2.52 µg/L	-0.051

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C4-PFBA	2.911	216.8 -> 171.9	113107	9.82 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C4-PFHpA	6.515	367.1 -> 322.0	28484	2.48 µg/L	-0.040
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C5-PFHxA	5.561	318.0 -> 273.0	39658	2.48 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C5-PFPeA	4.387	268.3 -> 223.0	59911	5.80 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 115.9%	
13C6-PFDA	8.241	519.1 -> 474.1	15762	1.30 µg/L	-0.051
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.9%	
13C7-PFUnDA	8.710	570.0 -> 525.1	19853	1.29 µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.0%	
13C8-FOSA	9.871	506.1 -> 77.8	13574	2.72 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.0%	
13C8-PFOA	7.187	421.1 -> 376.0	46125	2.56 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C8-PFOS	8.380	507.1 -> 79.9	8762	2.62 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.8%	
13C9-PFNA	7.734	472.1 -> 427.0	19321	1.24 µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.2%	
d3-MeFOSAA	8.312	573.2 -> 419.0	16553	5.23 µg/L	-0.049
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.5%	
13C3-HFPO-DA	5.928	286.9 -> 168.9	38556	9.66 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.6%	
d3-MeFOSA	11.139	515.0 -> 219.0	9269	2.55 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.1%	
d5-EtFOSAA	8.521	589.2 -> 419.0	13660	4.89 µg/L	-0.049
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.8%	
d7-MeFOSE	11.035	623.2 -> 58.9	68224	26.55 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 106.2%	
d9-EtFOSE	11.319	639.2 -> 58.9	98528	28.80 µg/L	-0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 115.2%	
d5-EtFOSA	11.411	531.1 -> 219.0	11093	2.81 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.5%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	11448	9.53 µg/L	97
		327.1 -> 80.9	4951		
6:2FTS	6.950	427.1 -> 407.0	15003	10.40 µg/L	98
		427.1 -> 80.9	5572		
8:2FTS	8.028	527.1 -> 507.0	12800	9.91 µg/L	95
		527.1 -> 80.8	5622		
EtFOSAA	8.522	584.2 -> 419.1	6535	2.97 µg/L	85
		584.2 -> 526.0	2639		
FOSA	9.862	498.1 -> 77.9	15299	2.55 µg/L	99
		498.1 -> 478.0	499		
MeFOSAA	8.313	570.1 -> 419.0	7184	2.43 µg/L	95
		570.1 -> 483.0	1249		
PFBA	2.920	212.8 -> 168.9	34629	10.18 µg/L	100
PFBS	5.455	298.7 -> 79.9	8724	2.14 µg/L	98
		298.7 -> 98.8	3434		
PFDA	8.242	512.9 -> 469.0	38968	2.38 µg/L	96
		512.9 -> 219.0	7105		
PFDODA	9.143	613.1 -> 569.0	42083	2.73 µg/L	97
		613.1 -> 319.0	6584		
PFDS	9.296	599.0 -> 79.9	6285	2.54 µg/L	99

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	3019			
PFHpA	6.516	363.1 -> 319.0	44912	2.56	µg/L	99
		363.1 -> 169.0	8243			
PFHpS	7.861	449.0 -> 79.9	8448	2.41	µg/L	100
		449.0 -> 98.9	4491			
PFHxA	5.563	313.0 -> 269.0	40336	2.60	µg/L	100
		313.0 -> 118.9	1274			
PFHxS	7.266	398.7 -> 79.9	6505	2.12	µg/L	m 93
		398.7 -> 98.9	3364			
PFNA	7.735	463.0 -> 419.0	38873	2.73	µg/L	98
		463.0 -> 219.0	9130			
PFNS	8.861	548.8 -> 79.9	5671	2.17	µg/L	90
		548.8 -> 98.9	3288			
PFOA	7.188	413.0 -> 369.0	66429	2.55	µg/L	99
		413.0 -> 169.0	12722			
PFOS	8.381	498.9 -> 79.9	10648	2.28	µg/L	m 84
		498.9 -> 98.8	5585			
PFPeA	4.389	263.0 -> 219.0	79037	4.68	µg/L	100
PFPeS	6.533	349.1 -> 79.9	5876	2.32	µg/L	96
		349.1 -> 98.9	2670			
PFTeDA	9.913	713.1 -> 669.0	33163	2.47	µg/L	99
		713.1 -> 168.9	3154			
PFTrDA	9.541	663.0 -> 619.0	44767	2.63	µg/L	97
		663.0 -> 168.9	5419			
PFUnDA	8.710	563.1 -> 519.0	39048	2.48	µg/L	99
		563.1 -> 269.1	7774			
11CI-PF3OUdS	9.580	630.9 -> 450.9	49313	4.79	µg/L	99
		632.9 -> 452.9	15059			
9CI-PF3ONS	8.725	530.8 -> 351.0	68798	4.99	µg/L	98
		532.8 -> 353.0	21160			
ADONA	6.768	376.9 -> 250.9	135688	4.70	µg/L	100
		376.9 -> 84.8	35142			
HFPO-DA	5.929	284.9 -> 168.9	20482	5.14	µg/L	99
		284.9 -> 184.9	2404			
3:3FTCA	3.873	241.0 -> 177.0	9908	12.65	µg/L	100
		241.0 -> 117.0	896			
5:3FTCA	6.244	341.0 -> 237.1	155936	60.45	µg/L	98
		341.0 -> 217.0	107485			
7:3FTCA	7.723	441.0 -> 316.9	86520	60.77	µg/L	99
		441.0 -> 336.9	203929			
EtFOSA	11.413	526.0 -> 219.0	24507	4.29	µg/L	99
		526.0 -> 169.0	33721			
EtFOSE	11.332	630.0 -> 58.9	53692	11.23	µg/L	100
MeFOSA	11.141	511.9 -> 219.0	18266	4.72	µg/L	72
		511.9 -> 169.0	27914			
MeFOSE	11.048	616.1 -> 58.9	40087	13.30	µg/L	100
PFDoDS	10.052	699.1 -> 79.9	4612	2.26	µg/L	90
		699.1 -> 98.8	2787			
NFDHA	5.443	295.0 -> 201.0	5154	5.66	µg/L	98
		295.0 -> 84.9	1276			
PFMBA	4.797	279.0 -> 85.1	41095	4.52	µg/L	100
PFMPA	3.528	229.0 -> 84.9	39343	4.56	µg/L	100
PFEESA	5.985	314.8 -> 134.9	53750	4.58	µg/L	100
		314.8 -> 82.9	1873			

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

7.7.12
7

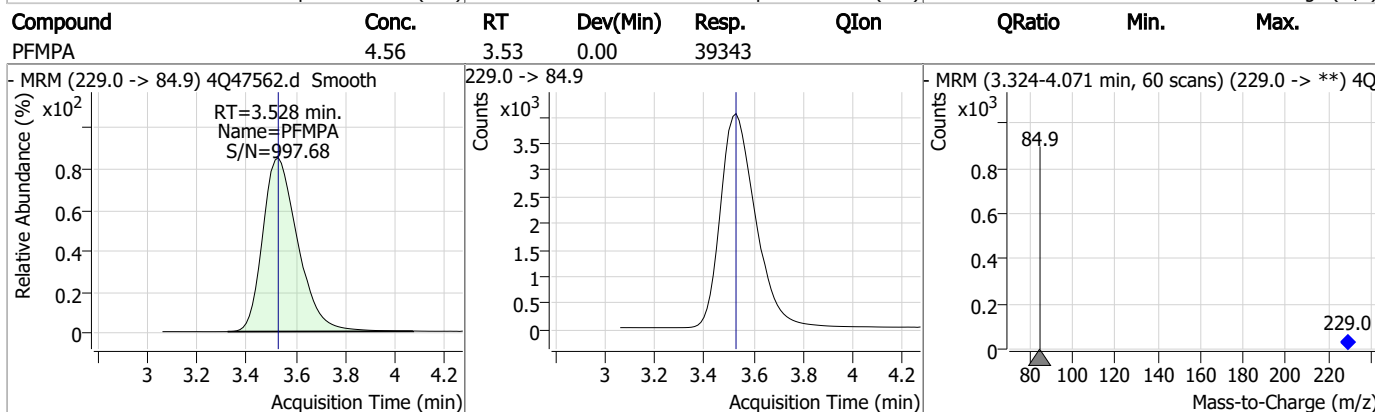
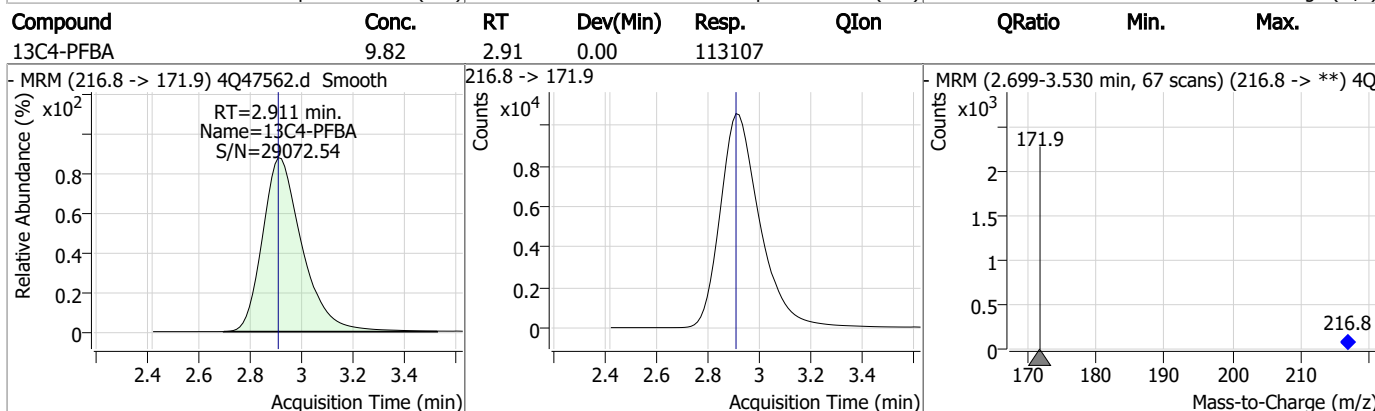
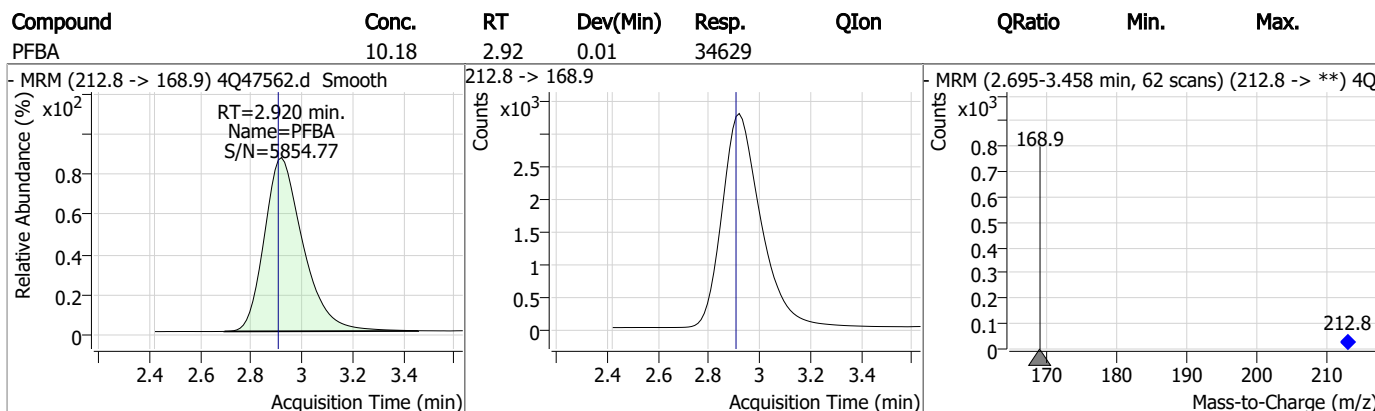
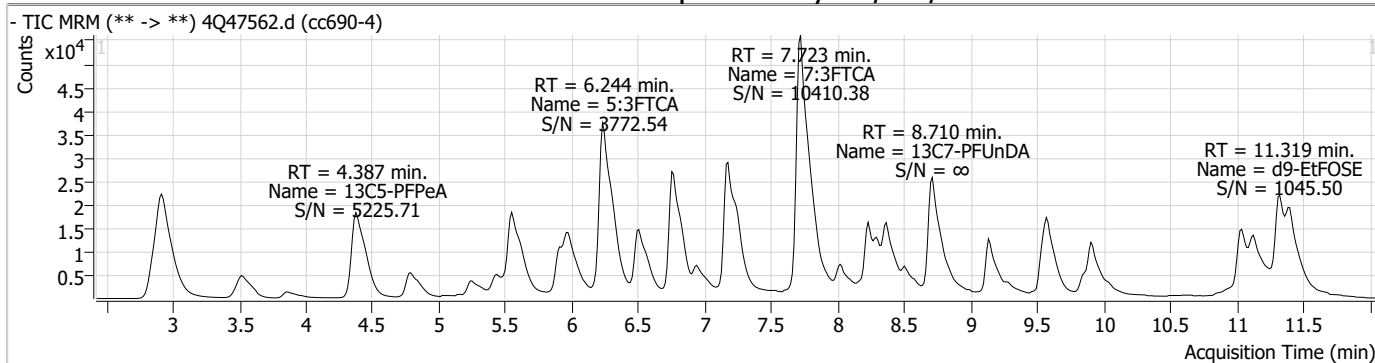
Perfluorinated Compounds by LC/MS/MS

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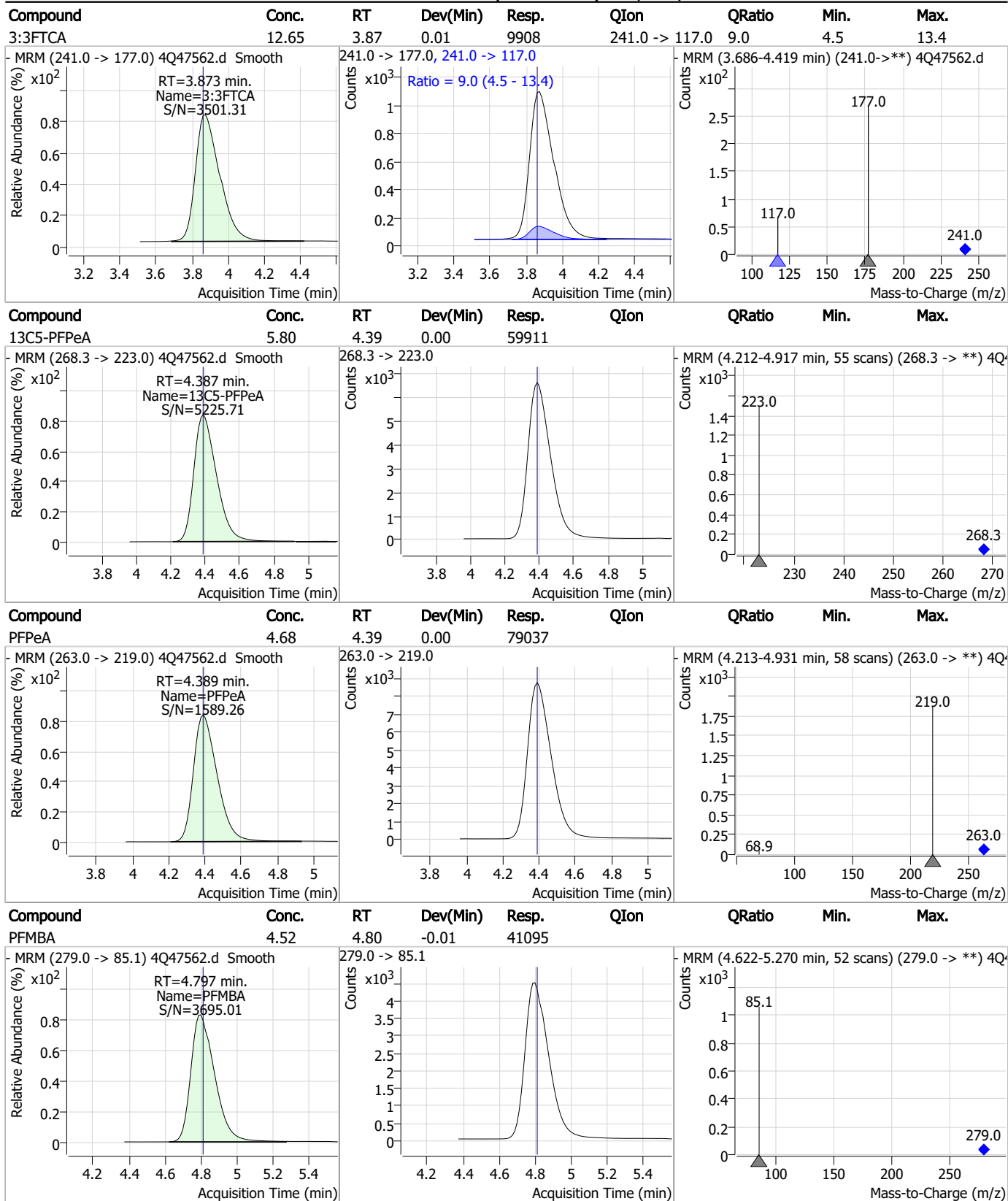
7.7.12

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Perfluorinated Compounds by LC/MS/MS

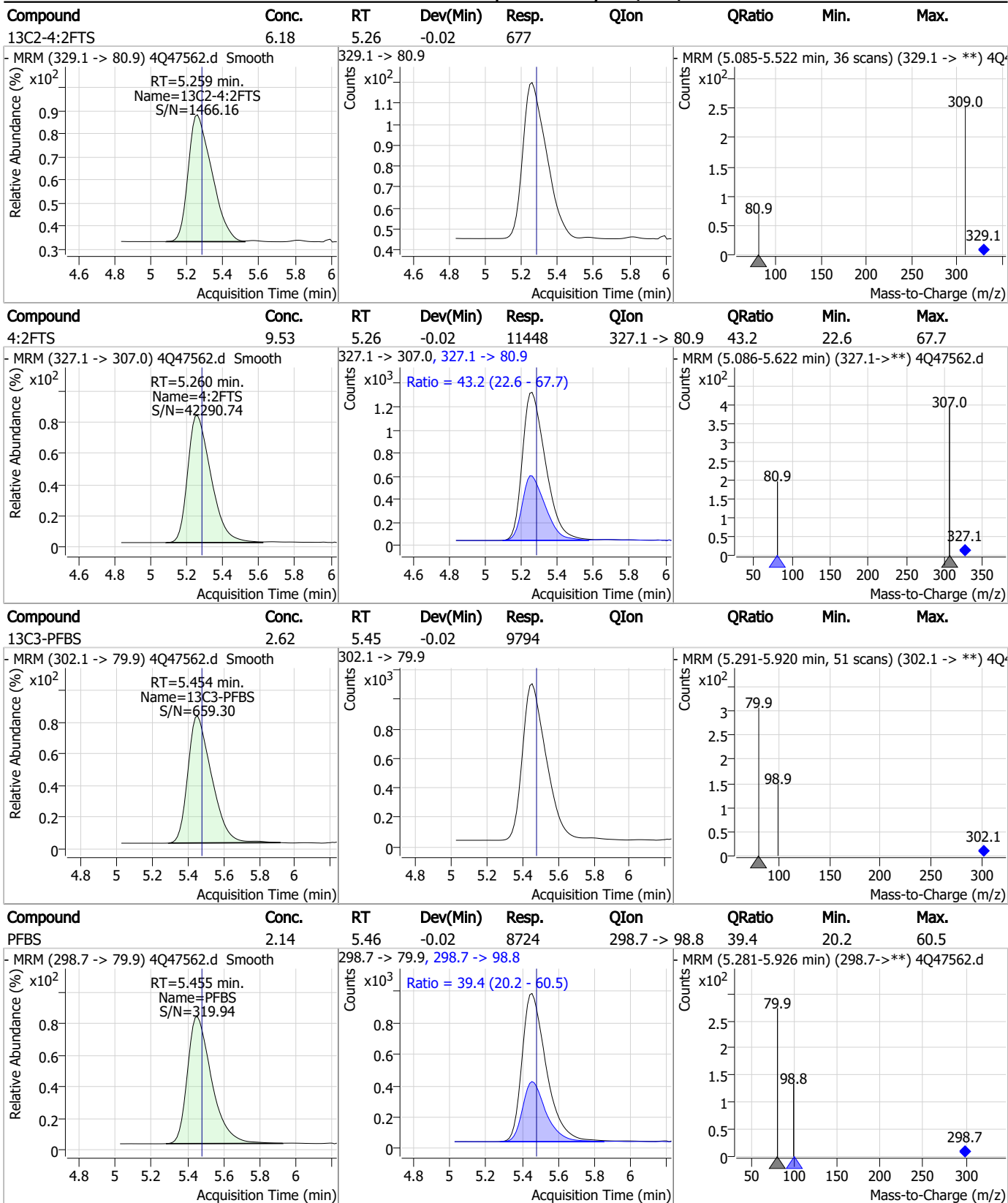


Perfluorinated Compounds by LC/MS/MS



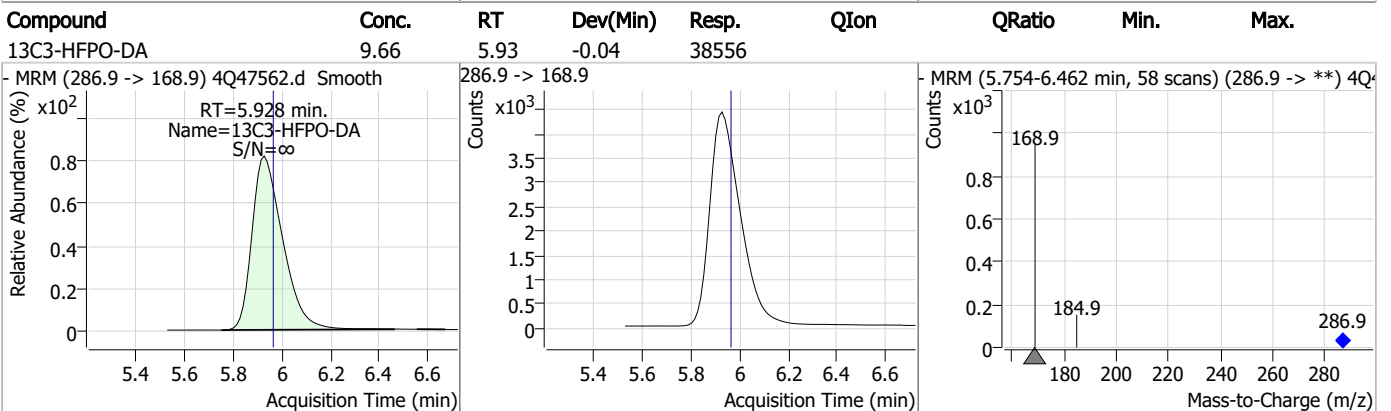
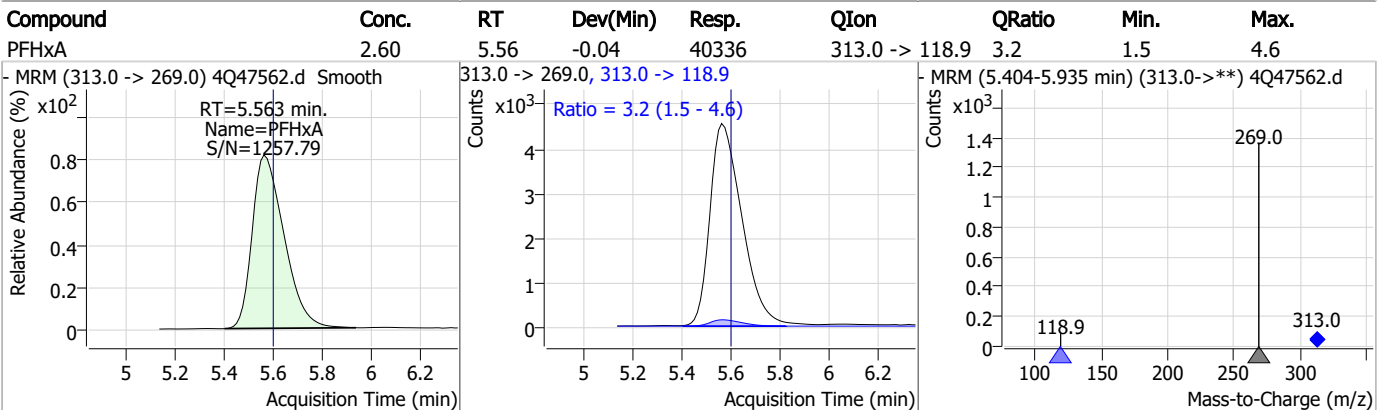
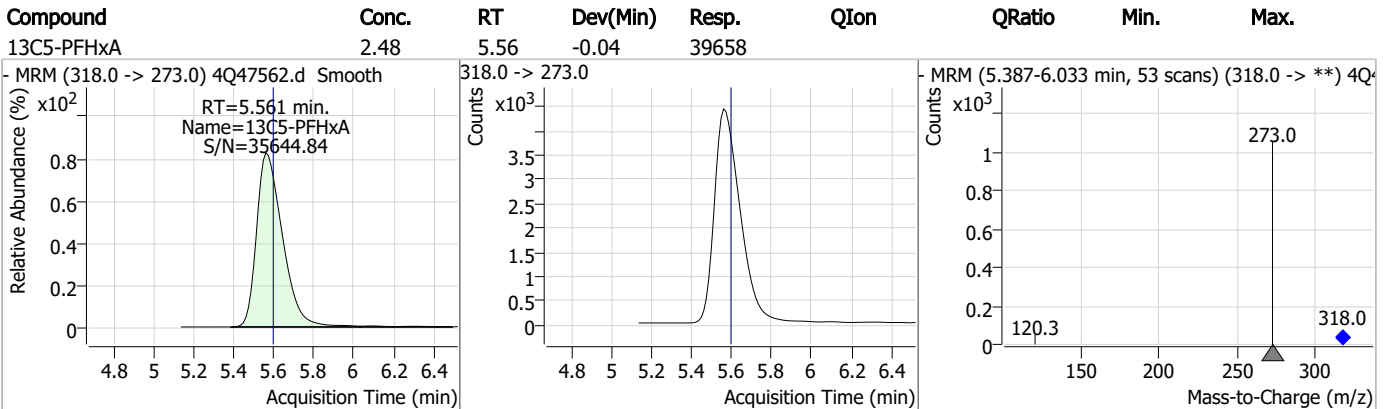
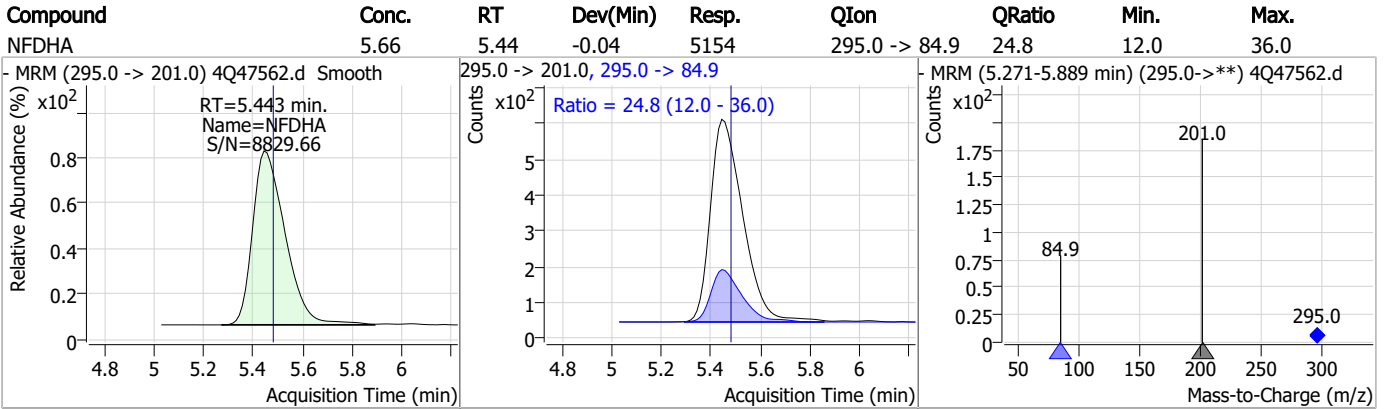
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Perfluorinated Compounds by LC/MS/MS



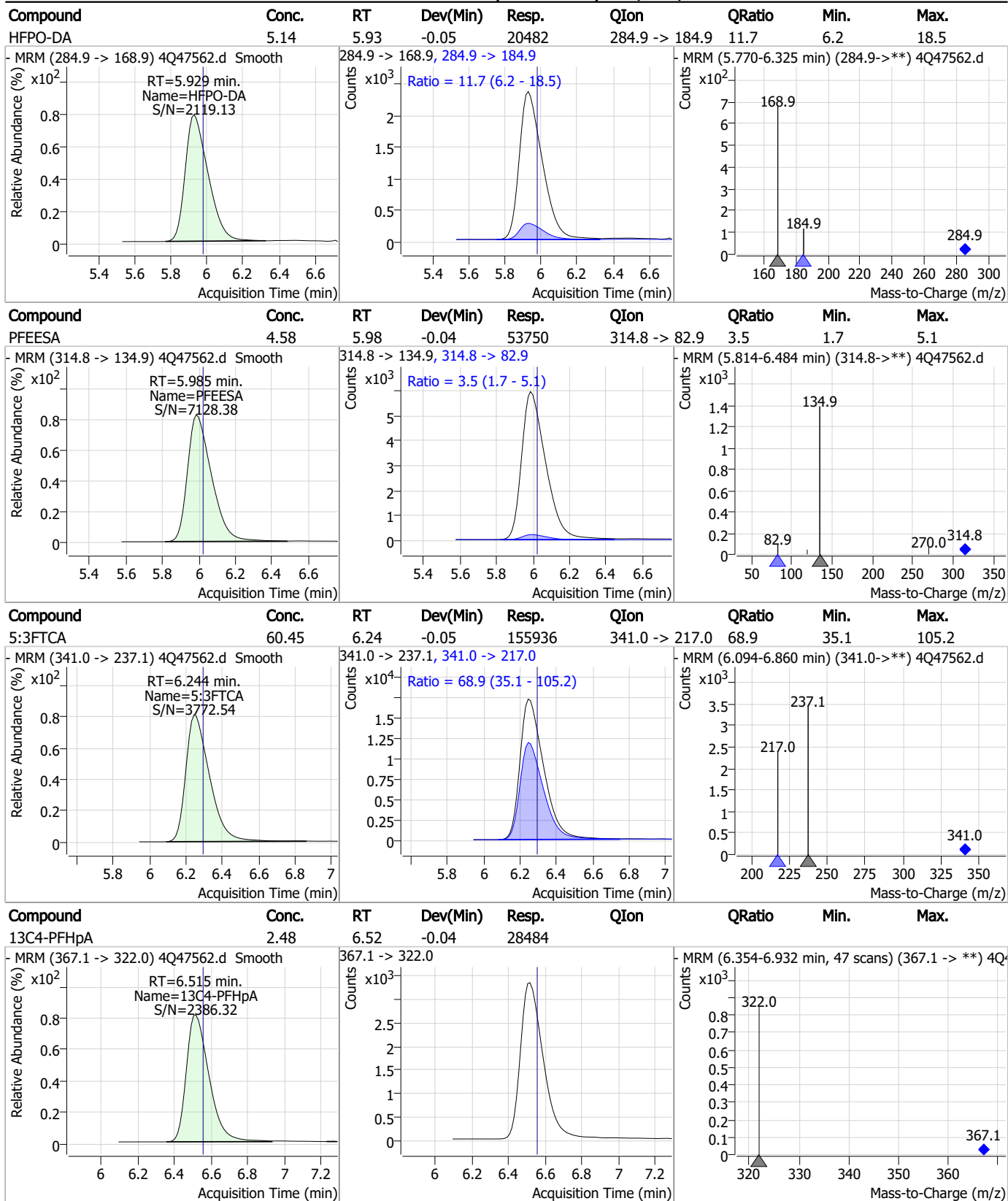
7.7.12
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Perfluorinated Compounds by LC/MS/MS



7.7.12 7

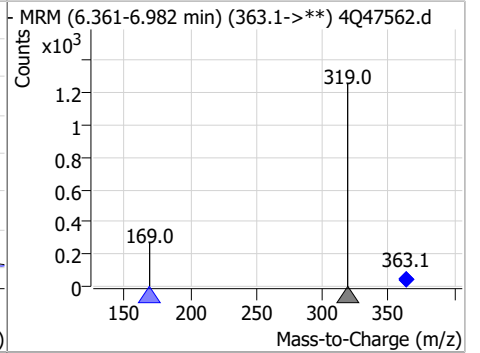
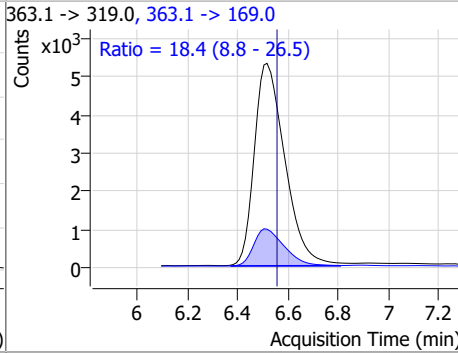
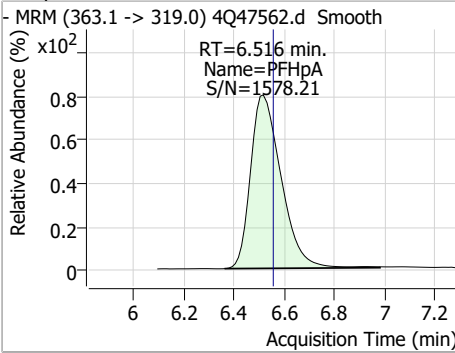
Perfluorinated Compounds by LC/MS/MS



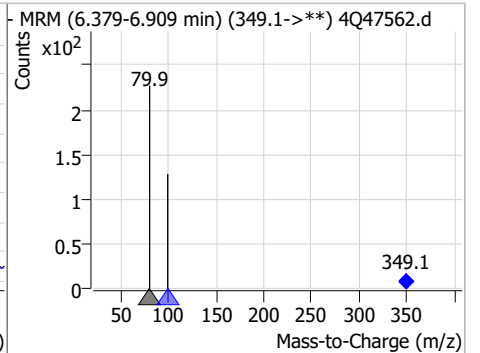
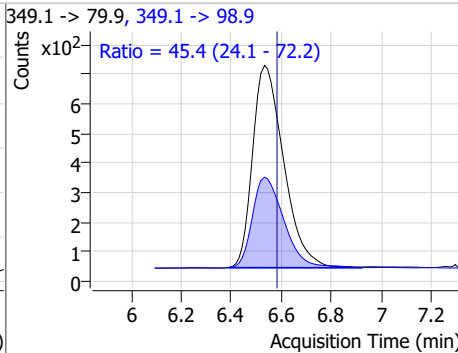
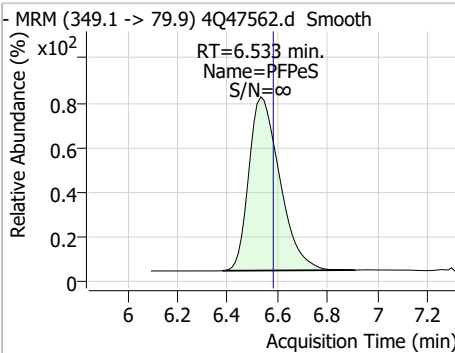
7.7.12
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Perfluorinated Compounds by LC/MS/MS

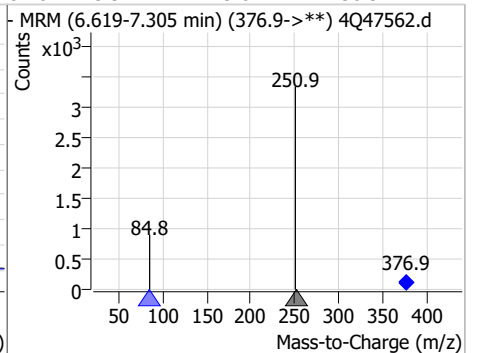
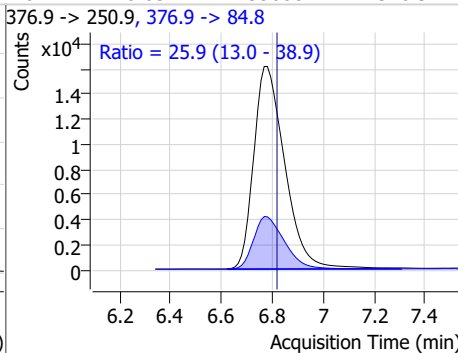
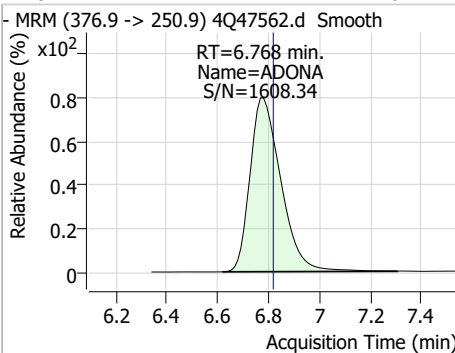
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	2.56	6.52	-0.04	44912	363.1 -> 169.0	18.4	8.8	26.5



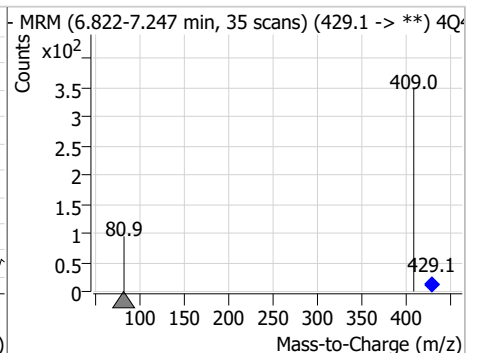
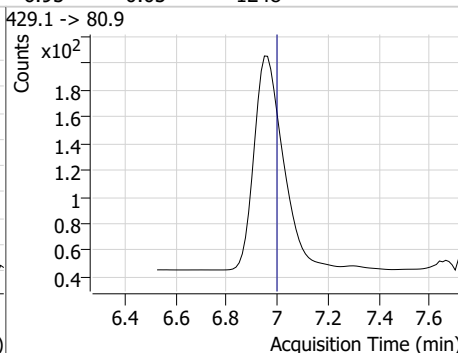
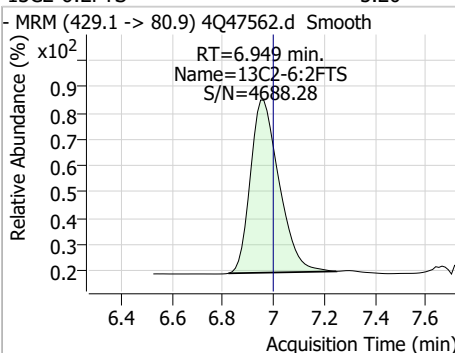
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.32	6.53	-0.05	5876	349.1 -> 98.9	45.4	24.1	72.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	4.70	6.77	-0.05	135688	376.9 -> 84.8	25.9	13.0	38.9



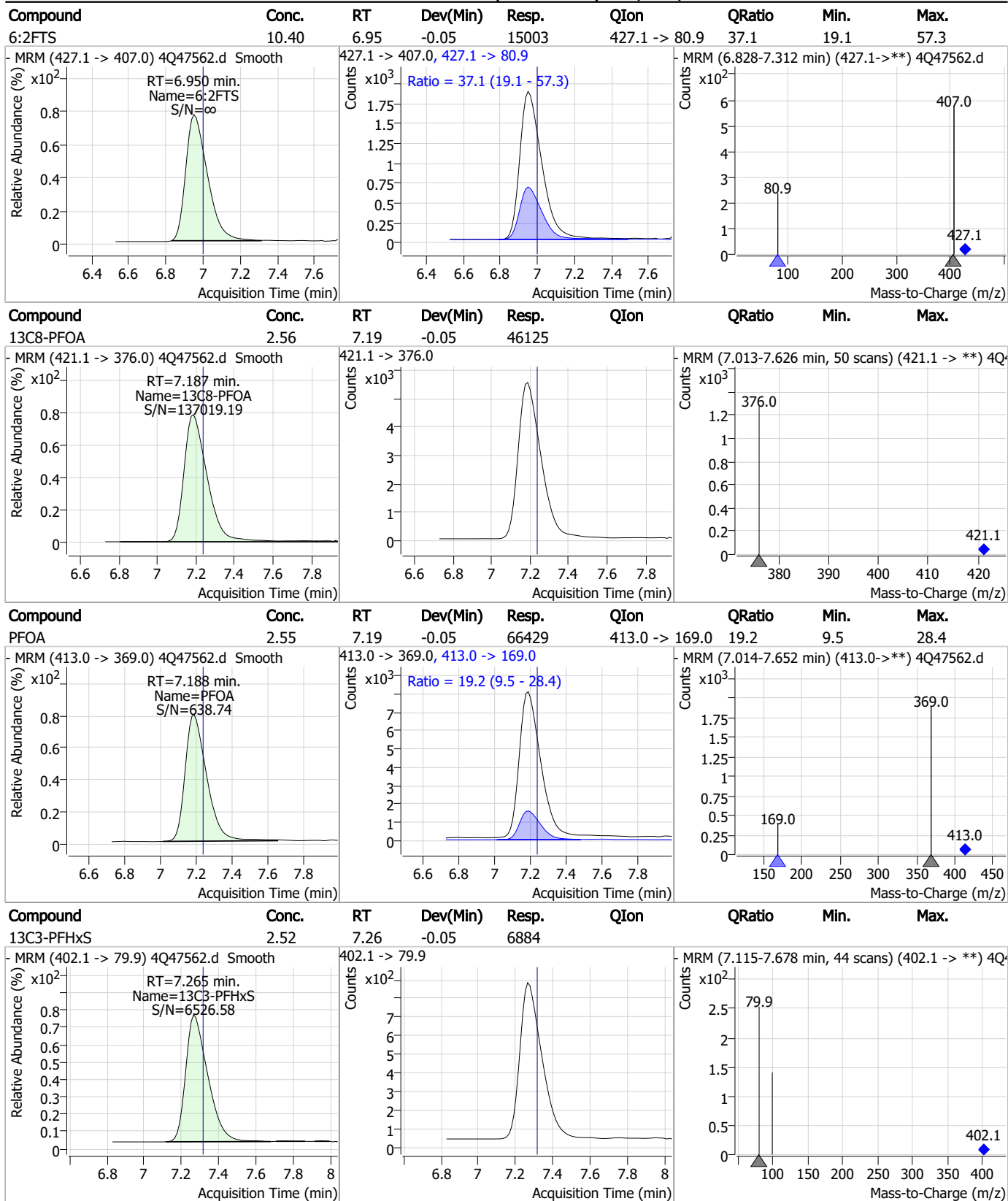
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	5.20	6.95	-0.05	1248	429.1 -> 80.9			



7.7.12
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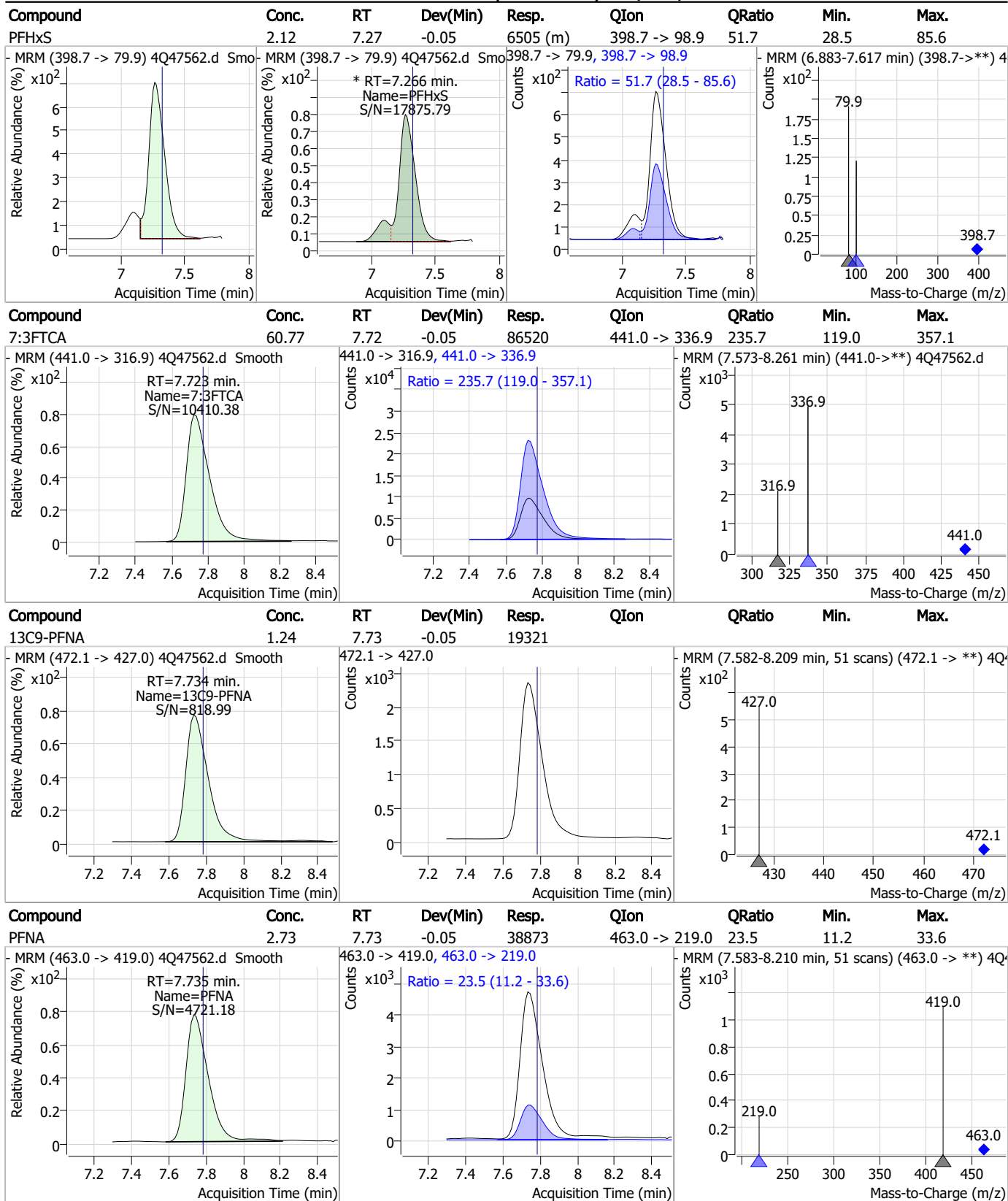


Perfluorinated Compounds by LC/MS/MS



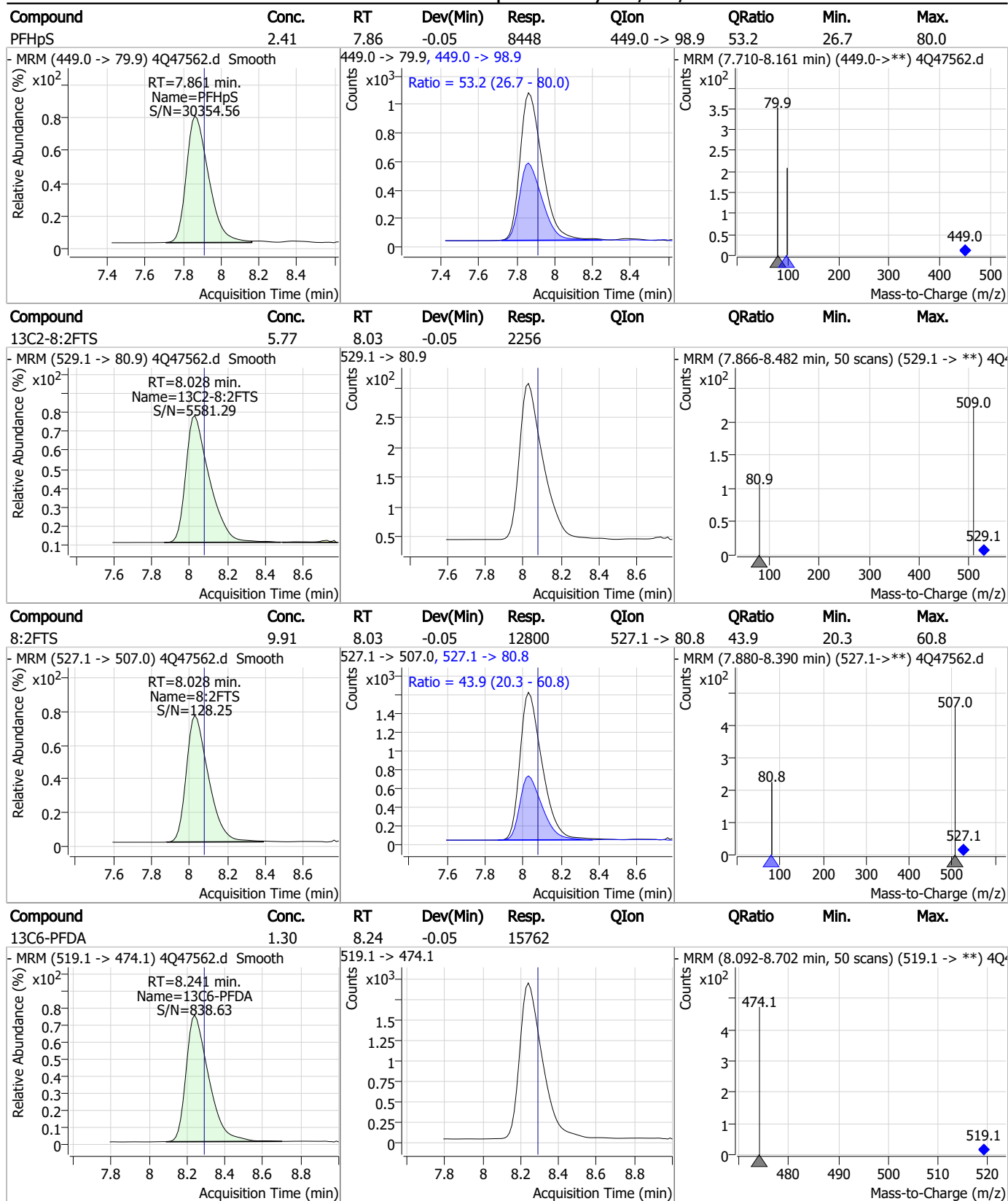
7.7.12
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

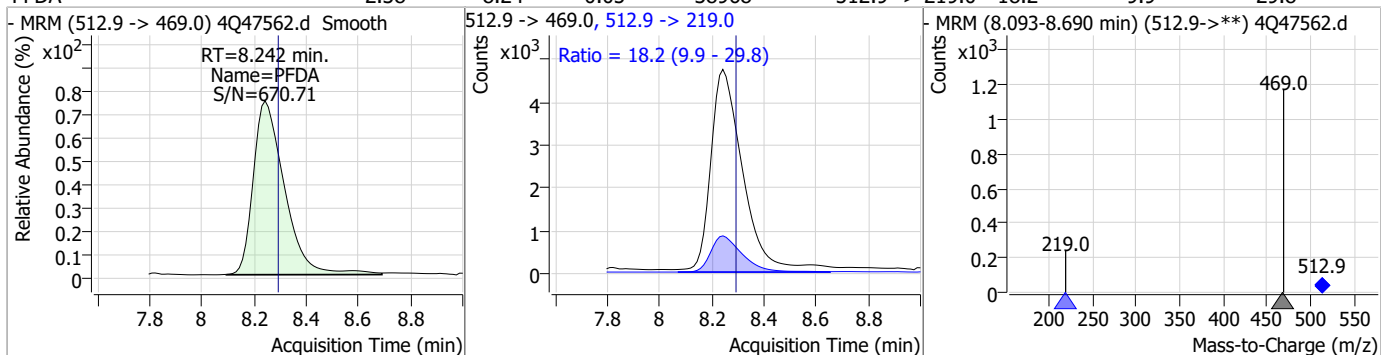


7.7.12

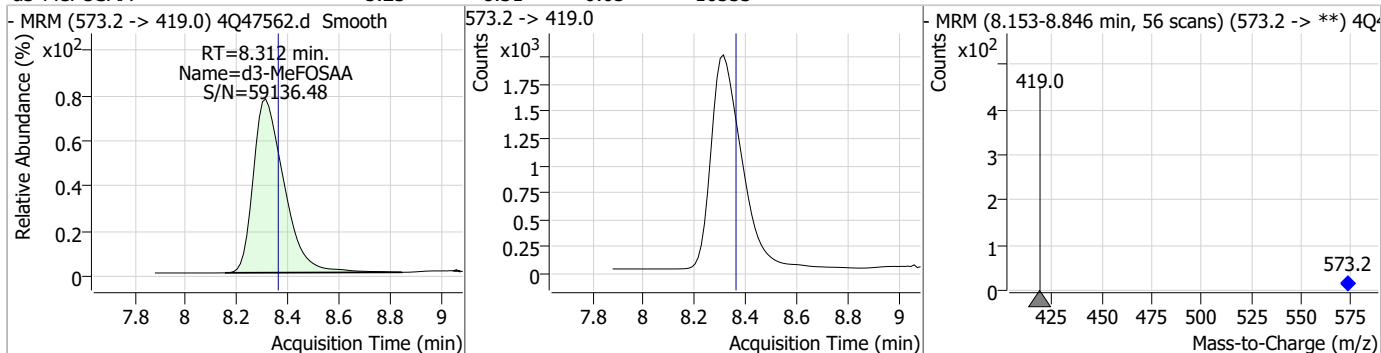
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Perfluorinated Compounds by LC/MS/MS

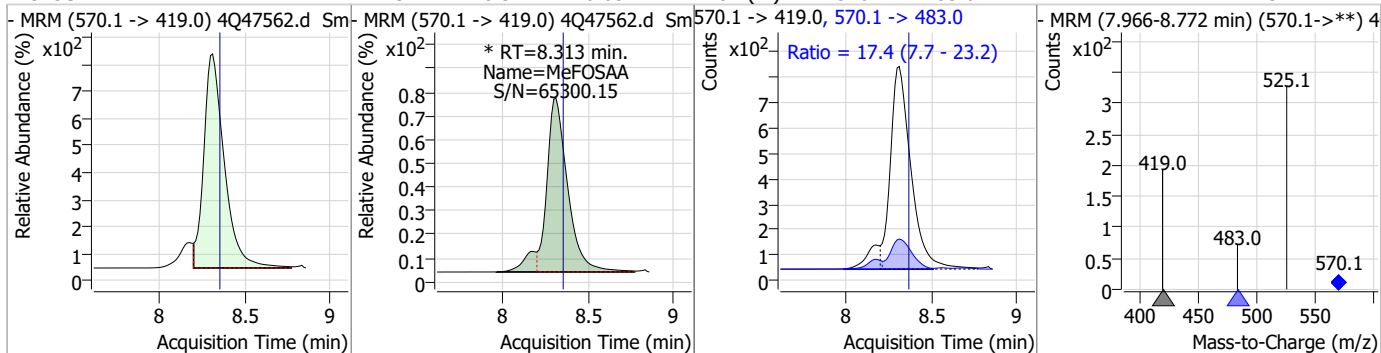
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.38	8.24	-0.05	38968	512.9 -> 219.0	18.2	9.9	29.8



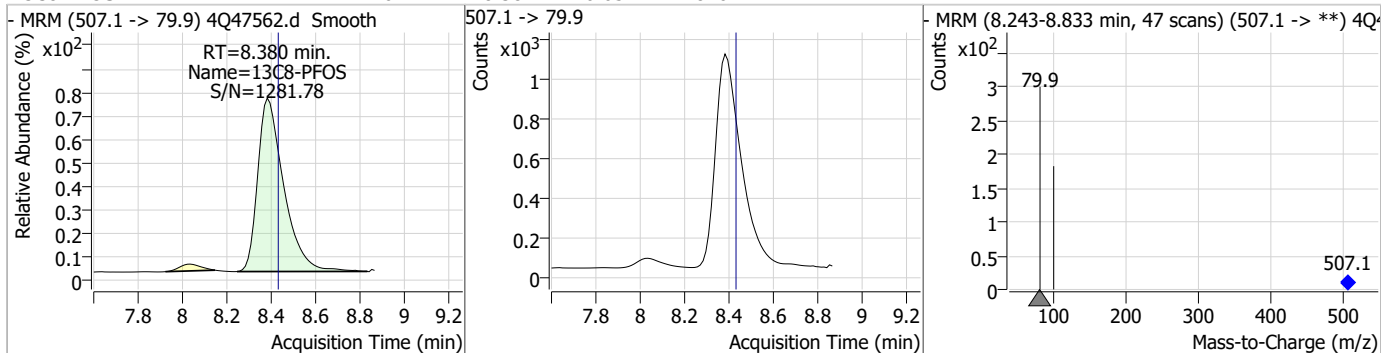
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.23	8.31	-0.05	16553				



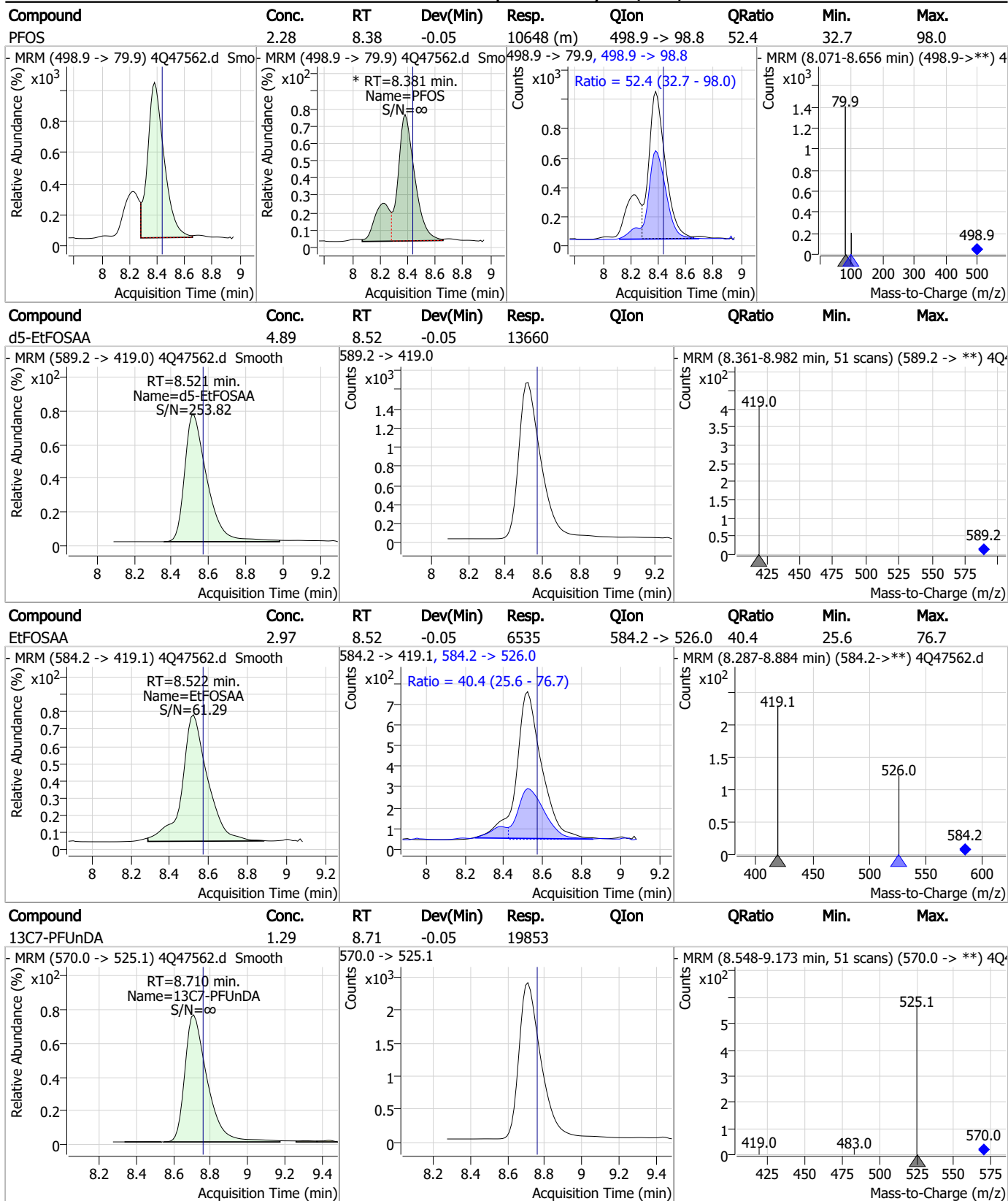
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.43	8.31	-0.05	7184 (m)	570.1 -> 483.0	17.4	7.7	23.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.62	8.38	-0.05	8762				



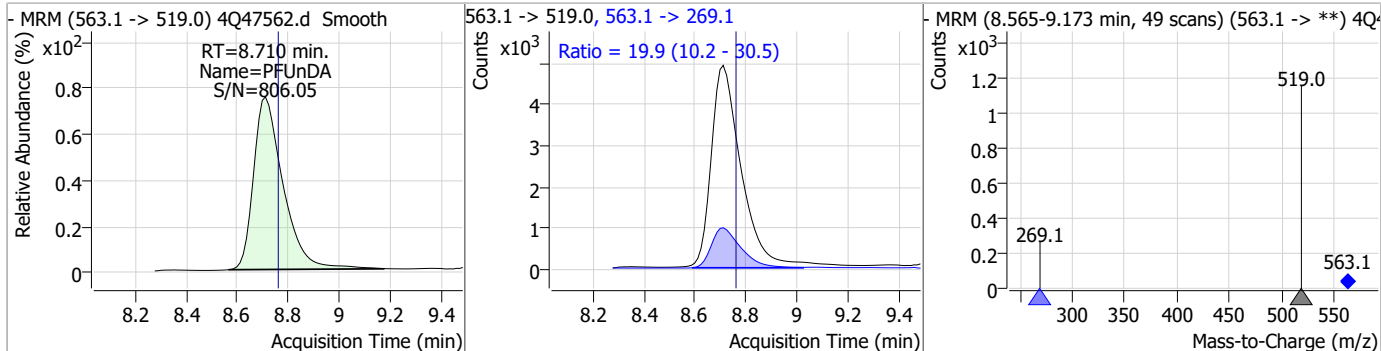
Perfluorinated Compounds by LC/MS/MS



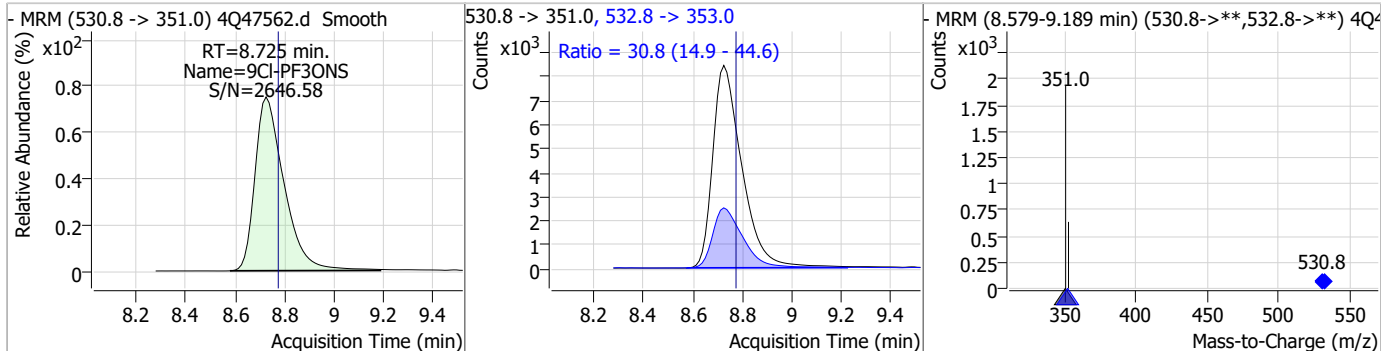
7.7.12
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Perfluorinated Compounds by LC/MS/MS

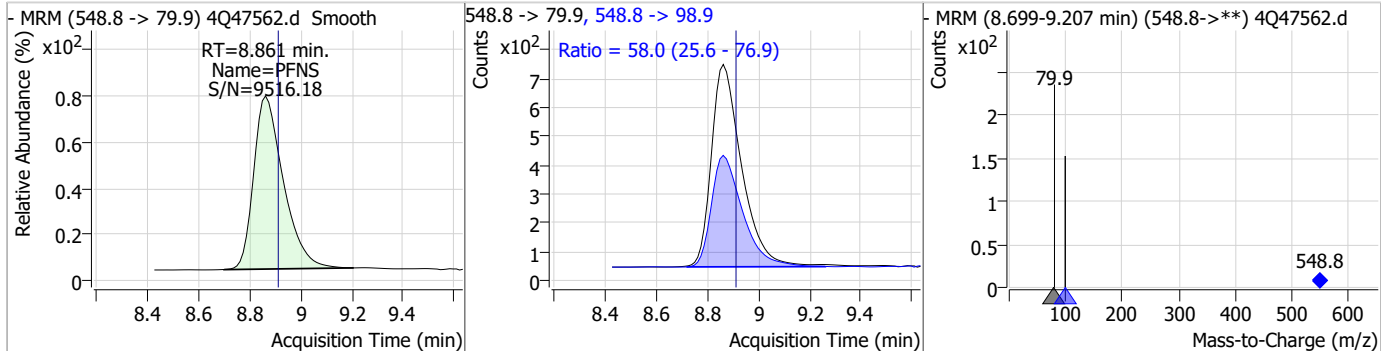
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	2.48	8.71	-0.05	39048	563.1 -> 269.1	19.9	10.2	30.5



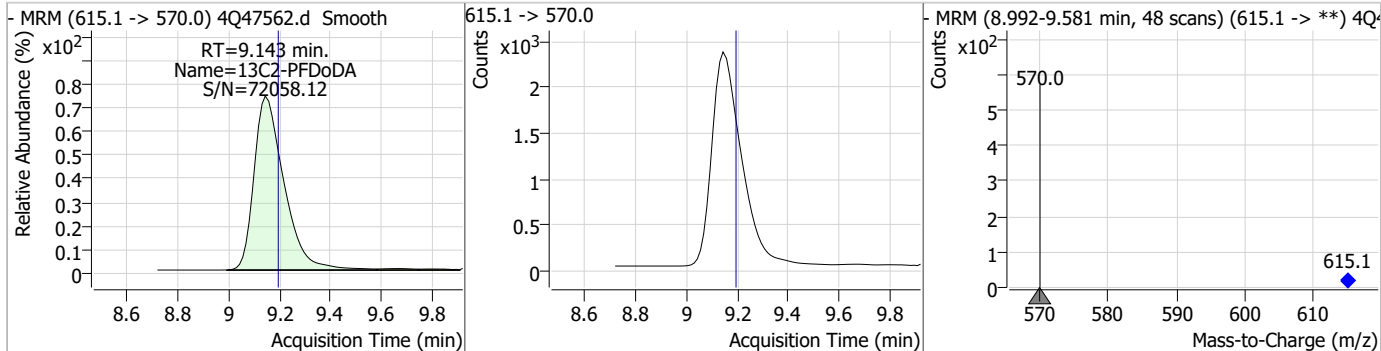
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	4.99	8.73	-0.05	68798	532.8 -> 353.0	30.8	14.9	44.6



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	2.17	8.86	-0.05	5671	548.8 -> 98.9	58.0	25.6	76.9

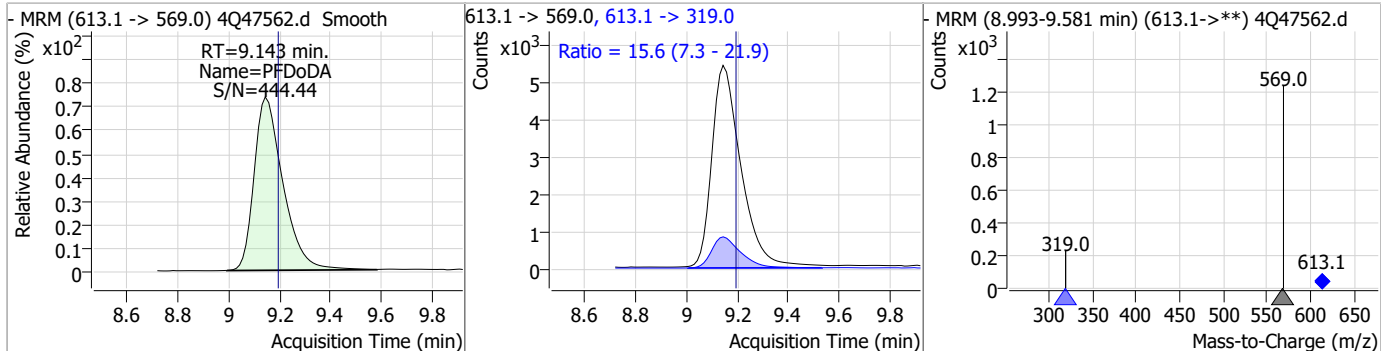


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.17	9.14	-0.05	19142	615.1 -> 570.0			

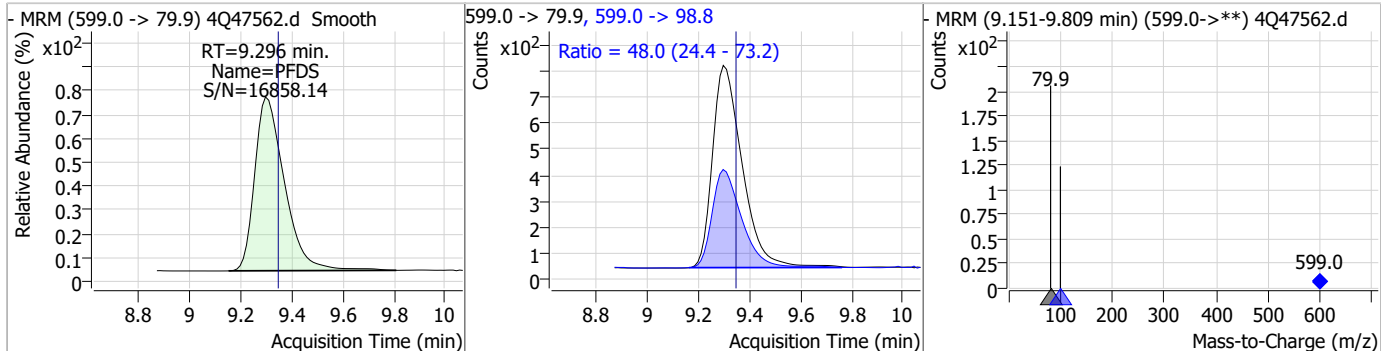


Perfluorinated Compounds by LC/MS/MS

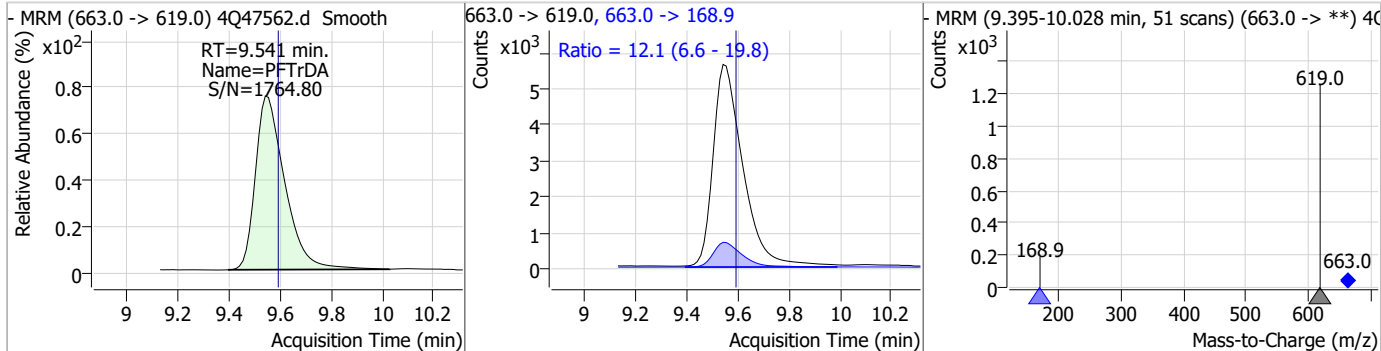
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	2.73	9.14	-0.05	42083	613.1 -> 319.0	15.6	7.3	21.9



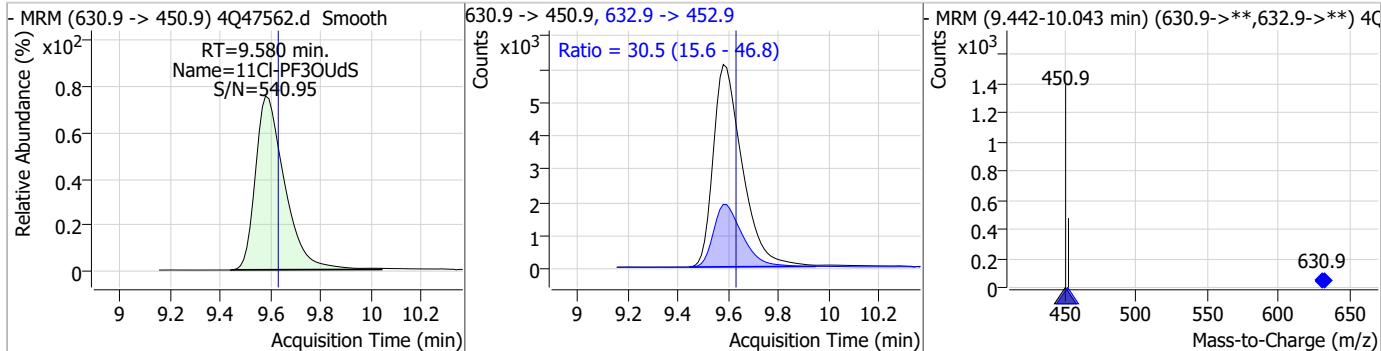
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	2.54	9.30	-0.05	6285	599.0 -> 98.8	48.0	24.4	73.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	2.63	9.54	-0.05	44767	663.0 -> 168.9	12.1	6.6	19.8



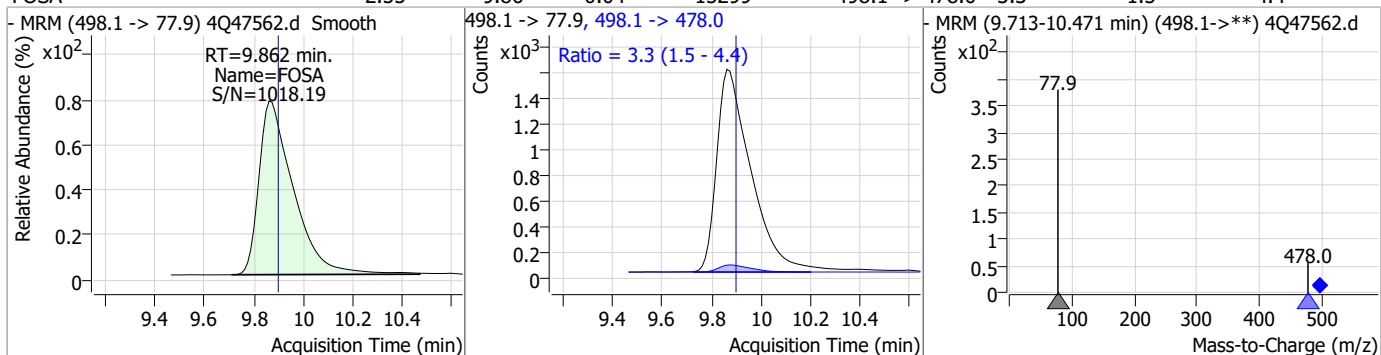
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	4.79	9.58	-0.05	49313	632.9 -> 452.9	30.5	15.6	46.8



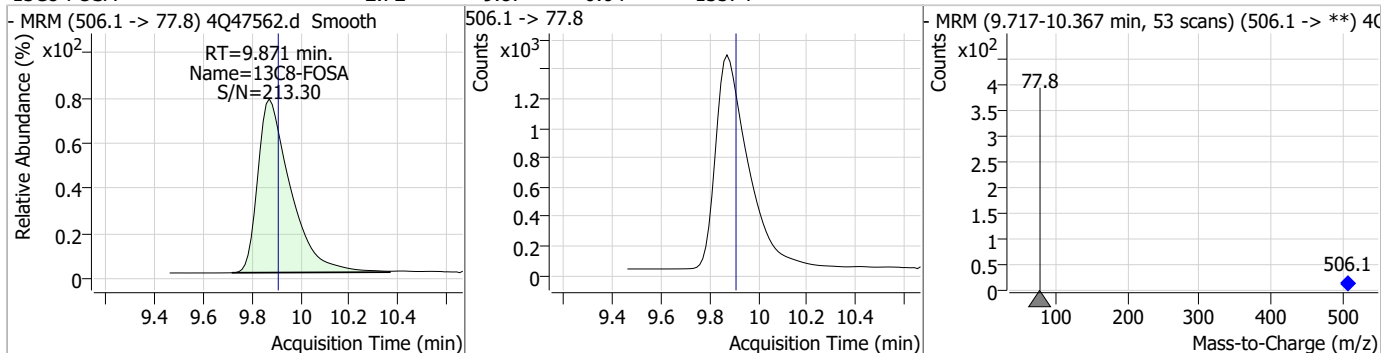
7.7.12
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Perfluorinated Compounds by LC/MS/MS

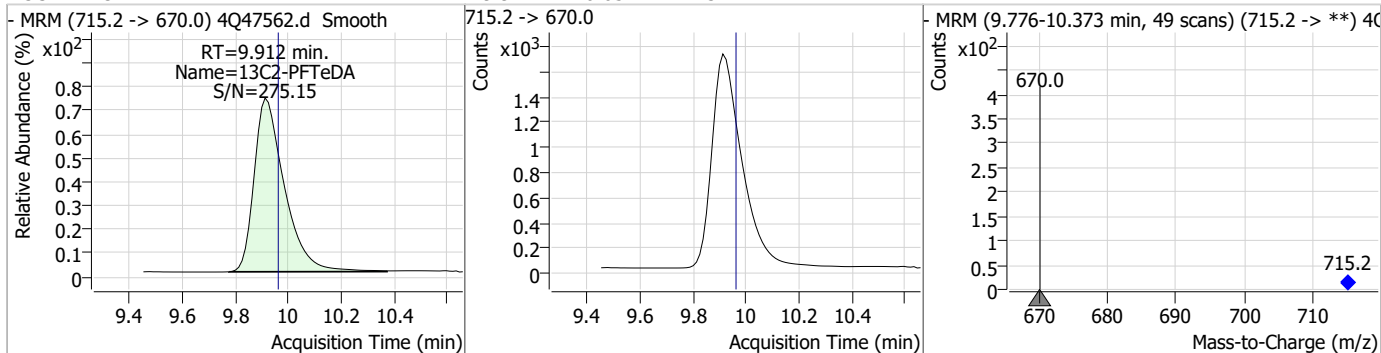
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.55	9.86	-0.04	15299	498.1 -> 478.0	3.3	1.5	4.4



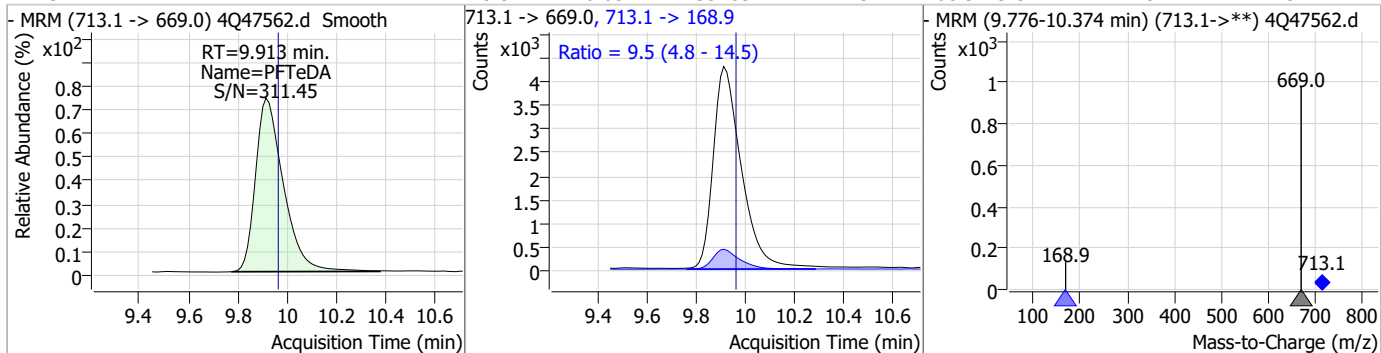
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.72	9.87	-0.04	13574				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.14	9.91	-0.05	13447				



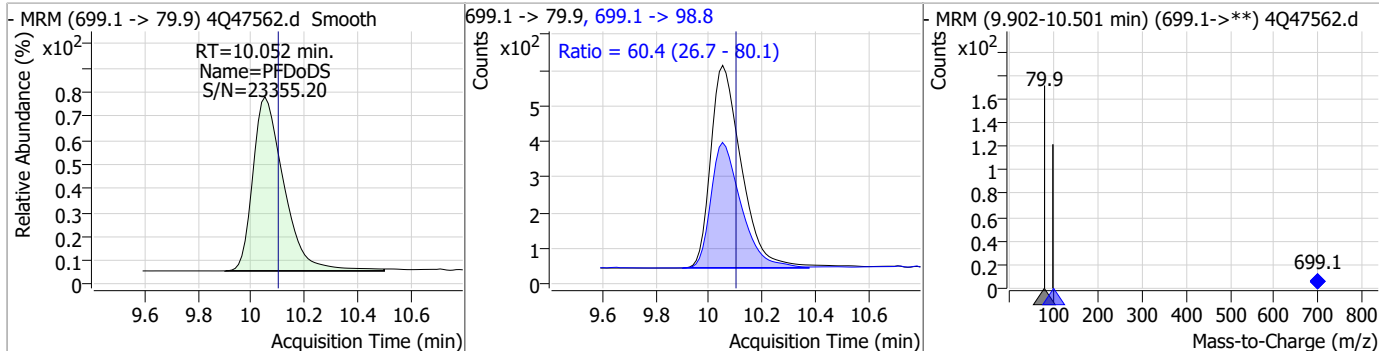
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.47	9.91	-0.05	33163	713.1 -> 168.9	9.5	4.8	14.5



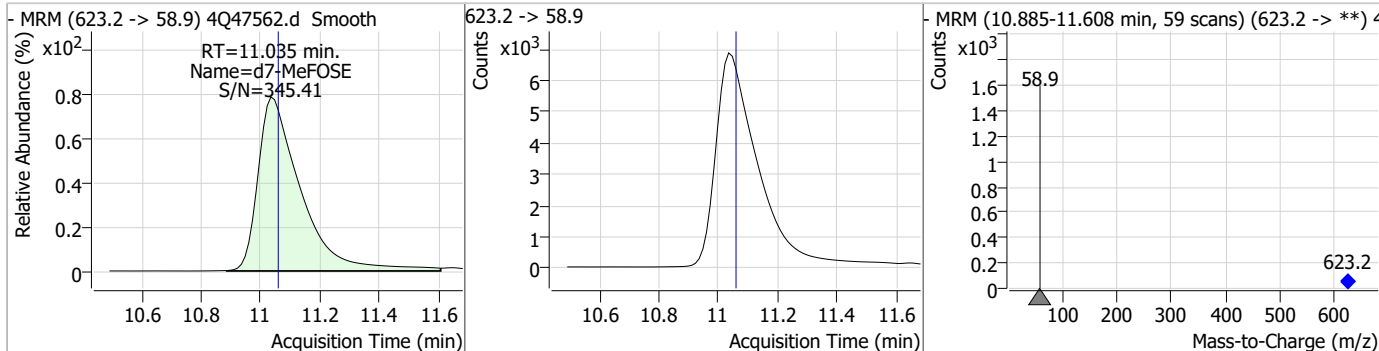
7.7.12
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Perfluorinated Compounds by LC/MS/MS

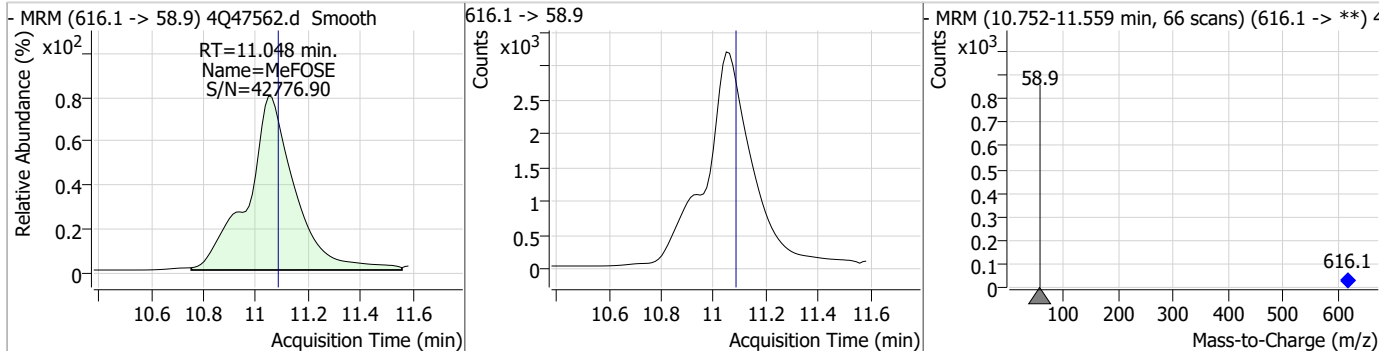
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.26	10.05	-0.05	4612	699.1 -> 98.8	60.4	26.7	80.1



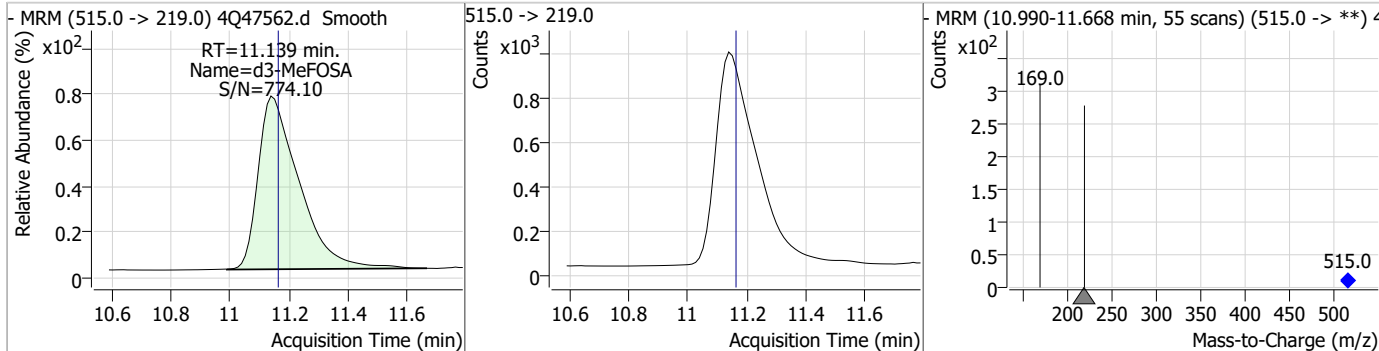
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.55	11.03	-0.02	68224				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	13.30	11.05	-0.04	40087				

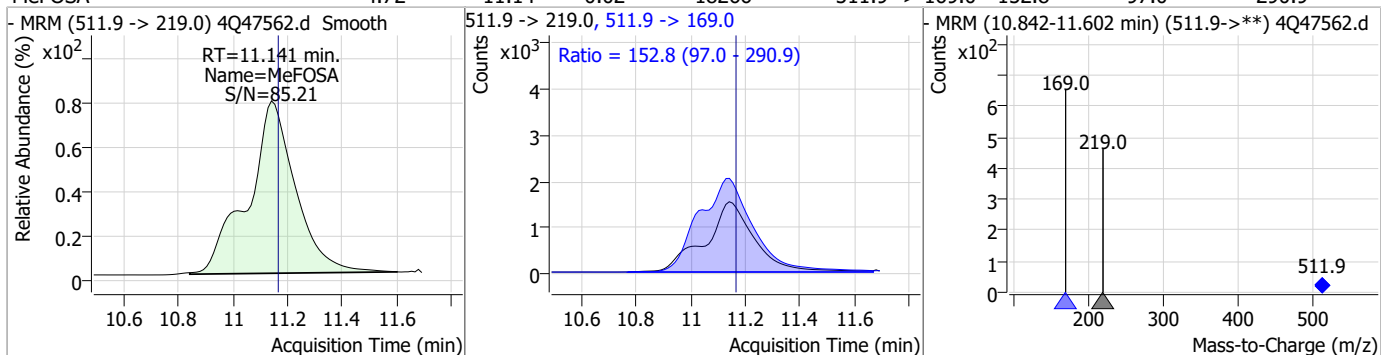


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.55	11.14	-0.02	9269				

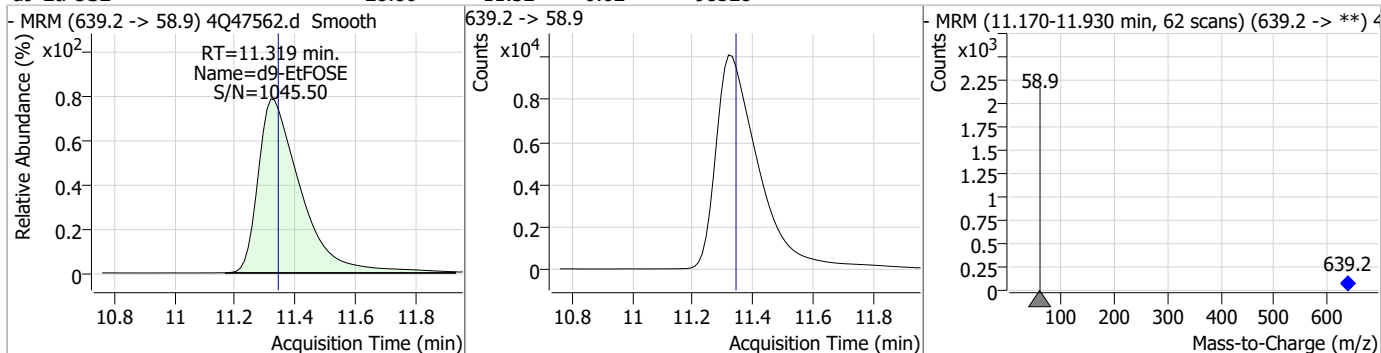


Perfluorinated Compounds by LC/MS/MS

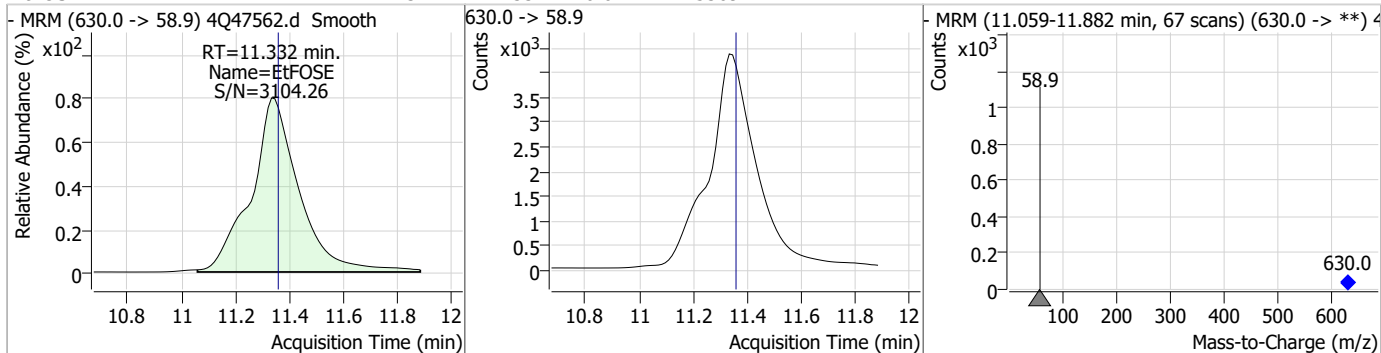
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.72	11.14	-0.02	18266	511.9 -> 169.0	152.8	97.0	290.9



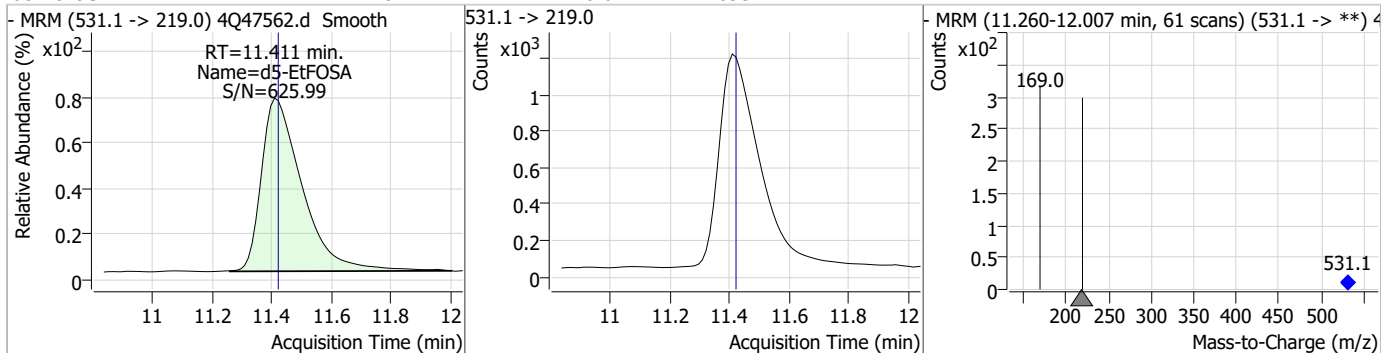
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	28.80	11.32	-0.02	98528				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	11.23	11.33	-0.02	53692				

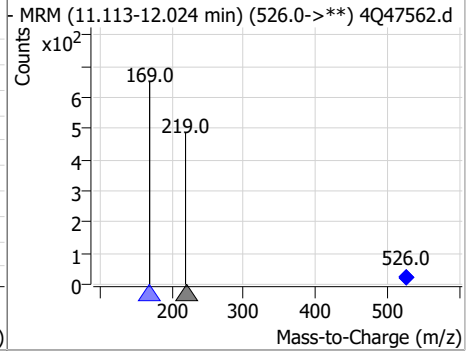
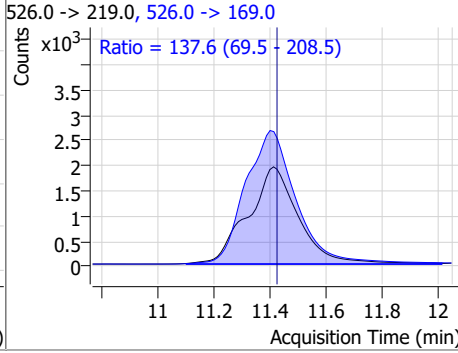
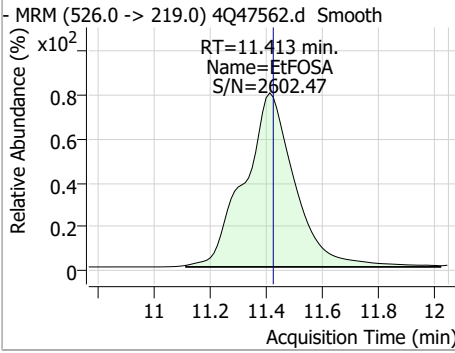


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.81	11.41	-0.01	11093				



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.29	11.41	-0.01	24507	526.0 -> 169.0	137.6	69.5	208.5



7.7.12
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Manual Integration Approval Summary

Sample Number: S4Q697-CC690
Lab FileID: 4Q47562.D
Injection Time: 07/19/23 11:56

Method: EPA DRAFT 1633
Analyst approved: 07/20/23 12:46 Anna Ludwig
Supervisor approved: 07/20/23 15:43 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.27	Split peak
MeFOSAA	2355-31-9		8.31	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.38	Split peak

7.7.12.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47563.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 12:11:03 PM
 Sample Name : cc690-1.0LL
 Vial : P1-A2
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q697.batch.bin
 Sample Information : OP97749,S4Q697,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	110329	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	57593	5.00 µg/L	-0.012
M5-PFHxA	5.561	318.0 -> 273.0	37820	2.50 µg/L	-0.037
M4-PFHpA	6.515	367.1 -> 322.0	27074	2.50 µg/L	-0.040
M8-PFOA	7.187	421.1 -> 376.0	44426	2.50 µg/L	-0.050
M9-PFNA	7.746	472.1 -> 427.0	19794	1.25 µg/L	-0.038
M6-PFDA	8.253	519.1 -> 474.1	14839	1.25 µg/L	-0.038
M7-PFUnDA	8.723	570.0 -> 525.1	17817	1.25 µg/L	-0.037
M2-PFDoDA	9.157	615.1 -> 570.0	17856	1.25 µg/L	-0.037
M2-PFTeDA	9.925	715.2 -> 670.0	12928	1.25 µg/L	-0.037
M8-FOSA	9.884	506.1 -> 77.8	13462	2.50 µg/L	-0.025
M3-PFBS	5.454	302.1 -> 79.9	9644	2.50 µg/L	-0.025
M3-PFHxS	7.277	402.1 -> 79.9	6475	2.50 µg/L	-0.039
M8-PFOS	8.392	507.1 -> 79.9	8293	2.50 µg/L	-0.037
M2-4:2FTS	5.247	329.1 -> 80.9	618	5.00 µg/L	-0.037
M2-6:2FTS	6.962	429.1 -> 80.9	1495	5.00 µg/L	-0.037
M2-8:2FTS	8.041	529.1 -> 80.9	2211	5.00 µg/L	-0.037
M3-MeFOSAA	8.324	573.2 -> 419.0	16223	5.00 µg/L	-0.037
M3-HFPO-DA	5.928	286.9 -> 168.9	37167	10.00 µg/L	-0.037
M5-EtFOSAA	8.521	589.2 -> 419.0	13373	5.00 µg/L	-0.049
M7-MeFOSE	11.047	623.2 -> 58.9	65174	25.00 µg/L	-0.012
M9-EtFOSE	11.332	639.2 -> 58.9	94416	25.00 µg/L	-0.012
M5-EtFOSA	11.423	531.1 -> 219.0	10463	2.50 µg/L	0.000
M3-MeFOSA	11.152	515.0 -> 219.0	9091	2.50 µg/L	-0.012
13C4-PFOS	8.393	502.8 -> 79.9	9069	2.50 µg/L	-0.037
13C3-PFBA	2.916	216.0 -> 172.0	59375	5.00 µg/L	0.000
18O2-PFHxS	7.276	403.0 -> 83.9	4741	2.50 µg/L	-0.039
13C4-PFOA	7.187	417.1 -> 372.0	54767	2.50 µg/L	-0.050
13C2-PFDA	8.254	515.1 -> 470.1	16702	1.25 µg/L	-0.038
13C5-PFNA	7.746	468.0 -> 423.0	22750	1.25 µg/L	-0.038
13C2-PFHxA	5.562	315.1 -> 270.0	35662	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	618	5.80 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.1%		
13C2-6:2FTS	6.962	429.1 -> 80.9	1495	6.41 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 128.1%		
13C2-8:2FTS	8.041	529.1 -> 80.9	2211	5.82 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.5%		
13C2-PFDoDA	9.157	615.1 -> 570.0	17856	1.15 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.0%		
13C2-PFTeDA	9.925	715.2 -> 670.0	12928	1.15 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.3%		
13C3-PFBS	5.454	302.1 -> 79.9	9644	2.66 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.3%		
13C3-PFHxS	7.277	402.1 -> 79.9	6475	2.43 µg/L	-0.039

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.4%	
13C4-PFBA	2.911	216.8 -> 171.9	110329	9.83 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C4-PFHpA	6.515	367.1 -> 322.0	27074	2.47 µg/L	-0.040
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C5-PFHxA	5.561	318.0 -> 273.0	37820	2.48 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C5-PFPeA	4.375	268.3 -> 223.0	57593	5.85 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 117.0%	
13C6-PFDA	8.253	519.1 -> 474.1	14839	1.28 µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C7-PFUnDA	8.723	570.0 -> 525.1	17817	1.21 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.1%	
13C8-FOSA	9.884	506.1 -> 77.8	13462	2.87 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 114.7%	
13C8-PFOA	7.187	421.1 -> 376.0	44426	2.49 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C8-PFOS	8.392	507.1 -> 79.9	8293	2.63 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.3%	
13C9-PFNA	7.746	472.1 -> 427.0	19794	1.30 µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.1%	
d3-MeFOSAA	8.324	573.2 -> 419.0	16223	5.44 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.8%	
13C3-HFPO-DA	5.928	286.9 -> 168.9	37167	9.78 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.8%	
d3-MeFOSA	11.152	515.0 -> 219.0	9091	2.66 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.3%	
d5-EtFOSAA	8.521	589.2 -> 419.0	13373	5.08 µg/L	-0.049
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
d7-MeFOSE	11.047	623.2 -> 58.9	65174	26.93 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 107.7%	
d9-EtFOSE	11.332	639.2 -> 58.9	94416	29.30 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 117.2%	
d5-EtFOSA	11.423	531.1 -> 219.0	10463	2.82 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.7%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	898	0.82 µg/L	88
		327.1 -> 80.9	334		
6:2FTS	6.962	427.1 -> 407.0	1270	0.74 µg/L	89
		427.1 -> 80.9	404		
8:2FTS	8.041	527.1 -> 507.0	1004	0.79 µg/L	94
		527.1 -> 80.8	368		
EtFOSAA	8.522	584.2 -> 419.1	481	0.22 µg/L	m 99
		584.2 -> 526.0	242		
FOSA	9.887	498.1 -> 77.9	977	0.16 µg/L	100
		498.1 -> 478.0	28		
MeFOSAA	8.325	570.1 -> 419.0	692	0.24 µg/L	m 85
		570.1 -> 483.0	63		
PFBA	2.920	212.8 -> 168.9	2463	0.74 µg/L	100
PFBS	5.455	298.7 -> 79.9	606	0.15 µg/L	100
		298.7 -> 98.8	245		
PFDA	8.254	512.9 -> 469.0	2924	0.19 µg/L	98
		512.9 -> 219.0	558		
PFDODA	9.157	613.1 -> 569.0	3047	0.21 µg/L	98
		613.1 -> 319.0	468		
PFDS	9.321	599.0 -> 79.9	455	0.19 µg/L	82

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	277			
PFHpA	6.516	363.1 -> 319.0	3028	0.18	µg/L	91
		363.1 -> 169.0	650			
PFHpS	7.861	449.0 -> 79.9	641	0.19	µg/L	88
		449.0 -> 98.9	288			
PFHxA	5.563	313.0 -> 269.0	3052	0.21	µg/L	99
		313.0 -> 118.9	78			
PFHxS	7.278	398.7 -> 79.9	544	0.19	µg/L	m 85
		398.7 -> 98.9	251			
PFNA	7.747	463.0 -> 419.0	2729	0.19	µg/L	95
		463.0 -> 219.0	676			
PFNS	8.874	548.8 -> 79.9	507	0.21	µg/L	99
		548.8 -> 98.9	256			
PFOA	7.188	413.0 -> 369.0	4670	0.19	µg/L	96
		413.0 -> 169.0	957			
PFOS	8.394	498.9 -> 79.9	956	0.22	µg/L	m 76
		498.9 -> 98.8	440			
PFPeA	4.377	263.0 -> 219.0	5584	0.34	µg/L	100
PFPeS	6.533	349.1 -> 79.9	481	0.20	µg/L	80
		349.1 -> 98.9	167			
PFTeDA	9.925	713.1 -> 669.0	2414	0.19	µg/L	96
		713.1 -> 168.9	201			
PFTrDA	9.566	663.0 -> 619.0	3100	0.19	µg/L	92
		663.0 -> 168.9	311			
PFUnDA	8.723	563.1 -> 519.0	2525	0.18	µg/L	95
		563.1 -> 269.1	454			
11Cl-PF3OUdS	9.594	630.9 -> 450.9	3505	0.35	µg/L	92
		632.9 -> 452.9	942			
9Cl-PF3ONS	8.738	530.8 -> 351.0	4714	0.35	µg/L	96
		532.8 -> 353.0	1499			
ADONA	6.780	376.9 -> 250.9	9460	0.34	µg/L	99
		376.9 -> 84.8	2507			
HFPO-DA	5.929	284.9 -> 168.9	1458	0.38	µg/L	95
		284.9 -> 184.9	152			
3:3FTCA	3.861	241.0 -> 177.0	721	0.94	µg/L	94
		241.0 -> 117.0	48			
5:3FTCA	6.256	341.0 -> 237.1	10307	4.19	µg/L	89
		341.0 -> 217.0	8127			
7:3FTCA	7.737	441.0 -> 316.9	5828	4.29	µg/L	96
		441.0 -> 336.9	14302			
EtFOSA	11.413	526.0 -> 219.0	1779	0.33	µg/L	94
		526.0 -> 169.0	2603			
EtFOSE	11.345	630.0 -> 58.9	4018	0.88	µg/L	100
MeFOSA	11.153	511.9 -> 219.0	1311	0.35	µg/L	m 75
		511.9 -> 169.0	2063			
MeFOSE	11.060	616.1 -> 58.9	2844	0.99	µg/L	100
PFDoDS	10.064	699.1 -> 79.9	340	0.18	µg/L	96
		699.1 -> 98.8	191			
NFDHA	5.443	295.0 -> 201.0	342	0.39	µg/L	90
		295.0 -> 84.9	99			
PFMBA	4.785	279.0 -> 85.1	2796	0.32	µg/L	100
PFMPA	3.515	229.0 -> 84.9	2791	0.34	µg/L	100
PFEESA	5.985	314.8 -> 134.9	3698	0.33	µg/L	99
		314.8 -> 82.9	137			

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

7.7.13
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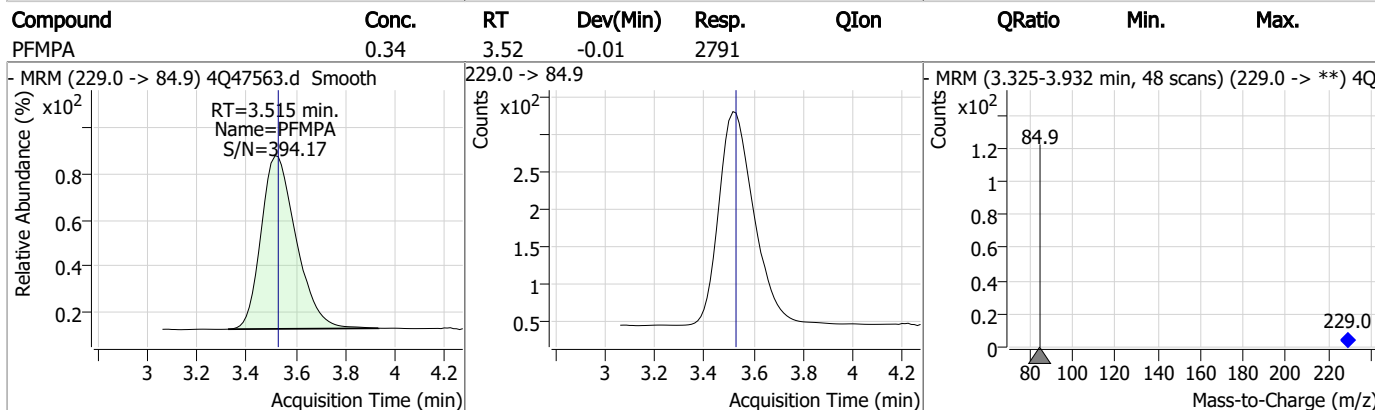
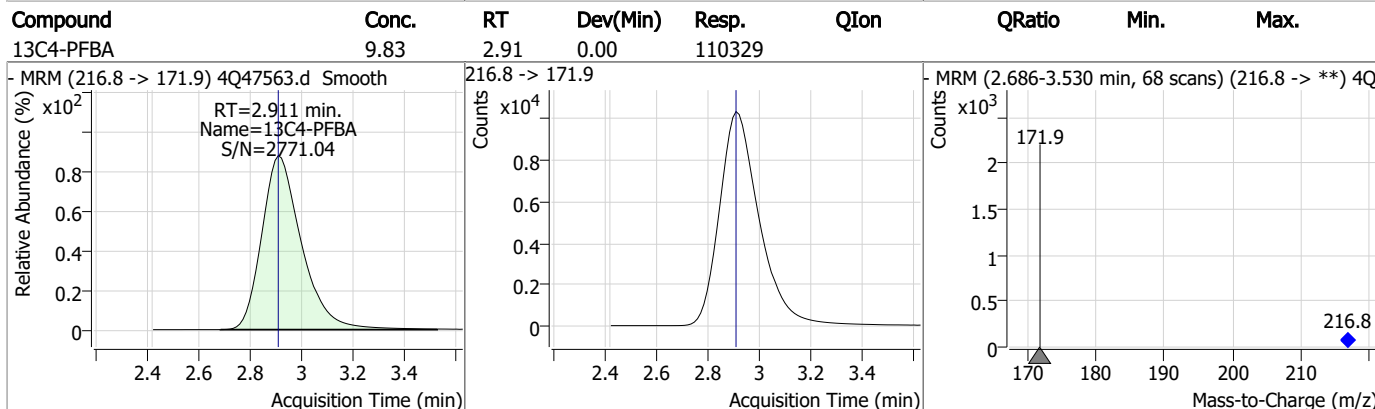
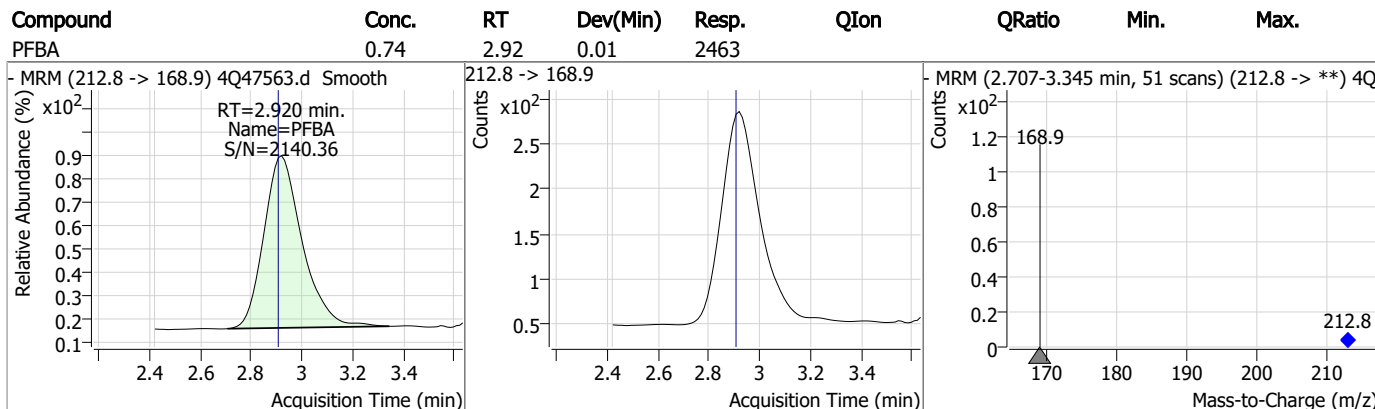
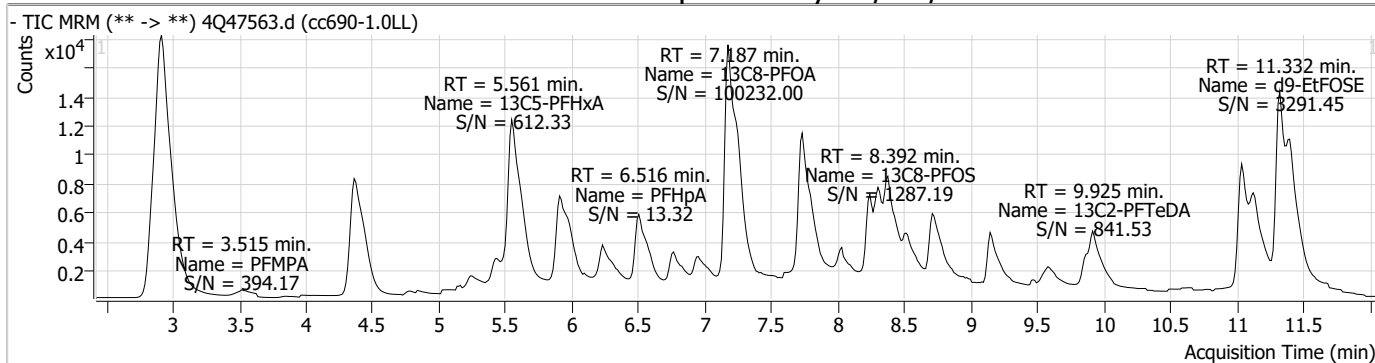
Perfluorinated Compounds by LC/MS/MS

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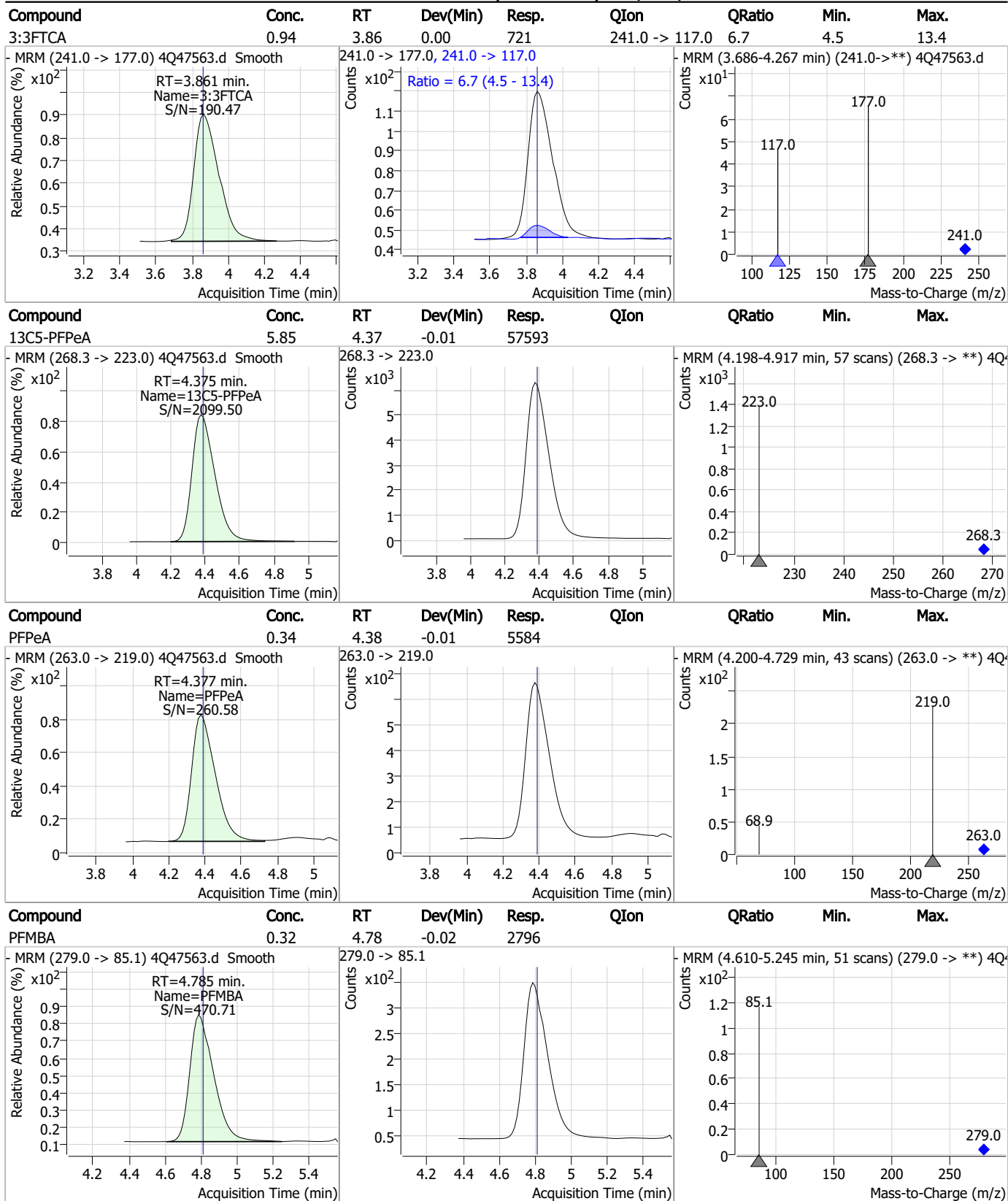
7.7.13

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Perfluorinated Compounds by LC/MS/MS



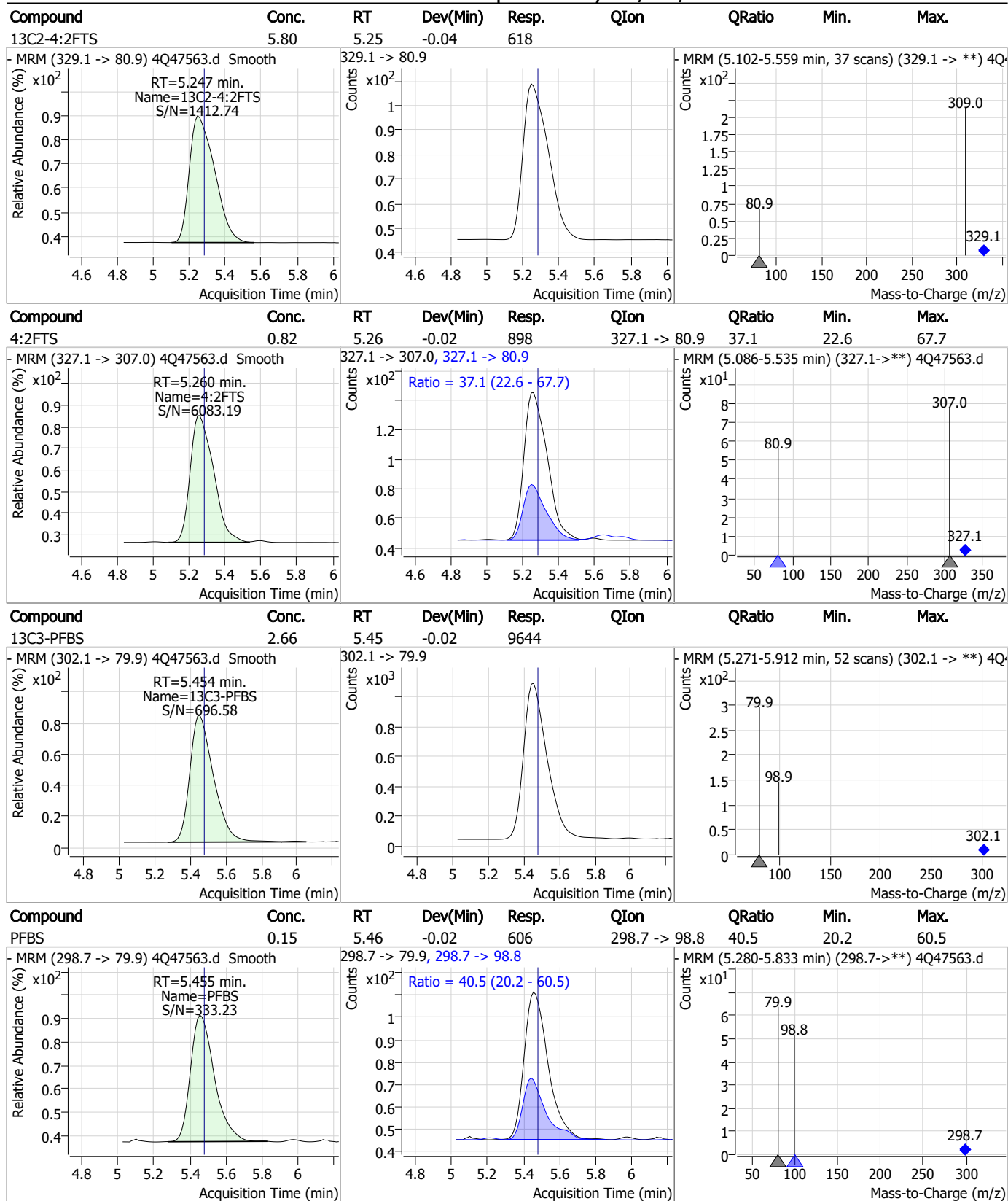
Perfluorinated Compounds by LC/MS/MS



7.7.13

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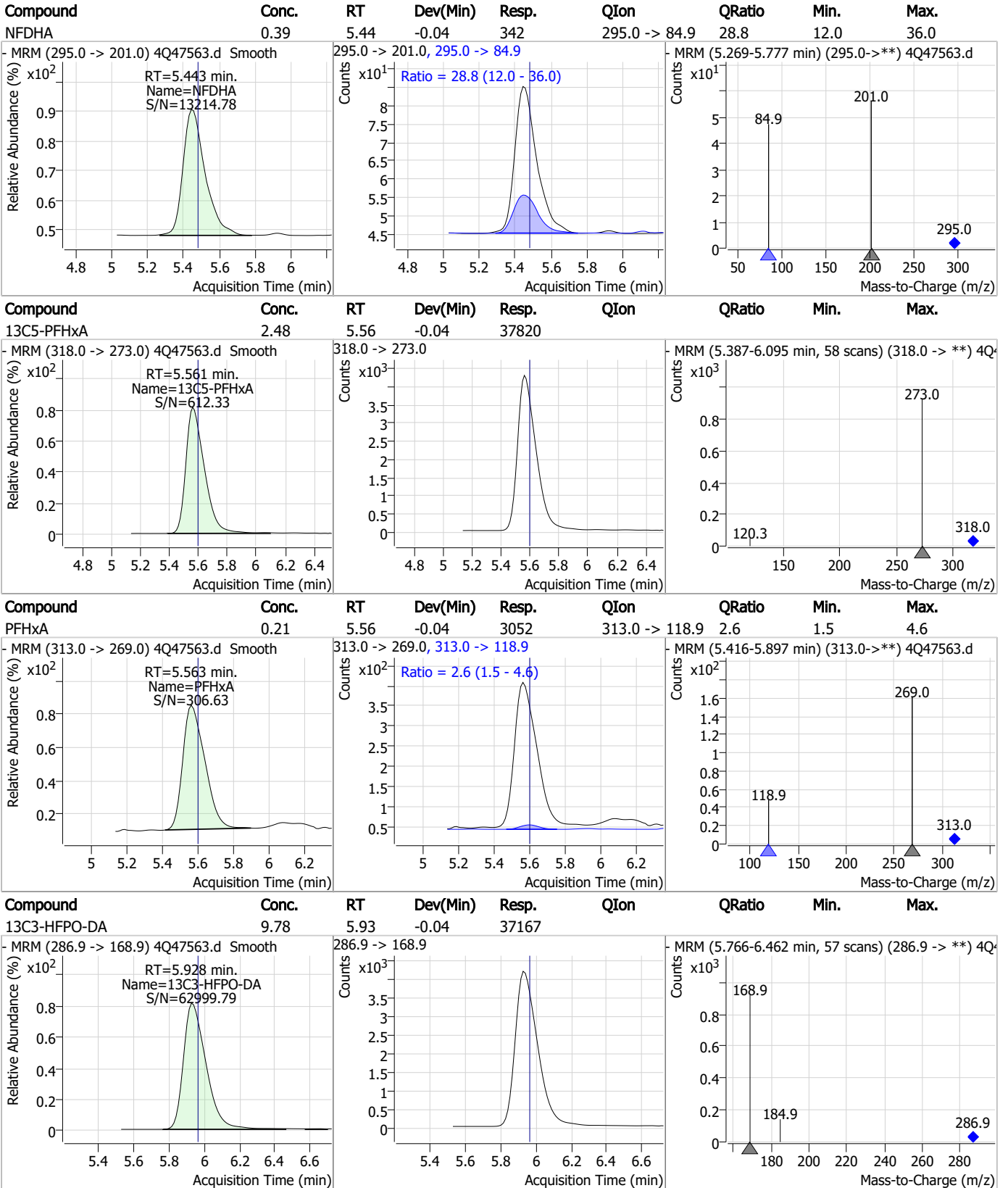
Perfluorinated Compounds by LC/MS/MS



7.7.13

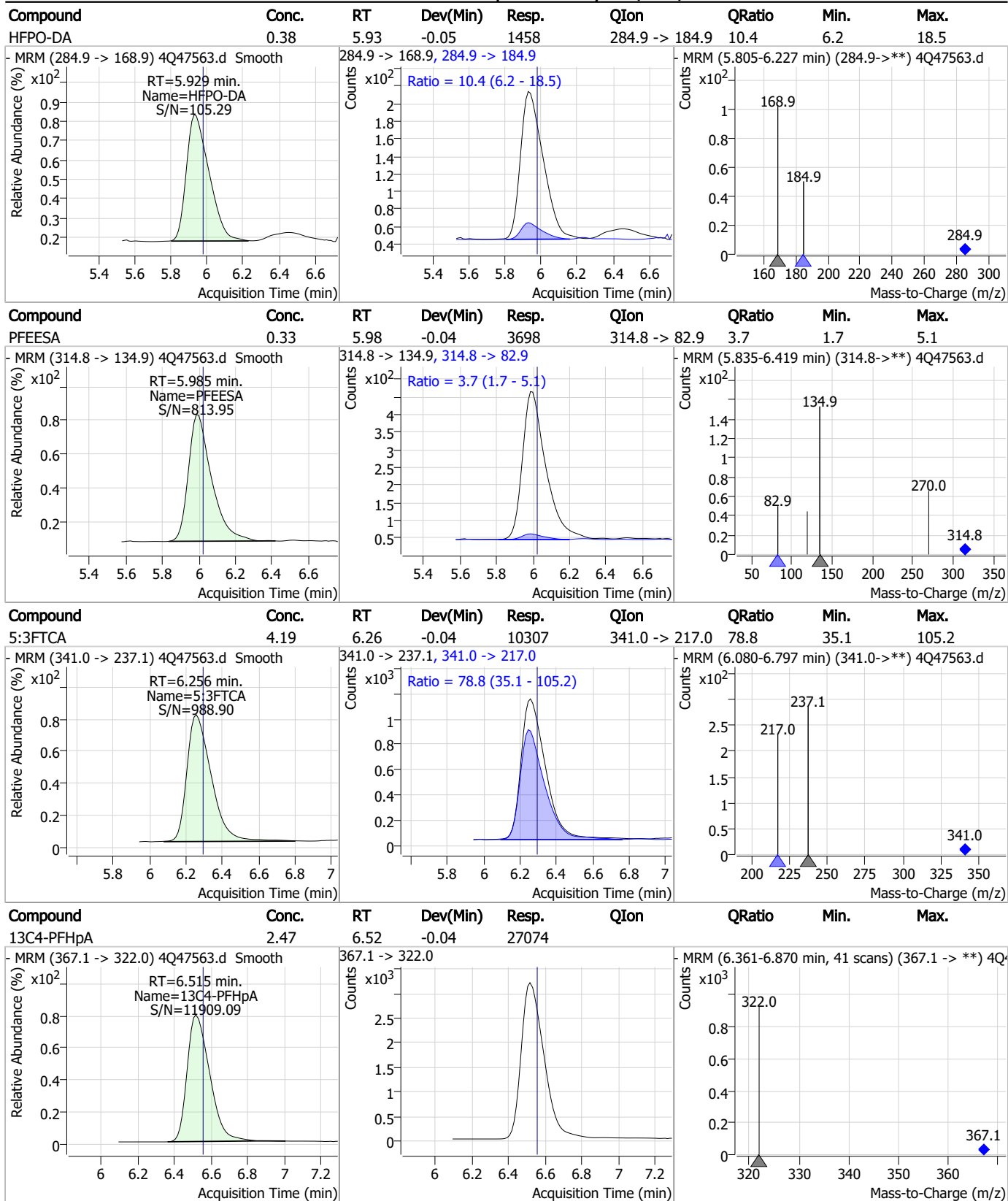
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Perfluorinated Compounds by LC/MS/MS



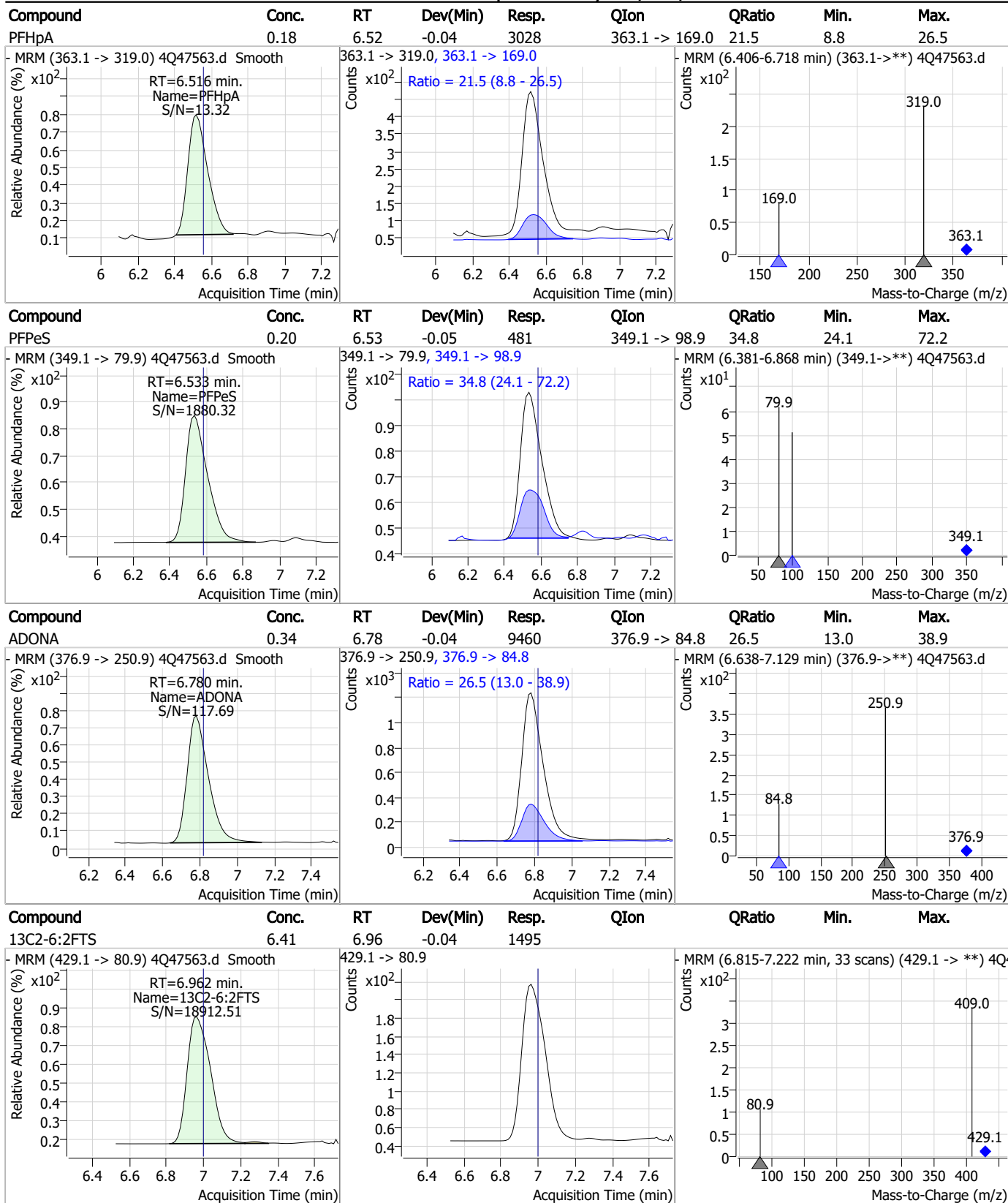
7.7.13 7

Perfluorinated Compounds by LC/MS/MS



7.7.13
7

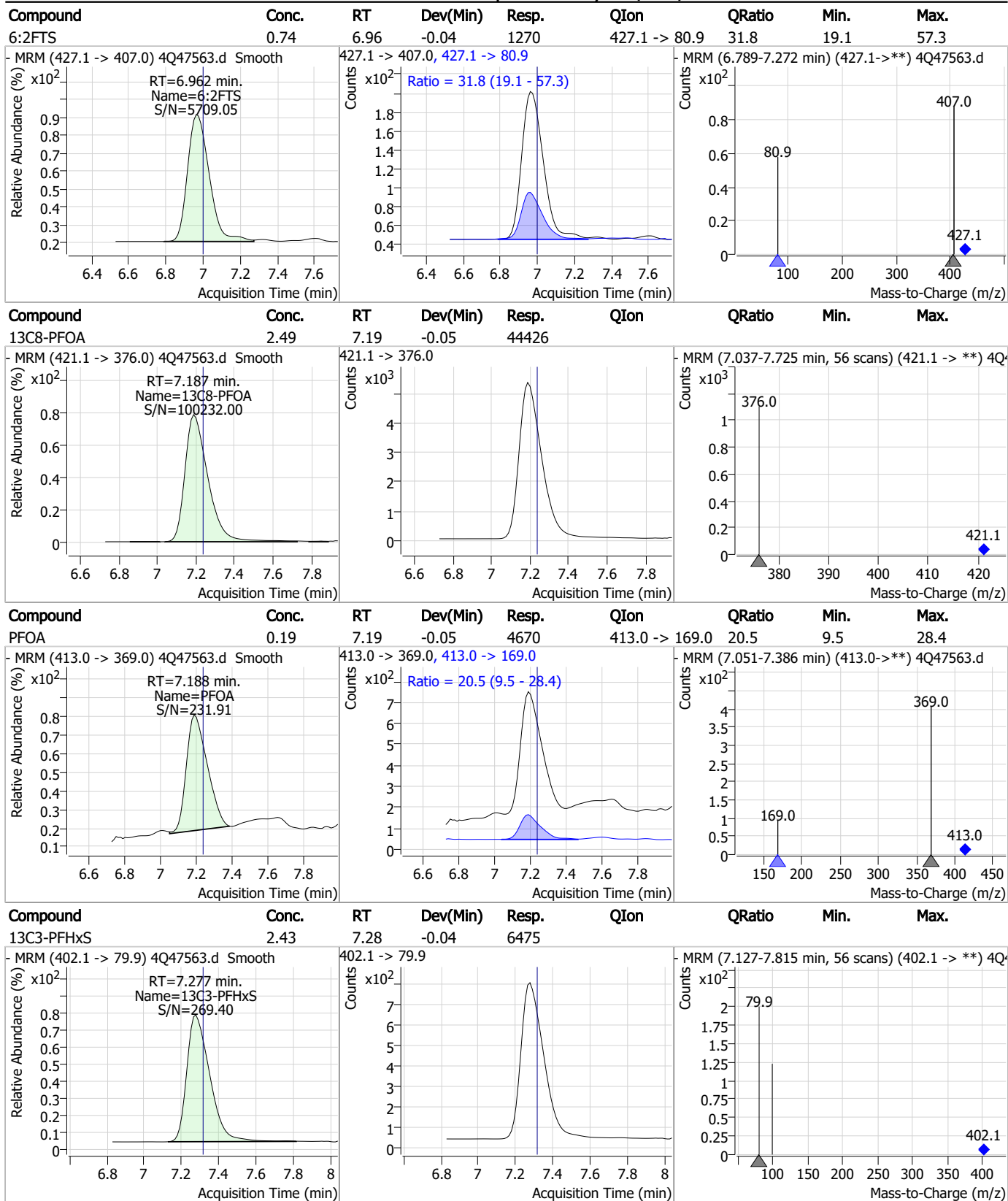
Perfluorinated Compounds by LC/MS/MS



7.7.13

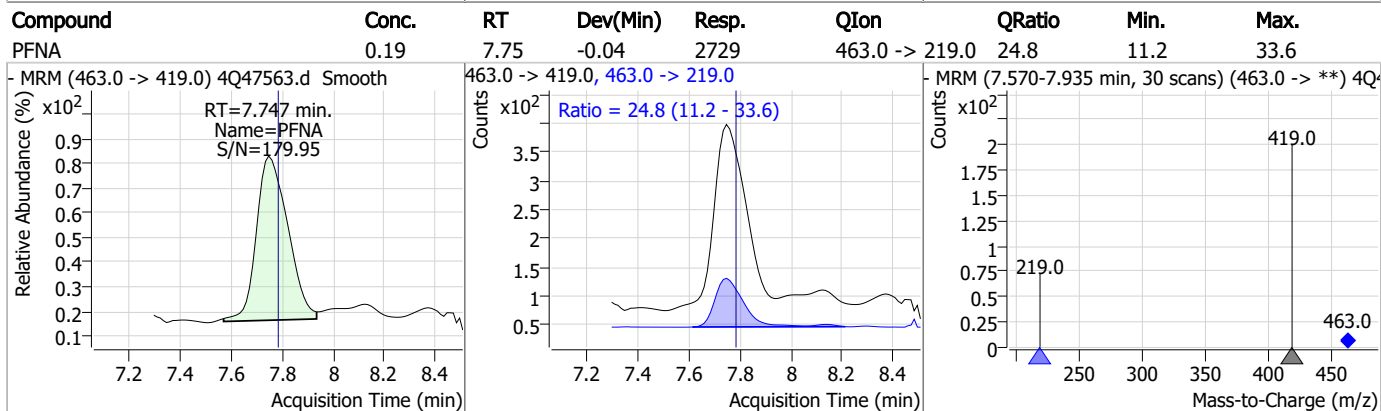
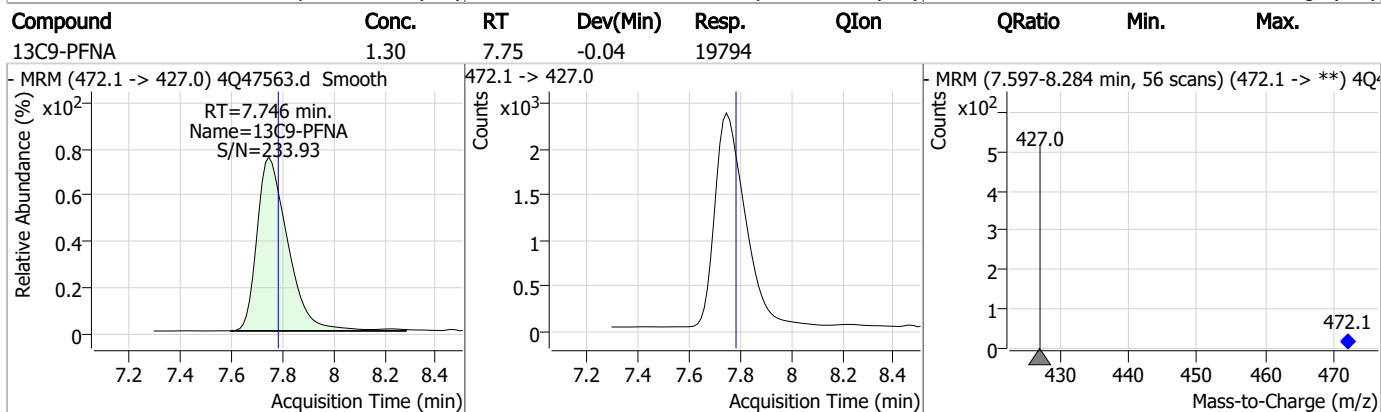
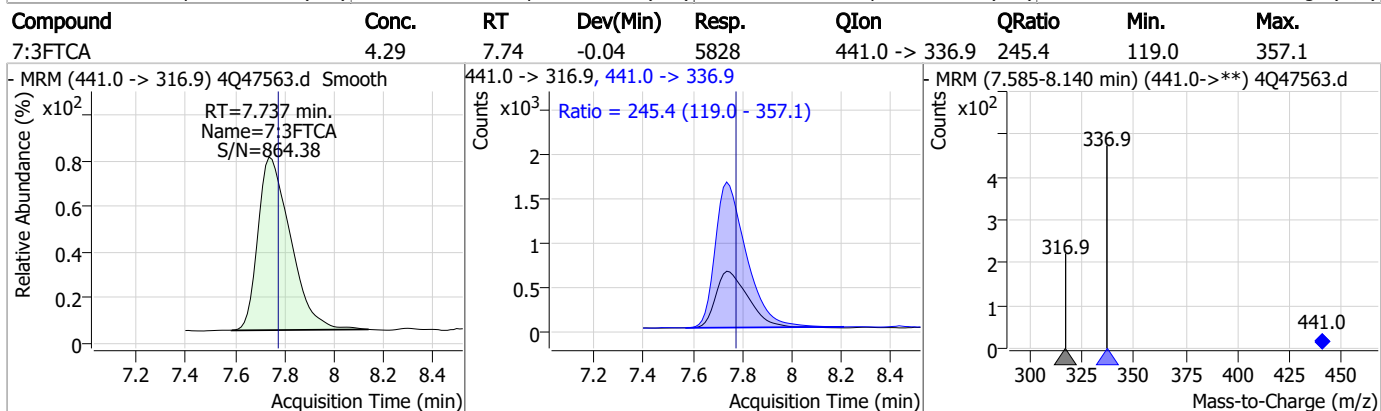
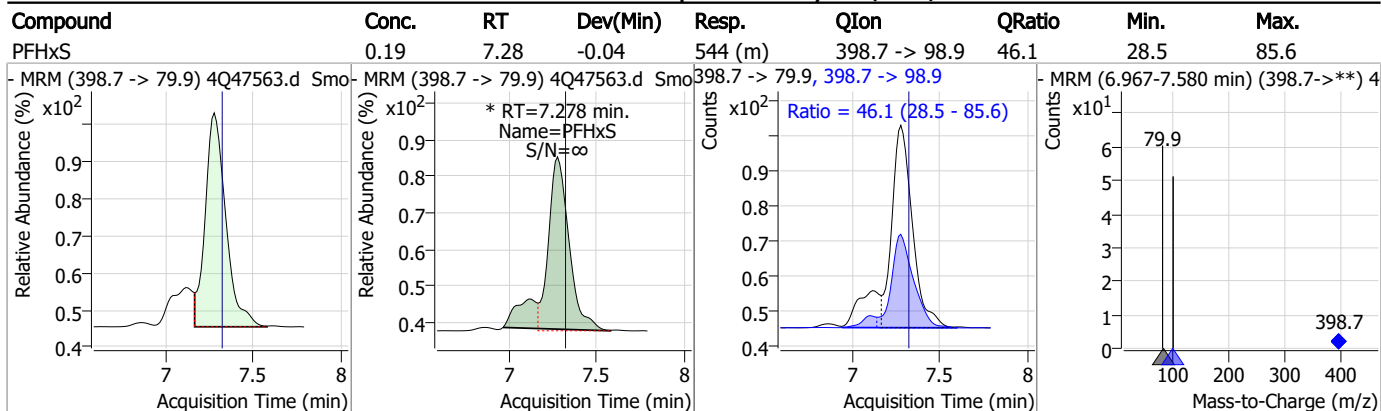
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Perfluorinated Compounds by LC/MS/MS



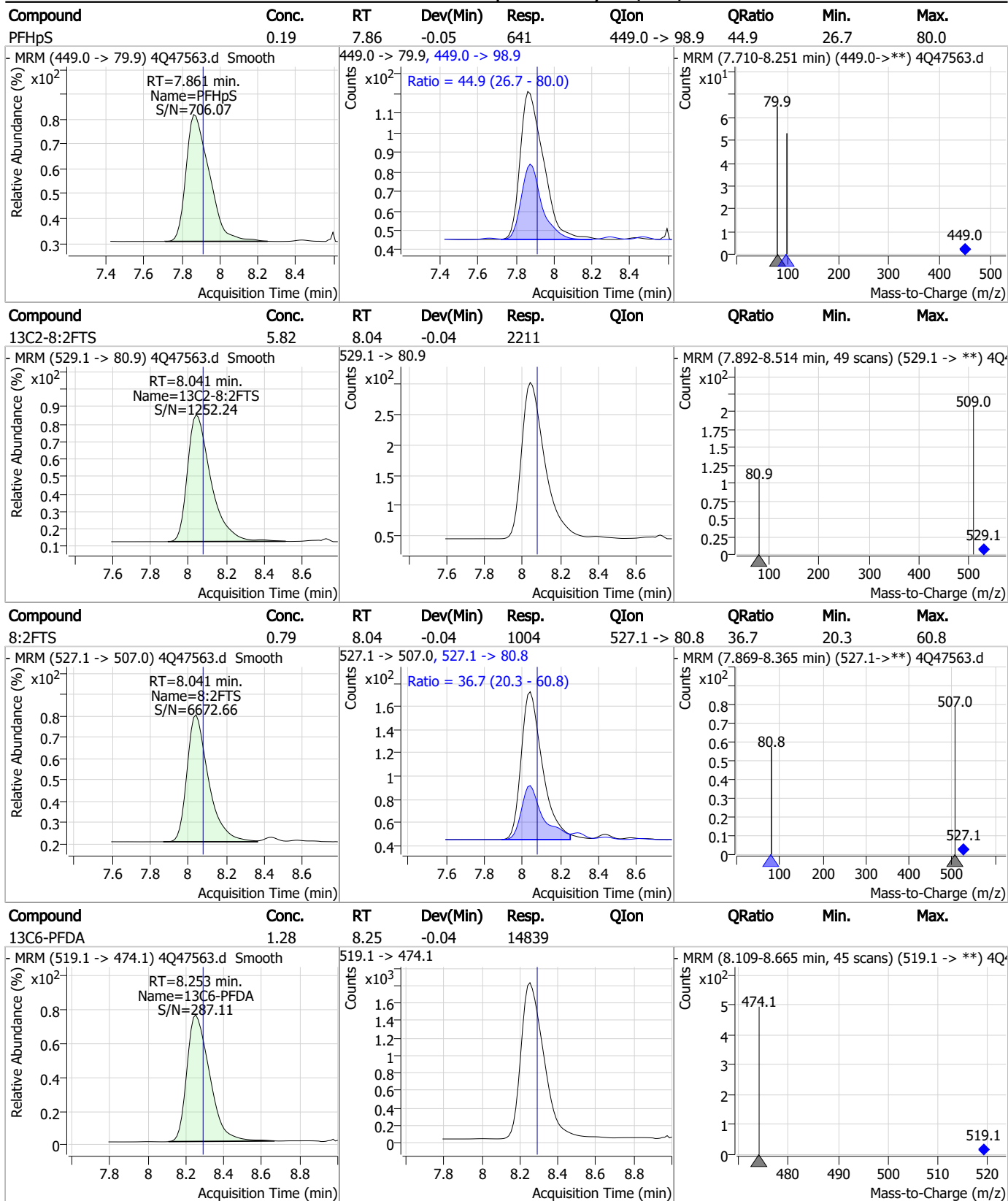
7.7.13 7

Perfluorinated Compounds by LC/MS/MS



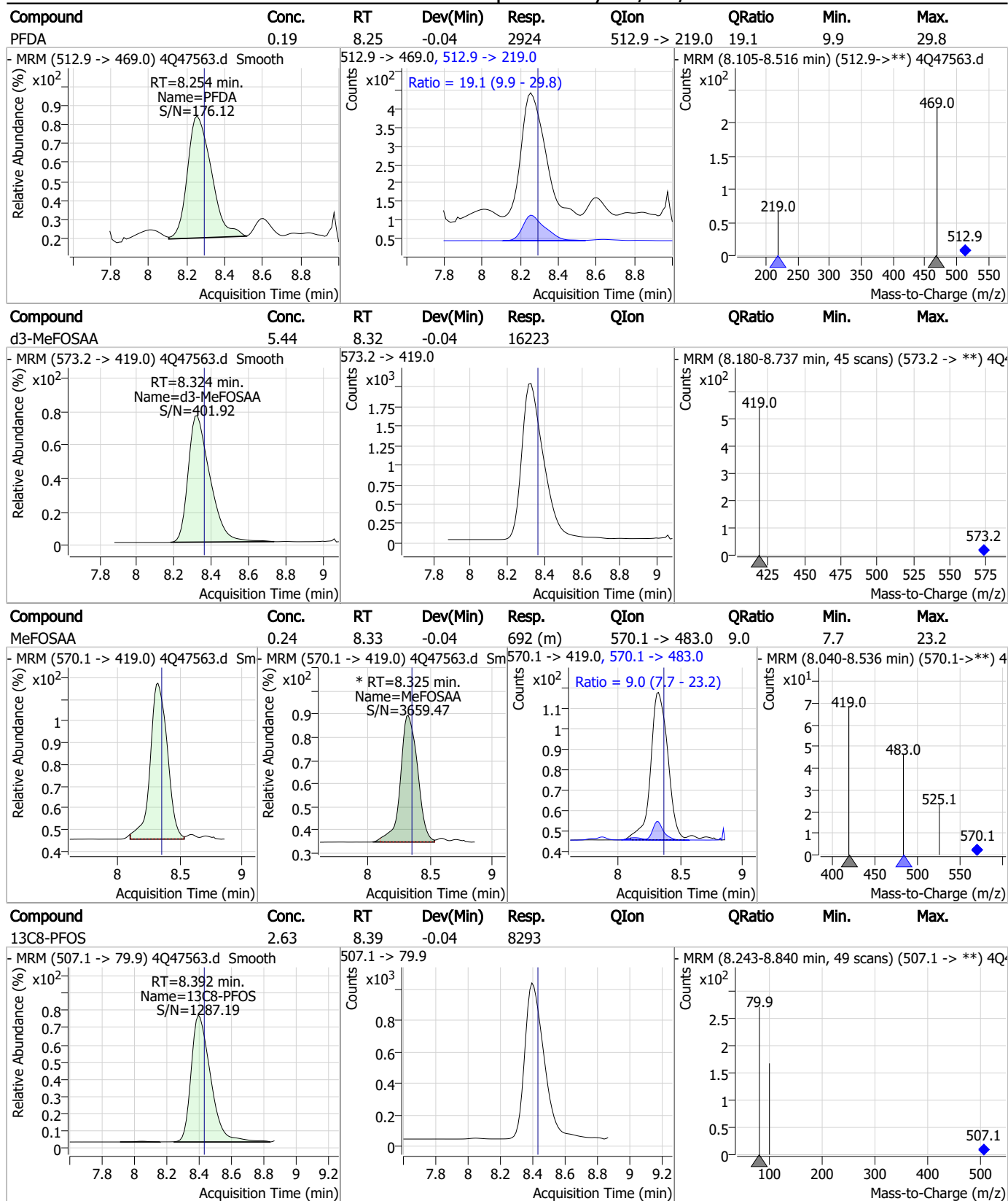
7.7.13
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Perfluorinated Compounds by LC/MS/MS



7.7.13
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Perfluorinated Compounds by LC/MS/MS

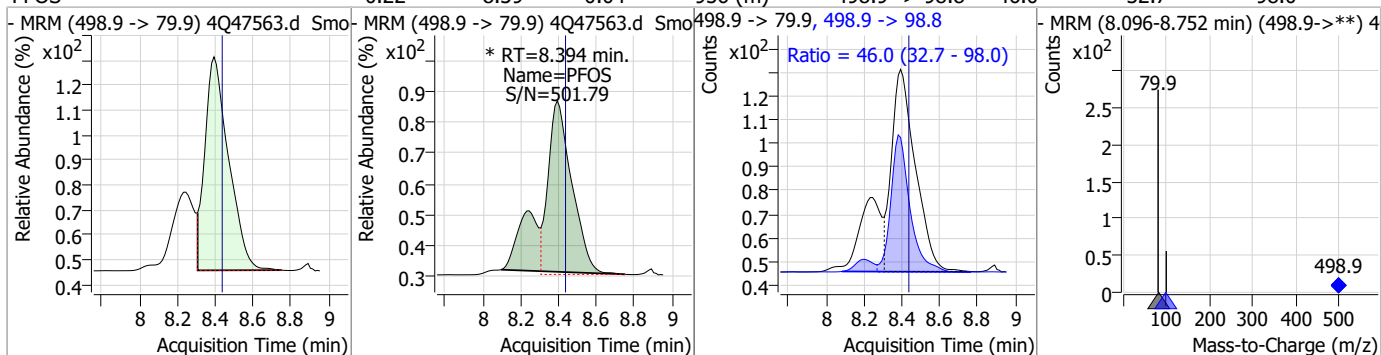


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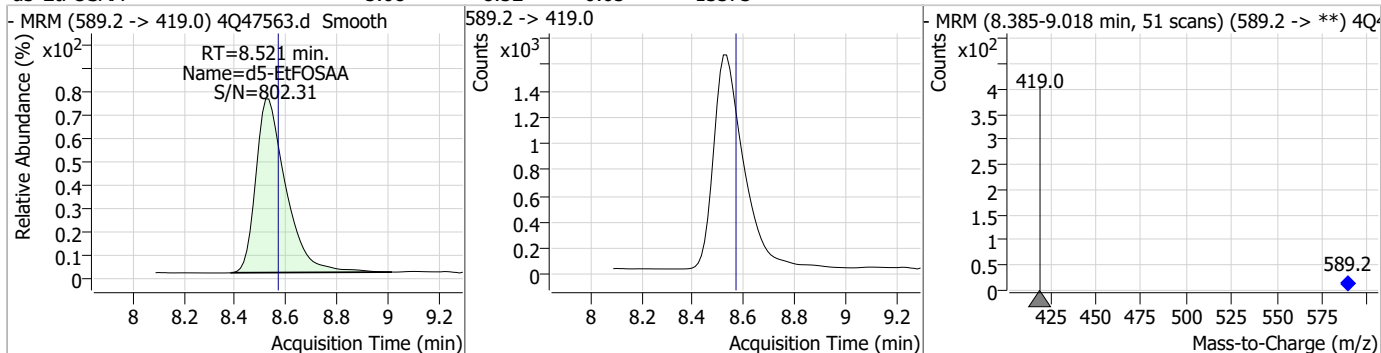
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Perfluorinated Compounds by LC/MS/MS

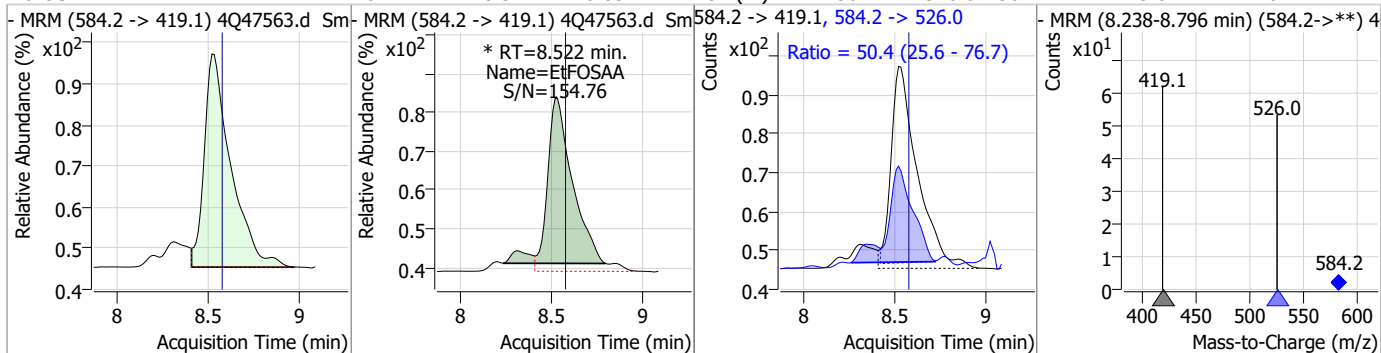
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.22	8.39	-0.04	956 (m)	498.9 -> 98.8	46.0	32.7	98.0



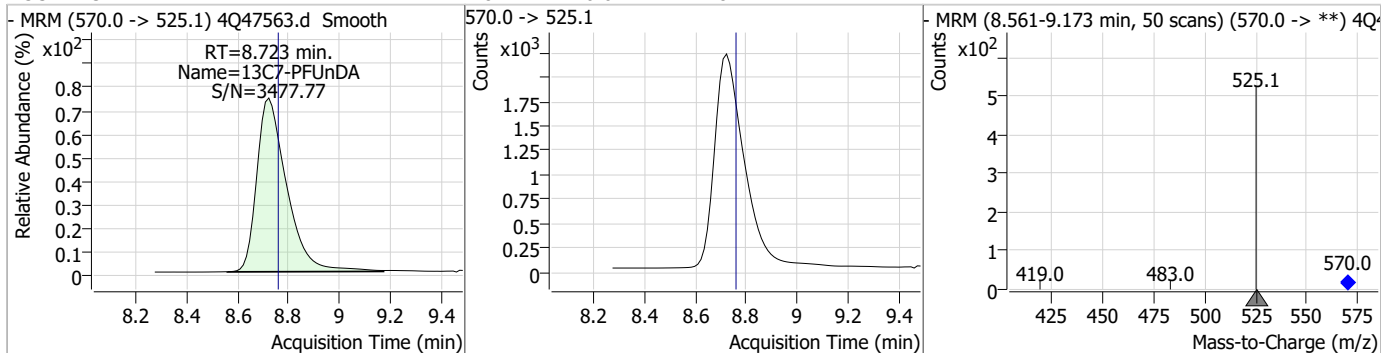
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.08	8.52	-0.05	13373				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.22	8.52	-0.05	481 (m)	584.2 -> 526.0	50.4	25.6	76.7

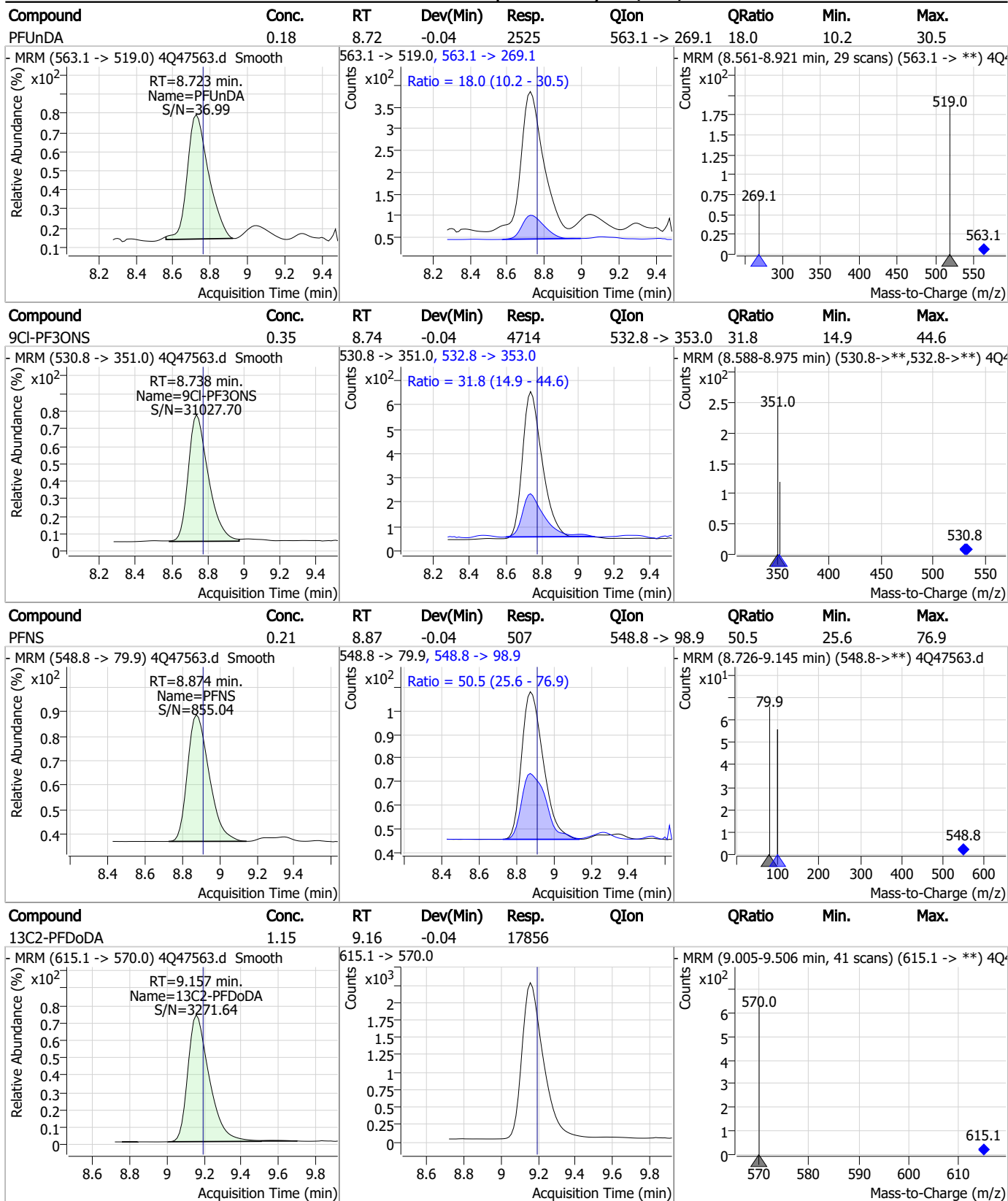


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.21	8.72	-0.04	17817				



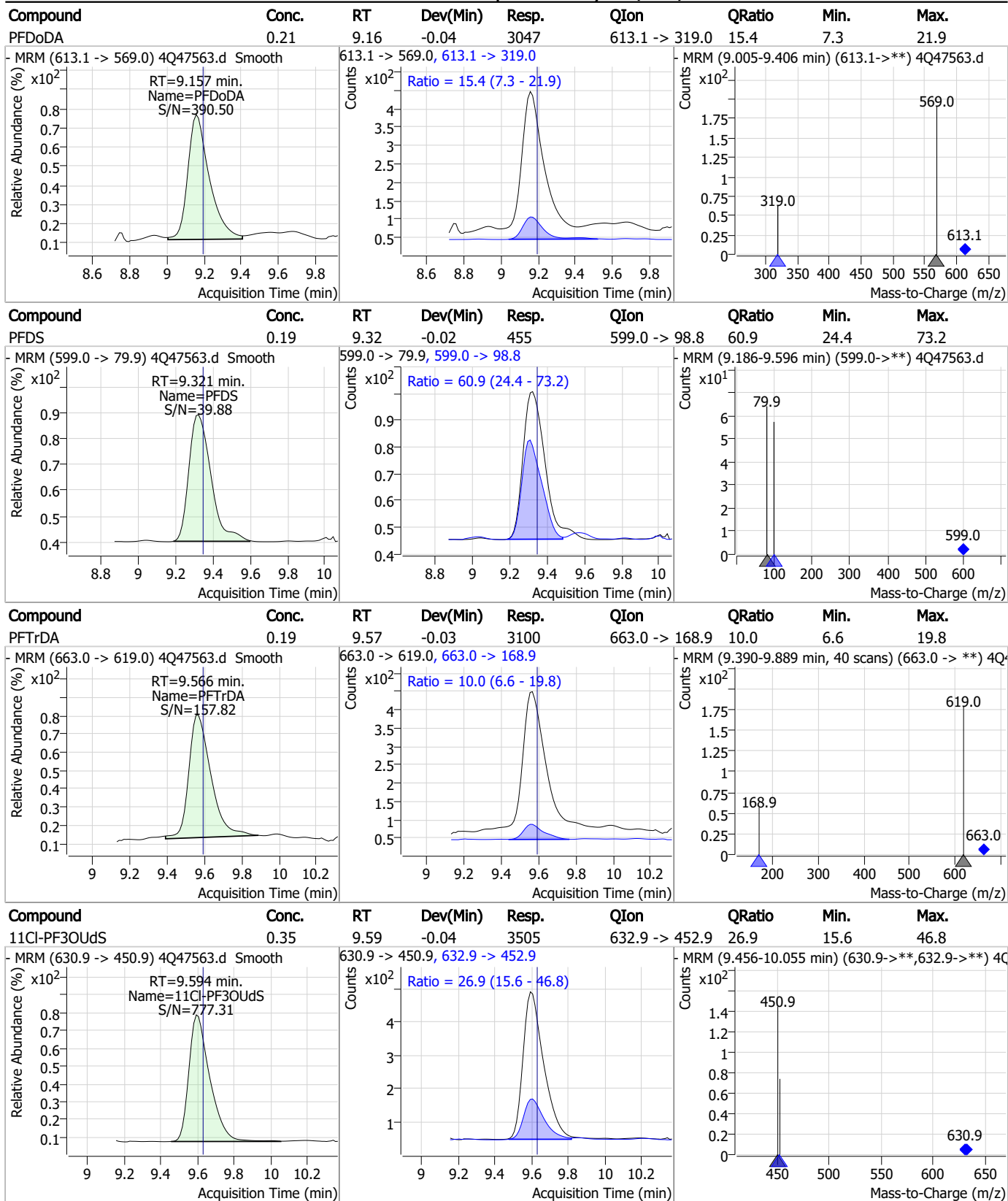
7.7.13
7

Perfluorinated Compounds by LC/MS/MS



7.7.13 7

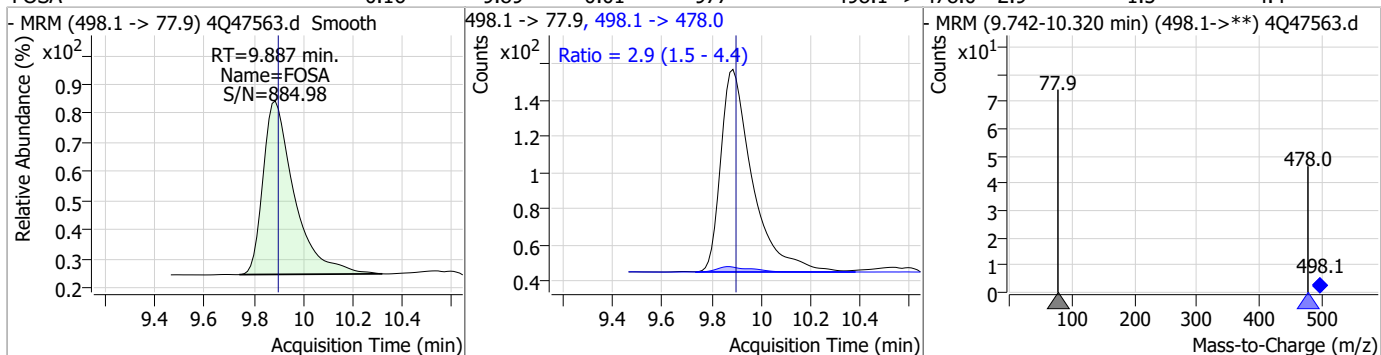
Perfluorinated Compounds by LC/MS/MS



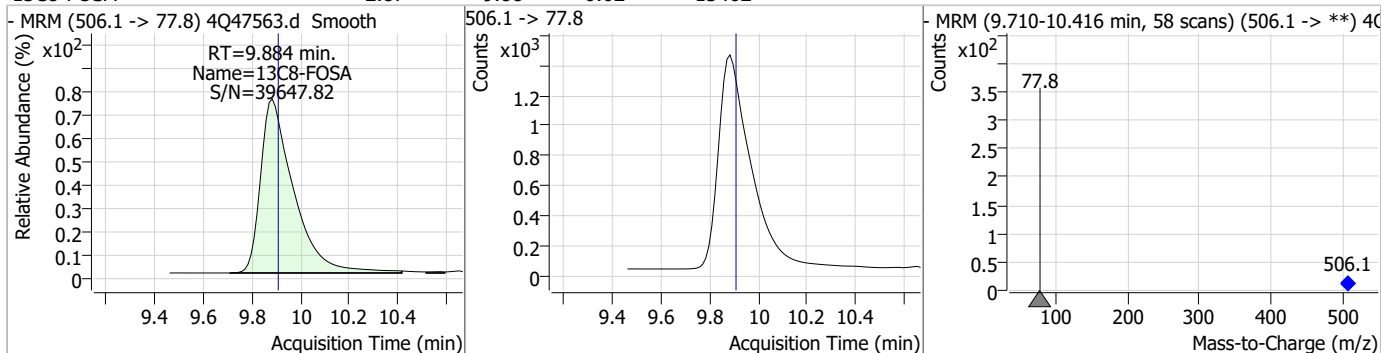
7.7.13
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Perfluorinated Compounds by LC/MS/MS

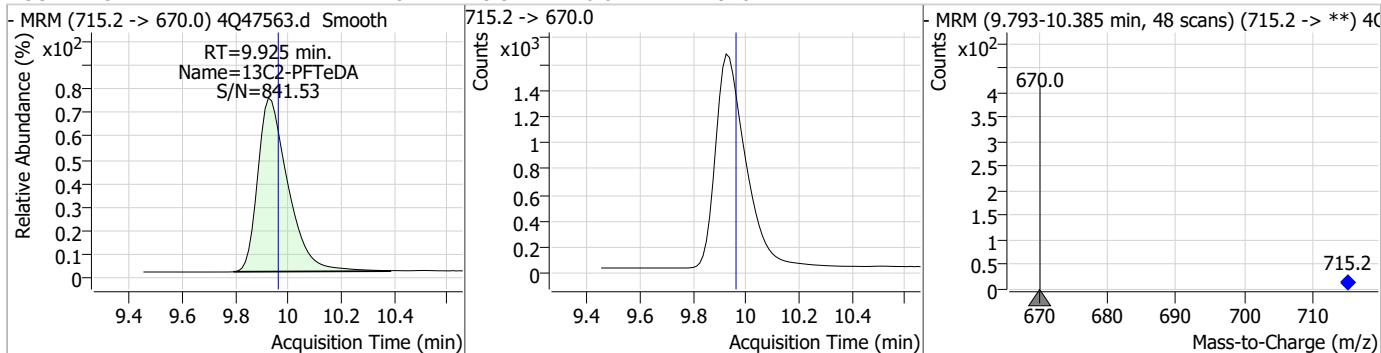
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.16	9.89	-0.01	977	498.1 -> 478.0	2.9	1.5	4.4



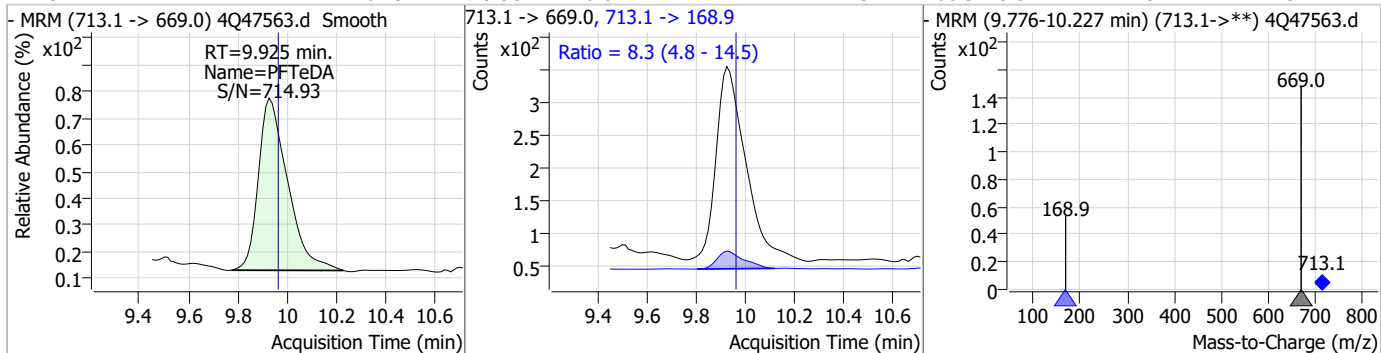
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.87	9.88	-0.02	13462				



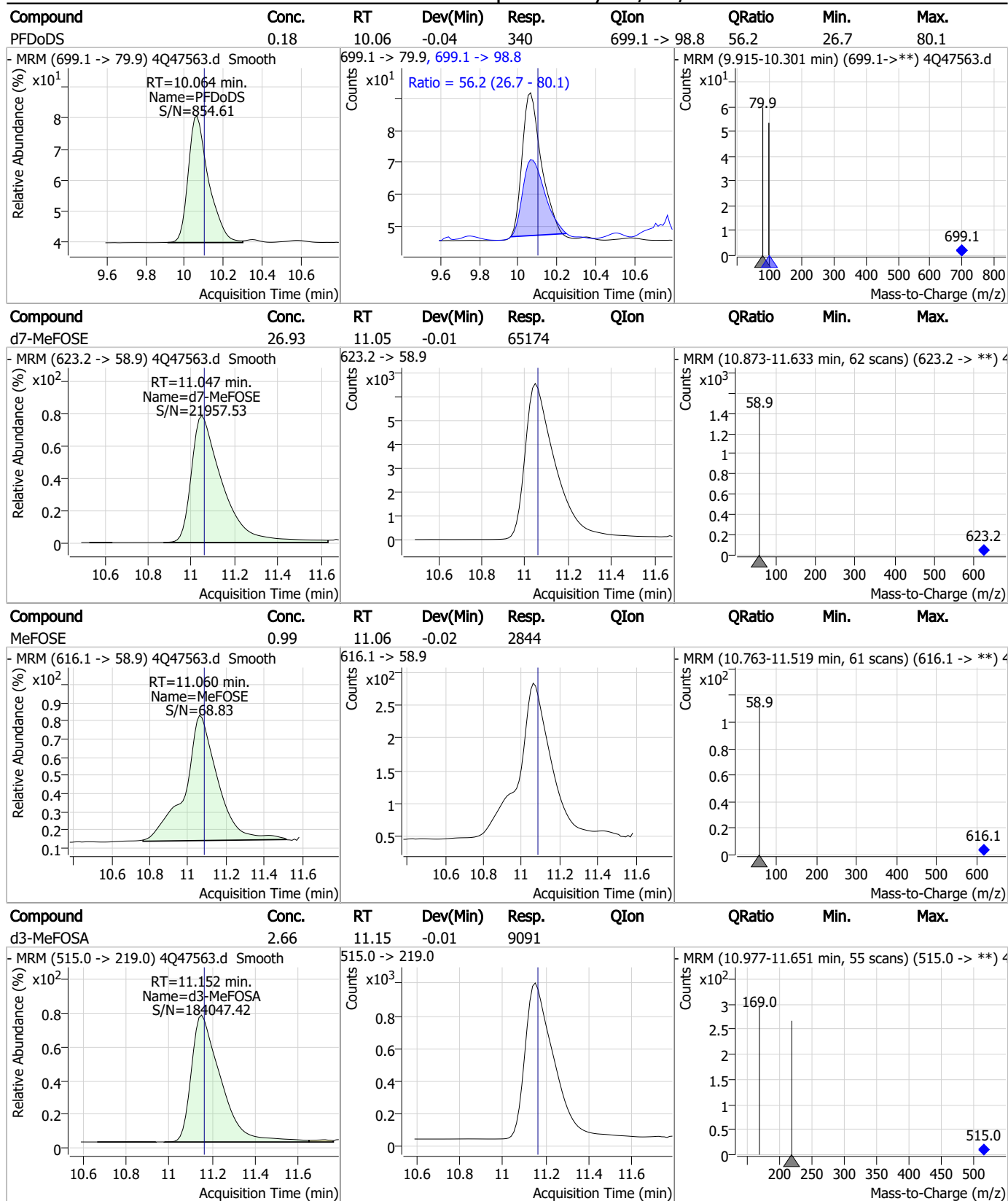
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.15	9.92	-0.04	12928				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.19	9.93	-0.04	2414	713.1 -> 168.9	8.3	4.8	14.5



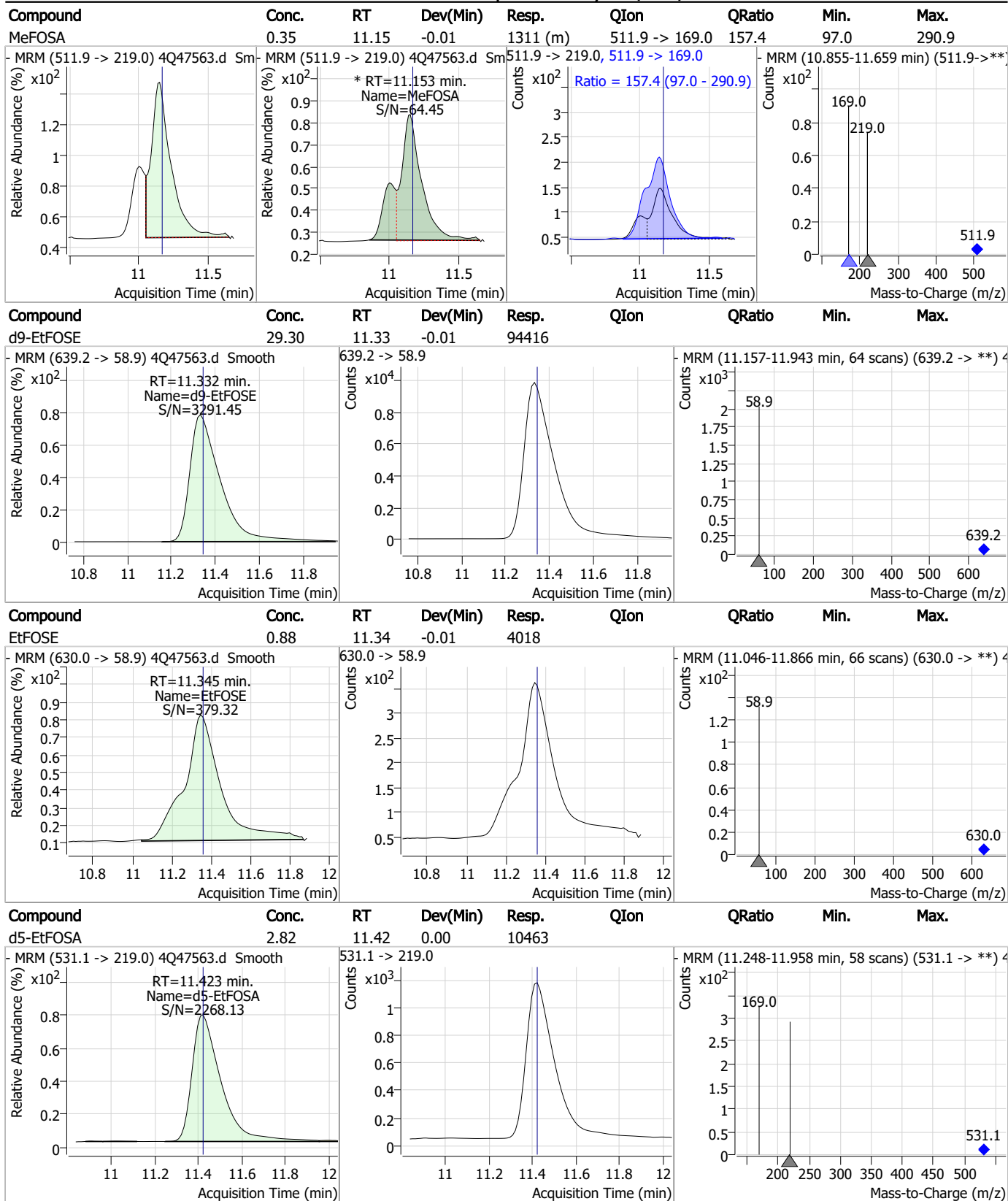
Perfluorinated Compounds by LC/MS/MS



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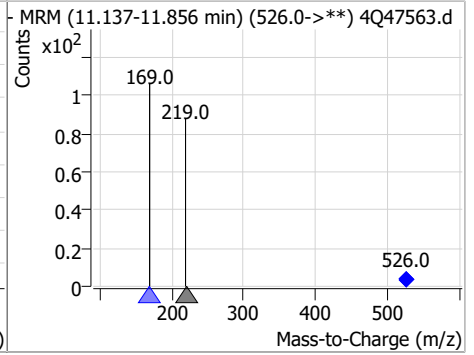
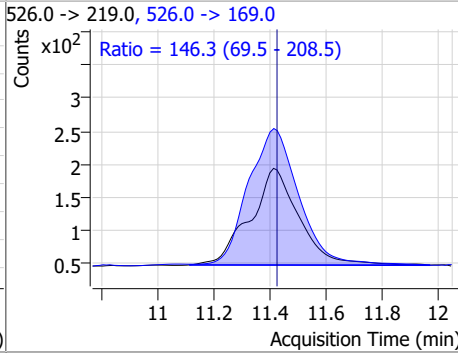
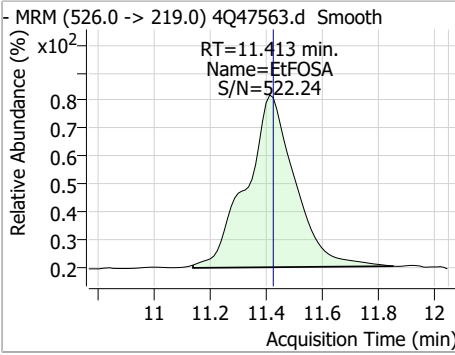
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	0.33	11.41	-0.01	1779	526.0 -> 169.0	146.3	69.5	208.5



7.7.13
7



Manual Integration Approval Summary

Sample Number: S4Q697-CC690 Method: EPA DRAFT 1633
Lab FileID: 4Q47563.D Analyst approved: 07/20/23 12:46 Anna Ludwig
Injection Time: 07/19/23 12:11 Supervisor approved: 07/20/23 15:43 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.28	Split peak
MeFOSAA	2355-31-9		8.32	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.39	Split peak
EtFOSAA	2991-50-6		8.52	Split peak
MeFOSA	31506-32-8		11.15	Split peak

7.7.13.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47574.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 2:53:14 PM
 Sample Name : cc690-4
 Vial : P1-A5
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q697.batch.bin
 Sample Information : OP97749,S4Q697,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	112965	10.00 µg/L	0.012
M5-PFPeA	4.387	268.3 -> 223.0	62339	5.00 µg/L	0.000
M5-PFHxA	5.573	318.0 -> 273.0	39786	2.50 µg/L	-0.025
M4-PFHpA	6.530	367.1 -> 322.0	27742	2.50 µg/L	-0.025
M8-PFOA	7.199	421.1 -> 376.0	47059	2.50 µg/L	-0.037
M9-PFNA	7.746	472.1 -> 427.0	20684	1.25 µg/L	-0.038
M6-PFDA	8.253	519.1 -> 474.1	15105	1.25 µg/L	-0.038
M7-PFUnDA	8.723	570.0 -> 525.1	18234	1.25 µg/L	-0.037
M2-PFDoDA	9.157	615.1 -> 570.0	19427	1.25 µg/L	-0.037
M2-PFTeDA	9.925	715.2 -> 670.0	13603	1.25 µg/L	-0.037
M8-FOSA	9.871	506.1 -> 77.8	13703	2.50 µg/L	-0.037
M3-PFBS	5.466	302.1 -> 79.9	10028	2.50 µg/L	-0.012
M3-PFHxS	7.290	402.1 -> 79.9	6899	2.50 µg/L	-0.027
M8-PFOS	8.392	507.1 -> 79.9	8943	2.50 µg/L	-0.037
M2-4:2FTS	5.284	329.1 -> 80.9	621	5.00 µg/L	0.000
M2-6:2FTS	6.962	429.1 -> 80.9	1240	5.00 µg/L	-0.037
M2-8:2FTS	8.041	529.1 -> 80.9	1931	5.00 µg/L	-0.037
M3-MeFOSAA	8.324	573.2 -> 419.0	16773	5.00 µg/L	-0.037
M3-HFPO-DA	5.953	286.9 -> 168.9	38000	10.00 µg/L	-0.012
M5-EtFOSAA	8.534	589.2 -> 419.0	14142	5.00 µg/L	-0.037
M7-MeFOSE	11.047	623.2 -> 58.9	62775	25.00 µg/L	-0.012
M9-EtFOSE	11.332	639.2 -> 58.9	88909	25.00 µg/L	-0.012
M5-EtFOSA	11.423	531.1 -> 219.0	10767	2.50 µg/L	0.000
M3-MeFOSA	11.152	515.0 -> 219.0	9010	2.50 µg/L	-0.012
13C4-PFOS	8.393	502.8 -> 79.9	9383	2.50 µg/L	-0.037
13C3-PFBA	2.928	216.0 -> 172.0	61915	5.00 µg/L	0.013
18O2-PFHxS	7.288	403.0 -> 83.9	5255	2.50 µg/L	-0.027
13C4-PFOA	7.200	417.1 -> 372.0	56312	2.50 µg/L	-0.037
13C2-PFDA	8.254	515.1 -> 470.1	17650	1.25 µg/L	-0.038
13C5-PFNA	7.759	468.0 -> 423.0	23924	1.25 µg/L	-0.025
13C2-PFHxA	5.574	315.1 -> 270.0	39173	2.50 µg/L	-0.025

System Monitoring Compounds

13C2-4:2FTS	5.284	329.1 -> 80.9	621	5.26 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.2%		
13C2-6:2FTS	6.962	429.1 -> 80.9	1240	4.79 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C2-8:2FTS	8.041	529.1 -> 80.9	1931	4.59 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.8%		
13C2-PFDoDA	9.157	615.1 -> 570.0	19427	1.18 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.7%		
13C2-PFTeDA	9.925	715.2 -> 670.0	13603	1.15 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.9%		
13C3-PFBS	5.466	302.1 -> 79.9	10028	2.49 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.7%		
13C3-PFHxS	7.290	402.1 -> 79.9	6899	2.34 µg/L	-0.027

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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 = 93.6%	
13C4-PFBA	2.924	216.8 -> 171.9	112965	9.66 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.6%	
13C4-PFHpA	6.530	367.1 -> 322.0	27742	2.31 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.3%	
13C5-PFHxA	5.573	318.0 -> 273.0	39786	2.37 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.0%	
13C5-PFPeA	4.387	268.3 -> 223.0	62339	5.77 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 115.3%	
13C6-PFDA	8.253	519.1 -> 474.1	15105	1.24 µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C7-PFUnDA	8.723	570.0 -> 525.1	18234	1.18 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.0%	
13C8-FOSA	9.871	506.1 -> 77.8	13703	2.82 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.9%	
13C8-PFOA	7.199	421.1 -> 376.0	47059	2.57 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C8-PFOS	8.392	507.1 -> 79.9	8943	2.74 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.8%	
13C9-PFNA	7.746	472.1 -> 427.0	20684	1.29 µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.4%	
d3-MeFOSAA	8.324	573.2 -> 419.0	16773	5.44 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.7%	
13C3-HFPO-DA	5.953	286.9 -> 168.9	38000	9.10 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 91.0%	
d3-MeFOSA	11.152	515.0 -> 219.0	9010	2.55 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
d5-EtFOSAA	8.534	589.2 -> 419.0	14142	5.19 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.9%	
d7-MeFOSE	11.047	623.2 -> 58.9	62775	25.07 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
d9-EtFOSE	11.332	639.2 -> 58.9	88909	26.67 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 106.7%	
d5-EtFOSA	11.423	531.1 -> 219.0	10767	2.80 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.1%	
Target Compounds					QValue
4:2FTS	5.272	327.1 -> 307.0	10530	9.56 µg/L	94
		327.1 -> 80.9	4369		
6:2FTS	6.974	427.1 -> 407.0	14178	9.89 µg/L	98
		427.1 -> 80.9	5247		
8:2FTS	8.041	527.1 -> 507.0	11413	10.33 µg/L	99
		527.1 -> 80.8	4692		
EtFOSAA	8.534	584.2 -> 419.1	6068	2.66 µg/L	95
		584.2 -> 526.0	2906		
FOSA	9.874	498.1 -> 77.9	14661	2.42 µg/L	100
		498.1 -> 478.0	412		
MeFOSAA	8.325	570.1 -> 419.0	7669	2.56 µg/L	95
		570.1 -> 483.0	1335		
PFBA	2.932	212.8 -> 168.9	35264	10.38 µg/L	100
PFBS	5.467	298.7 -> 79.9	8693	2.08 µg/L	99
		298.7 -> 98.8	3425		
PFDA	8.254	512.9 -> 469.0	39400	2.51 µg/L	99
		512.9 -> 219.0	7592		
PFDODA	9.157	613.1 -> 569.0	42469	2.72 µg/L	95
		613.1 -> 319.0	7015		
PFDS	9.308	599.0 -> 79.9	6161	2.44 µg/L	96

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	3177			
PFHpA	6.531	363.1 -> 319.0	44492	2.61	µg/L	99
		363.1 -> 169.0	8073			
PFHpS	7.873	449.0 -> 79.9	8882	2.48	µg/L	98
		449.0 -> 98.9	4635			
PFHxA	5.576	313.0 -> 269.0	38845	2.49	µg/L	99
		313.0 -> 118.9	1312			
PFHxS	7.291	398.7 -> 79.9	6631	2.16	µg/L	m 96
		398.7 -> 98.9	3585			
PFNA	7.760	463.0 -> 419.0	38594	2.53	µg/L	96
		463.0 -> 219.0	9478			
PFNS	8.874	548.8 -> 79.9	5893	2.21	µg/L	97
		548.8 -> 98.9	3145			
PFOA	7.201	413.0 -> 369.0	67992	2.55	µg/L	98
		413.0 -> 169.0	13545			
PFOS	8.394	498.9 -> 79.9	10507	2.21	µg/L	m 81
		498.9 -> 98.8	5244			
PFPeA	4.389	263.0 -> 219.0	78883	4.49	µg/L	100
PFPeS	6.545	349.1 -> 79.9	5785	2.28	µg/L	99
		349.1 -> 98.9	2736			
PFTeDA	9.925	713.1 -> 669.0	34605	2.55	µg/L	99
		713.1 -> 168.9	3253			
PFTrDA	9.553	663.0 -> 619.0	44410	2.57	µg/L	97
		663.0 -> 168.9	5396			
PFUnDA	8.723	563.1 -> 519.0	38867	2.69	µg/L	98
		563.1 -> 269.1	8207			
11CI-PF3OUdS	9.594	630.9 -> 450.9	48271	4.76	µg/L	99
		632.9 -> 452.9	15415			
9CI-PF3ONS	8.738	530.8 -> 351.0	67697	4.98	µg/L	97
		532.8 -> 353.0	21147			
ADONA	6.794	376.9 -> 250.9	138069	4.85	µg/L	99
		376.9 -> 84.8	35242			
HFPO-DA	5.941	284.9 -> 168.9	20276	5.17	µg/L	98
		284.9 -> 184.9	2627			
3:3FTCA	3.873	241.0 -> 177.0	9998	12.79	µg/L	99
		241.0 -> 117.0	920			
5:3FTCA	6.269	341.0 -> 237.1	158593	61.28	µg/L	99
		341.0 -> 217.0	110492			
7:3FTCA	7.749	441.0 -> 316.9	90025	63.02	µg/L	100
		441.0 -> 336.9	213630			
EtFOSA	11.425	526.0 -> 219.0	23930	4.31	µg/L	99
		526.0 -> 169.0	33540			
EtFOSE	11.345	630.0 -> 58.9	45843	10.63	µg/L	100
MeFOSA	11.153	511.9 -> 219.0	18577	4.94	µg/L	m 68
		511.9 -> 169.0	27278			
MeFOSE	11.060	616.1 -> 58.9	36458	13.15	µg/L	100
PFDoDS	10.052	699.1 -> 79.9	4877	2.34	µg/L	93
		699.1 -> 98.8	2838			
NFDHA	5.456	295.0 -> 201.0	5063	5.54	µg/L	96
		295.0 -> 84.9	1312			
PFMBA	4.797	279.0 -> 85.1	41232	4.36	µg/L	100
PFMPA	3.528	229.0 -> 84.9	40184	4.48	µg/L	100
PFEESA	6.010	314.8 -> 134.9	54512	4.63	µg/L	100
		314.8 -> 82.9	1923			

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

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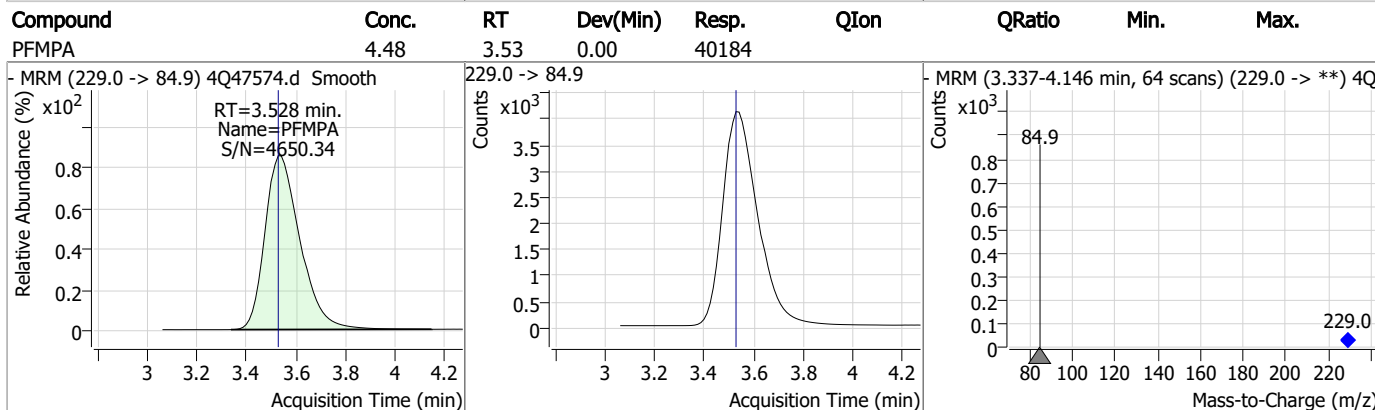
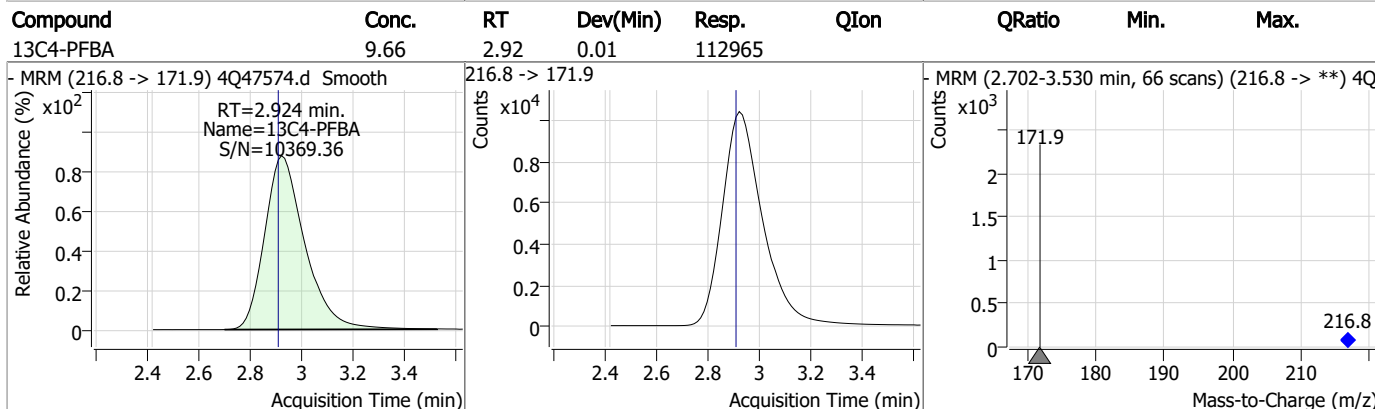
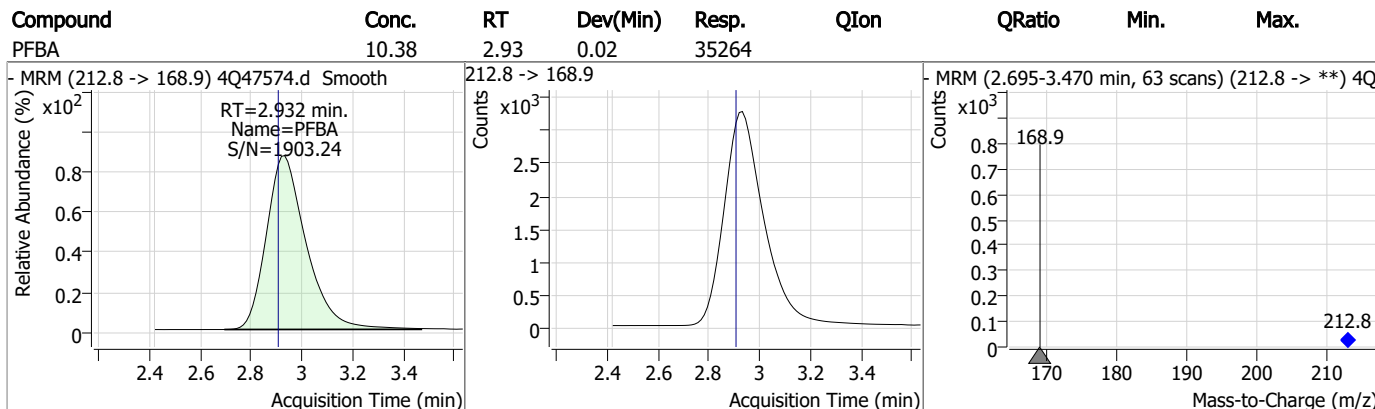
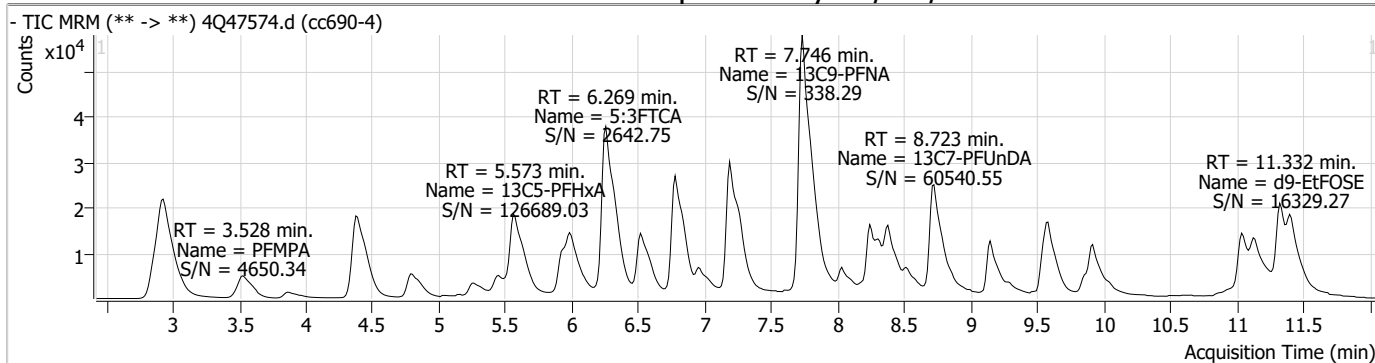
Perfluorinated Compounds by LC/MS/MS

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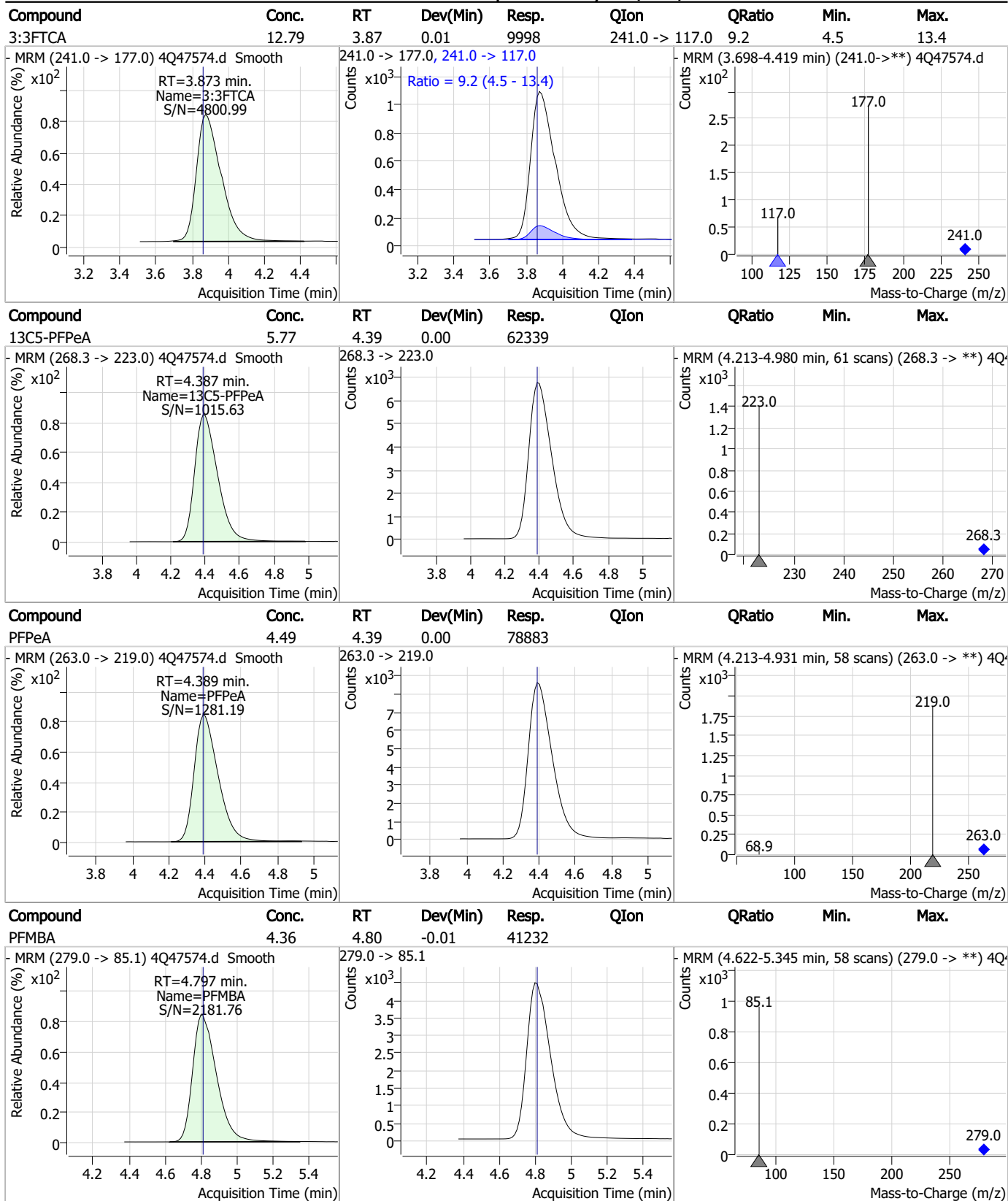
7.7.14

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Perfluorinated Compounds by LC/MS/MS

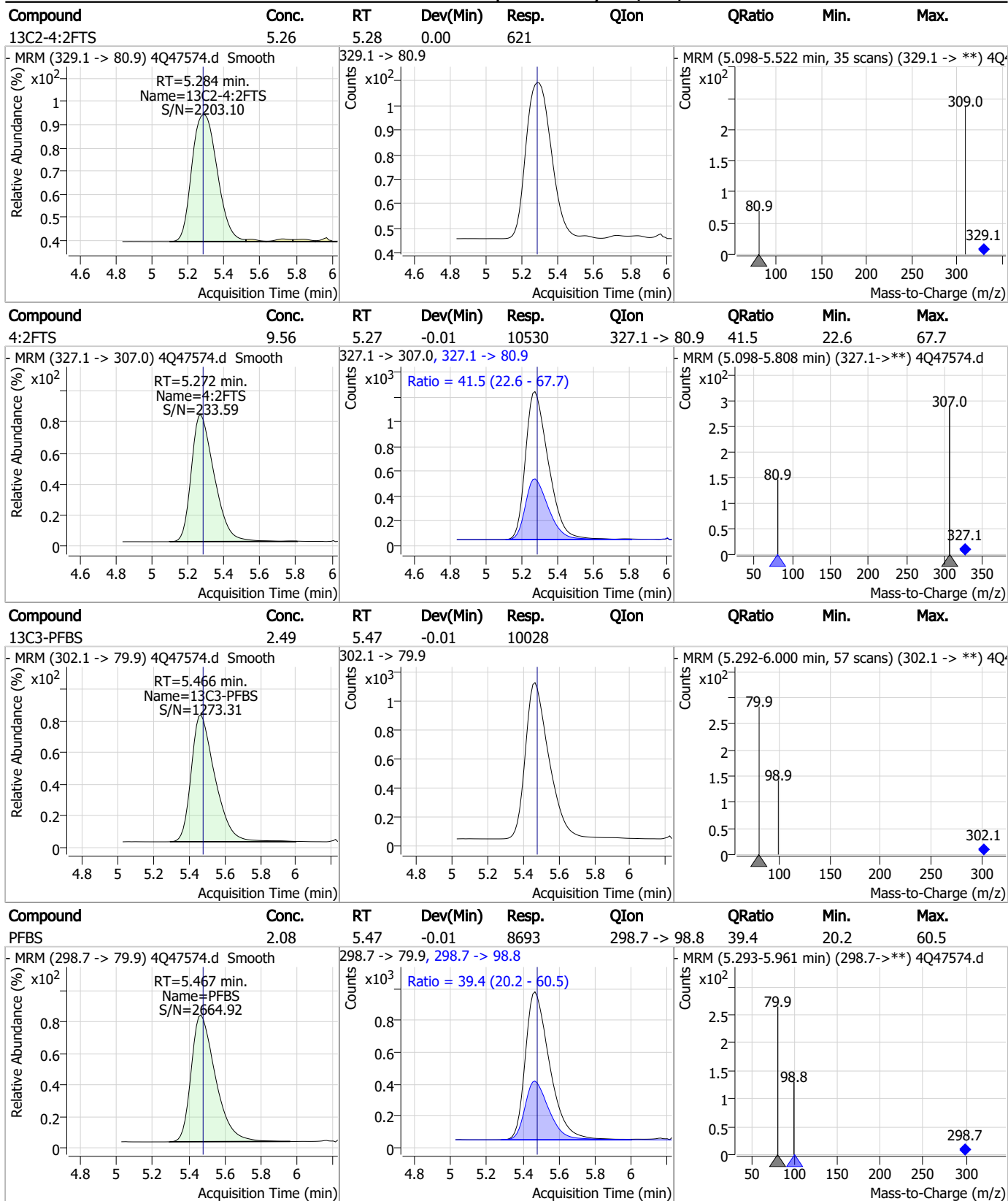


Perfluorinated Compounds by LC/MS/MS



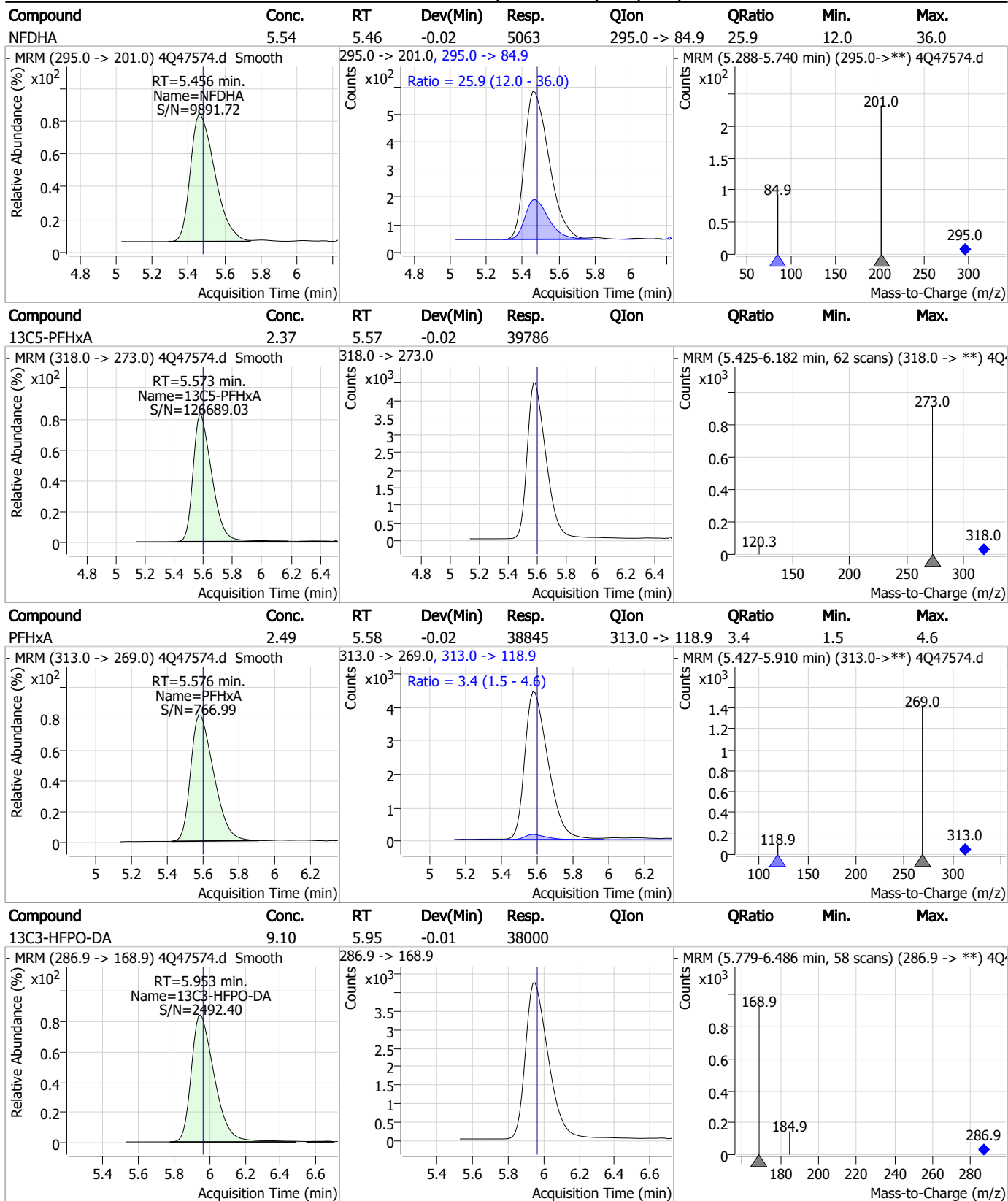
7.7.14
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Perfluorinated Compounds by LC/MS/MS



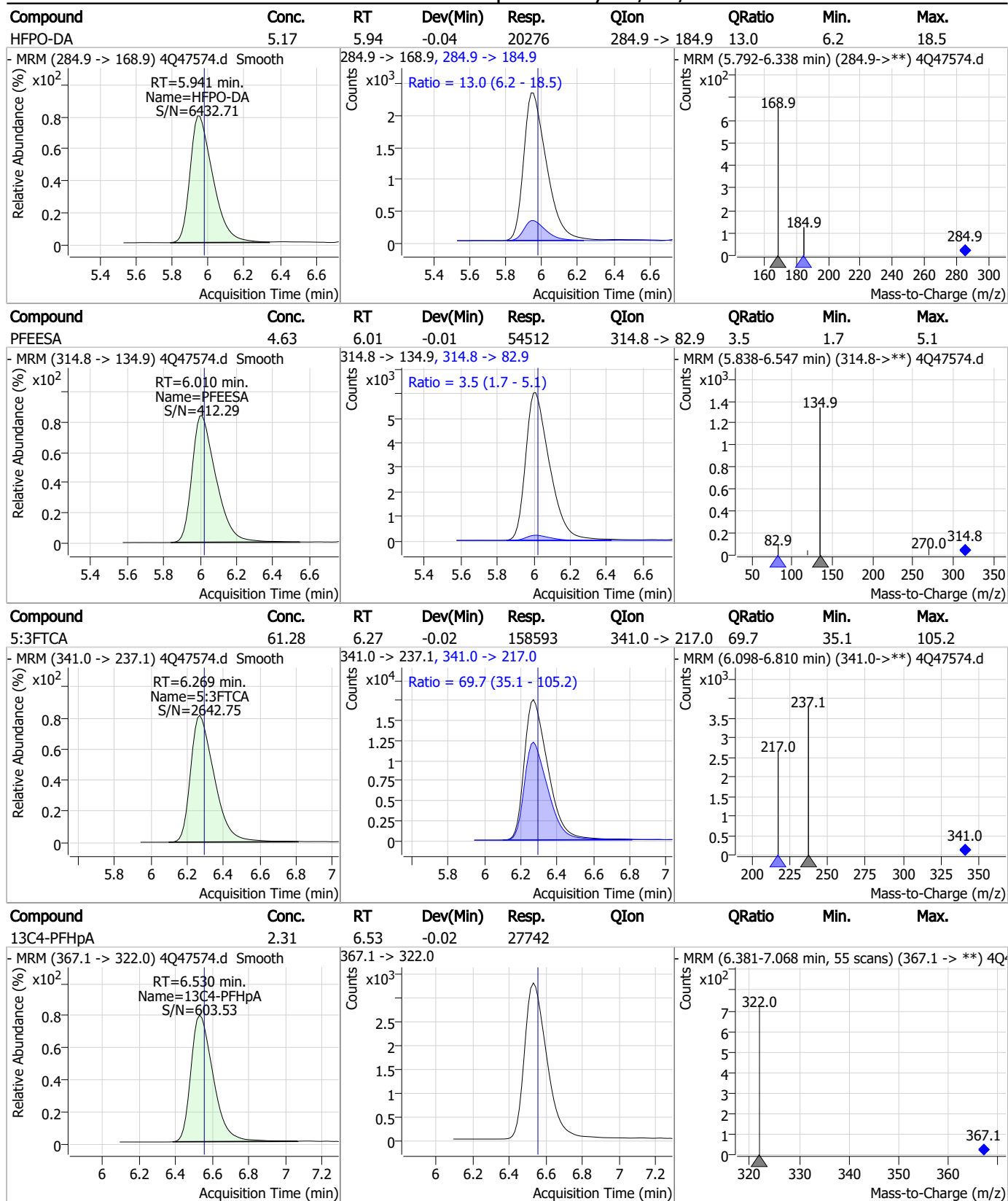
7.7.14
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Perfluorinated Compounds by LC/MS/MS



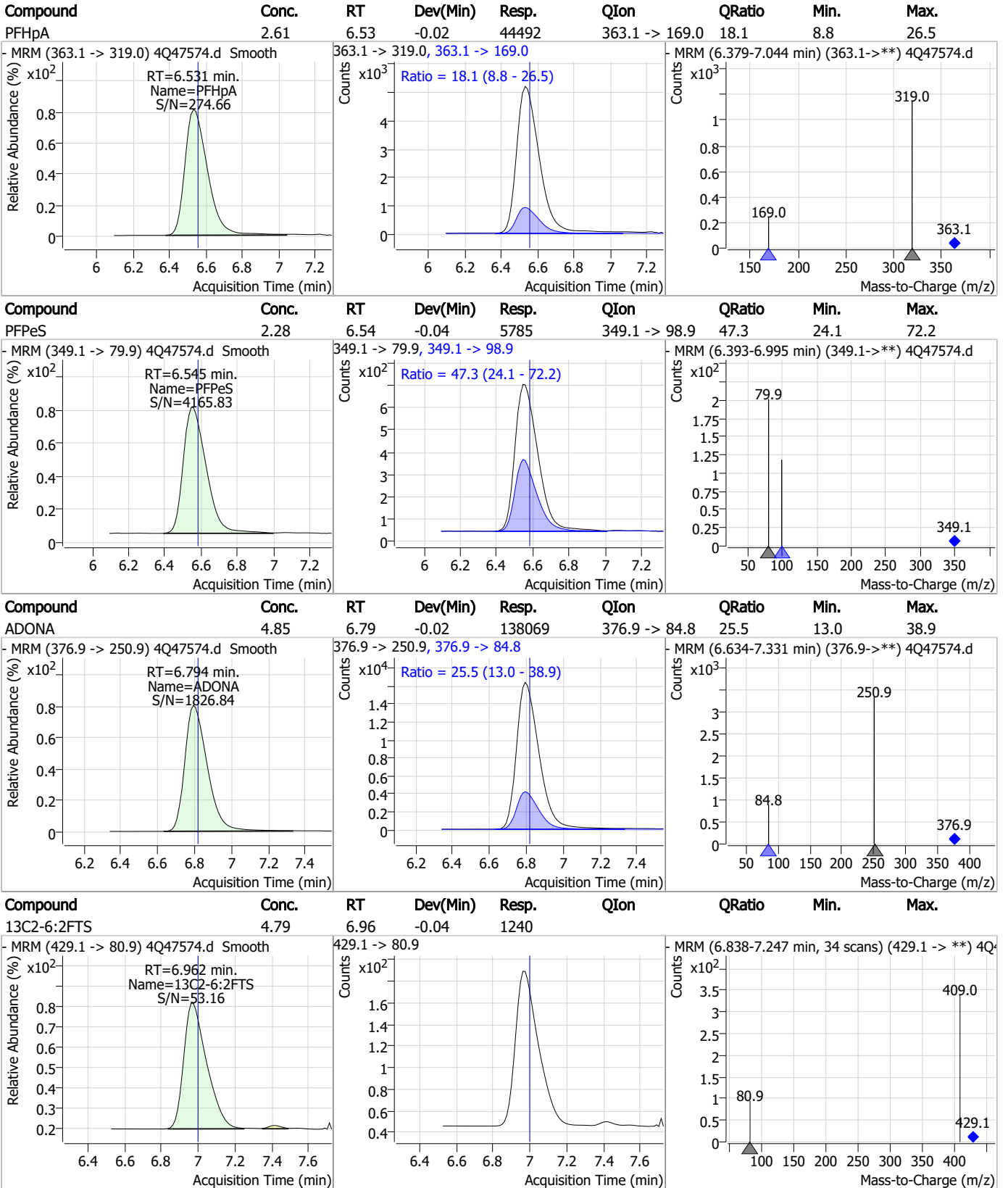
7.7.14
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Perfluorinated Compounds by LC/MS/MS



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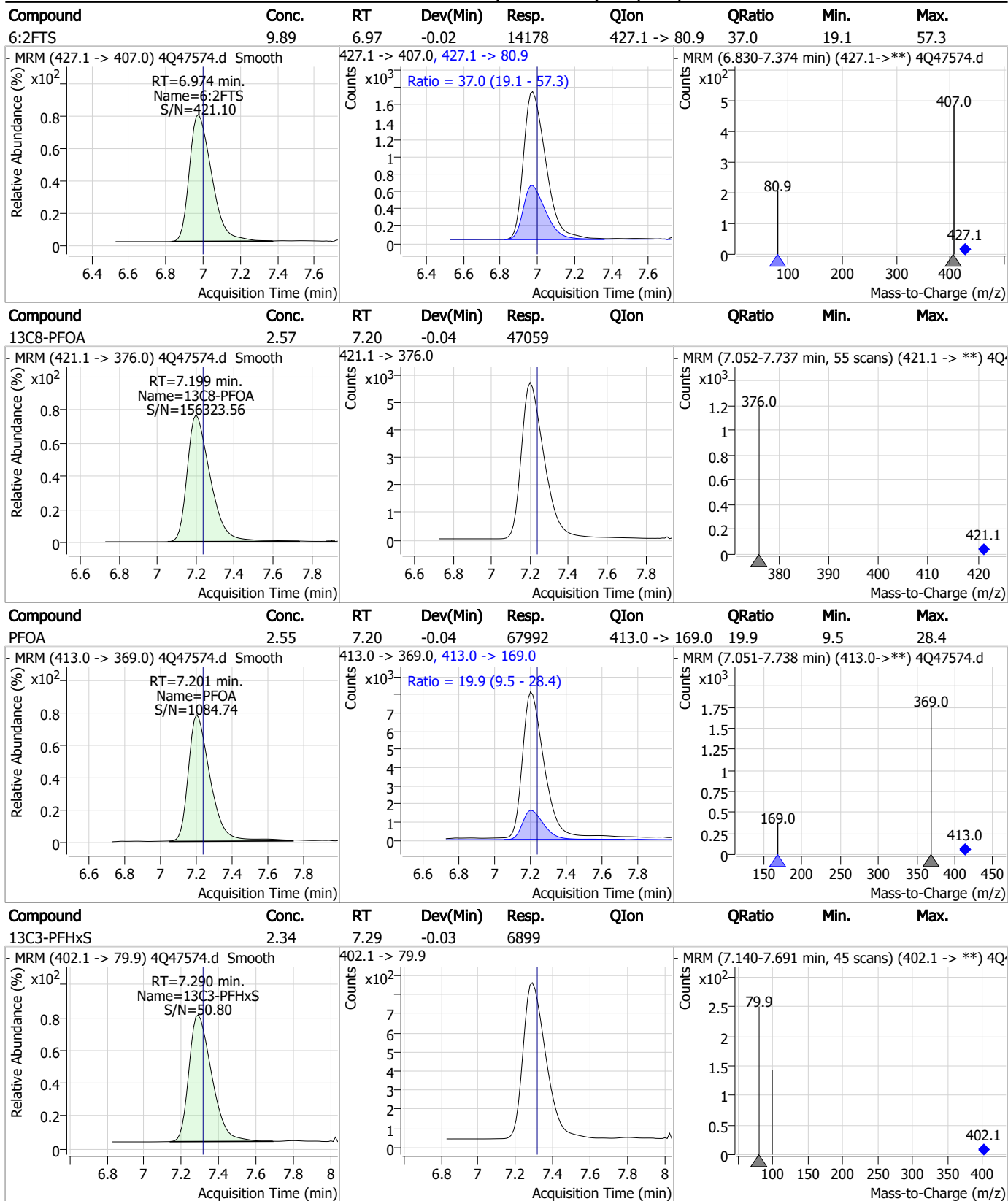
Perfluorinated Compounds by LC/MS/MS



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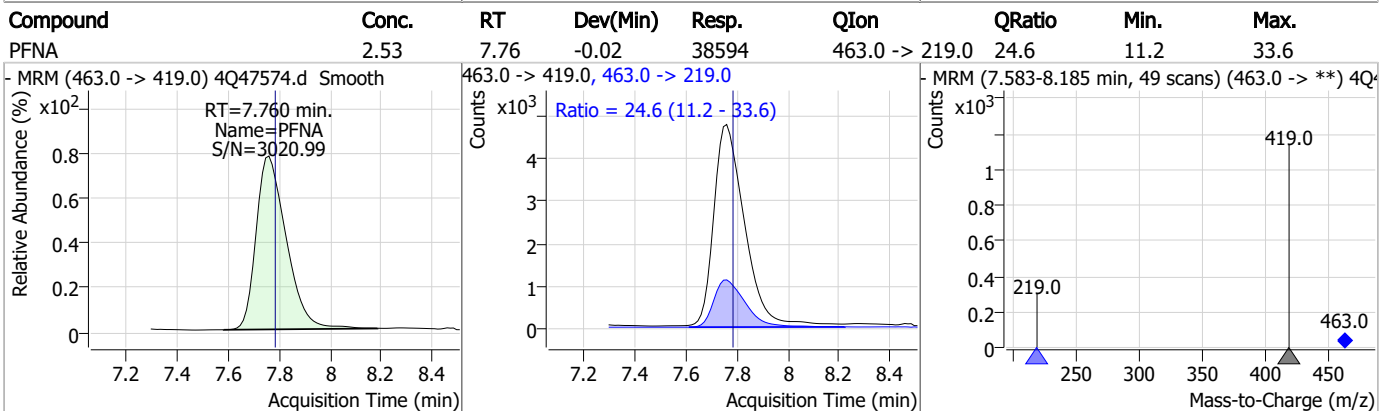
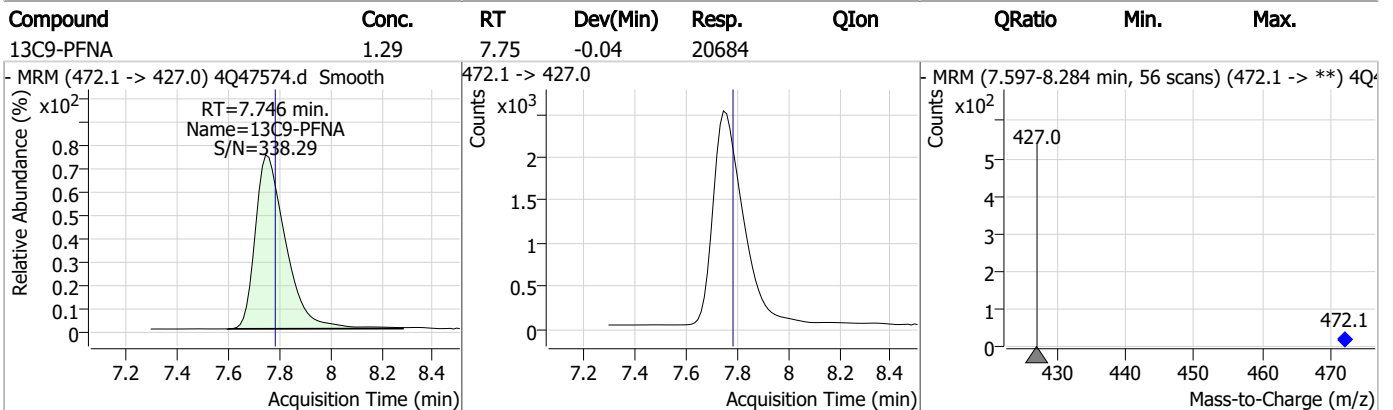
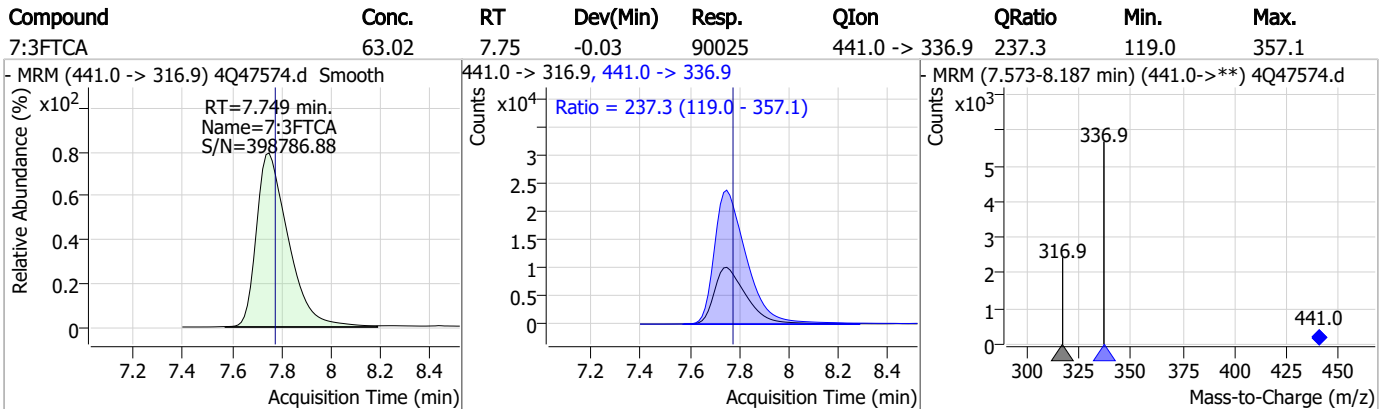
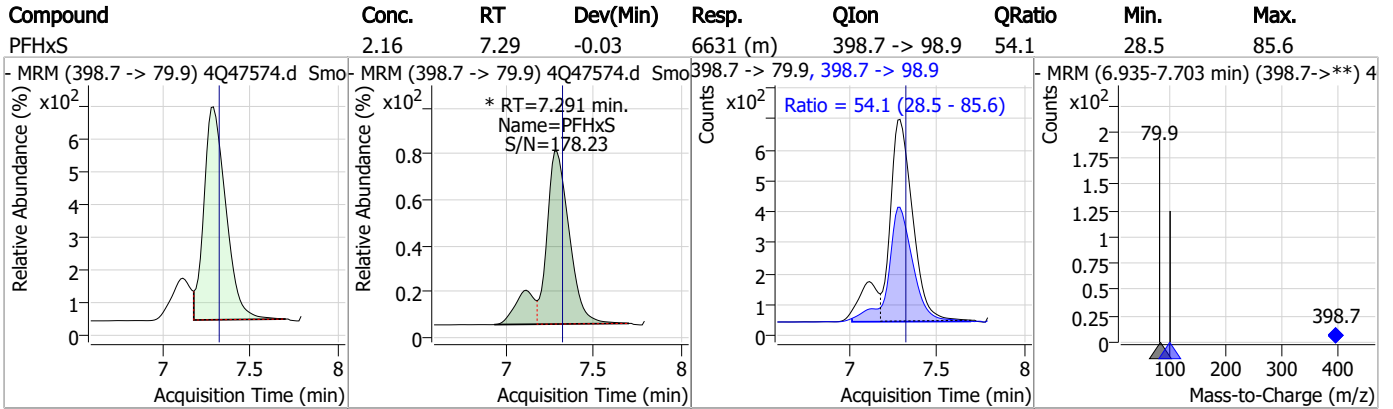
Perfluorinated Compounds by LC/MS/MS



7.7.14



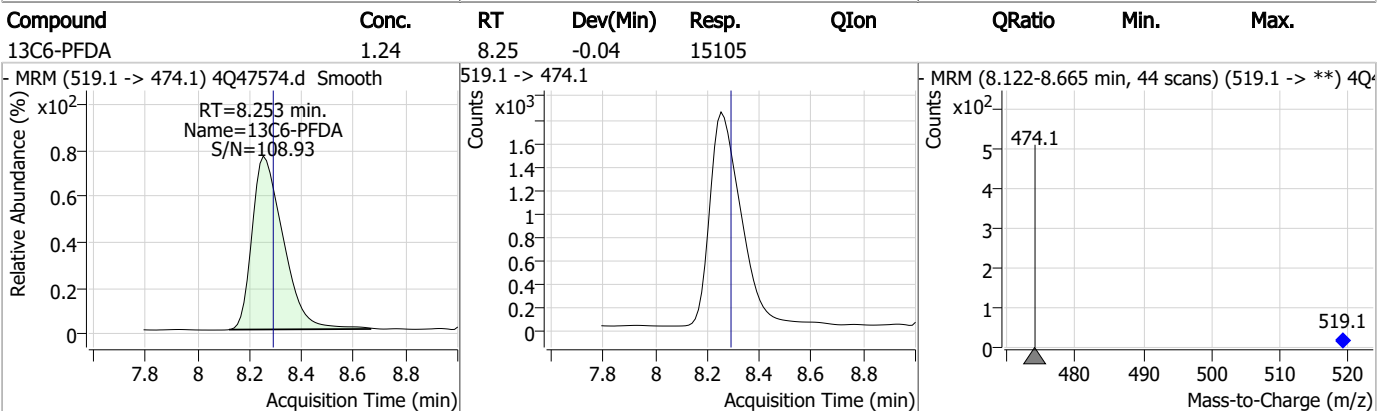
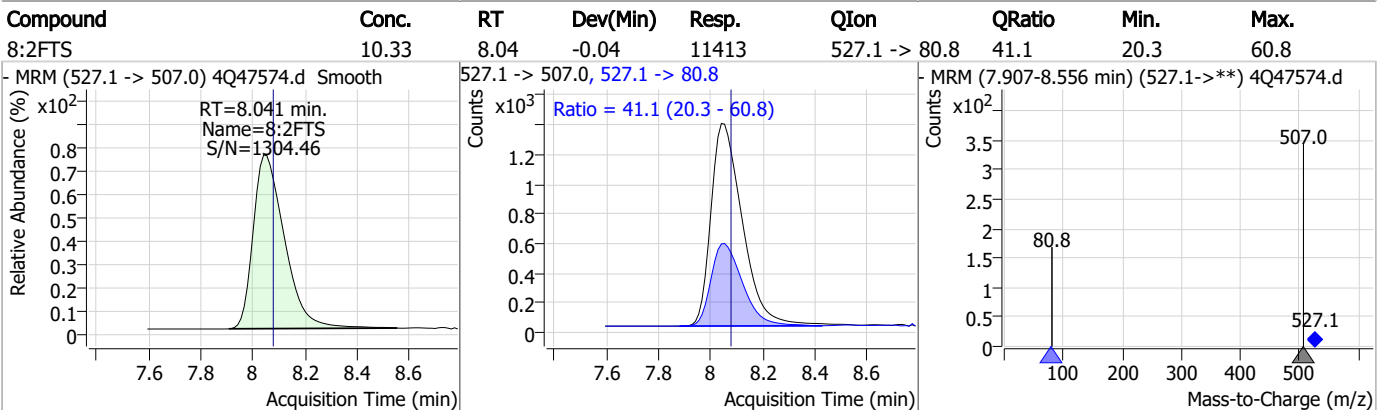
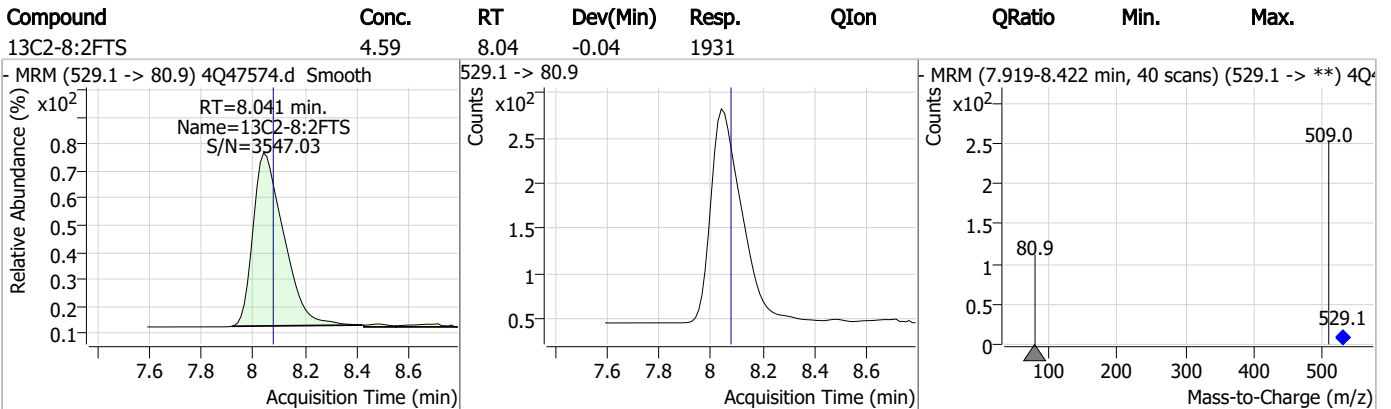
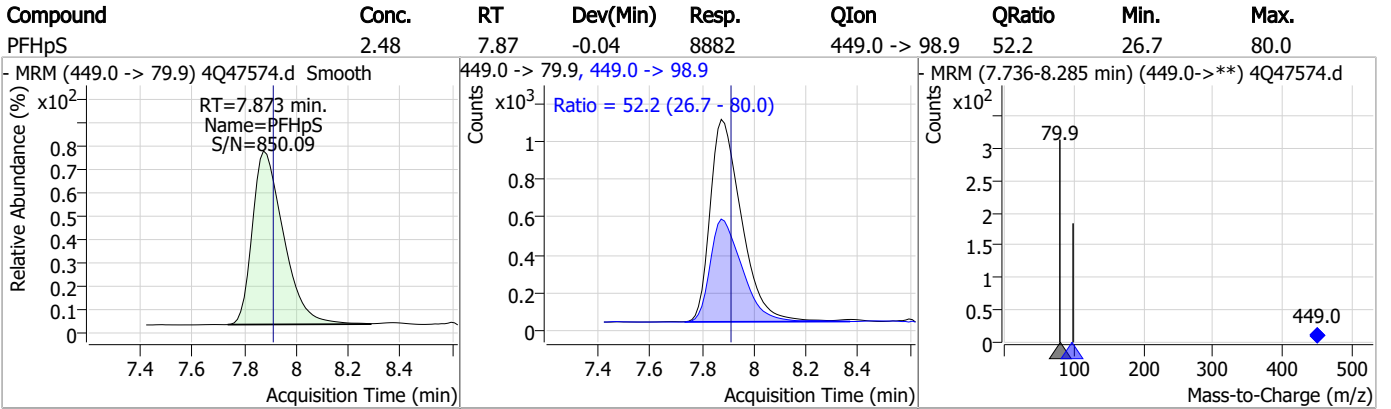
Perfluorinated Compounds by LC/MS/MS



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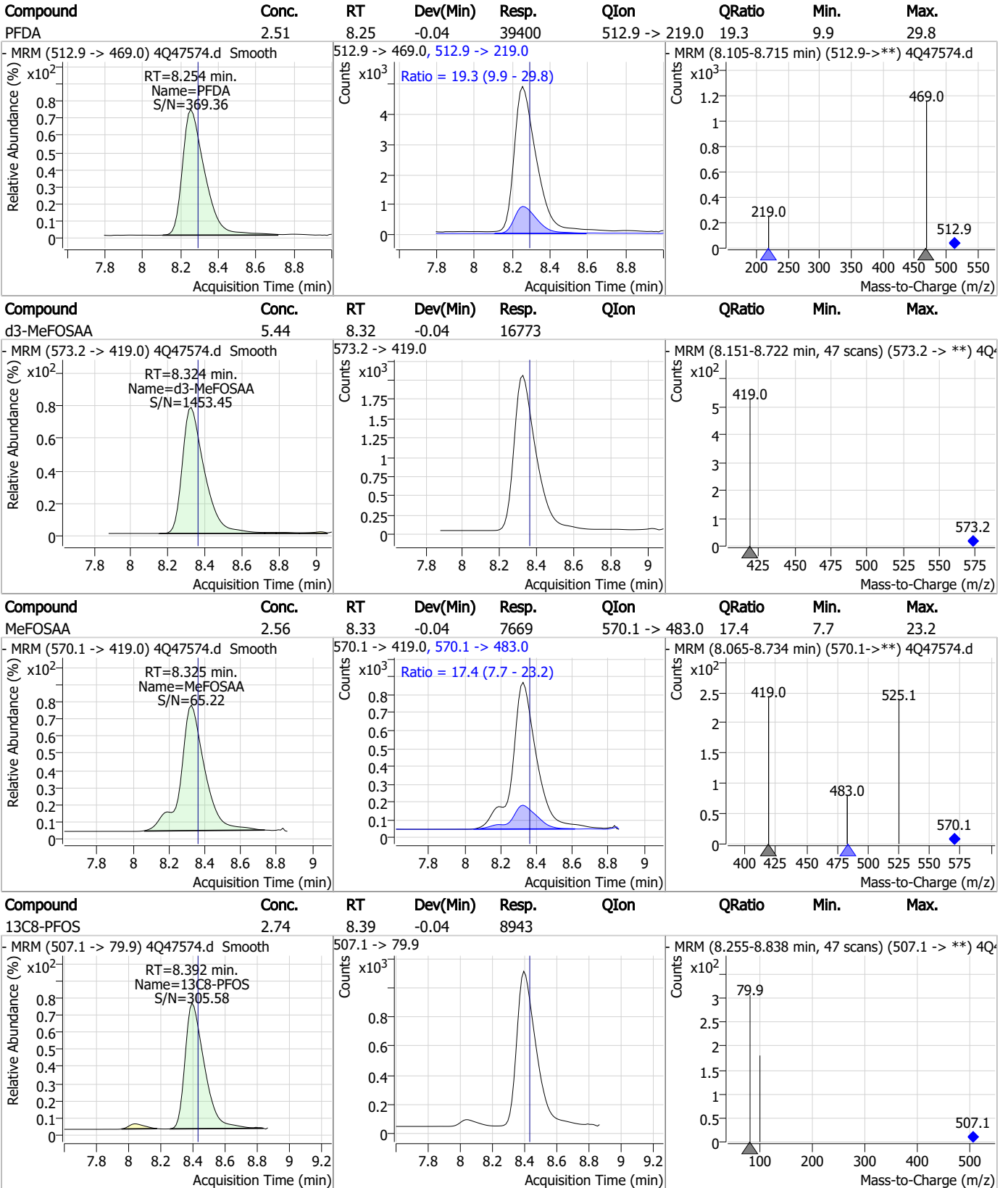
Perfluorinated Compounds by LC/MS/MS



7.7.14



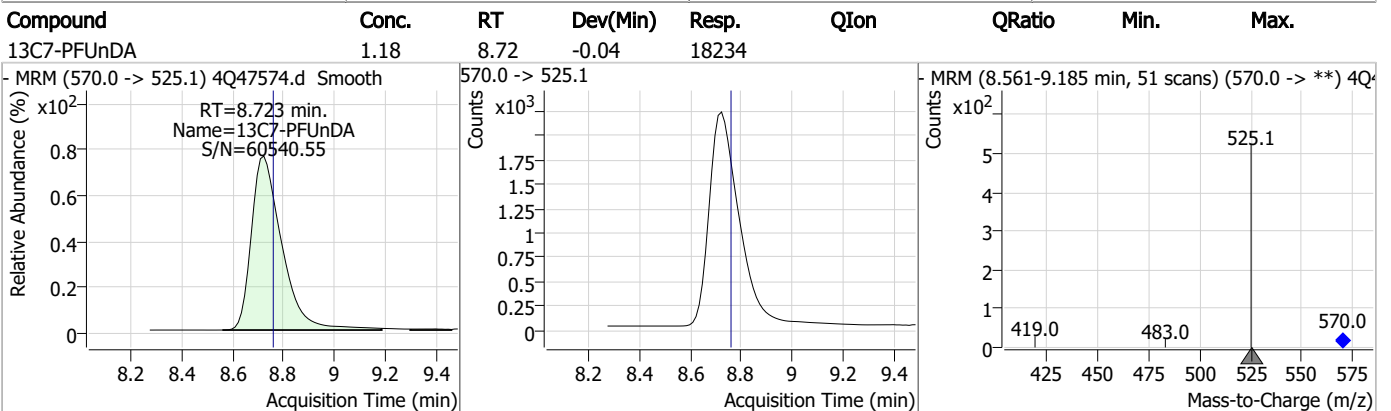
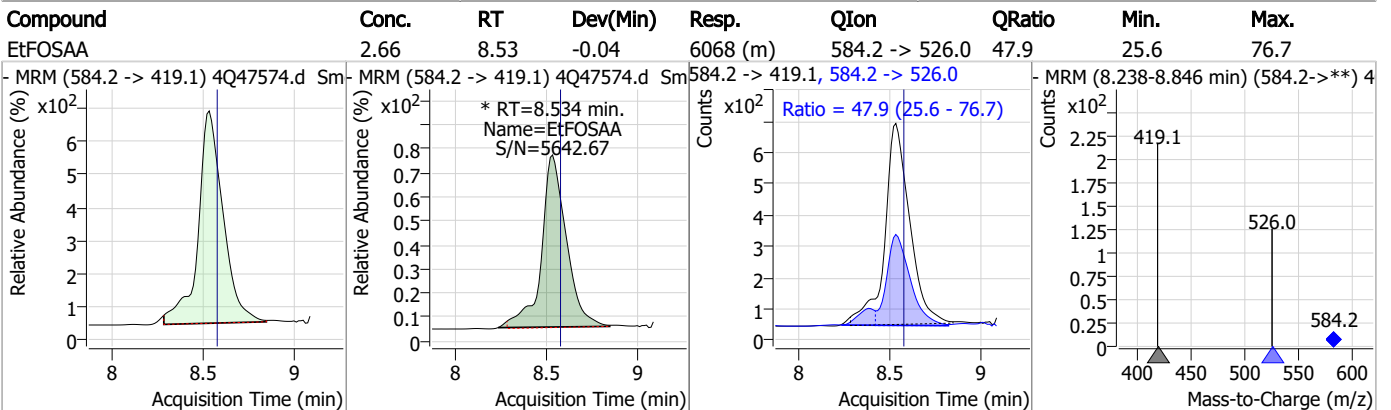
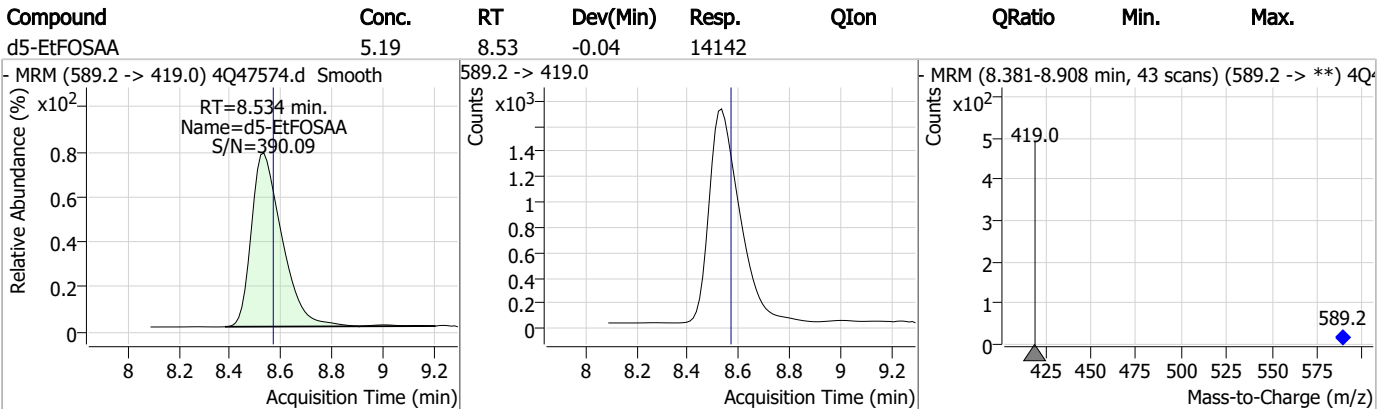
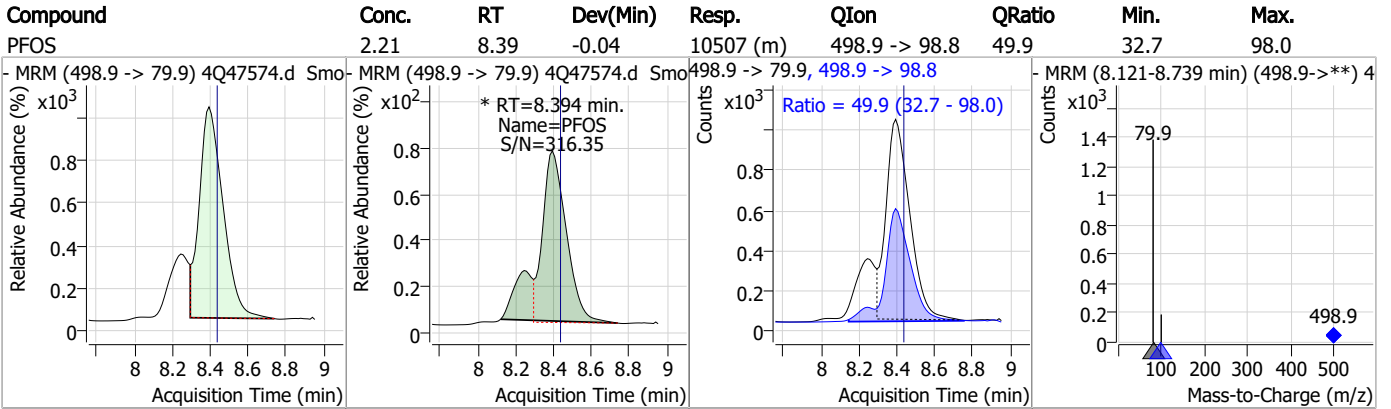
Perfluorinated Compounds by LC/MS/MS



7.7.14

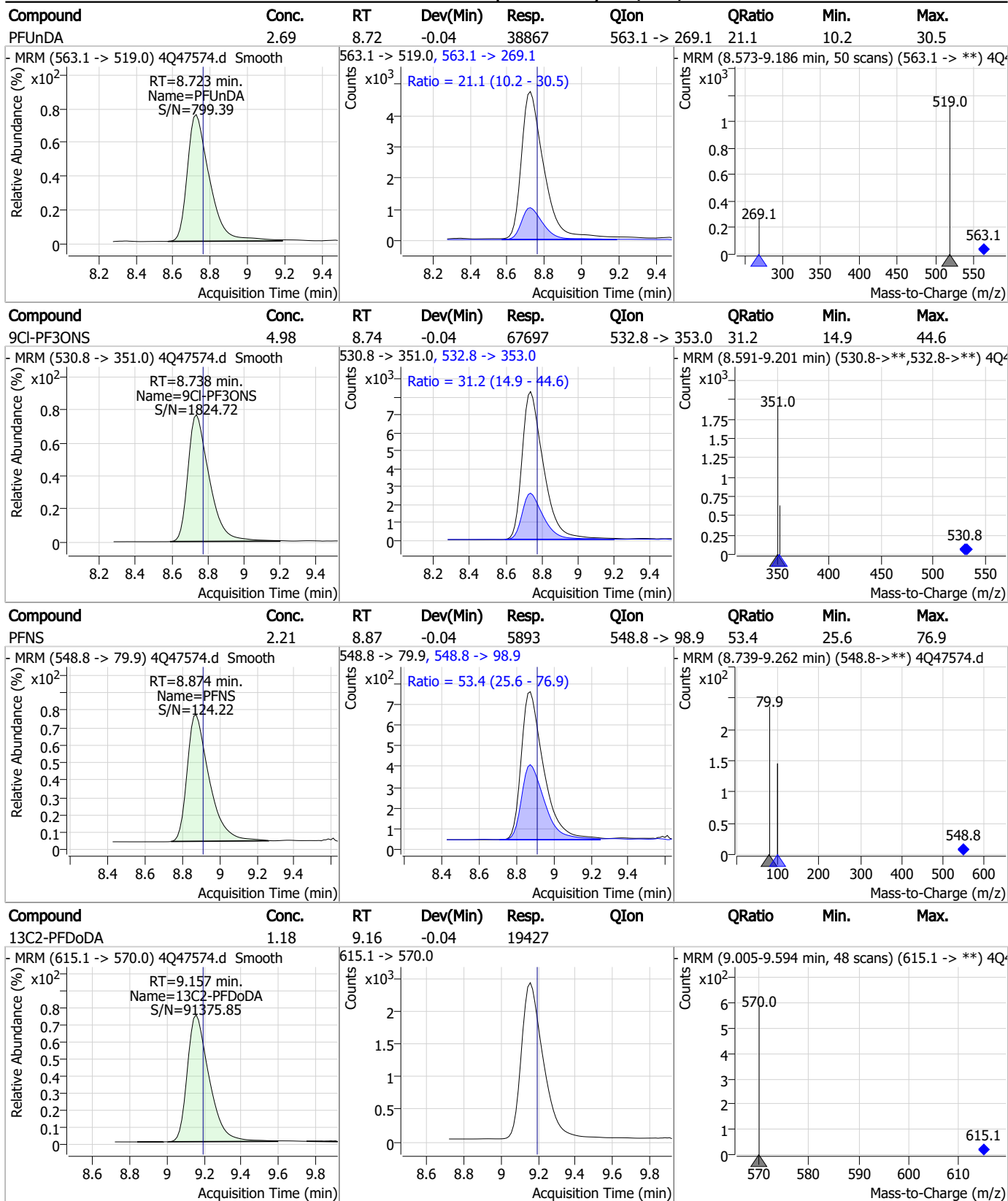


Perfluorinated Compounds by LC/MS/MS



7.7.14
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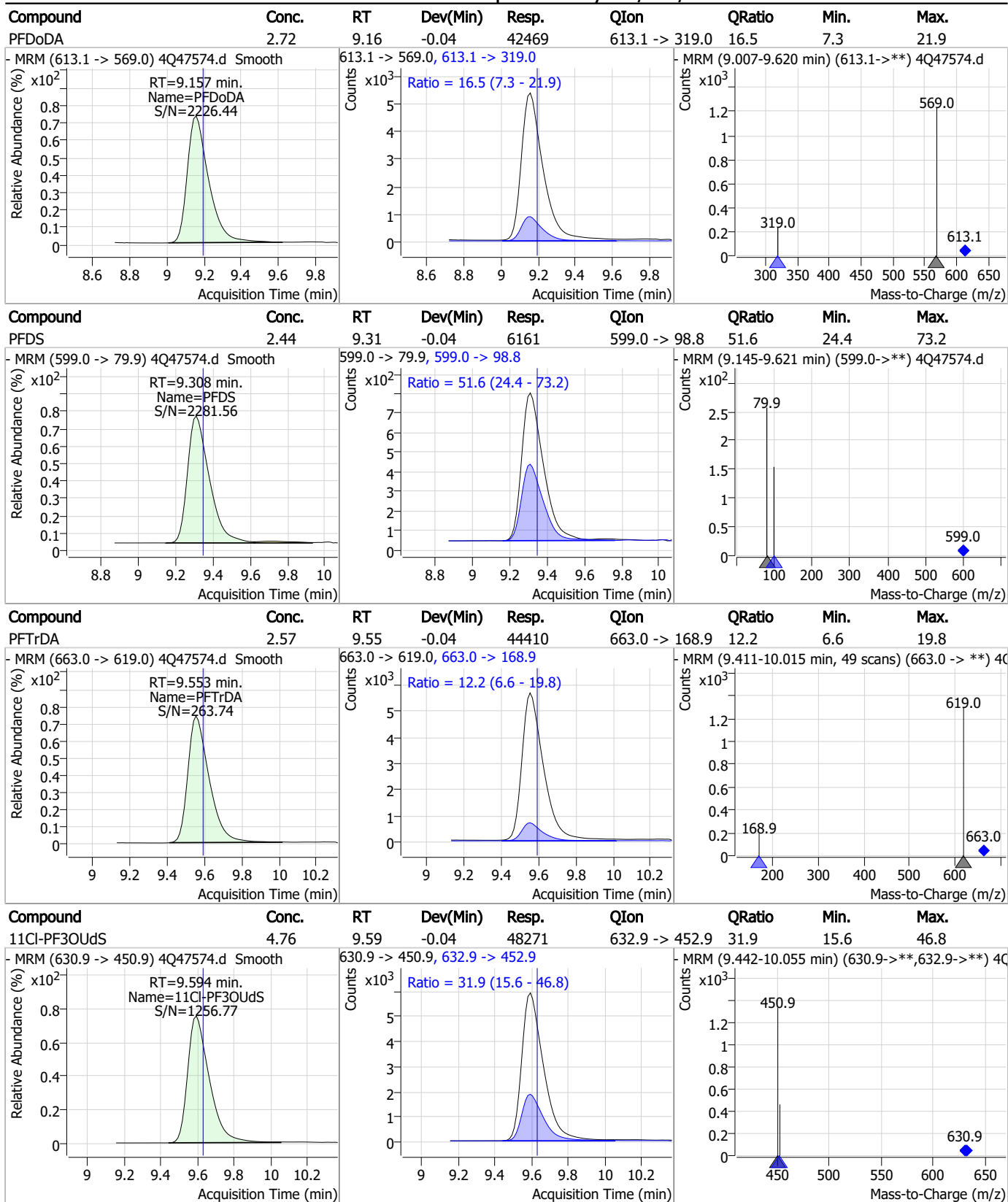
Perfluorinated Compounds by LC/MS/MS



7.7.14

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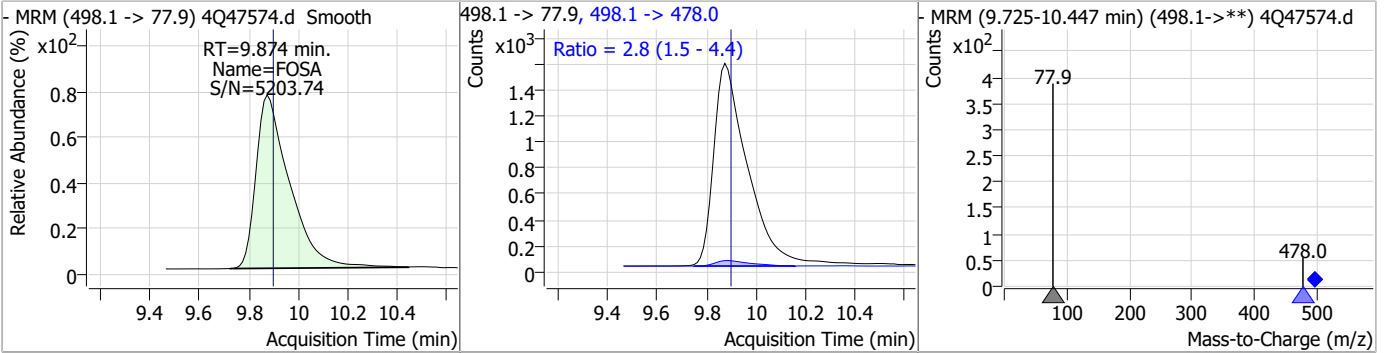
Perfluorinated Compounds by LC/MS/MS



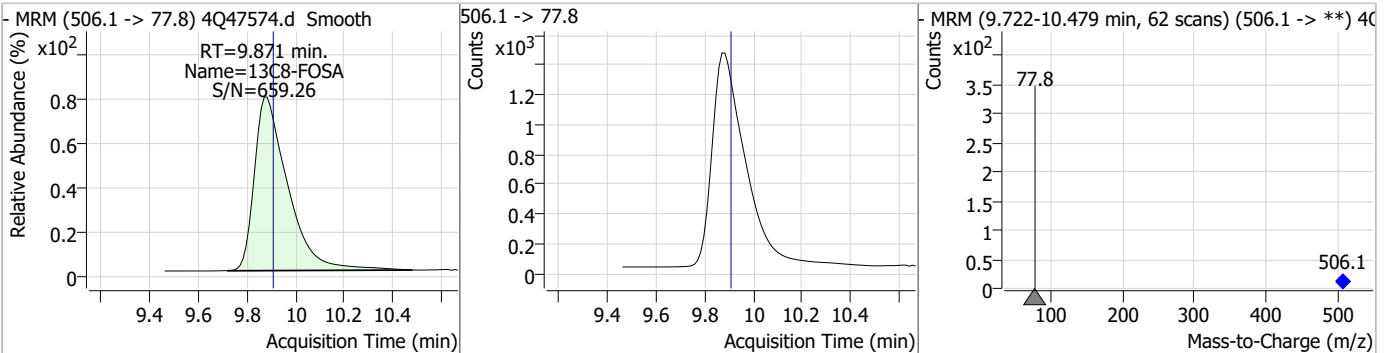
7.7.14
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Perfluorinated Compounds by LC/MS/MS

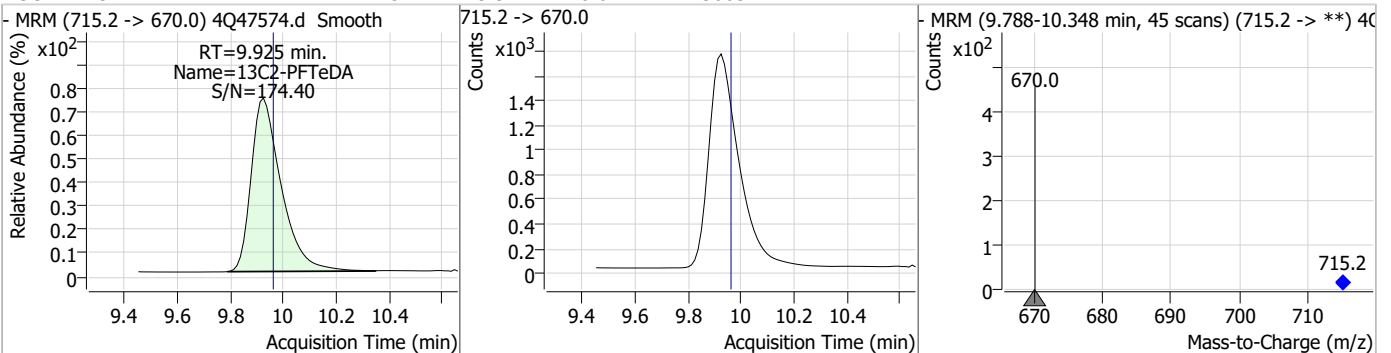
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.42	9.87	-0.02	14661	498.1 -> 478.0	2.8	1.5	4.4



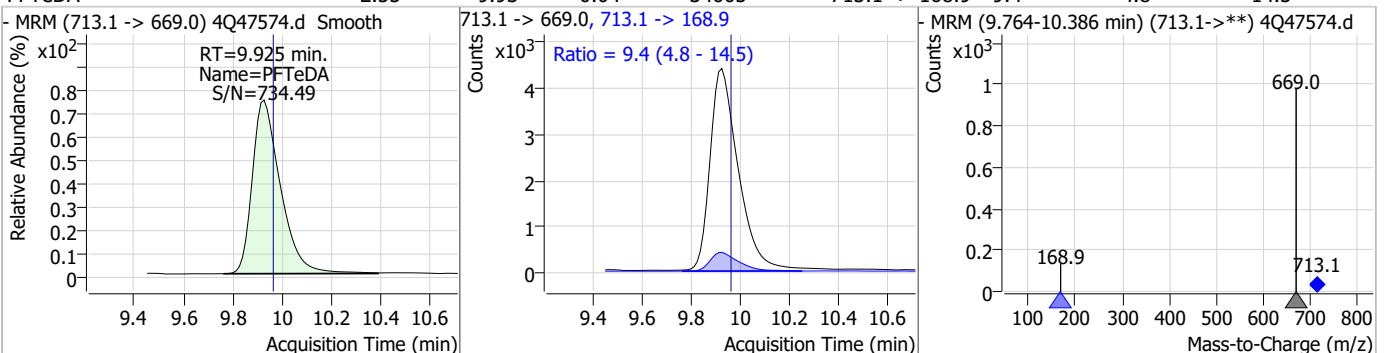
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.82	9.87	-0.04	13703				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.15	9.92	-0.04	13603				



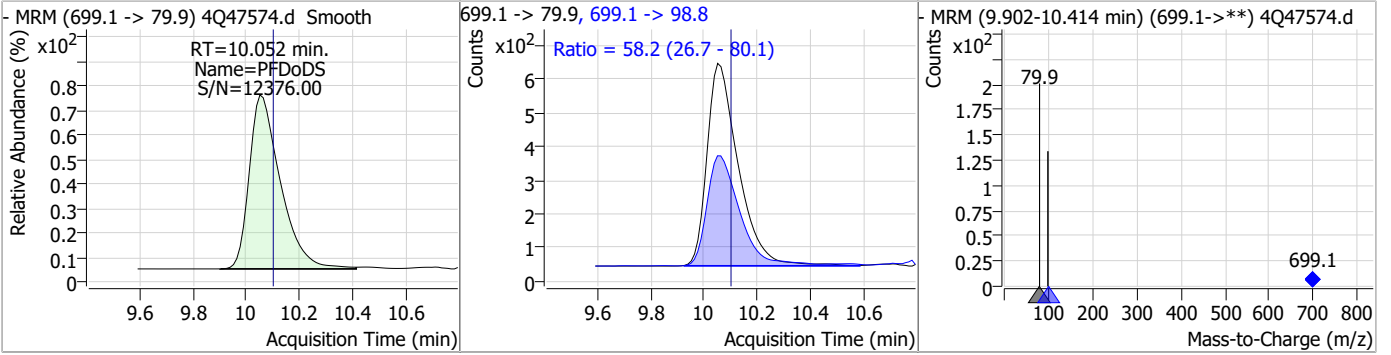
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.55	9.93	-0.04	34605	713.1 -> 168.9	9.4	4.8	14.5



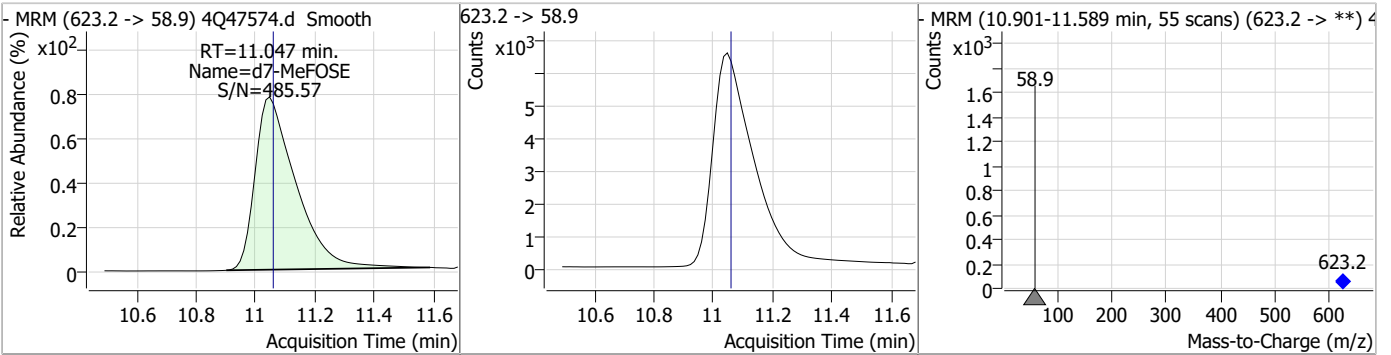
7.7.14

Perfluorinated Compounds by LC/MS/MS

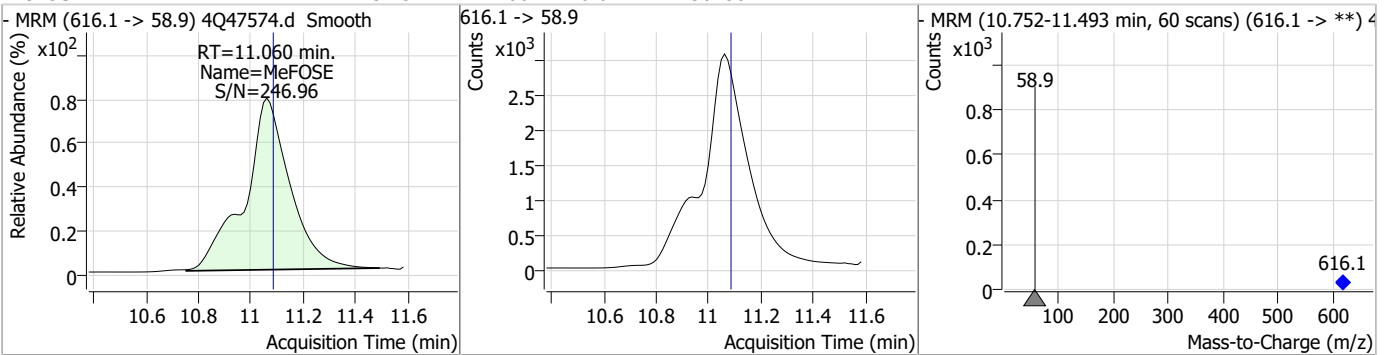
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PfDoDS	2.34	10.05	-0.05	4877	699.1 -> 98.8	58.2	26.7	80.1



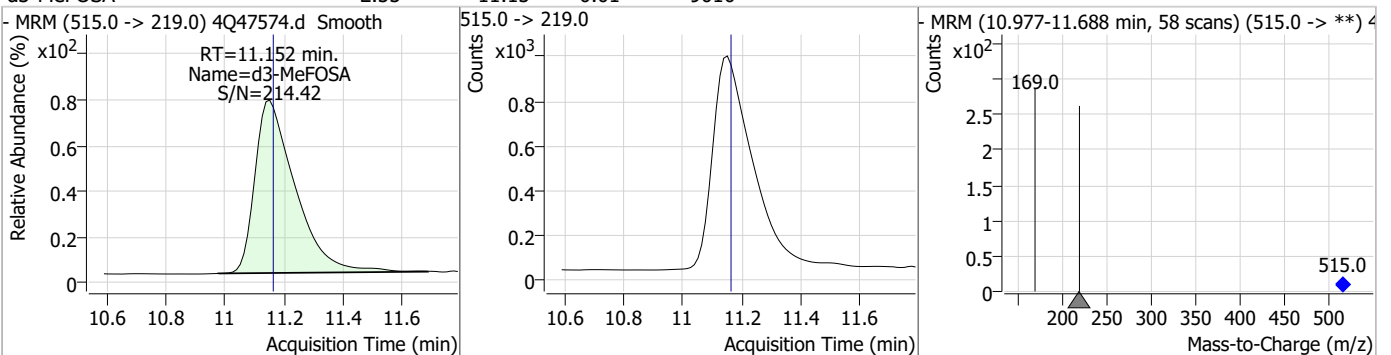
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.07	11.05	-0.01	62775				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	13.15	11.06	-0.02	36458				



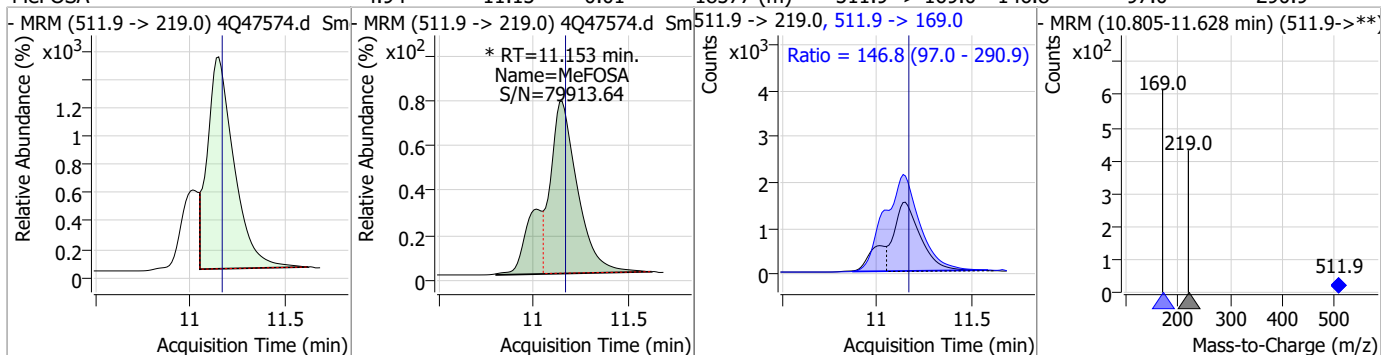
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.55	11.15	-0.01	9010				



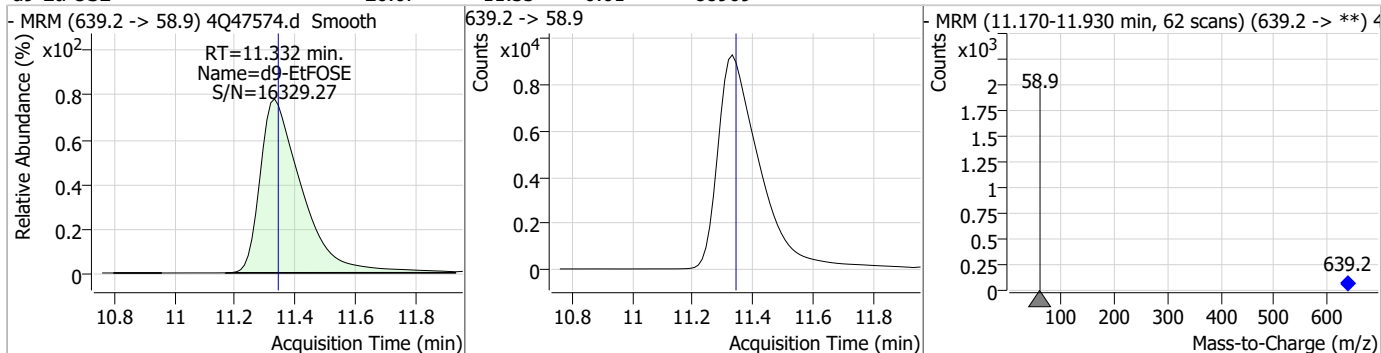
7.7.14
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Perfluorinated Compounds by LC/MS/MS

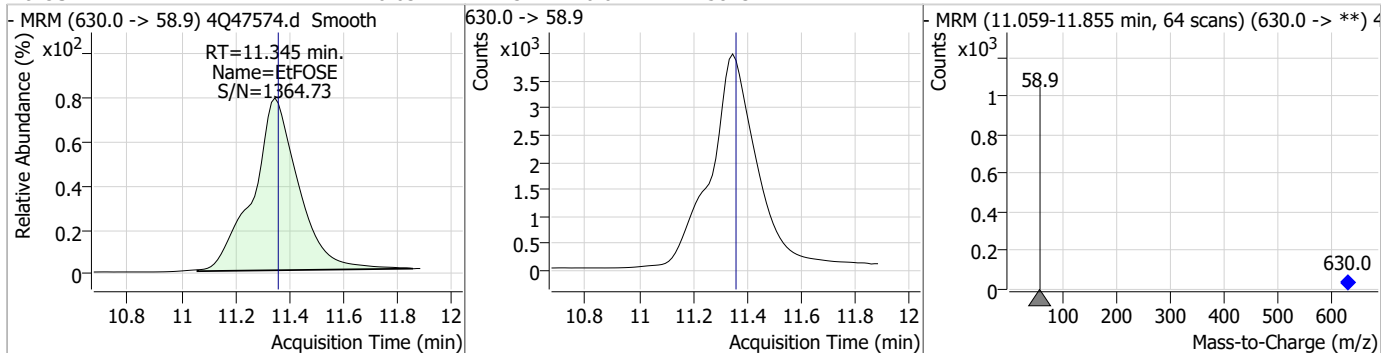
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.94	11.15	-0.01	18577 (m)	511.9 -> 169.0	146.8	97.0	290.9



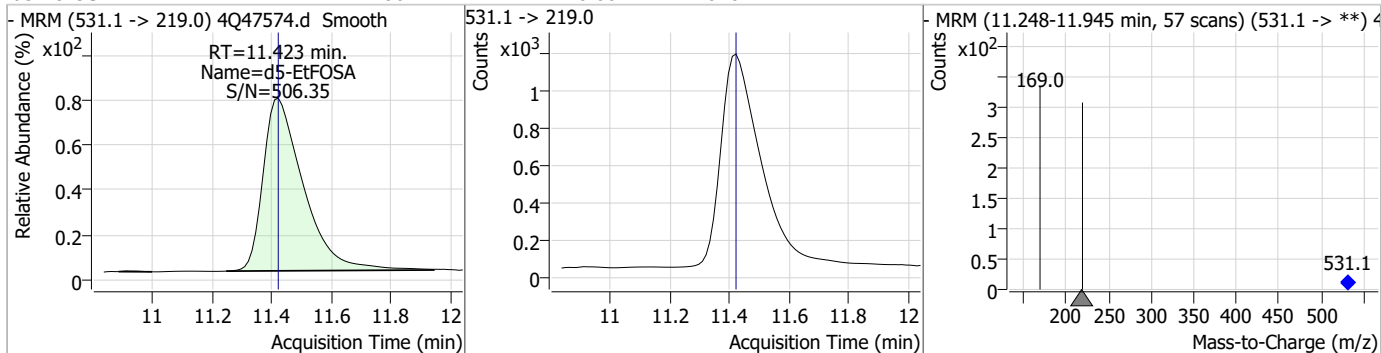
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	26.67	11.33	-0.01	88909				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	10.63	11.34	-0.01	45843				

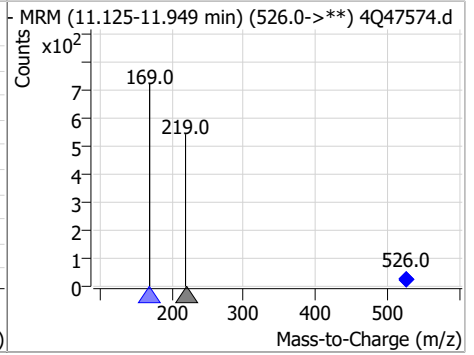
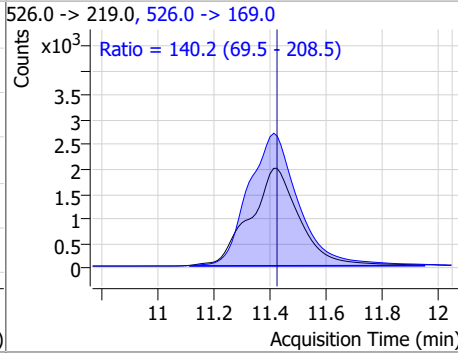
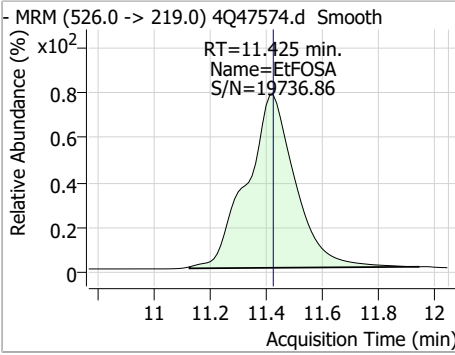


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.80	11.42	0.00	10767				



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.31	11.43	0.00	23930	526.0 -> 169.0	140.2	69.5	208.5



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Manual Integration Approval Summary

Sample Number: S4Q697-CC690 Method: EPA DRAFT 1633
Lab FileID: 4Q47574.D Analyst approved: 07/20/23 12:46 Anna Ludwig
Injection Time: 07/19/23 14:53 Supervisor approved: 07/20/23 15:43 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.39	Split peak
EtFOSAA	2991-50-6		8.53	Split peak
MeFOSA	31506-32-8		11.15	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47585.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/19/2023 5:39:13 PM
 Sample Name : cc690-4
 Vial : P1-A5
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q697.batch.bin
 Sample Information : OP97749,S4Q697,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.899	216.8 -> 171.9	116314	10.00 µg/L	-0.013
M5-PFPeA	4.387	268.3 -> 223.0	57494	5.00 µg/L	0.000
M5-PFHxA	5.585	318.0 -> 273.0	40201	2.50 µg/L	-0.012
M4-PFHpA	6.543	367.1 -> 322.0	28154	2.50 µg/L	-0.012
M8-PFOA	7.224	421.1 -> 376.0	46492	2.50 µg/L	-0.012
M9-PFNA	7.771	472.1 -> 427.0	20386	1.25 µg/L	-0.012
M6-PFDA	8.279	519.1 -> 474.1	15274	1.25 µg/L	-0.012
M7-PFUnDA	8.748	570.0 -> 525.1	18714	1.25 µg/L	-0.012
M2-PFDoDA	9.181	615.1 -> 570.0	19559	1.25 µg/L	-0.012
M2-PFTeDA	9.950	715.2 -> 670.0	13494	1.25 µg/L	-0.012
M8-FOSA	9.896	506.1 -> 77.8	13125	2.50 µg/L	-0.012
M3-PFBS	5.454	302.1 -> 79.9	9645	2.50 µg/L	-0.025
M3-PFHxS	7.304	402.1 -> 79.9	7244	2.50 µg/L	-0.012
M8-PFOS	8.417	507.1 -> 79.9	8572	2.50 µg/L	-0.013
M2-4:2FTS	5.259	329.1 -> 80.9	585	5.00 µg/L	-0.025
M2-6:2FTS	6.986	429.1 -> 80.9	1169	5.00 µg/L	-0.012
M2-8:2FTS	8.066	529.1 -> 80.9	1798	5.00 µg/L	-0.012
M3-MeFOSAA	8.337	573.2 -> 419.0	16451	5.00 µg/L	-0.025
M3-HFPO-DA	5.953	286.9 -> 168.9	37996	10.00 µg/L	-0.012
M5-EtFOSAA	8.546	589.2 -> 419.0	14168	5.00 µg/L	-0.025
M7-MeFOSE	11.059	623.2 -> 58.9	64371	25.00 µg/L	0.000
M9-EtFOSE	11.344	639.2 -> 58.9	85910	25.00 µg/L	0.000
M5-EtFOSA	11.423	531.1 -> 219.0	10454	2.50 µg/L	0.000
M3-MeFOSA	11.164	515.0 -> 219.0	9205	2.50 µg/L	0.000
13C4-PFOS	8.418	502.8 -> 79.9	9635	2.50 µg/L	-0.013
13C3-PFBA	2.903	216.0 -> 172.0	62151	5.00 µg/L	-0.012
18O2-PFHxS	7.303	403.0 -> 83.9	4723	2.50 µg/L	-0.012
13C4-PFOA	7.224	417.1 -> 372.0	54579	2.50 µg/L	-0.012
13C2-PFDA	8.280	515.1 -> 470.1	16747	1.25 µg/L	-0.012
13C5-PFNA	7.772	468.0 -> 423.0	24704	1.25 µg/L	-0.012
13C2-PFHxA	5.586	315.1 -> 270.0	38259	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.259	329.1 -> 80.9	585	5.52 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.3%		
13C2-6:2FTS	6.986	429.1 -> 80.9	1169	5.03 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C2-8:2FTS	8.066	529.1 -> 80.9	1798	4.75 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.1%		
13C2-PFDoDA	9.181	615.1 -> 570.0	19559	1.26 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C2-PFTeDA	9.950	715.2 -> 670.0	13494	1.20 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.1%		
13C3-PFBS	5.454	302.1 -> 79.9	9645	2.67 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.7%		
13C3-PFHxS	7.304	402.1 -> 79.9	7244	2.73 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.4%	
13C4-PFBA	2.899	216.8 -> 171.9	116314	9.90 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C4-PFHpA	6.543	367.1 -> 322.0	28154	2.40 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C5-PFHxA	5.585	318.0 -> 273.0	40201	2.46 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C5-PFPeA	4.387	268.3 -> 223.0	57494	5.44 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.9%	
13C6-PFDA	8.279	519.1 -> 474.1	15274	1.32 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.4%	
13C7-PFUnDA	8.748	570.0 -> 525.1	18714	1.27 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C8-FOSA	9.896	506.1 -> 77.8	13125	2.63 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.3%	
13C8-PFOA	7.224	421.1 -> 376.0	46492	2.62 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.7%	
13C8-PFOS	8.417	507.1 -> 79.9	8572	2.56 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C9-PFNA	7.771	472.1 -> 427.0	20386	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.7%	
d3-MeFOSAA	8.337	573.2 -> 419.0	16451	5.19 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C3-HFPO-DA	5.953	286.9 -> 168.9	37996	9.32 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 93.2%	
d3-MeFOSA	11.164	515.0 -> 219.0	9205	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
d5-EtFOSAA	8.546	589.2 -> 419.0	14168	5.07 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.4%	
d7-MeFOSE	11.059	623.2 -> 58.9	64371	25.04 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
d9-EtFOSE	11.344	639.2 -> 58.9	85910	25.10 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
d5-EtFOSA	11.423	531.1 -> 219.0	10454	2.65 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.0%	
Target Compounds					QValue
4:2FTS	5.272	327.1 -> 307.0	8987	8.66 µg/L	98
		327.1 -> 80.9	4144		
6:2FTS	6.987	427.1 -> 407.0	12601	9.33 µg/L	99
		427.1 -> 80.9	4894		
8:2FTS	8.066	527.1 -> 507.0	10368	10.08 µg/L	99
		527.1 -> 80.8	4302		
EtFOSAA	8.559	584.2 -> 419.1	5871	2.57 µg/L	m 94
		584.2 -> 526.0	2745		
FOSA	9.899	498.1 -> 77.9	14336	2.47 µg/L	99
		498.1 -> 478.0	381		
MeFOSAA	8.338	570.1 -> 419.0	7413	2.53 µg/L	m 91
		570.1 -> 483.0	1422		
PFBA	2.907	212.8 -> 168.9	36050	10.30 µg/L	100
PFBS	5.467	298.7 -> 79.9	8910	2.22 µg/L	97
		298.7 -> 98.8	3427		
PFDA	8.280	512.9 -> 469.0	39007	2.46 µg/L	98
		512.9 -> 219.0	7432		
PFDODA	9.182	613.1 -> 569.0	42519	2.70 µg/L	95
		613.1 -> 319.0	7157		
PFDS	9.333	599.0 -> 79.9	6406	2.64 µg/L	100

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.543	599.0 -> 98.8	3146	2.51	µg/L	98
		363.1 -> 319.0	43418			
PFHpS	7.899	363.1 -> 169.0	8133	2.45	µg/L	95
		449.0 -> 79.9	8400			
PFHxA	5.588	449.0 -> 98.9	4175	2.58	µg/L	100
		313.0 -> 269.0	40526			
PFHxS	7.305	313.0 -> 118.9	1164	2.06	µg/L	96
		398.7 -> 79.9	6639			
PFNA	7.772	398.7 -> 98.9	3587	2.63	µg/L	100
		463.0 -> 419.0	39521			
PFNS	8.899	463.0 -> 219.0	8778	2.40	µg/L	95
		548.8 -> 79.9	6113			
PFOA	7.225	548.8 -> 98.9	3343	2.54	µg/L	98
		413.0 -> 369.0	66845			
PFOS	8.406	413.0 -> 169.0	13201	2.21	µg/L	85
		498.9 -> 79.9	10070			
PFPeA	4.389	498.9 -> 98.8	5402	4.86	µg/L	100
		263.0 -> 219.0	78796			
PFPeS	6.557	349.1 -> 79.9	5919	2.22	µg/L	95
		349.1 -> 98.9	2639			
PFTeDA	9.950	713.1 -> 669.0	33632	2.49	µg/L	99
		713.1 -> 168.9	3361			
PFTrDA	9.578	663.0 -> 619.0	43997	2.53	µg/L	96
		663.0 -> 168.9	5098			
PFUnDA	8.736	563.1 -> 519.0	38833	2.62	µg/L	99
		563.1 -> 269.1	7715			
11Cl-PF3OUdS	9.618	630.9 -> 450.9	50516	4.98	µg/L	100
		632.9 -> 452.9	15769			
9Cl-PF3ONS	8.762	530.8 -> 351.0	70872	5.21	µg/L	97
		532.8 -> 353.0	22289			
ADONA	6.806	376.9 -> 250.9	136329	4.79	µg/L	100
		376.9 -> 84.8	35503			
HFPO-DA	5.954	284.9 -> 168.9	20594	5.25	µg/L	98
		284.9 -> 184.9	2398			
3:3FTCA	3.861	241.0 -> 177.0	10069	12.51	µg/L	99
		241.0 -> 117.0	950			
5:3FTCA	6.281	341.0 -> 237.1	161266	61.67	µg/L	100
		341.0 -> 217.0	113093			
7:3FTCA	7.762	441.0 -> 316.9	90489	62.70	µg/L	99
		441.0 -> 336.9	214231			
EtFOSA	11.425	526.0 -> 219.0	24154	4.48	µg/L	97
		526.0 -> 169.0	32762			
EtFOSE	11.357	630.0 -> 58.9	48124	11.55	µg/L	100
		511.9 -> 219.0	18371			
MeFOSA	11.166	511.9 -> 169.0	26825	4.78	µg/L	68
		616.1 -> 58.9	37276			
MeFOSE	11.073	699.1 -> 79.9	4960	13.11	µg/L	100
		699.1 -> 98.8	2705			
PFDoDS	10.090	295.0 -> 201.0	5224	2.49	µg/L	98
		295.0 -> 84.9	1286			
NFDHA	5.456	279.0 -> 85.1	41250	5.66	µg/L	99
		229.0 -> 84.9	39936			
PFMBA	4.797	314.8 -> 134.9	55231	4.73	µg/L	100
		314.8 -> 82.9	1844			
PFMPA	3.515			4.82	µg/L	100
PFEESA	6.010			4.65	µg/L	100

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



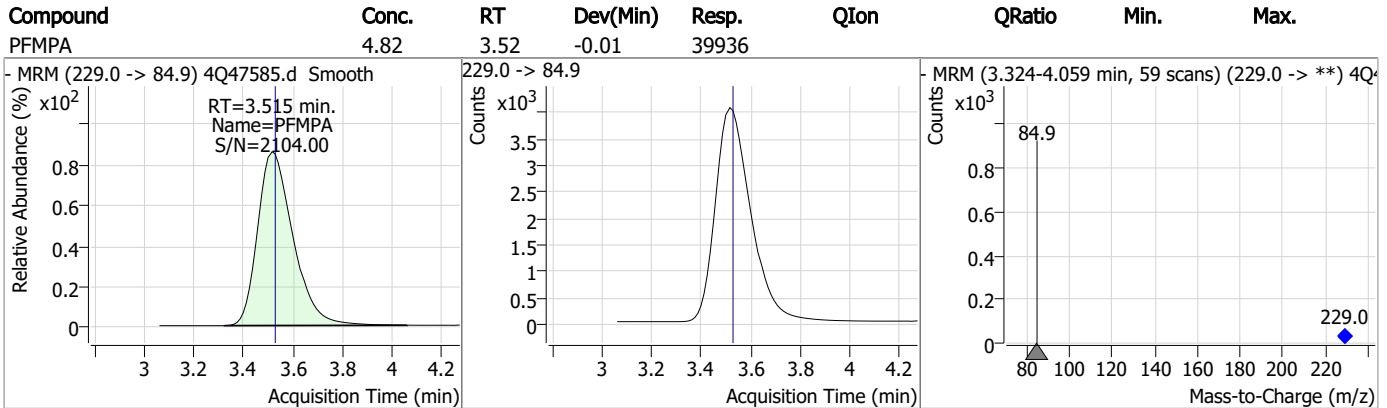
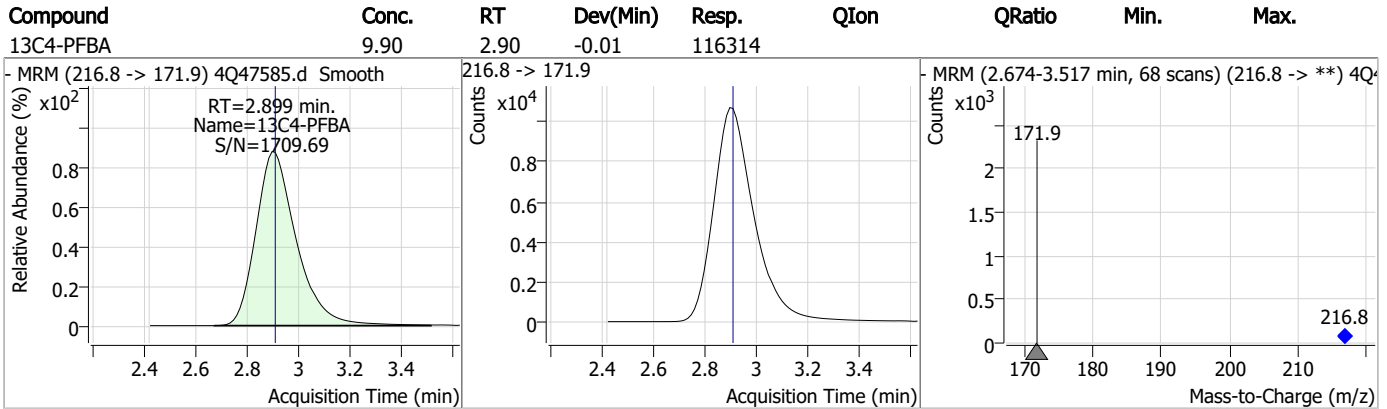
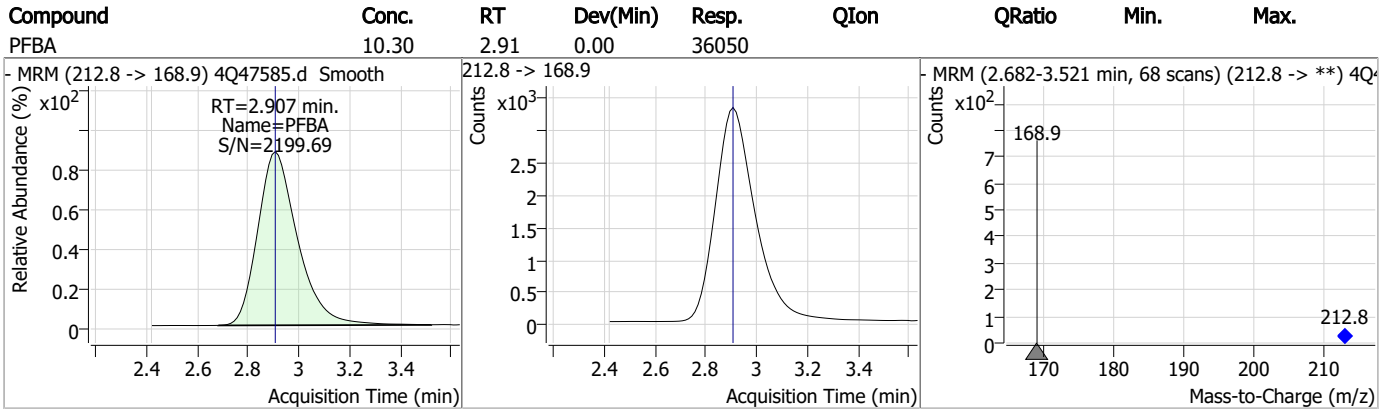
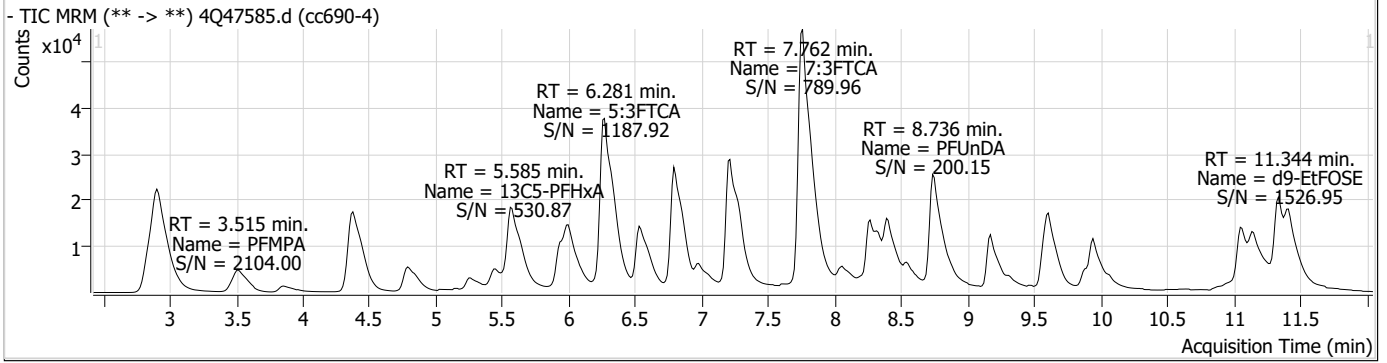
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.15

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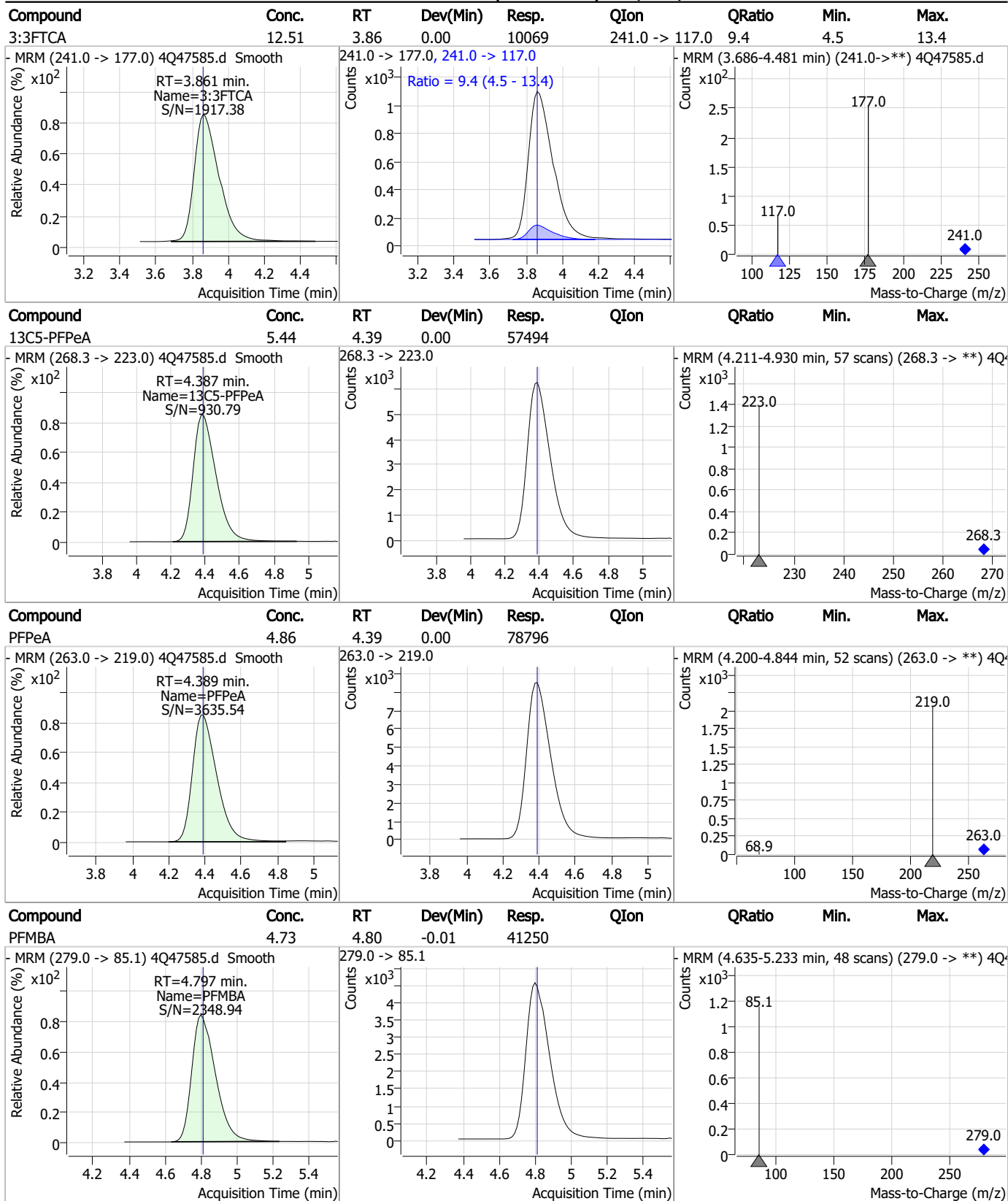
Perfluorinated Compounds by LC/MS/MS



7.7.15

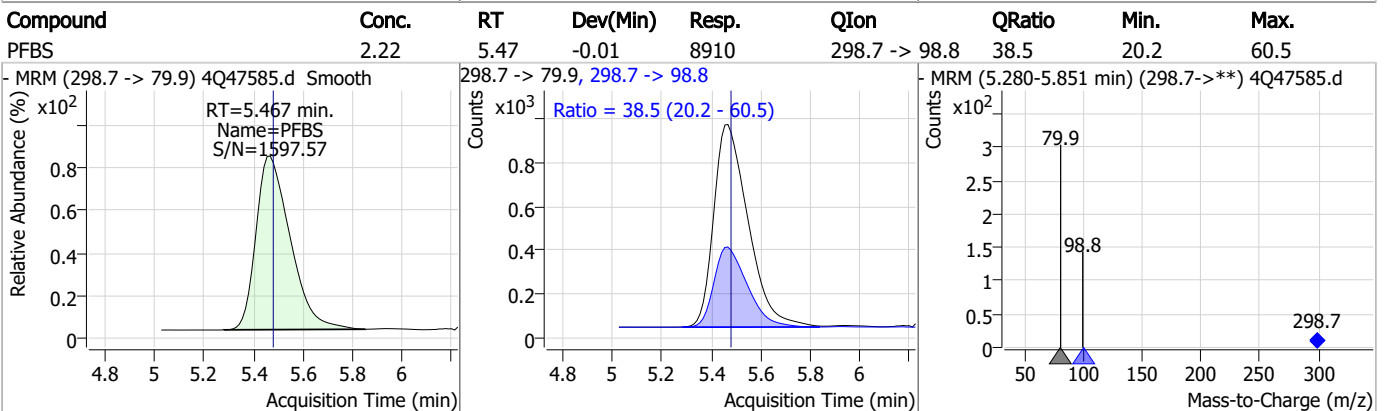
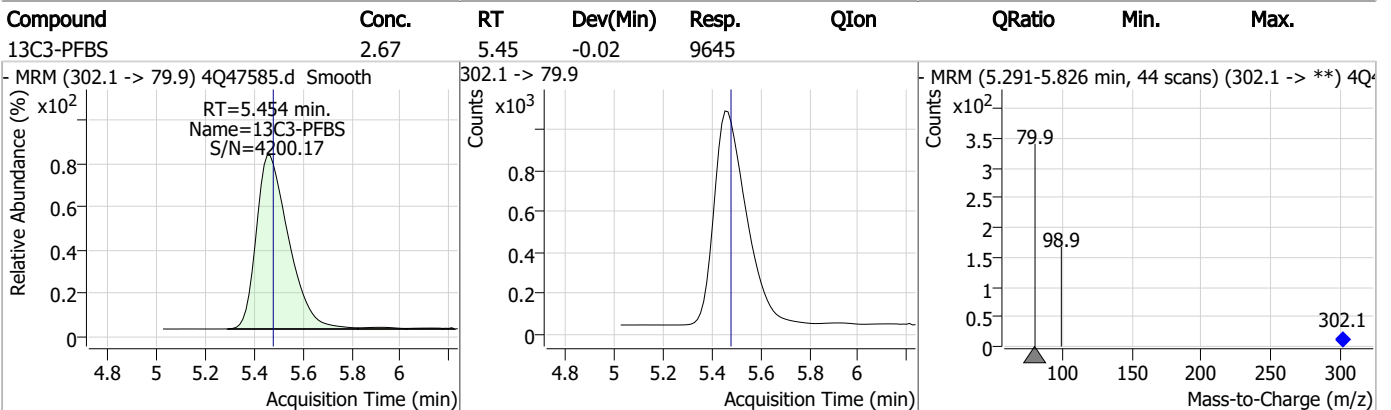
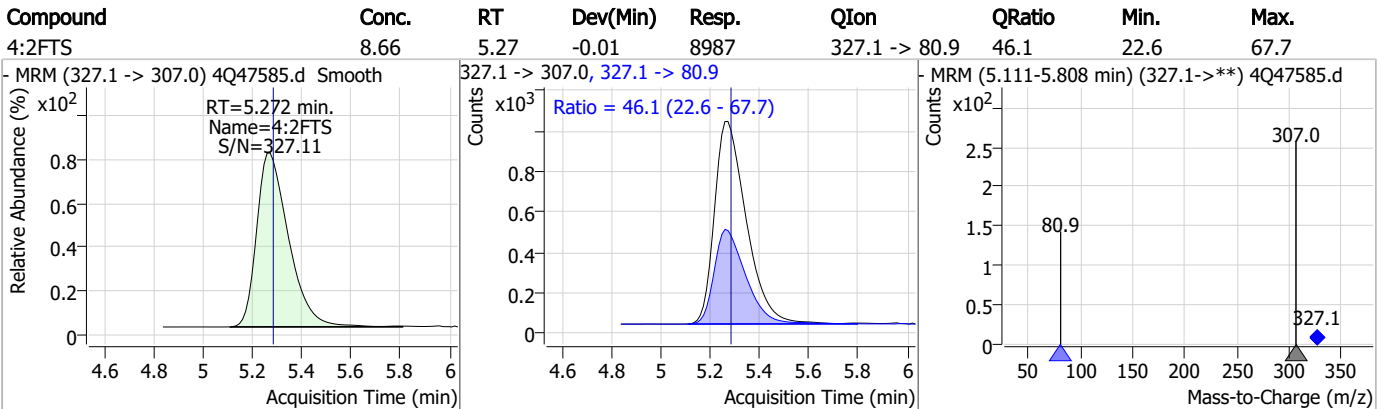
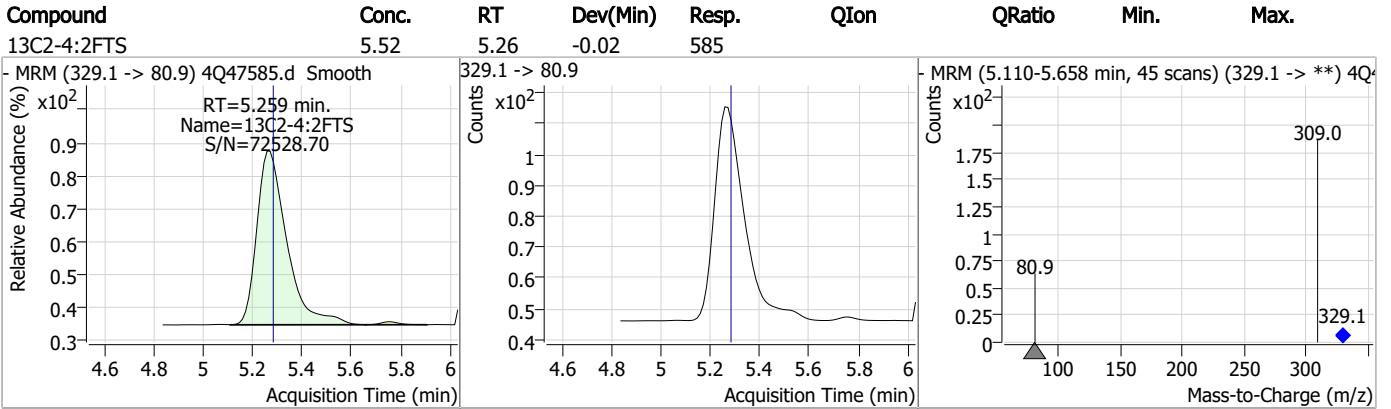
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Perfluorinated Compounds by LC/MS/MS



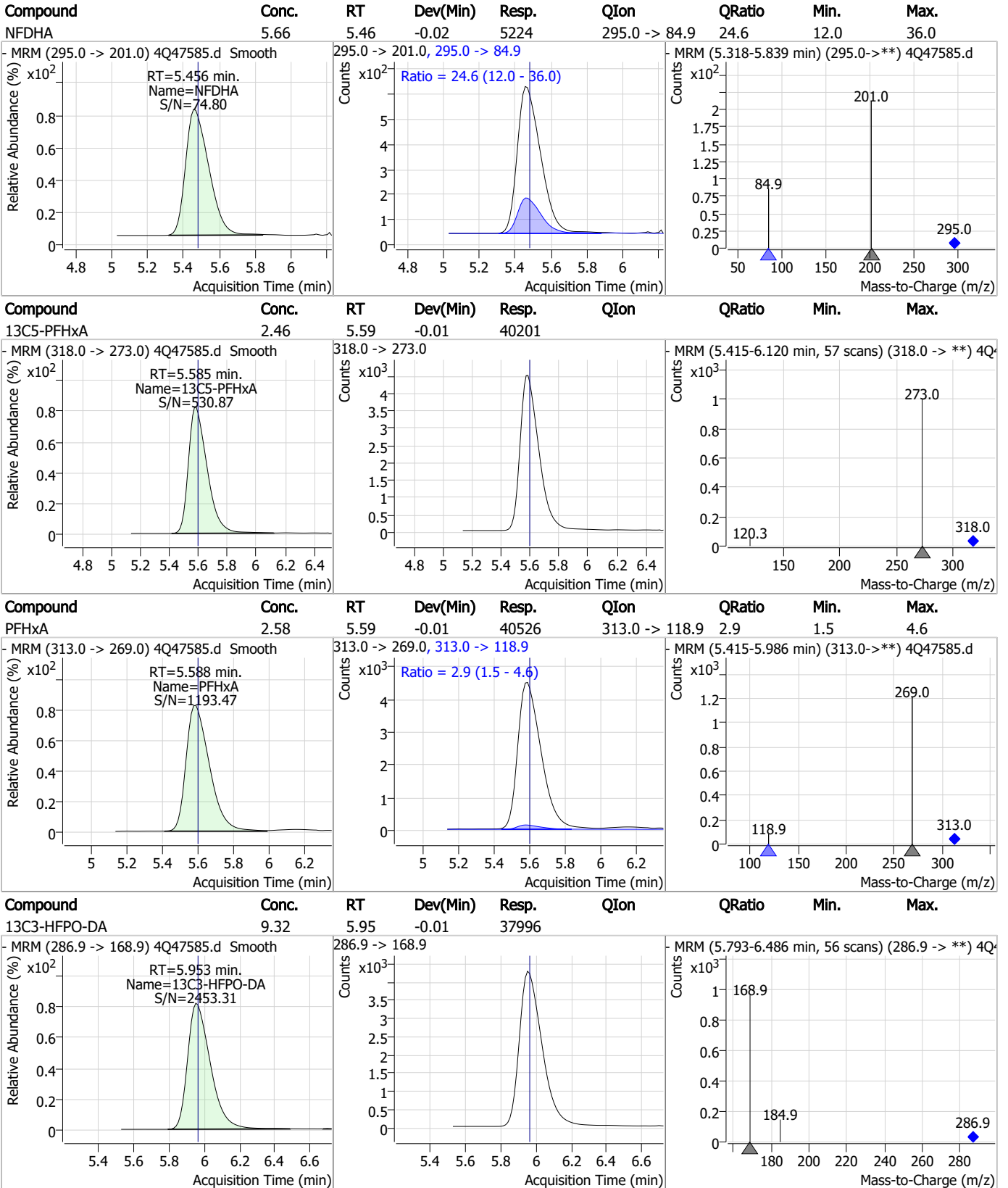
7.7.15
7

Perfluorinated Compounds by LC/MS/MS



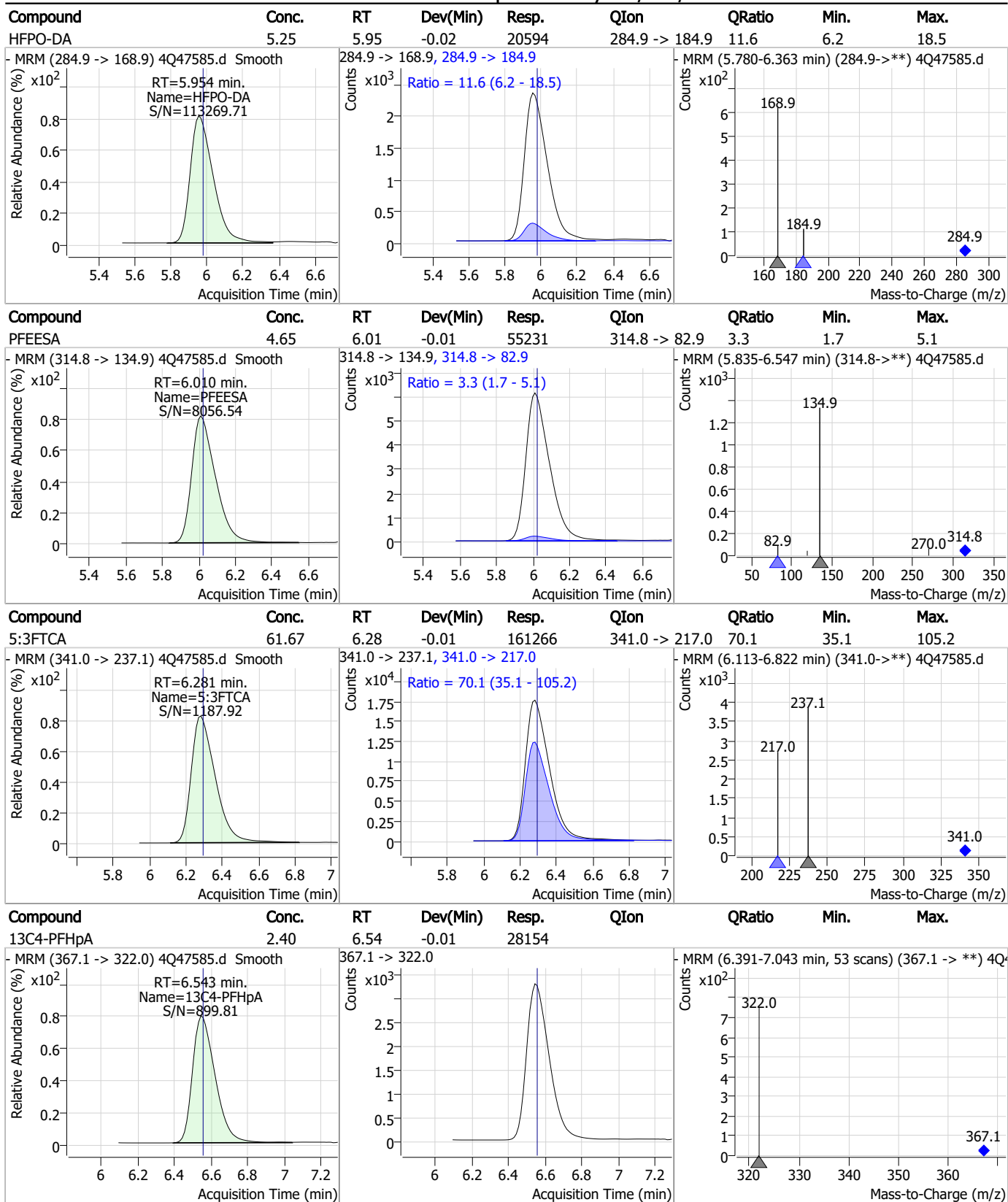
7.7.15 7

Perfluorinated Compounds by LC/MS/MS



7.7.15 7

Perfluorinated Compounds by LC/MS/MS

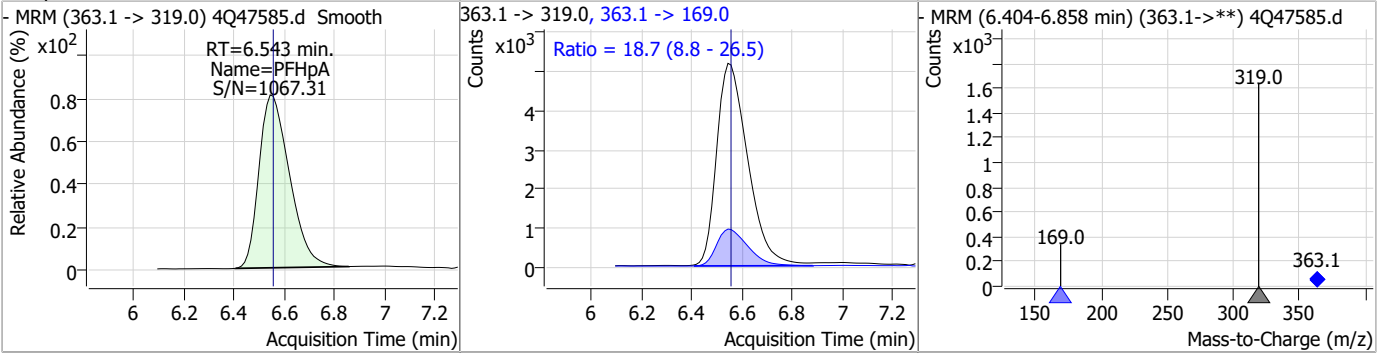


7.7.15
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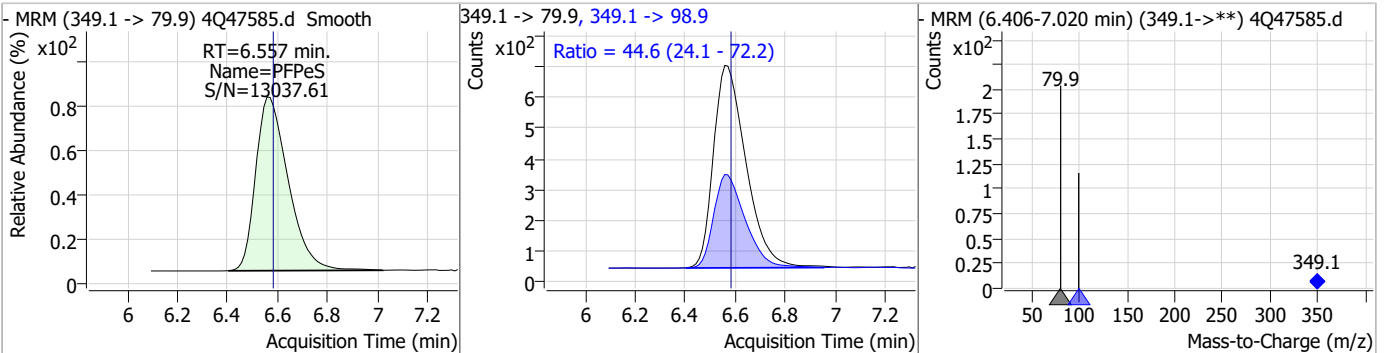


Perfluorinated Compounds by LC/MS/MS

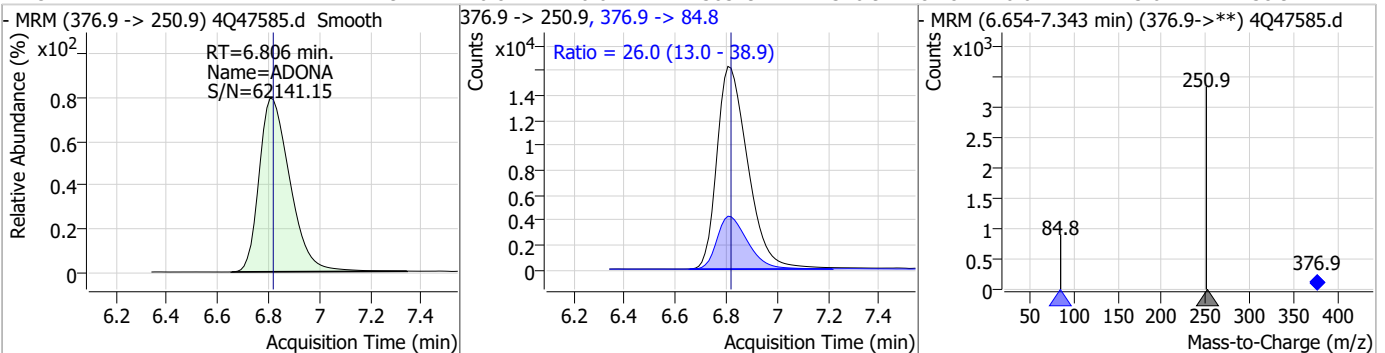
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	2.51	6.54	-0.01	43418	363.1 -> 169.0	18.7	8.8	26.5



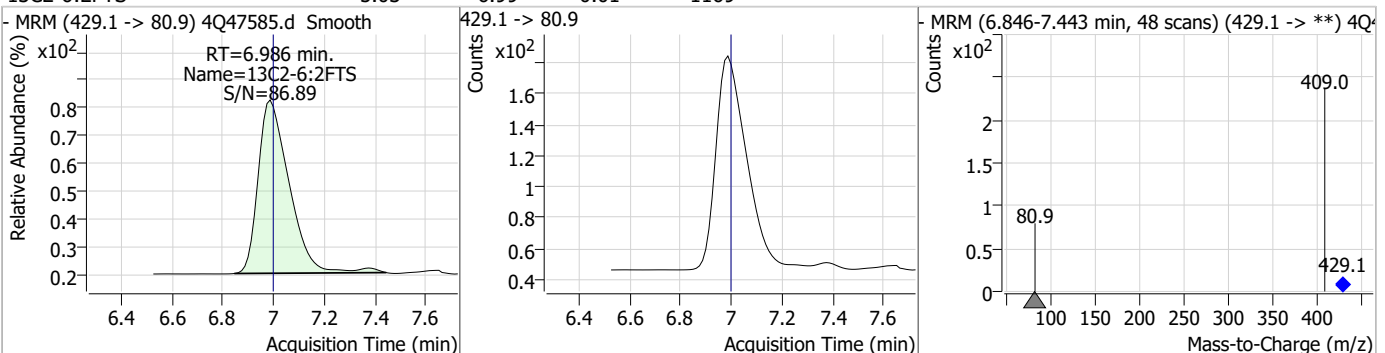
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.22	6.56	-0.02	5919	349.1 -> 98.9	44.6	24.1	72.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	4.79	6.81	-0.01	136329	376.9 -> 84.8	26.0	13.0	38.9

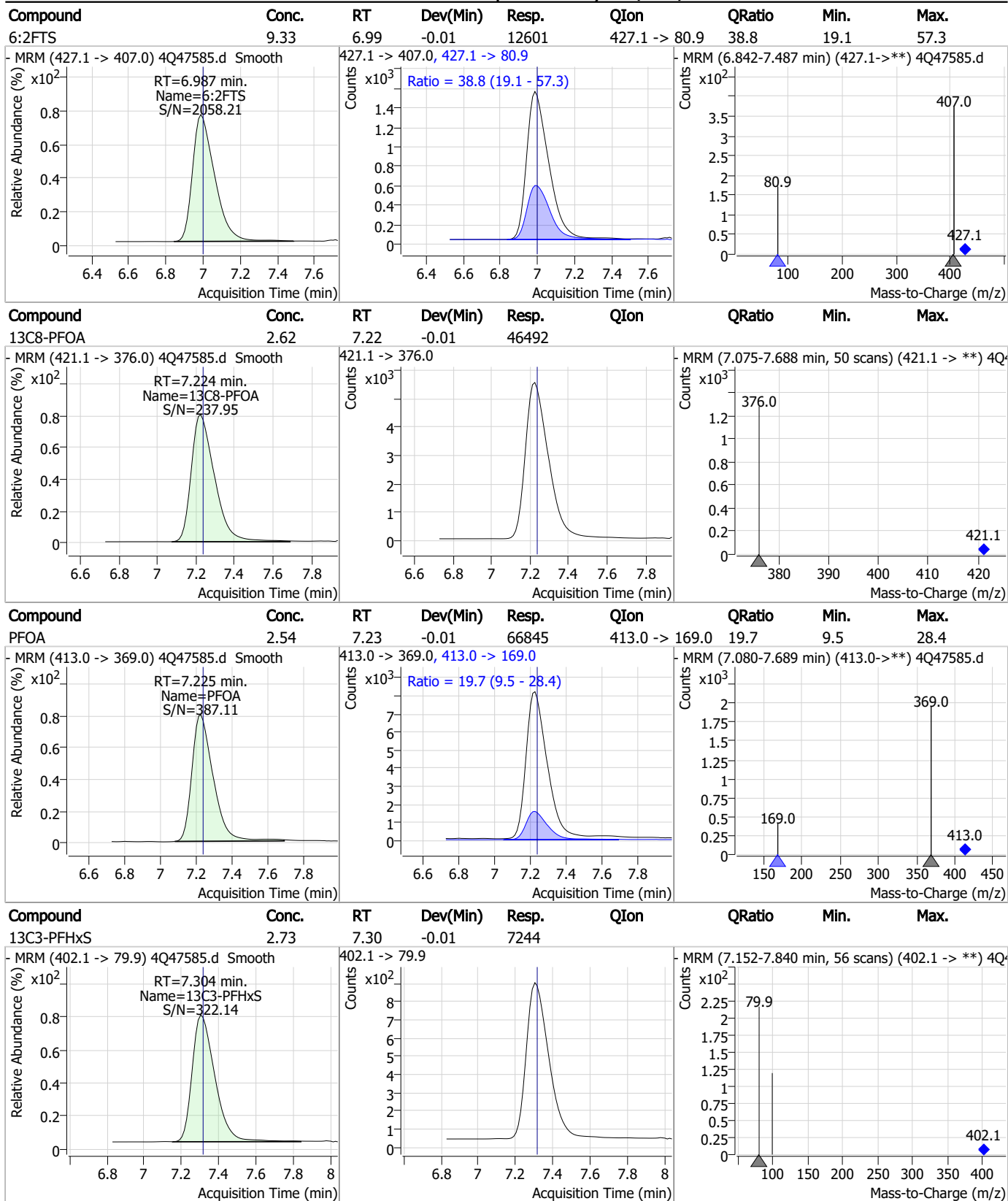


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	5.03	6.99	-0.01	1169	429.1 -> 80.9			



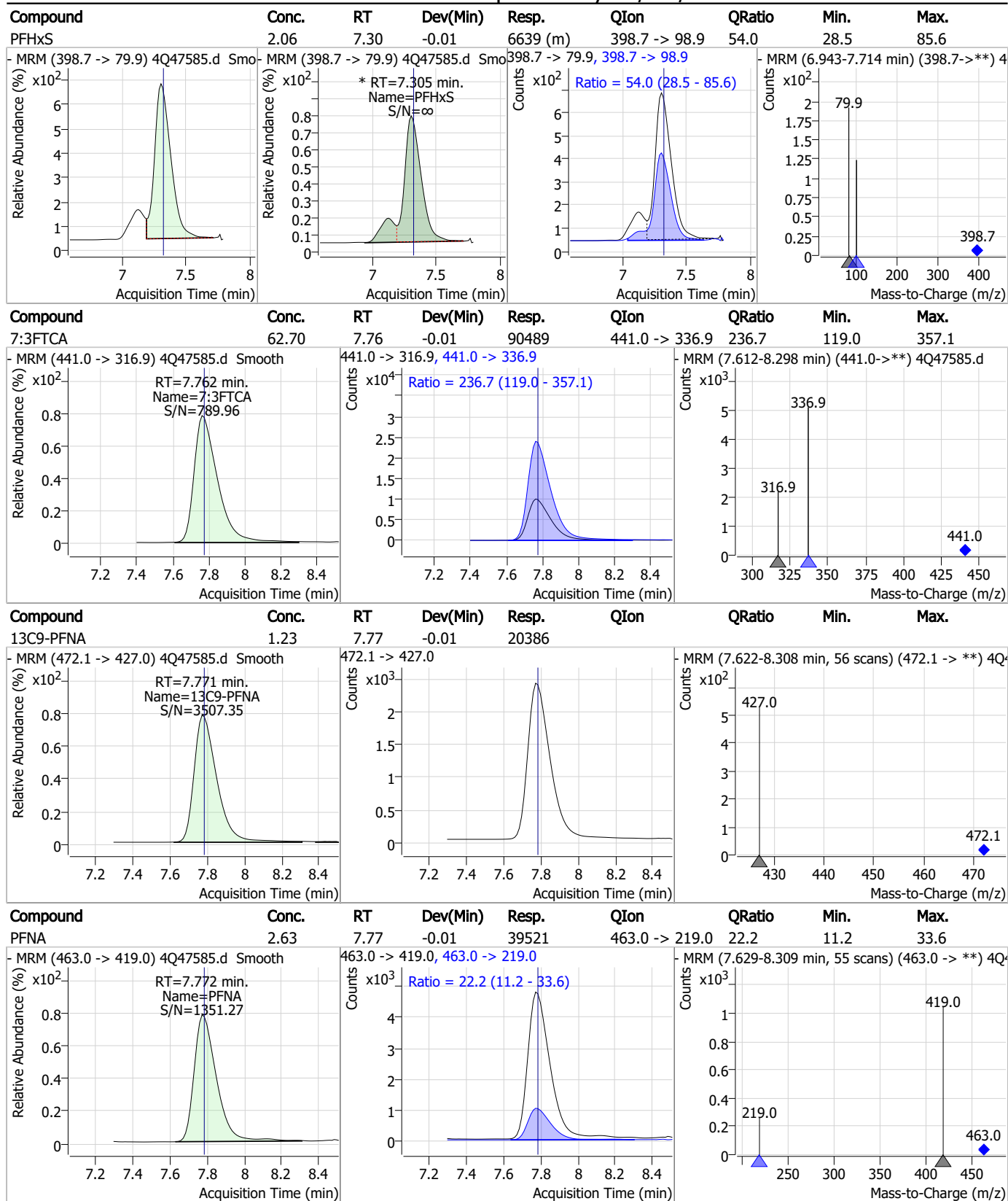
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Perfluorinated Compounds by LC/MS/MS



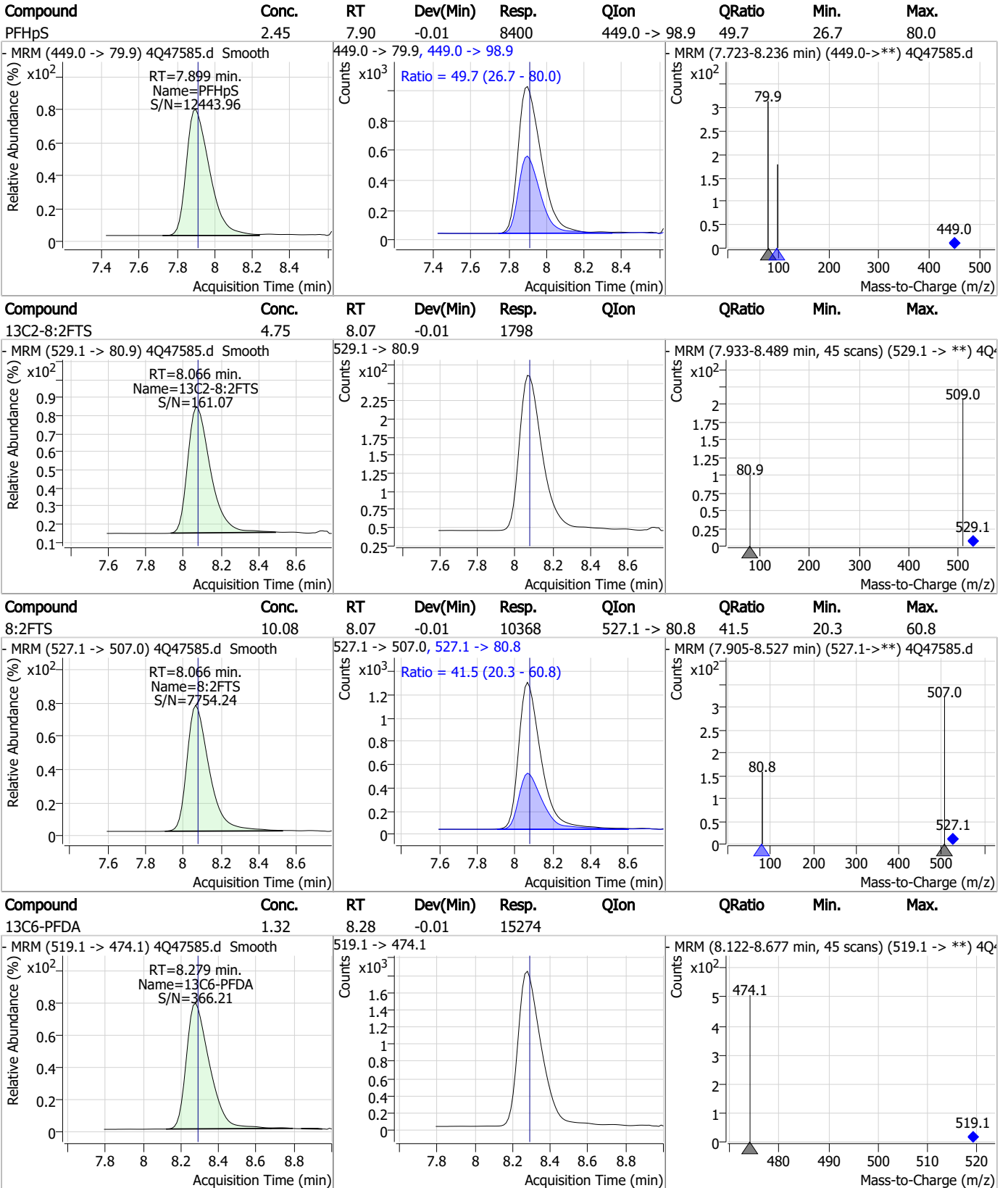
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Perfluorinated Compounds by LC/MS/MS



7.7.15

Perfluorinated Compounds by LC/MS/MS

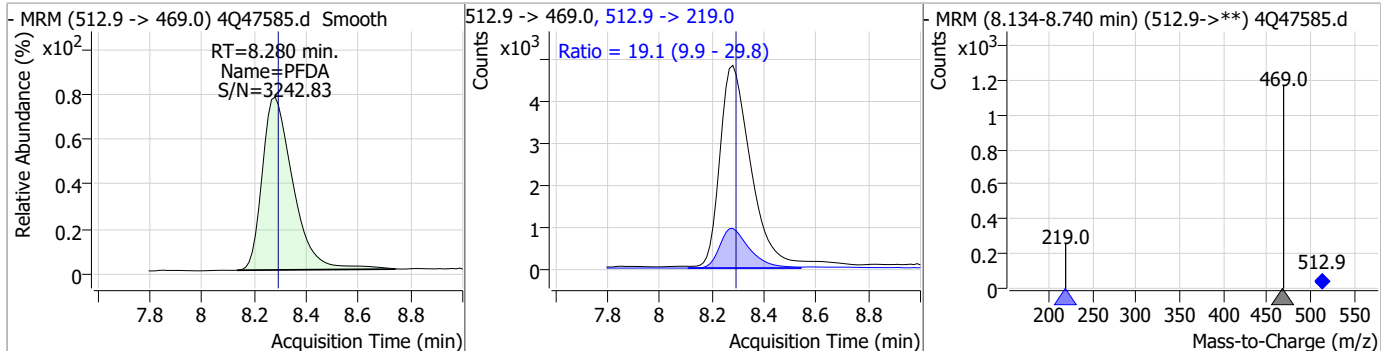


7.7.15 7

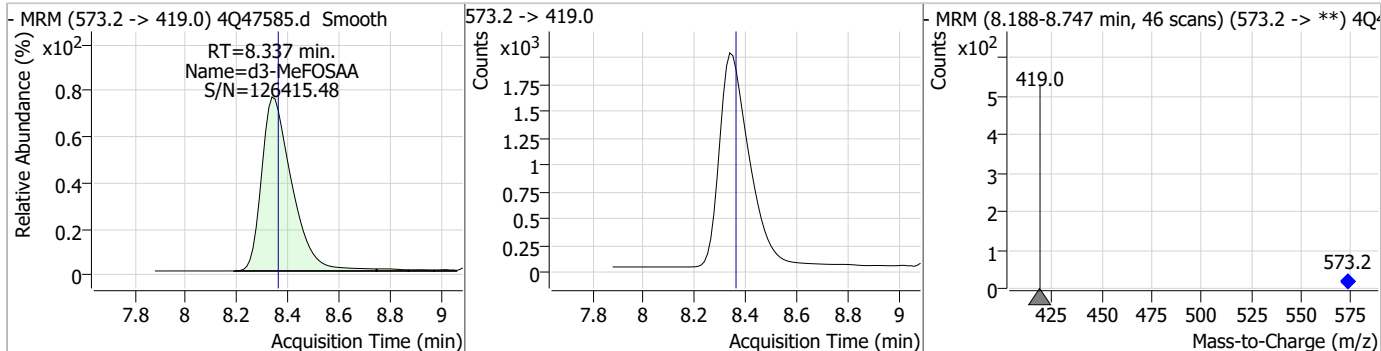


Perfluorinated Compounds by LC/MS/MS

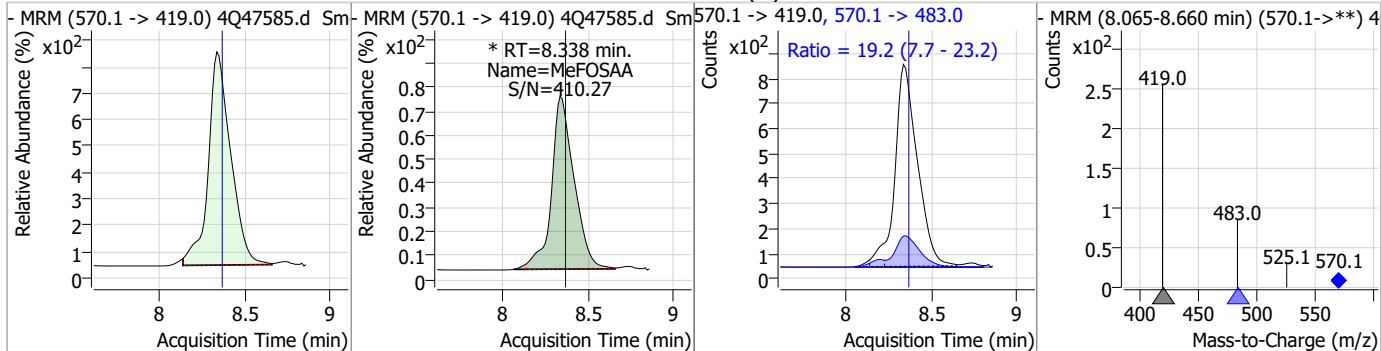
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.46	8.28	-0.01	39007	512.9 -> 219.0	19.1	9.9	29.8



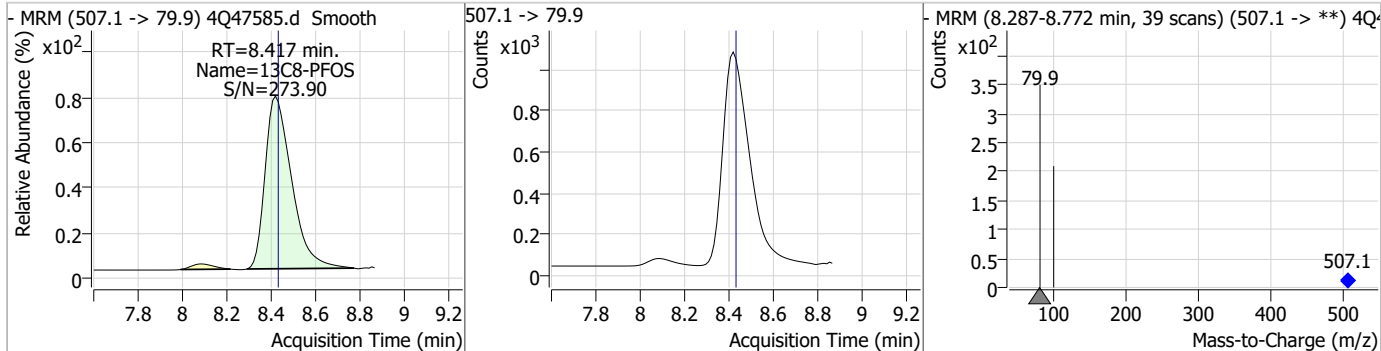
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.19	8.34	-0.02	16451	573.2 -> 419.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.53	8.34	-0.02	7413 (m)	570.1 -> 483.0	19.2	7.7	23.2

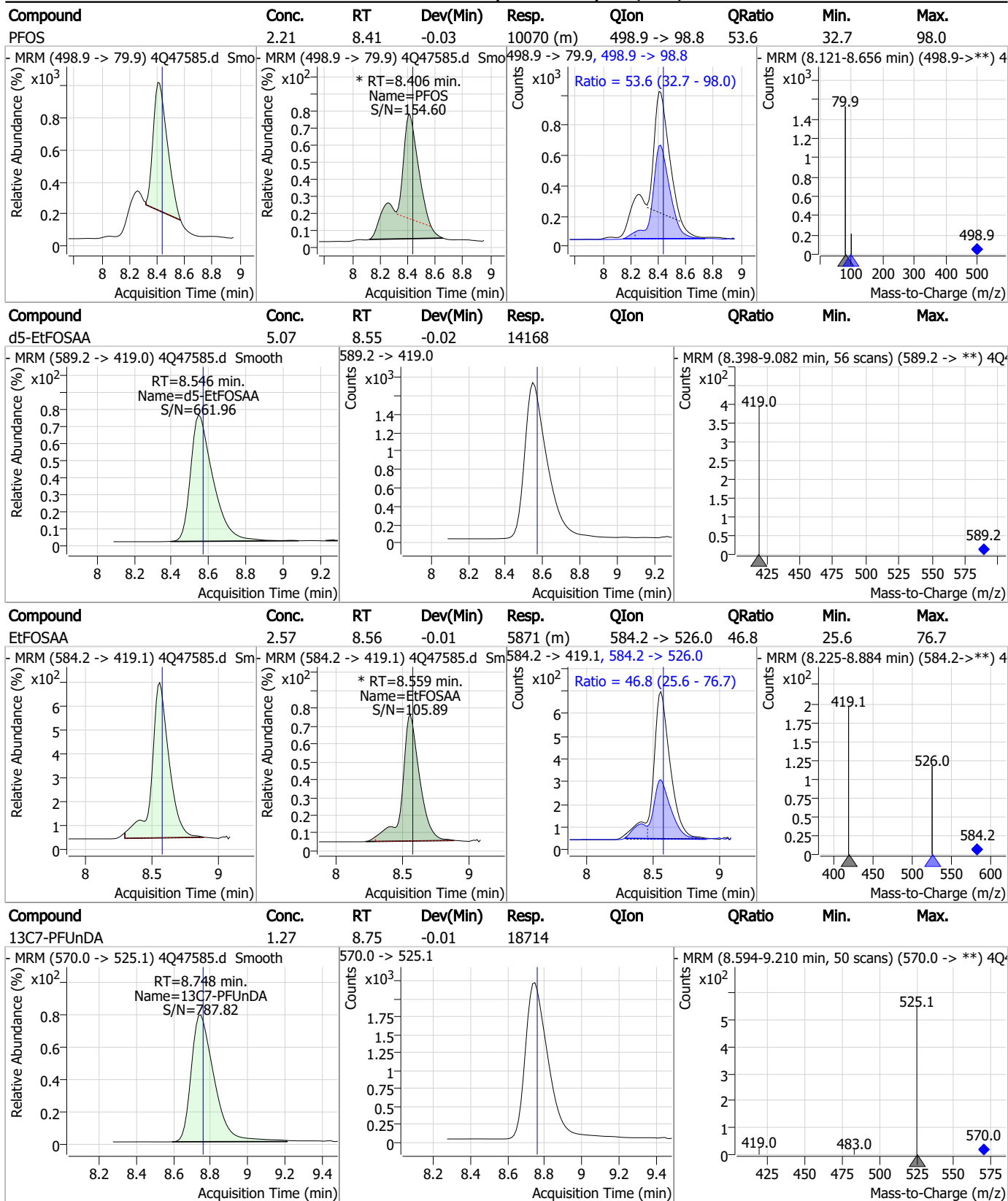


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.56	8.42	-0.01	8572	507.1 -> 79.9			



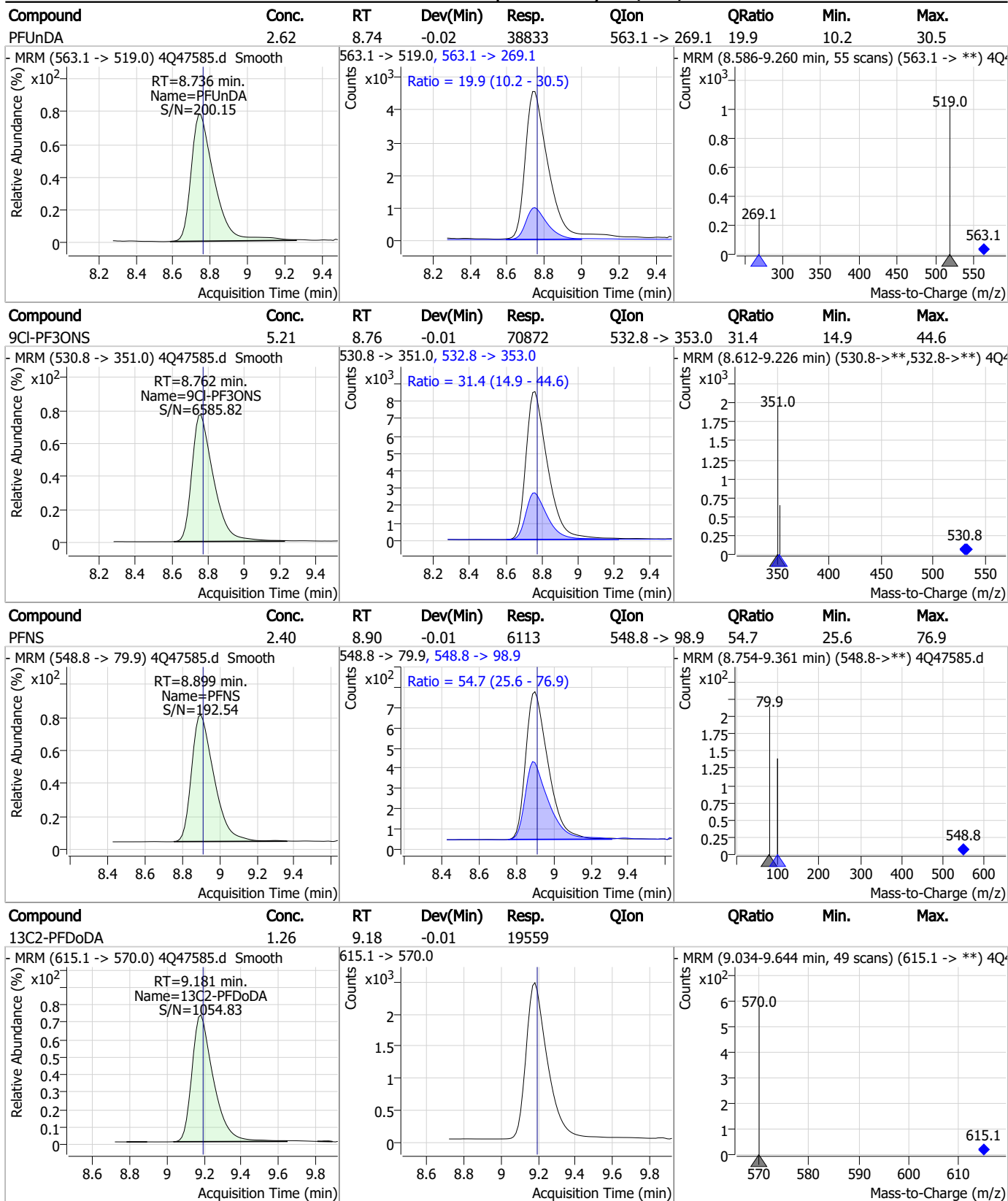
7.7.15
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Perfluorinated Compounds by LC/MS/MS



7.7.15
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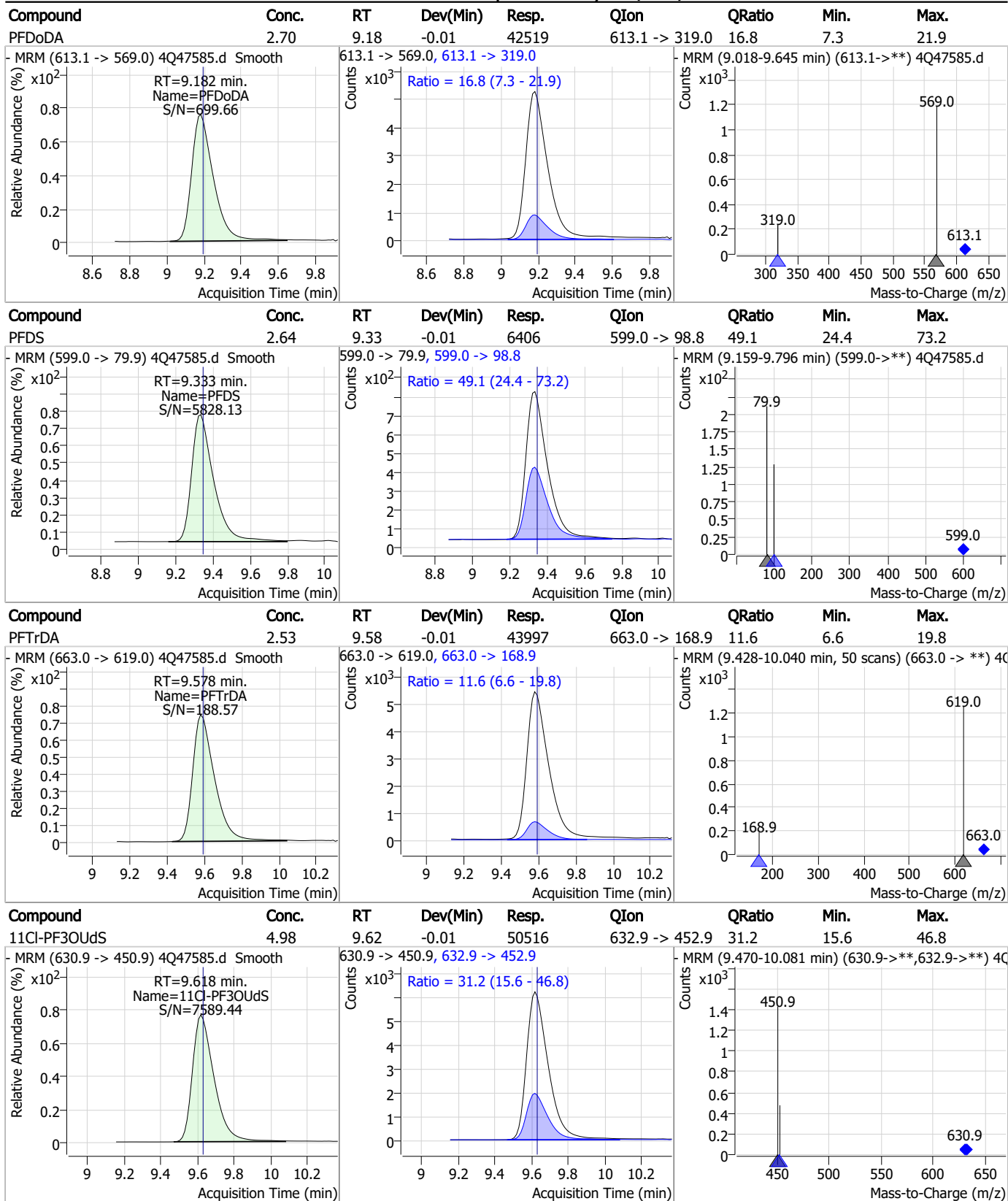
Perfluorinated Compounds by LC/MS/MS



7.7.15

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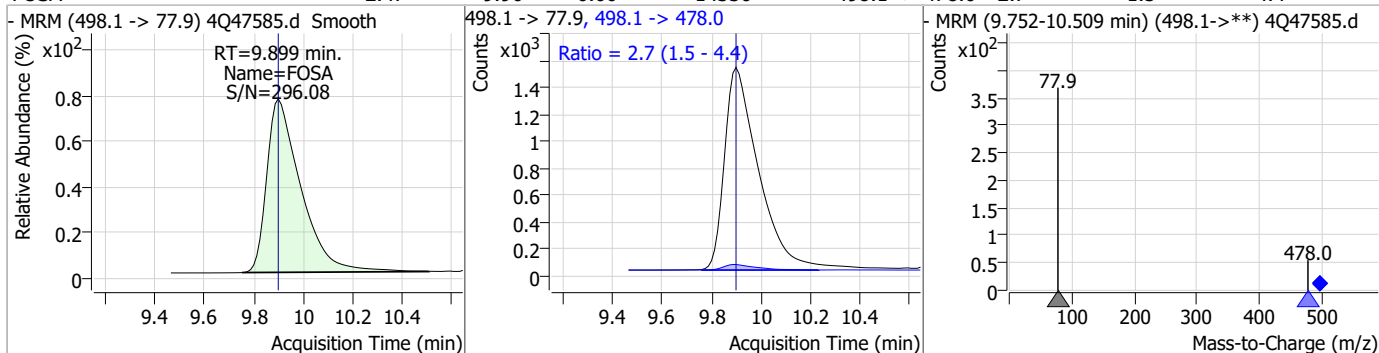
Perfluorinated Compounds by LC/MS/MS



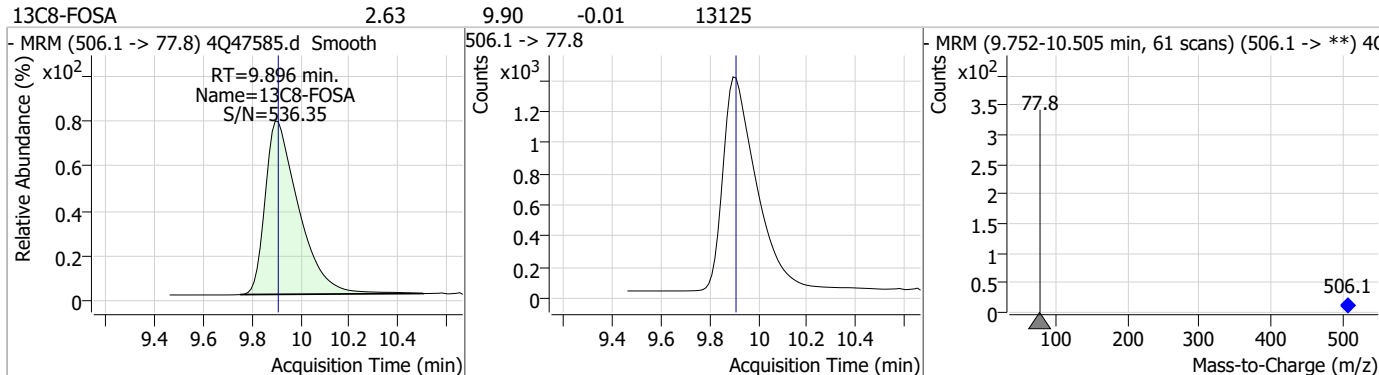
7.7.15
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Perfluorinated Compounds by LC/MS/MS

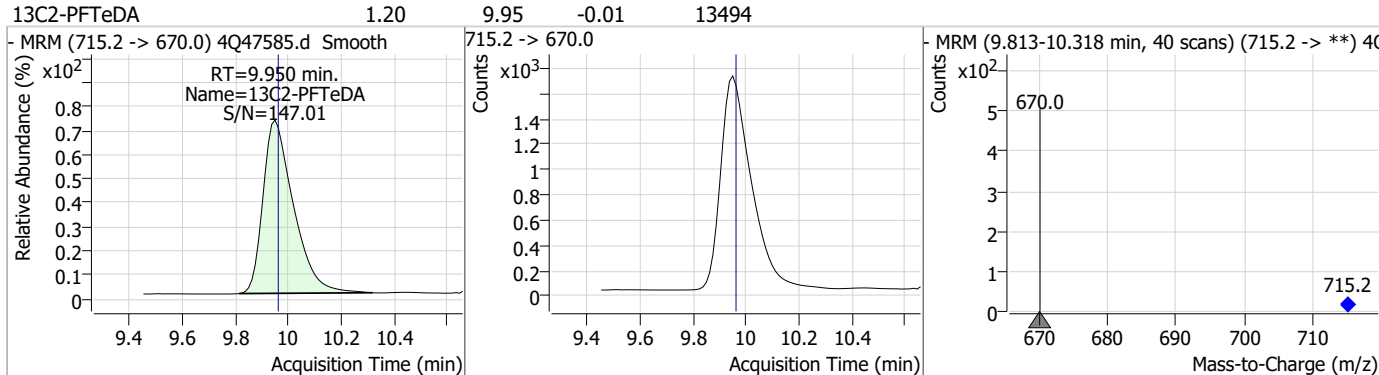
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.47	9.90	0.00	14336	498.1 -> 478.0	2.7	1.5	4.4



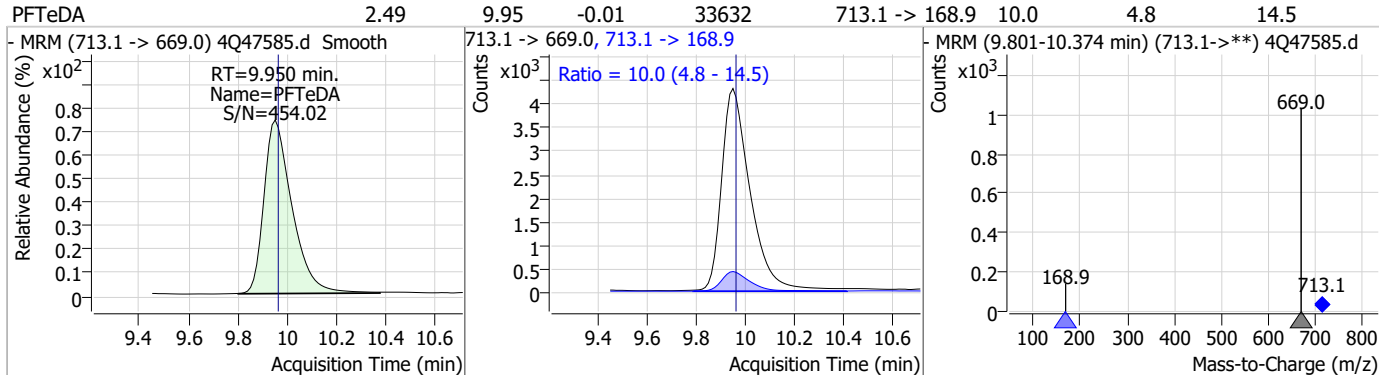
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.63	9.90	-0.01	13125				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.20	9.95	-0.01	13494				



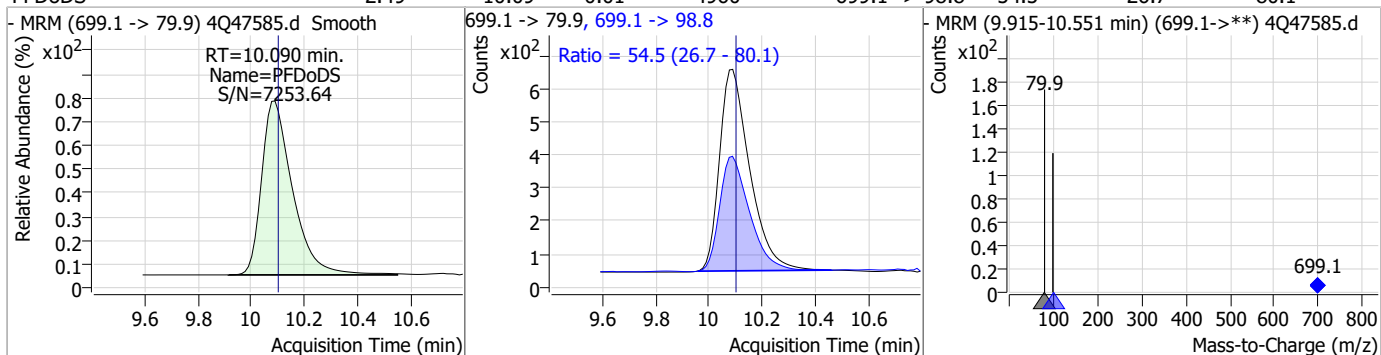
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.49	9.95	-0.01	33632	713.1 -> 168.9	10.0	4.8	14.5



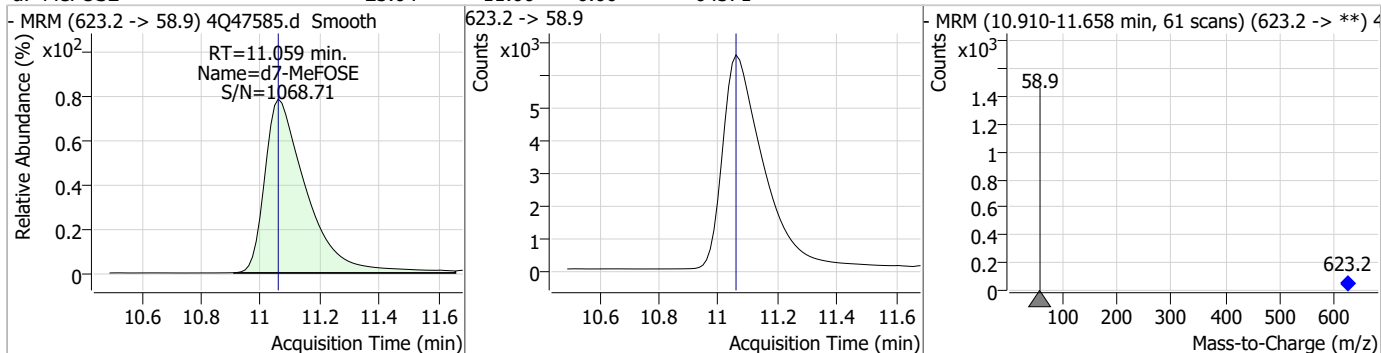
7.7.15
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Perfluorinated Compounds by LC/MS/MS

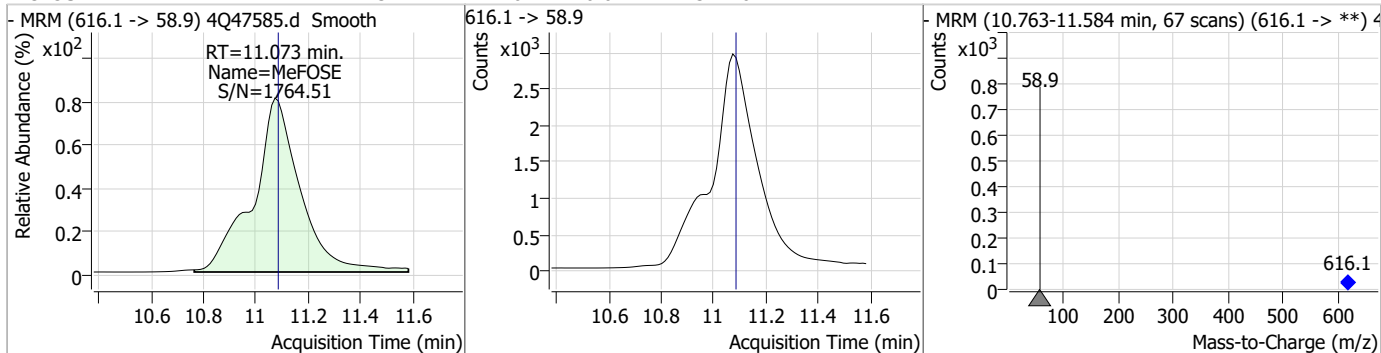
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	2.49	10.09	-0.01	4960	699.1 -> 98.8	54.5	26.7	80.1



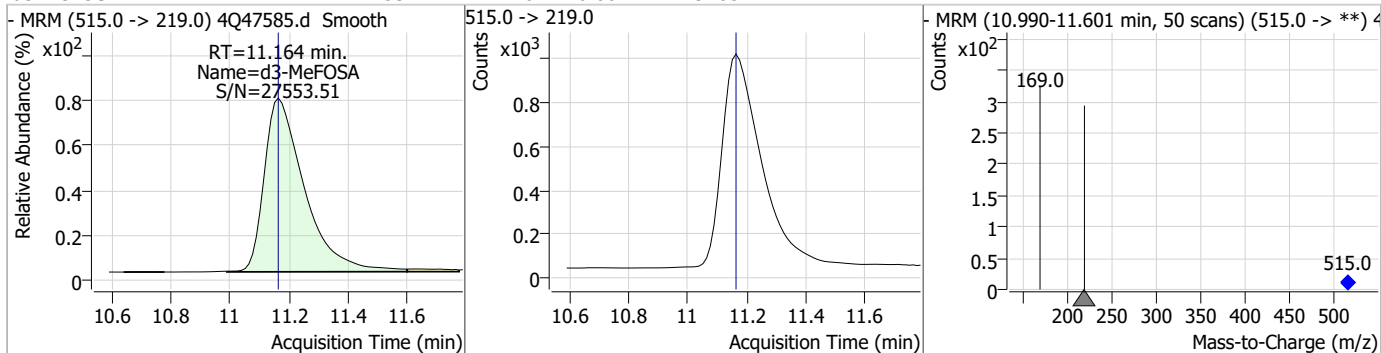
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.04	11.06	0.00	64371				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	13.11	11.07	-0.01	37276				



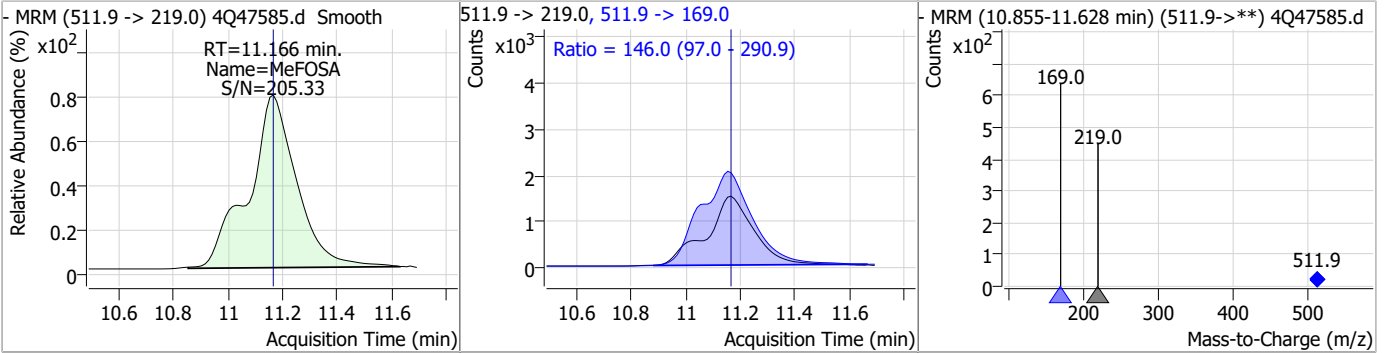
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.53	11.16	0.00	9205				



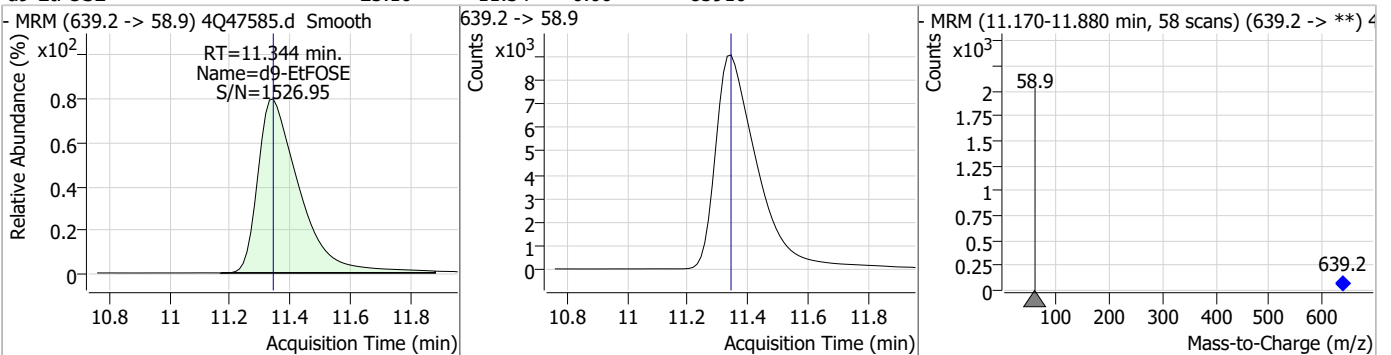
7.7.15
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Perfluorinated Compounds by LC/MS/MS

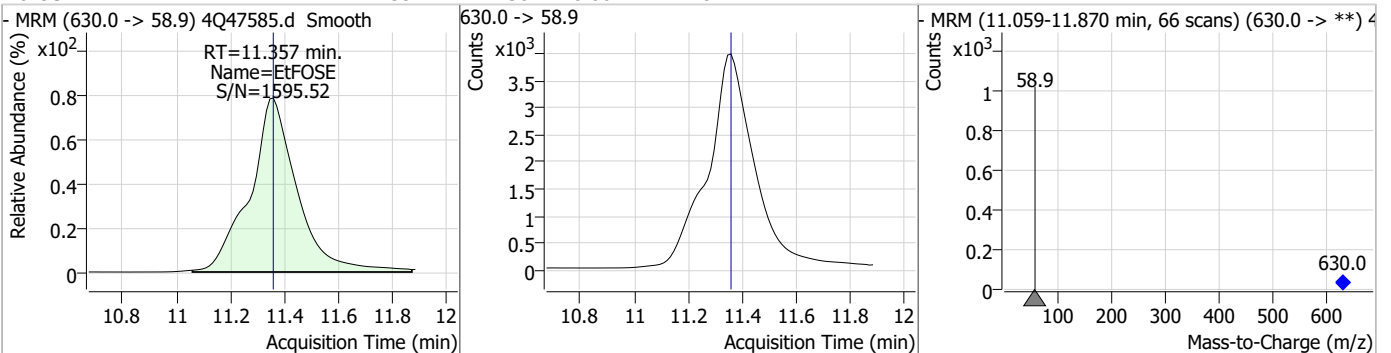
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.78	11.17	0.00	18371	511.9 -> 169.0	146.0	97.0	290.9



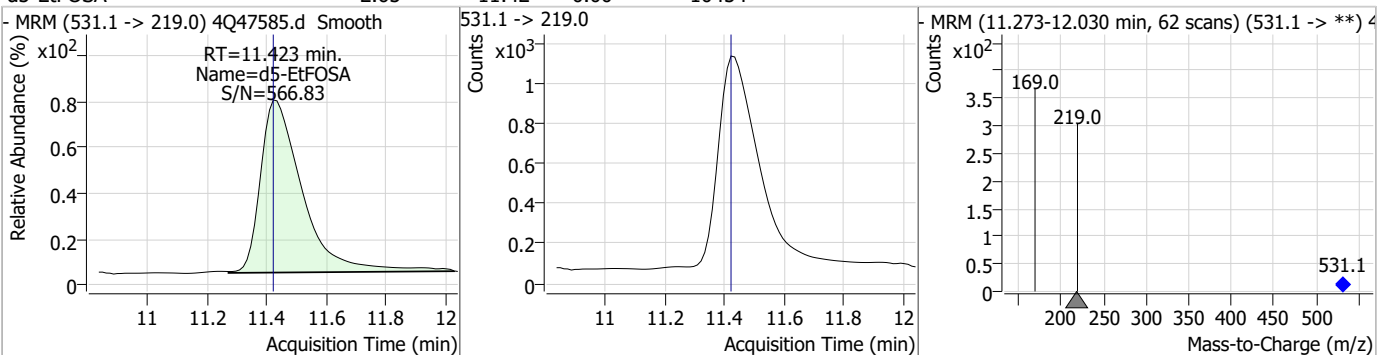
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.10	11.34	0.00	85910				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	11.55	11.36	0.00	48124				

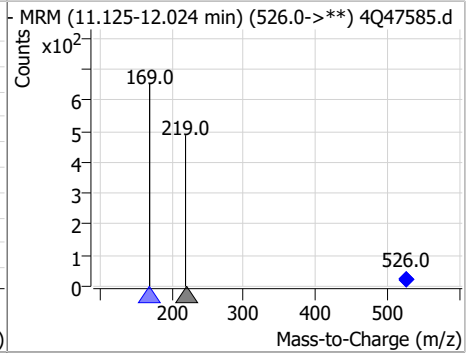
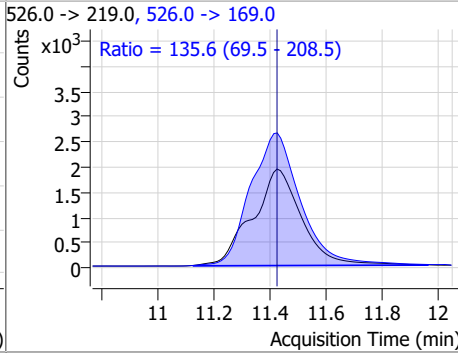
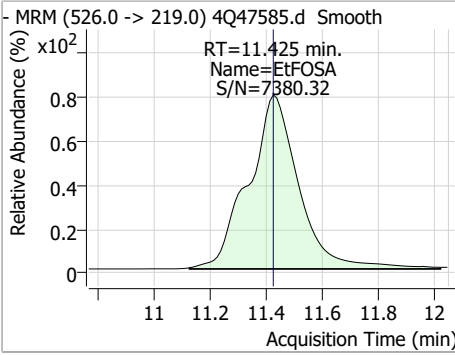


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.65	11.42	0.00	10454				



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.48	11.43	0.00	24154	526.0 -> 169.0	135.6	69.5	208.5



7.7.15
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Manual Integration Approval Summary

Sample Number: S4Q697-CC690 Method: EPA DRAFT 1633
Lab FileID: 4Q47585.D Analyst approved: 07/20/23 12:46 Anna Ludwig
Injection Time: 07/19/23 17:39 Supervisor approved: 07/20/23 15:43 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
MeFOSAA	2355-31-9		8.34	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak
EtFOSAA	2991-50-6		8.56	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47714.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/21/2023 1:52:53 AM
 Sample Name : cc690-4
 Vial : P1-A5
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q699.batch.bin
 Sample Information : OP97749,S4Q699,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.886	216.8 -> 171.9	127171	10.00 µg/L	-0.025
M5-PFPeA	4.360	268.3 -> 223.0	53101	5.00 µg/L	-0.027
M5-PFHxA	5.561	318.0 -> 273.0	42050	2.50 µg/L	-0.037
M4-PFHpA	6.530	367.1 -> 322.0	30364	2.50 µg/L	-0.025
M8-PFOA	7.211	421.1 -> 376.0	47179	2.50 µg/L	-0.025
M9-PFNA	7.771	472.1 -> 427.0	21187	1.25 µg/L	-0.012
M6-PFDA	8.266	519.1 -> 474.1	15422	1.25 µg/L	-0.026
M7-PFUnDA	8.735	570.0 -> 525.1	19355	1.25 µg/L	-0.025
M2-PFDoDA	9.169	615.1 -> 570.0	20614	1.25 µg/L	-0.025
M2-PFTeDA	9.950	715.2 -> 670.0	13764	1.25 µg/L	-0.012
M8-FOSA	9.921	506.1 -> 77.8	13996	2.50 µg/L	0.012
M3-PFBS	5.441	302.1 -> 79.9	9810	2.50 µg/L	-0.037
M3-PFHxS	7.290	402.1 -> 79.9	7377	2.50 µg/L	-0.027
M8-PFOS	8.405	507.1 -> 79.9	10147	2.50 µg/L	-0.025
M2-4:2FTS	5.259	329.1 -> 80.9	753	5.00 µg/L	-0.025
M2-6:2FTS	6.974	429.1 -> 80.9	1465	5.00 µg/L	-0.025
M2-8:2FTS	8.053	529.1 -> 80.9	2163	5.00 µg/L	-0.025
M3-MeFOSAA	8.337	573.2 -> 419.0	17851	5.00 µg/L	-0.025
M3-HFPO-DA	5.940	286.9 -> 168.9	36875	10.00 µg/L	-0.025
M5-EtFOSAA	8.546	589.2 -> 419.0	15643	5.00 µg/L	-0.025
M7-MeFOSE	11.059	623.2 -> 58.9	63489	25.00 µg/L	0.000
M9-EtFOSE	11.344	639.2 -> 58.9	96975	25.00 µg/L	0.000
M5-EtFOSA	11.423	531.1 -> 219.0	10114	2.50 µg/L	0.000
M3-MeFOSA	11.164	515.0 -> 219.0	9451	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	10615	2.50 µg/L	-0.025
13C3-PFBA	2.891	216.0 -> 172.0	66078	5.00 µg/L	-0.025
18O2-PFHxS	7.303	403.0 -> 83.9	5005	2.50 µg/L	-0.012
13C4-PFOA	7.212	417.1 -> 372.0	59981	2.50 µg/L	-0.025
13C2-PFDA	8.266	515.1 -> 470.1	18865	1.25 µg/L	-0.026
13C5-PFNA	7.772	468.0 -> 423.0	25035	1.25 µg/L	-0.012
13C2-PFHxA	5.574	315.1 -> 270.0	41157	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.259	329.1 -> 80.9	753	6.70 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 133.9%		
13C2-6:2FTS	6.974	429.1 -> 80.9	1465	5.95 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 119.0%		
13C2-8:2FTS	8.053	529.1 -> 80.9	2163	5.40 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.0%		
13C2-PFDoDA	9.169	615.1 -> 570.0	20614	1.18 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.0%		
13C2-PFTeDA	9.950	715.2 -> 670.0	13764	1.09 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 87.0%		
13C3-PFBS	5.441	302.1 -> 79.9	9810	2.56 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.4%		
13C3-PFHxS	7.290	402.1 -> 79.9	7377	2.63 µg/L	-0.027

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.1%	
13C4-PFBA	2.886	216.8 -> 171.9	127171	10.18 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C4-PFHpA	6.530	367.1 -> 322.0	30364	2.40 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.1%	
13C5-PFHxA	5.561	318.0 -> 273.0	42050	2.39 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.5%	
13C5-PFPeA	4.360	268.3 -> 223.0	53101	4.67 µg/L	-0.027
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.5%	
13C6-PFDA	8.266	519.1 -> 474.1	15422	1.18 µg/L	-0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.5%	
13C7-PFUnDA	8.735	570.0 -> 525.1	19355	1.17 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.4%	
13C8-FOSA	9.921	506.1 -> 77.8	13996	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C8-PFOA	7.211	421.1 -> 376.0	47179	2.42 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C8-PFOS	8.405	507.1 -> 79.9	10147	2.75 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.1%	
13C9-PFNA	7.771	472.1 -> 427.0	21187	1.27 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.3%	
d3-MeFOSAA	8.337	573.2 -> 419.0	17851	5.11 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C3-HFPO-DA	5.940	286.9 -> 168.9	36875	8.41 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 84.1%	
d3-MeFOSA	11.164	515.0 -> 219.0	9451	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.5%	
d5-EtFOSAA	8.546	589.2 -> 419.0	15643	5.08 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
d7-MeFOSE	11.059	623.2 -> 58.9	63489	22.41 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.7%	
d9-EtFOSE	11.344	639.2 -> 58.9	96975	25.71 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.8%	
d5-EtFOSA	11.423	531.1 -> 219.0	10114	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.1%	
Target Compounds					QValue
4:2FTS	5.247	327.1 -> 307.0	11488	8.60 µg/L	99
		327.1 -> 80.9	5120		
6:2FTS	6.975	427.1 -> 407.0	16685	9.85 µg/L	96
		427.1 -> 80.9	5927		
8:2FTS	8.054	527.1 -> 507.0	12972	10.48 µg/L	97
		527.1 -> 80.8	5528		
EtFOSAA	8.559	584.2 -> 419.1	6000	2.38 µg/L	m 99
		584.2 -> 526.0	3012		
FOSA	9.924	498.1 -> 77.9	15020	2.43 µg/L	98
		498.1 -> 478.0	538		
MeFOSAA	8.338	570.1 -> 419.0	8092	2.54 µg/L	m 89
		570.1 -> 483.0	1624		
PFBA	2.895	212.8 -> 168.9	37651	9.84 µg/L	100
PFBS	5.455	298.7 -> 79.9	9434	2.31 µg/L	97
		298.7 -> 98.8	3637		
PFDA	8.266	512.9 -> 469.0	41524	2.59 µg/L	96
		512.9 -> 219.0	7455		
PFDoDA	9.170	613.1 -> 569.0	42622	2.57 µg/L	96
		613.1 -> 319.0	6898		
PFDS	9.321	599.0 -> 79.9	5913	2.06 µg/L	99

7.7.16
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2862			
PFHpA	6.531	363.1 -> 319.0	46130	2.47	µg/L	99
		363.1 -> 169.0	8303			
PFHpS	7.886	449.0 -> 79.9	8453	2.08	µg/L	99
		449.0 -> 98.9	4439			
PFHxA	5.563	313.0 -> 269.0	40306	2.45	µg/L	100
		313.0 -> 118.9	1244			
PFHxS	7.291	398.7 -> 79.9	7008	2.13	µg/L	m 93
		398.7 -> 98.9	3633			
PFNA	7.772	463.0 -> 419.0	38513	2.47	µg/L	99
		463.0 -> 219.0	8480			
PFNS	8.887	548.8 -> 79.9	6400	2.12	µg/L	97
		548.8 -> 98.9	3164			
PFOA	7.213	413.0 -> 369.0	68177	2.55	µg/L	100
		413.0 -> 169.0	12877			
PFOS	8.406	498.9 -> 79.9	10858	2.01	µg/L	m 79
		498.9 -> 98.8	5259			
PFPeA	4.363	263.0 -> 219.0	78128	5.22	µg/L	100
PFPeS	6.557	349.1 -> 79.9	5714	2.10	µg/L	96
		349.1 -> 98.9	2609			
PFTeDA	9.938	713.1 -> 669.0	34643	2.52	µg/L	100
		713.1 -> 168.9	3422			
PFTrDA	9.578	663.0 -> 619.0	44711	2.43	µg/L	96
		663.0 -> 168.9	5157			
PFUnDA	8.736	563.1 -> 519.0	39788	2.59	µg/L	100
		563.1 -> 269.1	8062			
11Cl-PF3OUdS	9.606	630.9 -> 450.9	50952	5.18	µg/L	98
		632.9 -> 452.9	15372			
9Cl-PF3ONS	8.750	530.8 -> 351.0	73320	5.56	µg/L	98
		532.8 -> 353.0	22503			
ADONA	6.794	376.9 -> 250.9	144969	5.25	µg/L	99
		376.9 -> 84.8	37177			
HFPO-DA	5.941	284.9 -> 168.9	19168	5.03	µg/L	96
		284.9 -> 184.9	2039			
3:3FTCA	3.873	241.0 -> 177.0	11080	12.59	µg/L	99
		241.0 -> 117.0	954			
5:3FTCA	6.294	341.0 -> 237.1	171947	62.86	µg/L	99
		341.0 -> 217.0	122749			
7:3FTCA	7.787	441.0 -> 316.9	96734	64.08	µg/L	99
		441.0 -> 336.9	229489			
EtFOSA	11.425	526.0 -> 219.0	25578	4.91	µg/L	95
		526.0 -> 169.0	34117			
EtFOSE	11.357	630.0 -> 58.9	54108	11.50	µg/L	100
MeFOSA	11.166	511.9 -> 219.0	18738	4.75	µg/L	70
		511.9 -> 169.0	27925			
MeFOSE	11.073	616.1 -> 58.9	36546	13.03	µg/L	100
PFDoDS	10.077	699.1 -> 79.9	4757	2.01	µg/L	92
		699.1 -> 98.8	2823			
NFDHA	5.443	295.0 -> 201.0	4578	4.74	µg/L	93
		295.0 -> 84.9	1255			
PFMBA	4.772	279.0 -> 85.1	41663	5.17	µg/L	100
PFMPA	3.499	229.0 -> 84.9	40293	5.27	µg/L	100
PFEESA	5.997	314.8 -> 134.9	55590	4.47	µg/L	100
		314.8 -> 82.9	1831			

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

7.7.16
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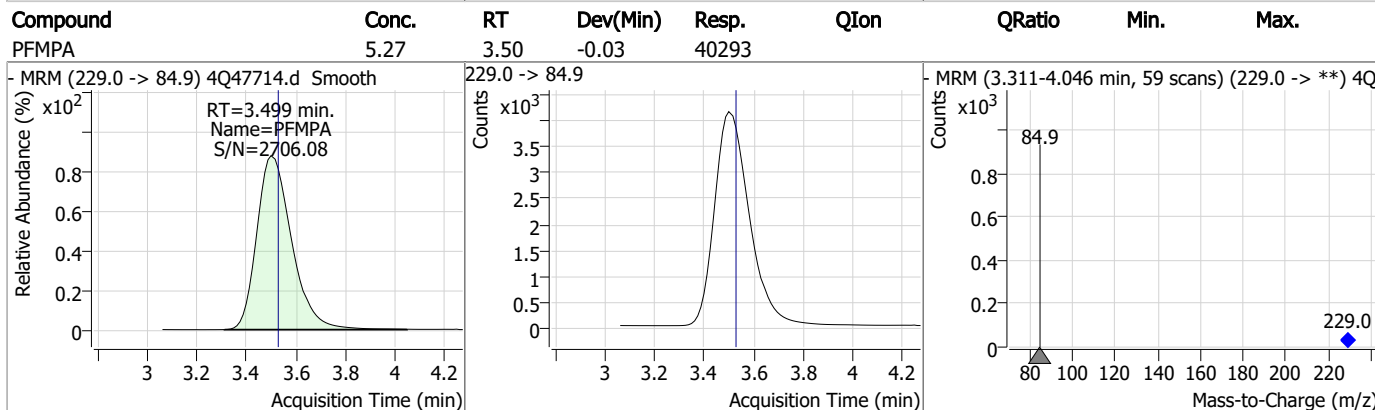
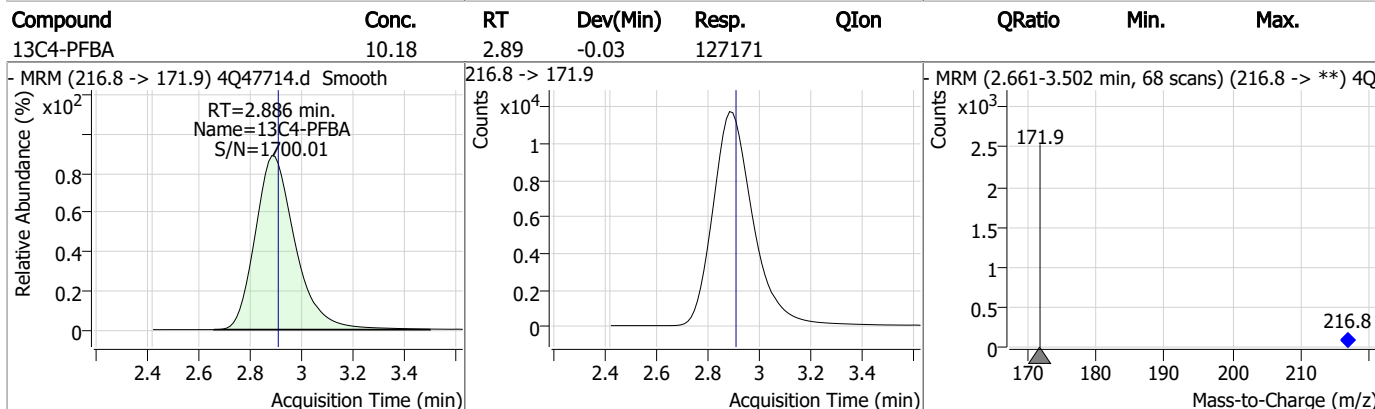
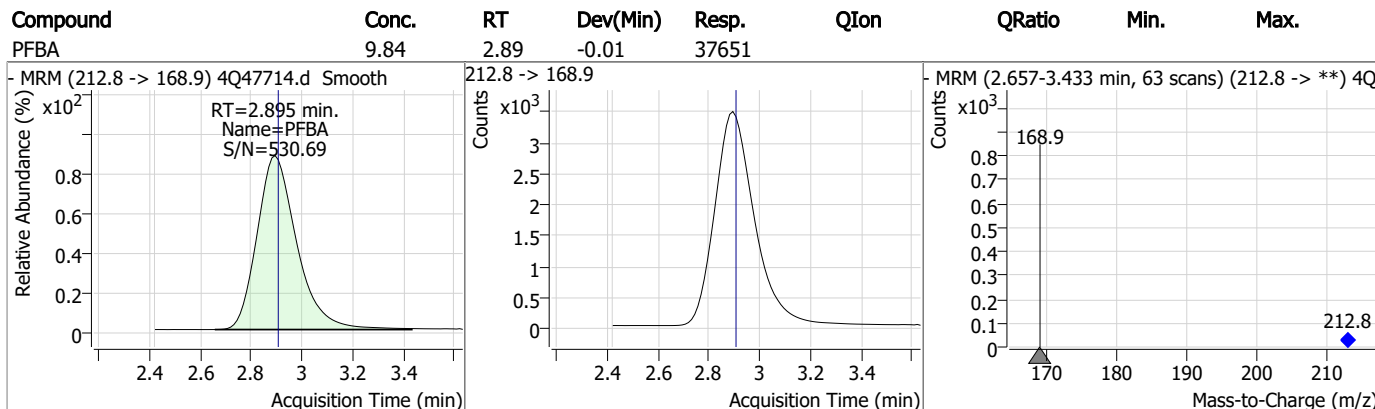
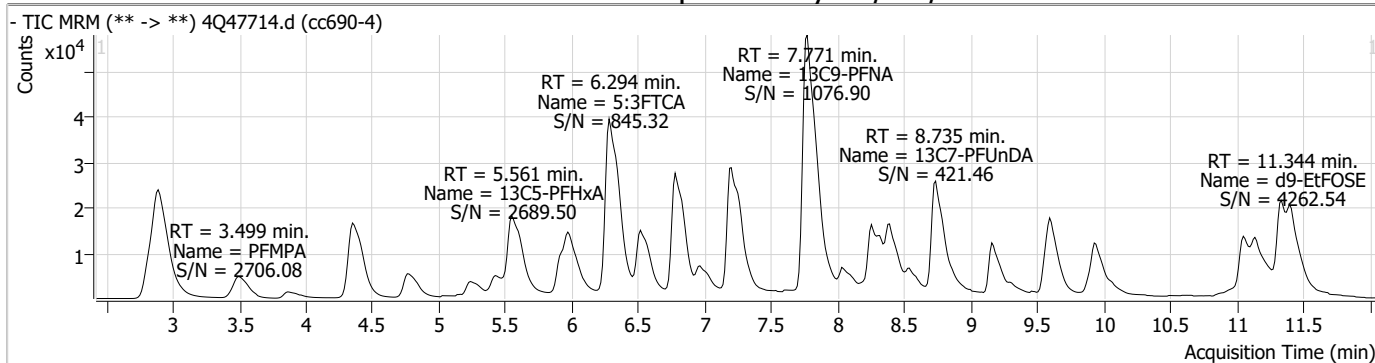
Perfluorinated Compounds by LC/MS/MS

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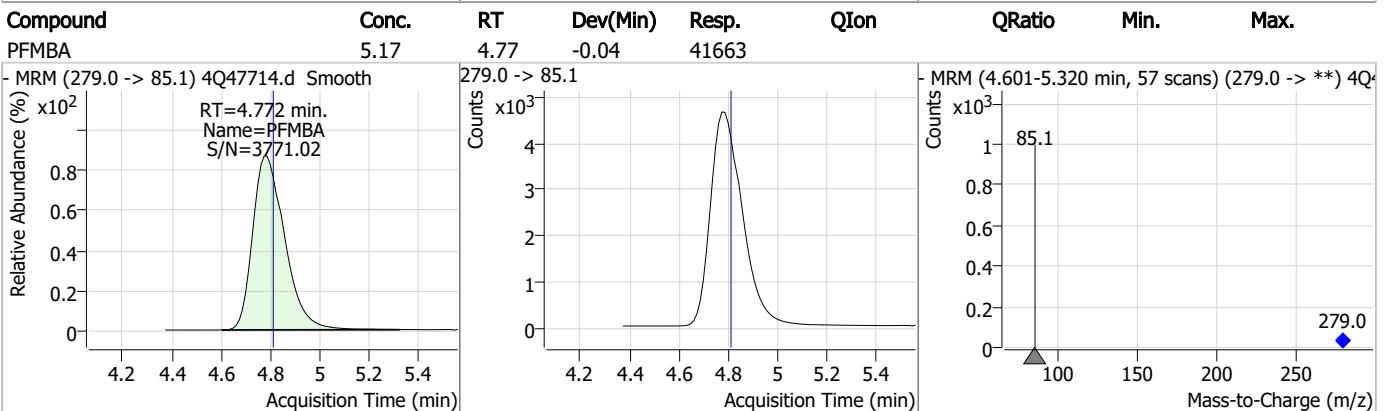
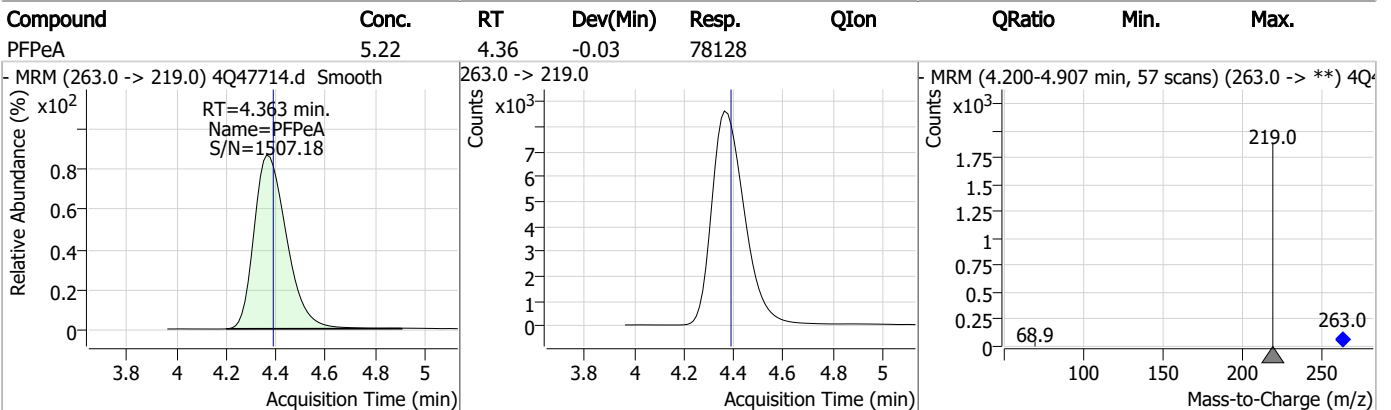
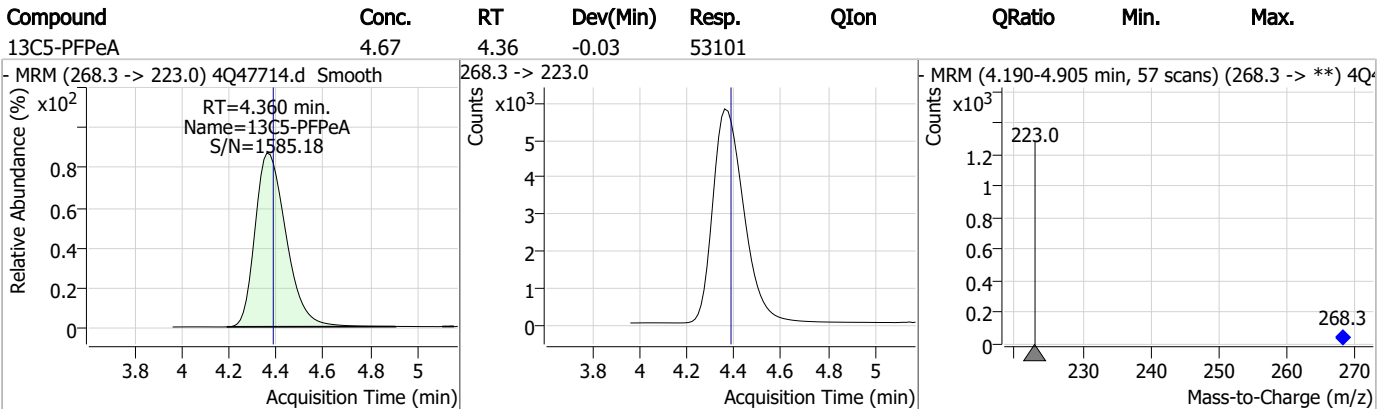
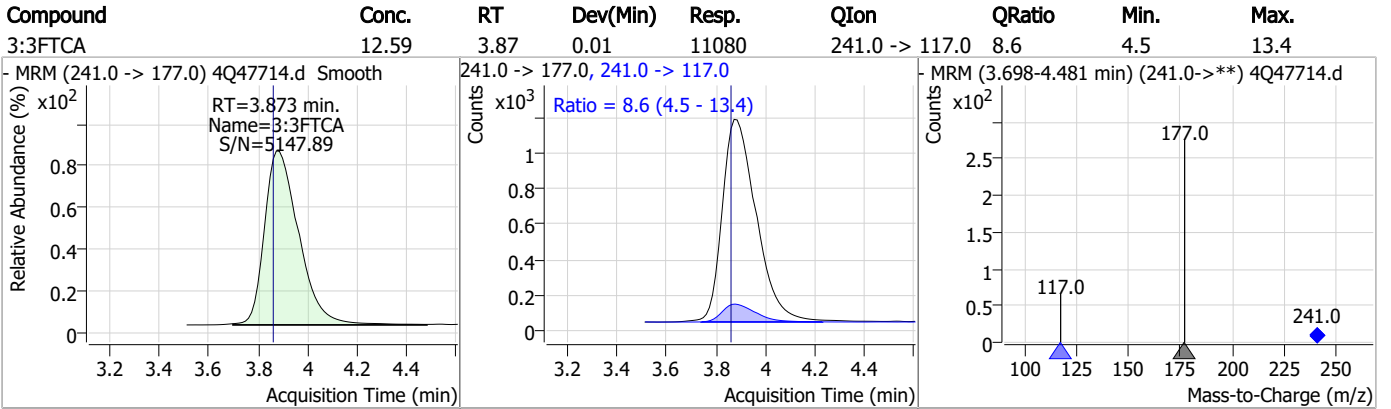
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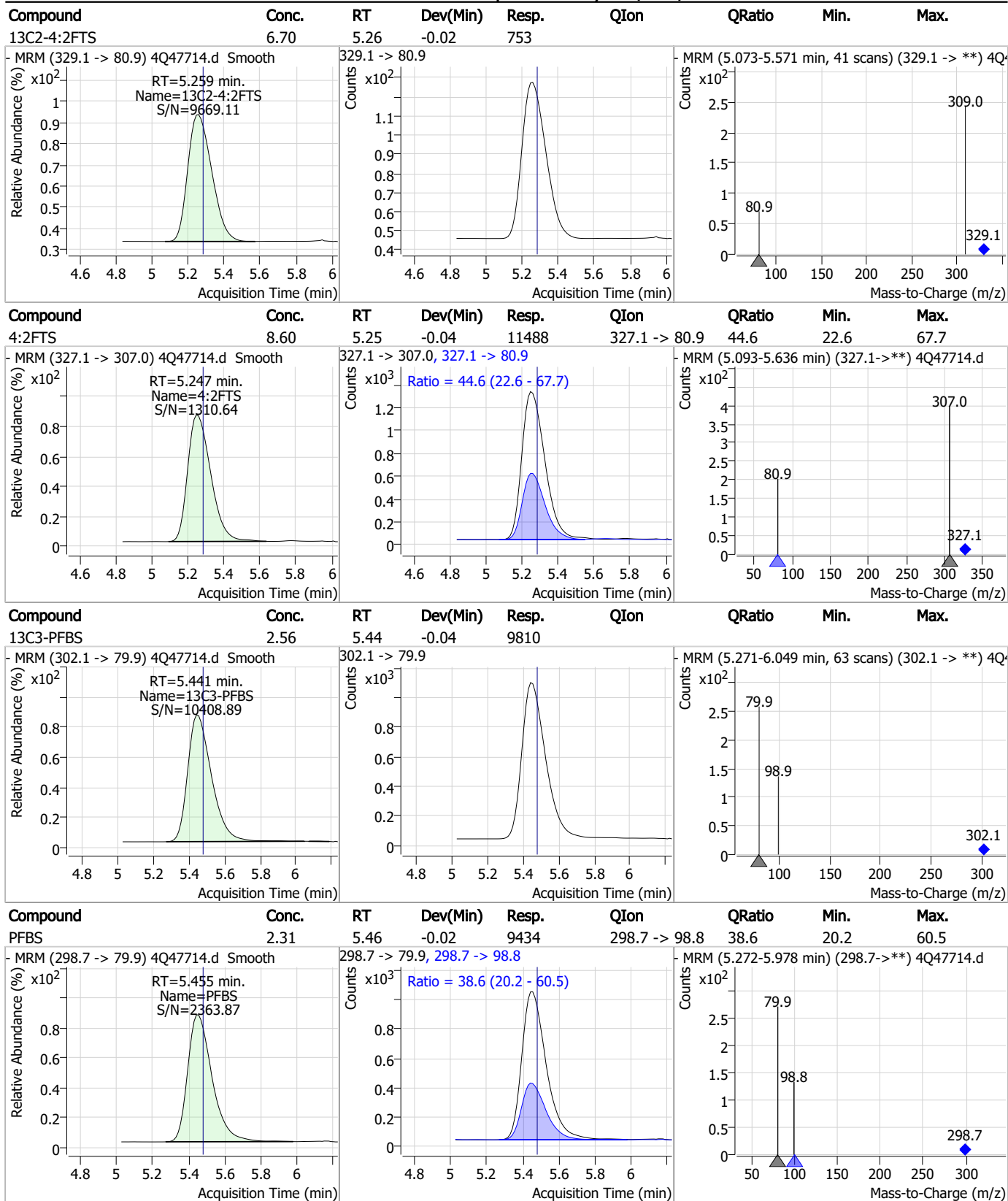
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

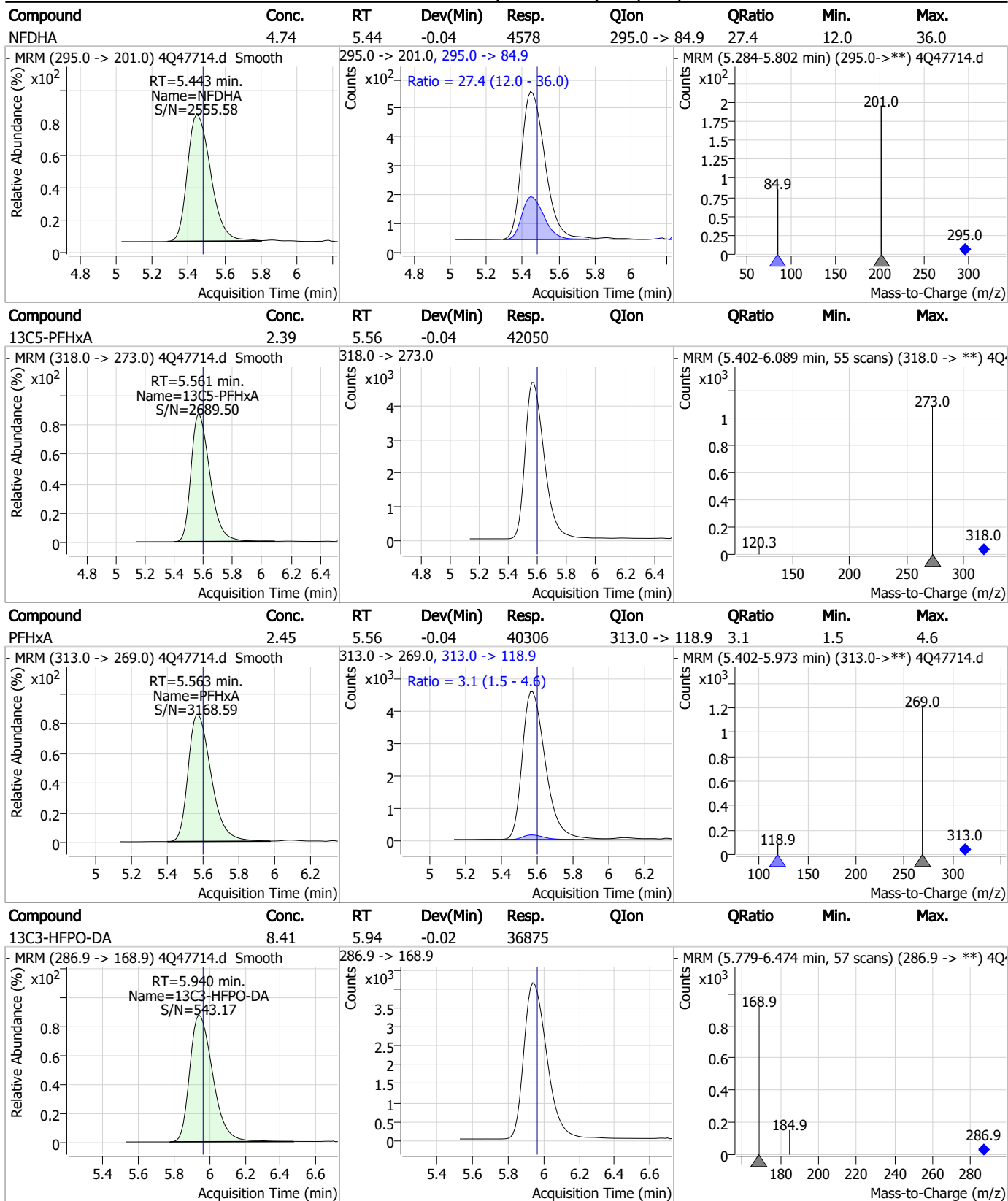


Perfluorinated Compounds by LC/MS/MS



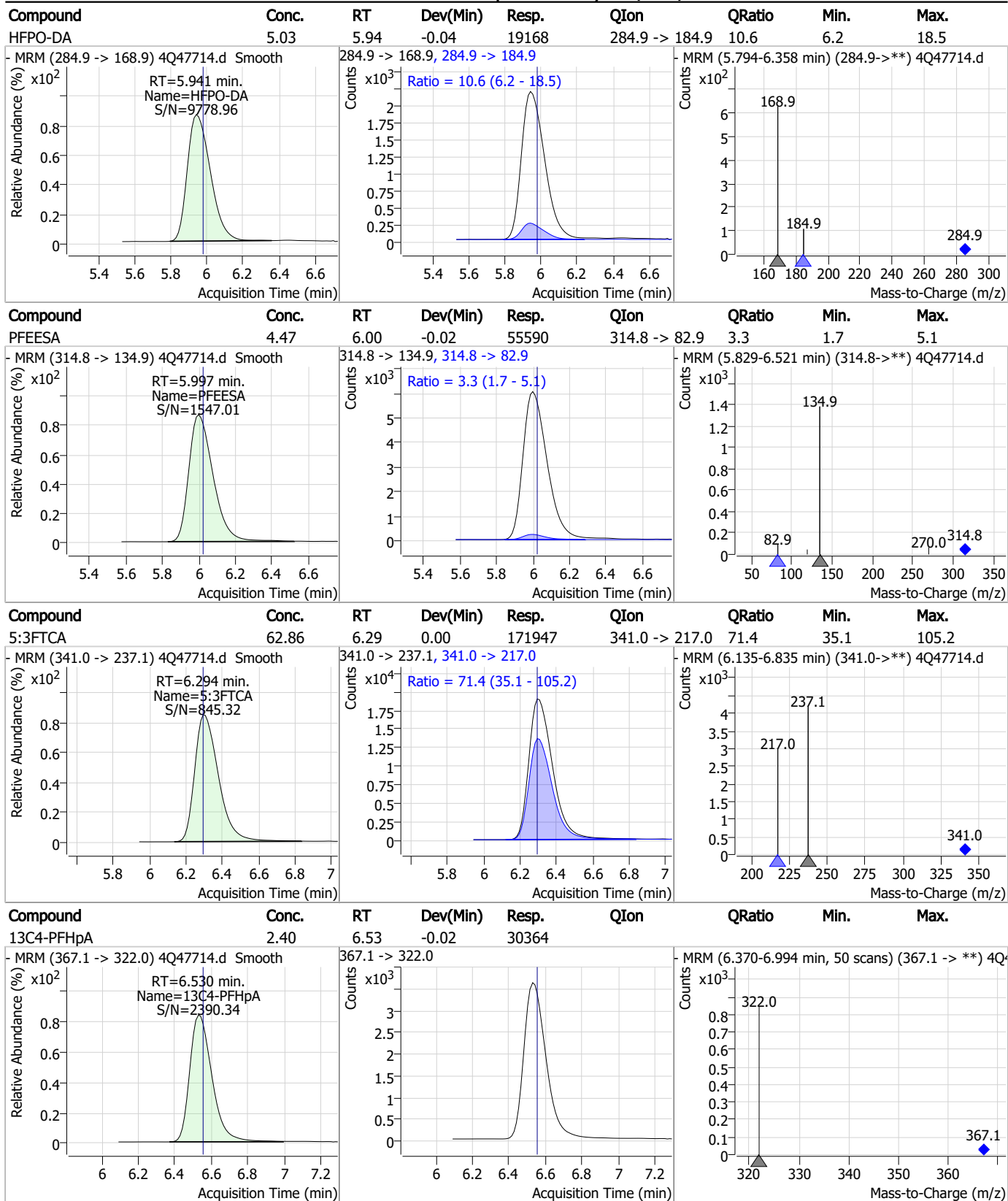
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Perfluorinated Compounds by LC/MS/MS



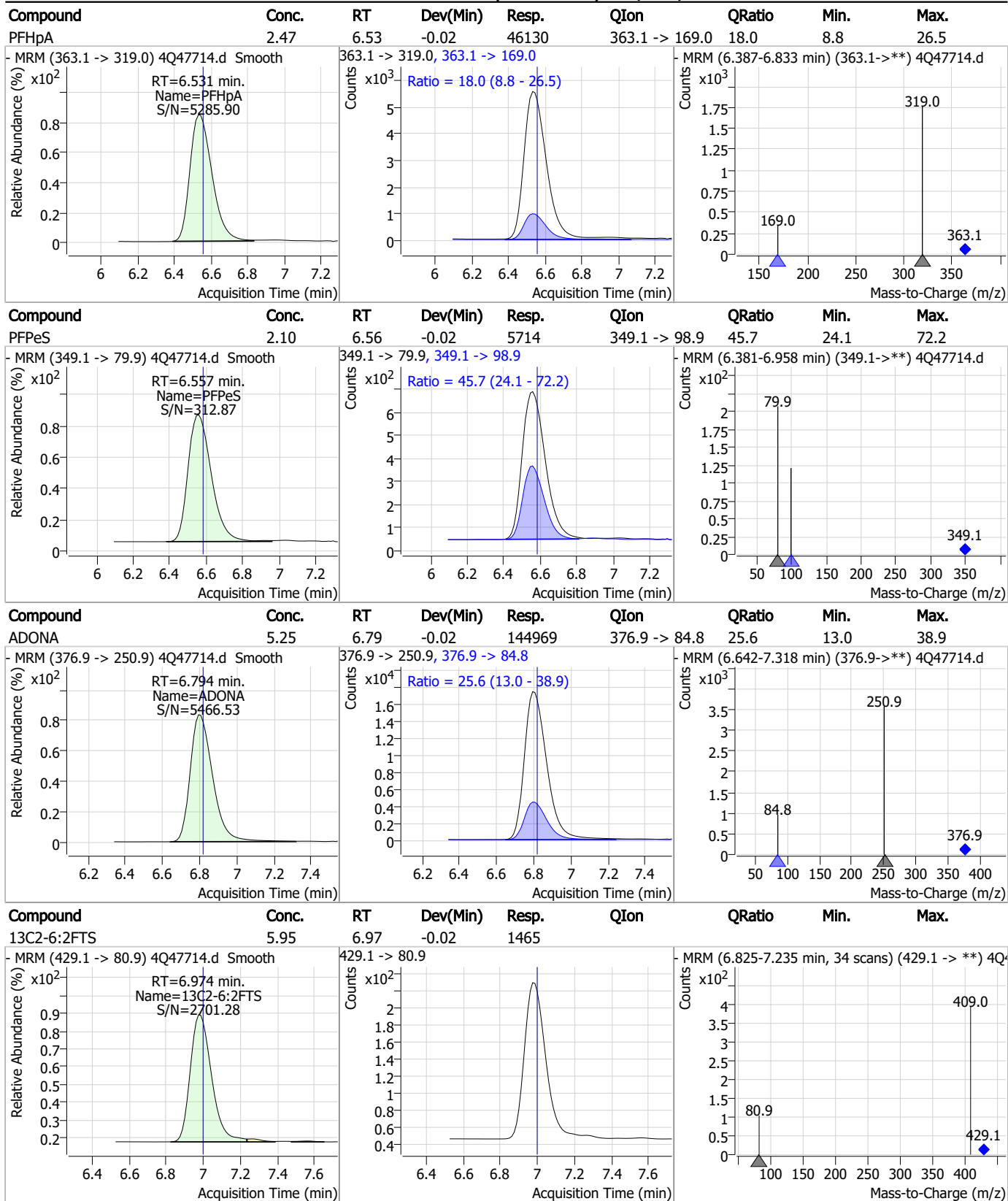
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Perfluorinated Compounds by LC/MS/MS



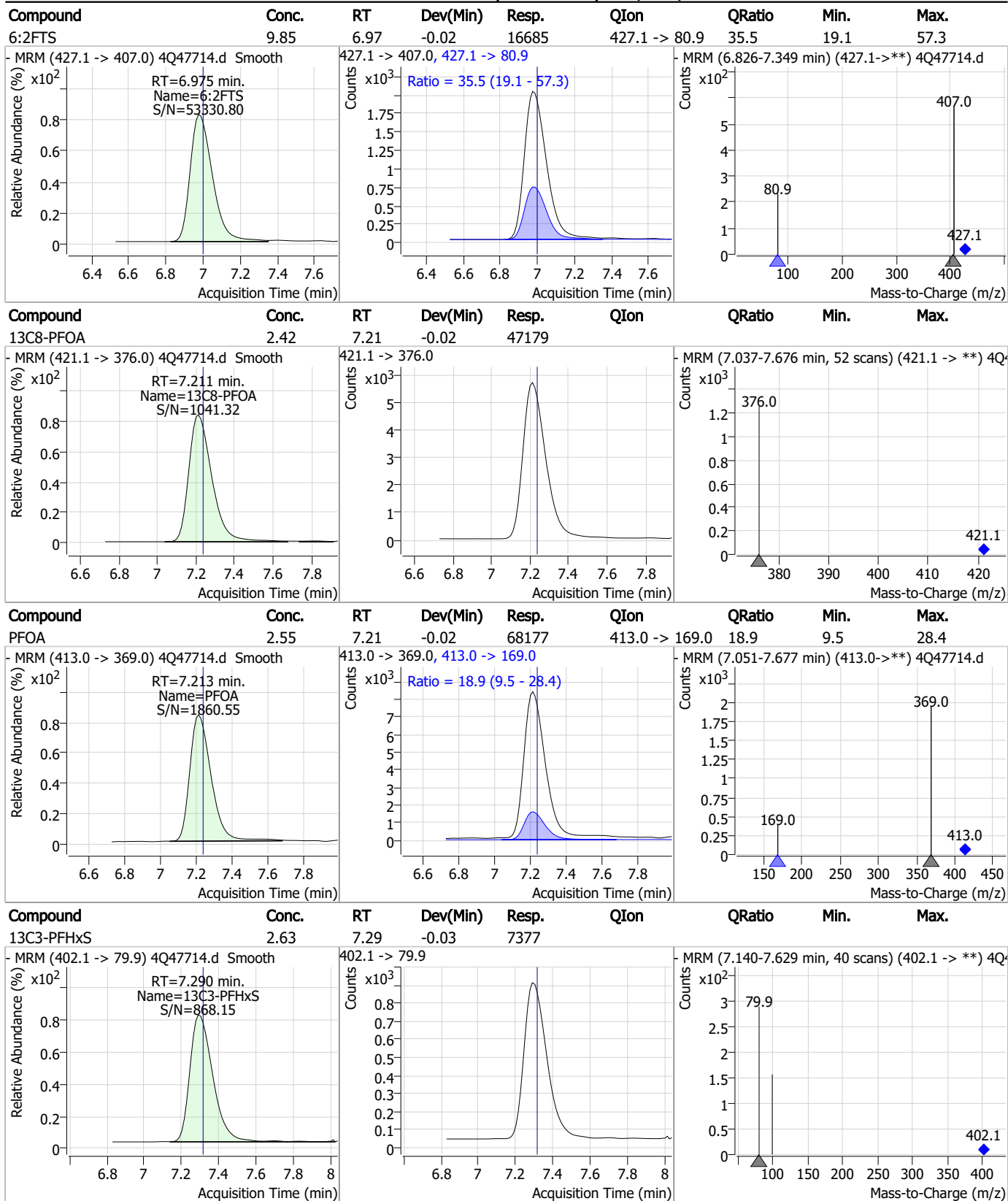
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Perfluorinated Compounds by LC/MS/MS



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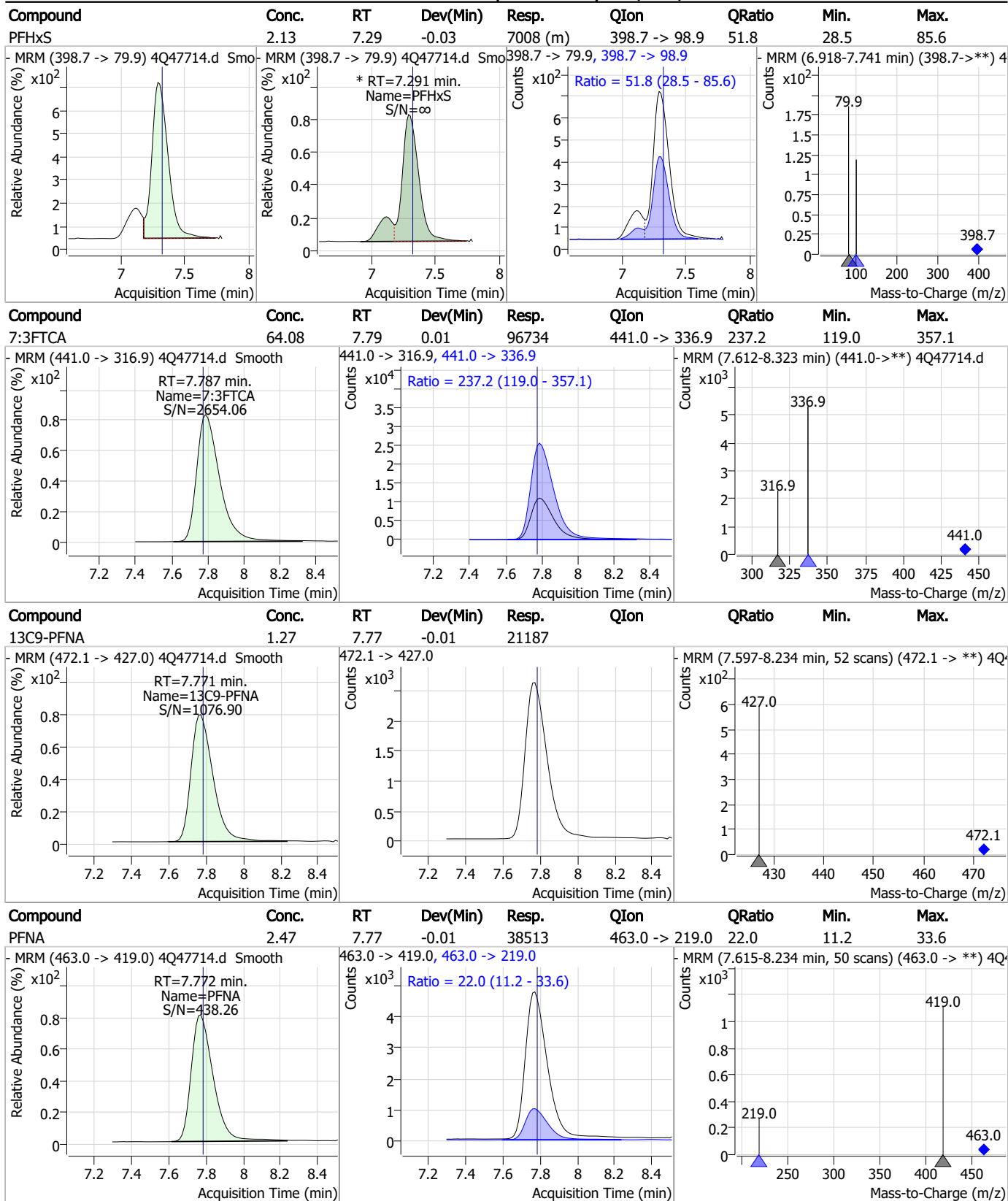
Perfluorinated Compounds by LC/MS/MS



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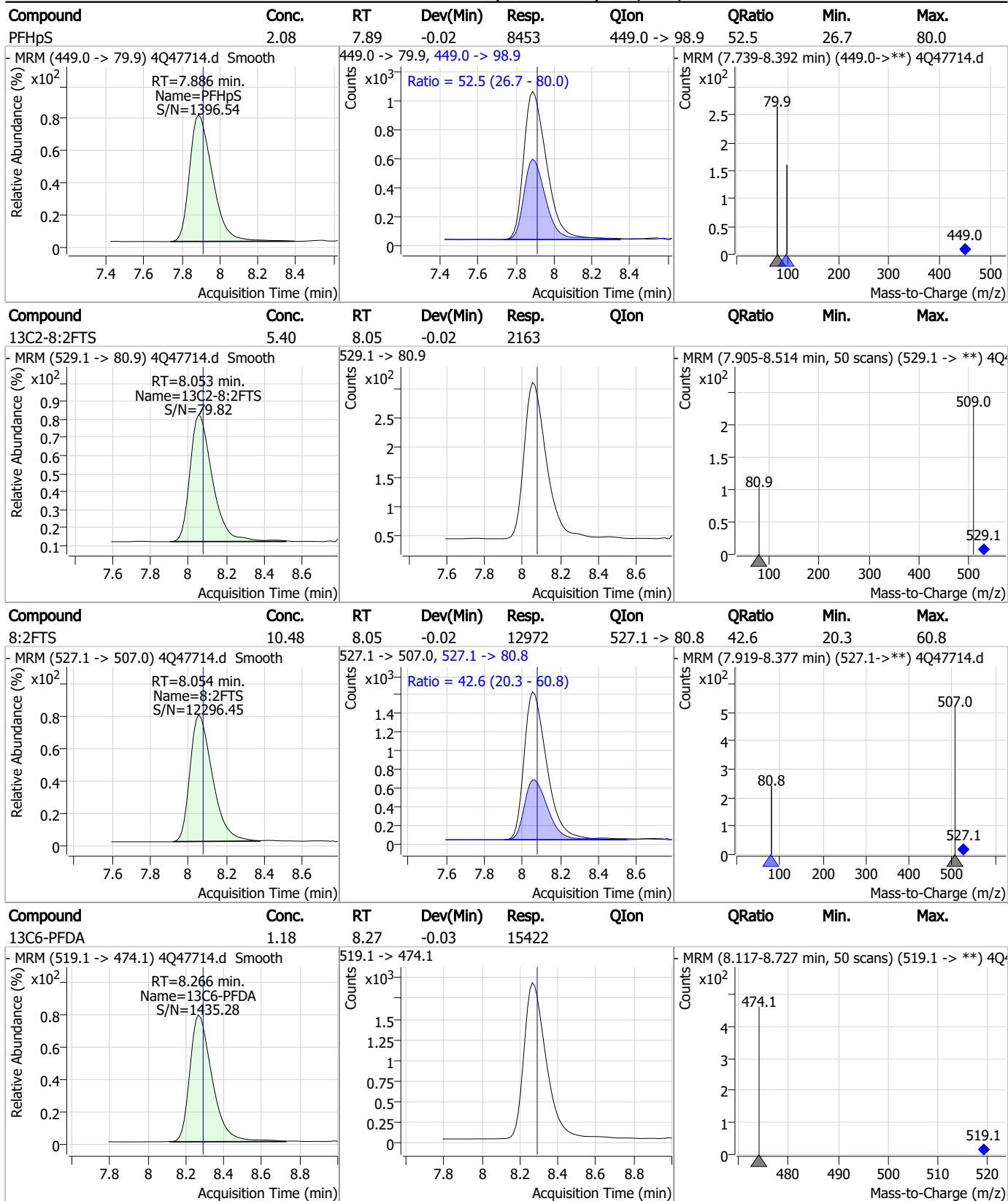


Perfluorinated Compounds by LC/MS/MS



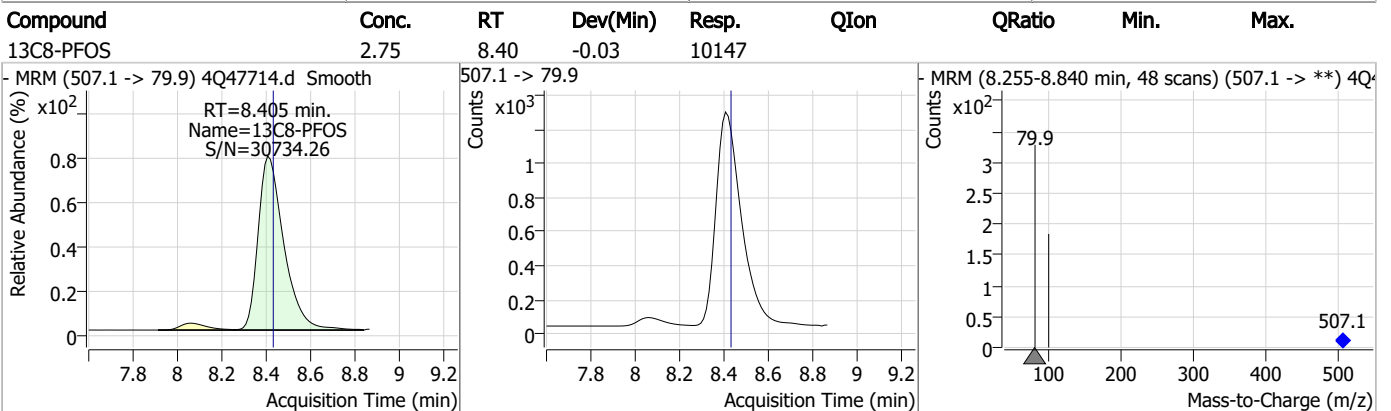
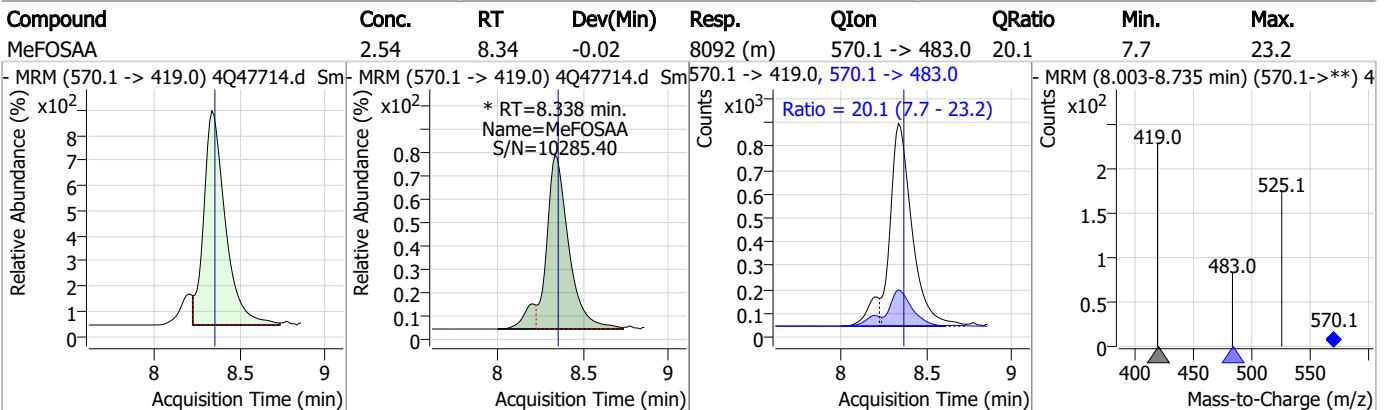
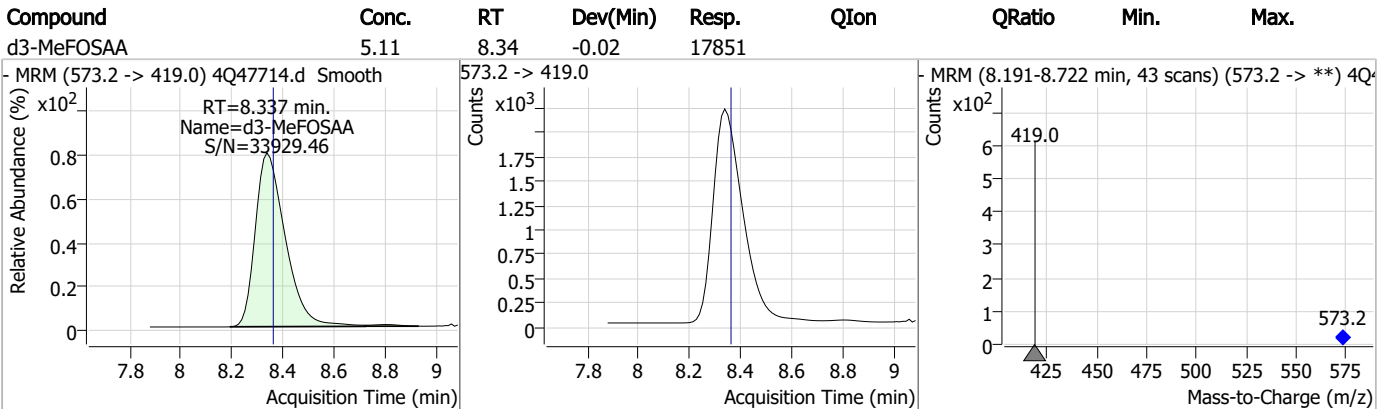
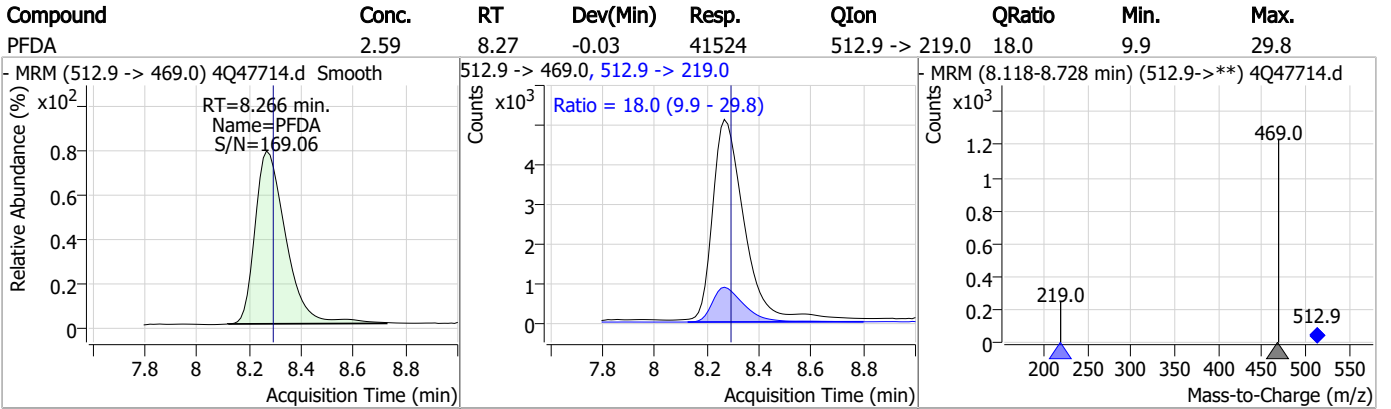
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Perfluorinated Compounds by LC/MS/MS

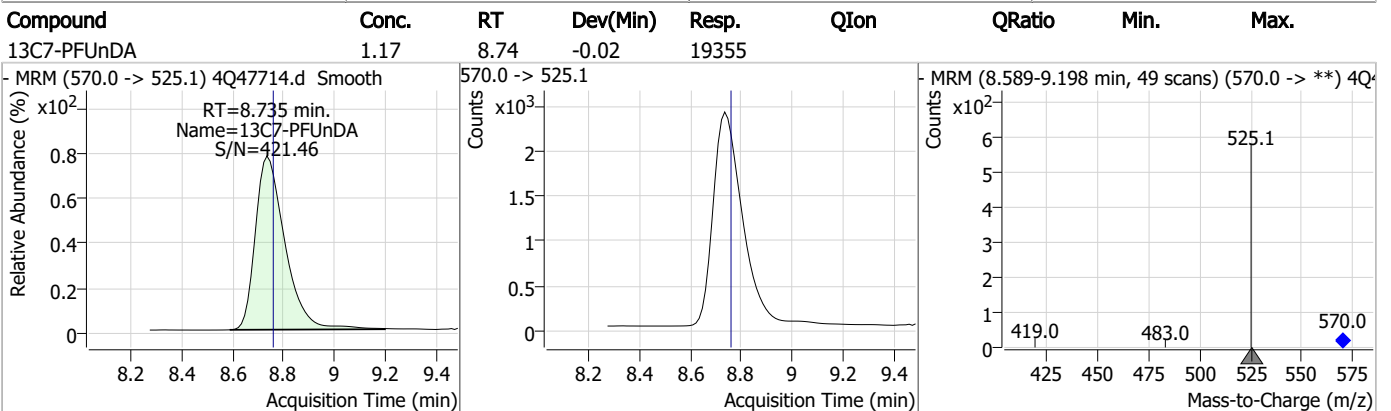
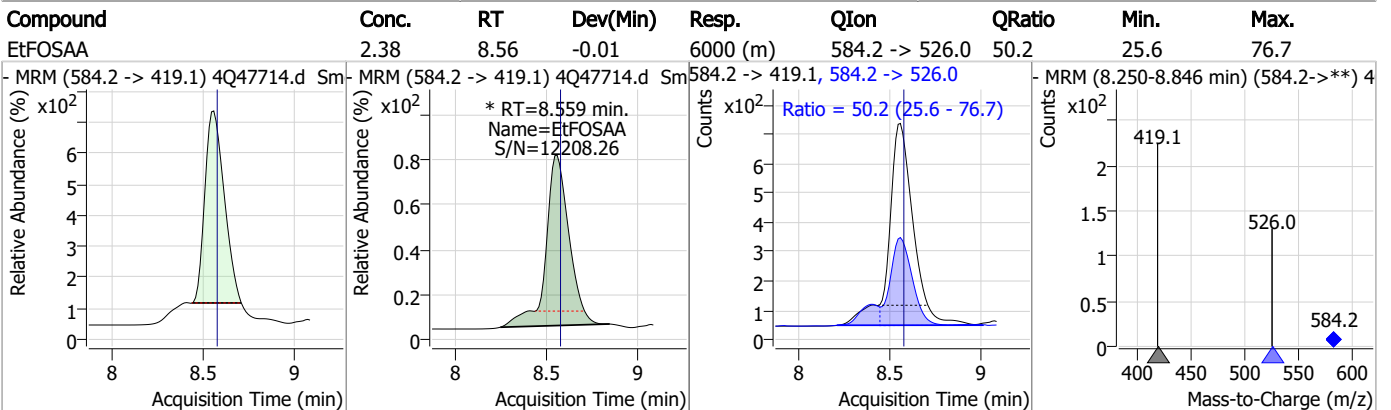
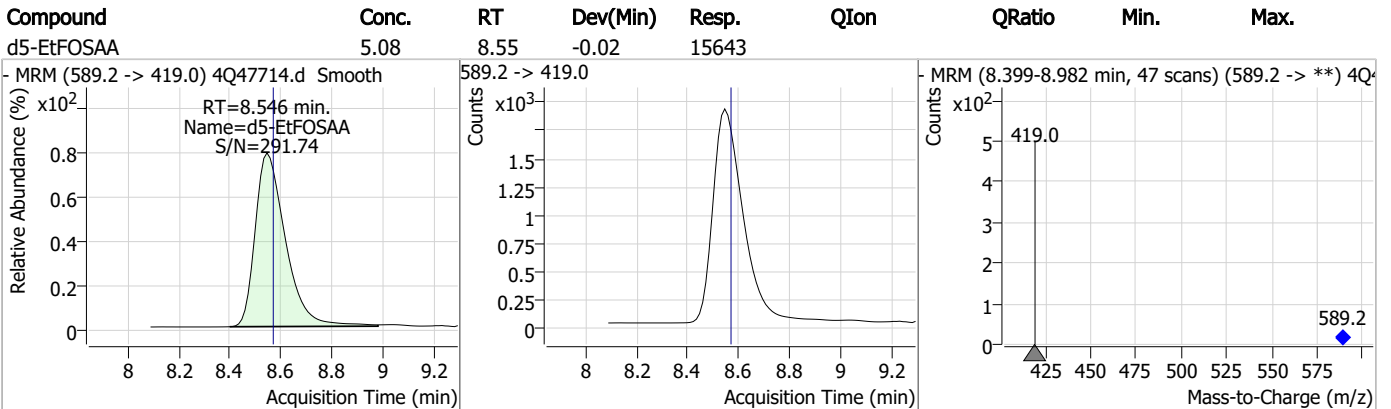
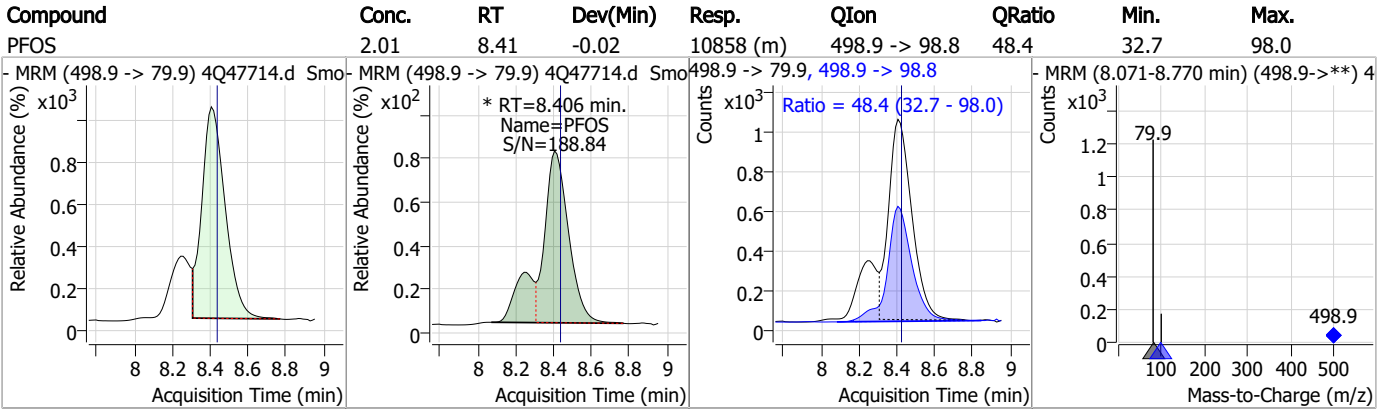


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Perfluorinated Compounds by LC/MS/MS



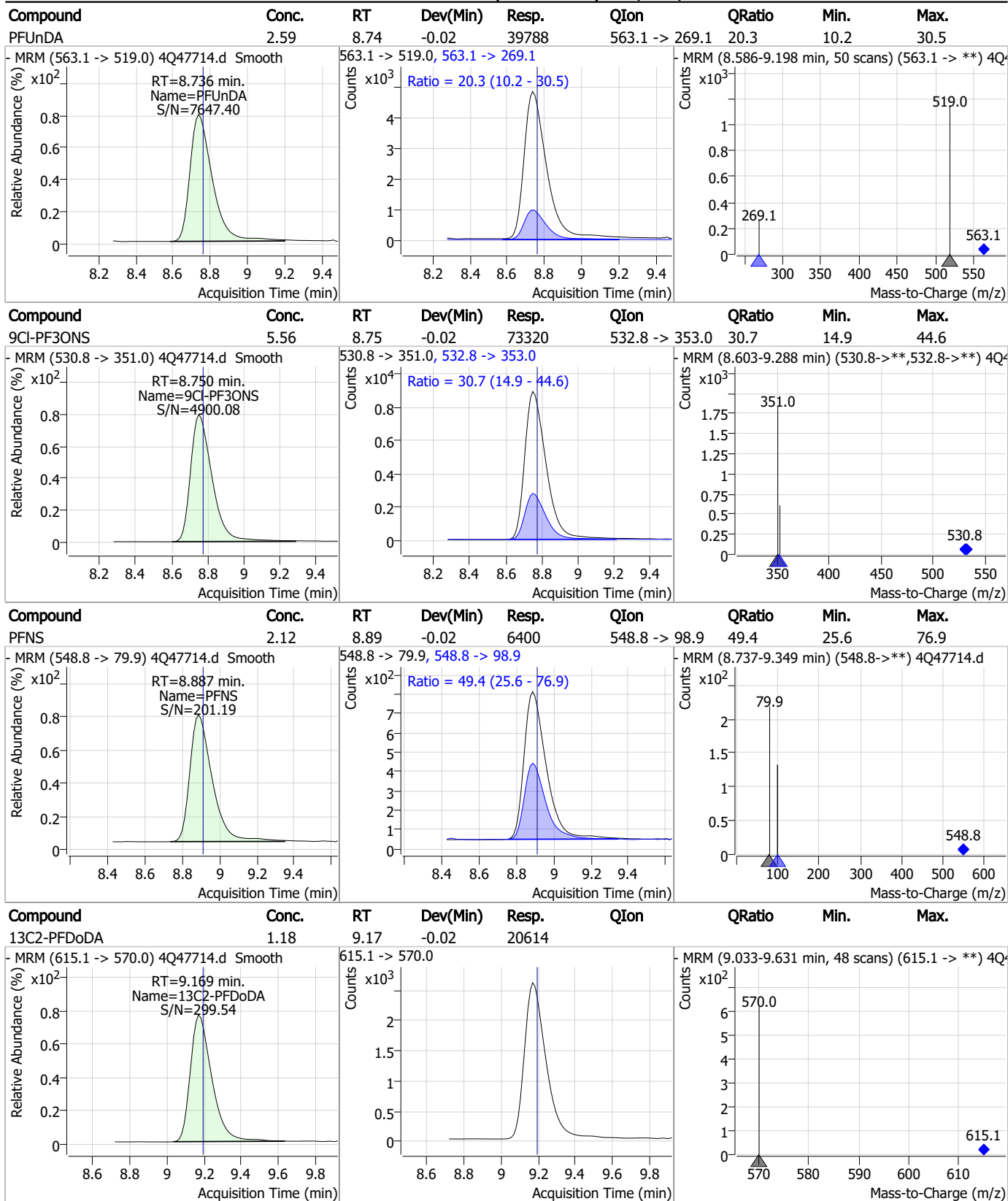
Perfluorinated Compounds by LC/MS/MS



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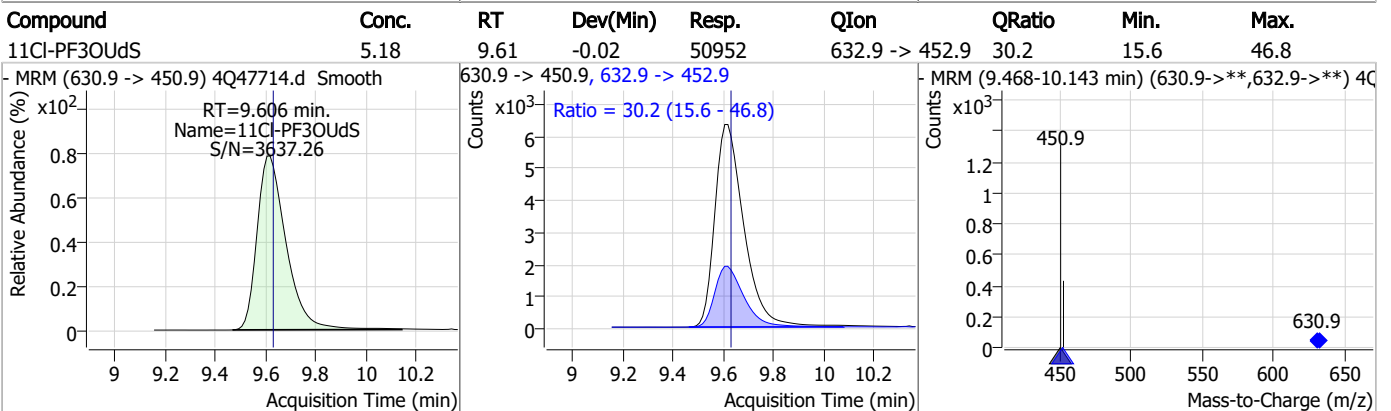
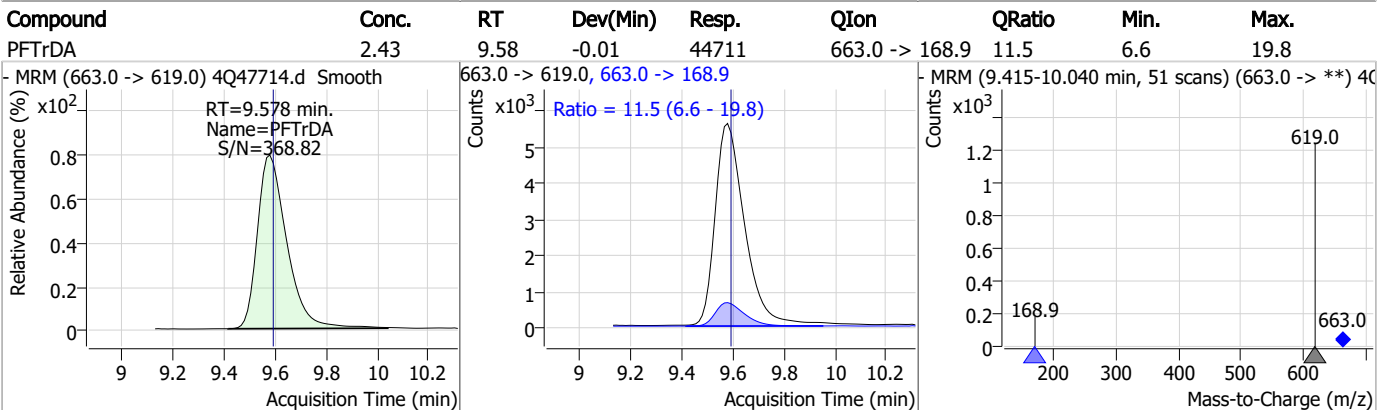
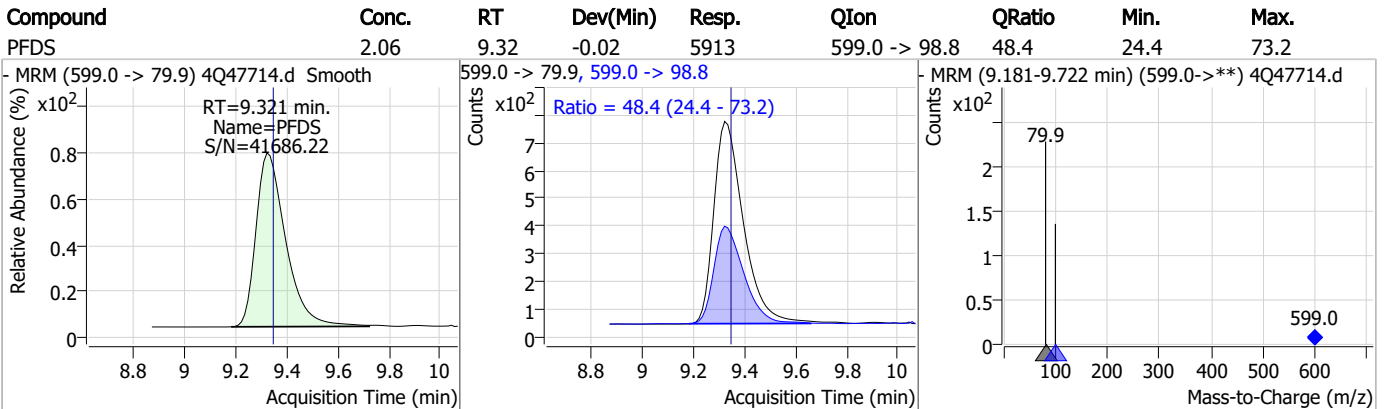
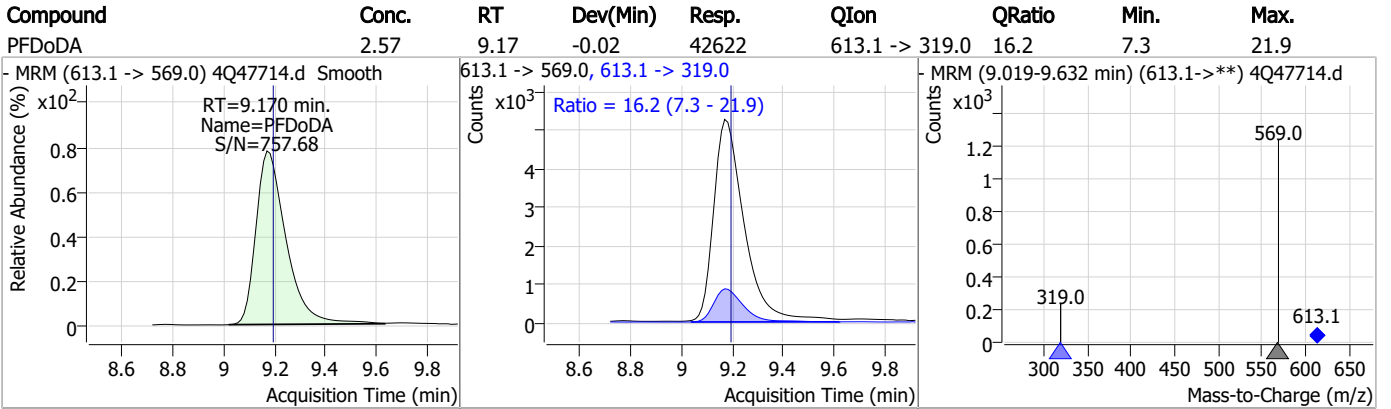


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

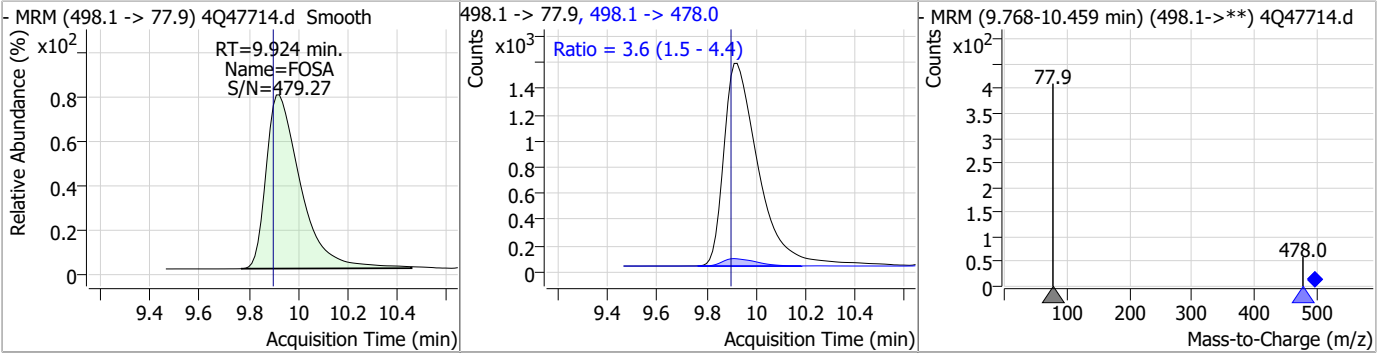


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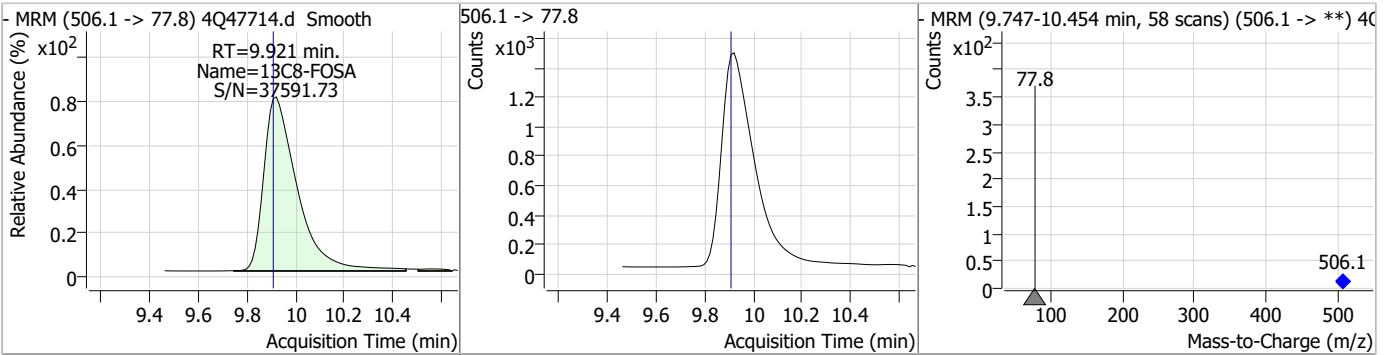


Perfluorinated Compounds by LC/MS/MS

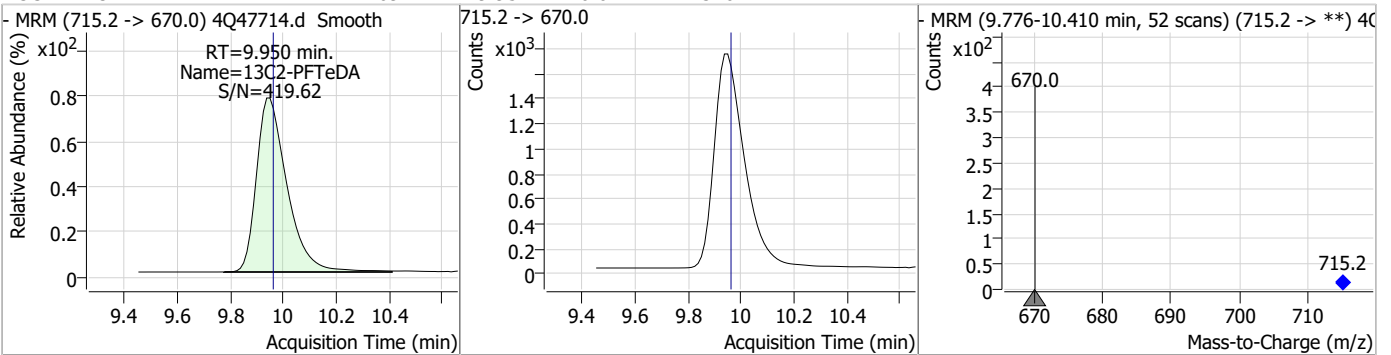
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.43	9.92	0.02	15020	498.1 -> 478.0	3.6	1.5	4.4



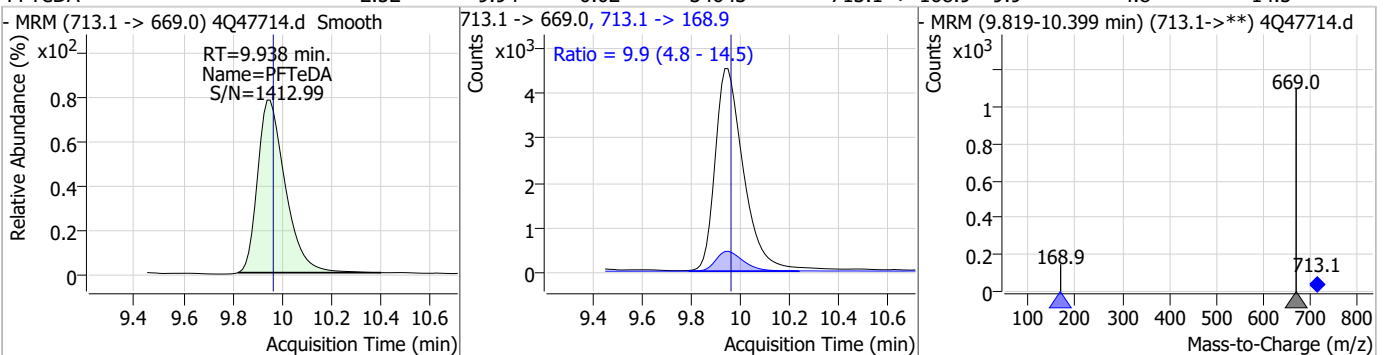
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.55	9.92	0.01	13996				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.09	9.95	-0.01	13764				

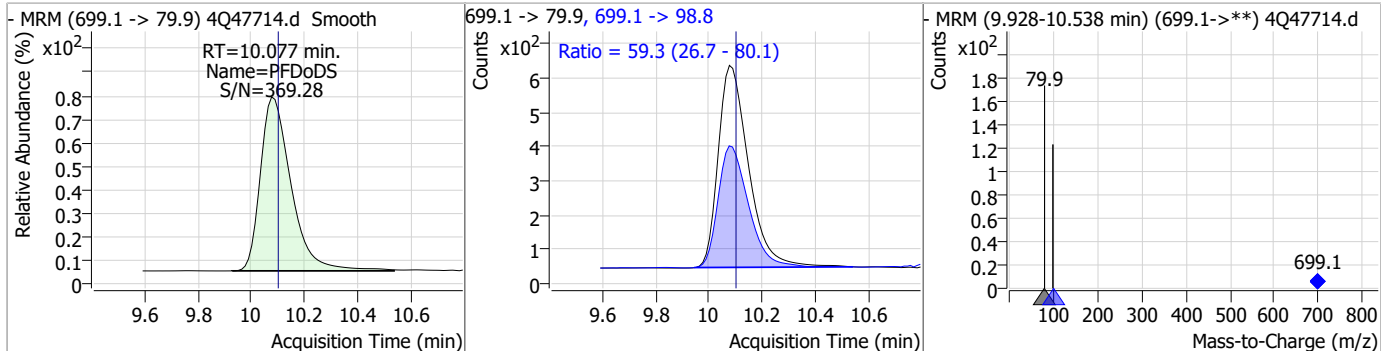


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.52	9.94	-0.02	34643	713.1 -> 168.9	9.9	4.8	14.5

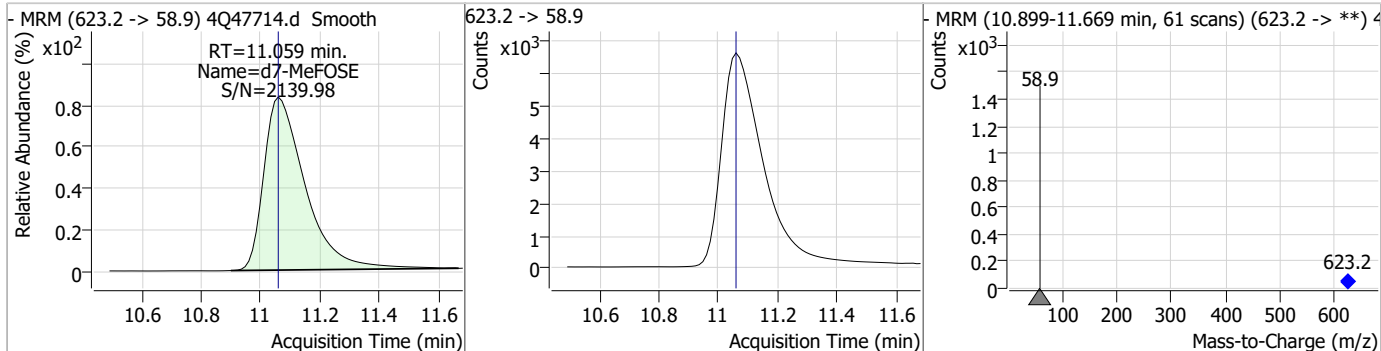


Perfluorinated Compounds by LC/MS/MS

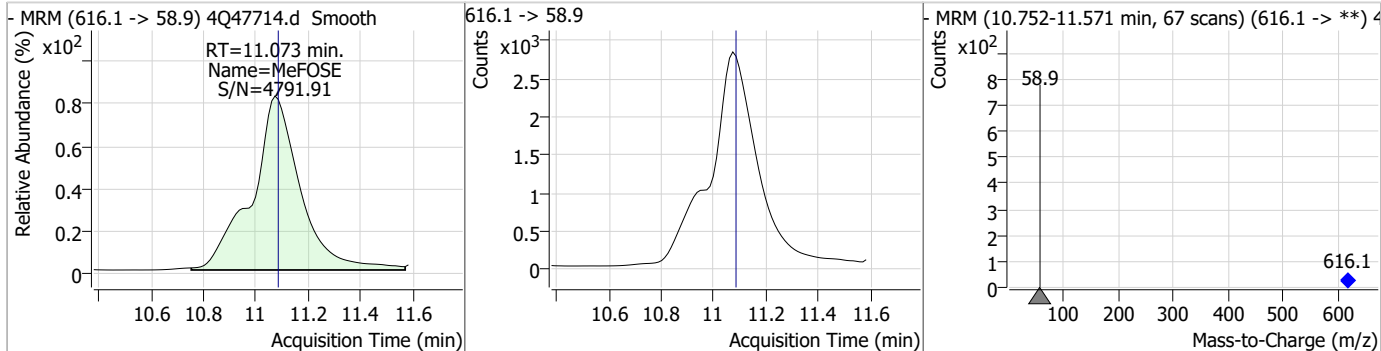
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	2.01	10.08	-0.02	4757	699.1 -> 98.8	59.3	26.7	80.1



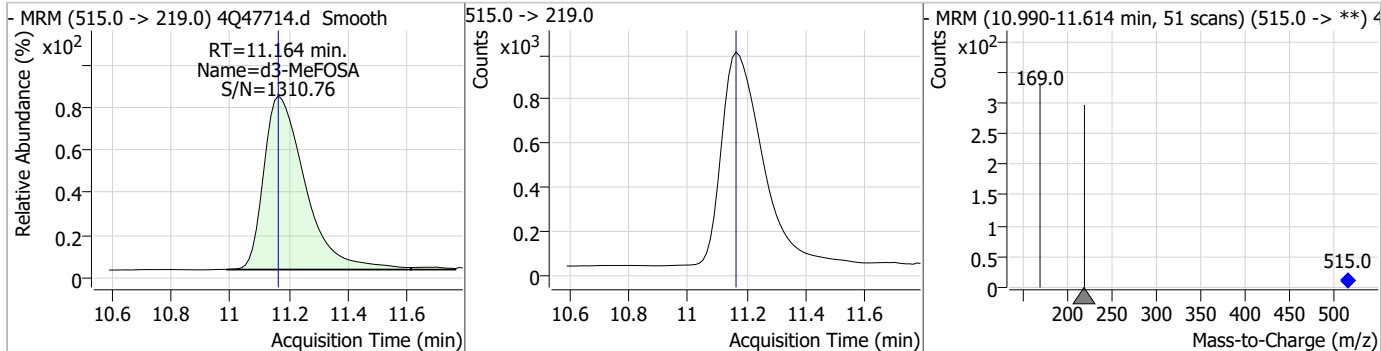
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	22.41	11.06	0.00	63489				



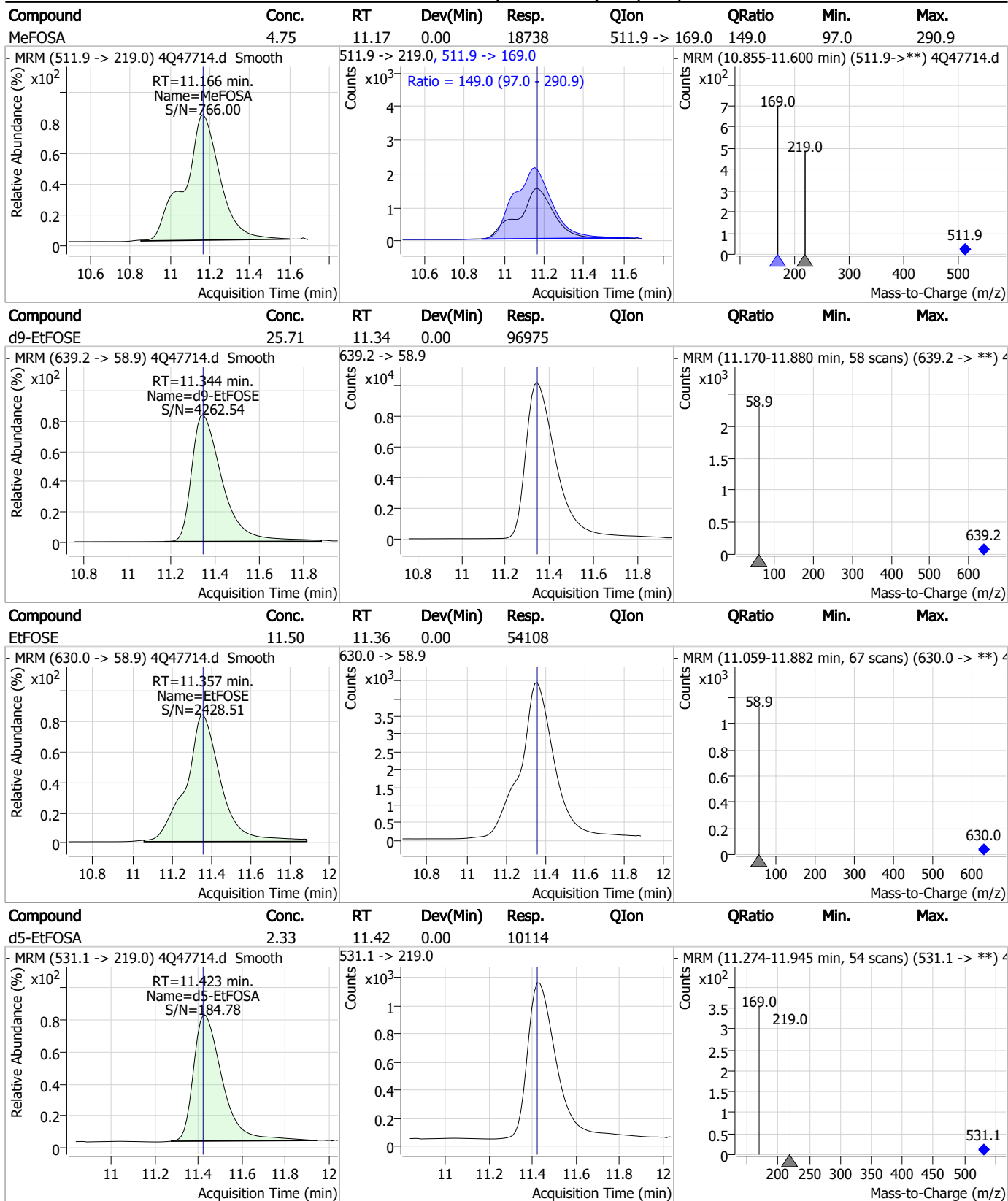
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	13.03	11.07	-0.01	36546				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.36	11.16	0.00	9451				



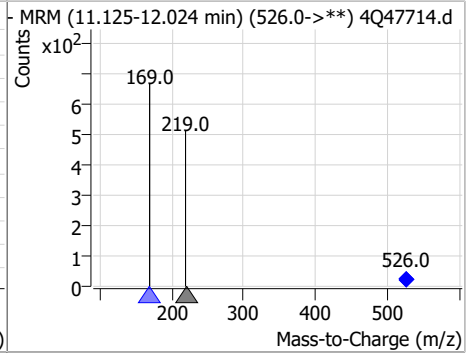
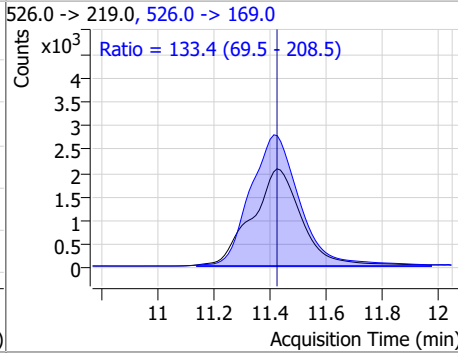
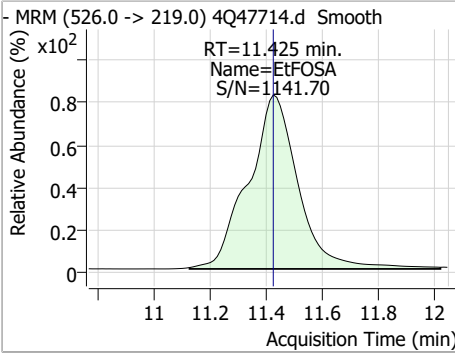
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.91	11.43	0.00	25578	526.0 -> 169.0	133.4	69.5	208.5



7.7.16
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Manual Integration Approval Summary

Sample Number: S4Q699-CC690 Method: EPA DRAFT 1633
Lab FileID: 4Q47714.D Analyst approved: 07/23/23 11:07 Anna Ludwig
Injection Time: 07/21/23 01:52 Supervisor approved: 07/24/23 09:53 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.34	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak
EtFOSAA	2991-50-6		8.56	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47715.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/21/2023 2:07:39 AM
 Sample Name : cc690-1.0LL
 Vial : P1-A2
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q699.batch.bin
 Sample Information : OP97749,S4Q699,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.899	216.8 -> 171.9	120559	10.00 µg/L	-0.013
M5-PFPeA	4.360	268.3 -> 223.0	51452	5.00 µg/L	-0.027
M5-PFHxA	5.561	318.0 -> 273.0	40743	2.50 µg/L	-0.037
M4-PFHpA	6.530	367.1 -> 322.0	29063	2.50 µg/L	-0.025
M8-PFOA	7.211	421.1 -> 376.0	45403	2.50 µg/L	-0.025
M9-PFNA	7.771	472.1 -> 427.0	18925	1.25 µg/L	-0.012
M6-PFDA	8.279	519.1 -> 474.1	15958	1.25 µg/L	-0.012
M7-PFUnDA	8.735	570.0 -> 525.1	19571	1.25 µg/L	-0.025
M2-PFDoDA	9.169	615.1 -> 570.0	19070	1.25 µg/L	-0.025
M2-PFTeDA	9.937	715.2 -> 670.0	13124	1.25 µg/L	-0.025
M8-FOSA	9.921	506.1 -> 77.8	13025	2.50 µg/L	0.012
M3-PFBS	5.441	302.1 -> 79.9	9639	2.50 µg/L	-0.037
M3-PFHxS	7.304	402.1 -> 79.9	6599	2.50 µg/L	-0.012
M8-PFOS	8.405	507.1 -> 79.9	9315	2.50 µg/L	-0.025
M2-4:2FTS	5.247	329.1 -> 80.9	680	5.00 µg/L	-0.037
M2-6:2FTS	6.986	429.1 -> 80.9	1428	5.00 µg/L	-0.012
M2-8:2FTS	8.053	529.1 -> 80.9	2058	5.00 µg/L	-0.025
M3-MeFOSAA	8.337	573.2 -> 419.0	16662	5.00 µg/L	-0.025
M3-HFPO-DA	5.940	286.9 -> 168.9	34503	10.00 µg/L	-0.025
M5-EtFOSAA	8.546	589.2 -> 419.0	14231	5.00 µg/L	-0.025
M7-MeFOSE	11.059	623.2 -> 58.9	61673	25.00 µg/L	0.000
M9-EtFOSE	11.344	639.2 -> 58.9	84067	25.00 µg/L	0.000
M5-EtFOSA	11.423	531.1 -> 219.0	9898	2.50 µg/L	0.000
M3-MeFOSA	11.164	515.0 -> 219.0	8699	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	9651	2.50 µg/L	-0.025
13C3-PFBA	2.891	216.0 -> 172.0	61232	5.00 µg/L	-0.025
18O2-PFHxS	7.303	403.0 -> 83.9	4656	2.50 µg/L	-0.012
13C4-PFOA	7.212	417.1 -> 372.0	55178	2.50 µg/L	-0.025
13C2-PFDA	8.266	515.1 -> 470.1	17663	1.25 µg/L	-0.026
13C5-PFNA	7.772	468.0 -> 423.0	24271	1.25 µg/L	-0.012
13C2-PFHxA	5.562	315.1 -> 270.0	37245	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	680	6.50 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.0%		
13C2-6:2FTS	6.986	429.1 -> 80.9	1428	6.23 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 124.7%		
13C2-8:2FTS	8.053	529.1 -> 80.9	2058	5.52 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.4%		
13C2-PFDoDA	9.169	615.1 -> 570.0	19070	1.16 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.9%		
13C2-PFTeDA	9.937	715.2 -> 670.0	13124	1.11 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.6%		
13C3-PFBS	5.441	302.1 -> 79.9	9639	2.70 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.2%		
13C3-PFHxS	7.304	402.1 -> 79.9	6599	2.53 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C4-PFBA	2.899	216.8 -> 171.9	120559	10.42 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 104.2%	
13C4-PFHpA	6.530	367.1 -> 322.0	29063	2.54 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C5-PFHxA	5.561	318.0 -> 273.0	40743	2.56 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C5-PFPeA	4.360	268.3 -> 223.0	51452	5.00 µg/L	-0.027
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C6-PFDA	8.279	519.1 -> 474.1	15958	1.31 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.4%	
13C7-PFUnDA	8.735	570.0 -> 525.1	19571	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C8-FOSA	9.921	506.1 -> 77.8	13025	2.61 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.3%	
13C8-PFOA	7.211	421.1 -> 376.0	45403	2.53 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C8-PFOS	8.405	507.1 -> 79.9	9315	2.78 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.2%	
13C9-PFNA	7.771	472.1 -> 427.0	18925	1.17 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.3%	
d3-MeFOSAA	8.337	573.2 -> 419.0	16662	5.25 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.0%	
13C3-HFPO-DA	5.940	286.9 -> 168.9	34503	8.69 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 86.9%	
d3-MeFOSA	11.164	515.0 -> 219.0	8699	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.6%	
d5-EtFOSAA	8.546	589.2 -> 419.0	14231	5.08 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
d7-MeFOSE	11.059	623.2 -> 58.9	61673	23.95 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.8%	
d9-EtFOSE	11.344	639.2 -> 58.9	84067	24.52 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.1%	
d5-EtFOSA	11.423	531.1 -> 219.0	9898	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
Target Compounds					QValue
4:2FTS	5.247	327.1 -> 307.0	915	0.76 µg/L	90
		327.1 -> 80.9	355		
6:2FTS	6.974	427.1 -> 407.0	1081	0.65 µg/L	93
		427.1 -> 80.9	457		
8:2FTS	8.054	527.1 -> 507.0	947	0.80 µg/L	89
		527.1 -> 80.8	448		
EtFOSAA	8.547	584.2 -> 419.1	593	0.26 µg/L	m 72
		584.2 -> 526.0	189		
FOSA	9.912	498.1 -> 77.9	1018	0.18 µg/L	98
		498.1 -> 478.0	22		
MeFOSAA	8.350	570.1 -> 419.0	604	0.20 µg/L	m 90
		570.1 -> 483.0	119		
PFBA	2.895	212.8 -> 168.9	2731	0.75 µg/L	100
PFBS	5.443	298.7 -> 79.9	784	0.20 µg/L	92
		298.7 -> 98.8	279		
PFDA	8.266	512.9 -> 469.0	3344	0.20 µg/L	96
		512.9 -> 219.0	610		
PFDODA	9.182	613.1 -> 569.0	2968	0.19 µg/L	99
		613.1 -> 319.0	445		
PFDS	9.333	599.0 -> 79.9	447	0.17 µg/L	94

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.531	599.0 -> 98.8	200	0.19	µg/L	97
		363.1 -> 319.0	3370			
PFHpS	7.886	363.1 -> 169.0	647	0.15	µg/L	95
		449.0 -> 79.9	573			
PFHxA	5.563	449.0 -> 98.9	328	0.19	µg/L	99
		313.0 -> 269.0	2957			
PFHxS	7.291	313.0 -> 118.9	99	0.21	µg/L	m
		398.7 -> 79.9	622			
PFNA	7.785	398.7 -> 98.9	328	0.18	µg/L	91
		463.0 -> 419.0	2497			
PFNS	8.899	463.0 -> 219.0	662	0.16	µg/L	80
		548.8 -> 79.9	443			
PFOA	7.213	548.8 -> 98.9	289	0.18	µg/L	97
		413.0 -> 369.0	4712			
PFOS	8.406	413.0 -> 169.0	953	0.19	µg/L	m
		498.9 -> 79.9	960			
PFPeA	4.363	498.9 -> 98.8	385	0.38	µg/L	100
		263.0 -> 219.0	5473			
PFPeS	6.557	349.1 -> 79.9	403	0.17	µg/L	94
		349.1 -> 98.9	210			
PFTeDA	9.950	713.1 -> 669.0	2771	0.21	µg/L	95
		713.1 -> 168.9	319			
PFTrDA	9.578	663.0 -> 619.0	3223	0.19	µg/L	99
		663.0 -> 168.9	406			
PFUnDA	8.736	563.1 -> 519.0	2779	0.18	µg/L	94
		563.1 -> 269.1	637			
11Cl-PF3OUdS	9.606	630.9 -> 450.9	3370	0.37	µg/L	97
		632.9 -> 452.9	1101			
9Cl-PF3ONS	8.750	530.8 -> 351.0	5137	0.42	µg/L	100
		532.8 -> 353.0	1514			
ADONA	6.794	376.9 -> 250.9	10393	0.40	µg/L	99
		376.9 -> 84.8	2638			
HFPO-DA	5.941	284.9 -> 168.9	1474	0.41	µg/L	96
		284.9 -> 184.9	159			
3:3FTCA	3.873	241.0 -> 177.0	767	0.92	µg/L	96
		241.0 -> 117.0	79			
5:3FTCA	6.294	341.0 -> 237.1	11936	4.50	µg/L	98
		341.0 -> 217.0	8539			
7:3FTCA	7.787	441.0 -> 316.9	7328	5.01	µg/L	91
		441.0 -> 336.9	16341			
EtFOSA	11.425	526.0 -> 219.0	1847	0.36	µg/L	98
		526.0 -> 169.0	2606			
EtFOSE	11.357	630.0 -> 58.9	3499	0.86	µg/L	100
		511.9 -> 219.0	1486			
MeFOSA	11.153	511.9 -> 169.0	2099	0.41	µg/L	65
		616.1 -> 58.9	2502			
MeFOSE	11.073	699.1 -> 79.9	346	0.92	µg/L	100
		699.1 -> 98.8	194			
PFDoDS	10.077	295.0 -> 201.0	318	0.16	µg/L	96
		295.0 -> 84.9	83			
NFDHA	5.443	279.0 -> 85.1	2997	0.34	µg/L	96
		229.0 -> 84.9	2978			
PFMBA	4.785	314.8 -> 134.9	4168	0.35	µg/L	98
PFMPA	3.499	314.8 -> 82.9	118			
PFEESA	5.997					

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

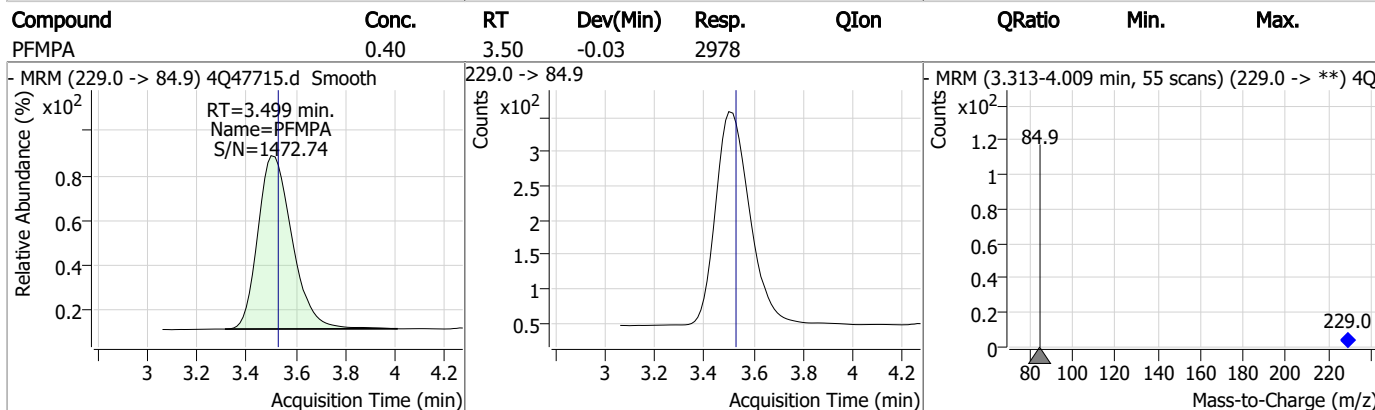
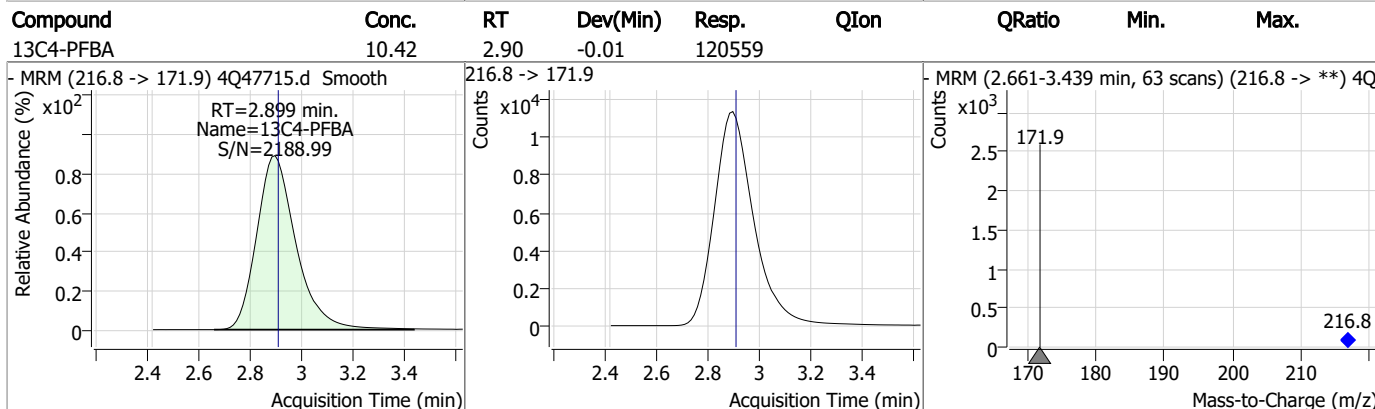
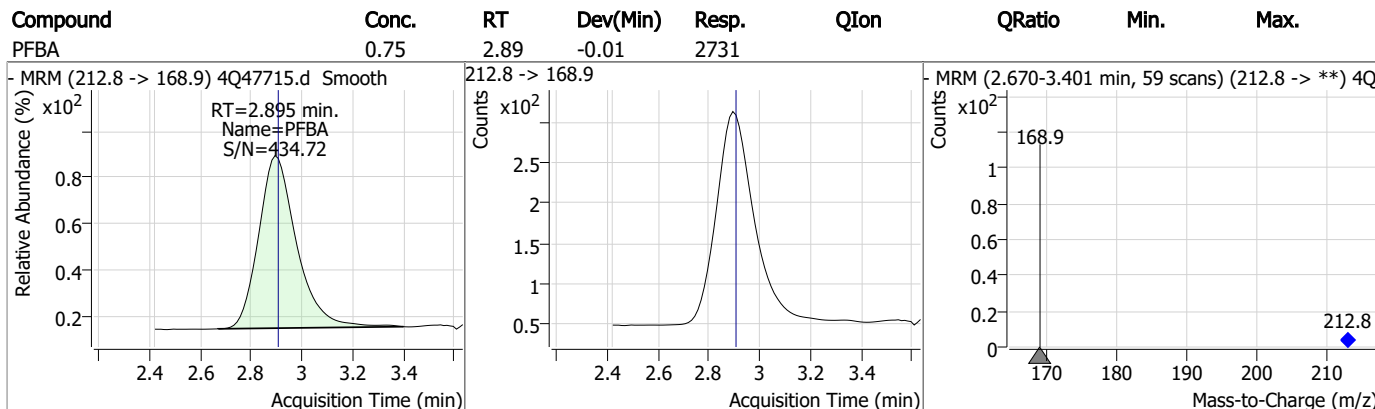
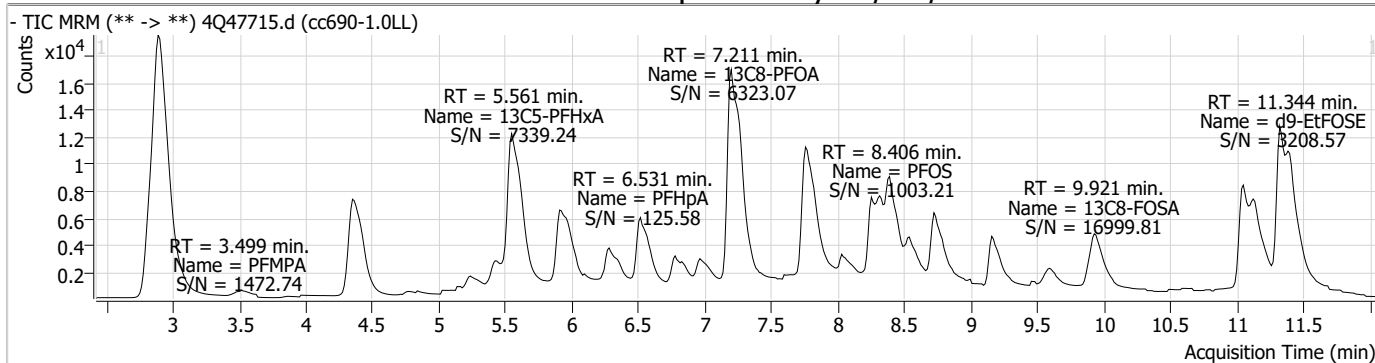
7.7.17
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Perfluorinated Compounds by LC/MS/MS

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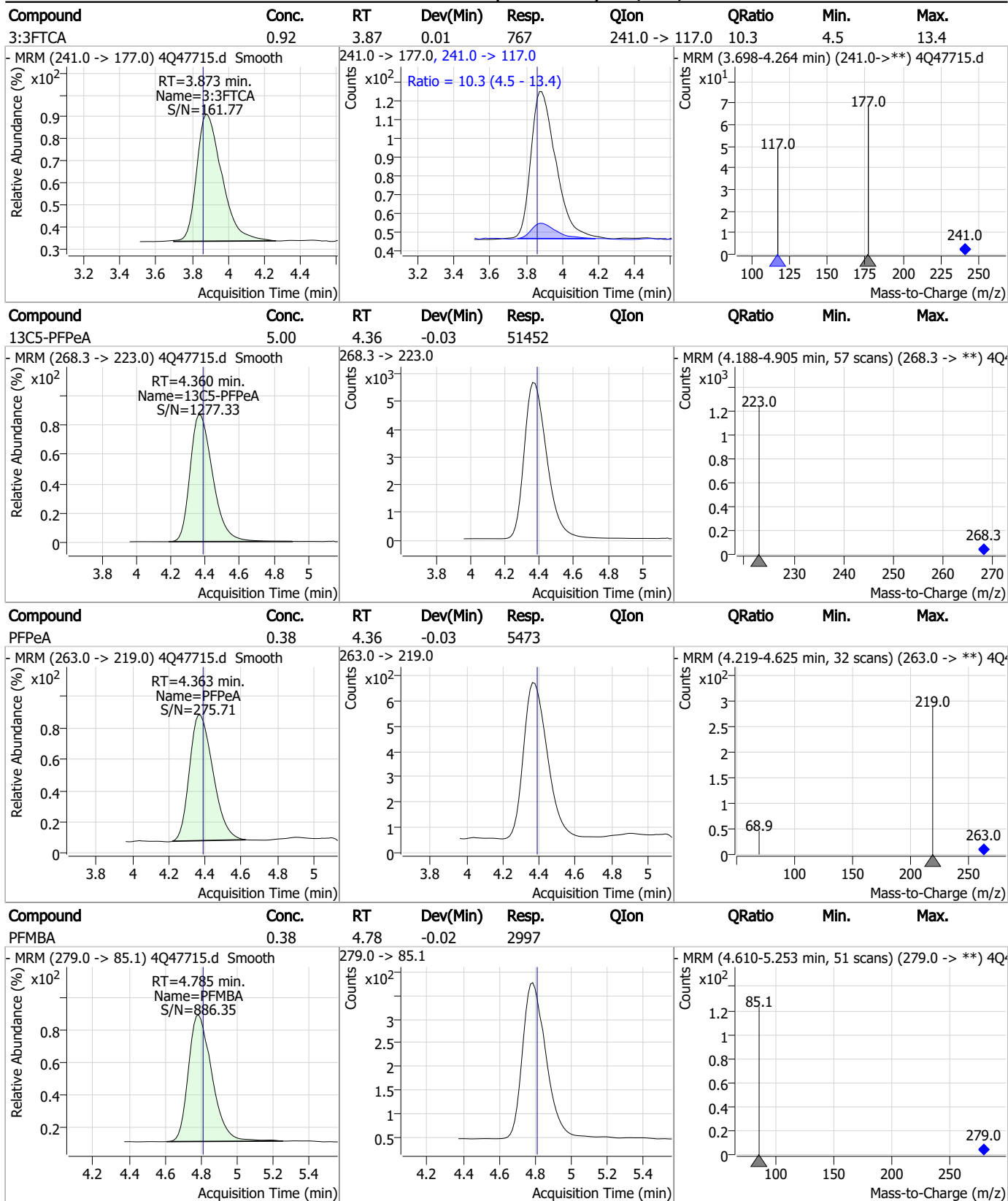
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Perfluorinated Compounds by LC/MS/MS



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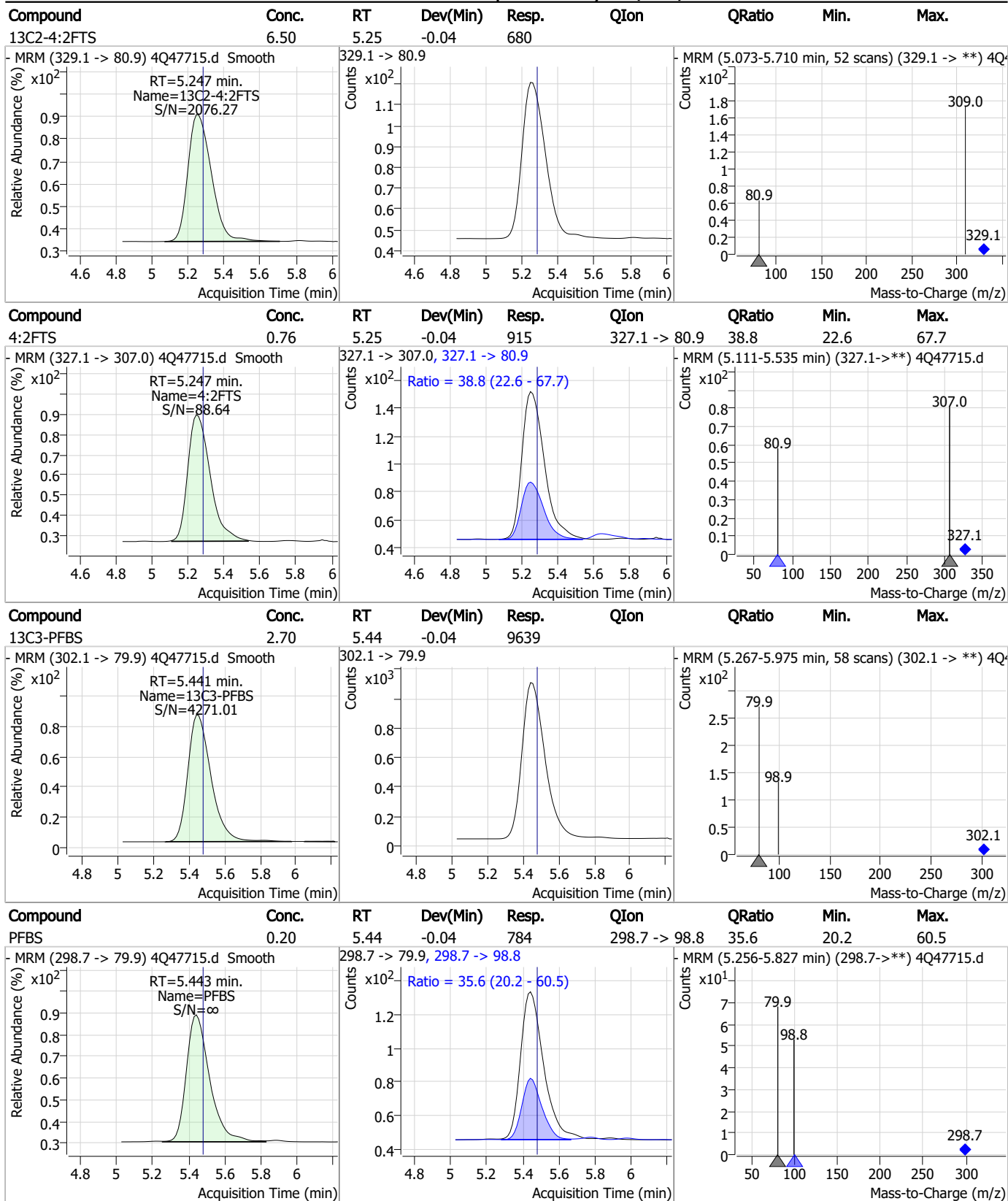
Perfluorinated Compounds by LC/MS/MS



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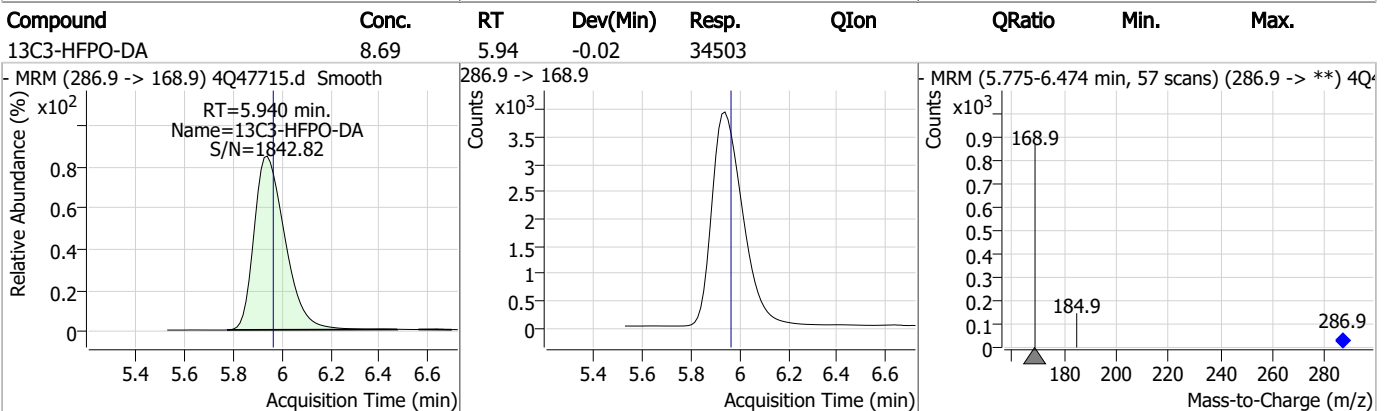
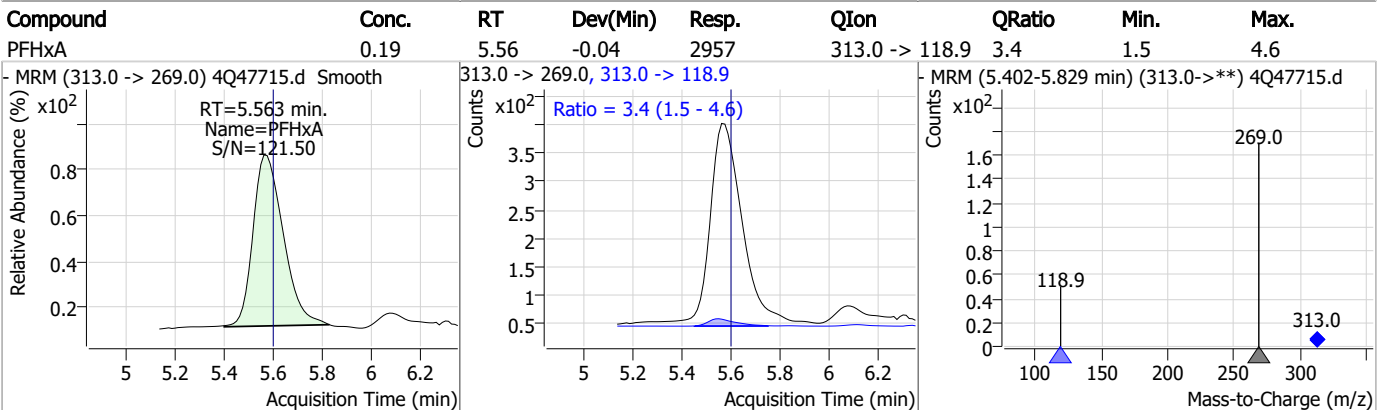
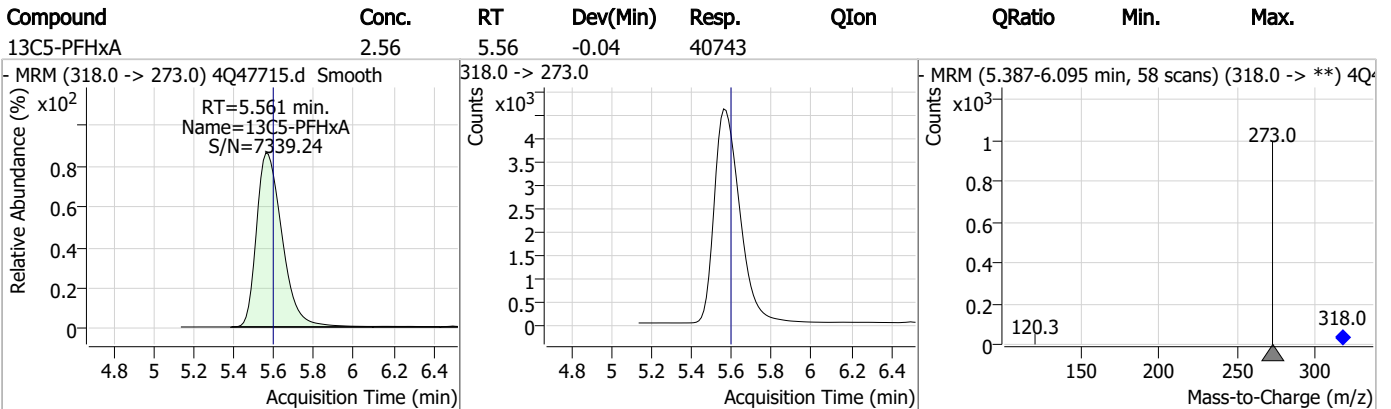
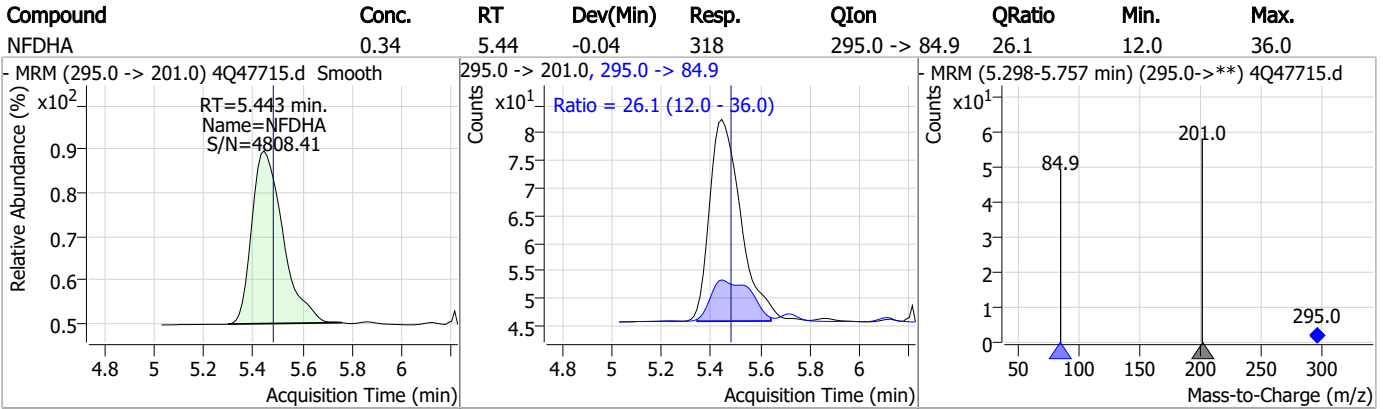
Perfluorinated Compounds by LC/MS/MS



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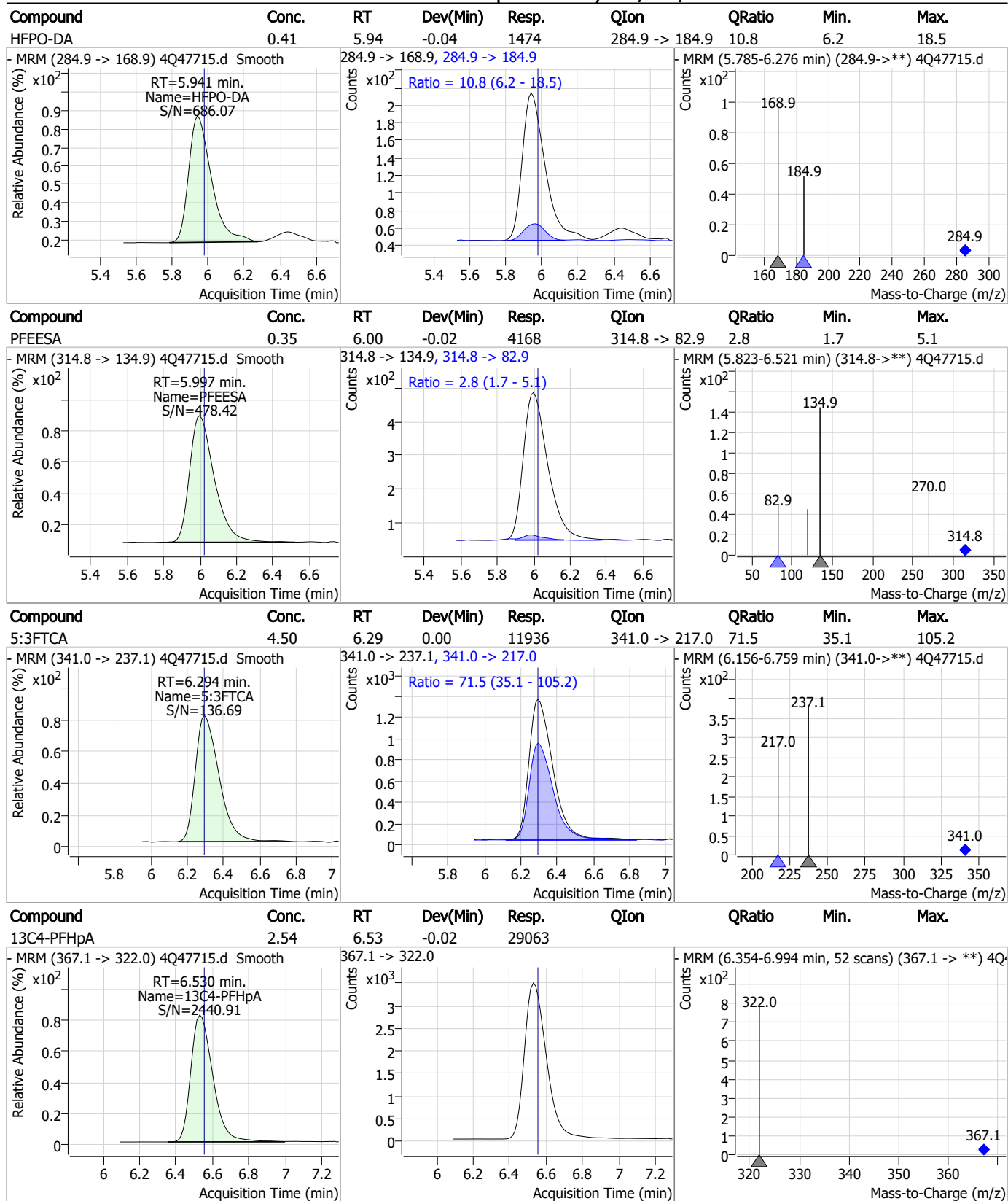


Perfluorinated Compounds by LC/MS/MS



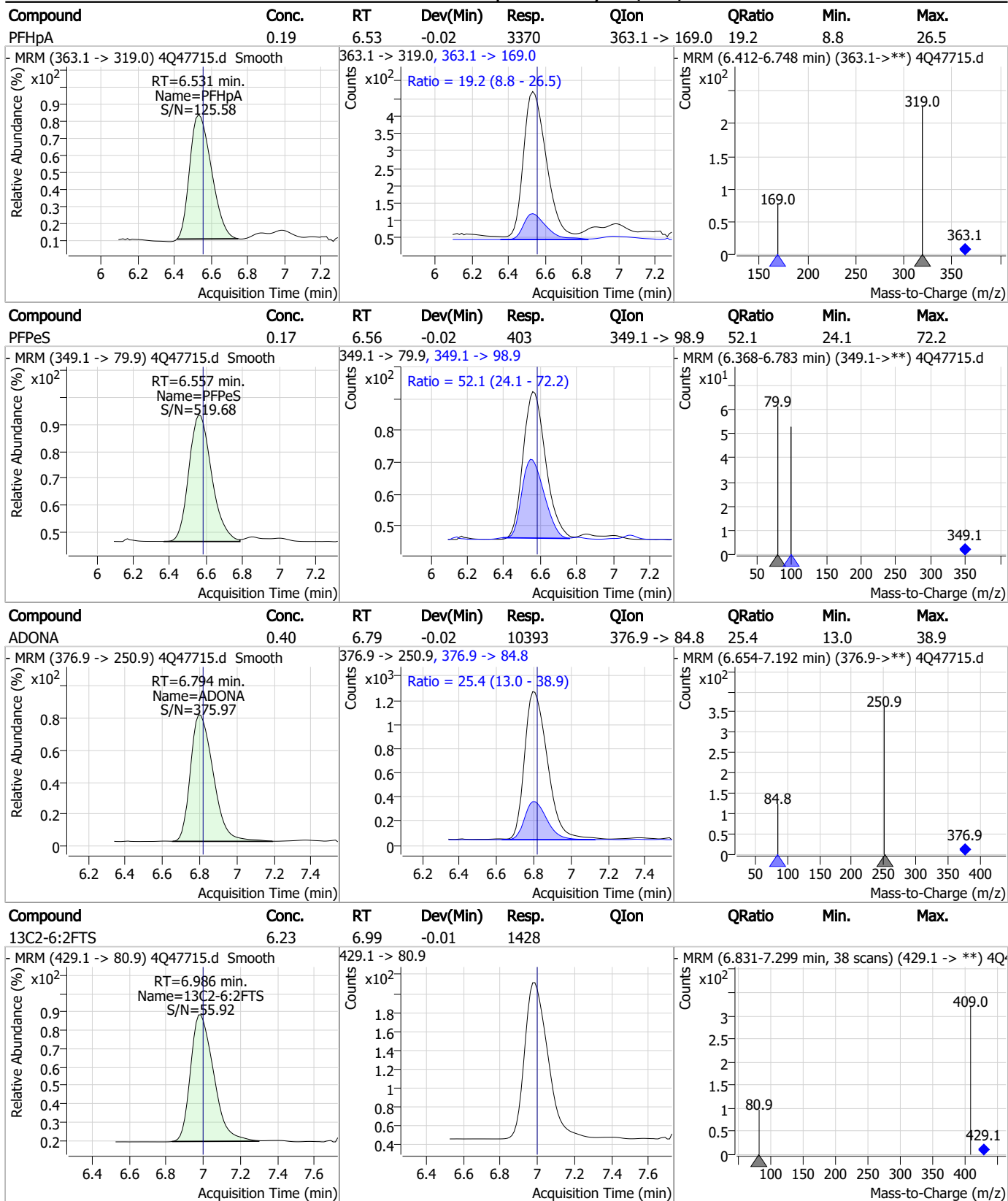
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Perfluorinated Compounds by LC/MS/MS



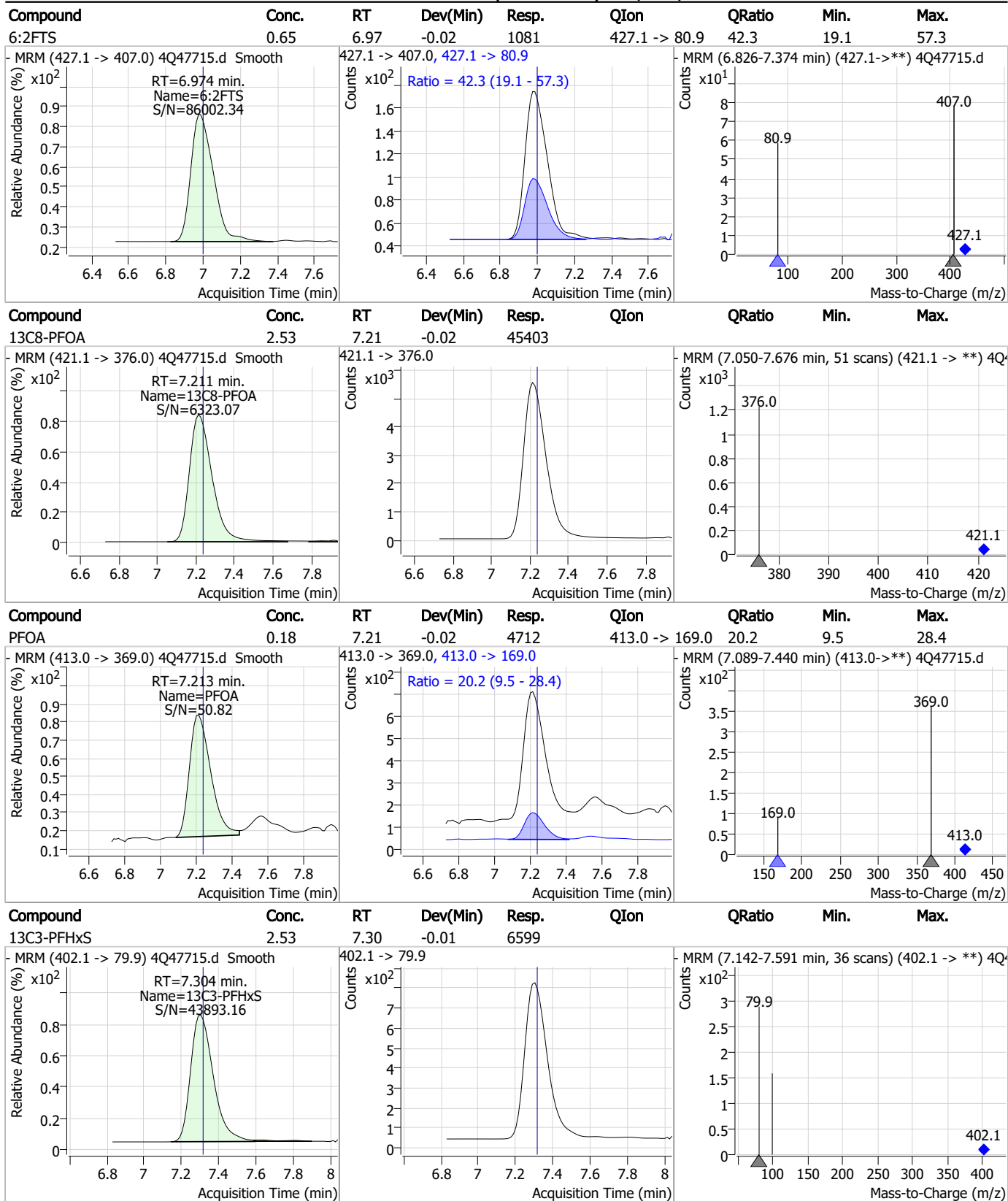
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Perfluorinated Compounds by LC/MS/MS



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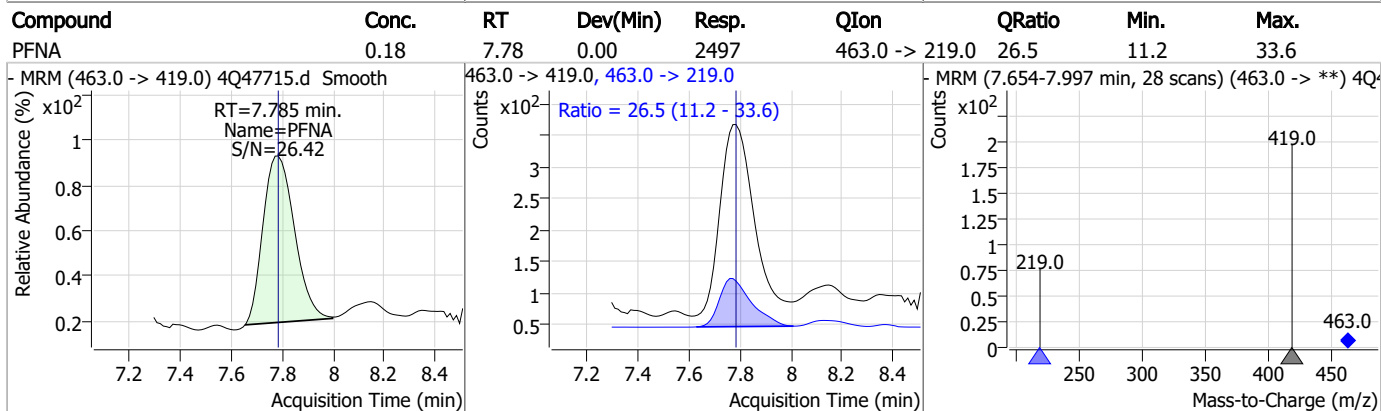
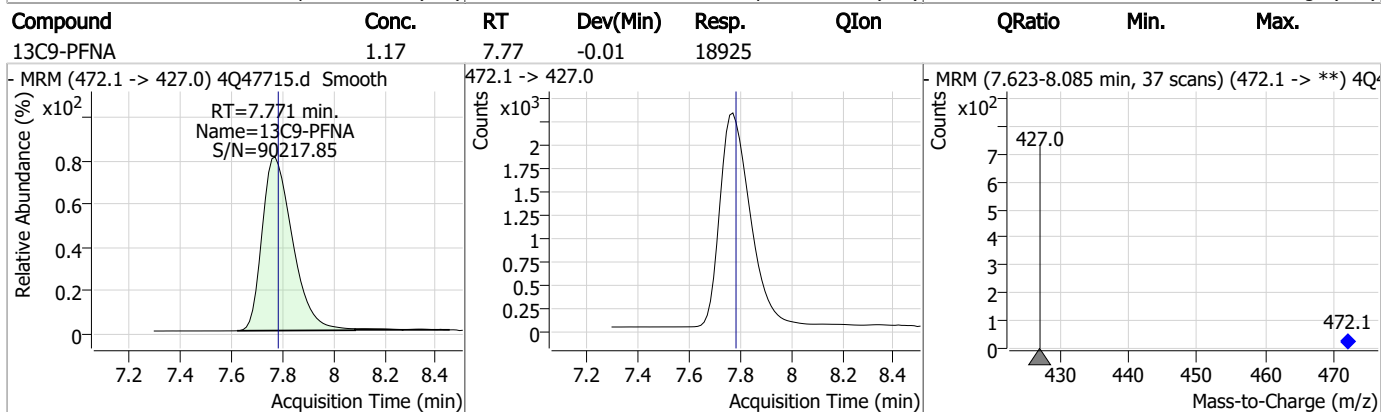
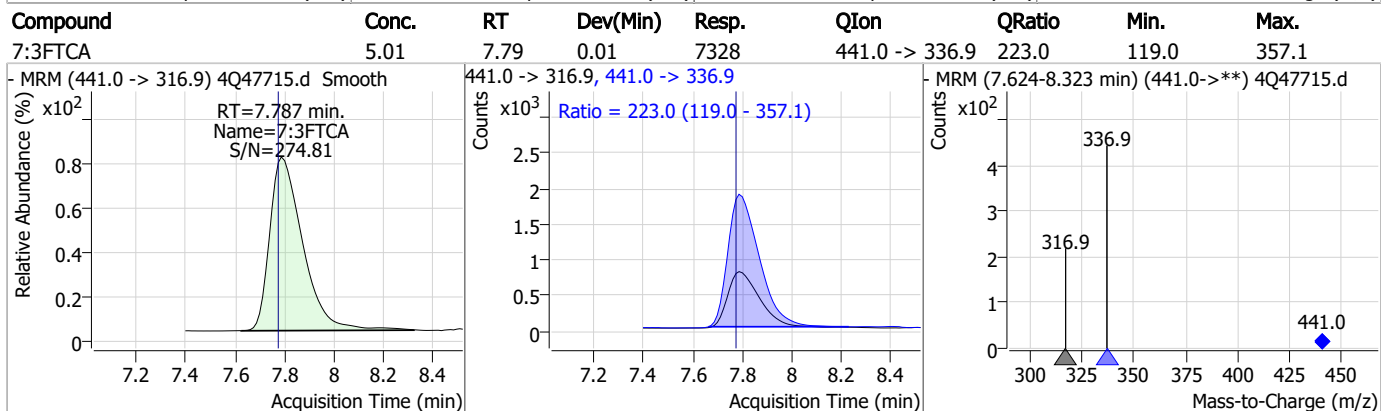
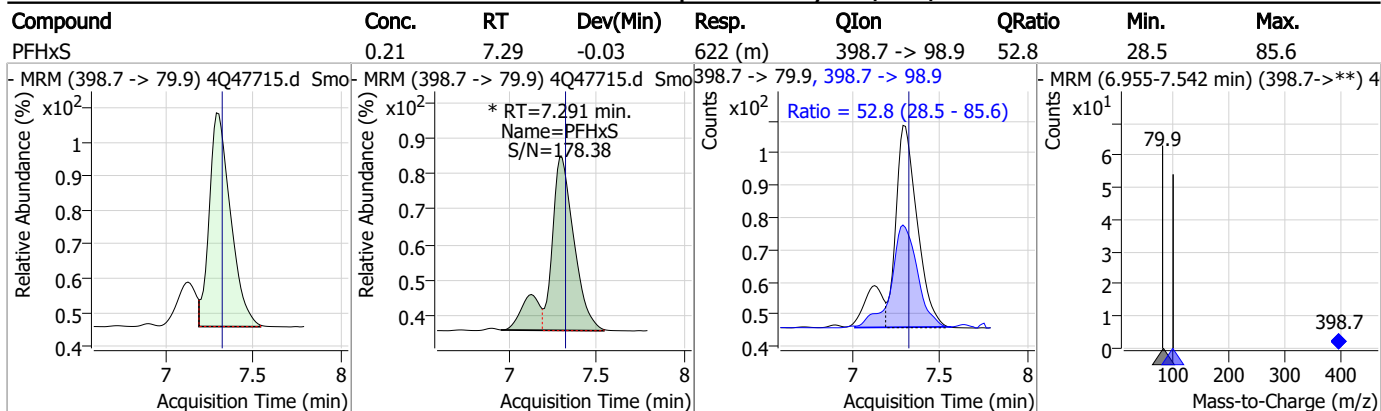
Perfluorinated Compounds by LC/MS/MS



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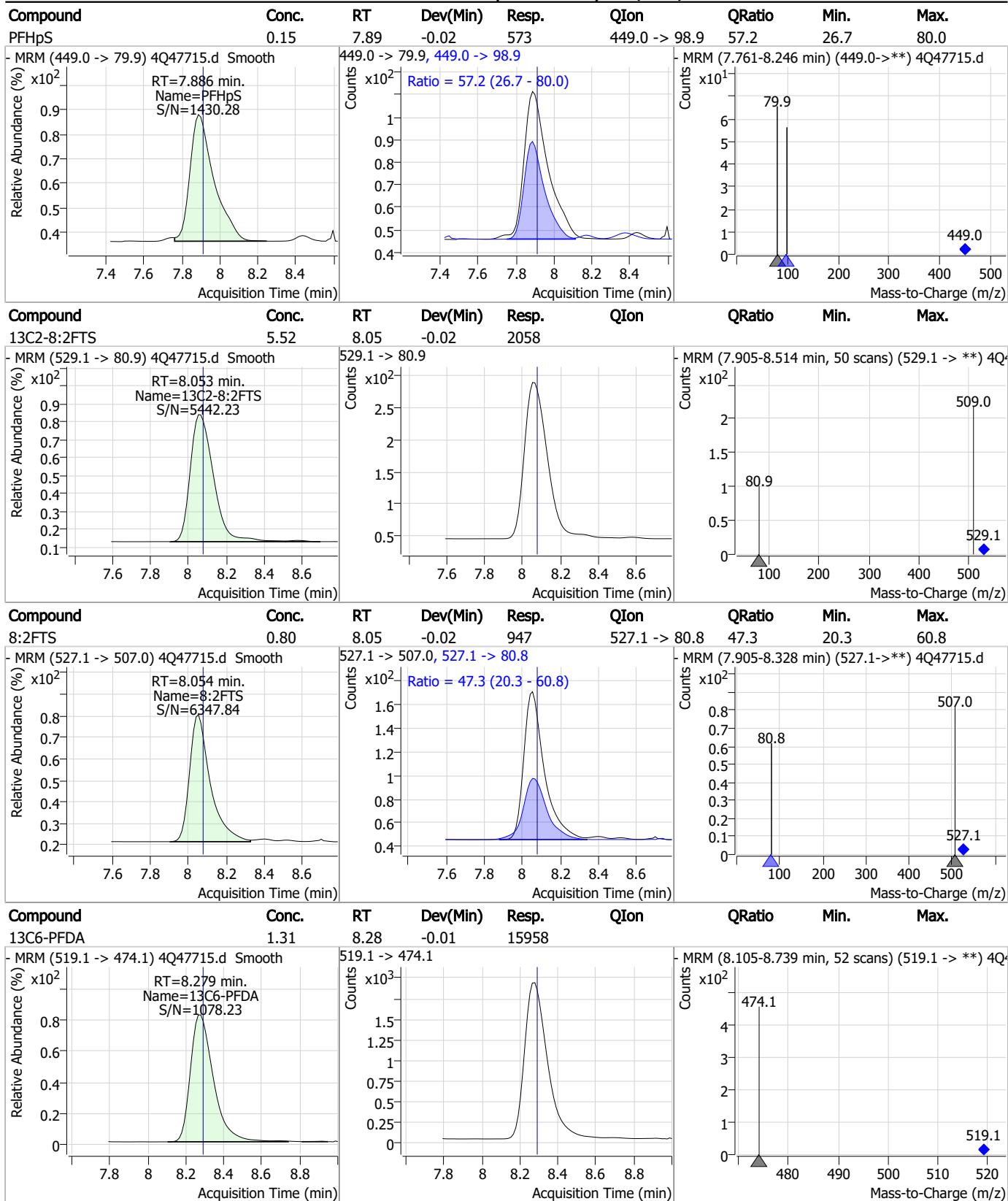


Perfluorinated Compounds by LC/MS/MS



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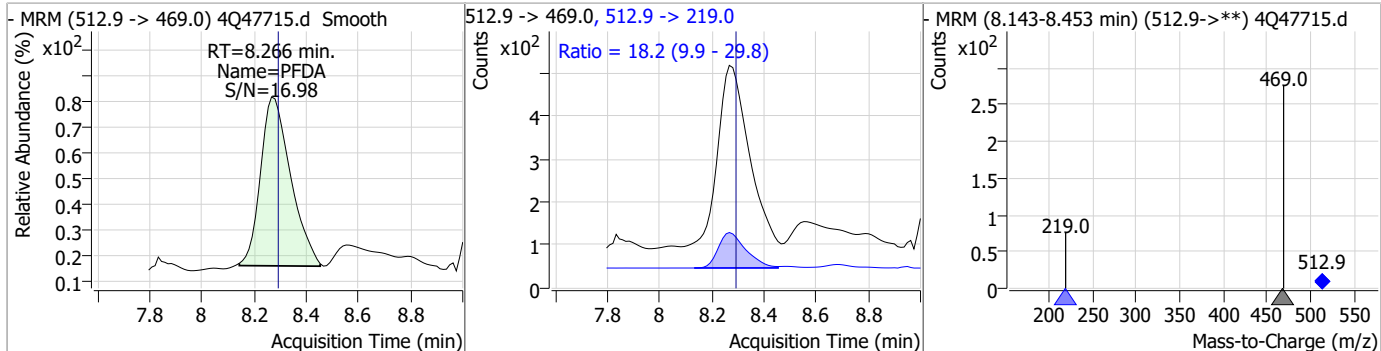
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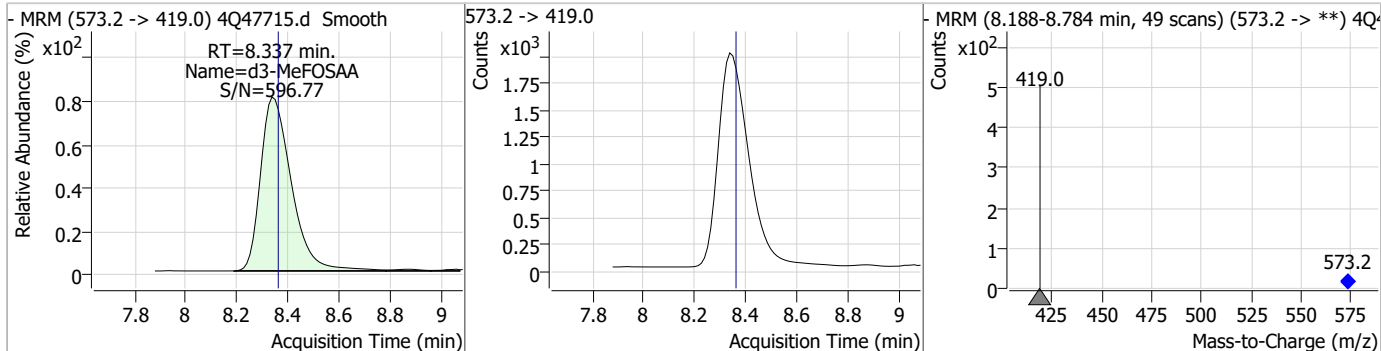
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Perfluorinated Compounds by LC/MS/MS

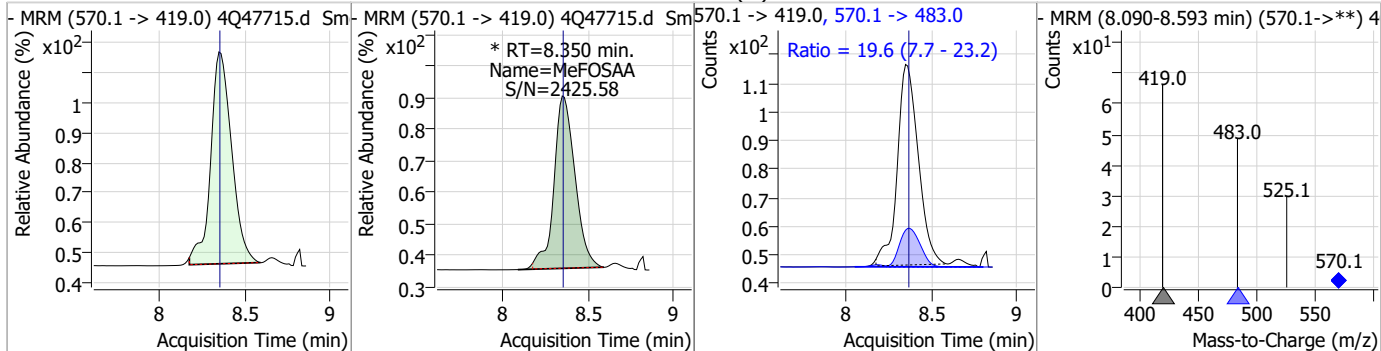
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.20	8.27	-0.03	3344	512.9 -> 219.0	18.2	9.9	29.8



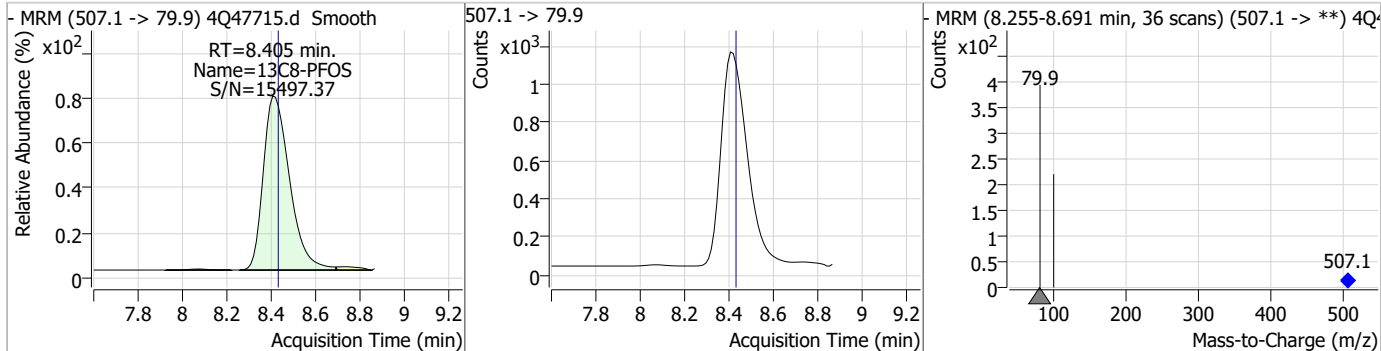
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.25	8.34	-0.02	16662				



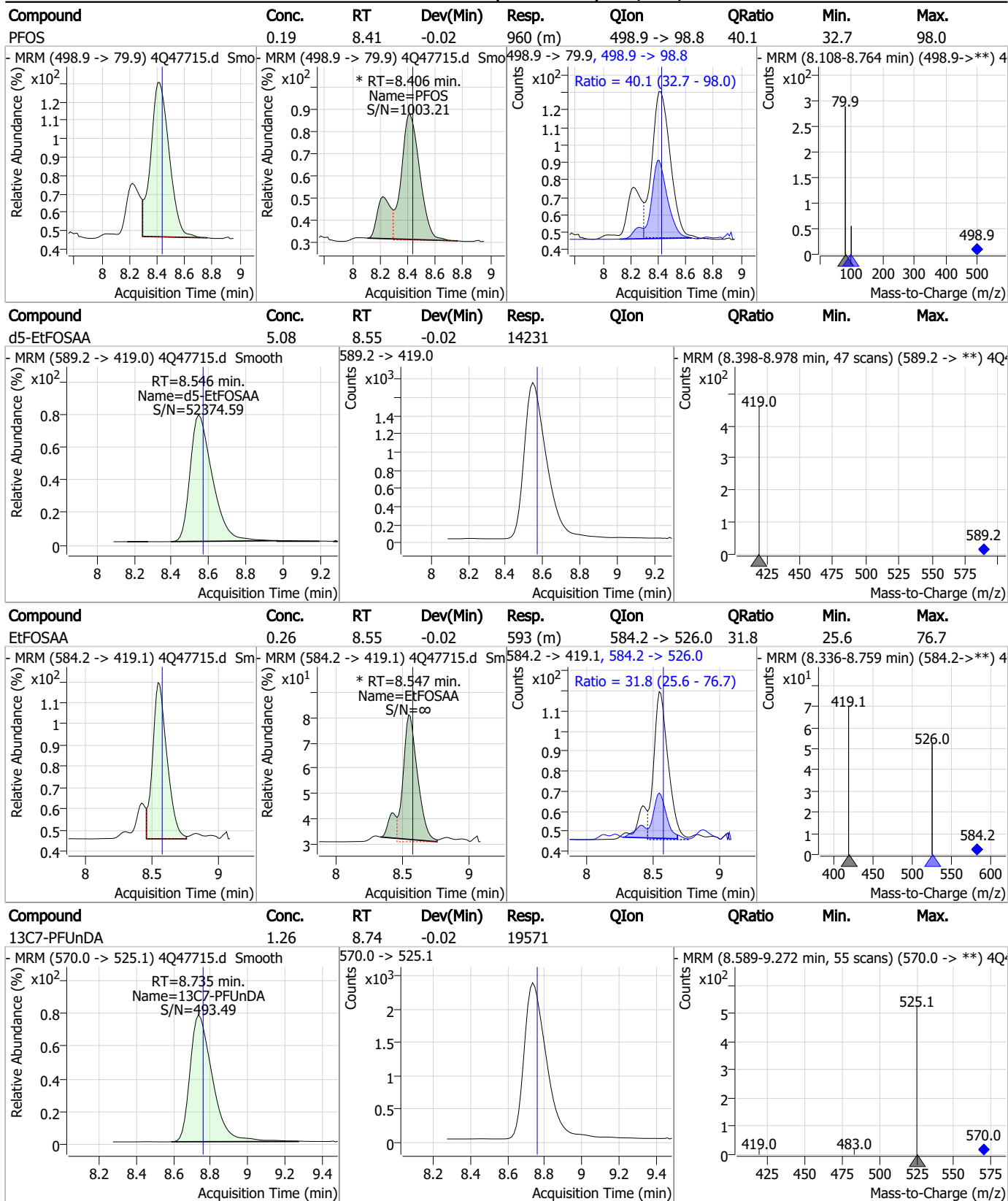
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.20	8.35	-0.01	604 (m)	570.1 -> 483.0	19.6	7.7	23.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.78	8.40	-0.03	9315				

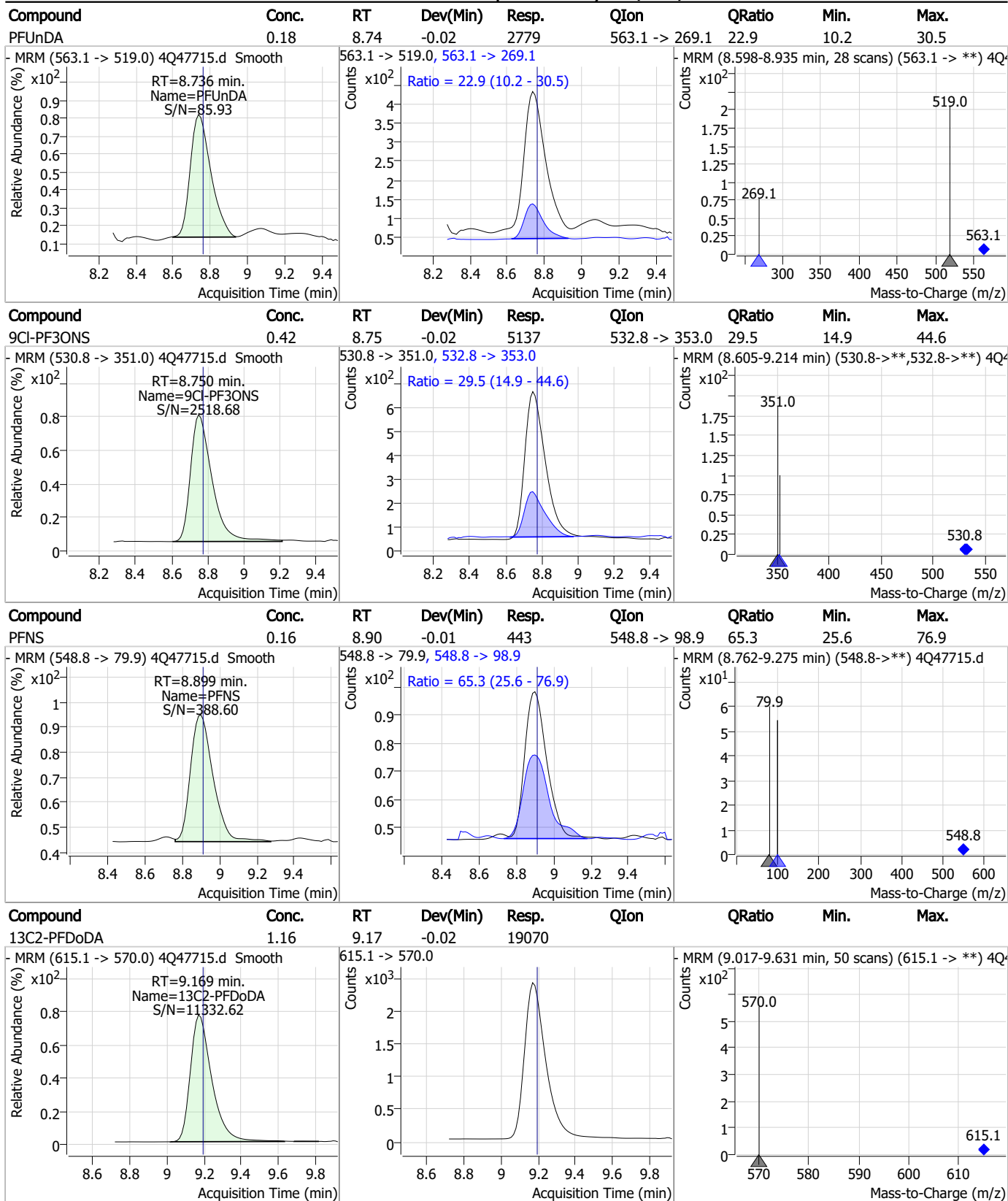


Perfluorinated Compounds by LC/MS/MS



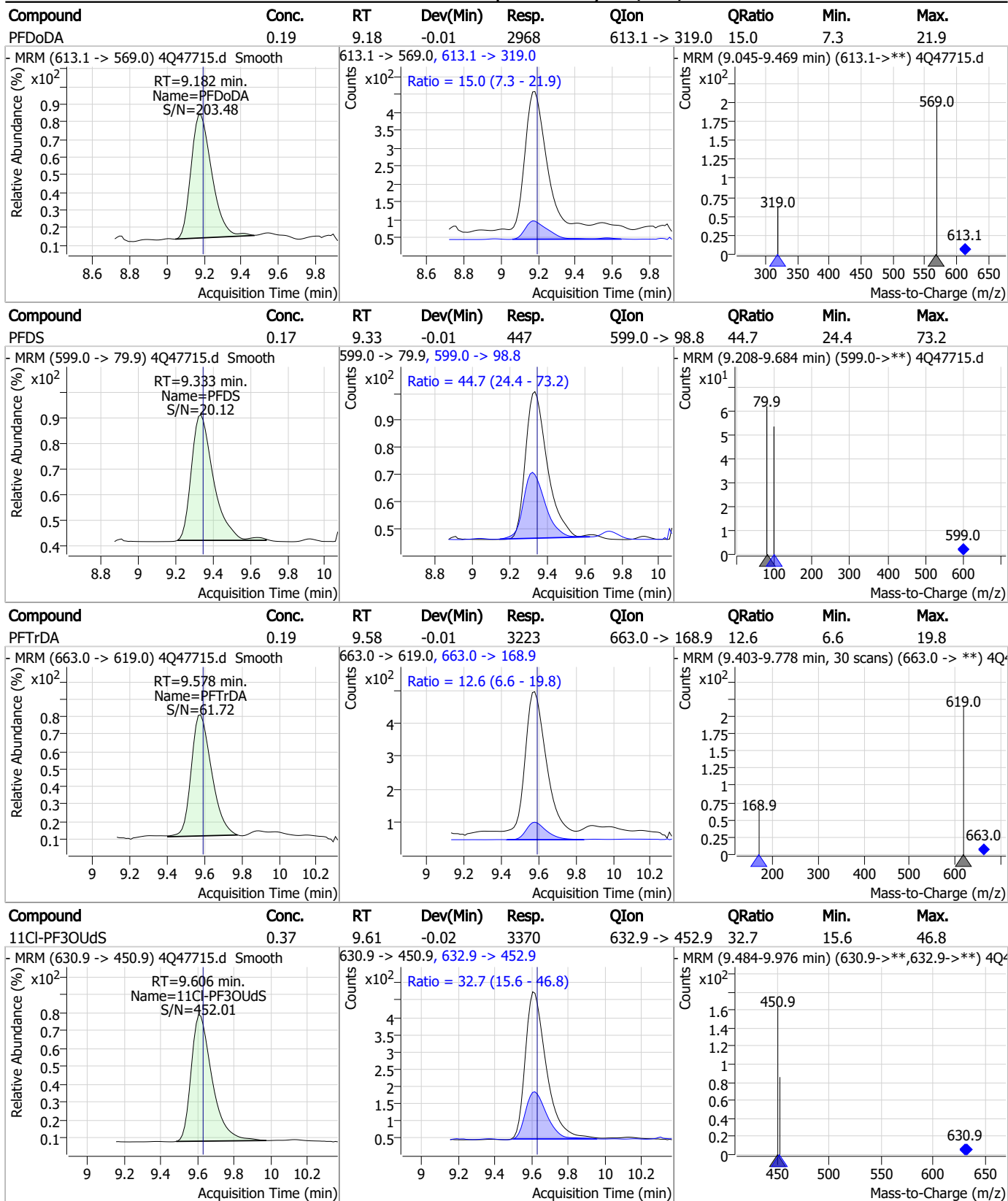
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Perfluorinated Compounds by LC/MS/MS



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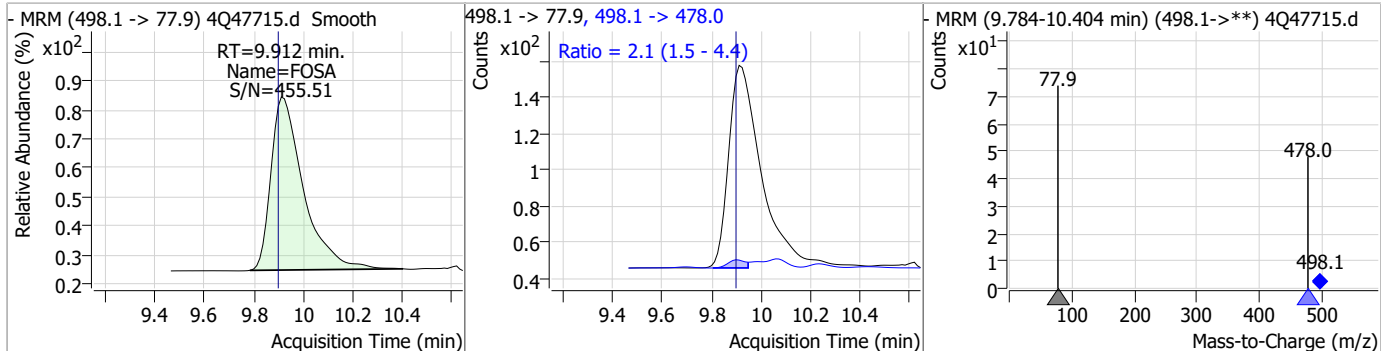
Perfluorinated Compounds by LC/MS/MS



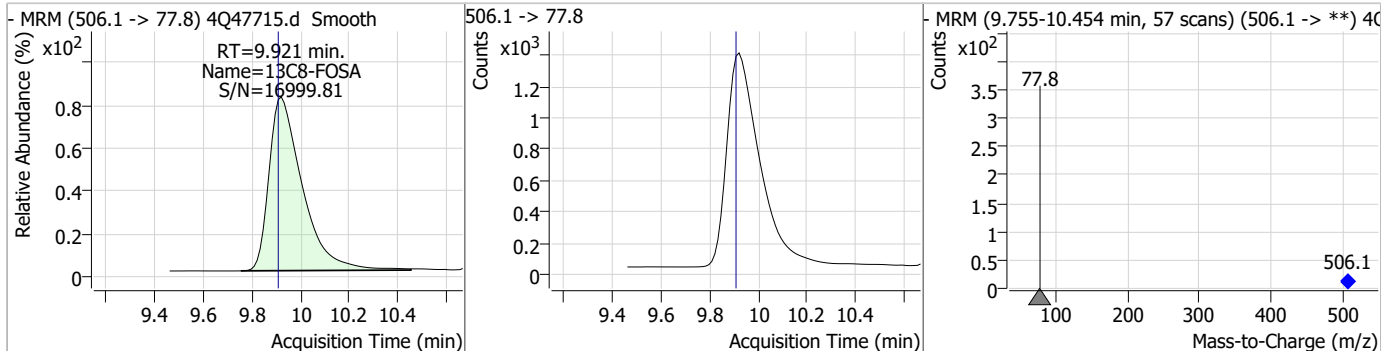
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Perfluorinated Compounds by LC/MS/MS

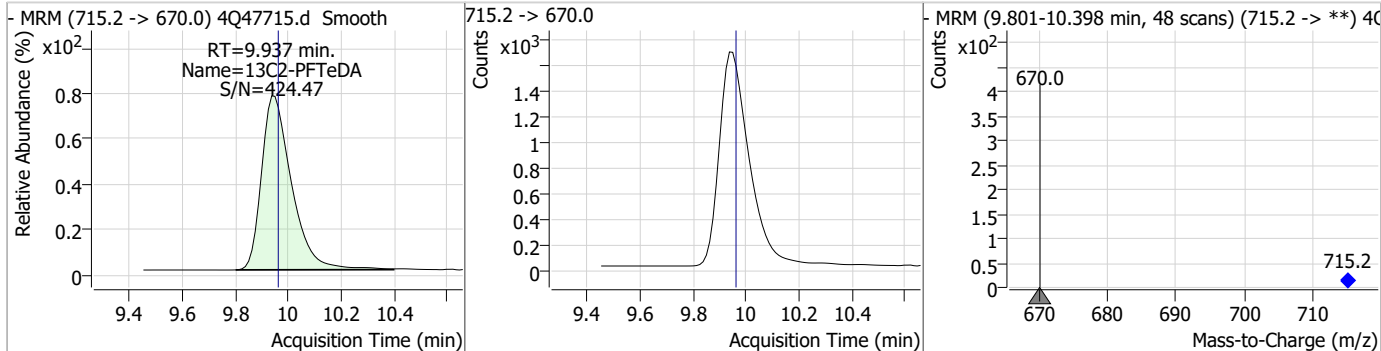
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.18	9.91	0.01	1018	498.1 -> 478.0	2.1	1.5	4.4



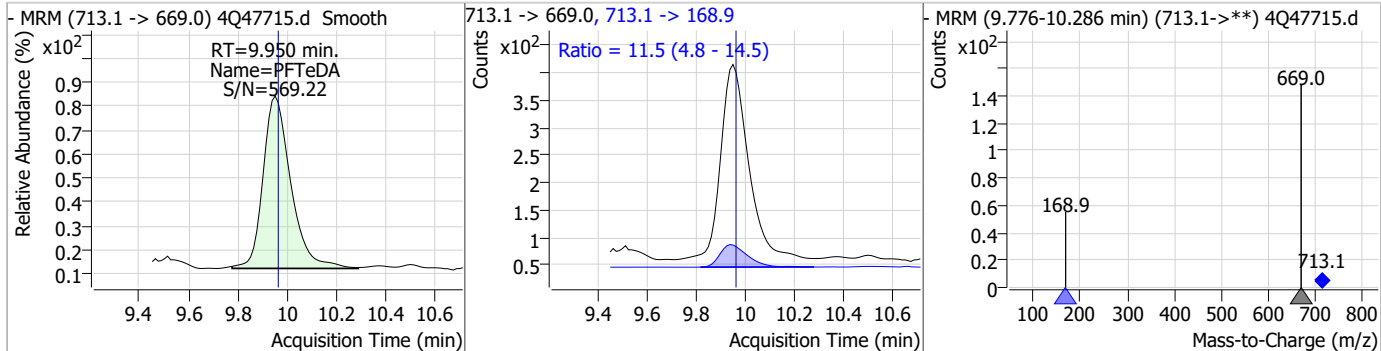
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.61	9.92	0.01	13025				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.11	9.94	-0.02	13124				

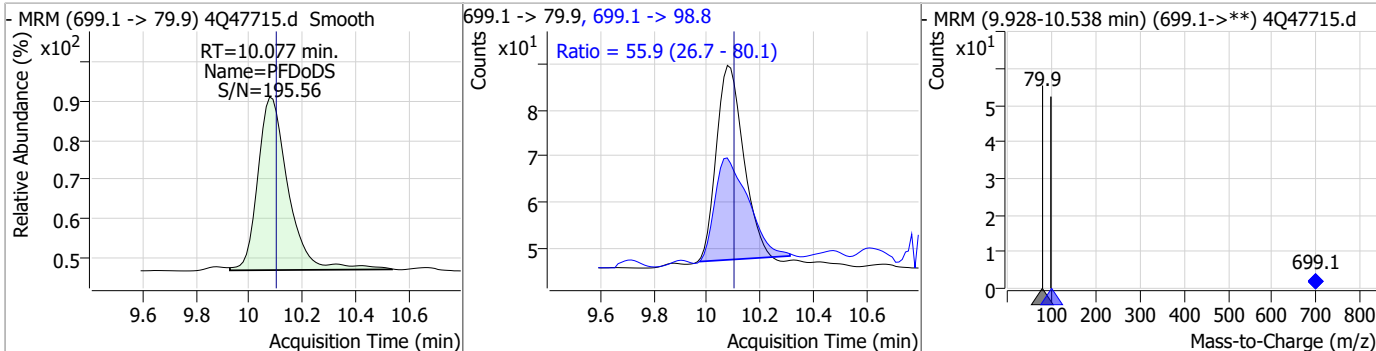


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.21	9.95	-0.01	2771	713.1 -> 168.9	11.5	4.8	14.5

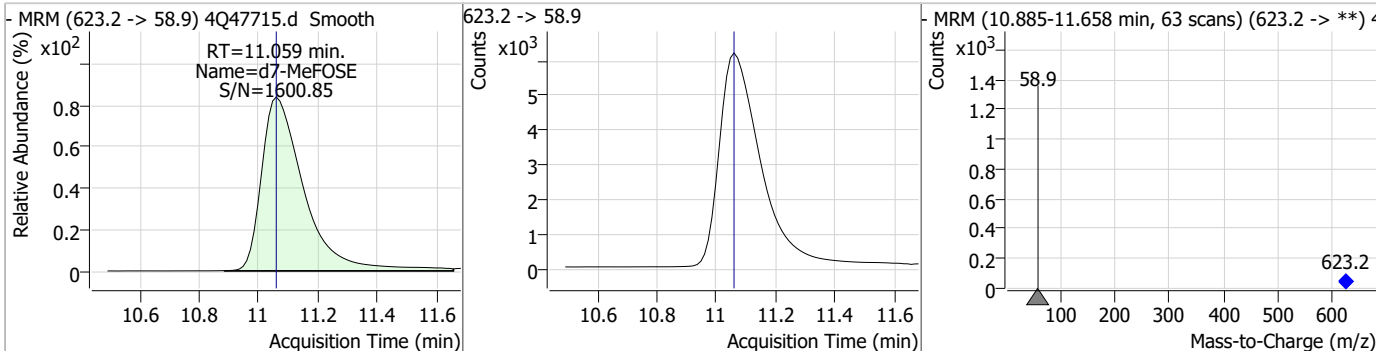


Perfluorinated Compounds by LC/MS/MS

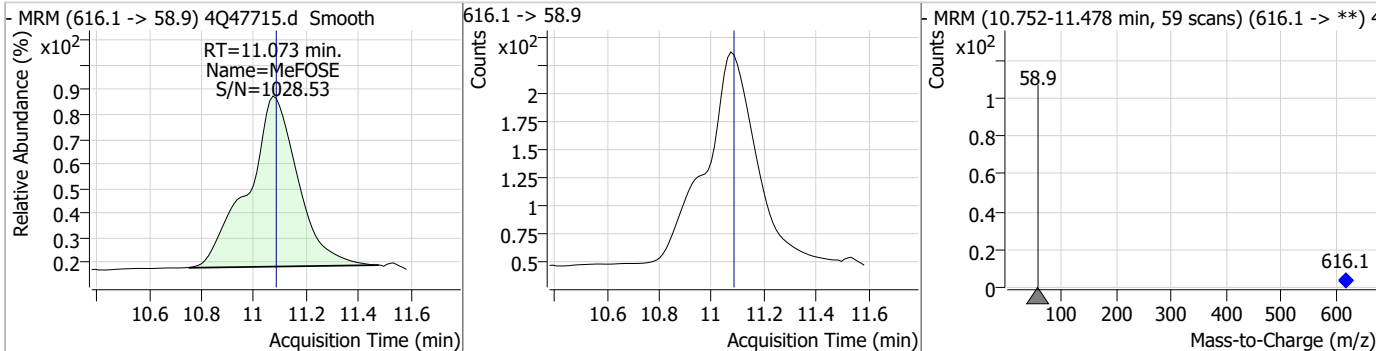
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	0.16	10.08	-0.02	346	699.1 -> 98.8	55.9	26.7	80.1



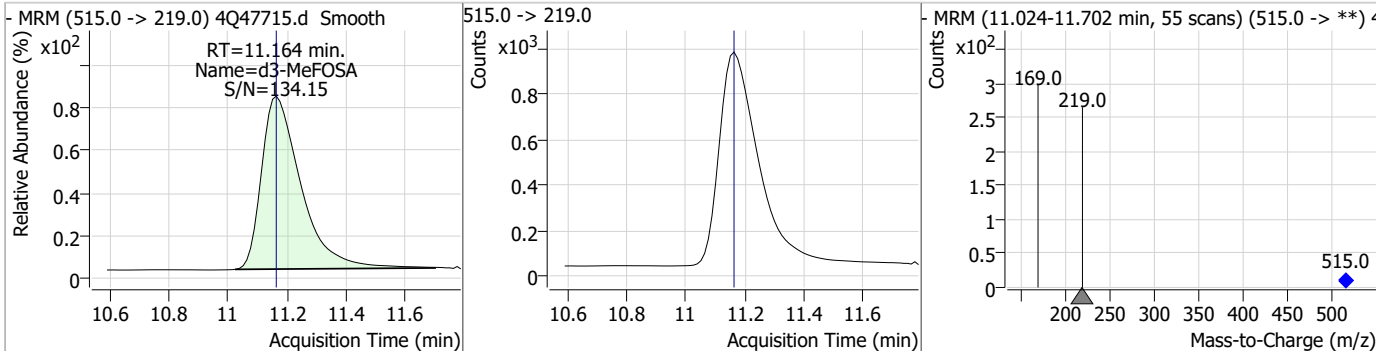
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.95	11.06	0.00	61673				



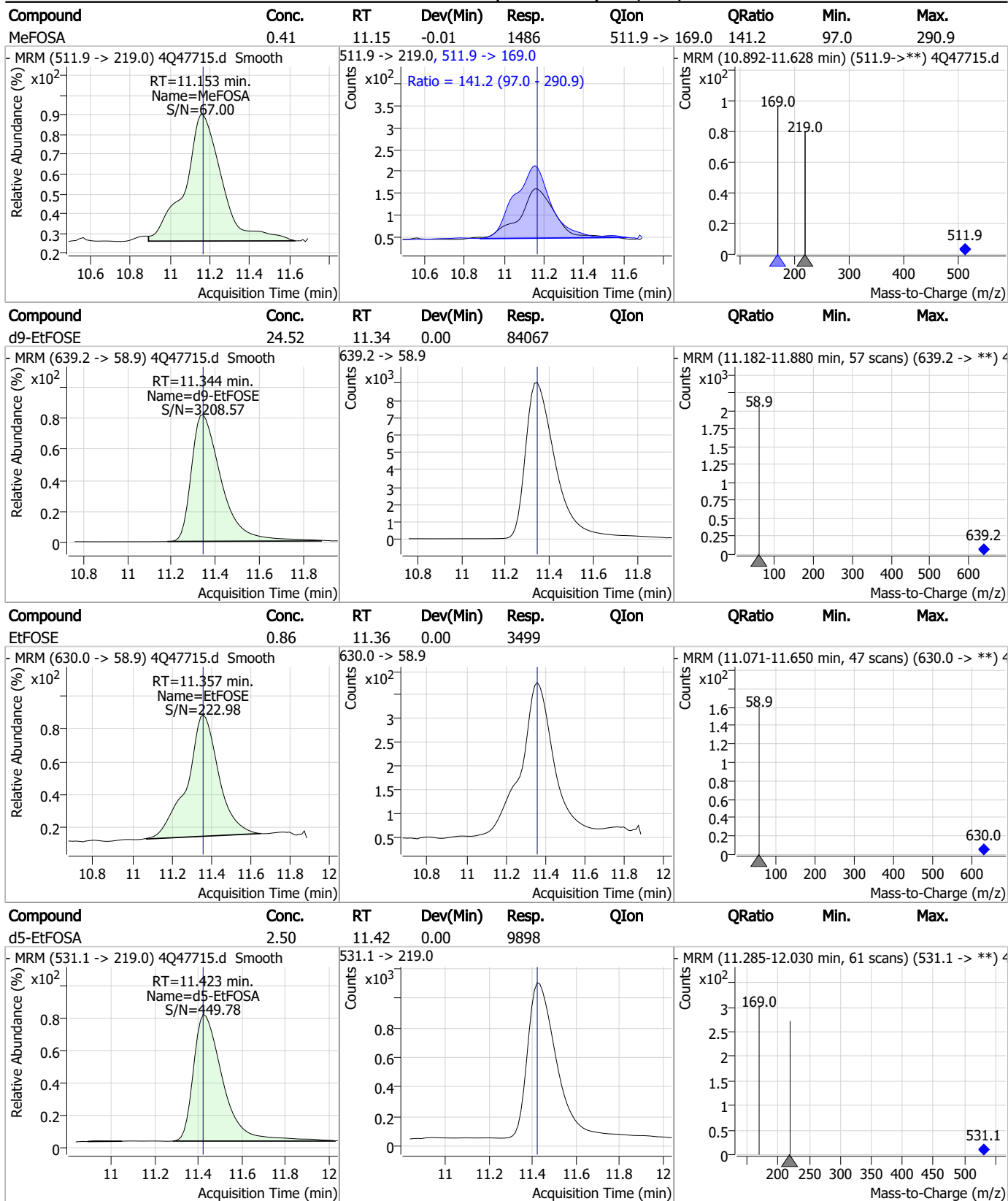
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	0.92	11.07	-0.01	2502				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.39	11.16	0.00	8699				

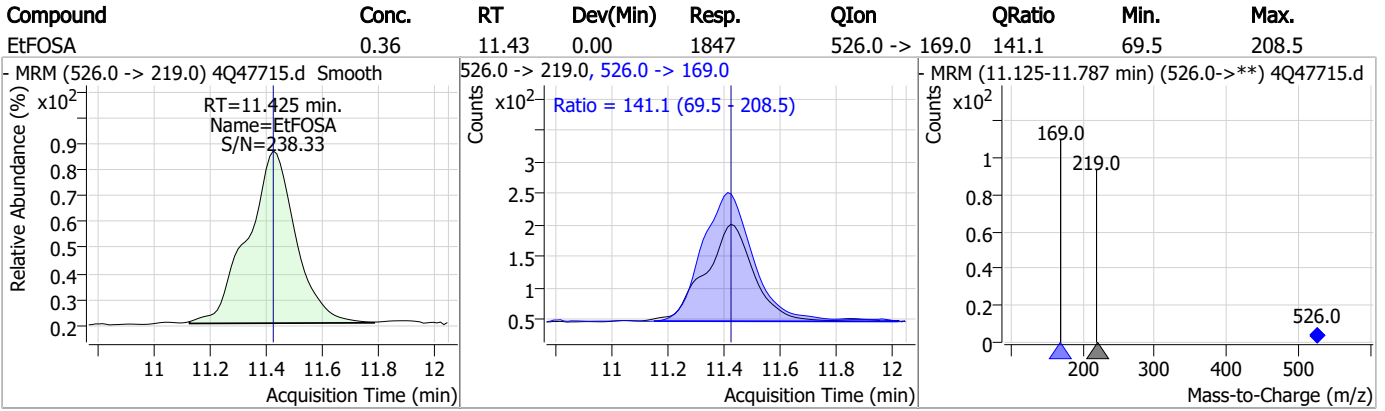


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q699-CC690 Method: EPA DRAFT 1633
Lab FileID: 4Q47715.D Analyst approved: 07/23/23 11:07 Anna Ludwig
Injection Time: 07/21/23 02:07 Supervisor approved: 07/24/23 09:53 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
MeFOSAA	2355-31-9		8.35	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak
EtFOSAA	2991-50-6		8.55	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q47725.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 7/21/2023 4:35:04 AM
 Sample Name : cc690-4
 Vial : P1-A5
 DA Method File : 1633_071223_S4Q690.quantmethod.xml
 Batch Name : s4q699.batch.bin
 Sample Information : OP97749,S4Q699,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.899	216.8 -> 171.9	128366	10.00 µg/L	-0.013
M5-PFPeA	4.360	268.3 -> 223.0	55354	5.00 µg/L	-0.027
M5-PFHxA	5.561	318.0 -> 273.0	43536	2.50 µg/L	-0.037
M4-PFHpA	6.530	367.1 -> 322.0	31009	2.50 µg/L	-0.025
M8-PFOA	7.211	421.1 -> 376.0	47973	2.50 µg/L	-0.025
M9-PFNA	7.759	472.1 -> 427.0	20903	1.25 µg/L	-0.025
M6-PFDA	8.266	519.1 -> 474.1	15687	1.25 µg/L	-0.026
M7-PFUnDA	8.735	570.0 -> 525.1	20511	1.25 µg/L	-0.025
M2-PFDoDA	9.169	615.1 -> 570.0	20839	1.25 µg/L	-0.025
M2-PFTeDA	9.937	715.2 -> 670.0	14011	1.25 µg/L	-0.025
M8-FOSA	9.909	506.1 -> 77.8	14413	2.50 µg/L	0.000
M3-PFBS	5.441	302.1 -> 79.9	10491	2.50 µg/L	-0.037
M3-PFHxS	7.290	402.1 -> 79.9	7821	2.50 µg/L	-0.027
M8-PFOS	8.405	507.1 -> 79.9	9720	2.50 µg/L	-0.025
M2-4:2FTS	5.247	329.1 -> 80.9	749	5.00 µg/L	-0.037
M2-6:2FTS	6.974	429.1 -> 80.9	1535	5.00 µg/L	-0.025
M2-8:2FTS	8.053	529.1 -> 80.9	2297	5.00 µg/L	-0.025
M3-MeFOSAA	8.337	573.2 -> 419.0	17603	5.00 µg/L	-0.025
M3-HFPO-DA	5.940	286.9 -> 168.9	37186	10.00 µg/L	-0.025
M5-EtFOSAA	8.546	589.2 -> 419.0	15597	5.00 µg/L	-0.025
M7-MeFOSE	11.059	623.2 -> 58.9	64389	25.00 µg/L	0.000
M9-EtFOSE	11.332	639.2 -> 58.9	89773	25.00 µg/L	-0.012
M5-EtFOSA	11.423	531.1 -> 219.0	10142	2.50 µg/L	0.000
M3-MeFOSA	11.152	515.0 -> 219.0	9382	2.50 µg/L	-0.012
13C4-PFOS	8.405	502.8 -> 79.9	10604	2.50 µg/L	-0.025
13C3-PFBA	2.891	216.0 -> 172.0	66377	5.00 µg/L	-0.025
18O2-PFHxS	7.303	403.0 -> 83.9	5445	2.50 µg/L	-0.012
13C4-PFOA	7.212	417.1 -> 372.0	60438	2.50 µg/L	-0.025
13C2-PFDA	8.266	515.1 -> 470.1	18377	1.25 µg/L	-0.026
13C5-PFNA	7.772	468.0 -> 423.0	25622	1.25 µg/L	-0.012
13C2-PFHxA	5.562	315.1 -> 270.0	40560	2.50 µg/L	-0.037
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	749	6.12 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.4%		
13C2-6:2FTS	6.974	429.1 -> 80.9	1535	5.73 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.6%		
13C2-8:2FTS	8.053	529.1 -> 80.9	2297	5.27 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.4%		
13C2-PFDoDA	9.169	615.1 -> 570.0	20839	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C2-PFTeDA	9.937	715.2 -> 670.0	14011	1.14 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 90.9%		
13C3-PFBS	5.441	302.1 -> 79.9	10491	2.52 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C3-PFHxS	7.290	402.1 -> 79.9	7821	2.56 µg/L	-0.027

7.7.18
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C4-PFBA	2.899	216.8 -> 171.9	128366	10.23 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C4-PFHpA	6.530	367.1 -> 322.0	31009	2.49 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C5-PFHxA	5.561	318.0 -> 273.0	43536	2.51 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C5-PFPeA	4.360	268.3 -> 223.0	55354	4.94 µg/L	-0.027
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C6-PFDA	8.266	519.1 -> 474.1	15687	1.23 µg/L	-0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C7-PFUnDA	8.735	570.0 -> 525.1	20511	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C8-FOSA	9.909	506.1 -> 77.8	14413	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.1%	
13C8-PFOA	7.211	421.1 -> 376.0	47973	2.44 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C8-PFOS	8.405	507.1 -> 79.9	9720	2.64 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C9-PFNA	7.759	472.1 -> 427.0	20903	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.6%	
d3-MeFOSAA	8.337	573.2 -> 419.0	17603	5.05 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C3-HFPO-DA	5.940	286.9 -> 168.9	37186	8.60 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 86.0%	
d3-MeFOSA	11.152	515.0 -> 219.0	9382	2.35 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.9%	
d5-EtFOSAA	8.546	589.2 -> 419.0	15597	5.07 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.4%	
d7-MeFOSE	11.059	623.2 -> 58.9	64389	22.75 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 91.0%	
d9-EtFOSE	11.332	639.2 -> 58.9	89773	23.83 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.3%	
d5-EtFOSA	11.423	531.1 -> 219.0	10142	2.34 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.4%	
Target Compounds					QValue
4:2FTS	5.247	327.1 -> 307.0	12075	9.09 µg/L	98
		327.1 -> 80.9	5285		
6:2FTS	6.974	427.1 -> 407.0	16902	9.53 µg/L	97
		427.1 -> 80.9	6188		
8:2FTS	8.054	527.1 -> 507.0	14037	10.68 µg/L	100
		527.1 -> 80.8	5705		
EtFOSAA	8.547	584.2 -> 419.1	6680	2.66 µg/L	91
		584.2 -> 526.0	2988		
FOSA	9.912	498.1 -> 77.9	15115	2.38 µg/L	99
		498.1 -> 478.0	470		
MeFOSAA	8.337	570.1 -> 419.0	7864	2.50 µg/L	92
		570.1 -> 483.0	1486		
PFBA	2.895	212.8 -> 168.9	38084	9.86 µg/L	100
PFBS	5.443	298.7 -> 79.9	9258	2.12 µg/L	97
		298.7 -> 98.8	3898		
PFDA	8.266	512.9 -> 469.0	41403	2.54 µg/L	99
		512.9 -> 219.0	8056		
PFDODA	9.170	613.1 -> 569.0	42559	2.54 µg/L	97
		613.1 -> 319.0	6755		
PFDS	9.321	599.0 -> 79.9	6088	2.22 µg/L	97

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.531	599.0 -> 98.8	2851	2.41	µg/L	100
		363.1 -> 319.0	46060			
PFHpS	7.886	363.1 -> 169.0	8109	2.21	µg/L	97
		449.0 -> 79.9	8583			
PFHxA	5.563	449.0 -> 98.9	4760	2.39	µg/L	100
		313.0 -> 269.0	40687			
PFHxS	7.291	313.0 -> 118.9	1247	2.00	µg/L	m
		398.7 -> 79.9	6959			
PFNA	7.760	398.7 -> 98.9	3707	2.52	µg/L	97
		463.0 -> 419.0	38839			
PFNS	8.887	463.0 -> 219.0	9346	2.35	µg/L	95
		548.8 -> 79.9	6799			
PFOA	7.213	548.8 -> 98.9	3274	2.50	µg/L	99
		413.0 -> 369.0	67892			
PFOS	8.406	413.0 -> 169.0	13254	2.23	µg/L	m
		498.9 -> 79.9	11548			
PFPeA	4.363	498.9 -> 98.8	5833	5.10	µg/L	100
		263.0 -> 219.0	79618			
PFPeS	6.545	349.1 -> 79.9	6055	2.10	µg/L	95
		349.1 -> 98.9	2690			
PFTeDA	9.938	713.1 -> 669.0	35973	2.57	µg/L	99
		713.1 -> 168.9	3294			
PFTrDA	9.566	663.0 -> 619.0	45282	2.44	µg/L	98
		663.0 -> 168.9	5614			
PFUnDA	8.736	563.1 -> 519.0	40639	2.50	µg/L	100
		563.1 -> 269.1	8196			
11CI-PF3OUdS	9.606	630.9 -> 450.9	50479	5.09	µg/L	99
		632.9 -> 452.9	16024			
9CI-PF3ONS	8.750	530.8 -> 351.0	73297	5.51	µg/L	97
		532.8 -> 353.0	22923			
ADONA	6.794	376.9 -> 250.9	145707	5.23	µg/L	99
		376.9 -> 84.8	36817			
HFPO-DA	5.941	284.9 -> 168.9	19374	5.04	µg/L	97
		284.9 -> 184.9	2145			
3:3FTCA	3.886	241.0 -> 177.0	10962	12.34	µg/L	99
		241.0 -> 117.0	953			
5:3FTCA	6.294	341.0 -> 237.1	177772	62.78	µg/L	99
		341.0 -> 217.0	122848			
7:3FTCA	7.787	441.0 -> 316.9	100541	64.32	µg/L	97
		441.0 -> 336.9	234852			
EtFOSA	11.425	526.0 -> 219.0	24793	4.74	µg/L	99
		526.0 -> 169.0	34143			
EtFOSE	11.345	630.0 -> 58.9	50008	11.48	µg/L	100
		511.9 -> 219.0	19120			
MeFOSA	11.153	511.9 -> 169.0	28304	4.88	µg/L	69
		616.1 -> 58.9	37162			
MeFOSE	11.073	699.1 -> 79.9	4872	13.07	µg/L	100
		699.1 -> 98.8	2922			
PFDoDS	10.077	295.0 -> 201.0	4635	4.64	µg/L	92
		295.0 -> 84.9	1291			
NFDHA	5.443	279.0 -> 85.1	42329	5.04	µg/L	100
		229.0 -> 84.9	41299			
PFMBA	4.785	314.8 -> 134.9	56338	4.38	µg/L	100
		314.8 -> 82.9	1912			

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

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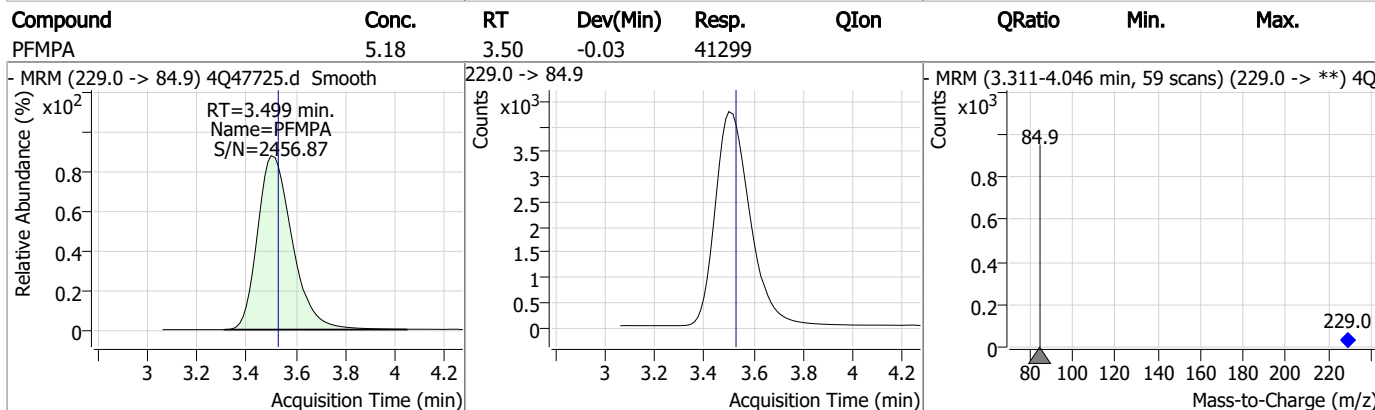
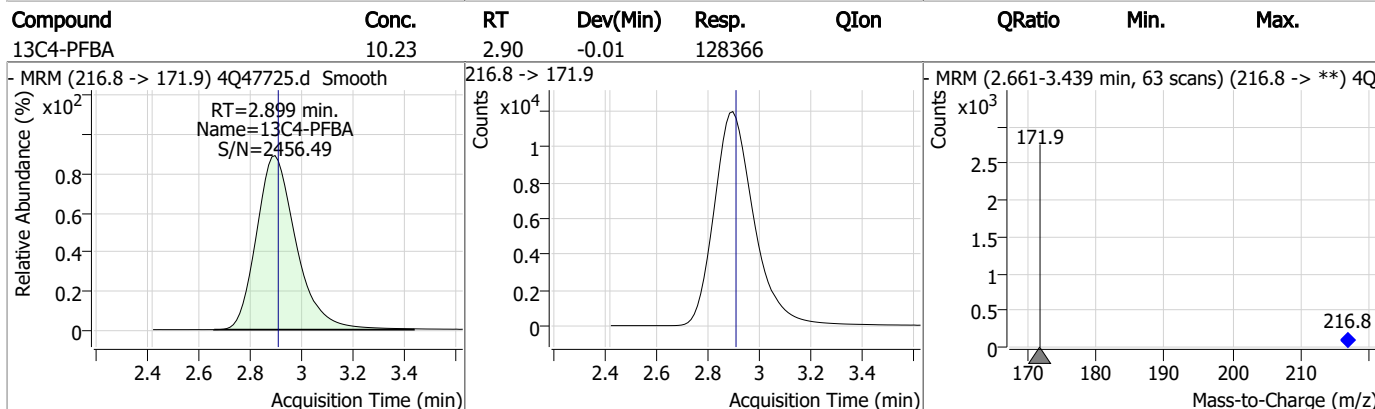
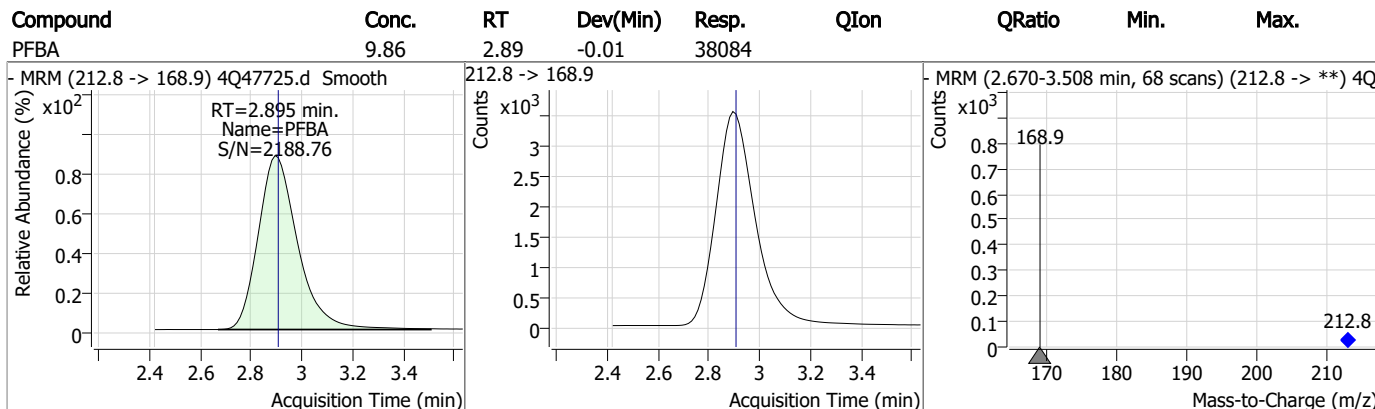
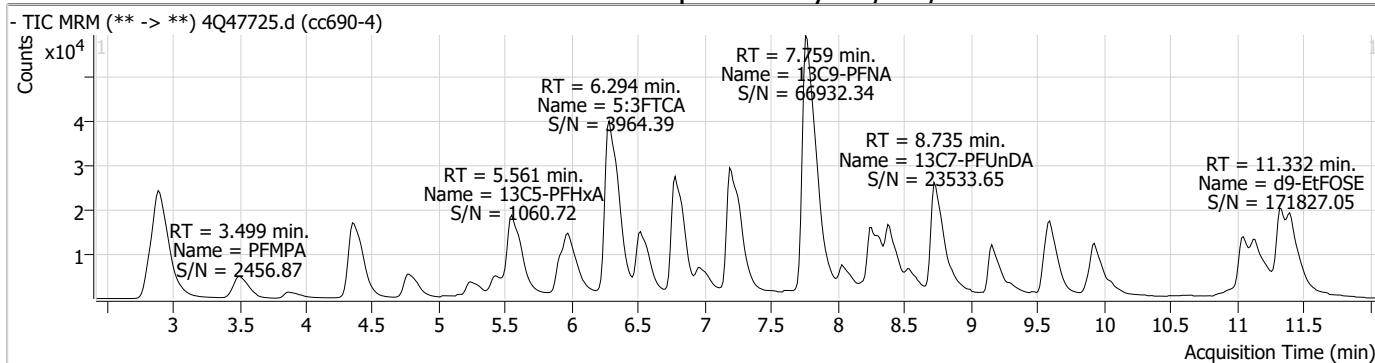
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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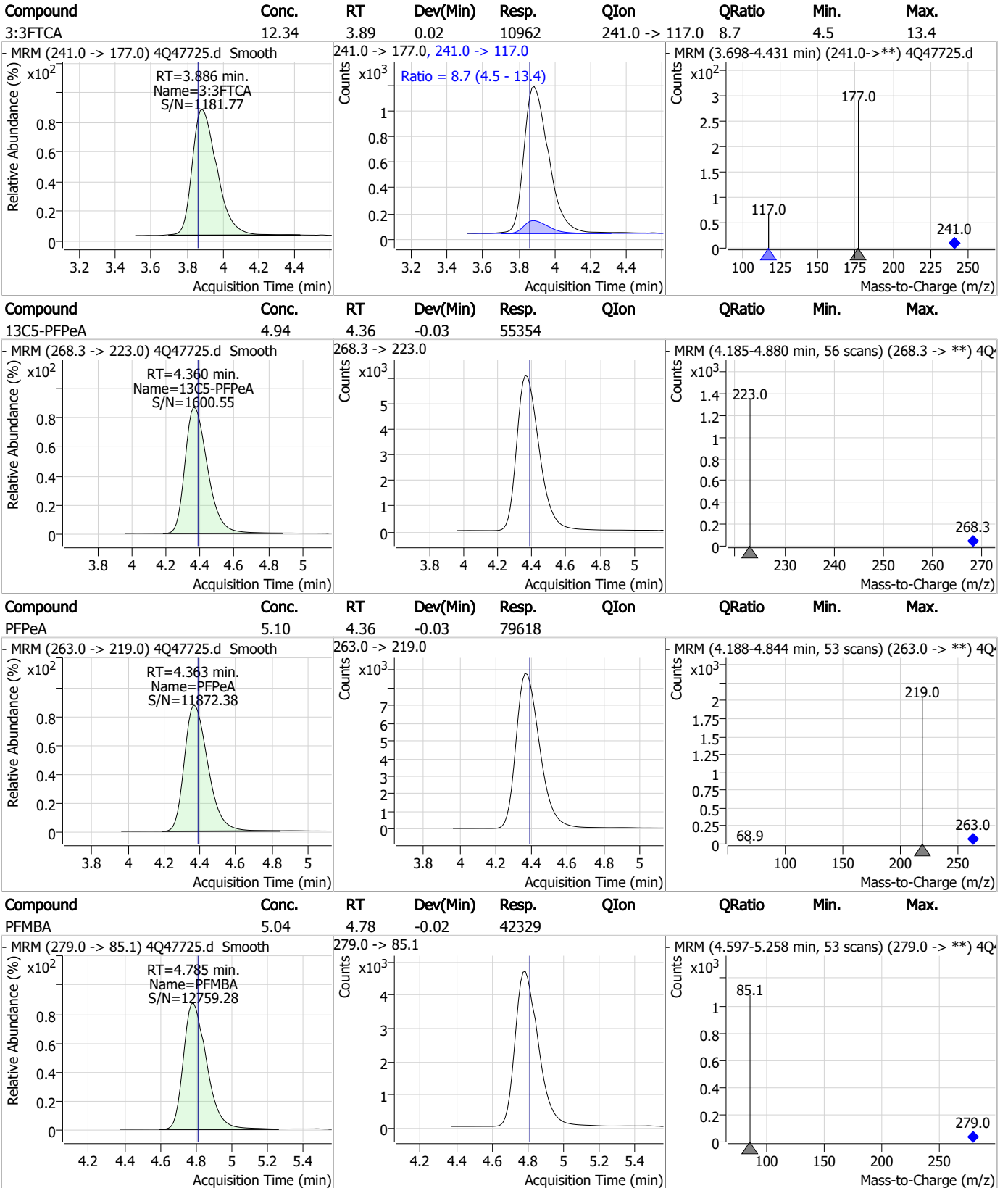
7.7.18

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

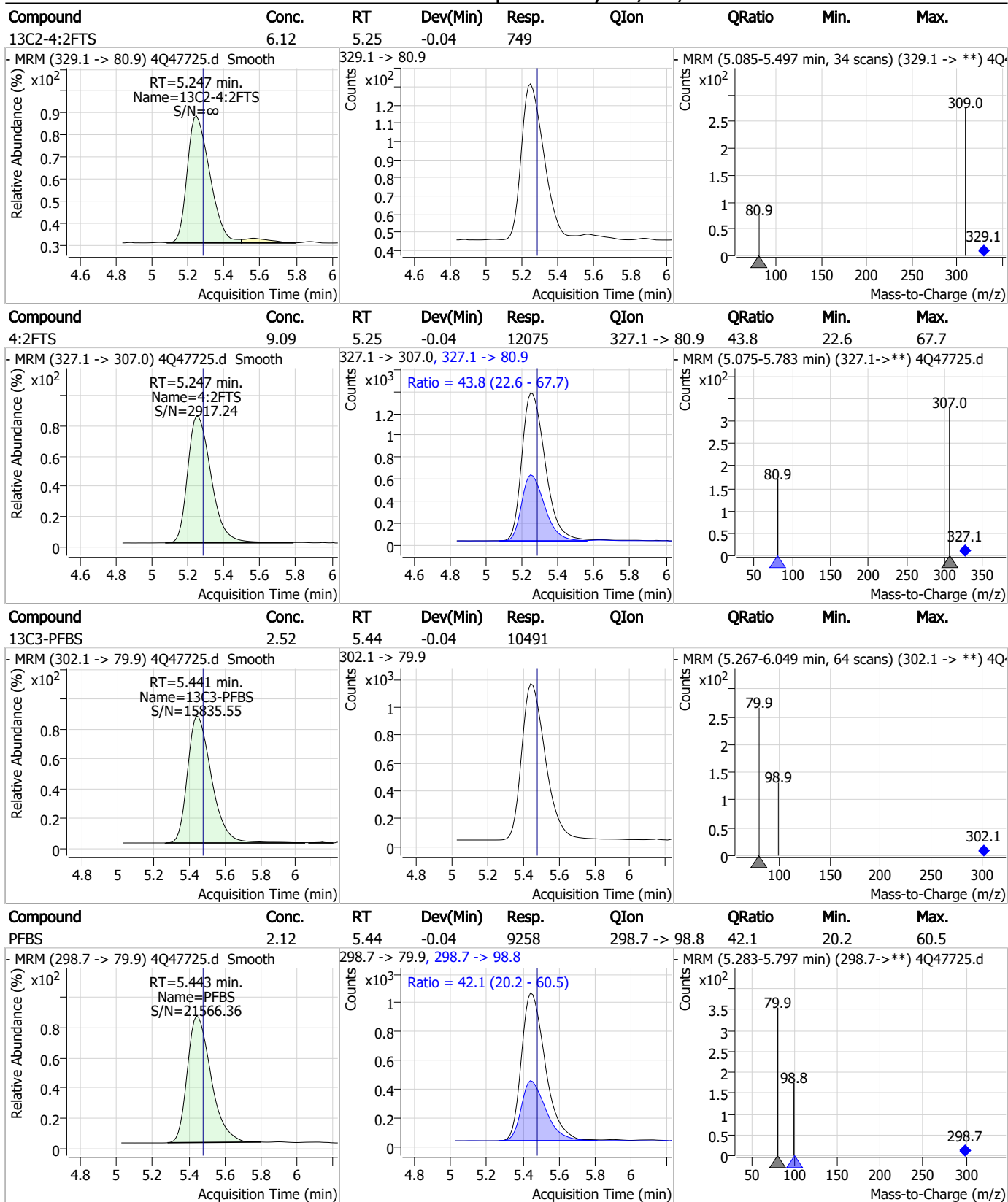


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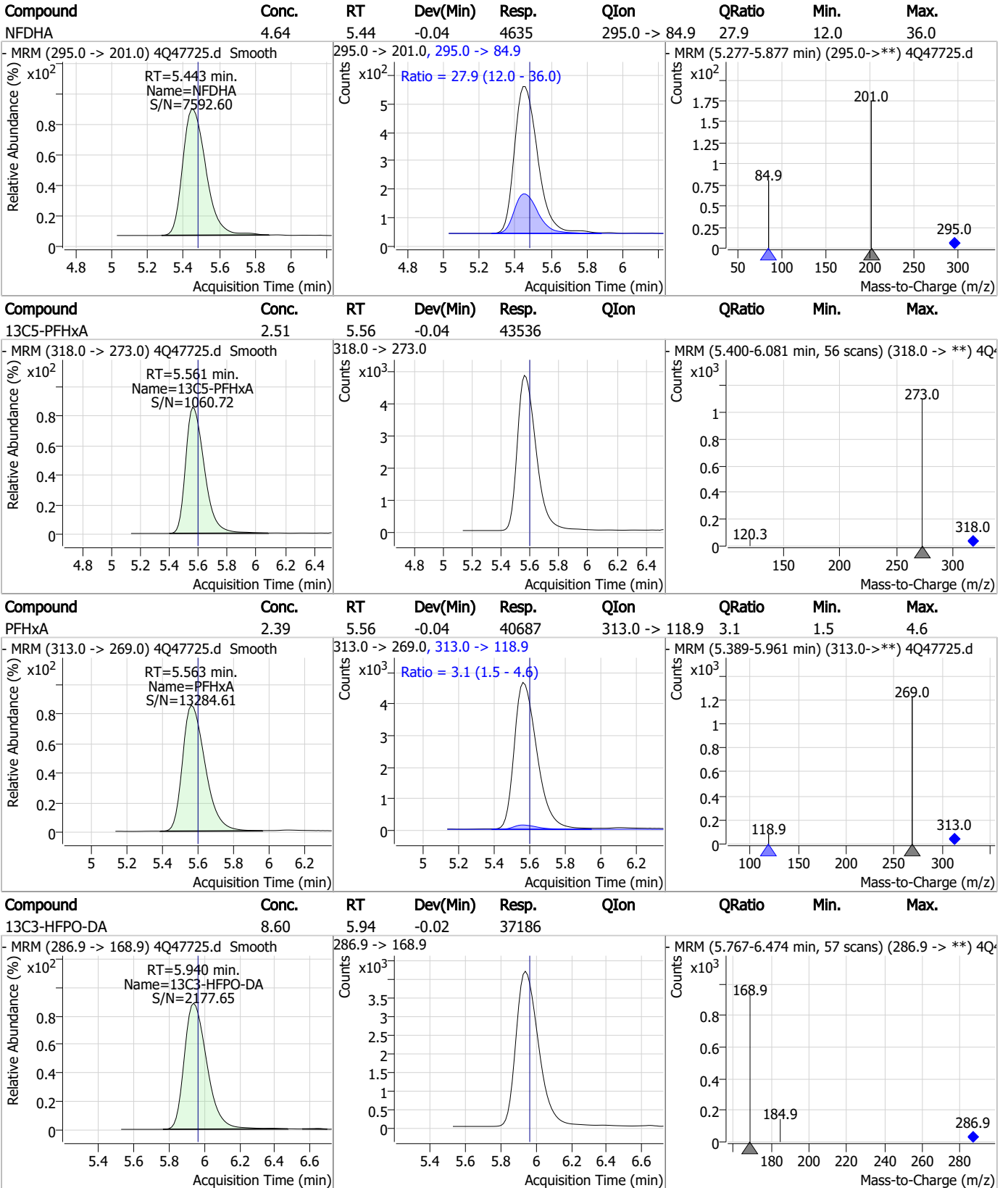
Perfluorinated Compounds by LC/MS/MS



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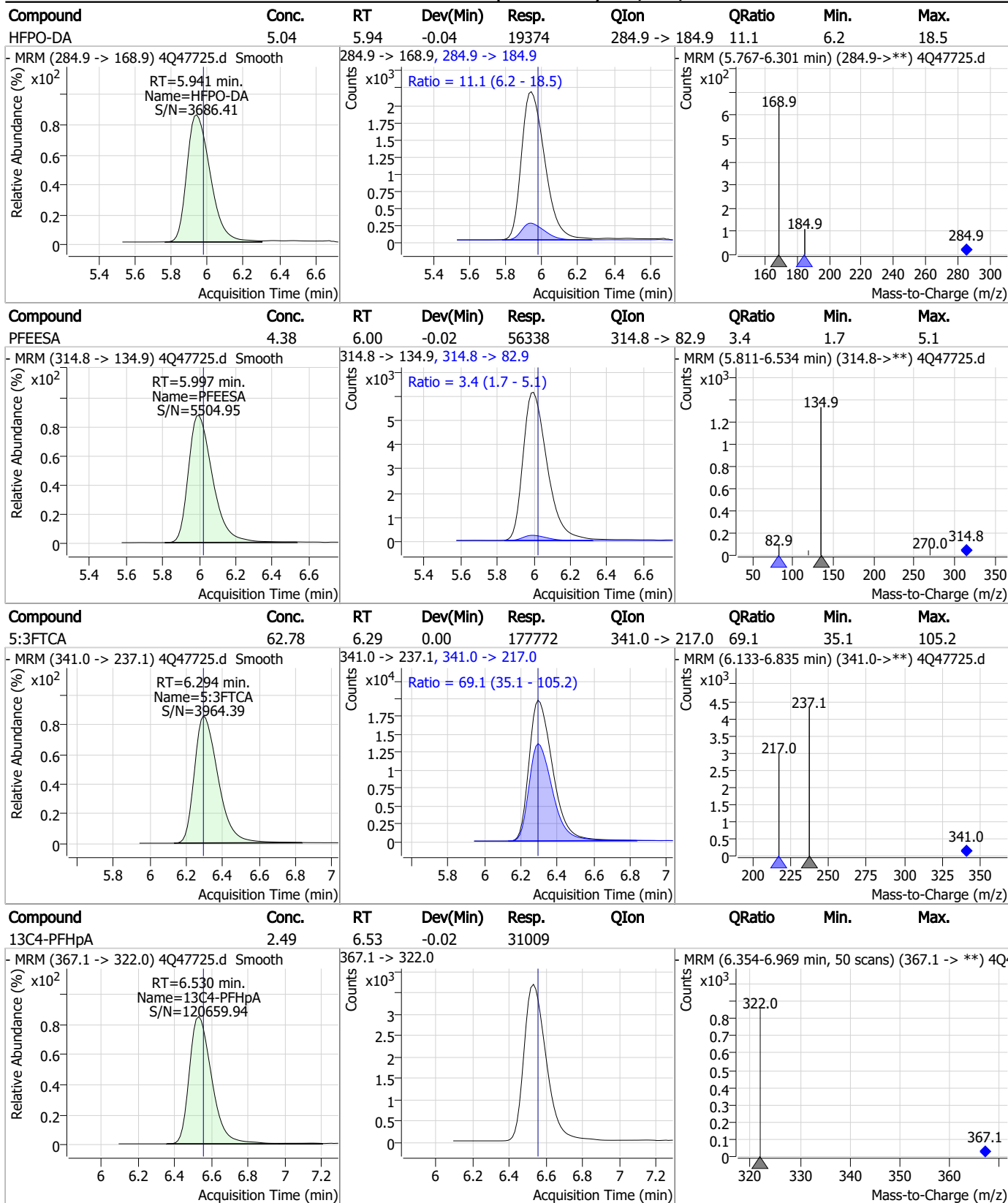
Perfluorinated Compounds by LC/MS/MS



7.7.18 7



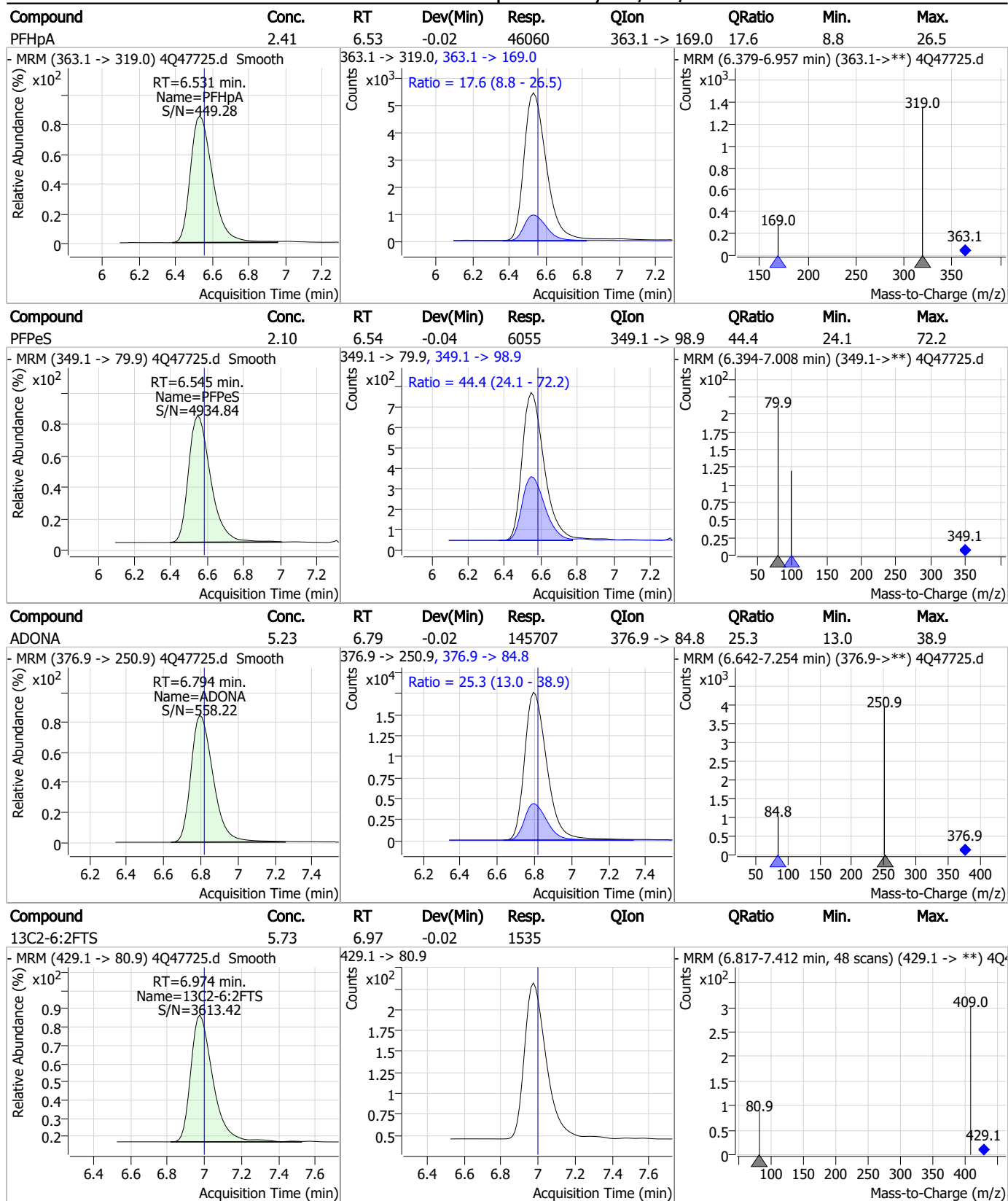
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7.7.18
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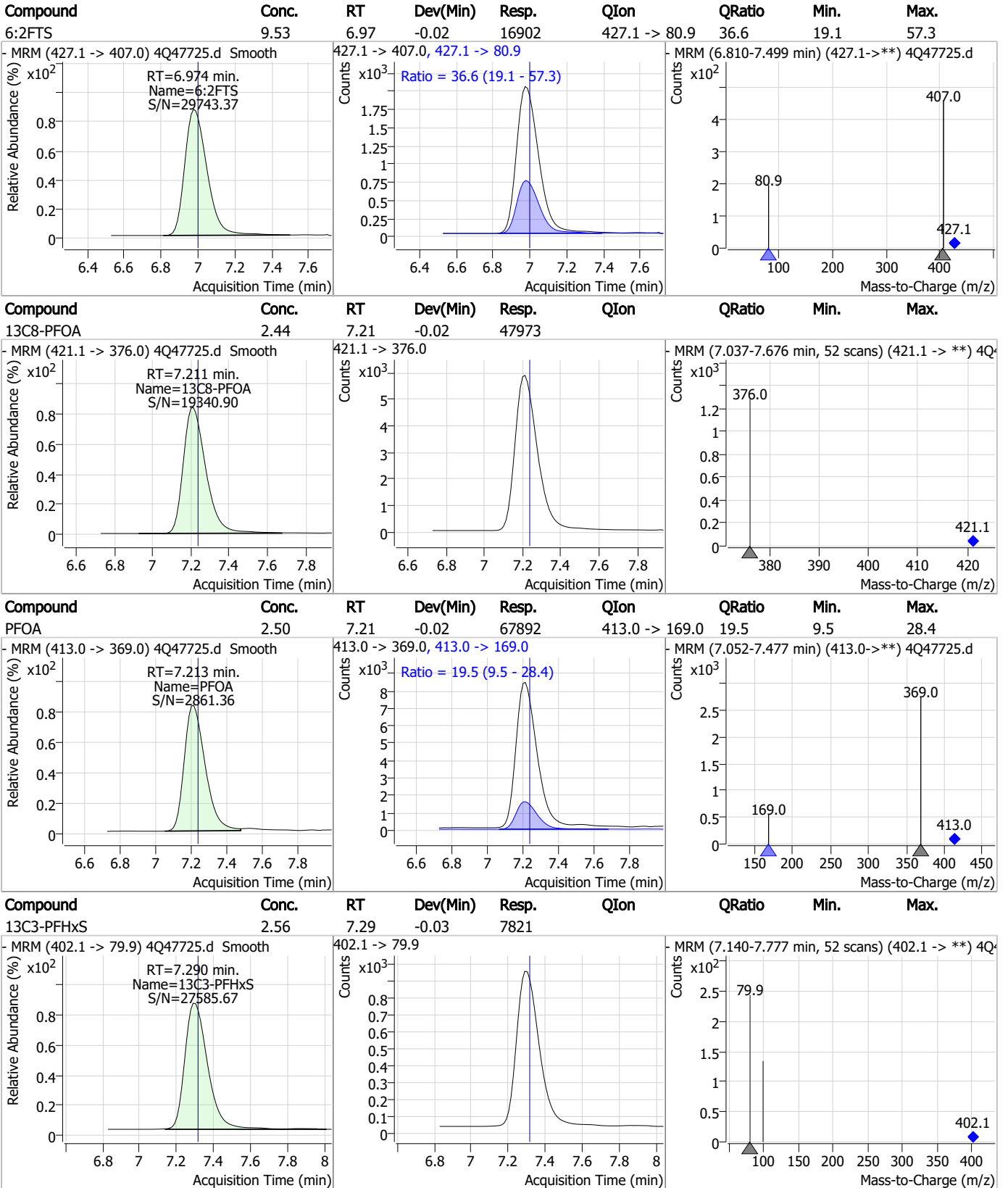
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7.7.18 7



Perfluorinated Compounds by LC/MS/MS

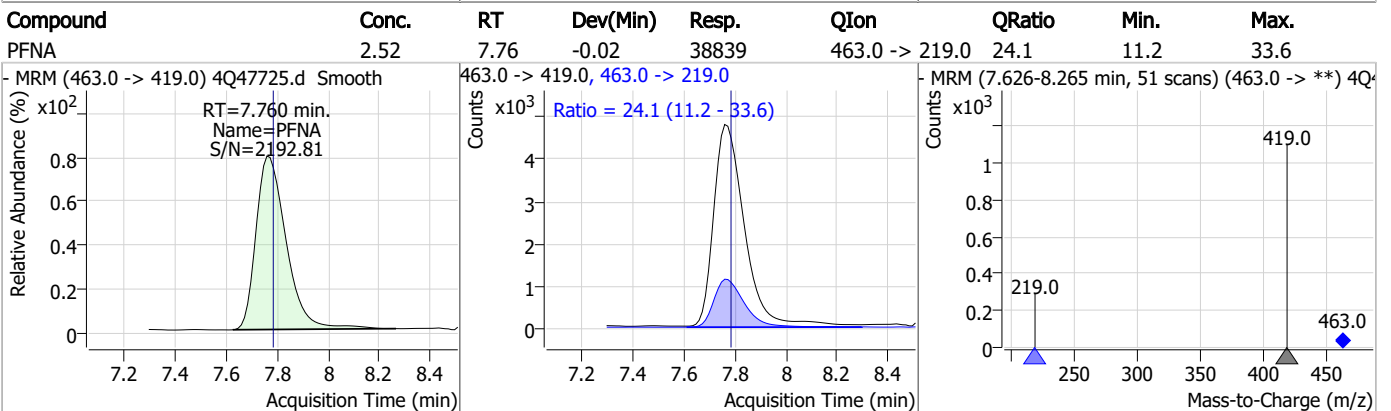
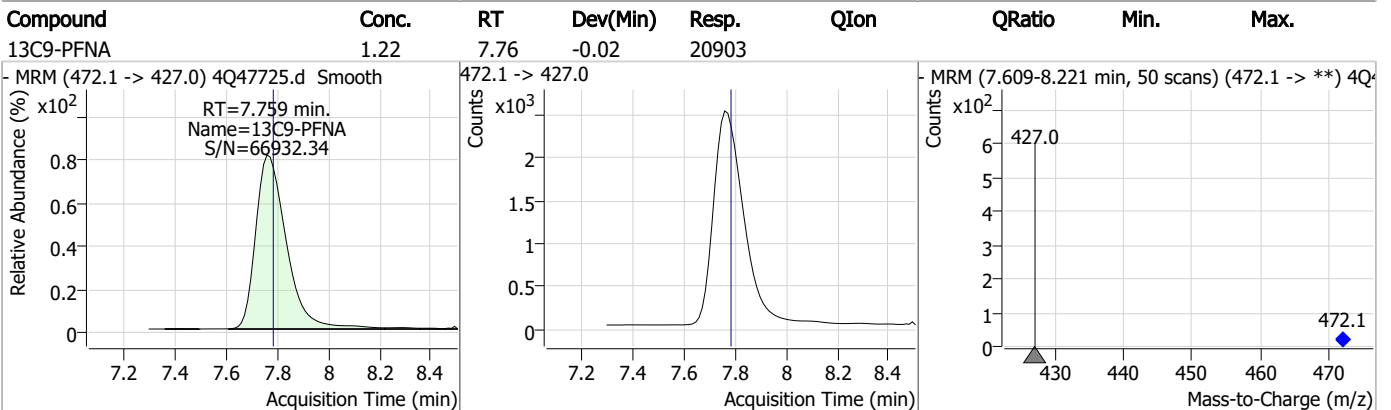
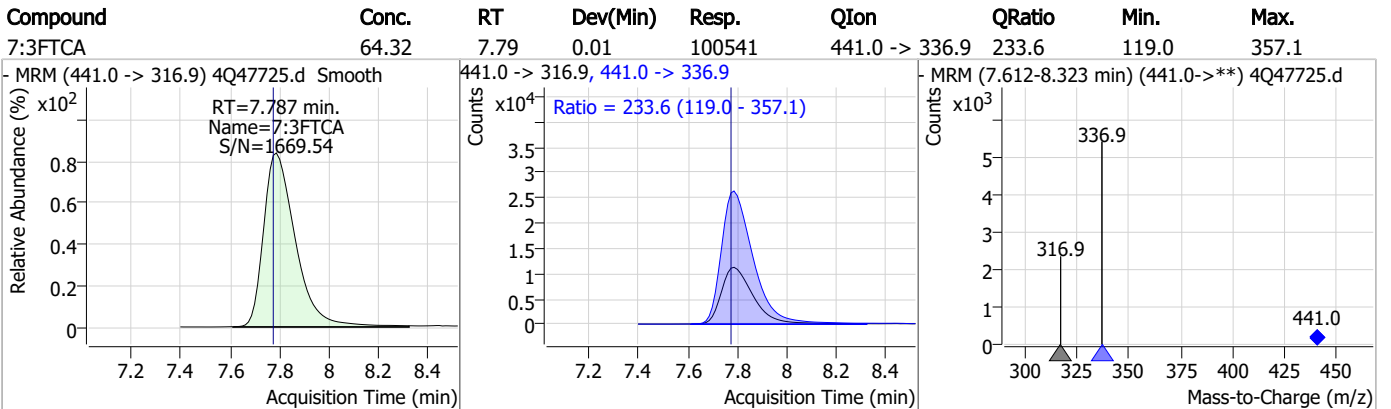
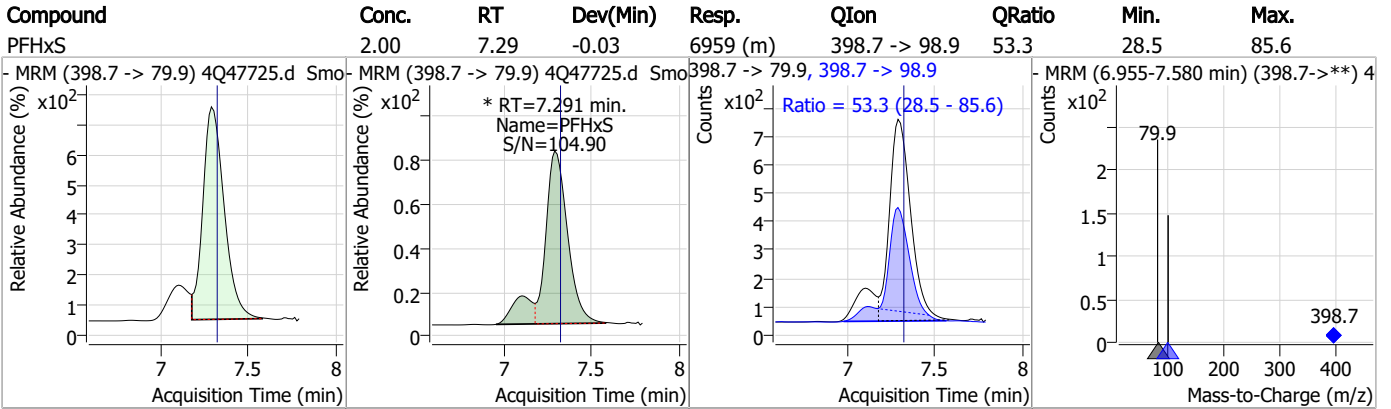


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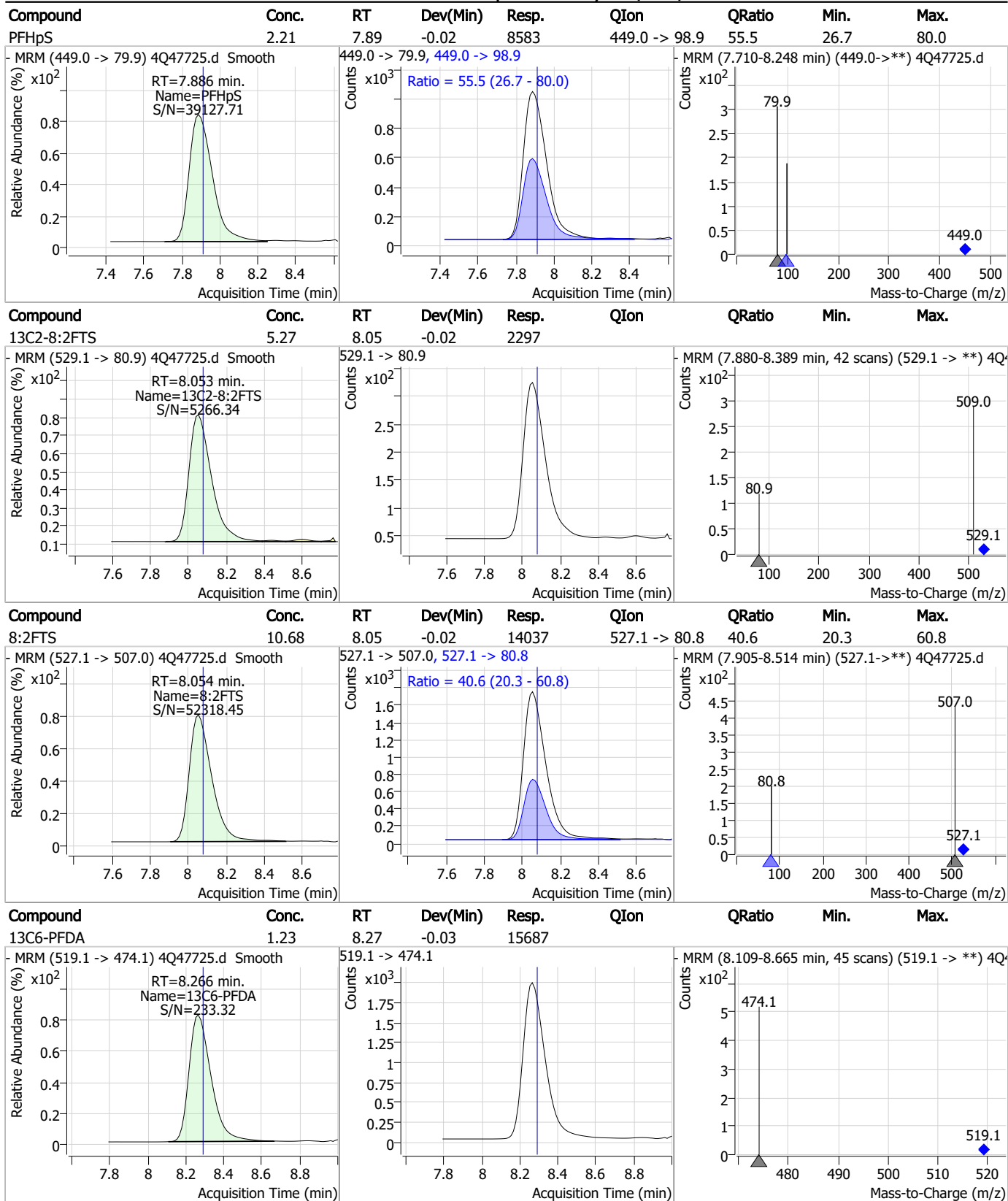
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Perfluorinated Compounds by LC/MS/MS

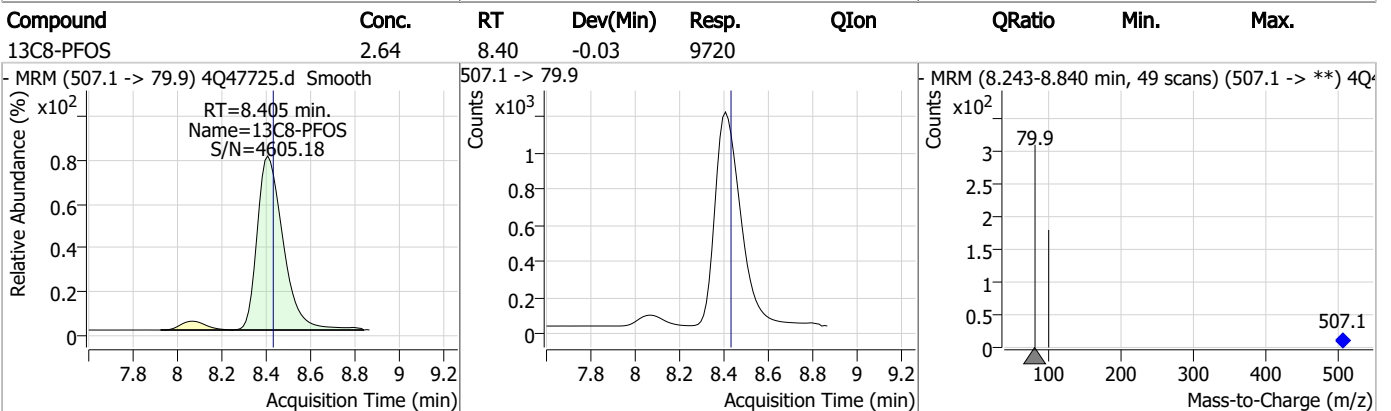
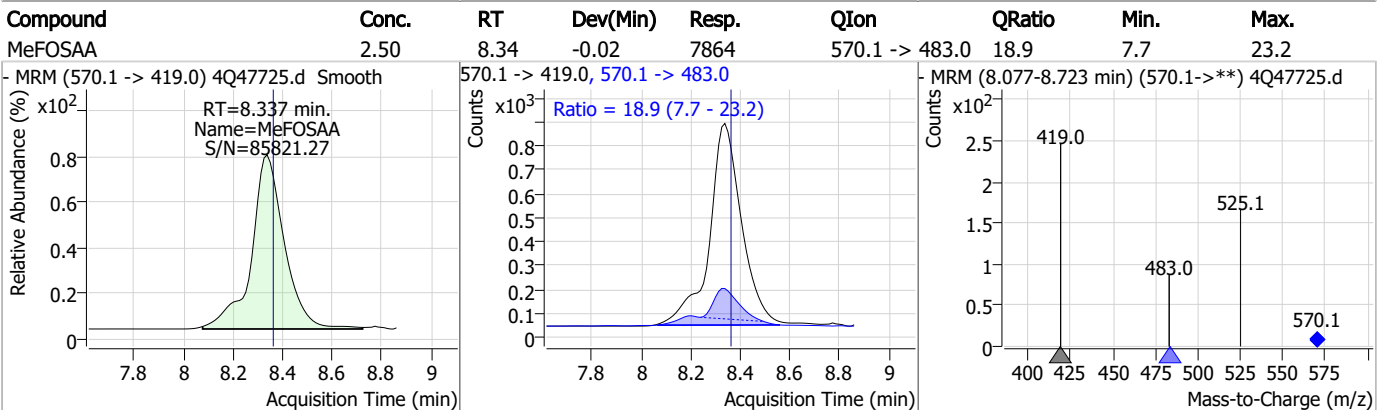
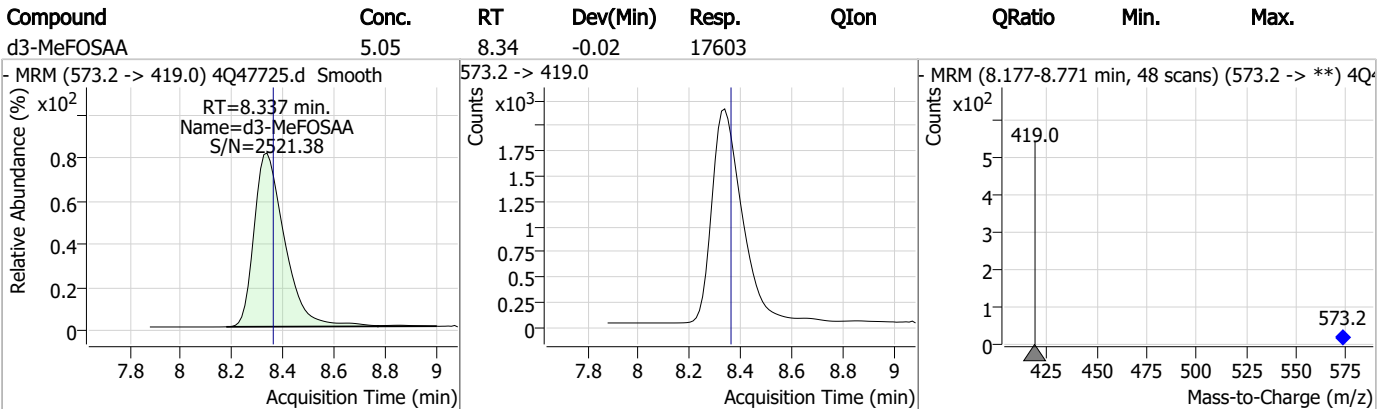
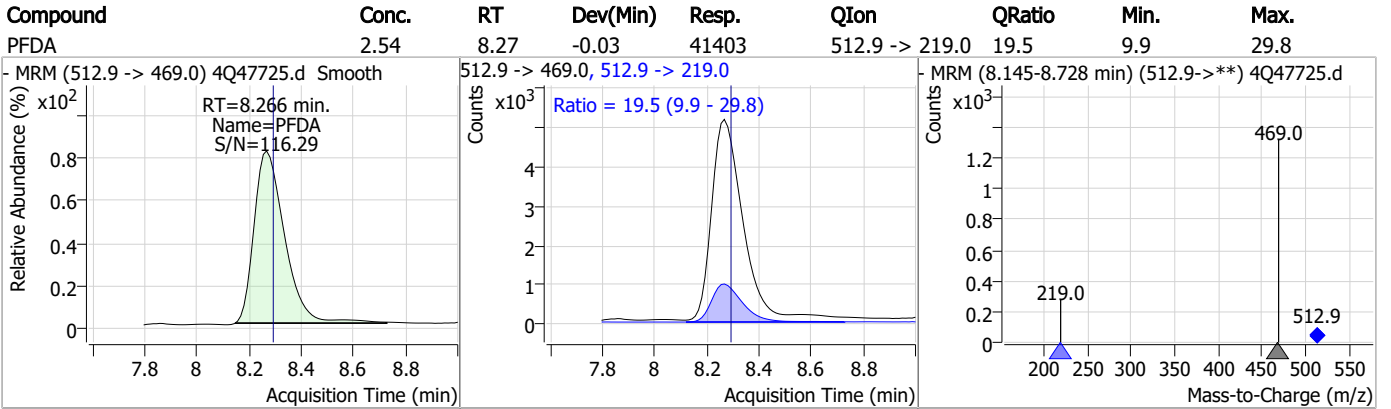


Perfluorinated Compounds by LC/MS/MS



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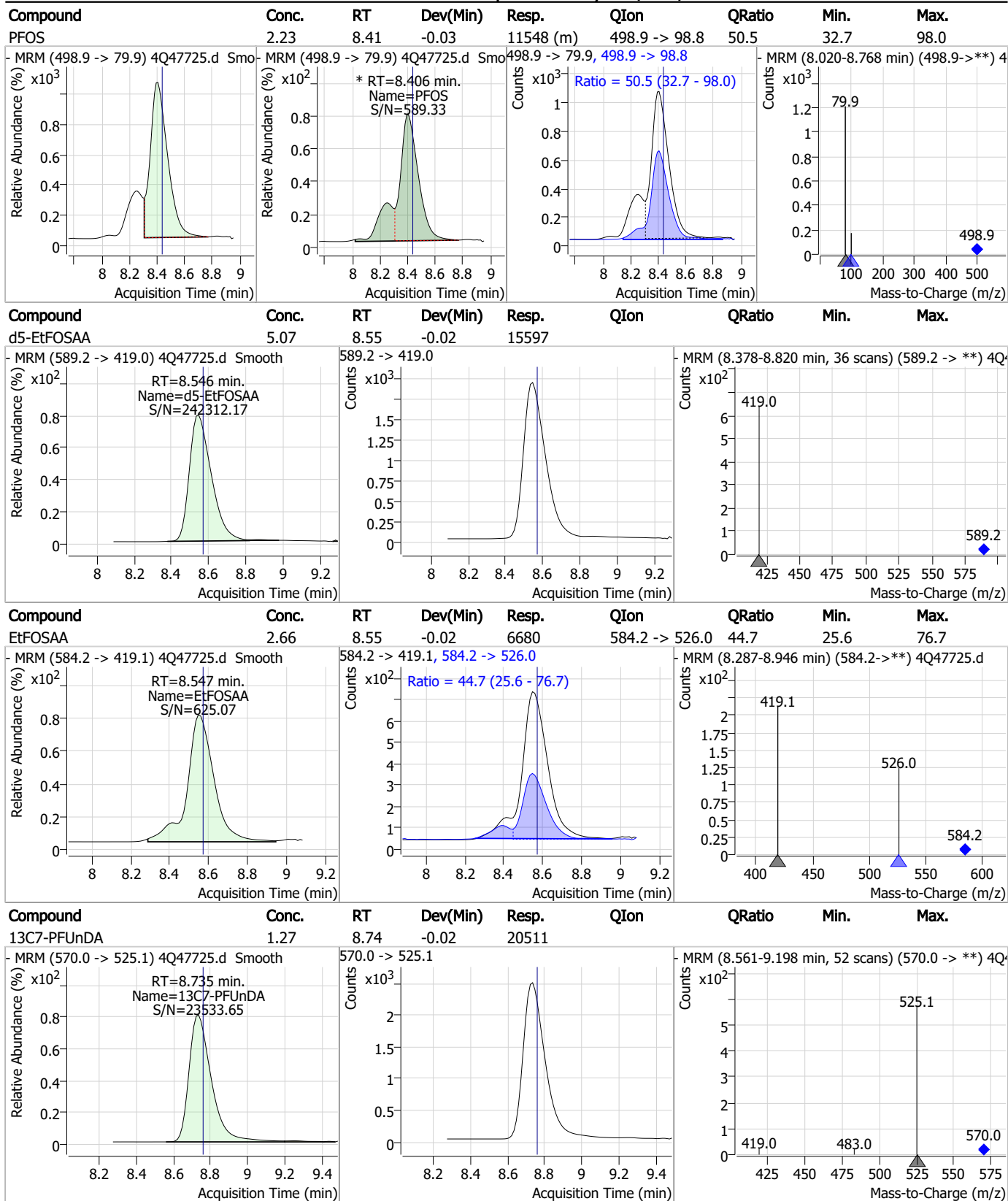
Perfluorinated Compounds by LC/MS/MS



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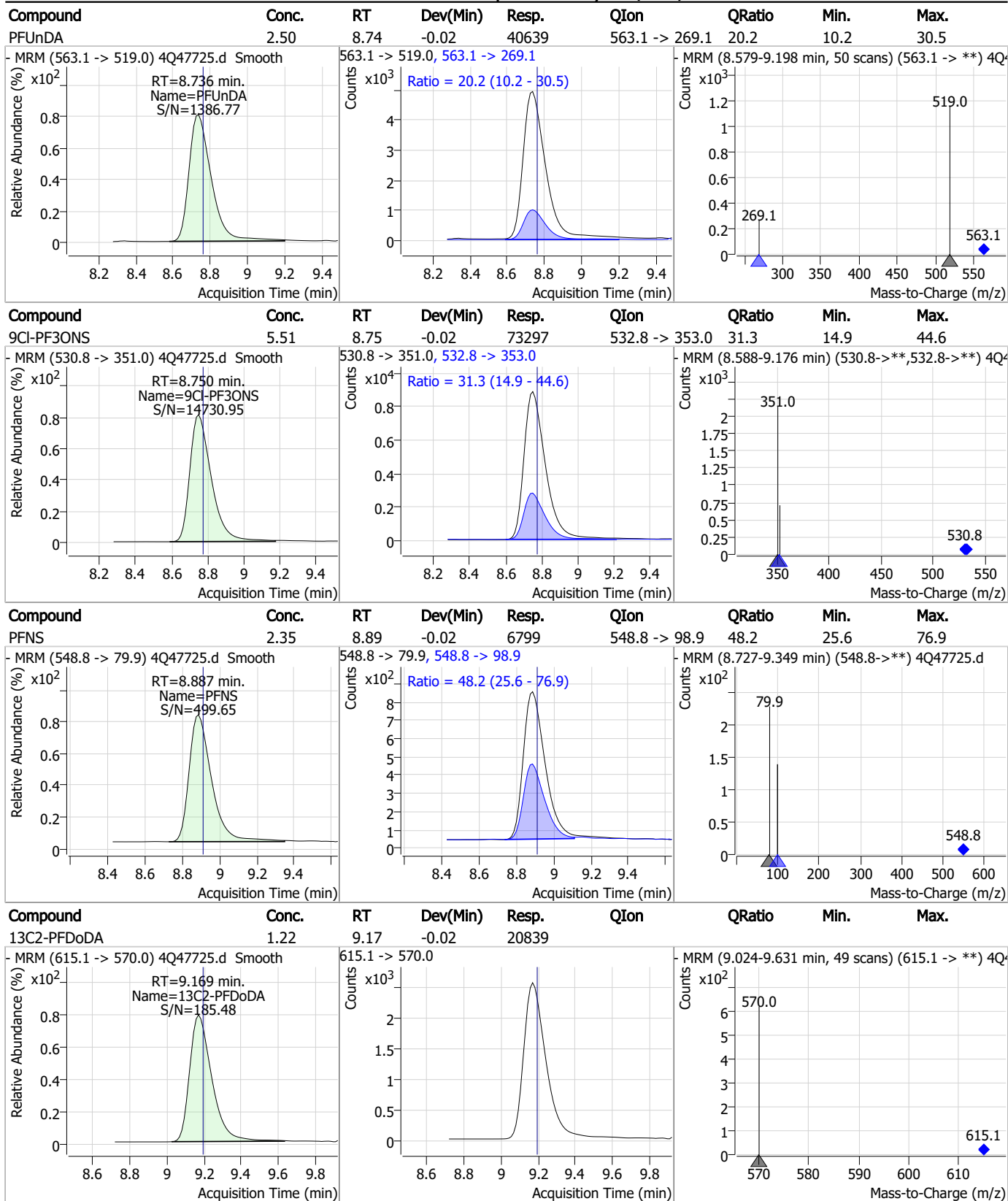


Perfluorinated Compounds by LC/MS/MS



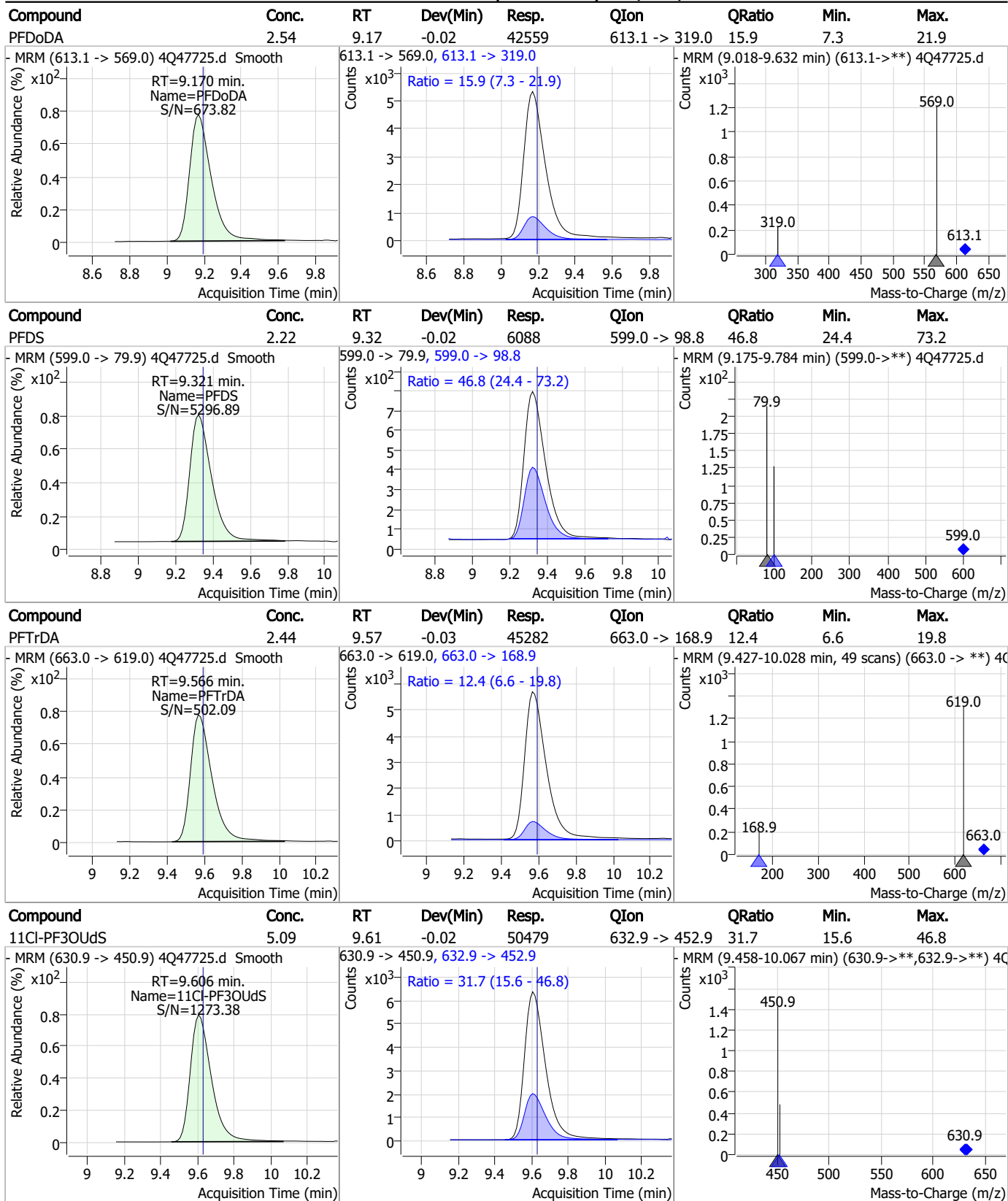
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Perfluorinated Compounds by LC/MS/MS



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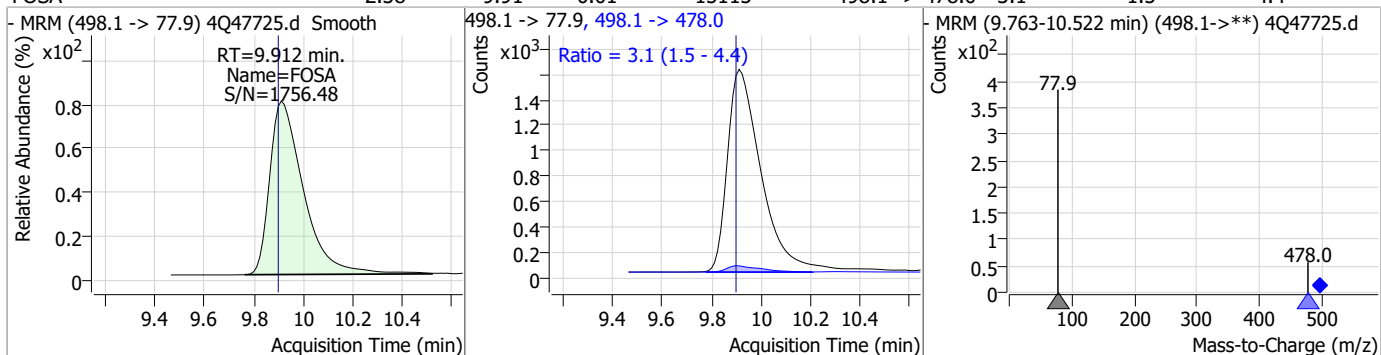
Perfluorinated Compounds by LC/MS/MS



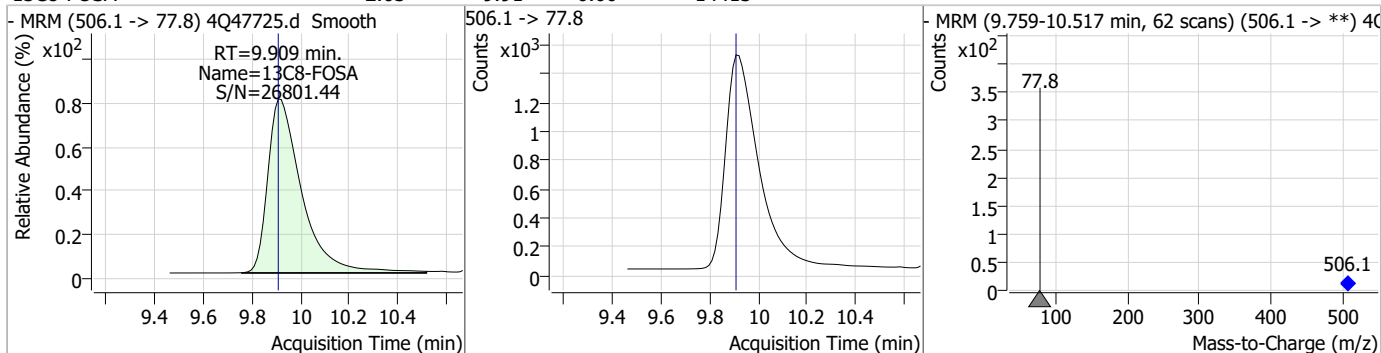
7.7.18 7

Perfluorinated Compounds by LC/MS/MS

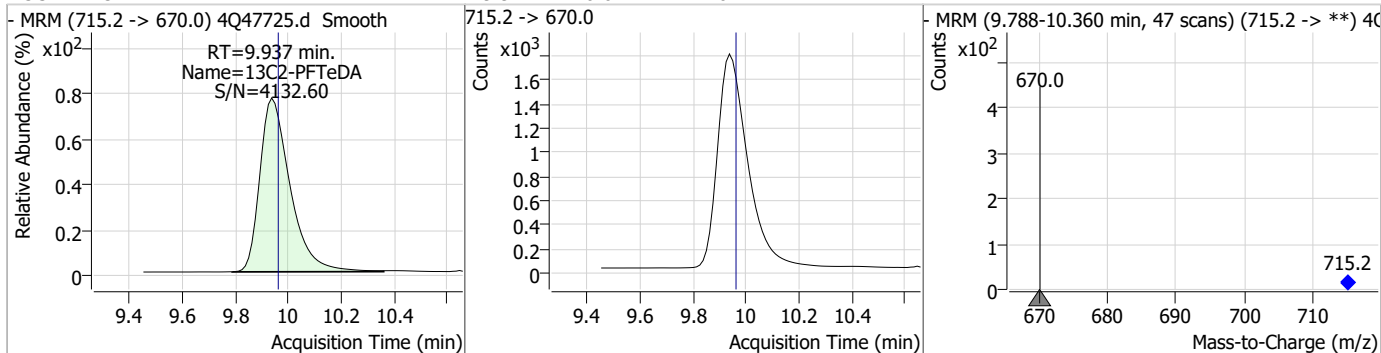
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.38	9.91	0.01	15115	498.1 -> 478.0	3.1	1.5	4.4



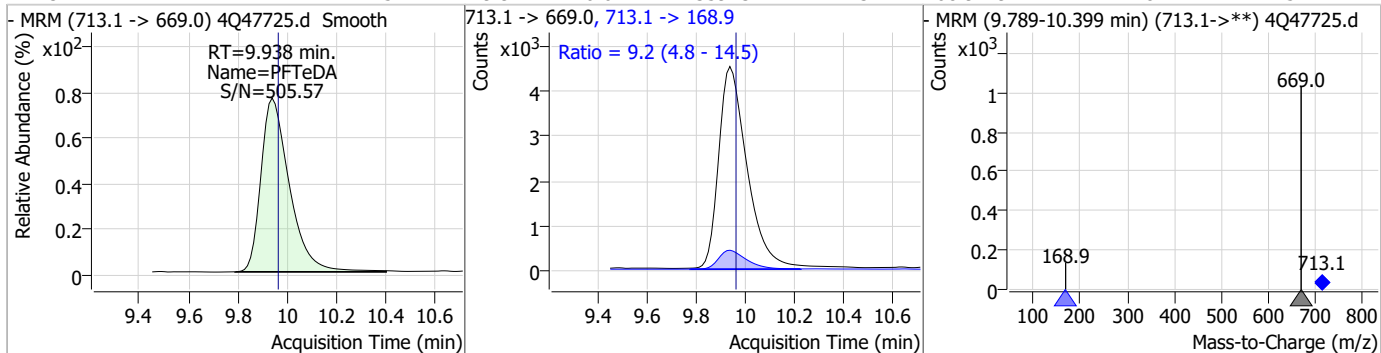
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.63	9.91	0.00	14413				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.14	9.94	-0.02	14011				



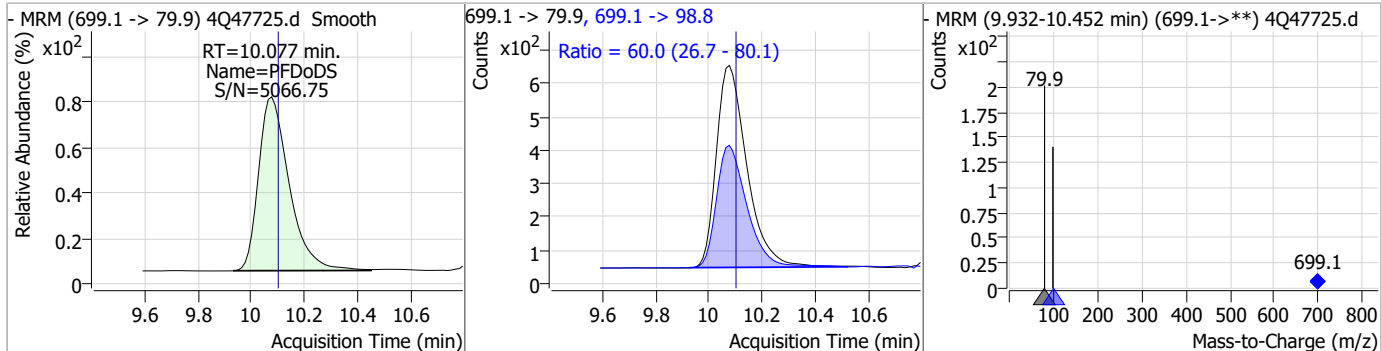
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.57	9.94	-0.02	35973	713.1 -> 168.9	9.2	4.8	14.5



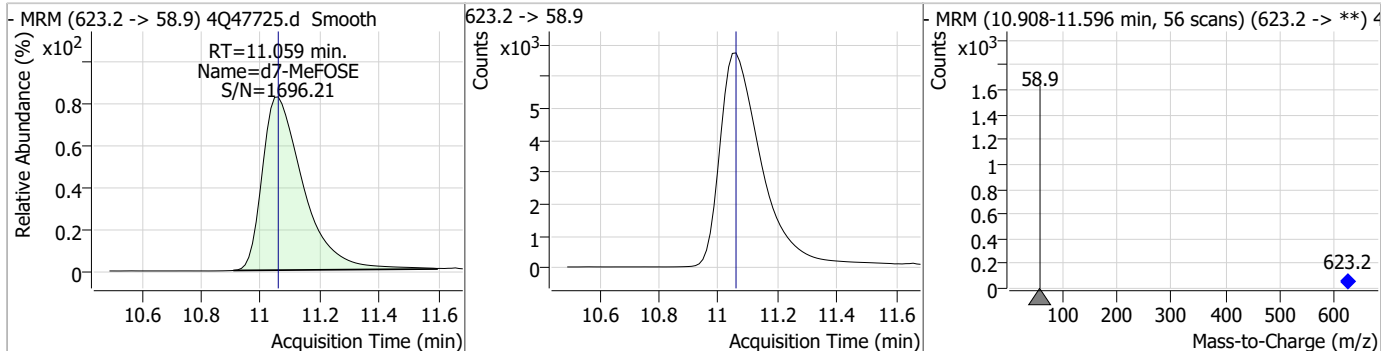
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Perfluorinated Compounds by LC/MS/MS

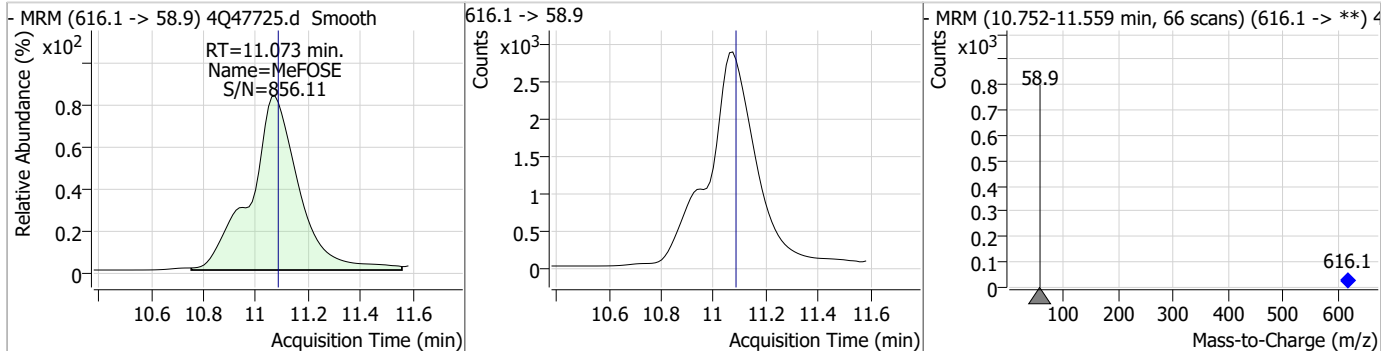
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	2.15	10.08	-0.02	4872	699.1 -> 98.8	60.0	26.7	80.1



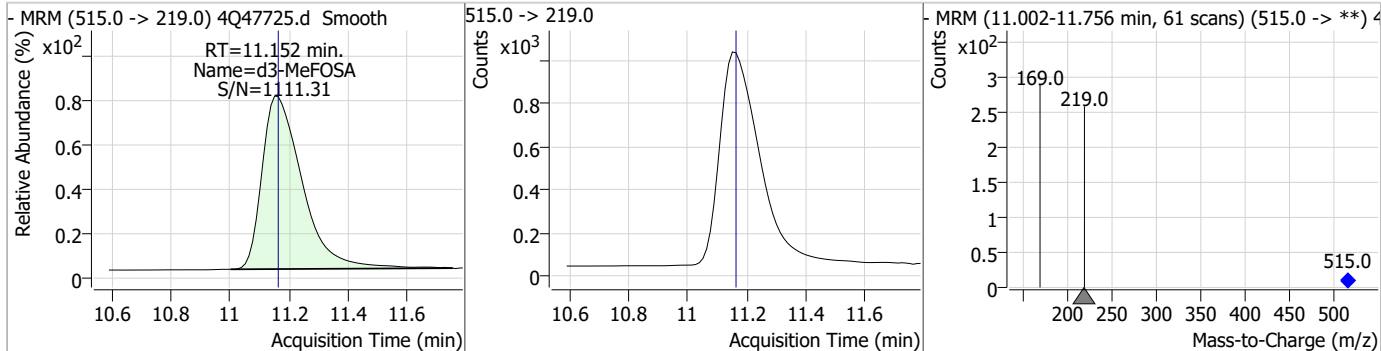
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	22.75	11.06	0.00	64389				



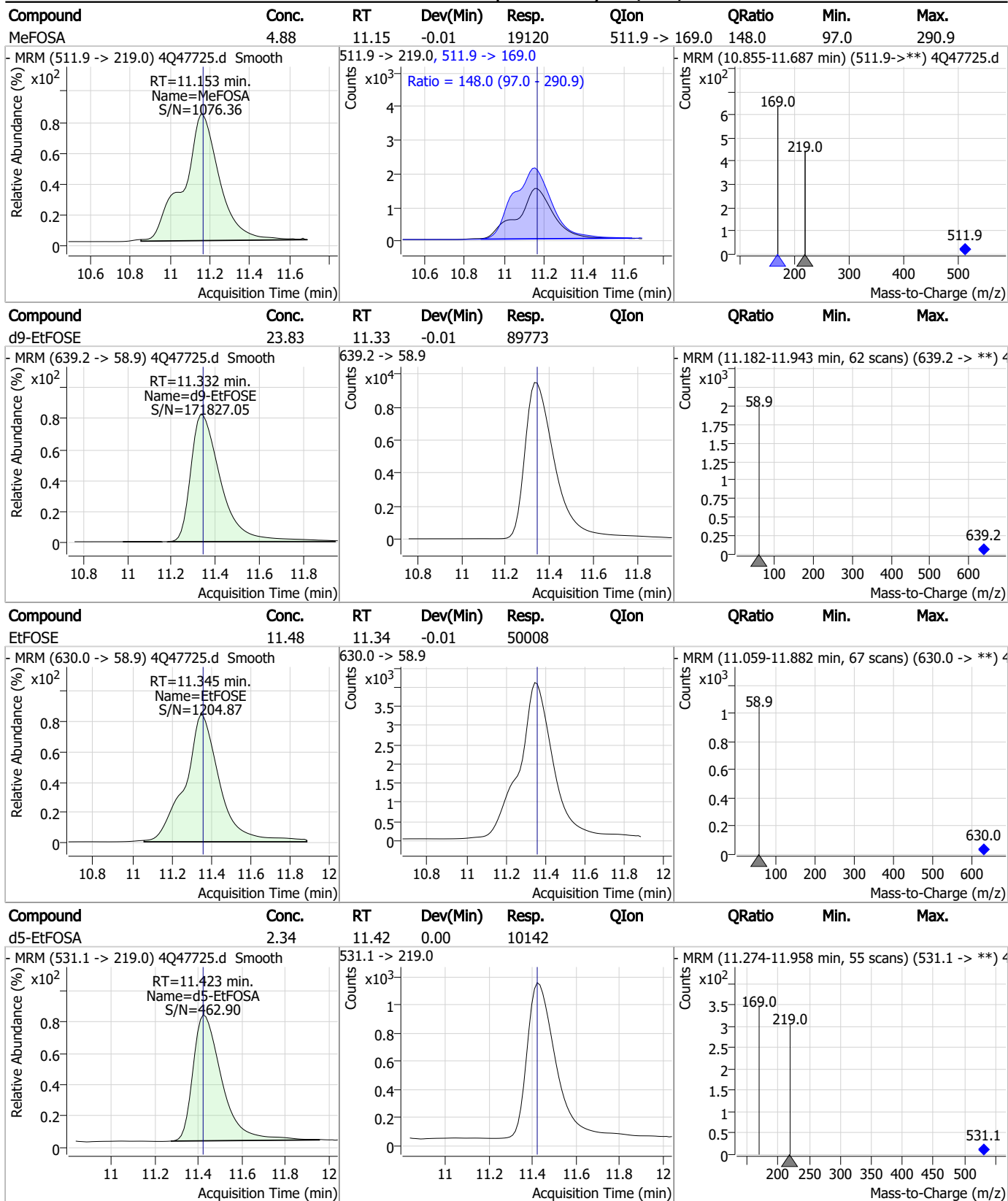
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	13.07	11.07	-0.01	37162				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.35	11.15	-0.01	9382				



Perfluorinated Compounds by LC/MS/MS

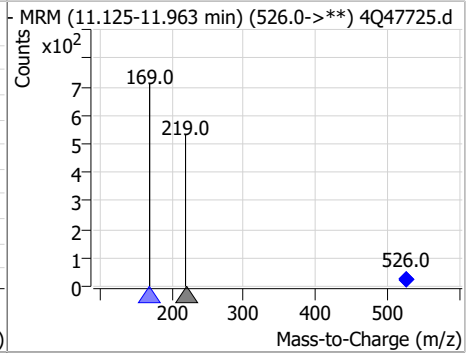
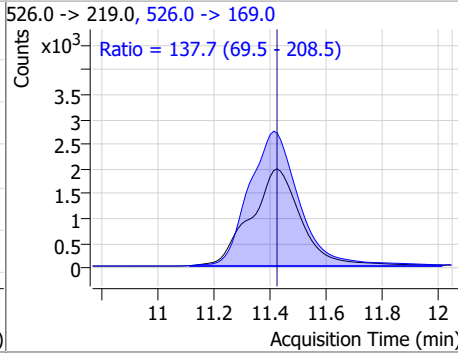
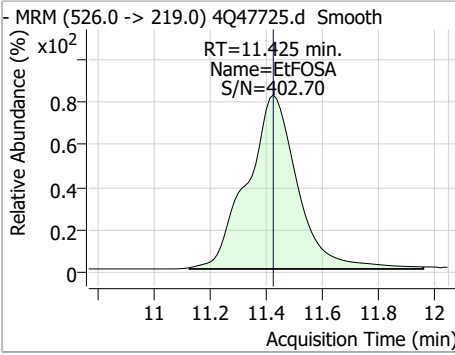


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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOFA	4.74	11.43	0.00	24793	526.0 -> 169.0	137.7	69.5	208.5



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Manual Integration Approval Summary

Sample Number: S4Q699-CC690 Method: EPA DRAFT 1633
Lab FileID: 4Q47725.D Analyst approved: 07/23/23 11:07 Anna Ludwig
Injection Time: 07/21/23 04:35 Supervisor approved: 07/24/23 09:53 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.29	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak

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SGS ORLANDO

DATE:	07/12/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_071223_S4Q690
CAL DATE:	07/12/23
ANALYST:	AL
RUN BATCH:	S4Q690

ELUENT A LOT #:	224863 W5%ACN 220213 2mMAMAC.11387
ELUENT B LOT #:	ACN 220213
IC/CC STD LOT #:	LCMS 2124
ICV STD LOT #:	LCMS 2124D/2125A
ISTD/D STD LOT #:	11850/11851

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q47142.d	P1-B9	CCB	1633full_4Q.m	Sample		OP97749.S4Q690.500,,,5.0,1,water	nd
2	4Q47143.d	P1-A5	update rt	1633full_4Q.m	Sample		OP97325.S4Q690.500,,,5.0,1,water	ok
3	4Q47144.d	P1-B9	CCB	1633full_4Q.m	Sample		OP97325.S4Q690.500,,,5.0,1,water	nd
4	4Q47145.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP97325.S4Q690.500,,,5.0,1,water	pass
5	4Q47146.d	P1-B2	RT br/h	1633full_4Q.m	Sample		OP97325.S4Q690.500,,,5.0,1,water	pass
6	4Q47147.d	P1-A1	ic690-0	1633full_4Q.m	Sample		OP97325.S4Q690.500,,,5.0,1,water	check tune file
7	4Q47148.d	P1-A2	ic690-1	1633full_4Q.m	Calibration	1.6/500	OP97325.S4Q690.500,,,5.0,1,water	pass
8	4Q47149.d	P1-A3	ic690-2	1633full_4Q.m	Calibration	3.2/500	OP97325.S4Q690.500,,,5.0,1,water	pass
9	4Q47150.d	P1-A4	ic690-3	1633full_4Q.m	Calibration	10/500	OP97325.S4Q690.500,,,5.0,1,water	pass
10	4Q47151.d	P1-A5	ic690-4	1633full_4Q.m	Calibration	20/500	OP97325.S4Q690.500,,,5.0,1,water	pass
11	4Q47152.d	P1-A6	ic690-5	1633full_4Q.m	Calibration	40/500	OP97325.S4Q690.500,,,5.0,1,water	pass
12	4Q47153.d	P1-A7	ic690-6	1633full_4Q.m	Calibration	100/500	OP97325.S4Q690.500,,,5.0,1,water	pass
13	4Q47154.d	P1-A8	ic690-7	1633full_4Q.m	Calibration	200/500	OP97325.S4Q690.500,,,5.0,1,water	pass
14	4Q47155.d	P1-A9	ic690-8	1633full_4Q.m	Calibration	1x	OP97325.S4Q690.500,,,5.0,1,water	pass
15	4Q47156.d	P1-A1	iblk	1633full_4Q.m	Sample		OP97325.S4Q690.500,,,5.0,1,water	nd
16	4Q47157.d	P1-B3	icv690-4	1633full_4Q.m	QC	20/500	OP97325.S4Q690.500,,,5.0,1,water	pass
17	4Q47158.d	P1-B4	icv690-20	1633full_4Q.m	QC	100/500	OP97325.S4Q690.500,,,5.0,1,water	pass
18	4Q47159.d	P1-A5	cc690-4	1633full_4Q.m	QC	20/50	OP97325.S4Q690.500,,,5.0,1,water	pass
19	4Q47160.d	P1-A2	cc690-1.0LL	1633full_4Q.m	QC	1.6/500	OP97325.S4Q690.500,,,5.0,1,water	pass
20	4Q47161.d	P3-A5	op97715-bs	1633full_4Q.m	Sample		OP97715.S4Q690.500,,,5.0,1,water	✓
21	4Q47162.d	P3-A6	op97715-llbs:3	1633full_4Q.m	Sample		OP97715.S4Q690.500,,,5.0,1,water	✓
22	4Q47163.d	P3-A7	op97715-mb	1633full_4Q.m	Sample		OP97715.S4Q690.500,,,5.0,1,water	✓
23	4Q47164.d	P3-C7	fc7060-18	1633full_4Q.m	Sample		OP97715.S4Q690.530,,,5.0,1,water	✓
24	4Q47165.d	P3-C8	fc7060-19	1633full_4Q.m	Sample		OP97715.S4Q690.472,,,5.0,1,water	✓
25	4Q47166.d	P3-C9	op97715-ms	1633full_4Q.m	Sample		OP97715.S4Q690.460,,,5.0,1,water	✓
26	4Q47167.d	P3-D1	op97715-mstd	1633full_4Q.m	Sample		OP97715.S4Q690.495,,,5.0,1,water	✓
27	4Q47168.d	P1-A5	cc690-4	1633full_4Q.m	QC	20/500	OP97325.S4Q690.500,,,5.0,1,water	pass
28	4Q47169.d	P1-A1	iccb	1633full_4Q.m	Sample		OP97325.S4Q690.500,,,5.0,1,water	nd
29	4Q47170.d	P3-D2	op97747-bs	1633full_4Q.m	Sample		OP97747.S4Q690.500,,,5.0,1,water	✓
30	4Q47171.d	P3-D3	op97747-llbs:3	1633full_4Q.m	Sample		OP97747.S4Q690.500,,,5.0,1,water	✓
31	4Q47172.d	P3-D4	op97747-mb	1633full_4Q.m	Sample		OP97747.S4Q690.500,,,5.0,1,water	✓
32	4Q47173.d	P3-D5	fc6887-2	1633full_4Q.m	Sample		OP97747.S4Q690.572,,,5.0,1,water	✓
33	4Q47174.d	P3-D6	fc6935-2	1633full_4Q.m	Sample		OP97747.S4Q690.530,,,5.0,1,water	✓
34	4Q47175.d	P3-D7	op97747-ms	1633full_4Q.m	Sample		OP97747.S4Q690.510,,,5.0,1,water	✓
35	4Q47176.d	P3-D8	op97747-mstd	1633full_4Q.m	Sample		OP97747.S4Q690.490,,,5.0,1,water	✓

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LCMS4-4Q ANALYSIS LOG

SGS ORLANDO

36	4Q47177.d	P3-D9	fc6936-1	1633full_4Q.m	Sample	OP97747,S4Q690,500,,,5.0,1,water	✓
37	4Q47178.d	P3-E1	fc6936-2	1633full_4Q.m	Sample	OP97747,S4Q690,526,,,5.0,1,water	✓
38	4Q47179.d	P3-E2	fc6936-3	1633full_4Q.m	Sample	OP97747,S4Q690,540,,,5.0,1,water	✓
39	4Q47180.d	P1-A5	ecc690-4	1633full_4Q.m	QC	20/500	pass
40	4Q47181.d	P1-A1	iccb	1633full_4Q.m	Sample	OP97325,S4Q690,500,,,5.0,1,water	nd
41	4Q47182.d	P3-E3	fc6936-4	1633full_4Q.m	Sample	OP97747,S4Q690,520,,,5.0,1,water	instrument stopped
42	4Q47183.d	P3-E4	fc6936-5	1633full_4Q.m	Sample	OP97747,S4Q690,550,,,5.0,1,water	instrument stopped
43	4Q47184.d	P3-E5	fc6936-6	1633full_4Q.m	Sample	OP97747,S4Q690,550,,,5.0,1,water	instrument stopped
44	4Q47185.d	P3-E6	fc6936-7	1633full_4Q.m	Sample	OP97747,S4Q690,524,,,5.0,1,water	instrument stopped
45	4Q47186.d	P3-E7	fc6936-8	1633full_4Q.m	Sample	OP97747,S4Q690,524,,,5.0,1,water	instrument stopped
46	4Q47187.d	P3-E8	fc6936-9	1633full_4Q.m	Sample	OP97747,S4Q690,550,,,5.0,1,water	instrument stopped
47	4Q47188.d	P3-E9	fc6936-10	1633full_4Q.m	Sample	OP97747,S4Q690,520,,,5.0,1,water	instrument stopped
48	4Q47189.d	P3-F1	fc6936-11	1633full_4Q.m	Sample	OP97747,S4Q690,530,,,5.0,1,water	instrument stopped
49	4Q47190.d	P3-F2	fc6936-12	1633full_4Q.m	Sample	OP97747,S4Q690,495,,,5.0,1,water	instrument stopped
50	4Q47191.d	P3-F3	fc6936-13	1633full_4Q.m	Sample	OP97747,S4Q690,510,,,5.0,1,water	instrument stopped
51	4Q47192.d	P1-A5	cc690-4	1633full_4Q.m	QC	20/500	instrument stopped
52	4Q47193.d	P1-A1	iccb	1633full_4Q.m	Sample	OP97325,S4Q690,500,,,5.0,1,water	instrument stopped
53	4Q47194.d	P3-F4	fc6936-14	1633full_4Q.m	Sample	OP97747,S4Q690,538,,,5.0,1,water	instrument stopped
54	4Q47195.d	P3-F5	fc6936-15	1633full_4Q.m	Sample	OP97747,S4Q690,550,,,5.0,1,water	instrument stopped
55	4Q47196.d	P3-F6	fc6936-16	1633full_4Q.m	Sample	OP97747,S4Q690,536,,,5.0,1,water	instrument stopped
56	4Q47197.d	P3-F7	fc6936-17	1633full_4Q.m	Sample	OP97747,S4Q690,526,,,5.0,1,water	instrument stopped
57	4Q47198.d	P3-F8	op97754-bs	1633full_4Q.m	Sample	OP97754,S4Q690,5.00,,,5.0,1,soil	instrument stopped
58	4Q47199.d	P3-F9	op97754-llbs:3	1633full_4Q.m	Sample	OP97754,S4Q690,5.00,,,5.0,1,soil	instrument stopped
59	4Q47200.d	P4-A1	op97754-mb	1633full_4Q.m	Sample	OP97754,S4Q690,5.00,,,5.0,1,soil	instrument stopped
60	4Q47201.d	P4-A2	fc7109-24	1633full_4Q.m	Sample	OP97754,S4Q690,4.97,,,5.0,1,soil	instrument stopped
61	4Q47202.d	P4-A3	op97754-ms	1633full_4Q.m	Sample	OP97754,S4Q690,5.02,,,5.0,1,soil	instrument stopped
62	4Q47203.d	P4-A4	op97754-msd	1633full_4Q.m	Sample	OP97754,S4Q690,5.04,,,5.0,1,soil	instrument stopped
63	4Q47204.d	P1-A5	cc690-4	1633full_4Q.m	QC	20/500	instrument stopped
64	4Q47205.d	P1-A1	iccb	1633full_4Q.m	Sample	OP97325,S4Q690,500,,,5.0,1,water	instrument stopped
65	4Q47206.d	P4-A5	op97755-bs	1633full_4Q.m	Sample	OP97755,S4Q690,5.00,,,5.0,1,soil	instrument stopped
66	4Q47207.d	P4-A6	op97755-llbs-2	1633full_4Q.m	Sample	OP97755,S4Q690,5.00,,,5.0,1,soil	instrument stopped
67	4Q47208.d	P4-A7	op97755-mb	1633full_4Q.m	Sample	OP97755,S4Q690,5.00,,,5.0,1,soil	instrument stopped
68	4Q47209.d	P4-A8	jd68286-1	1633full_4Q.m	Sample	OP97755,S4Q690,4.98,,,5.0,1,soil	instrument stopped
69	4Q47210.d	P4-B1	op97755-ms	1633full_4Q.m	Sample	OP97755,S4Q690,5.00,,,5.0,1,soil	instrument stopped
70	4Q47211.d	P4-B2	op97755-msd	1633full_4Q.m	Sample	OP97755,S4Q690,4.99,,,5.0,1,soil	instrument stopped
71	4Q47212.d	P4-A9	jd68286-2	1633full_4Q.m	Sample	OP97755,S4Q690,4.97,,,5.0,1,soil	instrument stopped
72	4Q47213.d	P1-A5	ecc690-4	1633full_4Q.m	QC	20/500	instrument stopped
73	4Q47214.d	P1-A1	iccb	1633full_4Q.m	Sample	OP97325,S4Q690,500,,,5.0,1,water	instrument stopped

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SGS ORLANDO

DATE:	07/19/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_071223_S4Q690
CAL DATE:	07/12/23
ANALYST:	AL
RUN BATCH:	S4Q697

ELUENT A LOT #:	224863 W5%ACN 220213 2mMAMAC.11387
ELUENT B LOT #:	ACN 220213
IC/CC STD LOT #:	LCMS 2124
ICV STD LOT #:	LCMS 2124D/2125A
ISTD/D STD LOT #:	11850/11851

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q47556.d	P1-B9	CCB	1633full_4Q.m	Sample		OP97749,S4Q697,500,,,5.0,1,water	nd
2	4Q47557.d	P1-B9	CCB	1633full_4Q.m	Sample		OP97749,S4Q697,500,,,5.0,1,water	nd
3	4Q47558.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP97749,S4Q697,500,,,5.0,1,water	pass
4	4Q47559.d	P1-B2	RT br/h	1633full_4Q.m	Sample		OP97749,S4Q697,500,,,5.0,1,water	pass
5	4Q47560.d	P1-A9	high std	1633full_4Q.m	Sample		OP97749,S4Q697,500,,,5.0,1,water	pass
6	4Q47561.d	P1-A1	iblk	1633full_4Q.m	Sample		OP97749,S4Q697,500,,,5.0,1,water	pass
7	4Q47562.d	P1-A5	cc690-4	1633full_4Q.m	QC	20/500	OP97749,S4Q697,500,,,5.0,1,water	pass
8	4Q47563.d	P1-A2	cc690-1.0LL	1633full_4Q.m	QC	1.6/500	OP97749,S4Q697,500,,,5.0,1,water	pass
9	4Q47564.d	P2-D8	op97911-bs	1633full_4Q.m	Sample		OP97911,S4Q697,500,,,5.0,1,water	✓
10	4Q47565.d	P2-D9	op97911-llbs:3	1633full_4Q.m	Sample		OP97911,S4Q697,500,,,5.0,1,water	✓
11	4Q47566.d	P2-E1	op97911-mb	1633full_4Q.m	Sample		OP97911,S4Q697,500,,,5.0,1,water	✓
12	4Q47567.d	P2-E2	fc7282-1	1633full_4Q.m	Sample		OP97911,S4Q697,510,,,5.0,1,water	✓
13	4Q47568.d	P2-E3	fc7282-2	1633full_4Q.m	Sample		OP97911,S4Q697,520,,,5.0,1,water	rr 10x high eis
14	4Q47569.d	P2-E4	fc7258-1	1633full_4Q.m	Sample		OP97911,S4Q697,540,,,5.0,1,water	rr 5x e flag
15	4Q47570.d	P2-E5	op97911-ms	1633full_4Q.m	Sample		OP97911,S4Q697,550,,,5.0,1,water	rr 5x e flag
16	4Q47571.d	P2-E6	fc7258-2	1633full_4Q.m	Sample		OP97911,S4Q697,490,,,5.0,1,water	rr 10x e flag
17	4Q47572.d	P2-E7	op97911-dup	1633full_4Q.m	Sample		OP97911,S4Q697,500,,,5.0,1,water	rr 10x e flag
18	4Q47573.d	P2-E8	fc7524-1	1633full_4Q.m	Sample		OP97911,S4Q697,560,,,5.0,1,water	✓
19	4Q47574.d	P1-A5	cc690-4	1633full_4Q.m	QC	20/500	OP97749,S4Q697,500,,,5.0,1,water	pass
20	4Q47575.d	P1-A1	iccb	1633full_4Q.m	Sample		OP97749,S4Q697,500,,,5.0,1,water	nd
21	4Q47576.d	P2-E9	fc7524-2	1633full_4Q.m	Sample		OP97911,S4Q697,500,,,5.0,1,water	✓
22	4Q47577.d	P2-F1	fc7724-1	1633full_4Q.m	Sample		OP97911,S4Q697,550,,,5.0,1,water	✓
23	4Q47578.d	P2-F2	fc7724-2	1633full_4Q.m	Sample		OP97911,S4Q697,540,,,5.0,1,water	✓
24	4Q47579.d	P2-F3	fc7724-3	1633full_4Q.m	Sample		OP97911,S4Q697,550,,,5.0,1,water	✓
25	4Q47580.d	P2-F4	fc7724-4	1633full_4Q.m	Sample		OP97911,S4Q697,550,,,5.0,1,water	✓
26	4Q47581.d	P2-F5	fc7724-5	1633full_4Q.m	Sample		OP97911,S4Q697,560,,,5.0,1,water	✓
27	4Q47582.d	P2-F6	fc7724-6	1633full_4Q.m	Sample		OP97911,S4Q697,510,,,5.0,1,water	✓
28	4Q47583.d	P2-F7	fc7759-1	1633full_4Q.m	Sample		OP97911,S4Q697,530,,,5.0,1,water	✓
29	4Q47584.d	P2-F8	fc7724-5	1633full_4Q.m	Sample		OP97911,S4Q697,65,,,5.0,1,water	✓
30	4Q47585.d	P1-A5	cc690-4	1633full_4Q.m	QC	20/500	OP97749,S4Q697,500,,,5.0,1,water	pass
31	4Q47586.d	P1-A1	iccb	1633full_4Q.m	Sample		OP97749,S4Q697,500,,,5.0,1,water	nd
32	4Q47587.d	P4-B7	fc7123-9	1633full_4Q.m	Sample	250/500	OP97881,S4Q697,420,,,5.0,2,water	✓
33	4Q47588.d	P4-B8	fc7123-10	1633full_4Q.m	Sample	250/500	OP97881,S4Q697,420,,,5.0,2,water	✓
34	4Q47589.d	P4-B9	fc7198-2	1633full_4Q.m	Sample	50/500	OP97881,S4Q697,495,,,5.0,10,water	✓
35	4Q47590.d	P4-C1	fc7198-6	1633full_4Q.m	Sample	100/500	OP97881,S4Q697,480,,,5.0,5,water	✓

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LCMS4-4Q ANALYSIS LOG

SGS ORLANDO

36	4Q47591.d	P4-C2	fc7198-7	1633full_4Q.m	Sample	250/500	OP97881.S4Q697.450,,,5.0,2.,water	✓
37	4Q47592.d	P4-C3	op97881-ms	1633full_4Q.m	Sample	250/500	OP97881.S4Q697.455,,,5.0,2.,water	✓
38	4Q47593.d	P4-C4	op97881-msd	1633full_4Q.m	Sample	250/500	OP97881.S4Q697.420,,,5.0,2.,water	✓
39	4Q47594.d	P4-C5	fc7198-8	1633full_4Q.m	Sample	50/500	OP97881.S4Q697.420,,,5.0,10.,water	✓
40	4Q47595.d	P4-C6	fc7198-9	1633full_4Q.m	Sample	250/500	OP97881.S4Q697.430,,,5.0,2.,water	✓
41	4Q47596.d	P1-A5	cc690-4	1633full_4Q.m	QC	20/500	OP97749.S4Q697.500,,,5.0,1.,water	pass
42	4Q47597.d	P1-A1	iccb	1633full_4Q.m	Sample		OP97749.S4Q697.500,,,5.0,1.,water	nd
43	4Q47598.d	P2-F9	op97906-bs	1633full_4Q.m	Sample		OP97906.S4Q697.500,,,5.0,1.,water	✓
44	4Q47599.d	P3-A1	op97906-llbs:3	1633full_4Q.m	Sample		OP97906.S4Q697.500,,,5.0,1.,water	✓
45	4Q47600.d	P3-A2	op97906-mb	1633full_4Q.m	Sample		OP97906.S4Q697.500,,,5.0,1.,water	✓
46	4Q47601.d	P3-A3	fc7243-1	1633full_4Q.m	Sample		OP97906.S4Q697.480,,,5.0,1.,water	✓
47	4Q47602.d	P3-A4	fc7243-2	1633full_4Q.m	Sample		OP97906.S4Q697.520,,,5.0,1.,water	✓
48	4Q47603.d	P3-A5	fc7243-3	1633full_4Q.m	Sample		OP97906.S4Q697.520,,,5.0,1.,water	✓
49	4Q47604.d	P3-A6	fc7243-4	1633full_4Q.m	Sample		OP97906.S4Q697.545,,,5.0,1.,water	rr 10x e flag
50	4Q47605.d	P3-A7	fc7243-5	1633full_4Q.m	Sample		OP97906.S4Q697.530,,,5.0,1.,water	rr 10x e flag
51	4Q47606.d	P3-A8	fc7243-6	1633full_4Q.m	Sample		OP97906.S4Q697.480,,,5.0,1.,water	rr 1x co
52	4Q47607.d	P3-A9	fc7243-7	1633full_4Q.m	Sample		OP97906.S4Q697.500,,,5.0,1.,water	✓
53	4Q47608.d	P1-A5	cc690-4	1633full_4Q.m	QC	20/500	OP97749.S4Q697.500,,,5.0,1.,water	pass
54	4Q47609.d	P1-A1	iccb	1633full_4Q.m	Sample		OP97749.S4Q697.500,,,5.0,1.,water	nd
55	4Q47610.d	P3-B1	fc7243-8	1633full_4Q.m	Sample		OP97906.S4Q697.440,,,5.0,1.,water	✓
56	4Q47611.d	P3-B2	fc7243-9	1633full_4Q.m	Sample		OP97906.S4Q697.520,,,5.0,1.,water	rr 10x e flag
57	4Q47612.d	P3-B3	fc7243-10	1633full_4Q.m	Sample		OP97906.S4Q697.520,,,5.0,1.,water	rr 10x e flag
58	4Q47613.d	P3-B4	op97906-ms	1633full_4Q.m	Sample		OP97906.S4Q697.510,,,5.0,1.,water	rr 10x e flag
59	4Q47614.d	P3-B5	op97906-msd	1633full_4Q.m	Sample		OP97906.S4Q697.525,,,5.0,1.,water	rr 10x e flag
60	4Q47615.d	P3-B6	fc7243-11	1633full_4Q.m	Sample		OP97906.S4Q697.585,,,5.0,1.,water	rr 1x co
61	4Q47616.d	P3-B7	fc7243-12	1633full_4Q.m	Sample		OP97906.S4Q697.500,,,5.0,1.,water	✓
62	4Q47617.d	P3-B8	fc7243-13	1633full_4Q.m	Sample		OP97906.S4Q697.520,,,5.0,1.,water	✓
63	4Q47618.d	P3-B9	fc7243-14	1633full_4Q.m	Sample		OP97906.S4Q697.510,,,5.0,1.,water	✓
64	4Q47619.d	P3-C1	fc7243-15	1633full_4Q.m	Sample		OP97906.S4Q697.520,,,5.0,1.,water	✓
65	4Q47620.d	P1-A5	cc690-4	1633full_4Q.m	QC	20/500	OP97749.S4Q697.500,,,5.0,1.,water	pass
66	4Q47621.d	P1-A1	iccb	1633full_4Q.m	Sample		OP97749.S4Q697.500,,,5.0,1.,water	nd
67	4Q47622.d	P3-C2	fc7243-16	1633full_4Q.m	Sample		OP97906.S4Q697.540,,,5.0,1.,water	rr 10x e flag
68	4Q47623.d	P3-C3	fc7243-17	1633full_4Q.m	Sample		OP97906.S4Q697.510,,,5.0,1.,water	rr 1x co
69	4Q47624.d	P3-C4	fc7243-18	1633full_4Q.m	Sample		OP97906.S4Q697.520,,,5.0,1.,water	rr 2x e flag
70	4Q47625.d	P3-C5	fc7243-19	1633full_4Q.m	Sample		OP97906.S4Q697.510,,,5.0,1.,water	rr 10x e flag
71	4Q47626.d	P1-A5	ecc690-4	1633full_4Q.m	QC	20/500	OP97749.S4Q697.500,,,5.0,1.,water	pass
72	4Q47627.d	P1-A1	iccb	1633full_4Q.m	Sample		OP97749.S4Q697.500,,,5.0,1.,water	nd

SGS ORLANDO

DATE:	07/21/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_071223_S4Q690
CAL DATE:	07/12/23
ANALYST:	AL
RUN BATCH:	S4Q699

ELUENT A LOT #:	224863 W5%ACN 220213 2mmMAMAC.11387
ELUENT B LOT #:	ACN 220213
IC/CC STD LOT #:	LCMS 2124
ICV STD LOT #:	LCMS 2124D/2125A
ISTD/ID STD LOT #:	11850/11851

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
81	4Q47708.d	P1-B9	CCB	1633full_4Q.m	Sample		OP97749,S4Q699,500,,,5.0,1,water	nd
82	4Q47709.d	P1-B9	CCB	1633full_4Q.m	Sample		OP97749,S4Q699,500,,,5.0,1,water	nd
83	4Q47710.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP97749,S4Q699,500,,,5.0,1,water	pass
84	4Q47711.d	P1-B2	RT br/h	1633full_4Q.m	Sample		OP97749,S4Q699,500,,,5.0,1,water	pass
85	4Q47712.d	P1-A9	high std	1633full_4Q.m	Sample		OP97749,S4Q699,500,,,5.0,1,water	pass
86	4Q47713.d	P1-A1	iblk	1633full_4Q.m	Sample		OP97749,S4Q699,500,,,5.0,1,water	nd
87	4Q47714.d	P1-A5	cc690-4	1633full_4Q.m	QC	20/500	OP97749,S4Q699,500,,,5.0,1,water	pass
88	4Q47715.d	P1-A2	cc690-1.0LL	1633full_4Q.m	QC	1.6/500	OP97749,S4Q699,500,,,5.0,1,water	pass
89	4Q47716.d	P4-C8	fc7258-1	1633full_4Q.m	Sample	100/500	OP97911,S4Q699,540,,,5.0,5,water	✓
90	4Q47717.d	P4-C9	op97911-ms	1633full_4Q.m	Sample	100/500	OP97911,S4Q699,550,,,5.0,5,water	✓
91	4Q47718.d	P4-D1	fc7258-2	1633full_4Q.m	Sample	50/500	OP97911,S4Q699,490,,,5.0,10,water	✓
92	4Q47719.d	P4-D2	op97911-dup	1633full_4Q.m	Sample	50/500	OP97911,S4Q699,500,,,5.0,10,water	✓
93	4Q47720.d	P4-D3	fc7282-2	1633full_4Q.m	Sample	50/500	OP97911,S4Q699,520,,,5.0,10,water	✓
94	4Q47721.d	P4-D4	fc7243-4	1633full_4Q.m	Sample	50/500	OP97906,S4Q699,545,,,5.0,10,water	redo 60ml
95	4Q47722.d	P4-D5	fc7243-5	1633full_4Q.m	Sample	50/500	OP97906,S4Q699,530,,,5.0,10,water	redo 60ml
96	4Q47723.d	P4-D6	fc7243-6	1633full_4Q.m	Sample		OP97906,S4Q699,480,,,5.0,1,water	rr 1x co
97	4Q47724.d	P4-D7	fc7243-9	1633full_4Q.m	Sample	50/500	OP97906,S4Q699,520,,,5.0,10,water	redo 60ml
98	4Q47725.d	P1-A5	cc690-4	1633full_4Q.m	QC	20/500	OP97749,S4Q699,500,,,5.0,1,water	pass
99	4Q47726.d	P1-A1	iccb	1633full_4Q.m	Sample		OP97749,S4Q699,500,,,5.0,1,water	nd
100	4Q47727.d	P4-D8	fc7243-10	1633full_4Q.m	Sample	50/500	OP97906,S4Q699,520,,,5.0,10,water	redo 60ml
101	4Q47728.d	P4-D9	op97906-ms	1633full_4Q.m	Sample	50/500	OP97906,S4Q699,510,,,5.0,10,water	redo 60ml
102	4Q47729.d	P4-E1	op97906-msd	1633full_4Q.m	Sample	50/500	OP97906,S4Q699,525,,,5.0,10,water	redo 60ml
103	4Q47730.d	P4-E2	fc7243-16	1633full_4Q.m	Sample	50/500	OP97906,S4Q699,540,,,5.0,10,water	rr 10x c/o
104	4Q47731.d	P4-E3	fc7243-17	1633full_4Q.m	Sample		OP97906,S4Q699,510,,,5.0,1,water	✓
105	4Q47732.d	P4-E4	fc7243-18	1633full_4Q.m	Sample	250/500	OP97906,S4Q699,520,,,5.0,2,water	✓
106	4Q47733.d	P4-E5	fc7243-19	1633full_4Q.m	Sample	50/500	OP97906,S4Q699,510,,,5.0,10,water	✓
107	4Q47734.d	P4-E6	op97940-bs	1633full_4Q.m	Sample		OP97940,S4Q699,500,,,5.0,1,water	✓
108	4Q47735.d	P4-E7	op97940-llbs:3	1633full_4Q.m	Sample		OP97940,S4Q699,500,,,5.0,1,water	✓
109	4Q47736.d	P4-E8	op97940-mb	1633full_4Q.m	Sample		OP97940,S4Q699,500,,,5.0,1,water	✓
110	4Q47737.d	P1-A5	cc690-4	1633full_4Q.m	QC	20/500	OP97749,S4Q699,500,,,5.0,1,water	pass
111	4Q47738.d	P1-A1	iccb	1633full_4Q.m	Sample		OP97749,S4Q699,500,,,5.0,1,water	nd
112	4Q47739.d	P4-E9	fc7222-1	1633full_4Q.m	Sample		OP97940,S4Q699,540,,,5.0,1,water	✓
113	4Q47740.d	P4-F1	fc7222-2	1633full_4Q.m	Sample		OP97940,S4Q699,520,,,5.0,1,water	✓
114	4Q47741.d	P4-F2	fc7222-3	1633full_4Q.m	Sample		OP97940,S4Q699,540,,,5.0,1,water	✓
115	4Q47742.d	P4-F3	fc7222-4	1633full_4Q.m	Sample		OP97940,S4Q699,510,,,5.0,1,water	rr 5x e flag

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LCMS4-4Q ANALYSIS LOG

SGS ORLANDO

116	4Q47743.d	P4-F4	fc7222-5	1633full_4Q.m	Sample	OP97940,S4Q699,500,,,5.0,1,water	✓
117	4Q47744.d	P4-F5	fc7222-6	1633full_4Q.m	Sample	OP97940,S4Q699,535,,,5.0,1,water	✓
118	4Q47745.d	P4-F6	fc7222-7	1633full_4Q.m	Sample	OP97940,S4Q699,545,,,5.0,1,water	✓
119	4Q47746.d	P4-F7	fc7222-8	1633full_4Q.m	Sample	OP97940,S4Q699,540,,,5.0,1,water	rr 2x e flag
120	4Q47747.d	P4-F8	fc7222-9	1633full_4Q.m	Sample	OP97940,S4Q699,535,,,5.0,1,water	rr 2x e flag
121	4Q47748.d	P1-A5	cc690-4	1633full_4Q.m	QC	OP97749,S4Q699,500,,,5.0,1,water	pass
122	4Q47749.d	P1-A1	iccb	1633full_4Q.m	Sample	OP97749,S4Q699,500,,,5.0,1,water	nd
123	4Q47750.d	P4-F9	fc7258-3	1633full_4Q.m	Sample	OP97940,S4Q699,535,,,5.0,1,water	rr 2x, 10x
124	4Q47751.d	P5-A1	op97940-ms	1633full_4Q.m	Sample	OP97940,S4Q699,530,,,5.0,1,water	rr 2x, 10x
125	4Q47752.d	P5-A2	fc7258-5	1633full_4Q.m	Sample	OP97940,S4Q699,495,,,5.0,1,water	rr 5x e flag
126	4Q47753.d	P5-A3	op97940-dup	1633full_4Q.m	Sample	OP97940,S4Q699,500,,,5.0,1,water	rr 5x e flag
127	4Q47754.d	P5-A4	fc7258-6	1633full_4Q.m	Sample	OP97940,S4Q699,520,,,5.0,1,water	✓
128	4Q47755.d	P5-A5	fc7258-7	1633full_4Q.m	Sample	OP97940,S4Q699,500,,,5.0,1,water	rr 10x e flag
129	4Q47756.d	P5-A6	op97941-bs	1633full_4Q.m	Sample	OP97941,S4Q699,500,,,5.0,1,water	✓
130	4Q47757.d	P5-A7	op97941-llbs:3	1633full_4Q.m	Sample	OP97941,S4Q699,500,,,5.0,1,water	✓
131	4Q47758.d	P5-A8	op97941-mb	1633full_4Q.m	Sample	OP97941,S4Q699,500,,,5.0,1,water	✓
132	4Q47759.d	P5-A9	fc7223-1	1633full_4Q.m	Sample	OP97941,S4Q699,535,,,5.0,1,water	✓
133	4Q47760.d	P1-A5	cc690-4	1633full_4Q.m	QC	OP97749,S4Q699,500,,,5.0,1,water	pass
134	4Q47761.d	P1-A1	iccb	1633full_4Q.m	Sample	OP97749,S4Q699,500,,,5.0,1,water	nd
135	4Q47762.d	P5-B1	fc7223-2	1633full_4Q.m	Sample	OP97941,S4Q699,535,,,5.0,1,water	✓
136	4Q47763.d	P5-B2	fc7223-3	1633full_4Q.m	Sample	OP97941,S4Q699,540,,,5.0,1,water	✓
137	4Q47764.d	P5-B3	fc7223-4	1633full_4Q.m	Sample	OP97941,S4Q699,545,,,5.0,1,water	✓
138	4Q47765.d	P5-B4	fc7223-5	1633full_4Q.m	Sample	OP97941,S4Q699,540,,,5.0,1,water	✓
139	4Q47766.d	P5-B5	fc7223-6	1633full_4Q.m	Sample	OP97941,S4Q699,545,,,5.0,1,water	✓
140	4Q47767.d	P5-B6	fc7223-7	1633full_4Q.m	Sample	OP97941,S4Q699,540,,,5.0,1,water	✓
141	4Q47768.d	P5-B7	fc7223-8	1633full_4Q.m	Sample	OP97941,S4Q699,540,,,5.0,1,water	rr 2x e flag
142	4Q47769.d	P5-B8	fc7223-9	1633full_4Q.m	Sample	OP97941,S4Q699,530,,,5.0,1,water	rr 2x e flag
143	4Q47770.d	P5-B9	fc7223-10	1633full_4Q.m	Sample	OP97941,S4Q699,545,,,5.0,1,water	✓
144	4Q47771.d	P5-C1	fc7223-11	1633full_4Q.m	Sample	OP97941,S4Q699,525,,,5.0,1,water	✓
145	4Q47772.d	P1-A5	cc690-4	1633full_4Q.m	QC	OP97749,S4Q699,500,,,5.0,1,water	pass
146	4Q47773.d	P1-A1	iccb	1633full_4Q.m	Sample	OP97749,S4Q699,500,,,5.0,1,water	nd
147	4Q47774.d	P5-C2	fc7223-12	1633full_4Q.m	Sample	OP97941,S4Q699,540,,,5.0,1,water	✓
148	4Q47775.d	P5-C3	fc7223-13	1633full_4Q.m	Sample	OP97941,S4Q699,540,,,5.0,1,water	✓
149	4Q47776.d	P5-C4	fc7223-14	1633full_4Q.m	Sample	OP97941,S4Q699,540,,,5.0,1,water	✓
150	4Q47777.d	P5-C5	fc7223-15	1633full_4Q.m	Sample	OP97941,S4Q699,535,,,5.0,1,water	✓
151	4Q47778.d	P5-C6	op97941-ms	1633full_4Q.m	Sample	OP97941,S4Q699,545,,,5.0,1,water	✓
152	4Q47779.d	P5-C7	op97941-msd	1633full_4Q.m	Sample	OP97941,S4Q699,545,,,5.0,1,water	✓
153	4Q47780.d	P5-C8	fc7223-16	1633full_4Q.m	Sample	OP97941,S4Q699,535,,,5.0,1,water	✓
154	4Q47781.d	P5-C9	fc7223-17	1633full_4Q.m	Sample	OP97941,S4Q699,535,,,5.0,1,water	✓
155	4Q47782.d	P5-F9	fc7243-11	1633full_4Q.m	Sample	OP97906,S4Q699,535,,,5.0,1,water	✓
156	4Q47783.d	P1-A5	ecc690-4	1633full_4Q.m	QC	OP97749,S4Q699,500,,,5.0,1,water	pass
157	4Q47784.d	P1-A1	iccb	1633full_4Q.m	Sample	OP97749,S4Q699,500,,,5.0,1,water	nd

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2122A-E	1633 opike Cal Std.	11771 11799A	PFAC MXF	wellington	4/19/28	4-27-24 5-15-24	1-4 ppm	250uL	4mL	62.5 125 250ppb	1633 mix	5/15/23	10/28/23	MJ
		LCMS 2097A	Br-LN Et+Me	sgs labo	n/a	10/28/23	2 ppm 5 ppm	250uL		125 312.5 ppb	2088ml			
		11772 11801A	PFAC MXF	wellington	3/24/26	4-27-24 5-15-24	2 ppm	250uL		125ppb				
		11774 11802A	PFAC MXG		12-01-27 12-01-27	4-27-24 5-15-24	2 ppm	250uL		125ppb				
		11738 11803A	PFAC MXJ		9/14/26 3-28-28	4-27-24 5-15-24	4-20 ppm	312uL	V	312/1160 ppb				
LCMS 2123A-B	PFC SPIKE	11750	PFAC MXH	wellington	4/19/28	4-27-24 5-15-24	1.0 ppm	2mL	5mL	95/1160H 51/120	1633	05/16/23	11/02/23	NG
		11432	N-Me- FOSA-M	wellington labs	02/28/27	03/16/24	50ppm	40uL						NG
		11513	FBSA-1		11/10/26	04/18/24								NG
		11514	FWSA-1		10/29/26	04/18/24								NG
		11332	PFECHS		03/28/27	04/18/24								NG
LCMS 2123-2124	1633 opike Cal std.	11799B	PFAC MXH	wellington	4/19/28	5/22/23 5-15-24	1-4 ppm	250uL	4mL	62.5 125 250ppb	1633 mix	5/22/23	10/28/23	NW
		LCMS 2097A 4801B	Br-LN Et+Me	sgs labo	n/a	10/28/23	2 ppm 5 ppm			125 312.5 ppb	2088ml			
		11801B	PFAC MXF	wellington	3/24/26	5/22/23 5-15-24	2 ppm			125ppb				
		11802B	PFAC MXG		12/1/27	5/22/24	2 ppm			125ppb				
		11803B	PFAC MXJ		3/28/28	5/22/24	4-20 ppm	312uL	V	312/1160 ppb				
						n/a	NW	continue next page 5/22/23						

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

Organic Standards Preparation Log

SGS - Orlando Sid. #	Name Description	Parent Sid. #	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 2095A-J	(10PTB) PFC ID SURF	11669	PFAC-2YES	Wellington Labs	01/18/23	03/28/24	1.0ppm	2.4mL	~50mL	0.5ppm	1633 MIX	03/28/23	09/28/23	NS
↓	↓	11585	PFAC-DA	↓	11/08/23	01/26/24	50ppm	48uL	↓	↓	↓	↓	↓	NS
↓	↓	11431	PFAC-d-N	↓	05/06/23	03/13/24	50ppm	48uL	↓	↓	↓	↓	↓	NS
LCMS 2096A-B	1633 spike Cal std.	11672	PFAC-MxH	Wellington Labs	8/8/27	3/23/24	1-4 ppm	250uL	4mL	02.5 125 250ppb	1633 MIX	3/30/23	9/30/23	MU
↓	↓	11686	PFAC-MxI	↓	2/27/28	3/30/24	170 ppm	250uL	↓	↓	↓	↓	↓	↓
↓	↓	11674A	PFAC-MxJ	↓	1/11/25	3/23/24	2ppm	500uL	↓	250ppb	↓	↓	↓	↓
↓	↓	11674B	PFAC-MxK	↓	12/11/27	3/30/24	2ppm	250uL	↓	125ppb	↓	↓	↓	↓
↓	↓	11660	PFAC-MxL	↓	9/14/26	3/23/24	4-20 ppm	312uL	↓	312/100 ppb	↓	↓	↓	↓
↓	↓	11675	PFAC-MxM	↓	10/28/23	10/28/23	50ppm	200uL	5mL	2ppm	1633 MIX	4/6/23	10/28/23	MU
LCMS 2097A-B	BR-LN metel for 1633	11497	br-N metosa	Wellington Labs	08/23/27	10/28/23	50ppm	200uL	↓	2ppm	↓	↓	↓	↓
↓	↓	11498	br-N Etfose	↓	10/07/27	10/28/23	50ppm	200uL	↓	2ppm	↓	↓	↓	↓
↓	↓	11495	br-N metose	↓	10/07/27	10/28/23	50ppm	500uL	↓	5ppm	↓	↓	↓	↓
↓	↓	11494	br-N Etfose	↓	10/17/27	10/28/23	50ppm	500uL	↓	5ppm	↓	↓	↓	↓
↓	↓					4/6/27								

* tested by SQA on 10/15/23

* 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 2125A-B	FULL LIST 40 SPIKE (CALC)	11750	PFOA 28 Comp.	Alabate	3/13/28	5/10/24	1.0ppm	400ul	4.0mL	100ppb	951MEOH 581H2O (2,400ml)	5/22/23	8/23/23	MW
↓	↓	LCMS 2067	40 LIST Aq. sol.	SGS old.	—	8/23/23	1.0ppm	400ul	↓	↓	↓	↓	↓	↓
↓	↓	LCMS 2117	40 LIST Aq. sol.	↓	—	11/8/23	1.0ppm	400ul	↓	↓	↓	↓	↓	↓
↓	↓	LCMS 2101	F05E Std.	↓	—	7/19/23	5.0ppm	400ul	↓	500ppb	↓	↓	↓	↓
LCMS 2126A-J	PFC ID SURT (10 PPB)	11804	MPAC - 24ES	Wellington Labs	01/18/28	05/23/24	1.0ppm	1.2mL	~2.5mL	0.5ppm	951MEOH 571H2O	05/23/23	10/28/23	NG
↓	↓	11635A	M3HFO DA	↓	11/08/25	04/14/24	50ppm	24ul	↓	↓	↓	↓	↓	NG
↓	↓	11431	D-N- MERSAM	↓	05/06/27	02/10/24	50ppm	24ul	↓	↓	↓	↓	↓	NG
LCMS 2127A-E	1633-OPICE CAL STD.	11799B 11807	PFAC MxH	Wellington	4/19/28	5/22/24 5/24/24	1-4 ppm	2.50ul	4mL	62.5 125 250ppb	1033 MIX (268ml)	5/24/23	10/28/23	MW
↓	↓	LCMS 2097A-B	BE IN ET-ME	SGS Labo	MA	10/28/23	2 ppm	↓	↓	↓	↓	↓	↓	↓
↓	↓	11801B 11808	PFAC Mx F	Wellington	3/24/26	5/22/24 5/24/24	2 ppm	↓	↓	125ppb	↓	↓	↓	↓
↓	↓	11802B 11809	PFAC Mx G	↓	12/1/27	5/22/24 5/24/24	2 ppm	↓	↓	125ppb	↓	↓	↓	↓
↓	↓	11803B 11810	PFAC Mx J	↓	3/28/28	5/22/24 5/24/24	4-20 ppm	3/2ul	↓	3/2 160ppb	↓	↓	↓	↓
LCMS 2128A-J	PFC ID SURT (10 PPB)	F-5 11819	MPAC - 24ES	Wellington Labs	01/18/28	06/10/24	1.0ppm	1.2mL	~2.5mL	0.5ppm	951MEOH 571H2O	06/10/23	10/28/23	NG
↓	↓	11635A	M3HFO DA	↓	11/08/25	04/14/24	50ppm	24ul	↓	↓	↓	↓	↓	NG
↓	↓	11584	D-N- MERSAM	↓	11/11/27	06/10/24	50ppm	24ul	↓	↓	↓	↓	↓	NG
						NG 06/10/24								

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

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2067	40 List std. ADD-ON #1	10726A	10:2 FTS	Wellington	3/3/26	3/21/23	50 ppm	80 uL	4.0 mL	1 ppm	95% MeOH 5% H2O	2/8/23	3/21/23 8/23/23	MV
		10840	L- PFDOS		7/9/26	10/18/23							8/23/23	
		10829	N- MCFOSA		8/3/26	8/23/23								
		10837	N- EToFOSA		8/3/26	8/23/23								
		10842	PFHxDA		9/3/26	10/18/23								
		10841	PFOBA		5/7/26	10/18/23								
		11116B	3:3 FTCA PFR-PA		2/3/27	2/8/24								
		10685A	5:3 FTCA PFPePA		11/11/25	8/23/23								
		11116A	7:3 FTCA FHP-PA		11/12/25	2/8/24								
		11332	PFECHS		3/2/27	10/18/23								
		10762B	PFEESA		5/13/25	10/18/23								
		10763B	PFMBA		3/31/25	10/18/23								
		10764	PFMFA		3/31/25	2/8/24								
		10765B	PF406A		3/31/25	10/18/23								
			NFHDA		3/31/25	10/18/23								
			3:6-OPFPA											
					NS	02/10/23								

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

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

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2115	LIST 40 Sum Add-on 5% H ₂ O	11523	Mefose	Wellington	1/23/27	5/9/24	50ppm	200uL	2 mL	5ppm	95% MeOH + 5% H ₂ O	5/9/23	8/23/23	MU
↓	↓	11400	d9-N Etfose	↓	1/23/27	12/6/23	↓	200uL	↓	5ppm	↓	↓	↓	↓
↓	↓	11115	M2-PFHDA	↓	11/23/28	8/23/23	↓	40uL	↓	1ppm	↓	↓	↓	↓
↓	↓	10836	D-N-Etfose	↓	12/30/25	8/23/23	↓	40uL	↓	1ppm	↓	↓	↓	↓
LCMS 2116	Full List (40) Spike (Cal. Std)	11053	PFOA 20ppm	Absolute	11/9/27	4/18/24	1.0ppm	400uL	4.0mL	100ppb	95% MeOH + 5% H ₂ O (2, 400ml)	5/9/23	8/23/23	MU
↓	↓	LCMS 2067	40 List Add on #1	↓	---	8/23/23	1.0ppm	400uL	↓	↓	↓	↓	↓	↓
↓	↓	LCMS 2117	40 List Add on #2	↓	---	5/18/23	1.0ppm	400uL	↓	↓	↓	↓	↓	↓
↓	↓	LCMS 2054	FOSC Std.	↓	---	7/24/23	5.0ppm	400uL	↓	500ppb	↓	↓	↓	↓
LCMS 2117	40 List Add on #2	11250	FOSA-1	Wellington	11/10/26	11/8/23	50ppm	80uL	4.0mL	1ppm	95% MeOH + 5% H ₂ O	5/9/23	11/8/23	MU
↓	↓	11249	FHXGA-1	↓	2/29/26	11/3/23	50ppm	80uL	↓	↓	↓	↓	↓	↓
↓	↓	11140B	L-PFAS	↓	7/12/26	5/9/24	50ppm	80uL	↓	↓	↓	↓	↓	↓
LCMS 2118 A	PFC ID Sum (10ppb)	11775A	MPFAC 24ES	Wellington	1/18/28	5/10/24	1.0ppm	2.4mL	5.0mL	0.5ppm	95% MeOH + 5% H ₂ O	5/10/23	11/10/23	MU
↓	↓	1635A	M3HPD DA	↓	11/8/25	4/24/24	50ppm	48uL	↓	↓	↓	↓	↓	↓
↓	↓	11431	d-11 Mefosum	↓	5/6/27	3/15/24	50ppm	48uL	↓	↓	↓	↓	↓	↓
DG 05/12/23														

* 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 2098A	1033 spike Cal std.	11672A	PFAC MxH	Wellington	8/8/24	3/23/24	1-4 ppm	2.50mL	4mL	6.25 250ppb	1033 mix	4/16/23	10/6/23	MU
		LCMS 2097	Er-in Et. Me	SGS	1/9	10/28/23	3ppm	2.50mL		125ppb				
		11674B	PFAC MxH	Wellington	11/1/25	3/30/24	2ppm	500uL		350ppb				
		11675	PFAC MxG		12/1/27	3/30/24	2ppm	250uL		125ppb				
		11672B	PFAC MxJ		9/14/26	3/23/24	4-20 ppm	312uL		312/1000 ppb				
LCMS 2099	537.1 Duw std. (Interim)	11670	M3PF-PEA	Wellington Labs	07/06/25	04/06/24	50ppm	80uL	4mL	10ppm	10:1 MeOH 4:1 H2O	04/16/23	06/15/23	NG
		10436A	M302a FTS		11/05/25	04/06/24		80uL		10ppm				NG
		10528B	D3-N-MEFOAA		10/22/25	05/15/23		160uL		20ppm				NG
		10498A	M3FOS		11/02/25	04/06/24		80uL		10ppm				NG
		11669	M3RFA		12/01/26	03/20/24		80uL		10ppm				NG
LCMS 2100	Full List (40) List 40 spike (Std)	11626	PF0A DEP 28 Comp.	Absolute	11/9/27	4/11/24	1.0ppm	400uL	4.0mL	100ppb	75% MeOH 5% H2O (2.40031)	4/11/23	7/24/23	MU
		LCMS 2067	40 List ADP FN	SGS add.		8/23/23	1.0ppm	400uL						
		LCMS 2076	40 List ADP FN			5/12/23	1.0ppm	400uL						
		LCMS 2054	F05F Std.			7/24/23	5.0ppm	400uL		50ppb				
LCMS 2101	F05F std.	11336	N-et F05F	Wellington	5/13/27	9/19/23	50ppm	200uL	2.0mL	5ppm	95% MeOH 5% H2O	9/11/23	9/19/23	MU
		11338	N-me f05F		5/13/27	9/19/23	50ppm	200uL						

* based on date opened as specified in each SGS - Orlando SOP. (1,000)

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



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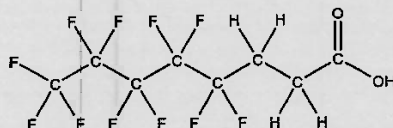
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FPePA
COMPOUND: 3-Perfluoropentyl propanoic acid

LOT NUMBER: FPePA1120

STRUCTURE:

CAS #: 914637-49-3



MOLECULAR FORMULA: C₈H₅F₁₁O₂
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/11/2020
EXPIRY DATE: (mm/dd/yyyy) 11/11/2025
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 342.11
SOLVENT(S): Methanol

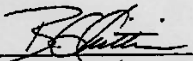
DOCUMENTATION/ DATA ATTACHED:

- 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 <1% of the unsaturated 5:3 telomer acid (C₈H₃F₁₁O₂) as an impurity determined by ¹⁹F NMR.

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Certified By: 
B.G. Chittim, General Manager
Date: 11/27/2020
(mm/dd/yyyy)

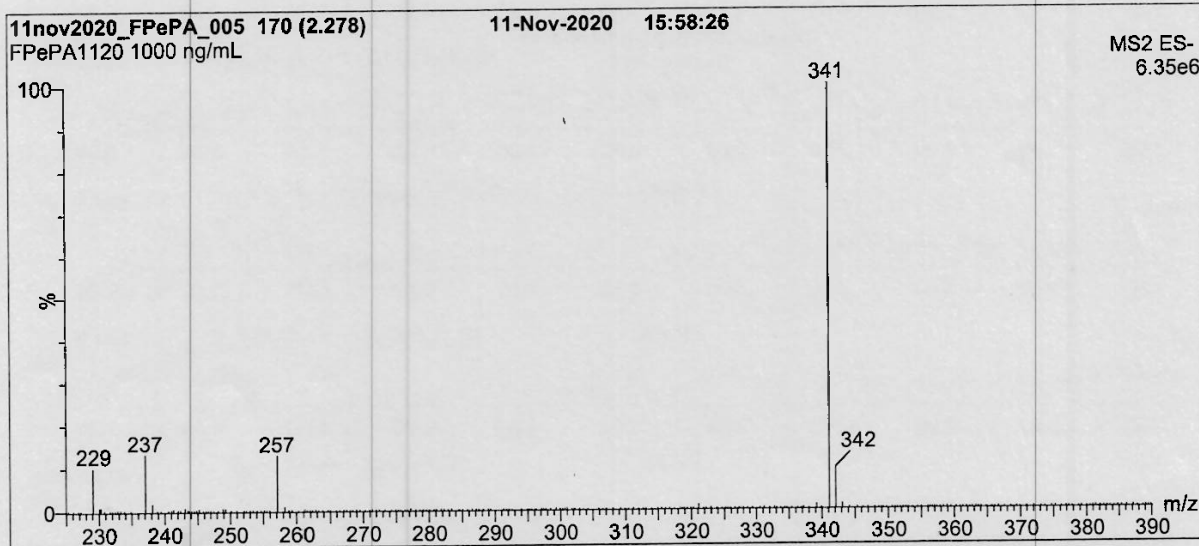
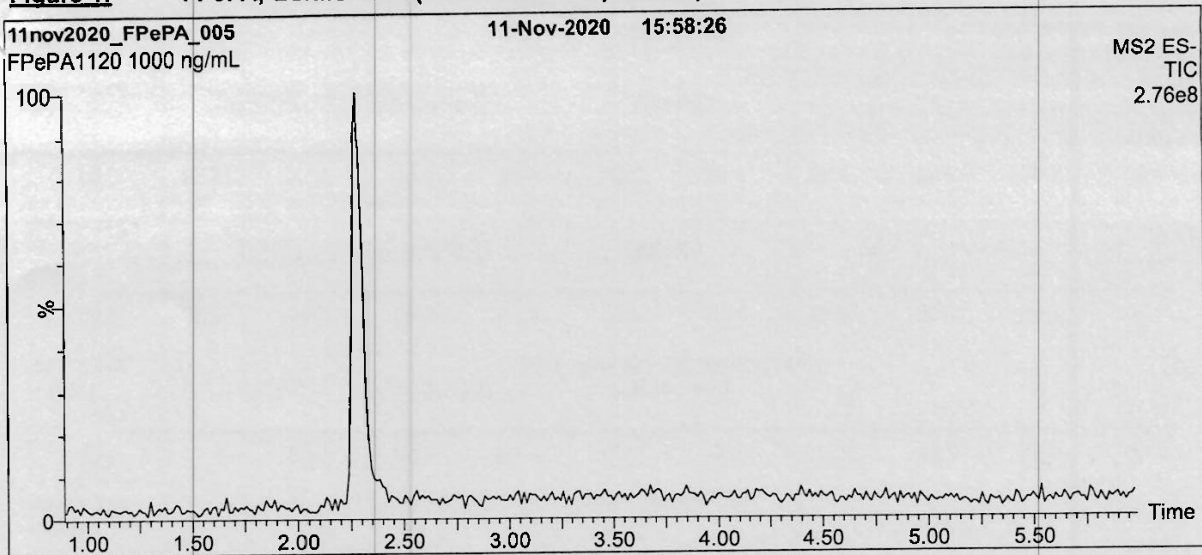
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Form#:27, Issued 2004-11-10
Revision#:8, Revised 2020-09-10

FPePA1120 (1 of 4)
rev0

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7

Figure 1: FPePA; 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 RP_{1a}
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) = 18.50
Desolvation Temperature ($^{\circ}$ C) = 500
Desolvation Gas Flow (L/hr) = 1000

10726 A

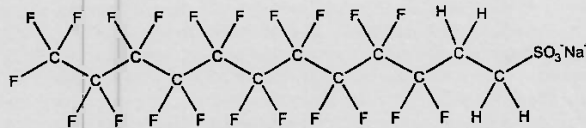


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 10:2FTS **LOT NUMBER:** 102FTS0221
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) 03/03/2021
EXPIRY DATE: (mm/dd/yyyy) 03/03/2026
RECOMMENDED STORAGE: Refrigerate ampoule

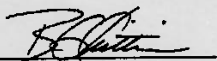
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 03/05/2021
B.G. Chittim, General Manager (mm/dd/yyyy)

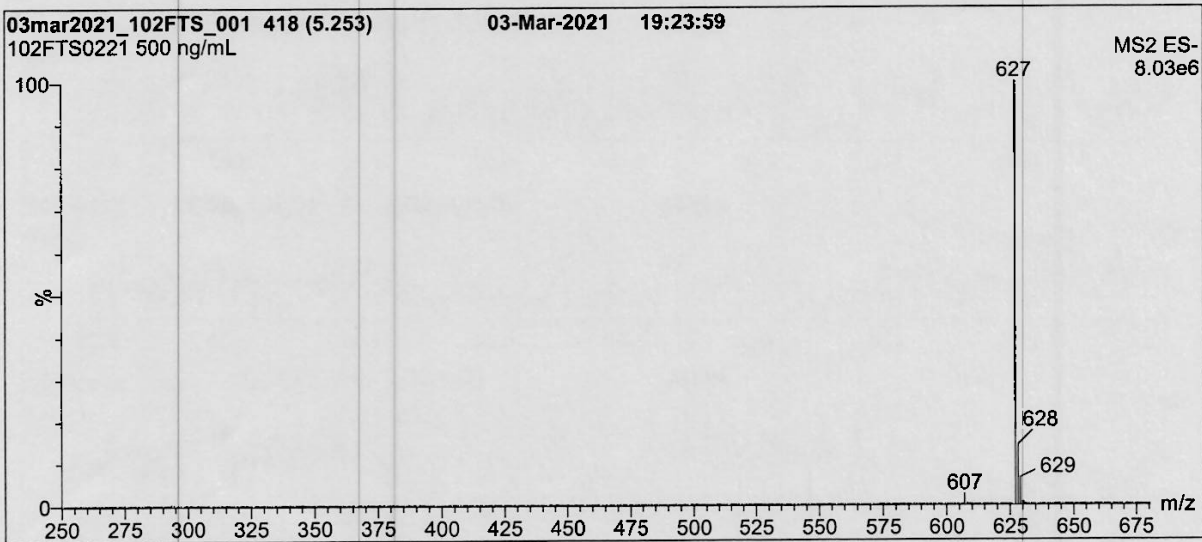
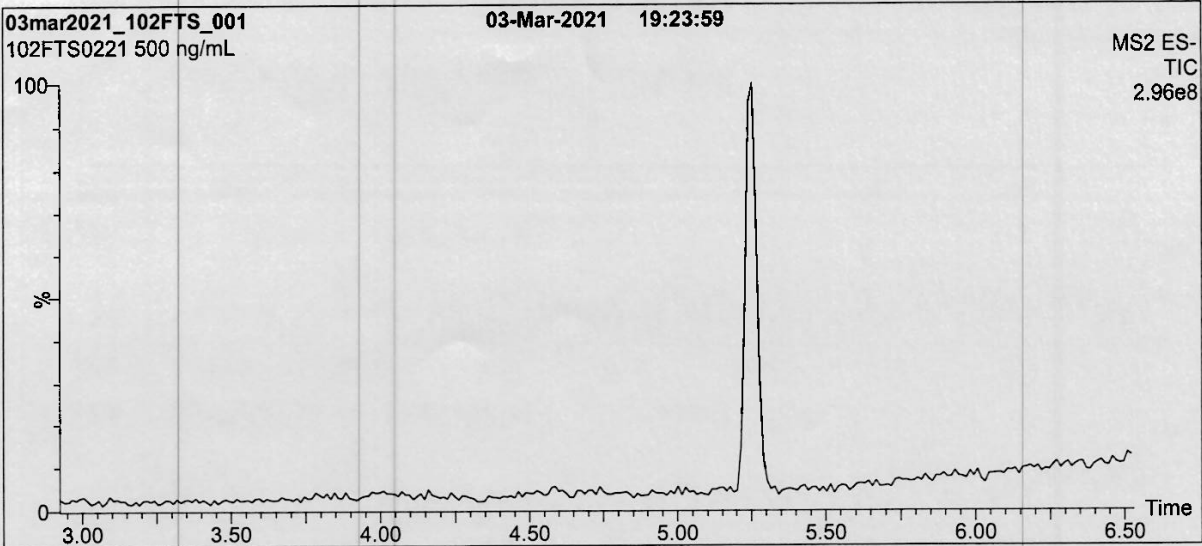
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Form#: 27, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

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7

Figure 1: 10:2FTS; LC/MS Data (Full Scan 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: 40% H₂O / 60% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 3 min
before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 μ L/min

MS Parameters:

Experiment: Full Scan (250 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 25.00
Desolvation Temperature ($^{\circ}$ C) = 500
Desolvation Gas Flow (L/hr) = 1000

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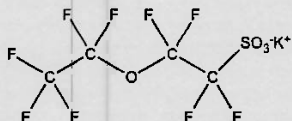
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFEESA *rec'd
8/20/21
WPH* **LOT NUMBER:** PFEESA0520

COMPOUND: Potassium perfluoro(2-ethoxyethane)sulfonate

STRUCTURE: **CAS #:** 117205-07-9



MOLECULAR FORMULA: C₄F₈SO₄K

CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt)
44.6 ± 2.2 µg/ml (PFEESA acid)
44.5 ± 2.2 µg/ml (PFEESA anion)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 05/13/2020

EXPIRY DATE: (mm/dd/yyyy) 05/13/2025

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 354.19

SOLVENT(S): Methanol

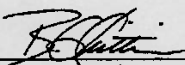
DOCUMENTATION/ DATA ATTACHED:

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 ~ 0.2% of perfluoro-n-octanoic acid (PFOA).

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Certified By: 
B.G. Chittim, General Manager

Date: 05/29/2020
(mm/dd/yyyy)

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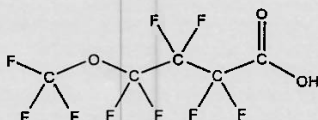
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PF5OHxA *res'd with 8/20/21* **LOT NUMBER:** PF5OHxA0320

COMPOUND: Perfluoro-5-oxahexanoic acid

SYNONYM: Perfluoro-4-methoxybutanoic acid (PFMBA)

STRUCTURE: **CAS #:** 863090-89-5



MOLECULAR FORMULA: C₅HF₉O₃ **MOLECULAR WEIGHT:** 280.05

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

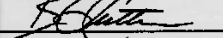
DOCUMENTATION/ DATA ATTACHED:

- 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: 12/21/2020
(mm/dd/yyyy)

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Form#: 27, Issued 2004-11-10
Revision#: 8, Revised 2020-09-10

PF5OHxA0320 (1 of 4)
rev1

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7

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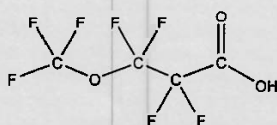
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PF4OPeA *rec'd
WPH
8/20/21* **LOT NUMBER:** PF4OPeA0320

COMPOUND: Perfluoro-4-oxapentanoic acid

SYNONYM: Perfluoro-3-methoxypropanoic acid (PFMPA)

STRUCTURE: **CAS #:** 377-73-1



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) 03/31/2020

EXPIRY DATE: (mm/dd/yyyy) 03/31/2025

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

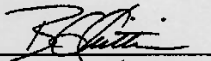
DOCUMENTATION/ DATA ATTACHED:

- 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: 12/21/2020
(mm/dd/yyyy)

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10765 A-13



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

3,6-OPFHpA

*rec'd
WPH
8/20/21*

LOT NUMBER:

36OPFHpA0320

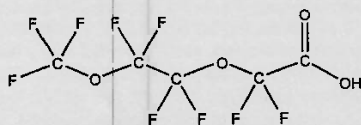
COMPOUND:

Perfluoro-3,6-dioxaheptanoic acid

STRUCTURE:

CAS #:

151772-58-6



MOLECULAR FORMULA:

C₆H₂F₉O₄

MOLECULAR WEIGHT:

296.04

CONCENTRATION:

50.0 ± 2.5 µg/ml

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/31/2020

EXPIRY DATE: (mm/dd/yyyy)

03/31/2025

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 05/27/2020
(mm/dd/yyyy)

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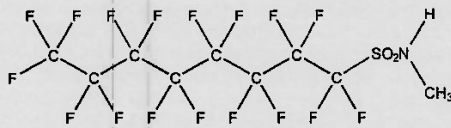
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSA-M
COMPOUND: N-methylperfluoro-1-octanesulfonamide

LOT NUMBER: NMeFOSA0721M

STRUCTURE:

CAS #: 31506-32-8



rec'd
WPA
10/5/21

MOLECULAR FORMULA: C₉H₄F₁₇NO₂S
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/03/2021
EXPIRY DATE: (mm/dd/yyyy) 08/03/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 513.17
SOLVENT(S): Methanol

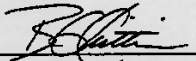
DOCUMENTATION/ DATA ATTACHED:

- 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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 08/04/2021
(mm/dd/yyyy)

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Revision#:9, Revised 2020-12-23

NMeFOSA0721M (1 of 4)
rev0

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-EtFOSA-M

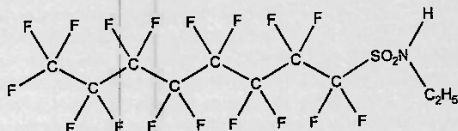
10837

LOT NUMBER: NEtFOSA0821M

COMPOUND:

N-ethylperfluoro-1-octanesulfonamide

STRUCTURE:



CAS #: 4151-50-2

MOLECULAR FORMULA:

$C_{10}H_9F_{17}NO_2S$

MOLECULAR WEIGHT:

527.20

CONCENTRATION:

$50.0 \pm 2.5 \mu\text{g/mL}$

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 08/16/2021

(mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

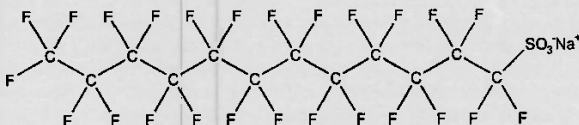
10840

PRODUCT CODE: L-PFDoS
COMPOUND: Sodium perfluoro-1-dodecanesulfonate

LOT NUMBER: LPFDoS0721

STRUCTURE:

CAS #: 1260224-54-1



MOLECULAR FORMULA: C₁₂F₂₅SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt)
48.5 ± 2.4 µg/mL (PFDoS acid)
48.4 ± 2.4 µg/mL (PFDoS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/09/2021
EXPIRY DATE: (mm/dd/yyyy) 07/09/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 722.14
SOLVENT(S): Methanol

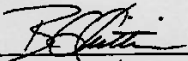
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~0.2% of perfluoro-n-dodecanoic acid (PFDoA).

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Certified By: 
B.G. Chittim, General Manager
Date: 07/16/2021
(mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFODA

10847 NS 01/18/23

LOT NUMBER:

PFODA0821

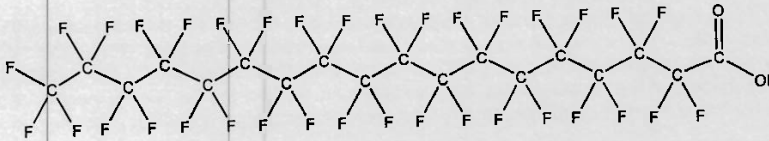
COMPOUND:

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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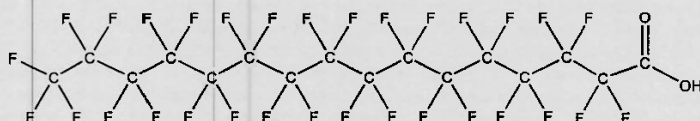
CERTIFICATE OF ANALYSIS DOCUMENTATION

10842 * NG 01/18/23

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

COMPOUND: Perfluoro-n-hexadecanoic acid

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



MOLECULAR FORMULA: C₁₆HF₃₁O₂ **MOLECULAR WEIGHT:** 814.13
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
 Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/07/2021
EXPIRY DATE: (mm/dd/yyyy) 05/07/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

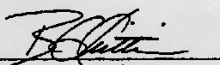
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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

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

PFHxDA0421 (1 of 4)
 rev0

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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

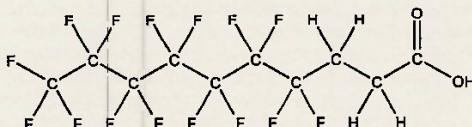
COMPOUND:

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

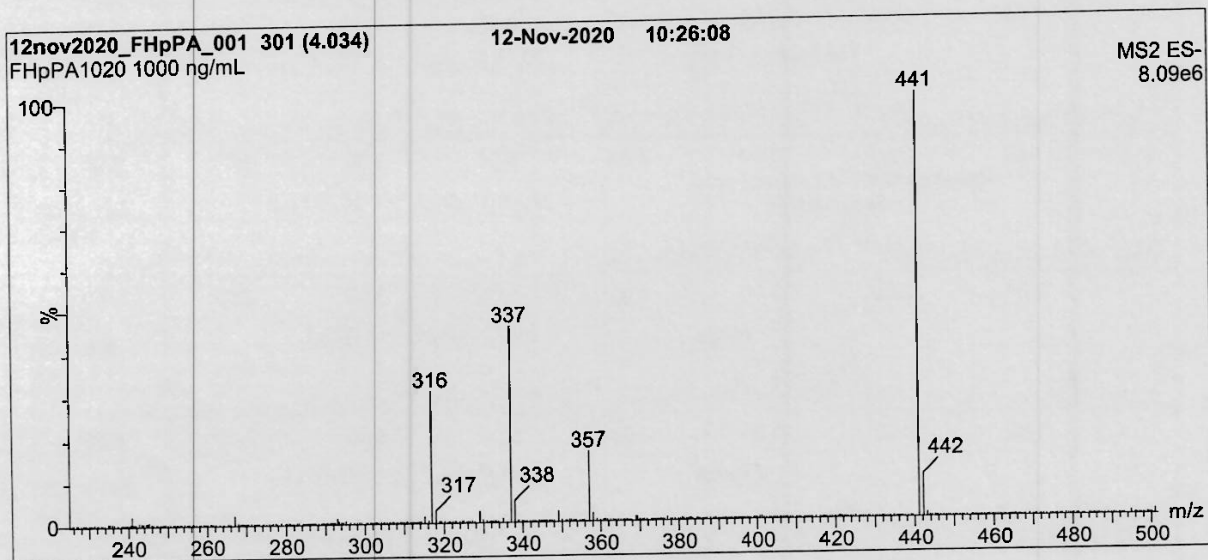
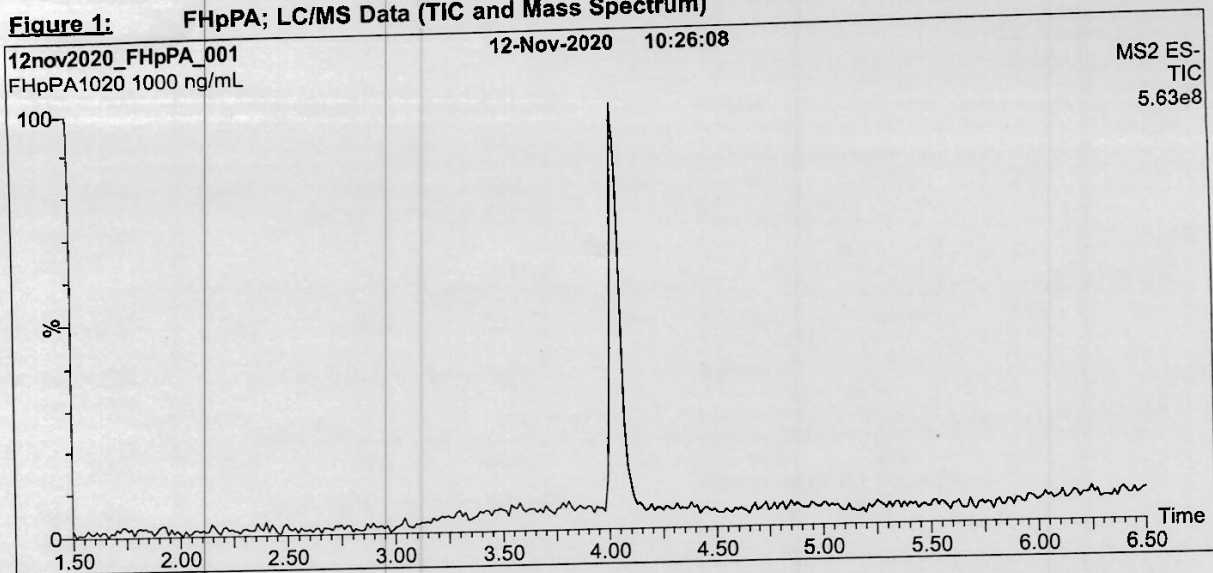
(mm/dd/yyyy)

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Form#: 27, Issued 2004-11-10
Revision#: 8, Revised 2020-09-10

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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

FPPrPA(3:3FTCA) 1116 B



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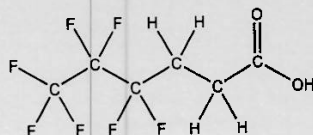
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FPPrPA
COMPOUND: 3-Perfluoropropyl propanoic acid

LOT NUMBER: FPPrPA0122

STRUCTURE:

CAS #: 356-02-5



MOLECULAR FORMULA: $C_6H_5F_7O_2$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$
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

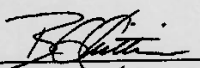
DOCUMENTATION/ DATA ATTACHED:

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 ($C_6H_3F_7O_2$) as an impurity determined by ^{19}F NMR.

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Certified By: 
B.G. Chittim, General Manager

Date: 02/04/2022
(mm/dd/yyyy)

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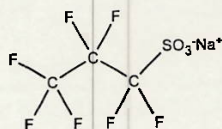
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFPrS
COMPOUND: Sodium perfluoro-1-propanesulfonate

LOT NUMBER: LPFPrS0721

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₃F₇SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt)
46.0 ± 2.3 µg/mL (PFPrS acid)
45.8 ± 2.3 µg/mL (PFPrS anion)

MOLECULAR WEIGHT: 272.07
SOLVENT(S): Methanol

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/12/2021
EXPIRY DATE: (mm/dd/yyyy) 07/12/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

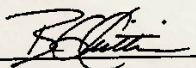
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: 
B.G. Chittim, General Manager

Date: 08/04/2021
(mm/dd/yyyy)

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

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7/1/22 KA



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHxSA-I

LOT NUMBER:

FHxSA12211

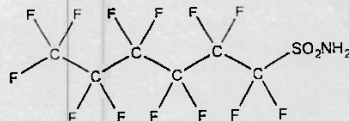
COMPOUND:

Perfluoro-1-hexanesulfonamide

STRUCTURE:

CAS #:

41997-13-1



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:

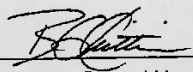
- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

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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PRODUCT CODE:

FBSA-I

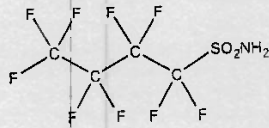
LOT NUMBER: FBSA11211

COMPOUND:

Perfluoro-1-butananesulfonamide

STRUCTURE:

CAS #: 30334-69-1



MOLECULAR FORMULA:

C₄H₂F₉NO₂S

MOLECULAR WEIGHT: 299.11

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S): Isopropanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/10/2021

EXPIRY DATE: (mm/dd/yyyy)

11/10/2026

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: 11/10/2021

(mm/dd/yyyy)

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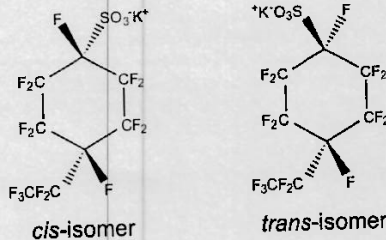
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:
COMPOUND:

PFECHS
Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

LOT NUMBER: PFECHS0222

STRUCTURE:



CAS #: 335-24-0

MOLECULAR FORMULA:
CONCENTRATION:

$C_8F_{15}SO_3K$
50.0 ± 2.5 µg/mL (K salt)
46.2 ± 2.3 µg/mL (PFECHS acid)
46.1 ± 2.3 µg/mL (PFECHS anion)
>98%

MOLECULAR WEIGHT: 500.22
SOLVENT(S): Methanol

CHEMICAL PURITY:

LAST TESTED: (mm/dd/yyyy)

03/28/2022

EXPIRY DATE: (mm/dd/yyyy)

03/28/2027

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 a mixture of the *cis/trans* isomers of PFECHS at a ratio of 1:1.27 (*cis:trans*).

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Certified By:

B.G. Chittim, General Manager

Date: 03/30/2022
(mm/dd/yyyy)

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11336

PRODUCT CODE:

N-EtFOSE-M

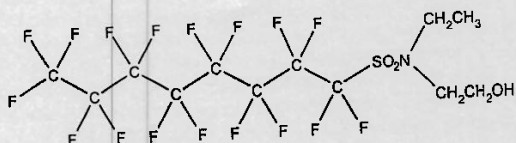
LOT NUMBER: NEtFOSE0622M

COMPOUND:

2-(N-ethylperfluoro-1-octanesulfonamido)ethanol

CAS #: 1691-99-2

STRUCTURE:



MOLECULAR FORMULA:

C₁₂H₁₀F₁₇NO₃S

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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NEtFOSE0622M (1 of 5)
rev0

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSE-M

LOT NUMBER:

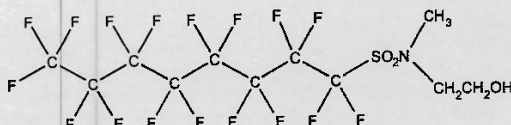
NMeFOSE0522M

COMPOUND:

2-(N-methylperfluoro-1-octanesulfonamido)ethanol

STRUCTURE:**CAS #:**

24448-09-7

**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:

B.G. Chittim, General Manager
Date: 06/14/2022
(mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSE

2-(N-Methylperfluorooctanesulfonamido)ethanol Isomeric Mix

<u>PRODUCT CODE:</u>	br-NMeFOSE
<u>LOT NUMBER:</u>	brNMeFOSE0922
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/mL
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	09/02/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	09/07/2022 (HRGC/LRMS) 10/07/2022 (LC/MS)
<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% 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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Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

brNMeFOSE0922 (1 of 7)
rev1

7.9.1

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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSE

**2-(N-Ethylperfluorooctanesulfonamido)ethanol
Isomeric Mix**

<u>PRODUCT CODE:</u>	br-NEtFOSE
<u>LOT NUMBER:</u>	brNEtFOSE1022
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/mL
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	09/12/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	09/12/2022 (HRGC/LRMS) 10/07/2022 (LC/MS)
<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% 2-(N-ethylperfluorooctanesulfonamido)ethanol linear and branched isomers. The full name, structure, and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS Data (SIR)
- Figure 4: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 1691-99-2 (for linear isomer).

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

brNEtFOSE1022 (1 of 7)
rev1

7.9.1

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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSA

N-Methylperfluorooctanesulfonamide Isomeric Mix

<u>PRODUCT CODE:</u>	br-NMeFOSA
<u>LOT NUMBER:</u>	brNMeFOSA0822
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/mL
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	08/18/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	08/23/2022
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	08/23/2027
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-methylperfluorooctanesulfonamide (linear and branched isomers). The full name, structure, and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
 Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
 Figure 2: LC/MS Data (SIR)
 Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 31506-32-8 (for linear isomer).

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519-822-2436 • Fax: 519-822-2849 • info@well-labs.com**

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

brNMeFOSA0822 (1 of 6)
rev1

7.9.1

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11498



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSA

N-Ethylperfluorooctanesulfonamide Isomeric Mix

<u>PRODUCT CODE:</u>	br-NEtFOSA
<u>LOT NUMBER:</u>	brNEtFOSA0922
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/mL
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	08/23/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	10/07/2022
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	10/07/2027
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-ethylperfluorooctanesulfonamide (linear and branched isomers). The full name, structure, and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
 Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
 Figure 2: LC/MS Data (SIR)
 Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 4151-50-2 (for linear isomer).

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

brNEtFOSA0922 (1 of 6)
rev1

7.9.1

7



Certified Reference Material CRM



11750
Rec'd: 04/17/23

CERTIFIED WEIGHT REPORT

Part Number: 99542
Lot Number: 110422
Description: Perfluoro-n-butanoic acid (PFNA)
Expiration Date: 01/15/25
Recommended Storage: -15°C
Nominal Concentration (µg/mL): 1.0
Notes: All assigned values are atom concentrations.

Solvent(s): Methanol (1 mL) / 2-Propanol
Lot: 10722 (85%)
32500 (15%)
Balance Uncertainty: 0.01
Peak Uncertainty: 0.01

Formulated By: Prashant Chauhan
Reviewed By: Pedro L. Ramos
Formulation Date: 01/15/23
Revision Date: 01/15/23

Expanded Uncertainty: (k=2)
Coverage: (95%)
Bias: (ppm)
Precision: (ppm)
Recovery: (%)
Retention Time: (min)
Reference: (IUPAC)

Compound	Part Number	Lot Number	Dilution Factor	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Recovery (%)	Retention Time (min)	Reference
Perfluoro-n-butanoic acid (PFNA)	99542	110422	0.02	2.00	0.017	50.1	1.00	0.02
Perfluoro-1-pentanoic acid (PFPA)	99543	01725	0.02	2.00	0.017	50.3	1.01	0.02
Perfluoro-2-pentanoic acid (PF2PA)	99199	07122	0.02	2.00	0.017	50.2	1.00	0.02
Perfluoro-3-pentanoic acid (PF3PA)	99197	11052	0.02	2.00	0.017	50.1	1.00	0.02
Perfluorooctanoic acid (PF8OA)	99202	06052	0.02	2.00	0.017	50.2	1.00	0.02
Perfluorodecanoic acid (PF10OA)	99200	11052	0.02	2.00	0.017	50.1	1.00	0.02
Perfluorododecanoic acid (PF12OA)	99195	11052	0.02	2.00	0.017	50.1	1.00	0.02
Perfluorotetradecanoic acid (PF14OA)	99205	07152	0.02	2.00	0.017	50.2	1.00	0.02
Perfluorohexadecanoic acid (PF16OA)	99196	07152	0.02	2.00	0.017	50.1	1.00	0.02
Perfluorooctadecanoic acid (PF18OA)	99204	11052	0.02	2.00	0.017	50.1	1.00	0.02
Perfluorooctadecanoic acid (PF18OA)	99203	03002	0.02	2.00	0.017	50.1	1.00	0.02
Perfluoro-1-iodooctadecanoic acid (PF18OIA)	3677	FOSA0321	0.02	2.00	0.017	50.0	1.00	0.05
Perfluoro-1-iodotetradecanoic acid (PF14OIA)	4162	BNMFOSA042	0.02	2.00	0.017	50.0	1.00	0.05
Perfluorobutanesulfonic acid (PFBS)	99194	06052	0.02	2.00	0.017	50.0	1.00	0.05
Perfluoropentanesulfonic acid (PFPS)	99544	09152	0.02	2.00	0.017	50.2	1.00	0.02
Perfluorohexanesulfonic acid (PFHPS)	99198	03052	0.02	2.00	0.017	50.1	1.00	0.02
Perfluoroheptanesulfonic acid (PF7HPS)	3672	LPFH0822	0.02	2.10	0.017	47.8	1.00	0.05
Perfluoro-octanesulfonic acid (PF8OS)	99201	03052	0.02	2.10	0.017	47.1	1.00	0.02
Perfluoro-novanesulfonic acid (PF9S)	3957	LPFN0122	0.02	2.10	0.017	48.0	1.01	0.05
Perfluorodecane sulfonic acid (PF10S)	3671	LPFD0122	0.02	2.10	0.017	48.2	1.01	0.05
Perfluoroundecane sulfonic acid (PF11S)	6271	06052	0.02	2.00	0.017	50.2	1.00	0.05
Perfluorododecane sulfonic acid (PF12S)	11,11,11,12,12,12-Hexafluorododecane sulfonic acid (2,2,2-F3S)	6272	03102	0.02	2.10	0.017	50.2	1.00
Perfluorotridecane sulfonic acid (PF13S)	11,11,11,12,12,12-Hexafluorotridecane sulfonic acid (2,2,2-F3S)	3662	8F15022	0.02	2.10	0.017	47.9	1.01
Perfluorotetradecane sulfonic acid (PF14S)	2,2,2,4,4,4-Hexafluorotetradecane sulfonic acid (PF14S)	99598	06052	0.02	2.10	0.017	50.1	1.00
Perfluoropentadecane sulfonic acid (PF15S)	1,1,1,1,1,1,1,1,1,1,1,1,1-Tridecafluoropentadecane sulfonic acid (11CF-P30S)	4165	11CF-P30S022	0.02	2.12	0.017	47.1	1.00
Perfluorohexadecane sulfonic acid (PF16S)	1,1,1,1,1,1,1,1,1,1,1,1,1,1,1-Tetradecafluorohexadecane sulfonic acid (14CF-P30S)	4164	14CF-P30S1022	0.02	2.14	0.017	46.8	1.00
Perfluoroheptadecane sulfonic acid (PF17S)	1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1-Pentadecafluoroheptadecane sulfonic acid (15CF-P30S)	4163	15CF-P30S1022	0.02	2.12	0.017	47.1	1.00
Perfluorooctadecane sulfonic acid (PF18S)	1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1-Hexadecafluorooctadecane sulfonic acid (16CF-P30S)	4162	16CF-P30S022	0.02	2.12	0.017	47.1	1.00

A qualitative standard (Sect. 3.13) is available for PFOA that contains the linear and branched isomers (Wellington Labs, Cat. No. T-PFOA, or equivalent). This linear PFOA standard must be purchased and used to identify the retention times of the branched PFOA isomers. The branched PFOA isomers must be identified by their retention time (Sect. 12.2) and a quantitative PFOA standard containing the branched and linear isomers becomes commercially available.

*The certified value is the concentration calculated from gravimetric and volumetric measurements under reference conditions.
*Standard is certified to 0.5% relative uncertainty. Higher values are available for NIST use only.
*All standards, after opening ampule, should be stored with cap tightly and under appropriate laboratory conditions.
*This report was prepared using the following methods: GC/MS/MS. Expressing the Uncertainty of NIST Measurement Results.
*NIST Technical Note 1371, U.S. Government Printing Office, Washington, DC, (1994).

11799 A-B
rec'd: 05/15/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

Native PFAS Solution/Mixture

<u>PRODUCT CODE:</u>	PFAC-MXH
<u>LOT NUMBER:</u>	PFACMXH0423
<u>SOLVENT(S):</u>	Methanol/Isopropanol (2%)/Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	04/06/2023
<u>LAST TESTED:</u> (mm/dd/yyyy)	04/19/2023
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	04/19/2028
<u>RECOMMENDED STORAGE:</u>	Refrigerate ampoule

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₅, C₇, 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
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Table A:**PFAC-MXH; Components and Concentrations
(ng/mL, ± 5% in methanol/isopropanol (2%)/water (<1%))**

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-butanoic acid	PFBA	4000		1
Perfluoro-n-pentanoic acid	PFPeA	2000		2
Perfluoro-n-hexanoic acid	PFHxA	1000		5
Perfluoro-n-heptanoic acid	PFHpA	1000		7
Perfluoro-n-octanoic acid	PFOA	1000		11
Perfluoro-n-nonanoic acid	PFNA	1000		14
Perfluoro-n-decanoic acid	PFDA	1000		18
Perfluoro-n-undecanoic acid	PFUdA	1000		23
Perfluoro-n-dodecanoic acid	PFDoA	1000		26
Perfluoro-n-tridecanoic acid	PFTrDA	1000		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1000		29
Perfluoro-1-octanesulfonamide	FOSA	1000		24
N-Methylperfluorooctanesulfonamidoacetic acid ^a	N-MeFOSAA: linear isomer	760		20
	N-MeFOSAA: ∑ branched isomers	240		17
N-Ethylperfluorooctanesulfonamidoacetic acid ^b	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanefulfonate	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)

11801A-B
rec'd: 05/15/23



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-MXF

**Native Replacement PFAS
Solution/Mixture**

PRODUCT CODE:

PFAC-MXF

LOT NUMBER:

PFACMXF0323

SOLVENT(S):

Methanol / Water (<1%)

DATE PREPARED: (mm/dd/yyyy)

03/23/2023

LAST TESTED: (mm/dd/yyyy)

03/24/2023

EXPIRY DATE: (mm/dd/yyyy)

03/24/2026

RECOMMENDED STORAGE:

Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonoate (NaDONA), the major and minor components of F-53B (9Cl-PF3ONS and 11Cl-PF3OUdS), and hexafluoropropylene oxide dimer acid (GenX, HFPO-DA). The components and their concentrations are given in Table A.

The individual components of this mixture all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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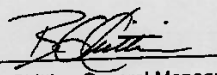
Form# 13, Issued 2004-11-10
Revision# 9, Revised 2020-12-23

PFACMXF0323 (1 of 5)
rev0

Table A: PFAC-MXF; Components and Concentrations (ng/mL; \pm 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-dioxanonanoate	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)

11802 A-B
rec'd: 05/15/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXG

Native Perfluoroalkyl Ether Carboxylic
Acids and Sulfonate Solution/Mixture

<u>PRODUCT CODE:</u>	PFAC-MXG
<u>LOT NUMBER:</u>	PFACMXG1122
<u>SOLVENT(S):</u>	Methanol/Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	11/30/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	12/01/2022
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	12/01/2027
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXG is a solution/mixture of three native perfluoroalkyl ether carboxylic acids and a native perfluoroalkyl ether sulfonate. The components and their concentrations are given in Table A.

The individual components all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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

PFACMXG1122 (1 of 5)
rev0

7.9.1
7

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

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-4-oxapentanoic acid	PF4OPeA	2000		A
Perfluoro-5-oxahexanoic acid	PF5OHxA	2000		B
Perfluoro-3,6-dioxahexanoic acid	3,6-OPFHpA	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)

11803 A-B
rec'd: 05/15/23

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

PRODUCT CODE:
LOT NUMBER:
SOLVENT(S):
DATE PREPARED: (mm/dd/yyyy)
LAST TESTED: (mm/dd/yyyy)
EXPIRY DATE: (mm/dd/yyyy)
RECOMMENDED STORAGE:

PFAC-MXJ
PFACMXJ0323
Methanol
03/27/2023
03/28/2023
03/28/2028
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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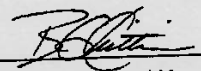
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Concentrations (µg/mL; ± 5% in methanol)

Table A: PFAC-MXJ; Components and

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)

PFACMXJ0323 (3 of 5)
rev0

11850 A-J
rec'd: 06/01/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-ES

Mass-Labelled PFAS Extraction Standard Solution/Mixture

PRODUCT CODE: MPFAC-HIF-ES
LOT NUMBER: MPFACHIFES1022
SOLVENT(S): Methanol/Isopropanol (1%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 10/28/2022
LAST TESTED: (mm/dd/yyyy) 11/23/2022
EXPIRY DATE: (mm/dd/yyyy) 11/23/2025
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) perfluorooctane-sulfonamidoethanols, and mass-labelled (¹³C) hexafluoropropylene oxide dimer acid (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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Table A: 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 ₅)hexanoic acid	M5PFHxA	500		5
Perfluoro-n-(1,2,3,4- ¹³ C ₆)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 ₁₀)decanoic acid	M6PFDA	250		14
Perfluoro-n-(1,2,3,4,5,6,7- ¹³ C ₁₁)undecanoic acid	M7PFUdA	250		18
Perfluoro-n-(1,2- ¹³ C ₁₂)dodecanoic acid	MPFDoA	250		19
Perfluoro-n-(1,2- ¹³ C ₁₄)tetradecanoic acid	M2PFTeDA	250		22
Perfluoro-1-(¹³ C ₈)octanesulfonamide	M8FOSA	500		17
N-methyl-d ₃ -perfluoro-1-octanesulfonamide	d-N-MeFOSA	500		21
N-ethyl-d ₃ -perfluoro-1-octanesulfonamide	d-N-EtFOSA	500		24
N-methyl-d ₃ -perfluoro-1-octanesulfonamidoacetic acid	d3-N-MeFOSAA	1000		15
N-ethyl-d ₃ -perfluoro-1-octanesulfonamidoacetic acid	d5-N-EtFOSAA	1000		16
2-(N-methyl-d ₃ -perfluoro-1-octanesulfonamido)ethan-d ₄ -ol	d7-N-MeFOSE	5000		20
2-(N-ethyl-d ₃ -perfluoro-1-octanesulfonamido)ethan-d ₄ -ol	d9-N-EtFOSE	5000		23
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: 11/24/2022
(mm/dd/yyyy)

11851 A-J
REC'D: 06/01/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-IS

**Mass-Labelled PFAS Injection
Standard Solution/Mixture**

PRODUCT CODE:	MPFAC-HIF-IS
LOT NUMBER:	MPFACHIFIS1122
SOLVENT(S):	Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	11/28/2022
LAST TESTED: (mm/dd/yyyy)	11/29/2022
EXPIRY DATE: (mm/dd/yyyy)	11/29/2027
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 (C₆ and C₈). The components and their concentrations are given in Table A.

The individual mass-labelled perfluoroalkylcarboxylic acids and mass-labelled 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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

**Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com**

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

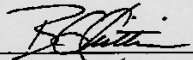
MPFACHIFIS1122 (1 of 5)
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Table A: MPFAC-HIF-IS; Components and Concentrations (ng/mL, ± 5% in methanol/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(2,3,4- ¹³ C ₃)butanoic acid	M3PFBA	1000		1
Perfluoro-n-(1,2- ¹³ C ₂)hexanoic acid	MPFHxA	500		2
Perfluoro-n-(1,2,3,4- ¹³ C ₄)octanoic acid	MPFOA	500		4
Perfluoro-n-(1,2,3,4,5- ¹³ C ₅)nonanoic acid	MPFNA	250		5
Perfluoro-n-(1,2- ¹³ C ₂)decanoic acid	MPFDA	250		7
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-hexane(¹⁸ O ₂)sulfonate	MPFHxS	500	474	3
Sodium perfluoro-1-(1,2,3,4- ¹³ C ₄)octanesulfonate	MPFOS	500	479	6

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 12/05/2022
(mm/dd/yyyy)

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 07/18/23 12:45
Started (mm/dd/yy 24:00)

Method: EPA 1633 Draft (GSM) List 40

Date/Time: 07/19/23 1000
Finished (mm/dd/yy 24:00)

Balance ID: _____

Batch# OP97911 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
OP 97911 MB	/	500	7	N/A	25		5	A4	
OP 97911 BS	/	500	7	N/A					
OP 97911 LLBS	/	500	7	N/A		200			
FC7282-1	2	510	7	N/A		60			
	2	520							
FC7298-1	2	540							
	2	490							
FC7584-1	1	560							decant
	2	550							
FC7724-1 Re	3	550						A4	
	2 Re	540						A6	
	3 Re	550							
	4 Re	550							
	5 Re	560							
	6 Re	510							
FC7759-1	2	530	7	N/A	25		5	A6	
FC7724-5 Re	1	65	7	N/A	25		5	A6	
GH 07/18/23									
OP FC7258-1 MS	3	550	7	N/A	25	200	5	A4	
OP MSD									
OP FC7258-2 DUP	3	500	7	N/A	25		5	A4	decant

Comments:

EIS (SURR) ID: 11889 AC Conc: 250-5000 ng/ml Exp. Date: 07/17/24 Inj. By: GH Ver. By: CM
 SPIKE 1 ID: LMS 21438 Conc: _____ Exp. Date: _____ Inj. By: _____ Ver. By: CM
 SPIKE 2 ID: LMS 21438 Conc: VARIED Exp. Date: 12/28/23 Inj. By: GH Ver. By: CM
 NIS (ISTD) ID: 11888 I-J Conc: 250-1000 ng/ml Exp. Date: 07/14/24 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 # 230916 1% NH4OH MeOH PF494 SPE Lot # 6741433-02
 Water Lot# OP97000 0.3M Formic Acid PF480 Syringe filter Lot #
 Acetic Acid# 194003 3% NH4OH Sol _____ pH paper Lot# 215322
 0.1M Formic PF493 5% Formic Acid _____ Carbon Lot# 99687

Relinquished By: *[Signature]* Date: 07/18/23
 Accepted By: *[Signature]* Date: 07/19/23

7.10.1 7