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Automated Report

Technical Report for

AECOM, INC.

N6274223F0104 RH Fire Suppression System

60697810

SGS Job Number: FC8440

Sampling Date: 08/02/23



Report to:

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ATTN: Katie Abbott

Total number of pages in report: 629



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

Client Service contact: Elvin Kumar 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001)

DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177),

AL, AK, AR, CT, IA, KY, MA, MI, MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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Test results relate only to samples analyzed.

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Sample Summary

AECOM, INC.

Job No: FC8440

N6274223F0104 RH Fire Suppression System
Project No: 60697810

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC8440-1	08/02/23	11:40	CPSR	08/04/23	AQ Ground Water	AF-RHMW225401-WGN01B-2308

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, INC.

Job No: FC8440

Site: N6274223F0104 RH Fire Suppression System

Report Date: 8/14/2023 5:12:54 PM

On 08/04/2023, 1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 2.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC8440 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: OP98297

Sample(s) FC8439-3MS, FC8439-4DUP were used as the QC samples indicated.

Matrix Spike Recovery(s) for 8:2 Fluorotelomer sulfonate are outside control limits. Probable cause is due to matrix interference.

RPD(s) for Duplicate for Perfluorooctanoic acid are outside control limits for sample OP98297-DUP. Probable cause is due to sample non-homogeneity.

OP98297-MB: All results and recoveries corrected for double EIS.

FC8440-1 for 8:2 Fluorotelomer sulfonate: Associated CCV outside of control limits high, sample was ND.

FC8440-1 for 9Cl-PF3ONS (F-53B Major): Associated CCV outside control limits high. Sample was ND.

OP98297-LLBS for 13C2-8:2FTS: Outside control limits.

OP98297-LLBS for 13C2-6:2FTS: 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: FC8440
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 08/02/23



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
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FC8440-1 AF-RHMW225401-WGN01B-2308

Perfluoropentanoic acid	1.3 J	7.5	1.9	ng/l	EPA DRAFT 1633
Perfluorohexanoic acid	0.70 J	3.8	1.9	ng/l	EPA DRAFT 1633
Perfluoroheptanoic acid	0.70 J	3.8	1.9	ng/l	EPA DRAFT 1633
Perfluorooctanoic acid	1.3 J	3.8	0.94	ng/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	0.69 J	3.8	1.9	ng/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid	1.4 J	3.8	1.9	ng/l	EPA DRAFT 1633

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

Page 1 of 3

Client Sample ID:	AF-RHMW225401-WGN01B-2308		
Lab Sample ID:	FC8440-1	Date Sampled:	08/02/23
Matrix:	AQ - Ground Water	Date Received:	08/04/23
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	4Q48784.D	1	08/09/23 20:17	AL	08/08/23 10:50	OP98297	S4Q713
Run #2							

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

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.8 U	15	3.8	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.3	7.5	1.9	0.89	ng/l	J
307-24-4	Perfluorohexanoic acid	0.70	3.8	1.9	0.47	ng/l	J
375-85-9	Perfluoroheptanoic acid	0.70	3.8	1.9	0.47	ng/l	J
335-67-1	Perfluorooctanoic acid	1.3	3.8	0.94	0.47	ng/l	J
375-95-1	Perfluorononanoic acid	1.9 U	3.8	1.9	0.58	ng/l	
335-76-2	Perfluorodecanoic acid	1.9 U	3.8	1.9	0.47	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	3.8	1.9	0.57	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	3.8	1.9	0.57	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.8	1.9	0.79	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.9 U	3.8	1.9	0.47	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.69	3.8	1.9	0.47	ng/l	J
2706-91-4	Perfluoropentanesulfonic acid	3.8 U	4.7	3.8	1.1	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.4	3.8	1.9	0.66	ng/l	J
375-92-8	Perfluoroheptanesulfonic acid	1.9 U	3.8	1.9	0.47	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.9 U	3.8	1.9	0.51	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.8	1.9	0.54	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.8	1.9	0.60	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.8 U	4.7	3.8	1.1	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.0	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.3	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate ^a	7.5 U	19	7.5	3.9	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.9 U	3.8	1.9	0.63	ng/l	
31506-32-8	MeFOSA	3.8 U	7.5	3.8	0.94	ng/l	
4151-50-2	EtFOSA	3.8 U	7.5	3.8	0.94	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW225401-WGN01B-2308		
Lab Sample ID:	FC8440-1	Date Sampled:	08/02/23
Matrix:	AQ - Ground Water	Date Received:	08/04/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

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

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

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

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

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

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

PER and POLYFLUOROETHER SULFONIC ACIDS

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

FLUOROTELOMER CARBOXYLIC ACIDS

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

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	133%		20-150%
	13C5-PFPeA	120%		20-150%
	13C5-PFHxA	133%		20-150%
	13C4-PFHpA	135%		20-150%
	13C8-PFOA	128%		20-150%
	13C9-PFNA	110%		20-150%
	13C6-PFDA	128%		20-150%
	13C7-PFUnDA	129%		20-150%
	13C2-PFDoDA	123%		20-150%
	13C2-PFTeDA	108%		20-150%
	13C3-PFBS	119%		20-150%
	13C3-PFHxS	122%		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-RHMW225401-WGN01B-2308	
Lab Sample ID:	FC8440-1	Date Sampled: 08/02/23
Matrix:	AQ - Ground Water	Date Received: 08/04/23
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	118%		20-150%
	13C8-FOSA	95%		20-150%
	d3-MeFOSA	109%		20-150%
	d5-EtFOSA	106%		20-150%
	d3-MeFOSAA	126%		20-150%
	d5-EtFOSAA	126%		20-150%
	d7-MeFOSE	85%		20-150%
	d9-EtFOSE	93%		20-150%
	13C2-4:2FTS	166%		20-180%
	13C2-6:2FTS	171%		20-180%
	13C2-8:2FTS	172%		20-180%
	13C3-HFPO-DA	111%		20-150%

- (a) Associated CCV outside of control limits high, sample was ND.
- (b) Associated CCV outside control limits high. Sample was ND.

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

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

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



SGS North America Inc - Orlando
Chain of Custody

4405 Vineyard Road, Suite C-15 Orlando, FL 32811
 TEL: 407-425-6700 FAX: 407-425-0707
 www.sgs.com

FC8440

COC #: 2308AFSG07

SGS - ORLANDO JOB #:

PAGE 1 OF 1

Client / Reporting Information		Project Information				Analytical Information		Matrix Codes	
Company Name: AECOM		Project Name: N6274223F0104 RH Fire Suppression System				<i>OSJ</i> <i>8/2/23</i>		DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge CR - 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>Cristina Perez</i> Sampler 2: <i>Simone Rey</i>		Client Purchase Order #				PFAS EPA Draft 1633			
SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	LAB USE ONLY	
	AF-RHMW225401-WGN01B-2308	8/2/23	1140	OSJR	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 <i>United AWD: 016-1492035</i>	
Rush T/A Data Available VIA Email or Lablink					Sample Custody must be documented below each time samples change possession, including courier delivery.				
1 Relinquished by Sampler/Affiliation	Date Time:	2 Received By/Affiliation	3 Relinquished By/Affiliation	Date Time:	4 Received By/Affiliation	1100			
<i>Andy Reung / AECOM</i>	<i>8/2/23 1330</i>	<i>Eli Martin / AECOM</i>	<i>Eli Martin / AECOM</i>	<i>8/2/23 1525</i>	<i>J.P.H.</i>	<i>8/4/23</i>			
5 Relinquished by/Affiliation	Date Time:	6 Received By/Affiliation	7 Relinquished By/Affiliation	Date Time:	8 Received By/Affiliation				
Lab Use Only: Cooler Temperature (s) Celsius (corrected): <i>2.58° (REAL)</i>					http://www.sgs.com/en/terms-and-conditions				

5.1
5

PFAS_COCs_ALL_082023.xls Rev 031318



SGS Sample Receipt Summary

Job Number: FC8440

Client: AECOM

Project: N6274223F0104 RH Fire Suppression System

Date / Time Received: 8/4/2023 11:00:00 AM

Delivery Method: United Cargo/Airspace

Airbill #'s: United Cargo AWB #: 016-14920135

Therm ID: IR 1;

Therm CF: -0.2;

of Coolers: 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.8);

Cooler Temps (Corrected) °C: Cooler 1: (2.6);

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 #'s: 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: ZANEB

Date: 8/4/2023 11:00:00 AM

Reviewer: ZB

Date: 8/9/2023

FC8440: Chain of Custody

Page 2 of 2

QC Evaluation: DOD QSM5.x Limits

Job Number: FC8440
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 08/02/23

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 FC8440

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: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q713-IBLK	4Q48763.D	1	08/09/23	AL	n/a	n/a	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8440-1

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	0.0020	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: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q713-IBLK	4Q48763.D	1	08/09/23	AL	n/a	n/a	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8440-1

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	106% 20-150%
	13C5-PFPeA	95% 20-150%
	13C5-PFHxA	100% 20-150%
	13C4-PFHpA	101% 20-150%
	13C8-PFOA	99% 20-150%
	13C9-PFNA	96% 20-150%
	13C6-PFDA	102% 20-150%
	13C7-PFUnDA	111% 20-150%
	13C2-PFDoDA	101% 20-150%
	13C2-PFTeDA	100% 20-150%
	13C3-PFBS	90% 20-150%
	13C3-PFHxS	94% 20-150%
	13C8-PFOS	91% 20-150%
	13C8-FOSA	92% 20-150%
	d3-MeFOSAA	105% 20-150%
	d5-EtFOSAA	103% 20-150%
	13C2-4:2FTS	148% 20-180%
	13C2-6:2FTS	130% 20-180%
	13C2-8:2FTS	138% 20-180%

6.1.1

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Continuing Calibration Blank

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q713-ICCB	4Q48777.D	1	08/09/23	AL	n/a	n/a	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8440-1

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: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q713-ICCB	4Q48777.D	1	08/09/23	AL	n/a	n/a	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8440-1

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	110% 20-150%
	13C5-PFPeA	89% 20-150%
	13C5-PFHxA	102% 20-150%
	13C4-PFHpA	103% 20-150%
	13C8-PFOA	101% 20-150%
	13C9-PFNA	93% 20-150%
	13C6-PFDA	107% 20-150%
	13C7-PFUnDA	110% 20-150%
	13C2-PFDoDA	108% 20-150%
	13C2-PFTeDA	103% 20-150%
	13C3-PFBS	90% 20-150%
	13C3-PFHxS	97% 20-150%
	13C8-PFOS	93% 20-150%
	13C8-FOSA	93% 20-150%
	d3-MeFOSAA	106% 20-150%
	d5-EtFOSAA	108% 20-150%
	13C2-4:2FTS	125% 20-180%
	13C2-6:2FTS	135% 20-180%
	13C2-8:2FTS	133% 20-180%

Method Blank Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-MB ^a	4Q48781.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8440-1

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: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-MB ^a	4Q48781.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8440-1

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	85% 20-150%
	13C5-PFPeA	74% 20-150%
	13C5-PFHxA	81% 20-150%
	13C4-PFHpA	84% 20-150%
	13C8-PFOA	77% 20-150%
	13C9-PFNA	72% 20-150%
	13C6-PFDA	79% 20-150%
	13C7-PFUnDA	80% 20-150%
	13C2-PFDoDA	77% 20-150%
	13C2-PFTeDA	71% 20-150%
	13C3-PFBS	76% 20-150%
	13C3-PFHxS	79% 20-150%
	13C8-PFOS	81% 20-150%
	13C8-FOSA	44% 20-150%
	d3-MeFOSA	49% 20-150%
	d5-EtFOSA	51% 20-150%
	d3-MeFOSAA	77% 20-150%
	d5-EtFOSAA	82% 20-150%
	d7-MeFOSE	37% 20-150%
	d9-EtFOSE	45% 20-150%
	13C2-4:2FTS	112% 20-180%
	13C2-6:2FTS	111% 20-180%
	13C2-8:2FTS	104% 20-180%
	13C3-HFPO-DA	73% 20-150%

(a) All results and recoveries corrected for double EIS.

6.1.3
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Continuing Calibration Blank

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q713-ICCB	4Q48788.D	1	08/09/23	AL	n/a	n/a	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP98297-DUP, OP98297-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	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: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q713-ICCB	4Q48788.D	1	08/09/23	AL	n/a	n/a	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP98297-DUP, OP98297-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	111% 20-150%
	13C5-PFPeA	88% 20-150%
	13C5-PFHxA	99% 20-150%
	13C4-PFHpA	103% 20-150%
	13C8-PFOA	102% 20-150%
	13C9-PFNA	84% 20-150%
	13C6-PFDA	101% 20-150%
	13C7-PFUnDA	116% 20-150%
	13C2-PFDoDA	106% 20-150%
	13C2-PFTeDA	99% 20-150%
	13C3-PFBS	91% 20-150%
	13C3-PFHxS	99% 20-150%
	13C8-PFOS	93% 20-150%
	13C8-FOSA	92% 20-150%
	d3-MeFOSAA	104% 20-150%
	d5-EtFOSAA	104% 20-150%
	13C2-4:2FTS	141% 20-180%
	13C2-6:2FTS	119% 20-180%
	13C2-8:2FTS	139% 20-180%

6.1.4

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Continuing Calibration Blank

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q713-ICCB	4Q48800.D	1	08/10/23	AL	n/a	n/a	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP98297-DUP, OP98297-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	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: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q713-ICCB	4Q48800.D	1	08/10/23	AL	n/a	n/a	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP98297-DUP, OP98297-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	111% 20-150%
	13C5-PFPeA	88% 20-150%
	13C5-PFHxA	97% 20-150%
	13C4-PFHpA	99% 20-150%
	13C8-PFOA	100% 20-150%
	13C9-PFNA	93% 20-150%
	13C6-PFDA	100% 20-150%
	13C7-PFUnDA	105% 20-150%
	13C2-PFDoDA	103% 20-150%
	13C2-PFTeDA	94% 20-150%
	13C3-PFBS	90% 20-150%
	13C3-PFHxS	102% 20-150%
	13C8-PFOS	91% 20-150%
	13C8-FOSA	89% 20-150%
	d3-MeFOSAA	96% 20-150%
	d5-EtFOSAA	100% 20-150%
	13C2-4:2FTS	131% 20-180%
	13C2-6:2FTS	137% 20-180%
	13C2-8:2FTS	142% 20-180%

Blank Spike Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-LLBS	4Q48780.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8440-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.03	0.0319	106	40-150
2706-90-3	Perfluoropentanoic acid	0.015	0.0180	120	40-150
307-24-4	Perfluorohexanoic acid	0.0075	0.0090	120	40-150
375-85-9	Perfluoroheptanoic acid	0.0075	0.0078	104	40-150
335-67-1	Perfluorooctanoic acid	0.0075	0.0090	120	40-150
375-95-1	Perfluorononanoic acid	0.0075	0.0088	117	40-150
335-76-2	Perfluorodecanoic acid	0.0075	0.0084	112	40-150
2058-94-8	Perfluoroundecanoic acid	0.0075	0.0079	105	40-150
307-55-1	Perfluorododecanoic acid	0.0075	0.0080	107	40-150
72629-94-8	Perfluorotridecanoic acid	0.0075	0.0089	119	40-150
376-06-7	Perfluorotetradecanoic acid	0.0075	0.0084	112	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00665	0.0084	126	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00706	0.0079	112	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00686	0.0082	120	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00715	0.0072	101	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00696	0.0090	129	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00722	0.0082	114	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00724	0.0077	106	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.00728	0.0079	109	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0281	0.0321	114	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0285	0.0316	111	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0288	0.0284	99	40-150
754-91-6	PFOSA	0.0075	0.0083	111	40-150
31506-32-8	MeFOSA	0.015	0.0138	92	40-150
4151-50-2	EtFOSA	0.015	0.0158	105	40-150
2355-31-9	MeFOSAA	0.0075	0.0090	120	40-150
2991-50-6	EtFOSAA	0.0075	0.0079	105	40-150
24448-09-7	MeFOSE	0.0375	0.0381	102	40-150
1691-99-2	EtFOSE	0.0375	0.0363	97	40-150
13252-13-6	HFPO-DA (GenX)	0.015	0.0166	111	40-150
919005-14-4	ADONA	0.0142	0.0174	123	40-150
377-73-1	PFMPA	0.015	0.0175	117	40-150
863090-89-5	PFMBA	0.015	0.0177	118	40-150
151772-58-6	NFDHA	0.015	0.0154	103	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.014	0.0175	125	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0142	0.0157	111	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-LLBS	4Q48780.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8440-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0134	0.0141	106	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.0375	0.0248	66	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.188	0.172	92	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.188	0.192	102	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	142%	20-150%
	13C5-PFPeA	114%	20-150%
	13C5-PFHxA	132%	20-150%
	13C4-PFHpA	137%	20-150%
	13C8-PFOA	127%	20-150%
	13C9-PFNA	115%	20-150%
	13C6-PFDA	127%	20-150%
	13C7-PFUnDA	133%	20-150%
	13C2-PFDoDA	118%	20-150%
	13C2-PFTeDA	106%	20-150%
	13C3-PFBS	121%	20-150%
	13C3-PFHxS	127%	20-150%
	13C8-PFOS	111%	20-150%
	13C8-FOSA	60%	20-150%
	d3-MeFOSA	73%	20-150%
	d5-EtFOSA	74%	20-150%
	d3-MeFOSAA	118%	20-150%
	d5-EtFOSAA	120%	20-150%
	d7-MeFOSE	58%	20-150%
	d9-EtFOSE	70%	20-150%
	13C2-4:2FTS	168%	20-180%
	13C2-6:2FTS	181%* a	20-180%
	13C2-8:2FTS	200%* a	20-180%
	13C3-HFPO-DA	114%	20-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-BS	4Q48779.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8440-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.111	111	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0643	129	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0284	114	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0282	113	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0300	120	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0319	128	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0318	127	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0292	117	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0274	110	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0304	122	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0302	121	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0315	142	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0257	109	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0299	131	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0272	114	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0299	129	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0308	128	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0274	114	40-150
79780-39-5	Perfluorododecanesulfonic acid	0.0243	0.0280	115	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.108	115	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.108	114	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.119	124	40-150
754-91-6	PFOSA	0.025	0.0293	117	40-150
31506-32-8	MeFOSA	0.05	0.0533	107	40-150
4151-50-2	EtFOSA	0.05	0.0562	112	40-150
2355-31-9	MeFOSAA	0.025	0.0310	124	40-150
2991-50-6	EtFOSAA	0.025	0.0360	144	40-150
24448-09-7	MeFOSE	0.125	0.140	112	40-150
1691-99-2	EtFOSE	0.125	0.138	110	40-150
13252-13-6	HFPO-DA (GenX)	0.05	0.0545	109	40-150
919005-14-4	ADONA	0.0473	0.0604	128	40-150
377-73-1	PFMPA	0.05	0.0621	124	40-150
863090-89-5	PFMBA	0.05	0.0632	126	40-150
151772-58-6	NFDHA	0.05	0.0577	115	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0629	135	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0608	129	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-BS	4Q48779.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8440-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0489	110	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.0953	76	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.610	98	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.672	108	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	140%	20-150%
	13C5-PFPeA	111%	20-150%
	13C5-PFHxA	130%	20-150%
	13C4-PFHpA	135%	20-150%
	13C8-PFOA	127%	20-150%
	13C9-PFNA	108%	20-150%
	13C6-PFDA	130%	20-150%
	13C7-PFUnDA	137%	20-150%
	13C2-PFDoDA	135%	20-150%
	13C2-PFTeDA	116%	20-150%
	13C3-PFBS	114%	20-150%
	13C3-PFHxS	125%	20-150%
	13C8-PFOS	112%	20-150%
	13C8-FOSA	68%	20-150%
	d3-MeFOSA	74%	20-150%
	d5-EtFOSA	74%	20-150%
	d3-MeFOSAA	123%	20-150%
	d5-EtFOSAA	101%	20-150%
	d7-MeFOSE	58%	20-150%
	d9-EtFOSE	69%	20-150%
	13C2-4:2FTS	159%	20-180%
	13C2-6:2FTS	168%	20-180%
	13C2-8:2FTS	173%	20-180%
	13C3-HFPO-DA	114%	20-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-MS	4Q48790.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713
FC8439-3	4Q48789.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8440-1

CAS No.	Compound	FC8439-3 ug/l	Spike Q	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.015 U	0.0909	0.106	117	40-150
2706-90-3	Perfluoropentanoic acid	0.0074 U	0.0455	0.0603	133	40-150
307-24-4	Perfluorohexanoic acid	0.0037 U	0.0227	0.0260	114	40-150
375-85-9	Perfluoroheptanoic acid	0.0037 U	0.0227	0.0268	118	40-150
335-67-1	Perfluorooctanoic acid	0.0037 U	0.0227	0.0290	128	40-150
375-95-1	Perfluorononanoic acid	0.0037 U	0.0227	0.0279	123	40-150
335-76-2	Perfluorodecanoic acid	0.0037 U	0.0227	0.0292	128	40-150
2058-94-8	Perfluoroundecanoic acid	0.0037 U	0.0227	0.0270	119	40-150
307-55-1	Perfluorododecanoic acid	0.0037 U	0.0227	0.0269	118	40-150
72629-94-8	Perfluorotridecanoic acid	0.0037 U	0.0227	0.0276	121	40-150
376-06-7	Perfluorotetradecanoic acid	0.0037 U	0.0227	0.0284	125	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0037 U	0.0202	0.0295	146	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0046 U	0.0214	0.0260	122	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0037 U	0.0208	0.0282	136	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0037 U	0.0217	0.0250	115	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0037 U	0.0211	0.0252	119	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0037 U	0.0219	0.0282	129	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0037 U	0.0219	0.0247	113	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0046 U	0.022	0.0250	113	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.019 U	0.0852	0.0991	116	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.019 U	0.0864	0.0981	114	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.019 U	0.0873	0.133	152*	40-150
754-91-6	PFOSA	0.0037 U	0.0227	0.0279	123	40-150
31506-32-8	MeFOSA	0.0074 U	0.0455	0.0473	104	40-150
4151-50-2	EtFOSA	0.0074 U	0.0455	0.0545	120	40-150
2355-31-9	MeFOSAA	0.0046 U	0.0227	0.0328	144	40-150
2991-50-6	EtFOSAA	0.0046 U	0.0227	0.0254	112	40-150
24448-09-7	MeFOSE	0.037 U	0.114	0.121	106	40-150
1691-99-2	EtFOSE	0.037 U	0.114	0.126	111	40-150
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0455	0.0512	113	40-150
919005-14-4	ADONA	0.0074 U	0.043	0.0574	134	40-150
377-73-1	PFMPA	0.0074 U	0.0455	0.0548	121	40-150
863090-89-5	PFMBA	0.0074 U	0.0455	0.0587	129	40-150
151772-58-6	NFDHA	0.0074 U	0.0455	0.0524	115	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0074 U	0.0425	0.0587	138	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0074 U	0.043	0.0549	128	40-150

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-MS	4Q48790.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713
FC8439-3	4Q48789.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8440-1

CAS No.	Compound	FC8439-3 ug/l	Spike Q	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0074 U	0.0405	0.0449	111	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.019 U	0.114	0.111	98	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.093 U	0.568	0.593	104	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.093 U	0.568	0.664	117	40-150

CAS No.	ID Standard Recoveries	MS	FC8439-3	Limits
	13C4-PFBA	107%	108%	20-150%
	13C5-PFPeA	107%	108%	20-150%
	13C5-PFHxA	124%	128%	20-150%
	13C4-PFHpA	126%	129%	20-150%
	13C8-PFOA	120%	120%	20-150%
	13C9-PFNA	101%	102%	20-150%
	13C6-PFDA	127%	122%	20-150%
	13C7-PFUnDA	130%	128%	20-150%
	13C2-PFDoDA	123%	115%	20-150%
	13C2-PFTeDA	103%	98%	20-150%
	13C3-PFBS	120%	108%	20-150%
	13C3-PFHxS	129%	114%	20-150%
	13C8-PFOS	113%	114%	20-150%
	13C8-FOSA	83%	90%	20-150%
	d3-MeFOSA	102%	101%	20-150%
	d5-EtFOSA	91%	91%	20-150%
	d3-MeFOSAA	118%	109%	20-150%
	d5-EtFOSAA	127%	120%	20-150%
	d7-MeFOSE	75%	82%	20-150%
	d9-EtFOSE	85%	87%	20-150%
	13C2-4:2FTS	170%	156%	20-180%
	13C2-6:2FTS	179%	162%	20-180%
	13C2-8:2FTS	155%	165%	20-180%
	13C3-HFPO-DA	107%	106%	20-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-DUP	4Q48792.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713
FC8439-4	4Q48791.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713
FC8439-4 ^a	6Q22667.D	10	08/10/23	MV	08/08/23	OP98297	S6Q330

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8440-1

CAS No.	Compound	FC8439-4 ug/l	DUP Q ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.015 U	ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0074 U	ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0037 U	ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0037 U	ND		nc	30
335-67-1	Perfluorooctanoic acid	0.00095 J	0.00056 J		52*	30
375-95-1	Perfluorononanoic acid	0.0037 U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0037 U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0037 U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0037 U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0037 U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0037 U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0037 U	ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0046 U	ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0037 U	ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0037 U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0037 U	ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0037 U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0037 U	ND		nc	30
79780-39-5	Perfluorododecanesulfonic aci	0.0046 U	ND		nc	30
757124-72-44:2	Fluorotelomer sulfonate	0.19 U ^b	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.19 U ^b	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.19 U ^b	ND		nc	30
754-91-6	PFOSA	0.0037 U	ND		nc	30
31506-32-8	MeFOSA	0.0074 U	ND		nc	30
4151-50-2	EtFOSA	0.0074 U	ND		nc	30
2355-31-9	MeFOSAA	0.0046 U	ND		nc	30
2991-50-6	EtFOSAA	0.0046 U	ND		nc	30
24448-09-7	MeFOSE	0.037 U	ND		nc	30
1691-99-2	EtFOSE	0.037 U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.0037 U	ND		nc	30
919005-14-4	ADONA	0.0074 U	ND		nc	30
377-73-1	PFMPA	0.0074 U	ND		nc	30
863090-89-5	PFMBA	0.0074 U	ND		nc	30
151772-58-6	NFDHA	0.0074 U	ND		nc	30
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0074 U	ND		nc	30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0074 U	ND		nc	30

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-DUP	4Q48792.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713
FC8439-4	4Q48791.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713
FC8439-4 ^a	6Q22667.D	10	08/10/23	MV	08/08/23	OP98297	S6Q330

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8440-1

CAS No.	Compound	FC8439-4 ug/l	DUP Q	ug/l	Q	RPD	Limits
113507-82-7	PFEESA	0.0074	U	ND		nc	30
356-02-5	3:3 Fluorotelomer carboxylate	0.019	U	ND		nc	30
914637-49-35:3	Fluorotelomer carboxylate	0.093	U	ND		nc	30
812-70-4	7:3 Fluorotelomer carboxylate	0.093	U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC8439-4	FC8439-4	Limits
	13C4-PFBA	88%	96%	91%	20-150%
	13C5-PFPeA	77%	80%	121%	20-150%
	13C5-PFHxA	125%	131%	127%	20-150%
	13C4-PFHpA	133%	139%	131%	20-150%
	13C8-PFOA	121%	118%	117%	20-150%
	13C9-PFNA	107%	106%	115%	20-150%
	13C6-PFDA	120%	126%	121%	20-150%
	13C7-PFUnDA	124%	135%	121%	20-150%
	13C2-PFDoDA	106%	114%	107%	20-150%
	13C2-PFTeDA	82%	88%	91%	20-150%
	13C3-PFBS	113%	114%	116%	20-150%
	13C3-PFHxS	128%	116%	113%	20-150%
	13C8-PFOS	110%	120%	113%	20-150%
	13C8-FOSA	101%	109%	106%	20-150%
	d3-MeFOSA	98%	101%	89%	20-150%
	d5-EtFOSA	94%	92%	94%	20-150%
	d3-MeFOSAA	138%	138%	113%	20-150%
	d5-EtFOSAA	145%	146%	106%	20-150%
	d7-MeFOSE	83%	86%	92%	20-150%
	d9-EtFOSE	85%	92%	94%	20-150%
	13C2-4:2FTS	265%* c	258%* c	109%	20-180%
	13C2-6:2FTS	254%* c	227%* c	137%	20-180%
	13C2-8:2FTS	180%	184%* c	142%	20-180%
	13C3-HFPO-DA	88%	92%	120%	20-150%

- (a) Dilution required (ID recovery standard failure).
- (b) Result is from Run #2.
- (c) Outside control limits.

* = Outside of Control Limits.

Injection Standard Area Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q713-CC711	Injection Date:	08/09/23
Lab File ID:	4Q48776.D	Injection Time:	18:19
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	51455	2.90	31931	5.61	47937	7.23	18636	7.79	14450	8.28
Check Std ^c	61499	2.89	37374	5.62	57982	7.25	25592	7.80	17403	8.30
Upper Limit ^d	102910	3.29	63862	6.02	95874	7.65	37272	8.20	28900	8.70
Lower Limit ^e	20582	2.49	12772	5.22	19175	6.85	7454	7.40	5780	7.90

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
S4Q713-ICCB	57476	2.88	36124	5.62	53437	7.25	23201	7.80	16671	8.30	1
S4Q713-ICCB	57476	2.88	36124	5.62	53437	7.25	23201	7.80	16671	8.30	1
ZZZZZZ	39160	2.89	31450	5.62	48100	7.25	21090	7.81	15650	8.29	10
OP98297-BS	46030	2.93	28192	5.62	42499	7.25	18465	7.81	12930	8.30	1
OP98297-LLBS	47443	2.94	28837	5.62	44104	7.25	18881	7.81	13090	8.30	1
OP98297-MB ^f	30165	2.93	17789	5.62	28337	7.25	11445	7.81	8929	8.30	1
ZZZZZZ	45445	2.93	28164	5.63	42400	7.26	18065	7.81	13561	8.30	1
ZZZZZZ	50367	2.93	31193	5.63	48097	7.25	20382	7.81	14761	8.30	1
FC8440-1	46340	2.93	28830	5.63	44044	7.25	19196	7.81	13495	8.30	1
ZZZZZZ	43186	2.93	27161	5.63	41985	7.26	16878	7.81	11946	8.32	1
ZZZZZZ	47062	2.94	29046	5.63	43996	7.26	19193	7.81	12796	8.30	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: S4Q711-ICC711 4Q48588.D 08/07/23 17:14. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 to + 100% of initial cal area.
- (d) Upper Limit = + 100% of initial standard area; Retention time + 0.4 minutes of check standard.
- (e) Lower Limit = -60% of initial standard area; Retention time -0.4 minutes of check standard.
- (f) All results and recoveries corrected for double EIS.

6.5.1
6

Injection Standard Area Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q713-CC711	Injection Date:	08/09/23
Lab File ID:	4Q48776.D	Injection Time:	18:19
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	4175	7.32	7644	8.42
Check Std ^c	4983	7.33	9613	8.44
Upper Limit ^d	8350	7.73	15288	8.84
Lower Limit ^e	1670	6.93	3058	8.04

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
S4Q713-ICCB	4812	7.33	9086	8.44	1
S4Q713-ICCB	4812	7.33	9086	8.44	1
ZZZZZZ	3770	7.34	7680	8.43	10
OP98297-BS	3832	7.34	7610	8.44	1
OP98297-LLBS	3802	7.34	7719	8.44	1
OP98297-MB ^f	2413	7.33	4702	8.44	1
ZZZZZZ	3727	7.34	7132	8.44	1
ZZZZZZ	3892	7.34	8104	8.44	1
FC8440-1	3875	7.34	7398	8.44	1
ZZZZZZ	3893	7.34	6996	8.44	1
ZZZZZZ	3876	7.34	7607	8.44	1

IS 6 = 1802-PFHXS
 IS 7 = 13C4-PFOS

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q711-ICC711 4Q48588.D 08/07/23 17:14. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 to + 100% of initial cal area.
- (d) Upper Limit = + 100% of initial standard area; Retention time + 0.4 minutes of check standard.
- (e) Lower Limit = -60% of initial standard area; Retention time -0.4 minutes of check standard.
- (f) All results and recoveries corrected for double EIS.

Injection Standard Area Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q713-CC711	Injection Date:	08/09/23
Lab File ID:	4Q48787.D	Injection Time:	21:01
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	51455	2.90	31931	5.61	47937	7.23	18636	7.79	14450	8.28
Check Std ^c	61496	2.92	37306	5.61	57522	7.25	24550	7.80	17170	8.29
Upper Limit ^d	102910	3.32	63862	6.01	95874	7.65	37272	8.20	28900	8.69
Lower Limit ^e	20582	2.52	12772	5.21	19175	6.85	7454	7.40	5780	7.89

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
S4Q713-ICCB	57955	2.89	36670	5.61	53942	7.23	24412	7.79	16908	8.29	1
FC8439-3	48462	2.93	29136	5.63	44667	7.25	19673	7.81	13671	8.30	1
OP98297-MS	46989	2.94	28932	5.62	43614	7.25	19557	7.80	12799	8.29	1
FC8439-4	25747	2.93	29588	5.62	47002	7.25	20500	7.81	13847	8.30	1
OP98297-DUP	26877	2.93	31391	5.62	47947	7.25	21496	7.81	14713	8.30	1
ZZZZZZ	22770	2.93	24747	5.62	37878	7.25	16425	7.80	11288	8.30	1
ZZZZZZ	32827	2.94	21350	5.62	32800	7.25	14096	7.80	10104	8.29	1
OP98277-BS	51923	2.94	32584	5.63	48420	7.25	20910	7.80	14629	8.30	1
OP98277-LLBS	52177	2.94	32213	5.63	49571	7.26	21506	7.81	14814	8.30	1
OP98277-MB	53927	2.94	34056	5.63	50273	7.25	20944	7.81	15495	8.30	1
ZZZZZZ	51868	2.95	32742	5.63	49444	7.25	21535	7.80	15268	8.30	1
S4Q713-ECC711	61642	2.89	38759	5.62	58871	7.25	25059	7.80	17647	8.29	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: S4Q711-ICCB 4Q48588.D 08/07/23 17:14. 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
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Injection Standard Area Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q713-CC711	Injection Date:	08/09/23
Lab File ID:	4Q48787.D	Injection Time:	21:01
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	4175	7.32	7644	8.42
Check Std ^c	4938	7.33	9625	8.43
Upper Limit ^d	8350	7.73	15288	8.83
Lower Limit ^e	1670	6.93	3058	8.03

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
S4Q713-ICCB	4874	7.32	9226	8.43	1
FC8439-3	4047	7.34	7728	8.44	1
OP98297-MS	3595	7.33	7161	8.43	1
FC8439-4	3787	7.34	7117	8.44	1
OP98297-DUP	3821	7.34	7246	8.44	1
ZZZZZZ	3042	7.34	6176	8.44	1
ZZZZZZ	2834	7.33	5102	8.43	1
OP98277-BS	4041	7.33	7926	8.44	1
OP98277-LLBS	3956	7.34	8429	8.44	1
OP98277-MB	4304	7.34	8879	8.44	1
ZZZZZZ	4159	7.34	8408	8.43	1
S4Q713-ECC711	5244	7.33	10308	8.43	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q711-ICC711 4Q48588.D 08/07/23 17:14. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 to + 100% of initial cal area.
- (d) Upper Limit = + 100% of initial standard area; Retention time + 0.4 minutes of check standard.
- (e) Lower Limit = -60% of initial standard area; Retention time -0.4 minutes of check standard.

TDCA Retention Time Check

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q711-RT	Injection Date:	08/07/23
Lab File ID:	4Q48582.D	Injection Time:	15:28
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.406	--	--
TDCA	6.947	1.459	1.000
TCDCA	6.798	1.608	1.000
TUDCA	5.954	2.452	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
S4Q711-IC711	4Q48584.D	08/07/23	16:11	00:43	Mass Calibration Verification
S4Q711-IC711	4Q48585.D	08/07/23	16:26	00:58	Initial cal 1
S4Q711-IC711	4Q48586.D	08/07/23	16:41	01:13	Initial cal 2
S4Q711-IC711	4Q48587.D	08/07/23	16:59	01:31	Initial cal 3
S4Q711-ICC711	4Q48588.D	08/07/23	17:14	01:46	Initial cal 4
S4Q711-IC711	4Q48589.D	08/07/23	17:28	02:00	Initial cal 5
S4Q711-IC711	4Q48590.D	08/07/23	17:43	02:15	Initial cal 6
S4Q711-IC711	4Q48591.D	08/07/23	17:58	02:30	Initial cal 7
S4Q711-IC711	4Q48592.D	08/07/23	18:13	02:45	Initial cal 8
S4Q711-IBLK	4Q48593.D	08/07/23	18:27	02:59	Instrument Blank
S4Q711-IBLK	4Q48593.D	08/07/23	18:27	02:59	Instrument Blank
S4Q711-ICV711	4Q48594.D	08/07/23	18:42	03:14	Initial cal verification 4
S4Q711-ICV711	4Q48595.D	08/07/23	18:57	03:29	Initial cal verification 20
S4Q711-CC711	4Q48596.D	08/07/23	19:12	03:44	Continuing cal 4
S4Q711-CC711	4Q48597.D	08/07/23	19:26	03:58	Continuing cal 1.0LL
ZZZZZZ	4Q48598.D	08/07/23	19:41	04:13	(unrelated sample)
OP98225-BS	4Q48599.D	08/07/23	19:56	04:28	Blank Spike
OP98225-LLBS	4Q48600.D	08/07/23	20:11	04:43	Blank Spike
OP98225-MB	4Q48601.D	08/07/23	20:25	04:57	Method Blank
ZZZZZZ	4Q48602.D	08/07/23	20:40	05:12	(unrelated sample)
ZZZZZZ	4Q48604.D	08/07/23	21:10	05:42	(unrelated sample)
ZZZZZZ	4Q48605.D	08/07/23	21:24	05:56	(unrelated sample)
S4Q711-CC711	4Q48606.D	08/07/23	21:39	06:11	Continuing cal 4
S4Q711-ICCB	4Q48607.D	08/07/23	21:54	06:26	Continuing Calibration Blank
S4Q711-ICCB	4Q48607.D	08/07/23	21:54	06:26	Continuing Calibration Blank
ZZZZZZ	4Q48608.D	08/07/23	22:09	06:41	(unrelated sample)
ZZZZZZ	4Q48609.D	08/07/23	22:23	06:55	(unrelated sample)
ZZZZZZ	4Q48610.D	08/07/23	22:38	07:10	(unrelated sample)
ZZZZZZ	4Q48611.D	08/07/23	22:53	07:25	(unrelated sample)
ZZZZZZ	4Q48612.D	08/07/23	23:08	07:40	(unrelated sample)
FC7868-1	4Q48613.D	08/07/23	23:22	07:54	(used for QC only; not part of job FC8440)
OP98161-MS	4Q48614.D	08/07/23	23:37	08:09	Matrix Spike
OP98161-MSD	4Q48615.D	08/07/23	23:52	08:24	Matrix Spike Duplicate
S4Q711-CC711	4Q48616.D	08/08/23	00:07	08:39	Continuing cal 4

TDCA Retention Time Check

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q711-RT	Injection Date:	08/07/23
Lab File ID:	4Q48582.D	Injection Time:	15:28
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q711-ICCB	4Q48617.D	08/08/23	00:21	08:53	Continuing Calibration Blank
S4Q711-ICCB	4Q48617.D	08/08/23	00:21	08:53	Continuing Calibration Blank
ZZZZZZ	4Q48618.D	08/08/23	00:36	09:08	(unrelated sample)
ZZZZZZ	4Q48619.D	08/08/23	00:51	09:23	(unrelated sample)
ZZZZZZ	4Q48620.D	08/08/23	01:06	09:38	(unrelated sample)
ZZZZZZ	4Q48621.D	08/08/23	01:20	09:52	(unrelated sample)
ZZZZZZ	4Q48622.D	08/08/23	01:35	10:07	(unrelated sample)
ZZZZZZ	4Q48623.D	08/08/23	01:50	10:22	(unrelated sample)
ZZZZZZ	4Q48624.D	08/08/23	02:05	10:37	(unrelated sample)
ZZZZZZ	4Q48625.D	08/08/23	02:19	10:51	(unrelated sample)
ZZZZZZ	4Q48626.D	08/08/23	02:34	11:06	(unrelated sample)
ZZZZZZ	4Q48627.D	08/08/23	02:49	11:21	(unrelated sample)
S4Q711-CC711	4Q48628.D	08/08/23	03:04	11:36	Continuing cal 4
S4Q711-ICCB	4Q48629.D	08/08/23	03:18	11:50	Continuing Calibration Blank
S4Q711-ICCB	4Q48629.D	08/08/23	03:18	11:50	Continuing Calibration Blank
ZZZZZZ	4Q48630.D	08/08/23	03:33	12:05	(unrelated sample)
ZZZZZZ	4Q48632.D	08/08/23	04:03	12:35	(unrelated sample)
ZZZZZZ	4Q48634.D	08/08/23	04:32	13:04	(unrelated sample)
ZZZZZZ	4Q48635.D	08/08/23	04:47	13:19	(unrelated sample)
ZZZZZZ	4Q48637.D	08/08/23	05:16	13:48	(unrelated sample)
FC7482-3	4Q48638.D	08/08/23	05:31	14:03	(used for QC only; not part of job FC8440)
OP98118-MS	4Q48639.D	08/08/23	05:46	14:18	Matrix Spike
S4Q711-CC711	4Q48640.D	08/08/23	06:01	14:33	Continuing cal 4
S4Q711-ICCB	4Q48641.D	08/08/23	06:15	14:47	Continuing Calibration Blank
S4Q711-ICCB	4Q48641.D	08/08/23	06:15	14:47	Continuing Calibration Blank
ZZZZZZ	4Q48642.D	08/08/23	06:30	15:02	(unrelated sample)
ZZZZZZ	4Q48643.D	08/08/23	06:45	15:17	(unrelated sample)
FC7599-1	4Q48644.D	08/08/23	07:00	15:32	(used for QC only; not part of job FC8440)
OP98118-DUP	4Q48645.D	08/08/23	07:14	15:46	Duplicate
ZZZZZZ	4Q48646.D	08/08/23	07:29	16:01	(unrelated sample)
ZZZZZZ	4Q48647.D	08/08/23	07:44	16:16	(unrelated sample)
FC7615-1	4Q48648.D	08/08/23	07:59	16:31	(used for QC only; not part of job FC8440)
OP98119-MS	4Q48649.D	08/08/23	08:13	16:45	Matrix Spike
OP98119-MSD	4Q48650.D	08/08/23	08:28	17:00	Matrix Spike Duplicate
S4Q711-CC711	4Q48651.D	08/08/23	08:43	17:15	Continuing cal 4
S4Q711-ICCB	4Q48652.D	08/08/23	08:59	17:31	Continuing Calibration Blank
ZZZZZZ	4Q48654.D	08/08/23	09:29	18:01	(unrelated sample)
ZZZZZZ	4Q48655.D	08/08/23	09:44	18:16	(unrelated sample)
ZZZZZZ	4Q48656.D	08/08/23	09:59	18:31	(unrelated sample)
ZZZZZZ	4Q48657.D	08/08/23	10:14	18:46	(unrelated sample)
ZZZZZZ	4Q48658.D	08/08/23	10:29	19:01	(unrelated sample)
ZZZZZZ	4Q48661.D	08/08/23	11:14	19:46	(unrelated sample)
ZZZZZZ	4Q48662.D	08/08/23	11:29	20:01	(unrelated sample)
S4Q711-CC711	4Q48663.D	08/08/23	11:43	20:15	Continuing cal 4

6.6.1
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TDCA Retention Time Check

Job Number: FC8440
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q711-RT	Injection Date:	08/07/23
Lab File ID:	4Q48582.D	Injection Time:	15:28
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q711-ICCB	4Q48664.D	08/08/23	11:58	20:30	Continuing Calibration Blank
ZZZZZZ	4Q48665.D	08/08/23	12:13	20:45	(unrelated sample)
ZZZZZZ	4Q48666.D	08/08/23	12:28	21:00	(unrelated sample)
S4Q711-ECC711	4Q48667.D	08/08/23	12:42	21:14	Ending cal 4
S4Q711-ICCB	4Q48668.D	08/08/23	12:57	21:29	Continuing Calibration Blank

6.6.1

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TDCA Retention Time Check

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q713-RT	Injection Date:	08/09/23
Lab File ID:	4Q48760.D	Injection Time:	14:15
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.419	--	--
TDCA	6.972	1.447	1.000
TCDCA	6.823	1.596	1.000
TUDCA	5.979	2.440	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
S4Q713-IBLK	4Q48763.D	08/09/23	15:01	00:46	Instrument Blank
S4Q713-IBLK	4Q48763.D	08/09/23	15:01	00:46	Instrument Blank
S4Q713-CC711	4Q48764.D	08/09/23	15:16	01:01	Continuing cal 4
S4Q713-CC711	4Q48765.D	08/09/23	15:30	01:15	Continuing cal 1.0LL
OP98160-BS	4Q48766.D	08/09/23	15:45	01:30	Blank Spike
OP98160-LLBS	4Q48767.D	08/09/23	16:00	01:45	Blank Spike
OP98160-MB	4Q48768.D	08/09/23	16:15	02:00	Method Blank
ZZZZZZ	4Q48769.D	08/09/23	16:35	02:20	(unrelated sample)
ZZZZZZ	4Q48770.D	08/09/23	16:50	02:35	(unrelated sample)
ZZZZZZ	4Q48771.D	08/09/23	17:05	02:50	(unrelated sample)
FC8220-6	4Q48772.D	08/09/23	17:20	03:05	(used for QC only; not part of job FC8440)
OP98160-MS	4Q48773.D	08/09/23	17:35	03:20	Matrix Spike
OP98160-MSD	4Q48774.D	08/09/23	17:49	03:34	Matrix Spike Duplicate
ZZZZZZ	4Q48775.D	08/09/23	18:04	03:49	(unrelated sample)
S4Q713-CC711	4Q48776.D	08/09/23	18:19	04:04	Continuing cal 4
S4Q713-ICCB	4Q48777.D	08/09/23	18:33	04:18	Continuing Calibration Blank
S4Q713-ICCB	4Q48777.D	08/09/23	18:33	04:18	Continuing Calibration Blank
ZZZZZZ	4Q48778.D	08/09/23	18:48	04:33	(unrelated sample)
OP98297-BS	4Q48779.D	08/09/23	19:03	04:48	Blank Spike
OP98297-LLBS	4Q48780.D	08/09/23	19:18	05:03	Blank Spike
OP98297-MB	4Q48781.D	08/09/23	19:33	05:18	Method Blank
ZZZZZZ	4Q48782.D	08/09/23	19:47	05:32	(unrelated sample)
ZZZZZZ	4Q48783.D	08/09/23	20:02	05:47	(unrelated sample)
FC8440-1	4Q48784.D	08/09/23	20:17	06:02	AF-RHMW225401-WGN01B-2308
ZZZZZZ	4Q48785.D	08/09/23	20:31	06:16	(unrelated sample)
ZZZZZZ	4Q48786.D	08/09/23	20:46	06:31	(unrelated sample)
S4Q713-CC711	4Q48787.D	08/09/23	21:01	06:46	Continuing cal 4
S4Q713-ICCB	4Q48788.D	08/09/23	21:16	07:01	Continuing Calibration Blank
FC8439-3	4Q48789.D	08/09/23	21:30	07:15	(used for QC only; not part of job FC8440)
OP98297-MS	4Q48790.D	08/09/23	21:45	07:30	Matrix Spike
FC8439-4	4Q48791.D	08/09/23	22:00	07:45	(used for QC only; not part of job FC8440)
OP98297-DUP	4Q48792.D	08/09/23	22:15	08:00	Duplicate
ZZZZZZ	4Q48793.D	08/09/23	22:29	08:14	(unrelated sample)
ZZZZZZ	4Q48794.D	08/09/23	22:44	08:29	(unrelated sample)

TDCA Retention Time Check

Job Number: FC8440
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q713-RT	Injection Date:	08/09/23
Lab File ID:	4Q48760.D	Injection Time:	14:15
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
OP98277-BS	4Q48795.D	08/09/23	22:59	08:44	Blank Spike
OP98277-LLBS	4Q48796.D	08/09/23	23:14	08:59	Blank Spike
OP98277-MB	4Q48797.D	08/09/23	23:28	09:13	Method Blank
ZZZZZ	4Q48798.D	08/09/23	23:43	09:28	(unrelated sample)
S4Q713-ECC711	4Q48799.D	08/09/23	23:58	09:43	Ending cal 4
S4Q713-ICCB	4Q48800.D	08/10/23	00:13	09:58	Continuing Calibration Blank

6.6.2

6

Ion Ratio Summary

Job Number: FC8440
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q713	Method: EPA DRAFT 1633
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Lab Sample ID	Lab File ID	Ion Ratios					
		PFPeA	PFHxA	PFHpA	PFOA	PFBS	PFHxS
S4Q711-ICC711	4Q48588.D	0	3.3	18.4	19.3	37	49.5
FC8440-1	4Q48784.D	0	6.2	14	13.9	33.5	44.1

6.7.1

6

Isotope Dilution Standard Recovery Summary

Job Number: FC8440
 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
FC8440-1	4Q48784.D	133	120	133	135	128	110	128	129
OP98297-BS	4Q48779.D	140	111	130	135	127	108	130	137
OP98297-DUP	4Q48792.D	88	77	125	133	121	107	120	124
OP98297-LLBS	4Q48780.D	142	114	132	137	127	115	127	133
OP98297-MB	4Q48781.D	85	74	81	84	77	72	79	80
OP98297-MS	4Q48790.D	107	107	124	126	120	101	127	130
S4Q713-IBLK	4Q48763.D	106	95	100	101	99	96	102	111
S4Q713-ICCB	4Q48777.D	110	89	102	103	101	93	107	110
S4Q713-ICCB	4Q48788.D	111	88	99	103	102	84	101	116
S4Q713-ICCB	4Q48800.D	111	88	97	99	100	93	100	105

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%

Isotope Dilution Standard Recovery Summary

Job Number: FC8440
 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
FC8440-1	4Q48784.D	123	108	119	122	118	95	109	106
OP98297-BS	4Q48779.D	135	116	114	125	112	68	74	74
OP98297-DUP	4Q48792.D	106	82	113	128	110	101	98	94
OP98297-LLBS	4Q48780.D	118	106	121	127	111	60	73	74
OP98297-MB	4Q48781.D	77	71	76	79	81	44	49	51
OP98297-MS	4Q48790.D	123	103	120	129	113	83	102	91
S4Q713-IBLK	4Q48763.D	101	100	90	94	91	92		
S4Q713-ICCB	4Q48777.D	108	103	90	97	93	93		
S4Q713-ICCB	4Q48788.D	106	99	91	99	93	92		
S4Q713-ICCB	4Q48800.D	103	94	90	102	91	89		

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%

Isotope Dilution Standard Recovery Summary

Job Number: FC8440
 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
FC8440-1	4Q48784.D	126	126	85	93	166	171	172	111
OP98297-BS	4Q48779.D	123	101	58	69	159	168	173	114
OP98297-DUP	4Q48792.D	138	145	83	85	265* a	254* a	180	88
OP98297-LLBS	4Q48780.D	118	120	58	70	168	181* a	200* a	114
OP98297-MB	4Q48781.D	77	82	37	45	112	111	104	73
OP98297-MS	4Q48790.D	118	127	75	85	170	179	155	107
S4Q713-IBLK	4Q48763.D	105	103			148	130	138	
S4Q713-ICCB	4Q48777.D	106	108			125	135	133	
S4Q713-ICCB	4Q48788.D	104	104			141	119	139	
S4Q713-ICCB	4Q48800.D	96	100			131	137	142	

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.

Initial Calibration Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q711-ICC711
 Lab FileID: 4Q48588.D

Initial Calibration Report

Method Path	D:\MassHunter\methods											
Method File	1633_080723_S4Q711.quantmethod.xml											
Batch Name	D:\MassHunter\Data\080723_1633_S4Q711\QuantResults\s4q711.batch.bin											
Last Calib Update	8/9/2023 10:16:05 AM											
Level Name	Calibration Files	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
1	D:\MassHunter\Data\080723_1633_S4Q711\4Q48585.d											
2	D:\MassHunter\Data\080723_1633_S4Q711\4Q48586.d											
3	D:\MassHunter\Data\080723_1633_S4Q711\4Q48587.d											
4	D:\MassHunter\Data\080723_1633_S4Q711\4Q48588.d											
5	D:\MassHunter\Data\080723_1633_S4Q711\4Q48589.d											
6	D:\MassHunter\Data\080723_1633_S4Q711\4Q48590.d											
7	D:\MassHunter\Data\080723_1633_S4Q711\4Q48591.d											
8	D:\MassHunter\Data\080723_1633_S4Q711\4Q48592.d											
Compound												
I M4-PFBA												
T PFBA												
T 3:3FTCA												
I M5-PFPeA												
T PFMPA												
T PFPeA												
T PFMBa												
I M5-PFHxA												
T NFDHA												
T PFHxA												
T PFEEA												
T 5:3FTCA												
T 7:3FTCA												
I M4-PFHpA												
T PFHpA												
I M8-PFOA												
T PFOA												
I M9-PFNA												
T PFNA												
I M6-PFDA												
T PFDA												
I M7-PFUnDA												
T PFUnDA												
I M2-PFDaDA												

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Initial Calibration Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q711-ICC711
 Lab FileID: 4Q48588.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T PFDoDA	Avg RF	0.7373	0.8092	0.8025	0.8239	0.8300	0.8300	0.7950	0.7909	0.7821	6.926
T PFTfDA	Avg RF	0.6661	0.7846	0.8617	0.9043	0.8757	0.8550	0.8306	0.8306	0.8083	10.922
I M2-PFTeDA	Avg RF	0.8144	0.8254	0.8291	0.8728	0.9724	0.9164	0.8876	0.8867	0.8756	6.064
T PFTeDA						ISTD					
I M8-FOSA	Avg RF	0.6963	0.7944	0.7925	0.8574	0.8668	0.8139	0.8170	0.8344	0.8091	6.540
T FOSA						ISTD					
I M3-PFBS	Avg RF	0.4832	0.5140	0.6129	0.6684	0.6450	0.6515	0.6564	0.6534	0.6106	11.695
T PFBS						ISTD					
I M3-PFHxS	Avg RF	0.5325	0.5726	0.6634	0.7235	0.8358	0.7039	0.6534	0.7154	0.6751	13.952
T PFPeS	Avg RF	0.5271	0.7489	0.7055	0.7603	0.8061	0.7296	0.6992	0.7630	0.7174	11.734
T PFHxS						ISTD					
I M8-PFOS	Avg RF	0.7075	0.6959	0.7072	0.7945	0.8133	0.7873	0.7578	0.7813	0.7556	6.073
T PFHpS	Avg RF	0.8938	0.8634	0.8812	0.9788	0.9622	0.9627	0.9185	0.9034	0.9205	4.634
T PFOs	Avg RF	0.4176	0.4339	0.4780	0.5375	0.5088	0.5232	0.5004	0.5063	0.4882	8.688
T PFNS	Avg RF	0.4628	0.4950	0.4736	0.5487	0.5200	0.5496	0.5291	0.5522	0.5164	6.855
T PFDS	Avg RF	0.3607	0.3357	0.3543	0.4357	0.3958	0.4360	0.4253	0.4348	0.3973	10.487
T PFDoDS						ISTD					
I M2-4:2FTS	Avg RF	6.7126	7.7558	5.6756	6.5741	7.6168	6.5636	6.2012	6.8294	6.7411	10.172
T 4:2FTS						ISTD					
I M2-6:2FTS	Avg RF	3.5633	4.0432	4.0177	4.6280	5.3482	4.3261	4.3719	3.8528	4.2439	13.826
T 6:2FTS						ISTD					
I M2-8:2FTS	Avg RF	1.9491	2.0621	1.9943	2.1952	2.3790	2.0169	2.3034	2.2422	2.1428	7.402
T 8:2FTS						ISTD					
I M3-MeFOSAA	Avg RF	0.4484	0.5876	0.6137	0.6306	0.7409	0.6585	0.6489	0.6715	0.6250	13.526
T MeFOSAA						ISTD					
I M3-HFO-DA	Avg RF	0.6780	0.8133	0.7992	0.8209	0.9231	0.8444	0.8455	0.8587	0.8229	8.464
T HFPO-DA	Avg RF	4.9339	5.3338	5.6049	6.1305	6.4636	6.1253	5.8766	5.9551	5.8030	8.469
T ADONA	Avg RF	2.5292	2.8432	2.9484	3.2100	3.2610	3.1208	2.9711	2.7202	2.9505	8.451
T 9Cl-PF3ONS	Avg RF	1.7592	1.8893	2.0106	2.2057	2.1876	2.1938	2.2435	2.2832	2.0966	9.018
T 11Cl-PF3OUds						ISTD					
I M5-EFOSAA	Avg RF	0.6197	0.6737	0.5951	0.7532	0.7151	0.6874	0.7088	0.7133	0.6833	7.700
T EFOSAA						ISTD					
I M7-MeFOSE	Avg RF	0.7152	0.8132	0.8551	0.9650	0.9739	0.9631	0.9089	0.9576	0.8940	10.397
T MeFOSE						ISTD					
I M9-EFOSE	Avg RF	0.6306	0.6457	0.7942	0.7960	0.8974	0.8107	0.8522	0.8314	0.7823	12.161
T EFOSE						ISTD					

Generated at 10:17 AM on 8/9/2023

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Initial Calibration Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q711-ICC711
 Lab FileID: 4Q48588.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M5-EFOSA	Avg RF	0.8615	0.9051	0.8520	0.9353	0.9925	0.9086	0.9182	0.9795	0.9191	5.428
T EtFOSA											
I M3-MeFOSA	Avg RF	0.7912	0.8548	0.8605	0.9244	0.9659	0.9085	0.8567	0.7942	0.8695	7.022
T MeFOSA											
I 13C4-PFOS											
S d3-MeFOSAA	Avg RF	0.9251	0.9317	0.8846	0.9295	0.8720	0.9841	0.9214	0.9751	0.9279	4.164
S 13C8-PFOS	Avg RF	1.0373	1.0349	0.9806	0.9755	0.9674	1.0384	0.9801	1.0190	1.0042	3.091
S d5-EFOSAA	Avg RF	0.7482	0.7295	0.7481	0.7348	0.7157	0.8303	0.7673	0.8288	0.7628	5.749
S 13C8-FOSA	Avg RF	1.6368	1.5447	1.5233	1.5439	1.5124	1.6673	1.5288	1.5182	1.5594	3.772
S d7-MeFOSE	Avg RF	0.7513	0.7455	0.7284	0.7370	0.6751	0.7656	0.7376	0.7331	0.7342	3.624
S d3-MeFOSA	Avg RF	0.8879	0.8695	0.8835	0.9170	0.8526	0.9749	0.9342	1.0271	0.9183	6.393
S d9-EFOSE	Avg RF	1.0292	1.0513	0.9922	1.0627	0.9468	1.1319	0.9856	1.0371	1.0296	5.480
S d5-EFOSA	Avg RF	1.0408	1.0119	1.0619	1.0823	1.0044	1.1762	1.0517	1.0325	1.0577	5.124
I 13C3-PFBA											
S 13C4-PFBA	Avg RF	0.8531	0.8530	0.8541	0.8588	0.8464	0.8576	0.8553	0.8585	0.8546	0.475
I 18O2-PFHxS											
S 13C2-4:2FTS	Avg RF	0.0601	0.0590	0.0728	0.0670	0.0566	0.0601	0.0627	0.0613	0.0625	8.235
S 13C3-PBBS	Avg RF	2.2242	2.3391	2.1654	2.1244	2.1143	2.0368	1.9630	2.0551	2.1278	5.512
S 13C2-6:2FTS	Avg RF	1.243	1.1300	1.1277	1.1140	1.1022	1.1154	1.1101	1.1309	1.1193	8.757
S 13C3-PFHxS	Avg RF	1.4772	1.4731	1.4036	1.3614	1.2465	1.3394	1.3847	1.3858	1.3840	5.353
S 13C2-8:2FTS	Avg RF	0.1884	0.1933	0.1856	0.1747	0.1677	0.1938	0.1623	0.1841	0.1812	6.484
I 13C4-PFOA											
S 13C8-PFOA	Avg RF	0.8548	0.8880	0.8054	0.8169	0.8388	0.7959	0.8107	0.7744	0.8231	4.376
I 13C2-PFDA											
S 13C6-PFDA	Avg RF	0.8481	0.8668	0.8630	0.9302	0.8192	0.9559	0.8237	0.8142	0.8651	6.052
S 13C7-PFUnDA	Avg RF	0.9664	0.9674	0.9963	1.0064	0.9279	1.0547	0.9892	0.8862	0.9743	5.235
S 13C2-PFDODA	Avg RF	1.0469	1.0589	1.0394	1.0948	1.0159	1.1045	1.1016	1.1053	1.0709	3.266
S 13C2-PFTeDA	Avg RF	0.8359	0.8461	0.8624	0.8912	0.7623	0.8903	0.8978	0.8924	0.8598	5.329
I 13C5-PFNA											
S 13C9-PFNA	Avg RF	0.9950	0.9346	0.9608	0.9578	0.8778	0.9483	0.9503	0.9508	0.9469	3.473
I 13C2-PFHxA											
S 13C5-PPeA	Avg RF	0.8948	0.8946	0.8737	0.9038	0.8917	0.8679	0.8577	0.8064	0.8738	3.602
S 13C5-PFHxA	Avg RF	1.0620	1.0497	1.0485	1.0734	1.0422	1.0467	1.0564	1.0030	1.0477	1.968
S 13C3-HPPO-DA	Avg RF	0.2378	0.2370	0.2363	0.2442	0.2327	0.2403	0.2434	0.2336	0.2382	1.777
S 13C4-PFHpA	Avg RF	0.7472	0.7396	0.7444	0.7612	0.7382	0.7565	0.7498	0.7211	0.7448	1.658

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

Initial Calibration Verification

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q711-ICV711
 Lab FileID: 4Q48594.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\080723_1633_S4Q711\s4q711.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\080723_1633_S4Q711\4Q48585.d
 2:D:\MassHunter\Data\080723_1633_S4Q711\4Q48586.d
 3:D:\MassHunter\Data\080723_1633_S4Q711\4Q48587.d
 4:D:\MassHunter\Data\080723_1633_S4Q711\4Q48588.d
 5:D:\MassHunter\Data\080723_1633_S4Q711\4Q48589.d
 6:D:\MassHunter\Data\080723_1633_S4Q711\4Q48590.d
 7:D:\MassHunter\Data\080723_1633_S4Q711\4Q48591.d
 8:D:\MassHunter\Data\080723_1633_S4Q711\4Q48592.d

Data File: 4Q48594
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.378	7.6	107.6
13C2-6:2FTS	5.000	5.096	1.9	101.9
13C2-8:2FTS	5.000	5.530	10.6	110.6
13C2-PFDoDA	1.250	1.222	-2.3	97.7
13C2-PFTeDA	1.250	1.253	0.3	100.3
13C3-PFBS	2.500	2.590	3.6	103.6
13C3-PFHxS	2.500	2.586	3.4	103.4
13C4-PFBA	10.000	10.185	1.9	101.9
13C4-PFHpA	2.500	2.551	2.0	102.0
13C5-PFHxA	2.500	2.510	0.4	100.4
13C5-PFPeA	5.000	5.039	0.8	100.8
13C6-PFDA	1.250	1.300	4.0	104.0
13C7-PFUnDA	1.250	1.291	3.3	103.3
13C8-FOSA	2.500	2.404	-3.9	96.1
13C8-PFOA	2.500	2.496	-0.2	99.8
13C8-PFOS	2.500	2.453	-1.9	98.1
13C9-PFNA	1.250	1.232	-1.5	98.5
4:2FTS	9.375	10.292	9.8	109.8
6:2FTS	9.500	10.456	10.1	110.1
8:2FTS	9.600	11.405	18.8	118.8
d3-MeFOSAA	5.000	4.838	-3.2	96.8
EtFOSAA	2.500	2.812	12.5	112.5
FOSA	2.500	2.834	13.4	113.4
MeFOSAA	2.500	2.946	17.8	117.8
PFBA	10.000	11.032	10.3	110.3
PFBS	2.218	2.575	16.1	116.1
PFDA	2.500	2.661	6.4	106.4
PFDoDA	2.500	2.729	9.2	109.2
PFDS	2.413	2.714	12.5	112.5
PFHpA	2.500	2.811	12.4	112.4
PFHpS	2.383	2.393	0.4	100.4
PFHxA	2.500	2.779	11.2	111.2
PFHxS	2.285	2.498	9.3	109.3
PFNA	2.500	2.726	9.0	109.0
PFNS	2.405	2.667	10.9	110.9
PFOA	2.500	2.686	7.5	107.5
PFOS	2.320	2.666	14.9	114.9

Initial Calibration Verification

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q711-ICV711
 Lab FileID: 4Q48594.D

PFPeA	5.000	5.523	10.5	110.5
PFPeS	2.353	2.673	13.6	113.6
PFTeDA	2.500	2.747	9.9	109.9
PFTTrDA	2.500	2.993	19.7	119.7
PFUnDA	2.500	2.750	10.0	110.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDODA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	5.563	17.7	117.7
13C3-HFPO-DA	10.000	9.830	-1.7	98.3
9C1-PF3ONS	4.675	5.712	22.2	122.2
ADONA	4.725	5.582	18.1	118.1
HFPO-DA	5.000	5.696	13.9	113.9
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	13.129	5.2	105.2
5:3FTCA	62.400	69.201	10.9	110.9
7:3FTCA	62.400	70.654	13.2	113.2
d3-MeFOSA	2.500	2.543	1.7	101.7
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.283	5.7	105.7
EtFOSE	12.500	14.644	17.2	117.2
MeFOSA	5.000	5.286	5.7	105.7
MeFOSE	12.500	13.979	11.8	111.8
PFDODS	2.425	2.696	11.2	111.2
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.771	-4.6	95.4
d7-MeFOSE	25.000	24.176	-3.3	96.7
d9-EtFOSE	25.000	23.932	-4.3	95.7
d5-EtFOSA	2.500	2.562	2.5	102.5
NFDHA	5.000	5.851	17.0	117.0
PFMBA	5.000	5.534	10.7	110.7
PFMPA	5.000	5.480	9.6	109.6
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	5.000	12.4	112.4

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q711-ICV711
 Lab FileID: 4Q48595.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\080723_1633_S4Q711\s4q711.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\080723_1633_S4Q711\4Q48585.d
 2:D:\MassHunter\Data\080723_1633_S4Q711\4Q48586.d
 3:D:\MassHunter\Data\080723_1633_S4Q711\4Q48587.d
 4:D:\MassHunter\Data\080723_1633_S4Q711\4Q48588.d
 5:D:\MassHunter\Data\080723_1633_S4Q711\4Q48589.d
 6:D:\MassHunter\Data\080723_1633_S4Q711\4Q48590.d
 7:D:\MassHunter\Data\080723_1633_S4Q711\4Q48591.d
 8:D:\MassHunter\Data\080723_1633_S4Q711\4Q48592.d

Data File: 4Q48595
 Type : QC
 Level : 20

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.526	10.5	110.5
13C2-6:2FTS	5.000	5.433	8.7	108.7
13C2-8:2FTS	5.000	4.713	-5.7	94.3
13C2-PFDoDA	1.250	1.355	8.4	108.4
13C2-PFTeDA	1.250	1.309	4.7	104.7
13C3-PFBS	2.500	2.510	0.4	100.4
13C3-PFHxS	2.500	2.545	1.8	101.8
13C4-PFBA	10.000	10.188	1.9	101.9
13C4-PFHpA	2.500	2.514	0.6	100.6
13C5-PFHxA	2.500	2.458	-1.7	98.3
13C5-PFPeA	5.000	4.993	-0.1	99.9
13C6-PFDA	1.250	1.297	3.7	103.7
13C7-PFUnDA	1.250	1.342	7.4	107.4
13C8-FOSA	2.500	2.549	2.0	102.0
13C8-PFOA	2.500	2.509	0.4	100.4
13C8-PFOS	2.500	2.487	-0.5	99.5
13C9-PFNA	1.250	1.176	-6.0	94.0
4:2FTS	20.000	19.676	-1.6	98.4
6:2FTS	20.000	20.258	1.3	101.3
8:2FTS	20.000	25.124	25.6	125.6
d3-MeFOSAA	5.000	5.131	2.6	102.6
EtFOSAA	20.000	20.709	3.5	103.5
FOSA	20.000	19.618	-1.9	98.1
MeFOSAA	20.000	21.428	7.1	107.1
PFBA	20.000	19.603	-2.0	98.0
PFBS	20.000	23.248	16.2	116.2
PFDA	20.000	21.027	5.1	105.1
PFDoDA	20.000	17.847	-10.8	89.2
PFDS	20.000	20.838	4.2	104.2
PFHpA	20.000	21.026	5.1	105.1
PFHpS	20.000	20.442	2.2	102.2
PFHxA	20.000	21.206	6.0	106.0
PFHxS	20.000	22.348	11.7	111.7
PFNA	20.000	22.880	14.4	114.4
PFNS	20.000	21.303	6.5	106.5
PFOA	20.000	19.825	-0.9	99.1
PFOS	20.000	20.521	2.6	102.6

Initial Calibration Verification

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q711-ICV711
 Lab FileID: 4Q48595.D

PFPeA	20.000	21.563	7.8	107.8
PFPeS	20.000	21.803	9.0	109.0
PFTeDA	20.000	20.948	4.7	104.7
PFTTrDA	20.000	18.162	-9.2	90.8
PFUnDA	20.000	18.949	-5.3	94.7
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDODA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	20.000	21.160	5.8	105.8
13C3-HFPO-DA	10.000	9.998	0.0	100.0
9C1-PF3ONS	20.000	21.039	5.2	105.2
ADONA	20.000	18.642	-6.8	93.2
HFPO-DA	20.000	19.027	-4.9	95.1
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	20.000	18.594	-7.0	93.0
5:3FTCA	20.000	20.805	4.0	104.0
7:3FTCA	20.000	19.475	-2.6	97.4
d3-MeFOSA	2.500	2.595	3.8	103.8
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	20.000	18.393	-8.0	92.0
EtFOSE	100.000	111.712	11.7	111.7
MeFOSA	20.000	18.401	-8.0	92.0
MeFOSE	100.000	108.830	8.8	108.8
PFDODS	20.000	21.050	5.3	105.3
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.140	2.8	102.8
d7-MeFOSE	25.000	25.396	1.6	101.6
d9-EtFOSE	25.000	24.763	-0.9	99.1
d5-EtFOSA	2.500	2.579	3.1	103.1
NFDHA	20.000	20.343	1.7	101.7
PFMBA	20.000	20.480	2.4	102.4
PFMPA	20.000	20.357	1.8	101.8
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	20.000	18.136	-9.3	90.7

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q713-CC711
 Lab FileID: 4Q48765.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\080923_1633_S4Q713\s4q713.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\080723_1633_S4Q711\4Q48585.d
 2:D:\MassHunter\Data\080723_1633_S4Q711\4Q48586.d
 3:D:\MassHunter\Data\080723_1633_S4Q711\4Q48587.d
 4:D:\MassHunter\Data\080723_1633_S4Q711\4Q48588.d
 5:D:\MassHunter\Data\080723_1633_S4Q711\4Q48589.d
 6:D:\MassHunter\Data\080723_1633_S4Q711\4Q48590.d
 7:D:\MassHunter\Data\080723_1633_S4Q711\4Q48591.d
 8:D:\MassHunter\Data\080723_1633_S4Q711\4Q48592.d

Data File: 4Q48765
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.742	# 34.8	134.8
13C2-6:2FTS	5.000	7.005	# 40.1	140.1
13C2-8:2FTS	5.000	7.024	# 40.5	140.5
13C2-PFDoDA	1.250	1.303	4.2	104.2
13C2-PFTeDA	1.250	1.215	-2.8	97.2
13C3-PFBS	2.500	2.372	-5.1	94.9
13C3-PFHxS	2.500	2.361	-5.6	94.4
13C4-PFBA	10.000	10.760	7.6	107.6
13C4-PFHpA	2.500	2.537	1.5	101.5
13C5-PFHxA	2.500	2.473	-1.1	98.9
13C5-PFPeA	5.000	4.632	-7.4	92.6
13C6-PFDA	1.250	1.344	7.6	107.6
13C7-PFUnDA	1.250	1.341	7.3	107.3
13C8-FOSA	2.500	2.319	-7.2	92.8
13C8-PFOA	2.500	2.572	2.9	102.9
13C8-PFOS	2.500	2.433	-2.7	97.3
13C9-PFNA	1.250	1.089	-12.8	87.2
4:2FTS	0.750	0.697	-7.1	92.9
6:2FTS	0.760	0.633	-16.7	83.3
8:2FTS	0.768	0.836	8.9	108.9
d3-MeFOSAA	5.000	5.089	1.8	101.8
EtFOSAA	0.200	0.211	5.4	105.4
FOSA	0.200	0.197	-1.5	98.5
MeFOSAA	0.200	0.217	8.5	108.5
PFBA	0.800	0.679	-15.1	84.9
PFBS	0.177	0.165	-6.9	93.1
PFDA	0.200	0.170	-15.0	85.0
PFDoDA	0.200	0.154	-23.1	76.9
PFDS	0.193	0.159	-17.7	82.3
PFHpA	0.200	0.180	-10.2	89.8
PFHpS	0.191	0.136	-29.0	71.0
PFHxA	0.200	0.176	-12.1	87.9
PFHxS	0.183	0.199	8.6	108.6
PFNA	0.200	0.181	-9.4	90.6
PFNS	0.192	0.197	2.7	102.7
PFOA	0.200	0.190	-5.1	94.9
PFOS	0.186	0.186	-0.1	99.9

Continuing Calibration Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q713-CC711
 Lab FileID: 4Q48765.D

PFPeA	0.400	0.303	-24.2	75.8
PFPeS	0.188	0.203	8.2	108.2
PFTeDA	0.200	0.190	-5.2	94.8
PFTTrDA	0.200	0.194	-3.0	97.0
PFUnDA	0.200	0.165	-17.5	82.5
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	0.380	0.6	100.6
13C3-HFPO-DA	10.000	9.425	-5.8	94.2
9C1-PF3ONS	0.374	0.384	2.7	102.7
ADONA	0.378	0.359	-4.9	95.1
HFPO-DA	0.400	0.382	-4.4	95.6
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.805	-19.4	80.6
5:3FTCA	4.992	4.450	-10.9	89.1
7:3FTCA	4.992	4.578	-8.3	91.7
d3-MeFOSA	2.500	2.461	-1.6	98.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.400	0.399	-0.2	99.8
EtFOSE	1.000	1.072	7.2	107.2
MeFOSA	0.400	0.353	-11.8	88.2
MeFOSE	1.000	0.906	-9.4	90.6
PFDoDS	0.194	0.185	-4.7	95.3
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.453	9.1	109.1
d7-MeFOSE	25.000	22.712	-9.2	90.8
d9-EtFOSE	25.000	22.584	-9.7	90.3
d5-EtFOSA	2.500	2.453	-1.9	98.1
NFDHA	0.400	0.377	-5.8	94.2
PFMBA	0.400	0.367	-8.2	91.8
PFMPA	0.400	0.371	-7.3	92.7
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	0.356	0.303	-14.8	85.2

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q713-CC711
 Lab FileID: 4Q48776.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\080923_1633_S4Q713\s4q713.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\080723_1633_S4Q711\4Q48585.d
 2:D:\MassHunter\Data\080723_1633_S4Q711\4Q48586.d
 3:D:\MassHunter\Data\080723_1633_S4Q711\4Q48587.d
 4:D:\MassHunter\Data\080723_1633_S4Q711\4Q48588.d
 5:D:\MassHunter\Data\080723_1633_S4Q711\4Q48589.d
 6:D:\MassHunter\Data\080723_1633_S4Q711\4Q48590.d
 7:D:\MassHunter\Data\080723_1633_S4Q711\4Q48591.d
 8:D:\MassHunter\Data\080723_1633_S4Q711\4Q48592.d

Data File: 4Q48776
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.800	# 36.0	136.0
13C2-6:2FTS	5.000	6.115	22.3	122.3
13C2-8:2FTS	5.000	6.020	20.4	120.4
13C2-PFDoDA	1.250	1.358	8.7	108.7
13C2-PFTeDA	1.250	1.295	3.6	103.6
13C3-PFBS	2.500	2.204	-11.8	88.2
13C3-PFHxS	2.500	2.436	-2.6	97.4
13C4-PFBA	10.000	10.825	8.3	108.3
13C4-PFHpA	2.500	2.564	2.6	102.6
13C5-PFHxA	2.500	2.475	-1.0	99.0
13C5-PFPeA	5.000	4.578	-8.4	91.6
13C6-PFDA	1.250	1.260	0.8	100.8
13C7-PFUnDA	1.250	1.439	15.1	115.1
13C8-FOSA	2.500	2.340	-6.4	93.6
13C8-PFOA	2.500	2.460	-1.6	98.4
13C8-PFOS	2.500	2.357	-5.7	94.3
13C9-PFNA	1.250	1.084	-13.3	86.7
4:2FTS	9.375	9.035	-3.6	96.4
6:2FTS	9.500	10.536	10.9	110.9
8:2FTS	9.600	13.082	# 36.3	136.3
d3-MeFOSAA	5.000	5.270	5.4	105.4
EtFOSAA	2.500	2.329	-6.8	93.2
FOSA	2.500	2.632	5.3	105.3
MeFOSAA	2.500	2.805	12.2	112.2
PFBA	10.000	10.105	1.1	101.1
PFBS	2.218	2.863	29.1	129.1
PFDA	2.500	2.756	10.2	110.2
PFDoDA	2.500	2.591	3.7	103.7
PFDS	2.413	2.548	5.6	105.6
PFHpA	2.500	2.677	7.1	107.1
PFHpS	2.383	2.420	1.6	101.6
PFHxA	2.500	2.648	5.9	105.9
PFHxS	2.285	2.649	15.9	115.9
PFNA	2.500	2.845	13.8	113.8
PFNS	2.405	2.649	10.1	110.1
PFOA	2.500	2.755	10.2	110.2
PFOS	2.320	2.627	13.2	113.2

Continuing Calibration Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q713-CC711
 Lab FileID: 4Q48776.D

PFPeA	5.000	5.591	11.8	111.8
PFPeS	2.353	2.405	2.2	102.2
PFTeDA	2.500	2.618	4.7	104.7
PFTTrDA	2.500	2.795	11.8	111.8
PFUnDA	2.500	2.450	-2.0	98.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	5.794	22.6	122.6
13C3-HFPO-DA	10.000	9.275	-7.2	92.8
9C1-PF3ONS	4.675	5.918	26.6	126.6
ADONA	4.725	5.539	17.2	117.2
HFPO-DA	5.000	5.142	2.8	102.8
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.230	-10.0	90.0
5:3FTCA	62.400	68.287	9.4	109.4
7:3FTCA	62.400	70.797	13.5	113.5
d3-MeFOSA	2.500	2.411	-3.5	96.5
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.530	10.6	110.6
EtFOSE	12.500	13.973	11.8	111.8
MeFOSA	5.000	5.112	2.2	102.2
MeFOSE	12.500	13.045	4.4	104.4
PFDoDS	2.425	2.624	8.2	108.2
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.566	11.3	111.3
d7-MeFOSE	25.000	21.914	-12.3	87.7
d9-EtFOSE	25.000	21.065	-15.7	84.3
d5-EtFOSA	2.500	2.307	-7.7	92.3
NFDHA	5.000	5.576	11.5	111.5
PFMBA	5.000	5.633	12.7	112.7
PFMPA	5.000	5.552	11.0	111.0
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.656	4.6	104.6

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q713-CC711
 Lab FileID: 4Q48787.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\080923_1633_S4Q713\s4q713.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\080723_1633_S4Q711\4Q48585.d
 2:D:\MassHunter\Data\080723_1633_S4Q711\4Q48586.d
 3:D:\MassHunter\Data\080723_1633_S4Q711\4Q48587.d
 4:D:\MassHunter\Data\080723_1633_S4Q711\4Q48588.d
 5:D:\MassHunter\Data\080723_1633_S4Q711\4Q48589.d
 6:D:\MassHunter\Data\080723_1633_S4Q711\4Q48590.d
 7:D:\MassHunter\Data\080723_1633_S4Q711\4Q48591.d
 8:D:\MassHunter\Data\080723_1633_S4Q711\4Q48592.d

Data File: 4Q48787
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	7.620	# 52.4	152.4
13C2-6:2FTS	5.000	6.690	# 33.8	133.8
13C2-8:2FTS	5.000	6.881	# 37.6	137.6
13C2-PFDoDA	1.250	1.389	11.1	111.1
13C2-PFTeDA	1.250	1.269	1.5	101.5
13C3-PFBS	2.500	2.387	-4.5	95.5
13C3-PFHxS	2.500	2.424	-3.0	97.0
13C4-PFBA	10.000	10.994	9.9	109.9
13C4-PFHpA	2.500	2.572	2.9	102.9
13C5-PFHxA	2.500	2.517	0.7	100.7
13C5-PFPeA	5.000	4.530	-9.4	90.6
13C6-PFDA	1.250	1.221	-2.3	97.7
13C7-PFUnDA	1.250	1.437	15.0	115.0
13C8-FOSA	2.500	2.333	-6.7	93.3
13C8-PFOA	2.500	2.426	-3.0	97.0
13C8-PFOS	2.500	2.367	-5.3	94.7
13C9-PFNA	1.250	1.127	-9.9	90.1
4:2FTS	9.375	8.260	-11.9	88.1
6:2FTS	9.500	10.244	7.8	107.8
8:2FTS	9.600	11.860	23.5	123.5
d3-MeFOSAA	5.000	5.202	4.0	104.0
EtFOSAA	2.500	2.198	-12.1	87.9
FOSA	2.500	2.648	5.9	105.9
MeFOSAA	2.500	3.032	21.3	121.3
PFBA	10.000	10.072	0.7	100.7
PFBS	2.218	2.674	20.6	120.6
PFDA	2.500	2.863	14.5	114.5
PFDoDA	2.500	2.537	1.5	101.5
PFDS	2.413	2.525	4.6	104.6
PFHpA	2.500	2.628	5.1	105.1
PFHpS	2.383	2.496	4.8	104.8
PFHxA	2.500	2.616	4.6	104.6
PFHxS	2.285	2.676	17.1	117.1
PFNA	2.500	2.722	8.9	108.9
PFNS	2.405	2.700	12.3	112.3
PFOA	2.500	2.799	11.9	111.9
PFOS	2.320	2.651	14.3	114.3

Continuing Calibration Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q713-CC711
 Lab FileID: 4Q48787.D

PFPeA	5.000	5.667	13.3	113.3
PFPeS	2.353	2.545	8.2	108.2
PFTeDA	2.500	2.607	4.3	104.3
PFTTrDA	2.500	2.766	10.6	110.6
PFUnDA	2.500	2.420	-3.2	96.8
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	6.021	27.4	127.4
13C3-HFPO-DA	10.000	9.139	-8.6	91.4
9C1-PF3ONS	4.675	6.083	# 30.1	130.1
ADONA	4.725	5.669	20.0	120.0
HFPO-DA	5.000	5.142	2.8	102.8
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.114	-10.9	89.1
5:3FTCA	62.400	67.990	9.0	109.0
7:3FTCA	62.400	69.808	11.9	111.9
d3-MeFOSA	2.500	2.452	-1.9	98.1
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.914	18.3	118.3
EtFOSE	12.500	14.577	16.6	116.6
MeFOSA	5.000	5.120	2.4	102.4
MeFOSE	12.500	13.247	6.0	106.0
PFDoDS	2.425	2.559	5.5	105.5
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.614	12.3	112.3
d7-MeFOSE	25.000	21.788	-12.8	87.2
d9-EtFOSE	25.000	21.836	-12.7	87.3
d5-EtFOSA	2.500	2.273	-9.1	90.9
NFDHA	5.000	4.993	-0.1	99.9
PFMBA	5.000	5.819	16.4	116.4
PFMPA	5.000	5.701	14.0	114.0
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.759	7.0	107.0

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q713-ECC711
 Lab FileID: 4Q48799.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\080923_1633_S4Q713\s4q713.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\080723_1633_S4Q711\4Q48585.d
 2:D:\MassHunter\Data\080723_1633_S4Q711\4Q48586.d
 3:D:\MassHunter\Data\080723_1633_S4Q711\4Q48587.d
 4:D:\MassHunter\Data\080723_1633_S4Q711\4Q48588.d
 5:D:\MassHunter\Data\080723_1633_S4Q711\4Q48589.d
 6:D:\MassHunter\Data\080723_1633_S4Q711\4Q48590.d
 7:D:\MassHunter\Data\080723_1633_S4Q711\4Q48591.d
 8:D:\MassHunter\Data\080723_1633_S4Q711\4Q48592.d

Data File: 4Q48799
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	6.645	# 32.9	132.9
13C2-6:2FTS	5.000	6.527	# 30.5	130.5
13C2-8:2FTS	5.000	6.944	# 38.9	138.9
13C2-PFDoDA	1.250	1.311	4.9	104.9
13C2-PFTeDA	1.250	1.182	-5.5	94.5
13C3-PFBS	2.500	2.230	-10.8	89.2
13C3-PFHxS	2.500	2.329	-6.8	93.2
13C4-PFBA	10.000	11.067	10.7	110.7
13C4-PFHpA	2.500	2.564	2.6	102.6
13C5-PFHxA	2.500	2.554	2.2	102.2
13C5-PFPeA	5.000	4.279	-14.4	85.6
13C6-PFDA	1.250	1.259	0.7	100.7
13C7-PFUnDA	1.250	1.385	10.8	110.8
13C8-FOSA	2.500	2.112	-15.5	84.5
13C8-PFOA	2.500	2.451	-1.9	98.1
13C8-PFOS	2.500	2.272	-9.1	90.9
13C9-PFNA	1.250	1.156	-7.5	92.5
4:2FTS	9.375	9.332	-0.5	99.5
6:2FTS	9.500	10.351	9.0	109.0
8:2FTS	9.600	10.762	12.1	112.1
d3-MeFOSAA	5.000	4.961	-0.8	99.2
EtFOSAA	2.500	2.341	-6.4	93.6
FOSA	2.500	2.723	8.9	108.9
MeFOSAA	2.500	2.898	15.9	115.9
PFBA	10.000	10.207	2.1	102.1
PFBS	2.218	2.853	28.6	128.6
PFDA	2.500	2.937	17.5	117.5
PFDoDA	2.500	2.610	4.4	104.4
PFDS	2.413	2.564	6.2	106.2
PFHpA	2.500	2.564	2.5	102.5
PFHpS	2.383	2.372	-0.5	99.5
PFHxA	2.500	2.491	-0.4	99.6
PFHxS	2.285	2.680	17.3	117.3
PFNA	2.500	2.634	5.4	105.4
PFNS	2.405	2.763	14.9	114.9
PFOA	2.500	2.814	12.6	112.6
PFOS	2.320	2.552	10.0	110.0

Continuing Calibration Summary

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q713-ECC711
 Lab FileID: 4Q48799.D

PFPeA	5.000	5.847	16.9	116.9
PFPeS	2.353	2.439	3.6	103.6
PFTeDA	2.500	2.777	11.1	111.1
PFTTrDA	2.500	2.880	15.2	115.2
PFUnDA	2.500	2.612	4.5	104.5
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	5.933	25.6	125.6
13C3-HFPO-DA	10.000	8.980	-10.2	89.8
9C1-PF3ONS	4.675	5.906	26.3	126.3
ADONA	4.725	5.719	21.0	121.0
HFPO-DA	5.000	5.237	4.7	104.7
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	10.953	-12.2	87.8
5:3FTCA	62.400	66.241	6.2	106.2
7:3FTCA	62.400	65.569	5.1	105.1
d3-MeFOSA	2.500	2.317	-7.3	92.7
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.903	18.1	118.1
EtFOSE	12.500	14.406	15.2	115.2
MeFOSA	5.000	5.145	2.9	102.9
MeFOSE	12.500	12.854	2.8	102.8
PFDoDS	2.425	2.512	3.6	103.6
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.047	0.9	100.9
d7-MeFOSE	25.000	20.475	-18.1	81.9
d9-EtFOSE	25.000	20.200	-19.2	80.8
d5-EtFOSA	2.500	2.147	-14.1	85.9
NFDHA	5.000	5.330	6.6	106.6
PFMBA	5.000	6.020	20.4	120.4
PFMPA	5.000	5.731	14.6	114.6
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.486	0.8	100.8

CC Criteria: +/- 30%

Run Sequence Report

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q711	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
S4Q711-RT	4Q48582.D	08/07/23 15:28	n/a	Retention Time Marker
S4Q711-RT	4Q48583.D	08/07/23 15:56	n/a	Retention Time Marker
S4Q711-IC711	4Q48584.D	08/07/23 16:11	n/a	Mass Calibration Verification
S4Q711-IC711	4Q48585.D	08/07/23 16:26	n/a	Initial cal 1
S4Q711-IC711	4Q48586.D	08/07/23 16:41	n/a	Initial cal 2
S4Q711-IC711	4Q48587.D	08/07/23 16:59	n/a	Initial cal 3
S4Q711-ICC711	4Q48588.D	08/07/23 17:14	n/a	Initial cal 4
S4Q711-IC711	4Q48589.D	08/07/23 17:28	n/a	Initial cal 5
S4Q711-IC711	4Q48590.D	08/07/23 17:43	n/a	Initial cal 6
S4Q711-IC711	4Q48591.D	08/07/23 17:58	n/a	Initial cal 7
S4Q711-IC711	4Q48592.D	08/07/23 18:13	n/a	Initial cal 8
S4Q711-IBLK	4Q48593.D	08/07/23 18:27	n/a	Instrument Blank
S4Q711-IBLK	4Q48593.D	08/07/23 18:27	n/a	Instrument Blank
S4Q711-ICV711	4Q48594.D	08/07/23 18:42	n/a	Initial cal verification 4
S4Q711-ICV711	4Q48595.D	08/07/23 18:57	n/a	Initial cal verification 20
S4Q711-CC711	4Q48596.D	08/07/23 19:12	n/a	Continuing cal 4
S4Q711-CC711	4Q48597.D	08/07/23 19:26	n/a	Continuing cal 1.0LL
ZZZZZZ	4Q48598.D	08/07/23 19:41	OP98117	(unrelated sample)
OP98225-BS	4Q48599.D	08/07/23 19:56	OP98225	Blank Spike
OP98225-LLBS	4Q48600.D	08/07/23 20:11	OP98225	Blank Spike
OP98225-MB	4Q48601.D	08/07/23 20:25	OP98225	Method Blank
ZZZZZZ	4Q48602.D	08/07/23 20:40	OP98225	(unrelated sample)
ZZZZZZ	4Q48604.D	08/07/23 21:10	OP98225	(unrelated sample)
ZZZZZZ	4Q48605.D	08/07/23 21:24	OP98161	(unrelated sample)
S4Q711-CC711	4Q48606.D	08/07/23 21:39	n/a	Continuing cal 4
S4Q711-ICCB	4Q48607.D	08/07/23 21:54	n/a	Continuing Calibration Blank
S4Q711-ICCB	4Q48607.D	08/07/23 21:54	n/a	Continuing Calibration Blank
ZZZZZZ	4Q48608.D	08/07/23 22:09	OP98118	(unrelated sample)
ZZZZZZ	4Q48609.D	08/07/23 22:23	OP98118	(unrelated sample)
ZZZZZZ	4Q48610.D	08/07/23 22:38	OP98119	(unrelated sample)
ZZZZZZ	4Q48611.D	08/07/23 22:53	OP98119	(unrelated sample)
ZZZZZZ	4Q48612.D	08/07/23 23:08	OP98119	(unrelated sample)
FC7868-1	4Q48613.D	08/07/23 23:22	OP98161	(used for QC only; not part of job FC8440)
OP98161-MS	4Q48614.D	08/07/23 23:37	OP98161	Matrix Spike
OP98161-MSD	4Q48615.D	08/07/23 23:52	OP98161	Matrix Spike Duplicate
S4Q711-CC711	4Q48616.D	08/08/23 00:07	n/a	Continuing cal 4
S4Q711-ICCB	4Q48617.D	08/08/23 00:21	n/a	Continuing Calibration Blank
S4Q711-ICCB	4Q48617.D	08/08/23 00:21	n/a	Continuing Calibration Blank
ZZZZZZ	4Q48618.D	08/08/23 00:36	OP98161	(unrelated sample)
ZZZZZZ	4Q48619.D	08/08/23 00:51	OP98161	(unrelated sample)
ZZZZZZ	4Q48620.D	08/08/23 01:06	OP98161	(unrelated sample)
ZZZZZZ	4Q48621.D	08/08/23 01:20	OP98161	(unrelated sample)
ZZZZZZ	4Q48622.D	08/08/23 01:35	OP98161	(unrelated sample)
ZZZZZZ	4Q48623.D	08/08/23 01:50	OP98161	(unrelated sample)
ZZZZZZ	4Q48624.D	08/08/23 02:05	OP98161	(unrelated sample)
ZZZZZZ	4Q48625.D	08/08/23 02:19	OP98161	(unrelated sample)

Run Sequence Report

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q711	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
ZZZZZZ	4Q48626.D	08/08/23 02:34	OP98161	(unrelated sample)
ZZZZZZ	4Q48627.D	08/08/23 02:49	OP98161	(unrelated sample)
S4Q711-CC711	4Q48628.D	08/08/23 03:04	n/a	Continuing cal 4
S4Q711-ICCB	4Q48629.D	08/08/23 03:18	n/a	Continuing Calibration Blank
S4Q711-ICCB	4Q48629.D	08/08/23 03:18	n/a	Continuing Calibration Blank
ZZZZZZ	4Q48630.D	08/08/23 03:33	OP98161	(unrelated sample)
ZZZZZZ	4Q48632.D	08/08/23 04:03	OP98161	(unrelated sample)
ZZZZZZ	4Q48634.D	08/08/23 04:32	OP98161	(unrelated sample)
ZZZZZZ	4Q48635.D	08/08/23 04:47	OP98161	(unrelated sample)
ZZZZZZ	4Q48637.D	08/08/23 05:16	OP98118	(unrelated sample)
FC7482-3	4Q48638.D	08/08/23 05:31	OP98118	(used for QC only; not part of job FC8440)
OP98118-MS	4Q48639.D	08/08/23 05:46	OP98118	Matrix Spike
S4Q711-CC711	4Q48640.D	08/08/23 06:01	n/a	Continuing cal 4
S4Q711-ICCB	4Q48641.D	08/08/23 06:15	n/a	Continuing Calibration Blank
S4Q711-ICCB	4Q48641.D	08/08/23 06:15	n/a	Continuing Calibration Blank
ZZZZZZ	4Q48642.D	08/08/23 06:30	OP98118	(unrelated sample)
ZZZZZZ	4Q48643.D	08/08/23 06:45	OP98118	(unrelated sample)
FC7599-1	4Q48644.D	08/08/23 07:00	OP98118	(used for QC only; not part of job FC8440)
OP98118-DUP	4Q48645.D	08/08/23 07:14	OP98118	Duplicate
ZZZZZZ	4Q48646.D	08/08/23 07:29	OP98119	(unrelated sample)
ZZZZZZ	4Q48647.D	08/08/23 07:44	OP98119	(unrelated sample)
FC7615-1	4Q48648.D	08/08/23 07:59	OP98119	(used for QC only; not part of job FC8440)
OP98119-MS	4Q48649.D	08/08/23 08:13	OP98119	Matrix Spike
OP98119-MSD	4Q48650.D	08/08/23 08:28	OP98119	Matrix Spike Duplicate
S4Q711-CC711	4Q48651.D	08/08/23 08:43	n/a	Continuing cal 4
S4Q711-ICCB	4Q48652.D	08/08/23 08:59	n/a	Continuing Calibration Blank
ZZZZZZ	4Q48654.D	08/08/23 09:29	OP98156	(unrelated sample)
ZZZZZZ	4Q48655.D	08/08/23 09:44	OP98156	(unrelated sample)
ZZZZZZ	4Q48656.D	08/08/23 09:59	OP98124	(unrelated sample)
ZZZZZZ	4Q48657.D	08/08/23 10:14	OP98225	(unrelated sample)
ZZZZZZ	4Q48658.D	08/08/23 10:29	OP98225	(unrelated sample)
ZZZZZZ	4Q48661.D	08/08/23 11:14	OP98225	(unrelated sample)
ZZZZZZ	4Q48662.D	08/08/23 11:29	OP98225	(unrelated sample)
S4Q711-CC711	4Q48663.D	08/08/23 11:43	n/a	Continuing cal 4
S4Q711-ICCB	4Q48664.D	08/08/23 11:58	n/a	Continuing Calibration Blank
ZZZZZZ	4Q48665.D	08/08/23 12:13	OP98119	(unrelated sample)
ZZZZZZ	4Q48666.D	08/08/23 12:28	OP98119	(unrelated sample)
S4Q711-ECC711	4Q48667.D	08/08/23 12:42	n/a	Ending cal 4
S4Q711-ICCB	4Q48668.D	08/08/23 12:57	n/a	Continuing Calibration Blank

6-10-1

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Run Sequence Report

Job Number: FC8440
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q713	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q		
Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q713-RT	4Q48760.D	08/09/23 14:15	n/a	Retention Time Marker
S4Q713-RT	4Q48761.D	08/09/23 14:31	n/a	Retention Time Marker
S4Q713-IBLK	4Q48763.D	08/09/23 15:01	n/a	Instrument Blank
S4Q713-IBLK	4Q48763.D	08/09/23 15:01	n/a	Instrument Blank
S4Q713-CC711	4Q48764.D	08/09/23 15:16	n/a	Continuing cal 4
S4Q713-CC711	4Q48765.D	08/09/23 15:30	n/a	Continuing cal 1.0LL
OP98160-BS	4Q48766.D	08/09/23 15:45	OP98160	Blank Spike
OP98160-LLBS	4Q48767.D	08/09/23 16:00	OP98160	Blank Spike
OP98160-MB	4Q48768.D	08/09/23 16:15	OP98160	Method Blank
ZZZZZZ	4Q48769.D	08/09/23 16:35	OP98160	(unrelated sample)
ZZZZZZ	4Q48770.D	08/09/23 16:50	OP98160	(unrelated sample)
ZZZZZZ	4Q48771.D	08/09/23 17:05	OP98160	(unrelated sample)
FC8220-6	4Q48772.D	08/09/23 17:20	OP98160	(used for QC only; not part of job FC8440)
OP98160-MS	4Q48773.D	08/09/23 17:35	OP98160	Matrix Spike
OP98160-MSD	4Q48774.D	08/09/23 17:49	OP98160	Matrix Spike Duplicate
ZZZZZZ	4Q48775.D	08/09/23 18:04	OP98160	(unrelated sample)
S4Q713-CC711	4Q48776.D	08/09/23 18:19	n/a	Continuing cal 4
S4Q713-ICCB	4Q48777.D	08/09/23 18:33	n/a	Continuing Calibration Blank
S4Q713-ICCB	4Q48777.D	08/09/23 18:33	n/a	Continuing Calibration Blank
ZZZZZZ	4Q48778.D	08/09/23 18:48	OP98156	(unrelated sample)
OP98297-BS	4Q48779.D	08/09/23 19:03	OP98297	Blank Spike
OP98297-LLBS	4Q48780.D	08/09/23 19:18	OP98297	Blank Spike
OP98297-MB	4Q48781.D	08/09/23 19:33	OP98297	Method Blank
ZZZZZZ	4Q48782.D	08/09/23 19:47	OP98297	(unrelated sample)
ZZZZZZ	4Q48783.D	08/09/23 20:02	OP98297	(unrelated sample)
FC8440-1	4Q48784.D	08/09/23 20:17	OP98297	AF-RHMW225401-WGN01B-2308
ZZZZZZ	4Q48785.D	08/09/23 20:31	OP98297	(unrelated sample)
ZZZZZZ	4Q48786.D	08/09/23 20:46	OP98297	(unrelated sample)
S4Q713-CC711	4Q48787.D	08/09/23 21:01	n/a	Continuing cal 4
S4Q713-ICCB	4Q48788.D	08/09/23 21:16	n/a	Continuing Calibration Blank
FC8439-3	4Q48789.D	08/09/23 21:30	OP98297	(used for QC only; not part of job FC8440)
OP98297-MS	4Q48790.D	08/09/23 21:45	OP98297	Matrix Spike
FC8439-4	4Q48791.D	08/09/23 22:00	OP98297	(used for QC only; not part of job FC8440)
OP98297-DUP	4Q48792.D	08/09/23 22:15	OP98297	Duplicate
ZZZZZZ	4Q48793.D	08/09/23 22:29	OP98297	(unrelated sample)
ZZZZZZ	4Q48794.D	08/09/23 22:44	OP98297	(unrelated sample)
OP98277-BS	4Q48795.D	08/09/23 22:59	OP98277	Blank Spike
OP98277-LLBS	4Q48796.D	08/09/23 23:14	OP98277	Blank Spike
OP98277-MB	4Q48797.D	08/09/23 23:28	OP98277	Method Blank
ZZZZZZ	4Q48798.D	08/09/23 23:43	OP98277	(unrelated sample)
S4Q713-ECC711	4Q48799.D	08/09/23 23:58	n/a	Ending cal 4
S4Q713-ICCB	4Q48800.D	08/10/23 00:13	n/a	Continuing Calibration Blank

MS Semi-volatiles

Raw Data

Manual Integrations
APPROVED
 (compounds with "m" flag)
 Natasha Gumtie
 08/14/23 16:34

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48784.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/9/2023 8:17:14 PM
 Sample Name : fc8440-1
 Vial : P4-D6
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q713.batch.bin
 Sample Information : OP98297,S4Q713,530,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	105633	10.00 µg/L	0.012
M5-PFPeA	4.425	268.3 -> 223.0	60314	5.00 µg/L	0.012
M5-PFHxA	5.622	318.0 -> 273.0	40288	2.50 µg/L	0.012
M4-PFHpA	6.580	367.1 -> 322.0	28967	2.50 µg/L	0.025
M8-PFOA	7.251	421.1 -> 376.0	46291	2.50 µg/L	0.025
M9-PFNA	7.810	472.1 -> 427.0	19937	1.25 µg/L	0.025
M6-PFDA	8.303	519.1 -> 474.1	14921	1.25 µg/L	0.025
M7-PFUnDA	8.773	570.0 -> 525.1	17016	1.25 µg/L	0.037
M2-PFDoDA	9.205	615.1 -> 570.0	17760	1.25 µg/L	0.025
M2-PFTeDA	9.974	715.2 -> 670.0	12577	1.25 µg/L	0.025
M8-FOSA	9.919	506.1 -> 77.8	10918	2.50 µg/L	0.037
M3-PFBS	5.502	302.1 -> 79.9	9802	2.50 µg/L	0.013
M3-PFHxS	7.342	402.1 -> 79.9	6530	2.50 µg/L	0.025
M8-PFOS	8.442	507.1 -> 79.9	8755	2.50 µg/L	0.025
M2-4:2FTS	5.309	329.1 -> 80.9	802	5.00 µg/L	0.012
M2-6:2FTS	7.023	429.1 -> 80.9	1582	5.00 µg/L	0.025
M2-8:2FTS	8.092	529.1 -> 80.9	2418	5.00 µg/L	0.026
M3-MeFOSAA	8.373	573.2 -> 419.0	17328	5.00 µg/L	0.025
M3-HFPO-DA	6.002	286.9 -> 168.9	30527	10.00 µg/L	0.025
M5-EtFOSAA	8.584	589.2 -> 419.0	14174	5.00 µg/L	0.037
M7-MeFOSE	11.084	623.2 -> 58.9	46342	25.00 µg/L	0.025
M9-EtFOSE	11.356	639.2 -> 58.9	71220	25.00 µg/L	0.025
M5-EtFOSA	11.447	531.1 -> 219.0	8269	2.50 µg/L	0.025
M3-MeFOSA	11.189	515.0 -> 219.0	7435	2.50 µg/L	0.037
13C4-PFOS	8.443	502.8 -> 79.9	7398	2.50 µg/L	0.025
13C3-PFBA	2.928	216.0 -> 172.0	46340	5.00 µg/L	0.025
18O2-PFHxS	7.341	403.0 -> 83.9	3875	2.50 µg/L	0.025
13C4-PFOA	7.251	417.1 -> 372.0	44044	2.50 µg/L	0.025
13C2-PFDA	8.304	515.1 -> 470.1	13495	1.25 µg/L	0.025
13C5-PFNA	7.810	468.0 -> 423.0	19196	1.25 µg/L	0.025
13C2-PFHxA	5.635	315.1 -> 270.0	28830	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.309	329.1 -> 80.9	802	8.28 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 165.6%		
13C2-6:2FTS	7.023	429.1 -> 80.9	1582	8.55 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 171.1%		
13C2-8:2FTS	8.092	529.1 -> 80.9	2418	8.61 µg/L	0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 172.2%		
13C2-PFDoDA	9.205	615.1 -> 570.0	17760	1.54 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 122.9%		
13C2-PFTeDA	9.974	715.2 -> 670.0	12577	1.35 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.4%		
13C3-PFBS	5.502	302.1 -> 79.9	9802	2.97 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 118.9%		
13C3-PFHxS	7.342	402.1 -> 79.9	6530	3.04 µg/L	0.025

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 = 121.8%	
13C4-PFBA	2.924	216.8 -> 171.9	105633	13.34 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 133.4%	
13C4-PFHpA	6.580	367.1 -> 322.0	28967	3.37 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 134.9%	
13C5-PFHxA	5.622	318.0 -> 273.0	40288	3.33 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 133.4%	
13C5-PFPeA	4.425	268.3 -> 223.0	60314	5.99 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 119.7%	
13C6-PFDA	8.303	519.1 -> 474.1	14921	1.60 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 127.8%	
13C7-PFUnDA	8.773	570.0 -> 525.1	17016	1.62 µg/L	0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 129.4%	
13C8-FOSA	9.919	506.1 -> 77.8	10918	2.37 µg/L	0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.6%	
13C8-PFOA	7.251	421.1 -> 376.0	46291	3.19 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 127.7%	
13C8-PFOS	8.442	507.1 -> 79.9	8755	2.95 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 117.8%	
13C9-PFNA	7.810	472.1 -> 427.0	19937	1.37 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.7%	
d3-MeFOSAA	8.373	573.2 -> 419.0	17328	6.31 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 126.2%	
13C3-HFPO-DA	6.002	286.9 -> 168.9	30527	11.11 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 111.1%	
d3-MeFOSA	11.189	515.0 -> 219.0	7435	2.74 µg/L	0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.4%	
d5-EtFOSAA	8.584	589.2 -> 419.0	14174	6.28 µg/L	0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 125.6%	
d7-MeFOSE	11.084	623.2 -> 58.9	46342	21.33 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 85.3%	
d9-EtFOSE	11.356	639.2 -> 58.9	71220	23.37 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 93.5%	
d5-EtFOSA	11.447	531.1 -> 219.0	8269	2.64 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.7%	

Target Compounds

Compound	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	5.515	298.7 -> 79.9	175	0.07 µg/L	94
		298.7 -> 98.8	59		
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.581	599.0 -> 98.8				
		363.1 -> 319.0	970	0.07 µg/L	m	90
PFHpS	-	363.1 -> 169.0	135			
		449.0 -> 79.9	-	N.D.		
PFHxA	5.625	449.0 -> 98.9				
		313.0 -> 269.0	868	0.07 µg/L	#	91
PFHxS	7.342	313.0 -> 118.9	54			
		398.7 -> 79.9	282	0.15 µg/L	m	88
PFNA	-	398.7 -> 98.9	125			
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	7.264	548.8 -> 98.9				
		413.0 -> 369.0	2602	0.14 µg/L	m	88
PFOS	-	413.0 -> 169.0	362			
		498.9 -> 79.9	-	N.D.		
PFPeA	4.427	498.9 -> 98.8				
		263.0 -> 219.0	1499	0.14 µg/L		100
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				
PFEESA	-					

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

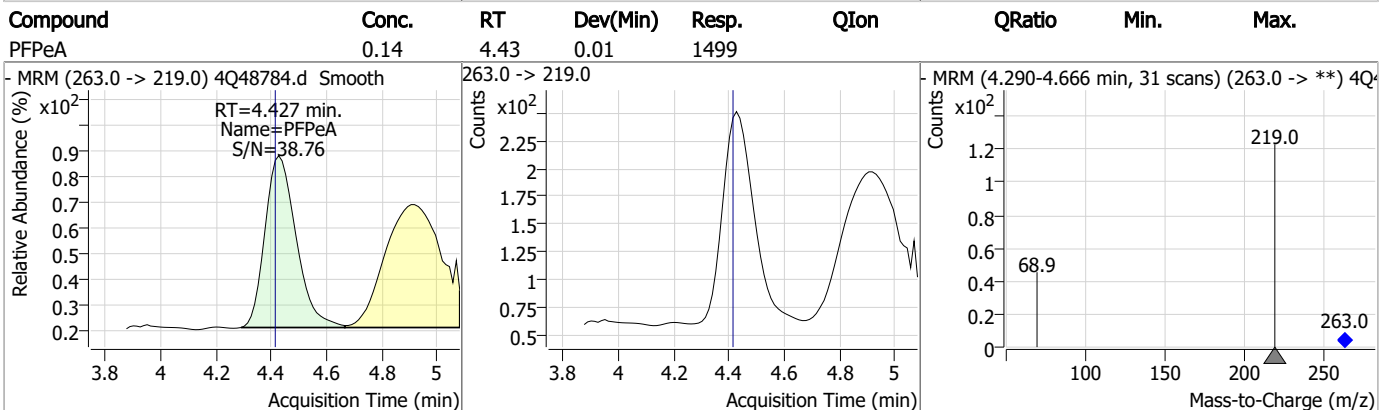
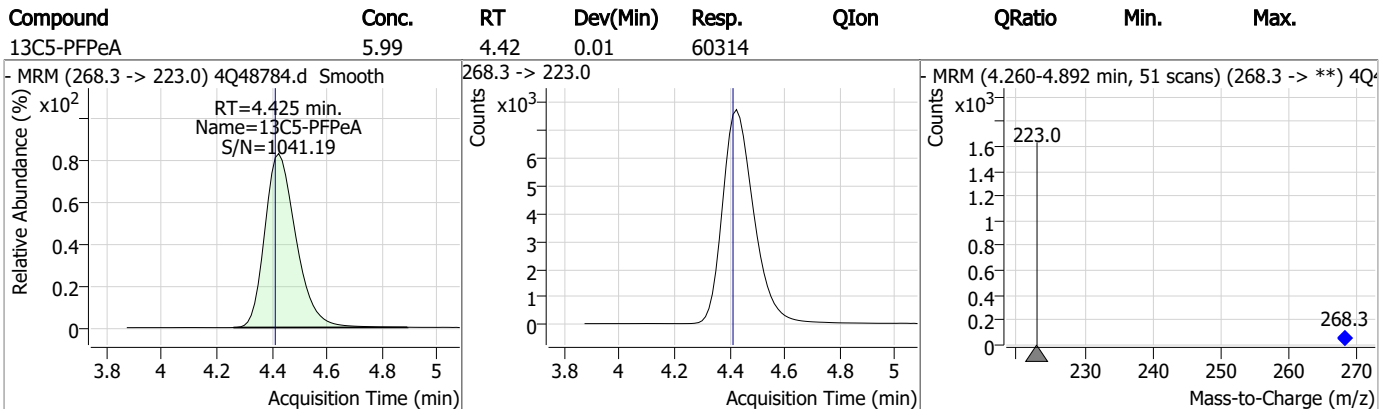
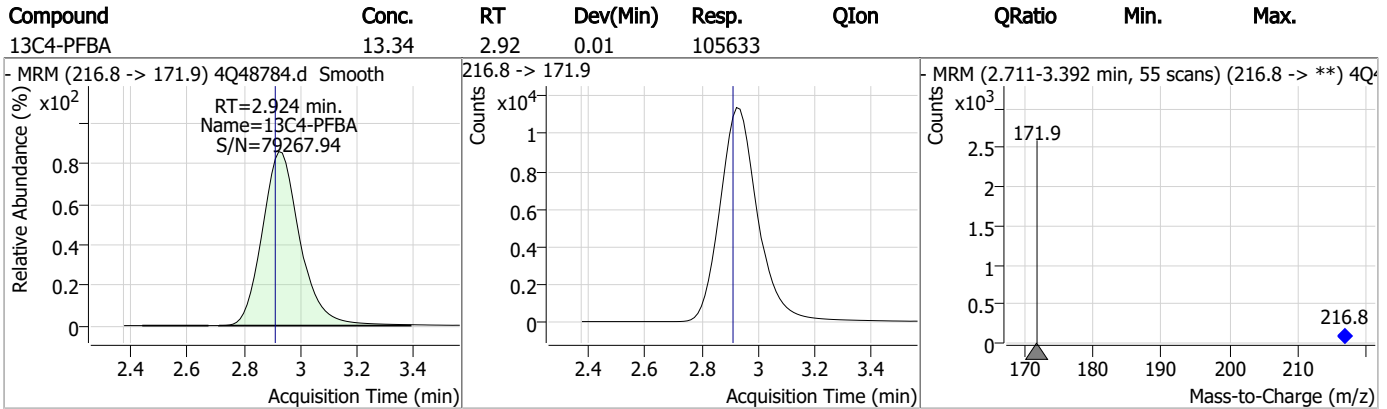
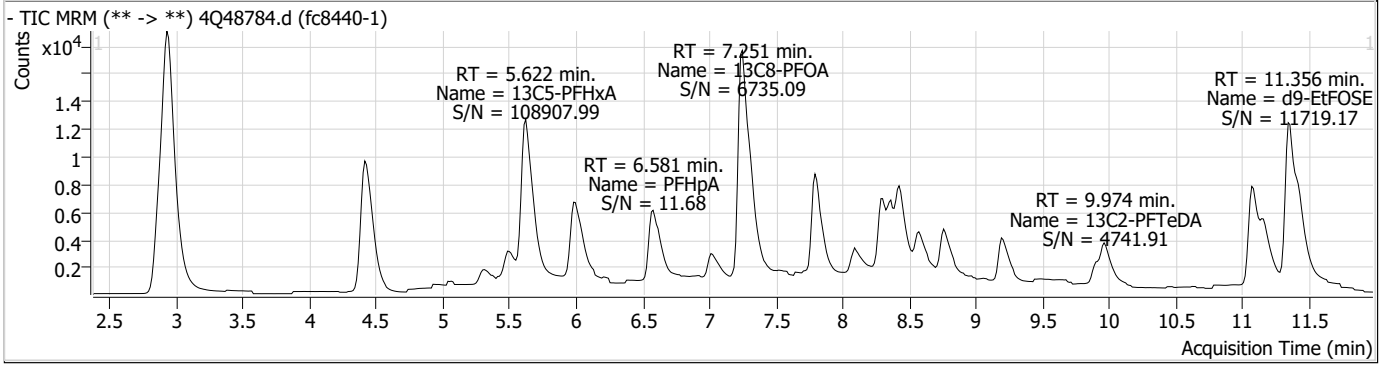
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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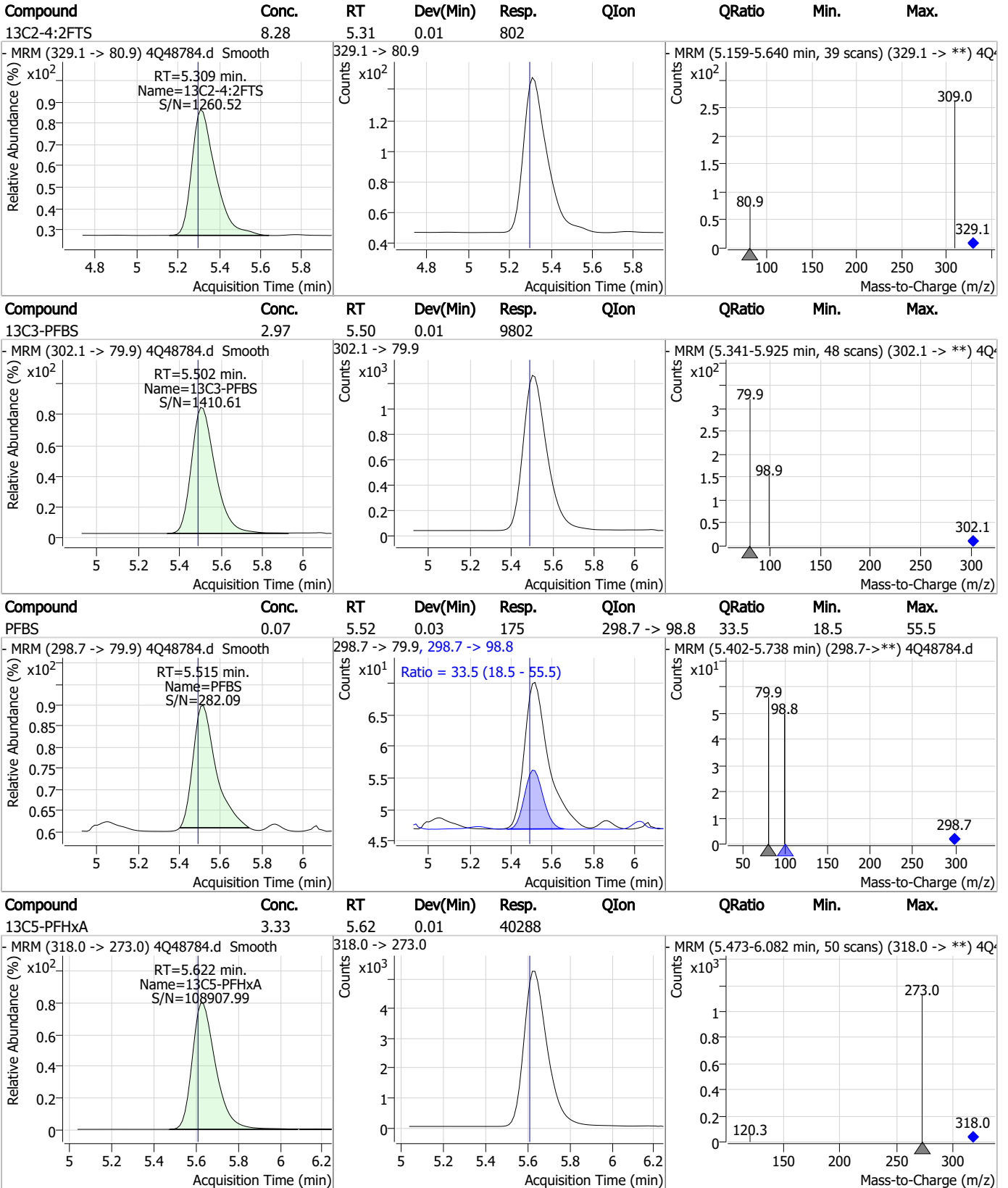
7.1.1

7

Perfluorinated Compounds by LC/MS/MS

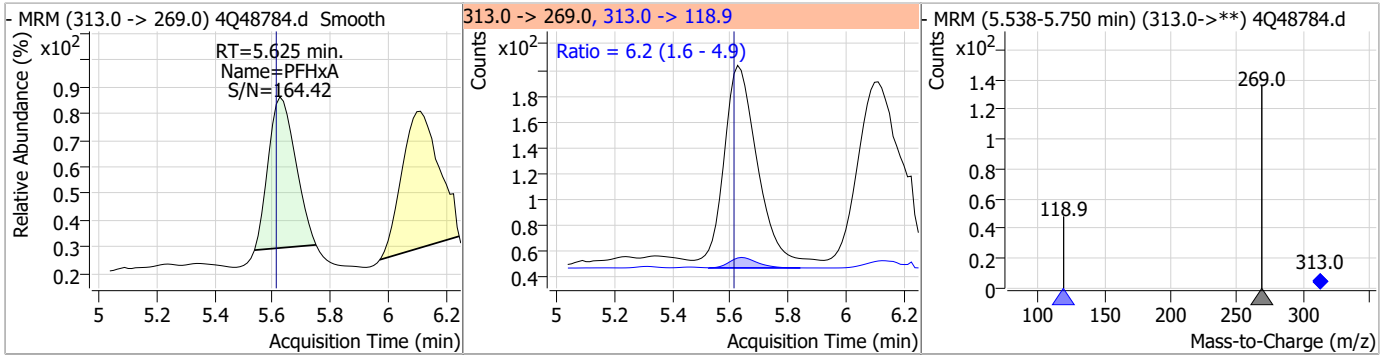


Perfluorinated Compounds by LC/MS/MS

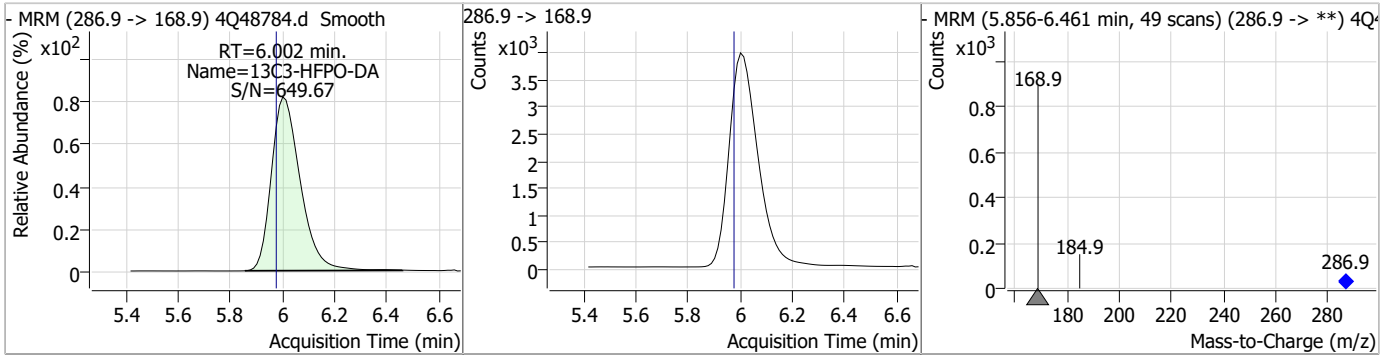


Perfluorinated Compounds by LC/MS/MS

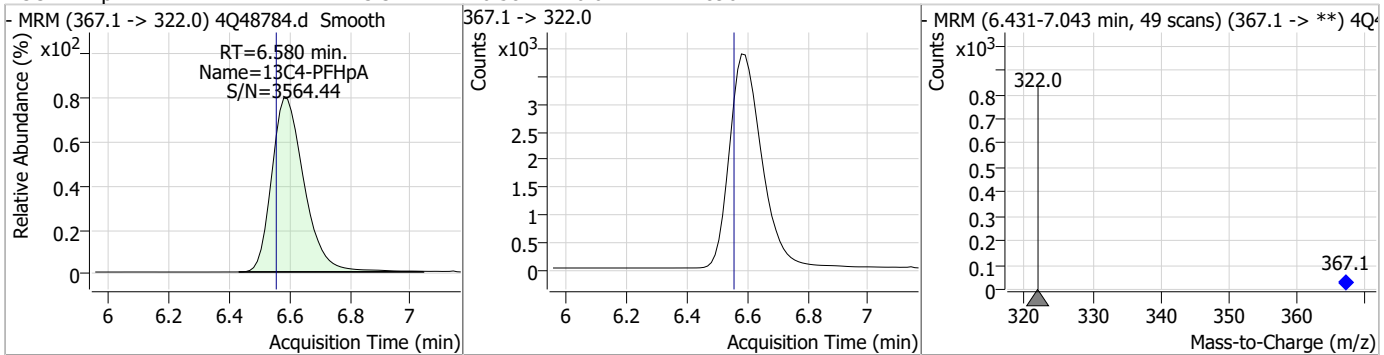
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.07	5.62	0.01	868	313.0 -> 118.9	6.2	1.6	4.9



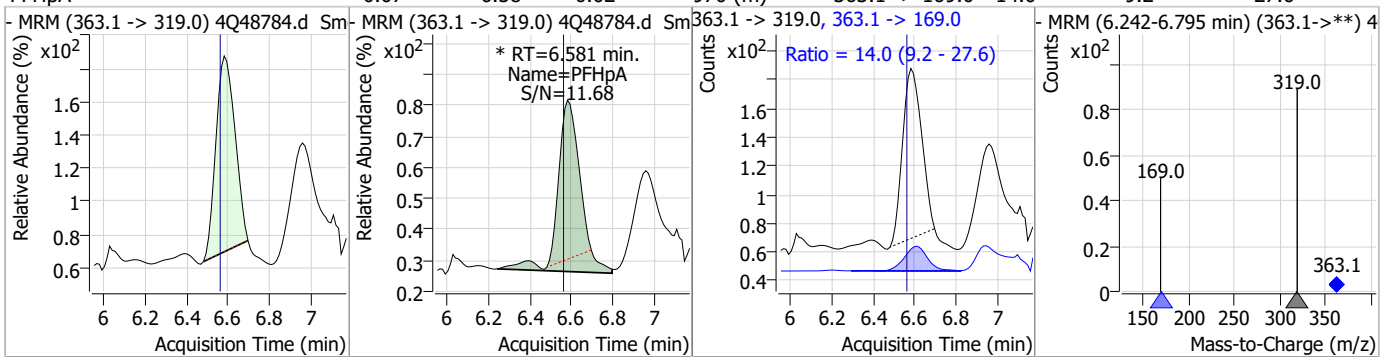
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	11.11	6.00	0.02	30527				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	3.37	6.58	0.02	28967				

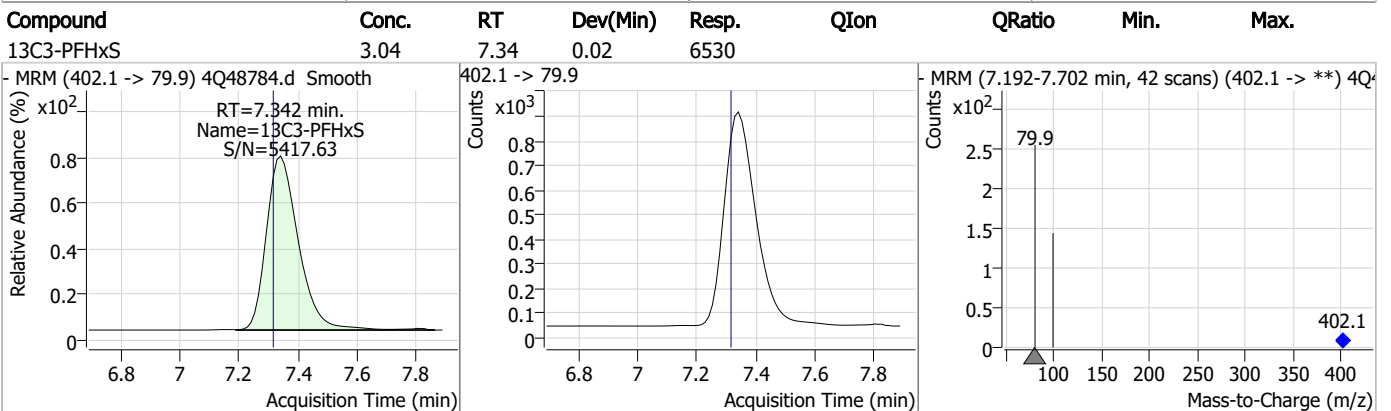
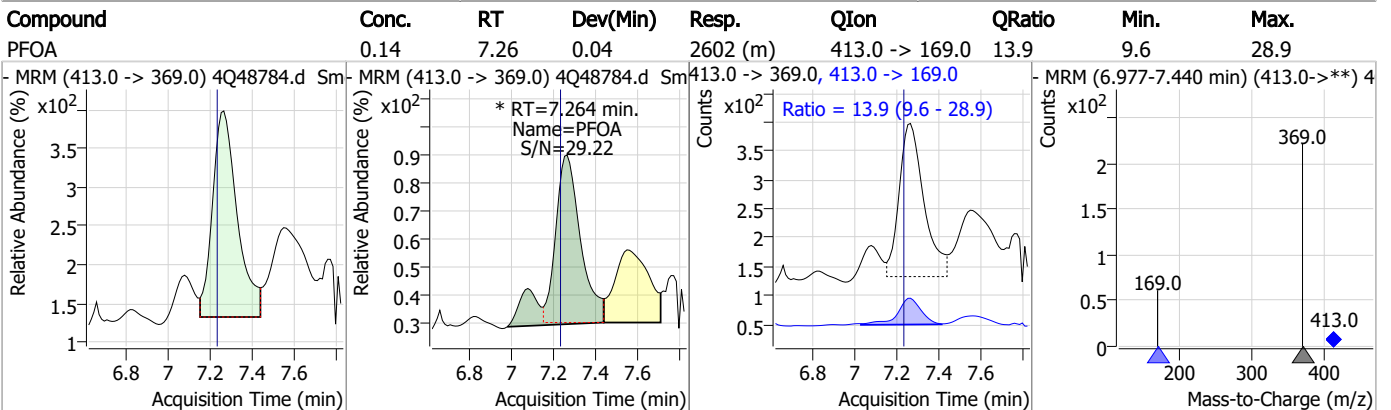
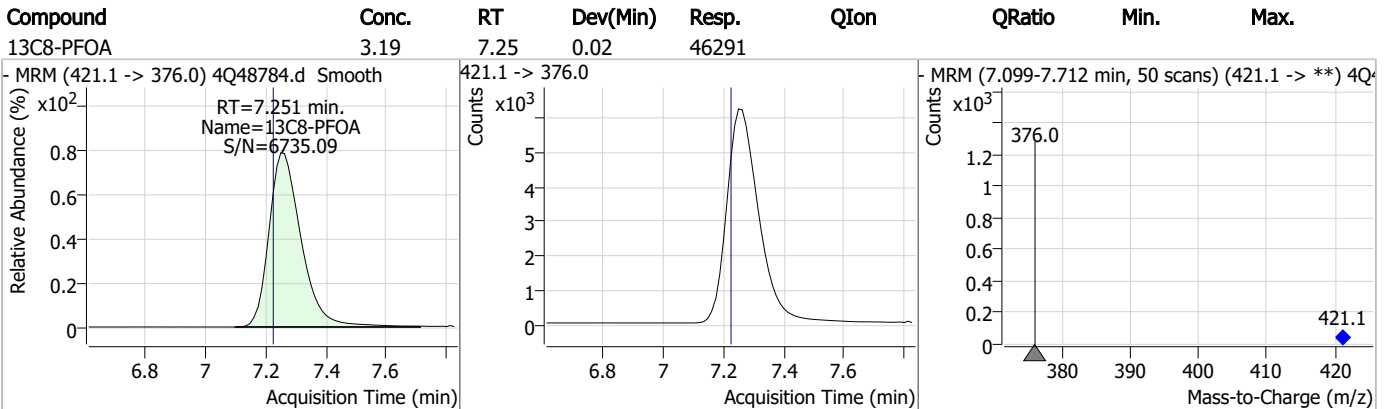
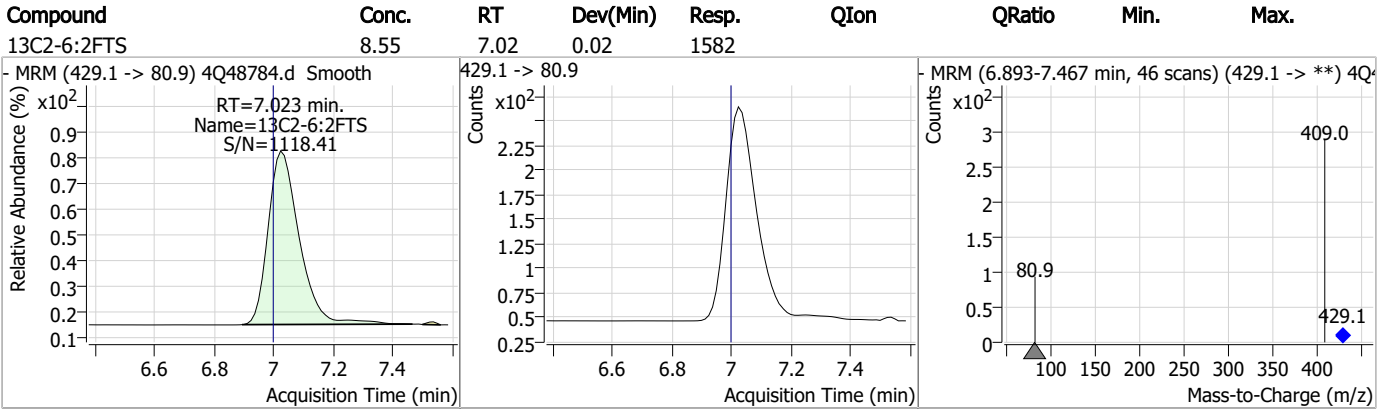


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.07	6.58	0.02	970 (m)	363.1 -> 169.0	14.0	9.2	27.6

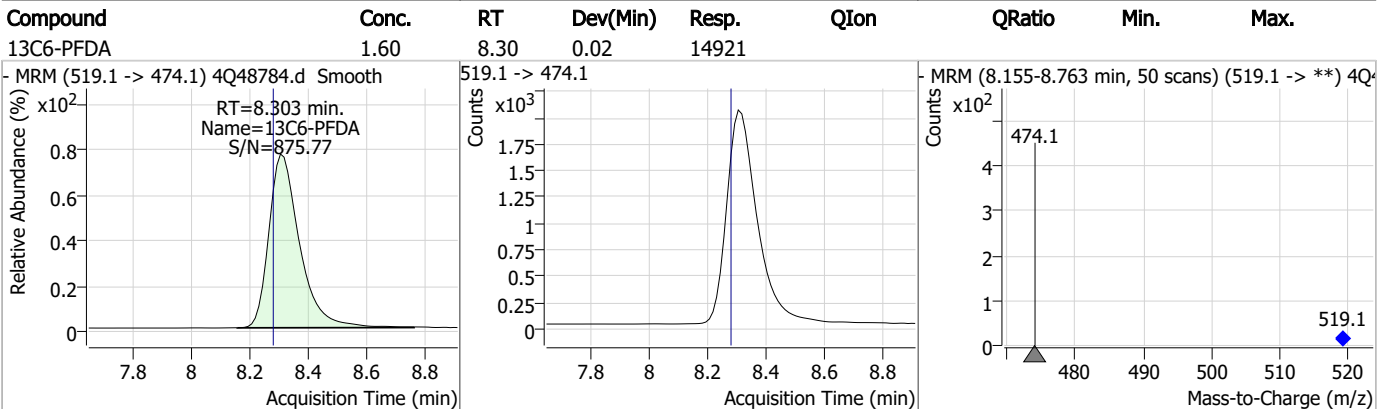
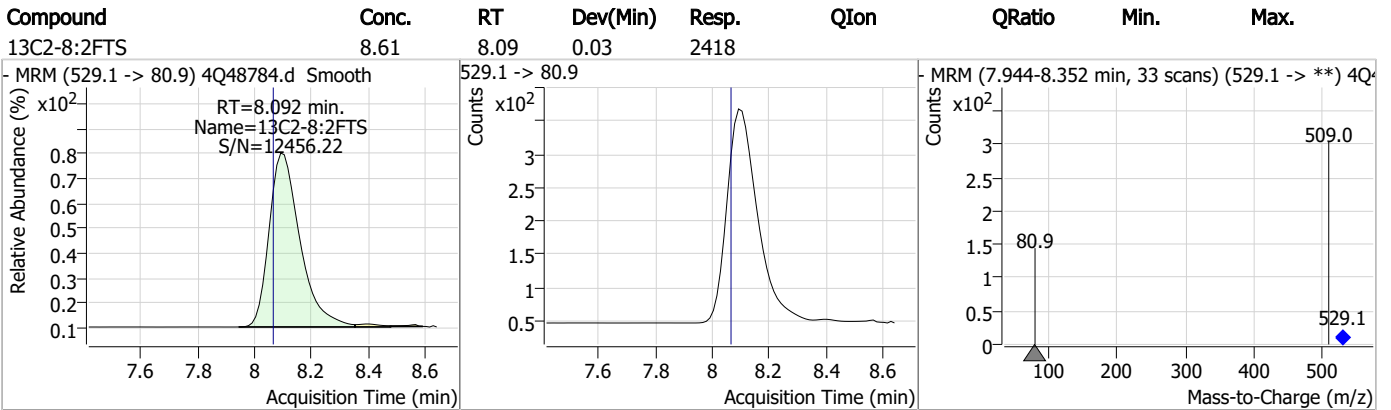
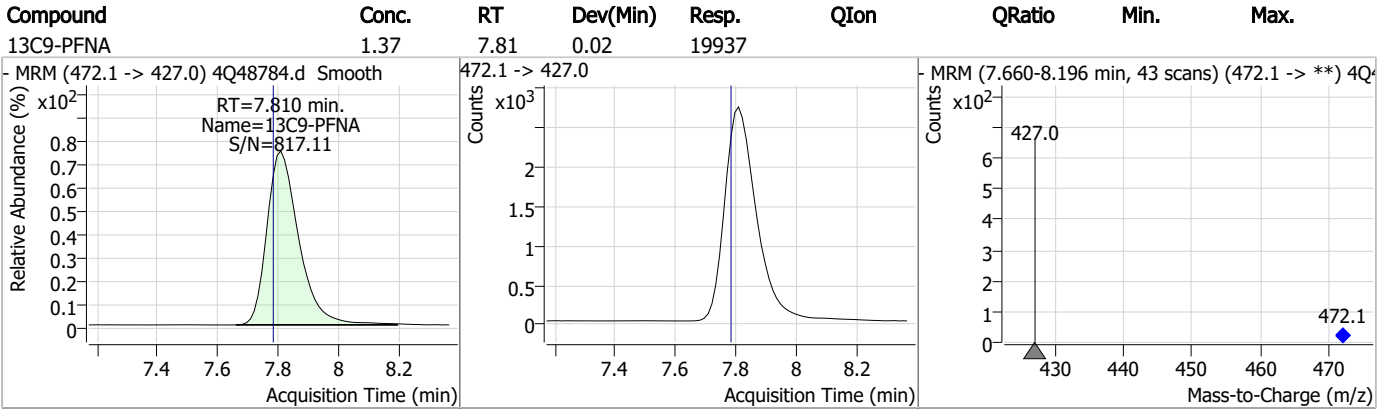
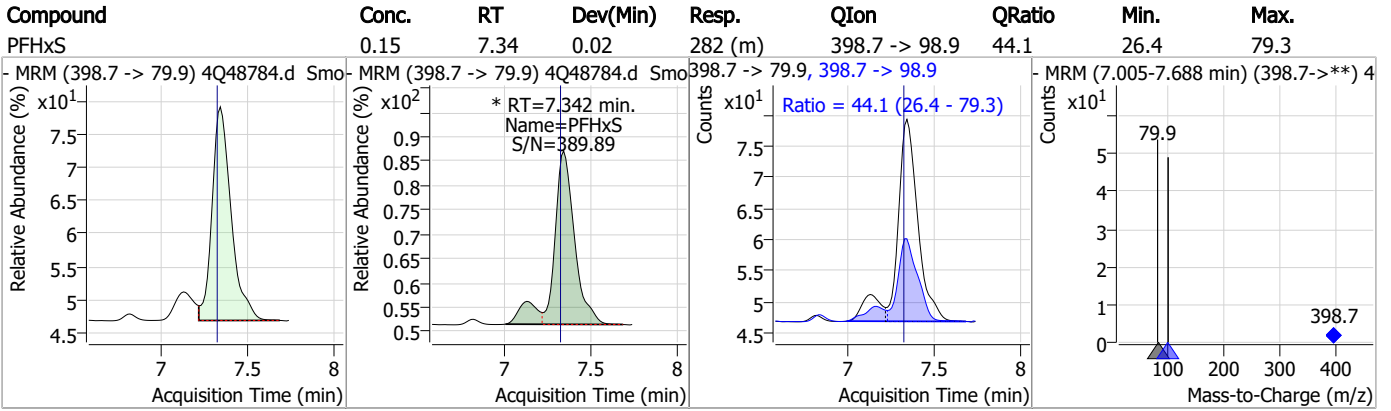


7.1.1
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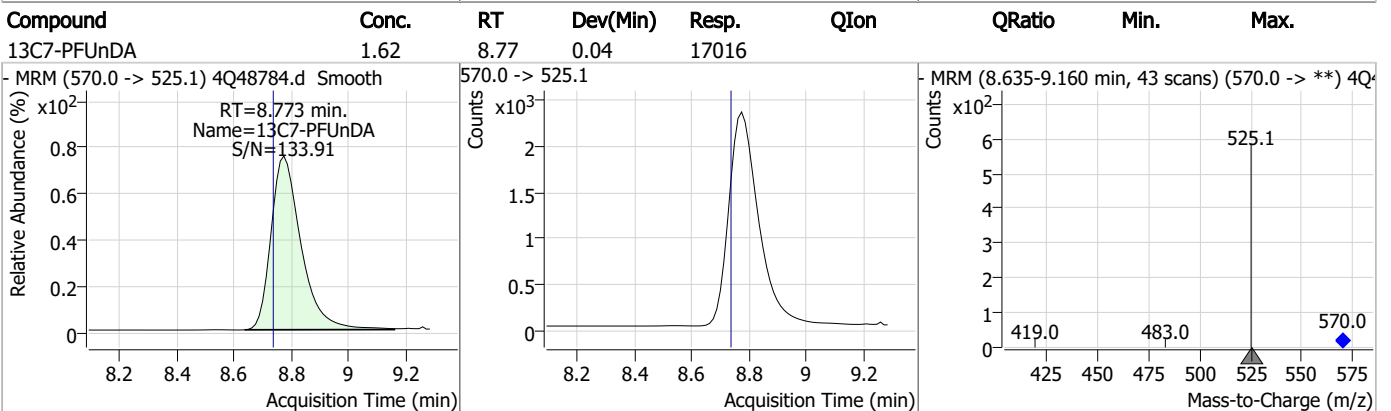
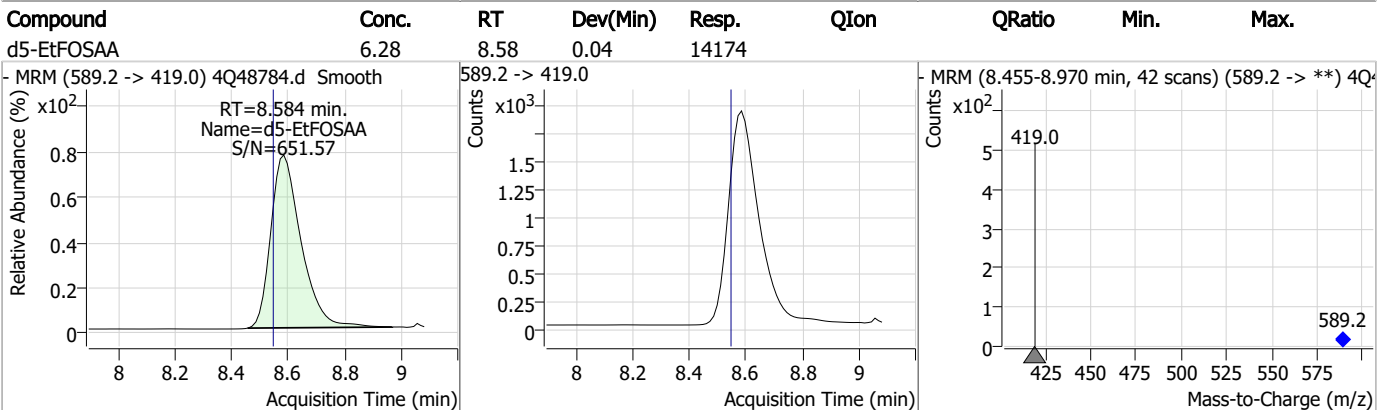
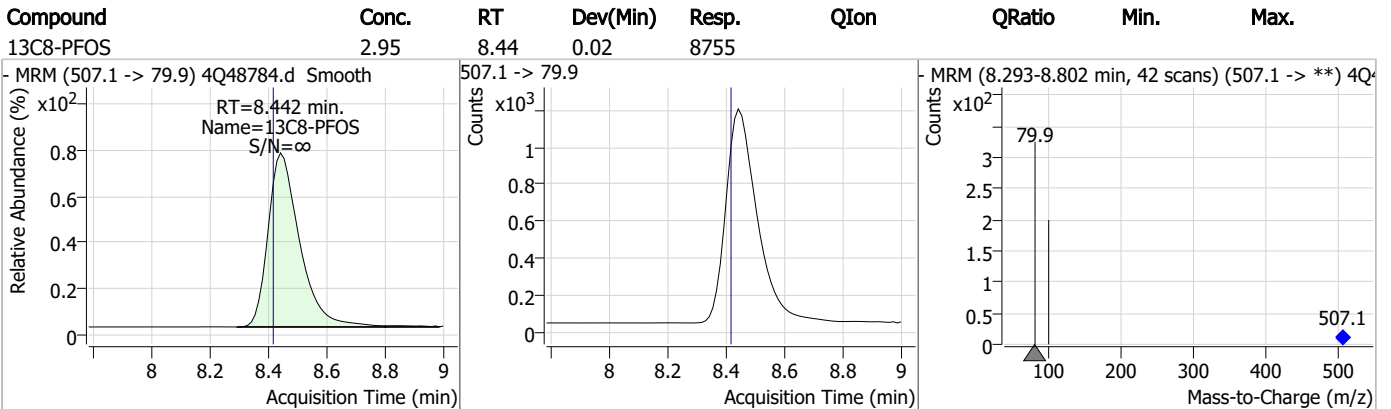
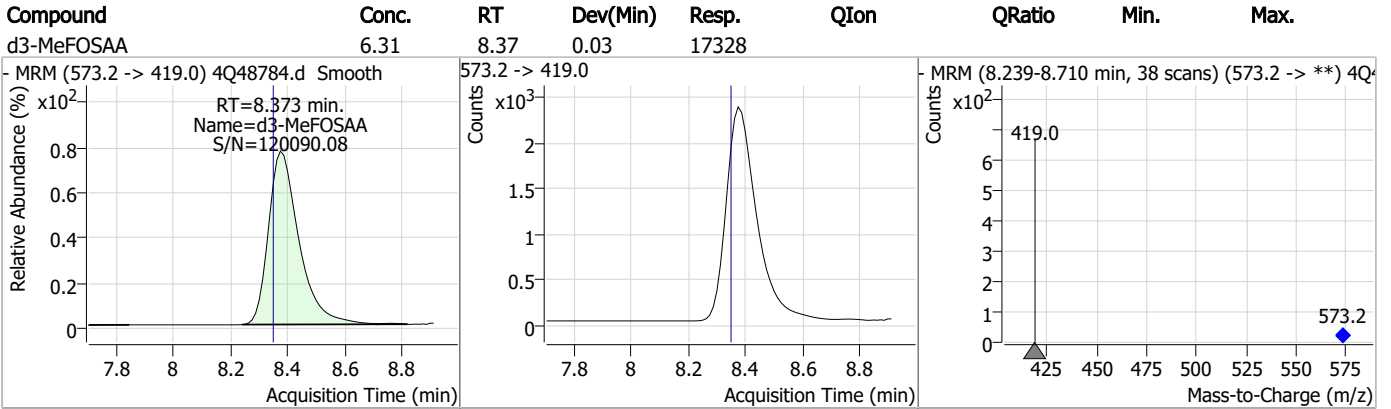
Perfluorinated Compounds by LC/MS/MS



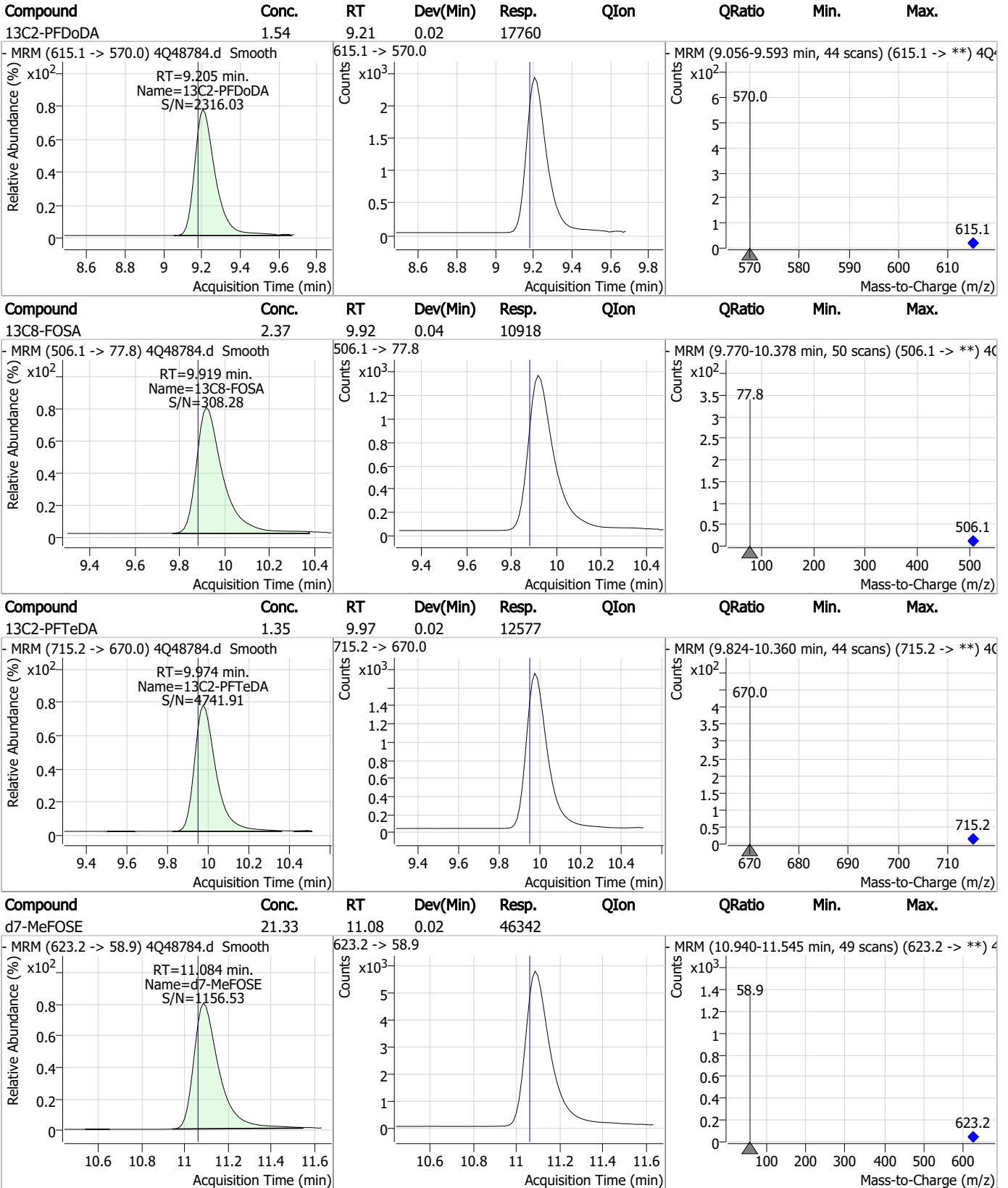
Perfluorinated Compounds by LC/MS/MS



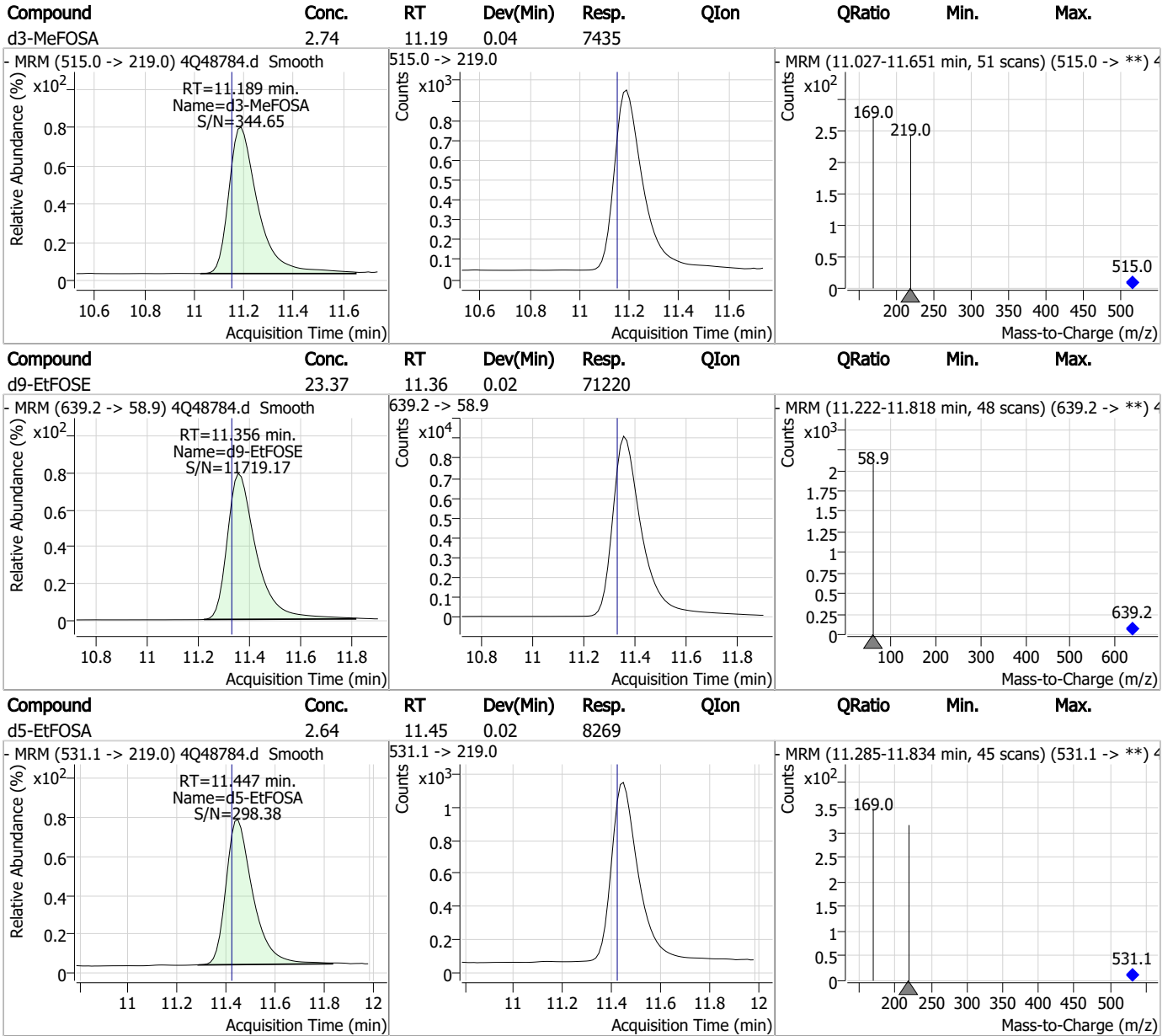
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.1.1

7

Manual Integration Approval Summary

Sample Number: FC8440-1 Method: EPA DRAFT 1633
Lab FileID: 4Q48784.D Analyst approved: 08/10/23 11:07 Anna Ludwig
Injection Time: 08/09/23 20:17 Supervisor approved: 08/14/23 16:34 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoroheptanoic acid	375-85-9		6.58	Split peak
Perfluorooctanoic acid	335-67-1		7.26	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.34	Split peak

7.1.1.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48781.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/9/2023 7:33:02 PM
 Sample Name : op98297-mb
 Vial : P4-D3
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q713.batch.bin
 Sample Information : OP98297,S4Q713,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	87478	10.00 µg/L	0.012
M5-PFPeA	4.425	268.3 -> 223.0	46245	5.00 µg/L	0.012
M5-PFHxA	5.622	318.0 -> 273.0	30072	2.50 µg/L	0.012
M4-PFHpA	6.580	367.1 -> 322.0	22360	2.50 µg/L	0.025
M8-PFOA	7.251	421.1 -> 376.0	36028	2.50 µg/L	0.025
M9-PFNA	7.797	472.1 -> 427.0	15577	1.25 µg/L	0.013
M6-PFDA	8.303	519.1 -> 474.1	12148	1.25 µg/L	0.025
M7-PFUnDA	8.773	570.0 -> 525.1	13836	1.25 µg/L	0.037
M2-PFDoDA	9.205	615.1 -> 570.0	14746	1.25 µg/L	0.025
M2-PFTeDA	9.974	715.2 -> 670.0	10876	1.25 µg/L	0.025
M8-FOSA	9.919	506.1 -> 77.8	6434	2.50 µg/L	0.037
M3-PFBS	5.502	302.1 -> 79.9	7840	2.50 µg/L	0.013
M3-PFHxS	7.329	402.1 -> 79.9	5246	2.50 µg/L	0.012
M8-PFOS	8.442	507.1 -> 79.9	7632	2.50 µg/L	0.025
M2-4:2FTS	5.309	329.1 -> 80.9	675	5.00 µg/L	0.012
M2-6:2FTS	7.023	429.1 -> 80.9	1273	5.00 µg/L	0.025
M2-8:2FTS	8.092	529.1 -> 80.9	1821	5.00 µg/L	0.026
M3-MeFOSAA	8.373	573.2 -> 419.0	13382	5.00 µg/L	0.025
M3-HFPO-DA	6.002	286.9 -> 168.9	24830	10.00 µg/L	0.025
M5-EtFOSAA	8.584	589.2 -> 419.0	11779	5.00 µg/L	0.037
M7-MeFOSE	11.084	623.2 -> 58.9	25557	25.00 µg/L	0.025
M9-EtFOSE	11.356	639.2 -> 58.9	43570	25.00 µg/L	0.025
M5-EtFOSA	11.447	531.1 -> 219.0	5079	2.50 µg/L	0.025
M3-MeFOSA	11.189	515.0 -> 219.0	4253	2.50 µg/L	0.037
13C4-PFOS	8.443	502.8 -> 79.9	4702	2.50 µg/L	0.025
13C3-PFBA	2.928	216.0 -> 172.0	30165	5.00 µg/L	0.025
18O2-PFHxS	7.328	403.0 -> 83.9	2413	2.50 µg/L	0.012
13C4-PFOA	7.251	417.1 -> 372.0	28337	2.50 µg/L	0.025
13C2-PFDA	8.304	515.1 -> 470.1	8929	1.25 µg/L	0.025
13C5-PFNA	7.810	468.0 -> 423.0	11445	1.25 µg/L	0.025
13C2-PFHxA	5.623	315.1 -> 270.0	17789	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.309	329.1 -> 80.9	675	11.20 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 224.0%		
13C2-6:2FTS	7.023	429.1 -> 80.9	1273	11.06 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 221.1%		
13C2-8:2FTS	8.092	529.1 -> 80.9	1821	10.41 µg/L	0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 208.2%		
13C2-PFDoDA	9.205	615.1 -> 570.0	14746	1.93 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 154.2%		
13C2-PFTeDA	9.974	715.2 -> 670.0	10876	1.77 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 141.7%		
13C3-PFBS	5.502	302.1 -> 79.9	7840	3.82 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 152.7%		
13C3-PFHxS	7.329	402.1 -> 79.9	5246	3.93 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 = 157.1%	
13C4-PFBA	2.924	216.8 -> 171.9	87478	16.97 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 169.7%	
13C4-PFHpA	6.580	367.1 -> 322.0	22360	4.22 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 168.8%	
13C5-PFHxA	5.622	318.0 -> 273.0	30072	4.03 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 161.4%	
13C5-PFPeA	4.425	268.3 -> 223.0	46245	7.44 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 148.7%	
13C6-PFDA	8.303	519.1 -> 474.1	12148	1.97 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 157.3%	
13C7-PFUnDA	8.773	570.0 -> 525.1	13836	1.99 µg/L	0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 159.0%	
13C8-FOSA	9.919	506.1 -> 77.8	6434	2.19 µg/L	0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 87.8%	
13C8-PFOA	7.251	421.1 -> 376.0	36028	3.86 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 154.5%	
13C8-PFOS	8.442	507.1 -> 79.9	7632	4.04 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 161.6%	
13C9-PFNA	7.797	472.1 -> 427.0	15577	1.80 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 143.7%	
d3-MeFOSAA	8.373	573.2 -> 419.0	13382	7.67 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 153.4%	
13C3-HFPO-DA	6.002	286.9 -> 168.9	24830	14.65 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 146.5%	
d3-MeFOSA	11.189	515.0 -> 219.0	4253	2.46 µg/L	0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
d5-EtFOSAA	8.584	589.2 -> 419.0	11779	8.21 µg/L	0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 164.2%	
d7-MeFOSE	11.084	623.2 -> 58.9	25557	18.51 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 74.0%	
d9-EtFOSE	11.356	639.2 -> 58.9	43570	22.50 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 90.0%	
d5-EtFOSA	11.447	531.1 -> 219.0	5079	2.55 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.1%	

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

7.2.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.970	599.0 -> 98.8				
		363.1 -> 319.0	0	µg/L	m	1
PFHpS	-	363.1 -> 169.0	0			
		449.0 -> 79.9	-	N.D.		
PFHxA	6.097	449.0 -> 98.9				
		313.0 -> 269.0	0	µg/L	m	1
PFHxS	-	313.0 -> 118.9	0			
		398.7 -> 79.9	-	N.D.		
PFNA	-	398.7 -> 98.9				
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	-	548.8 -> 98.9				
		413.0 -> 369.0	-	N.D.		
PFOS	-	413.0 -> 169.0				
		498.9 -> 79.9	-	N.D.		
PFPeA	4.894	498.9 -> 98.8				
		263.0 -> 219.0	0	µg/L	m	1
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	9.551	713.1 -> 669.0	0	µg/L	m	1
		713.1 -> 168.9	0			
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.2.1
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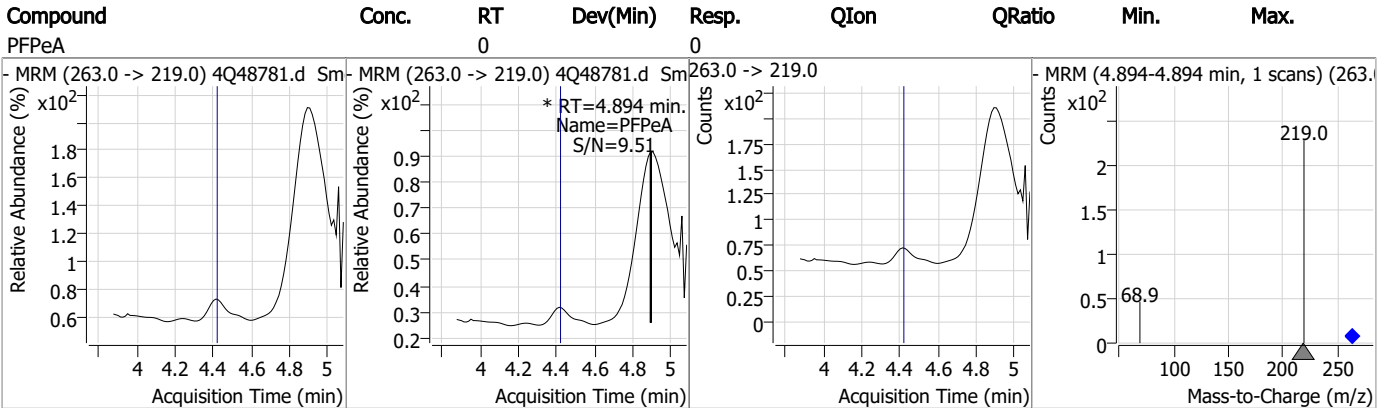
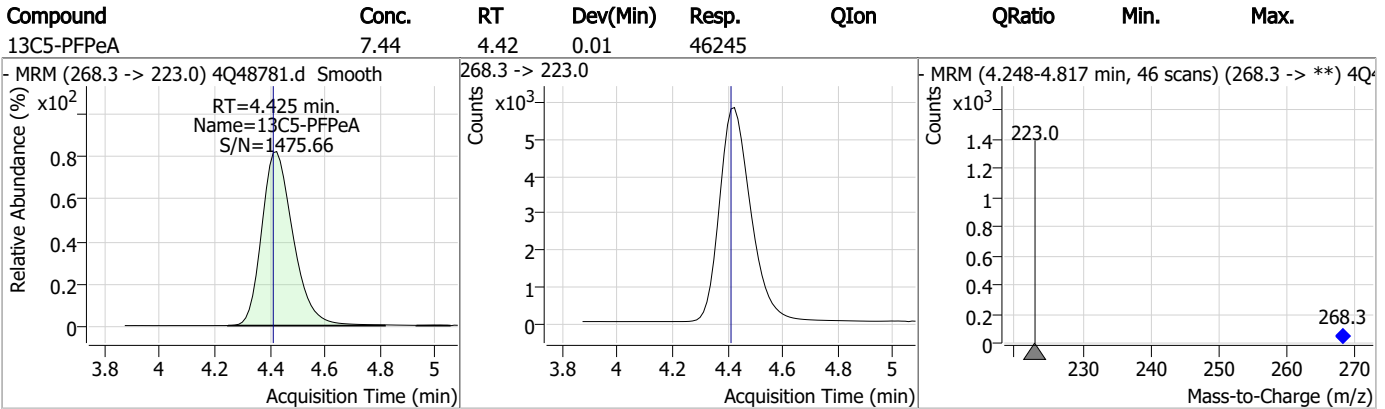
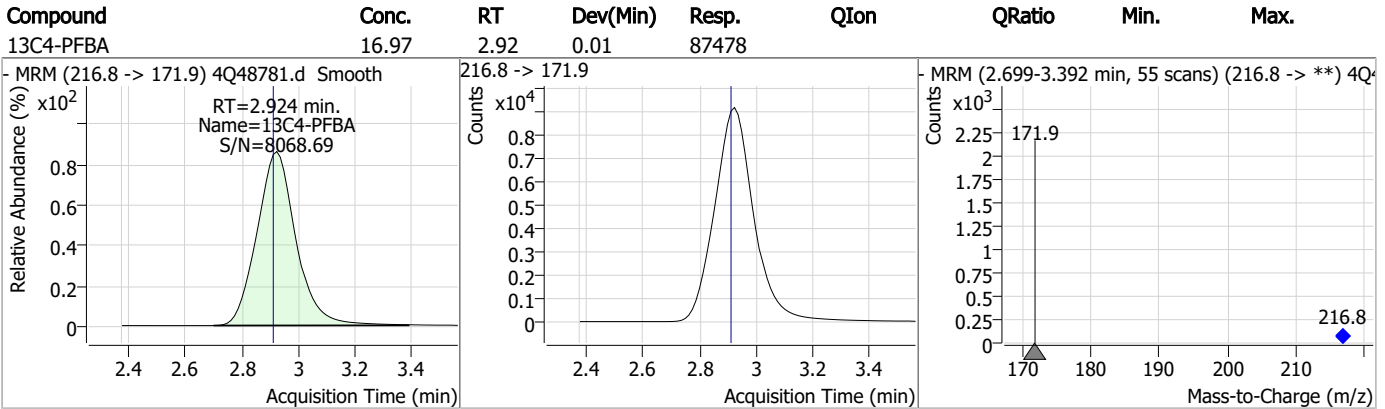
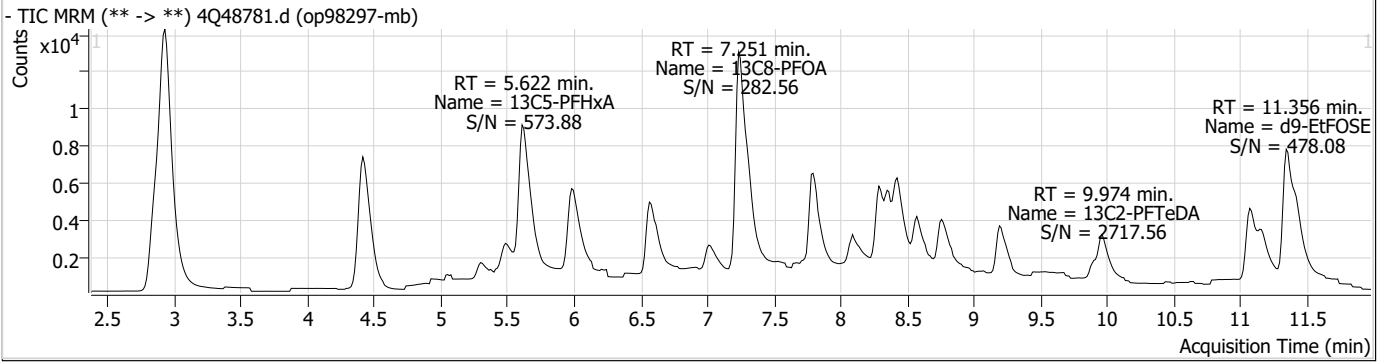
Perfluorinated Compounds by LC/MS/MS

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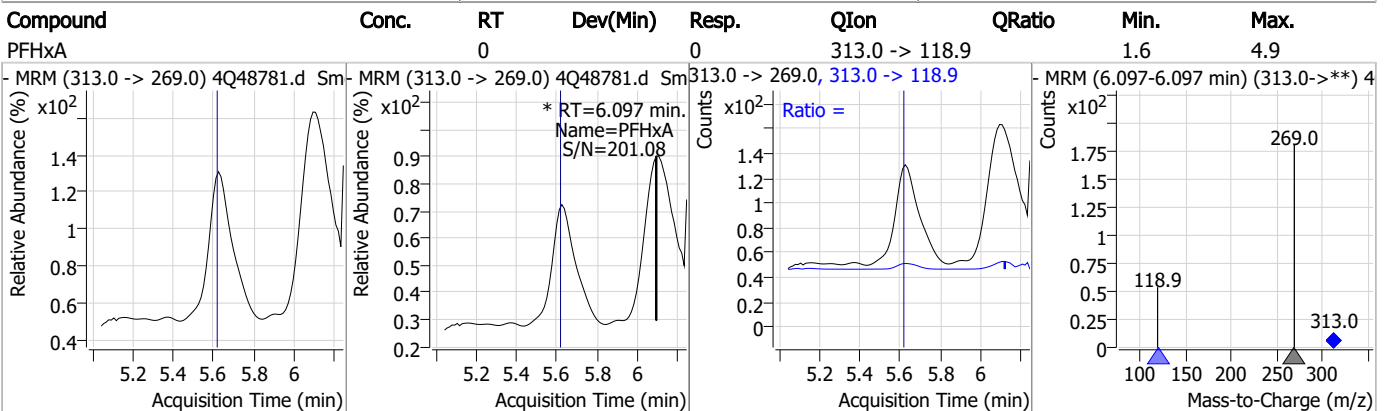
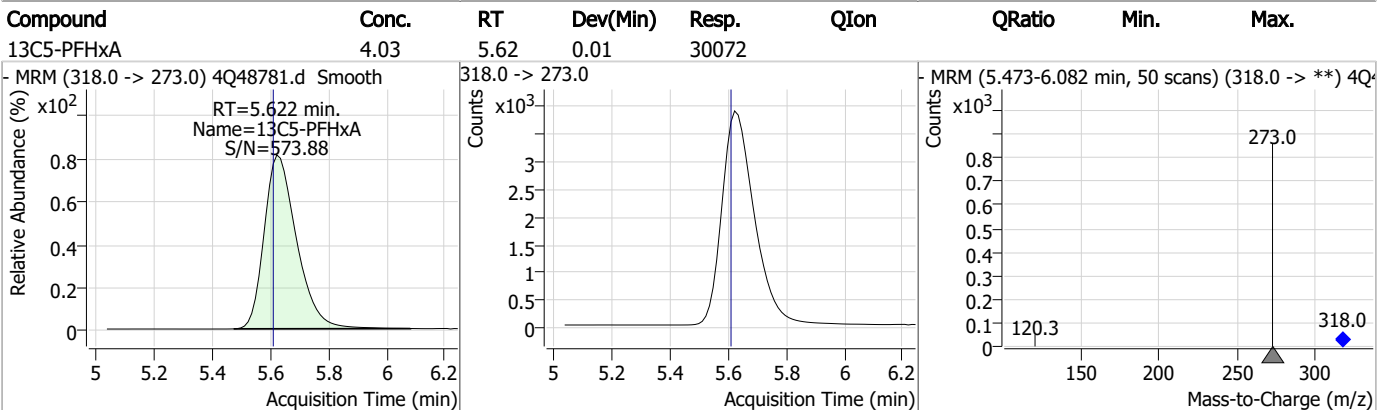
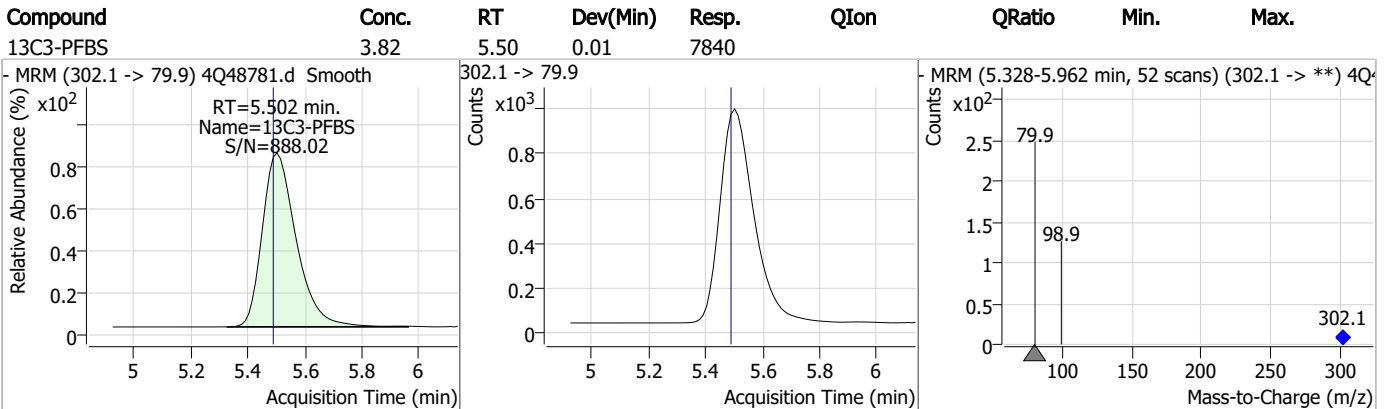
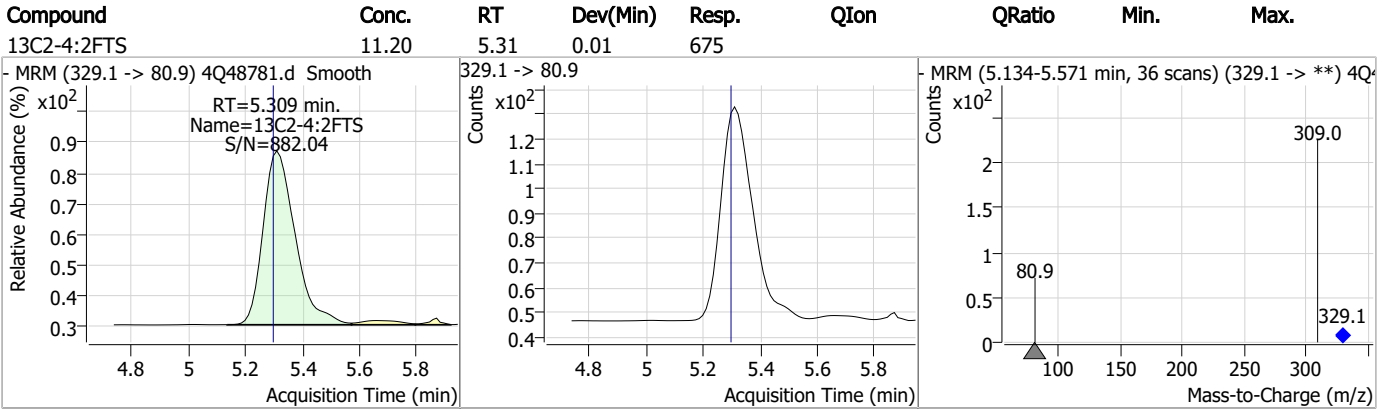
7.2.1

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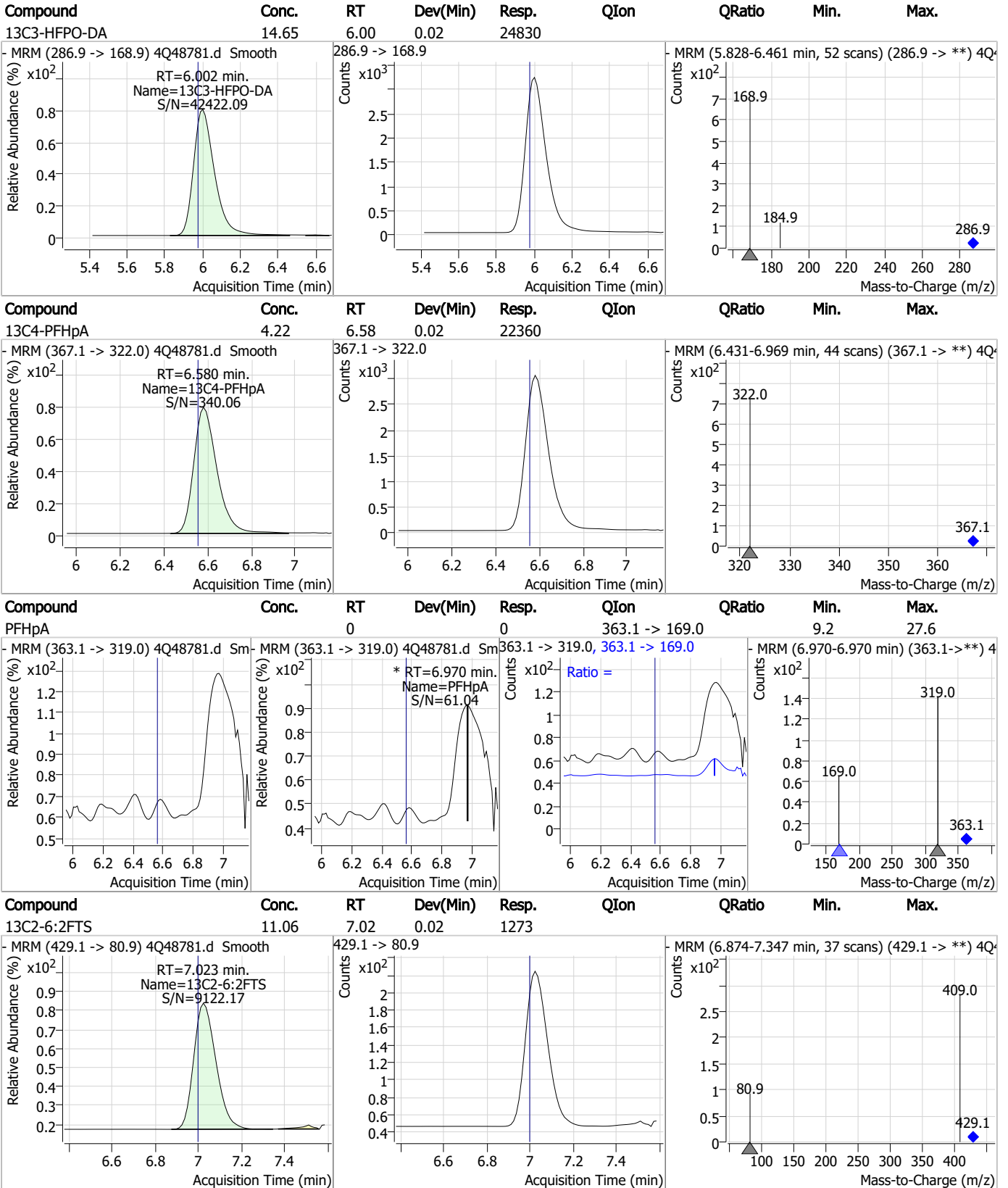
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

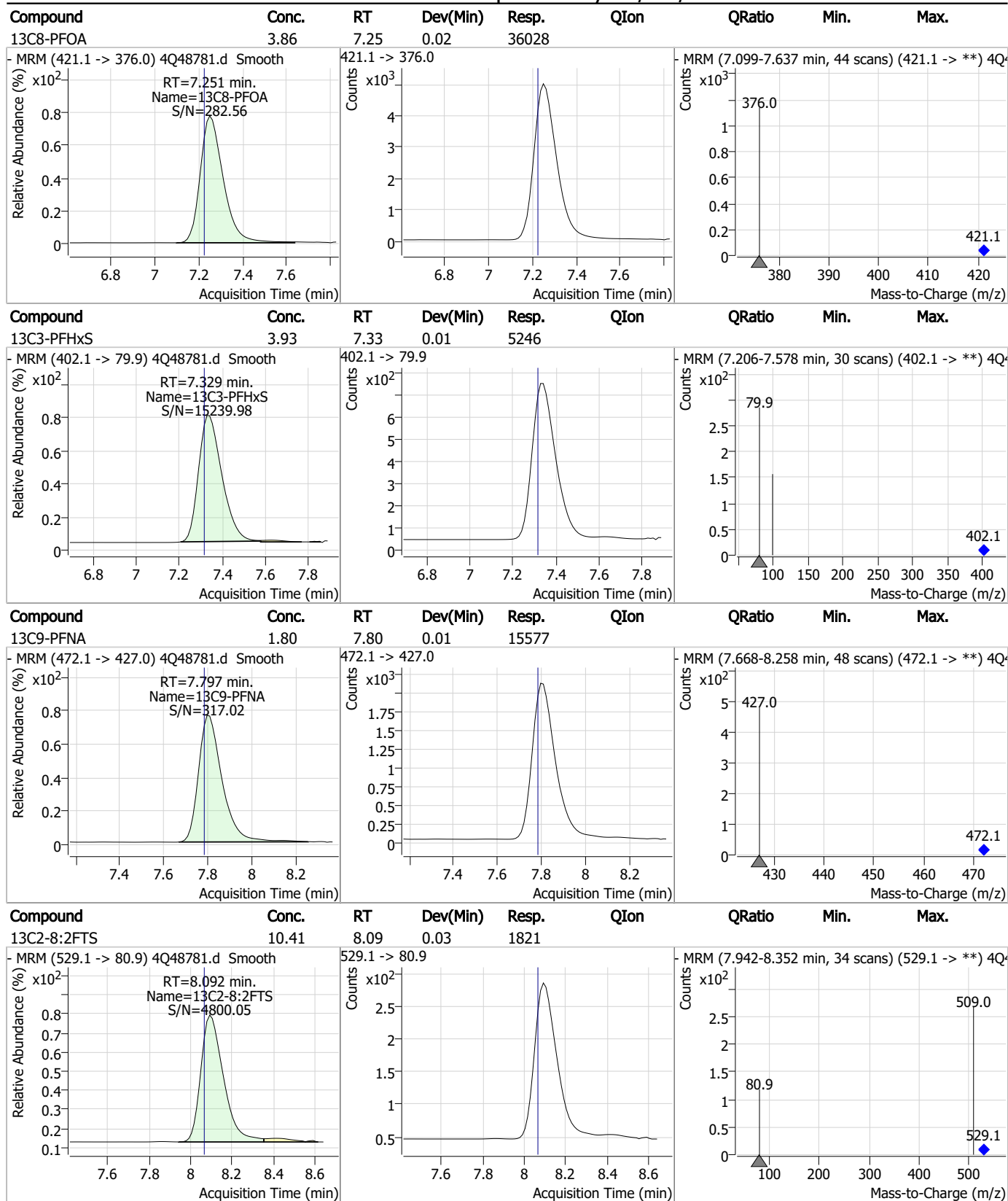


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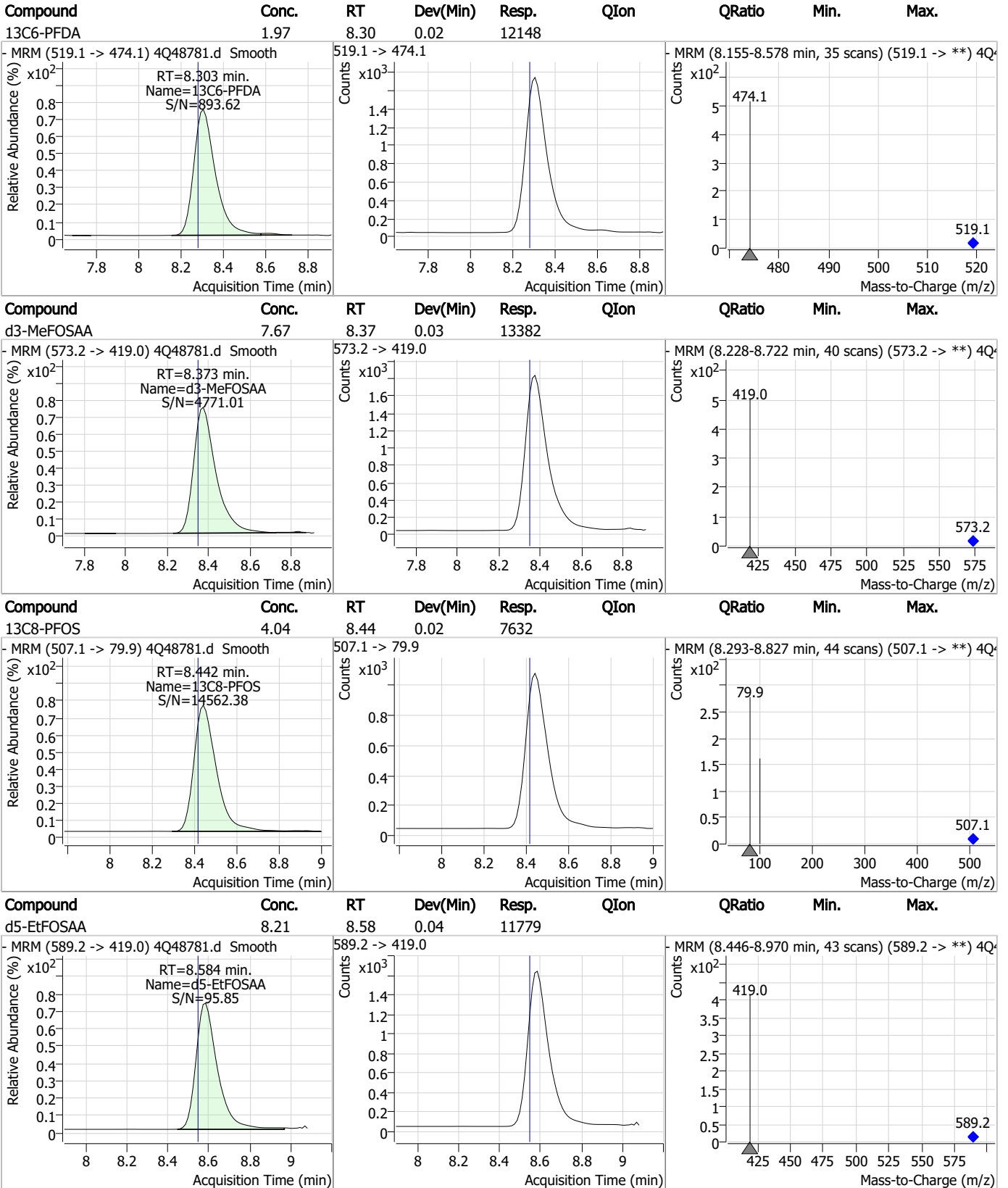


Perfluorinated Compounds by LC/MS/MS



7.2.1
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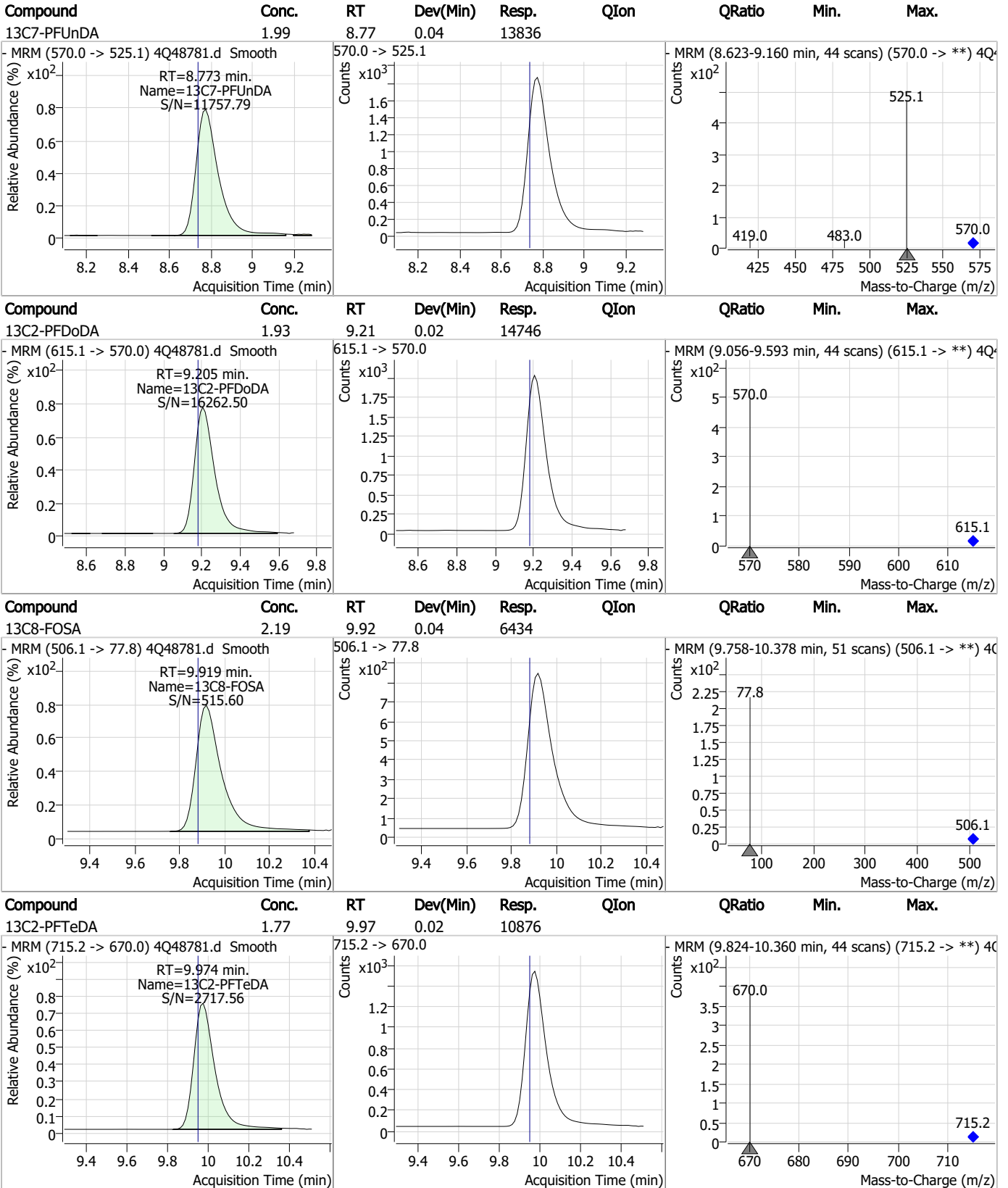
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

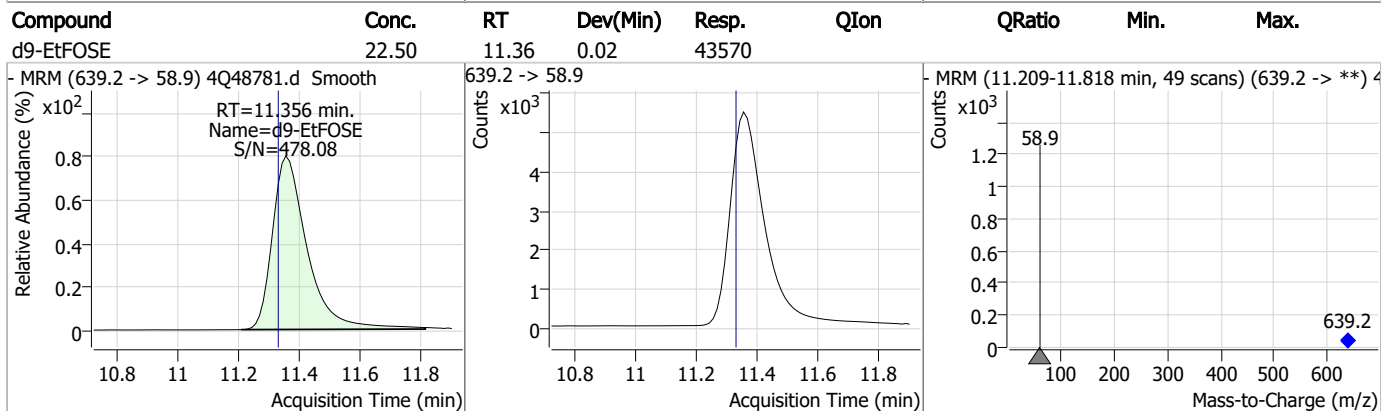
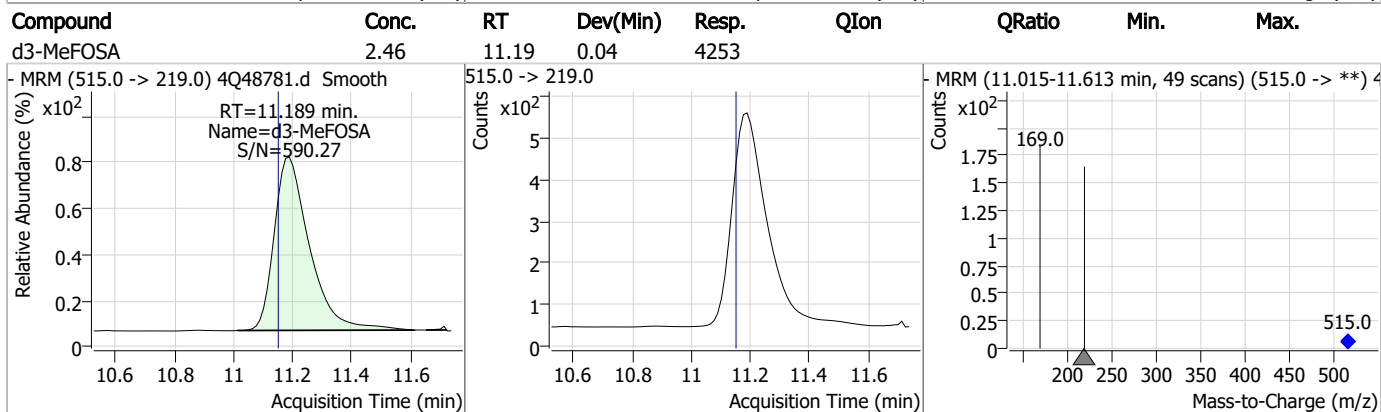
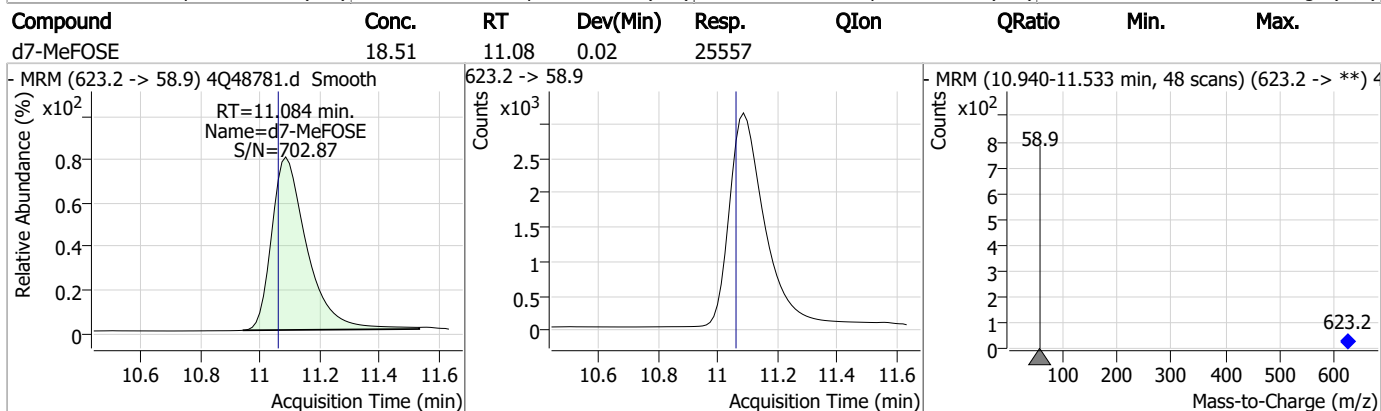
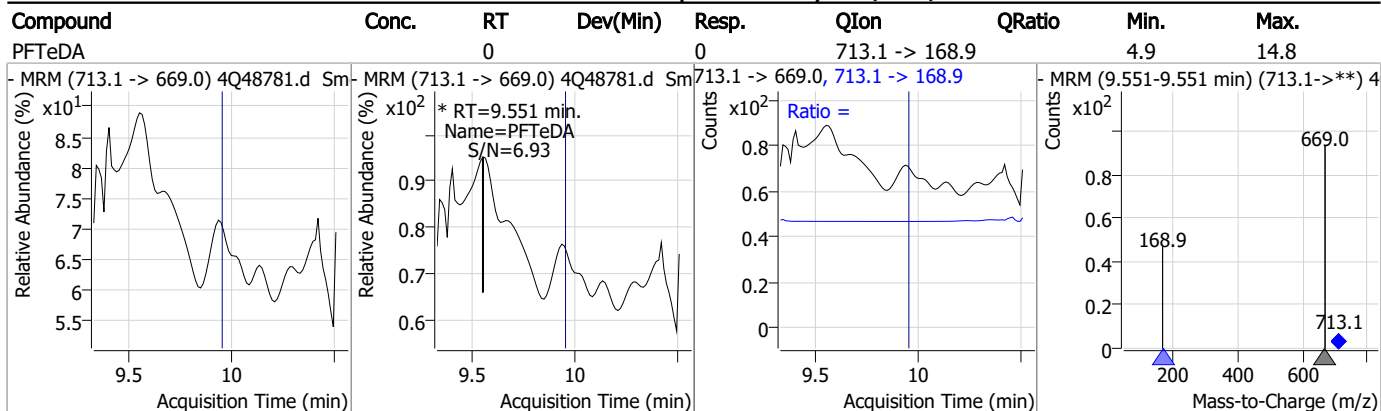


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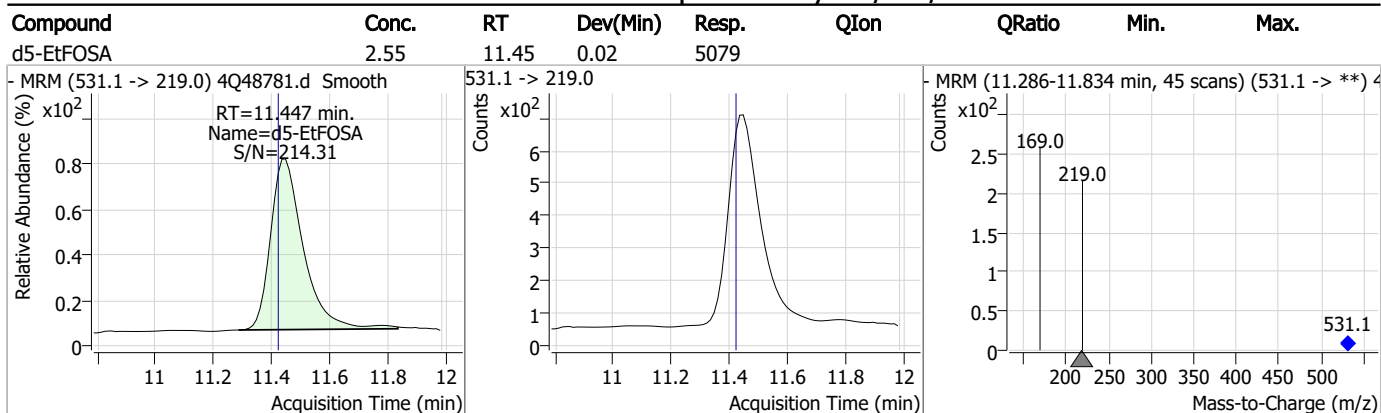


Perfluorinated Compounds by LC/MS/MS



7.2.1
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Perfluorinated Compounds by LC/MS/MS



7.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48763.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/9/2023 3:01:19 PM
 Sample Name : iblk
 Vial : P1-A1
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q713.batch.bin
 Sample Information : OP98180,S4Q713,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.886	216.8 -> 171.9	99751	10.00 µg/L	-0.025
M5-PFPeA	4.400	268.3 -> 223.0	56718	5.00 µg/L	-0.012
M5-PFHxA	5.610	318.0 -> 273.0	35705	2.50 µg/L	0.000
M4-PFHpA	6.568	367.1 -> 322.0	25650	2.50 µg/L	0.012
M8-PFOA	7.238	421.1 -> 376.0	43374	2.50 µg/L	0.012
M9-PFNA	7.797	472.1 -> 427.0	20302	1.25 µg/L	0.013
M6-PFDA	8.291	519.1 -> 474.1	14136	1.25 µg/L	0.013
M7-PFUnDA	8.748	570.0 -> 525.1	17359	1.25 µg/L	0.012
M2-PFDoDA	9.193	615.1 -> 570.0	17313	1.25 µg/L	0.012
M2-PFTeDA	9.961	715.2 -> 670.0	13783	1.25 µg/L	0.013
M8-FOSA	9.907	506.1 -> 77.8	13060	2.50 µg/L	0.024
M3-PFBS	5.489	302.1 -> 79.9	9098	2.50 µg/L	0.000
M3-PFHxS	7.317	402.1 -> 79.9	6141	2.50 µg/L	0.000
M8-PFOS	8.430	507.1 -> 79.9	8268	2.50 µg/L	0.013
M2-4:2FTS	5.284	329.1 -> 80.9	874	5.00 µg/L	-0.012
M2-6:2FTS	7.011	429.1 -> 80.9	1472	5.00 µg/L	0.012
M2-8:2FTS	8.078	529.1 -> 80.9	2375	5.00 µg/L	0.013
M3-MeFOSAA	8.361	573.2 -> 419.0	17684	5.00 µg/L	0.013
M3-HFPO-DA	5.977	286.9 -> 168.9	31289	10.00 µg/L	0.000
M5-EtFOSAA	8.559	589.2 -> 419.0	14208	5.00 µg/L	0.013
M7-MeFOSE	11.072	623.2 -> 58.9	57451	25.00 µg/L	0.012
M9-EtFOSE	11.344	639.2 -> 58.9	84338	25.00 µg/L	0.013
M5-EtFOSA	11.435	531.1 -> 219.0	9204	2.50 µg/L	0.012
M3-MeFOSA	11.164	515.0 -> 219.0	7948	2.50 µg/L	0.012
13C4-PFOS	8.430	502.8 -> 79.9	9073	2.50 µg/L	0.013
13C3-PFBA	2.891	216.0 -> 172.0	54834	5.00 µg/L	-0.013
18O2-PFHxS	7.316	403.0 -> 83.9	4733	2.50 µg/L	0.000
13C4-PFOA	7.239	417.1 -> 372.0	53278	2.50 µg/L	0.012
13C2-PFDA	8.291	515.1 -> 470.1	15996	1.25 µg/L	0.013
13C5-PFNA	7.785	468.0 -> 423.0	22418	1.25 µg/L	0.000
13C2-PFHxA	5.611	315.1 -> 270.0	34124	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.284	329.1 -> 80.9	874	7.39 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 147.9%		
13C2-6:2FTS	7.011	429.1 -> 80.9	1472	6.52 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.3%		
13C2-8:2FTS	8.078	529.1 -> 80.9	2375	6.92 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 138.5%		
13C2-PFDoDA	9.193	615.1 -> 570.0	17313	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C2-PFTeDA	9.961	715.2 -> 670.0	13783	1.25 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C3-PFBS	5.489	302.1 -> 79.9	9098	2.26 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.3%		
13C3-PFHxS	7.317	402.1 -> 79.9	6141	2.34 µg/L	0.000

7.22
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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 = 93.8%	
13C4-PFBA	2.886	216.8 -> 171.9	99751	10.64 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 106.4%	
13C4-PFHpA	6.568	367.1 -> 322.0	25650	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C5-PFHxA	5.610	318.0 -> 273.0	35705	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C5-PFPeA	4.400	268.3 -> 223.0	56718	4.76 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.1%	
13C6-PFDA	8.291	519.1 -> 474.1	14136	1.28 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C7-PFUnDA	8.748	570.0 -> 525.1	17359	1.39 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 111.4%	
13C8-FOSA	9.907	506.1 -> 77.8	13060	2.31 µg/L	0.024
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.3%	
13C8-PFOA	7.238	421.1 -> 376.0	43374	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C8-PFOS	8.430	507.1 -> 79.9	8268	2.27 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.8%	
13C9-PFNA	7.797	472.1 -> 427.0	20302	1.20 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.6%	
d3-MeFOSAA	8.361	573.2 -> 419.0	17684	5.25 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.0%	
13C3-HFPO-DA	5.977	286.9 -> 168.9	31289	9.62 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.2%	
d3-MeFOSA	11.164	515.0 -> 219.0	7948	2.38 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.4%	
d5-EtFOSAA	8.559	589.2 -> 419.0	14208	5.13 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.6%	
d7-MeFOSE	11.072	623.2 -> 58.9	57451	21.56 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 86.2%	
d9-EtFOSE	11.344	639.2 -> 58.9	84338	22.57 µg/L	0.013
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 90.3%	
d5-EtFOSA	11.435	531.1 -> 219.0	9204	2.40 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.9%	

7.22
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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	8.374	570.1 -> 419.0	104	0.05 µg/L	81
		570.1 -> 483.0	11		
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	6.945	599.0 -> 98.8				
		363.1 -> 319.0	0	µg/L	m	1
PFHpS	-	363.1 -> 169.0	0			
		449.0 -> 79.9	-	N.D.		
PFHxA	6.085	449.0 -> 98.9				
		313.0 -> 269.0	0	µg/L	m	1
PFHxS	-	313.0 -> 118.9	0			
		398.7 -> 79.9	-	N.D.		
PFNA	-	398.7 -> 98.9				
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	7.564	548.8 -> 98.9				
		413.0 -> 369.0	0	µg/L	m	1
PFOS	-	413.0 -> 169.0	0			
		498.9 -> 79.9	-	N.D.		
PFPeA	4.881	498.9 -> 98.8				
		263.0 -> 219.0	0	µg/L	m	1
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	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	11.412	526.0 -> 219.0	667	0.20 µg/L	m	98
		526.0 -> 169.0	914			
EtFOSE	11.320	630.0 -> 58.9	730	0.28 µg/L	m	100
MeFOSA	11.041	511.9 -> 219.0	0	µg/L	m	1
		511.9 -> 169.0	0			
MeFOSE	11.073	616.1 -> 58.9	329	0.16 µg/L	m	100
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.2.2
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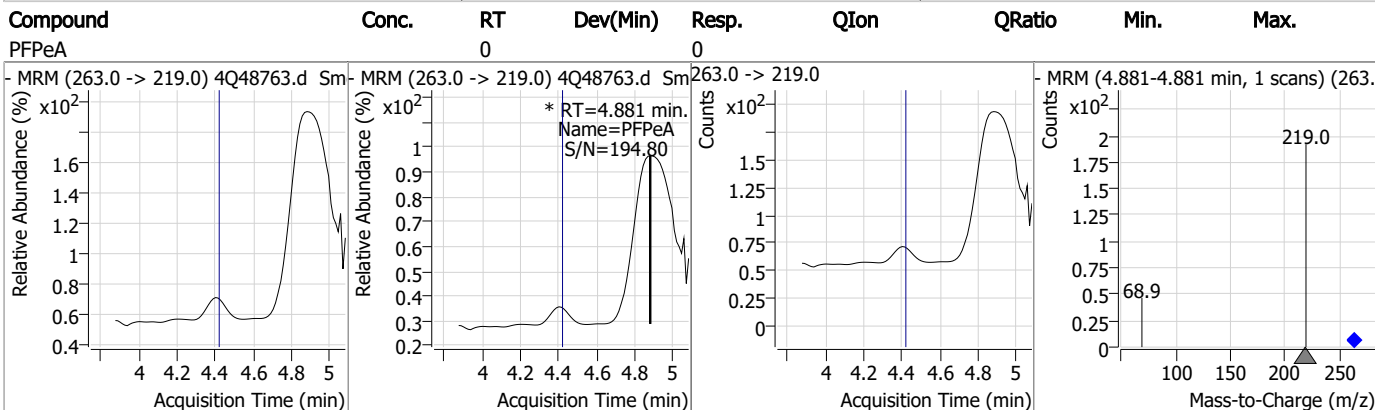
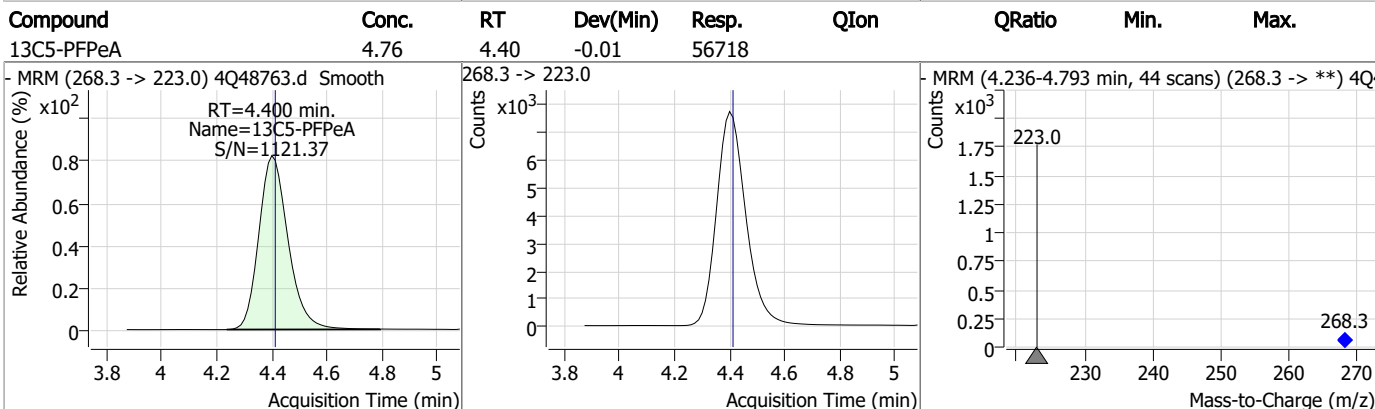
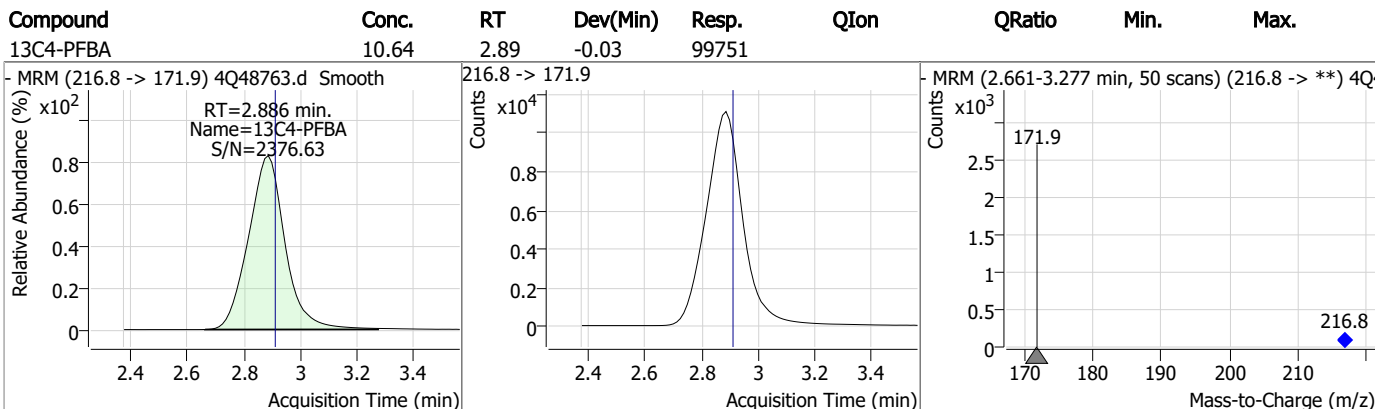
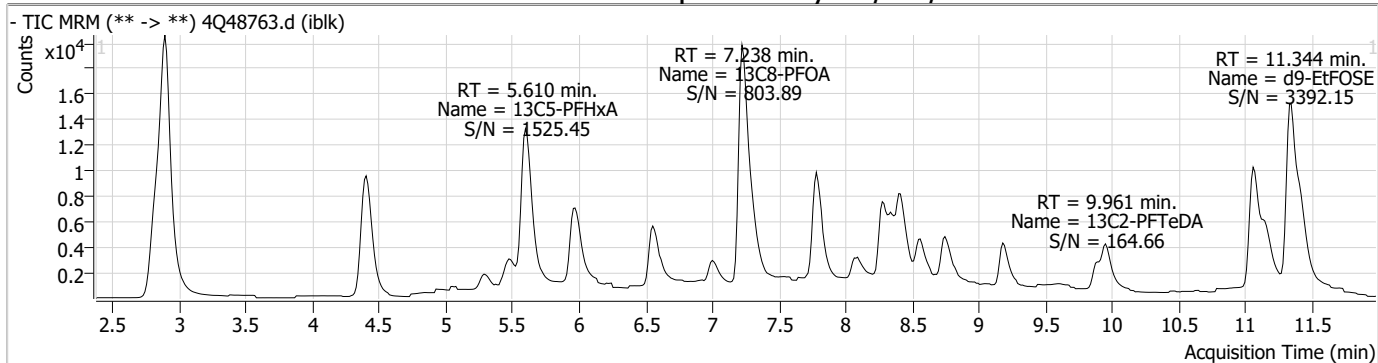
Perfluorinated Compounds by LC/MS/MS

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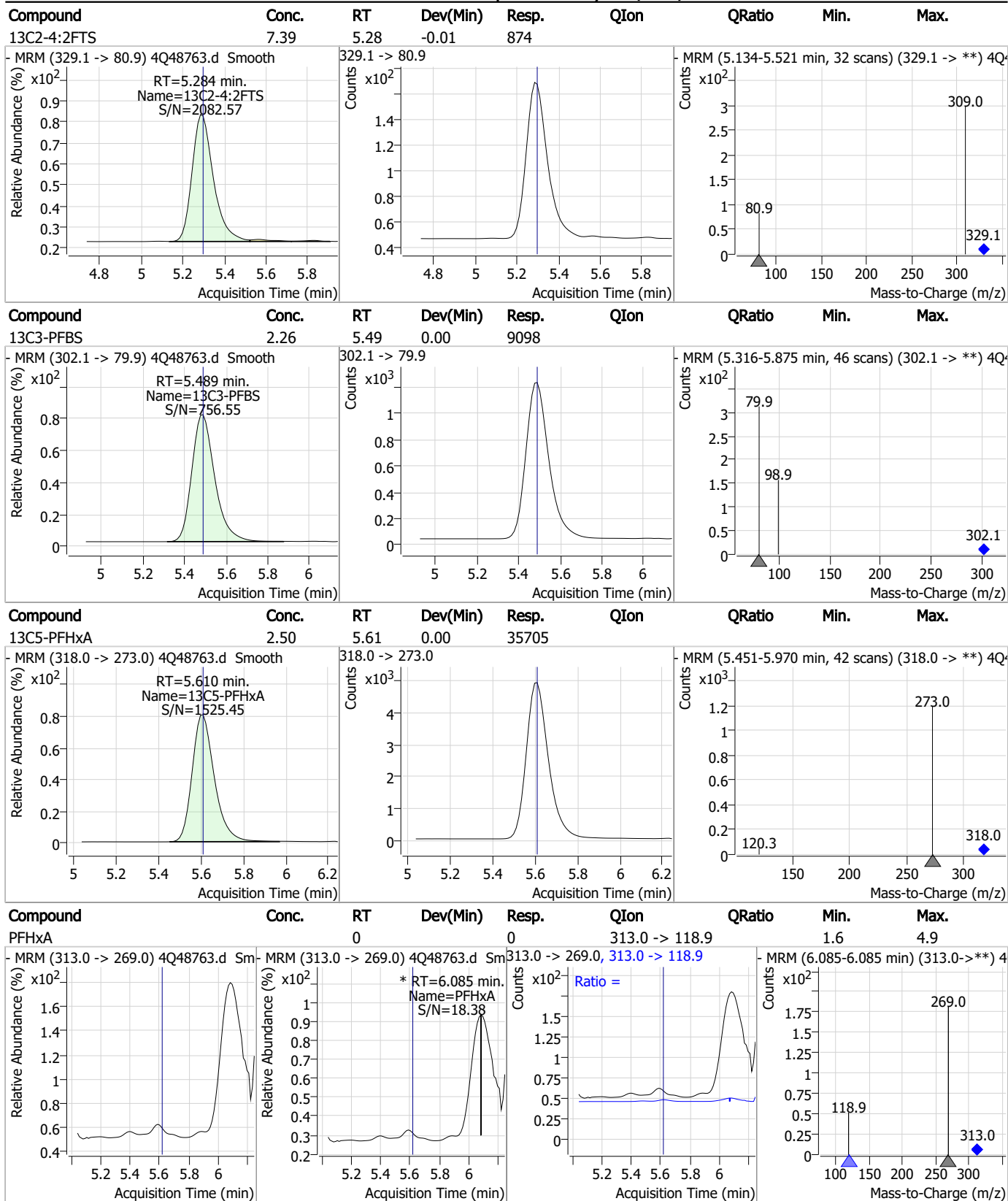
7.2.2

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Perfluorinated Compounds by LC/MS/MS

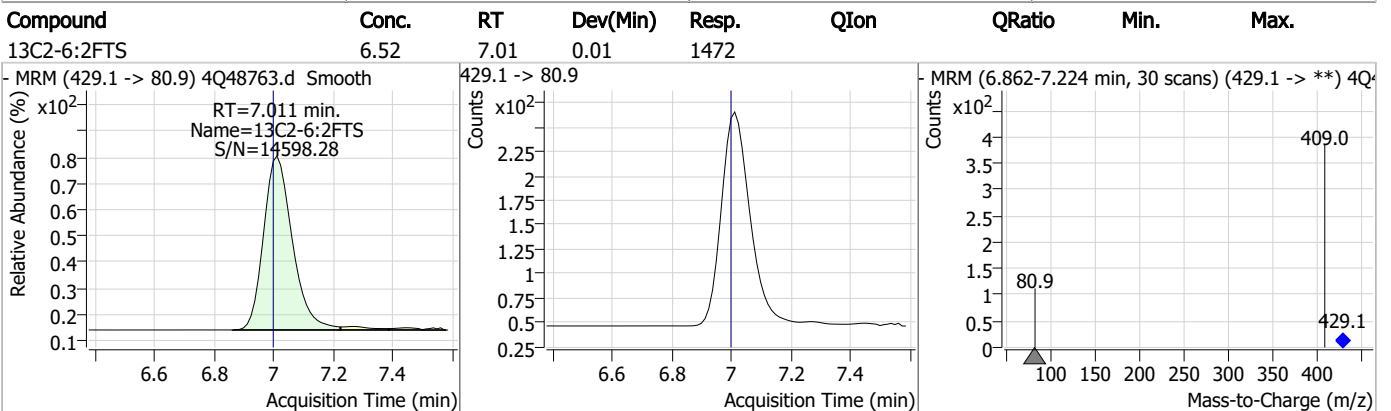
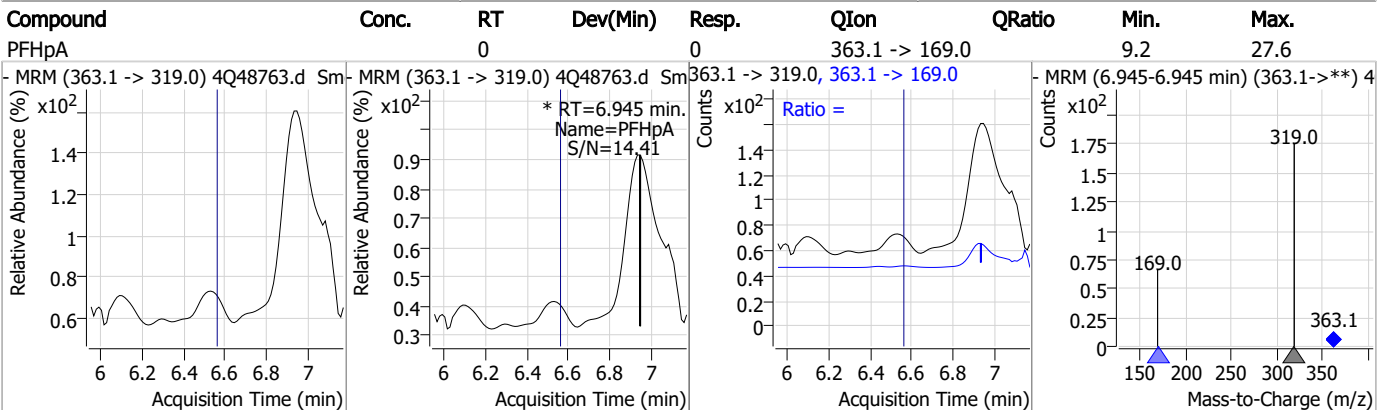
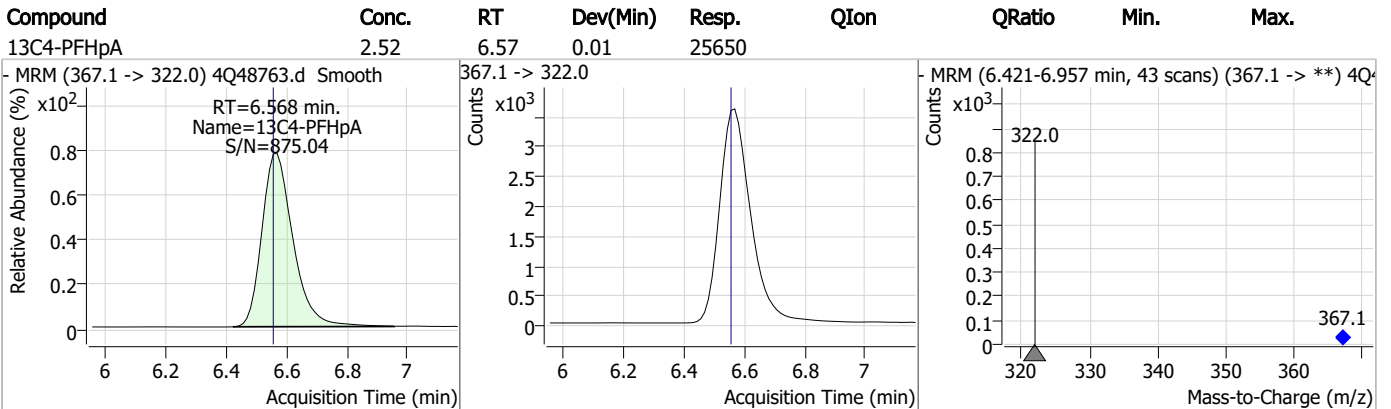
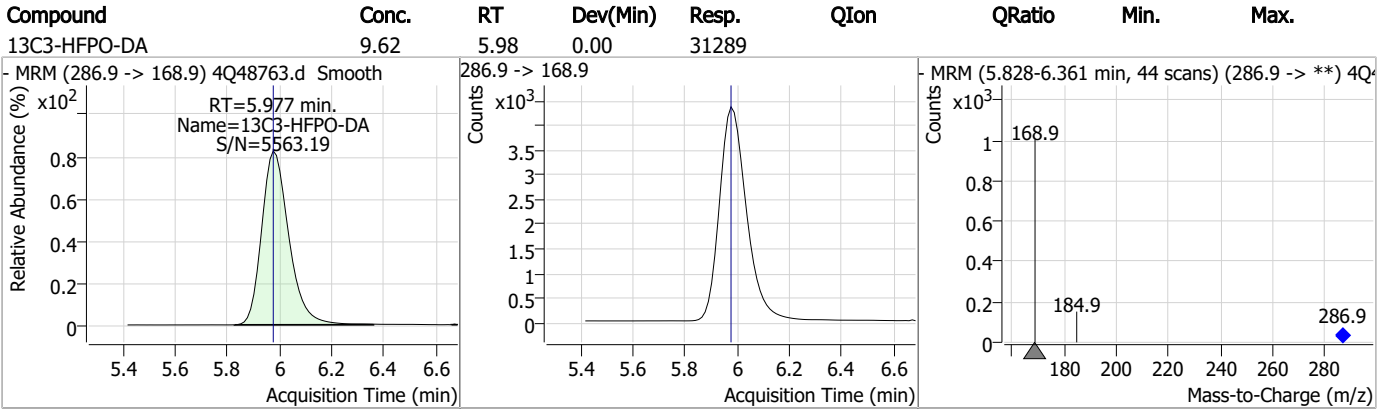


Perfluorinated Compounds by LC/MS/MS

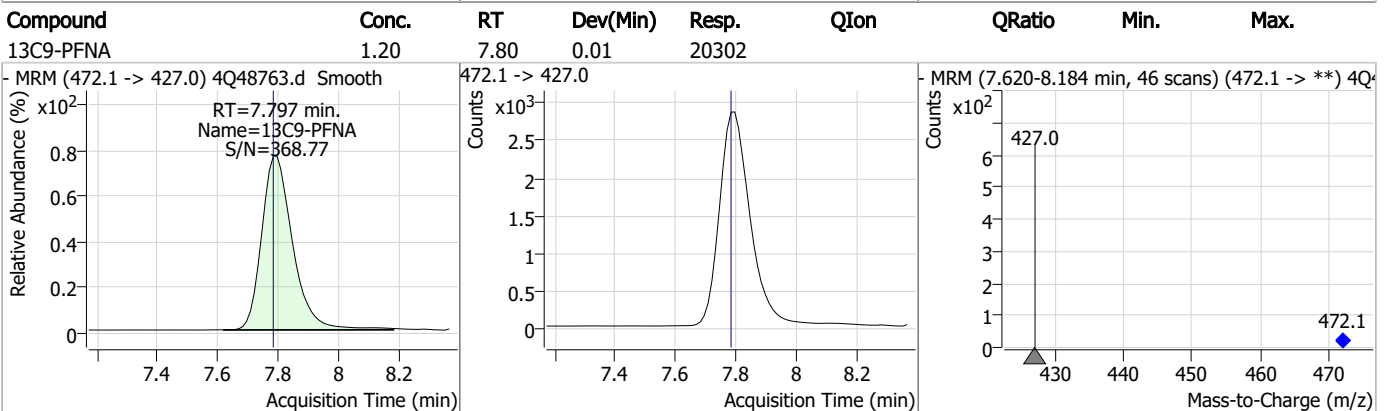
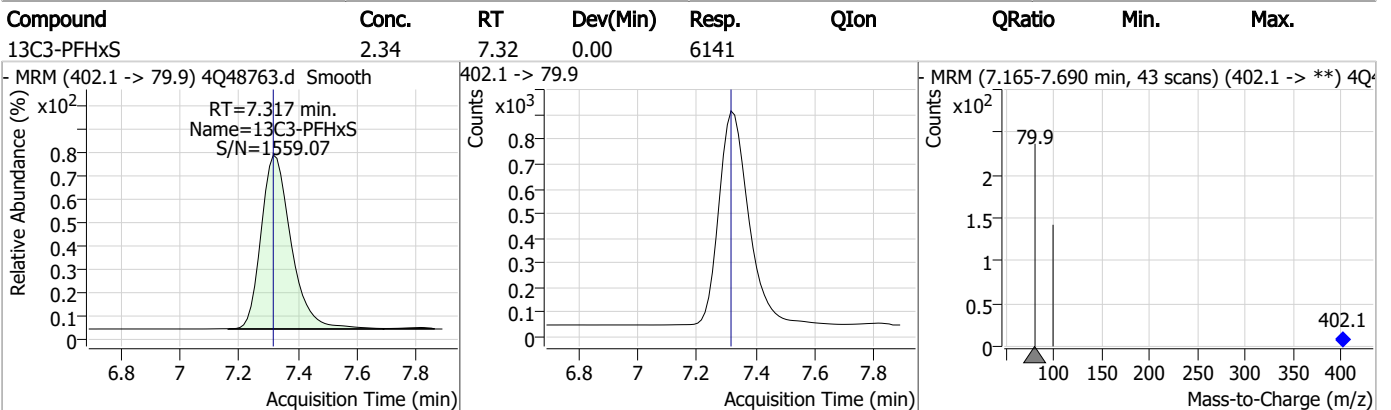
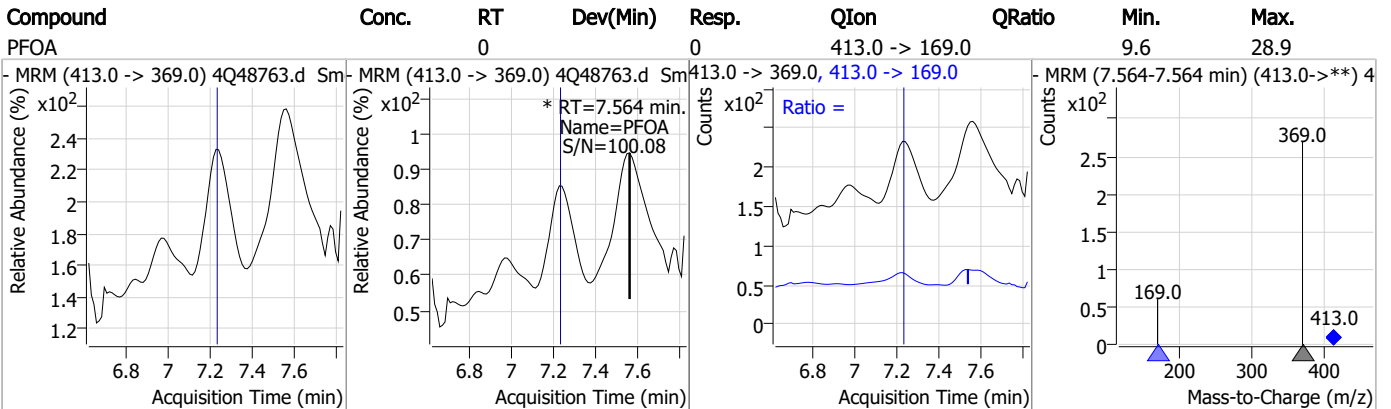
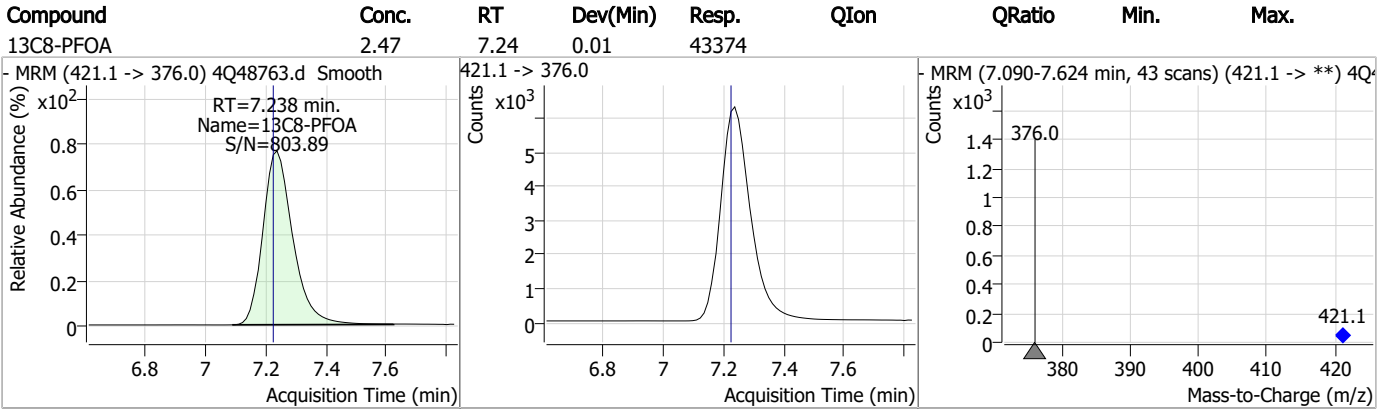


7.2.2
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Perfluorinated Compounds by LC/MS/MS



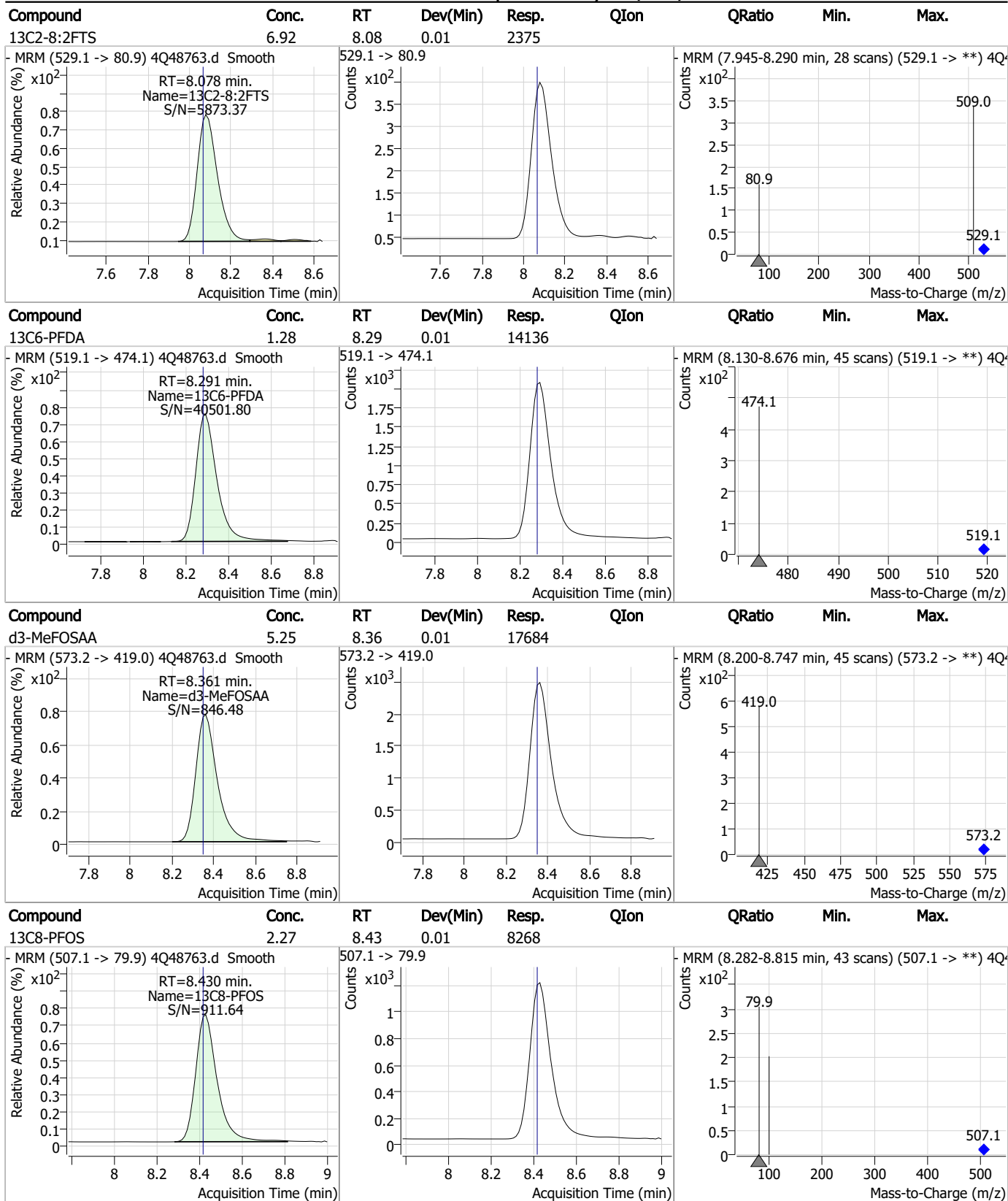
Perfluorinated Compounds by LC/MS/MS



7.22

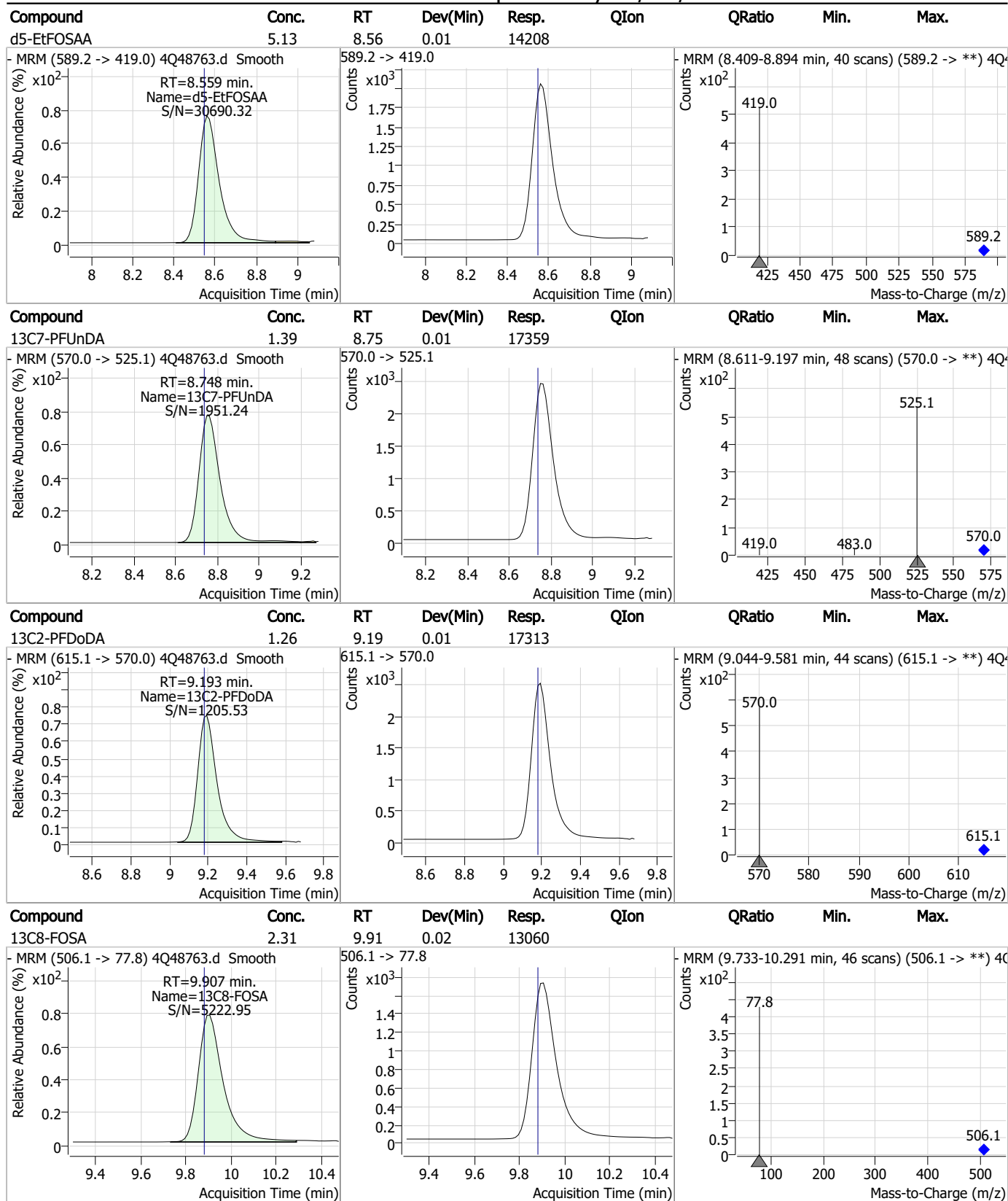
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Perfluorinated Compounds by LC/MS/MS



7.2.2
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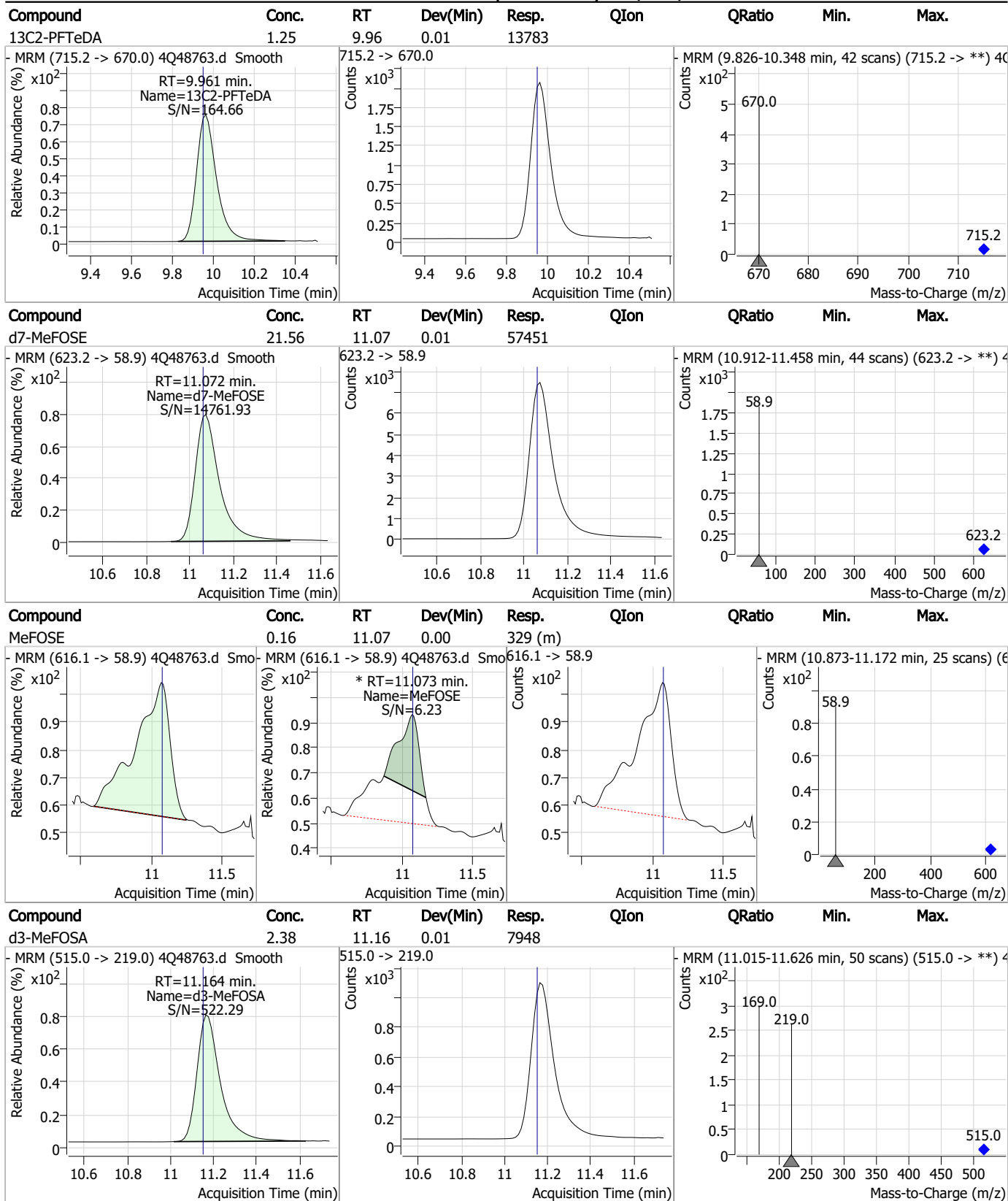
Perfluorinated Compounds by LC/MS/MS



7.2.2
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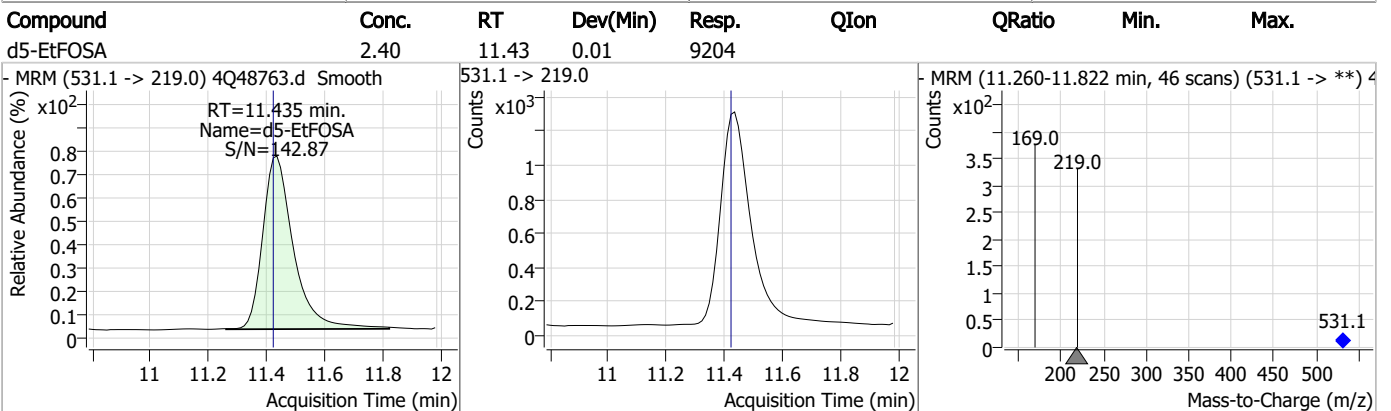
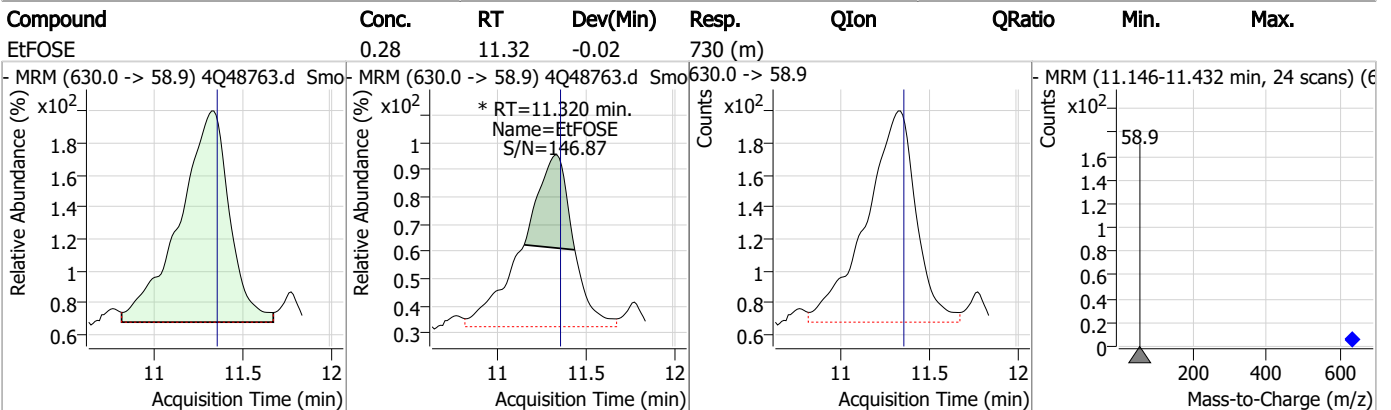
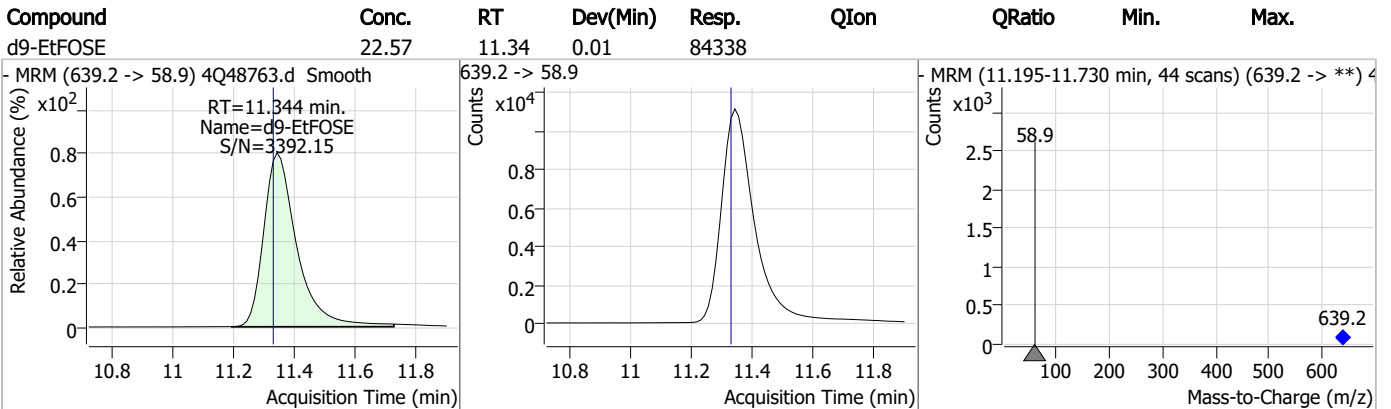
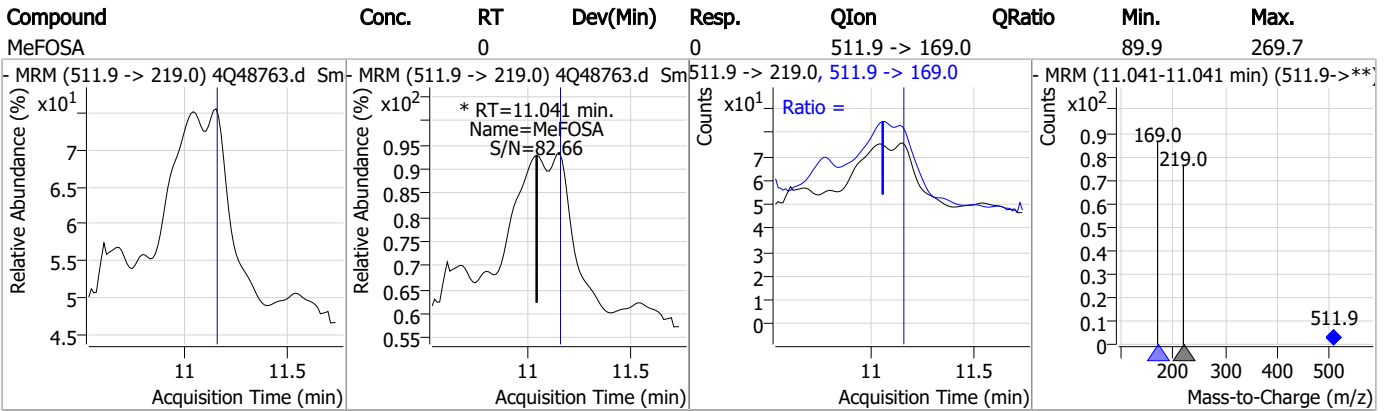
Perfluorinated Compounds by LC/MS/MS



7.2.2
7



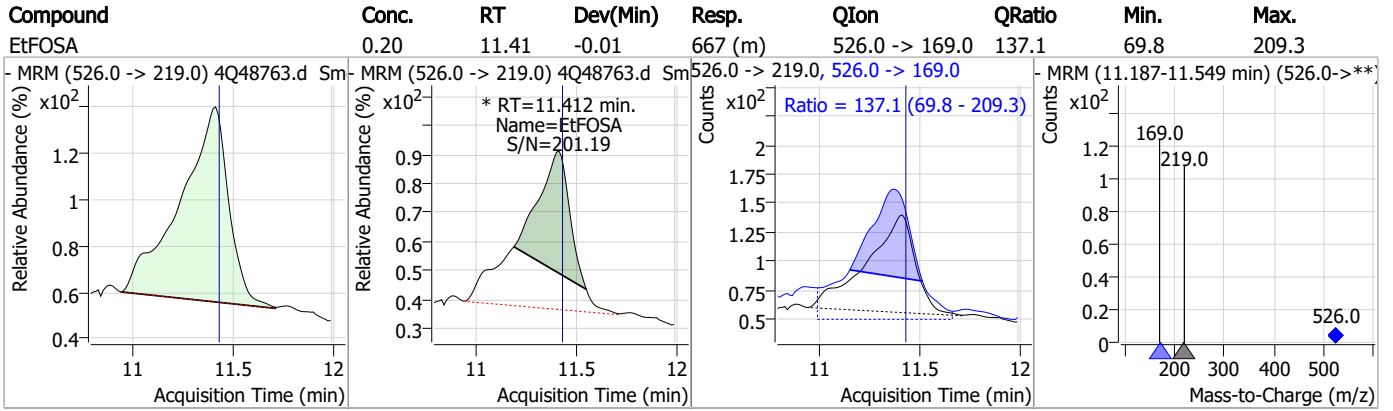
Perfluorinated Compounds by LC/MS/MS



7.2.2

7

Perfluorinated Compounds by LC/MS/MS



7.2.2

7

Manual Integration Approval Summary

Sample Number: S4Q713-IBLK Method: EPA DRAFT 1633
Lab FileID: 4Q48763.D Analyst approved: 08/10/23 10:42 Anna Ludwig
Injection Time: 08/09/23 15:01 Supervisor approved: 08/11/23 11:37 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
MeFOSE	24448-09-7		11.07	Split peak
EiFOSE	1691-99-2		11.32	Split peak
EiFOSA	4151-50-2		11.41	Split peak

7.2.2.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48777.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/9/2023 6:33:57 PM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q713.batch.bin
 Sample Information : OP98180,S4Q713,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.886	216.8 -> 171.9	108010	10.00 µg/L	-0.025
M5-PFPeA	4.412	268.3 -> 223.0	56108	5.00 µg/L	0.000
M5-PFHxA	5.622	318.0 -> 273.0	38790	2.50 µg/L	0.012
M4-PFHpA	6.580	367.1 -> 322.0	27823	2.50 µg/L	0.025
M8-PFOA	7.251	421.1 -> 376.0	44309	2.50 µg/L	0.025
M9-PFNA	7.797	472.1 -> 427.0	20388	1.25 µg/L	0.013
M6-PFDA	8.303	519.1 -> 474.1	15421	1.25 µg/L	0.025
M7-PFUnDA	8.760	570.0 -> 525.1	17867	1.25 µg/L	0.025
M2-PFDoDA	9.205	615.1 -> 570.0	19367	1.25 µg/L	0.025
M2-PFTeDA	9.974	715.2 -> 670.0	14750	1.25 µg/L	0.025
M8-FOSA	9.919	506.1 -> 77.8	13157	2.50 µg/L	0.037
M3-PFBS	5.502	302.1 -> 79.9	9254	2.50 µg/L	0.013
M3-PFHxS	7.329	402.1 -> 79.9	6489	2.50 µg/L	0.012
M8-PFOS	8.442	507.1 -> 79.9	8492	2.50 µg/L	0.025
M2-4:2FTS	5.309	329.1 -> 80.9	753	5.00 µg/L	0.012
M2-6:2FTS	7.023	429.1 -> 80.9	1547	5.00 µg/L	0.025
M2-8:2FTS	8.092	529.1 -> 80.9	2325	5.00 µg/L	0.026
M3-MeFOSAA	8.373	573.2 -> 419.0	17914	5.00 µg/L	0.025
M3-HFPO-DA	5.989	286.9 -> 168.9	30868	10.00 µg/L	0.012
M5-EtFOSAA	8.571	589.2 -> 419.0	14983	5.00 µg/L	0.025
M7-MeFOSE	11.084	623.2 -> 58.9	60308	25.00 µg/L	0.025
M9-EtFOSE	11.356	639.2 -> 58.9	83857	25.00 µg/L	0.025
M5-EtFOSA	11.435	531.1 -> 219.0	8820	2.50 µg/L	0.012
M3-MeFOSA	11.176	515.0 -> 219.0	8503	2.50 µg/L	0.025
13C4-PFOS	8.443	502.8 -> 79.9	9086	2.50 µg/L	0.025
13C3-PFBA	2.878	216.0 -> 172.0	57476	5.00 µg/L	-0.025
18O2-PFHxS	7.328	403.0 -> 83.9	4812	2.50 µg/L	0.012
13C4-PFOA	7.251	417.1 -> 372.0	53437	2.50 µg/L	0.025
13C2-PFDA	8.304	515.1 -> 470.1	16671	1.25 µg/L	0.025
13C5-PFNA	7.798	468.0 -> 423.0	23201	1.25 µg/L	0.013
13C2-PFHxA	5.623	315.1 -> 270.0	36124	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.309	329.1 -> 80.9	753	6.26 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 125.2%		
13C2-6:2FTS	7.023	429.1 -> 80.9	1547	6.73 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 134.7%		
13C2-8:2FTS	8.092	529.1 -> 80.9	2325	6.66 µg/L	0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 133.3%		
13C2-PFDoDA	9.205	615.1 -> 570.0	19367	1.36 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.5%		
13C2-PFTeDA	9.974	715.2 -> 670.0	14750	1.29 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C3-PFBS	5.502	302.1 -> 79.9	9254	2.26 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.4%		
13C3-PFHxS	7.329	402.1 -> 79.9	6489	2.44 µg/L	0.012

7.2.3
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.4%	
13C4-PFBA	2.886	216.8 -> 171.9	108010	10.99 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 109.9%	
13C4-PFHpA	6.580	367.1 -> 322.0	27823	2.59 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.4%	
13C5-PFHxA	5.622	318.0 -> 273.0	38790	2.56 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C5-PFPeA	4.412	268.3 -> 223.0	56108	4.44 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 88.9%	
13C6-PFDA	8.303	519.1 -> 474.1	15421	1.34 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.9%	
13C7-PFUnDA	8.760	570.0 -> 525.1	17867	1.37 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 110.0%	
13C8-FOSA	9.919	506.1 -> 77.8	13157	2.32 µg/L	0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.9%	
13C8-PFOA	7.251	421.1 -> 376.0	44309	2.52 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C8-PFOS	8.442	507.1 -> 79.9	8492	2.33 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.1%	
13C9-PFNA	7.797	472.1 -> 427.0	20388	1.16 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.8%	
d3-MeFOSAA	8.373	573.2 -> 419.0	17914	5.31 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.2%	
13C3-HFPO-DA	5.989	286.9 -> 168.9	30868	8.97 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 89.7%	
d3-MeFOSA	11.176	515.0 -> 219.0	8503	2.55 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
d5-EtFOSAA	8.571	589.2 -> 419.0	14983	5.40 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.1%	
d7-MeFOSE	11.084	623.2 -> 58.9	60308	22.60 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 90.4%	
d9-EtFOSE	11.356	639.2 -> 58.9	83857	22.41 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.6%	
d5-EtFOSA	11.435	531.1 -> 219.0	8820	2.29 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.8%	

Target Compounds

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



7.2.3
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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	6.097	449.0 -> 98.9	0	µg/L	m	1
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	0	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	4.894	498.9 -> 98.8	0	µg/L	m	1
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	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
7

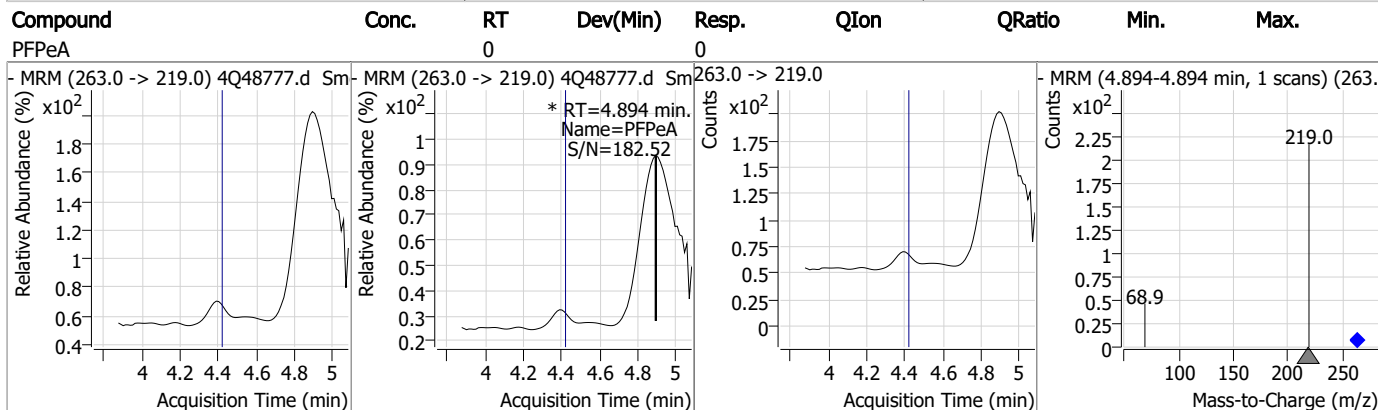
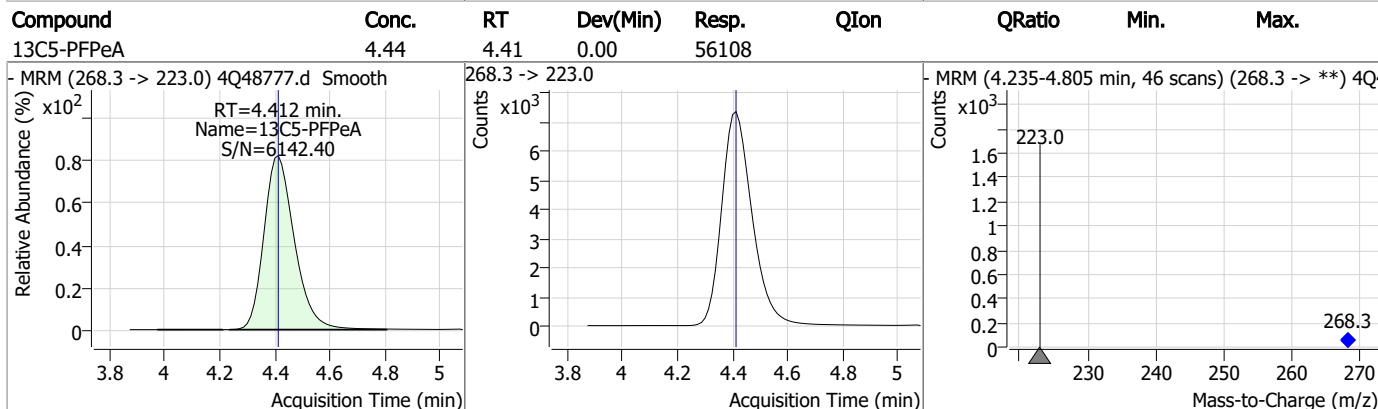
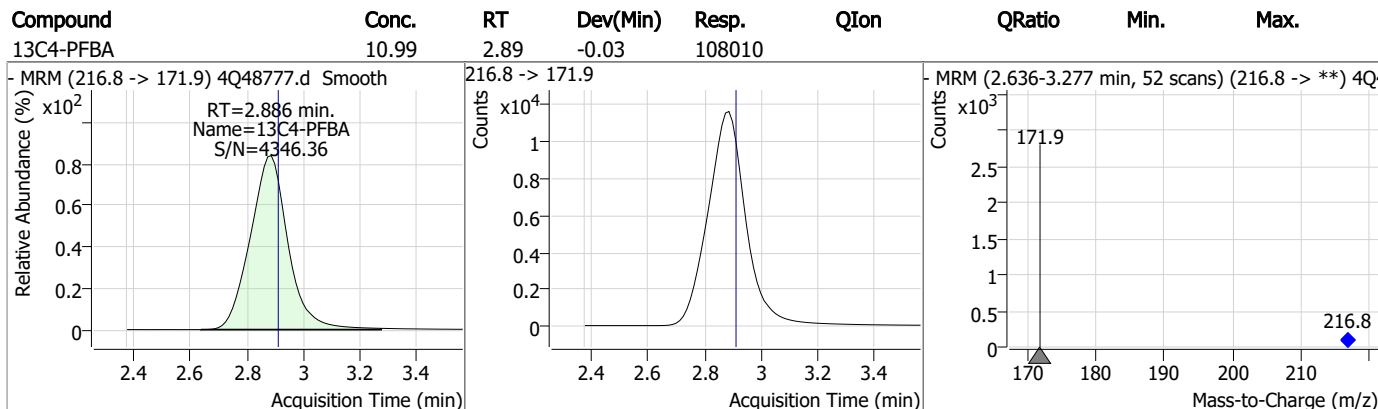
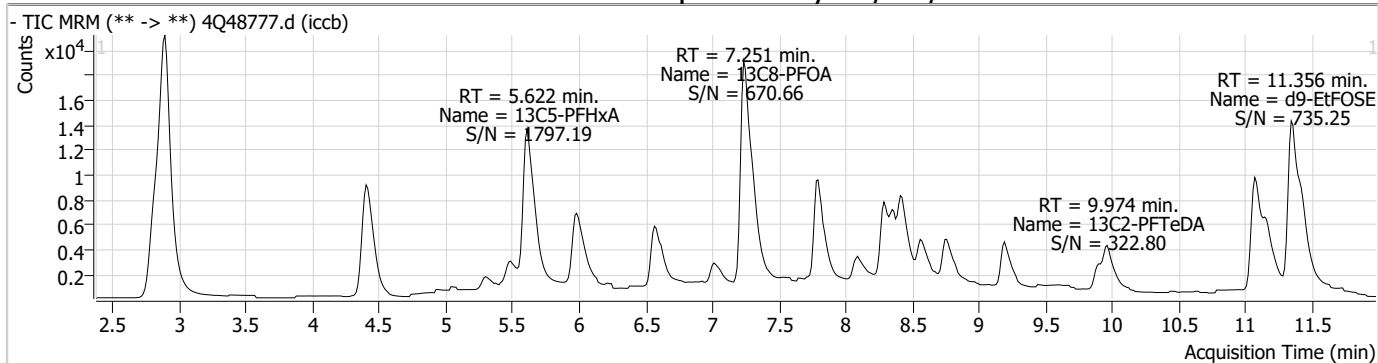
Perfluorinated Compounds by LC/MS/MS

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

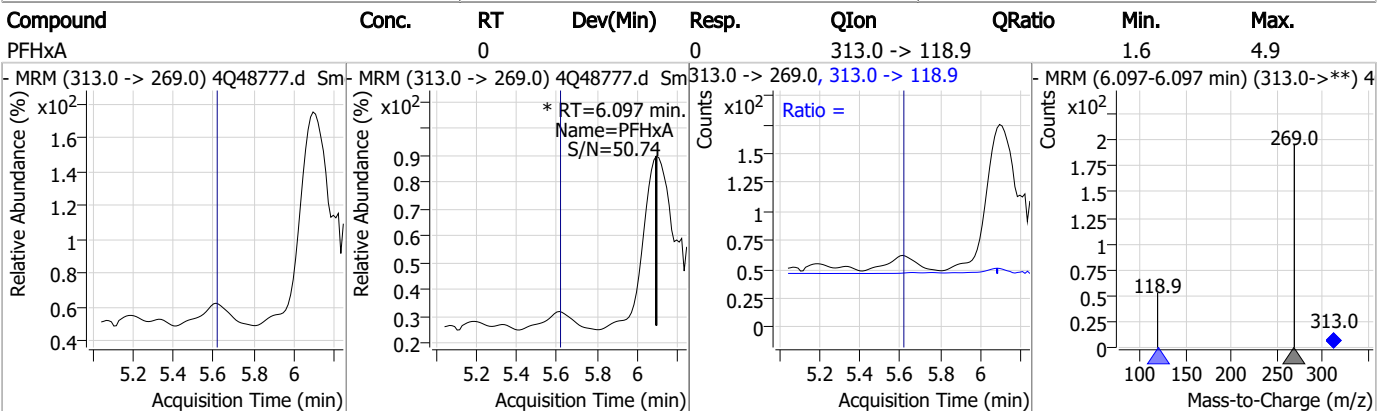
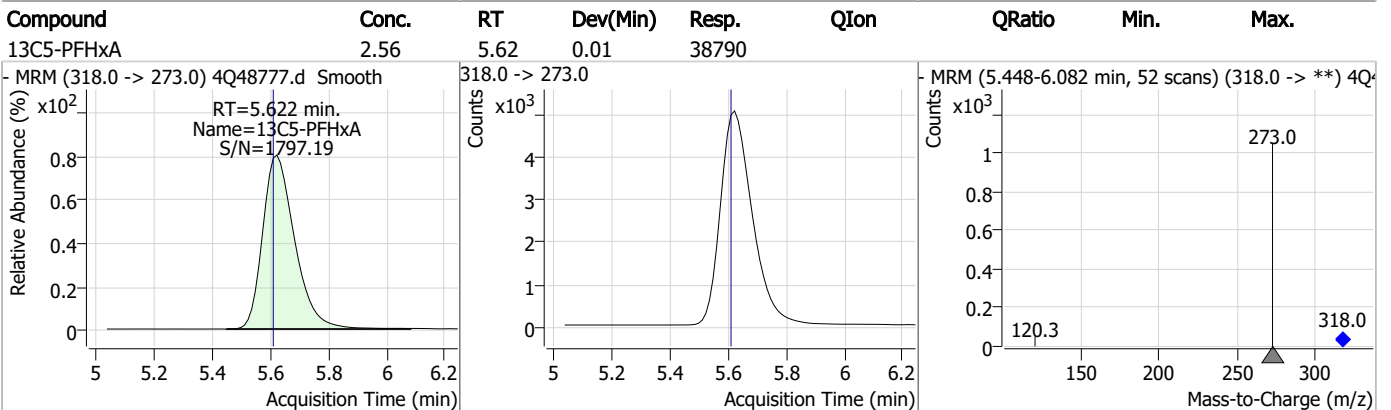
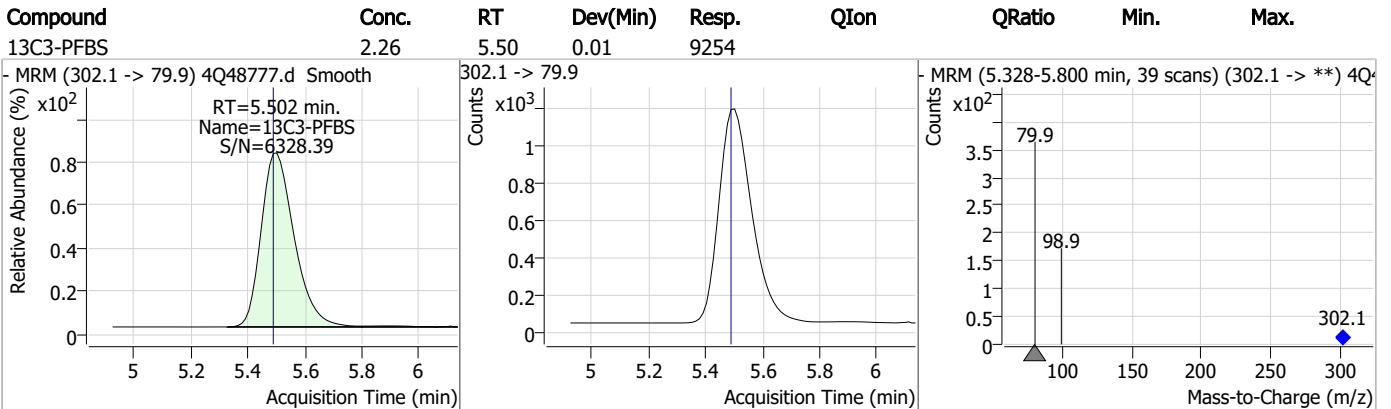
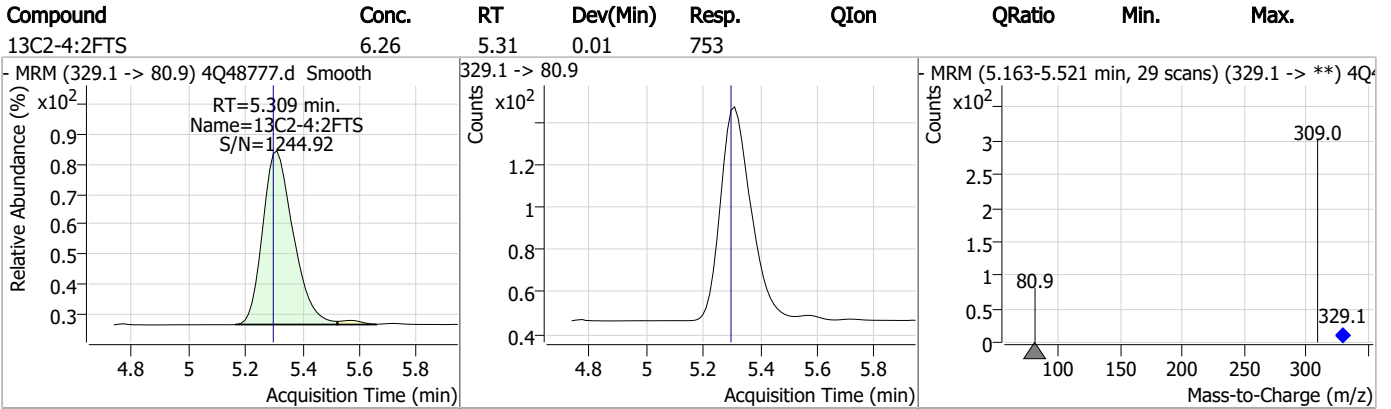
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Perfluorinated Compounds by LC/MS/MS

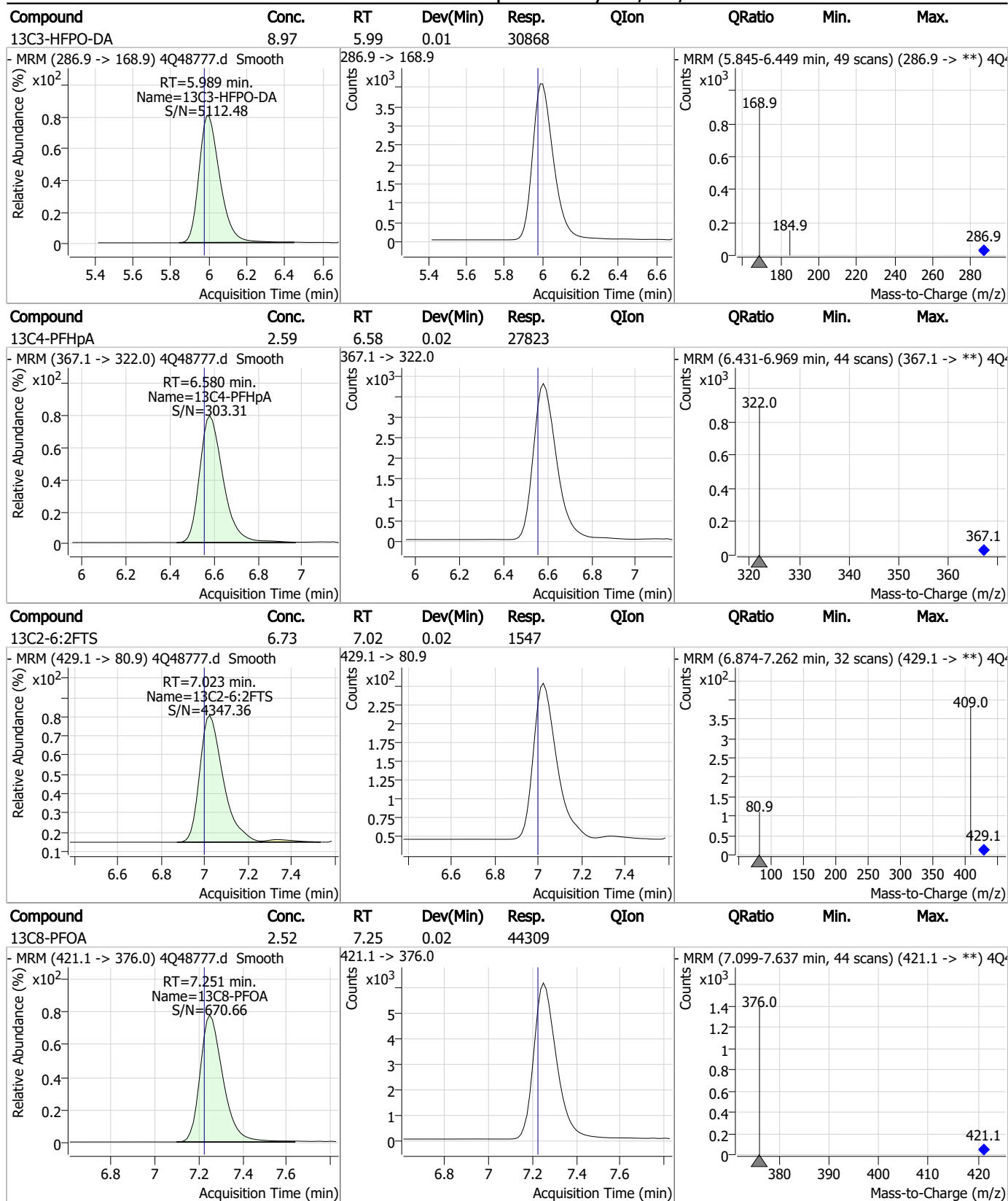


7.2.3
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Perfluorinated Compounds by LC/MS/MS



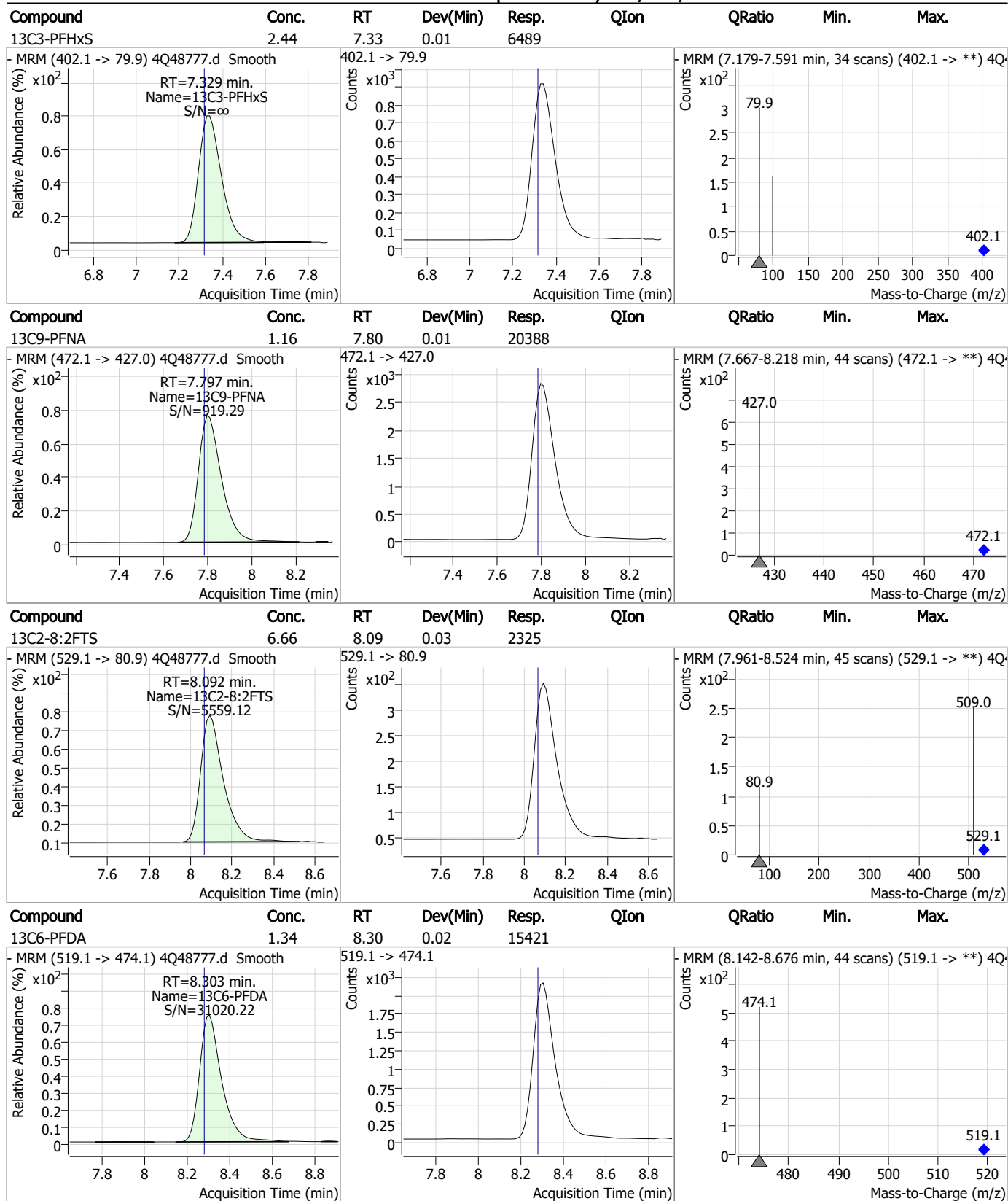
Perfluorinated Compounds by LC/MS/MS



7.2.3
7



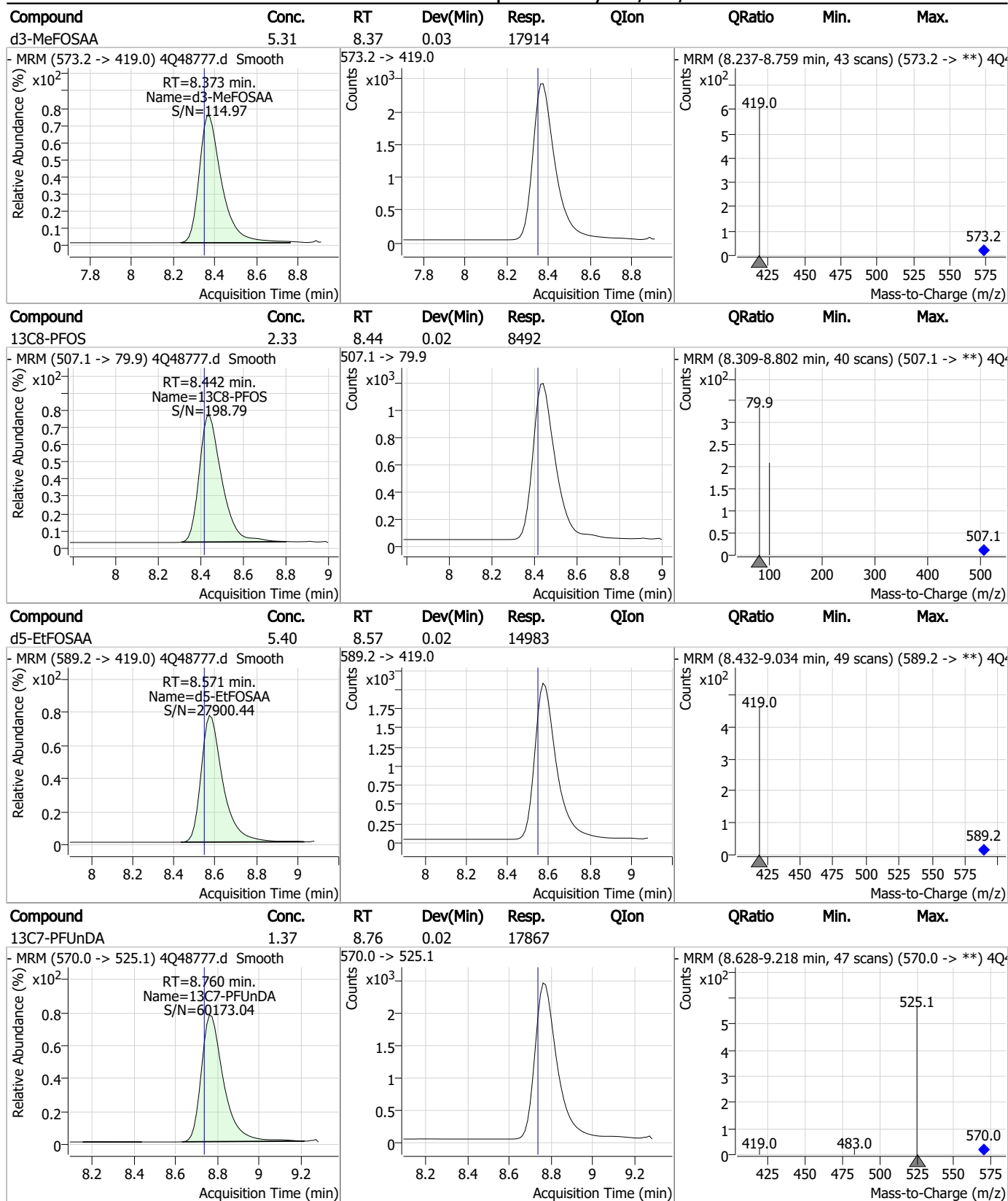
Perfluorinated Compounds by LC/MS/MS



7.2.3
7



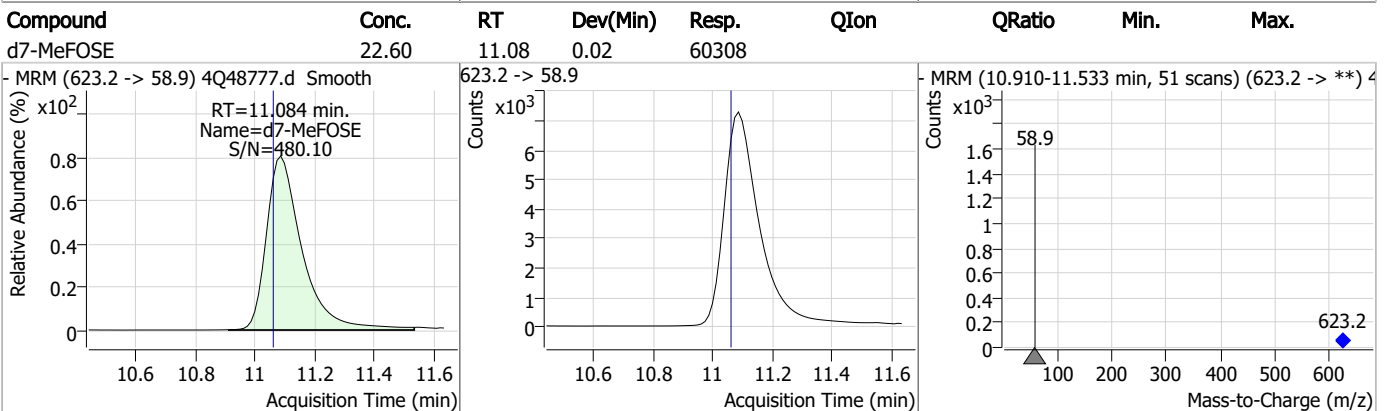
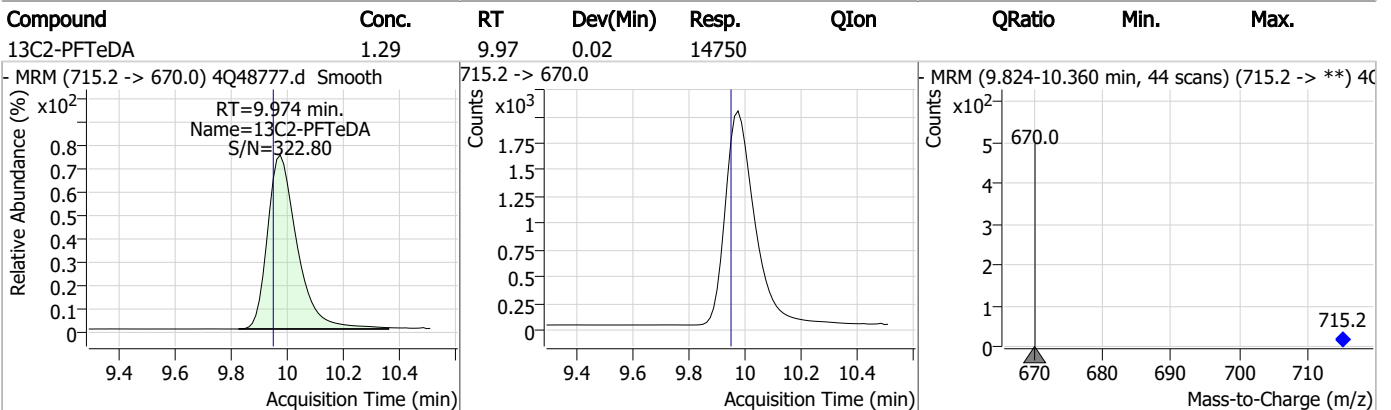
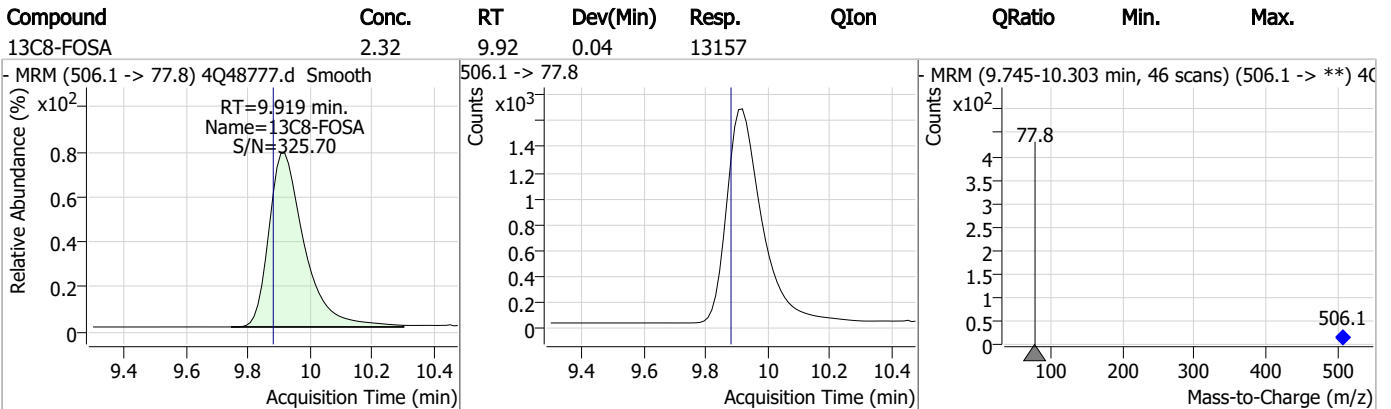
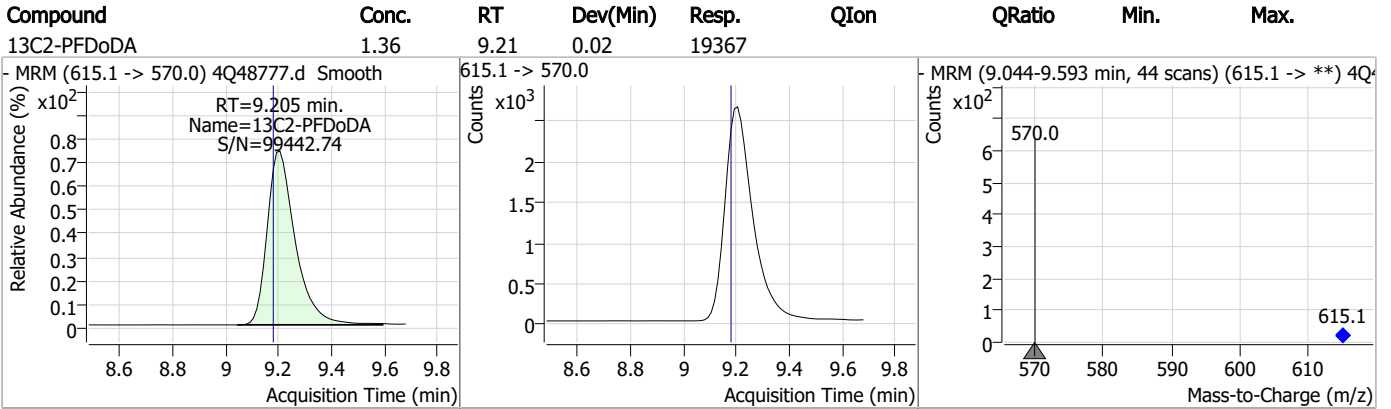
Perfluorinated Compounds by LC/MS/MS



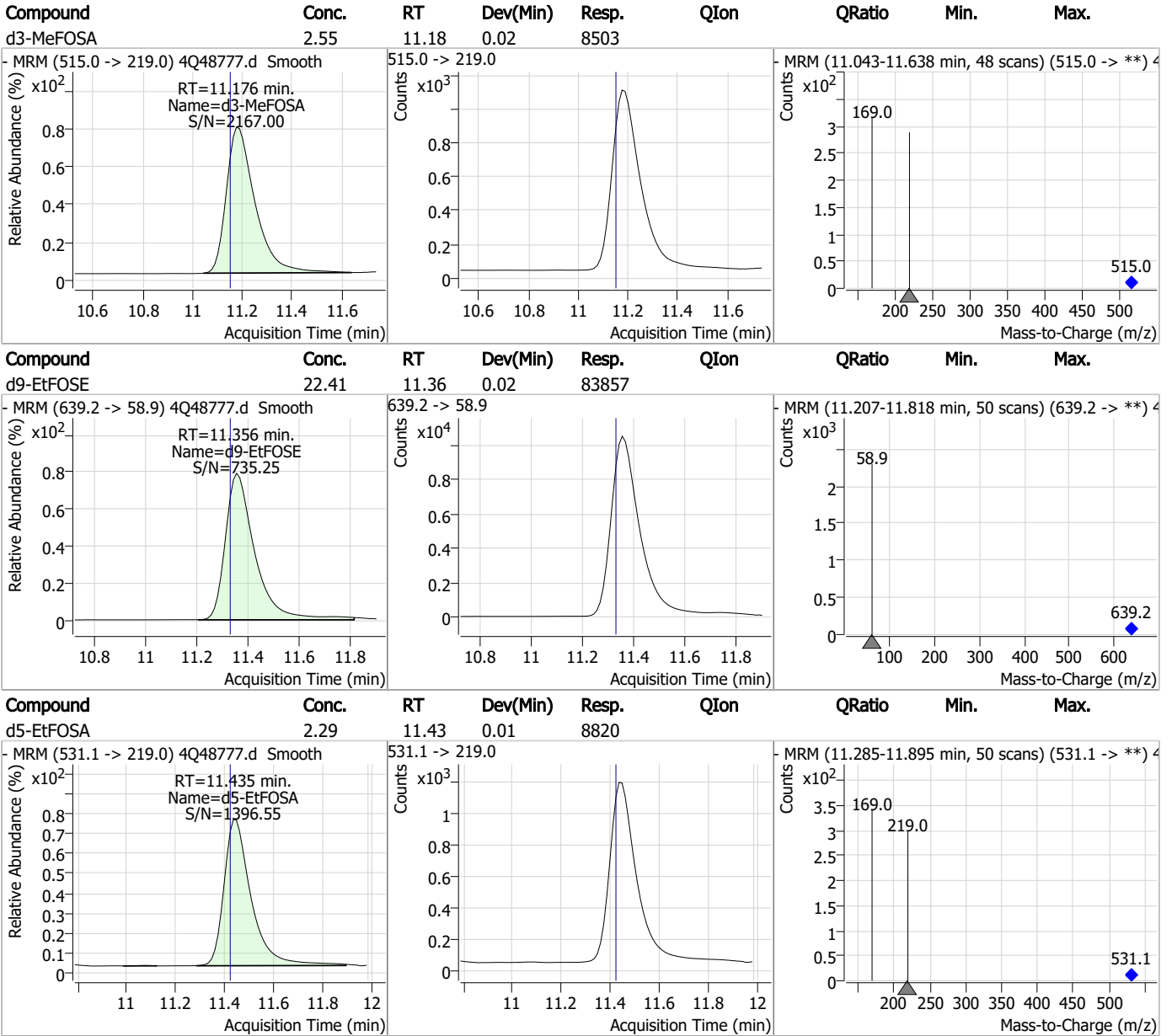
7.2.3
7



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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 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/9/2023 9:16:12 PM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q713.batch.bin
 Sample Information : OP98180,S4Q713,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.886	216.8 -> 171.9	110231	10.00 µg/L	-0.025
M5-PFPeA	4.425	268.3 -> 223.0	56595	5.00 µg/L	0.012
M5-PFHxA	5.610	318.0 -> 273.0	38105	2.50 µg/L	0.000
M4-PFHpA	6.555	367.1 -> 322.0	28133	2.50 µg/L	0.000
M8-PFOA	7.226	421.1 -> 376.0	45207	2.50 µg/L	0.000
M9-PFNA	7.785	472.1 -> 427.0	19475	1.25 µg/L	0.000
M6-PFDA	8.291	519.1 -> 474.1	14747	1.25 µg/L	0.013
M7-PFUnDA	8.760	570.0 -> 525.1	19115	1.25 µg/L	0.025
M2-PFDoDA	9.205	615.1 -> 570.0	19131	1.25 µg/L	0.025
M2-PFTeDA	9.974	715.2 -> 670.0	14354	1.25 µg/L	0.025
M8-FOSA	9.919	506.1 -> 77.8	13303	2.50 µg/L	0.037
M3-PFBS	5.489	302.1 -> 79.9	9460	2.50 µg/L	0.000
M3-PFHxS	7.317	402.1 -> 79.9	6656	2.50 µg/L	0.000
M8-PFOS	8.430	507.1 -> 79.9	8600	2.50 µg/L	0.013
M2-4:2FTS	5.309	329.1 -> 80.9	861	5.00 µg/L	0.012
M2-6:2FTS	6.998	429.1 -> 80.9	1382	5.00 µg/L	0.000
M2-8:2FTS	8.078	529.1 -> 80.9	2453	5.00 µg/L	0.013
M3-MeFOSAA	8.361	573.2 -> 419.0	17754	5.00 µg/L	0.013
M3-HFPO-DA	5.977	286.9 -> 168.9	30721	10.00 µg/L	0.000
M5-EtFOSAA	8.571	589.2 -> 419.0	14666	5.00 µg/L	0.025
M7-MeFOSE	11.072	623.2 -> 58.9	60496	25.00 µg/L	0.012
M9-EtFOSE	11.356	639.2 -> 58.9	84598	25.00 µg/L	0.025
M5-EtFOSA	11.435	531.1 -> 219.0	8994	2.50 µg/L	0.012
M3-MeFOSA	11.176	515.0 -> 219.0	8547	2.50 µg/L	0.025
13C4-PFOS	8.430	502.8 -> 79.9	9226	2.50 µg/L	0.013
13C3-PFBA	2.891	216.0 -> 172.0	57955	5.00 µg/L	-0.013
18O2-PFHxS	7.316	403.0 -> 83.9	4874	2.50 µg/L	0.000
13C4-PFOA	7.226	417.1 -> 372.0	53942	2.50 µg/L	0.000
13C2-PFDA	8.291	515.1 -> 470.1	16908	1.25 µg/L	0.013
13C5-PFNA	7.785	468.0 -> 423.0	24412	1.25 µg/L	0.000
13C2-PFHxA	5.611	315.1 -> 270.0	36670	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.309	329.1 -> 80.9	861	7.07 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 141.4%		
13C2-6:2FTS	6.998	429.1 -> 80.9	1382	5.94 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.8%		
13C2-8:2FTS	8.078	529.1 -> 80.9	2453	6.94 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 138.8%		
13C2-PFDoDA	9.205	615.1 -> 570.0	19131	1.32 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.7%		
13C2-PFTeDA	9.974	715.2 -> 670.0	14354	1.23 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C3-PFBS	5.489	302.1 -> 79.9	9460	2.28 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.2%		
13C3-PFHxS	7.317	402.1 -> 79.9	6656	2.47 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C4-PFBA	2.886	216.8 -> 171.9	110231	11.13 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 111.3%	
13C4-PFHpA	6.555	367.1 -> 322.0	28133	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.0%	
13C5-PFHxA	5.610	318.0 -> 273.0	38105	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C5-PFPeA	4.425	268.3 -> 223.0	56595	4.42 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 88.3%	
13C6-PFDA	8.291	519.1 -> 474.1	14747	1.26 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C7-PFUnDA	8.760	570.0 -> 525.1	19115	1.45 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 116.0%	
13C8-FOSA	9.919	506.1 -> 77.8	13303	2.31 µg/L	0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.5%	
13C8-PFOA	7.226	421.1 -> 376.0	45207	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C8-PFOS	8.430	507.1 -> 79.9	8600	2.32 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.8%	
13C9-PFNA	7.785	472.1 -> 427.0	19475	1.05 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 84.2%	
d3-MeFOSAA	8.361	573.2 -> 419.0	17754	5.18 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C3-HFPO-DA	5.977	286.9 -> 168.9	30721	8.79 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 87.9%	
d3-MeFOSA	11.176	515.0 -> 219.0	8547	2.52 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
d5-EtFOSAA	8.571	589.2 -> 419.0	14666	5.21 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.2%	
d7-MeFOSE	11.072	623.2 -> 58.9	60496	22.33 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.3%	
d9-EtFOSE	11.356	639.2 -> 58.9	84598	22.26 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.1%	
d5-EtFOSA	11.435	531.1 -> 219.0	8994	2.30 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.2%	

Target Compounds

QValue

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



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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	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	6.097	449.0 -> 98.9	0	µg/L	m	1
		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	4.894	498.9 -> 98.8	0	µg/L	m	1
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	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

7.2.4
7

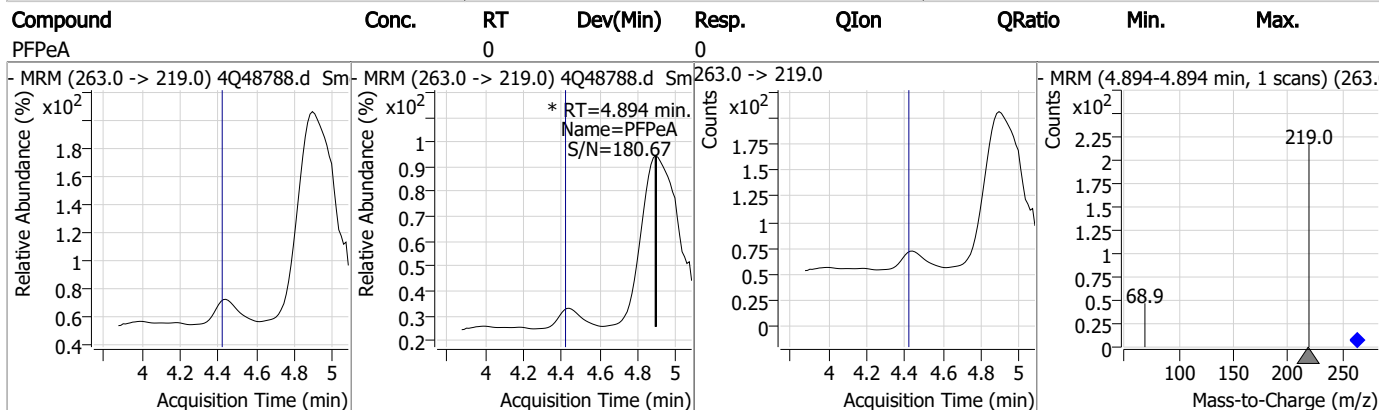
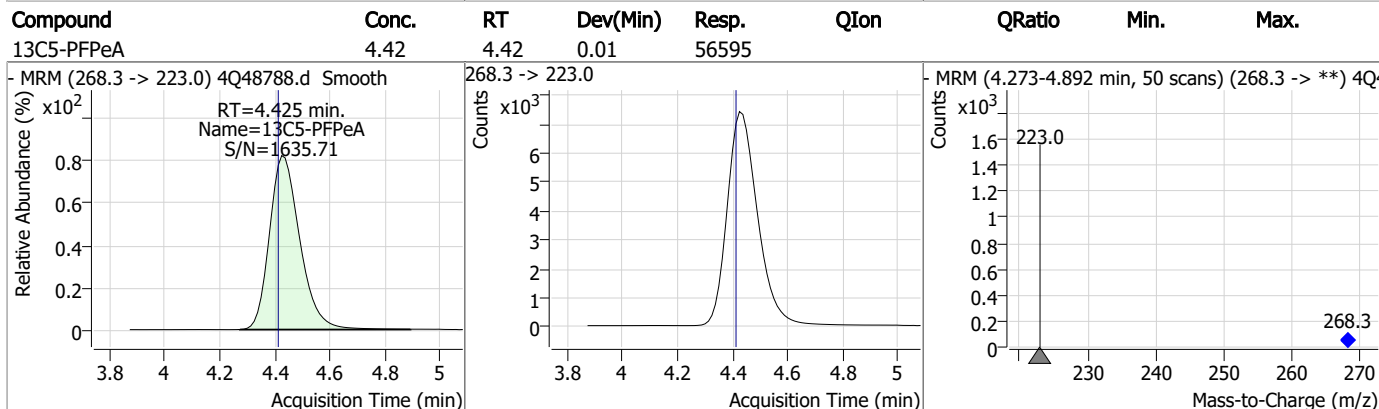
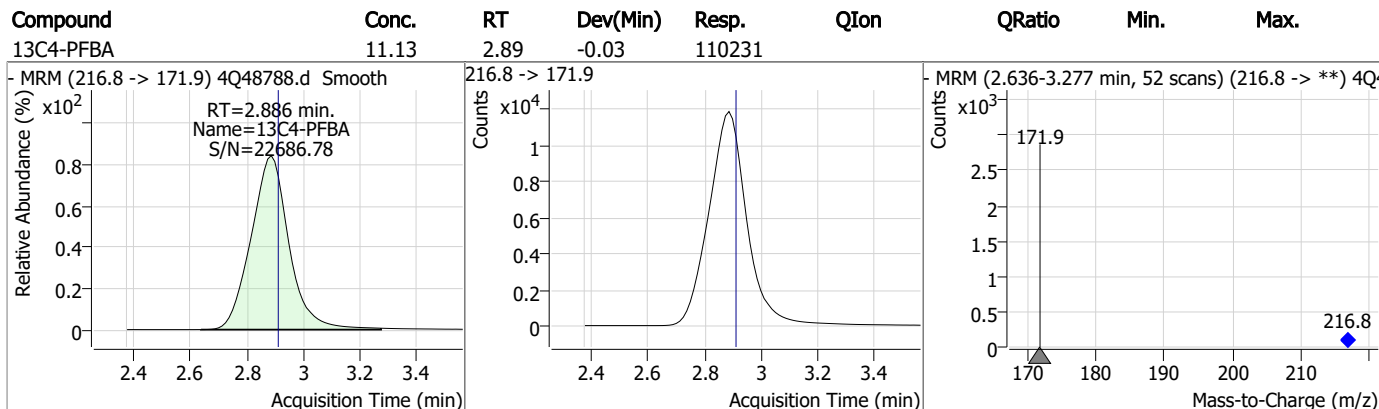
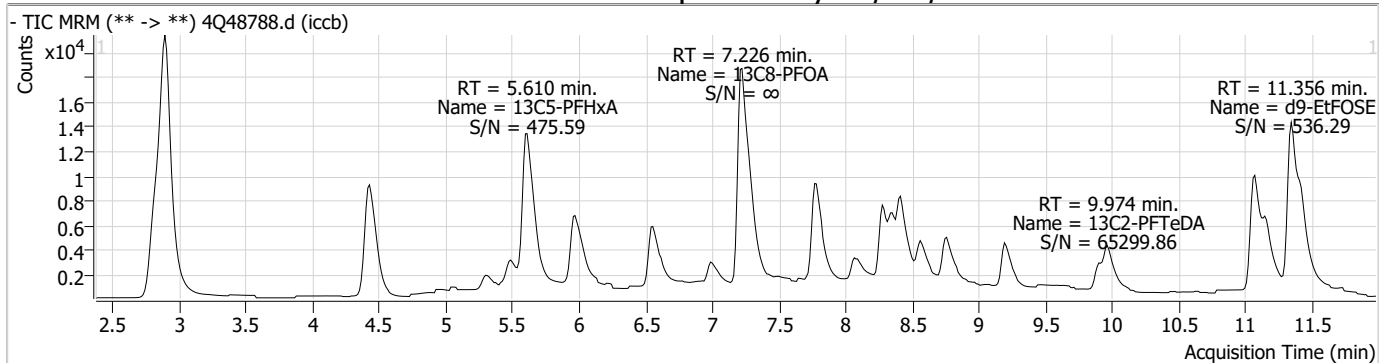
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.2.4
7

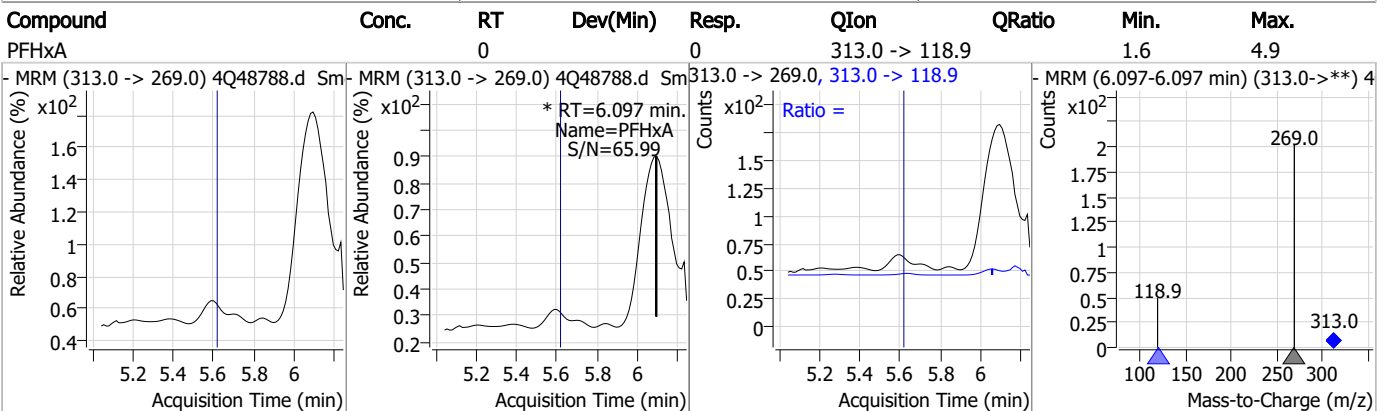
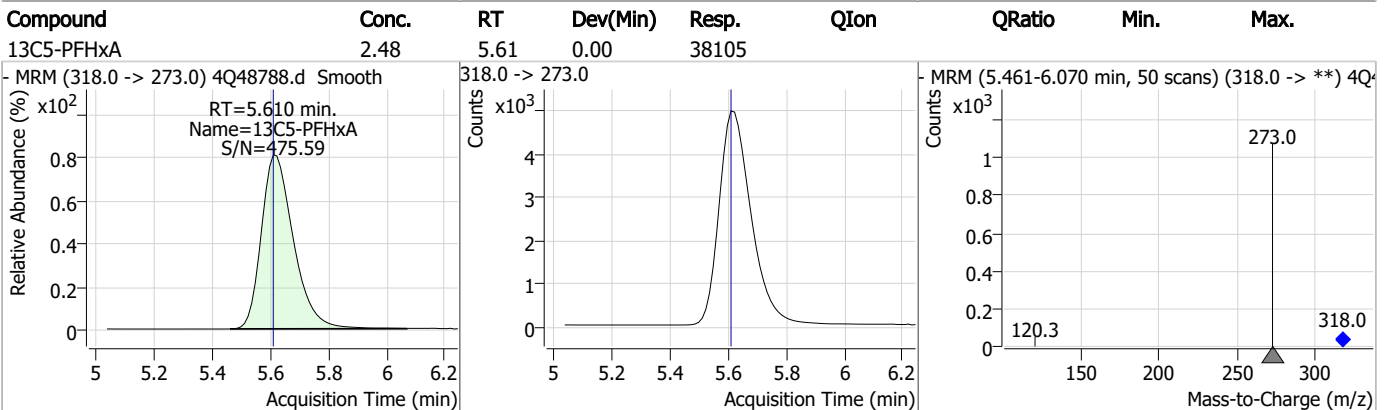
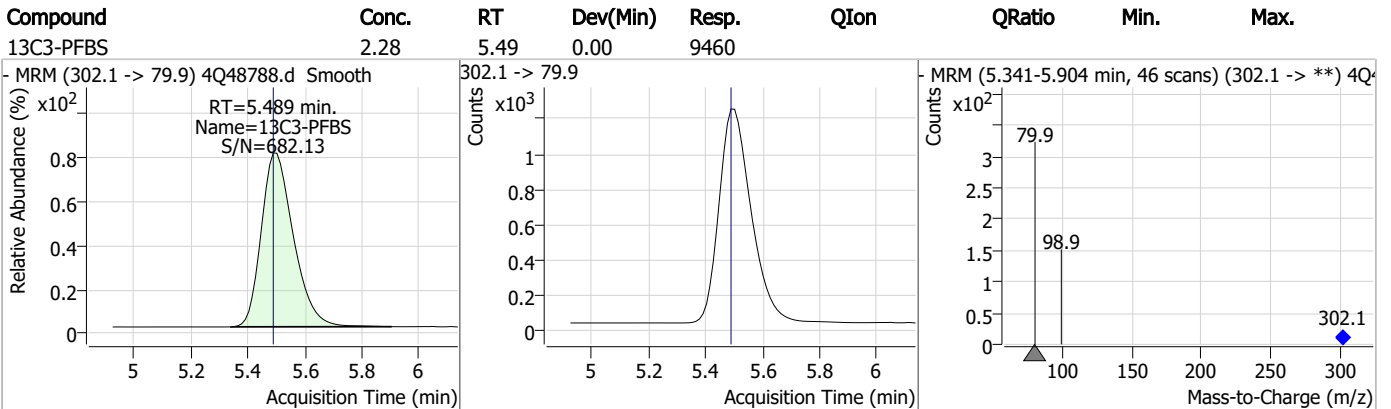
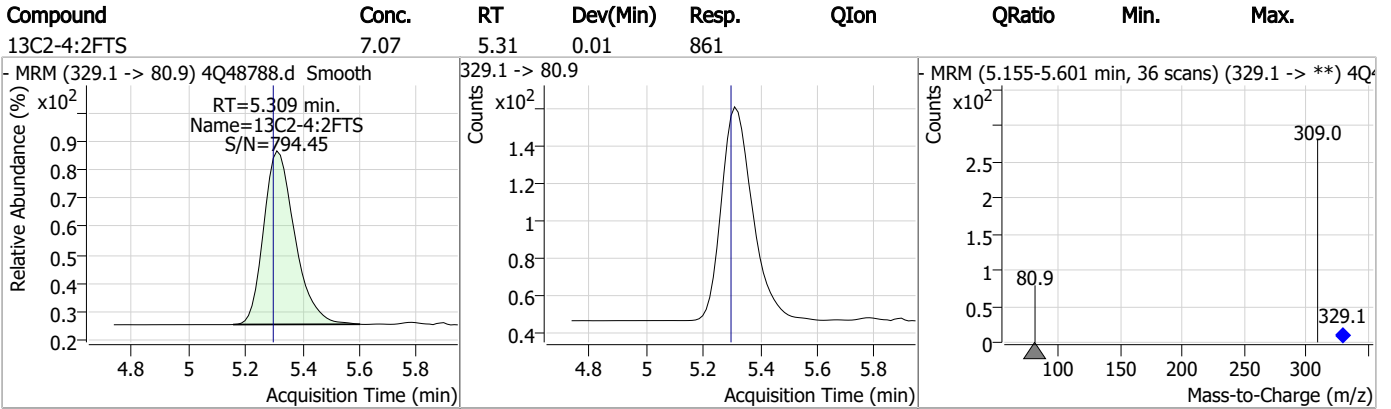


Perfluorinated Compounds by LC/MS/MS

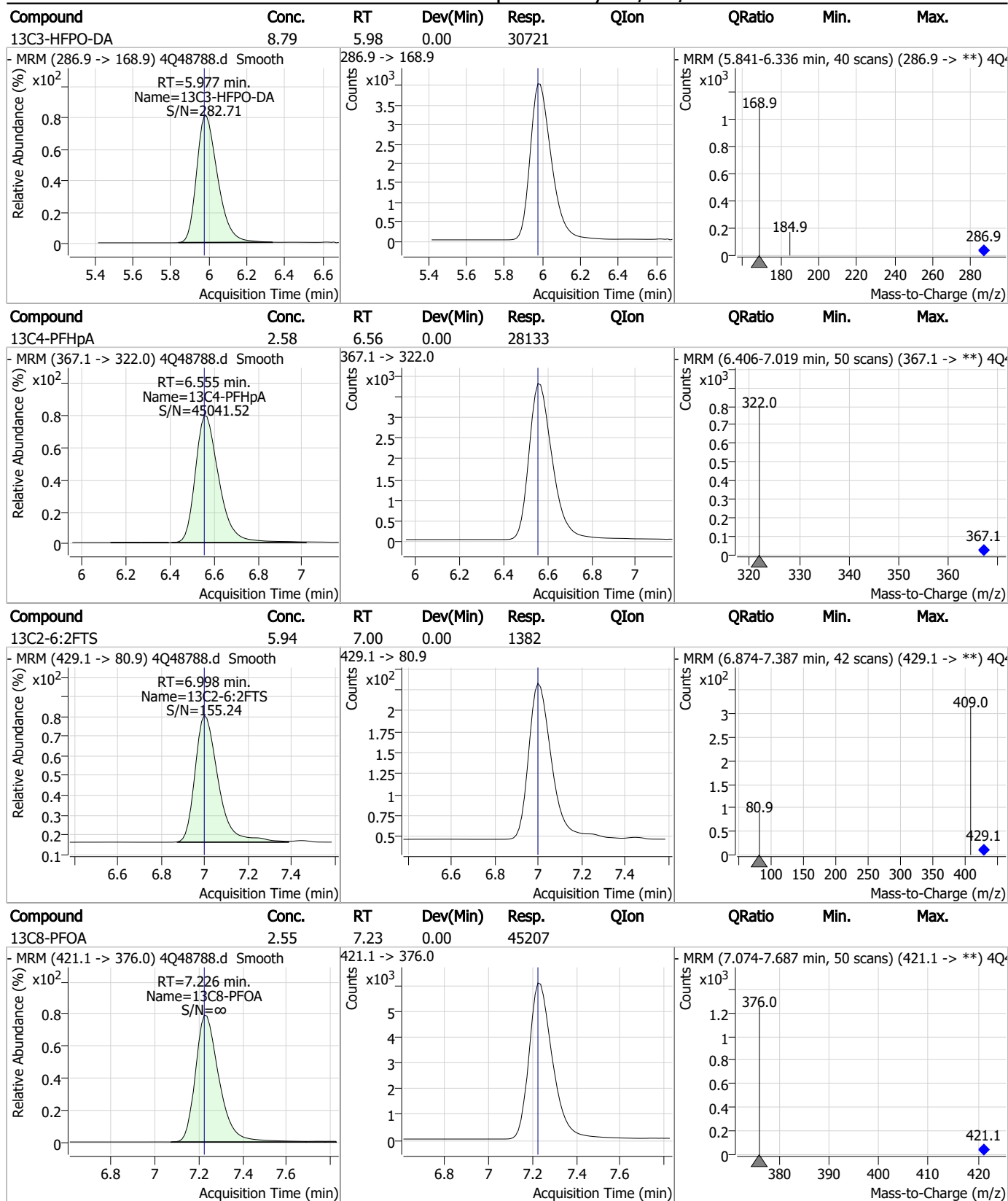


7.2.4
7

Perfluorinated Compounds by LC/MS/MS



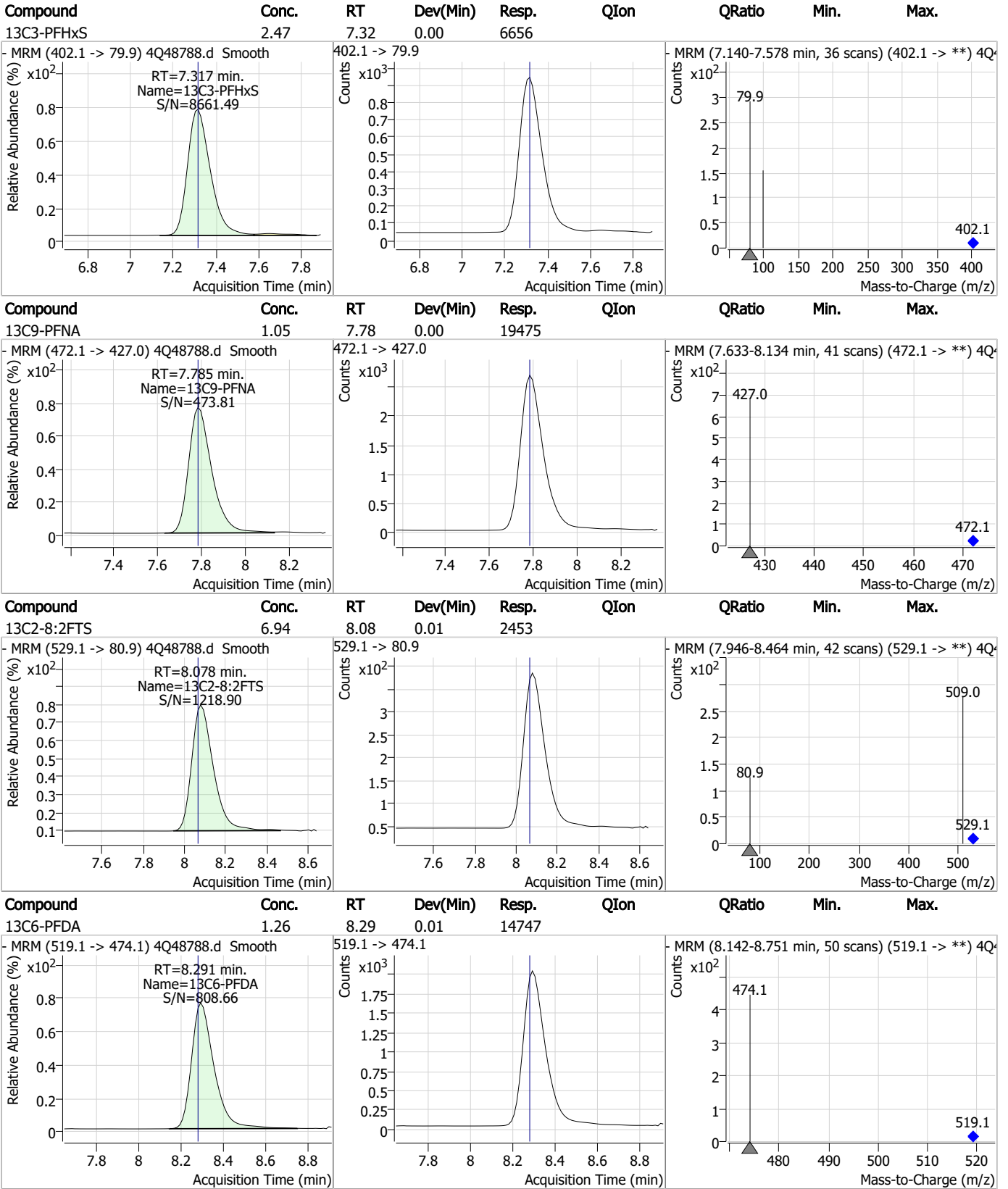
Perfluorinated Compounds by LC/MS/MS



7.2.4
7



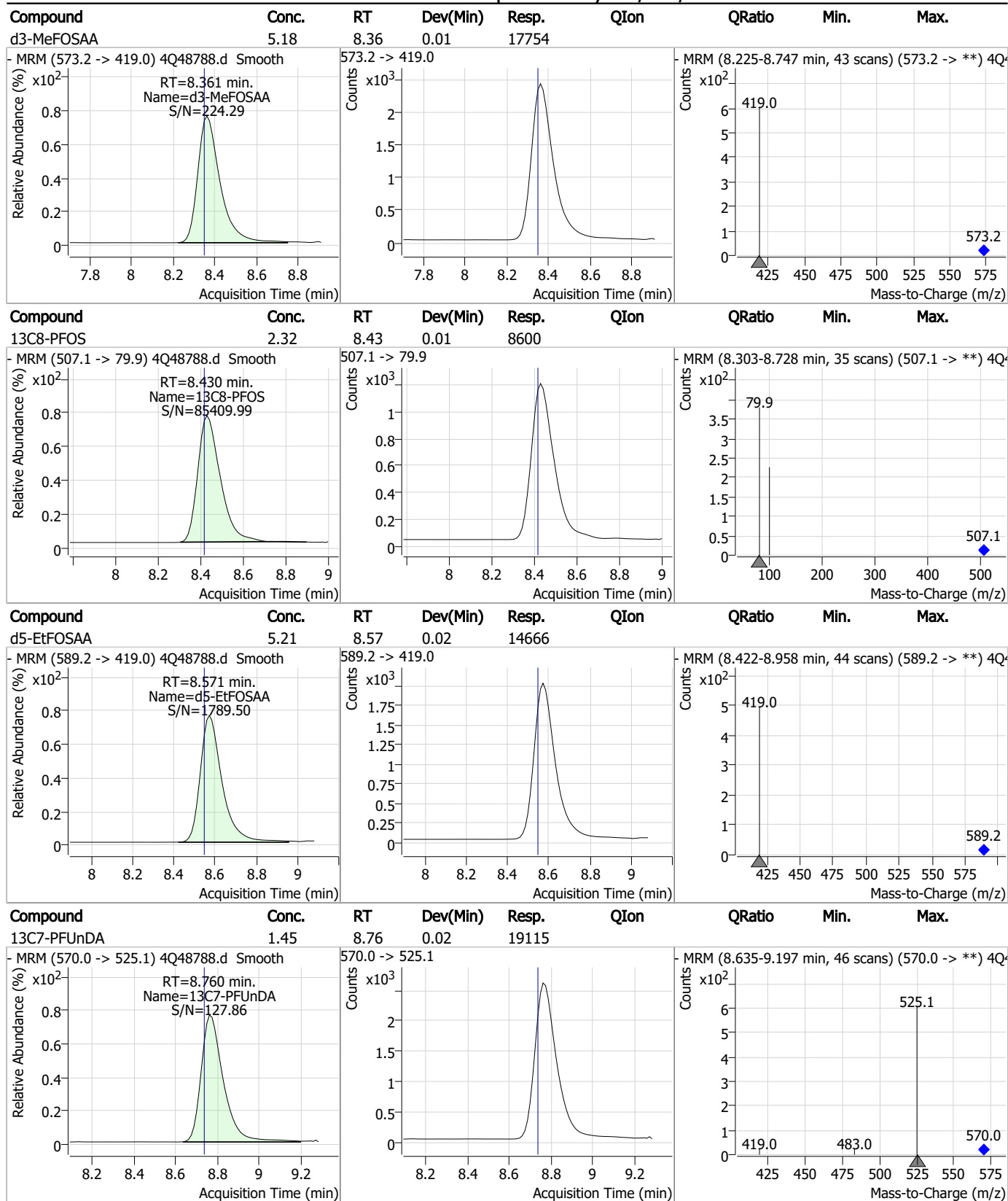
Perfluorinated Compounds by LC/MS/MS



7.2.4

7

Perfluorinated Compounds by LC/MS/MS



7.2.4

7

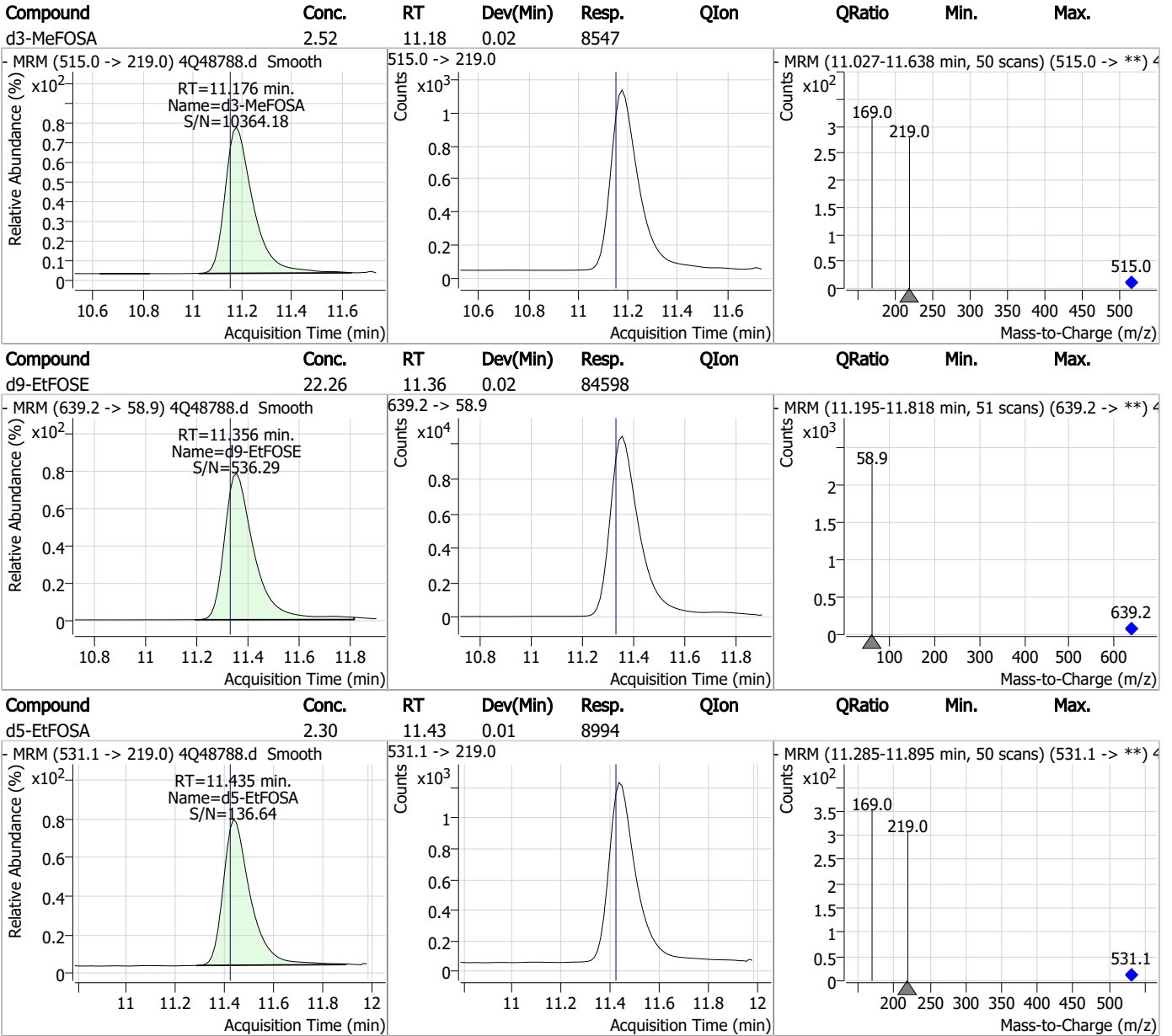
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.32	9.21	0.02	19131				
13C8-FOSA	2.31	9.92	0.04	13303				
13C2-PFTeDA	1.23	9.97	0.02	14354				
d7-MeFOSE	22.33	11.07	0.01	60496				

7.2.4
7



Perfluorinated Compounds by LC/MS/MS



7.2.4

7



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48800.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/10/2023 12:13:18 AM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q713.batch.bin
 Sample Information : OP98180,S4Q713,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.899	216.8 -> 171.9	109148	10.00 µg/L	-0.013
M5-PFPeA	4.412	268.3 -> 223.0	57364	5.00 µg/L	0.000
M5-PFHxA	5.622	318.0 -> 273.0	37827	2.50 µg/L	0.012
M4-PFHpA	6.580	367.1 -> 322.0	27442	2.50 µg/L	0.025
M8-PFOA	7.251	421.1 -> 376.0	45301	2.50 µg/L	0.025
M9-PFNA	7.810	472.1 -> 427.0	20916	1.25 µg/L	0.025
M6-PFDA	8.303	519.1 -> 474.1	15105	1.25 µg/L	0.025
M7-PFUnDA	8.760	570.0 -> 525.1	17865	1.25 µg/L	0.025
M2-PFDoDA	9.193	615.1 -> 570.0	19249	1.25 µg/L	0.012
M2-PFTeDA	9.961	715.2 -> 670.0	14134	1.25 µg/L	0.013
M8-FOSA	9.907	506.1 -> 77.8	13521	2.50 µg/L	0.024
M3-PFBS	5.502	302.1 -> 79.9	9369	2.50 µg/L	0.013
M3-PFHxS	7.342	402.1 -> 79.9	6902	2.50 µg/L	0.025
M8-PFOS	8.442	507.1 -> 79.9	8865	2.50 µg/L	0.025
M2-4:2FTS	5.309	329.1 -> 80.9	794	5.00 µg/L	0.012
M2-6:2FTS	7.023	429.1 -> 80.9	1590	5.00 µg/L	0.025
M2-8:2FTS	8.092	529.1 -> 80.9	2509	5.00 µg/L	0.026
M3-MeFOSAA	8.373	573.2 -> 419.0	17291	5.00 µg/L	0.025
M3-HFPO-DA	6.002	286.9 -> 168.9	31375	10.00 µg/L	0.025
M5-EtFOSAA	8.571	589.2 -> 419.0	14808	5.00 µg/L	0.025
M7-MeFOSE	11.072	623.2 -> 58.9	57730	25.00 µg/L	0.012
M9-EtFOSE	11.356	639.2 -> 58.9	82339	25.00 µg/L	0.025
M5-EtFOSA	11.435	531.1 -> 219.0	9195	2.50 µg/L	0.012
M3-MeFOSA	11.176	515.0 -> 219.0	8431	2.50 µg/L	0.025
13C4-PFOS	8.443	502.8 -> 79.9	9734	2.50 µg/L	0.025
13C3-PFBA	2.903	216.0 -> 172.0	57530	5.00 µg/L	0.000
18O2-PFHxS	7.341	403.0 -> 83.9	4866	2.50 µg/L	0.025
13C4-PFOA	7.251	417.1 -> 372.0	54940	2.50 µg/L	0.025
13C2-PFDA	8.304	515.1 -> 470.1	17442	1.25 µg/L	0.025
13C5-PFNA	7.798	468.0 -> 423.0	23653	1.25 µg/L	0.013
13C2-PFHxA	5.623	315.1 -> 270.0	37402	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.309	329.1 -> 80.9	794	6.53 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.6%		
13C2-6:2FTS	7.023	429.1 -> 80.9	1590	6.84 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 136.9%		
13C2-8:2FTS	8.092	529.1 -> 80.9	2509	7.11 µg/L	0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 142.2%		
13C2-PFDoDA	9.193	615.1 -> 570.0	19249	1.29 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C2-PFTeDA	9.961	715.2 -> 670.0	14134	1.18 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.2%		
13C3-PFBS	5.502	302.1 -> 79.9	9369	2.26 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.5%		
13C3-PFHxS	7.342	402.1 -> 79.9	6902	2.56 µg/L	0.025

7.2.5
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C4-PFBA	2.899	216.8 -> 171.9	109148	11.10 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 111.0%	
13C4-PFHpA	6.580	367.1 -> 322.0	27442	2.46 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C5-PFHxA	5.622	318.0 -> 273.0	37827	2.41 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.5%	
13C5-PFPeA	4.412	268.3 -> 223.0	57364	4.39 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 87.8%	
13C6-PFDA	8.303	519.1 -> 474.1	15105	1.25 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C7-PFUnDA	8.760	570.0 -> 525.1	17865	1.31 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.1%	
13C8-FOSA	9.907	506.1 -> 77.8	13521	2.23 µg/L	0.024
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.1%	
13C8-PFOA	7.251	421.1 -> 376.0	45301	2.50 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C8-PFOS	8.442	507.1 -> 79.9	8865	2.27 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.7%	
13C9-PFNA	7.810	472.1 -> 427.0	20916	1.17 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.4%	
d3-MeFOSAA	8.373	573.2 -> 419.0	17291	4.79 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.7%	
13C3-HFPO-DA	6.002	286.9 -> 168.9	31375	8.81 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 88.1%	
d3-MeFOSA	11.176	515.0 -> 219.0	8431	2.36 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.3%	
d5-EtFOSAA	8.571	589.2 -> 419.0	14808	4.99 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
d7-MeFOSE	11.072	623.2 -> 58.9	57730	20.19 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 80.8%	
d9-EtFOSE	11.356	639.2 -> 58.9	82339	20.54 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 82.2%	
d5-EtFOSA	11.435	531.1 -> 219.0	9195	2.23 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.3%	

Target Compounds

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

7.25
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.945	599.0 -> 98.8				
		363.1 -> 319.0	0	µg/L	m	1
PFHpS	-	363.1 -> 169.0	0			
		449.0 -> 79.9	-	N.D.		
PFHxA	6.097	449.0 -> 98.9				
		313.0 -> 269.0	0	µg/L	m	1
PFHxS	-	313.0 -> 118.9	0			
		398.7 -> 79.9	-	N.D.		
PFNA	-	398.7 -> 98.9				
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	-	548.8 -> 98.9				
		413.0 -> 369.0	-	N.D.		
PFOS	-	413.0 -> 169.0				
		498.9 -> 79.9	-	N.D.		
PFPeA	4.894	498.9 -> 98.8				
		263.0 -> 219.0	0	µg/L	m	1
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	9.402	713.1 -> 669.0	0	µg/L	m	1
		713.1 -> 168.9	0			
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				
PFMPA	-					
PFEESA	-					

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

7.2.5
7

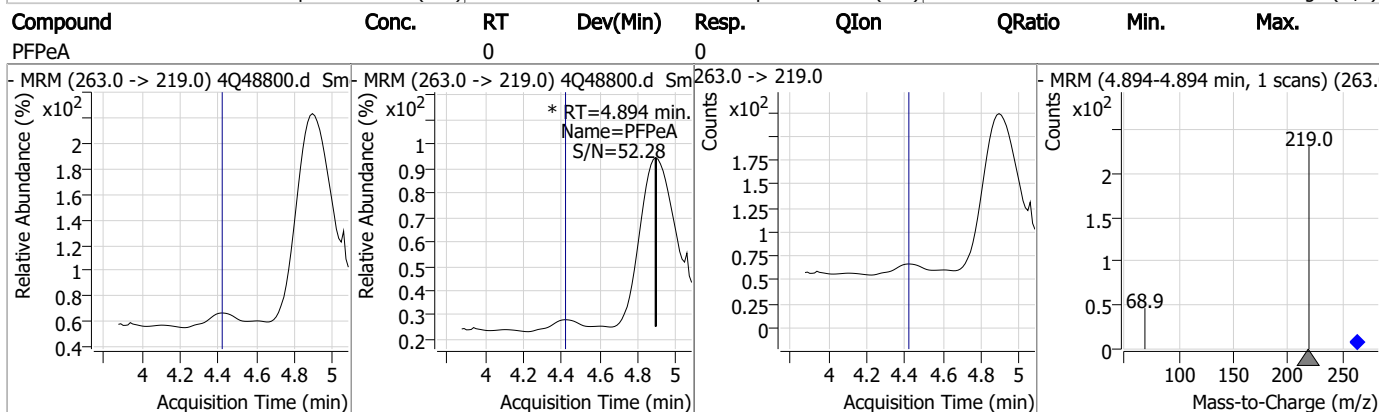
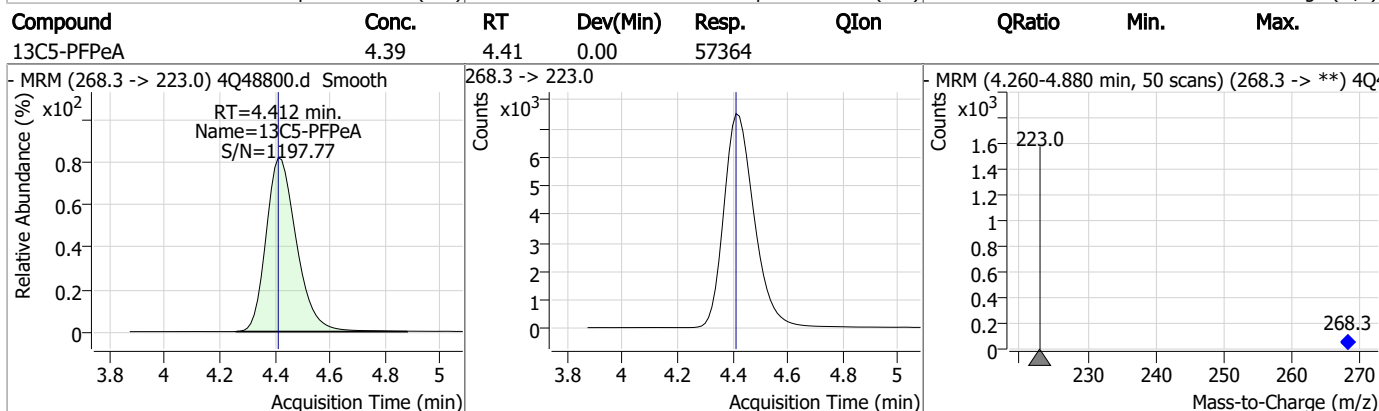
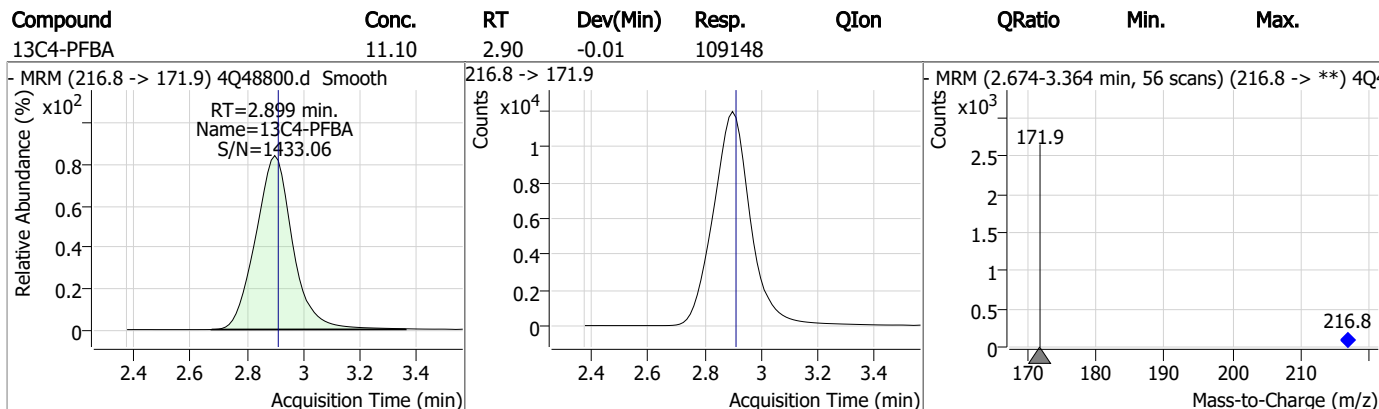
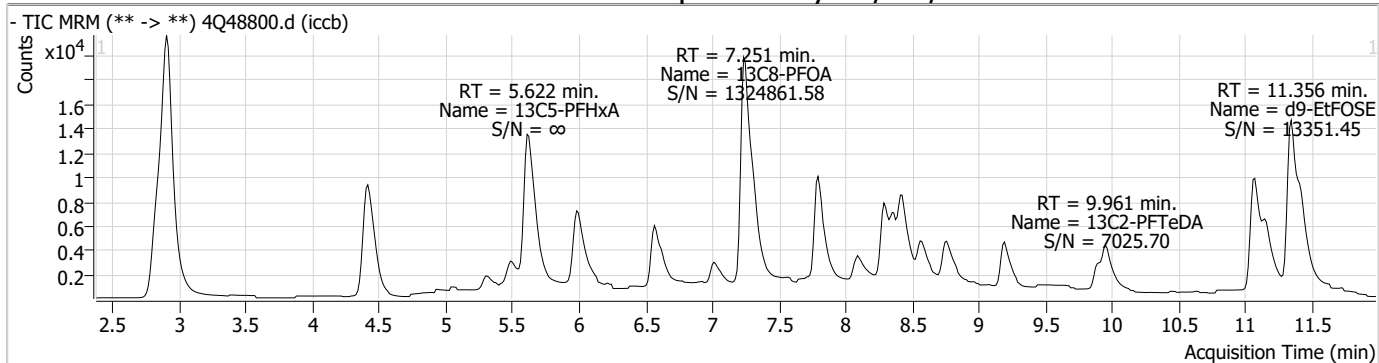
Perfluorinated Compounds by LC/MS/MS

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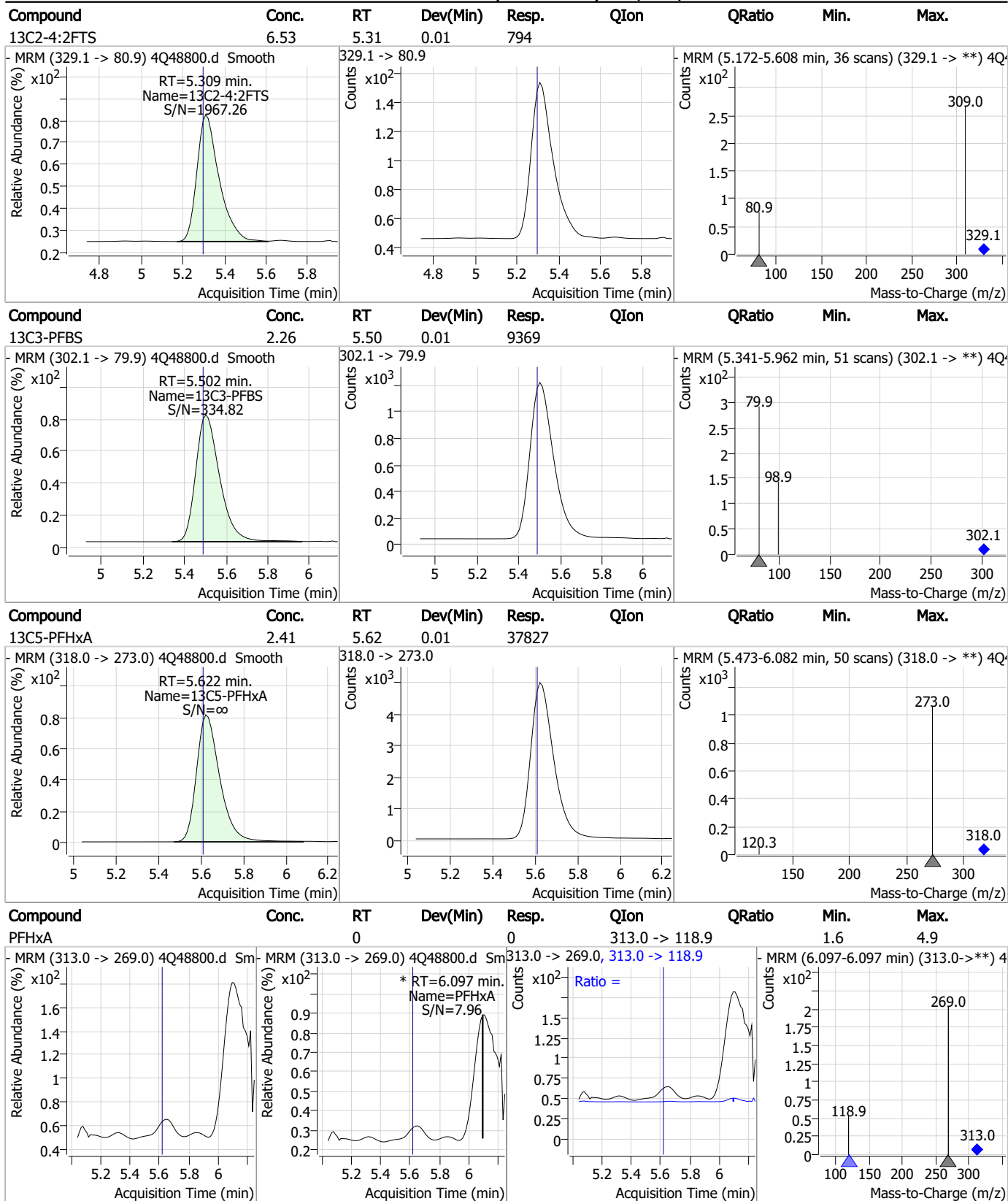
7.2.5

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Perfluorinated Compounds by LC/MS/MS

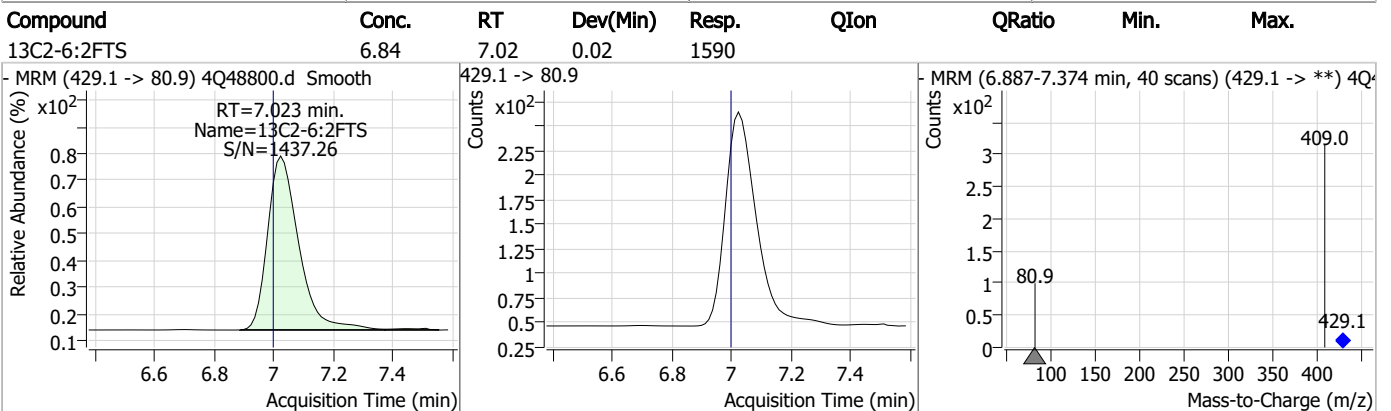
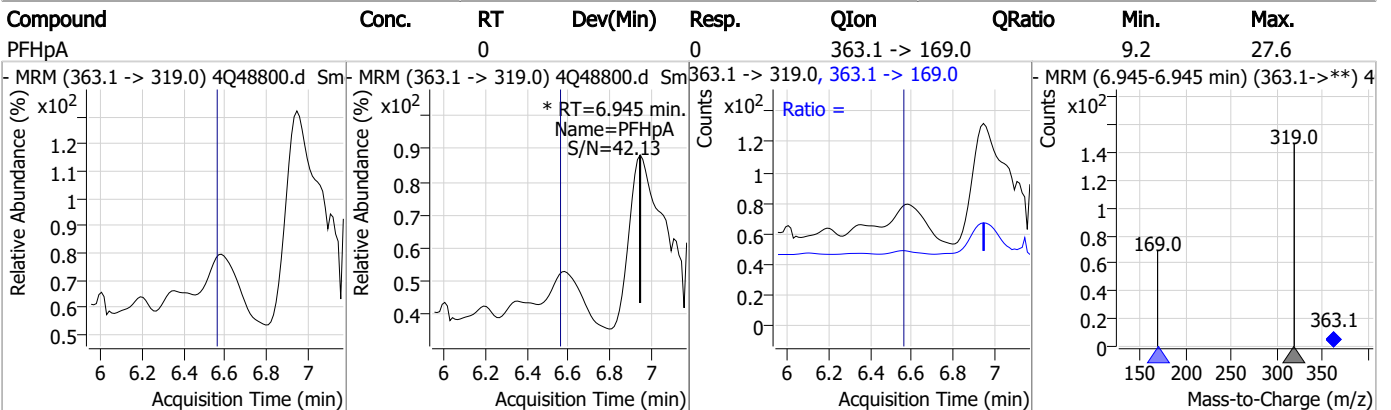
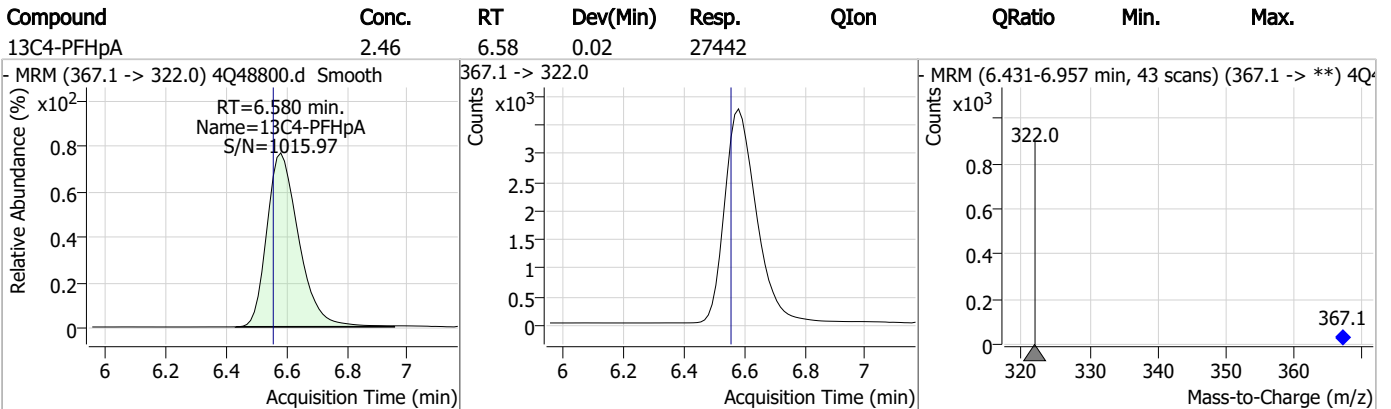
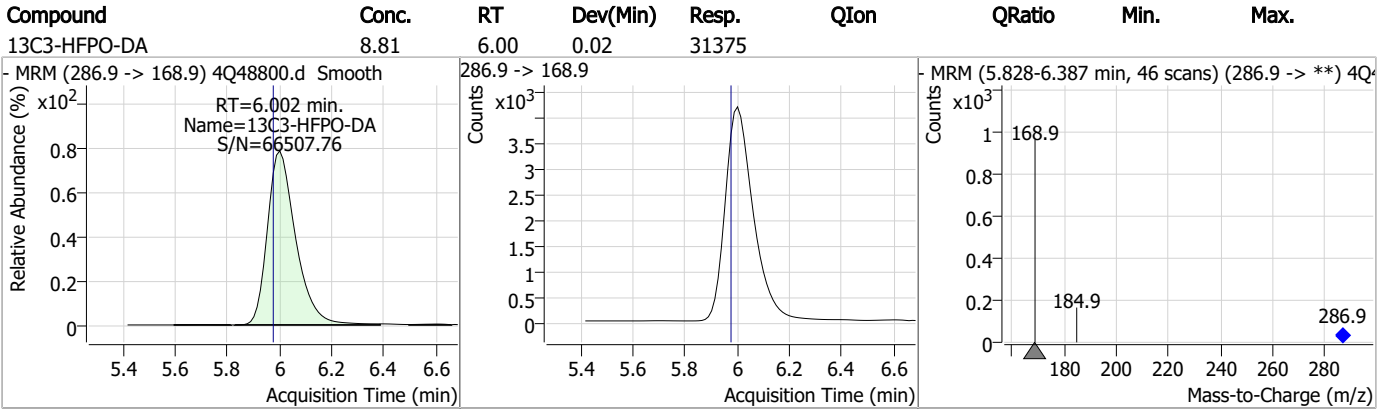


Perfluorinated Compounds by LC/MS/MS

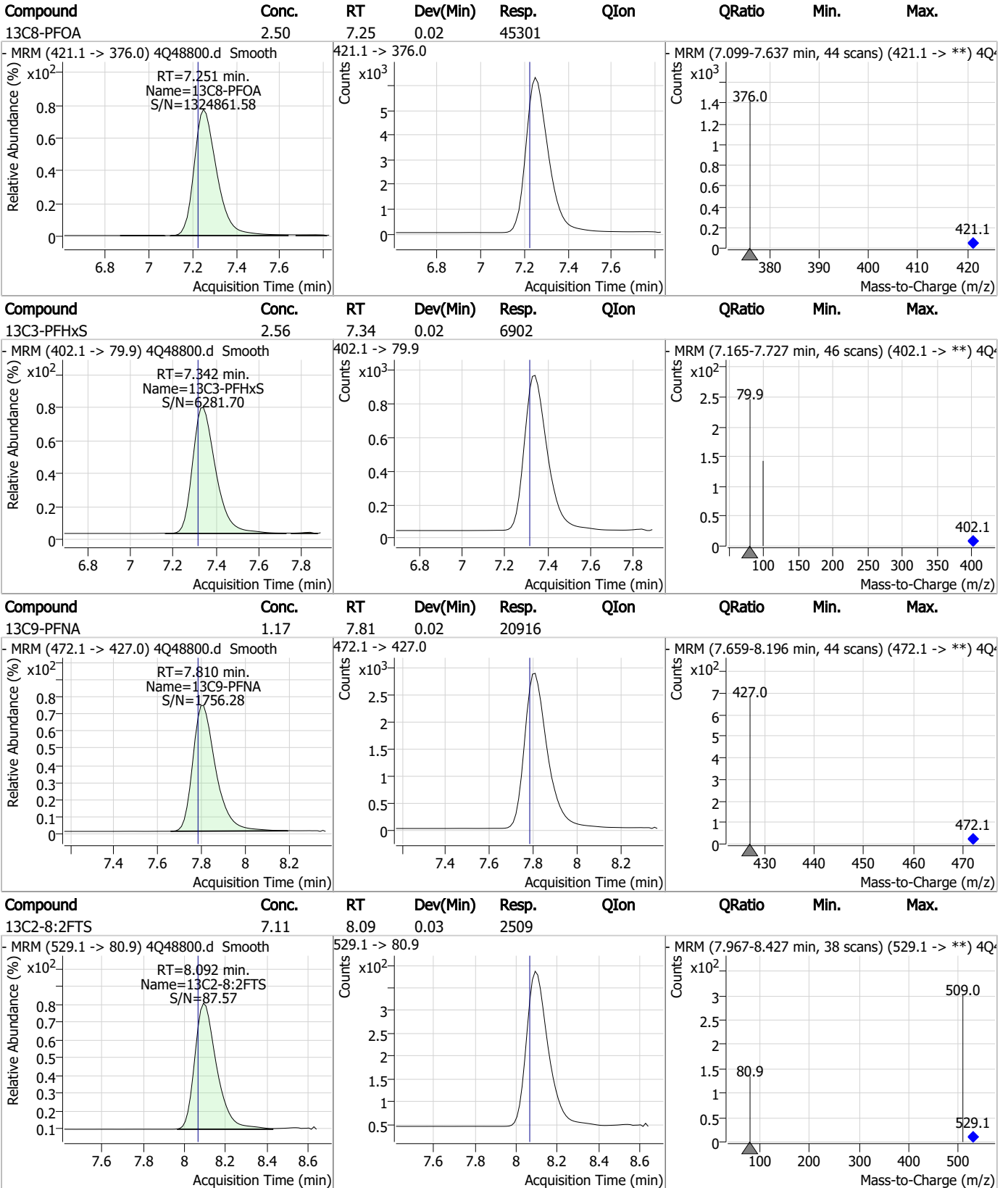


7.25
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Perfluorinated Compounds by LC/MS/MS



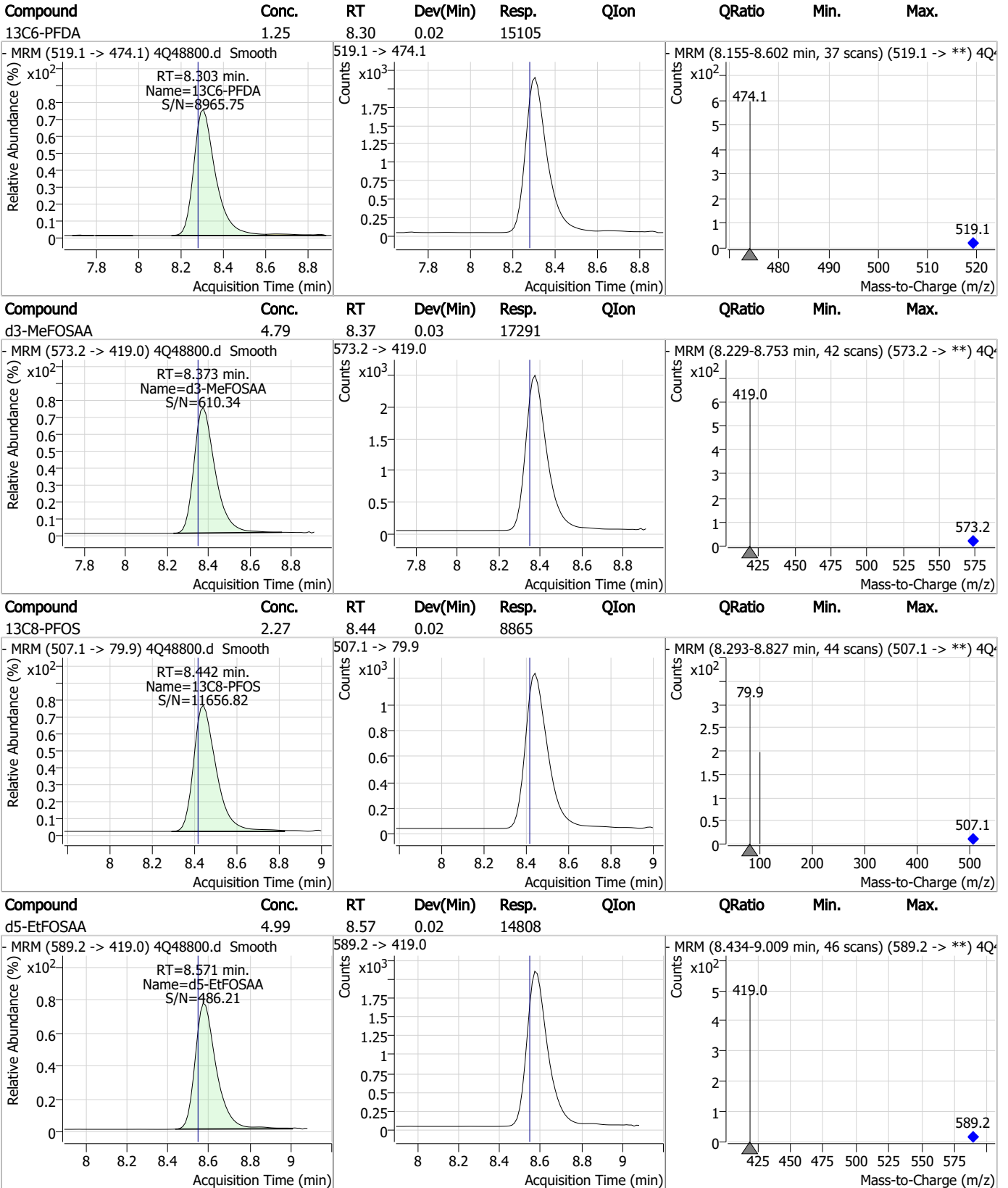
Perfluorinated Compounds by LC/MS/MS



7.25

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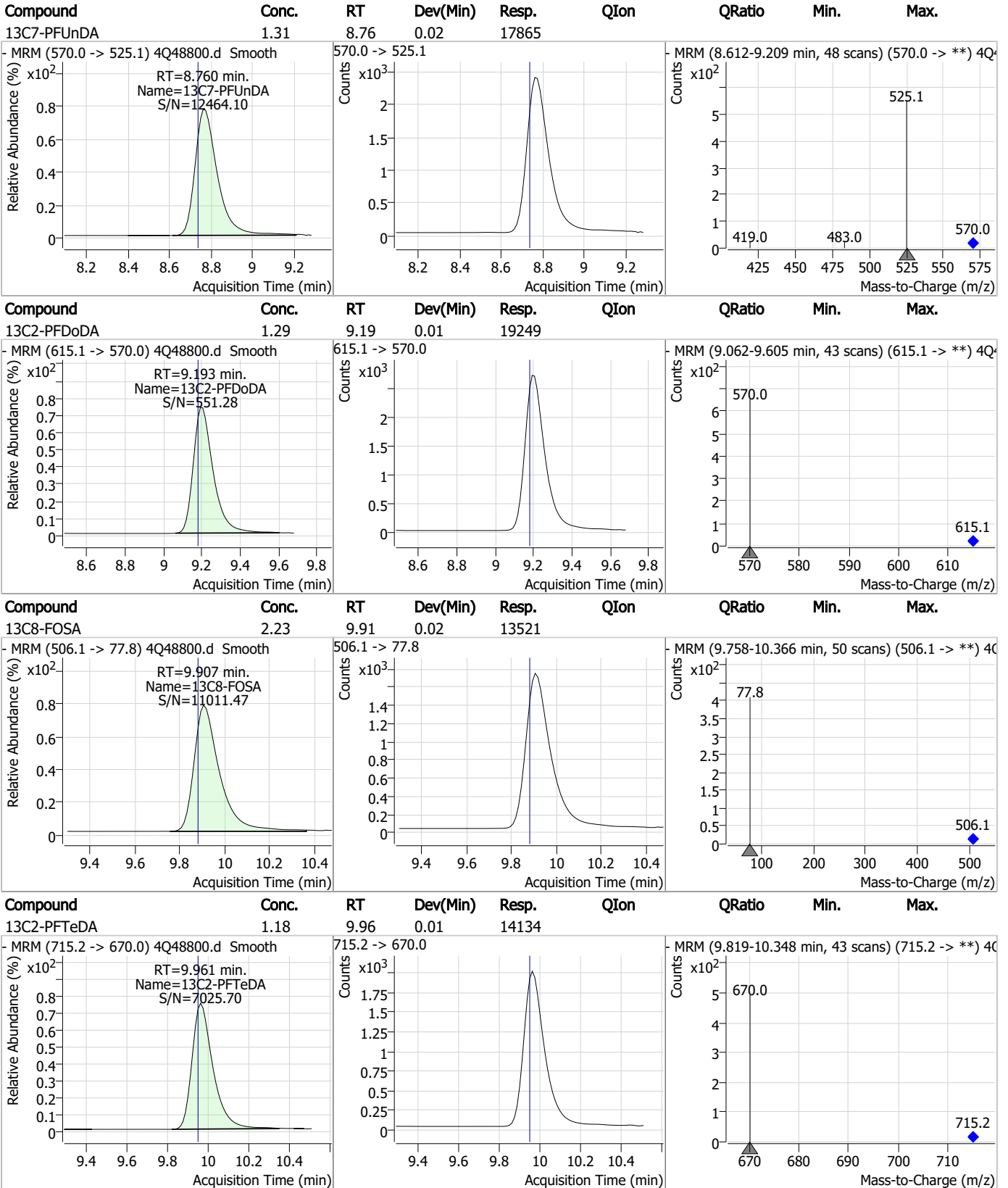
Perfluorinated Compounds by LC/MS/MS



7.25

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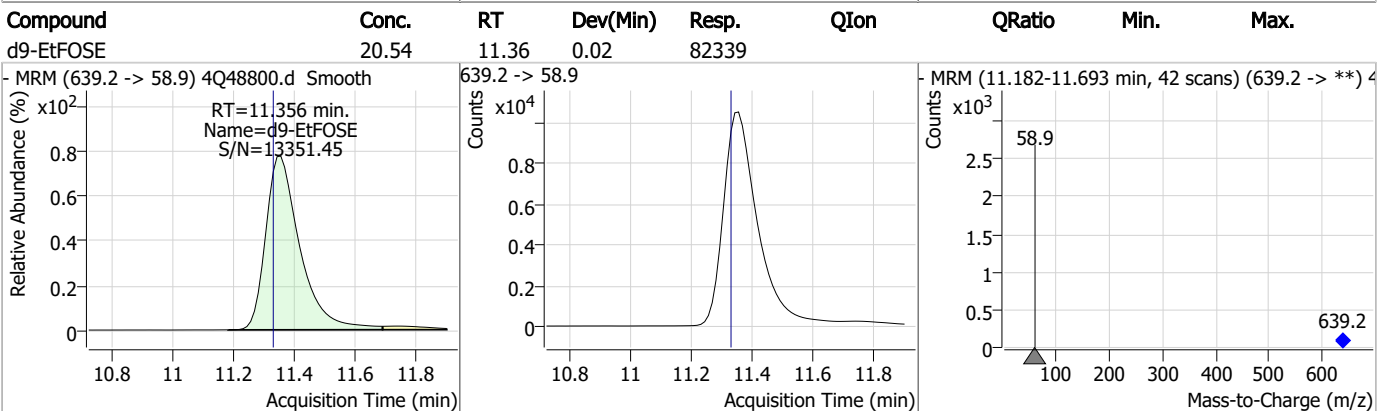
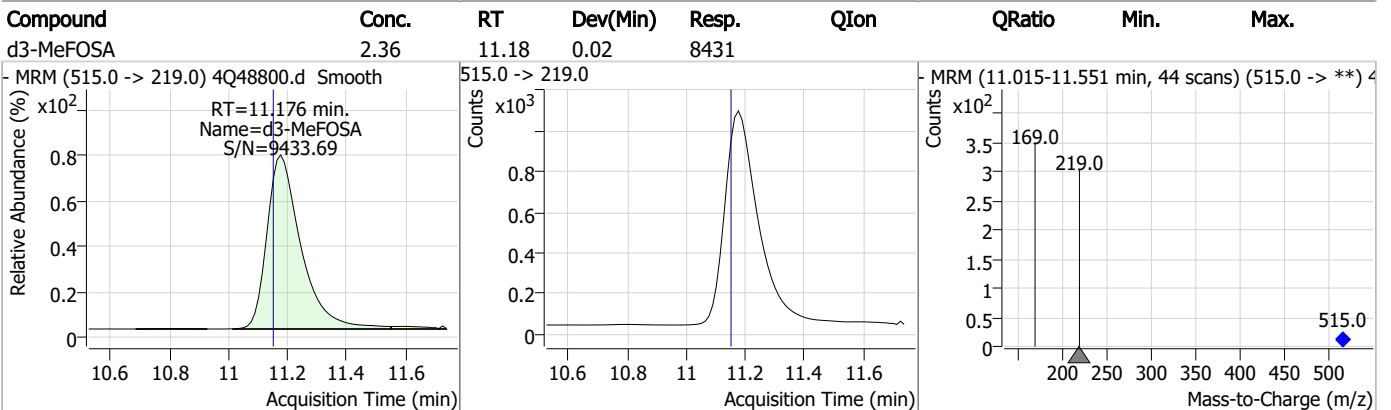
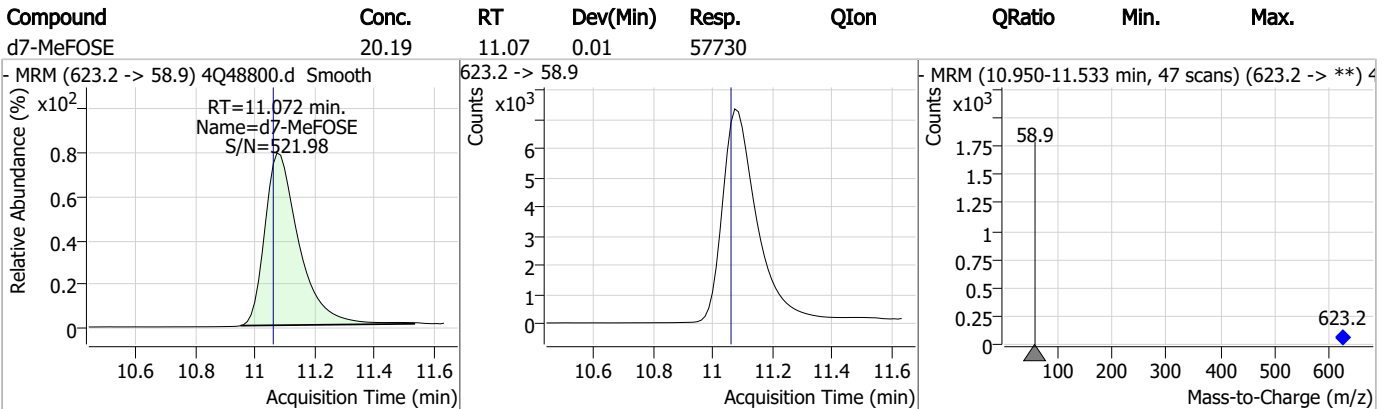
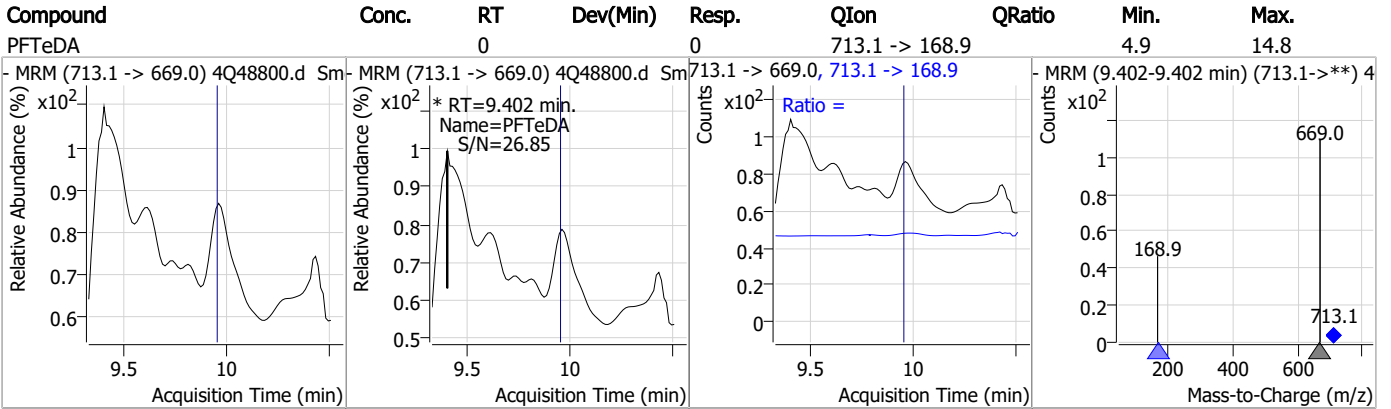
Perfluorinated Compounds by LC/MS/MS



7.25

7

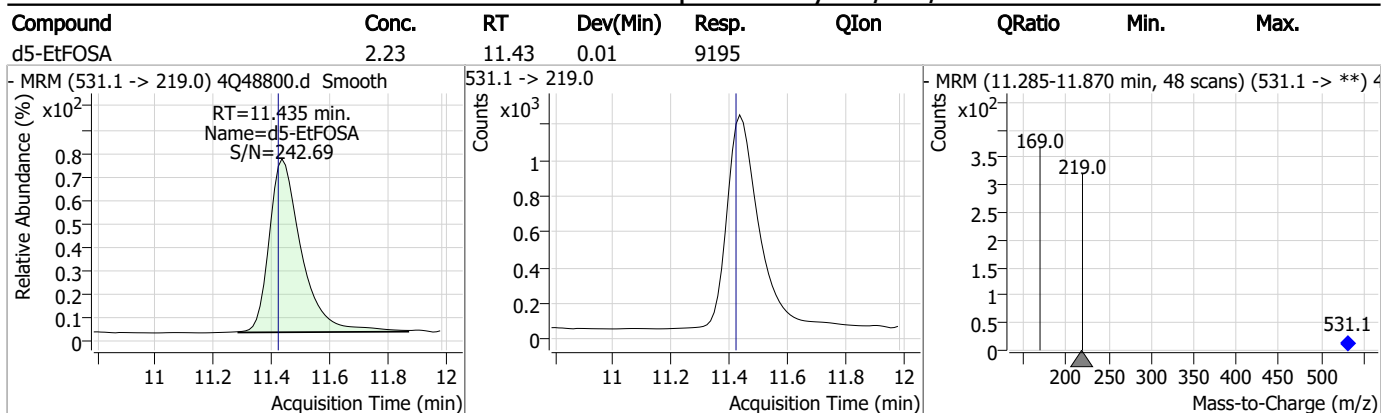
Perfluorinated Compounds by LC/MS/MS



7.2.5

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Perfluorinated Compounds by LC/MS/MS



7.2.5

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48779.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/9/2023 7:03:31 PM
 Sample Name : op98297-bs
 Vial : P4-D1
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q713.batch.bin
 Sample Information : OP98297,S4Q713,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	110386	10.00 µg/L	0.012
M5-PFPeA	4.425	268.3 -> 223.0	54850	5.00 µg/L	0.012
M5-PFHxA	5.622	318.0 -> 273.0	38436	2.50 µg/L	0.012
M4-PFHpA	6.580	367.1 -> 322.0	28277	2.50 µg/L	0.025
M8-PFOA	7.251	421.1 -> 376.0	44452	2.50 µg/L	0.025
M9-PFNA	7.810	472.1 -> 427.0	18929	1.25 µg/L	0.025
M6-PFDA	8.303	519.1 -> 474.1	14586	1.25 µg/L	0.025
M7-PFUnDA	8.773	570.0 -> 525.1	17260	1.25 µg/L	0.037
M2-PFDoDA	9.205	615.1 -> 570.0	18728	1.25 µg/L	0.025
M2-PFTeDA	9.974	715.2 -> 670.0	12844	1.25 µg/L	0.025
M8-FOSA	9.919	506.1 -> 77.8	8019	2.50 µg/L	0.037
M3-PFBS	5.502	302.1 -> 79.9	9289	2.50 µg/L	0.013
M3-PFHxS	7.342	402.1 -> 79.9	6614	2.50 µg/L	0.025
M8-PFOS	8.442	507.1 -> 79.9	8560	2.50 µg/L	0.025
M2-4:2FTS	5.309	329.1 -> 80.9	759	5.00 µg/L	0.012
M2-6:2FTS	7.023	429.1 -> 80.9	1534	5.00 µg/L	0.025
M2-8:2FTS	8.092	529.1 -> 80.9	2401	5.00 µg/L	0.026
M3-MeFOSAA	8.373	573.2 -> 419.0	17303	5.00 µg/L	0.025
M3-HFPO-DA	6.002	286.9 -> 168.9	30550	10.00 µg/L	0.025
M5-EtFOSAA	8.571	589.2 -> 419.0	11721	5.00 µg/L	0.025
M7-MeFOSE	11.084	623.2 -> 58.9	32557	25.00 µg/L	0.025
M9-EtFOSE	11.356	639.2 -> 58.9	54207	25.00 µg/L	0.025
M5-EtFOSA	11.435	531.1 -> 219.0	5986	2.50 µg/L	0.012
M3-MeFOSA	11.176	515.0 -> 219.0	5172	2.50 µg/L	0.025
13C4-PFOS	8.443	502.8 -> 79.9	7610	2.50 µg/L	0.025
13C3-PFBA	2.928	216.0 -> 172.0	46030	5.00 µg/L	0.025
18O2-PFHxS	7.341	403.0 -> 83.9	3832	2.50 µg/L	0.025
13C4-PFOA	7.251	417.1 -> 372.0	42499	2.50 µg/L	0.025
13C2-PFDA	8.304	515.1 -> 470.1	12930	1.25 µg/L	0.025
13C5-PFNA	7.810	468.0 -> 423.0	18465	1.25 µg/L	0.025
13C2-PFHxA	5.623	315.1 -> 270.0	28192	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.309	329.1 -> 80.9	759	7.93 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 158.5%		
13C2-6:2FTS	7.023	429.1 -> 80.9	1534	8.39 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 167.7%		
13C2-8:2FTS	8.092	529.1 -> 80.9	2401	8.64 µg/L	0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 172.9%		
13C2-PFDoDA	9.205	615.1 -> 570.0	18728	1.69 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 135.3%		
13C2-PFTeDA	9.974	715.2 -> 670.0	12844	1.44 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 115.5%		
13C3-PFBS	5.502	302.1 -> 79.9	9289	2.85 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 113.9%		
13C3-PFHxS	7.342	402.1 -> 79.9	6614	3.12 µg/L	0.025

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 124.7%	
13C4-PFBA	2.924	216.8 -> 171.9	110386	14.03 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 140.3%	
13C4-PFHpA	6.580	367.1 -> 322.0	28277	3.37 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 134.7%	
13C5-PFHxA	5.622	318.0 -> 273.0	38436	3.25 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 130.1%	
13C5-PFPeA	4.425	268.3 -> 223.0	54850	5.57 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 111.3%	
13C6-PFDA	8.303	519.1 -> 474.1	14586	1.63 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 130.4%	
13C7-PFUnDA	8.773	570.0 -> 525.1	17260	1.71 µg/L	0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 137.0%	
13C8-FOSA	9.919	506.1 -> 77.8	8019	1.69 µg/L	0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 67.6%	
13C8-PFOA	7.251	421.1 -> 376.0	44452	3.18 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 127.1%	
13C8-PFOS	8.442	507.1 -> 79.9	8560	2.80 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.0%	
13C9-PFNA	7.810	472.1 -> 427.0	18929	1.35 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.3%	
d3-MeFOSAA	8.373	573.2 -> 419.0	17303	6.13 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 122.5%	
13C3-HFPO-DA	6.002	286.9 -> 168.9	30550	11.37 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 113.7%	
d3-MeFOSA	11.176	515.0 -> 219.0	5172	1.85 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 74.0%	
d5-EtFOSAA	8.571	589.2 -> 419.0	11721	5.05 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
d7-MeFOSE	11.084	623.2 -> 58.9	32557	14.57 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 58.3%	
d9-EtFOSE	11.356	639.2 -> 58.9	54207	17.30 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 69.2%	
d5-EtFOSA	11.435	531.1 -> 219.0	5986	1.86 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 74.4%	
Target Compounds					QValue
4:2FTS	5.309	327.1 -> 307.0	11083	10.83 µg/L	95
		327.1 -> 80.9	4918		
6:2FTS	7.024	427.1 -> 407.0	14025	10.77 µg/L	99
		427.1 -> 80.9	5060		
8:2FTS	8.092	527.1 -> 507.0	11504	11.93 µg/L	91
		527.1 -> 80.8	4378		
EtFOSAA	8.584	584.2 -> 419.1	5768	3.60 µg/L	m 95
		584.2 -> 526.0	2549		
FOSA	9.911	498.1 -> 77.9	7605	2.93 µg/L	99
		498.1 -> 478.0	213		
MeFOSAA	8.374	570.1 -> 419.0	6698	3.10 µg/L	98
		570.1 -> 483.0	1325		
PFBA	2.932	212.8 -> 168.9	28306	11.14 µg/L	100
PFBS	5.503	298.7 -> 79.9	7143	3.15 µg/L	99
		298.7 -> 98.8	2620		
PFDA	8.304	512.9 -> 469.0	32567	3.18 µg/L	99
		512.9 -> 219.0	6444		
PFDODA	9.206	613.1 -> 569.0	32157	2.74 µg/L	99
		613.1 -> 319.0	5080		
PFDS	9.347	599.0 -> 79.9	4837	2.74 µg/L	99

7.3.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.581	599.0 -> 98.8	2431	2.82	µg/L	98
		363.1 -> 319.0	36027			
PFHpS	7.925	363.1 -> 169.0	6307	2.72	µg/L	97
		449.0 -> 79.9	7037			
PFHxA	5.625	449.0 -> 98.9	3388	2.84	µg/L	100
		313.0 -> 269.0	31551			
PFHxS	7.342	313.0 -> 118.9	994	2.99	µg/L	99
		398.7 -> 79.9	5683			
PFNA	7.810	398.7 -> 98.9	3056	3.19	µg/L	98
		463.0 -> 419.0	31440			
PFNS	8.911	463.0 -> 219.0	7139	3.08	µg/L	99
		548.8 -> 79.9	5144			
PFOA	7.252	548.8 -> 98.9	2715	3.00	µg/L	100
		413.0 -> 369.0	52827			
PFOS	8.443	413.0 -> 169.0	10080	2.99	µg/L	83
		498.9 -> 79.9	9097			
PFPeA	4.427	498.9 -> 98.8	4562	6.43	µg/L	100
		263.0 -> 219.0	61274			
PFPeS	6.595	349.1 -> 79.9	4590	2.57	µg/L	99
		349.1 -> 98.9	2077			
PFTeDA	9.975	713.1 -> 669.0	27194	3.02	µg/L	99
		713.1 -> 168.9	2622			
PFTrDA	9.603	663.0 -> 619.0	36776	3.04	µg/L	98
		663.0 -> 168.9	4328			
PFUnDA	8.761	563.1 -> 519.0	32836	2.92	µg/L	98
		563.1 -> 269.1	6416			
11CI-PF3OUdS	9.630	630.9 -> 450.9	38921	6.08	µg/L	97
		632.9 -> 452.9	12539			
9CI-PF3ONS	8.775	530.8 -> 351.0	56711	6.29	µg/L	97
		532.8 -> 353.0	16767			
ADONA	6.843	376.9 -> 250.9	107017	6.04	µg/L	100
		376.9 -> 84.8	27916			
HFPO-DA	6.003	284.9 -> 168.9	13688	5.44	µg/L	97
		284.9 -> 184.9	1610			
3:3FTCA	3.905	241.0 -> 177.0	6116	9.53	µg/L	96
		241.0 -> 117.0	512			
5:3FTCA	6.321	341.0 -> 237.1	110795	61.04	µg/L	97
		341.0 -> 217.0	76461			
7:3FTCA	7.800	441.0 -> 316.9	67228	67.21	µg/L	95
		441.0 -> 336.9	159914			
EtFOSA	11.437	526.0 -> 219.0	12371	5.62	µg/L	99
		526.0 -> 169.0	17481			
EtFOSE	11.370	630.0 -> 58.9	23345	13.76	µg/L	100
		511.9 -> 219.0	9588			
MeFOSA	11.178	511.9 -> 169.0	14100	5.33	µg/L	77
		616.1 -> 58.9	16292			
MeFOSE	11.097	699.1 -> 79.9	3805	13.99	µg/L	100
		699.1 -> 98.8	2021			
PFDoDS	10.102	295.0 -> 201.0	4125	2.80	µg/L	98
		295.0 -> 84.9	993			
NFDHA	5.503	279.0 -> 85.1	33769	5.77	µg/L	98
		229.0 -> 84.9	32339			
PFMBA	4.841	314.8 -> 134.9	43715	6.32	µg/L	100
		314.8 -> 82.9	1568			
PFMPA	3.540			6.21	µg/L	100
PFEESA	6.059			4.89	µg/L	100

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

7.3.1
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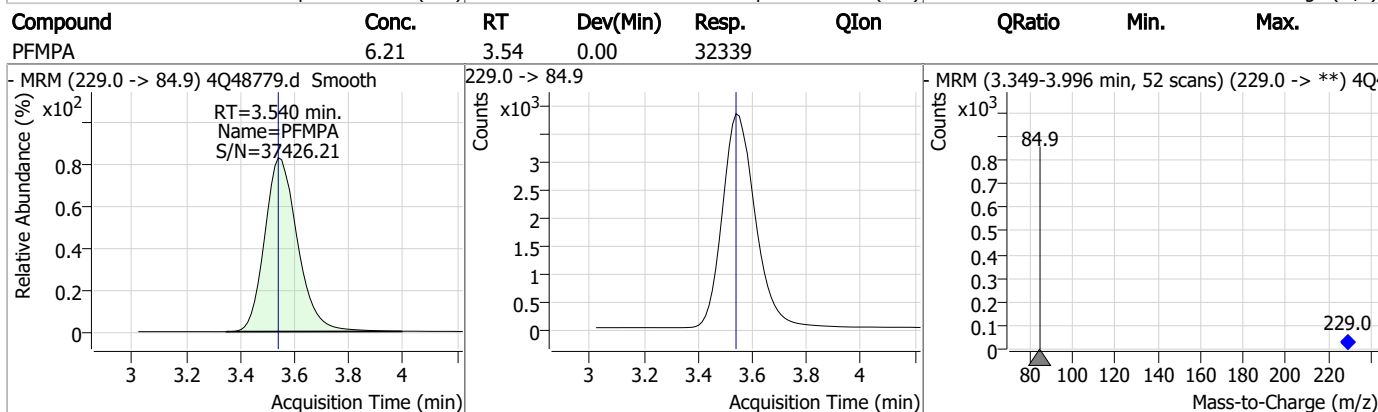
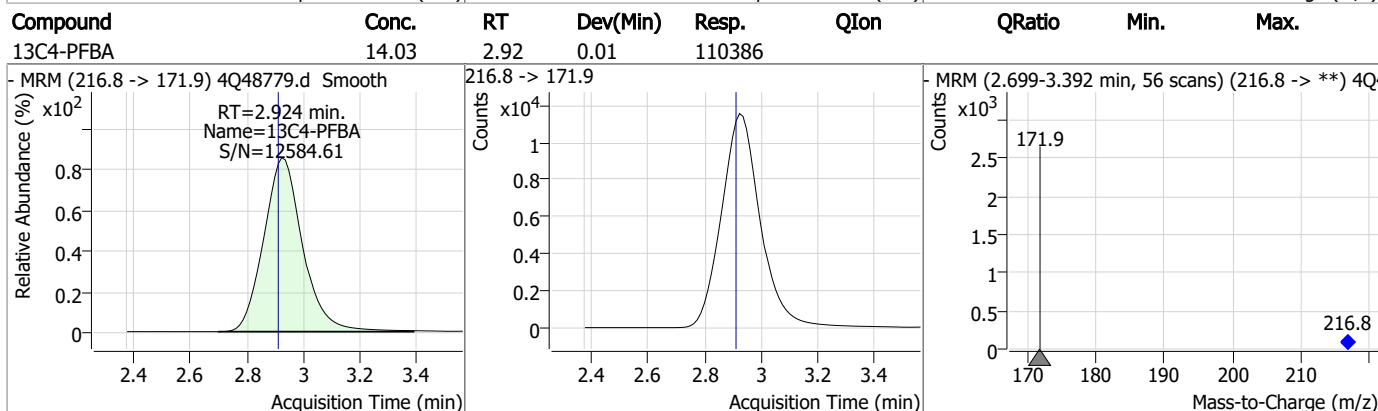
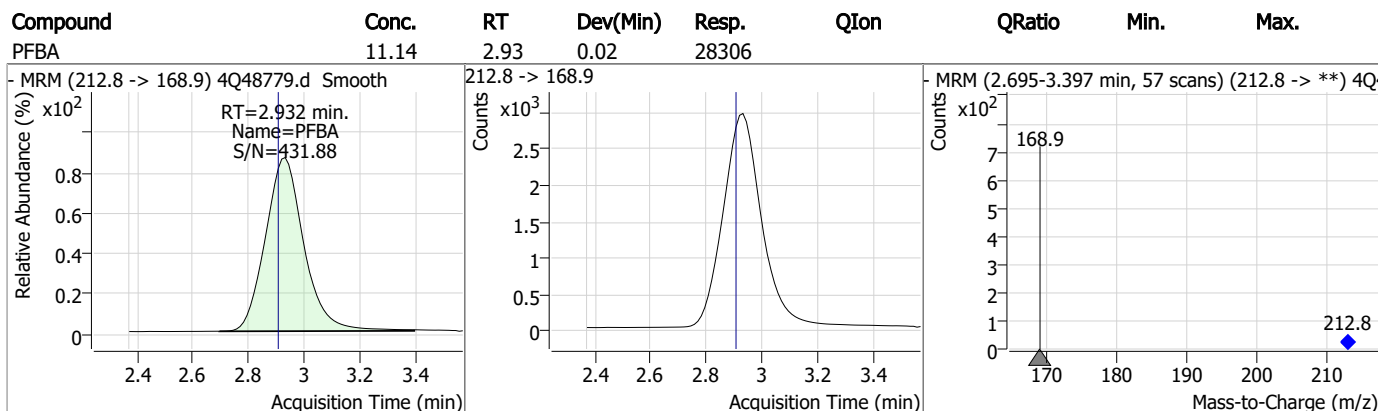
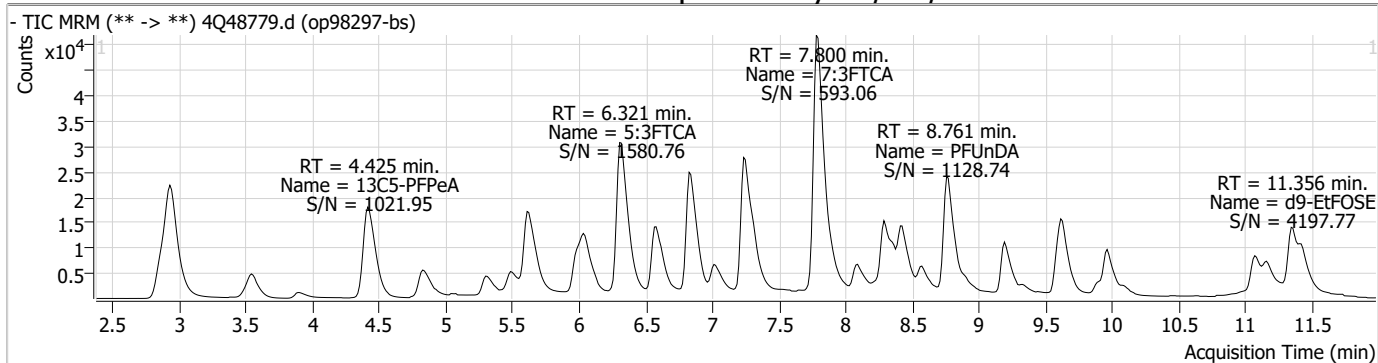
Perfluorinated Compounds by LC/MS/MS

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

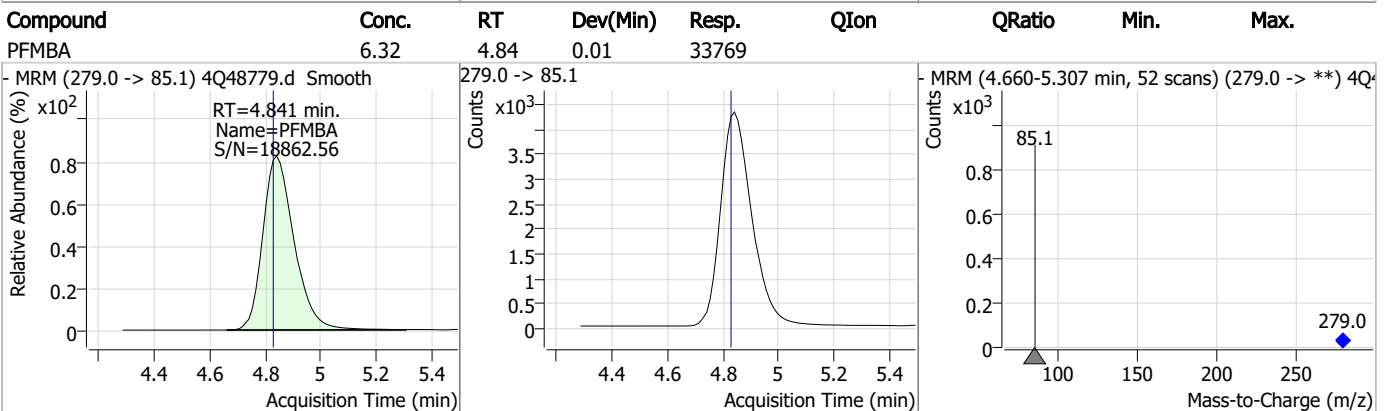
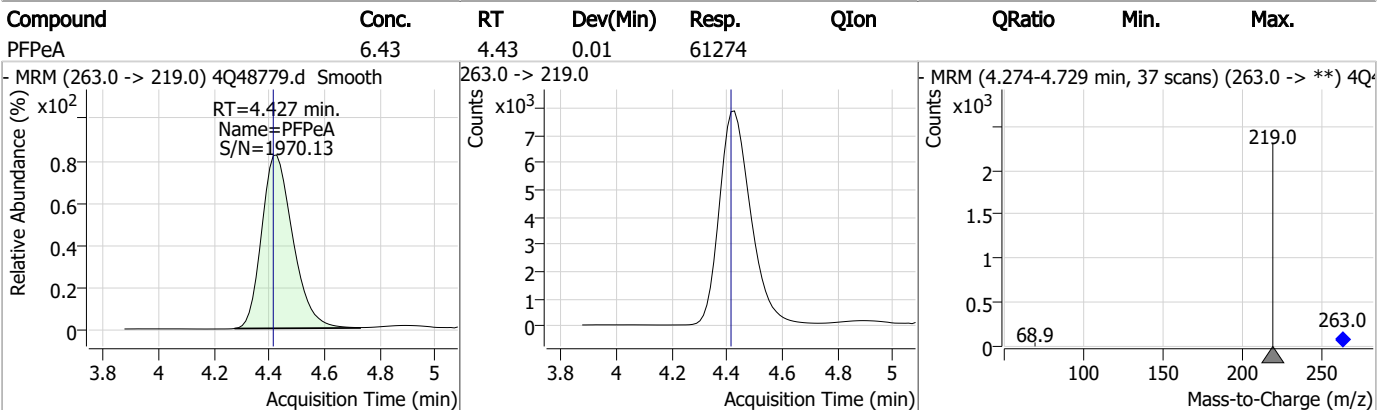
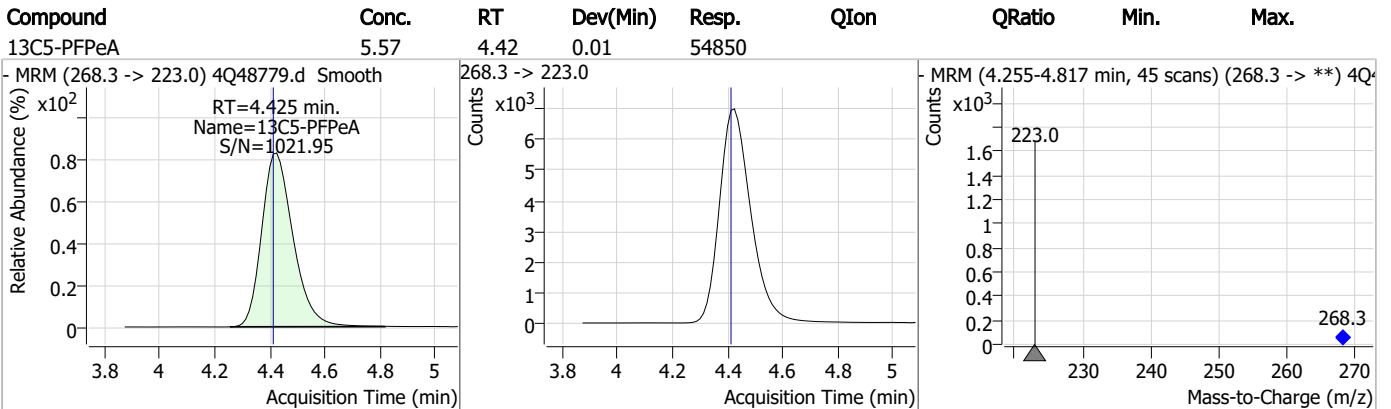
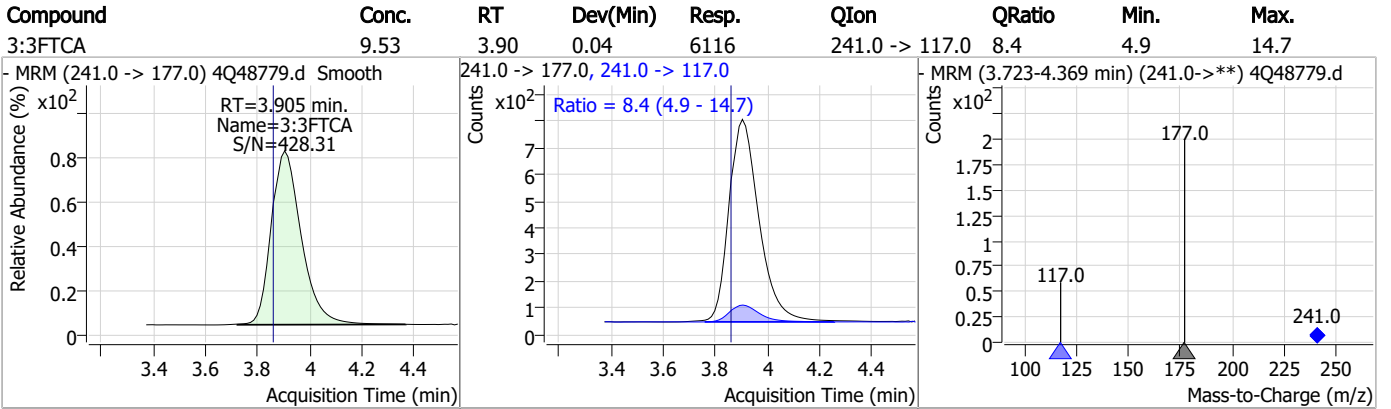
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Perfluorinated Compounds by LC/MS/MS



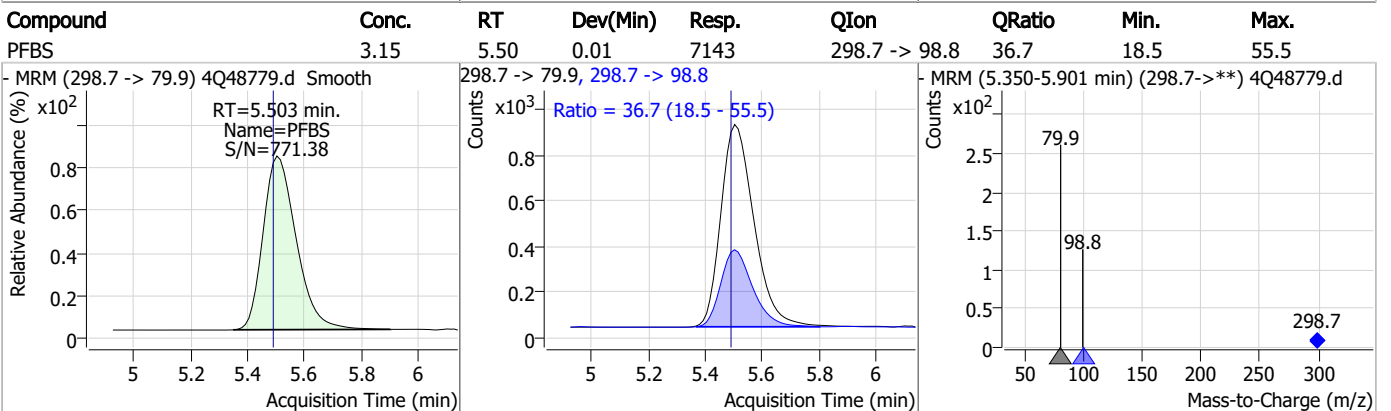
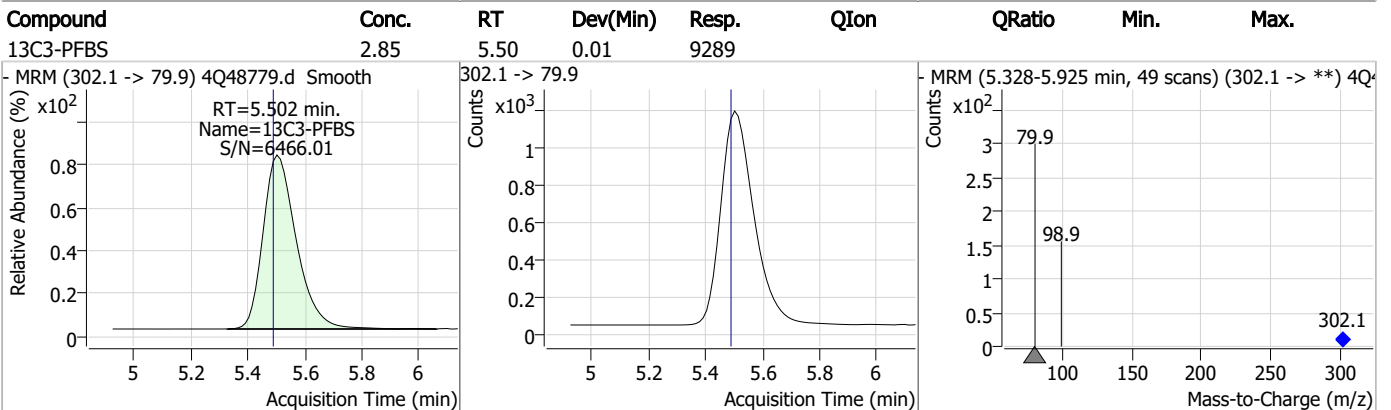
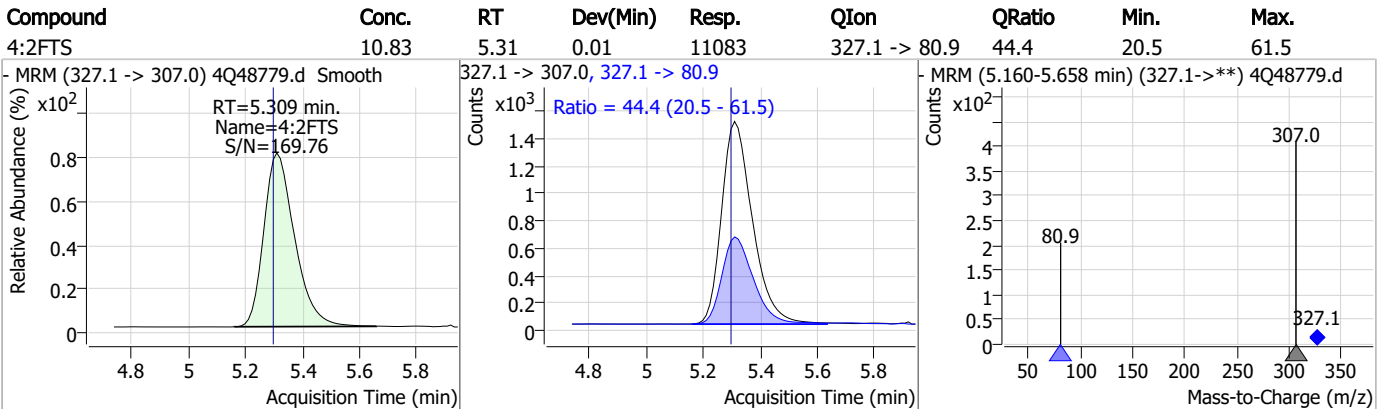
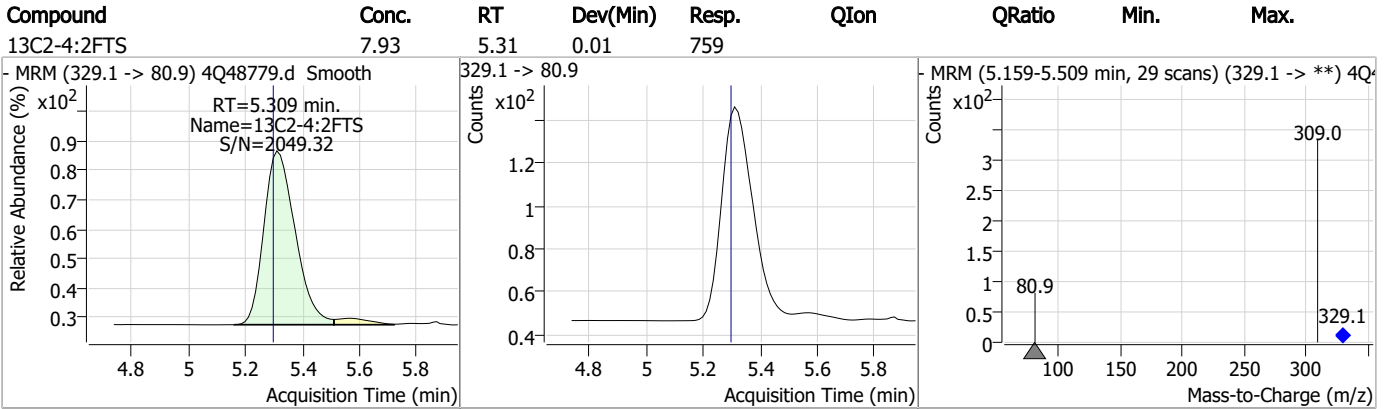
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

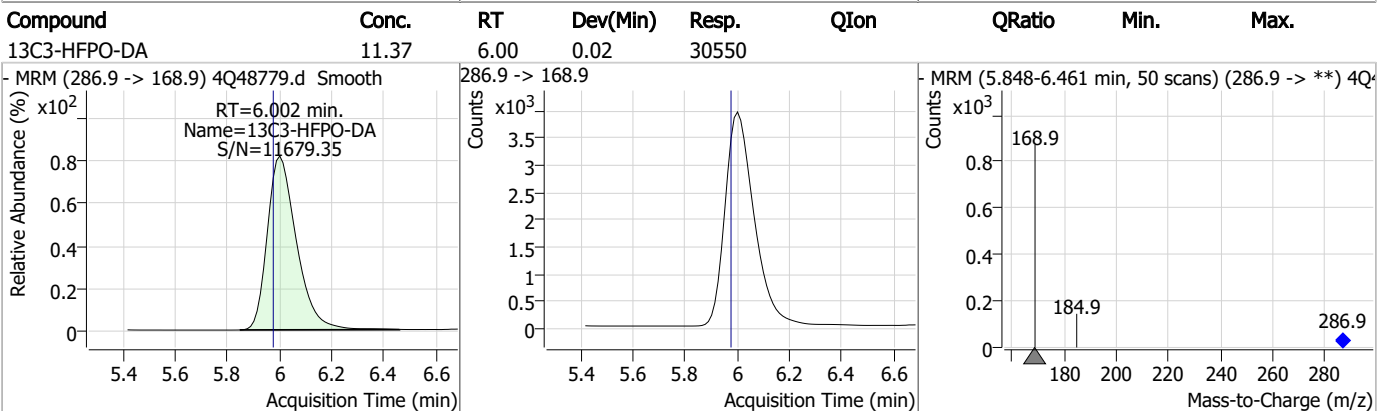
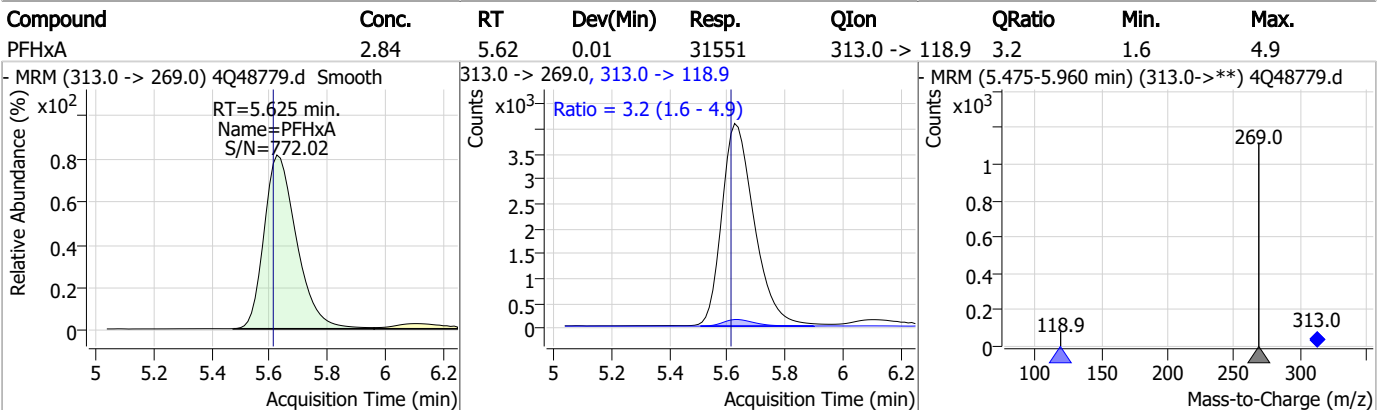
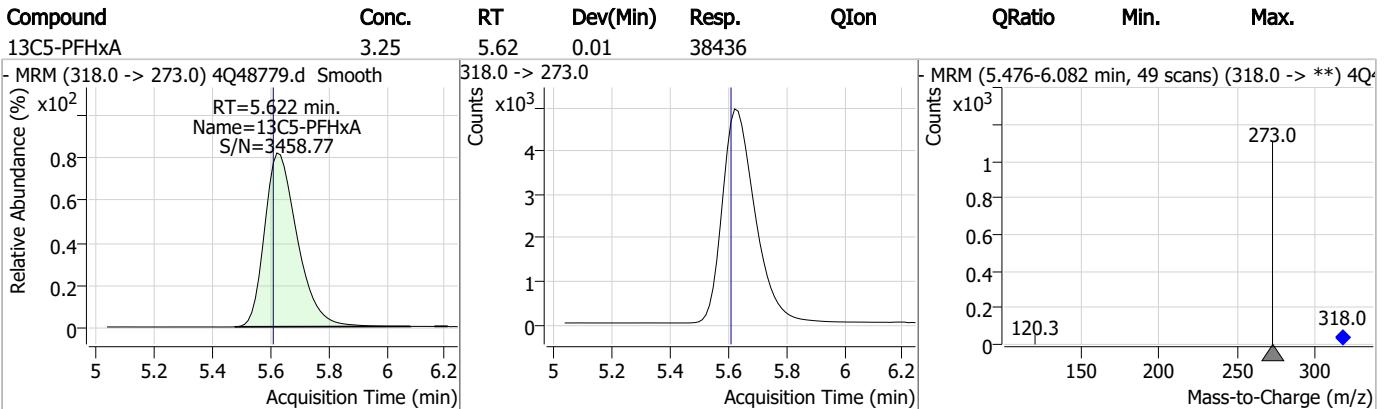
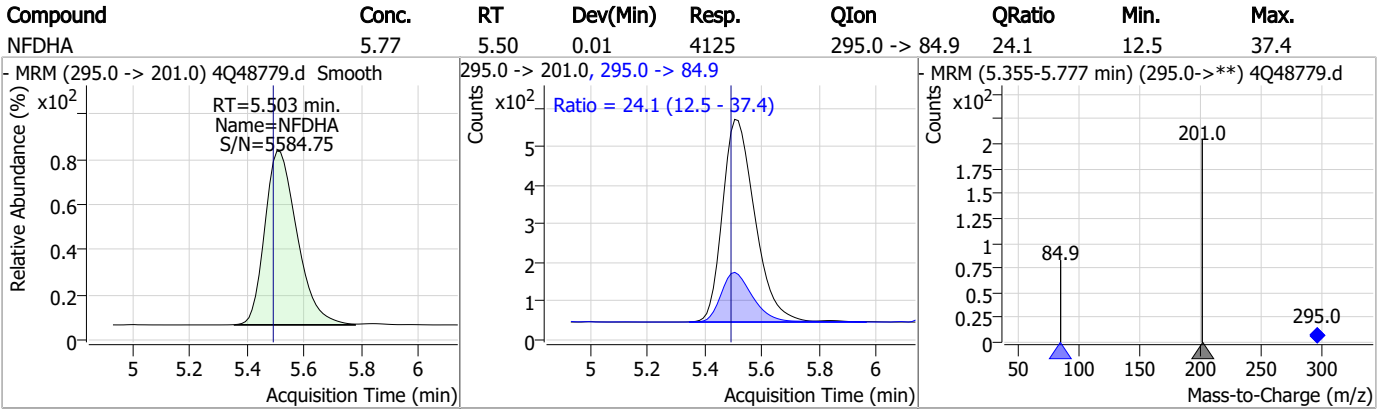


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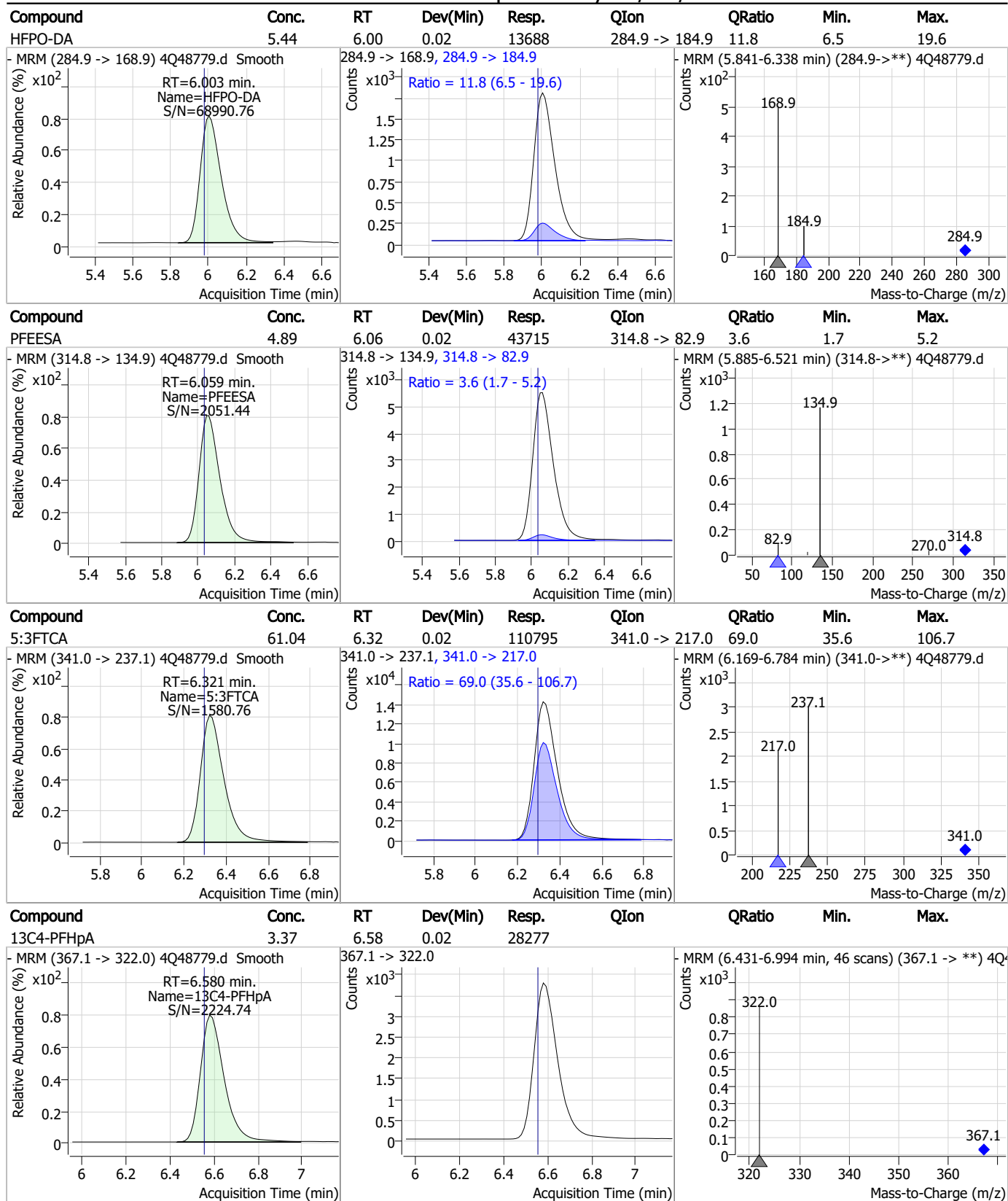
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Perfluorinated Compounds by LC/MS/MS



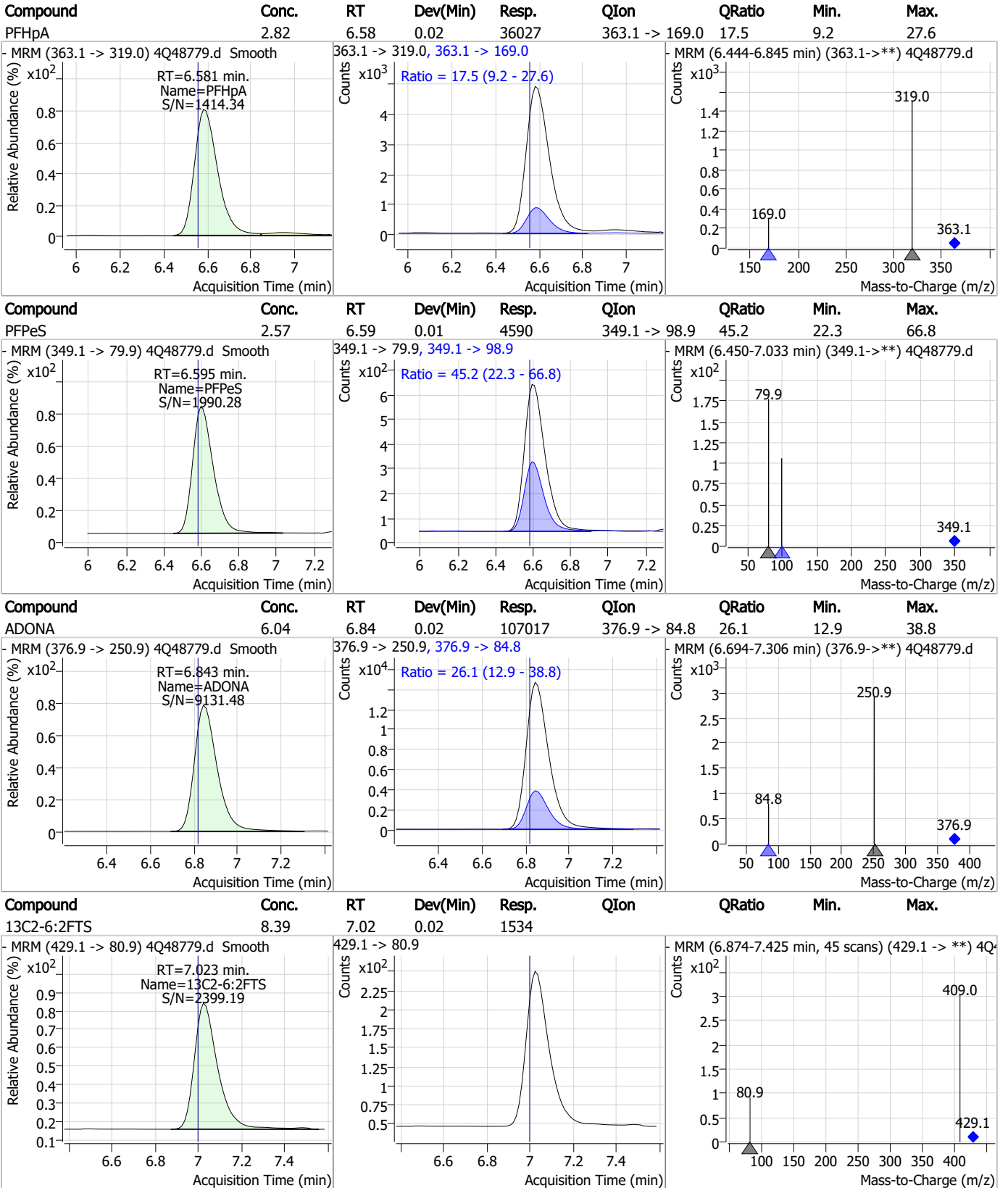
Perfluorinated Compounds by LC/MS/MS



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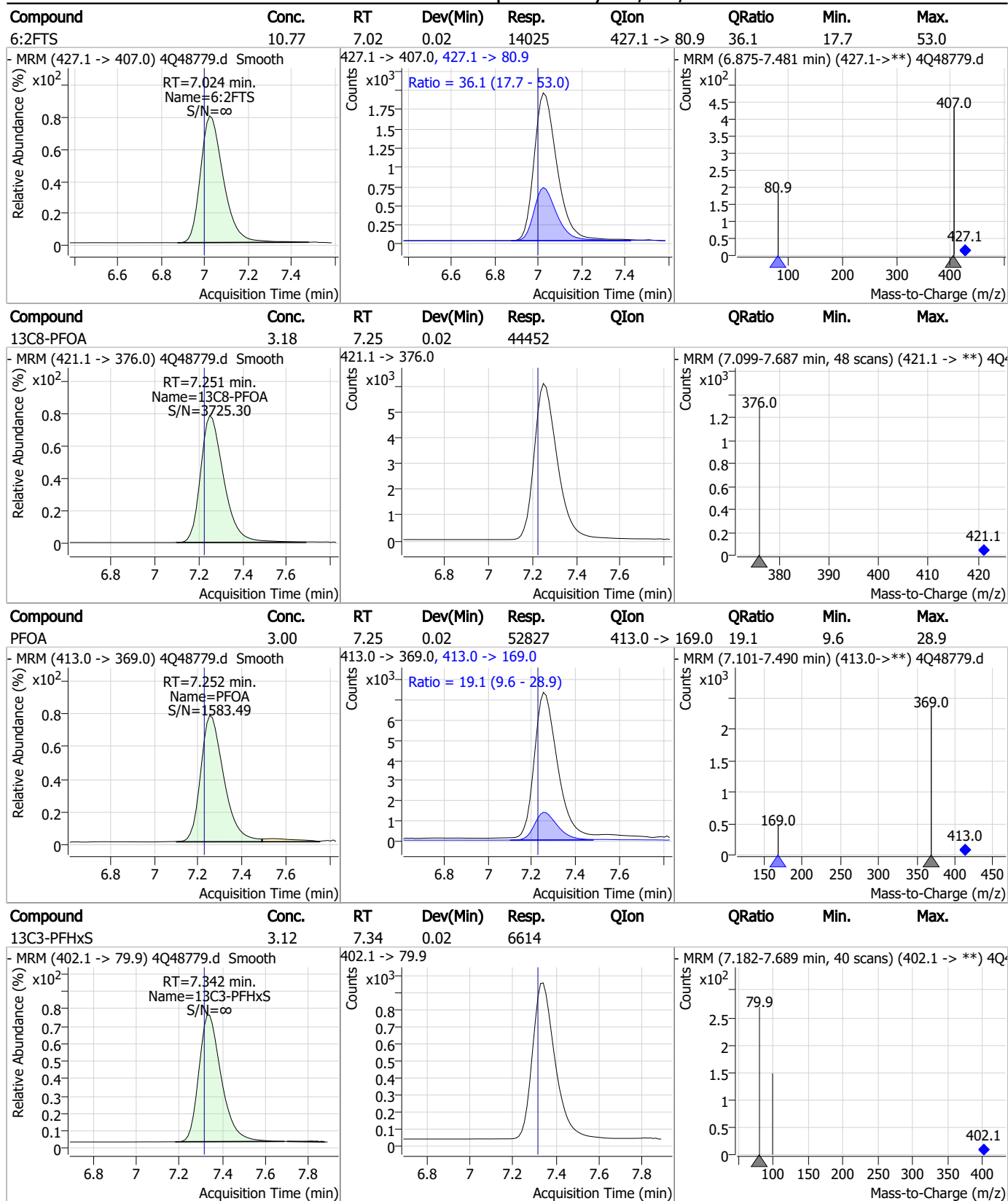
Perfluorinated Compounds by LC/MS/MS



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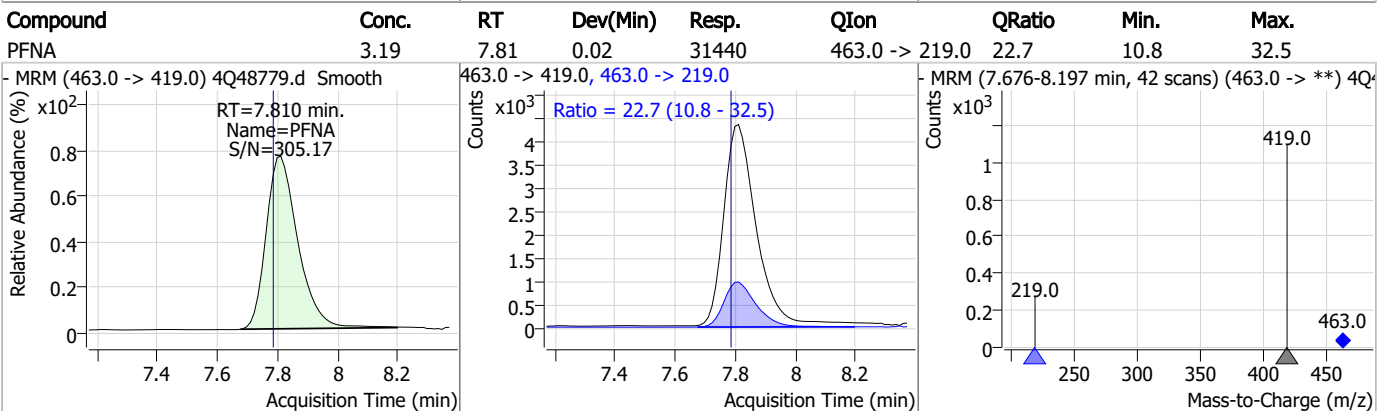
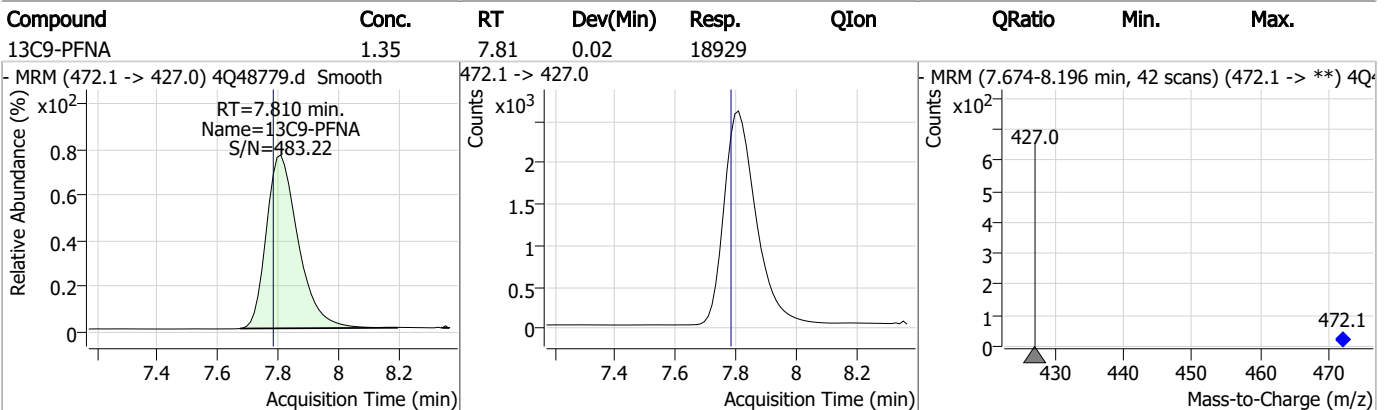
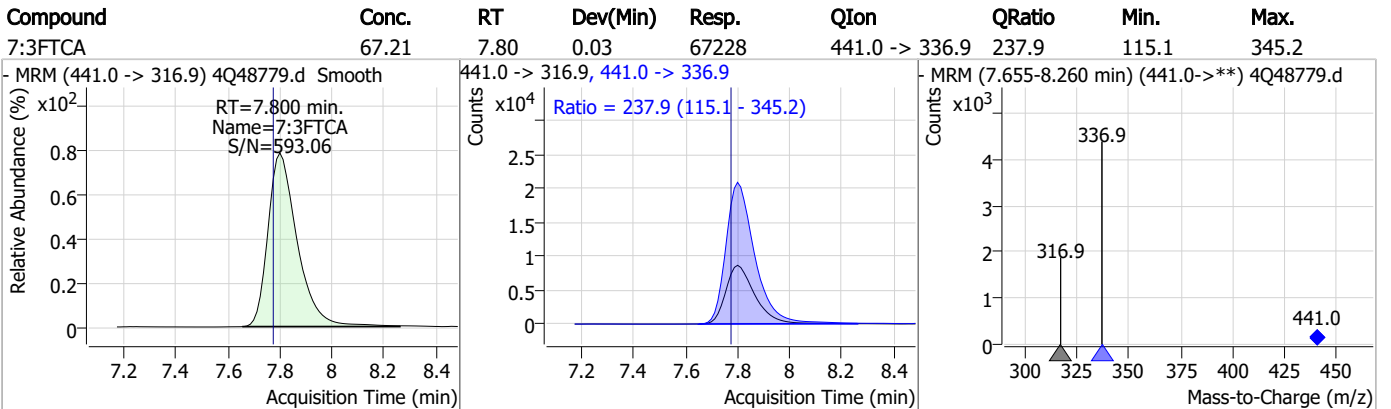
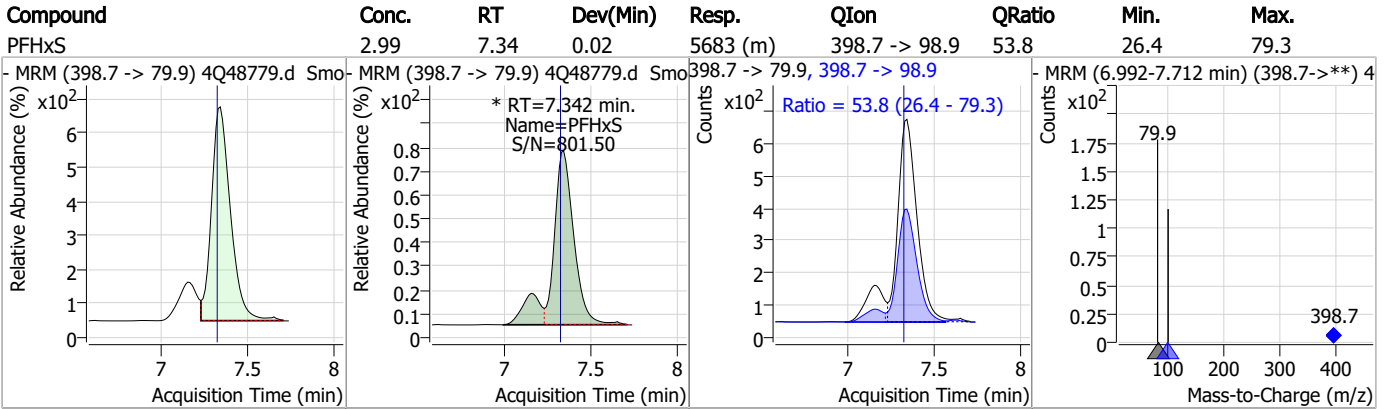
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Perfluorinated Compounds by LC/MS/MS

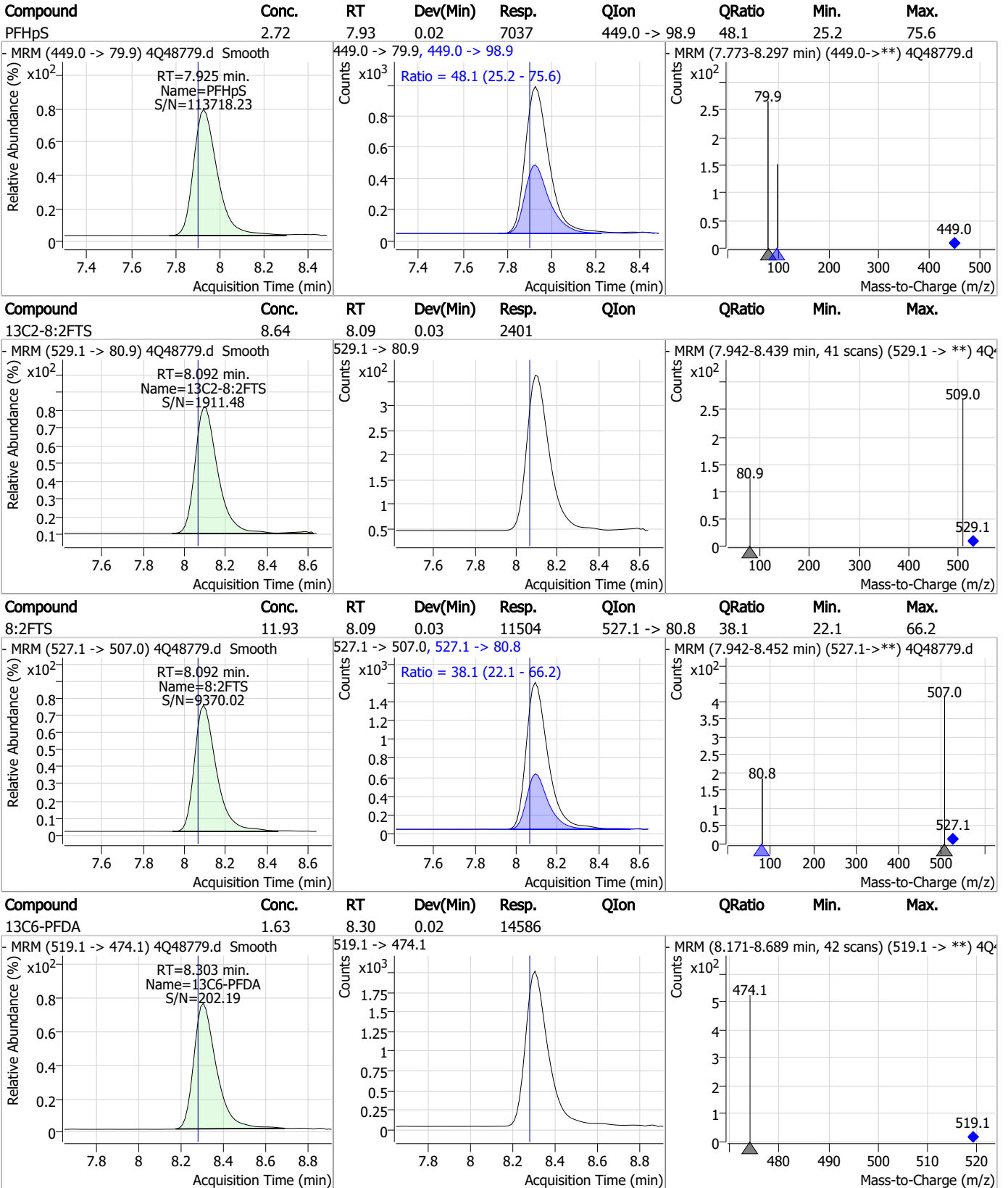


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Perfluorinated Compounds by LC/MS/MS



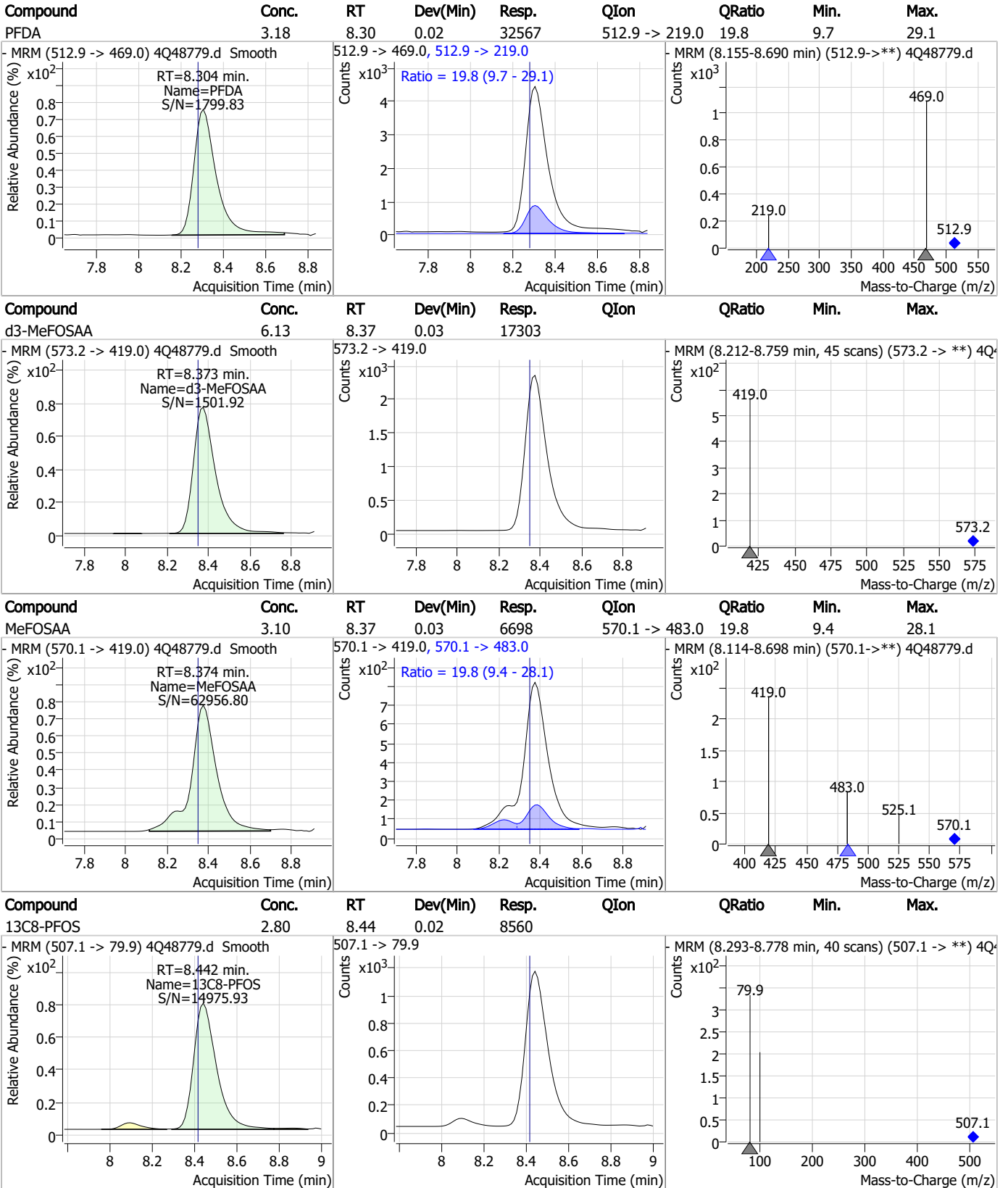
Perfluorinated Compounds by LC/MS/MS



7.3.1

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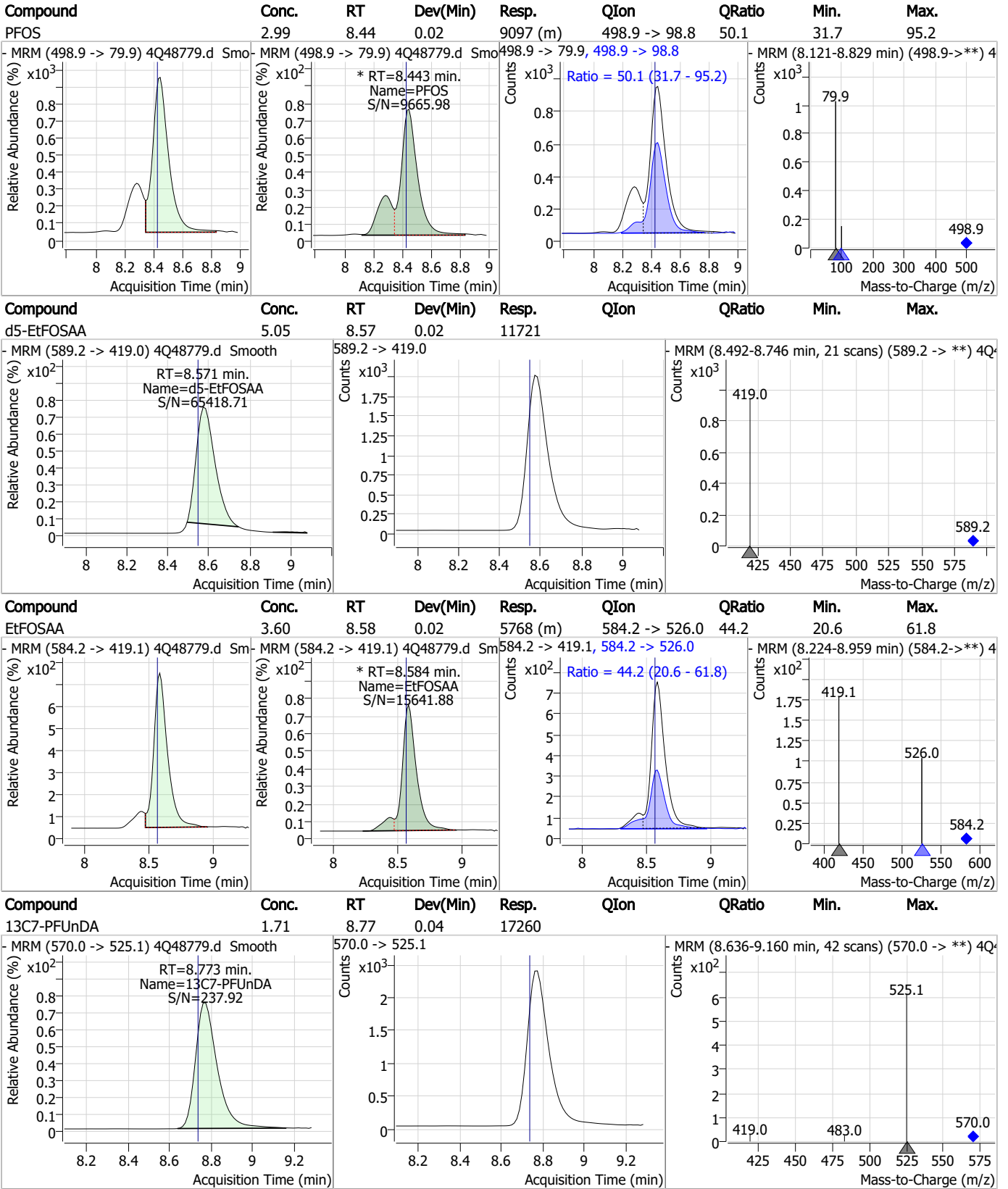
Perfluorinated Compounds by LC/MS/MS



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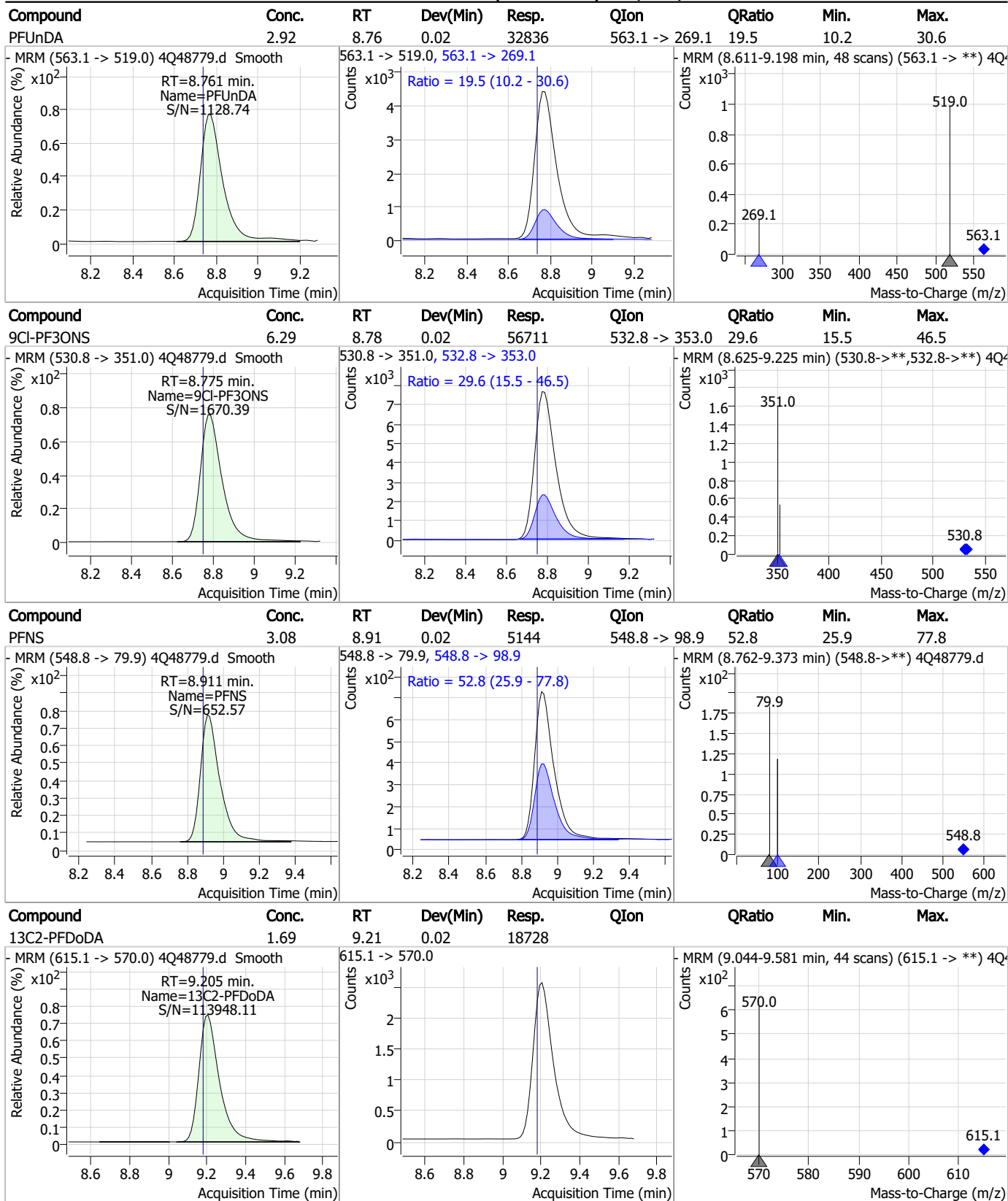
Perfluorinated Compounds by LC/MS/MS



7.3.1 7

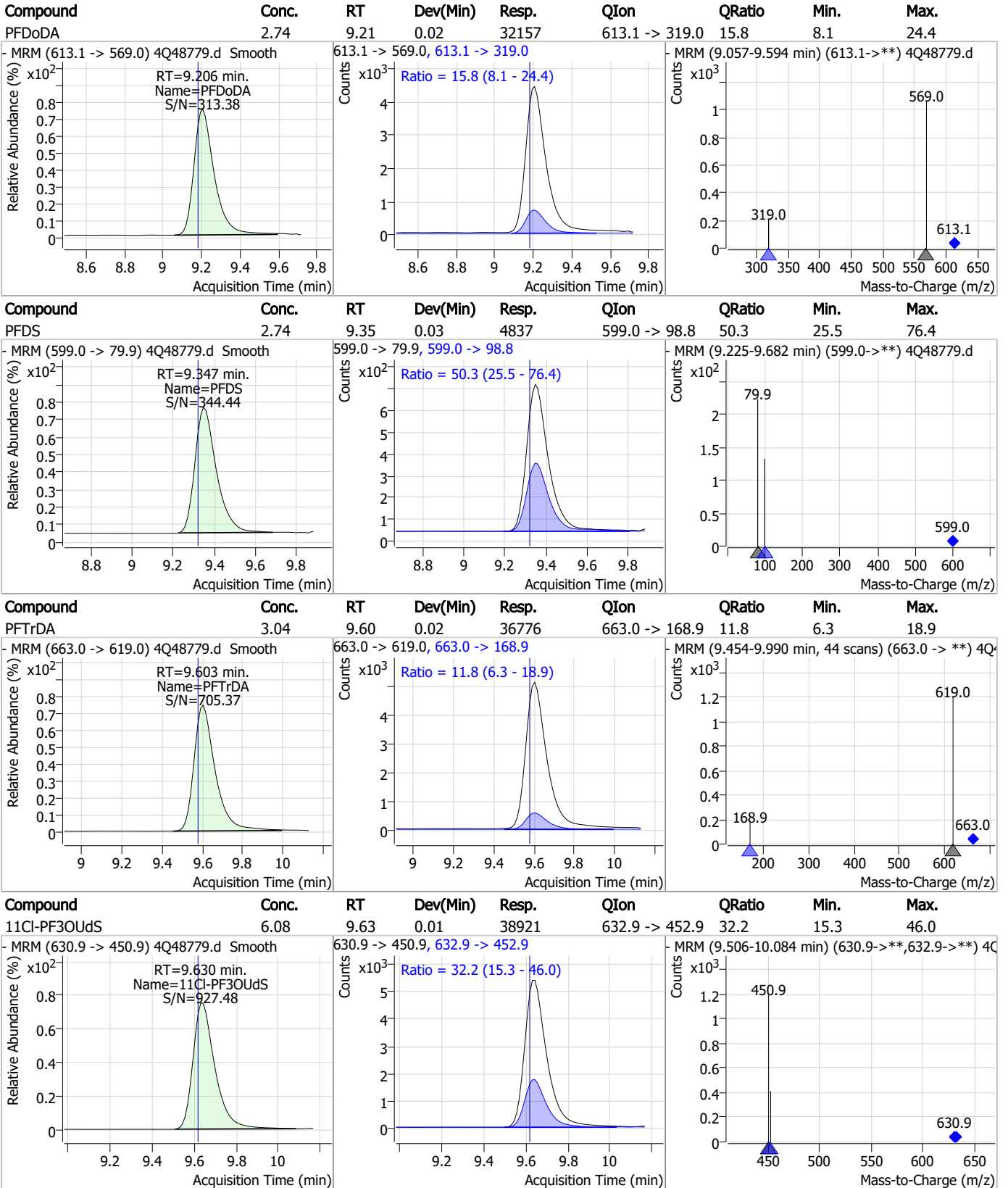


Perfluorinated Compounds by LC/MS/MS



7.3.1
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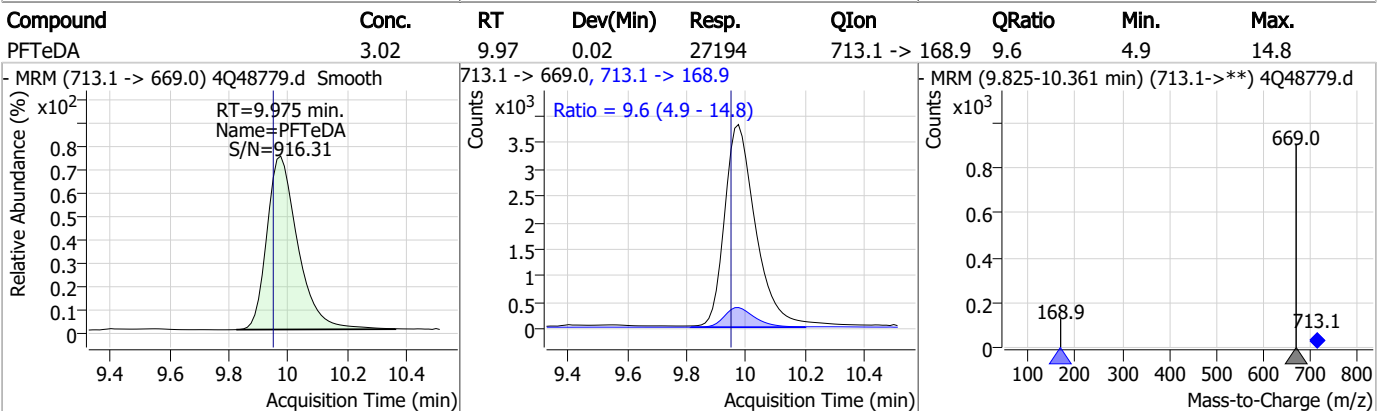
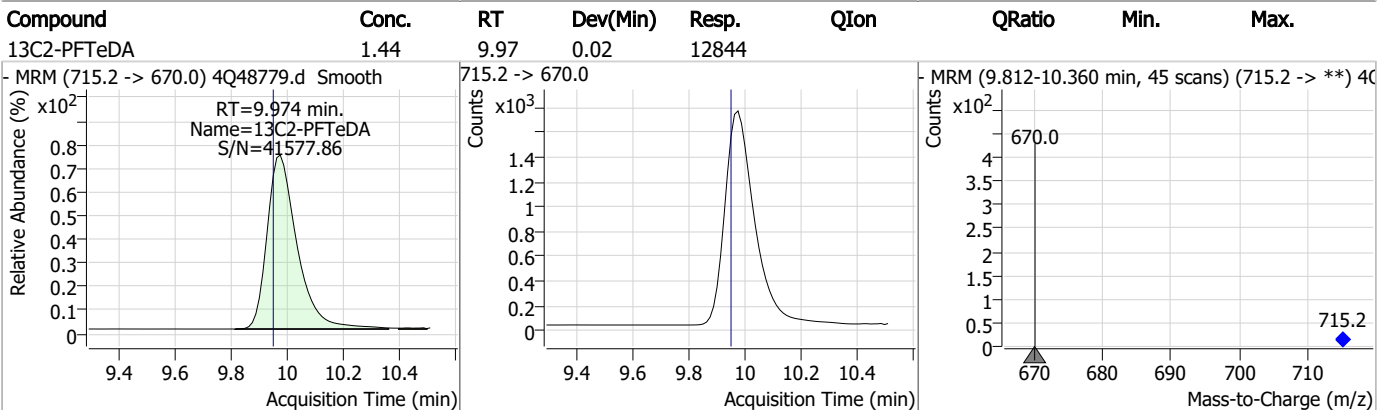
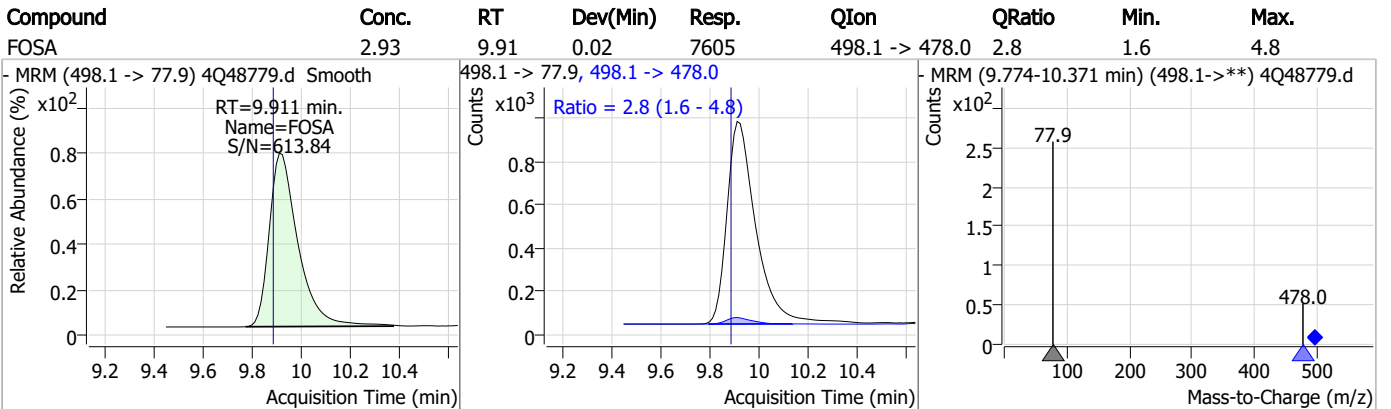
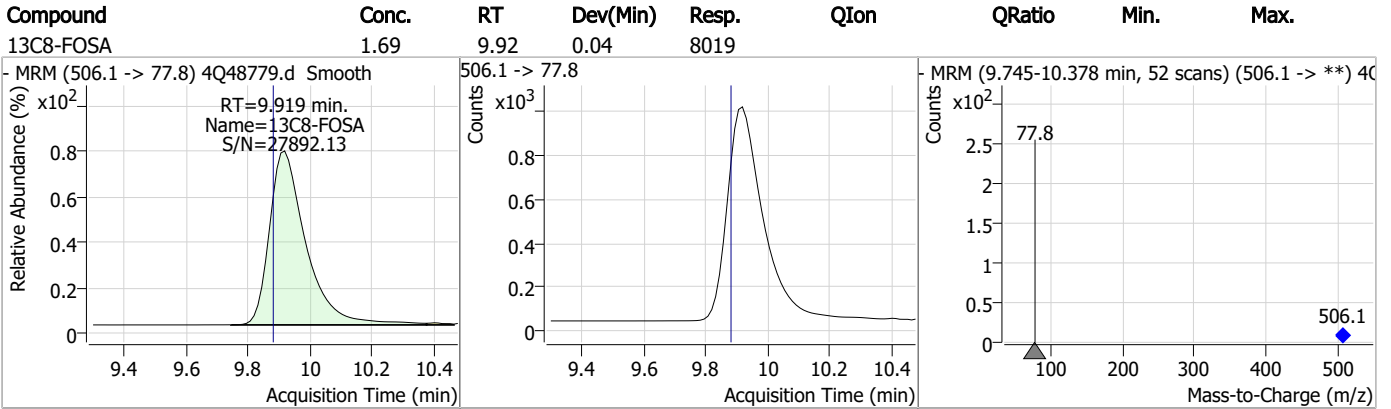
Perfluorinated Compounds by LC/MS/MS



7.3.1

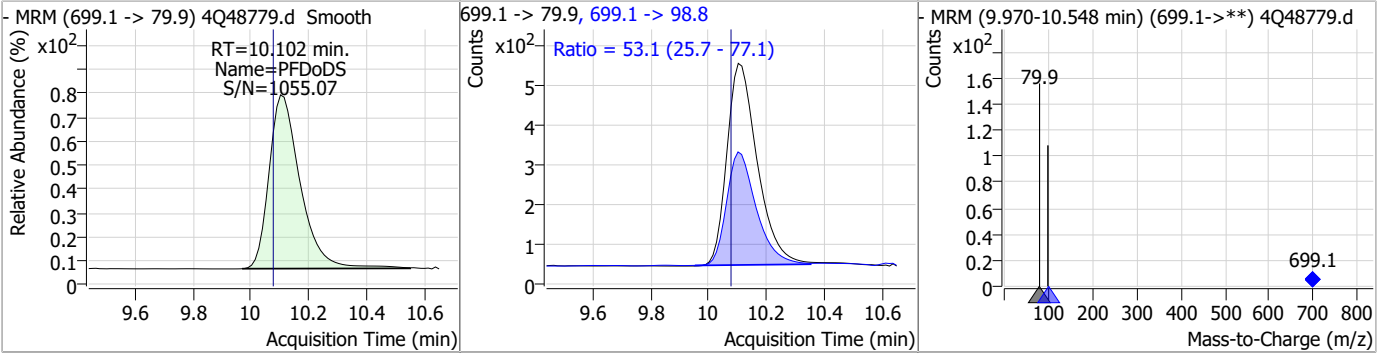
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Perfluorinated Compounds by LC/MS/MS

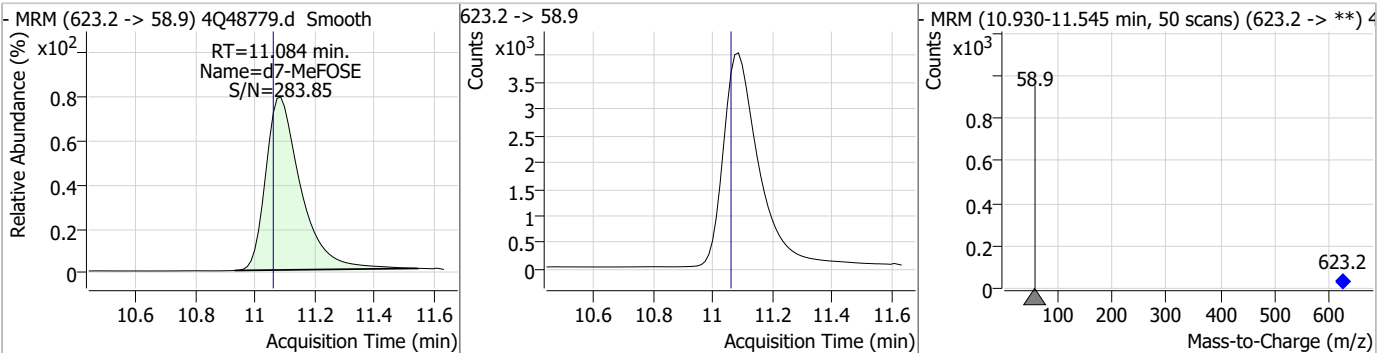


Perfluorinated Compounds by LC/MS/MS

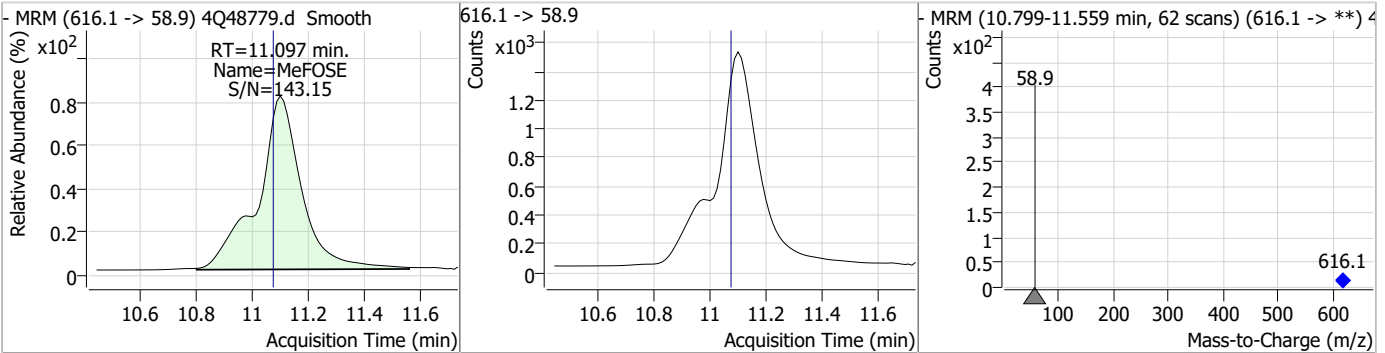
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	2.80	10.10	0.02	3805	699.1 -> 98.8	53.1	25.7	77.1



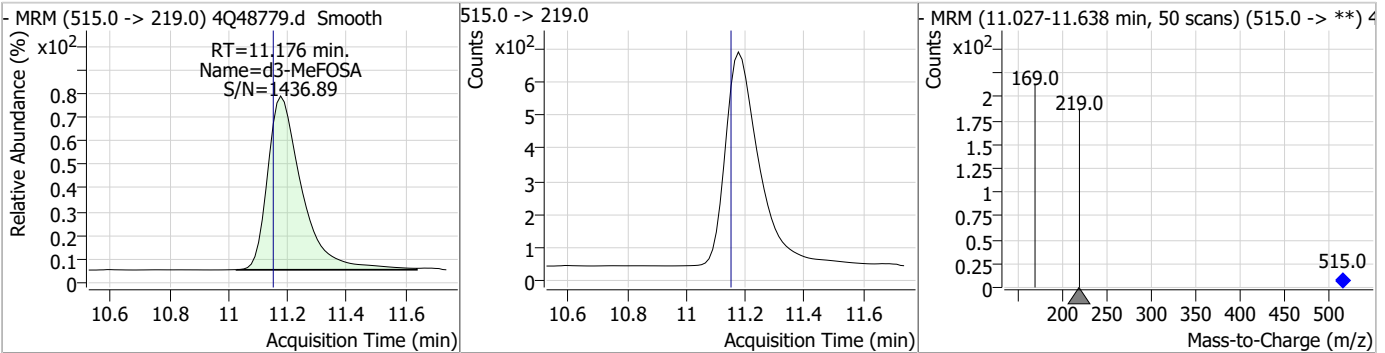
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	14.57	11.08	0.02	32557				



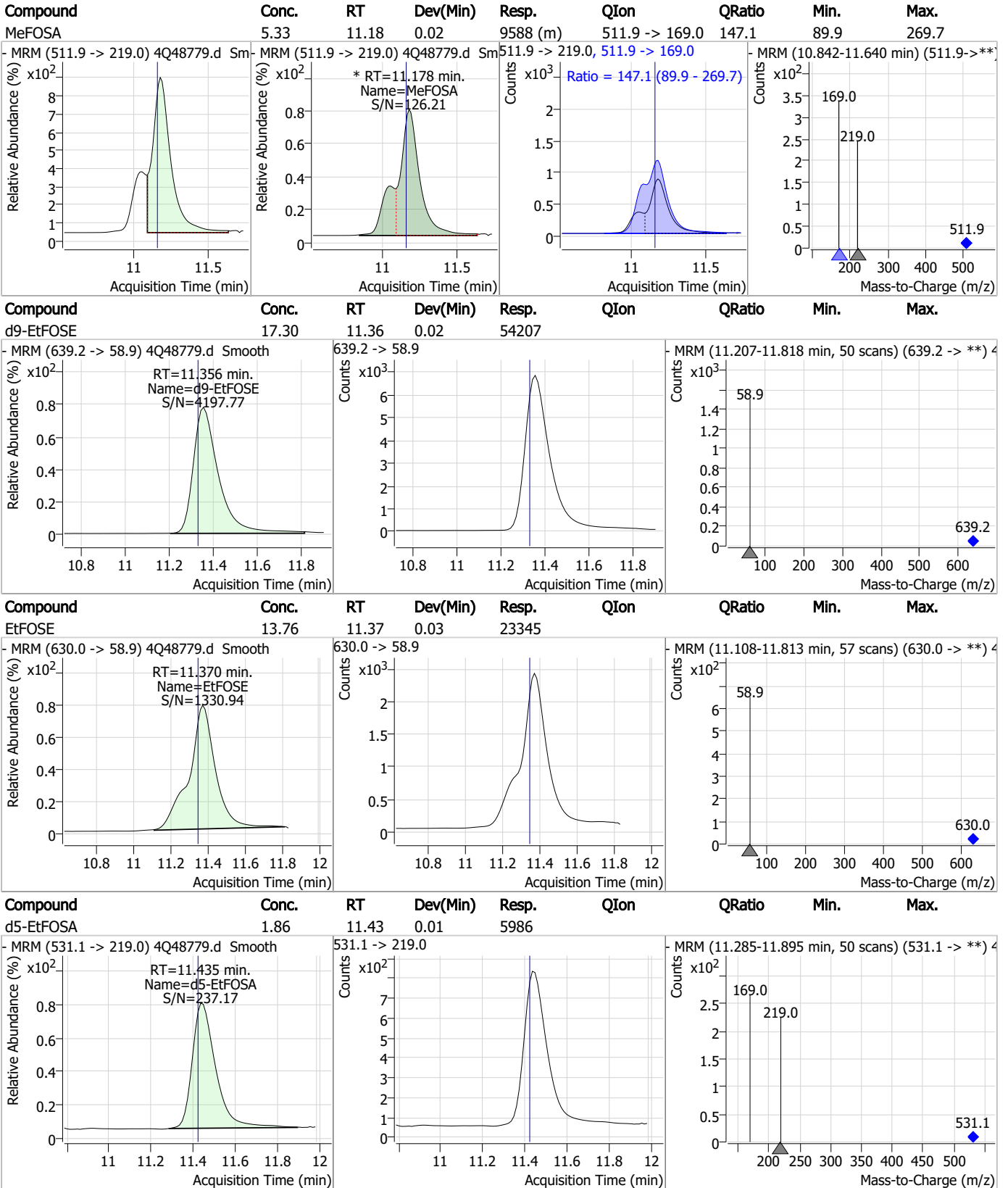
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	13.99	11.10	0.02	16292				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.85	11.18	0.02	5172				



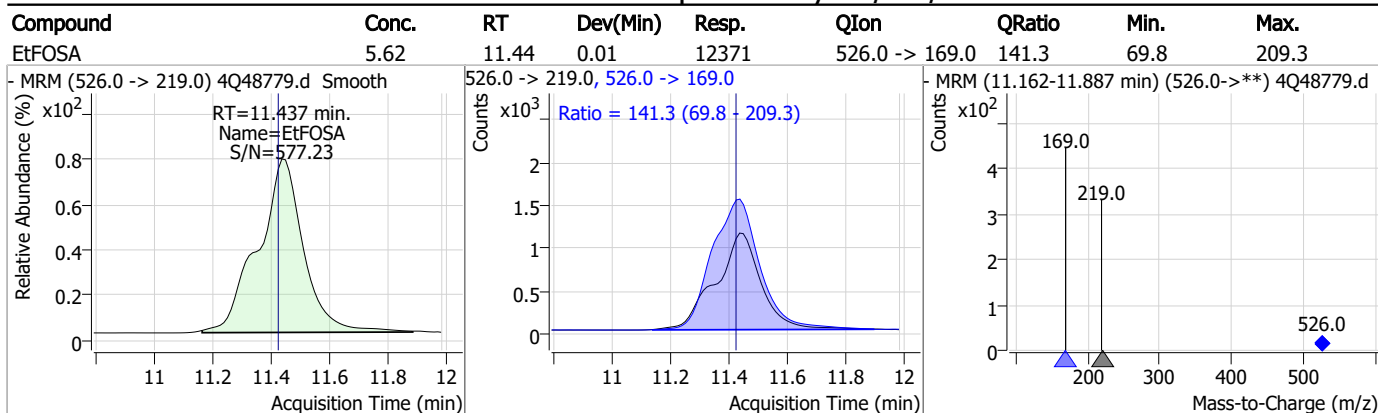
Perfluorinated Compounds by LC/MS/MS



7.3.1

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Perfluorinated Compounds by LC/MS/MS



7.3.1

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Manual Integration Approval Summary

Sample Number: OP98297-BS Method: EPA DRAFT 1633
Lab FileID: 4Q48779.D Analyst approved: 08/10/23 10:42 Anna Ludwig
Injection Time: 08/09/23 19:03 Supervisor approved: 08/14/23 16:34 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.34	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.44	Split peak
EtFOSAA	2991-50-6		8.58	Split peak
MeFOSA	31506-32-8		11.18	Split peak

7.3.1.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48780.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/9/2023 7:18:18 PM
 Sample Name : op98297-llbs:3
 Vial : P4-D2
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q713.batch.bin
 Sample Information : OP98297,S4Q713,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	114824	10.00 µg/L	0.025
M5-PFPeA	4.425	268.3 -> 223.0	57668	5.00 µg/L	0.012
M5-PFHxA	5.622	318.0 -> 273.0	39901	2.50 µg/L	0.012
M4-PFHpA	6.580	367.1 -> 322.0	29365	2.50 µg/L	0.025
M8-PFOA	7.251	421.1 -> 376.0	46209	2.50 µg/L	0.025
M9-PFNA	7.810	472.1 -> 427.0	20484	1.25 µg/L	0.025
M6-PFDA	8.303	519.1 -> 474.1	14350	1.25 µg/L	0.025
M7-PFUnDA	8.773	570.0 -> 525.1	16929	1.25 µg/L	0.037
M2-PFDoDA	9.205	615.1 -> 570.0	16481	1.25 µg/L	0.025
M2-PFTeDA	9.974	715.2 -> 670.0	11899	1.25 µg/L	0.025
M8-FOSA	9.919	506.1 -> 77.8	7248	2.50 µg/L	0.037
M3-PFBS	5.502	302.1 -> 79.9	9760	2.50 µg/L	0.013
M3-PFHxS	7.342	402.1 -> 79.9	6677	2.50 µg/L	0.025
M8-PFOS	8.442	507.1 -> 79.9	8637	2.50 µg/L	0.025
M2-4:2FTS	5.309	329.1 -> 80.9	799	5.00 µg/L	0.012
M2-6:2FTS	7.023	429.1 -> 80.9	1639	5.00 µg/L	0.025
M2-8:2FTS	8.092	529.1 -> 80.9	2757	5.00 µg/L	0.026
M3-MeFOSAA	8.373	573.2 -> 419.0	16965	5.00 µg/L	0.025
M3-HFPO-DA	6.002	286.9 -> 168.9	31260	10.00 µg/L	0.025
M5-EtFOSAA	8.571	589.2 -> 419.0	14178	5.00 µg/L	0.025
M7-MeFOSE	11.084	623.2 -> 58.9	32847	25.00 µg/L	0.025
M9-EtFOSE	11.356	639.2 -> 58.9	55661	25.00 µg/L	0.025
M5-EtFOSA	11.447	531.1 -> 219.0	6048	2.50 µg/L	0.025
M3-MeFOSA	11.189	515.0 -> 219.0	5181	2.50 µg/L	0.037
13C4-PFOS	8.443	502.8 -> 79.9	7719	2.50 µg/L	0.025
13C3-PFBA	2.941	216.0 -> 172.0	47443	5.00 µg/L	0.037
18O2-PFHxS	7.341	403.0 -> 83.9	3802	2.50 µg/L	0.025
13C4-PFOA	7.251	417.1 -> 372.0	44104	2.50 µg/L	0.025
13C2-PFDA	8.304	515.1 -> 470.1	13090	1.25 µg/L	0.025
13C5-PFNA	7.810	468.0 -> 423.0	18881	1.25 µg/L	0.025
13C2-PFHxA	5.623	315.1 -> 270.0	28837	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.309	329.1 -> 80.9	799	8.42 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 168.3%		
13C2-6:2FTS	7.023	429.1 -> 80.9	1639	9.03 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 180.6%		
13C2-8:2FTS	8.092	529.1 -> 80.9	2757	10.00 µg/L	0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 200.1%		
13C2-PFDoDA	9.205	615.1 -> 570.0	16481	1.47 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 117.6%		
13C2-PFTeDA	9.974	715.2 -> 670.0	11899	1.32 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.7%		
13C3-PFBS	5.502	302.1 -> 79.9	9760	3.02 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 120.7%		
13C3-PFHxS	7.342	402.1 -> 79.9	6677	3.17 µg/L	0.025

7.32
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 126.9%	
13C4-PFBA	2.936	216.8 -> 171.9	114824	14.16 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 141.6%	
13C4-PFHpA	6.580	367.1 -> 322.0	29365	3.42 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 136.7%	
13C5-PFHxA	5.622	318.0 -> 273.0	39901	3.30 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 132.1%	
13C5-PFPeA	4.425	268.3 -> 223.0	57668	5.72 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.4%	
13C6-PFDA	8.303	519.1 -> 474.1	14350	1.58 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 126.7%	
13C7-PFUnDA	8.773	570.0 -> 525.1	16929	1.66 µg/L	0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 132.7%	
13C8-FOSA	9.919	506.1 -> 77.8	7248	1.51 µg/L	0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 60.2%	
13C8-PFOA	7.251	421.1 -> 376.0	46209	3.18 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 127.3%	
13C8-PFOS	8.442	507.1 -> 79.9	8637	2.79 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.4%	
13C9-PFNA	7.810	472.1 -> 427.0	20484	1.43 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 114.6%	
d3-MeFOSAA	8.373	573.2 -> 419.0	16965	5.92 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 118.4%	
13C3-HFPO-DA	6.002	286.9 -> 168.9	31260	11.38 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 113.8%	
d3-MeFOSA	11.189	515.0 -> 219.0	5181	1.83 µg/L	0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 73.1%	
d5-EtFOSAA	8.571	589.2 -> 419.0	14178	6.02 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 120.4%	
d7-MeFOSE	11.084	623.2 -> 58.9	32847	14.49 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 58.0%	
d9-EtFOSE	11.356	639.2 -> 58.9	55661	17.51 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 70.0%	
d5-EtFOSA	11.447	531.1 -> 219.0	6048	1.85 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 74.1%	
Target Compounds					QValue
4:2FTS	5.309	327.1 -> 307.0	3463	3.21 µg/L	93
		327.1 -> 80.9	1561		
6:2FTS	7.024	427.1 -> 407.0	4394	3.16 µg/L	99
		427.1 -> 80.9	1520		
8:2FTS	8.092	527.1 -> 507.0	3146	2.84 µg/L	89
		527.1 -> 80.8	1156		
EtFOSAA	8.584	584.2 -> 419.1	1531	0.79 µg/L	m 99
		584.2 -> 526.0	645		
FOSA	9.923	498.1 -> 77.9	1948	0.83 µg/L	100
		498.1 -> 478.0	60		
MeFOSAA	8.374	570.1 -> 419.0	1915	0.90 µg/L	m 98
		570.1 -> 483.0	338		
PFBA	2.932	212.8 -> 168.9	8440	3.19 µg/L	100
PFBS	5.503	298.7 -> 79.9	2010	0.84 µg/L	89
		298.7 -> 98.8	878		
PFDA	8.304	512.9 -> 469.0	8503	0.84 µg/L	96
		512.9 -> 219.0	1809		
PFDODA	9.206	613.1 -> 569.0	8276	0.80 µg/L	97
		613.1 -> 319.0	1460		
PFDS	9.347	599.0 -> 79.9	1369	0.77 µg/L	100

7.3.2
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.581	599.0 -> 98.8	703	0.78	µg/L	99
		363.1 -> 319.0	10326			
PFHpS	7.925	363.1 -> 169.0	1869	0.72	µg/L	79
		449.0 -> 79.9	1872			
PFHxA	5.625	449.0 -> 98.9	1219	0.90	µg/L	98
		313.0 -> 269.0	10385			
PFHxS	7.330	313.0 -> 118.9	284	0.82	µg/L	90
		398.7 -> 79.9	1570			
PFNA	7.810	398.7 -> 98.9	943	0.88	µg/L	96
		463.0 -> 419.0	9419			
PFNS	8.911	463.0 -> 219.0	1847	0.82	µg/L	92
		548.8 -> 79.9	1385			
PFOA	7.252	548.8 -> 98.9	798	0.90	µg/L	98
		413.0 -> 369.0	16551			
PFOS	8.443	413.0 -> 169.0	3013	0.90	µg/L	80
		498.9 -> 79.9	2764			
PFPeA	4.427	498.9 -> 98.8	1326	1.80	µg/L	100
		263.0 -> 219.0	18010			
PFPeS	6.607	349.1 -> 79.9	1432	0.79	µg/L	90
		349.1 -> 98.9	547			
PFTeDA	9.975	713.1 -> 669.0	6981	0.84	µg/L	99
		713.1 -> 168.9	705			
PFTrDA	9.603	663.0 -> 619.0	9458	0.89	µg/L	97
		663.0 -> 168.9	1307			
PFUnDA	8.773	563.1 -> 519.0	8665	0.79	µg/L	94
		563.1 -> 269.1	2000			
11Cl-PF3OUdS	9.642	630.9 -> 450.9	10275	1.57	µg/L	99
		632.9 -> 452.9	3079			
9Cl-PF3ONS	8.788	530.8 -> 351.0	16159	1.75	µg/L	98
		532.8 -> 353.0	5166			
ADONA	6.843	376.9 -> 250.9	31644	1.74	µg/L	100
		376.9 -> 84.8	8193			
HFPO-DA	6.003	284.9 -> 168.9	4278	1.66	µg/L	97
		284.9 -> 184.9	514			
3:3FTCA	3.905	241.0 -> 177.0	1654	2.48	µg/L	98
		241.0 -> 117.0	152			
5:3FTCA	6.321	341.0 -> 237.1	32454	17.22	µg/L	96
		341.0 -> 217.0	22123			
7:3FTCA	7.800	441.0 -> 316.9	19974	19.24	µg/L	97
		441.0 -> 336.9	45097			
EtFOSA	11.449	526.0 -> 219.0	3514	1.58	µg/L	99
		526.0 -> 169.0	4939			
EtFOSE	11.370	630.0 -> 58.9	6314	3.62	µg/L	100
		511.9 -> 219.0	2492			
MeFOSA	11.190	511.9 -> 169.0	3877	1.38	µg/L	83
		616.1 -> 58.9	4472			
MeFOSE	11.097	699.1 -> 79.9	1087	3.81	µg/L	100
		699.1 -> 98.8	502			
PFDoDS	10.114	295.0 -> 201.0	1142	0.79	µg/L	92
		295.0 -> 84.9	340			
NFDHA	5.503	279.0 -> 85.1	9916	1.54	µg/L	90
		229.0 -> 84.9	9571			
PFMBA	4.841	314.8 -> 134.9	13039	1.77	µg/L	100
		314.8 -> 82.9	481			
PFMPA	3.553			1.75	µg/L	100
PFEESA	6.047			1.41	µg/L	99

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

7.3.2
7

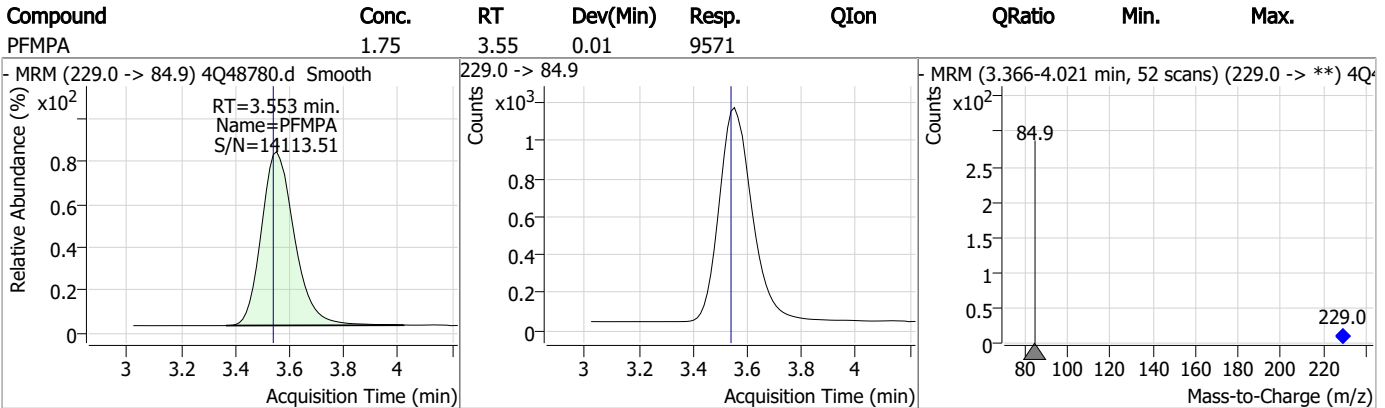
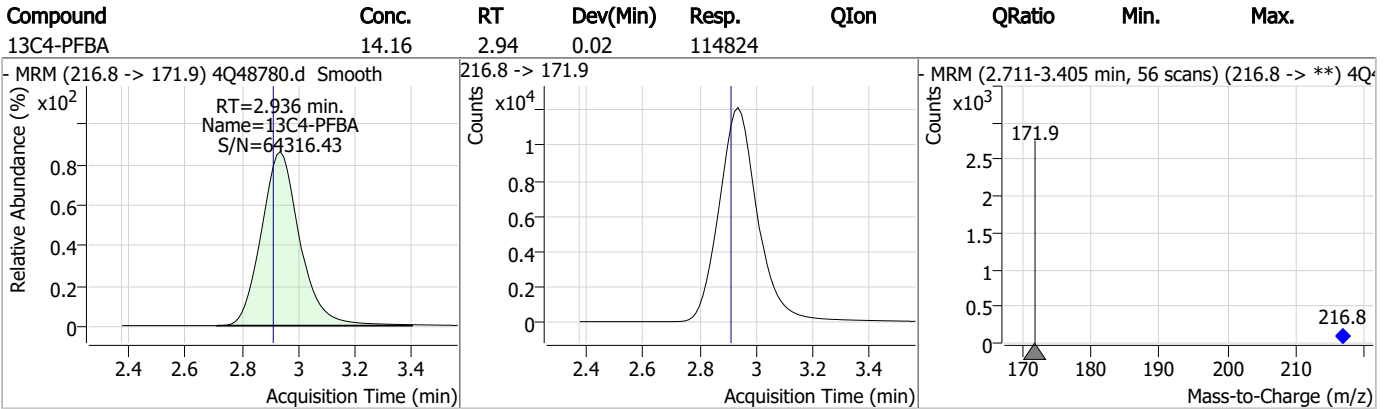
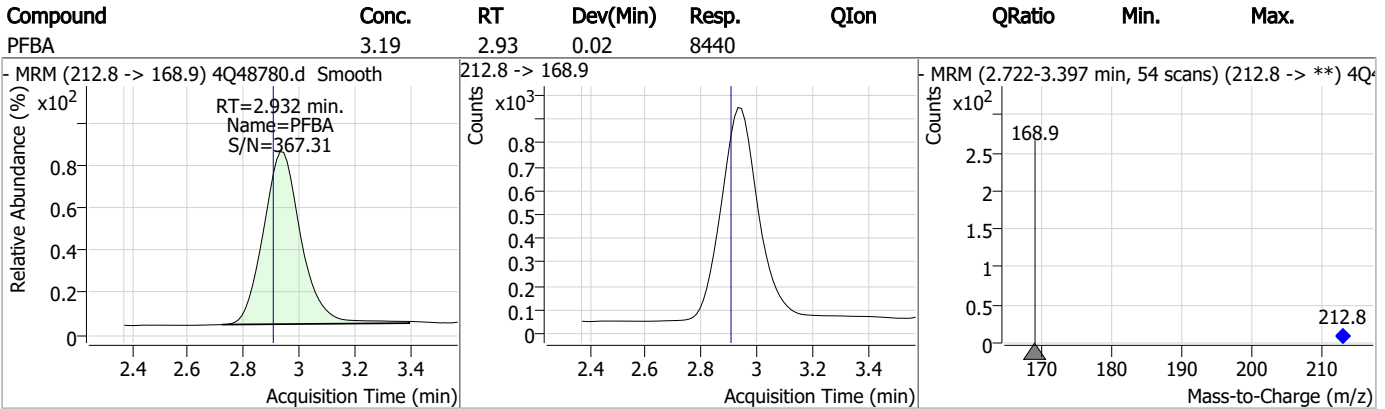
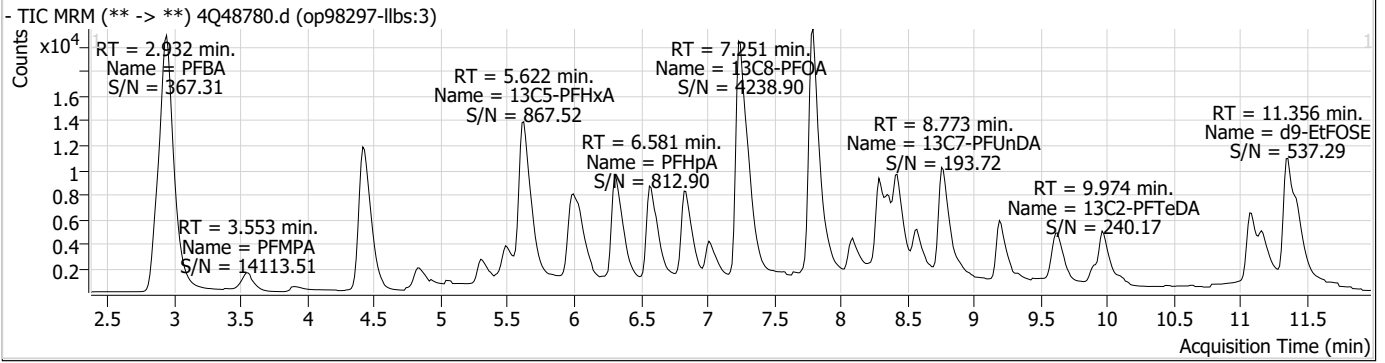
Perfluorinated Compounds by LC/MS/MS

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

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Perfluorinated Compounds by LC/MS/MS

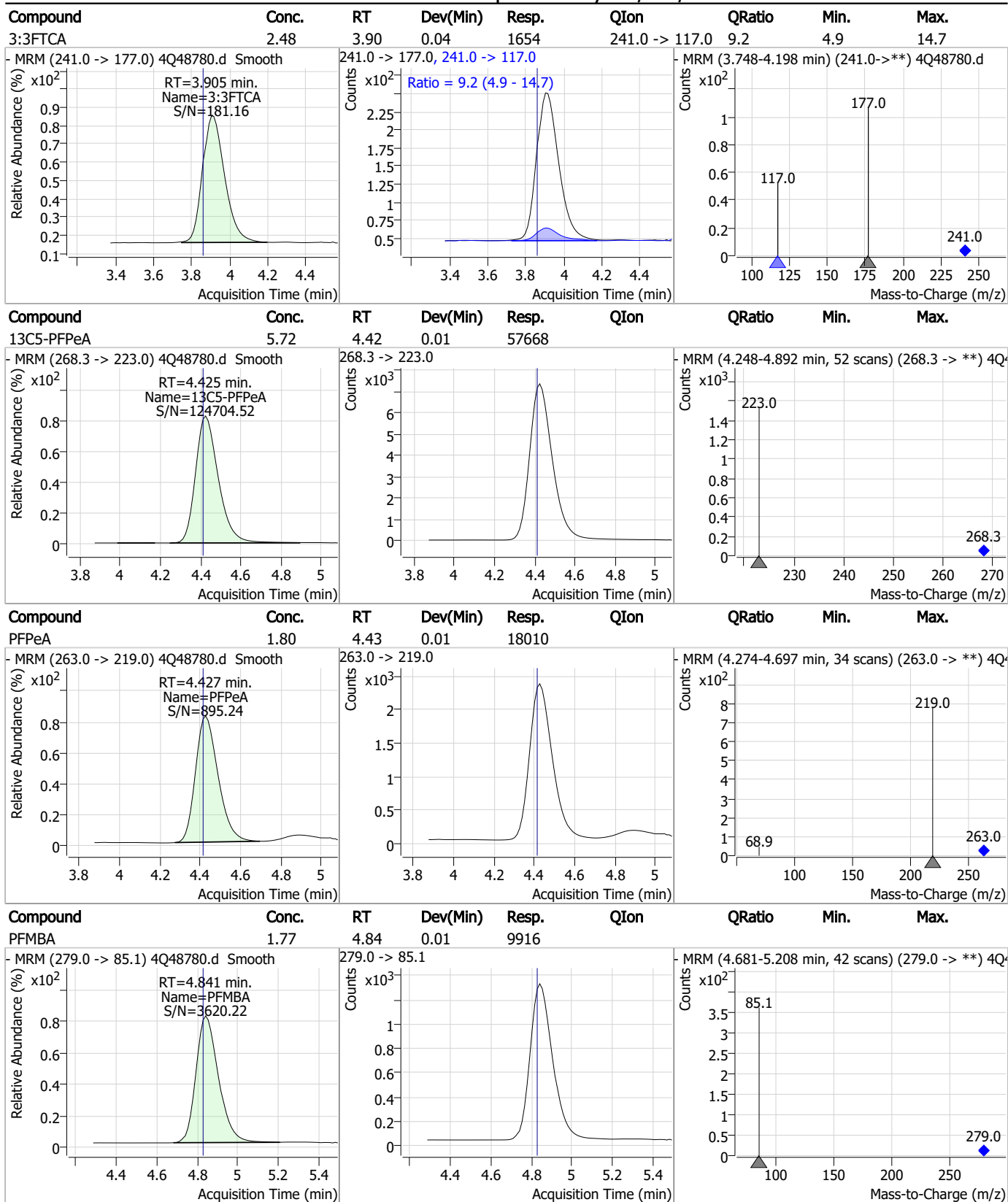


7.3.2

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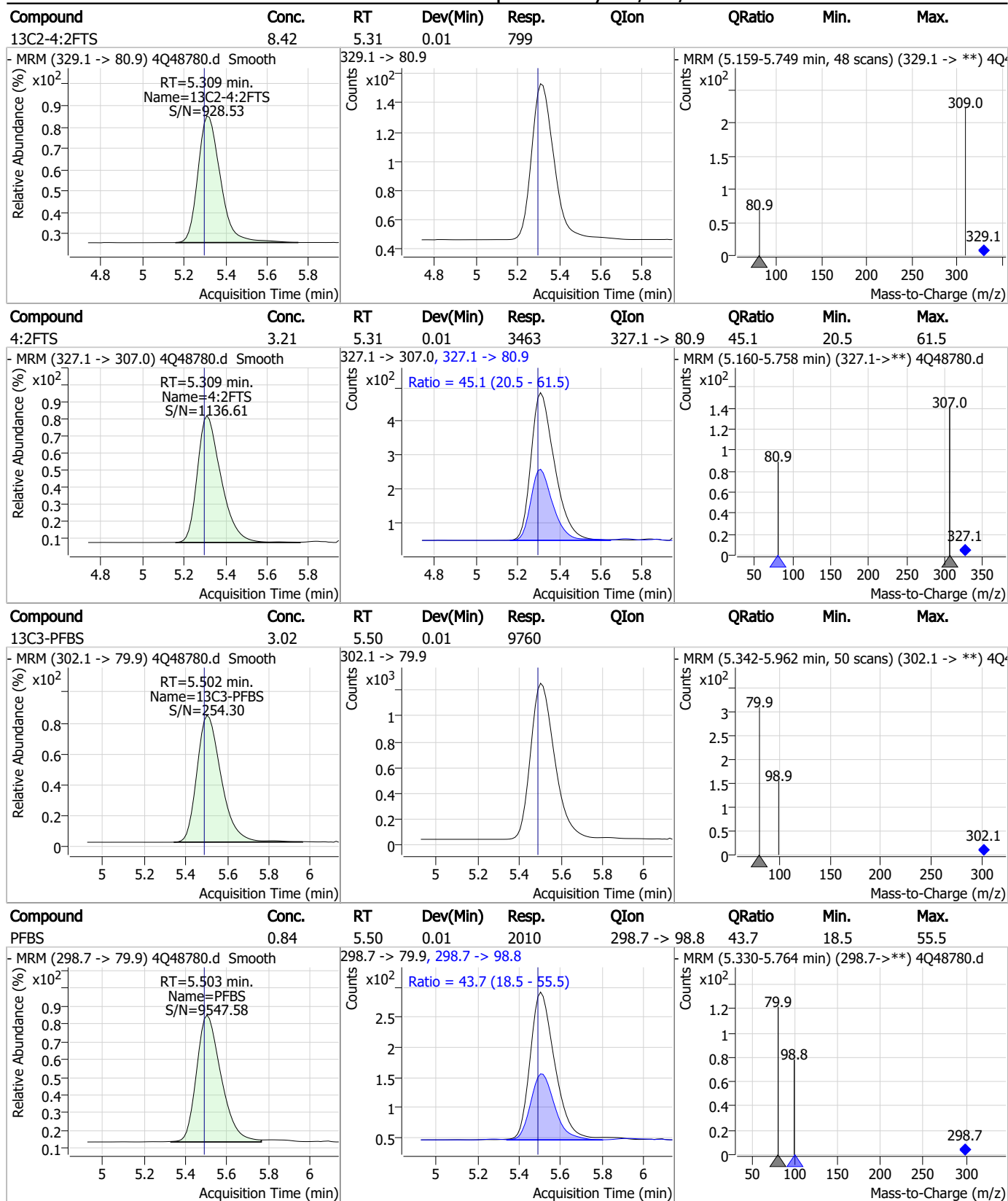


Perfluorinated Compounds by LC/MS/MS



7.3.2
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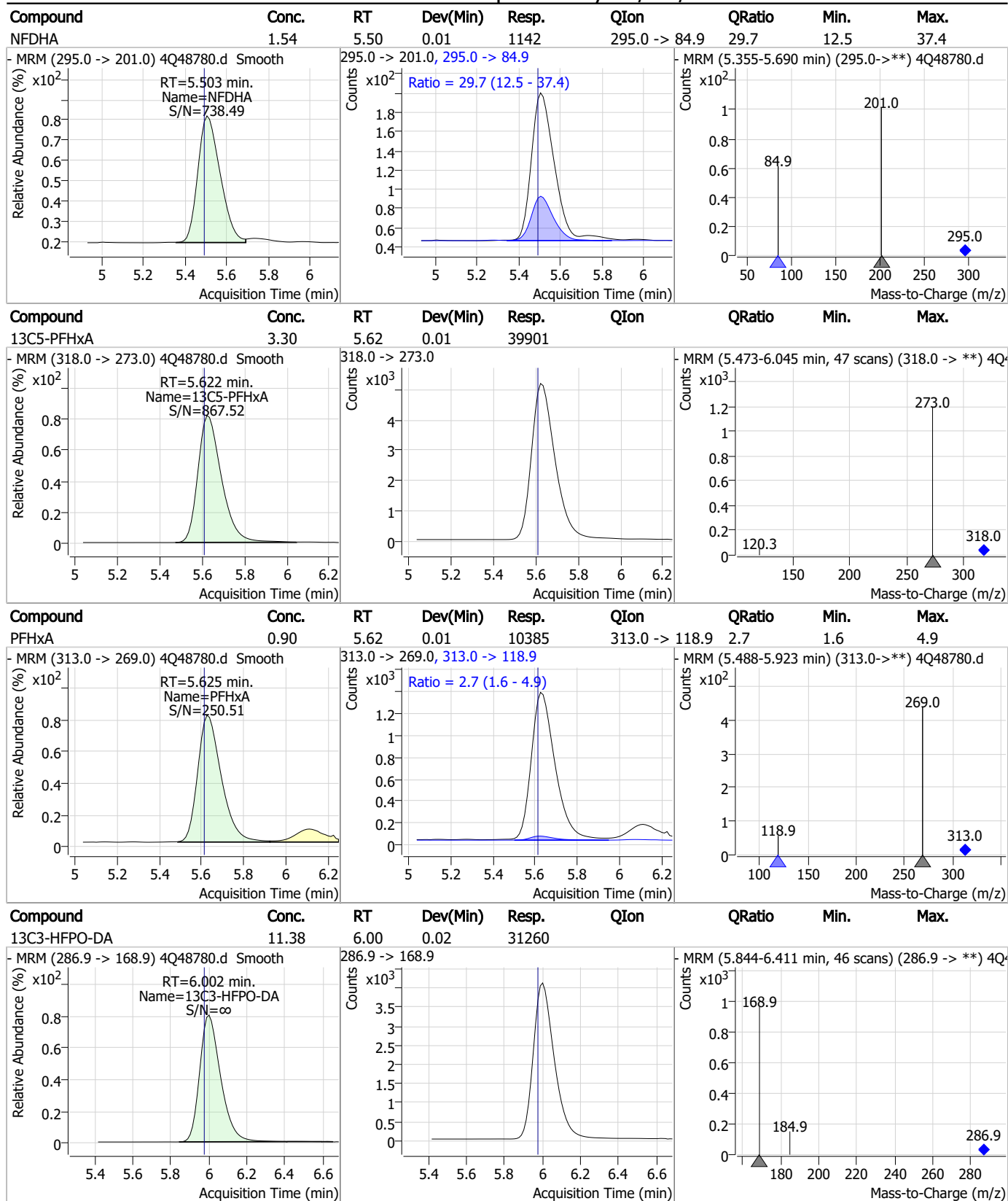
Perfluorinated Compounds by LC/MS/MS



7.3.2
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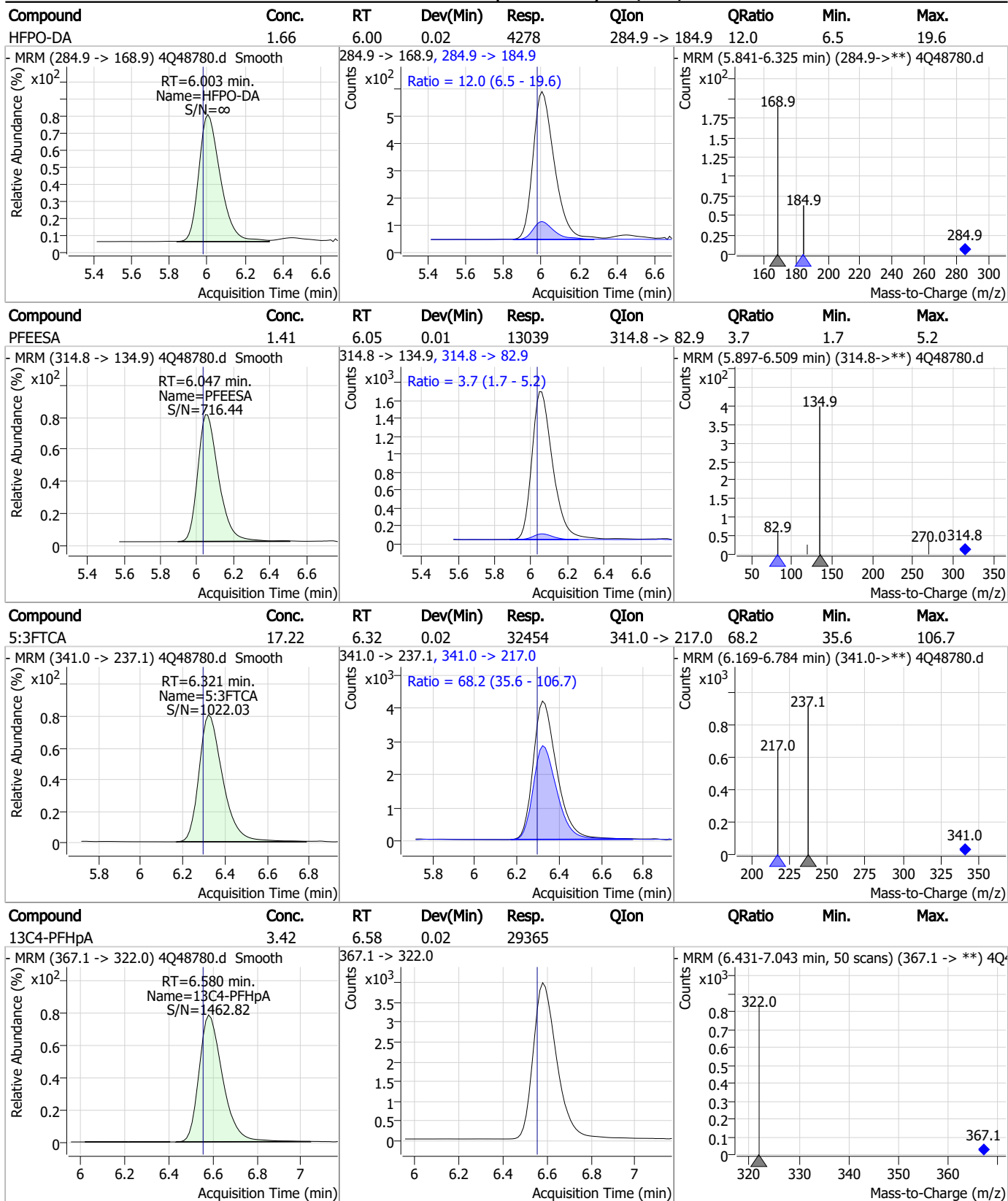


Perfluorinated Compounds by LC/MS/MS



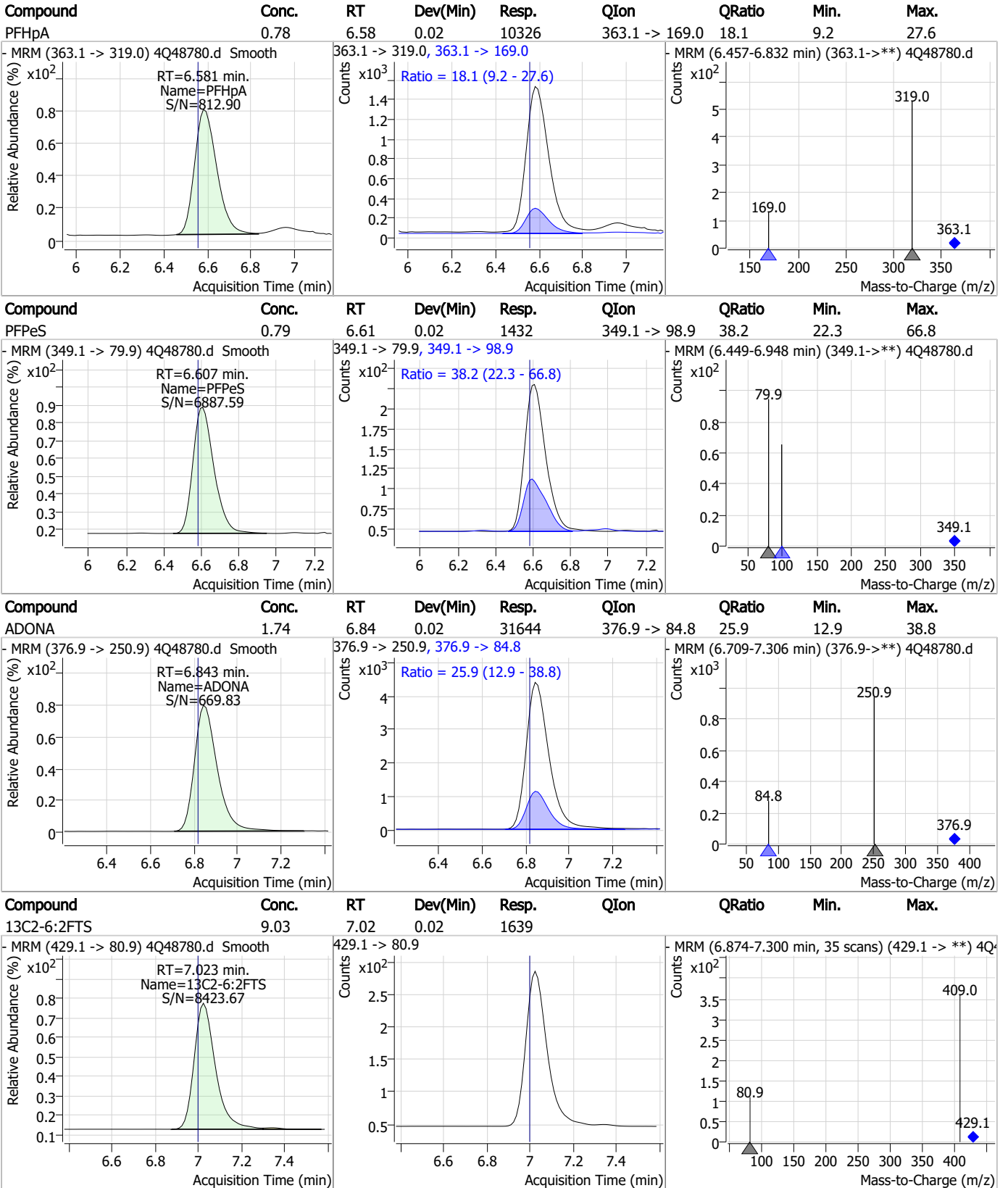
7.3.2
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Perfluorinated Compounds by LC/MS/MS



7.3.2
7

Perfluorinated Compounds by LC/MS/MS

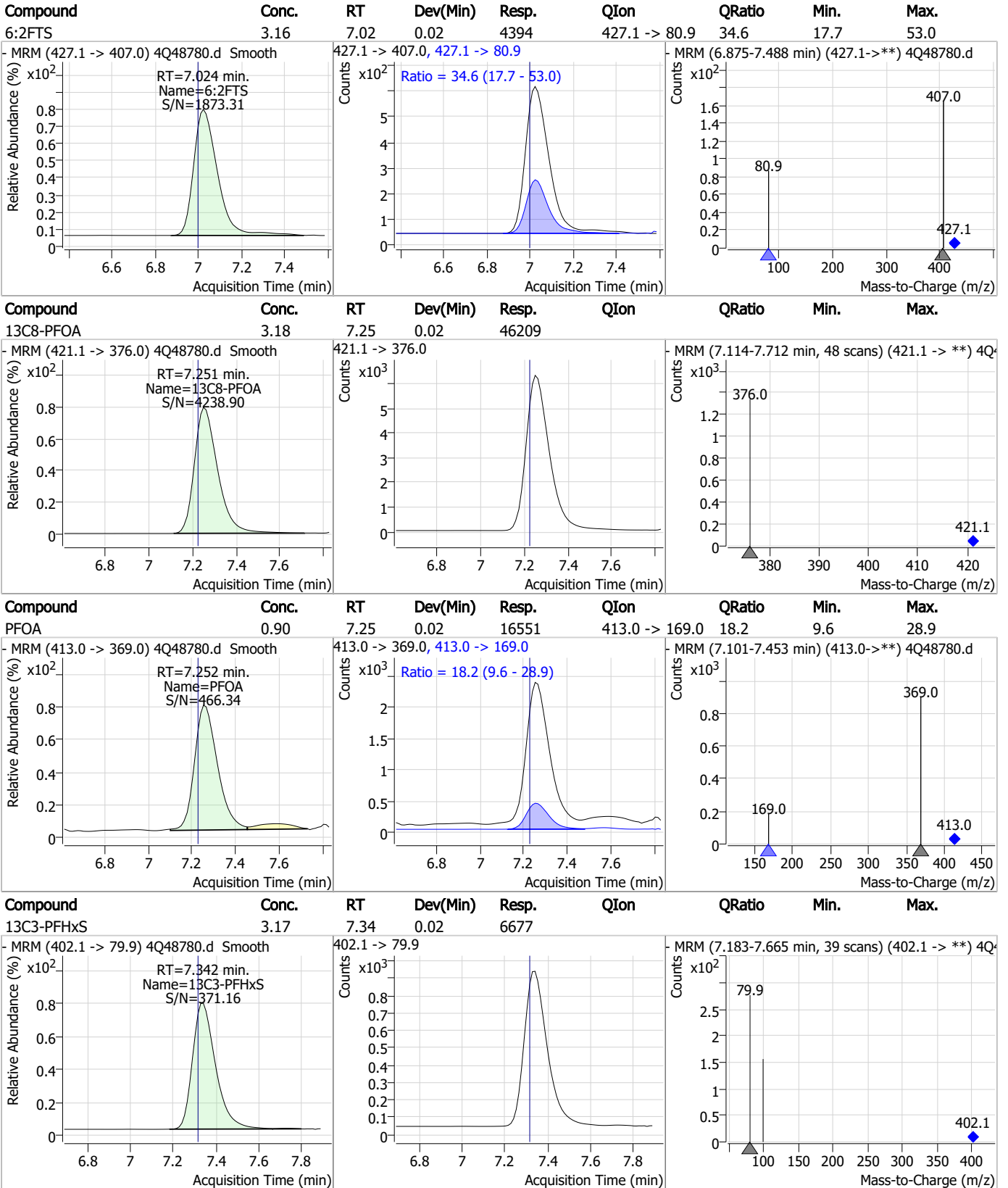


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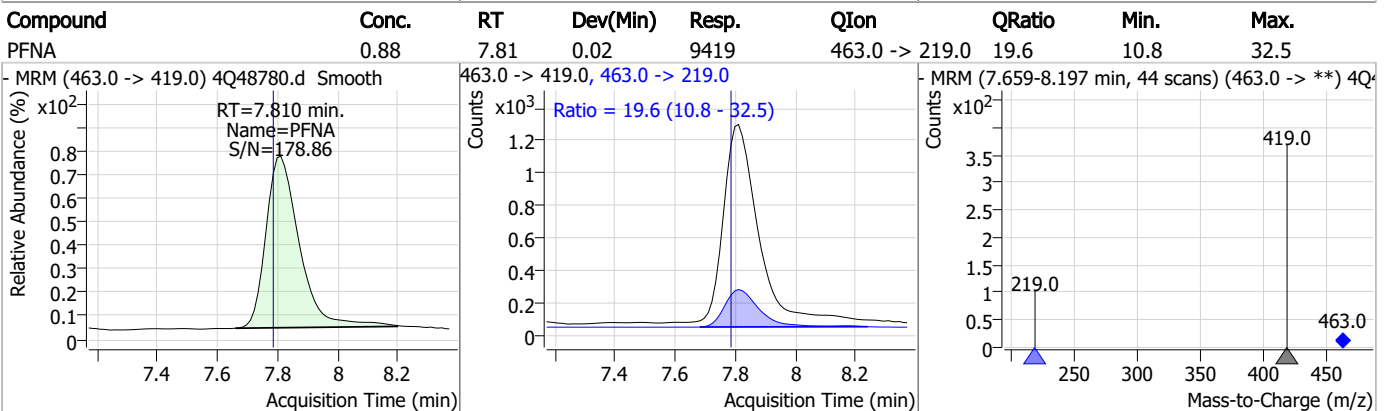
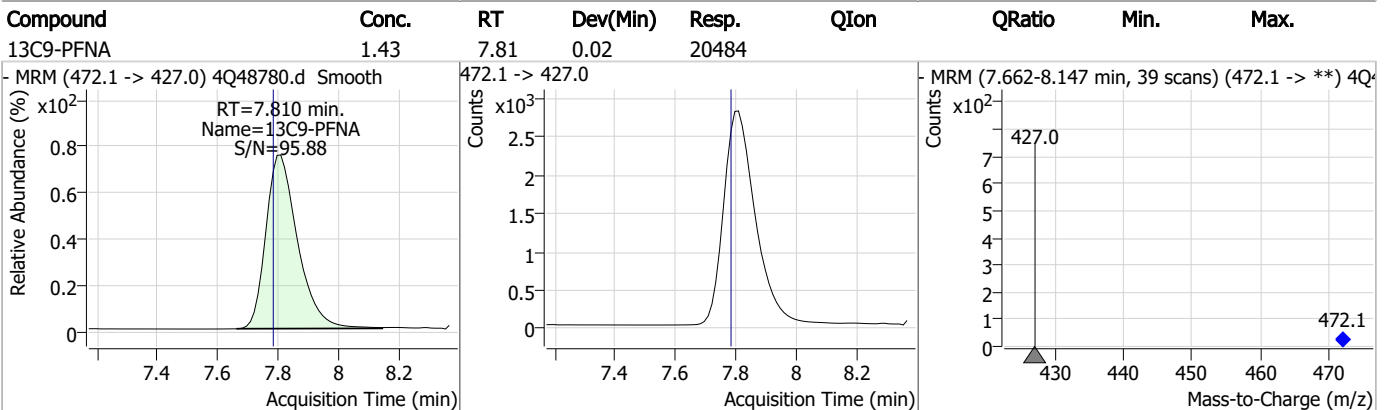
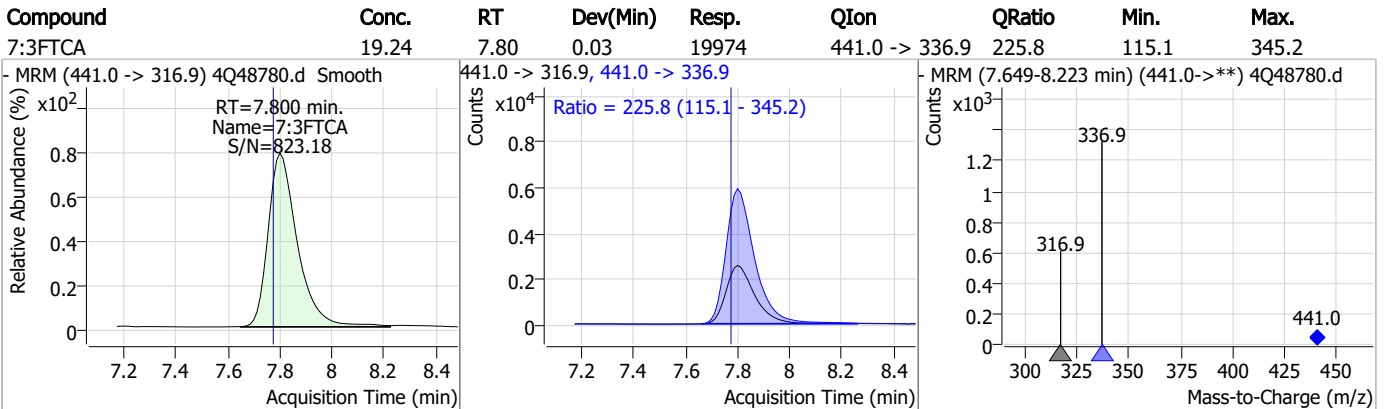
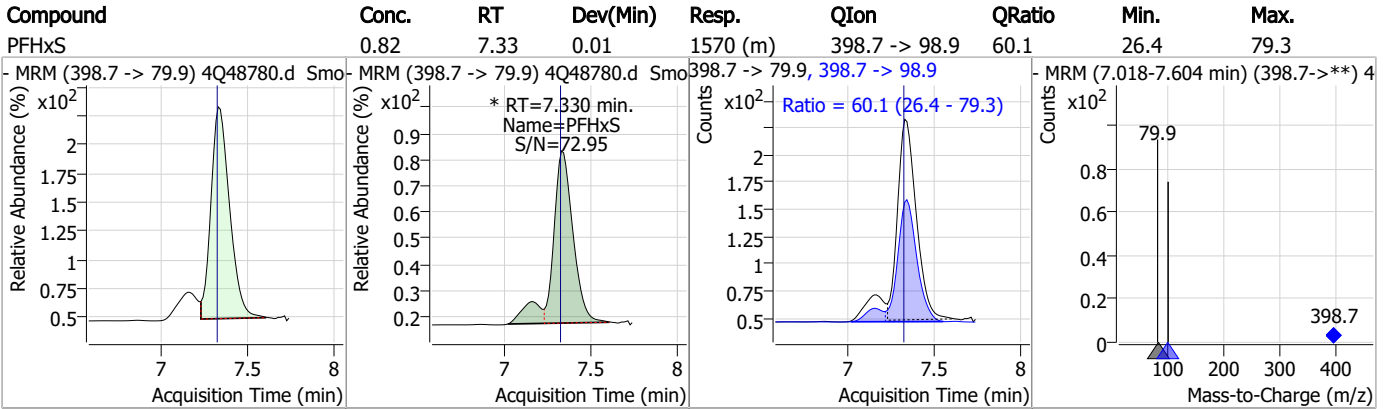
Perfluorinated Compounds by LC/MS/MS



7.3.2
7



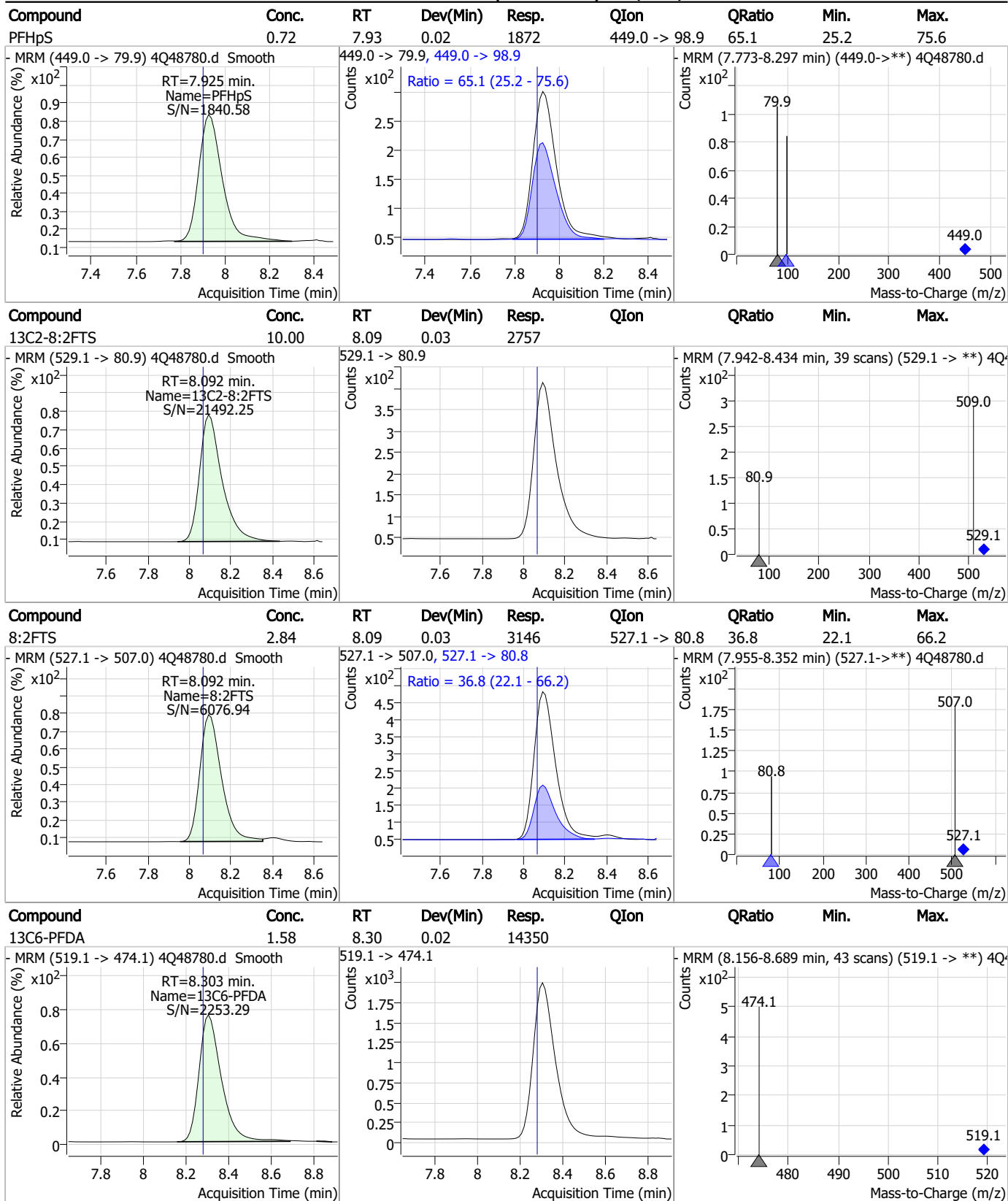
Perfluorinated Compounds by LC/MS/MS



7.3.2

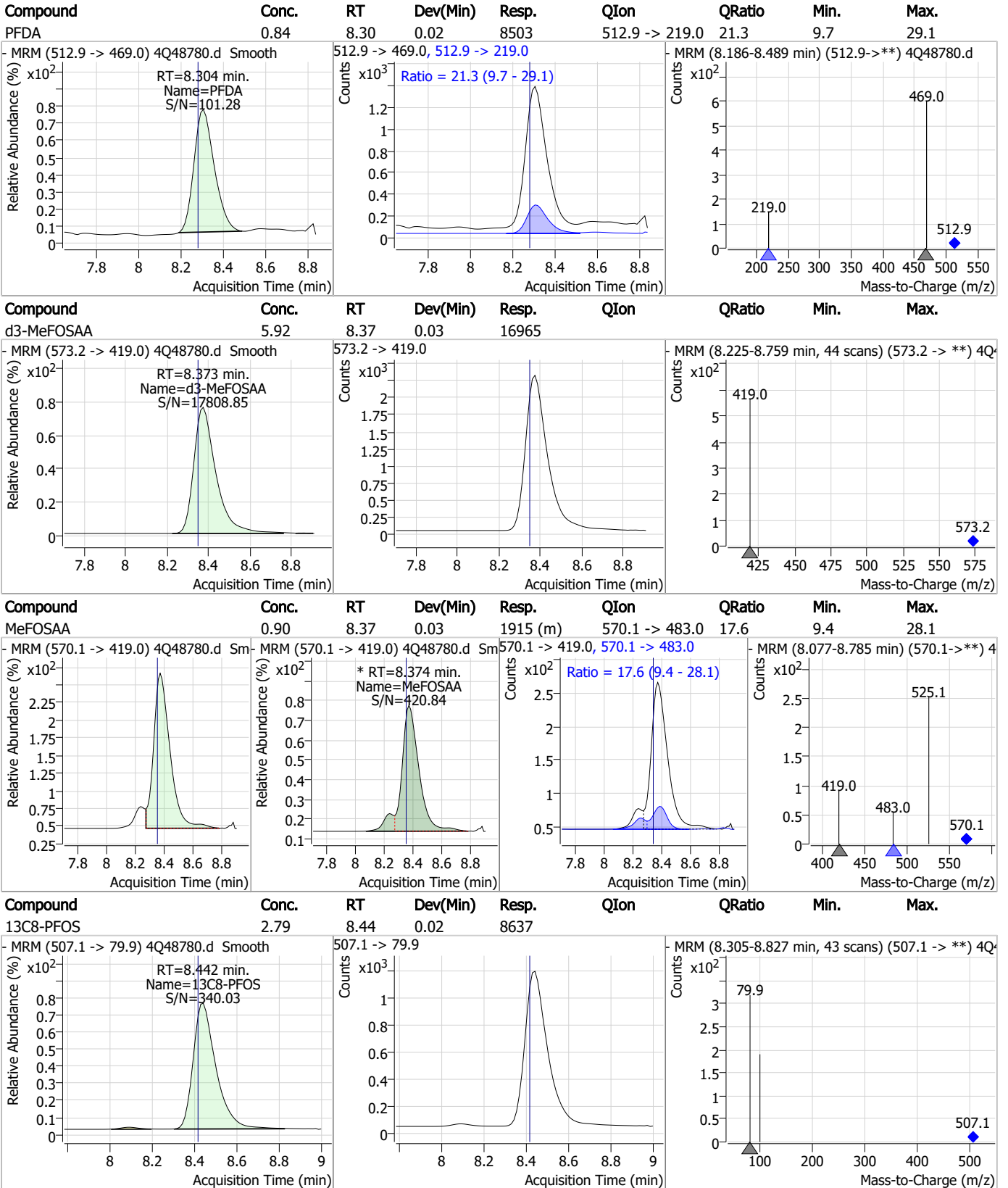
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Perfluorinated Compounds by LC/MS/MS



7.3.2
7

Perfluorinated Compounds by LC/MS/MS

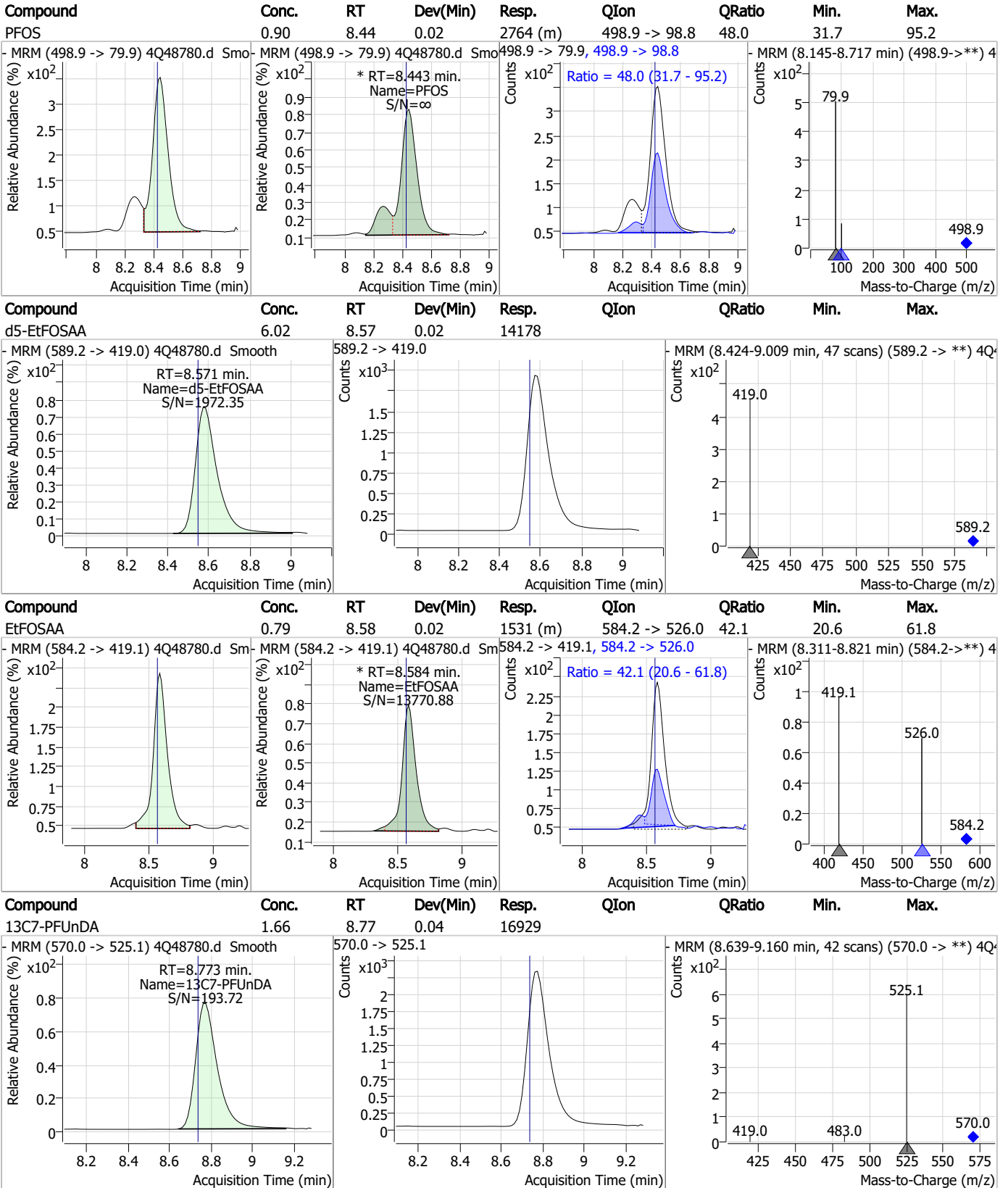


7.3.2

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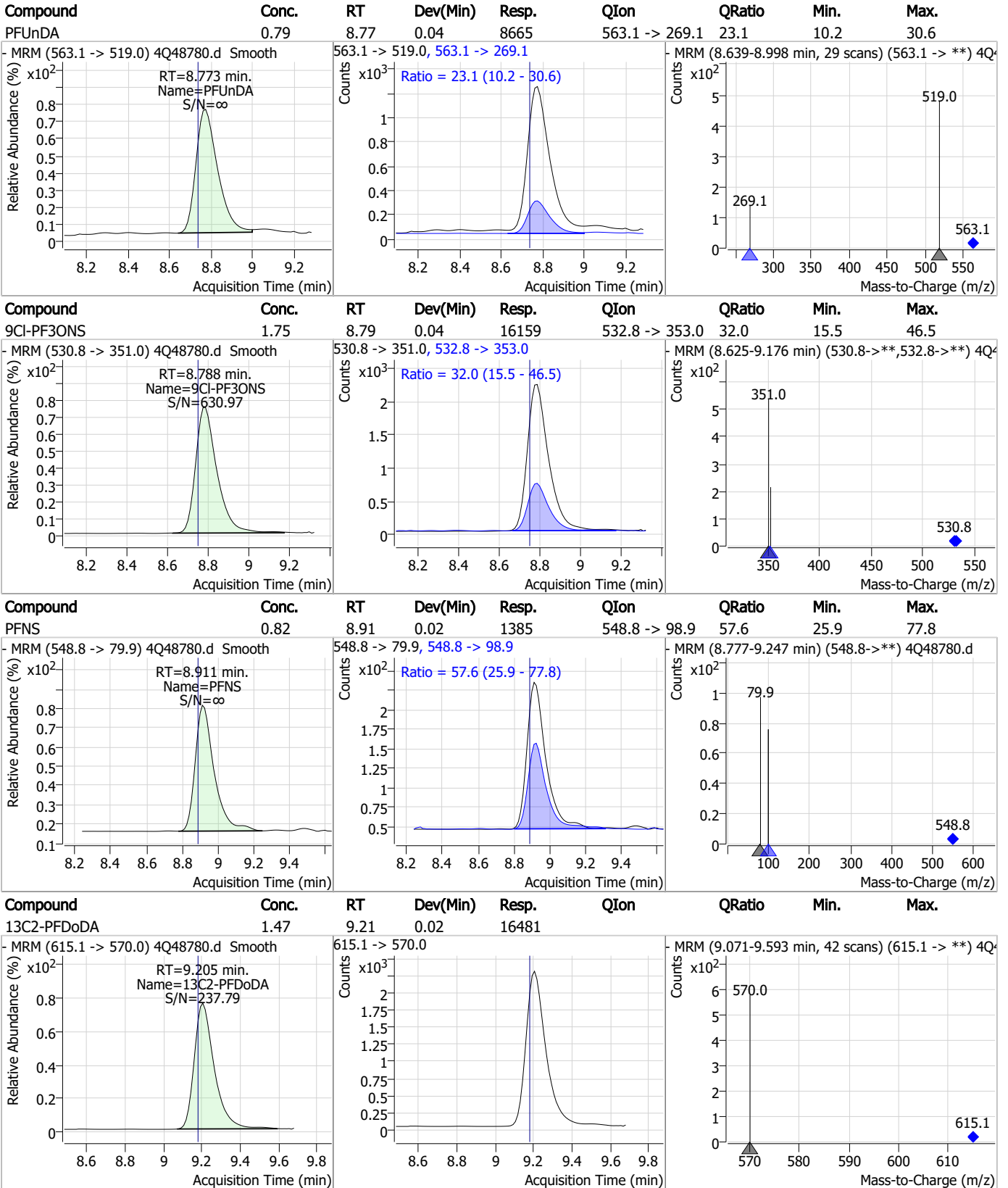
Perfluorinated Compounds by LC/MS/MS



7.3.2

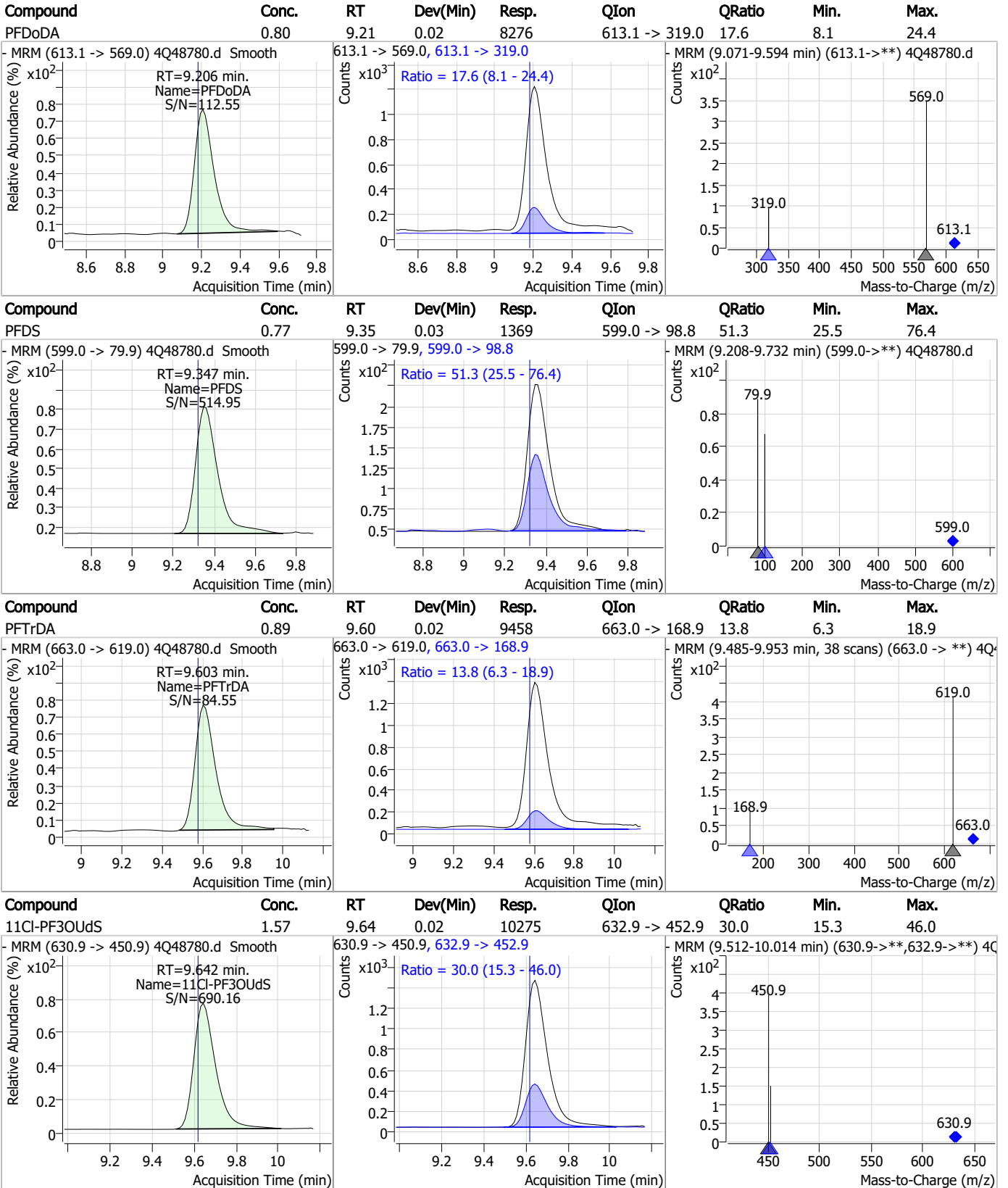
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Perfluorinated Compounds by LC/MS/MS



7.3.2
7

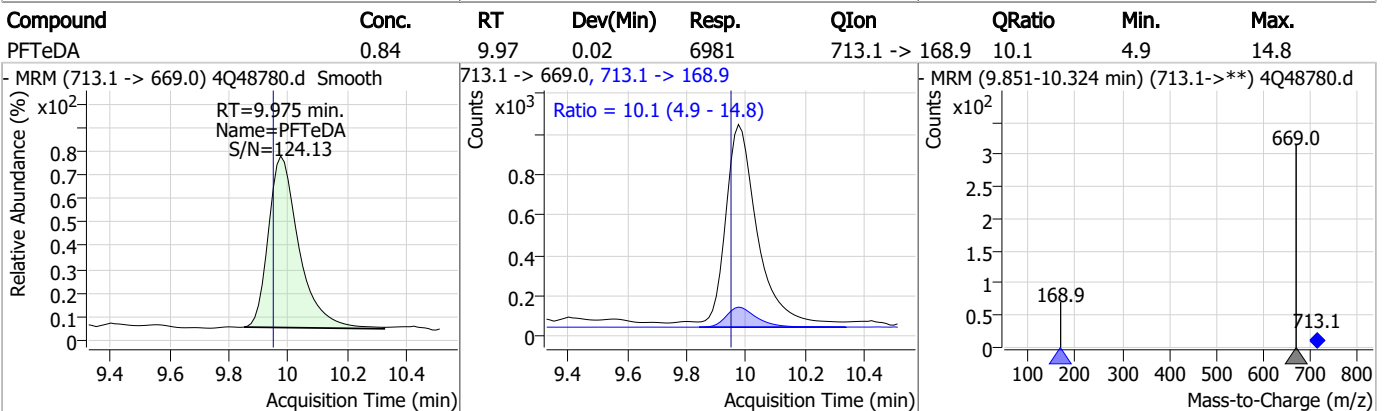
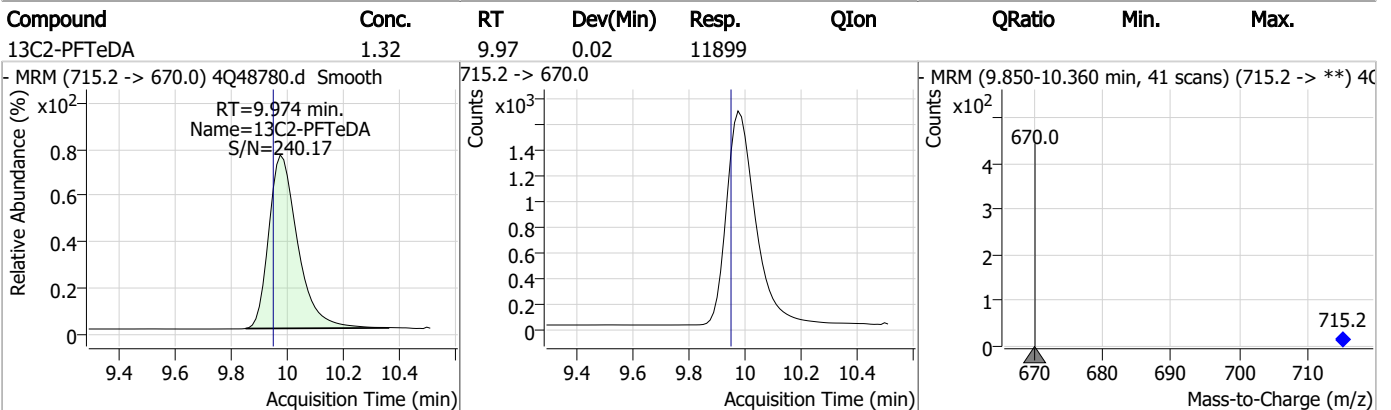
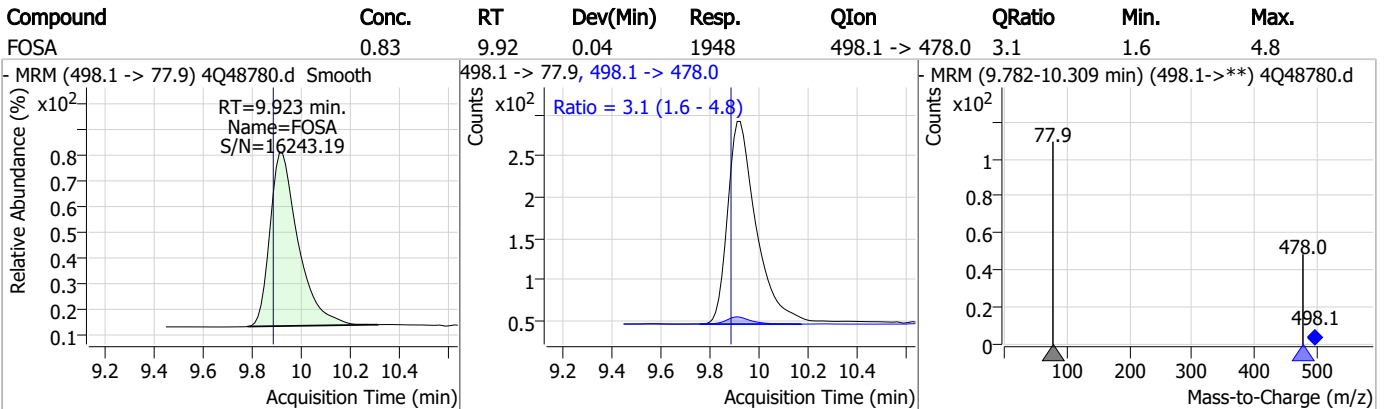
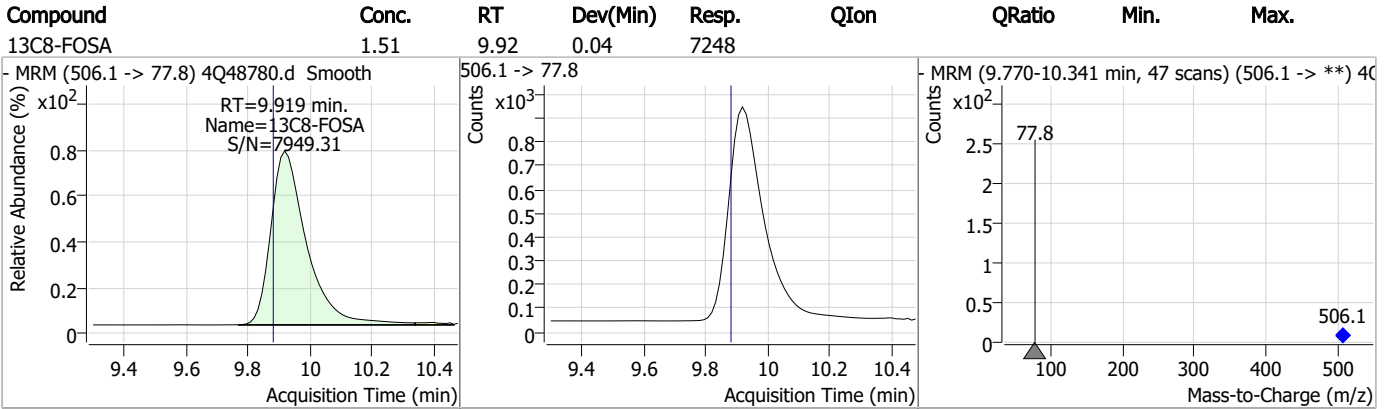
Perfluorinated Compounds by LC/MS/MS



7.3.2
7

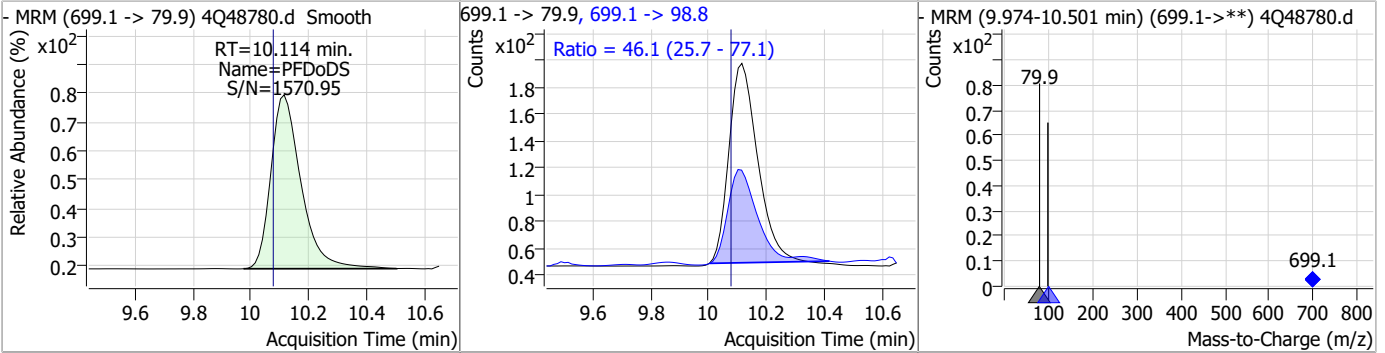


Perfluorinated Compounds by LC/MS/MS

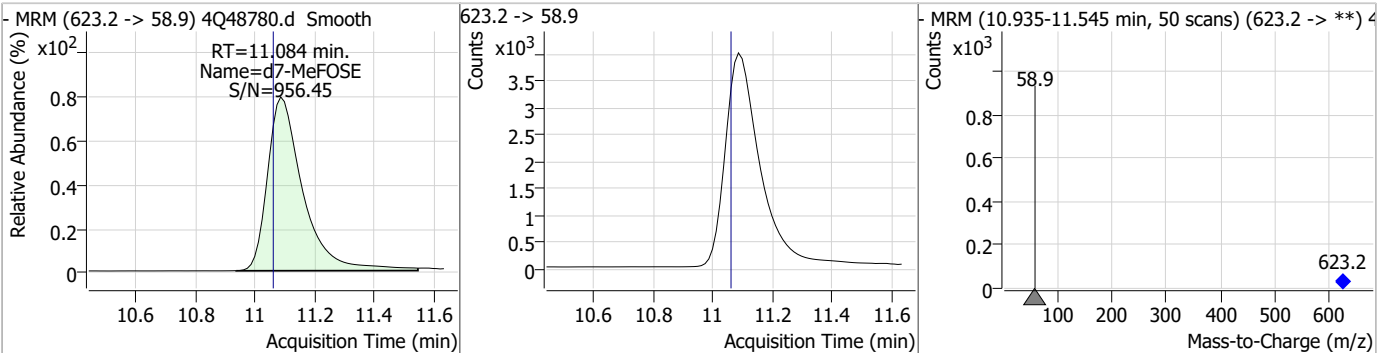


Perfluorinated Compounds by LC/MS/MS

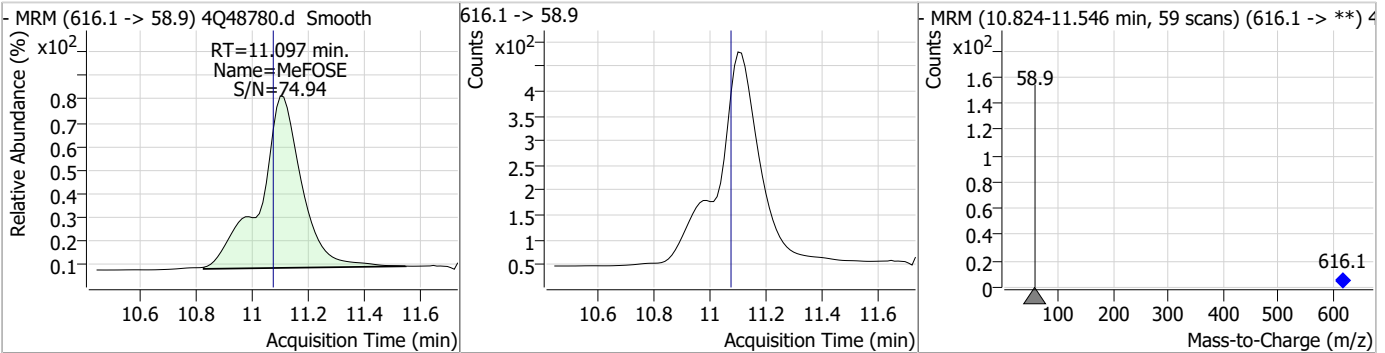
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	0.79	10.11	0.04	1087	699.1 -> 98.8	46.1	25.7	77.1



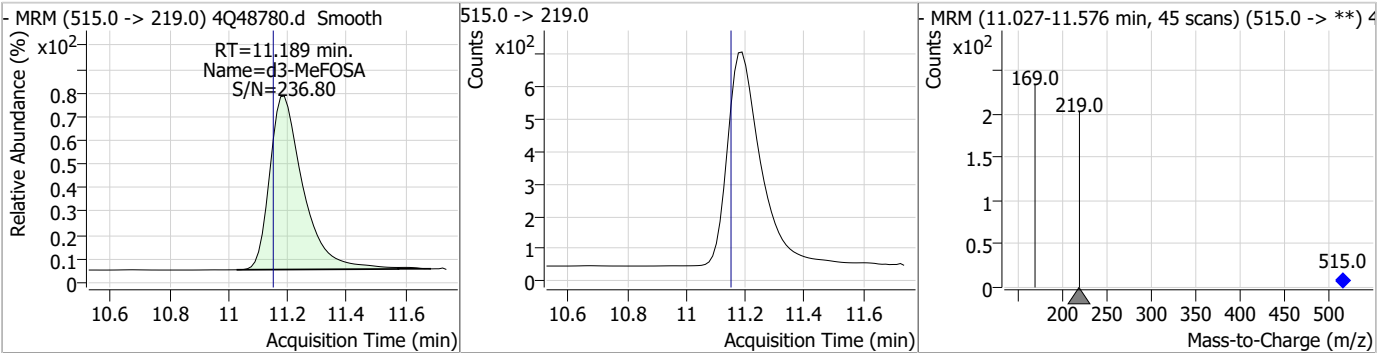
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	14.49	11.08	0.02	32847				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	3.81	11.10	0.02	4472				

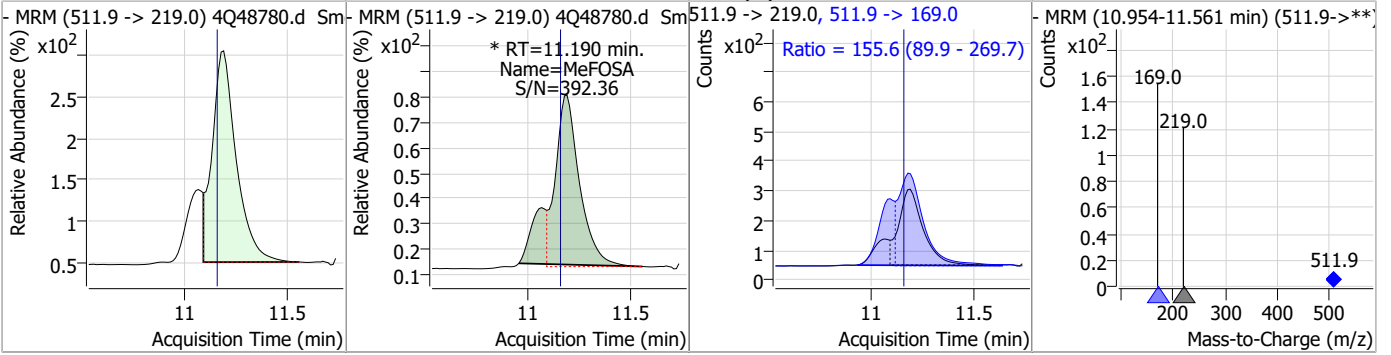


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.83	11.19	0.04	5181				

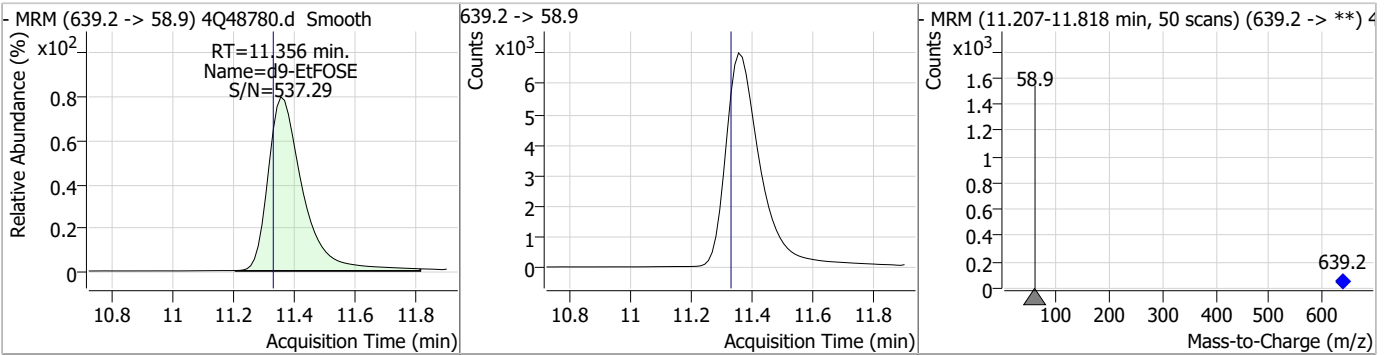


Perfluorinated Compounds by LC/MS/MS

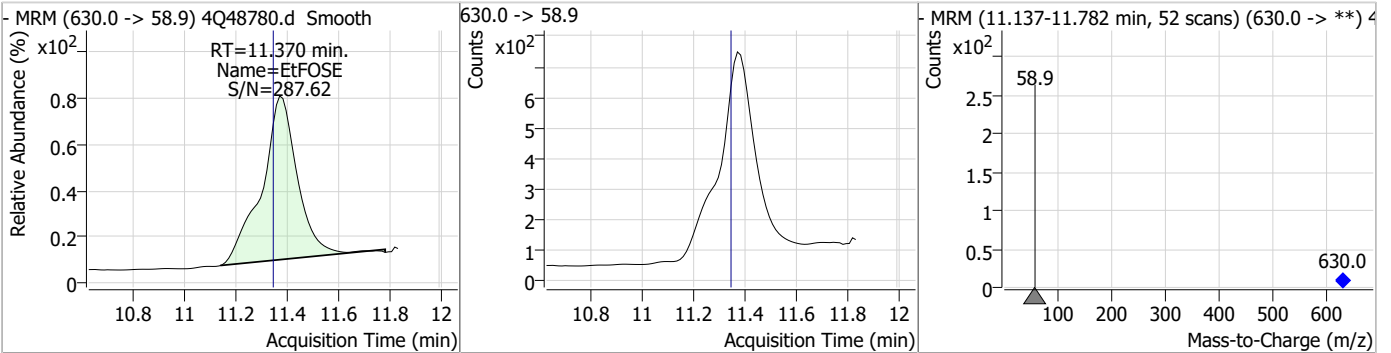
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	1.38	11.19	0.04	2492 (m)	511.9 -> 169.0	155.6	89.9	269.7



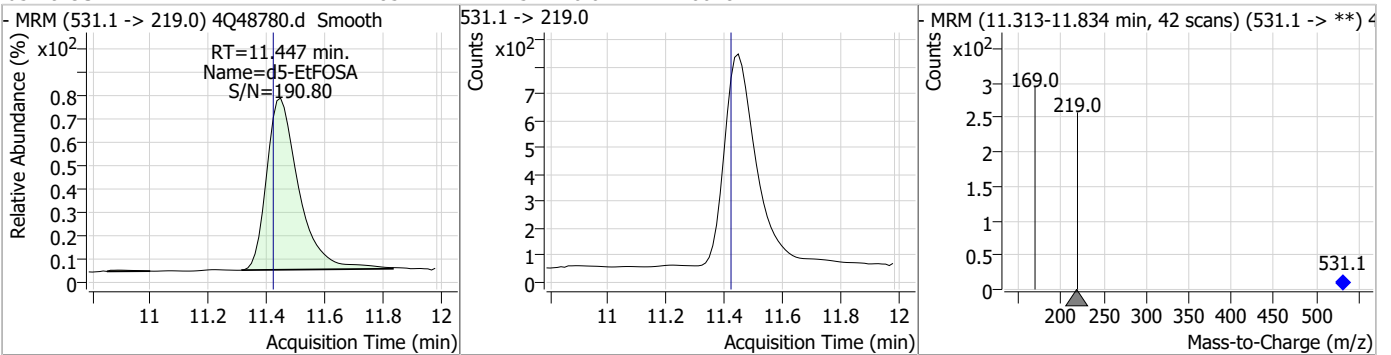
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	17.51	11.36	0.02	55661				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	3.62	11.37	0.03	6314				

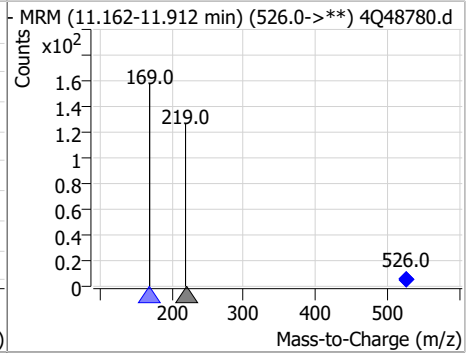
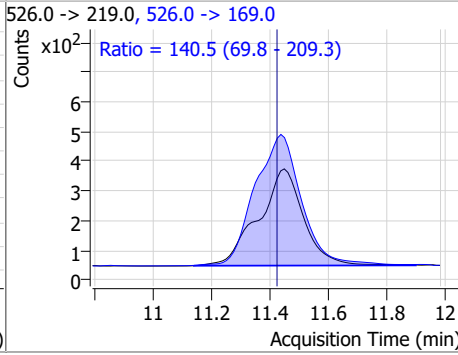
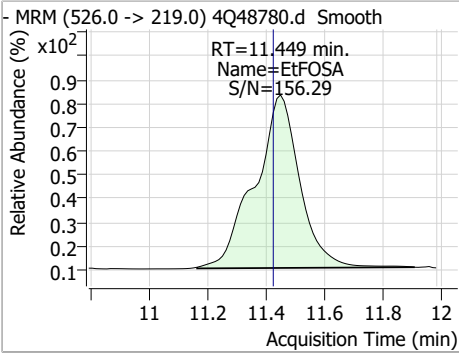


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	1.85	11.45	0.02	6048				



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	1.58	11.45	0.02	3514	526.0 -> 169.0	140.5	69.8	209.3



7.3.2

7

Manual Integration Approval Summary

Sample Number: OP98297-LLBS Method: EPA DRAFT 1633
Lab FileID: 4Q48780.D Analyst approved: 08/10/23 10:42 Anna Ludwig
Injection Time: 08/09/23 19:18 Supervisor approved: 08/14/23 16:34 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.33	Split peak
MeFOSAA	2355-31-9		8.37	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.44	Split peak
EtFOSAA	2991-50-6		8.58	Split peak
MeFOSA	31506-32-8		11.19	Split peak

7.3.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48790.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/9/2023 9:45:42 PM
 Sample Name : op98297-ms
 Vial : P4-E1
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q713.batch.bin
 Sample Information : OP98297,S4Q713,550,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	85592	10.00 µg/L	0.025
M5-PFPeA	4.425	268.3 -> 223.0	53960	5.00 µg/L	0.012
M5-PFHxA	5.622	318.0 -> 273.0	37511	2.50 µg/L	0.012
M4-PFHpA	6.580	367.1 -> 322.0	27120	2.50 µg/L	0.025
M8-PFOA	7.251	421.1 -> 376.0	43118	2.50 µg/L	0.025
M9-PFNA	7.797	472.1 -> 427.0	18697	1.25 µg/L	0.013
M6-PFDA	8.303	519.1 -> 474.1	14084	1.25 µg/L	0.025
M7-PFUnDA	8.760	570.0 -> 525.1	16218	1.25 µg/L	0.025
M2-PFDoDA	9.205	615.1 -> 570.0	16870	1.25 µg/L	0.025
M2-PFTeDA	9.974	715.2 -> 670.0	11281	1.25 µg/L	0.025
M8-FOSA	9.919	506.1 -> 77.8	9318	2.50 µg/L	0.037
M3-PFBS	5.502	302.1 -> 79.9	9172	2.50 µg/L	0.013
M3-PFHxS	7.329	402.1 -> 79.9	6443	2.50 µg/L	0.012
M8-PFOS	8.430	507.1 -> 79.9	8103	2.50 µg/L	0.013
M2-4:2FTS	5.309	329.1 -> 80.9	764	5.00 µg/L	0.012
M2-6:2FTS	7.023	429.1 -> 80.9	1539	5.00 µg/L	0.025
M2-8:2FTS	8.092	529.1 -> 80.9	2025	5.00 µg/L	0.026
M3-MeFOSAA	8.373	573.2 -> 419.0	15737	5.00 µg/L	0.025
M3-HFPO-DA	6.002	286.9 -> 168.9	29418	10.00 µg/L	0.025
M5-EtFOSAA	8.571	589.2 -> 419.0	13824	5.00 µg/L	0.025
M7-MeFOSE	11.084	623.2 -> 58.9	39400	25.00 µg/L	0.025
M9-EtFOSE	11.356	639.2 -> 58.9	62919	25.00 µg/L	0.025
M5-EtFOSA	11.447	531.1 -> 219.0	6925	2.50 µg/L	0.025
M3-MeFOSA	11.189	515.0 -> 219.0	6678	2.50 µg/L	0.037
13C4-PFOS	8.430	502.8 -> 79.9	7161	2.50 µg/L	0.013
13C3-PFBA	2.941	216.0 -> 172.0	46989	5.00 µg/L	0.037
18O2-PFHxS	7.328	403.0 -> 83.9	3595	2.50 µg/L	0.012
13C4-PFOA	7.251	417.1 -> 372.0	43614	2.50 µg/L	0.025
13C2-PFDA	8.291	515.1 -> 470.1	12799	1.25 µg/L	0.013
13C5-PFNA	7.798	468.0 -> 423.0	19557	1.25 µg/L	0.013
13C2-PFHxA	5.623	315.1 -> 270.0	28932	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.309	329.1 -> 80.9	764	8.50 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 170.1%		
13C2-6:2FTS	7.023	429.1 -> 80.9	1539	8.97 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 179.4%		
13C2-8:2FTS	8.092	529.1 -> 80.9	2025	7.77 µg/L	0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 155.4%		
13C2-PFDoDA	9.205	615.1 -> 570.0	16870	1.54 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 123.1%		
13C2-PFTeDA	9.974	715.2 -> 670.0	11281	1.28 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C3-PFBS	5.502	302.1 -> 79.9	9172	3.00 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 119.9%		
13C3-PFHxS	7.329	402.1 -> 79.9	6443	3.24 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 = 129.5%	
13C4-PFBA	2.936	216.8 -> 171.9	85592	10.66 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 106.6%	
13C4-PFHpA	6.580	367.1 -> 322.0	27120	3.15 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 125.9%	
13C5-PFHxA	5.622	318.0 -> 273.0	37511	3.09 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 123.7%	
13C5-PFPeA	4.425	268.3 -> 223.0	53960	5.34 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.7%	
13C6-PFDA	8.303	519.1 -> 474.1	14084	1.59 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 127.2%	
13C7-PFUnDA	8.760	570.0 -> 525.1	16218	1.63 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 130.1%	
13C8-FOSA	9.919	506.1 -> 77.8	9318	2.09 µg/L	0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 83.4%	
13C8-PFOA	7.251	421.1 -> 376.0	43118	3.00 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 120.1%	
13C8-PFOS	8.430	507.1 -> 79.9	8103	2.82 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.7%	
13C9-PFNA	7.797	472.1 -> 427.0	18697	1.26 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.0%	
d3-MeFOSAA	8.373	573.2 -> 419.0	15737	5.92 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 118.4%	
13C3-HFPO-DA	6.002	286.9 -> 168.9	29418	10.67 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 106.7%	
d3-MeFOSA	11.189	515.0 -> 219.0	6678	2.54 µg/L	0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
d5-EtFOSAA	8.571	589.2 -> 419.0	13824	6.33 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 126.5%	
d7-MeFOSE	11.084	623.2 -> 58.9	39400	18.73 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 74.9%	
d9-EtFOSE	11.356	639.2 -> 58.9	62919	21.33 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 85.3%	
d5-EtFOSA	11.447	531.1 -> 219.0	6925	2.29 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.4%	
Target Compounds					QValue
4:2FTS	5.309	327.1 -> 307.0	11227	10.90 µg/L	99
		327.1 -> 80.9	4547		
6:2FTS	7.024	427.1 -> 407.0	14102	10.79 µg/L	99
		427.1 -> 80.9	5032		
8:2FTS	8.092	527.1 -> 507.0	11886	14.62 µg/L	93
		527.1 -> 80.8	4737		
EtFOSAA	8.584	584.2 -> 419.1	5279	2.79 µg/L	m 94
		584.2 -> 526.0	2387		
FOSA	9.911	498.1 -> 77.9	9260	3.07 µg/L	100
		498.1 -> 478.0	298		
MeFOSAA	8.374	570.1 -> 419.0	7108	3.61 µg/L	98
		570.1 -> 483.0	1252		
PFBA	2.945	212.8 -> 168.9	23041	11.69 µg/L	100
PFBS	5.503	298.7 -> 79.9	7279	3.25 µg/L	97
		298.7 -> 98.8	2803		
PFDA	8.304	512.9 -> 469.0	31792	3.21 µg/L	99
		512.9 -> 219.0	6050		
PFDoDA	9.206	613.1 -> 569.0	31188	2.95 µg/L	99
		613.1 -> 319.0	4896		
PFDS	9.347	599.0 -> 79.9	4543	2.71 µg/L	96

7.4.1
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.581	599.0 -> 98.8	2431	2.95	µg/L	100
		363.1 -> 319.0	36100			
PFHpS	7.913	363.1 -> 169.0	6571	2.75	µg/L	92
		449.0 -> 79.9	6742			
PFHxA	5.625	449.0 -> 98.9	3764	2.86	µg/L	99
		313.0 -> 269.0	31001			
PFHxS	7.330	313.0 -> 118.9	1077	3.11	µg/L	99
		398.7 -> 79.9	5744			
PFNA	7.798	398.7 -> 98.9	3061	3.07	µg/L	95
		463.0 -> 419.0	29884			
PFNS	8.911	463.0 -> 219.0	7223	3.10	µg/L	93
		548.8 -> 79.9	4906			
PFOA	7.252	548.8 -> 98.9	2304	3.20	µg/L	99
		413.0 -> 369.0	54636			
PFOS	8.431	413.0 -> 169.0	10205	2.77	µg/L	93
		498.9 -> 79.9	7979			
PFPeA	4.427	498.9 -> 98.8	4636	6.63	µg/L	100
		263.0 -> 219.0	62163			
PFPeS	6.595	349.1 -> 79.9	4980	2.86	µg/L	99
		349.1 -> 98.9	2200			
PFTeDA	9.975	713.1 -> 669.0	24680	3.12	µg/L	99
		713.1 -> 168.9	2349			
PFTrDA	9.603	663.0 -> 619.0	33131	3.04	µg/L	100
		663.0 -> 168.9	4112			
PFUnDA	8.761	563.1 -> 519.0	31429	2.98	µg/L	98
		563.1 -> 269.1	6708			
11Cl-PF3OUdS	9.642	630.9 -> 450.9	37223	6.03	µg/L	100
		632.9 -> 452.9	11423			
9Cl-PF3ONS	8.775	530.8 -> 351.0	56089	6.46	µg/L	97
		532.8 -> 353.0	16549			
ADONA	6.843	376.9 -> 250.9	107841	6.32	µg/L	100
		376.9 -> 84.8	27794			
HFPO-DA	6.003	284.9 -> 168.9	13627	5.63	µg/L	99
		284.9 -> 184.9	1707			
3:3FTCA	3.917	241.0 -> 177.0	6085	12.23	µg/L	97
		241.0 -> 117.0	533			
5:3FTCA	6.321	341.0 -> 237.1	115602	65.26	µg/L	99
		341.0 -> 217.0	80922			
7:3FTCA	7.800	441.0 -> 316.9	71353	73.09	µg/L	99
		441.0 -> 336.9	165873			
EtFOSA	11.449	526.0 -> 219.0	15276	6.00	µg/L	97
		526.0 -> 169.0	20691			
EtFOSE	11.382	630.0 -> 58.9	27270	13.85	µg/L	100
		511.9 -> 219.0	12098			
MeFOSA	11.190	511.9 -> 169.0	17130	5.21	µg/L	73
		616.1 -> 58.9	18701			
MeFOSE	11.097	699.1 -> 79.9	3539	13.27	µg/L	100
		699.1 -> 98.8	1987			
PFDoDS	10.102	295.0 -> 201.0	4021	2.75	µg/L	93
		295.0 -> 84.9	1087			
NFDHA	5.503	279.0 -> 85.1	33961	5.76	µg/L	96
		229.0 -> 84.9	30900			
PFMBA	4.841	314.8 -> 134.9	43092	6.46	µg/L	100
		314.8 -> 82.9	1662			
PFMPA	3.553			6.03	µg/L	100
PFEESA	6.047			4.94	µg/L	99

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

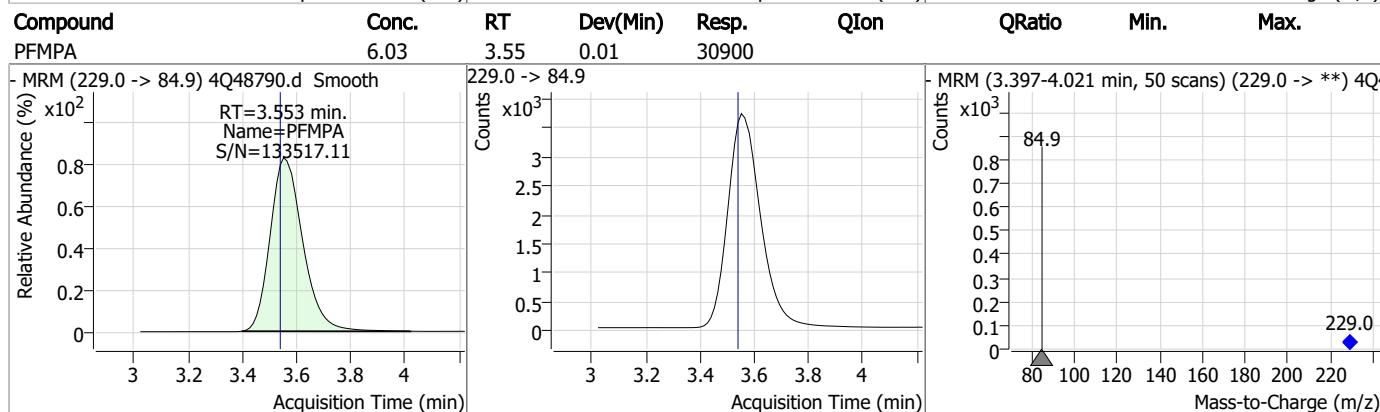
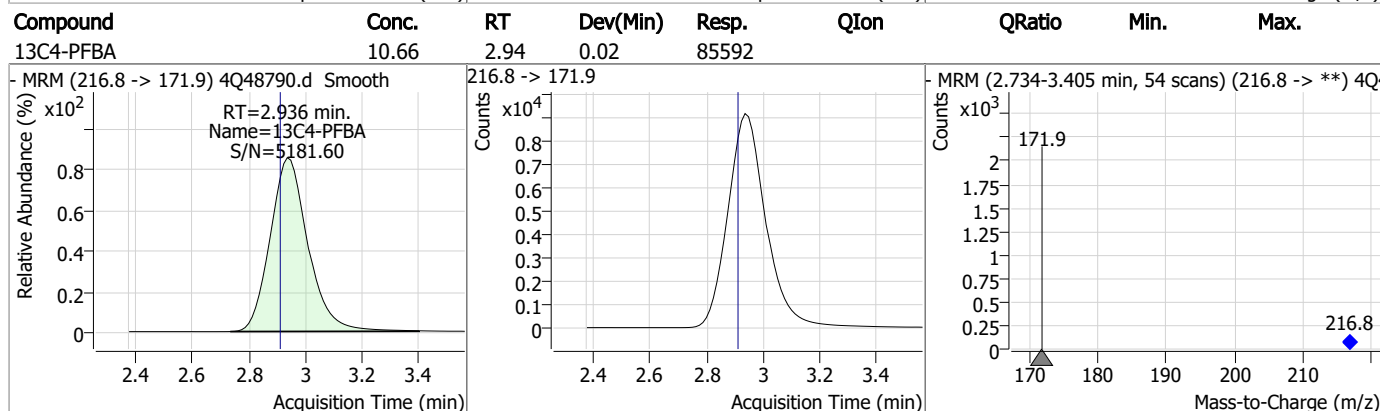
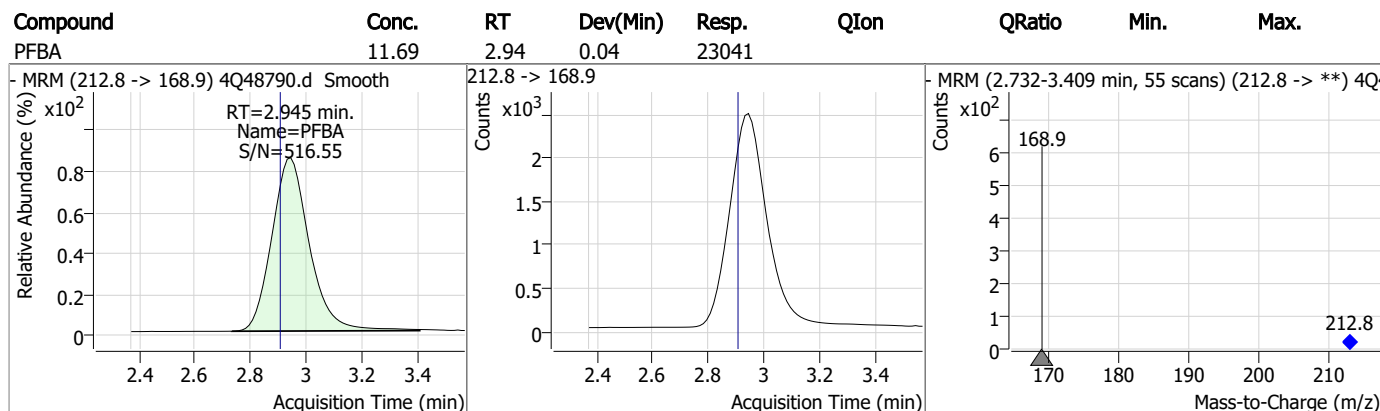
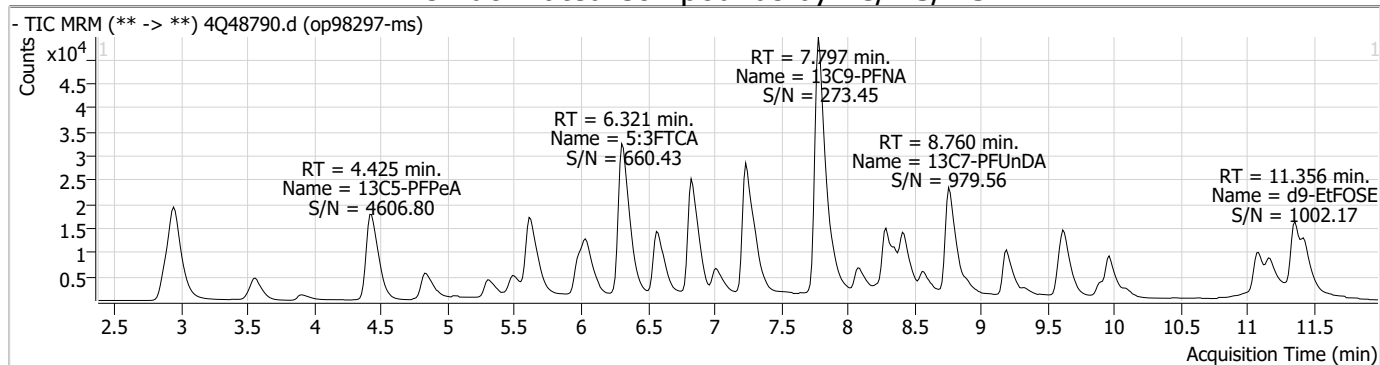
Perfluorinated Compounds by LC/MS/MS

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

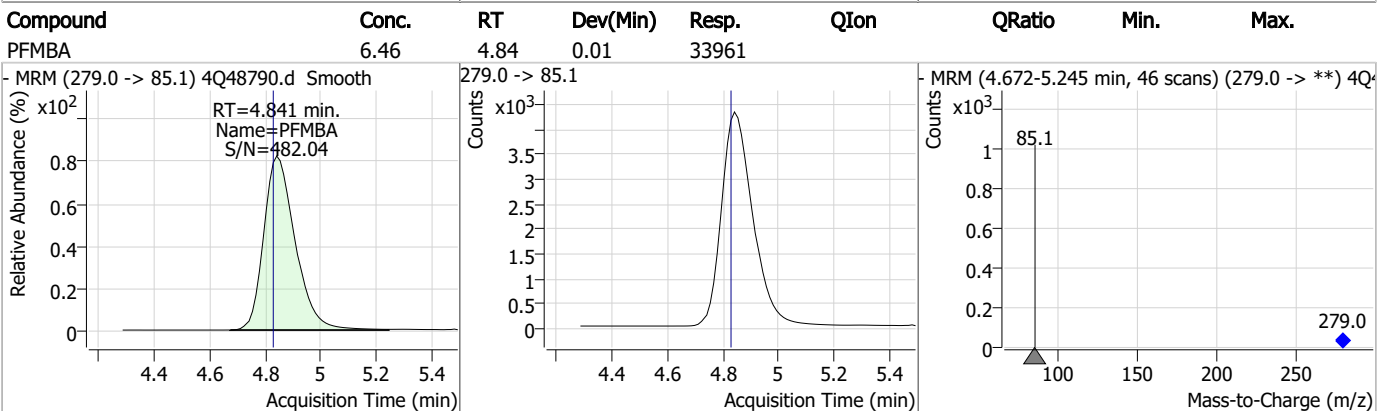
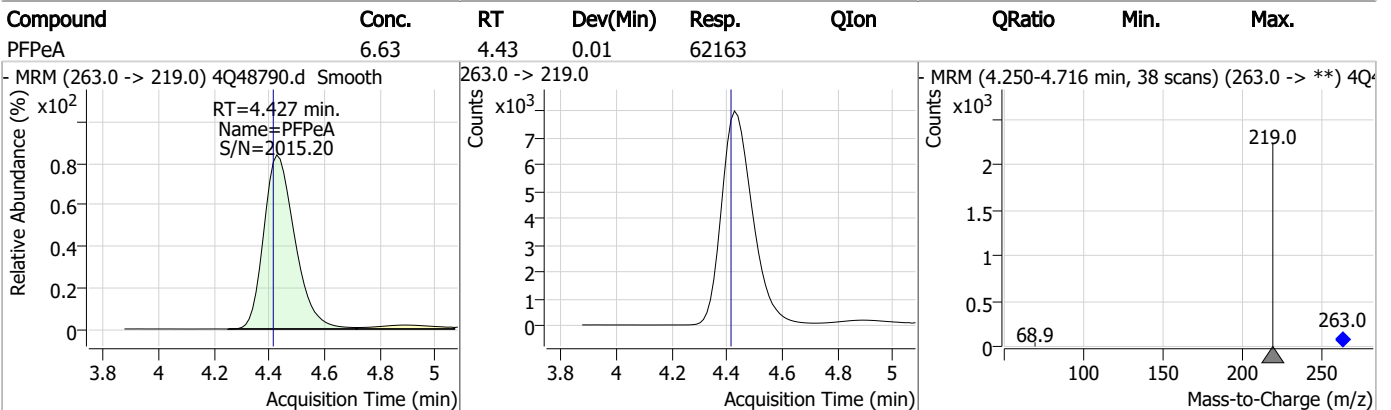
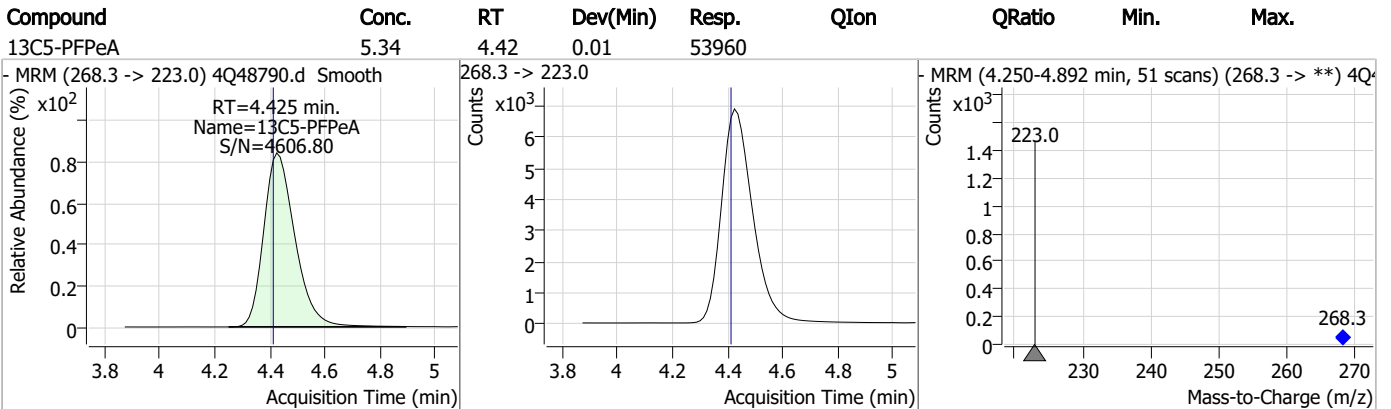
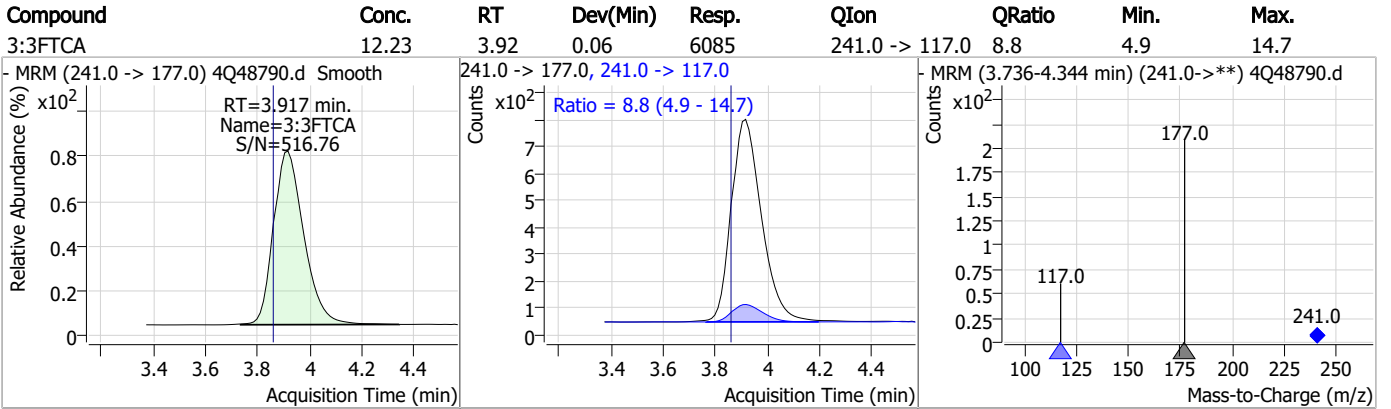
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Perfluorinated Compounds by LC/MS/MS



7.4.1
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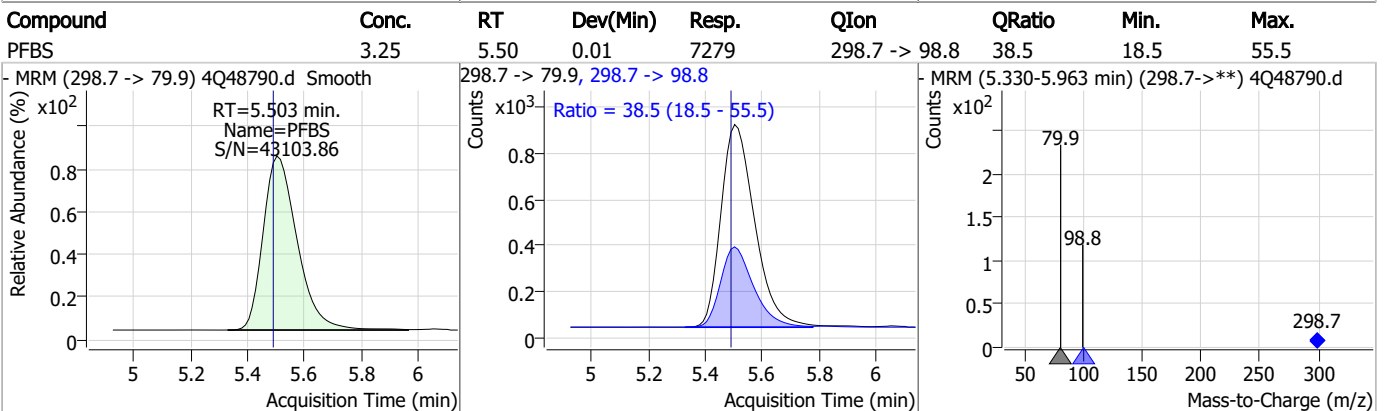
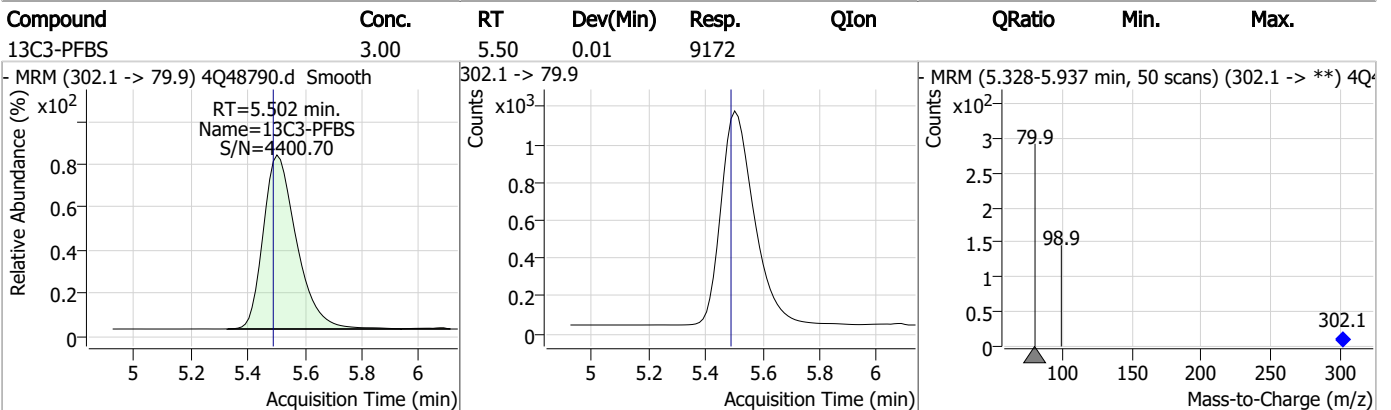
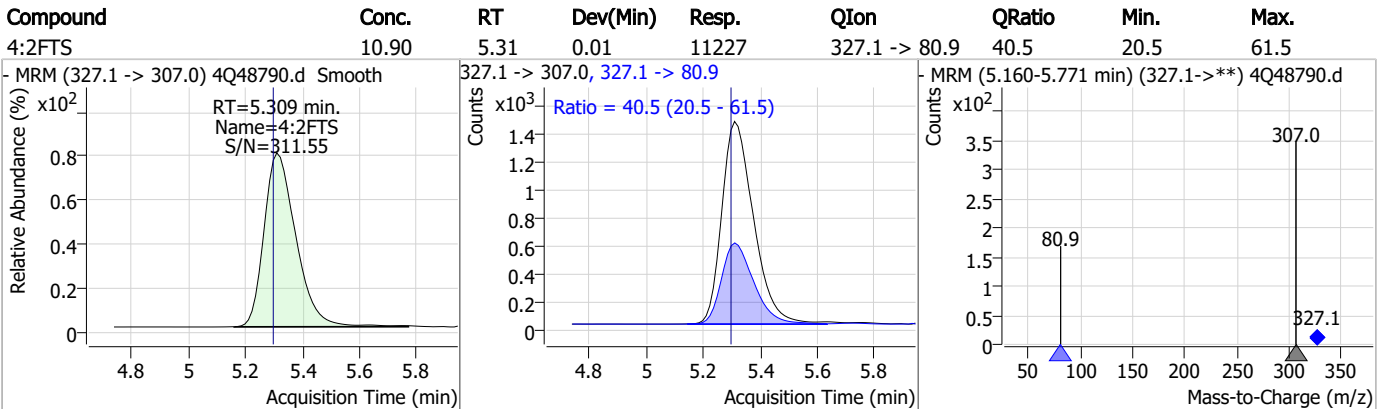
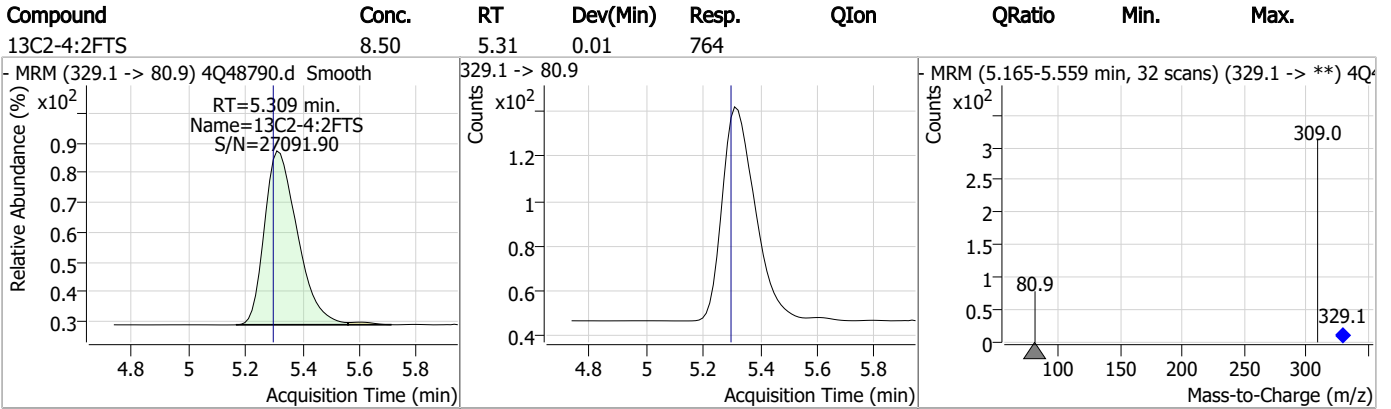
Perfluorinated Compounds by LC/MS/MS



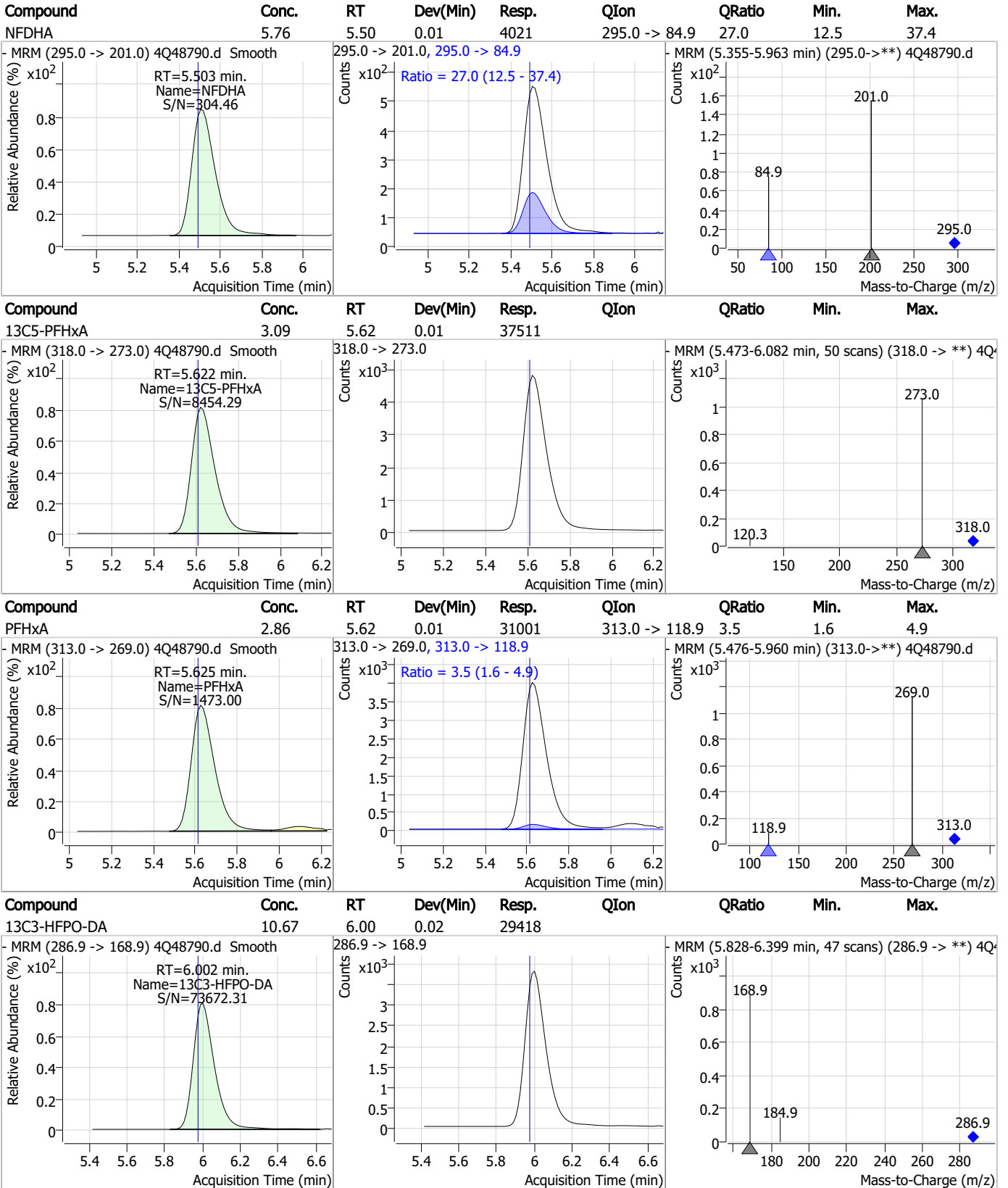
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Perfluorinated Compounds by LC/MS/MS



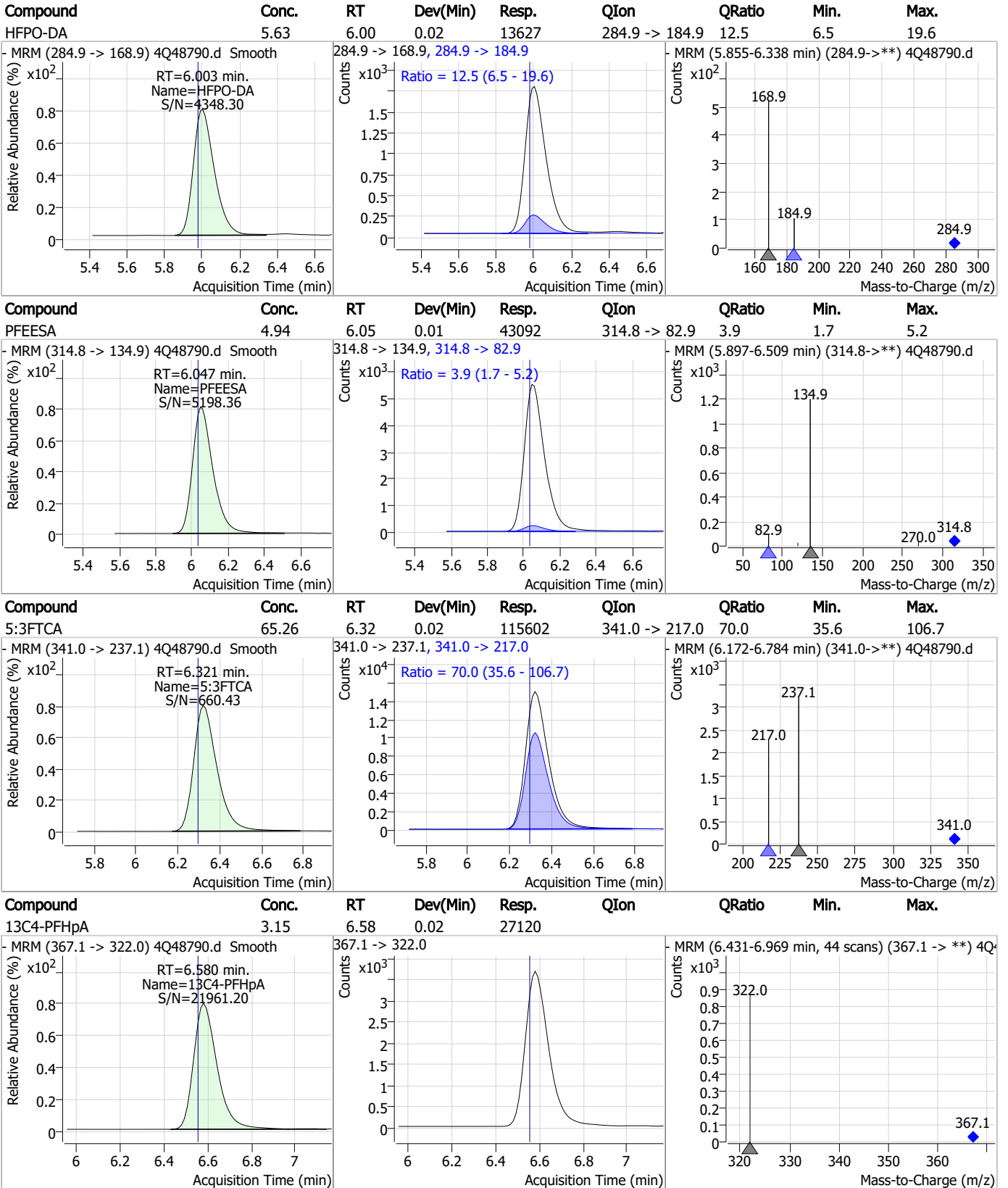
Perfluorinated Compounds by LC/MS/MS



7.4.1

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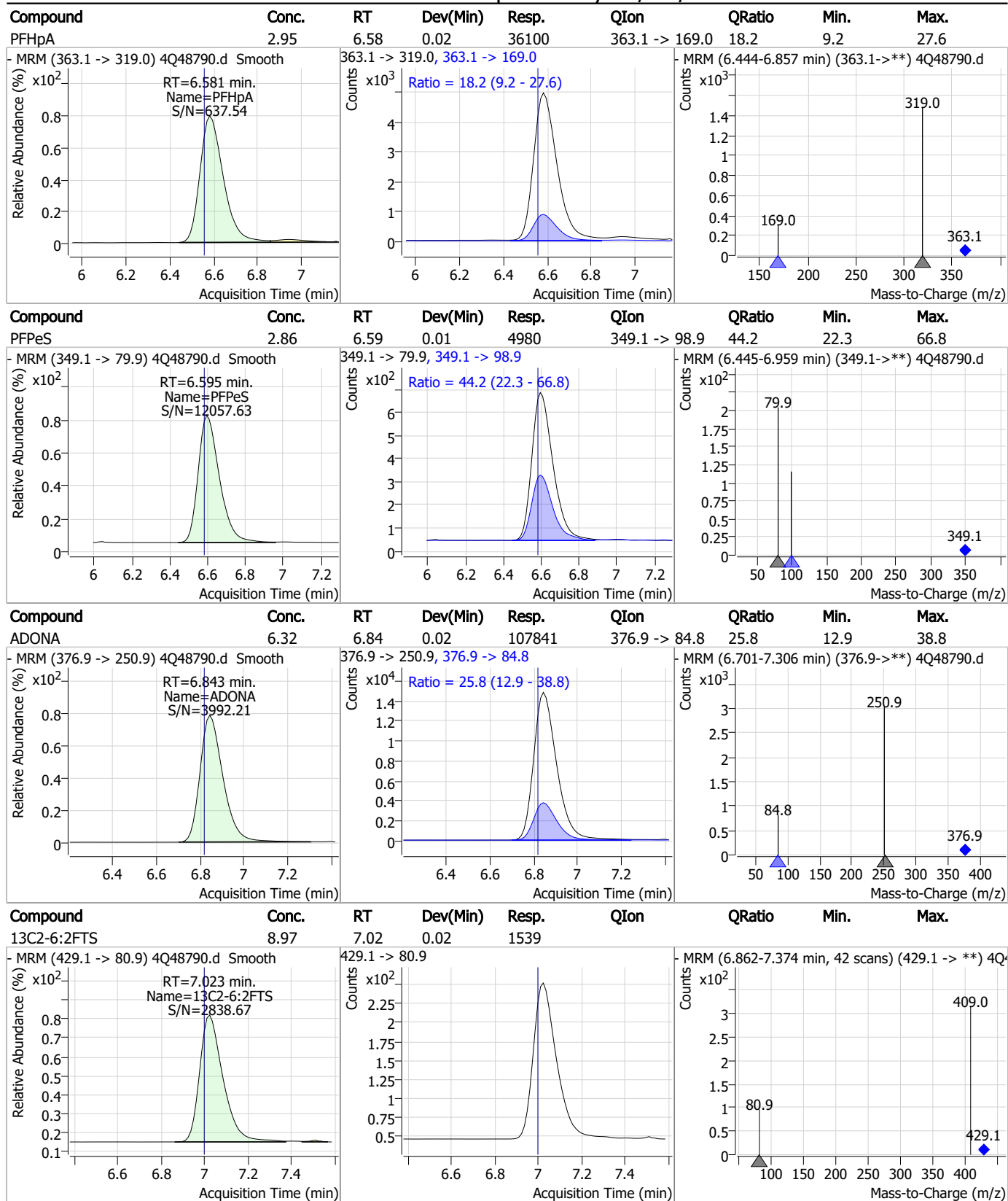
Perfluorinated Compounds by LC/MS/MS



7.4.1

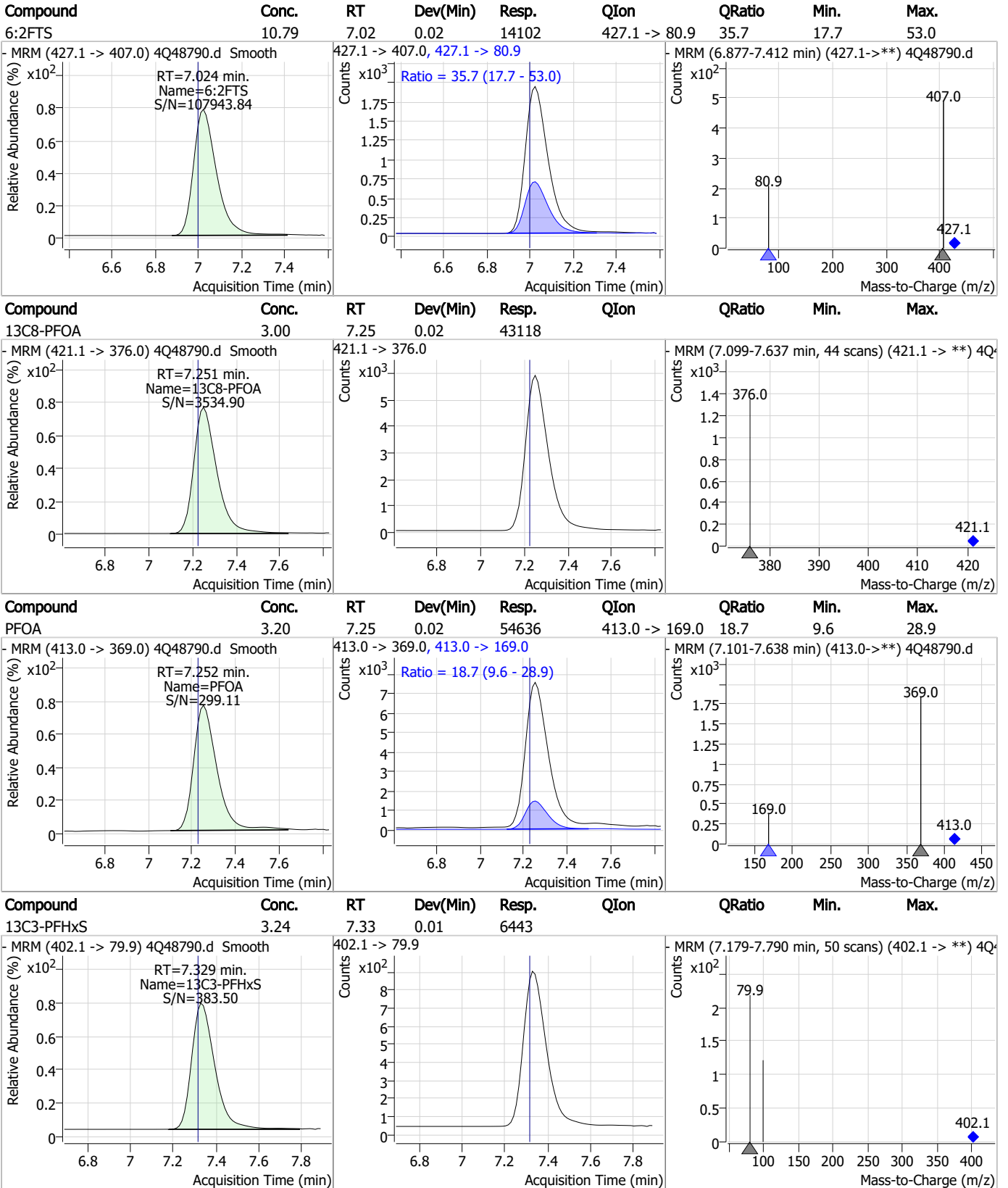
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Perfluorinated Compounds by LC/MS/MS



7.4.1
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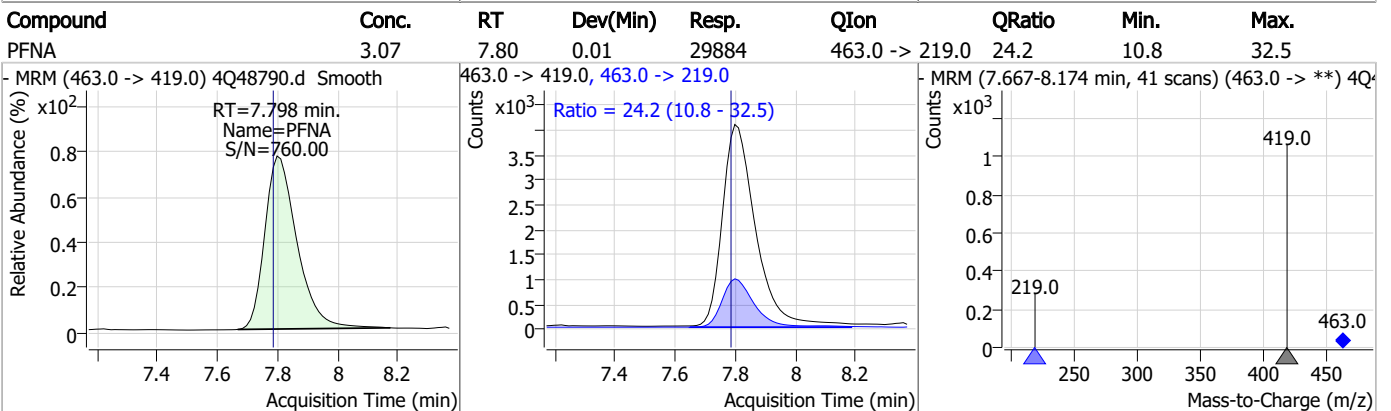
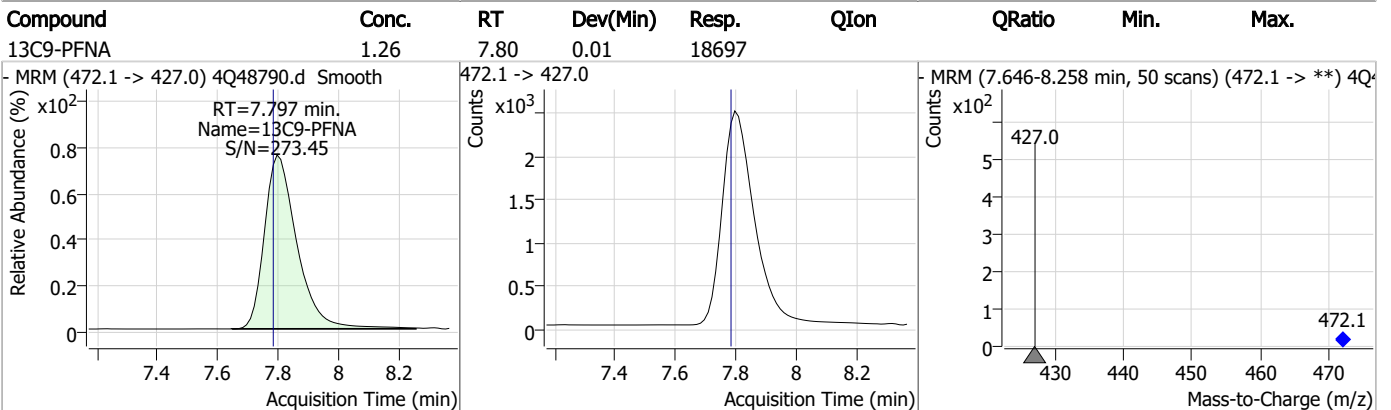
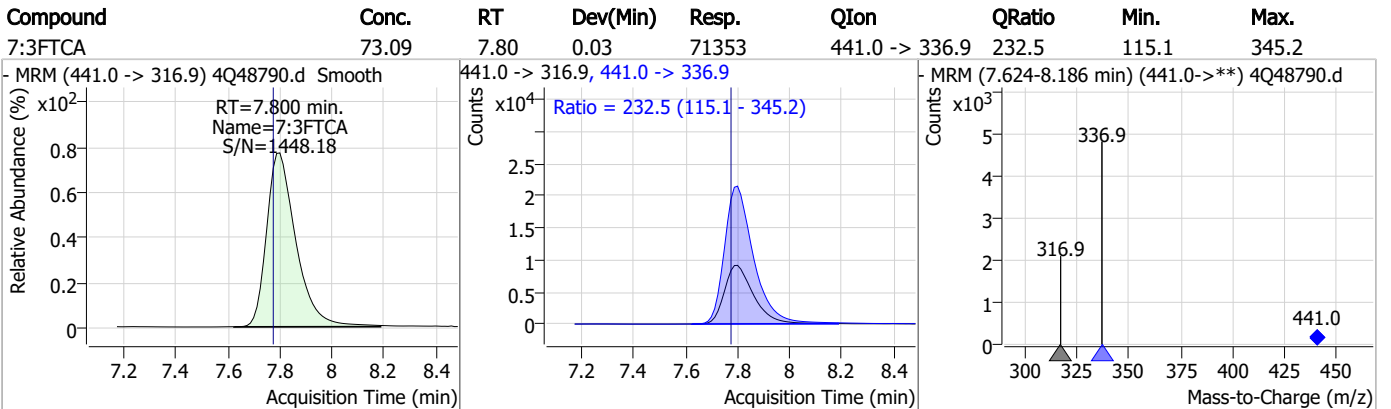
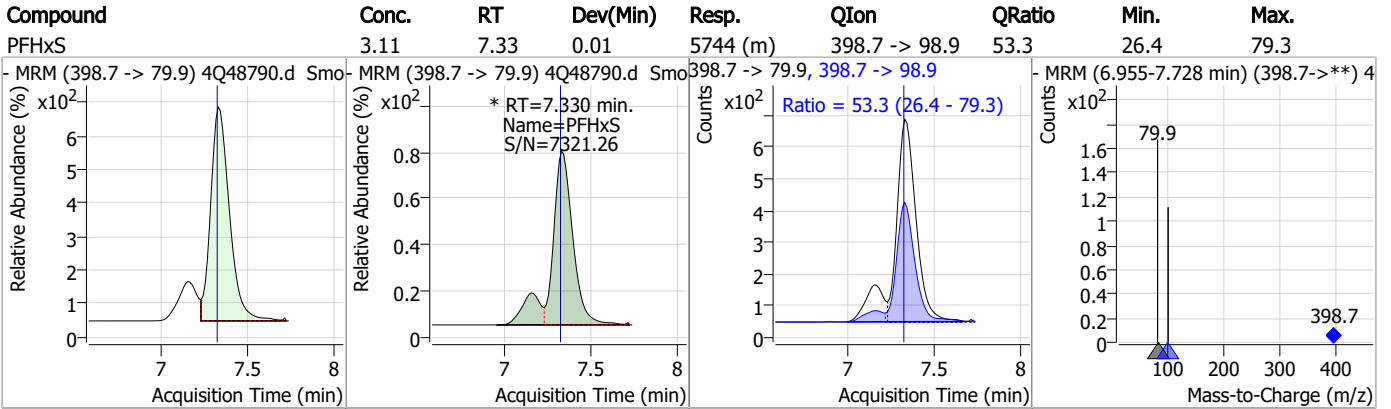
Perfluorinated Compounds by LC/MS/MS



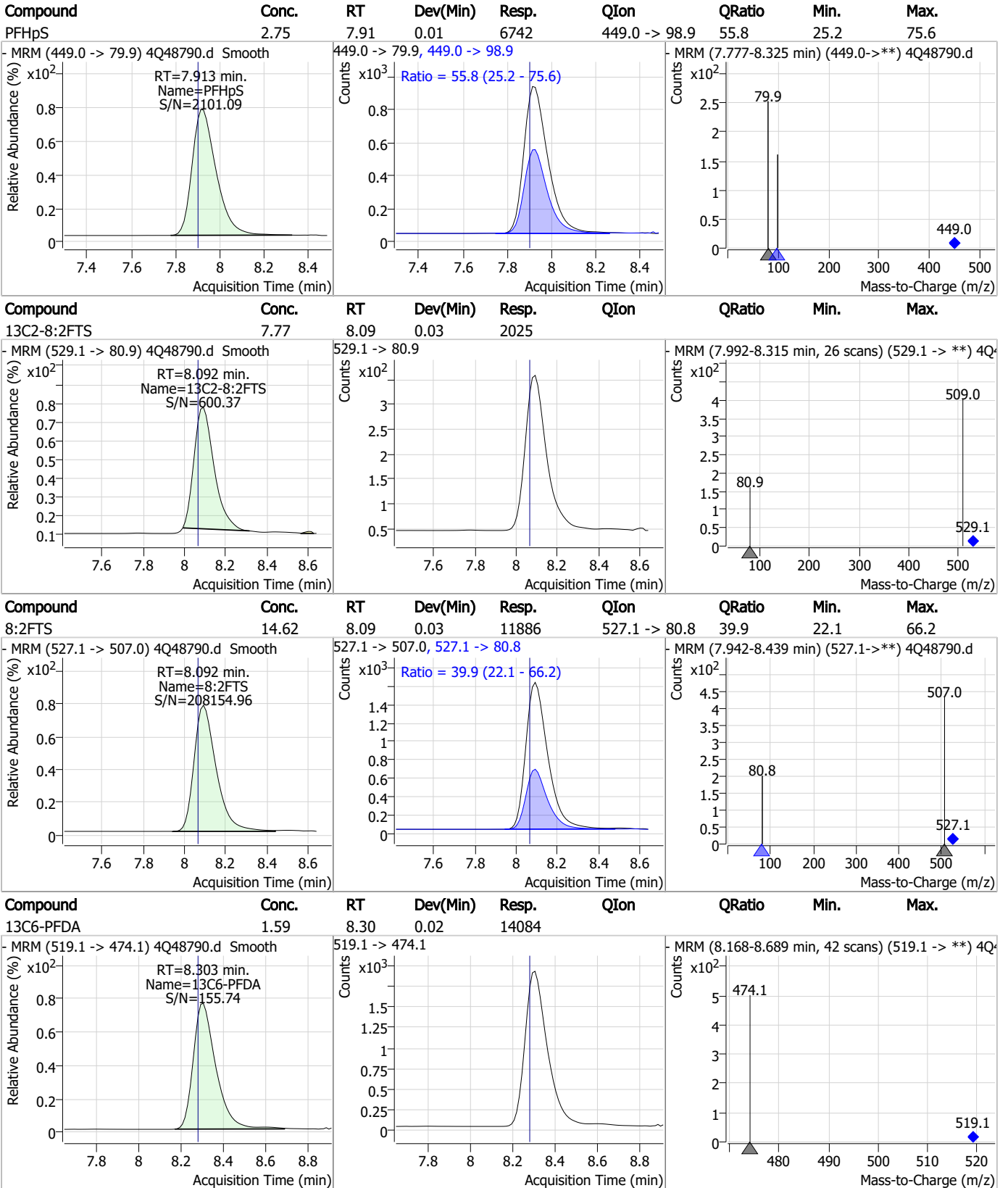
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Perfluorinated Compounds by LC/MS/MS



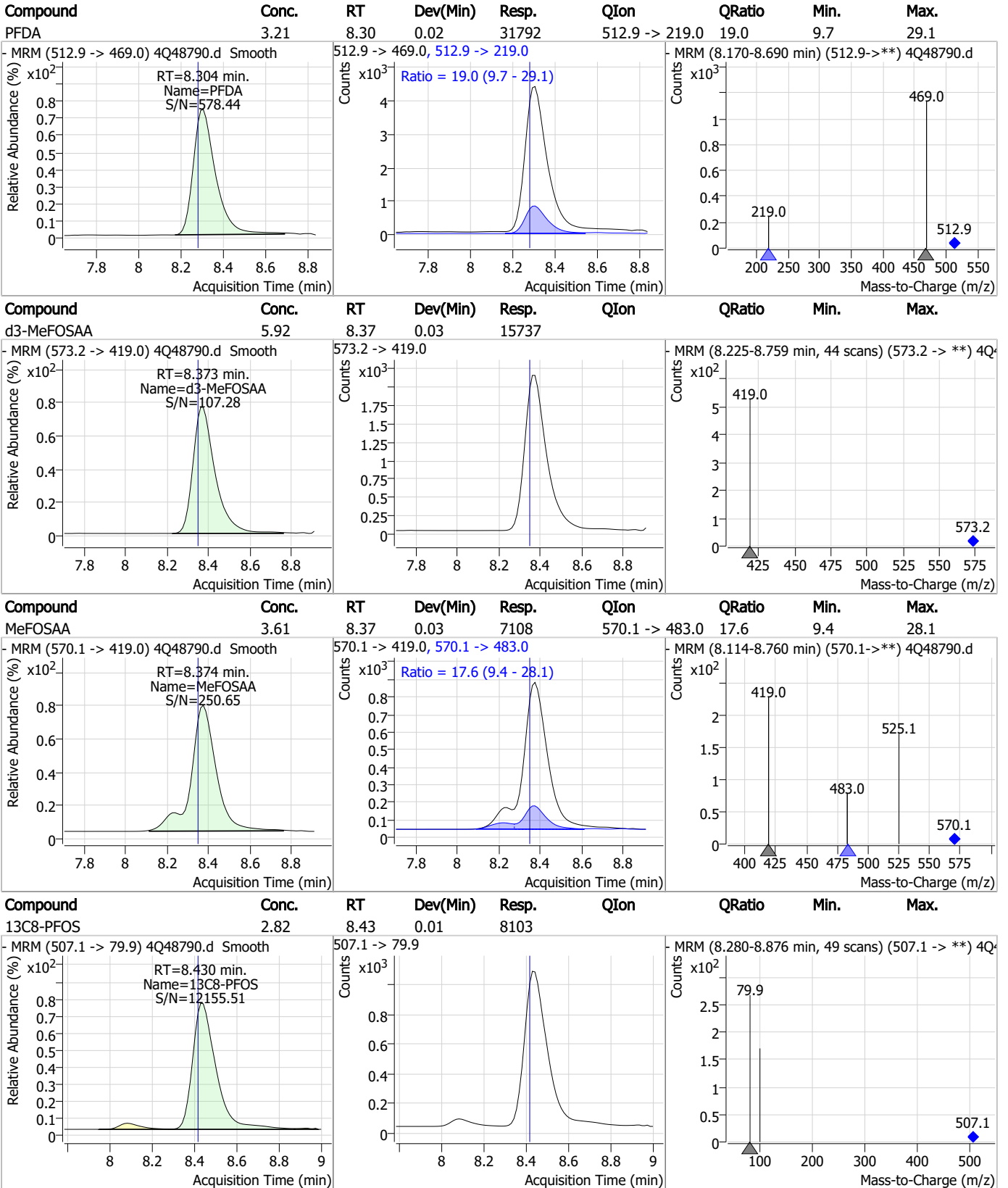
Perfluorinated Compounds by LC/MS/MS



7.4.1

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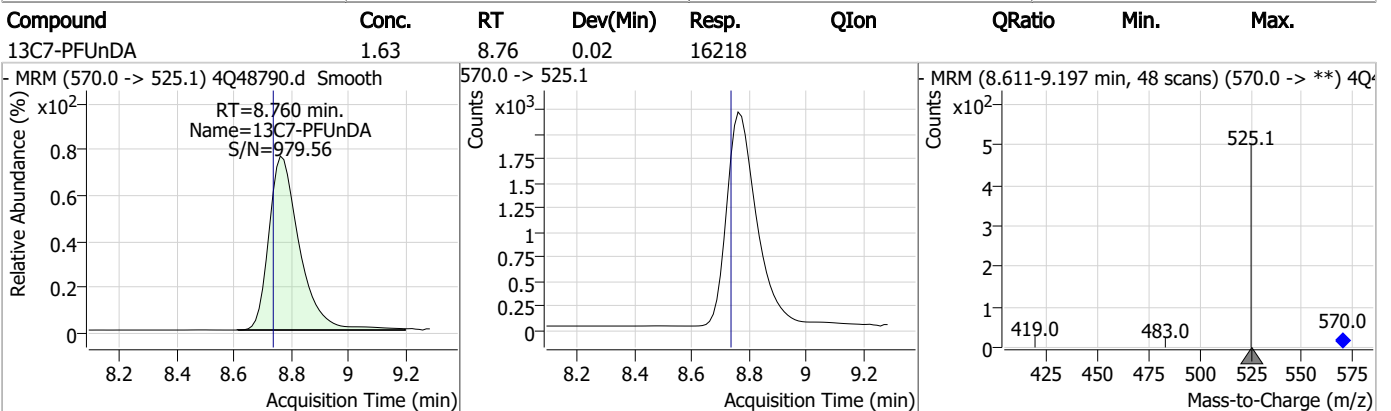
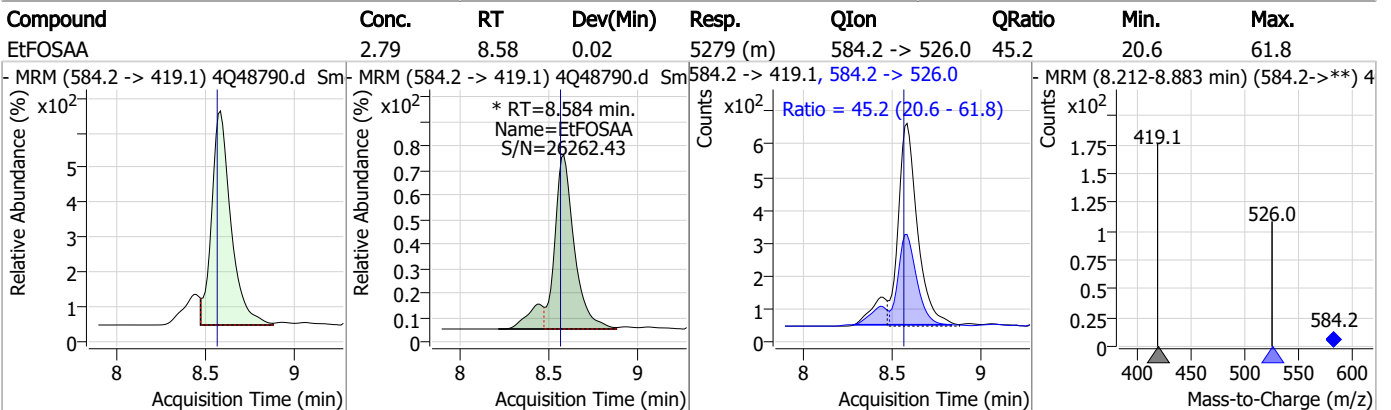
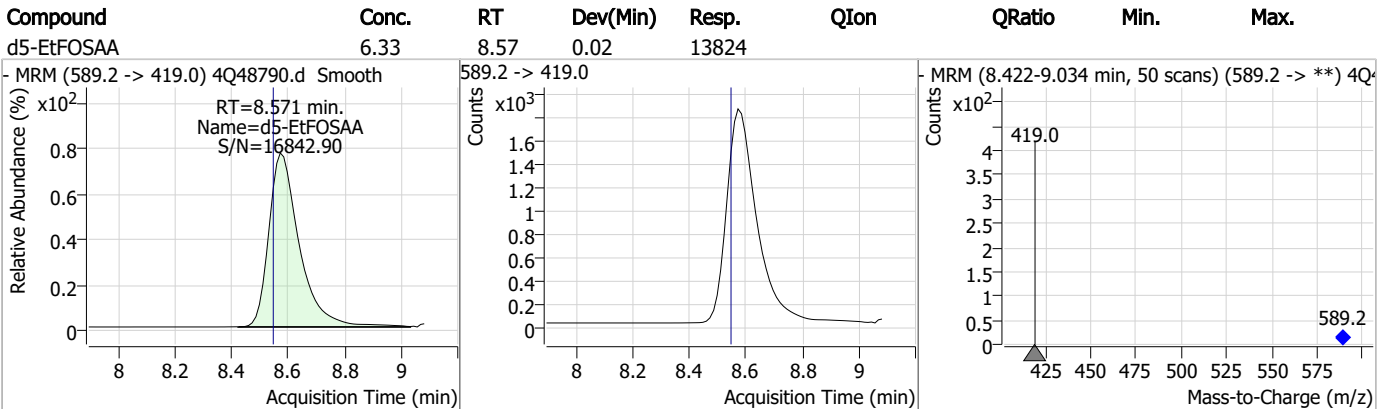
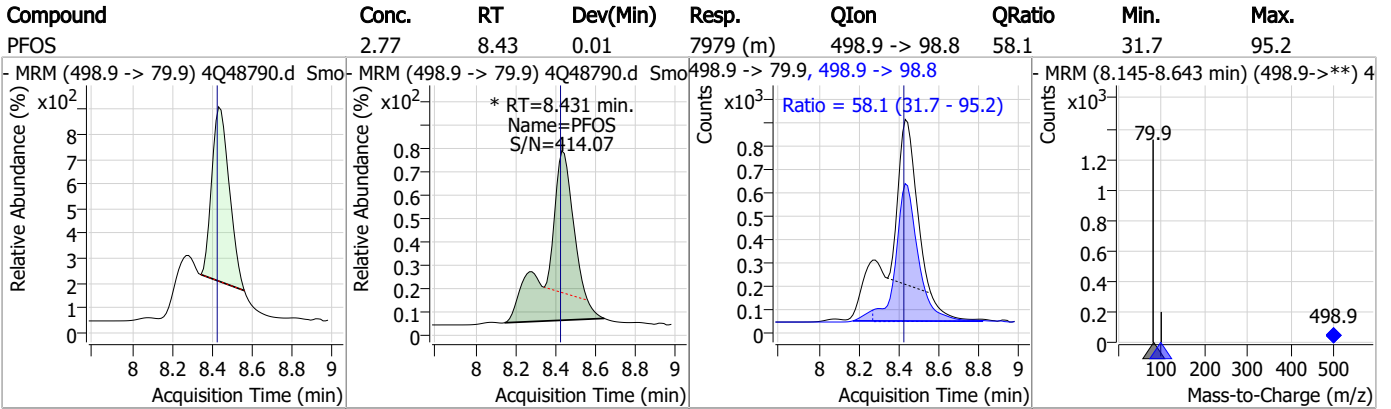
Perfluorinated Compounds by LC/MS/MS



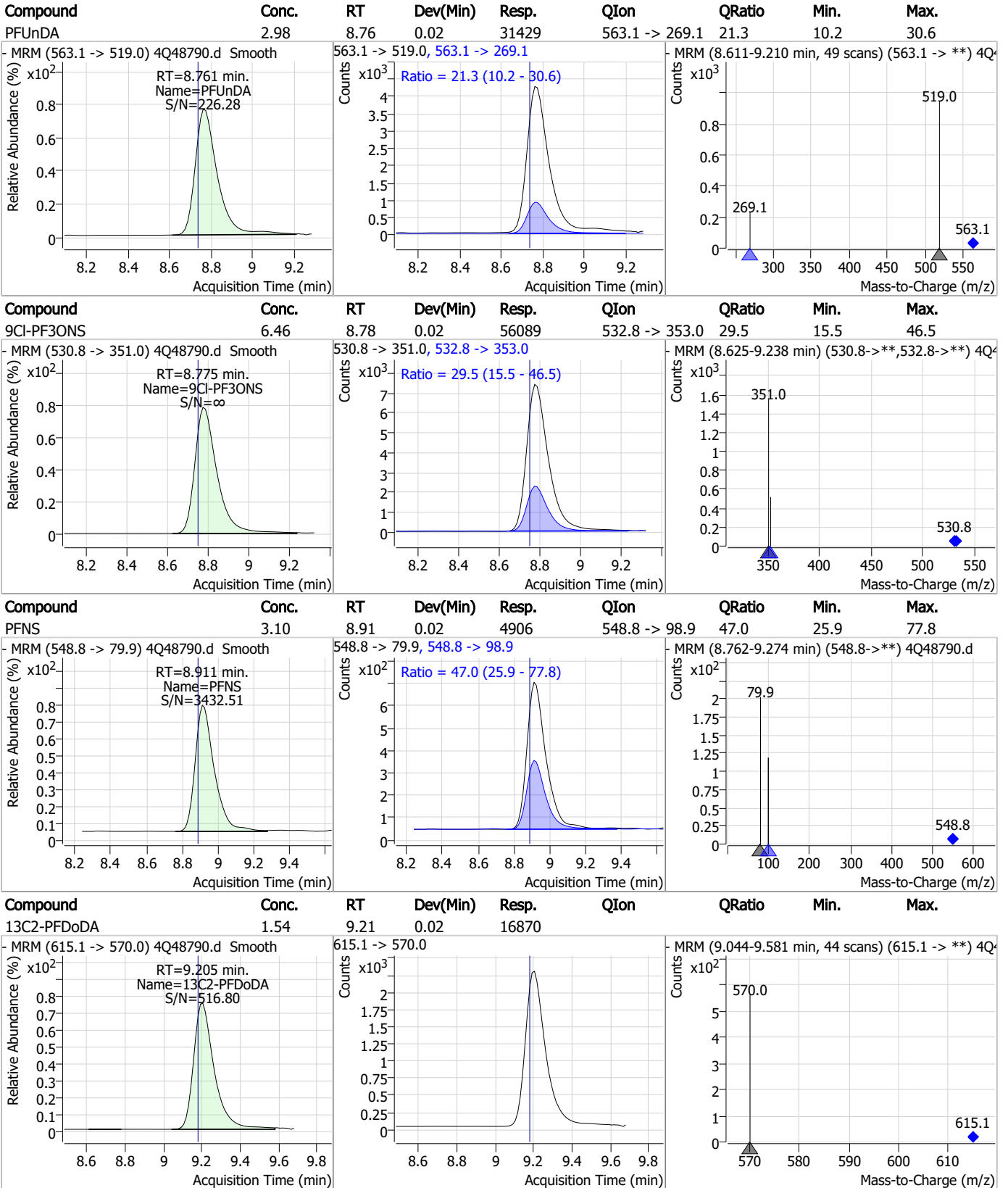
7.4.1

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Perfluorinated Compounds by LC/MS/MS



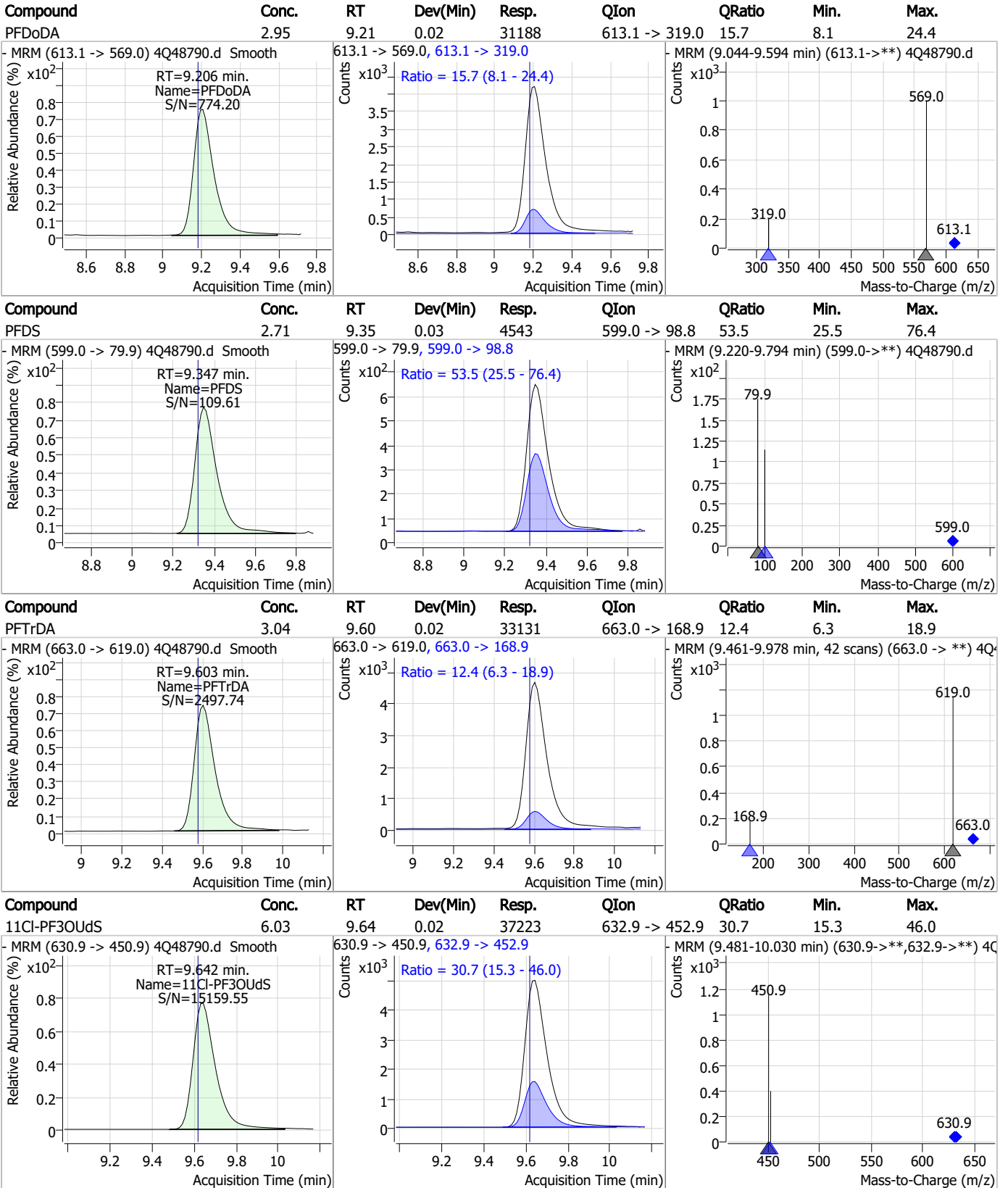
Perfluorinated Compounds by LC/MS/MS



7.4.1

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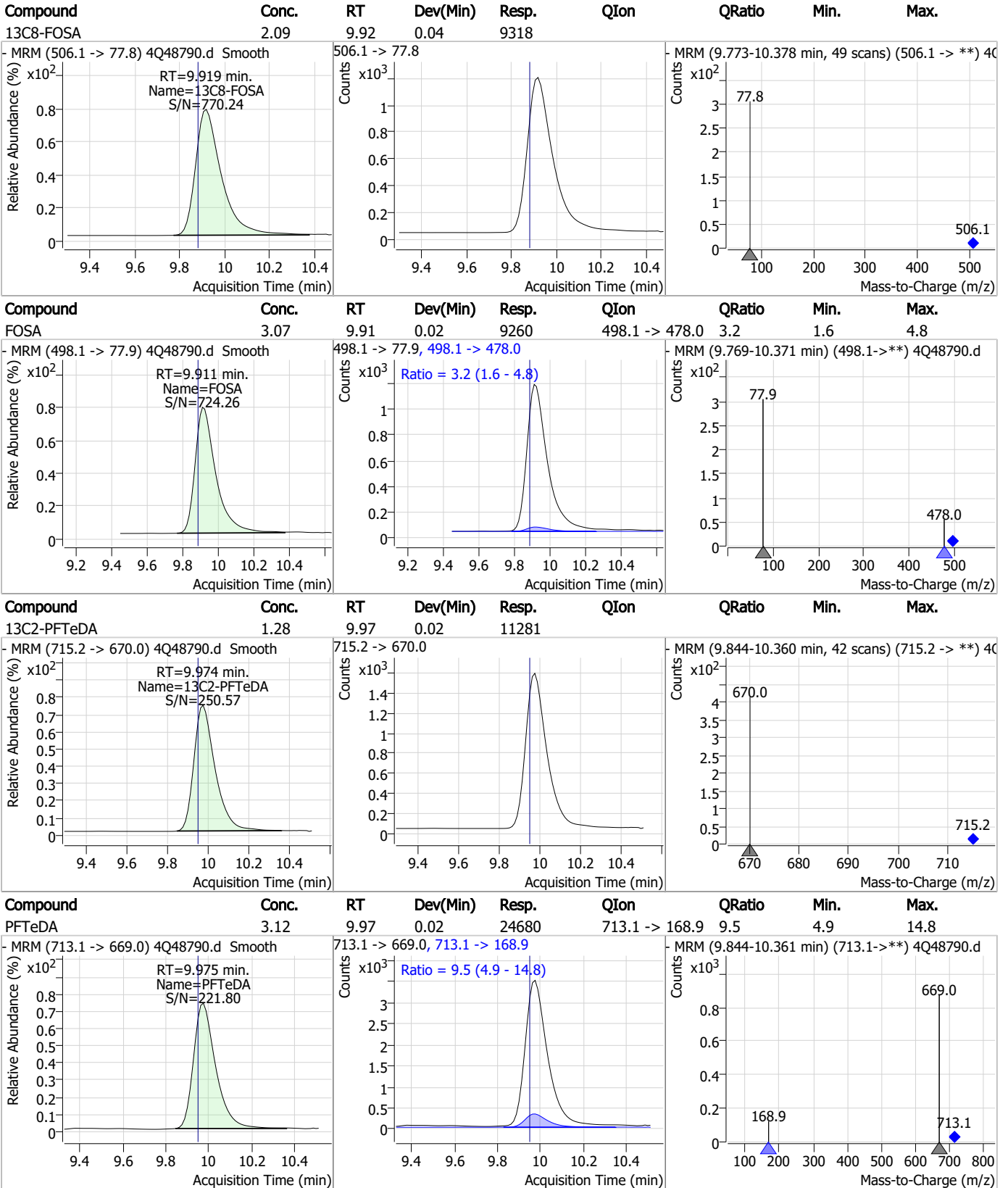
Perfluorinated Compounds by LC/MS/MS



7.4.1

7

Perfluorinated Compounds by LC/MS/MS



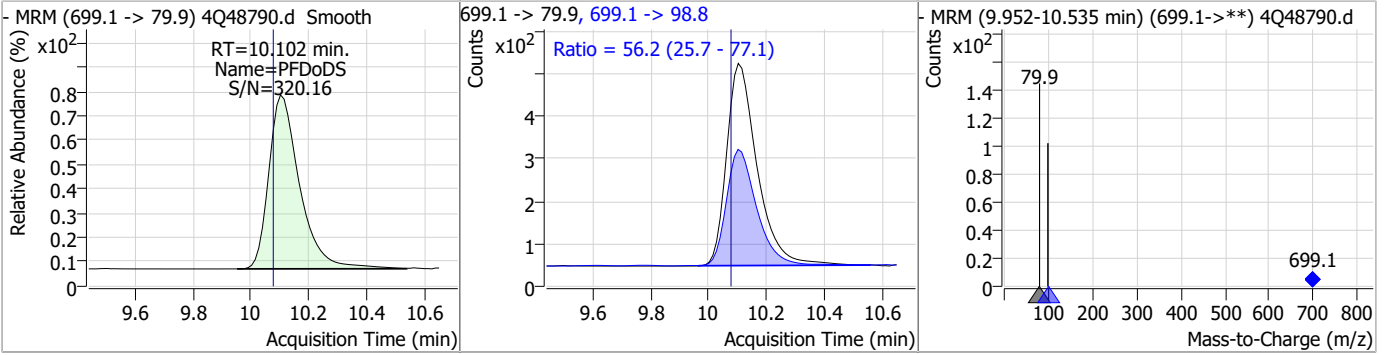
7.4.1

7

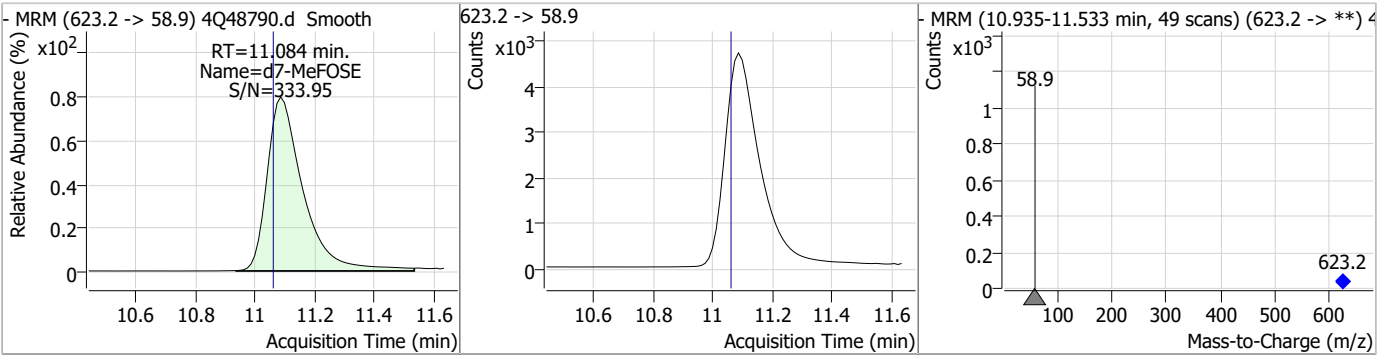


Perfluorinated Compounds by LC/MS/MS

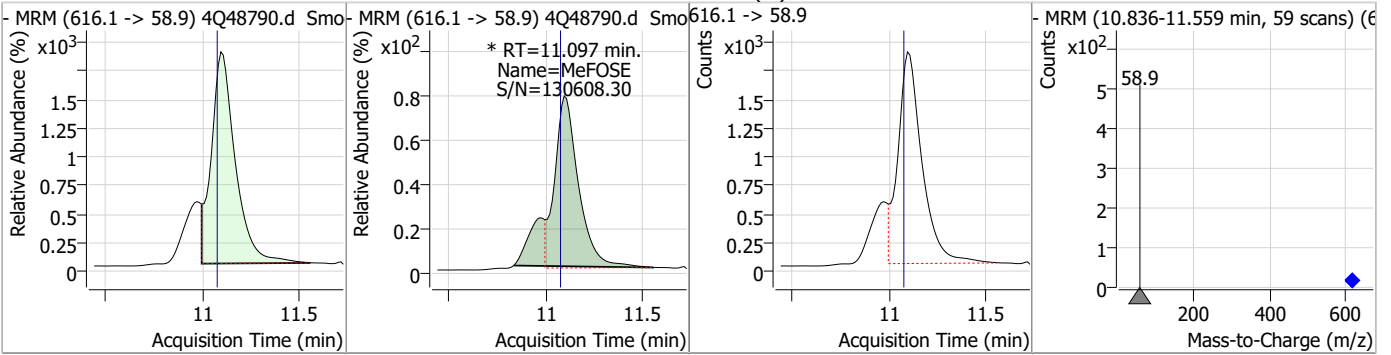
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.75	10.10	0.02	3539	699.1 -> 98.8	56.2	25.7	77.1



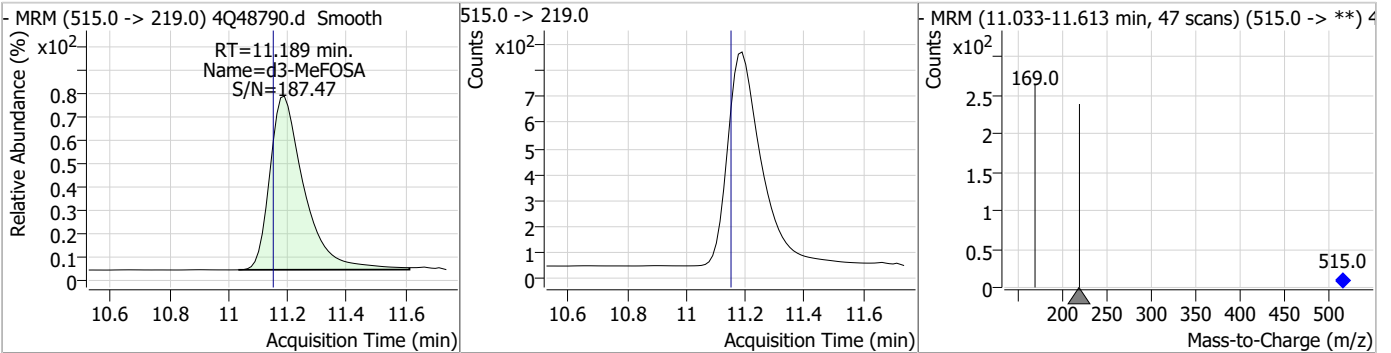
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	18.73	11.08	0.02	39400				



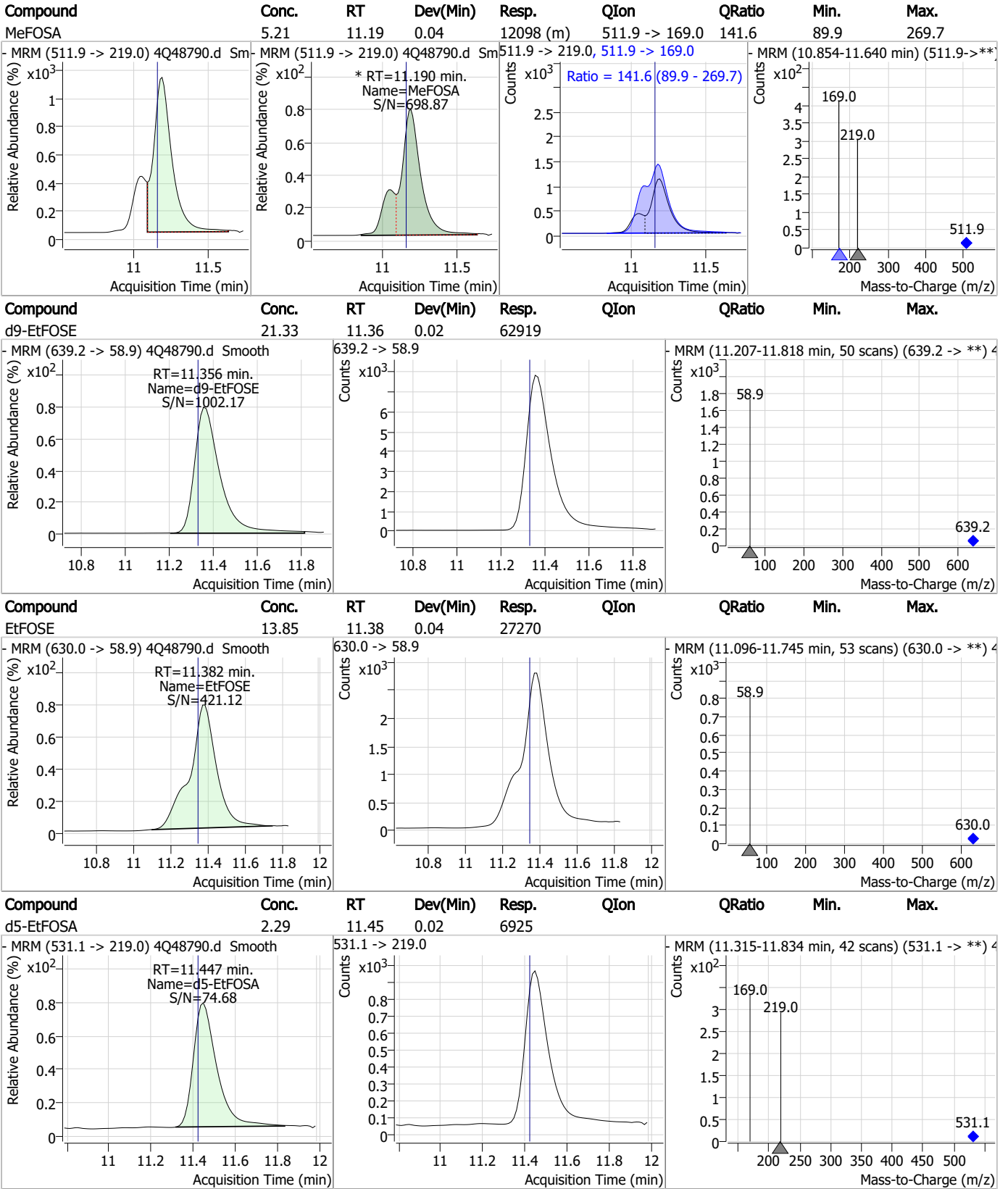
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	13.27	11.10	0.02	18701 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.54	11.19	0.04	6678				



Perfluorinated Compounds by LC/MS/MS



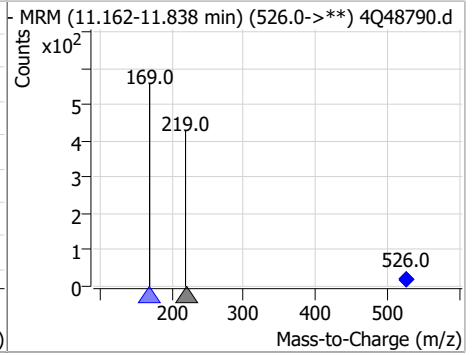
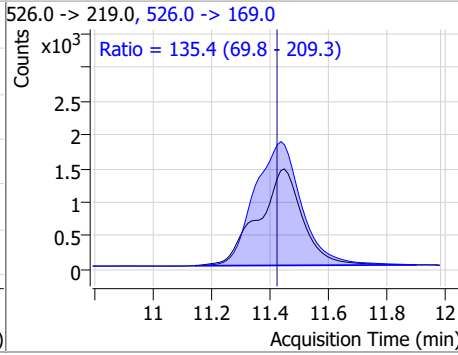
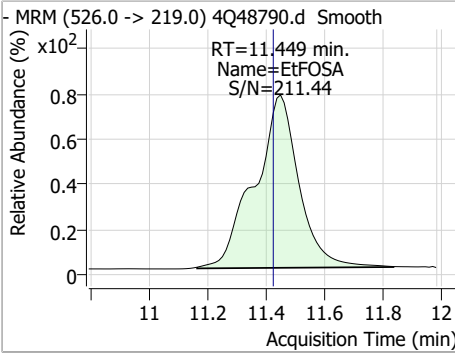
7.4.1

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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	6.00	11.45	0.02	15276	526.0 -> 169.0	135.4	69.8	209.3



7.4.1

7

Manual Integration Approval Summary

Sample Number: OP98297-MS Method: EPA DRAFT 1633
Lab FileID: 4Q48790.D Analyst approved: 08/10/23 11:07 Anna Ludwig
Injection Time: 08/09/23 21:45 Supervisor approved: 08/14/23 16:34 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.33	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.43	Split peak
EtFOSAA	2991-50-6		8.58	Split peak
MeFOSE	24448-09-7		11.10	Split peak
MeFOSA	31506-32-8		11.19	Split peak

7.4.1.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48792.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/9/2023 10:15:09 PM
 Sample Name : op98297-dup
 Vial : P4-E3
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q713.batch.bin
 Sample Information : OP98297,S4Q713,540,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.924	216.8 -> 171.9	40354	10.00 µg/L	0.012
M5-PFPeA	4.412	268.3 -> 223.0	42288	5.00 µg/L	0.000
M5-PFHxA	5.622	318.0 -> 273.0	41032	2.50 µg/L	0.012
M4-PFHpA	6.580	367.1 -> 322.0	31029	2.50 µg/L	0.025
M8-PFOA	7.251	421.1 -> 376.0	47830	2.50 µg/L	0.025
M9-PFNA	7.810	472.1 -> 427.0	21697	1.25 µg/L	0.025
M6-PFDA	8.303	519.1 -> 474.1	15255	1.25 µg/L	0.025
M7-PFUnDA	8.773	570.0 -> 525.1	17729	1.25 µg/L	0.037
M2-PFDoDA	9.205	615.1 -> 570.0	16717	1.25 µg/L	0.025
M2-PFTeDA	9.961	715.2 -> 670.0	10351	1.25 µg/L	0.013
M8-FOSA	9.907	506.1 -> 77.8	11449	2.50 µg/L	0.024
M3-PFBS	5.502	302.1 -> 79.9	9214	2.50 µg/L	0.013
M3-PFHxS	7.342	402.1 -> 79.9	6757	2.50 µg/L	0.025
M8-PFOS	8.442	507.1 -> 79.9	8014	2.50 µg/L	0.025
M2-4:2FTS	5.309	329.1 -> 80.9	1265	5.00 µg/L	0.012
M2-6:2FTS	7.023	429.1 -> 80.9	2317	5.00 µg/L	0.025
M2-8:2FTS	8.104	529.1 -> 80.9	2491	5.00 µg/L	0.039
M3-MeFOSAA	8.373	573.2 -> 419.0	18559	5.00 µg/L	0.025
M3-HFPO-DA	6.002	286.9 -> 168.9	26251	10.00 µg/L	0.025
M5-EtFOSAA	8.584	589.2 -> 419.0	15983	5.00 µg/L	0.037
M7-MeFOSE	11.084	623.2 -> 58.9	43936	25.00 µg/L	0.025
M9-EtFOSE	11.356	639.2 -> 58.9	63316	25.00 µg/L	0.025
M5-EtFOSA	11.447	531.1 -> 219.0	7188	2.50 µg/L	0.025
M3-MeFOSA	11.176	515.0 -> 219.0	6548	2.50 µg/L	0.025
13C4-PFOS	8.443	502.8 -> 79.9	7246	2.50 µg/L	0.025
13C3-PFBA	2.928	216.0 -> 172.0	26877	5.00 µg/L	0.025
18O2-PFHxS	7.341	403.0 -> 83.9	3821	2.50 µg/L	0.025
13C4-PFOA	7.251	417.1 -> 372.0	47947	2.50 µg/L	0.025
13C2-PFDA	8.304	515.1 -> 470.1	14713	1.25 µg/L	0.025
13C5-PFNA	7.810	468.0 -> 423.0	21496	1.25 µg/L	0.025
13C2-PFHxA	5.623	315.1 -> 270.0	31391	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.309	329.1 -> 80.9	1265	13.26 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 265.1%		
13C2-6:2FTS	7.023	429.1 -> 80.9	2317	12.71 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 254.1%		
13C2-8:2FTS	8.104	529.1 -> 80.9	2491	8.99 µg/L	0.039
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 179.9%		
13C2-PFDoDA	9.205	615.1 -> 570.0	16717	1.33 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.1%		
13C2-PFTeDA	9.961	715.2 -> 670.0	10351	1.02 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 81.8%		
13C3-PFBS	5.502	302.1 -> 79.9	9214	2.83 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 113.3%		
13C3-PFHxS	7.342	402.1 -> 79.9	6757	3.19 µg/L	0.025

7.5.1
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 127.8%	
13C4-PFBA	2.924	216.8 -> 171.9	40354	8.78 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 87.8%	
13C4-PFHpA	6.580	367.1 -> 322.0	31029	3.32 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 132.7%	
13C5-PFHxA	5.622	318.0 -> 273.0	41032	3.12 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 124.8%	
13C5-PFPeA	4.412	268.3 -> 223.0	42288	3.85 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 77.1%	
13C6-PFDA	8.303	519.1 -> 474.1	15255	1.50 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 119.8%	
13C7-PFUnDA	8.773	570.0 -> 525.1	17729	1.55 µg/L	0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 123.7%	
13C8-FOSA	9.907	506.1 -> 77.8	11449	2.53 µg/L	0.024
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C8-PFOA	7.251	421.1 -> 376.0	47830	3.03 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 121.2%	
13C8-PFOS	8.442	507.1 -> 79.9	8014	2.75 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.1%	
13C9-PFNA	7.810	472.1 -> 427.0	21697	1.33 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.6%	
d3-MeFOSAA	8.373	573.2 -> 419.0	18559	6.90 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 138.0%	
13C3-HFPO-DA	6.002	286.9 -> 168.9	26251	8.78 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 87.8%	
d3-MeFOSA	11.176	515.0 -> 219.0	6548	2.46 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.4%	
d5-EtFOSAA	8.584	589.2 -> 419.0	15983	7.23 µg/L	0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 144.6%	
d7-MeFOSE	11.084	623.2 -> 58.9	43936	20.65 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 82.6%	
d9-EtFOSE	11.356	639.2 -> 58.9	63316	21.22 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 84.9%	
d5-EtFOSA	11.447	531.1 -> 219.0	7188	2.34 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.8%	
Target Compounds					QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	7.024	427.1 -> 407.0	606	0.31 µg/L	99
		427.1 -> 80.9	219		
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	3.397	212.8 -> 168.9	0	µg/L	m 1
PFBS	4.953	298.7 -> 79.9	0	µg/L	m 1
		298.7 -> 98.8	0		
PFDA	8.665	512.9 -> 469.0	0	µg/L	m 1
		512.9 -> 219.0	0		
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	

7.5.1
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.957	599.0 -> 98.8				
		363.1 -> 319.0	0	µg/L	m	1
PFHpS	-	363.1 -> 169.0	0			
		449.0 -> 79.9	-	N.D.		
PFHxA	5.613	449.0 -> 98.9				
		313.0 -> 269.0	0	µg/L	m	1
PFHxS	-	313.0 -> 118.9	0			
		398.7 -> 79.9	-	N.D.		
PFNA	-	398.7 -> 98.9				
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	7.252	548.8 -> 98.9				
		413.0 -> 369.0	1146	0.06 µg/L		95
PFOS	-	413.0 -> 169.0	246			
		498.9 -> 79.9	-	N.D.		
PFPeA	4.489	498.9 -> 98.8				
		263.0 -> 219.0	0	µg/L	m	1
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				
PFMPA	-					
PFEESA	-					

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



7.5.1
7

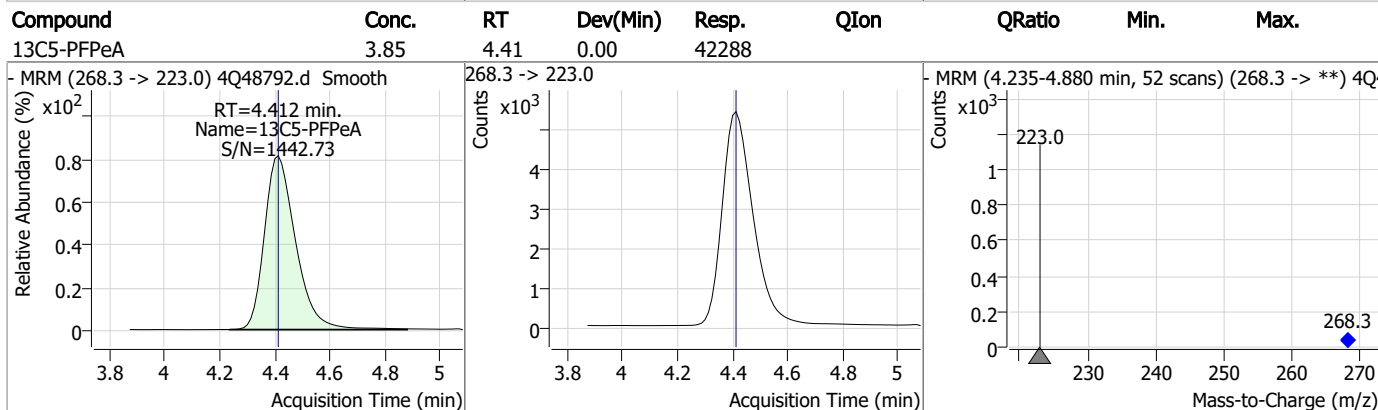
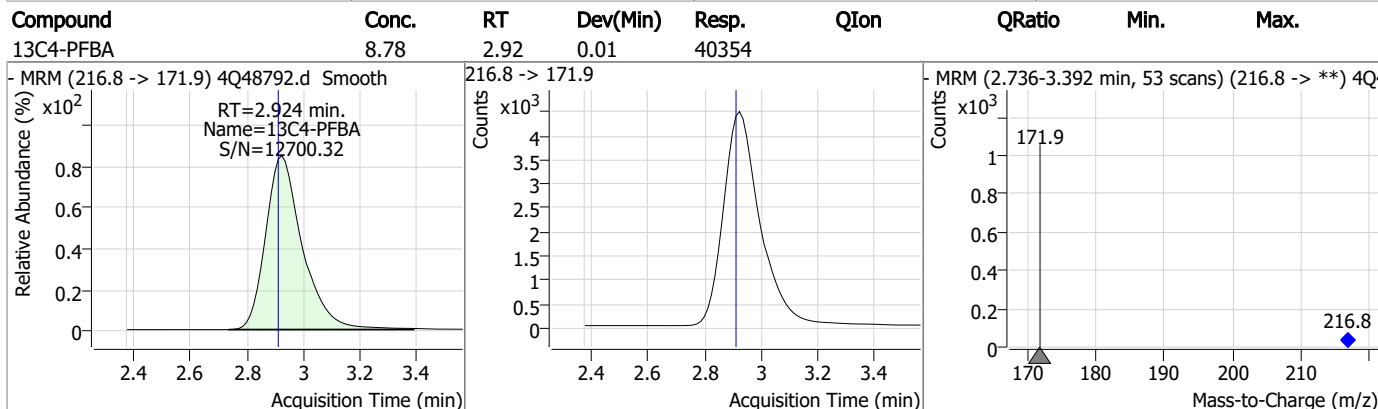
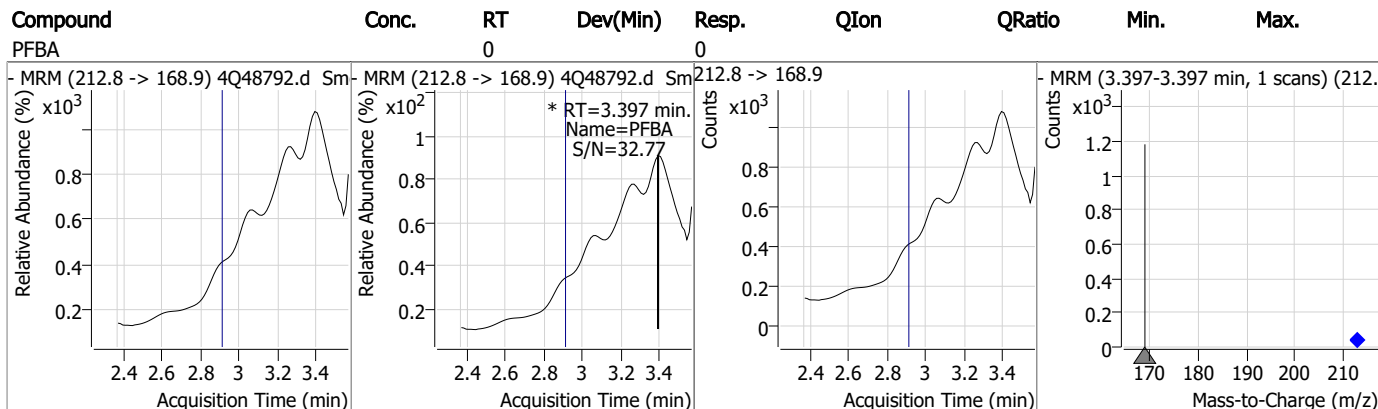
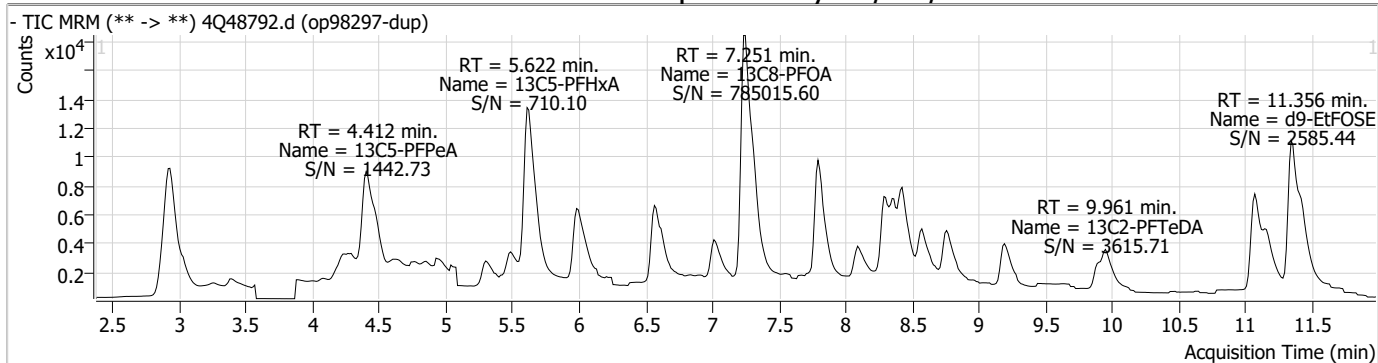
Perfluorinated Compounds by LC/MS/MS

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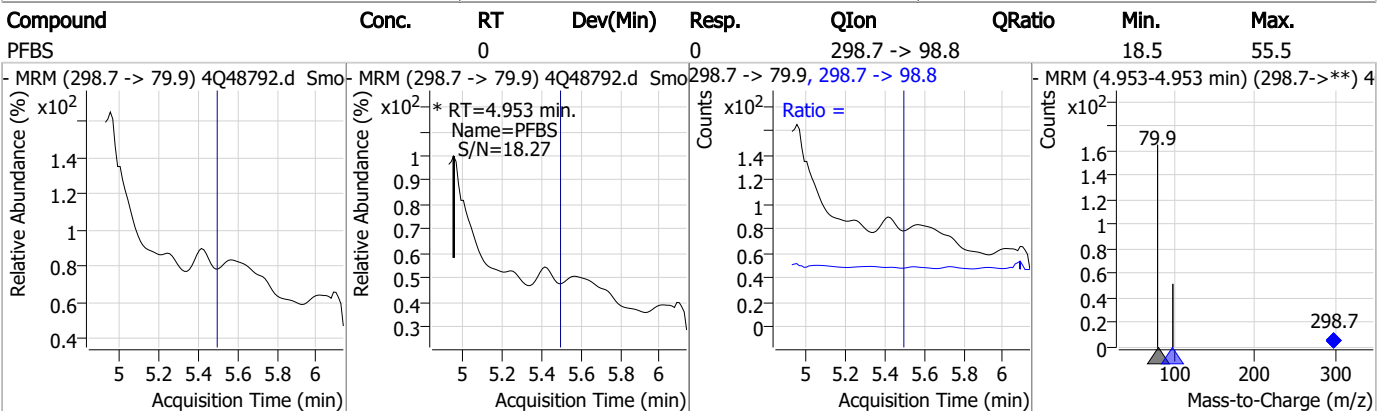
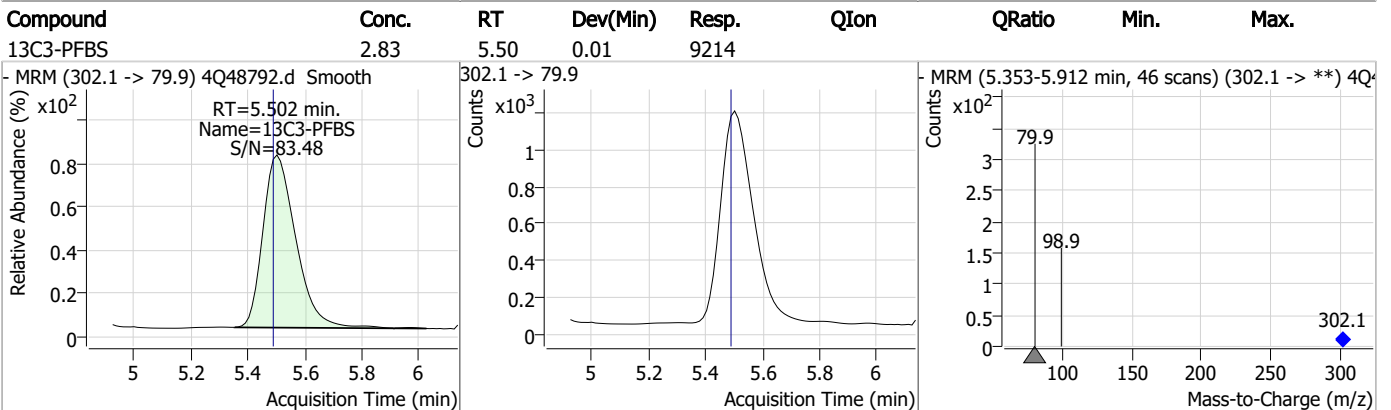
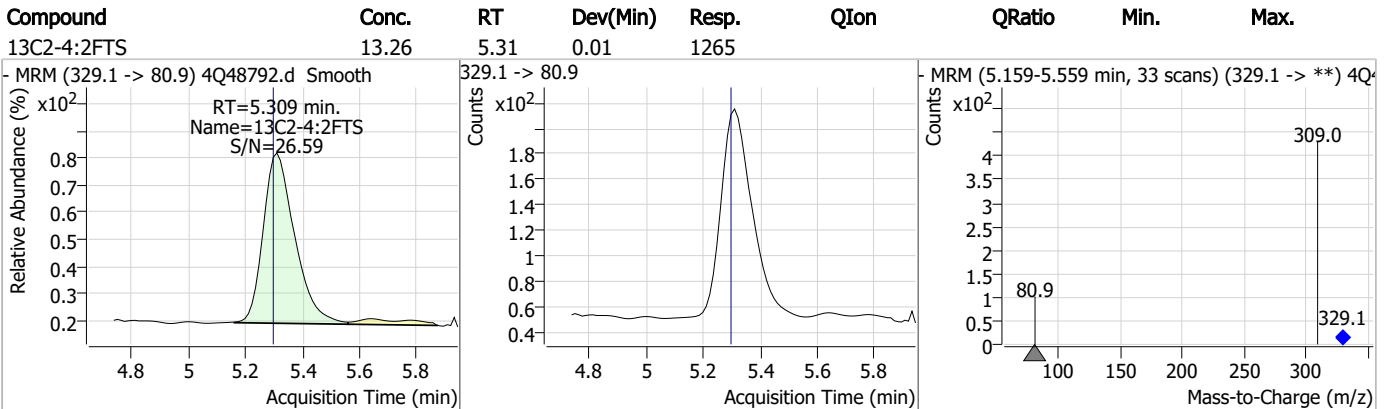
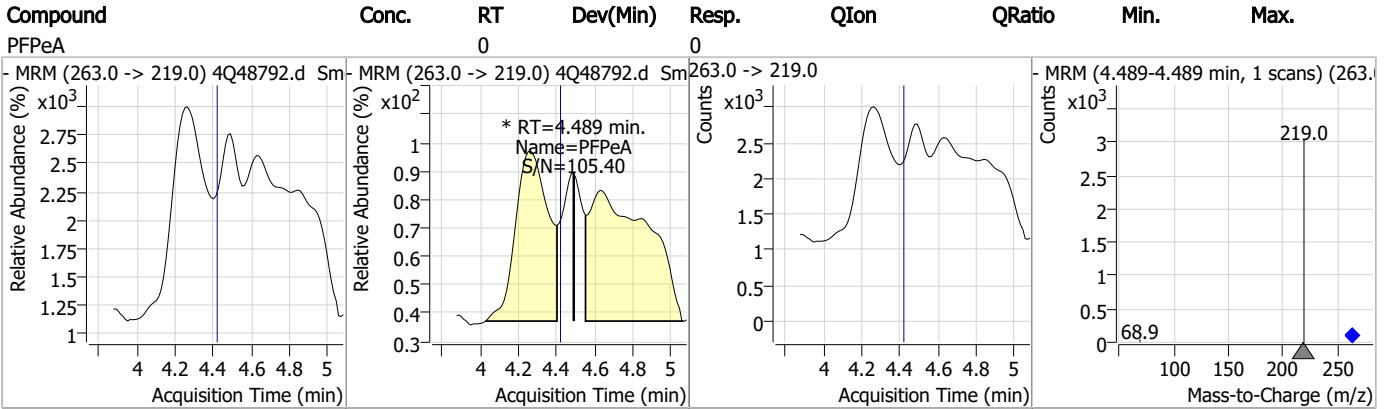
7.5.1

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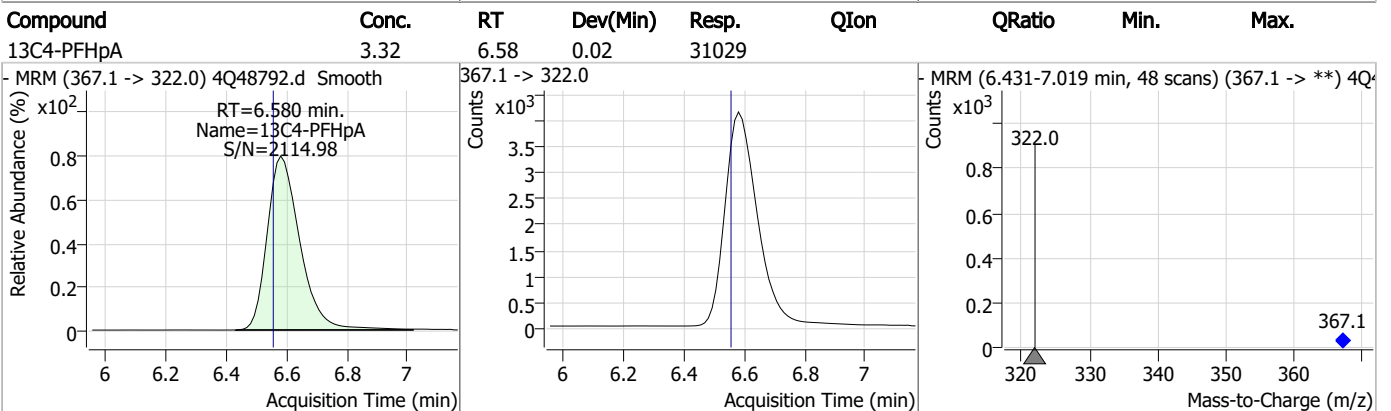
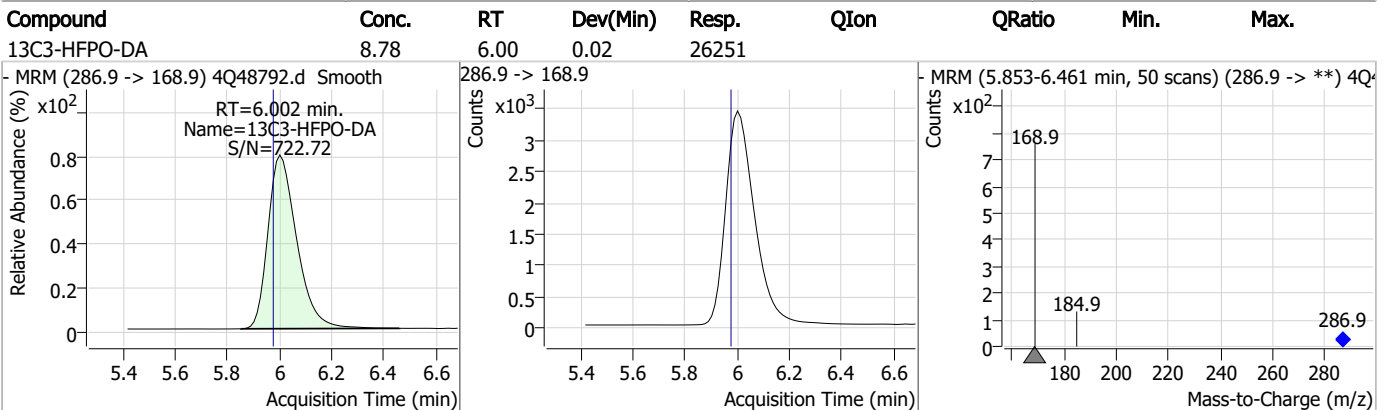
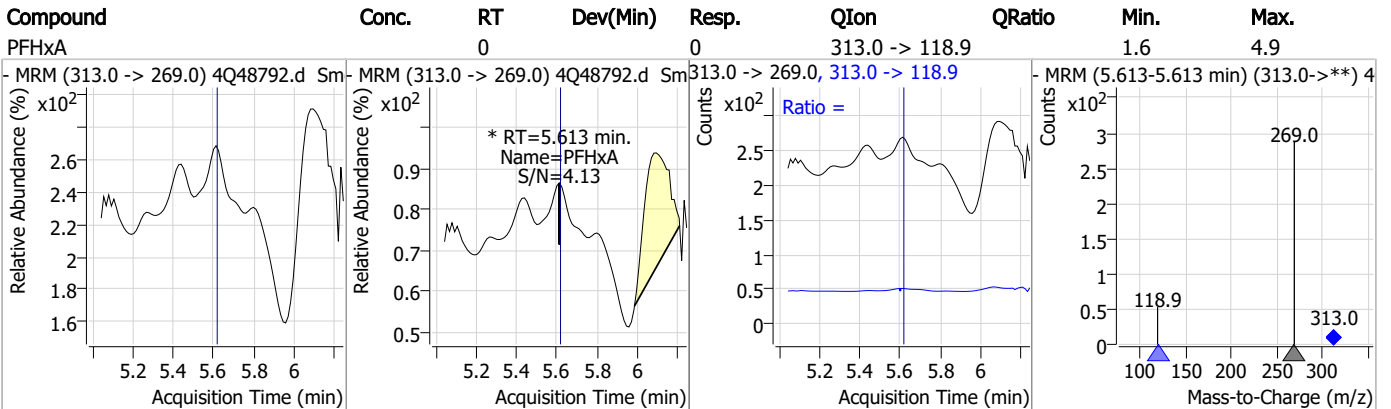
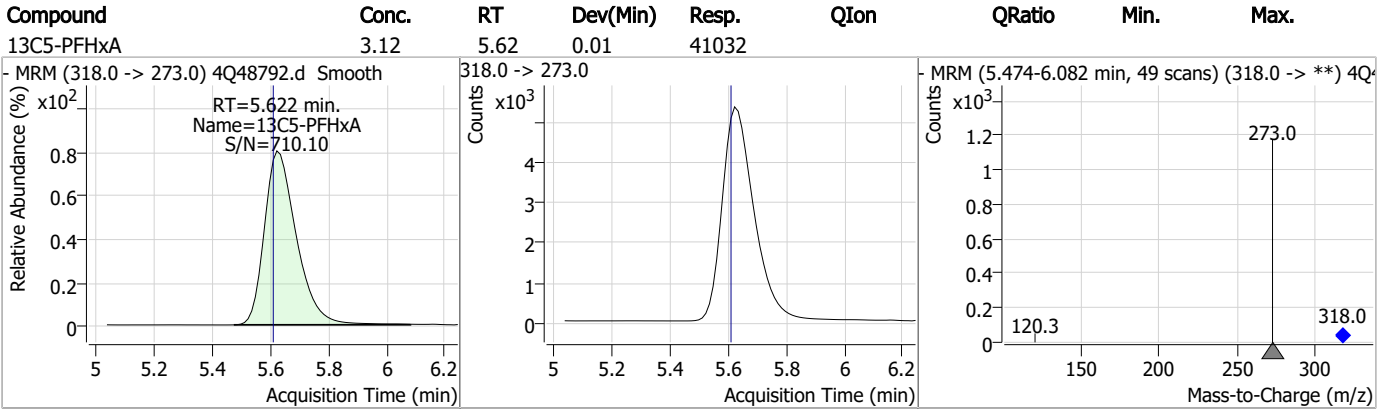
Perfluorinated Compounds by LC/MS/MS



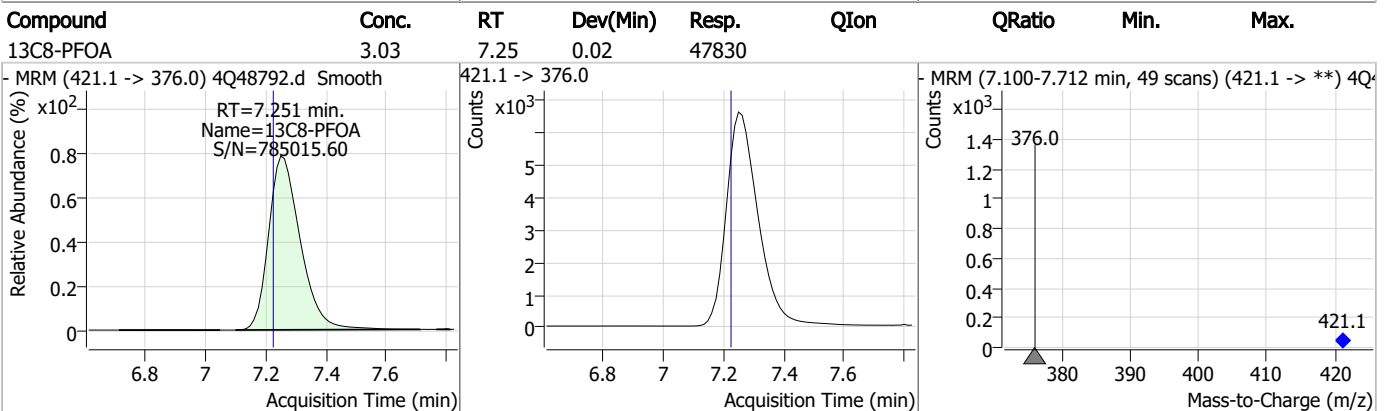
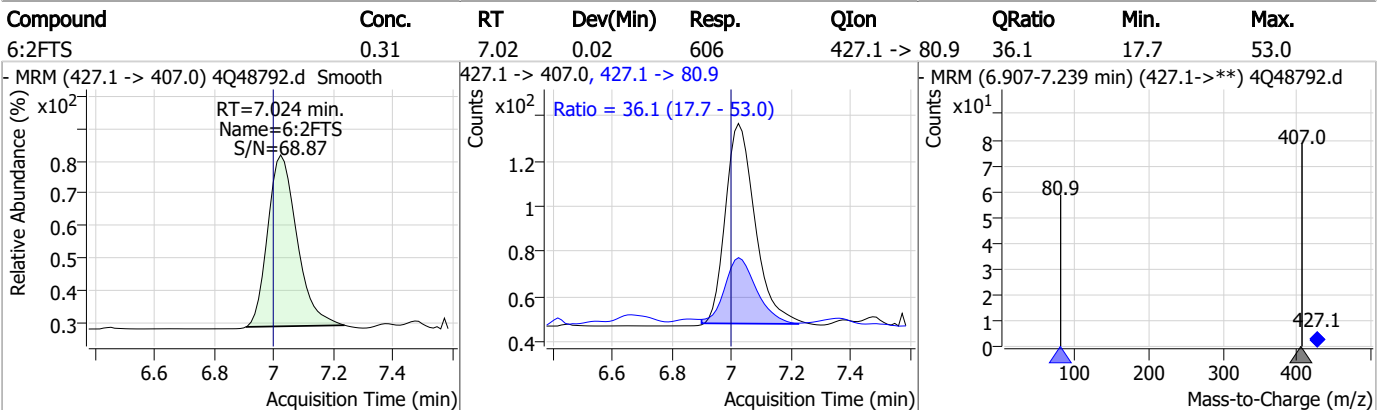
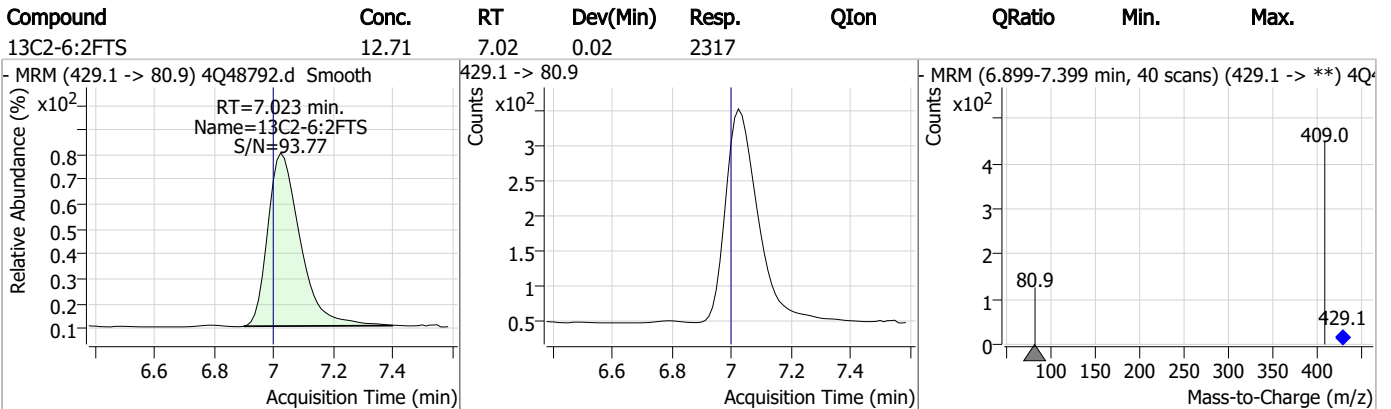
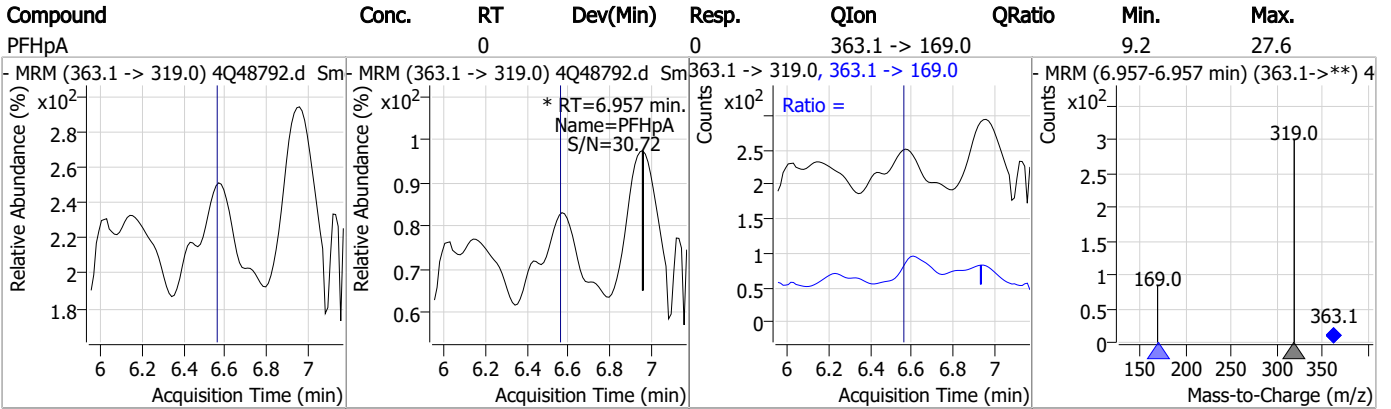
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



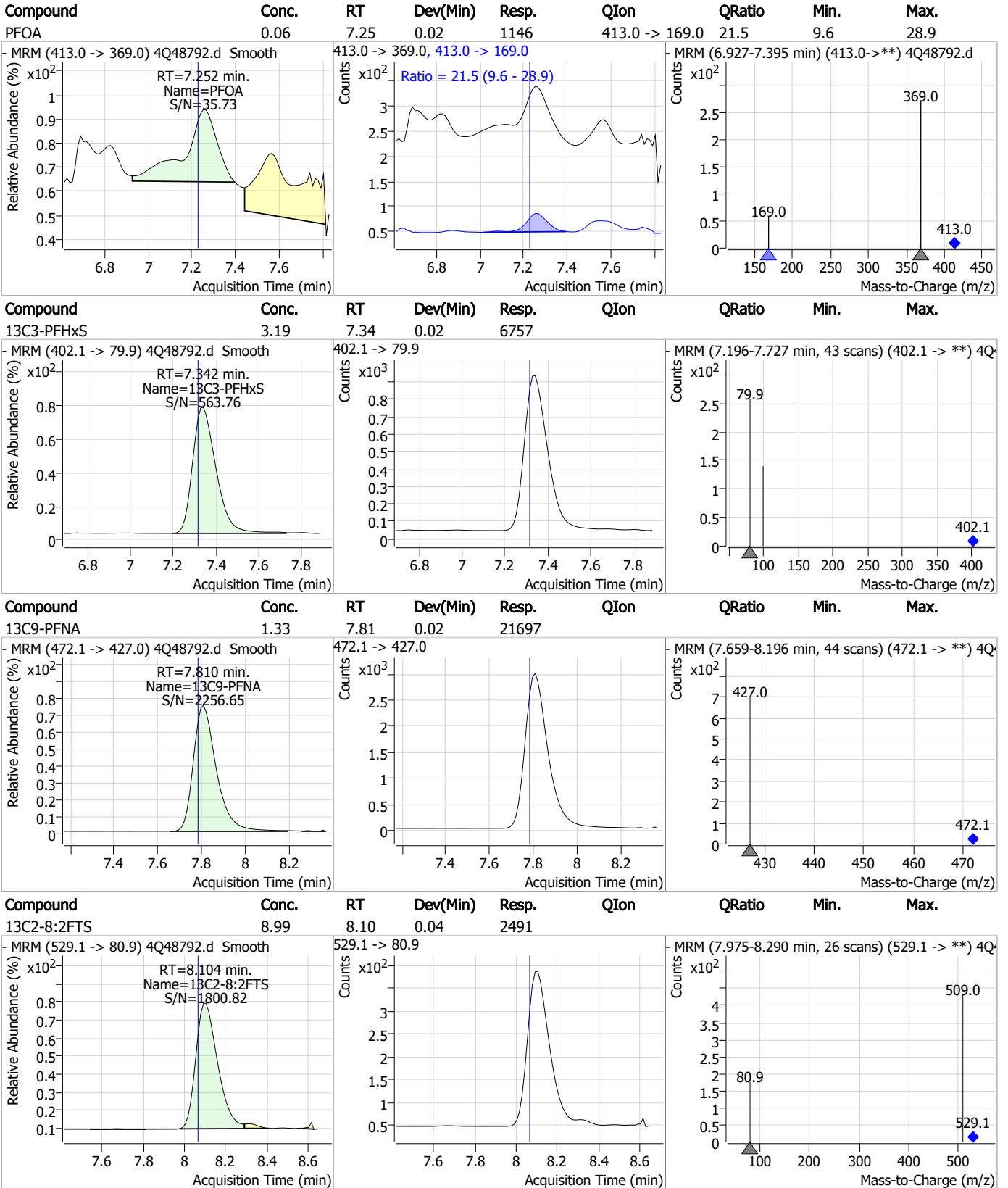
Perfluorinated Compounds by LC/MS/MS



7.5.1

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Perfluorinated Compounds by LC/MS/MS

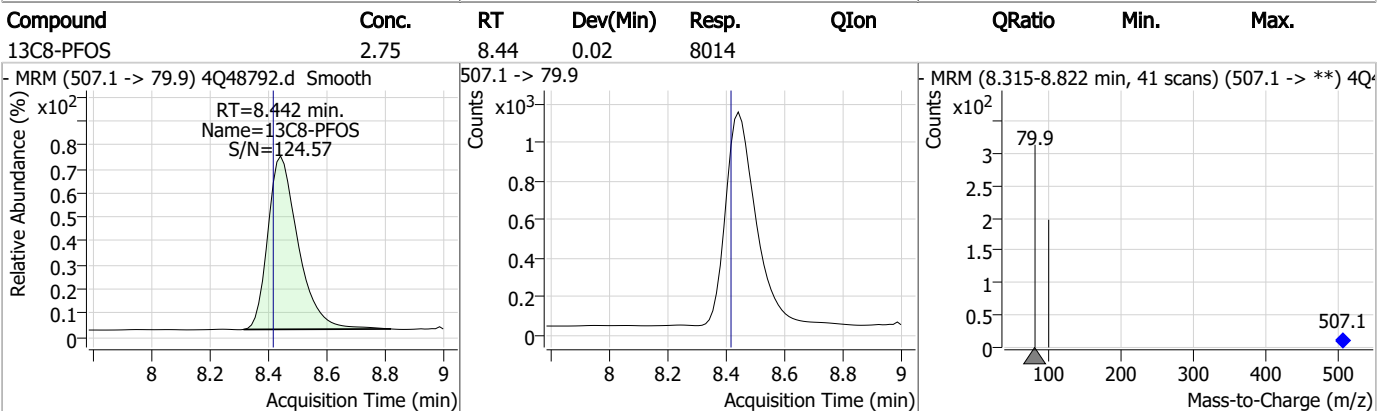
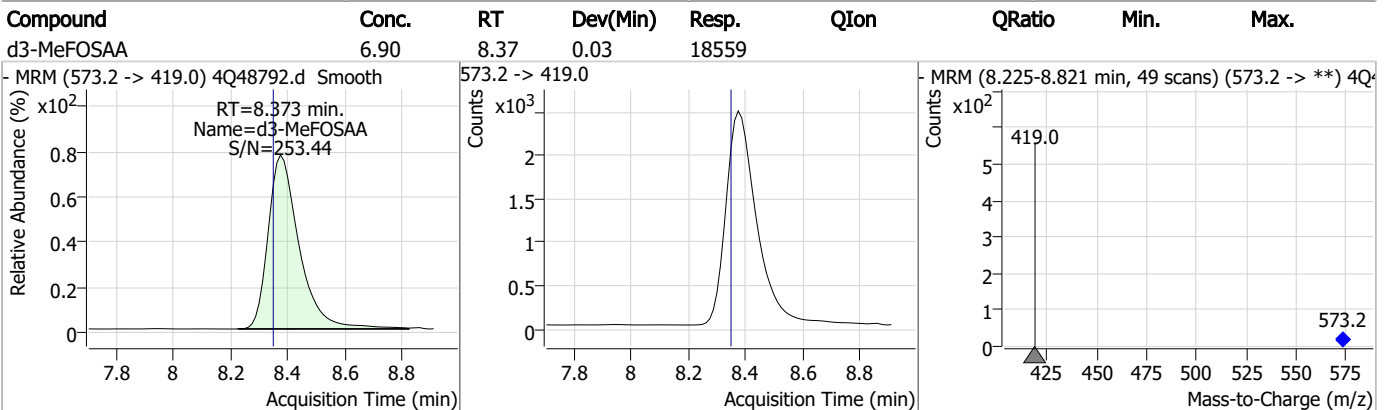
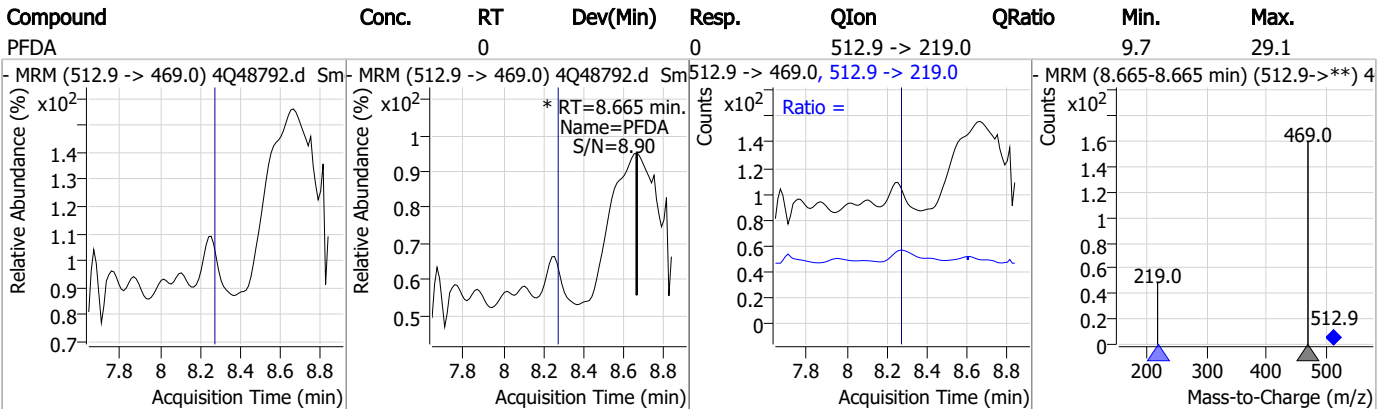
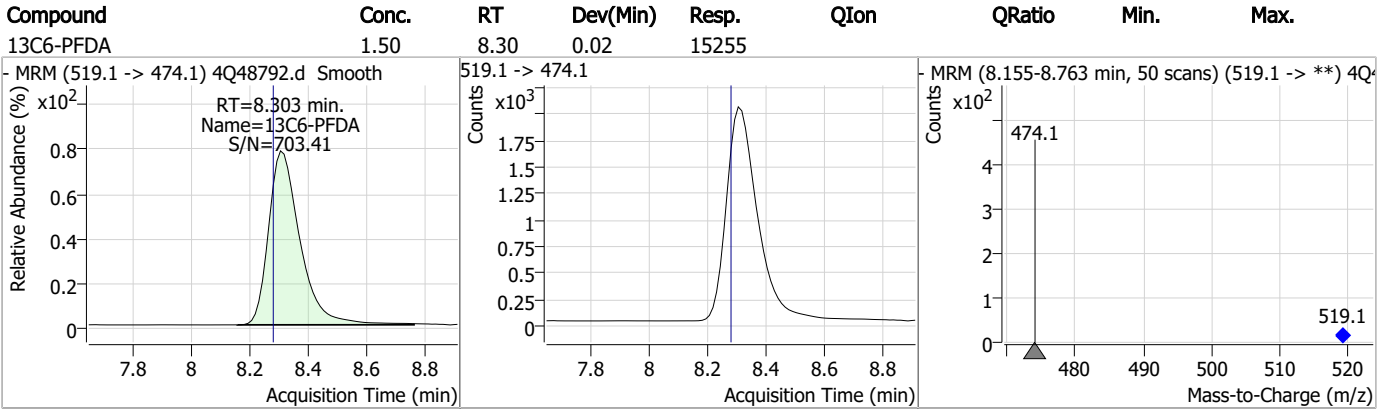


7.5.1

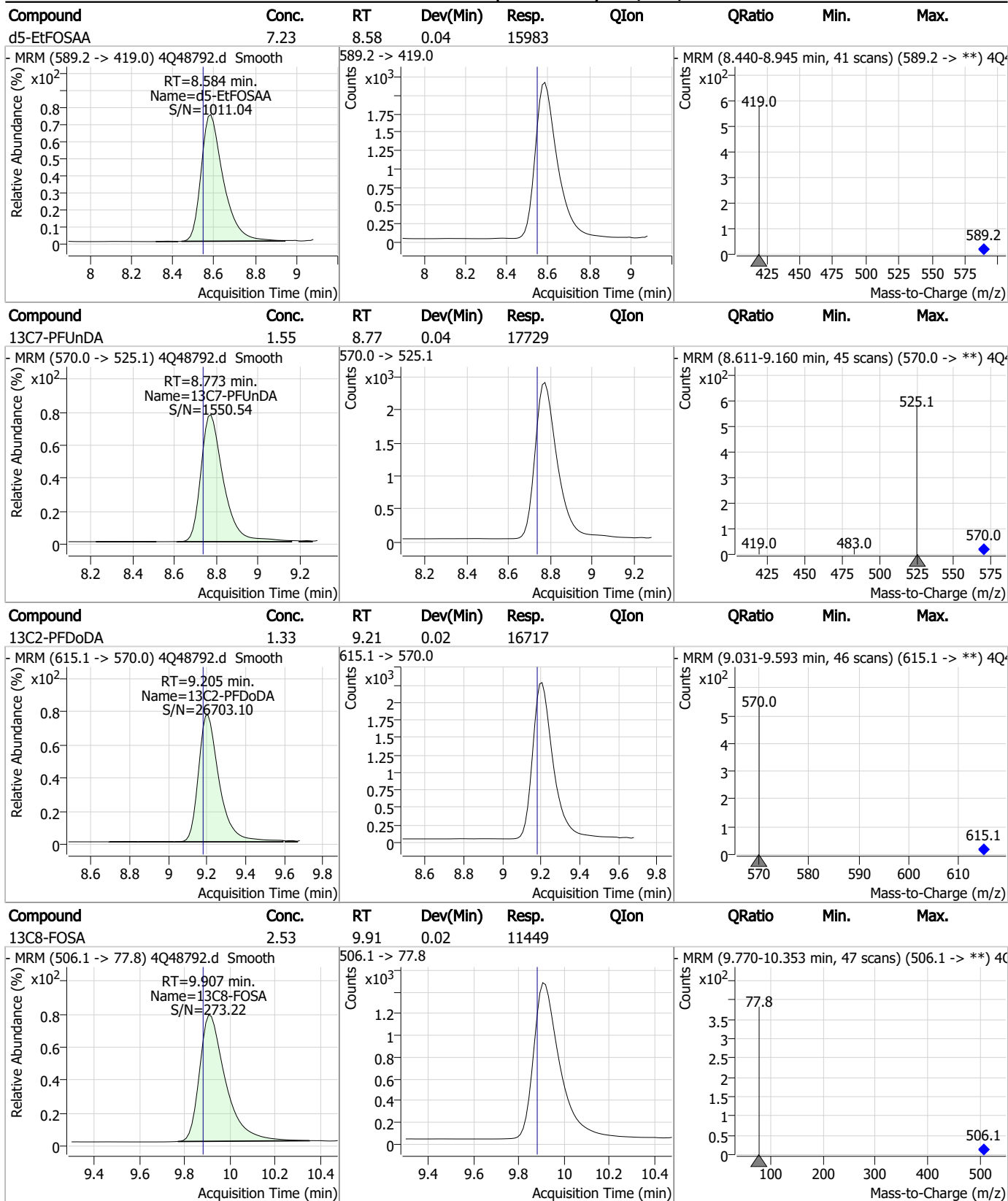
7



Perfluorinated Compounds by LC/MS/MS

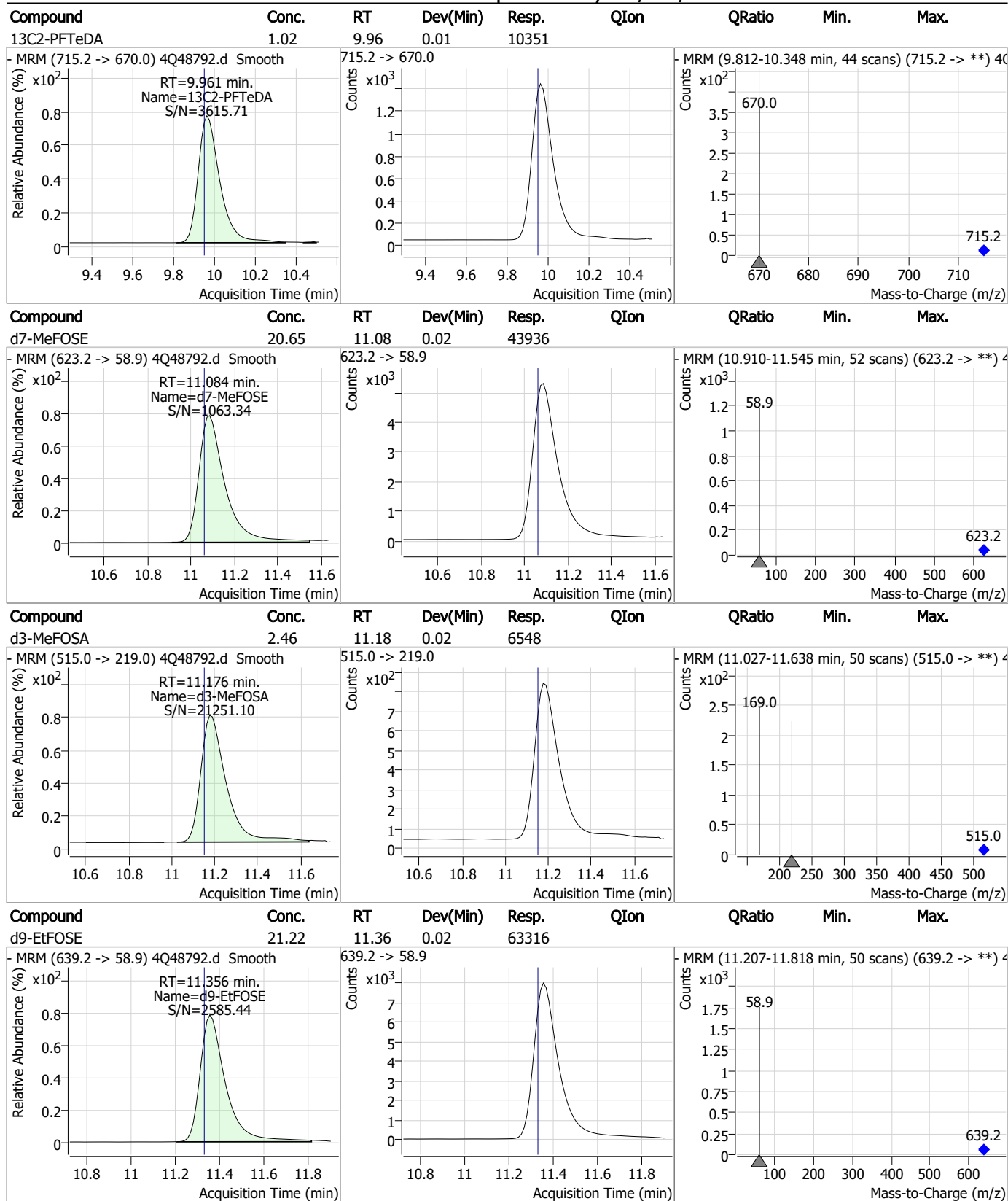


Perfluorinated Compounds by LC/MS/MS



7.5.1
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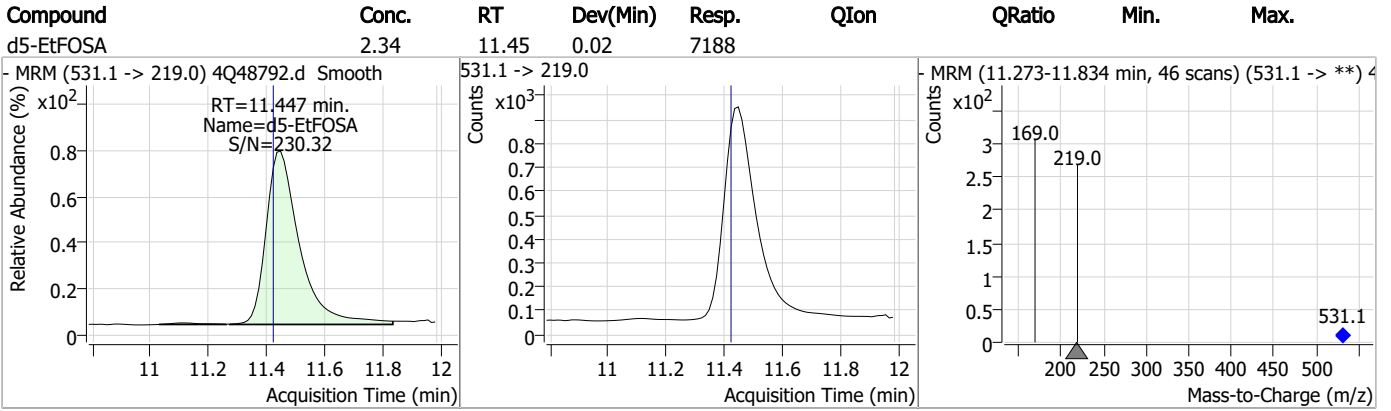
Perfluorinated Compounds by LC/MS/MS



7.5.1

7

Perfluorinated Compounds by LC/MS/MS



7.5.1

7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 08/09/23 10:50

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48582.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/7/2023 3:28:01 PM
 Sample Name : RT TDCA
 Vial : P1-B1
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q711_TDCA.batch.bin
 Sample Information : OP97964,S4Q711,500,,,5.0,1,water

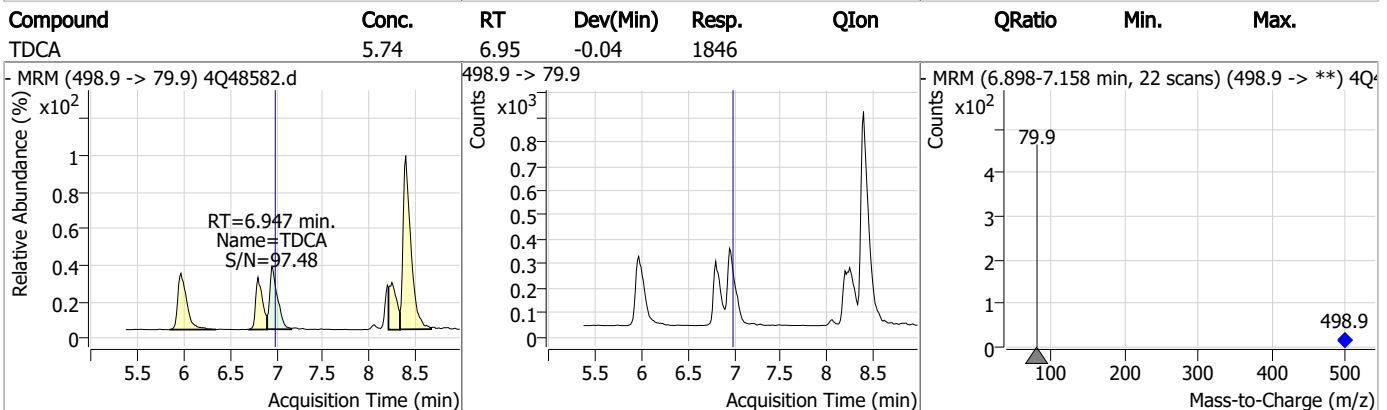
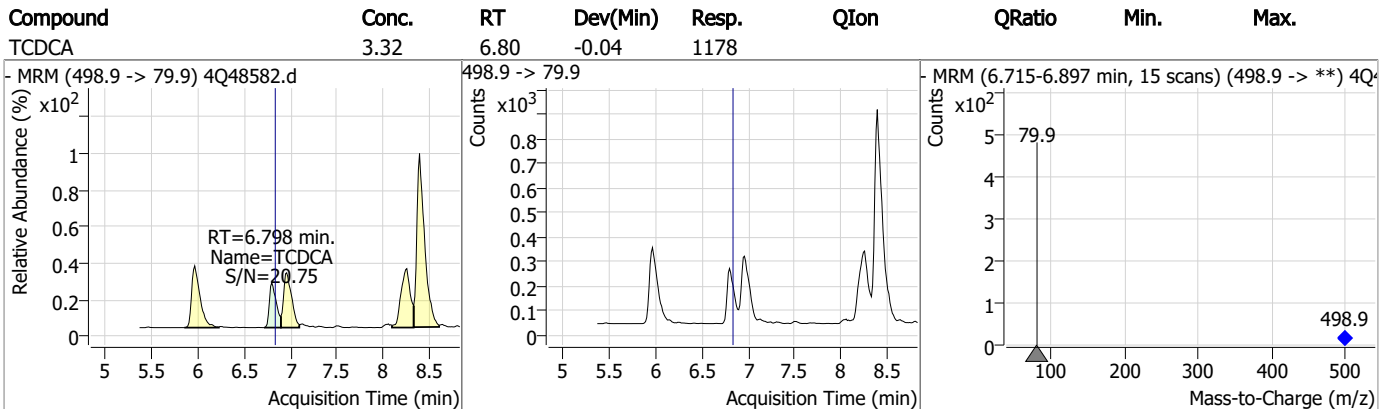
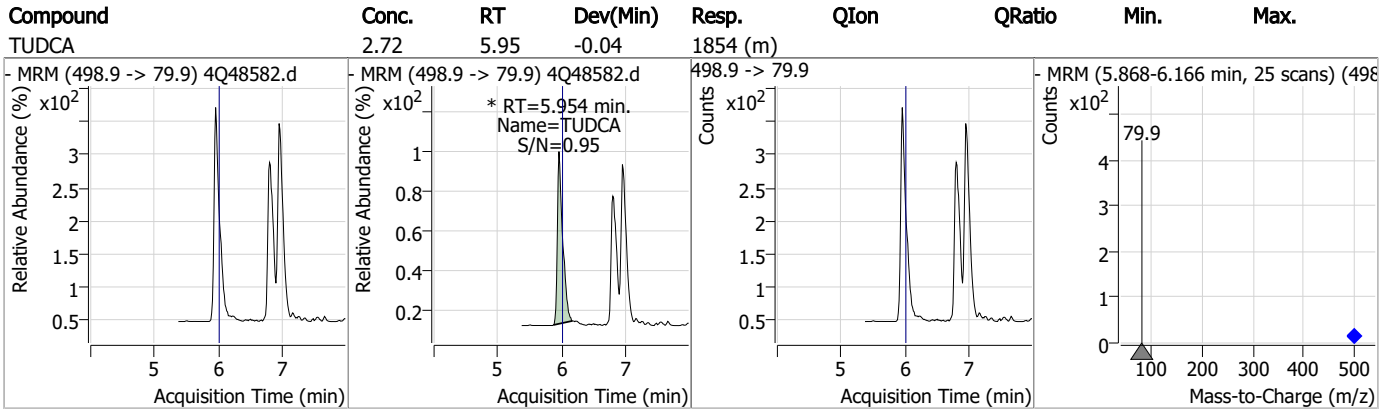
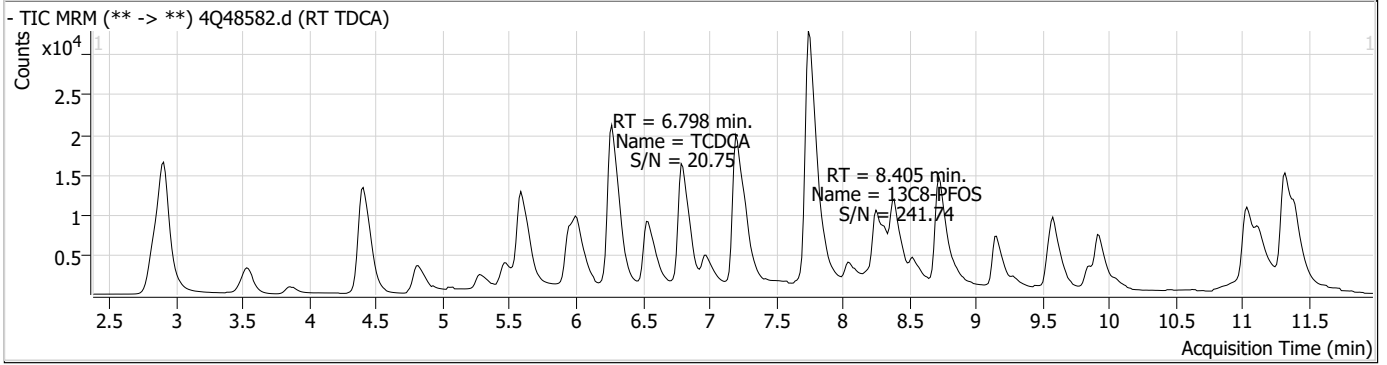
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.405	507.1 -> 79.9	7699	2.50	µg/L	-0.049	
13C4-PFOS	8.405	502.8 -> 79.9	8652	2.50	µg/L	-0.049	
System Monitoring Compounds							
13C8-PFOS	8.405	507.1 -> 79.9	7699	2.26	µg/L	-0.049	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.3%				
Target Compounds							
PFOS	8.406	498.9 -> 79.9 498.9 -> 98.8	6804 3579	2.59	µg/L	m	96
TCDCa	6.798	498.9 -> 79.9	1178	3.32	ng/ml		100
TDCA	6.947	498.9 -> 79.9	1846	5.74	ng/ml		100
TUDCA	5.954	498.9 -> 79.9	1854	2.72	ng/ml	m	100

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

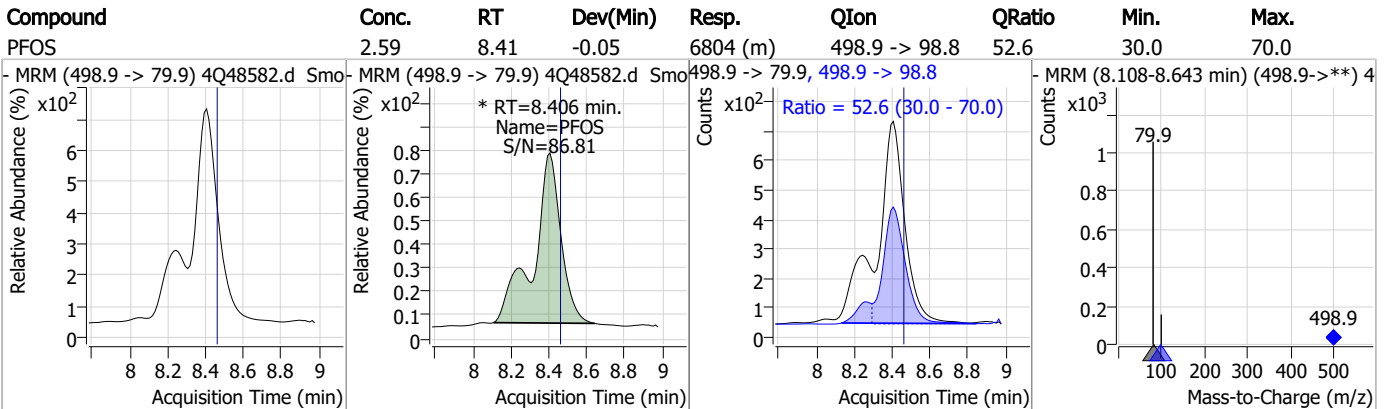
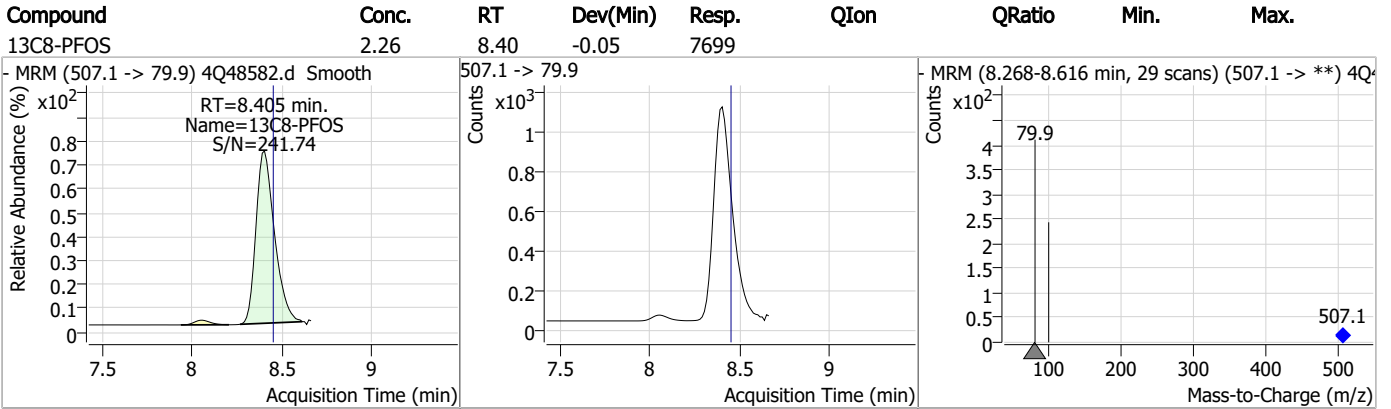
7.6.1
7



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.1

7

Manual Integration Approval Summary

Sample Number: S4Q711-RT Method: EPA DRAFT 1633
Lab FileID: 4Q48582.D Analyst approved: 08/09/23 10:49 Norman Farmer
Injection Time: 08/07/23 15:28 Supervisor approved: 08/09/23 10:50 Norman Farmer

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

7.6.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48583.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/7/2023 3:56:45 PM
 Sample Name : RT br/lr
 Vial : P1-B2
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q711.batch.bin
 Sample Information : OP97964,S4Q711,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.999	216.8 -> 171.9	92135	10.00 µg/L	0.087
M5-PFPeA	4.475	268.3 -> 223.0	61151	5.00 µg/L	0.062
M5-PFHxA	5.647	318.0 -> 273.0	36890	2.50 µg/L	0.037
M4-PFHpA	6.580	367.1 -> 322.0	25518	2.50 µg/L	0.025
M8-PFOA	7.238	421.1 -> 376.0	42514	2.50 µg/L	0.012
M9-PFNA	7.785	472.1 -> 427.0	18914	1.25 µg/L	0.000
M6-PFDA	8.279	519.1 -> 474.1	14133	1.25 µg/L	0.000
M7-PFUnDA	8.748	570.0 -> 525.1	15429	1.25 µg/L	0.012
M2-PFDoDA	9.180	615.1 -> 570.0	18106	1.25 µg/L	0.000
M2-PFTeDA	9.936	715.2 -> 670.0	15389	1.25 µg/L	-0.012
M8-FOSA	9.882	506.1 -> 77.8	13885	2.50 µg/L	0.000
M3-PFBS	5.527	302.1 -> 79.9	9684	2.50 µg/L	0.038
M3-PFHxS	7.329	402.1 -> 79.9	6407	2.50 µg/L	0.012
M8-PFOS	8.417	507.1 -> 79.9	7973	2.50 µg/L	0.000
M2-4:2FTS	5.333	329.1 -> 80.9	570	5.00 µg/L	0.037
M2-6:2FTS	7.011	429.1 -> 80.9	1016	5.00 µg/L	0.012
M2-8:2FTS	8.078	529.1 -> 80.9	1434	5.00 µg/L	0.012
M3-MeFOSAA	8.348	573.2 -> 419.0	15354	5.00 µg/L	0.000
M3-HFPO-DA	6.014	286.9 -> 168.9	33152	10.00 µg/L	0.037
M5-EtFOSAA	8.559	589.2 -> 419.0	13270	5.00 µg/L	0.012
M7-MeFOSE	11.047	623.2 -> 58.9	69436	25.00 µg/L	-0.012
M9-EtFOSE	11.331	639.2 -> 58.9	92722	25.00 µg/L	0.000
M5-EtFOSA	11.422	531.1 -> 219.0	8431	2.50 µg/L	0.000
M3-MeFOSA	11.151	515.0 -> 219.0	7573	2.50 µg/L	0.000
13C4-PFOS	8.418	502.8 -> 79.9	8049	2.50 µg/L	0.000
13C3-PFBA	3.003	216.0 -> 172.0	53576	5.00 µg/L	0.100
18O2-PFHxS	7.328	403.0 -> 83.9	4113	2.50 µg/L	0.012
13C4-PFOA	7.239	417.1 -> 372.0	50942	2.50 µg/L	0.012
13C2-PFDA	8.279	515.1 -> 470.1	16359	1.25 µg/L	0.000
13C5-PFNA	7.785	468.0 -> 423.0	19472	1.25 µg/L	0.000
13C2-PFHxA	5.648	315.1 -> 270.0	33708	2.50 µg/L	0.037
System Monitoring Compounds					
13C2-4:2FTS	5.333	329.1 -> 80.9	570	5.55 µg/L	0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.0%		
13C2-6:2FTS	7.011	429.1 -> 80.9	1016	5.17 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.5%		
13C2-8:2FTS	8.078	529.1 -> 80.9	1434	4.81 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C2-PFDoDA	9.180	615.1 -> 570.0	18106	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.3%		
13C2-PFTeDA	9.936	715.2 -> 670.0	15389	1.37 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 109.4%		
13C3-PFBS	5.527	302.1 -> 79.9	9684	2.77 µg/L	0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 110.6%		
13C3-PFHxS	7.329	402.1 -> 79.9	6407	2.81 µg/L	0.012

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 = 112.6%	
13C4-PFBA	2.999	216.8 -> 171.9	92135	10.06 µg/L	0.087
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C4-PFHpA	6.580	367.1 -> 322.0	25518	2.54 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C5-PFHxA	5.647	318.0 -> 273.0	36890	2.61 µg/L	0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.5%	
13C5-PFPeA	4.475	268.3 -> 223.0	61151	5.19 µg/L	0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C6-PFDA	8.279	519.1 -> 474.1	14133	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C7-PFUnDA	8.748	570.0 -> 525.1	15429	1.21 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.8%	
13C8-FOSA	9.882	506.1 -> 77.8	13885	2.77 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.6%	
13C8-PFOA	7.238	421.1 -> 376.0	42514	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C8-PFOS	8.417	507.1 -> 79.9	7973	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C9-PFNA	7.785	472.1 -> 427.0	18914	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.6%	
d3-MeFOSAA	8.348	573.2 -> 419.0	15354	5.14 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.8%	
13C3-HFPO-DA	6.014	286.9 -> 168.9	33152	10.32 µg/L	0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.2%	
d3-MeFOSA	11.151	515.0 -> 219.0	7573	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.4%	
d5-EtFOSAA	8.559	589.2 -> 419.0	13270	5.40 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.1%	
d7-MeFOSE	11.047	623.2 -> 58.9	69436	29.37 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 117.5%	
d9-EtFOSE	11.331	639.2 -> 58.9	92722	27.97 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 111.9%	
d5-EtFOSA	11.422	531.1 -> 219.0	8431	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%	
Target Compounds					QValue
4:2FTS	5.334	327.1 -> 307.0 327.1 -> 80.9	37378 15440	48.62 µg/L	100
6:2FTS	7.011	427.1 -> 407.0 427.1 -> 80.9	43582 15845	50.56 µg/L	98
8:2FTS	8.078	527.1 -> 507.0 527.1 -> 80.8	33025 13852	57.36 µg/L	97
EtFOSAA	8.559	584.2 -> 419.1 584.2 -> 526.0	22345 9937	12.32 µg/L	m 95
FOSA	9.886	498.1 -> 77.9 498.1 -> 478.0	140450 4113	31.26 µg/L	99
MeFOSAA	8.361	570.1 -> 419.0 570.1 -> 483.0	24437 4969	12.73 µg/L	96
PFBA	2.995	212.8 -> 168.9	108203	51.00 µg/L	100
PFBS	5.528	298.7 -> 79.9 298.7 -> 98.8	26979 10352	11.41 µg/L	98
PFDA	8.279	512.9 -> 469.0 512.9 -> 219.0	122031 22929	12.29 µg/L	99
PFDoDA	9.181	613.1 -> 569.0 613.1 -> 319.0	141758 22141	12.51 µg/L	98
PFDS	9.321	599.0 -> 79.9	21312	12.94 µg/L	99

7.6.2
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	10730			
PFHpA	6.581	363.1 -> 319.0	157841	13.71	µg/L	98
		363.1 -> 169.0	27810			
PFHpS	7.913	449.0 -> 79.9	29248	12.14	µg/L	98
		449.0 -> 98.9	15244			
PFHxA	5.650	313.0 -> 269.0	137933	12.96	µg/L	100
		313.0 -> 118.9	4454			
PFHxS	7.330	398.7 -> 79.9	19934	10.84	µg/L	m 93
		398.7 -> 98.9	9584			
PFNA	7.785	463.0 -> 419.0	262294	26.65	µg/L	m 97
		463.0 -> 219.0	61121			
PFNS	8.899	548.8 -> 79.9	19912	12.79	µg/L	96
		548.8 -> 98.9	10942			
PFOA	7.240	413.0 -> 369.0	466277	27.66	µg/L	m 99
		413.0 -> 169.0	91928			
PFOS	8.419	498.9 -> 79.9	34399	12.13	µg/L	m 81
		498.9 -> 98.8	16641			
PFPeA	4.477	263.0 -> 219.0	275189	25.89	µg/L	100
PFPeS	6.595	349.1 -> 79.9	21931	12.68	µg/L	95
		349.1 -> 98.9	8988			
PFTeDA	9.937	713.1 -> 669.0	130669	12.12	µg/L	98
		713.1 -> 168.9	12179			
PFTrDA	9.579	663.0 -> 619.0	154919	13.23	µg/L	98
		663.0 -> 168.9	18418			
PFUnDA	8.749	563.1 -> 519.0	130847	13.02	µg/L	99
		563.1 -> 269.1	25921			
11Cl-PF3OUdS	9.618	630.9 -> 450.9	178077	25.62	µg/L	99
		632.9 -> 452.9	55300			
9Cl-PF3ONS	8.763	530.8 -> 351.0	236463	24.17	µg/L	100
		532.8 -> 353.0	73105			
ADONA	6.843	376.9 -> 250.9	469291	24.39	µg/L	99
		376.9 -> 84.8	119301			
HFPO-DA	6.015	284.9 -> 168.9	69579	25.51	µg/L	95
		284.9 -> 184.9	7793			
3:3FTCA	3.967	241.0 -> 177.0	35755	66.79	µg/L	99
		241.0 -> 117.0	3340			
5:3FTCA	6.333	341.0 -> 237.1	548138	314.62	µg/L	99
		341.0 -> 217.0	383511			
7:3FTCA	7.799	441.0 -> 316.9	290903	303.02	µg/L	97
		441.0 -> 336.9	681661			
EtFOSA	11.412	526.0 -> 219.0	127734	41.21	µg/L	99
		526.0 -> 169.0	176895			
EtFOSE	11.345	630.0 -> 58.9	244632	84.32	µg/L	100
MeFOSA	11.153	511.9 -> 219.0	107843	40.94	µg/L	m 80
		511.9 -> 169.0	163583			
MeFOSE	11.060	616.1 -> 58.9	204990	82.56	µg/L	100
PFDoDS	10.077	699.1 -> 79.9	17744	14.00	µg/L	95
		699.1 -> 98.8	9709			
NFDHA	5.528	295.0 -> 201.0	17280	25.19	µg/L	97
		295.0 -> 84.9	4068			
PFMBA	4.878	279.0 -> 85.1	152560	25.62	µg/L	100
PFMPA	3.607	229.0 -> 84.9	145046	24.97	µg/L	100
PFEESA	6.071	314.8 -> 134.9	189363	22.08	µg/L	100
		314.8 -> 82.9	6781			

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

7.6.2
7

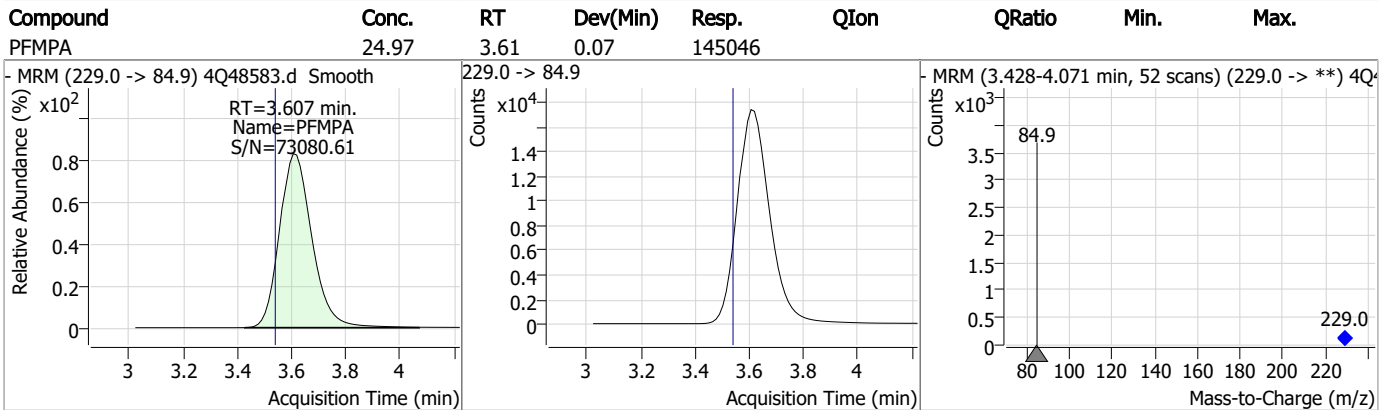
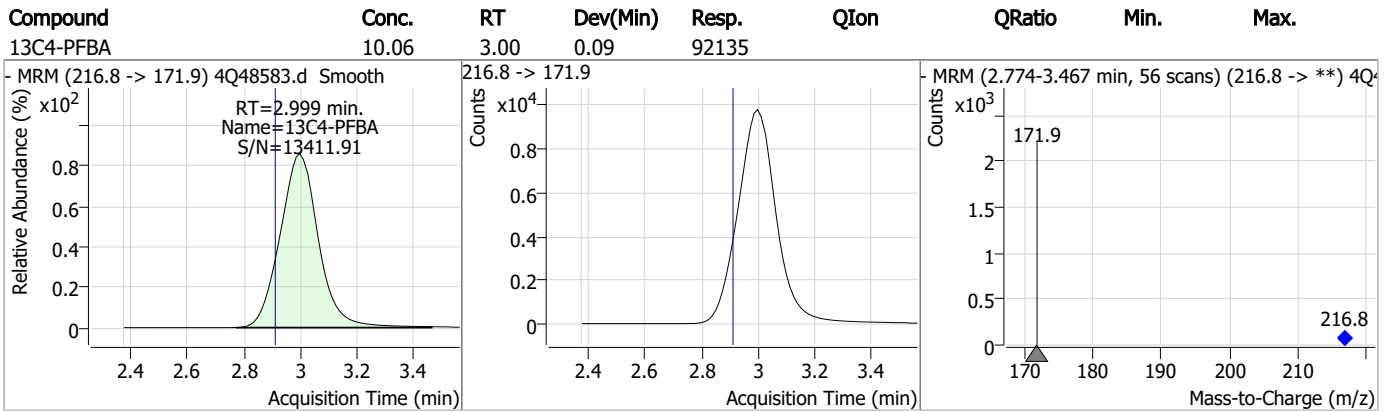
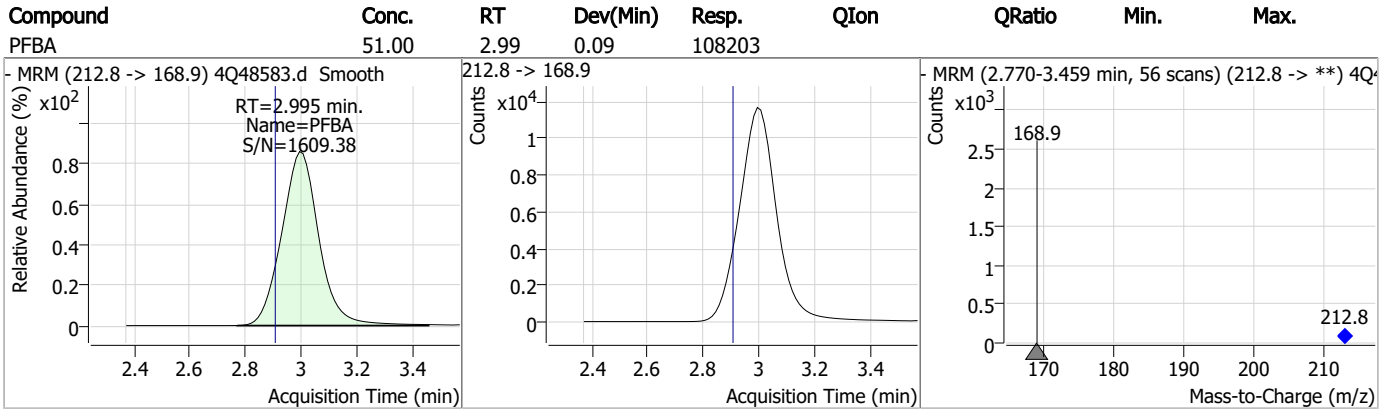
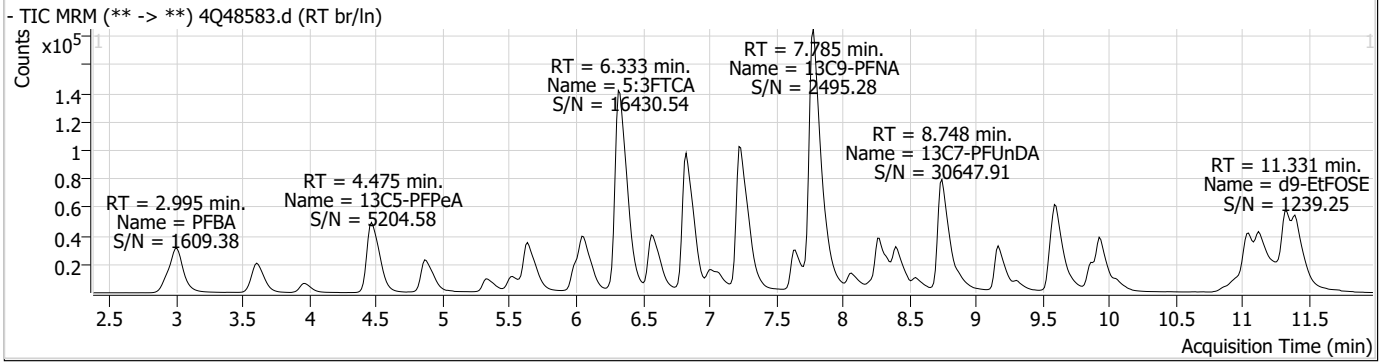
Perfluorinated Compounds by LC/MS/MS

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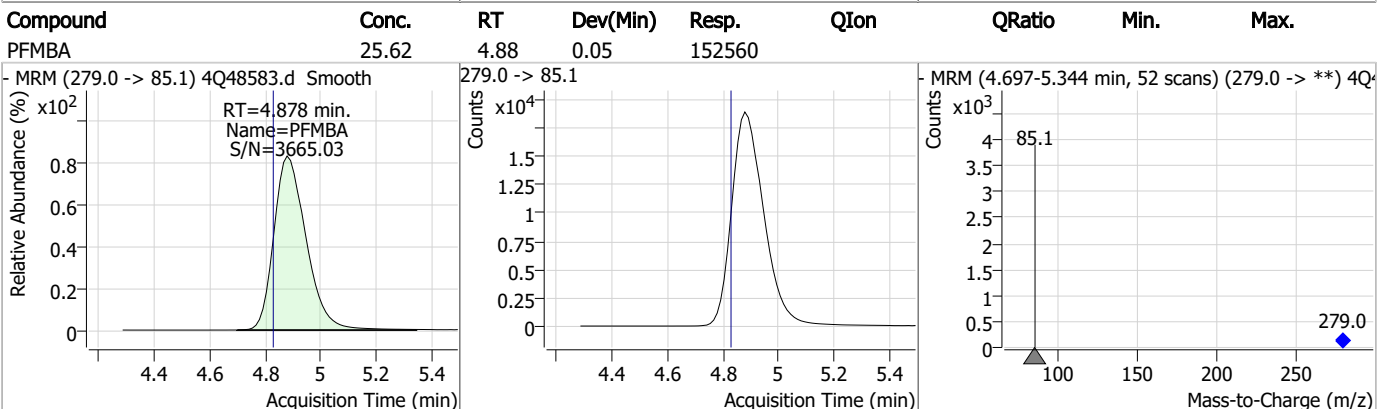
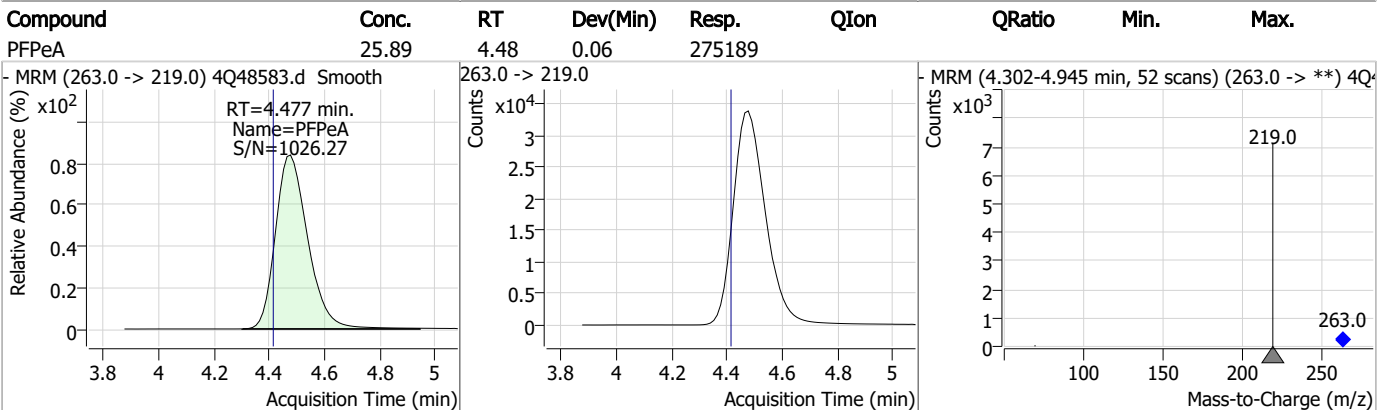
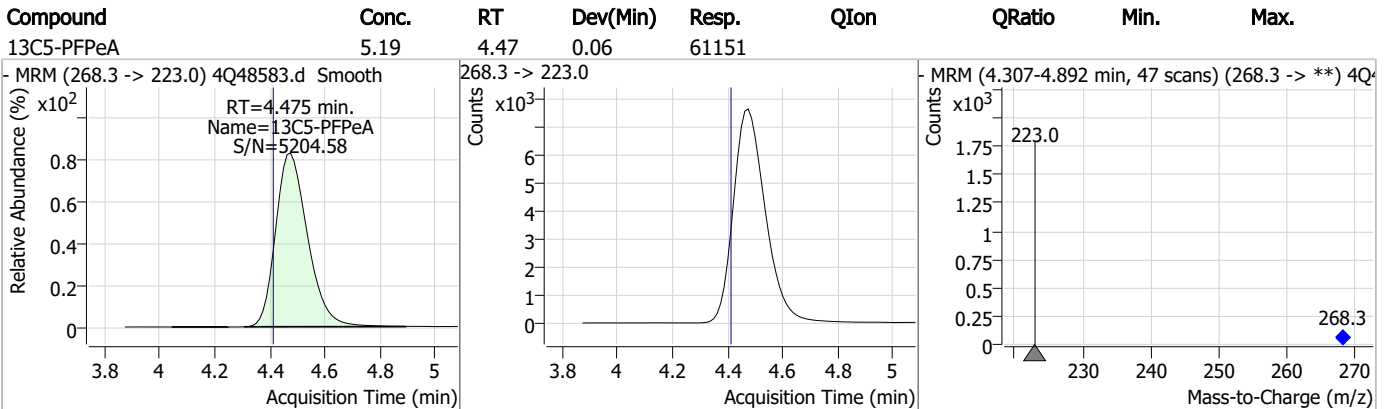
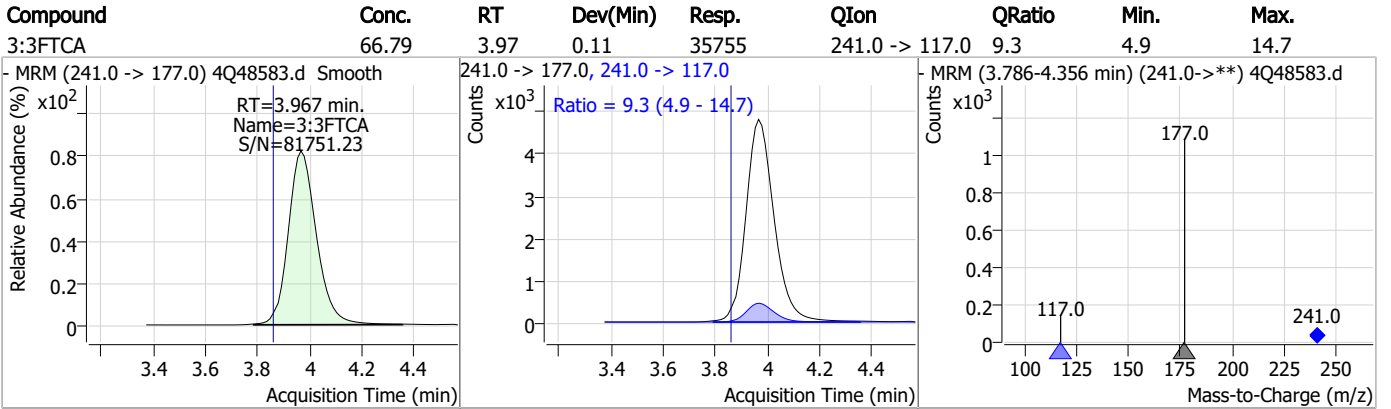
7.6.2

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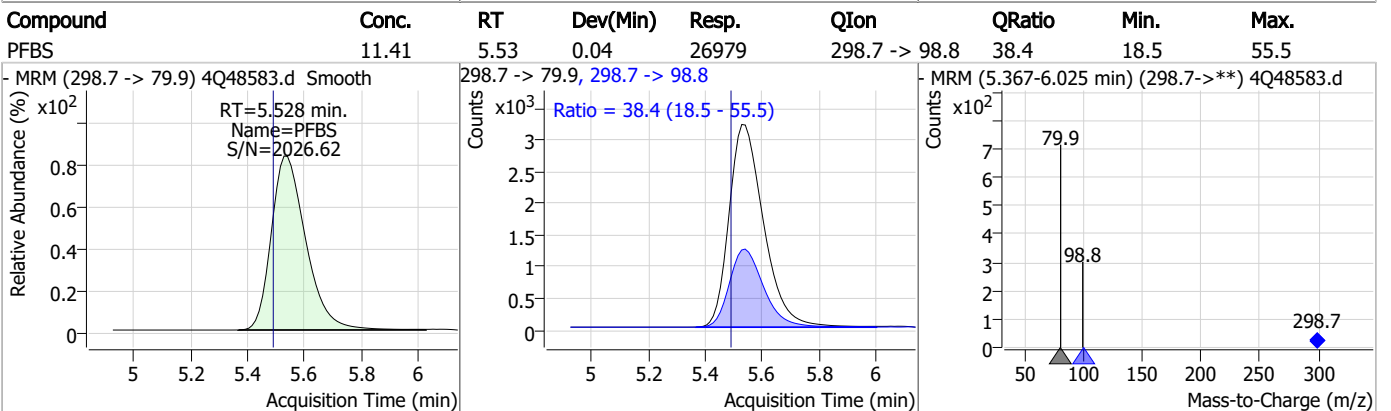
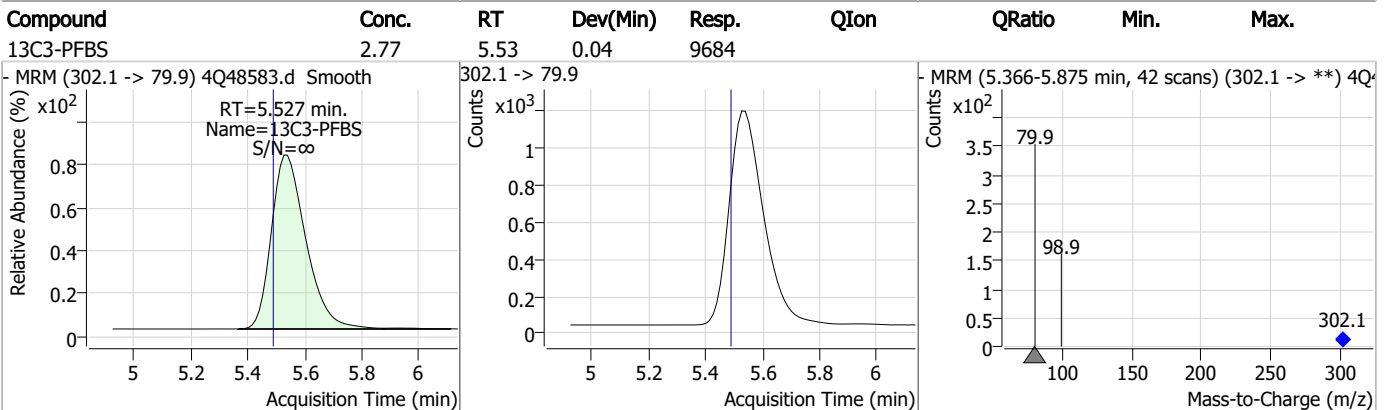
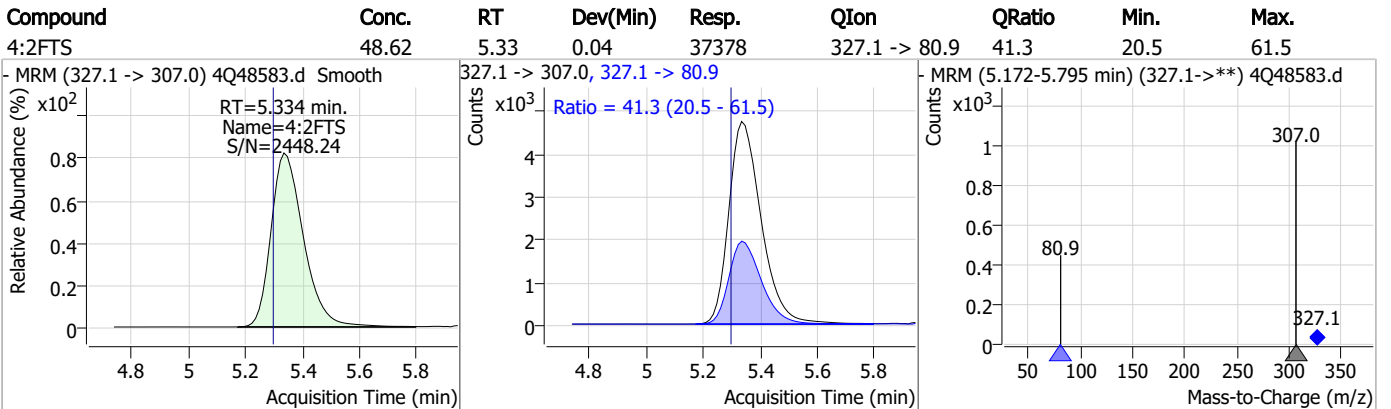
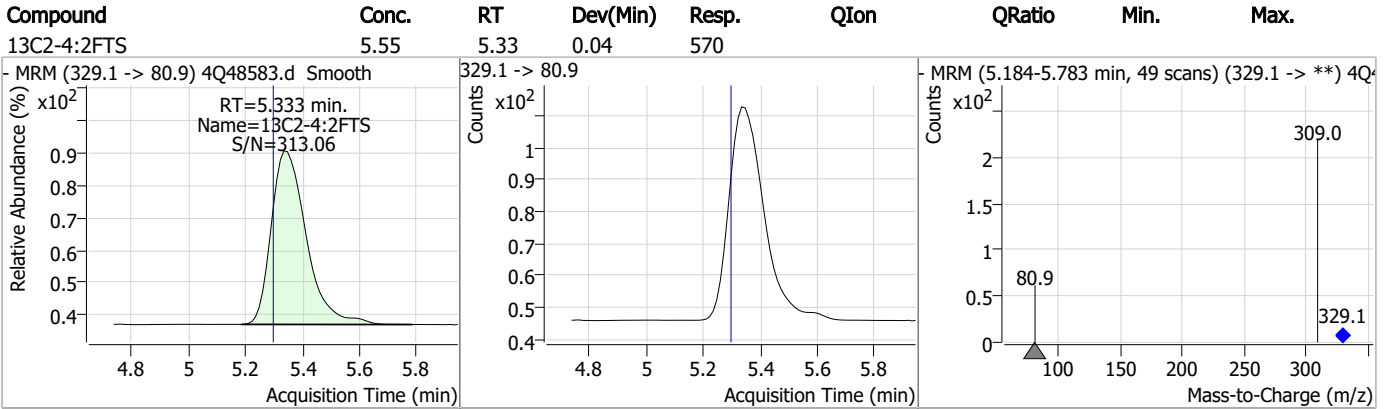
Perfluorinated Compounds by LC/MS/MS



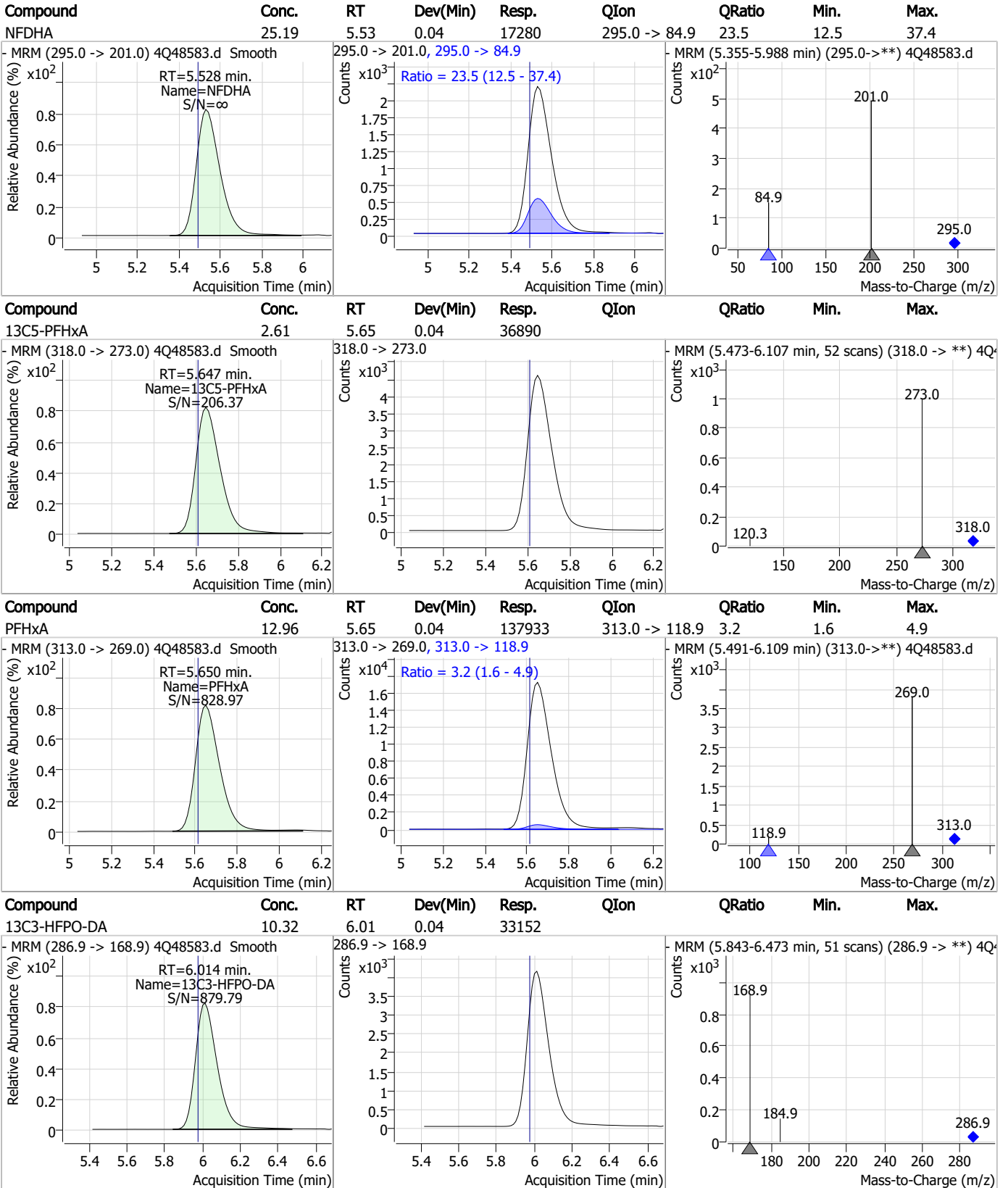
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

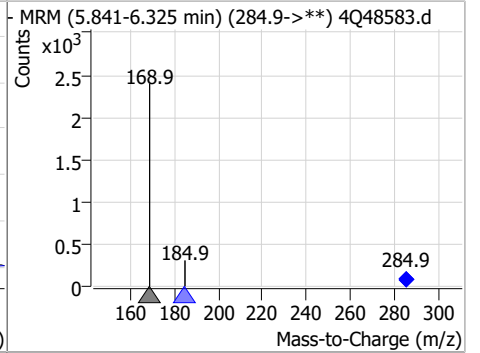
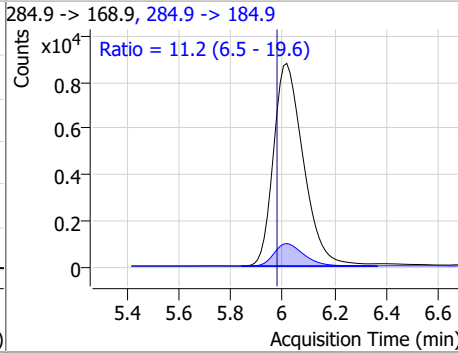
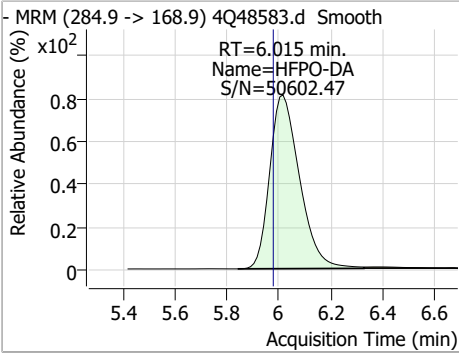


7.6.2

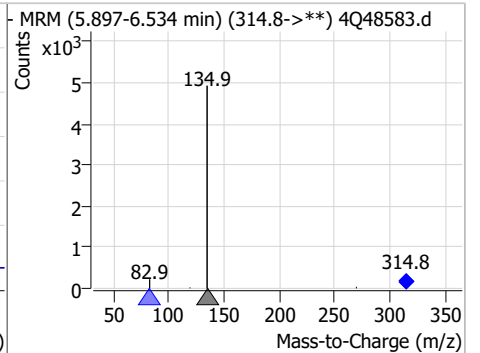
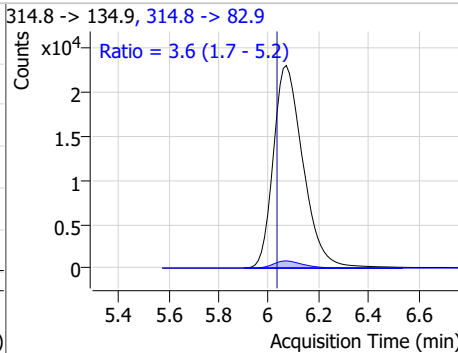
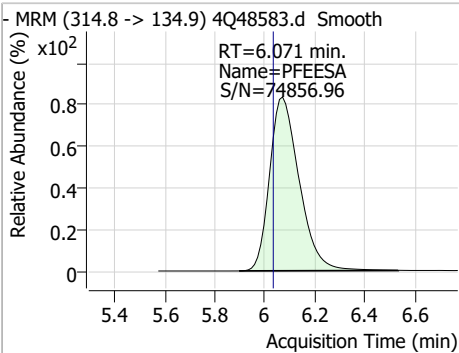
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Perfluorinated Compounds by LC/MS/MS

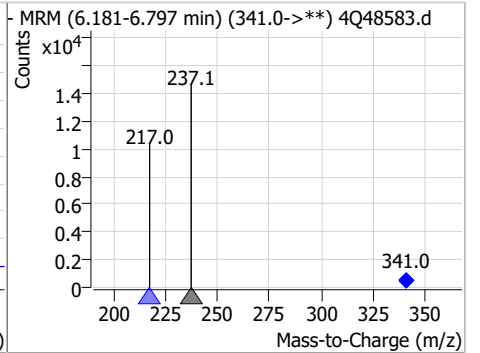
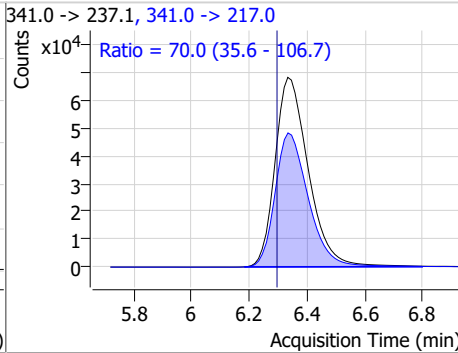
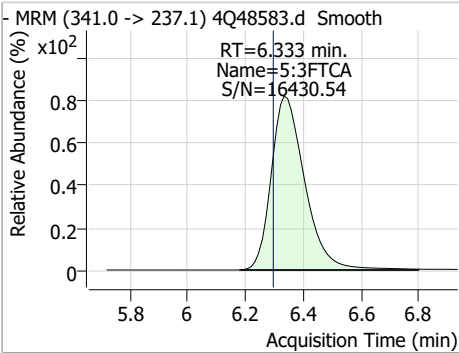
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	25.51	6.02	0.04	69579	284.9 -> 184.9	11.2	6.5	19.6



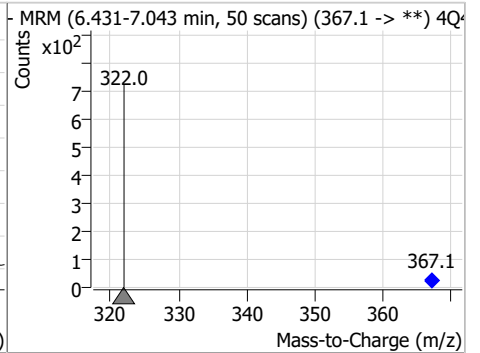
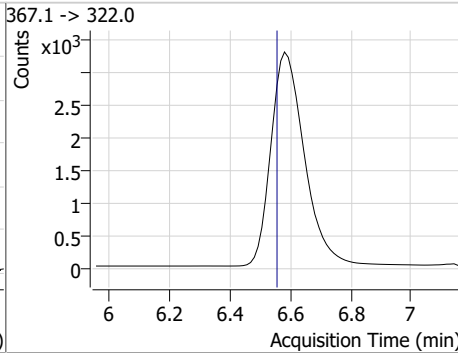
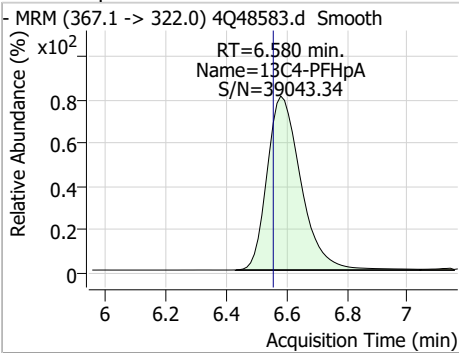
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	22.08	6.07	0.04	189363	314.8 -> 82.9	3.6	1.7	5.2



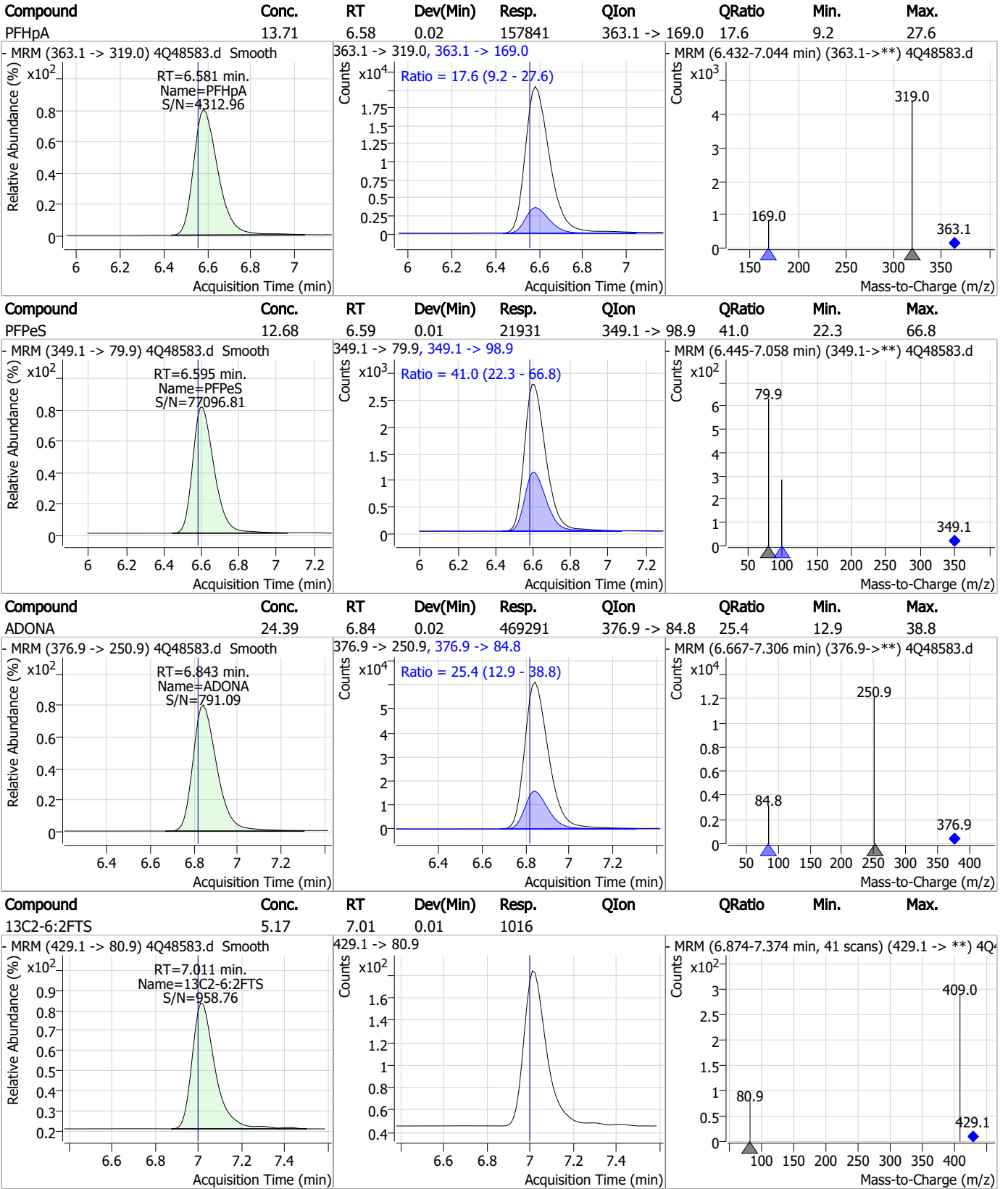
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	314.62	6.33	0.04	548138	341.0 -> 217.0	70.0	35.6	106.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.54	6.58	0.02	25518				



Perfluorinated Compounds by LC/MS/MS

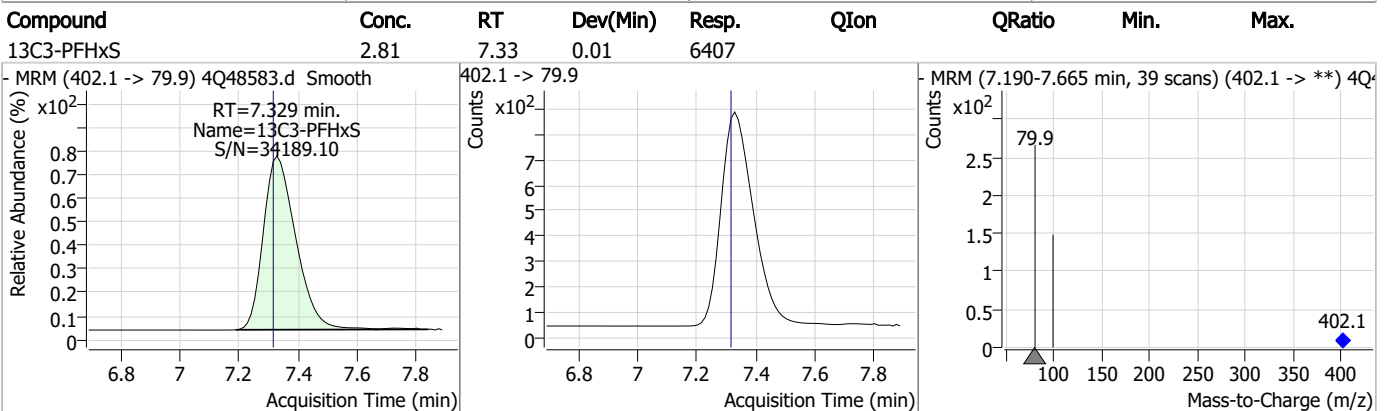
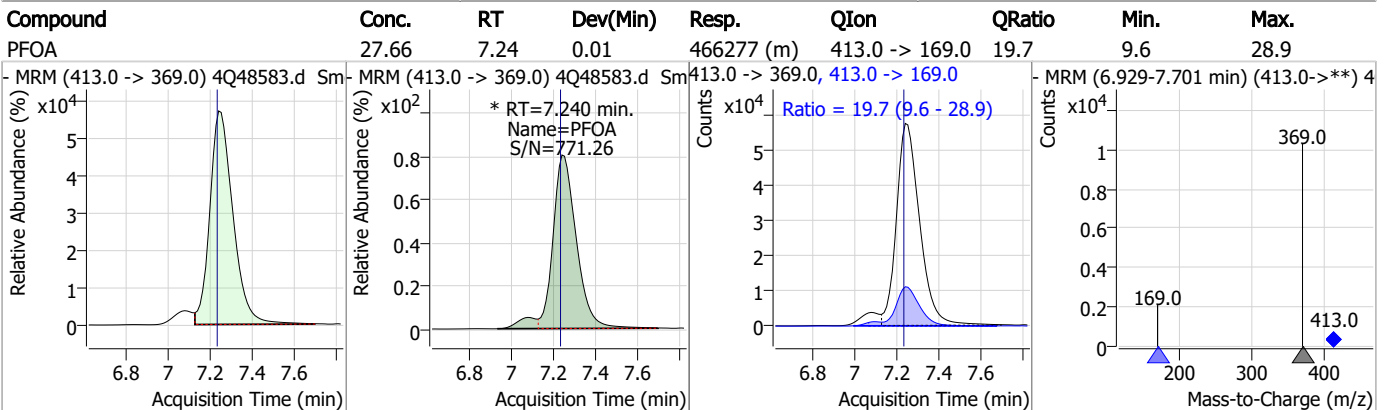
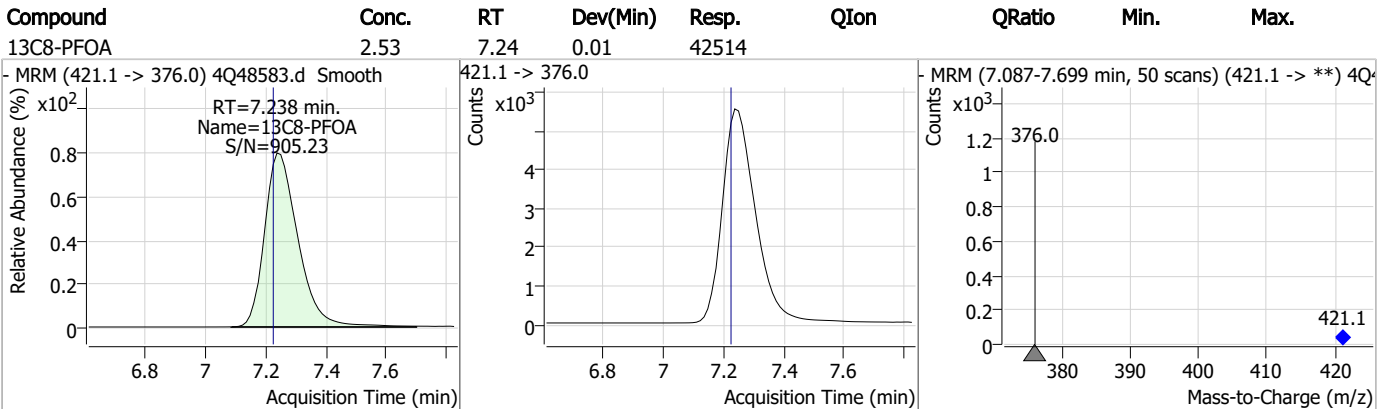
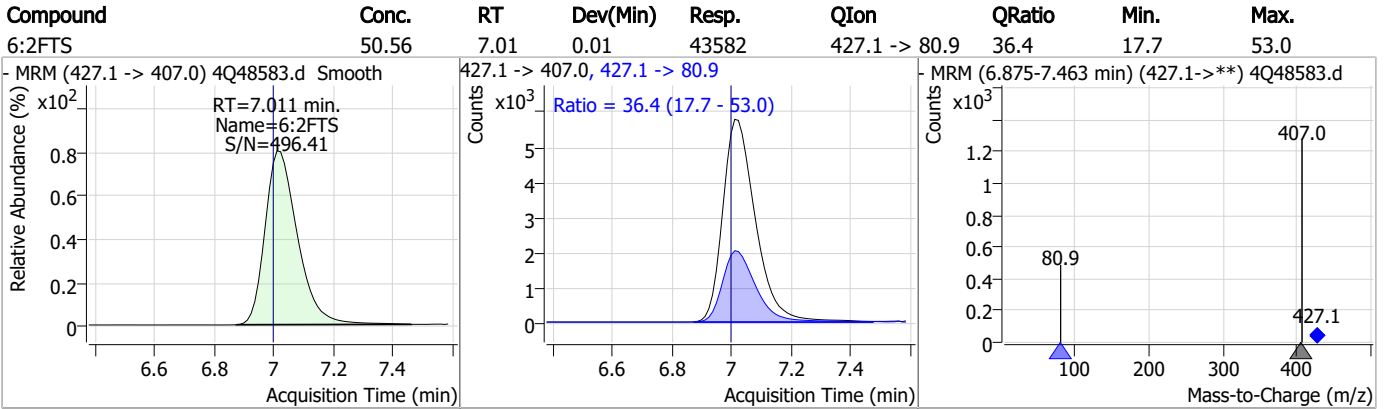


7.6.2

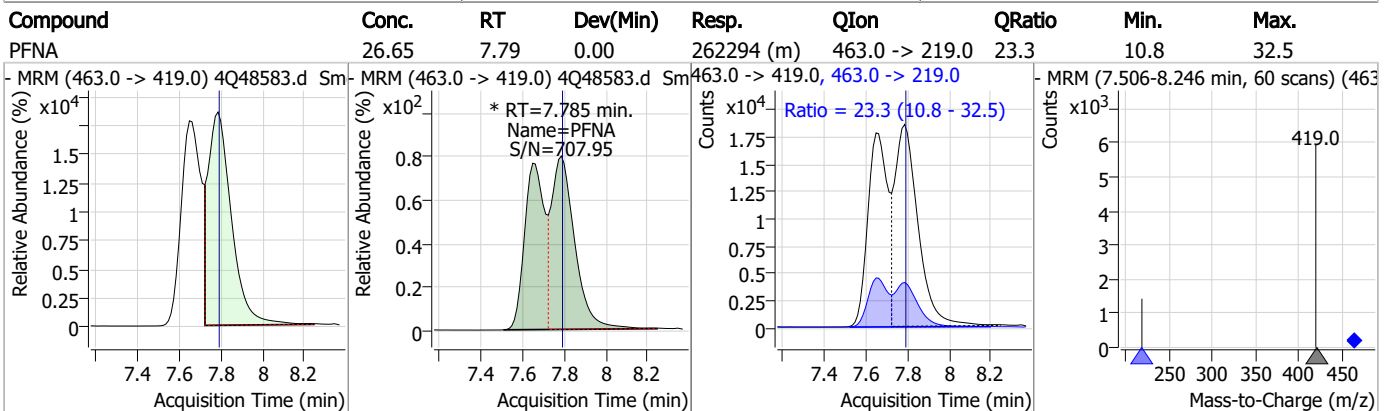
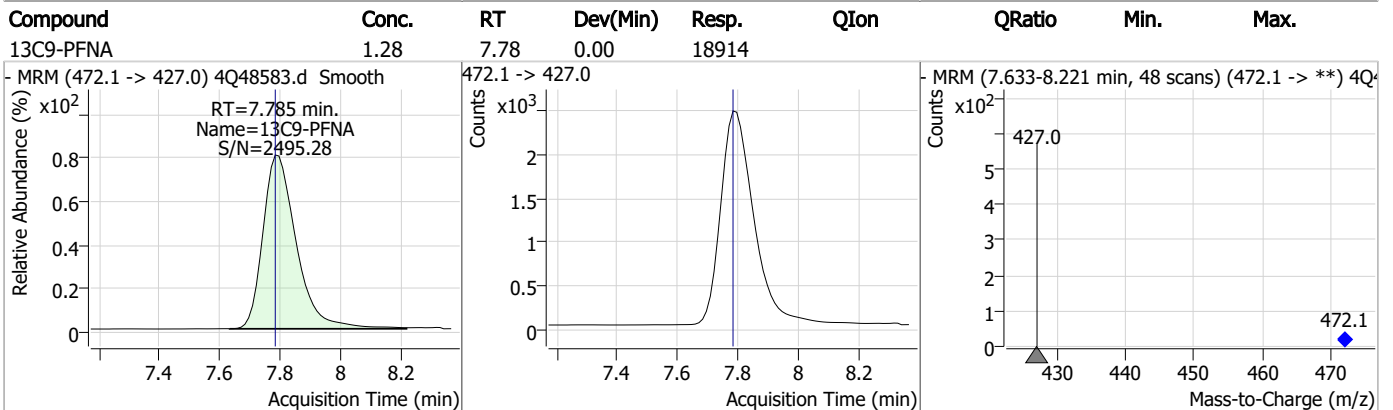
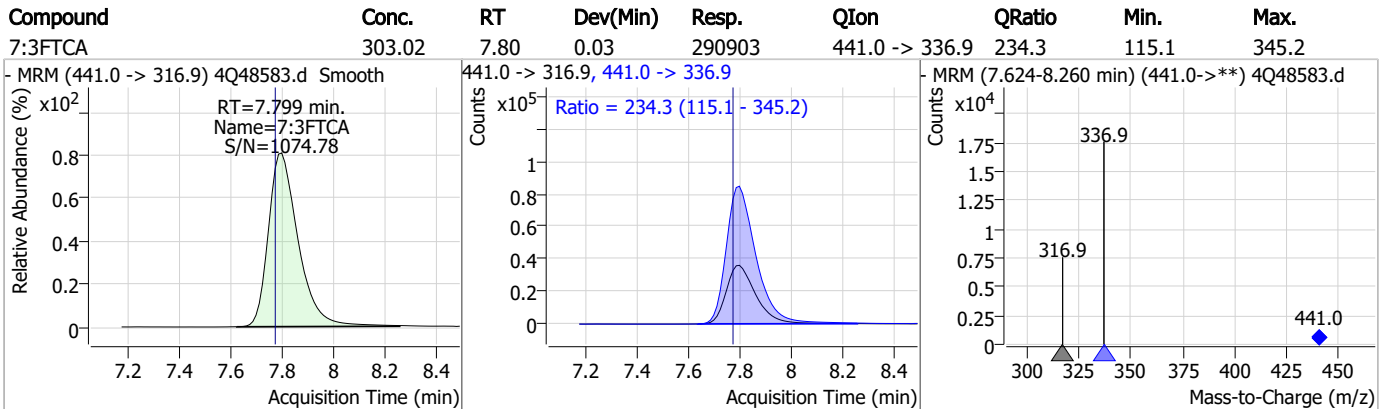
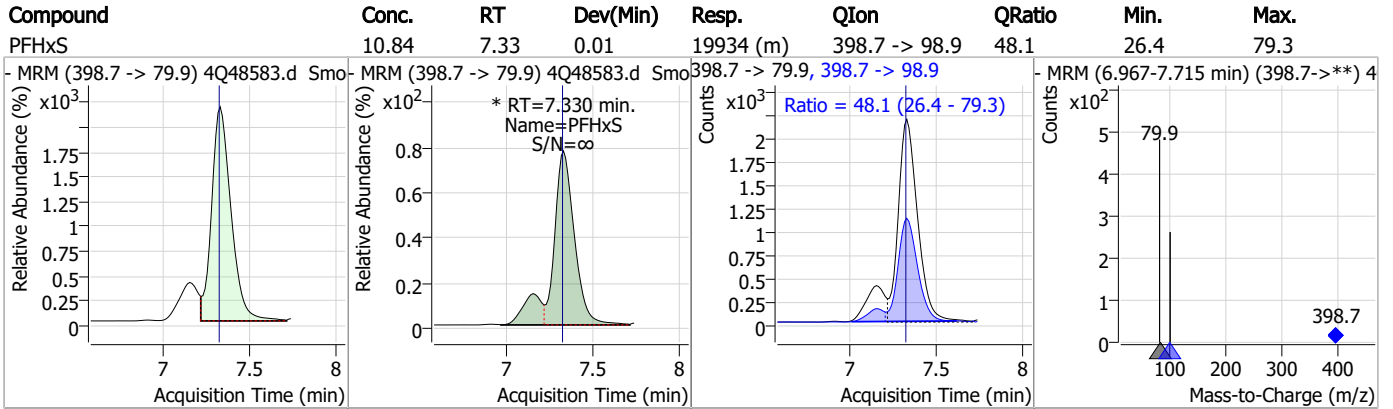
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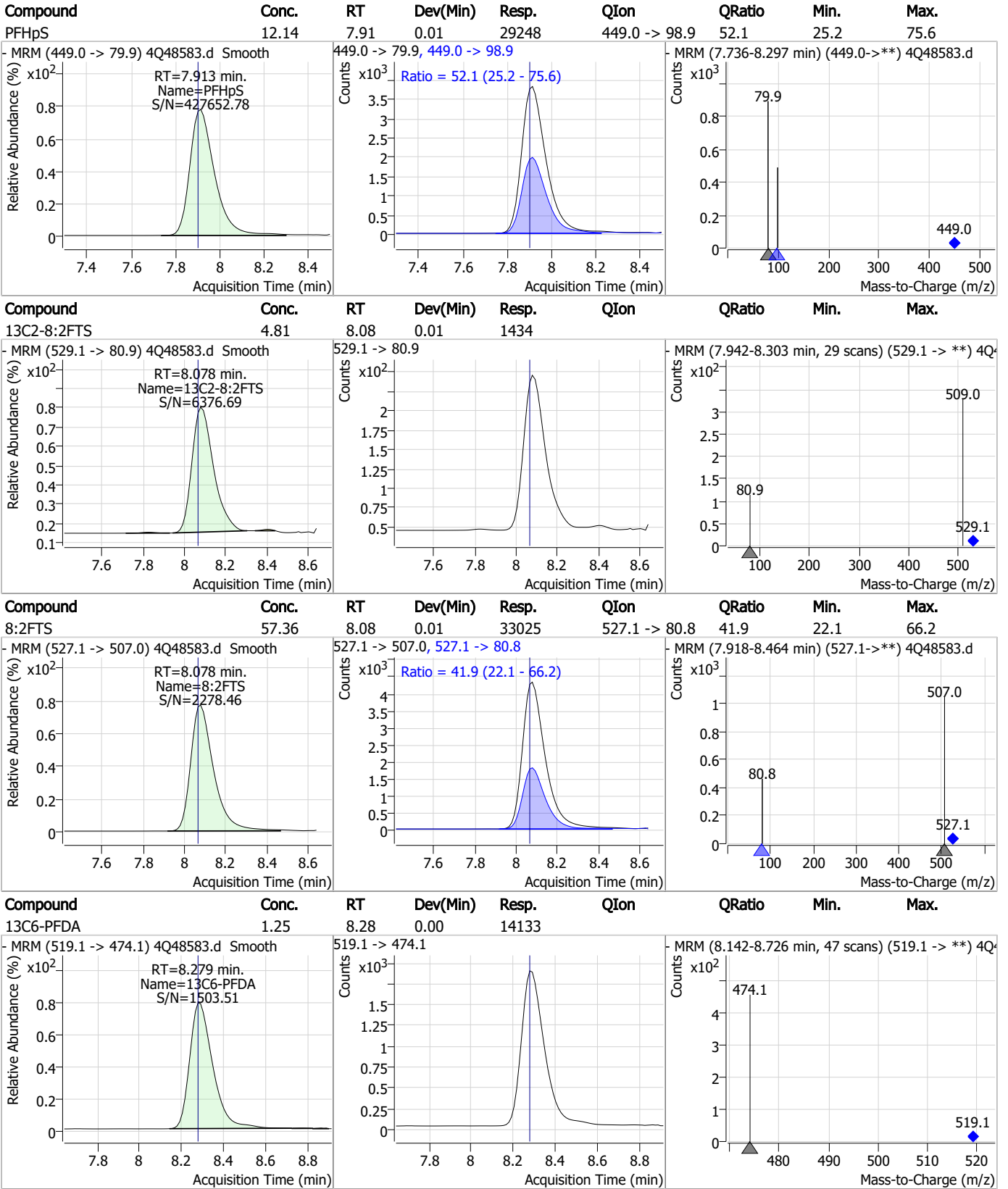
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



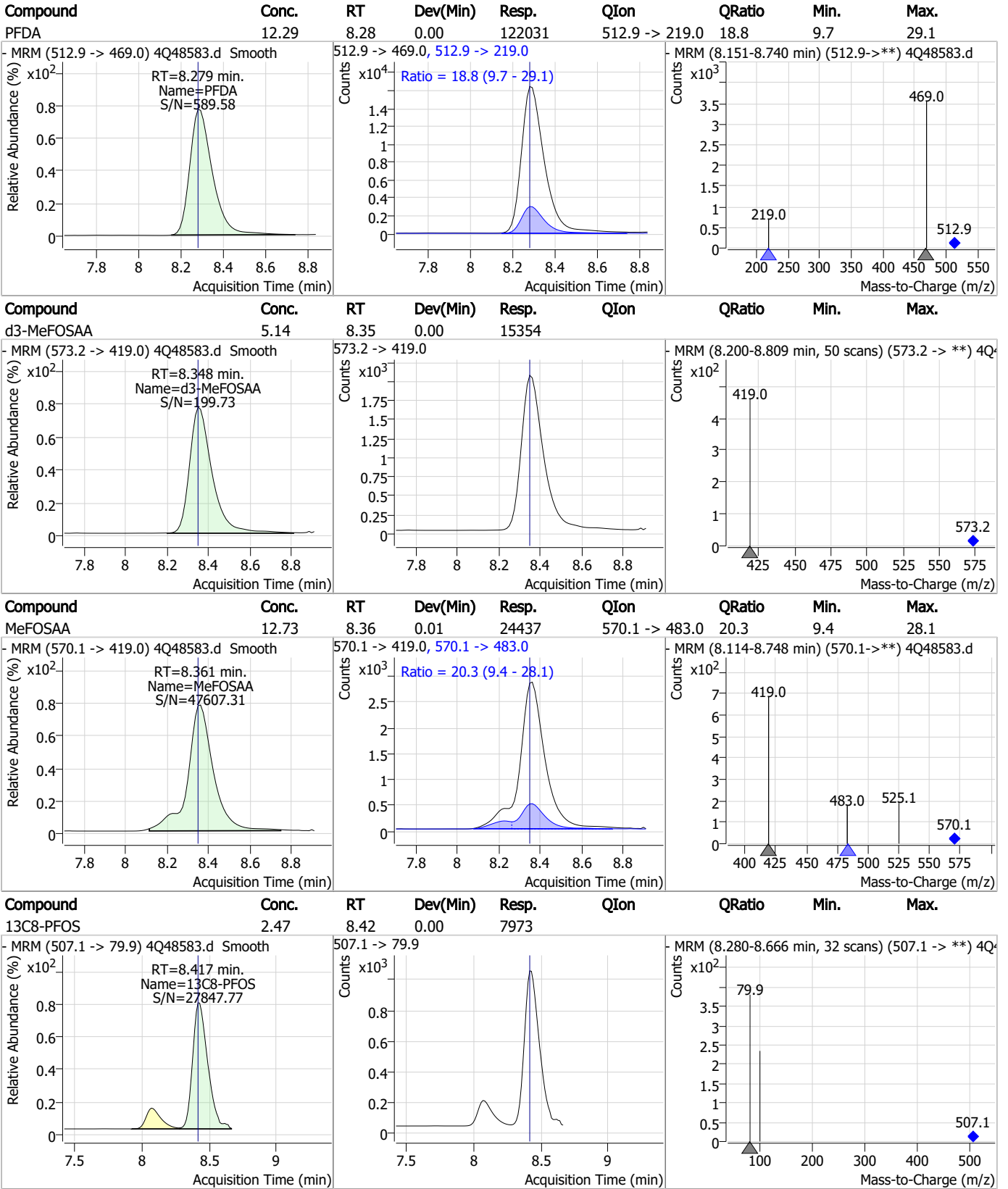
Perfluorinated Compounds by LC/MS/MS



7.6.2

7

Perfluorinated Compounds by LC/MS/MS

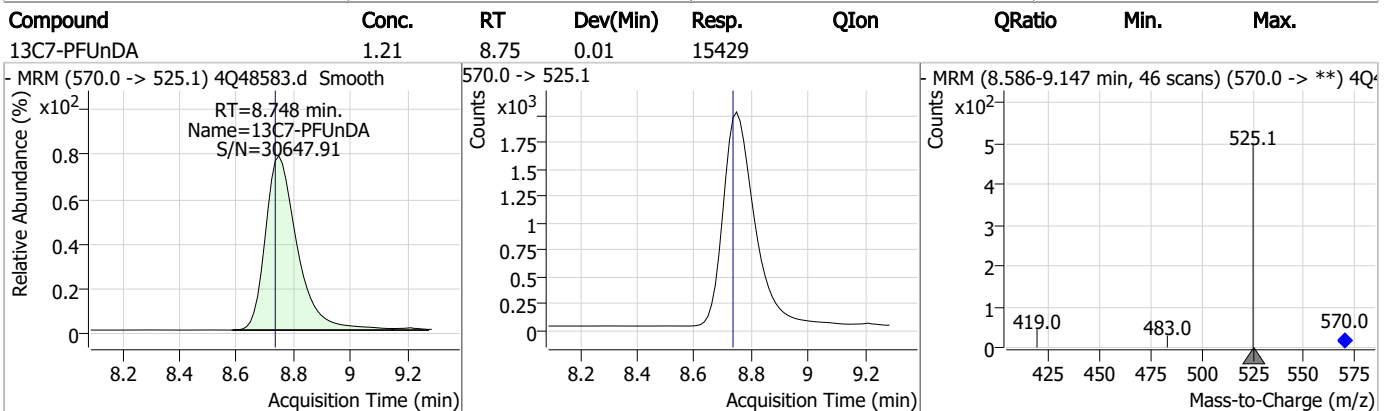
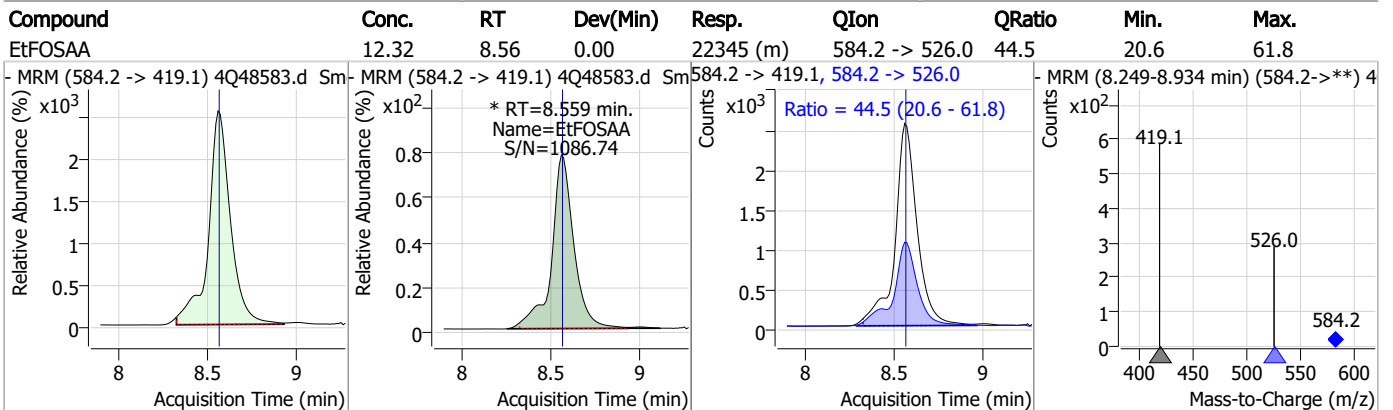
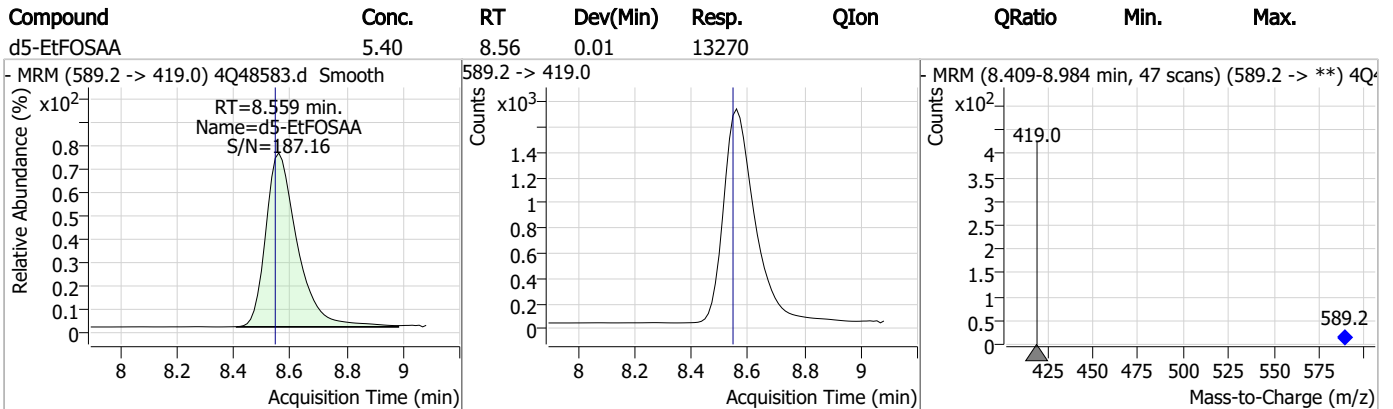
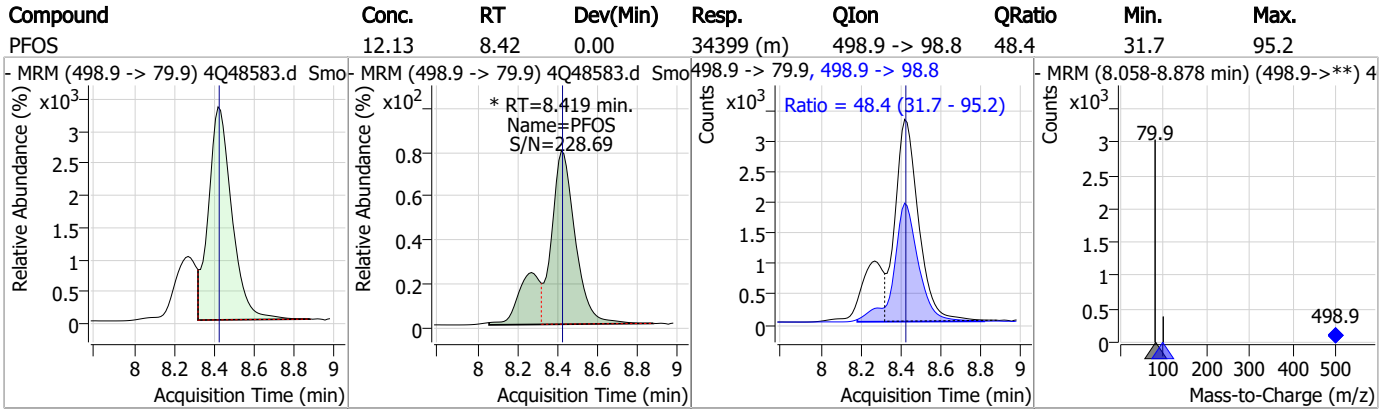


7.6.2

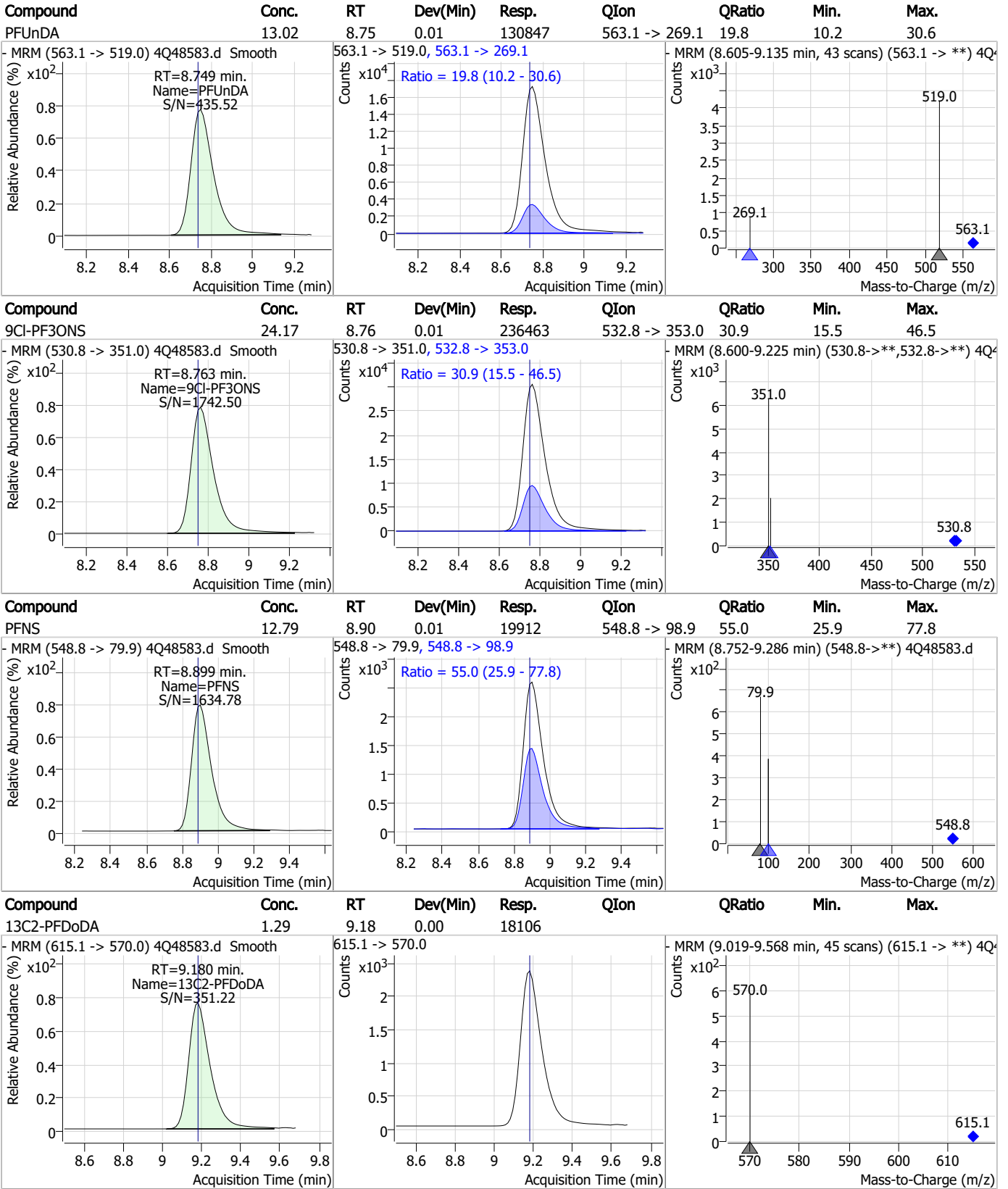
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Perfluorinated Compounds by LC/MS/MS



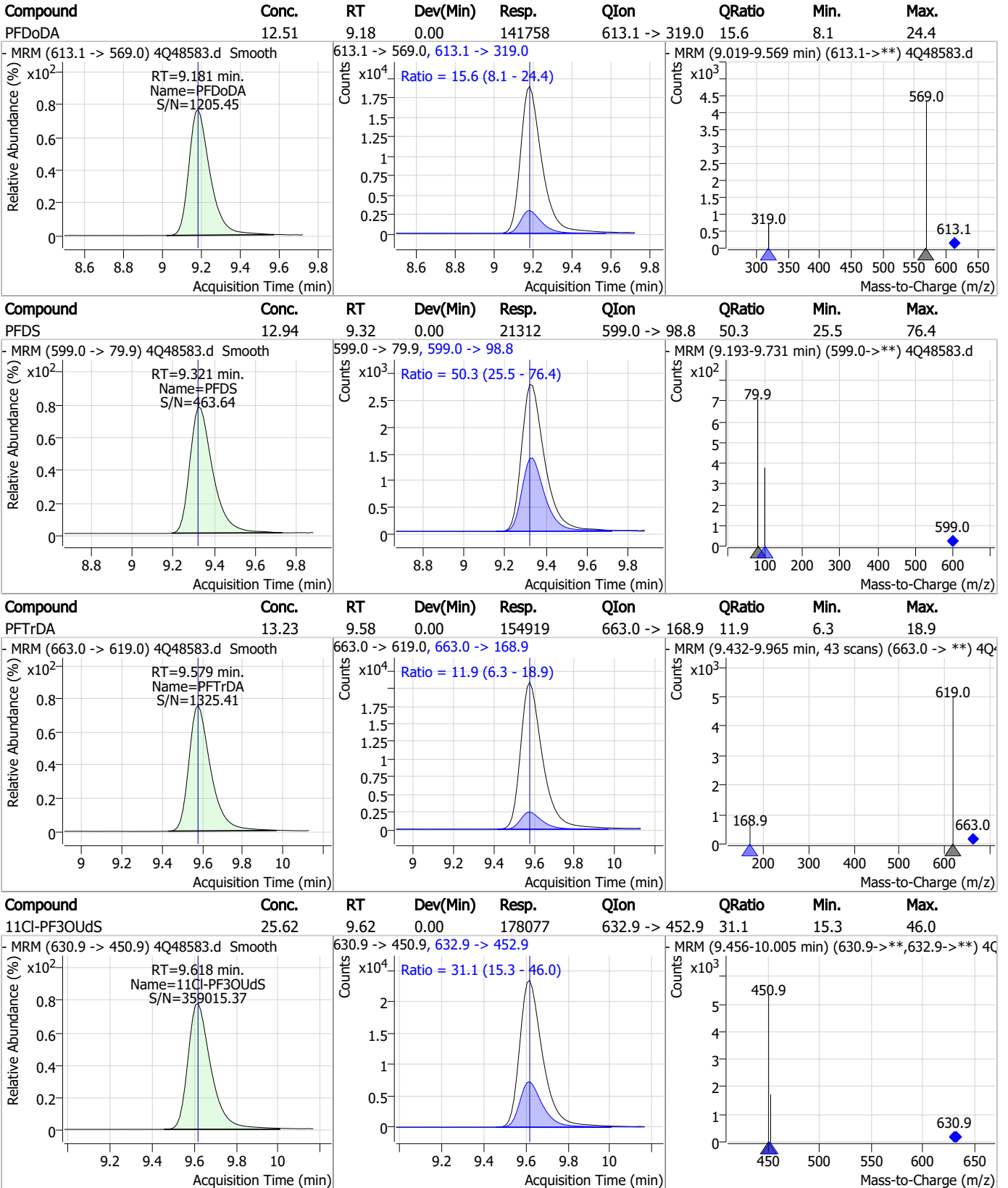
Perfluorinated Compounds by LC/MS/MS



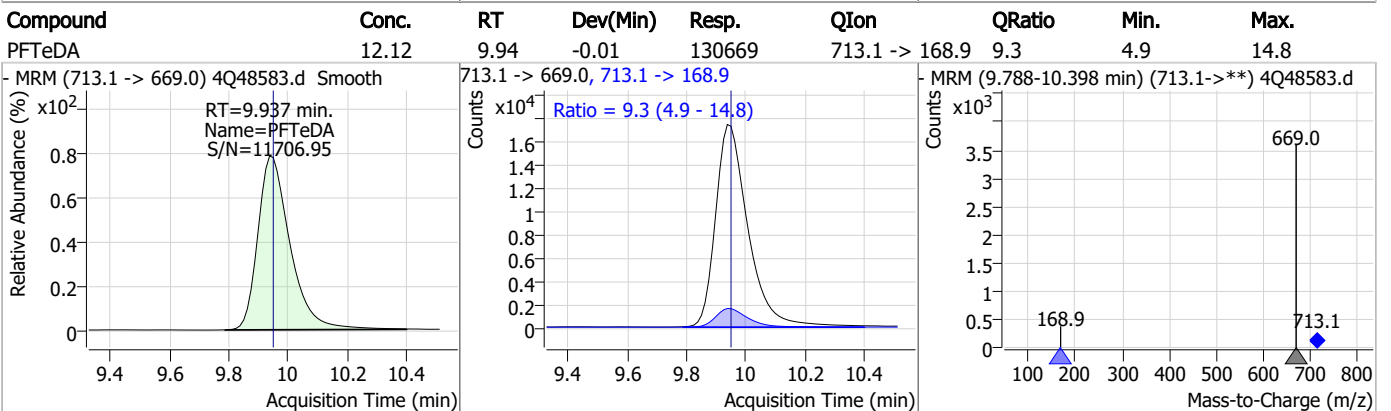
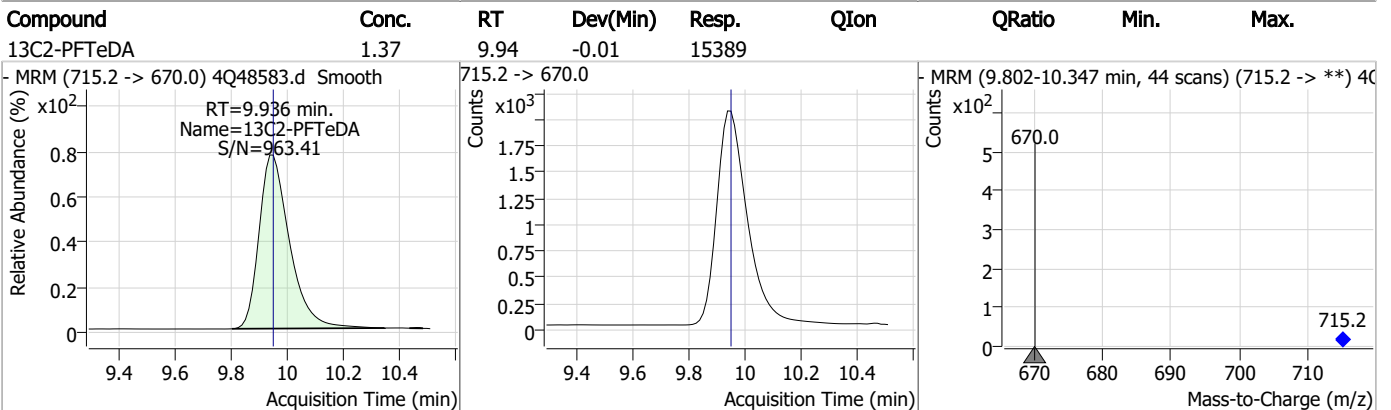
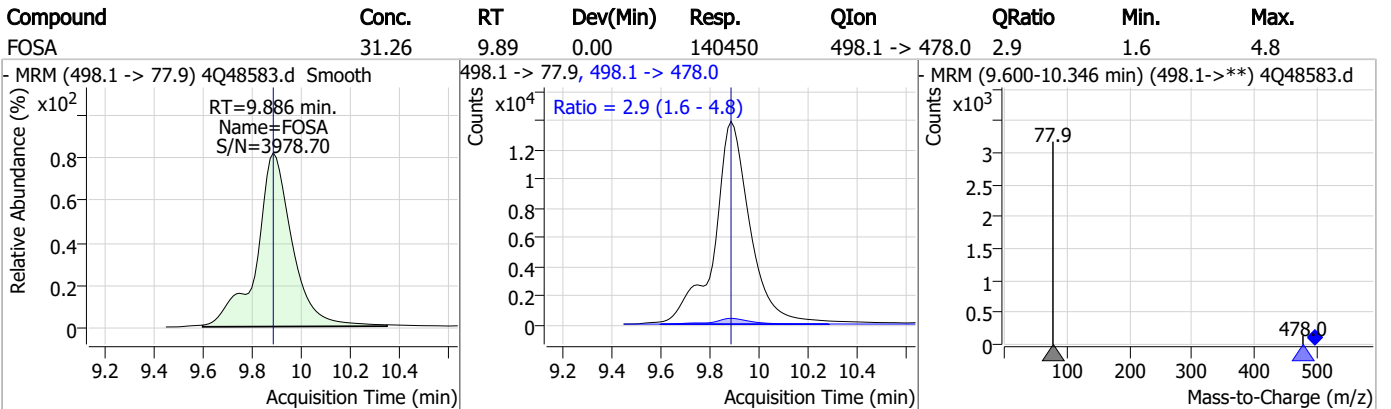
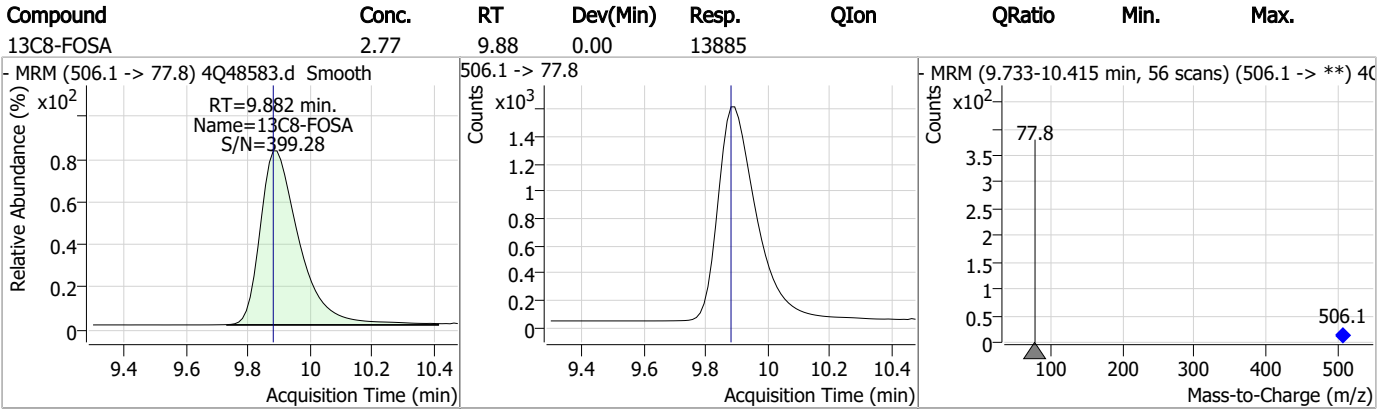
7.6.2

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Perfluorinated Compounds by LC/MS/MS

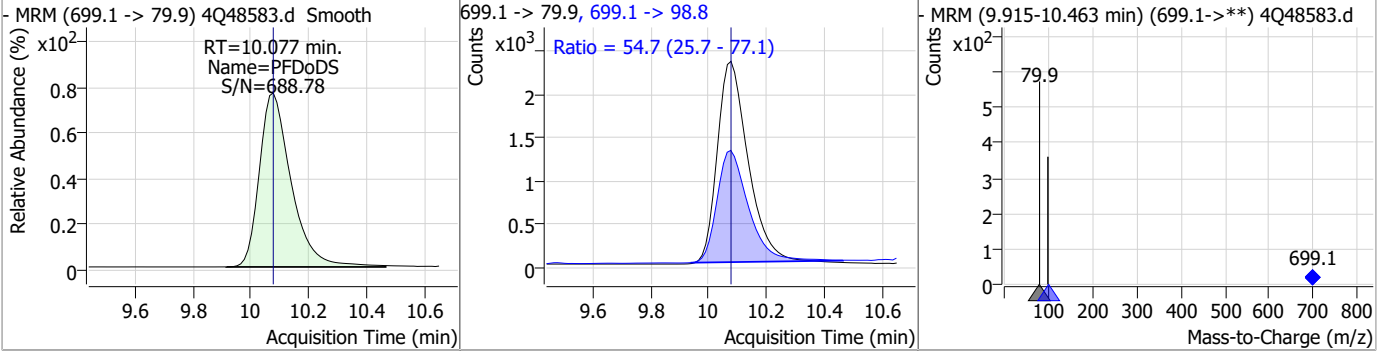


Perfluorinated Compounds by LC/MS/MS

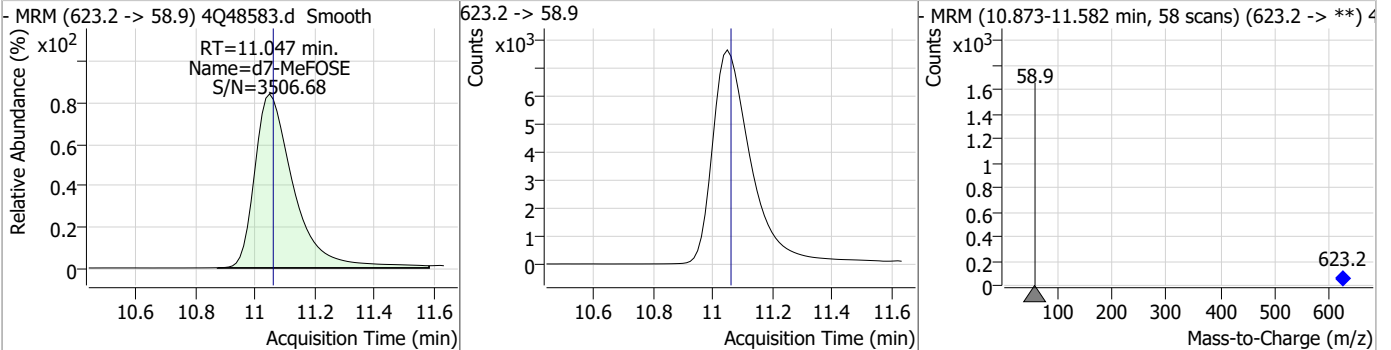


Perfluorinated Compounds by LC/MS/MS

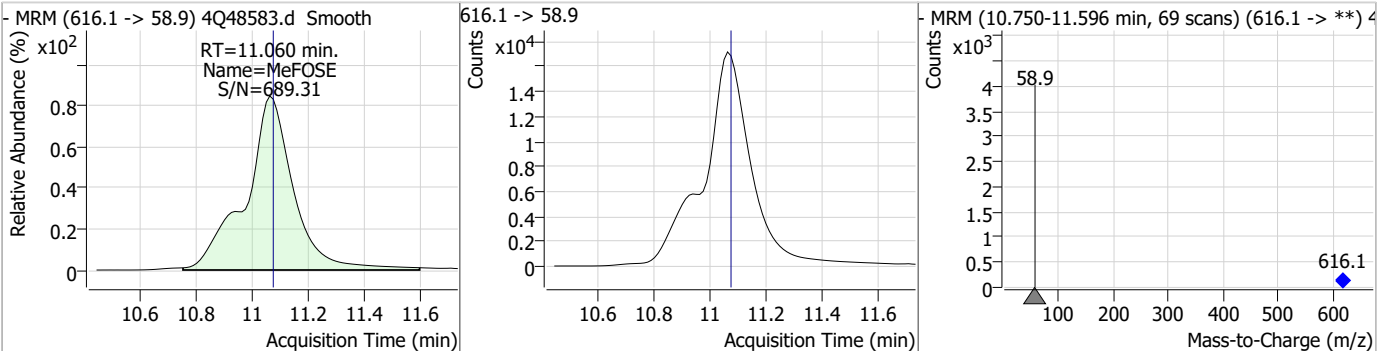
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	14.00	10.08	0.00	17744	699.1 -> 98.8	54.7	25.7	77.1



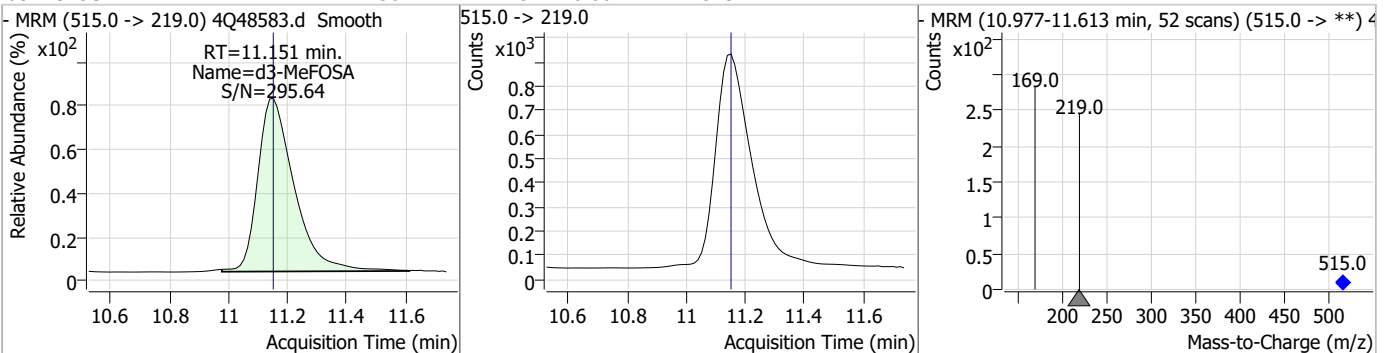
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	29.37	11.05	-0.01	69436				



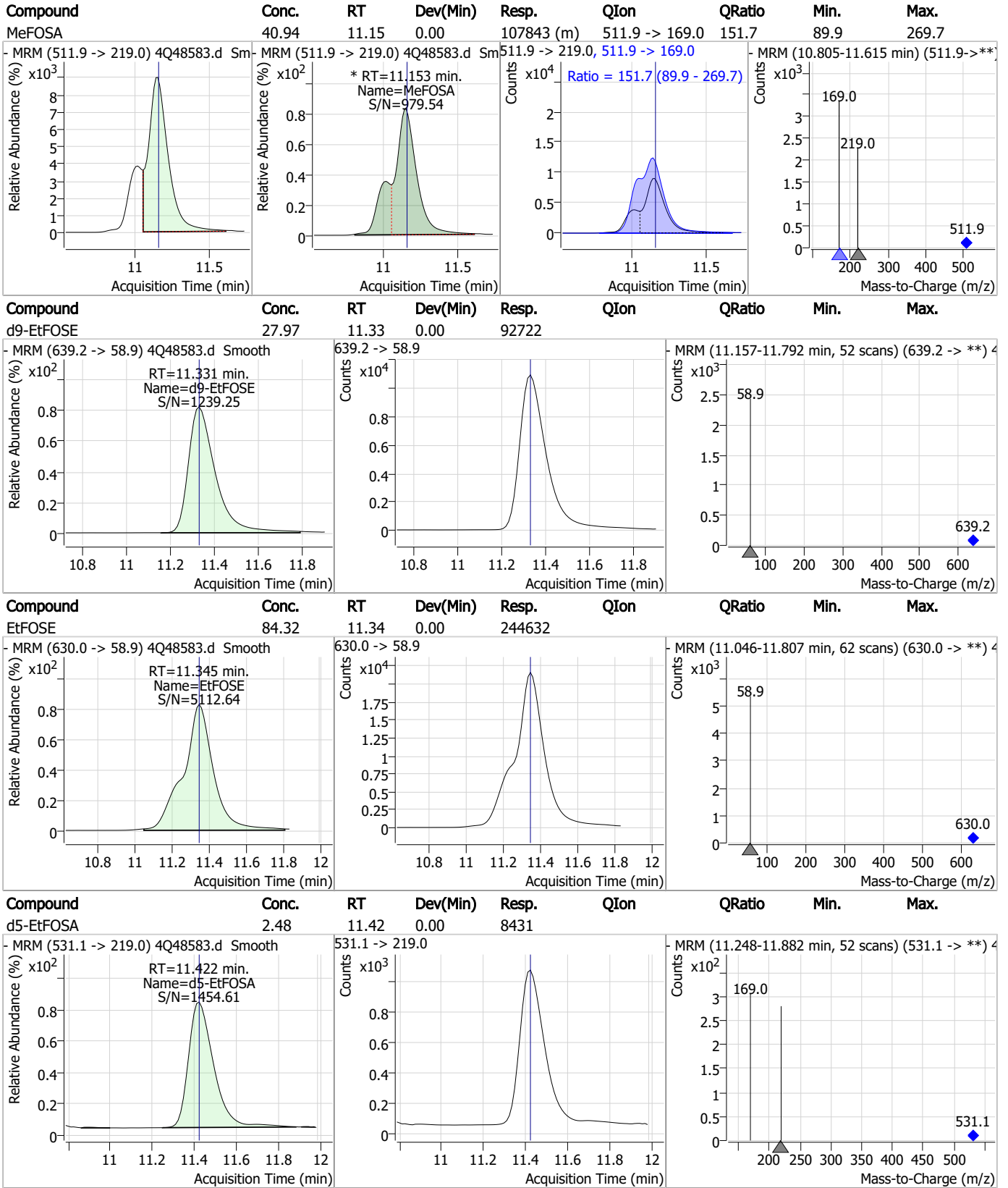
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	82.56	11.06	-0.01	204990				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.56	11.15	0.00	7573				



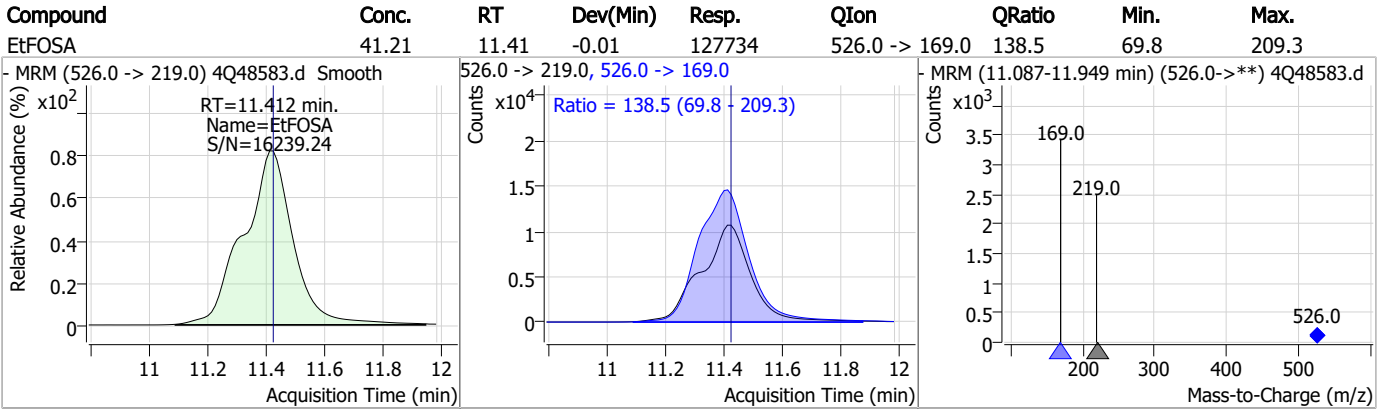
Perfluorinated Compounds by LC/MS/MS



7.6.2

7

Perfluorinated Compounds by LC/MS/MS



7.6.2

7

Manual Integration Approval Summary

Sample Number: S4Q711-RT Method: EPA DRAFT 1633
Lab FileID: 4Q48583.D Analyst approved: 08/09/23 11:54 Anna Ludwig
Injection Time: 08/07/23 15:56 Supervisor approved: 08/09/23 14:46 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.24	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.33	Split peak
Perfluorononanoic acid	375-95-1		7.79	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.42	Split peak
EtFOSAA	2991-50-6		8.56	Split peak
MeFOSA	31506-32-8		11.15	Split peak

7.6.2.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)
 Natasha Gumtie
 08/11/23 11:37

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48760.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/9/2023 2:15:43 PM
 Sample Name : RT TDCA
 Vial : P1-B1
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q713_TDCA.batch.bin
 Sample Information : OP98180,S4Q713,500,,,5.0,1,water

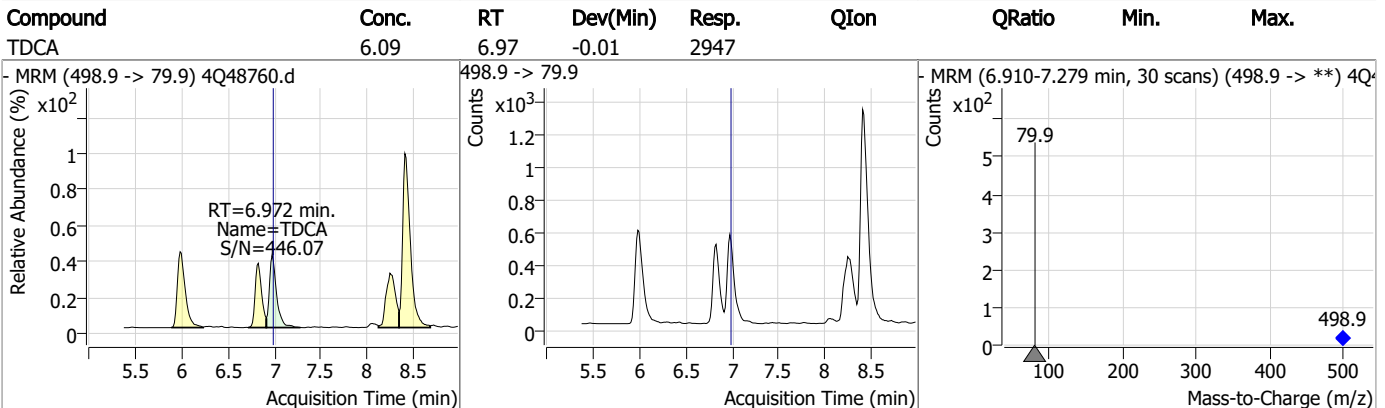
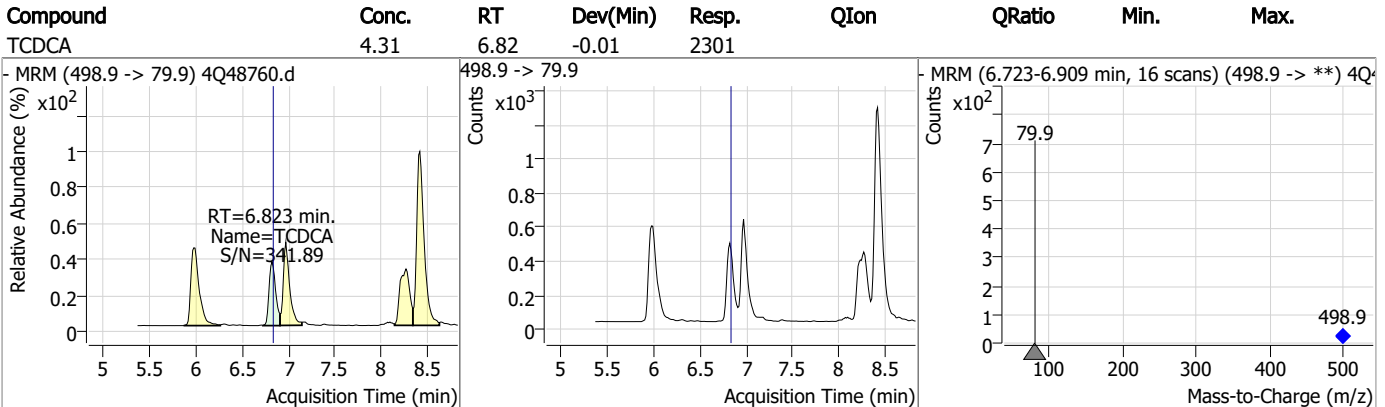
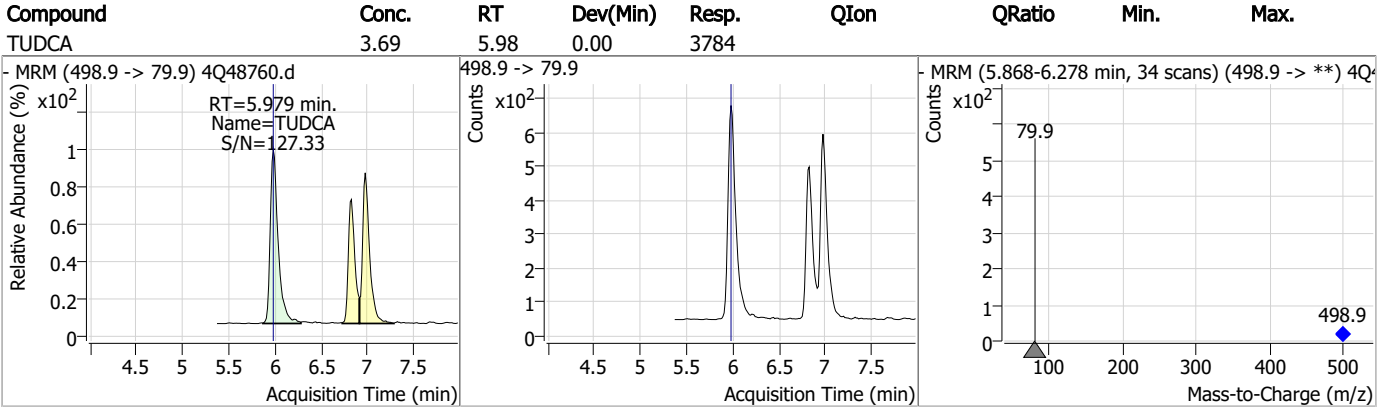
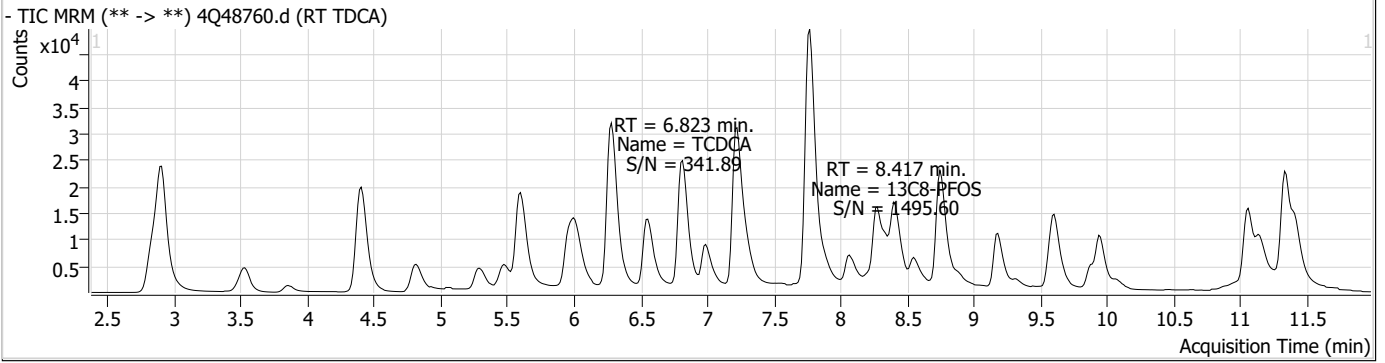
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.417	507.1 -> 79.9	11578	2.50	µg/L	-0.037	
13C4-PFOS	8.418	502.8 -> 79.9	12106	2.50	µg/L	-0.036	
System Monitoring Compounds							
13C8-PFOS	8.417	507.1 -> 79.9	11578	2.43	µg/L	-0.037	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.0%				
Target Compounds							
PFOS	8.419	498.9 -> 79.9 498.9 -> 98.8	10591 4681	2.68	µg/L	m	83
TCDCa	6.823	498.9 -> 79.9	2301	4.31	ng/ml		100
TDCA	6.972	498.9 -> 79.9	2947	6.09	ng/ml		100
TUDCA	5.979	498.9 -> 79.9	3784	3.69	ng/ml		100

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

7.6.3

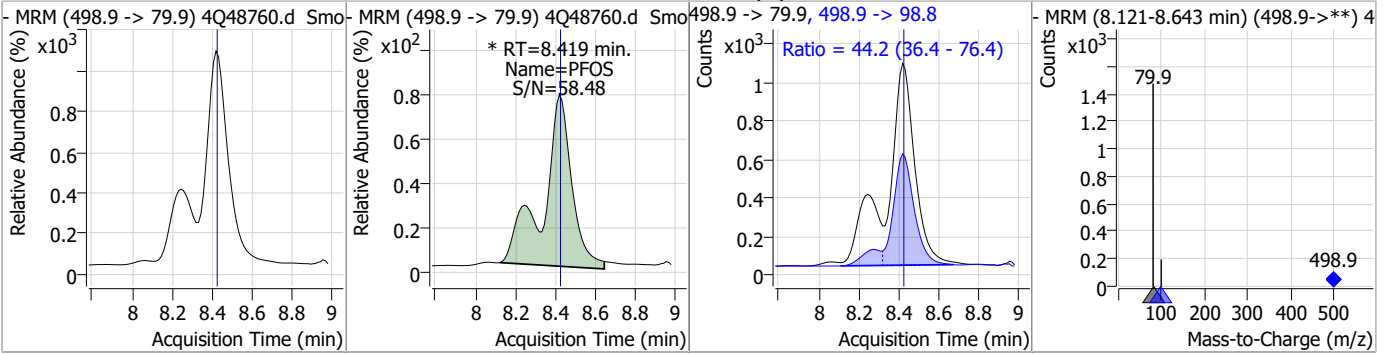
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Perfluorinated Compounds by LC/MS/MS

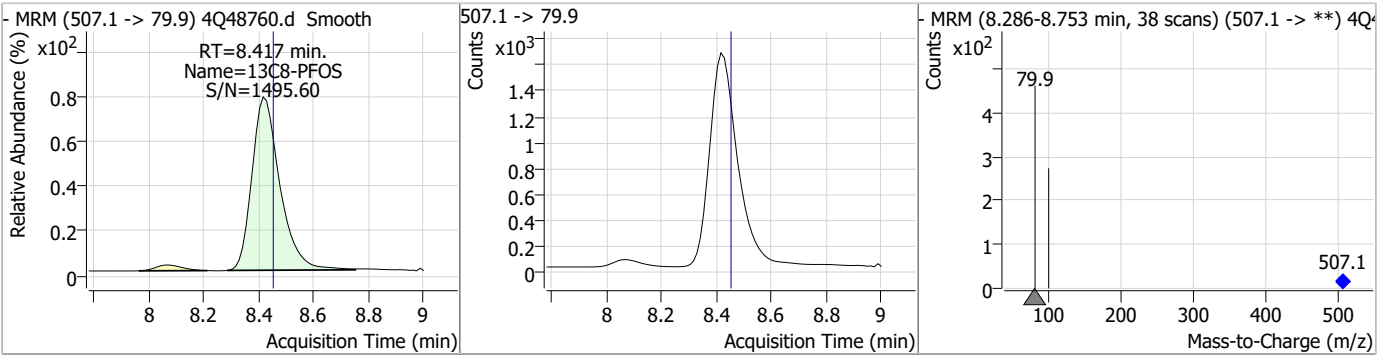


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.68	8.42	0.00	10591 (m)	498.9 -> 98.8	44.2	36.4	76.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.43	8.42	-0.04	11578				



7.6.3

7

Manual Integration Approval Summary

Sample Number: S4Q713-RT Method: EPA DRAFT 1633
Lab FileID: 4Q48760.D Analyst approved: 08/11/23 10:12 Anna Ludwig
Injection Time: 08/09/23 14:15 Supervisor approved: 08/11/23 11:37 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.42	Split peak

7.6.3.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48761.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/9/2023 2:31:48 PM
 Sample Name : RT br/lr
 Vial : P1-B2
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q713.batch.bin
 Sample Information : OP98180,S4Q713,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	97126	10.00 µg/L	0.000
M5-PFPeA	4.412	268.3 -> 223.0	60393	5.00 µg/L	0.000
M5-PFHxA	5.610	318.0 -> 273.0	37670	2.50 µg/L	0.000
M4-PFHpA	6.568	367.1 -> 322.0	26855	2.50 µg/L	0.012
M8-PFOA	7.238	421.1 -> 376.0	44524	2.50 µg/L	0.012
M9-PFNA	7.785	472.1 -> 427.0	20803	1.25 µg/L	0.000
M6-PFDA	8.279	519.1 -> 474.1	14435	1.25 µg/L	0.000
M7-PFUnDA	8.748	570.0 -> 525.1	17108	1.25 µg/L	0.012
M2-PFDoDA	9.180	615.1 -> 570.0	19098	1.25 µg/L	0.000
M2-PFTeDA	9.961	715.2 -> 670.0	15066	1.25 µg/L	0.013
M8-FOSA	9.894	506.1 -> 77.8	13497	2.50 µg/L	0.012
M3-PFBS	5.489	302.1 -> 79.9	9238	2.50 µg/L	0.000
M3-PFHxS	7.317	402.1 -> 79.9	6702	2.50 µg/L	0.000
M8-PFOS	8.417	507.1 -> 79.9	8970	2.50 µg/L	0.000
M2-4:2FTS	5.296	329.1 -> 80.9	783	5.00 µg/L	0.000
M2-6:2FTS	6.998	429.1 -> 80.9	1532	5.00 µg/L	0.000
M2-8:2FTS	8.078	529.1 -> 80.9	2369	5.00 µg/L	0.013
M3-MeFOSAA	8.348	573.2 -> 419.0	18190	5.00 µg/L	0.000
M3-HFPO-DA	5.989	286.9 -> 168.9	32325	10.00 µg/L	0.012
M5-EtFOSAA	8.559	589.2 -> 419.0	15135	5.00 µg/L	0.013
M7-MeFOSE	11.072	623.2 -> 58.9	57344	25.00 µg/L	0.012
M9-EtFOSE	11.344	639.2 -> 58.9	81171	25.00 µg/L	0.013
M5-EtFOSA	11.435	531.1 -> 219.0	8863	2.50 µg/L	0.012
M3-MeFOSA	11.164	515.0 -> 219.0	8044	2.50 µg/L	0.012
13C4-PFOS	8.418	502.8 -> 79.9	8800	2.50 µg/L	0.000
13C3-PFBA	2.916	216.0 -> 172.0	55301	5.00 µg/L	0.012
18O2-PFHxS	7.316	403.0 -> 83.9	4434	2.50 µg/L	0.000
13C4-PFOA	7.239	417.1 -> 372.0	54234	2.50 µg/L	0.012
13C2-PFDA	8.279	515.1 -> 470.1	18579	1.25 µg/L	0.000
13C5-PFNA	7.785	468.0 -> 423.0	22110	1.25 µg/L	0.000
13C2-PFHxA	5.611	315.1 -> 270.0	36156	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.296	329.1 -> 80.9	783	7.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 141.4%		
13C2-6:2FTS	6.998	429.1 -> 80.9	1532	7.24 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 144.7%		
13C2-8:2FTS	8.078	529.1 -> 80.9	2369	7.37 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 147.4%		
13C2-PFDoDA	9.180	615.1 -> 570.0	19098	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.0%		
13C2-PFTeDA	9.961	715.2 -> 670.0	15066	1.18 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.3%		
13C3-PFBS	5.489	302.1 -> 79.9	9238	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C3-PFHxS	7.317	402.1 -> 79.9	6702	2.73 µg/L	0.000

7.6.4
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.2%	
13C4-PFBA	2.911	216.8 -> 171.9	97126	10.28 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.8%	
13C4-PFHpA	6.568	367.1 -> 322.0	26855	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C5-PFHxA	5.610	318.0 -> 273.0	37670	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C5-PFPeA	4.412	268.3 -> 223.0	60393	4.78 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.6%	
13C6-PFDA	8.279	519.1 -> 474.1	14435	1.12 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 89.8%	
13C7-PFUnDA	8.748	570.0 -> 525.1	17108	1.18 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.5%	
13C8-FOSA	9.894	506.1 -> 77.8	13497	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C8-PFOA	7.238	421.1 -> 376.0	44524	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C8-PFOS	8.417	507.1 -> 79.9	8970	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C9-PFNA	7.785	472.1 -> 427.0	20803	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.4%	
d3-MeFOSAA	8.348	573.2 -> 419.0	18190	5.57 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 111.4%	
13C3-HFPO-DA	5.989	286.9 -> 168.9	32325	9.38 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 93.8%	
d3-MeFOSA	11.164	515.0 -> 219.0	8044	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
d5-EtFOSAA	8.559	589.2 -> 419.0	15135	5.64 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 112.7%	
d7-MeFOSE	11.072	623.2 -> 58.9	57344	22.19 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 88.8%	
d9-EtFOSE	11.344	639.2 -> 58.9	81171	22.40 µg/L	0.013
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.6%	
d5-EtFOSA	11.435	531.1 -> 219.0	8863	2.38 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.2%	
Target Compounds					QValue
4:2FTS	5.297	327.1 -> 307.0	47373	44.88 µg/L	98
		327.1 -> 80.9	19927		
6:2FTS	6.999	427.1 -> 407.0	62522	48.09 µg/L	100
		427.1 -> 80.9	21962		
8:2FTS	8.078	527.1 -> 507.0	52220	54.91 µg/L	92
		527.1 -> 80.8	20158		
EtFOSAA	8.560	584.2 -> 419.1	25969	12.56 µg/L	m 96
		584.2 -> 526.0	11360		
FOSA	9.898	498.1 -> 77.9	137375	31.45 µg/L	m 99
		498.1 -> 478.0	4155		
MeFOSAA	8.349	570.1 -> 419.0	29535	12.99 µg/L	97
		570.1 -> 483.0	5905		
PFBA	2.920	212.8 -> 168.9	113143	50.59 µg/L	100
PFBS	5.490	298.7 -> 79.9	27574	12.22 µg/L	94
		298.7 -> 98.8	11198		
PFDA	8.279	512.9 -> 469.0	137404	13.54 µg/L	98
		512.9 -> 219.0	25176		
PFDoDA	9.181	613.1 -> 569.0	153102	12.81 µg/L	98
		613.1 -> 319.0	23478		
PFDS	9.335	599.0 -> 79.9	22787	12.30 µg/L	100

7.6.4

7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.568	599.0 -> 98.8	11557	13.38	µg/L	100
		363.1 -> 319.0	162146			
PFHpS	7.901	363.1 -> 169.0	29516	11.77	µg/L	96
		449.0 -> 79.9	31913			
PFHxA	5.613	449.0 -> 98.9	17002	12.84	µg/L	99
		313.0 -> 269.0	139575			
PFHxS	7.318	313.0 -> 118.9	4301	11.34	µg/L	m
		398.7 -> 79.9	21812			
PFNA	7.647	398.7 -> 98.9	10926	26.73	µg/L	m
		463.0 -> 419.0	289393			
PFNS	8.899	463.0 -> 219.0	68986	12.37	µg/L	98
		548.8 -> 79.9	21678			
PFOA	7.240	548.8 -> 98.9	11576	29.44	µg/L	m
		413.0 -> 369.0	519882			
PFOS	8.419	413.0 -> 169.0	101762	11.92	µg/L	m
		498.9 -> 79.9	38054			
PFPeA	4.414	498.9 -> 98.8	18046	26.46	µg/L	100
		263.0 -> 219.0	277683			
PFPeS	6.582	349.1 -> 79.9	21108	11.66	µg/L	97
		349.1 -> 98.9	9045			
PFTeDA	9.962	713.1 -> 669.0	133792	12.68	µg/L	99
		713.1 -> 168.9	12813			
PFTrDA	9.591	663.0 -> 619.0	167952	13.60	µg/L	98
		663.0 -> 168.9	20144			
PFUnDA	8.748	563.1 -> 519.0	141488	12.70	µg/L	100
		563.1 -> 269.1	28862			
11CI-PF3OUdS	9.618	630.9 -> 450.9	188140	27.76	µg/L	99
		632.9 -> 452.9	56722			
9CI-PF3ONS	8.763	530.8 -> 351.0	256447	26.89	µg/L	99
		532.8 -> 353.0	78004			
ADONA	6.831	376.9 -> 250.9	495961	26.44	µg/L	99
		376.9 -> 84.8	126864			
HFPO-DA	5.990	284.9 -> 168.9	69028	25.95	µg/L	97
		284.9 -> 184.9	8119			
3:3FTCA	3.880	241.0 -> 177.0	34491	61.11	µg/L	99
		241.0 -> 117.0	3242			
5:3FTCA	6.308	341.0 -> 237.1	564584	317.35	µg/L	99
		341.0 -> 217.0	395407			
7:3FTCA	7.774	441.0 -> 316.9	312013	318.27	µg/L	97
		441.0 -> 336.9	731099			
EtFOSA	11.437	526.0 -> 219.0	141909	43.55	µg/L	98
		526.0 -> 169.0	195288			
EtFOSE	11.357	630.0 -> 58.9	220717	86.90	µg/L	100
		511.9 -> 219.0	116864			
MeFOSA	11.166	511.9 -> 169.0	168401	41.77	µg/L	m
		616.1 -> 58.9	175890			
MeFOSE	11.085	699.1 -> 79.9	17824	85.77	µg/L	m
		699.1 -> 98.8	9790			
PFDoDS	10.089	295.0 -> 201.0	18143	12.50	µg/L	95
		295.0 -> 84.9	4876			
NFDHA	5.491	279.0 -> 85.1	152727	25.97	µg/L	100
		229.0 -> 84.9	147163			
PFMBA	4.828	314.8 -> 134.9	196770	22.47	µg/L	100
		314.8 -> 82.9	6668			

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

7.6.4
7

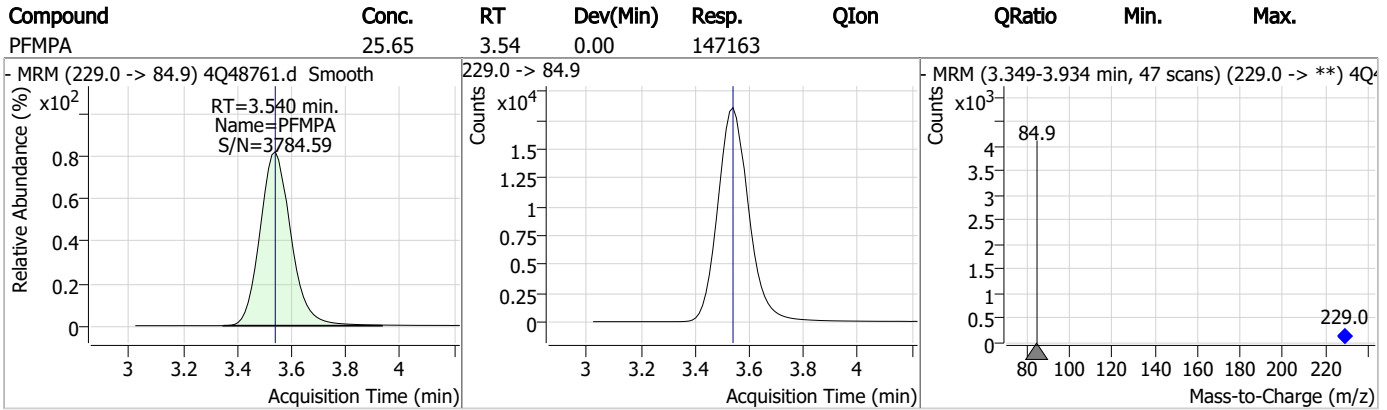
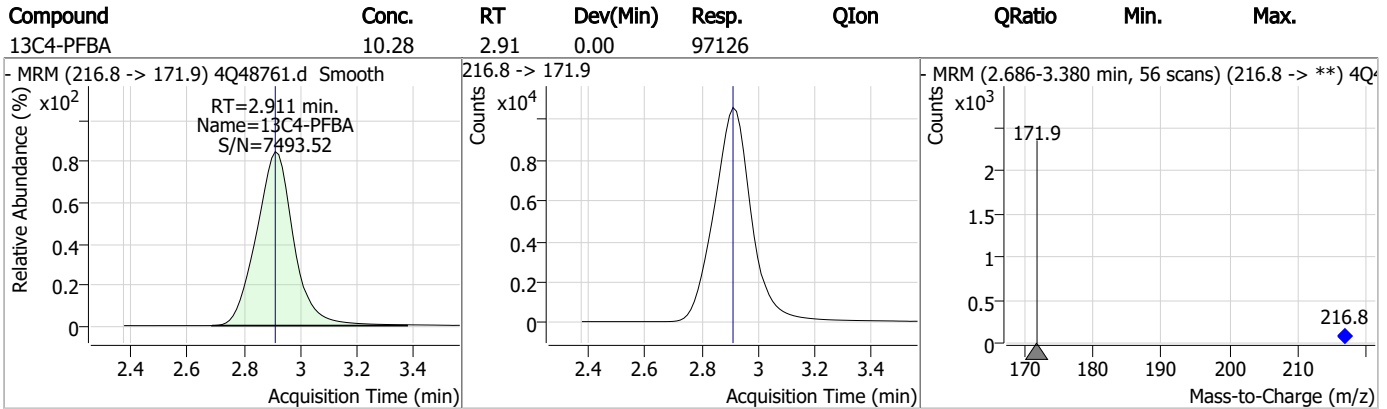
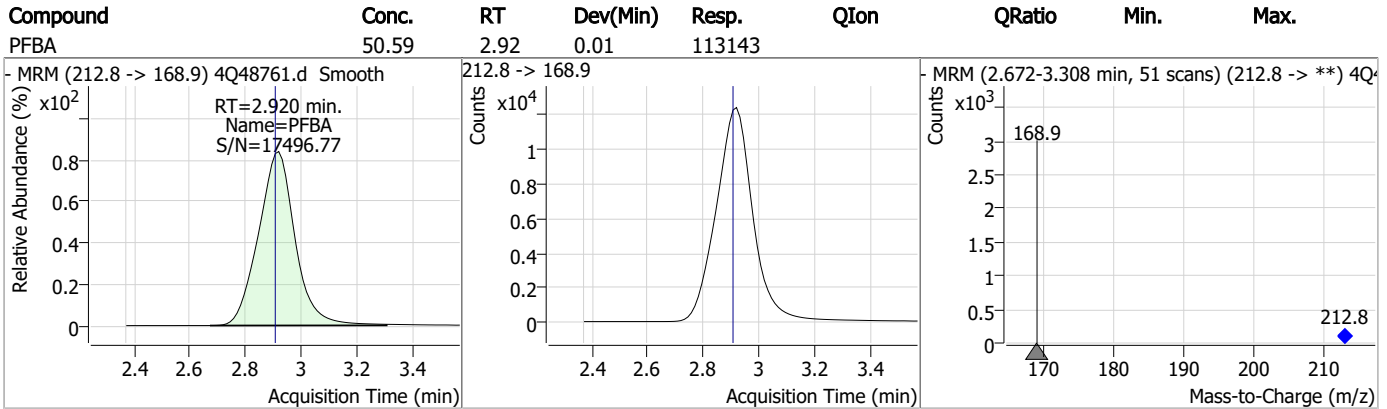
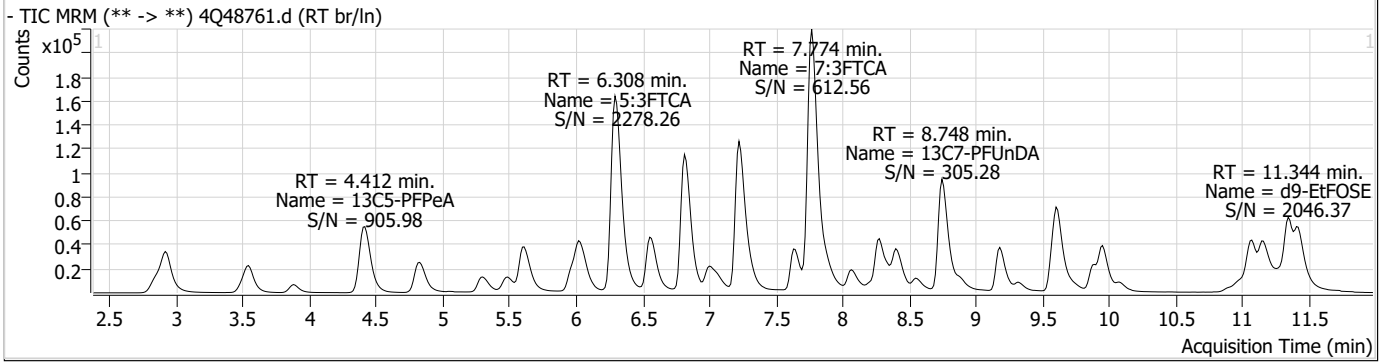
Perfluorinated Compounds by LC/MS/MS

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

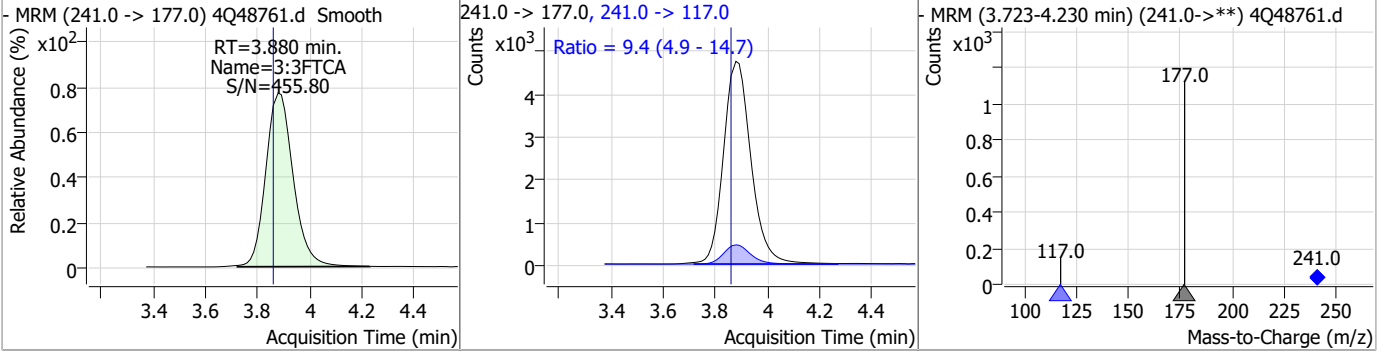
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Perfluorinated Compounds by LC/MS/MS

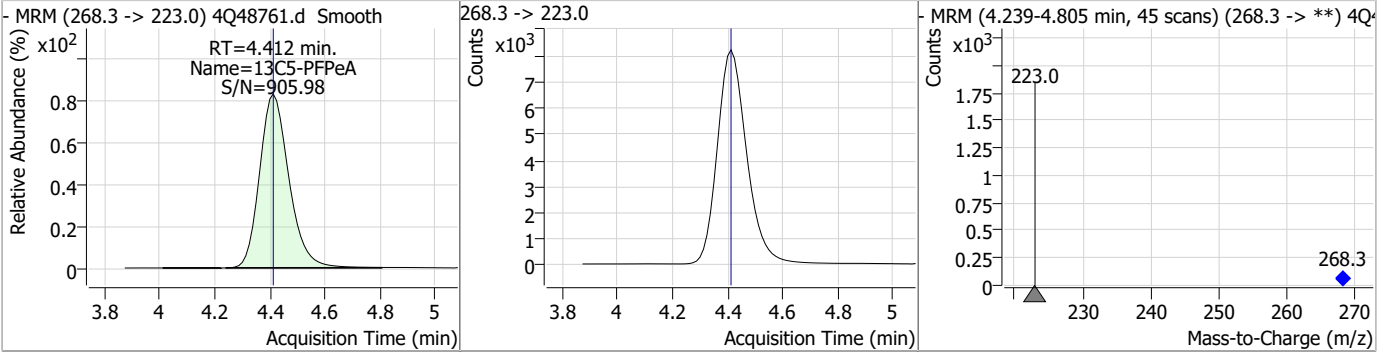


Perfluorinated Compounds by LC/MS/MS

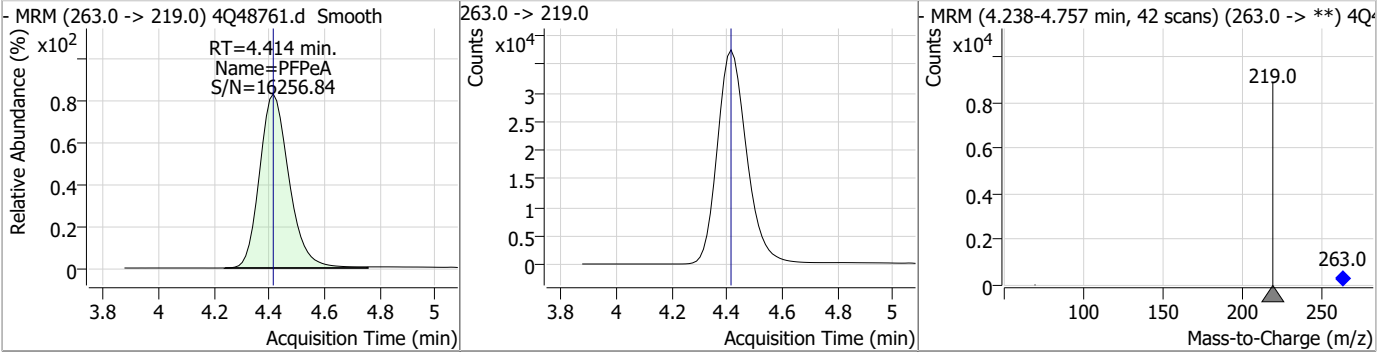
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	61.11	3.88	0.02	34491	241.0 -> 117.0	9.4	4.9	14.7



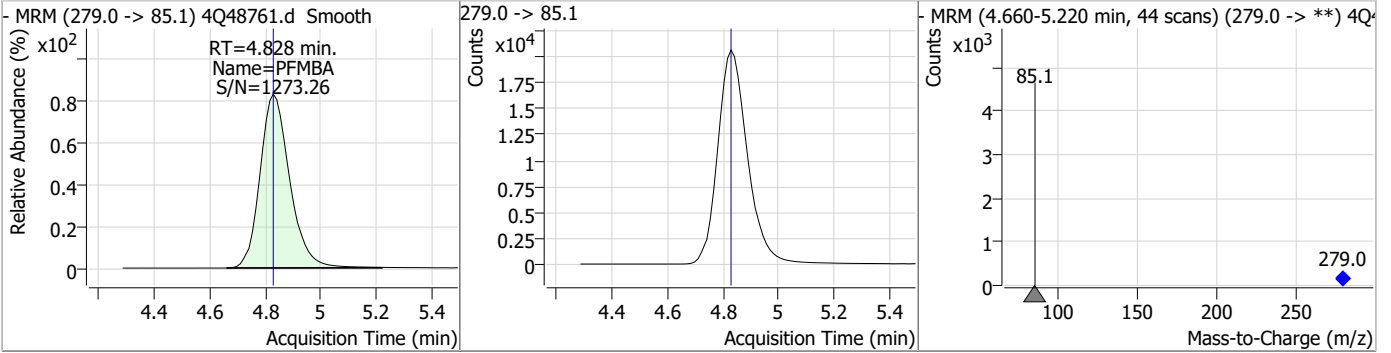
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.78	4.41	0.00	60393				



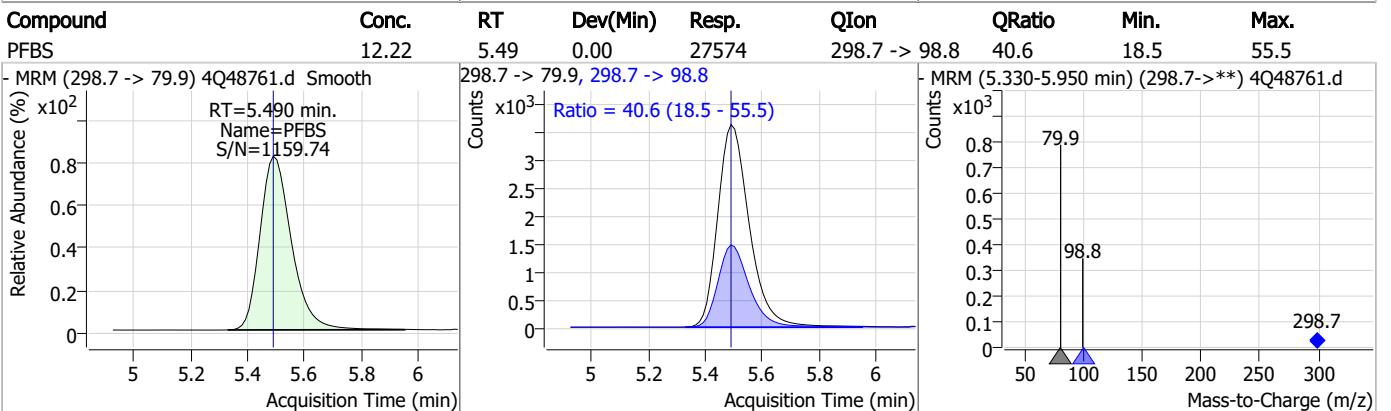
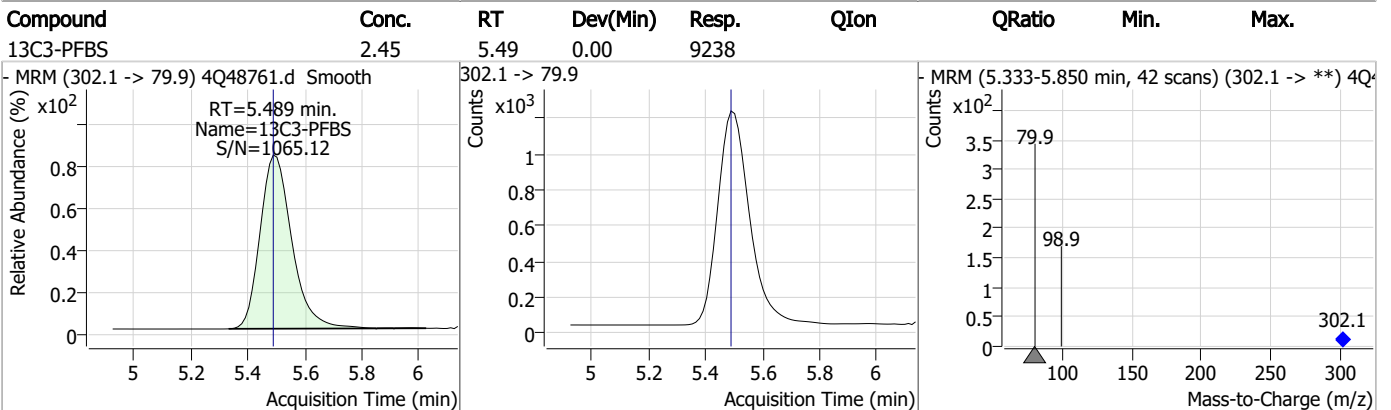
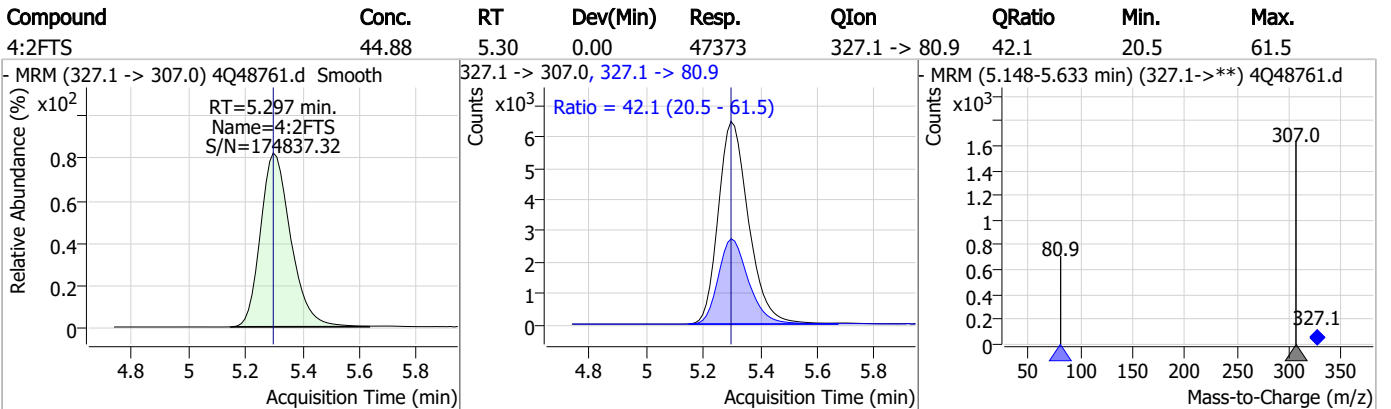
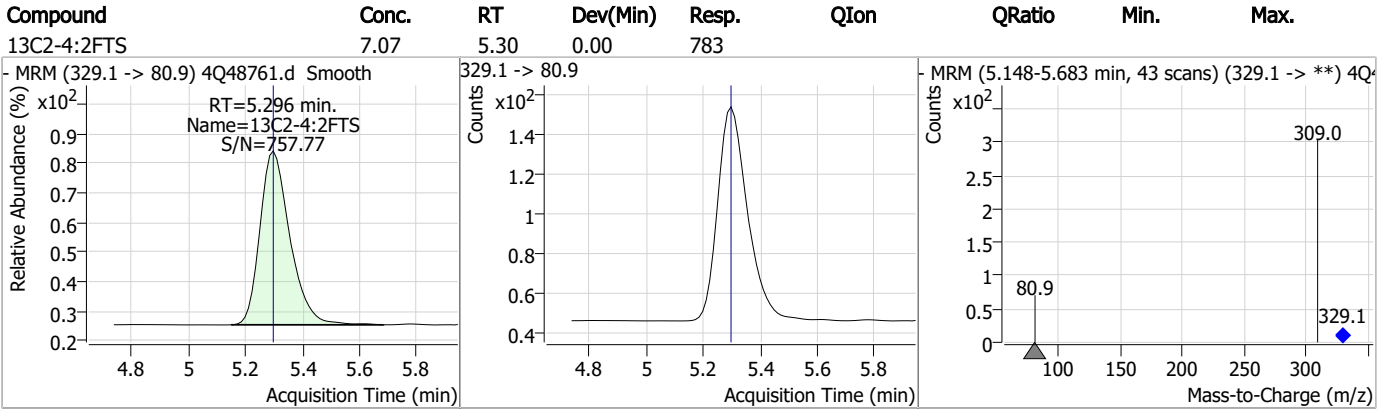
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	26.46	4.41	0.00	277683				



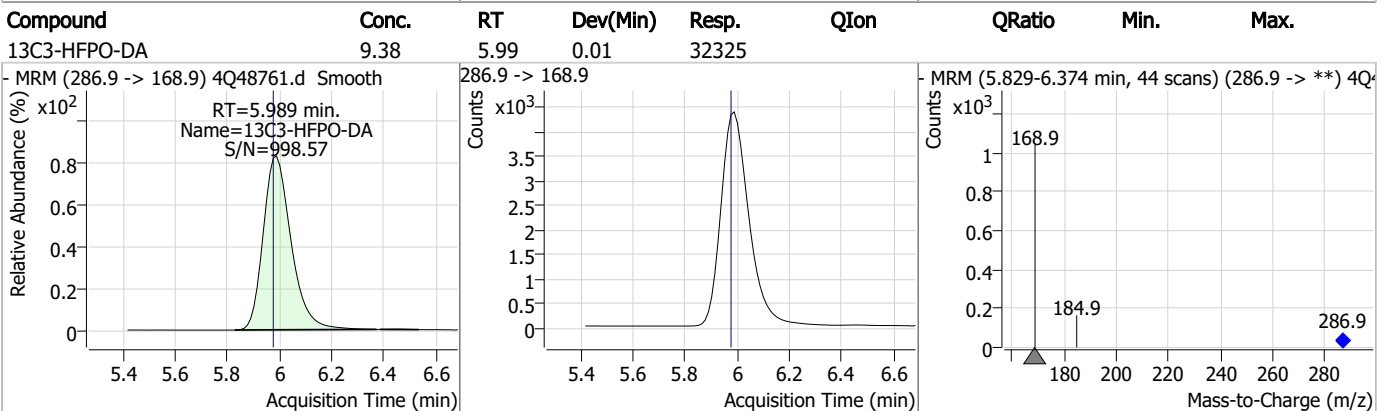
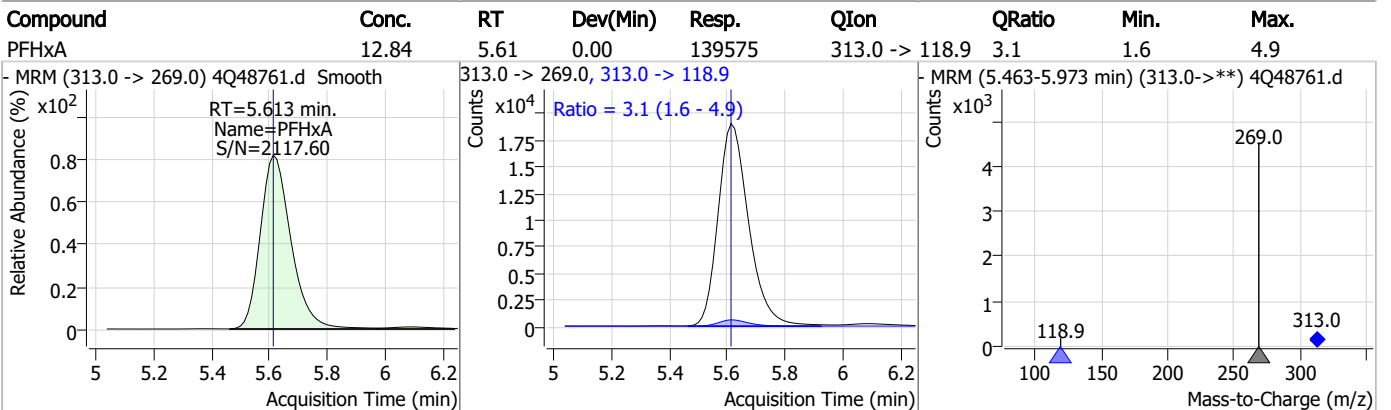
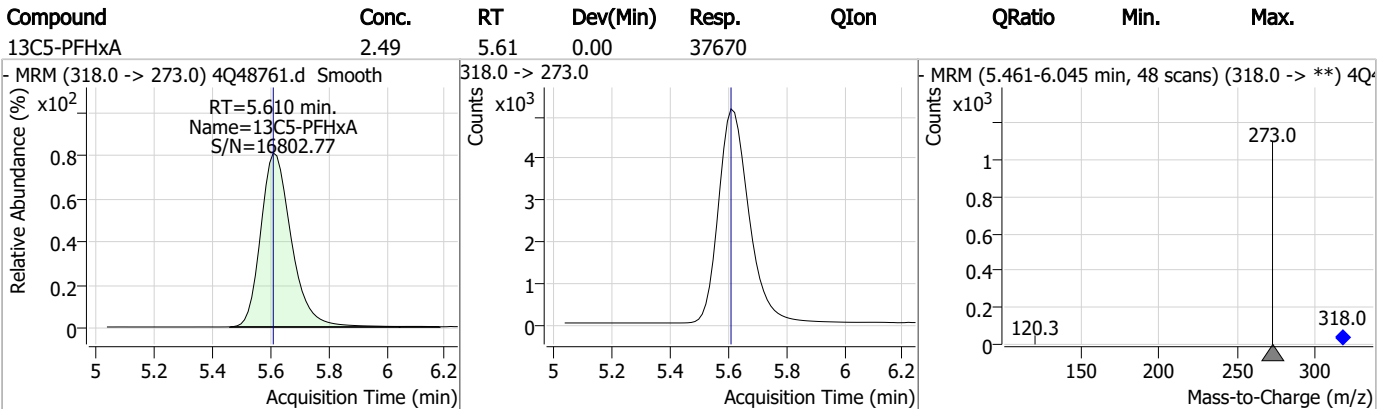
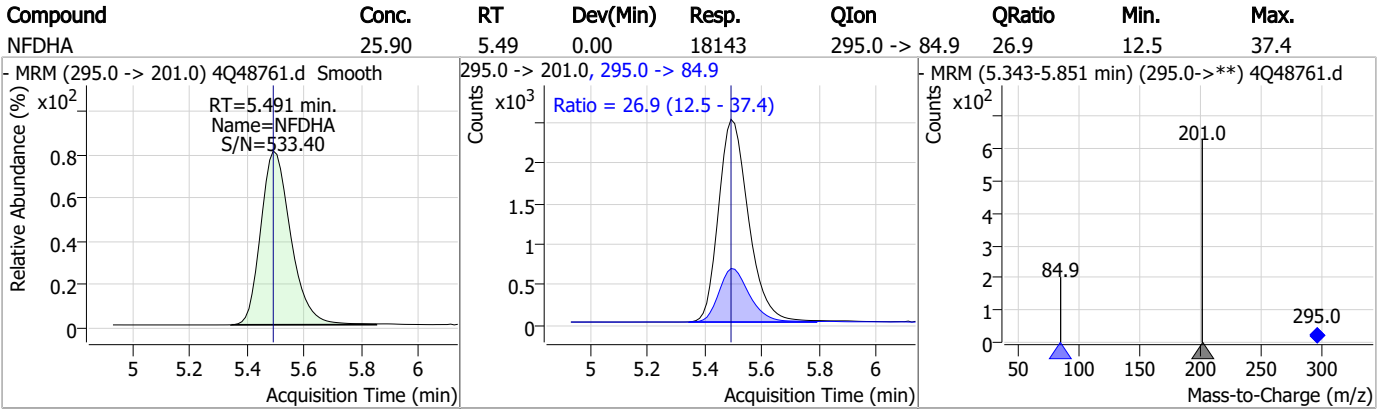
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	25.97	4.83	0.00	152727				



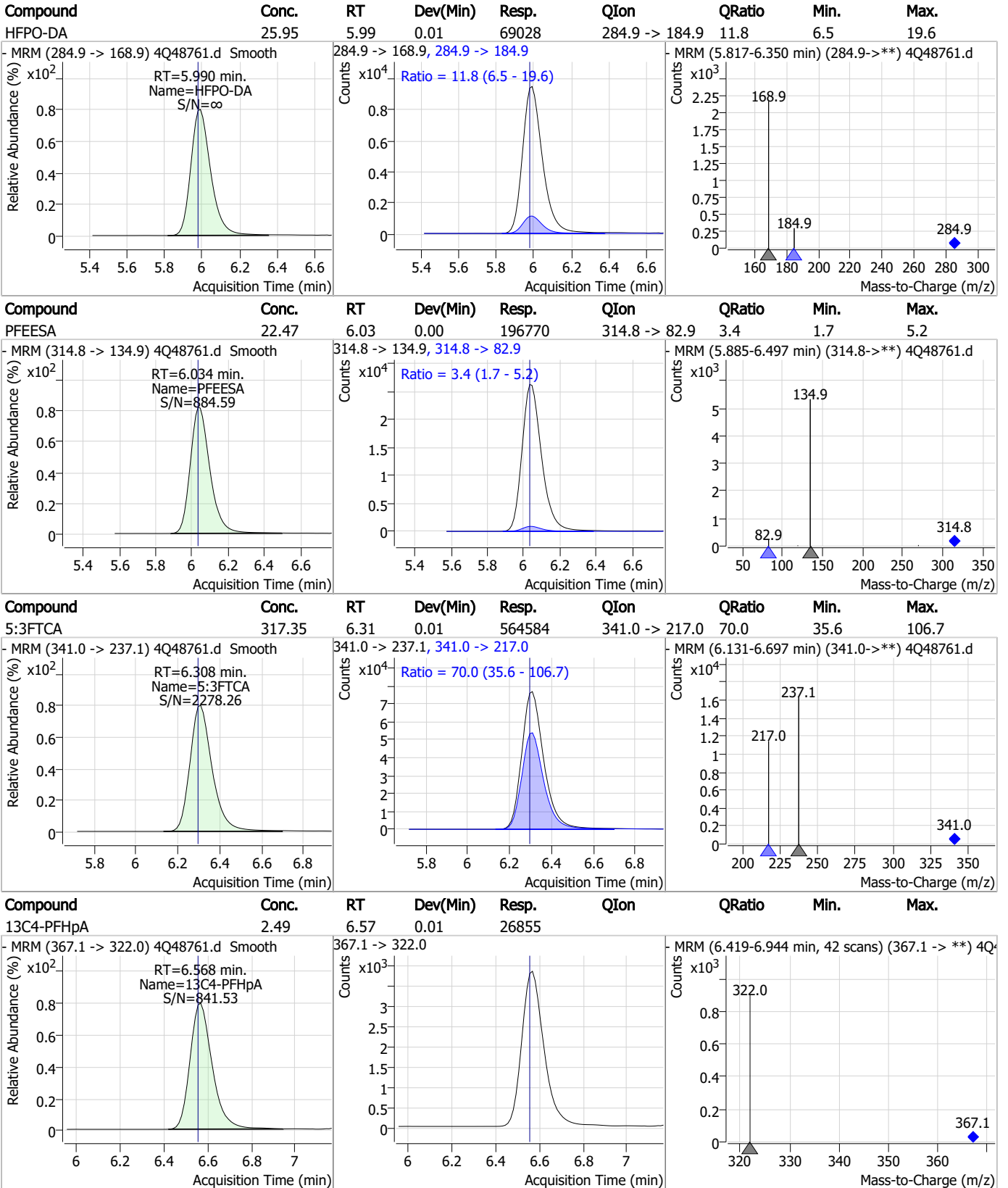
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



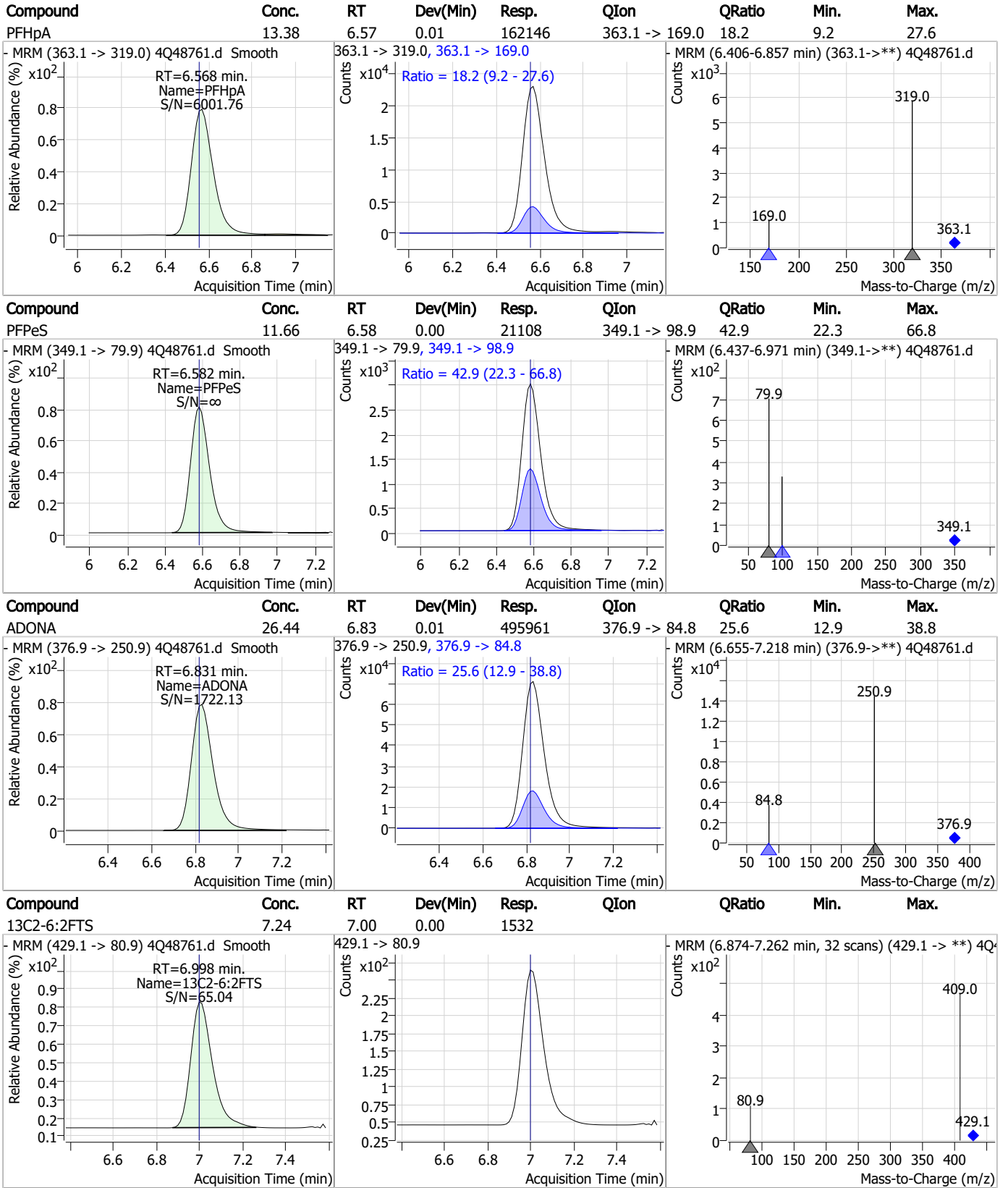
Perfluorinated Compounds by LC/MS/MS



7.6.4

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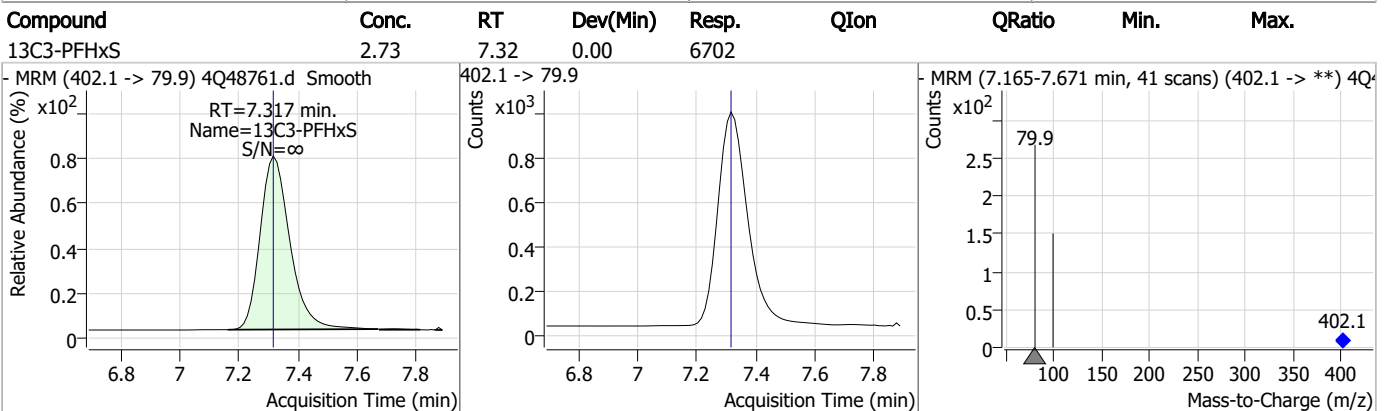
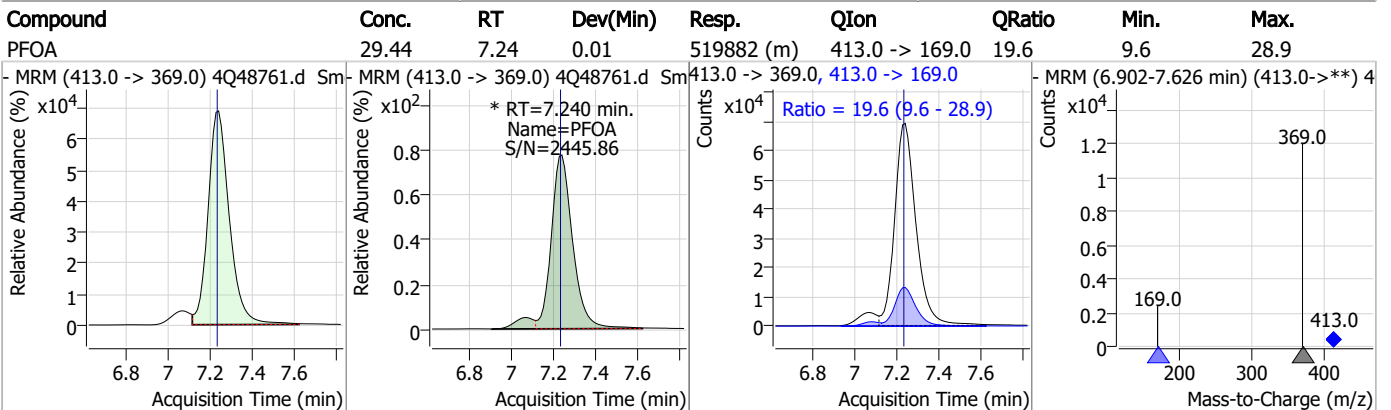
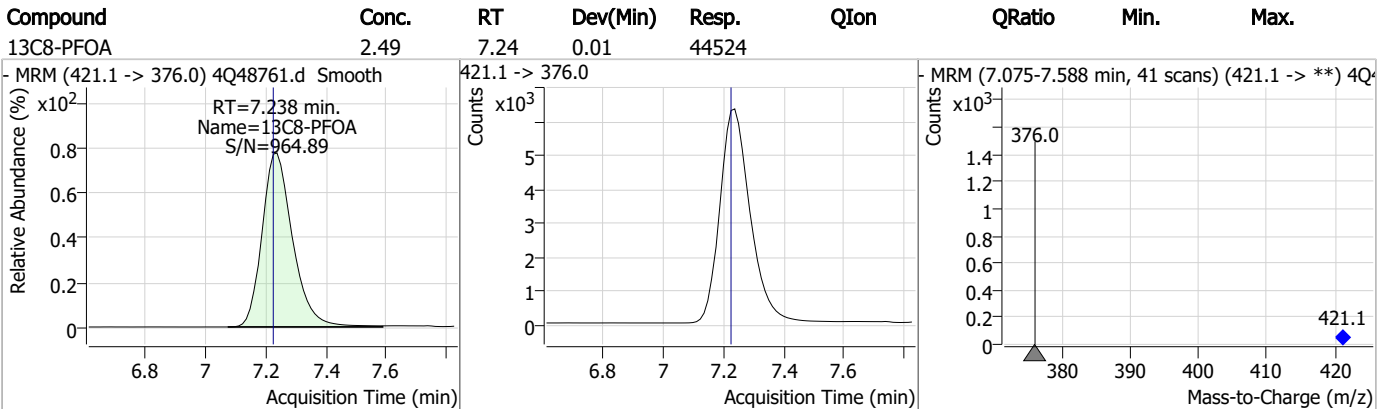
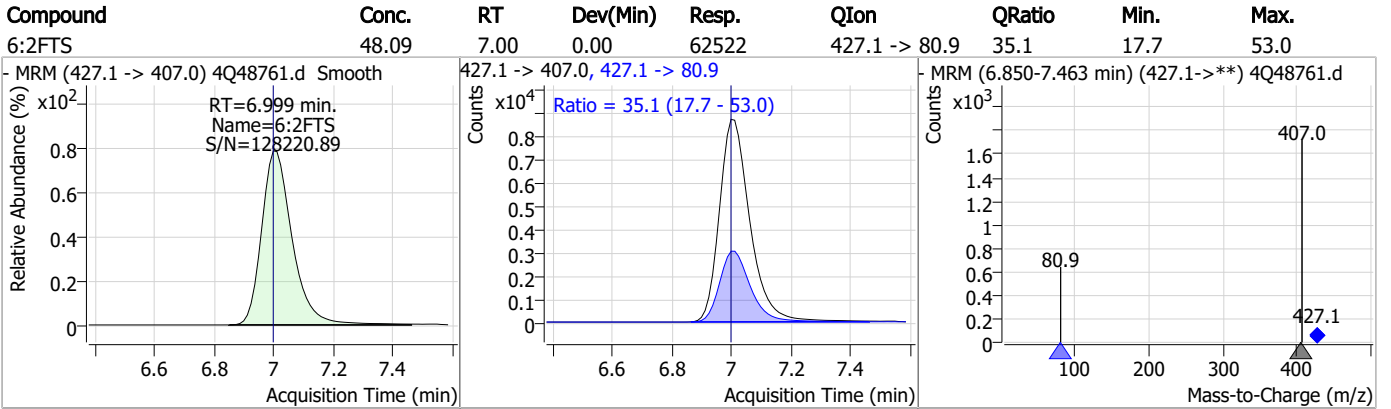
Perfluorinated Compounds by LC/MS/MS



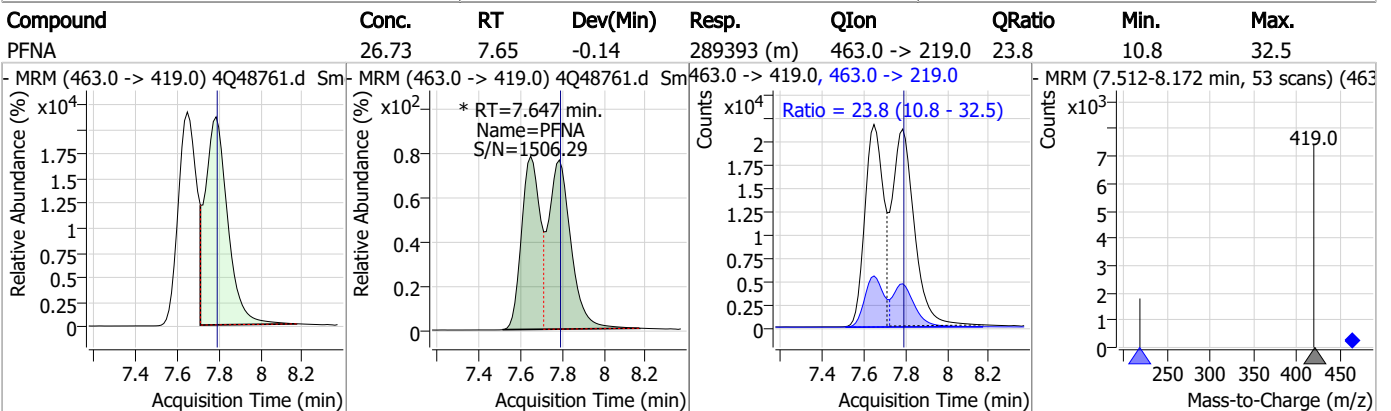
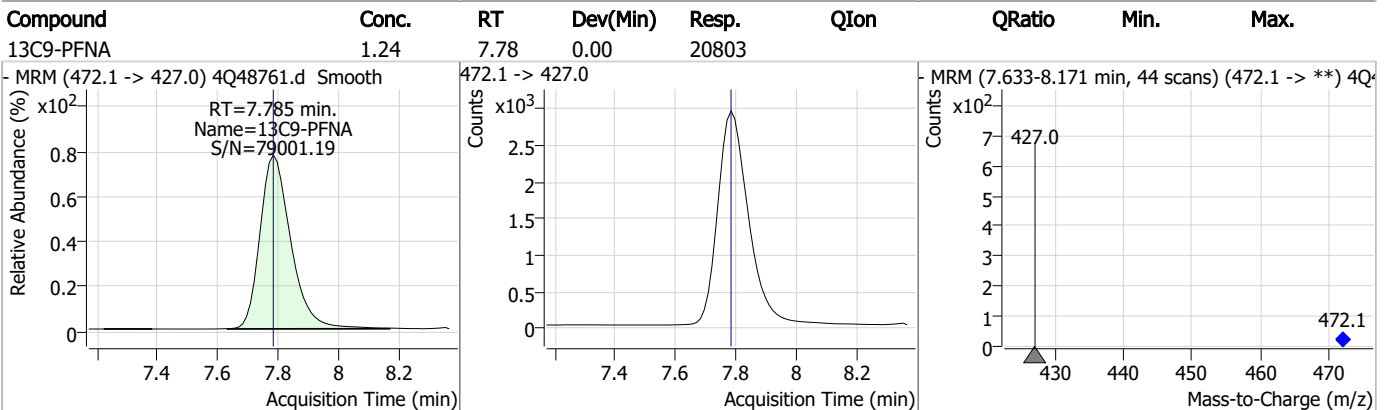
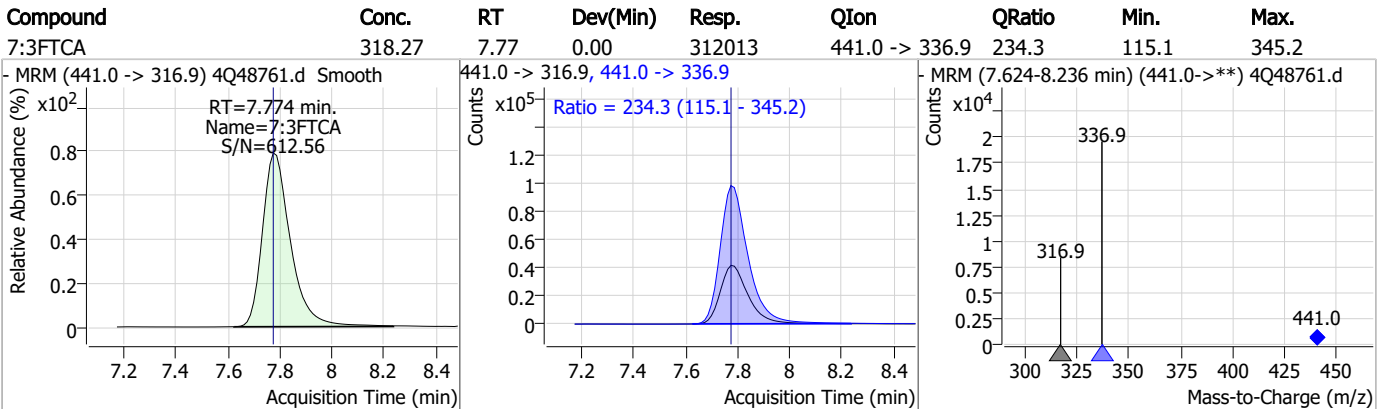
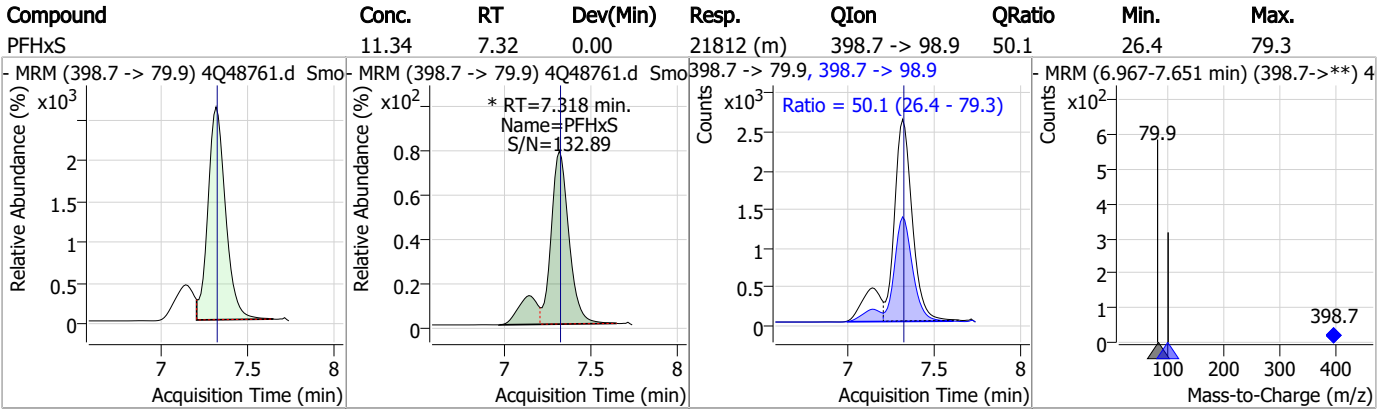
7.6.4

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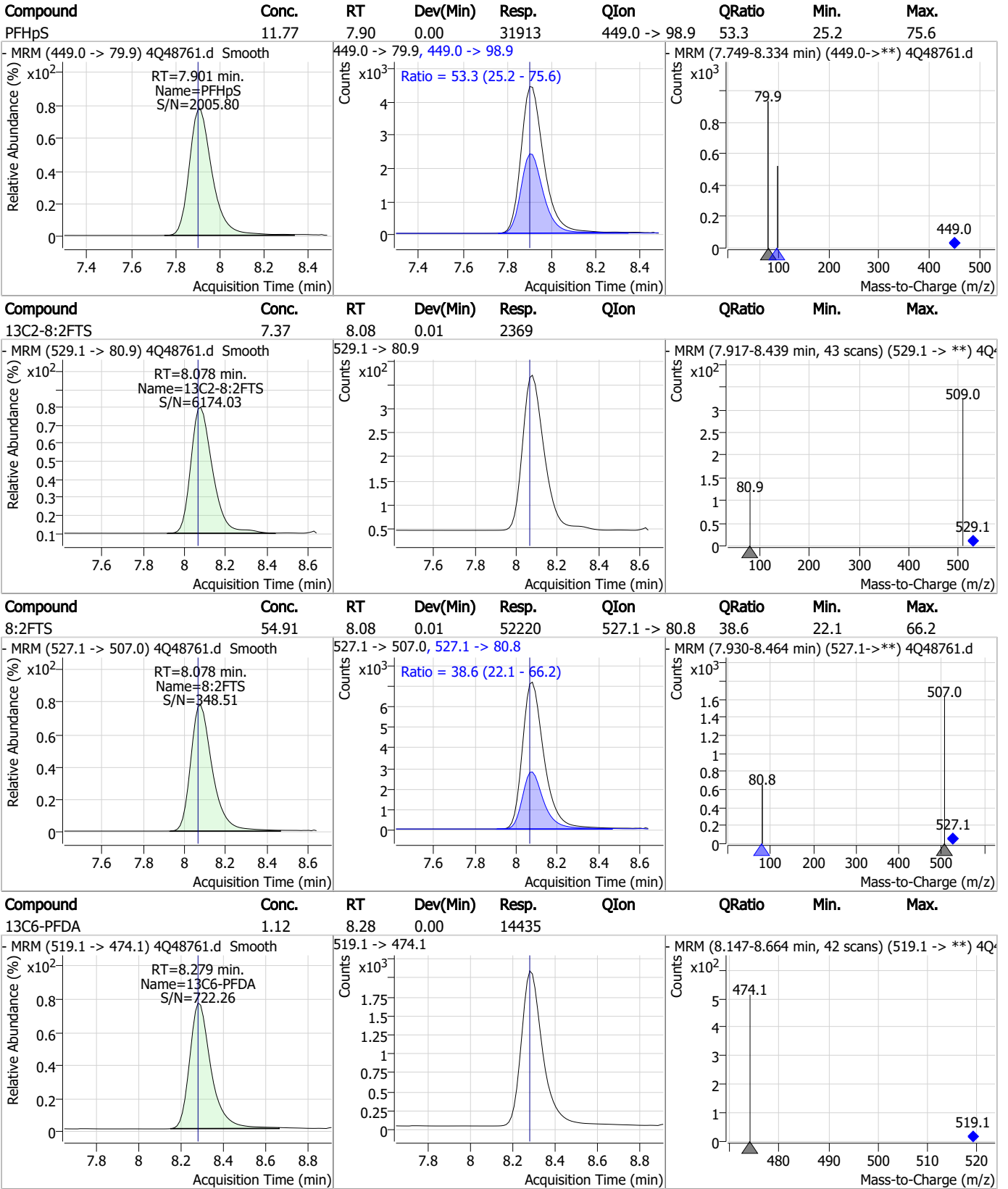
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

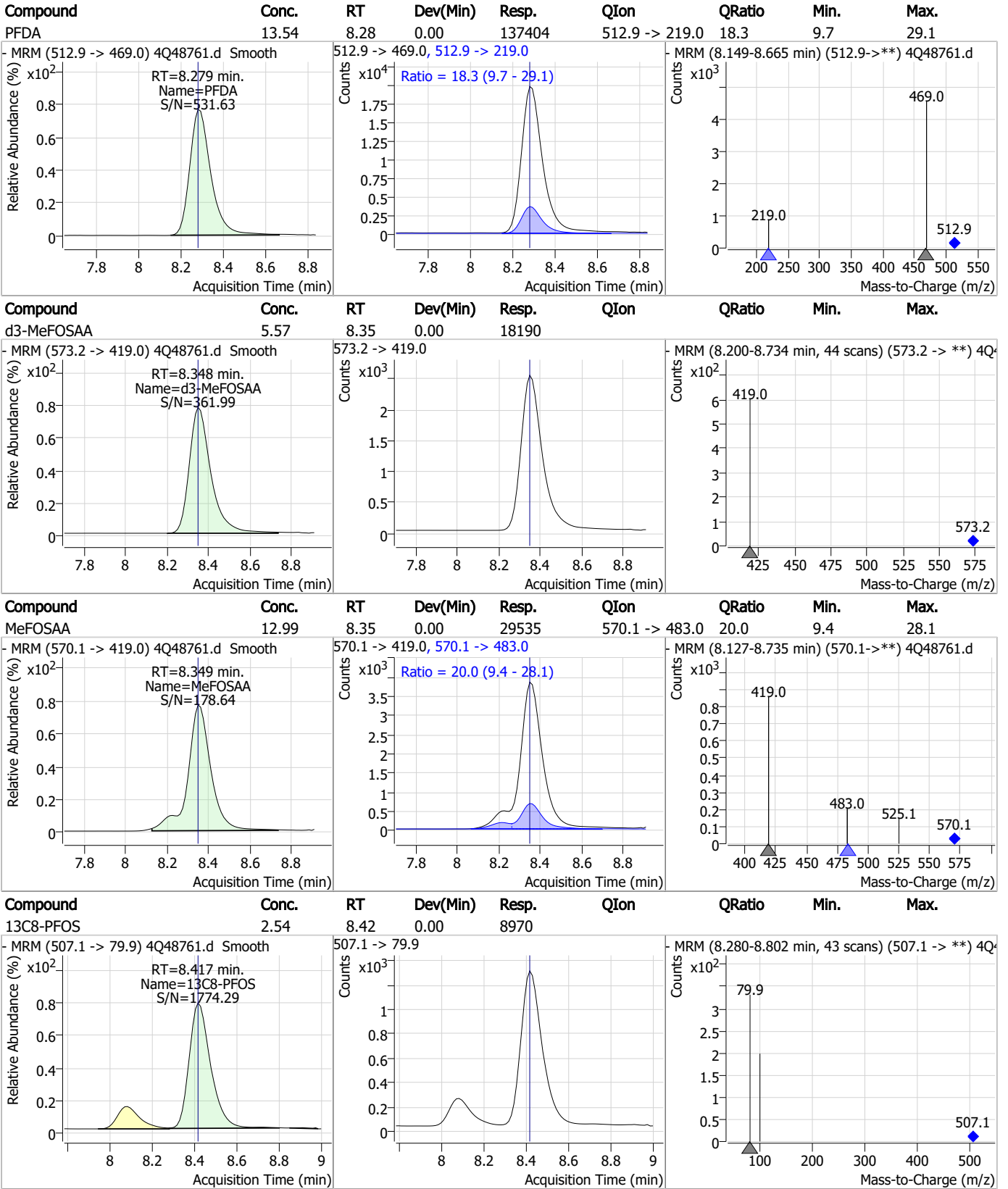


7.6.4

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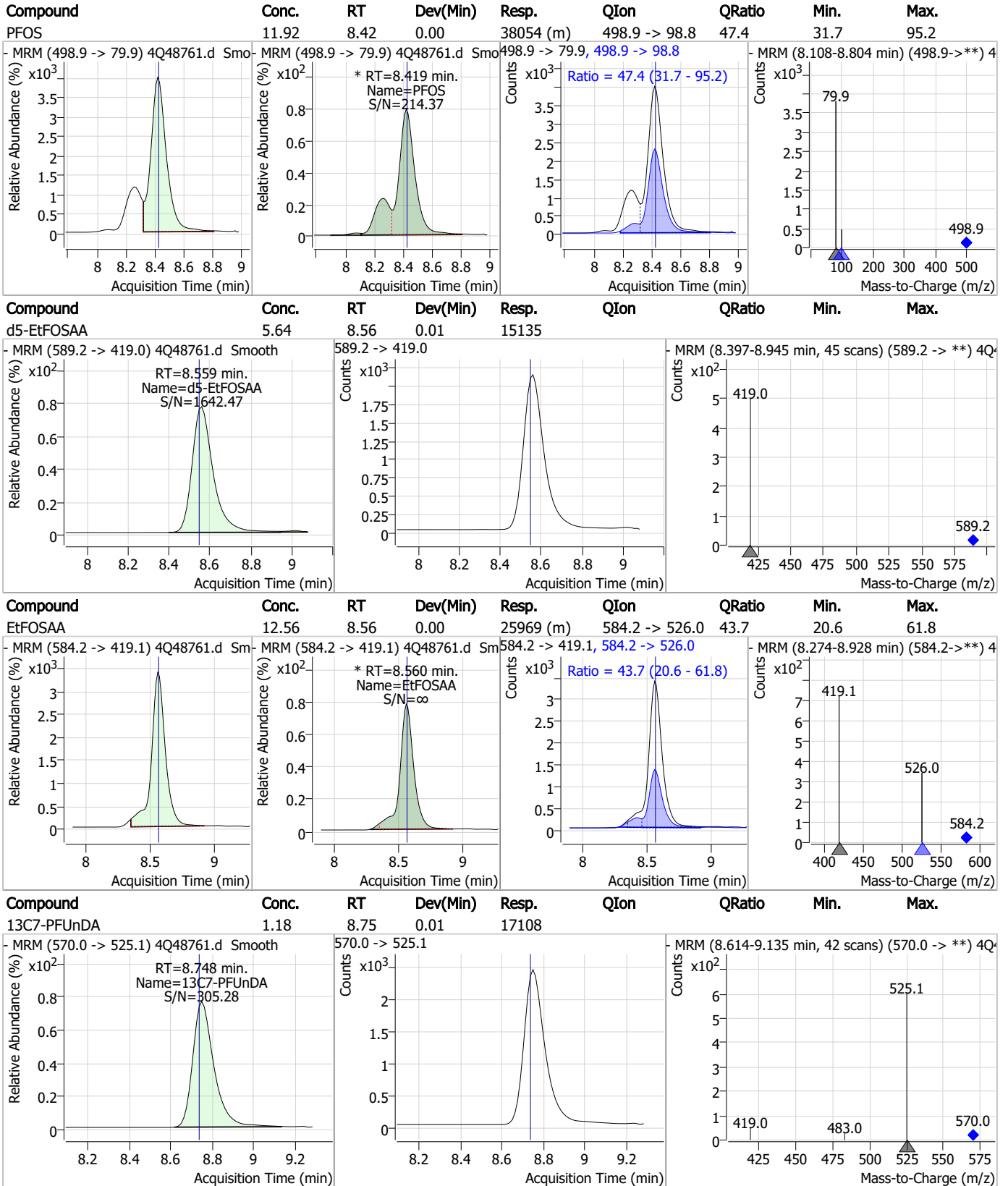
Perfluorinated Compounds by LC/MS/MS



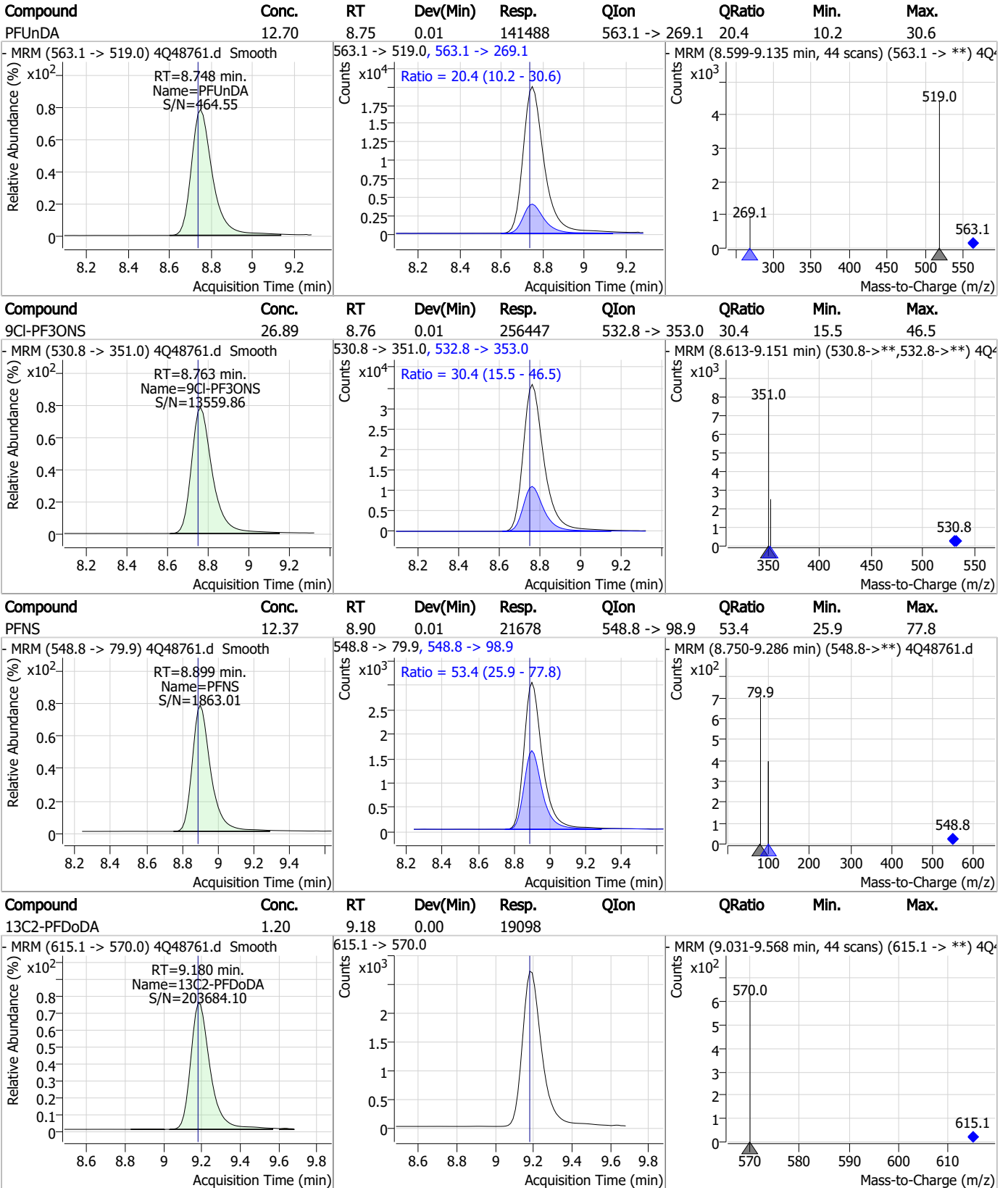
7.6.4

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Perfluorinated Compounds by LC/MS/MS



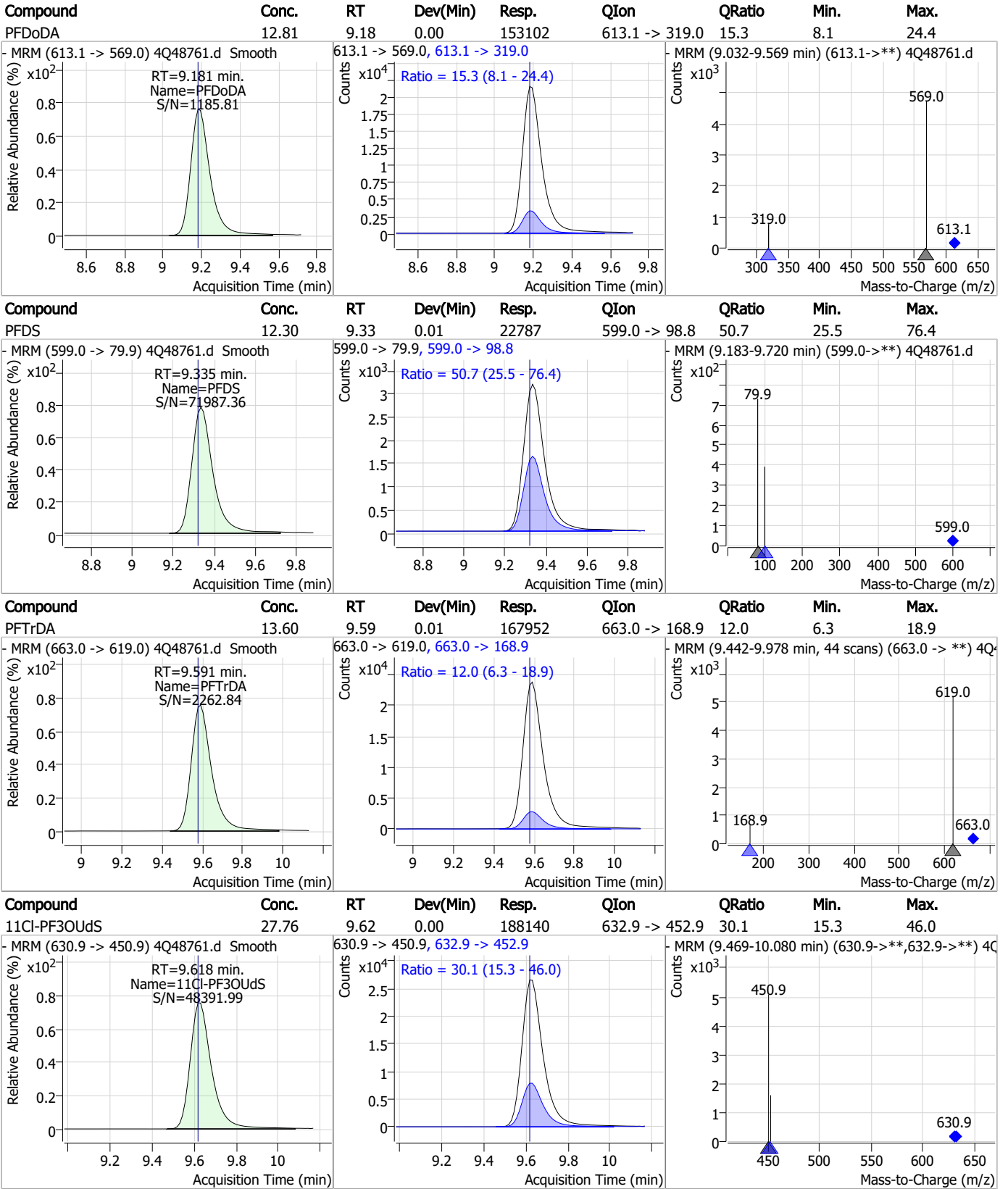
Perfluorinated Compounds by LC/MS/MS



7.6.4

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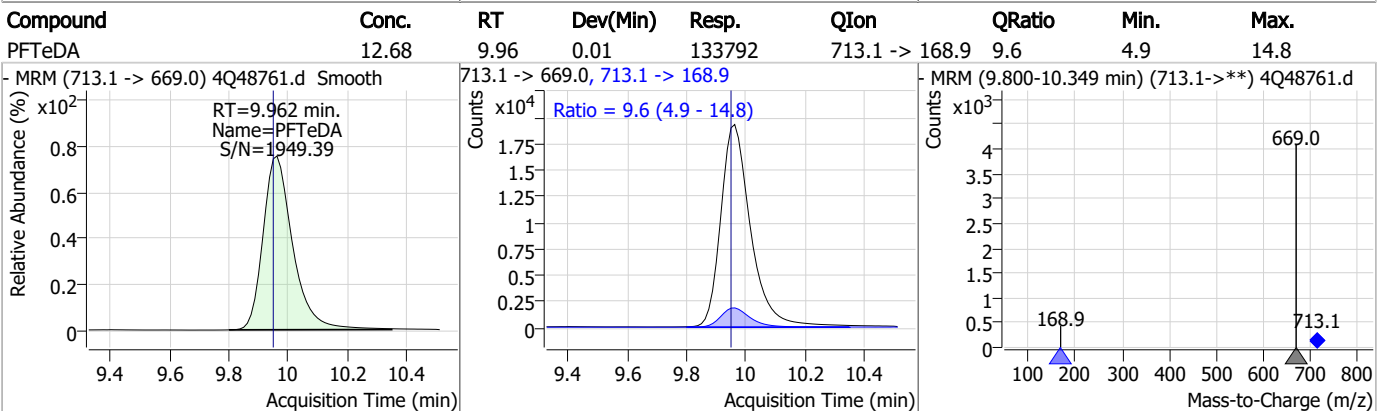
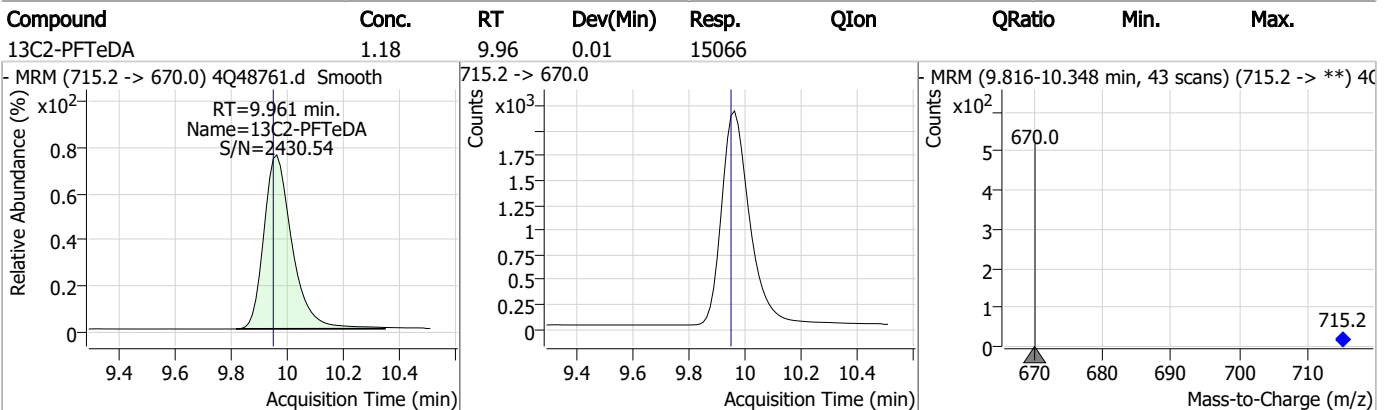
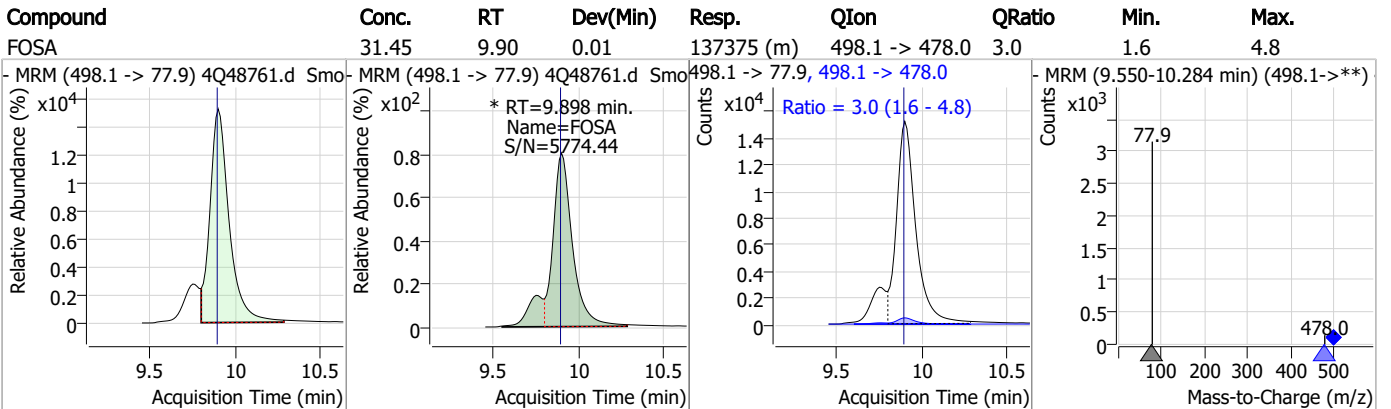
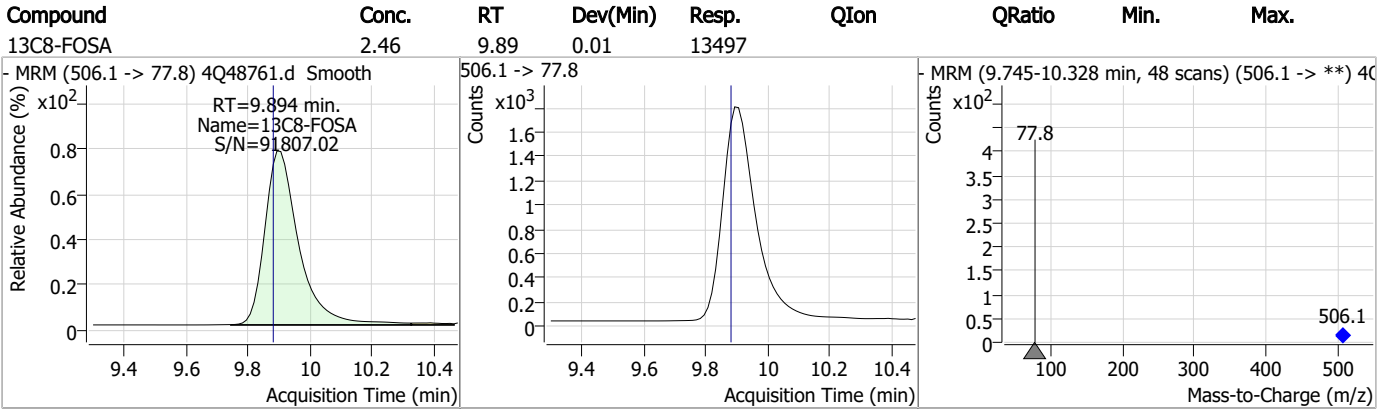
Perfluorinated Compounds by LC/MS/MS



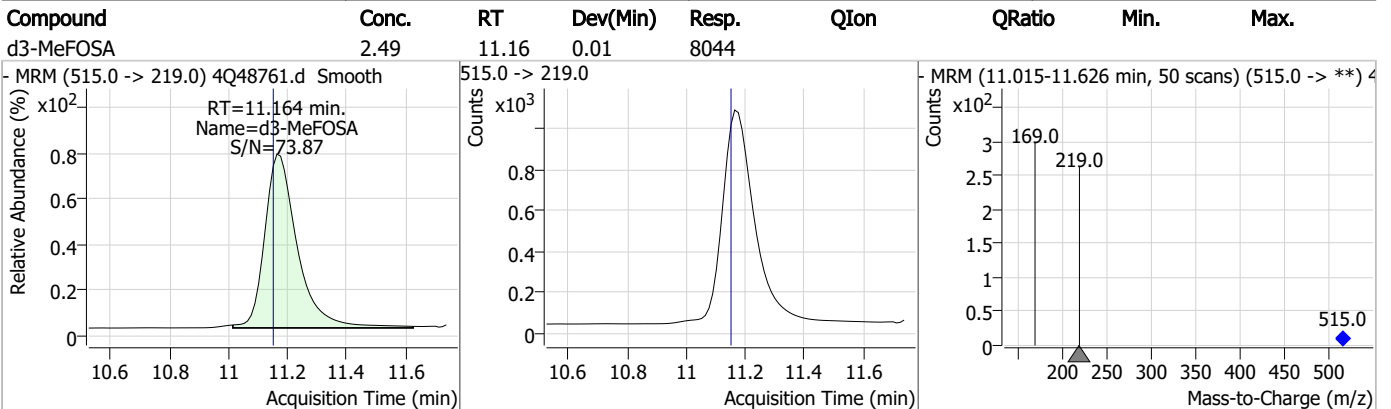
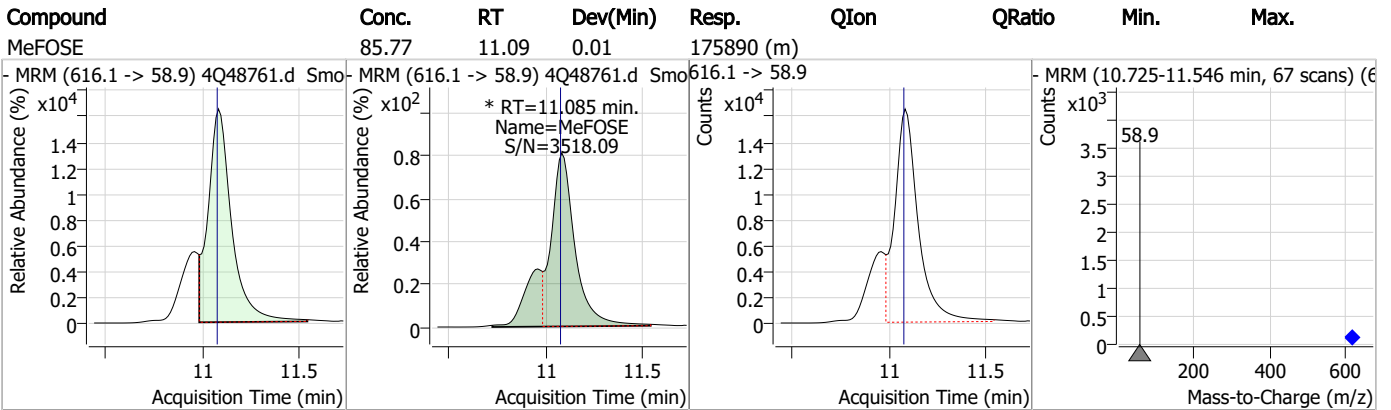
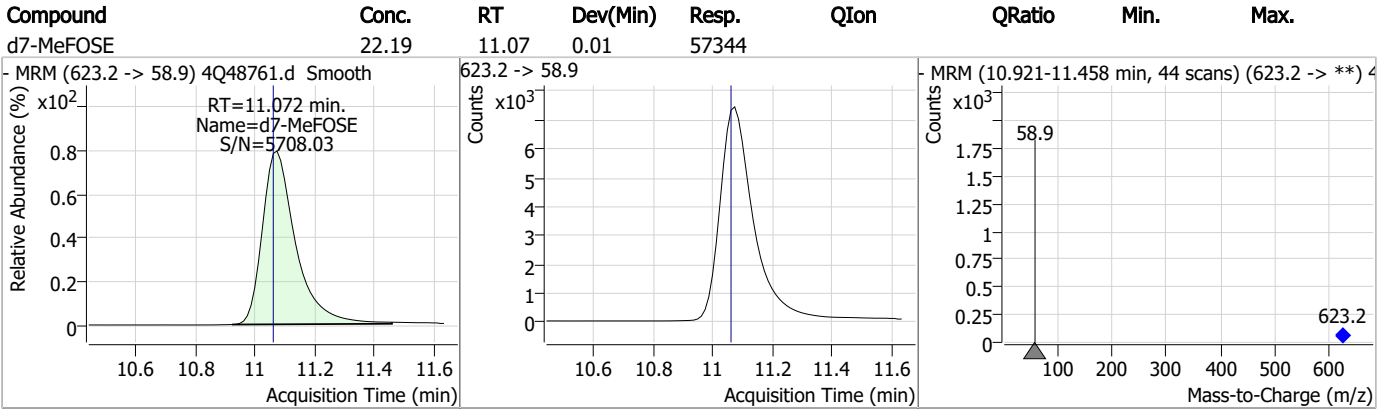
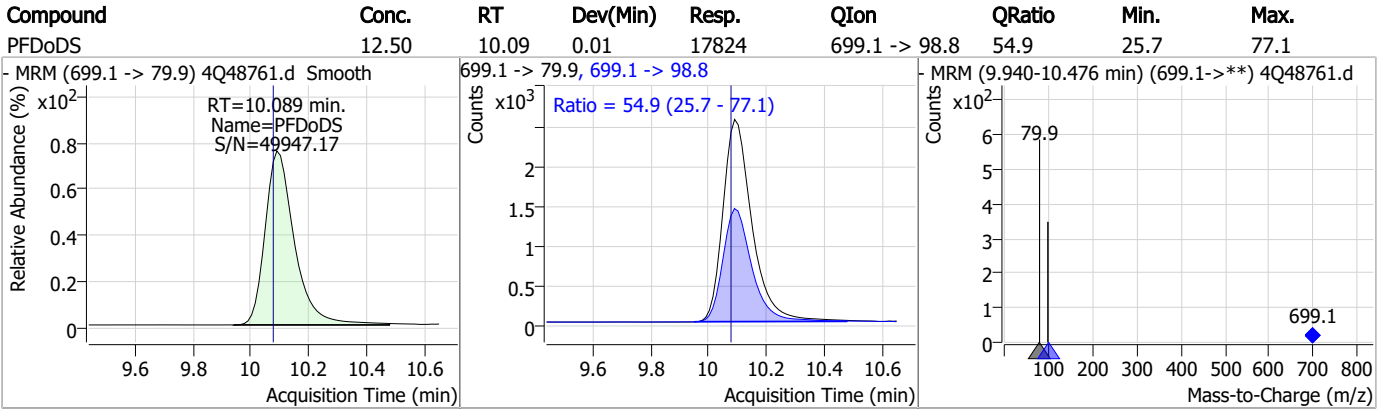
7.6.4

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Perfluorinated Compounds by LC/MS/MS

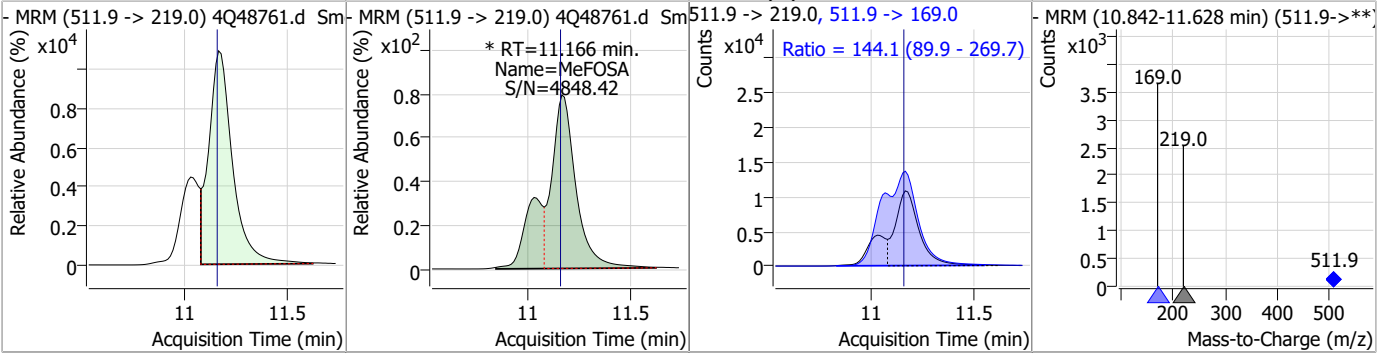


Perfluorinated Compounds by LC/MS/MS

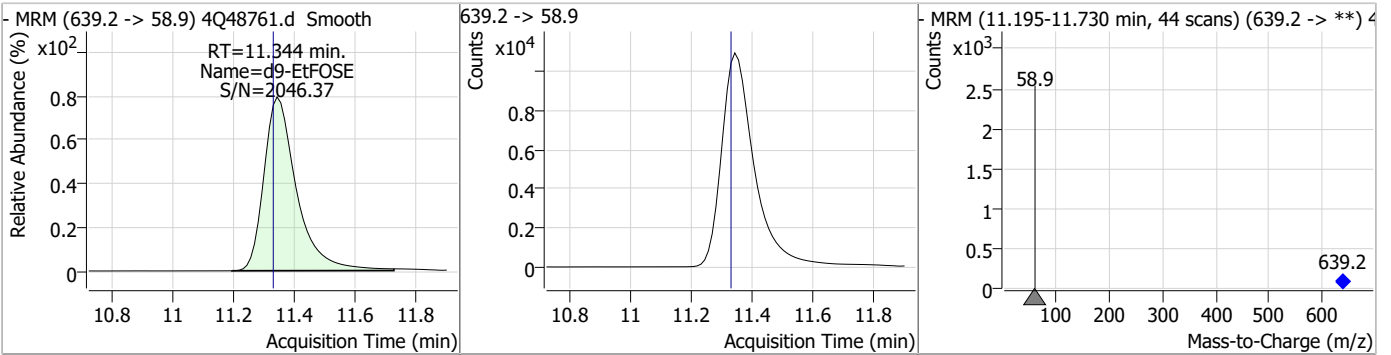


Perfluorinated Compounds by LC/MS/MS

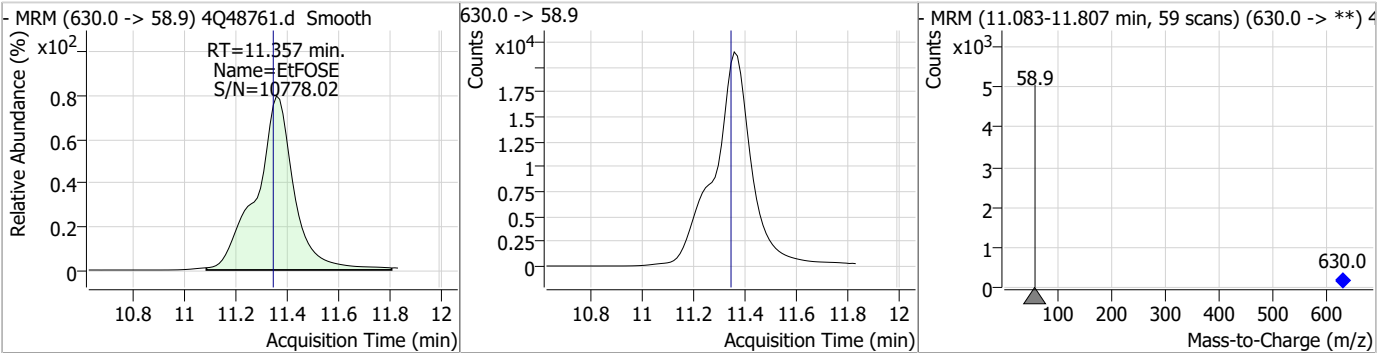
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	41.77	11.17	0.01	116864 (m)	511.9 -> 169.0	144.1	89.9	269.7



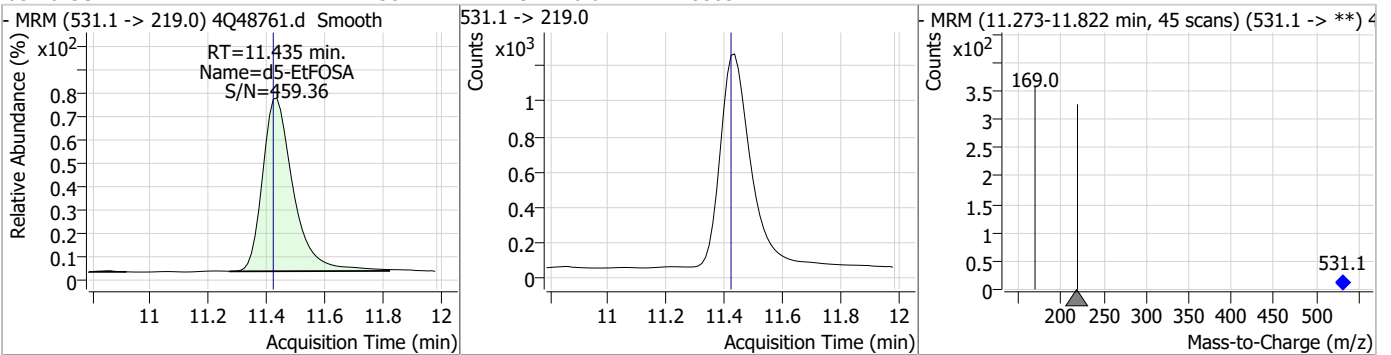
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	22.40	11.34	0.01	81171				



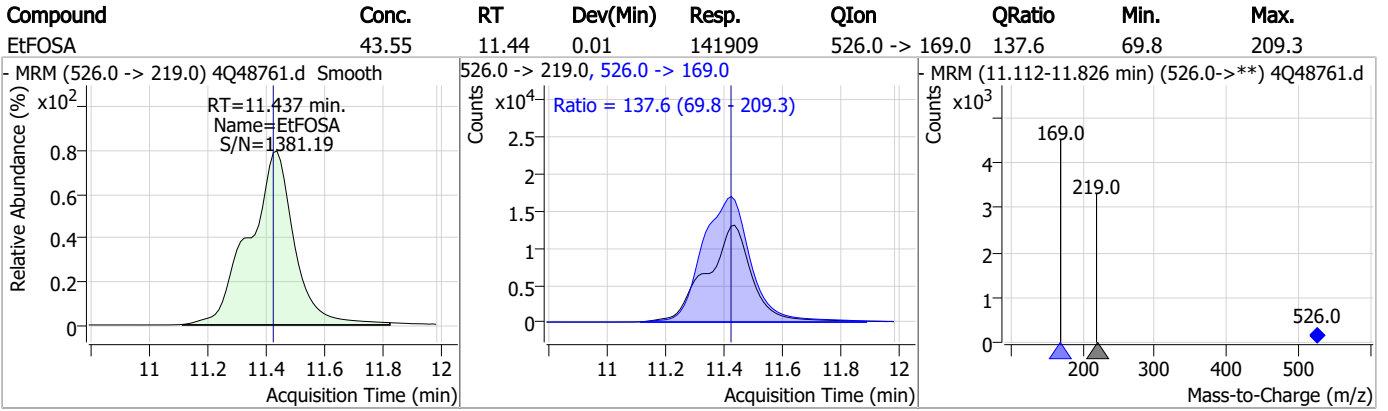
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	86.90	11.36	0.01	220717				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.38	11.43	0.01	8863				



Perfluorinated Compounds by LC/MS/MS



7.6.4

7

Manual Integration Approval Summary

Sample Number: S4Q713-RT Method: EPA DRAFT 1633
Lab FileID: 4Q48761.D Analyst approved: 08/10/23 10:42 Anna Ludwig
Injection Time: 08/09/23 14:31 Supervisor approved: 08/11/23 11:37 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.24	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
Perfluorononanoic acid	375-95-1		7.65	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.42	Split peak
EtFOSAA	2991-50-6		8.56	Split peak
PFOSA	754-91-6		9.90	Split peak
MeFOSE	24448-09-7		11.09	Split peak
MeFOSA	31506-32-8		11.17	Split peak

7.6.4.1
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 31 July 2023 12:14:07
Data Path D:\MassHunter\Tune\QQQ\G6470A\atunes.TUNE.XML
Ion Source AJS ESI
Ionization Mode AJS ESI
Tuned Resolution All
Vacuum Pressure 1.77E+0 [R] (Torr); 3.60E-5 [H] (Torr)

Source Parameters

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

7.7.1

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QQQ Check Tune Report



Negative Results

Analyzer: MS1 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	113.00	0.01	Pass	0.70	0.73	0.03	Pass	258805
302.00	302.06	0.06	Pass	0.70	0.64	-0.06	Pass	96593
601.98	602.05	0.07	Pass	0.70	0.61	-0.09	Pass	282362
1033.99	1034.00	0.01	Pass	0.70	0.61	-0.09	Pass	354750
1633.95	1633.87	-0.08	Pass	0.70	0.63	-0.07	Pass	647401
2233.91	2233.66	-0.25	Pass	0.70	0.66	-0.04	Pass	340958

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	64988
112.99	112.98	-0.01	Pass	0.70	0.71	0.01	Pass	181929
302.00	301.97	-0.03	Pass	0.70	0.69	-0.01	Pass	112962
601.98	601.90	-0.08	Pass	0.70	0.67	-0.03	Pass	280833
1033.99	1033.89	-0.10	Pass	0.70	0.65	-0.05	Pass	335185
1633.95	1633.76	-0.19	Pass	0.70	0.63	-0.07	Pass	556215
2233.91	2233.61	-0.30	Pass	0.70	0.65	-0.05	Pass	364028

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	113.01	0.02	Pass	1.20	1.28	0.08	Pass	307430
302.00	302.01	0.01	Pass	1.20	1.27	0.07	Pass	142426
601.98	601.97	-0.01	Pass	1.20	1.37	0.17	Pass	495657
1033.99	1033.92	-0.07	Pass	1.20	1.42	0.22	Pass	783690
1633.95	1633.80	-0.15	Pass	1.20	1.30	0.10	Pass	2001846
2233.91	2233.65	-0.26	Pass	1.20	1.19	-0.01	Pass	1100778

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	1.08	-0.12	Pass	85341
112.99	112.97	-0.02	Pass	1.20	1.20	0.00	Pass	255703
302.00	301.95	-0.05	Pass	1.20	1.38	0.18	Pass	166071
601.98	601.88	-0.10	Pass	1.20	1.44	0.24	Pass	527892
1033.99	1033.84	-0.15	Pass	1.20	1.43	0.23	Pass	734318
1633.95	1633.70	-0.25	Pass	1.20	1.33	0.13	Pass	2006089
2233.91	2233.59	-0.32	Pass	1.20	1.12	-0.08	Pass	1219530

Analyzer: MS1 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.98	-0.01	Pass	2.50	2.46	-0.04	Pass	366656
302.00	301.99	-0.01	Pass	2.50	2.44	-0.06	Pass	180260
601.98	601.96	-0.02	Pass	2.50	2.56	0.06	Pass	689762
1033.99	1033.92	-0.07	Pass	2.50	2.59	0.09	Pass	1293848
1633.95	1633.81	-0.14	Pass	2.50	2.44	-0.06	Pass	4205428
2233.91	2233.56	-0.35	Pass	2.50	2.33	-0.17	Pass	2968877

Analyzer: MS2 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.06	0.06	Pass	2.50	2.33	-0.17	Pass	108028
112.99	112.96	-0.03	Pass	2.50	2.45	-0.05	Pass	324921
302.00	301.96	-0.04	Pass	2.50	2.62	0.12	Pass	208767
601.98	601.90	-0.08	Pass	2.50	2.68	0.18	Pass	711726
1033.99	1033.85	-0.14	Pass	2.50	2.61	0.11	Pass	1188983
1633.95	1633.73	-0.22	Pass	2.50	2.38	-0.12	Pass	3945586
2233.91	2233.60	-0.31	Pass	2.50	2.19	-0.31	Pass	3344974

7.7.1
7



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48585.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/7/2023 4:26:15 PM
 Sample Name : ic711-1
 Vial : P1-A2
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q711.batch.bin
 Sample Information : OP97964,S4Q711,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.899	216.8 -> 171.9	79767	10.00 µg/L	-0.013
M5-PFPeA	4.412	268.3 -> 223.0	50617	5.00 µg/L	0.000
M5-PFHxA	5.597	318.0 -> 273.0	30039	2.50 µg/L	-0.012
M4-PFHpA	6.555	367.1 -> 322.0	21134	2.50 µg/L	0.000
M8-PFOA	7.226	421.1 -> 376.0	35337	2.50 µg/L	0.000
M9-PFNA	7.772	472.1 -> 427.0	15578	1.25 µg/L	-0.013
M6-PFDA	8.266	519.1 -> 474.1	10929	1.25 µg/L	-0.012
M7-PFUnDA	8.723	570.0 -> 525.1	12454	1.25 µg/L	-0.012
M2-PFDoDA	9.168	615.1 -> 570.0	13491	1.25 µg/L	-0.012
M2-PFTeDA	9.936	715.2 -> 670.0	10771	1.25 µg/L	-0.012
M8-FOSA	9.870	506.1 -> 77.8	11120	2.50 µg/L	-0.012
M3-PFBS	5.489	302.1 -> 79.9	8158	2.50 µg/L	0.000
M3-PFHxS	7.304	402.1 -> 79.9	5418	2.50 µg/L	-0.012
M8-PFOS	8.405	507.1 -> 79.9	7048	2.50 µg/L	-0.012
M2-4:2FTS	5.296	329.1 -> 80.9	441	5.00 µg/L	0.000
M2-6:2FTS	6.986	429.1 -> 80.9	912	5.00 µg/L	-0.012
M2-8:2FTS	8.053	529.1 -> 80.9	1382	5.00 µg/L	-0.012
M3-MeFOSAA	8.336	573.2 -> 419.0	12570	5.00 µg/L	-0.012
M3-HFPO-DA	5.964	286.9 -> 168.9	26909	10.00 µg/L	-0.012
M5-EtFOSAA	8.546	589.2 -> 419.0	10167	5.00 µg/L	0.000
M7-MeFOSE	11.047	623.2 -> 58.9	51047	25.00 µg/L	-0.012
M9-EtFOSE	11.331	639.2 -> 58.9	69923	25.00 µg/L	0.000
M5-EtFOSA	11.422	531.1 -> 219.0	7071	2.50 µg/L	0.000
M3-MeFOSA	11.151	515.0 -> 219.0	6032	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	6794	2.50 µg/L	-0.012
13C3-PFBA	2.903	216.0 -> 172.0	46752	5.00 µg/L	0.000
18O2-PFHxS	7.303	403.0 -> 83.9	3668	2.50 µg/L	-0.012
13C4-PFOA	7.226	417.1 -> 372.0	41338	2.50 µg/L	0.000
13C2-PFDA	8.267	515.1 -> 470.1	12886	1.25 µg/L	-0.012
13C5-PFNA	7.772	468.0 -> 423.0	15657	1.25 µg/L	-0.013
13C2-PFHxA	5.598	315.1 -> 270.0	28285	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.296	329.1 -> 80.9	441	4.81 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C2-6:2FTS	6.986	429.1 -> 80.9	912	5.21 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.2%		
13C2-8:2FTS	8.053	529.1 -> 80.9	1382	5.20 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C2-PFDoDA	9.168	615.1 -> 570.0	13491	1.22 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C2-PFTeDA	9.936	715.2 -> 670.0	10771	1.22 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C3-PFBS	5.489	302.1 -> 79.9	8158	2.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.5%		
13C3-PFHxS	7.304	402.1 -> 79.9	5418	2.67 µg/L	-0.012

7.7.2
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.7%		
13C4-PFBA	2.899	216.8 -> 171.9	79767	9.98 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C4-PFHpA	6.555	367.1 -> 322.0	21134	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C5-PFHxA	5.597	318.0 -> 273.0	30039	2.53 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C5-PFPeA	4.412	268.3 -> 223.0	50617	5.12 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.4%		
13C6-PFDA	8.266	519.1 -> 474.1	10929	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C7-PFUnDA	8.723	570.0 -> 525.1	12454	1.24 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C8-FOSA	9.870	506.1 -> 77.8	11120	2.62 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.0%		
13C8-PFOA	7.226	421.1 -> 376.0	35337	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.9%		
13C8-PFOS	8.405	507.1 -> 79.9	7048	2.58 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.3%		
13C9-PFNA	7.772	472.1 -> 427.0	15578	1.31 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.1%		
d3-MeFOSAA	8.336	573.2 -> 419.0	12570	4.98 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.7%		
13C3-HFPO-DA	5.964	286.9 -> 168.9	26909	9.99 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.9%		
d3-MeFOSA	11.151	515.0 -> 219.0	6032	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.7%		
d5-EtFOSAA	8.546	589.2 -> 419.0	10167	4.90 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.1%		
d7-MeFOSE	11.047	623.2 -> 58.9	51047	25.58 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 102.3%		
d9-EtFOSE	11.331	639.2 -> 58.9	69923	24.99 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.0%		
d5-EtFOSA	11.422	531.1 -> 219.0	7071	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.4%		
Target Compounds					QValue
4:2FTS	5.284	327.1 -> 307.0	444	0.75 µg/L	95
		327.1 -> 80.9	196		
6:2FTS	6.987	427.1 -> 407.0	466	0.60 µg/L	83
		427.1 -> 80.9	210		
8:2FTS	8.066	527.1 -> 507.0	414	0.75 µg/L	84
		527.1 -> 80.8	141		
EtFOSAA	8.547	584.2 -> 419.1	252	0.18 µg/L	89
		584.2 -> 526.0	121		
FOSA	9.873	498.1 -> 77.9	619	0.17 µg/L	99
		498.1 -> 478.0	22		
MeFOSAA	8.336	570.1 -> 419.0	225	0.14 µg/L	#m 75
		570.1 -> 483.0	16		
PFBA	2.907	212.8 -> 168.9	1378	0.75 µg/L	100
PFBS	5.478	298.7 -> 79.9	279	0.14 µg/L	89
		298.7 -> 98.8	85		
PFDA	8.267	512.9 -> 469.0	1326	0.17 µg/L	96
		512.9 -> 219.0	236		
PFDoDA	9.168	613.1 -> 569.0	1592	0.19 µg/L	87
		613.1 -> 319.0	171		
PFDS	9.321	599.0 -> 79.9	252	0.17 µg/L	91

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	144			
PFHpA	6.556	363.1 -> 319.0	1689	0.18	µg/L	99
		363.1 -> 169.0	318			
PFHpS	7.887	449.0 -> 79.9	381	0.18	µg/L	87
		449.0 -> 98.9	157			
PFHxA	5.600	313.0 -> 269.0	1490	0.17	µg/L	100
		313.0 -> 118.9	49			
PFHxS	7.305	398.7 -> 79.9	209	0.13	µg/L	m 84
		398.7 -> 98.9	135			
PFNA	7.772	463.0 -> 419.0	1395	0.17	µg/L	86
		463.0 -> 219.0	393			
PFNS	8.887	548.8 -> 79.9	226	0.16	µg/L	81
		548.8 -> 98.9	147			
PFOA	7.215	413.0 -> 369.0	2967	0.21	µg/L	100
		413.0 -> 169.0	573			
PFOS	8.419	498.9 -> 79.9	469	0.19	µg/L	m 67
		498.9 -> 98.8	178			
PFPeA	4.414	263.0 -> 219.0	3098	0.35	µg/L	100
PFPeS	6.570	349.1 -> 79.9	217	0.15	µg/L	98
		349.1 -> 98.9	100			
PFTeDA	9.937	713.1 -> 669.0	1404	0.19	µg/L	98
		713.1 -> 168.9	147			
PFTrDA	9.566	663.0 -> 619.0	1438	0.16	µg/L	94
		663.0 -> 168.9	213			
PFUnDA	8.724	563.1 -> 519.0	1537	0.19	µg/L	98
		563.1 -> 269.1	298			
11CI-PF3OUdS	9.605	630.9 -> 450.9	1789	0.32	µg/L	95
		632.9 -> 452.9	600			
9CI-PF3ONS	8.751	530.8 -> 351.0	2545	0.32	µg/L	94
		532.8 -> 353.0	876			
ADONA	6.818	376.9 -> 250.9	5019	0.32	µg/L	95
		376.9 -> 84.8	1417			
HFPO-DA	5.978	284.9 -> 168.9	730	0.33	µg/L	95
		284.9 -> 184.9	80			
3:3FTCA	3.861	241.0 -> 177.0	422	0.91	µg/L	99
		241.0 -> 117.0	40			
5:3FTCA	6.283	341.0 -> 237.1	5928	4.18	µg/L	95
		341.0 -> 217.0	4464			
7:3FTCA	7.762	441.0 -> 316.9	3495	4.47	µg/L	97
		441.0 -> 336.9	7896			
EtFOSA	11.424	526.0 -> 219.0	975	0.37	µg/L	90
		526.0 -> 169.0	1237			
EtFOSE	11.345	630.0 -> 58.9	1764	0.81	µg/L	100
MeFOSA	11.141	511.9 -> 219.0	764	0.36	µg/L	76
		511.9 -> 169.0	1117			
MeFOSE	11.060	616.1 -> 58.9	1460	0.80	µg/L	100
PFDoDS	10.064	699.1 -> 79.9	197	0.18	µg/L	92
		699.1 -> 98.8	91			
NFDHA	5.491	295.0 -> 201.0	209	0.37	µg/L	99
		295.0 -> 84.9	51			
PFMBA	4.828	279.0 -> 85.1	1665	0.34	µg/L	100
PFMPA	3.540	229.0 -> 84.9	1721	0.36	µg/L	100
PFEESA	6.034	314.8 -> 134.9	2140	0.31	µg/L	96
		314.8 -> 82.9	44			

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

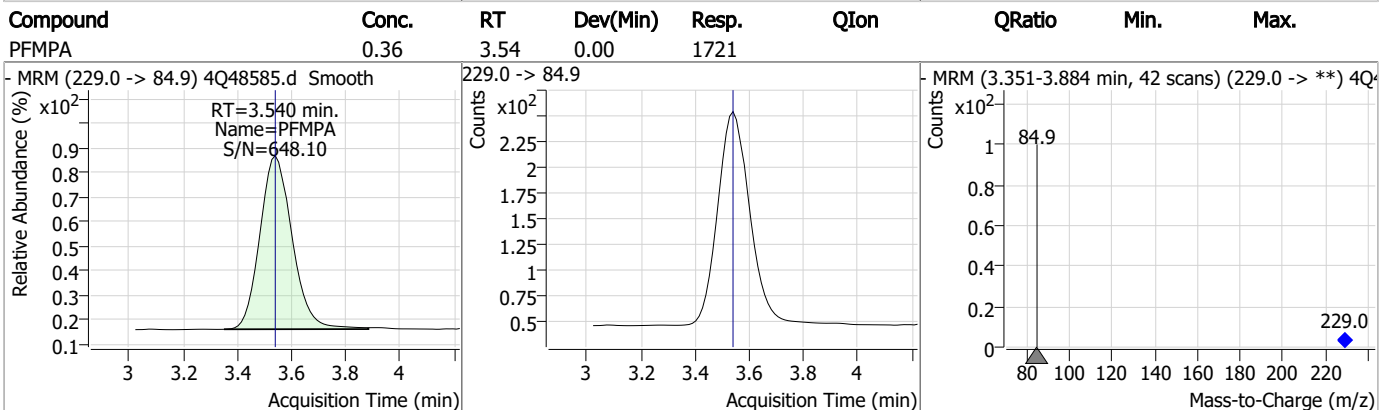
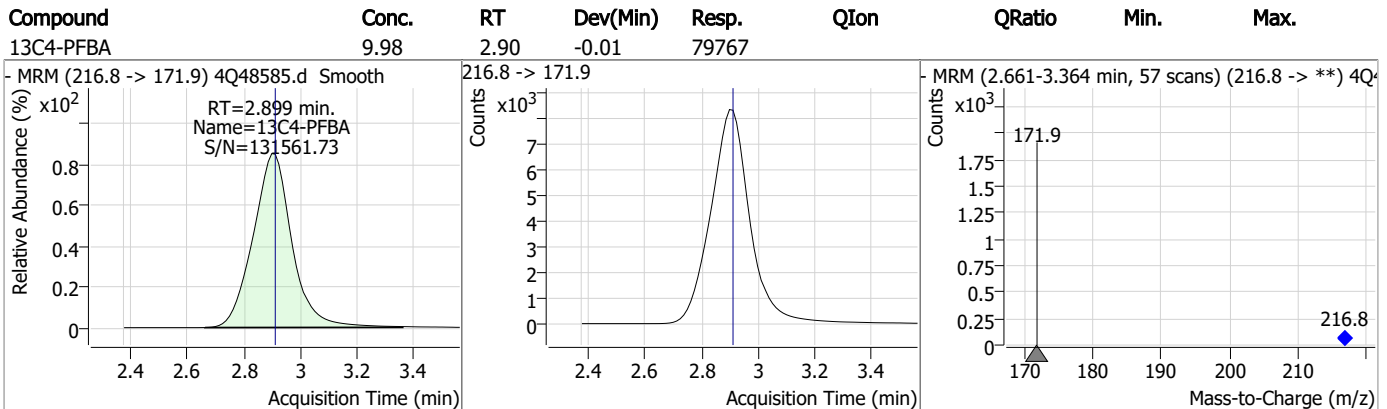
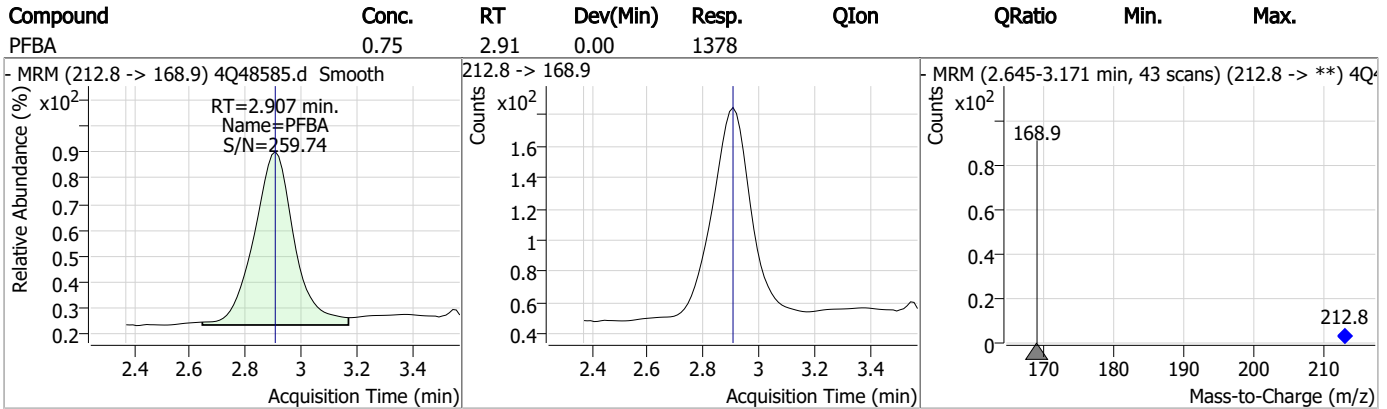
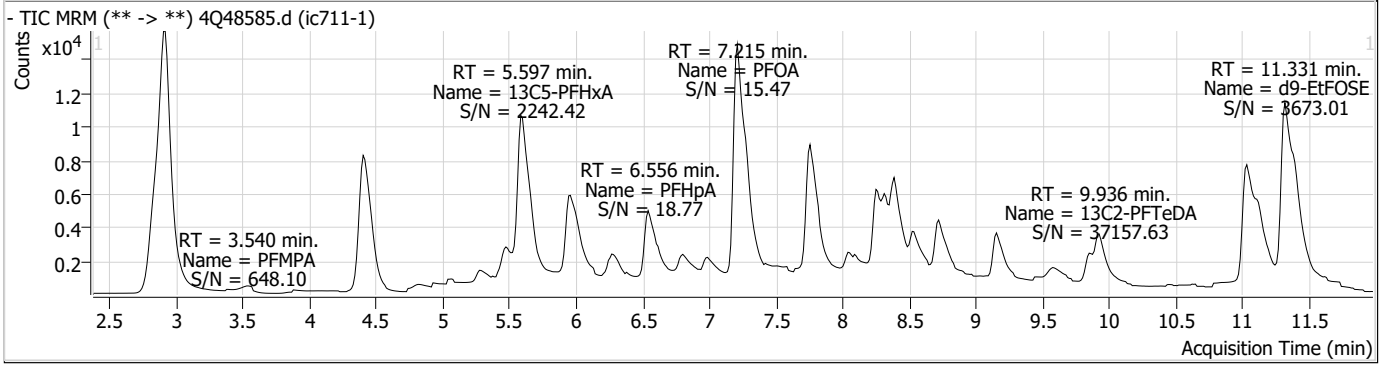
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.2
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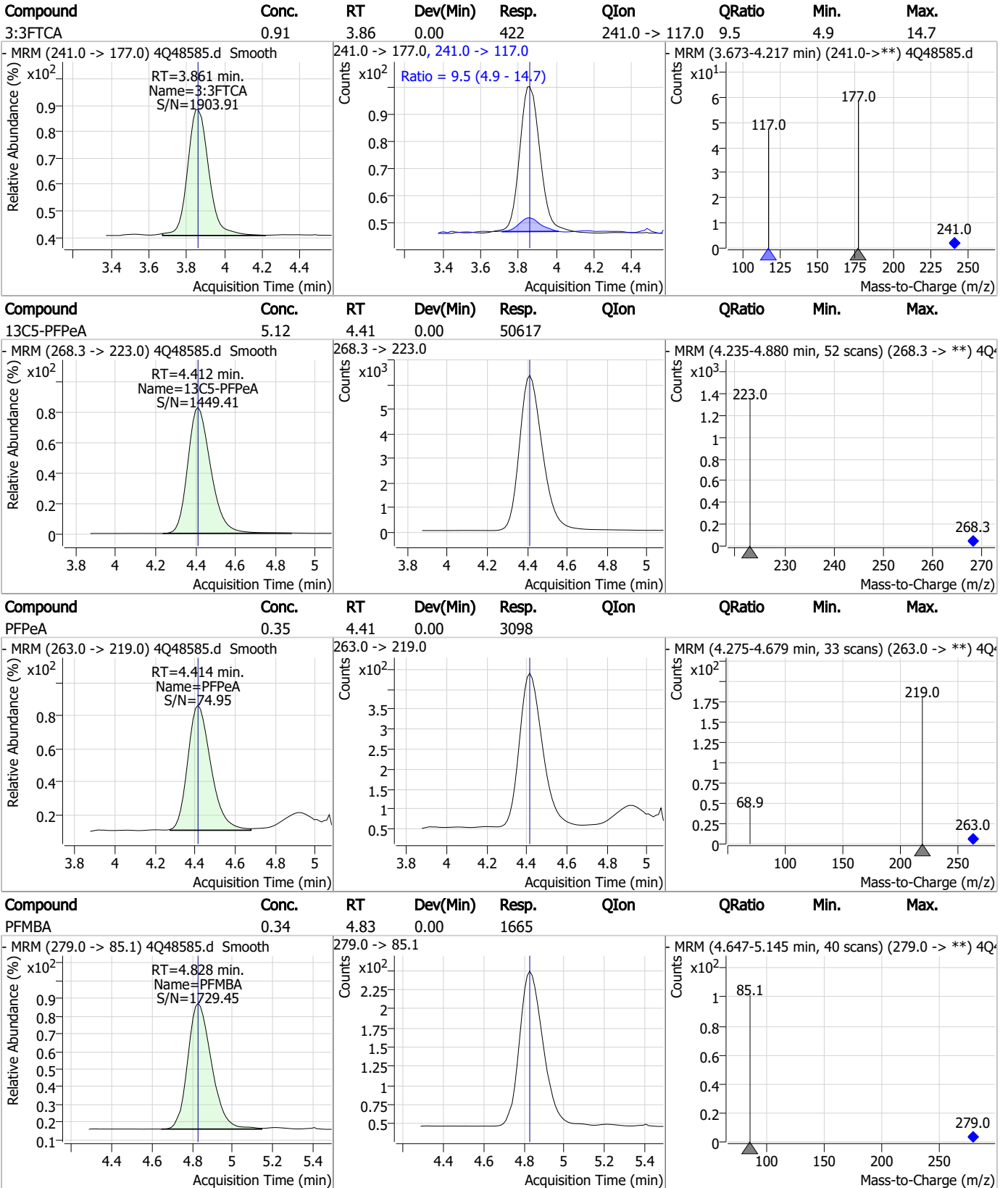
Perfluorinated Compounds by LC/MS/MS



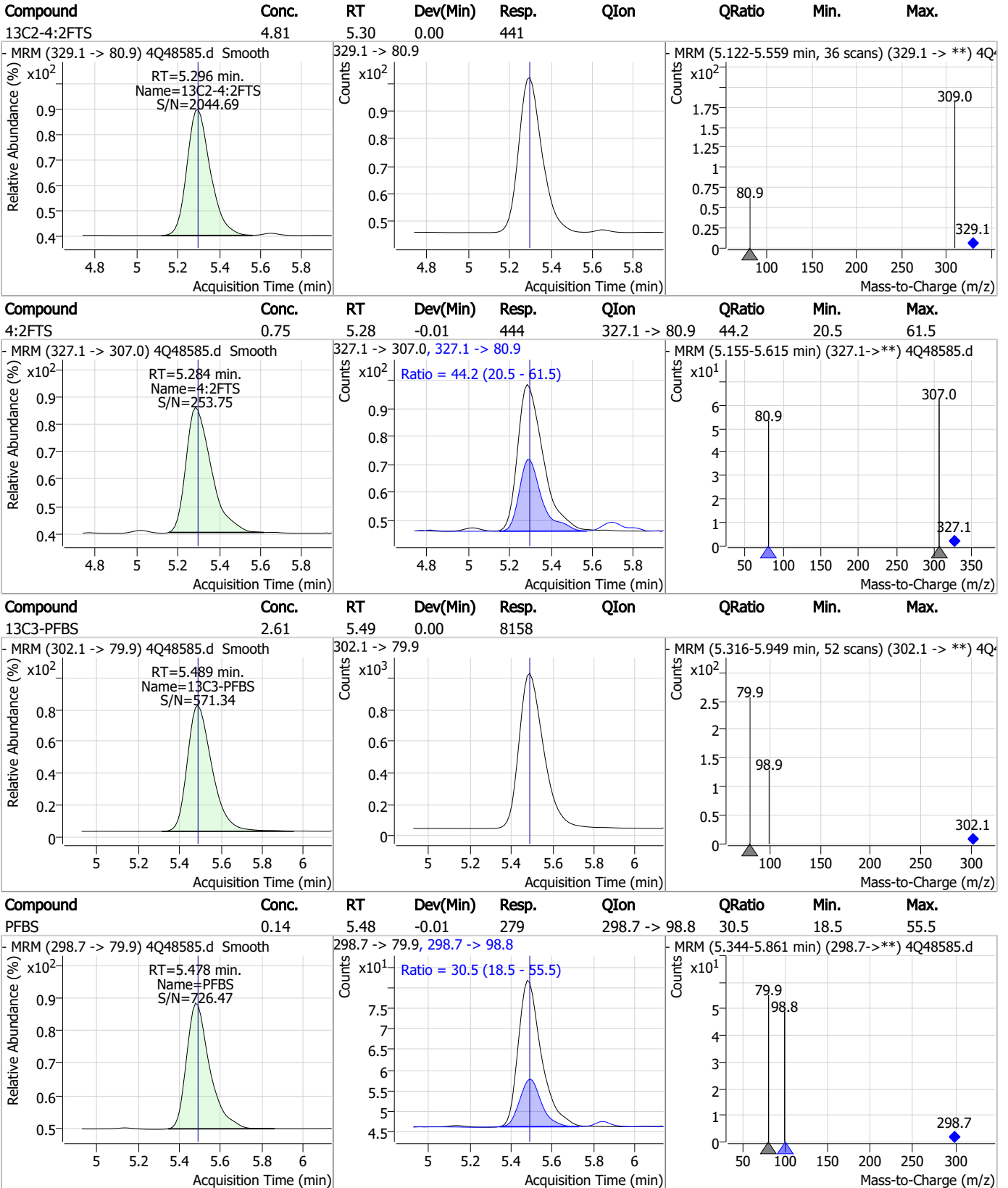
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Perfluorinated Compounds by LC/MS/MS



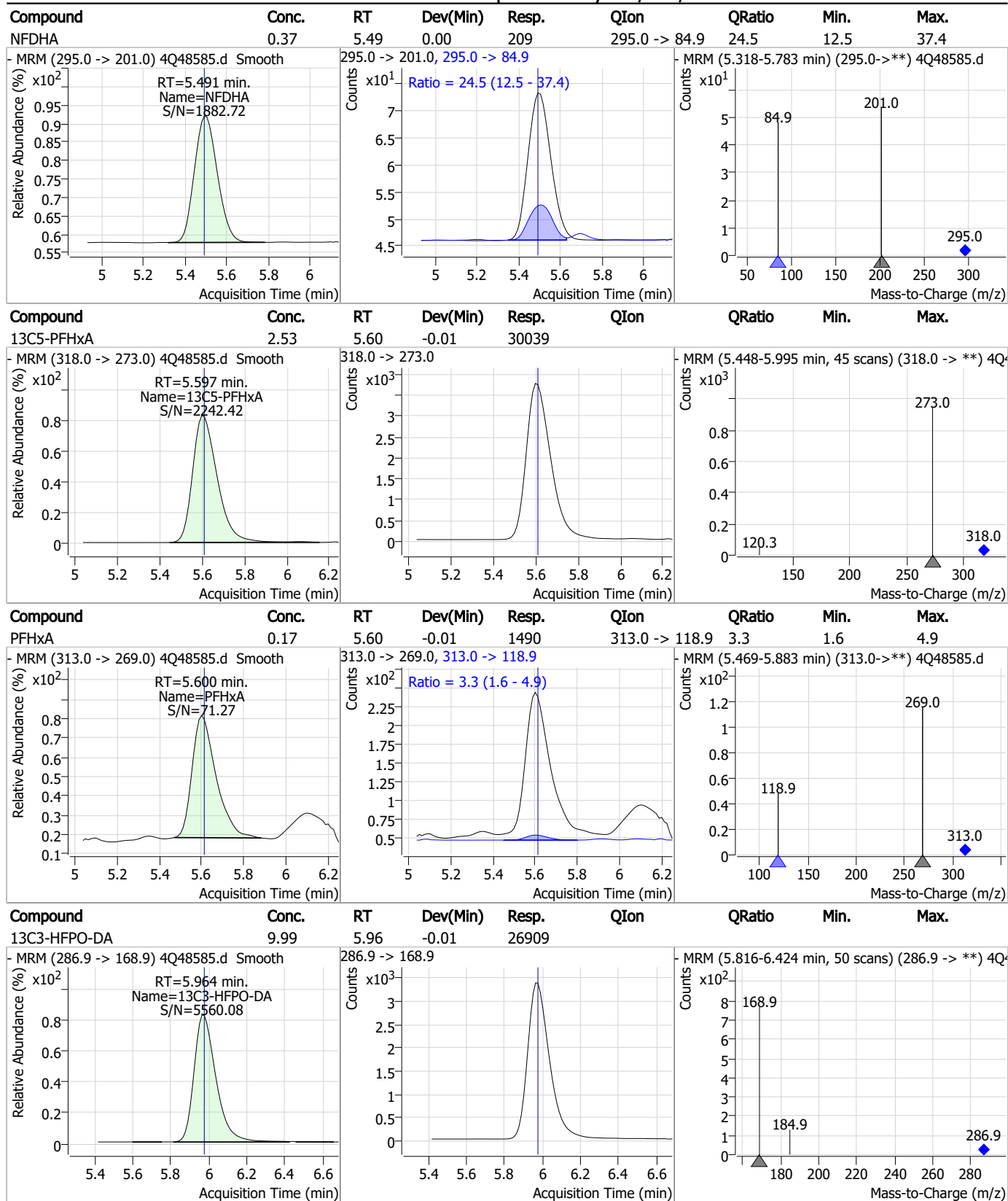
Perfluorinated Compounds by LC/MS/MS



7.7.2

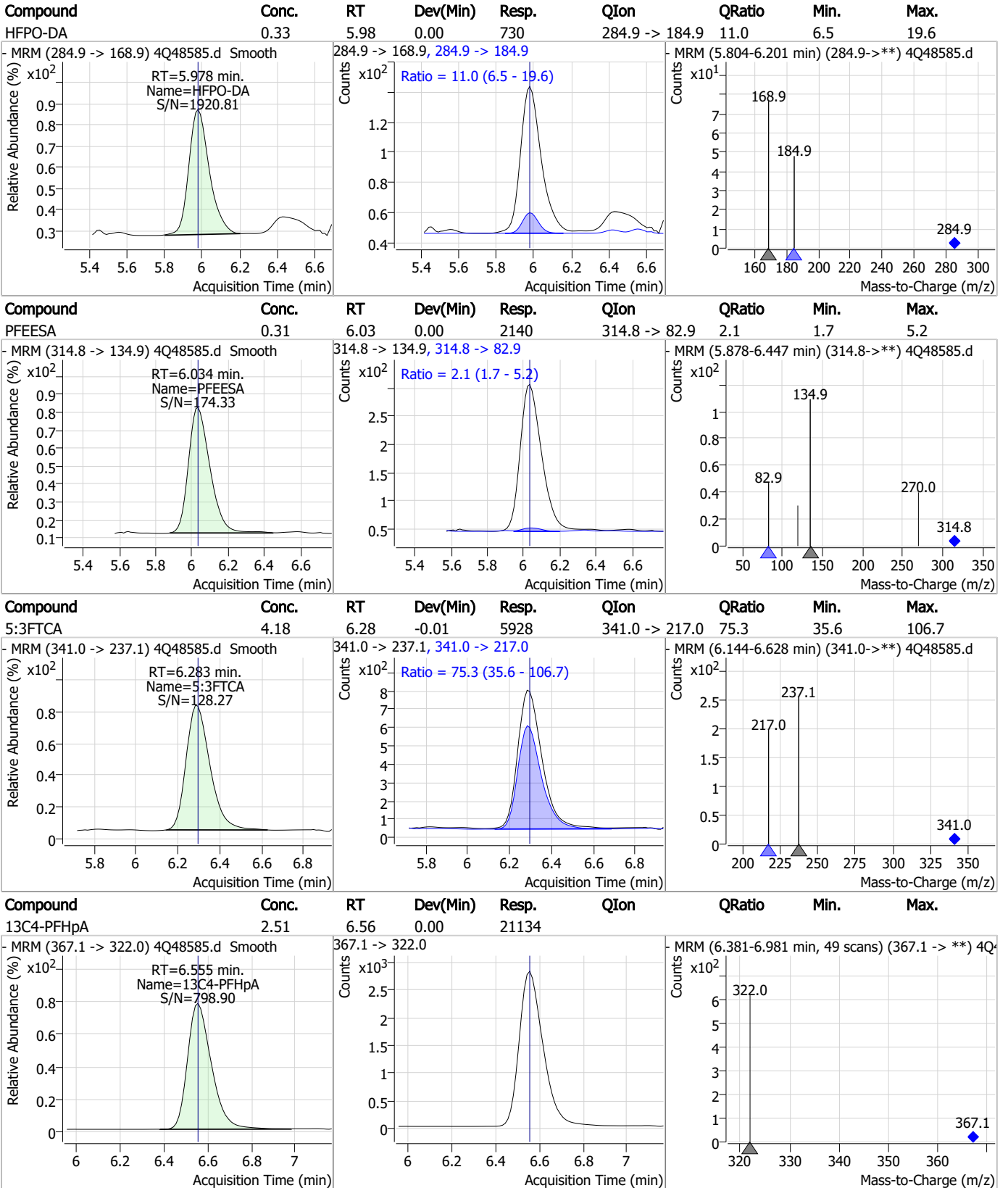
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Perfluorinated Compounds by LC/MS/MS

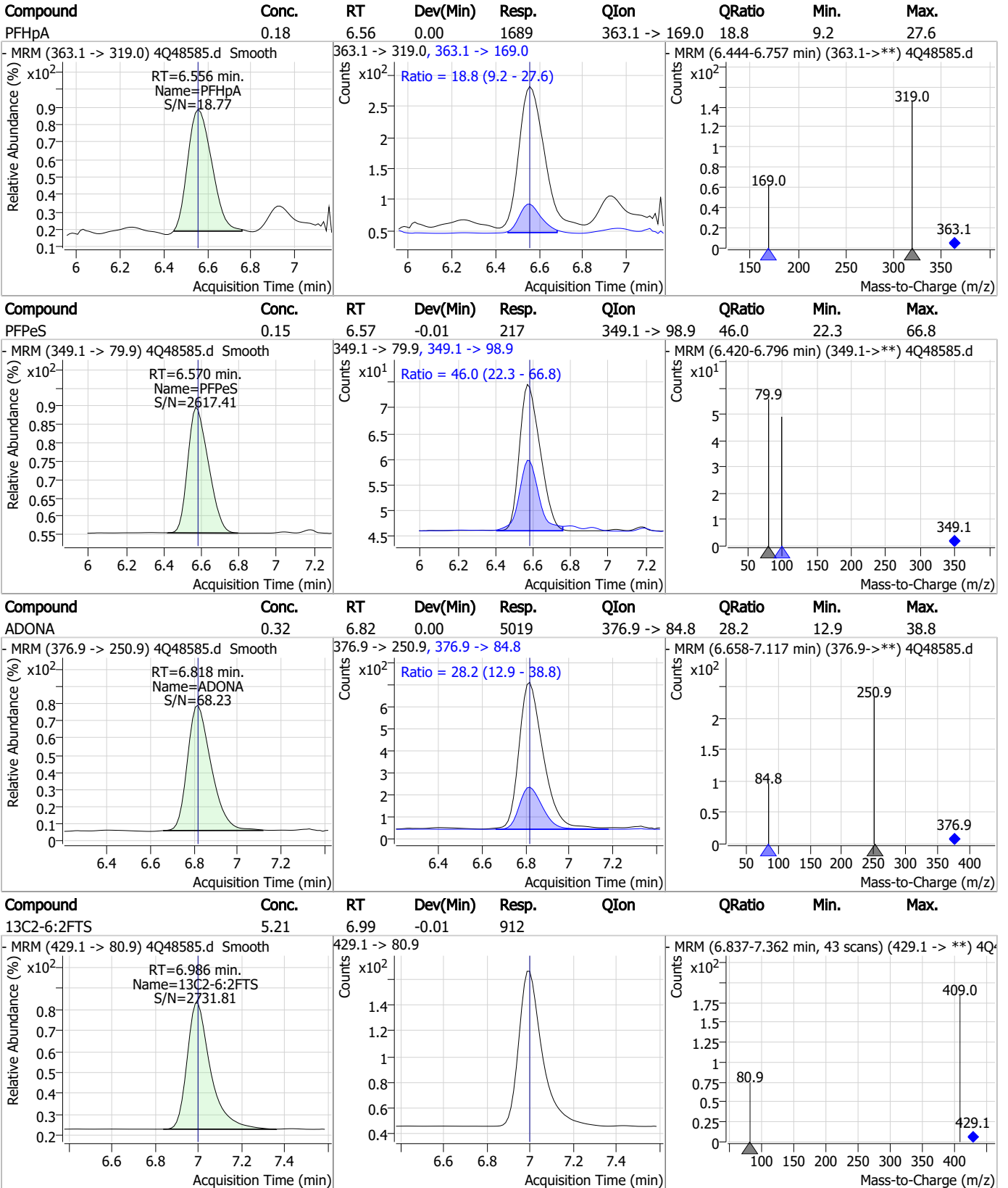


7.7.2
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

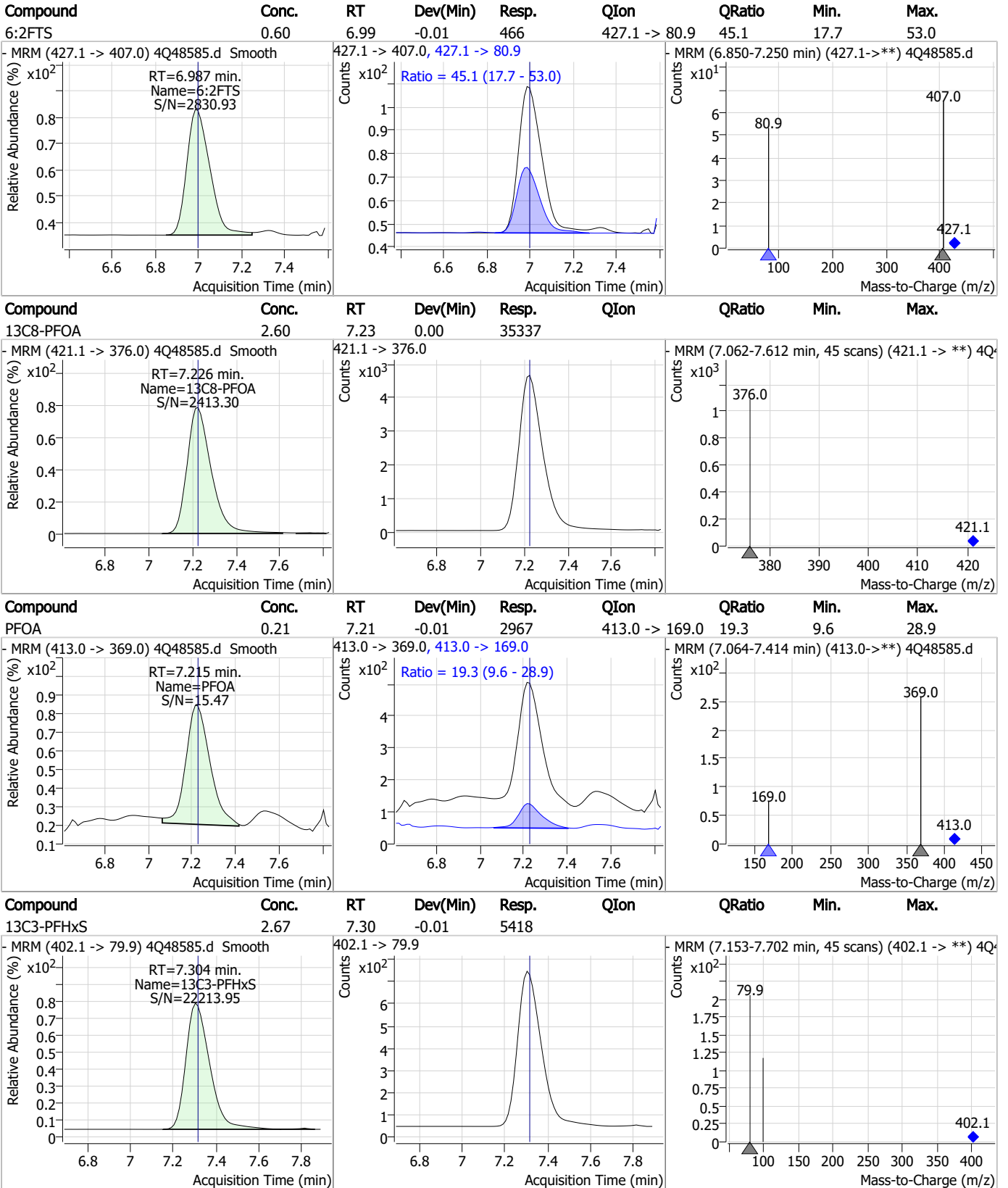


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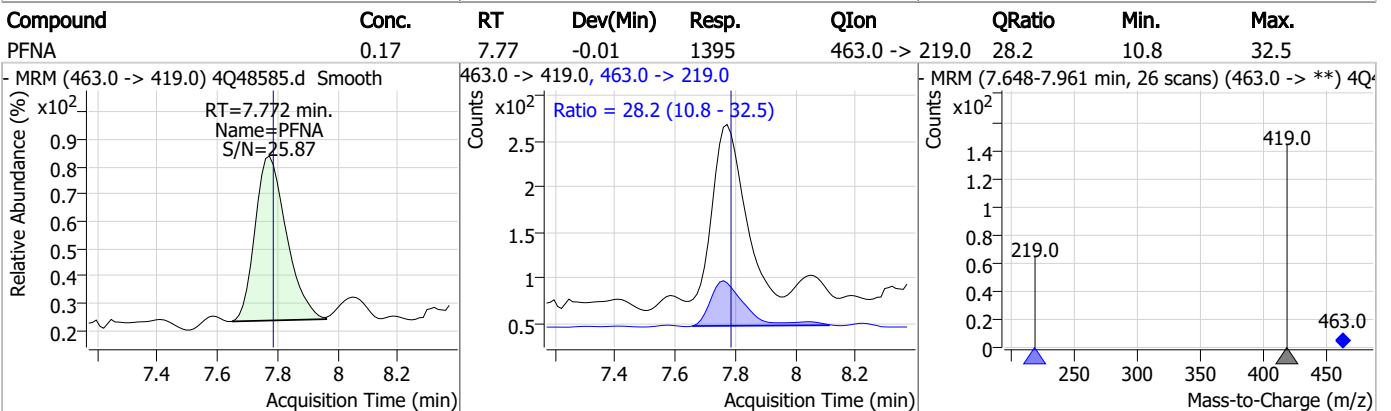
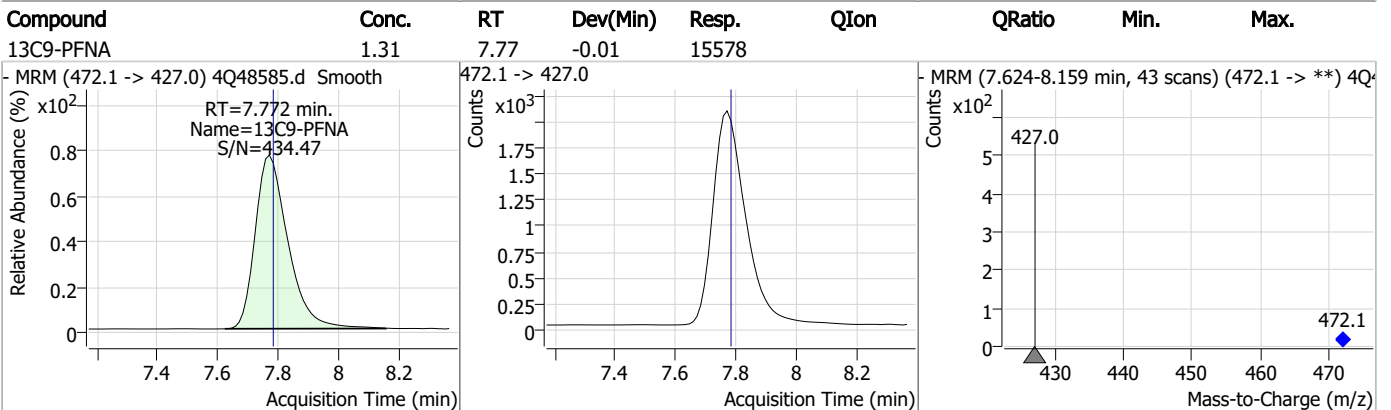
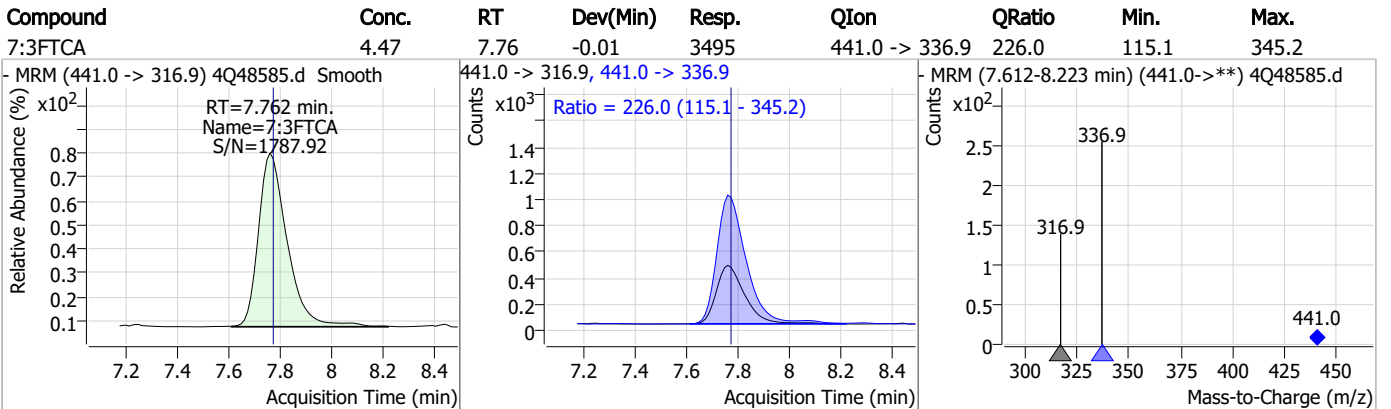
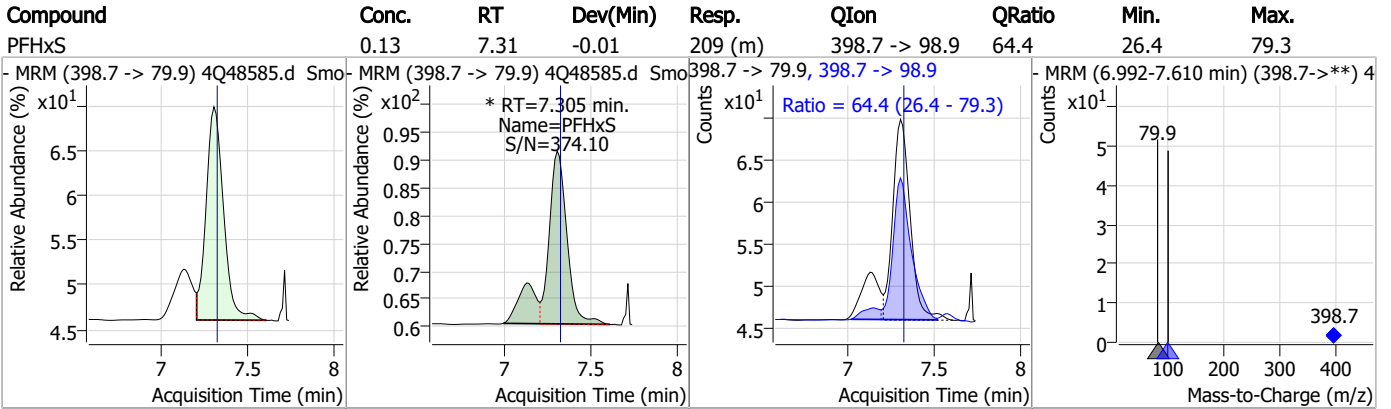
Perfluorinated Compounds by LC/MS/MS



7.7.2

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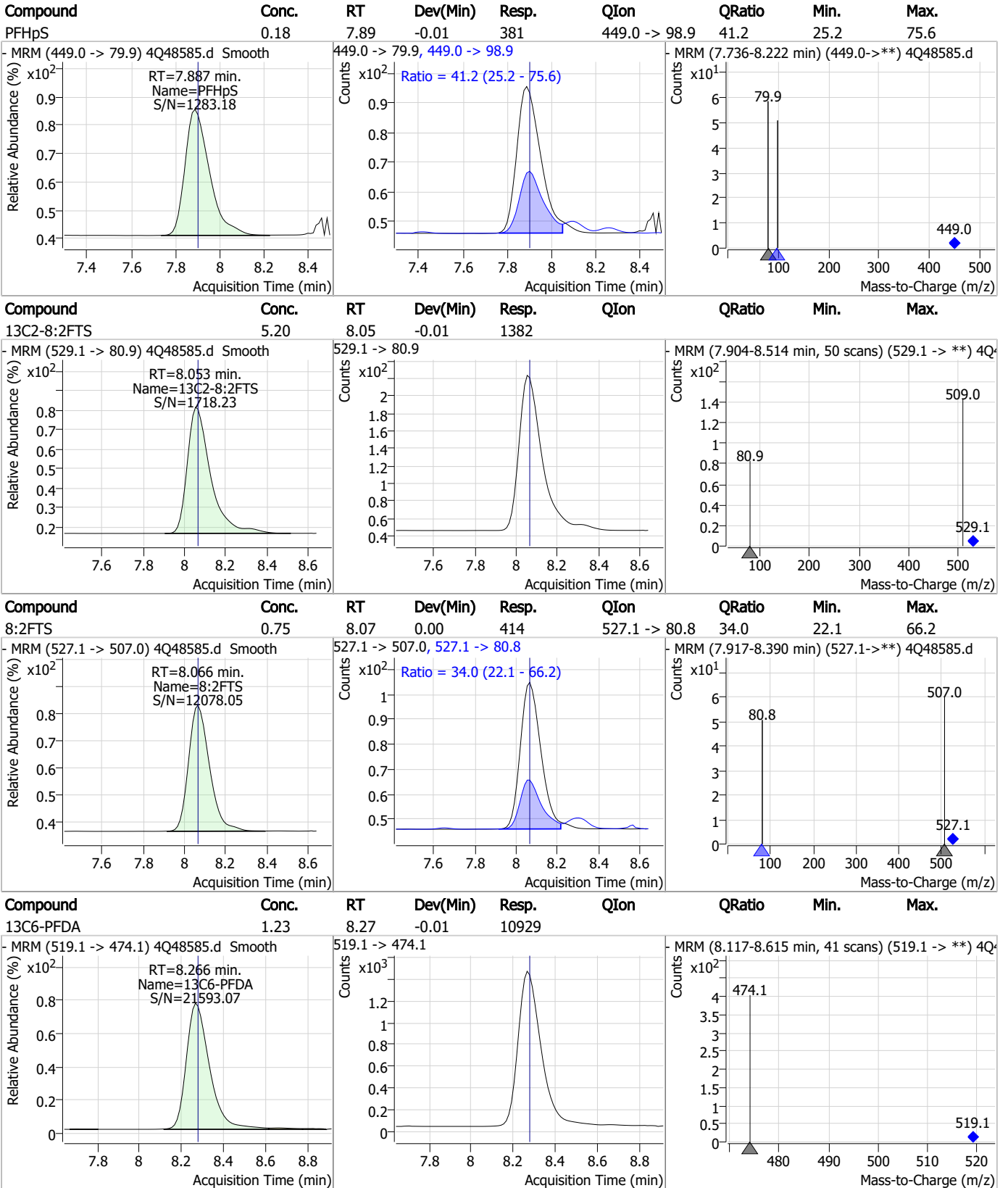
Perfluorinated Compounds by LC/MS/MS



7.7.2

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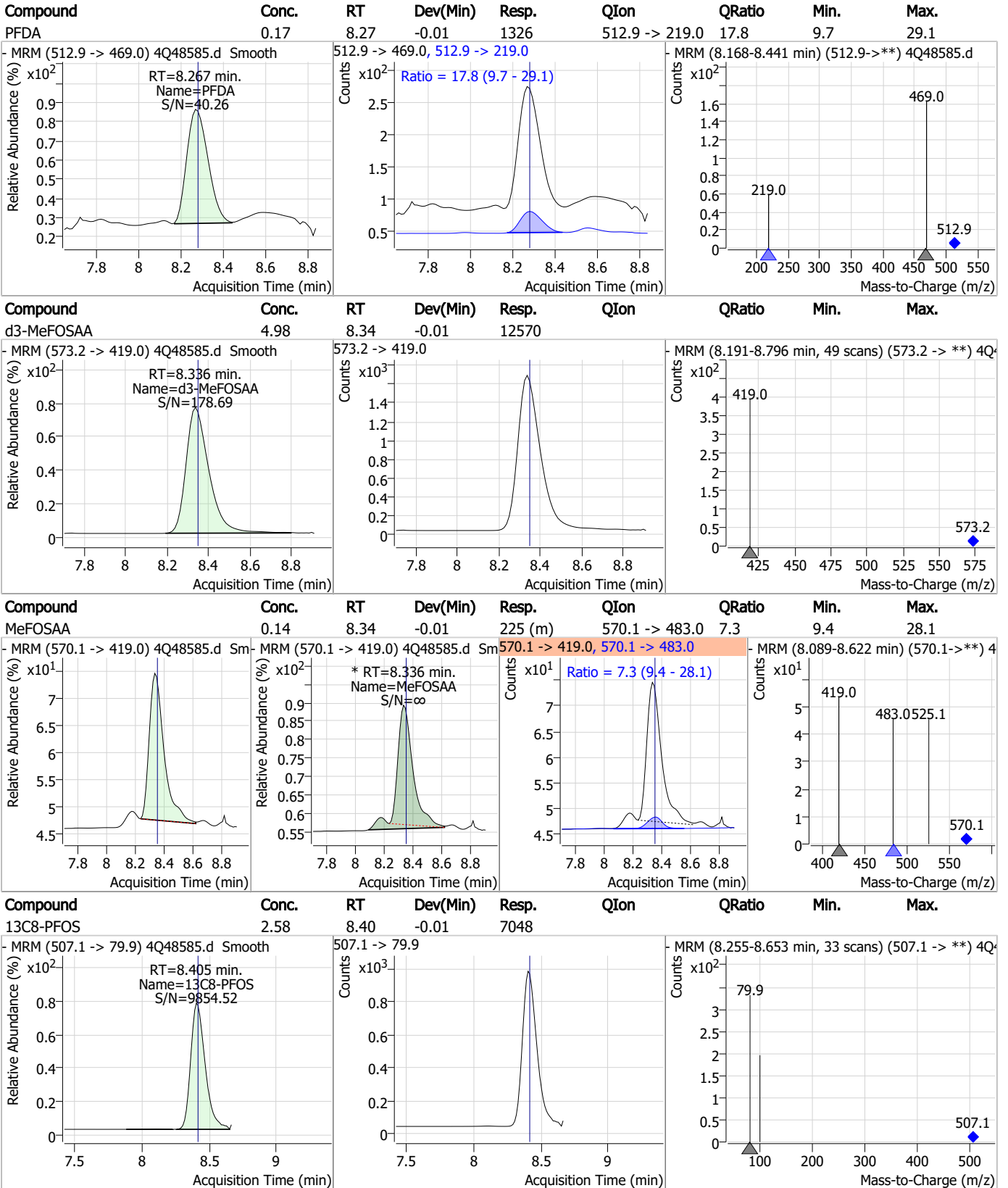
Perfluorinated Compounds by LC/MS/MS



7.7.2

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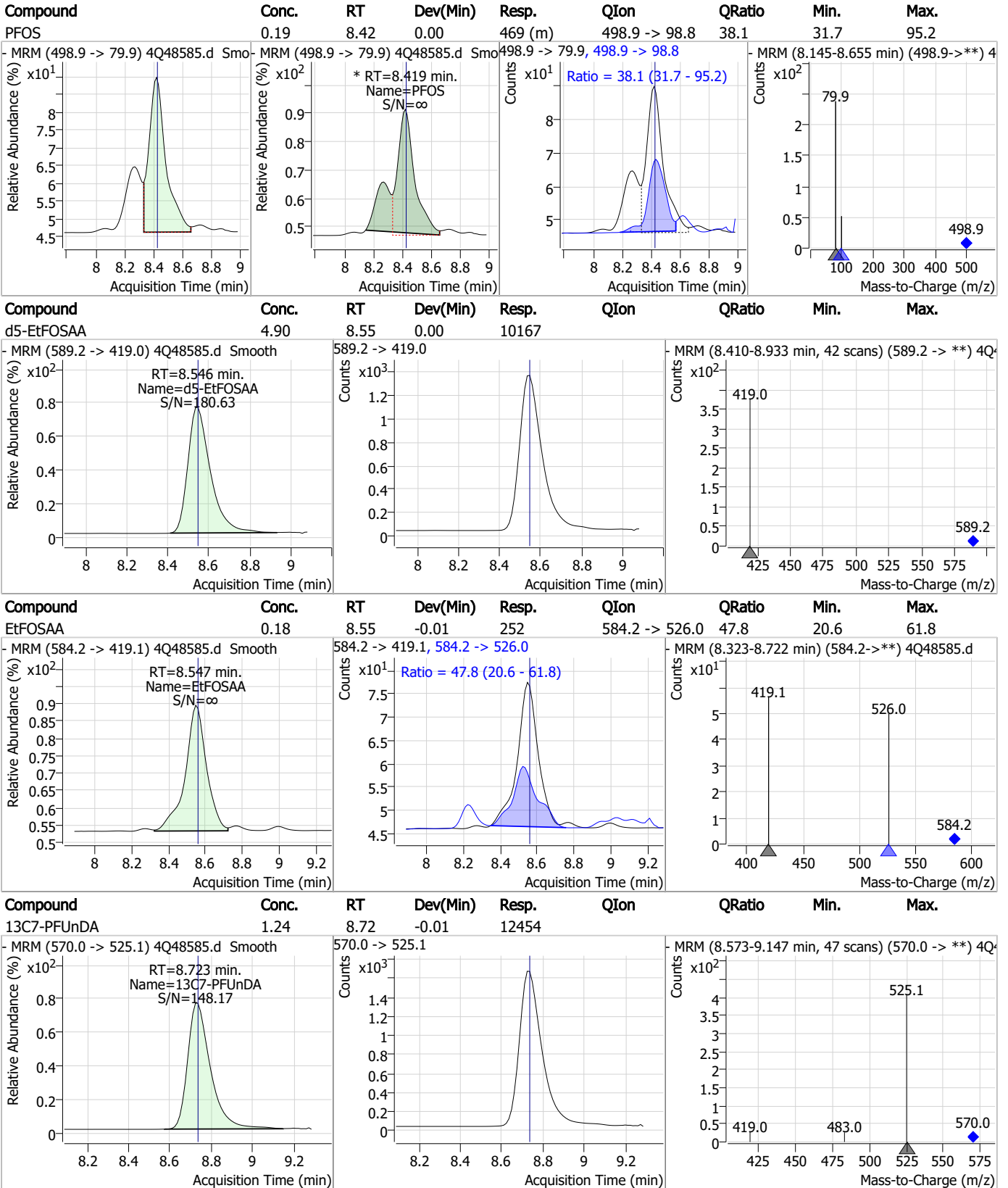
Perfluorinated Compounds by LC/MS/MS



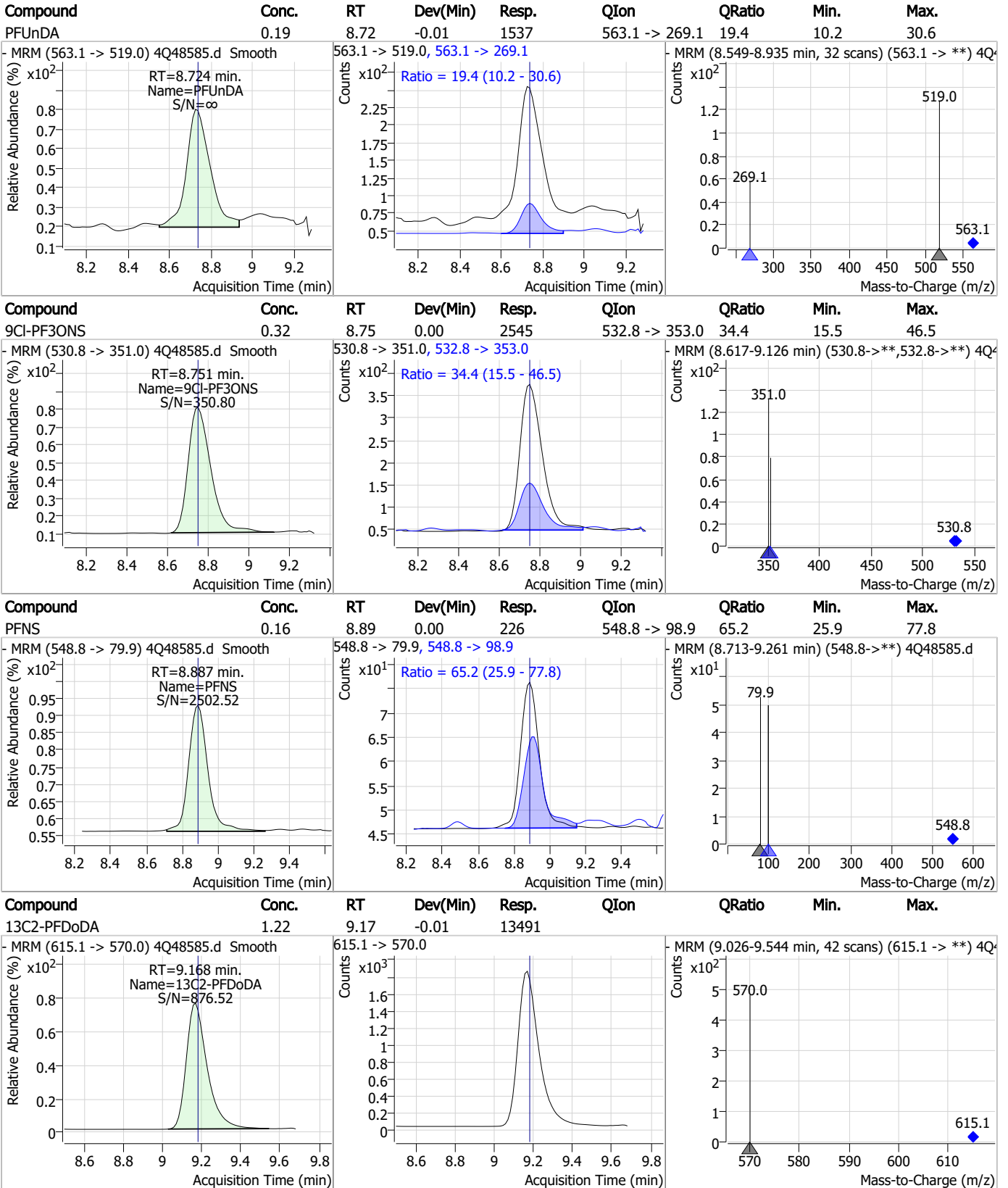
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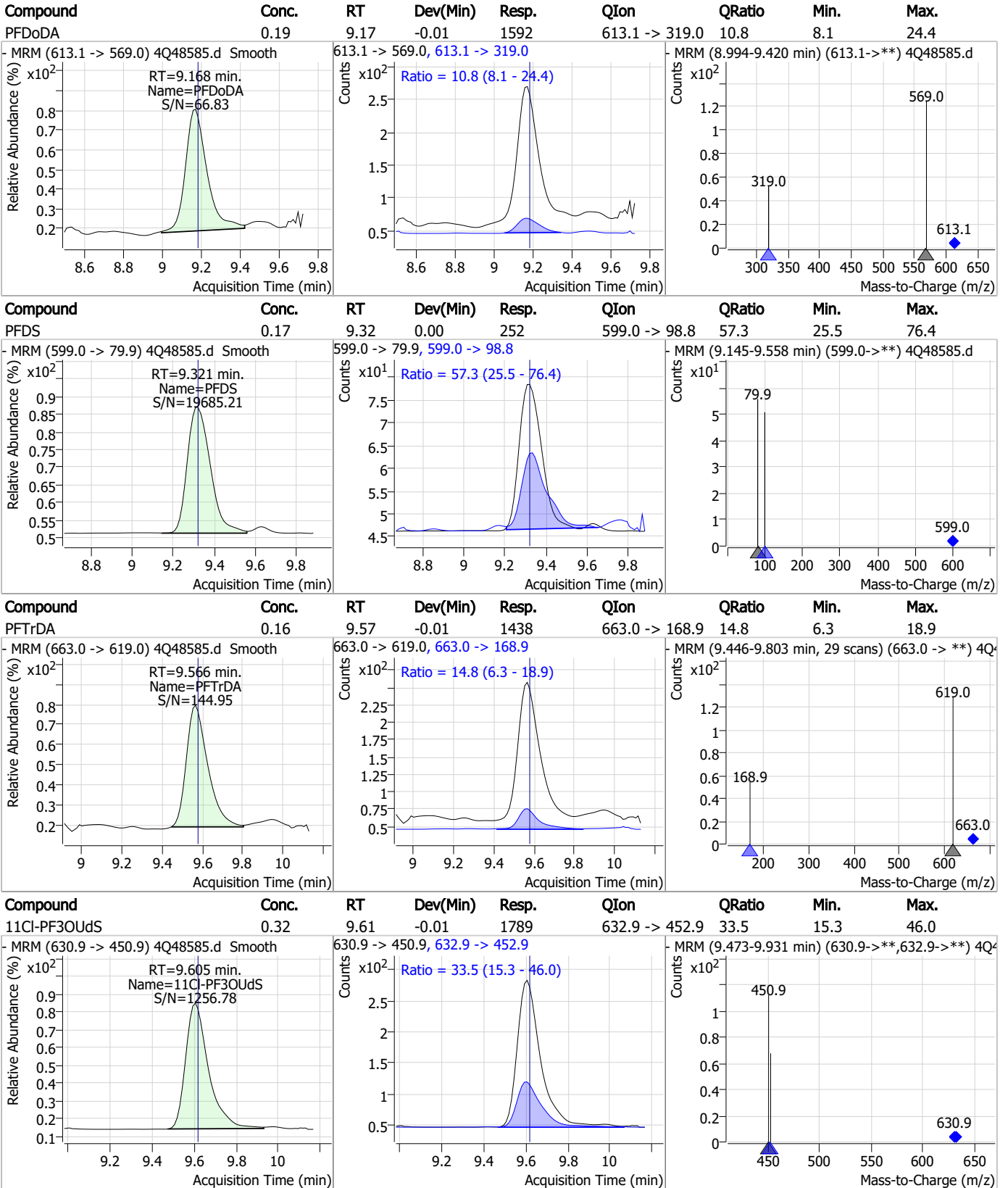
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



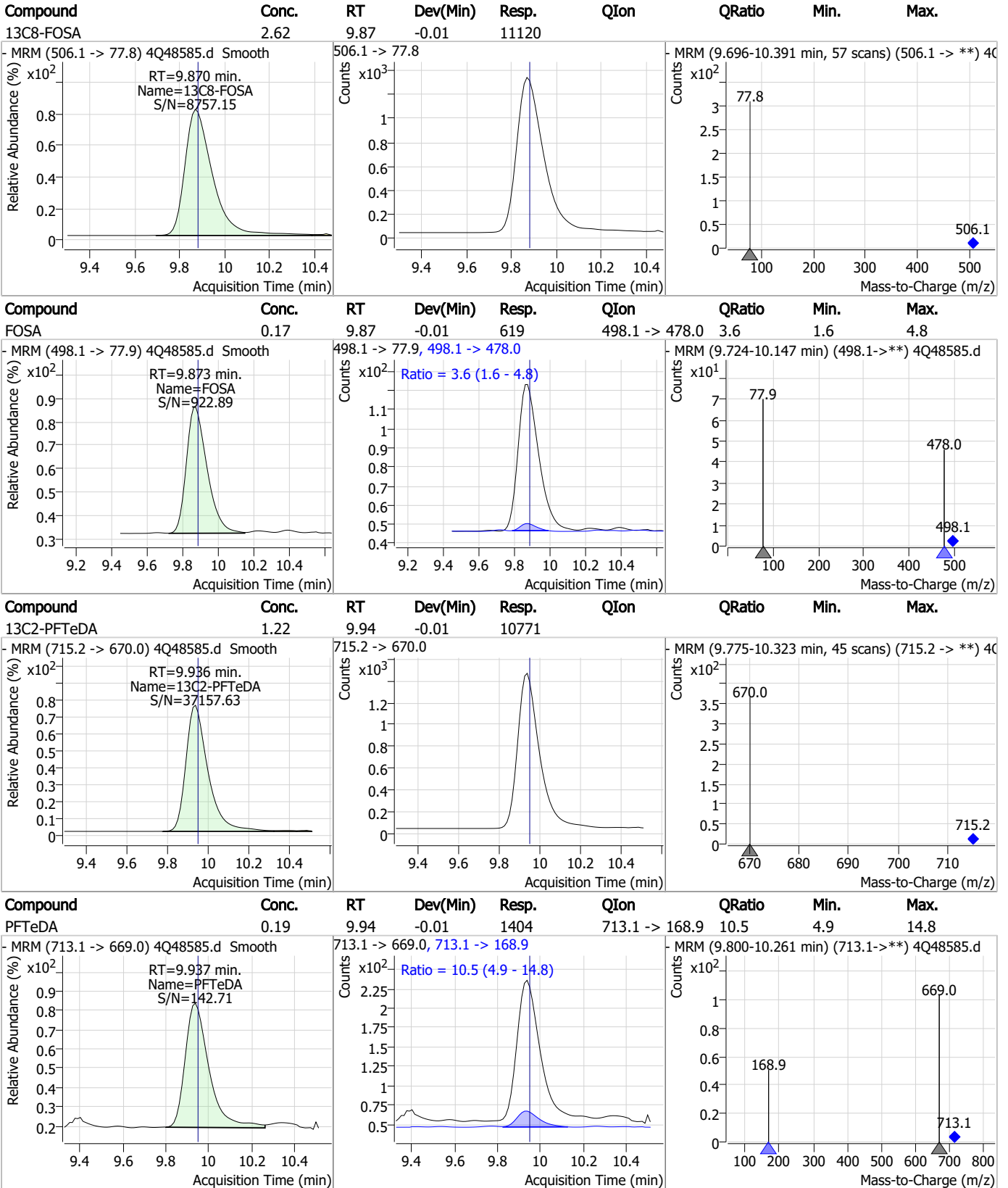
Perfluorinated Compounds by LC/MS/MS



7.7.2
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Perfluorinated Compounds by LC/MS/MS

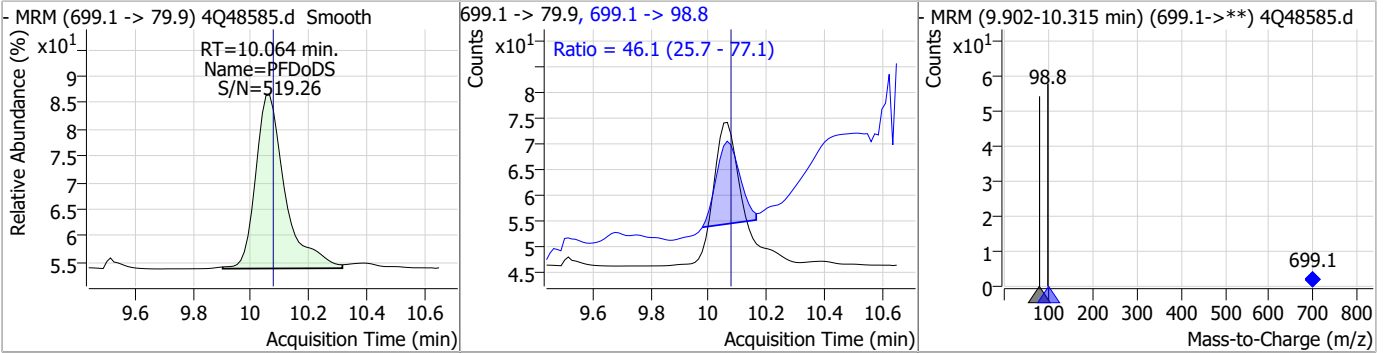


7.7.2

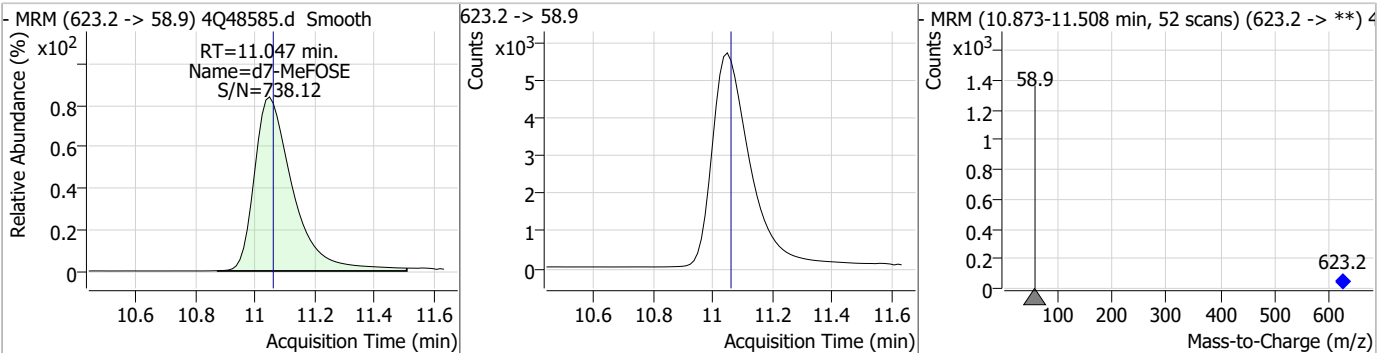
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Perfluorinated Compounds by LC/MS/MS

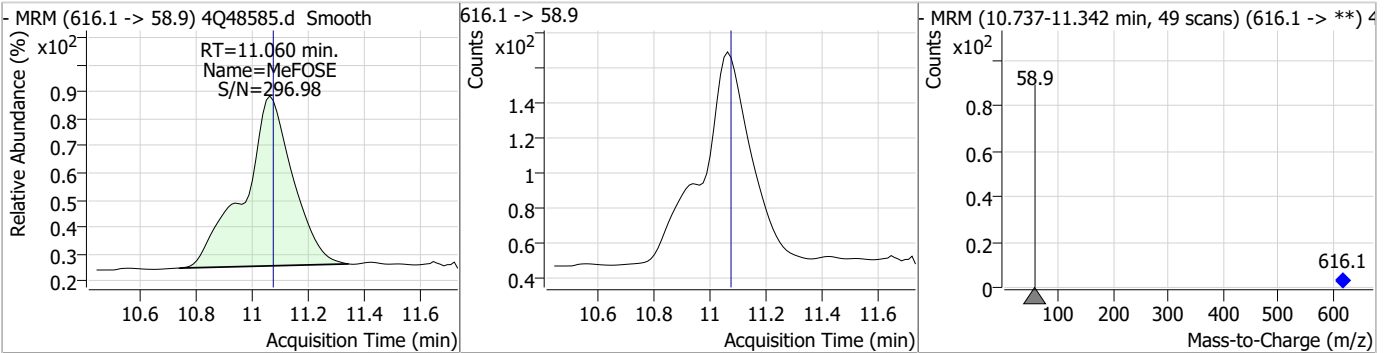
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.18	10.06	-0.01	197	699.1 -> 98.8	46.1	25.7	77.1



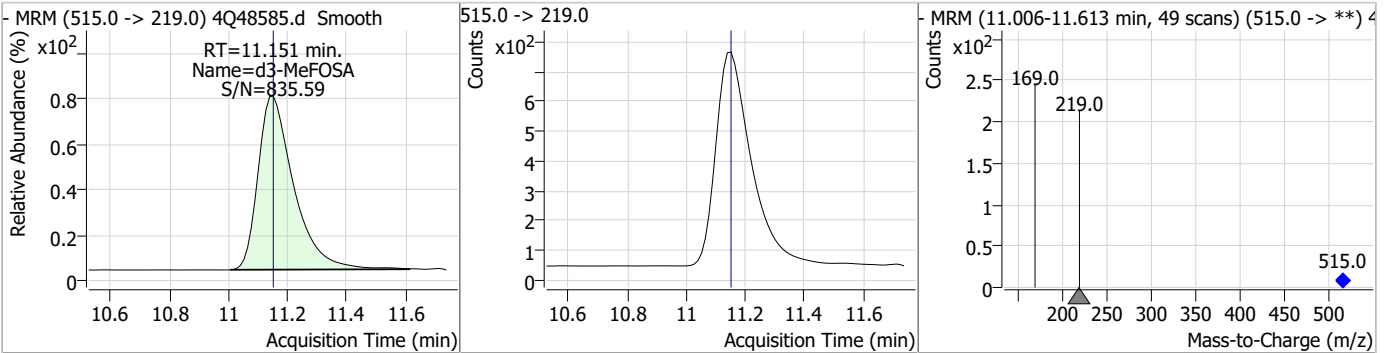
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.58	11.05	-0.01	51047				



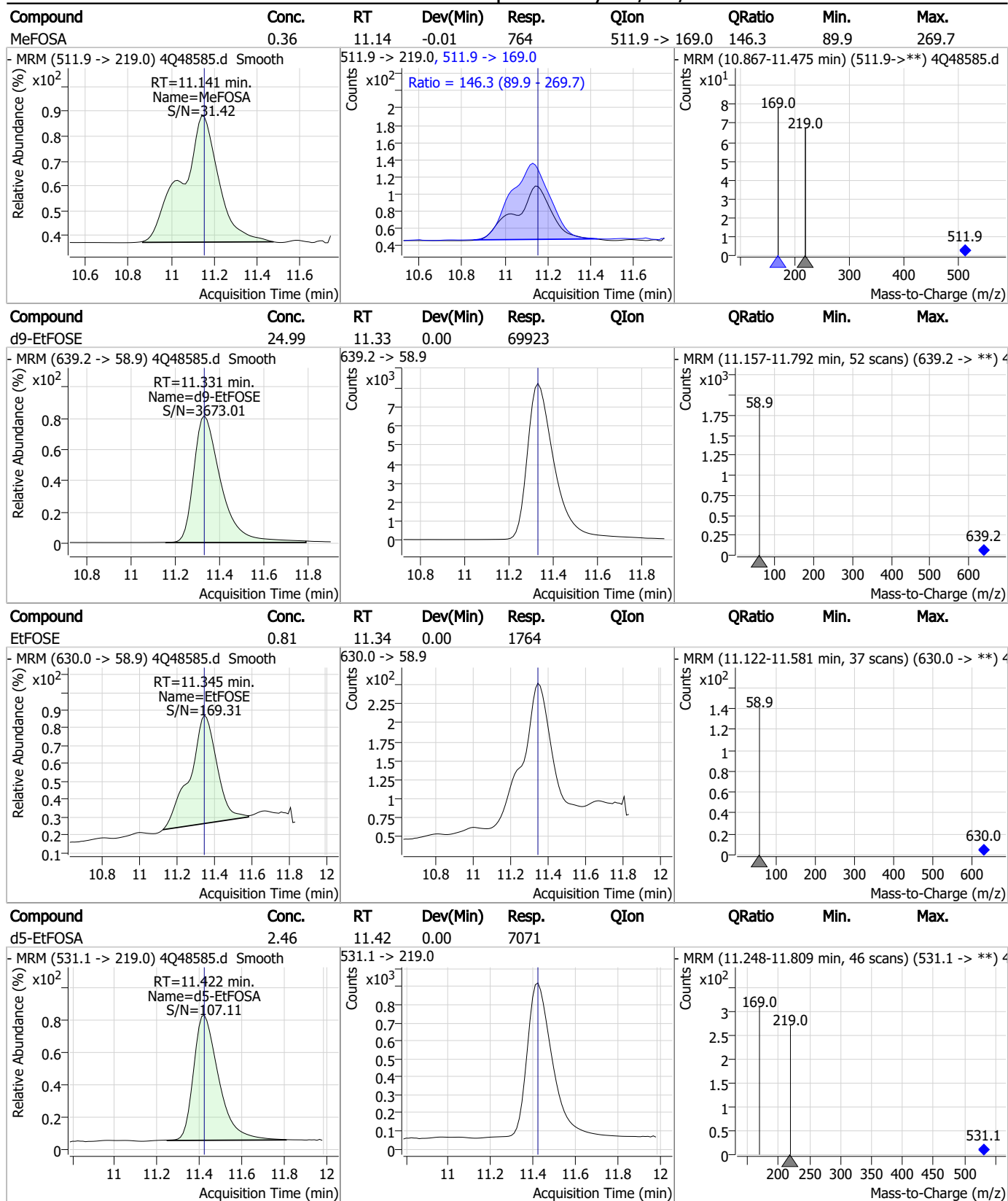
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	0.80	11.06	-0.01	1460				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.42	11.15	0.00	6032				

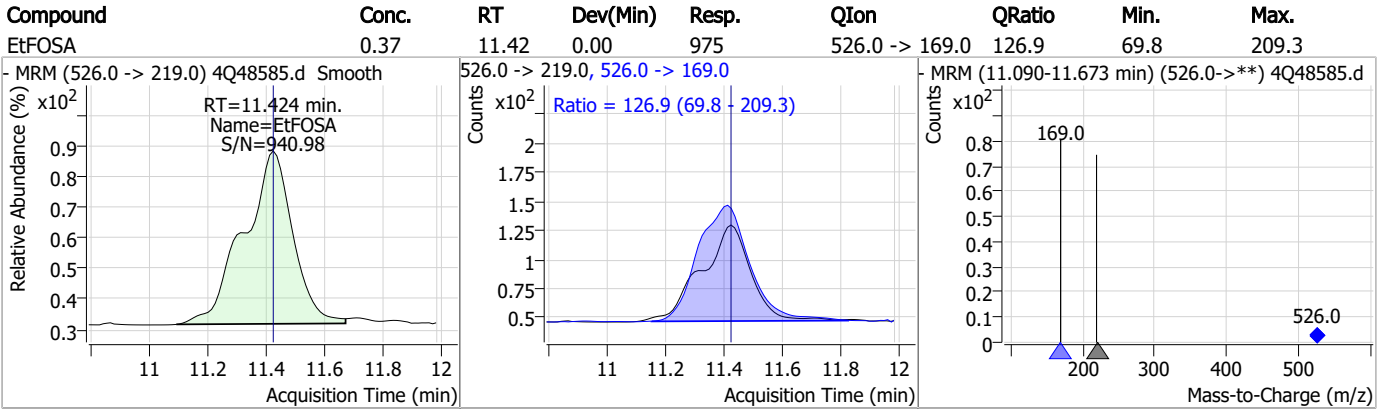


Perfluorinated Compounds by LC/MS/MS



7.7.2
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Perfluorinated Compounds by LC/MS/MS



7.7.2

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Manual Integration Approval Summary

Sample Number: S4Q711-IC711 Method: EPA DRAFT 1633
Lab FileID: 4Q48585.D Analyst approved: 08/09/23 11:54 Anna Ludwig
Injection Time: 08/07/23 16:26 Supervisor approved: 08/09/23 14:46 Natasha Gumtie

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		8.42	Split peak

7.7.2.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48586.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/7/2023 4:41:00 PM
 Sample Name : ic711-2
 Vial : P1-A3
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q711.batch.bin
 Sample Information : OP97964,S4Q711,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.899	216.8 -> 171.9	75160	10.00 µg/L	-0.013
M5-PFPeA	4.412	268.3 -> 223.0	47710	5.00 µg/L	0.000
M5-PFHxA	5.610	318.0 -> 273.0	27989	2.50 µg/L	0.000
M4-PFHpA	6.555	367.1 -> 322.0	19722	2.50 µg/L	0.000
M8-PFOA	7.226	421.1 -> 376.0	34735	2.50 µg/L	0.000
M9-PFNA	7.772	472.1 -> 427.0	14429	1.25 µg/L	-0.013
M6-PFDA	8.266	519.1 -> 474.1	10589	1.25 µg/L	-0.012
M7-PFUnDA	8.736	570.0 -> 525.1	11818	1.25 µg/L	0.000
M2-PFDoDA	9.168	615.1 -> 570.0	12935	1.25 µg/L	-0.012
M2-PFTeDA	9.936	715.2 -> 670.0	10335	1.25 µg/L	-0.012
M8-FOSA	9.870	506.1 -> 77.8	10028	2.50 µg/L	-0.012
M3-PFBS	5.489	302.1 -> 79.9	7778	2.50 µg/L	0.000
M3-PFHxS	7.317	402.1 -> 79.9	4898	2.50 µg/L	0.000
M8-PFOS	8.405	507.1 -> 79.9	6719	2.50 µg/L	-0.012
M2-4:2FTS	5.296	329.1 -> 80.9	392	5.00 µg/L	0.000
M2-6:2FTS	6.998	429.1 -> 80.9	864	5.00 µg/L	0.000
M2-8:2FTS	8.065	529.1 -> 80.9	1286	5.00 µg/L	0.000
M3-MeFOSAA	8.336	573.2 -> 419.0	12097	5.00 µg/L	-0.012
M3-HFPO-DA	5.977	286.9 -> 168.9	25277	10.00 µg/L	0.000
M5-EtFOSAA	8.546	589.2 -> 419.0	9472	5.00 µg/L	0.000
M7-MeFOSE	11.047	623.2 -> 58.9	48401	25.00 µg/L	-0.012
M9-EtFOSE	11.331	639.2 -> 58.9	68253	25.00 µg/L	0.000
M5-EtFOSA	11.422	531.1 -> 219.0	6569	2.50 µg/L	0.000
M3-MeFOSA	11.151	515.0 -> 219.0	5645	2.50 µg/L	0.000
13C4-PFOS	8.405	502.8 -> 79.9	6492	2.50 µg/L	-0.012
13C3-PFBA	2.903	216.0 -> 172.0	44054	5.00 µg/L	0.000
18O2-PFHxS	7.316	403.0 -> 83.9	3325	2.50 µg/L	0.000
13C4-PFOA	7.226	417.1 -> 372.0	39117	2.50 µg/L	0.000
13C2-PFDA	8.267	515.1 -> 470.1	12215	1.25 µg/L	-0.012
13C5-PFNA	7.772	468.0 -> 423.0	15440	1.25 µg/L	-0.013
13C2-PFHxA	5.611	315.1 -> 270.0	26664	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.296	329.1 -> 80.9	392	4.72 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.5%		
13C2-6:2FTS	6.998	429.1 -> 80.9	864	5.45 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.9%		
13C2-8:2FTS	8.065	529.1 -> 80.9	1286	5.33 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.7%		
13C2-PFDoDA	9.168	615.1 -> 570.0	12935	1.24 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C2-PFTeDA	9.936	715.2 -> 670.0	10335	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C3-PFBS	5.489	302.1 -> 79.9	7778	2.75 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.9%		
13C3-PFHxS	7.317	402.1 -> 79.9	4898	2.66 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 = 106.4%	
13C4-PFBA	2.899	216.8 -> 171.9	75160	9.98 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C4-PFHpA	6.555	367.1 -> 322.0	19722	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C5-PFHxA	5.610	318.0 -> 273.0	27989	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C5-PFPeA	4.412	268.3 -> 223.0	47710	5.12 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C6-PFDA	8.266	519.1 -> 474.1	10589	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C7-PFUnDA	8.736	570.0 -> 525.1	11818	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C8-FOSA	9.870	506.1 -> 77.8	10028	2.48 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C8-PFOA	7.226	421.1 -> 376.0	34735	2.70 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.9%	
13C8-PFOS	8.405	507.1 -> 79.9	6719	2.58 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C9-PFNA	7.772	472.1 -> 427.0	14429	1.23 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.7%	
d3-MeFOSAA	8.336	573.2 -> 419.0	12097	5.02 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C3-HFPO-DA	5.977	286.9 -> 168.9	25277	9.95 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
d3-MeFOSA	11.151	515.0 -> 219.0	5645	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.7%	
d5-EtFOSAA	8.546	589.2 -> 419.0	9472	4.78 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.6%	
d7-MeFOSE	11.047	623.2 -> 58.9	48401	25.39 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.5%	
d9-EtFOSE	11.331	639.2 -> 58.9	68253	25.53 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.1%	
d5-EtFOSA	11.422	531.1 -> 219.0	6569	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.7%	
Target Compounds					QValue
4:2FTS	5.284	327.1 -> 307.0	913	1.73 µg/L	91
		327.1 -> 80.9	323		
6:2FTS	6.987	427.1 -> 407.0	1062	1.45 µg/L	100
		427.1 -> 80.9	374		
8:2FTS	8.066	527.1 -> 507.0	814	1.58 µg/L	94
		527.1 -> 80.8	389		
EtFOSAA	8.559	584.2 -> 419.1	511	0.39 µg/L	m 95
		584.2 -> 526.0	227		
FOSA	9.873	498.1 -> 77.9	1275	0.39 µg/L	90
		498.1 -> 478.0			
MeFOSAA	8.349	570.1 -> 419.0	569	0.38 µg/L	m 95
		570.1 -> 483.0	119		
PFBA	2.907	212.8 -> 168.9	2465	1.42 µg/L	100
PFBS	5.478	298.7 -> 79.9	568	0.30 µg/L	98
		298.7 -> 98.8	218		
PFDA	8.279	512.9 -> 469.0	2515	0.34 µg/L	95
		512.9 -> 219.0	541		
PFDODA	9.168	613.1 -> 569.0	2764	0.34 µg/L	99
		613.1 -> 319.0	457		
PFDS	9.321	599.0 -> 79.9	514	0.37 µg/L	91

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	228			
PFHpA	6.556	363.1 -> 319.0	3146	0.35	µg/L	96
		363.1 -> 169.0	638			
PFHpS	7.900	449.0 -> 79.9	713	0.35	µg/L	95
		449.0 -> 98.9	337			
PFHxA	5.600	313.0 -> 269.0	3152	0.39	µg/L	99
		313.0 -> 118.9	111			
PFHxS	7.318	398.7 -> 79.9	537	0.38	µg/L	m 92
		398.7 -> 98.9	255			
PFNA	7.772	463.0 -> 419.0	2951	0.39	µg/L	86
		463.0 -> 219.0	447			
PFNS	8.887	548.8 -> 79.9	449	0.34	µg/L	98
		548.8 -> 98.9	239			
PFOA	7.227	413.0 -> 369.0	4365	0.32	µg/L	98
		413.0 -> 169.0	873			
PFOS	8.406	498.9 -> 79.9	861	0.36	µg/L	m 89
		498.9 -> 98.8	470			
PFPeA	4.414	263.0 -> 219.0	5995	0.72	µg/L	100
PFPeS	6.570	349.1 -> 79.9	422	0.32	µg/L	81
		349.1 -> 98.9	239			
PFTeDA	9.937	713.1 -> 669.0	2730	0.38	µg/L	99
		713.1 -> 168.9	264			
PFTrDA	9.566	663.0 -> 619.0	2848	0.34	µg/L	97
		663.0 -> 168.9	320			
PFUnDA	8.736	563.1 -> 519.0	2877	0.37	µg/L	97
		563.1 -> 269.1	622			
11Cl-PF3OUdS	9.605	630.9 -> 450.9	3610	0.68	µg/L	93
		632.9 -> 452.9	970			
9Cl-PF3ONS	8.751	530.8 -> 351.0	5376	0.72	µg/L	97
		532.8 -> 353.0	1590			
ADONA	6.818	376.9 -> 250.9	10192	0.69	µg/L	99
		376.9 -> 84.8	2701			
HFPO-DA	5.978	284.9 -> 168.9	1644	0.79	µg/L	93
		284.9 -> 184.9	167			
3:3FTCA	3.848	241.0 -> 177.0	746	1.71	µg/L	96
		241.0 -> 117.0	83			
5:3FTCA	6.283	341.0 -> 237.1	12036	9.11	µg/L	98
		341.0 -> 217.0	8398			
7:3FTCA	7.774	441.0 -> 316.9	6353	8.72	µg/L	96
		441.0 -> 336.9	15065			
EtFOSA	11.424	526.0 -> 219.0	1903	0.79	µg/L	97
		526.0 -> 169.0	2592			
EtFOSE	11.345	630.0 -> 58.9	3526	1.65	µg/L	100
MeFOSA	11.153	511.9 -> 219.0	1544	0.79	µg/L	69
		511.9 -> 169.0	2092			
MeFOSE	11.073	616.1 -> 58.9	3149	1.82	µg/L	100
PFDoDS	10.064	699.1 -> 79.9	350	0.33	µg/L	92
		699.1 -> 98.8	199			
NFDHA	5.478	295.0 -> 201.0	411	0.79	µg/L	100
		295.0 -> 84.9	102			
PFMBA	4.828	279.0 -> 85.1	3411	0.73	µg/L	100
PFMPA	3.540	229.0 -> 84.9	3309	0.73	µg/L	100
PFEESA	6.034	314.8 -> 134.9	4432	0.68	µg/L	99
		314.8 -> 82.9	163			

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

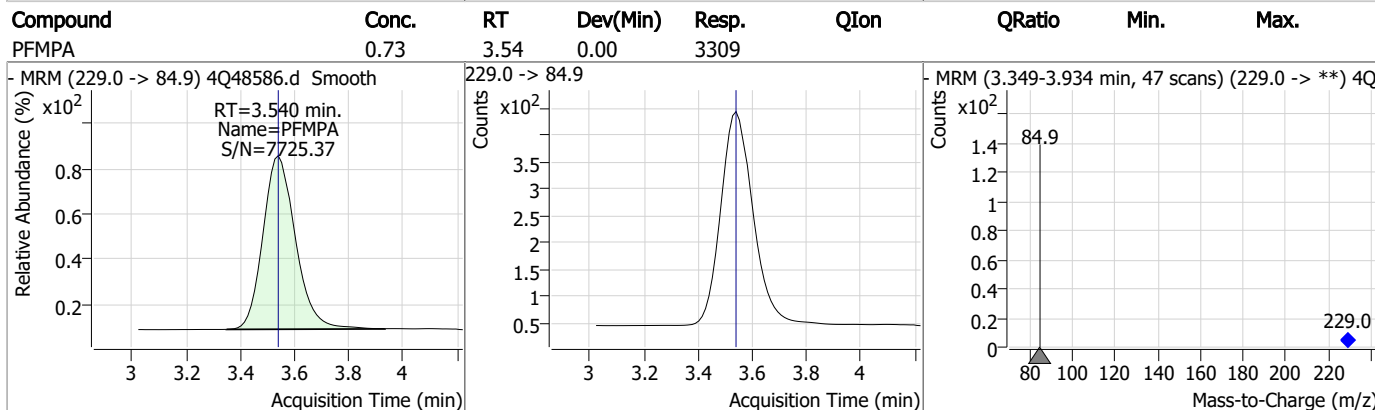
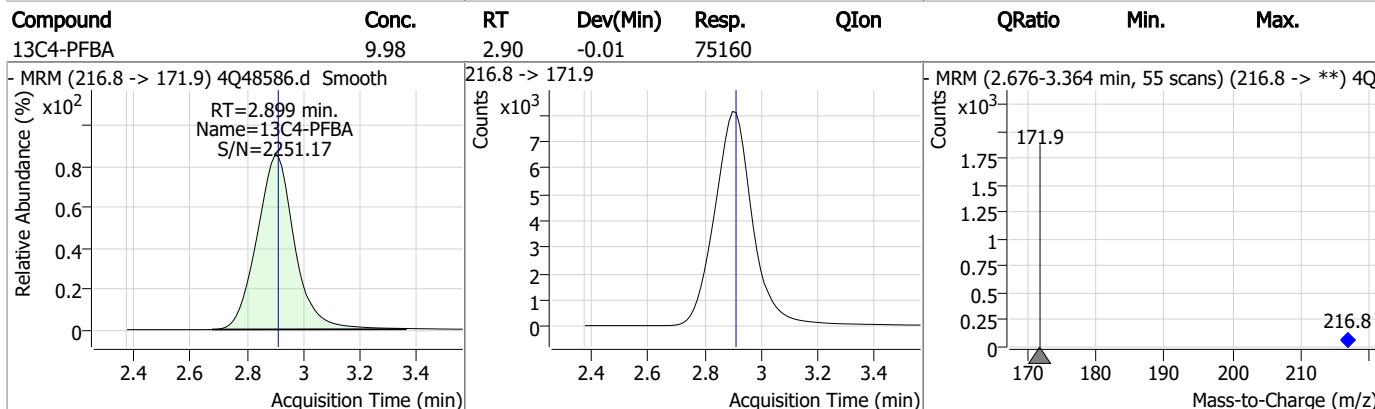
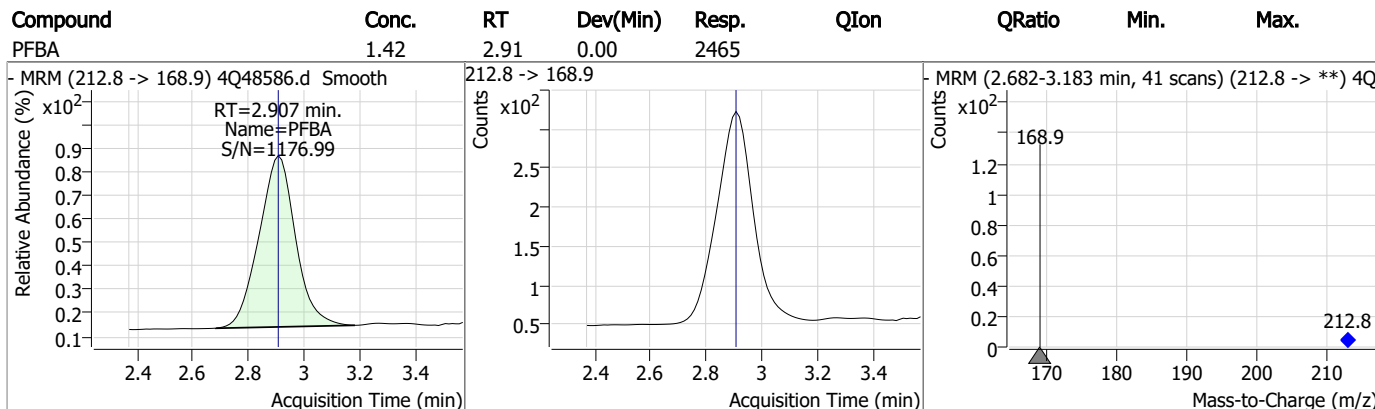
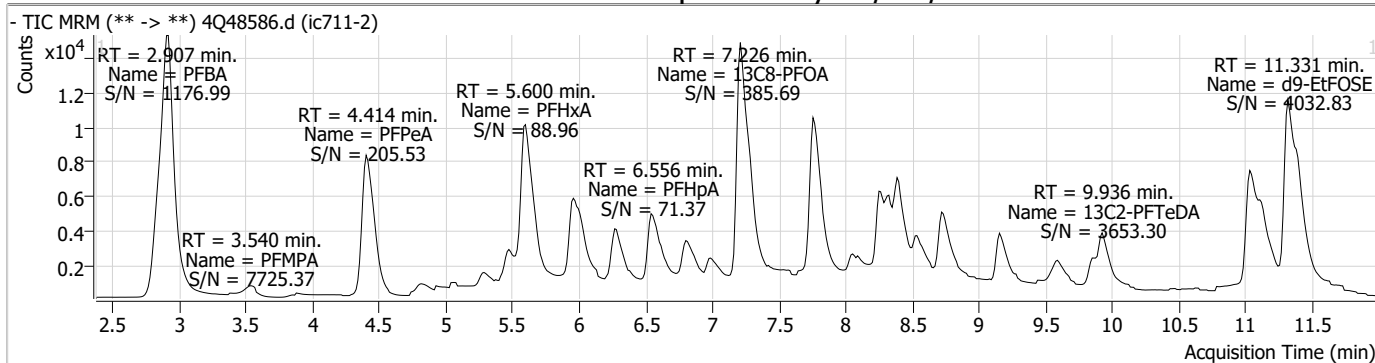
Perfluorinated Compounds by LC/MS/MS

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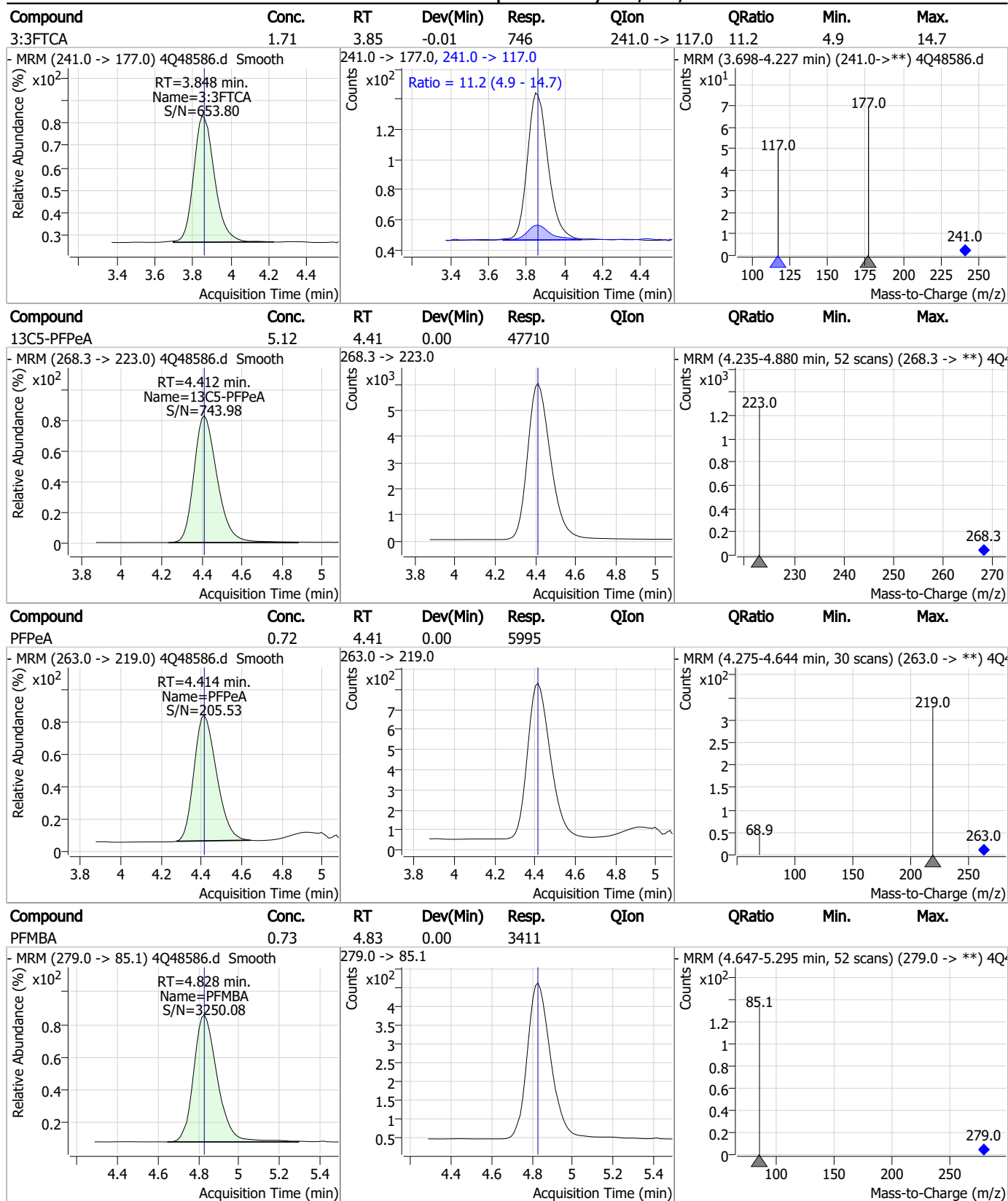
7.7.3

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Perfluorinated Compounds by LC/MS/MS

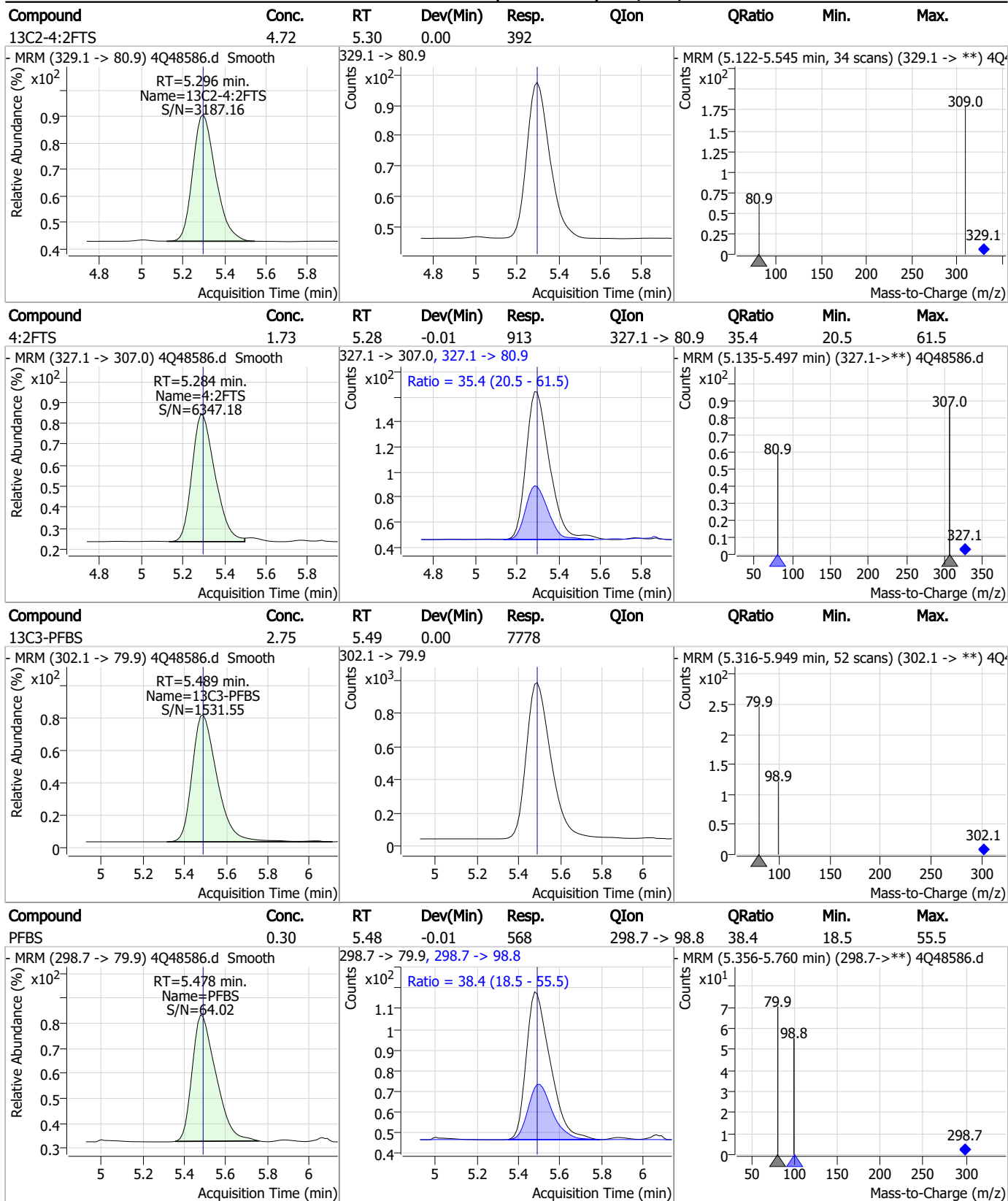


Perfluorinated Compounds by LC/MS/MS



7.7.3
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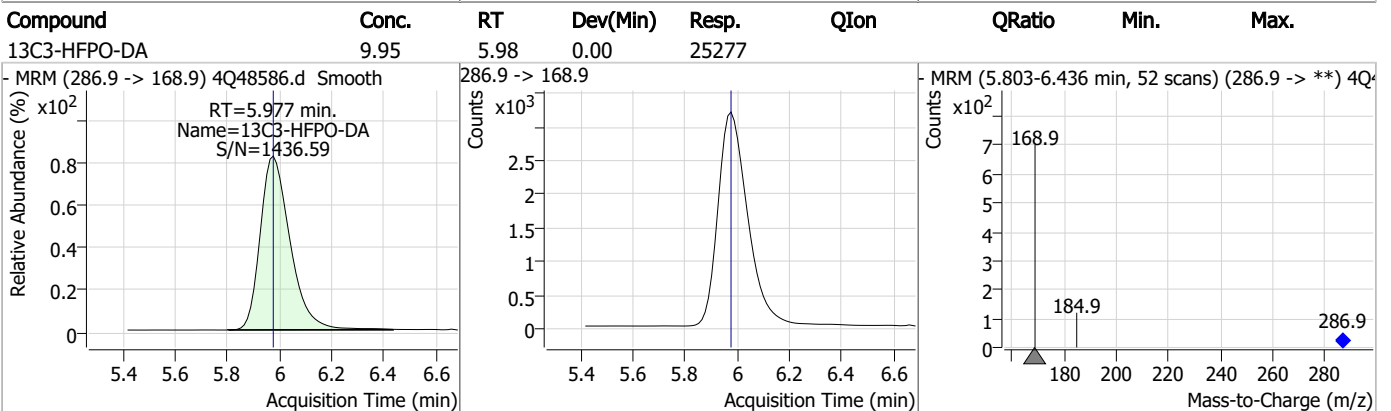
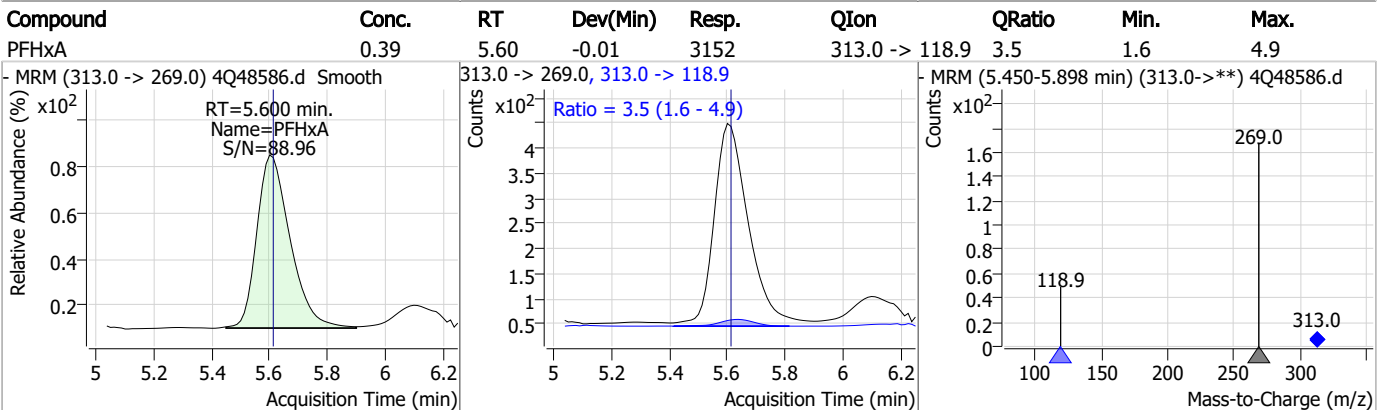
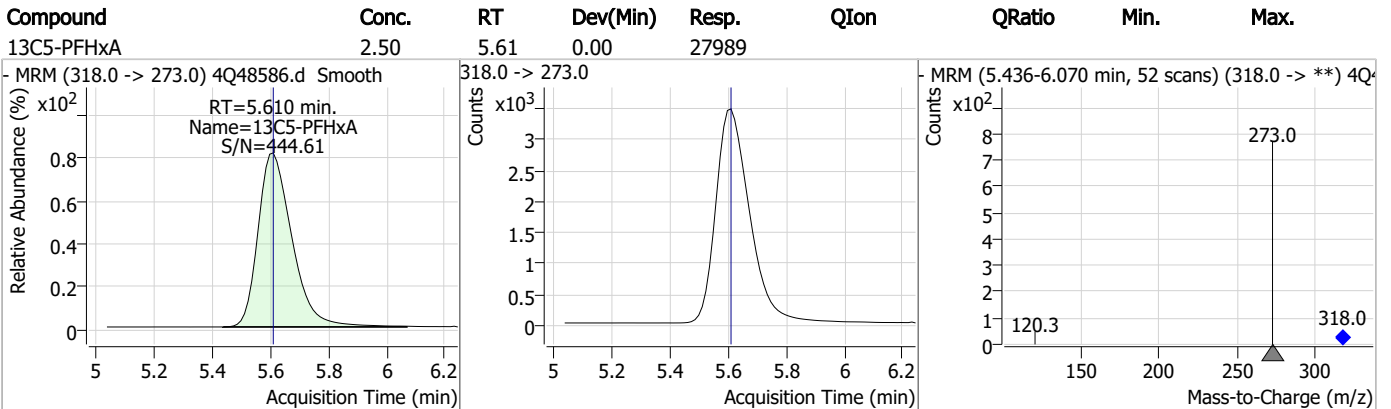
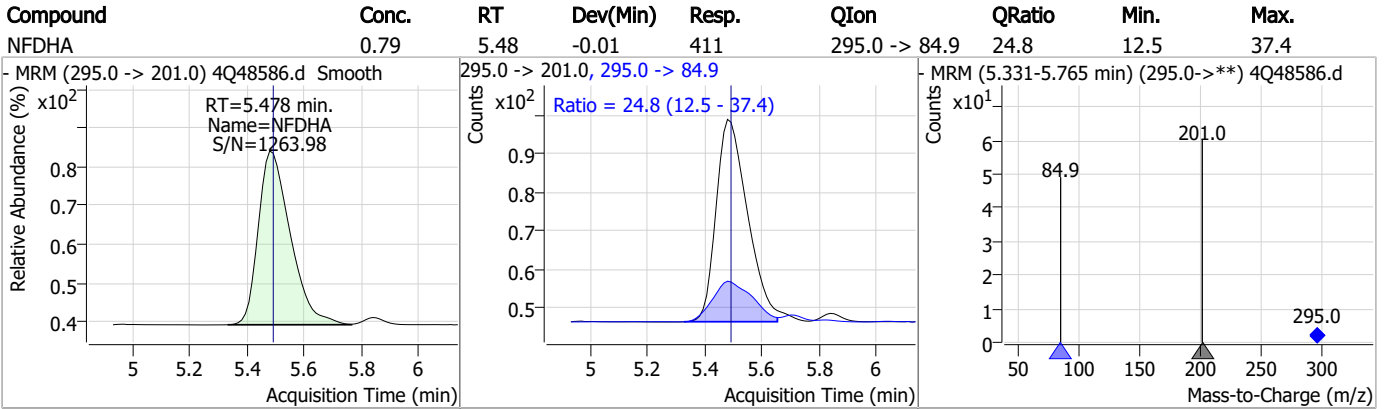
Perfluorinated Compounds by LC/MS/MS



7.7.3

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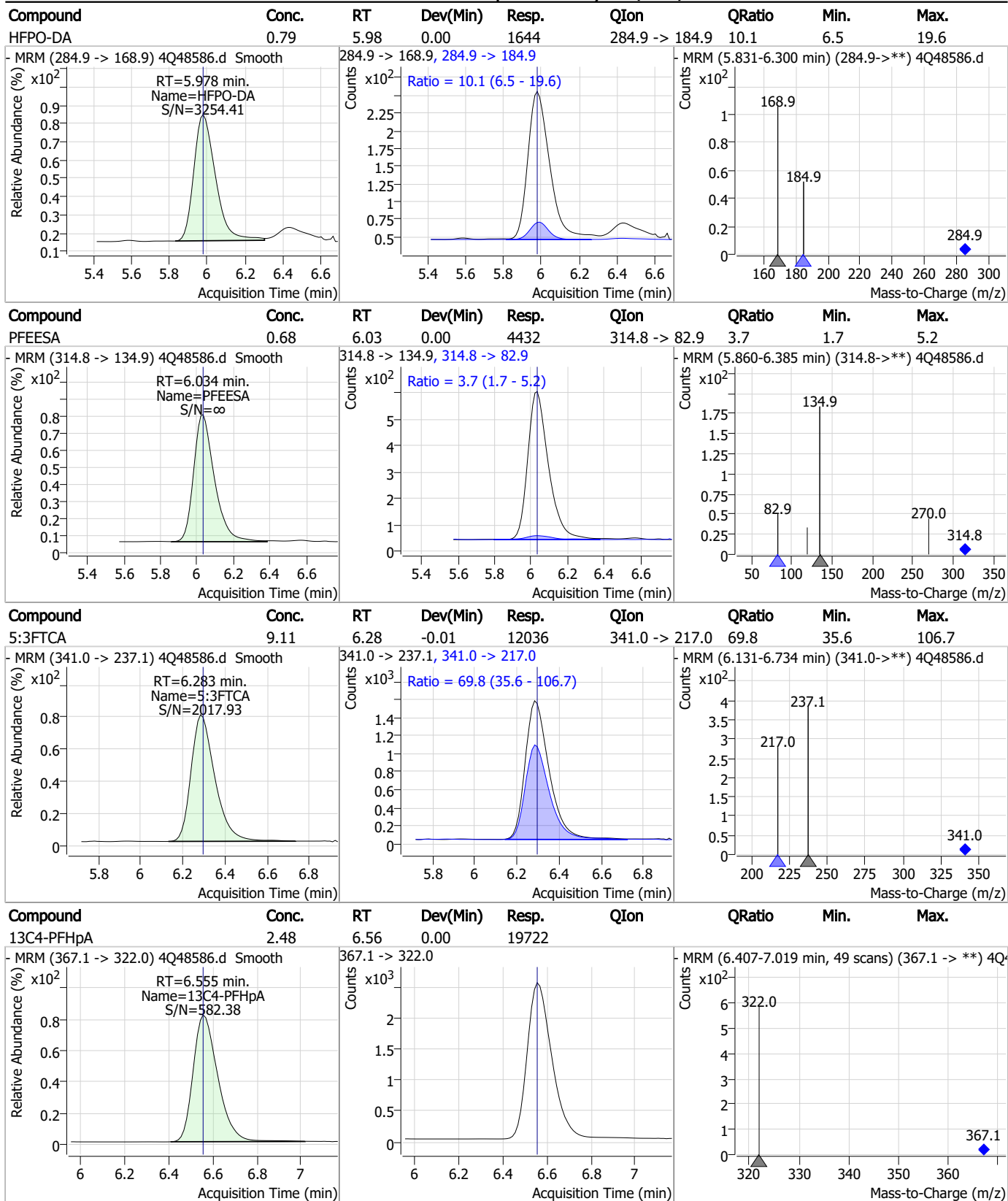
Perfluorinated Compounds by LC/MS/MS



7.7.3

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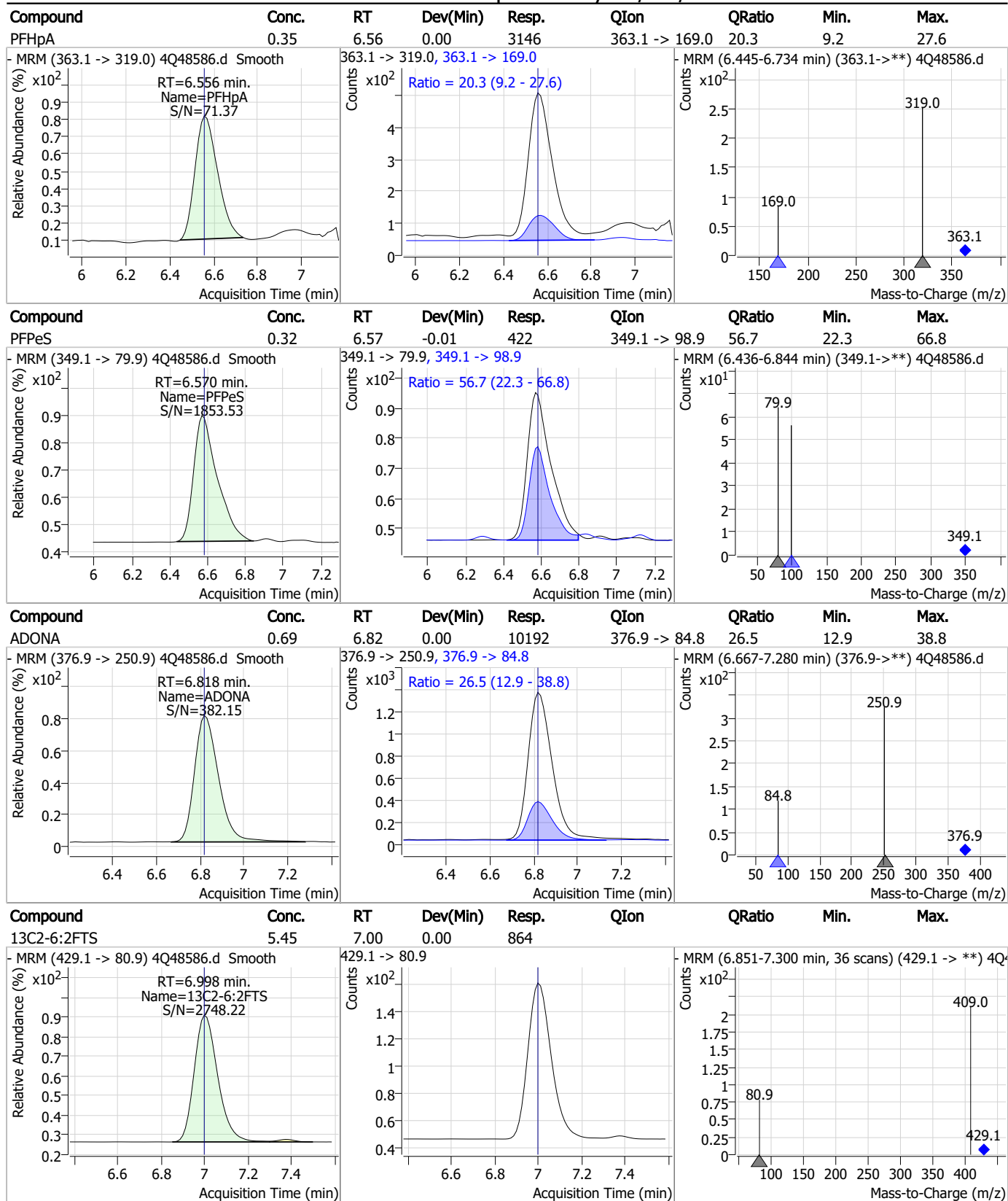
Perfluorinated Compounds by LC/MS/MS



7.7.3
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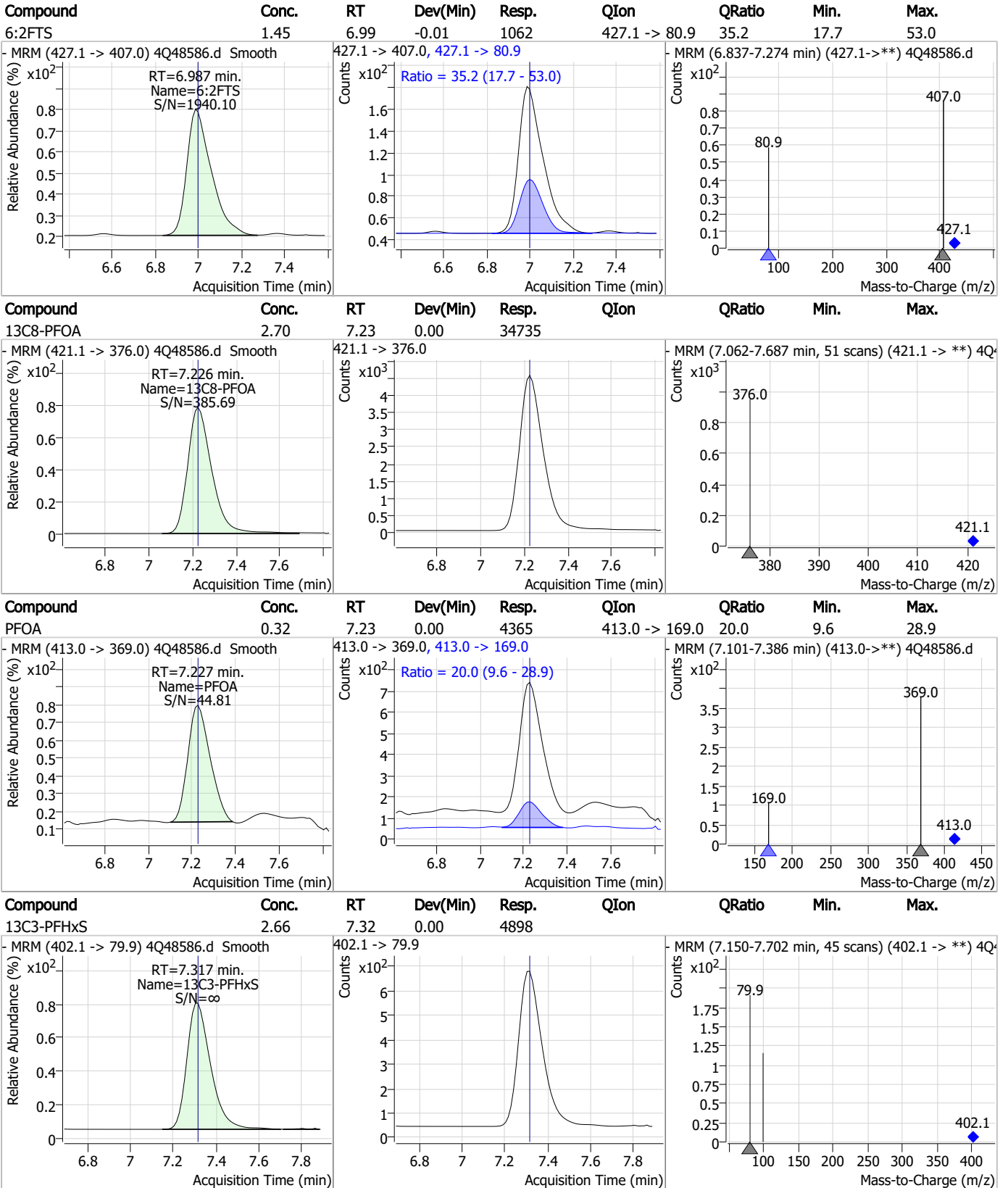
Perfluorinated Compounds by LC/MS/MS



7.7.3

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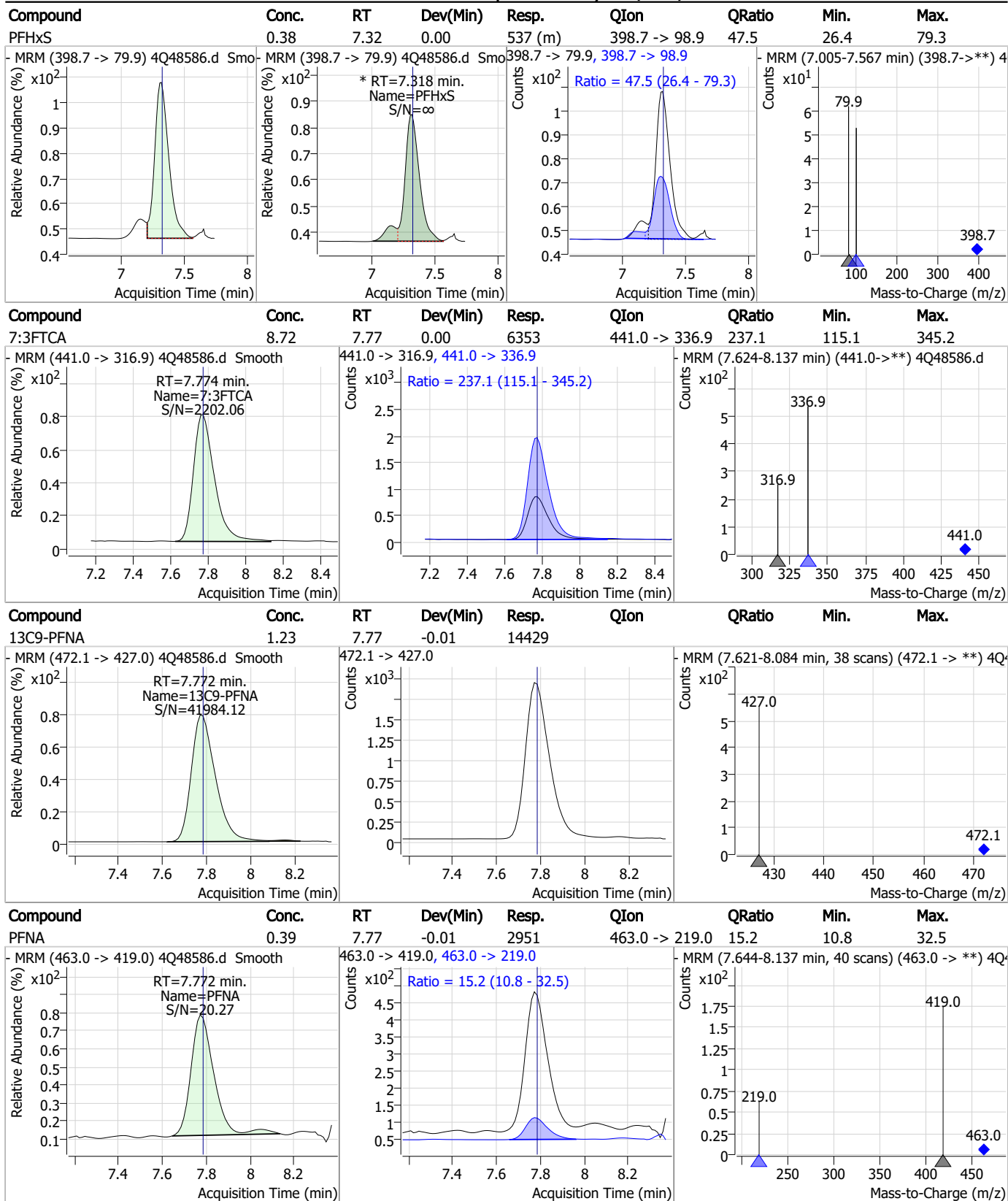
Perfluorinated Compounds by LC/MS/MS



7.7.3
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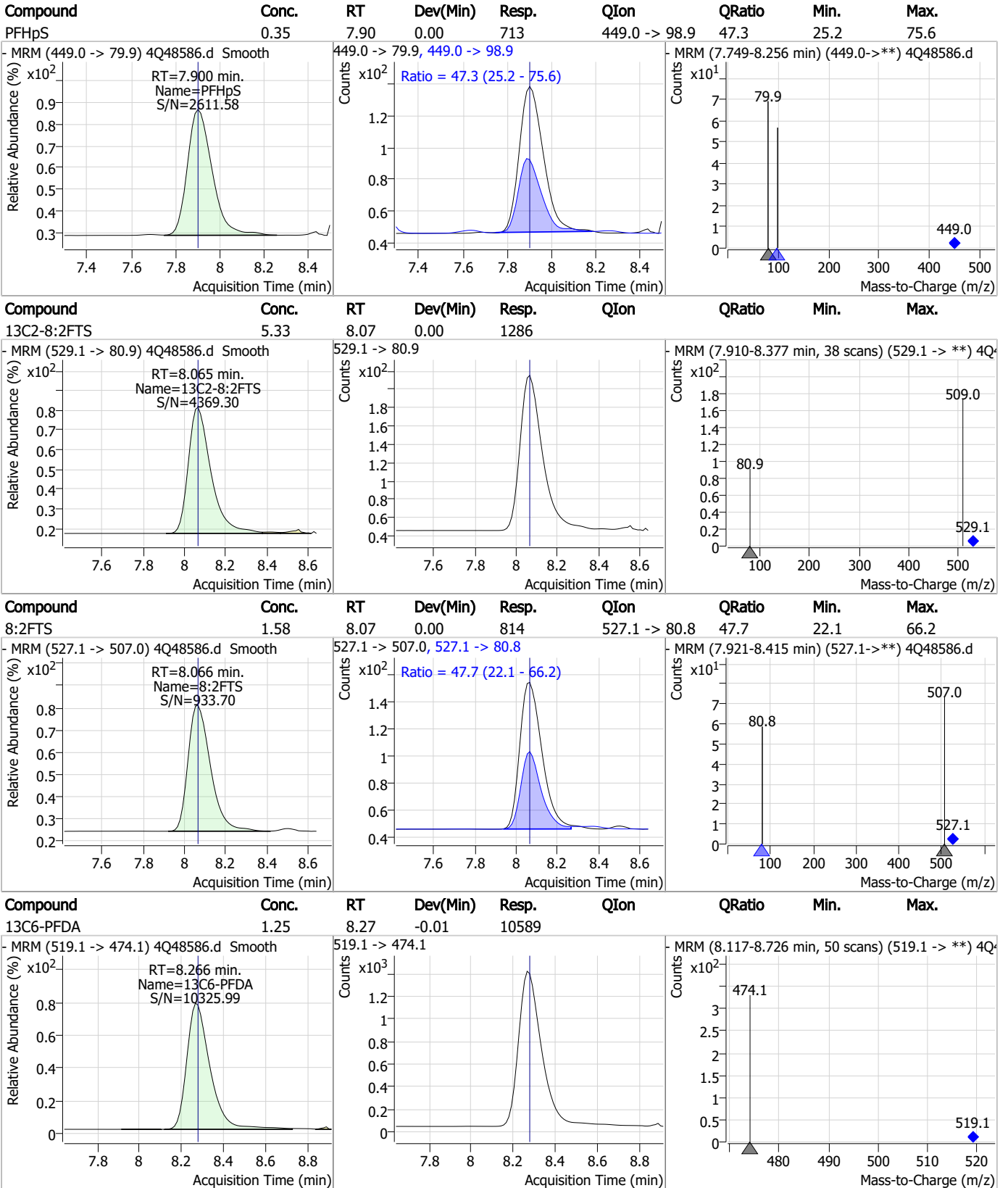
Perfluorinated Compounds by LC/MS/MS



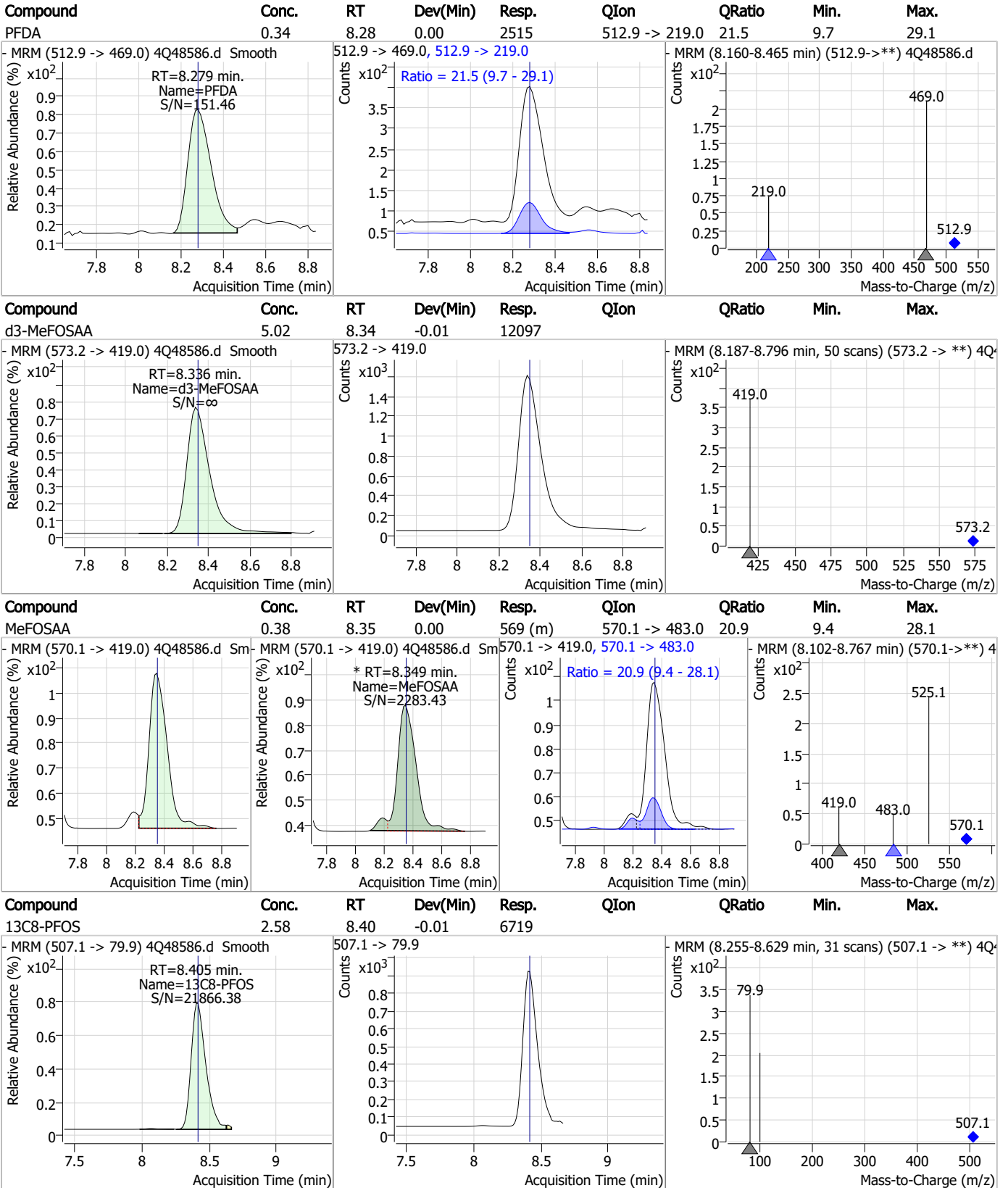
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Perfluorinated Compounds by LC/MS/MS



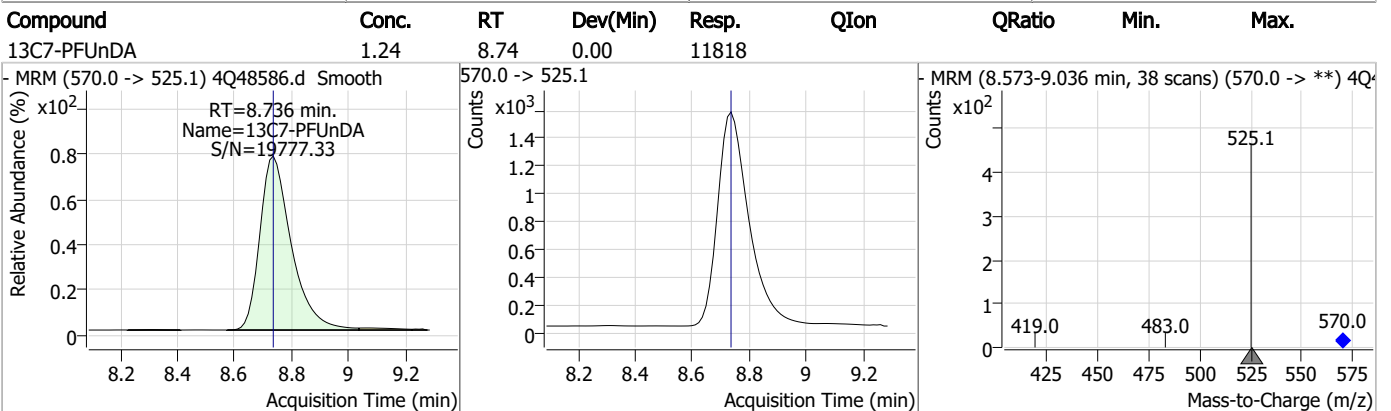
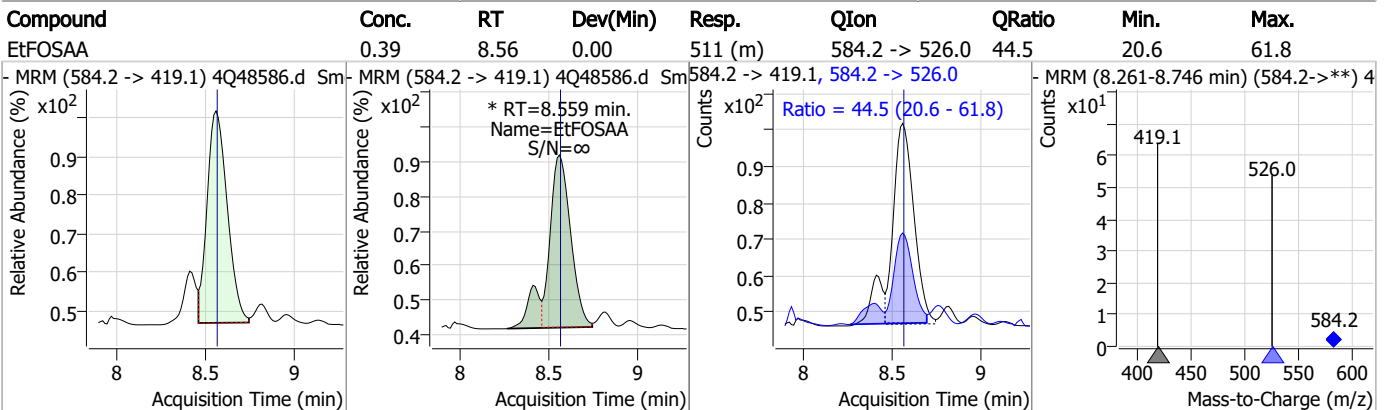
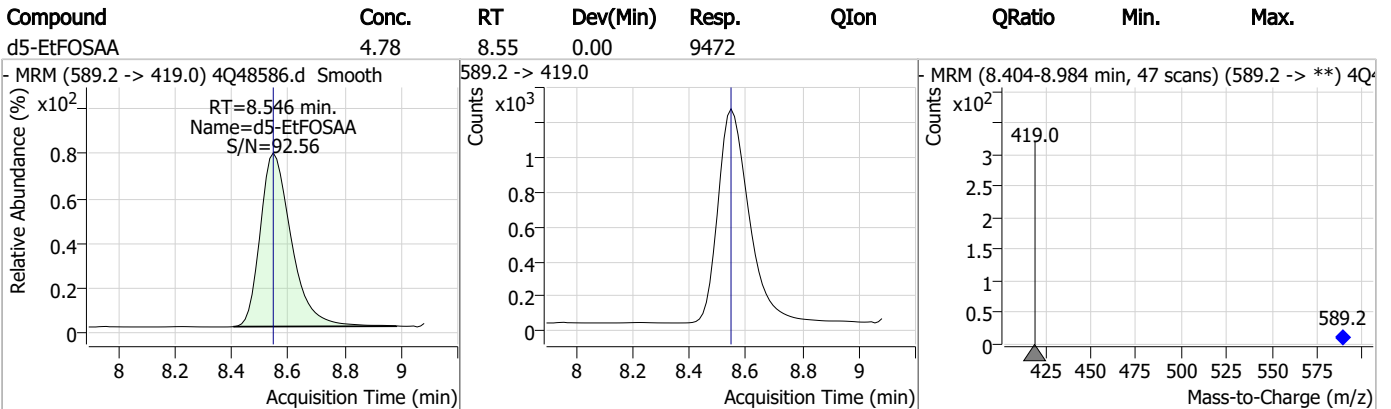
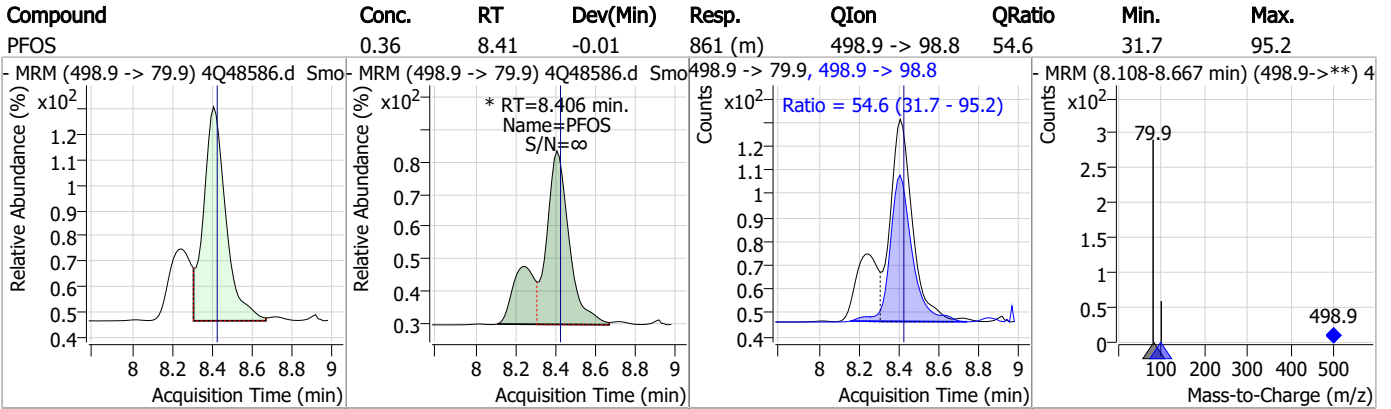
Perfluorinated Compounds by LC/MS/MS



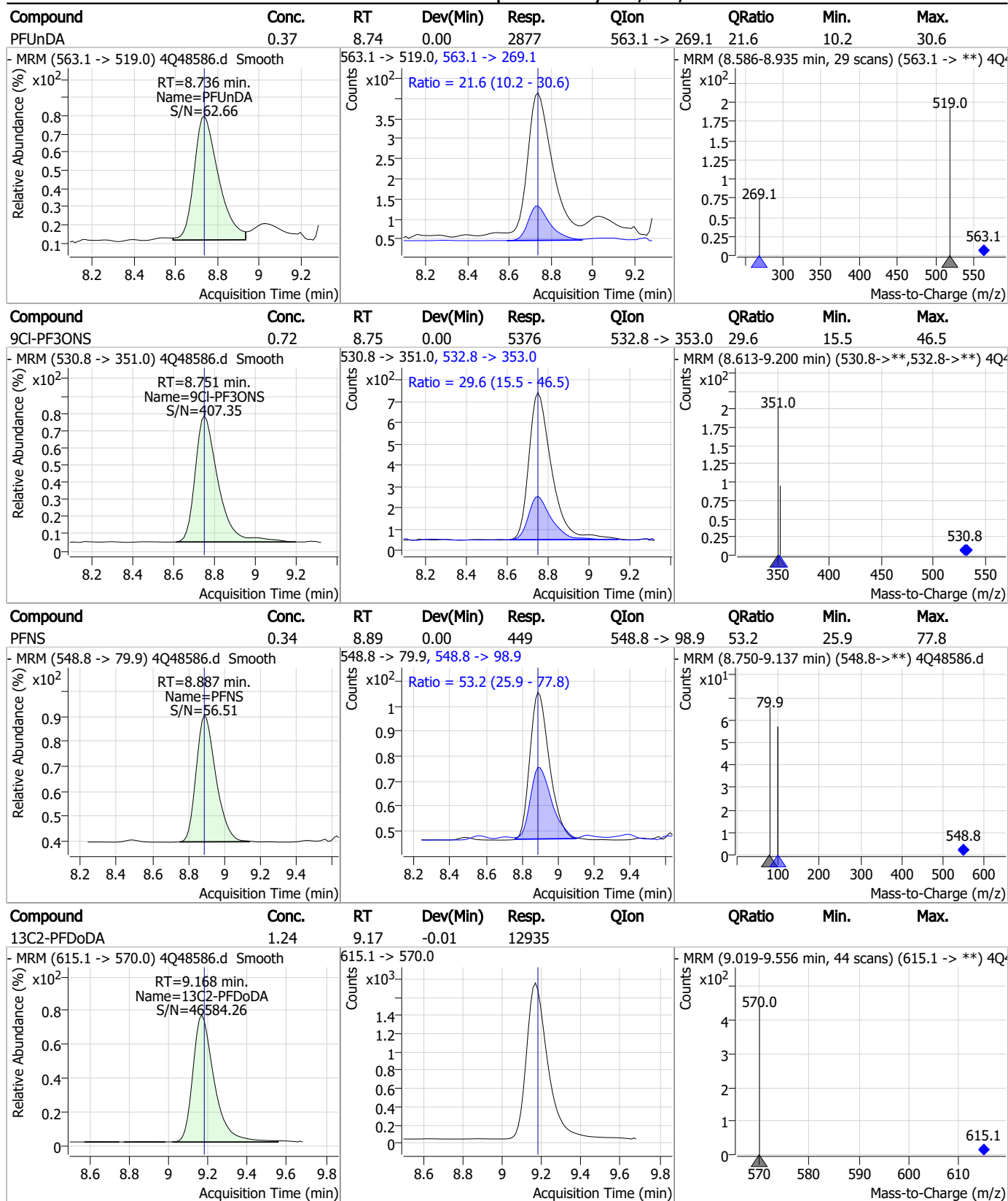
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Perfluorinated Compounds by LC/MS/MS



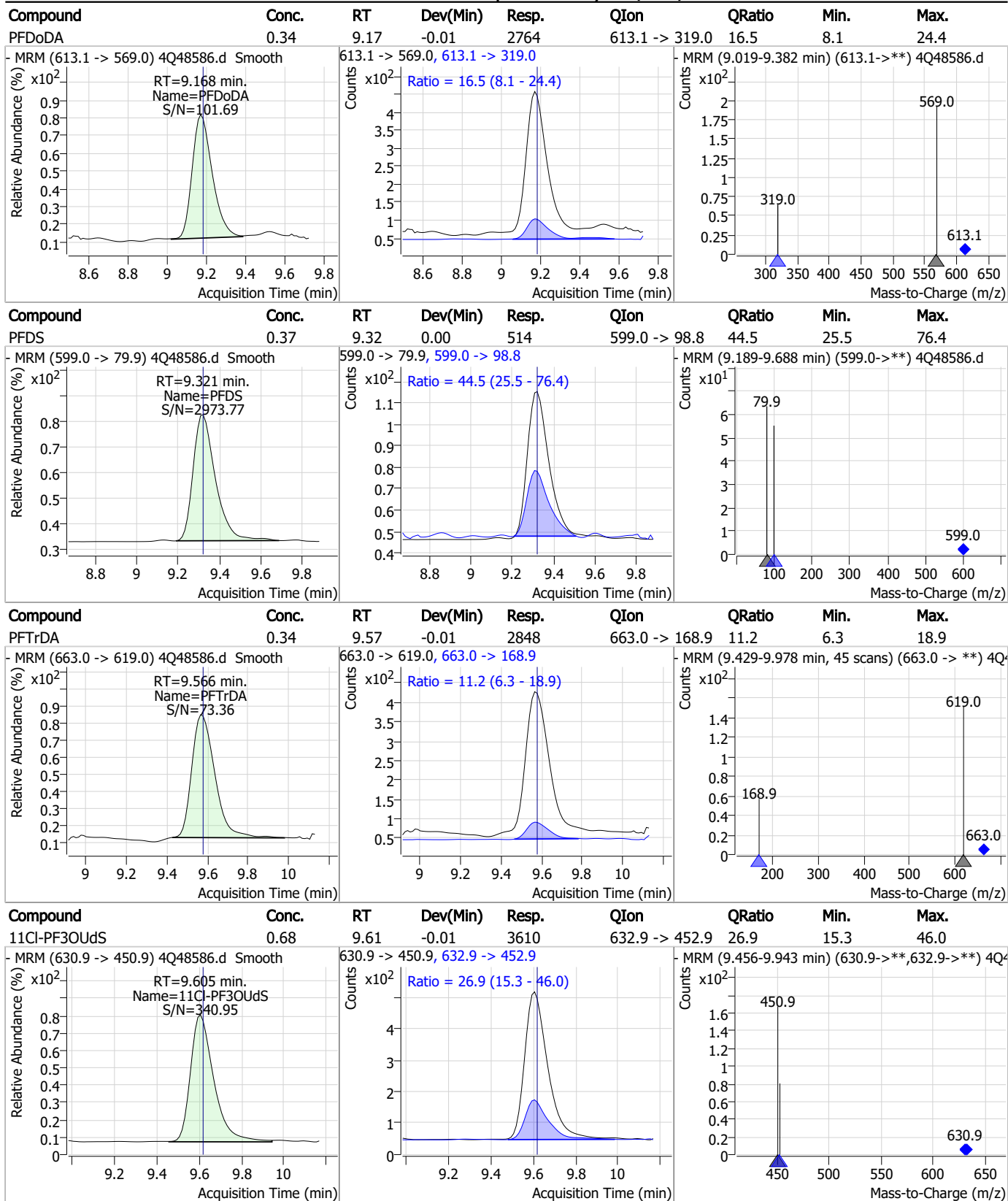
Perfluorinated Compounds by LC/MS/MS



7.7.3

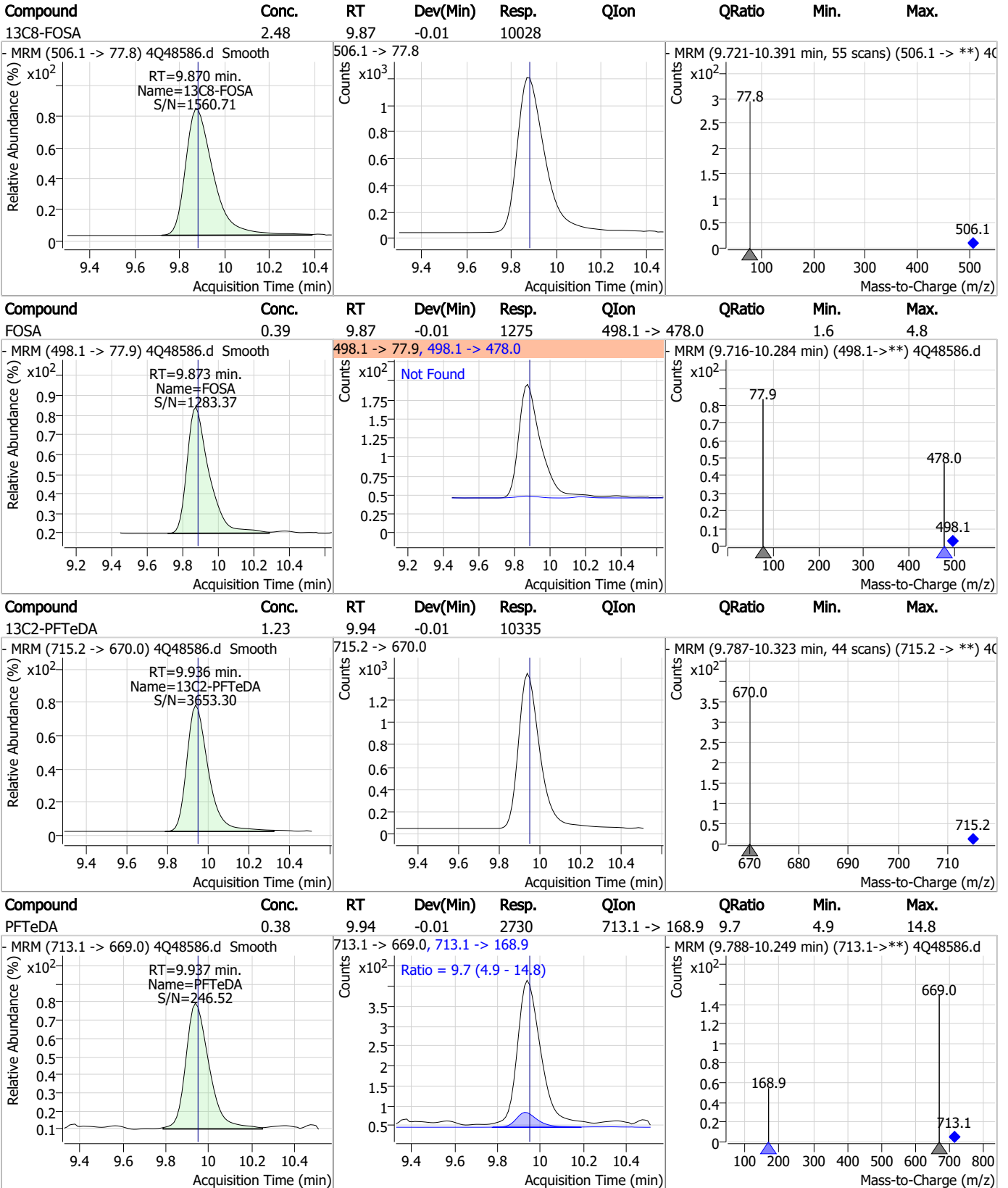
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Perfluorinated Compounds by LC/MS/MS



7.7.3
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Perfluorinated Compounds by LC/MS/MS

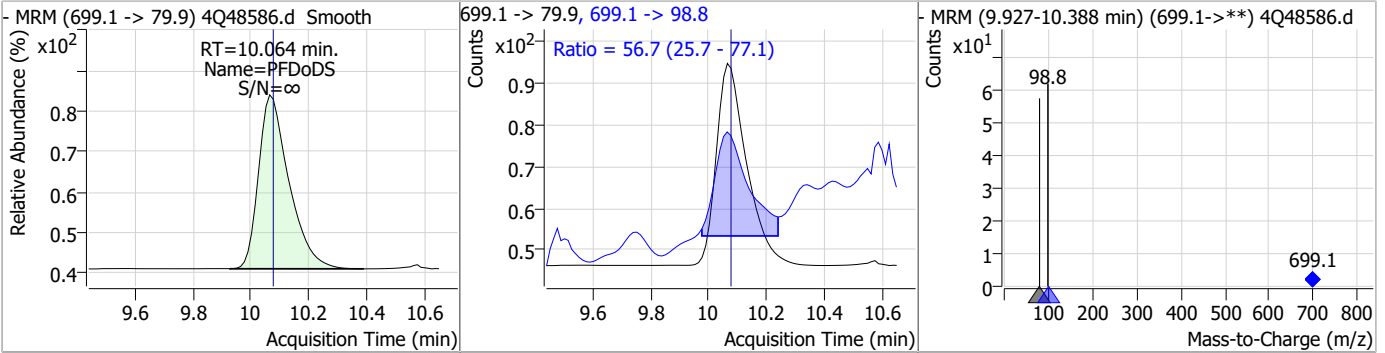


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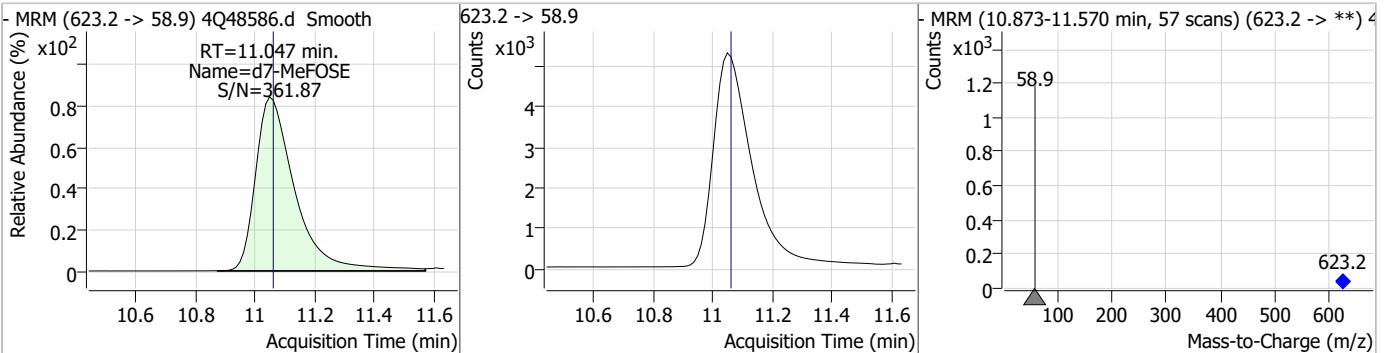
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Perfluorinated Compounds by LC/MS/MS

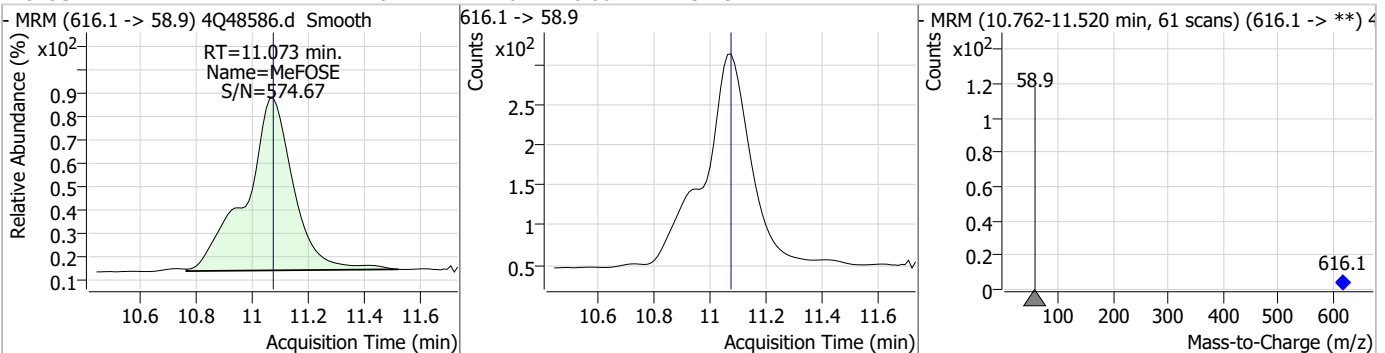
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.33	10.06	-0.01	350	699.1 -> 98.8	56.7	25.7	77.1



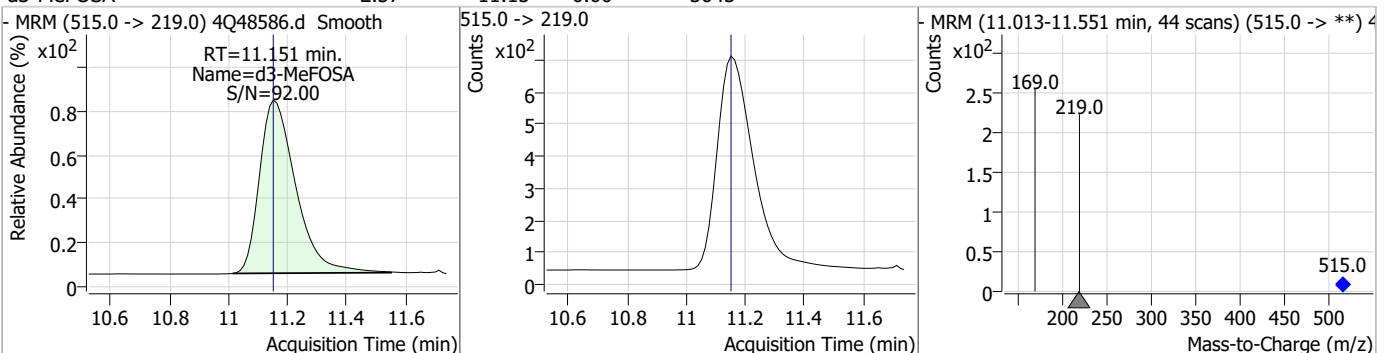
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.39	11.05	-0.01	48401				



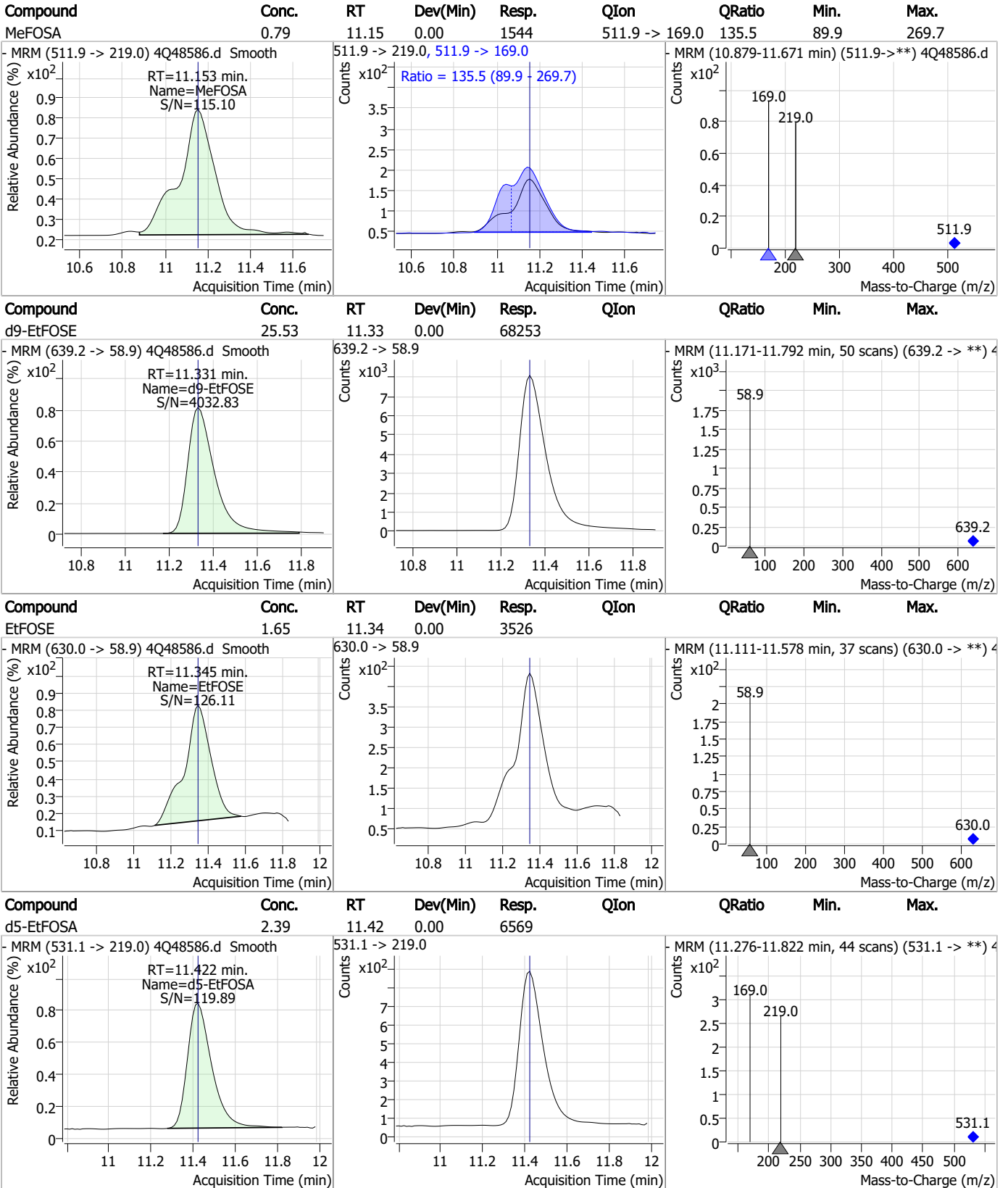
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	1.82	11.07	0.00	3149				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.37	11.15	0.00	5645				

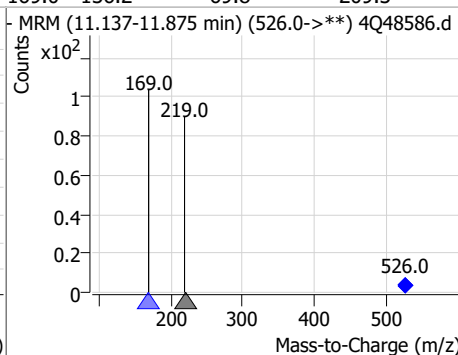
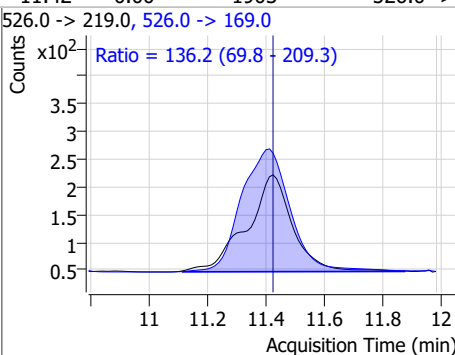
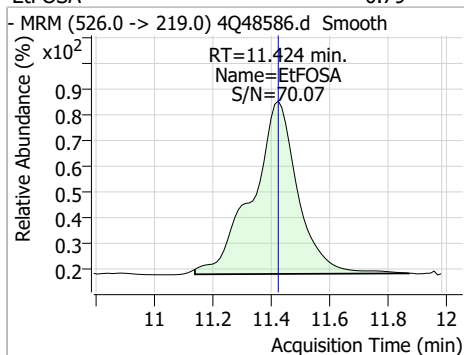


Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOsa	0.79	11.42	0.00	1903	526.0 -> 169.0	136.2	69.8	209.3



7.7.3

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Manual Integration Approval Summary

Sample Number: S4Q711-IC711 Method: EPA DRAFT 1633
Lab FileID: 4Q48586.D Analyst approved: 08/09/23 11:54 Anna Ludwig
Injection Time: 08/07/23 16:41 Supervisor approved: 08/09/23 14:46 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
MeFOSAA	2355-31-9		8.35	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.41	Split peak
EtFOSAA	2991-50-6		8.56	Split peak

7.7.3.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48587.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/7/2023 4:59:17 PM
 Sample Name : ic711-3
 Vial : P1-A4
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q711.batch.bin
 Sample Information : OP97964,S4Q711,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.961	216.8 -> 171.9	100094	10.00 µg/L	0.050
M5-PFPeA	4.437	268.3 -> 223.0	62944	5.00 µg/L	0.025
M5-PFHxA	5.622	318.0 -> 273.0	37768	2.50 µg/L	0.012
M4-PFHpA	6.568	367.1 -> 322.0	26814	2.50 µg/L	0.012
M8-PFOA	7.238	421.1 -> 376.0	43568	2.50 µg/L	0.012
M9-PFNA	7.785	472.1 -> 427.0	19802	1.25 µg/L	0.000
M6-PFDA	8.279	519.1 -> 474.1	14123	1.25 µg/L	0.000
M7-PFUnDA	8.748	570.0 -> 525.1	16303	1.25 µg/L	0.012
M2-PFDoDA	9.180	615.1 -> 570.0	17010	1.25 µg/L	0.000
M2-PFTeDA	9.949	715.2 -> 670.0	14113	1.25 µg/L	0.000
M8-FOSA	9.894	506.1 -> 77.8	13582	2.50 µg/L	0.012
M3-PFBS	5.502	302.1 -> 79.9	9836	2.50 µg/L	0.013
M3-PFHxS	7.317	402.1 -> 79.9	6375	2.50 µg/L	0.000
M8-PFOS	8.417	507.1 -> 79.9	8743	2.50 µg/L	0.000
M2-4:2FTS	5.309	329.1 -> 80.9	661	5.00 µg/L	0.012
M2-6:2FTS	7.011	429.1 -> 80.9	1160	5.00 µg/L	0.012
M2-8:2FTS	8.065	529.1 -> 80.9	1686	5.00 µg/L	0.000
M3-MeFOSAA	8.348	573.2 -> 419.0	15775	5.00 µg/L	0.000
M3-HFPO-DA	5.989	286.9 -> 168.9	34045	10.00 µg/L	0.012
M5-EtFOSAA	8.559	589.2 -> 419.0	13340	5.00 µg/L	0.012
M7-MeFOSE	11.047	623.2 -> 58.9	64942	25.00 µg/L	-0.012
M9-EtFOSE	11.331	639.2 -> 58.9	88469	25.00 µg/L	0.000
M5-EtFOSA	11.422	531.1 -> 219.0	9468	2.50 µg/L	0.000
M3-MeFOSA	11.151	515.0 -> 219.0	7877	2.50 µg/L	0.000
13C4-PFOS	8.418	502.8 -> 79.9	8916	2.50 µg/L	0.000
13C3-PFBA	2.966	216.0 -> 172.0	58599	5.00 µg/L	0.062
18O2-PFHxS	7.328	403.0 -> 83.9	4542	2.50 µg/L	0.012
13C4-PFOA	7.239	417.1 -> 372.0	54097	2.50 µg/L	0.012
13C2-PFDA	8.279	515.1 -> 470.1	16365	1.25 µg/L	0.000
13C5-PFNA	7.785	468.0 -> 423.0	20611	1.25 µg/L	0.000
13C2-PFHxA	5.623	315.1 -> 270.0	36020	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.309	329.1 -> 80.9	661	5.83 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.5%		
13C2-6:2FTS	7.011	429.1 -> 80.9	1160	5.35 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.0%		
13C2-8:2FTS	8.065	529.1 -> 80.9	1686	5.12 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.4%		
13C2-PFDoDA	9.180	615.1 -> 570.0	17010	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C2-PFTeDA	9.949	715.2 -> 670.0	14113	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C3-PFBS	5.502	302.1 -> 79.9	9836	2.54 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C3-PFHxS	7.317	402.1 -> 79.9	6375	2.54 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 = 101.4%	
13C4-PFBA	2.961	216.8 -> 171.9	100094	9.99 µg/L	0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C4-PFHpA	6.568	367.1 -> 322.0	26814	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C5-PFHxA	5.622	318.0 -> 273.0	37768	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C5-PFPeA	4.437	268.3 -> 223.0	62944	5.00 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C6-PFDA	8.279	519.1 -> 474.1	14123	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C7-PFUnDA	8.748	570.0 -> 525.1	16303	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C8-FOSA	9.894	506.1 -> 77.8	13582	2.44 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C8-PFOA	7.238	421.1 -> 376.0	43568	2.45 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C8-PFOS	8.417	507.1 -> 79.9	8743	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C9-PFNA	7.785	472.1 -> 427.0	19802	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.5%	
d3-MeFOSAA	8.348	573.2 -> 419.0	15775	4.77 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.3%	
13C3-HFPO-DA	5.989	286.9 -> 168.9	34045	9.92 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
d3-MeFOSA	11.151	515.0 -> 219.0	7877	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.2%	
d5-EtFOSAA	8.559	589.2 -> 419.0	13340	4.90 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.1%	
d7-MeFOSE	11.047	623.2 -> 58.9	64942	24.80 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
d9-EtFOSE	11.331	639.2 -> 58.9	88469	24.09 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.4%	
d5-EtFOSA	11.422	531.1 -> 219.0	9468	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
Target Compounds					QValue
4:2FTS	5.309	327.1 -> 307.0	3518	3.95 µg/L	94
		327.1 -> 80.9	1576		
6:2FTS	6.999	427.1 -> 407.0	4429	4.50 µg/L	100
		427.1 -> 80.9	1558		
8:2FTS	8.078	527.1 -> 507.0	3227	4.77 µg/L	100
		527.1 -> 80.8	1413		
EtFOSAA	8.559	584.2 -> 419.1	1985	1.09 µg/L	m 98
		584.2 -> 526.0	845		
FOSA	9.886	498.1 -> 77.9	5382	1.22 µg/L	98
		498.1 -> 478.0	202		
MeFOSAA	8.349	570.1 -> 419.0	2420	1.23 µg/L	88
		570.1 -> 483.0	585		
PFBA	2.970	212.8 -> 168.9	10889	4.72 µg/L	100
PFBS	5.503	298.7 -> 79.9	2674	1.11 µg/L	91
		298.7 -> 98.8	1135		
PFDA	8.279	512.9 -> 469.0	12566	1.27 µg/L	100
		512.9 -> 219.0	2420		
PFDoDA	9.181	613.1 -> 569.0	13765	1.29 µg/L	96
		613.1 -> 319.0	2021		
PFDS	9.335	599.0 -> 79.9	1998	1.11 µg/L	97

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	972			
PFHpA	6.568	363.1 -> 319.0	14852	1.23	µg/L	97
		363.1 -> 169.0	2539			
PFHpS	7.913	449.0 -> 79.9	2946	1.11	µg/L	98
		449.0 -> 98.9	1534			
PFHxA	5.625	313.0 -> 269.0	12832	1.18	µg/L	99
		313.0 -> 118.9	456			
PFHxS	7.318	398.7 -> 79.9	2056	1.12	µg/L	m 92
		398.7 -> 98.9	966			
PFNA	7.785	463.0 -> 419.0	12986	1.26	µg/L	99
		463.0 -> 219.0	2727			
PFNS	8.899	548.8 -> 79.9	2011	1.18	µg/L	88
		548.8 -> 98.9	1208			
PFOA	7.240	413.0 -> 369.0	19949	1.15	µg/L	100
		413.0 -> 169.0	3872			
PFOS	8.419	498.9 -> 79.9	3575	1.15	µg/L	m 78
		498.9 -> 98.8	1660			
PFPeA	4.439	263.0 -> 219.0	26285	2.40	µg/L	100
PFPeS	6.582	349.1 -> 79.9	1989	1.16	µg/L	93
		349.1 -> 98.9	971			
PFTeDA	9.950	713.1 -> 669.0	11701	1.18	µg/L	98
		713.1 -> 168.9	1080			
PFTrDA	9.579	663.0 -> 619.0	13346	1.21	µg/L	98
		663.0 -> 168.9	1811			
PFUnDA	8.749	563.1 -> 519.0	12568	1.18	µg/L	96
		563.1 -> 269.1	2773			
11CI-PF3OUdS	9.617	630.9 -> 450.9	16171	2.27	µg/L	98
		632.9 -> 452.9	5116			
9CI-PF3ONS	8.763	530.8 -> 351.0	23463	2.34	µg/L	96
		532.8 -> 353.0	6787			
ADONA	6.831	376.9 -> 250.9	45080	2.28	µg/L	99
		376.9 -> 84.8	11873			
HFPO-DA	5.990	284.9 -> 168.9	6802	2.43	µg/L	97
		284.9 -> 184.9	973			
3:3FTCA	3.917	241.0 -> 177.0	3406	5.86	µg/L	97
		241.0 -> 117.0	366			
5:3FTCA	6.308	341.0 -> 237.1	52730	29.56	µg/L	99
		341.0 -> 217.0	37167			
7:3FTCA	7.787	441.0 -> 316.9	28535	29.03	µg/L	93
		441.0 -> 336.9	68927			
EtFOSA	11.424	526.0 -> 219.0	8067	2.32	µg/L	96
		526.0 -> 169.0	10859			
EtFOSE	11.345	630.0 -> 58.9	17565	6.34	µg/L	100
MeFOSA	11.153	511.9 -> 219.0	6779	2.47	µg/L	77
		511.9 -> 169.0	9973			
MeFOSE	11.073	616.1 -> 58.9	13883	5.98	µg/L	m 100
PFDoDS	10.089	699.1 -> 79.9	1503	1.08	µg/L	80
		699.1 -> 98.8	979			
NFDHA	5.503	295.0 -> 201.0	1742	2.48	µg/L	95
		295.0 -> 84.9	391			
PFMBA	4.853	279.0 -> 85.1	14950	2.44	µg/L	100
PFMPA	3.582	229.0 -> 84.9	14004	2.34	µg/L	100
PFEESA	6.047	314.8 -> 134.9	18077	2.06	µg/L	99
		314.8 -> 82.9	698			

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

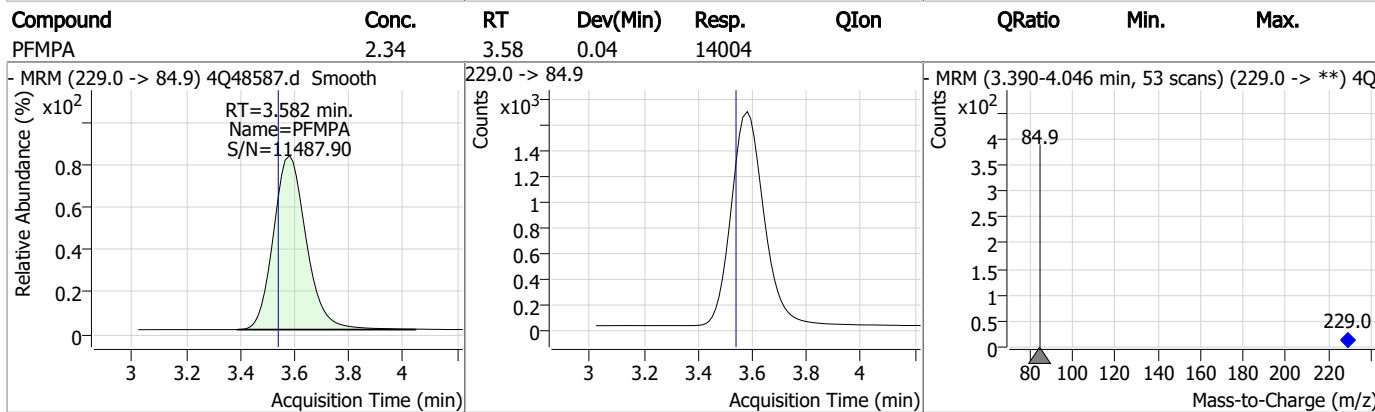
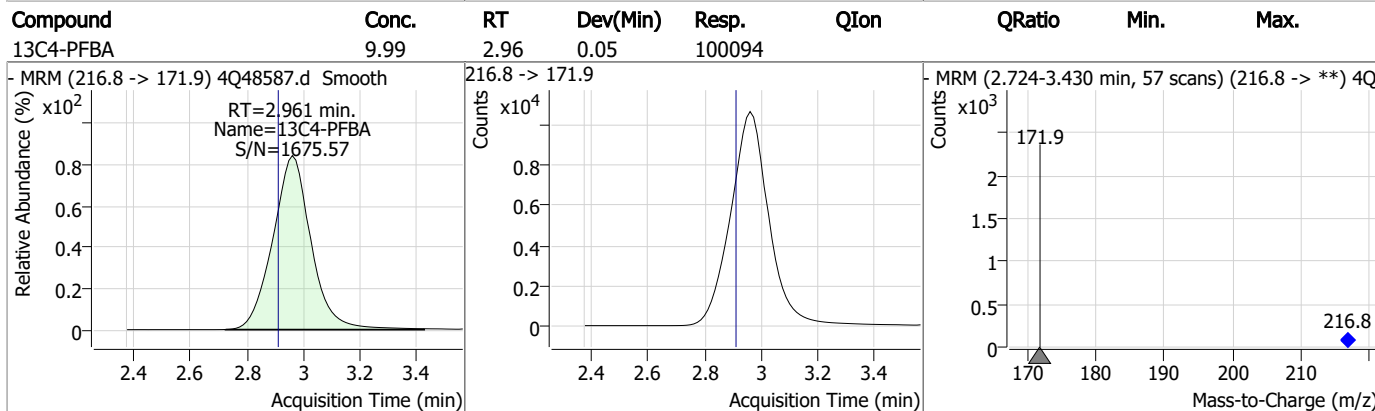
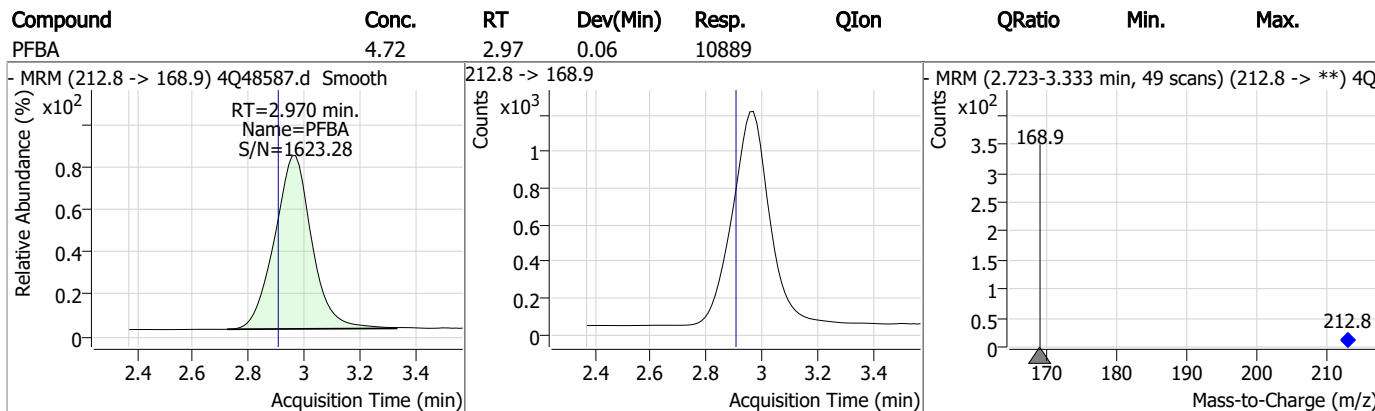
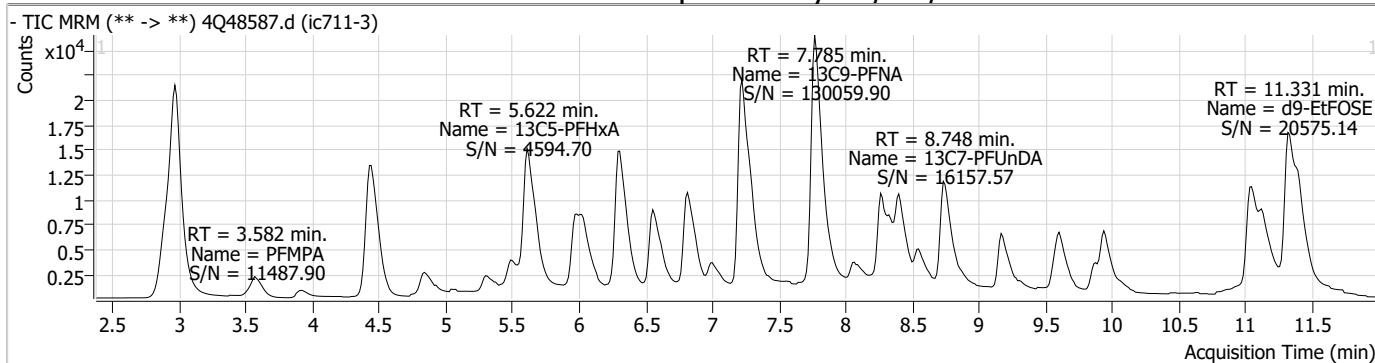
Perfluorinated Compounds by LC/MS/MS

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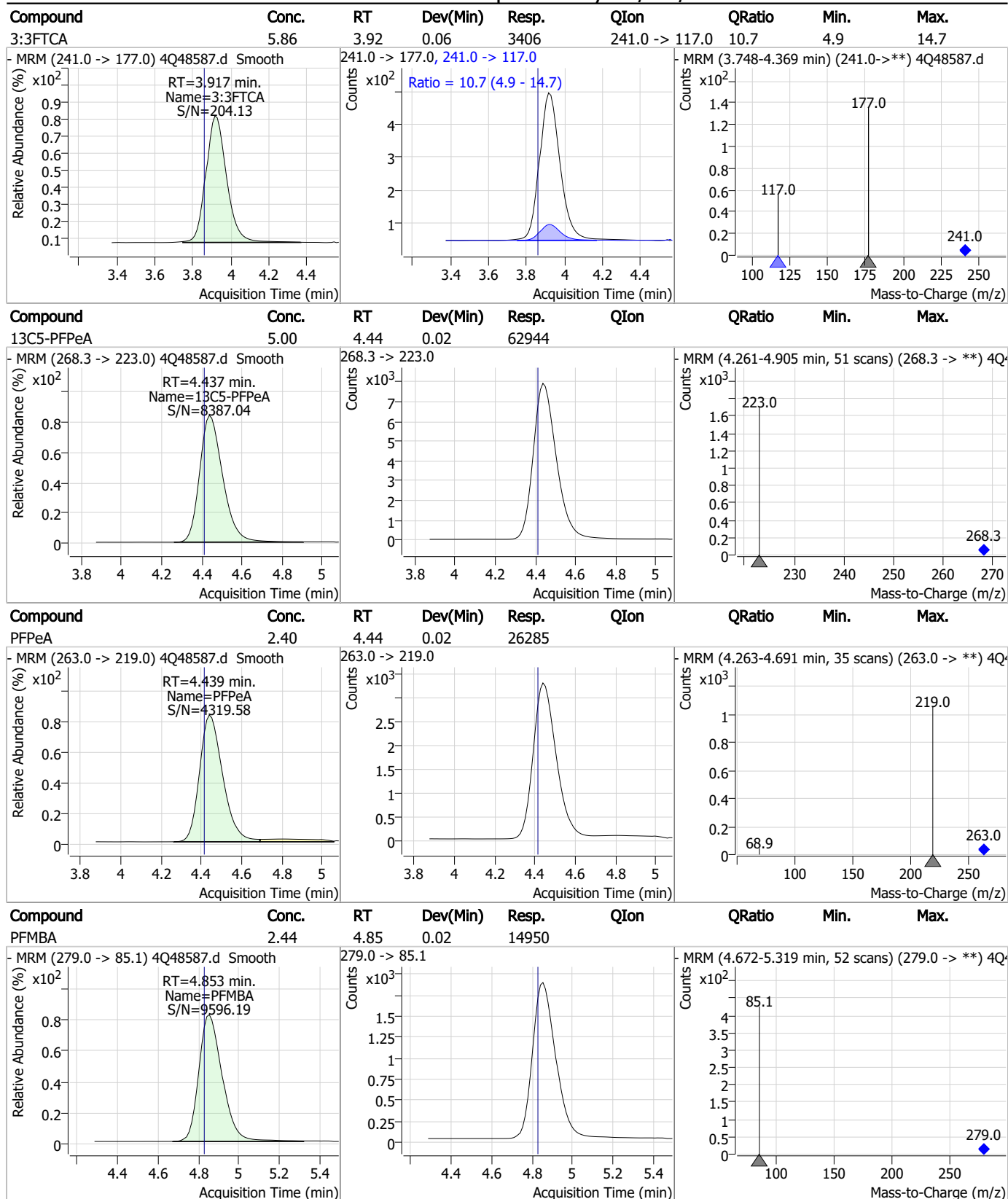
7.7.4

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Perfluorinated Compounds by LC/MS/MS

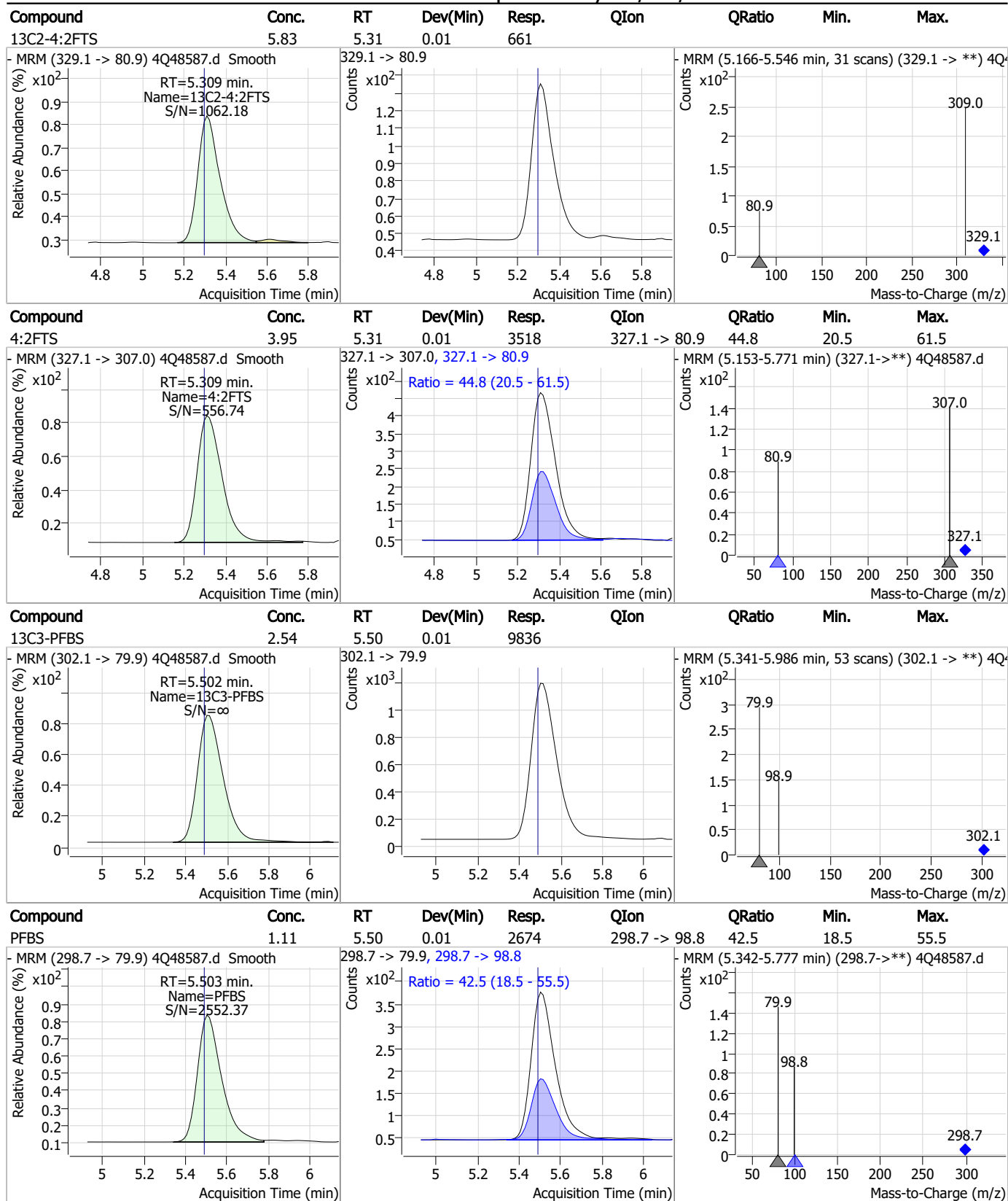


Perfluorinated Compounds by LC/MS/MS



7.7.4
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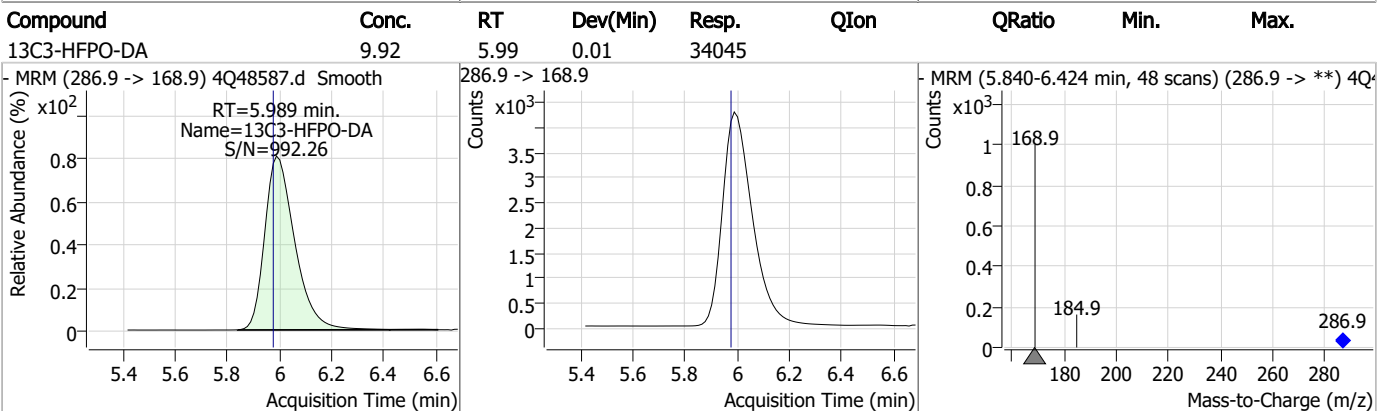
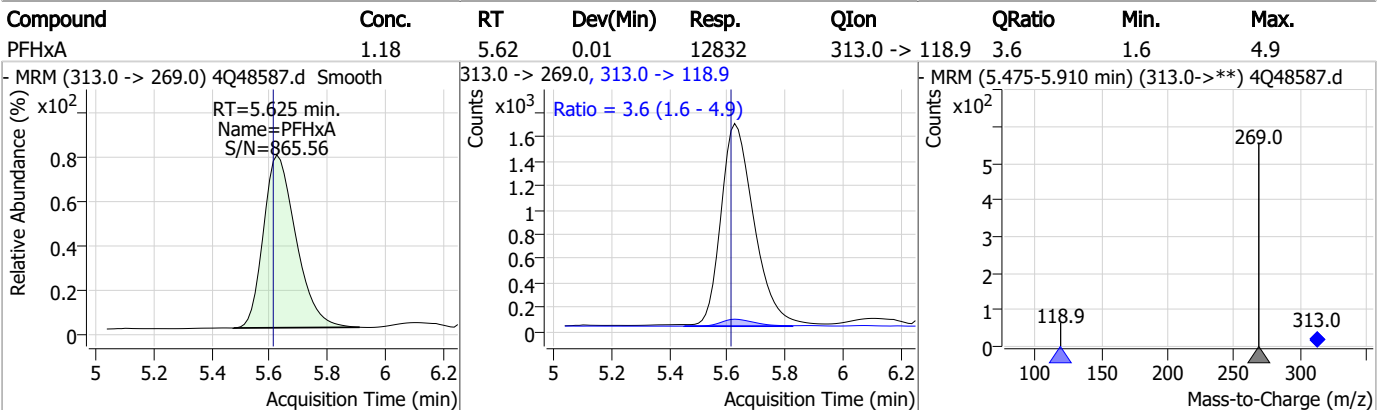
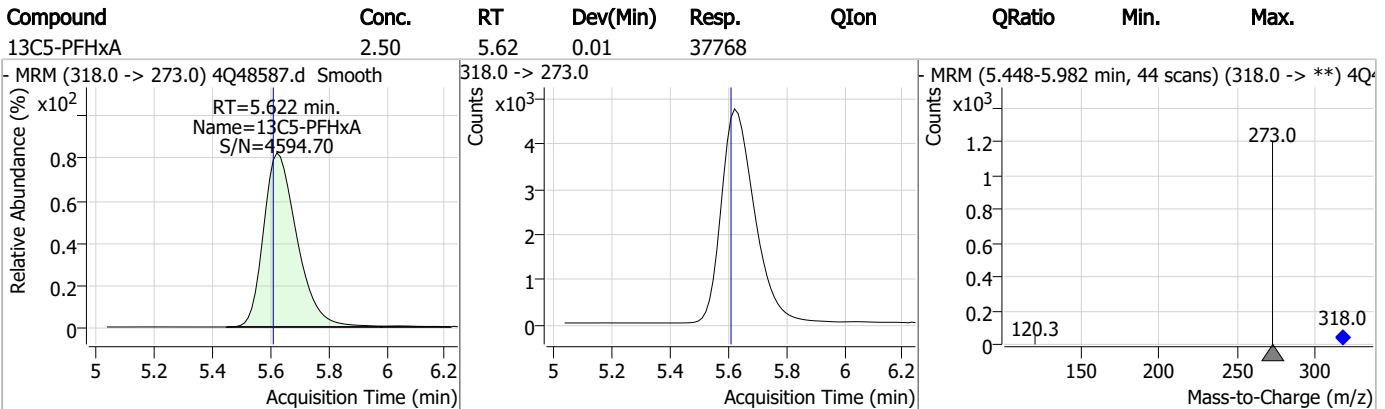
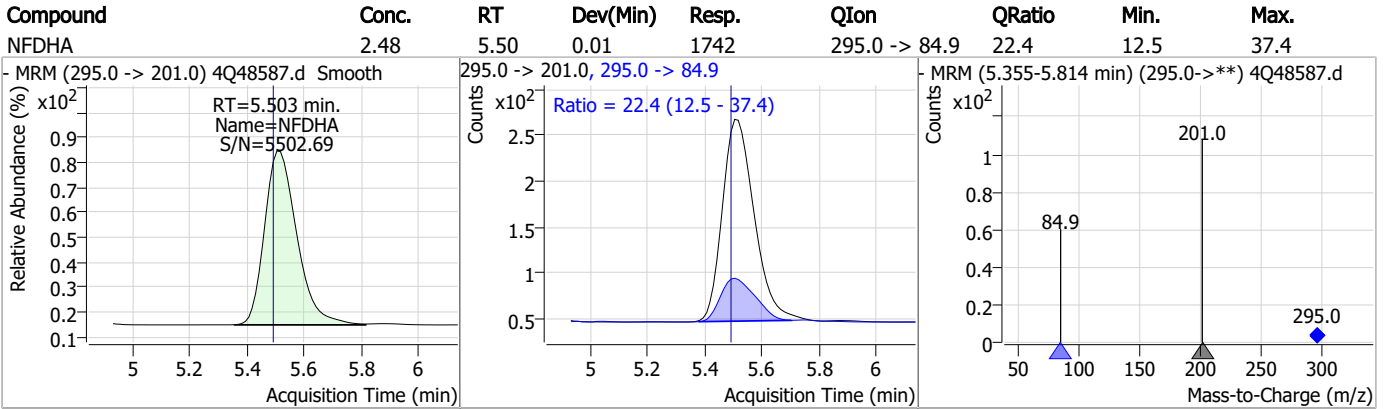
Perfluorinated Compounds by LC/MS/MS



7.7.4

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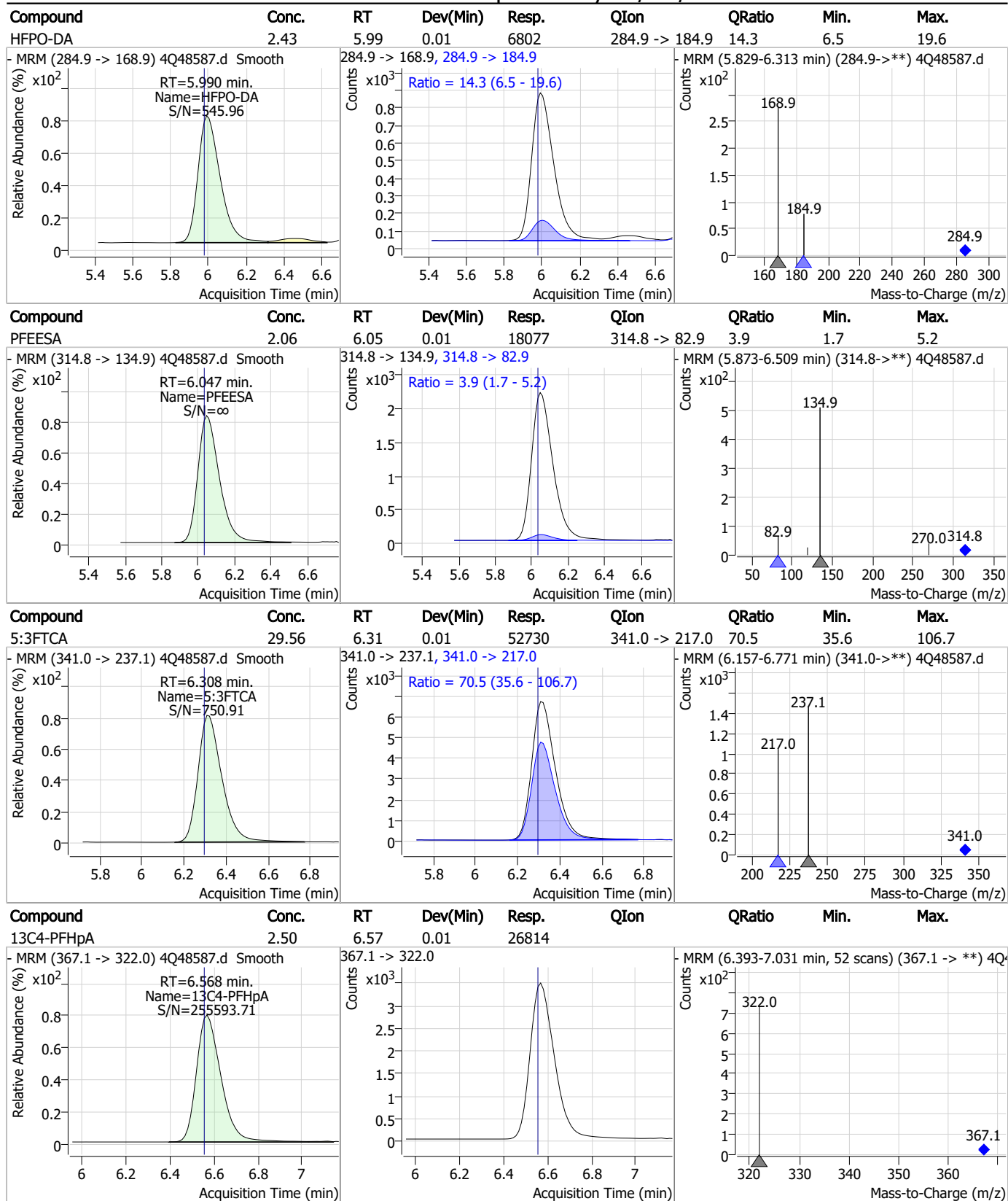
Perfluorinated Compounds by LC/MS/MS



7.7.4

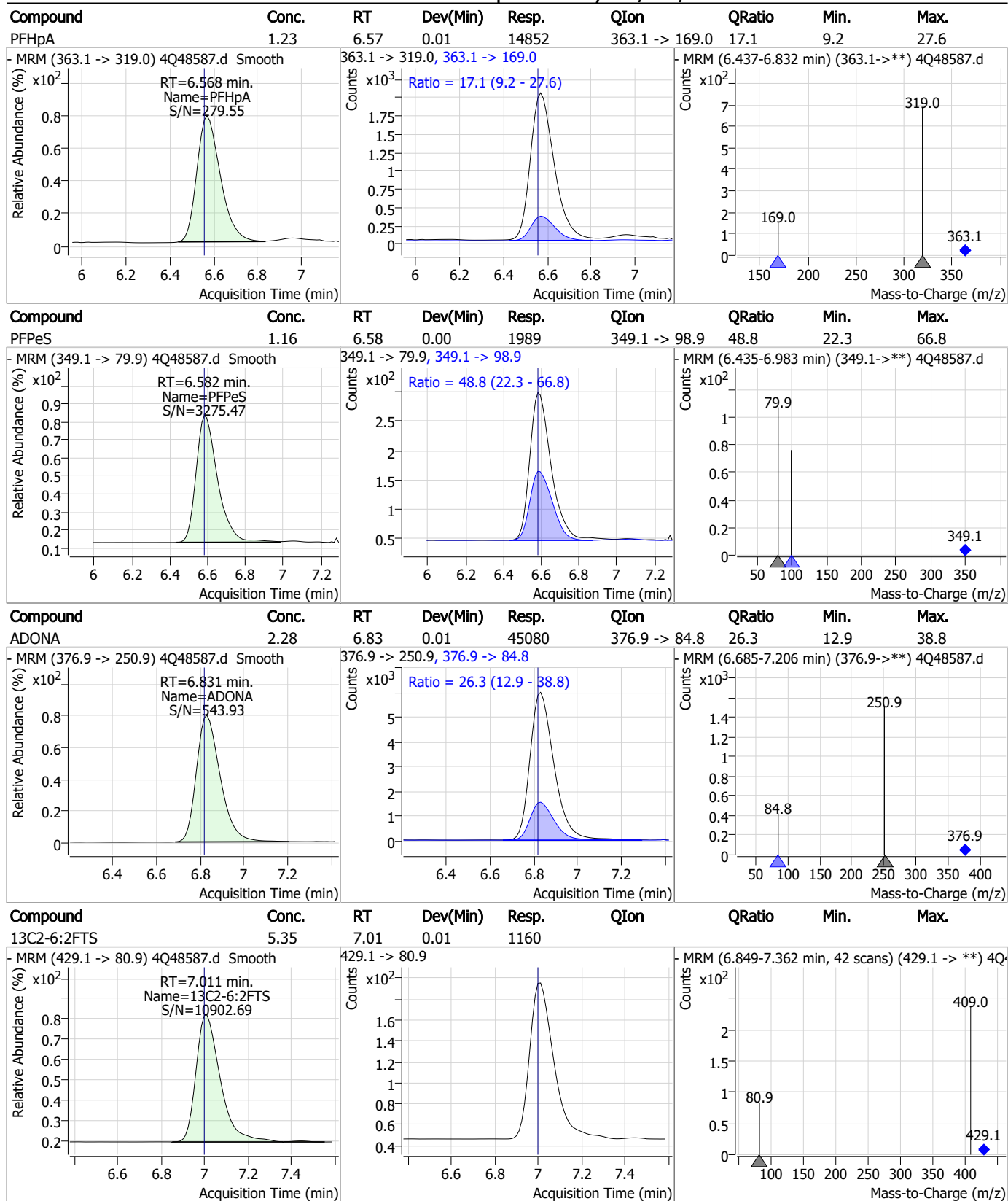
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Perfluorinated Compounds by LC/MS/MS



7.7.4
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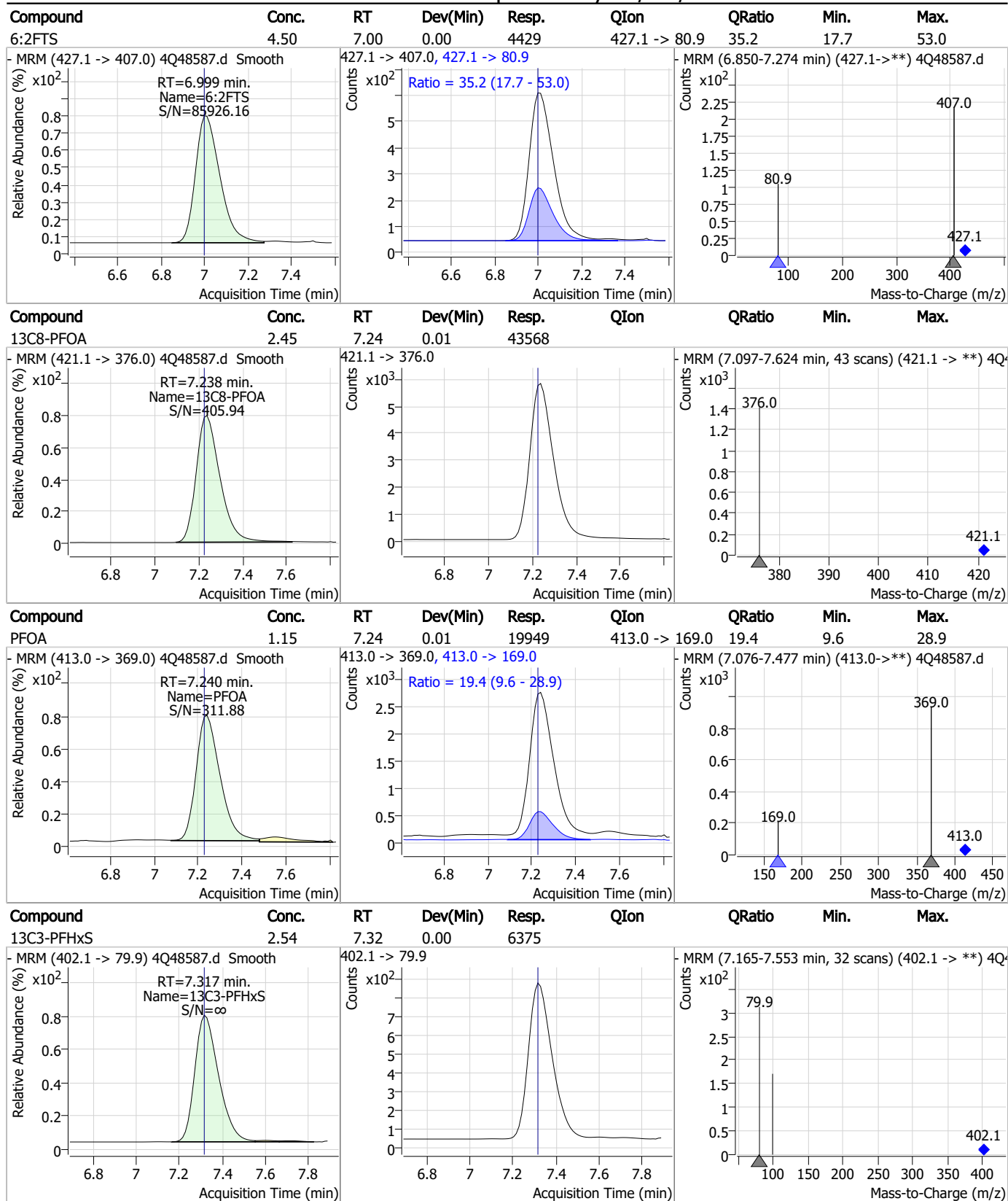
Perfluorinated Compounds by LC/MS/MS



7.7.4

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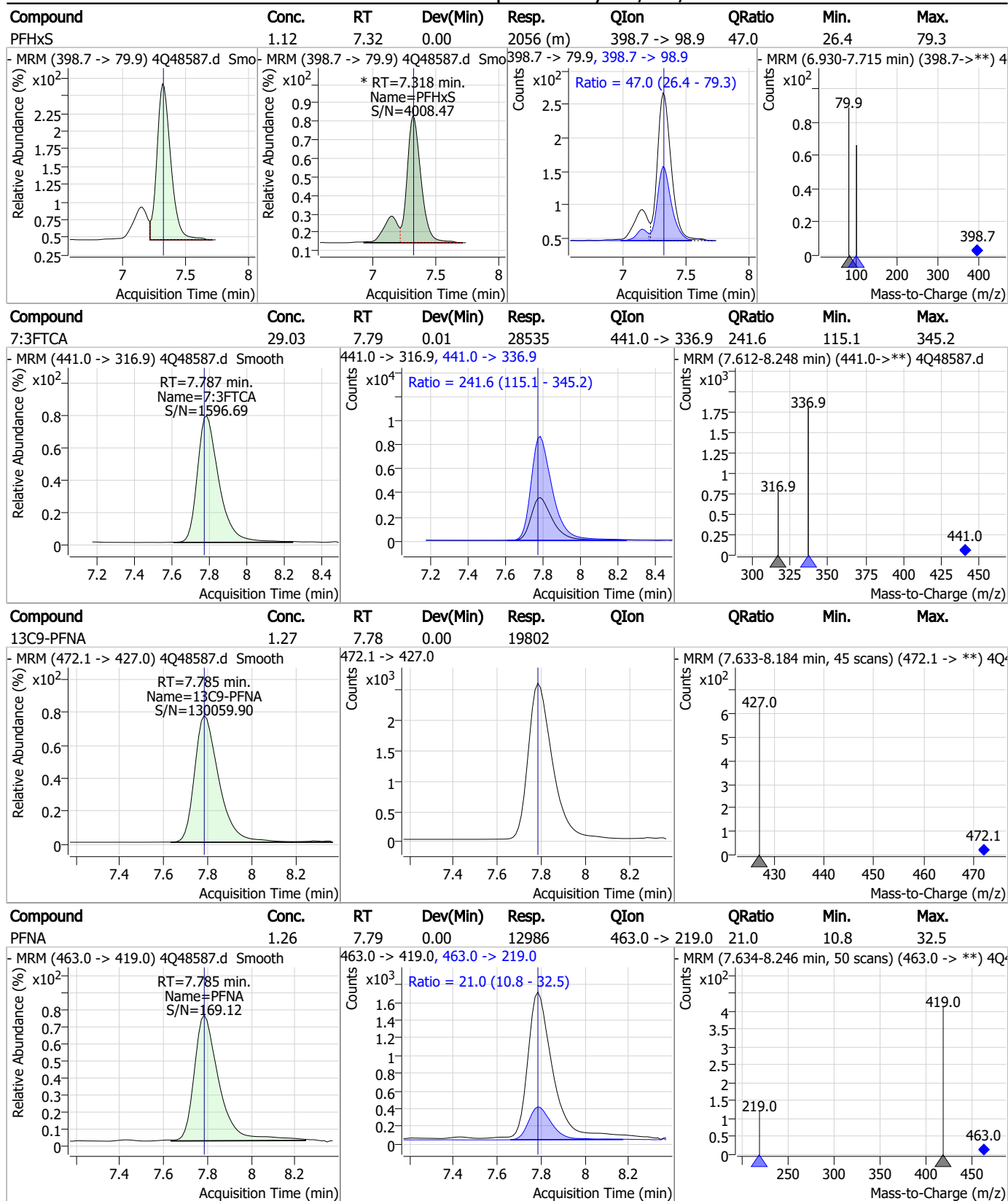
Perfluorinated Compounds by LC/MS/MS



7.7.4

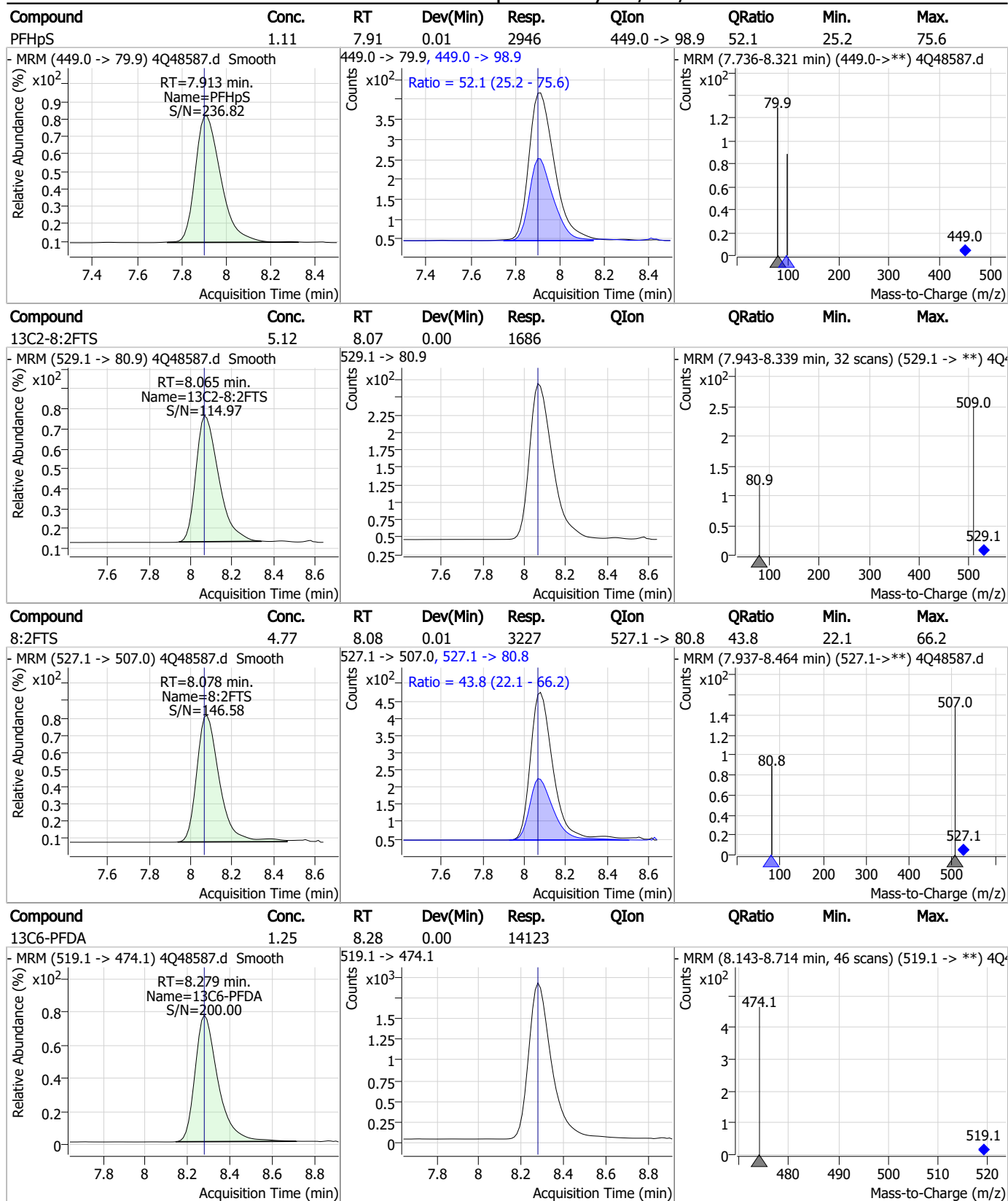
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Perfluorinated Compounds by LC/MS/MS



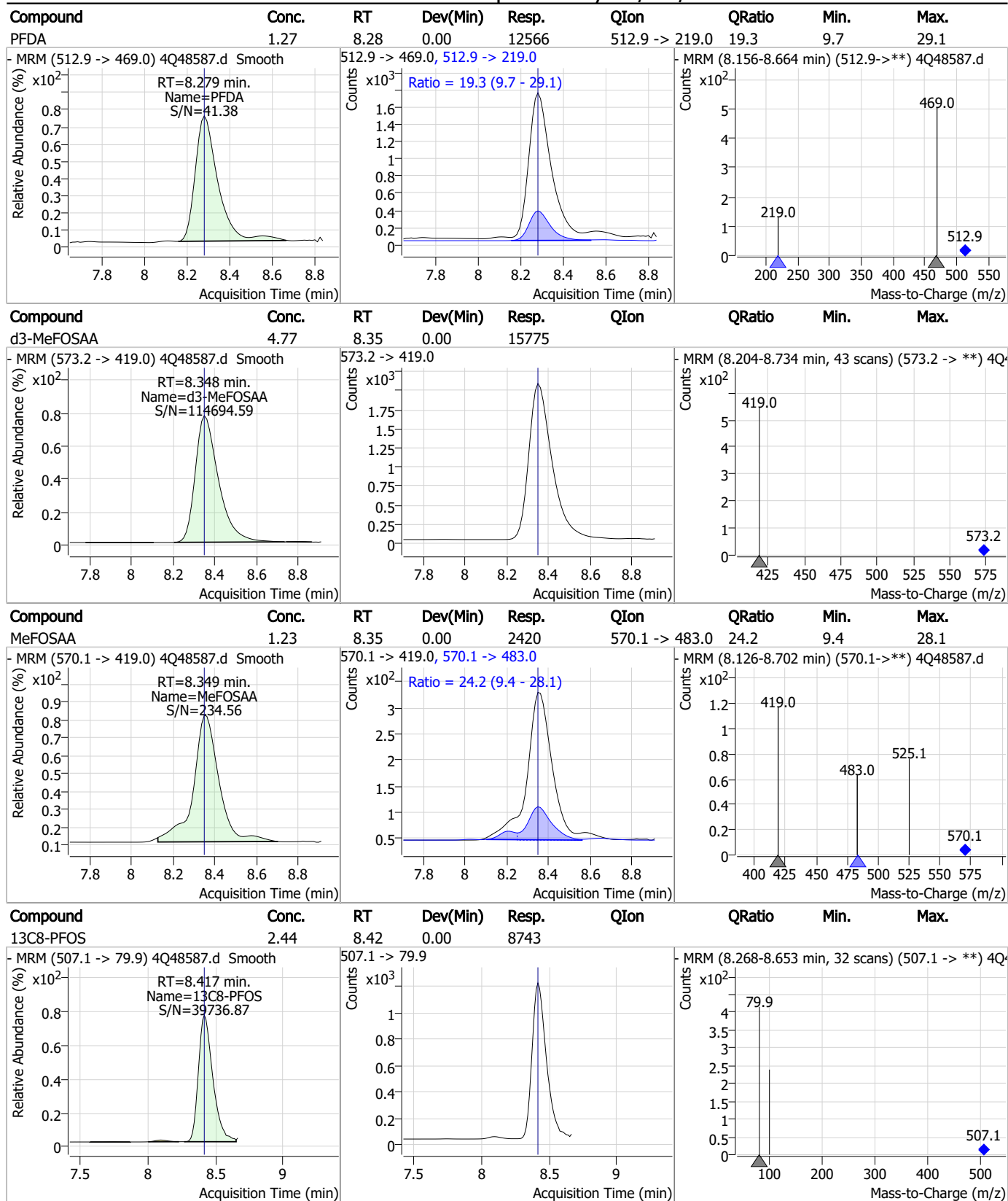
7.7.4
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Perfluorinated Compounds by LC/MS/MS



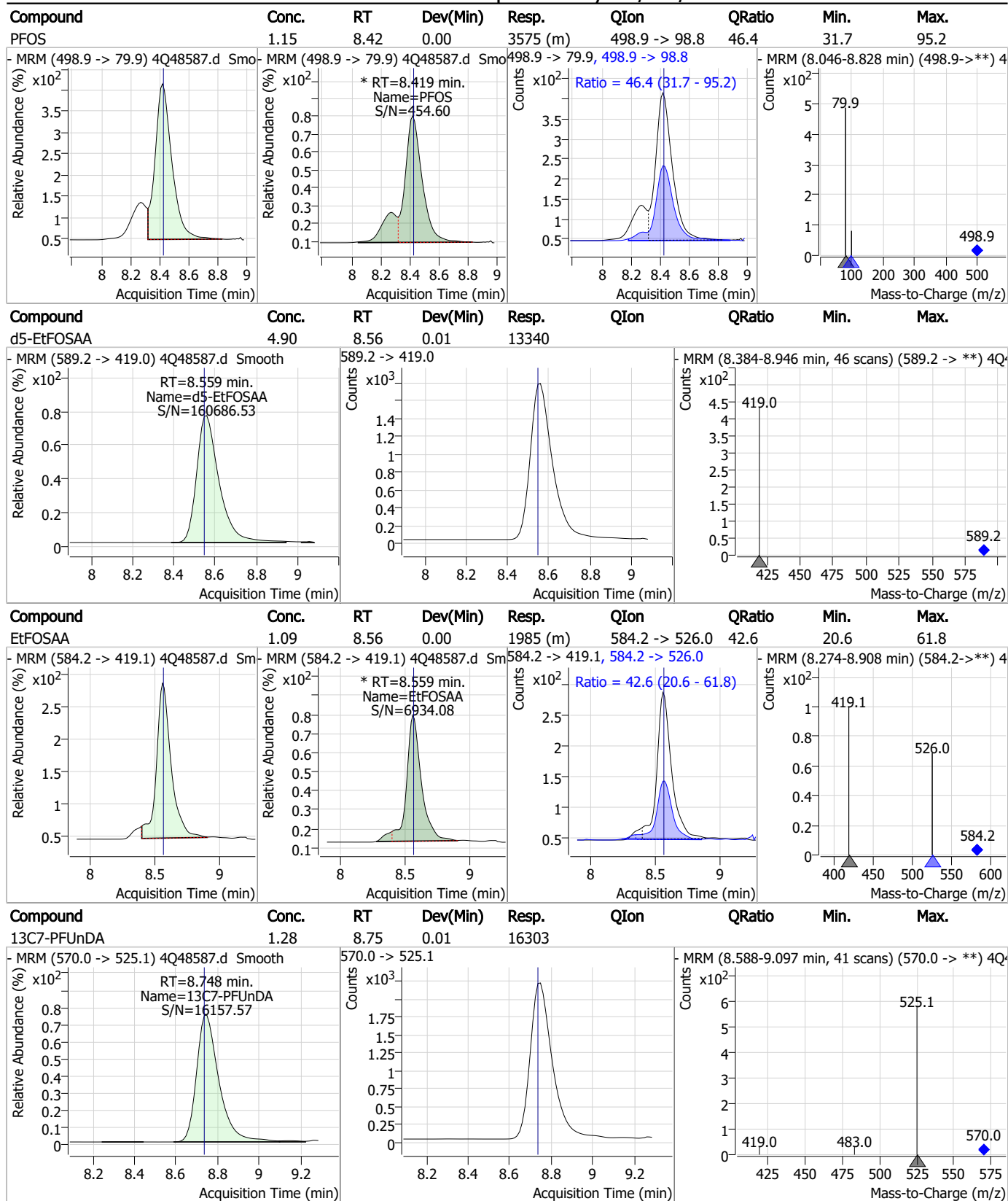
7.7.4
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Perfluorinated Compounds by LC/MS/MS

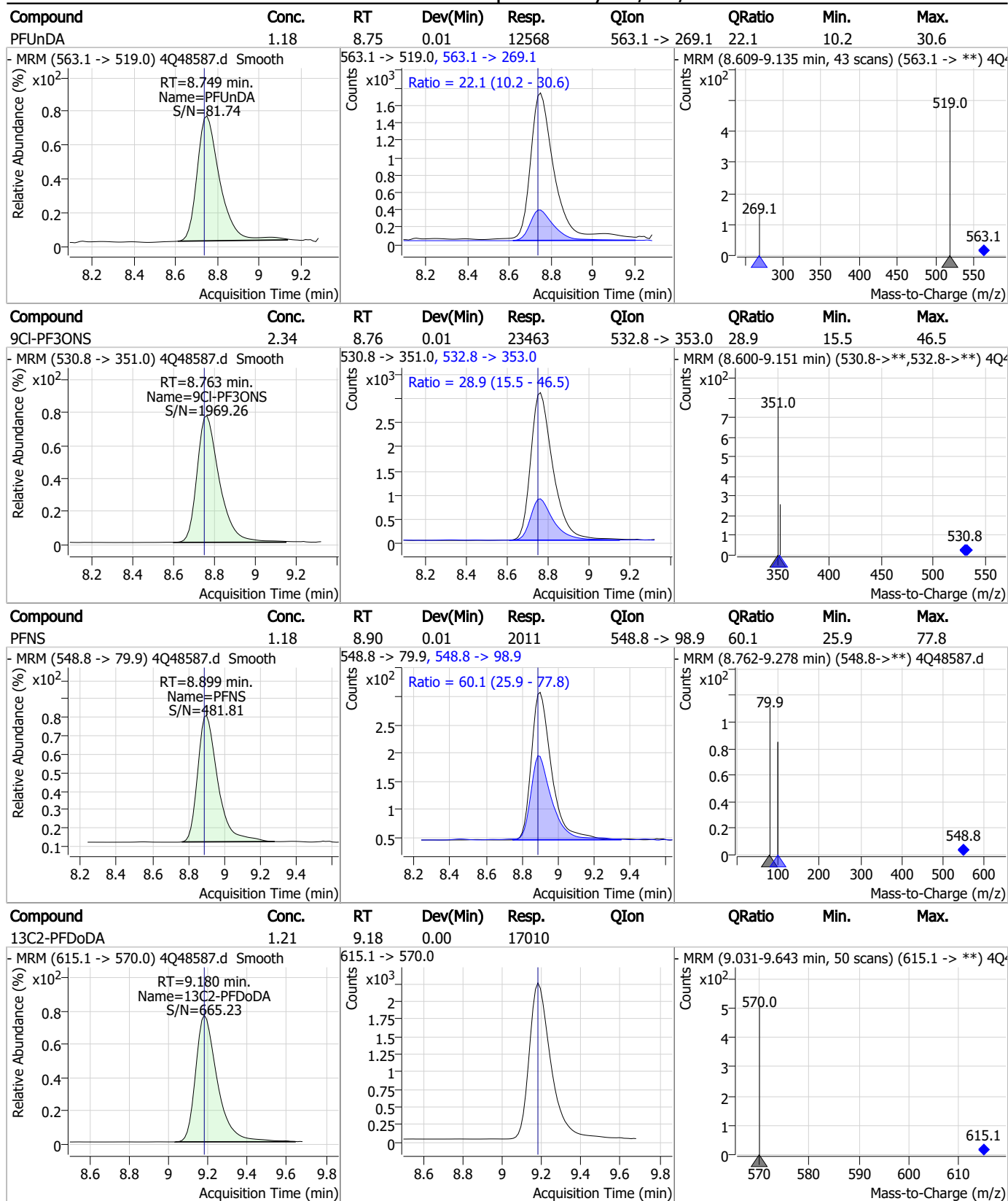


7.7.4
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Perfluorinated Compounds by LC/MS/MS

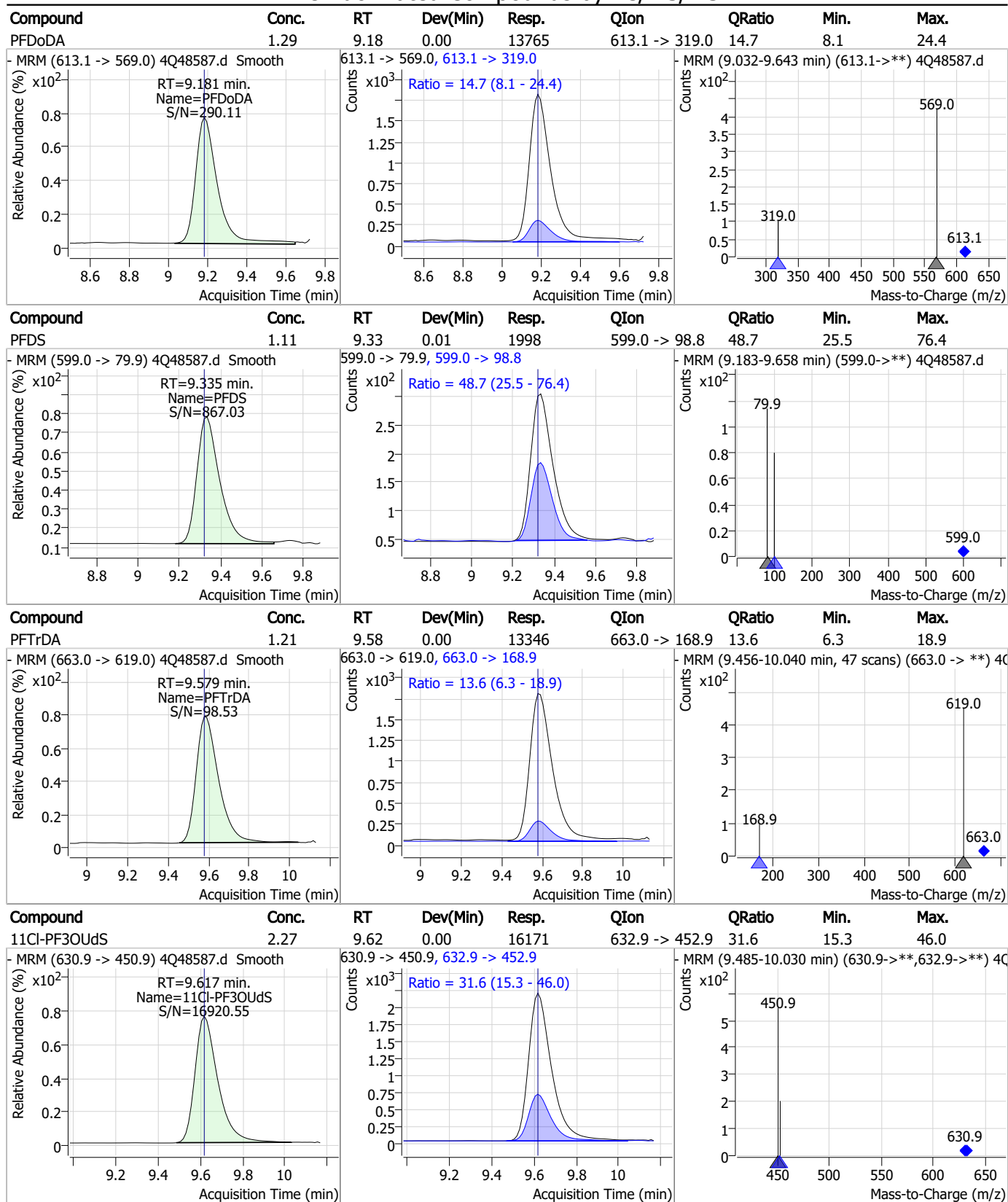


Perfluorinated Compounds by LC/MS/MS



7.7.4
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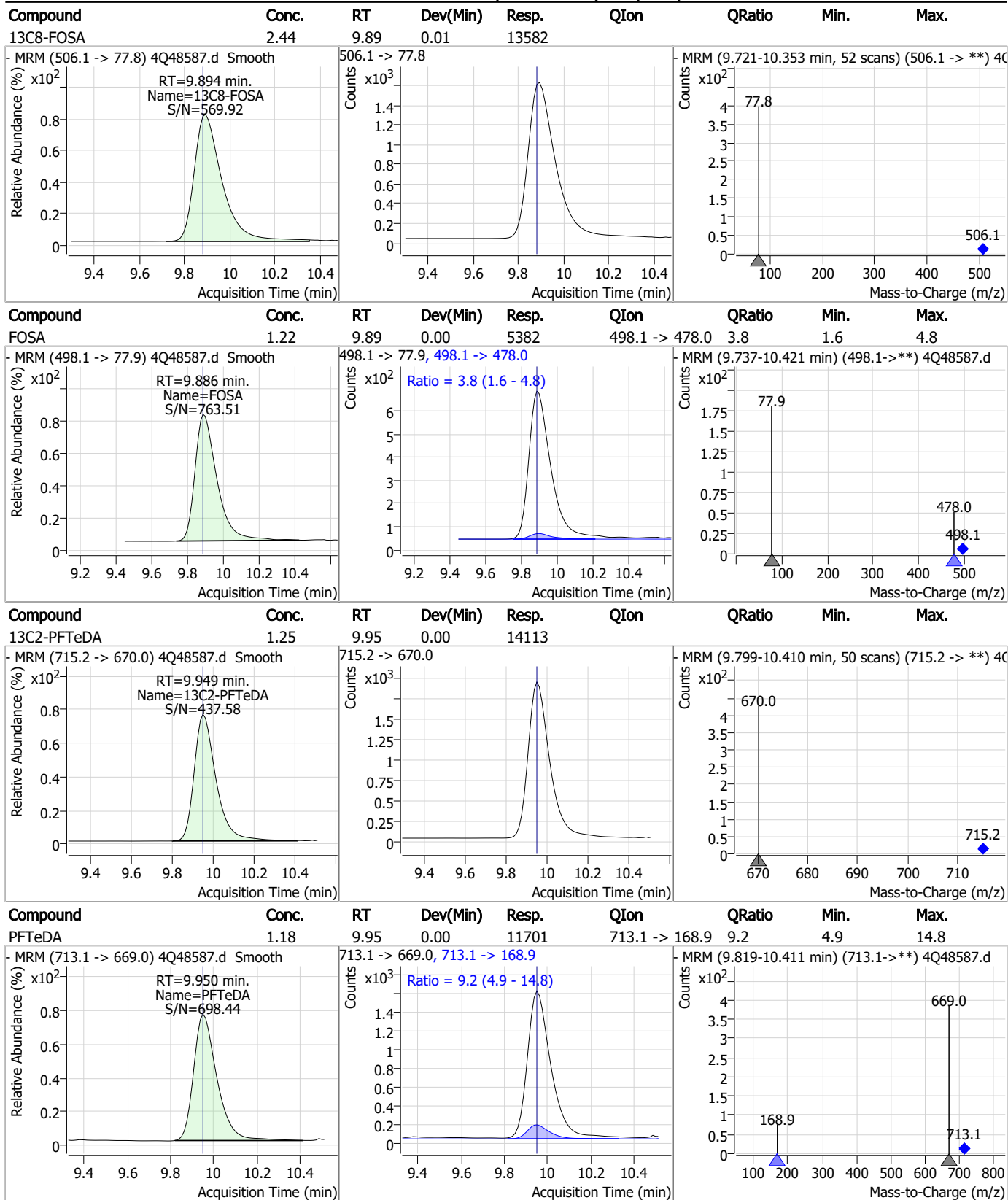
Perfluorinated Compounds by LC/MS/MS



7.7.4

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Perfluorinated Compounds by LC/MS/MS

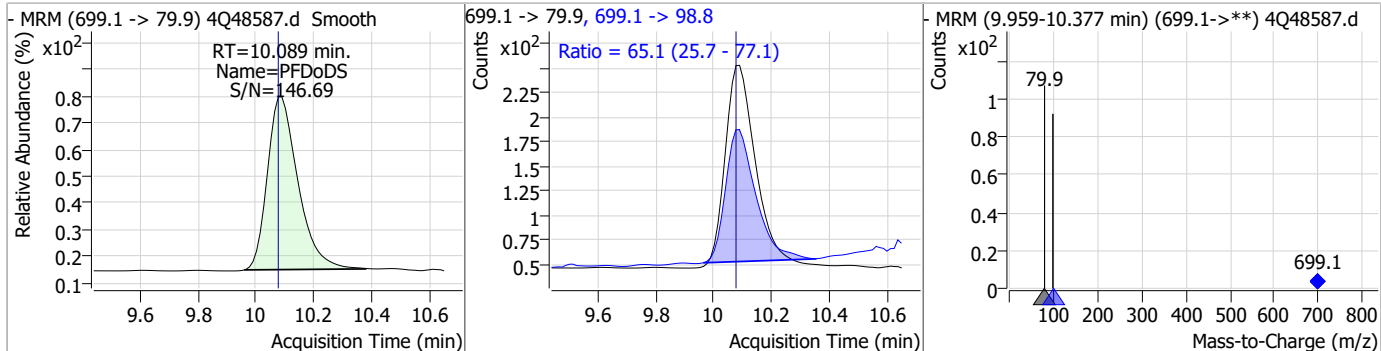


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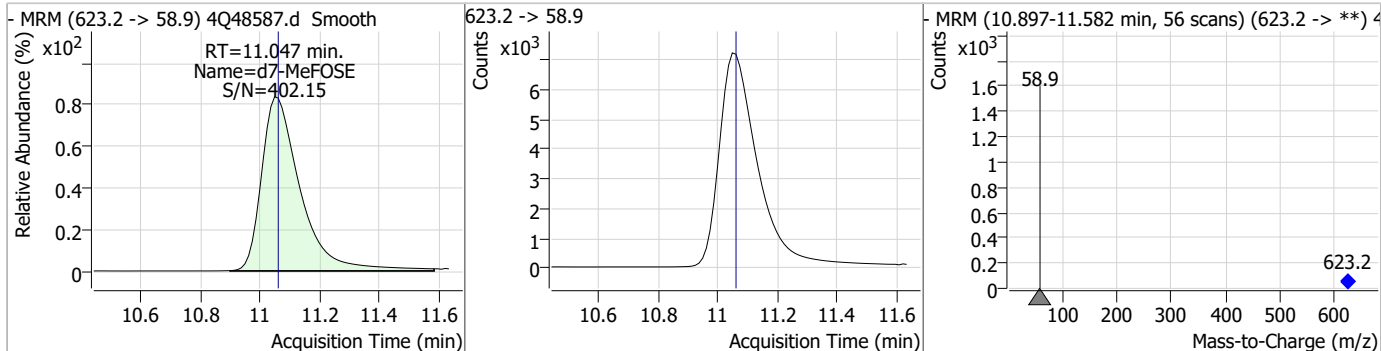
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Perfluorinated Compounds by LC/MS/MS

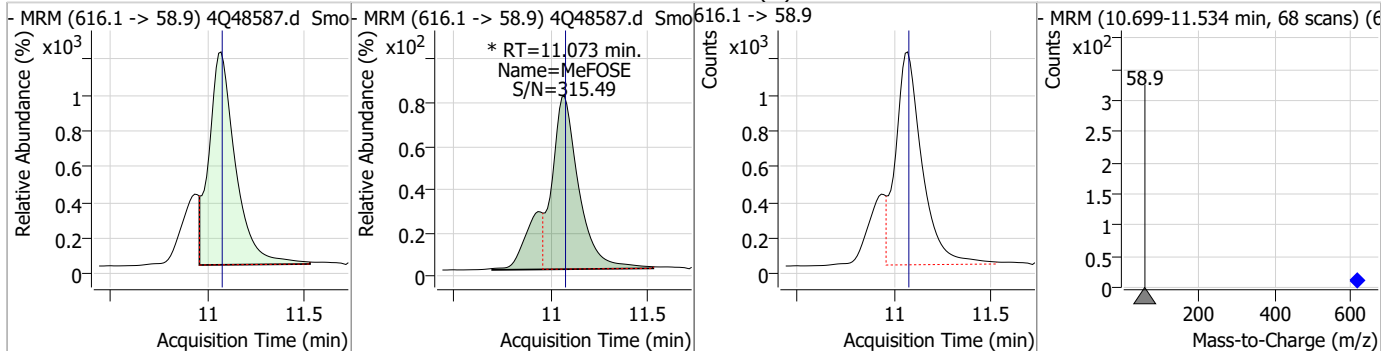
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	1.08	10.09	0.01	1503	699.1 -> 98.8	65.1	25.7	77.1



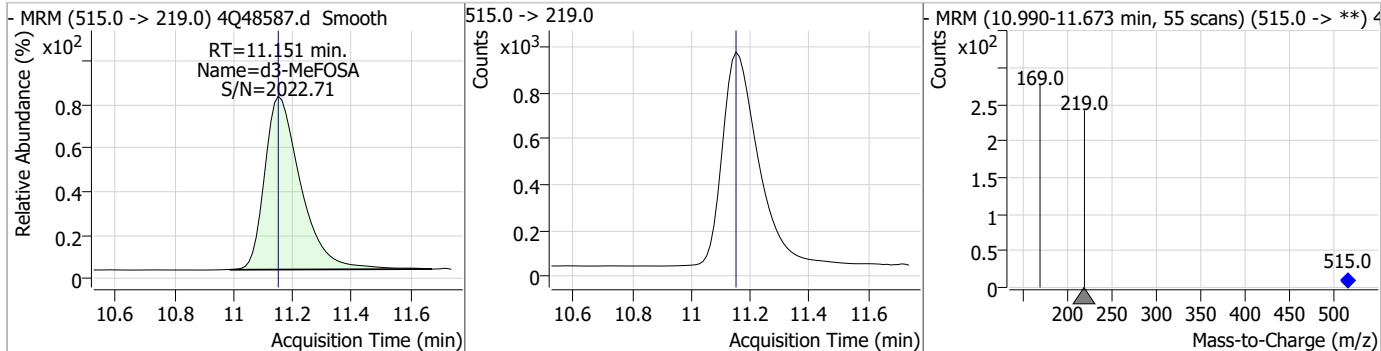
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.80	11.05	-0.01	64942				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	5.98	11.07	0.00	13883 (m)				

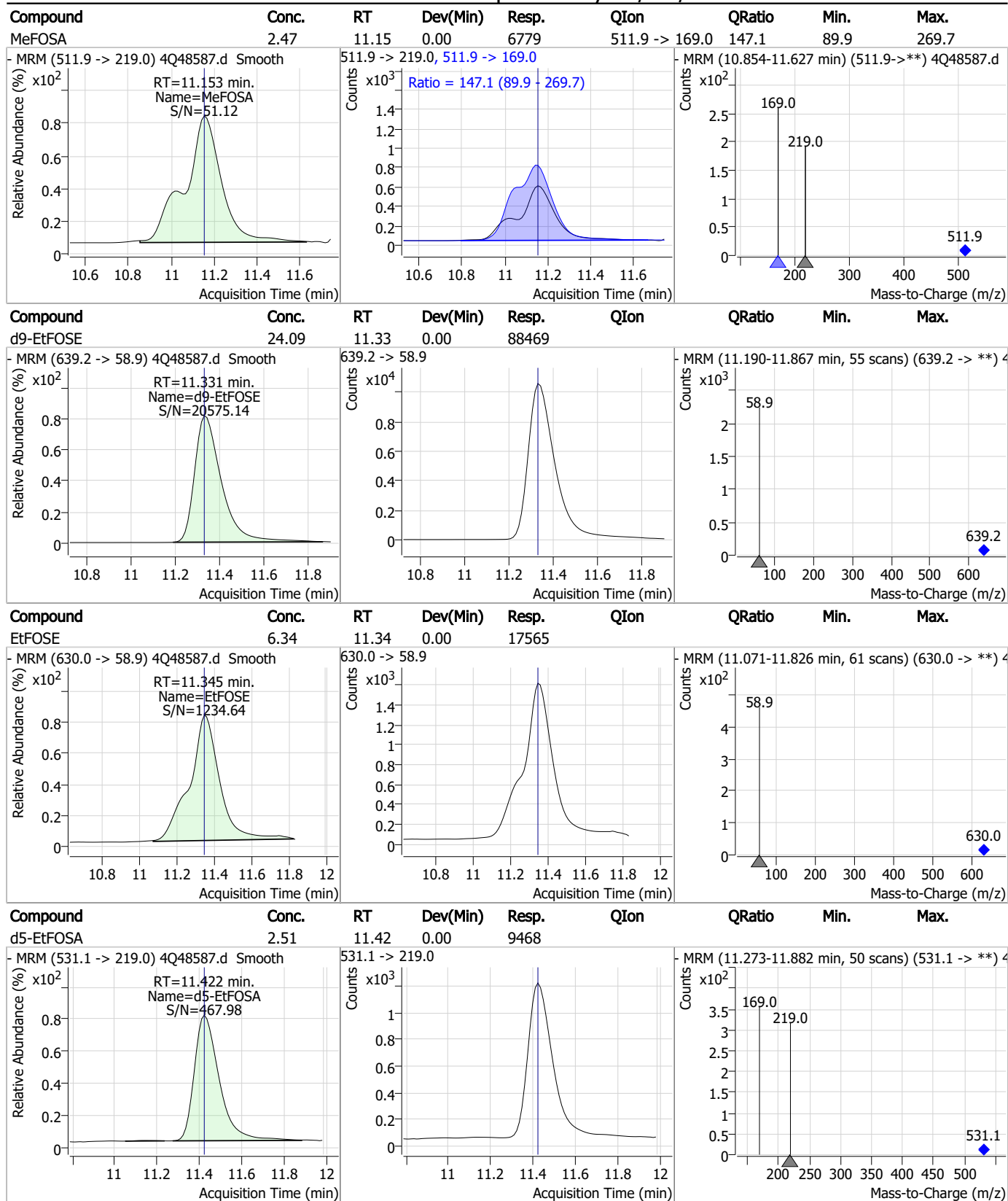


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.41	11.15	0.00	7877				



7.7.4
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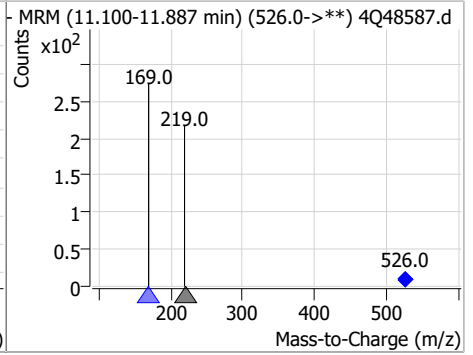
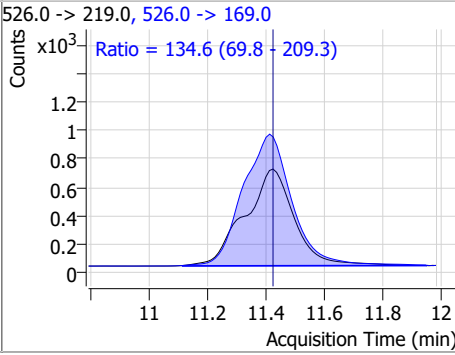
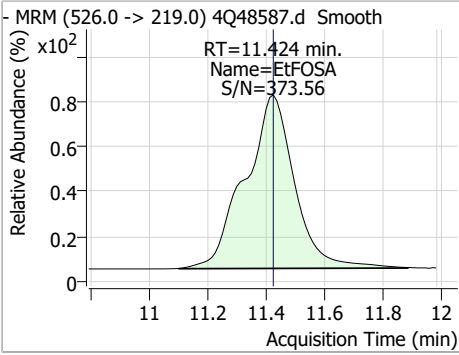
Perfluorinated Compounds by LC/MS/MS



7.7.4
7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	2.32	11.42	0.00	8067	526.0 -> 169.0	134.6	69.8	209.3



7.7.4

7

Manual Integration Approval Summary

Sample Number: S4Q711-IC711 Method: EPA DRAFT 1633
Lab FileID: 4Q48587.D Analyst approved: 08/09/23 11:54 Anna Ludwig
Injection Time: 08/07/23 16:59 Supervisor approved: 08/09/23 14:46 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.42	Split peak
EtFOSAA	2991-50-6		8.56	Split peak
MeFOSE	24448-09-7		11.07	Split peak

7.7.4.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48588.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/7/2023 5:14:04 PM
 Sample Name : icc711-4
 Vial : P1-A5
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q711.batch.bin
 Sample Information : OP97964,S4Q711,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	98007	10.00 µg/L	0.000
M5-PFPeA	4.412	268.3 -> 223.0	61172	5.00 µg/L	0.000
M5-PFHxA	5.610	318.0 -> 273.0	36323	2.50 µg/L	0.000
M4-PFHpA	6.555	367.1 -> 322.0	25759	2.50 µg/L	0.000
M8-PFOA	7.226	421.1 -> 376.0	42435	2.50 µg/L	0.000
M9-PFNA	7.785	472.1 -> 427.0	19286	1.25 µg/L	0.000
M6-PFDA	8.279	519.1 -> 474.1	14349	1.25 µg/L	0.000
M7-PFUnDA	8.736	570.0 -> 525.1	15525	1.25 µg/L	0.000
M2-PFDoDA	9.180	615.1 -> 570.0	16889	1.25 µg/L	0.000
M2-PFTeDA	9.949	715.2 -> 670.0	13748	1.25 µg/L	0.000
M8-FOSA	9.882	506.1 -> 77.8	12909	2.50 µg/L	0.000
M3-PFBS	5.489	302.1 -> 79.9	9621	2.50 µg/L	0.000
M3-PFHxS	7.317	402.1 -> 79.9	6165	2.50 µg/L	0.000
M8-PFOS	8.417	507.1 -> 79.9	8157	2.50 µg/L	0.000
M2-4:2FTS	5.296	329.1 -> 80.9	607	5.00 µg/L	0.000
M2-6:2FTS	6.998	429.1 -> 80.9	1033	5.00 µg/L	0.000
M2-8:2FTS	8.065	529.1 -> 80.9	1582	5.00 µg/L	0.000
M3-MeFOSAA	8.348	573.2 -> 419.0	15543	5.00 µg/L	0.000
M3-HFPO-DA	5.977	286.9 -> 168.9	33060	10.00 µg/L	0.000
M5-EtFOSAA	8.546	589.2 -> 419.0	12288	5.00 µg/L	0.000
M7-MeFOSE	11.059	623.2 -> 58.9	61626	25.00 µg/L	0.000
M9-EtFOSE	11.331	639.2 -> 58.9	88855	25.00 µg/L	0.000
M5-EtFOSA	11.422	531.1 -> 219.0	9050	2.50 µg/L	0.000
M3-MeFOSA	11.151	515.0 -> 219.0	7667	2.50 µg/L	0.000
13C4-PFOS	8.418	502.8 -> 79.9	8361	2.50 µg/L	0.000
13C3-PFBA	2.903	216.0 -> 172.0	57062	5.00 µg/L	0.000
18O2-PFHxS	7.316	403.0 -> 83.9	4529	2.50 µg/L	0.000
13C4-PFOA	7.226	417.1 -> 372.0	51944	2.50 µg/L	0.000
13C2-PFDA	8.279	515.1 -> 470.1	15426	1.25 µg/L	0.000
13C5-PFNA	7.785	468.0 -> 423.0	20136	1.25 µg/L	0.000
13C2-PFHxA	5.611	315.1 -> 270.0	33840	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.296	329.1 -> 80.9	607	5.36 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.3%		
13C2-6:2FTS	6.998	429.1 -> 80.9	1033	4.78 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.5%		
13C2-8:2FTS	8.065	529.1 -> 80.9	1582	4.82 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.4%		
13C2-PFDoDA	9.180	615.1 -> 570.0	16889	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C2-PFTeDA	9.949	715.2 -> 670.0	13748	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.7%		
13C3-PFBS	5.489	302.1 -> 79.9	9621	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C3-PFHxS	7.317	402.1 -> 79.9	6165	2.46 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 = 98.4%	
13C4-PFBA	2.911	216.8 -> 171.9	98007	10.05 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C4-PFHpA	6.555	367.1 -> 322.0	25759	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C5-PFHxA	5.610	318.0 -> 273.0	36323	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C5-PFPeA	4.412	268.3 -> 223.0	61172	5.17 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.4%	
13C6-PFDA	8.279	519.1 -> 474.1	14349	1.34 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.5%	
13C7-PFUnDA	8.736	570.0 -> 525.1	15525	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C8-FOSA	9.882	506.1 -> 77.8	12909	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C8-PFOA	7.226	421.1 -> 376.0	42435	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C8-PFOS	8.417	507.1 -> 79.9	8157	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.1%	
13C9-PFNA	7.785	472.1 -> 427.0	19286	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.2%	
d3-MeFOSAA	8.348	573.2 -> 419.0	15543	5.01 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C3-HFPO-DA	5.977	286.9 -> 168.9	33060	10.25 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.5%	
d3-MeFOSA	11.151	515.0 -> 219.0	7667	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
d5-EtFOSAA	8.546	589.2 -> 419.0	12288	4.82 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.3%	
d7-MeFOSE	11.059	623.2 -> 58.9	61626	25.10 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
d9-EtFOSE	11.331	639.2 -> 58.9	88855	25.80 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.2%	
d5-EtFOSA	11.422	531.1 -> 219.0	9050	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.3%	
Target Compounds					QValue
4:2FTS	5.297	327.1 -> 307.0	7480	9.14 µg/L	100
		327.1 -> 80.9	3067		
6:2FTS	6.999	427.1 -> 407.0	9080	10.36 µg/L	100
		427.1 -> 80.9	3206		
8:2FTS	8.066	527.1 -> 507.0	6667	10.50 µg/L	100
		527.1 -> 80.8	2943		
EtFOSAA	8.559	584.2 -> 419.1	4628	2.76 µg/L	m 93
		584.2 -> 526.0	1703		
FOSA	9.886	498.1 -> 77.9	11067	2.65 µg/L	100
		498.1 -> 478.0	354		
MeFOSAA	8.349	570.1 -> 419.0	4901	2.52 µg/L	m 93
		570.1 -> 483.0	1060		
PFBA	2.907	212.8 -> 168.9	23334	10.34 µg/L	100
PFBS	5.490	298.7 -> 79.9	5705	2.43 µg/L	100
		298.7 -> 98.8	2110		
PFDA	8.279	512.9 -> 469.0	25643	2.54 µg/L	100
		512.9 -> 219.0	4970		
PFDODA	9.181	613.1 -> 569.0	27107	2.57 µg/L	100
		613.1 -> 319.0	4415		
PFDS	9.321	599.0 -> 79.9	4320	2.56 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2201			
PFHpA	6.556	363.1 -> 319.0	30136	2.59	µg/L	100
		363.1 -> 169.0	5540			
PFHpS	7.900	449.0 -> 79.9	6177	2.51	µg/L	100
		449.0 -> 98.9	3113			
PFHxA	5.613	313.0 -> 269.0	26158	2.50	µg/L	100
		313.0 -> 118.9	861			
PFHxS	7.318	398.7 -> 79.9	4284	2.42	µg/L	m 95
		398.7 -> 98.9	2120			
PFNA	7.785	463.0 -> 419.0	25423	2.53	µg/L	100
		463.0 -> 219.0	5505			
PFNS	8.887	548.8 -> 79.9	4218	2.65	µg/L	100
		548.8 -> 98.9	2188			
PFOA	7.227	413.0 -> 369.0	43333	2.58	µg/L	100
		413.0 -> 169.0	8351			
PFOS	8.419	498.9 -> 79.9	7409	2.55	µg/L	m 81
		498.9 -> 98.8	3617			
PFPeA	4.414	263.0 -> 219.0	53695	5.05	µg/L	100
PFPeS	6.582	349.1 -> 79.9	4198	2.52	µg/L	100
		349.1 -> 98.9	1870			
PFTeDA	9.950	713.1 -> 669.0	23997	2.49	µg/L	100
		713.1 -> 168.9	2368			
PFTrDA	9.579	663.0 -> 619.0	29105	2.67	µg/L	100
		663.0 -> 168.9	3661			
PFUnDA	8.736	563.1 -> 519.0	26609	2.63	µg/L	100
		563.1 -> 269.1	5430			
11Cl-PF3OUdS	9.617	630.9 -> 450.9	34454	4.97	µg/L	100
		632.9 -> 452.9	10555			
9Cl-PF3ONS	8.751	530.8 -> 351.0	49612	5.09	µg/L	100
		532.8 -> 353.0	15383			
ADONA	6.818	376.9 -> 250.9	95762	4.99	µg/L	100
		376.9 -> 84.8	24792			
HFPO-DA	5.978	284.9 -> 168.9	13569	4.99	µg/L	100
		284.9 -> 184.9	1774			
3:3FTCA	3.861	241.0 -> 177.0	7029	12.34	µg/L	100
		241.0 -> 117.0	691			
5:3FTCA	6.296	341.0 -> 237.1	110816	64.60	µg/L	100
		341.0 -> 217.0	78827			
7:3FTCA	7.774	441.0 -> 316.9	62333	65.94	µg/L	100
		441.0 -> 336.9	143448			
EtFOSA	11.424	526.0 -> 219.0	16928	5.09	µg/L	100
		526.0 -> 169.0	23615			
EtFOSE	11.345	630.0 -> 58.9	35363	12.72	µg/L	100
MeFOSA	11.153	511.9 -> 219.0	14176	5.32	µg/L	m 74
		511.9 -> 169.0	20283			
MeFOSE	11.073	616.1 -> 58.9	29734	13.49	µg/L	100
PFDoDS	10.077	699.1 -> 79.9	3447	2.66	µg/L	100
		699.1 -> 98.8	1772			
NFDHA	5.491	295.0 -> 201.0	3695	5.47	µg/L	100
		295.0 -> 84.9	921			
PFMBA	4.828	279.0 -> 85.1	30696	5.15	µg/L	100
PFMPA	3.540	229.0 -> 84.9	29835	5.13	µg/L	100
PFEESA	6.034	314.8 -> 134.9	39277	4.65	µg/L	100
		314.8 -> 82.9	1358			

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

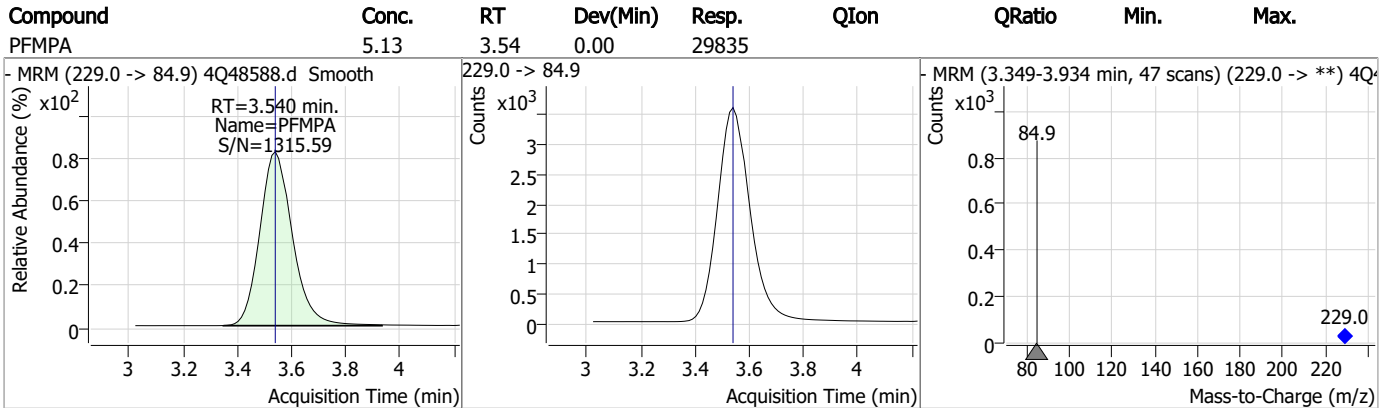
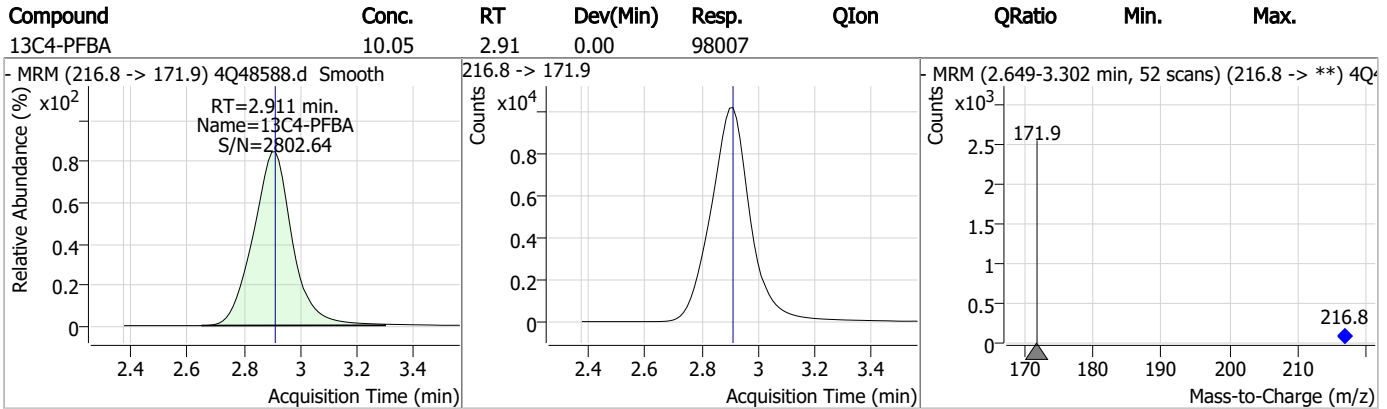
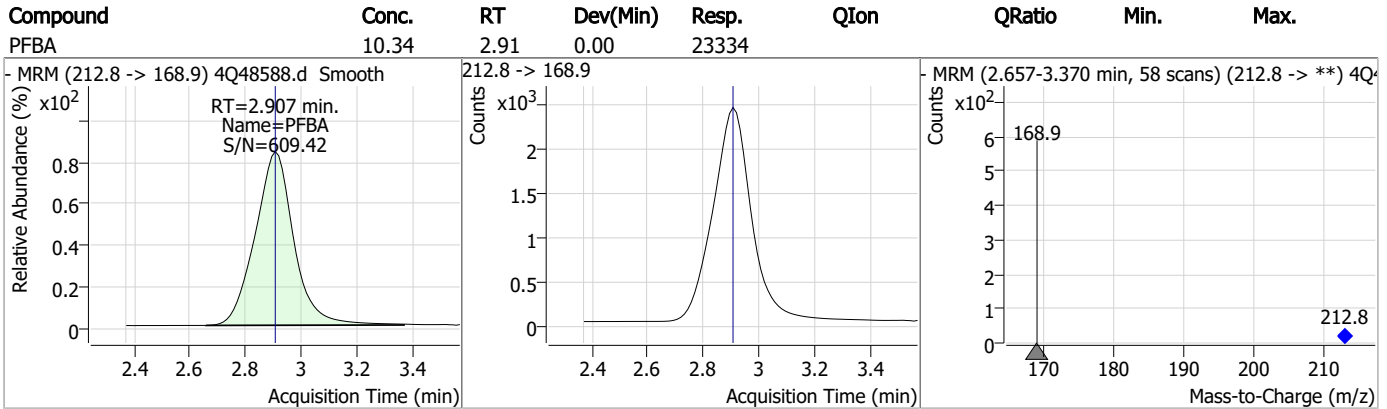
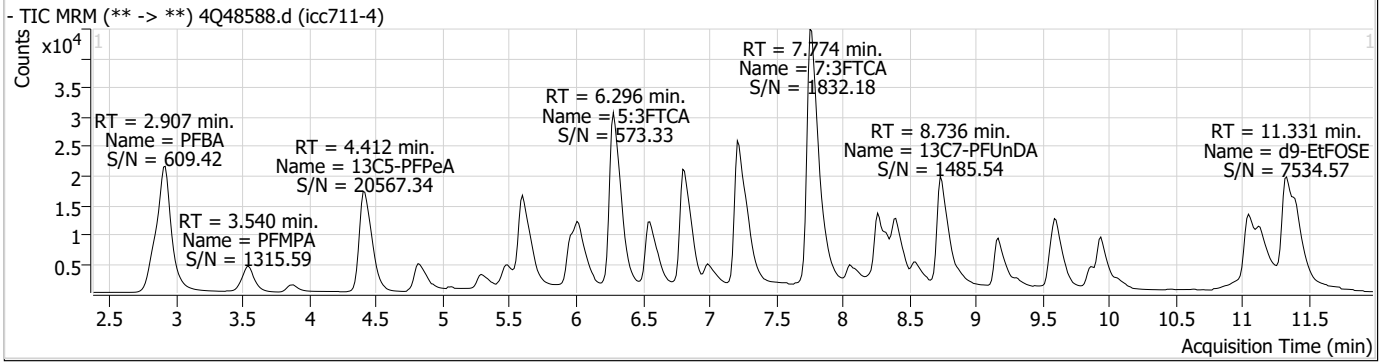
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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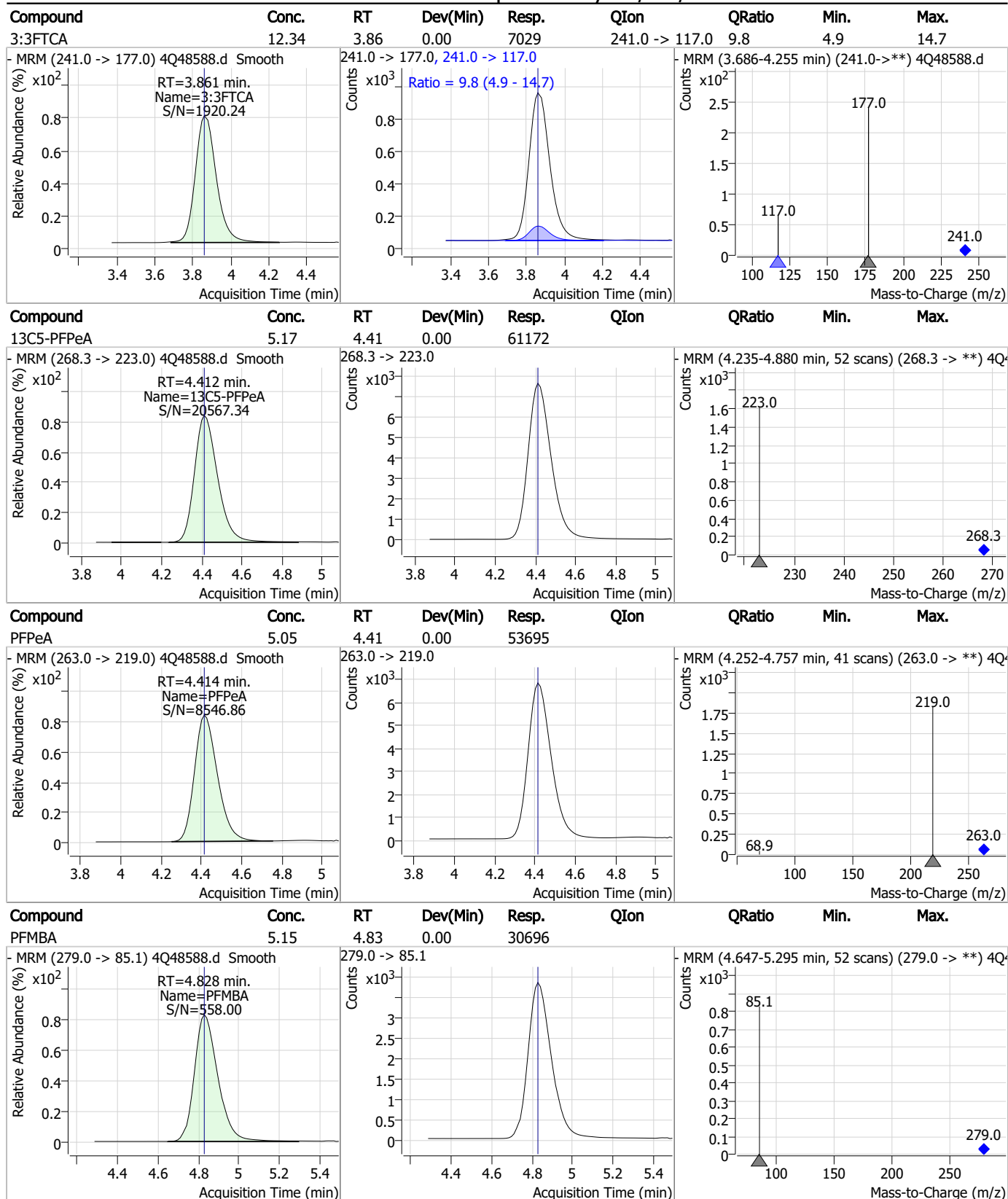
7.7.5
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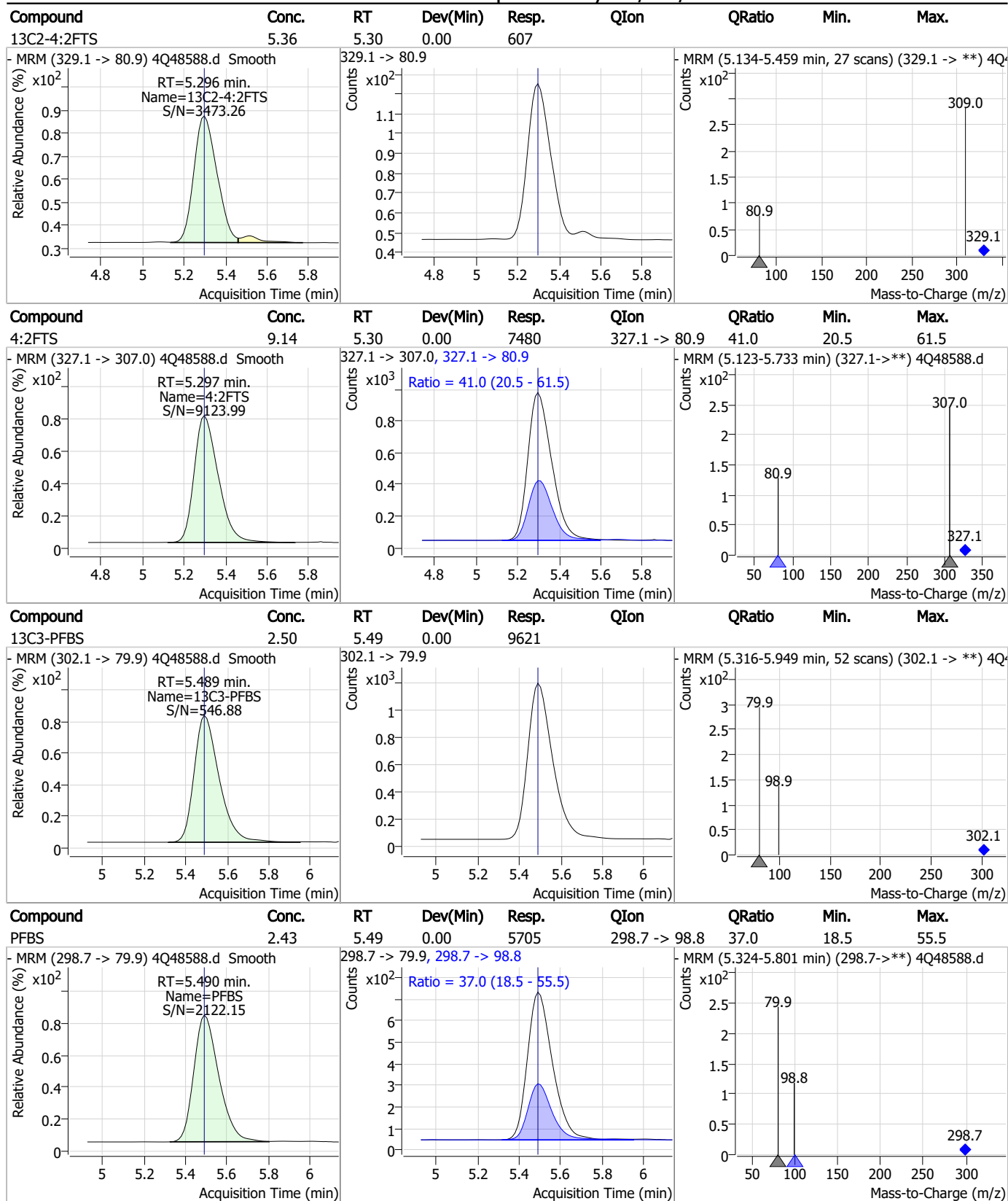
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



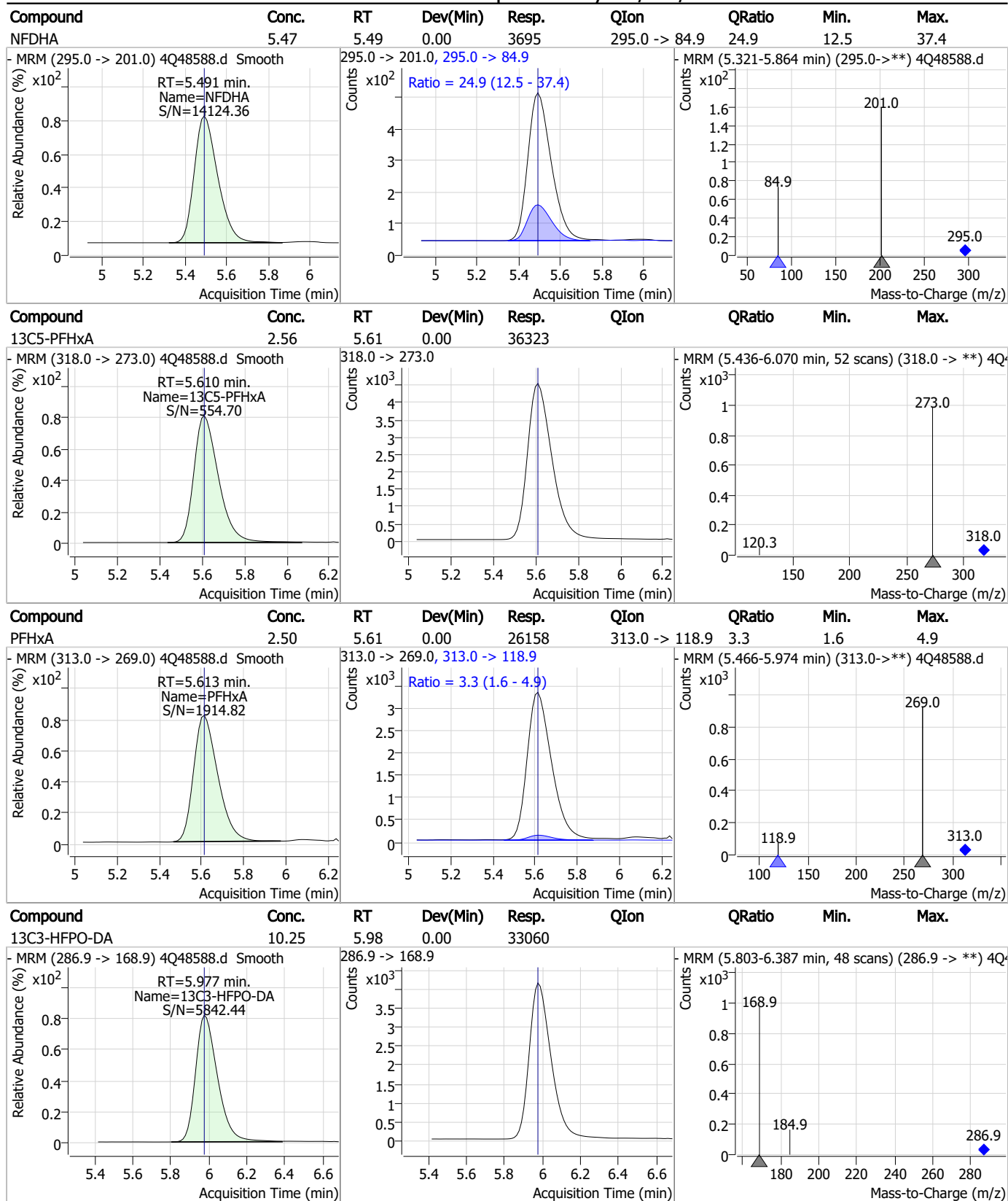
Perfluorinated Compounds by LC/MS/MS



7.7.5

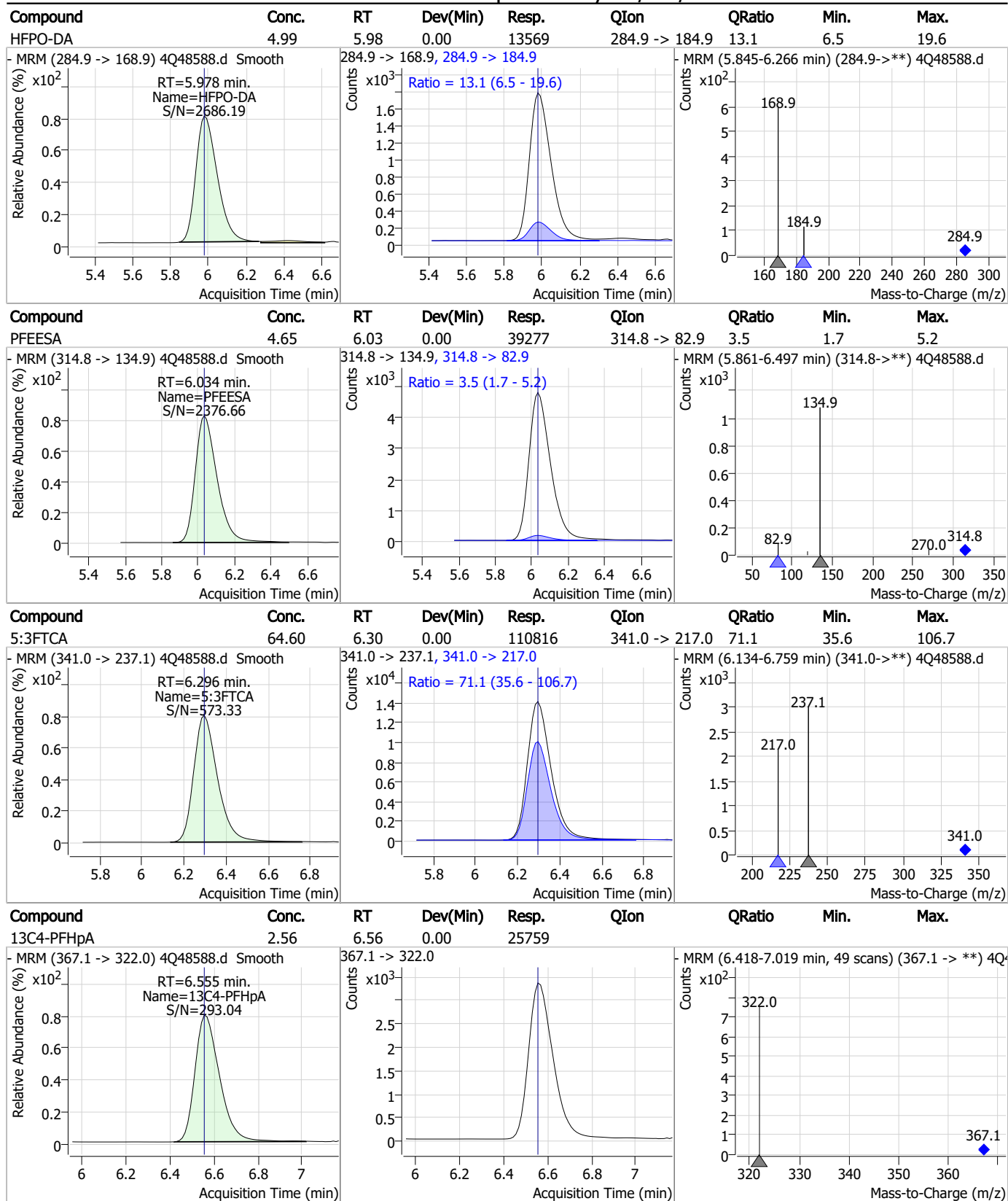
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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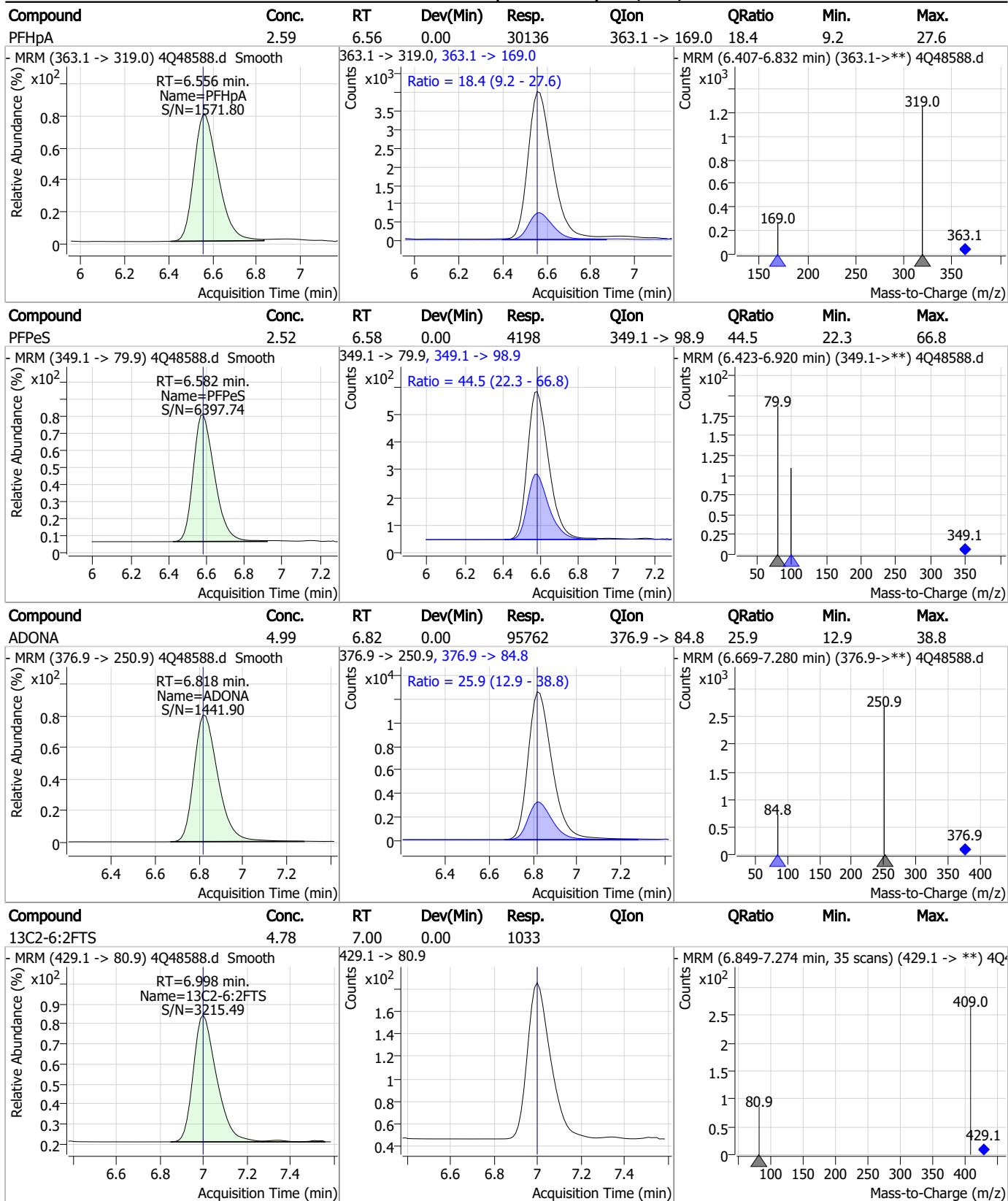
Perfluorinated Compounds by LC/MS/MS



7.7.5
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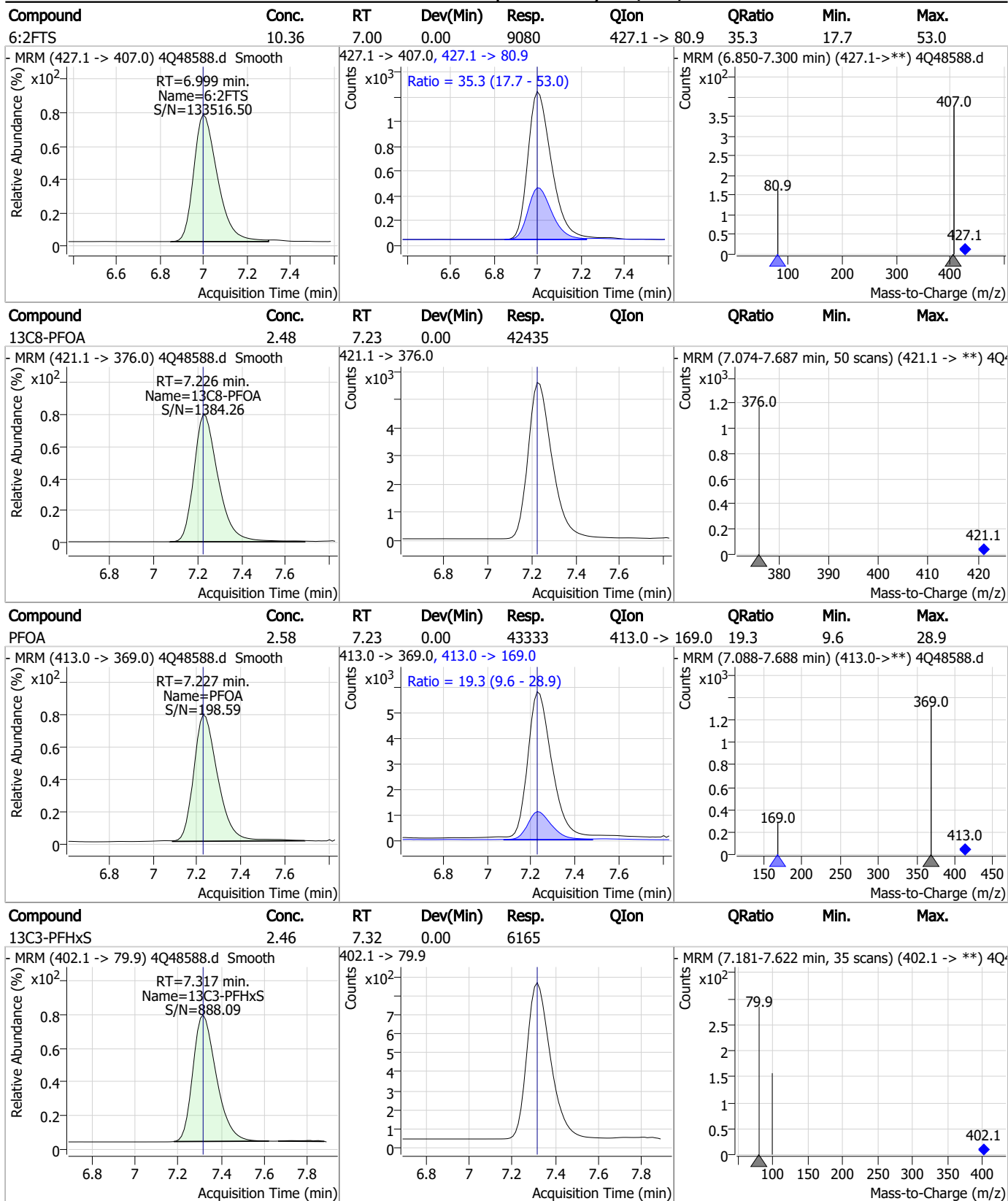


Perfluorinated Compounds by LC/MS/MS



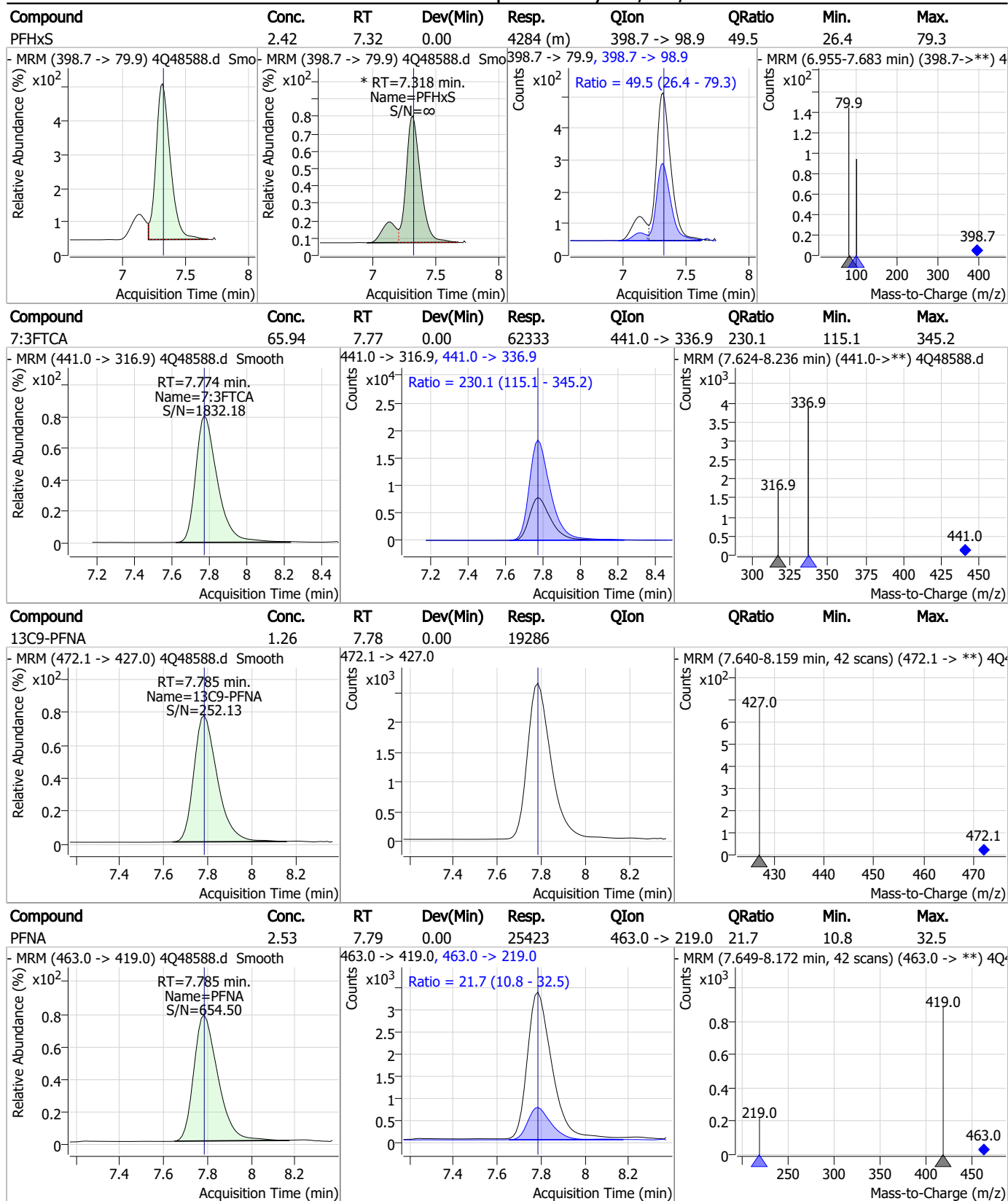
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Perfluorinated Compounds by LC/MS/MS



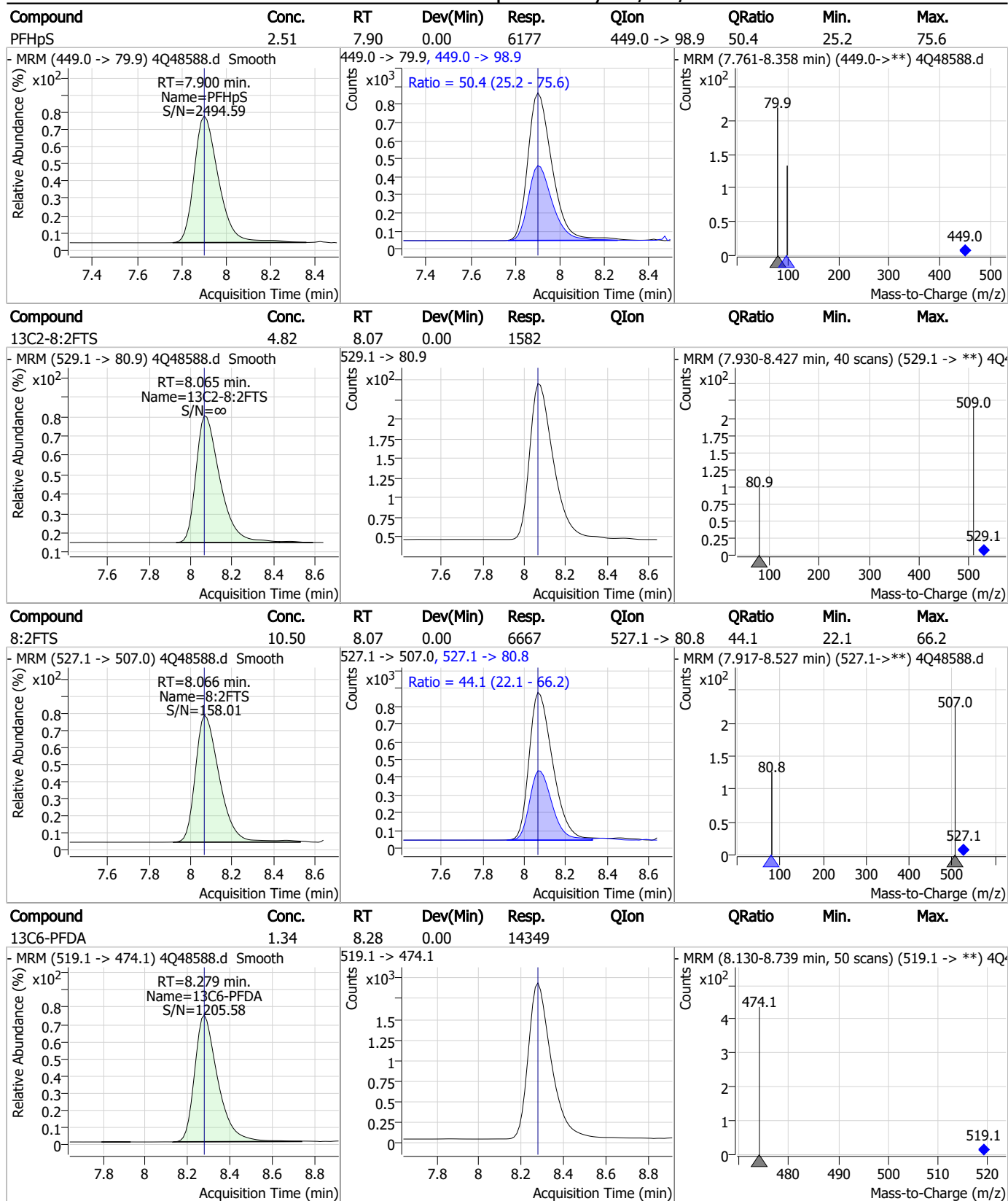
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Perfluorinated Compounds by LC/MS/MS



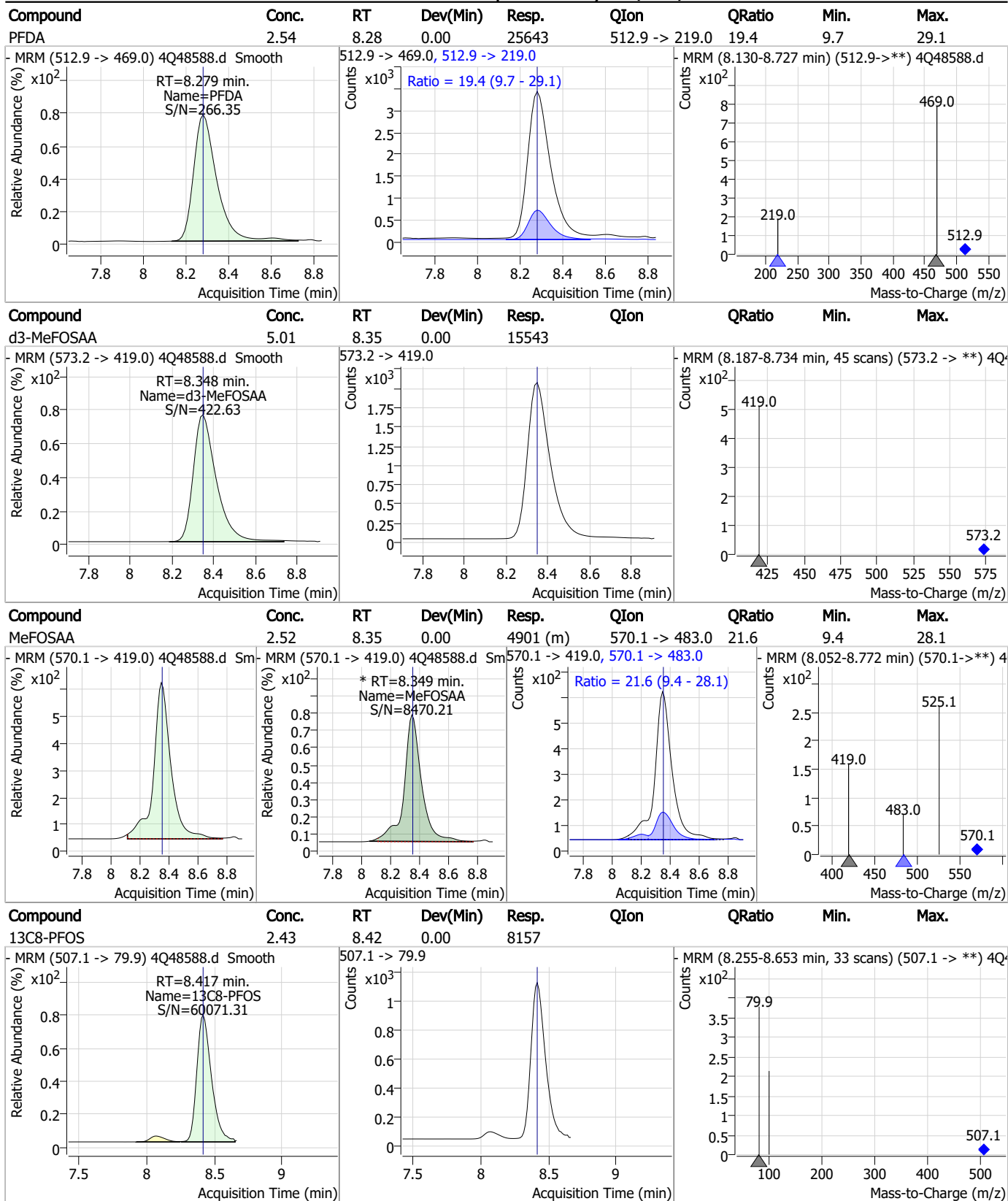
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Perfluorinated Compounds by LC/MS/MS



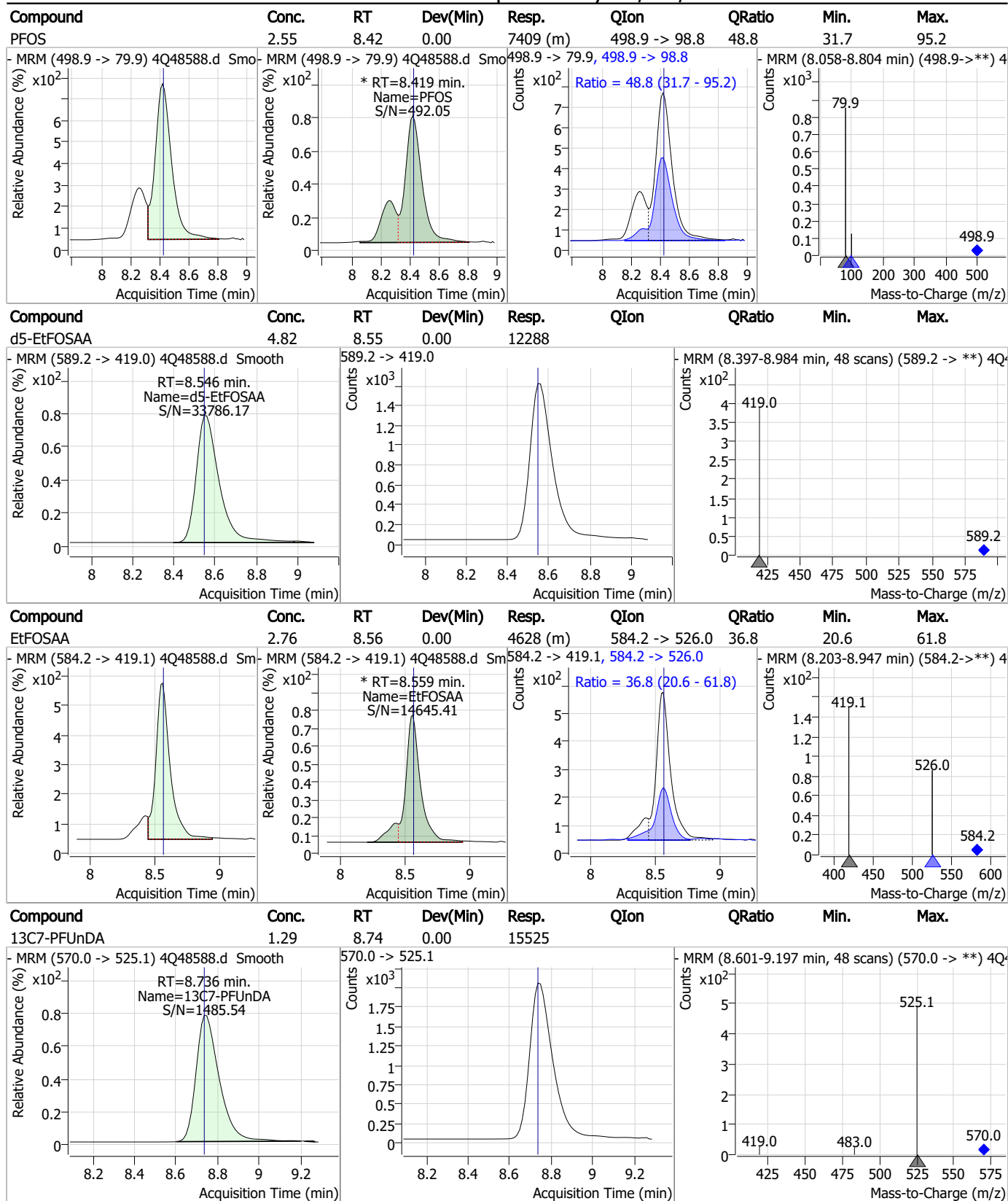
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Perfluorinated Compounds by LC/MS/MS

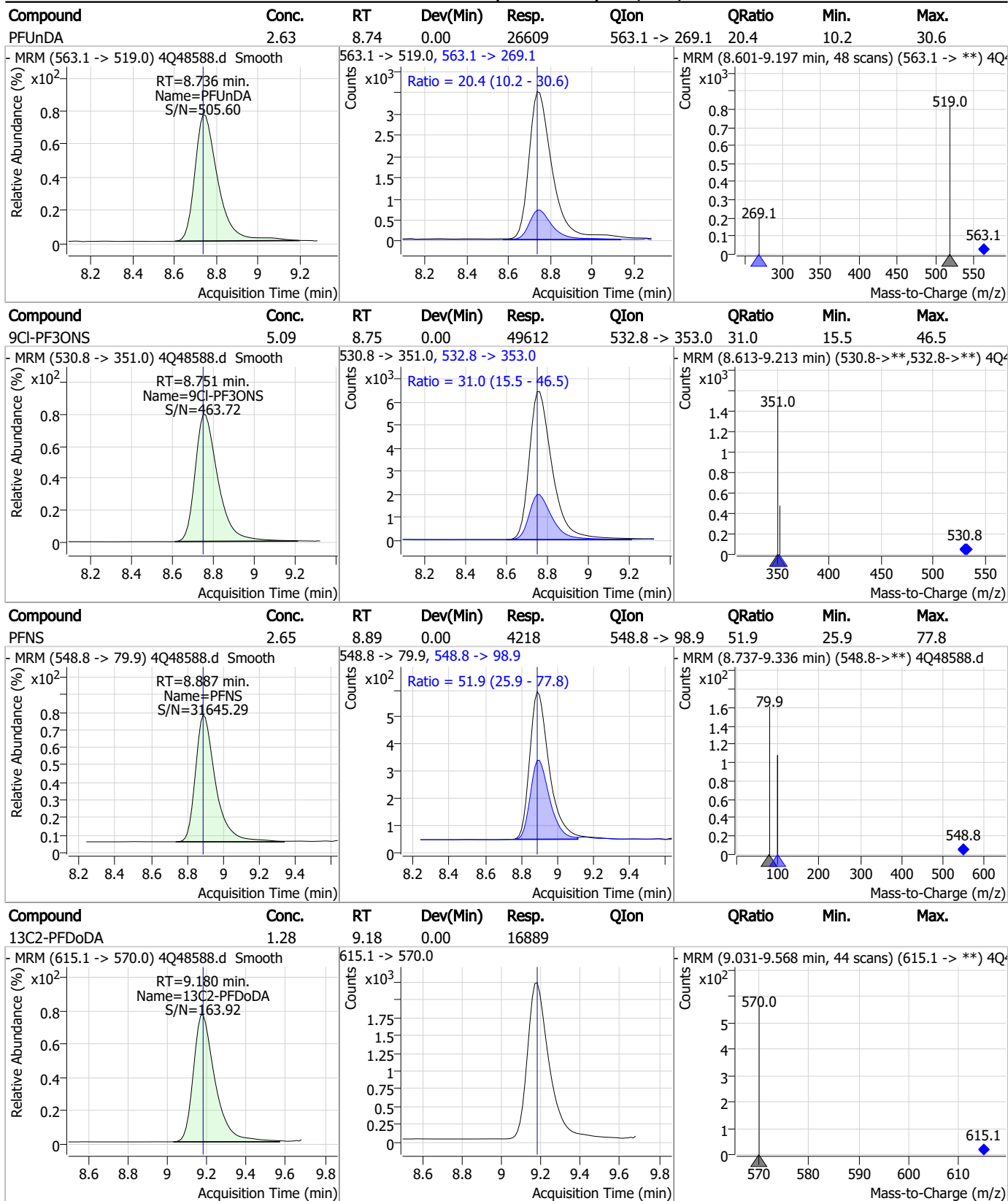


7.7.5
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Perfluorinated Compounds by LC/MS/MS



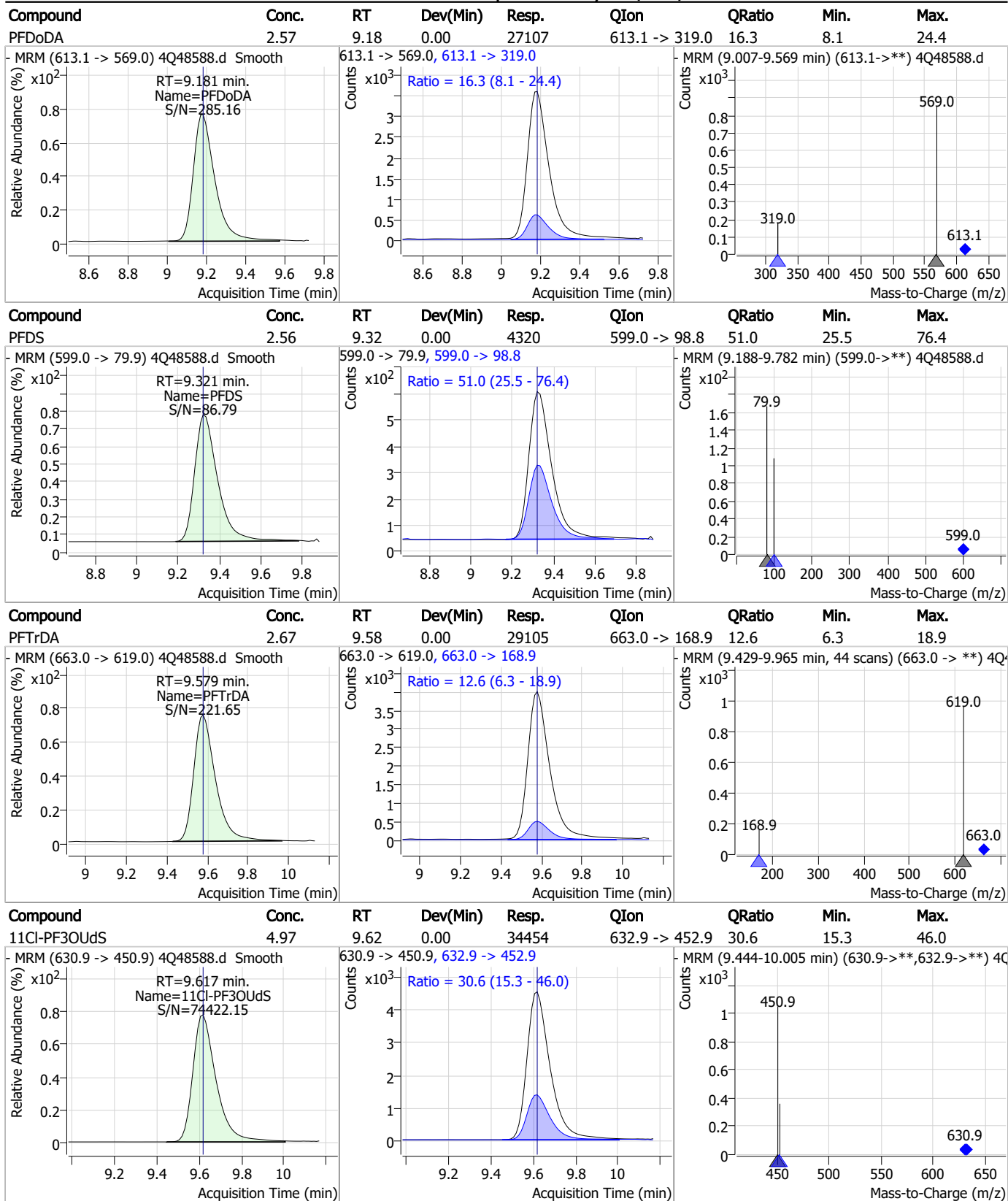
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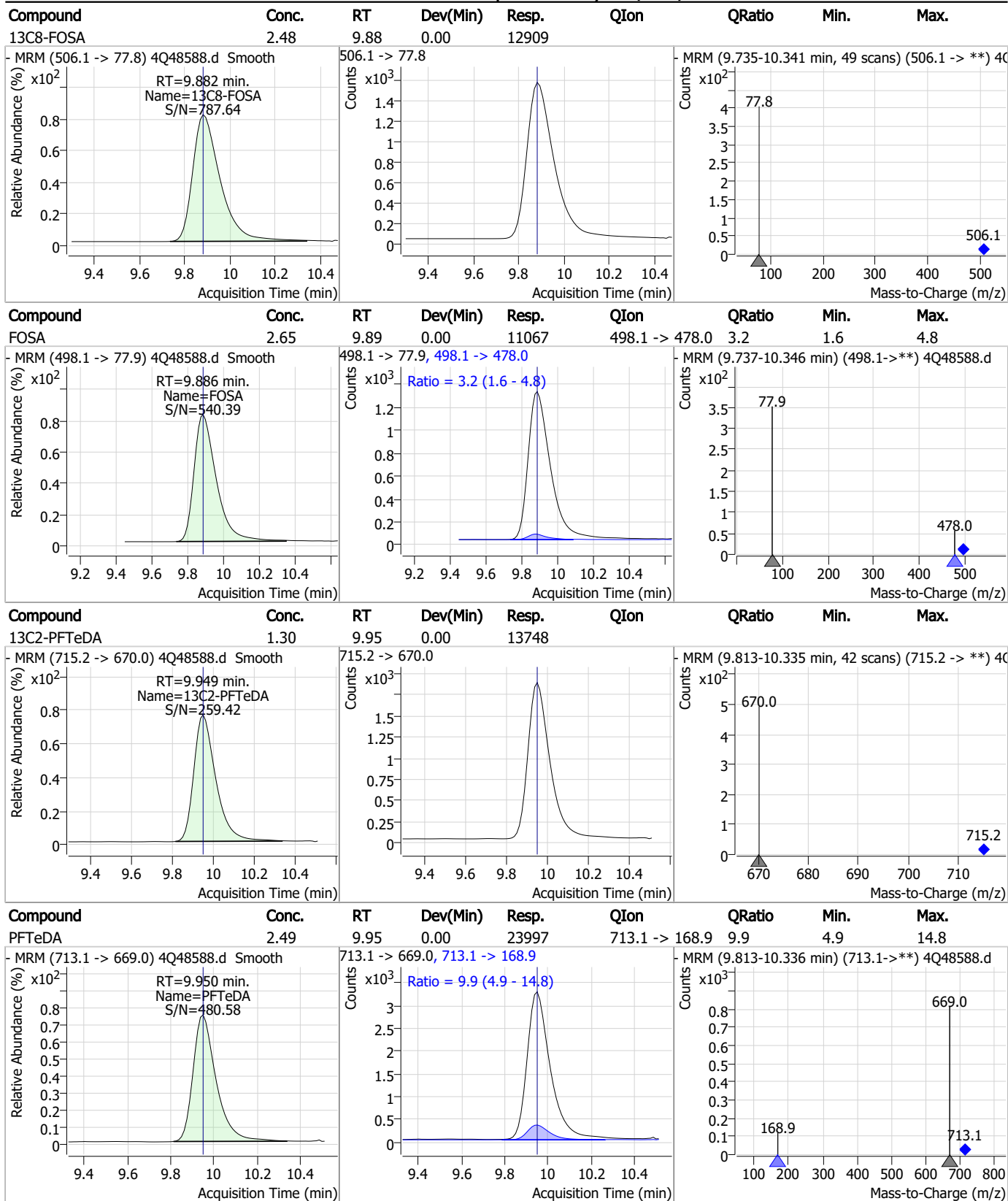
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Perfluorinated Compounds by LC/MS/MS



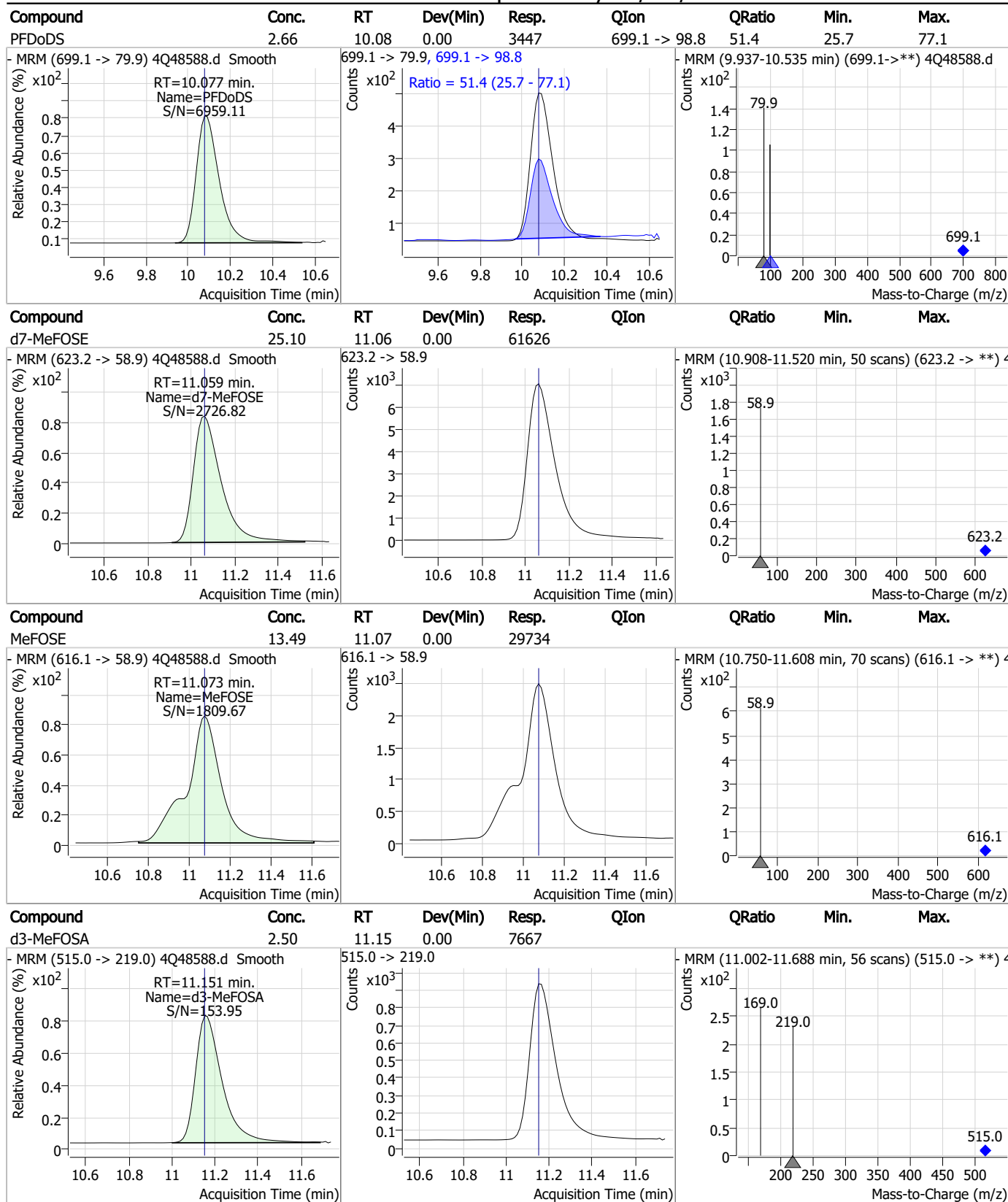
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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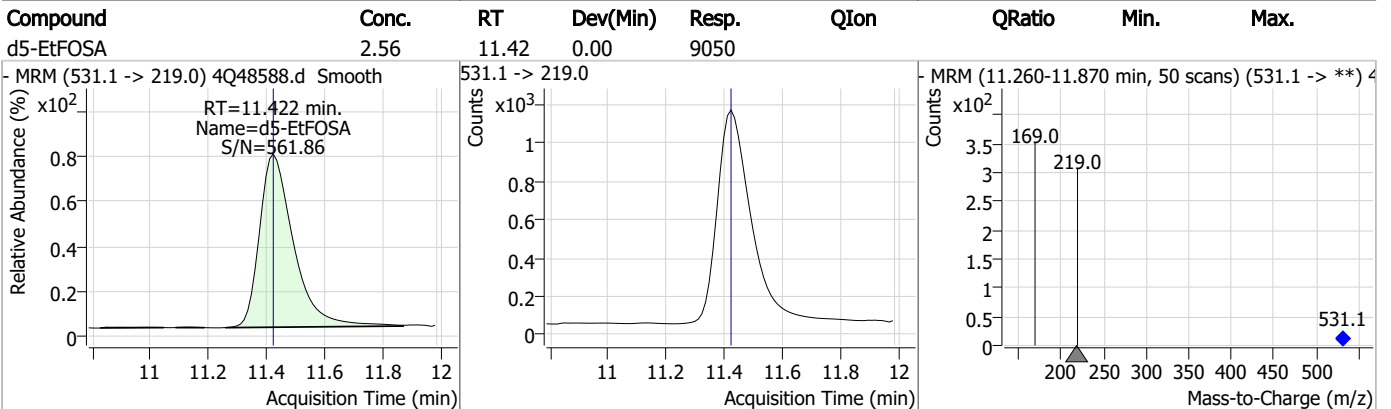
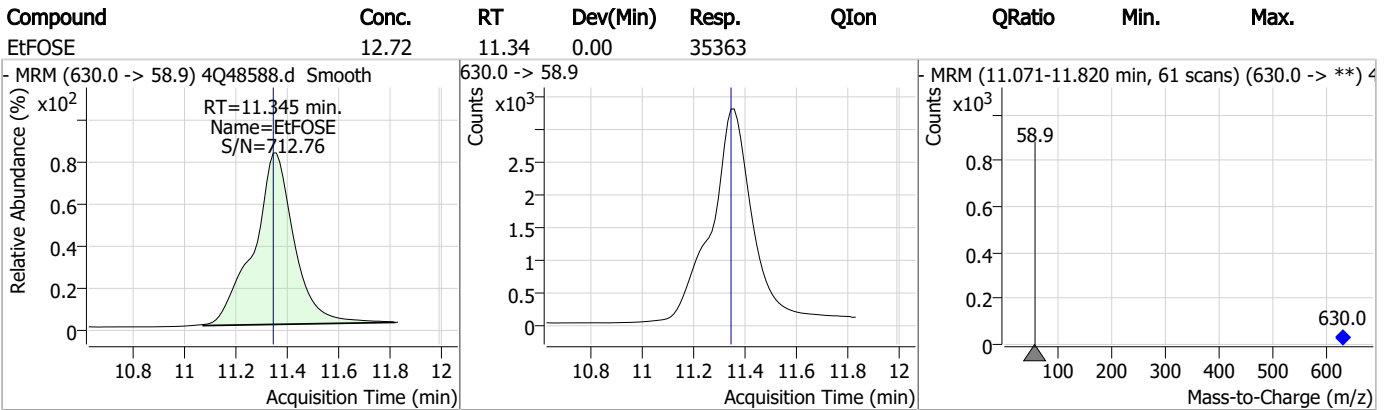
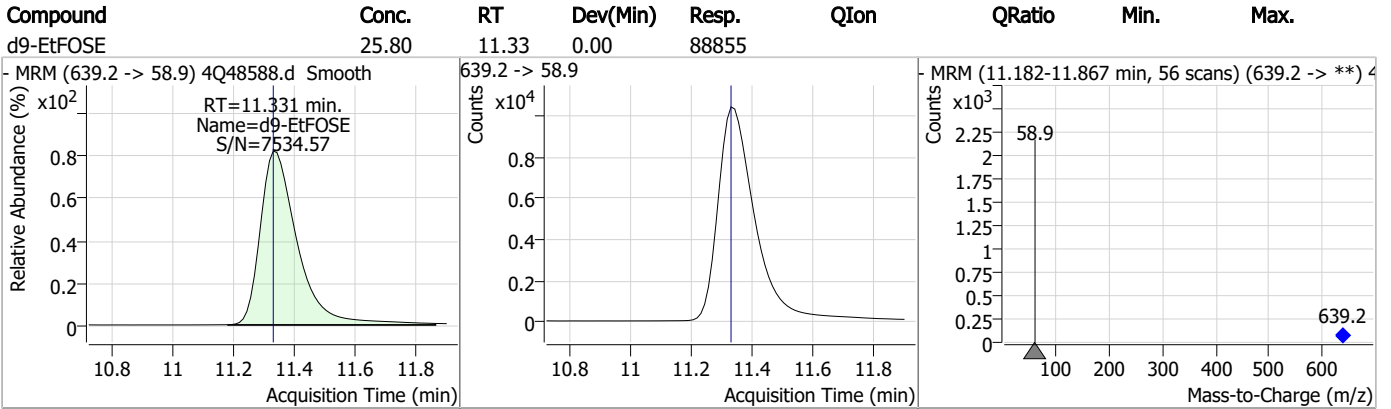
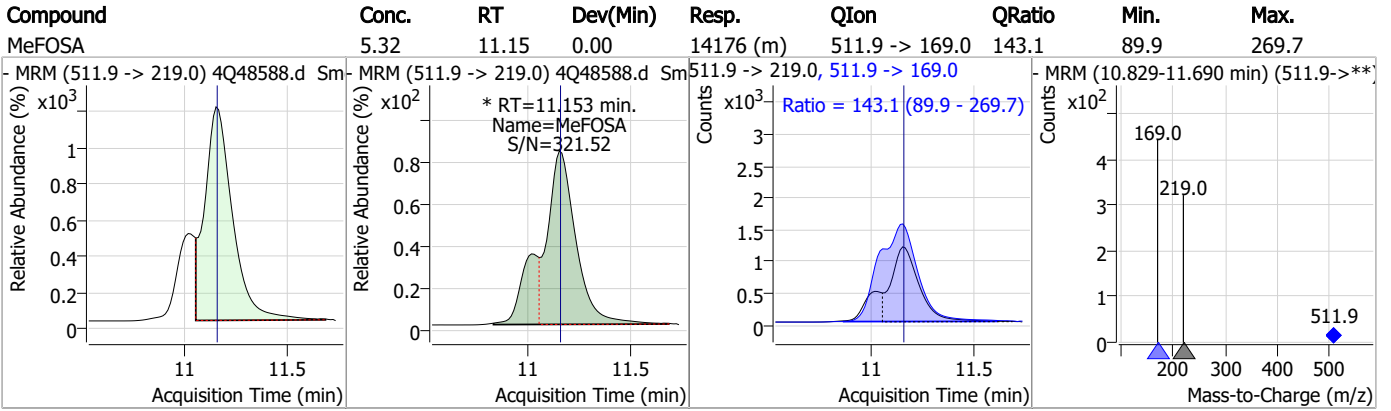
Perfluorinated Compounds by LC/MS/MS



7.7.5

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Perfluorinated Compounds by LC/MS/MS

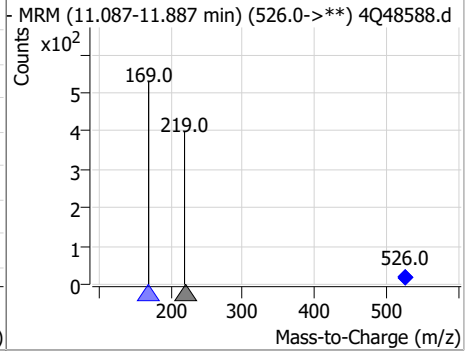
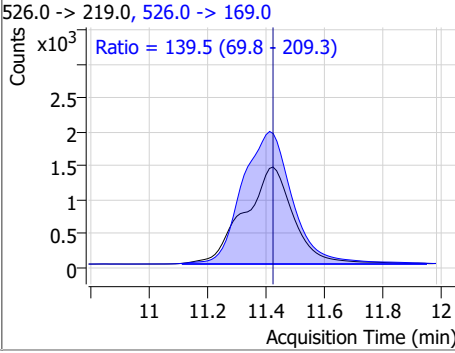
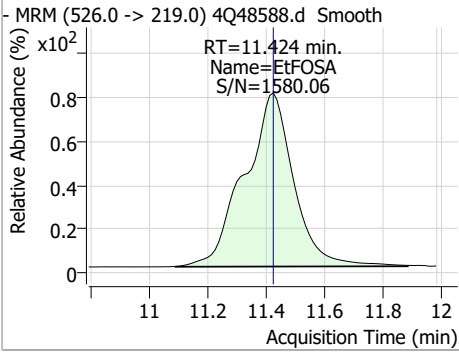


7.7.5

7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	5.09	11.42	0.00	16928	526.0 -> 169.0	139.5	69.8	209.3



7.7.5
7

Manual Integration Approval Summary

Sample Number: S4Q711-ICC711 Method: EPA DRAFT 1633
Lab FileID: 4Q48588.D Analyst approved: 08/09/23 11:54 Anna Ludwig
Injection Time: 08/07/23 17:14 Supervisor approved: 08/09/23 14:46 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
MeFOSAA	2355-31-9		8.35	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.42	Split peak
EtFOSAA	2991-50-6		8.56	Split peak
MeFOSA	31506-32-8		11.15	Split peak

7.7.5.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48589.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/7/2023 5:28:48 PM
 Sample Name : ic711-5
 Vial : P1-A6
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q711.batch.bin
 Sample Information : OP97964,S4Q711,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.899	216.8 -> 171.9	72366	10.00 µg/L	-0.013
M5-PFPeA	4.412	268.3 -> 223.0	44838	5.00 µg/L	0.000
M5-PFHxA	5.610	318.0 -> 273.0	26202	2.50 µg/L	0.000
M4-PFHpA	6.568	367.1 -> 322.0	18558	2.50 µg/L	0.012
M8-PFOA	7.238	421.1 -> 376.0	30799	2.50 µg/L	0.012
M9-PFNA	7.785	472.1 -> 427.0	13057	1.25 µg/L	0.000
M6-PFDA	8.279	519.1 -> 474.1	9227	1.25 µg/L	0.000
M7-PFUnDA	8.748	570.0 -> 525.1	10451	1.25 µg/L	0.012
M2-PFDoDA	9.180	615.1 -> 570.0	11443	1.25 µg/L	0.000
M2-PFTeDA	9.949	715.2 -> 670.0	8587	1.25 µg/L	0.000
M8-FOSA	9.882	506.1 -> 77.8	9323	2.50 µg/L	0.000
M3-PFBS	5.489	302.1 -> 79.9	7246	2.50 µg/L	0.000
M3-PFHxS	7.317	402.1 -> 79.9	4272	2.50 µg/L	0.000
M8-PFOS	8.417	507.1 -> 79.9	5963	2.50 µg/L	0.000
M2-4:2FTS	5.296	329.1 -> 80.9	388	5.00 µg/L	0.000
M2-6:2FTS	6.998	429.1 -> 80.9	700	5.00 µg/L	0.000
M2-8:2FTS	8.065	529.1 -> 80.9	1150	5.00 µg/L	0.000
M3-MeFOSAA	8.348	573.2 -> 419.0	10751	5.00 µg/L	0.000
M3-HFPO-DA	5.989	286.9 -> 168.9	23397	10.00 µg/L	0.012
M5-EtFOSAA	8.546	589.2 -> 419.0	8824	5.00 µg/L	0.000
M7-MeFOSE	11.059	623.2 -> 58.9	41614	25.00 µg/L	0.000
M9-EtFOSE	11.331	639.2 -> 58.9	58362	25.00 µg/L	0.000
M5-EtFOSA	11.422	531.1 -> 219.0	6191	2.50 µg/L	0.000
M3-MeFOSA	11.151	515.0 -> 219.0	5256	2.50 µg/L	0.000
13C4-PFOS	8.418	502.8 -> 79.9	6164	2.50 µg/L	0.000
13C3-PFBA	2.891	216.0 -> 172.0	42751	5.00 µg/L	-0.013
18O2-PFHxS	7.316	403.0 -> 83.9	3427	2.50 µg/L	0.000
13C4-PFOA	7.239	417.1 -> 372.0	36716	2.50 µg/L	0.012
13C2-PFDA	8.279	515.1 -> 470.1	11264	1.25 µg/L	0.000
13C5-PFNA	7.785	468.0 -> 423.0	14874	1.25 µg/L	0.000
13C2-PFHxA	5.611	315.1 -> 270.0	25141	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.296	329.1 -> 80.9	388	4.53 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 90.7%		
13C2-6:2FTS	6.998	429.1 -> 80.9	700	4.28 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 85.6%		
13C2-8:2FTS	8.065	529.1 -> 80.9	1150	4.63 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.6%		
13C2-PFDoDA	9.180	615.1 -> 570.0	11443	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.9%		
13C2-PFTeDA	9.949	715.2 -> 670.0	8587	1.11 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.7%		
13C3-PFBS	5.489	302.1 -> 79.9	7246	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C3-PFHxS	7.317	402.1 -> 79.9	4272	2.25 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 = 90.1%	
13C4-PFBA	2.899	216.8 -> 171.9	72366	9.90 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C4-PFHpA	6.568	367.1 -> 322.0	18558	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C5-PFHxA	5.610	318.0 -> 273.0	26202	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C5-PFPeA	4.412	268.3 -> 223.0	44838	5.10 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C6-PFDA	8.279	519.1 -> 474.1	9227	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.7%	
13C7-PFUnDA	8.748	570.0 -> 525.1	10451	1.19 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.2%	
13C8-FOSA	9.882	506.1 -> 77.8	9323	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C8-PFOA	7.238	421.1 -> 376.0	30799	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C8-PFOS	8.417	507.1 -> 79.9	5963	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.3%	
13C9-PFNA	7.785	472.1 -> 427.0	13057	1.16 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.7%	
d3-MeFOSAA	8.348	573.2 -> 419.0	10751	4.70 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.0%	
13C3-HFPO-DA	5.989	286.9 -> 168.9	23397	9.77 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.7%	
d3-MeFOSA	11.151	515.0 -> 219.0	5256	2.32 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.8%	
d5-EtFOSAA	8.546	589.2 -> 419.0	8824	4.69 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.8%	
d7-MeFOSE	11.059	623.2 -> 58.9	41614	22.99 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 91.9%	
d9-EtFOSE	11.331	639.2 -> 58.9	58362	22.99 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 92.0%	
d5-EtFOSA	11.422	531.1 -> 219.0	6191	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.0%	
Target Compounds					QValue
4:2FTS	5.297	327.1 -> 307.0	11084	21.19 µg/L	97
		327.1 -> 80.9	4720		
6:2FTS	6.999	427.1 -> 407.0	14233	23.94 µg/L	100
		427.1 -> 80.9	5052		
8:2FTS	8.066	527.1 -> 507.0	10502	22.75 µg/L	96
		527.1 -> 80.8	4346		
EtFOSAA	8.559	584.2 -> 419.1	6310	5.23 µg/L	m 86
		584.2 -> 526.0	3166		
FOSA	9.886	498.1 -> 77.9	16162	5.36 µg/L	99
		498.1 -> 478.0	477		
MeFOSAA	8.349	570.1 -> 419.0	7965	5.93 µg/L	m 97
		570.1 -> 483.0	1366		
PFBA	2.895	212.8 -> 168.9	36620	21.98 µg/L	100
PFBS	5.490	298.7 -> 79.9	8291	4.68 µg/L	96
		298.7 -> 98.8	3244		
PFDA	8.279	512.9 -> 469.0	36496	5.63 µg/L	99
		512.9 -> 219.0	6895		
PFDODA	9.181	613.1 -> 569.0	37713	5.27 µg/L	98
		613.1 -> 319.0	5754		
PFDS	9.321	599.0 -> 79.9	5985	4.86 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	3063			
PFHpA	6.568	363.1 -> 319.0	45462	5.43	µg/L	100
		363.1 -> 169.0	8391			
PFHpS	7.900	449.0 -> 79.9	9244	5.13	µg/L	98
		449.0 -> 98.9	4763			
PFHxA	5.613	313.0 -> 269.0	41202	5.45	µg/L	100
		313.0 -> 118.9	1371			
PFHxS	7.318	398.7 -> 79.9	6294	5.13	µg/L	m 100
		398.7 -> 98.9	3317			
PFNA	7.785	463.0 -> 419.0	37226	5.48	µg/L	95
		463.0 -> 219.0	8923			
PFNS	8.887	548.8 -> 79.9	5838	5.01	µg/L	90
		548.8 -> 98.9	3447			
PFOA	7.240	413.0 -> 369.0	64838	5.31	µg/L	99
		413.0 -> 169.0	12883			
PFOS	8.419	498.9 -> 79.9	10650	5.02	µg/L	m 80
		498.9 -> 98.8	5110			
PFPeA	4.414	263.0 -> 219.0	85165	10.93	µg/L	100
PFPeS	6.582	349.1 -> 79.9	6720	5.83	µg/L	98
		349.1 -> 98.9	2913			
PFTeDA	9.950	713.1 -> 669.0	33398	5.55	µg/L	100
		713.1 -> 168.9	3304			
PFTrDA	9.579	663.0 -> 619.0	41394	5.59	µg/L	98
		663.0 -> 168.9	4911			
PFUnDA	8.749	563.1 -> 519.0	37310	5.48	µg/L	98
		563.1 -> 269.1	7935			
11CI-PF3OUdS	9.617	630.9 -> 450.9	48369	9.86	µg/L	100
		632.9 -> 452.9	14834			
9CI-PF3ONS	8.763	530.8 -> 351.0	71339	10.33	µg/L	100
		532.8 -> 353.0	22126			
ADONA	6.831	376.9 -> 250.9	142913	10.53	µg/L	100
		376.9 -> 84.8	37075			
HFPO-DA	5.990	284.9 -> 168.9	21598	11.22	µg/L	96
		284.9 -> 184.9	2510			
3:3FTCA	3.861	241.0 -> 177.0	11100	26.40	µg/L	100
		241.0 -> 117.0	1102			
5:3FTCA	6.296	341.0 -> 237.1	174001	140.62	µg/L	99
		341.0 -> 217.0	122605			
7:3FTCA	7.774	441.0 -> 316.9	93752	137.49	µg/L	97
		441.0 -> 336.9	220609			
EtFOSA	11.424	526.0 -> 219.0	24579	10.80	µg/L	99
		526.0 -> 169.0	33968			
EtFOSE	11.357	630.0 -> 58.9	52374	28.68	µg/L	100
MeFOSA	11.153	511.9 -> 219.0	20306	11.11	µg/L	m 77
		511.9 -> 169.0	29865			
MeFOSE	11.073	616.1 -> 58.9	40529	27.23	µg/L	100
PFDoDS	10.077	699.1 -> 79.9	4579	4.83	µg/L	93
		699.1 -> 98.8	2580			
NFDHA	5.491	295.0 -> 201.0	5613	11.52	µg/L	99
		295.0 -> 84.9	1417			
PFMBA	4.828	279.0 -> 85.1	47291	10.83	µg/L	100
PFMPA	3.540	229.0 -> 84.9	46600	10.94	µg/L	100
PFEESA	6.034	314.8 -> 134.9	61024	10.02	µg/L	99
		314.8 -> 82.9	2278			

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

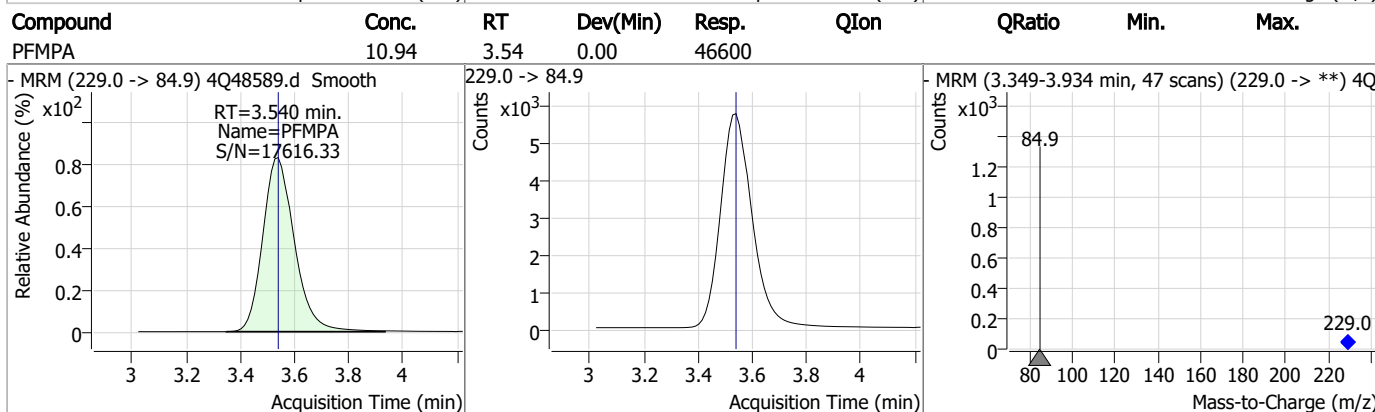
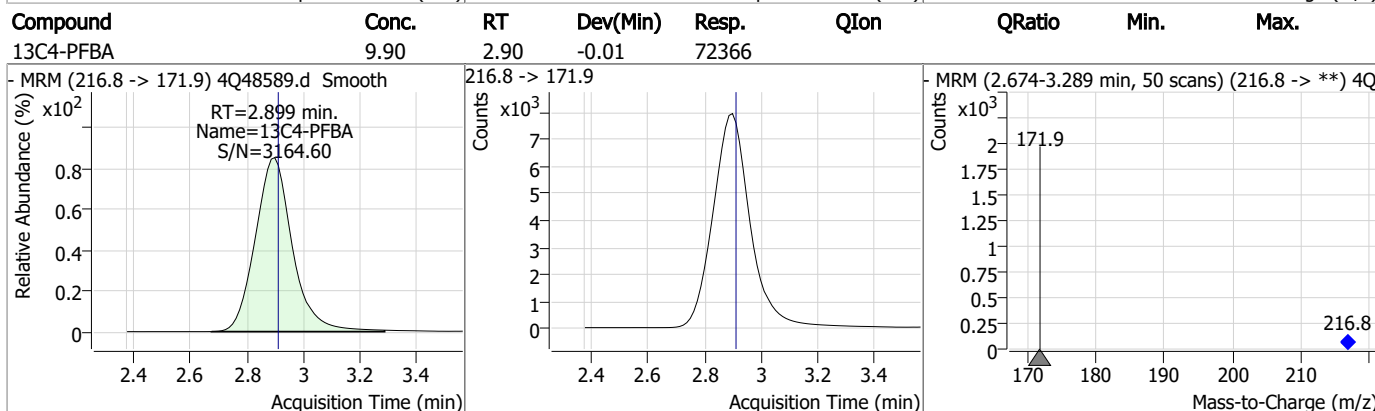
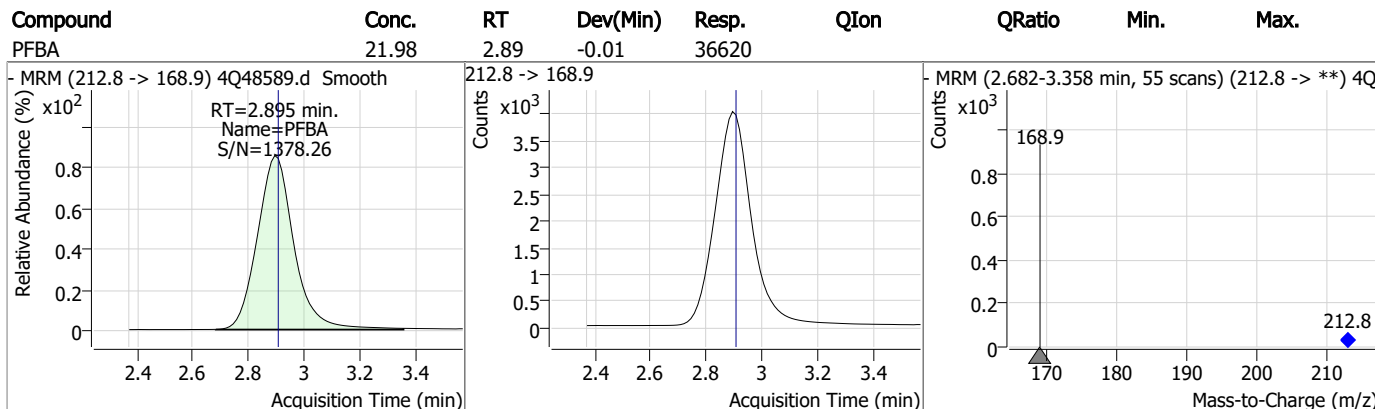
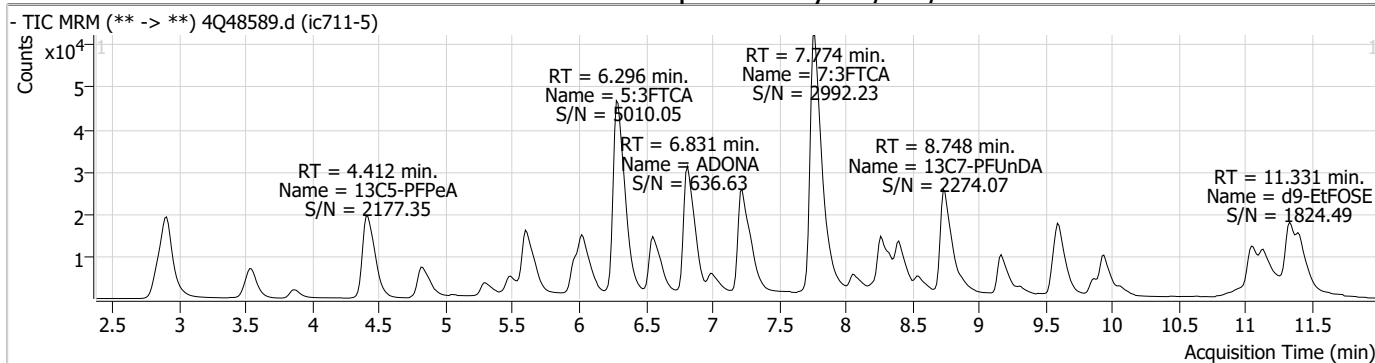
Perfluorinated Compounds by LC/MS/MS

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

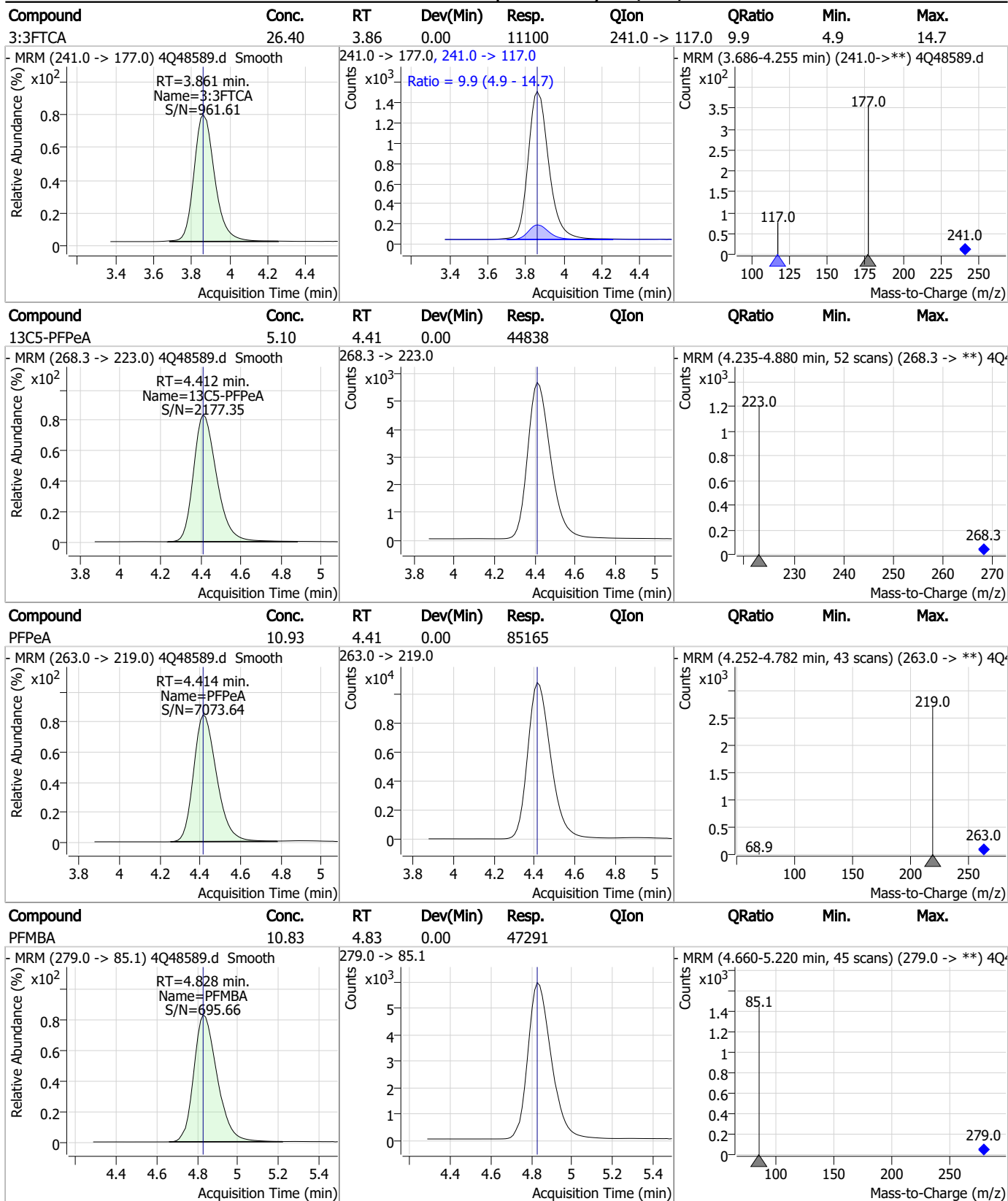
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Perfluorinated Compounds by LC/MS/MS



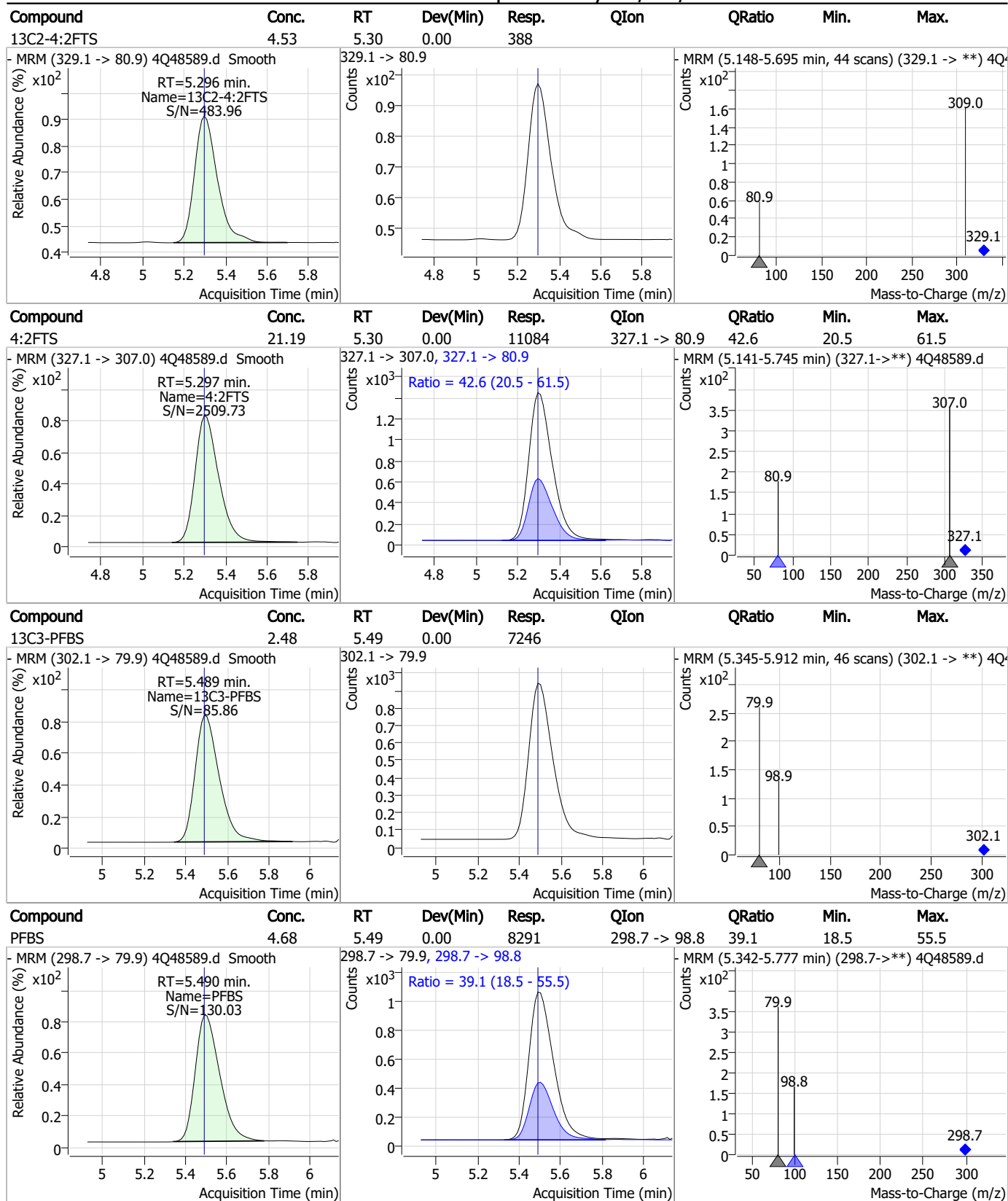
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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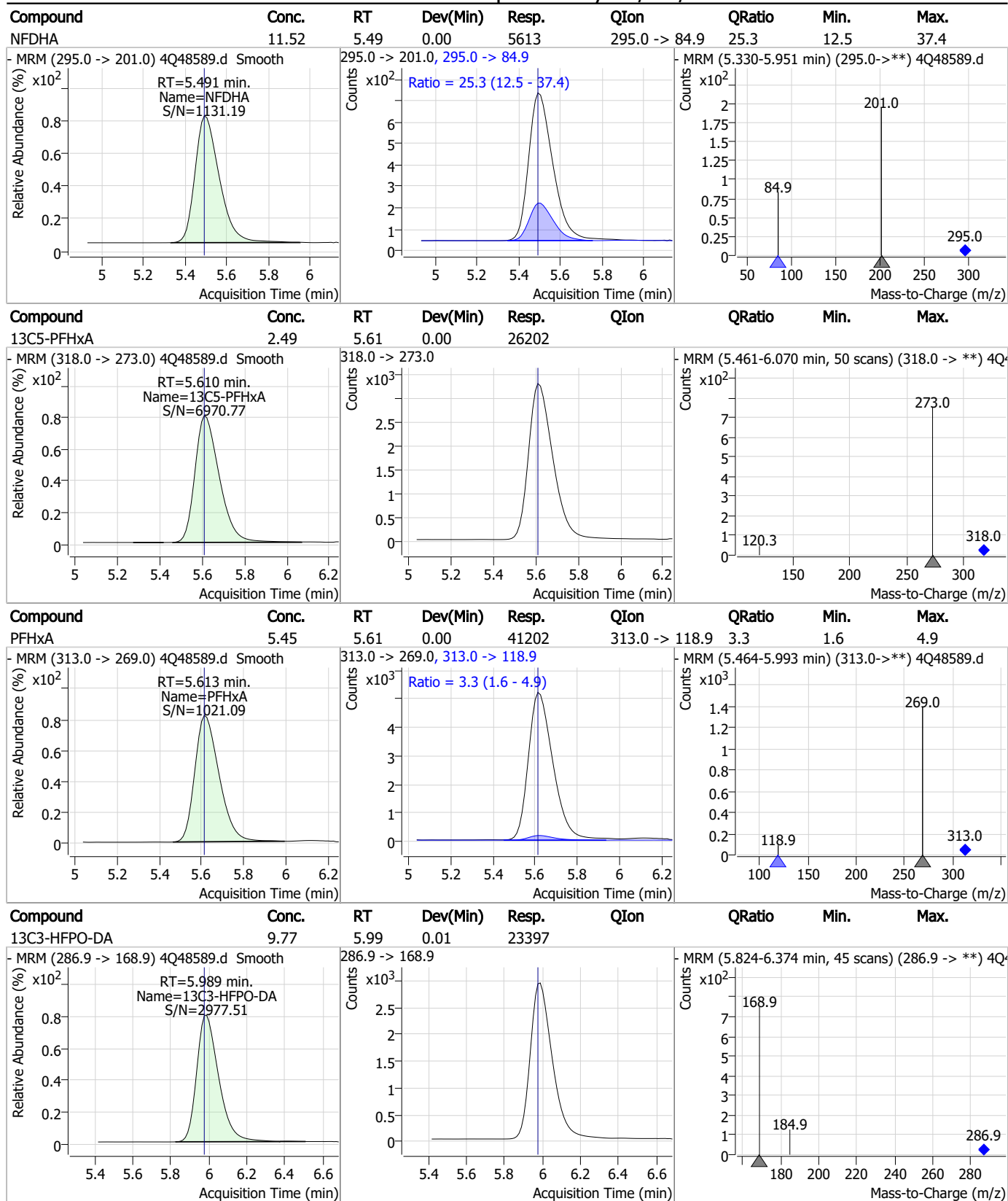
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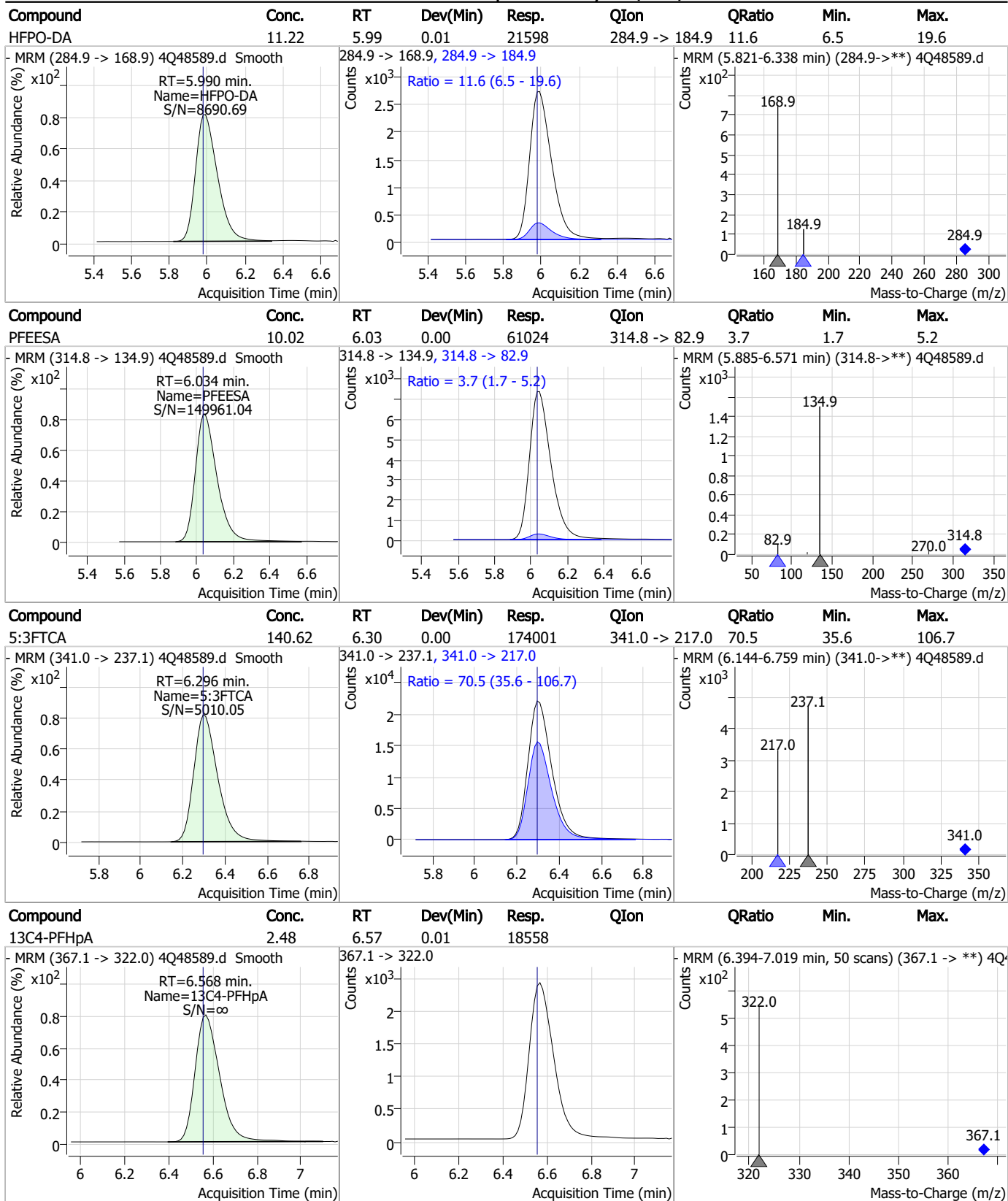
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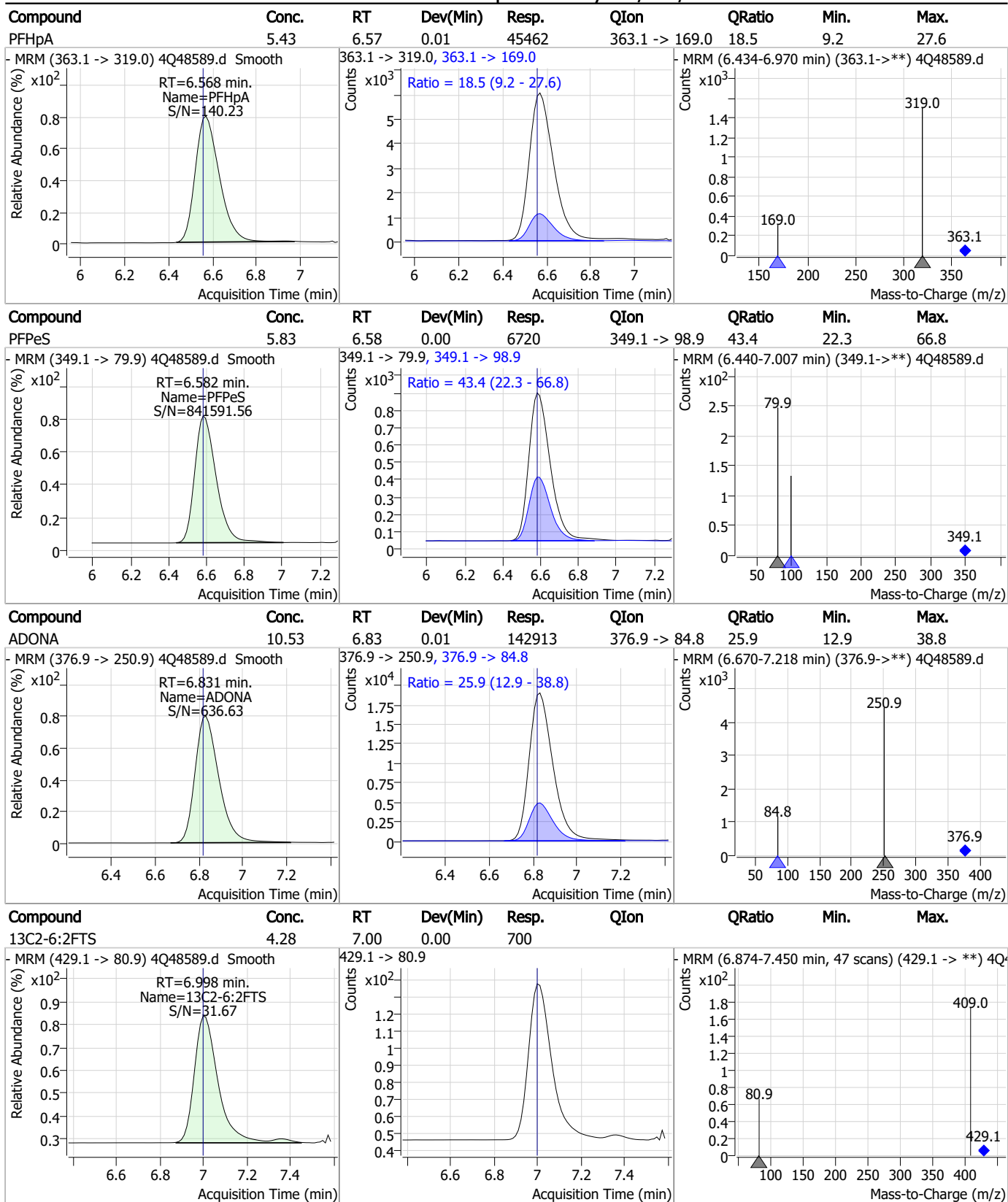


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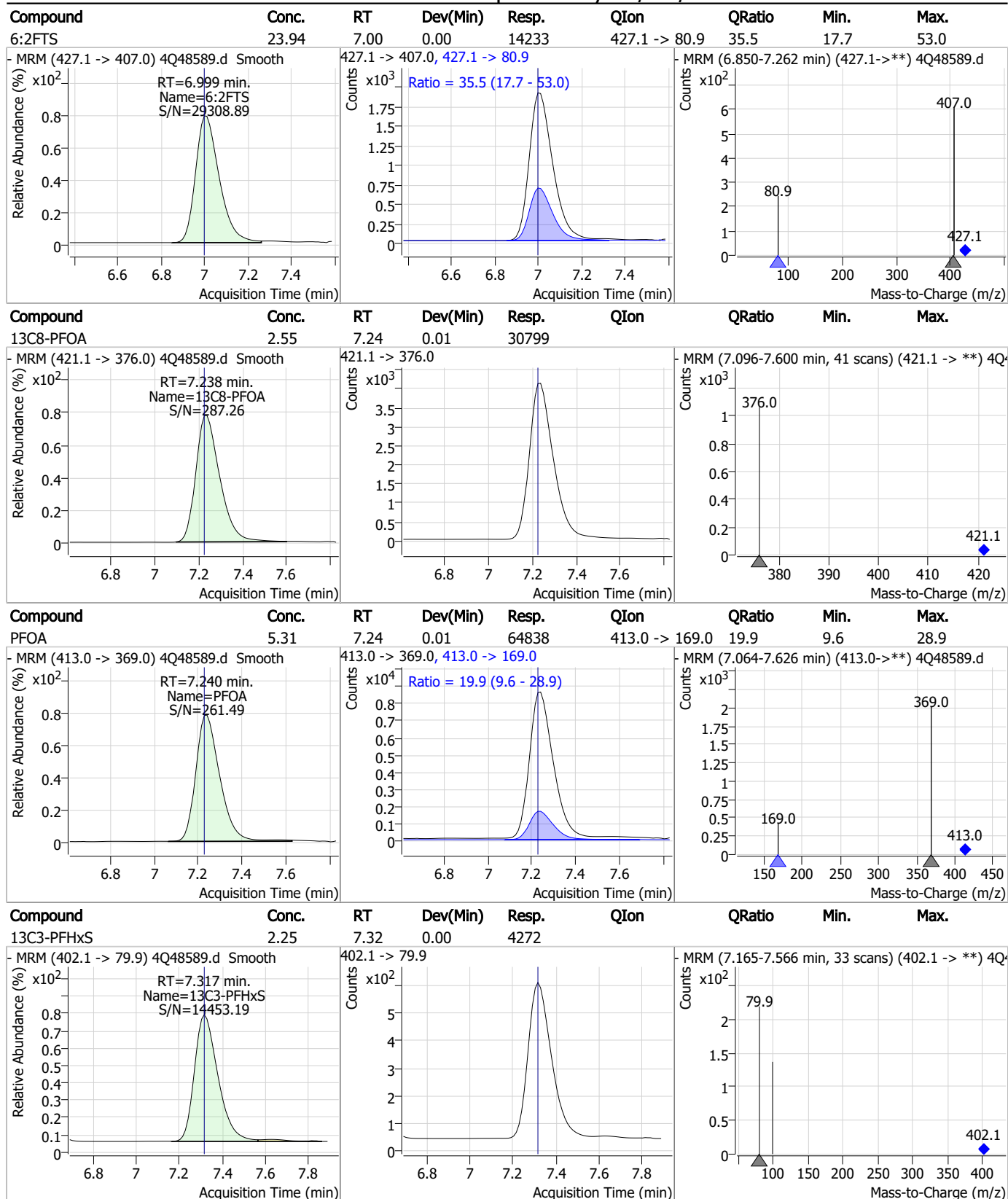
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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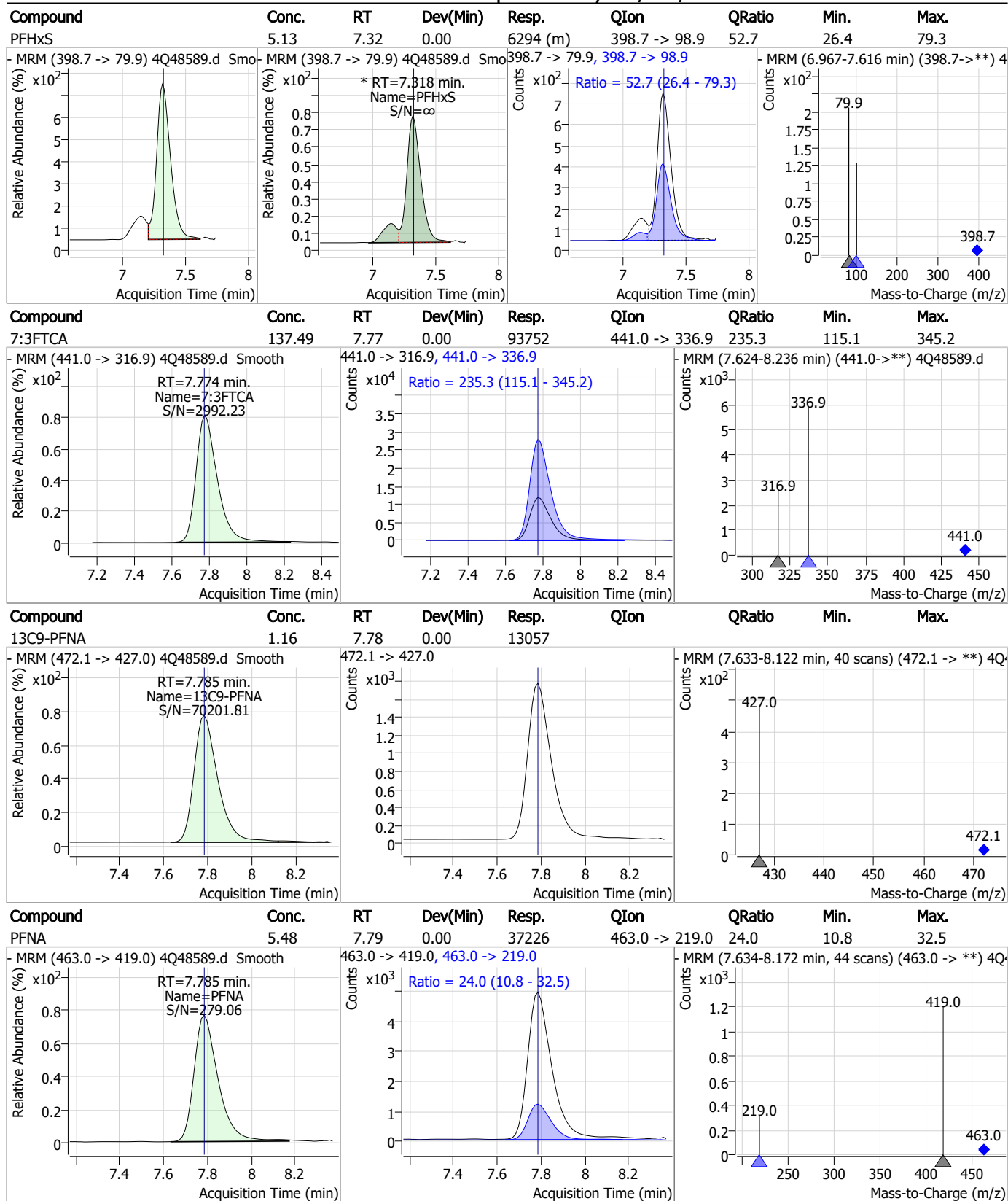
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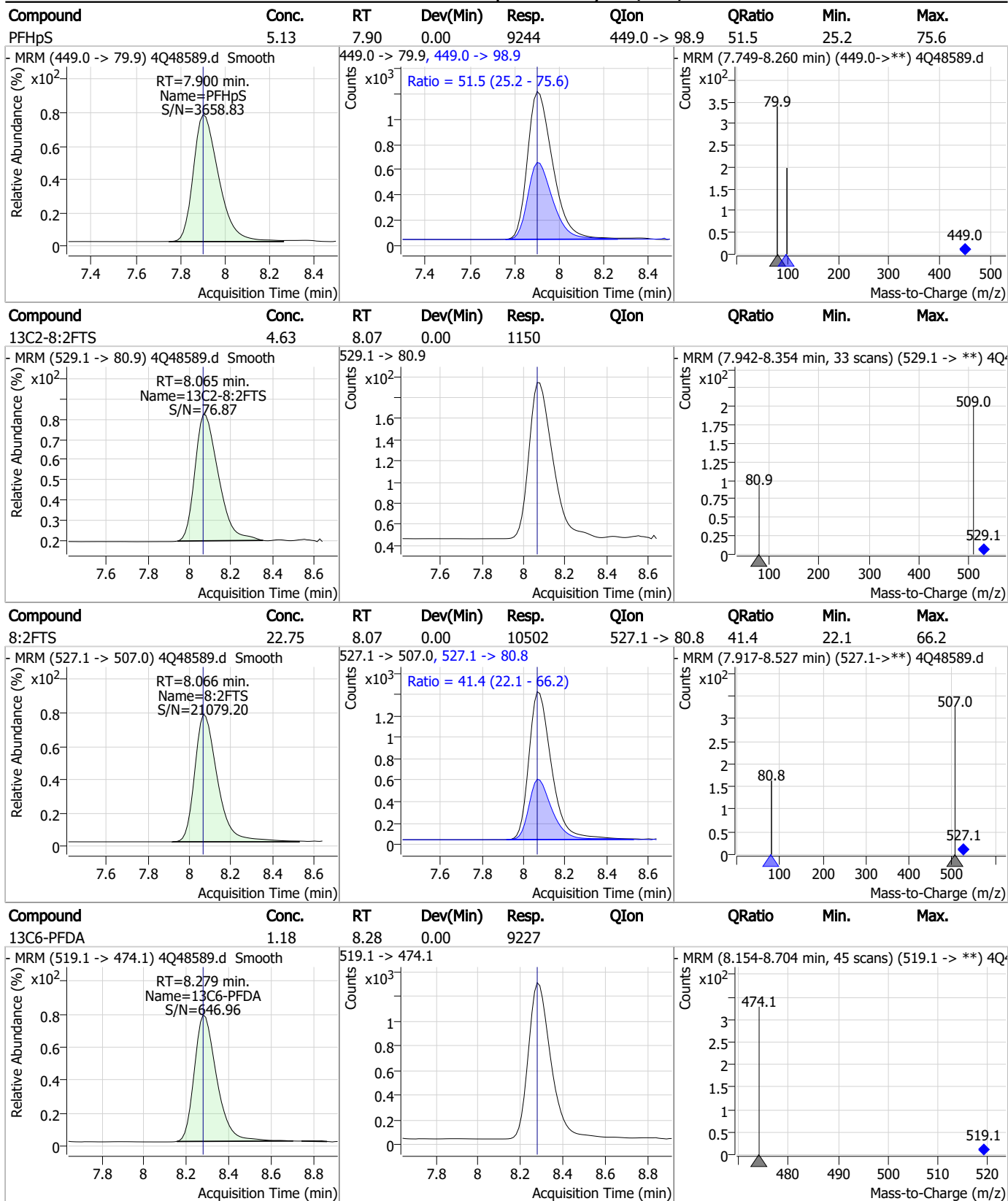
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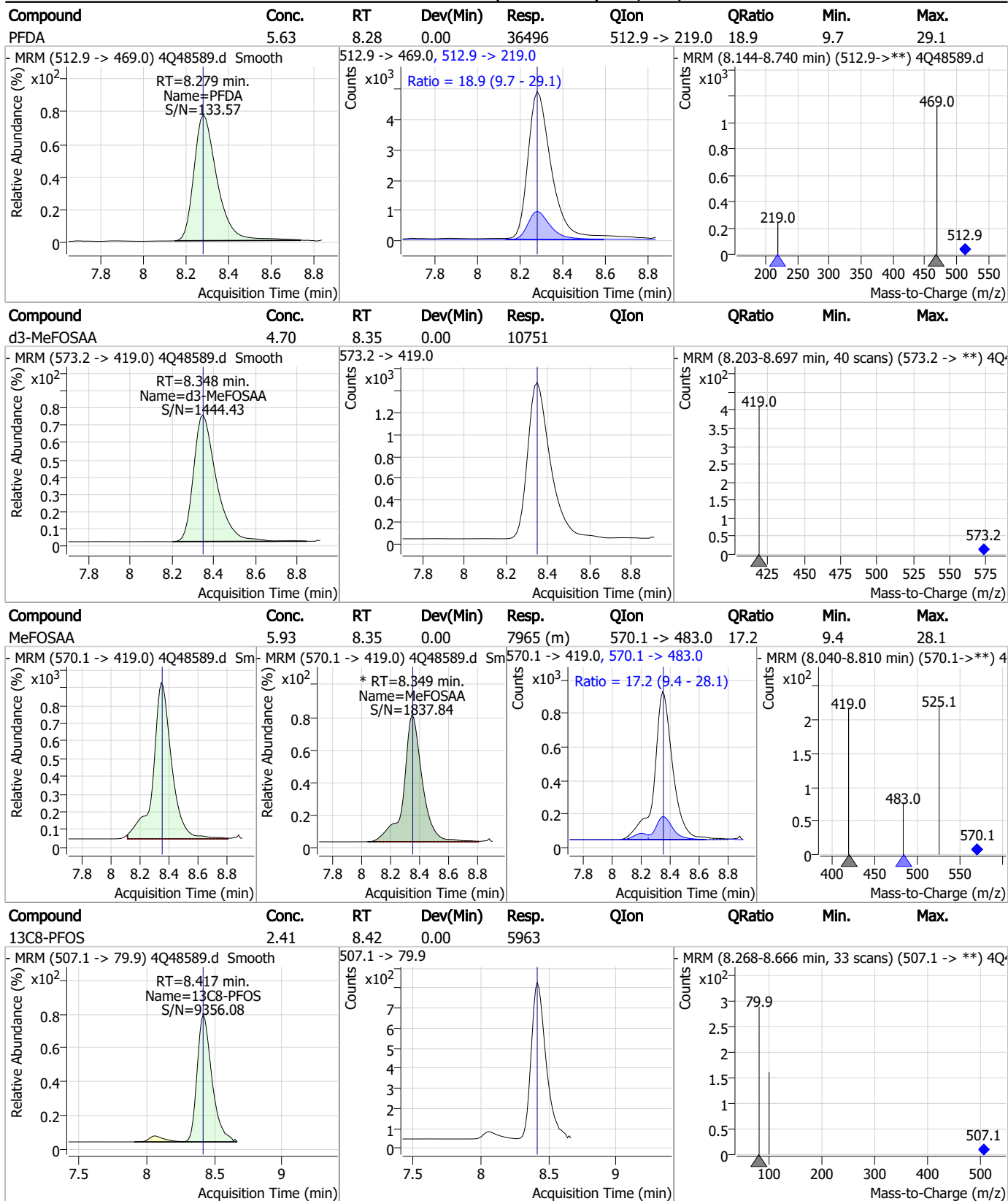
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Perfluorinated Compounds by LC/MS/MS



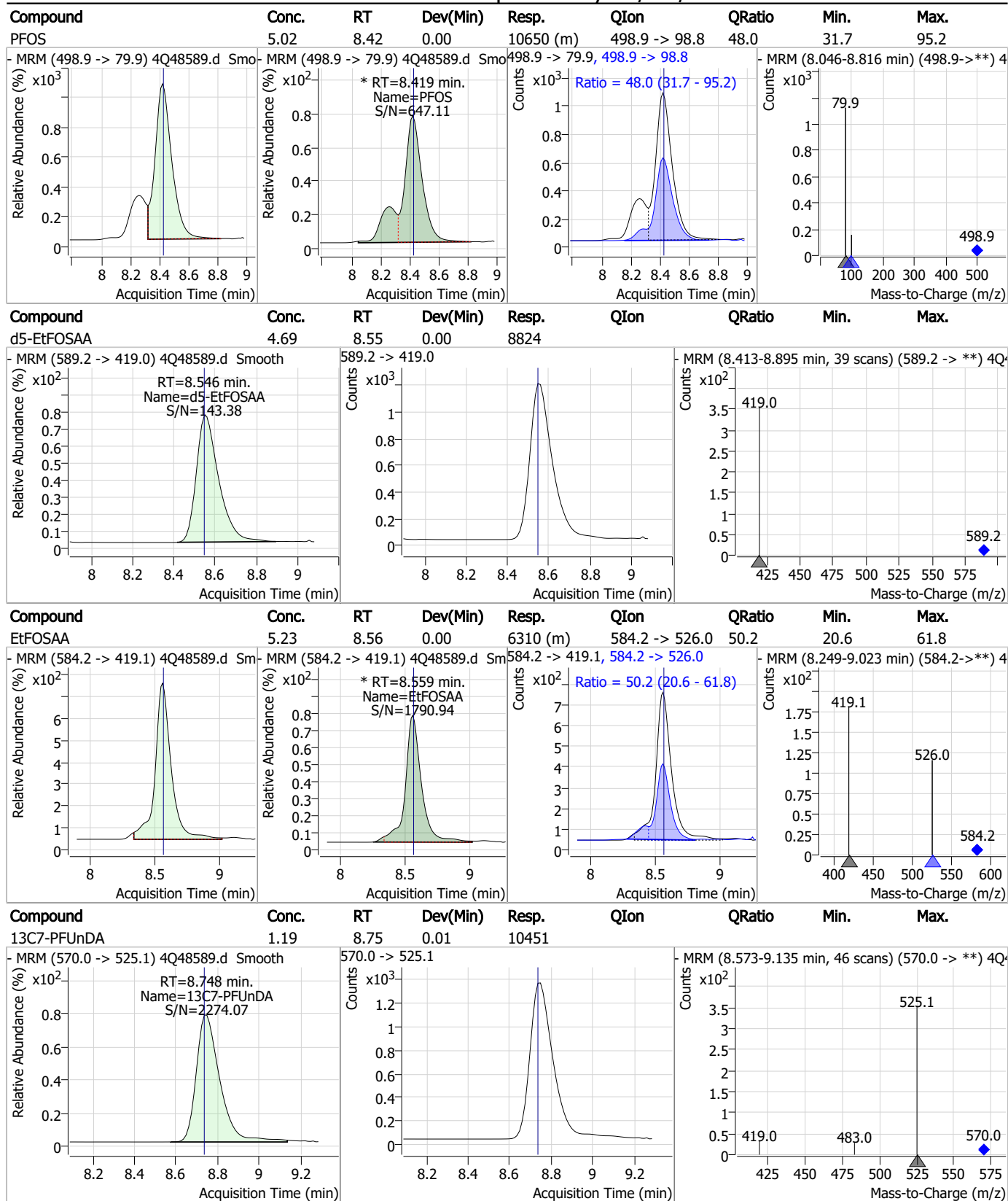
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Perfluorinated Compounds by LC/MS/MS



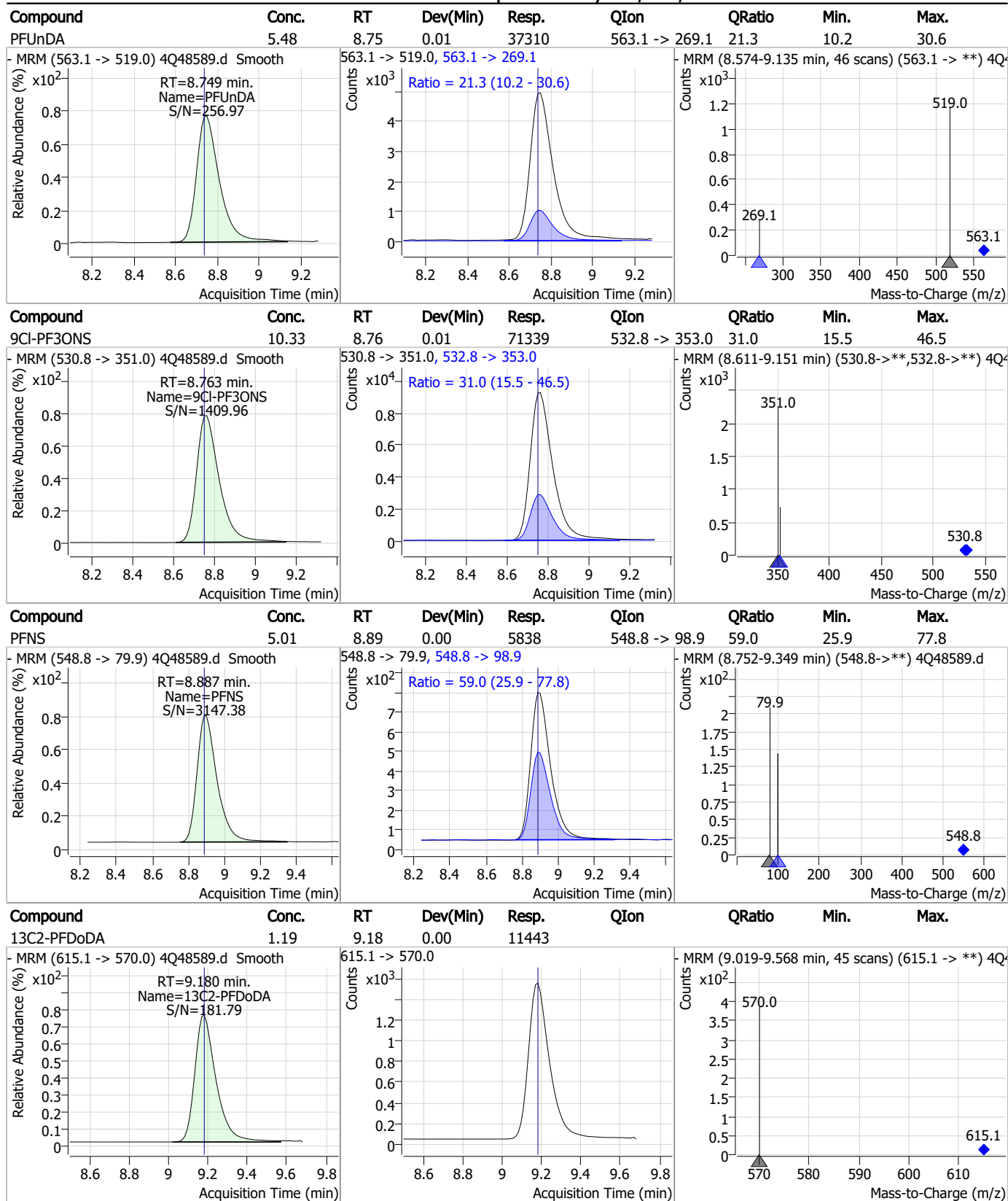
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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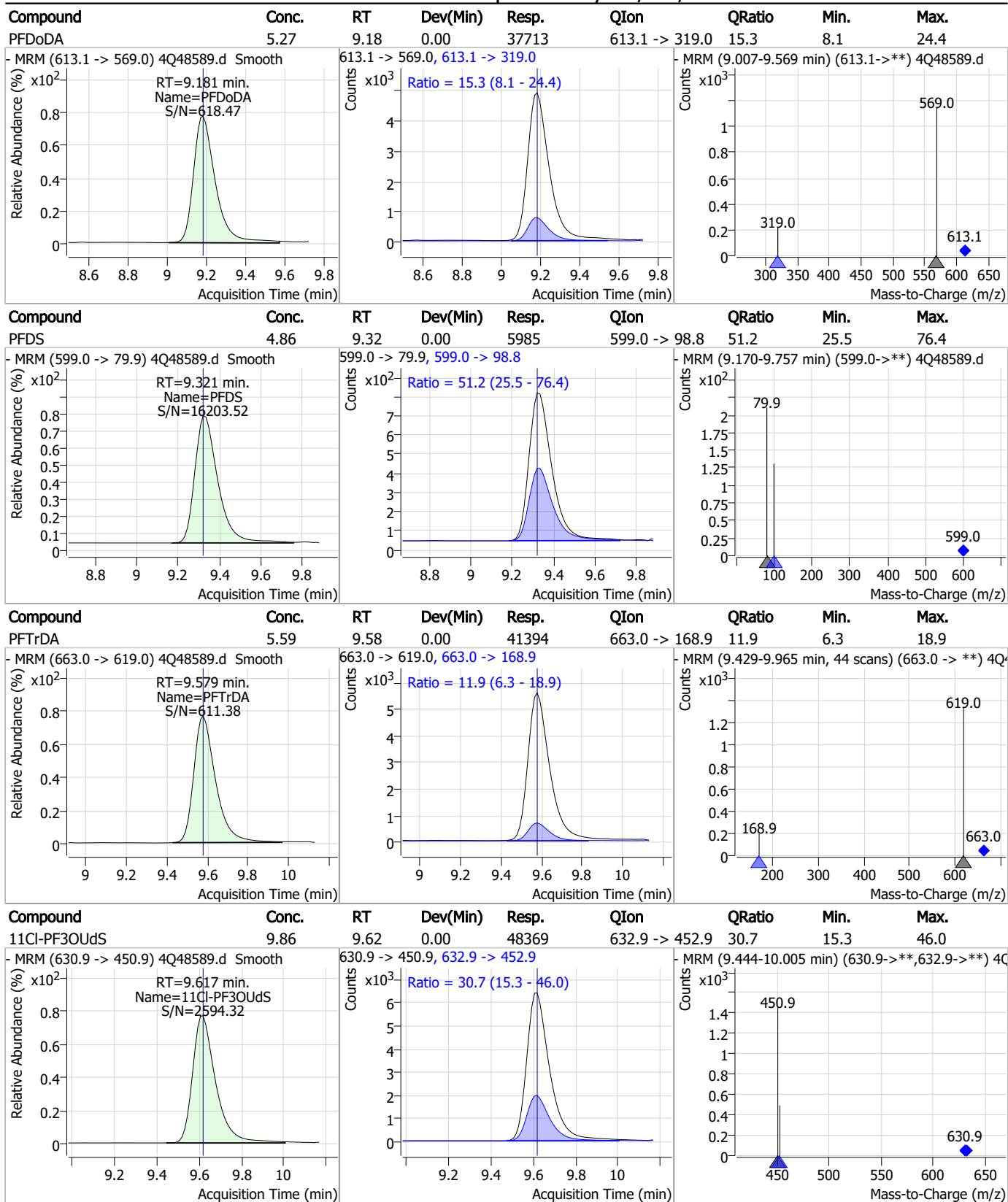
Perfluorinated Compounds by LC/MS/MS



7.7.6

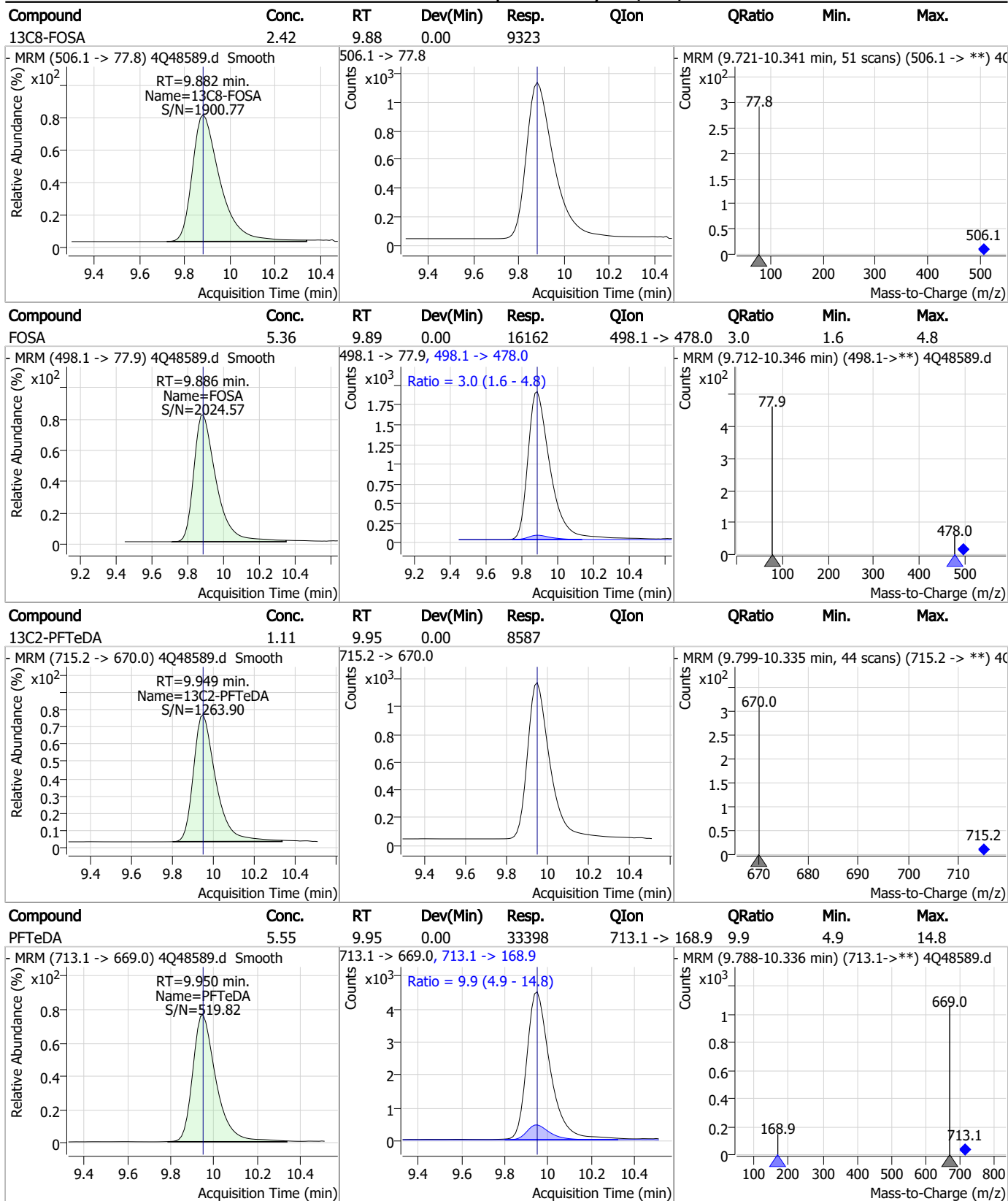
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Perfluorinated Compounds by LC/MS/MS



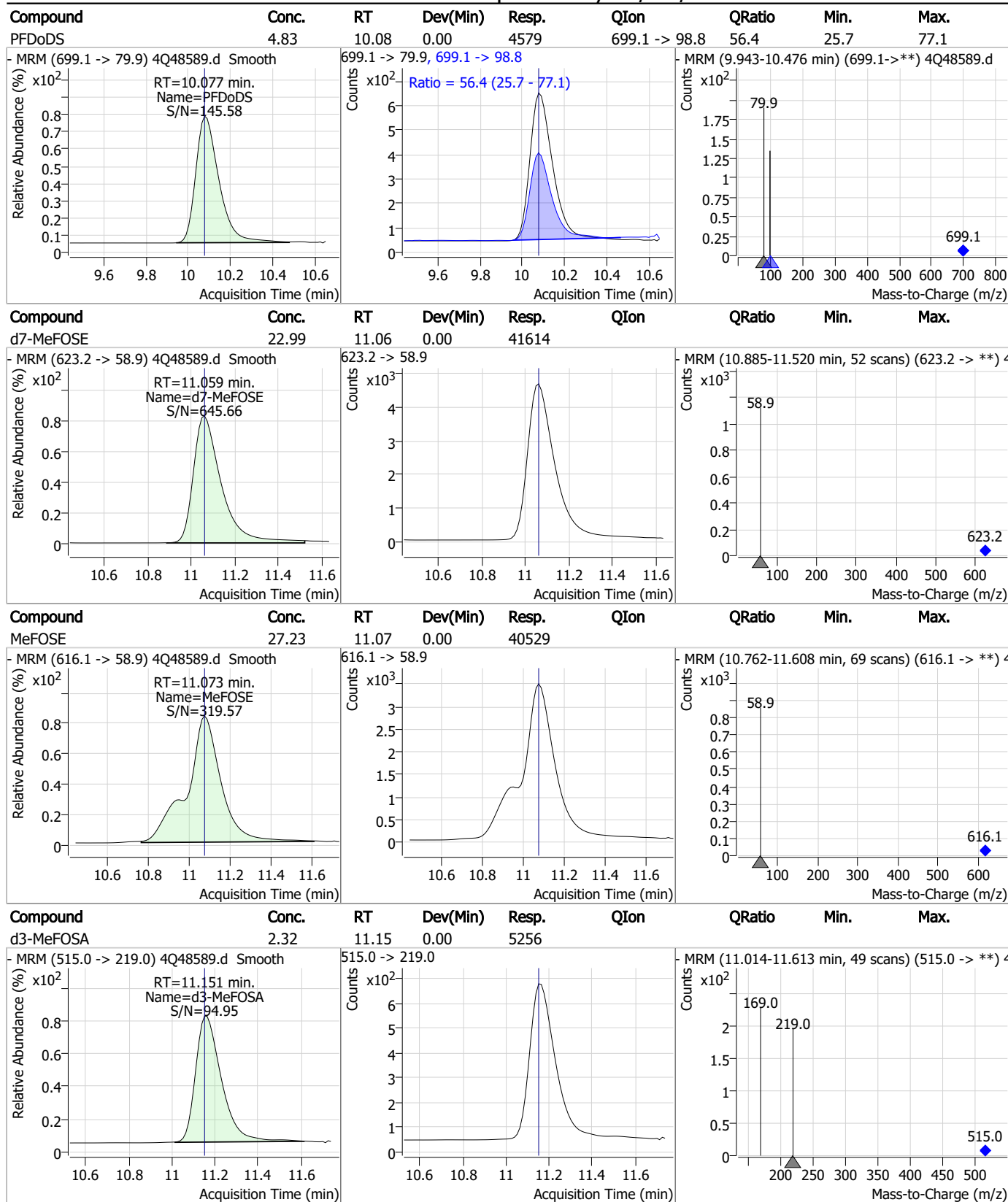
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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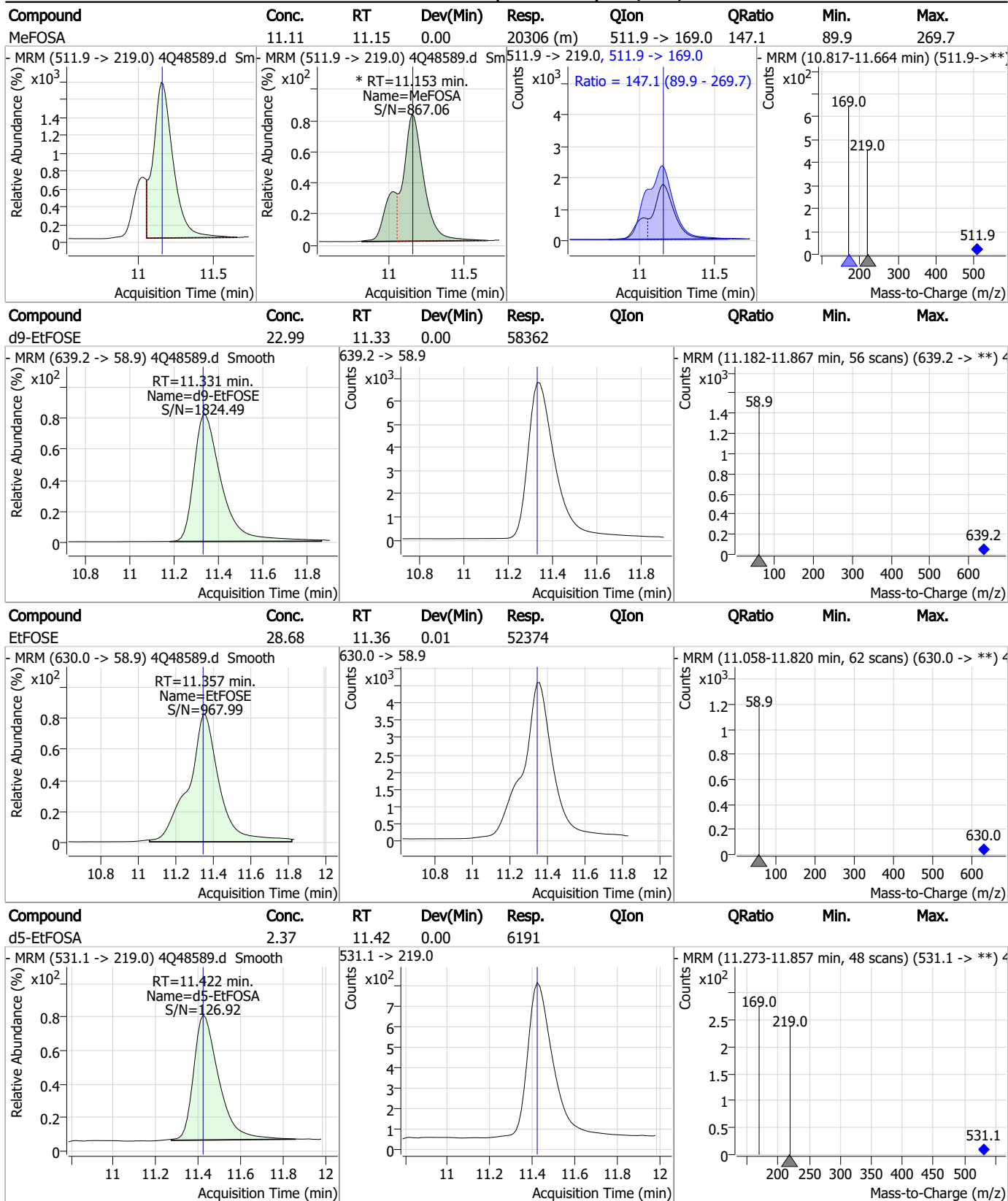
Perfluorinated Compounds by LC/MS/MS



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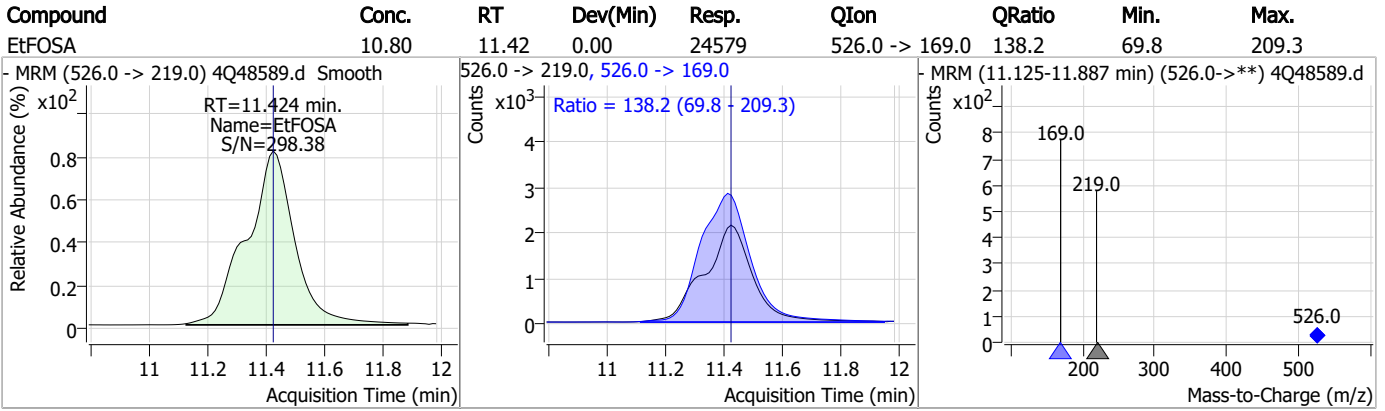
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Perfluorinated Compounds by LC/MS/MS



7.7.6
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Perfluorinated Compounds by LC/MS/MS



7.7.6

7

Manual Integration Approval Summary

Sample Number: S4Q711-IC711 Method: EPA DRAFT 1633
Lab FileID: 4Q48589.D Analyst approved: 08/09/23 11:54 Anna Ludwig
Injection Time: 08/07/23 17:28 Supervisor approved: 08/09/23 14:46 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
MeFOSAA	2355-31-9		8.35	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.42	Split peak
EtFOSAA	2991-50-6		8.56	Split peak
MeFOSA	31506-32-8		11.15	Split peak

7.7.6.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtje
 08/09/23 14:46

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48590.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/7/2023 5:43:35 PM
 Sample Name : ic711-6
 Vial : P1-A7
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q711.batch.bin
 Sample Information : OP97964,S4Q711,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	99124	10.00 µg/L	0.000
M5-PFPeA	4.412	268.3 -> 223.0	61719	5.00 µg/L	0.000
M5-PFHxA	5.610	318.0 -> 273.0	37215	2.50 µg/L	0.000
M4-PFHpA	6.555	367.1 -> 322.0	26897	2.50 µg/L	0.000
M8-PFOA	7.226	421.1 -> 376.0	44058	2.50 µg/L	0.000
M9-PFNA	7.785	472.1 -> 427.0	20279	1.25 µg/L	0.000
M6-PFDA	8.279	519.1 -> 474.1	14668	1.25 µg/L	0.000
M7-PFUnDA	8.748	570.0 -> 525.1	16184	1.25 µg/L	0.012
M2-PFDoDA	9.180	615.1 -> 570.0	16949	1.25 µg/L	0.000
M2-PFTeDA	9.949	715.2 -> 670.0	13662	1.25 µg/L	0.000
M8-FOSA	9.882	506.1 -> 77.8	13310	2.50 µg/L	0.000
M3-PFBS	5.489	302.1 -> 79.9	9714	2.50 µg/L	0.000
M3-PFHxS	7.317	402.1 -> 79.9	6388	2.50 µg/L	0.000
M8-PFOS	8.417	507.1 -> 79.9	8290	2.50 µg/L	0.000
M2-4:2FTS	5.296	329.1 -> 80.9	574	5.00 µg/L	0.000
M2-6:2FTS	6.998	429.1 -> 80.9	1101	5.00 µg/L	0.000
M2-8:2FTS	8.078	529.1 -> 80.9	1848	5.00 µg/L	0.012
M3-MeFOSAA	8.348	573.2 -> 419.0	15713	5.00 µg/L	0.000
M3-HFPO-DA	5.977	286.9 -> 168.9	34180	10.00 µg/L	0.000
M5-EtFOSAA	8.559	589.2 -> 419.0	13257	5.00 µg/L	0.012
M7-MeFOSE	11.047	623.2 -> 58.9	61116	25.00 µg/L	-0.012
M9-EtFOSE	11.331	639.2 -> 58.9	90365	25.00 µg/L	0.000
M5-EtFOSA	11.422	531.1 -> 219.0	9390	2.50 µg/L	0.000
M3-MeFOSA	11.151	515.0 -> 219.0	7783	2.50 µg/L	0.000
13C4-PFOS	8.418	502.8 -> 79.9	7983	2.50 µg/L	0.000
13C3-PFBA	2.903	216.0 -> 172.0	57790	5.00 µg/L	0.000
18O2-PFHxS	7.316	403.0 -> 83.9	4769	2.50 µg/L	0.000
13C4-PFOA	7.226	417.1 -> 372.0	55360	2.50 µg/L	0.000
13C2-PFDA	8.279	515.1 -> 470.1	15345	1.25 µg/L	0.000
13C5-PFNA	7.785	468.0 -> 423.0	21386	1.25 µg/L	0.000
13C2-PFHxA	5.611	315.1 -> 270.0	35555	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.296	329.1 -> 80.9	574	4.81 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C2-6:2FTS	6.998	429.1 -> 80.9	1101	4.84 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.7%		
13C2-8:2FTS	8.078	529.1 -> 80.9	1848	5.35 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.9%		
13C2-PFDoDA	9.180	615.1 -> 570.0	16949	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C2-PFTeDA	9.949	715.2 -> 670.0	13662	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.5%		
13C3-PFBS	5.489	302.1 -> 79.9	9714	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.7%		
13C3-PFHxS	7.317	402.1 -> 79.9	6388	2.42 µg/L	0.000

7.7.7
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 = 96.8%		
13C4-PFBA	2.911	216.8 -> 171.9	99124	10.04 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C4-PFHpA	6.555	367.1 -> 322.0	26897	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C5-PFHxA	5.610	318.0 -> 273.0	37215	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C5-PFPeA	4.412	268.3 -> 223.0	61719	4.97 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C6-PFDA	8.279	519.1 -> 474.1	14668	1.38 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 110.5%		
13C7-PFUnDA	8.748	570.0 -> 525.1	16184	1.35 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.2%		
13C8-FOSA	9.882	506.1 -> 77.8	13310	2.67 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.9%		
13C8-PFOA	7.226	421.1 -> 376.0	44058	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.7%		
13C8-PFOS	8.417	507.1 -> 79.9	8290	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.4%		
13C9-PFNA	7.785	472.1 -> 427.0	20279	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.1%		
d3-MeFOSAA	8.348	573.2 -> 419.0	15713	5.30 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.1%		
13C3-HFPO-DA	5.977	286.9 -> 168.9	34180	10.09 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.9%		
d3-MeFOSA	11.151	515.0 -> 219.0	7783	2.65 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.2%		
d5-EtFOSAA	8.559	589.2 -> 419.0	13257	5.44 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.8%		
d7-MeFOSE	11.047	623.2 -> 58.9	61116	26.07 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 104.3%		
d9-EtFOSE	11.331	639.2 -> 58.9	90365	27.48 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 109.9%		
d5-EtFOSA	11.422	531.1 -> 219.0	9390	2.78 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.2%		
Target Compounds					QValue
4:2FTS	5.297	327.1 -> 307.0	35296	45.64 µg/L	99
		327.1 -> 80.9	14636		
6:2FTS	6.999	427.1 -> 407.0	45253	48.42 µg/L	98
		427.1 -> 80.9	16430		
8:2FTS	8.078	527.1 -> 507.0	35785	48.22 µg/L	91
		527.1 -> 80.8	13719		
EtFOSAA	8.559	584.2 -> 419.1	22780	12.57 µg/L	94
		584.2 -> 526.0	10201		
FOSA	9.886	498.1 -> 77.9	54166	12.57 µg/L	99
		498.1 -> 478.0	1595		
MeFOSAA	8.349	570.1 -> 419.0	25866	13.17 µg/L	98
		570.1 -> 483.0	4582		
PFBA	2.907	212.8 -> 168.9	115750	50.71 µg/L	100
PFBS	5.490	298.7 -> 79.9	28070	11.83 µg/L	100
		298.7 -> 98.8	10462		
PFDA	8.279	512.9 -> 469.0	129059	12.52 µg/L	99
		512.9 -> 219.0	24244		
PFDoDA	9.181	613.1 -> 569.0	140678	13.27 µg/L	98
		613.1 -> 319.0	21996		
PFDS	9.321	599.0 -> 79.9	21986	12.84 µg/L	99

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	11130			
PFHpA	6.556	363.1 -> 319.0	156998	12.93	µg/L	99
		363.1 -> 169.0	28274			
PFHpS	7.900	449.0 -> 79.9	31103	12.41	µg/L	98
		449.0 -> 98.9	16022			
PFHxA	5.613	313.0 -> 269.0	139445	12.98	µg/L	99
		313.0 -> 118.9	4125			
PFHxS	7.318	398.7 -> 79.9	21301	11.62	µg/L	m 98
		398.7 -> 98.9	10967			
PFNA	7.785	463.0 -> 419.0	133907	12.69	µg/L	100
		463.0 -> 219.0	28955			
PFNS	8.887	548.8 -> 79.9	20865	12.89	µg/L	99
		548.8 -> 98.9	11041			
PFOA	7.227	413.0 -> 369.0	223055	12.77	µg/L	100
		413.0 -> 169.0	43497			
PFOS	8.419	498.9 -> 79.9	37030	12.55	µg/L	m 81
		498.9 -> 98.8	17872			
PFPeA	4.414	263.0 -> 219.0	279867	26.09	µg/L	100
PFPeS	6.582	349.1 -> 79.9	21156	12.26	µg/L	99
		349.1 -> 98.9	9489			
PFTeDA	9.950	713.1 -> 669.0	125206	13.08	µg/L	99
		713.1 -> 168.9	11786			
PFTrDA	9.579	663.0 -> 619.0	148428	13.54	µg/L	98
		663.0 -> 168.9	17763			
PFUnDA	8.749	563.1 -> 519.0	133677	12.68	µg/L	99
		563.1 -> 269.1	26592			
11Cl-PF3OUdS	9.617	630.9 -> 450.9	177156	24.72	µg/L	98
		632.9 -> 452.9	56366			
9Cl-PF3ONS	8.763	530.8 -> 351.0	249345	24.72	µg/L	99
		532.8 -> 353.0	78141			
ADONA	6.818	376.9 -> 250.9	494628	24.94	µg/L	99
		376.9 -> 84.8	125921			
HFPO-DA	5.978	284.9 -> 168.9	72153	25.65	µg/L	98
		284.9 -> 184.9	8808			
3:3FTCA	3.861	241.0 -> 177.0	35718	62.01	µg/L	99
		241.0 -> 117.0	3384			
5:3FTCA	6.296	341.0 -> 237.1	574110	326.65	µg/L	99
		341.0 -> 217.0	404842			
7:3FTCA	7.774	441.0 -> 316.9	318700	329.07	µg/L	99
		441.0 -> 336.9	739663			
EtFOSA	11.424	526.0 -> 219.0	85316	24.71	µg/L	98
		526.0 -> 169.0	116875			
EtFOSE	11.345	630.0 -> 58.9	183159	64.77	µg/L	100
MeFOSA	11.153	511.9 -> 219.0	70709	26.12	µg/L	76
		511.9 -> 169.0	103405			
MeFOSE	11.073	616.1 -> 58.9	147148	67.33	µg/L	100
PFDoDS	10.077	699.1 -> 79.9	17531	13.31	µg/L	93
		699.1 -> 98.8	9845			
NFDHA	5.491	295.0 -> 201.0	17244	24.92	µg/L	96
		295.0 -> 84.9	4598			
PFMBA	4.828	279.0 -> 85.1	155438	25.86	µg/L	100
PFMPA	3.540	229.0 -> 84.9	150499	25.67	µg/L	100
PFEESA	6.034	314.8 -> 134.9	198327	22.93	µg/L	99
		314.8 -> 82.9	7485			

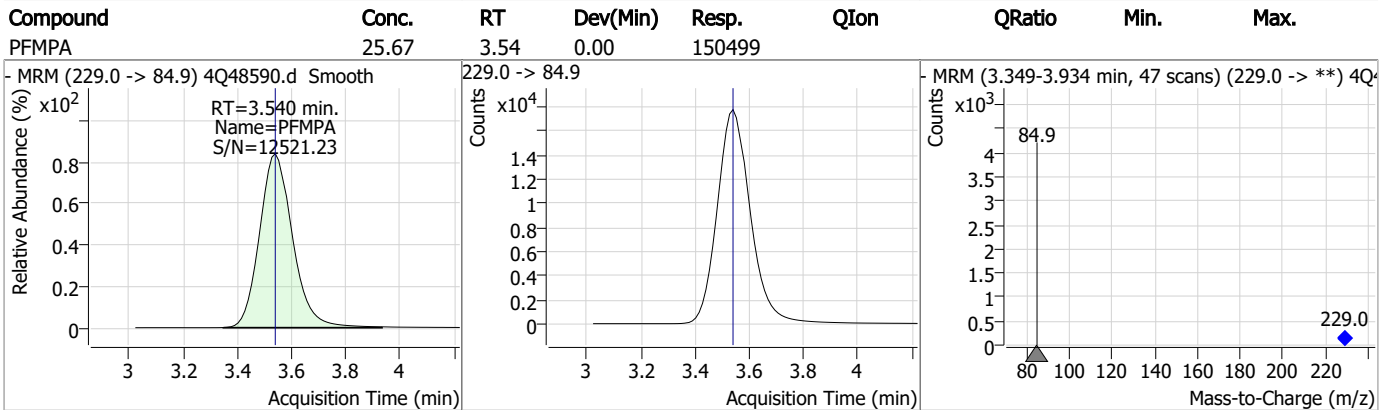
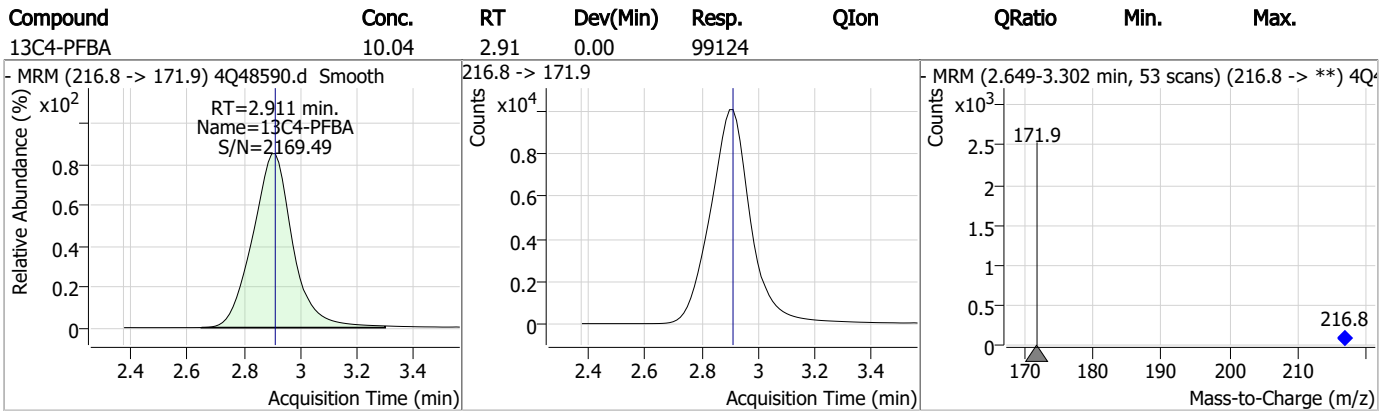
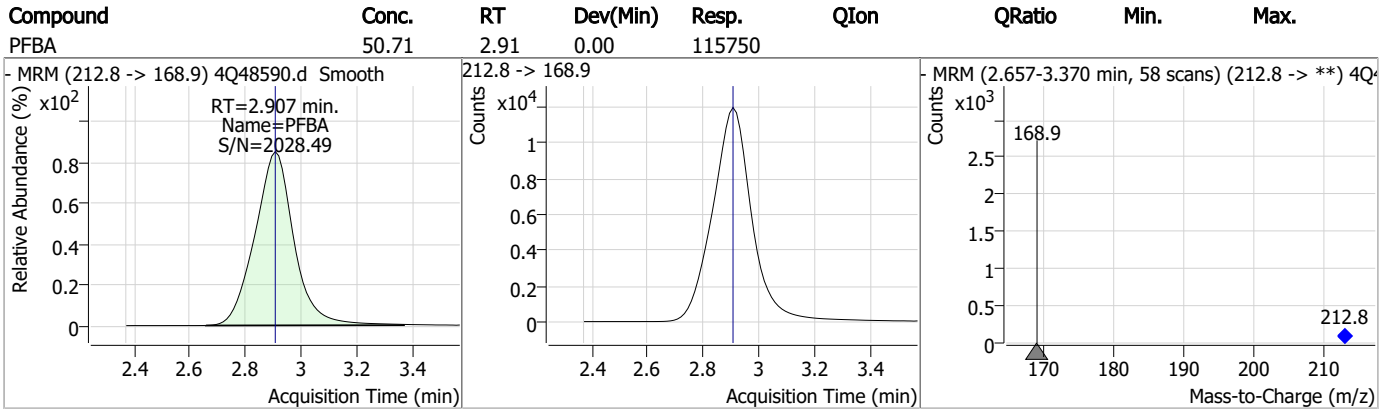
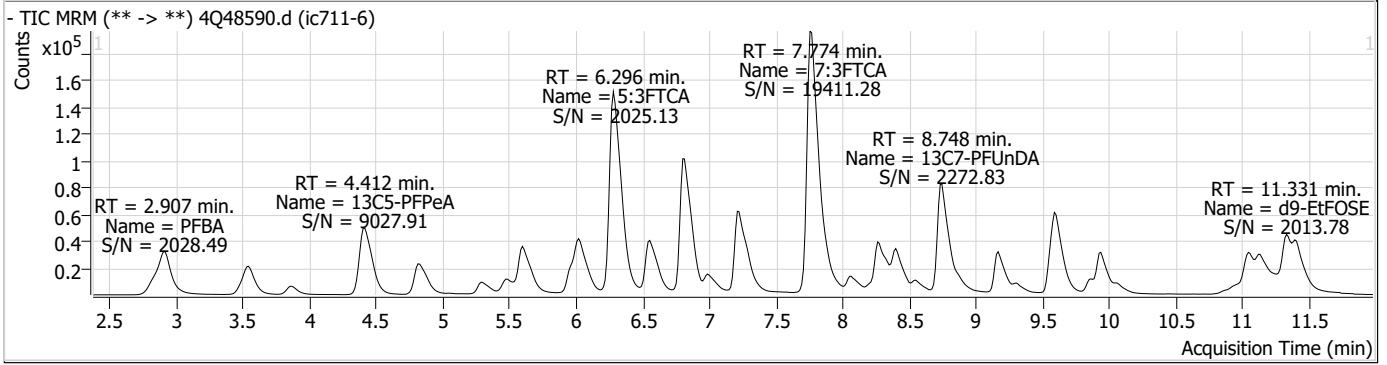
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

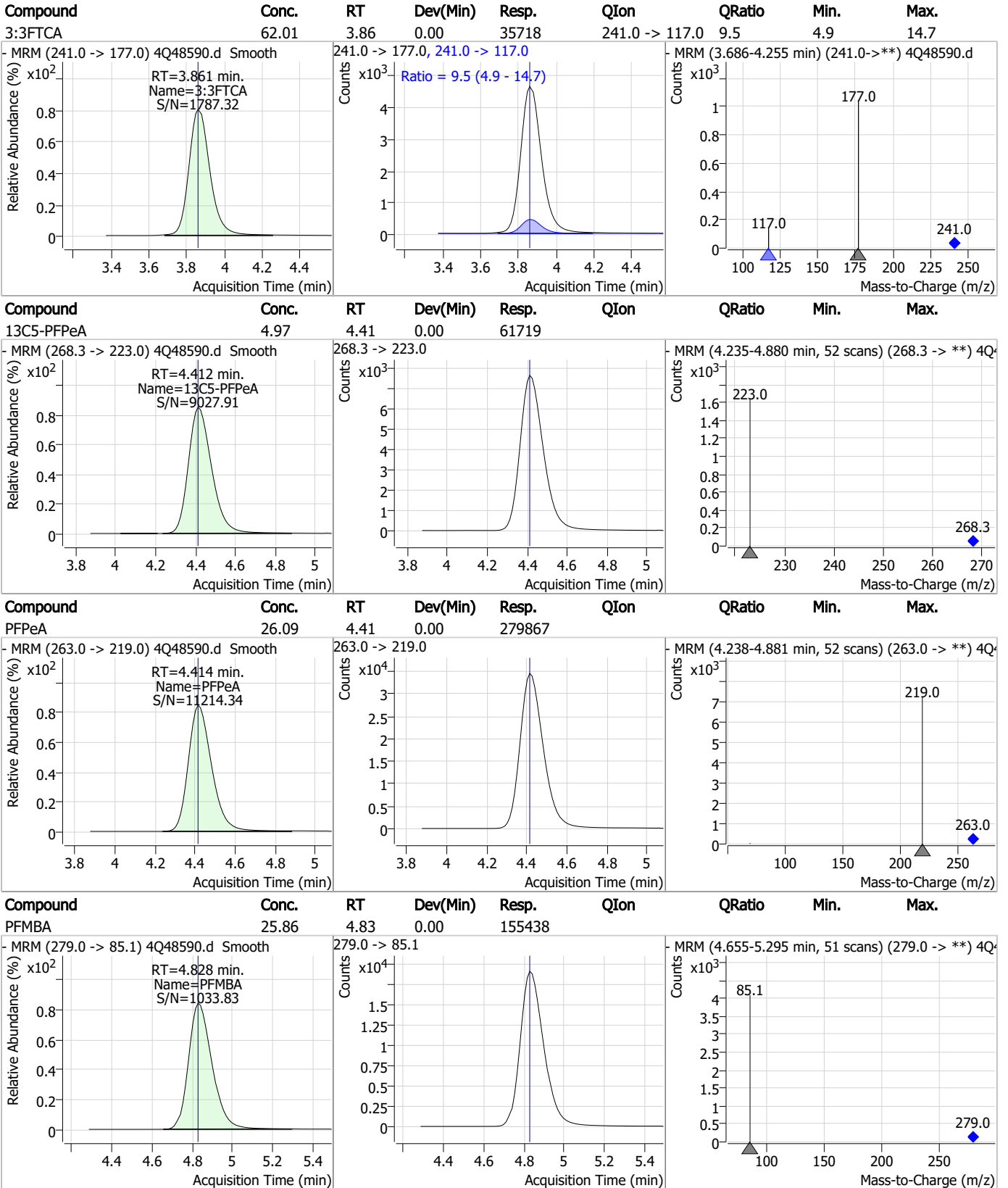
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.7
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Perfluorinated Compounds by LC/MS/MS

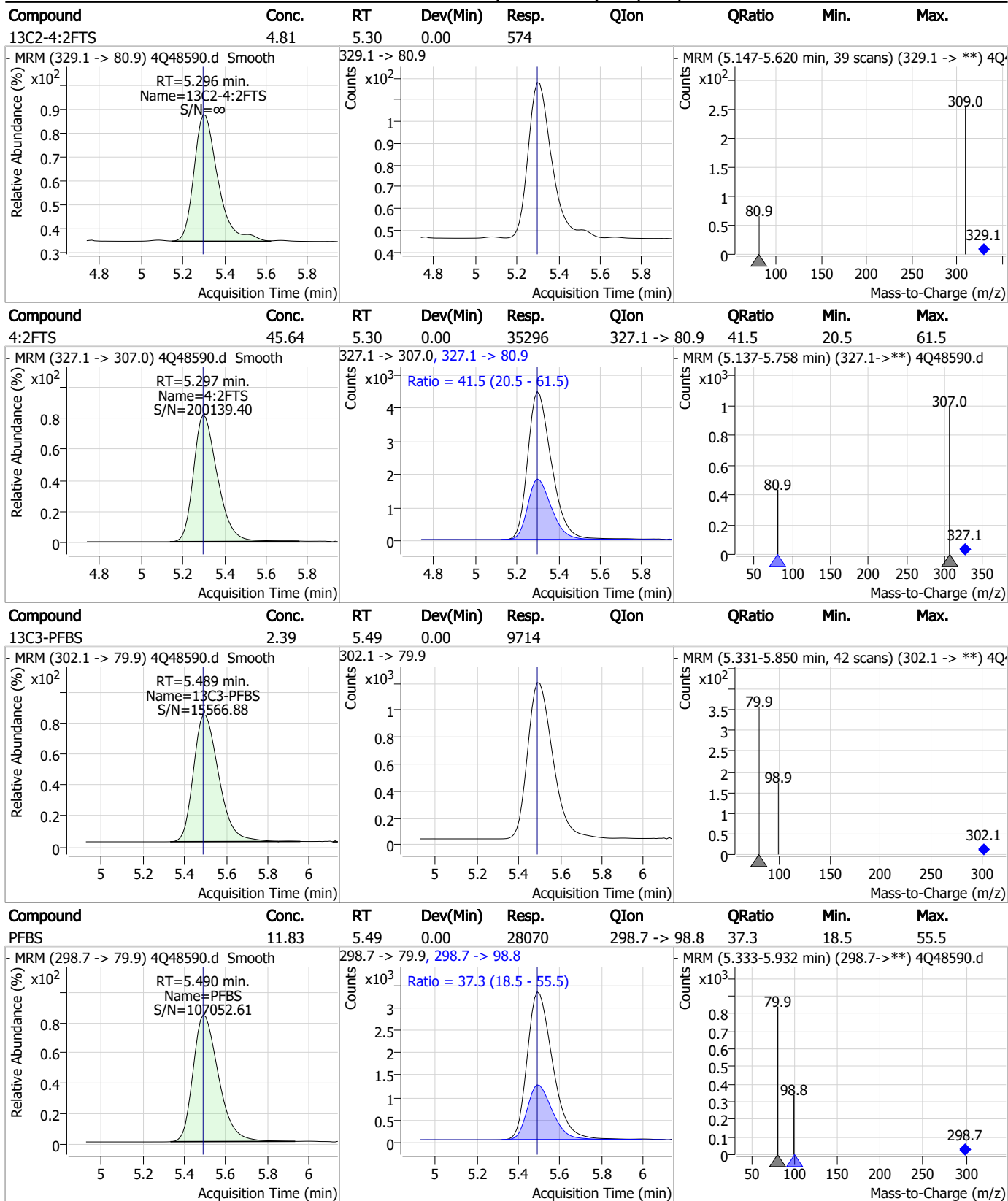


Perfluorinated Compounds by LC/MS/MS



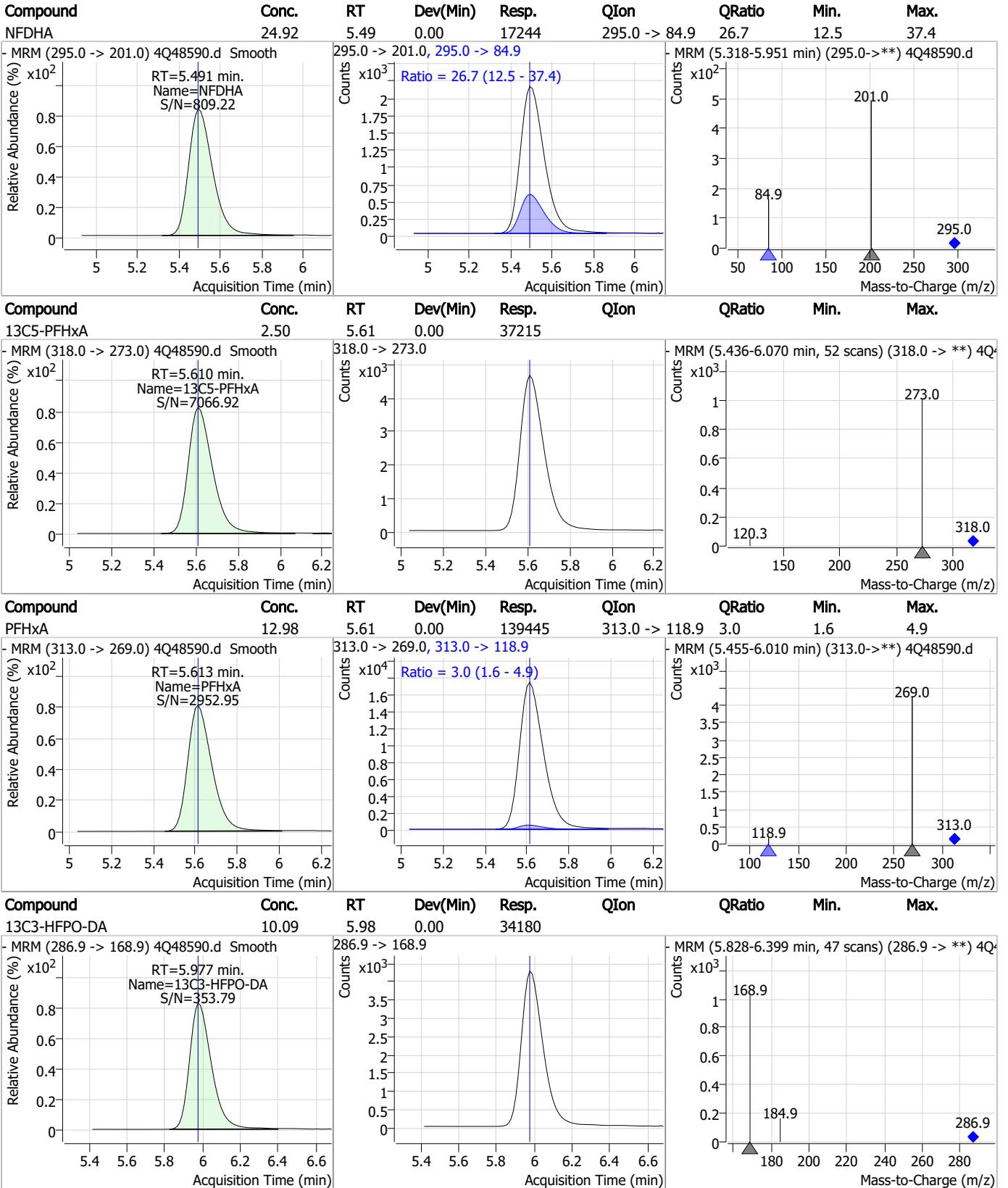
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Perfluorinated Compounds by LC/MS/MS



7.7.7
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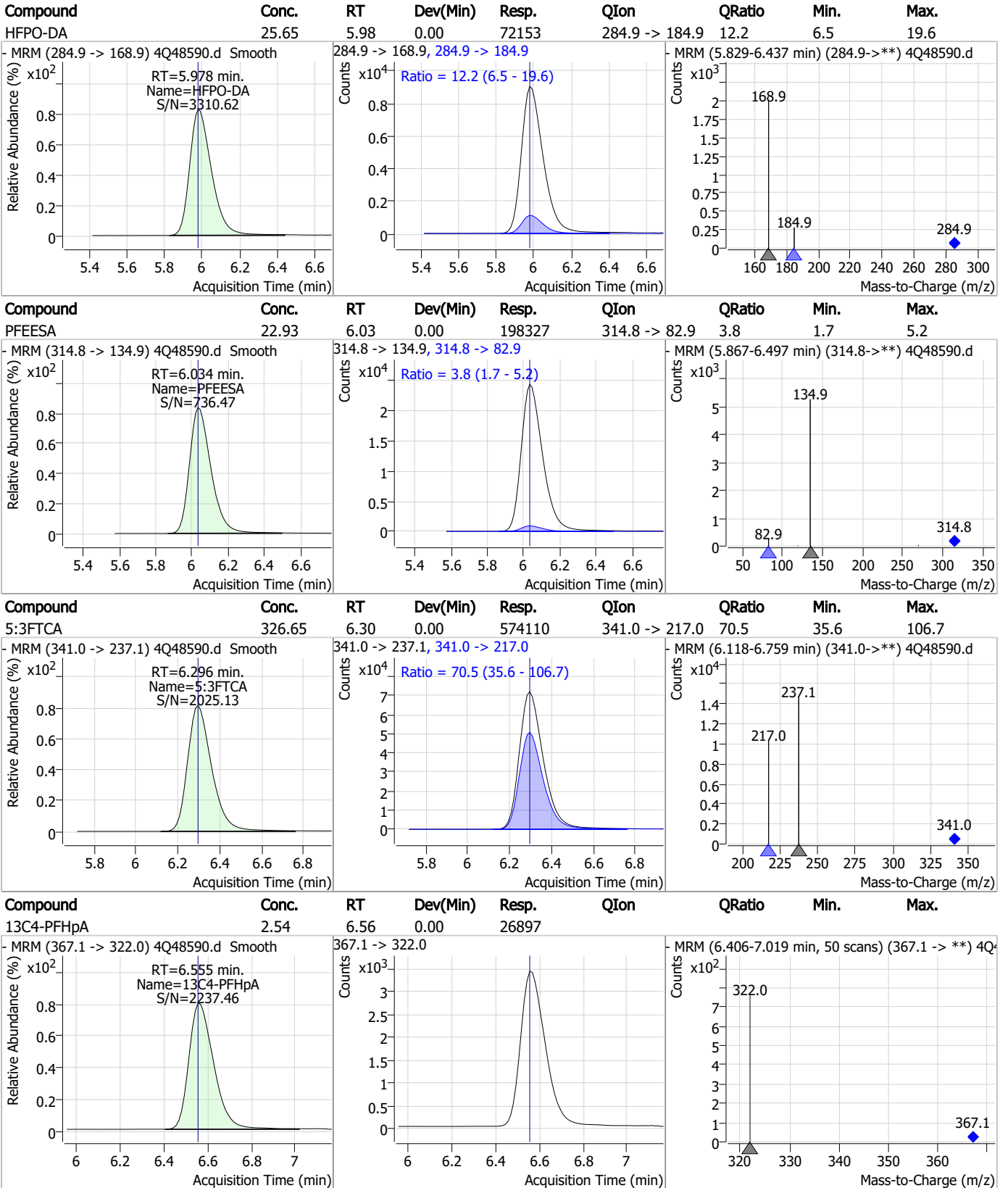
Perfluorinated Compounds by LC/MS/MS



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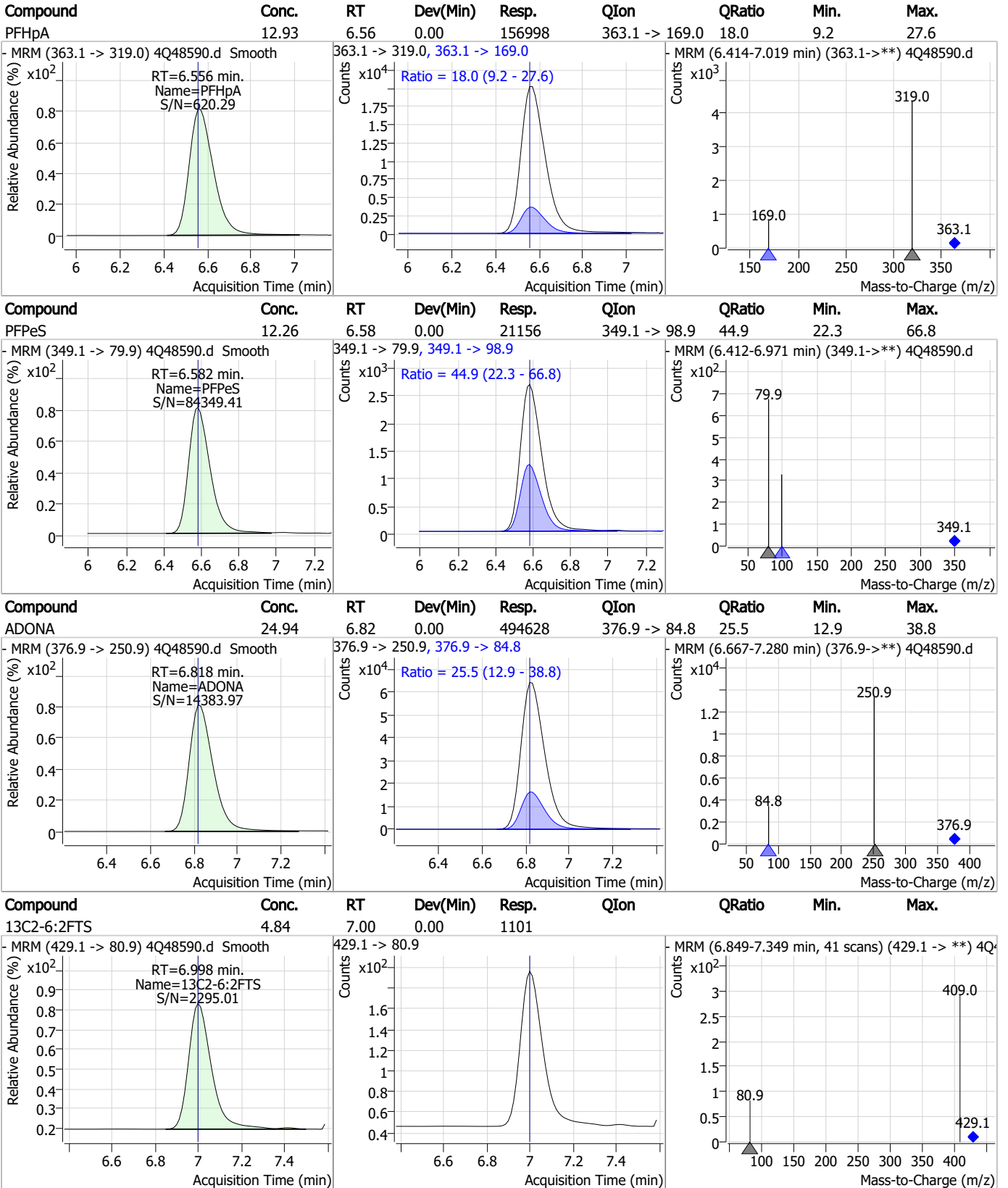
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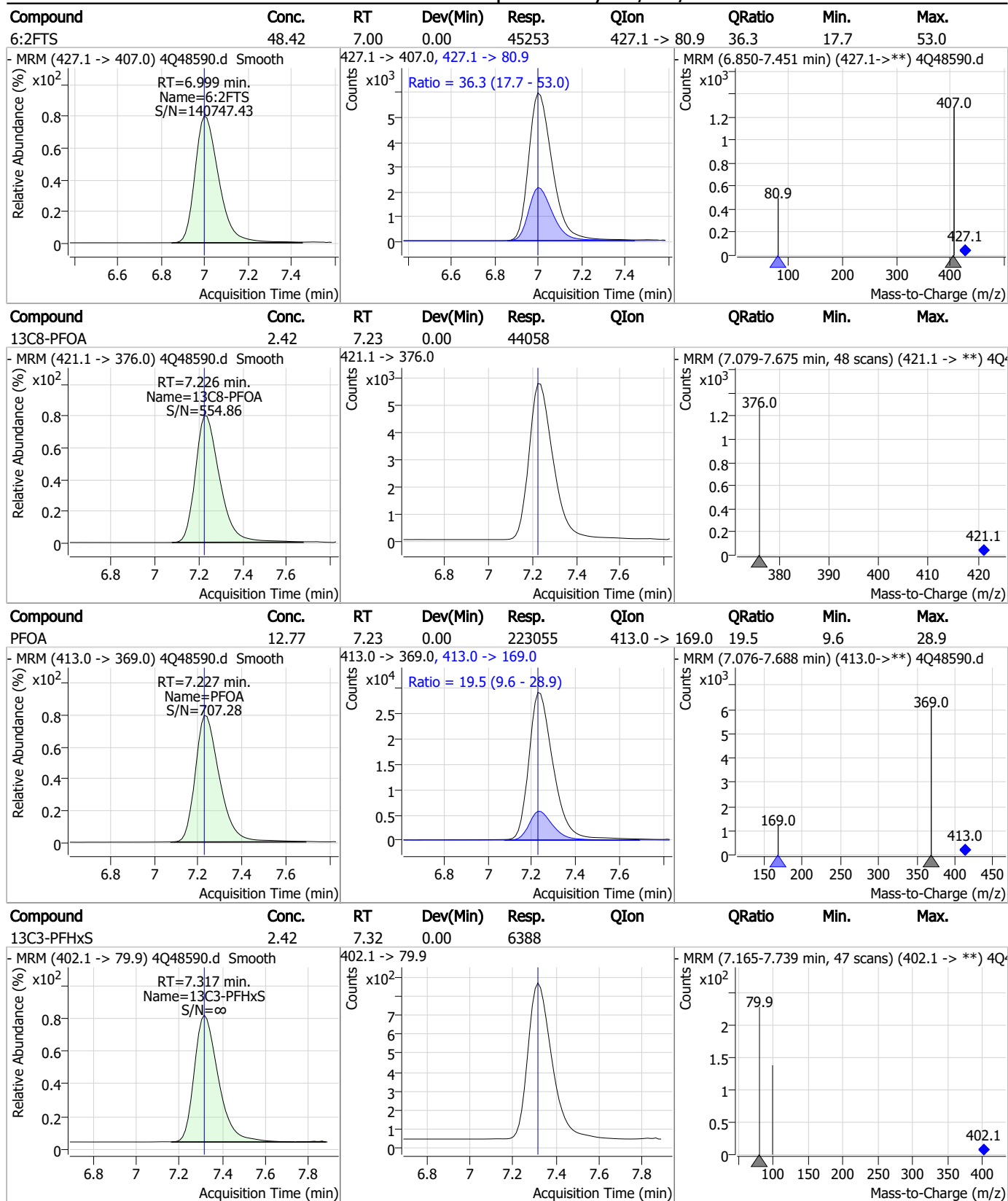
Perfluorinated Compounds by LC/MS/MS



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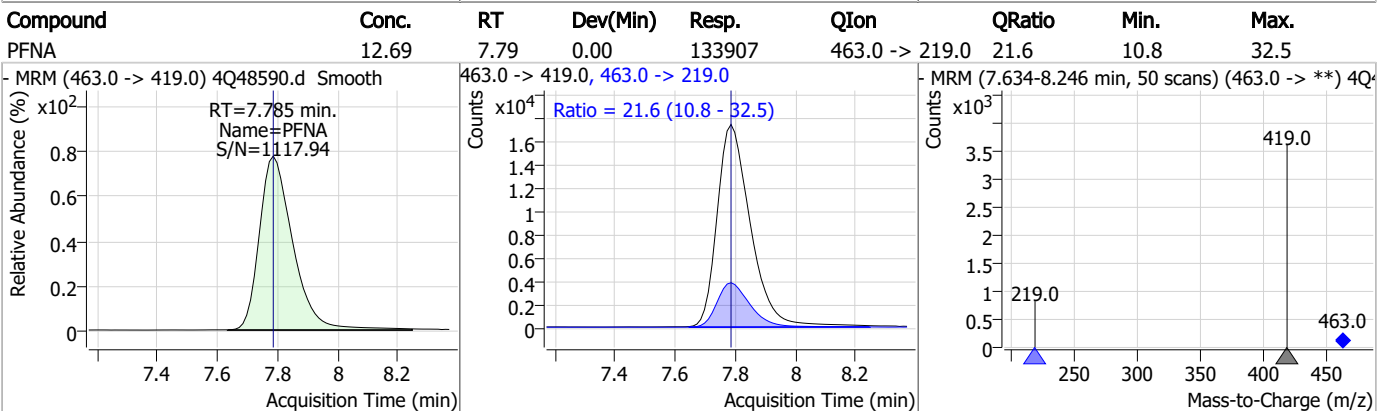
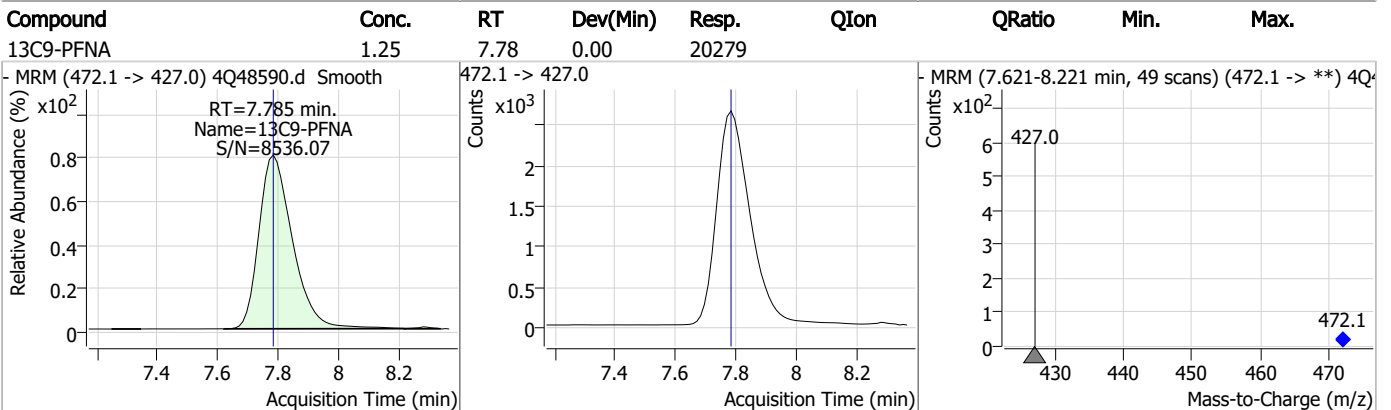
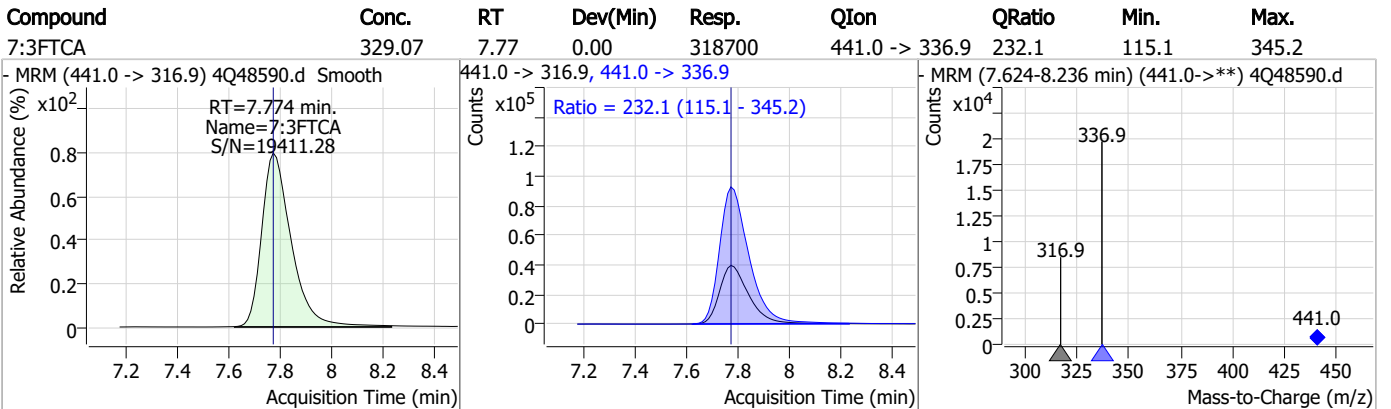
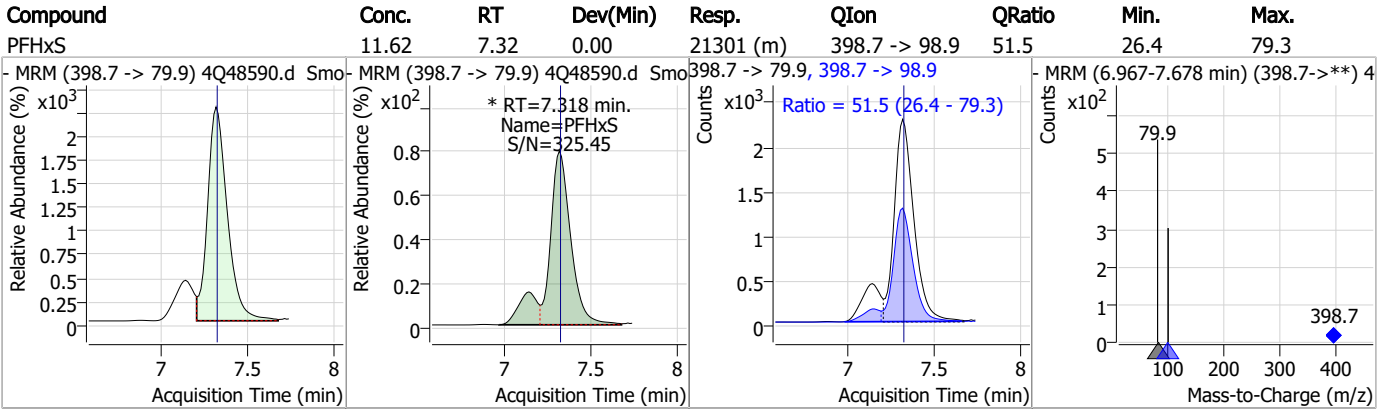


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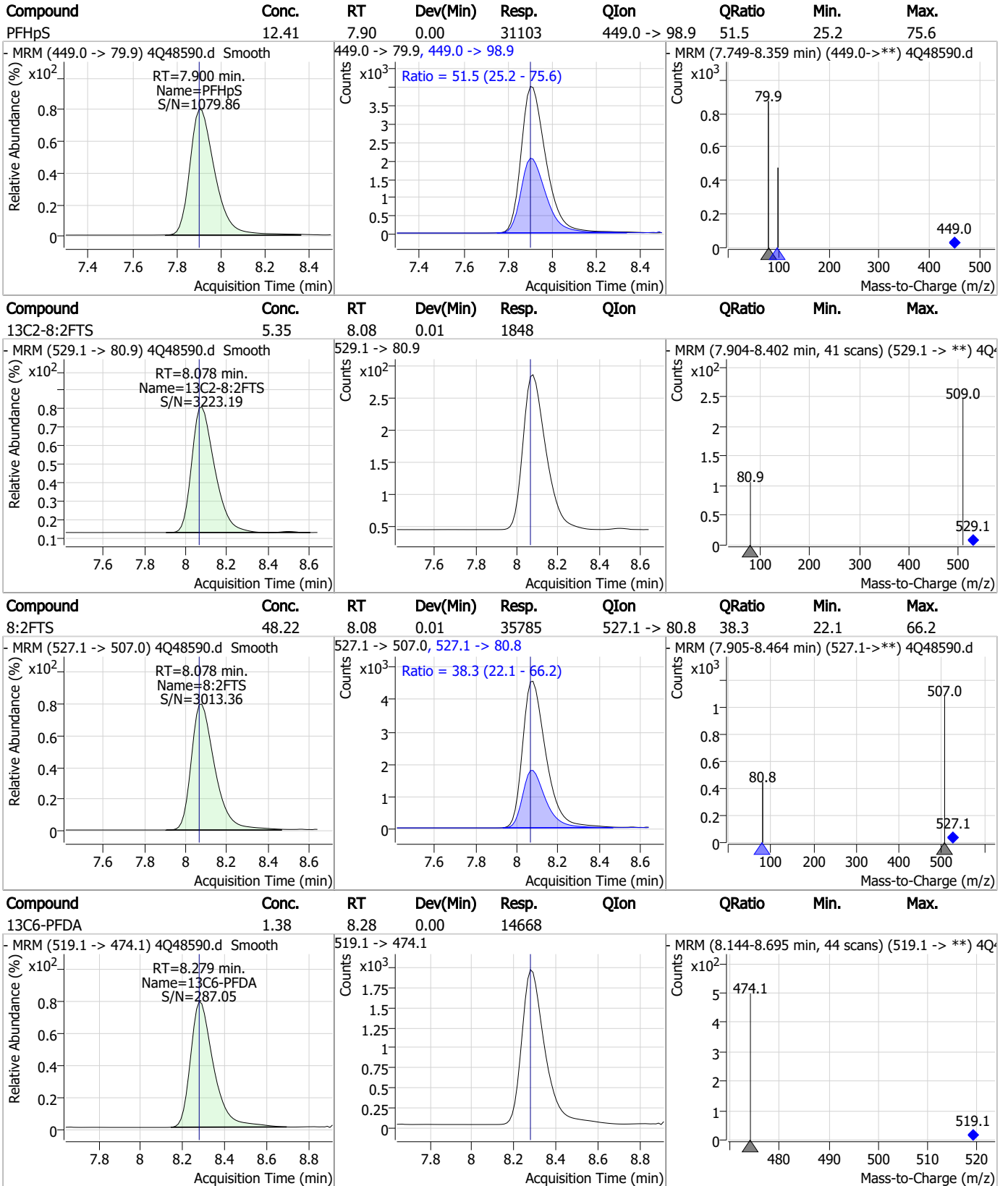


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Perfluorinated Compounds by LC/MS/MS

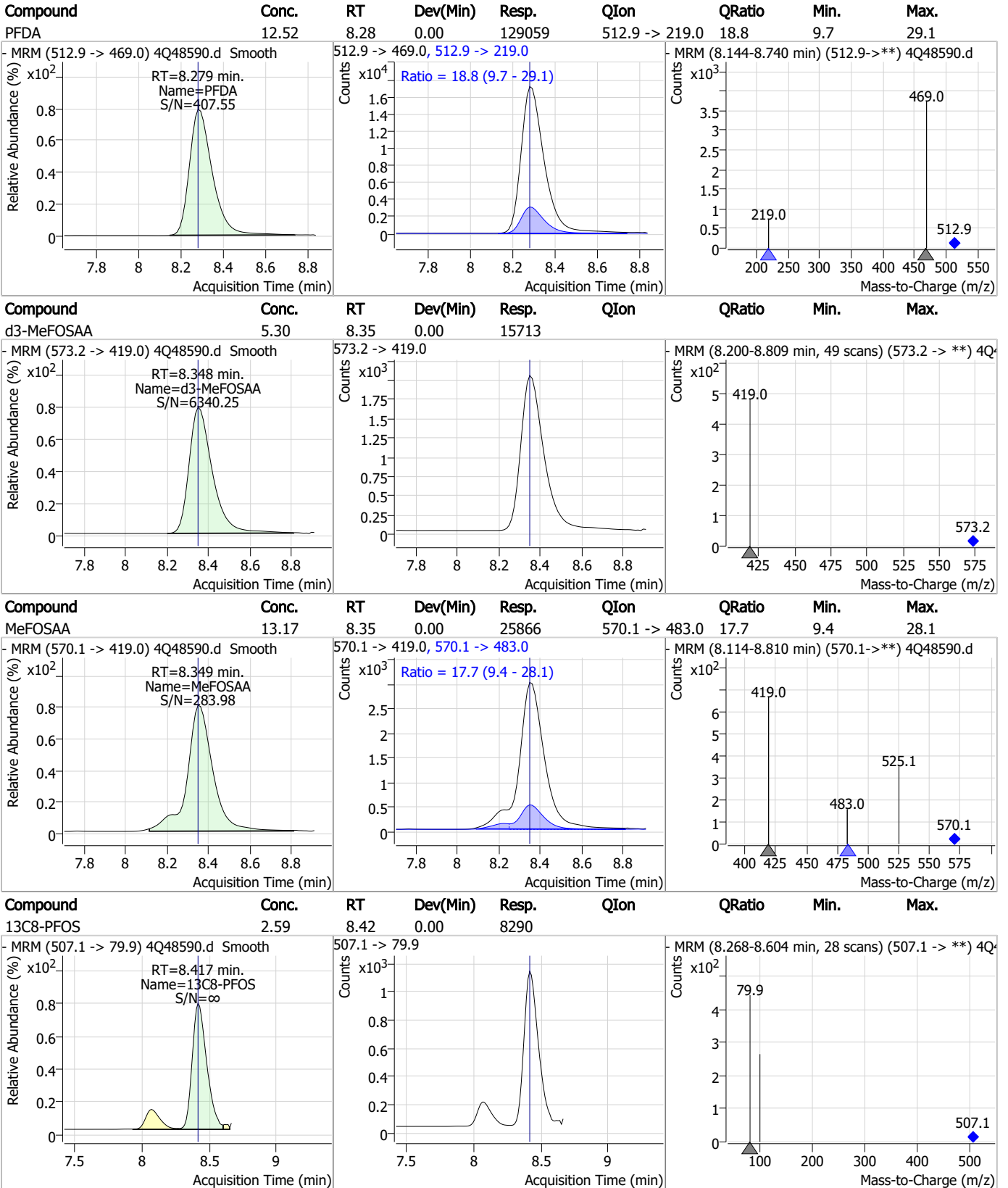


Perfluorinated Compounds by LC/MS/MS



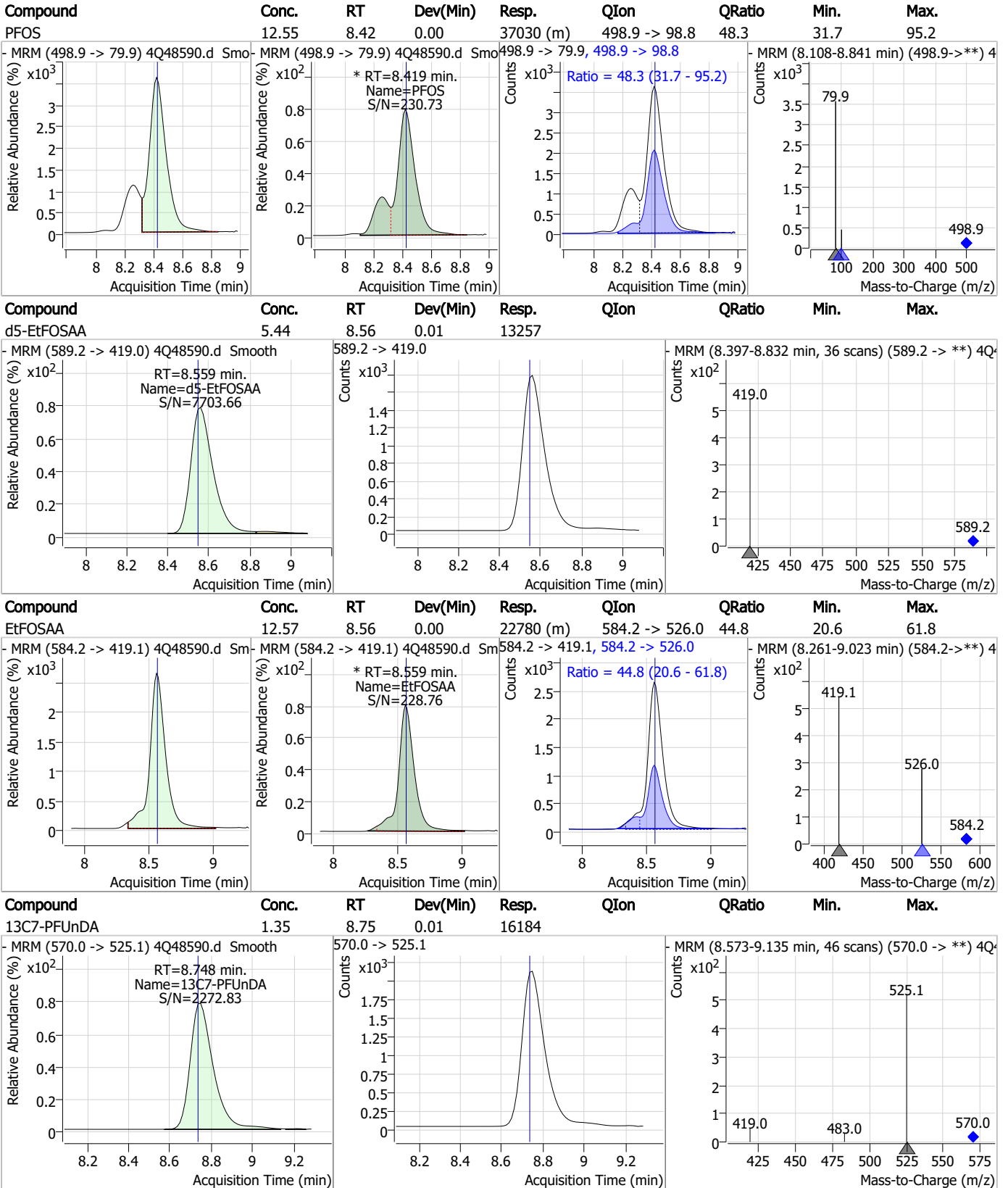
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Perfluorinated Compounds by LC/MS/MS



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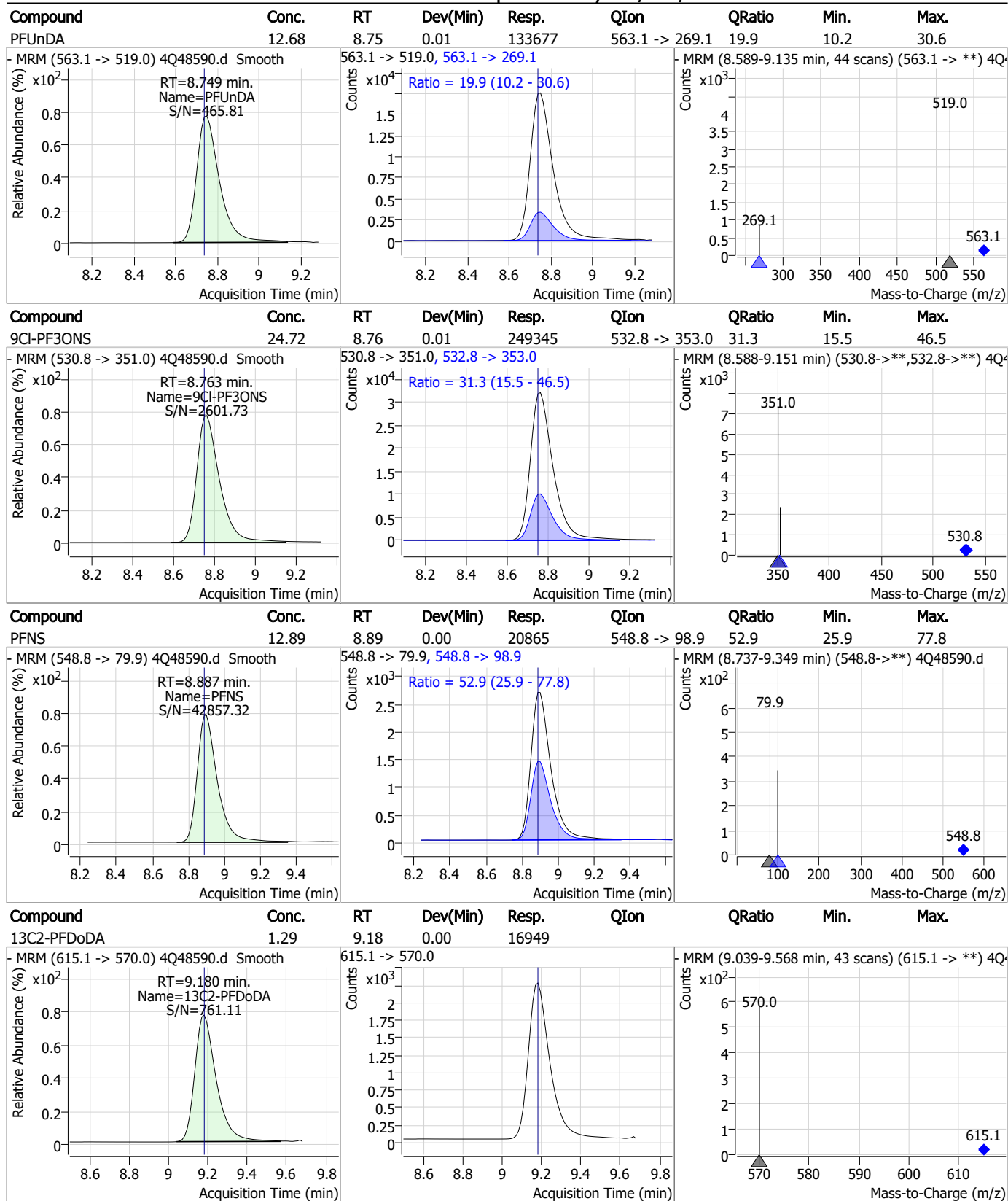
Perfluorinated Compounds by LC/MS/MS



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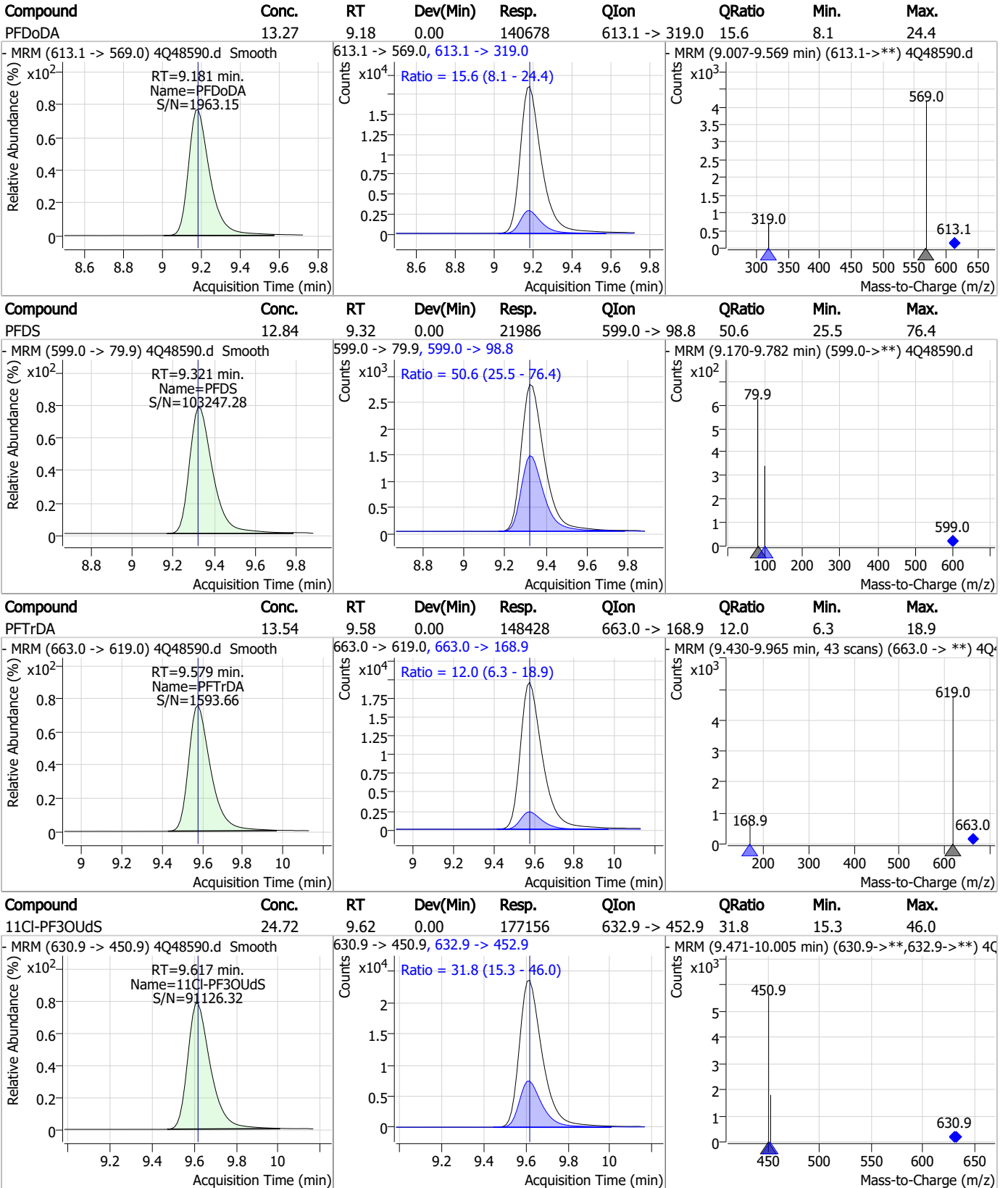
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Perfluorinated Compounds by LC/MS/MS



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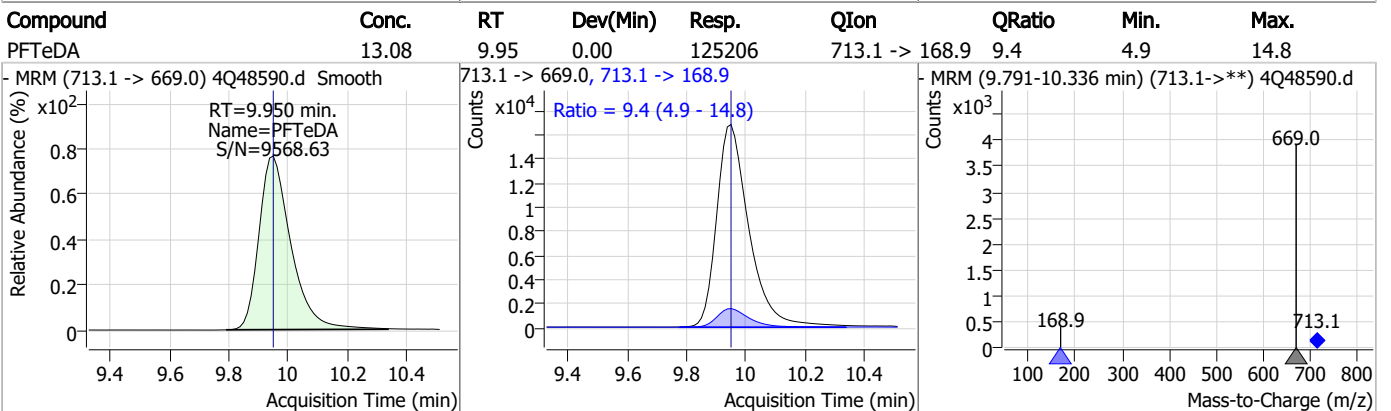
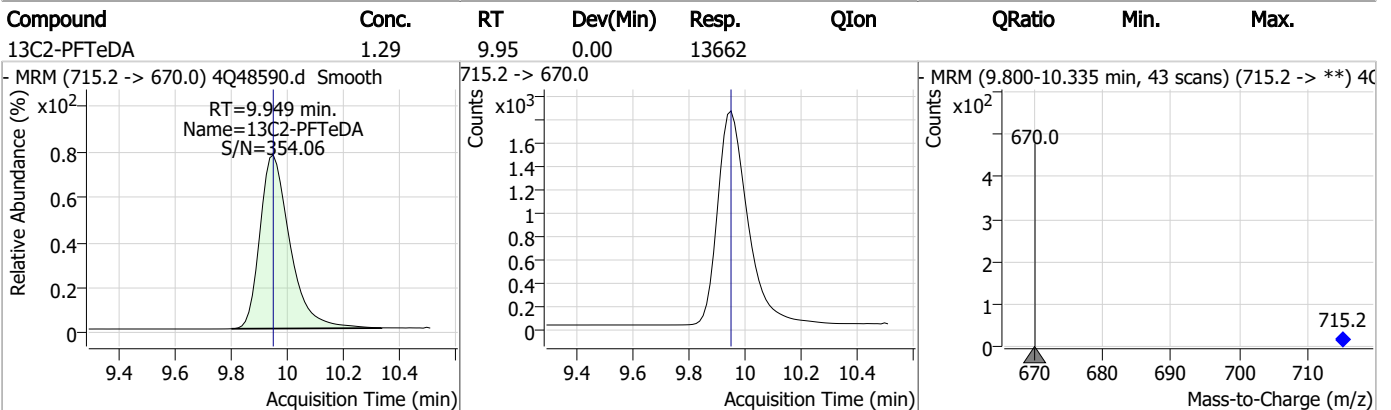
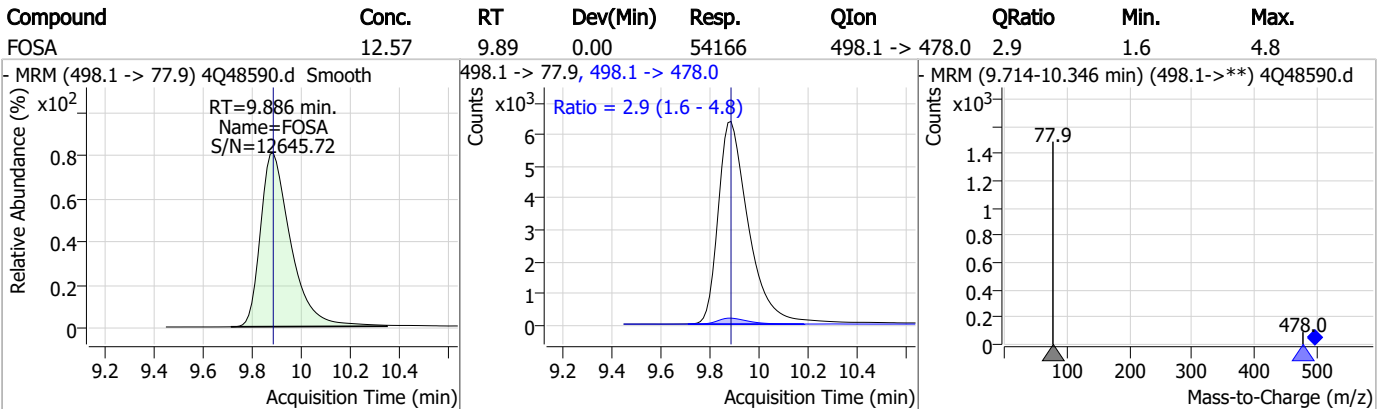
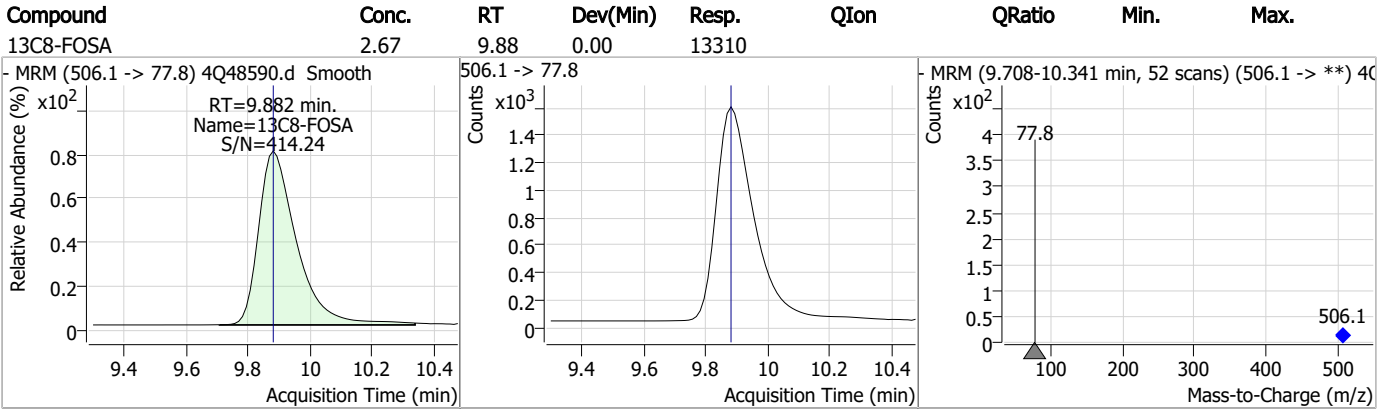
Perfluorinated Compounds by LC/MS/MS



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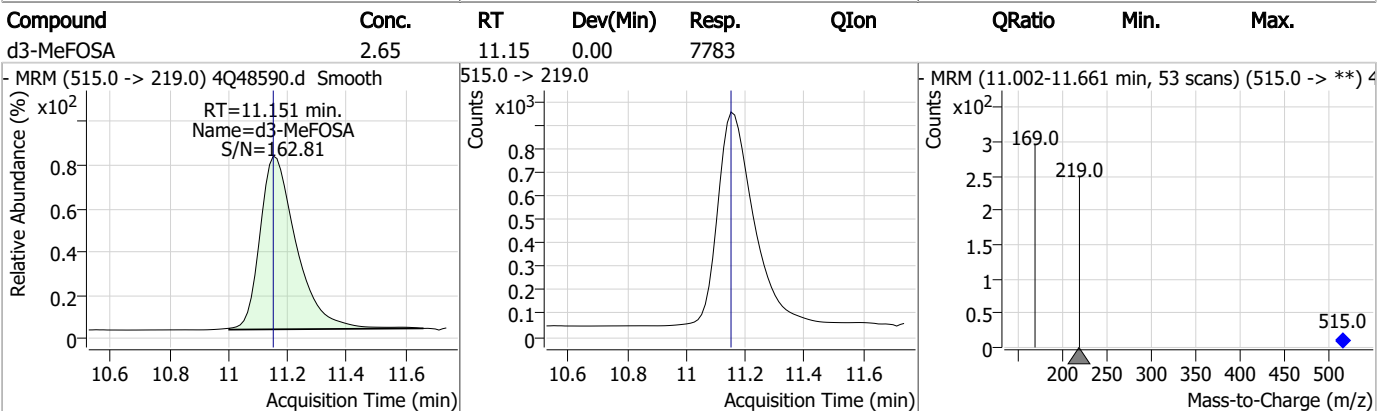
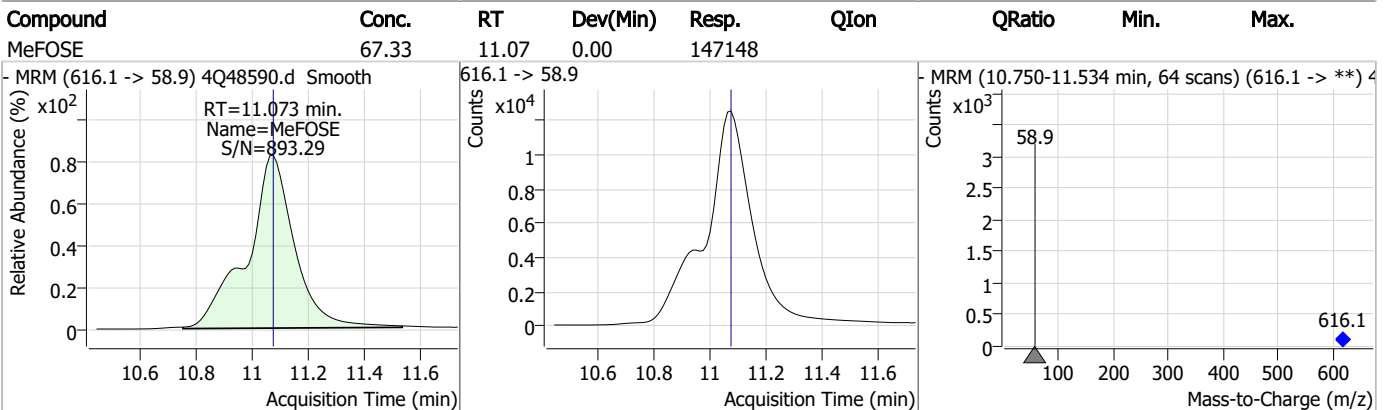
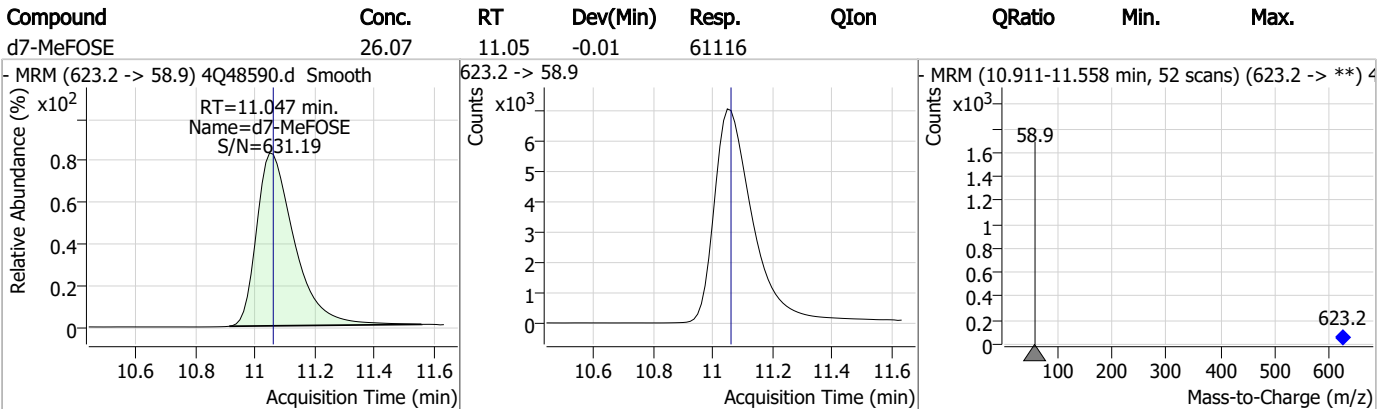
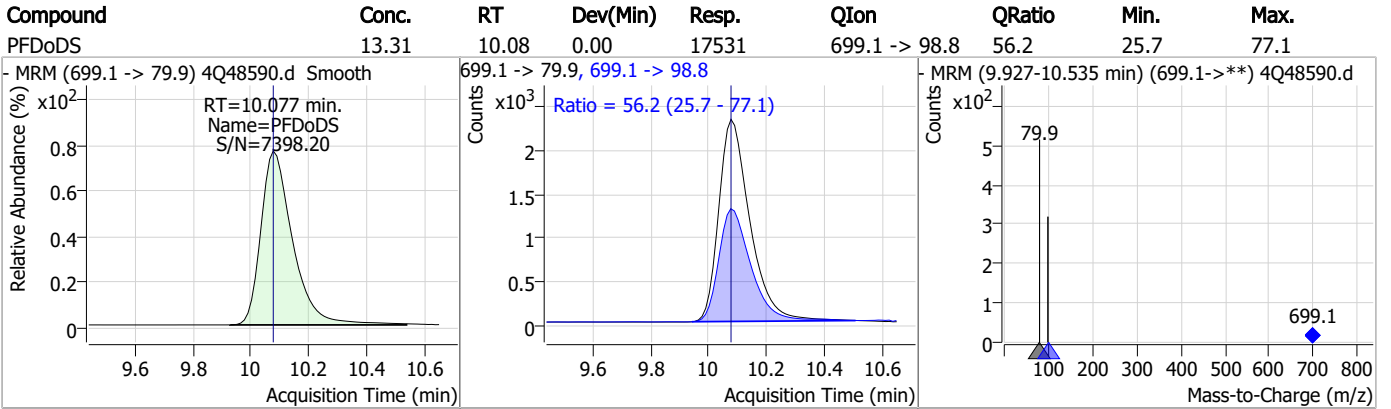
Perfluorinated Compounds by LC/MS/MS



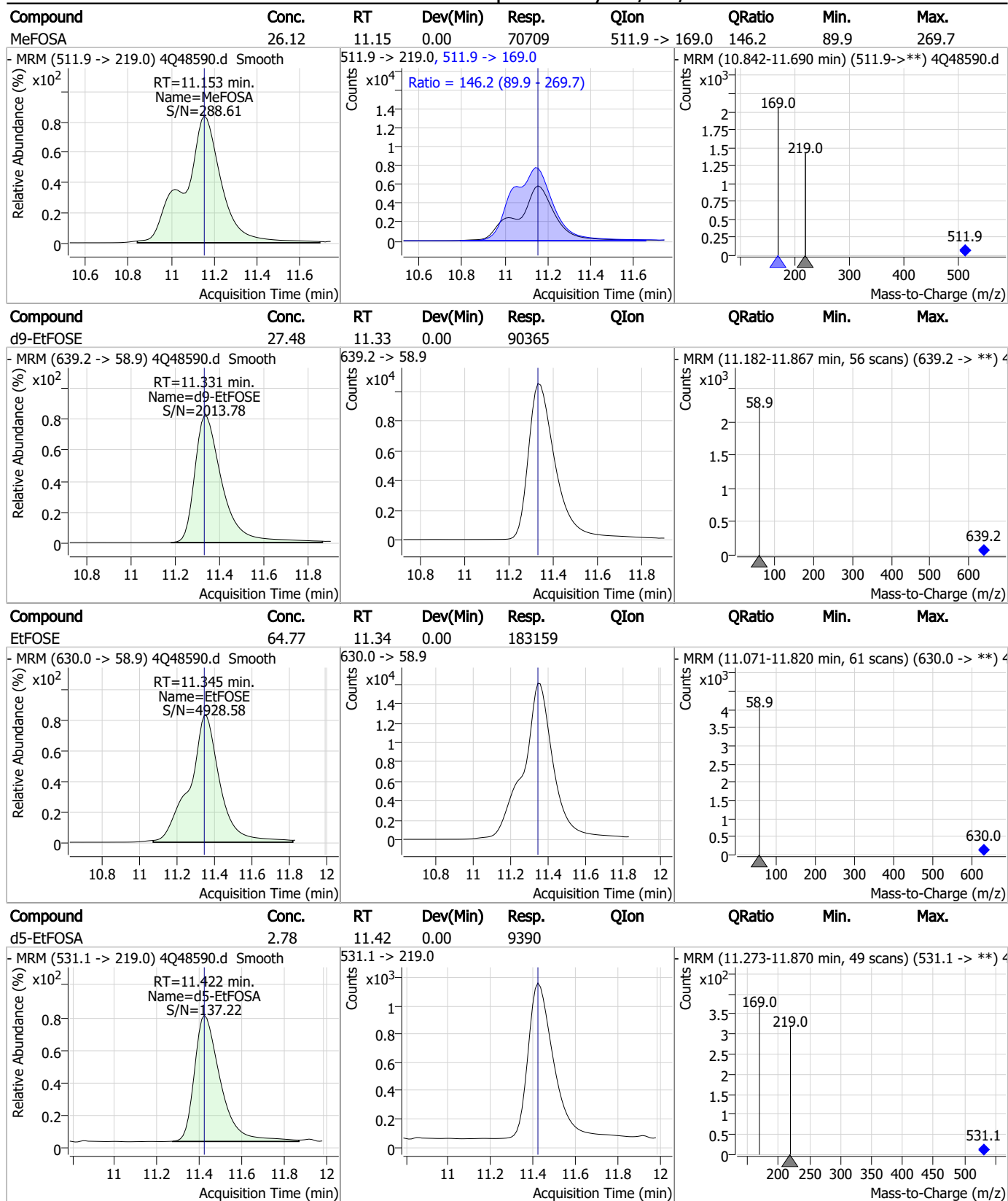
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Perfluorinated Compounds by LC/MS/MS

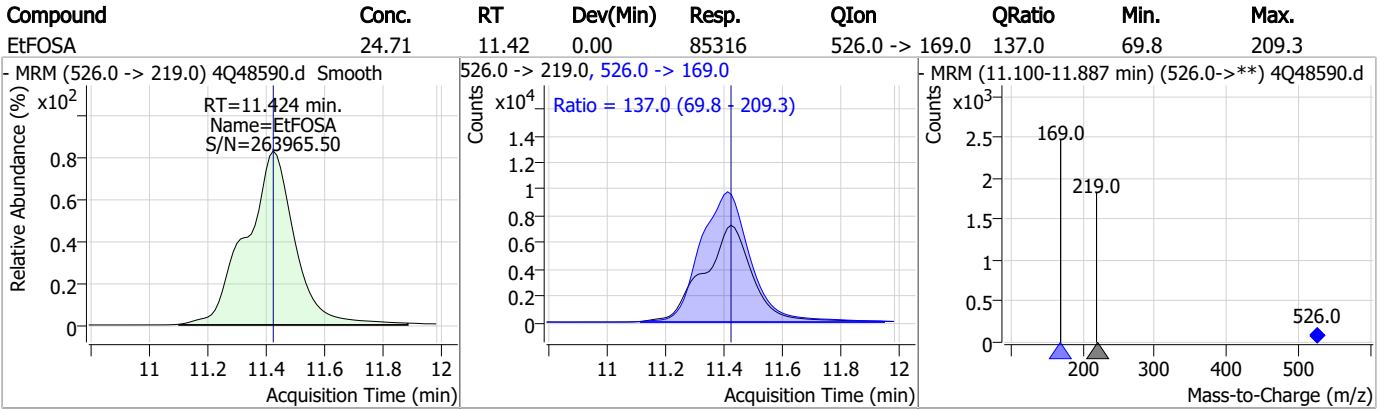


Perfluorinated Compounds by LC/MS/MS



7.7.7
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Perfluorinated Compounds by LC/MS/MS



7.7.7
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Manual Integration Approval Summary

Sample Number: S4Q711-IC711 Method: EPA DRAFT 1633
Lab FileID: 4Q48590.D Analyst approved: 08/09/23 11:54 Anna Ludwig
Injection Time: 08/07/23 17:43 Supervisor approved: 08/09/23 14:46 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.42	Split peak
EtFOSAA	2991-50-6		8.56	Split peak

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Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtje
 08/09/23 14:46

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48591.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/7/2023 5:58:22 PM
 Sample Name : ic711-7
 Vial : P1-A8
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q711.batch.bin
 Sample Information : OP97964,S4Q711,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	95552	10.00 µg/L	0.000
M5-PFPeA	4.412	268.3 -> 223.0	60760	5.00 µg/L	0.000
M5-PFHxA	5.610	318.0 -> 273.0	37419	2.50 µg/L	0.000
M4-PFHpA	6.568	367.1 -> 322.0	26561	2.50 µg/L	0.012
M8-PFOA	7.238	421.1 -> 376.0	43985	2.50 µg/L	0.012
M9-PFNA	7.785	472.1 -> 427.0	20033	1.25 µg/L	0.000
M6-PFDA	8.279	519.1 -> 474.1	13449	1.25 µg/L	0.000
M7-PFUnDA	8.748	570.0 -> 525.1	16153	1.25 µg/L	0.012
M2-PFDoDA	9.180	615.1 -> 570.0	17988	1.25 µg/L	0.000
M2-PFTeDA	9.949	715.2 -> 670.0	14660	1.25 µg/L	0.000
M8-FOSA	9.882	506.1 -> 77.8	13248	2.50 µg/L	0.000
M3-PFBS	5.489	302.1 -> 79.9	9460	2.50 µg/L	0.000
M3-PFHxS	7.317	402.1 -> 79.9	6673	2.50 µg/L	0.000
M8-PFOS	8.417	507.1 -> 79.9	8493	2.50 µg/L	0.000
M2-4:2FTS	5.296	329.1 -> 80.9	604	5.00 µg/L	0.000
M2-6:2FTS	6.998	429.1 -> 80.9	1061	5.00 µg/L	0.000
M2-8:2FTS	8.078	529.1 -> 80.9	1564	5.00 µg/L	0.012
M3-MeFOSAA	8.348	573.2 -> 419.0	15969	5.00 µg/L	0.000
M3-HFPO-DA	5.977	286.9 -> 168.9	34489	10.00 µg/L	0.000
M5-EtFOSAA	8.559	589.2 -> 419.0	13299	5.00 µg/L	0.012
M7-MeFOSE	11.059	623.2 -> 58.9	63921	25.00 µg/L	0.000
M9-EtFOSE	11.344	639.2 -> 58.9	85407	25.00 µg/L	0.012
M5-EtFOSA	11.422	531.1 -> 219.0	9114	2.50 µg/L	0.000
M3-MeFOSA	11.151	515.0 -> 219.0	8095	2.50 µg/L	0.000
13C4-PFOS	8.418	502.8 -> 79.9	8666	2.50 µg/L	0.000
13C3-PFBA	2.916	216.0 -> 172.0	55858	5.00 µg/L	0.012
18O2-PFHxS	7.316	403.0 -> 83.9	4819	2.50 µg/L	0.000
13C4-PFOA	7.239	417.1 -> 372.0	54254	2.50 µg/L	0.012
13C2-PFDA	8.279	515.1 -> 470.1	16329	1.25 µg/L	0.000
13C5-PFNA	7.785	468.0 -> 423.0	21081	1.25 µg/L	0.000
13C2-PFHxA	5.611	315.1 -> 270.0	35422	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.296	329.1 -> 80.9	604	5.02 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C2-6:2FTS	6.998	429.1 -> 80.9	1061	4.61 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.3%		
13C2-8:2FTS	8.078	529.1 -> 80.9	1564	4.48 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.5%		
13C2-PFDoDA	9.180	615.1 -> 570.0	17988	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C2-PFTeDA	9.949	715.2 -> 670.0	14660	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.4%		
13C3-PFBS	5.489	302.1 -> 79.9	9460	2.31 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.3%		
13C3-PFHxS	7.317	402.1 -> 79.9	6673	2.50 µg/L	0.000

7.7.8
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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 = 100.1%		
13C4-PFBA	2.911	216.8 -> 171.9	95552	10.01 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C4-PFHpA	6.568	367.1 -> 322.0	26561	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C5-PFHxA	5.610	318.0 -> 273.0	37419	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C5-PFPeA	4.412	268.3 -> 223.0	60760	4.91 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.1%		
13C6-PFDA	8.279	519.1 -> 474.1	13449	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.2%		
13C7-PFUnDA	8.748	570.0 -> 525.1	16153	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.5%		
13C8-FOSA	9.882	506.1 -> 77.8	13248	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C8-PFOA	7.238	421.1 -> 376.0	43985	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C8-PFOS	8.417	507.1 -> 79.9	8493	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C9-PFNA	7.785	472.1 -> 427.0	20033	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.4%		
d3-MeFOSAA	8.348	573.2 -> 419.0	15969	4.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C3-HFPO-DA	5.977	286.9 -> 168.9	34489	10.22 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 102.2%		
d3-MeFOSA	11.151	515.0 -> 219.0	8095	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.7%		
d5-EtFOSAA	8.559	589.2 -> 419.0	13299	5.03 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.6%		
d7-MeFOSE	11.059	623.2 -> 58.9	63921	25.12 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
d9-EtFOSE	11.344	639.2 -> 58.9	85407	23.93 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 95.7%		
d5-EtFOSA	11.422	531.1 -> 219.0	9114	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.4%		
Target Compounds					QValue
4:2FTS	5.297	327.1 -> 307.0	70269	86.24 µg/L	99
		327.1 -> 80.9	29426		
6:2FTS	6.999	427.1 -> 407.0	88161	97.87 µg/L	99
		427.1 -> 80.9	31492		
8:2FTS	8.078	527.1 -> 507.0	69168	110.15 µg/L	93
		527.1 -> 80.8	27272		
EtFOSAA	8.559	584.2 -> 419.1	47134	25.93 µg/L	m 95
		584.2 -> 526.0	20994		
FOSA	9.886	498.1 -> 77.9	108238	25.24 µg/L	99
		498.1 -> 478.0	3232		
MeFOSAA	8.349	570.1 -> 419.0	51815	25.96 µg/L	100
		570.1 -> 483.0	9627		
PFBA	2.920	212.8 -> 168.9	225518	102.50 µg/L	100
PFBS	5.490	298.7 -> 79.9	55080	23.84 µg/L	96
		298.7 -> 98.8	21660		
PFDA	8.279	512.9 -> 469.0	259671	27.47 µg/L	98
		512.9 -> 219.0	47636		
PFDoDA	9.181	613.1 -> 569.0	286028	25.41 µg/L	99
		613.1 -> 319.0	45160		
PFDS	9.335	599.0 -> 79.9	43368	24.72 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	21410			
PFHpA	6.568	363.1 -> 319.0	312761	26.09	µg/L	99
		363.1 -> 169.0	55642			
PFHpS	7.900	449.0 -> 79.9	61338	23.89	µg/L	96
		449.0 -> 98.9	32594			
PFHxA	5.613	313.0 -> 269.0	277112	25.66	µg/L	100
		313.0 -> 118.9	9132			
PFHxS	7.318	398.7 -> 79.9	42642	22.27	µg/L	m 99
		398.7 -> 98.9	22212			
PFNA	7.785	463.0 -> 419.0	263119	25.24	µg/L	99
		463.0 -> 219.0	58954			
PFNS	8.899	548.8 -> 79.9	40889	24.65	µg/L	99
		548.8 -> 98.9	21483			
PFOA	7.240	413.0 -> 369.0	447883	25.68	µg/L	98
		413.0 -> 169.0	83062			
PFOS	8.419	498.9 -> 79.9	72394	23.96	µg/L	m 79
		498.9 -> 98.8	34015			
PFPeA	4.414	263.0 -> 219.0	552213	52.30	µg/L	100
PFPeS	6.582	349.1 -> 79.9	41030	22.77	µg/L	97
		349.1 -> 98.9	18930			
PFTeDA	9.950	713.1 -> 669.0	260239	25.34	µg/L	98
		713.1 -> 168.9	23524			
PFTrDA	9.579	663.0 -> 619.0	307599	26.45	µg/L	98
		663.0 -> 168.9	36745			
PFUnDA	8.749	563.1 -> 519.0	260701	24.78	µg/L	98
		563.1 -> 269.1	50537			
11CI-PF3OUdS	9.618	630.9 -> 450.9	365599	50.56	µg/L	100
		632.9 -> 452.9	111956			
9CI-PF3ONS	8.763	530.8 -> 351.0	479050	47.08	µg/L	99
		532.8 -> 353.0	145769			
ADONA	6.831	376.9 -> 250.9	957641	47.85	µg/L	100
		376.9 -> 84.8	248824			
HFPO-DA	5.978	284.9 -> 168.9	145804	51.38	µg/L	96
		284.9 -> 184.9	16711			
3:3FTCA	3.861	241.0 -> 177.0	72325	130.27	µg/L	98
		241.0 -> 117.0	6678			
5:3FTCA	6.296	341.0 -> 237.1	1143229	646.92	µg/L	99
		341.0 -> 217.0	805552			
7:3FTCA	7.774	441.0 -> 316.9	625787	642.63	µg/L	100
		441.0 -> 336.9	1441981			
EtFOSA	11.424	526.0 -> 219.0	167372	49.95	µg/L	99
		526.0 -> 169.0	232223			
EtFOSE	11.357	630.0 -> 58.9	363905	136.17	µg/L	100
MeFOSA	11.153	511.9 -> 219.0	138711	49.26	µg/L	m 75
		511.9 -> 169.0	200314			
MeFOSE	11.073	616.1 -> 58.9	290490	127.08	µg/L	100
PFDoDS	10.089	699.1 -> 79.9	35037	25.96	µg/L	93
		699.1 -> 98.8	19696			
NFDHA	5.491	295.0 -> 201.0	33275	47.82	µg/L	100
		295.0 -> 84.9	8258			
PFMBA	4.828	279.0 -> 85.1	309734	52.34	µg/L	100
PFMPA	3.540	229.0 -> 84.9	300542	52.07	µg/L	100
PFEESA	6.034	314.8 -> 134.9	396207	45.55	µg/L	100
		314.8 -> 82.9	13858			

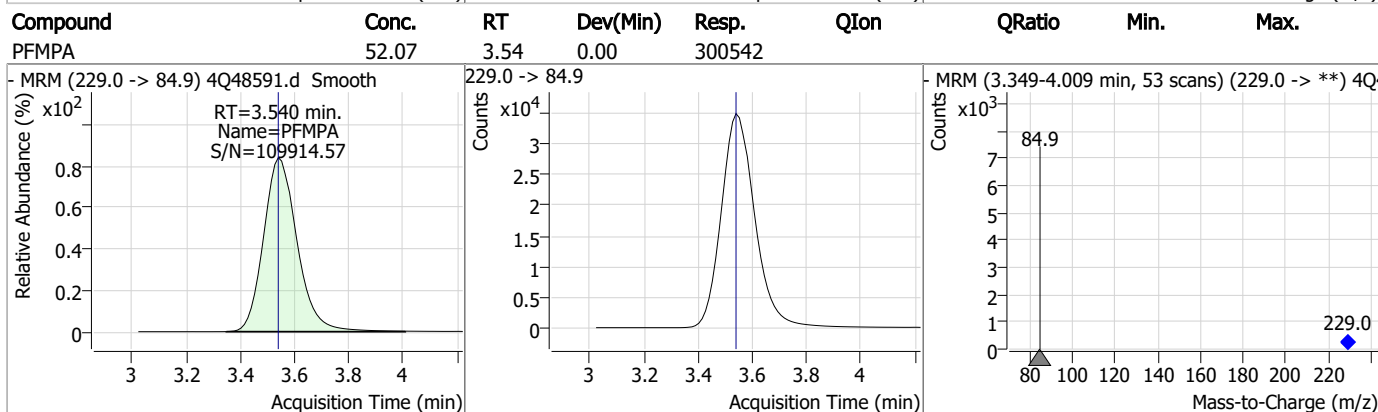
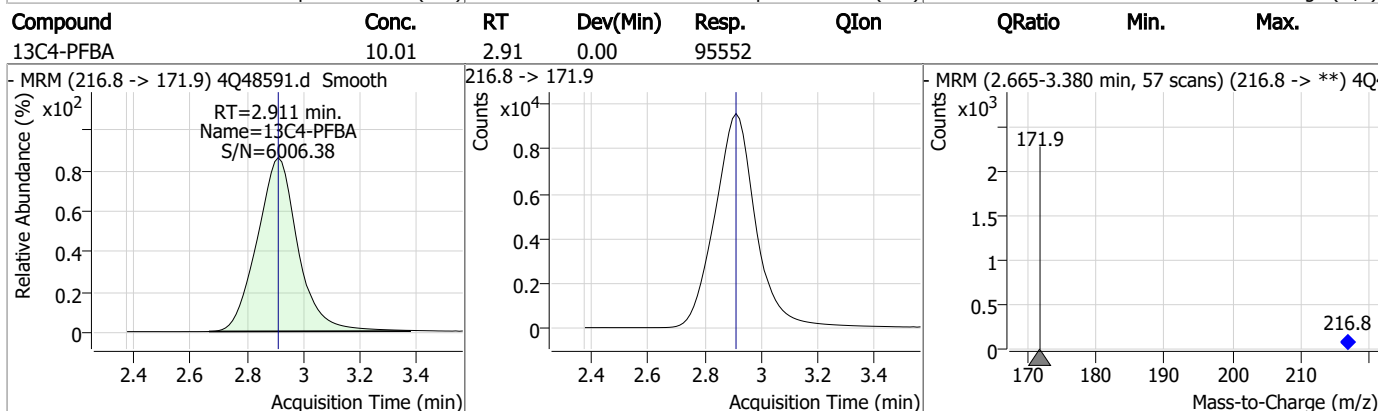
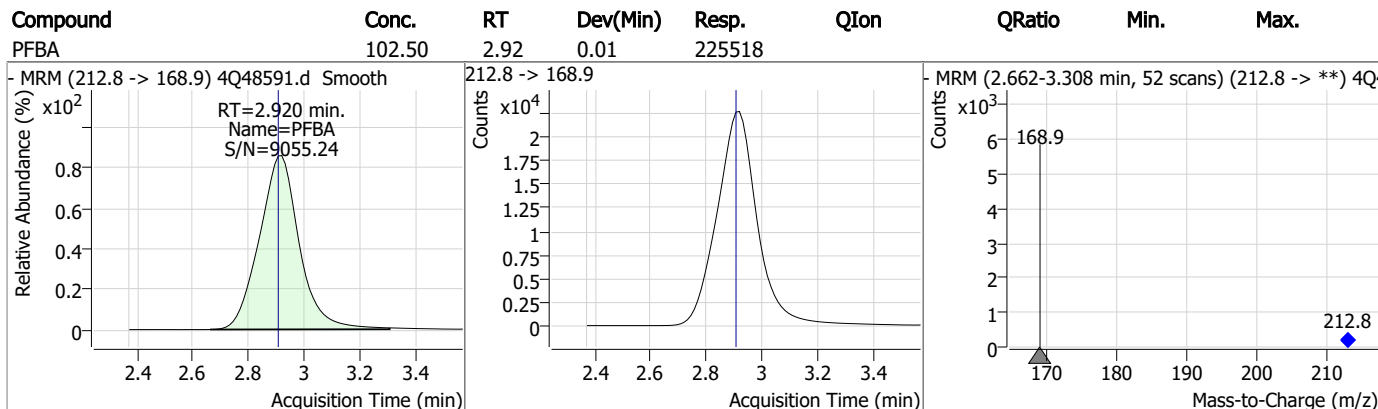
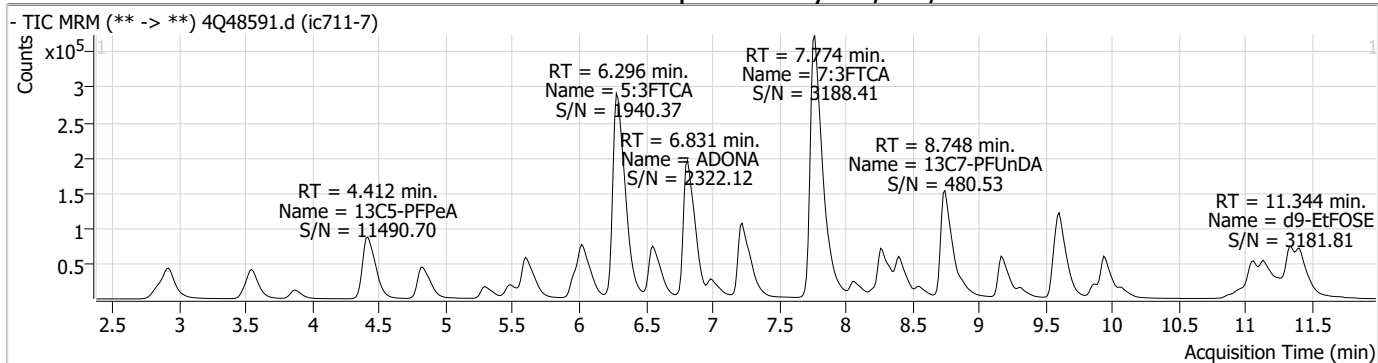
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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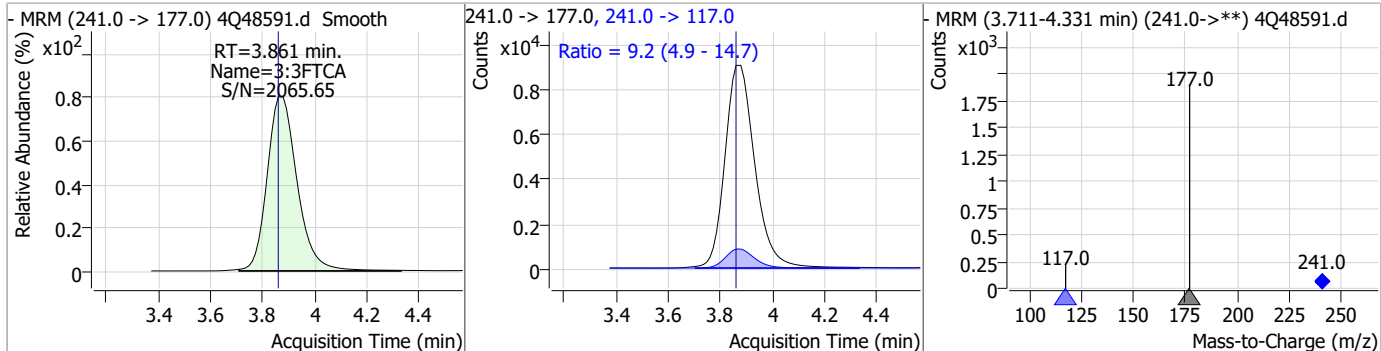
7.7.8
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Perfluorinated Compounds by LC/MS/MS

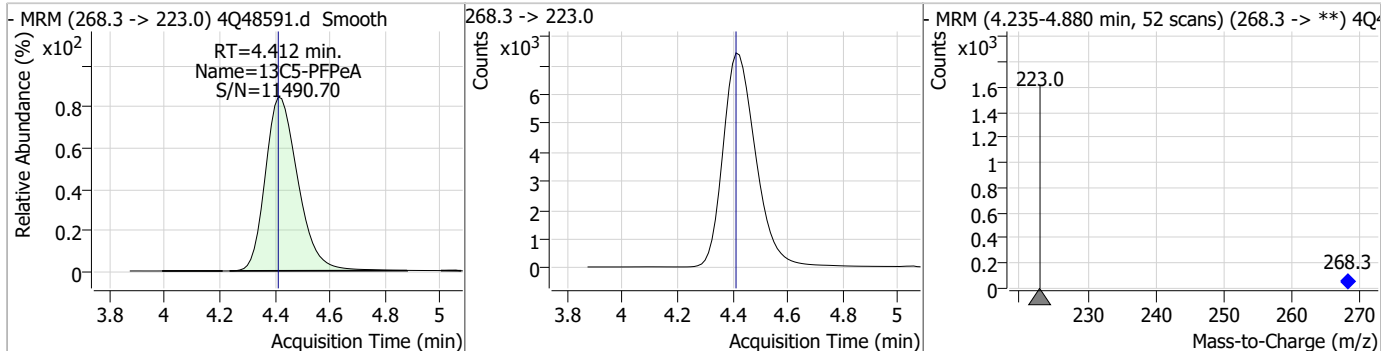


Perfluorinated Compounds by LC/MS/MS

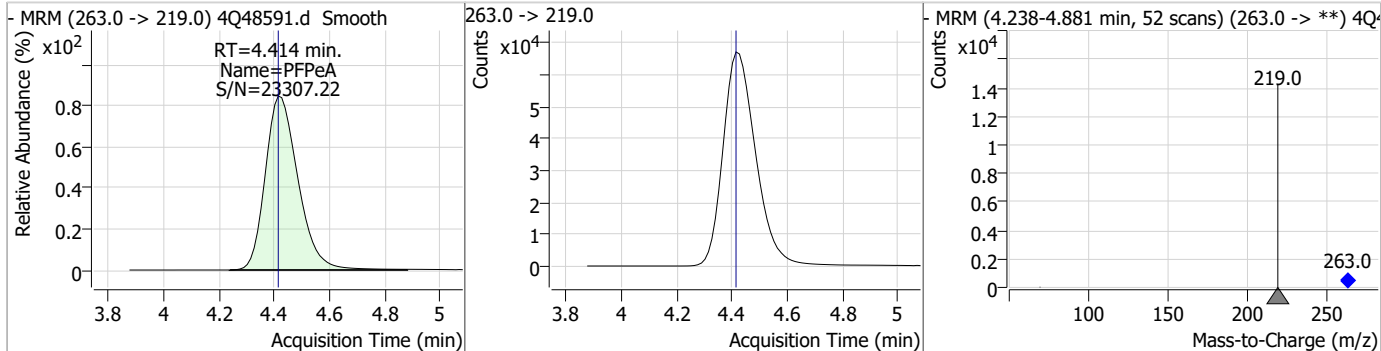
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	130.27	3.86	0.00	72325	241.0 -> 117.0	9.2	4.9	14.7



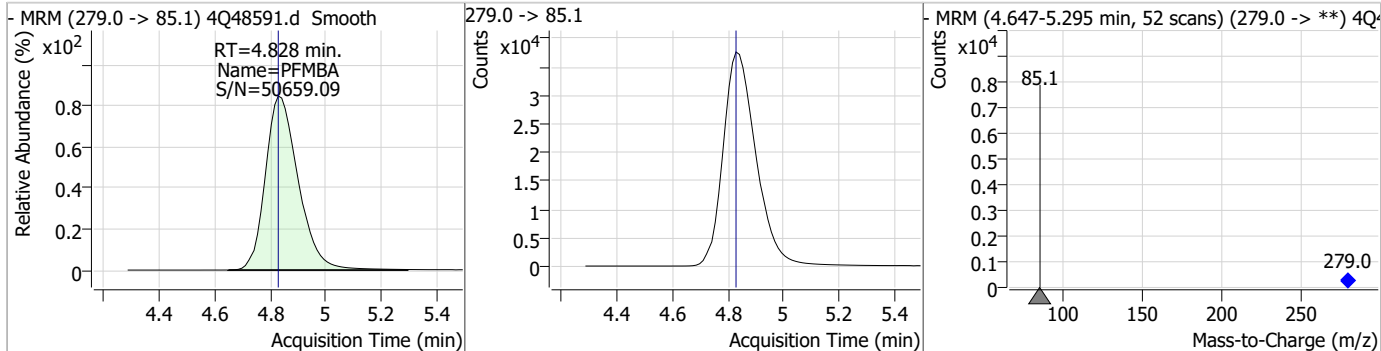
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.91	4.41	0.00	60760				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	52.30	4.41	0.00	552213				

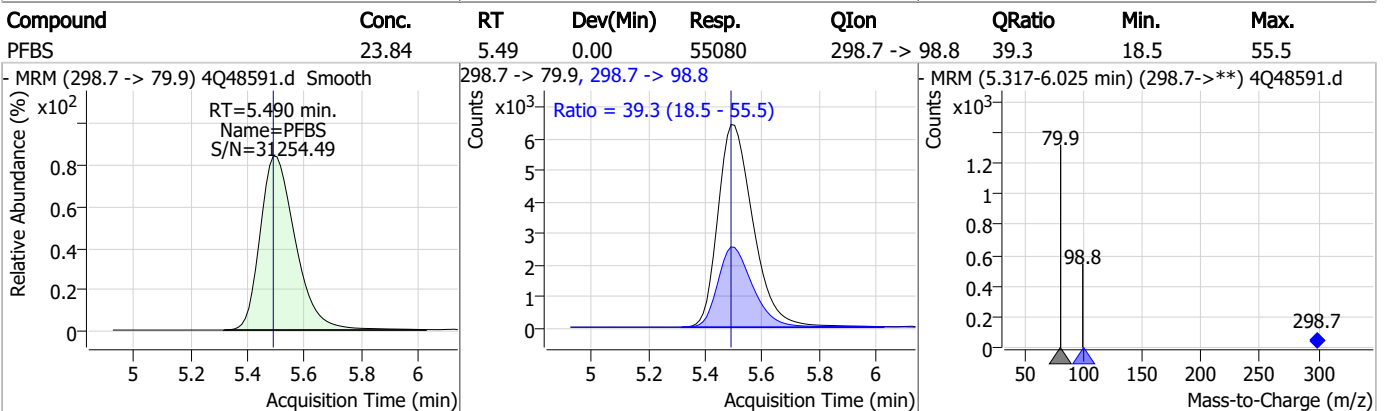
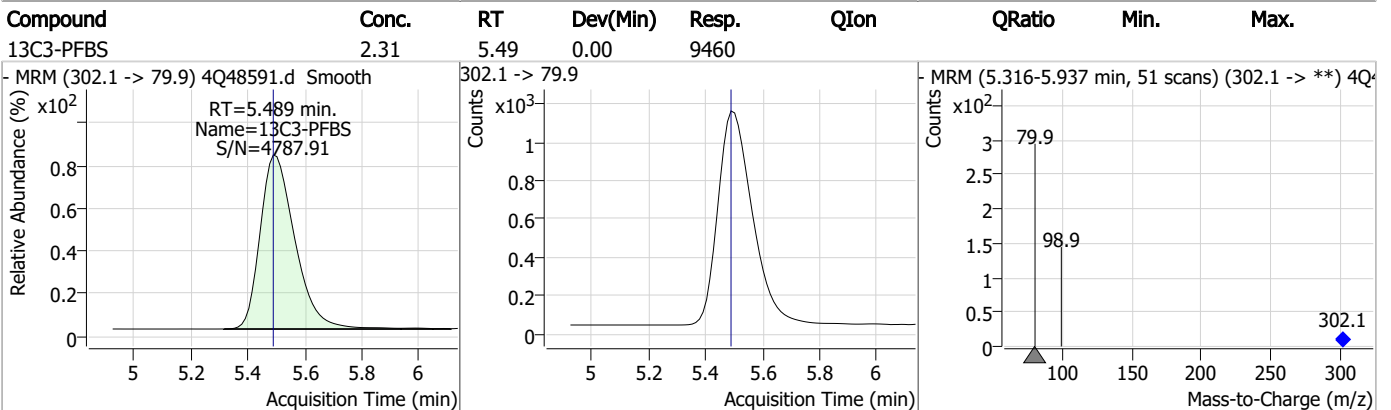
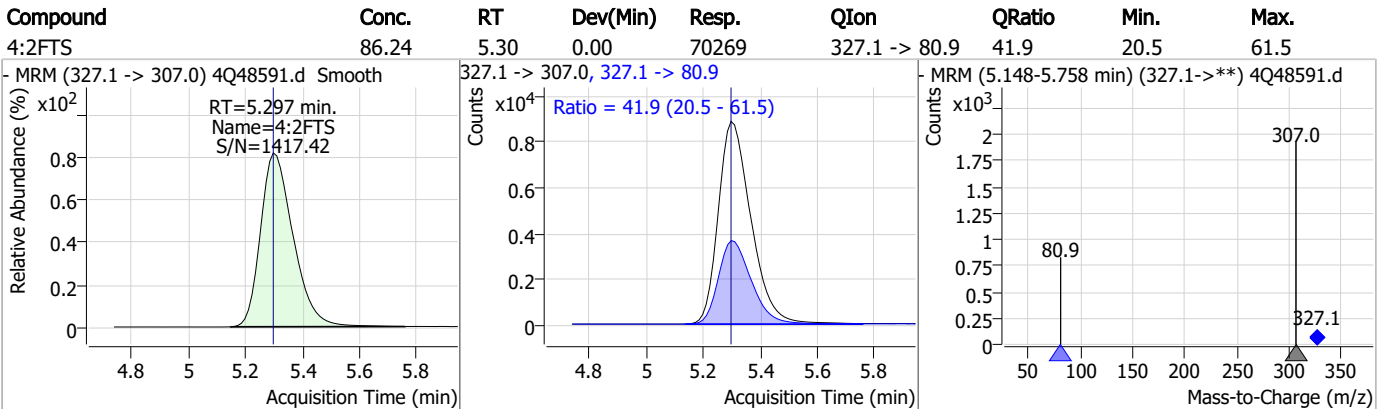
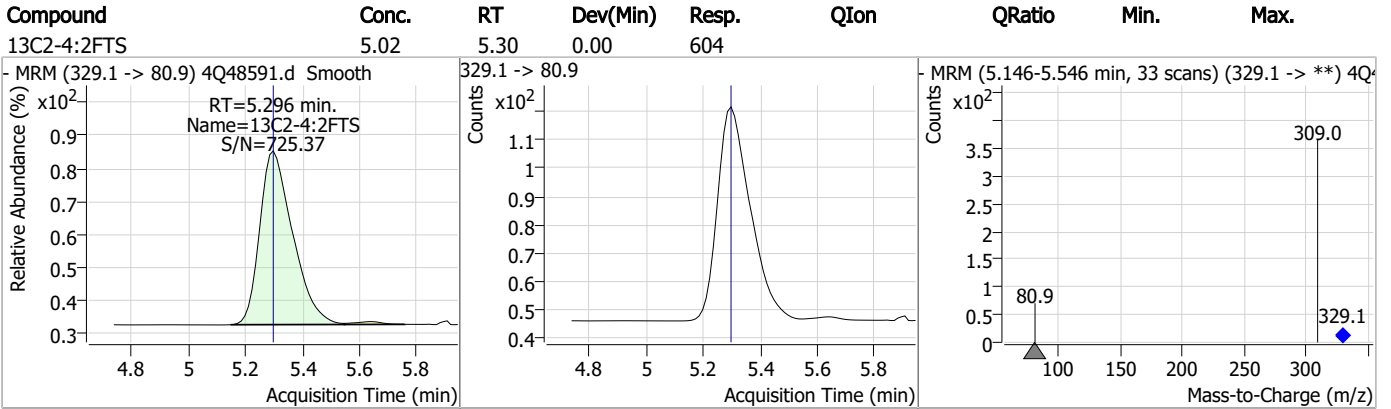


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	52.34	4.83	0.00	309734				



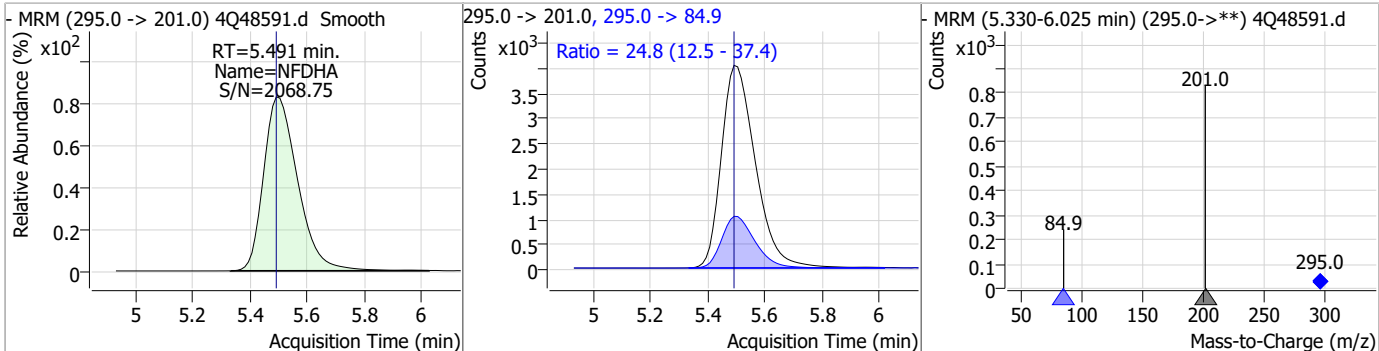
7.7.8
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Perfluorinated Compounds by LC/MS/MS

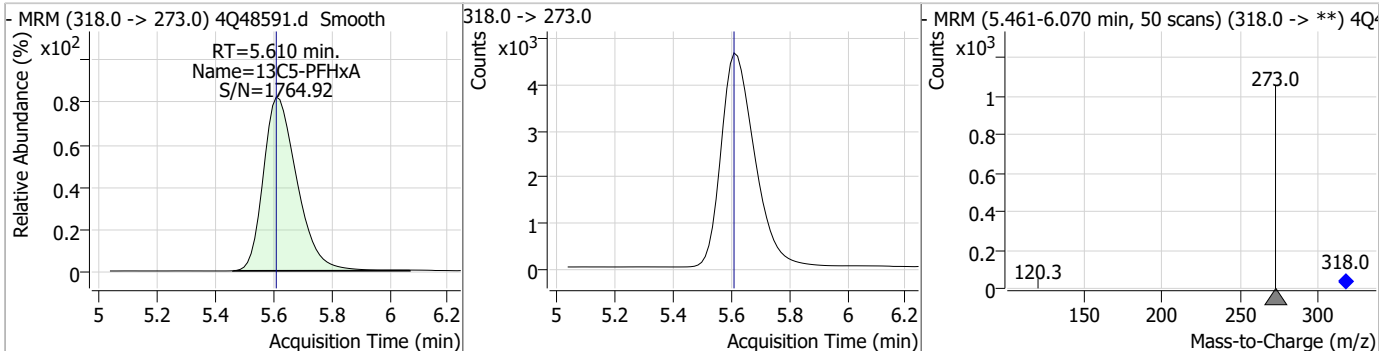


Perfluorinated Compounds by LC/MS/MS

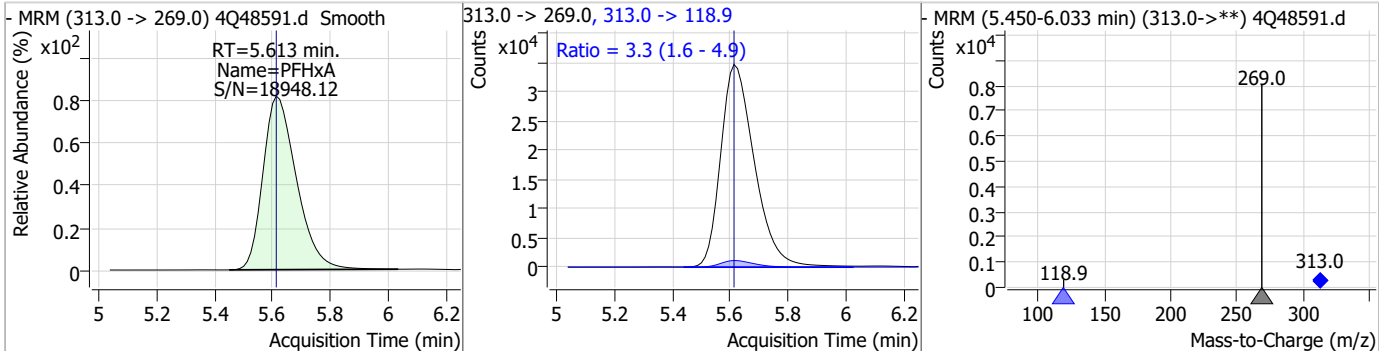
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	47.82	5.49	0.00	33275	295.0 -> 84.9	24.8	12.5	37.4



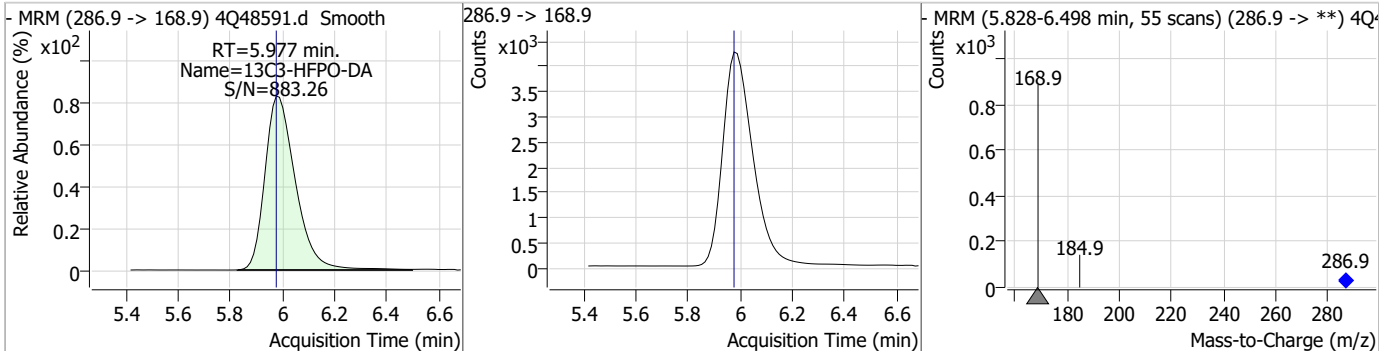
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.52	5.61	0.00	37419				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	25.66	5.61	0.00	277112	313.0 -> 118.9	3.3	1.6	4.9

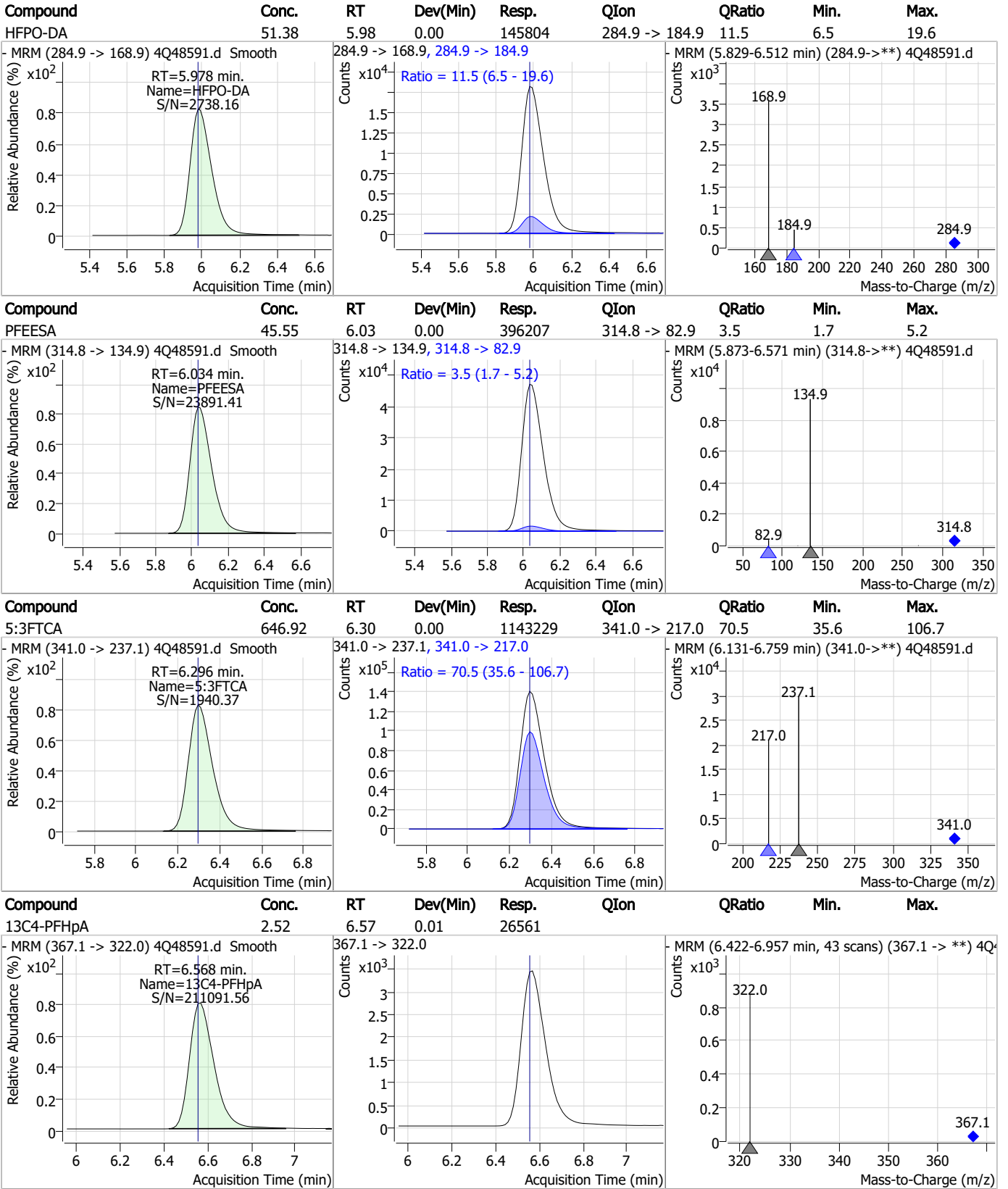


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.22	5.98	0.00	34489				



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Perfluorinated Compounds by LC/MS/MS

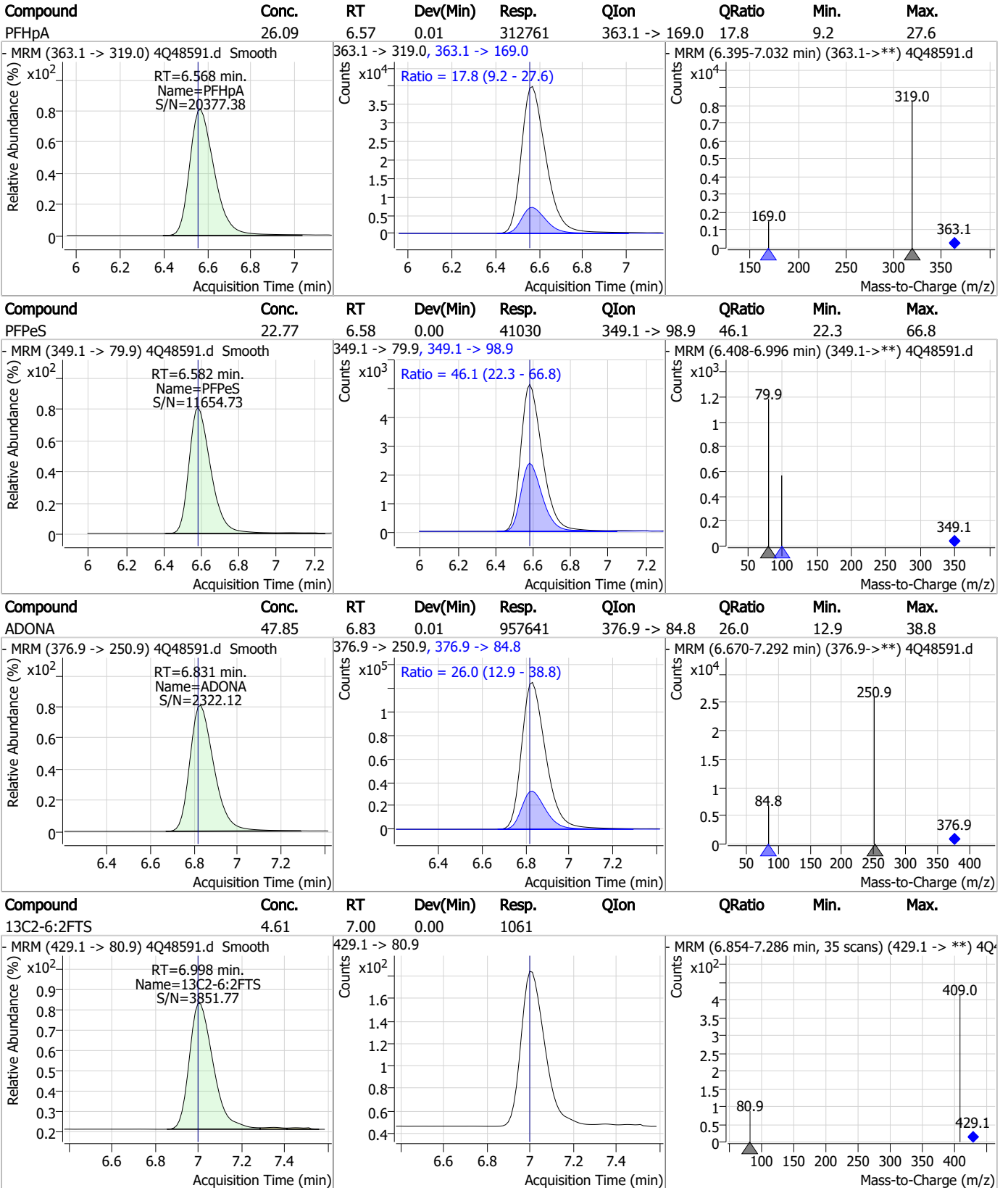


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Perfluorinated Compounds by LC/MS/MS

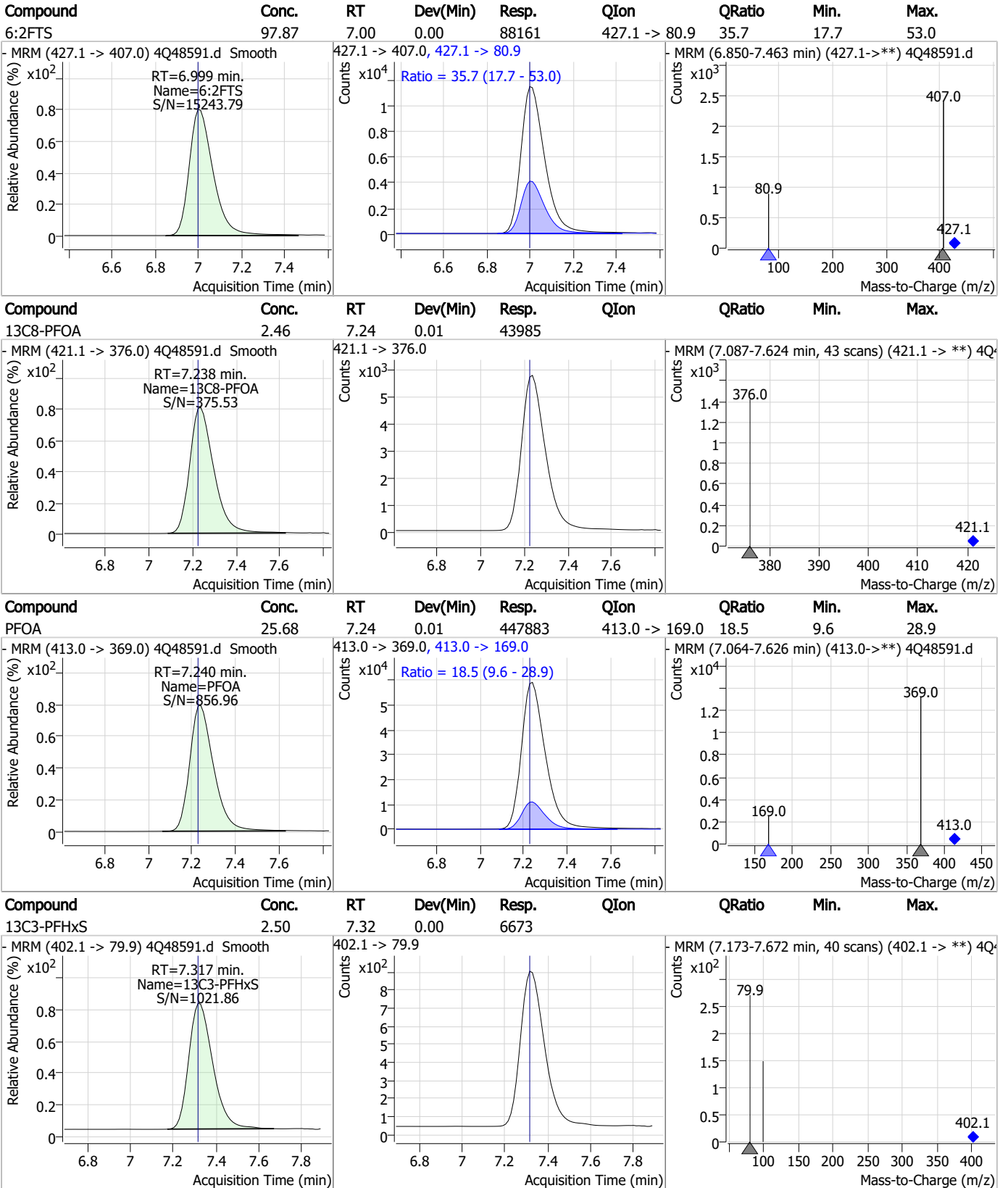


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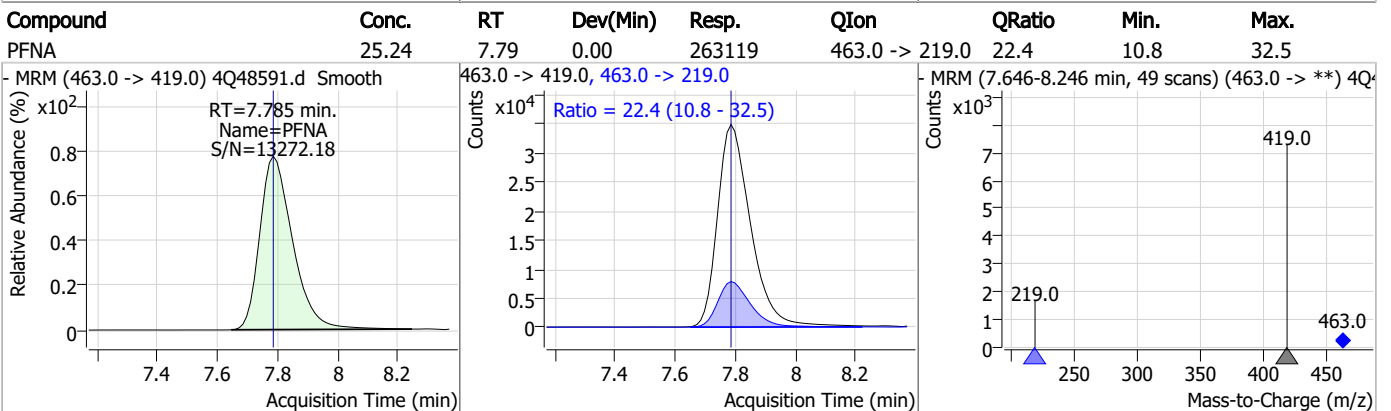
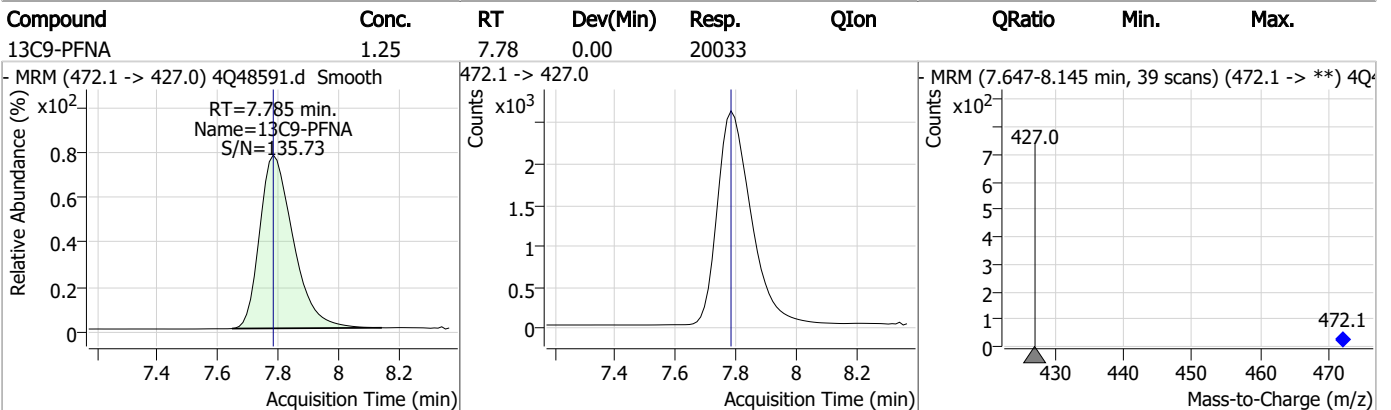
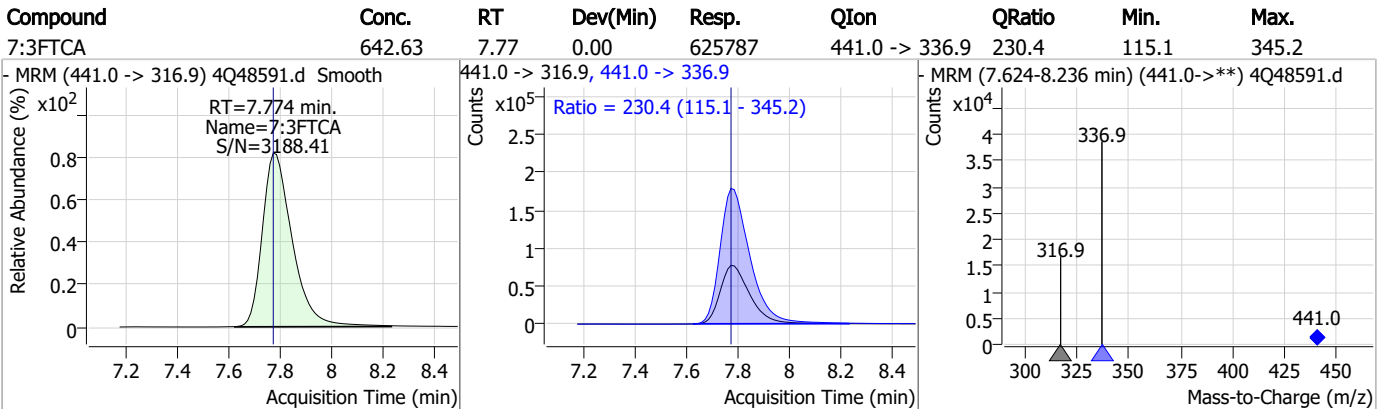
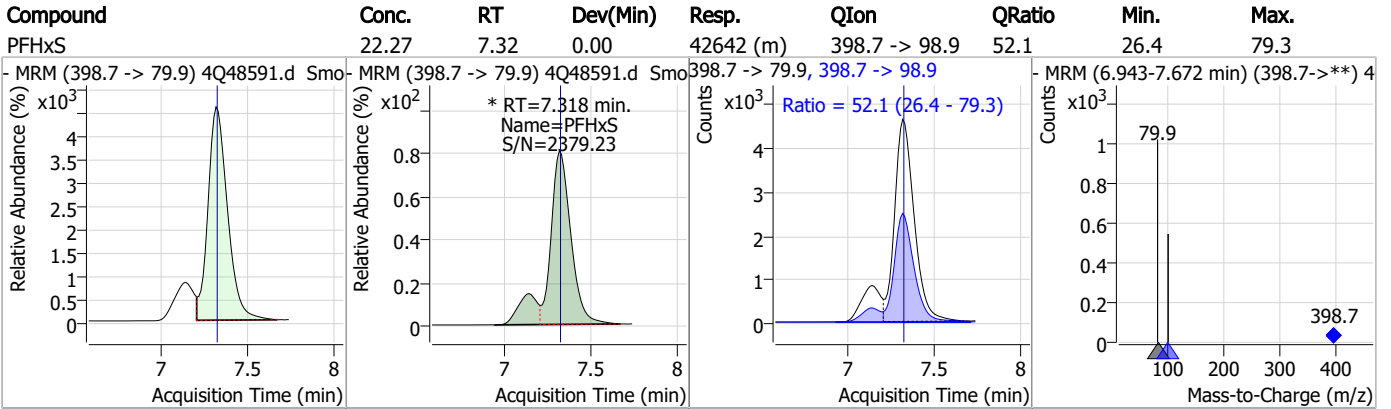


Perfluorinated Compounds by LC/MS/MS



7.7.8
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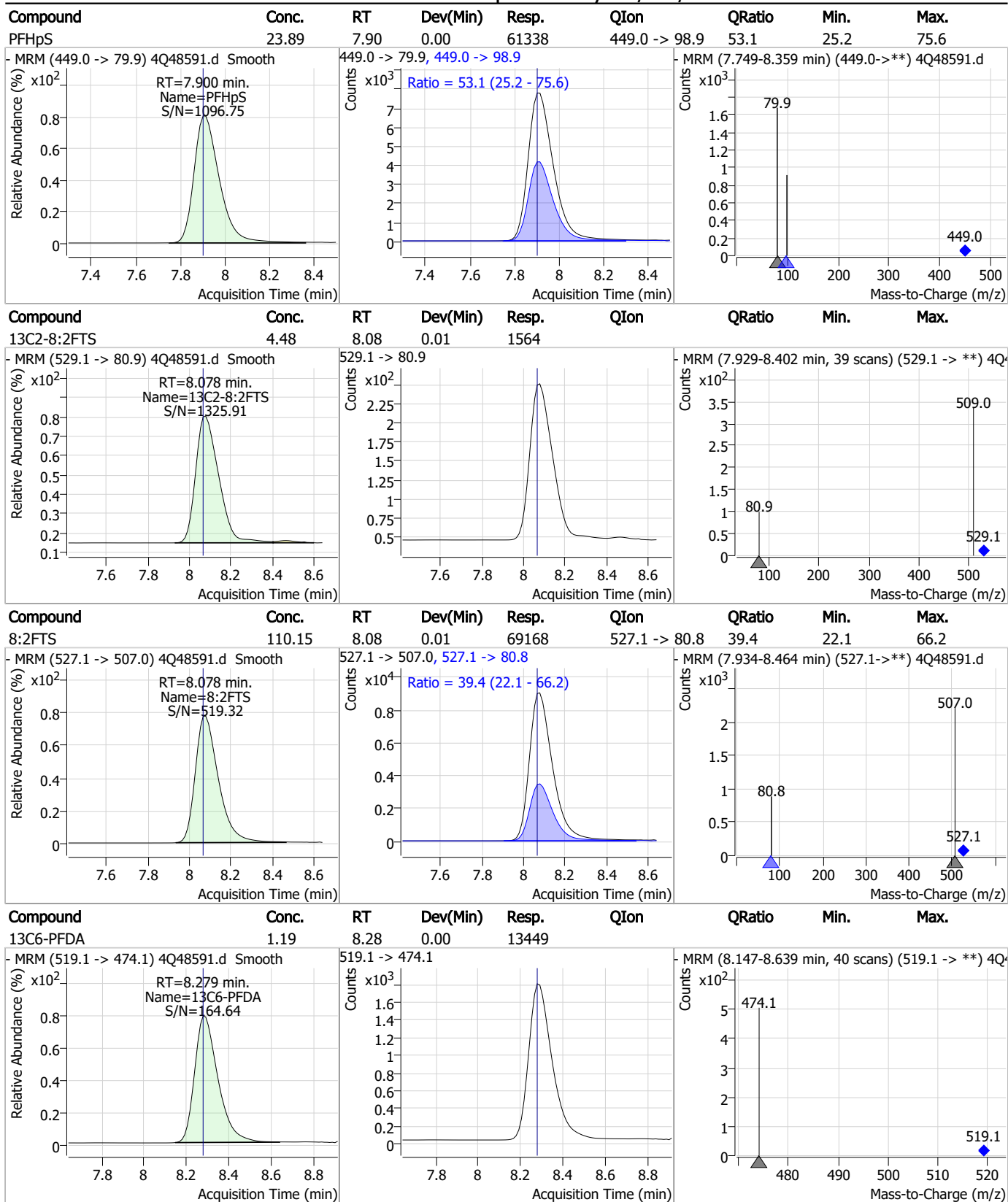
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



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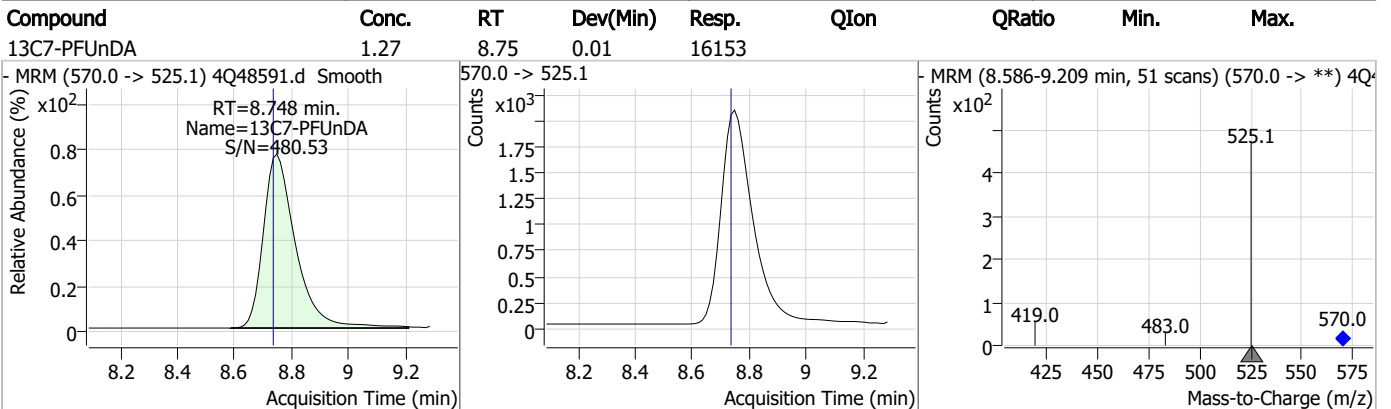
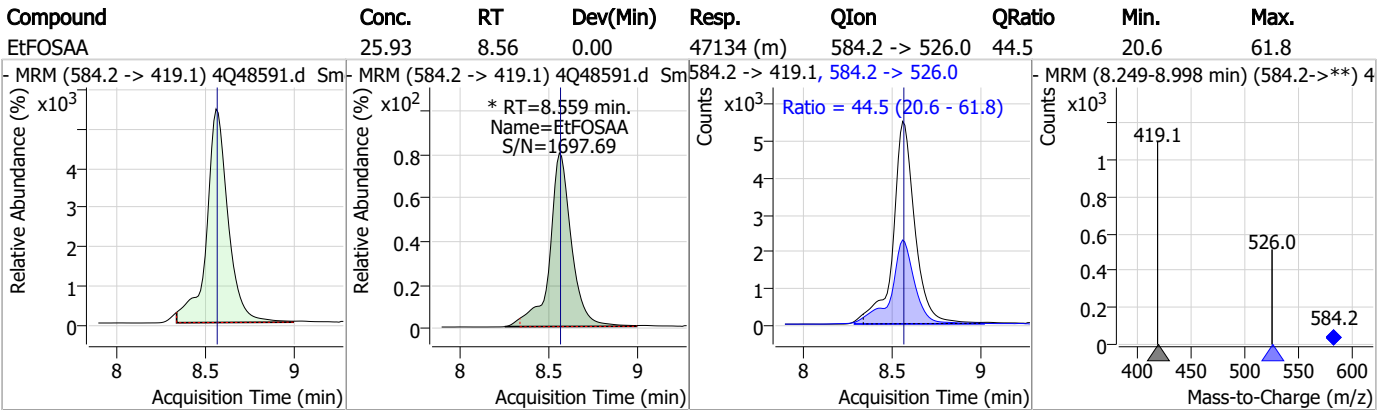
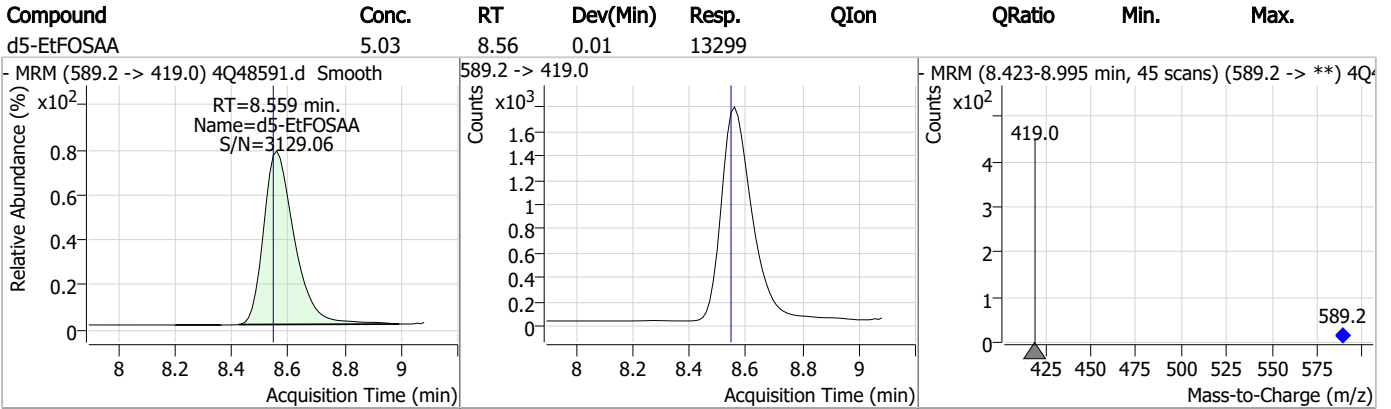
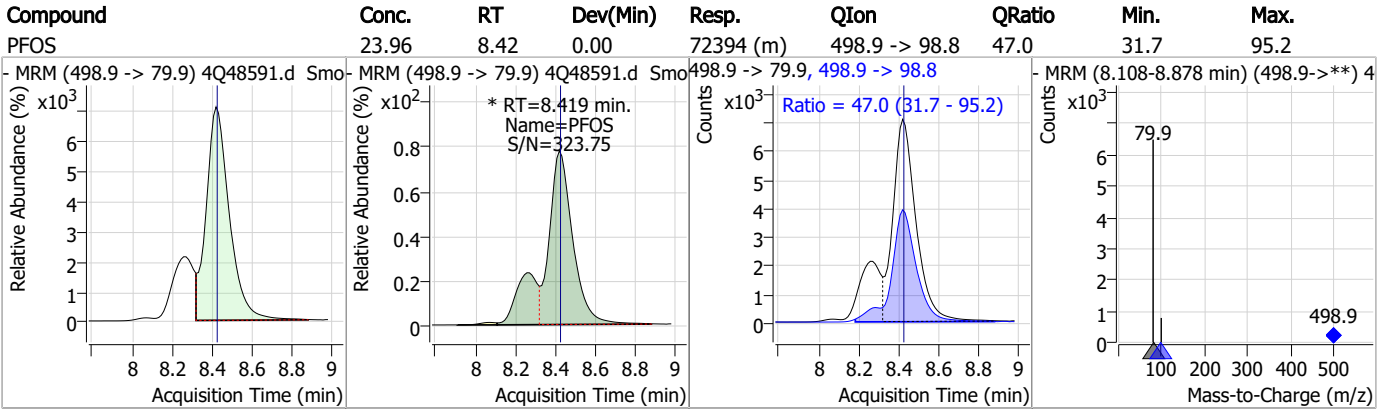
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	27.47	8.28	0.00	259671	512.9 -> 219.0	18.3	9.7	29.1
d3-MeFOSAA	4.96	8.35	0.00	15969				
MeFOSAA	25.96	8.35	0.00	51815	570.1 -> 483.0	18.6	9.4	28.1
13C8-PFOS	2.44	8.42	0.00	8493				

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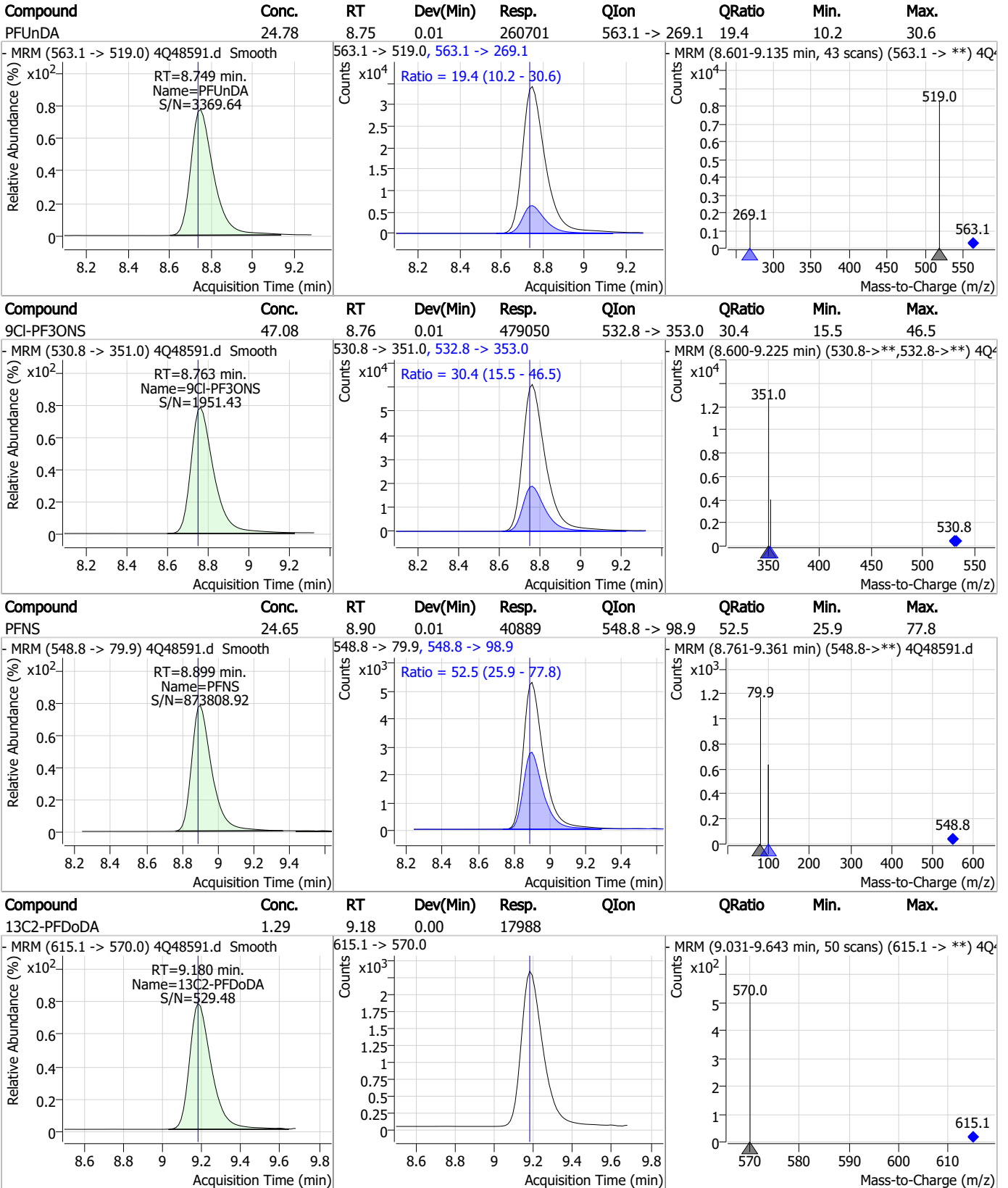
Perfluorinated Compounds by LC/MS/MS



7.7.8
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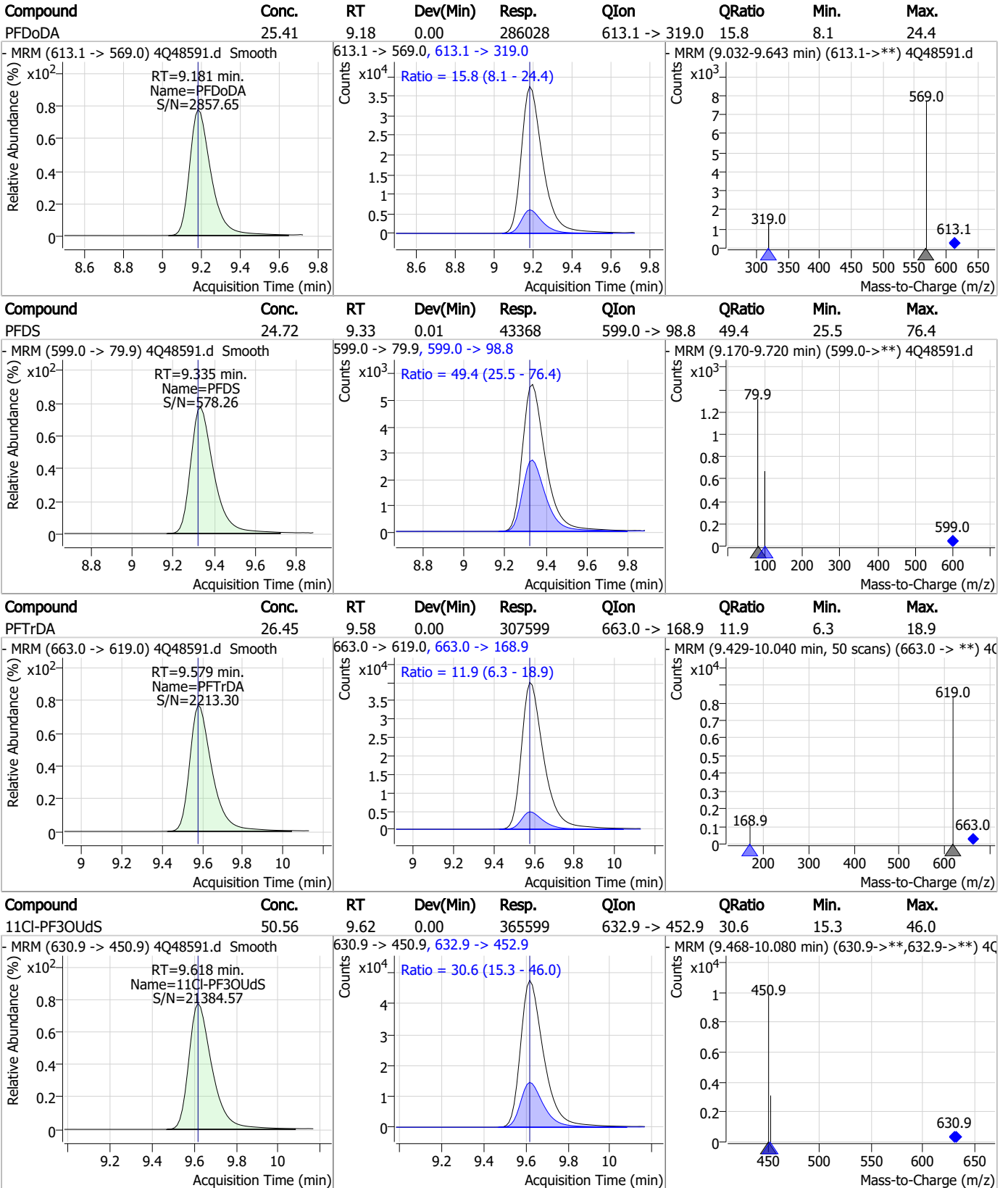
Perfluorinated Compounds by LC/MS/MS



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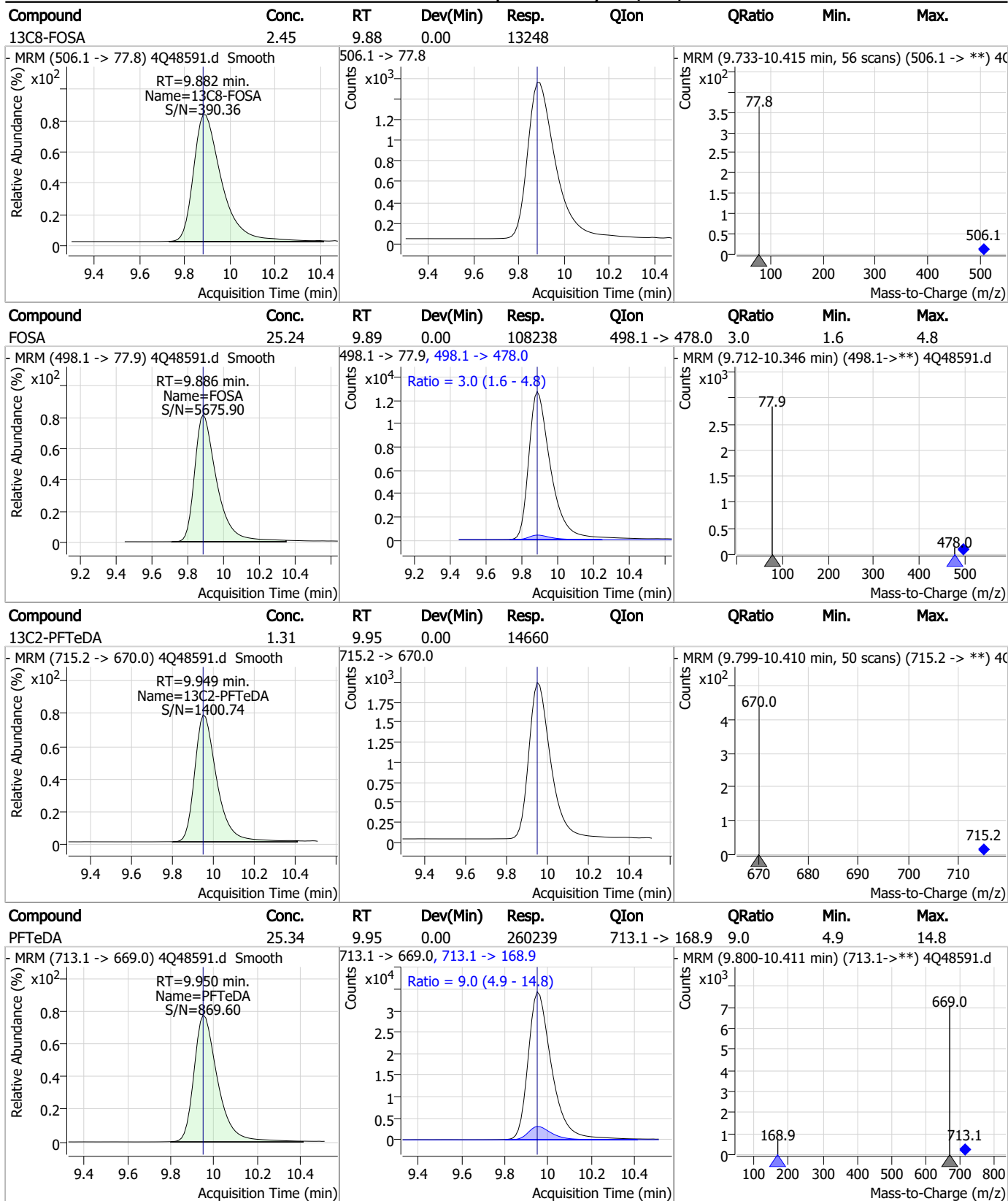
Perfluorinated Compounds by LC/MS/MS



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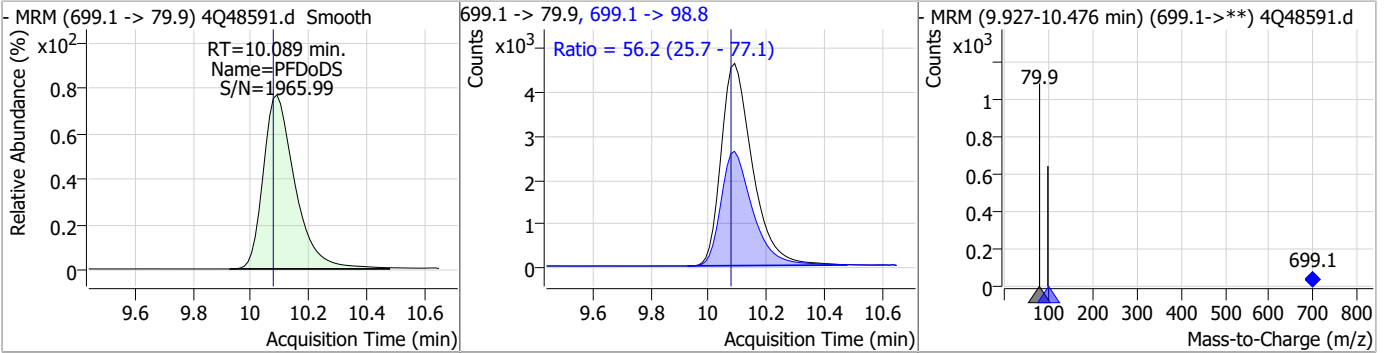
Perfluorinated Compounds by LC/MS/MS



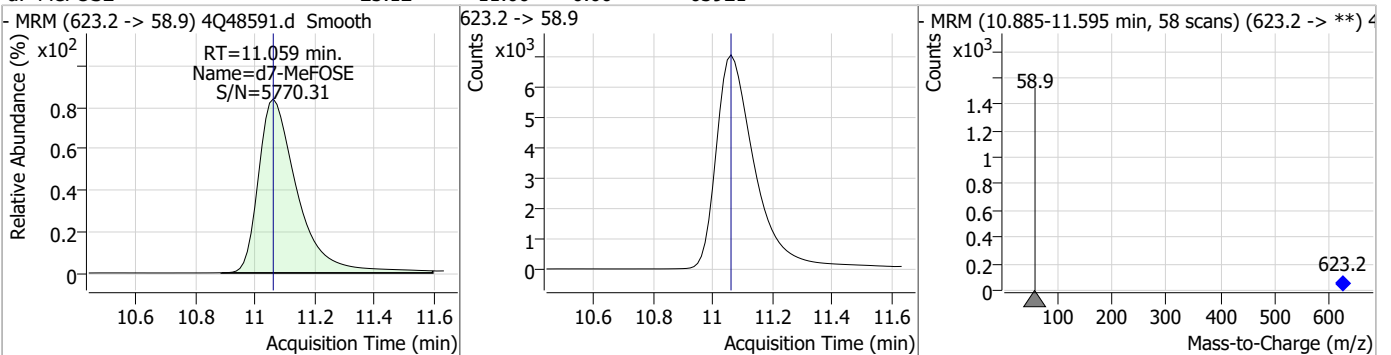
7.7.8
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Perfluorinated Compounds by LC/MS/MS

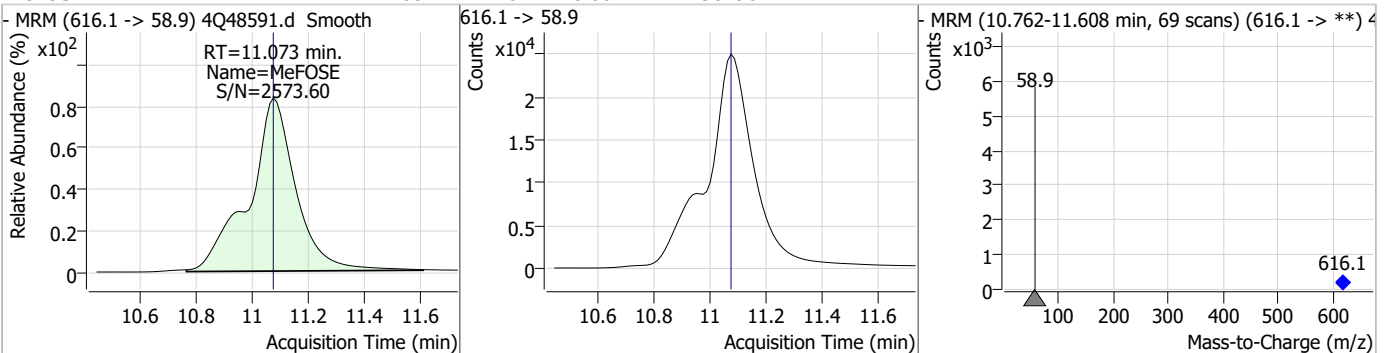
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	25.96	10.09	0.01	35037	699.1 -> 98.8	56.2	25.7	77.1



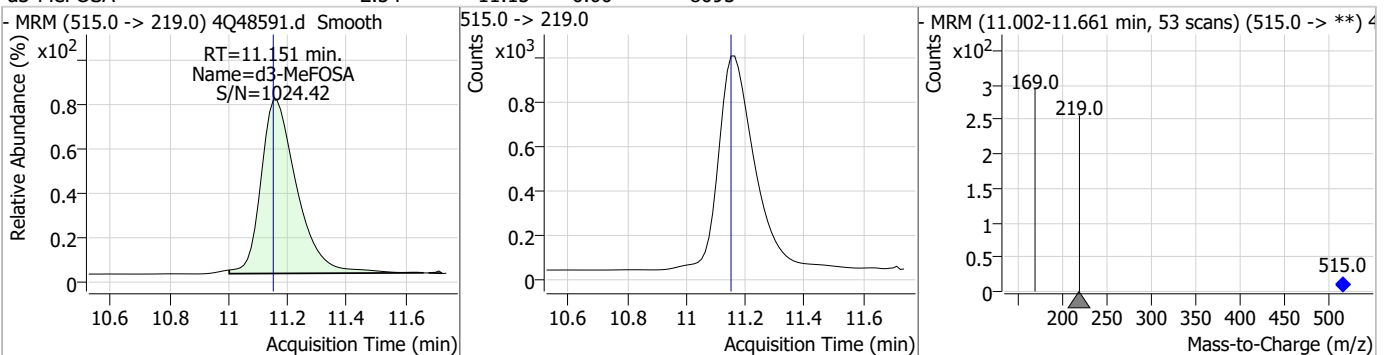
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.12	11.06	0.00	63921				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	127.08	11.07	0.00	290490				

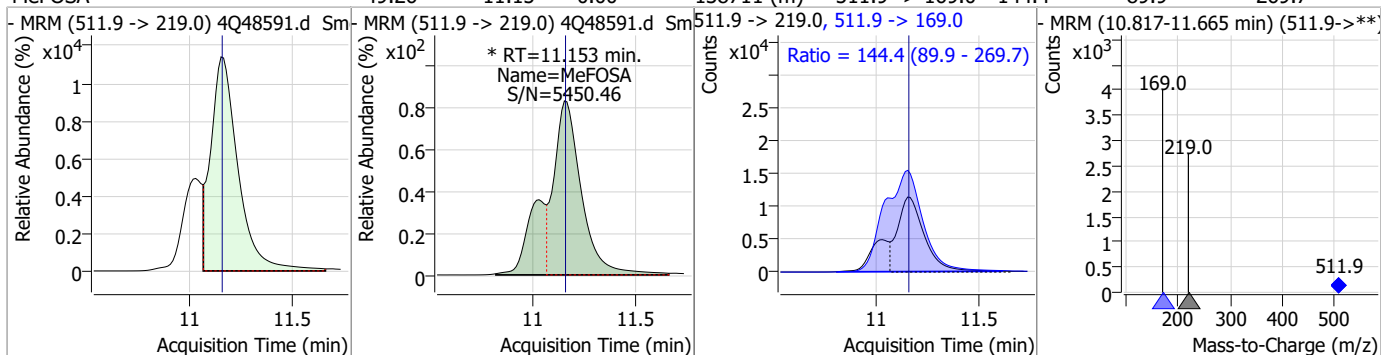


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.54	11.15	0.00	8095				

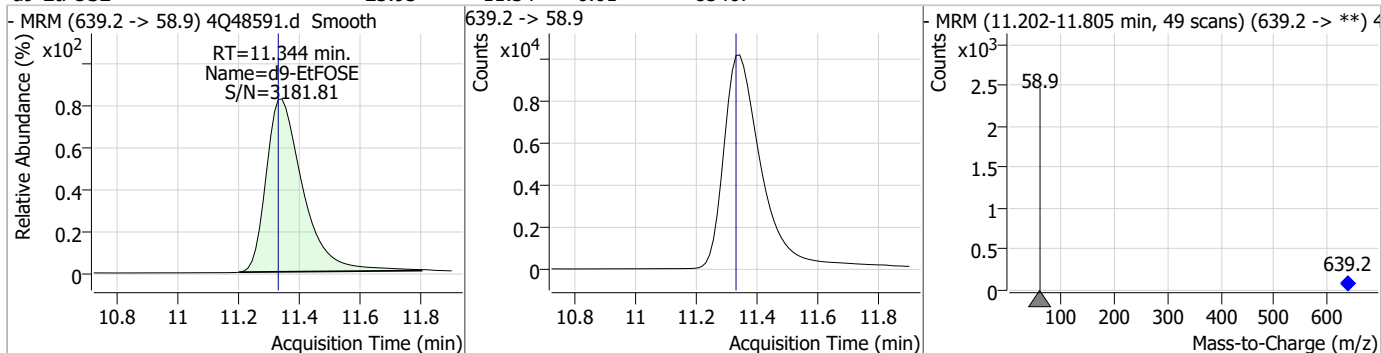


Perfluorinated Compounds by LC/MS/MS

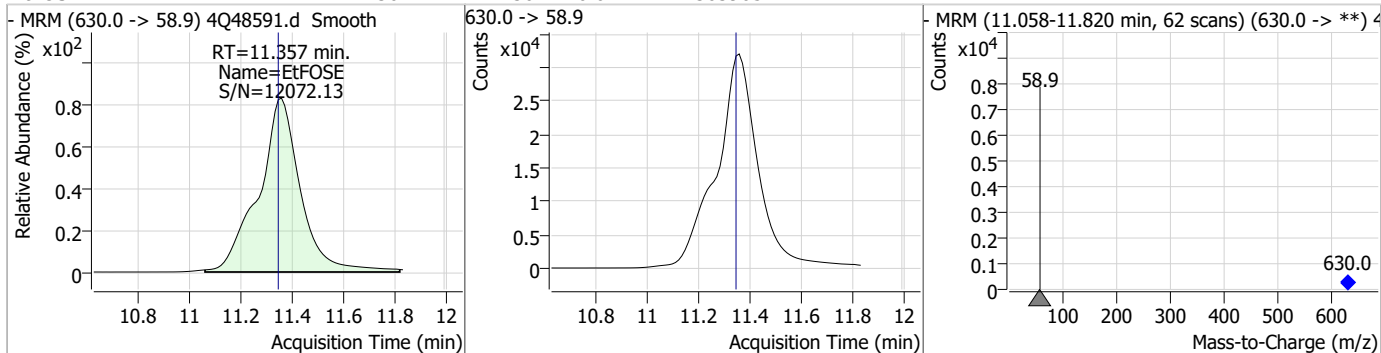
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	49.26	11.15	0.00	138711 (m)	511.9 -> 169.0	144.4	89.9	269.7



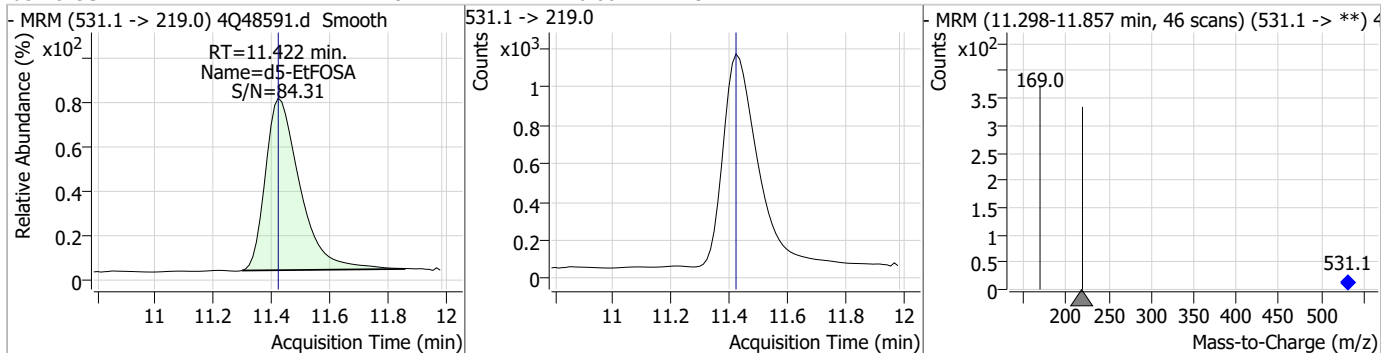
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	23.93	11.34	0.01	85407				



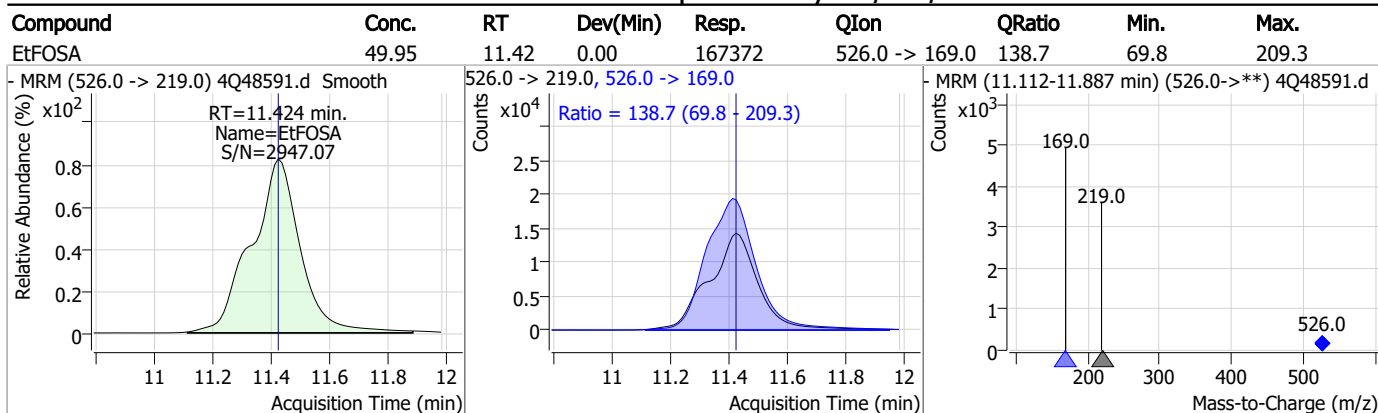
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	136.17	11.36	0.01	363905				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.49	11.42	0.00	9114				



Perfluorinated Compounds by LC/MS/MS



7.7.8
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Manual Integration Approval Summary

Sample Number: S4Q711-IC711 Method: EPA DRAFT 1633
Lab FileID: 4Q48591.D Analyst approved: 08/09/23 11:54 Anna Ludwig
Injection Time: 08/07/23 17:58 Supervisor approved: 08/09/23 14:46 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.42	Split peak
EtFOSAA	2991-50-6		8.56	Split peak
MeFOSA	31506-32-8		11.15	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48592.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/7/2023 6:13:07 PM
 Sample Name : ic711-8
 Vial : P1-A9
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q711.batch.bin
 Sample Information : OP97964,S4Q711,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.936	216.8 -> 171.9	83745	10.00 µg/L	0.025
M5-PFPeA	4.425	268.3 -> 223.0	55674	5.00 µg/L	0.012
M5-PFHxA	5.622	318.0 -> 273.0	34622	2.50 µg/L	0.012
M4-PFHpA	6.568	367.1 -> 322.0	24894	2.50 µg/L	0.012
M8-PFOA	7.238	421.1 -> 376.0	39239	2.50 µg/L	0.012
M9-PFNA	7.785	472.1 -> 427.0	18926	1.25 µg/L	0.000
M6-PFDA	8.279	519.1 -> 474.1	12840	1.25 µg/L	0.000
M7-PFUnDA	8.748	570.0 -> 525.1	13977	1.25 µg/L	0.012
M2-PFDoDA	9.180	615.1 -> 570.0	17432	1.25 µg/L	0.000
M2-PFTeDA	9.949	715.2 -> 670.0	14075	1.25 µg/L	0.000
M8-FOSA	9.882	506.1 -> 77.8	11802	2.50 µg/L	0.000
M3-PFBS	5.502	302.1 -> 79.9	8876	2.50 µg/L	0.013
M3-PFHxS	7.317	402.1 -> 79.9	5985	2.50 µg/L	0.000
M8-PFOS	8.417	507.1 -> 79.9	7921	2.50 µg/L	0.000
M2-4:2FTS	5.309	329.1 -> 80.9	529	5.00 µg/L	0.012
M2-6:2FTS	7.011	429.1 -> 80.9	1131	5.00 µg/L	0.012
M2-8:2FTS	8.078	529.1 -> 80.9	1590	5.00 µg/L	0.012
M3-MeFOSAA	8.348	573.2 -> 419.0	15161	5.00 µg/L	0.000
M3-HFPO-DA	5.989	286.9 -> 168.9	32253	10.00 µg/L	0.012
M5-EtFOSAA	8.559	589.2 -> 419.0	12886	5.00 µg/L	0.012
M7-MeFOSE	11.059	623.2 -> 58.9	56992	25.00 µg/L	0.000
M9-EtFOSE	11.331	639.2 -> 58.9	80627	25.00 µg/L	0.000
M5-EtFOSA	11.422	531.1 -> 219.0	8026	2.50 µg/L	0.000
M3-MeFOSA	11.151	515.0 -> 219.0	7985	2.50 µg/L	0.000
13C4-PFOS	8.418	502.8 -> 79.9	7774	2.50 µg/L	0.000
13C3-PFBA	2.941	216.0 -> 172.0	48774	5.00 µg/L	0.037
18O2-PFHxS	7.316	403.0 -> 83.9	4319	2.50 µg/L	0.000
13C4-PFOA	7.239	417.1 -> 372.0	50670	2.50 µg/L	0.012
13C2-PFDA	8.279	515.1 -> 470.1	15771	1.25 µg/L	0.000
13C5-PFNA	7.785	468.0 -> 423.0	19906	1.25 µg/L	0.000
13C2-PFHxA	5.623	315.1 -> 270.0	34520	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.309	329.1 -> 80.9	529	4.90 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.1%		
13C2-6:2FTS	7.011	429.1 -> 80.9	1131	5.48 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.7%		
13C2-8:2FTS	8.078	529.1 -> 80.9	1590	5.08 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C2-PFDoDA	9.180	615.1 -> 570.0	17432	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.2%		
13C2-PFTeDA	9.949	715.2 -> 670.0	14075	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.8%		
13C3-PFBS	5.502	302.1 -> 79.9	8876	2.41 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.6%		
13C3-PFHxS	7.317	402.1 -> 79.9	5985	2.50 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C4-PFBA	2.936	216.8 -> 171.9	83745	10.05 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C4-PFHpA	6.568	367.1 -> 322.0	24894	2.42 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.8%		
13C5-PFHxA	5.622	318.0 -> 273.0	34622	2.39 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.7%		
13C5-PFPeA	4.425	268.3 -> 223.0	55674	4.61 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.3%		
13C6-PFDA	8.279	519.1 -> 474.1	12840	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.1%		
13C7-PFUnDA	8.748	570.0 -> 525.1	13977	1.14 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.0%		
13C8-FOSA	9.882	506.1 -> 77.8	11802	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.4%		
13C8-PFOA	7.238	421.1 -> 376.0	39239	2.35 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.1%		
13C8-PFOS	8.417	507.1 -> 79.9	7921	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.5%		
13C9-PFNA	7.785	472.1 -> 427.0	18926	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.4%		
d3-MeFOSAA	8.348	573.2 -> 419.0	15161	5.25 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.1%		
13C3-HFPO-DA	5.989	286.9 -> 168.9	32253	9.81 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 98.1%		
d3-MeFOSA	11.151	515.0 -> 219.0	7985	2.80 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.8%		
d5-EtFOSAA	8.559	589.2 -> 419.0	12886	5.43 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.6%		
d7-MeFOSE	11.059	623.2 -> 58.9	56992	24.96 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.8%		
d9-EtFOSE	11.331	639.2 -> 58.9	80627	25.18 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.7%		
d5-EtFOSA	11.422	531.1 -> 219.0	8026	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.6%		
Target Compounds					QValue
4:2FTS	5.309	327.1 -> 307.0 327.1 -> 80.9	169407 69245	237.44 µg/L	100
6:2FTS	7.011	427.1 -> 407.0 427.1 -> 80.9	206915 74390	215.61 µg/L	99
8:2FTS	8.078	527.1 -> 507.0 527.1 -> 80.8	171124 62475	268.06 µg/L	88
EtFOSAA	8.559	584.2 -> 419.1 584.2 -> 526.0	114896 50655	65.25 µg/L	m 95
FOSA	9.886	498.1 -> 77.9 498.1 -> 478.0	246205 7652	64.46 µg/L	100
MeFOSAA	8.349	570.1 -> 419.0 570.1 -> 483.0	127248 21461	67.15 µg/L	96
PFBA	2.945	212.8 -> 168.9	508592	263.75 µg/L	100
PFBS	5.503	298.7 -> 79.9 298.7 -> 98.8	128607 48339	59.32 µg/L	99
PFDA	8.279	512.9 -> 469.0 512.9 -> 219.0	583979 109809	64.71 µg/L	99
PFDoDA	9.181	613.1 -> 569.0 613.1 -> 319.0	689360 108191	63.21 µg/L	99
PFDS	9.335	599.0 -> 79.9	105532	64.50 µg/L	97

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.568	599.0 -> 98.8	51585	65.51	µg/L	99
		363.1 -> 319.0	735927			
PFHpS	7.900	363.1 -> 169.0	130570	61.59	µg/L	98
		449.0 -> 79.9	147457			
PFHxA	5.625	449.0 -> 98.9	76147	66.87	µg/L	99
		313.0 -> 269.0	668094			
PFHxS	7.318	313.0 -> 118.9	19926	60.75	µg/L	m
		398.7 -> 79.9	104345			
PFNA	7.785	398.7 -> 98.9	52348	63.48	µg/L	99
		463.0 -> 419.0	625292			
PFNS	8.899	463.0 -> 219.0	139003	62.35	µg/L	100
		548.8 -> 79.9	96460			
PFOA	7.240	548.8 -> 98.9	49794	67.85	µg/L	100
		413.0 -> 369.0	1055733			
PFOS	8.419	413.0 -> 169.0	202783	58.90	µg/L	m
		498.9 -> 79.9	166017			
PFPeA	4.427	498.9 -> 98.8	79575	132.75	µg/L	100
		263.0 -> 219.0	1284443			
PFPeS	6.582	349.1 -> 79.9	100738	62.33	µg/L	97
		349.1 -> 98.9	42598			
PFTeDA	9.950	713.1 -> 669.0	623978	63.29	µg/L	98
		713.1 -> 168.9	56743			
PFTrDA	9.579	663.0 -> 619.0	723946	64.23	µg/L	98
		663.0 -> 168.9	85375			
PFUnDA	8.749	563.1 -> 519.0	578841	63.58	µg/L	97
		563.1 -> 269.1	111181			
11CI-PF3OUdS	9.618	630.9 -> 450.9	869871	128.64	µg/L	99
		632.9 -> 452.9	270775			
9CI-PF3ONS	8.763	530.8 -> 351.0	1025392	107.75	µg/L	99
		532.8 -> 353.0	323863			
ADONA	6.831	376.9 -> 250.9	2268857	121.22	µg/L	100
		376.9 -> 84.8	588240			
HFPO-DA	5.990	284.9 -> 168.9	346208	130.45	µg/L	95
		284.9 -> 184.9	38994			
3:3FTCA	3.905	241.0 -> 177.0	183618	377.35	µg/L	98
		241.0 -> 117.0	16871			
5:3FTCA	6.308	341.0 -> 237.1	2682735	1640.71	µg/L	99
		341.0 -> 217.0	1919713			
7:3FTCA	7.787	441.0 -> 316.9	1478238	1640.65	µg/L	100
		441.0 -> 336.9	3407708			
EtFOSA	11.424	526.0 -> 219.0	393099	133.22	µg/L	98
		526.0 -> 169.0	538798			
EtFOSE	11.357	630.0 -> 58.9	837932	332.13	µg/L	100
		511.9 -> 219.0	317073			
MeFOSA	11.153	511.9 -> 169.0	464799	114.17	µg/L	m
		616.1 -> 58.9	682208			
MeFOSE	11.073	699.1 -> 79.9	83517	334.74	µg/L	100
		699.1 -> 98.8	47909			
PFDoDS	10.077	295.0 -> 201.0	71133	66.35	µg/L	91
		295.0 -> 84.9	17992			
NFDHA	5.503	279.0 -> 85.1	724017	110.49	µg/L	99
		229.0 -> 84.9	704971			
PFMBA	4.841	314.8 -> 134.9	923732	133.30	µg/L	100
		314.8 -> 82.9	32006			
PFMPA	3.553			114.78	µg/L	100
PFEESA	6.047					

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

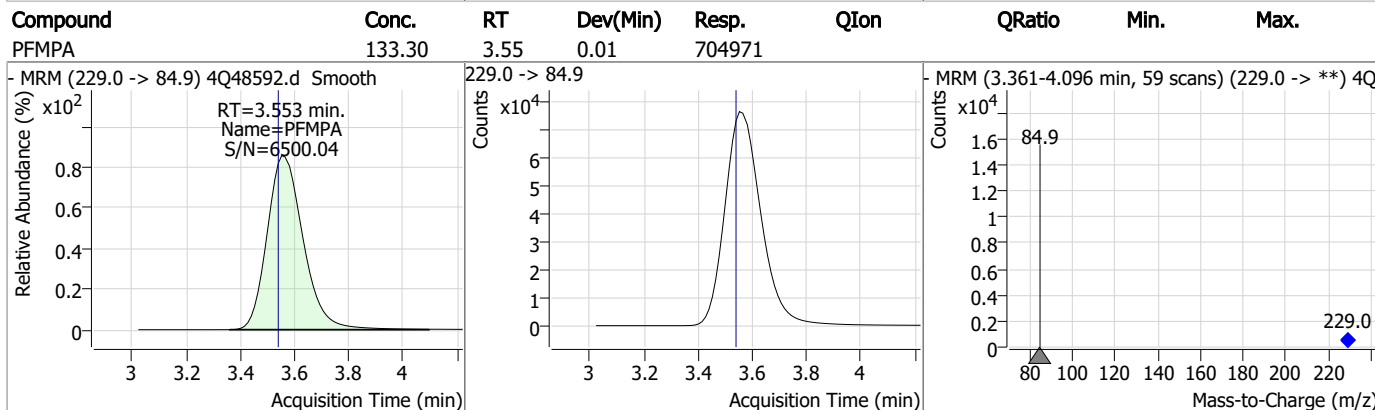
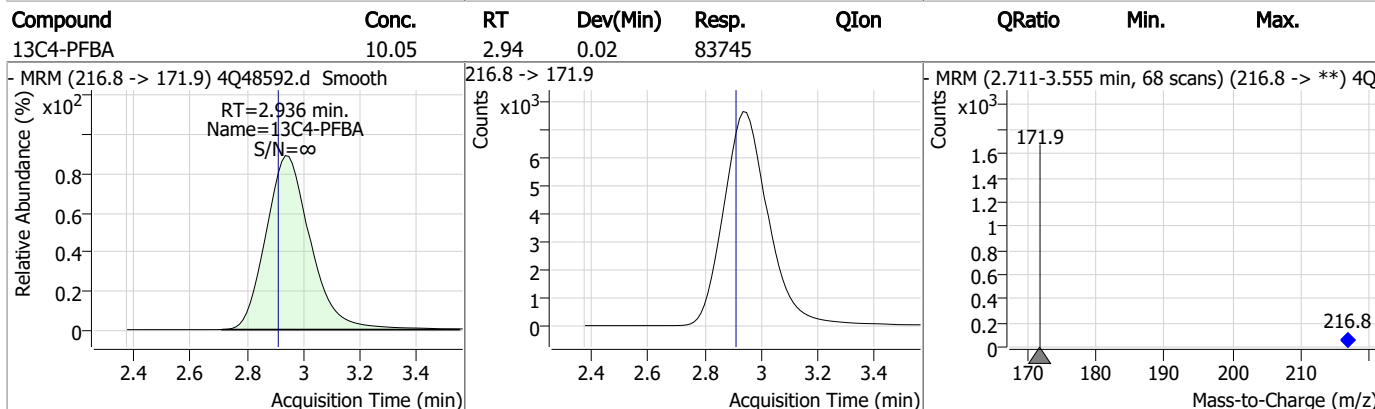
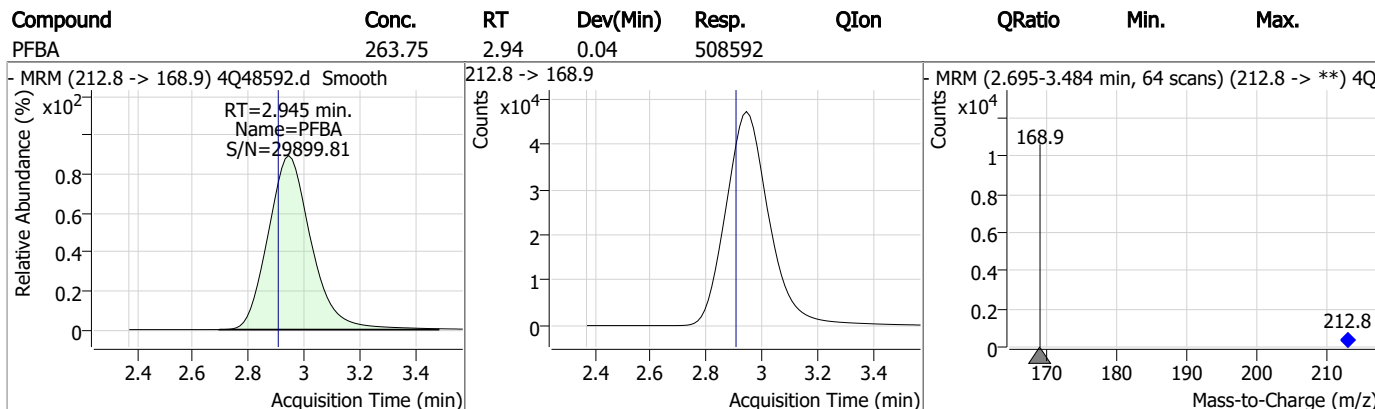
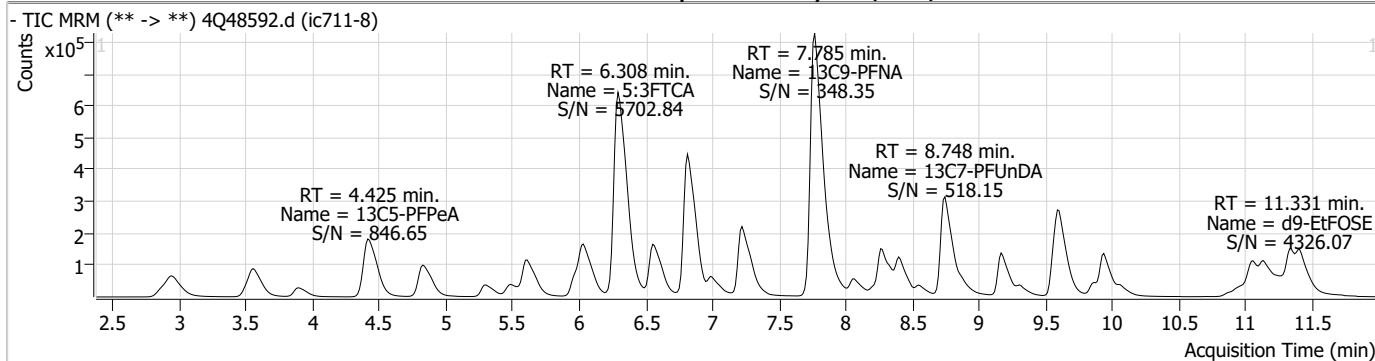
Perfluorinated Compounds by LC/MS/MS

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

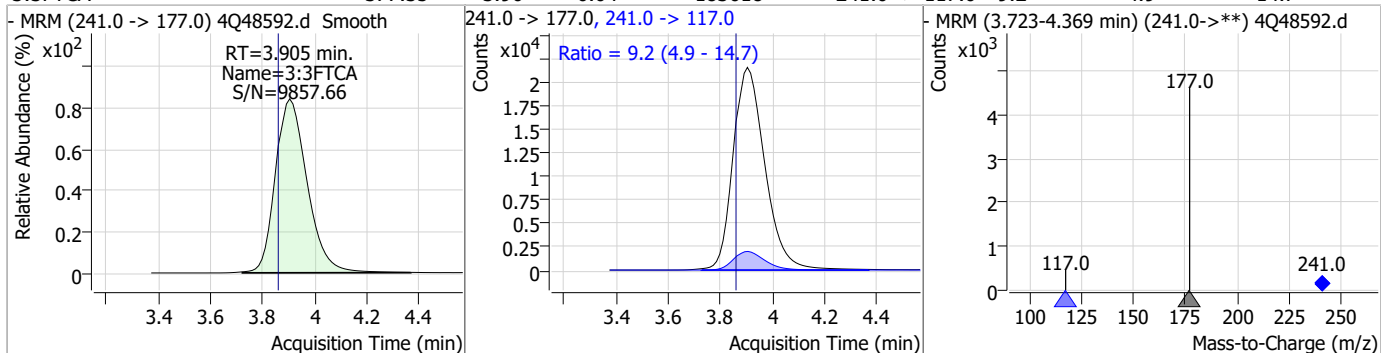
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Perfluorinated Compounds by LC/MS/MS

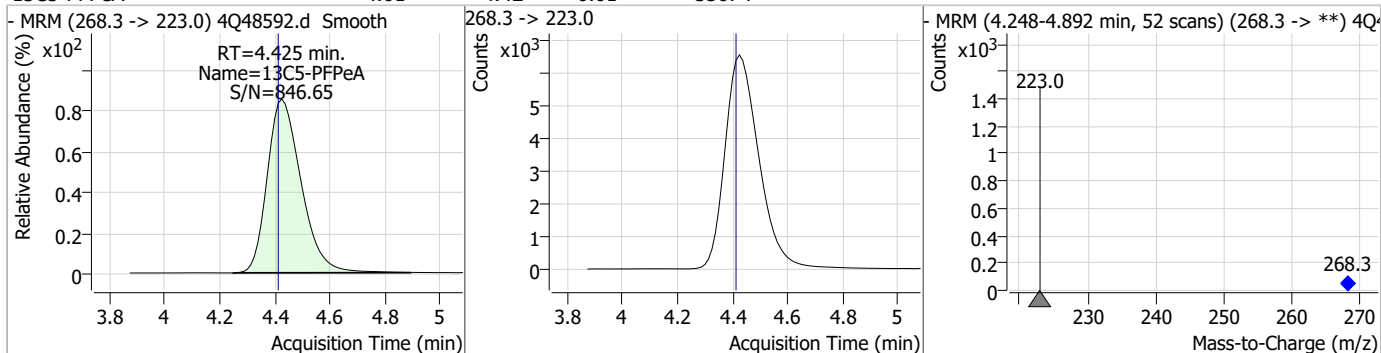


Perfluorinated Compounds by LC/MS/MS

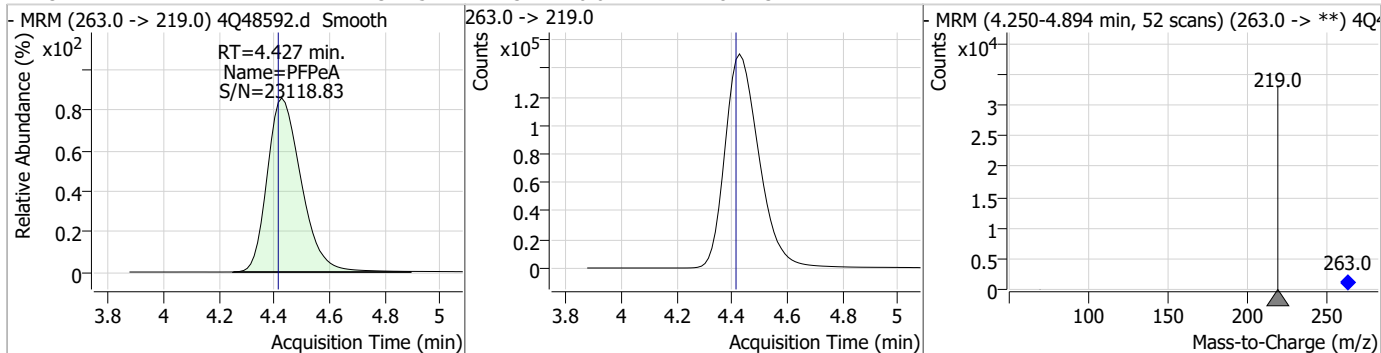
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	377.35	3.90	0.04	183618	241.0 -> 117.0	9.2	4.9	14.7



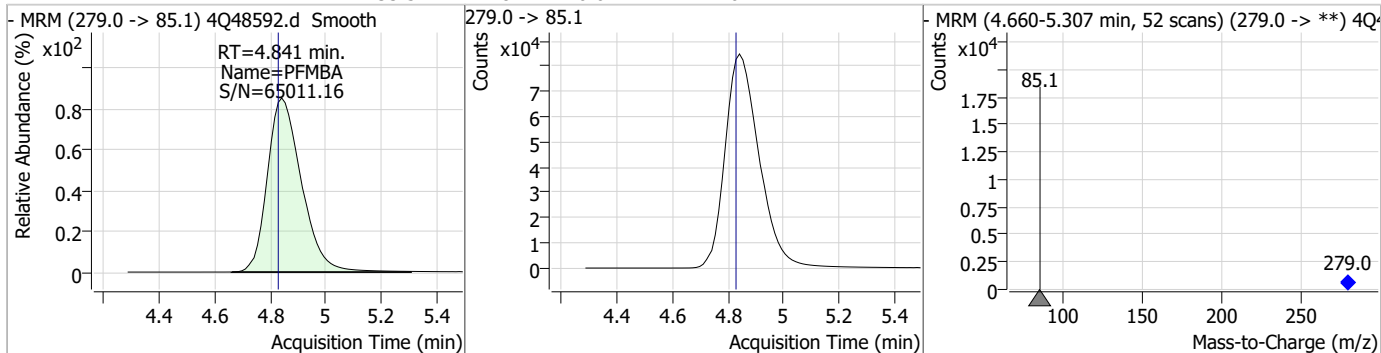
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.61	4.42	0.01	55674				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	132.75	4.43	0.01	1284443				

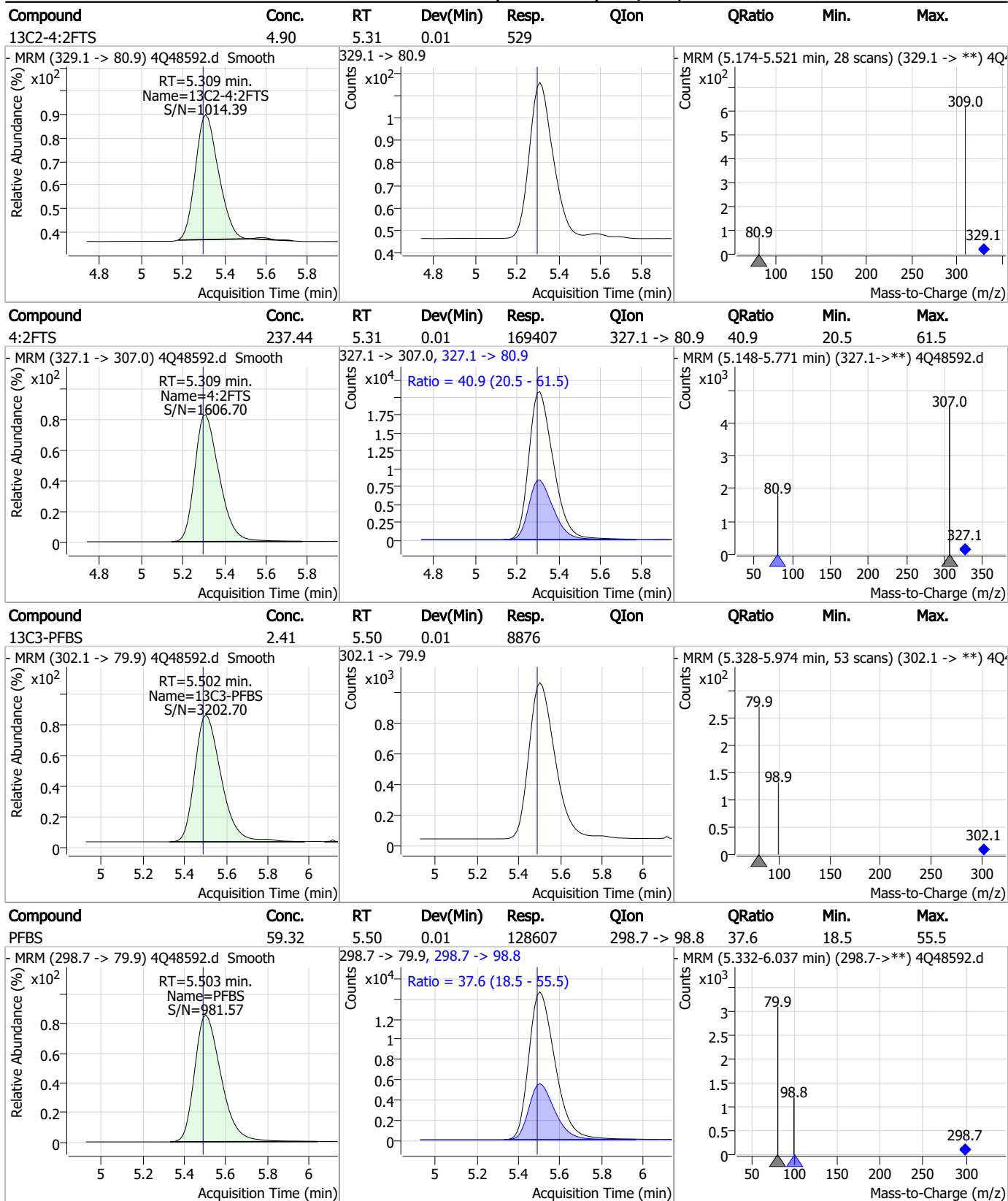


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	133.52	4.84	0.01	724017				



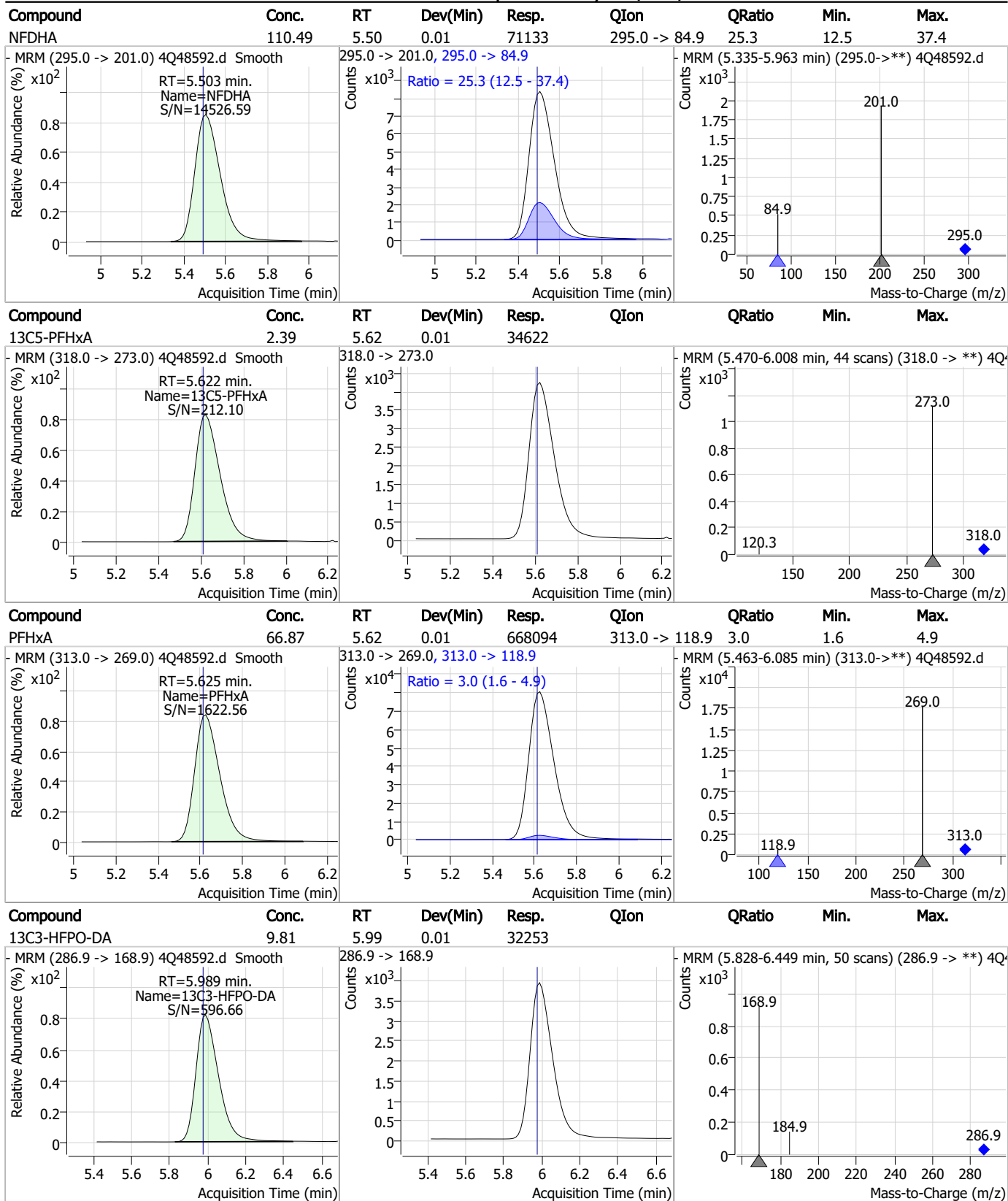
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Perfluorinated Compounds by LC/MS/MS



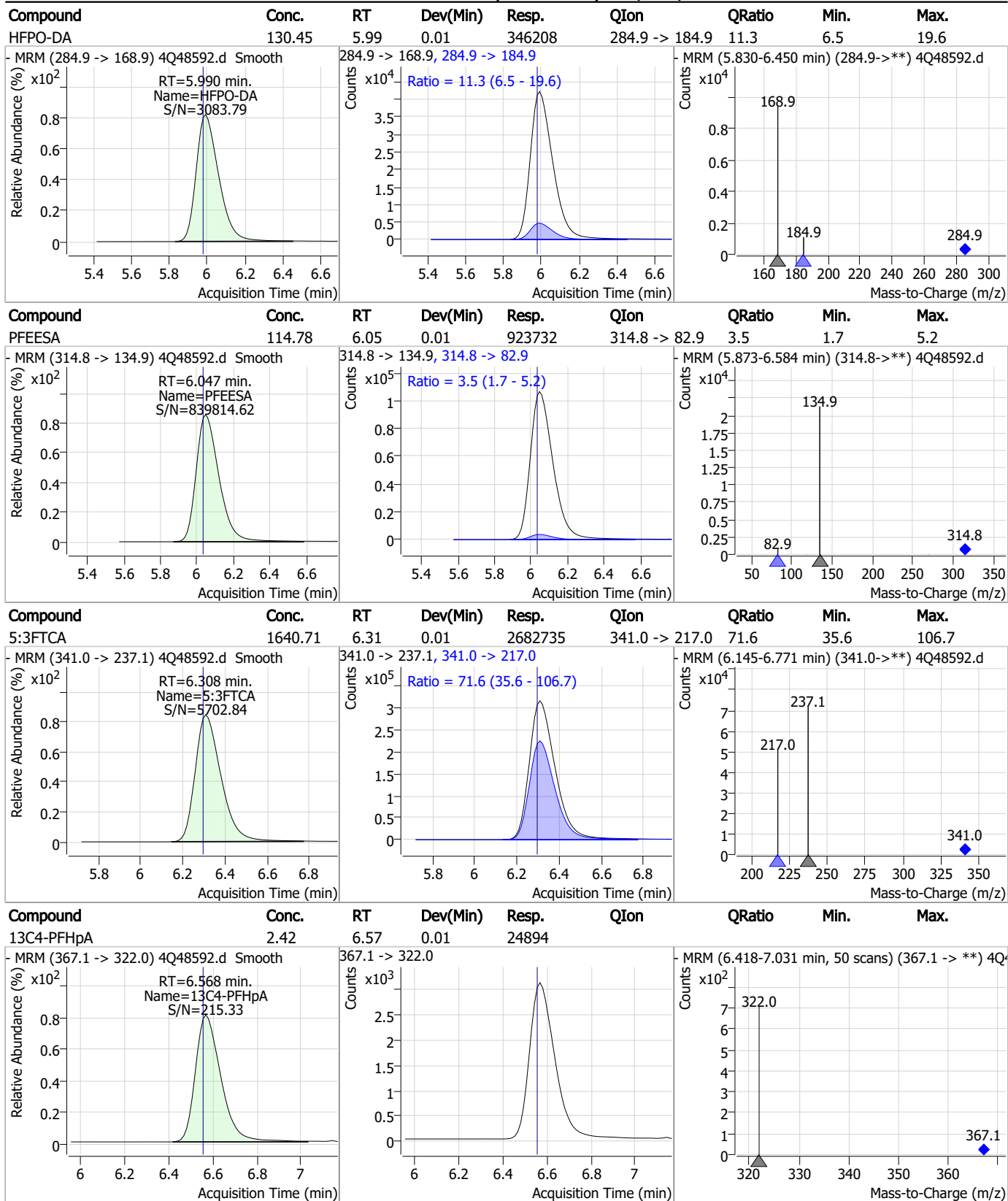
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Perfluorinated Compounds by LC/MS/MS



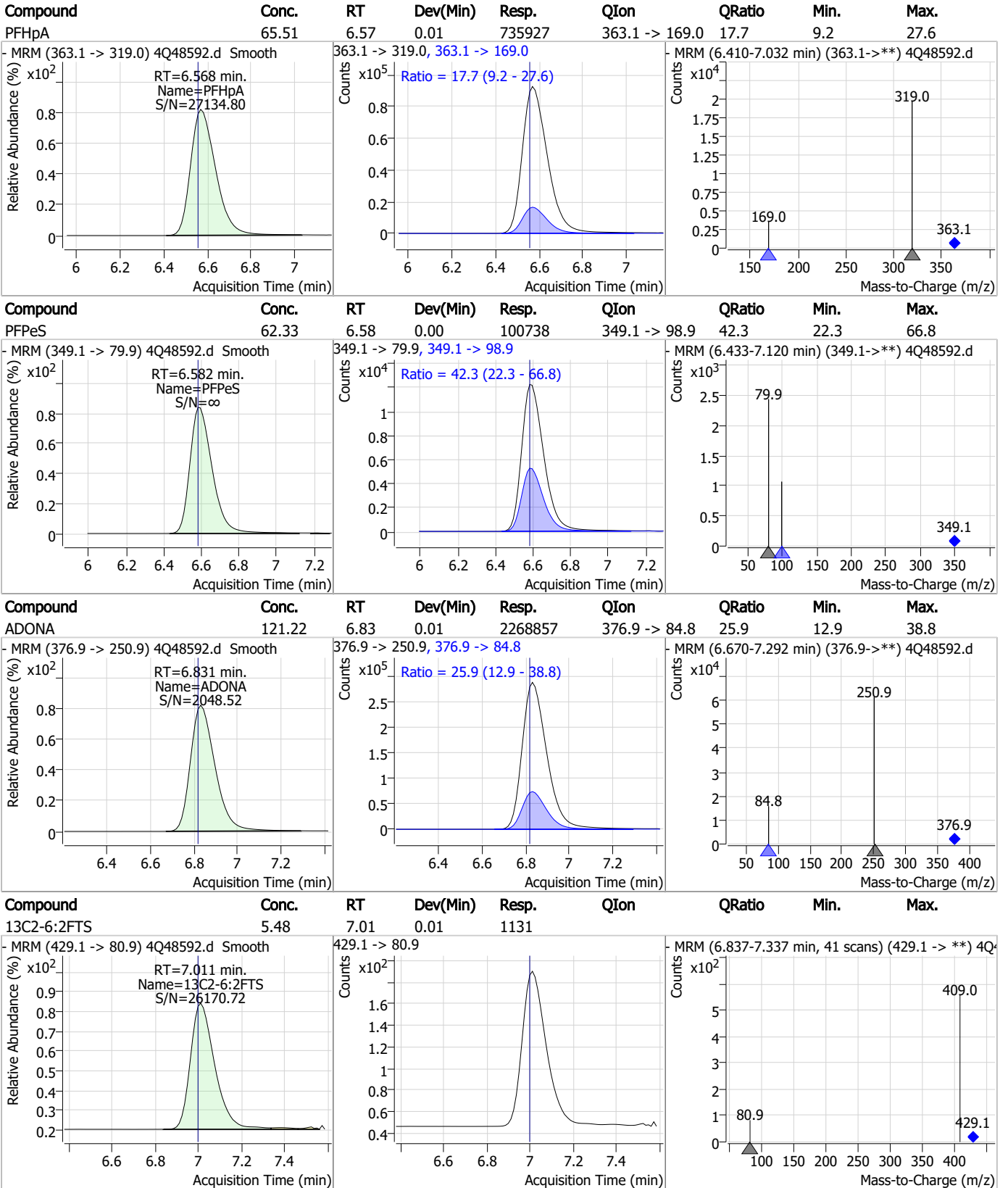
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

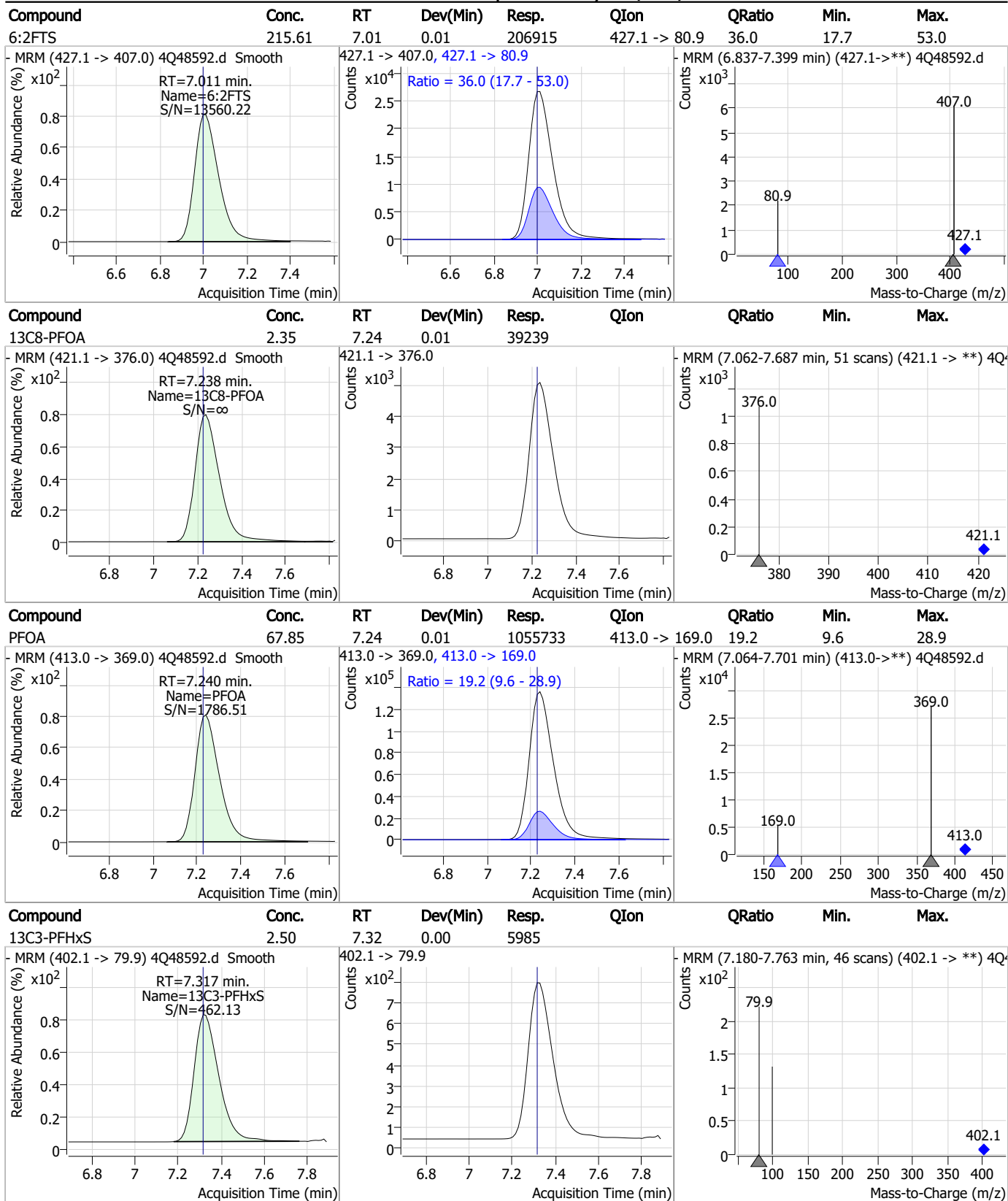


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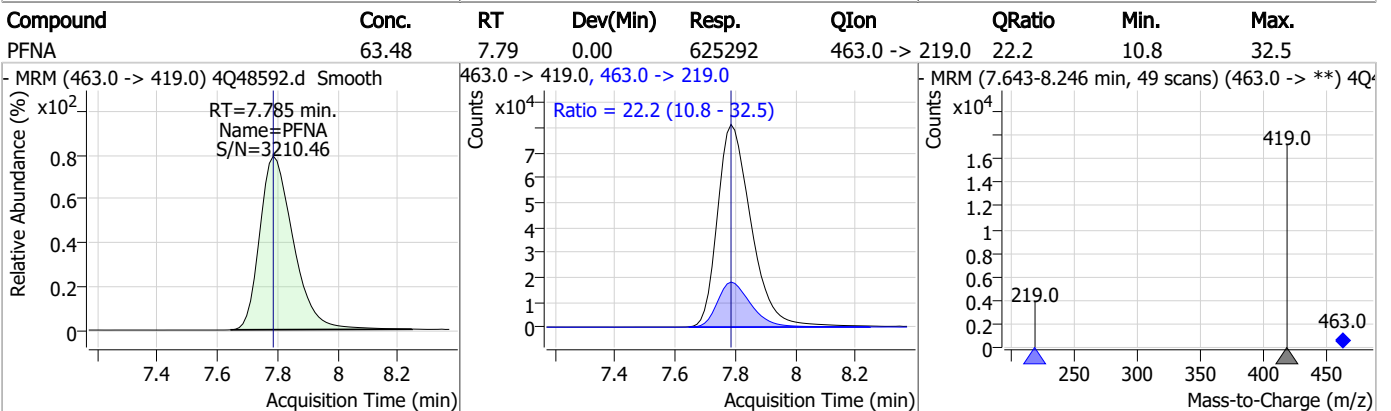
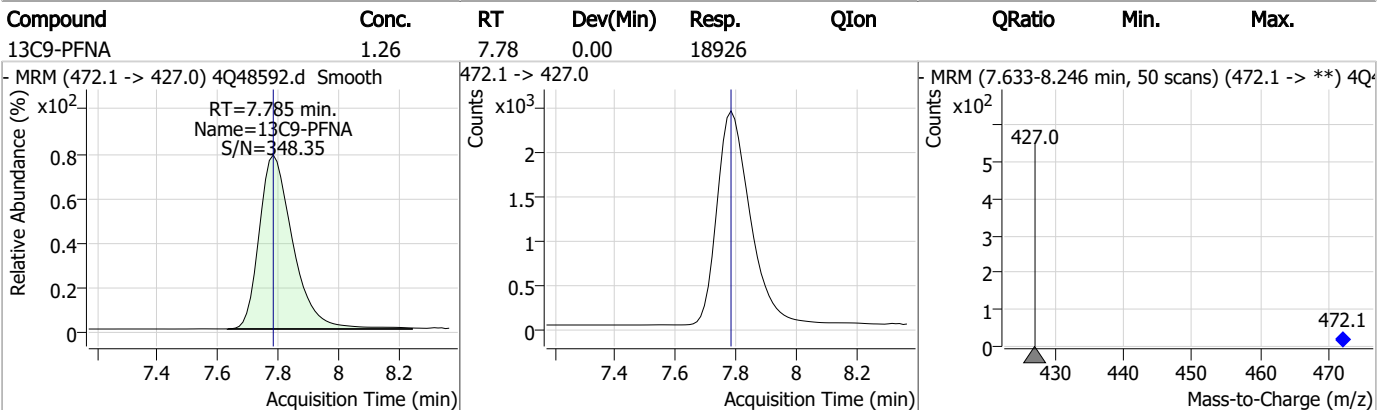
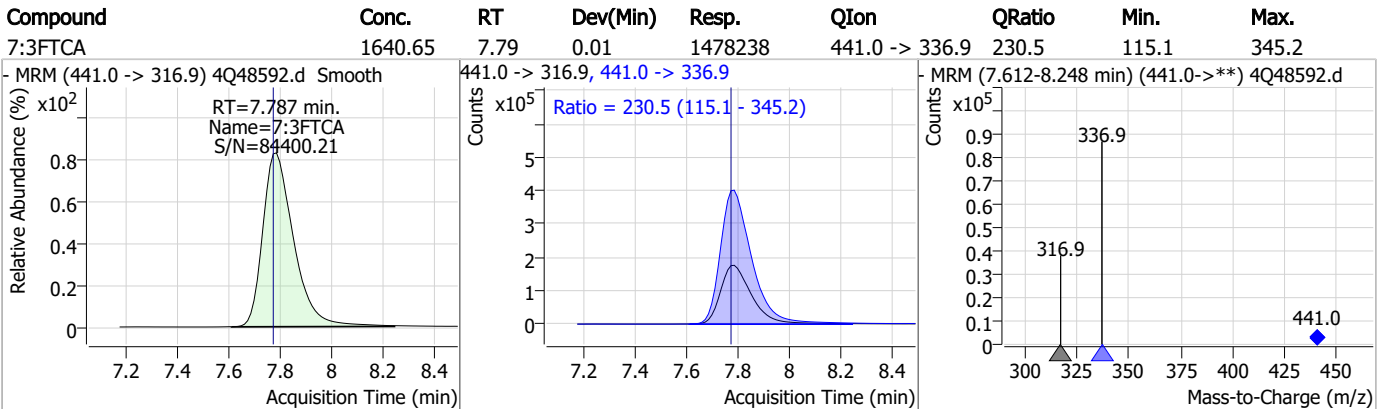
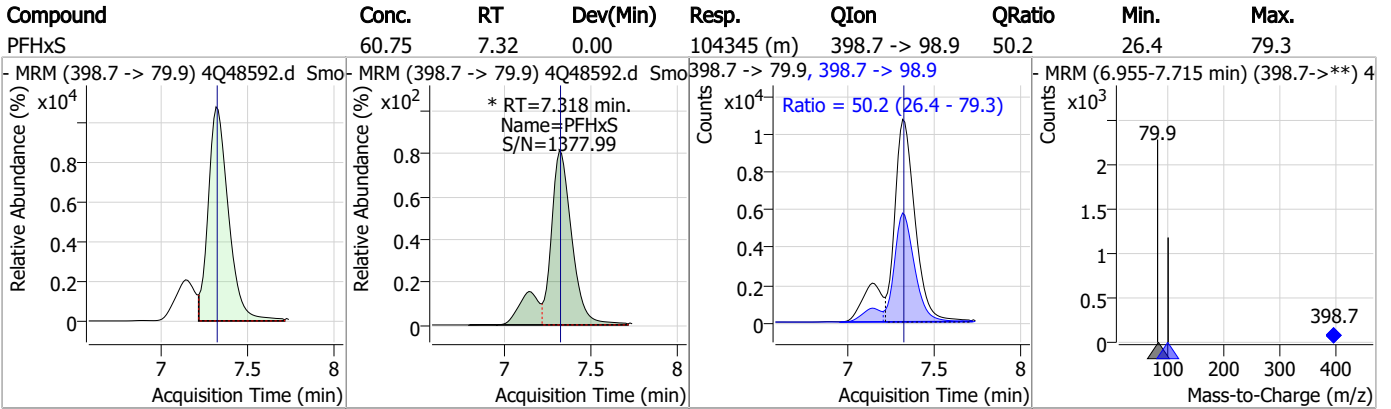
Perfluorinated Compounds by LC/MS/MS



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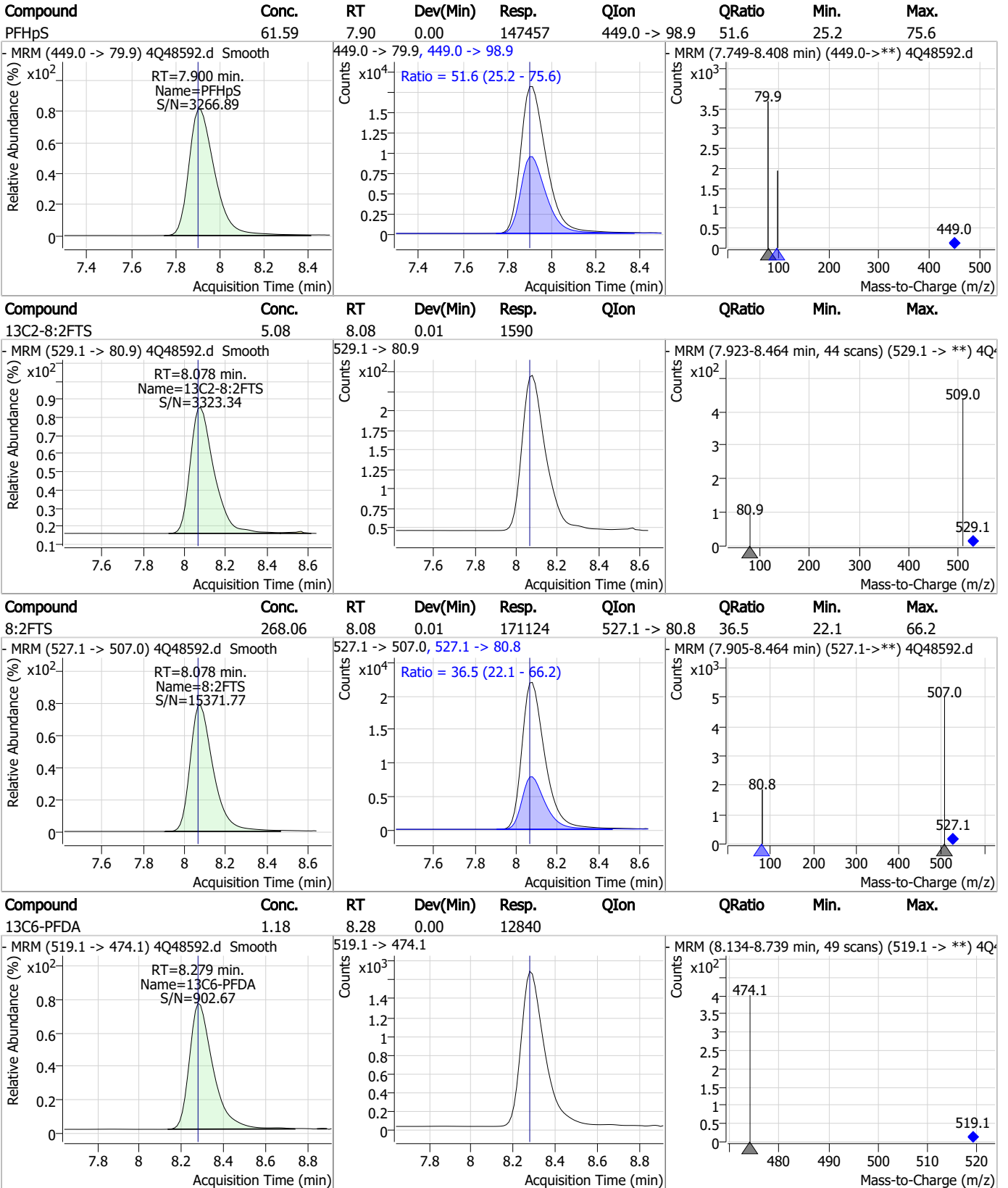
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

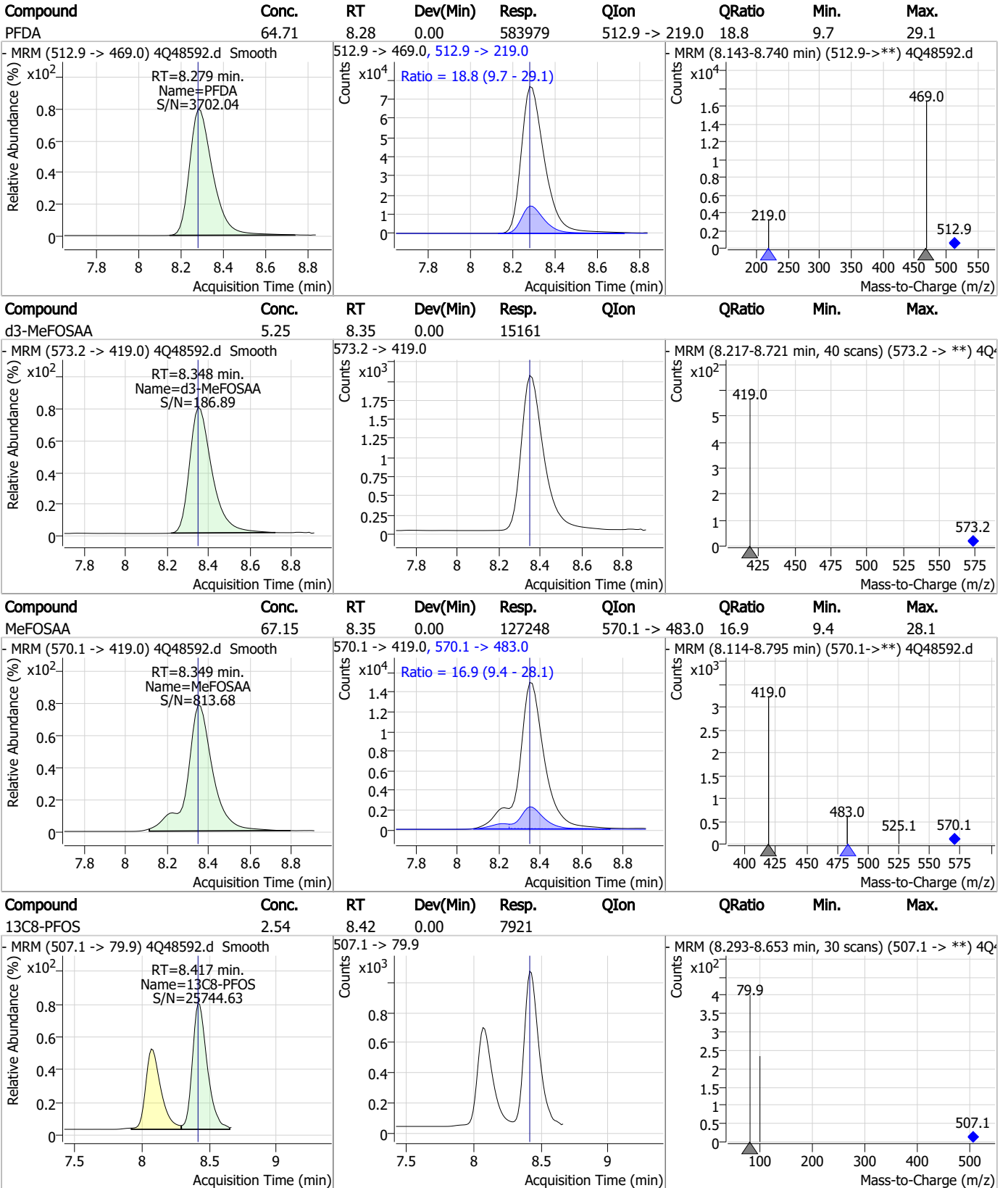


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Perfluorinated Compounds by LC/MS/MS

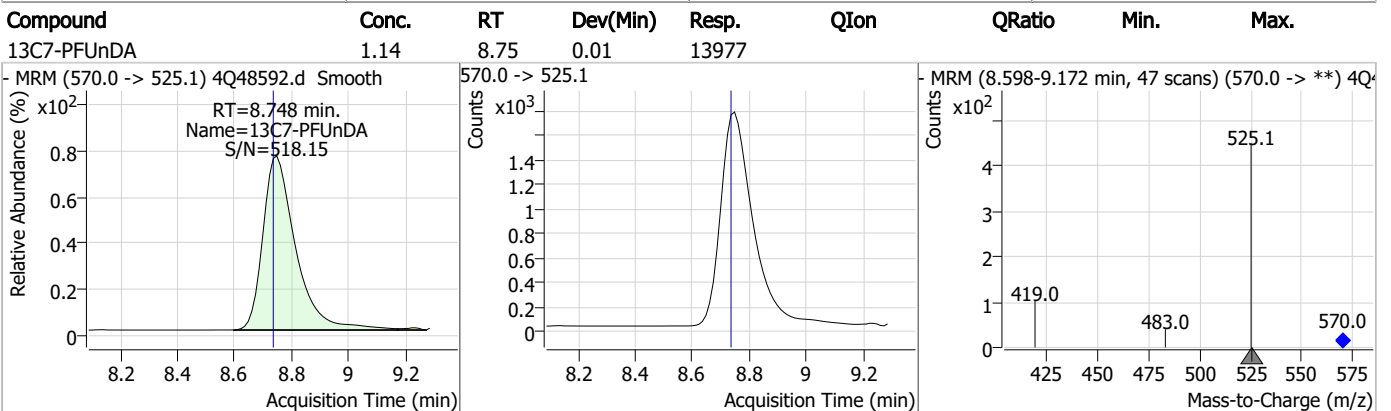
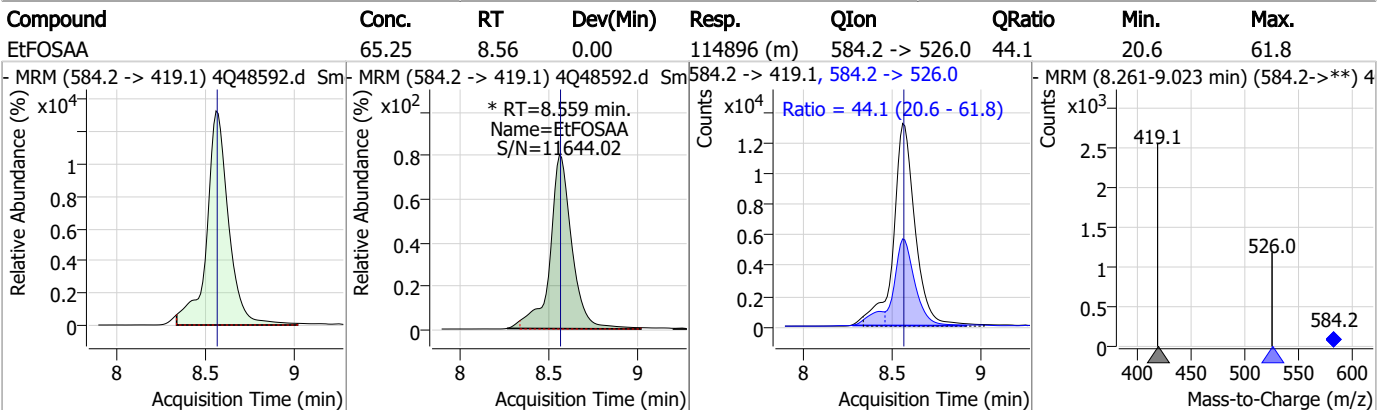
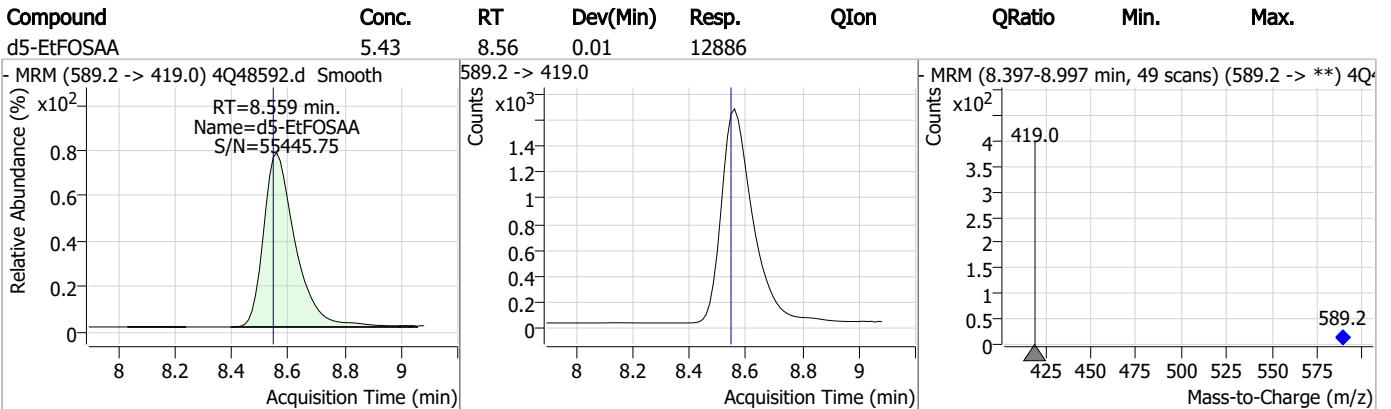
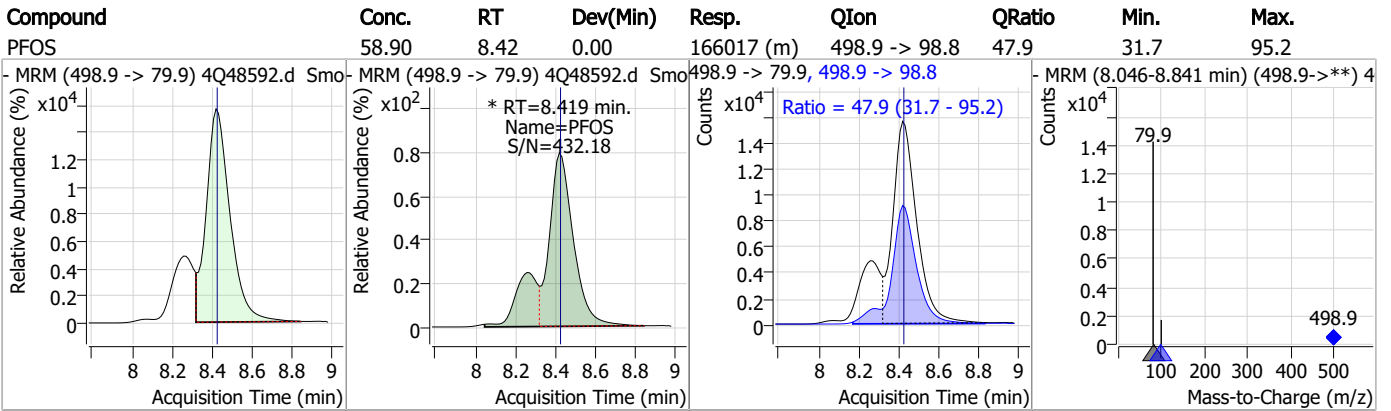


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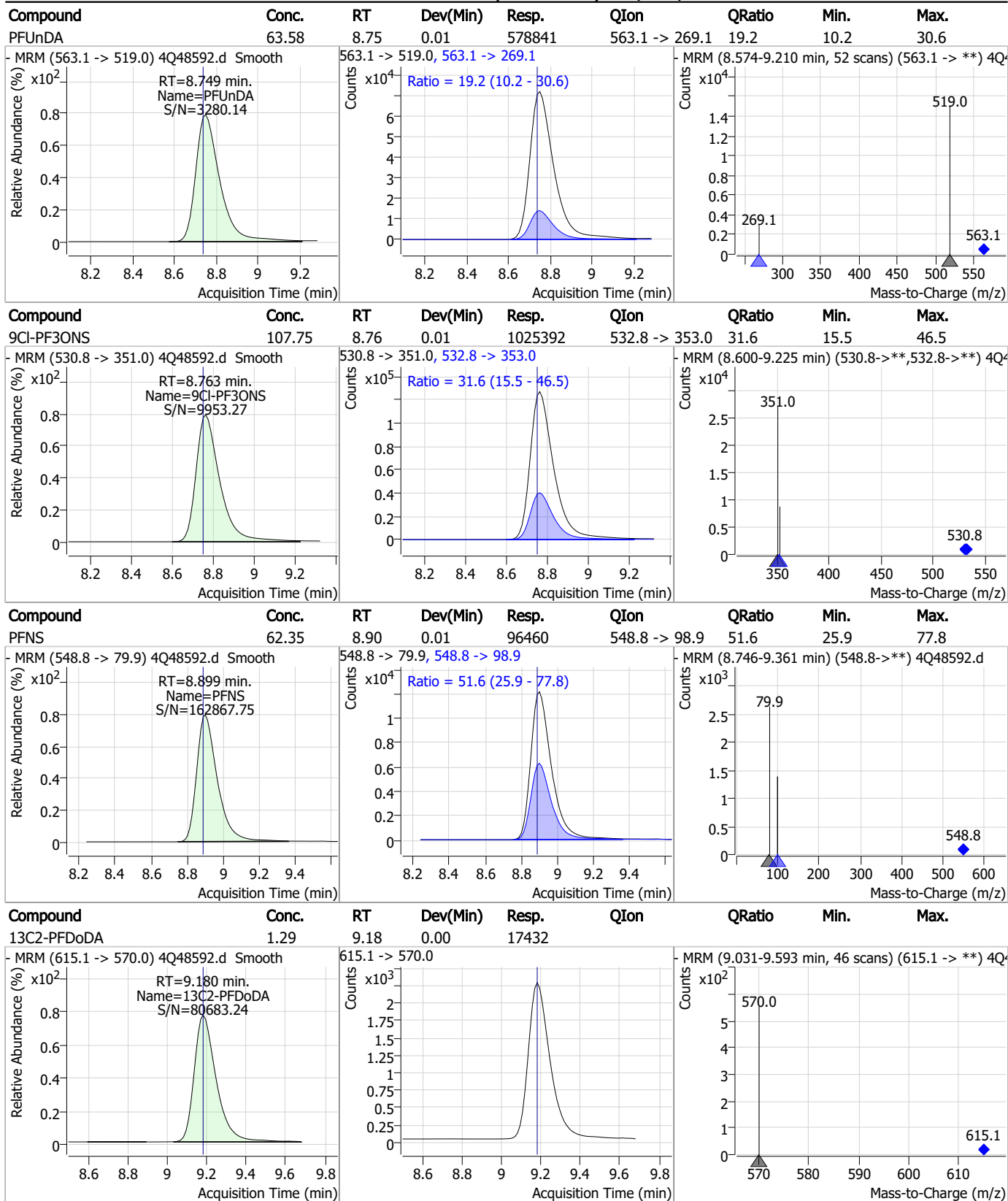
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Perfluorinated Compounds by LC/MS/MS



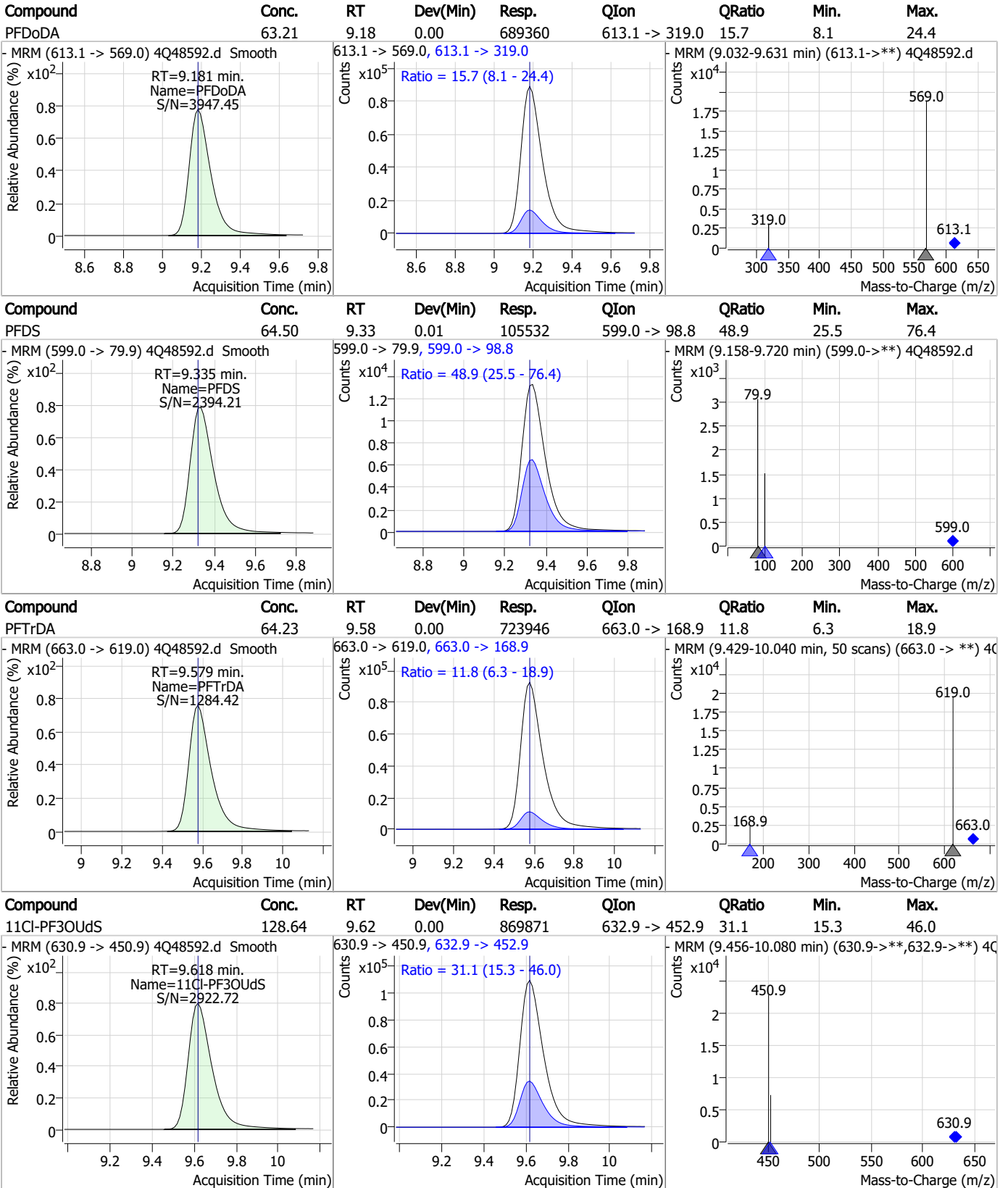
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

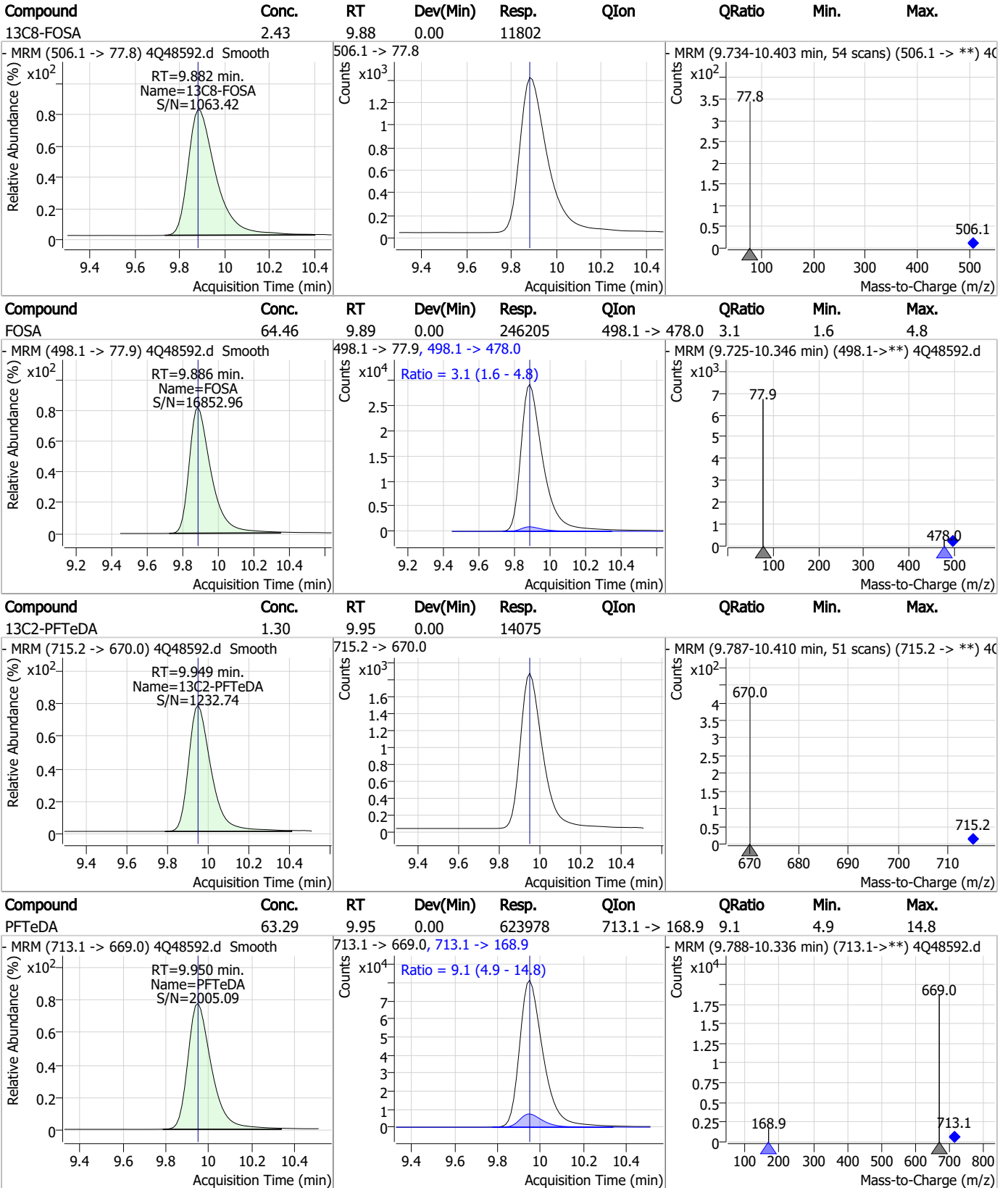


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Perfluorinated Compounds by LC/MS/MS



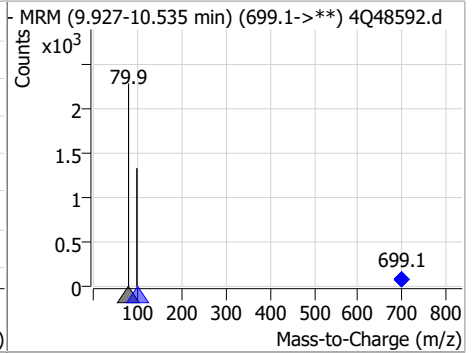
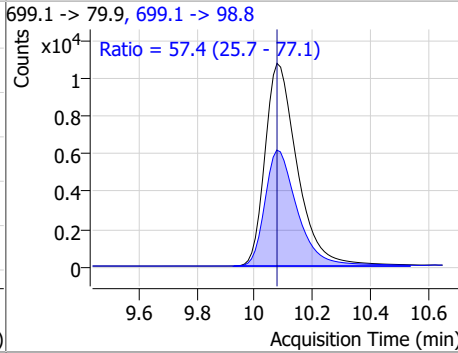
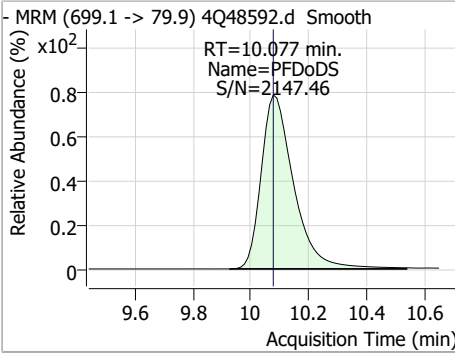
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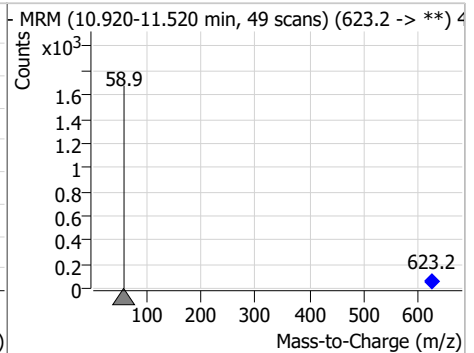
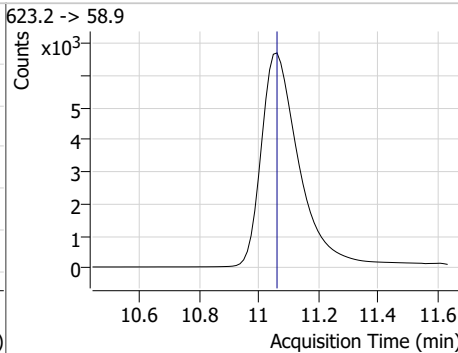
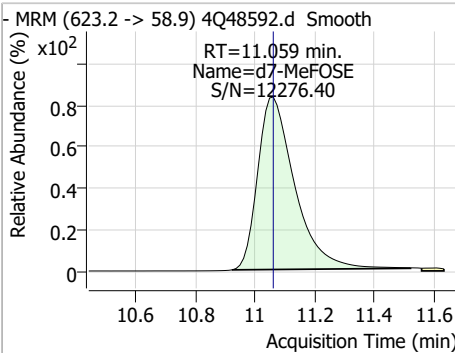


Perfluorinated Compounds by LC/MS/MS

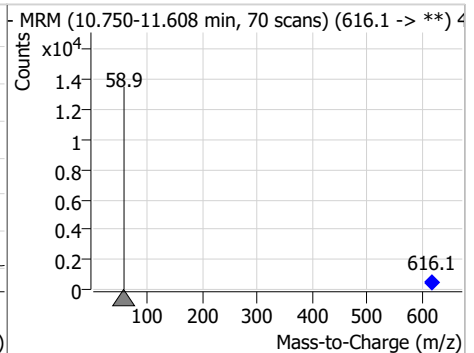
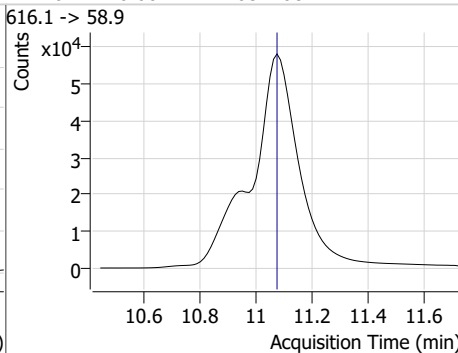
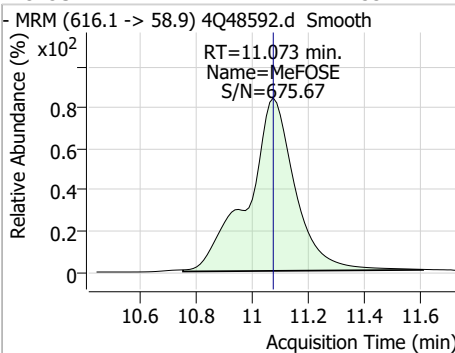
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	66.35	10.08	0.00	83517	699.1 -> 98.8	57.4	25.7	77.1



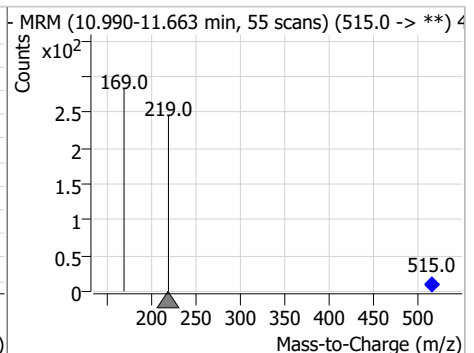
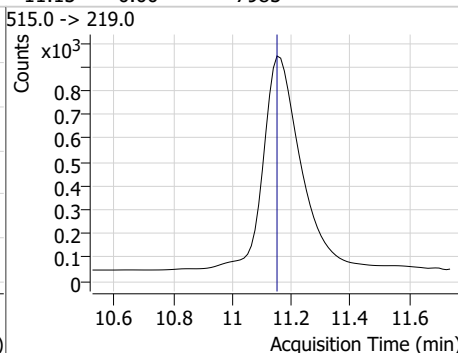
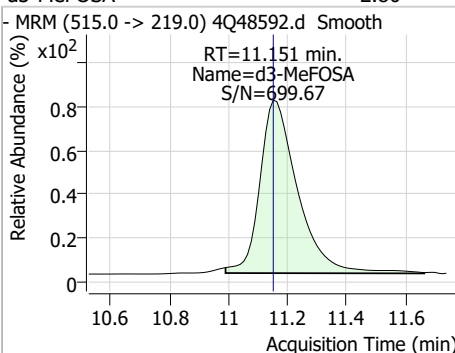
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.96	11.06	0.00	56992	623.2 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	334.74	11.07	0.00	682208	616.1 -> 58.9			

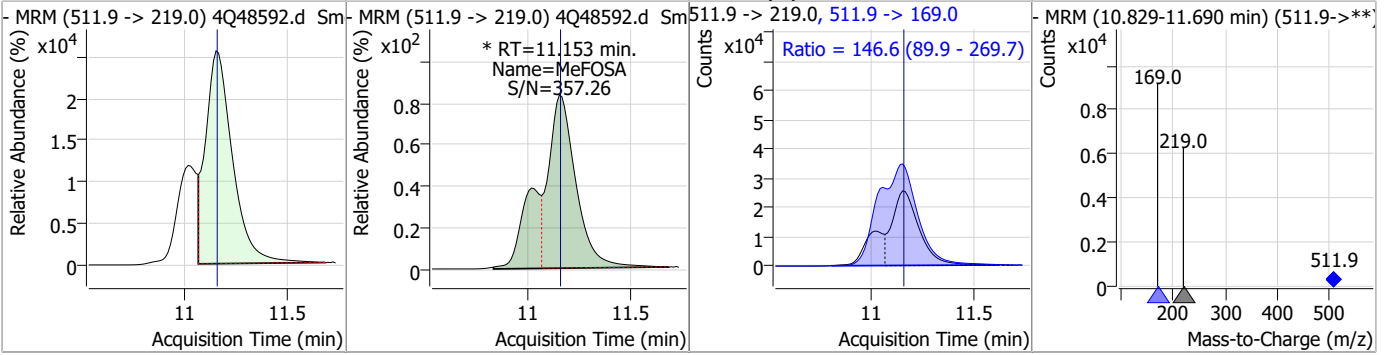


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.80	11.15	0.00	7985	515.0 -> 219.0			

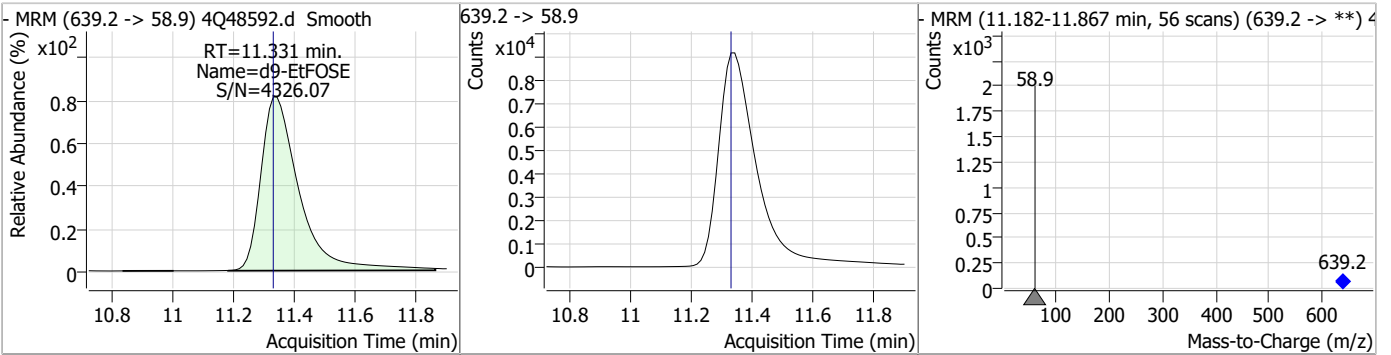


Perfluorinated Compounds by LC/MS/MS

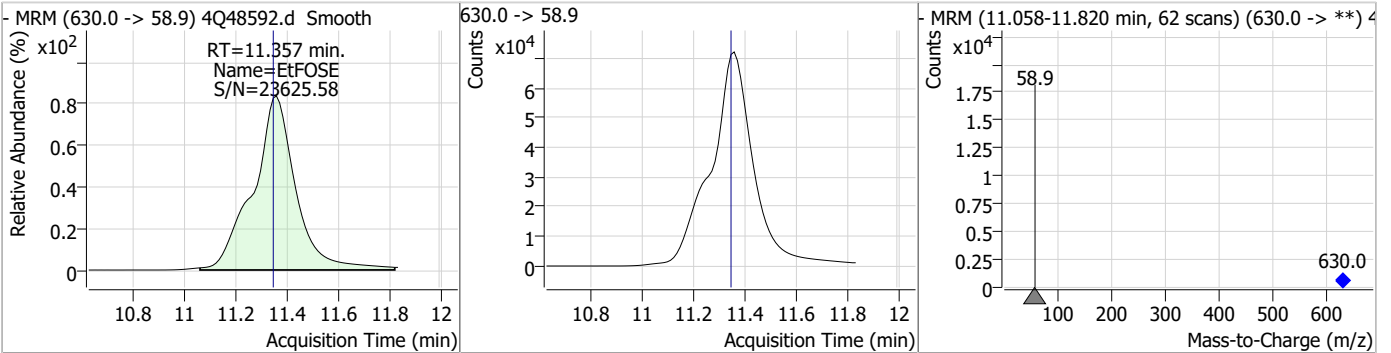
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	114.17	11.15	0.00	317073 (m)	511.9 -> 169.0	146.6	89.9	269.7



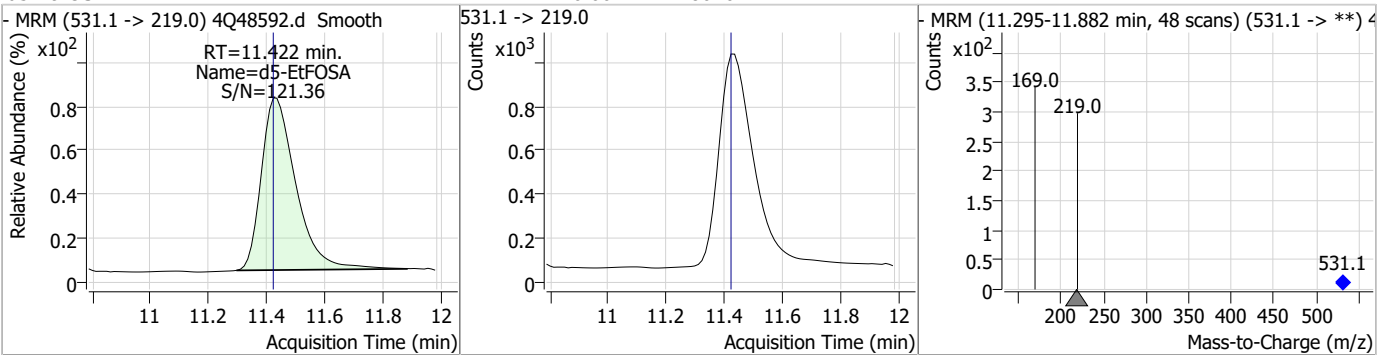
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.18	11.33	0.00	80627				



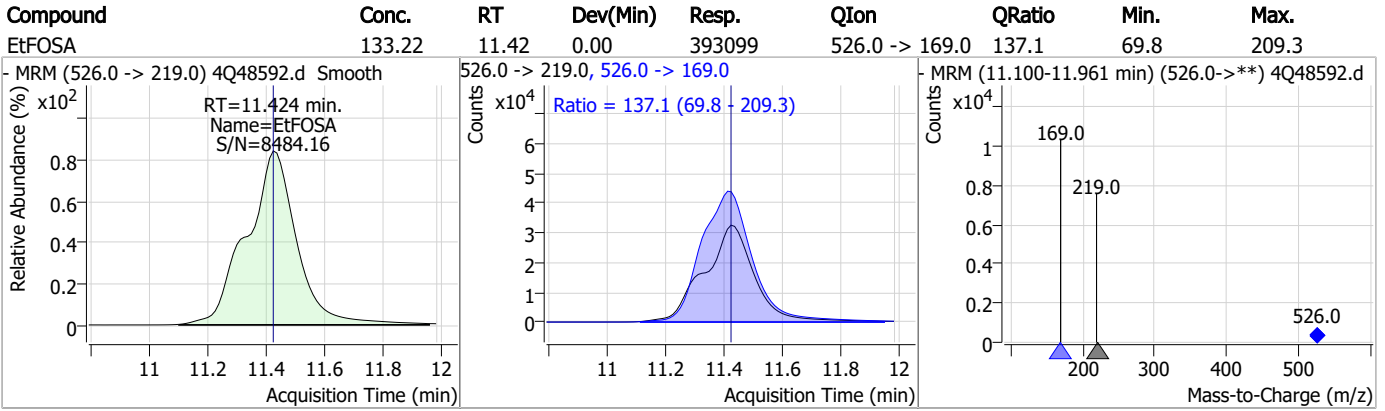
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	332.13	11.36	0.01	837932				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.44	11.42	0.00	8026				



Perfluorinated Compounds by LC/MS/MS



7.7.9

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Manual Integration Approval Summary

Sample Number: S4Q711-IC711 Method: EPA DRAFT 1633
Lab FileID: 4Q48592.D Analyst approved: 08/09/23 11:54 Anna Ludwig
Injection Time: 08/07/23 18:13 Supervisor approved: 08/09/23 14:46 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.42	Split peak
EtFOSAA	2991-50-6		8.56	Split peak
MeFOSA	31506-32-8		11.15	Split peak

7.7.9.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48594.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/7/2023 6:42:40 PM
 Sample Name : icv711-4
 Vial : P1-B3
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q711.batch.bin
 Sample Information : OP97964,S4Q711,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	95737	10.00 µg/L	0.000
M5-PFPeA	4.412	268.3 -> 223.0	58583	5.00 µg/L	0.000
M5-PFHxA	5.610	318.0 -> 273.0	34982	2.50 µg/L	0.000
M4-PFHpA	6.568	367.1 -> 322.0	25272	2.50 µg/L	0.012
M8-PFOA	7.238	421.1 -> 376.0	41706	2.50 µg/L	0.012
M9-PFNA	7.785	472.1 -> 427.0	18835	1.25 µg/L	0.000
M6-PFDA	8.291	519.1 -> 474.1	13830	1.25 µg/L	0.012
M7-PFUnDA	8.748	570.0 -> 525.1	15473	1.25 µg/L	0.012
M2-PFDoDA	9.180	615.1 -> 570.0	16088	1.25 µg/L	0.000
M2-PFTeDA	9.949	715.2 -> 670.0	13254	1.25 µg/L	0.000
M8-FOSA	9.882	506.1 -> 77.8	12632	2.50 µg/L	0.000
M3-PFBS	5.489	302.1 -> 79.9	9228	2.50 µg/L	0.000
M3-PFHxS	7.317	402.1 -> 79.9	5994	2.50 µg/L	0.000
M8-PFOS	8.429	507.1 -> 79.9	8302	2.50 µg/L	0.012
M2-4:2FTS	5.296	329.1 -> 80.9	563	5.00 µg/L	0.000
M2-6:2FTS	7.011	429.1 -> 80.9	1018	5.00 µg/L	0.012
M2-8:2FTS	8.078	529.1 -> 80.9	1679	5.00 µg/L	0.012
M3-MeFOSAA	8.348	573.2 -> 419.0	15129	5.00 µg/L	0.000
M3-HFPO-DA	5.989	286.9 -> 168.9	31144	10.00 µg/L	0.012
M5-EtFOSAA	8.559	589.2 -> 419.0	12264	5.00 µg/L	0.012
M7-MeFOSE	11.059	623.2 -> 58.9	59819	25.00 µg/L	0.000
M9-EtFOSE	11.344	639.2 -> 58.9	83041	25.00 µg/L	0.012
M5-EtFOSA	11.422	531.1 -> 219.0	9133	2.50 µg/L	0.000
M3-MeFOSA	11.164	515.0 -> 219.0	7870	2.50 µg/L	0.012
13C4-PFOS	8.430	502.8 -> 79.9	8425	2.50 µg/L	0.012
13C3-PFBA	2.903	216.0 -> 172.0	54995	5.00 µg/L	0.000
18O2-PFHxS	7.328	403.0 -> 83.9	4187	2.50 µg/L	0.012
13C4-PFOA	7.239	417.1 -> 372.0	50758	2.50 µg/L	0.012
13C2-PFDA	8.291	515.1 -> 470.1	15372	1.25 µg/L	0.012
13C5-PFNA	7.785	468.0 -> 423.0	20185	1.25 µg/L	0.000
13C2-PFHxA	5.611	315.1 -> 270.0	33258	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.296	329.1 -> 80.9	563	5.38 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.6%		
13C2-6:2FTS	7.011	429.1 -> 80.9	1018	5.10 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C2-8:2FTS	8.078	529.1 -> 80.9	1679	5.53 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.6%		
13C2-PFDoDA	9.180	615.1 -> 570.0	16088	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.7%		
13C2-PFTeDA	9.949	715.2 -> 670.0	13254	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C3-PFBS	5.489	302.1 -> 79.9	9228	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.6%		
13C3-PFHxS	7.317	402.1 -> 79.9	5994	2.59 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.4%	
13C4-PFBA	2.911	216.8 -> 171.9	95737	10.19 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C4-PFHpA	6.568	367.1 -> 322.0	25272	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C5-PFHxA	5.610	318.0 -> 273.0	34982	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C5-PFPeA	4.412	268.3 -> 223.0	58583	5.04 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C6-PFDA	8.291	519.1 -> 474.1	13830	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.0%	
13C7-PFUnDA	8.748	570.0 -> 525.1	15473	1.29 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C8-FOSA	9.882	506.1 -> 77.8	12632	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.1%	
13C8-PFOA	7.238	421.1 -> 376.0	41706	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C8-PFOS	8.429	507.1 -> 79.9	8302	2.45 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C9-PFNA	7.785	472.1 -> 427.0	18835	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.5%	
d3-MeFOSAA	8.348	573.2 -> 419.0	15129	4.84 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.8%	
13C3-HFPO-DA	5.989	286.9 -> 168.9	31144	9.83 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.3%	
d3-MeFOSA	11.164	515.0 -> 219.0	7870	2.54 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.7%	
d5-EtFOSAA	8.559	589.2 -> 419.0	12264	4.77 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.4%	
d7-MeFOSE	11.059	623.2 -> 58.9	59819	24.18 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.7%	
d9-EtFOSE	11.344	639.2 -> 58.9	83041	23.93 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.7%	
d5-EtFOSA	11.422	531.1 -> 219.0	9133	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
Target Compounds					QValue
4:2FTS	5.297	327.1 -> 307.0	7805	10.29 µg/L	99
		327.1 -> 80.9	3159		
6:2FTS	7.011	427.1 -> 407.0	9039	10.46 µg/L	92
		427.1 -> 80.9	3625		
8:2FTS	8.078	527.1 -> 507.0	7686	11.40 µg/L	96
		527.1 -> 80.8	3175		
EtFOSAA	8.572	584.2 -> 419.1	4714	2.81 µg/L	m 93
		584.2 -> 526.0	2156		
FOSA	9.886	498.1 -> 77.9	11586	2.83 µg/L	100
		498.1 -> 478.0	357		
MeFOSAA	8.361	570.1 -> 419.0	5571	2.95 µg/L	m 96
		570.1 -> 483.0	1130		
PFBA	2.907	212.8 -> 168.9	24319	11.03 µg/L	100
PFBS	5.490	298.7 -> 79.9	5803	2.57 µg/L	98
		298.7 -> 98.8	2228		
PFDA	8.292	512.9 -> 469.0	25866	2.66 µg/L	100
		512.9 -> 219.0	5053		
PFDODA	9.181	613.1 -> 569.0	27473	2.73 µg/L	98
		613.1 -> 319.0	4239		
PFDS	9.335	599.0 -> 79.9	4654	2.71 µg/L	97

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.568	599.0 -> 98.8	2283	2.81	µg/L	99
		363.1 -> 319.0	32058			
PFHpS	7.913	363.1 -> 169.0	5992	2.39	µg/L	90
		449.0 -> 79.9	6006			
PFHxA	5.613	449.0 -> 98.9	3430	2.78	µg/L	100
		313.0 -> 269.0	28056			
PFHxS	7.318	313.0 -> 118.9	880	2.50	µg/L	99
		398.7 -> 79.9	4297			
PFNA	7.785	398.7 -> 98.9	2249	2.73	µg/L	97
		463.0 -> 419.0	26721			
PFNS	8.899	463.0 -> 219.0	6189	2.67	µg/L	94
		548.8 -> 79.9	4325			
PFOA	7.240	548.8 -> 98.9	2419	2.69	µg/L	98
		413.0 -> 369.0	44431			
PFOS	8.431	413.0 -> 169.0	8962	2.67	µg/L	80
		498.9 -> 79.9	7877			
PFPeA	4.414	498.9 -> 98.8	3760	5.52	µg/L	100
		263.0 -> 219.0	56231			
PFPeS	6.582	349.1 -> 79.9	4326	2.67	µg/L	98
		349.1 -> 98.9	1866			
PFTeDA	9.950	713.1 -> 669.0	25504	2.75	µg/L	99
		713.1 -> 168.9	2468			
PFTrDA	9.579	663.0 -> 619.0	31135	2.99	µg/L	99
		663.0 -> 168.9	3785			
PFUnDA	8.749	563.1 -> 519.0	27722	2.75	µg/L	96
		563.1 -> 269.1	5142			
11Cl-PF3OUdS	9.618	630.9 -> 450.9	36322	5.56	µg/L	100
		632.9 -> 452.9	11137			
9Cl-PF3ONS	8.763	530.8 -> 351.0	52484	5.71	µg/L	97
		532.8 -> 353.0	17259			
ADONA	6.831	376.9 -> 250.9	100888	5.58	µg/L	98
		376.9 -> 84.8	25197			
HFPO-DA	5.978	284.9 -> 168.9	14598	5.70	µg/L	96
		284.9 -> 184.9	1695			
3:3FTCA	3.861	241.0 -> 177.0	7303	13.13	µg/L	99
		241.0 -> 117.0	691			
5:3FTCA	6.296	341.0 -> 237.1	114325	69.20	µg/L	99
		341.0 -> 217.0	81914			
7:3FTCA	7.774	441.0 -> 316.9	64321	70.65	µg/L	96
		441.0 -> 336.9	152779			
EtFOSA	11.424	526.0 -> 219.0	17738	5.28	µg/L	100
		526.0 -> 169.0	24781			
EtFOSE	11.357	630.0 -> 58.9	38051	14.64	µg/L	100
		511.9 -> 219.0	14470			
MeFOSA	11.165	511.9 -> 169.0	20982	5.29	µg/L	75
		616.1 -> 58.9	29903			
MeFOSE	11.073	699.1 -> 79.9	3557	13.98	µg/L	100
		699.1 -> 98.8	2146			
PFDoDS	10.089	295.0 -> 201.0	3806	2.70	µg/L	87
		295.0 -> 84.9	955			
NFDHA	5.503	279.0 -> 85.1	31575	5.85	µg/L	100
		229.0 -> 84.9	30498			
PFMBA	4.828	314.8 -> 134.9	40661	5.48	µg/L	100
		314.8 -> 82.9	1517			
PFMPA	3.540			5.00	µg/L	99
PFEESA	6.034					

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



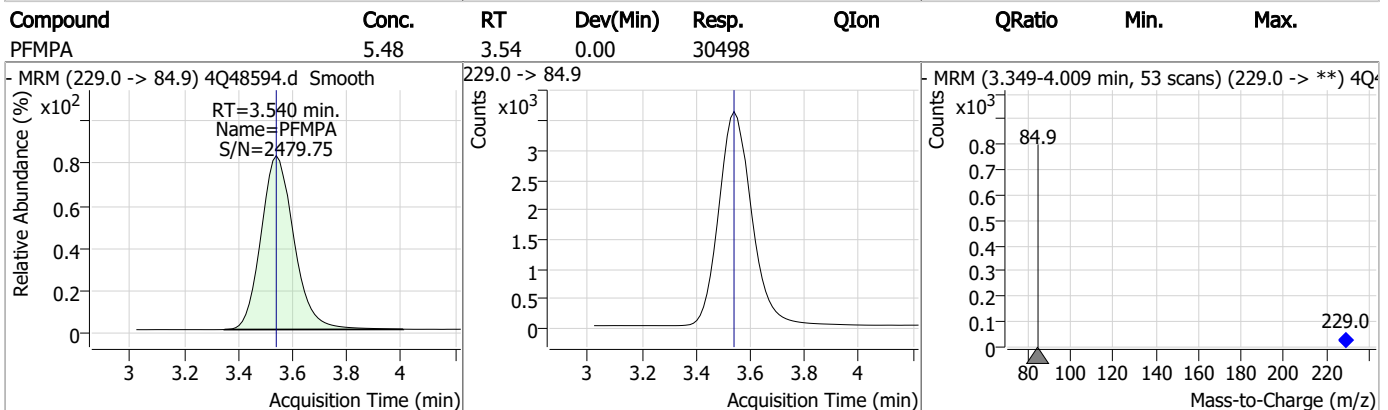
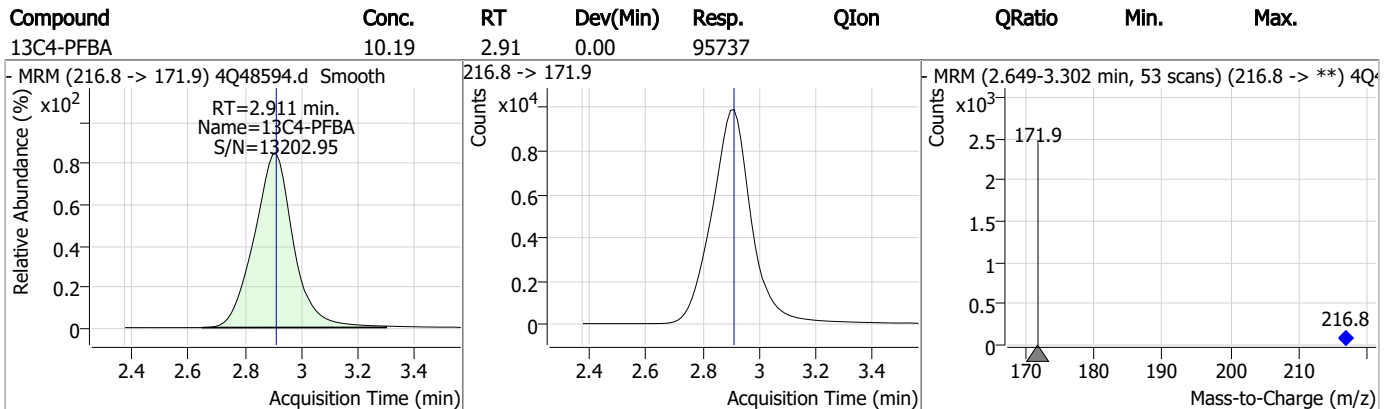
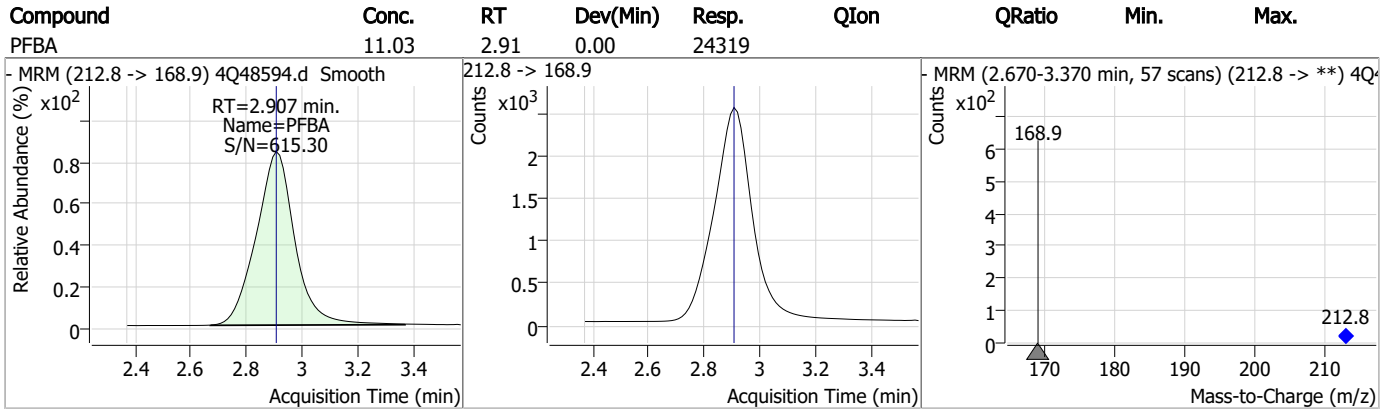
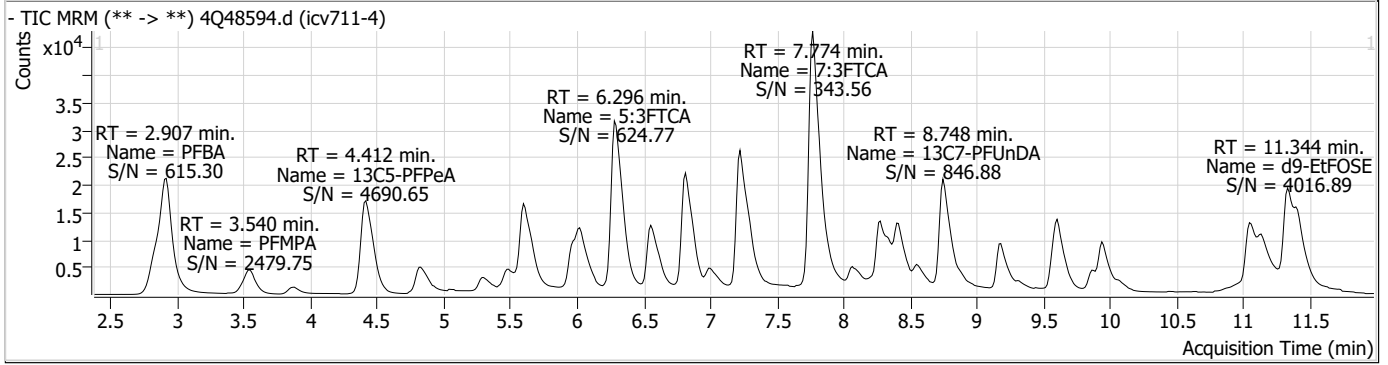
Perfluorinated Compounds by LC/MS/MS

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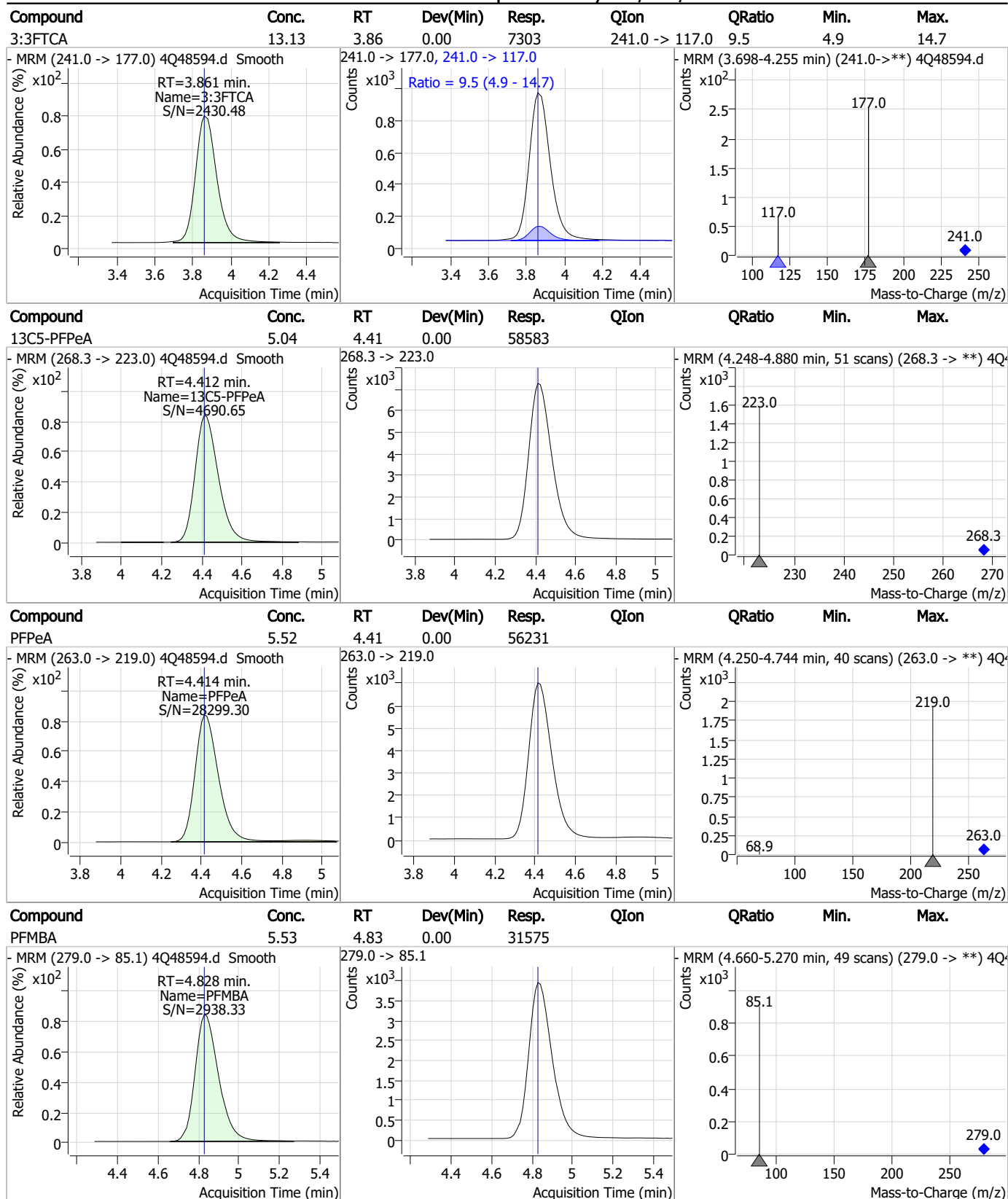
7.7.10

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Perfluorinated Compounds by LC/MS/MS

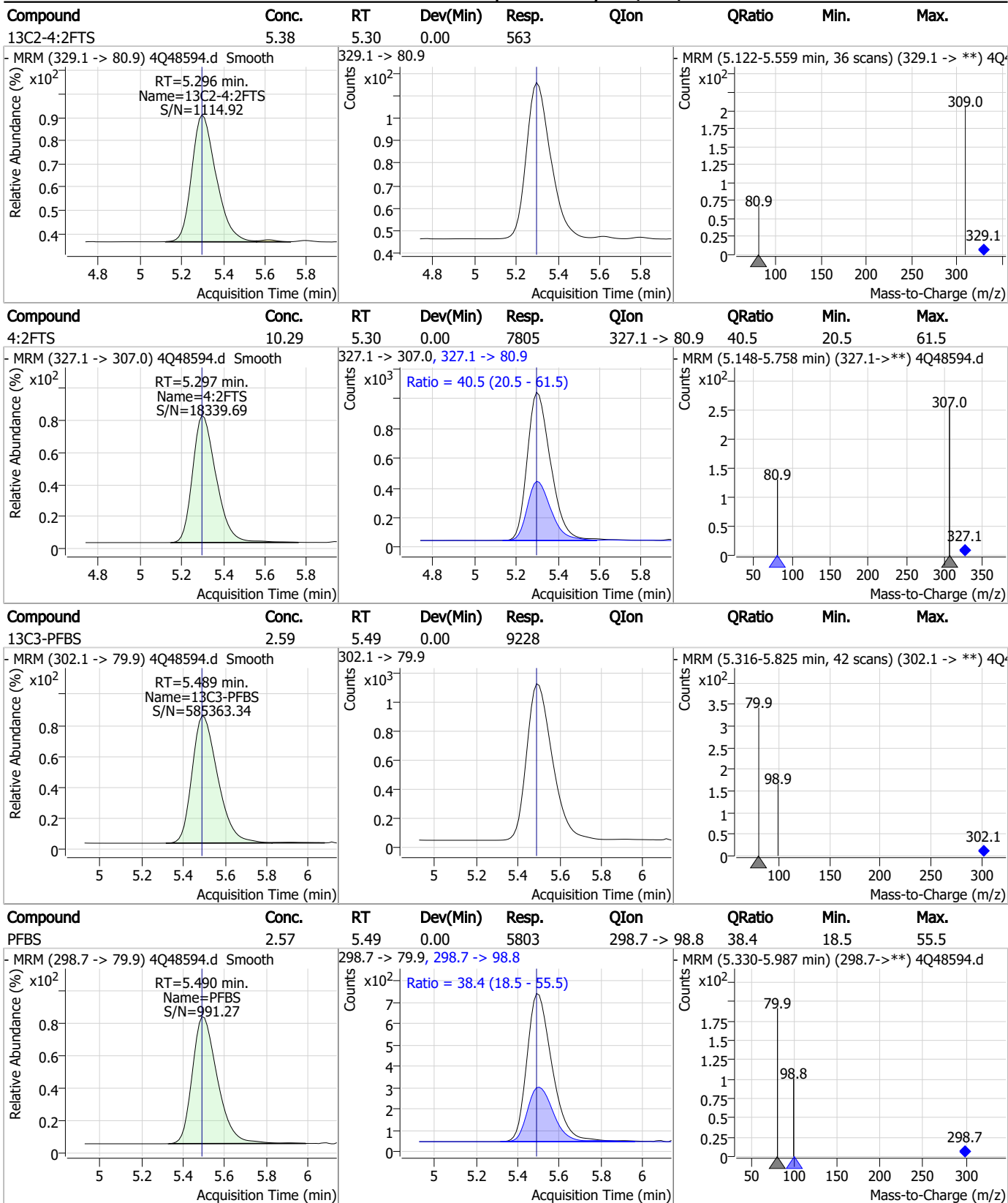


Perfluorinated Compounds by LC/MS/MS



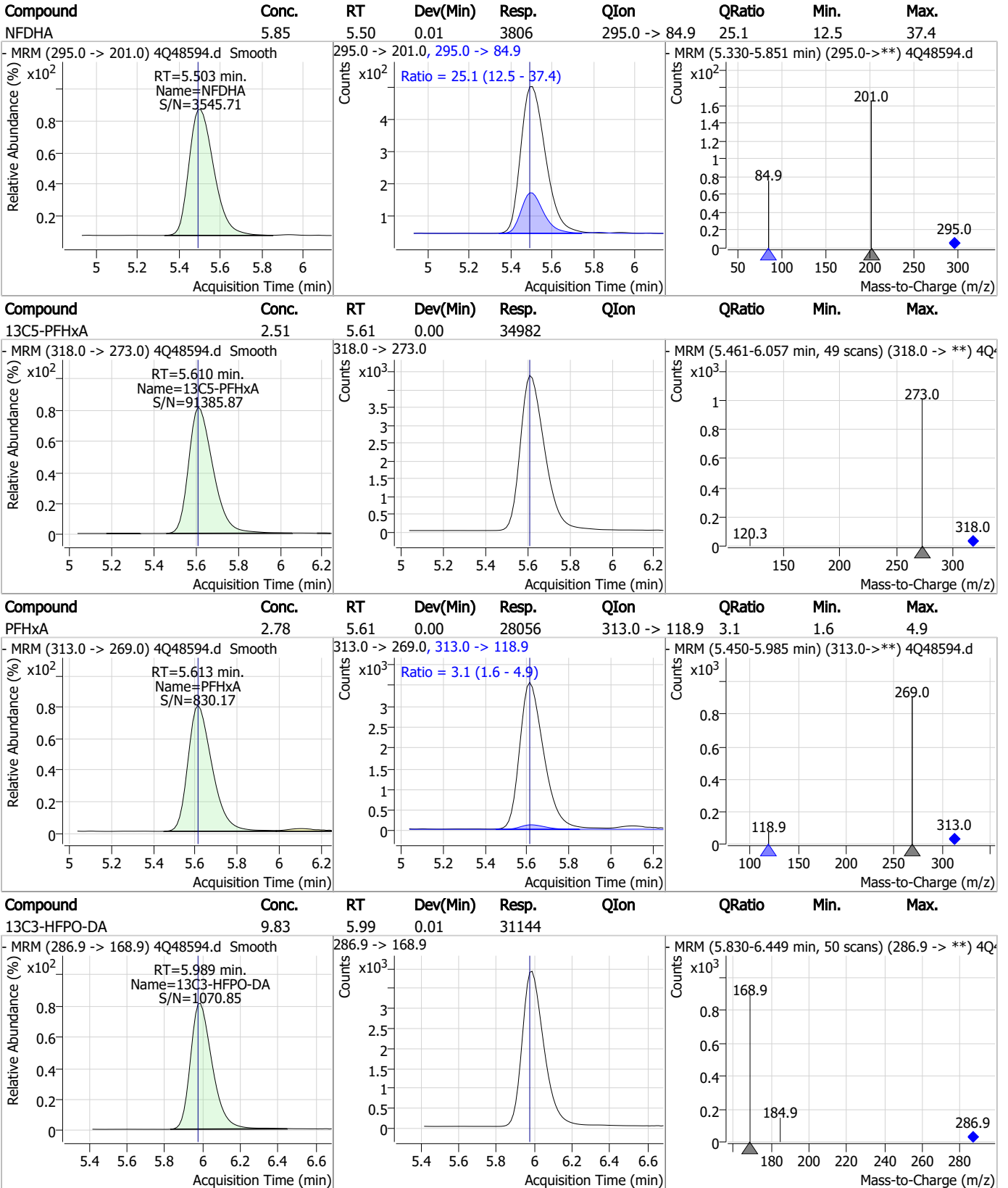
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Perfluorinated Compounds by LC/MS/MS



7.7.10
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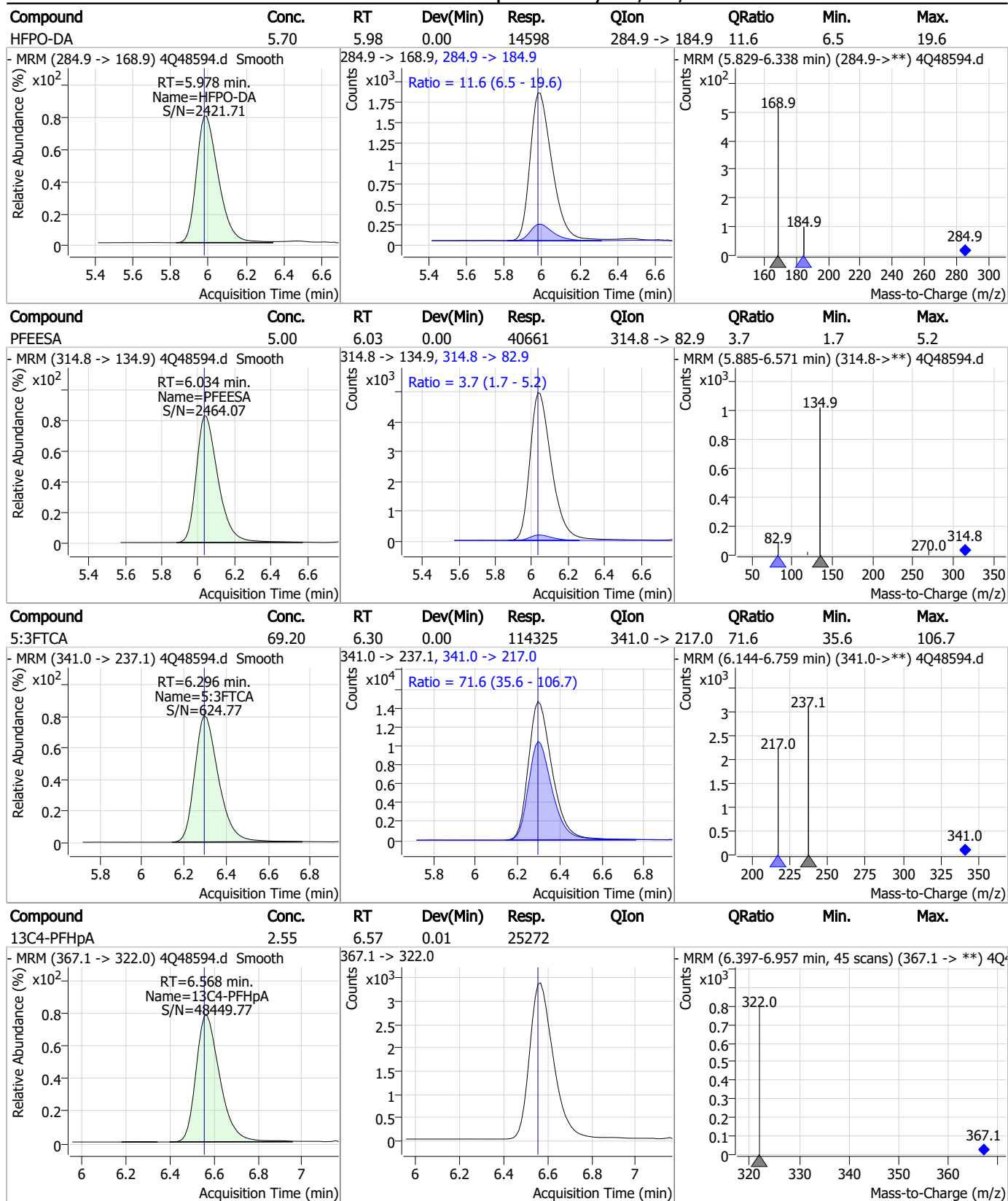
Perfluorinated Compounds by LC/MS/MS



7.7.10 7

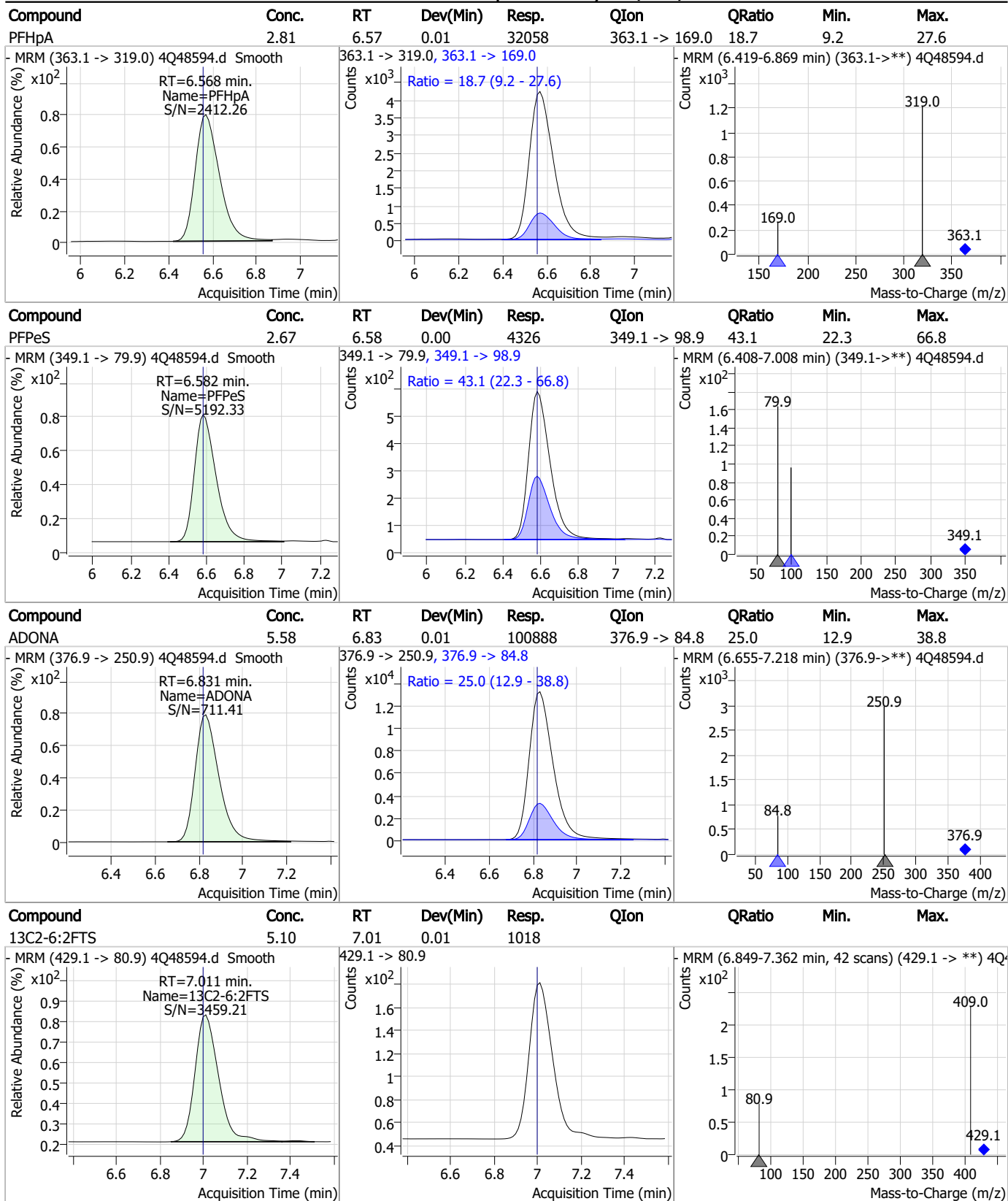


Perfluorinated Compounds by LC/MS/MS



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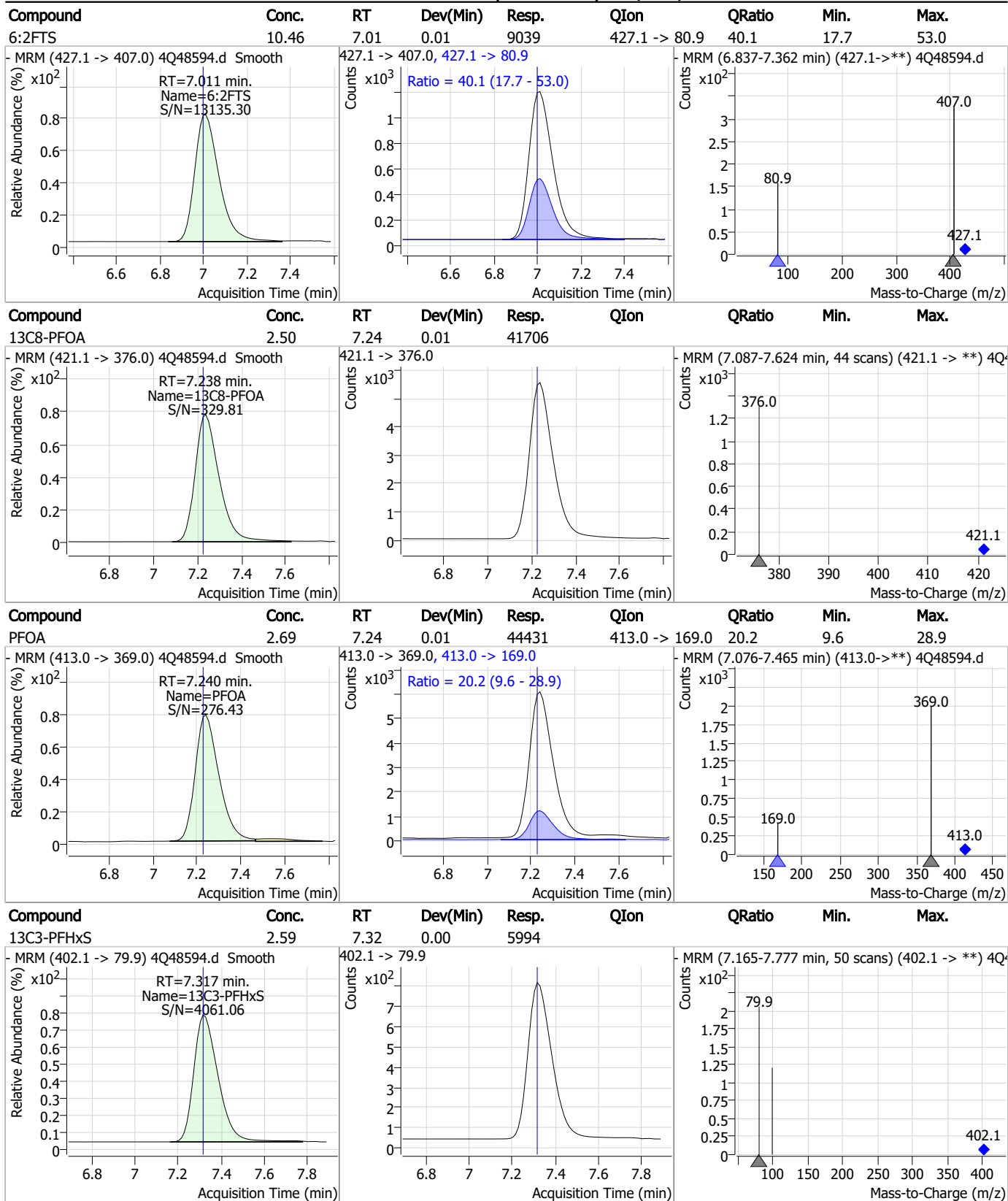
Perfluorinated Compounds by LC/MS/MS



7.7.10 7

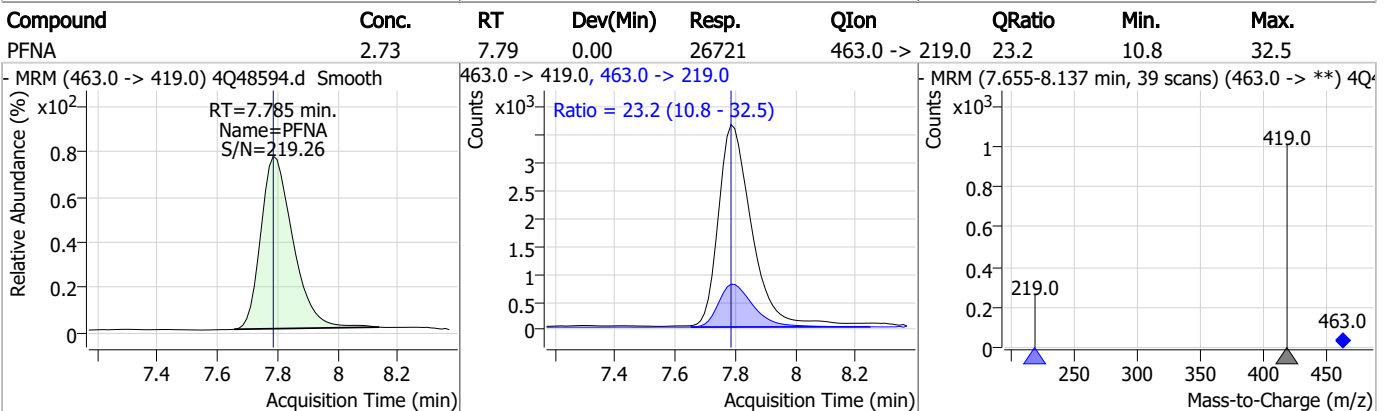
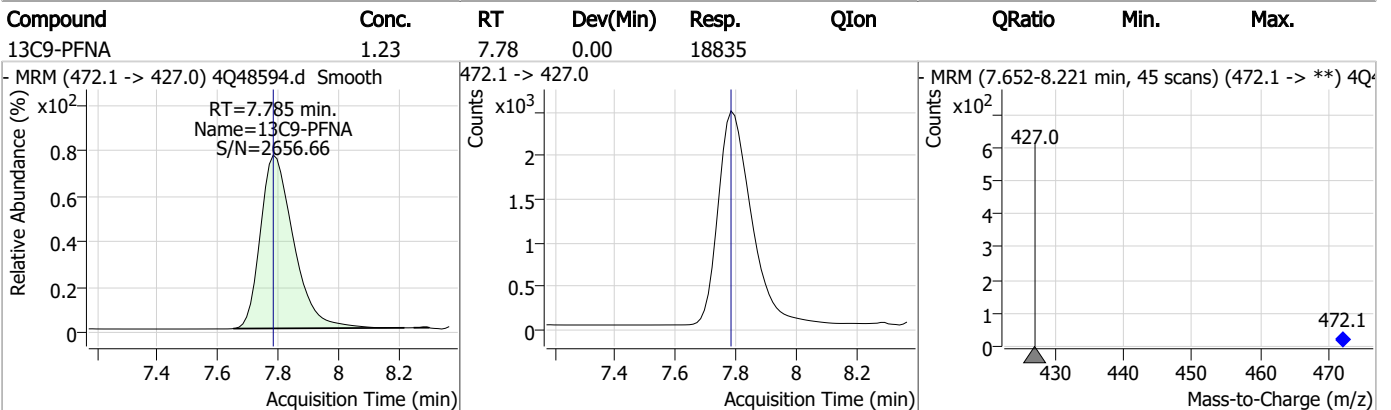
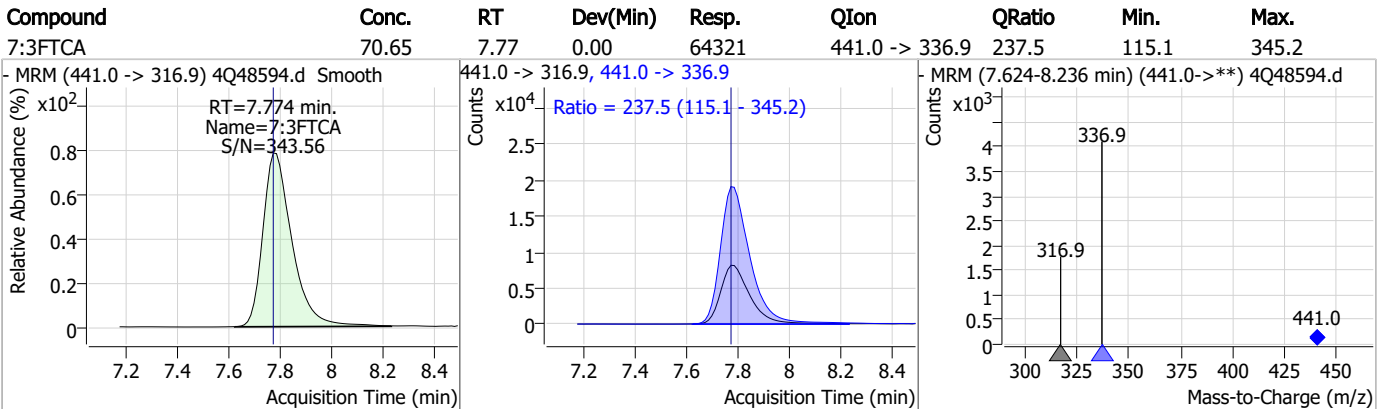
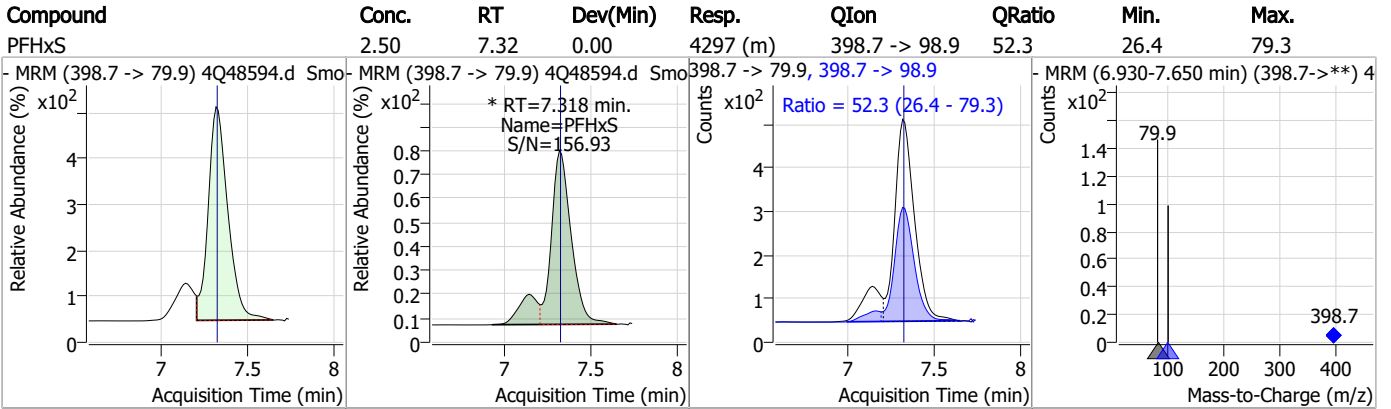


Perfluorinated Compounds by LC/MS/MS

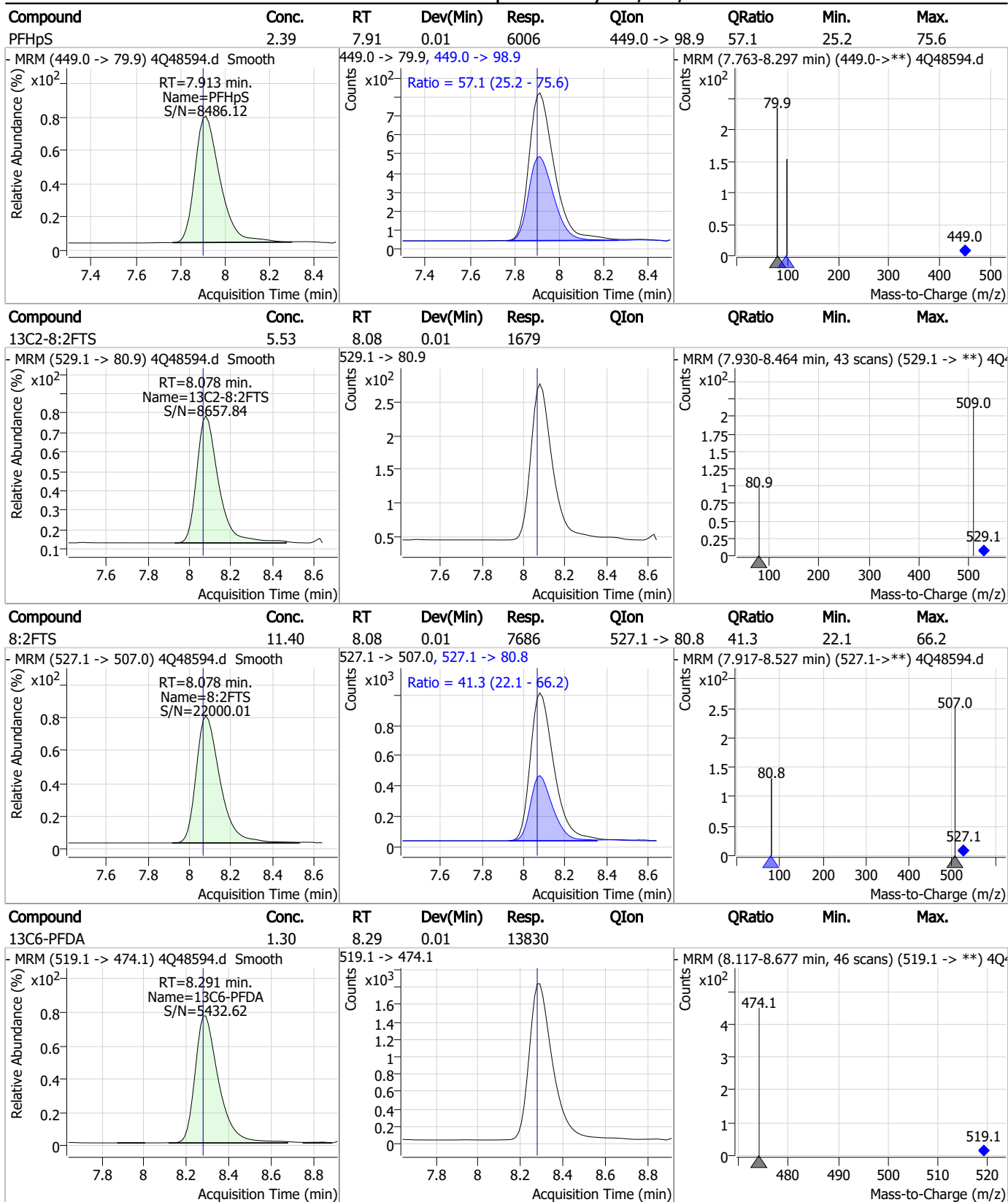


7.7.10 7

Perfluorinated Compounds by LC/MS/MS

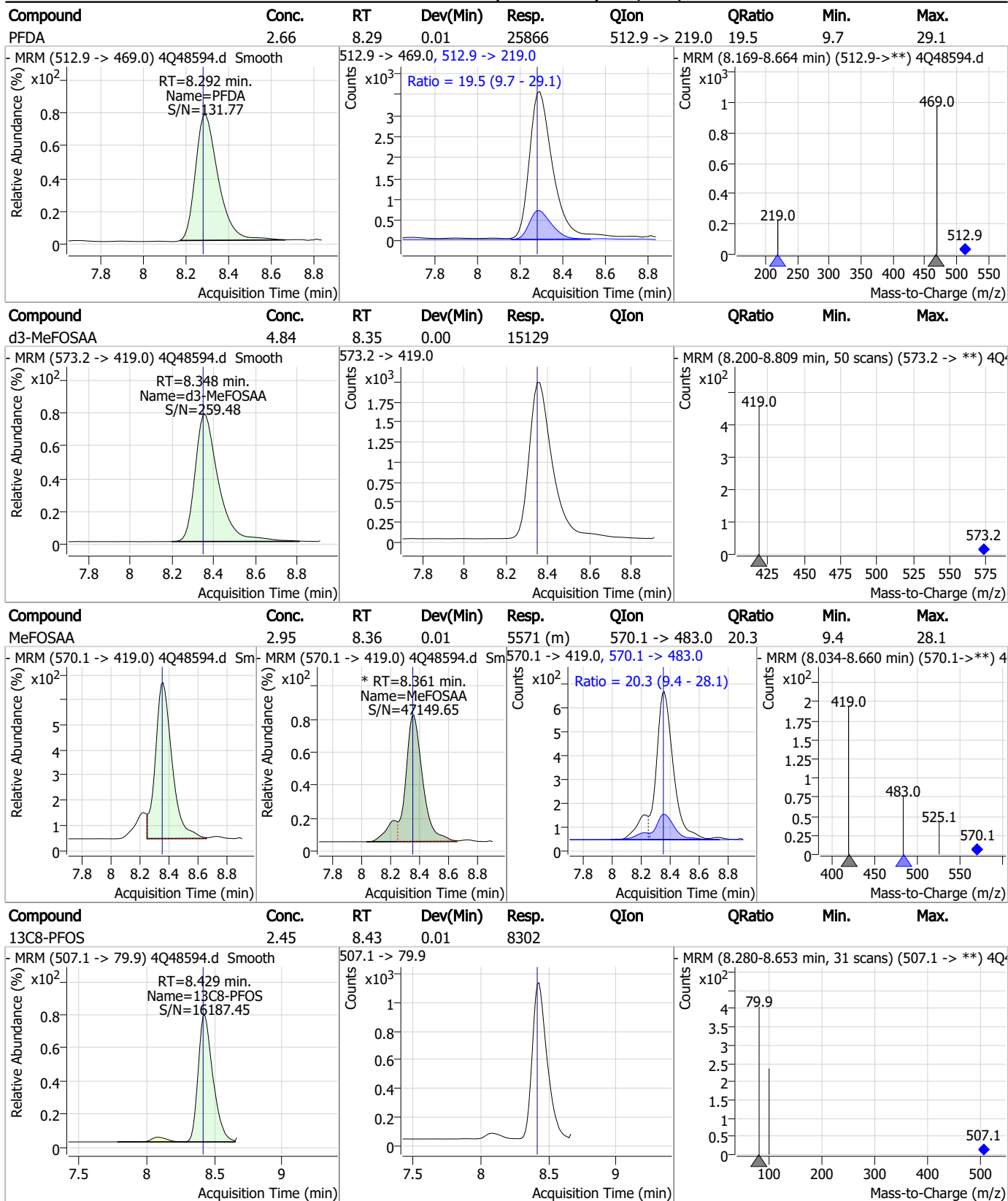


Perfluorinated Compounds by LC/MS/MS



7.7.10
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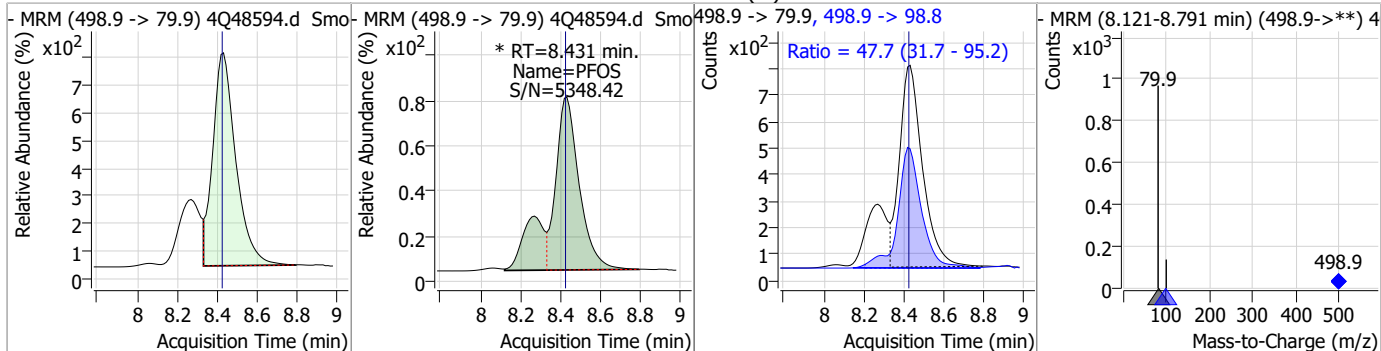
Perfluorinated Compounds by LC/MS/MS



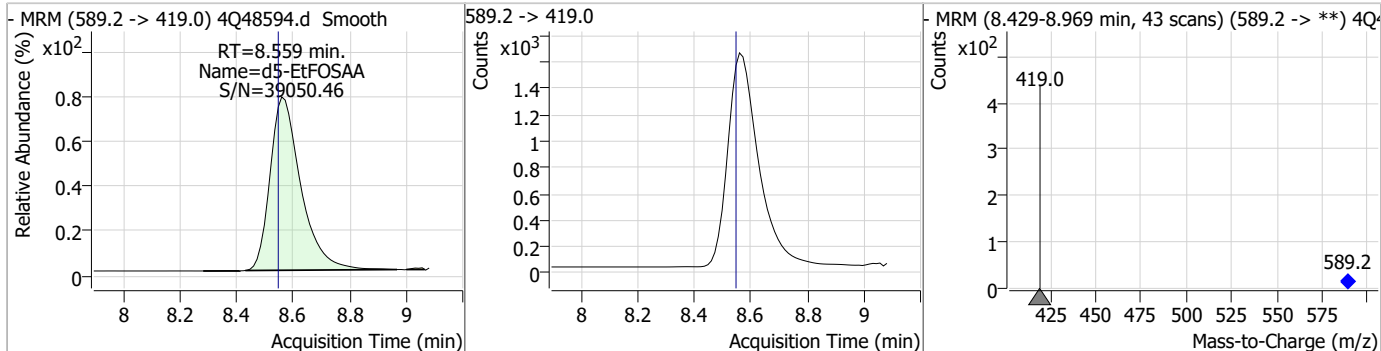
7.7.10
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Perfluorinated Compounds by LC/MS/MS

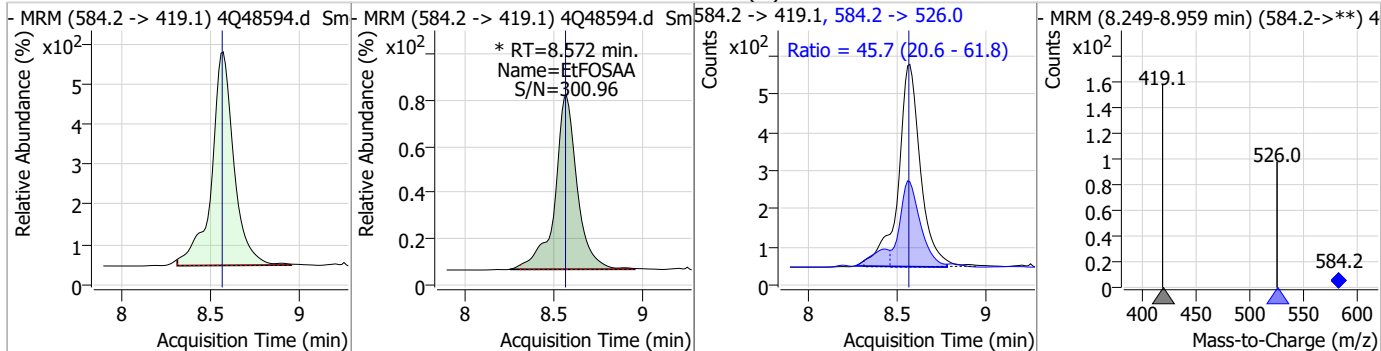
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.67	8.43	0.01	7877 (m)	498.9 -> 98.8	47.7	31.7	95.2



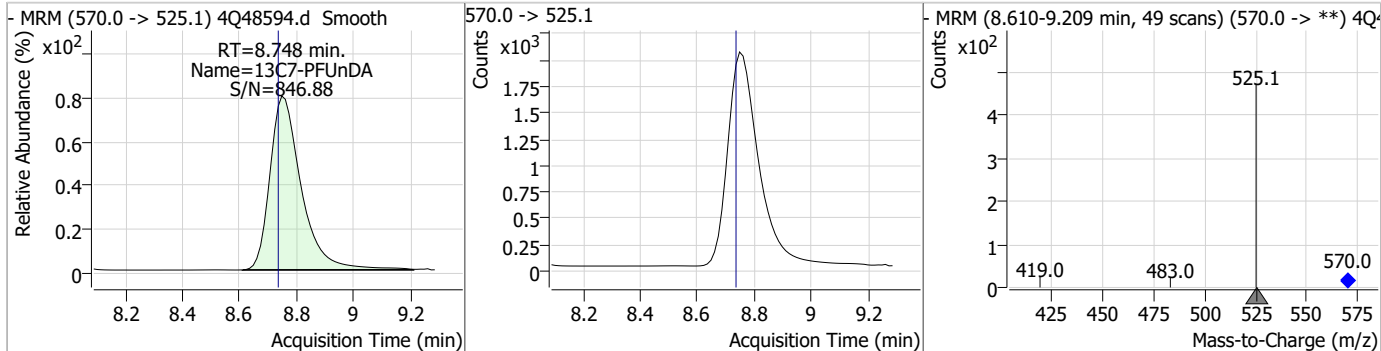
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.77	8.56	0.01	12264				



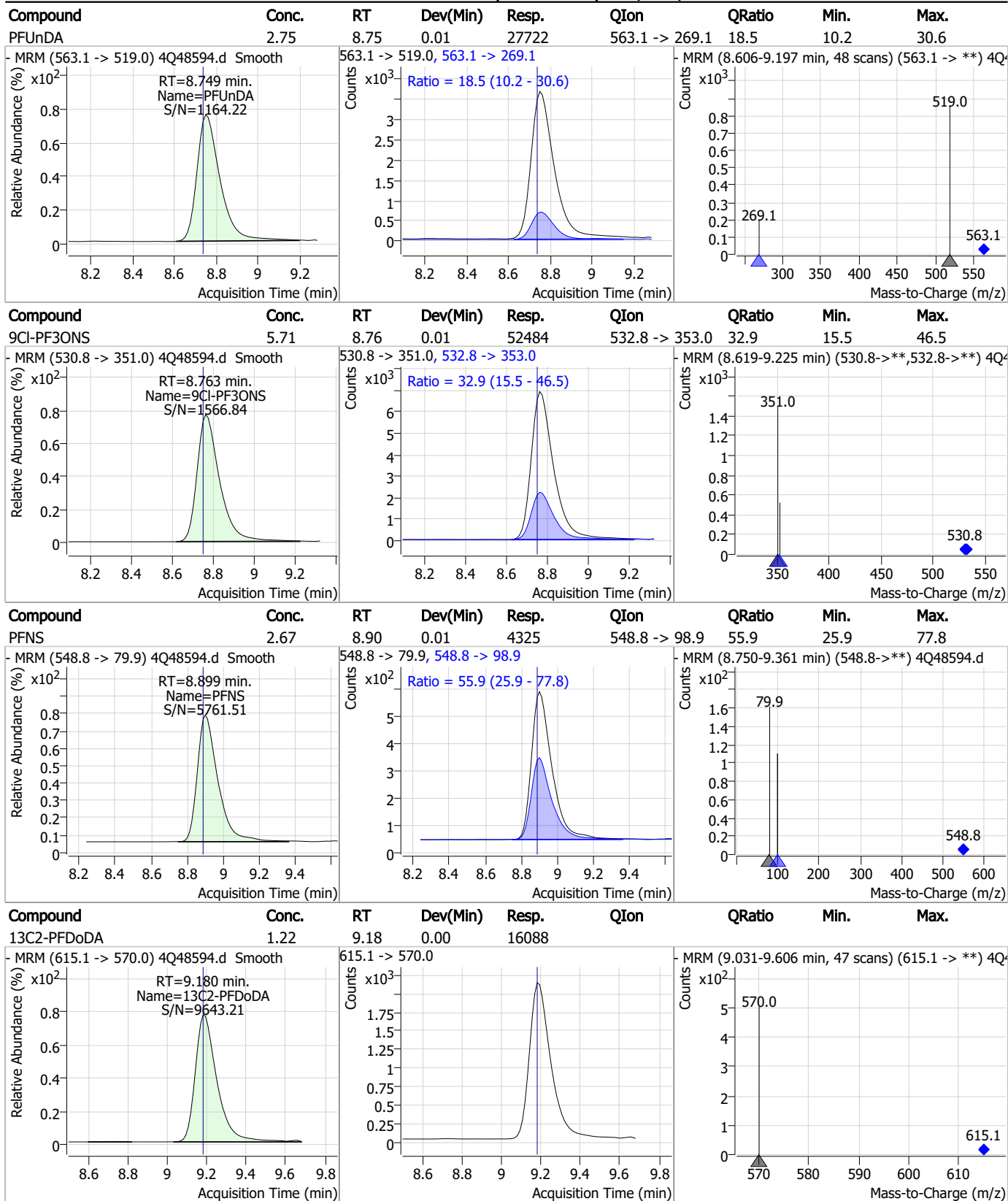
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.81	8.57	0.01	4714 (m)	584.2 -> 526.0	45.7	20.6	61.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.29	8.75	0.01	15473				

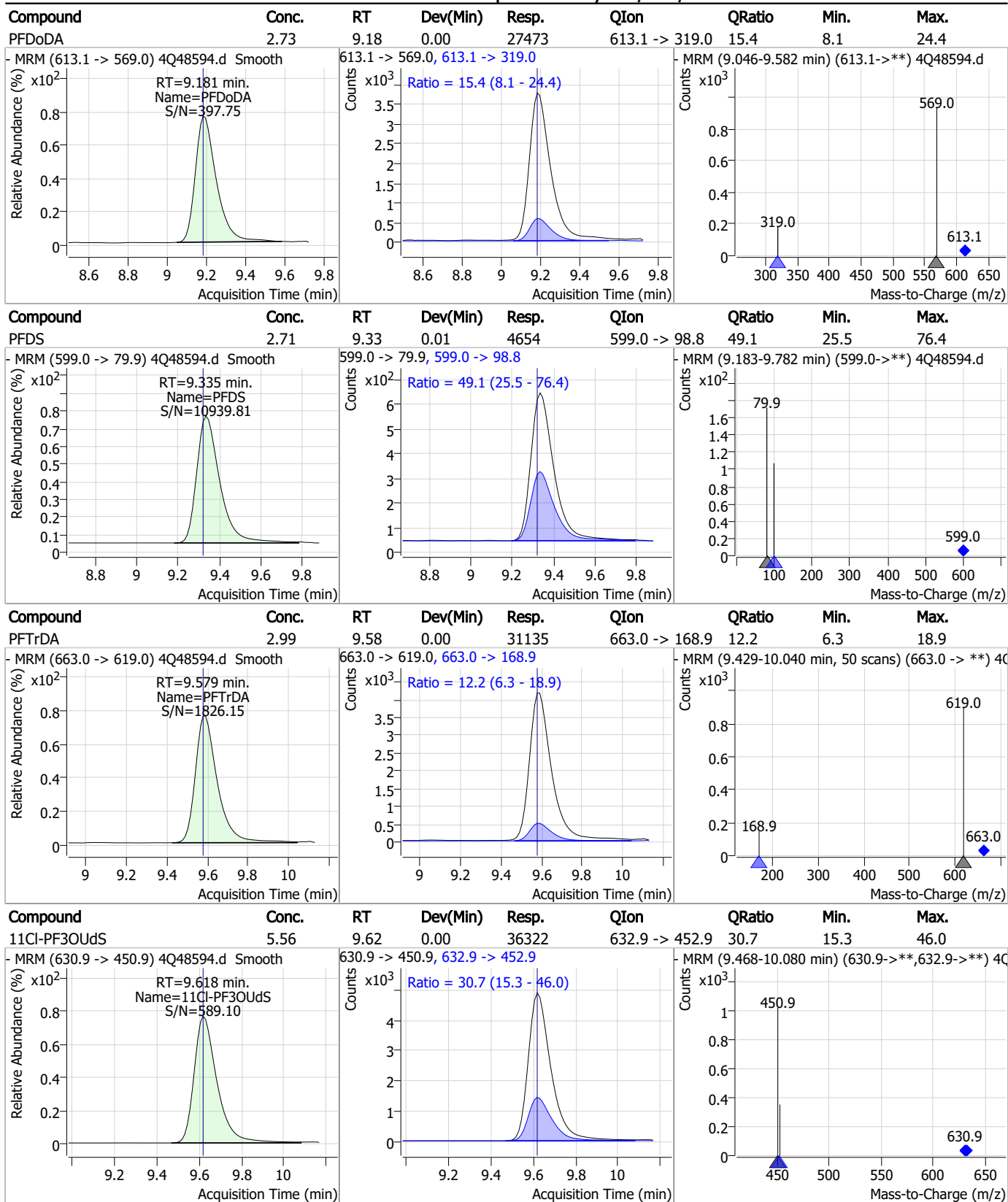


Perfluorinated Compounds by LC/MS/MS



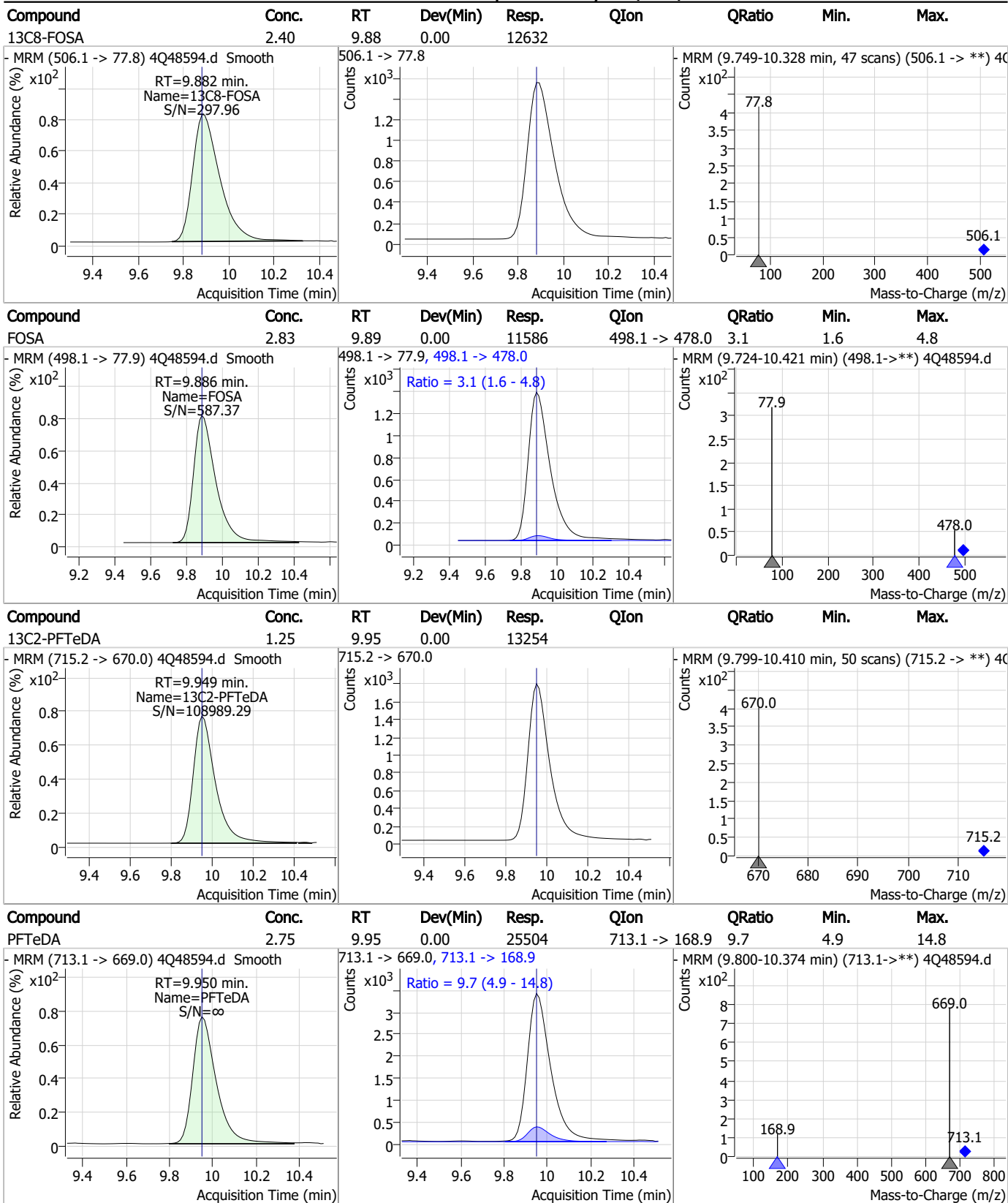
7.7.10 7

Perfluorinated Compounds by LC/MS/MS



7.7.10
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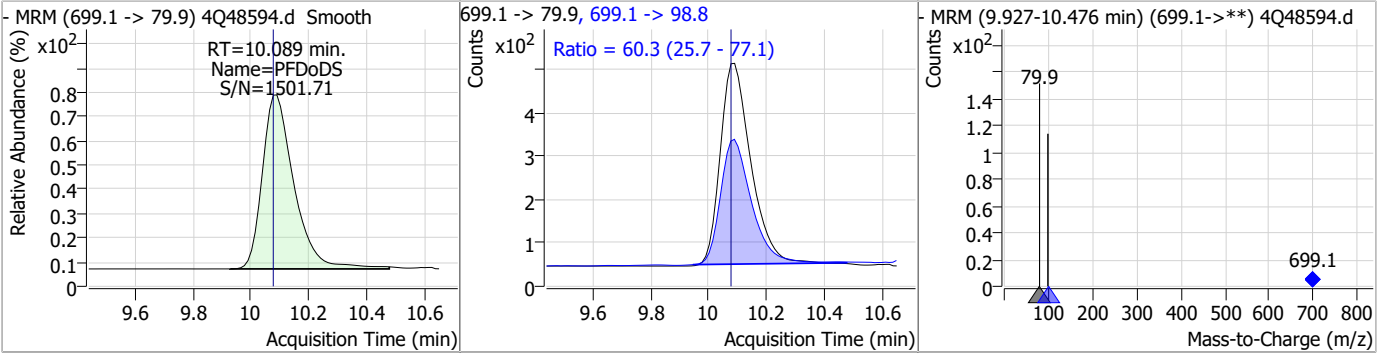
Perfluorinated Compounds by LC/MS/MS



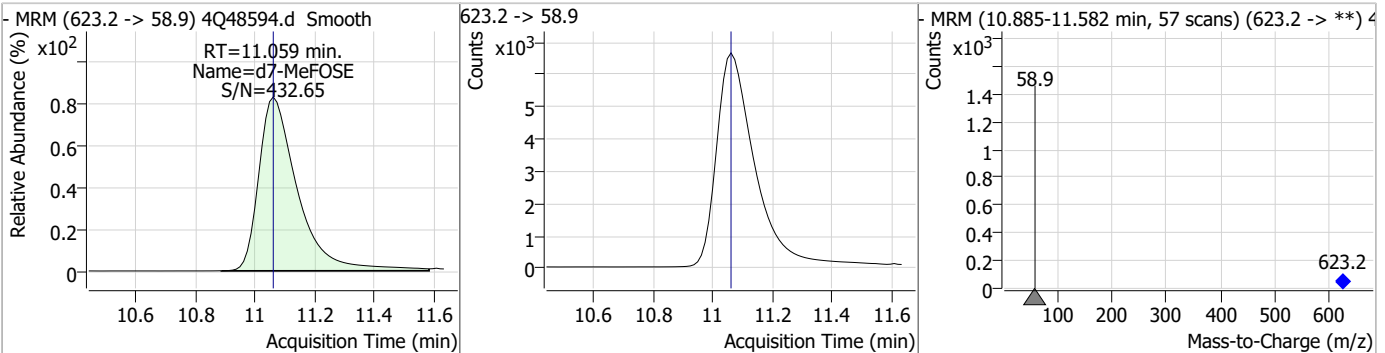
7.7.10
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Perfluorinated Compounds by LC/MS/MS

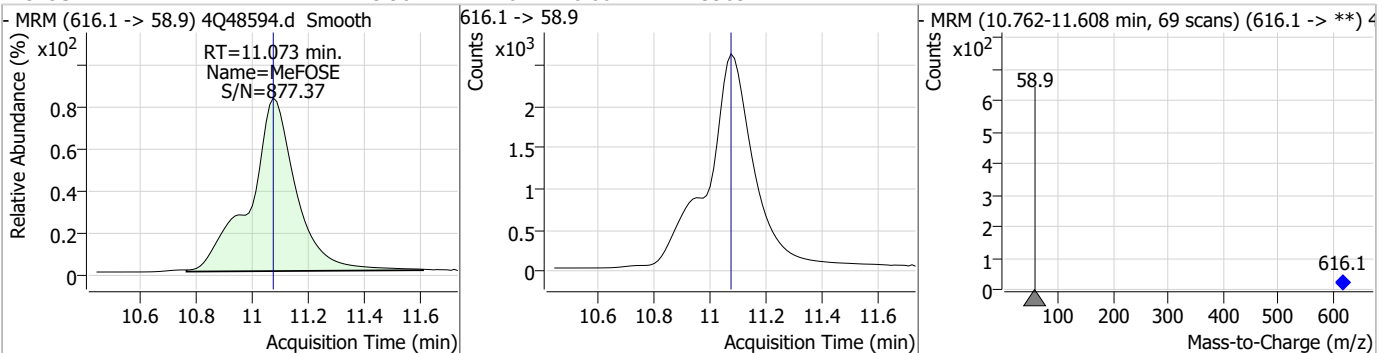
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	2.70	10.09	0.01	3557	699.1 -> 98.8	60.3	25.7	77.1



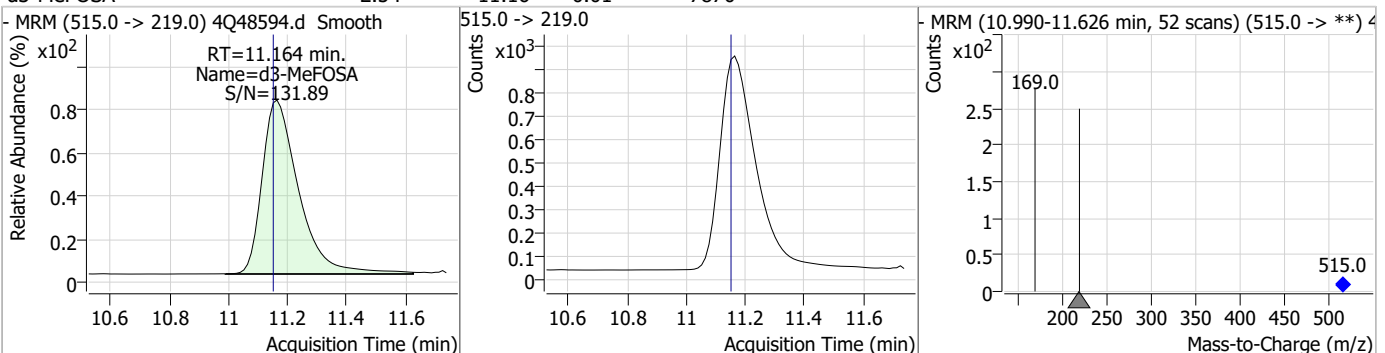
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.18	11.06	0.00	59819	623.2 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	13.98	11.07	0.00	29903	616.1 -> 58.9			



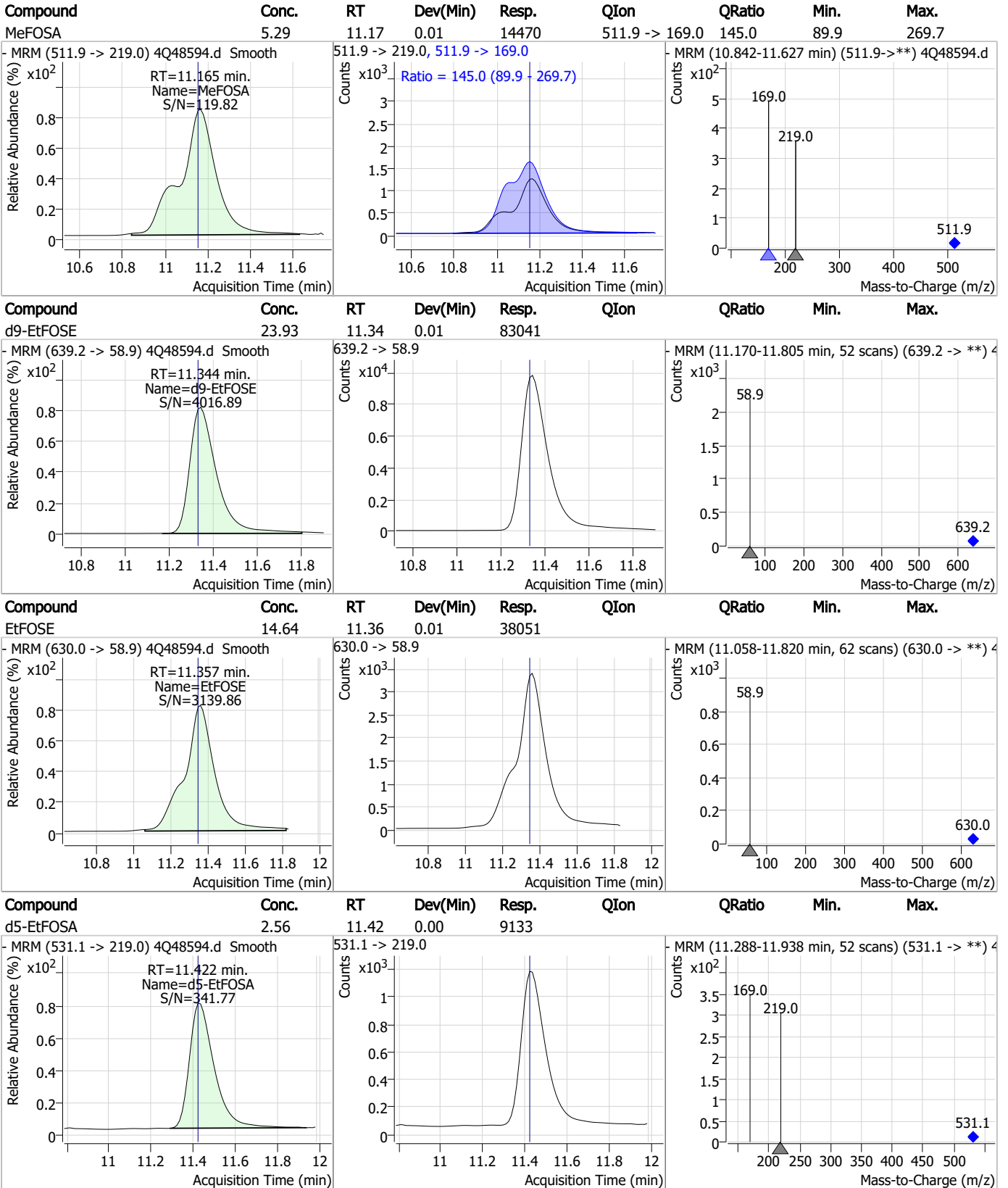
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.54	11.16	0.01	7870	515.0 -> 219.0			



7.7.10
7



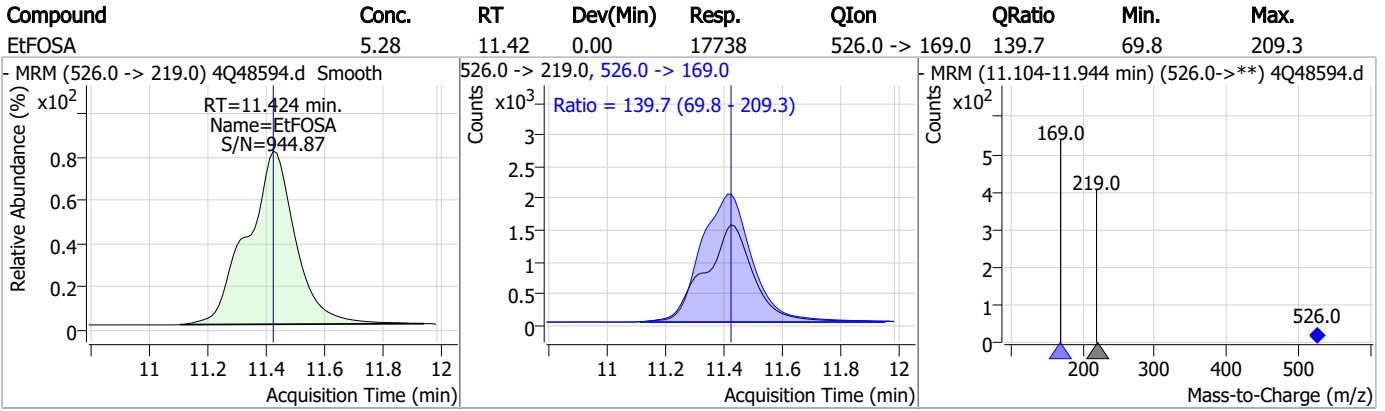
Perfluorinated Compounds by LC/MS/MS



7.7.10 7



Perfluorinated Compounds by LC/MS/MS



7.7.10
7

Manual Integration Approval Summary

Sample Number: S4Q711-ICV711 Method: EPA DRAFT 1633
Lab FileID: 4Q48594.D Analyst approved: 08/09/23 11:54 Anna Ludwig
Injection Time: 08/07/23 18:42 Supervisor approved: 08/09/23 14:46 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

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48595.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/7/2023 6:57:24 PM
 Sample Name : icv711-20
 Vial : P1-B4
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q711.batch.bin
 Sample Information : OP97964,S4Q711,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.899	216.8 -> 171.9	107092	10.00 µg/L	-0.013
M5-PFPeA	4.412	268.3 -> 223.0	64229	5.00 µg/L	0.000
M5-PFHxA	5.610	318.0 -> 273.0	37909	2.50 µg/L	0.000
M4-PFHpA	6.568	367.1 -> 322.0	27566	2.50 µg/L	0.012
M8-PFOA	7.238	421.1 -> 376.0	45419	2.50 µg/L	0.012
M9-PFNA	7.785	472.1 -> 427.0	19366	1.25 µg/L	0.000
M6-PFDA	8.279	519.1 -> 474.1	14724	1.25 µg/L	0.000
M7-PFUnDA	8.748	570.0 -> 525.1	17166	1.25 µg/L	0.012
M2-PFDoDA	9.180	615.1 -> 570.0	19044	1.25 µg/L	0.000
M2-PFTeDA	9.949	715.2 -> 670.0	14774	1.25 µg/L	0.000
M8-FOSA	9.882	506.1 -> 77.8	13818	2.50 µg/L	0.000
M3-PFBS	5.502	302.1 -> 79.9	9898	2.50 µg/L	0.013
M3-PFHxS	7.317	402.1 -> 79.9	6526	2.50 µg/L	0.000
M8-PFOS	8.417	507.1 -> 79.9	8681	2.50 µg/L	0.000
M2-4:2FTS	5.309	329.1 -> 80.9	639	5.00 µg/L	0.012
M2-6:2FTS	7.011	429.1 -> 80.9	1201	5.00 µg/L	0.012
M2-8:2FTS	8.078	529.1 -> 80.9	1583	5.00 µg/L	0.012
M3-MeFOSAA	8.348	573.2 -> 419.0	16551	5.00 µg/L	0.000
M3-HFPO-DA	5.989	286.9 -> 168.9	35054	10.00 µg/L	0.012
M5-EtFOSAA	8.559	589.2 -> 419.0	13631	5.00 µg/L	0.012
M7-MeFOSE	11.059	623.2 -> 58.9	64821	25.00 µg/L	0.000
M9-EtFOSE	11.344	639.2 -> 58.9	88633	25.00 µg/L	0.012
M5-EtFOSA	11.422	531.1 -> 219.0	9481	2.50 µg/L	0.000
M3-MeFOSA	11.164	515.0 -> 219.0	8284	2.50 µg/L	0.012
13C4-PFOS	8.418	502.8 -> 79.9	8691	2.50 µg/L	0.000
13C3-PFBA	2.903	216.0 -> 172.0	61499	5.00 µg/L	0.000
18O2-PFHxS	7.316	403.0 -> 83.9	4632	2.50 µg/L	0.000
13C4-PFOA	7.239	417.1 -> 372.0	54984	2.50 µg/L	0.012
13C2-PFDA	8.279	515.1 -> 470.1	16407	1.25 µg/L	0.000
13C5-PFNA	7.785	468.0 -> 423.0	21747	1.25 µg/L	0.000
13C2-PFHxA	5.611	315.1 -> 270.0	36803	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.309	329.1 -> 80.9	639	5.53 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.5%		
13C2-6:2FTS	7.011	429.1 -> 80.9	1201	5.43 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.7%		
13C2-8:2FTS	8.078	529.1 -> 80.9	1583	4.71 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.3%		
13C2-PFDoDA	9.180	615.1 -> 570.0	19044	1.35 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.4%		
13C2-PFTeDA	9.949	715.2 -> 670.0	14774	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.7%		
13C3-PFBS	5.502	302.1 -> 79.9	9898	2.51 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C3-PFHxS	7.317	402.1 -> 79.9	6526	2.54 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C4-PFBA	2.899	216.8 -> 171.9	107092	10.19 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C4-PFHpA	6.568	367.1 -> 322.0	27566	2.51 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C5-PFHxA	5.610	318.0 -> 273.0	37909	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C5-PFPeA	4.412	268.3 -> 223.0	64229	4.99 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C6-PFDA	8.279	519.1 -> 474.1	14724	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C7-PFUnDA	8.748	570.0 -> 525.1	17166	1.34 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.4%	
13C8-FOSA	9.882	506.1 -> 77.8	13818	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C8-PFOA	7.238	421.1 -> 376.0	45419	2.51 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C8-PFOS	8.417	507.1 -> 79.9	8681	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C9-PFNA	7.785	472.1 -> 427.0	19366	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.0%	
d3-MeFOSAA	8.348	573.2 -> 419.0	16551	5.13 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C3-HFPO-DA	5.989	286.9 -> 168.9	35054	10.00 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
d3-MeFOSA	11.164	515.0 -> 219.0	8284	2.59 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.8%	
d5-EtFOSAA	8.559	589.2 -> 419.0	13631	5.14 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.8%	
d7-MeFOSE	11.059	623.2 -> 58.9	64821	25.40 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
d9-EtFOSE	11.344	639.2 -> 58.9	88633	24.76 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.1%	
d5-EtFOSA	11.422	531.1 -> 219.0	9481	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.1%	
Target Compounds					QValue
4:2FTS	5.297	327.1 -> 307.0	16963	19.68 µg/L	99
		327.1 -> 80.9	7061		
6:2FTS	7.011	427.1 -> 407.0	20655	20.26 µg/L	97
		427.1 -> 80.9	7697		
8:2FTS	8.078	527.1 -> 507.0	15965	25.12 µg/L	94
		527.1 -> 80.8	6401		
EtFOSAA	8.559	584.2 -> 419.1	38576	20.71 µg/L	m 95
		584.2 -> 526.0	17152		
FOSA	9.886	498.1 -> 77.9	87730	19.62 µg/L	99
		498.1 -> 478.0	2587		
MeFOSAA	8.349	570.1 -> 419.0	44332	21.43 µg/L	99
		570.1 -> 483.0	8577		
PFBA	2.907	212.8 -> 168.9	48340	19.60 µg/L	100
PFBS	5.503	298.7 -> 79.9	56198	23.25 µg/L	99
		298.7 -> 98.8	21257		
PFDA	8.279	512.9 -> 469.0	217573	21.03 µg/L	99
		512.9 -> 219.0	41186		
PFDoDA	9.181	613.1 -> 569.0	212654	17.85 µg/L	99
		613.1 -> 319.0	33890		
PFDS	9.335	599.0 -> 79.9	37366	20.84 µg/L	98

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.568	599.0 -> 98.8	18636	21.03	µg/L	99
		363.1 -> 319.0	261564			
PFHpS	7.913	363.1 -> 169.0	46429	20.44	µg/L	98
		449.0 -> 79.9	53638			
PFHxA	5.613	449.0 -> 98.9	27951	21.21	µg/L	99
		313.0 -> 269.0	231989			
PFHxS	7.318	313.0 -> 118.9	7024	22.35	µg/L	m
		398.7 -> 79.9	41855			
PFNA	7.785	398.7 -> 98.9	20275	22.88	µg/L	100
		463.0 -> 419.0	230603			
PFNS	8.899	463.0 -> 219.0	50335	21.30	µg/L	99
		548.8 -> 79.9	36118			
PFOA	7.240	548.8 -> 98.9	18983	19.83	µg/L	99
		413.0 -> 369.0	357088			
PFOS	8.419	413.0 -> 169.0	68026	20.52	µg/L	m
		498.9 -> 79.9	63385			
PFPeA	4.414	498.9 -> 98.8	29898	21.56	µg/L	100
		263.0 -> 219.0	240694			
PFPeS	6.582	349.1 -> 79.9	38422	21.80	µg/L	98
		349.1 -> 98.9	16544			
PFTeDA	9.950	713.1 -> 669.0	216786	20.95	µg/L	99
		713.1 -> 168.9	20596			
PFTrDA	9.579	663.0 -> 619.0	223651	18.16	µg/L	99
		663.0 -> 168.9	27375			
PFUnDA	8.749	563.1 -> 519.0	211885	18.95	µg/L	100
		563.1 -> 269.1	42978			
11CI-PF3OUdS	9.617	630.9 -> 450.9	155511	21.16	µg/L	99
		632.9 -> 452.9	48199			
9CI-PF3ONS	8.763	530.8 -> 351.0	217596	21.04	µg/L	99
		532.8 -> 353.0	65814			
ADONA	6.831	376.9 -> 250.9	379216	18.64	µg/L	99
		376.9 -> 84.8	95785			
HFPO-DA	5.990	284.9 -> 168.9	54882	19.03	µg/L	96
		284.9 -> 184.9	6308			
3:3FTCA	3.861	241.0 -> 177.0	11571	18.59	µg/L	99
		241.0 -> 117.0	1112			
5:3FTCA	6.296	341.0 -> 237.1	37248	20.81	µg/L	99
		341.0 -> 217.0	26023			
7:3FTCA	7.774	441.0 -> 316.9	19213	19.47	µg/L	92
		441.0 -> 336.9	46680			
EtFOSA	11.437	526.0 -> 219.0	64113	18.39	µg/L	79
		526.0 -> 169.0	73388			
EtFOSE	11.357	630.0 -> 58.9	309821	111.71	µg/L	100
MeFOSA	11.165	511.9 -> 219.0	53021	18.40	µg/L	56
		511.9 -> 169.0	62175			
MeFOSE	11.085	616.1 -> 58.9	252269	108.83	µg/L	100
PFDoDS	10.089	699.1 -> 79.9	29040	21.05	µg/L	93
		699.1 -> 98.8	16312			
NFDHA	5.491	295.0 -> 201.0	14340	20.34	µg/L	94
		295.0 -> 84.9	3979			
PFMBA	4.828	279.0 -> 85.1	128115	20.48	µg/L	100
PFMPA	3.540	229.0 -> 84.9	124204	20.36	µg/L	100
PFEESA	6.034	314.8 -> 134.9	159809	18.14	µg/L	100
		314.8 -> 82.9	5706			

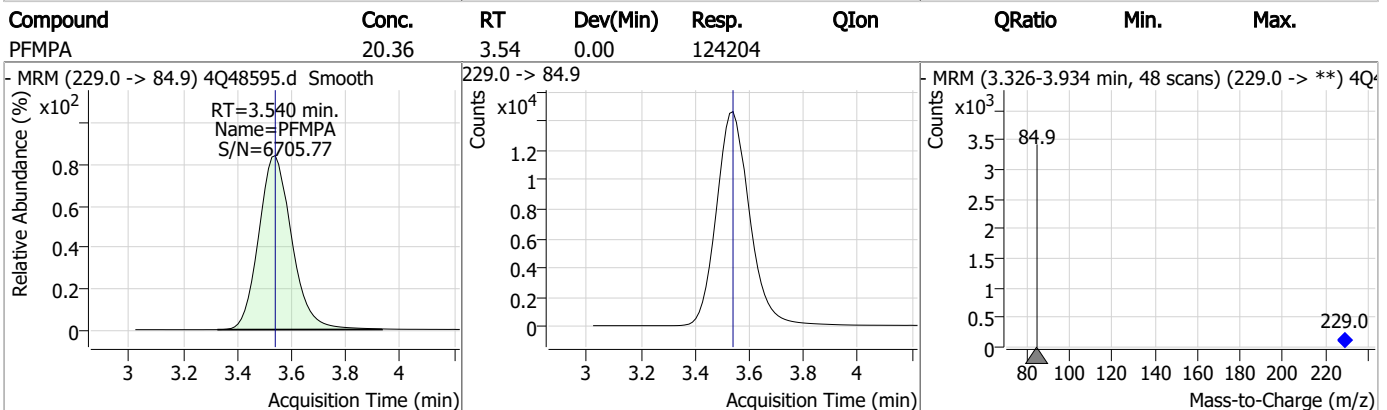
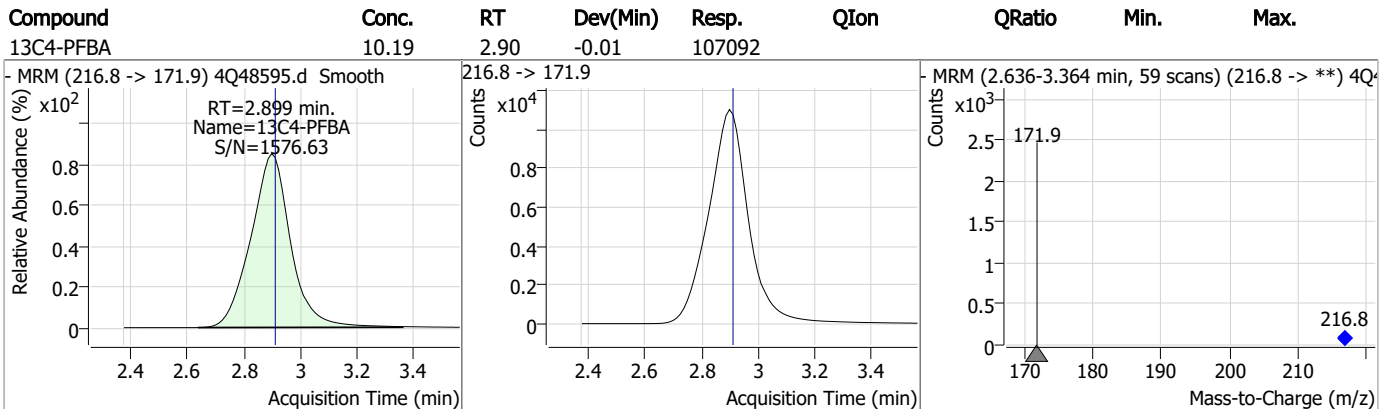
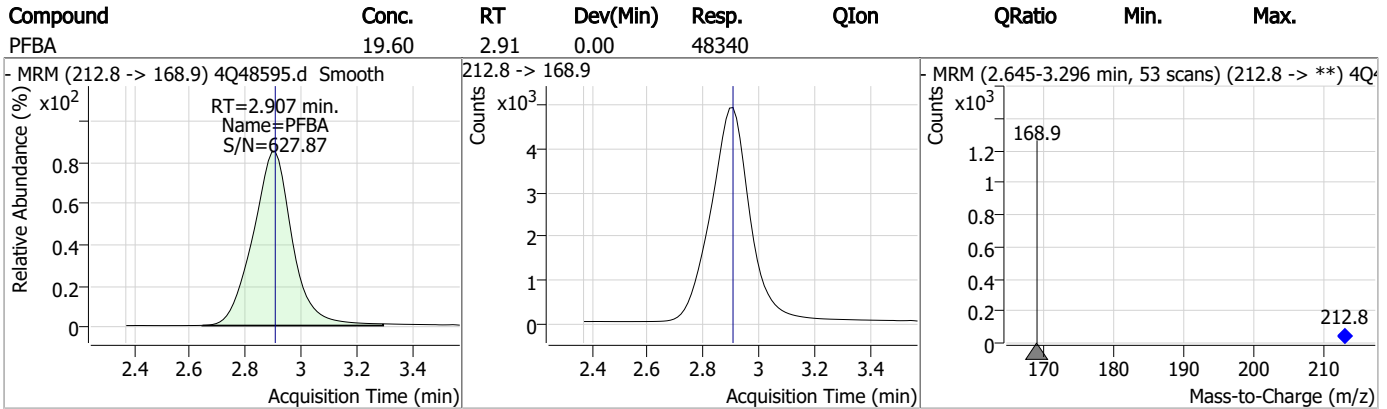
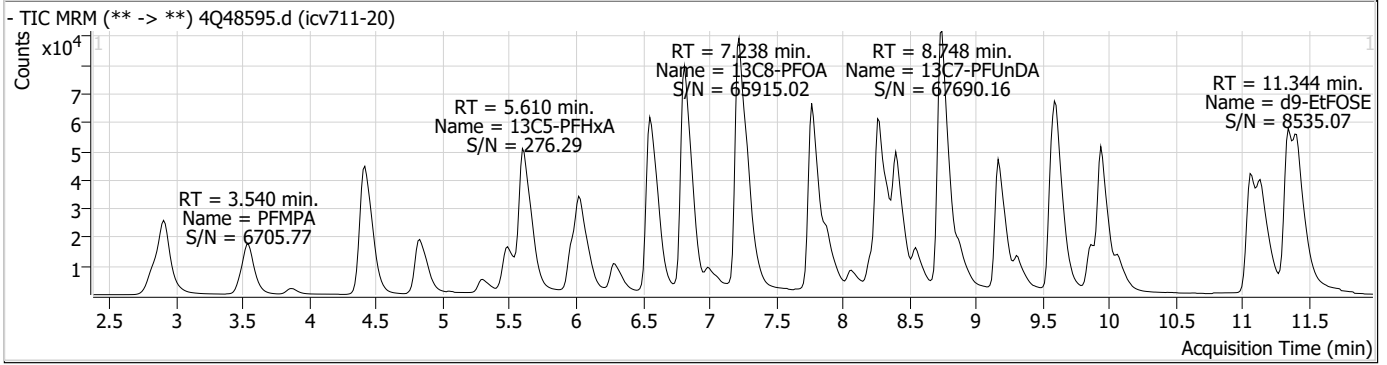
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

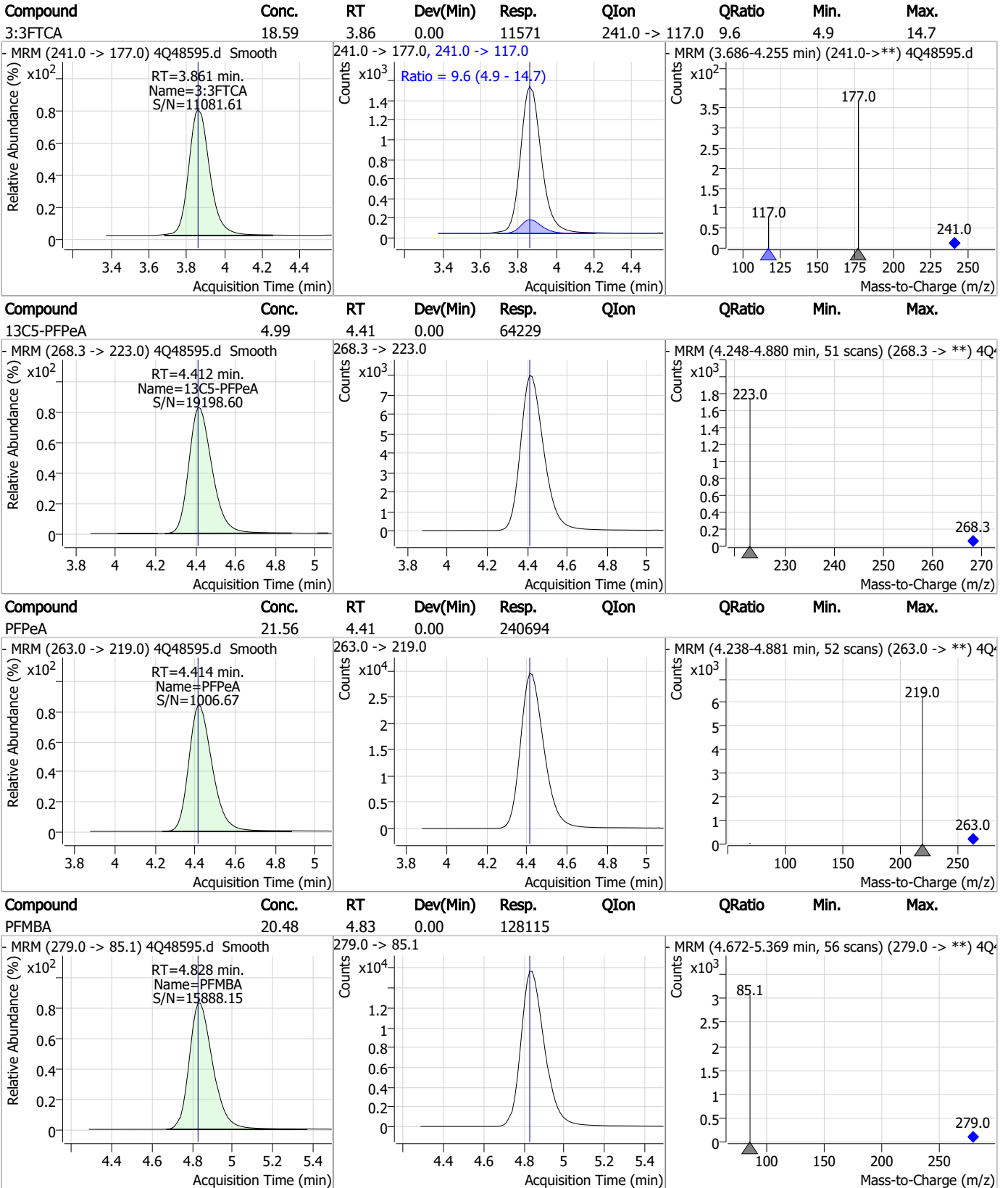
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.11
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Perfluorinated Compounds by LC/MS/MS



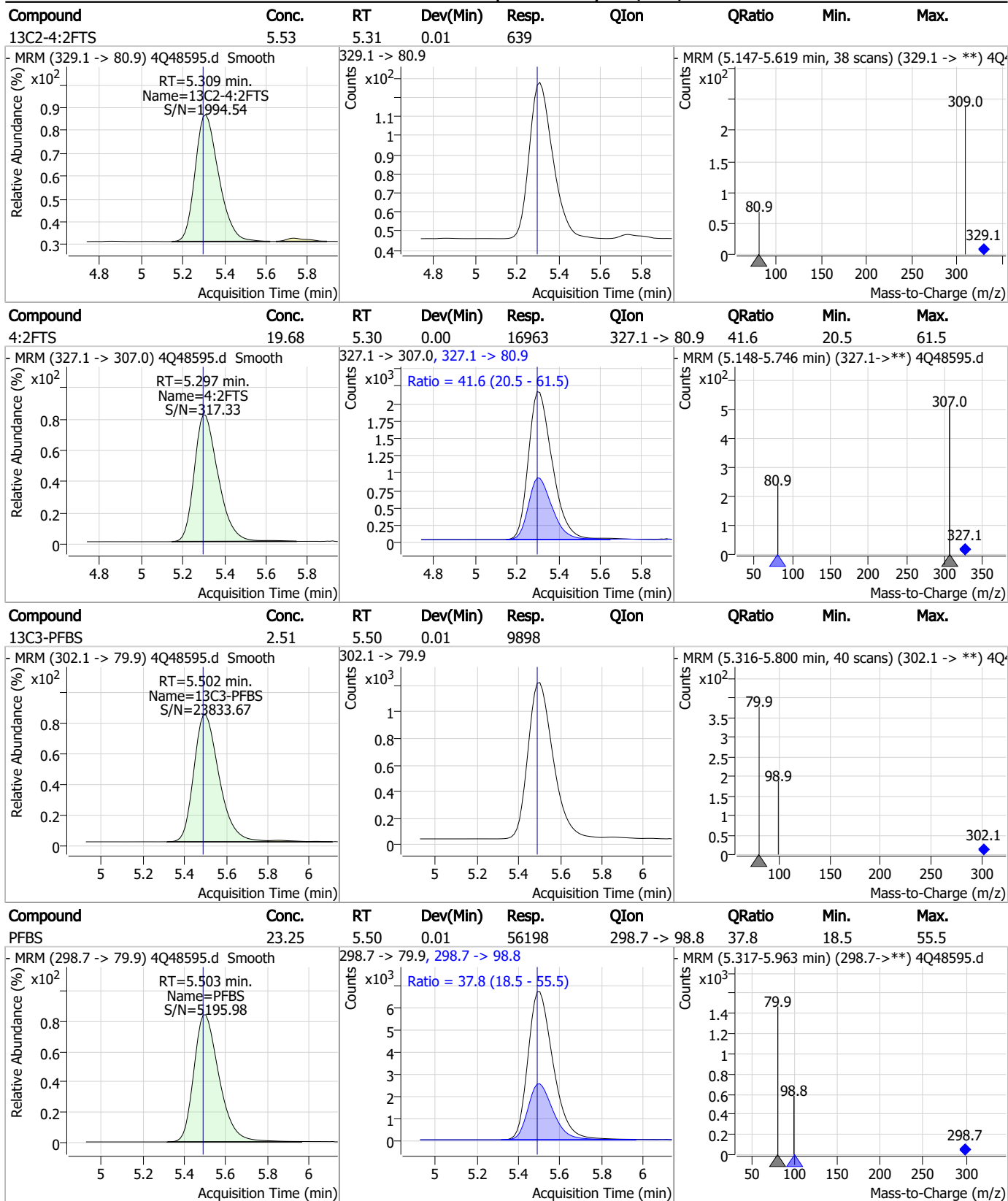
Perfluorinated Compounds by LC/MS/MS



7.7.11
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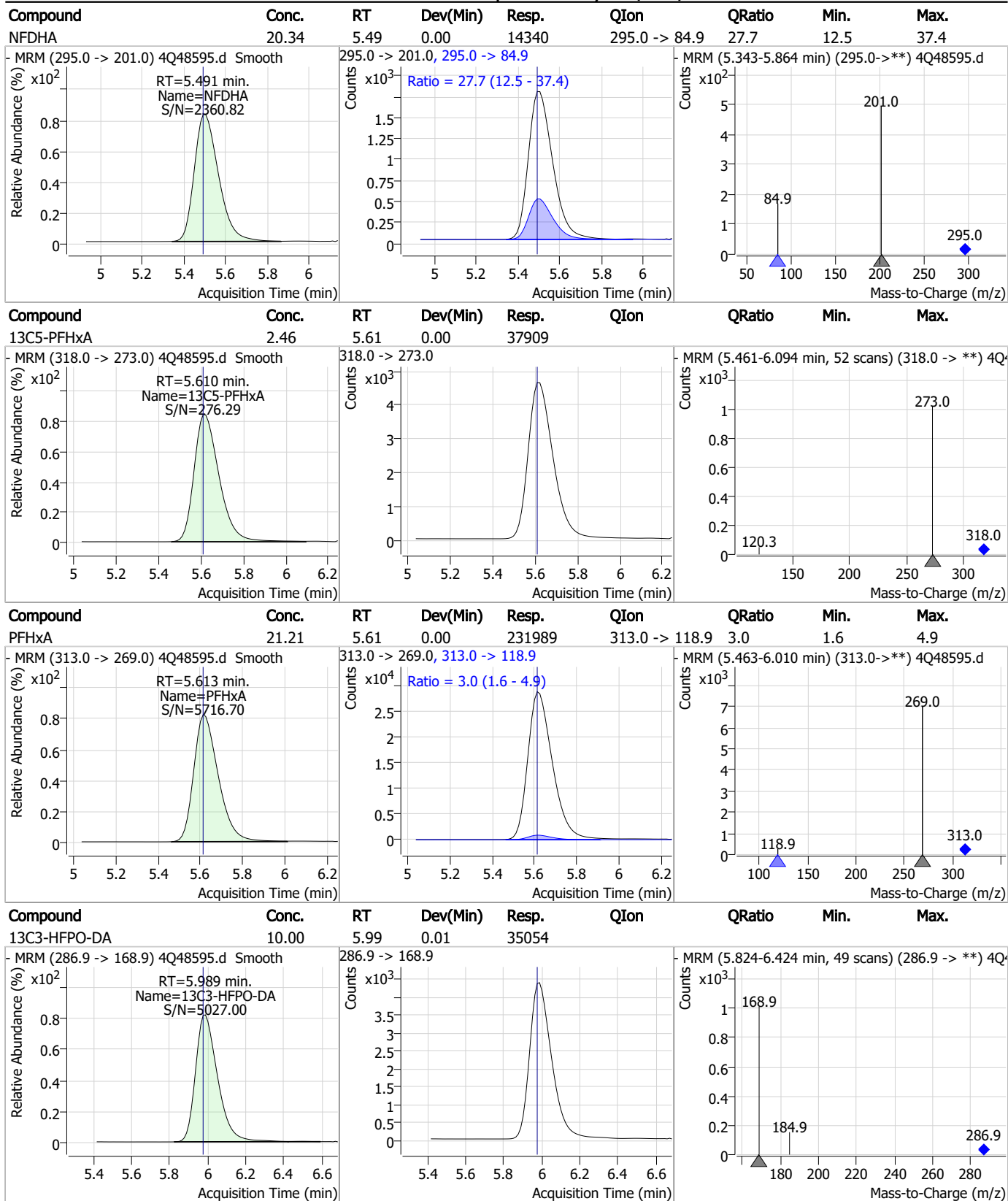
Perfluorinated Compounds by LC/MS/MS



7.7.11

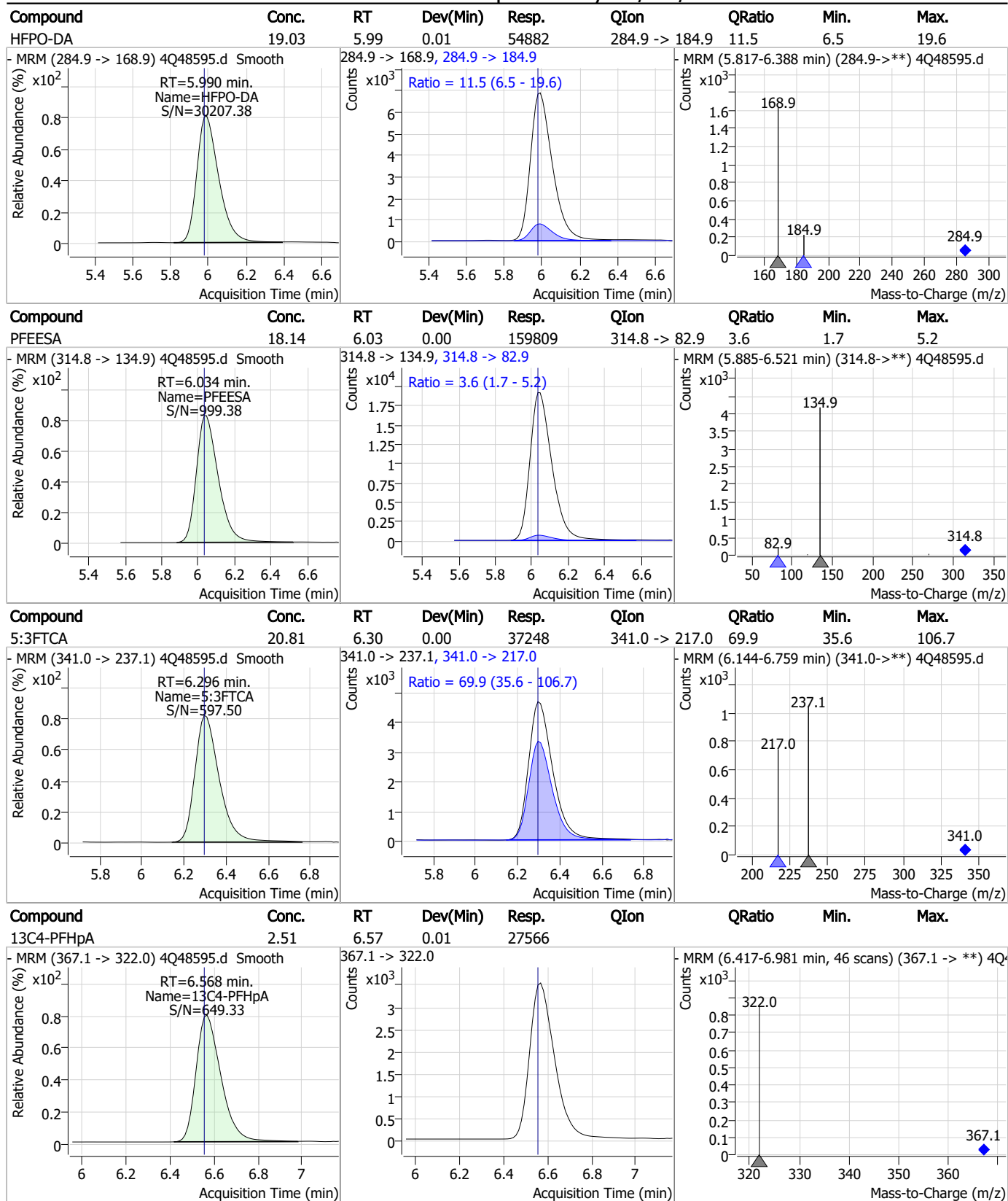
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Perfluorinated Compounds by LC/MS/MS



7.7.11
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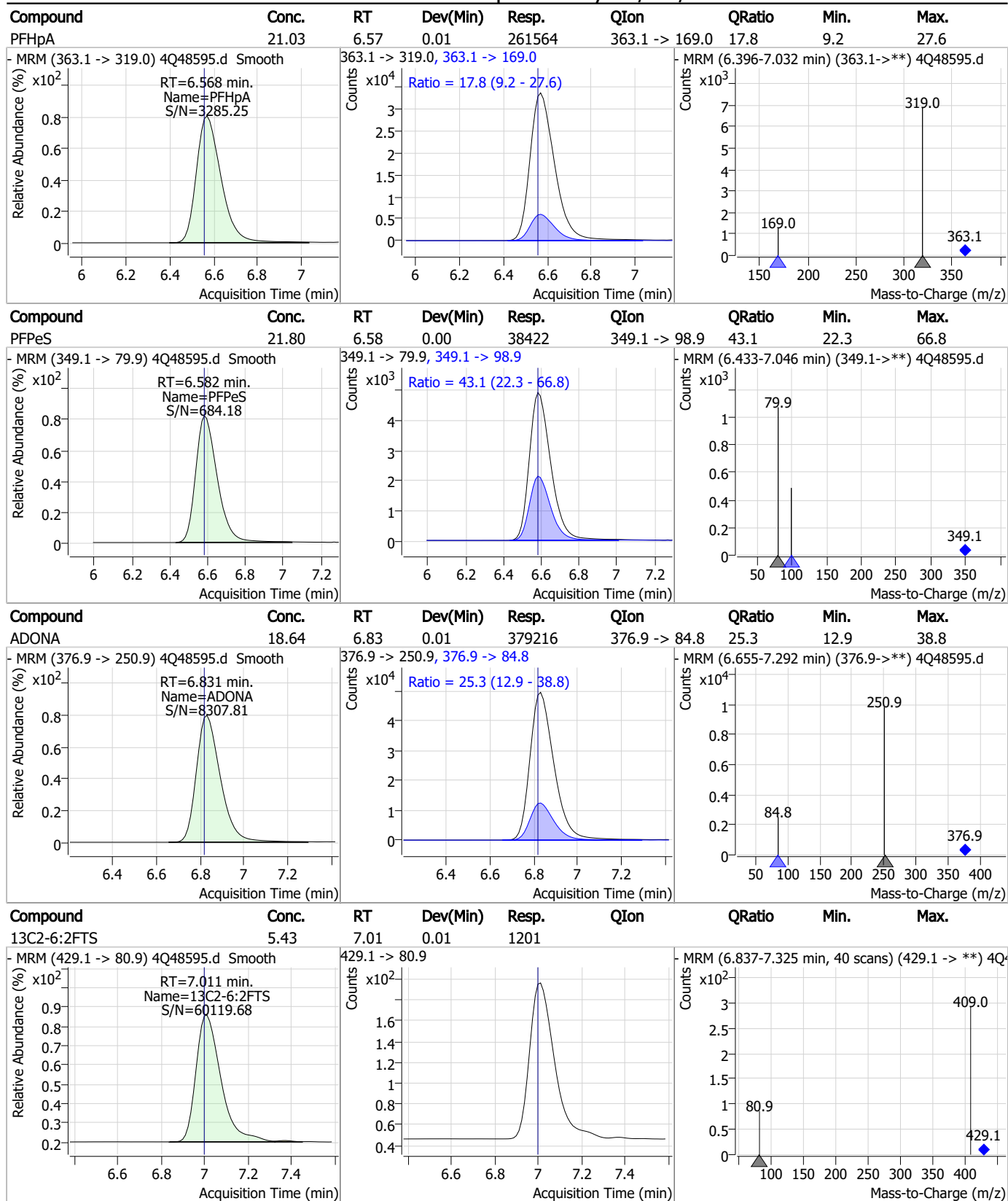
Perfluorinated Compounds by LC/MS/MS



7.7.11

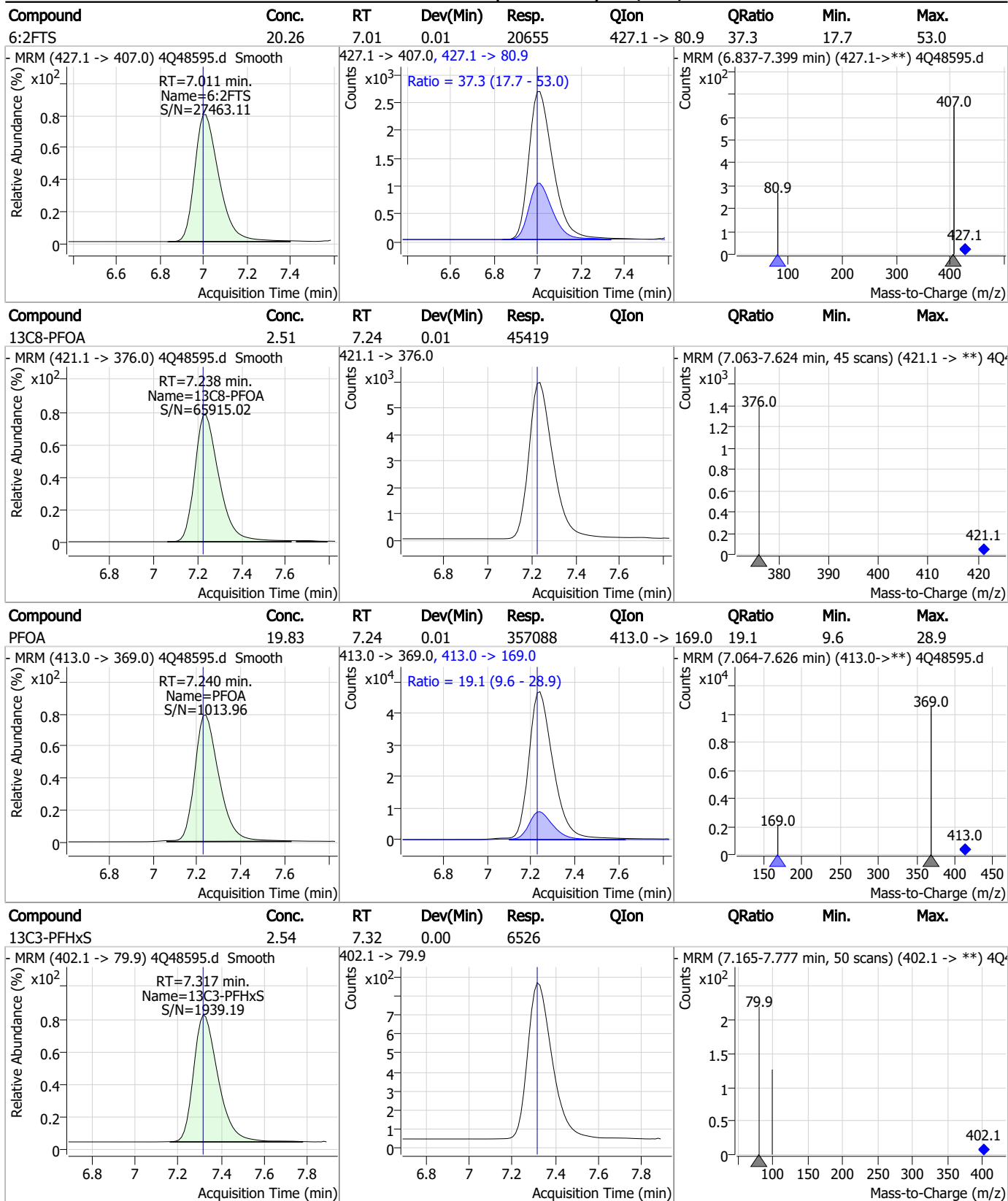
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Perfluorinated Compounds by LC/MS/MS



7.7.11
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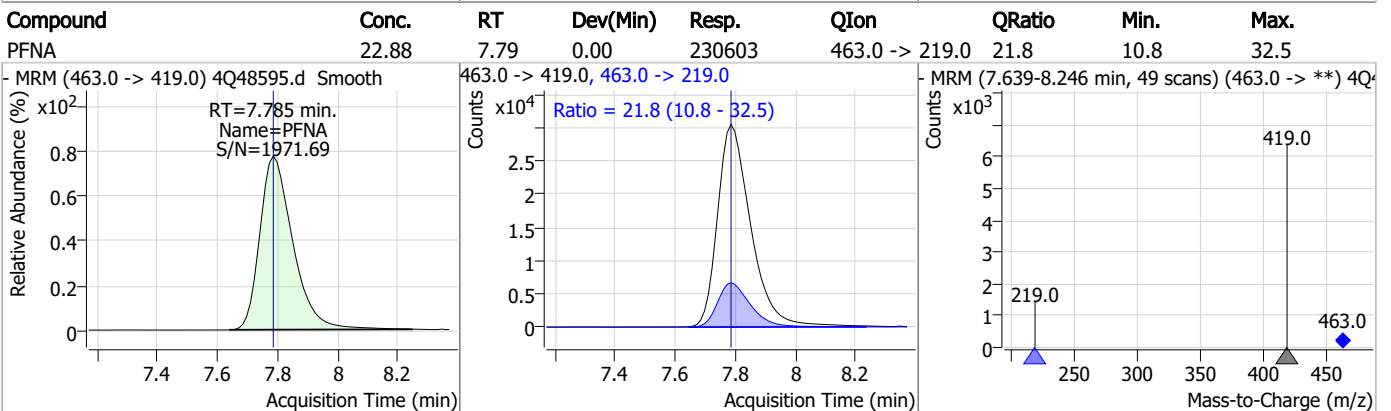
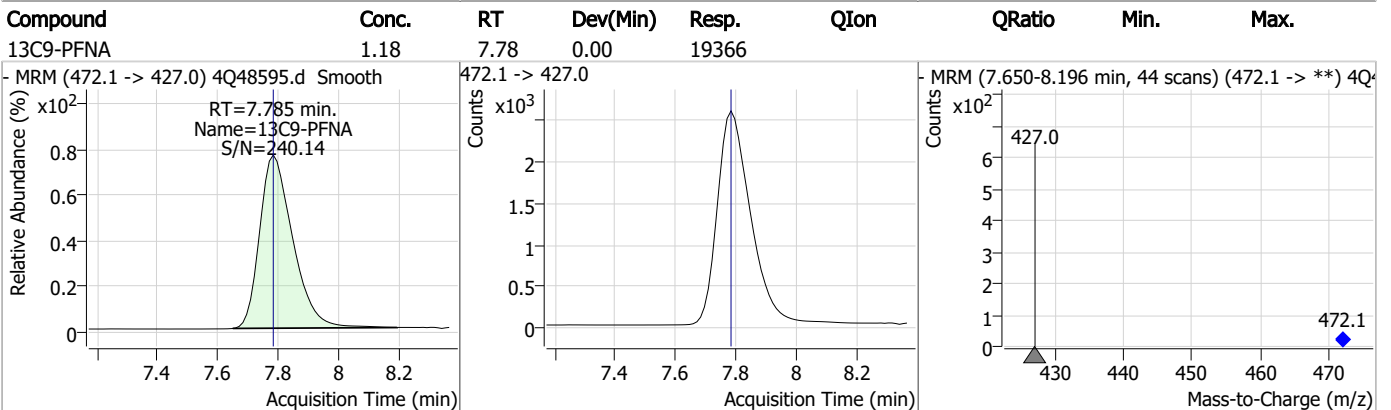
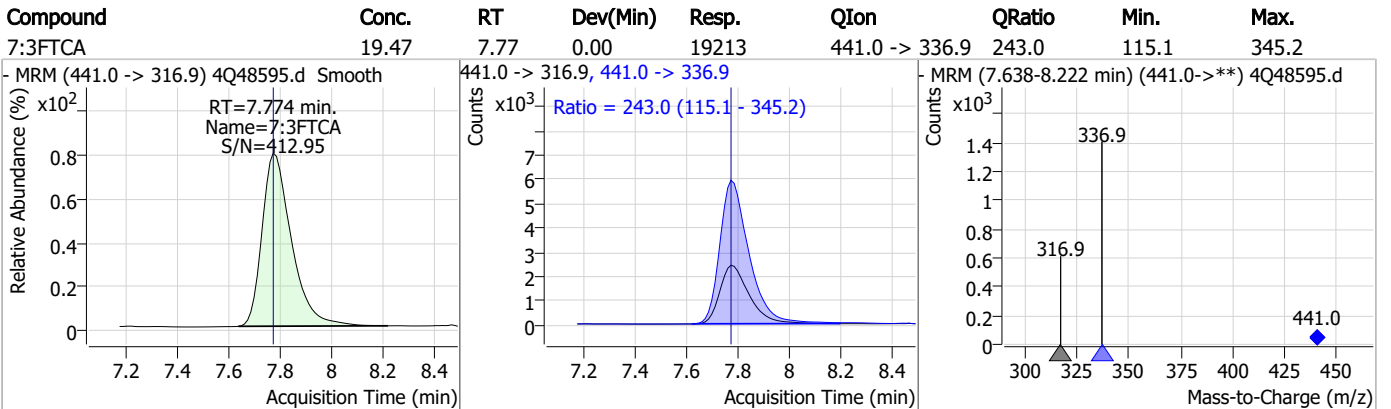
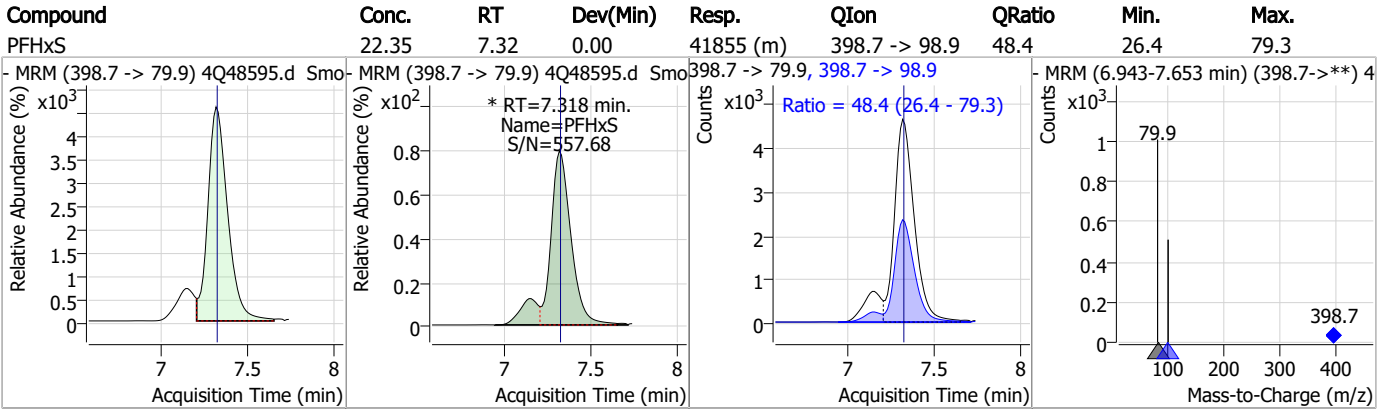
Perfluorinated Compounds by LC/MS/MS



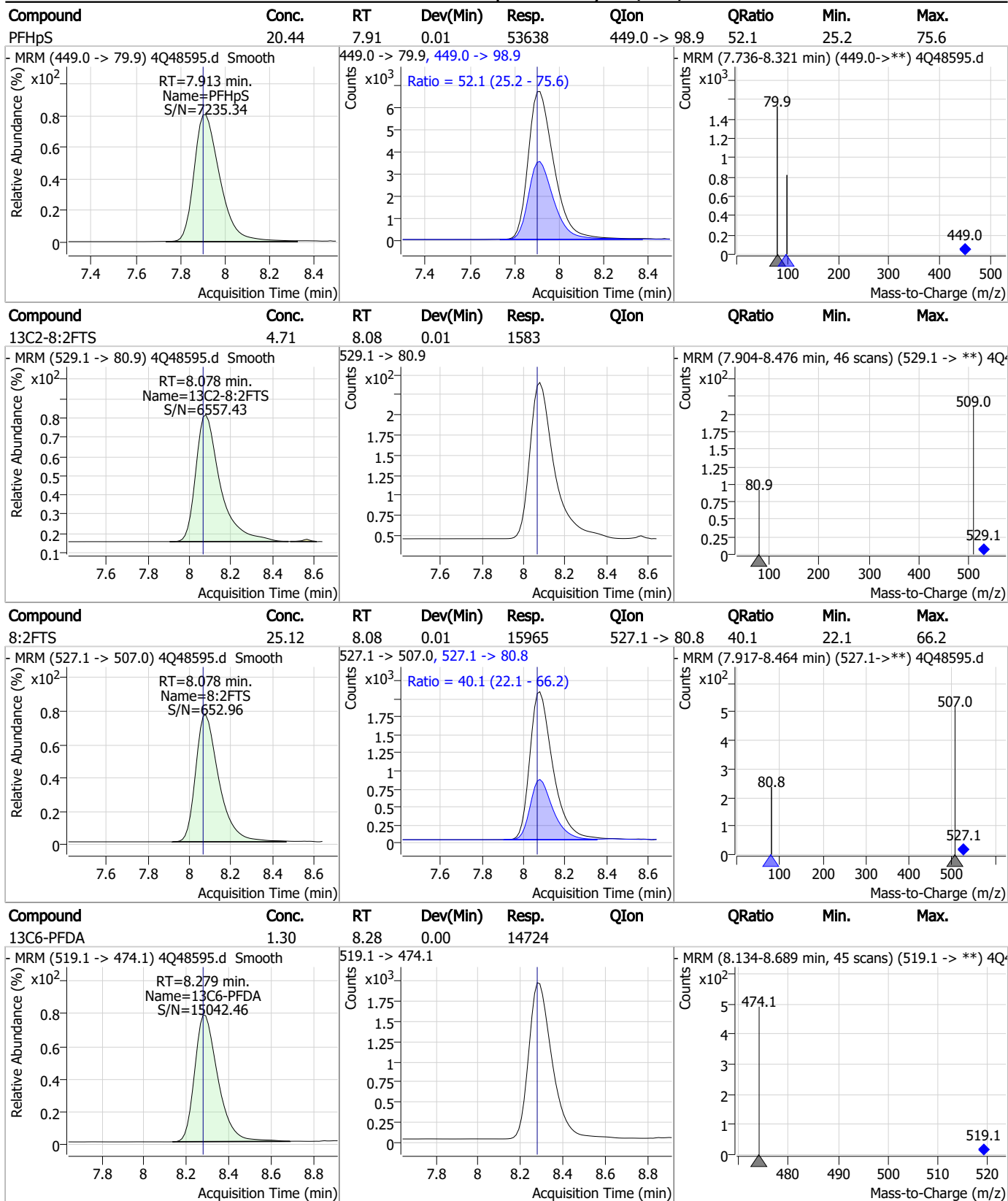
7.7.11
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Perfluorinated Compounds by LC/MS/MS



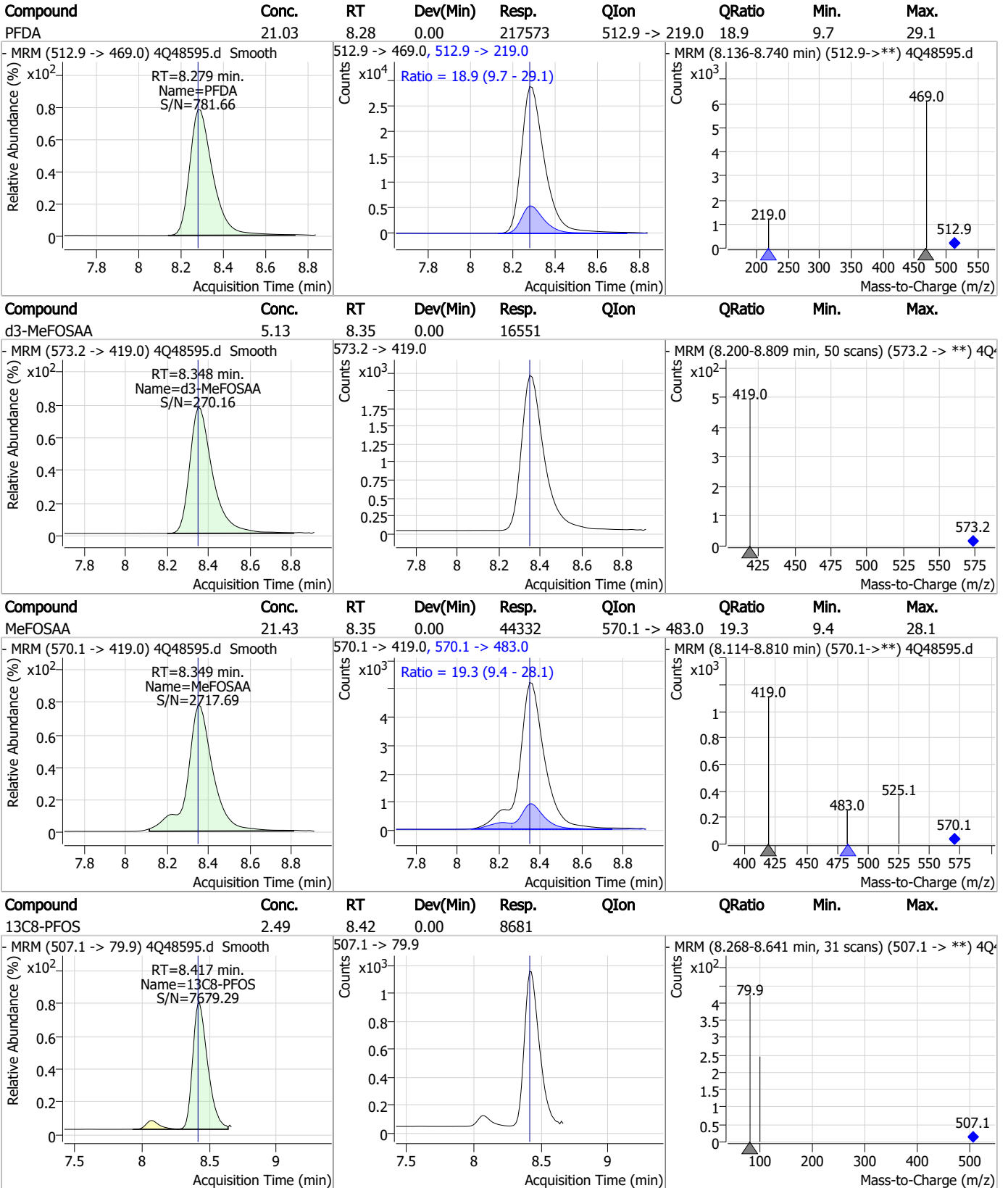
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

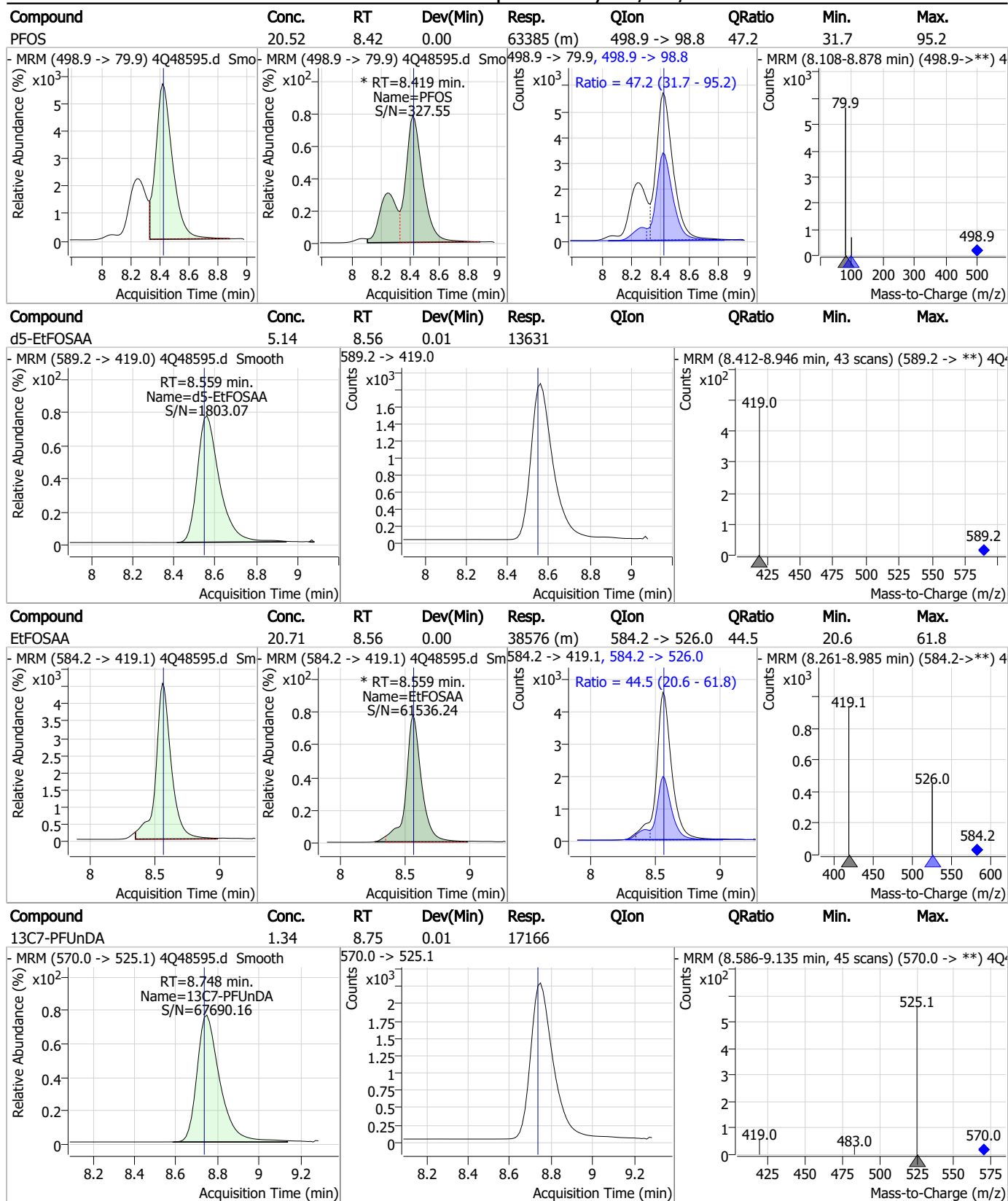


7.7.11

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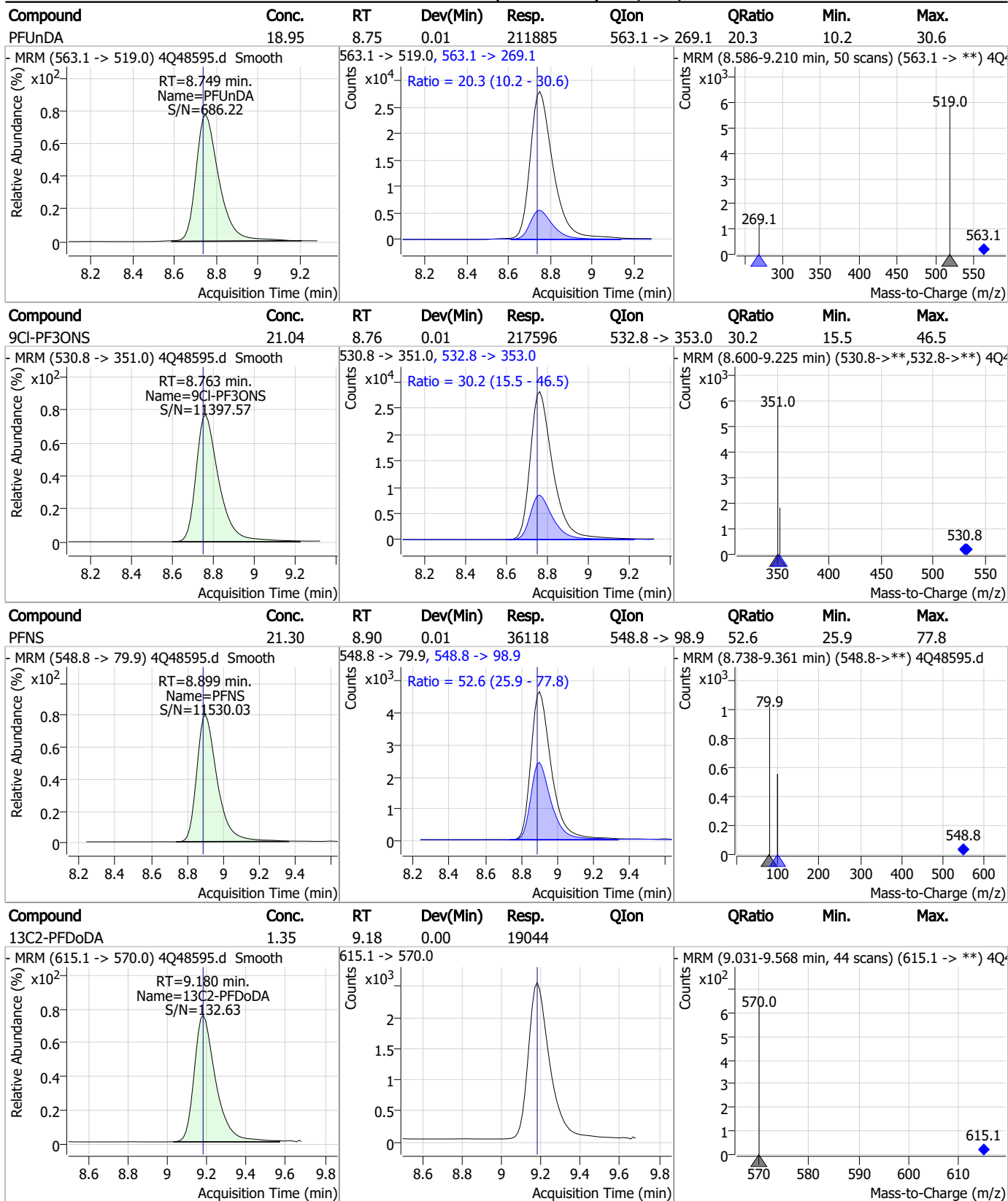
Perfluorinated Compounds by LC/MS/MS



7.7.11

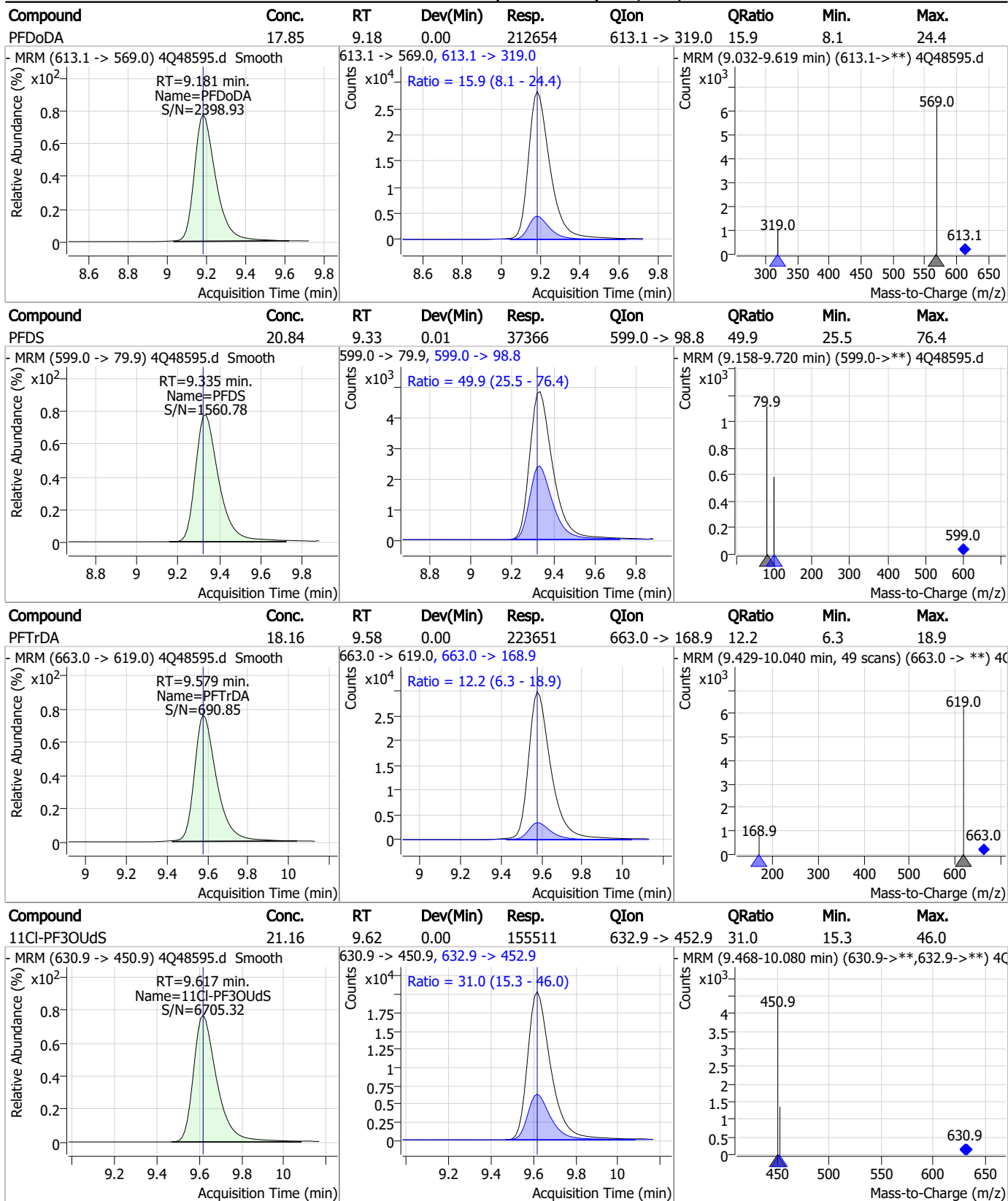
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Perfluorinated Compounds by LC/MS/MS



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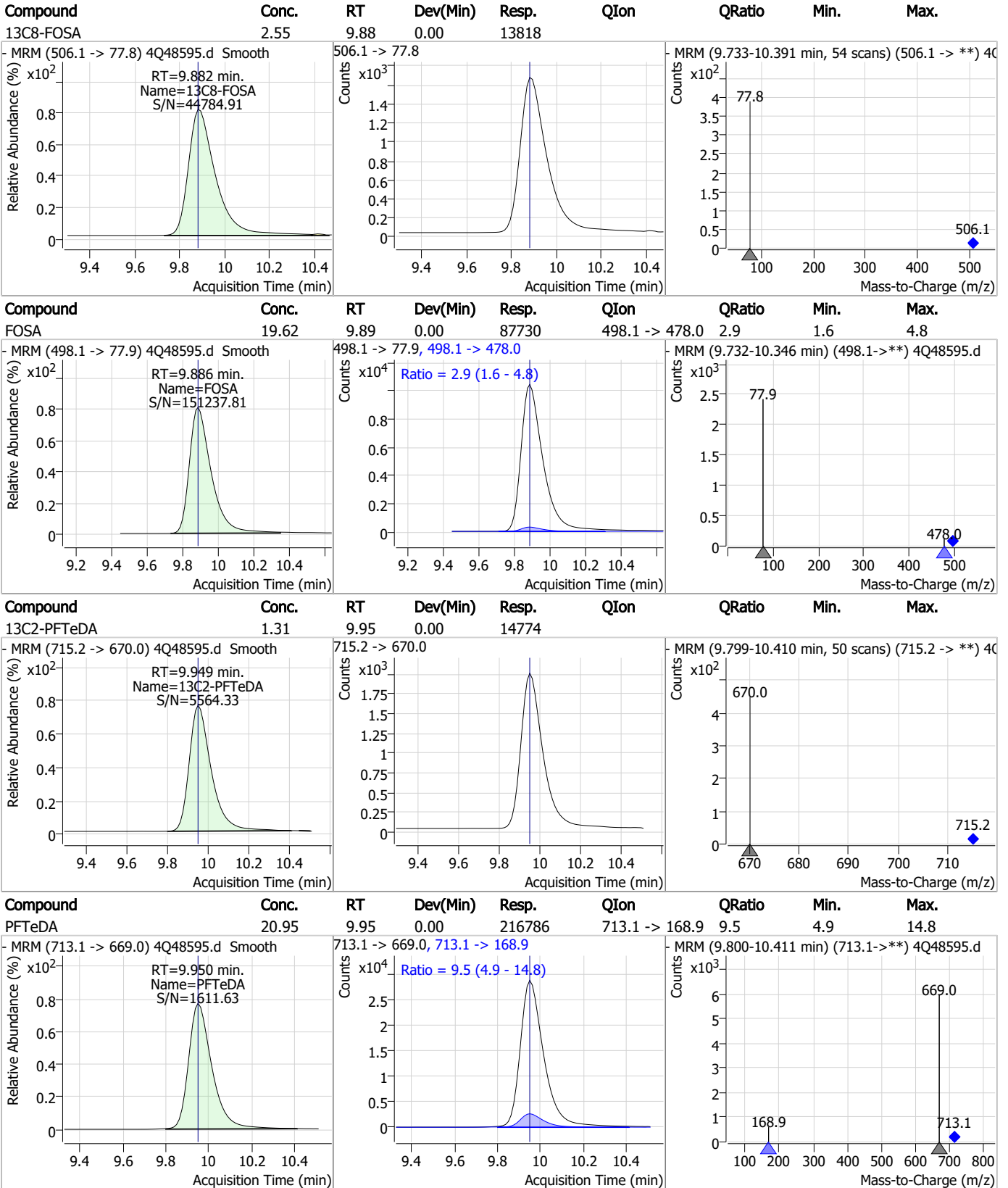
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

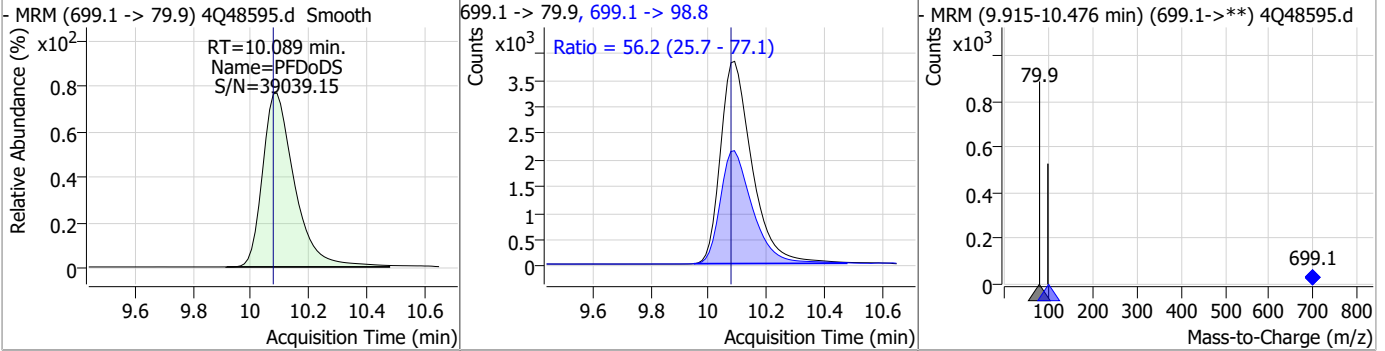


7.7.11

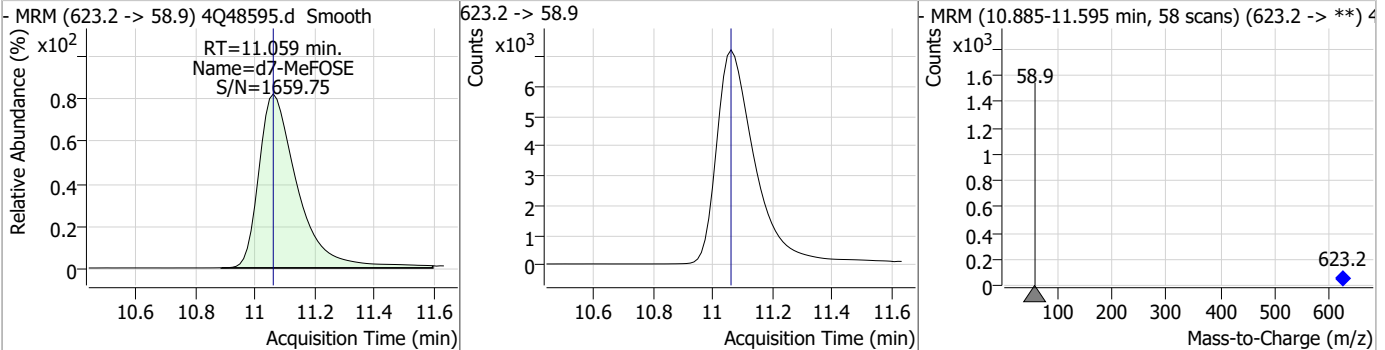
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Perfluorinated Compounds by LC/MS/MS

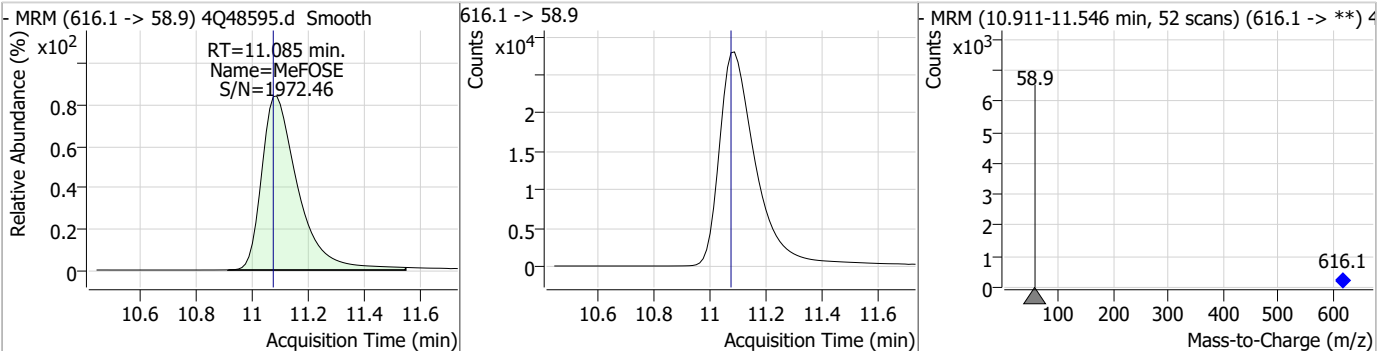
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	21.05	10.09	0.01	29040	699.1 -> 98.8	56.2	25.7	77.1



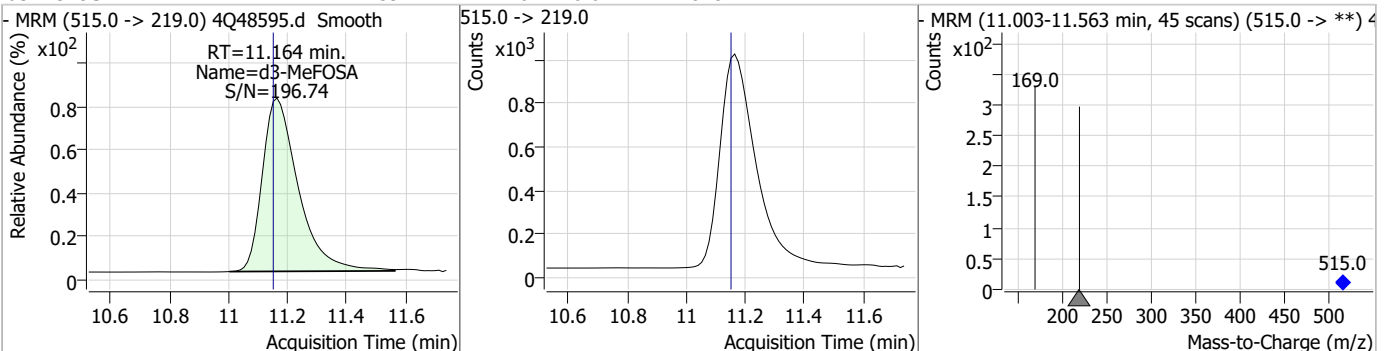
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.40	11.06	0.00	64821				



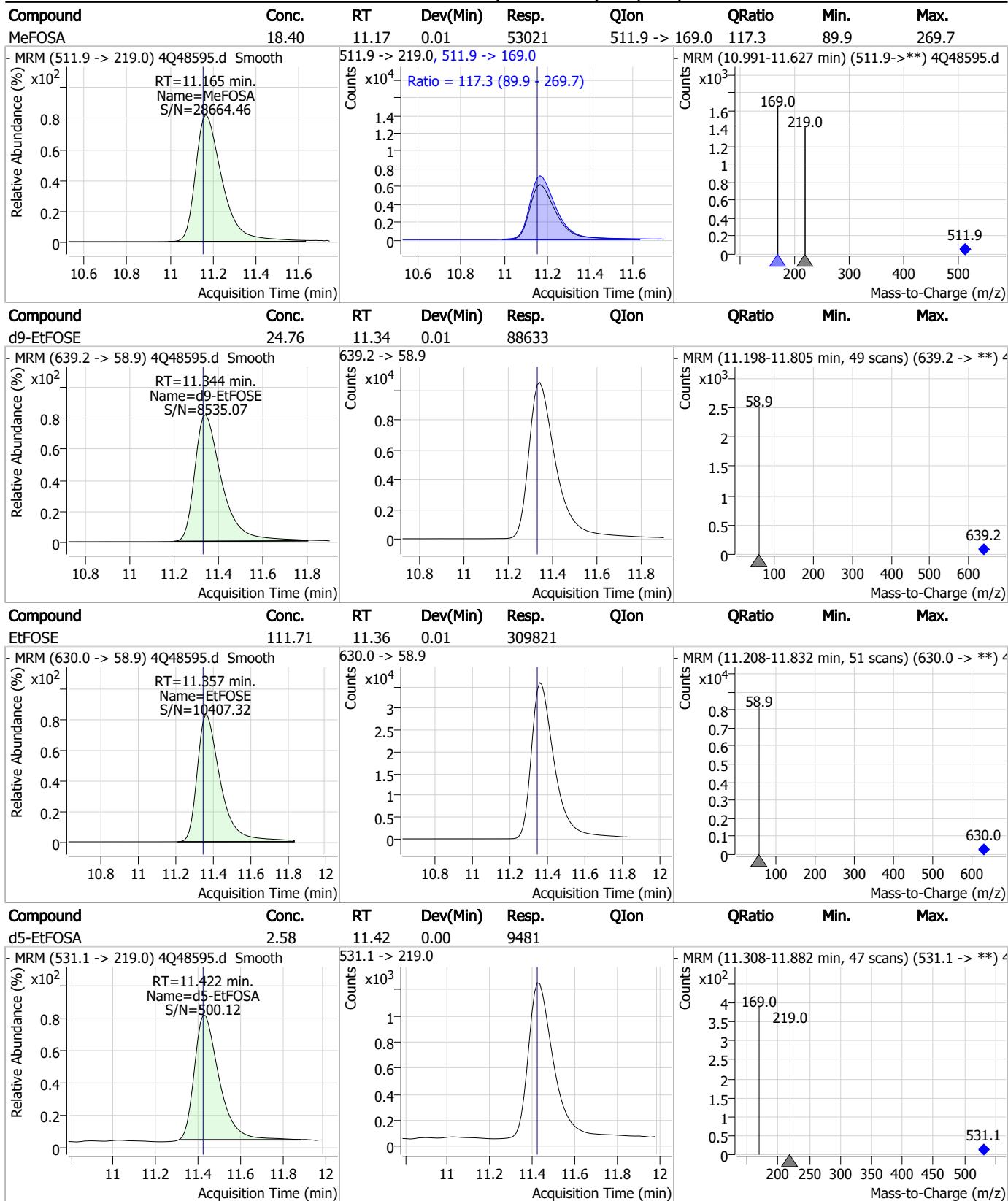
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	108.83	11.08	0.01	252269				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.59	11.16	0.01	8284				

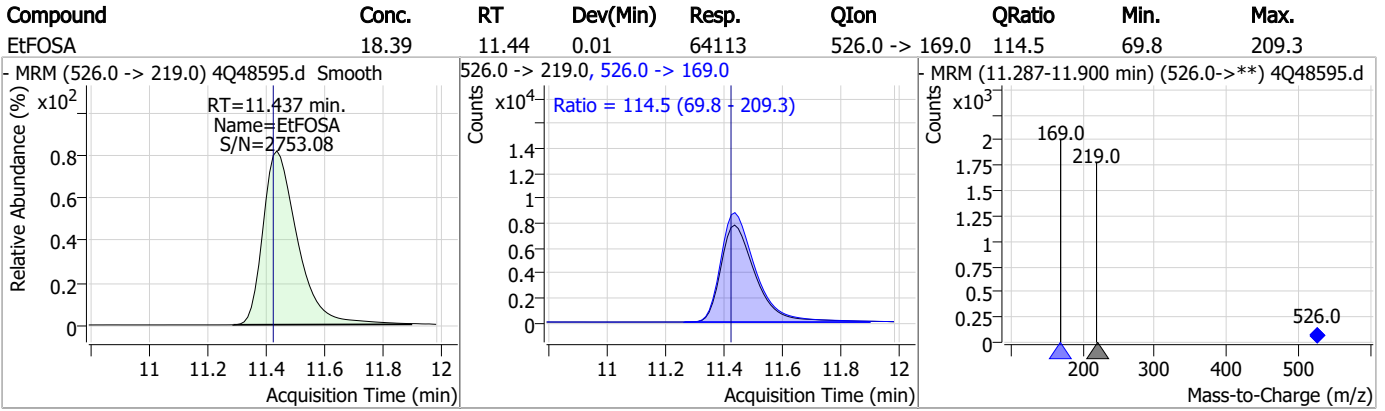


Perfluorinated Compounds by LC/MS/MS



7.7.11
7

Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q711-ICV711 Method: EPA DRAFT 1633
Lab FileID: 4Q48595.D Analyst approved: 08/09/23 11:54 Anna Ludwig
Injection Time: 08/07/23 18:57 Supervisor approved: 08/09/23 14:46 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.32	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.42	Split peak
EtFOSAA	2991-50-6		8.56	Split peak

7.7.11.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48765.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/9/2023 3:30:48 PM
 Sample Name : cc711-1.0LL
 Vial : P1-A2
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q713.batch.bin
 Sample Information : OP98180,S4Q713,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.874	216.8 -> 171.9	100749	10.00 µg/L	-0.037
M5-PFPeA	4.400	268.3 -> 223.0	55371	5.00 µg/L	-0.012
M5-PFHxA	5.610	318.0 -> 273.0	35443	2.50 µg/L	0.000
M4-PFHpA	6.568	367.1 -> 322.0	25847	2.50 µg/L	0.012
M8-PFOA	7.238	421.1 -> 376.0	43006	2.50 µg/L	0.012
M9-PFNA	7.785	472.1 -> 427.0	18418	1.25 µg/L	0.000
M6-PFDA	8.291	519.1 -> 474.1	14987	1.25 µg/L	0.013
M7-PFUnDA	8.748	570.0 -> 525.1	16840	1.25 µg/L	0.012
M2-PFDoDA	9.193	615.1 -> 570.0	17978	1.25 µg/L	0.012
M2-PFTeDA	9.961	715.2 -> 670.0	13464	1.25 µg/L	0.013
M8-FOSA	9.907	506.1 -> 77.8	12400	2.50 µg/L	0.024
M3-PFBS	5.489	302.1 -> 79.9	9200	2.50 µg/L	0.000
M3-PFHxS	7.317	402.1 -> 79.9	5958	2.50 µg/L	0.000
M8-PFOS	8.430	507.1 -> 79.9	8374	2.50 µg/L	0.013
M2-4:2FTS	5.296	329.1 -> 80.9	768	5.00 µg/L	0.000
M2-6:2FTS	7.011	429.1 -> 80.9	1524	5.00 µg/L	0.012
M2-8:2FTS	8.078	529.1 -> 80.9	2321	5.00 µg/L	0.013
M3-MeFOSAA	8.361	573.2 -> 419.0	16189	5.00 µg/L	0.013
M3-HFPO-DA	5.989	286.9 -> 168.9	30708	10.00 µg/L	0.012
M5-EtFOSAA	8.559	589.2 -> 419.0	14261	5.00 µg/L	0.013
M7-MeFOSE	11.072	623.2 -> 58.9	57168	25.00 µg/L	0.012
M9-EtFOSE	11.356	639.2 -> 58.9	79716	25.00 µg/L	0.025
M5-EtFOSA	11.435	531.1 -> 219.0	8896	2.50 µg/L	0.012
M3-MeFOSA	11.176	515.0 -> 219.0	7746	2.50 µg/L	0.025
13C4-PFOS	8.430	502.8 -> 79.9	8571	2.50 µg/L	0.013
13C3-PFBA	2.878	216.0 -> 172.0	54780	5.00 µg/L	-0.025
18O2-PFHxS	7.328	403.0 -> 83.9	4558	2.50 µg/L	0.012
13C4-PFOA	7.239	417.1 -> 372.0	50784	2.50 µg/L	0.012
13C2-PFDA	8.291	515.1 -> 470.1	16106	1.25 µg/L	0.013
13C5-PFNA	7.785	468.0 -> 423.0	22318	1.25 µg/L	0.000
13C2-PFHxA	5.611	315.1 -> 270.0	34201	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.296	329.1 -> 80.9	768	6.74 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 134.8%		
13C2-6:2FTS	7.011	429.1 -> 80.9	1524	7.00 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 140.1%		
13C2-8:2FTS	8.078	529.1 -> 80.9	2321	7.02 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 140.5%		
13C2-PFDoDA	9.193	615.1 -> 570.0	17978	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.2%		
13C2-PFTeDA	9.961	715.2 -> 670.0	13464	1.22 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C3-PFBS	5.489	302.1 -> 79.9	9200	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.9%		
13C3-PFHxS	7.317	402.1 -> 79.9	5958	2.36 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.4%	
13C4-PFBA	2.874	216.8 -> 171.9	100749	10.76 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 107.6%	
13C4-PFHpA	6.568	367.1 -> 322.0	25847	2.54 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C5-PFHxA	5.610	318.0 -> 273.0	35443	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C5-PFPeA	4.400	268.3 -> 223.0	55371	4.63 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.6%	
13C6-PFDA	8.291	519.1 -> 474.1	14987	1.34 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.6%	
13C7-PFUnDA	8.748	570.0 -> 525.1	16840	1.34 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.3%	
13C8-FOSA	9.907	506.1 -> 77.8	12400	2.32 µg/L	0.024
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.8%	
13C8-PFOA	7.238	421.1 -> 376.0	43006	2.57 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.9%	
13C8-PFOS	8.430	507.1 -> 79.9	8374	2.43 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C9-PFNA	7.785	472.1 -> 427.0	18418	1.09 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 87.2%	
d3-MeFOSAA	8.361	573.2 -> 419.0	16189	5.09 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C3-HFPO-DA	5.989	286.9 -> 168.9	30708	9.42 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.2%	
d3-MeFOSA	11.176	515.0 -> 219.0	7746	2.46 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.4%	
d5-EtFOSAA	8.559	589.2 -> 419.0	14261	5.45 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.1%	
d7-MeFOSE	11.072	623.2 -> 58.9	57168	22.71 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 90.8%	
d9-EtFOSE	11.356	639.2 -> 58.9	79716	22.58 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 90.3%	
d5-EtFOSA	11.435	531.1 -> 219.0	8896	2.45 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.1%	
Target Compounds					QValue
4:2FTS	5.297	327.1 -> 307.0	722	0.70 µg/L	95
		327.1 -> 80.9	274		
6:2FTS	7.011	427.1 -> 407.0	819	0.63 µg/L	96
		427.1 -> 80.9	271		
8:2FTS	8.078	527.1 -> 507.0	779	0.84 µg/L	95
		527.1 -> 80.8	317		
EtFOSAA	8.572	584.2 -> 419.1	411	0.21 µg/L	m 86
		584.2 -> 526.0	133		
FOSA	9.898	498.1 -> 77.9	790	0.20 µg/L	96
		498.1 -> 478.0	16		
MeFOSAA	8.361	570.1 -> 419.0	439	0.22 µg/L	92
		570.1 -> 483.0	97		
PFBA	2.882	212.8 -> 168.9	1576	0.68 µg/L	100
PFBS	5.478	298.7 -> 79.9	370	0.16 µg/L	71
		298.7 -> 98.8	201		
PFDA	8.292	512.9 -> 469.0	1791	0.17 µg/L	91
		512.9 -> 219.0	422		
PFDODA	9.193	613.1 -> 569.0	1729	0.15 µg/L	94
		613.1 -> 319.0	327		
PFDS	9.335	599.0 -> 79.9	275	0.16 µg/L	85

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.568	599.0 -> 98.8	169	0.18	µg/L	90
		363.1 -> 319.0	2094			
PFHpS	7.913	363.1 -> 169.0	474	0.14	µg/L	#
		449.0 -> 79.9	343			
PFHxA	5.613	449.0 -> 98.9	260	0.18	µg/L	98
		313.0 -> 269.0	1798			
PFHxS	7.318	313.0 -> 118.9	46	0.20	µg/L	m
		398.7 -> 79.9	340			
PFNA	7.786	398.7 -> 98.9	193	0.18	µg/L	99
		463.0 -> 419.0	1737			
PFNS	8.899	463.0 -> 219.0	367	0.20	µg/L	97
		548.8 -> 79.9	323			
PFOA	7.240	548.8 -> 98.9	161	0.19	µg/L	94
		413.0 -> 369.0	3236			
PFOS	8.431	413.0 -> 169.0	715	0.19	µg/L	m
		498.9 -> 79.9	554			
PFPeA	4.402	498.9 -> 98.8	280	0.30	µg/L	100
		263.0 -> 219.0	2917			
PFPeS	6.582	349.1 -> 79.9	327	0.20	µg/L	93
		349.1 -> 98.9	131			
PFTeDA	9.962	713.1 -> 669.0	1788	0.19	µg/L	98
		713.1 -> 168.9	193			
PFTrDA	9.591	663.0 -> 619.0	2256	0.19	µg/L	94
		663.0 -> 168.9	341			
PFUnDA	8.748	563.1 -> 519.0	1810	0.16	µg/L	96
		563.1 -> 269.1	332			
11CI-PF3OUdS	9.618	630.9 -> 450.9	2448	0.38	µg/L	94
		632.9 -> 452.9	829			
9CI-PF3ONS	8.763	530.8 -> 351.0	3479	0.38	µg/L	91
		532.8 -> 353.0	1259			
ADONA	6.831	376.9 -> 250.9	6404	0.36	µg/L	100
		376.9 -> 84.8	1647			
HFPO-DA	5.990	284.9 -> 168.9	966	0.38	µg/L	99
		284.9 -> 184.9	131			
3:3FTCA	3.848	241.0 -> 177.0	471	0.80	µg/L	100
		241.0 -> 117.0	47			
5:3FTCA	6.296	341.0 -> 237.1	7449	4.45	µg/L	94
		341.0 -> 217.0	4951			
7:3FTCA	7.774	441.0 -> 316.9	4222	4.58	µg/L	97
		441.0 -> 336.9	9918			
EtFOSA	11.437	526.0 -> 219.0	1306	0.40	µg/L	99
		526.0 -> 169.0	1810			
EtFOSE	11.370	630.0 -> 58.9	2675	1.07	µg/L	100
		511.9 -> 219.0	950			
MeFOSA	11.178	511.9 -> 169.0	1472	0.35	µg/L	m
		616.1 -> 58.9	1853			
MeFOSE	11.085	699.1 -> 79.9	246	0.91	µg/L	100
		699.1 -> 98.8	142			
PFDoDS	10.089	295.0 -> 201.0	248	0.18	µg/L	91
		295.0 -> 84.9	74			
NFDHA	5.491	279.0 -> 85.1	1980	0.37	µg/L	100
		229.0 -> 84.9	1950			
PFMBA	3.515	314.8 -> 134.9	2499	0.37	µg/L	100
		314.8 -> 82.9	126			
PFEESA	6.034			0.30	µg/L	95

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



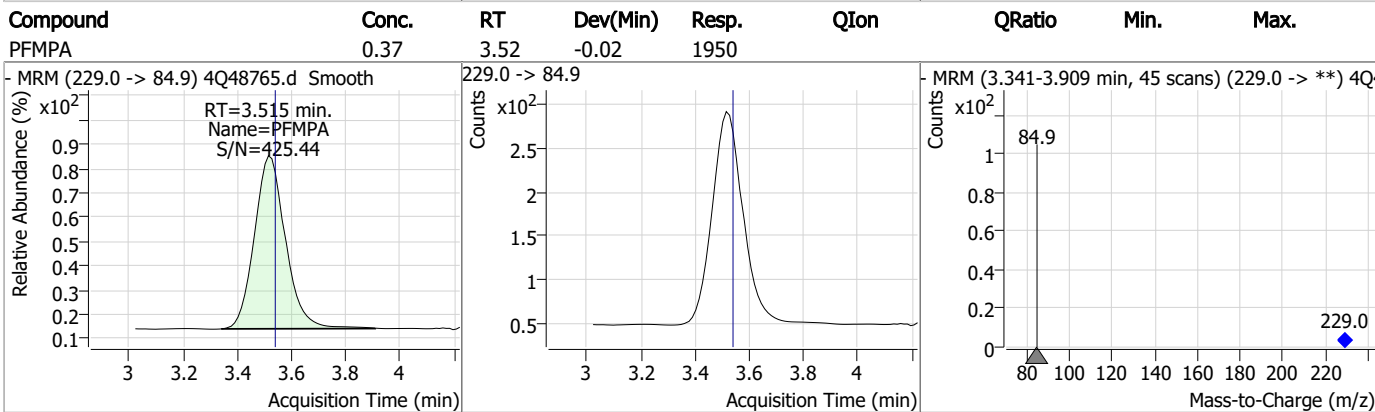
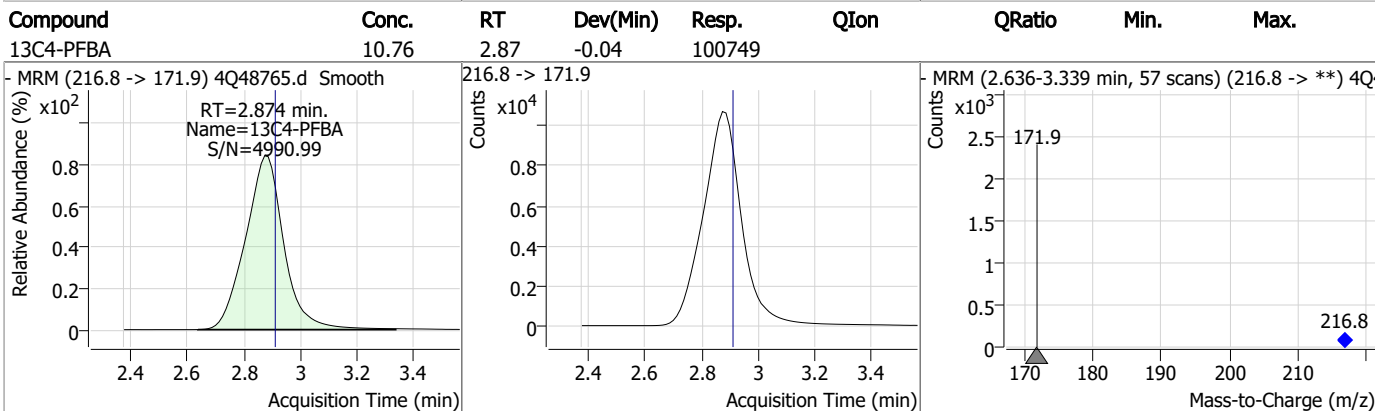
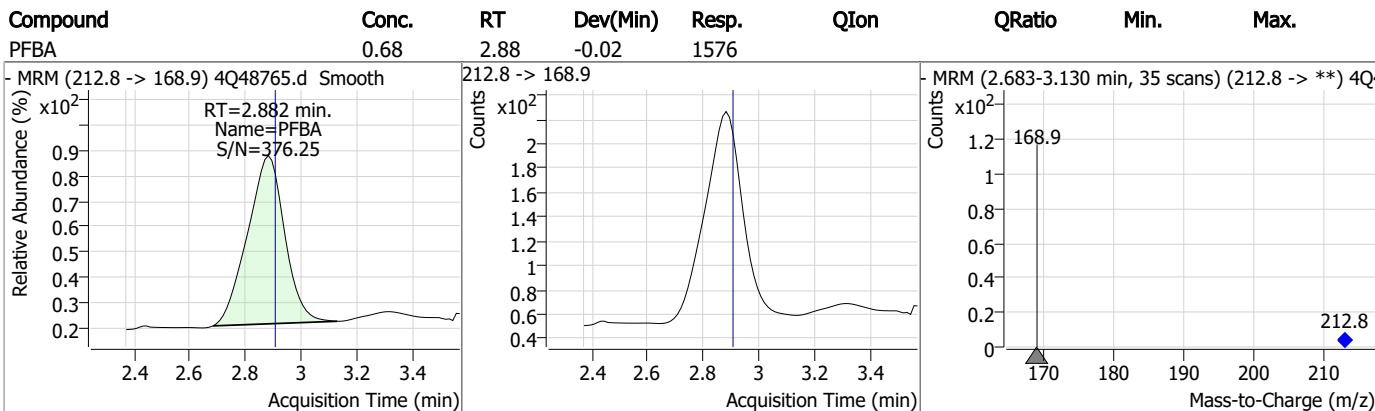
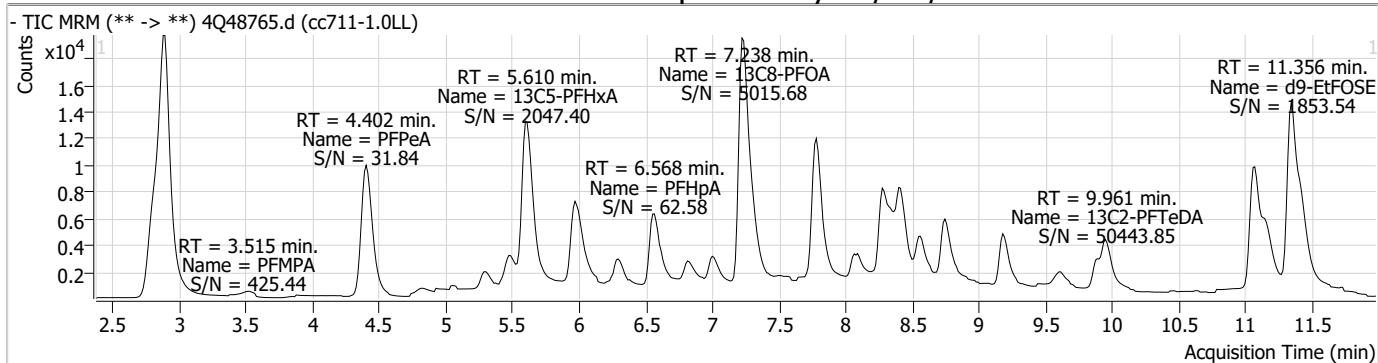
Perfluorinated Compounds by LC/MS/MS

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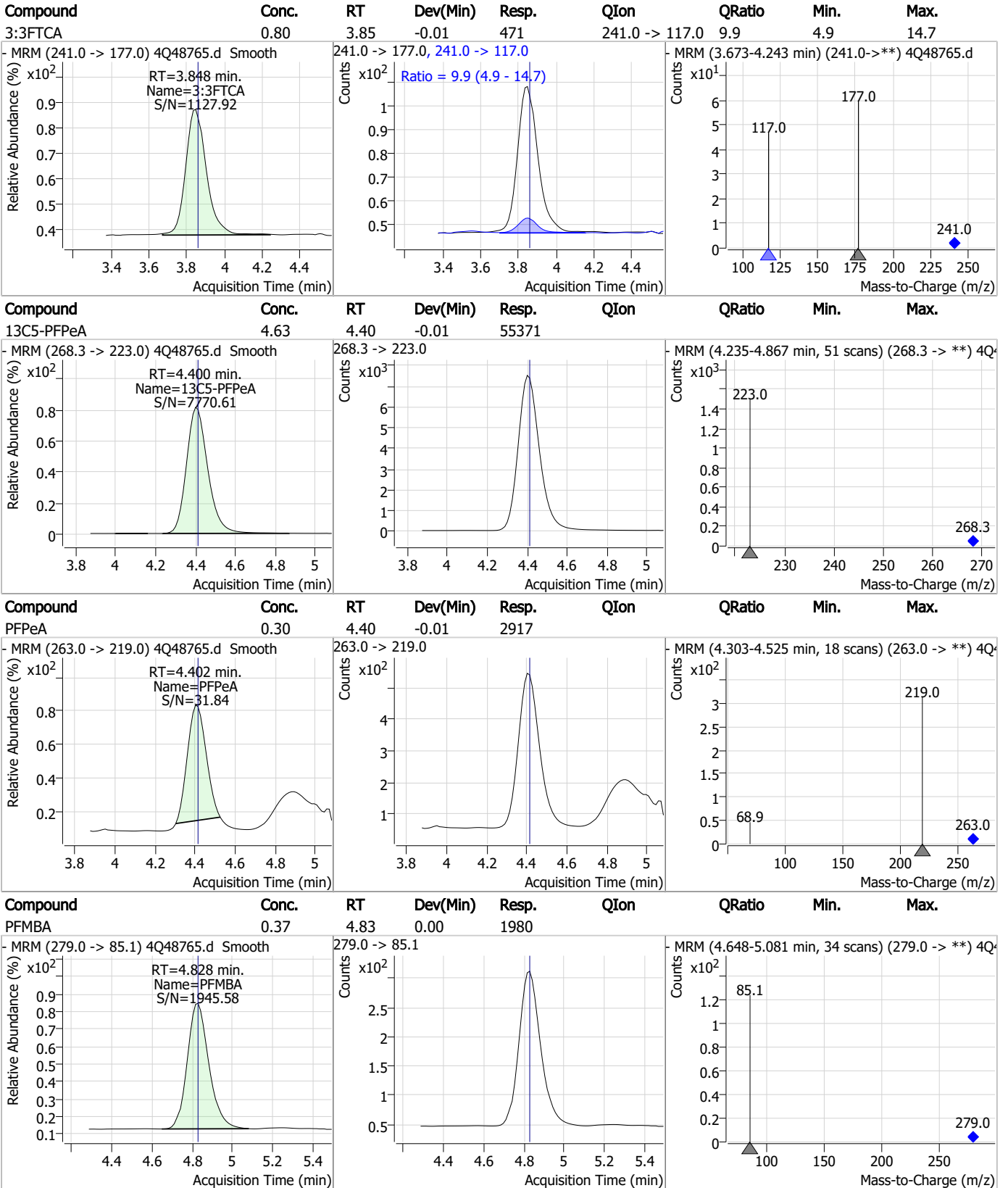
7.7.12

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Perfluorinated Compounds by LC/MS/MS



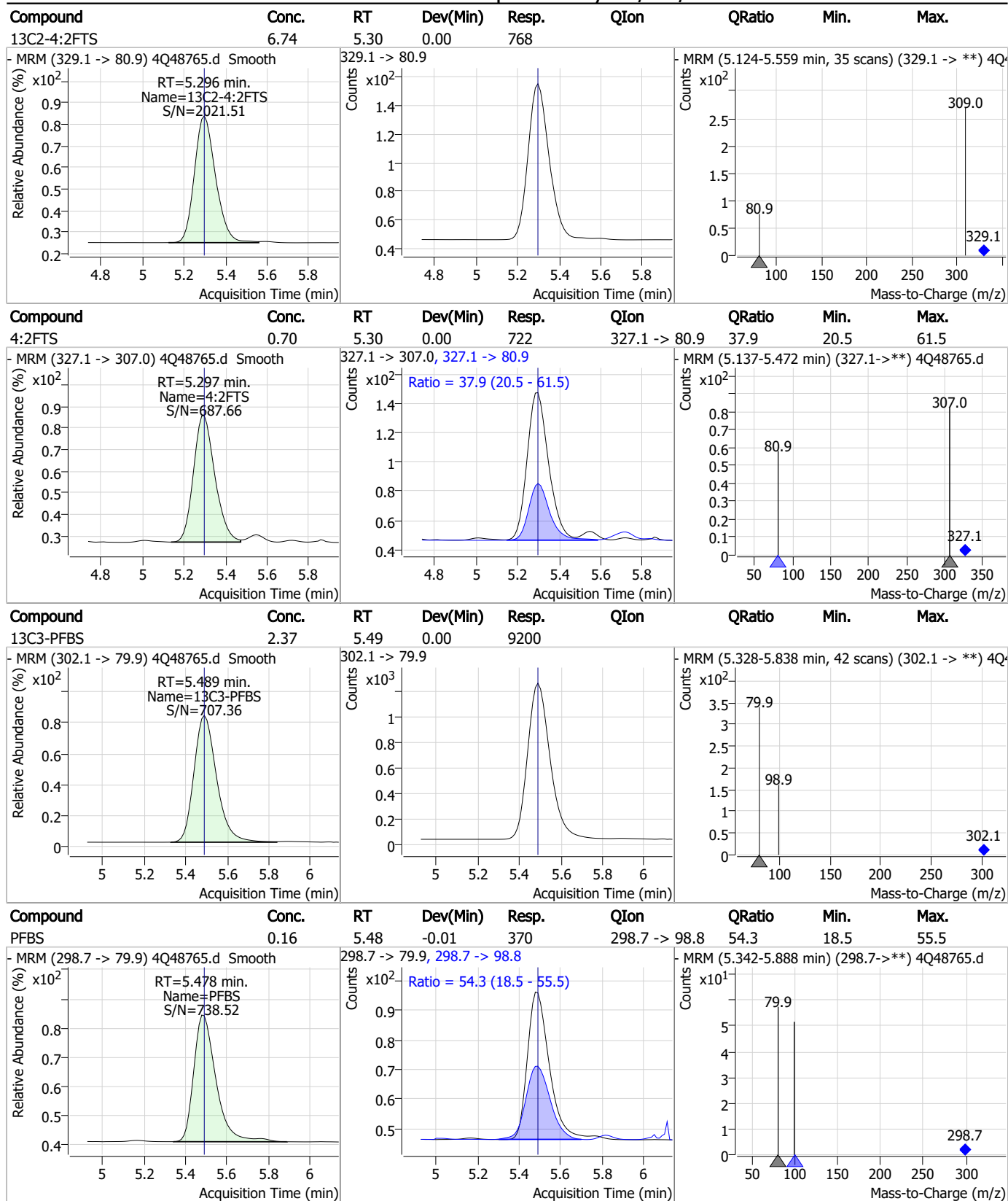
Perfluorinated Compounds by LC/MS/MS



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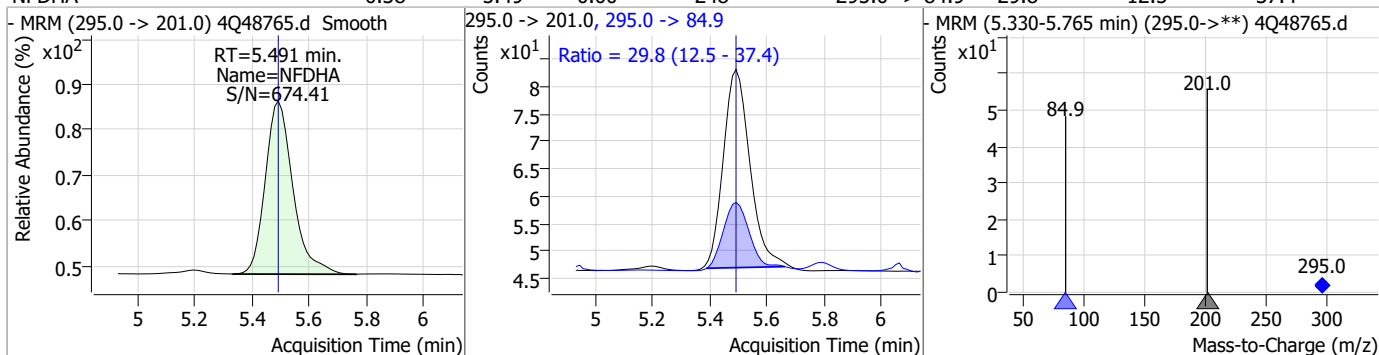
Perfluorinated Compounds by LC/MS/MS



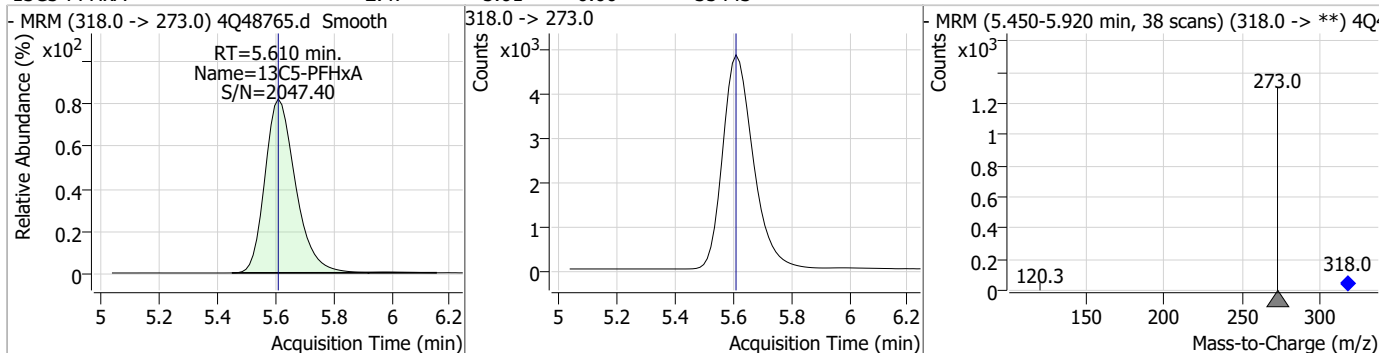
7.7.12
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Perfluorinated Compounds by LC/MS/MS

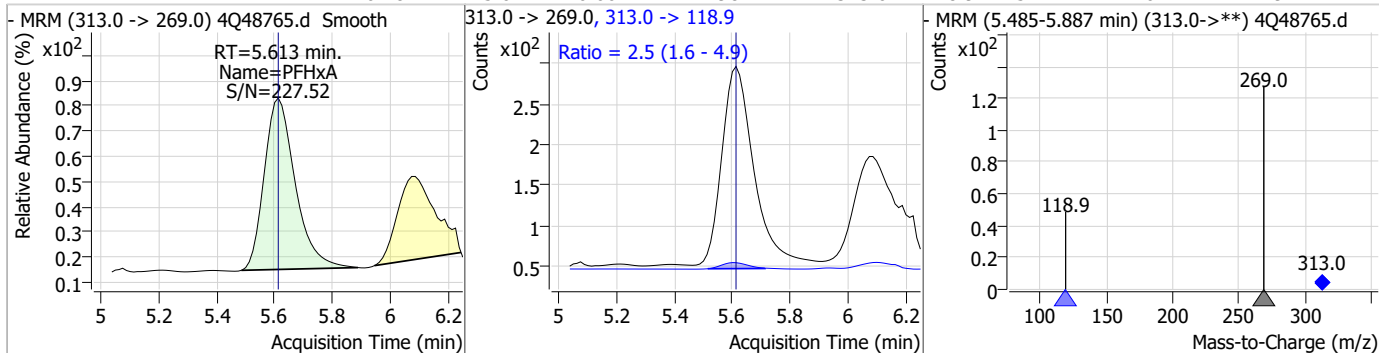
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	0.38	5.49	0.00	248	295.0 -> 84.9	29.8	12.5	37.4



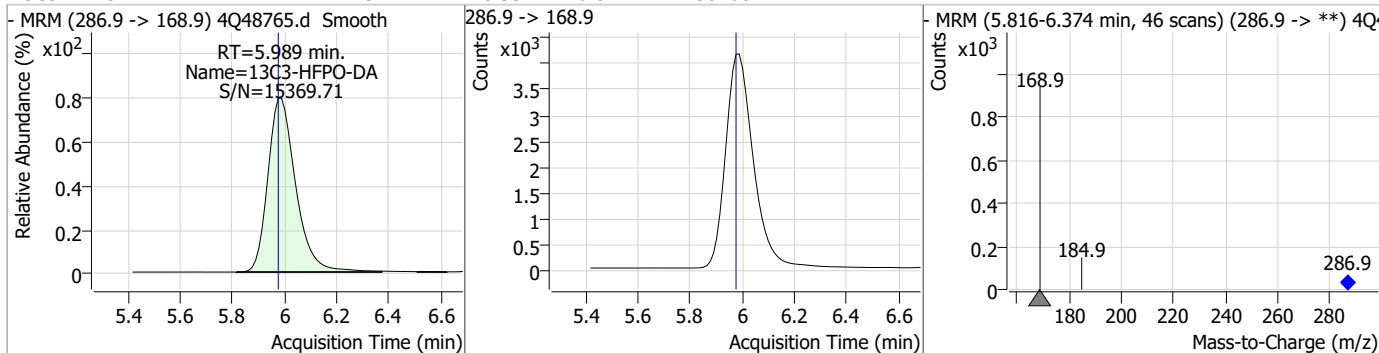
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.47	5.61	0.00	35443				



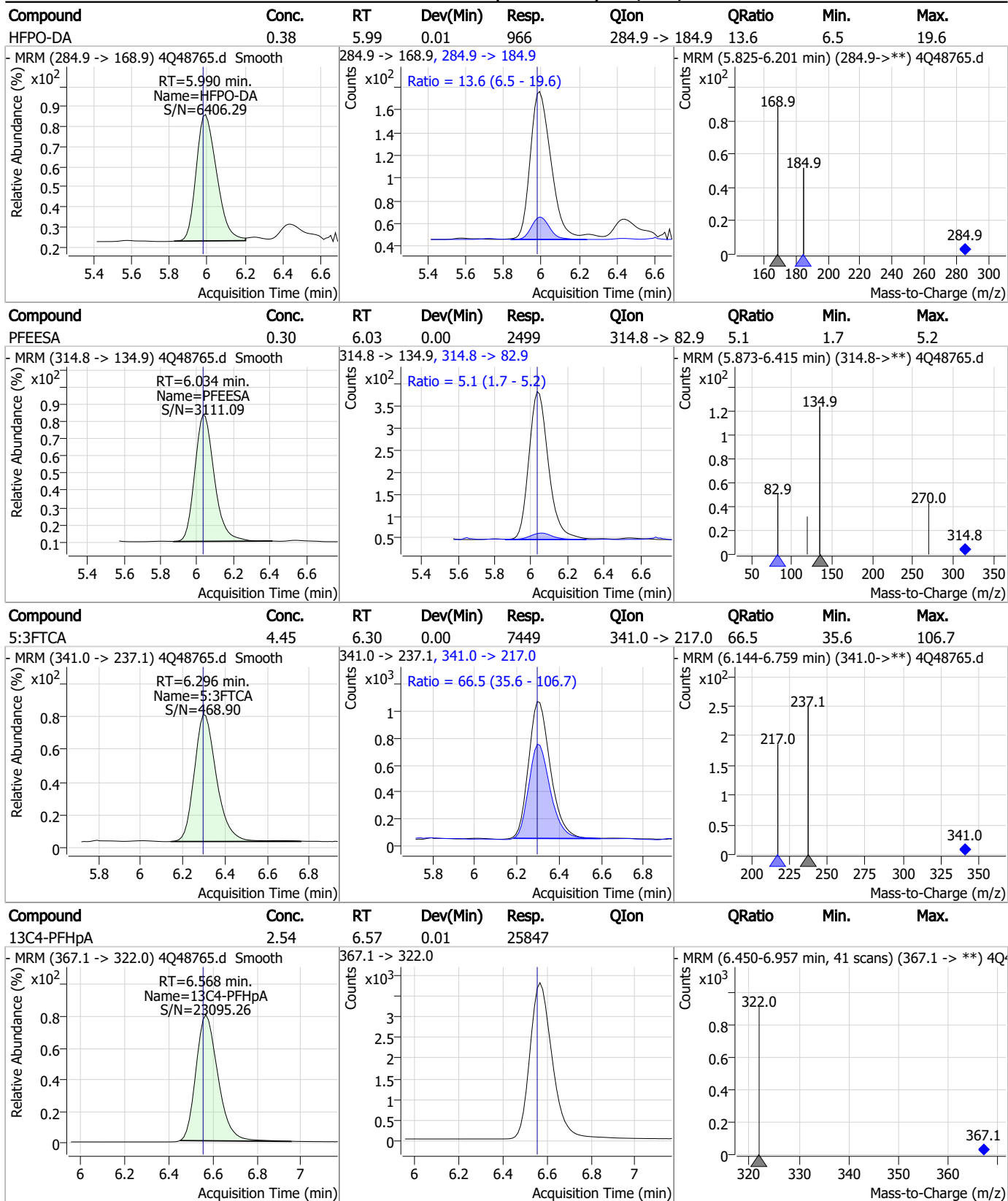
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.18	5.61	0.00	1798	313.0 -> 118.9	2.5	1.6	4.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.42	5.99	0.01	30708				

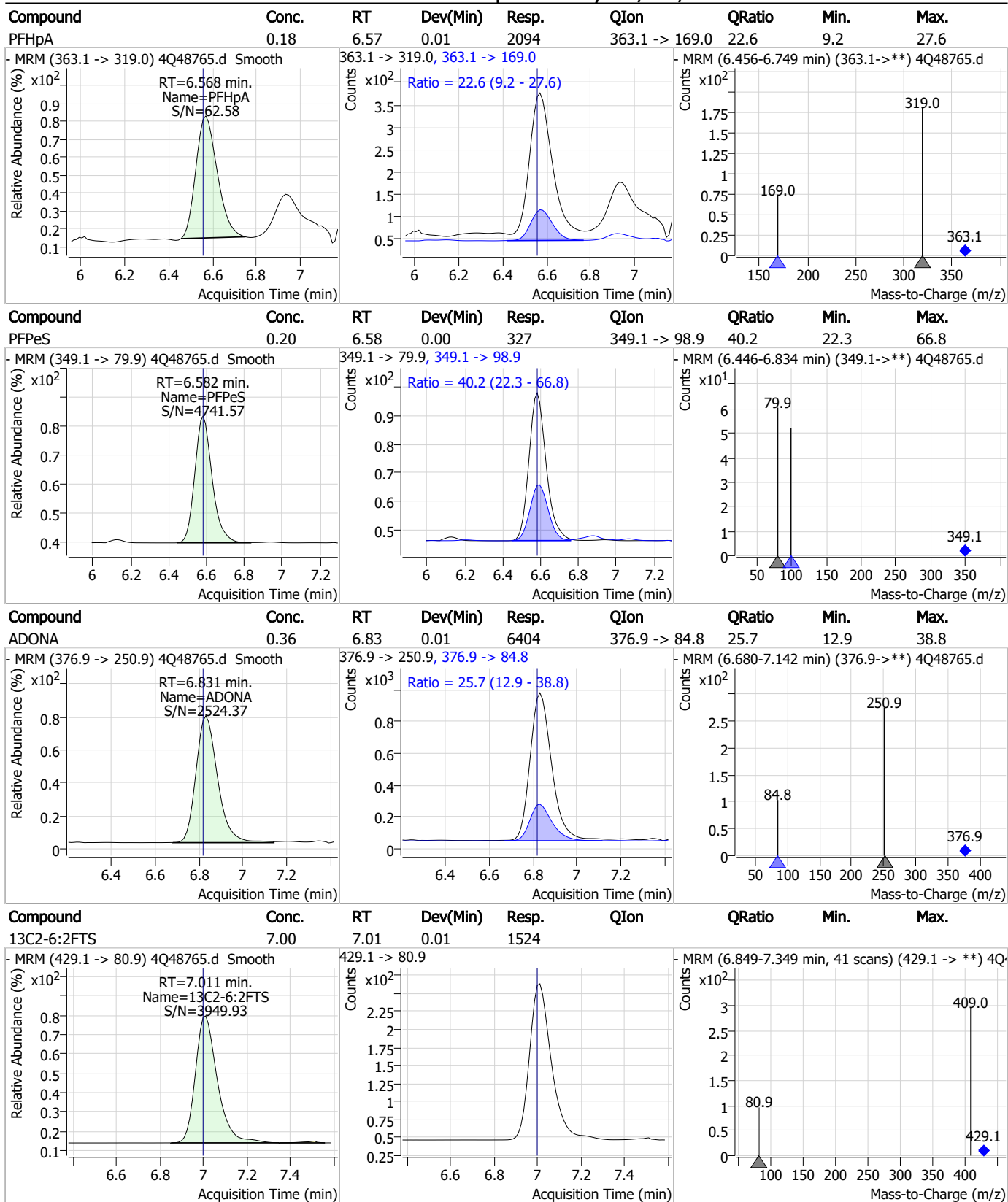


Perfluorinated Compounds by LC/MS/MS



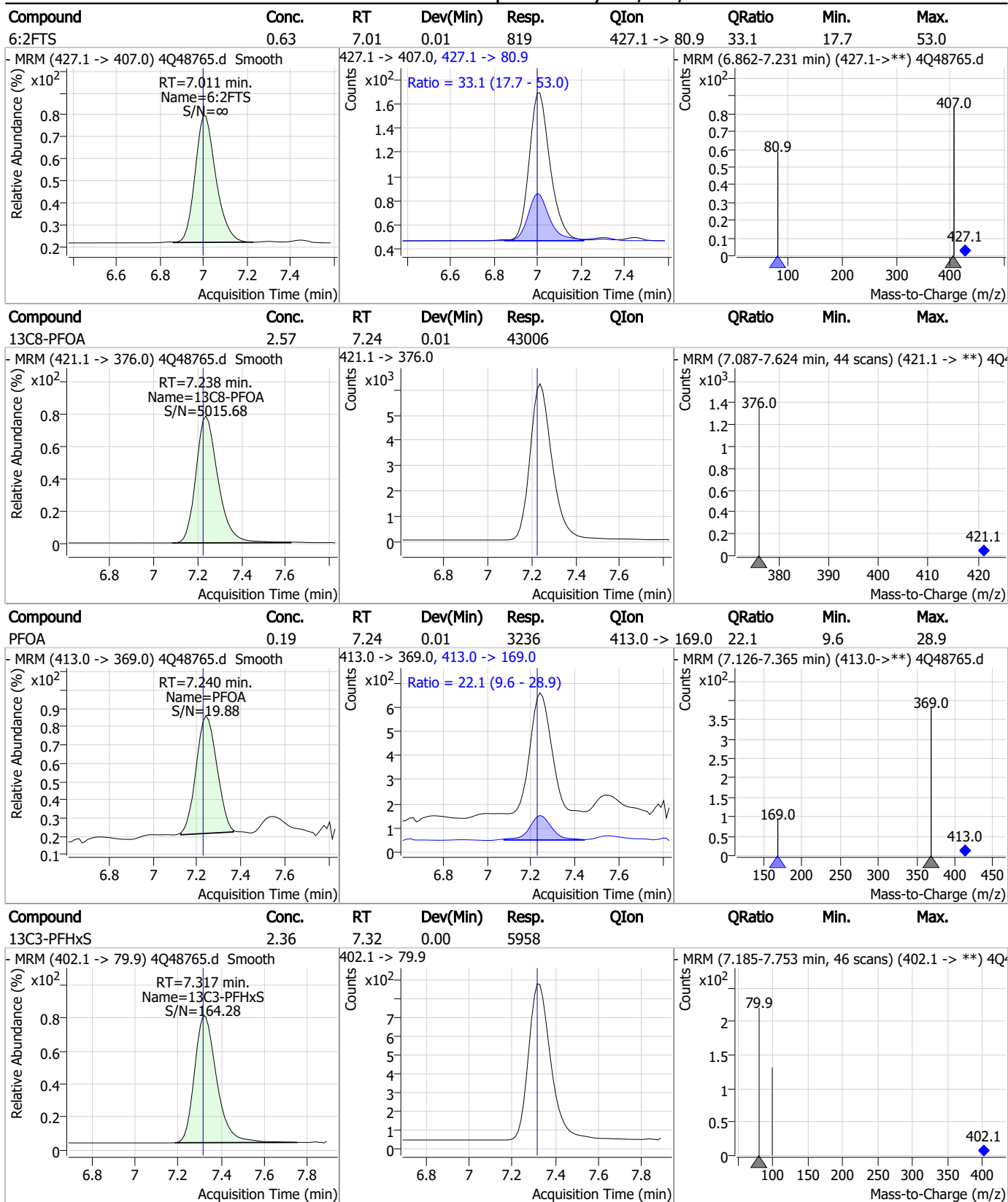
7.7.12
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Perfluorinated Compounds by LC/MS/MS



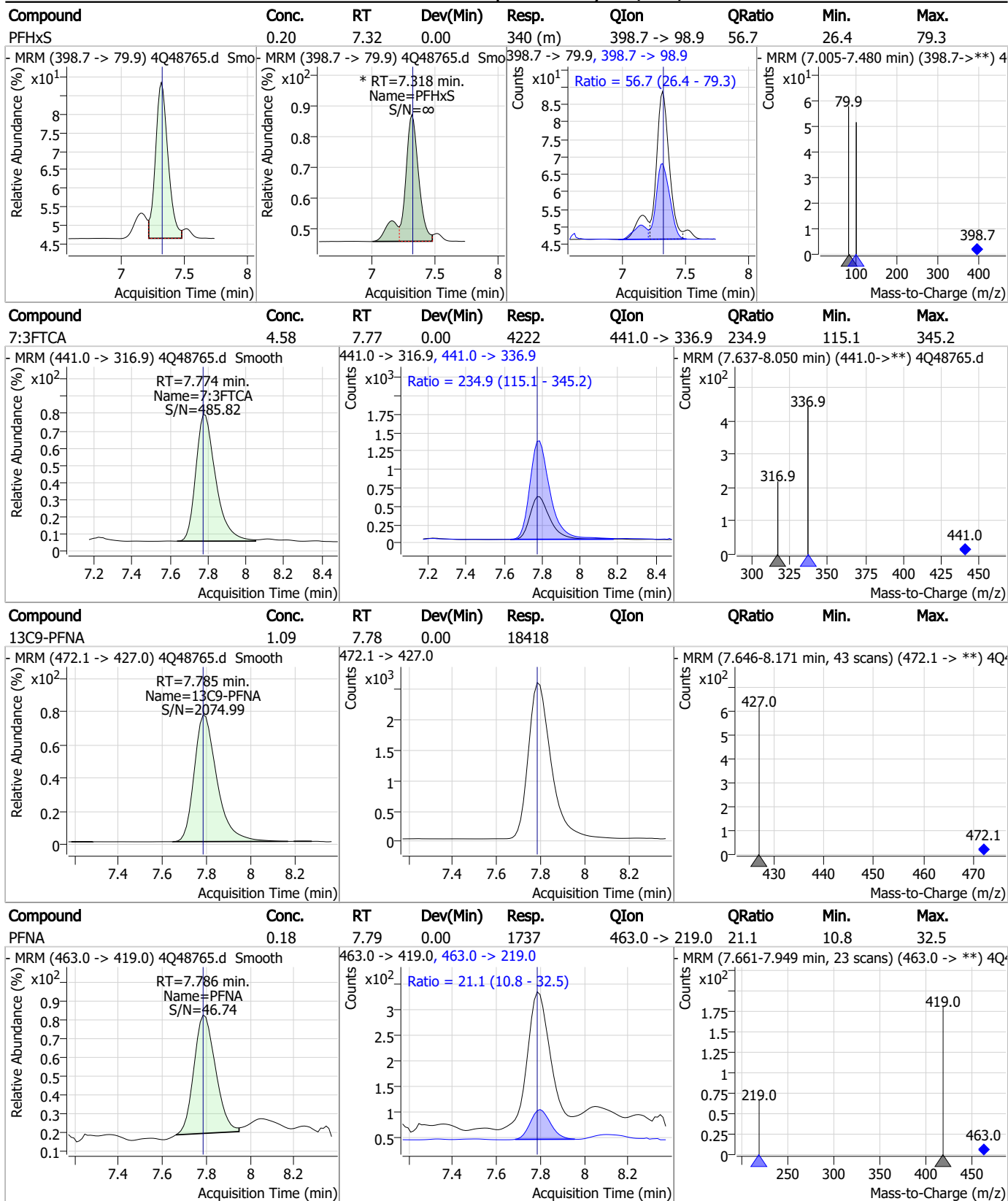
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Perfluorinated Compounds by LC/MS/MS



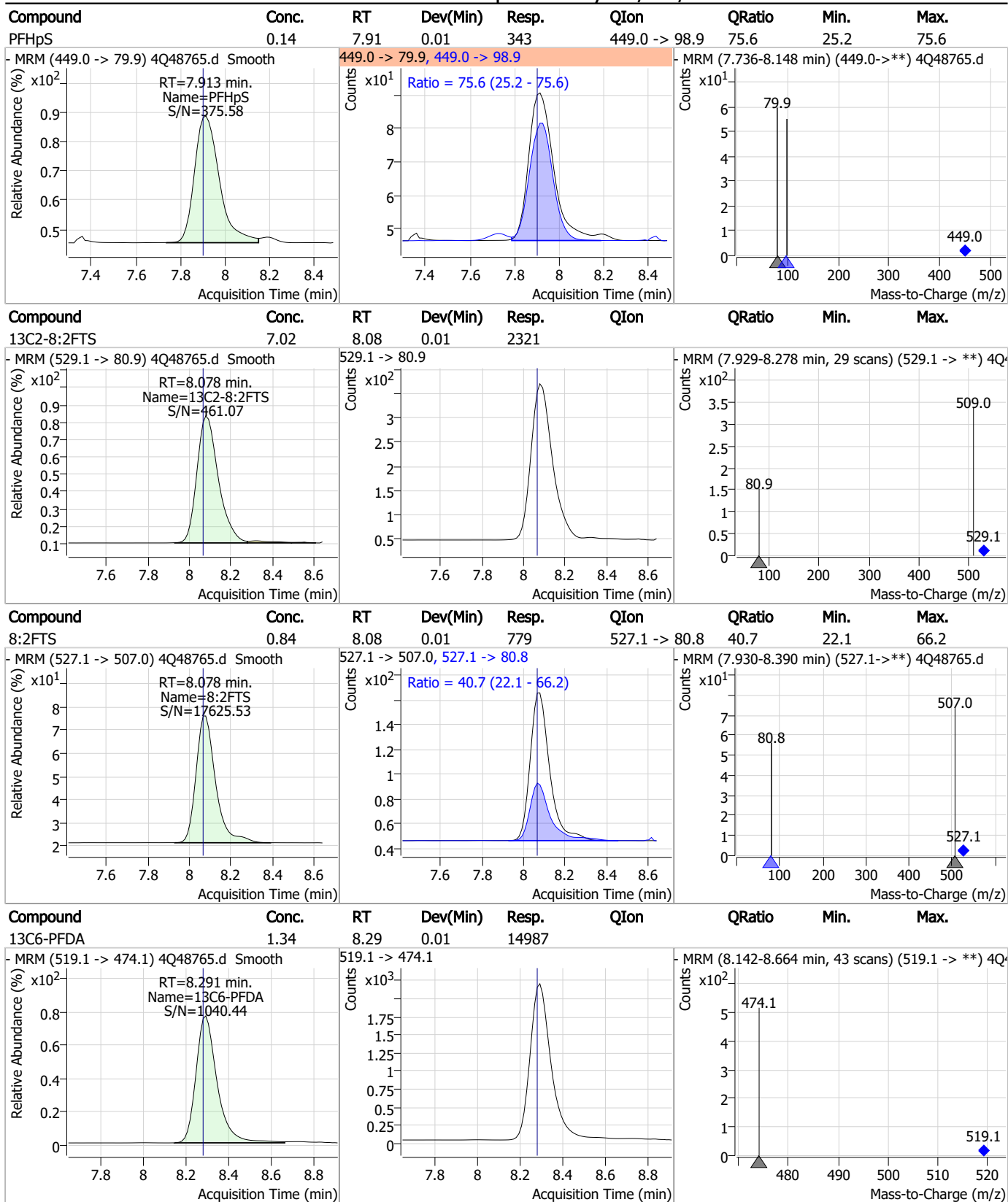
7.7.12
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Perfluorinated Compounds by LC/MS/MS



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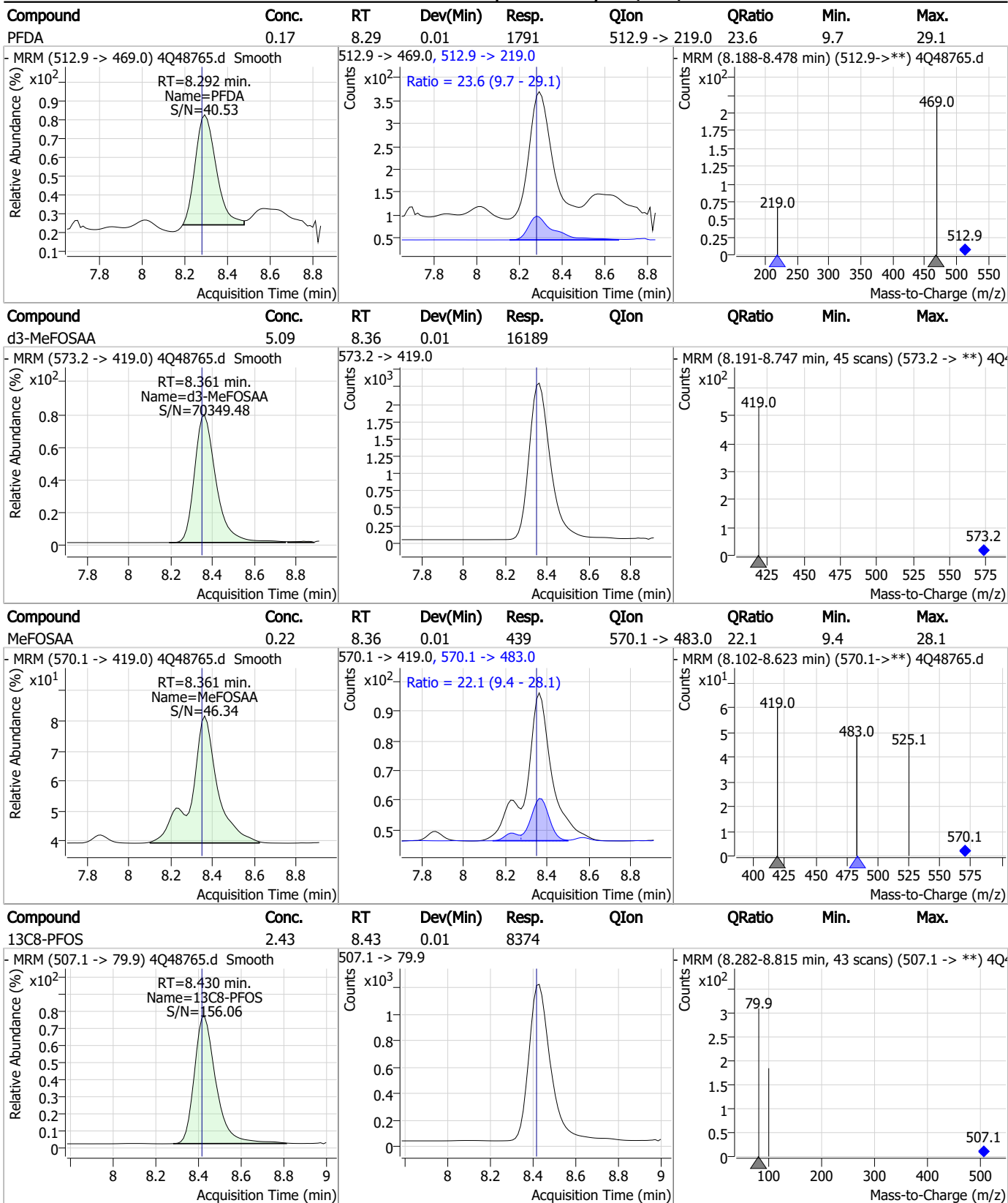
Perfluorinated Compounds by LC/MS/MS



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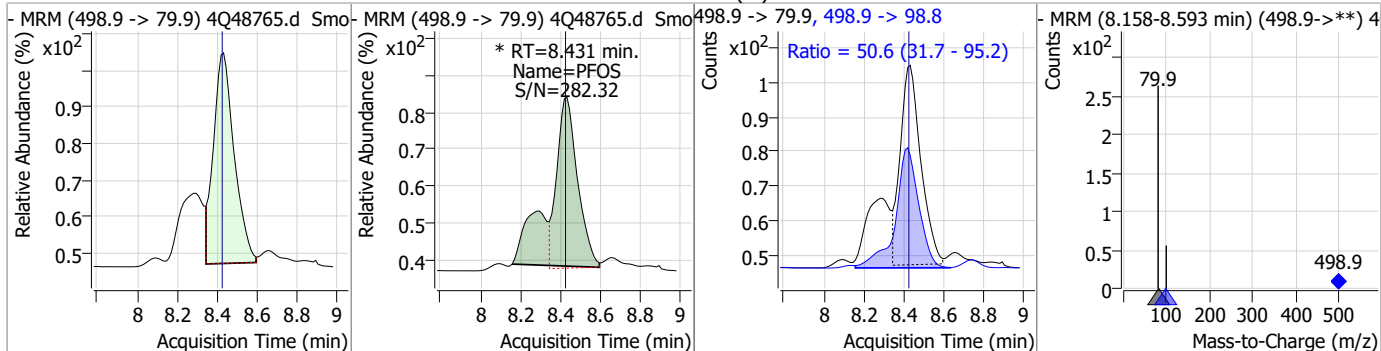
Perfluorinated Compounds by LC/MS/MS



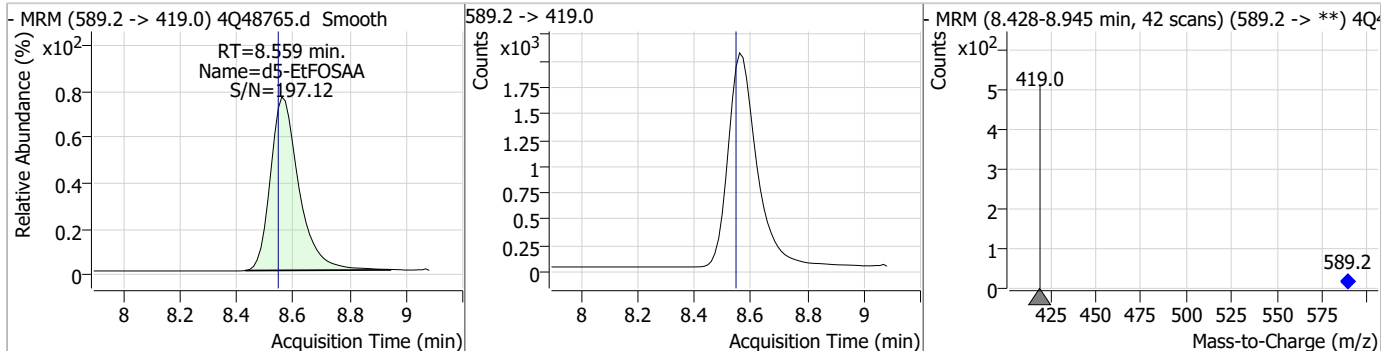
7.7.12
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Perfluorinated Compounds by LC/MS/MS

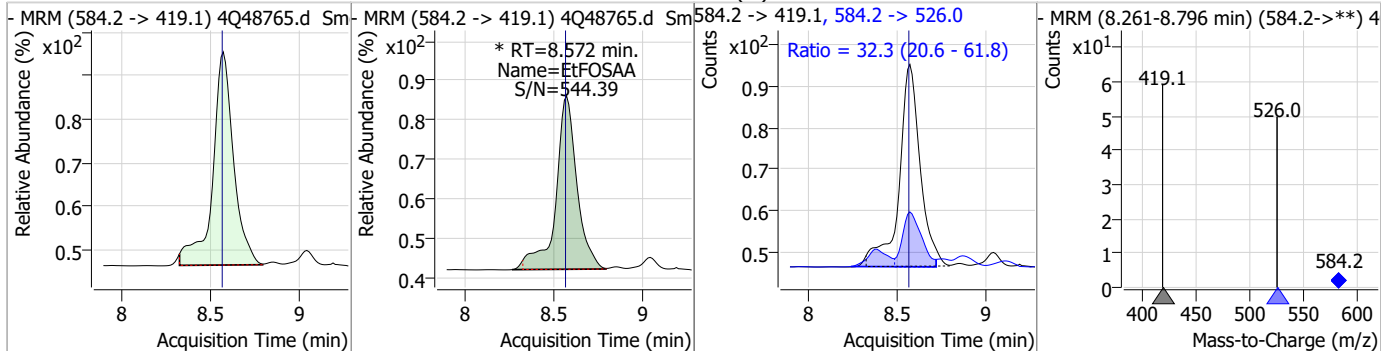
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.19	8.43	0.01	554 (m)	498.9 -> 98.8	50.6	31.7	95.2



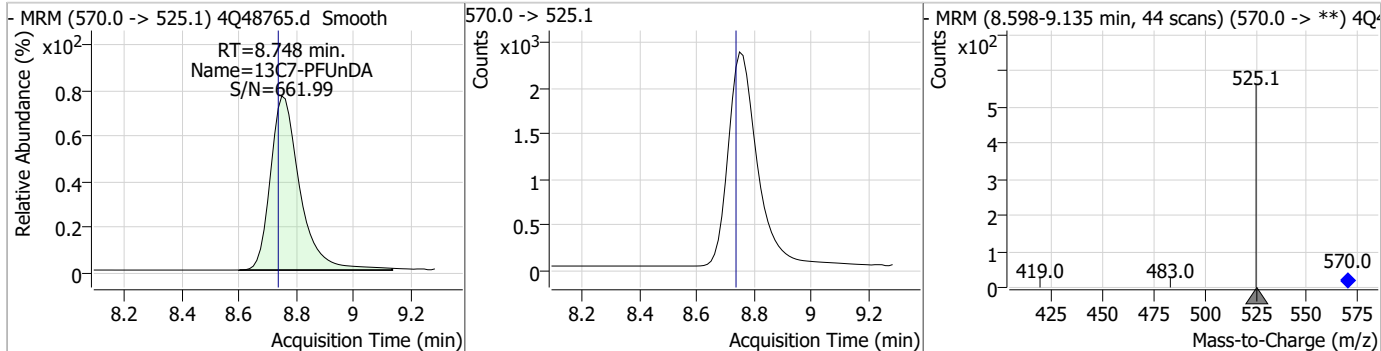
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.45	8.56	0.01	14261				



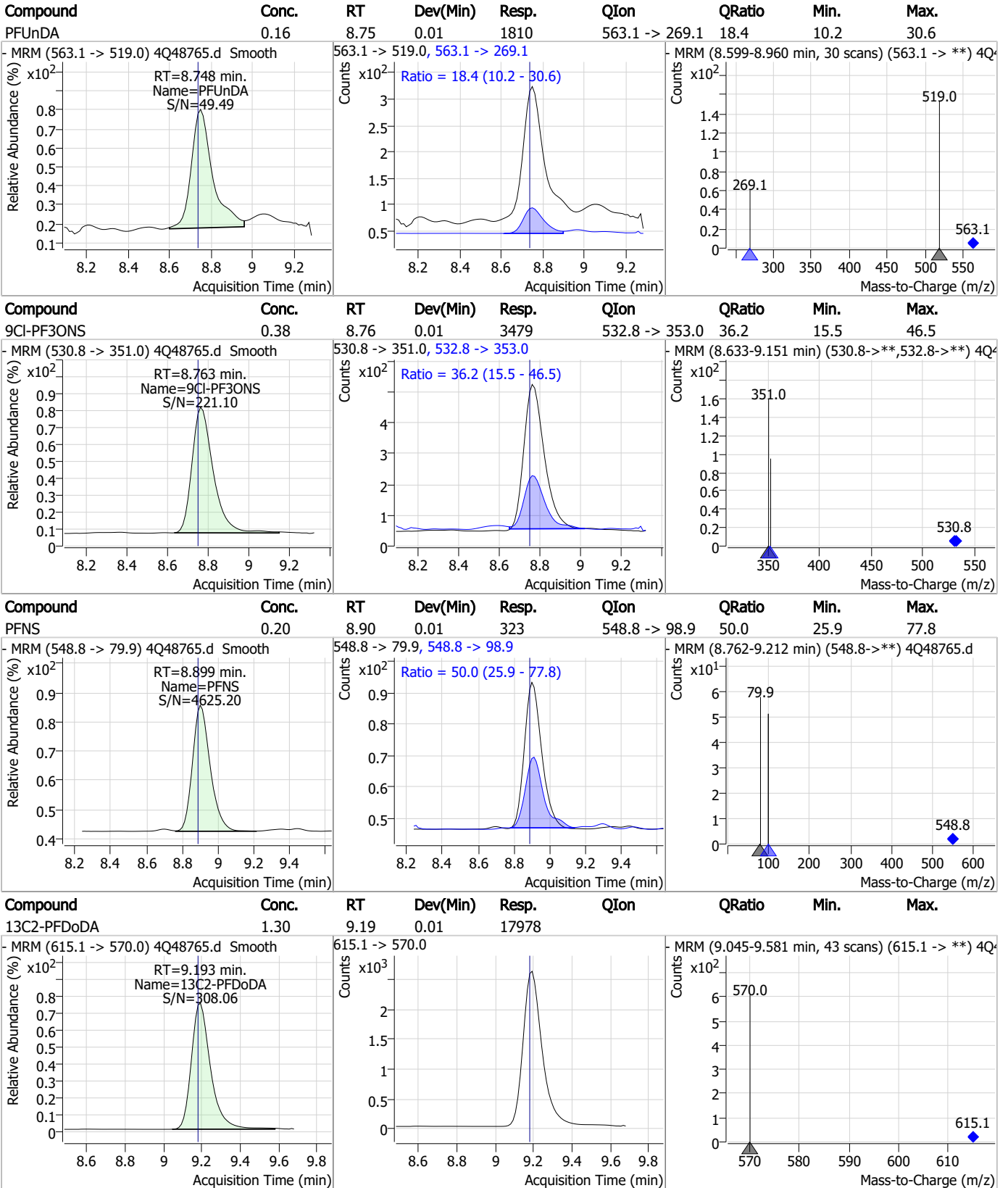
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.21	8.57	0.01	411 (m)	584.2 -> 526.0	32.3	20.6	61.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.34	8.75	0.01	16840				



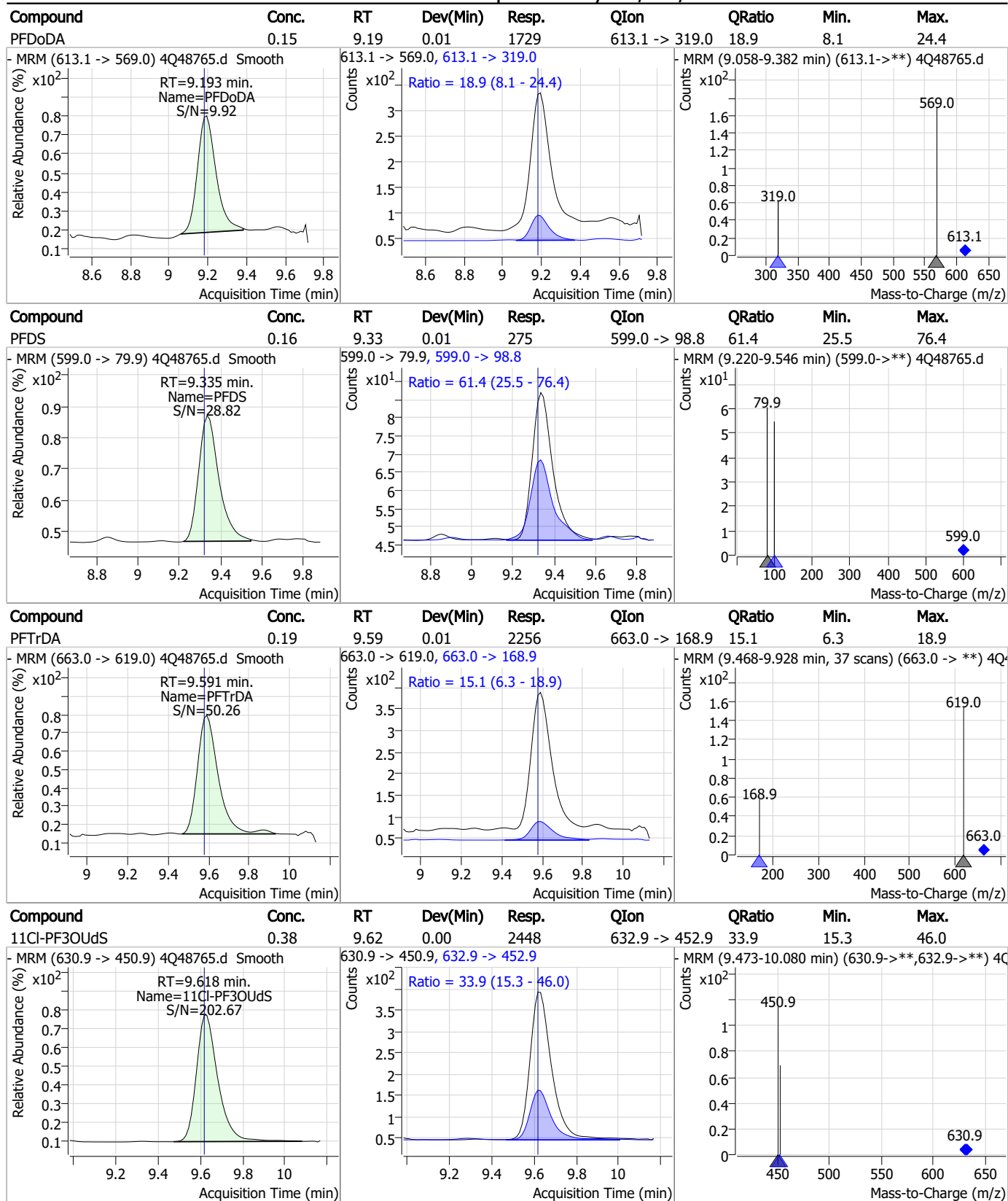
Perfluorinated Compounds by LC/MS/MS



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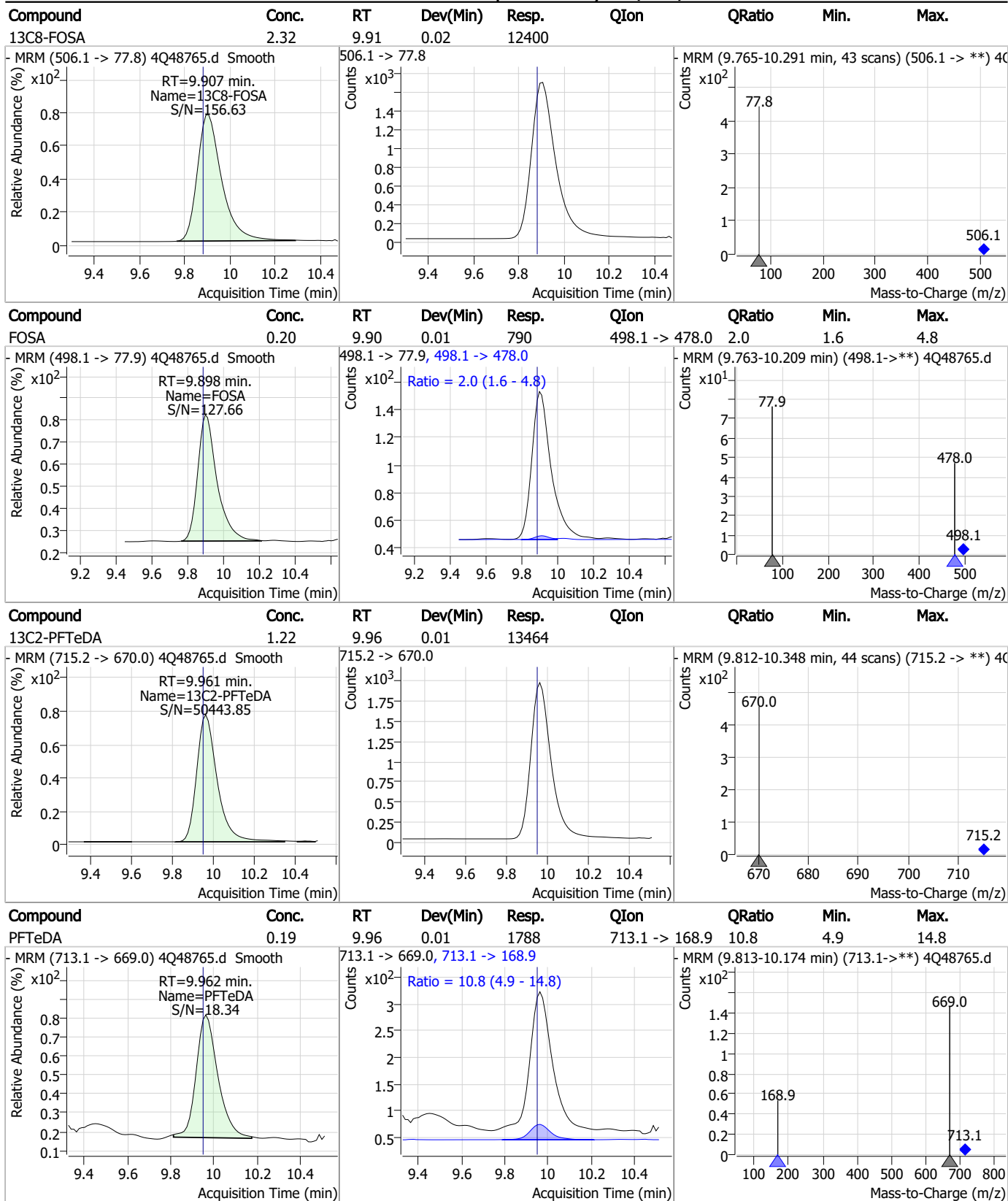


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

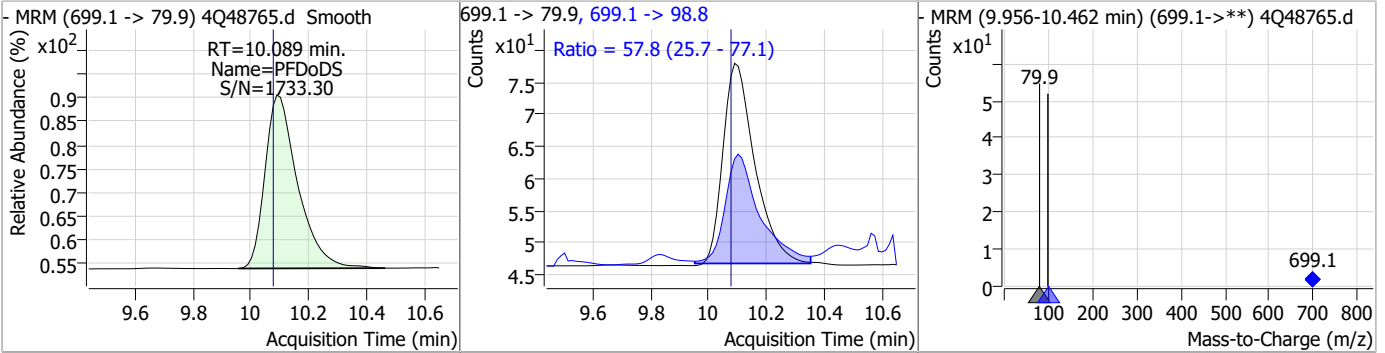


7.7.12
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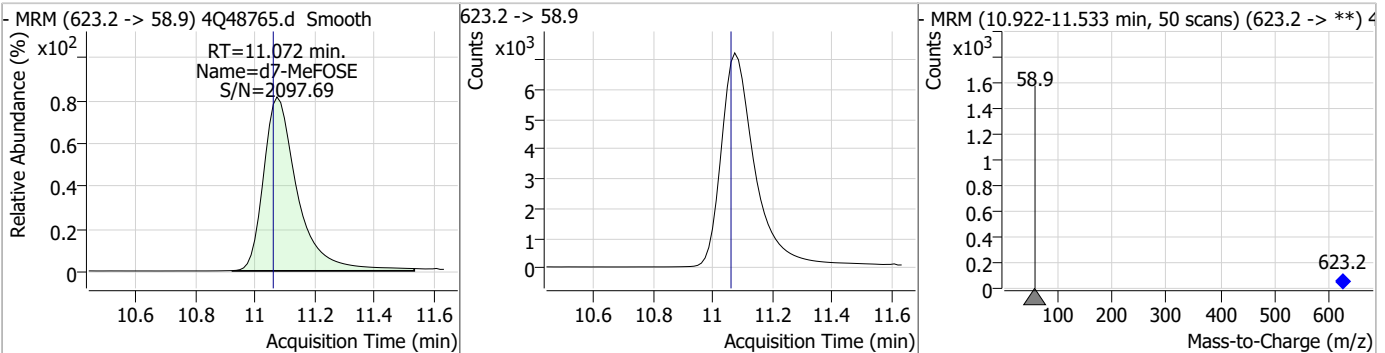


Perfluorinated Compounds by LC/MS/MS

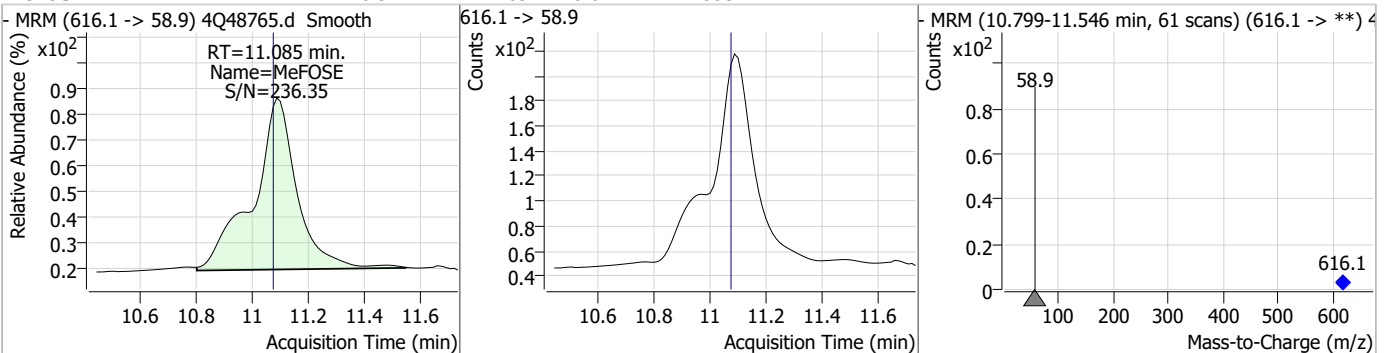
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	0.18	10.09	0.01	246	699.1 -> 98.8	57.8	25.7	77.1



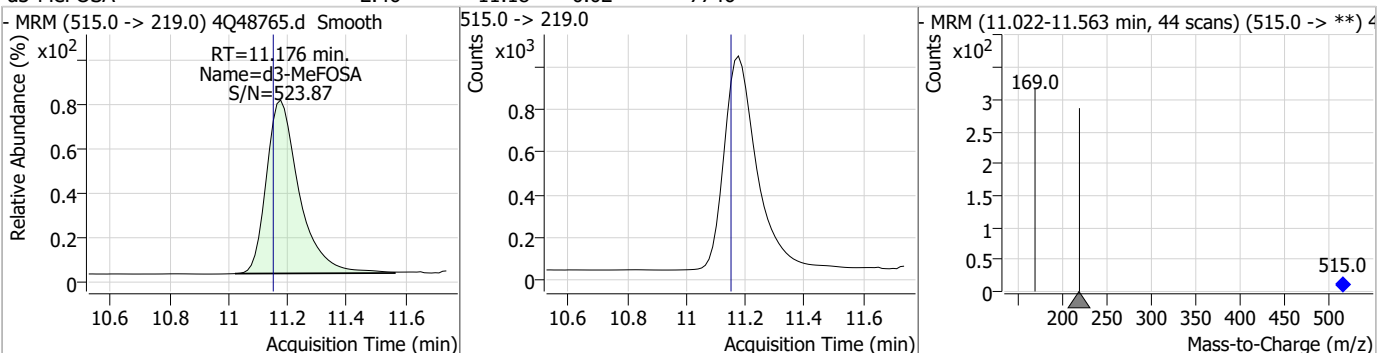
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	22.71	11.07	0.01	57168				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	0.91	11.09	0.01	1853				



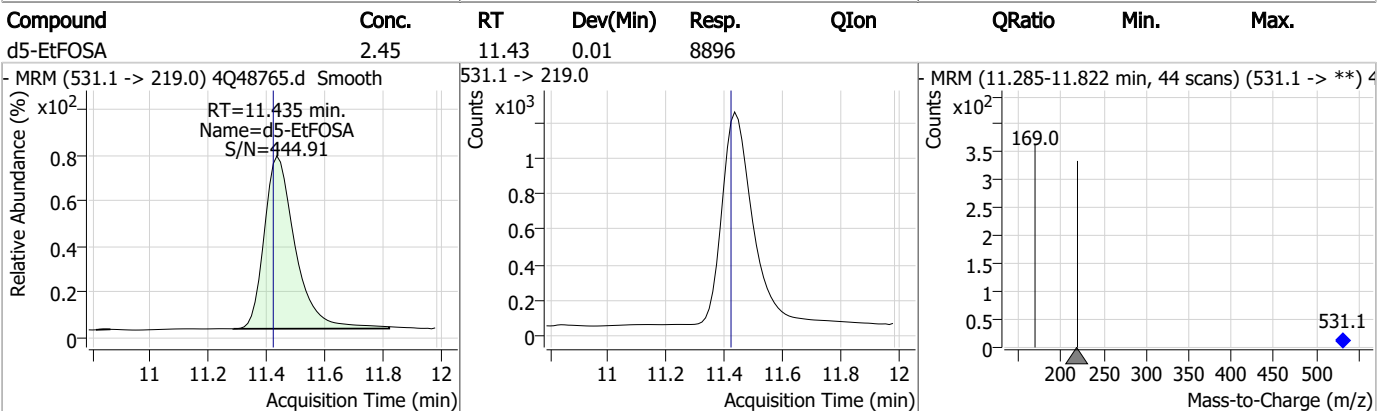
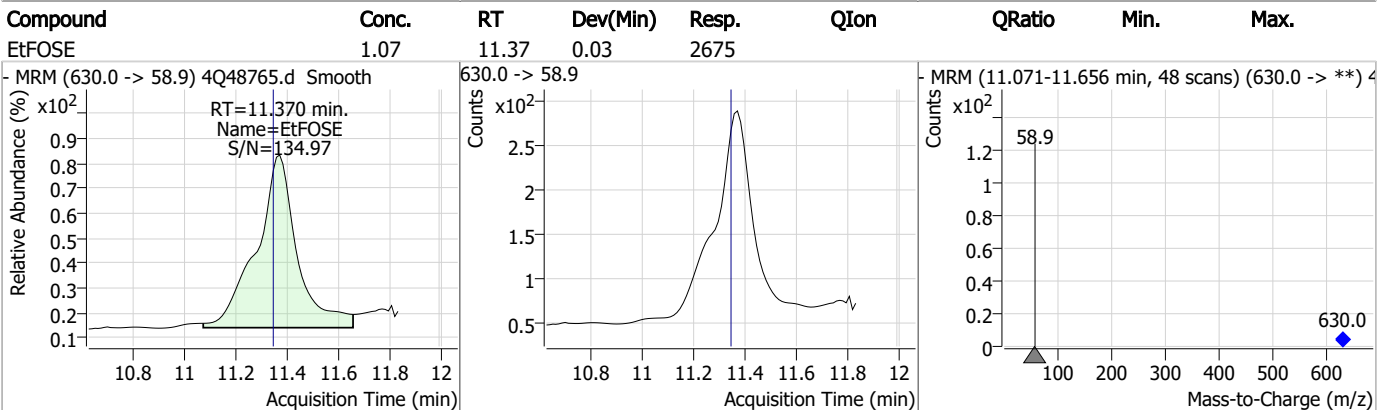
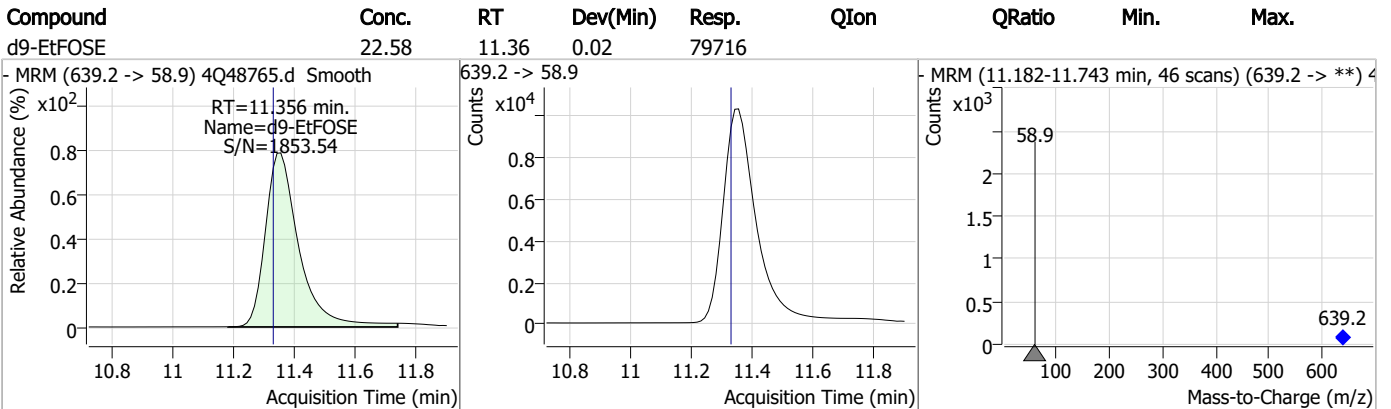
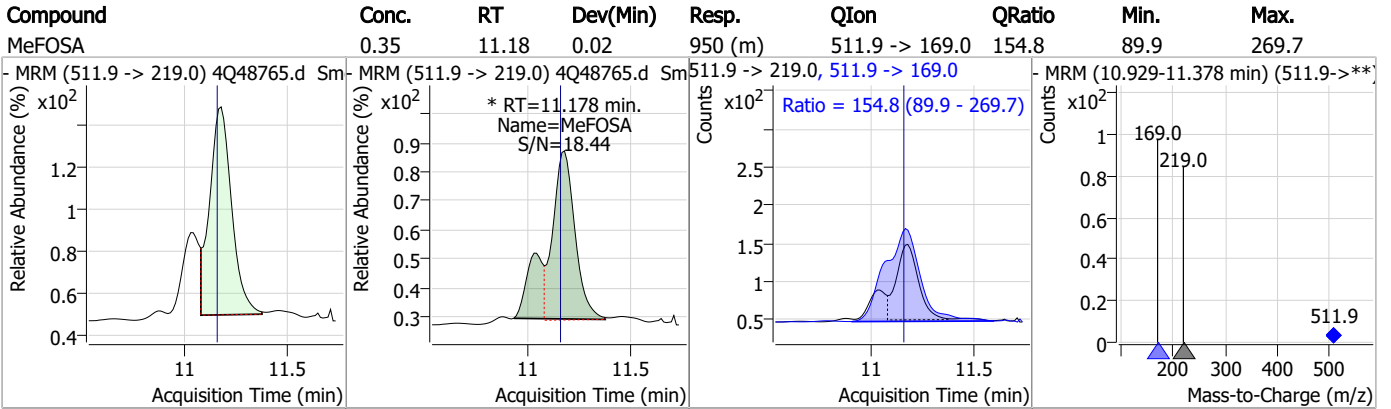
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.46	11.18	0.02	7746				



7.7.12

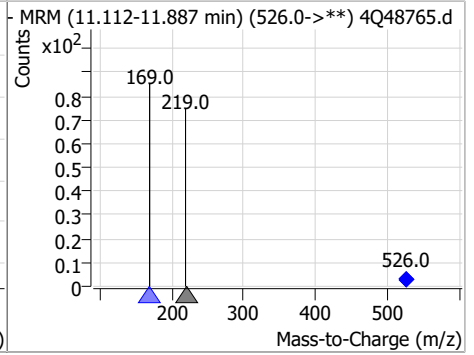
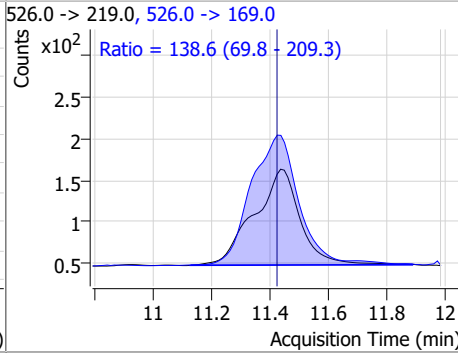
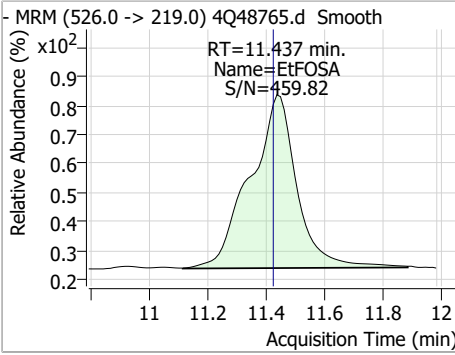
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	0.40	11.44	0.01	1306	526.0 -> 169.0	138.6	69.8	209.3



7.7.12
7

Manual Integration Approval Summary

Sample Number: S4Q713-CC711 Method: EPA DRAFT 1633
Lab FileID: 4Q48765.D Analyst approved: 08/10/23 10:42 Anna Ludwig
Injection Time: 08/09/23 15:30 Supervisor approved: 08/11/23 11:37 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

7.7.12.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48776.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/9/2023 6:19:13 PM
 Sample Name : cc711-4
 Vial : P1-A5
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q713.batch.bin
 Sample Information : OP98180,S4Q713,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.886	216.8 -> 171.9	113788	10.00 µg/L	-0.025
M5-PFPeA	4.412	268.3 -> 223.0	59798	5.00 µg/L	0.000
M5-PFHxA	5.622	318.0 -> 273.0	38769	2.50 µg/L	0.012
M4-PFHpA	6.580	367.1 -> 322.0	28549	2.50 µg/L	0.025
M8-PFOA	7.251	421.1 -> 376.0	46965	2.50 µg/L	0.025
M9-PFNA	7.797	472.1 -> 427.0	21016	1.25 µg/L	0.013
M6-PFDA	8.303	519.1 -> 474.1	15174	1.25 µg/L	0.025
M7-PFUnDA	8.760	570.0 -> 525.1	19524	1.25 µg/L	0.025
M2-PFDoDA	9.205	615.1 -> 570.0	20253	1.25 µg/L	0.025
M2-PFTeDA	9.974	715.2 -> 670.0	15508	1.25 µg/L	0.025
M8-FOSA	9.907	506.1 -> 77.8	14031	2.50 µg/L	0.024
M3-PFBS	5.502	302.1 -> 79.9	9349	2.50 µg/L	0.013
M3-PFHxS	7.329	402.1 -> 79.9	6720	2.50 µg/L	0.012
M8-PFOS	8.430	507.1 -> 79.9	9101	2.50 µg/L	0.013
M2-4:2FTS	5.309	329.1 -> 80.9	846	5.00 µg/L	0.012
M2-6:2FTS	7.023	429.1 -> 80.9	1455	5.00 µg/L	0.025
M2-8:2FTS	8.092	529.1 -> 80.9	2175	5.00 µg/L	0.026
M3-MeFOSAA	8.373	573.2 -> 419.0	18804	5.00 µg/L	0.025
M3-HFPO-DA	6.002	286.9 -> 168.9	33024	10.00 µg/L	0.025
M5-EtFOSAA	8.571	589.2 -> 419.0	16326	5.00 µg/L	0.025
M7-MeFOSE	11.072	623.2 -> 58.9	61867	25.00 µg/L	0.012
M9-EtFOSE	11.356	639.2 -> 58.9	83398	25.00 µg/L	0.025
M5-EtFOSA	11.435	531.1 -> 219.0	9384	2.50 µg/L	0.012
M3-MeFOSA	11.176	515.0 -> 219.0	8515	2.50 µg/L	0.025
13C4-PFOS	8.443	502.8 -> 79.9	9613	2.50 µg/L	0.025
13C3-PFBA	2.891	216.0 -> 172.0	61499	5.00 µg/L	-0.013
18O2-PFHxS	7.328	403.0 -> 83.9	4983	2.50 µg/L	0.012
13C4-PFOA	7.251	417.1 -> 372.0	57982	2.50 µg/L	0.025
13C2-PFDA	8.304	515.1 -> 470.1	17403	1.25 µg/L	0.025
13C5-PFNA	7.798	468.0 -> 423.0	25592	1.25 µg/L	0.013
13C2-PFHxA	5.623	315.1 -> 270.0	37374	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.309	329.1 -> 80.9	846	6.80 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 136.0%		
13C2-6:2FTS	7.023	429.1 -> 80.9	1455	6.12 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.3%		
13C2-8:2FTS	8.092	529.1 -> 80.9	2175	6.02 µg/L	0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 120.4%		
13C2-PFDoDA	9.205	615.1 -> 570.0	20253	1.36 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.7%		
13C2-PFTeDA	9.974	715.2 -> 670.0	15508	1.30 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.6%		
13C3-PFBS	5.502	302.1 -> 79.9	9349	2.20 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 88.2%		
13C3-PFHxS	7.329	402.1 -> 79.9	6720	2.44 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 = 97.4%	
13C4-PFBA	2.886	216.8 -> 171.9	113788	10.83 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 108.3%	
13C4-PFHpA	6.580	367.1 -> 322.0	28549	2.56 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C5-PFHxA	5.622	318.0 -> 273.0	38769	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C5-PFPeA	4.412	268.3 -> 223.0	59798	4.58 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 91.6%	
13C6-PFDA	8.303	519.1 -> 474.1	15174	1.26 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C7-PFUnDA	8.760	570.0 -> 525.1	19524	1.44 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 115.1%	
13C8-FOSA	9.907	506.1 -> 77.8	14031	2.34 µg/L	0.024
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.6%	
13C8-PFOA	7.251	421.1 -> 376.0	46965	2.46 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C8-PFOS	8.430	507.1 -> 79.9	9101	2.36 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.3%	
13C9-PFNA	7.797	472.1 -> 427.0	21016	1.08 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 86.7%	
d3-MeFOSAA	8.373	573.2 -> 419.0	18804	5.27 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.4%	
13C3-HFPO-DA	6.002	286.9 -> 168.9	33024	9.28 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 92.8%	
d3-MeFOSA	11.176	515.0 -> 219.0	8515	2.41 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.5%	
d5-EtFOSAA	8.571	589.2 -> 419.0	16326	5.57 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 111.3%	
d7-MeFOSE	11.072	623.2 -> 58.9	61867	21.91 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 87.7%	
d9-EtFOSE	11.356	639.2 -> 58.9	83398	21.06 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 84.3%	
d5-EtFOSA	11.435	531.1 -> 219.0	9384	2.31 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.3%	
Target Compounds					QValue
4:2FTS	5.309	327.1 -> 307.0	10311	9.04 µg/L	100
		327.1 -> 80.9	4253		
6:2FTS	7.024	427.1 -> 407.0	13008	10.54 µg/L	95
		427.1 -> 80.9	4956		
8:2FTS	8.092	527.1 -> 507.0	11422	13.08 µg/L	92
		527.1 -> 80.8	4413		
EtFOSAA	8.584	584.2 -> 419.1	5196	2.33 µg/L	91
		584.2 -> 526.0	2446		
FOSA	9.911	498.1 -> 77.9	11954	2.63 µg/L	100
		498.1 -> 478.0	389		
MeFOSAA	8.374	570.1 -> 419.0	6592	2.80 µg/L	99
		570.1 -> 483.0	1251		
PFBA	2.882	212.8 -> 168.9	26477	10.11 µg/L	100
PFBS	5.490	298.7 -> 79.9	6538	2.86 µg/L	95
		298.7 -> 98.8	2611		
PFDA	8.304	512.9 -> 469.0	29386	2.76 µg/L	100
		512.9 -> 219.0	5673		
PFDoDA	9.193	613.1 -> 569.0	32835	2.59 µg/L	98
		613.1 -> 319.0	5016		
PFDS	9.347	599.0 -> 79.9	4789	2.55 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	2477			
PFHpA	6.581	363.1 -> 319.0	34486	2.68	µg/L	97
		363.1 -> 169.0	5848			
PFHpS	7.913	449.0 -> 79.9	6658	2.42	µg/L	98
		449.0 -> 98.9	3453			
PFHxA	5.625	313.0 -> 269.0	29626	2.65	µg/L	100
		313.0 -> 118.9	948			
PFHxS	7.330	398.7 -> 79.9	5108	2.65	µg/L	m 99
		398.7 -> 98.9	2660			
PFNA	7.798	463.0 -> 419.0	31113	2.84	µg/L	100
		463.0 -> 219.0	6758			
PFNS	8.911	548.8 -> 79.9	4708	2.65	µg/L	99
		548.8 -> 98.9	2477			
PFOA	7.252	413.0 -> 369.0	51319	2.76	µg/L	98
		413.0 -> 169.0	9544			
PFOS	8.431	498.9 -> 79.9	8506	2.63	µg/L	m 79
		498.9 -> 98.8	4012			
PFPeA	4.414	263.0 -> 219.0	58103	5.59	µg/L	100
PFPeS	6.595	349.1 -> 79.9	4364	2.40	µg/L	98
		349.1 -> 98.9	1996			
PFTeDA	9.975	713.1 -> 669.0	28440	2.62	µg/L	98
		713.1 -> 168.9	2646			
PFTrDA	9.603	663.0 -> 619.0	36602	2.79	µg/L	100
		663.0 -> 168.9	4566			
PFUnDA	8.761	563.1 -> 519.0	31158	2.45	µg/L	99
		563.1 -> 269.1	6247			
11CI-PF3OUdS	9.630	630.9 -> 450.9	40115	5.79	µg/L	100
		632.9 -> 452.9	12323			
9CI-PF3ONS	8.775	530.8 -> 351.0	57662	5.92	µg/L	100
		532.8 -> 353.0	17860			
ADONA	6.843	376.9 -> 250.9	106141	5.54	µg/L	99
		376.9 -> 84.8	26957			
HFPO-DA	6.003	284.9 -> 168.9	13973	5.14	µg/L	96
		284.9 -> 184.9	1597			
3:3FTCA	3.861	241.0 -> 177.0	7425	11.23	µg/L	99
		241.0 -> 117.0	710			
5:3FTCA	6.308	341.0 -> 237.1	125030	68.29	µg/L	98
		341.0 -> 217.0	87333			
7:3FTCA	7.787	441.0 -> 316.9	71429	70.80	µg/L	97
		441.0 -> 336.9	168380			
EtFOSA	11.437	526.0 -> 219.0	19080	5.53	µg/L	97
		526.0 -> 169.0	25900			
EtFOSE	11.370	630.0 -> 58.9	36464	13.97	µg/L	100
MeFOSA	11.178	511.9 -> 219.0	15139	5.11	µg/L	m 75
		511.9 -> 169.0	21873			
MeFOSE	11.097	616.1 -> 58.9	28860	13.04	µg/L	100
PFDoDS	10.102	699.1 -> 79.9	3795	2.62	µg/L	95
		699.1 -> 98.8	2088			
NFDHA	5.503	295.0 -> 201.0	4020	5.58	µg/L	99
		295.0 -> 84.9	977			
PFMBA	4.828	279.0 -> 85.1	32809	5.63	µg/L	100
PFMPA	3.528	229.0 -> 84.9	31534	5.55	µg/L	100
PFEESA	6.047	314.8 -> 134.9	41962	4.66	µg/L	99
		314.8 -> 82.9	1647			

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



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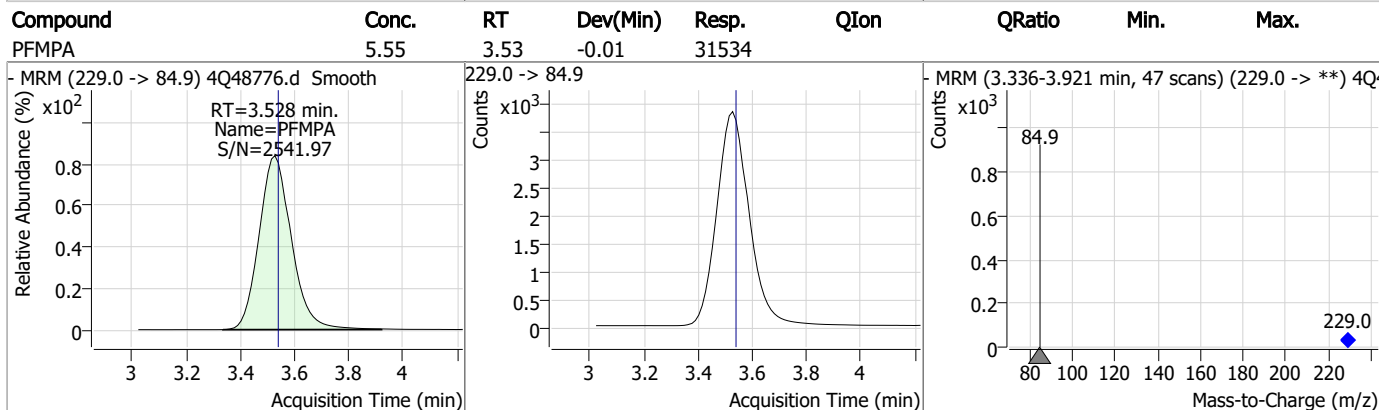
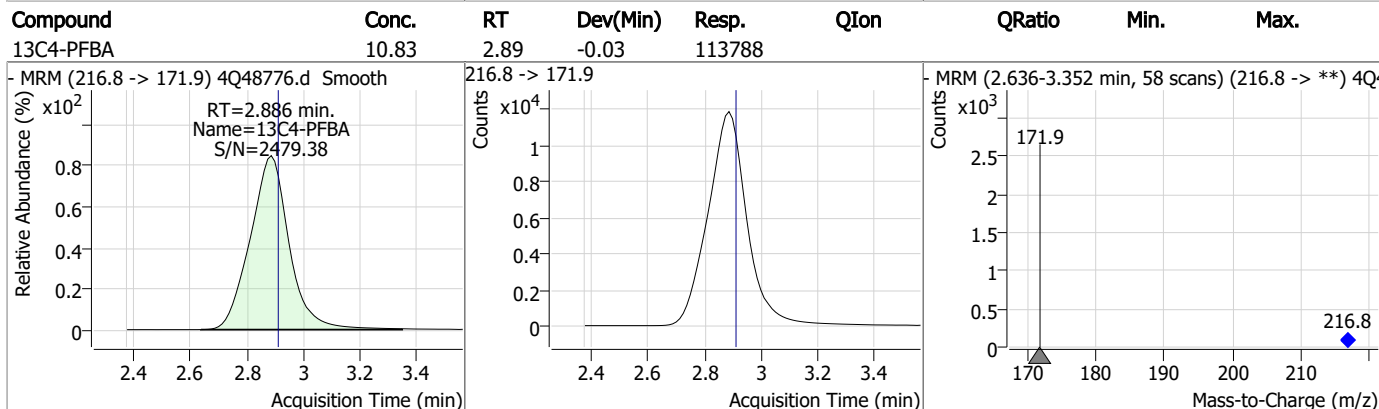
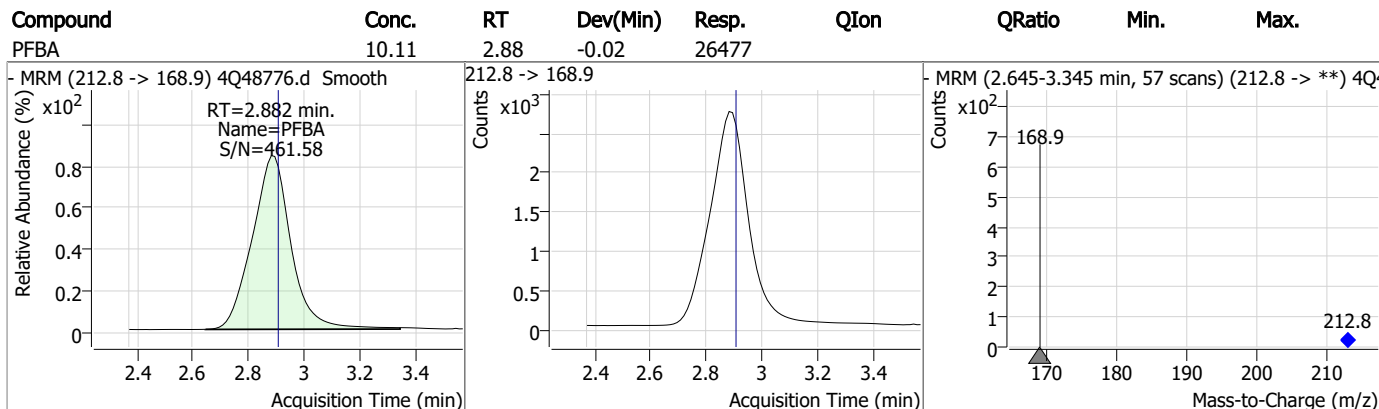
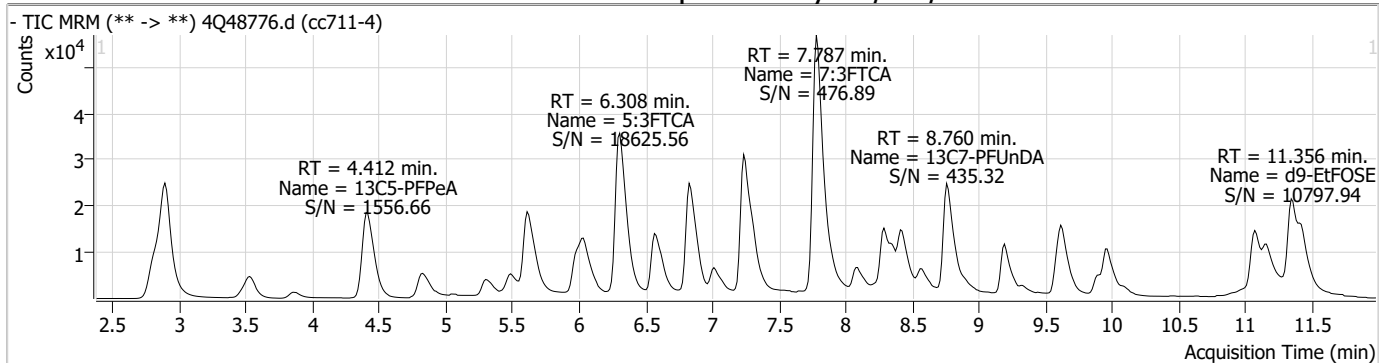
Perfluorinated Compounds by LC/MS/MS

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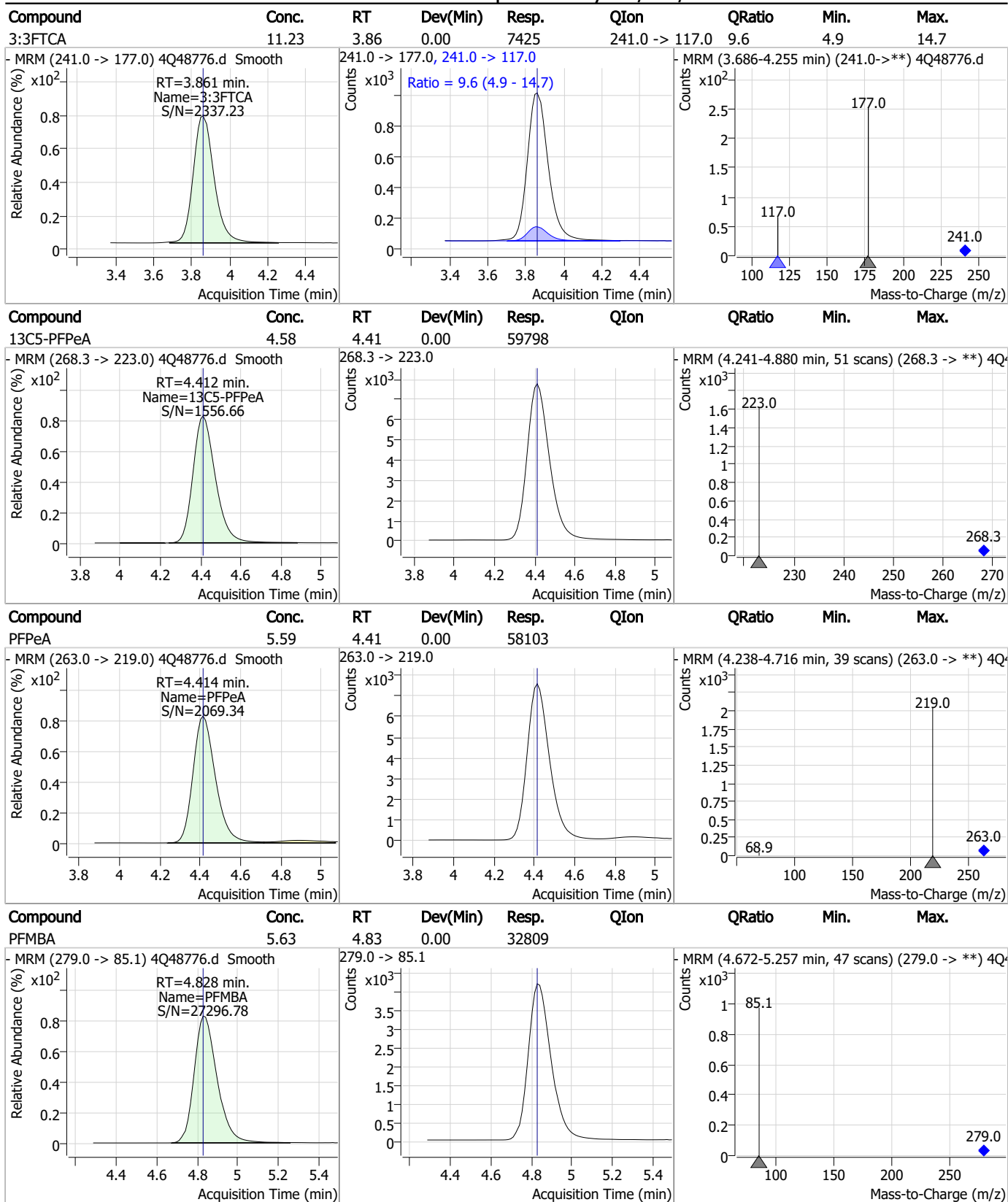
7.7.13

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Perfluorinated Compounds by LC/MS/MS

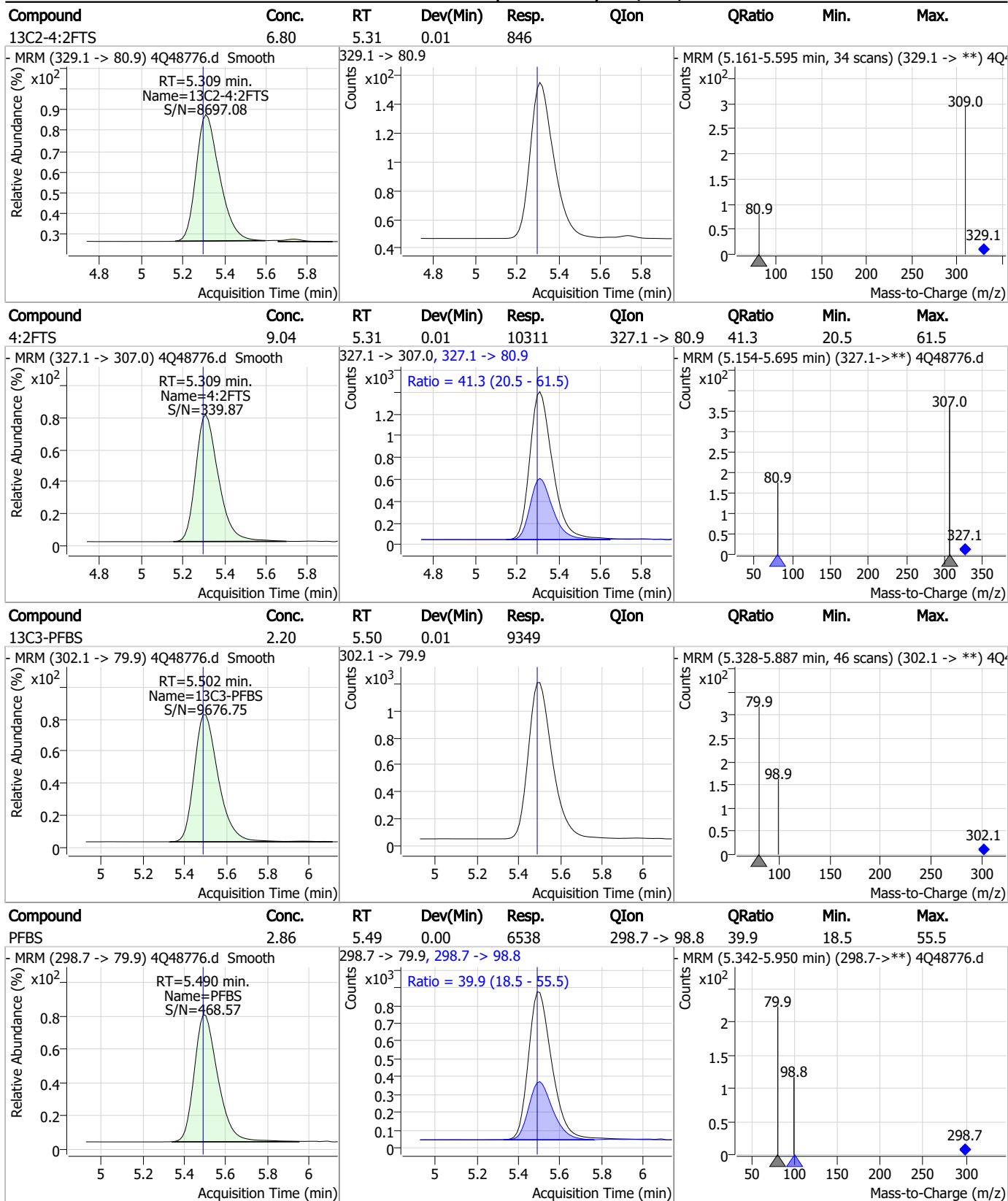


Perfluorinated Compounds by LC/MS/MS



7.7.13
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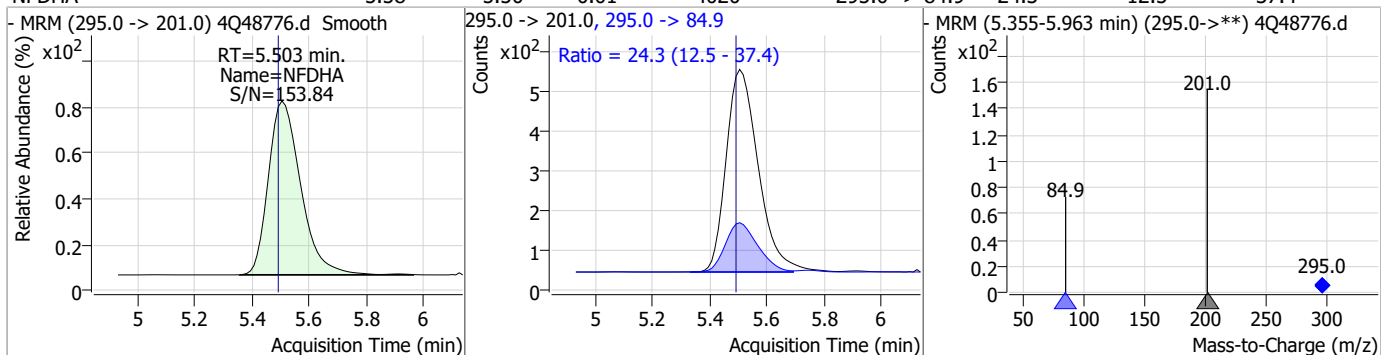
Perfluorinated Compounds by LC/MS/MS



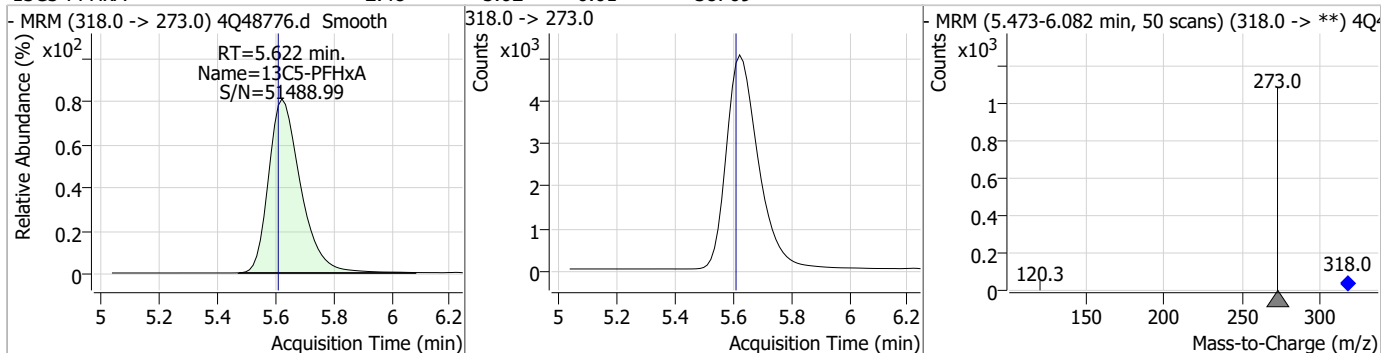
7.7.13
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Perfluorinated Compounds by LC/MS/MS

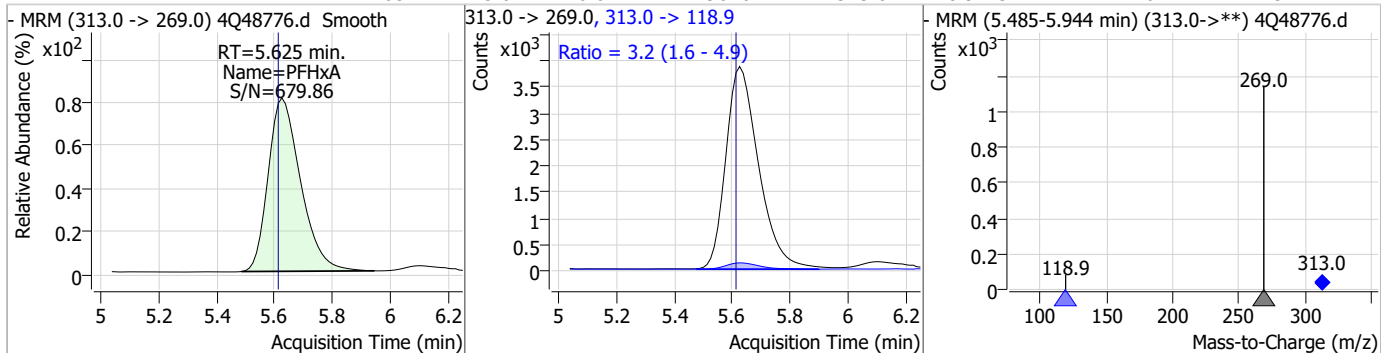
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	5.58	5.50	0.01	4020	295.0 -> 84.9	24.3	12.5	37.4



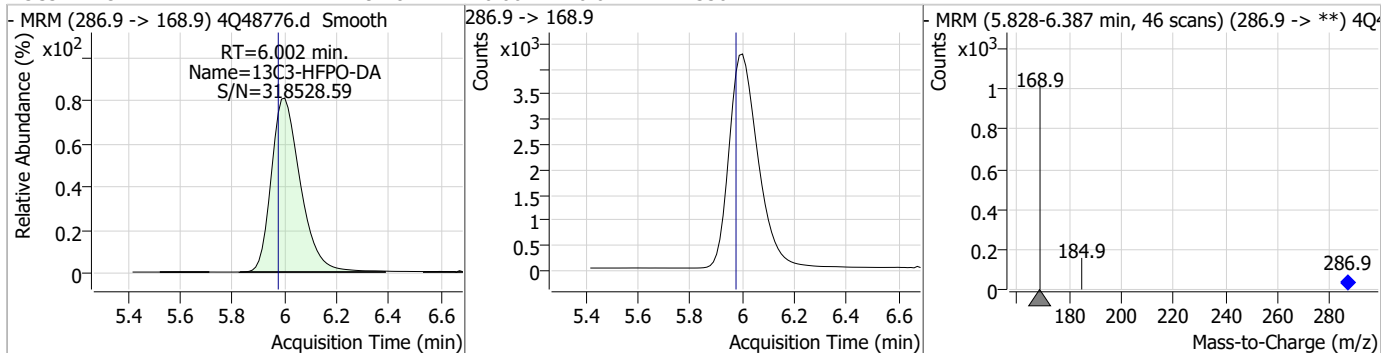
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.48	5.62	0.01	38769	318.0 -> 273.0	3.2	1.6	4.9



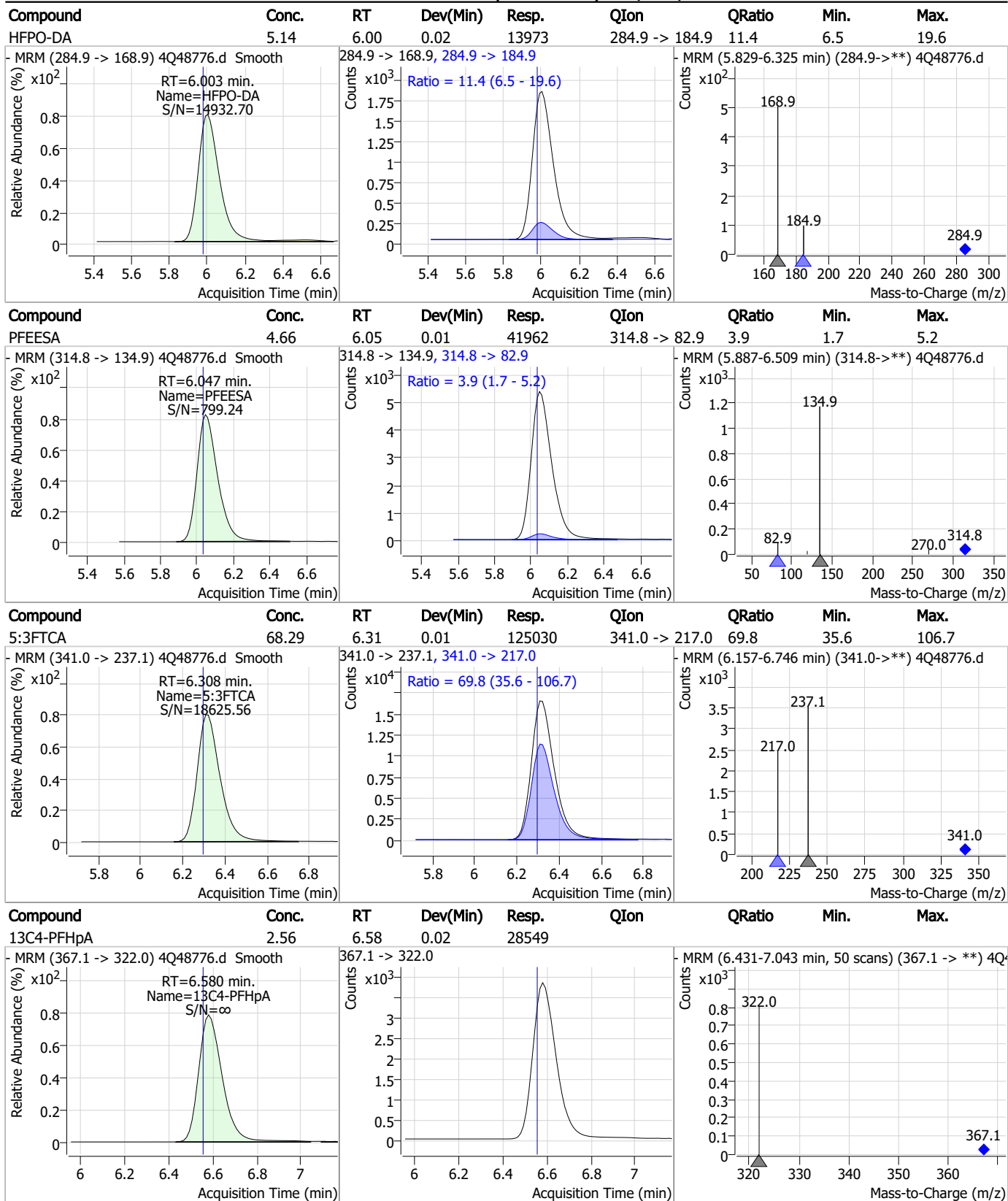
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.65	5.62	0.01	29626	313.0 -> 118.9	3.2	1.6	4.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.28	6.00	0.02	33024	286.9 -> 168.9	3.2	1.6	4.9

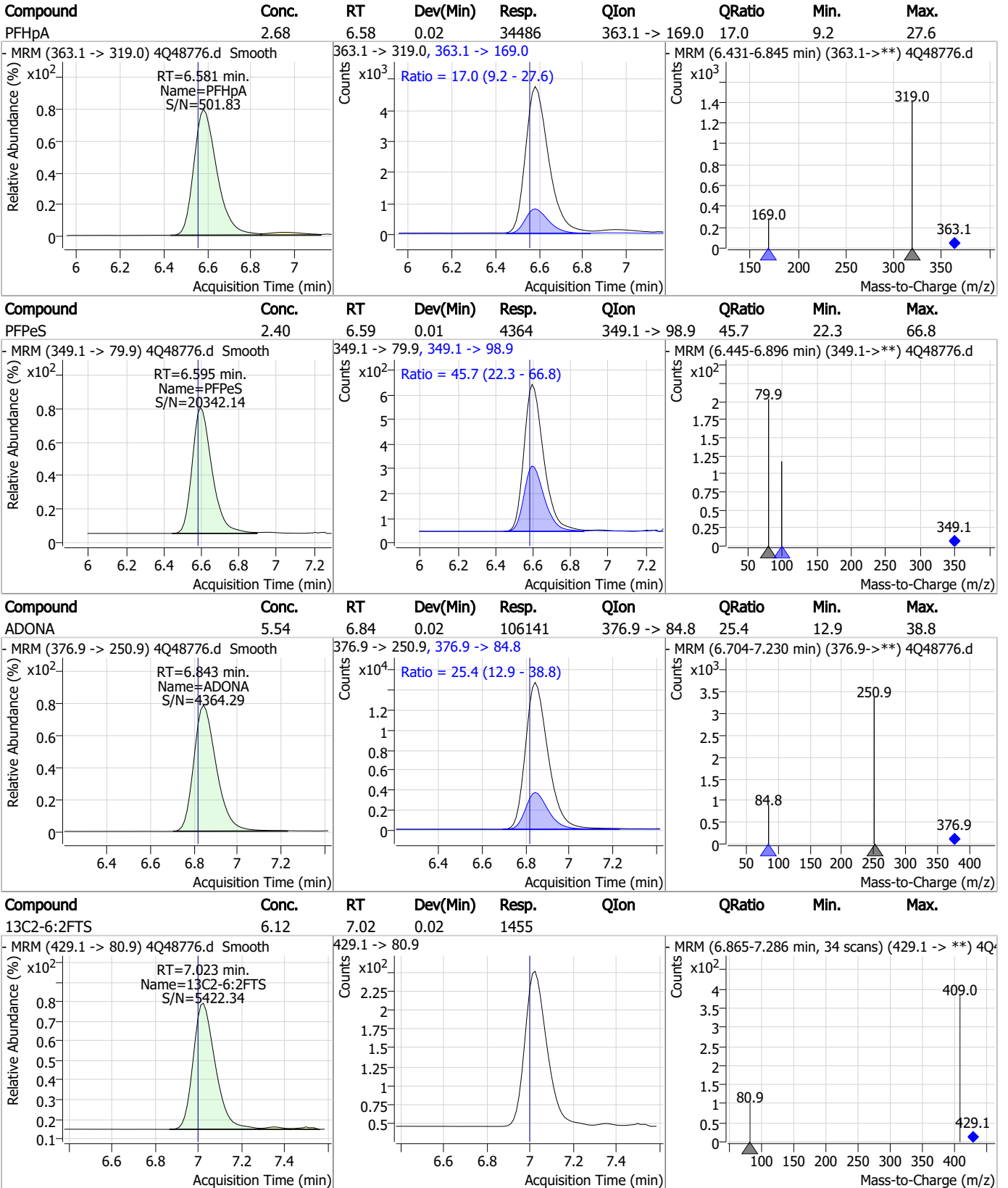


Perfluorinated Compounds by LC/MS/MS



7.7.13
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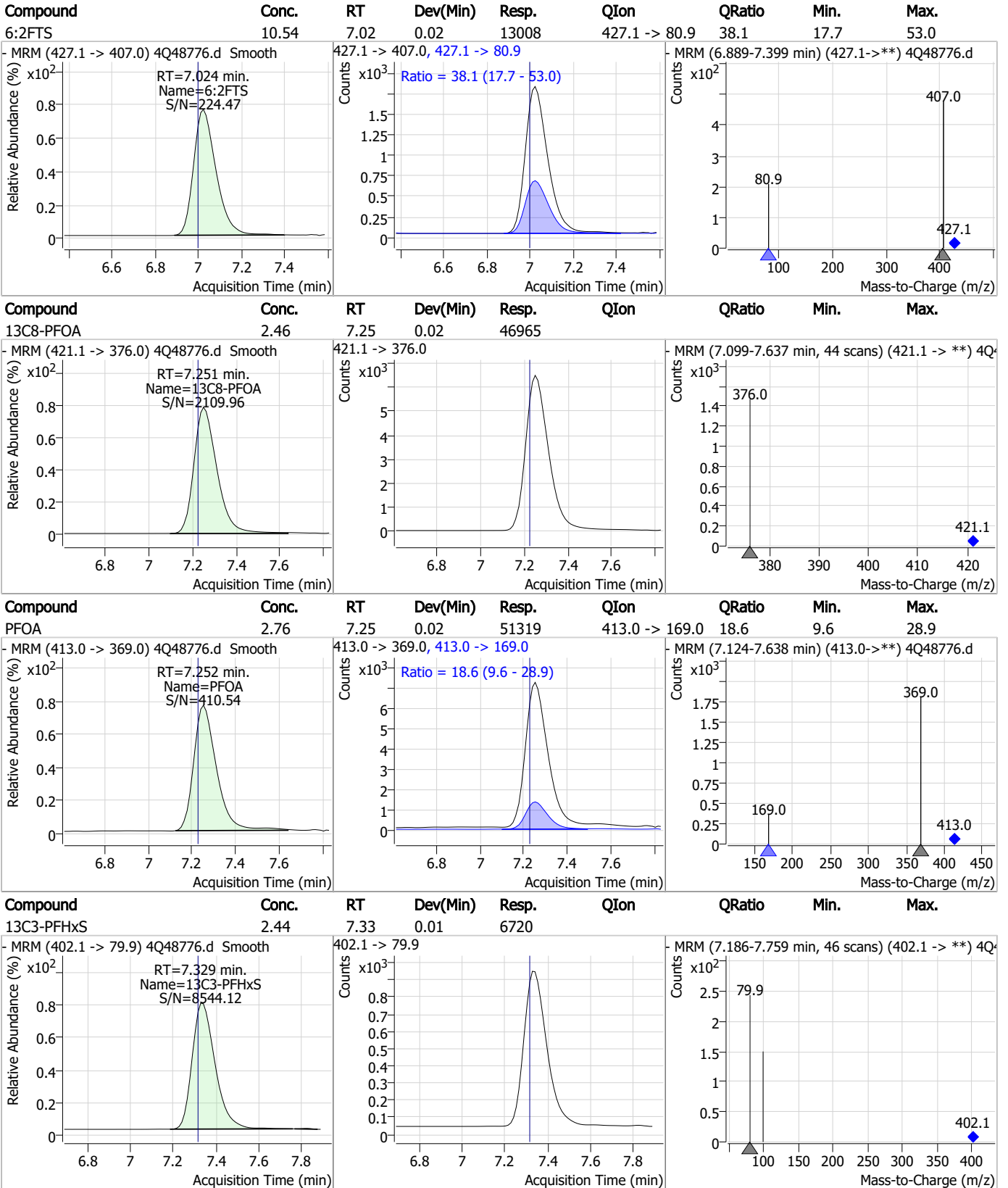
Perfluorinated Compounds by LC/MS/MS



7.7.13
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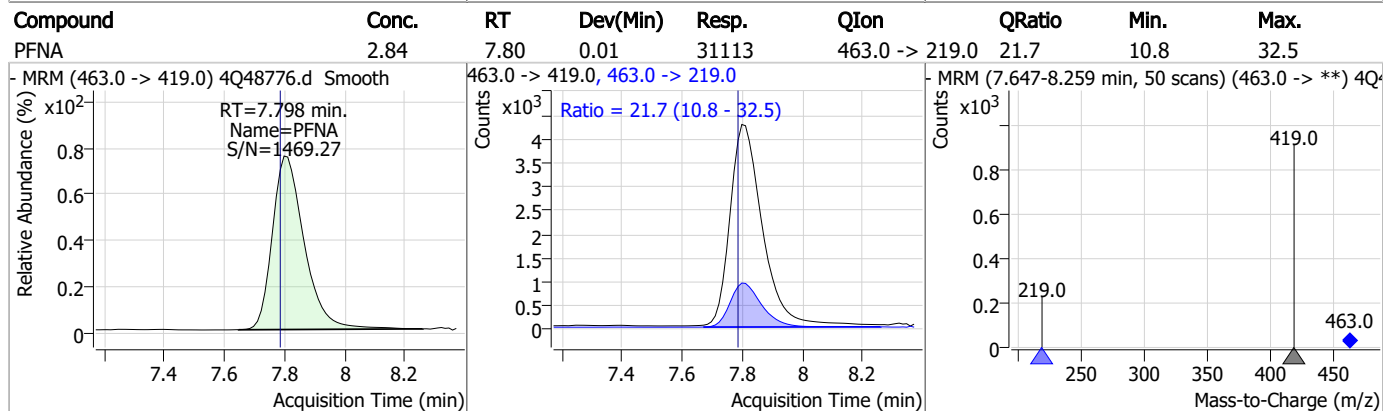
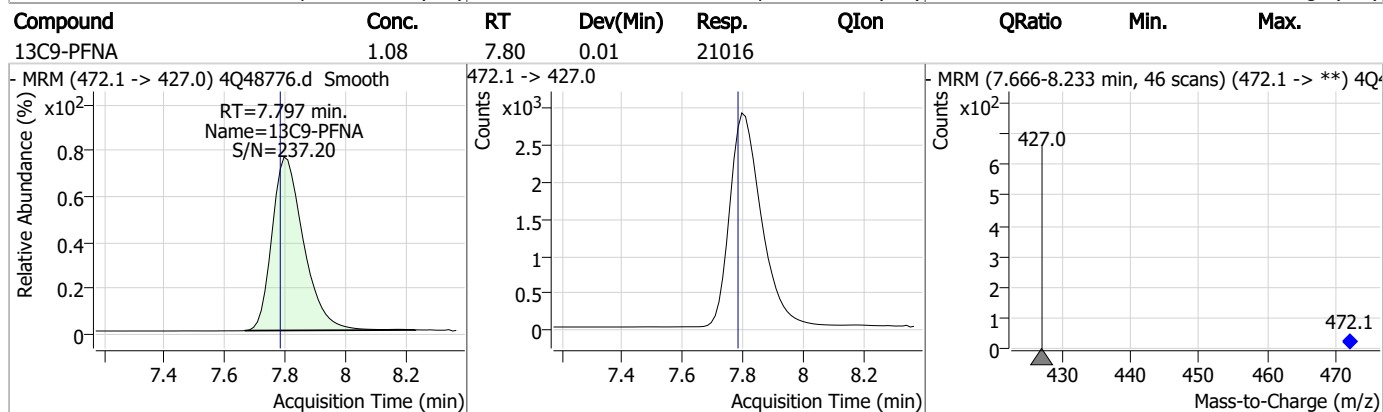
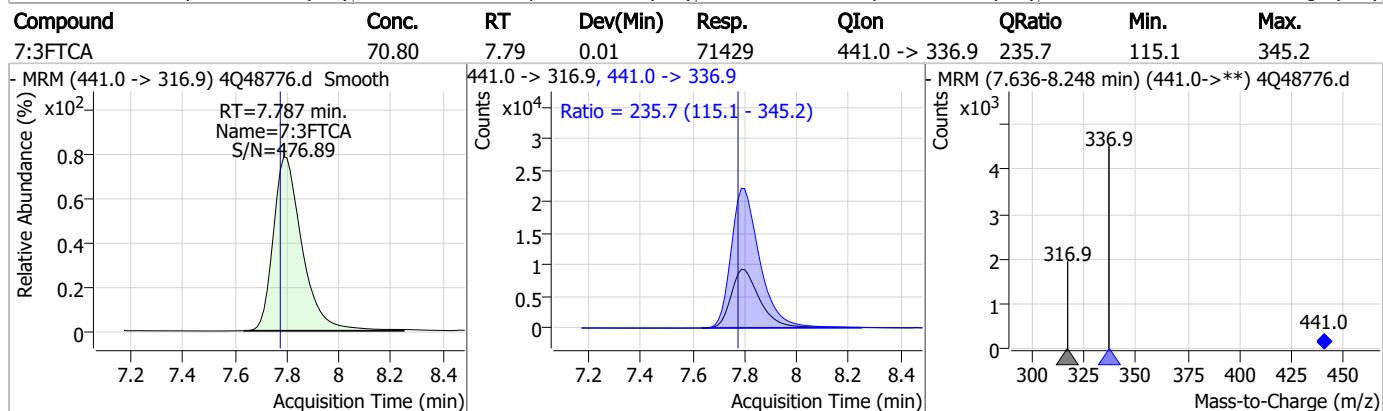
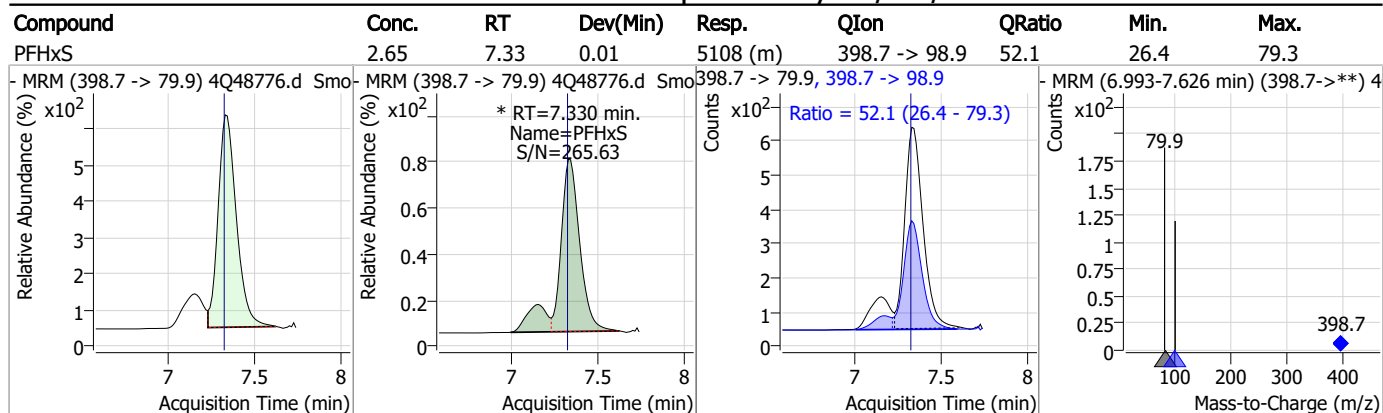
Perfluorinated Compounds by LC/MS/MS



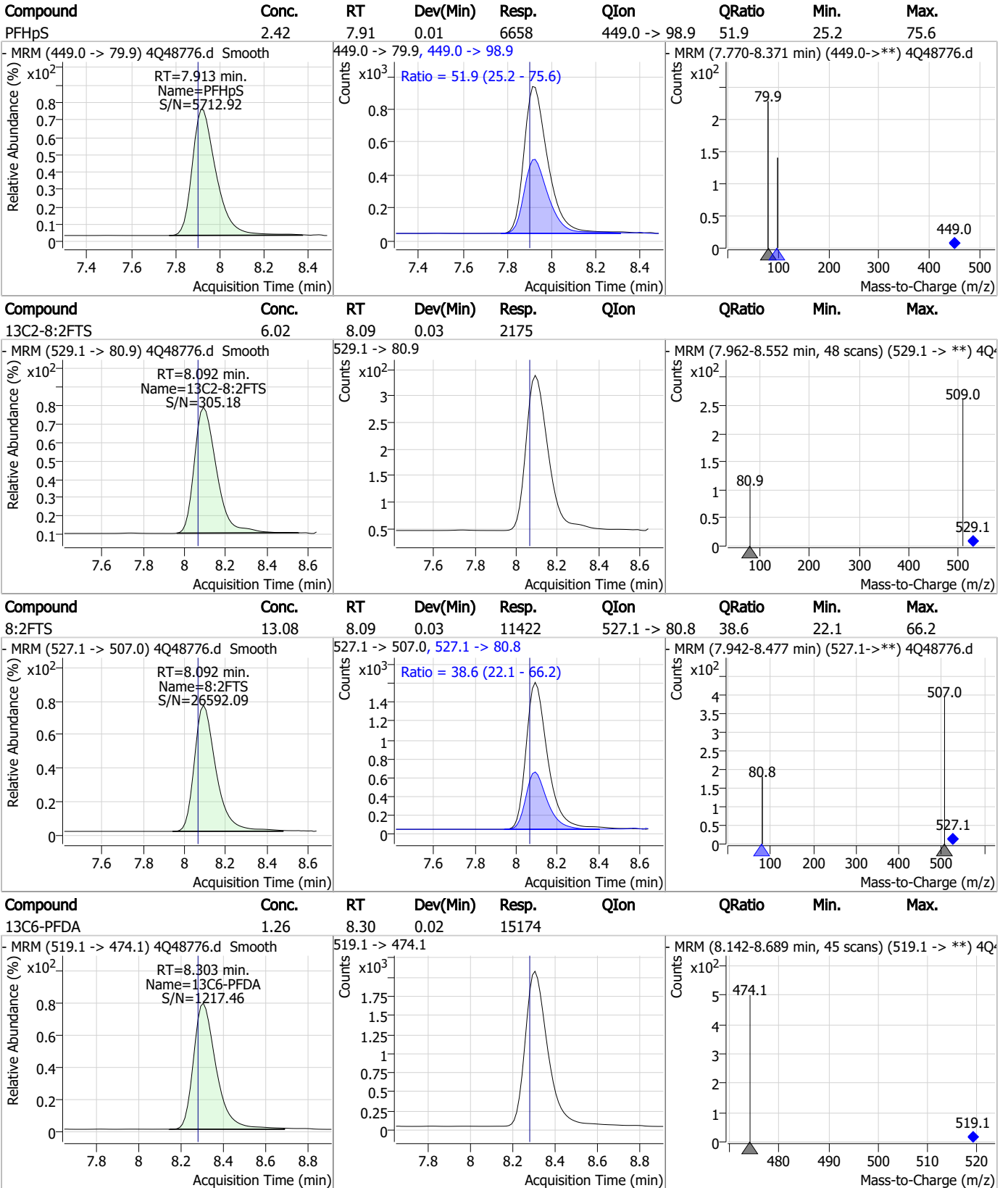
7.7.13
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Perfluorinated Compounds by LC/MS/MS



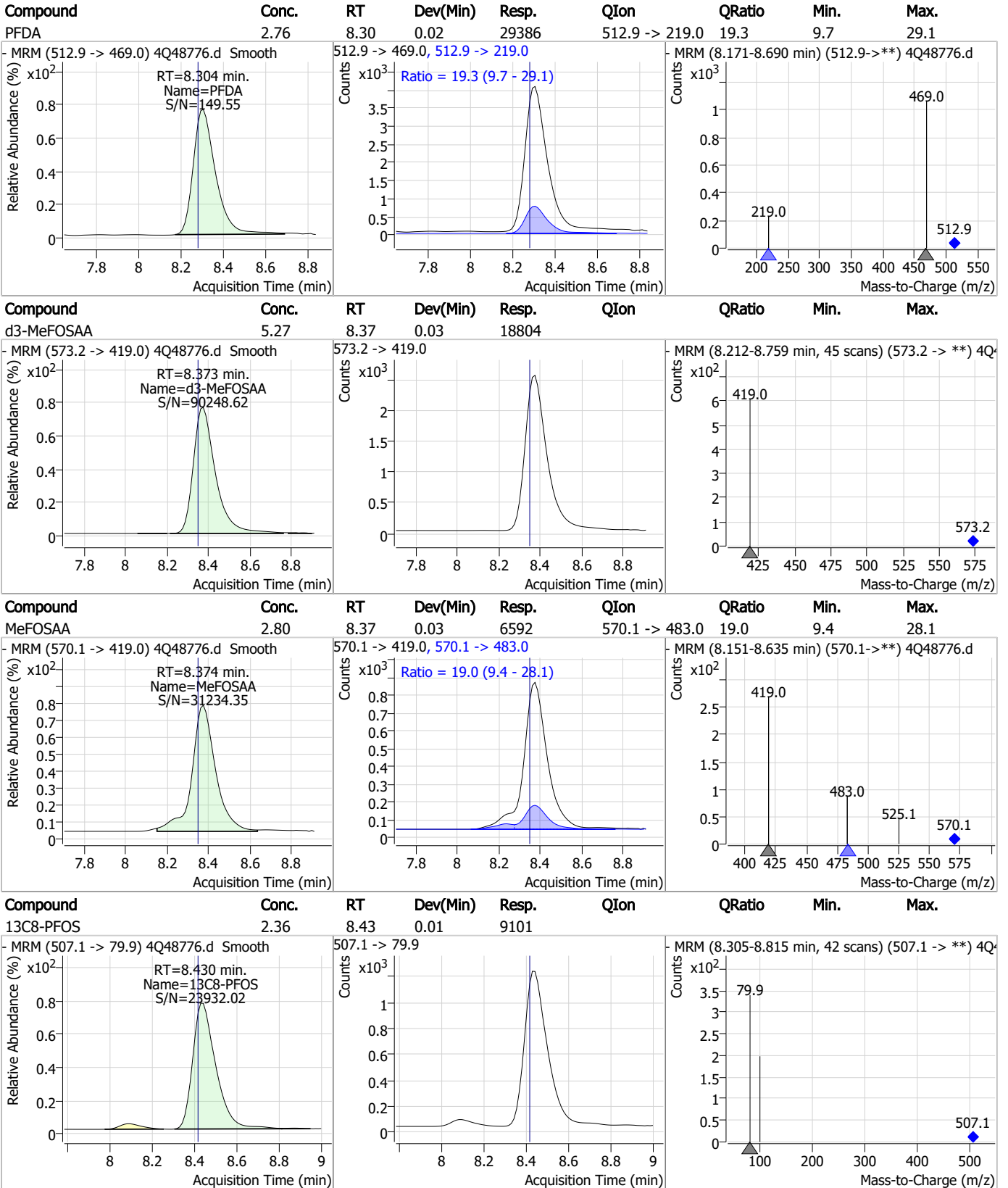
Perfluorinated Compounds by LC/MS/MS



7.7.13
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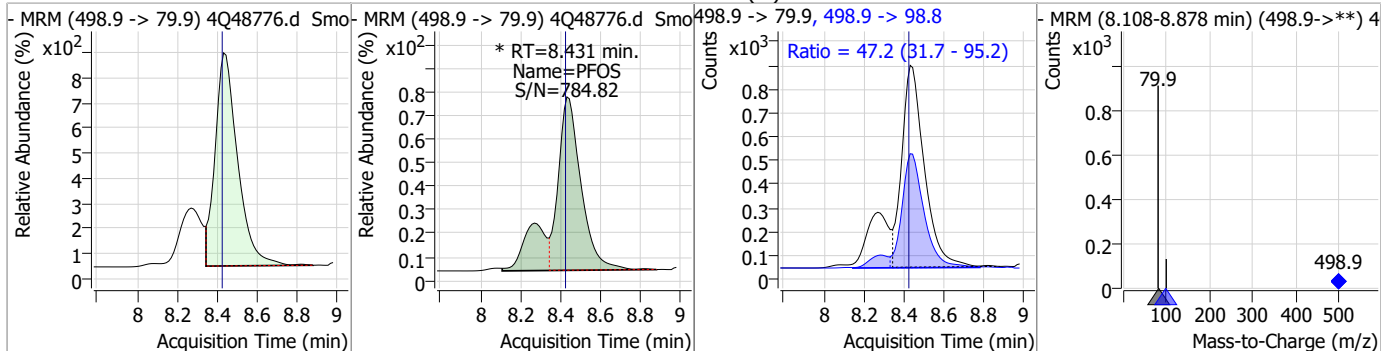
Perfluorinated Compounds by LC/MS/MS



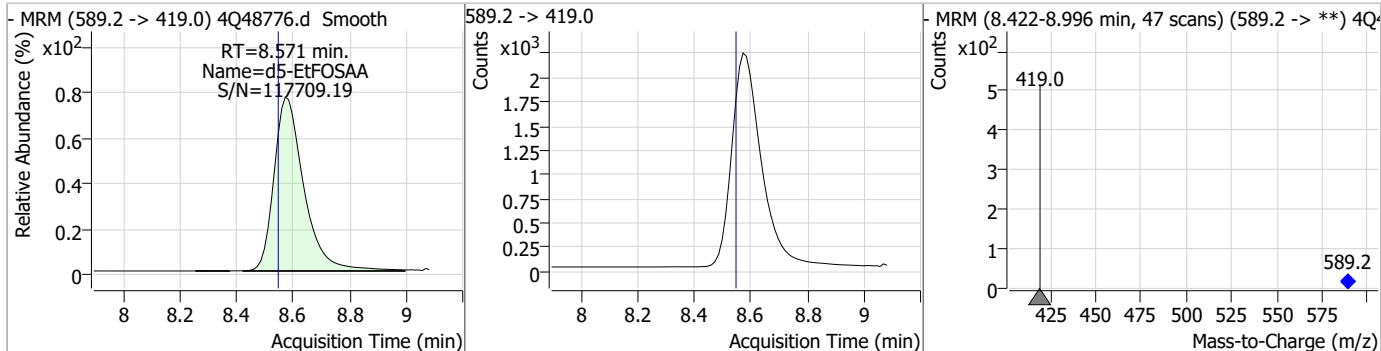
7.7.13
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Perfluorinated Compounds by LC/MS/MS

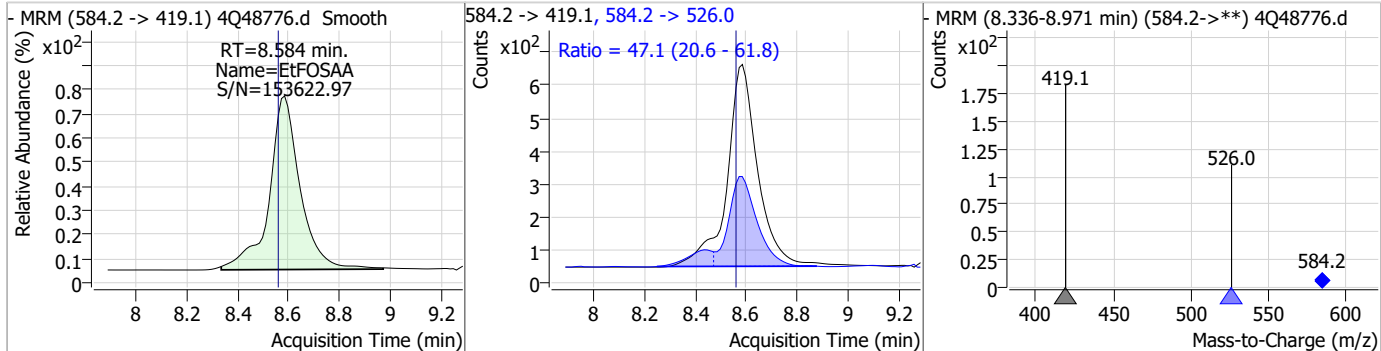
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.63	8.43	0.01	8506 (m)	498.9 -> 98.8	47.2	31.7	95.2



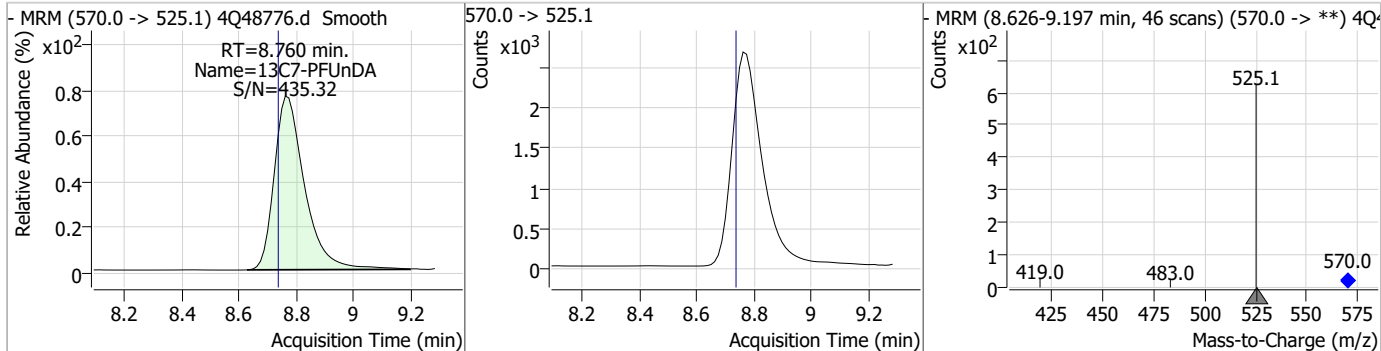
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.57	8.57	0.02	16326				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.33	8.58	0.02	5196	584.2 -> 526.0	47.1	20.6	61.8

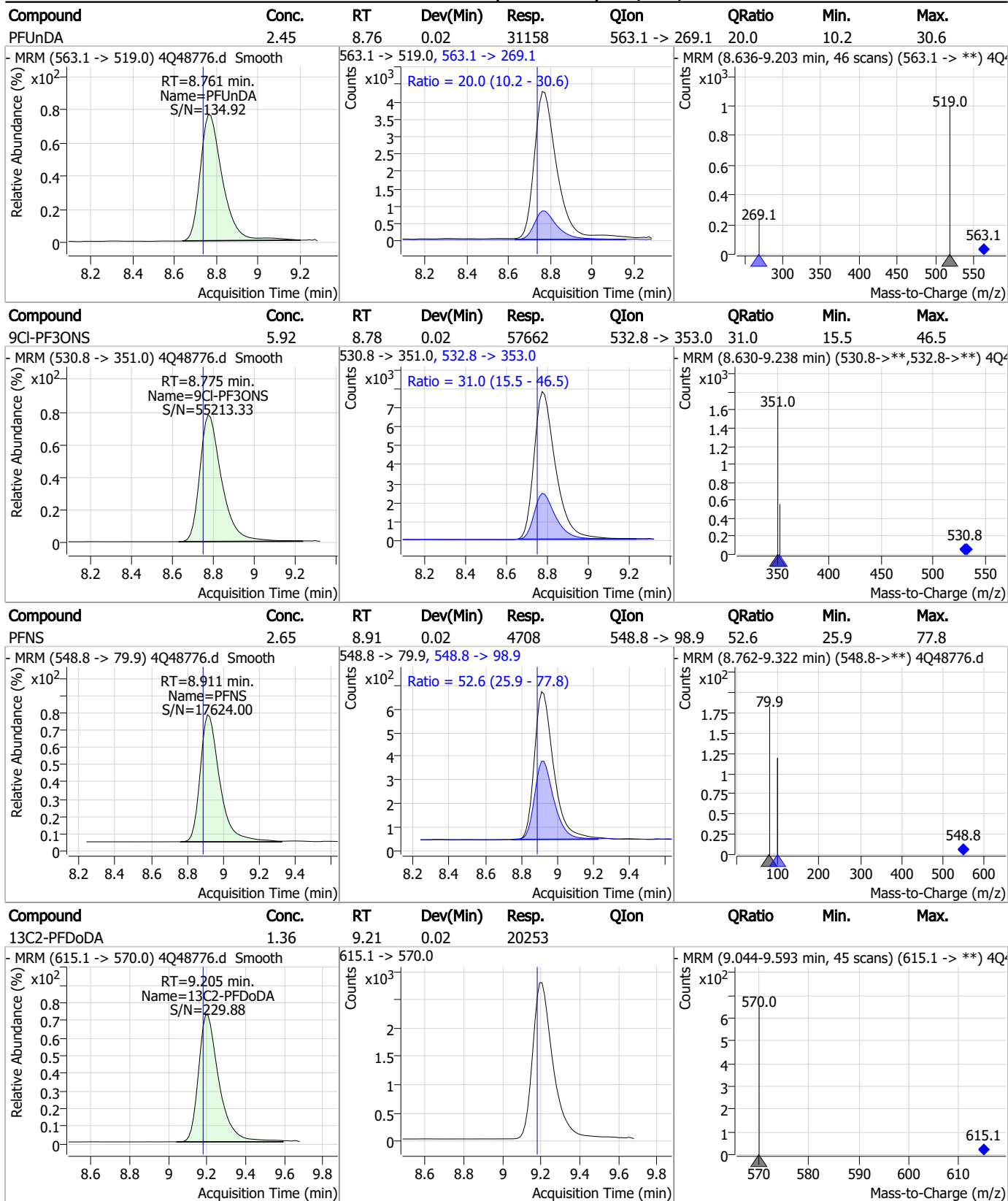


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.44	8.76	0.02	19524				



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Perfluorinated Compounds by LC/MS/MS

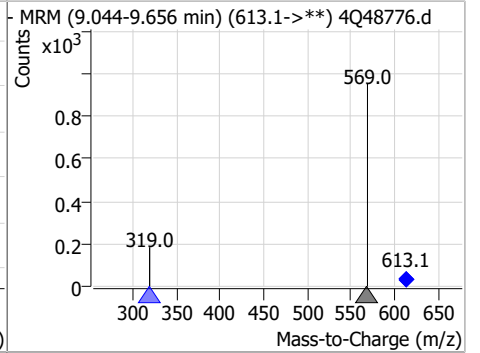
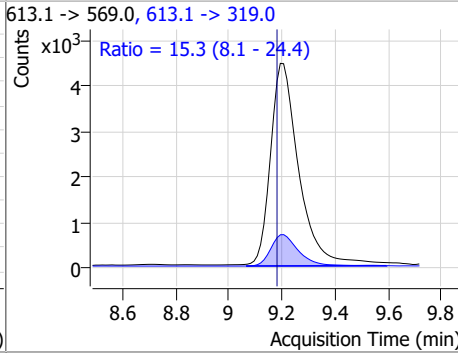
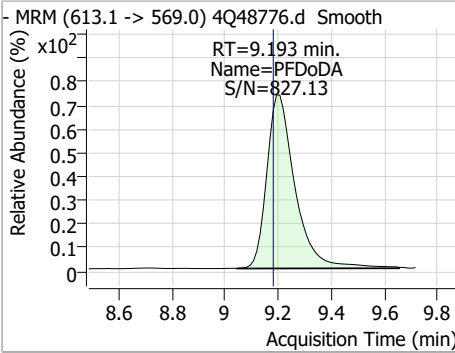


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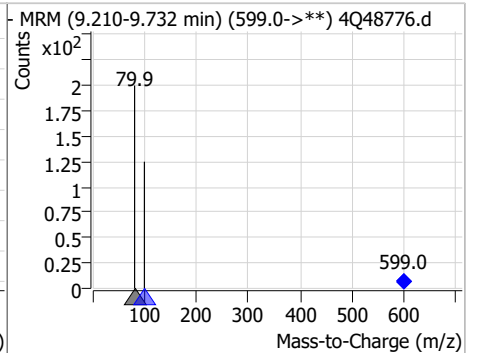
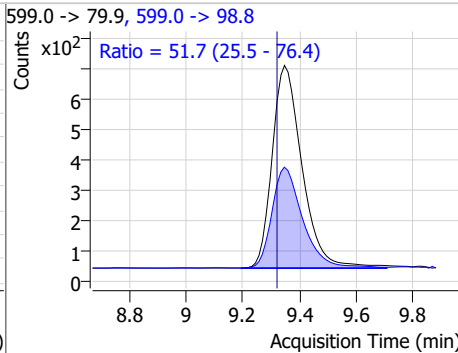
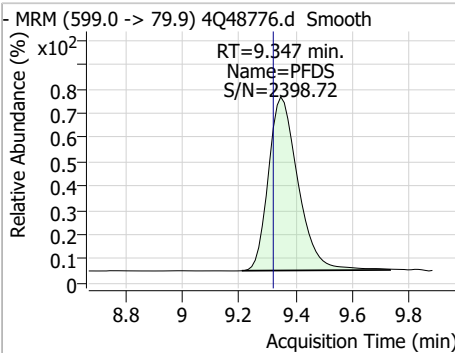


Perfluorinated Compounds by LC/MS/MS

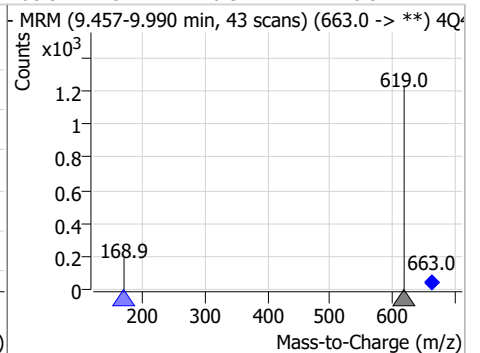
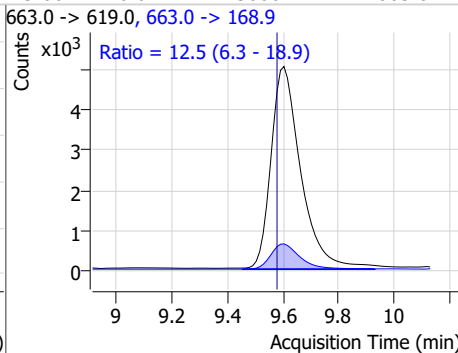
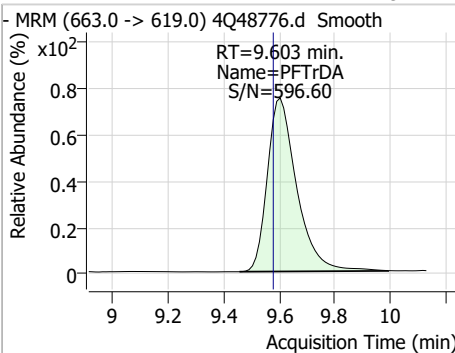
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	2.59	9.19	0.01	32835	613.1 -> 319.0	15.3	8.1	24.4



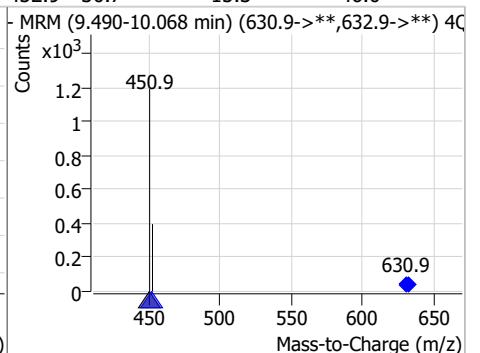
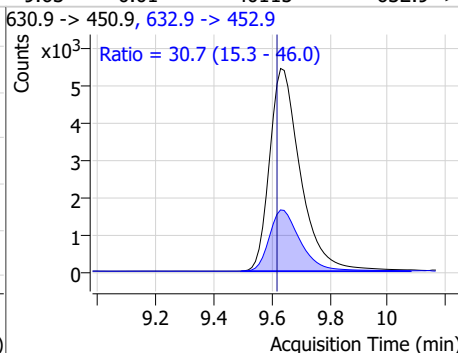
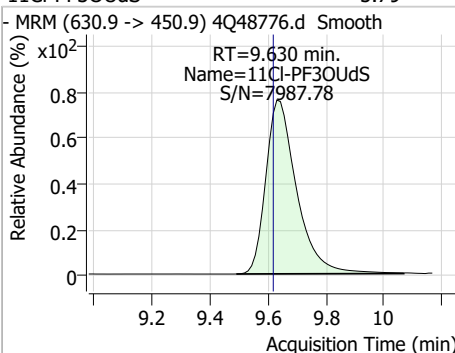
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDS	2.55	9.35	0.03	4789	599.0 -> 98.8	51.7	25.5	76.4



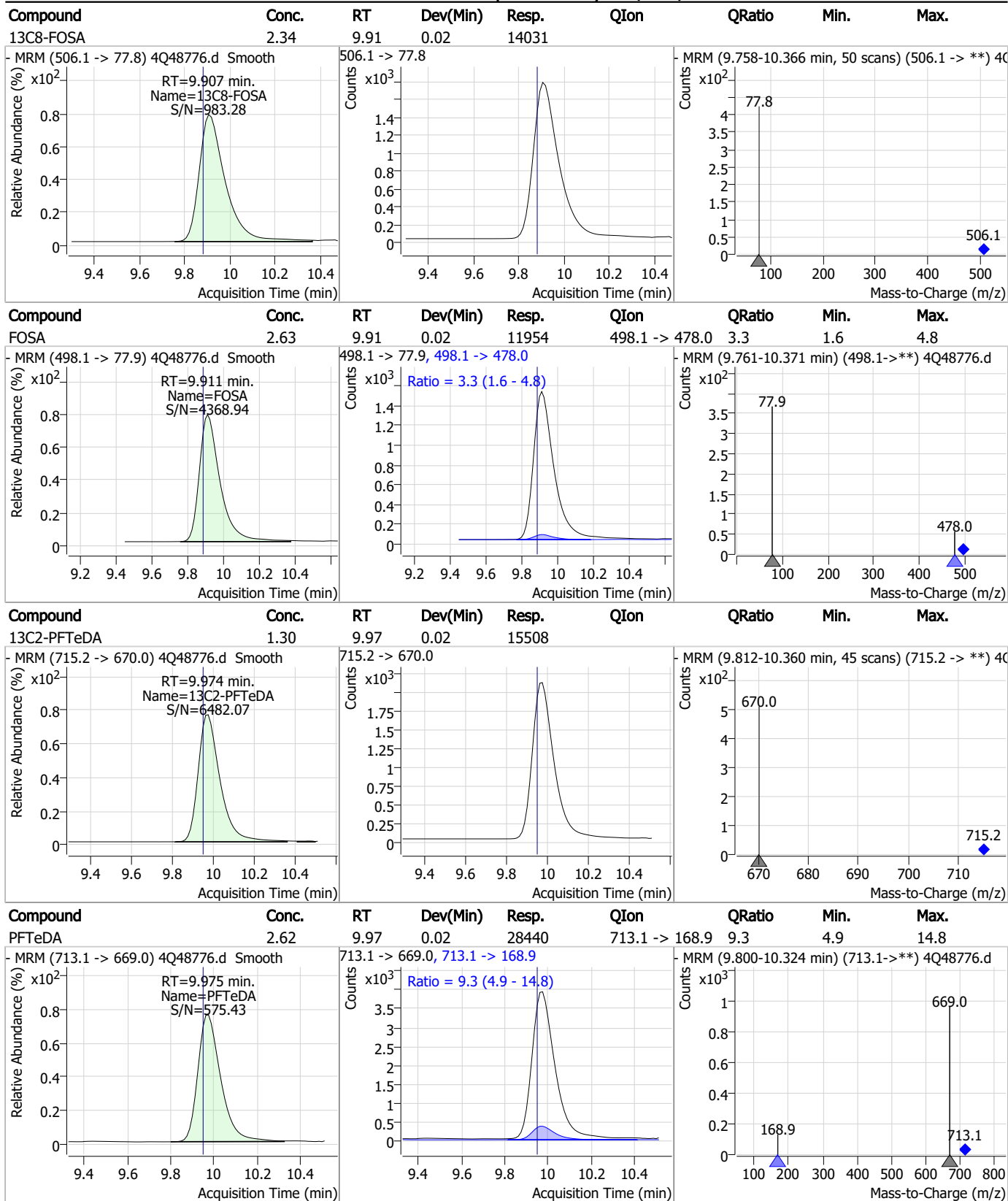
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTrDA	2.79	9.60	0.02	36602	663.0 -> 168.9	12.5	6.3	18.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
11Cl-PF3OUdS	5.79	9.63	0.01	40115	632.9 -> 452.9	30.7	15.3	46.0

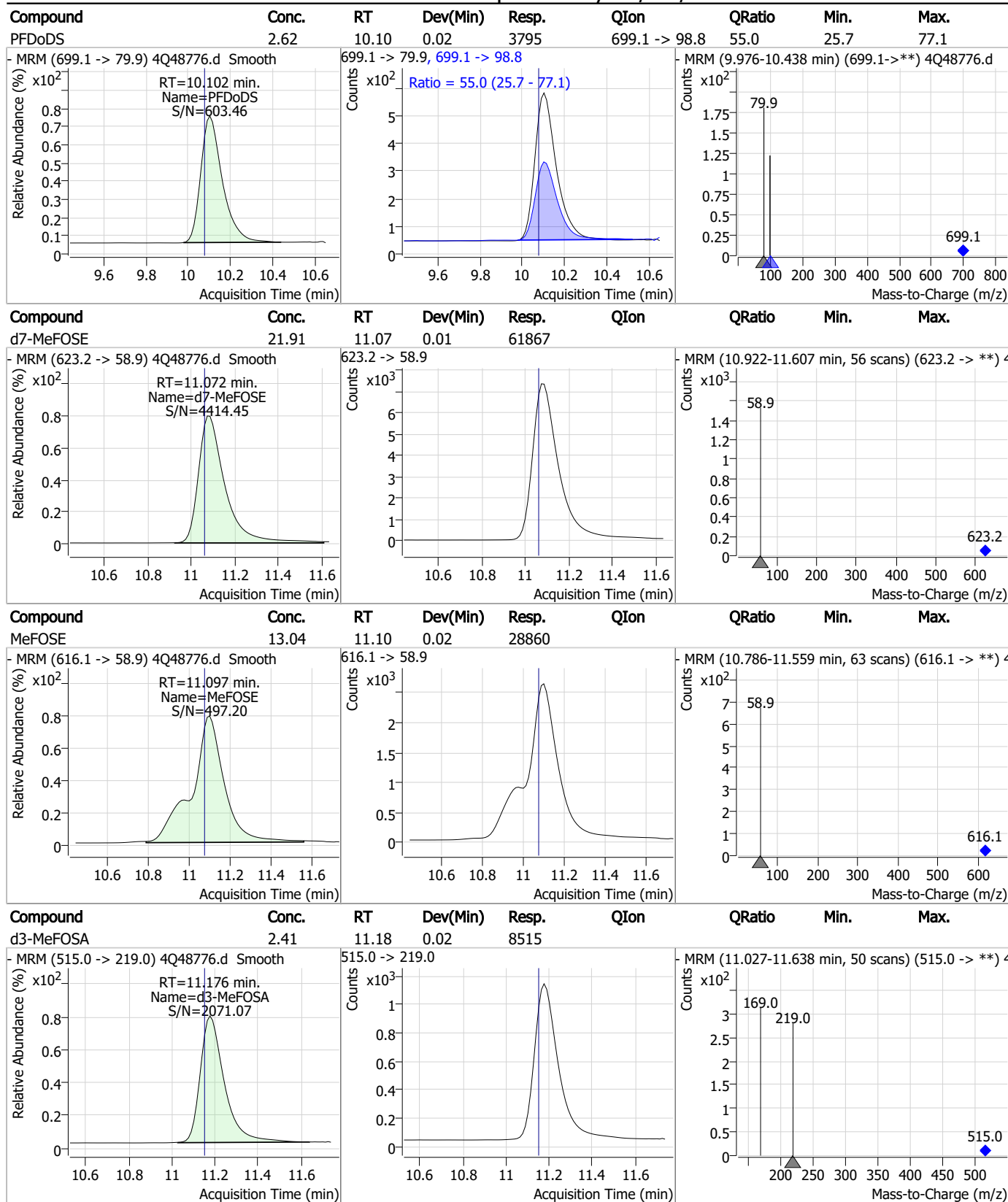


Perfluorinated Compounds by LC/MS/MS



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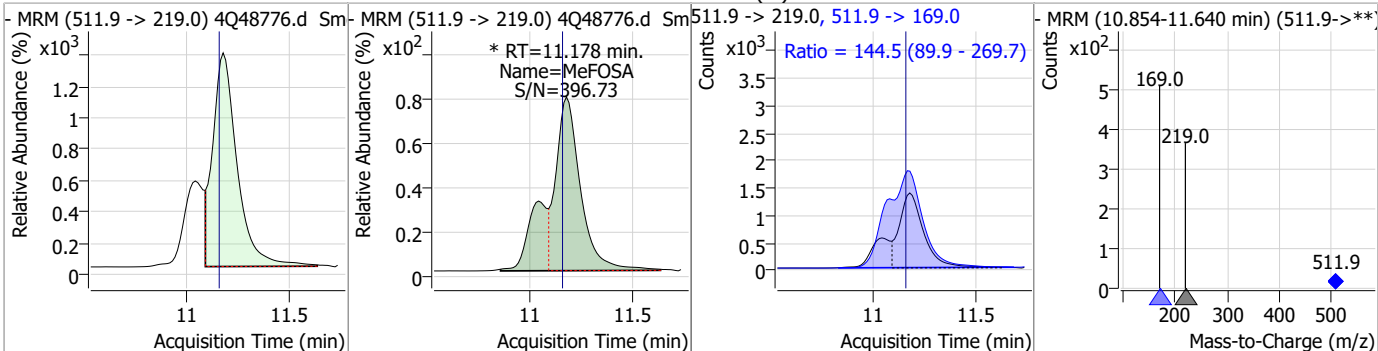
Perfluorinated Compounds by LC/MS/MS



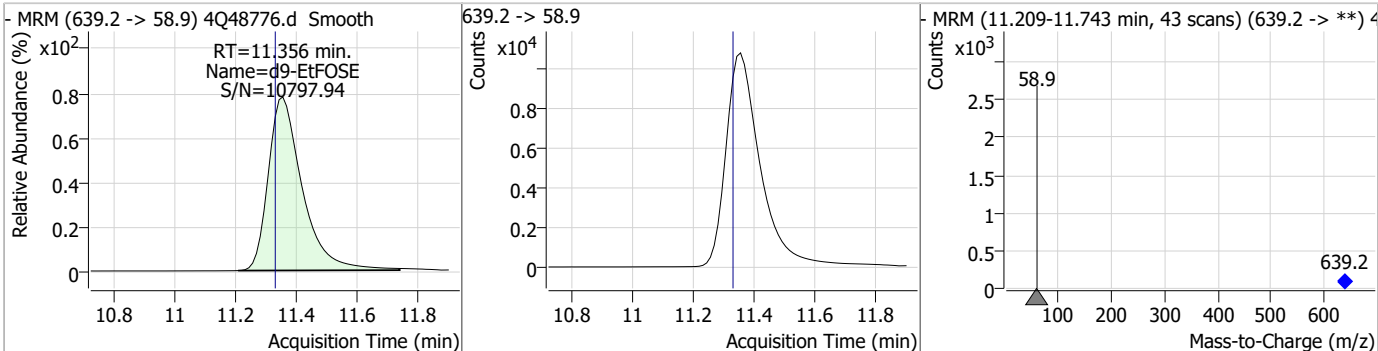
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Perfluorinated Compounds by LC/MS/MS

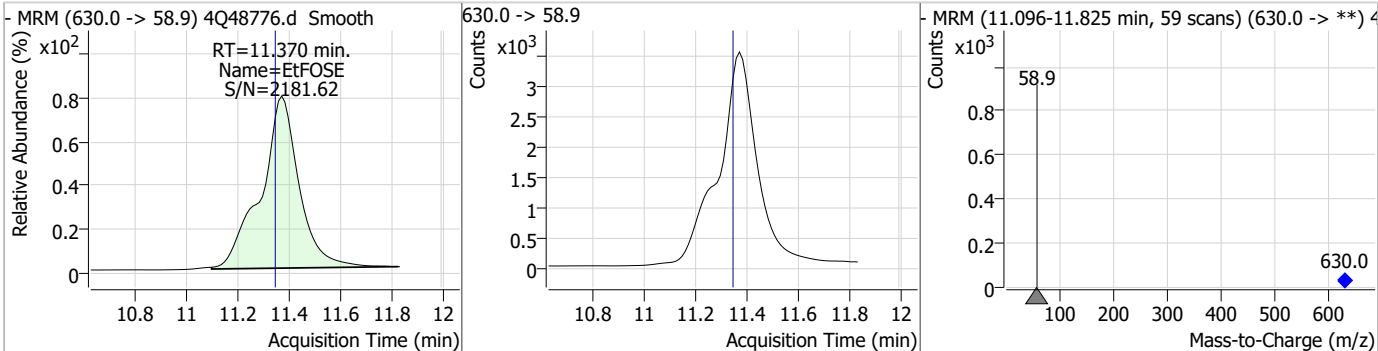
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	5.11	11.18	0.02	15139 (m)	511.9 -> 169.0	144.5	89.9	269.7



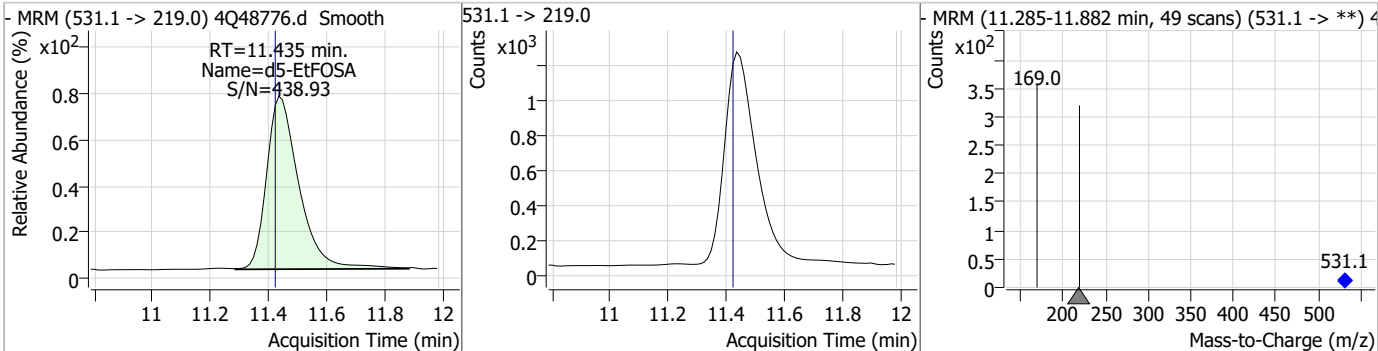
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	21.06	11.36	0.02	83398				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	13.97	11.37	0.03	36464				

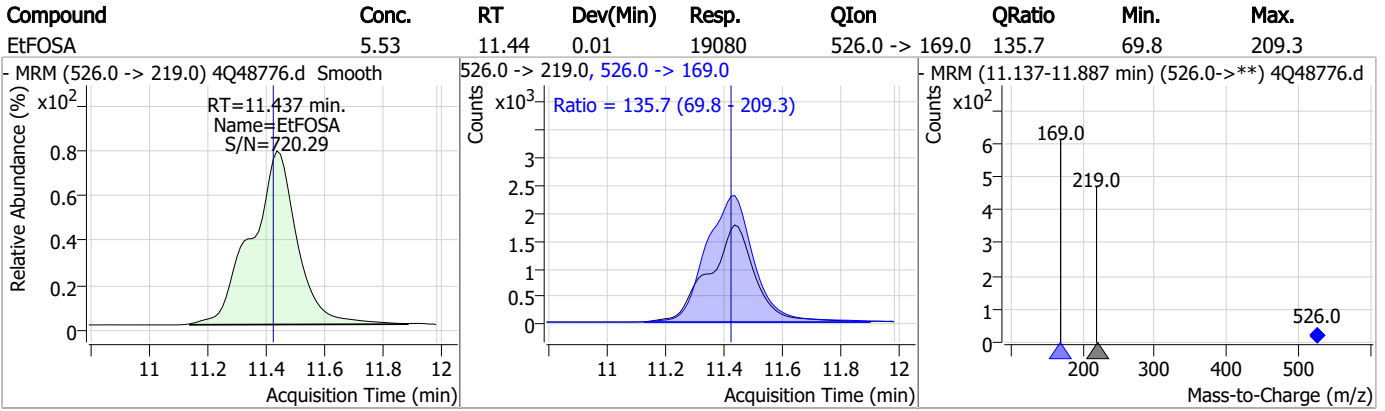


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.31	11.43	0.01	9384				



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Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q713-CC711 Method: EPA DRAFT 1633
Lab FileID: 4Q48776.D Analyst approved: 08/10/23 10:42 Anna Ludwig
Injection Time: 08/09/23 18:19 Supervisor approved: 08/11/23 11:37 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.33	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.43	Split peak
MeFOSA	31506-32-8		11.18	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48787.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/9/2023 9:01:28 PM
 Sample Name : cc711-4
 Vial : P1-A5
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q713.batch.bin
 Sample Information : OP98180,S4Q713,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.911	216.8 -> 171.9	115554	10.00 µg/L	0.000
M5-PFPeA	4.412	268.3 -> 223.0	59068	5.00 µg/L	0.000
M5-PFHxA	5.610	318.0 -> 273.0	39355	2.50 µg/L	0.000
M4-PFHpA	6.580	367.1 -> 322.0	28579	2.50 µg/L	0.025
M8-PFOA	7.251	421.1 -> 376.0	45943	2.50 µg/L	0.025
M9-PFNA	7.797	472.1 -> 427.0	20950	1.25 µg/L	0.013
M6-PFDA	8.291	519.1 -> 474.1	14515	1.25 µg/L	0.013
M7-PFUnDA	8.748	570.0 -> 525.1	19233	1.25 µg/L	0.012
M2-PFDoDA	9.180	615.1 -> 570.0	20430	1.25 µg/L	0.000
M2-PFTeDA	9.949	715.2 -> 670.0	14990	1.25 µg/L	0.000
M8-FOSA	9.894	506.1 -> 77.8	14009	2.50 µg/L	0.012
M3-PFBS	5.489	302.1 -> 79.9	10031	2.50 µg/L	0.000
M3-PFHxS	7.342	402.1 -> 79.9	6625	2.50 µg/L	0.025
M8-PFOS	8.430	507.1 -> 79.9	9151	2.50 µg/L	0.013
M2-4:2FTS	5.296	329.1 -> 80.9	940	5.00 µg/L	0.000
M2-6:2FTS	7.023	429.1 -> 80.9	1577	5.00 µg/L	0.025
M2-8:2FTS	8.078	529.1 -> 80.9	2463	5.00 µg/L	0.013
M3-MeFOSAA	8.361	573.2 -> 419.0	18586	5.00 µg/L	0.013
M3-HFPO-DA	5.989	286.9 -> 168.9	32481	10.00 µg/L	0.012
M5-EtFOSAA	8.559	589.2 -> 419.0	16489	5.00 µg/L	0.013
M7-MeFOSE	11.059	623.2 -> 58.9	61585	25.00 µg/L	0.000
M9-EtFOSE	11.344	639.2 -> 58.9	86555	25.00 µg/L	0.013
M5-EtFOSA	11.435	531.1 -> 219.0	9257	2.50 µg/L	0.012
M3-MeFOSA	11.164	515.0 -> 219.0	8669	2.50 µg/L	0.012
13C4-PFOS	8.430	502.8 -> 79.9	9625	2.50 µg/L	0.013
13C3-PFBA	2.916	216.0 -> 172.0	61496	5.00 µg/L	0.012
18O2-PFHxS	7.328	403.0 -> 83.9	4938	2.50 µg/L	0.012
13C4-PFOA	7.251	417.1 -> 372.0	57522	2.50 µg/L	0.025
13C2-PFDA	8.291	515.1 -> 470.1	17170	1.25 µg/L	0.013
13C5-PFNA	7.798	468.0 -> 423.0	24550	1.25 µg/L	0.013
13C2-PFHxA	5.611	315.1 -> 270.0	37306	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.296	329.1 -> 80.9	940	7.62 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 152.4%		
13C2-6:2FTS	7.023	429.1 -> 80.9	1577	6.69 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 133.8%		
13C2-8:2FTS	8.078	529.1 -> 80.9	2463	6.88 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 137.6%		
13C2-PFDoDA	9.180	615.1 -> 570.0	20430	1.39 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 111.1%		
13C2-PFTeDA	9.949	715.2 -> 670.0	14990	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.5%		
13C3-PFBS	5.489	302.1 -> 79.9	10031	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.5%		
13C3-PFHxS	7.342	402.1 -> 79.9	6625	2.42 µg/L	0.025

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C4-PFBA	2.911	216.8 -> 171.9	115554	10.99 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 109.9%	
13C4-PFHpA	6.580	367.1 -> 322.0	28579	2.57 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.9%	
13C5-PFHxA	5.610	318.0 -> 273.0	39355	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C5-PFPeA	4.412	268.3 -> 223.0	59068	4.53 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 90.6%	
13C6-PFDA	8.291	519.1 -> 474.1	14515	1.22 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C7-PFUnDA	8.748	570.0 -> 525.1	19233	1.44 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 115.0%	
13C8-FOSA	9.894	506.1 -> 77.8	14009	2.33 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.3%	
13C8-PFOA	7.251	421.1 -> 376.0	45943	2.43 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C8-PFOS	8.430	507.1 -> 79.9	9151	2.37 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.7%	
13C9-PFNA	7.797	472.1 -> 427.0	20950	1.13 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 90.1%	
d3-MeFOSAA	8.361	573.2 -> 419.0	18586	5.20 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.0%	
13C3-HFPO-DA	5.989	286.9 -> 168.9	32481	9.14 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 91.4%	
d3-MeFOSA	11.164	515.0 -> 219.0	8669	2.45 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.1%	
d5-EtFOSAA	8.559	589.2 -> 419.0	16489	5.61 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 112.3%	
d7-MeFOSE	11.059	623.2 -> 58.9	61585	21.79 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 87.2%	
d9-EtFOSE	11.344	639.2 -> 58.9	86555	21.84 µg/L	0.013
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 87.3%	
d5-EtFOSA	11.435	531.1 -> 219.0	9257	2.27 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.9%	
Target Compounds					QValue
4:2FTS	5.297	327.1 -> 307.0	10467	8.26 µg/L	98
		327.1 -> 80.9	4393		
6:2FTS	7.024	427.1 -> 407.0	13709	10.24 µg/L	97
		427.1 -> 80.9	5087		
8:2FTS	8.078	527.1 -> 507.0	11729	11.86 µg/L	95
		527.1 -> 80.8	4759		
EtFOSAA	8.572	584.2 -> 419.1	4953	2.20 µg/L	m 80
		584.2 -> 526.0	2655		
FOSA	9.898	498.1 -> 77.9	12004	2.65 µg/L	100
		498.1 -> 478.0	380		
MeFOSAA	8.361	570.1 -> 419.0	7044	3.03 µg/L	95
		570.1 -> 483.0	1155		
PFBA	2.907	212.8 -> 168.9	26801	10.07 µg/L	100
PFBS	5.490	298.7 -> 79.9	6552	2.67 µg/L	98
		298.7 -> 98.8	2483		
PFDA	8.292	512.9 -> 469.0	29201	2.86 µg/L	97
		512.9 -> 219.0	6121		
PFDODA	9.181	613.1 -> 569.0	32426	2.54 µg/L	99
		613.1 -> 319.0	5148		
PFDS	9.335	599.0 -> 79.9	4773	2.53 µg/L	97

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2522			
PFHpA	6.581	363.1 -> 319.0	33890	2.63	µg/L	97
		363.1 -> 169.0	5807			
PFHpS	7.913	449.0 -> 79.9	6904	2.50	µg/L	99
		449.0 -> 98.9	3511			
PFHxA	5.613	313.0 -> 269.0	29712	2.62	µg/L	99
		313.0 -> 118.9	912			
PFHxS	7.330	398.7 -> 79.9	5088	2.68	µg/L	m 99
		398.7 -> 98.9	2670			
PFNA	7.798	463.0 -> 419.0	29677	2.72	µg/L	98
		463.0 -> 219.0	6703			
PFNS	8.899	548.8 -> 79.9	4825	2.70	µg/L	99
		548.8 -> 98.9	2528			
PFOA	7.252	413.0 -> 369.0	50987	2.80	µg/L	99
		413.0 -> 169.0	10159			
PFOS	8.431	498.9 -> 79.9	8631	2.65	µg/L	m 83
		498.9 -> 98.8	4351			
PFPeA	4.414	263.0 -> 219.0	58179	5.67	µg/L	100
PFPeS	6.595	349.1 -> 79.9	4553	2.55	µg/L	100
		349.1 -> 98.9	2030			
PFTeDA	9.950	713.1 -> 669.0	27378	2.61	µg/L	99
		713.1 -> 168.9	2816			
PFTrDA	9.579	663.0 -> 619.0	36535	2.77	µg/L	99
		663.0 -> 168.9	4476			
PFUnDA	8.748	563.1 -> 519.0	30314	2.42	µg/L	97
		563.1 -> 269.1	6565			
11Cl-PF3OUdS	9.618	630.9 -> 450.9	41001	6.02	µg/L	100
		632.9 -> 452.9	12454			
9Cl-PF3ONS	8.763	530.8 -> 351.0	58298	6.08	µg/L	100
		532.8 -> 353.0	17998			
ADONA	6.843	376.9 -> 250.9	106849	5.67	µg/L	100
		376.9 -> 84.8	27880			
HFPO-DA	5.990	284.9 -> 168.9	13745	5.14	µg/L	97
		284.9 -> 184.9	1643			
3:3FTCA	3.880	241.0 -> 177.0	7462	11.11	µg/L	99
		241.0 -> 117.0	704			
5:3FTCA	6.308	341.0 -> 237.1	126367	67.99	µg/L	98
		341.0 -> 217.0	87612			
7:3FTCA	7.787	441.0 -> 316.9	71495	69.81	µg/L	95
		441.0 -> 336.9	170169			
EtFOSA	11.437	526.0 -> 219.0	20125	5.91	µg/L	94
		526.0 -> 169.0	26714			
EtFOSE	11.357	630.0 -> 58.9	39479	14.58	µg/L	100
MeFOSA	11.166	511.9 -> 219.0	15439	5.12	µg/L	m 75
		511.9 -> 169.0	22205			
MeFOSE	11.085	616.1 -> 58.9	29174	13.25	µg/L	m 100
PFDoDS	10.089	699.1 -> 79.9	3722	2.56	µg/L	92
		699.1 -> 98.8	2120			
NFDHA	5.491	295.0 -> 201.0	3654	4.99	µg/L	97
		295.0 -> 84.9	959			
PFMBA	4.828	279.0 -> 85.1	33474	5.82	µg/L	100
PFMPA	3.540	229.0 -> 84.9	31988	5.70	µg/L	100
PFEESA	6.034	314.8 -> 134.9	43538	4.76	µg/L	99
		314.8 -> 82.9	1407			

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

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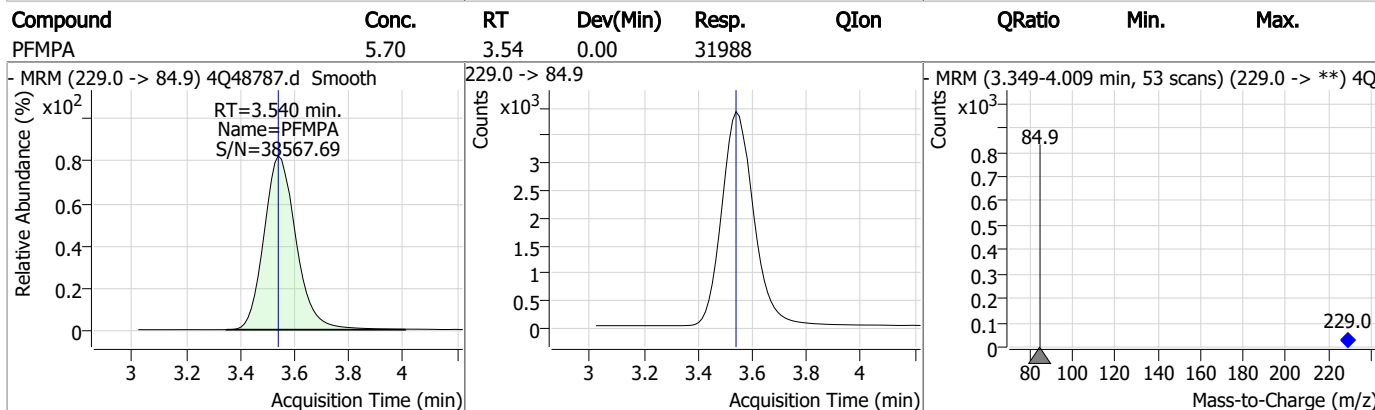
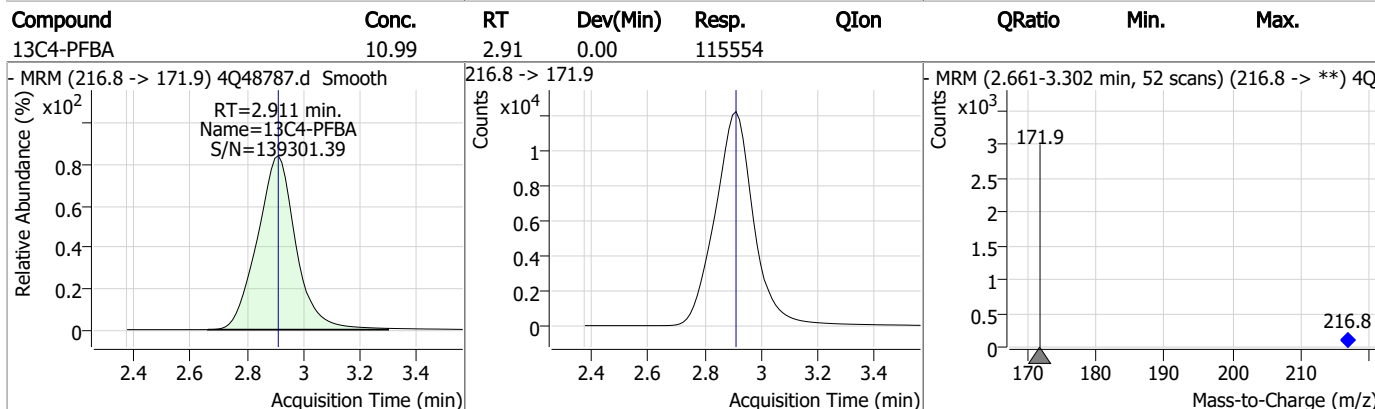
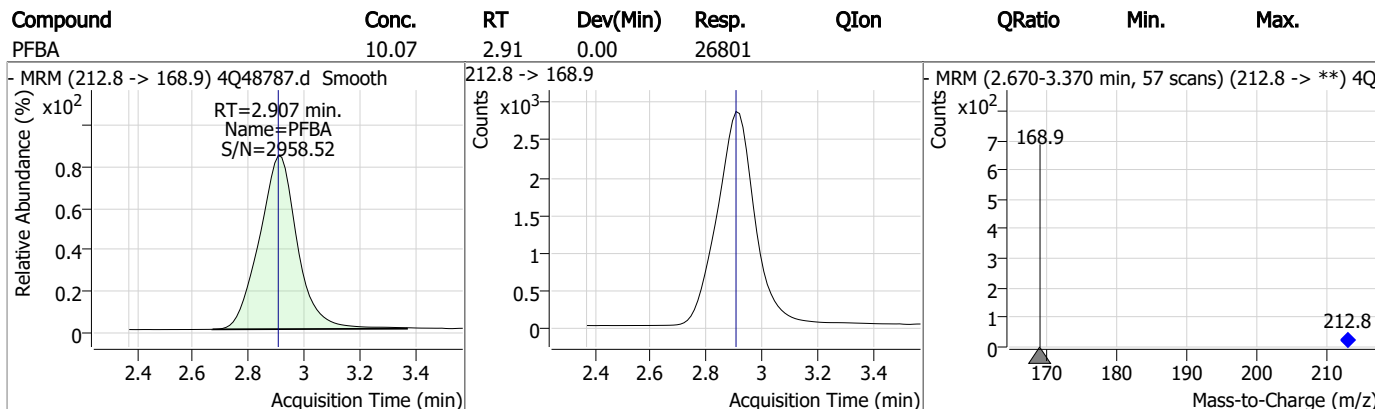
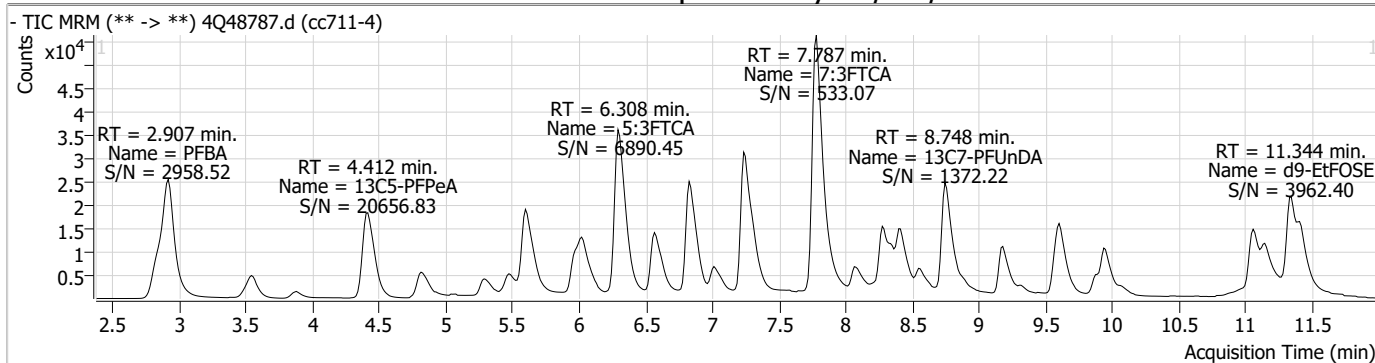
Perfluorinated Compounds by LC/MS/MS

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

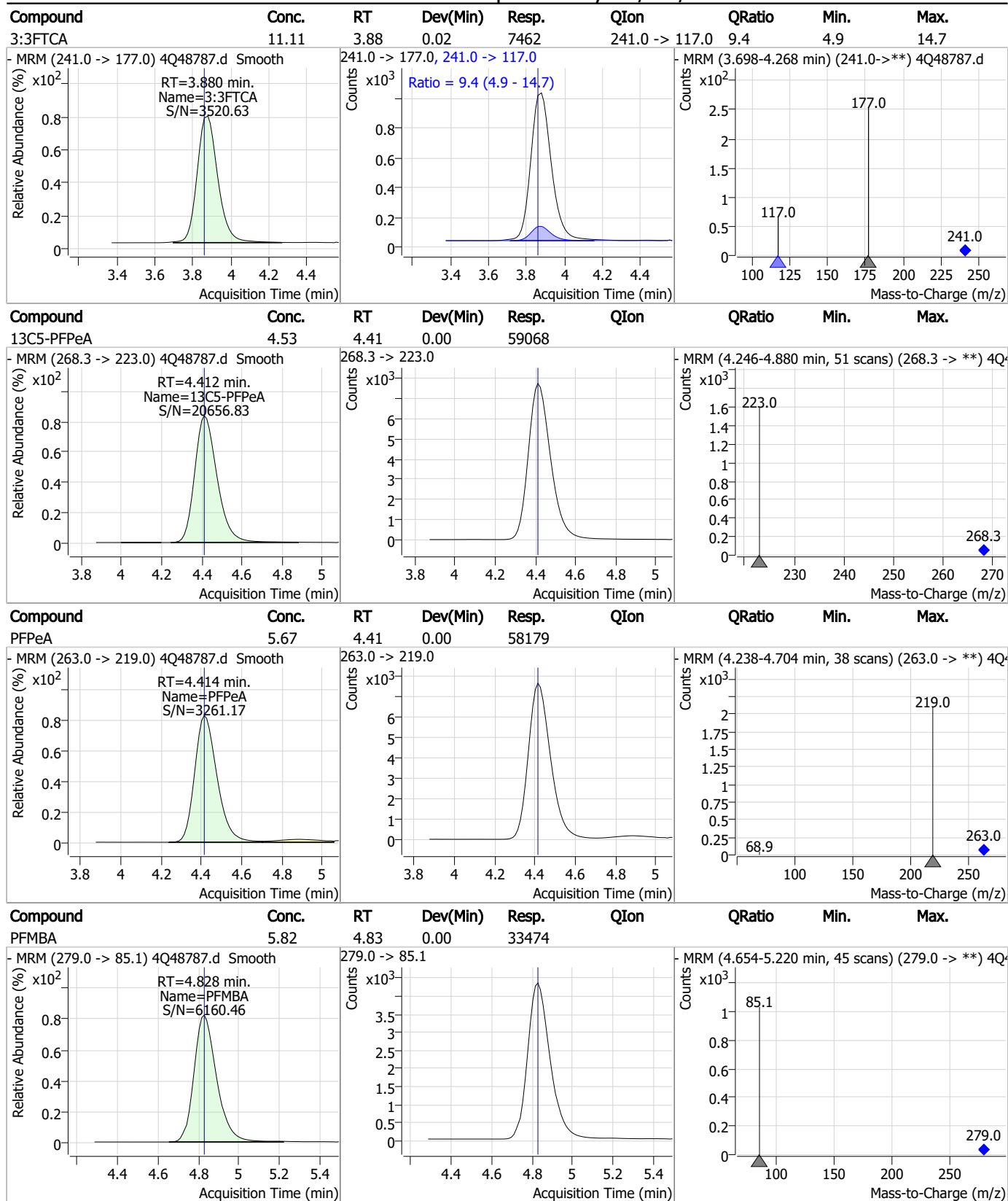
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Perfluorinated Compounds by LC/MS/MS



7.7.14
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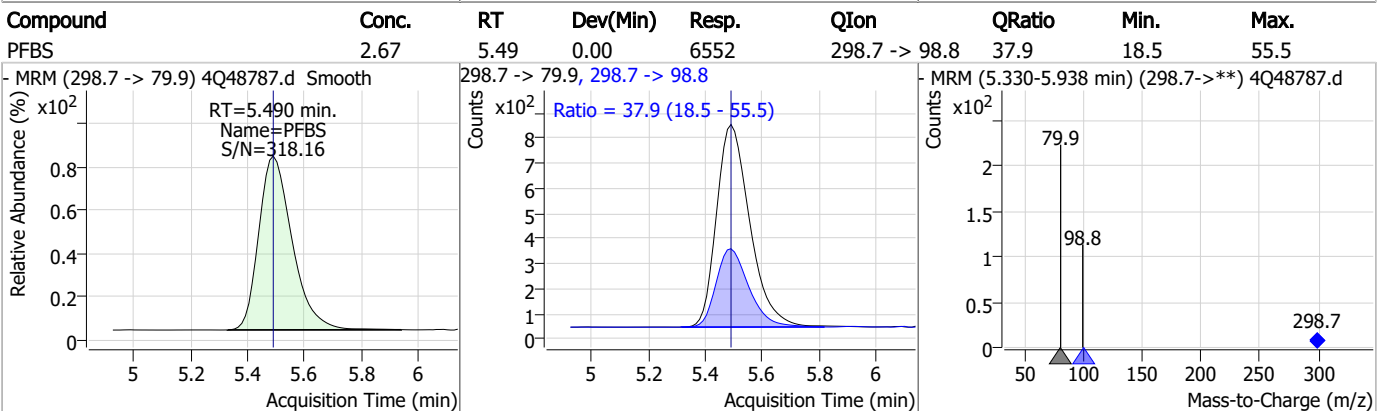
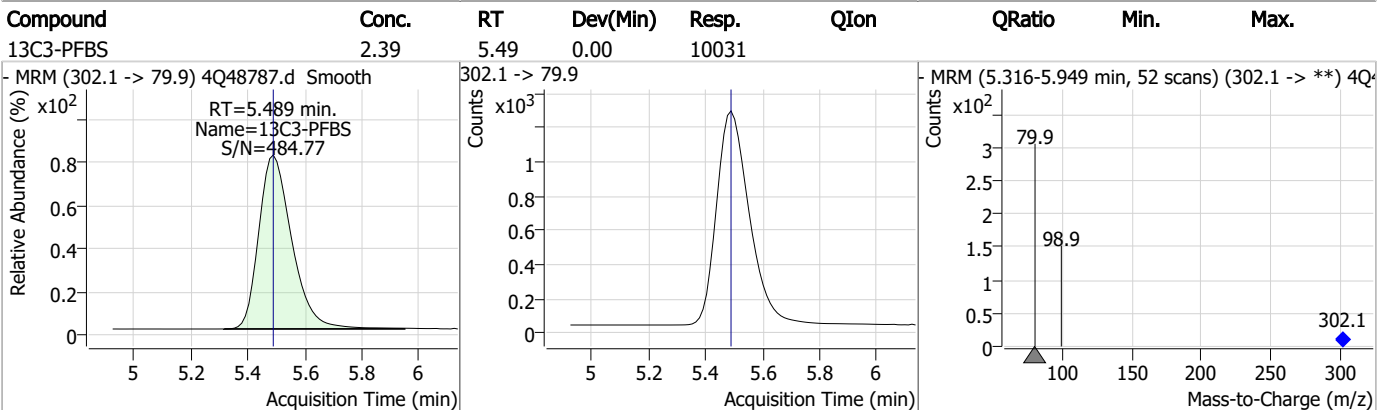
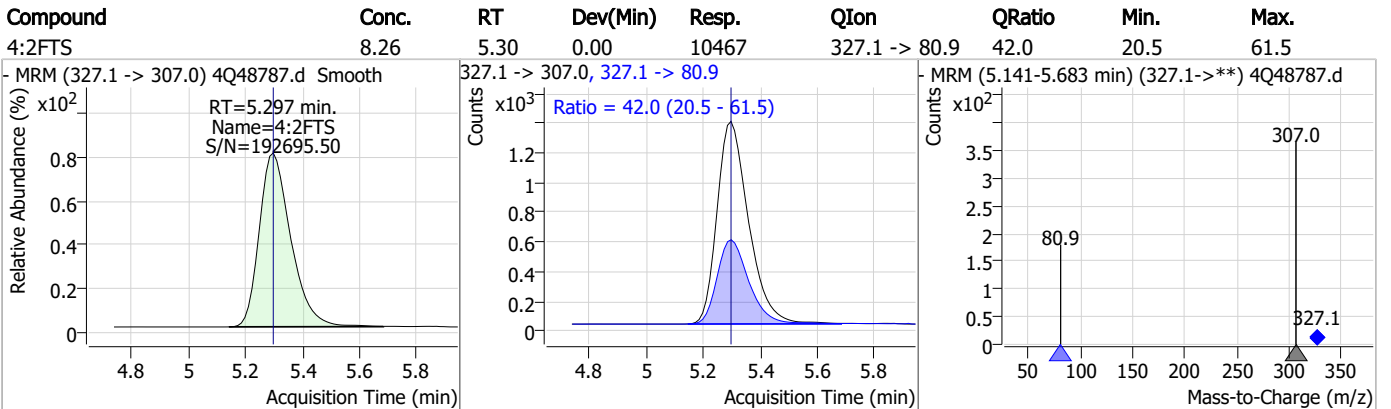
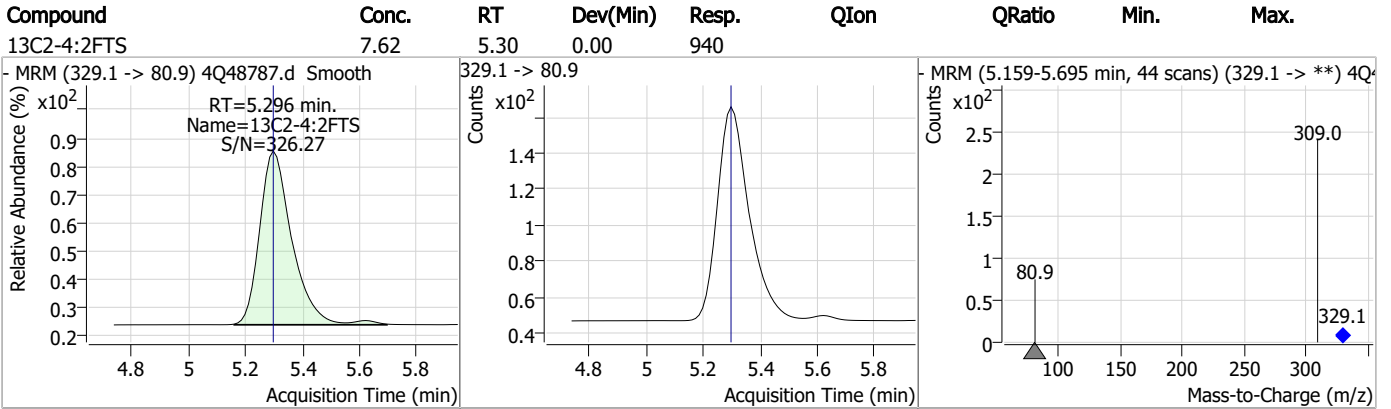
Perfluorinated Compounds by LC/MS/MS



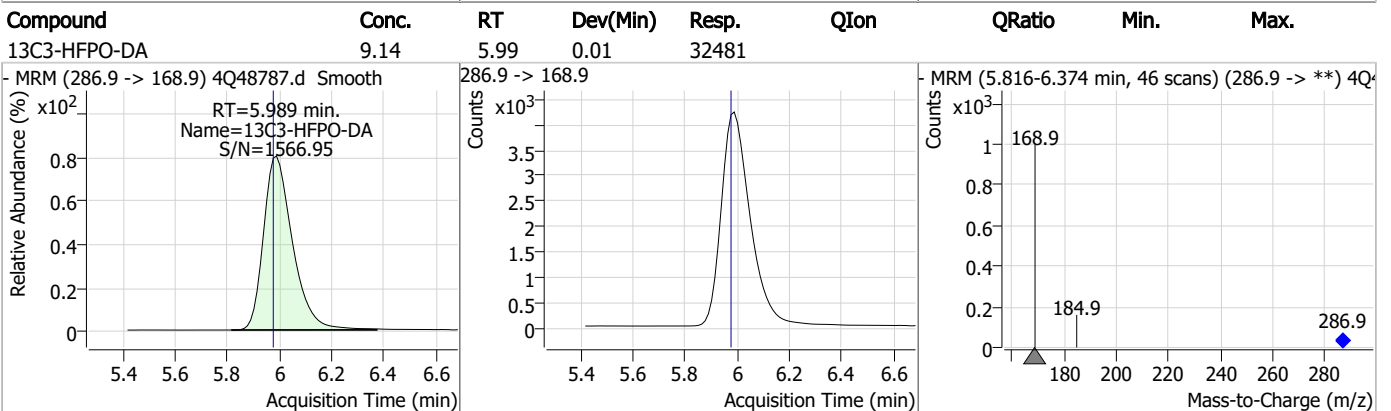
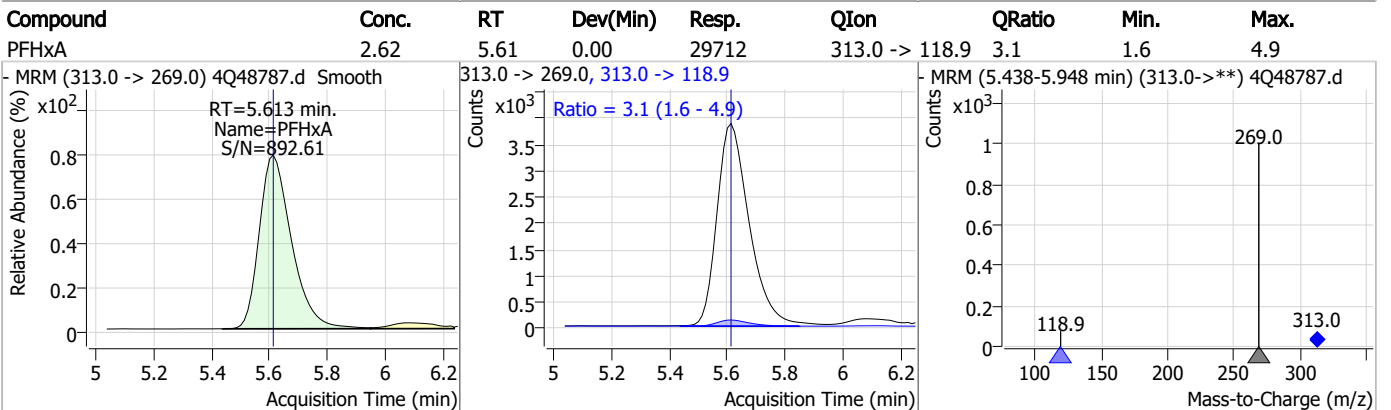
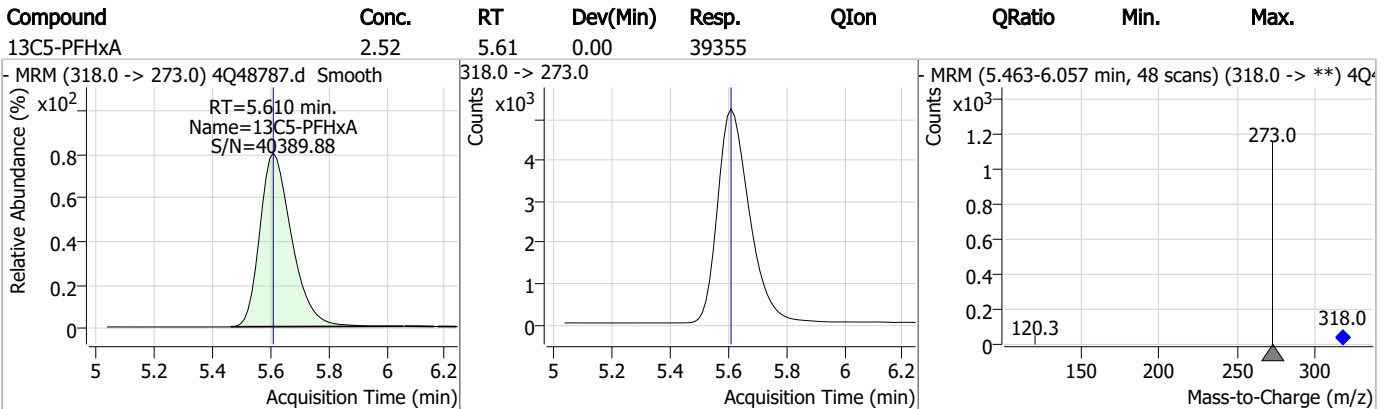
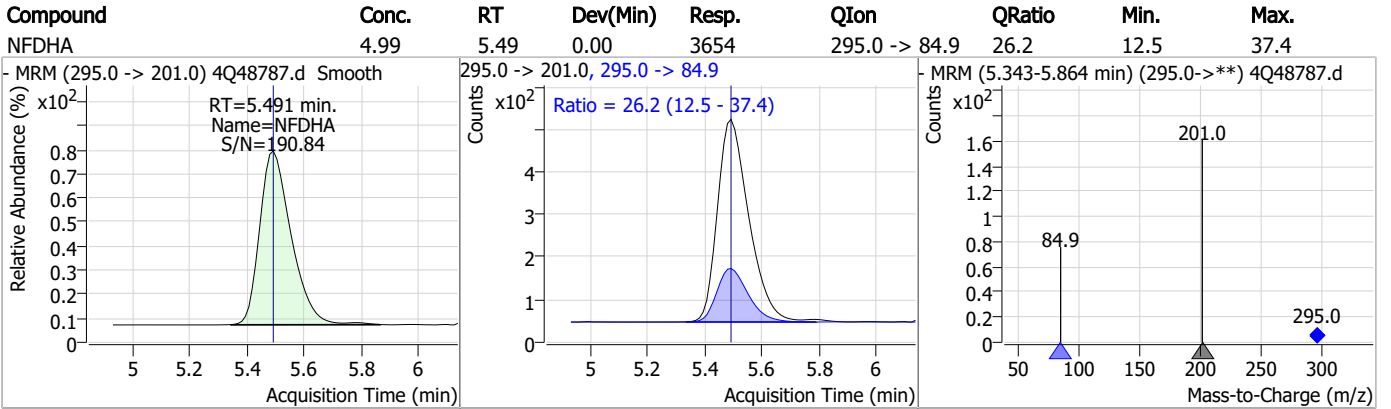
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

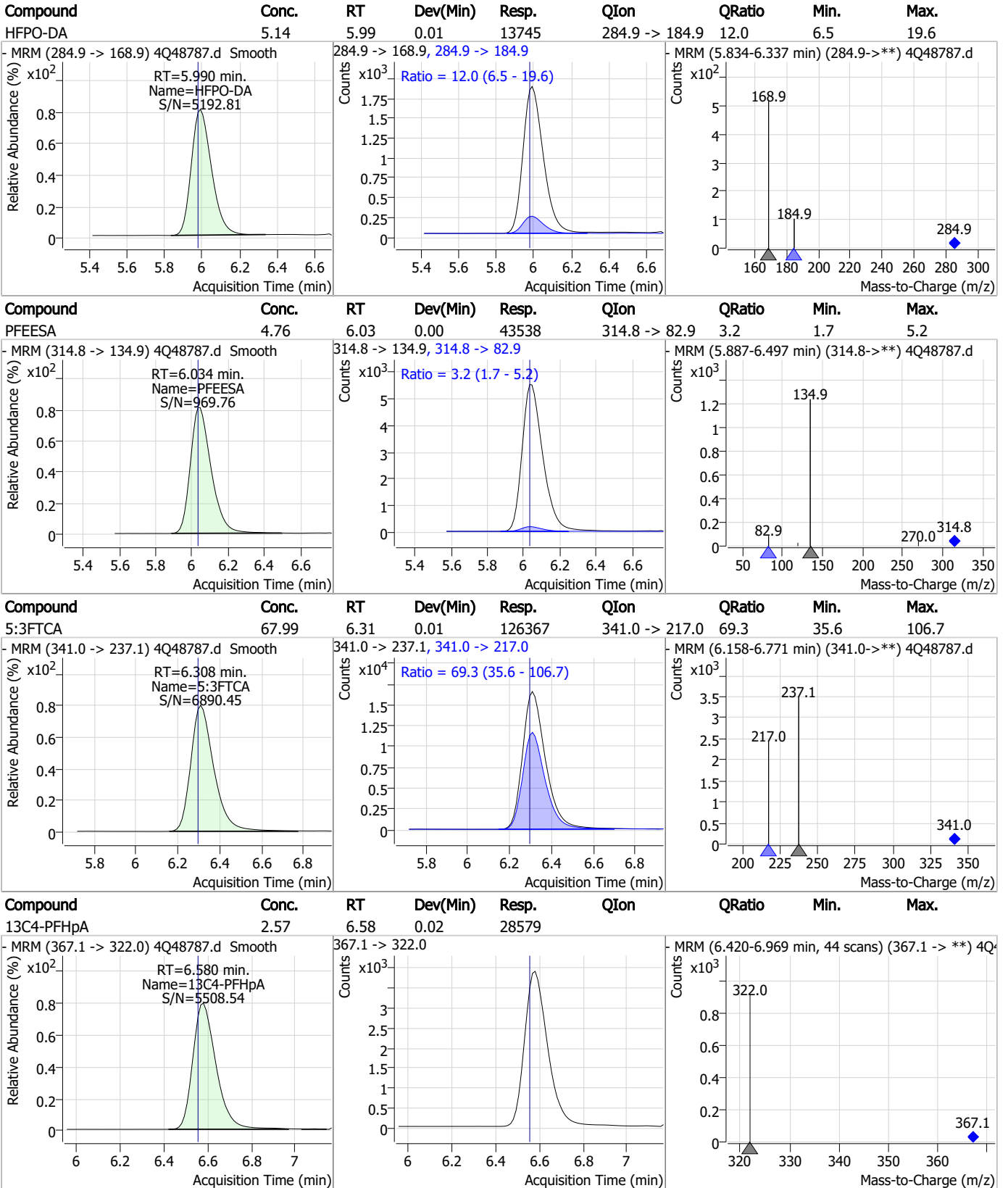


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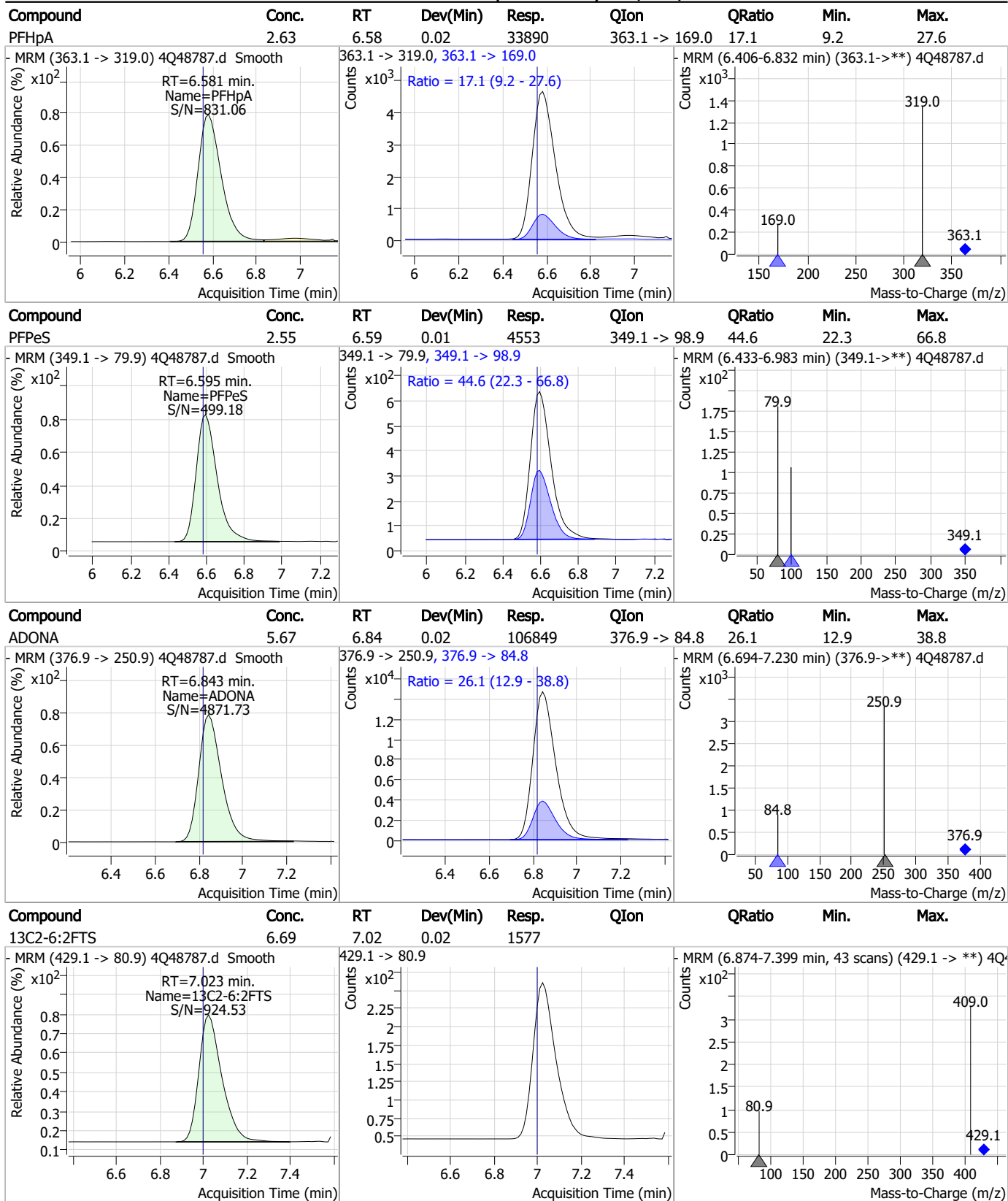
Perfluorinated Compounds by LC/MS/MS



7.7.14
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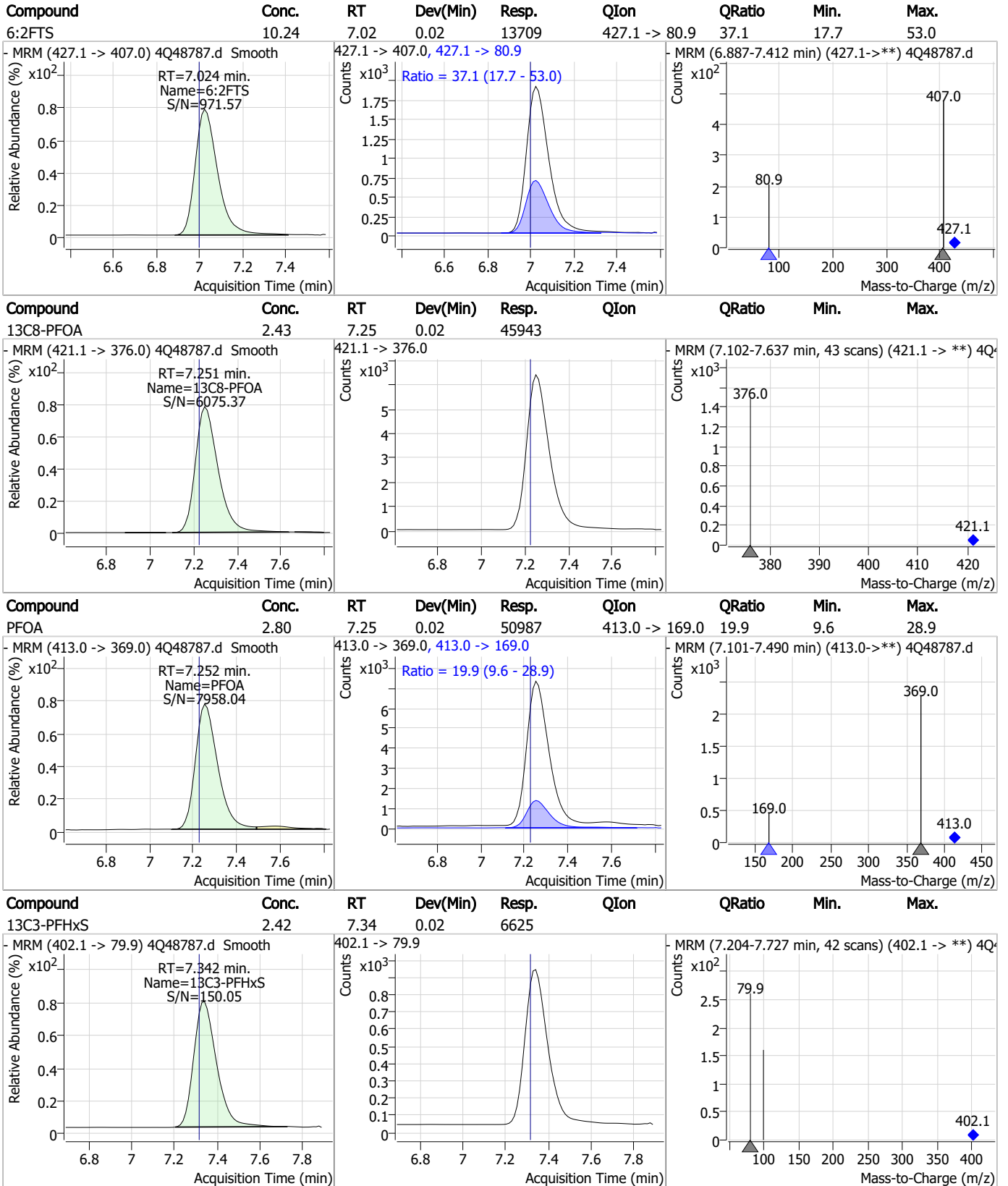


Perfluorinated Compounds by LC/MS/MS



7.7.14

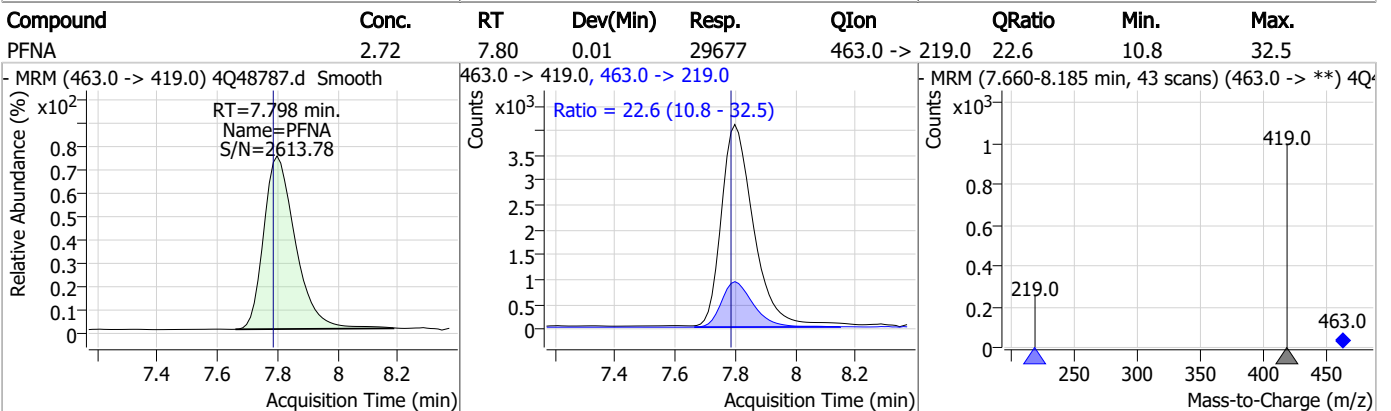
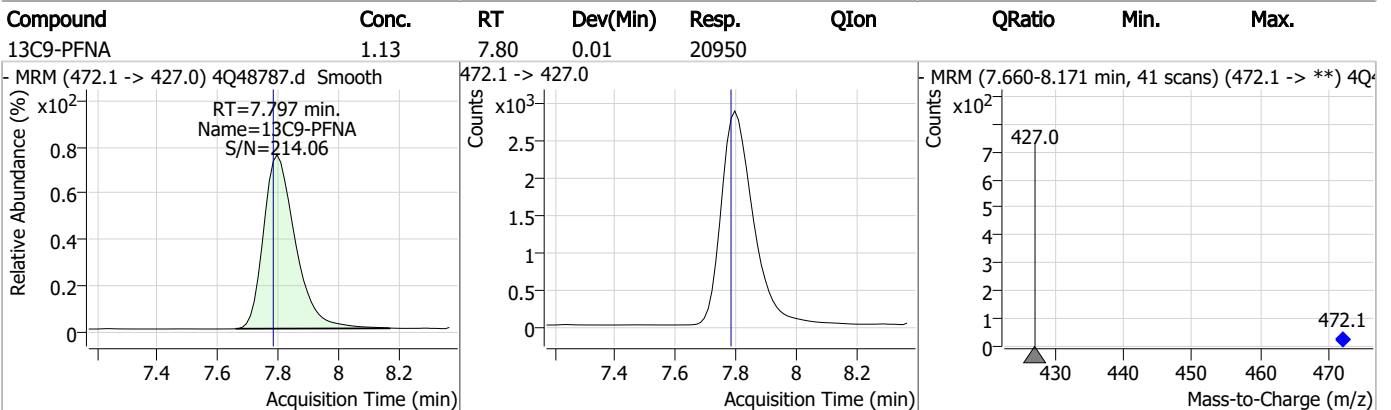
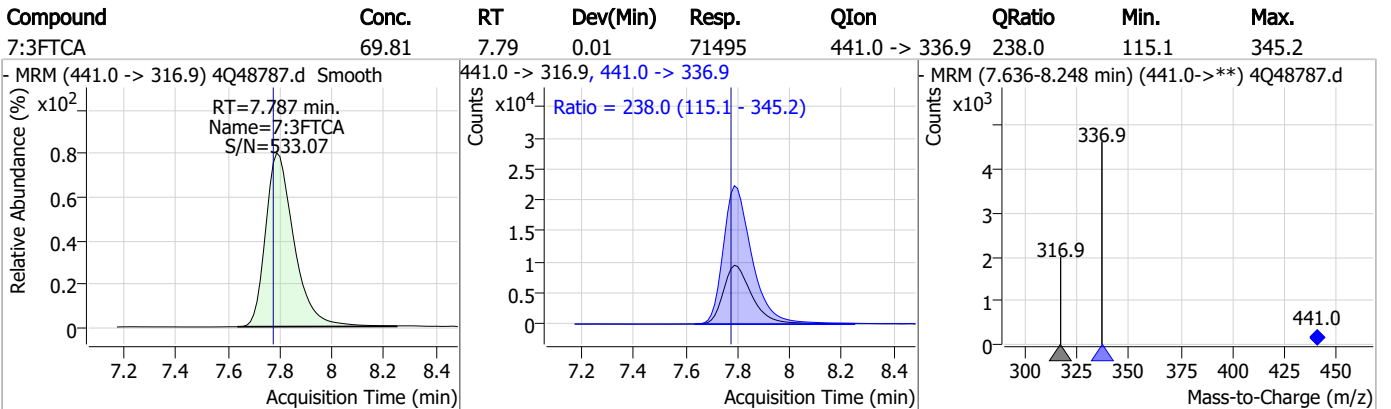
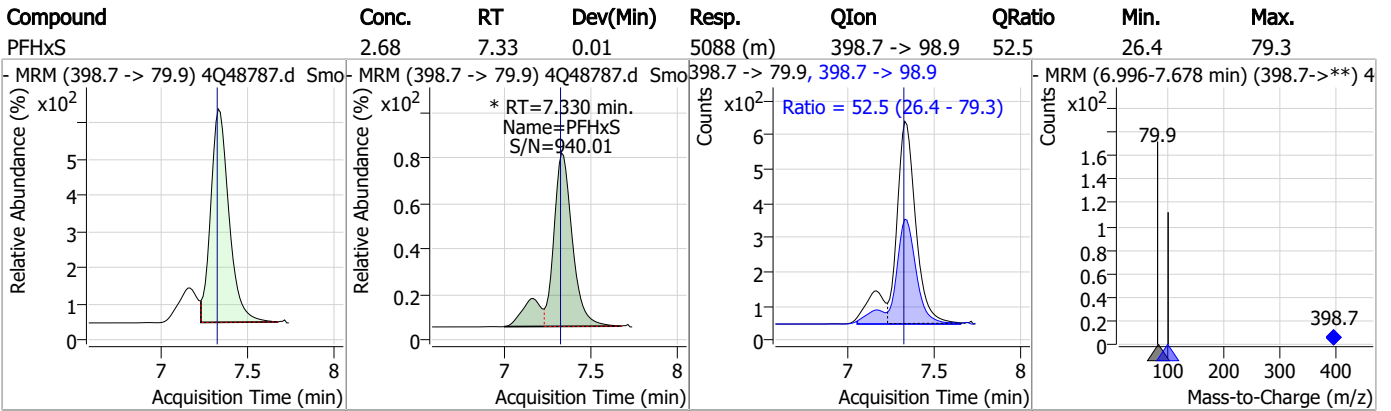
Perfluorinated Compounds by LC/MS/MS



7.7.14

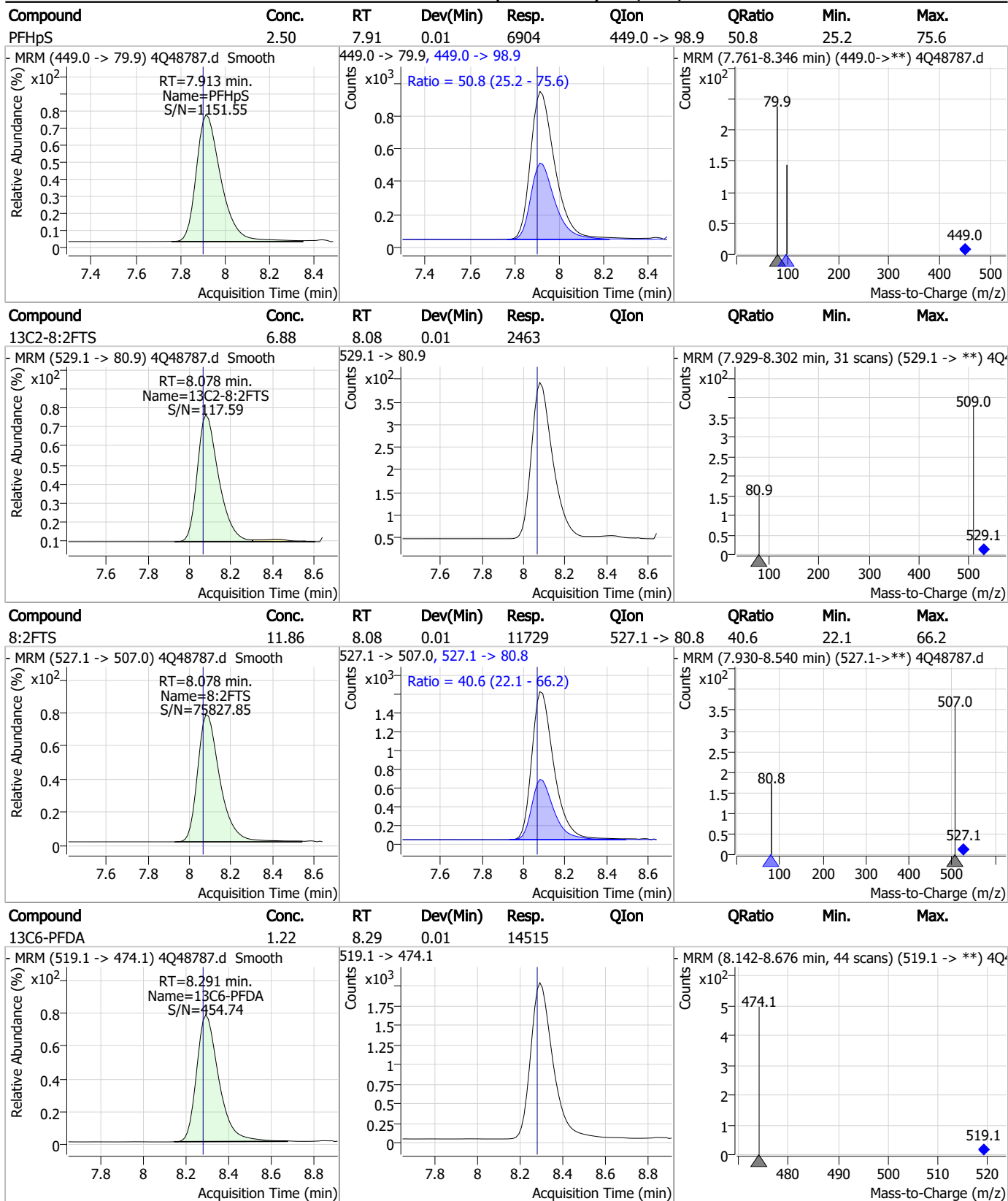


Perfluorinated Compounds by LC/MS/MS



7.7.14

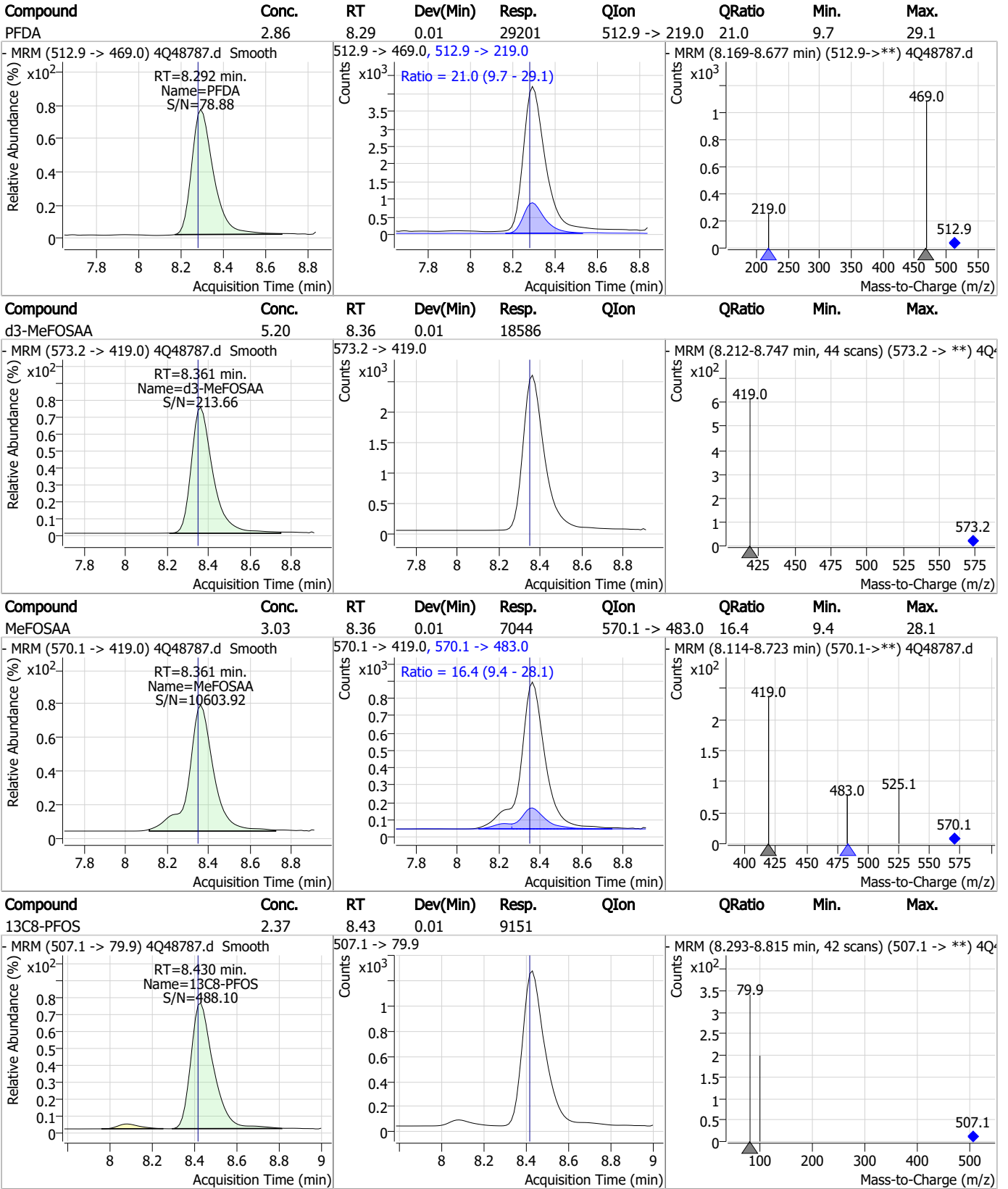
Perfluorinated Compounds by LC/MS/MS



7.7.14
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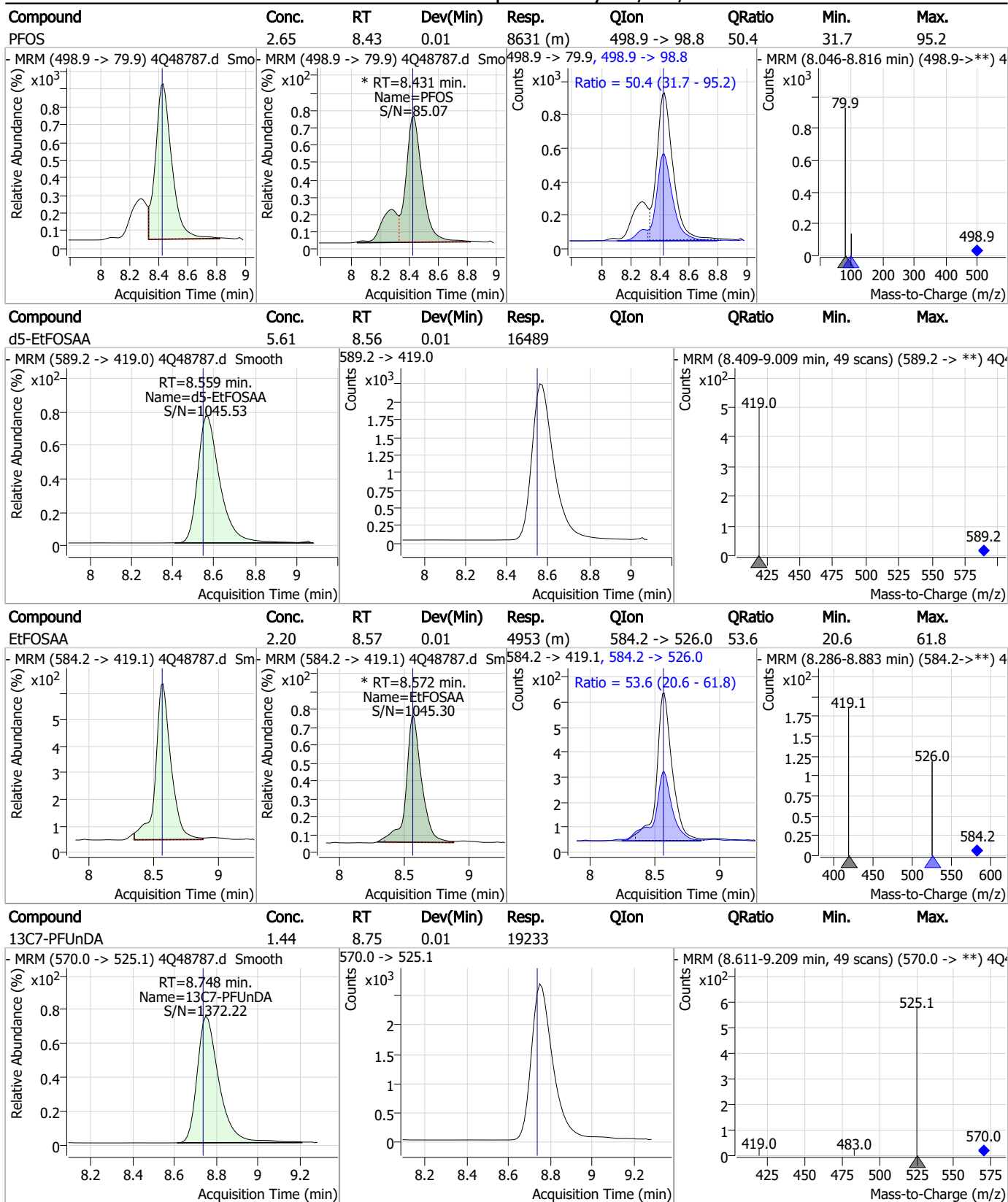
Perfluorinated Compounds by LC/MS/MS



7.7.14

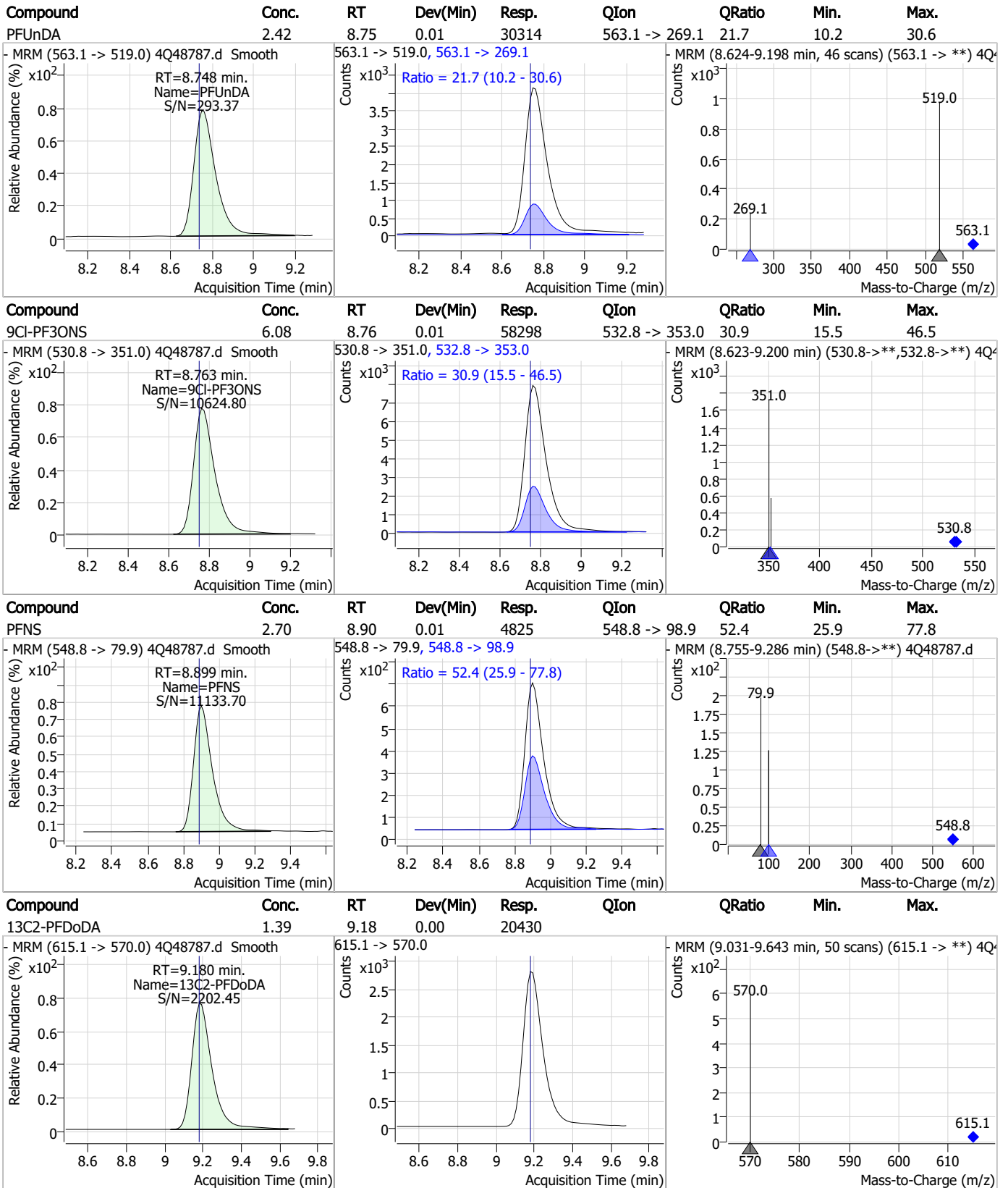
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Perfluorinated Compounds by LC/MS/MS



7.7.14

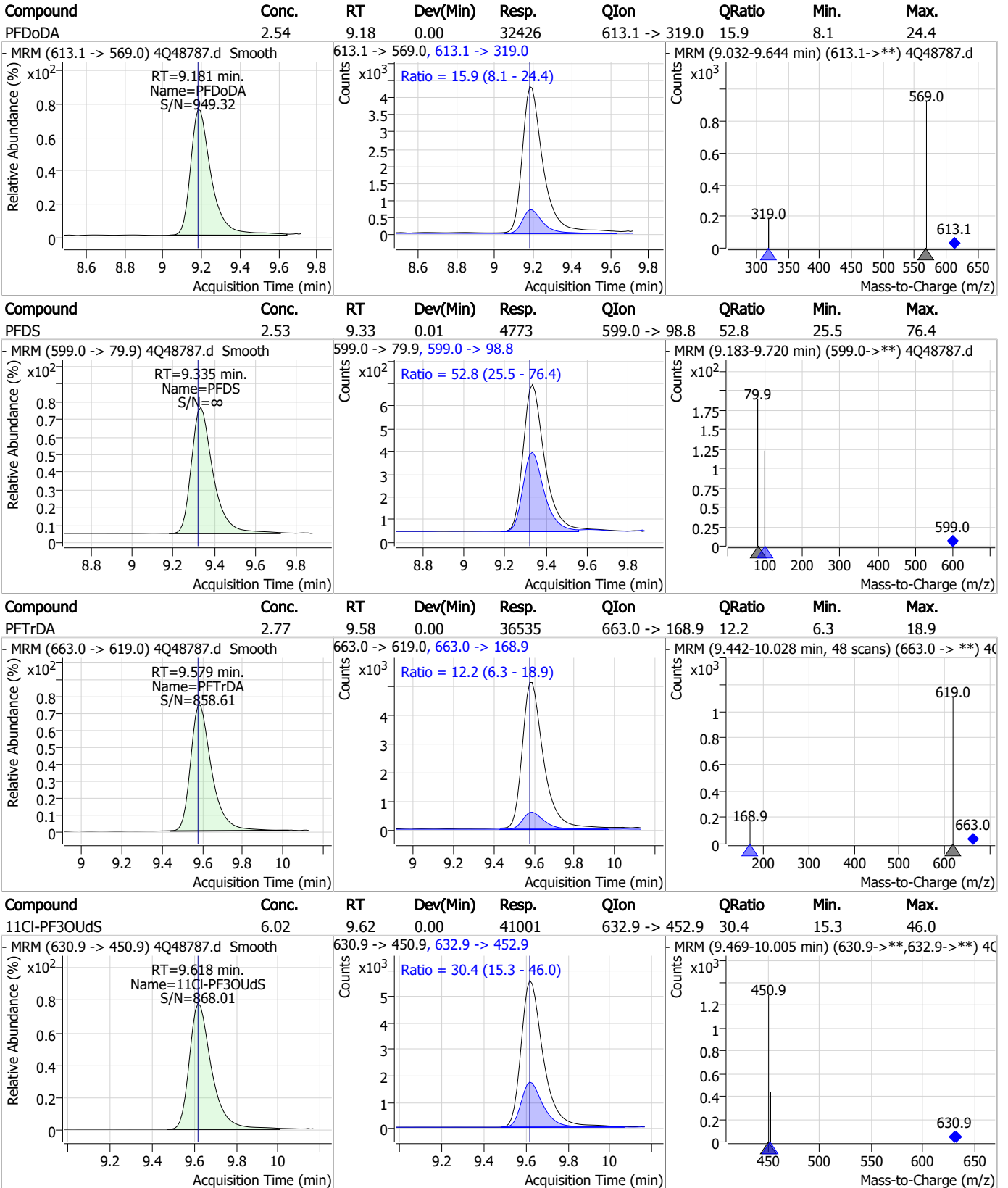
Perfluorinated Compounds by LC/MS/MS



7.7.14

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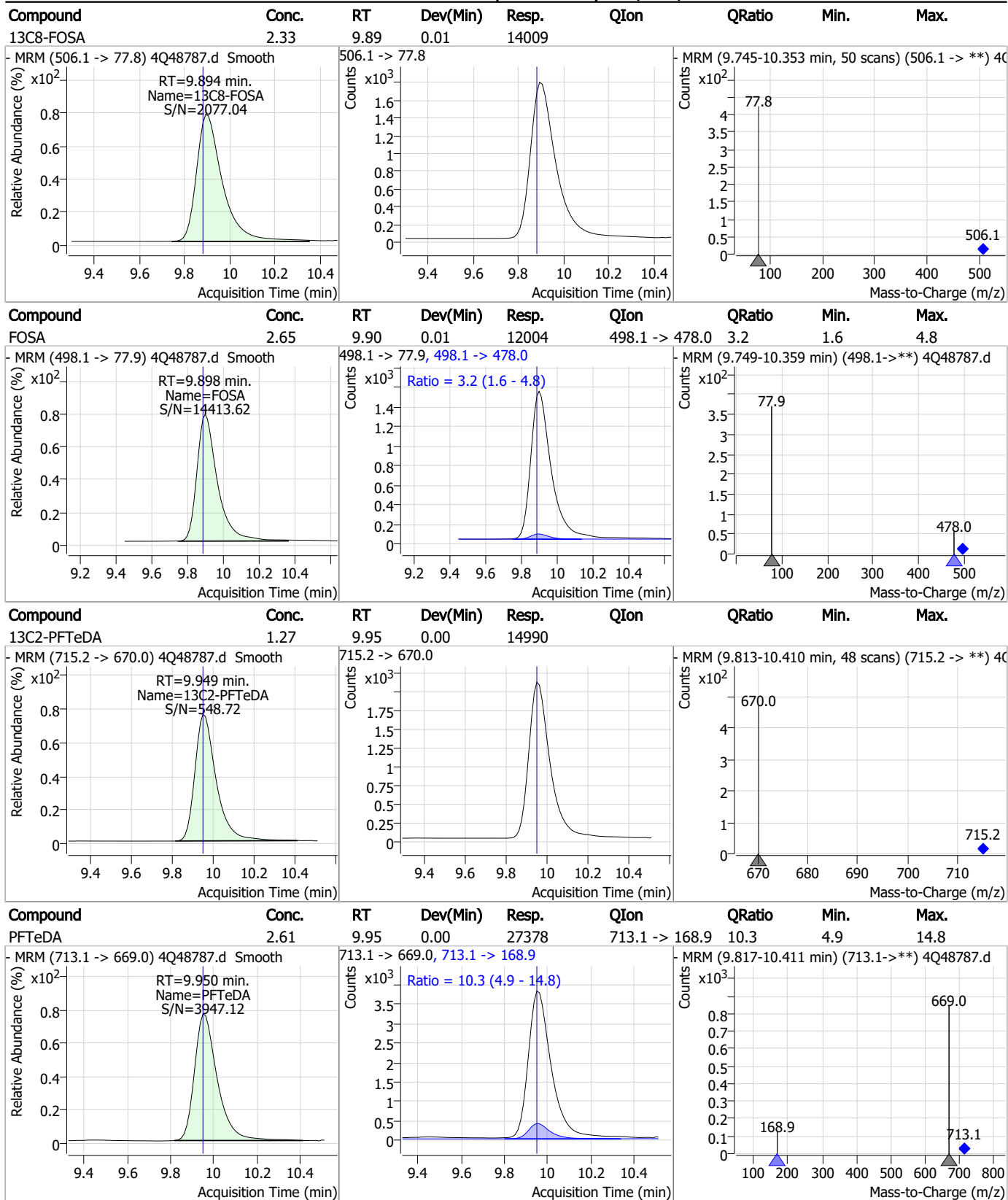
Perfluorinated Compounds by LC/MS/MS



7.7.14
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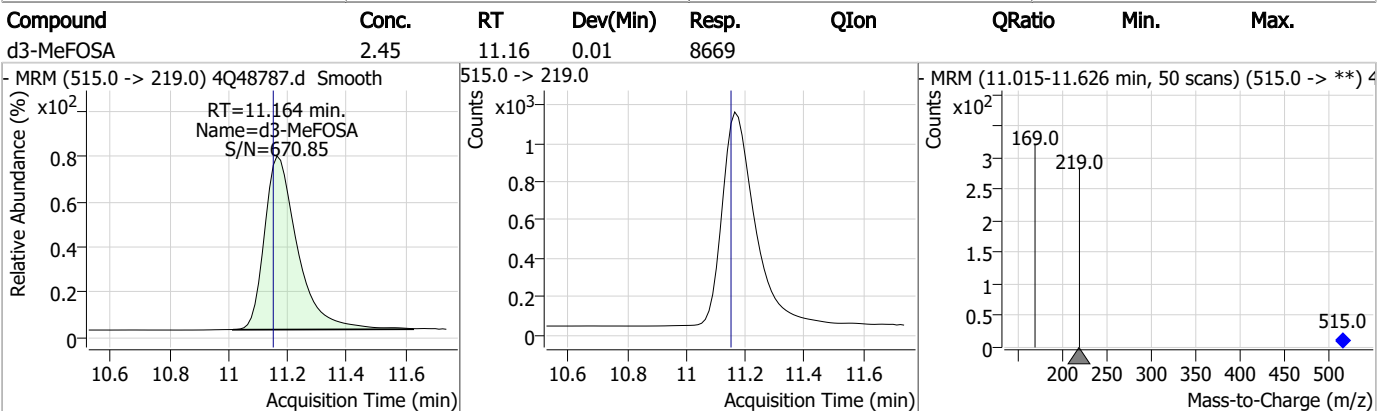
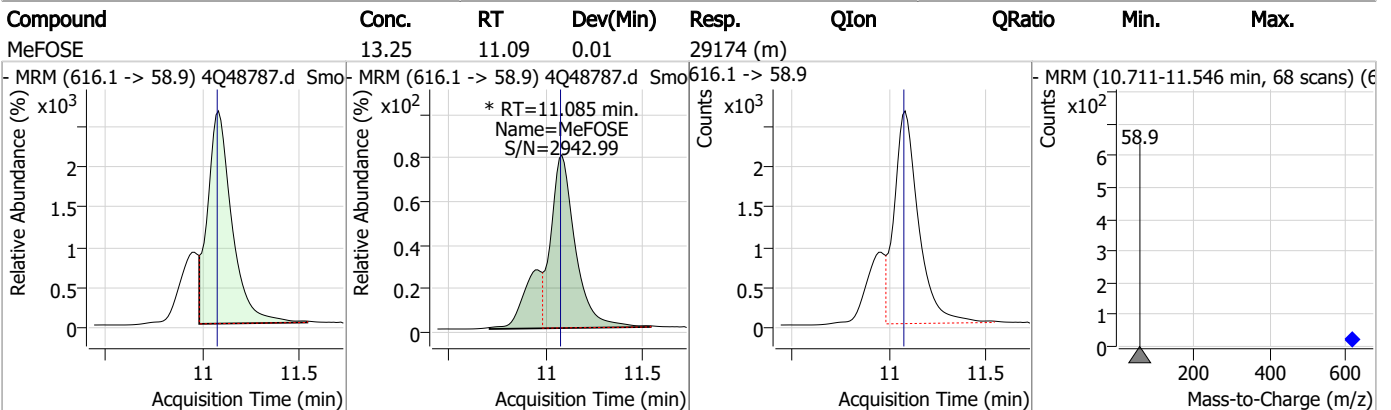
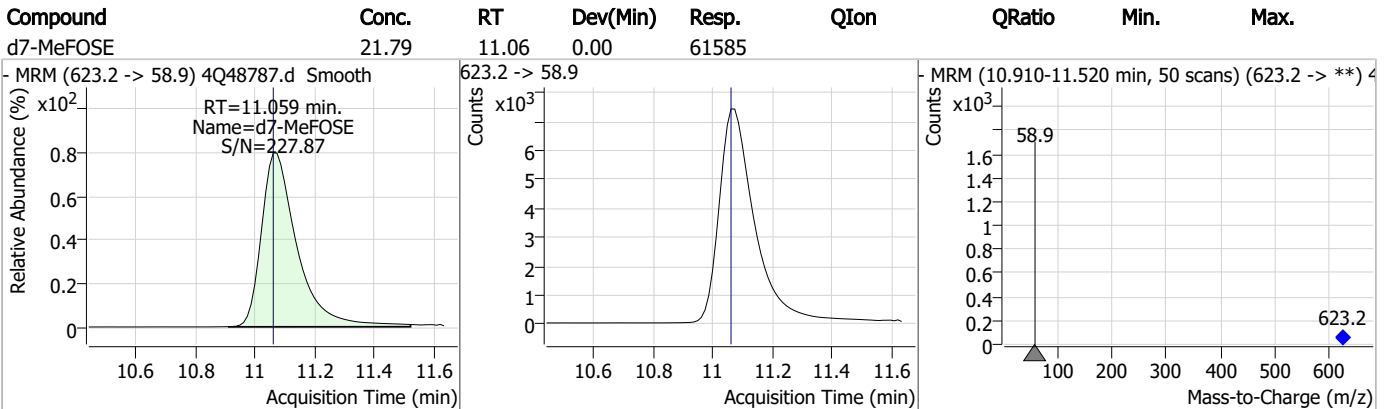
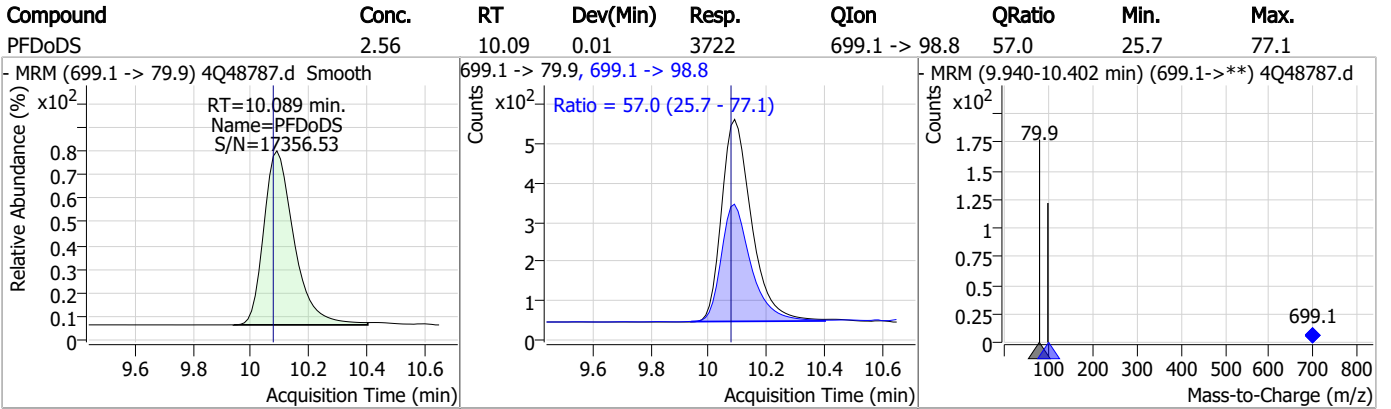


Perfluorinated Compounds by LC/MS/MS

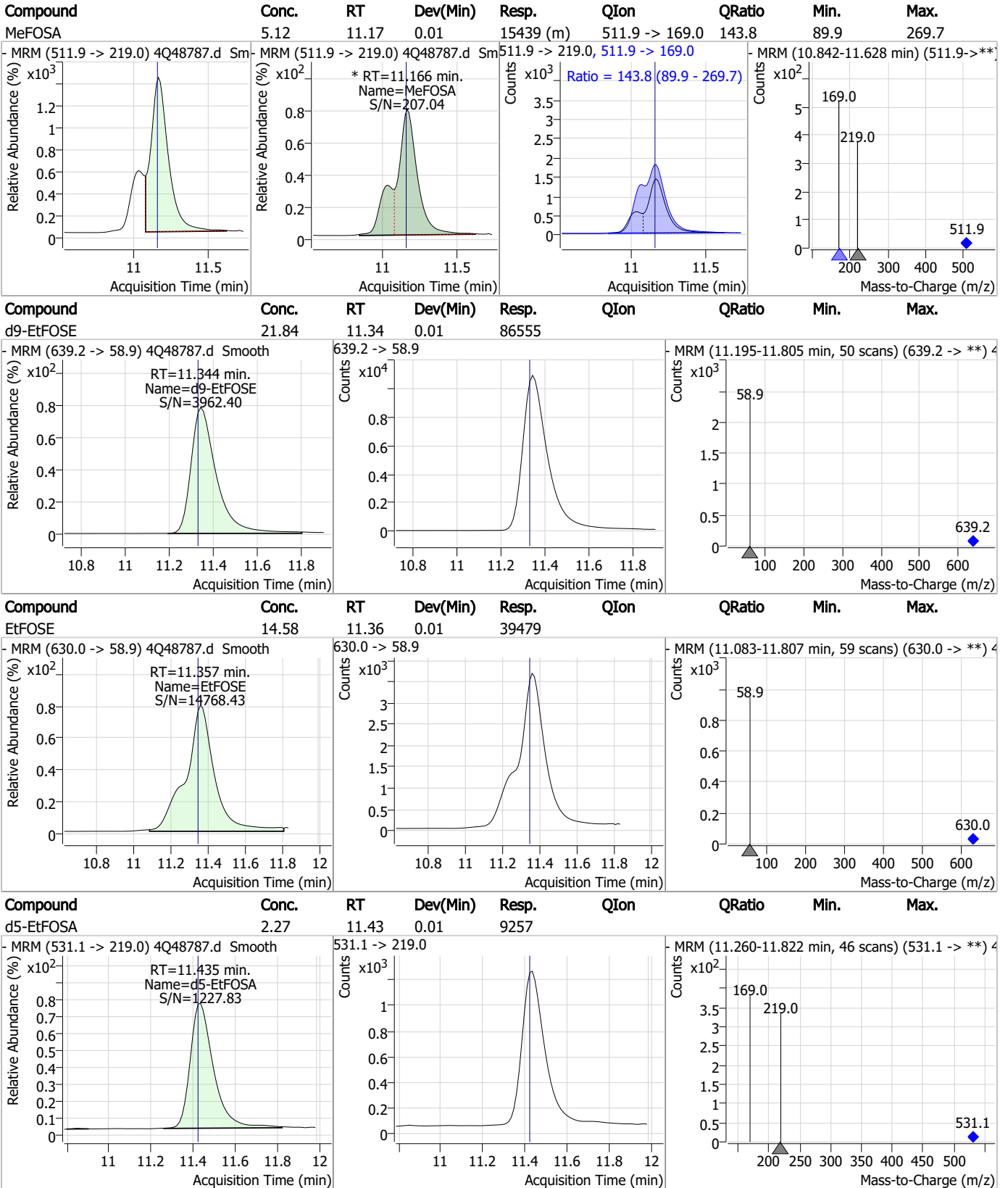


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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

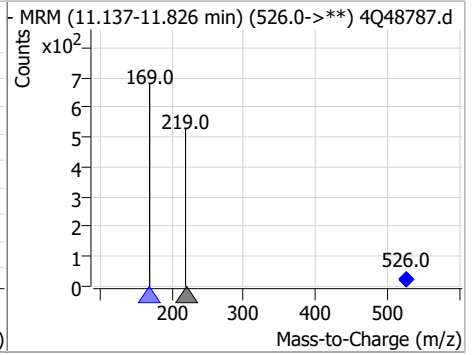
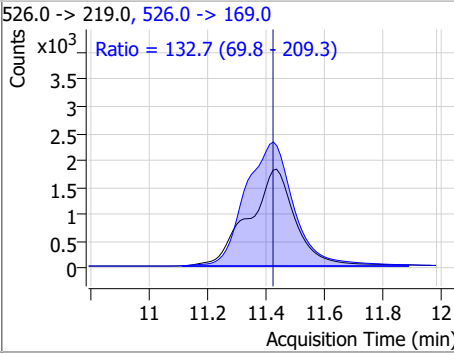
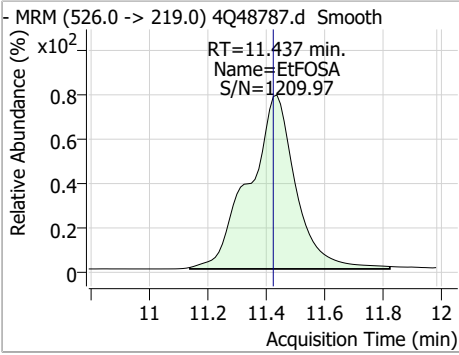


7.7.14
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	5.91	11.44	0.01	20125	526.0 -> 169.0	132.7	69.8	209.3



7.7.14
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Manual Integration Approval Summary

Sample Number: S4Q713-CC711 Method: EPA DRAFT 1633
Lab FileID: 4Q48787.D Analyst approved: 08/10/23 10:42 Anna Ludwig
Injection Time: 08/09/23 21:01 Supervisor approved: 08/11/23 11:37 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.33	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.43	Split peak
EtFOSAA	2991-50-6		8.57	Split peak
MeFOSE	24448-09-7		11.09	Split peak
MeFOSA	31506-32-8		11.17	Split peak

7.7.14.1
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Natasha Gumtje
08/11/23 11:37

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q48799.d
 Operator : annal
 Acq. Method : 1633full_4Q.m
 Acq. Date-Time : 8/9/2023 11:58:31 PM
 Sample Name : ecc711-4
 Vial : P1-A5
 DA Method File : 1633_080723_S4Q711.quantmethod.xml
 Batch Name : s4q713.batch.bin
 Sample Information : OP98180,S4Q713,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.899	216.8 -> 171.9	116598	10.00 µg/L	-0.013
M5-PFPeA	4.412	268.3 -> 223.0	57974	5.00 µg/L	0.000
M5-PFHxA	5.622	318.0 -> 273.0	41494	2.50 µg/L	0.012
M4-PFHpA	6.580	367.1 -> 322.0	29604	2.50 µg/L	0.025
M8-PFOA	7.251	421.1 -> 376.0	47516	2.50 µg/L	0.025
M9-PFNA	7.797	472.1 -> 427.0	21952	1.25 µg/L	0.013
M6-PFDA	8.291	519.1 -> 474.1	15374	1.25 µg/L	0.013
M7-PFUnDA	8.760	570.0 -> 525.1	19048	1.25 µg/L	0.025
M2-PFDoDA	9.193	615.1 -> 570.0	19824	1.25 µg/L	0.012
M2-PFTeDA	9.974	715.2 -> 670.0	14344	1.25 µg/L	0.025
M8-FOSA	9.907	506.1 -> 77.8	13578	2.50 µg/L	0.024
M3-PFBS	5.502	302.1 -> 79.9	9956	2.50 µg/L	0.013
M3-PFHxS	7.329	402.1 -> 79.9	6763	2.50 µg/L	0.012
M8-PFOS	8.430	507.1 -> 79.9	9405	2.50 µg/L	0.013
M2-4:2FTS	5.296	329.1 -> 80.9	871	5.00 µg/L	0.000
M2-6:2FTS	7.023	429.1 -> 80.9	1634	5.00 µg/L	0.025
M2-8:2FTS	8.092	529.1 -> 80.9	2640	5.00 µg/L	0.026
M3-MeFOSAA	8.361	573.2 -> 419.0	18980	5.00 µg/L	0.013
M3-HFPO-DA	5.989	286.9 -> 168.9	33159	10.00 µg/L	0.012
M5-EtFOSAA	8.571	589.2 -> 419.0	15875	5.00 µg/L	0.025
M7-MeFOSE	11.084	623.2 -> 58.9	61986	25.00 µg/L	0.025
M9-EtFOSE	11.356	639.2 -> 58.9	85755	25.00 µg/L	0.025
M5-EtFOSA	11.447	531.1 -> 219.0	9364	2.50 µg/L	0.025
M3-MeFOSA	11.176	515.0 -> 219.0	8774	2.50 µg/L	0.025
13C4-PFOS	8.430	502.8 -> 79.9	10308	2.50 µg/L	0.013
13C3-PFBA	2.891	216.0 -> 172.0	61642	5.00 µg/L	-0.013
18O2-PFHxS	7.328	403.0 -> 83.9	5244	2.50 µg/L	0.012
13C4-PFOA	7.251	417.1 -> 372.0	58871	2.50 µg/L	0.025
13C2-PFDA	8.291	515.1 -> 470.1	17647	1.25 µg/L	0.013
13C5-PFNA	7.798	468.0 -> 423.0	25059	1.25 µg/L	0.013
13C2-PFHxA	5.623	315.1 -> 270.0	38759	2.50 µg/L	0.012

System Monitoring Compounds

13C2-4:2FTS	5.296	329.1 -> 80.9	871	6.65 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 132.9%		
13C2-6:2FTS	7.023	429.1 -> 80.9	1634	6.53 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 130.5%		
13C2-8:2FTS	8.092	529.1 -> 80.9	2640	6.94 µg/L	0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 138.9%		
13C2-PFDoDA	9.193	615.1 -> 570.0	19824	1.31 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.9%		
13C2-PFTeDA	9.974	715.2 -> 670.0	14344	1.18 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.5%		
13C3-PFBS	5.502	302.1 -> 79.9	9956	2.23 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 89.2%		
13C3-PFHxS	7.329	402.1 -> 79.9	6763	2.33 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 = 93.2%	
13C4-PFBA	2.899	216.8 -> 171.9	116598	11.07 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 110.7%	
13C4-PFHpA	6.580	367.1 -> 322.0	29604	2.56 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C5-PFHxA	5.622	318.0 -> 273.0	41494	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C5-PFPeA	4.412	268.3 -> 223.0	57974	4.28 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 85.6%	
13C6-PFDA	8.291	519.1 -> 474.1	15374	1.26 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C7-PFUnDA	8.760	570.0 -> 525.1	19048	1.38 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 110.8%	
13C8-FOSA	9.907	506.1 -> 77.8	13578	2.11 µg/L	0.024
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 84.5%	
13C8-PFOA	7.251	421.1 -> 376.0	47516	2.45 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C8-PFOS	8.430	507.1 -> 79.9	9405	2.27 µg/L	0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.9%	
13C9-PFNA	7.797	472.1 -> 427.0	21952	1.16 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.5%	
d3-MeFOSAA	8.361	573.2 -> 419.0	18980	4.96 µg/L	0.013
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C3-HFPO-DA	5.989	286.9 -> 168.9	33159	8.98 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 89.8%	
d3-MeFOSA	11.176	515.0 -> 219.0	8774	2.32 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.7%	
d5-EtFOSAA	8.571	589.2 -> 419.0	15875	5.05 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
d7-MeFOSE	11.084	623.2 -> 58.9	61986	20.48 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 81.9%	
d9-EtFOSE	11.356	639.2 -> 58.9	85755	20.20 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 80.8%	
d5-EtFOSA	11.447	531.1 -> 219.0	9364	2.15 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 85.9%	
Target Compounds					QValue
4:2FTS	5.309	327.1 -> 307.0	10953	9.33 µg/L	98
		327.1 -> 80.9	4652		
6:2FTS	7.011	427.1 -> 407.0	14354	10.35 µg/L	100
		427.1 -> 80.9	5073		
8:2FTS	8.092	527.1 -> 507.0	11407	10.76 µg/L	100
		527.1 -> 80.8	5003		
EtFOSAA	8.584	584.2 -> 419.1	5078	2.34 µg/L	88
		584.2 -> 526.0	2474		
FOSA	9.911	498.1 -> 77.9	11966	2.72 µg/L	99
		498.1 -> 478.0	353		
MeFOSAA	8.361	570.1 -> 419.0	6876	2.90 µg/L	m 98
		570.1 -> 483.0	1210		
PFBA	2.895	212.8 -> 168.9	27404	10.21 µg/L	100
PFBS	5.503	298.7 -> 79.9	6938	2.85 µg/L	99
		298.7 -> 98.8	2512		
PFDA	8.292	512.9 -> 469.0	31732	2.94 µg/L	98
		512.9 -> 219.0	5892		
PFDODA	9.193	613.1 -> 569.0	32374	2.61 µg/L	98
		613.1 -> 319.0	4980		
PFDS	9.347	599.0 -> 79.9	4981	2.56 µg/L	96

7.7.15
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Perfluorinated Compounds by LC/MS/MS

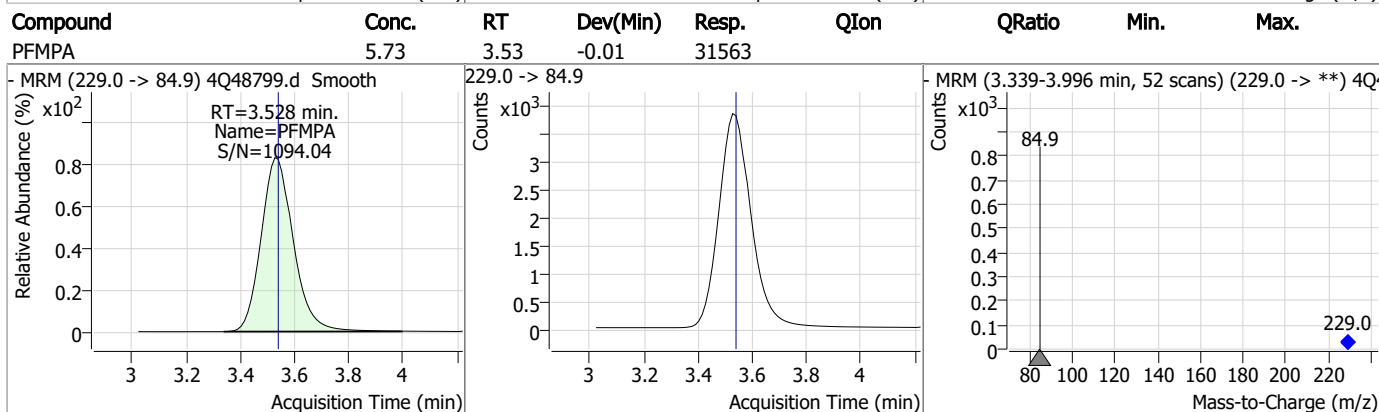
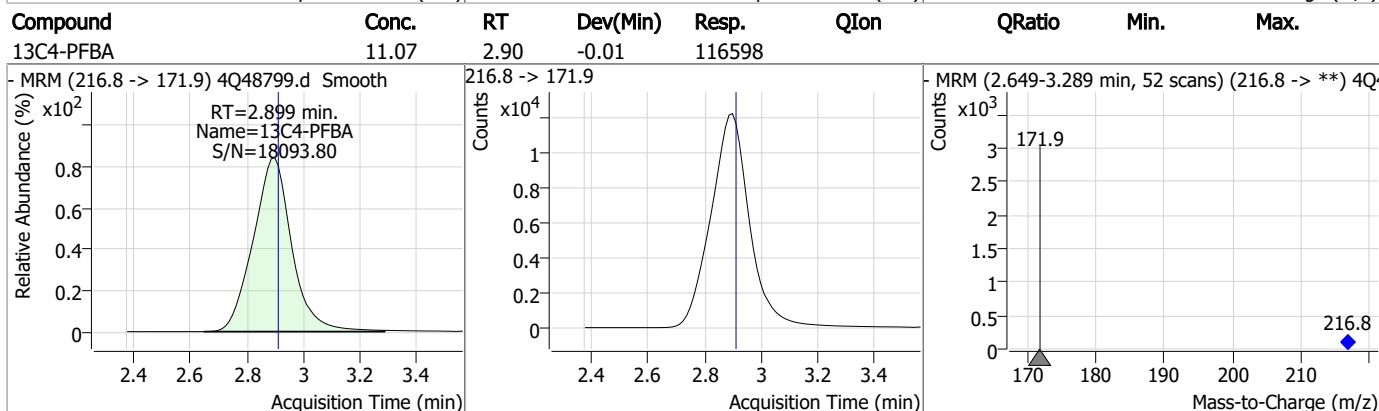
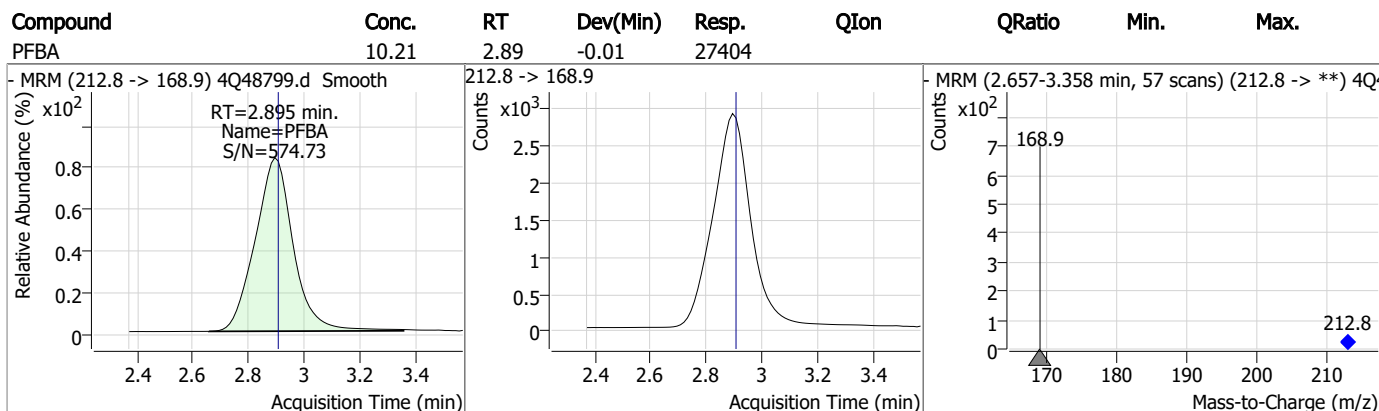
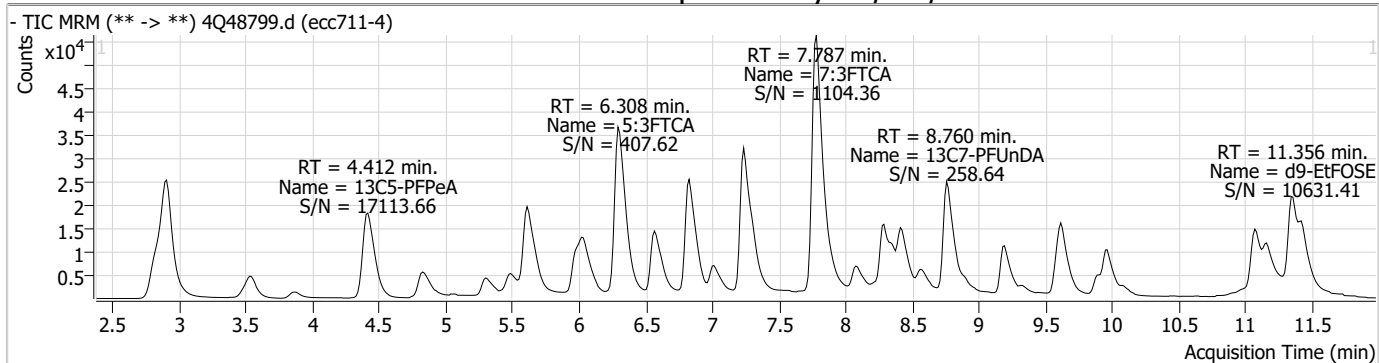
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2418			
PFHpA	6.581	363.1 -> 319.0	34249	2.56	µg/L	96
		363.1 -> 169.0	5617			
PFHpS	7.913	449.0 -> 79.9	6743	2.37	µg/L	98
		449.0 -> 98.9	3505			
PFHxA	5.625	313.0 -> 269.0	29824	2.49	µg/L	100
		313.0 -> 118.9	1032			
PFHxS	7.330	398.7 -> 79.9	5200	2.68	µg/L	m 96
		398.7 -> 98.9	2593			
PFNA	7.798	463.0 -> 419.0	30090	2.63	µg/L	97
		463.0 -> 219.0	6985			
PFNS	8.911	548.8 -> 79.9	5075	2.76	µg/L	95
		548.8 -> 98.9	2466			
PFOA	7.252	413.0 -> 369.0	53032	2.81	µg/L	97
		413.0 -> 169.0	9601			
PFOS	8.431	498.9 -> 79.9	8541	2.55	µg/L	m 78
		498.9 -> 98.8	3966			
PFPeA	4.414	263.0 -> 219.0	58908	5.85	µg/L	100
PFPeS	6.595	349.1 -> 79.9	4453	2.44	µg/L	97
		349.1 -> 98.9	1894			
PFTeDA	9.962	713.1 -> 669.0	27904	2.78	µg/L	99
		713.1 -> 168.9	2684			
PFTrDA	9.603	663.0 -> 619.0	36920	2.88	µg/L	99
		663.0 -> 168.9	4477			
PFUnDA	8.761	563.1 -> 519.0	32404	2.61	µg/L	99
		563.1 -> 269.1	6689			
11CI-PF3OUdS	9.630	630.9 -> 450.9	41246	5.93	µg/L	99
		632.9 -> 452.9	12323			
9CI-PF3ONS	8.775	530.8 -> 351.0	57785	5.91	µg/L	100
		532.8 -> 353.0	17919			
ADONA	6.843	376.9 -> 250.9	110054	5.72	µg/L	100
		376.9 -> 84.8	28288			
HFPO-DA	5.990	284.9 -> 168.9	14289	5.24	µg/L	98
		284.9 -> 184.9	1730			
3:3FTCA	3.861	241.0 -> 177.0	7421	10.95	µg/L	99
		241.0 -> 117.0	696			
5:3FTCA	6.308	341.0 -> 237.1	129808	66.24	µg/L	97
		341.0 -> 217.0	88970			
7:3FTCA	7.787	441.0 -> 316.9	70804	65.57	µg/L	92
		441.0 -> 336.9	172129			
EtFOSA	11.437	526.0 -> 219.0	20320	5.90	µg/L	97
		526.0 -> 169.0	27510			
EtFOSE	11.370	630.0 -> 58.9	38656	14.41	µg/L	100
MeFOSA	11.178	511.9 -> 219.0	15703	5.15	µg/L	m 76
		511.9 -> 169.0	22786			
MeFOSE	11.097	616.1 -> 58.9	28493	12.85	µg/L	100
PFDoDS	10.102	699.1 -> 79.9	3754	2.51	µg/L	87
		699.1 -> 98.8	2268			
NFDHA	5.503	295.0 -> 201.0	4112	5.33	µg/L	96
		295.0 -> 84.9	1108			
PFMBA	4.841	279.0 -> 85.1	33993	6.02	µg/L	100
PFMPA	3.528	229.0 -> 84.9	31563	5.73	µg/L	100
PFEESA	6.047	314.8 -> 134.9	43268	4.49	µg/L	98
		314.8 -> 82.9	1743			

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

Perfluorinated Compounds by LC/MS/MS

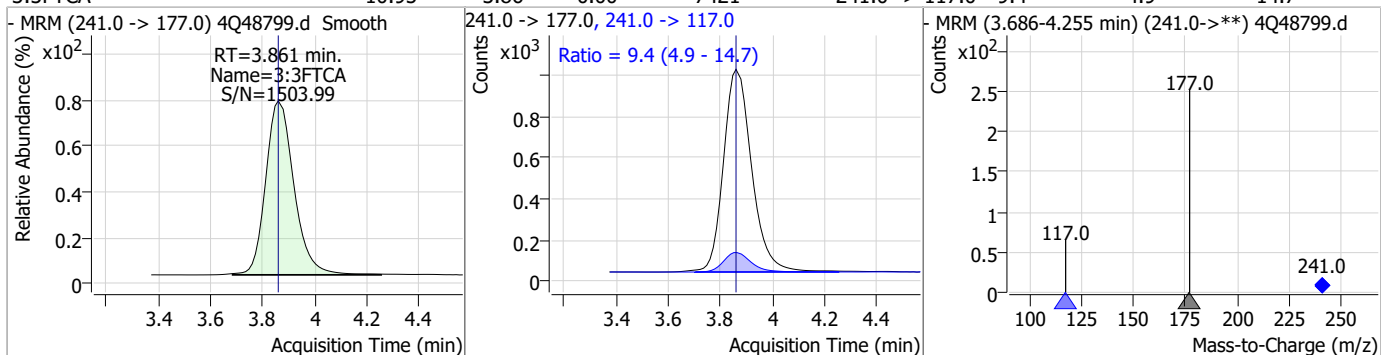
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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Perfluorinated Compounds by LC/MS/MS

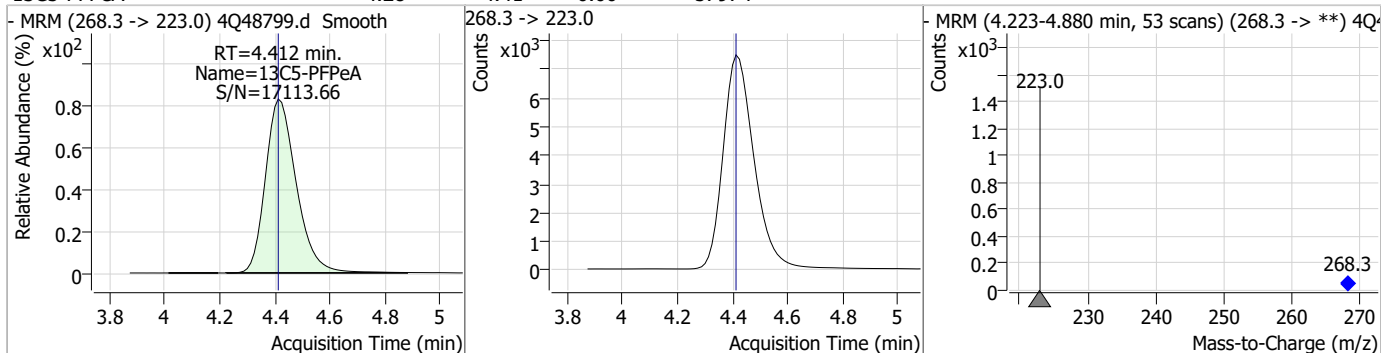


Perfluorinated Compounds by LC/MS/MS

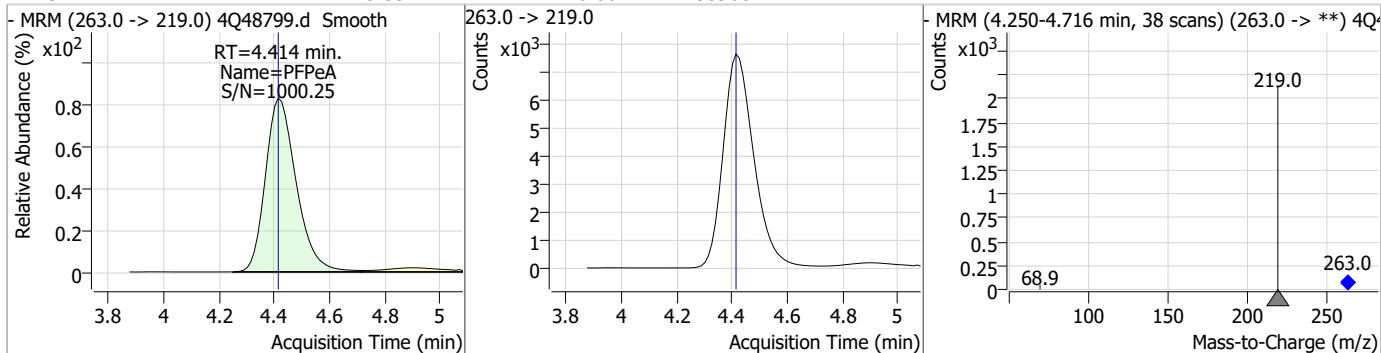
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	10.95	3.86	0.00	7421	241.0 -> 117.0	9.4	4.9	14.7



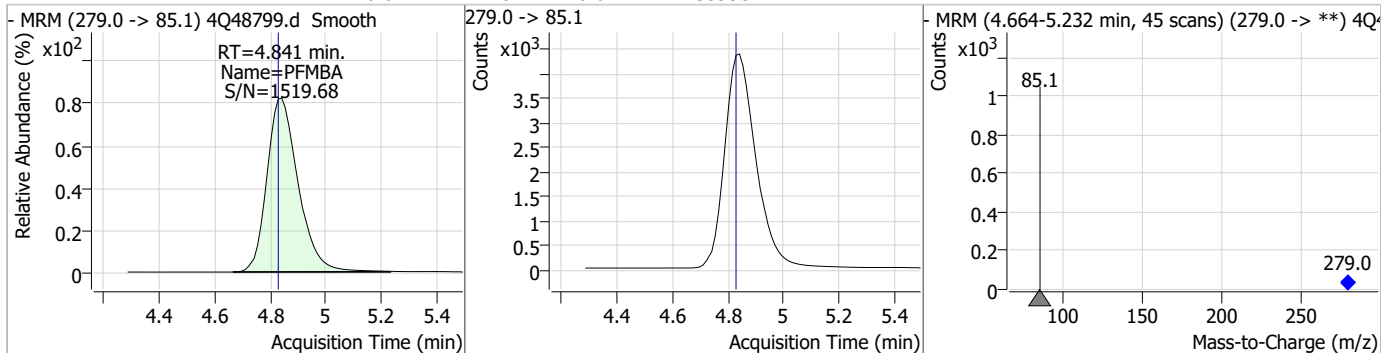
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.28	4.41	0.00	57974				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	5.85	4.41	0.00	58908				

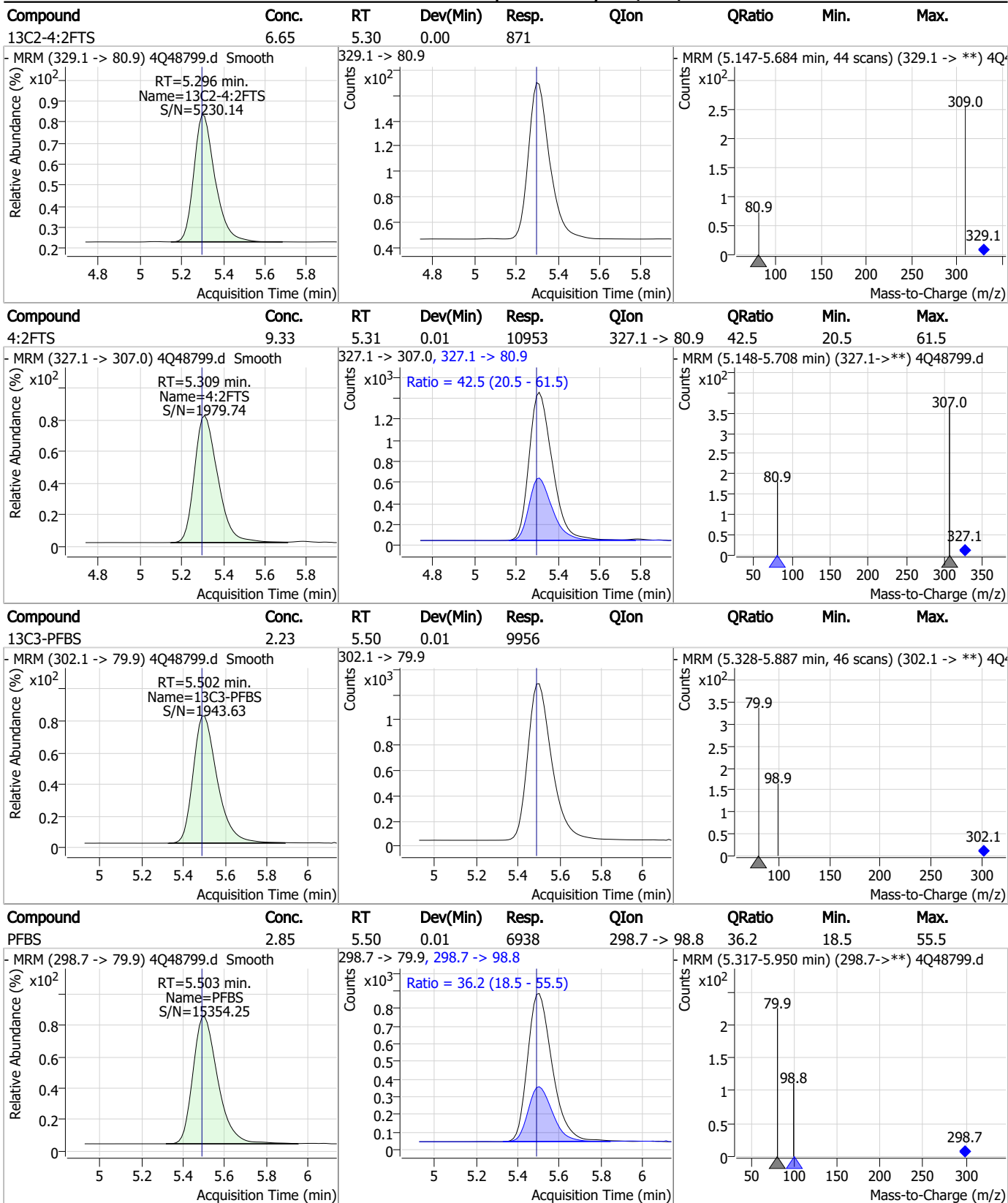


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	6.02	4.84	0.01	33993				



7.7.15
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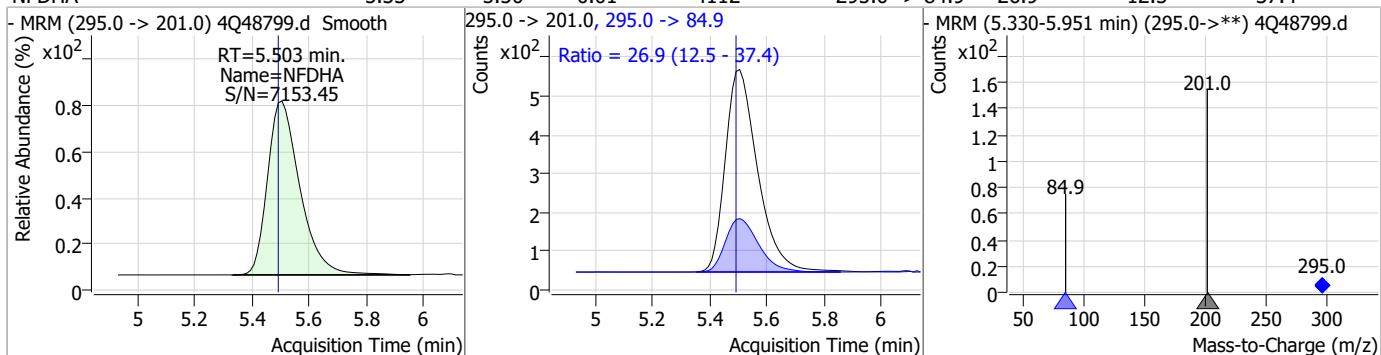
Perfluorinated Compounds by LC/MS/MS



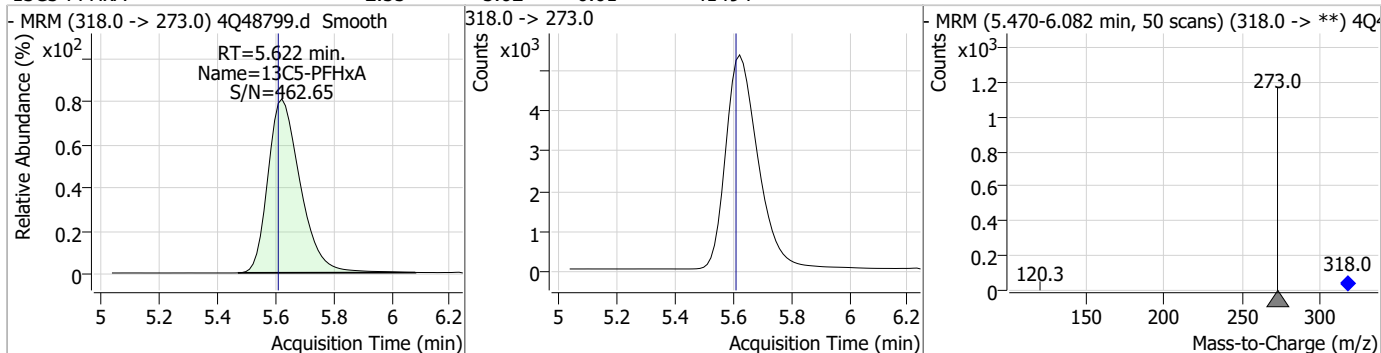
7.7.15
7

Perfluorinated Compounds by LC/MS/MS

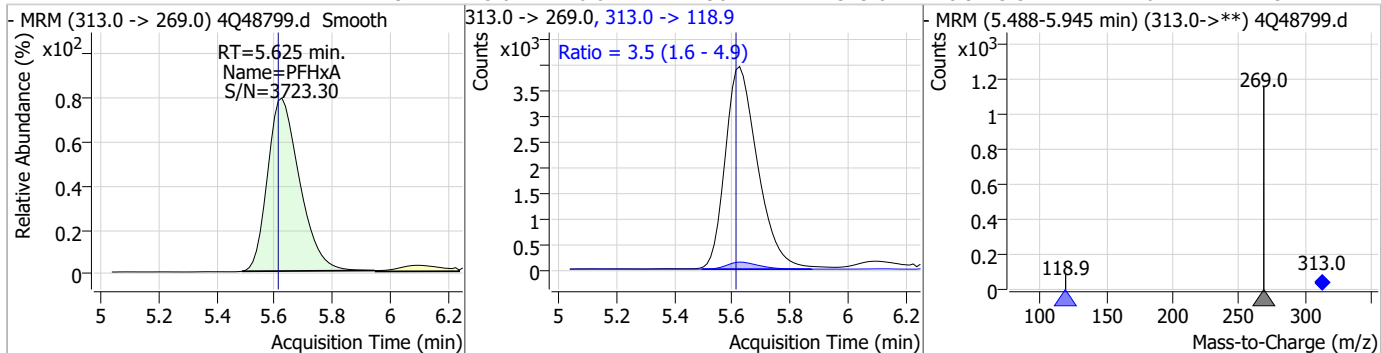
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	5.33	5.50	0.01	4112	295.0 -> 84.9	26.9	12.5	37.4



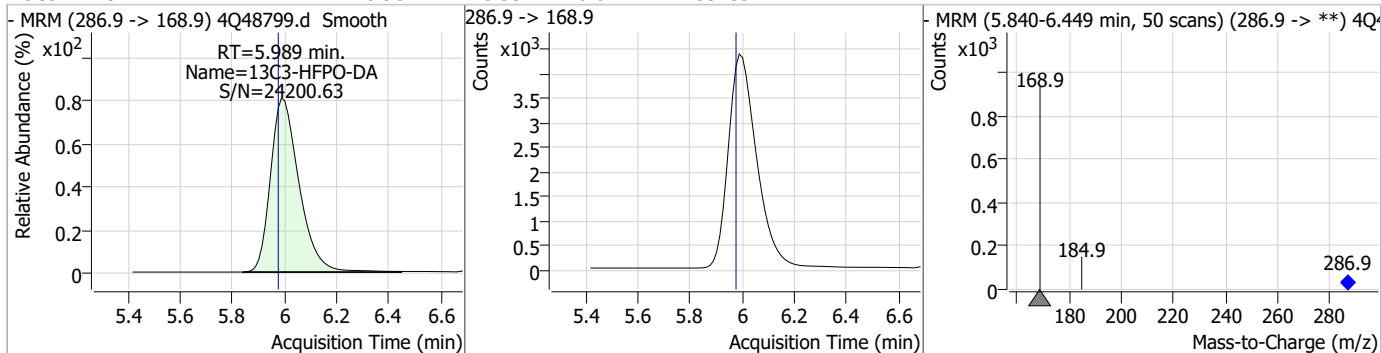
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.55	5.62	0.01	41494				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.49	5.62	0.01	29824	313.0 -> 118.9	3.5	1.6	4.9

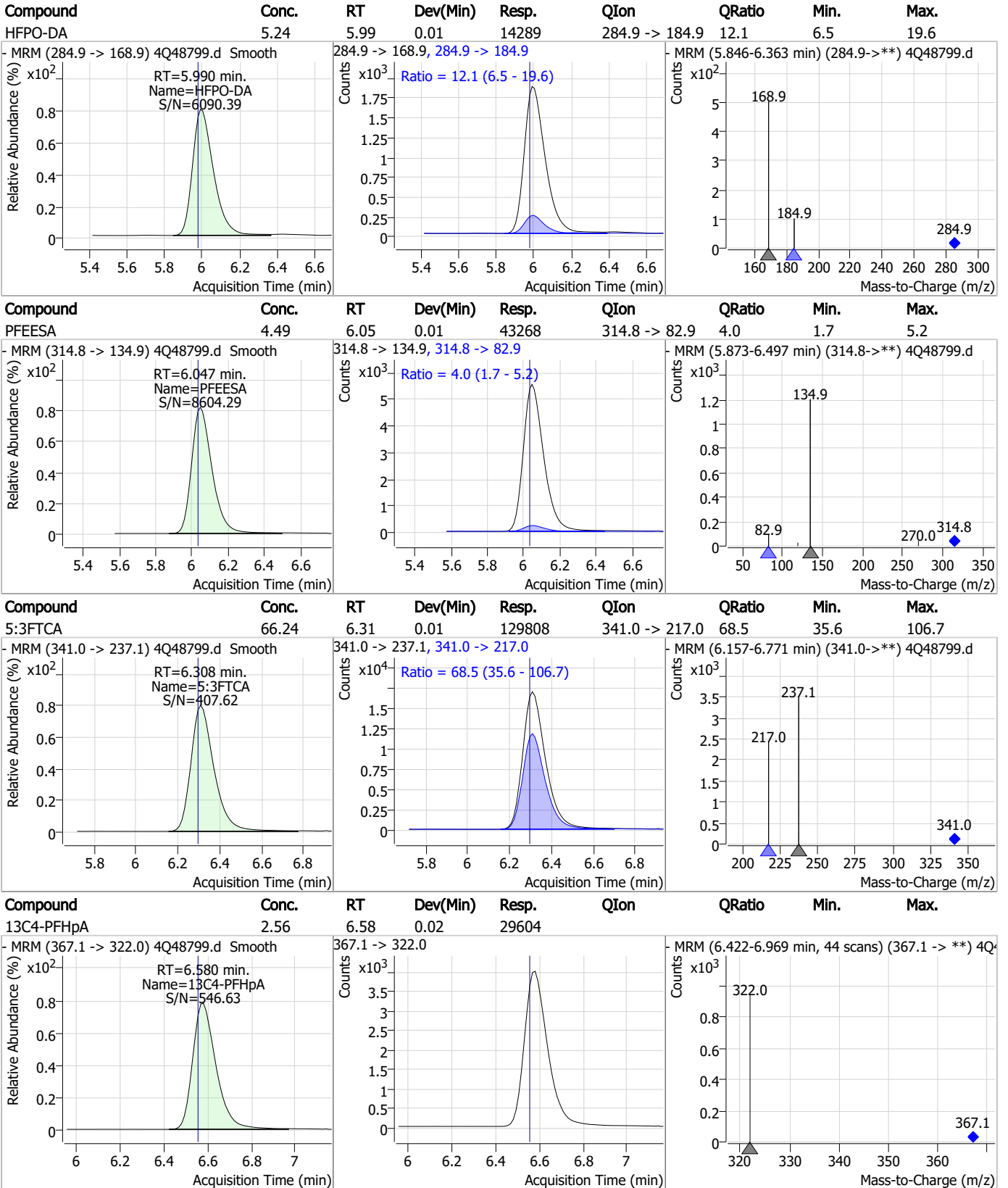


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	8.98	5.99	0.01	33159				



7.7.15
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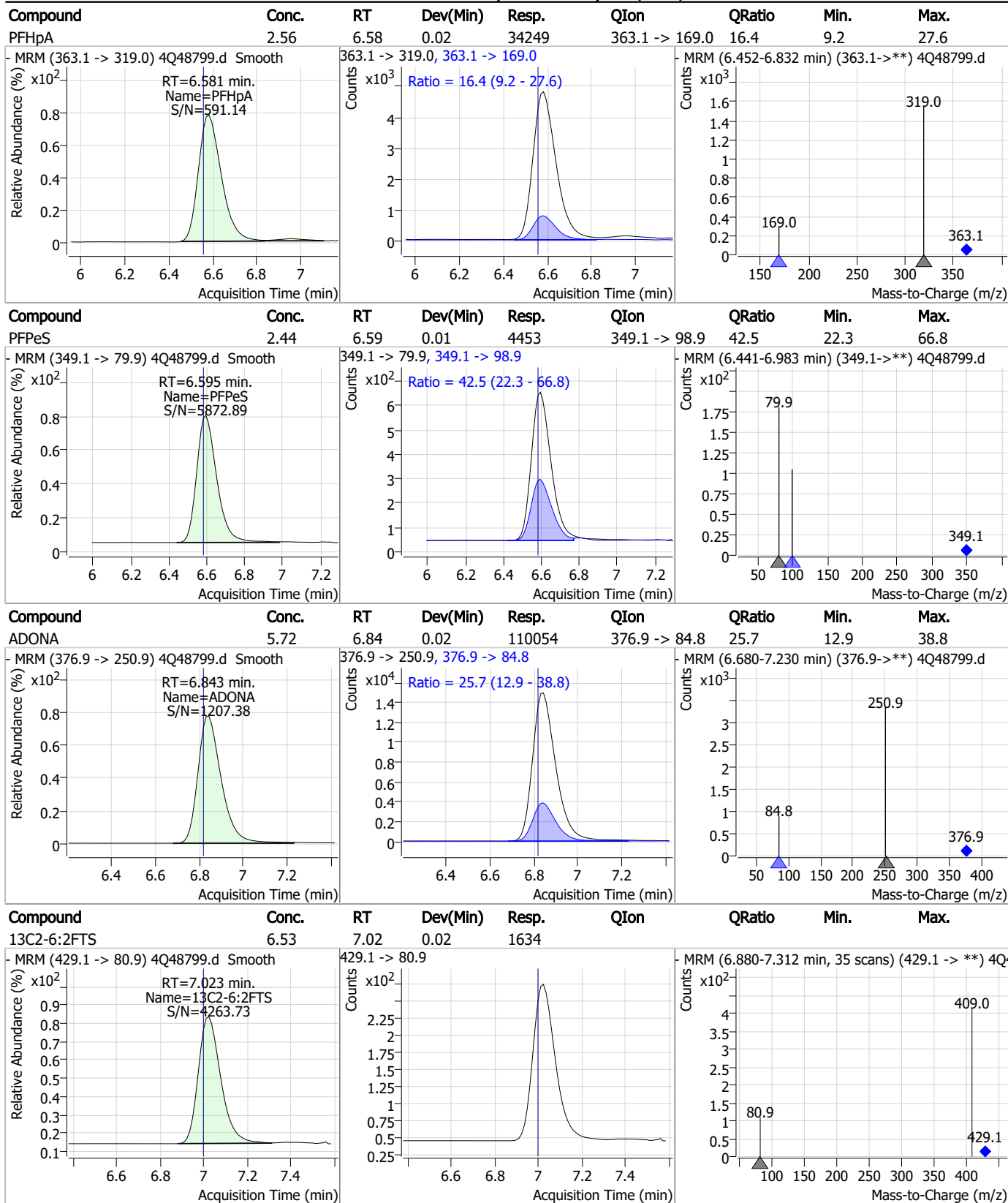
Perfluorinated Compounds by LC/MS/MS



7.7.15 7

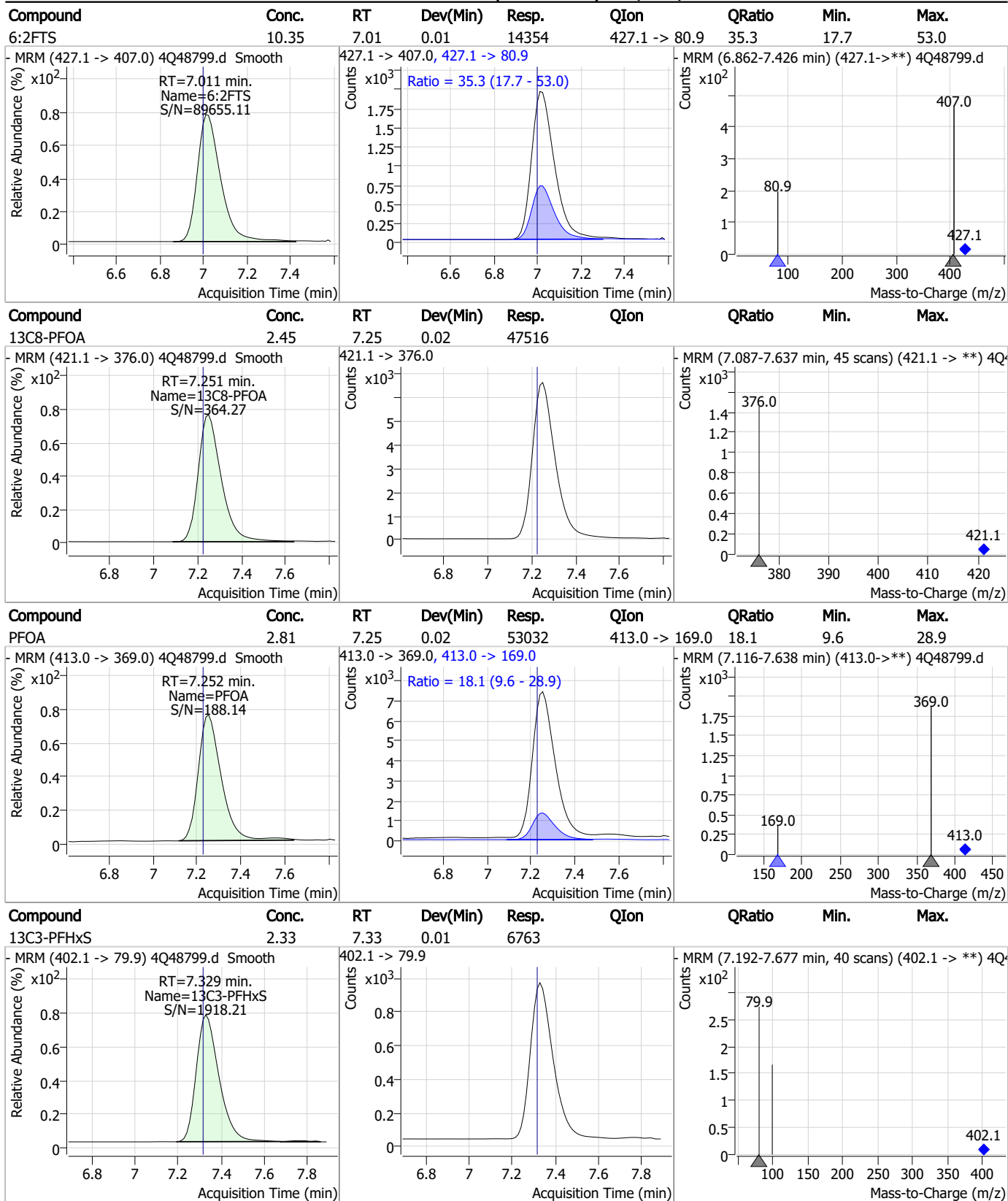


Perfluorinated Compounds by LC/MS/MS



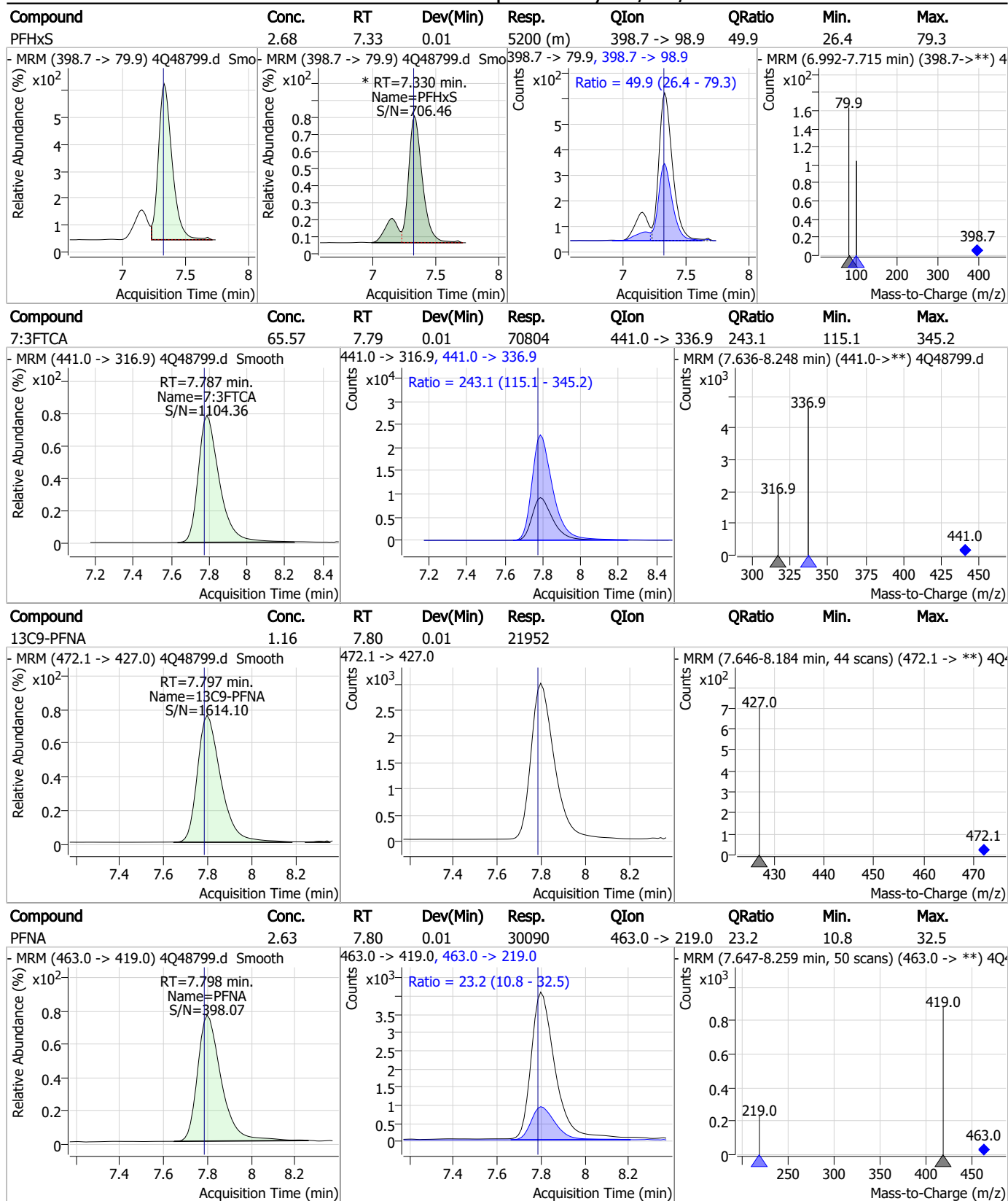
7.7.15

Perfluorinated Compounds by LC/MS/MS



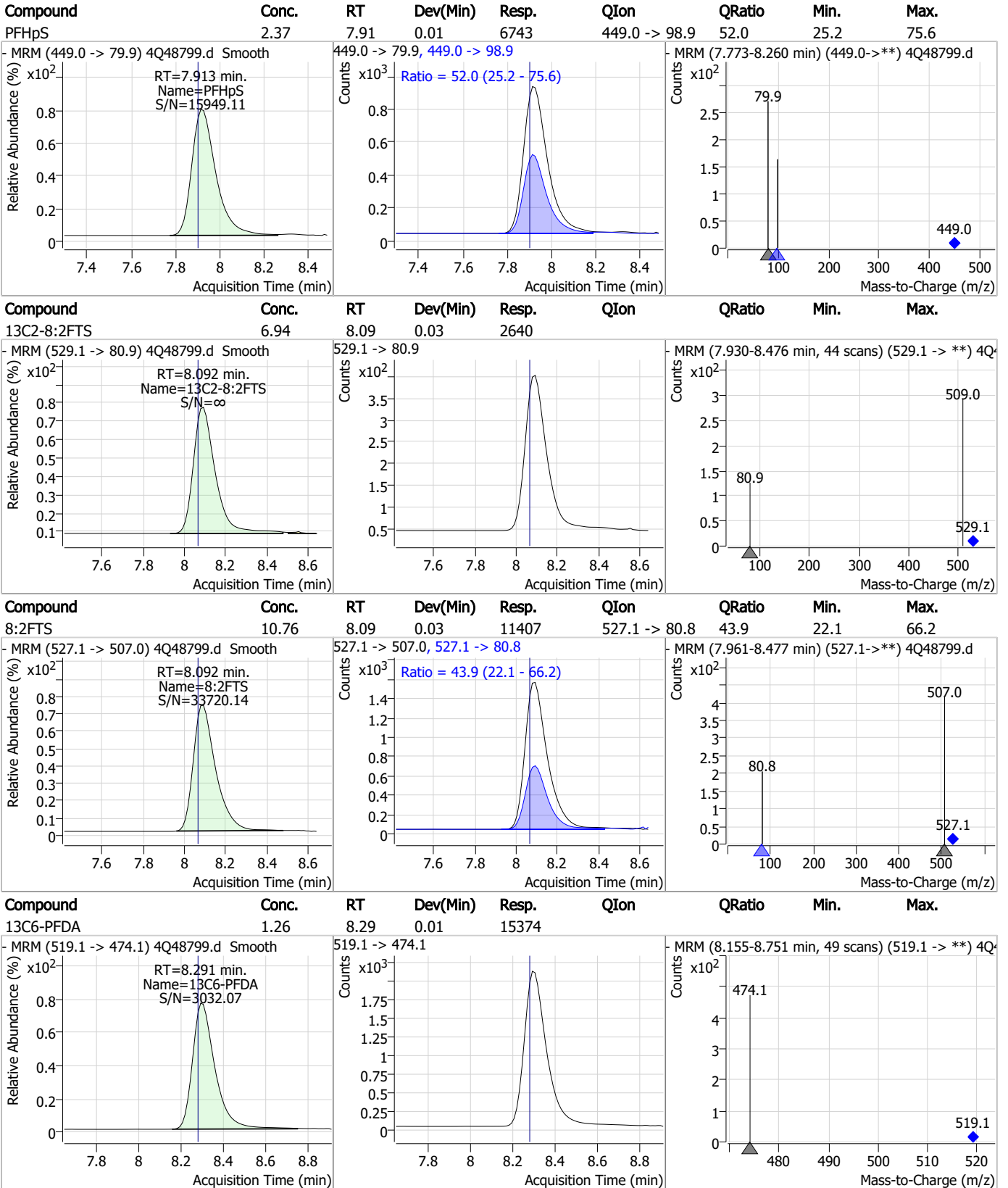
7.7.15
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Perfluorinated Compounds by LC/MS/MS



7.7.15
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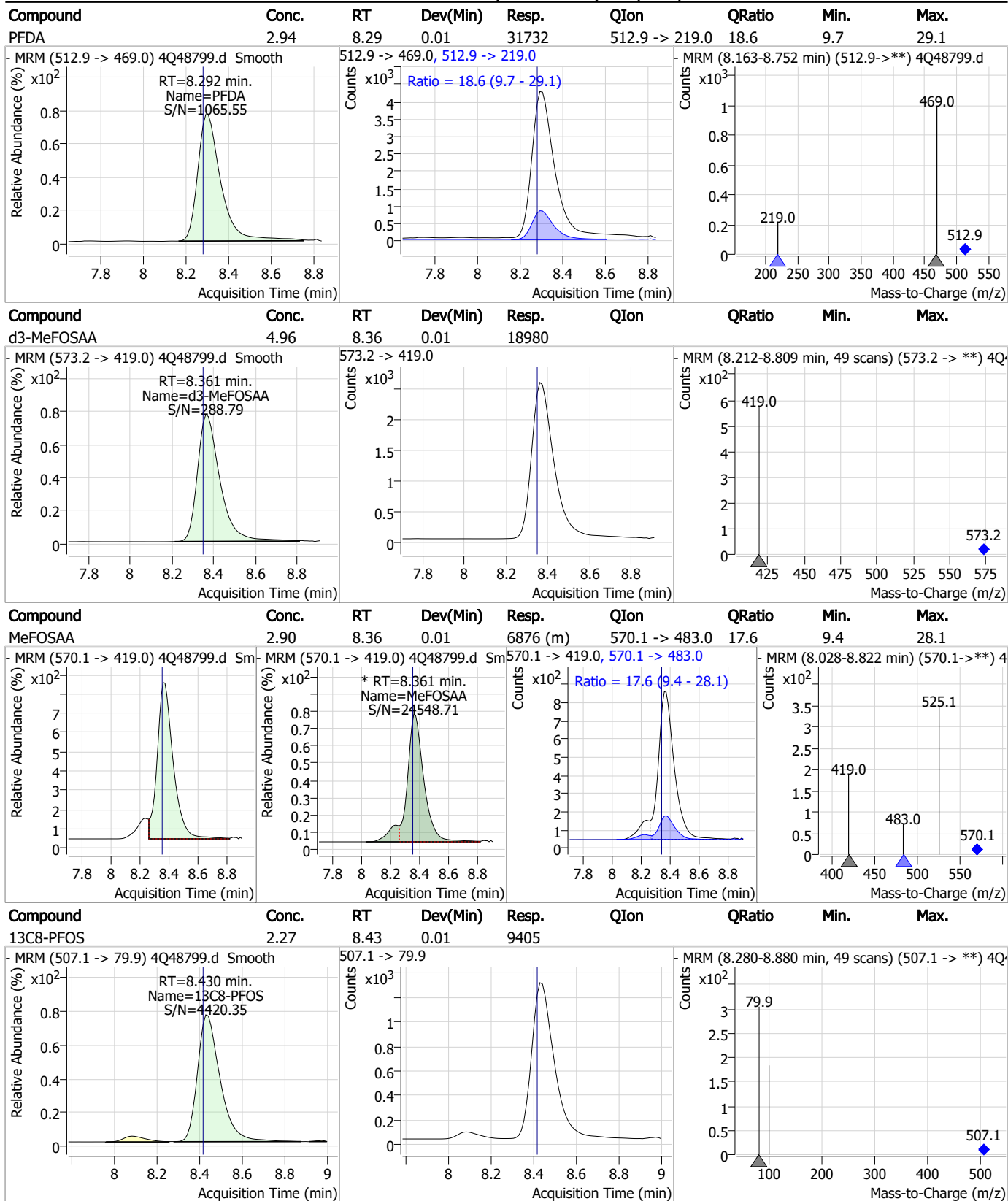
Perfluorinated Compounds by LC/MS/MS



7.7.15 7

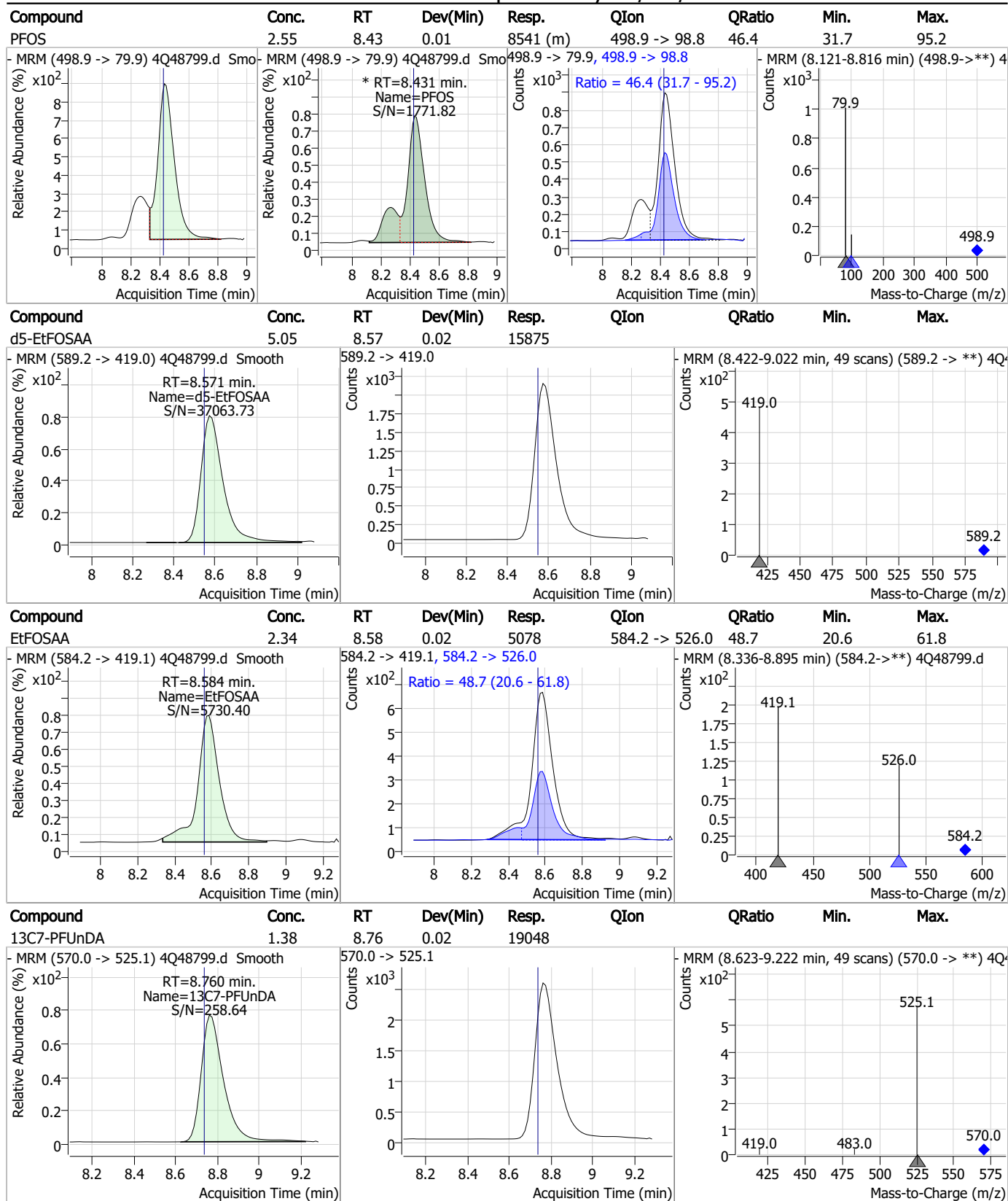


Perfluorinated Compounds by LC/MS/MS



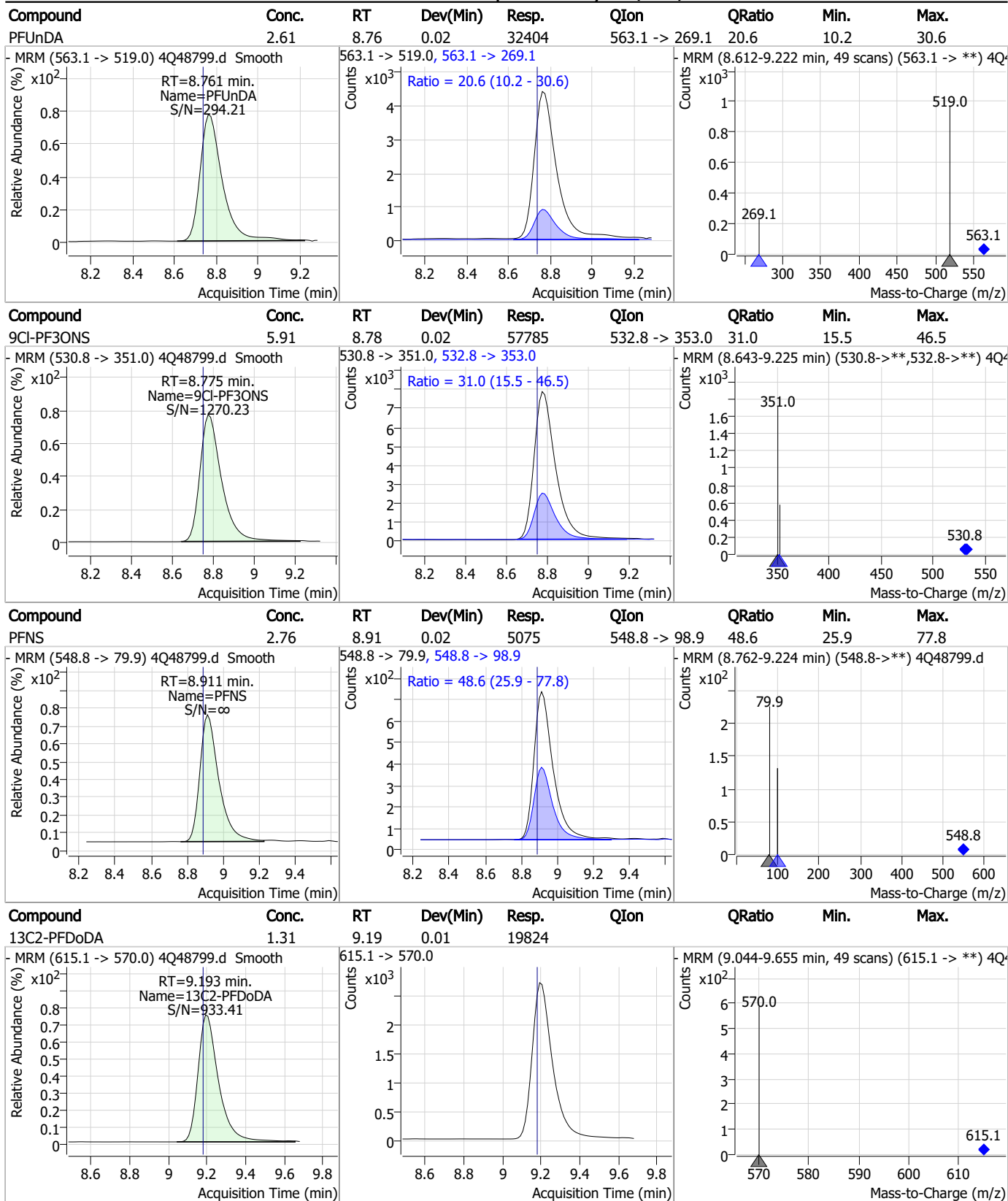
7.7.15
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Perfluorinated Compounds by LC/MS/MS



7.7.15
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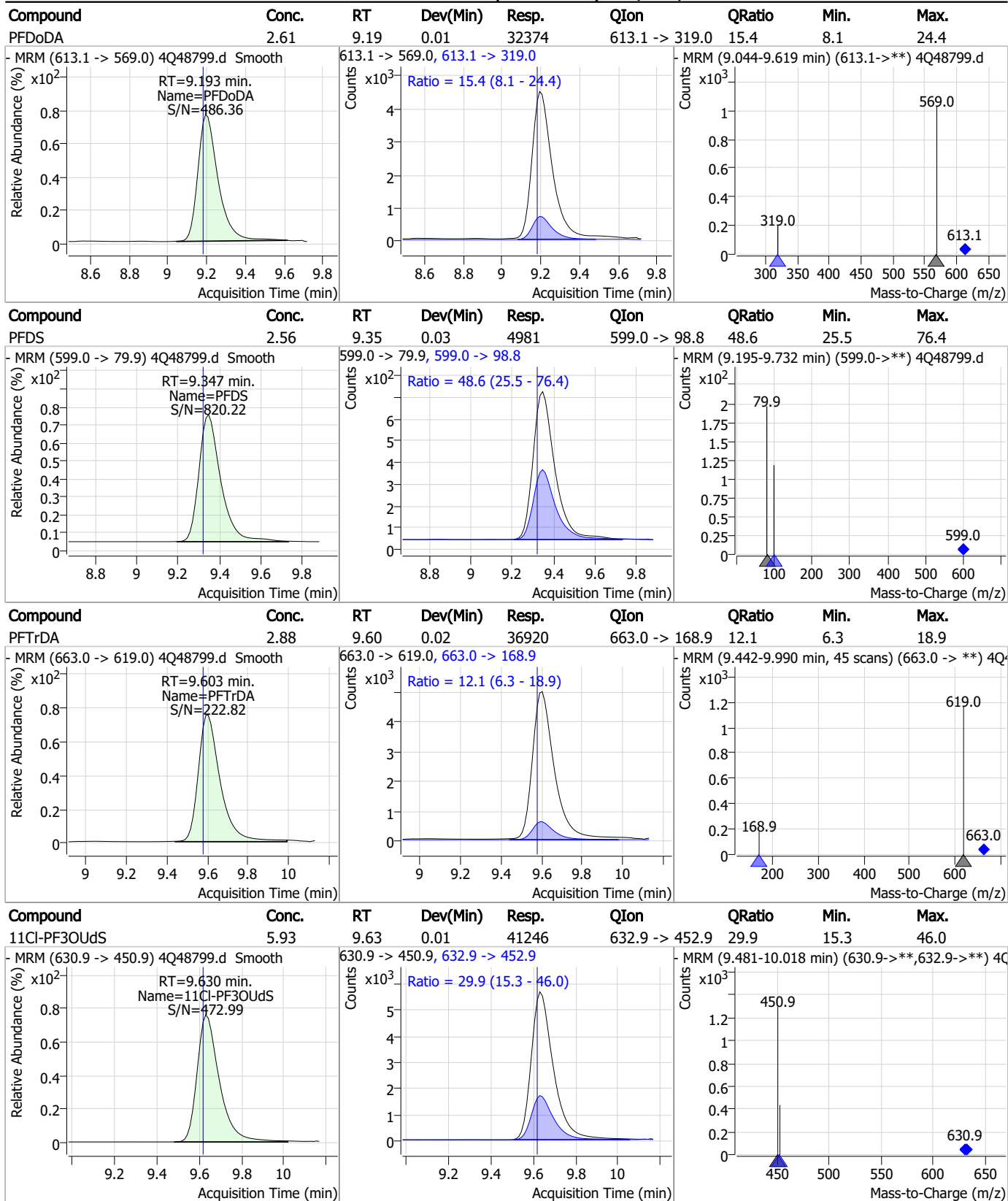
Perfluorinated Compounds by LC/MS/MS



7.7.15
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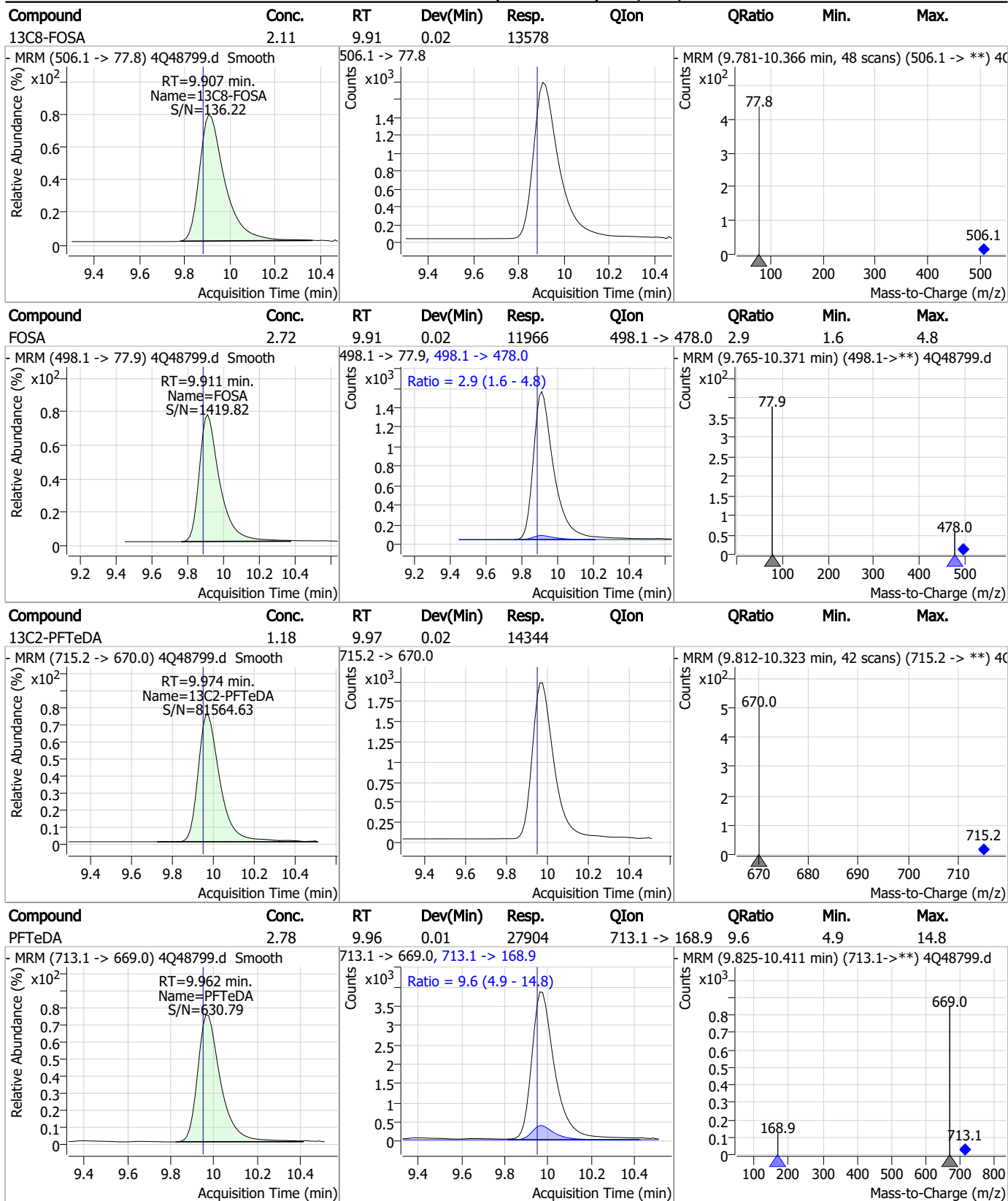
Perfluorinated Compounds by LC/MS/MS



7.7.15
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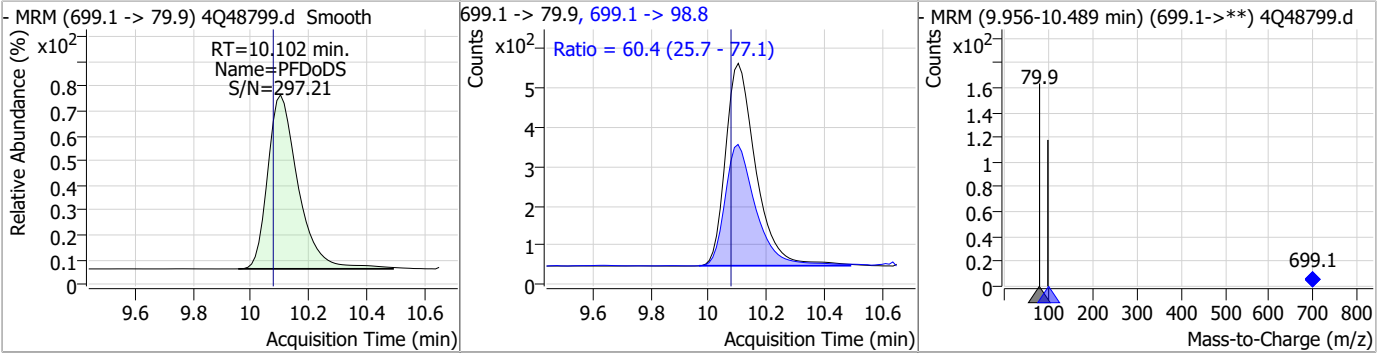
Perfluorinated Compounds by LC/MS/MS



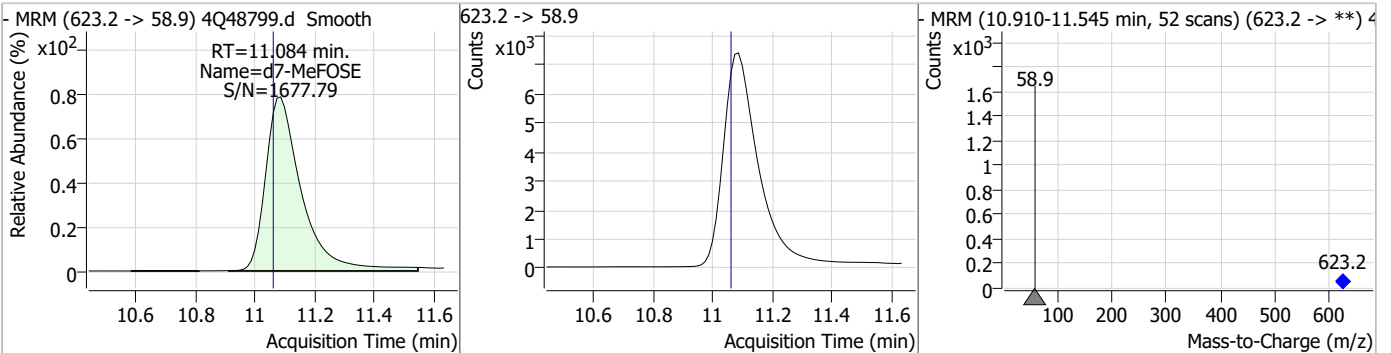
7.7.15
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Perfluorinated Compounds by LC/MS/MS

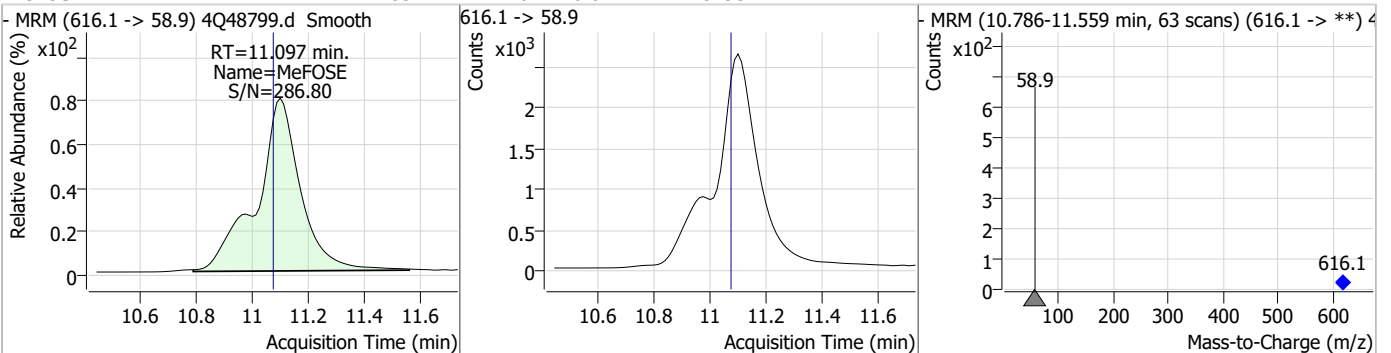
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	2.51	10.10	0.02	3754	699.1 -> 98.8	60.4	25.7	77.1



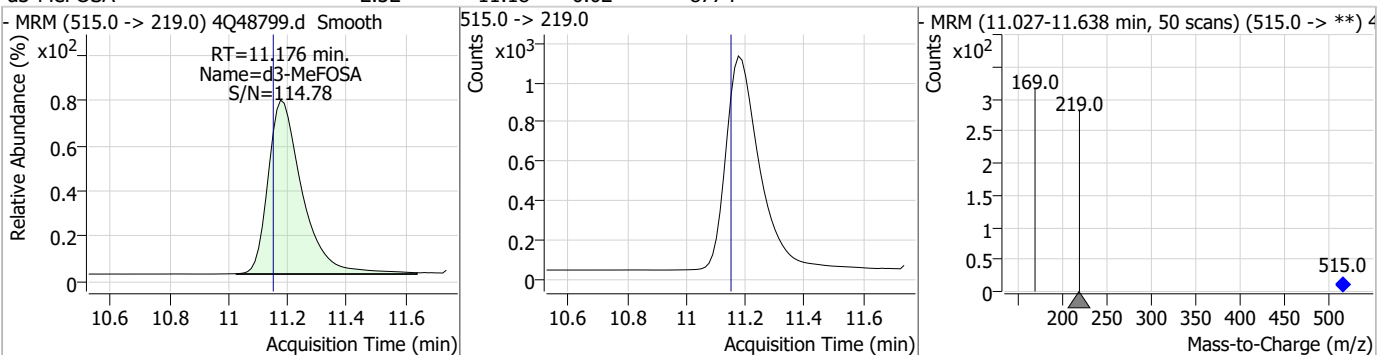
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	20.48	11.08	0.02	61986				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.85	11.10	0.02	28493				

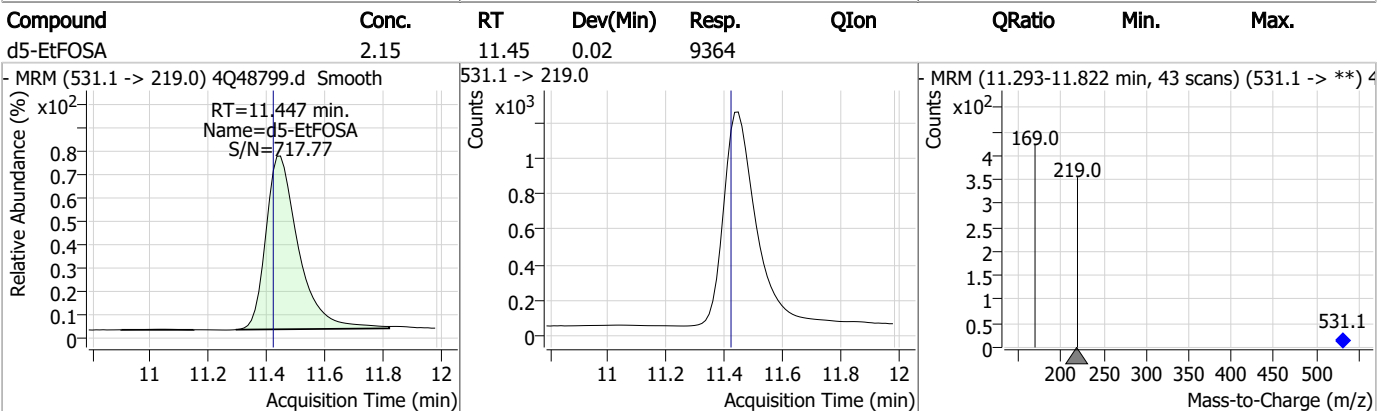
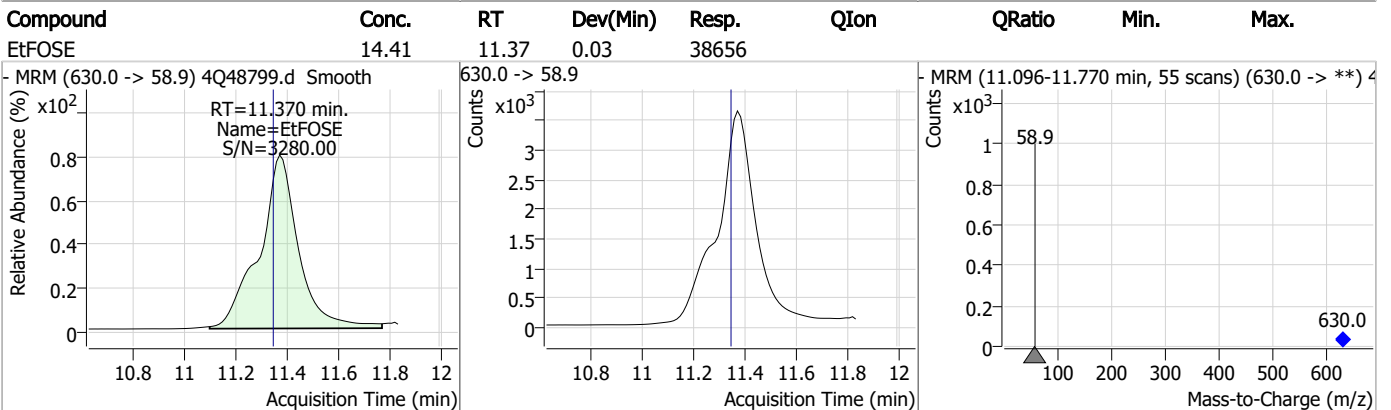
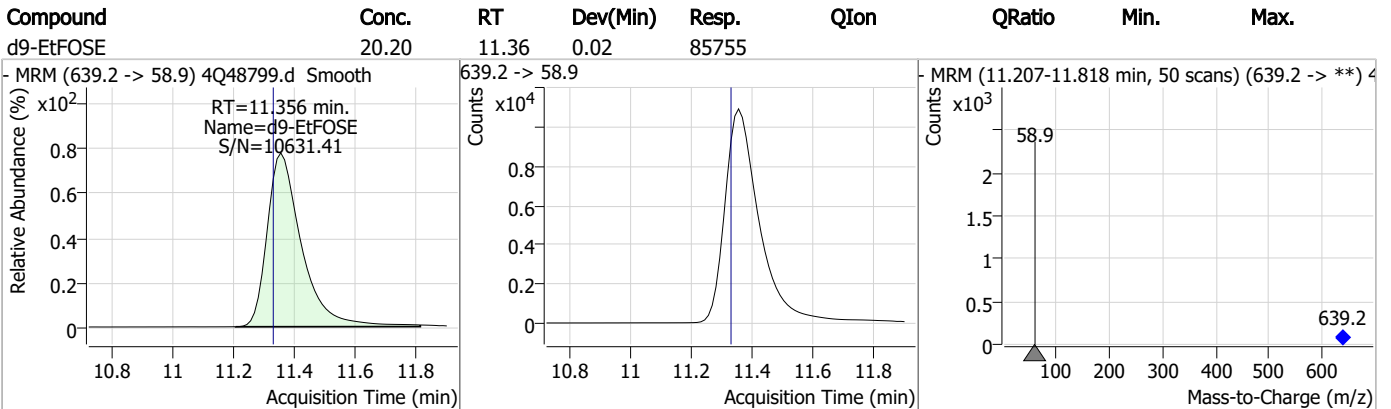
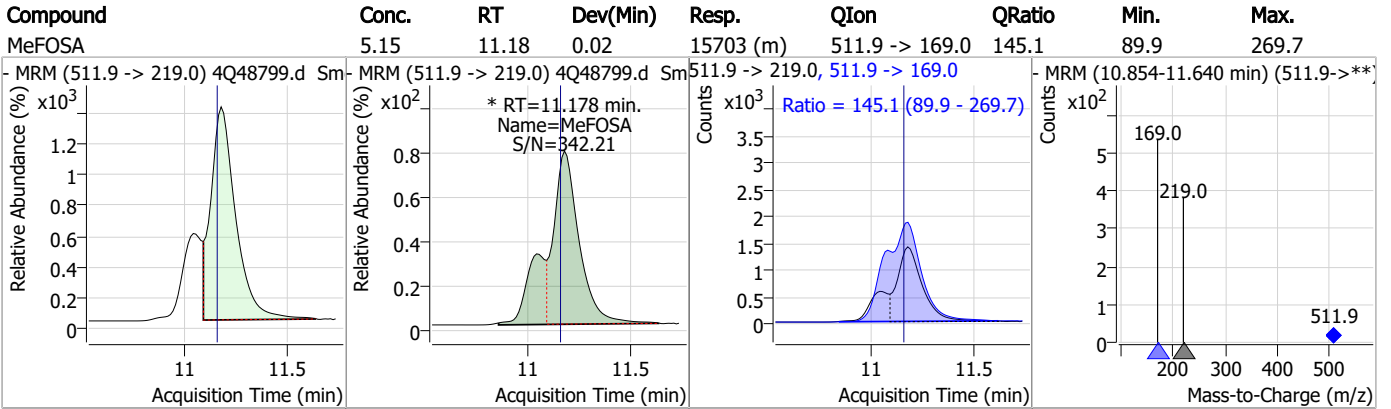


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.32	11.18	0.02	8774				



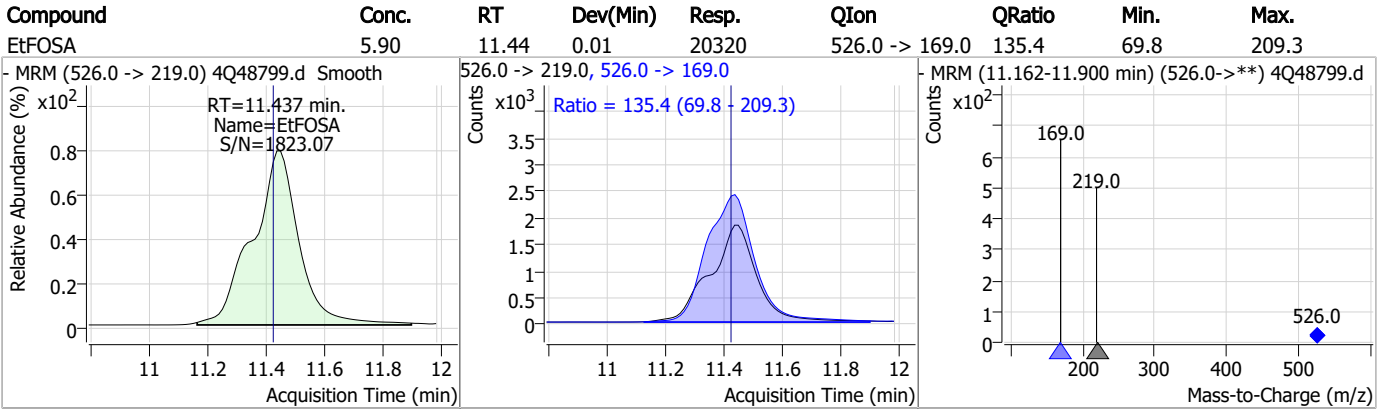
7.7.15 7

Perfluorinated Compounds by LC/MS/MS



7.7.15
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Perfluorinated Compounds by LC/MS/MS



7.7.15

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Manual Integration Approval Summary

Sample Number: S4Q713-ECC711 Method: EPA DRAFT 1633
Lab FileID: 4Q48799.D Analyst approved: 08/10/23 10:42 Anna Ludwig
Injection Time: 08/09/23 23:58 Supervisor approved: 08/11/23 11:37 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.33	Split peak
MeFOSAA	2355-31-9		8.36	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.43	Split peak
MeFOSA	31506-32-8		11.18	Split peak

7.7.15.1

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SGS ORLANDO

DATE:	08/07/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_080723_S4Q711
CAL DATE:	08/07/23
ANALYST:	AL
RUN BATCH:	S4Q711

ELUENT A LOT #:	224863 W5%ACN 220228 2mMAMAC.11387
ELUENT B LOT #:	ACN 220228
IC/CC STD LOT #:	LCMS 2146
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	4Q48579.d	P1-A6	update rt	1633full_4Q.m	Sample		OP97964.S4Q711.500,,,5.0,1,water	ok
2	4Q48580.d	P1-B9	CCB	1633full_4Q.m	Sample		OP97964.S4Q711.500,,,5.0,1,water	nd
3	4Q48581.d	P1-B9	CCB	1633full_4Q.m	Sample		OP97964.S4Q711.500,,,5.0,1,water	nd
4	4Q48582.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP97964.S4Q711.500,,,5.0,1,water	pass
5	4Q48583.d	P1-B2	RT br/h	1633full_4Q.m	Sample		OP97964.S4Q711.500,,,5.0,1,water	pass
6	4Q48584.d	P1-A1	ic711-0	1633full_4Q.m	Sample		OP97964.S4Q711.500,,,5.0,1,water	check tune file
7	4Q48585.d	P1-A2	ic711-1	1633full_4Q.m	Calibration	1.6/500	OP97964.S4Q711.500,,,5.0,1,water	pass
8	4Q48586.d	P1-A3	ic711-2	1633full_4Q.m	Calibration	3.2/500	OP97964.S4Q711.500,,,5.0,1,water	pass
9	4Q48587.d	P1-A4	ic711-3	1633full_4Q.m	Calibration	10/500	OP97964.S4Q711.500,,,5.0,1,water	pass
10	4Q48588.d	P1-A5	ic711-4	1633full_4Q.m	Calibration	20/500	OP97964.S4Q711.500,,,5.0,1,water	pass
11	4Q48589.d	P1-A6	ic711-5	1633full_4Q.m	Calibration	40/500	OP97964.S4Q711.500,,,5.0,1,water	pass
12	4Q48590.d	P1-A7	ic711-6	1633full_4Q.m	Calibration	100/500	OP97964.S4Q711.500,,,5.0,1,water	pass
13	4Q48591.d	P1-A8	ic711-7	1633full_4Q.m	Calibration	200/500	OP97964.S4Q711.500,,,5.0,1,water	pass
14	4Q48592.d	P1-A9	ic711-8	1633full_4Q.m	Calibration	1x	OP97964.S4Q711.500,,,5.0,1,water	pass
15	4Q48593.d	P1-A1	iblk	1633full_4Q.m	Sample		OP97964.S4Q711.500,,,5.0,1,water	nd
16	4Q48594.d	P1-B3	icv711-4	1633full_4Q.m	QC	20/500	OP97964.S4Q711.500,,,5.0,1,water	pass
17	4Q48595.d	P1-B4	icv711-20	1633full_4Q.m	QC	100/500	OP97964.S4Q711.500,,,5.0,1,water	pass
18	4Q48596.d	P1-A5	cc711-4	1633full_4Q.m	QC	20/500	OP97964.S4Q711.500,,,5.0,1,water	pass
19	4Q48597.d	P1-A2	cc711-1.0LL	1633full_4Q.m	QC	1.6/500	OP97964.S4Q711.500,,,5.0,1,water	pass
20	4Q48598.d	P2-C5	fc7446-13	1633full_4Q.m	Sample	250/500	OP98117.S4Q711.510,,,5.0,2,water	✓
21	4Q48599.d	P2-C6	op98225-bs	1633full_4Q.m	Sample		OP98225.S4Q711.500,,,5.0,1,water	✓
22	4Q48600.d	P2-C7	op98225-llbs:2	1633full_4Q.m	Sample		OP98225.S4Q711.500,,,5.0,1,water	hxa and 8:2 high - ok
23	4Q48601.d	P2-C8	op98225-mb	1633full_4Q.m	Sample		OP98225.S4Q711.500,,,5.0,1,water	✓
24	4Q48602.d	P2-C9	fc7360-3	1633full_4Q.m	Sample		OP98225.S4Q711.60,,,5.0,1,water	✓
25	4Q48603.d	P2-D1	fc7401-1	1633full_4Q.m	Sample		OP98225.S4Q711.60,,,5.0,1,water	✓
26	4Q48604.d	P2-D2	fc7401-2	1633full_4Q.m	Sample		OP98225.S4Q711.60,,,5.0,1,water	✓
27	4Q48605.d	P2-F7	fc7925-1	1633full_4Q.m	Sample	250/500	OP98161.S4Q711.1.01,,,5.0,2,soil	✓
28	4Q48606.d	P1-A5	cc711-4	1633full_4Q.m	QC	20/500	OP97964.S4Q711.500,,,5.0,1,water	pass
29	4Q48607.d	P1-A1	iccb	1633full_4Q.m	Sample		OP97964.S4Q711.500,,,5.0,1,water	nd
30	4Q48608.d	P1-B7	fc7644-6	1633full_4Q.m	Sample		OP98118.S4Q711.560,,,5.0,1,water	✓
31	4Q48609.d	P2-F8	fc7644-6	1633full_4Q.m	Sample	50/500	OP98118.S4Q711.560,,,5.0,10,water	✓
32	4Q48610.d	P2-A5	fc7615-2	1633full_4Q.m	Sample		OP98119.S4Q711.450,,,5.0,1,water	rr 10x high eis
33	4Q48611.d	P2-A6	fc7615-3	1633full_4Q.m	Sample		OP98119.S4Q711.475,,,5.0,1,water	rr 10x high eis
34	4Q48612.d	P2-A7	fc7615-8	1633full_4Q.m	Sample		OP98119.S4Q711.565,,,5.0,1,water	✓
35	4Q48613.d	P2-A8	fc7868-1	1633full_4Q.m	Sample		OP98161.S4Q711.5.04,,,5.0,1,soil	✓

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LCMS4-4Q ANALYSIS LOG

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36	4Q48614.d	P2-A9	op98161-ms	1633full_4Q.m	Sample	OP98161,S4Q711,4.99,,5.0,1,soil	✓
37	4Q48615.d	P2-B1	op98161-msd	1633full_4Q.m	Sample	OP98161,S4Q711,4.97,,5.0,1,soil	✓
38	4Q48616.d	P1-A5	cc711-4	1633full_4Q.m	QC	OP97964,S4Q711,5.00,,,5.0,1,water	pass
39	4Q48617.d	P1-A1	iccb	1633full_4Q.m	Sample	OP97964,S4Q711,5.00,,,5.0,1,water	nd
40	4Q48618.d	P2-B2	fc7868-2	1633full_4Q.m	Sample	OP98161,S4Q711,5.02,,5.0,1,soil	✓
41	4Q48619.d	P2-F9	fc7868-2	1633full_4Q.m	Sample	OP98161,S4Q711,5.02,,5.0,5,soil	✓
42	4Q48620.d	P2-B3	fc7868-3	1633full_4Q.m	Sample	OP98161,S4Q711,4.99,,5.0,1,soil	✓
43	4Q48621.d	P3-A1	fc7868-3	1633full_4Q.m	Sample	OP98161,S4Q711,4.99,,5.0,10,soil	✓
44	4Q48622.d	P2-B4	fc7868-4	1633full_4Q.m	Sample	OP98161,S4Q711,5.00,,,5.0,1,soil	✓
45	4Q48623.d	P3-A2	fc7868-4	1633full_4Q.m	Sample	OP98161,S4Q711,5.00,,,5.0,10,soil	✓
46	4Q48624.d	P2-B5	fc7868-5	1633full_4Q.m	Sample	OP98161,S4Q711,5.02,,5.0,1,soil	✓
47	4Q48625.d	P3-A3	fc7868-5	1633full_4Q.m	Sample	OP98161,S4Q711,5.02,,5.0,10,soil	✓
48	4Q48626.d	P2-B6	fc7951-1	1633full_4Q.m	Sample	OP98161,S4Q711,4.96,,5.0,1,soil	✓
49	4Q48627.d	P3-A4	fc7951-1	1633full_4Q.m	Sample	OP98161,S4Q711,4.96,,5.0,10,soil	✓
50	4Q48628.d	P1-A5	cc711-4	1633full_4Q.m	QC	OP97964,S4Q711,5.00,,,5.0,1,water	pass
51	4Q48629.d	P1-A1	iccb	1633full_4Q.m	Sample	OP97964,S4Q711,5.00,,,5.0,1,water	nd
52	4Q48630.d	P2-B7	fc7951-2	1633full_4Q.m	Sample	OP98161,S4Q711,5.01,,5.0,1,soil	✓
53	4Q48631.d	P3-A5	fc7951-2	1633full_4Q.m	Sample	OP98161,S4Q711,5.01,,5.0,10,soil	✓
54	4Q48632.d	P2-B8	fc7951-3	1633full_4Q.m	Sample	OP98161,S4Q711,5.02,,5.0,1,soil	✓
55	4Q48633.d	P3-A6	fc7951-3	1633full_4Q.m	Sample	OP98161,S4Q711,5.02,,5.0,10,soil	✓
56	4Q48634.d	P2-B9	fc7951-4	1633full_4Q.m	Sample	OP98161,S4Q711,5.05,,5.0,1,soil	✓
57	4Q48635.d	P3-A7	fc7951-4	1633full_4Q.m	Sample	OP98161,S4Q711,5.05,,5.0,10,soil	✓
58	4Q48636.d	P3-A8	fc7482-1	1633full_4Q.m	Sample	OP98118,S4Q711,4.90,,,5.0,2,water	✓
59	4Q48637.d	P3-A9	fc7482-1	1633full_4Q.m	Sample	OP98118,S4Q711,4.90,,5.0,10,water	✓
60	4Q48638.d	P3-B1	fc7482-3	1633full_4Q.m	Sample	OP98118,S4Q711,4.70,,5.0,5,water	✓
61	4Q48639.d	P3-B2	op98118-ms	1633full_4Q.m	Sample	OP98118,S4Q711,5.00,,,5.0,5,water	✓
62	4Q48640.d	P1-A5	cc711-4	1633full_4Q.m	QC	OP97964,S4Q711,5.00,,,5.0,1,water	pass
63	4Q48641.d	P1-A1	iccb	1633full_4Q.m	Sample	OP97964,S4Q711,5.00,,,5.0,1,water	nd
64	4Q48642.d	P3-B3	fc7644-1	1633full_4Q.m	Sample	OP98118,S4Q711,2.40,,5.0,10,water	redo
65	4Q48643.d	P3-B4	fc7644-2	1633full_4Q.m	Sample	OP98118,S4Q711,1.60,,5.0,10,water	✓
66	4Q48644.d	P3-B5	fc7599-1	1633full_4Q.m	Sample	OP98118,S4Q711,5.60,,5.0,5,water	✓
67	4Q48645.d	P3-B6	op98118-dup	1633full_4Q.m	Sample	OP98118,S4Q711,5.60,,5.0,5,water	✓
68	4Q48646.d	P3-B7	fc7530-1	1633full_4Q.m	Sample	OP98119,S4Q711,5.45,,5.0,5,water	✓
69	4Q48647.d	P1-F5	fc7530-2	1633full_4Q.m	Sample	OP98119,S4Q711,5.45,,5.0,1,water	✓
70	4Q48648.d	P3-B8	fc7615-1	1633full_4Q.m	Sample	OP98119,S4Q711,5.45,,5.0,1,water	✓
71	4Q48649.d	P3-B9	op98119-ms	1633full_4Q.m	Sample	OP98119,S4Q711,4.70,,5.0,10,water	✓
72	4Q48650.d	P3-C1	op98119-msd	1633full_4Q.m	Sample	OP98119,S4Q711,4.80,,5.0,10,water	✓
73	4Q48651.d	P1-A5	cc711-4	1633full_4Q.m	QC	OP97964,S4Q711,5.00,,,5.0,1,water	pass
74	4Q48652.d	P1-A1	iccb	1633full_4Q.m	Sample	OP97964,S4Q711,5.00,,,5.0,1,water	nd
75	4Q48653.d	P3-D1	test6	1633full_4Q.m	Sample	OP98156,S4Q711,5.00,,,5.0,1,water	ok
76	4Q48654.d	P3-C2	fc7642-3	1633full_4Q.m	Sample	OP98156,S4Q711,4.65,,5.0,1,water	rr 10x high eis
77	4Q48655.d	P3-C3	fc7642-3	1633full_4Q.m	Sample	OP98156,S4Q711,4.65,,5.0,5,water	rr 10x high eis
78	4Q48656.d	P3-C4	fc7629-1	1633full_4Q.m	Sample	OP98124,S4Q711,5.30,,5.0,5,water	✓

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SGS ORLANDO LCMS4-4Q ANALYSIS LOG

79	4Q48657.d	P2-D1	fc7401-1	1633full_4Q.m	Sample	OP98225.S4Q711.60,,,5.0,1,water	✓
80	4Q48658.d	P3-D2	fc7401-1	1633full_4Q.m	Sample	OP98225.S4Q711.60,,,5.0,10,water	✓
81	4Q48659.d	P3-C5	new std test	1633full_4Q.m	Sample	OP97964.S4Q711.500,,,5.0,1,water	ok
82	4Q48660.d	P3-C6	old std test	1633full_4Q.m	Sample	OP97964.S4Q711.500,,,5.0,1,water	ok
83	4Q48661.d	P3-D3	fc7401-2	1633full_4Q.m	Sample	OP98225.S4Q711.60,,,5.0,10,water	✓
84	4Q48662.d	P3-D4	fc7360-3	1633full_4Q.m	Sample	OP98225.S4Q711.60,,,5.0,10,water	✓
85	4Q48663.d	P1-A5	cc711-4	1633full_4Q.m	QC	OP97964.S4Q711.500,,,5.0,1,water	pass
86	4Q48664.d	P1-A1	iccb	1633full_4Q.m	Sample	OP97964.S4Q711.500,,,5.0,1,water	nd
87	4Q48665.d	P3-C7	fc7615-2	1633full_4Q.m	Sample	OP98119.S4Q711.450,,,5.0,10,water	✓
88	4Q48666.d	P3-C8	fc7615-3	1633full_4Q.m	Sample	OP98119.S4Q711.475,,,5.0,10,water	✓
89	4Q48667.d	P1-A5	ecc711-4	1633full_4Q.m	QC	OP97964.S4Q711.500,,,5.0,1,water	pass
90	4Q48668.d	P1-A1	iccb	1633full_4Q.m	Sample	OP97964.S4Q711.500,,,5.0,1,water	nd

SGS ORLANDO

DATE:	08/09/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_080723_S4Q711
CAL DATE:	08/07/23
ANALYST:	AL
RUN BATCH:	S4Q713

ELUENT A LOT #:	224863 W5%ACN 220228 2ml/MAMAC.11387
ELUENT B LOT #:	ACN 220228
IC/CC STD LOT #:	LCMS 2124D
ICV STD LOT #:	LCMS 2124D/2125A
ISTD/ID STD LOT #:	11850/11851

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q48758.d	P1-B9	CCB	1633full_4Q.m	Sample		OP98180,S4Q713,500,,,5.0,1,water	nd
2	4Q48759.d	P1-B9	CCB	1633full_4Q.m	Sample		OP98180,S4Q713,500,,,5.0,1,water	nd
3	4Q48760.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP98180,S4Q713,500,,,5.0,1,water	pass
4	4Q48761.d	P1-B2	RT br/h	1633full_4Q.m	Sample		OP98180,S4Q713,500,,,5.0,1,water	pass
5	4Q48762.d	P1-A9	high std	1633full_4Q.m	Sample		OP98180,S4Q713,500,,,5.0,1,water	pass
6	4Q48763.d	P1-A1	iblk	1633full_4Q.m	Sample		OP98180,S4Q713,500,,,5.0,1,water	nd
7	4Q48764.d	P1-A5	cc711-4	1633full_4Q.m	QC	20/500	OP98180,S4Q713,500,,,5.0,1,water	pass
8	4Q48765.d	P1-A2	cc711-1.0LL	1633full_4Q.m	QC	1.6/500	OP98180,S4Q713,500,,,5.0,1,water	pass
9	4Q48766.d	P4-B8	op98160-bs	1633full_4Q.m	Sample		OP98160,S4Q713,5.00,,,5.0,1,soil	✓
10	4Q48767.d	P4-B9	op98160-llbs:2	1633full_4Q.m	Sample		OP98160,S4Q713,5.00,,,5.0,1,soil	✓
11	4Q48768.d	P4-C1	op98160-mb	1633full_4Q.m	Sample		OP98160,S4Q713,5.00,,,5.0,1,soil	✓
12	4Q48769.d	P4-C2	jd69377-1A	1633full_4Q.m	Sample		OP98160,S4Q713,4.95,,,5.0,1,soil	✓
13	4Q48770.d	P4-C3	fc8220-4	1633full_4Q.m	Sample		OP98160,S4Q713,5.04,,,5.0,1,soil	✓
14	4Q48771.d	P4-C4	fc8220-5	1633full_4Q.m	Sample		OP98160,S4Q713,4.99,,,5.0,1,soil	✓
15	4Q48772.d	P4-C5	fc8220-6	1633full_4Q.m	Sample		OP98160,S4Q713,4.98,,,5.0,1,soil	✓
16	4Q48773.d	P4-C6	op98160-ms	1633full_4Q.m	Sample		OP98160,S4Q713,5.02,,,5.0,1,soil	✓
17	4Q48774.d	P4-C7	op98160-msd	1633full_4Q.m	Sample		OP98160,S4Q713,4.95,,,5.0,1,soil	✓
18	4Q48775.d	P4-C8	fc8220-16	1633full_4Q.m	Sample		OP98160,S4Q713,5.02,,,5.0,1,soil	✓
19	4Q48776.d	P1-A5	cc711-4	1633full_4Q.m	QC	20/500	OP98180,S4Q713,500,,,5.0,1,water	8.2 high
20	4Q48777.d	P1-A1	iccb	1633full_4Q.m	Sample		OP98180,S4Q713,500,,,5.0,1,water	nd
21	4Q48778.d	P4-C9	fc7642-3	1633full_4Q.m	Sample	50/500	OP98156,S4Q713,465,,,5.0,10,water	redo
22	4Q48779.d	P4-D1	op98297-bs	1633full_4Q.m	Sample		OP98297,S4Q713,500,,,5.0,1,water	✓
23	4Q48780.d	P4-D2	op98297-llbs:3	1633full_4Q.m	Sample		OP98297,S4Q713,500,,,5.0,1,water	✓
24	4Q48781.d	P4-D3	op98297-mb	1633full_4Q.m	Sample		OP98297,S4Q713,500,,,5.0,1,water	✓
25	4Q48782.d	P4-D4	fc7908-17	1633full_4Q.m	Sample		OP98297,S4Q713,470,,,5.0,1,water	✓
26	4Q48783.d	P4-D5	fc8392-1	1633full_4Q.m	Sample		OP98297,S4Q713,570,,,5.0,1,water	✓
27	4Q48784.d	P4-D6	fc8440-1	1633full_4Q.m	Sample		OP98297,S4Q713,530,,,5.0,1,water	✓
28	4Q48785.d	P4-D7	fc8439-1	1633full_4Q.m	Sample		OP98297,S4Q713,530,,,5.0,1,water	✓
29	4Q48786.d	P4-D8	fc8439-2	1633full_4Q.m	Sample		OP98297,S4Q713,500,,,5.0,1,water	rr 5x high eis
30	4Q48787.d	P1-A5	cc711-4	1633full_4Q.m	QC	20/500	OP98180,S4Q713,500,,,5.0,1,water	9cl high
31	4Q48788.d	P1-A1	iccb	1633full_4Q.m	Sample		OP98180,S4Q713,500,,,5.0,1,water	nd
32	4Q48789.d	P4-D9	fc8439-3	1633full_4Q.m	Sample		OP98297,S4Q713,540,,,5.0,1,water	✓
33	4Q48790.d	P4-E1	op98297-ms	1633full_4Q.m	Sample		OP98297,S4Q713,550,,,5.0,1,water	✓
34	4Q48791.d	P4-E2	fc8439-4	1633full_4Q.m	Sample		OP98297,S4Q713,540,,,5.0,1,water	rr 10x high eis
35	4Q48792.d	P4-E3	op98297-dup	1633full_4Q.m	Sample		OP98297,S4Q713,540,,,5.0,1,water	rr 10x high eis

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SGS ORLANDO LCMS4-4Q ANALYSIS LOG

36	4Q48793.d	P4-E4	fc8439-5	1633full_4Q.m	Sample	OP98297.S4Q713.540,,,5.0,1,water	rr 10x high eis
37	4Q48794.d	P4-E5	fc8439-6	1633full_4Q.m	Sample	OP98297.S4Q713.520,,,5.0,1,water	rr 10x high eis
38	4Q48795.d	P4-E6	op98277-bs	1633full_4Q.m	Sample	OP98277.S4Q713.500,,,5.0,1,water	✓
39	4Q48796.d	P4-E7	op98277-llbs:2	1633full_4Q.m	Sample	OP98277.S4Q713.500,,,5.0,1,water	✓
40	4Q48797.d	P4-E8	op98277-mb	1633full_4Q.m	Sample	OP98277.S4Q713.500,,,5.0,1,water	✓
41	4Q48798.d	P4-E9	jd69300-1A	1633full_4Q.m	Sample	OP98277.S4Q713.35,,,5.0,1,water	✓
42	4Q48799.d	P1-A5	ecc711-4	1633full_4Q.m	QC	OP98180.S4Q713.500,,,5.0,1,water	pass
43	4Q48800.d	P1-A1	iccb	1633full_4Q.m	Sample	OP98180.S4Q713.500,,,5.0,1,water	nd
44	4Q48801.d	P4-F1	fc8066-1	1633full_4Q.m	Sample	OP98277.S4Q713.500,,,5.0,1,water	no bracketing ccv - rr
45	4Q48802.d	P4-F2	fc8066-2	1633full_4Q.m	Sample	OP98277.S4Q713.545,,,5.0,1,water	no bracketing ccv - rr
46	4Q48803.d	P4-F3	fc8066-3	1633full_4Q.m	Sample	OP98277.S4Q713.485,,,5.0,1,water	no bracketing ccv - rr
47	4Q48804.d	P4-F4	fc8066-4	1633full_4Q.m	Sample	OP98277.S4Q713.550,,,5.0,1,water	no bracketing ccv - rr
48	4Q48805.d	P4-F5	fc8066-5	1633full_4Q.m	Sample	OP98277.S4Q713.525,,,5.0,1,water	no bracketing ccv - rr
49	4Q48806.d	P4-F6	op98277-ms	1633full_4Q.m	Sample	OP98277.S4Q713.525,,,5.0,1,water	no bracketing ccv - rr
50	4Q48807.d	P4-F7	op98277-msd	1633full_4Q.m	Sample	OP98277.S4Q713.510,,,5.0,1,water	no bracketing ccv - rr
51	4Q48808.d	P4-F8	fc8066-6	1633full_4Q.m	Sample	OP98277.S4Q713.540,,,5.0,1,water	no bracketing ccv - rr
52	4Q48809.d	P4-F9	fc8066-7	1633full_4Q.m	Sample	OP98277.S4Q713.510,,,5.0,1,water	no bracketing ccv - rr
53	4Q48810.d	P5-A1	fc8066-8	1633full_4Q.m	Sample	OP98277.S4Q713.520,,,5.0,1,water	instrument errored
54	4Q48811.d	P1-A5	cc711-4	1633full_4Q.m	QC	OP98180.S4Q713.500,,,5.0,1,water	instrument errored
55	4Q48812.d	P1-A1	iccb	1633full_4Q.m	Sample	OP98180.S4Q713.500,,,5.0,1,water	instrument errored
56	4Q48813.d	P5-A2	fc8066-9	1633full_4Q.m	Sample	OP98277.S4Q713.465,,,5.0,1,water	instrument errored
57	4Q48814.d	P5-A3	fc8066-10	1633full_4Q.m	Sample	OP98277.S4Q713.515,,,5.0,1,water	instrument errored
58	4Q48815.d	P5-A4	fc8066-11	1633full_4Q.m	Sample	OP98277.S4Q713.525,,,5.0,1,water	instrument errored
59	4Q48816.d	P5-A5	fc8066-12	1633full_4Q.m	Sample	OP98277.S4Q713.545,,,5.0,1,water	instrument errored
60	4Q48817.d	P5-A6	fc8066-13	1633full_4Q.m	Sample	OP98277.S4Q713.530,,,5.0,1,water	instrument errored
61	4Q48818.d	P1-A5	ecc711-4	1633full_4Q.m	QC	OP98180.S4Q713.500,,,5.0,1,water	instrument errored
62	4Q48819.d	P1-A1	iccb	1633full_4Q.m	Sample	OP98180.S4Q713.500,,,5.0,1,water	instrument errored

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	2098ml			
		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 MXJ	Absolute Wellington Labs	03/10/28	05/16/24	1.0 ppm	2mL	5mL	95/1000 5/1.420	100ppb	05/16/23	11/02/23	NG
		11432	N-Me- FOSA-M	wellington Labs	02/18/27	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		03/18/27	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	(2098ml)			
		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	(10PTD) PFC ID SURR	11669	PFAC-2YES	Wellington Labs	01/18/18	03/28/24	1.0ppm	2.4mL	~50mL	0.5ppm	95/100th 51420	03/28/23	09/28/23	NS
↓	↓	11585	PFAC-DA	↓	11/08/18	01/26/24	50ppm	48uL	↓	↓	↓	↓	↓	NS
↓	↓	11431	PFAC-d-N	↓	05/06/17	03/13/24	50ppm	48uL	↓	↓	↓	↓	↓	NS
LCMS 2096A-B	1033 spike Cal std.	11672	PFAC-MxH	Wellington Labs	8/8/27	3/23/24	1-4 ppm	250uL	4mL	02.5 125 250ppb	1033 MIX	3/30/23	9/30/23	MU
↓	↓	11686	PFAC-MxI	↓	2/27/28	3/30/24	170 ppm	250uL	↓	02.5 625ppb	↓	↓	↓	↓
↓	↓	11674A	PFAC-MxJ	↓	1/11/25	3/23/24	2ppm	500uL	↓	250ppb	↓	↓	↓	↓
↓	↓	11674B	PFAC-MxK	↓	12/11/27	3/30/24	2ppm	250uL	↓	125ppb	↓	↓	↓	↓
↓	↓	11600	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	1033 MIX	4/6/23	10/28/23	MU
LCMS 2097A-B	BR-LN metel for 1033	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	↓	↓	↓	↓
↓	↓					4/8/27								

* tested & used on 3/29/24

* 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
↓	↓	2067	40 LIST Aged on	Sgs old.	—	8/23/23	1.0ppm	400ul	↓	↓	↓	↓	↓	↓
↓	↓	2117	40 LIST Aged on	↓	—	11/8/23	1.0ppm	400ul	↓	↓	↓	↓	↓	↓
↓	↓	2101	F05E Std.	↓	—	7/19/23	5.0ppm	400ul	↓	500ppb	↓	↓	↓	↓
LCMS 2126A-5	PRC 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	PFAC	Wellington	4/19/28	5/22/24	1-4 ppm	2.50ul	4mL	62.5 125 250ppb	1033 MIX (268ml)	5/24/23	10/28/23	MW
↓	↓	11807	MxH	Wellington	10/28/23	5/24/24	2 ppm	↓	↓	125 250ppb	↓	↓	↓	↓
↓	↓	11801B	PFAC Mx F	Wellington	3/24/26	5/22/24	2 ppm	↓	↓	125ppb	↓	↓	↓	↓
↓	↓	11802B	PFAC Mx G	↓	12/1/27	5/22/24	2 ppm	↓	↓	125ppb	↓	↓	↓	↓
↓	↓	11803B	PFAC Mx J	↓	3/28/28	5/22/24	4-20 ppm	3/2ul	↓	3/2 160ppb	↓	↓	↓	↓
LCMS 2128A-5	PRC ID SURT (10 PPB)	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.

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-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 2098A 2098A	1033 spike CAL std.	11072A 11072B	PFAC MXH	Wellington	8/18/24	3/23/24 4/6/24	1-4 ppm	2.50 mL	4 mL	6.25 250 ppb	1033 MIX	4/6/23	10/6/23	MU
		LCMS 2097	Gr-In Et-Me	SGS Labo	n/a	10/28/23	3 ppm	2.50 mL		125 ppb				
		11074B	PFAC MXF	Wellington	11/1/25	3/30/24	2 ppm	500 µL		350 ppb				
		11075	PFAC MYG		12/1/27	3/30/24	2 ppm	250 µL		125 ppb				
		11072B	PFAC MXJ		9/14/26	3/23/24	4-20 ppm	312 µL		312/100 ppb				
LCMS 2099 2099	537.1 DW std. (Interim)	11070	M3PF-PEA	Wellington Labs	07/08/25	04/08/24	50 ppm	80 µL	4 mL	10 ppm	06/11/23 47, H ₂ O	04/06/23	06/15/23	NG
		10436A	M3G-a FTS		11/05/25	04/08/24		80 µL		10 ppm				NG
		10528B	D3-N-MSF3A		10/22/25	05/15/23		160 µL		20 ppm				NG
		10498A	M3FOS		11/02/25	07/22/24		80 µL		10 ppm				NG
		11069	M3PFA		12/01/26	03/20/24		80 µL		10 ppm				NG
LCMS 2100 2100	Full List (40) List 40 spike (500)	11026	PF0A M3P 28 Comp.	Absolute	11/9/27 4/23/24	4/11/24	1.0 ppm	400 µL	4.0 mL	100 ppb	95% MeOH 5% H ₂ O (2,400:1)	4/11/23	7/24/23	MU
		LCMS 2067	40 List ADP 1N	SGS add.		8/23/23	1.0 ppm	400 µL						
		LCMS 2070	40 List ADP 2N			5/12/23	1.0 ppm	400 µL						
		LCMS 2054	F0SE Std.			7/24/23	5.0 ppm	400 µL		50 ppb				
LCMS 2101 2101	F0SE std.	11336	N-et F0SE	Wellington	5/13/27	9/19/23	50 ppm	200 µL	2.0 mL	5 ppm	95% MeOH 5% H ₂ O	9/11/23	9/19/23	MU
		11338	N-me f0SE		5/13/27	9/19/23	50 ppm	200 µL						

* tested
on 11/17/23

LCMS 2100
2100
7/13
10/20



10685A



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPePA

LOT NUMBER:

FPePA1120

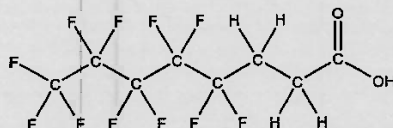
COMPOUND:

3-Perfluoropentyl propanoic acid

STRUCTURE:

CAS #:

914637-49-3



MOLECULAR FORMULA:

C₈H₅F₁₁O₂

MOLECULAR WEIGHT:

342.11

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/11/2020

EXPIRY DATE: (mm/dd/yyyy)

11/11/2025

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.
- Contains <1% of the unsaturated 5:3 telomer acid (C₈H₃F₁₁O₂) as an impurity determined by ¹⁹F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

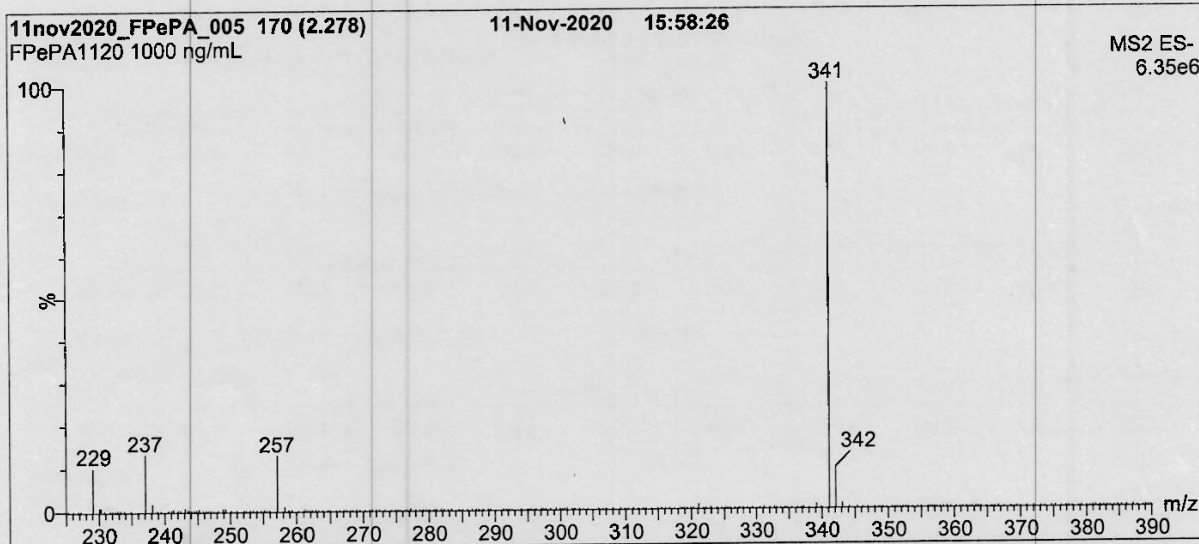
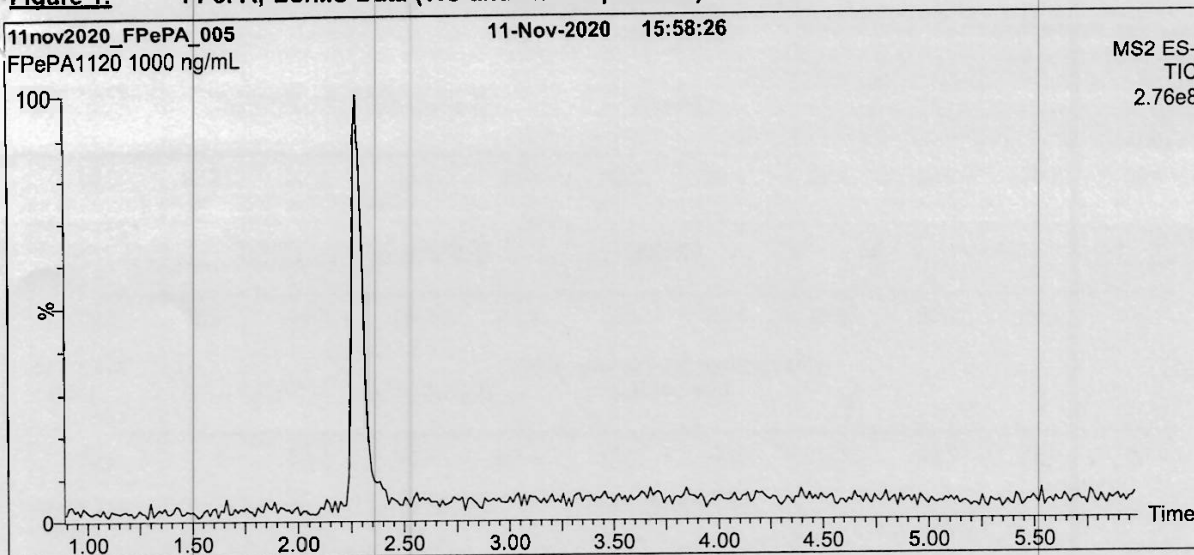
Date: 11/27/2020
(mm/dd/yyyy)

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Revision#:8, Revised 2020-09-10

FPePA1120 (1 of 4)
rev0

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

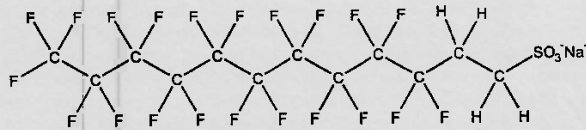


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CERTIFICATE OF ANALYSIS DOCUMENTATION

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

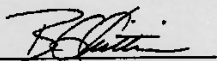
DOCUMENTATION/ DATA ATTACHED:

- 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.

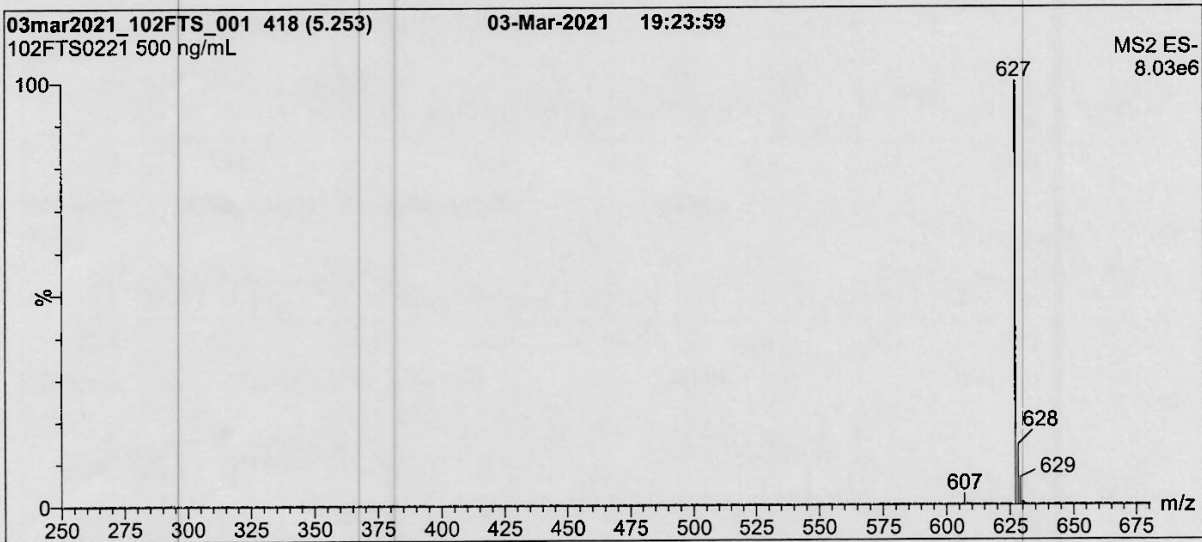
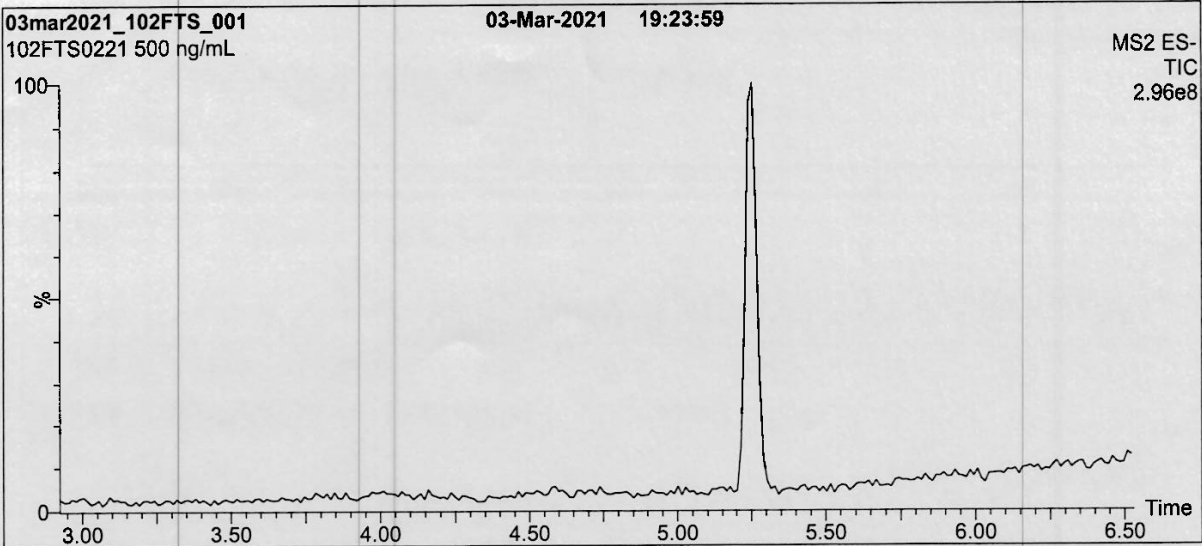
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Certified By:  **Date:** 03/05/2021
(mm/dd/yyyy)
B.G. Chittim, General Manager

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

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

10762 A-B



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFEESA

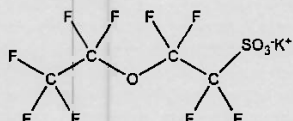
LOT NUMBER:

PFEESA0520

COMPOUND:

Potassium perfluoro(2-ethoxyethane)sulfonate

STRUCTURE:



CAS #:

117205-07-9

MOLECULAR FORMULA:

C₄F₉SO₄K

MOLECULAR WEIGHT:

354.19

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)

SOLVENT(S):

Methanol

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

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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10763 A-B



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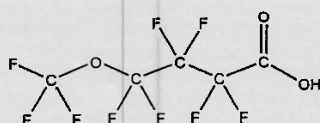
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

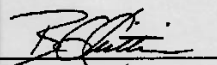
DOCUMENTATION/ DATA ATTACHED:

- 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.

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Certified By: 
B.G. Chittim, General Manager

Date: 12/21/2020
(mm/dd/yyyy)

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Revision#: 8, Revised 2020-09-10

PF5OHxA0320 (1 of 4)
rev1

7.9.1
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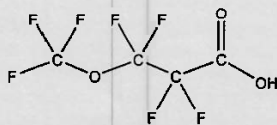
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

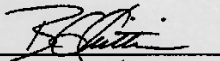
DOCUMENTATION/ DATA ATTACHED:

- 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:  **Date:** 12/21/2020
(mm/dd/yyyy)

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PF4OPeA0320 (1 of 4)
rev1

7.9.1

7

10765 A-13



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

3,6-OPFHpA

*rec'd
WPH
8/20/21*

LOT NUMBER:

36OPFHpA0320

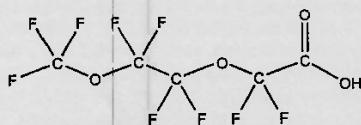
COMPOUND:

Perfluoro-3,6-dioxaheptanoic acid

STRUCTURE:

CAS #:

151772-58-6



MOLECULAR FORMULA:

C₆H₂F₉O₄

MOLECULAR WEIGHT:

296.04

CONCENTRATION:

50.0 ± 2.5 µg/ml

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/31/2020

EXPIRY DATE: (mm/dd/yyyy)

03/31/2025

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 05/27/2020
(mm/dd/yyyy)

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10829



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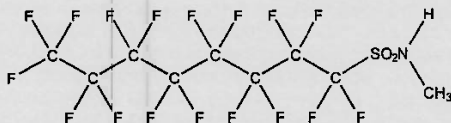
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

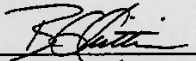
DOCUMENTATION/ DATA ATTACHED:

- 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

7.9.1

7



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-EtFOSA-M

10837

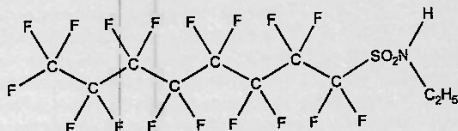
LOT NUMBER: NEtFOSA0821M

COMPOUND:

N-ethylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA:

C₁₀H₉F₁₇NO₂S

MOLECULAR WEIGHT:

527.20

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/12/2021

EXPIRY DATE: (mm/dd/yyyy)

08/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

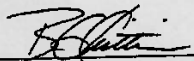
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:


B.G. Chittim, General Manager

Date: 08/16/2021

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA

7.9.1
7



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CERTIFICATE OF ANALYSIS DOCUMENTATION

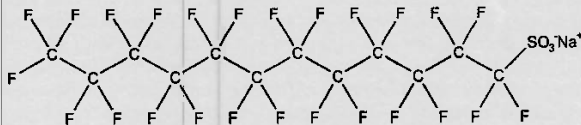
10840

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

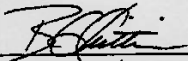
DOCUMENTATION/ DATA ATTACHED:

- 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).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 07/16/2021
(mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFODA

10847 NS 01/18/23

LOT NUMBER:

PFODA0821

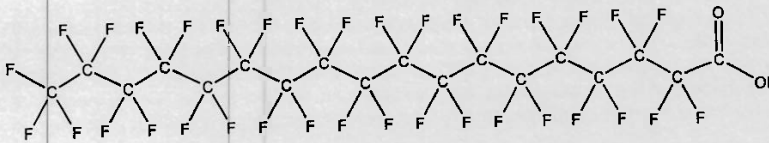
COMPOUND:

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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7.9.1
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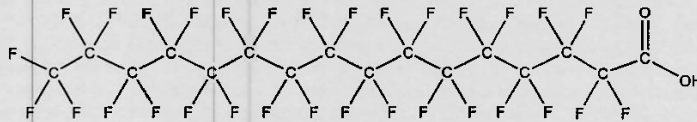
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

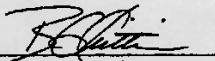
DOCUMENTATION/ DATA ATTACHED:

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

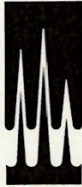
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 Revision#:9, Revised 2020-12-23

PFHxDA0421 (1 of 4)
 rev0

1116 A.B ^{mw}

1116B on the back mw



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHpPA

LOT NUMBER:

FHpPA1020

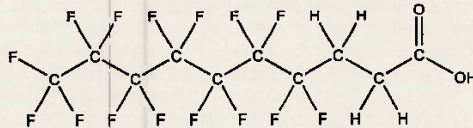
COMPOUND:

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

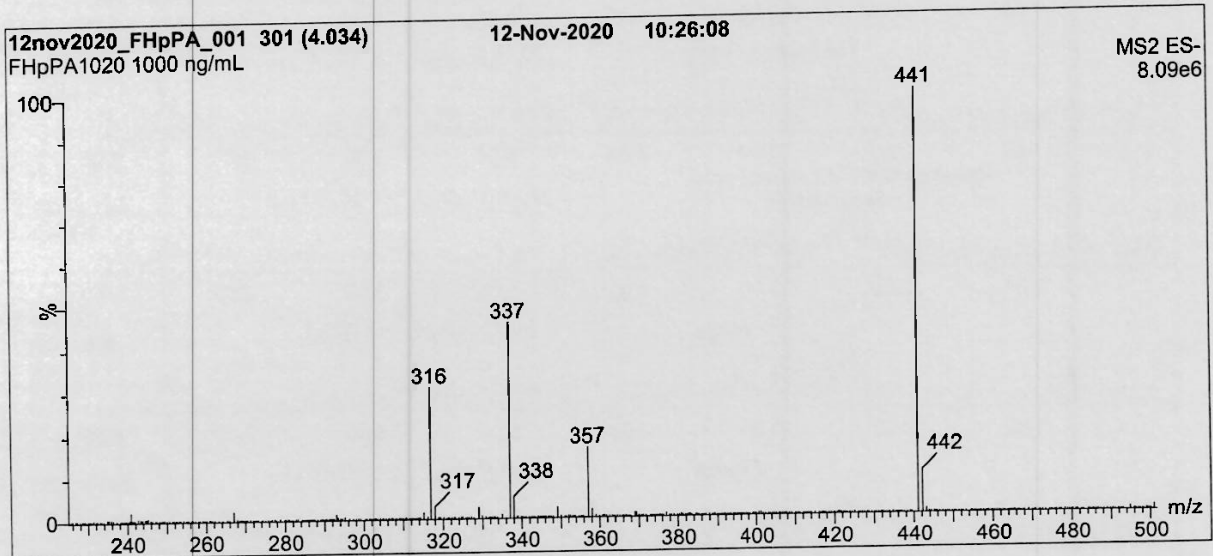
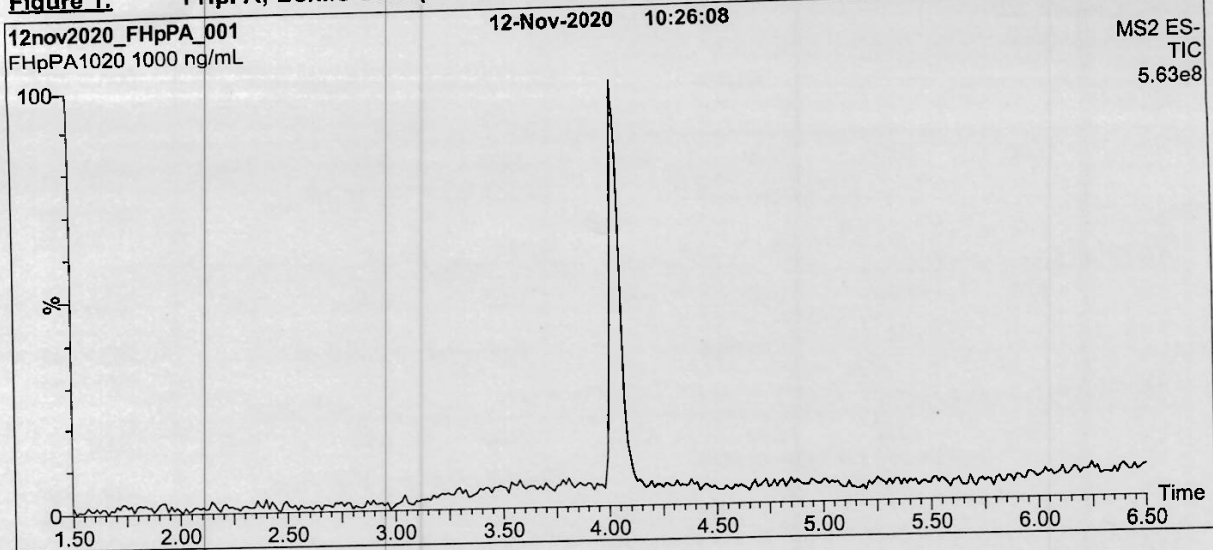
Date: 11/27/2020

(mm/dd/yyyy)

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Form#: 27, Issued 2004-11-10
Revision#: 8, Revised 2020-09-10

FHpPA1020 (1 of 4)
rev0

Figure 1: FHpPA; LC/MS Data (TIC and Mass Spectrum)**Conditions for Figure 1:**

Waters Acquity Ultra Performance LC
Waters Xevo TQ-S micro MS

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H₂O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 μ L/min

MS Parameters:

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 28.50
Desolvation Temperature ($^{\circ}$ C) = 500
Desolvation Gas Flow (L/hr) = 1000

FP_rPA(3:3FTCA) 1116 B



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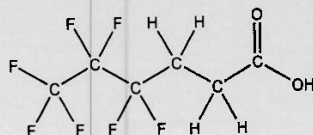
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FPrPA
COMPOUND: 3-Perfluoropropyl propanoic acid

LOT NUMBER: FPrPA0122

STRUCTURE:

CAS #: 356-02-5



MOLECULAR FORMULA: C₆H₅F₇O₂
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/03/2022
EXPIRY DATE: (mm/dd/yyyy) 02/03/2027
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 242.09
SOLVENT(S): Methanol

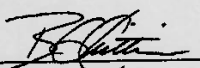
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <1% of the unsaturated 3:3 telomer acid (C₆H₃F₇O₂) as an impurity determined by ¹⁹F NMR.

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Certified By: 
B.G. Chittim, General Manager

Date: 02/04/2022
(mm/dd/yyyy)

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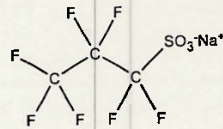
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFPrS
COMPOUND: Sodium perfluoro-1-propanesulfonate

LOT NUMBER: LPFPrS0721

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₃F₇SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt)
46.0 ± 2.3 µg/mL (PFPrS acid)
45.8 ± 2.3 µg/mL (PFPrS anion)

MOLECULAR WEIGHT: 272.07
SOLVENT(S): Methanol

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/12/2021
EXPIRY DATE: (mm/dd/yyyy) 07/12/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

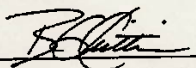
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: 
B.G. Chittim, General Manager

Date: 08/04/2021
(mm/dd/yyyy)

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

LPFPrS0721 (1 of 4)
rev0

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHxSA-I

LOT NUMBER:

FHxSA12211

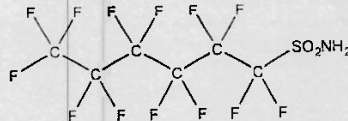
COMPOUND:

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 01/10/2022

(mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FBSA-I

LOT NUMBER:

FBSA11211

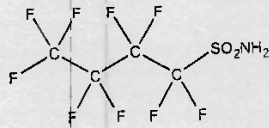
COMPOUND:

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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Revision#: 9, Revised 2020-12-23

FBSA11211 (1 of 4)
rev0

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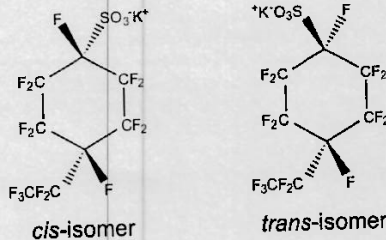
CERTIFICATE OF ANALYSIS DOCUMENTATION

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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CERTIFICATE OF ANALYSIS DOCUMENTATION

11336

PRODUCT CODE:

N-EtFOSE-M

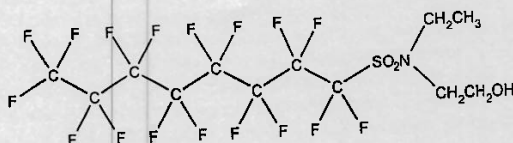
LOT NUMBER: NEtFOSE0622M

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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Revision#: 9, Revised 2020-12-23

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PRODUCT CODE:

N-MeFOSE-M

LOT NUMBER:

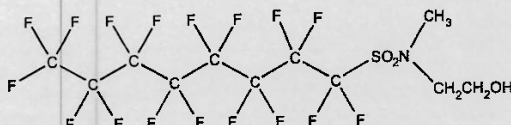
NMeFOSE0522M

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

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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

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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSA

N-Methylperfluorooctanesulfonamide Isomeric Mix

PRODUCT CODE: br-NMeFOSA
LOT NUMBER: brNMeFOSA0822
CONCENTRATION: 50.0 ± 2.5 µg/mL
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 08/18/2022
LAST TESTED: (mm/dd/yyyy) 08/23/2022
EXPIRY DATE: (mm/dd/yyyy) 08/23/2027
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-methylperfluorooctanesulfonamide (linear and branched isomers). The full name, structure, and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 31506-32-8 (for linear isomer).

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

brNMeFOSA0822 (1 of 6)
rev1

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

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11799 A-B
rec'd: 05/15/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

Native PFAS Solution/Mixture

PRODUCT CODE: PFAC-MXH
LOT NUMBER: PFACMXH0423
SOLVENT(S): Methanol/Isopropanol (2%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 04/06/2023
LAST TESTED: (mm/dd/yyyy) 04/19/2023
EXPIRY DATE: (mm/dd/yyyy) 04/19/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, 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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Table A: PFAC-MXH; Components and Concentrations
(ng/mL, \pm 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: Σ branched isomers	240		17
N-Ethylperfluorooctanesulfonamidoacetic acid ^b	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: Σ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanesulfonate	L-PFBS	1000	887	3
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	1000	941	6
Potassium perfluorohexanesulfonate ^c	PFHxSK: linear isomer	811	741	9
	PFHxSK: Σ branched isomers	189	173	8
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	1000	953	12
Potassium perfluorooctanesulfonate ^d	PFOSK: linear isomer	788	732	15
	PFOSK: Σ 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)

7.9.1
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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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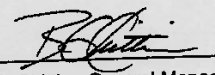
Form# 13, Issued 2004-11-10
Revision# 9, Revised 2020-12-23

PFACMXF0323 (1 of 5)
rev0

Table A: PFAC-MXF; Components and Concentrations (ng/mL; ± 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:  Date: 03/29/2023
(mm/dd/yyyy)
 B.G. Chittim, General Manager

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

PRODUCT CODE:	PFAC-MXG
LOT NUMBER:	PFACMXG1122
SOLVENT(S):	Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	11/30/2022
LAST TESTED: (mm/dd/yyyy)	12/01/2022
EXPIRY DATE: (mm/dd/yyyy)	12/01/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXG is a solution/mixture of three native perfluoroalkyl ether carboxylic acids and a native perfluoroalkyl ether sulfonate. The components and their concentrations are given in Table A.

The individual components all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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

PFACMXG1122 (1 of 5)
rev0

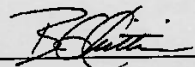
Table A: PFAC-MXG; Components and Concentrations (ng/mL; ± 5% in methanol/water (<1%))

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-dioxaheptanoic 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:

PFAC-MXJ

LOT NUMBER:

PFACMXJ0323

SOLVENT(S):

Methanol

DATE PREPARED: (mm/dd/yyyy)

03/27/2023

LAST TESTED: (mm/dd/yyyy)

03/28/2023

EXPIRY DATE: (mm/dd/yyyy)

03/28/2028

RECOMMENDED STORAGE:

Refrigerate ampoule

DESCRIPTION:

PFAC-MXJ is a solution/mixture of three native X:3 fluorotelomer carboxylic acids. The components and their concentrations are given in Table A.

The individual components have a chemical purity of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

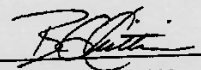
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Concentrations (µg/mL; ± 5% in methanol)

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 (^{13}C) perfluoroalkylcarboxylic acids ($\text{C}_4\text{-C}_{12}$, C_{14}), three mass-labelled (^{13}C) perfluoroalkanesulfonates (C_4 , C_6 , and C_8), three mass-labelled (one ^{13}C and two ^2H) perfluoro-1-octanesulfonamides, three mass-labelled (^{13}C) fluorotelomer sulfonates (4:2, 6:2, and 8:2), two mass-labelled (^2H) perfluorooctanesulfonamidoacetic acids, two mass-labelled (^2H) perfluorooctanesulfonamidoethanols, and mass-labelled (^{13}C) hexafluoropropylene oxide dimer acid (GenX, M3HFPO-DA). The components and their concentrations are given in Table A.

The individual ^{13}C -labelled components all have chemical purities >98% and isotopic purities of $\geq 99\%$. The individual ^2H -labelled components all have chemical purities >98% and isotopic purities of $\geq 98\%$.

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

MPFACHIFES1022 (1 of 7)
rev0

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	MPFDaA	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.

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

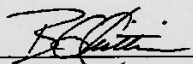
MPFACHIFIS1122 (1 of 5)
rev0

7.9.1
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Table A: MPFAC-HIF-IS; Components and Concentrations (ng/mL, ± 5% in methanol/water (<1%))

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(2,3,4- ¹³ C ₃)butanoic acid	M3PFBA	1000		1
Perfluoro-n-(1,2- ¹³ C ₂)hexanoic acid	MPFHxA	500		2
Perfluoro-n-(1,2,3,4- ¹³ C ₄)octanoic acid	MPFOA	500		4
Perfluoro-n-(1,2,3,4,5- ¹³ C ₅)nonanoic acid	MPFNA	250		5
Perfluoro-n-(1,2- ¹³ C ₂)decanoic acid	MPFDA	250		7
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-hexane(¹⁸ O ₂)sulfonate	MPFHxS	500	474	3
Sodium perfluoro-1-(1,2,3,4- ¹³ C ₄)octanesulfonate	MPFOS	500	479	6

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 12/05/2022
(mm/dd/yyyy)

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 08/08/23 10:50
Started (mm/dd/yyyy 24:00)

Method: EPA 1633 Draft (2SM)

Date/Time: 08/08/23 16:20
Finished (mm/dd/yyyy 24:00)

Incorrect date 08/09/23 AL

Balance ID: _____

Batch#: OP98297 Ext. By: GH

Conc. By: _____ Vialed 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 98297 MB		500	7	N/A	25		86	A4	
OP 98297 BS		500	7	N/A		200	5		
OP 98297 LLBS		500	7	N/A		60			
FC 7908-17		470	7						
FC 8392-1	1	570							
FC 8440-1	2	530							
FC 8439-1	2	530							
	2	500							
	3	540							
	4	540							
	5	540					5		
	6	520	7	N/A	25		6	A4	
GH 08/08/23									
OP FC8439-3MS	3	550	7	N/A	25	200	5	A4	
OP MSD									
OP FC8439-4DUP	3	540	7	N/A	25		5	A4	

Comments:

EIS (SURR) ID: 119345-L Conc: 250-5000ng/ml Exp. Date: 07/30/24 Inj. By: GH Ver. By: CM
 SPIKE 1 ID: LCMS21516 Conc: VARIED Exp. Date: 12/28/23 Inj. By: GH Ver. By: CM
 SPIKE 2 ID: _____ Conc: _____ Exp. Date: _____ Inj. By: _____ Ver. By: _____
 NIS (ISTD) ID: 11935J-L Conc: 250-1000ng/ml Exp. Date: 08/03/24 Inj. By: AL Ver. By: LR

TurboVap Temp (Therm ID): _____ N-Evap Temp (Therm ID): _____
 Observed Temp °C: _____ Carr. Temp °C: _____ Observed Temp °C: _____ Carr. Temp °C: _____

Methanol Lot # 232031 1% NH4OH MeOH PF529 SPE Lot # 6748887-01
 Water Lot# DI H2O 0.3M Formic Acid PF511 Syringe filter Lot # _____
 Acetic Acid# 194003 3% NH4OH Sol _____ pH paper Lot# 205423
 0.1M Formic PF525 5% Formic Acid _____ Carbon Lot# 99687

Relinquished By: Yanilla Vachon
 Accepted By: Am J

Date: 08/08/23
 Date: 08/09/23

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