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## Technical Report for

**AECOM, INC.**

**N6274223F0104 RH Fire Suppression System**

**60697810**

**SGS Job Number: FC11160**

**Sampling Date: 11/09/23**



### Report to:

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**Denver, CO 80237**  
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**ATTN: Katie Abbott**

**Total number of pages in report: 618**



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: Terri McNulty-Patterson 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),  
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Test results relate only to samples analyzed.

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## Sample Summary

AECOM, INC.

Job No: FC11160

N6274223F0104 RH Fire Suppression System  
Project No: 60697810

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC11160-1	11/09/23	09:20 MD	11/10/23	AQ	Ground Water	AF-RHMW12A-WGN01LF-2311
FC11160-2	11/09/23	09:20 MD	11/10/23	AQ	Ground Water	AF-RHMW12A-WGFD01LF-2311

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** AECOM, INC.

**Job No:** FC11160

**Site:** N6274223F0104 RH Fire Suppression System

**Report Date:** 11/17/2023 12:37:08 PM

On 11/10/2023, 2 Sample(s), 0 Trip Blank(s), 0 Equip. Blanks and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 5 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC11160 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:** OP58

Sample(s) FC11101-1MS, FC11101-2DUP were used as the QC samples indicated.

Blank Spike Recovery(s) for 3:3 Fluorotelomer carboxylate are outside control limits.

RPD(s) for Duplicate for 6:2 Fluorotelomer sulfonate are outside control limits for sample OP58-DUP. Probable cause is due to sample non-homogeneity.

FC11160-1 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND.

FC11160-2 for 3:3 Fluorotelomer carboxylate: Associated BS outside control limits high, sample was ND.

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:

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

## Summary of Hits

**Job Number:** FC11160  
**Account:** AECOM, INC.  
**Project:** N6274223F0104 RH Fire Suppression System  
**Collected:** 11/09/23



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
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FC11160-1      AF-RHMW12A-WGN01LF-2311

No hits reported in this sample.

FC11160-2      AF-RHMW12A-WGFD01LF-2311

No hits reported in this sample.

**Sample Results**

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**Report of Analysis**

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SGS North America Inc.

## Report of Analysis

Page 1 of 3

Client Sample ID:	AF-RHMW12A-WGN01LF-2311		
Lab Sample ID:	FC11160-1	Date Sampled:	11/09/23
Matrix:	AQ - Ground Water	Date Received:	11/10/23
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	4Q53888.D	1	11/15/23 16:06	AL	11/13/23 11:10	OP58	S4Q786
Run #2							

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

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

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

# Report of Analysis

Client Sample ID:	AF-RHMW12A-WGN01LF-2311		
Lab Sample ID:	FC11160-1	Date Sampled:	11/09/23
Matrix:	AQ - Ground Water	Date Received:	11/10/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

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

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

**PERFLUOROOCCTANE SULFONAMIDO ETHANOLS**

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

**PER and POLYFLUOROETHER CARBOXYLIC ACIDS**

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

**PER and POLYFLUOROETHER SULFONIC ACIDS**

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

**FLUOROTELOMER CARBOXYLIC ACIDS**

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

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	51%		20-150%
	13C5-PFPeA	101%		20-150%
	13C5-PFHxA	98%		20-150%
	13C4-PFHpA	102%		20-150%
	13C8-PFOA	95%		20-150%
	13C9-PFNA	99%		20-150%
	13C6-PFDA	98%		20-150%
	13C7-PFUnDA	99%		20-150%
	13C2-PFDoDA	86%		20-150%
	13C2-PFTeDA	80%		20-150%
	13C3-PFBS	100%		20-150%
	13C3-PFHxS	94%		20-150%

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

4.1  
4



## Report of Analysis

Client Sample ID:	AF-RHMW12A-WGN01LF-2311	
Lab Sample ID:	FC11160-1	Date Sampled: 11/09/23
Matrix:	AQ - Ground Water	Date Received: 11/10/23
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	98%		20-150%
	13C8-FOSA	93%		20-150%
	d3-MeFOSA	76%		20-150%
	d5-EtFOSA	86%		20-150%
	d3-MeFOSAA	104%		20-150%
	d5-EtFOSAA	97%		20-150%
	d7-MeFOSE	82%		20-150%
	d9-EtFOSE	85%		20-150%
	13C2-4:2FTS	100%		20-180%
	13C2-6:2FTS	114%		20-180%
	13C2-8:2FTS	108%		20-180%
	13C3-HFPO-DA	99%		20-150%

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

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

SGS North America Inc.

## Report of Analysis

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Client Sample ID:	AF-RHMW12A-WGFD01LF-2311		
Lab Sample ID:	FC11160-2	Date Sampled:	11/09/23
Matrix:	AQ - Ground Water	Date Received:	11/10/23
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	4Q53889.D	1	11/15/23 16:21	AL	11/13/23 11:10	OP58	S4Q786
Run #2							

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

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

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

## PERFLUOROALKYL SULFONIC ACIDS

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

## FLUOROTELOMER SULFONIC ACIDS

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

## PERFLUOROOCCTANE SULFONAMIDES

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

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

# Report of Analysis

Client Sample ID:	AF-RHMW12A-WGFD01LF-2311		Date Sampled:	11/09/23
Lab Sample ID:	FC11160-2		Date Received:	11/10/23
Matrix:	AQ - Ground Water		Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT			
Project:	N6274223F0104 RH Fire Suppression System			

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

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

**PERFLUOROOCCTANE SULFONAMIDO ETHANOLS**

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

**PER and POLYFLUOROETHER CARBOXYLIC ACIDS**

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

**PER and POLYFLUOROETHER SULFONIC ACIDS**

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

**FLUOROTELOMER CARBOXYLIC ACIDS**

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

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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	13C4-PFBA	48%		20-150%
	13C5-PFPeA	95%		20-150%
	13C5-PFHxA	94%		20-150%
	13C4-PFHpA	99%		20-150%
	13C8-PFOA	92%		20-150%
	13C9-PFNA	95%		20-150%
	13C6-PFDA	93%		20-150%
	13C7-PFUnDA	90%		20-150%
	13C2-PFDoDA	77%		20-150%
	13C2-PFTeDA	74%		20-150%
	13C3-PFBS	96%		20-150%
	13C3-PFHxS	100%		20-150%

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

## Report of Analysis

Client Sample ID:	AF-RHMW12A-WGFD01LF-2311		Date Sampled:	11/09/23
Lab Sample ID:	FC11160-2		Date Received:	11/10/23
Matrix:	AQ - Ground Water		Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT			
Project:	N6274223F0104 RH Fire Suppression System			

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	90%		20-150%
	13C8-FOSA	89%		20-150%
	d3-MeFOSA	73%		20-150%
	d5-EtFOSA	76%		20-150%
	d3-MeFOSAA	95%		20-150%
	d5-EtFOSAA	85%		20-150%
	d7-MeFOSE	74%		20-150%
	d9-EtFOSE	75%		20-150%
	13C2-4:2FTS	118%		20-180%
	13C2-6:2FTS	110%		20-180%
	13C2-8:2FTS	91%		20-180%
	13C3-HFPO-DA	92%		20-150%

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

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

**Misc. Forms**

**Custody Documents and Other Forms**

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**Includes the following where applicable:**

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



SGS North America Inc - Orlando  
Chain of Custody

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

COC #: 2311AFSG05

SGS - ORLANDO JOB #:

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**FC11160**

SGS - ORLANDO Quote #

SI IFF#

Client / Reporting Information			Project Information			Analytical Information												Matrix Codes
Company Name: AECOM			Project Name: N6274223F0104 RH Fire Suppression System			<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small; margin-right: 5px;">PFAS EPA Draft 1633</div> <div style="border: 1px solid black; width: 100%; height: 100%; position: relative;"> <span style="position: absolute; top: 10%; left: 10%; font-size: 2em; opacity: 0.5;">FC11160</span> </div> </div>												DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe
Address: 1001 Bishop St. ste 1600			Street															
City: Honolulu State: HI Zip: 96813		City Honolulu State Hawaii																
Project Contact: Katie Abbott Email: katie.abbott@aecom.com		Project # 23F0104 - 60697810																
Project Manager: Watson Tanji Email: watson.tanji@aecom.com		Fax #																
Phone #: 303-796-4624 / 808-954-4512			Client Purchase Order # 151253															
Sampler(s) Name(s) (Printed) Sampler 1: <i>W.D./RS/LW</i> Sampler 2:																		
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION			CONTAINER INFORMATION												LAB USE ONLY	
		DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NACHLZINC	DI WATER	MEDIH			
1	AF-RHMW12A-WGN01LF-2311	11/9/23	0920	<i>MD RS LW</i>	GW	3		X									X	
2	AF-RHMW12A-WGFD01LF-2311	11/9/23	0920	<i>MD RS LW</i>	GW	3		X									X	
		<i>W.D. 11/9/23</i>																
																	INITIAL ASSESSMENT <i>ZB</i>	
																	LABEL VERIFICATION <i>SP</i>	
																	4.6 IRI	
Turnaround Time ( Business days)			Data Deliverable Information			Comments / Remarks												
10 Day (Business) Approved By: / Date: 7 Day <input checked="" type="checkbox"/> 5 Day 3 Day RUSH 2 Day RUSH 1 Day RUSH Other			<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S			EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW United AWB: 010-95269145												
Rush T/A Data Available VIA Email or Lablink																		
Relinquished by Sampler/Affiliation		Date Time:	Sample Custody must be documented below each time samples change possession, including courier delivery.			Relinquished By/Affiliation	Date Time:	Received By/Affiliation										
1 <i>Micarda Delarosa AECOM</i>		11/9/23 1150	2 <i>Ellie Shimatsu AECOM</i>			3 <i>Ellie Shimatsu AECOM</i>	11/9/23 1240	4 <i>LC</i>										
5 <i>UC</i>			6 <i>[Signature] 11/10/23 OHS</i>			7		8										

PFAS\_COCs\_ALL\_10022023.xls Rev 031318

FC11160: Chain of Custody

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## SGS Sample Receipt Summary

**Job Number:** fc11160

**Client:** AECOM

**Project:** N6274223F0104 RH Fire Suppression Syst

**Date / Time Received:** 11/10/2023 7:15:00 PM

**Delivery Method:** United Cargo/Airspace

**Airbill #'s:** United Cargo AWB #: 016-95269145

**Cooler Temps (Raw Measured) °C:** Cooler 1: (4.6);

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

**Cooler Informatio**

**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 presented properly:
- 3. Suffiient volume/containers recv'd for analysi:
- 4. Condition of sample: Intact
- 5. Sample recv'd within HT:
- 6. Dates/Times/IDs on COC match sample labe:
- 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  
 Test Strip Lot #: pH 0-3: 226422  
 Residual Chlorine Test Strip Lot: \_\_\_\_\_

Number of Lab Filtered Metals  
 pH 10-12: \_\_\_\_\_                      Other: (Specify) pH 1.0 - 12.0 222221

Comments

SM001  
 Rev. Date 05/04/17

Technician: SHAYLAP

Date: 11/10/2023 7:15:00 PM

Reviewer: ZB

Date: 11/10/2023

**FC11160: Chain of Custody**

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# QC Evaluation: DOD QSM5.x Limits

**Job Number:** FC11160  
**Account:** AECOM, INC.  
**Project:** N6274223F0104 RH Fire Suppression System  
**Collected:** 11/09/23

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.

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\* Sample used for QC is not from job FC11160

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## MS Semi-volatiles

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### QC Data Summaries

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#### Includes the following where applicable:

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

**Instrument Blank**

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11160-1, FC11160-2

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

# Instrument Blank

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11160-1, FC11160-2

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

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

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## Continuing Calibration Blank

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11160-1, FC11160-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
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: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11160-1, FC11160-2

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

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

**Method Blank Summary**

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11160-1, FC11160-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
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: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11160-1, FC11160-2

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

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

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**Blank Spike Summary**

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11160-1, FC11160-2

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

\* = Outside of Control Limits.



# Blank Spike Summary

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11160-1, FC11160-2

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

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

\* = Outside of Control Limits.

**Blank Spike Summary**

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

Method: EPA DRAFT 1633

FC11160-1, FC11160-2

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

\* = Outside of Control Limits.

# Blank Spike Summary

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11160-1, FC11160-2

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

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

\* = Outside of Control Limits.

## Matrix Spike Summary

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11160-1, FC11160-2

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

\* = Outside of Control Limits.

# Matrix Spike Summary

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11160-1, FC11160-2

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

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

\* = Outside of Control Limits.

**Duplicate Summary**

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11160-1, FC11160-2

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

\* = Outside of Control Limits.

# Duplicate Summary

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC11160-1, FC11160-2

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

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

(a) Outside control limits.

\* = Outside of Control Limits.

# Injection Standard Area Summary

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

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

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

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

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

6.5.1  
6



# Injection Standard Area Summary

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

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

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

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

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

6.5.1  
6

# Injection Standard Area Summary

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

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

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	DF <sup>a</sup>
S4Q786-ICCB	41838	2.63	30392	5.31	36209	6.98	13476	7.52	10530	8.00	1
FC11101-1	44022	2.69	31324	5.31	37402	6.96	13106	7.52	10510	8.00	1
OP58-MS	43679	2.70	30307	5.31	36012	6.98	12959	7.52	10016	8.00	1
FC11101-2	41454	2.69	30207	5.31	33545	6.98	12504	7.52	10257	8.00	1
OP58-DUP	41246	2.69	30213	5.31	34832	6.96	12925	7.51	9449	8.00	1
ZZZZZZ	44457	2.69	30878	5.32	36597	6.98	14064	7.52	9862	8.02	1
ZZZZZZ	39897	2.67	30326	5.31	33741	6.96	13056	7.52	9914	8.00	1
ZZZZZZ	43528	2.70	30648	5.32	36629	6.98	13990	7.52	9965	8.00	1
FC11160-1	42478	2.70	30128	5.32	36982	6.98	13579	7.52	9729	8.02	1
FC11160-2	44057	2.70	30825	5.32	37149	6.98	13460	7.52	9555	8.00	1

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

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

6.5.2  
6

# Injection Standard Area Summary

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

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

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF <sup>a</sup>
S4Q786-ICCB	4409	7.03	6435	8.13	1
FC11101-1	4498	7.03	5965	8.13	1
OP58-MS	4326	7.03	6190	8.13	1
FC11101-2	3759	7.03	5286	8.12	1
OP58-DUP	3905	7.03	5278	8.12	1
ZZZZZZ	4390	7.04	6334	8.13	1
ZZZZZZ	4121	7.03	6113	8.13	1
ZZZZZZ	4418	7.04	5987	8.13	1
FC11160-1	4408	7.04	6135	8.13	1
FC11160-2	4428	7.04	6257	8.13	1

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

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

## TDCA Retention Time Check

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q785-IC785	4Q53730.D	11/13/23	15:25	00:30	Mass Calibration Verification
S4Q785-IC785	4Q53731.D	11/13/23	15:40	00:45	Initial cal 1
S4Q785-IC785	4Q53732.D	11/13/23	15:55	01:00	Initial cal 2
S4Q785-IC785	4Q53733.D	11/13/23	16:09	01:14	Initial cal 3
S4Q785-ICC785	4Q53734.D	11/13/23	16:43	01:48	Initial cal 4
S4Q785-IC785	4Q53735.D	11/13/23	16:58	02:03	Initial cal 5
S4Q785-IC785	4Q53736.D	11/13/23	17:13	02:18	Initial cal 6
S4Q785-IC785	4Q53737.D	11/13/23	17:28	02:33	Initial cal 7
S4Q785-IC785	4Q53738.D	11/13/23	17:42	02:47	Initial cal 8
S4Q785-IBLK	4Q53739.D	11/13/23	17:57	03:02	Instrument Blank
S4Q785-IBLK	4Q53739.D	11/13/23	17:57	03:02	Instrument Blank
S4Q785-ICV785	4Q53740.D	11/13/23	18:12	03:17	Initial cal verification 4
S4Q785-ICV785	4Q53741.D	11/13/23	18:27	03:32	Initial cal verification 20
S4Q785-CC785	4Q53742.D	11/13/23	18:41	03:46	Continuing cal 4
S4Q785-CC785	4Q53743.D	11/13/23	18:56	04:01	Continuing cal 1.0LL
OP99997-BS	4Q53744.D	11/13/23	19:11	04:16	Blank Spike
OP99997-LLBS	4Q53745.D	11/13/23	19:26	04:31	Blank Spike
OP99997-MB	4Q53746.D	11/13/23	19:40	04:45	Method Blank
ZZZZZZ	4Q53747.D	11/13/23	19:55	05:00	(unrelated sample)
ZZZZZZ	4Q53748.D	11/13/23	20:10	05:15	(unrelated sample)
FC11062-2	4Q53749.D	11/13/23	20:25	05:30	(used for QC only; not part of job FC11160)
OP99997-MS	4Q53750.D	11/13/23	20:39	05:44	Matrix Spike
FC11062-3	4Q53751.D	11/13/23	20:54	05:59	(used for QC only; not part of job FC11160)
OP99997-DUP	4Q53752.D	11/13/23	21:09	06:14	Duplicate
ZZZZZZ	4Q53753.D	11/13/23	21:24	06:29	(unrelated sample)
S4Q785-CC785	4Q53754.D	11/13/23	21:38	06:43	Continuing cal 4
S4Q785-ICCB	4Q53755.D	11/13/23	21:53	06:58	Continuing Calibration Blank
ZZZZZZ	4Q53756.D	11/13/23	22:08	07:13	(unrelated sample)
ZZZZZZ	4Q53757.D	11/13/23	22:23	07:28	(unrelated sample)
OP99956-BS	4Q53758.D	11/13/23	22:37	07:42	Blank Spike
OP99956-LLBS	4Q53759.D	11/13/23	22:52	07:57	Blank Spike
OP99956-MB	4Q53760.D	11/13/23	23:07	08:12	Method Blank
ZZZZZZ	4Q53761.D	11/13/23	23:22	08:27	(unrelated sample)
ZZZZZZ	4Q53762.D	11/13/23	23:36	08:41	(unrelated sample)

# TDCA Retention Time Check

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	4Q53763.D	11/13/23	23:51	08:56	(unrelated sample)
ZZZZZZ	4Q53764.D	11/14/23	00:06	09:11	(unrelated sample)
ZZZZZZ	4Q53765.D	11/14/23	00:21	09:26	(unrelated sample)
S4Q785-CC785	4Q53766.D	11/14/23	00:35	09:40	Continuing cal 4
S4Q785-ICCB	4Q53767.D	11/14/23	00:50	09:55	Continuing Calibration Blank
ZZZZZZ	4Q53768.D	11/14/23	01:05	10:10	(unrelated sample)
ZZZZZZ	4Q53769.D	11/14/23	01:20	10:25	(unrelated sample)
ZZZZZZ	4Q53770.D	11/14/23	01:34	10:39	(unrelated sample)
ZZZZZZ	4Q53771.D	11/14/23	01:49	10:54	(unrelated sample)
ZZZZZZ	4Q53772.D	11/14/23	02:04	11:09	(unrelated sample)
ZZZZZZ	4Q53773.D	11/14/23	02:19	11:24	(unrelated sample)
ZZZZZZ	4Q53774.D	11/14/23	02:33	11:38	(unrelated sample)
ZZZZZZ	4Q53775.D	11/14/23	02:48	11:53	(unrelated sample)
ZZZZZZ	4Q53776.D	11/14/23	03:03	12:08	(unrelated sample)
S4Q785-CC785	4Q53777.D	11/14/23	03:18	12:23	Continuing cal 4
S4Q785-ICCB	4Q53778.D	11/14/23	03:32	12:37	Continuing Calibration Blank
FC10708-15	4Q53779.D	11/14/23	03:47	12:52	(used for QC only; not part of job FC11160)
OP99956-MS	4Q53780.D	11/14/23	04:02	13:07	Matrix Spike
OP99956-MSD	4Q53781.D	11/14/23	04:17	13:22	Matrix Spike Duplicate
ZZZZZZ	4Q53782.D	11/14/23	04:31	13:36	(unrelated sample)
ZZZZZZ	4Q53783.D	11/14/23	04:46	13:51	(unrelated sample)
OP99926-BS	4Q53784.D	11/14/23	05:01	14:06	Blank Spike
OP99926-LLBS	4Q53785.D	11/14/23	05:16	14:21	Blank Spike
OP99926-MB	4Q53786.D	11/14/23	05:30	14:35	Method Blank
ZZZZZZ	4Q53787.D	11/14/23	05:45	14:50	(unrelated sample)
ZZZZZZ	4Q53788.D	11/14/23	06:00	15:05	(unrelated sample)
S4Q785-CC785	4Q53789.D	11/14/23	06:15	15:20	Continuing cal 4
S4Q785-ICCB	4Q53790.D	11/14/23	06:29	15:34	Continuing Calibration Blank
FC10703-1	4Q53791.D	11/14/23	06:44	15:49	(used for QC only; not part of job FC11160)
OP99926-MS	4Q53792.D	11/14/23	06:59	16:04	Matrix Spike
FC10703-2	4Q53793.D	11/14/23	07:14	16:19	(used for QC only; not part of job FC11160)
OP99926-DUP	4Q53794.D	11/14/23	07:28	16:33	Duplicate
ZZZZZZ	4Q53795.D	11/14/23	07:43	16:48	(unrelated sample)
ZZZZZZ	4Q53796.D	11/14/23	07:58	17:03	(unrelated sample)
ZZZZZZ	4Q53797.D	11/14/23	08:13	17:18	(unrelated sample)
ZZZZZZ	4Q53798.D	11/14/23	08:28	17:33	(unrelated sample)
ZZZZZZ	4Q53799.D	11/14/23	08:42	17:47	(unrelated sample)
ZZZZZZ	4Q53800.D	11/14/23	08:57	18:02	(unrelated sample)
S4Q785-CC785	4Q53801.D	11/14/23	09:12	18:17	Continuing cal 4
S4Q785-ICCB	4Q53802.D	11/14/23	09:27	18:32	Continuing Calibration Blank
ZZZZZZ	4Q53803.D	11/14/23	09:41	18:46	(unrelated sample)
ZZZZZZ	4Q53804.D	11/14/23	09:56	19:01	(unrelated sample)
ZZZZZZ	4Q53805.D	11/14/23	10:11	19:16	(unrelated sample)
ZZZZZZ	4Q53806.D	11/14/23	10:26	19:31	(unrelated sample)

# TDCA Retention Time Check

**Job Number:** FC11160  
**Account:** AECOMCOD AECOM, INC.  
**Project:** N6274223F0104 RH Fire Suppression System

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	4Q53807.D	11/14/23	10:40	19:45	(unrelated sample)
FC10636-32	4Q53808.D	11/14/23	10:55	20:00	(used for QC only; not part of job FC11160)
ZZZZZZ	4Q53809.D	11/14/23	11:10	20:15	(unrelated sample)
ZZZZZZ	4Q53810.D	11/14/23	11:25	20:30	(unrelated sample)
ZZZZZZ	4Q53811.D	11/14/23	11:39	20:44	(unrelated sample)
S4Q785-ECC785	4Q53812.D	11/14/23	11:54	20:59	Ending cal 4
S4Q785-ICCB	4Q53813.D	11/14/23	12:09	21:14	Continuing Calibration Blank

6.6.1

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## TDCA Retention Time Check

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q786-IBLK	4Q53867.D	11/15/23	10:45	00:44	Instrument Blank
S4Q786-IBLK	4Q53867.D	11/15/23	10:45	00:44	Instrument Blank
S4Q786-CC785	4Q53868.D	11/15/23	11:00	00:59	Continuing cal 4
S4Q786-CC785	4Q53869.D	11/15/23	11:14	01:13	Continuing cal 1.0LL
ZZZZZZ	4Q53870.D	11/15/23	11:41	01:40	(unrelated sample)
OP58-BS	4Q53871.D	11/15/23	11:55	01:54	Blank Spike
OP58-LLBS	4Q53872.D	11/15/23	12:10	02:09	Blank Spike
OP58-MB	4Q53873.D	11/15/23	12:25	02:24	Method Blank
ZZZZZZ	4Q53874.D	11/15/23	12:40	02:39	(unrelated sample)
ZZZZZZ	4Q53875.D	11/15/23	12:54	02:53	(unrelated sample)
ZZZZZZ	4Q53877.D	11/15/23	13:24	03:23	(unrelated sample)
S4Q786-CC785	4Q53879.D	11/15/23	13:53	03:52	Continuing cal 4
S4Q786-ICCB	4Q53880.D	11/15/23	14:08	04:07	Continuing Calibration Blank
FC11101-1	4Q53881.D	11/15/23	14:23	04:22	(used for QC only; not part of job FC11160)
OP58-MS	4Q53882.D	11/15/23	14:38	04:37	Matrix Spike
FC11101-2	4Q53883.D	11/15/23	14:52	04:51	(used for QC only; not part of job FC11160)
OP58-DUP	4Q53884.D	11/15/23	15:07	05:06	Duplicate
ZZZZZZ	4Q53885.D	11/15/23	15:22	05:21	(unrelated sample)
ZZZZZZ	4Q53886.D	11/15/23	15:37	05:36	(unrelated sample)
ZZZZZZ	4Q53887.D	11/15/23	15:51	05:50	(unrelated sample)
FC11160-1	4Q53888.D	11/15/23	16:06	06:05	AF-RHMW12A-WGN01LF-2311
FC11160-2	4Q53889.D	11/15/23	16:21	06:20	AF-RHMW12A-WGFD01LF-2311
S4Q786-CC785	4Q53890.D	11/15/23	16:36	06:35	Continuing cal 4
S4Q786-ICCB	4Q53891.D	11/15/23	16:50	06:49	Continuing Calibration Blank
OP99927-BS	4Q53892.D	11/15/23	17:05	07:04	Blank Spike
OP99927-LLBS	4Q53893.D	11/15/23	17:20	07:19	Blank Spike
OP99927-MB	4Q53894.D	11/15/23	17:35	07:34	Method Blank
ZZZZZZ	4Q53895.D	11/15/23	17:50	07:49	(unrelated sample)
ZZZZZZ	4Q53896.D	11/15/23	18:04	08:03	(unrelated sample)
ZZZZZZ	4Q53897.D	11/15/23	18:19	08:18	(unrelated sample)
ZZZZZZ	4Q53898.D	11/15/23	18:34	08:33	(unrelated sample)
ZZZZZZ	4Q53899.D	11/15/23	18:49	08:48	(unrelated sample)
ZZZZZZ	4Q53900.D	11/15/23	19:03	09:02	(unrelated sample)
S4Q786-CC785	4Q53901.D	11/15/23	19:18	09:17	Continuing cal 4

# TDCA Retention Time Check

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

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

6.6.2  
6



# Isotope Dilution Standard Recovery Summary

Job Number: FC11160  
 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
FC11160-1	4Q53888.D	51	101	98	102	95	99	98	99
FC11160-2	4Q53889.D	48	95	94	99	92	95	93	90
OP58-BS	4Q53871.D	36	87	85	87	86	86	85	85
OP58-DUP	4Q53884.D	3* a	20	92	98	94	93	104	103
OP58-LLBS	4Q53872.D	97	96	94	96	98	101	105	101
OP58-MB	4Q53873.D	103	98	96	102	103	98	98	100
OP58-MS	4Q53882.D	84	98	98	100	95	101	93	90
S4Q786-IBLK	4Q53867.D	100	103	102	107	102	105	102	114
S4Q786-ICCB	4Q53880.D	101	102	99	101	99	105	99	103

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

(a) Outside control limits.

6.7.1  
6

# Isotope Dilution Standard Recovery Summary

Job Number: FC11160  
 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
FC11160-1	4Q53888.D	86	80	100	94	98	93	76	86
FC11160-2	4Q53889.D	77	74	96	100	90	89	73	76
OP58-BS	4Q53871.D	76	74	91	90	89	93	78	80
OP58-DUP	4Q53884.D	92	74	96	101	98	109	100	103
OP58-LLBS	4Q53872.D	95	81	98	98	88	97	78	84
OP58-MB	4Q53873.D	87	76	100	106	94	81	62	65
OP58-MS	4Q53882.D	82	73	97	100	87	98	63	66
S4Q786-IBLK	4Q53867.D	101	99	117	114	102	110		
S4Q786-ICCB	4Q53880.D	95	97	94	101	100	97		

**Isotope Dilution Standards**                      **Recovery Limits**

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

6.7.1

6

# Isotope Dilution Standard Recovery Summary

Job Number: FC11160  
 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
FC11160-1	4Q53888.D	104	97	82	85	100	114	108	99
FC11160-2	4Q53889.D	95	85	74	75	118	110	91	92
OP58-BS	4Q53871.D	105	96	80	83	122	122	130	83
OP58-DUP	4Q53884.D	130	132	86	88	214* a	143	137	79
OP58-LLBS	4Q53872.D	116	108	83	86	122	143	134	92
OP58-MB	4Q53873.D	106	97	68	73	151	157	145	97
OP58-MS	4Q53882.D	103	89	76	79	119	111	114	95
S4Q786-IBLK	4Q53867.D	127	115			177	162	158	
S4Q786-ICCB	4Q53880.D	114	99			148	131	145	

Isotope Dilution Standards	Recovery Limits
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: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

## Initial Calibration Report

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

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# Initial Calibration Summary

Job Number: FC11160  
 Account: AECOM AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

## Initial Calibration Report

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

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

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# Initial Calibration Summary

Job Number: FC11160  
 Account: AECOM AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

## Initial Calibration Report

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

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

**Initial Calibration Verification**

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

## Continuing Calibration Report

Batch: D:\MassHunter\Data\111323\_1633\_S4Q785\s4q785.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53731.d  
 2:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53732.d  
 3:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53733.d  
 4:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53734.d  
 5:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53735.d  
 6:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53736.d  
 7:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53737.d  
 8:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53738.d

Data File: 4Q53740  
 Type : QC  
 Level : 4

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

# Initial Calibration Verification

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

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

CC Criteria: +/- 30%



**Initial Calibration Verification**

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

## Continuing Calibration Report

Batch: D:\MassHunter\Data\111323\_1633\_S4Q785\s4q785.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53731.d  
 2:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53732.d  
 3:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53733.d  
 4:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53734.d  
 5:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53735.d  
 6:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53736.d  
 7:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53737.d  
 8:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53738.d

Data File: 4Q53741  
 Type : QC  
 Level : 20

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

# Initial Calibration Verification

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

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

CC Criteria: +/- 30%

**Continuing Calibration Summary**

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

## Continuing Calibration Report

Batch: D:\MassHunter\Data\111523\_1633\_S4Q786\s4q786.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53731.d  
 2:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53732.d  
 3:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53733.d  
 4:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53734.d  
 5:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53735.d  
 6:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53736.d  
 7:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53737.d  
 8:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53738.d

Data File: 4Q53868  
 Type : QC  
 Level : 4

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

# Continuing Calibration Summary

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

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

CC Criteria: +/- 30%

**Continuing Calibration Summary**

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

## Continuing Calibration Report

Batch: D:\MassHunter\Data\111523\_1633\_S4Q786\s4q786.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53731.d  
 2:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53732.d  
 3:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53733.d  
 4:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53734.d  
 5:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53735.d  
 6:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53736.d  
 7:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53737.d  
 8:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53738.d

Data File: 4Q53869  
 Type : QC  
 Level : 1

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

# Continuing Calibration Summary

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

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

CC Criteria: +/- 30%

**Continuing Calibration Summary**

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

## Continuing Calibration Report

Batch: D:\MassHunter\Data\111523\_1633\_S4Q786\s4q786.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53731.d  
 2:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53732.d  
 3:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53733.d  
 4:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53734.d  
 5:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53735.d  
 6:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53736.d  
 7:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53737.d  
 8:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53738.d

Data File: 4Q53879  
 Type : QC  
 Level : 4

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

# Continuing Calibration Summary

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

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

CC Criteria: +/- 30%



**Continuing Calibration Summary**

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

## Continuing Calibration Report

Batch: D:\MassHunter\Data\111523\_1633\_S4Q786\s4q786.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53731.d  
 2:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53732.d  
 3:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53733.d  
 4:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53734.d  
 5:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53735.d  
 6:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53736.d  
 7:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53737.d  
 8:D:\MassHunter\Data\111323\_1633\_S4Q785\4Q53738.d

Data File: 4Q53890  
 Type : QC  
 Level : 4

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

# Continuing Calibration Summary

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

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

CC Criteria: +/- 30%

## Run Sequence Report

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q785	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q785-RT	4Q53728.D	11/13/23 14:55	n/a	Retention Time Marker
S4Q785-RT	4Q53729.D	11/13/23 15:10	n/a	Retention Time Marker
S4Q785-IC785	4Q53730.D	11/13/23 15:25	n/a	Mass Calibration Verification
S4Q785-IC785	4Q53731.D	11/13/23 15:40	n/a	Initial cal 1
S4Q785-IC785	4Q53732.D	11/13/23 15:55	n/a	Initial cal 2
S4Q785-IC785	4Q53733.D	11/13/23 16:09	n/a	Initial cal 3
S4Q785-ICC785	4Q53734.D	11/13/23 16:43	n/a	Initial cal 4
S4Q785-IC785	4Q53735.D	11/13/23 16:58	n/a	Initial cal 5
S4Q785-IC785	4Q53736.D	11/13/23 17:13	n/a	Initial cal 6
S4Q785-IC785	4Q53737.D	11/13/23 17:28	n/a	Initial cal 7
S4Q785-IC785	4Q53738.D	11/13/23 17:42	n/a	Initial cal 8
S4Q785-IBLK	4Q53739.D	11/13/23 17:57	n/a	Instrument Blank
S4Q785-IBLK	4Q53739.D	11/13/23 17:57	n/a	Instrument Blank
S4Q785-ICV785	4Q53740.D	11/13/23 18:12	n/a	Initial cal verification 4
S4Q785-ICV785	4Q53741.D	11/13/23 18:27	n/a	Initial cal verification 20
S4Q785-CC785	4Q53742.D	11/13/23 18:41	n/a	Continuing cal 4
S4Q785-CC785	4Q53743.D	11/13/23 18:56	n/a	Continuing cal 1.0LL
OP99997-BS	4Q53744.D	11/13/23 19:11	OP99997	Blank Spike
OP99997-LLBS	4Q53745.D	11/13/23 19:26	OP99997	Blank Spike
OP99997-MB	4Q53746.D	11/13/23 19:40	OP99997	Method Blank
ZZZZZZ	4Q53747.D	11/13/23 19:55	OP99997	(unrelated sample)
ZZZZZZ	4Q53748.D	11/13/23 20:10	OP99997	(unrelated sample)
FC11062-2	4Q53749.D	11/13/23 20:25	OP99997	(used for QC only; not part of job FC11160)
OP99997-MS	4Q53750.D	11/13/23 20:39	OP99997	Matrix Spike
FC11062-3	4Q53751.D	11/13/23 20:54	OP99997	(used for QC only; not part of job FC11160)
OP99997-DUP	4Q53752.D	11/13/23 21:09	OP99997	Duplicate
ZZZZZZ	4Q53753.D	11/13/23 21:24	OP99997	(unrelated sample)
S4Q785-CC785	4Q53754.D	11/13/23 21:38	n/a	Continuing cal 4
S4Q785-ICCB	4Q53755.D	11/13/23 21:53	n/a	Continuing Calibration Blank
ZZZZZZ	4Q53756.D	11/13/23 22:08	OP99997	(unrelated sample)
ZZZZZZ	4Q53757.D	11/13/23 22:23	OP99997	(unrelated sample)
OP99956-BS	4Q53758.D	11/13/23 22:37	OP99956	Blank Spike
OP99956-LLBS	4Q53759.D	11/13/23 22:52	OP99956	Blank Spike
OP99956-MB	4Q53760.D	11/13/23 23:07	OP99956	Method Blank
ZZZZZZ	4Q53761.D	11/13/23 23:22	OP99956	(unrelated sample)
ZZZZZZ	4Q53762.D	11/13/23 23:36	OP99956	(unrelated sample)
ZZZZZZ	4Q53763.D	11/13/23 23:51	OP99956	(unrelated sample)
ZZZZZZ	4Q53764.D	11/14/23 00:06	OP99956	(unrelated sample)
ZZZZZZ	4Q53765.D	11/14/23 00:21	OP99956	(unrelated sample)
S4Q785-CC785	4Q53766.D	11/14/23 00:35	n/a	Continuing cal 4
S4Q785-ICCB	4Q53767.D	11/14/23 00:50	n/a	Continuing Calibration Blank
ZZZZZZ	4Q53768.D	11/14/23 01:05	OP99956	(unrelated sample)
ZZZZZZ	4Q53769.D	11/14/23 01:20	OP99956	(unrelated sample)
ZZZZZZ	4Q53770.D	11/14/23 01:34	OP99956	(unrelated sample)
ZZZZZZ	4Q53771.D	11/14/23 01:49	OP99956	(unrelated sample)
ZZZZZZ	4Q53772.D	11/14/23 02:04	OP99956	(unrelated sample)

# Run Sequence Report

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q785	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
ZZZZZZ	4Q53773.D	11/14/23 02:19	OP99956	(unrelated sample)
ZZZZZZ	4Q53774.D	11/14/23 02:33	OP99956	(unrelated sample)
ZZZZZZ	4Q53775.D	11/14/23 02:48	OP99956	(unrelated sample)
ZZZZZZ	4Q53776.D	11/14/23 03:03	OP99956	(unrelated sample)
S4Q785-CC785	4Q53777.D	11/14/23 03:18	n/a	Continuing cal 4
S4Q785-ICCB	4Q53778.D	11/14/23 03:32	n/a	Continuing Calibration Blank
FC10708-15	4Q53779.D	11/14/23 03:47	OP99956	(used for QC only; not part of job FC11160)
OP99956-MS	4Q53780.D	11/14/23 04:02	OP99956	Matrix Spike
OP99956-MSD	4Q53781.D	11/14/23 04:17	OP99956	Matrix Spike Duplicate
ZZZZZZ	4Q53782.D	11/14/23 04:31	OP99956	(unrelated sample)
ZZZZZZ	4Q53783.D	11/14/23 04:46	OP99956	(unrelated sample)
OP99926-BS	4Q53784.D	11/14/23 05:01	OP99926	Blank Spike
OP99926-LLBS	4Q53785.D	11/14/23 05:16	OP99926	Blank Spike
OP99926-MB	4Q53786.D	11/14/23 05:30	OP99926	Method Blank
ZZZZZZ	4Q53787.D	11/14/23 05:45	OP99926	(unrelated sample)
ZZZZZZ	4Q53788.D	11/14/23 06:00	OP99926	(unrelated sample)
S4Q785-CC785	4Q53789.D	11/14/23 06:15	n/a	Continuing cal 4
S4Q785-ICCB	4Q53790.D	11/14/23 06:29	n/a	Continuing Calibration Blank
FC10703-1	4Q53791.D	11/14/23 06:44	OP99926	(used for QC only; not part of job FC11160)
OP99926-MS	4Q53792.D	11/14/23 06:59	OP99926	Matrix Spike
FC10703-2	4Q53793.D	11/14/23 07:14	OP99926	(used for QC only; not part of job FC11160)
OP99926-DUP	4Q53794.D	11/14/23 07:28	OP99926	Duplicate
ZZZZZZ	4Q53795.D	11/14/23 07:43	OP99926	(unrelated sample)
ZZZZZZ	4Q53796.D	11/14/23 07:58	OP99926	(unrelated sample)
ZZZZZZ	4Q53797.D	11/14/23 08:13	OP99926	(unrelated sample)
ZZZZZZ	4Q53798.D	11/14/23 08:28	OP99926	(unrelated sample)
ZZZZZZ	4Q53799.D	11/14/23 08:42	OP99926	(unrelated sample)
ZZZZZZ	4Q53800.D	11/14/23 08:57	OP99926	(unrelated sample)
S4Q785-CC785	4Q53801.D	11/14/23 09:12	n/a	Continuing cal 4
S4Q785-ICCB	4Q53802.D	11/14/23 09:27	n/a	Continuing Calibration Blank
ZZZZZZ	4Q53803.D	11/14/23 09:41	OP99926	(unrelated sample)
ZZZZZZ	4Q53804.D	11/14/23 09:56	OP99926	(unrelated sample)
ZZZZZZ	4Q53805.D	11/14/23 10:11	OP99926	(unrelated sample)
ZZZZZZ	4Q53806.D	11/14/23 10:26	OP99926	(unrelated sample)
ZZZZZZ	4Q53807.D	11/14/23 10:40	OP99926	(unrelated sample)
FC10636-32	4Q53808.D	11/14/23 10:55	OP99872	(used for QC only; not part of job FC11160)
ZZZZZZ	4Q53809.D	11/14/23 11:10	OP99872	(unrelated sample)
ZZZZZZ	4Q53810.D	11/14/23 11:25	OP99872	(unrelated sample)
ZZZZZZ	4Q53811.D	11/14/23 11:39	OP99872	(unrelated sample)
S4Q785-ECC785	4Q53812.D	11/14/23 11:54	n/a	Ending cal 4
S4Q785-ICCB	4Q53813.D	11/14/23 12:09	n/a	Continuing Calibration Blank

## Run Sequence Report

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q786	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q786-RT	4Q53864.D	11/15/23 10:01	n/a	Retention Time Marker
S4Q786-RT	4Q53865.D	11/15/23 10:15	n/a	Retention Time Marker
S4Q786-IBLK	4Q53867.D	11/15/23 10:45	n/a	Instrument Blank
S4Q786-IBLK	4Q53867.D	11/15/23 10:45	n/a	Instrument Blank
S4Q786-CC785	4Q53868.D	11/15/23 11:00	n/a	Continuing cal 4
S4Q786-CC785	4Q53869.D	11/15/23 11:14	n/a	Continuing cal 1.0LL
ZZZZZZ	4Q53870.D	11/15/23 11:41	OP99926	(unrelated sample)
OP58-BS	4Q53871.D	11/15/23 11:55	OP58	Blank Spike
OP58-LLBS	4Q53872.D	11/15/23 12:10	OP58	Blank Spike
OP58-MB	4Q53873.D	11/15/23 12:25	OP58	Method Blank
ZZZZZZ	4Q53874.D	11/15/23 12:40	OP58	(unrelated sample)
ZZZZZZ	4Q53875.D	11/15/23 12:54	OP58	(unrelated sample)
ZZZZZZ	4Q53877.D	11/15/23 13:24	OP58	(unrelated sample)
S4Q786-CC785	4Q53879.D	11/15/23 13:53	n/a	Continuing cal 4
S4Q786-ICCB	4Q53880.D	11/15/23 14:08	n/a	Continuing Calibration Blank
FC11101-1	4Q53881.D	11/15/23 14:23	OP58	(used for QC only; not part of job FC11160)
OP58-MS	4Q53882.D	11/15/23 14:38	OP58	Matrix Spike
FC11101-2	4Q53883.D	11/15/23 14:52	OP58	(used for QC only; not part of job FC11160)
OP58-DUP	4Q53884.D	11/15/23 15:07	OP58	Duplicate
ZZZZZZ	4Q53885.D	11/15/23 15:22	OP58	(unrelated sample)
ZZZZZZ	4Q53886.D	11/15/23 15:37	OP58	(unrelated sample)
ZZZZZZ	4Q53887.D	11/15/23 15:51	OP58	(unrelated sample)
FC11160-1	4Q53888.D	11/15/23 16:06	OP58	AF-RHMW12A-WGN01LF-2311
FC11160-2	4Q53889.D	11/15/23 16:21	OP58	AF-RHMW12A-WGFD01LF-2311
S4Q786-CC785	4Q53890.D	11/15/23 16:36	n/a	Continuing cal 4
S4Q786-ICCB	4Q53891.D	11/15/23 16:50	n/a	Continuing Calibration Blank
OP99927-BS	4Q53892.D	11/15/23 17:05	OP99927	Blank Spike
OP99927-LLBS	4Q53893.D	11/15/23 17:20	OP99927	Blank Spike
OP99927-MB	4Q53894.D	11/15/23 17:35	OP99927	Method Blank
ZZZZZZ	4Q53895.D	11/15/23 17:50	OP99927	(unrelated sample)
ZZZZZZ	4Q53896.D	11/15/23 18:04	OP99927	(unrelated sample)
ZZZZZZ	4Q53897.D	11/15/23 18:19	OP99927	(unrelated sample)
ZZZZZZ	4Q53898.D	11/15/23 18:34	OP99927	(unrelated sample)
ZZZZZZ	4Q53899.D	11/15/23 18:49	OP99927	(unrelated sample)
ZZZZZZ	4Q53900.D	11/15/23 19:03	OP99927	(unrelated sample)
S4Q786-CC785	4Q53901.D	11/15/23 19:18	n/a	Continuing cal 4
S4Q786-ICCB	4Q53902.D	11/15/23 19:33	n/a	Continuing Calibration Blank
ZZZZZZ	4Q53903.D	11/15/23 19:48	OP99927	(unrelated sample)
ZZZZZZ	4Q53904.D	11/15/23 20:02	OP99927	(unrelated sample)
ZZZZZZ	4Q53905.D	11/15/23 20:17	OP99927	(unrelated sample)
ZZZZZZ	4Q53906.D	11/15/23 20:32	OP99927	(unrelated sample)
ZZZZZZ	4Q53907.D	11/15/23 20:47	OP99927	(unrelated sample)
ZZZZZZ	4Q53908.D	11/15/23 21:01	OP99927	(unrelated sample)
ZZZZZZ	4Q53909.D	11/15/23 21:16	OP99927	(unrelated sample)
ZZZZZZ	4Q53910.D	11/15/23 21:31	OP99927	(unrelated sample)
S4Q786-CC785	4Q53913.D	11/15/23 22:15	n/a	Continuing cal 4

# Run Sequence Report

Job Number: FC11160  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

6.9.2

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**MS Semi-volatiles**

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**Raw Data**

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53888.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/15/2023 4:06:40 PM  
 Sample Name : fc11160-1  
 Vial : P2-A9  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q786.batch.bin  
 Sample Information : OP58,S4Q786,525,,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.699	216.8 -> 171.9	45093	10.00 µg/L	0.000
M5-PFPeA	4.150	268.3 -> 223.0	37152	5.00 µg/L	-0.025
M5-PFHxA	5.322	318.0 -> 273.0	27575	2.50 µg/L	-0.025
M4-PFHpA	6.280	367.1 -> 322.0	26926	2.50 µg/L	-0.025
M8-PFOA	6.976	421.1 -> 376.0	31467	2.50 µg/L	-0.012
M9-PFNA	7.521	472.1 -> 427.0	13241	1.25 µg/L	-0.012
M6-PFDA	8.017	519.1 -> 474.1	8744	1.25 µg/L	0.000
M7-PFUnDA	8.461	570.0 -> 525.1	10196	1.25 µg/L	-0.012
M2-PFDoDA	8.892	615.1 -> 570.0	9434	1.25 µg/L	-0.012
M2-PFTeDA	9.662	715.2 -> 670.0	8849	1.25 µg/L	0.000
M8-FOSA	9.806	506.1 -> 77.8	6823	2.50 µg/L	-0.012
M3-PFBS	5.177	302.1 -> 79.9	8249	2.50 µg/L	-0.025
M3-PFHxS	7.029	402.1 -> 79.9	6453	2.50 µg/L	-0.025
M8-PFOS	8.130	507.1 -> 79.9	7166	2.50 µg/L	-0.013
M2-4:2FTS	5.021	329.1 -> 80.9	756	5.00 µg/L	-0.025
M2-6:2FTS	6.748	429.1 -> 80.9	1804	5.00 µg/L	-0.012
M2-8:2FTS	7.804	529.1 -> 80.9	2426	5.00 µg/L	-0.025
M3-MeFOSAA	8.099	573.2 -> 419.0	12047	5.00 µg/L	0.000
M3-HFPO-DA	5.677	286.9 -> 168.9	25333	10.00 µg/L	-0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	9845	5.00 µg/L	-0.014
M7-MeFOSE	11.034	623.2 -> 58.9	25814	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	31013	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	5203	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	3868	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	6135	2.50 µg/L	-0.013
13C3-PFBA	2.703	216.0 -> 172.0	42478	5.00 µg/L	0.000
18O2-PFHxS	7.041	403.0 -> 83.9	4408	2.50 µg/L	-0.013
13C4-PFOA	6.977	417.1 -> 372.0	36982	2.50 µg/L	-0.012
13C2-PFDA	8.017	515.1 -> 470.1	9729	1.25 µg/L	-0.012
13C5-PFNA	7.522	468.0 -> 423.0	13579	1.25 µg/L	-0.012
13C2-PFHxA	5.323	315.1 -> 270.0	30128	2.50 µg/L	-0.025
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.021	329.1 -> 80.9	756	5.01 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C2-6:2FTS	6.748	429.1 -> 80.9	1804	5.68 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.5%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2426	5.41 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.3%		
13C2-PFDoDA	8.892	615.1 -> 570.0	9434	1.07 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 86.0%		
13C2-PFTeDA	9.662	715.2 -> 670.0	8849	1.00 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 80.1%		
13C3-PFBS	5.177	302.1 -> 79.9	8249	2.50 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C3-PFHxS	7.029	402.1 -> 79.9	6453	2.36 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 = 94.5%	
13C4-PFBA	2.699	216.8 -> 171.9	45093	5.09 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 50.9%	
13C4-PFHpA	6.280	367.1 -> 322.0	26926	2.56 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C5-PFHxA	5.322	318.0 -> 273.0	27575	2.45 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C5-PFPeA	4.150	268.3 -> 223.0	37152	5.06 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C6-PFDA	8.017	519.1 -> 474.1	8744	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C7-PFUnDA	8.461	570.0 -> 525.1	10196	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C8-FOSA	9.806	506.1 -> 77.8	6823	2.33 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.1%	
13C8-PFOA	6.976	421.1 -> 376.0	31467	2.38 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.3%	
13C8-PFOS	8.130	507.1 -> 79.9	7166	2.45 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C9-PFNA	7.521	472.1 -> 427.0	13241	1.24 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.9%	
d3-MeFOSAA	8.099	573.2 -> 419.0	12047	5.18 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.5%	
13C3-HFPO-DA	5.677	286.9 -> 168.9	25333	9.88 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.8%	
d3-MeFOSA	11.139	515.0 -> 219.0	3868	1.89 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 75.6%	
d5-EtFOSAA	8.296	589.2 -> 419.0	9845	4.83 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.6%	
d7-MeFOSE	11.034	623.2 -> 58.9	25814	20.42 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 81.7%	
d9-EtFOSE	11.319	639.2 -> 58.9	31013	21.18 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 84.7%	
d5-EtFOSA	11.410	531.1 -> 219.0	5203	2.14 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 85.7%	

**Target Compounds**

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

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	7.898	398.7 -> 98.9	0	µg/L	m	1
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	7.302	548.8 -> 98.9	0	µg/L	m	1
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	0	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	9.127	713.1 -> 669.0	0	µg/L	m	1
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

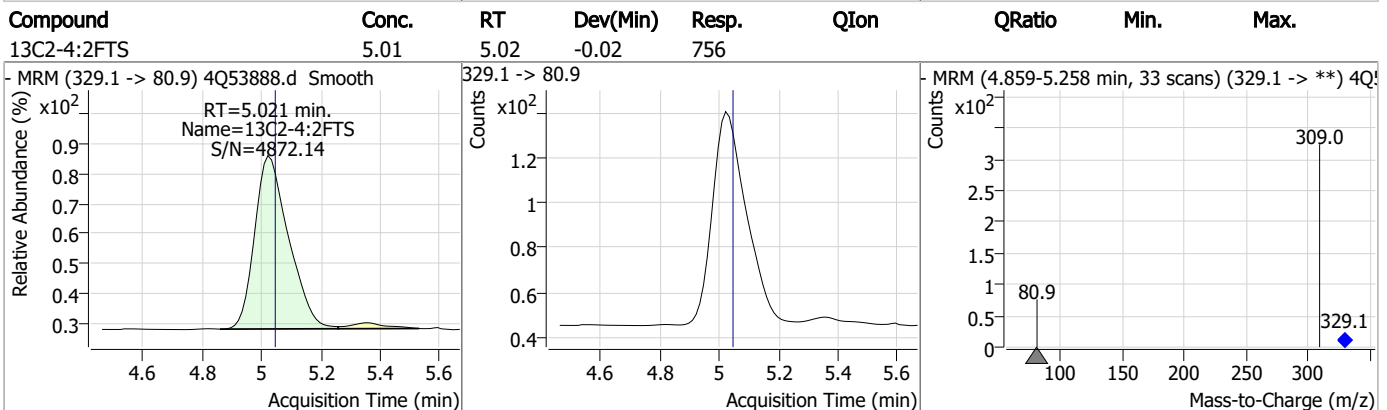
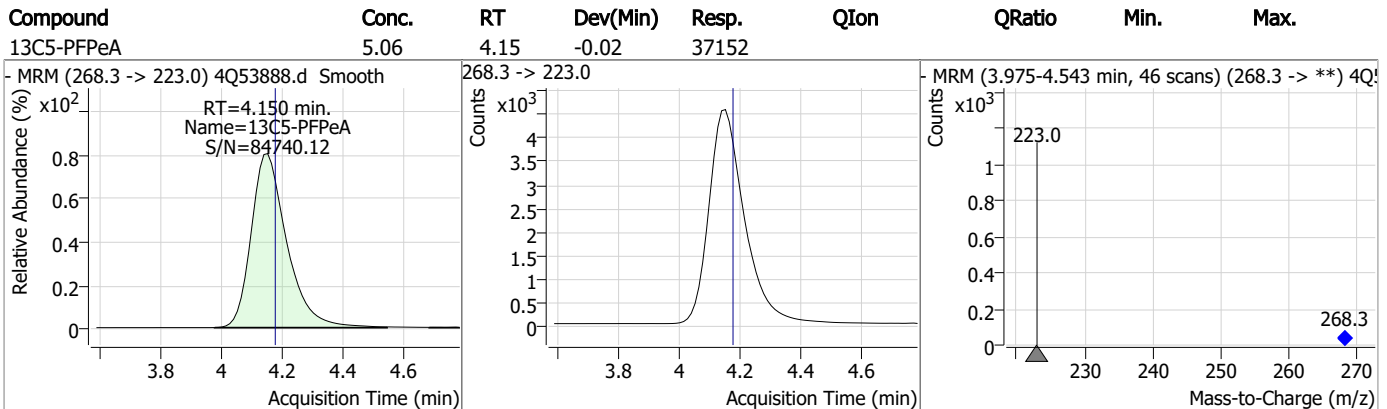
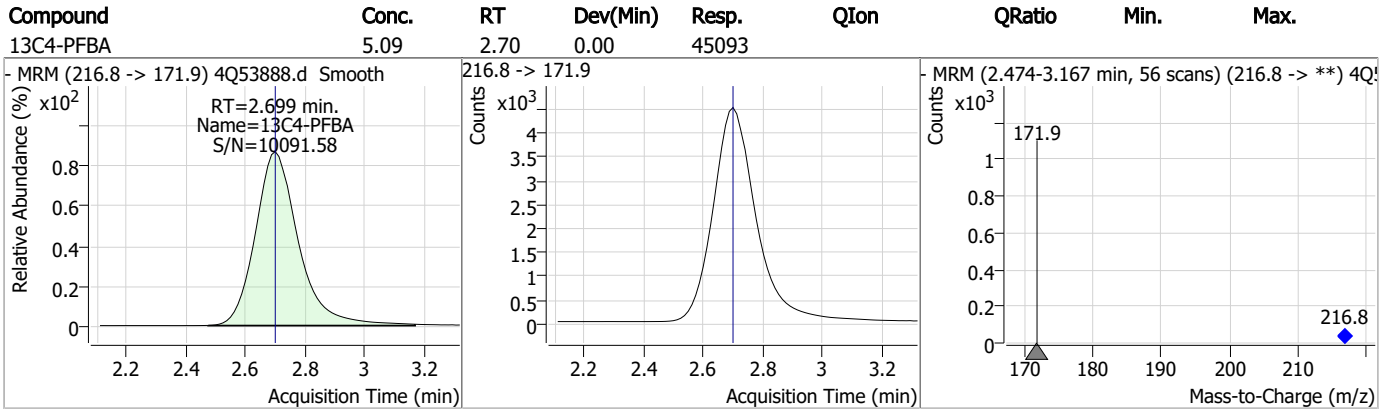
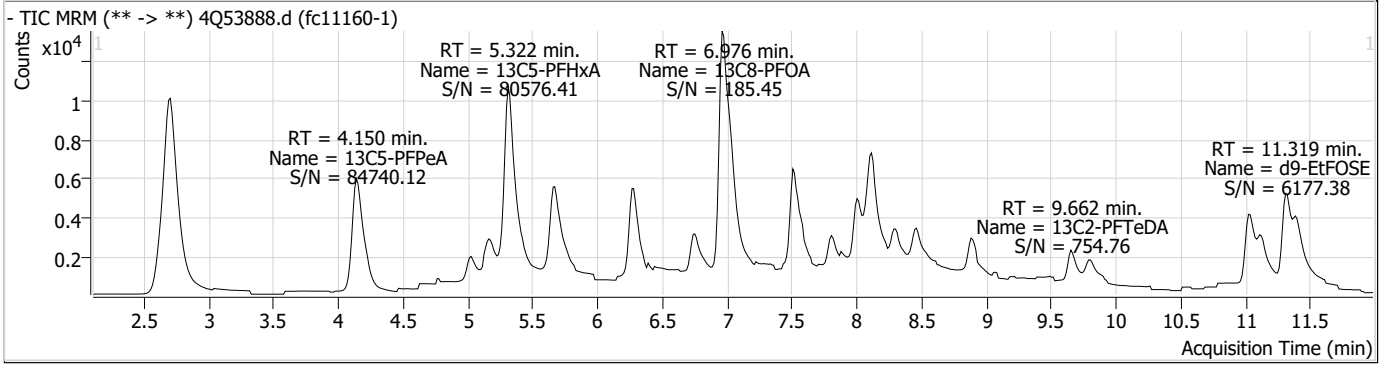
### Perfluorinated Compounds by LC/MS/MS

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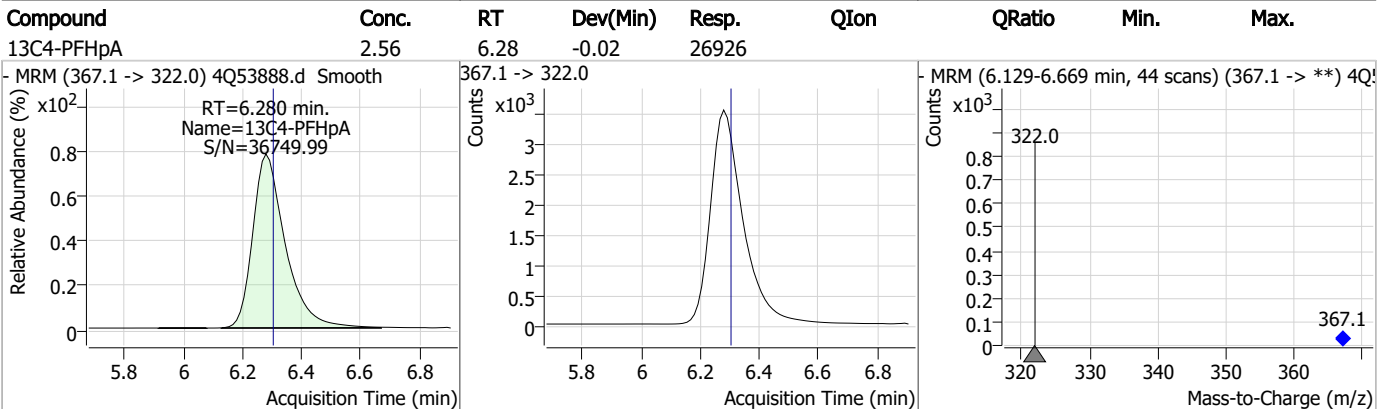
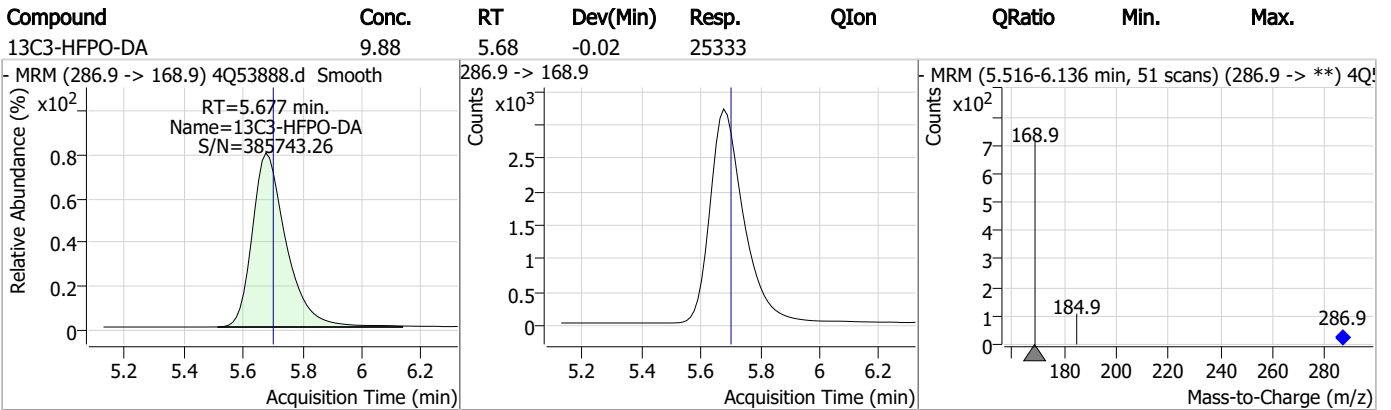
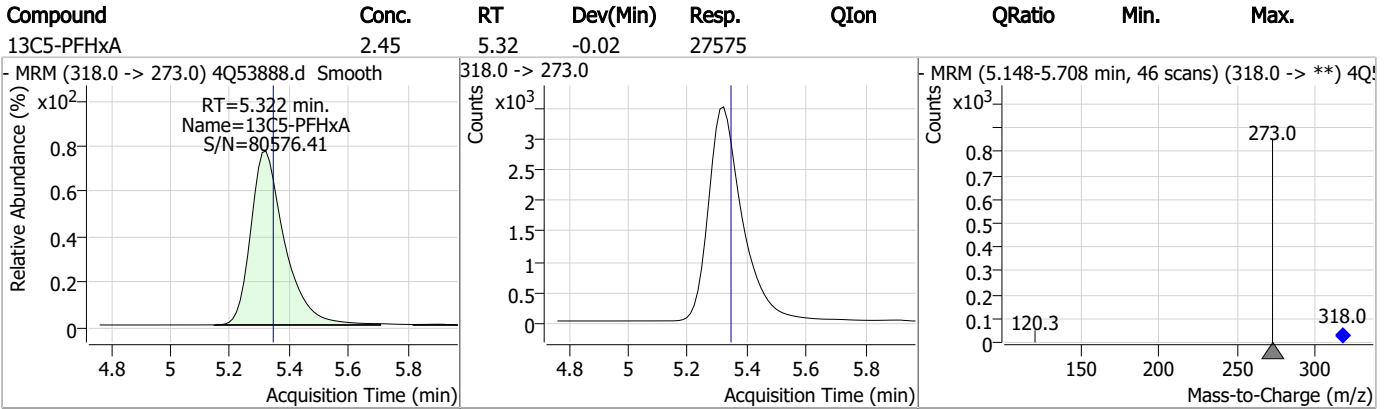
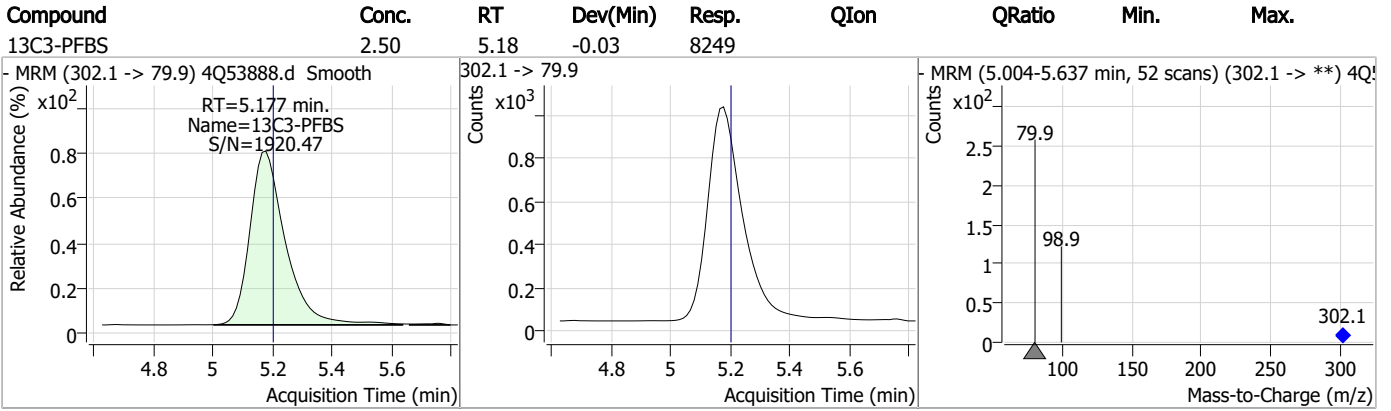
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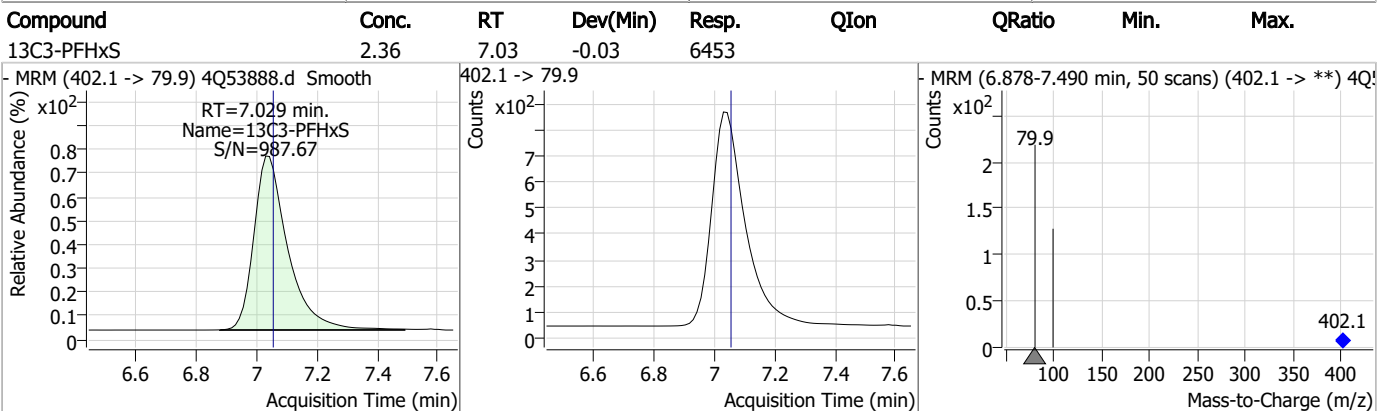
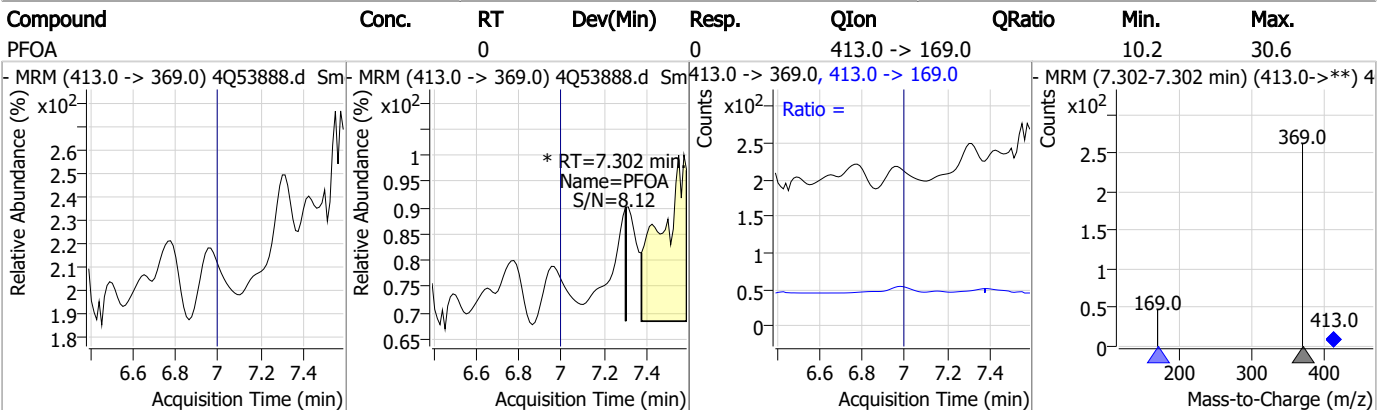
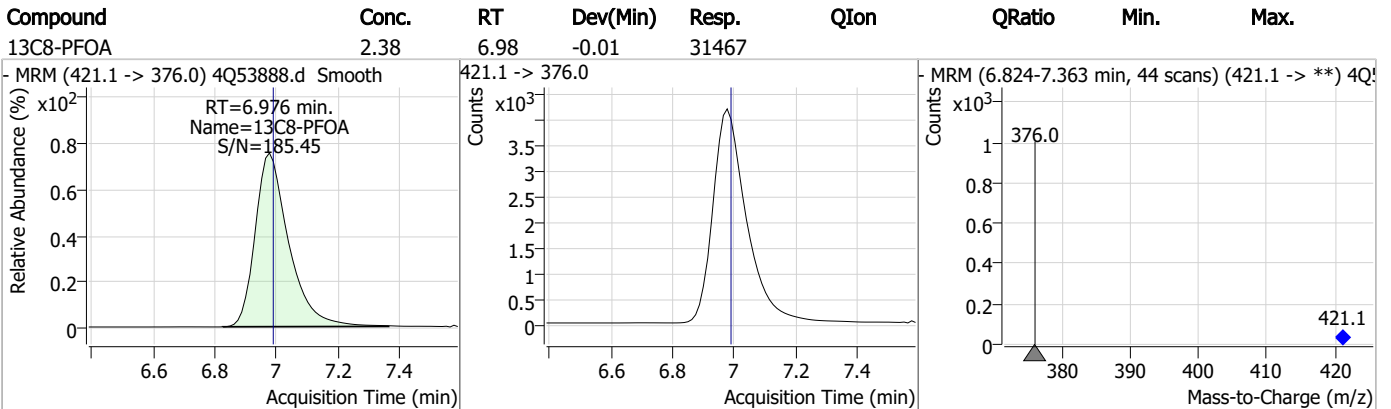
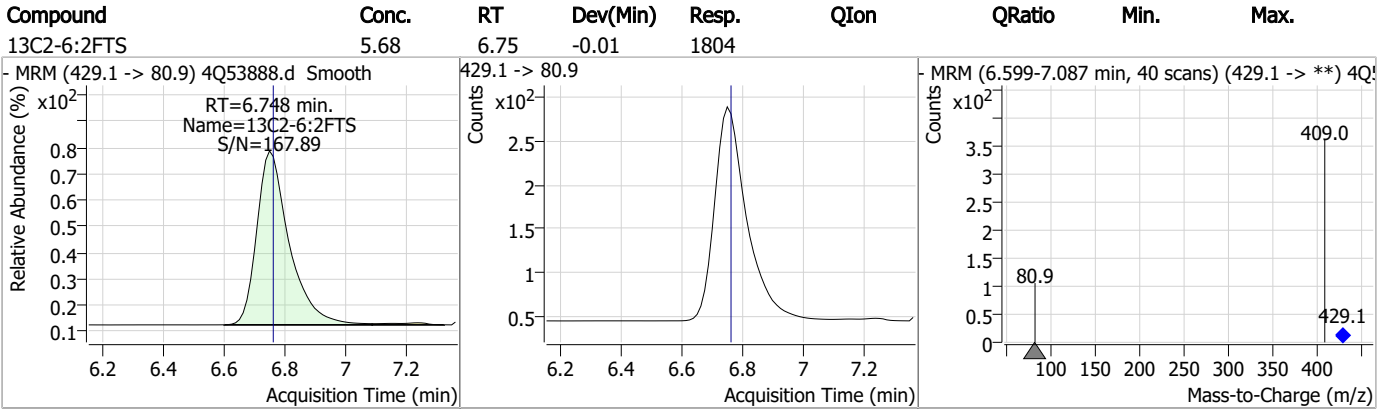
### Perfluorinated Compounds by LC/MS/MS



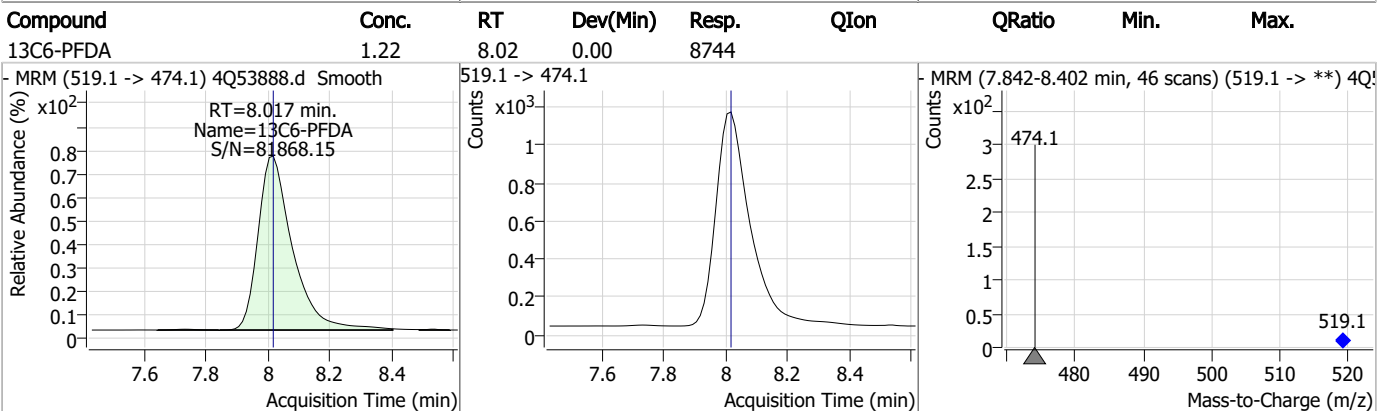
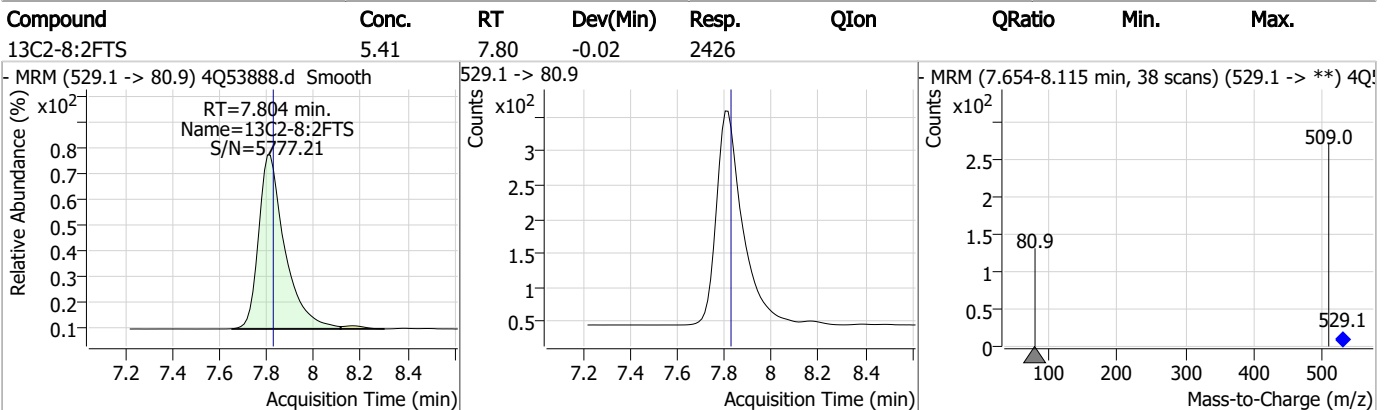
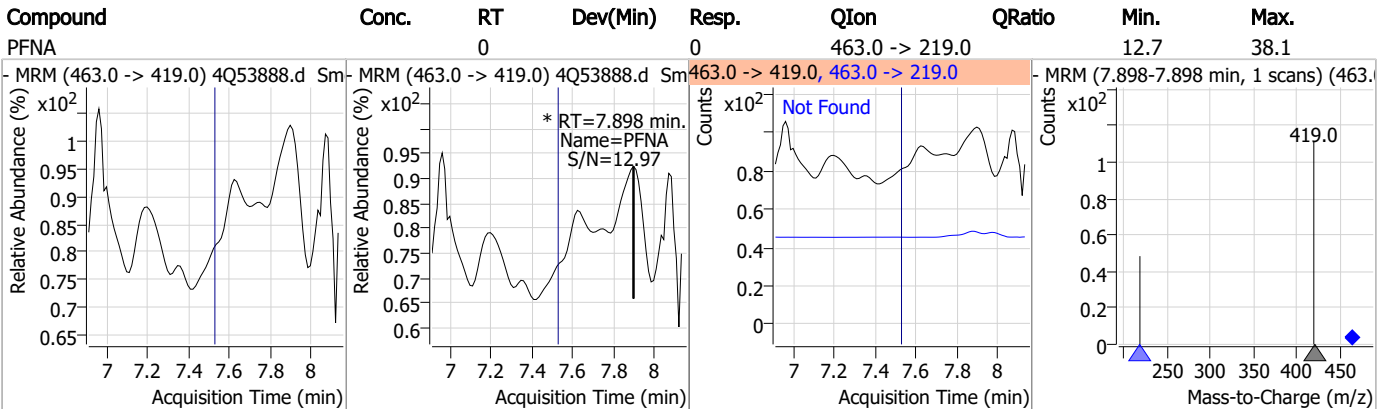
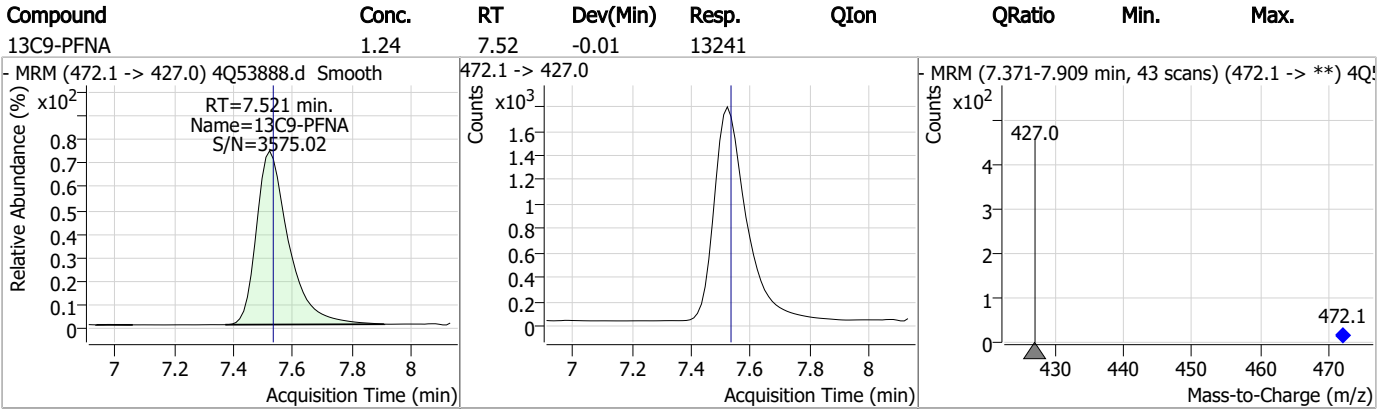
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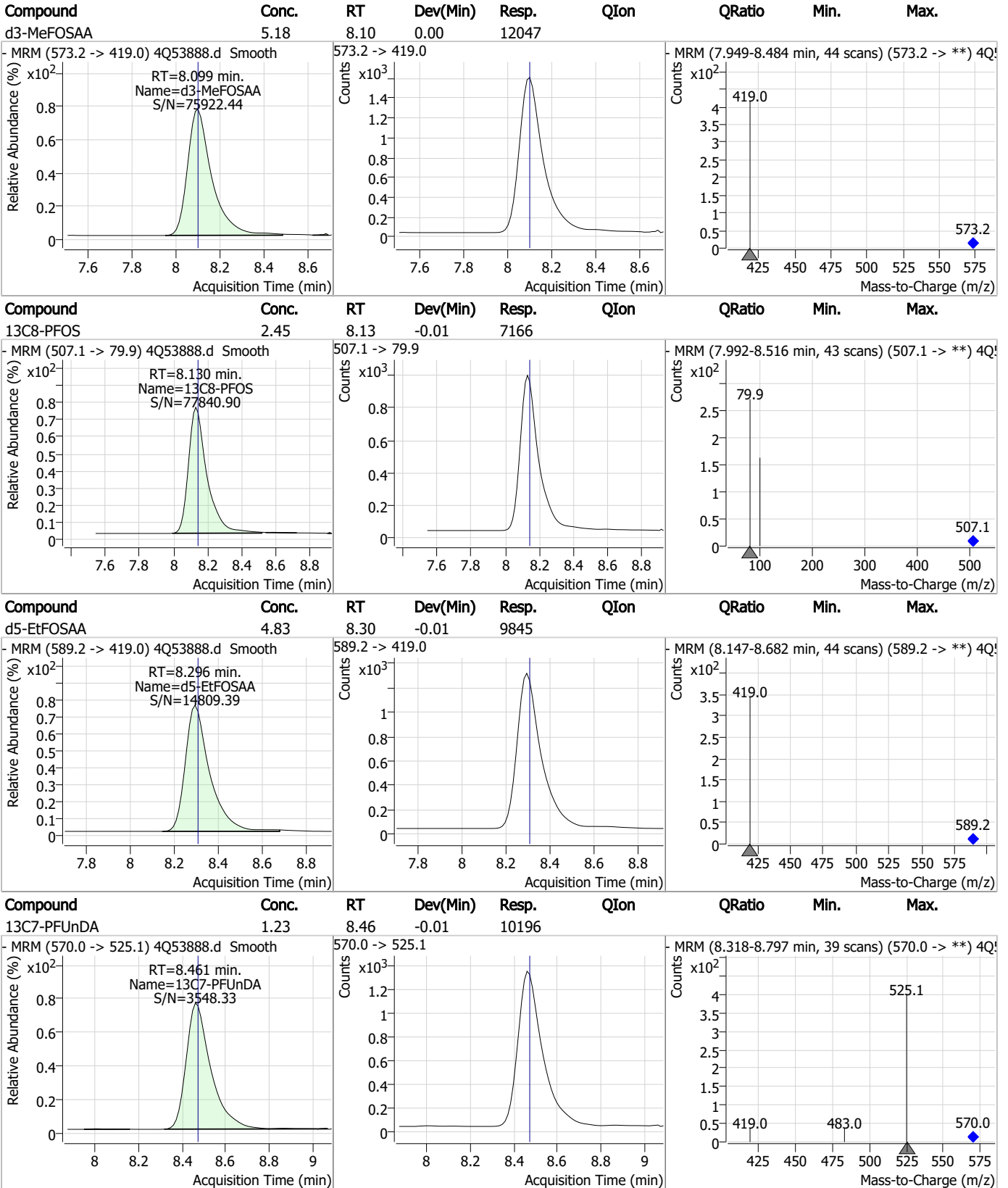
### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



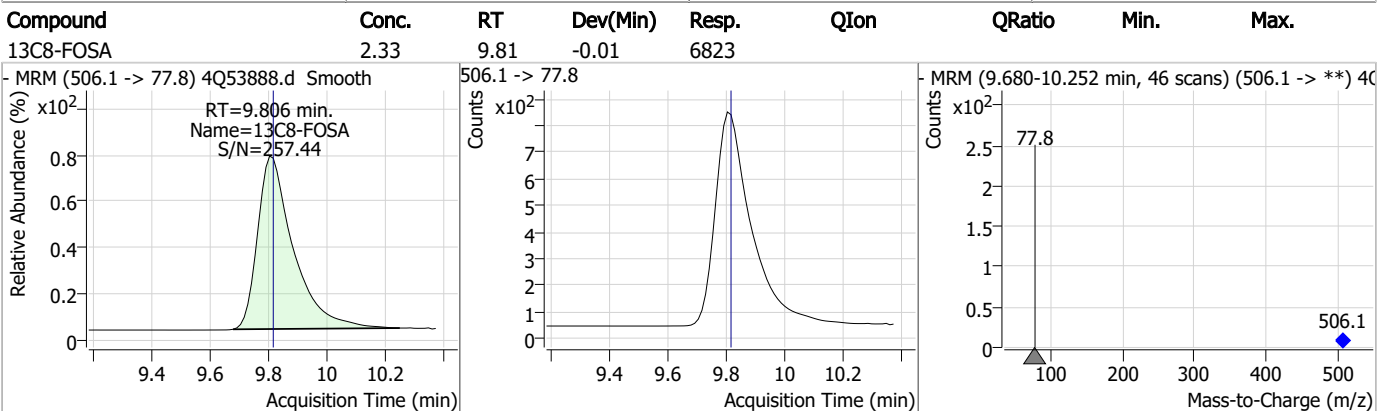
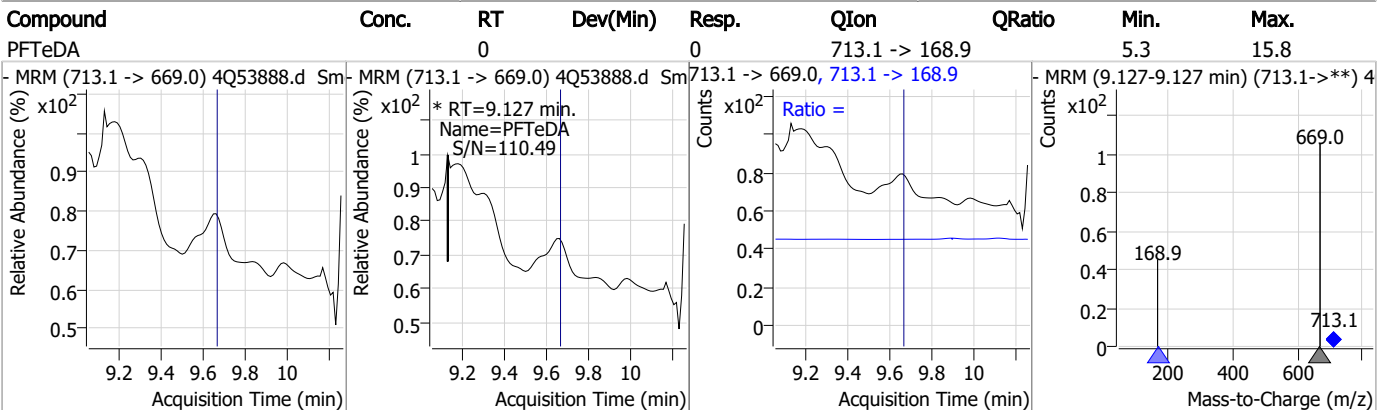
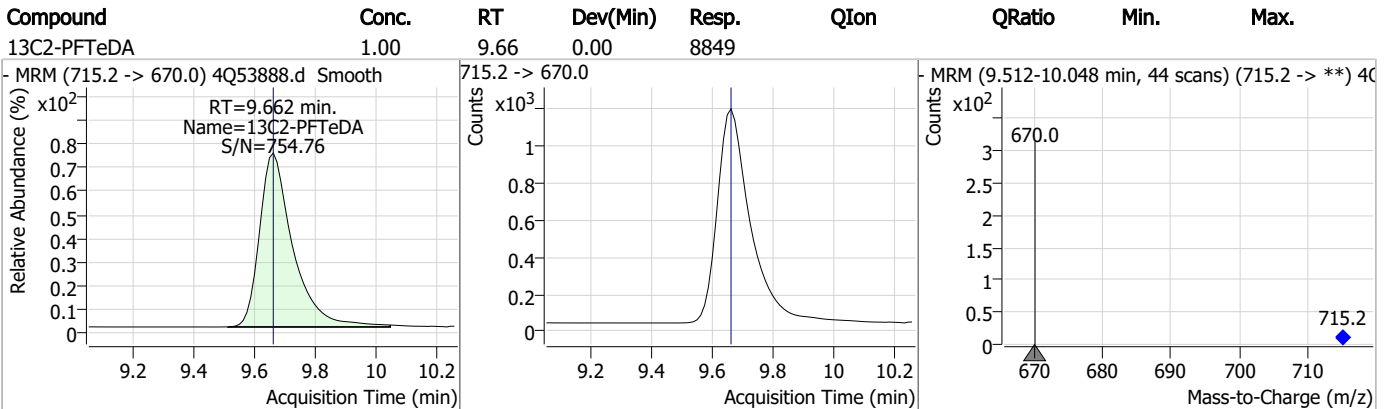
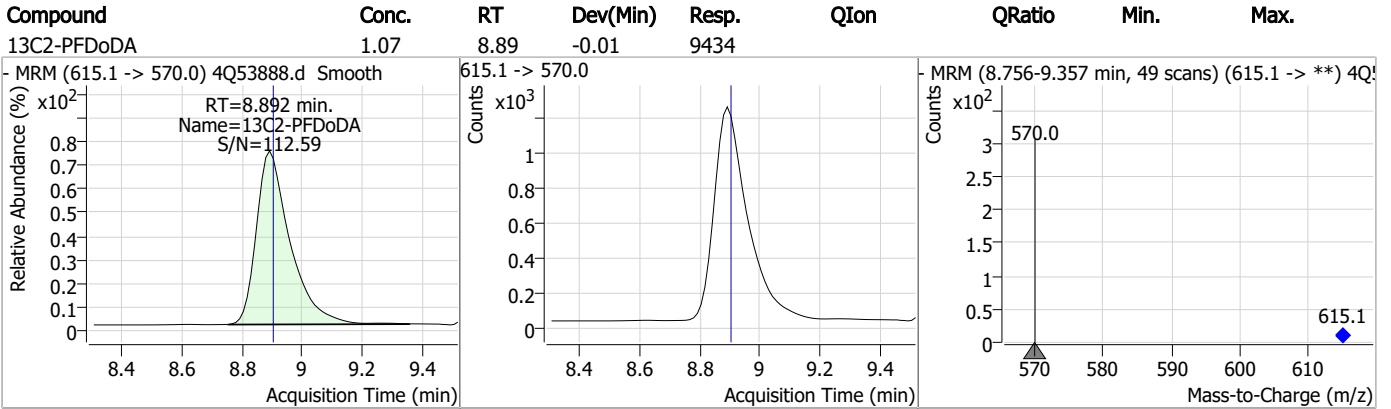
### Perfluorinated Compounds by LC/MS/MS



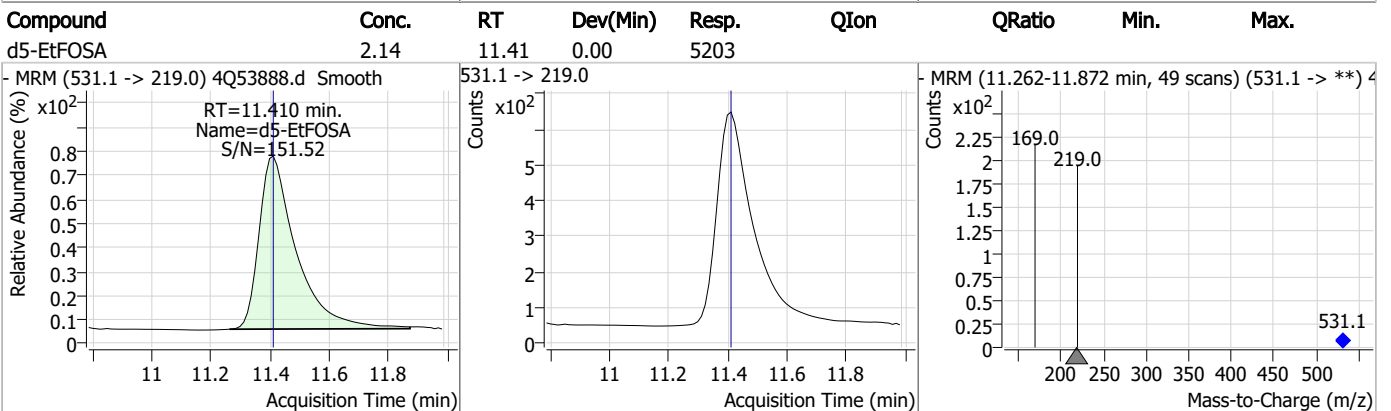
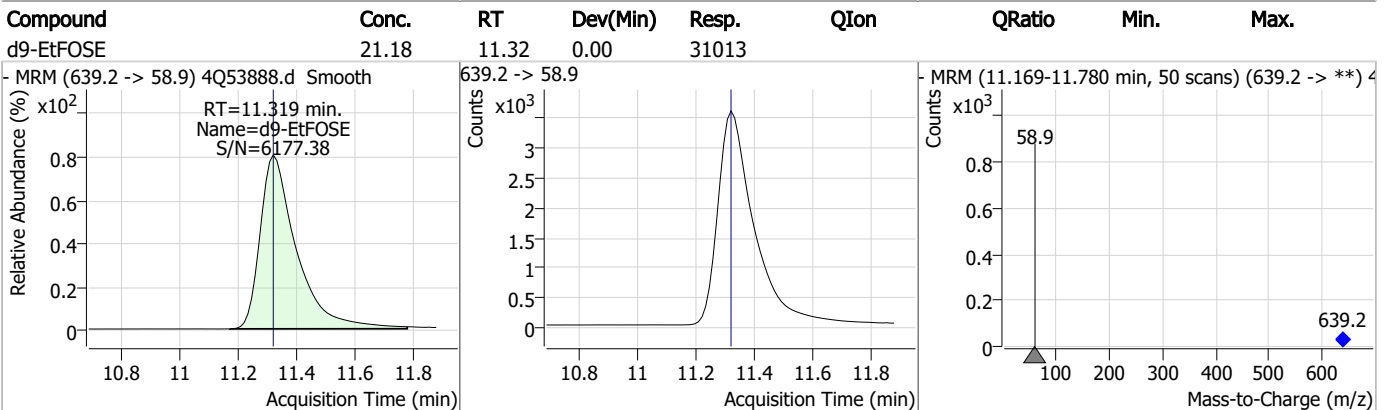
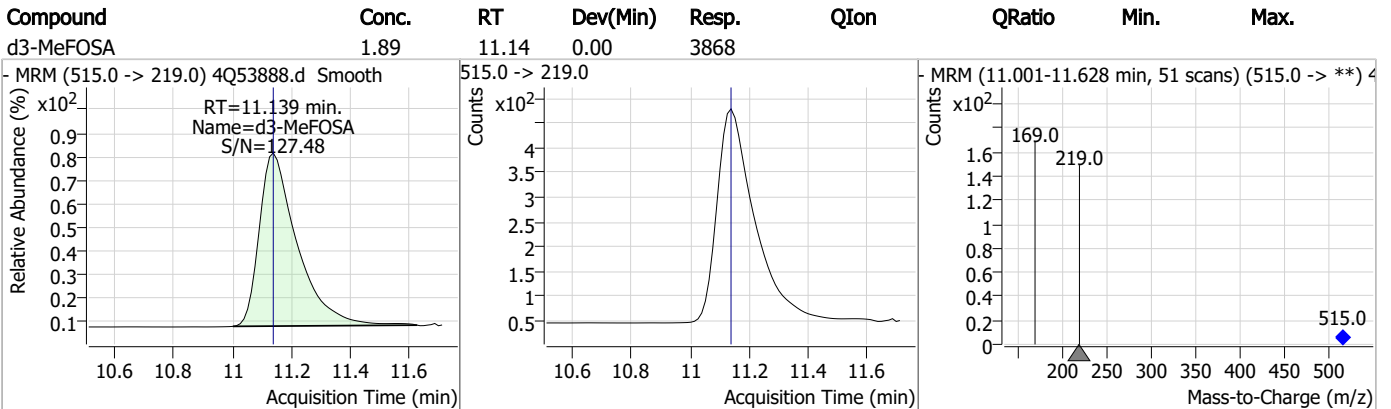
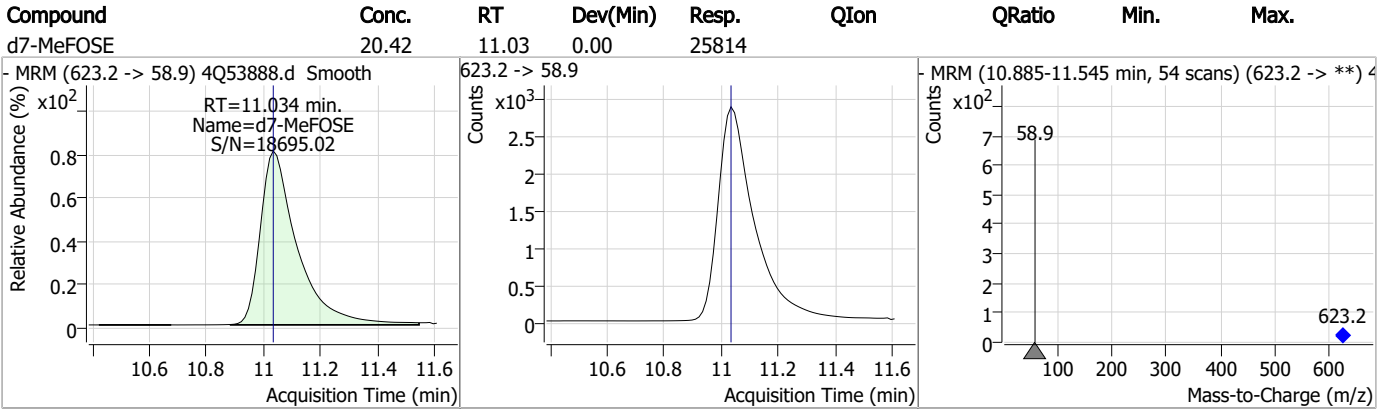
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### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

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 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/15/2023 4:21:26 PM  
 Sample Name : fc11160-2  
 Vial : P2-B1  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q786.batch.bin  
 Sample Information : OP58,S4Q786,525,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.699	216.8 -> 171.9	43667	10.00 µg/L	0.000
M5-PFPeA	4.150	268.3 -> 223.0	35890	5.00 µg/L	-0.025
M5-PFHxA	5.322	318.0 -> 273.0	27130	2.50 µg/L	-0.025
M4-PFHpA	6.280	367.1 -> 322.0	26492	2.50 µg/L	-0.025
M8-PFOA	6.976	421.1 -> 376.0	30366	2.50 µg/L	-0.012
M9-PFNA	7.521	472.1 -> 427.0	12650	1.25 µg/L	-0.012
M6-PFDA	8.004	519.1 -> 474.1	8207	1.25 µg/L	-0.013
M7-PFUnDA	8.461	570.0 -> 525.1	9181	1.25 µg/L	-0.012
M2-PFDoDA	8.892	615.1 -> 570.0	8249	1.25 µg/L	-0.012
M2-PFTeDA	9.662	715.2 -> 670.0	8050	1.25 µg/L	0.000
M8-FOSA	9.806	506.1 -> 77.8	6649	2.50 µg/L	-0.012
M3-PFBS	5.177	302.1 -> 79.9	7947	2.50 µg/L	-0.025
M3-PFHxS	7.029	402.1 -> 79.9	6876	2.50 µg/L	-0.025
M8-PFOS	8.130	507.1 -> 79.9	6746	2.50 µg/L	-0.013
M2-4:2FTS	5.021	329.1 -> 80.9	894	5.00 µg/L	-0.025
M2-6:2FTS	6.748	429.1 -> 80.9	1753	5.00 µg/L	-0.012
M2-8:2FTS	7.816	529.1 -> 80.9	2055	5.00 µg/L	-0.012
M3-MeFOSAA	8.086	573.2 -> 419.0	11286	5.00 µg/L	-0.012
M3-HFPO-DA	5.677	286.9 -> 168.9	24066	10.00 µg/L	-0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	8795	5.00 µg/L	-0.014
M7-MeFOSE	11.034	623.2 -> 58.9	23686	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	27959	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	4693	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	3784	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	6257	2.50 µg/L	-0.013
13C3-PFBA	2.703	216.0 -> 172.0	44057	5.00 µg/L	0.000
18O2-PFHxS	7.041	403.0 -> 83.9	4428	2.50 µg/L	-0.013
13C4-PFOA	6.977	417.1 -> 372.0	37149	2.50 µg/L	-0.012
13C2-PFDA	8.004	515.1 -> 470.1	9555	1.25 µg/L	-0.025
13C5-PFNA	7.522	468.0 -> 423.0	13460	1.25 µg/L	-0.012
13C2-PFHxA	5.323	315.1 -> 270.0	30825	2.50 µg/L	-0.025
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.021	329.1 -> 80.9	894	5.90 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.0%		
13C2-6:2FTS	6.748	429.1 -> 80.9	1753	5.49 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.8%		
13C2-8:2FTS	7.816	529.1 -> 80.9	2055	4.56 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.3%		
13C2-PFDoDA	8.892	615.1 -> 570.0	8249	0.96 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 76.5%		
13C2-PFTeDA	9.662	715.2 -> 670.0	8050	0.93 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 74.2%		
13C3-PFBS	5.177	302.1 -> 79.9	7947	2.39 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.7%		
13C3-PFHxS	7.029	402.1 -> 79.9	6876	2.51 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 = 100.2%		
13C4-PFBA	2.699	216.8 -> 171.9	43667	4.76 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 47.6%		
13C4-PFHpA	6.280	367.1 -> 322.0	26492	2.46 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C5-PFHxA	5.322	318.0 -> 273.0	27130	2.36 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.4%		
13C5-PFPeA	4.150	268.3 -> 223.0	35890	4.77 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.5%		
13C6-PFDA	8.004	519.1 -> 474.1	8207	1.17 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.4%		
13C7-PFUnDA	8.461	570.0 -> 525.1	9181	1.13 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 90.4%		
13C8-FOSA	9.806	506.1 -> 77.8	6649	2.22 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 88.9%		
13C8-PFOA	6.976	421.1 -> 376.0	30366	2.29 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.6%		
13C8-PFOS	8.130	507.1 -> 79.9	6746	2.26 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.3%		
13C9-PFNA	7.521	472.1 -> 427.0	12650	1.19 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.3%		
d3-MeFOSAA	8.086	573.2 -> 419.0	11286	4.76 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.1%		
13C3-HFPO-DA	5.677	286.9 -> 168.9	24066	9.17 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 91.7%		
d3-MeFOSA	11.139	515.0 -> 219.0	3784	1.81 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 72.5%		
d5-EtFOSAA	8.296	589.2 -> 419.0	8795	4.23 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 84.7%		
d7-MeFOSE	11.034	623.2 -> 58.9	23686	18.38 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 73.5%		
d9-EtFOSE	11.319	639.2 -> 58.9	27959	18.73 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 74.9%		
d5-EtFOSA	11.410	531.1 -> 219.0	4693	1.89 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 75.8%		

Target Compounds

Target Compounds	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	8.663	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.	



7.1.2

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	7.459	398.7 -> 98.9	0	µg/L	m	1
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	9.077	713.1 -> 669.0	0	µg/L	m	1
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	11.681	630.0 -> 58.9	0	µg/L	m	1
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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



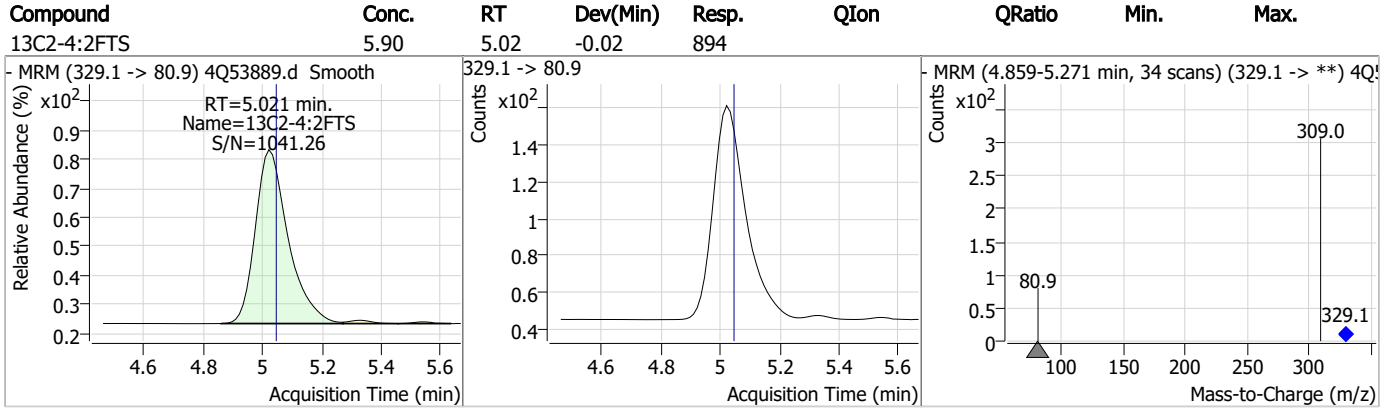
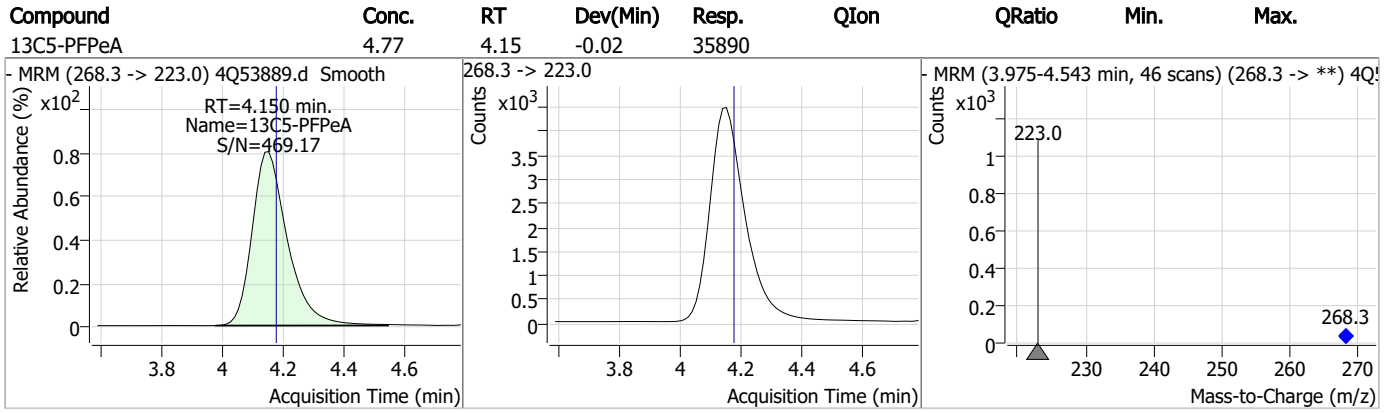
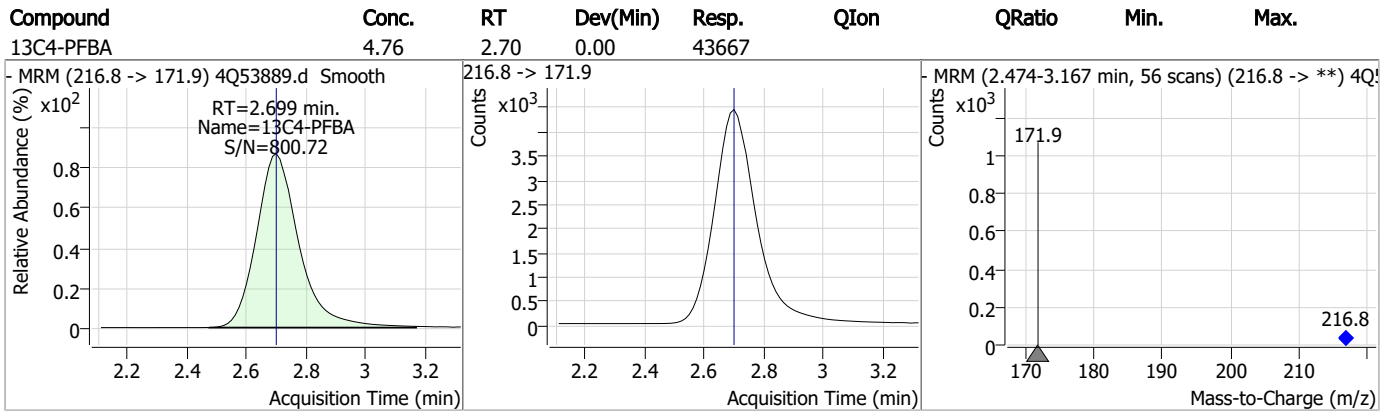
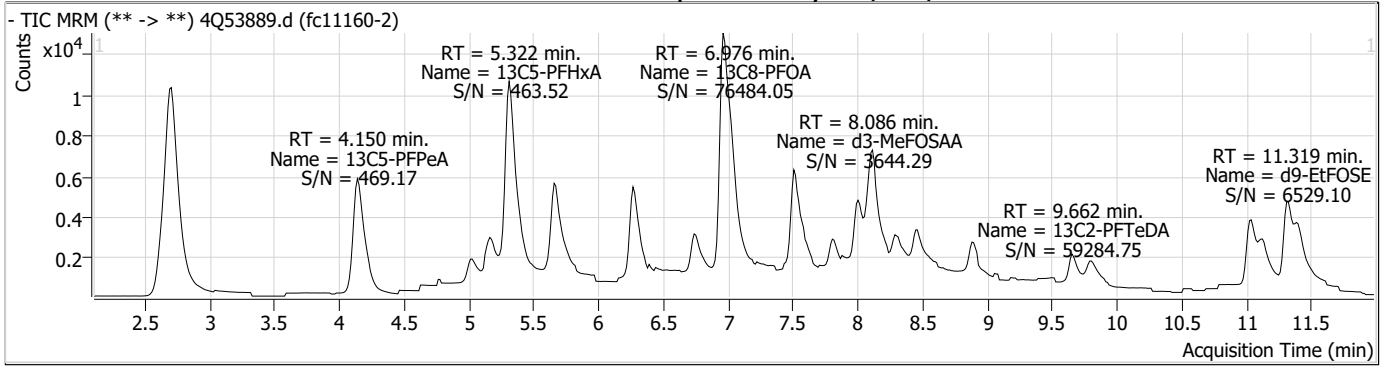
### Perfluorinated Compounds by LC/MS/MS

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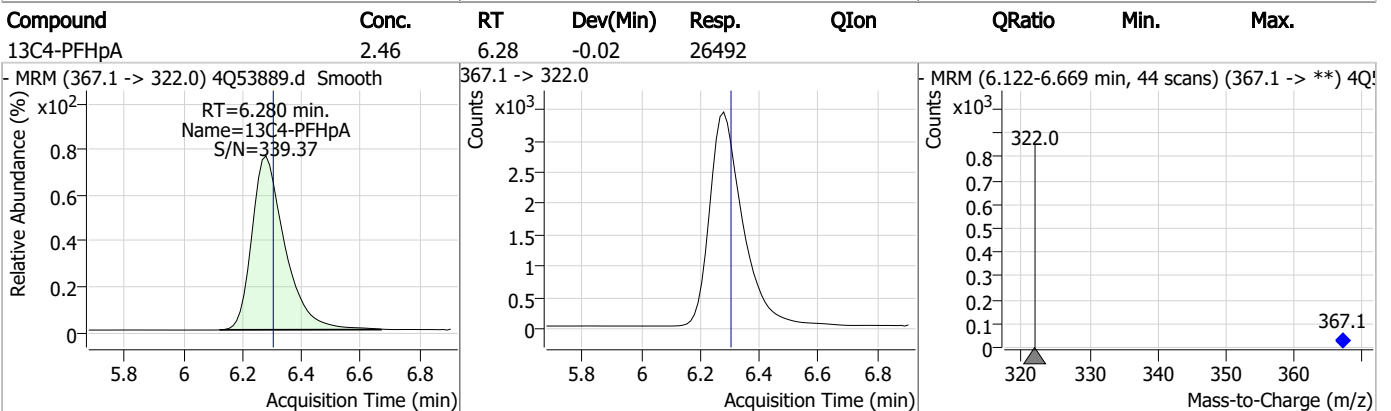
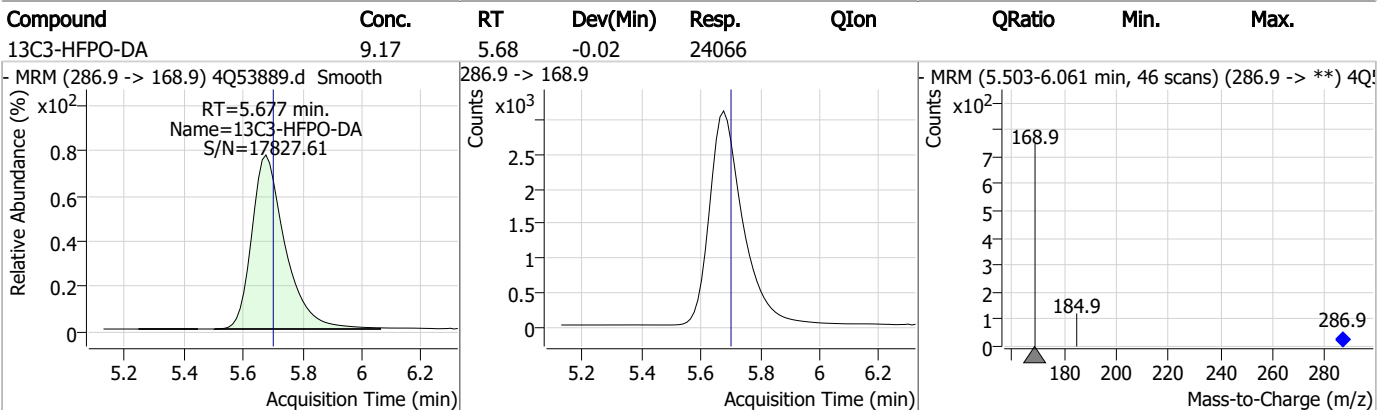
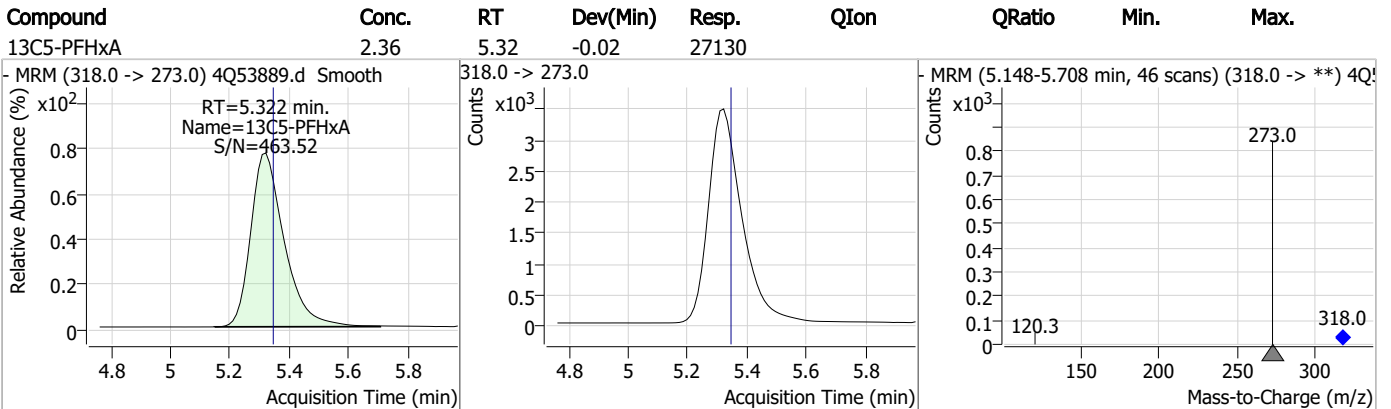
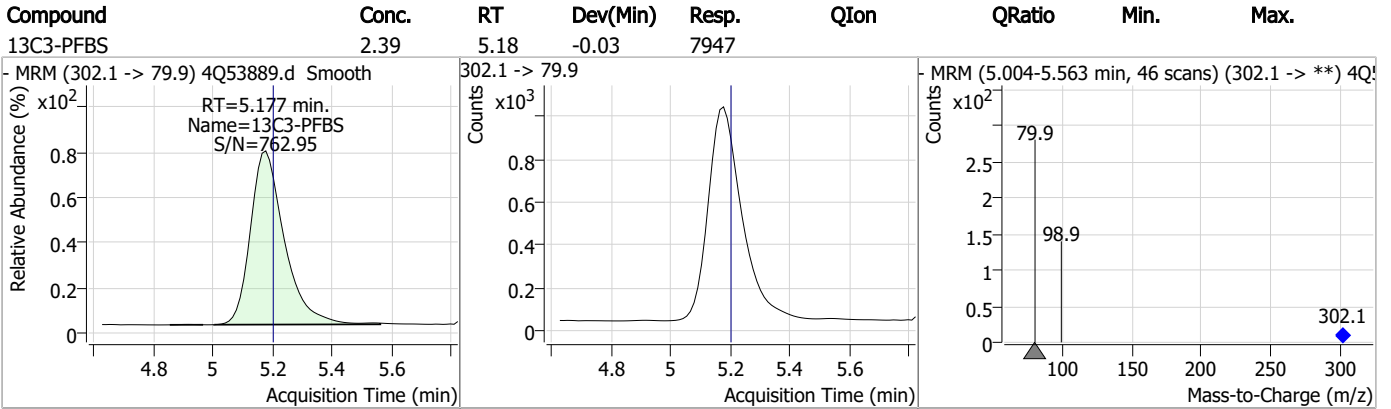
7.1.2  
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### Perfluorinated Compounds by LC/MS/MS

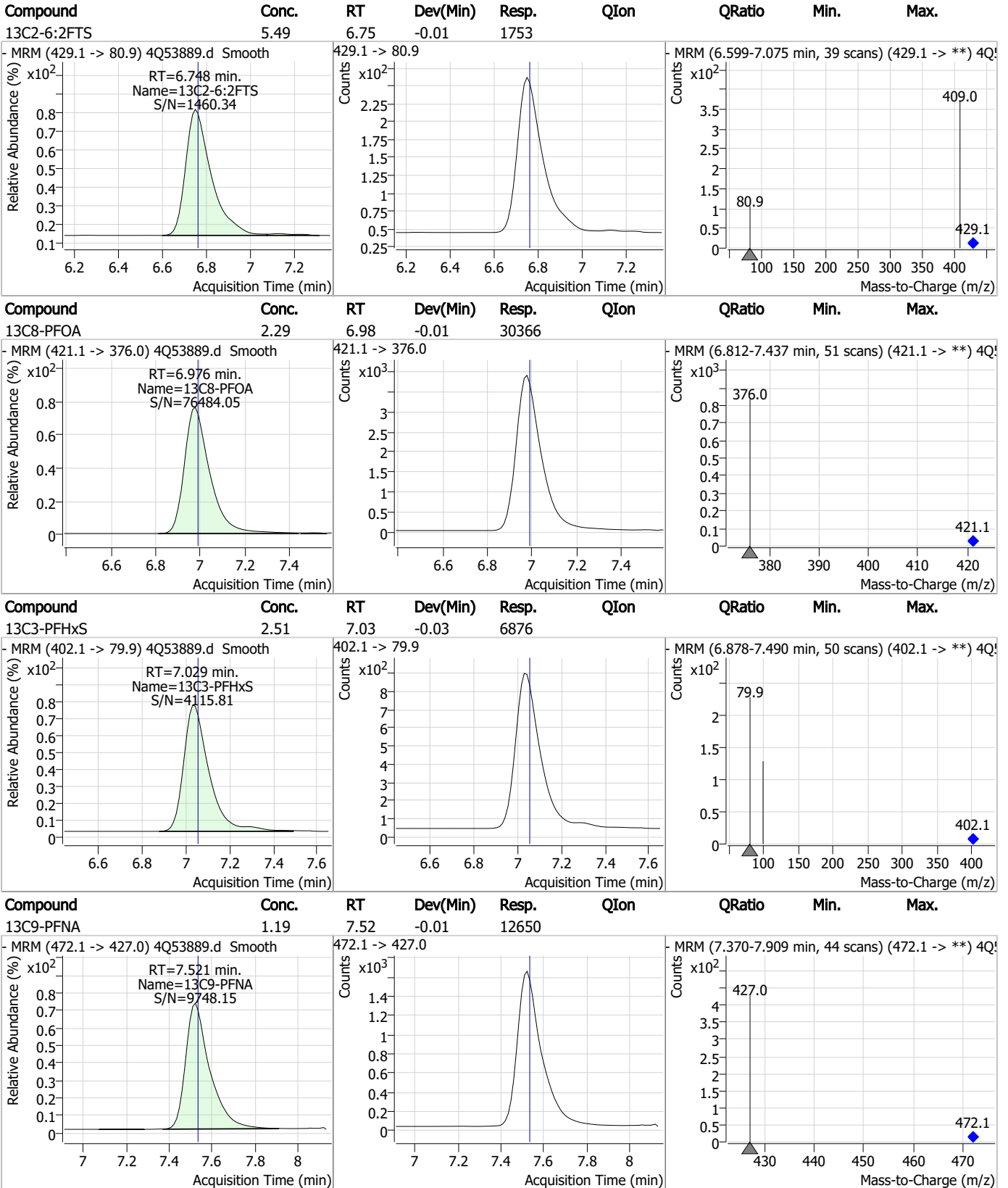


### Perfluorinated Compounds by LC/MS/MS





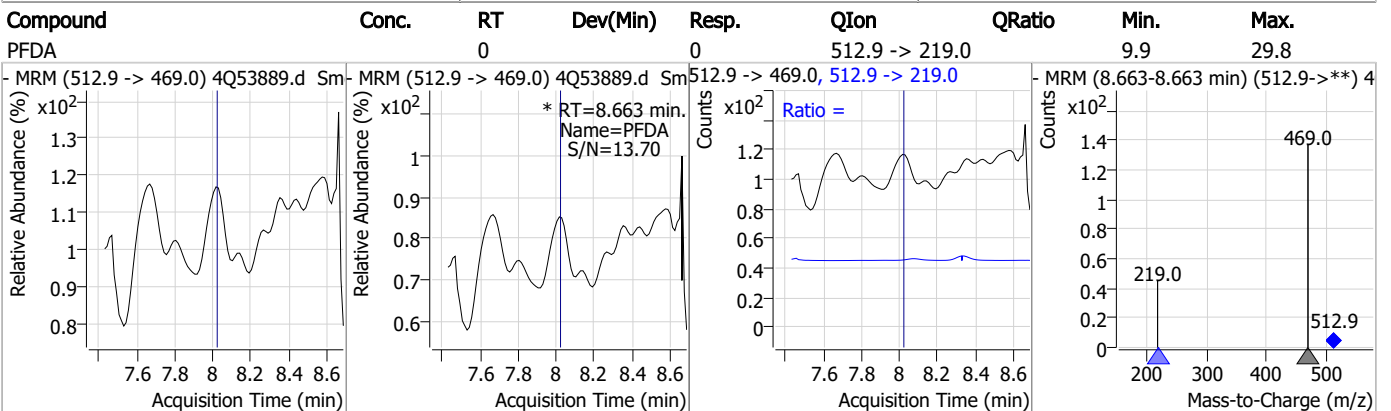
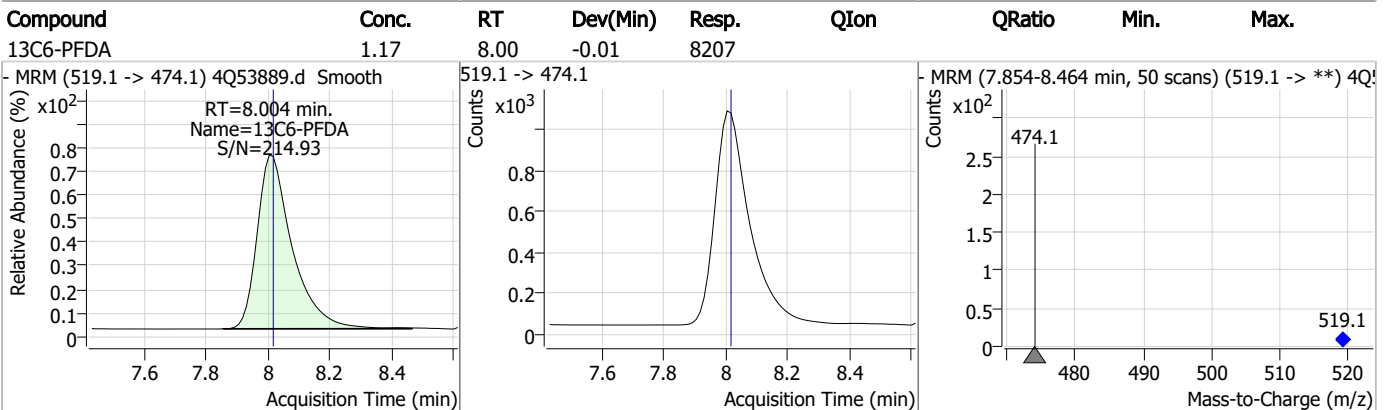
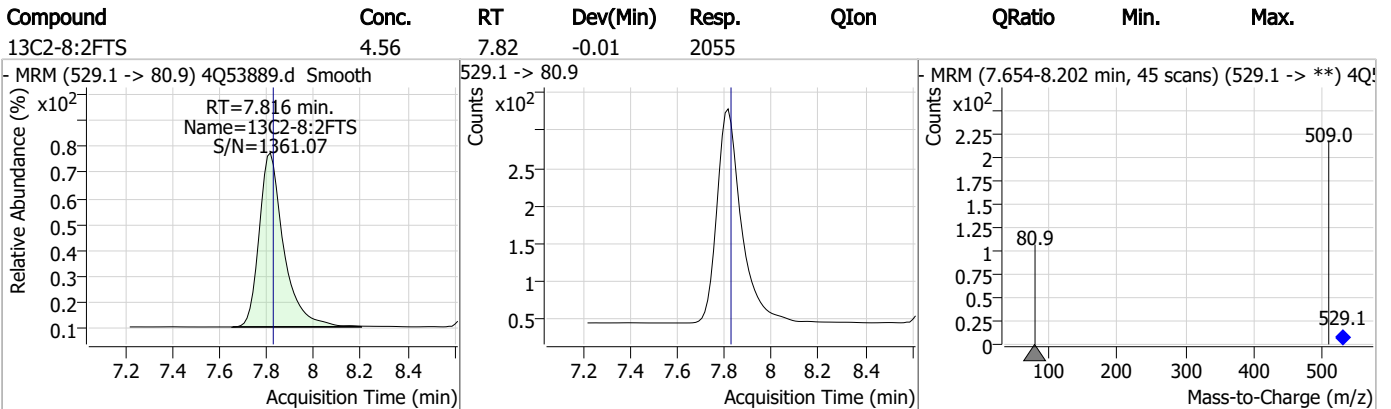
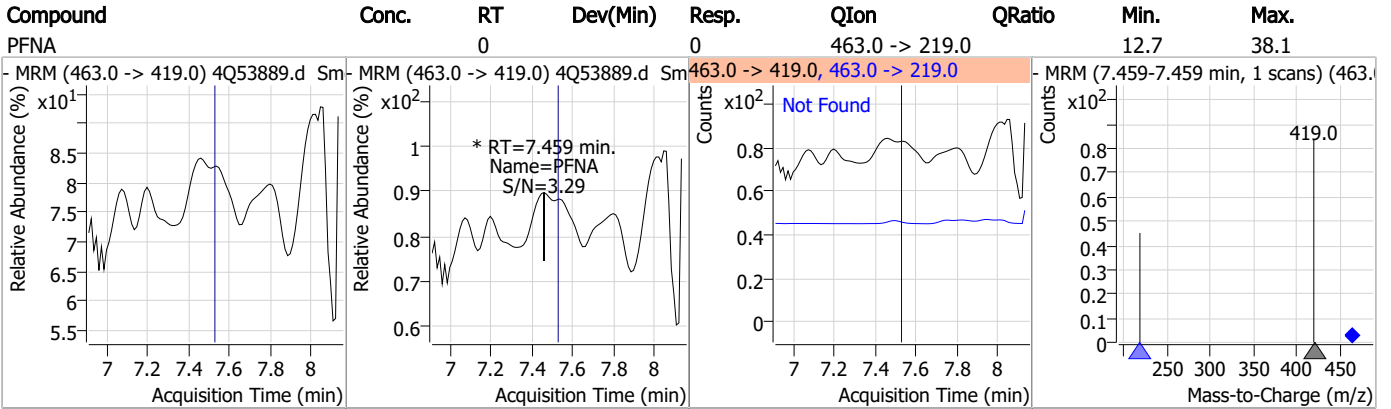
### Perfluorinated Compounds by LC/MS/MS



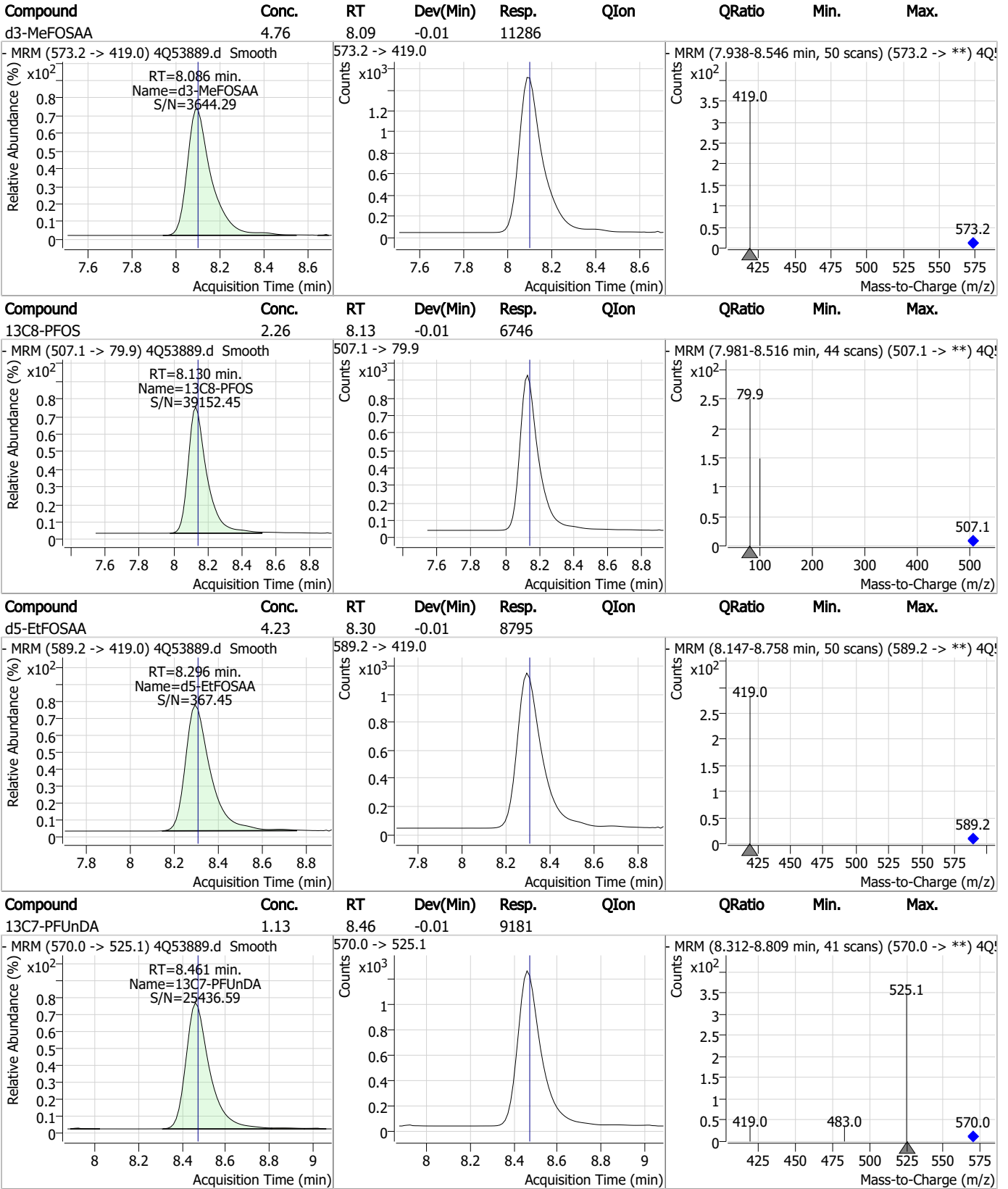
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### Perfluorinated Compounds by LC/MS/MS



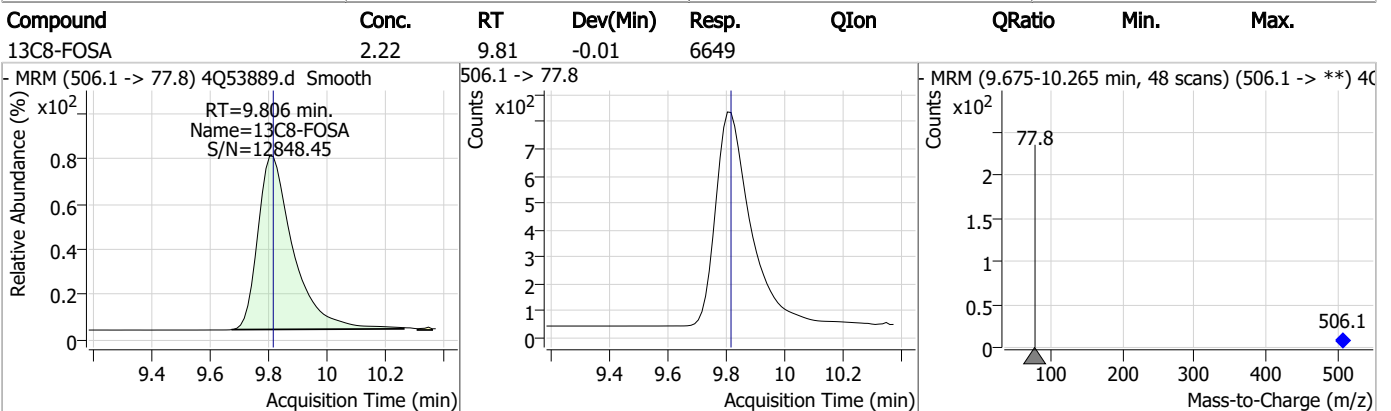
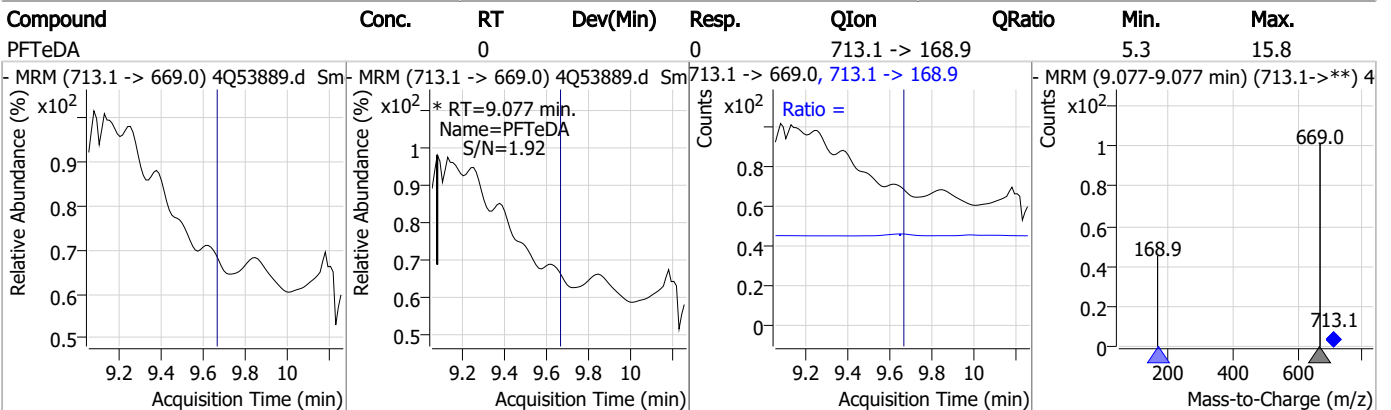
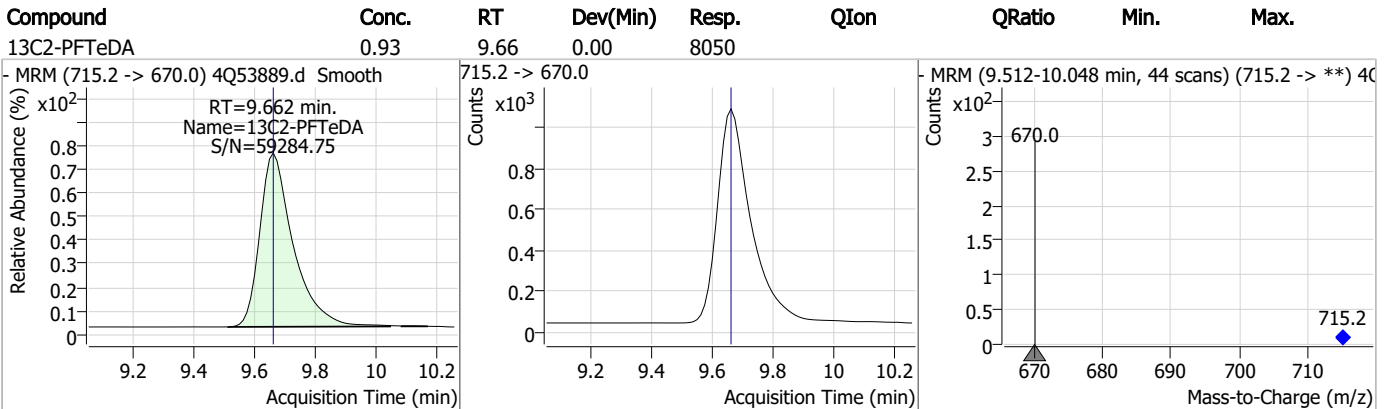
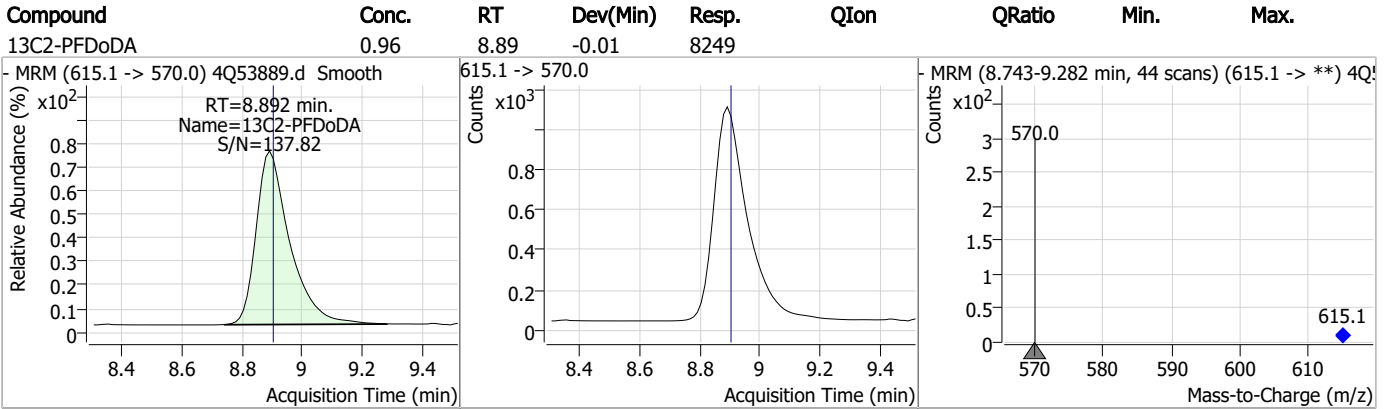
### Perfluorinated Compounds by LC/MS/MS



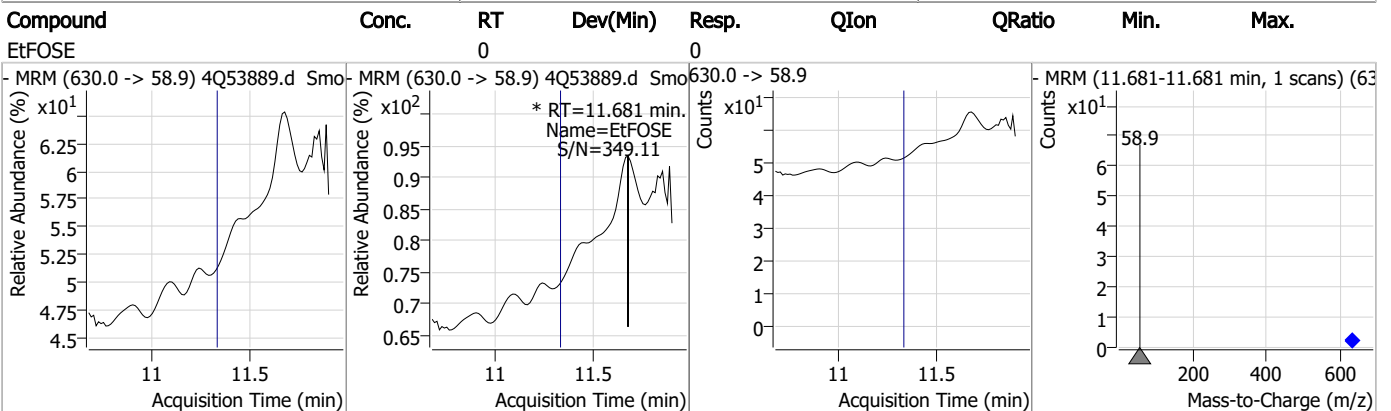
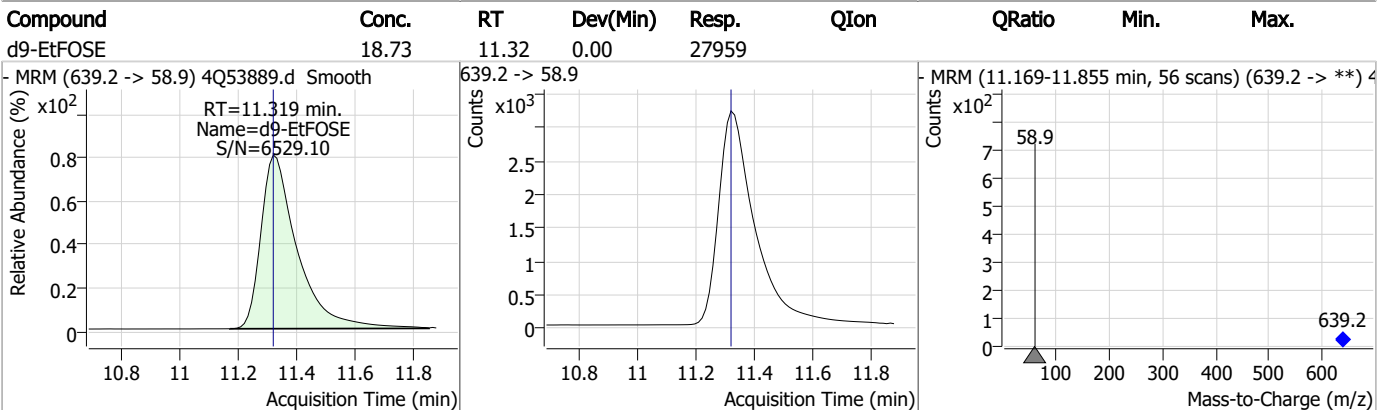
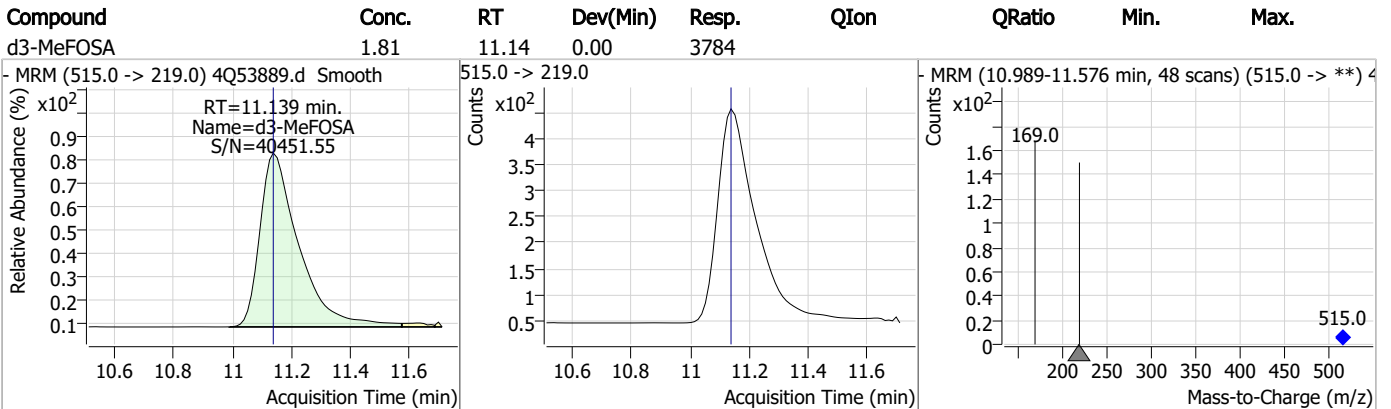
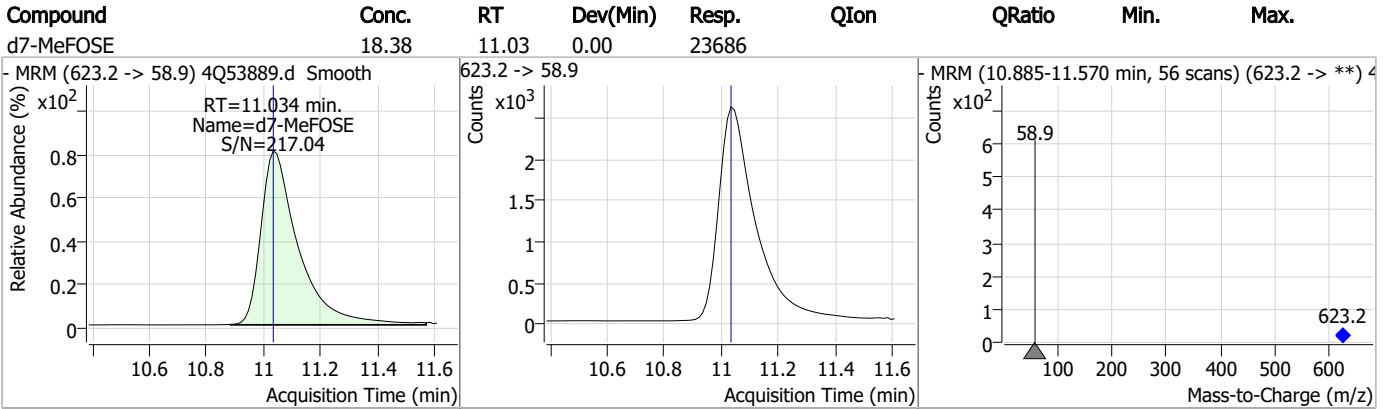
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### Perfluorinated Compounds by LC/MS/MS

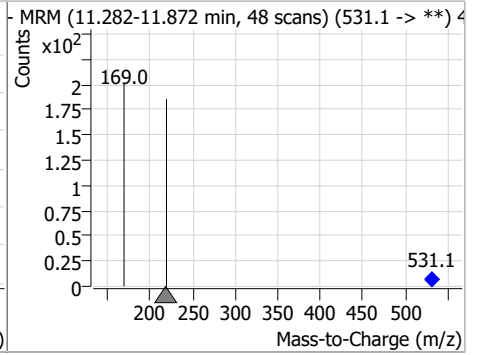
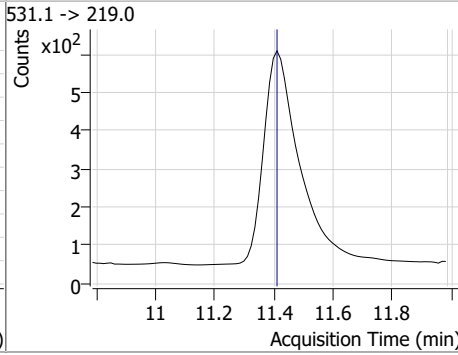
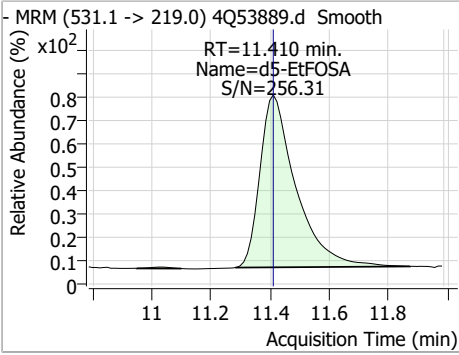


### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	1.89	11.41	0.00	4693				



7.1.2  
7



## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53873.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/15/2023 12:25:22 PM  
 Sample Name : op58-mb  
 Vial : P1-F5  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q786.batch.bin  
 Sample Information : OP58,S4Q786,500,,,5.0,1,water

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

7.2.1  
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### Perfluorinated Compounds by LC/MS/MS

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

**Target Compounds**

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



7.2.1  
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Perfluorinated Compounds by LC/MS/MS

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

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



7.2.1  
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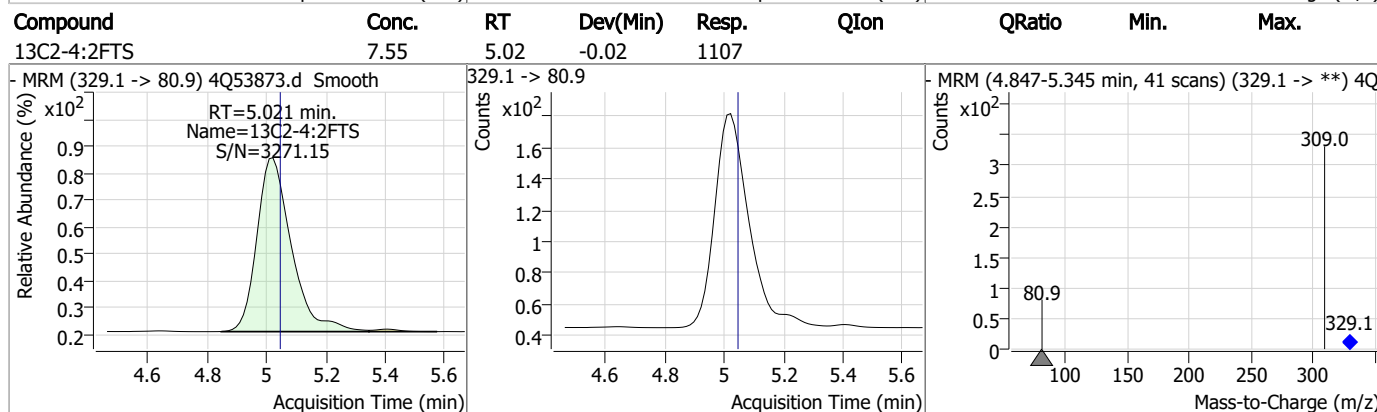
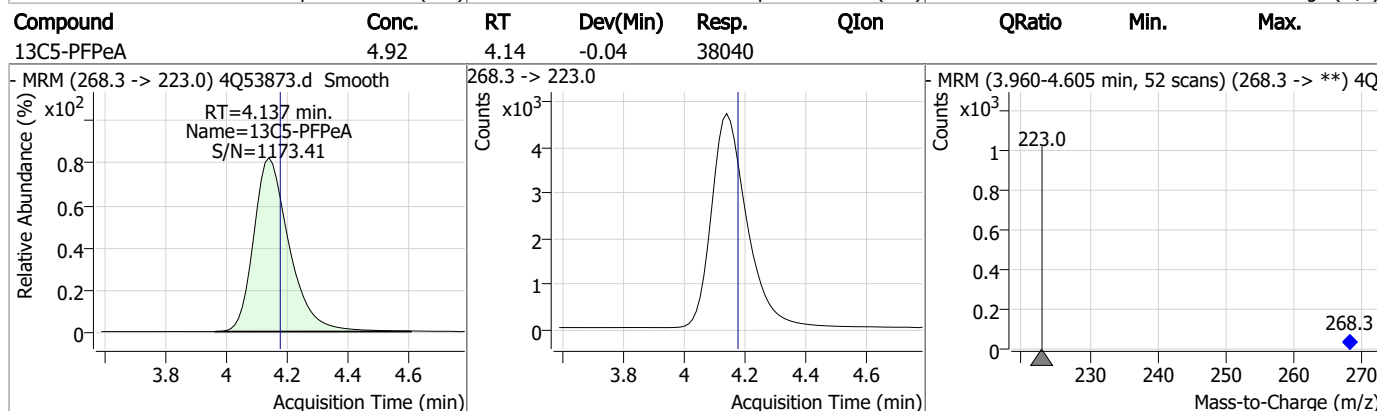
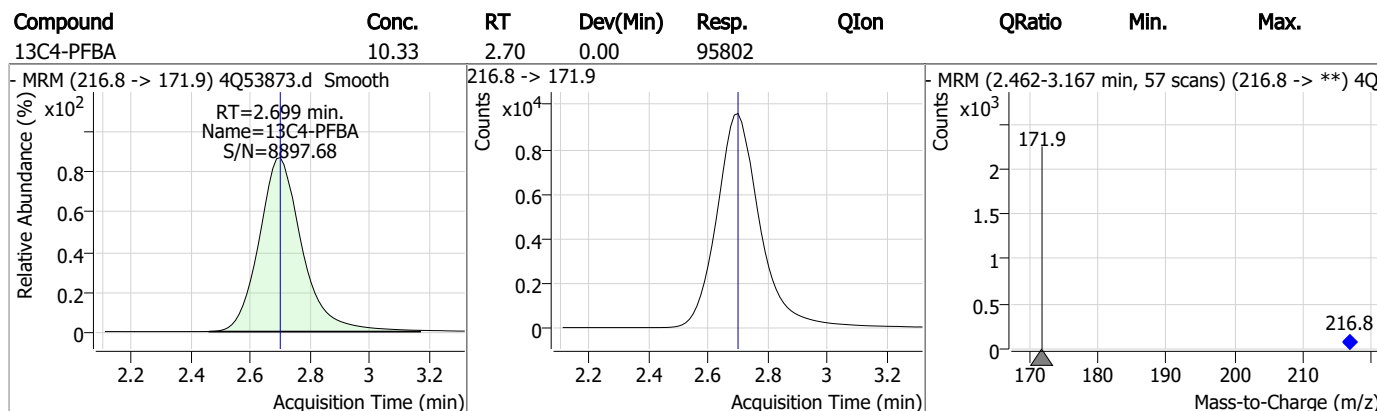
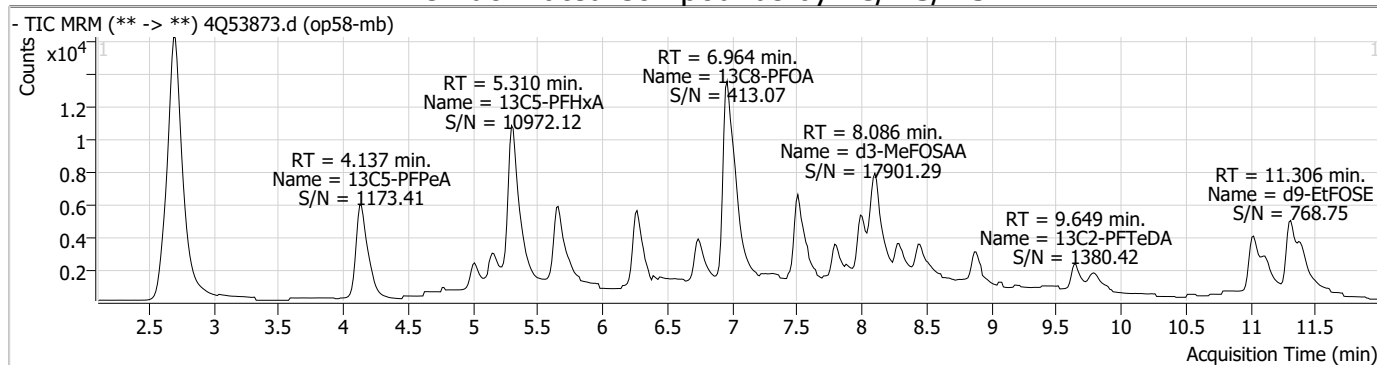
### Perfluorinated Compounds by LC/MS/MS

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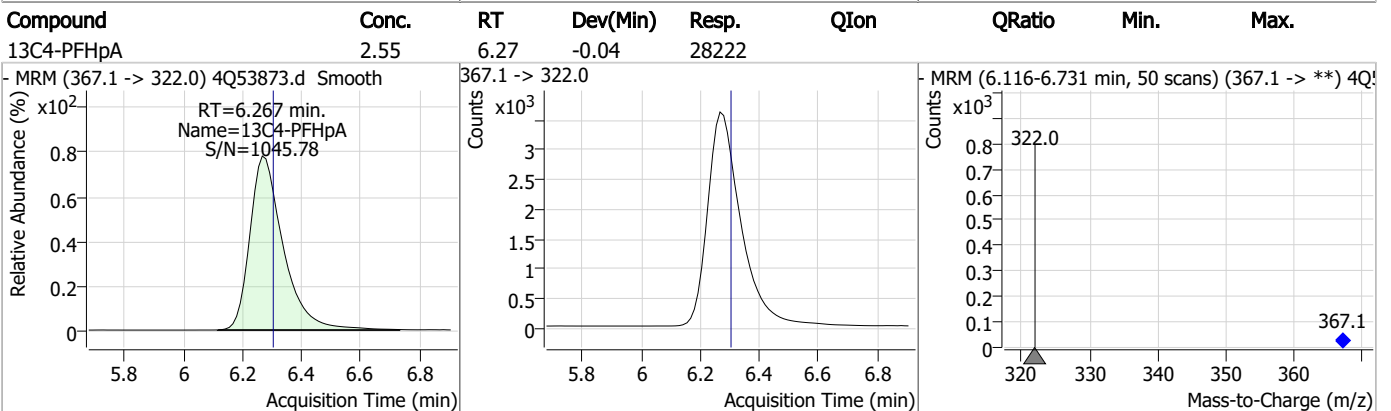
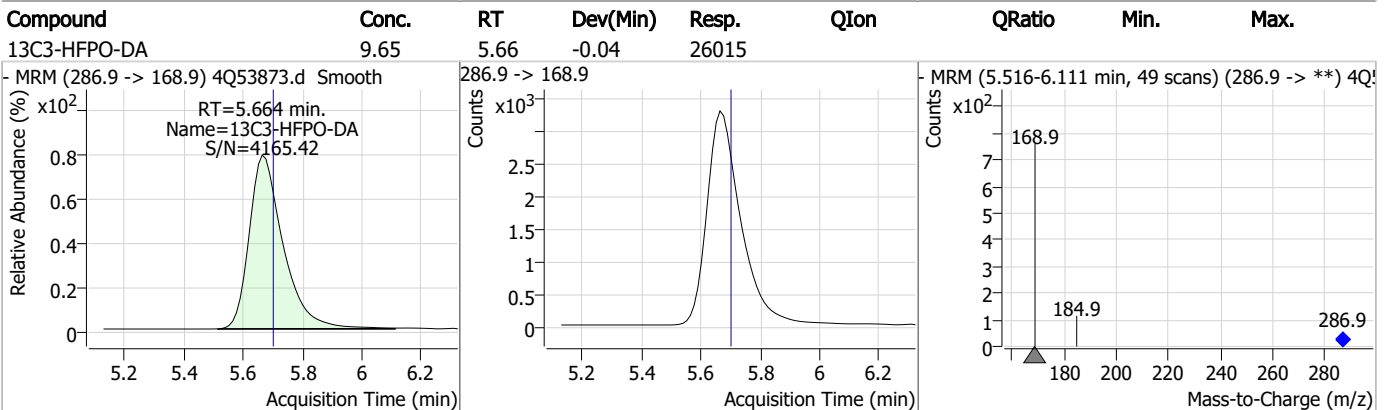
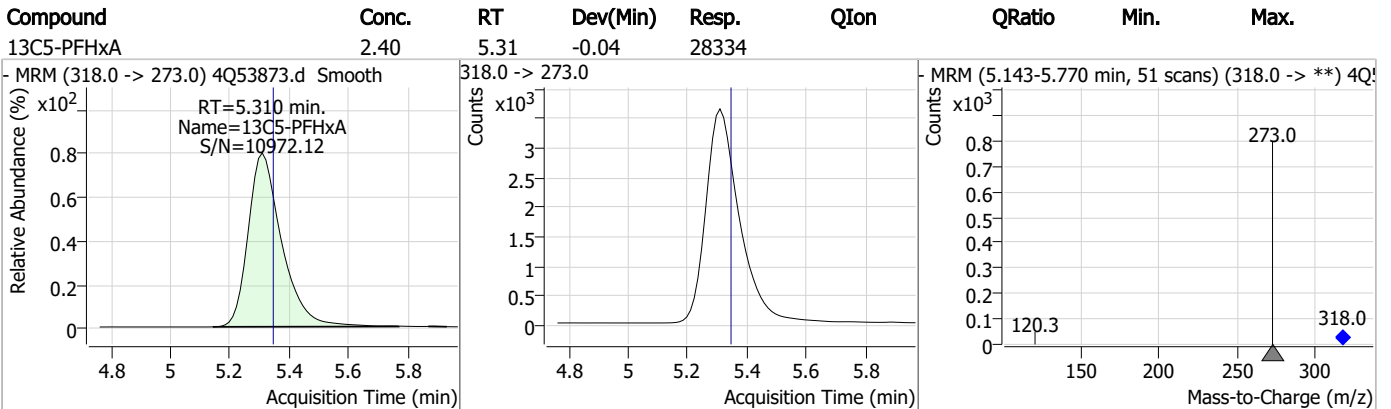
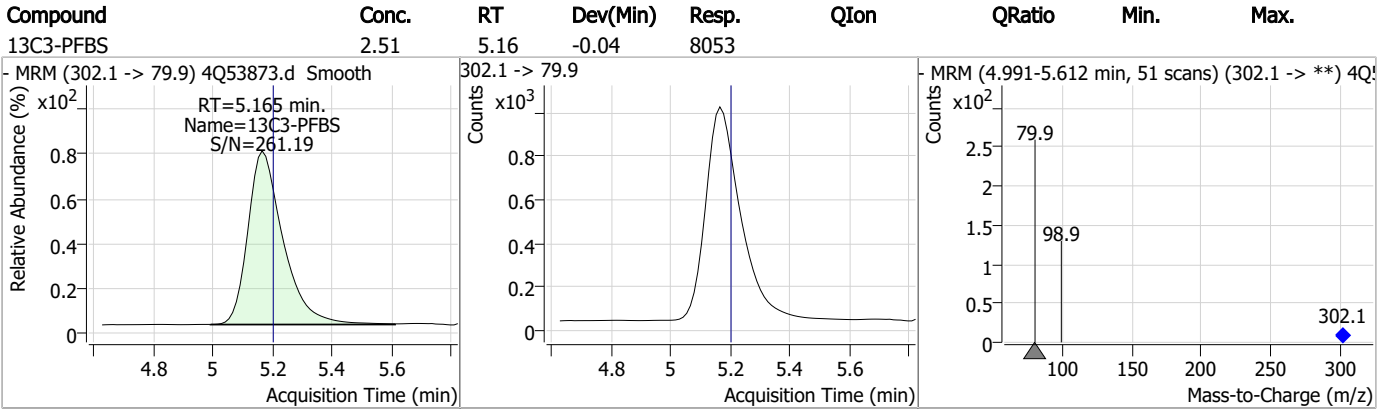
7.2.1

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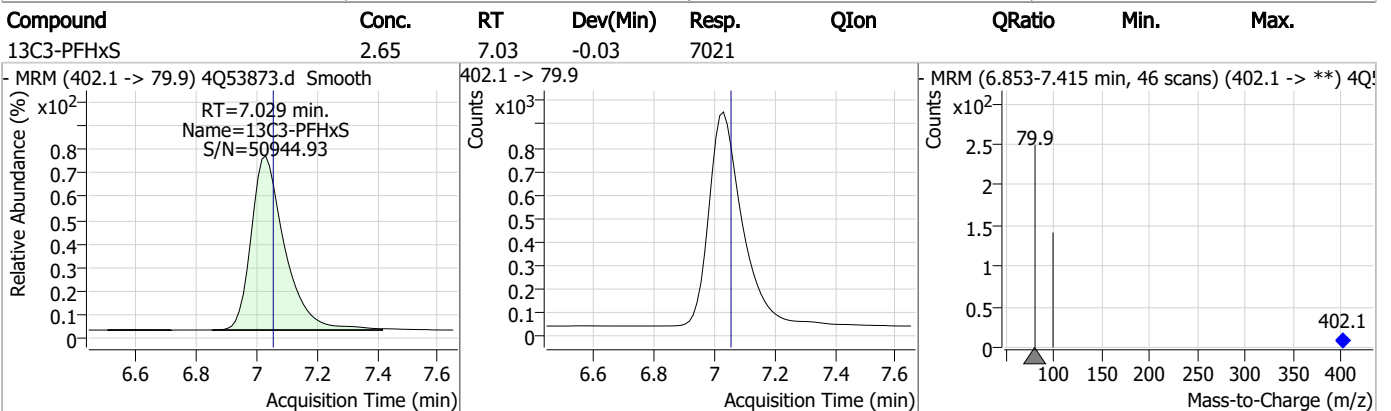
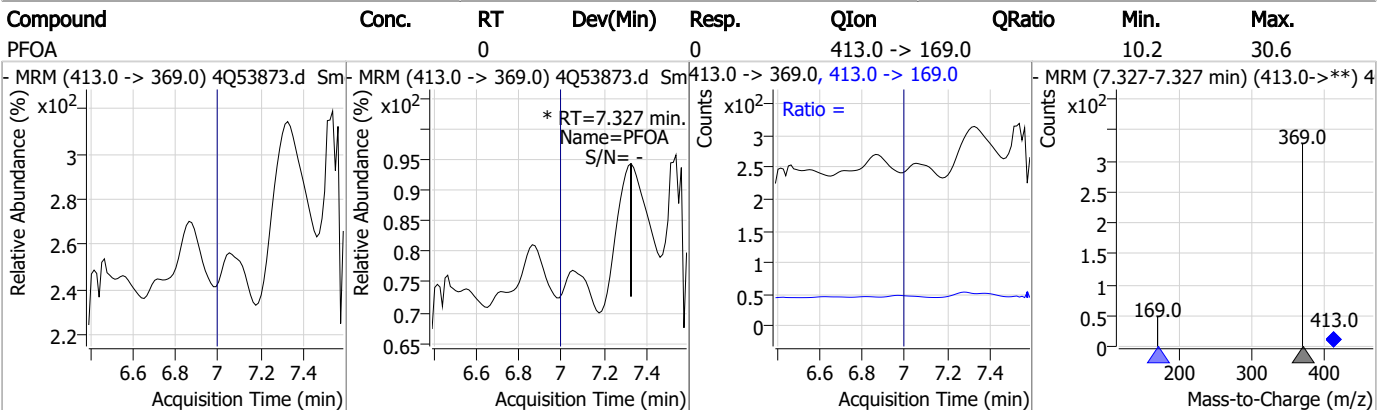
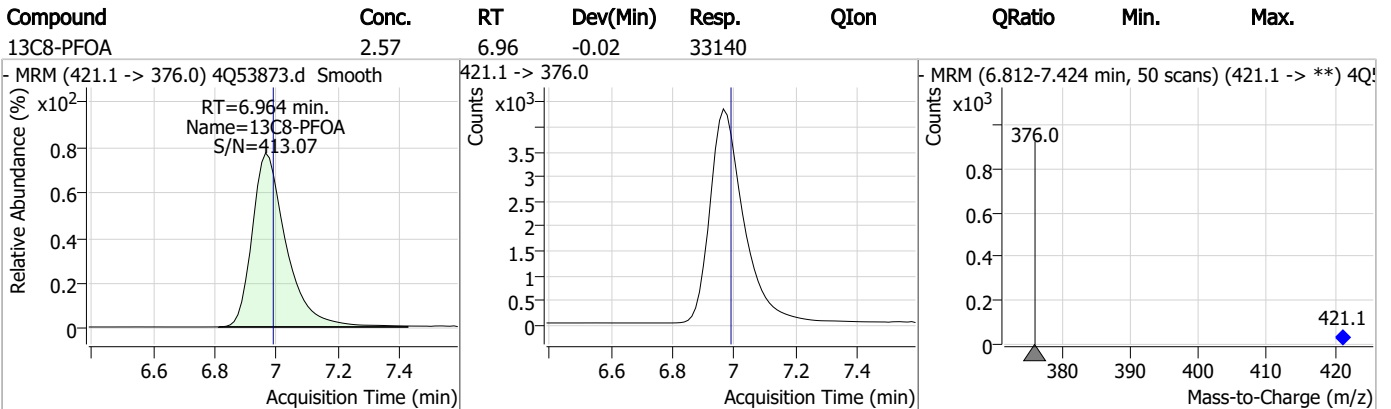
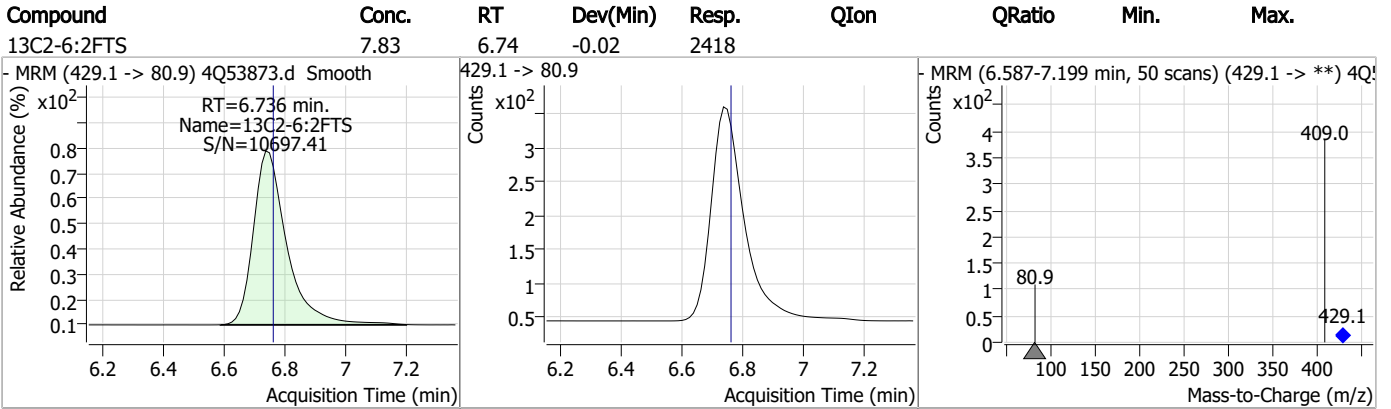
### Perfluorinated Compounds by LC/MS/MS



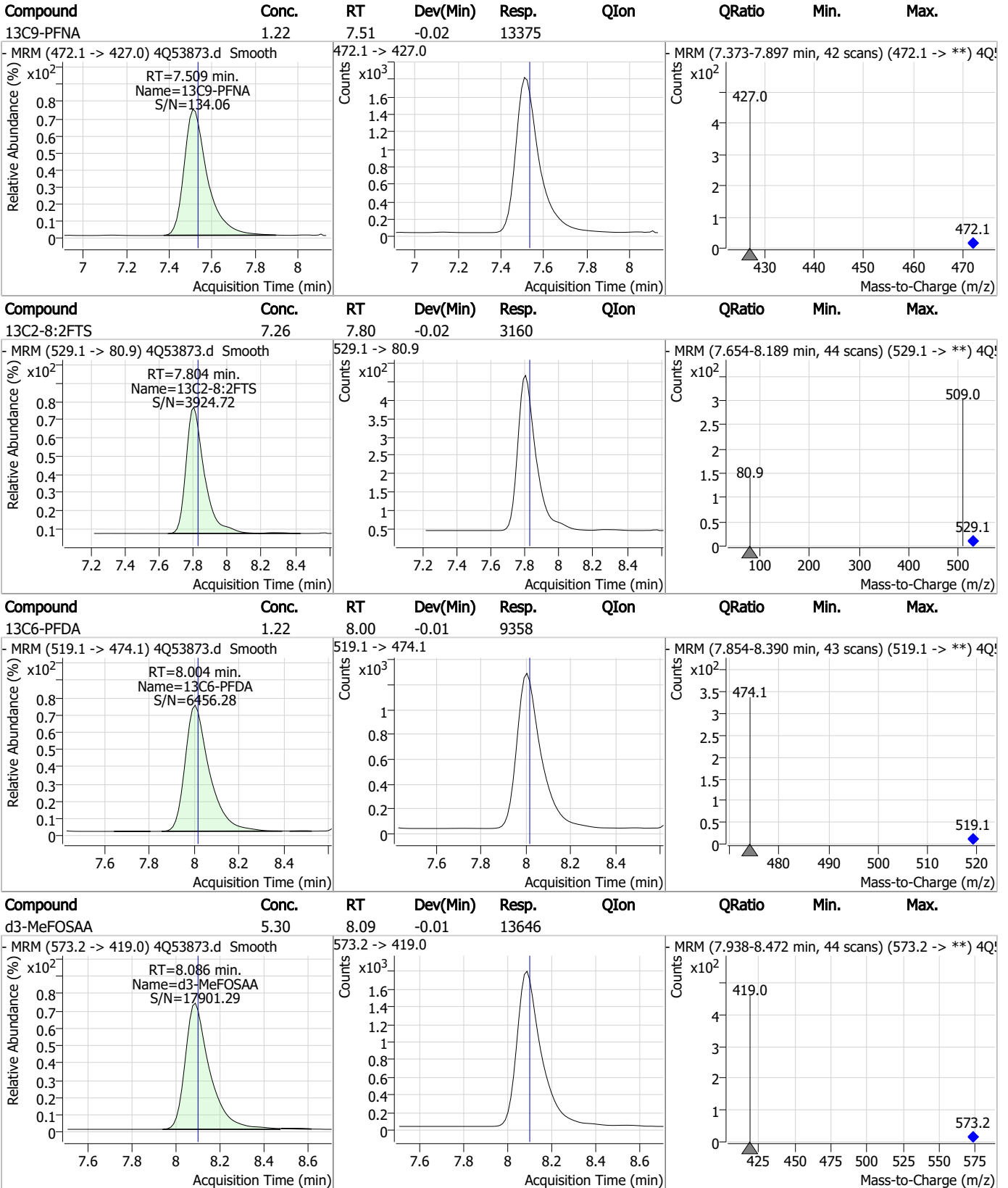
### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



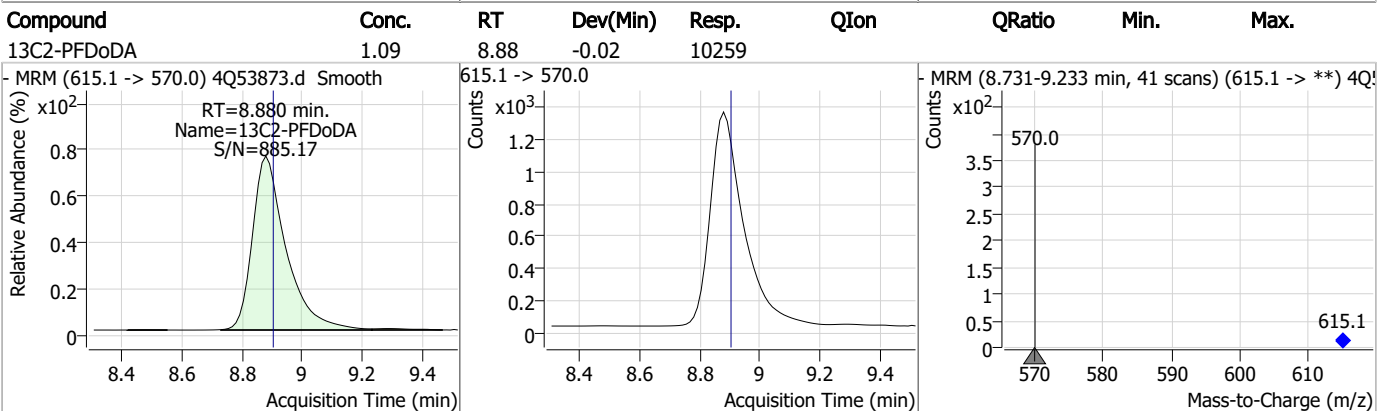
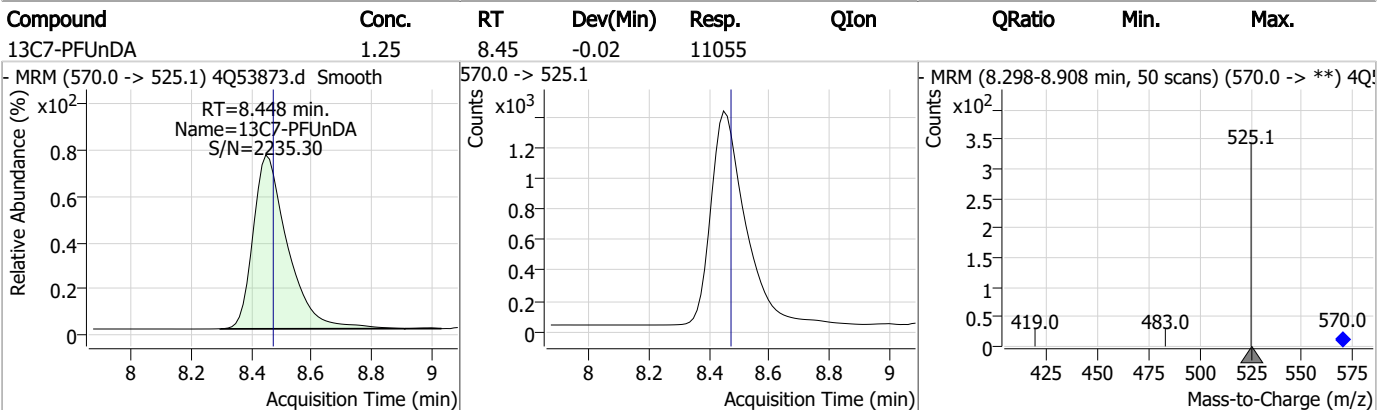
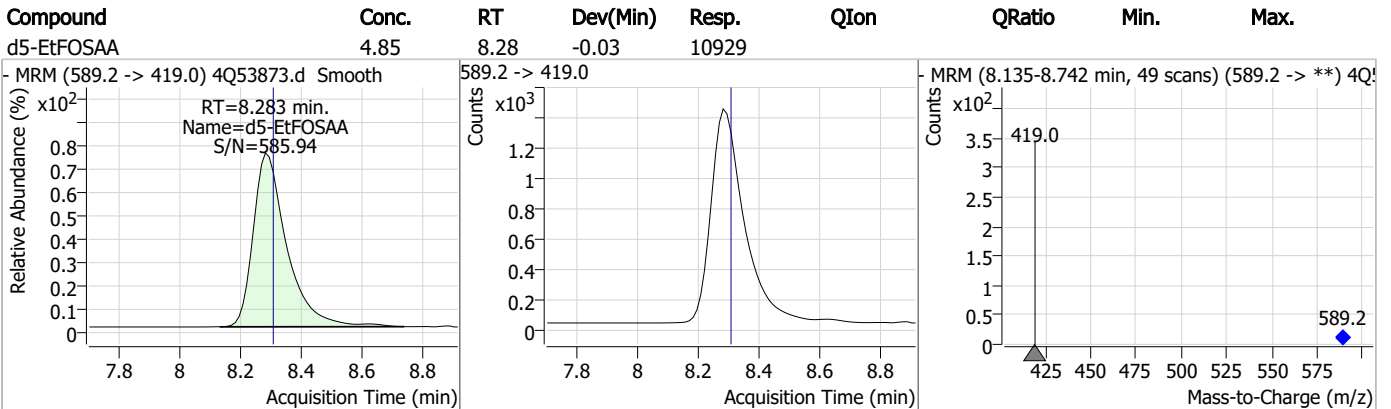
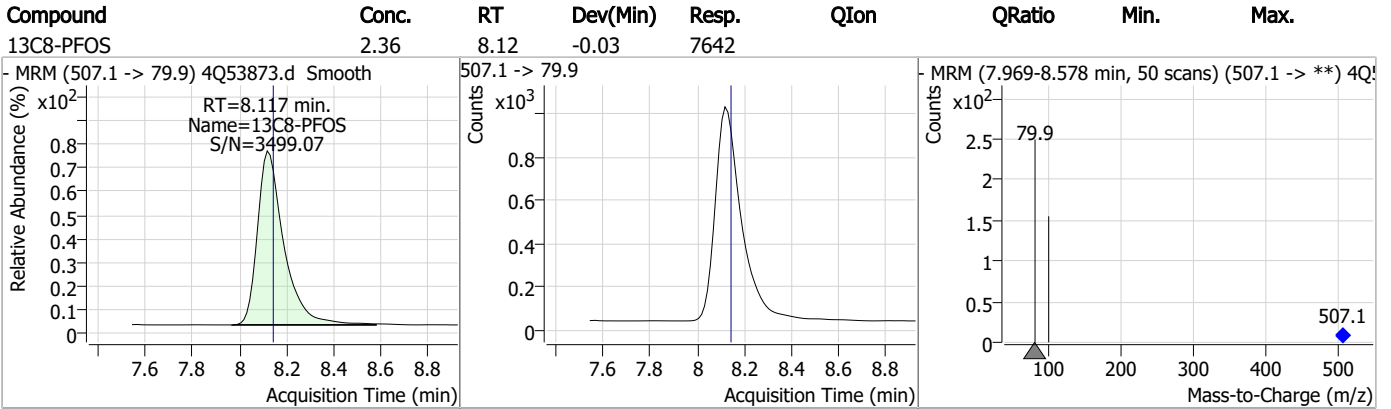
### Perfluorinated Compounds by LC/MS/MS



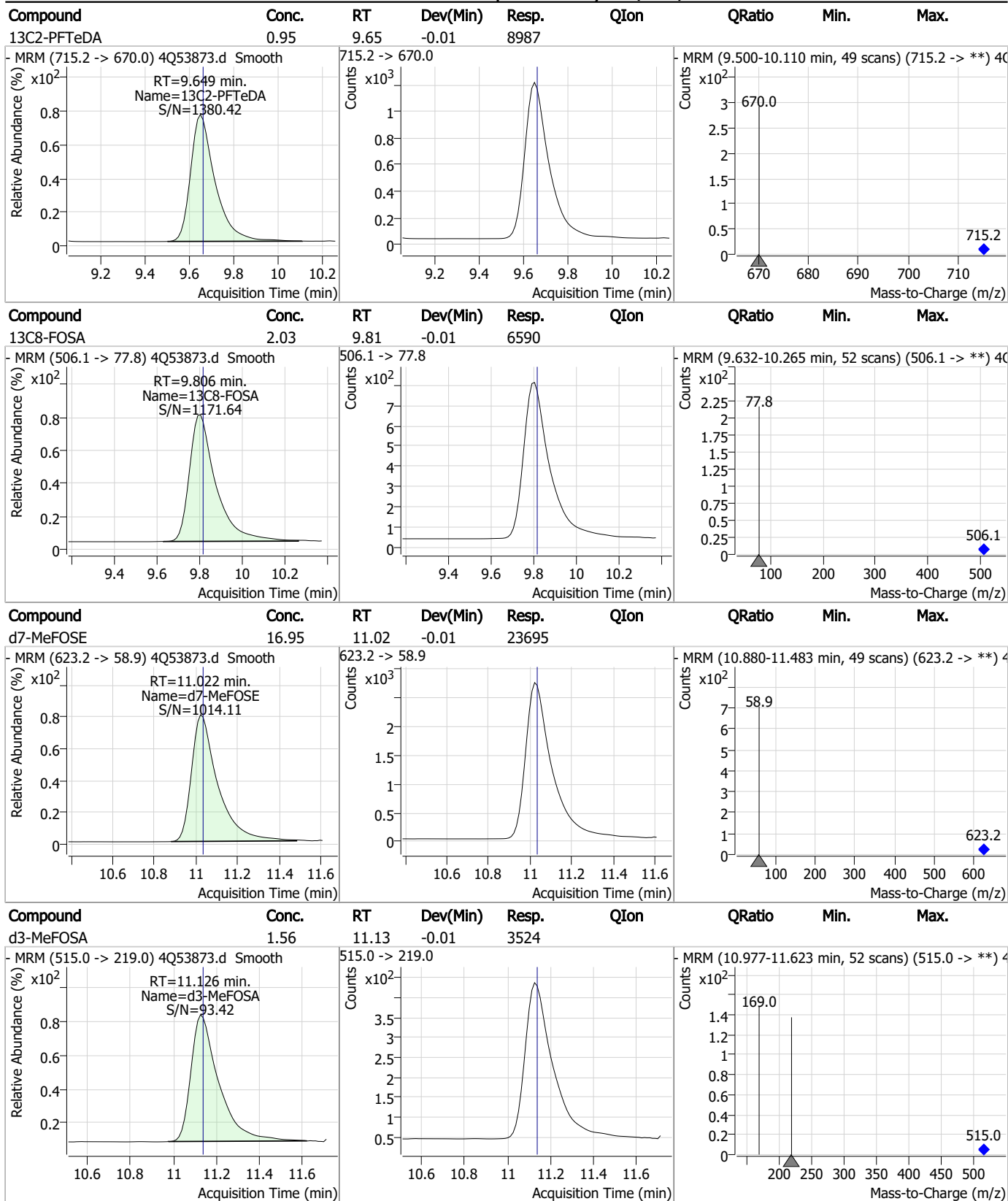
7.2.1

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### Perfluorinated Compounds by LC/MS/MS



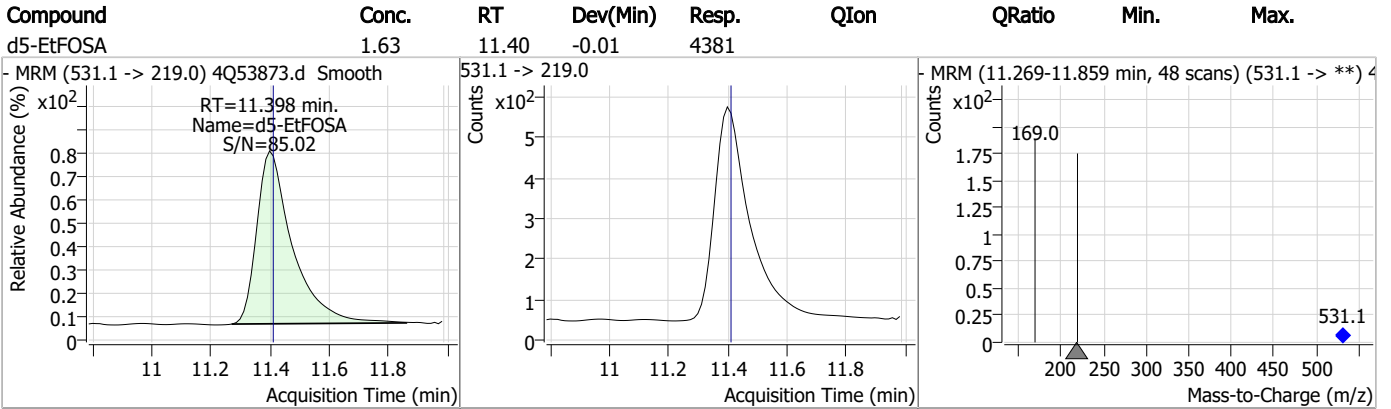
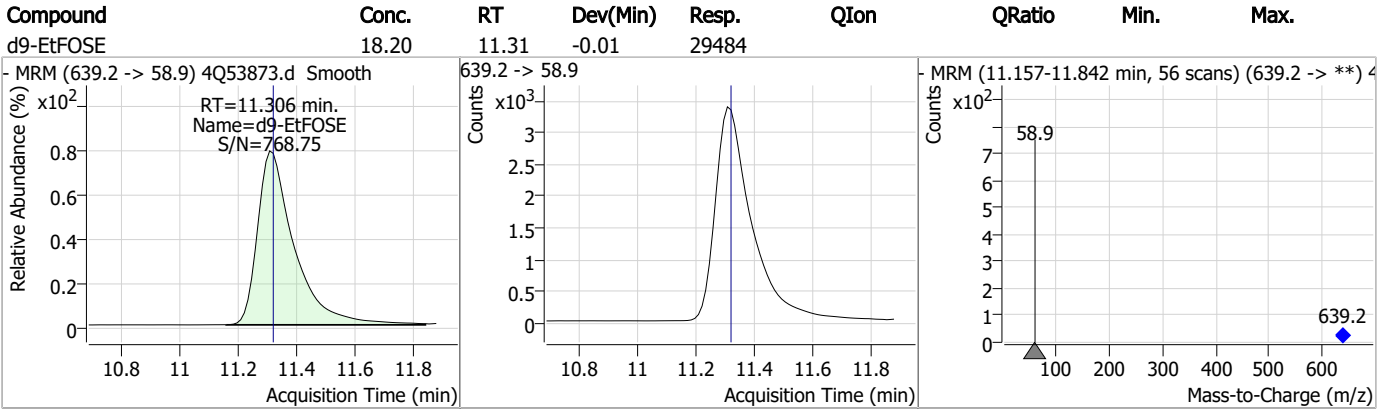
### Perfluorinated Compounds by LC/MS/MS



7.2.1  
7



### Perfluorinated Compounds by LC/MS/MS



7.2.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53867.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/15/2023 10:45:23 AM  
 Sample Name : iblk  
 Vial : P1-A1  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q786.batch.bin  
 Sample Information : OP98180,S4Q786,500,,,5.0,1,water

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

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Perfluorinated Compounds by LC/MS/MS

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

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	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



Perfluorinated Compounds by LC/MS/MS

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

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

7.2.2

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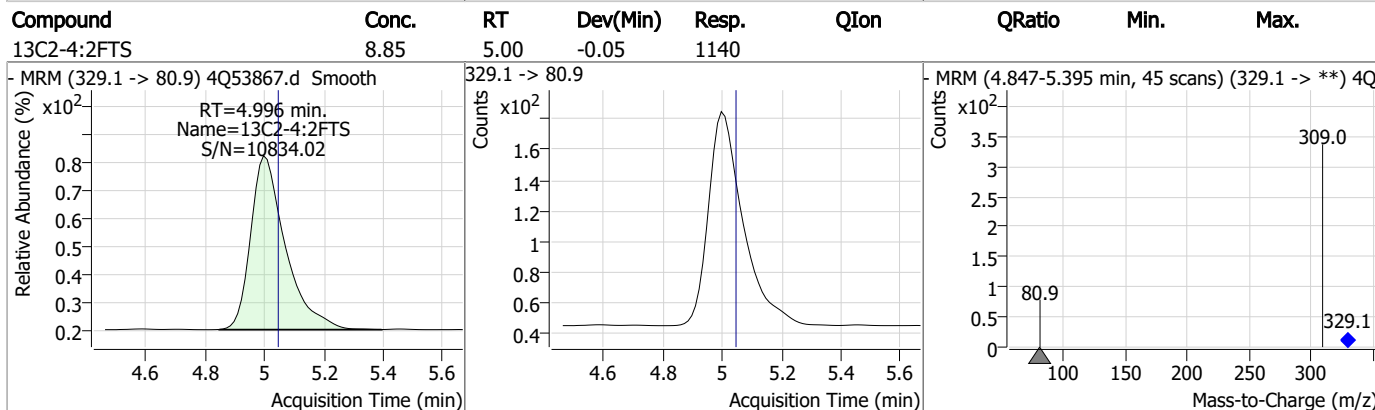
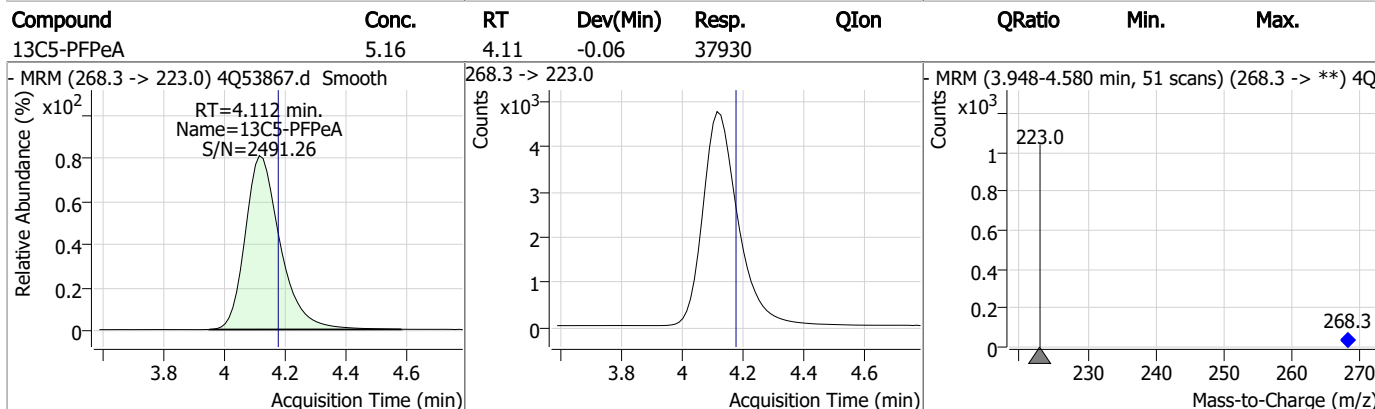
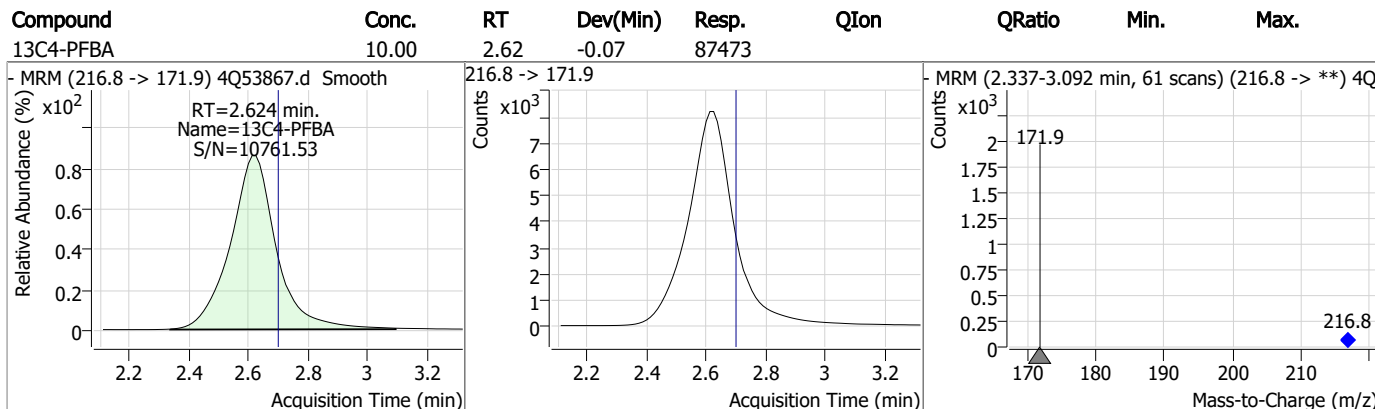
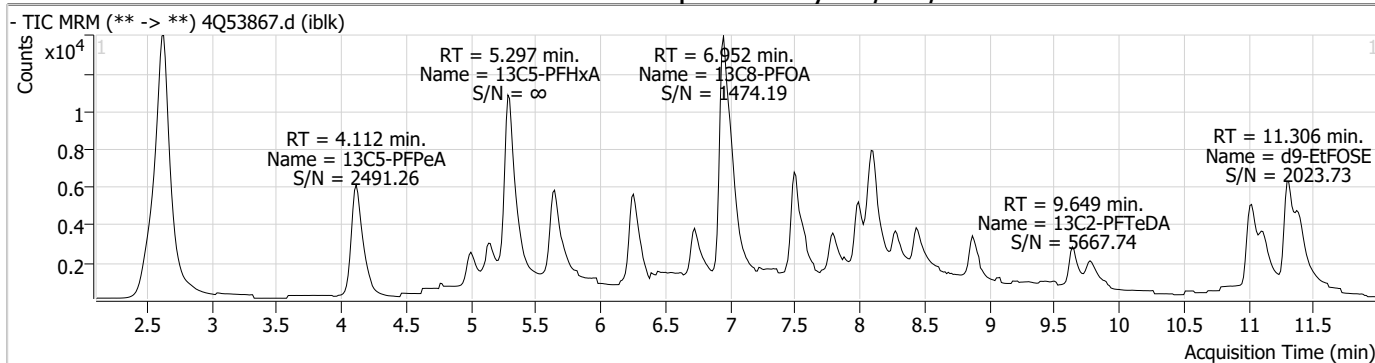
### Perfluorinated Compounds by LC/MS/MS

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



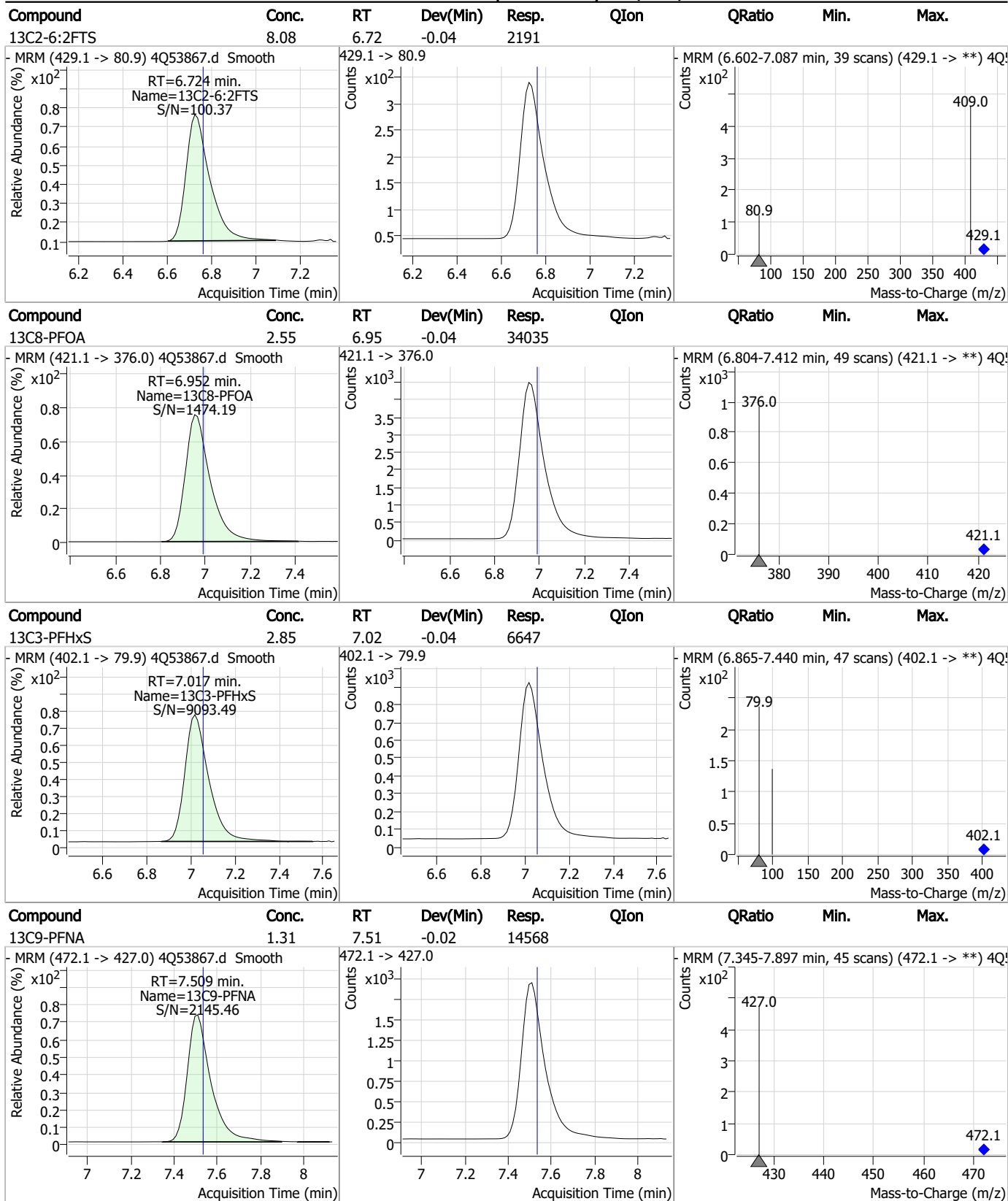
7.2.2  
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### Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	2.92	5.15	-0.05	8241				
<p>MRM (302.1 -&gt; 79.9) 4Q53867.d Smooth RT=5.152 min. Name=13C3-PFBS S/N=145.41</p>			<p>302.1 -&gt; 79.9</p>			<p>MRM (4.979-5.523 min, 44 scans) (302.1 -&gt; **) 4Q53867.d Smooth</p>		
13C5-PFHxA	2.54	5.30	-0.05	28603				
<p>MRM (318.0 -&gt; 273.0) 4Q53867.d Smooth RT=5.297 min. Name=13C5-PFHxA S/N=100</p>			<p>318.0 -&gt; 273.0</p>			<p>MRM (5.123-5.682 min, 46 scans) (318.0 -&gt; **) 4Q53867.d Smooth</p>		
13C3-HFPO-DA	10.02	5.65	-0.05	25710				
<p>MRM (286.9 -&gt; 168.9) 4Q53867.d Smooth RT=5.652 min. Name=13C3-HFPO-DA S/N=1091.33</p>			<p>286.9 -&gt; 168.9</p>			<p>MRM (5.503-6.111 min, 50 scans) (286.9 -&gt; **) 4Q53867.d Smooth</p>		
13C4-PFHpA	2.66	6.25	-0.05	27999				
<p>MRM (367.1 -&gt; 322.0) 4Q53867.d Smooth RT=6.255 min. Name=13C4-PFHpA S/N=1827.80</p>			<p>367.1 -&gt; 322.0</p>			<p>MRM (6.104-6.719 min, 50 scans) (367.1 -&gt; **) 4Q53867.d Smooth</p>		

7.2.2  
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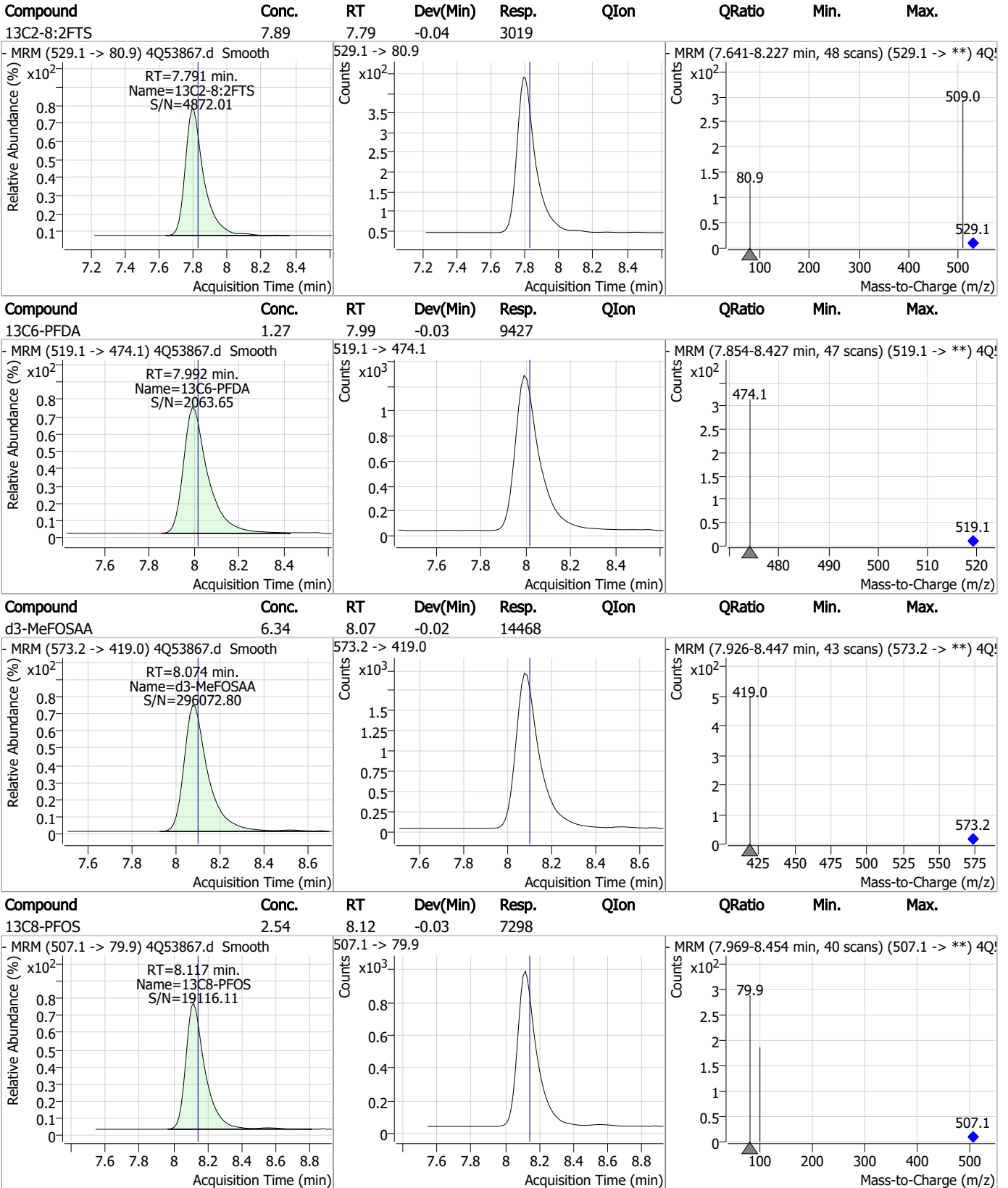
### Perfluorinated Compounds by LC/MS/MS



7.2.2  
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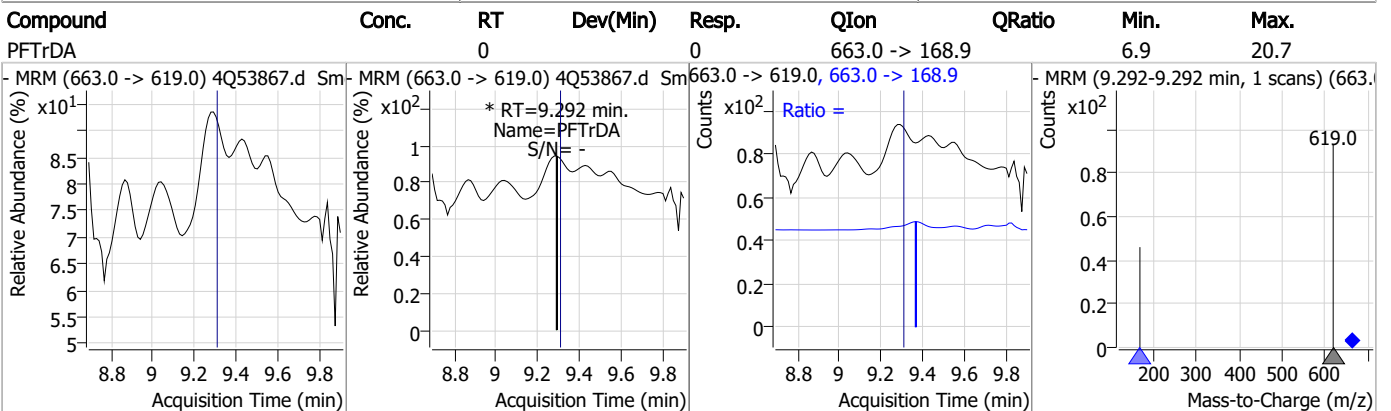
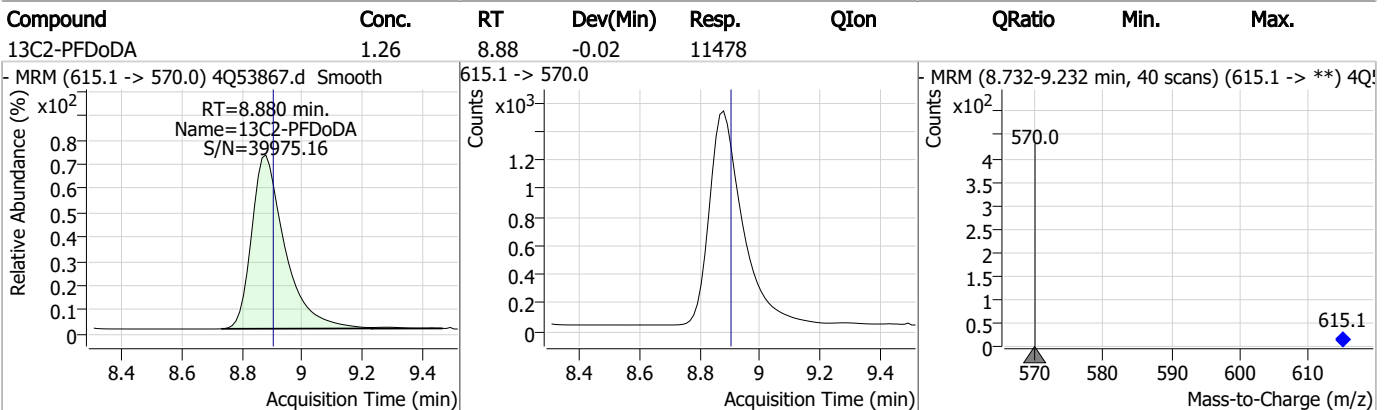
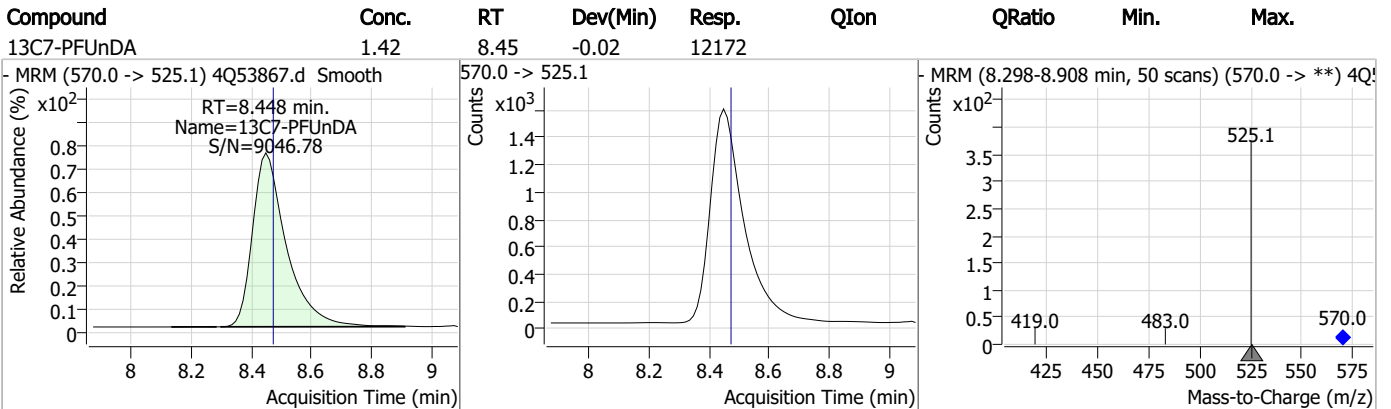
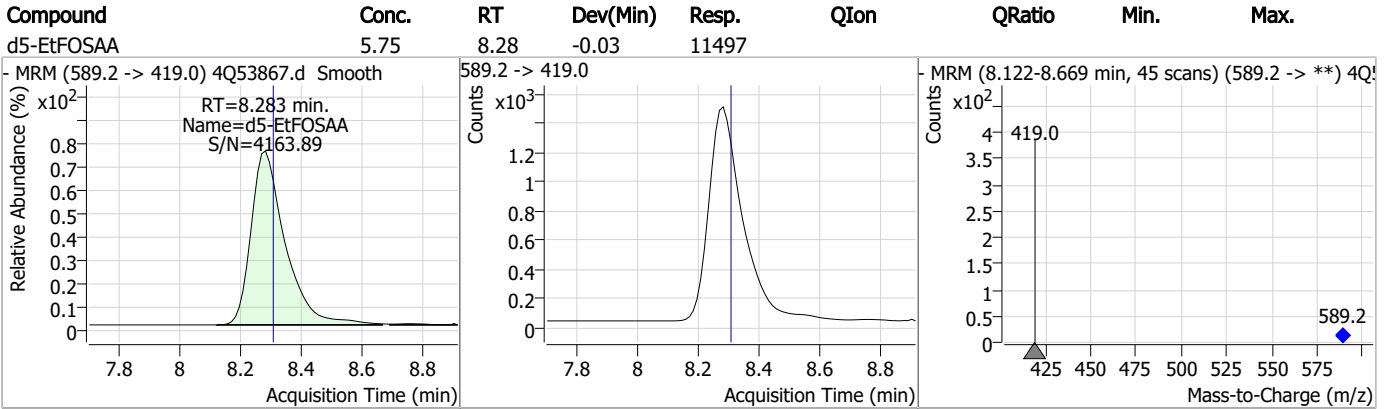
### Perfluorinated Compounds by LC/MS/MS



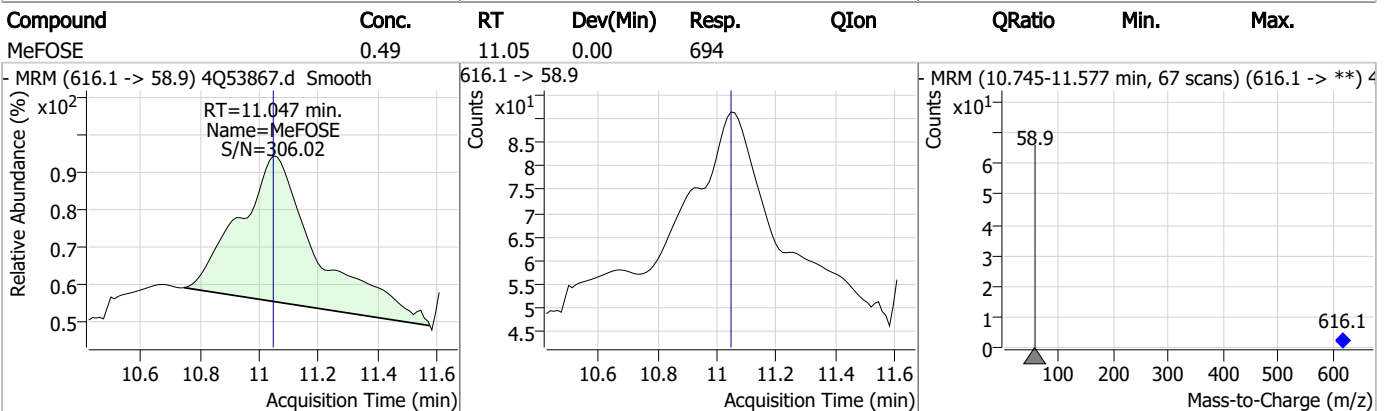
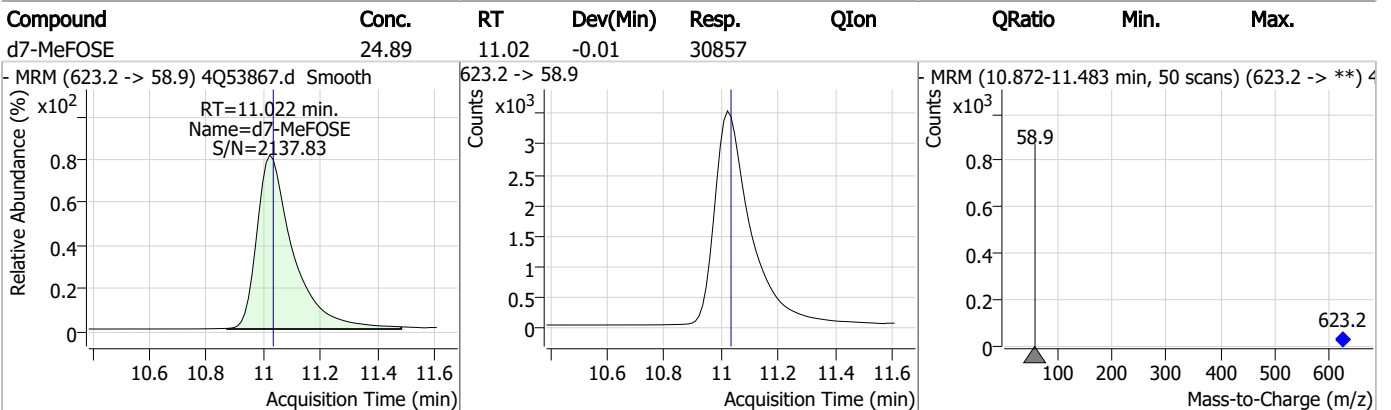
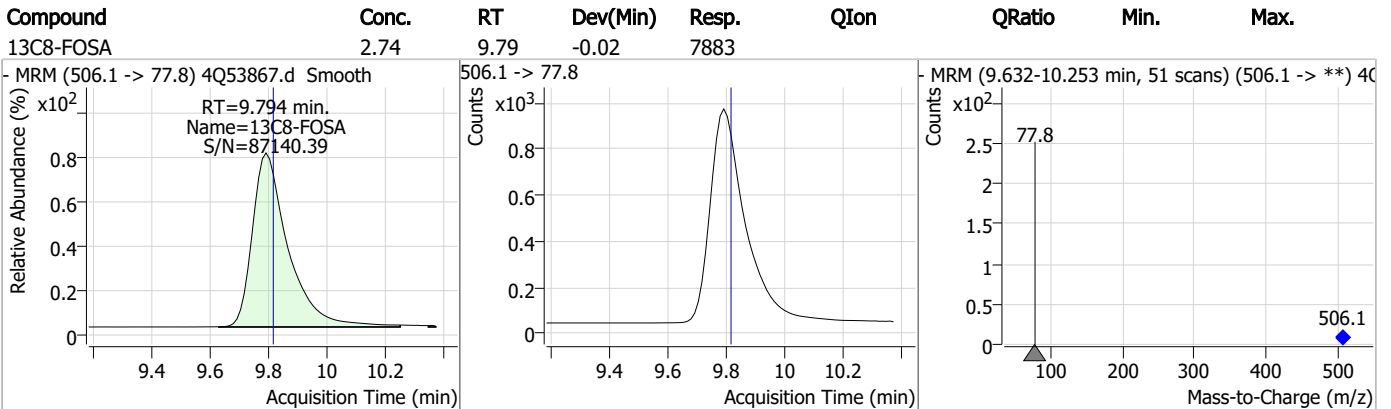
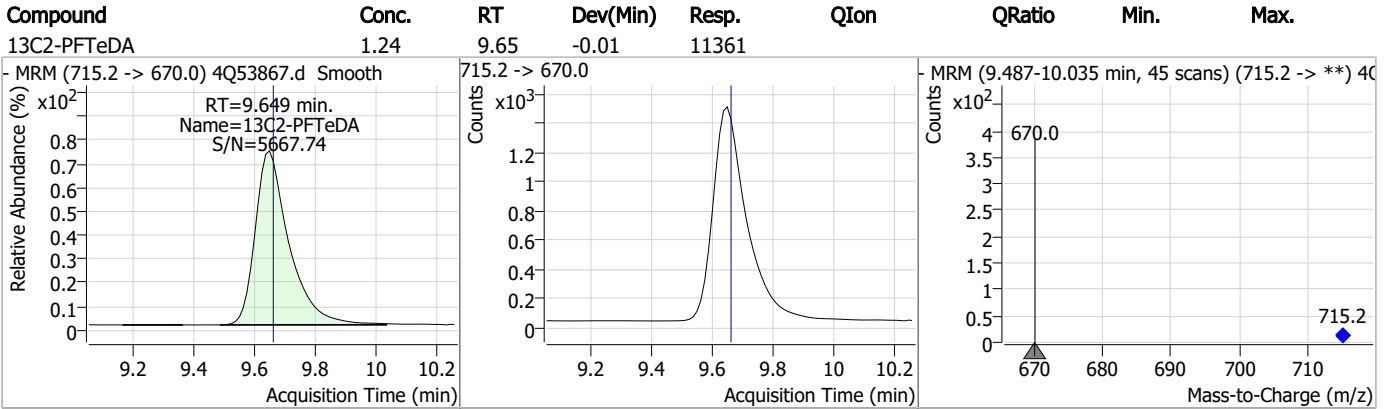
7.2.2

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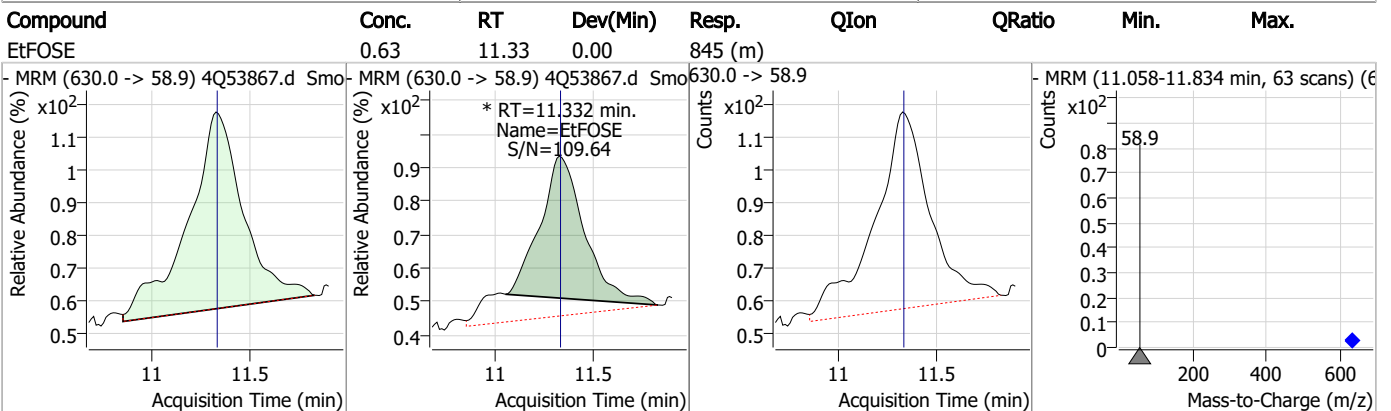
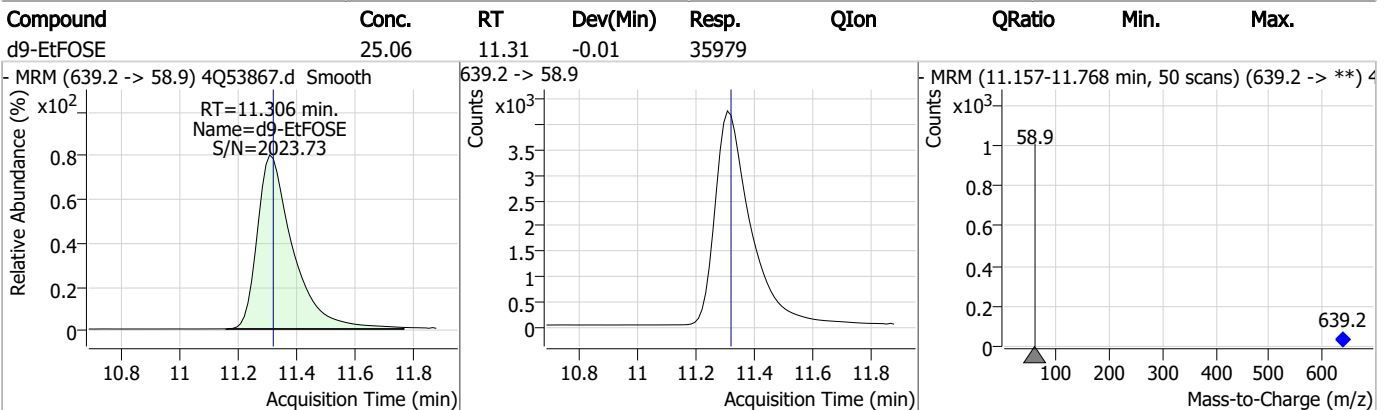
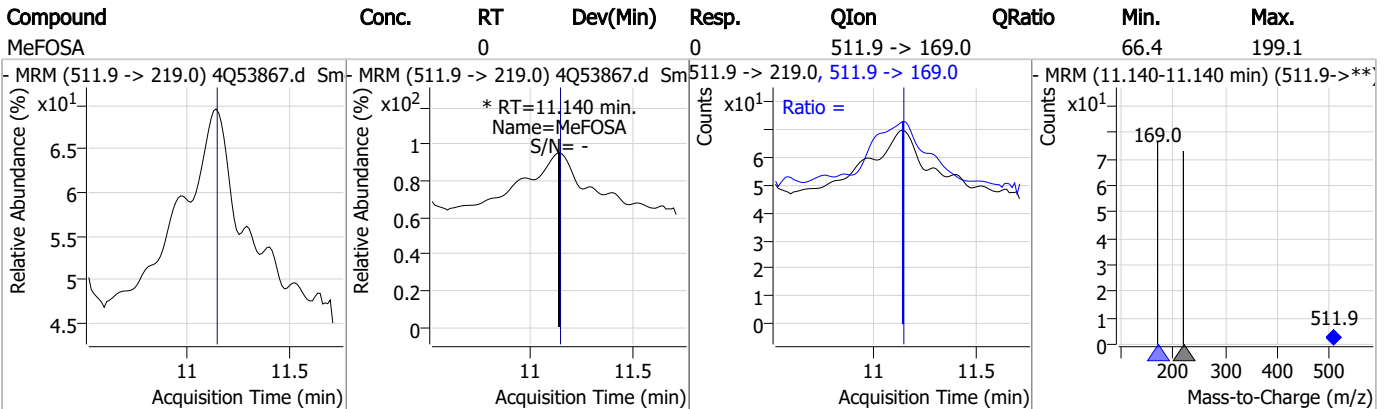
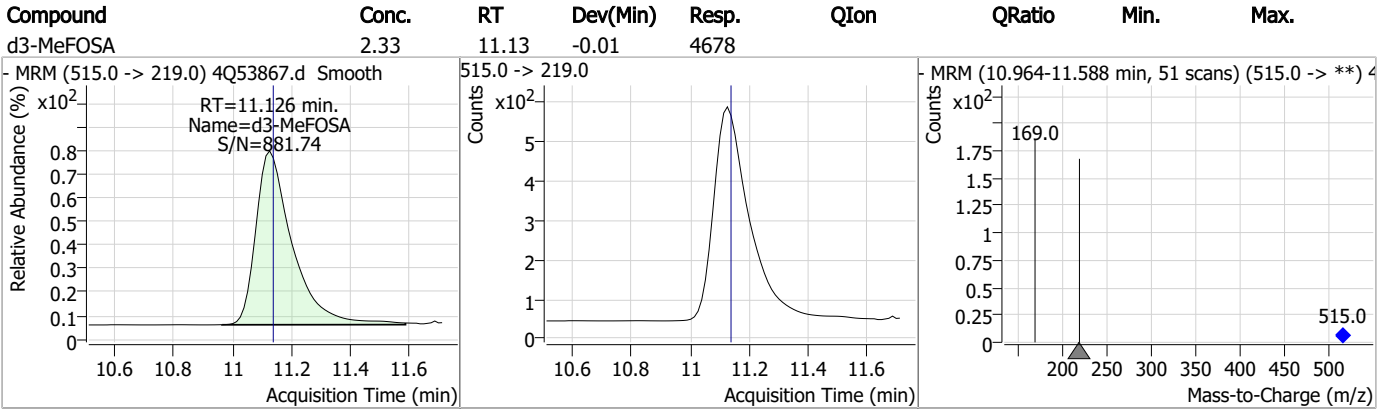
### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

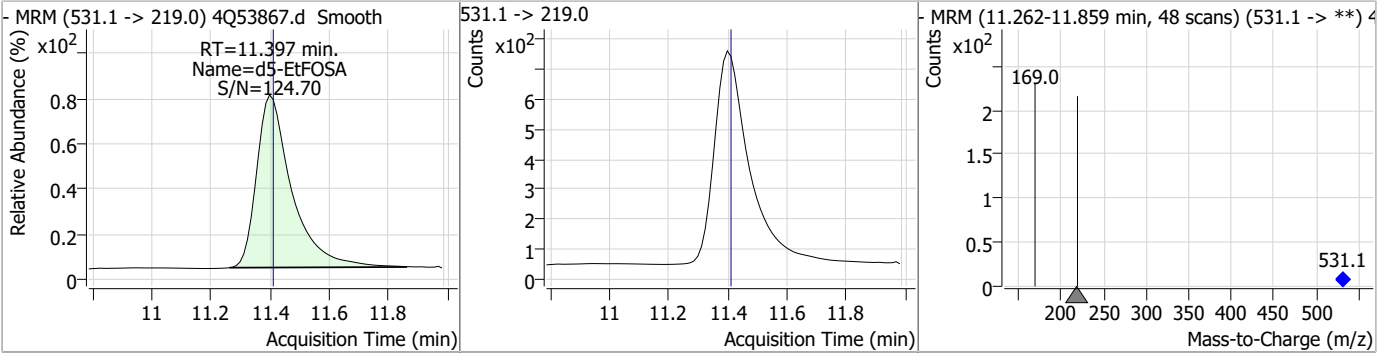


7.2.2

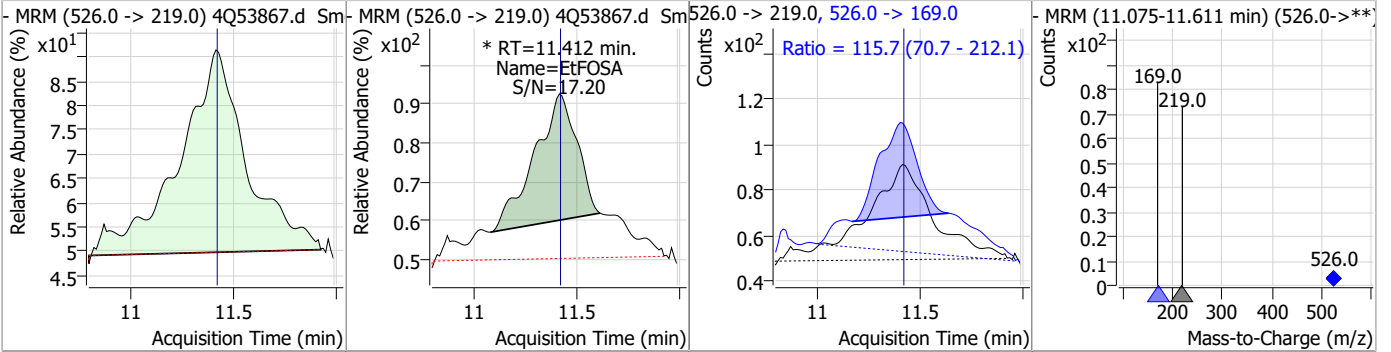
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### Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.45	11.40	-0.01	5847				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	0.18	11.41	0.00	463 (m)	526.0 -> 169.0	115.7	70.7	212.1



7.2.2

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# Manual Integration Approval Summary

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

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

7.2.2.1

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### Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53880.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/15/2023 2:08:37 PM  
 Sample Name : iccb  
 Vial : P1-A1  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q786.batch.bin  
 Sample Information : OP98180,S4Q786,500,,,5.0,1,water

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

7.2.3  
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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 = 101.3%		
13C4-PFBA	2.624	216.8 -> 171.9	88029	10.10	µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.0%		
13C4-PFHpA	6.280	367.1 -> 322.0	26866	2.53	µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%		
13C5-PFHxA	5.310	318.0 -> 273.0	27949	2.47	µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%		
13C5-PFPeA	4.125	268.3 -> 223.0	37805	5.10	µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.0%		
13C6-PFDA	8.004	519.1 -> 474.1	9566	1.23	µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.8%		
13C7-PFUnDA	8.461	570.0 -> 525.1	11525	1.29	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.0%		
13C8-FOSA	9.806	506.1 -> 77.8	7421	2.41	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.5%		
13C8-PFOA	6.976	421.1 -> 376.0	31901	2.47	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%		
13C8-PFOS	8.130	507.1 -> 79.9	7655	2.49	µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%		
13C9-PFNA	7.521	472.1 -> 427.0	13992	1.32	µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.3%		
d3-MeFOSAA	8.086	573.2 -> 419.0	13925	5.71	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.1%		
13C3-HFPO-DA	5.677	286.9 -> 168.9	25288	9.78	µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.8%		
d3-MeFOSA	11.139	515.0 -> 219.0	4711	2.19	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 87.8%		
d5-EtFOSAA	8.296	589.2 -> 419.0	10576	4.95	µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.0%		
d7-MeFOSE	11.034	623.2 -> 58.9	30088	22.70	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 90.8%		
d9-EtFOSE	11.319	639.2 -> 58.9	34124	22.23	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 88.9%		
d5-EtFOSA	11.398	531.1 -> 219.0	5871	2.30	µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.2%		

**Target Compounds**

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	8.868	613.1 -> 569.0	0	µg/L	m	1
		613.1 -> 319.0				
PFDS	-	599.0 -> 79.9	-	N.D.		

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Perfluorinated Compounds by LC/MS/MS

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

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



7.2.3  
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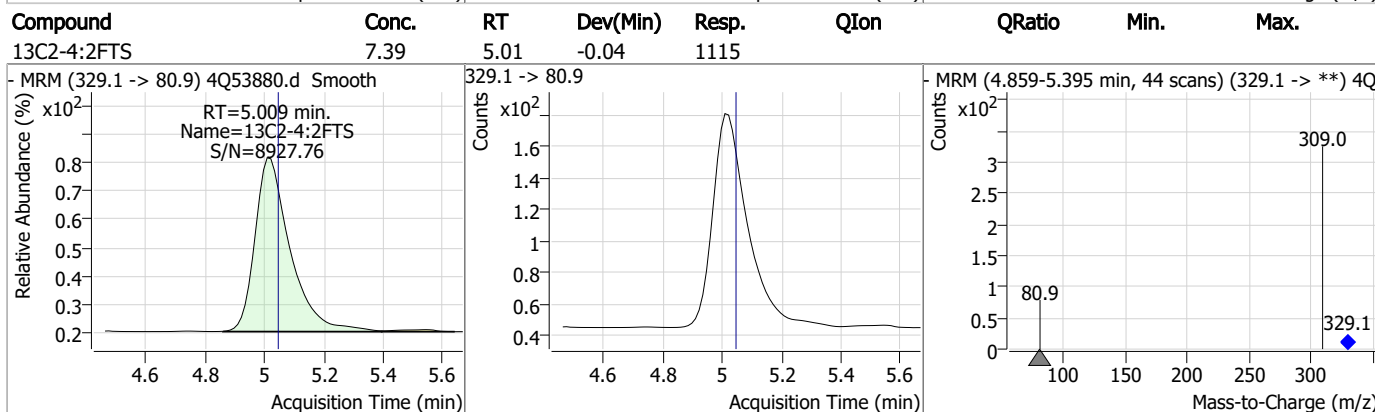
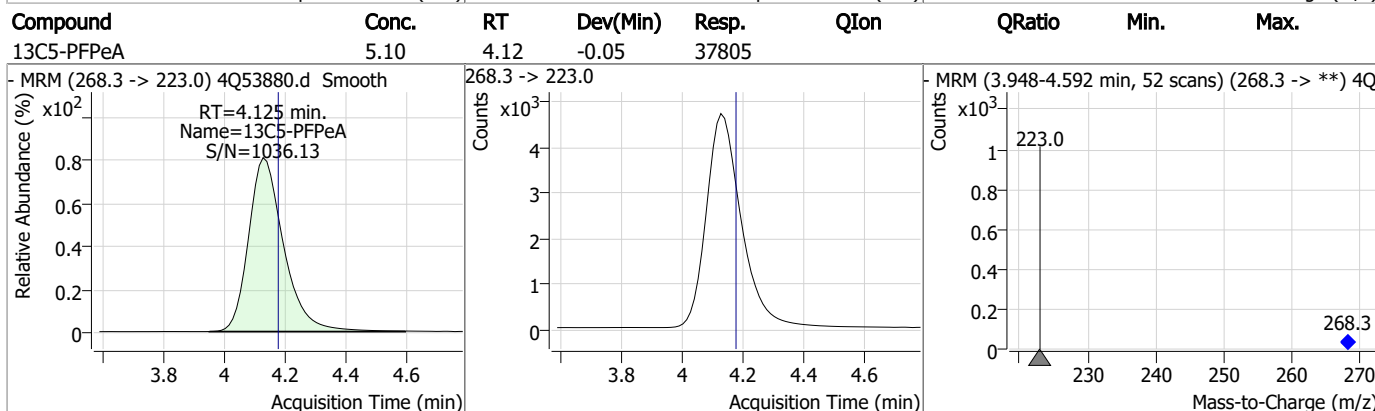
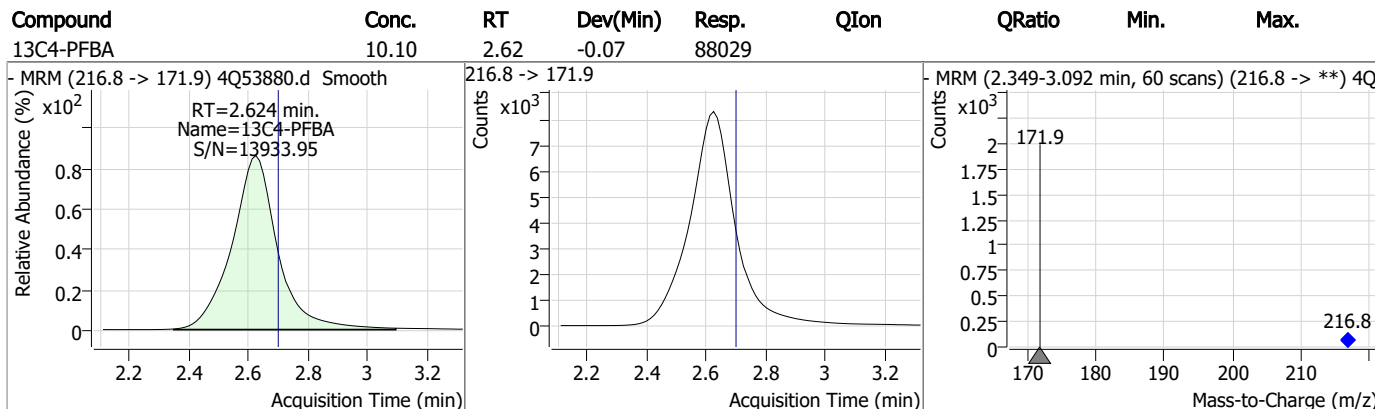
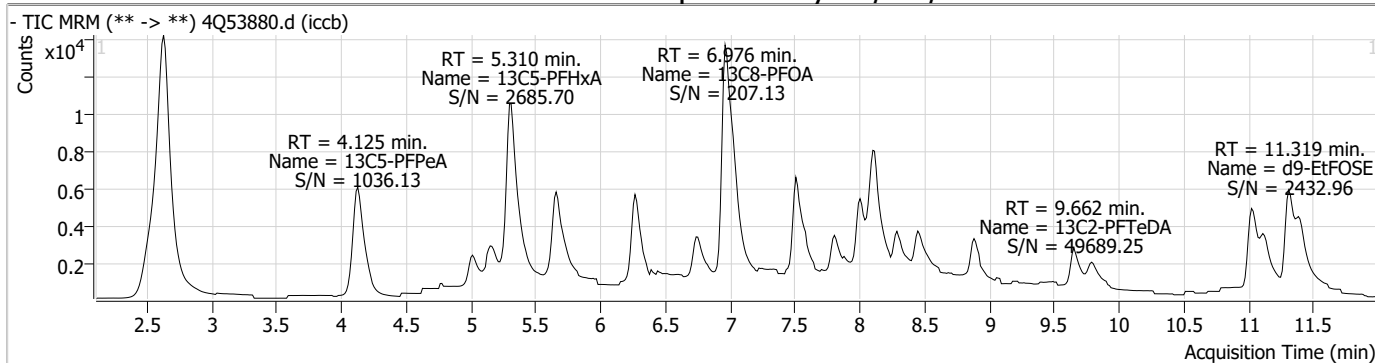
### Perfluorinated Compounds by LC/MS/MS

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

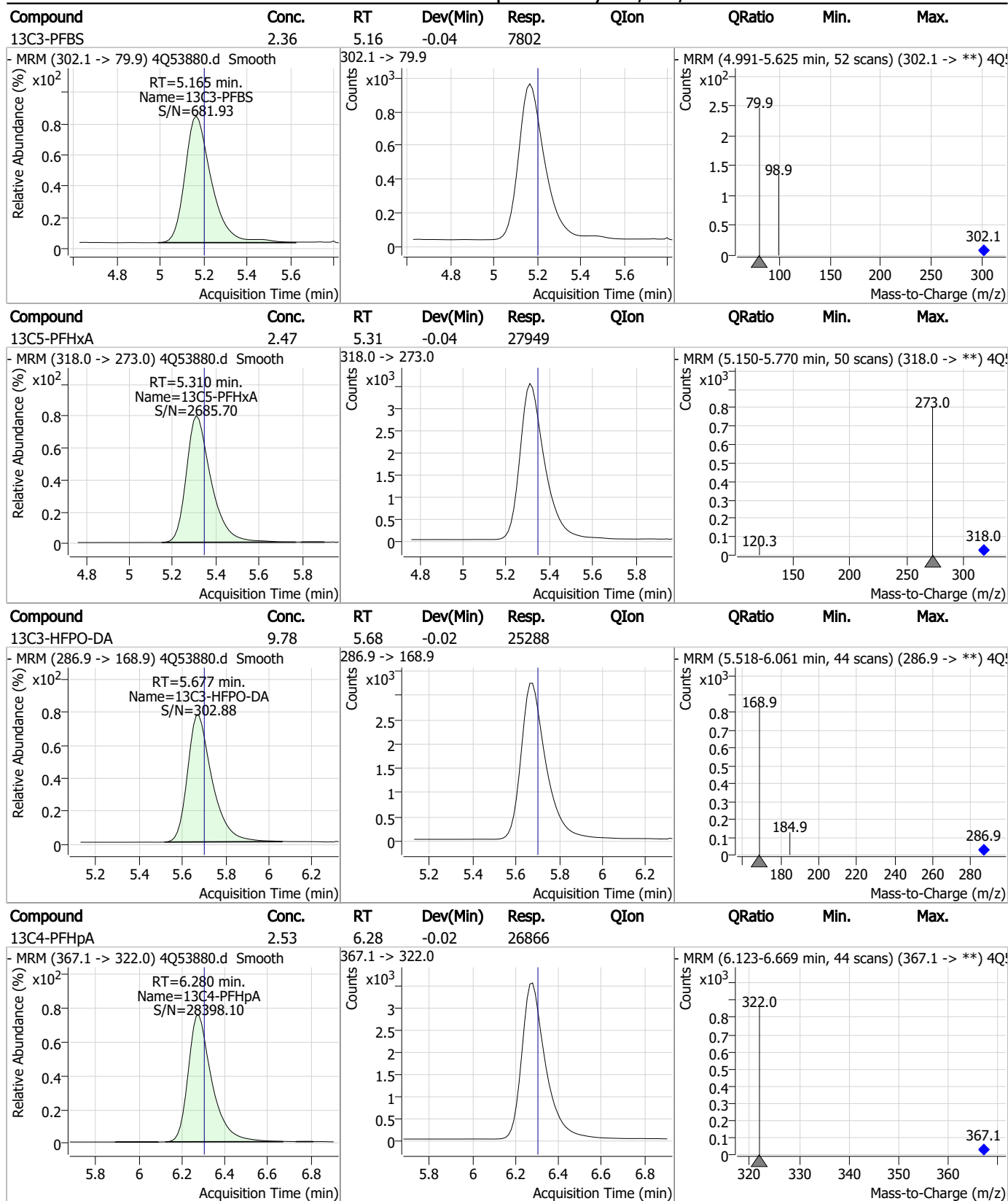
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### Perfluorinated Compounds by LC/MS/MS



7.2.3  
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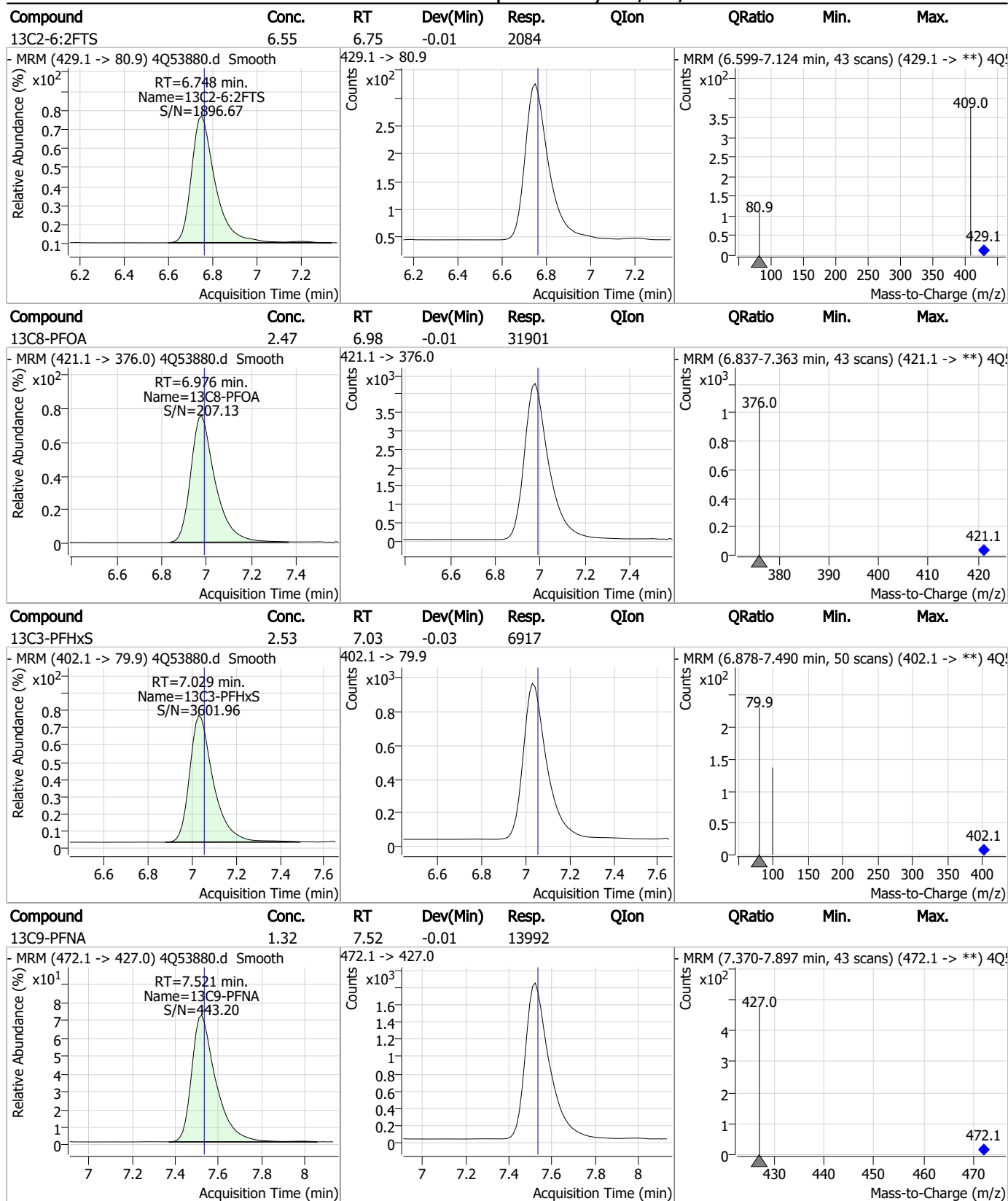
### Perfluorinated Compounds by LC/MS/MS



7.2.3  
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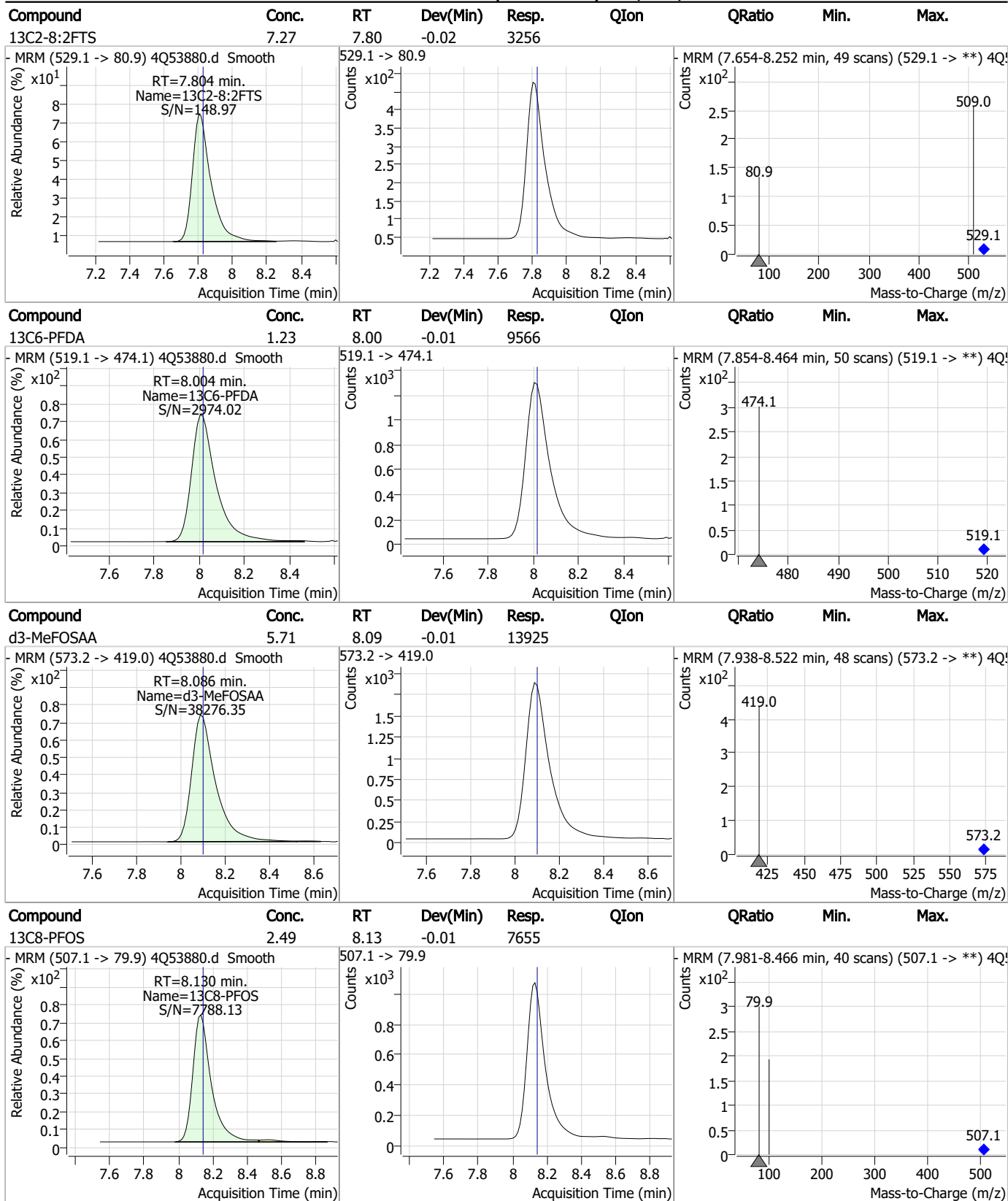


### Perfluorinated Compounds by LC/MS/MS



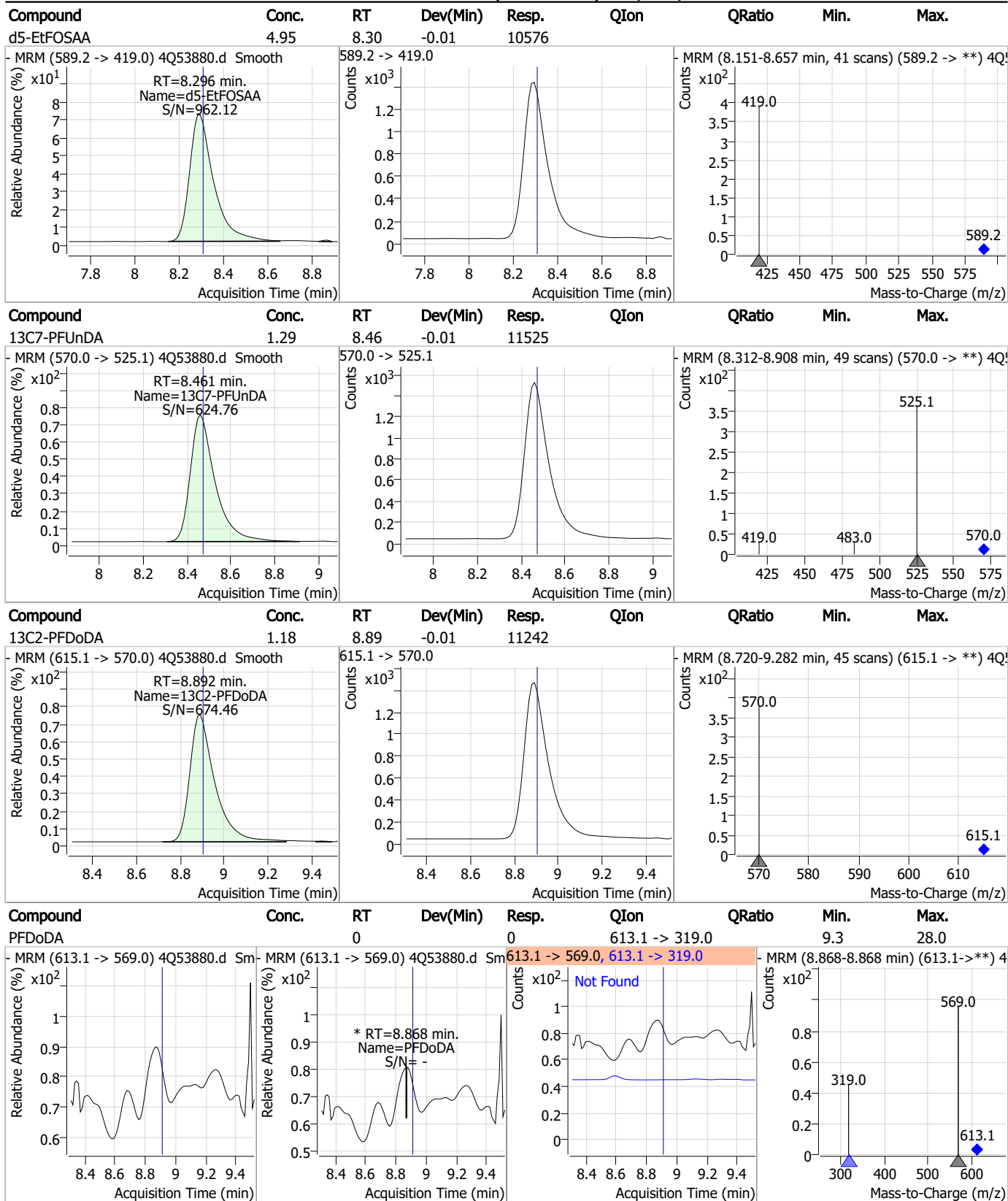
7.2.3  
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### Perfluorinated Compounds by LC/MS/MS



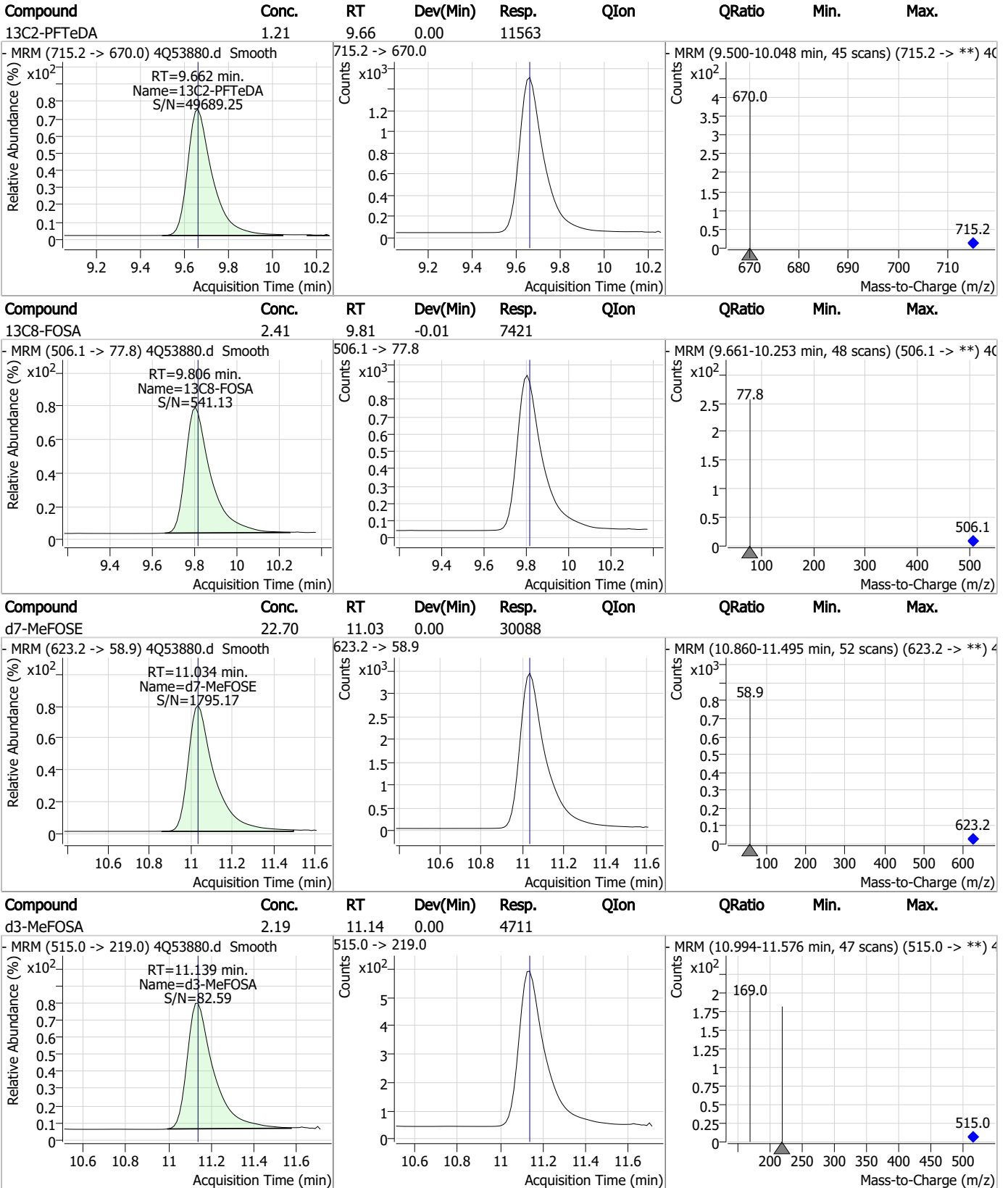
7.2.3  
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### Perfluorinated Compounds by LC/MS/MS



7.2.3  
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### Perfluorinated Compounds by LC/MS/MS



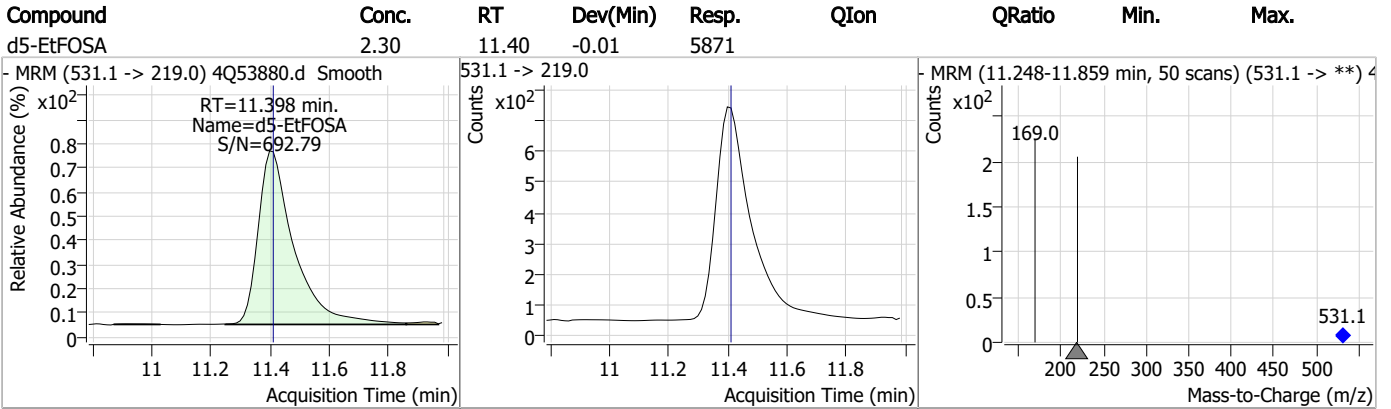
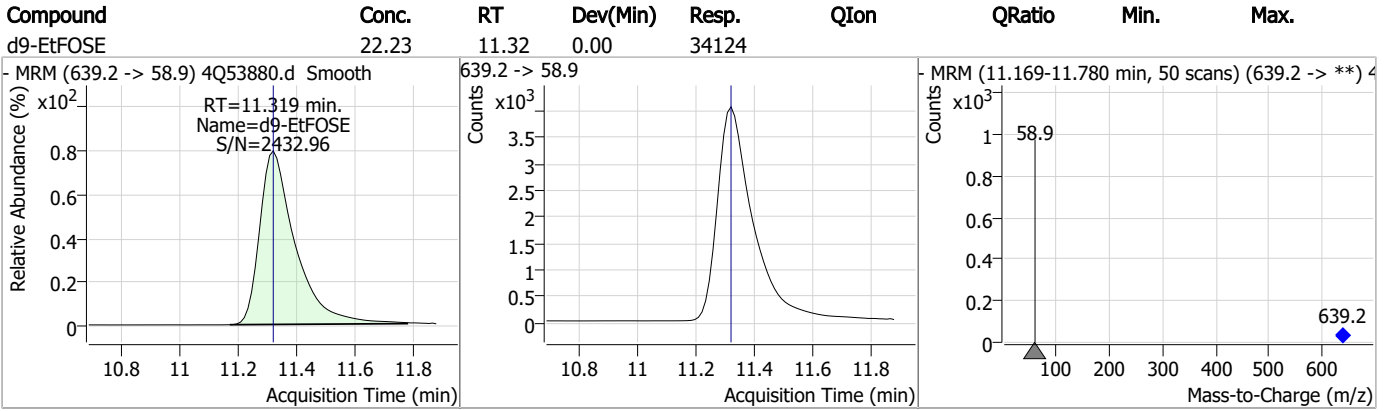
7.2.3

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### Perfluorinated Compounds by LC/MS/MS



7.2.3

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### Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53871.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/15/2023 11:55:48 AM  
 Sample Name : op58-bs  
 Vial : P1-F3  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q786.batch.bin  
 Sample Information : OP58,S4Q786,500,,,5.0,1,water

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

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### Perfluorinated Compounds by LC/MS/MS

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

7.3.1  
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Perfluorinated Compounds by LC/MS/MS

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

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

7.3.1  
7

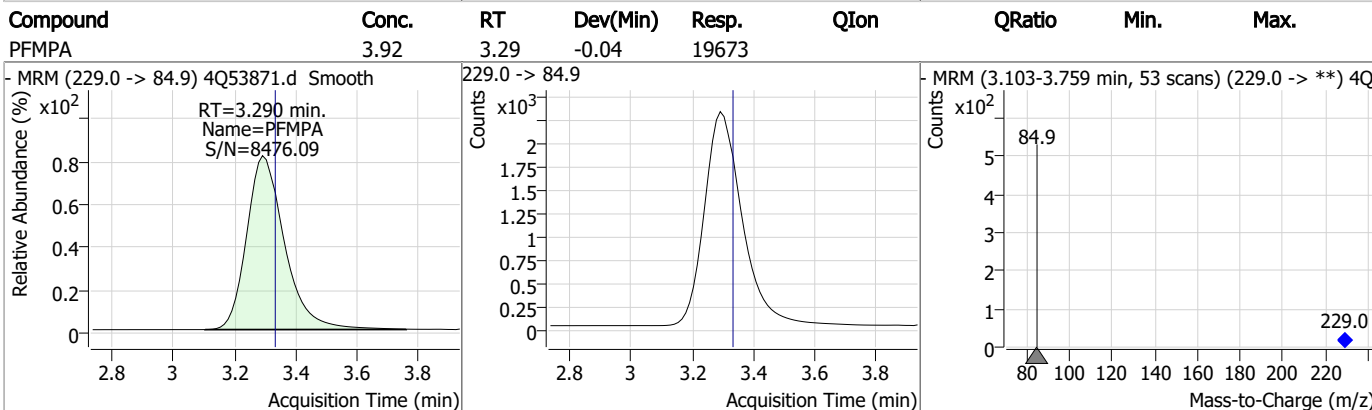
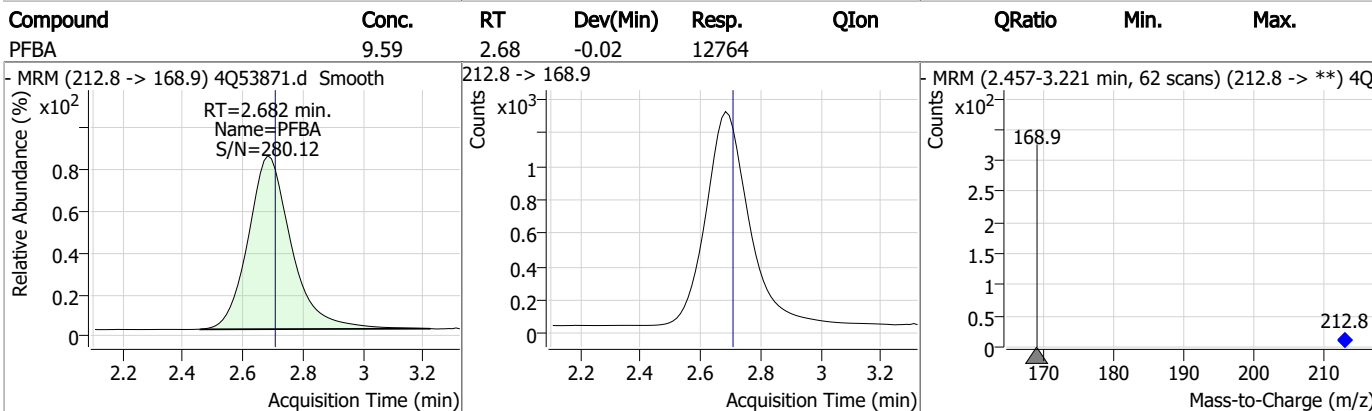
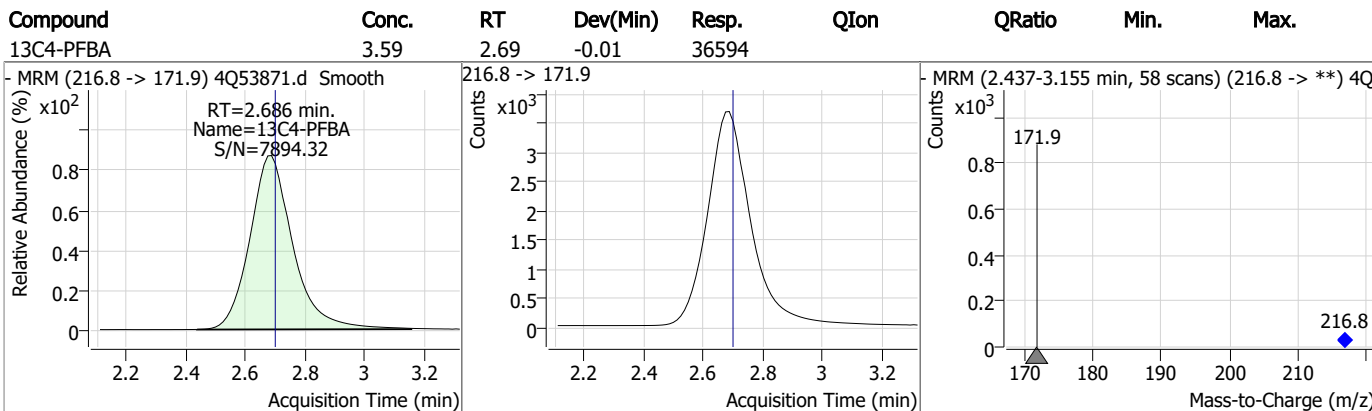
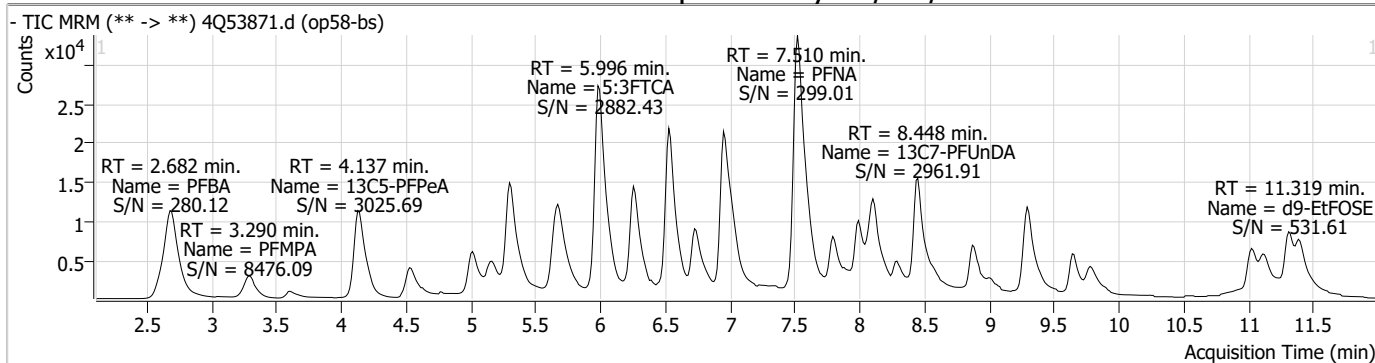
### Perfluorinated Compounds by LC/MS/MS

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

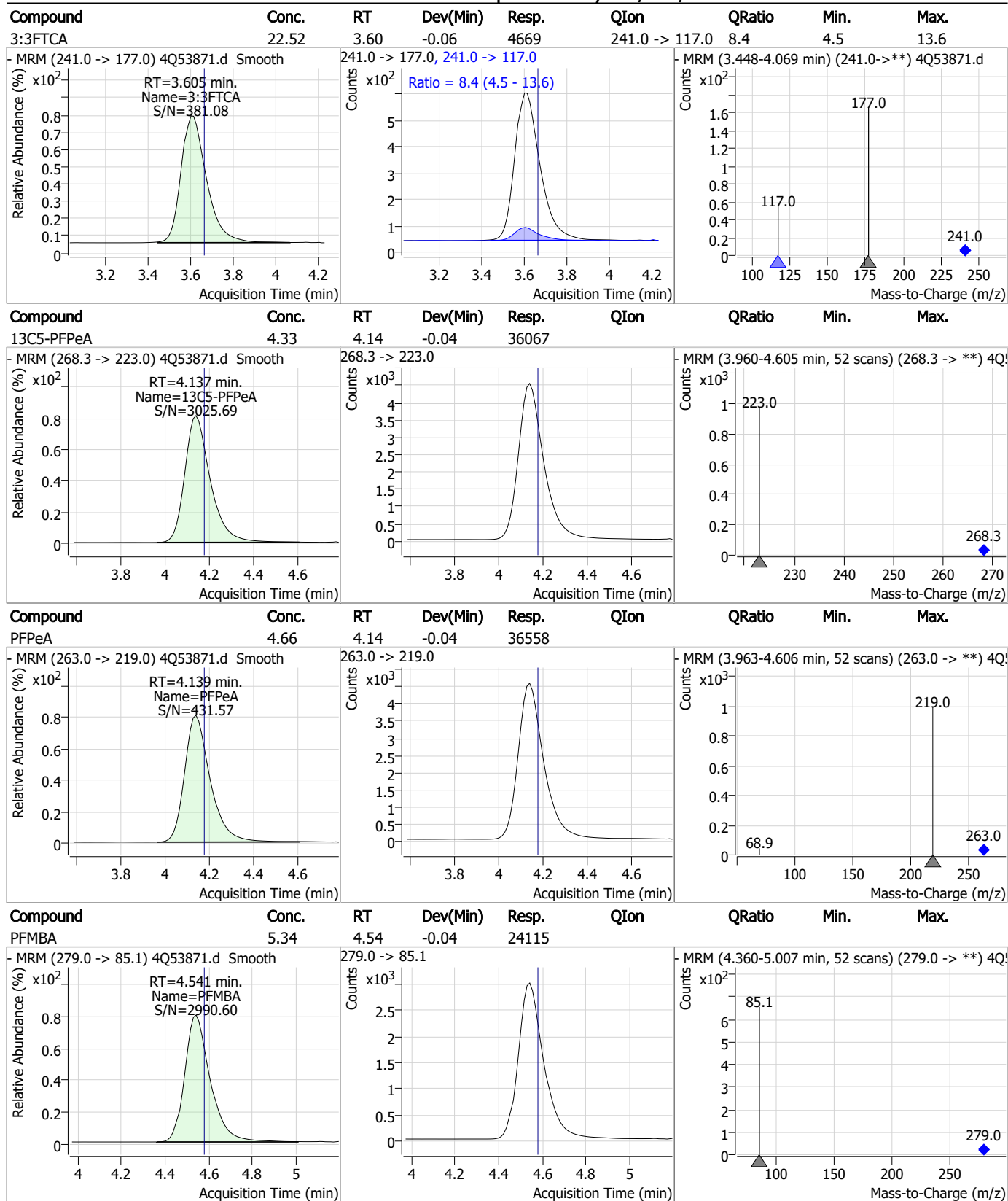
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### Perfluorinated Compounds by LC/MS/MS



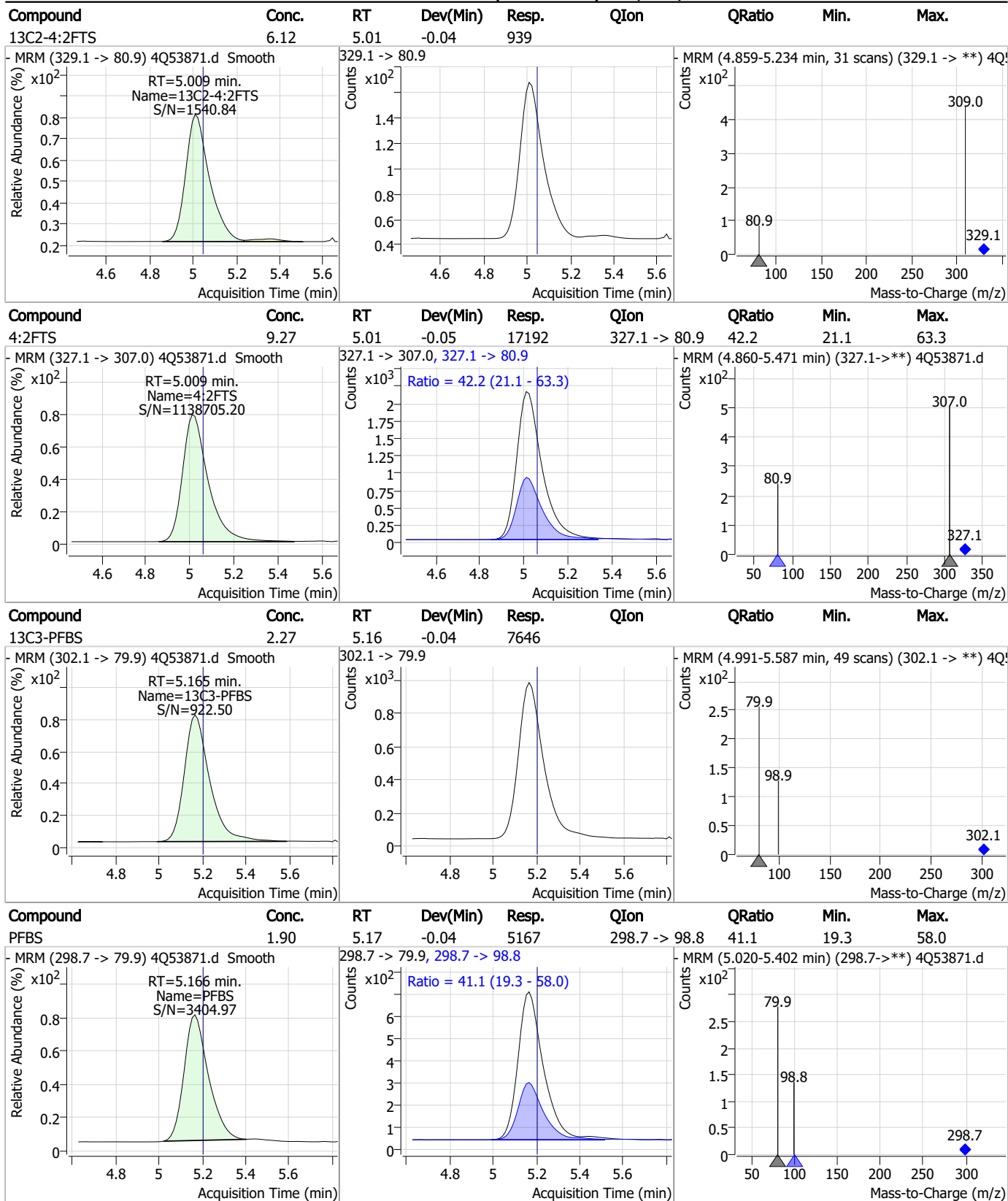
7.3.1  
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### Perfluorinated Compounds by LC/MS/MS



7.3.1  
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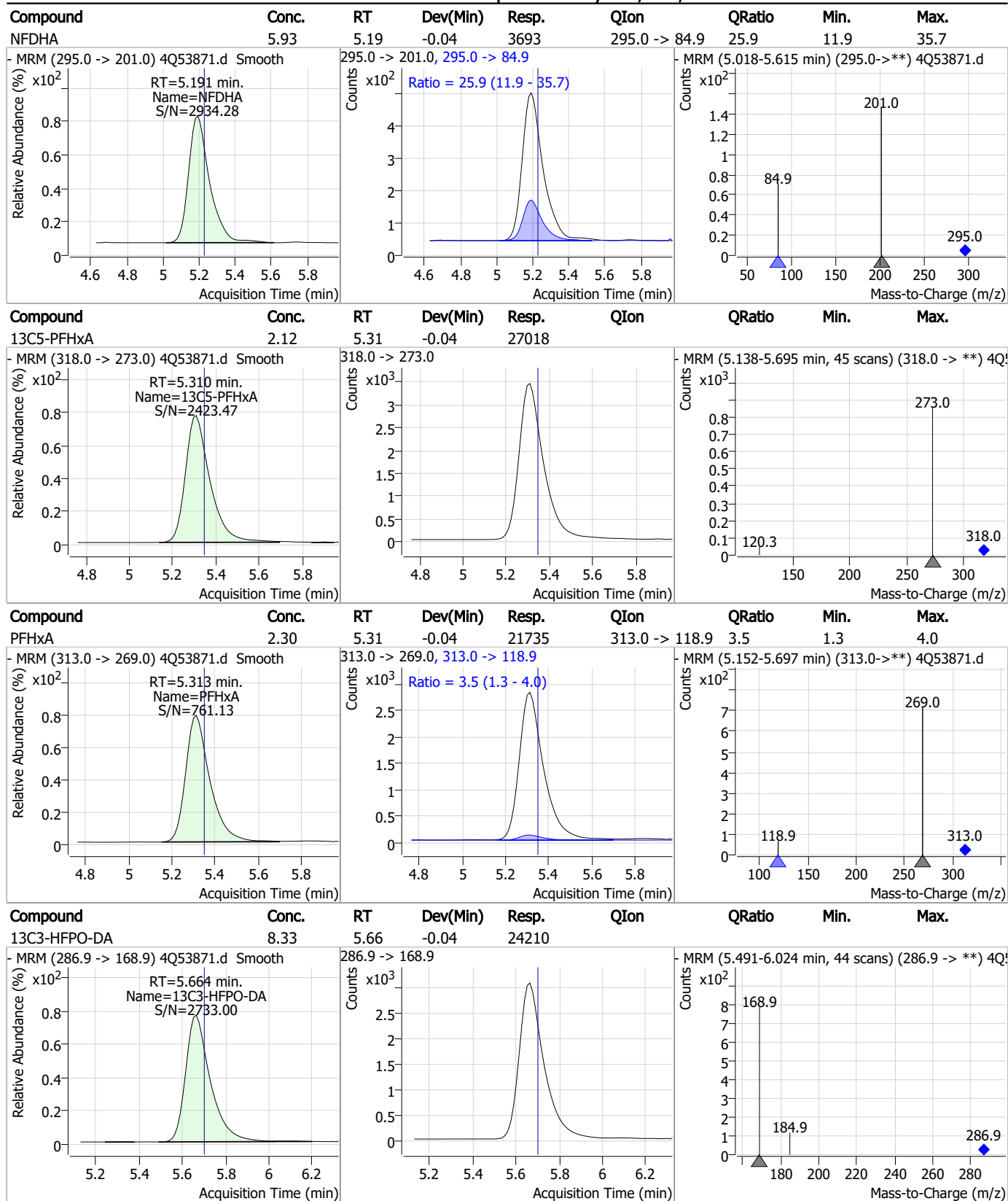
### Perfluorinated Compounds by LC/MS/MS



7.3.1  
7



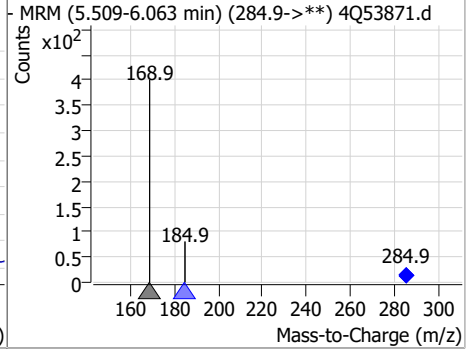
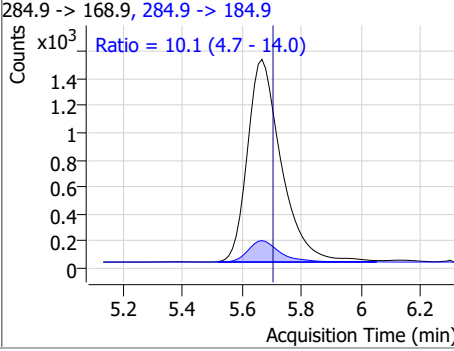
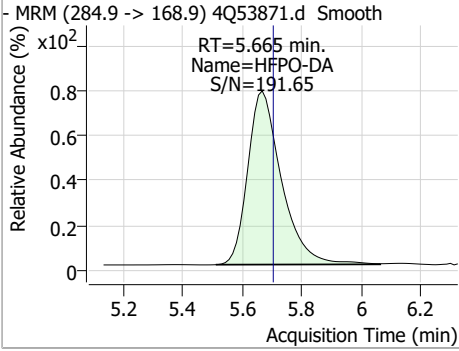
### Perfluorinated Compounds by LC/MS/MS



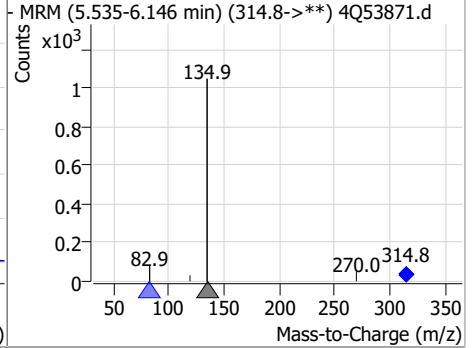
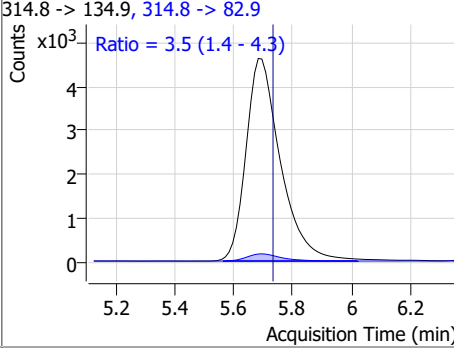
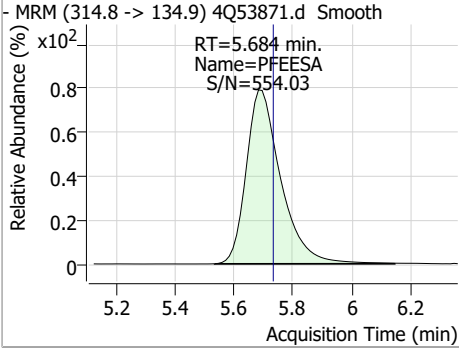
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### Perfluorinated Compounds by LC/MS/MS

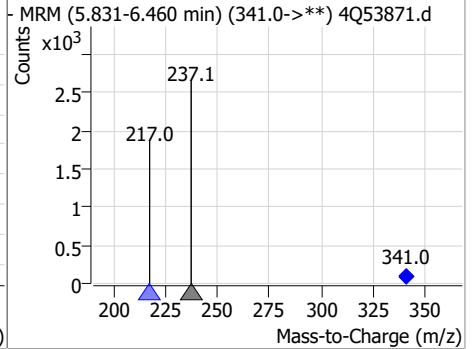
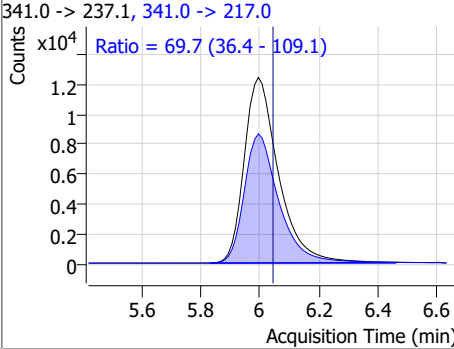
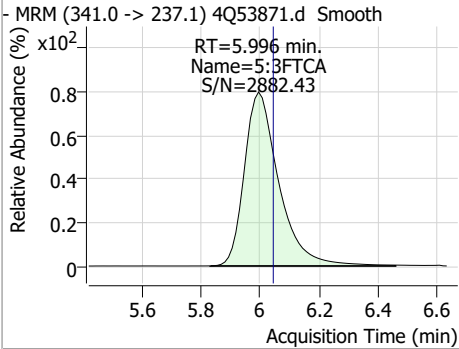
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.60	5.67	-0.04	11803	284.9 -> 184.9	10.1	4.7	14.0



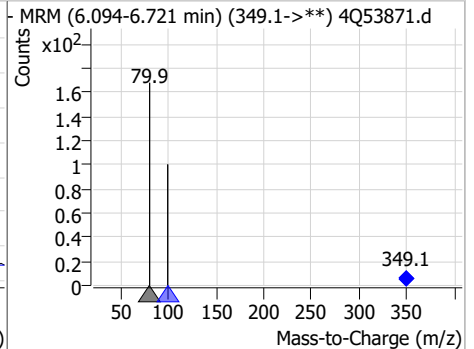
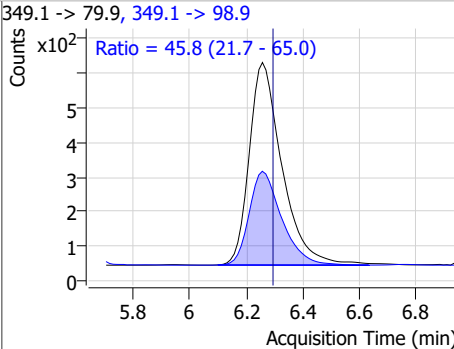
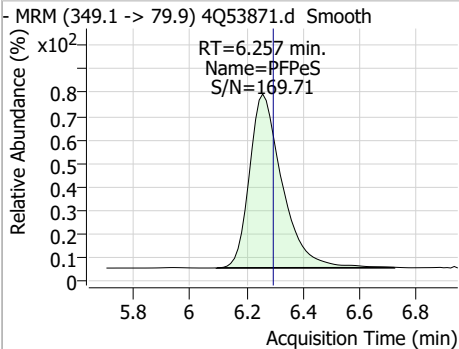
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	5.01	5.68	-0.05	37423	314.8 -> 82.9	3.5	1.4	4.3



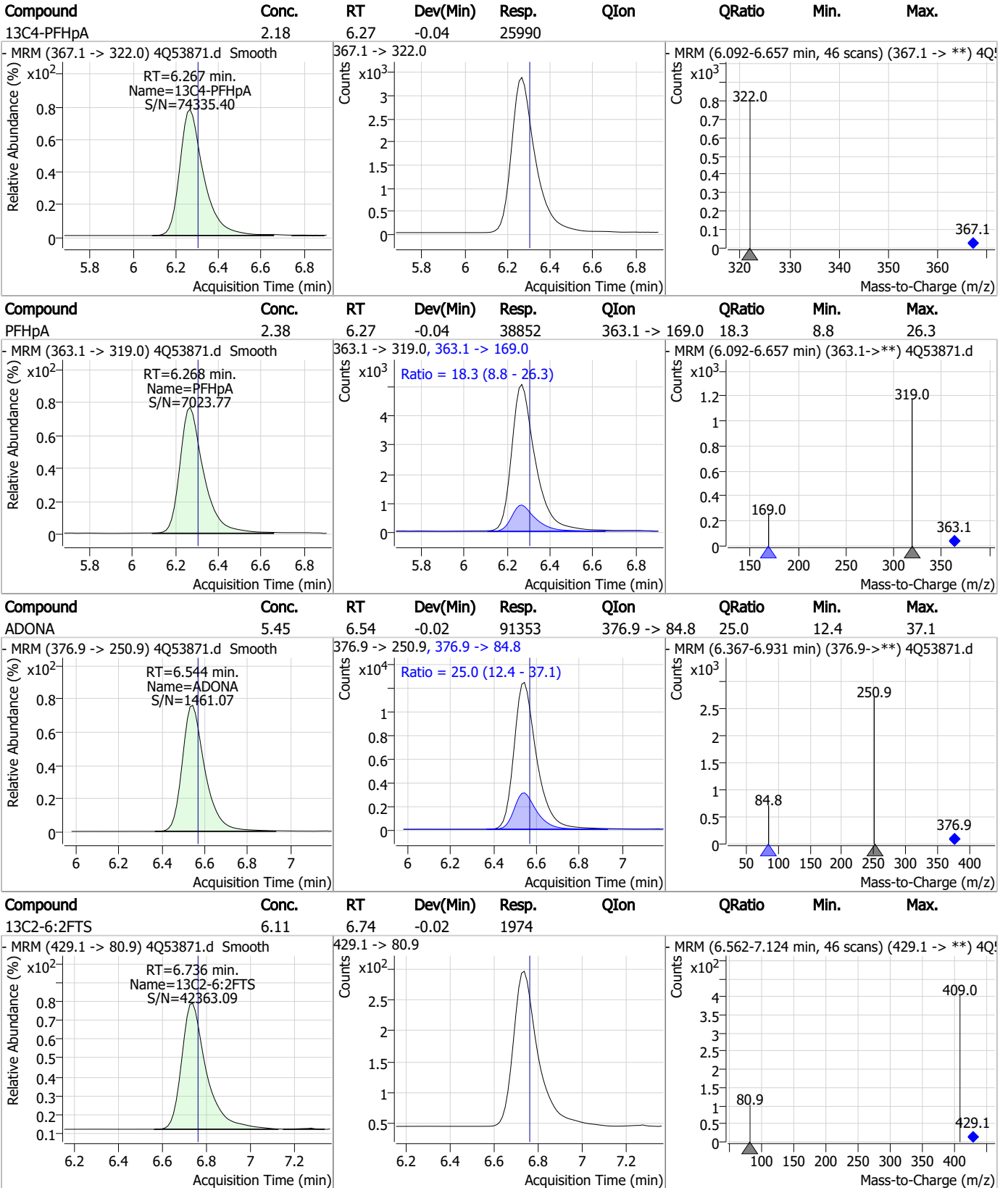
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	60.87	6.00	-0.05	101101	341.0 -> 217.0	69.7	36.4	109.1



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



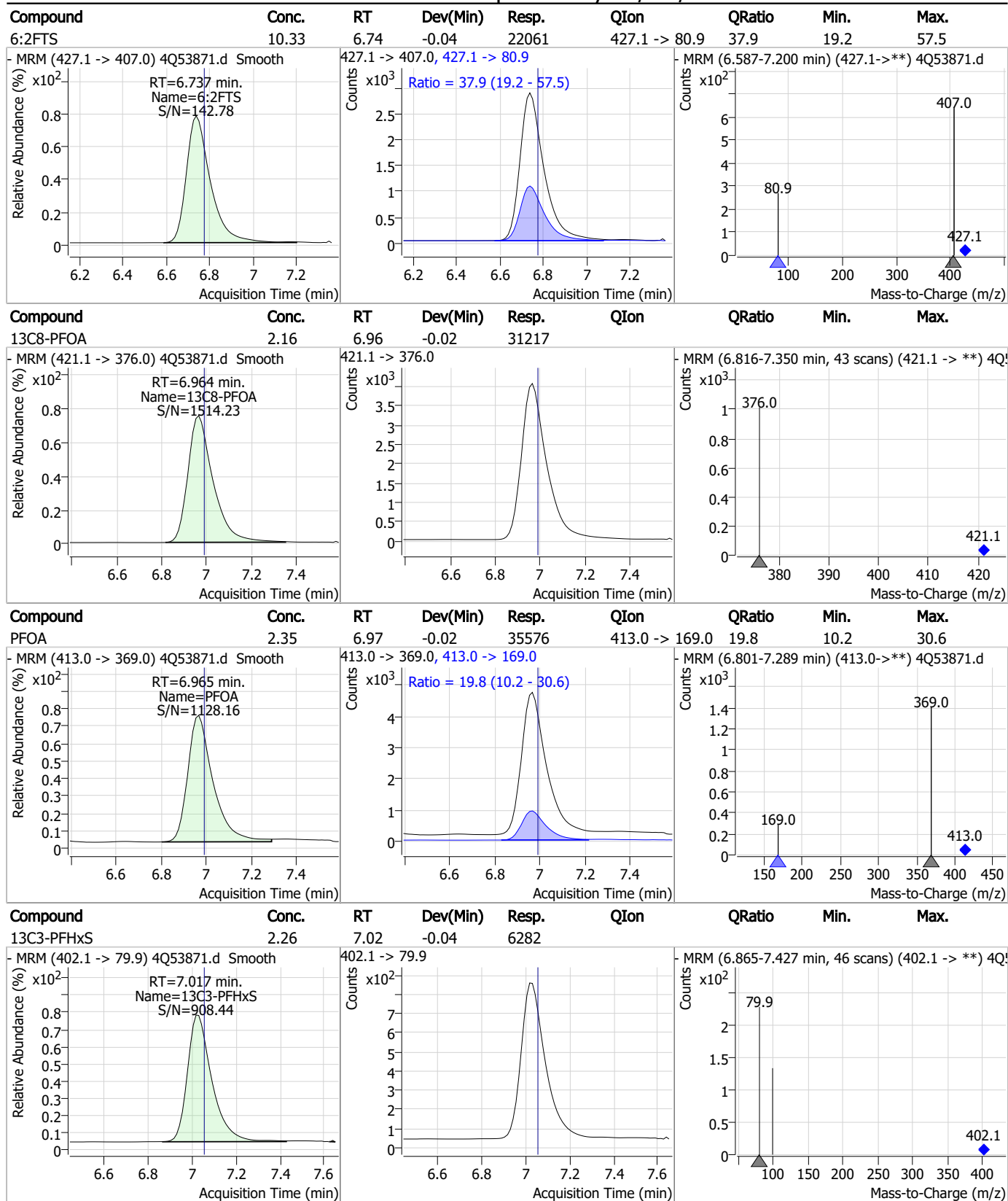
### Perfluorinated Compounds by LC/MS/MS



7.3.1

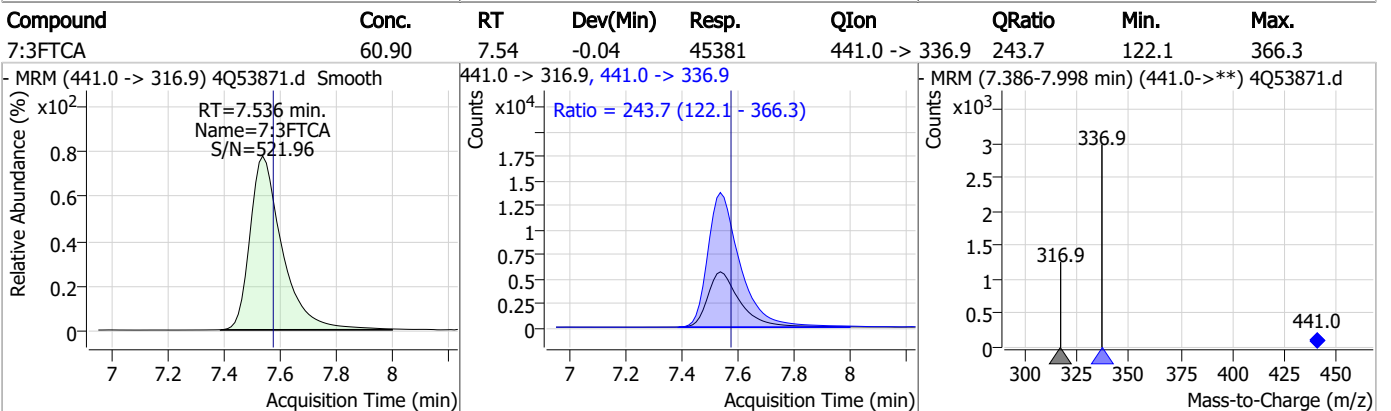
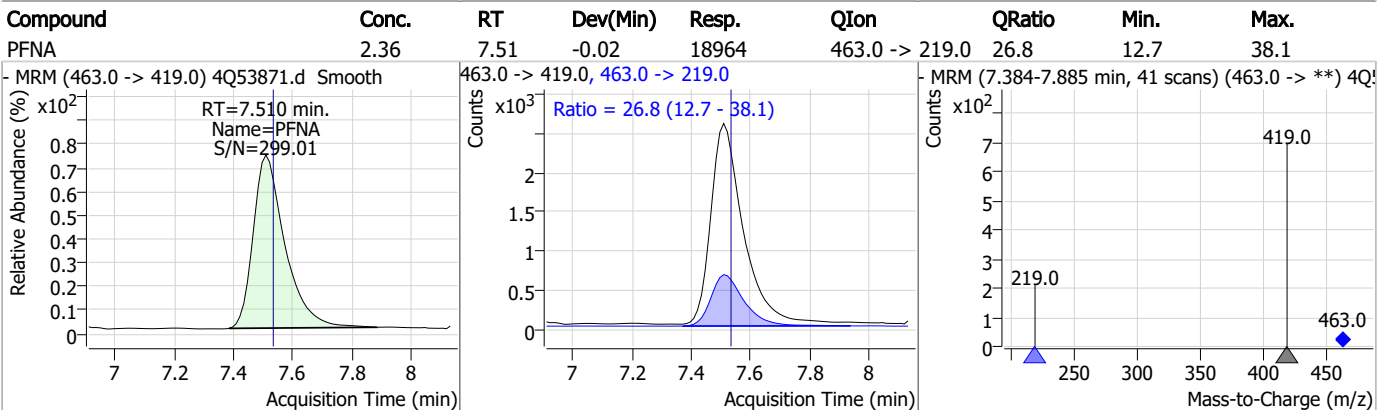
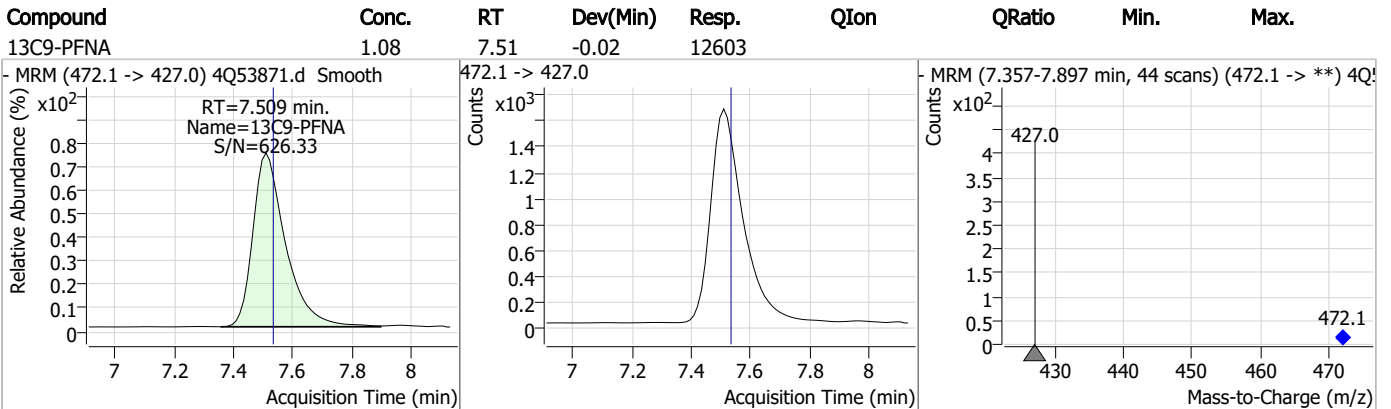
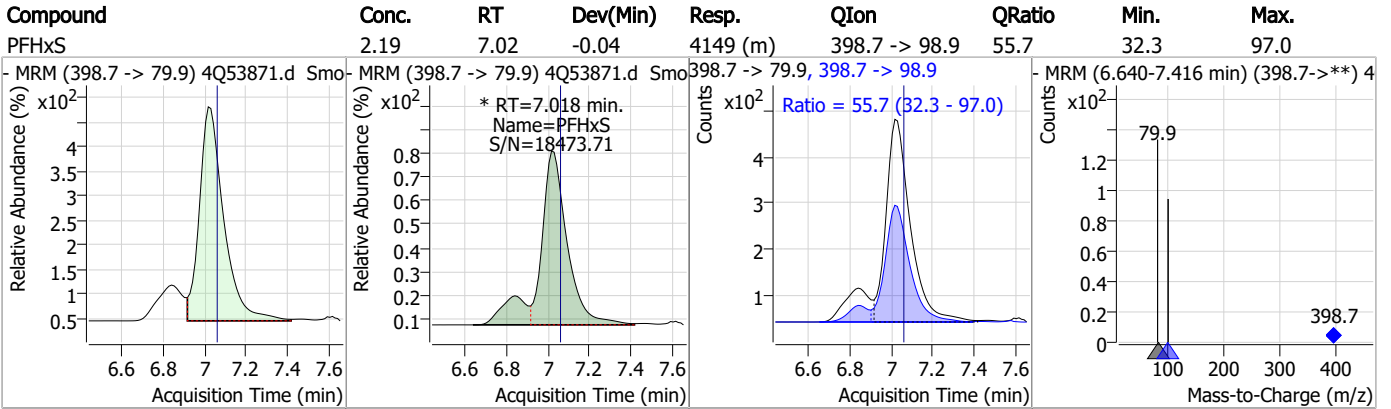
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### Perfluorinated Compounds by LC/MS/MS

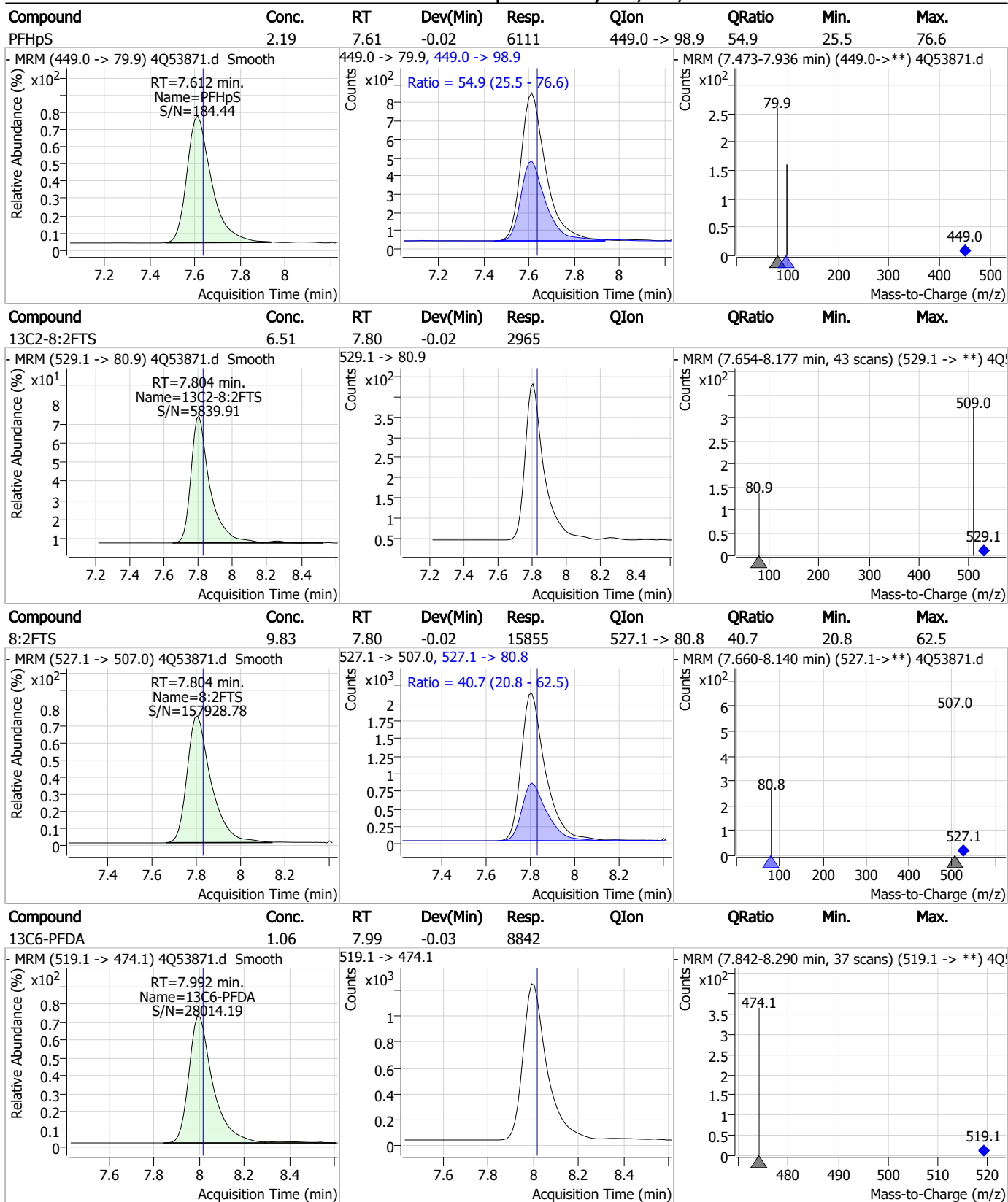


7.3.1  
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## Perfluorinated Compounds by LC/MS/MS

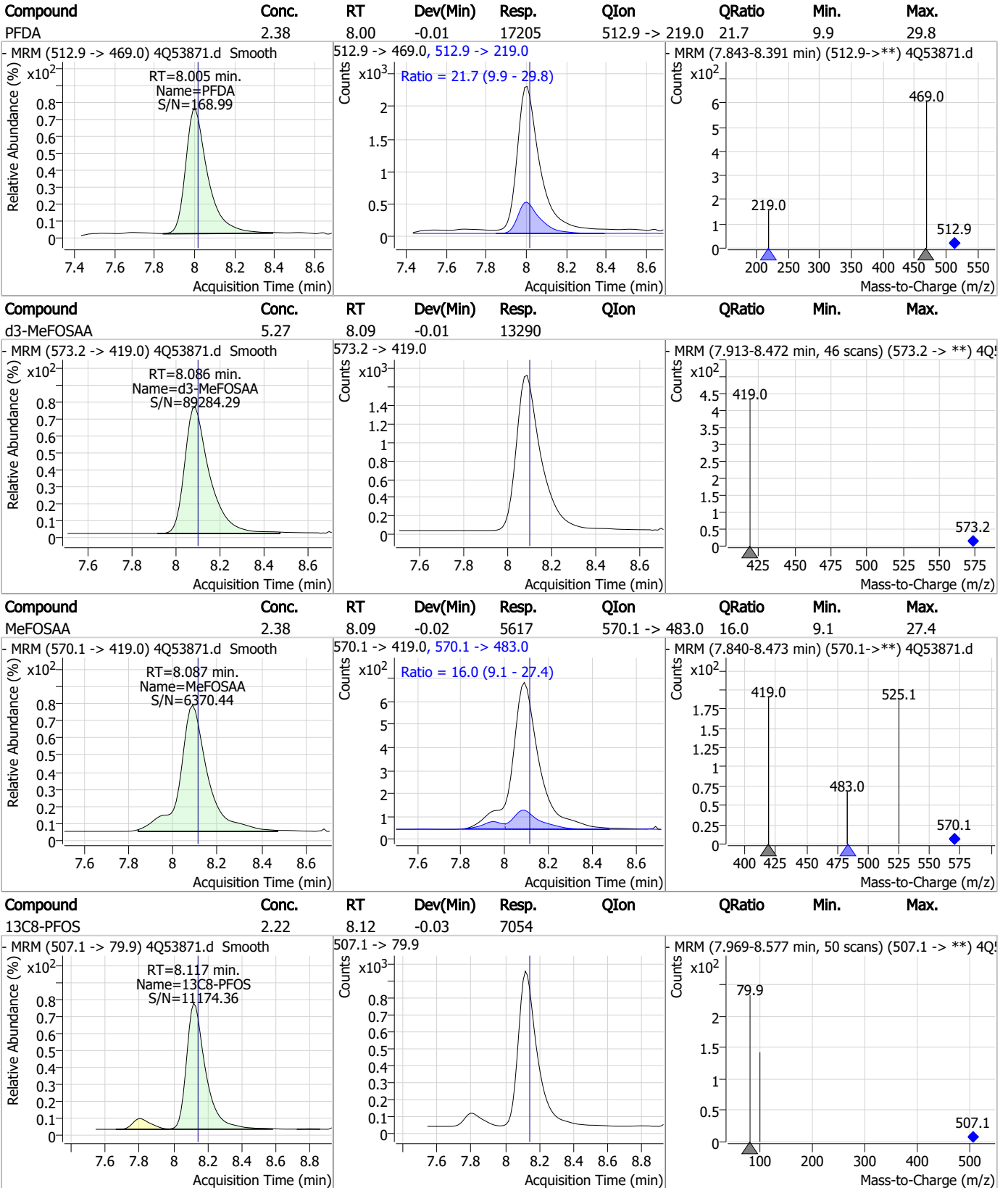


### Perfluorinated Compounds by LC/MS/MS



7.3.1  
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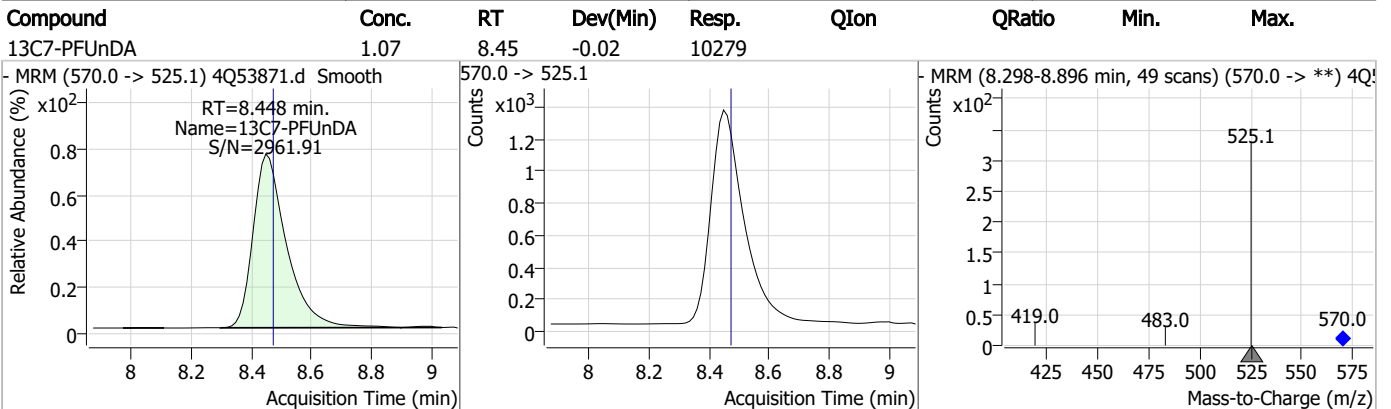
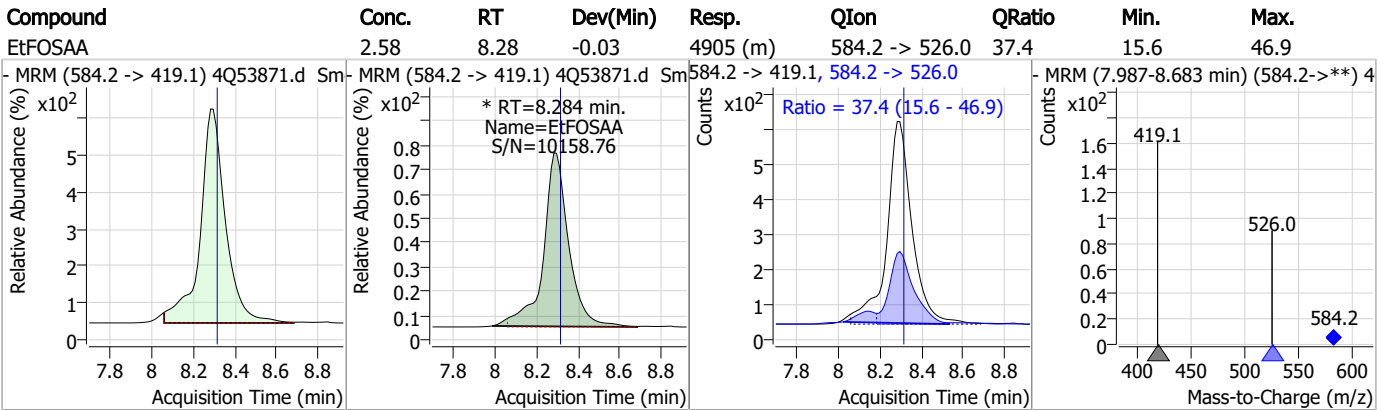
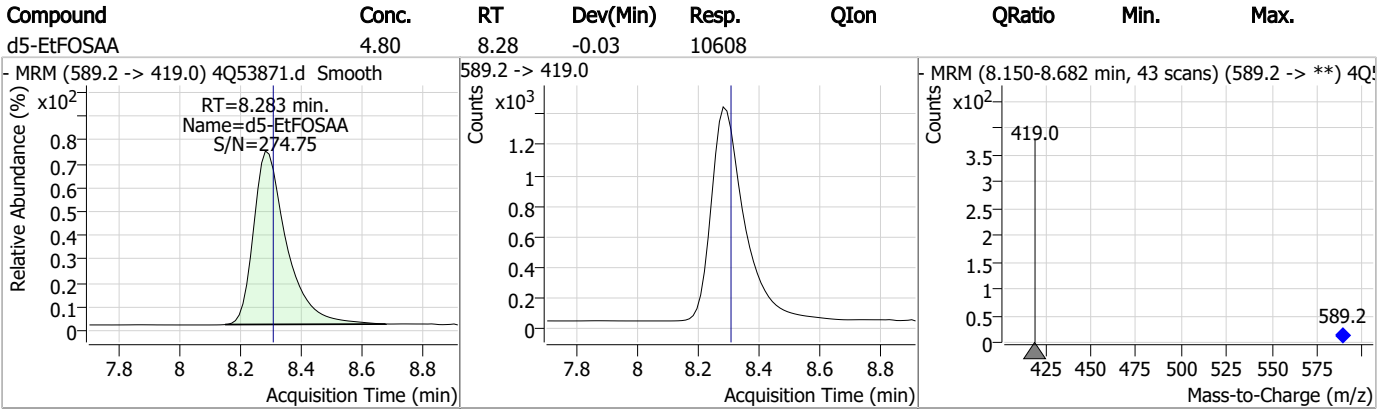
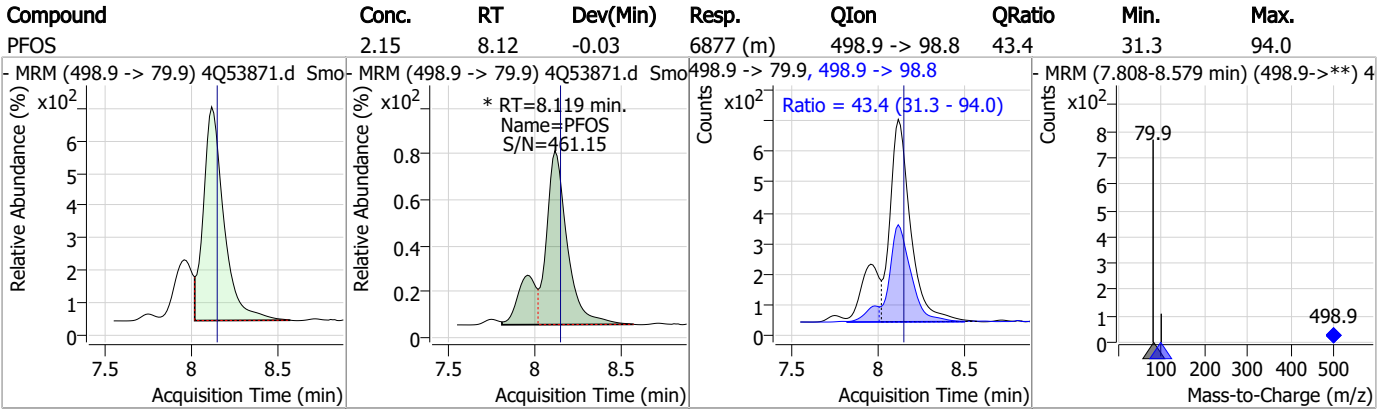
### Perfluorinated Compounds by LC/MS/MS



7.3.1

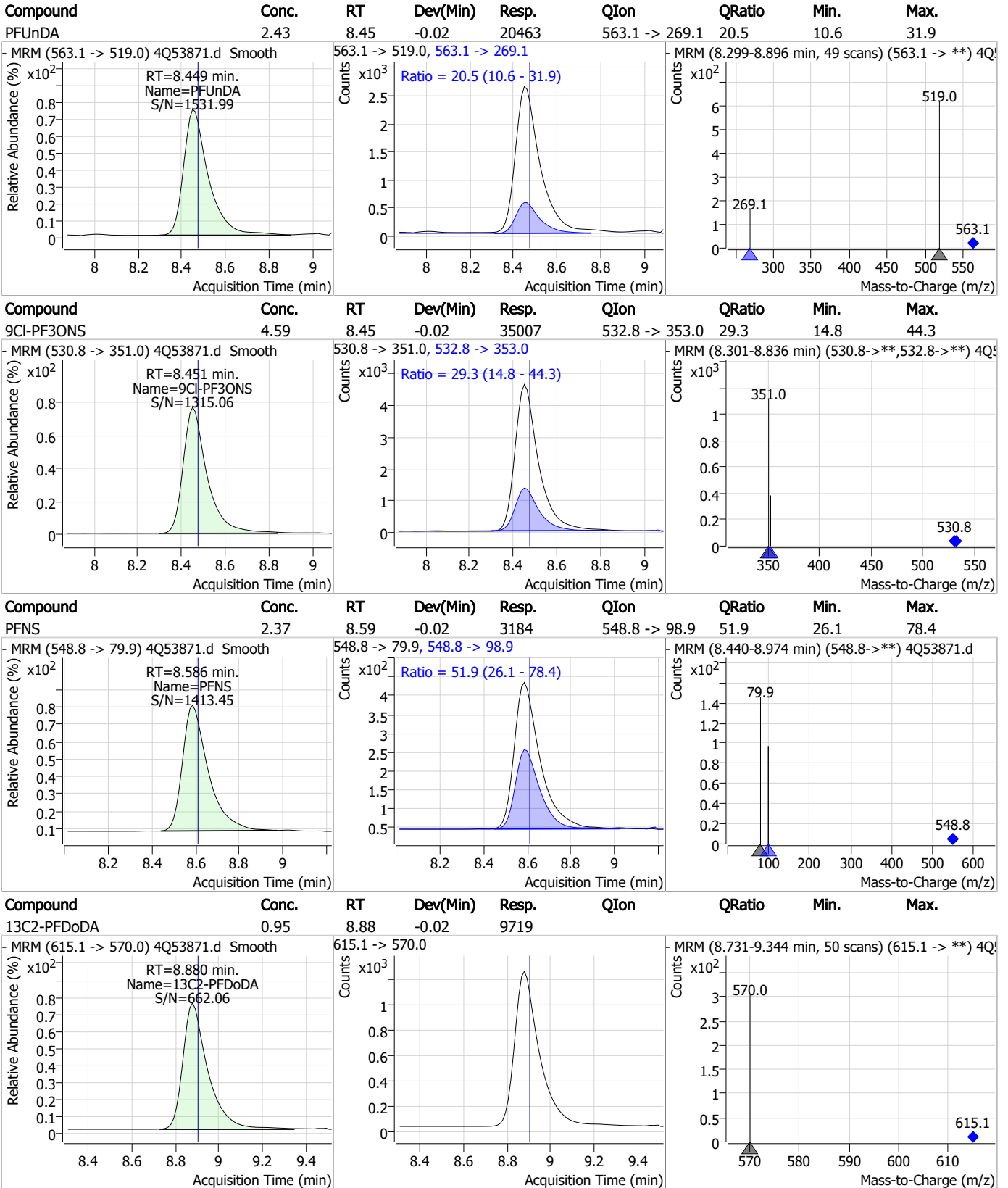
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### Perfluorinated Compounds by LC/MS/MS





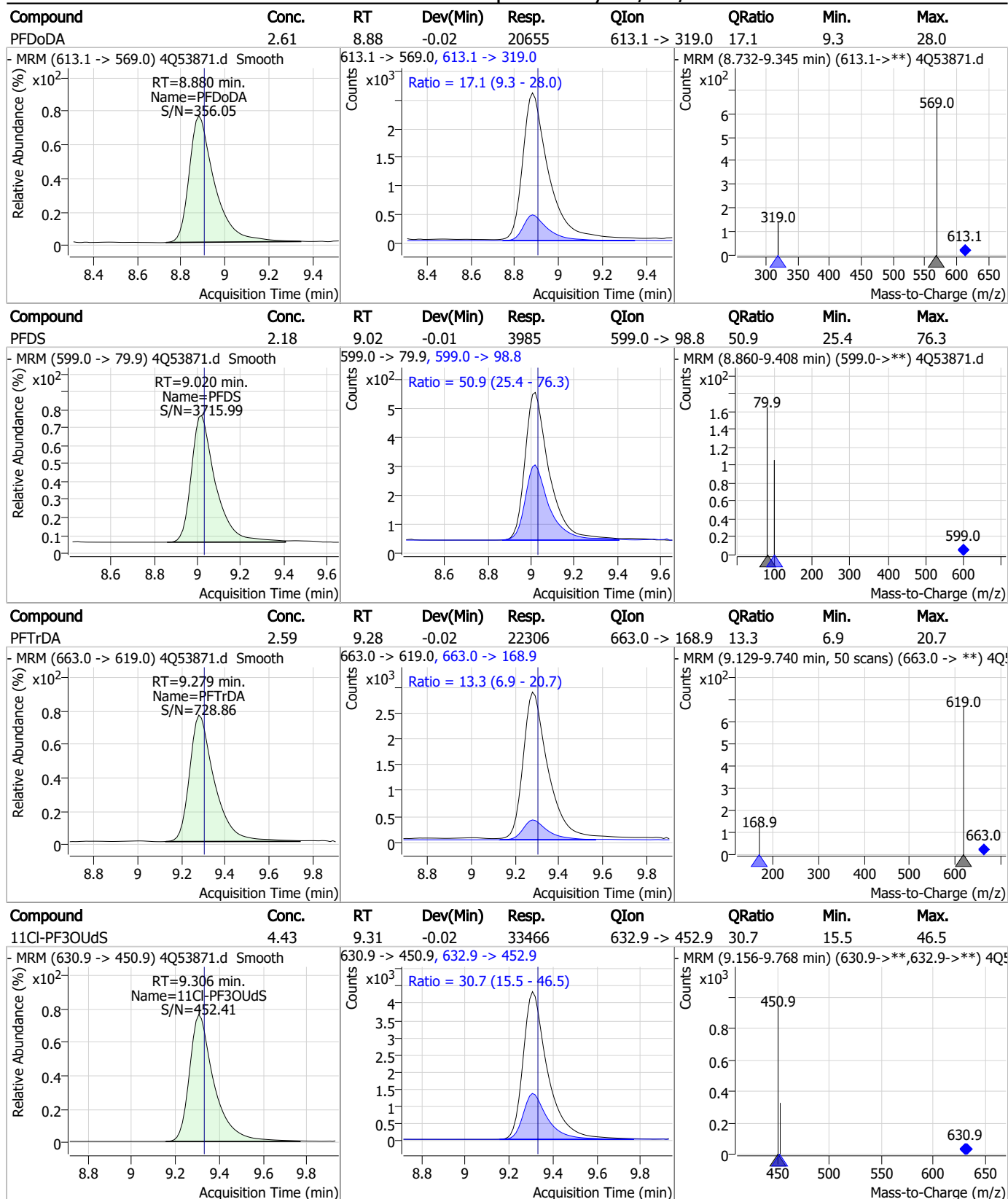
### Perfluorinated Compounds by LC/MS/MS



7.3.1

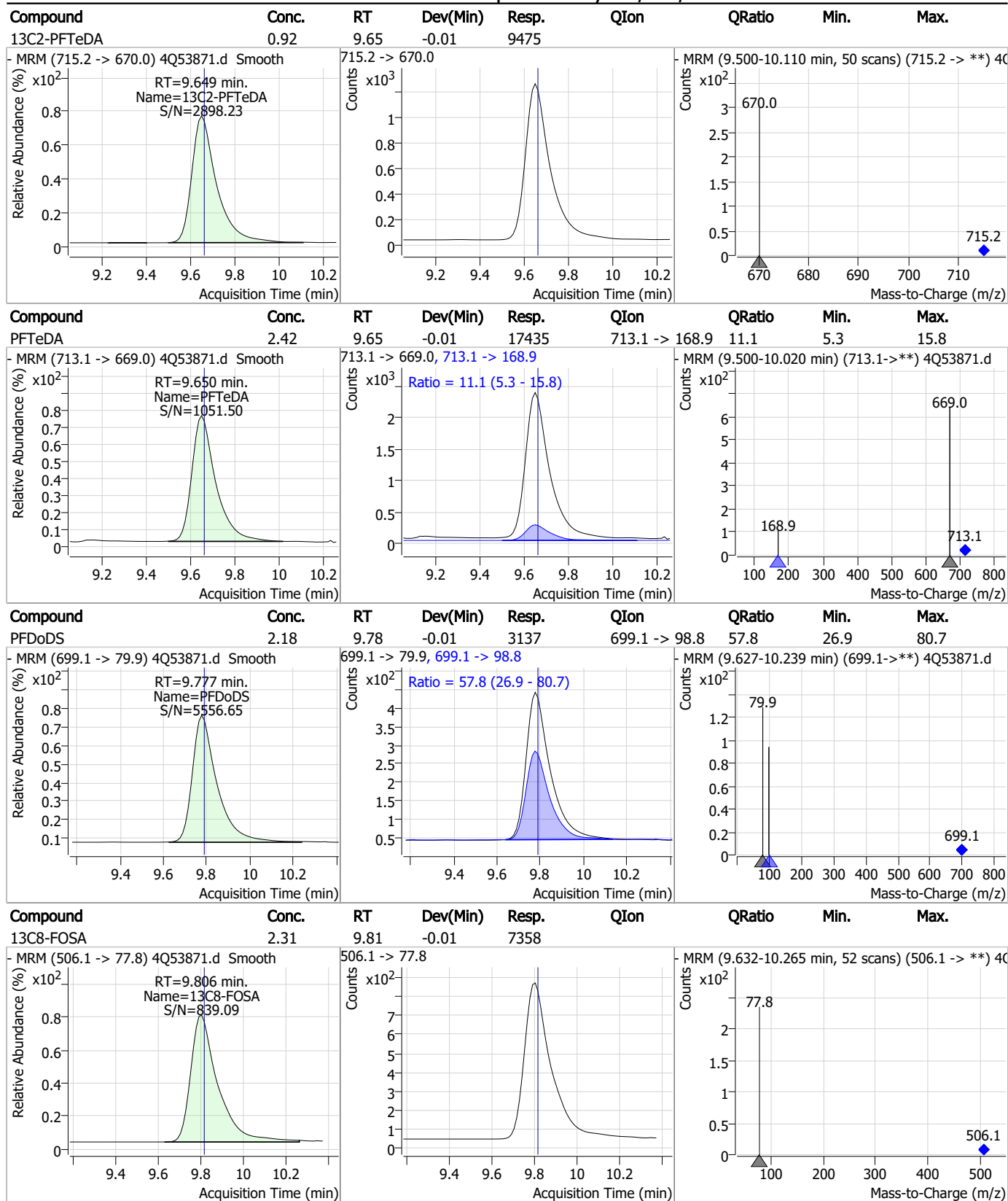
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### Perfluorinated Compounds by LC/MS/MS



7.3.1  
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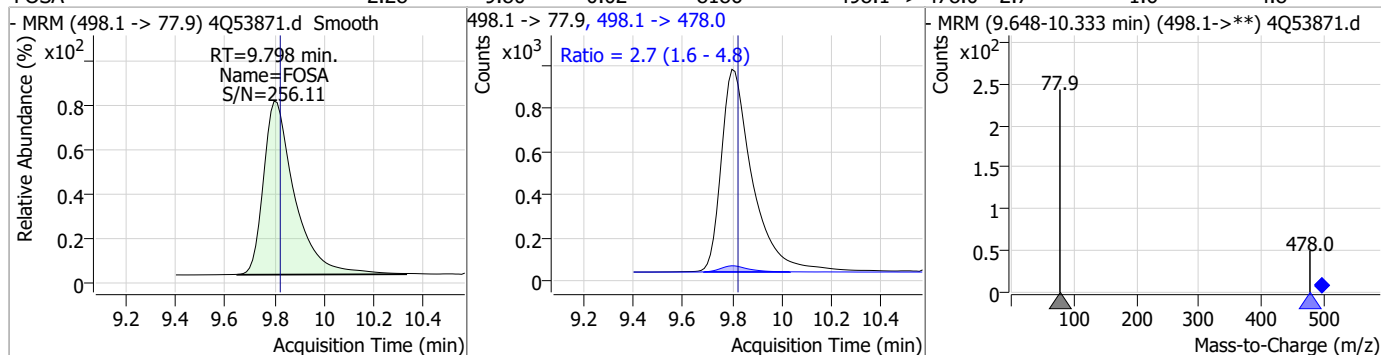
### Perfluorinated Compounds by LC/MS/MS



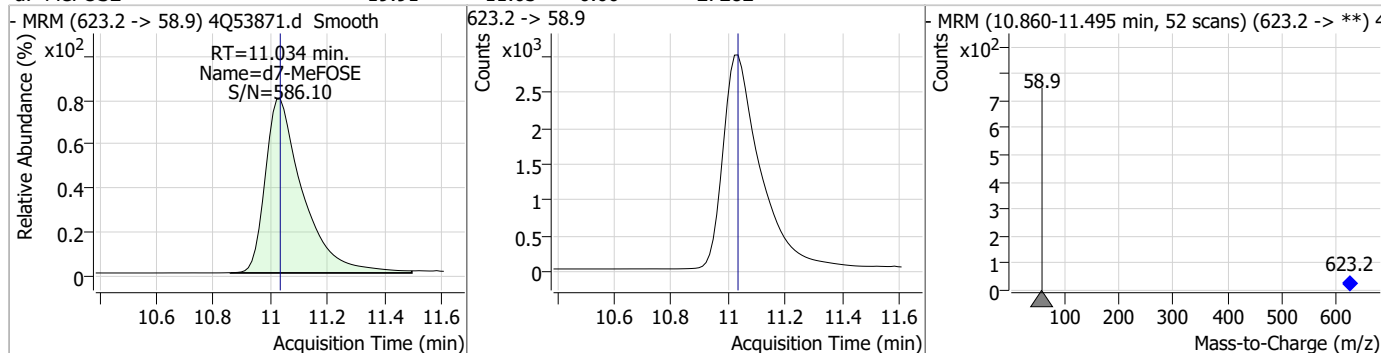
7.3.1  
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### Perfluorinated Compounds by LC/MS/MS

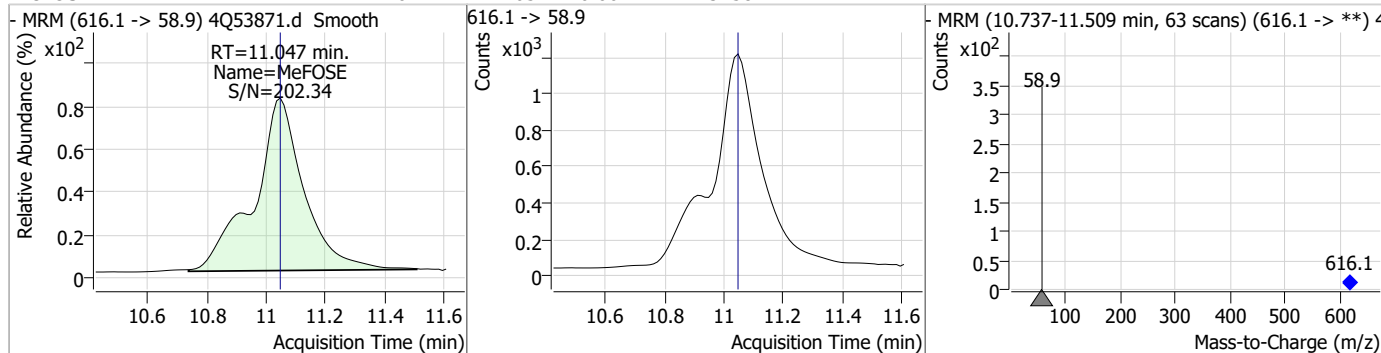
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.28	9.80	-0.02	8186	498.1 -> 478.0	2.7	1.6	4.8



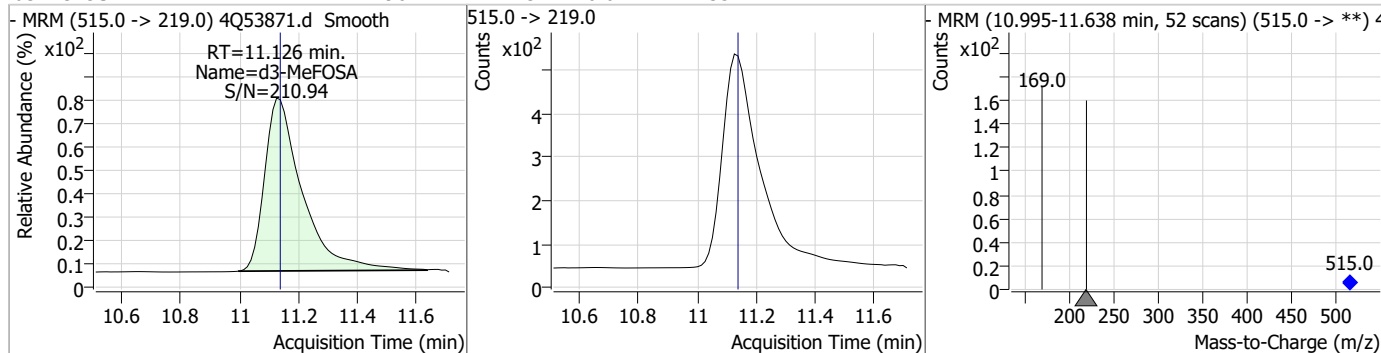
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	19.91	11.03	0.00	27282				



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

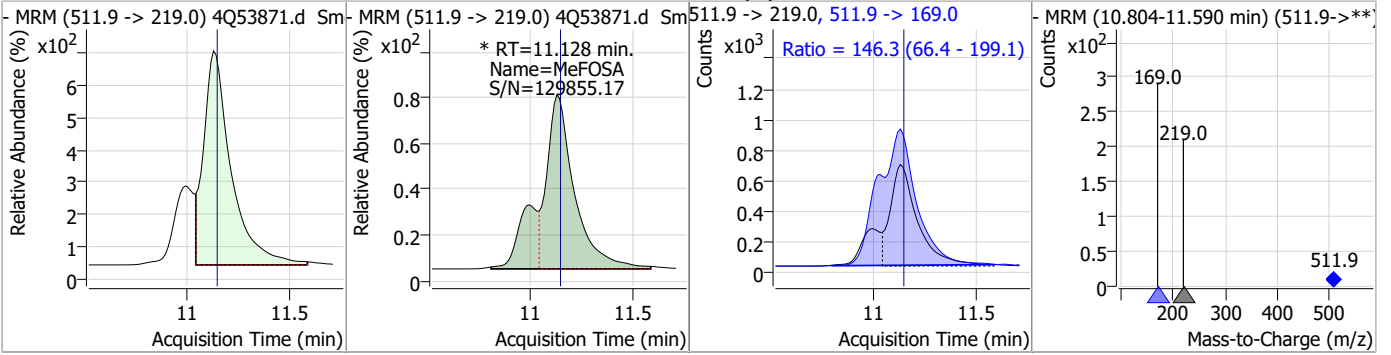


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.96	11.13	-0.01	4352				

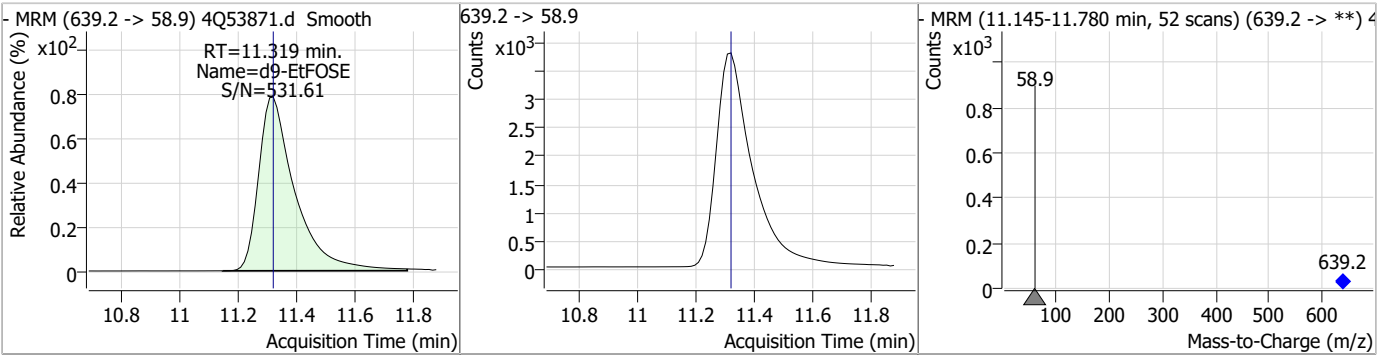


### Perfluorinated Compounds by LC/MS/MS

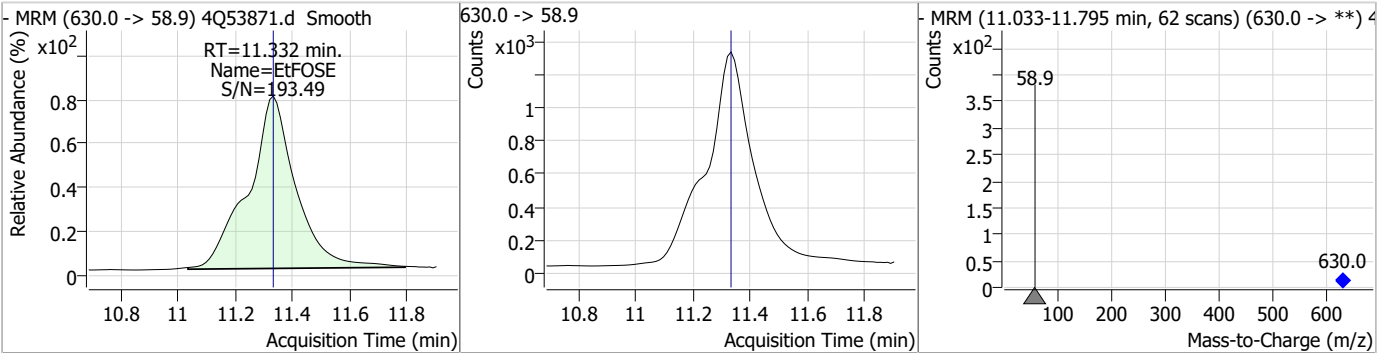
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	5.01	11.13	-0.01	7921 (m)	511.9 -> 169.0	146.3	66.4	199.1



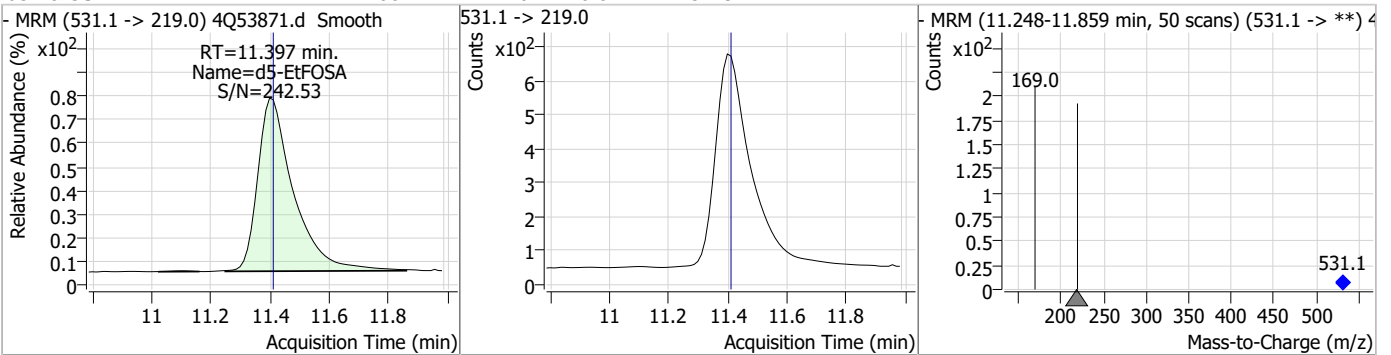
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	20.72	11.32	0.00	32883				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.15	11.33	0.00	14933				

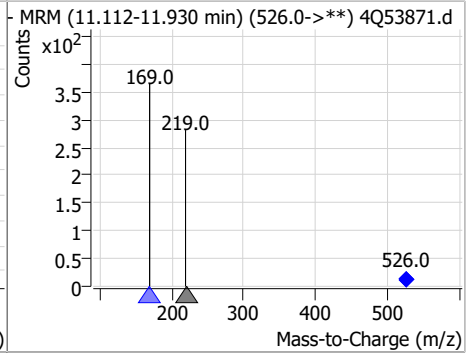
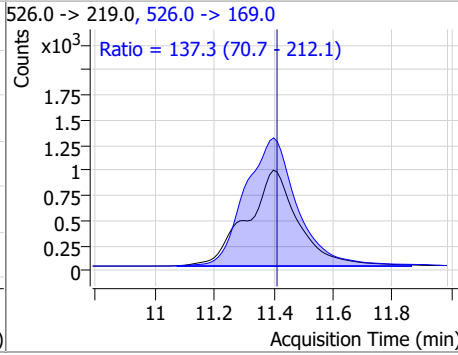
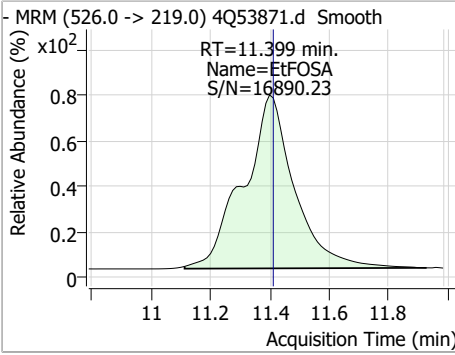


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.00	11.40	-0.01	5279				



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.81	11.40	-0.01	11453	526.0 -> 169.0	137.3	70.7	212.1



7.3.1

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# Manual Integration Approval Summary

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

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

7.3.1.1  
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### Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53872.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/15/2023 12:10:36 PM  
 Sample Name : op58-llbs:3  
 Vial : P1-F4  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q786.batch.bin  
 Sample Information : OP58,S4Q786,500,,,5.0,1,water

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

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

7.3.2  
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Perfluorinated Compounds by LC/MS/MS

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

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

7.3.2  
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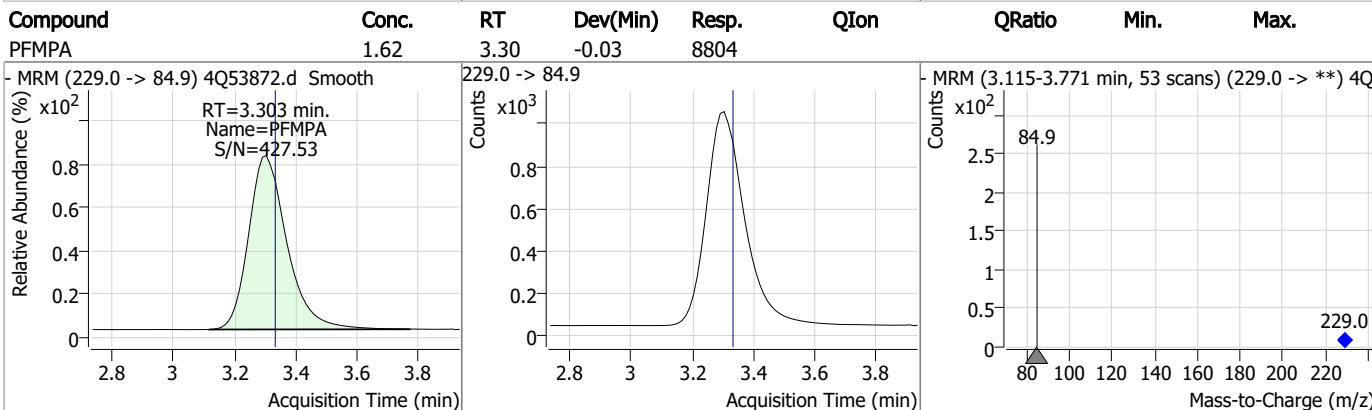
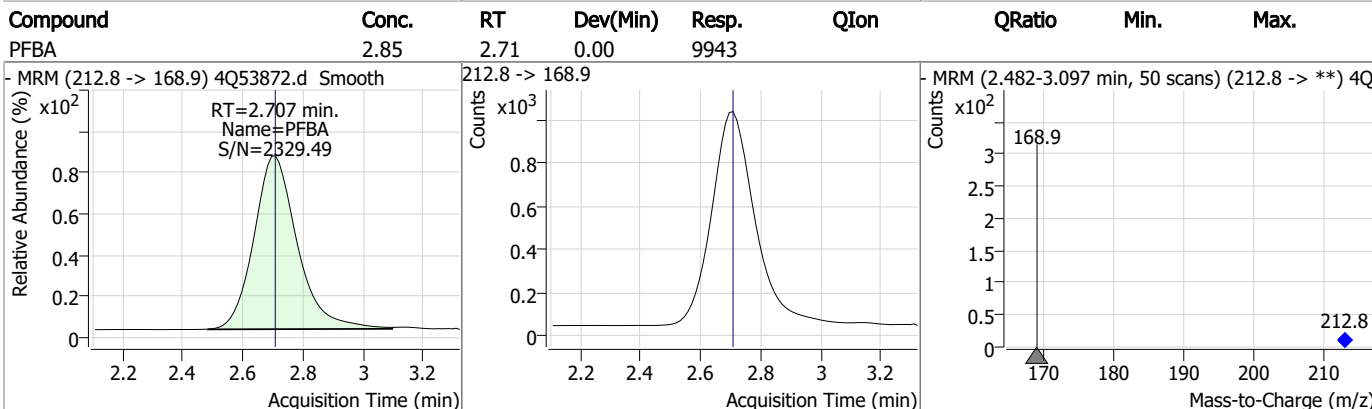
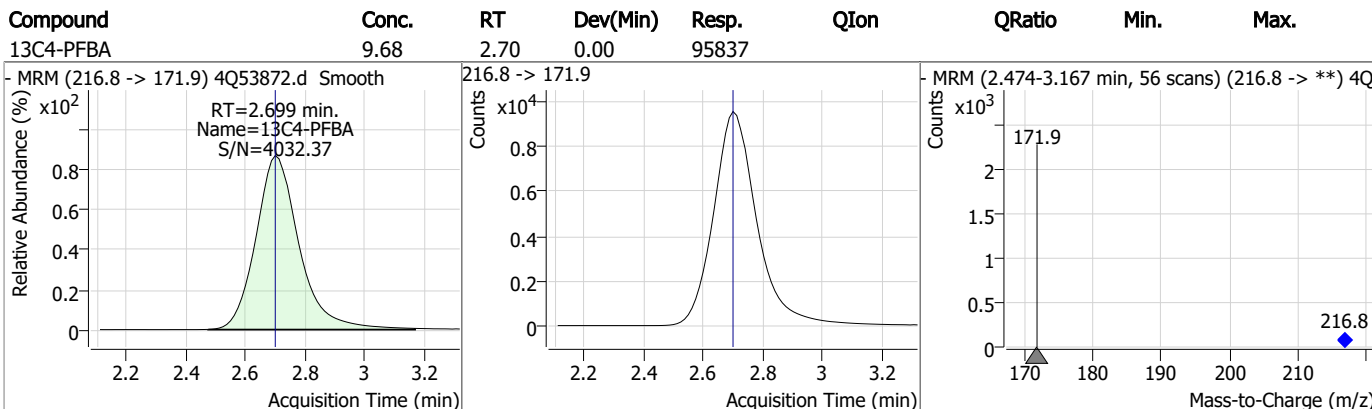
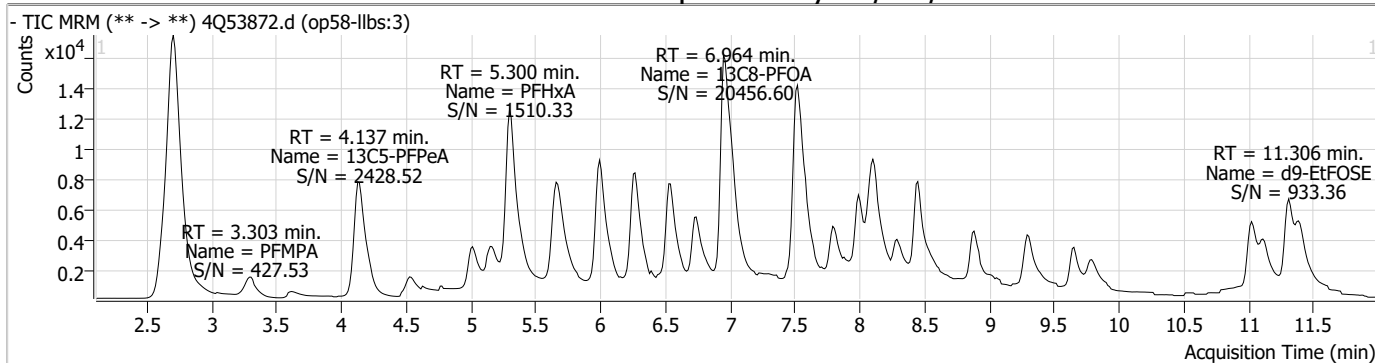
### Perfluorinated Compounds by LC/MS/MS

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

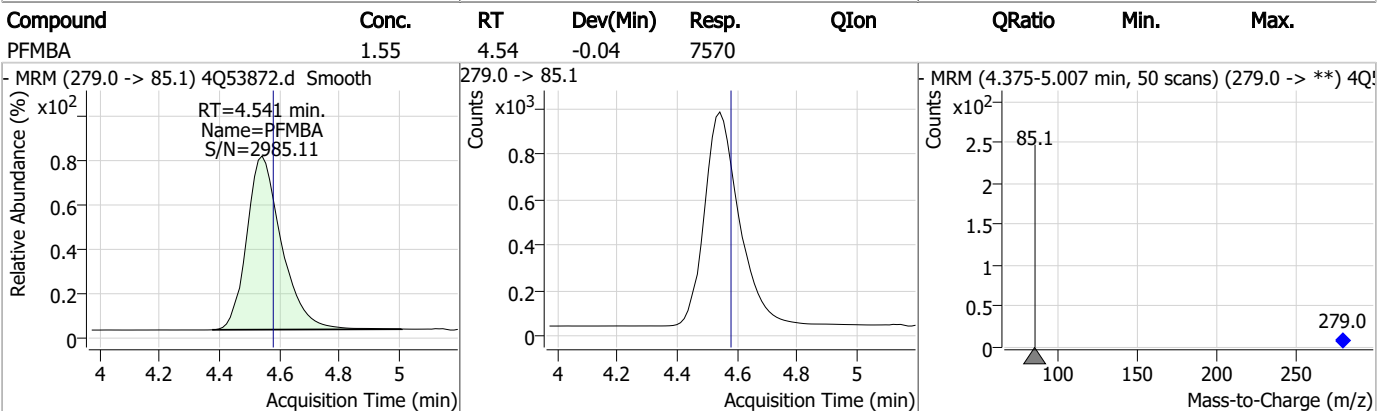
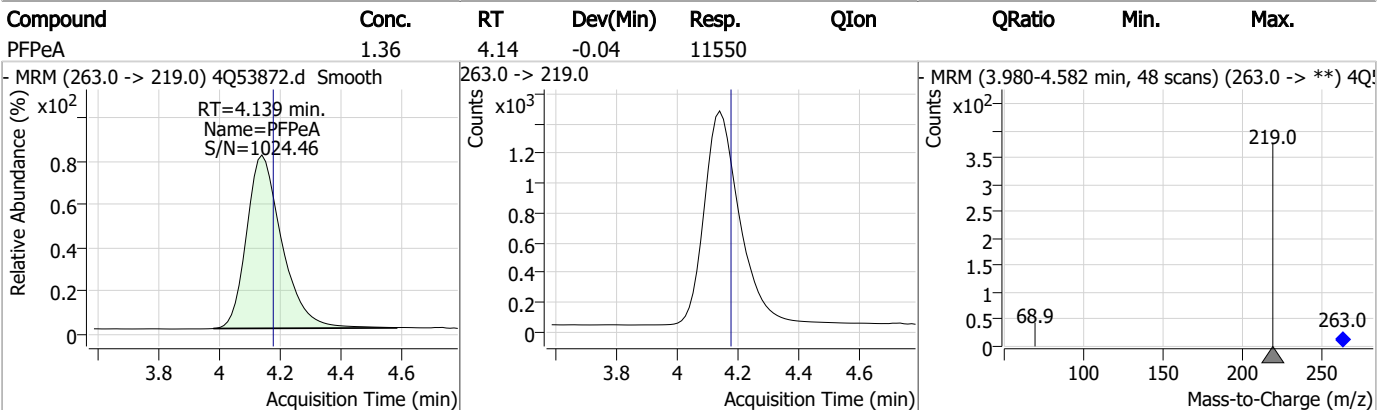
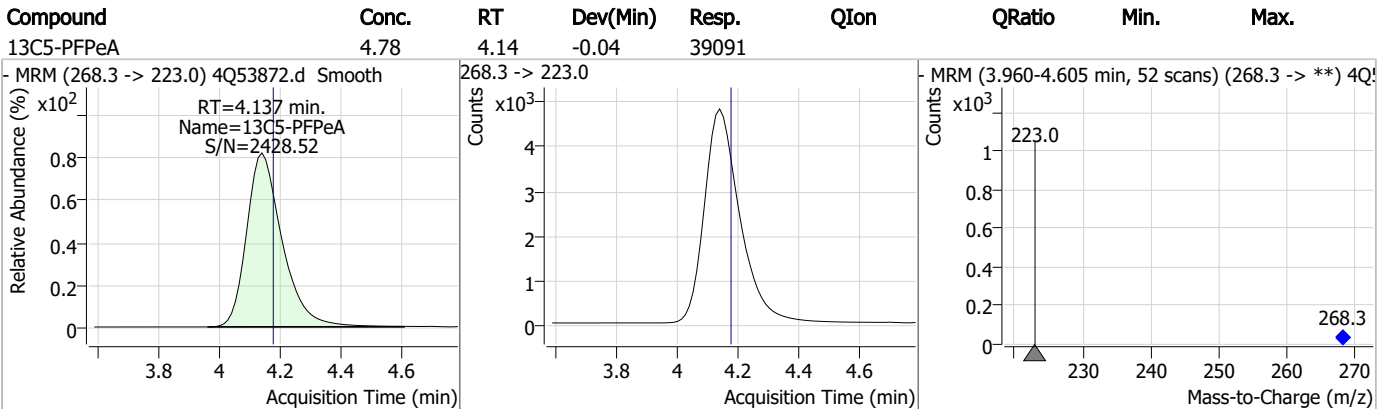
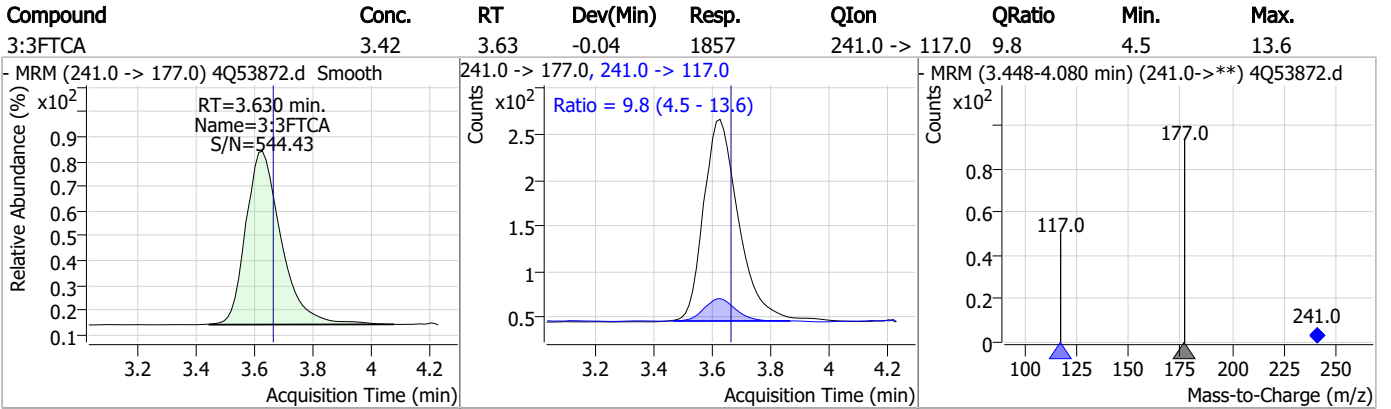
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### Perfluorinated Compounds by LC/MS/MS



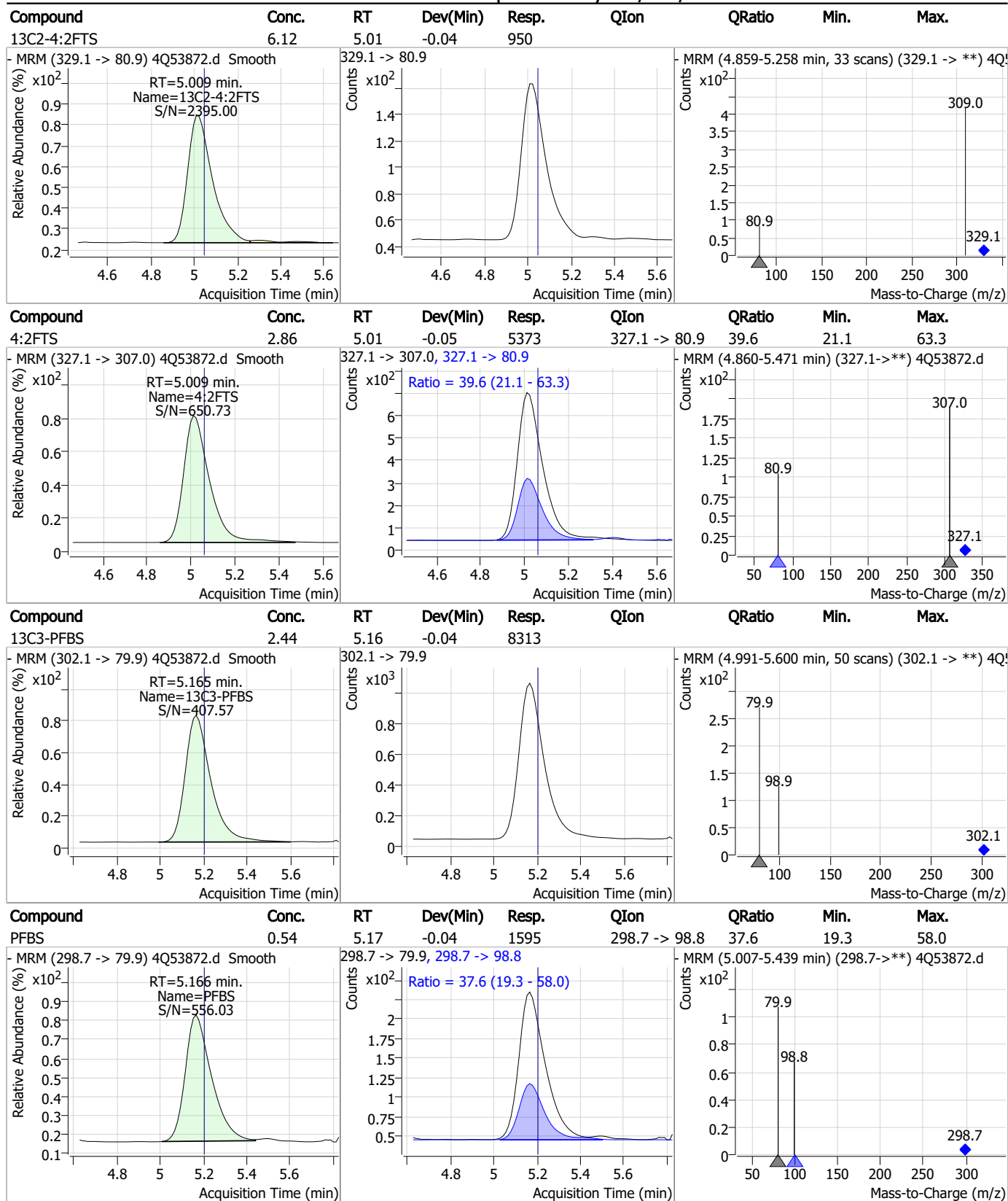
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### Perfluorinated Compounds by LC/MS/MS



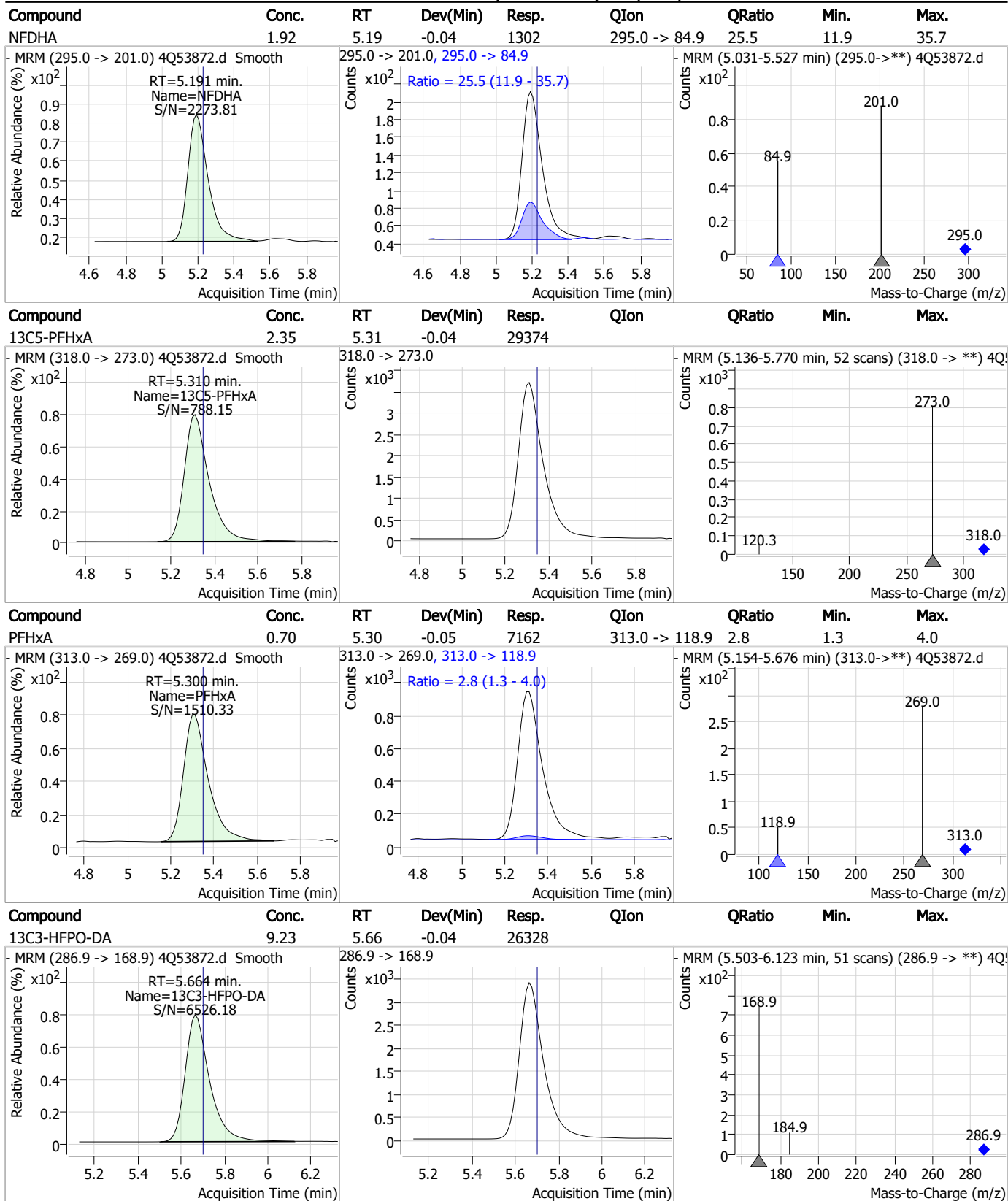
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### Perfluorinated Compounds by LC/MS/MS



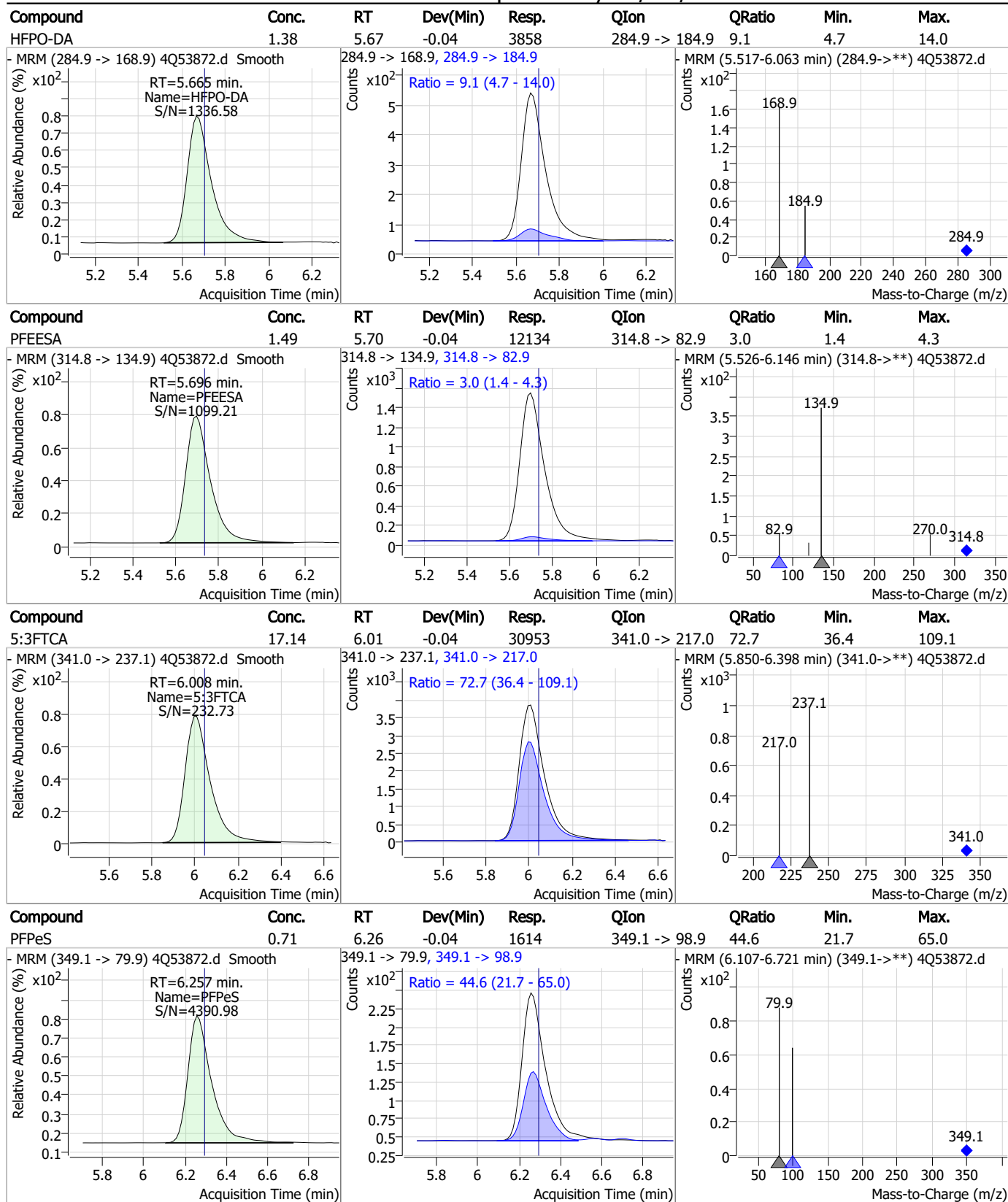
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### Perfluorinated Compounds by LC/MS/MS



7.3.2  
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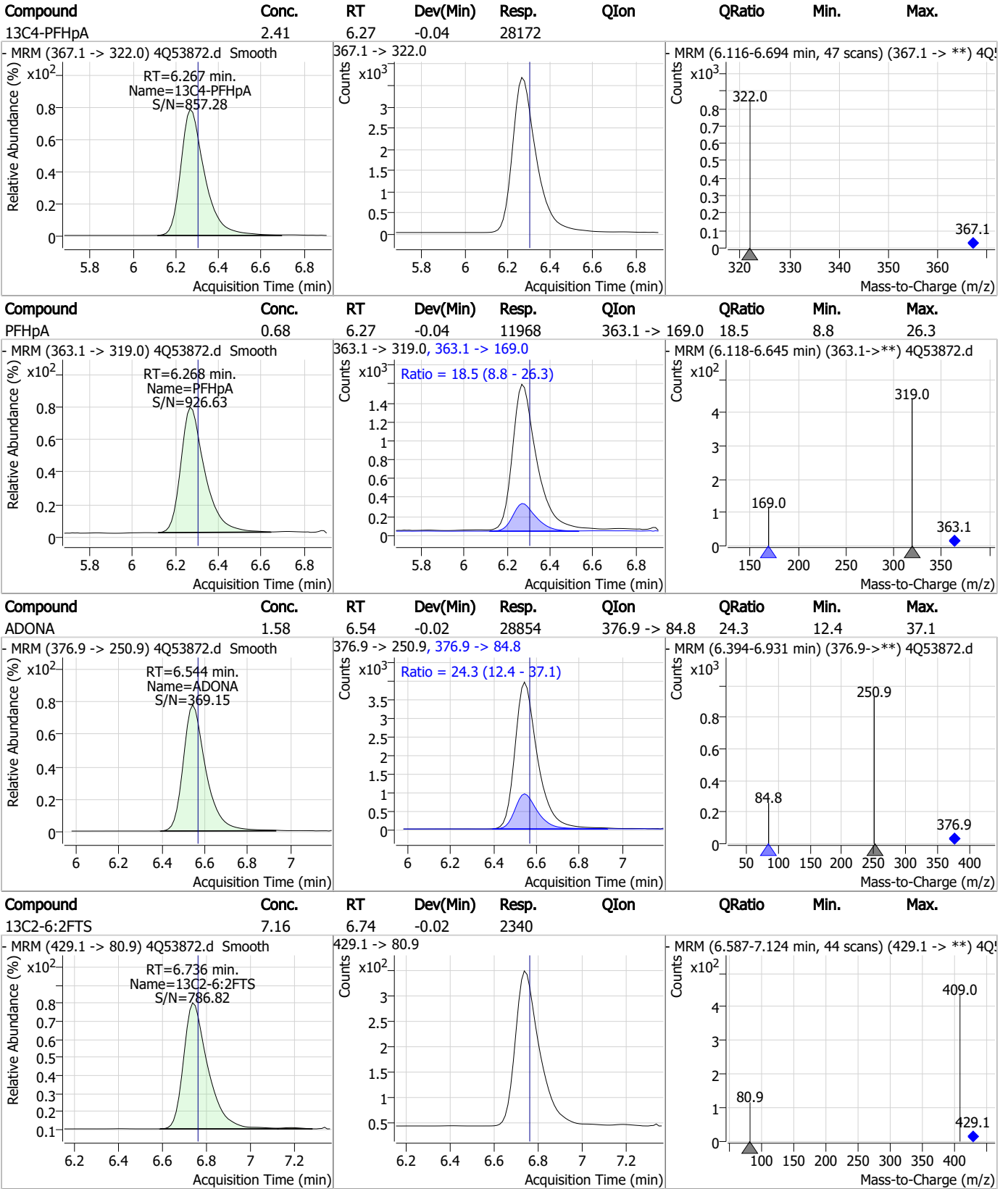
### Perfluorinated Compounds by LC/MS/MS



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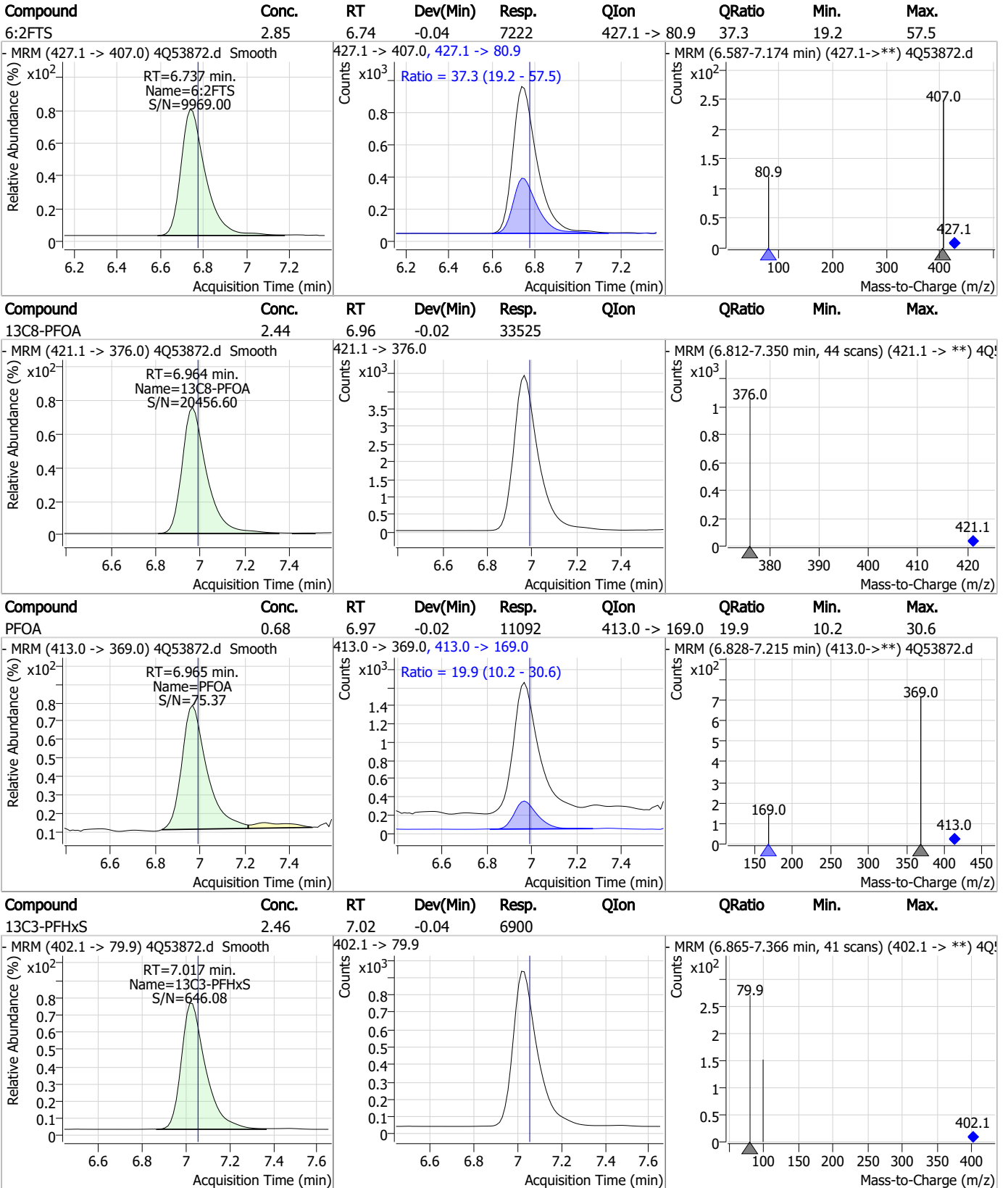
### Perfluorinated Compounds by LC/MS/MS



7.3.2

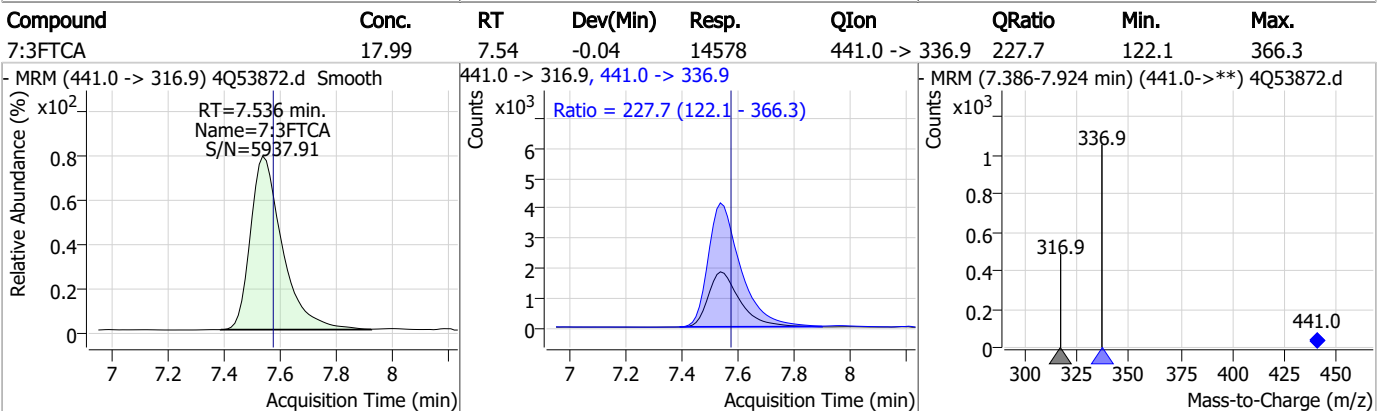
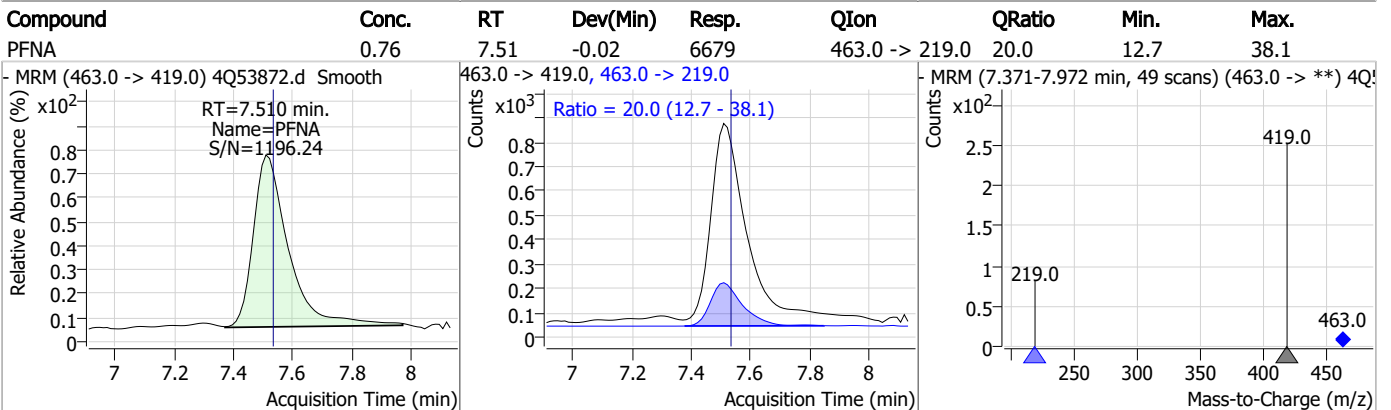
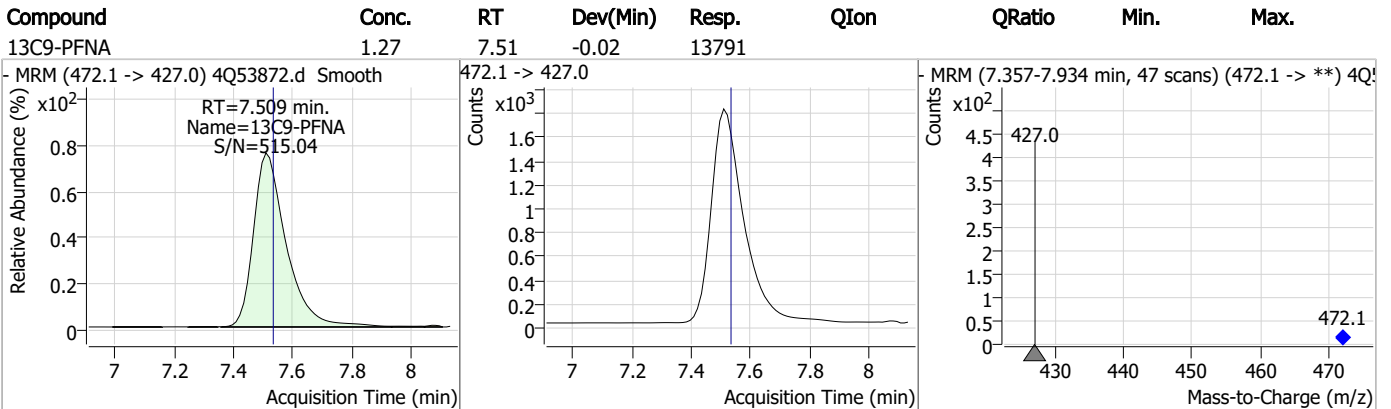
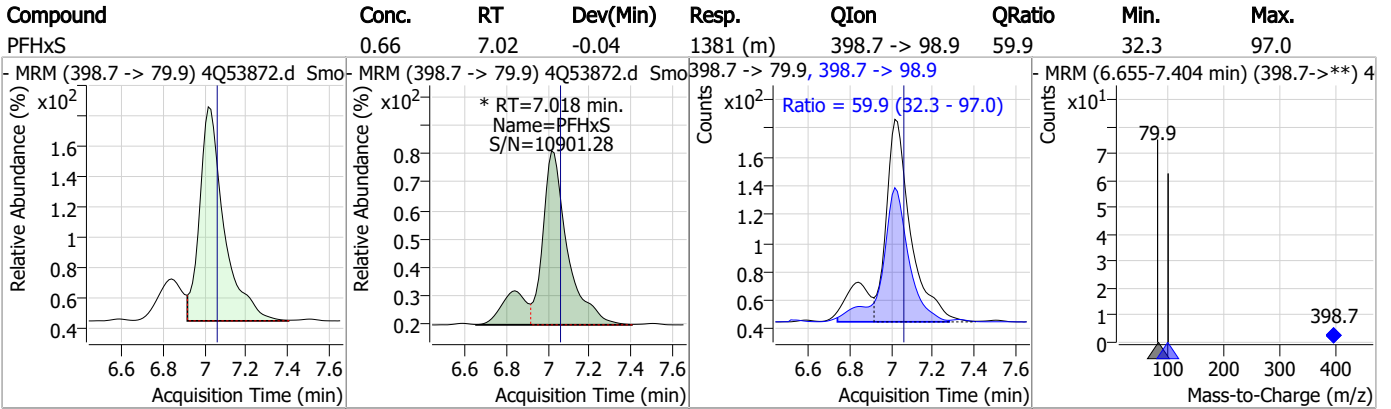
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### Perfluorinated Compounds by LC/MS/MS

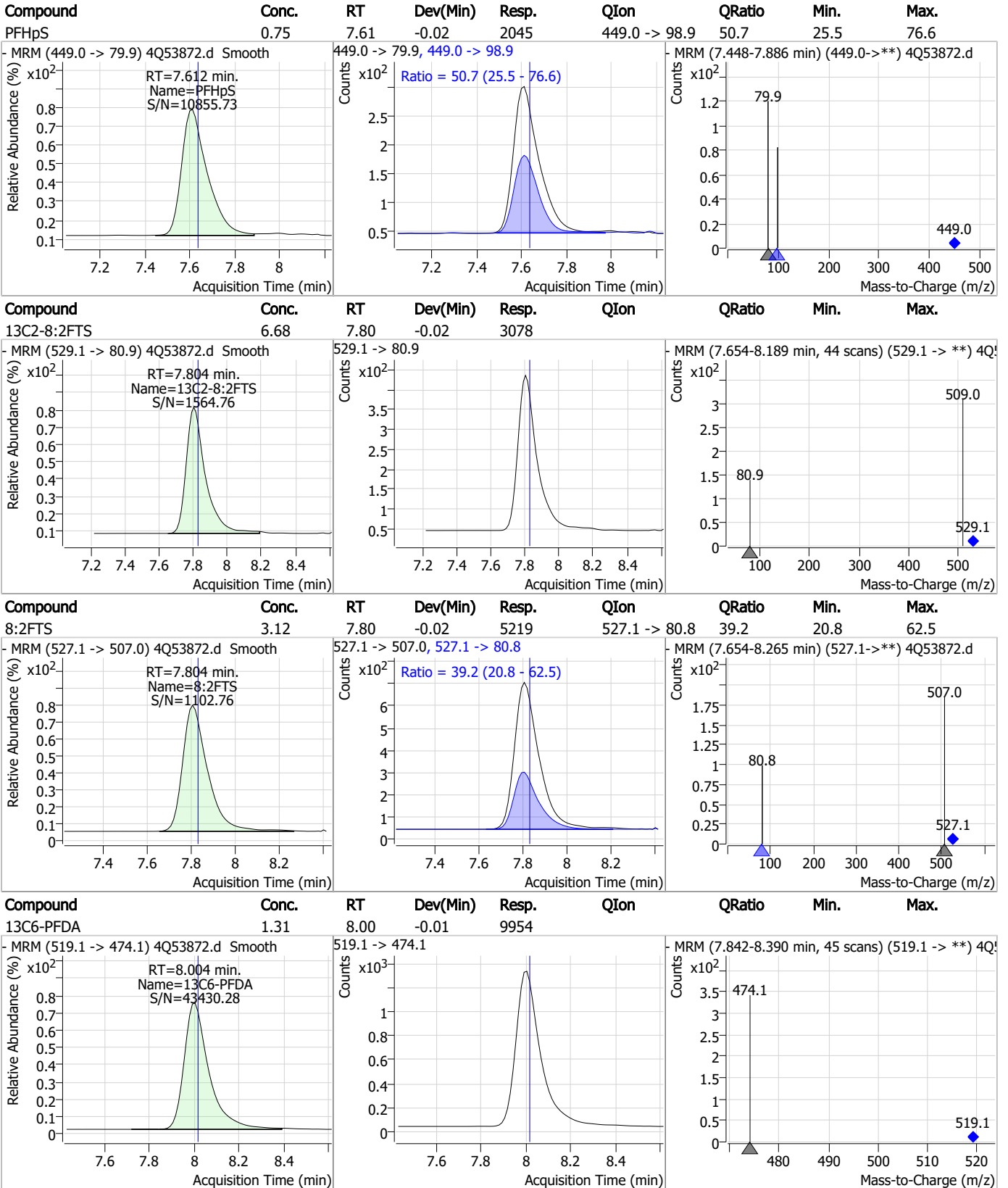


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### Perfluorinated Compounds by LC/MS/MS

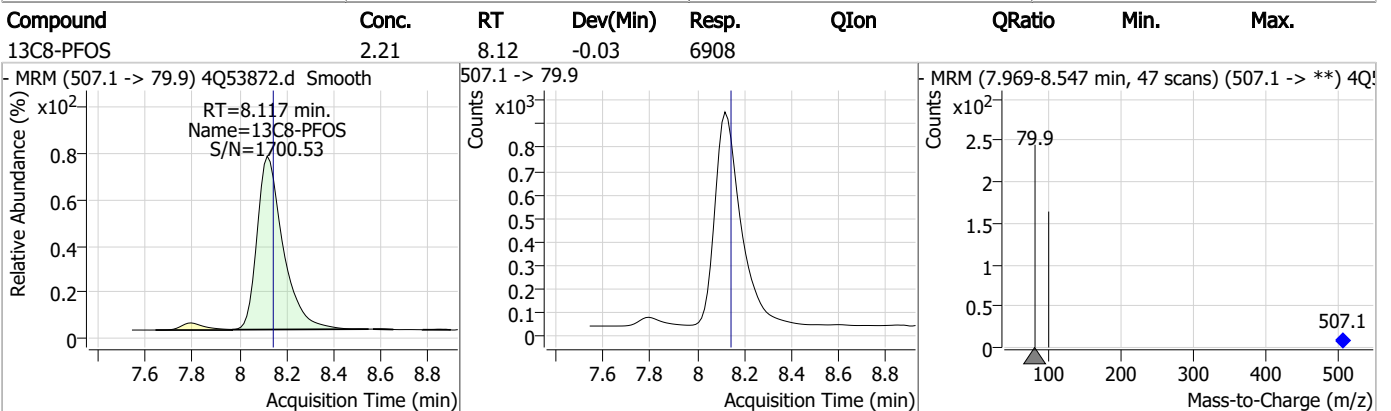
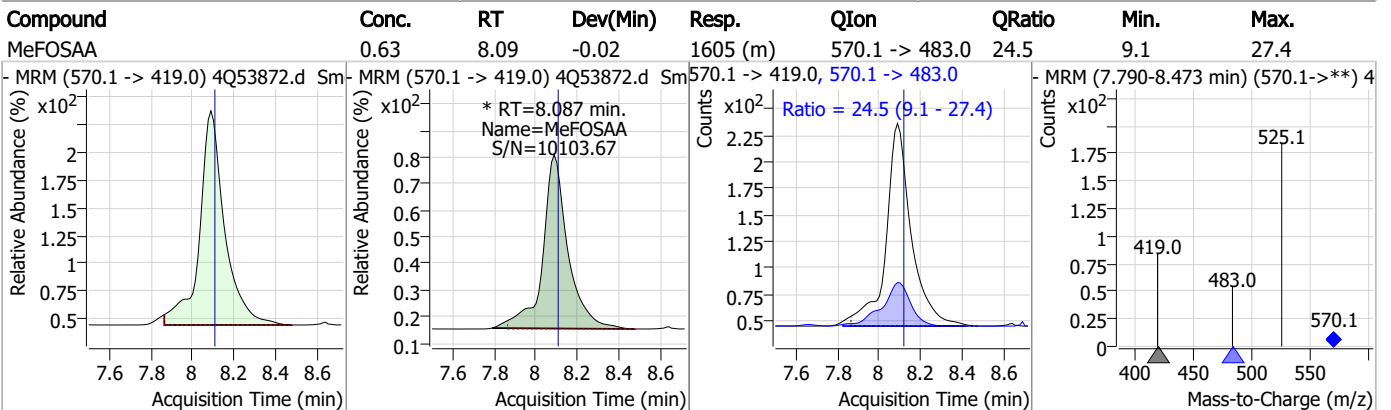
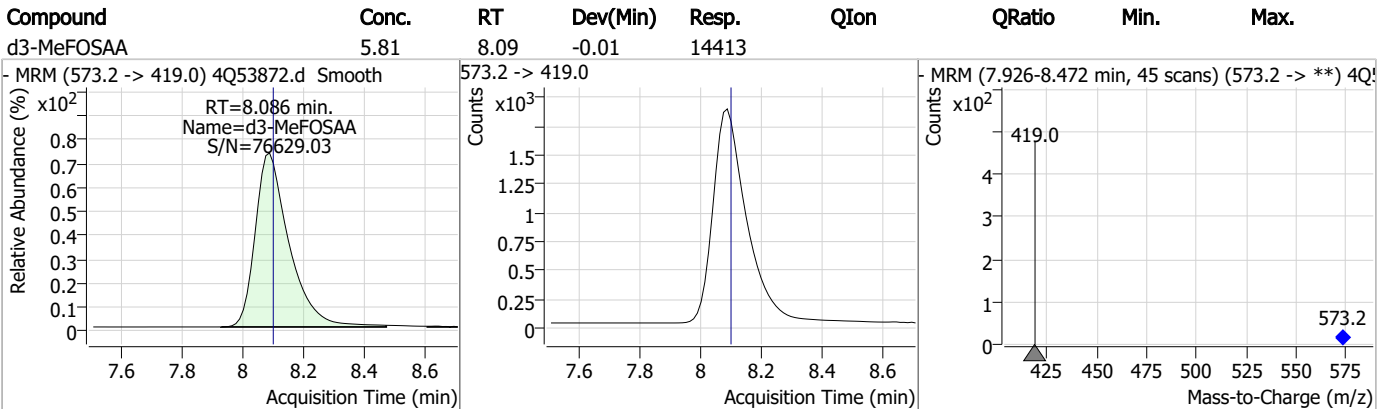
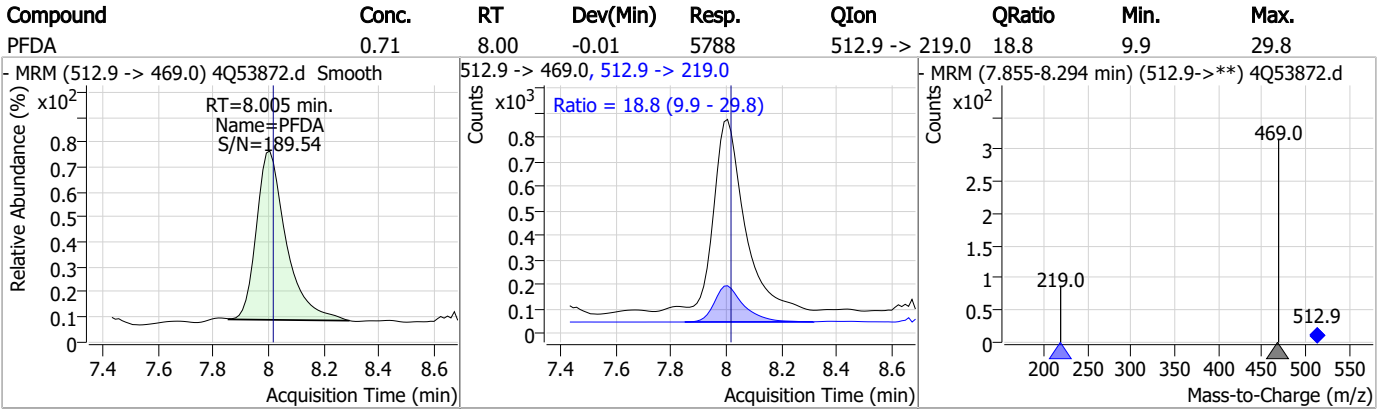


### Perfluorinated Compounds by LC/MS/MS

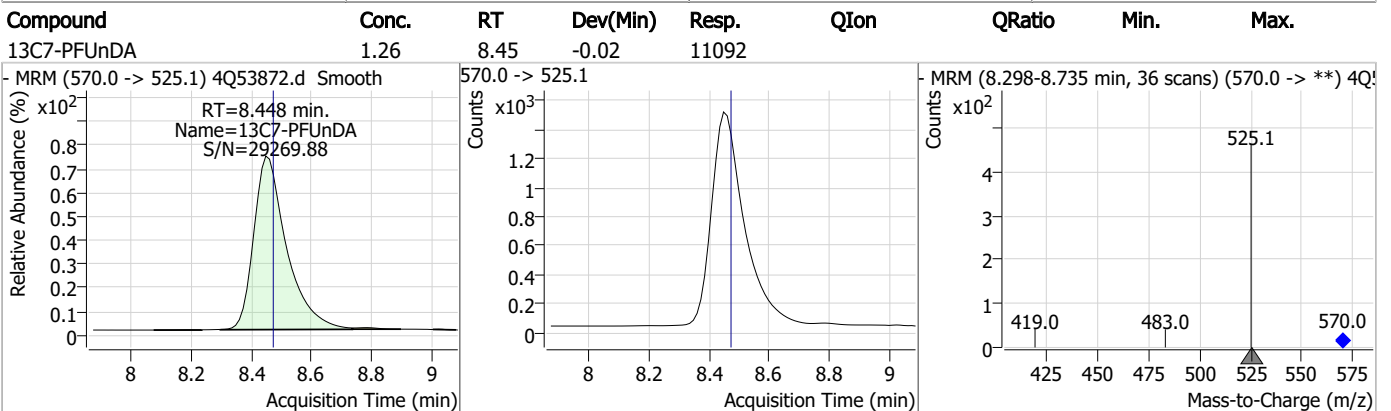
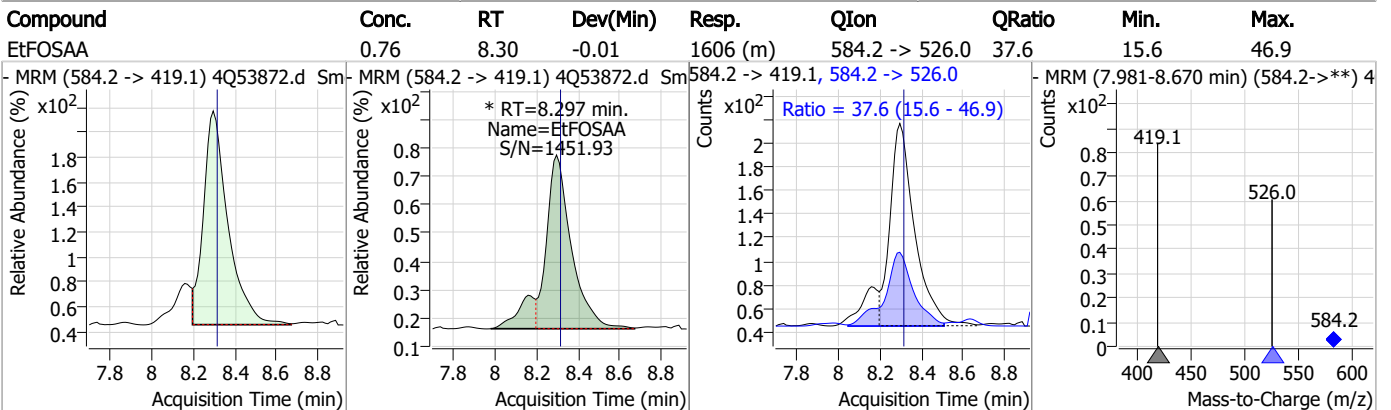
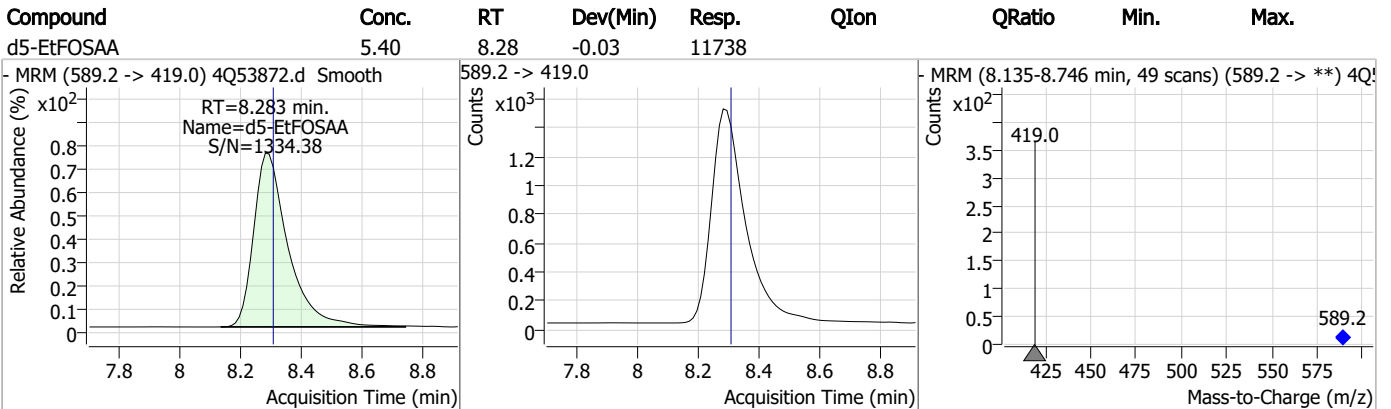
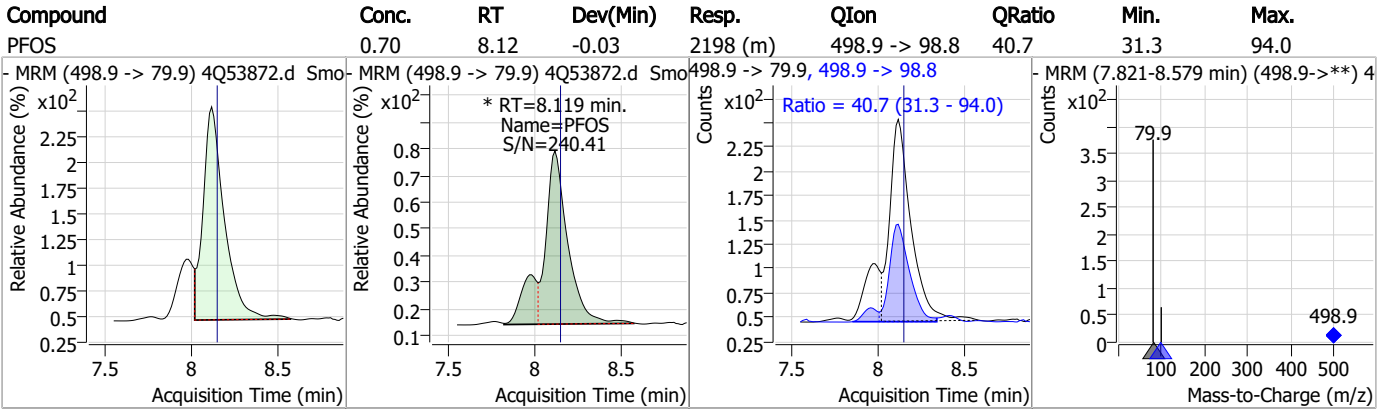


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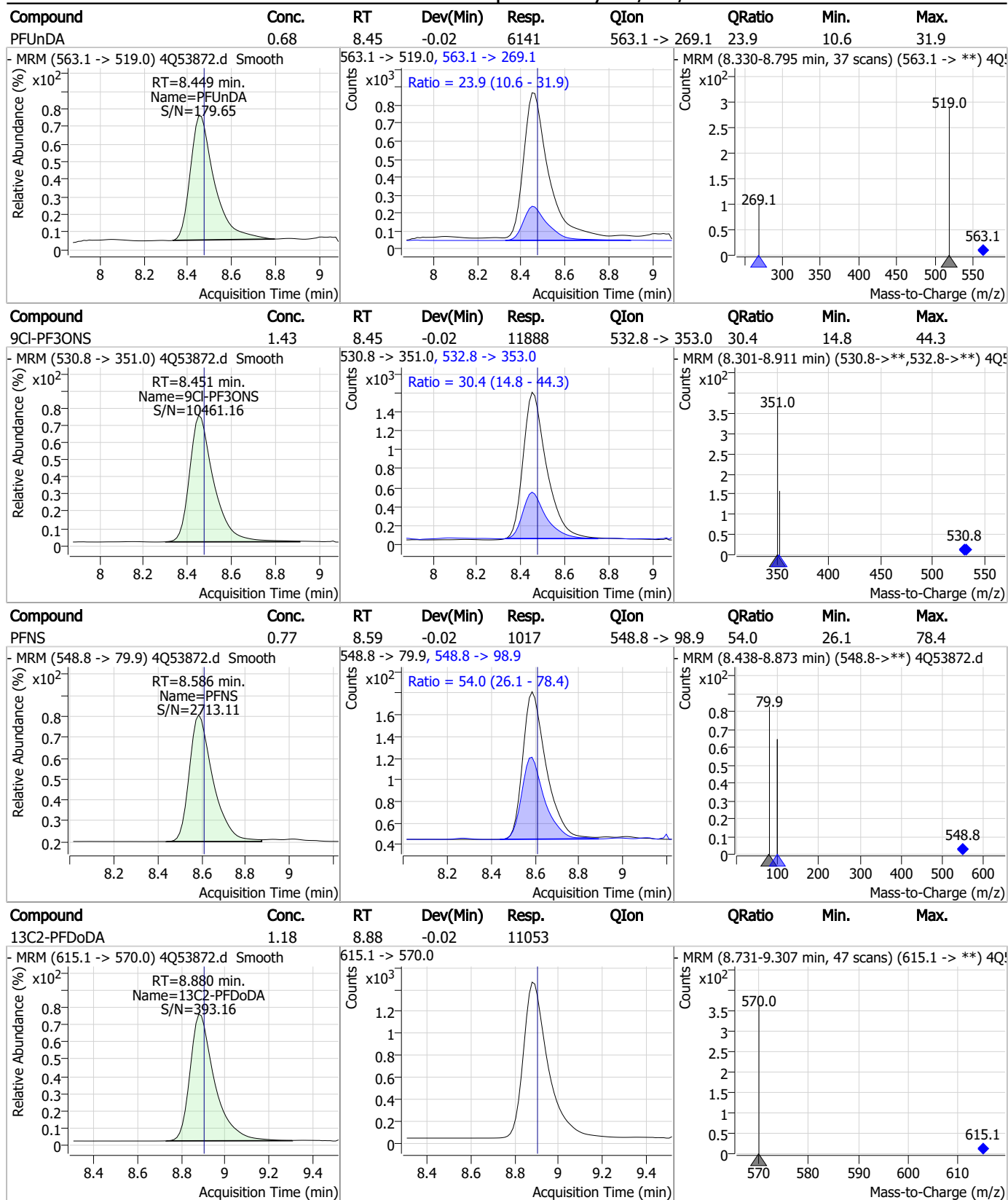
### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

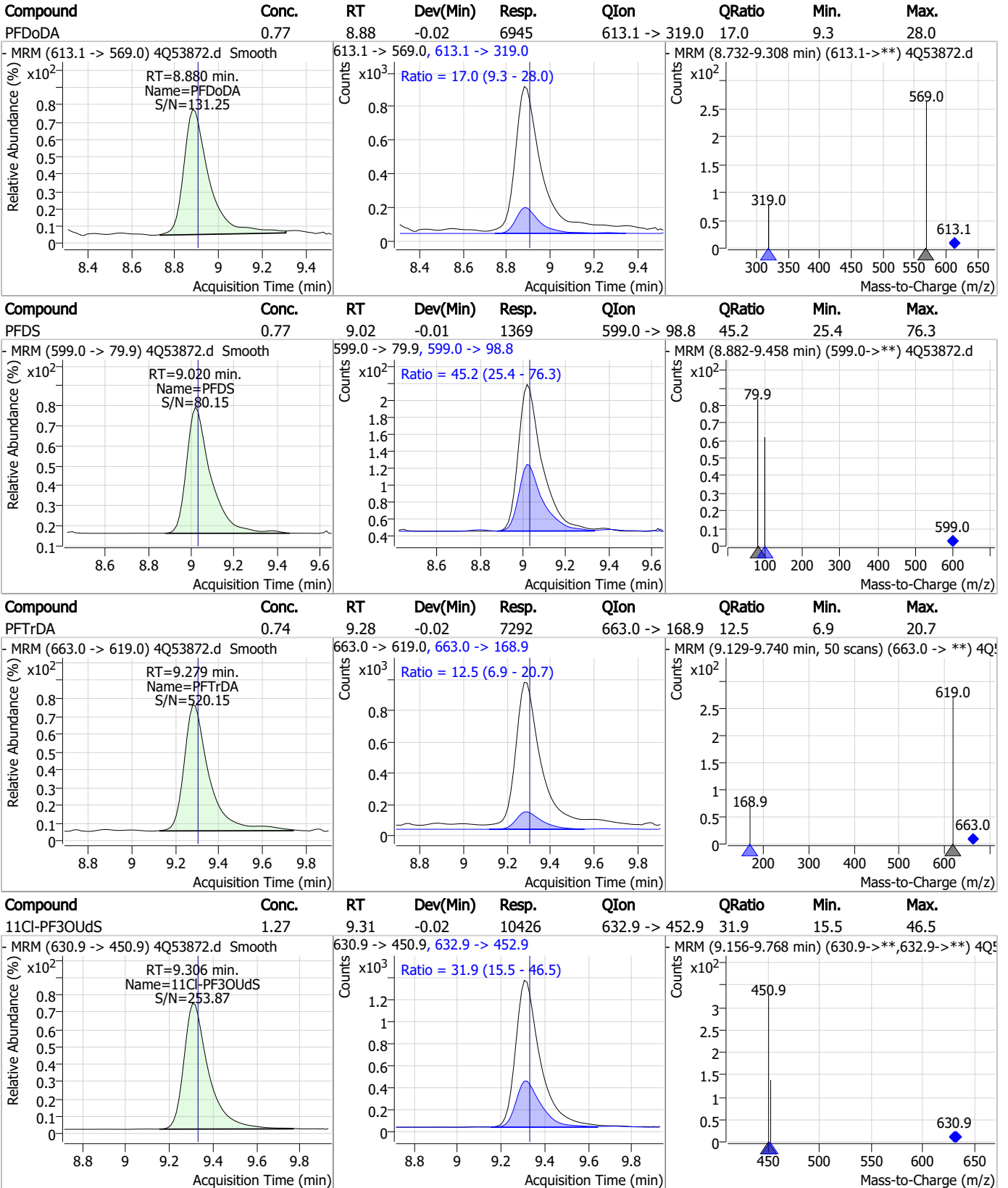


### Perfluorinated Compounds by LC/MS/MS



7.3.2  
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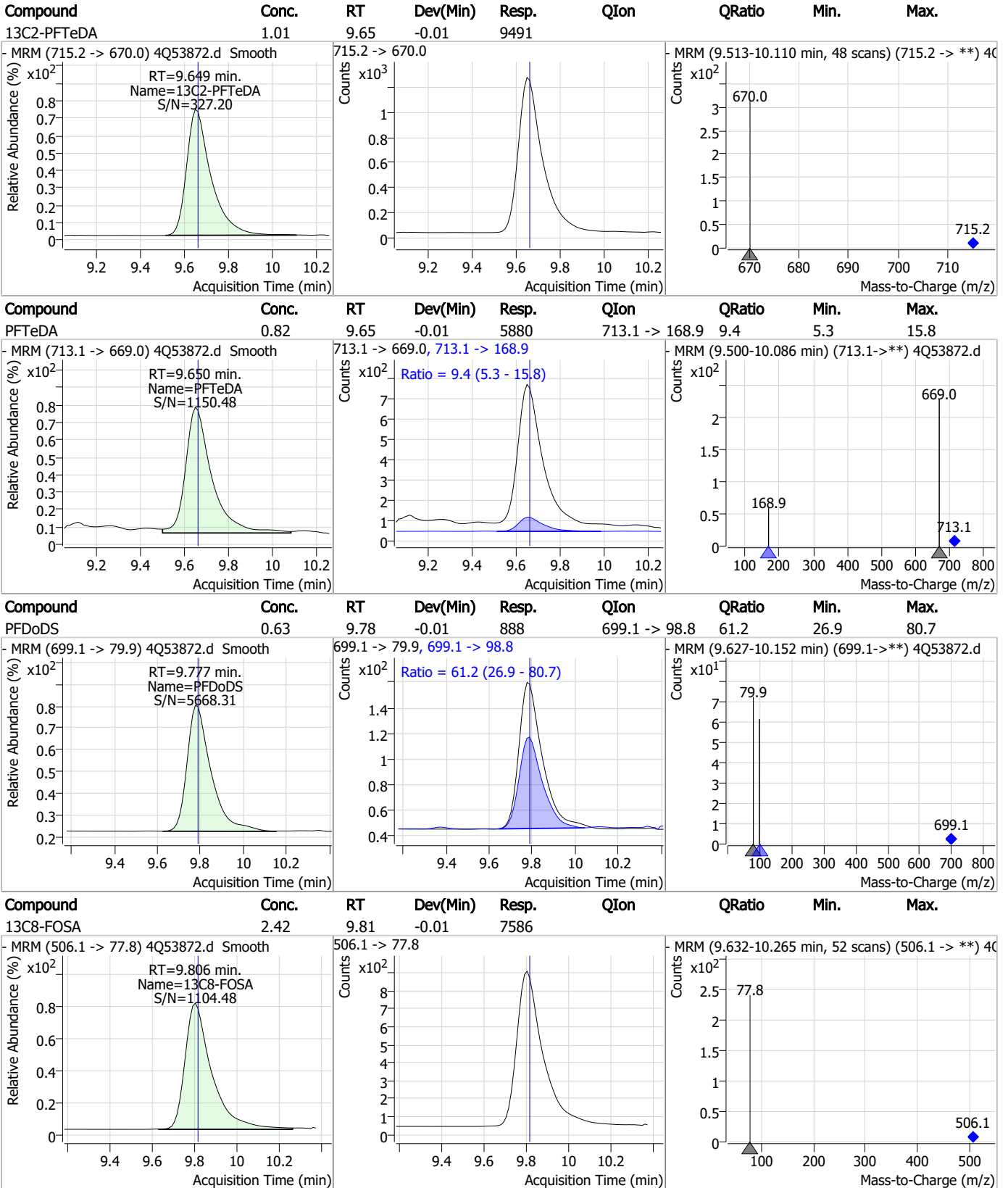
### Perfluorinated Compounds by LC/MS/MS



7.3.2  
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### Perfluorinated Compounds by LC/MS/MS

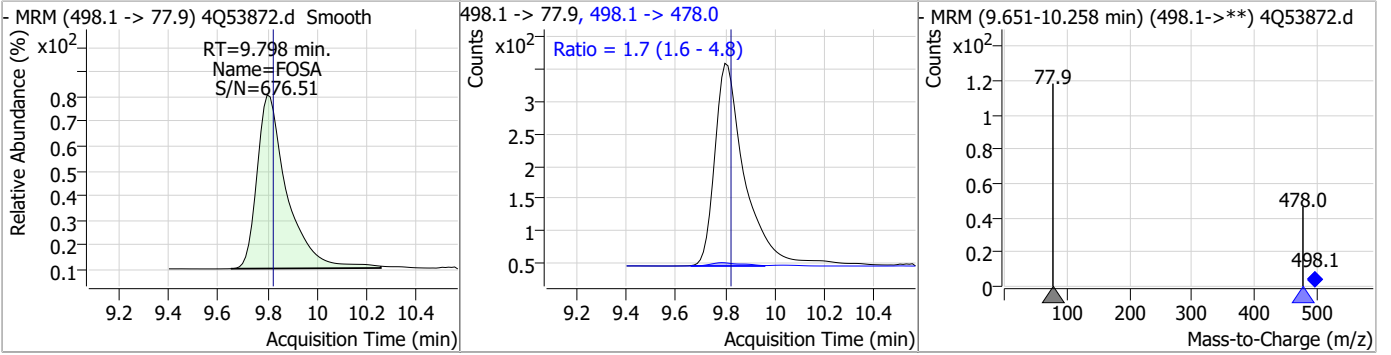


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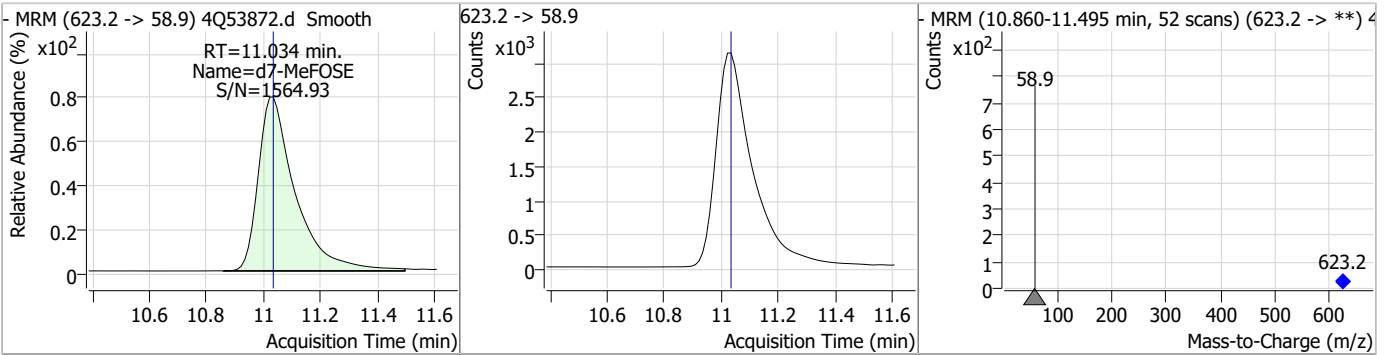
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### Perfluorinated Compounds by LC/MS/MS

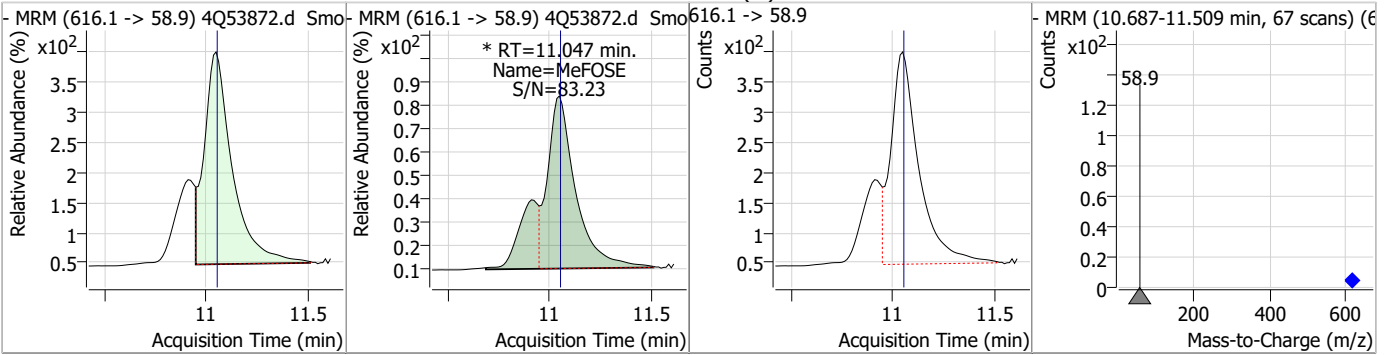
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.71	9.80	-0.02	2639	498.1 -> 478.0	1.7	1.6	4.8



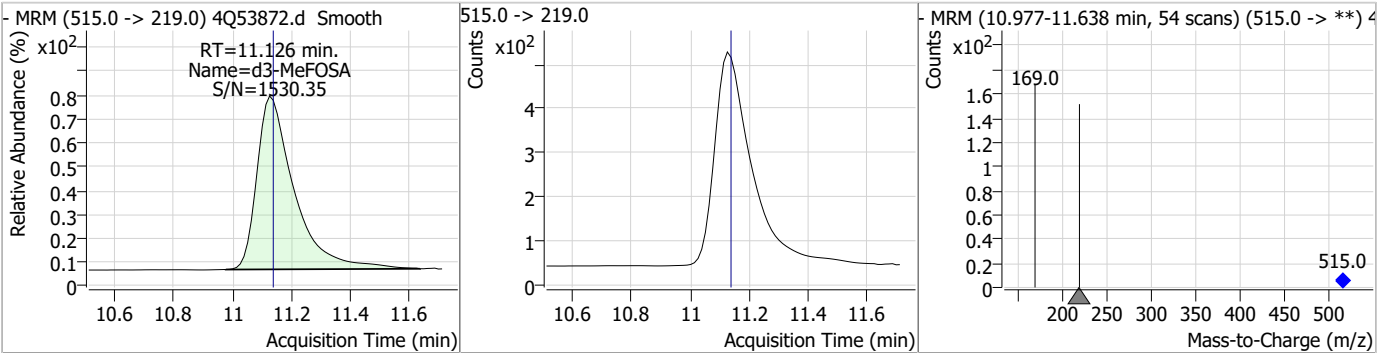
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	20.72	11.03	0.00	27945				



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

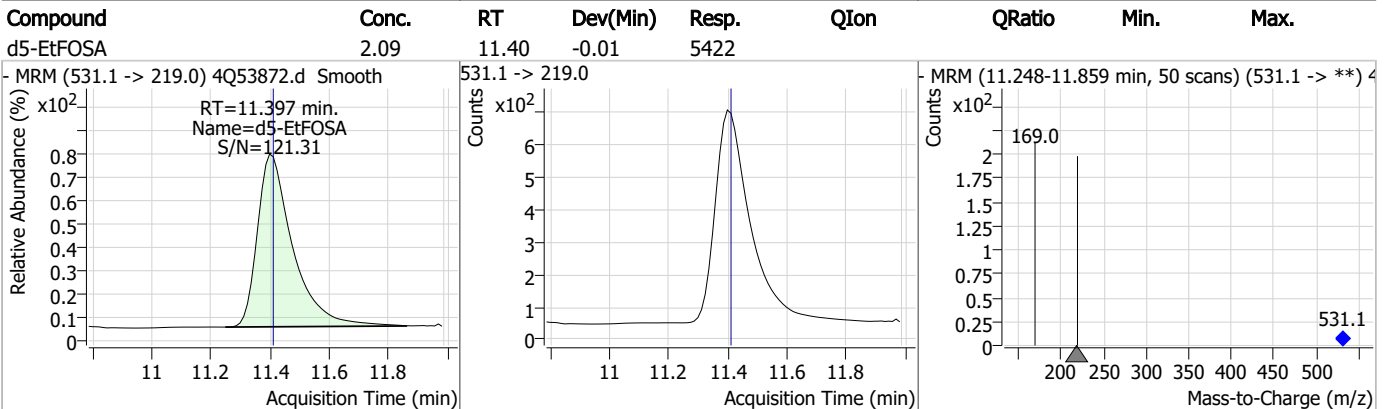
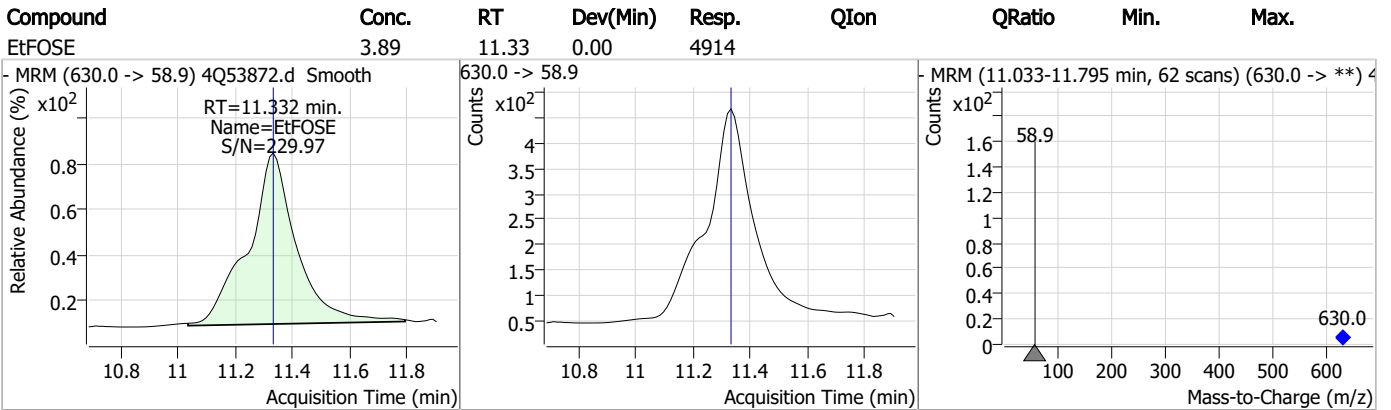
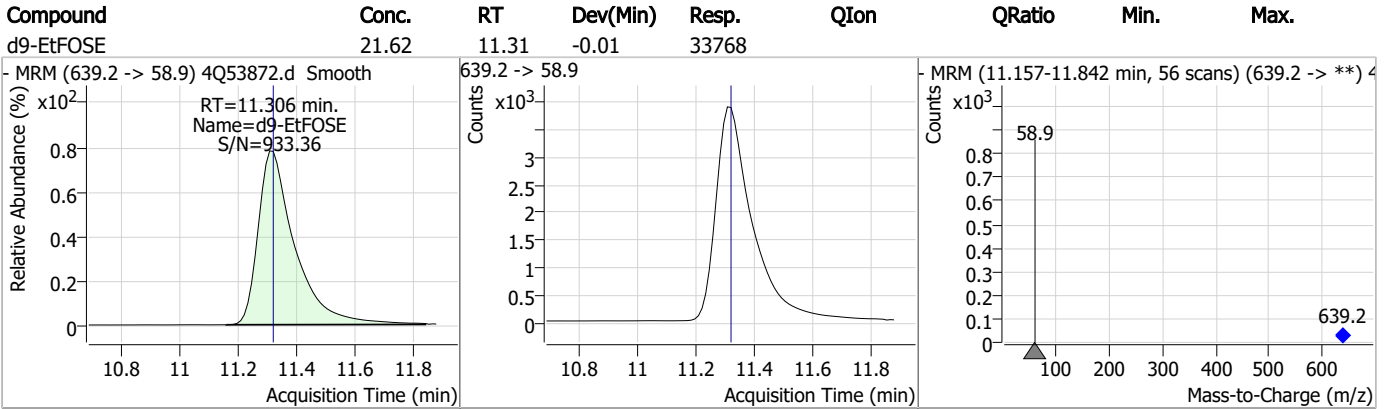
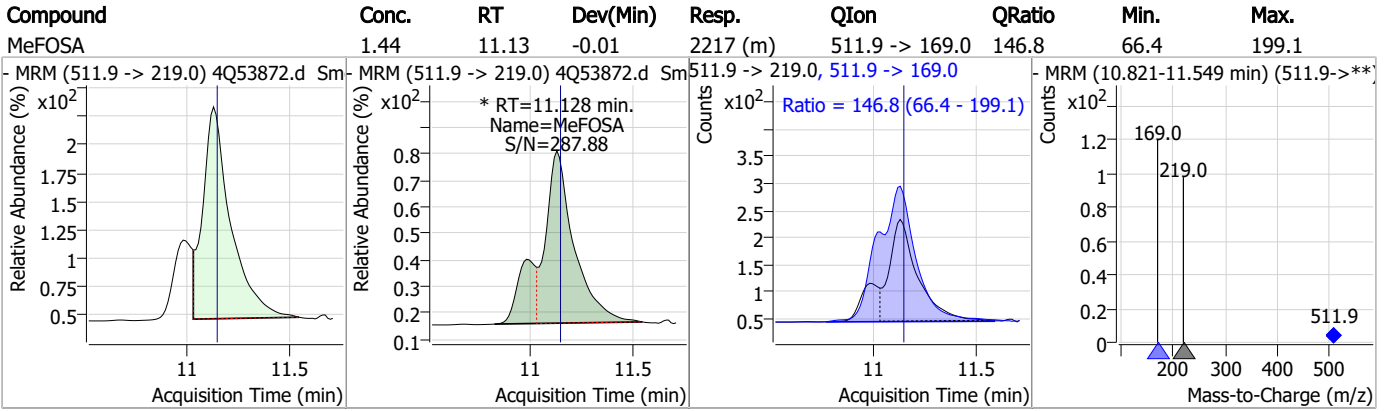


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.94	11.13	-0.01	4235				



7.3.2  
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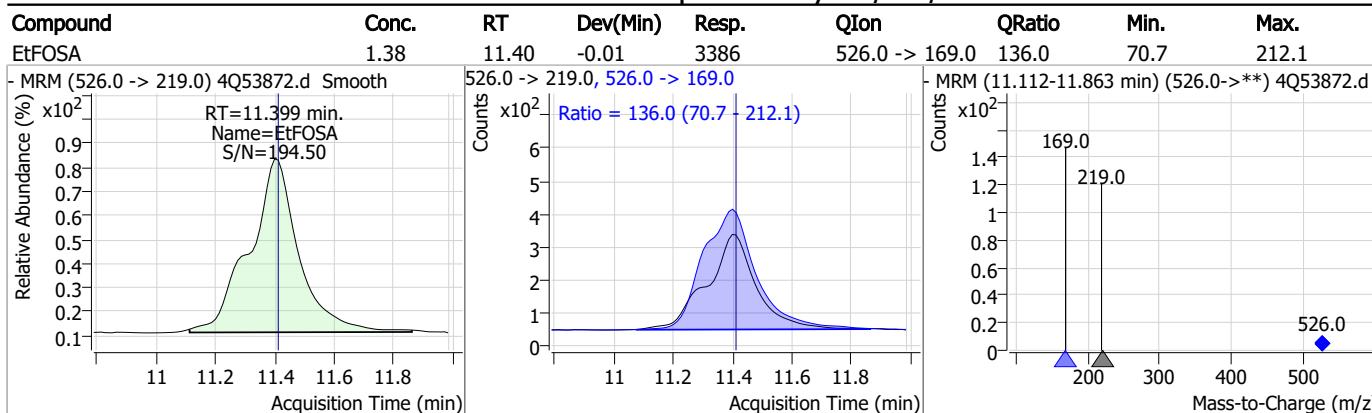
### Perfluorinated Compounds by LC/MS/MS



7.3.2  
7



### Perfluorinated Compounds by LC/MS/MS



7.3.2  
7

# Manual Integration Approval Summary

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

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

7.3.2.1

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## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53882.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/15/2023 2:38:07 PM  
 Sample Name : op58-ms  
 Vial : P2-A3  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q786.batch.bin  
 Sample Information : OP58,S4Q786,535,,,,5.0,1,water

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

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

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Perfluorinated Compounds by LC/MS/MS

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

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



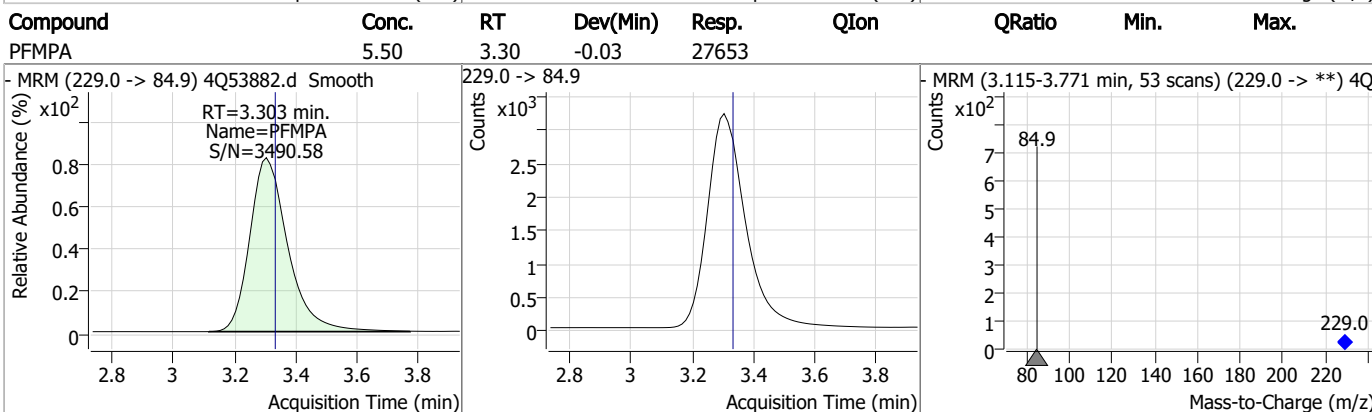
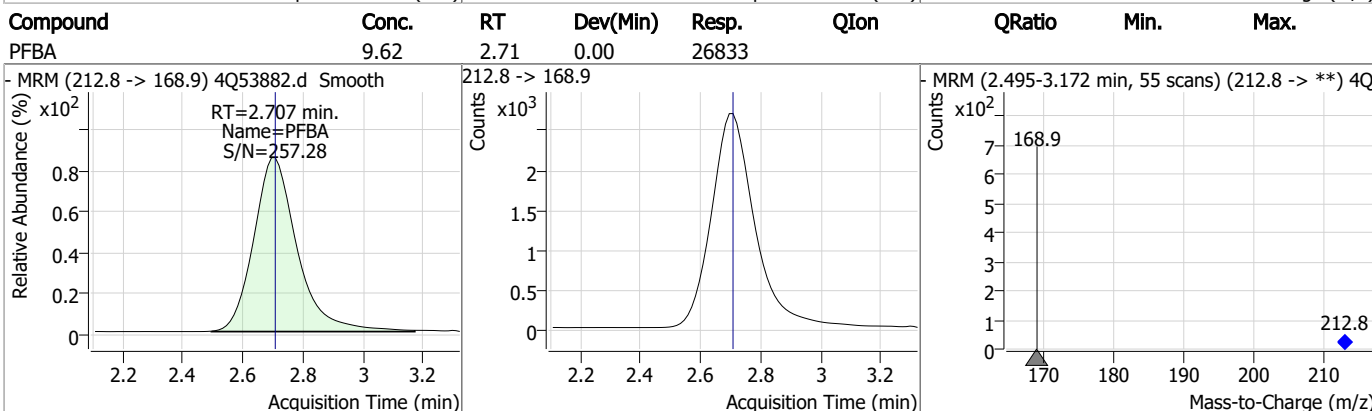
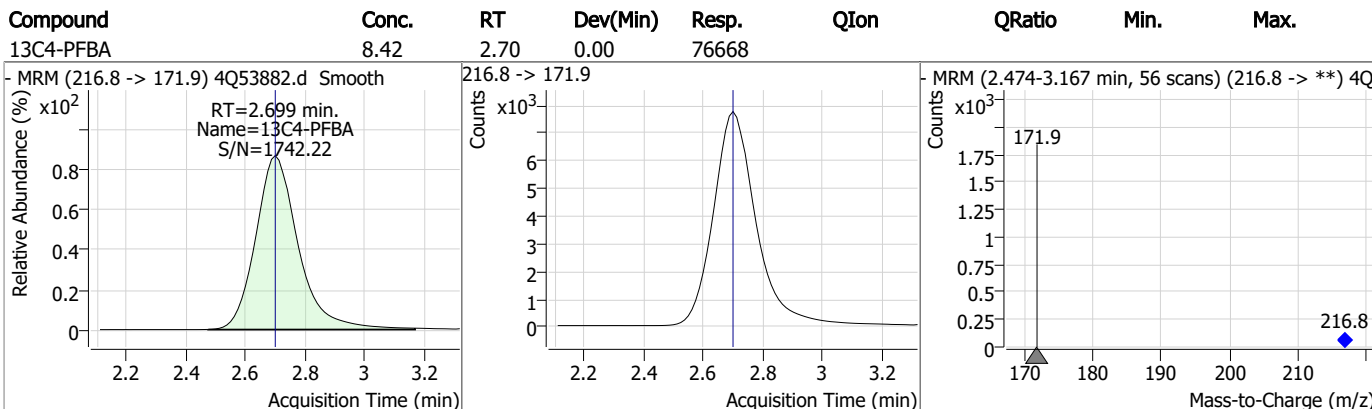
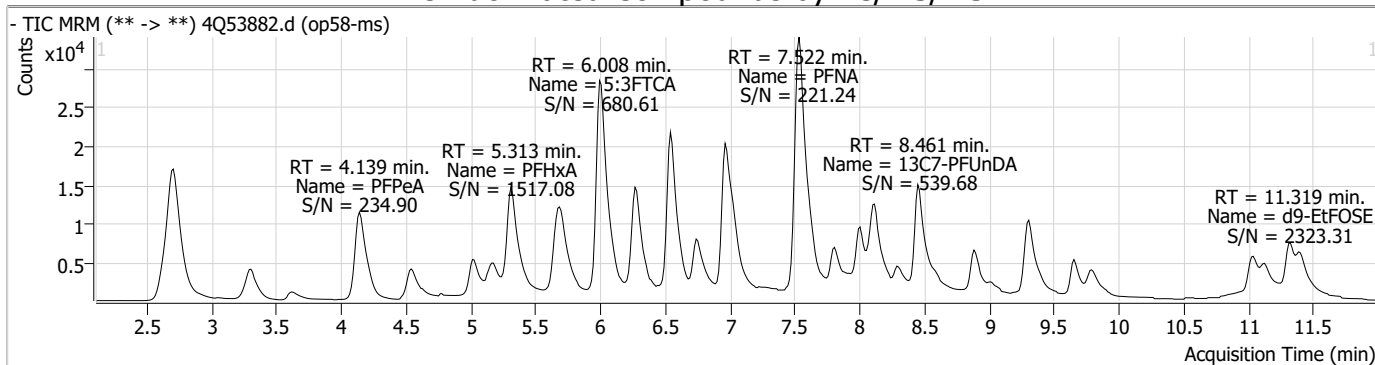
### Perfluorinated Compounds by LC/MS/MS

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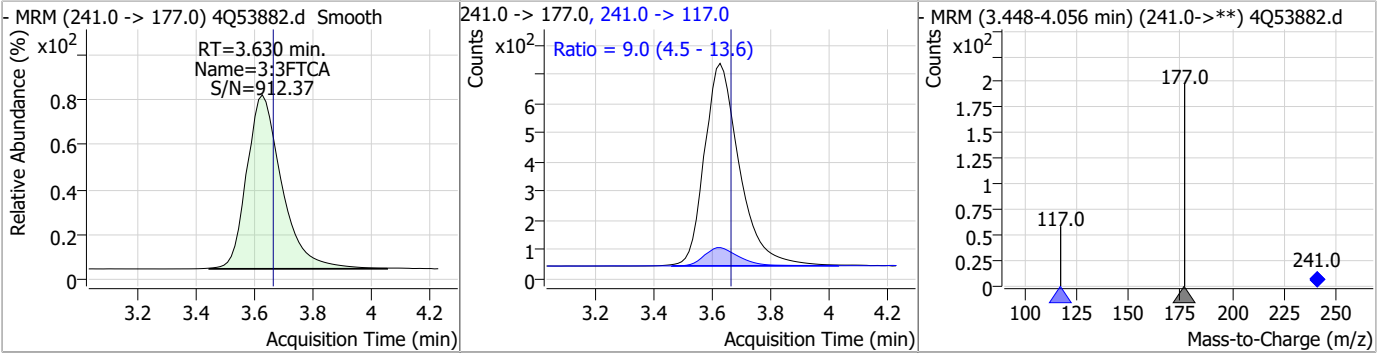
### Perfluorinated Compounds by LC/MS/MS



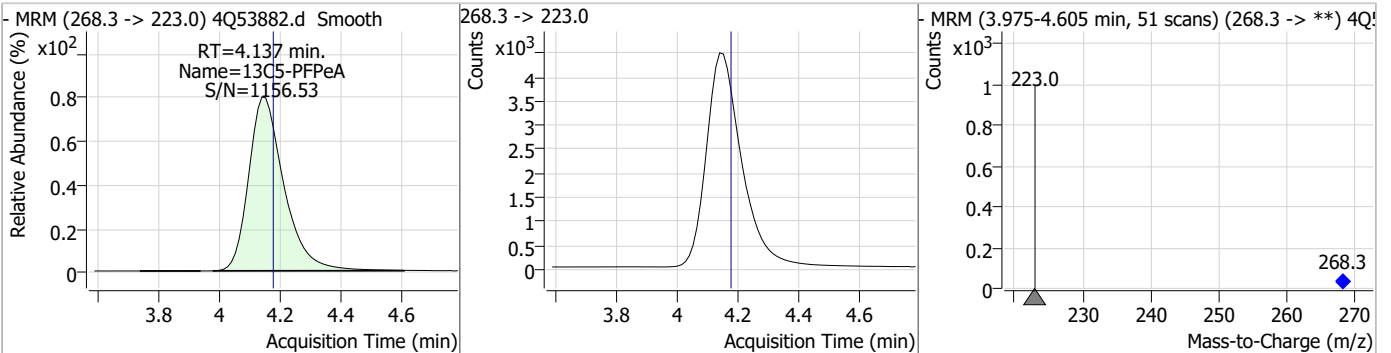
7.4.1  
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### Perfluorinated Compounds by LC/MS/MS

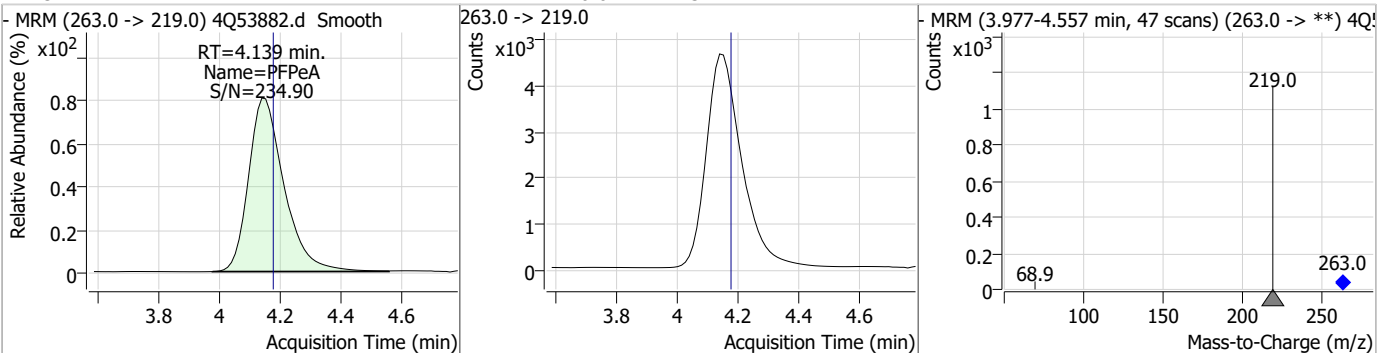
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	13.26	3.63	-0.04	5757	241.0 -> 117.0	9.0	4.5	13.6



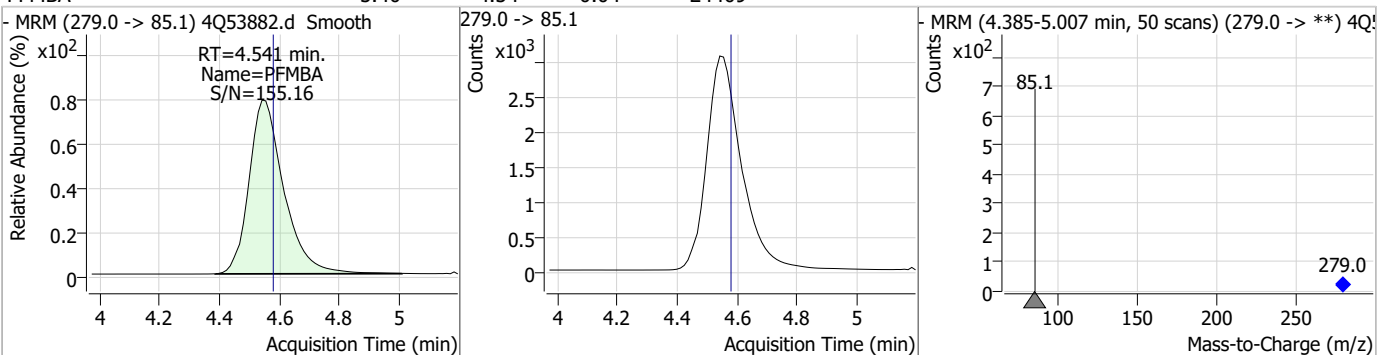
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.88	4.14	-0.04	36077				



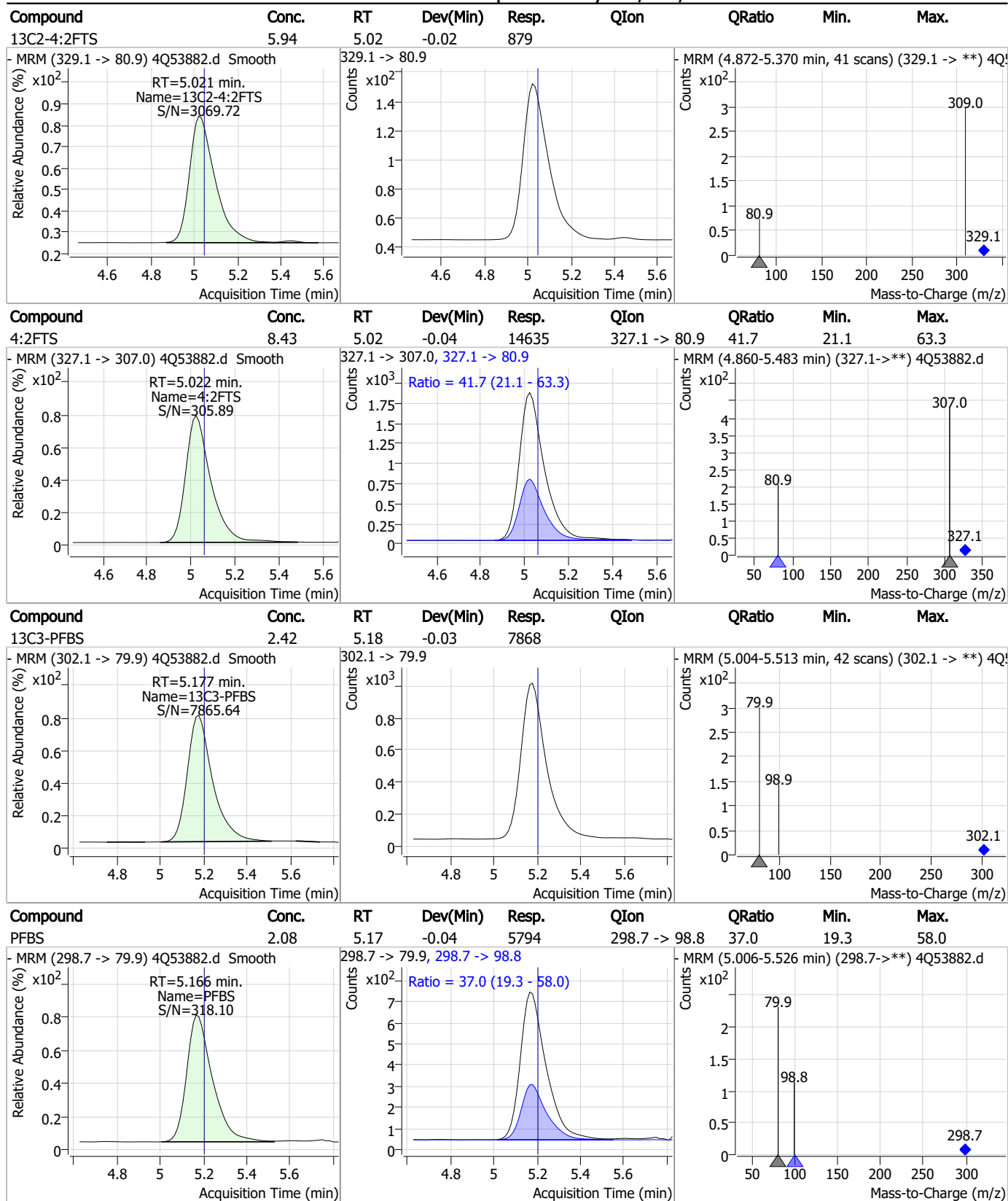
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.77	4.14	-0.04	37412				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	5.40	4.54	-0.04	24409				



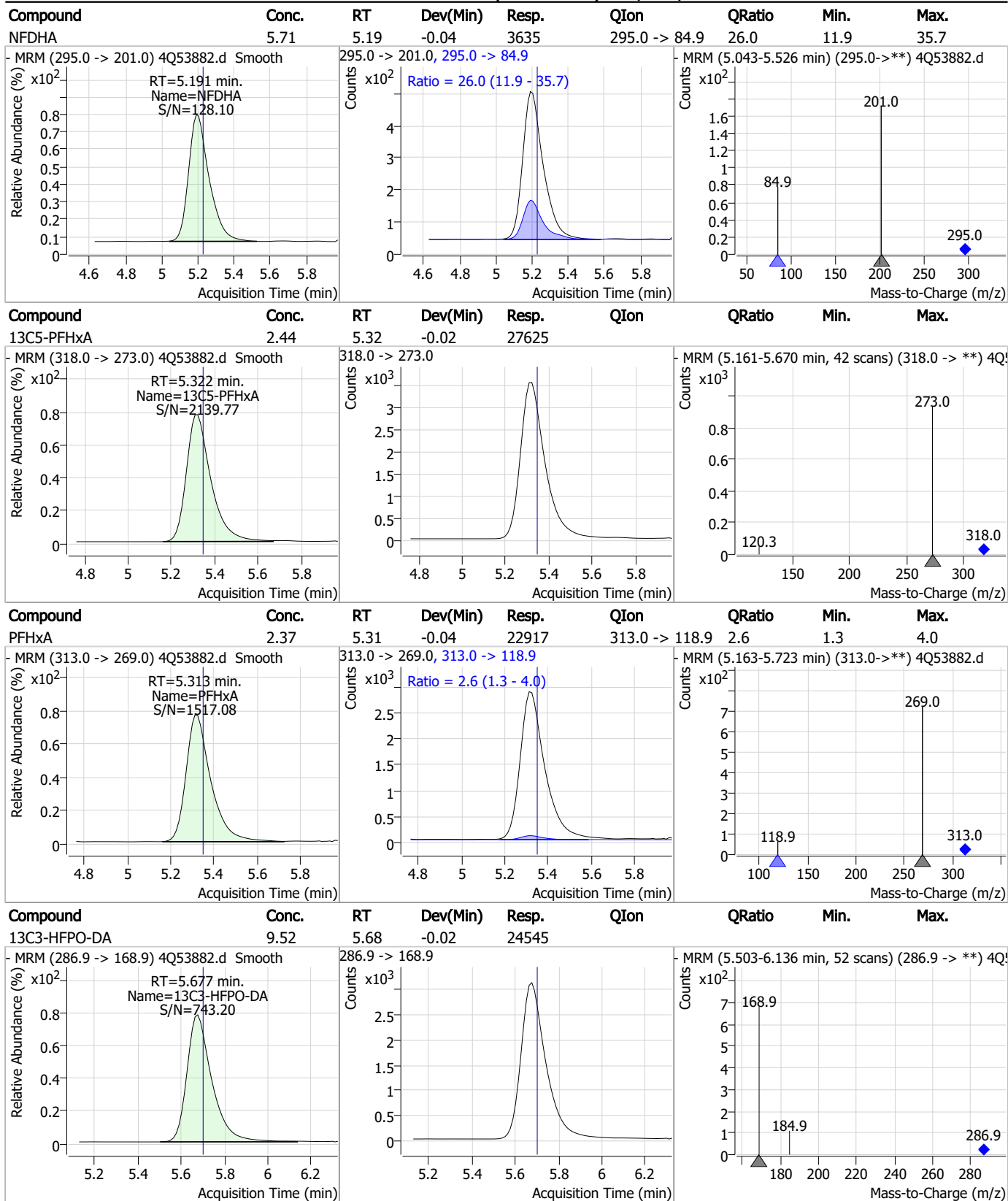
### Perfluorinated Compounds by LC/MS/MS



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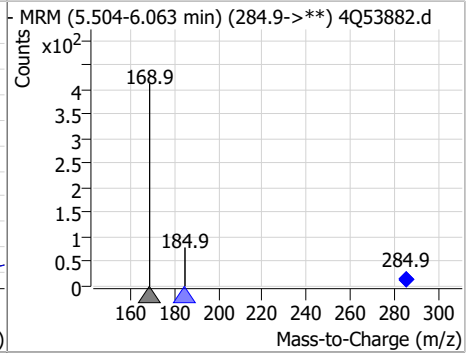
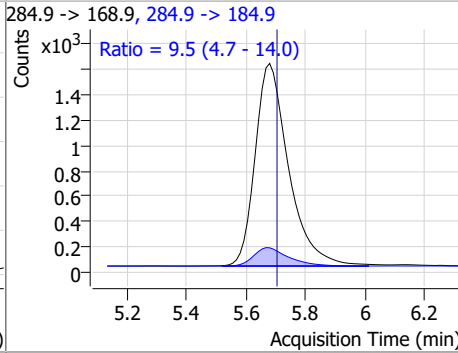
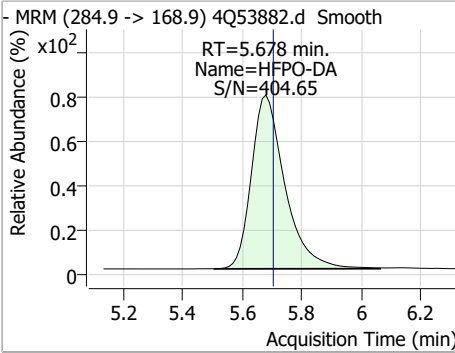
### Perfluorinated Compounds by LC/MS/MS



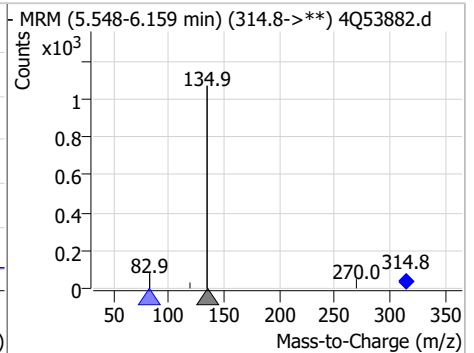
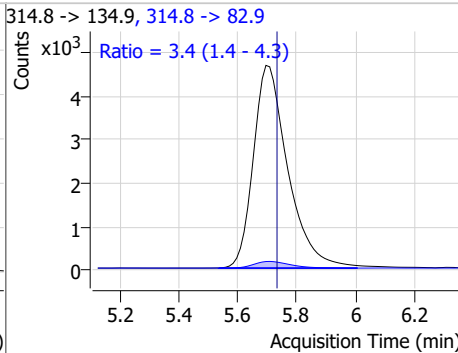
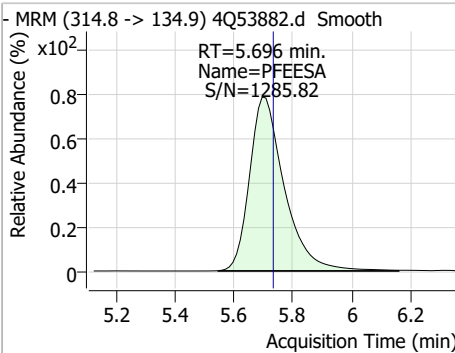
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### Perfluorinated Compounds by LC/MS/MS

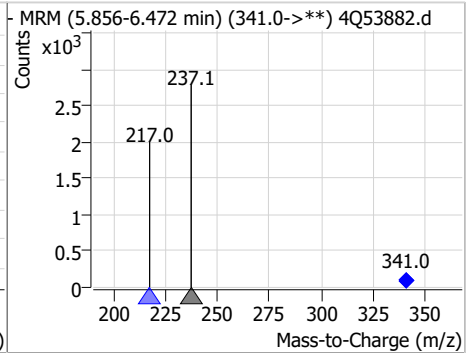
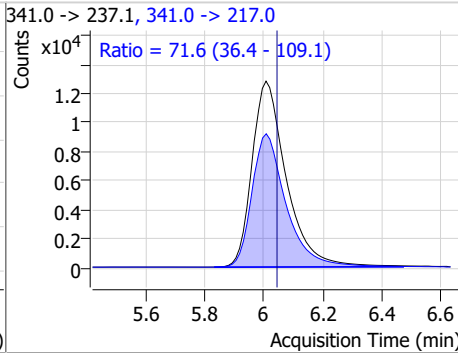
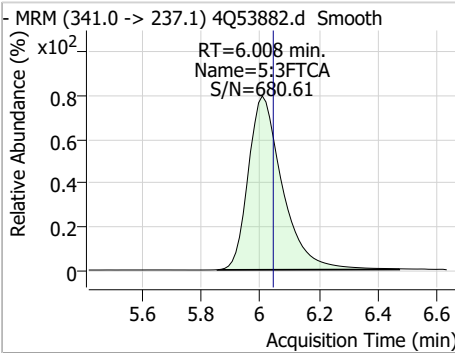
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.83	5.68	-0.02	12543	284.9 -> 184.9	9.5	4.7	14.0



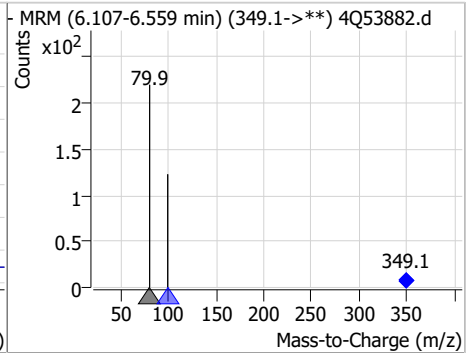
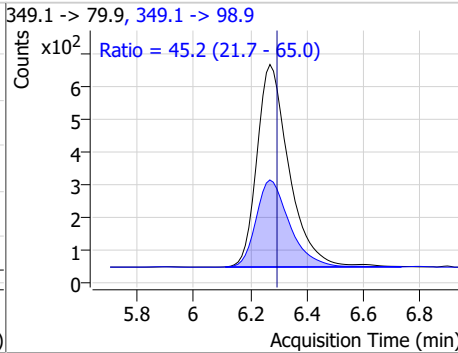
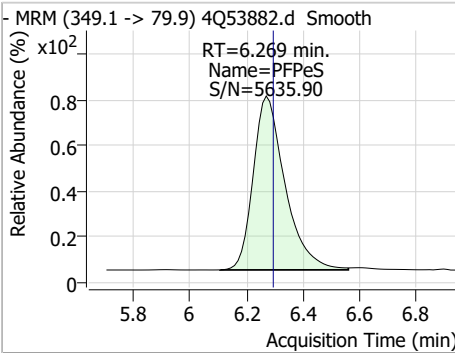
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	5.01	5.70	-0.04	38284	314.8 -> 82.9	3.4	1.4	4.3



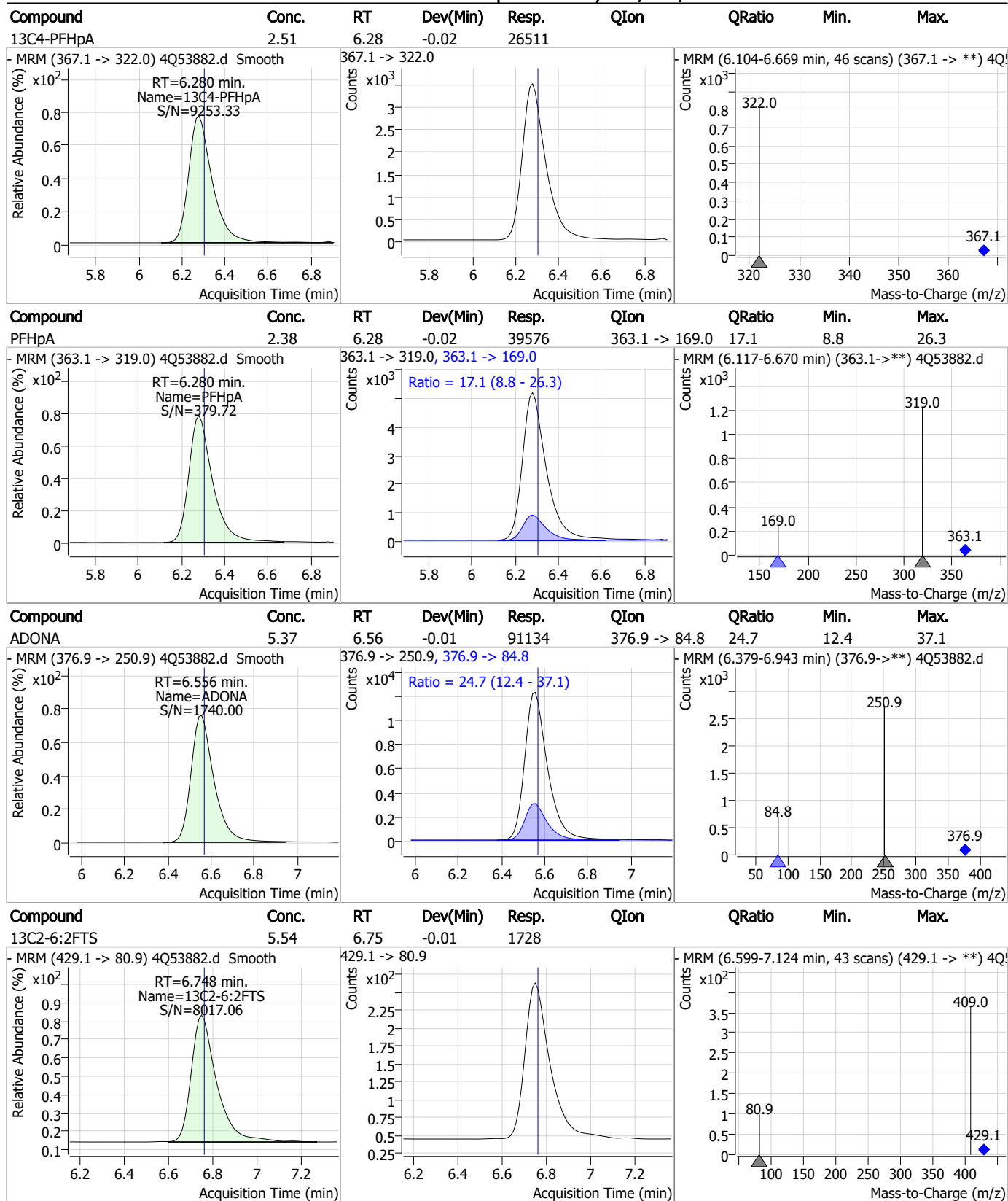
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	60.79	6.01	-0.04	103244	341.0 -> 217.0	71.6	36.4	109.1



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

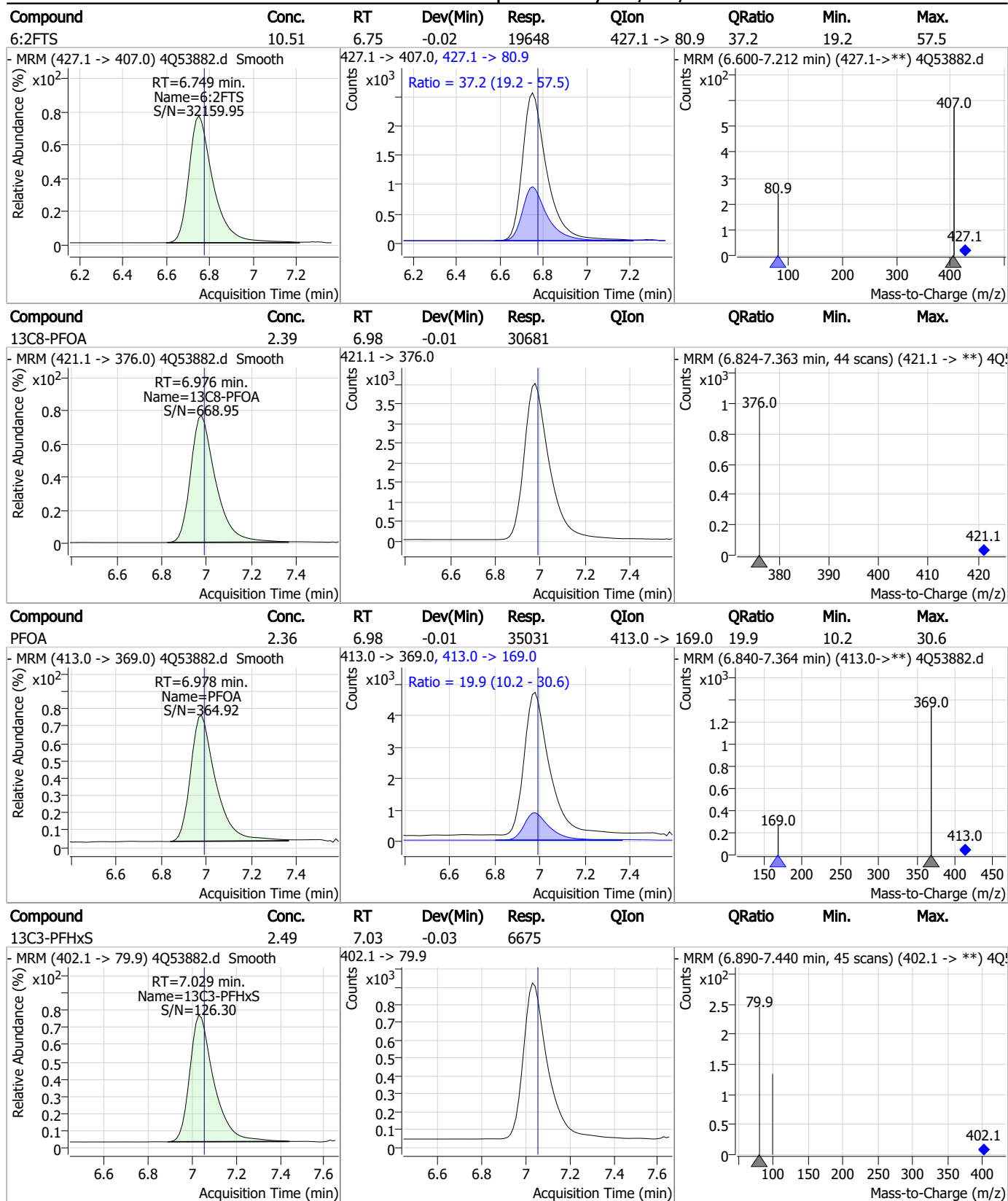


### Perfluorinated Compounds by LC/MS/MS



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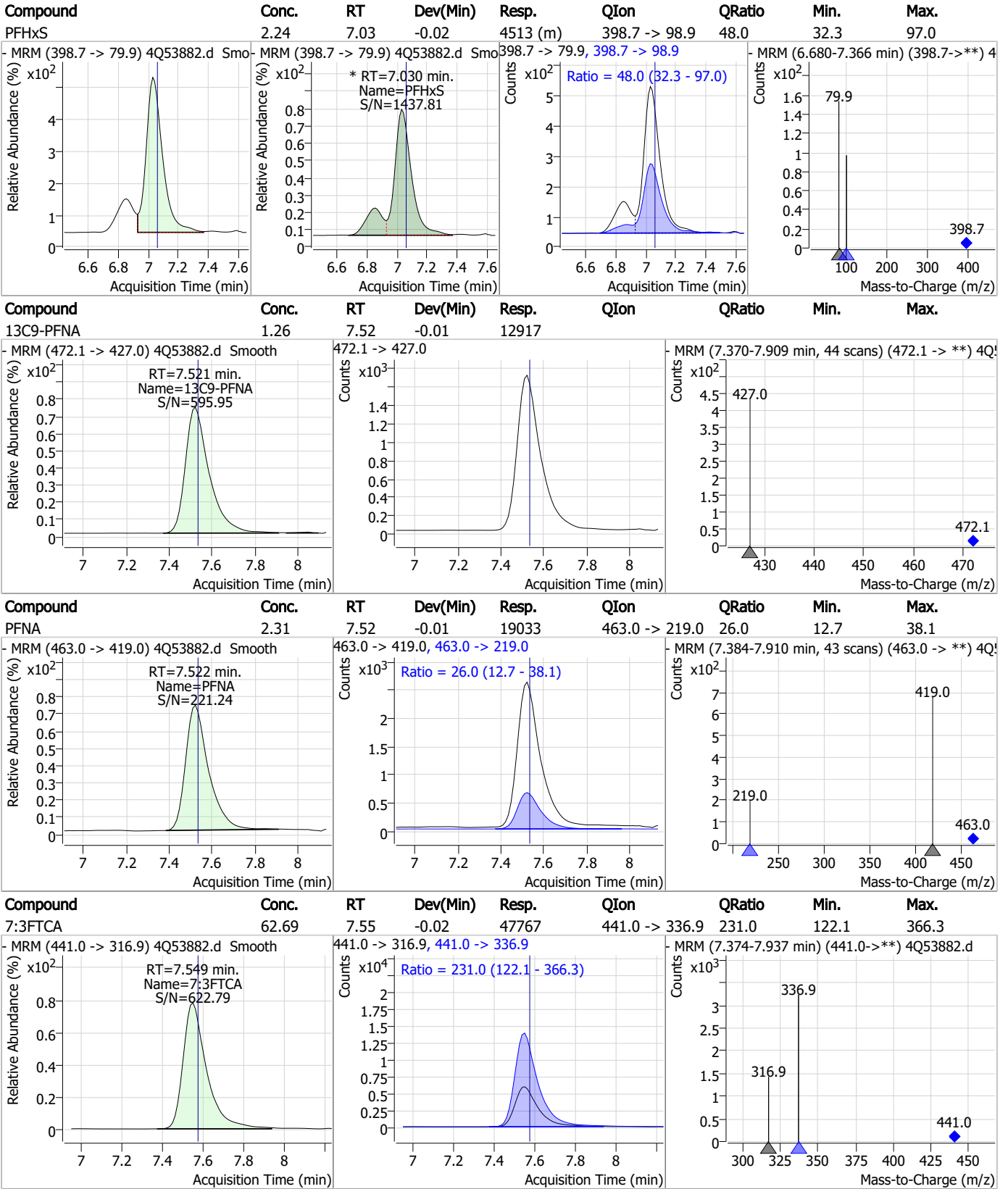
### Perfluorinated Compounds by LC/MS/MS



7.4.1  
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### Perfluorinated Compounds by LC/MS/MS

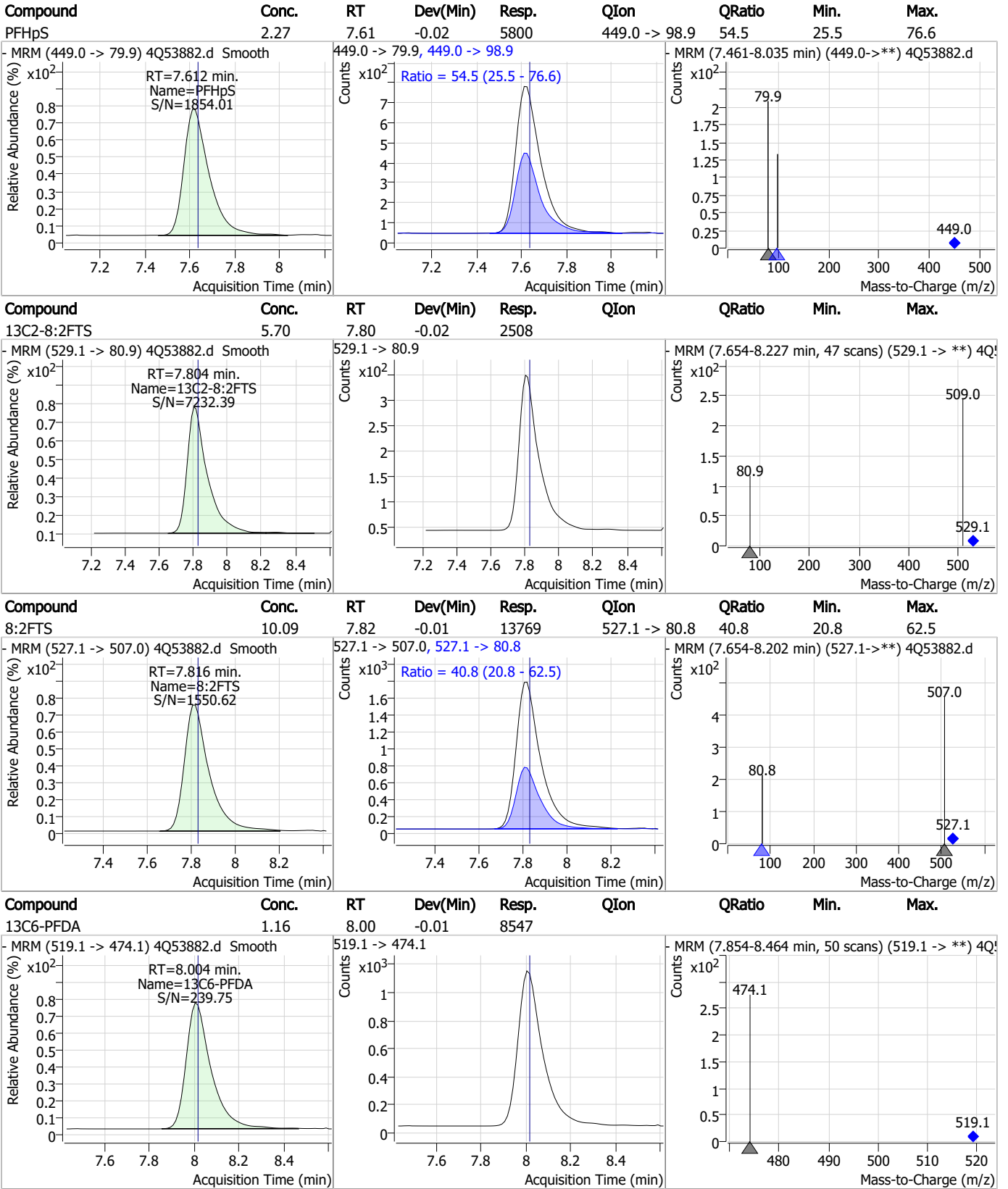


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### Perfluorinated Compounds by LC/MS/MS

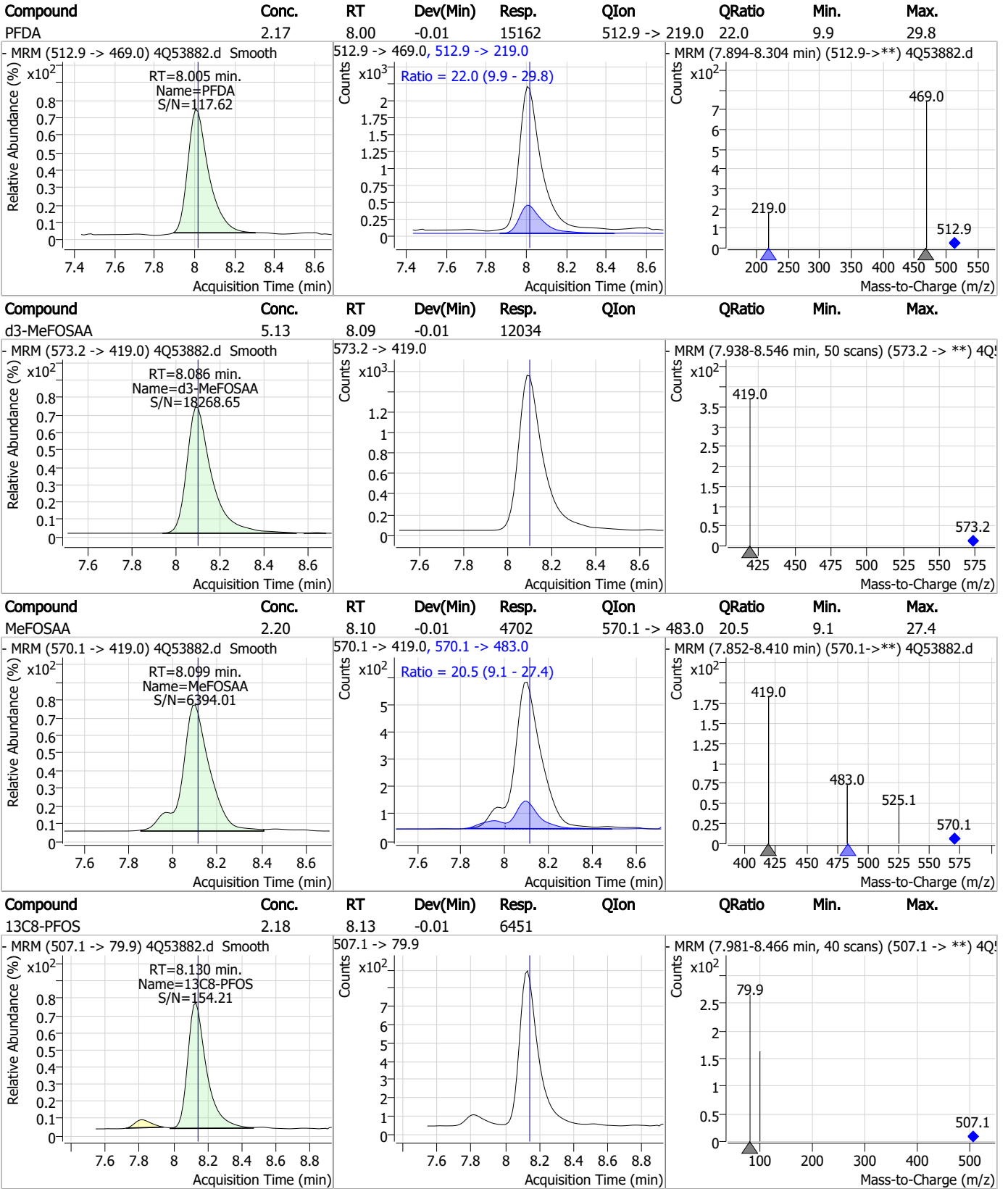


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### Perfluorinated Compounds by LC/MS/MS

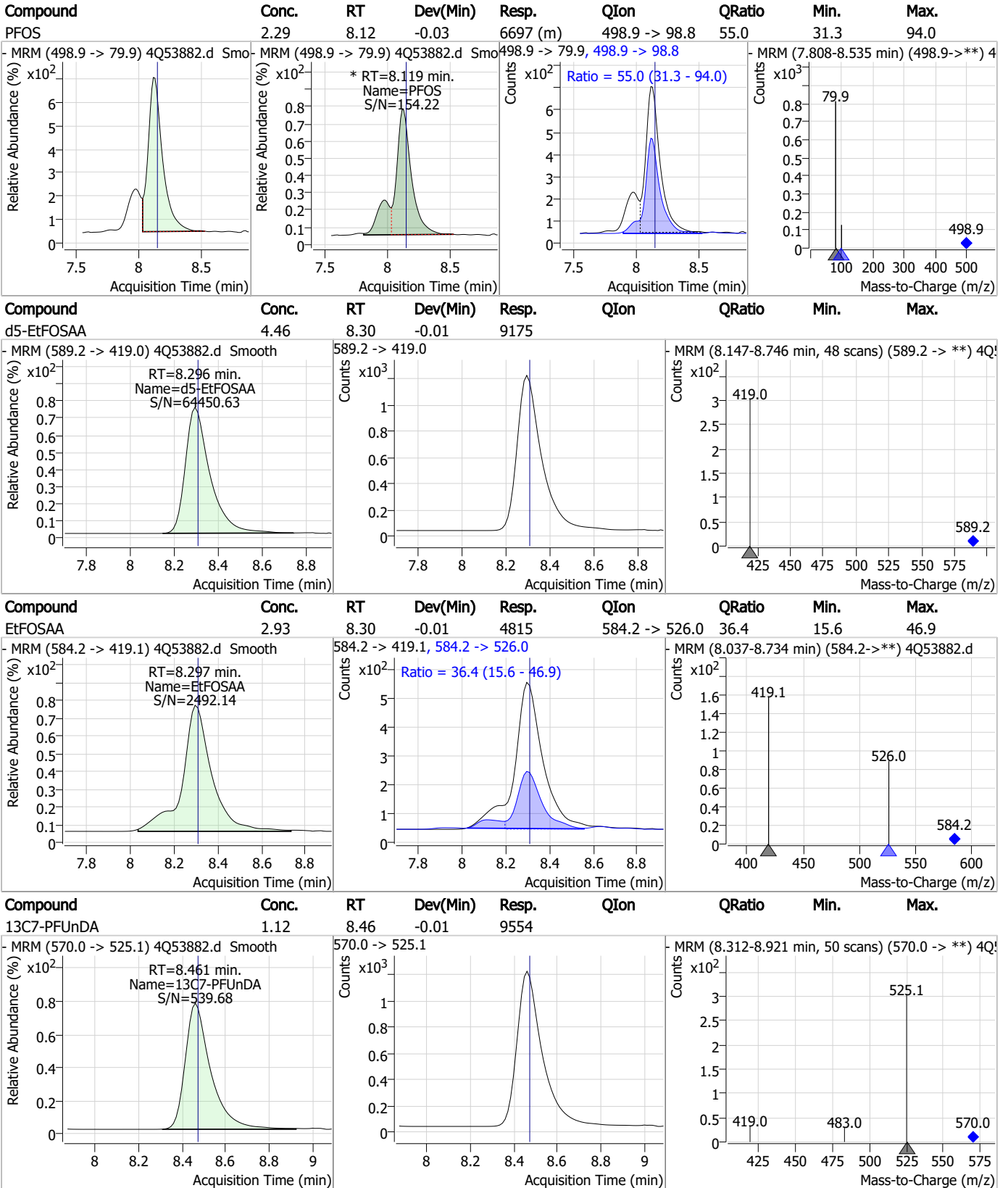


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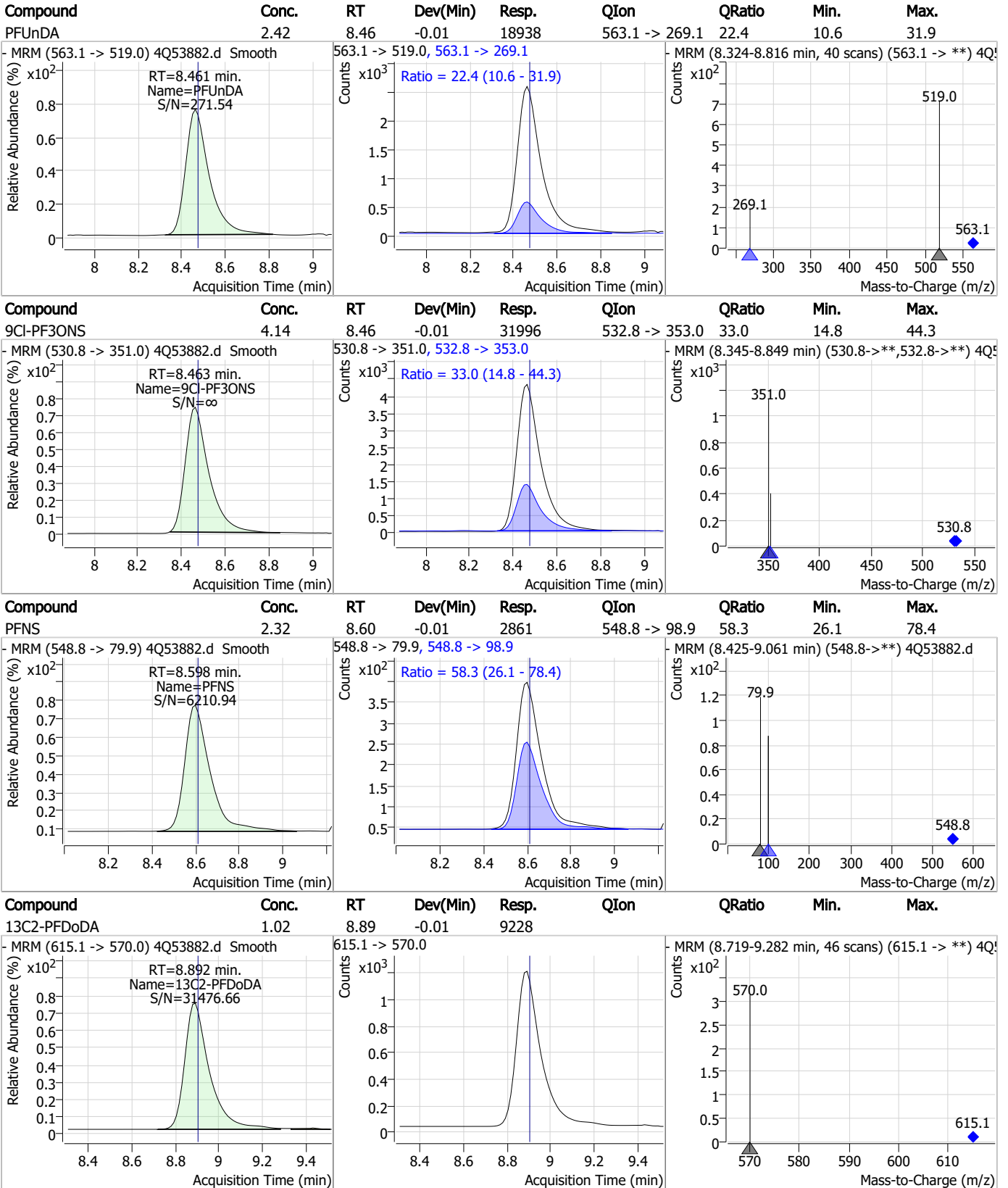
### Perfluorinated Compounds by LC/MS/MS



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### Perfluorinated Compounds by LC/MS/MS

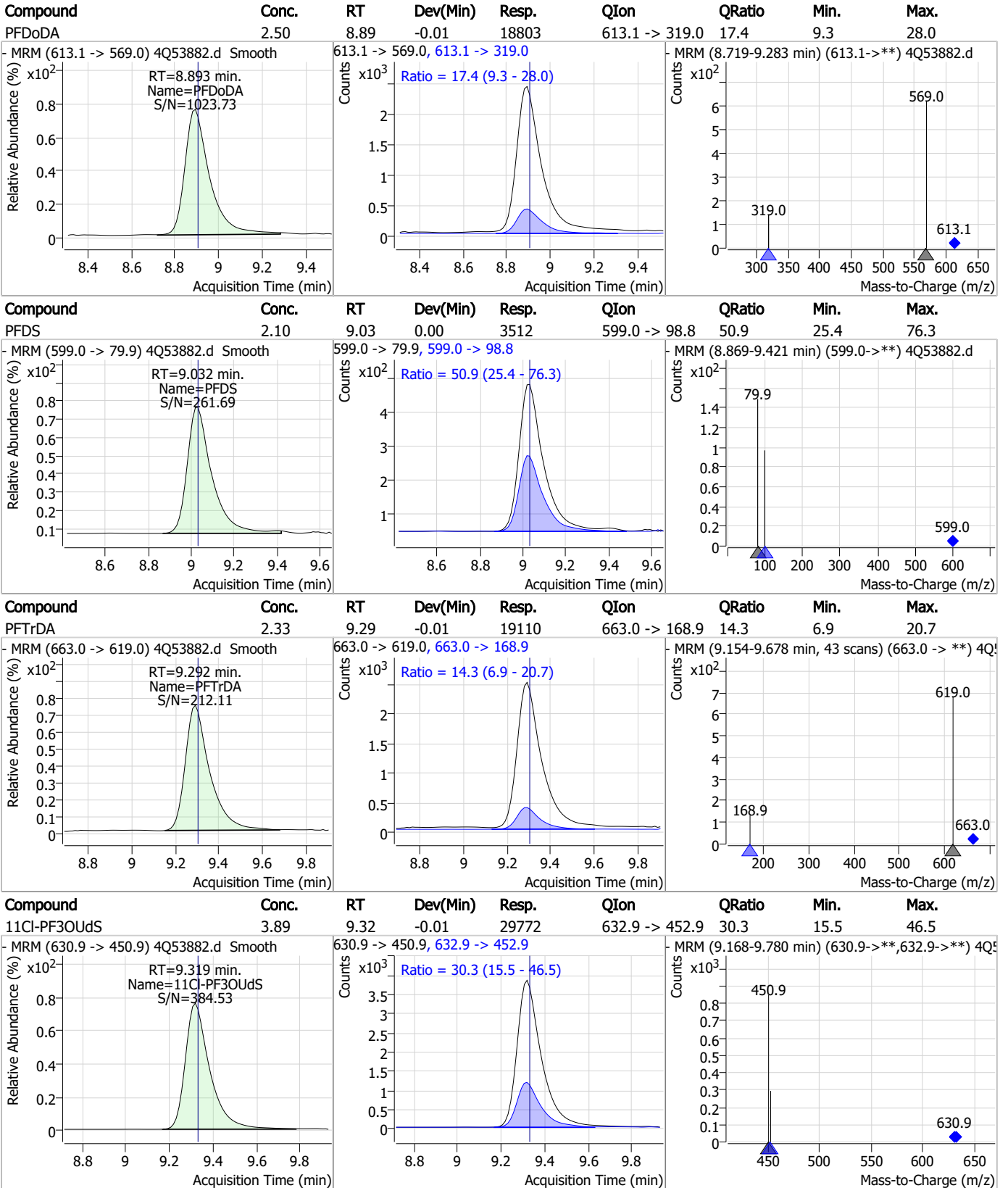


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### Perfluorinated Compounds by LC/MS/MS

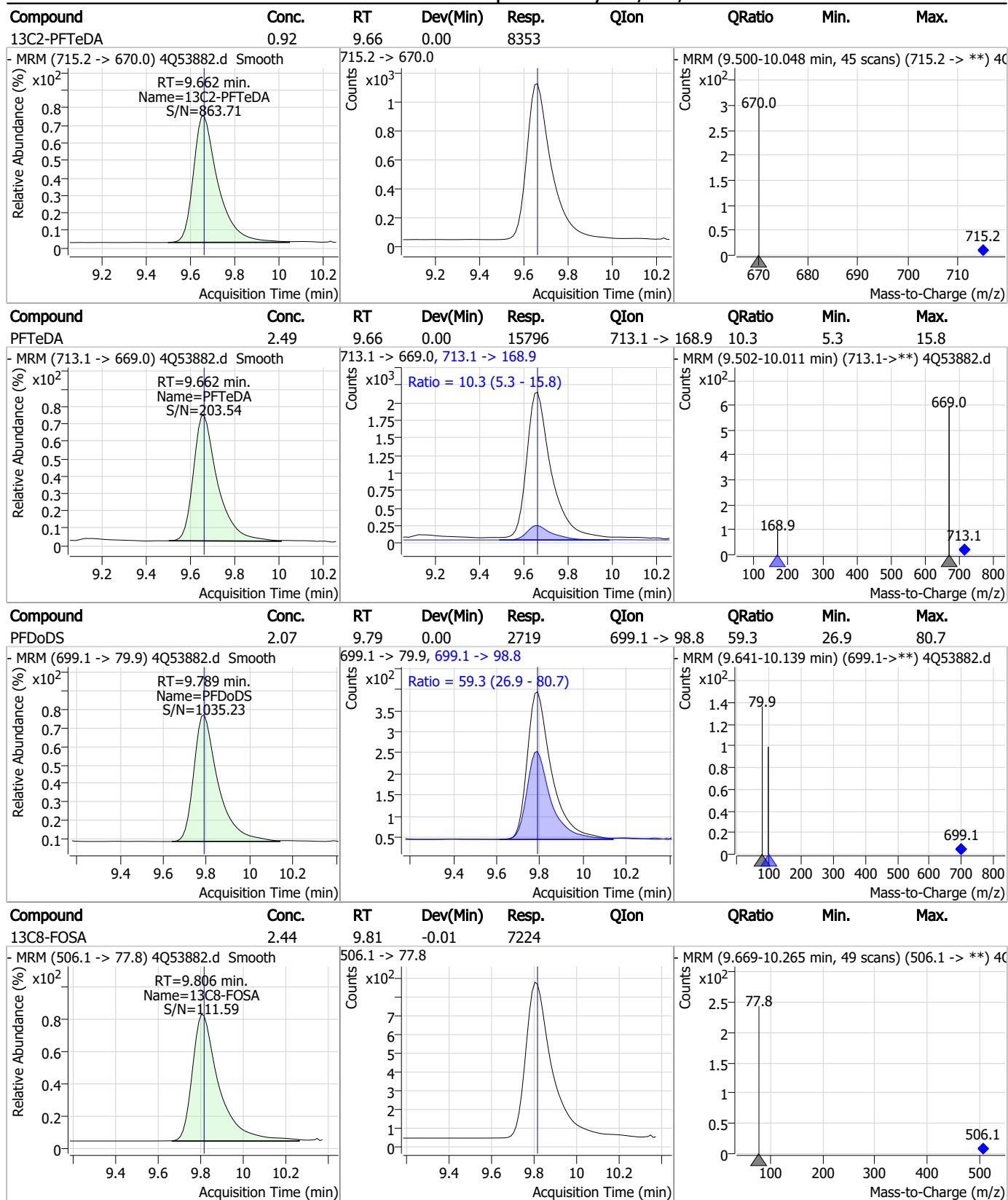


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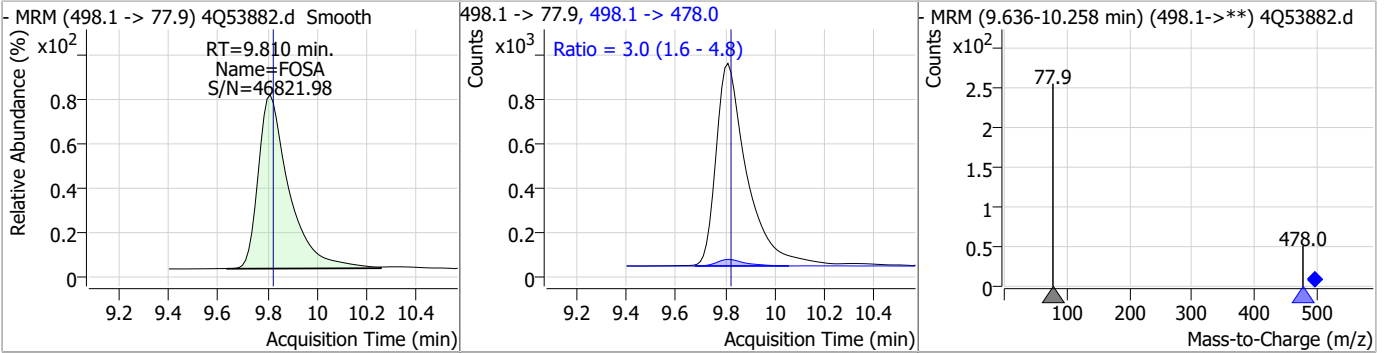
### Perfluorinated Compounds by LC/MS/MS



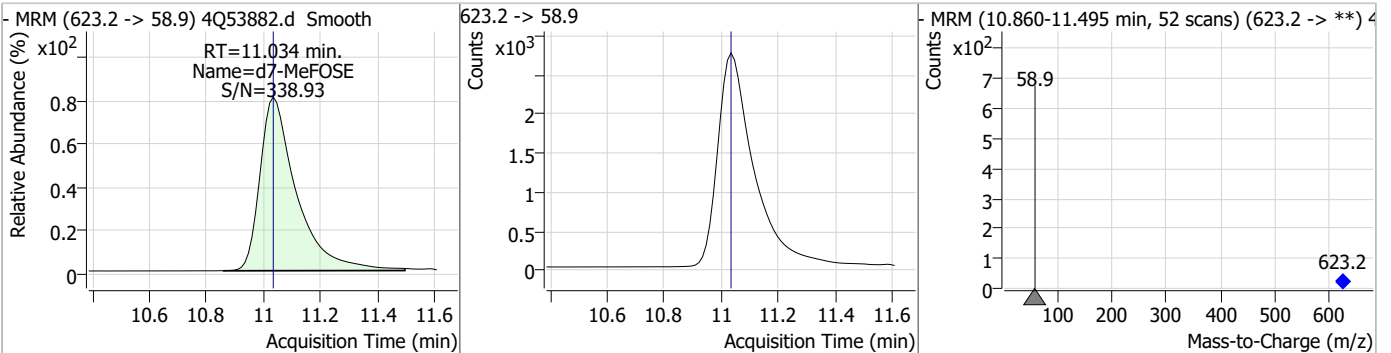
7.4.1  
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### Perfluorinated Compounds by LC/MS/MS

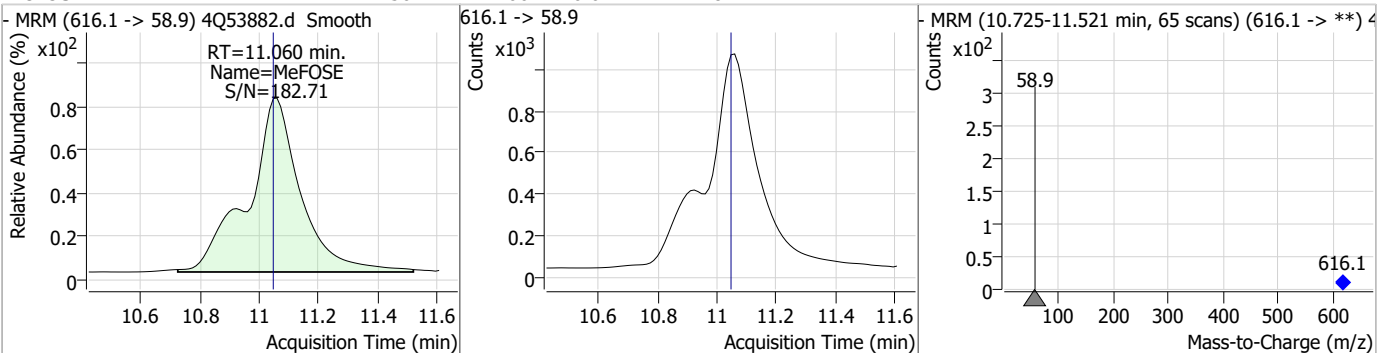
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.25	9.81	-0.01	7937	498.1 -> 478.0	3.0	1.6	4.8



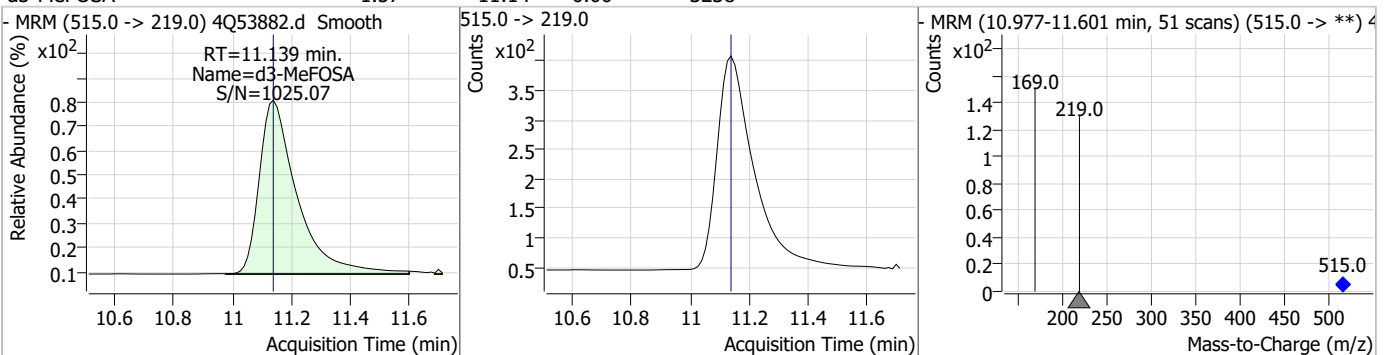
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	19.08	11.03	0.00	24330				



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

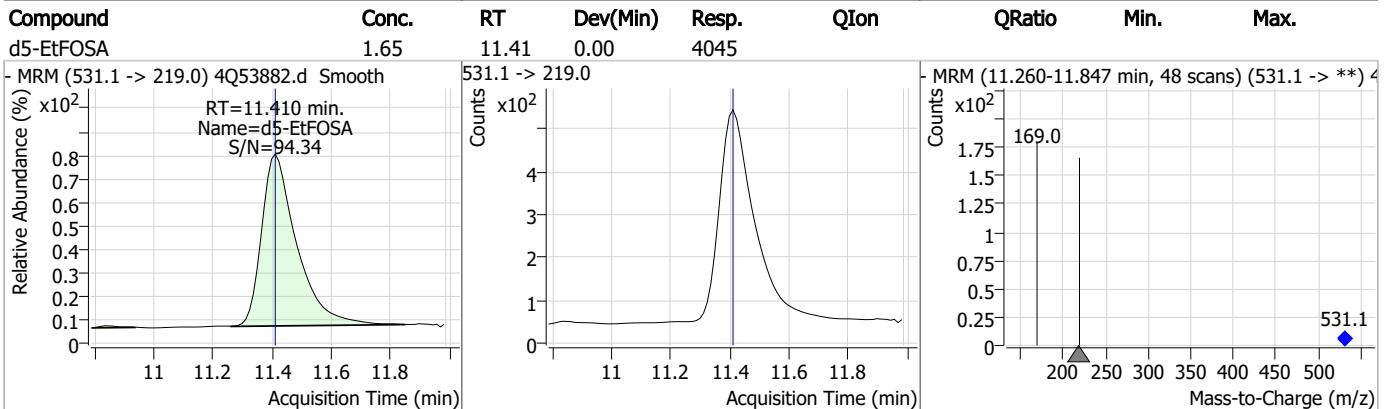
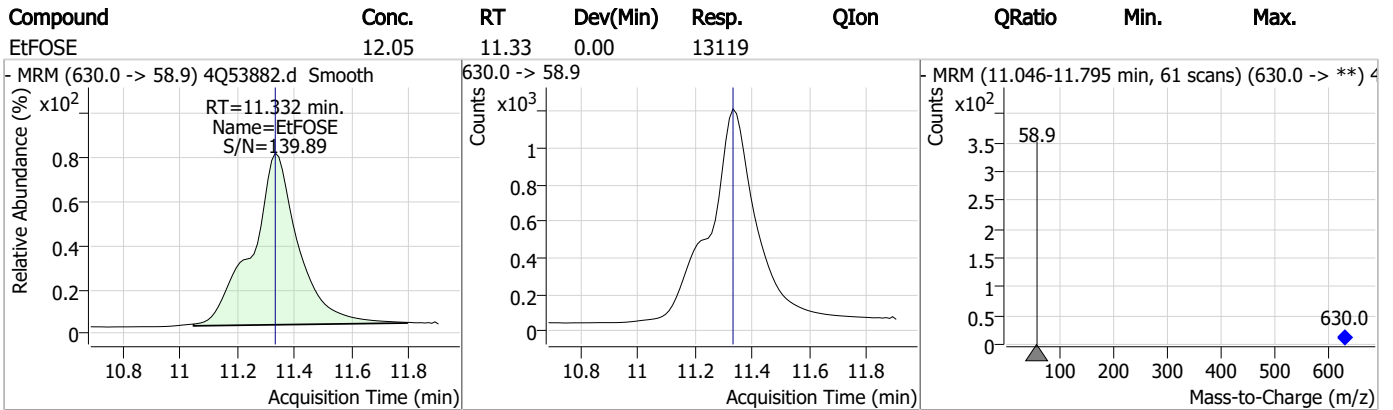
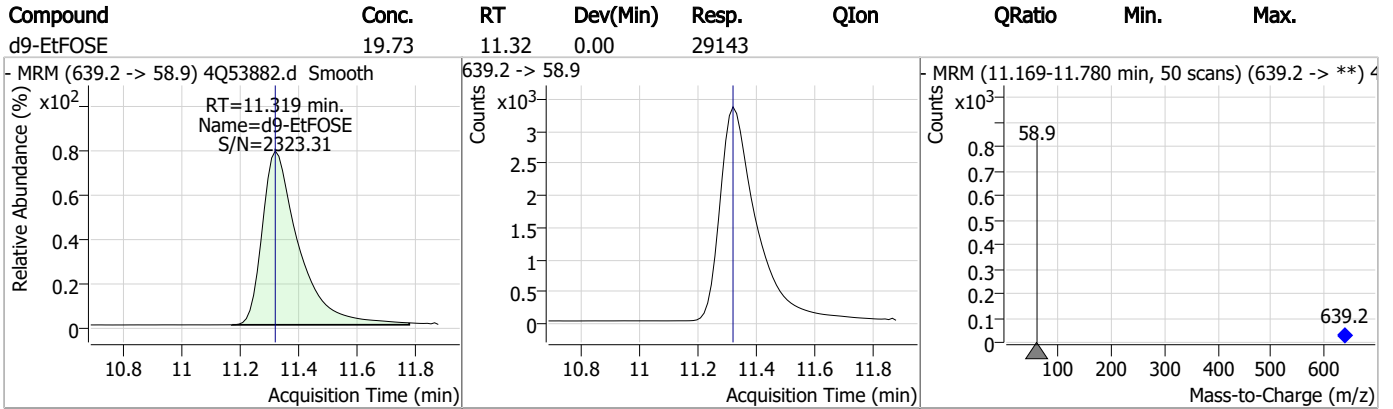
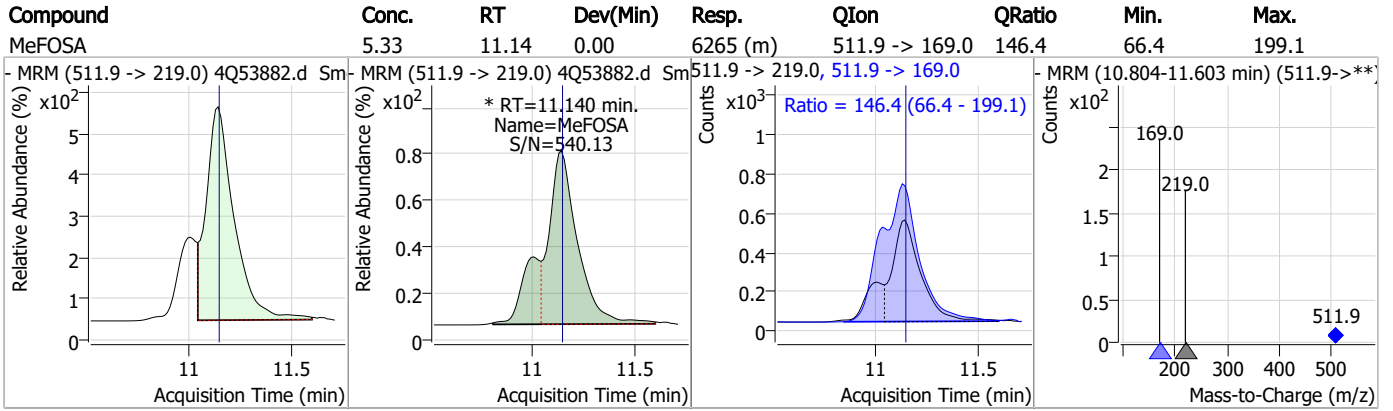


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	1.57	11.14	0.00	3238				



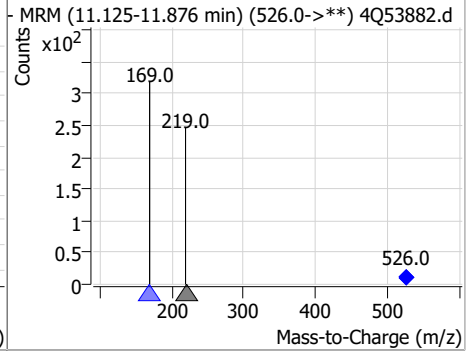
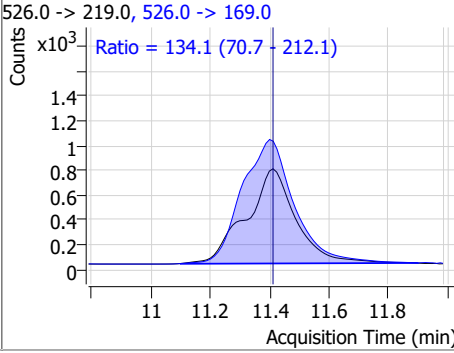
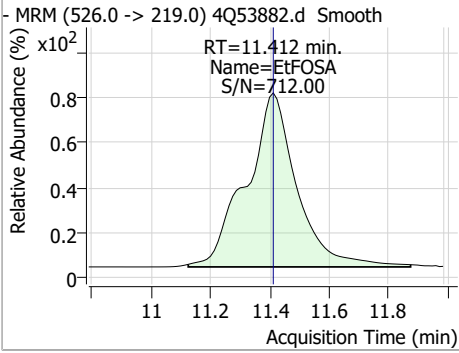


### Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOFA	5.01	11.41	0.00	9145	526.0 -> 169.0	134.1	70.7	212.1



7.4.1  
7

# Manual Integration Approval Summary

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

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

7.4.1.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53884.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/15/2023 3:07:38 PM  
 Sample Name : op58-dup  
 Vial : P2-A5  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q786.batch.bin  
 Sample Information : OP58,S4Q786,540,,,,5.0,1,water

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

7.5.1  
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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 = 100.9%		
13C4-PFBA	2.699	216.8 -> 171.9	2322	0.27 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 2.7%		
13C4-PFHpA	6.267	367.1 -> 322.0	25877	2.46 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C5-PFHxA	5.310	318.0 -> 273.0	25980	2.31 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.2%		
13C5-PFPeA	4.137	268.3 -> 223.0	7356	1.00 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 20.0%		
13C6-PFDA	8.004	519.1 -> 474.1	9040	1.30 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C7-PFUnDA	8.461	570.0 -> 525.1	10330	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.8%		
13C8-FOSA	9.806	506.1 -> 77.8	6895	2.73 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.3%		
13C8-PFOA	6.964	421.1 -> 376.0	29323	2.36 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.3%		
13C8-PFOS	8.117	507.1 -> 79.9	6186	2.45 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C9-PFNA	7.509	472.1 -> 427.0	11788	1.16 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.5%		
d3-MeFOSAA	8.086	573.2 -> 419.0	12984	6.49 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 129.7%		
13C3-HFPO-DA	5.664	286.9 -> 168.9	20410	7.94 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 79.4%		
d3-MeFOSA	11.139	515.0 -> 219.0	4406	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.1%		
d5-EtFOSAA	8.296	589.2 -> 419.0	11598	6.62 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 132.3%		
d7-MeFOSE	11.034	623.2 -> 58.9	23271	21.40 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 85.6%		
d9-EtFOSE	11.319	639.2 -> 58.9	27723	22.01 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 88.1%		
d5-EtFOSA	11.410	531.1 -> 219.0	5365	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.7%		
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	-	327.1 -> 307.0 327.1 -> 80.9	-	N.D.	
6:2FTS	6.749	427.1 -> 407.0 427.1 -> 80.9	1802 635	0.83 µg/L	95
8:2FTS	-	527.1 -> 507.0 527.1 -> 80.8	-	N.D.	
EtFOSAA	-	584.2 -> 419.1 584.2 -> 526.0	-	N.D.	
FOSA	-	498.1 -> 77.9 498.1 -> 478.0	-	N.D.	
MeFOSAA	-	570.1 -> 419.0 570.1 -> 483.0	-	N.D.	
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9 298.7 -> 98.8	-	N.D.	
PFDA	7.494	512.9 -> 469.0 512.9 -> 219.0	0 0	µg/L m	1
PFDODA	-	613.1 -> 569.0 613.1 -> 319.0	-	N.D.	
PFDS	8.970	599.0 -> 79.9	0	µg/L m	1

7.5.1  
7

Perfluorinated Compounds by LC/MS/MS

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

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



7.5.1  
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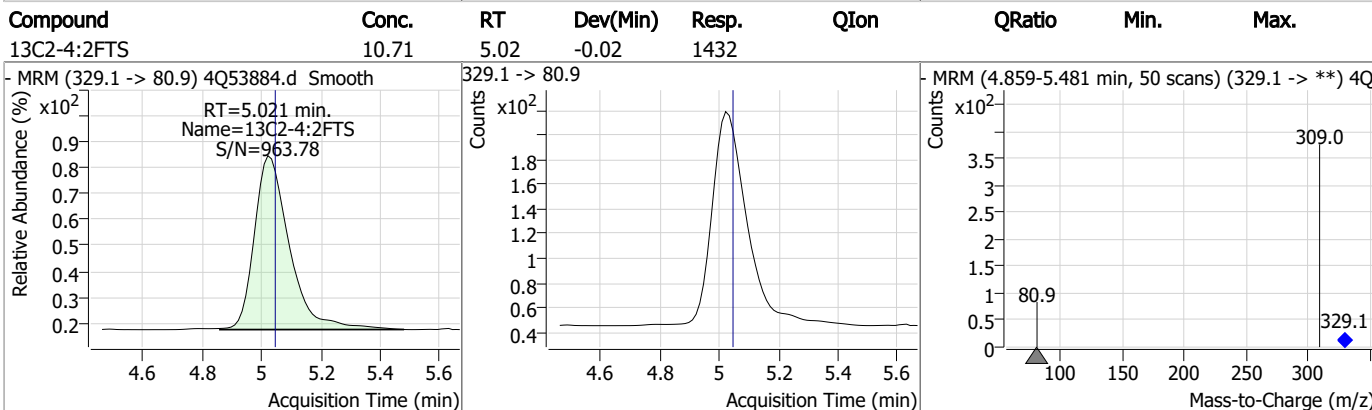
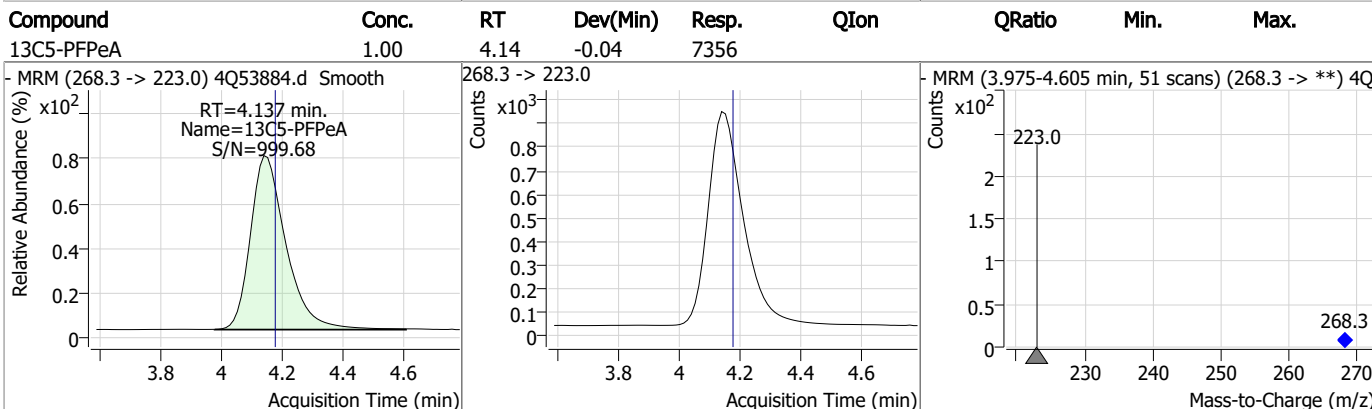
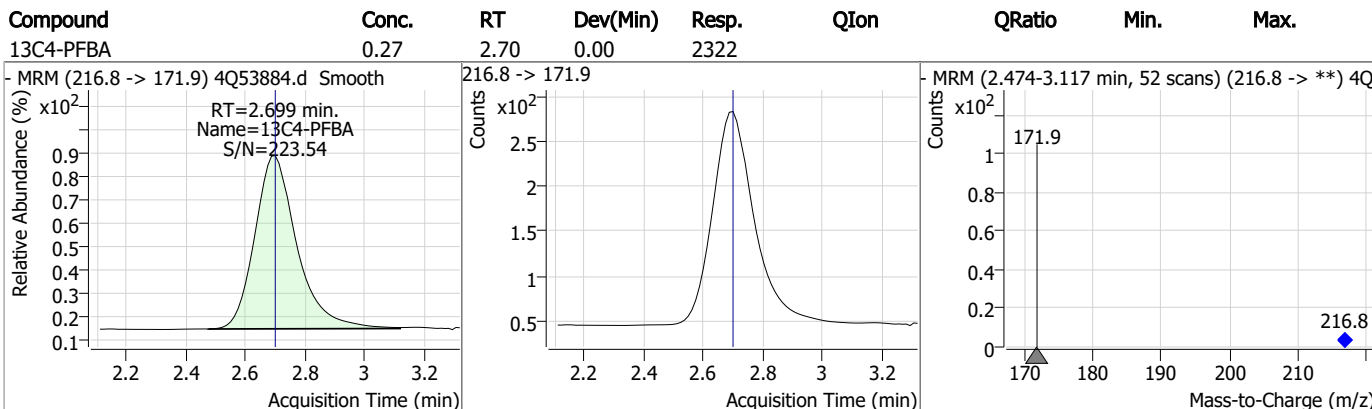
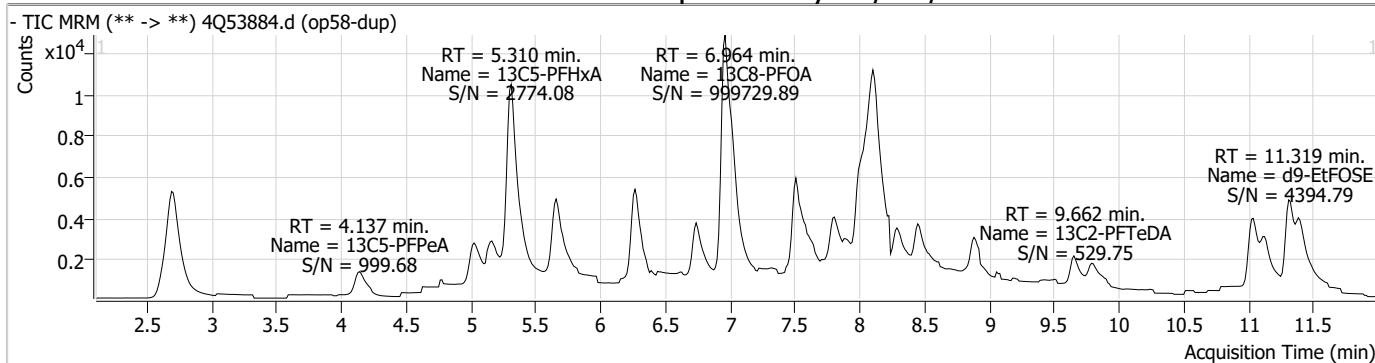
### Perfluorinated Compounds by LC/MS/MS

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

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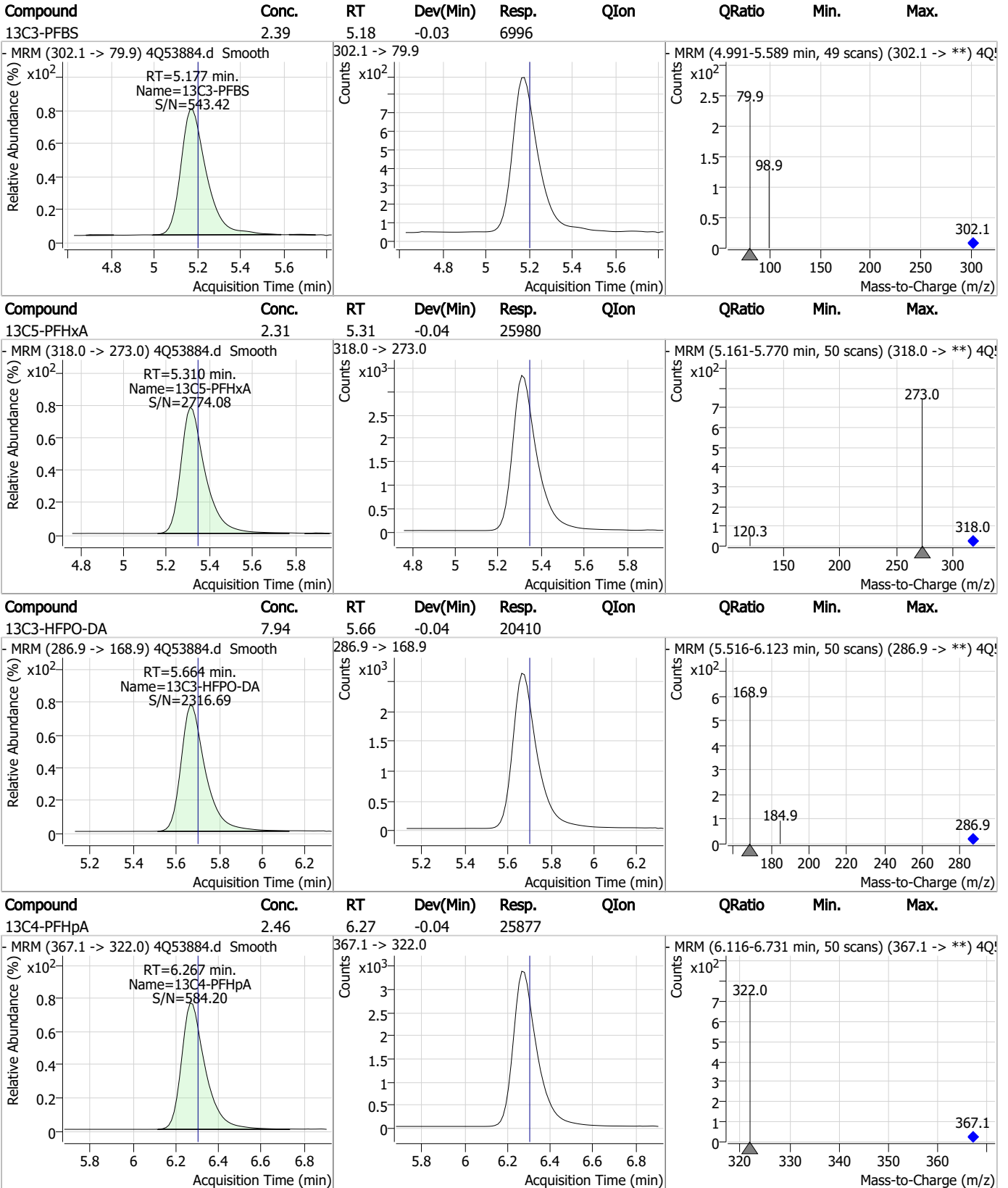
### Perfluorinated Compounds by LC/MS/MS



7.5.1  
7



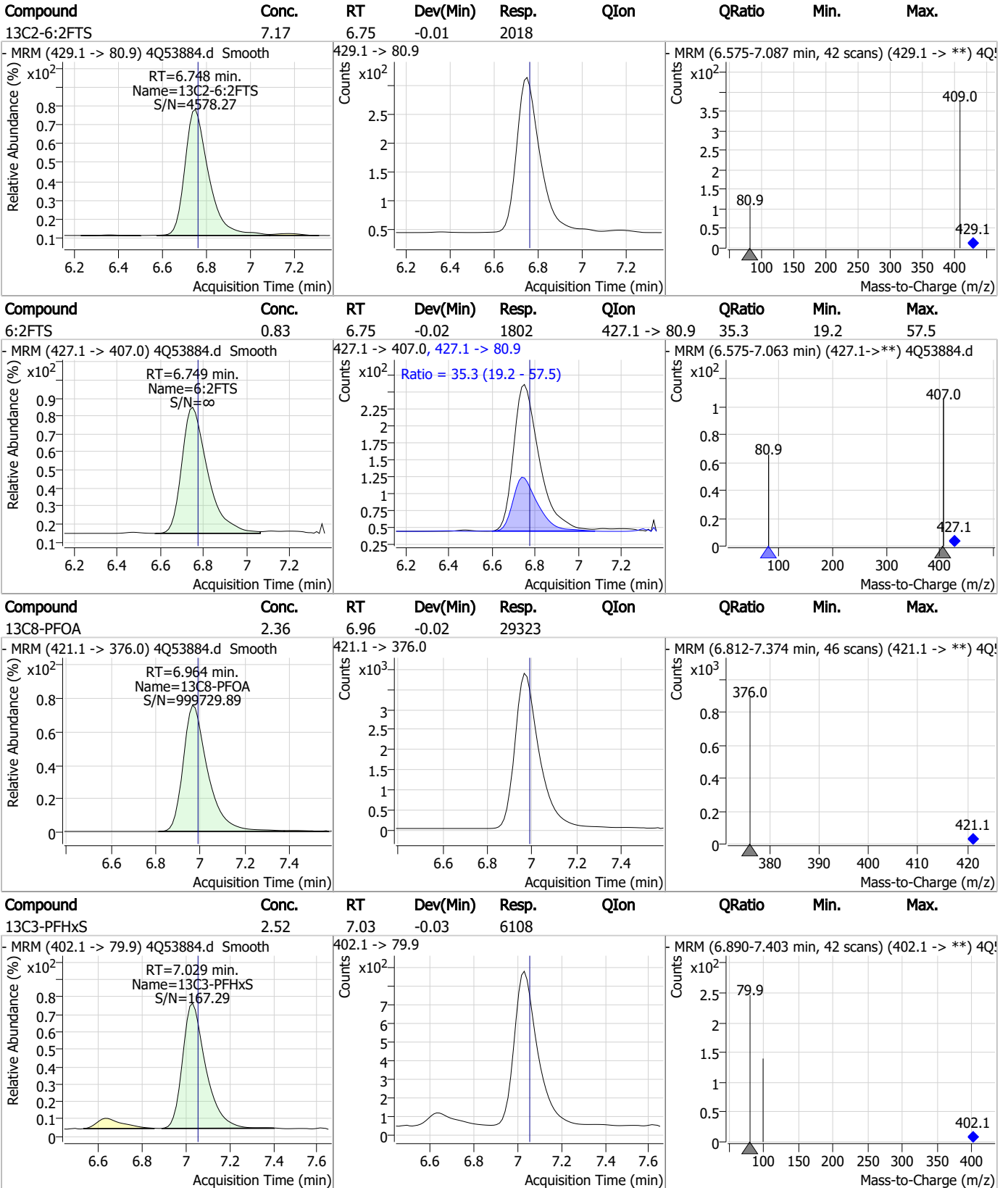
### Perfluorinated Compounds by LC/MS/MS



7.5.1

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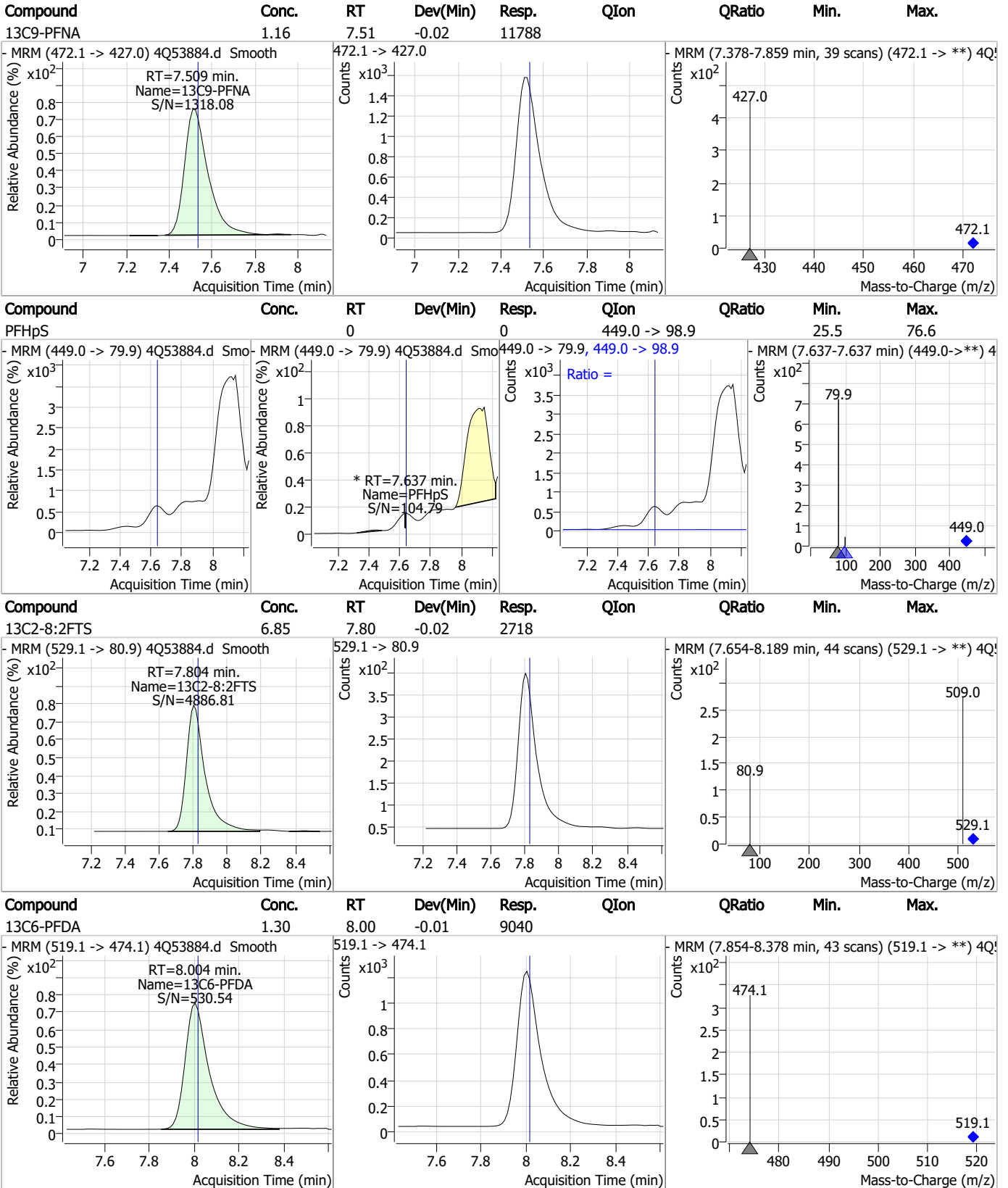
### Perfluorinated Compounds by LC/MS/MS



7.5.1

7

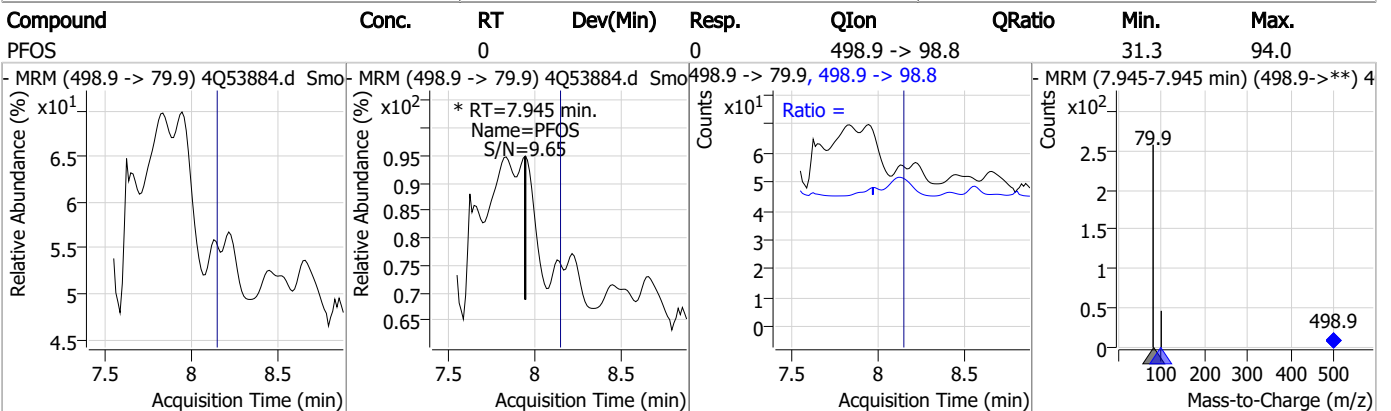
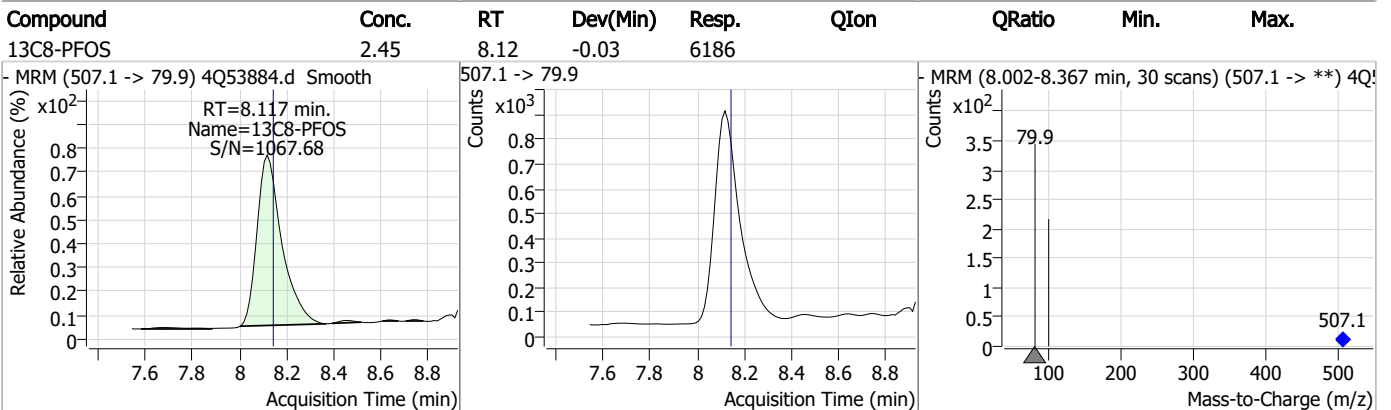
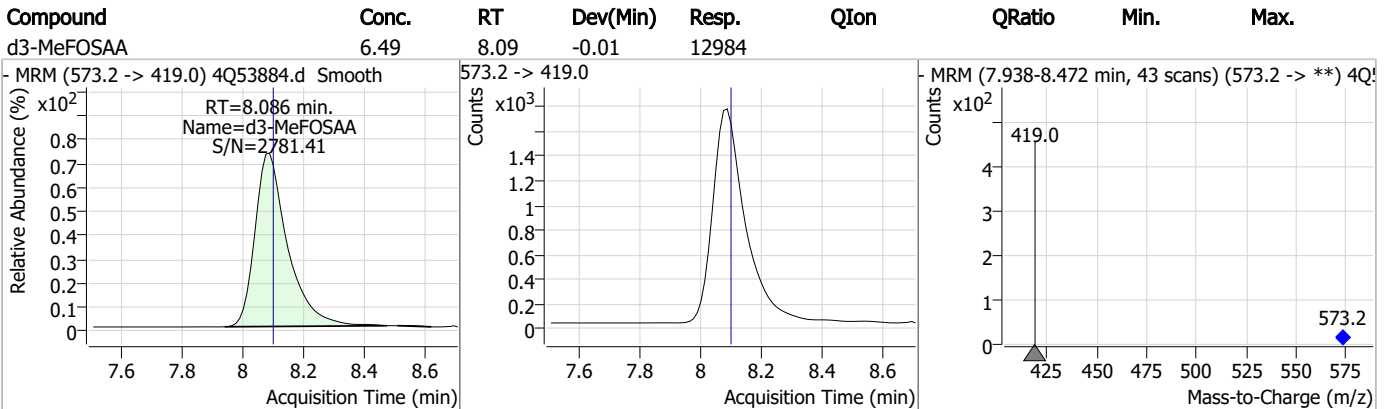
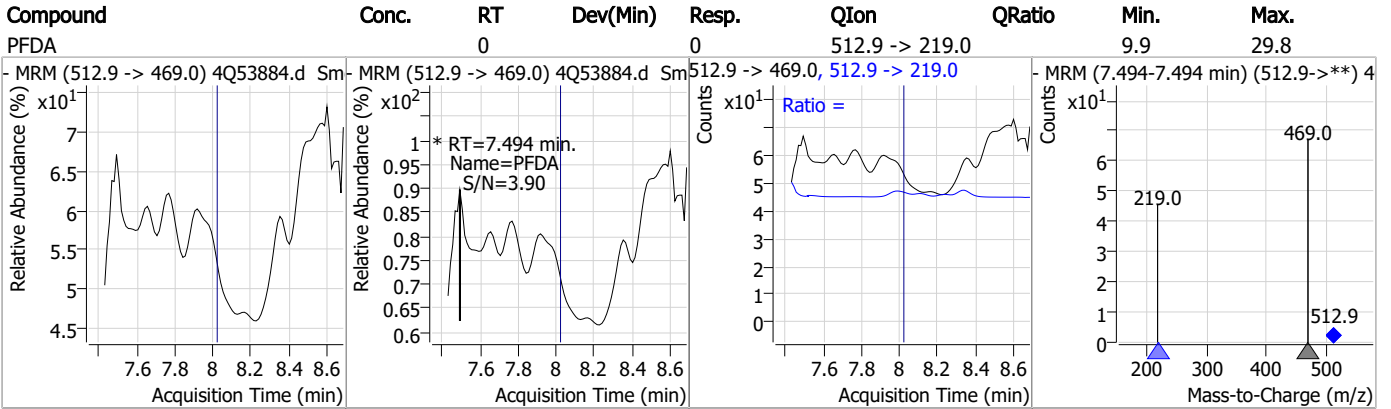
### Perfluorinated Compounds by LC/MS/MS



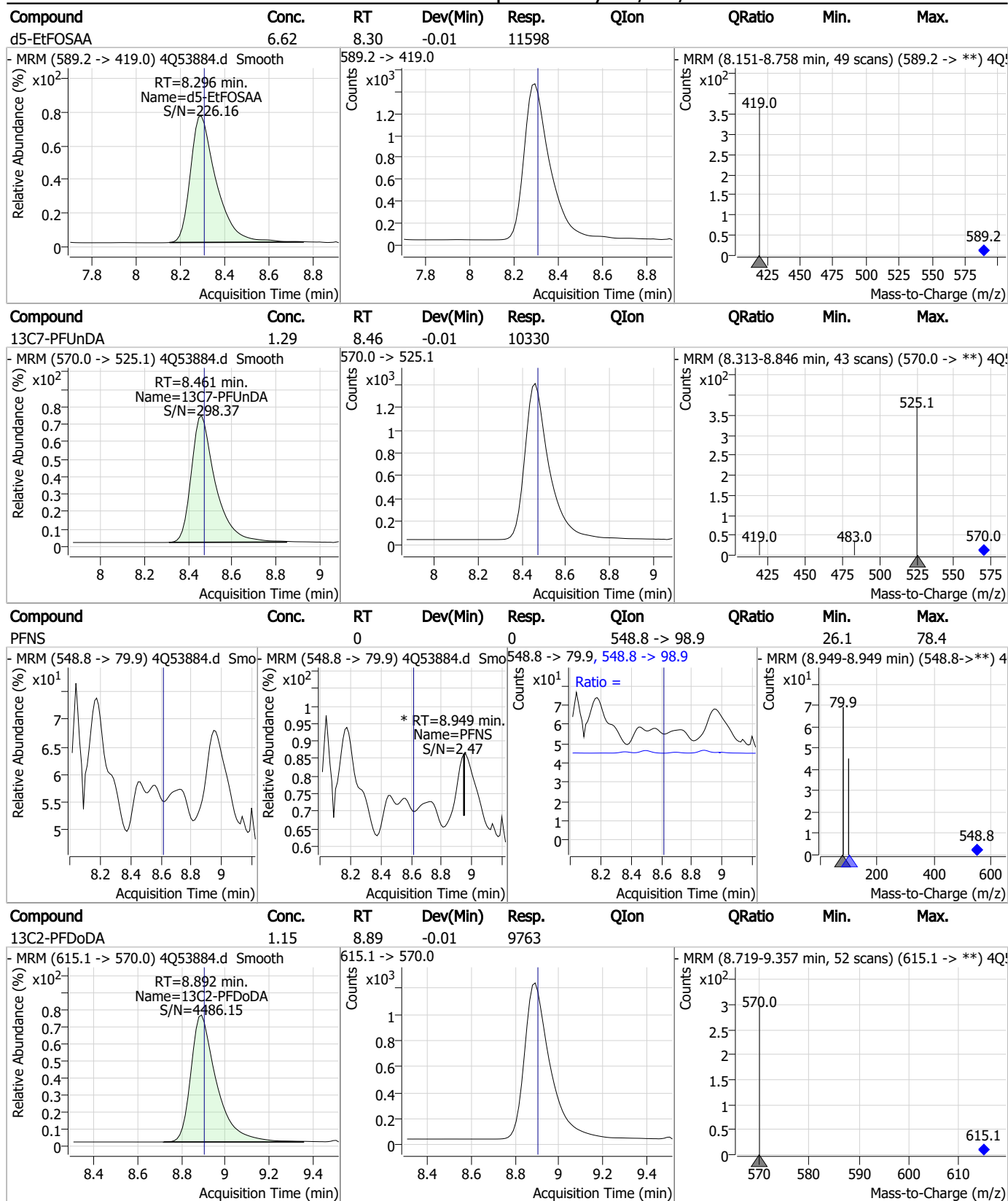
7.5.1

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### Perfluorinated Compounds by LC/MS/MS

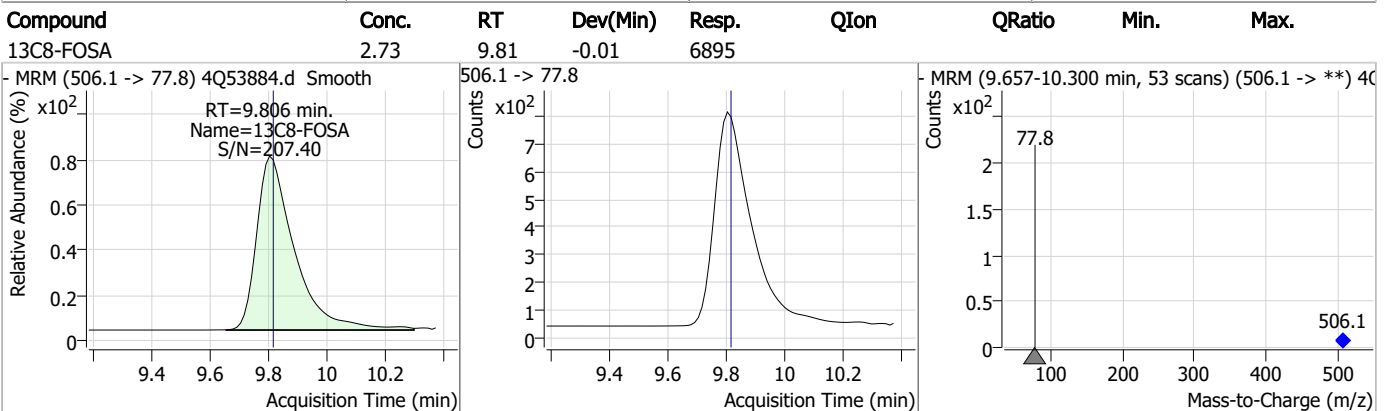
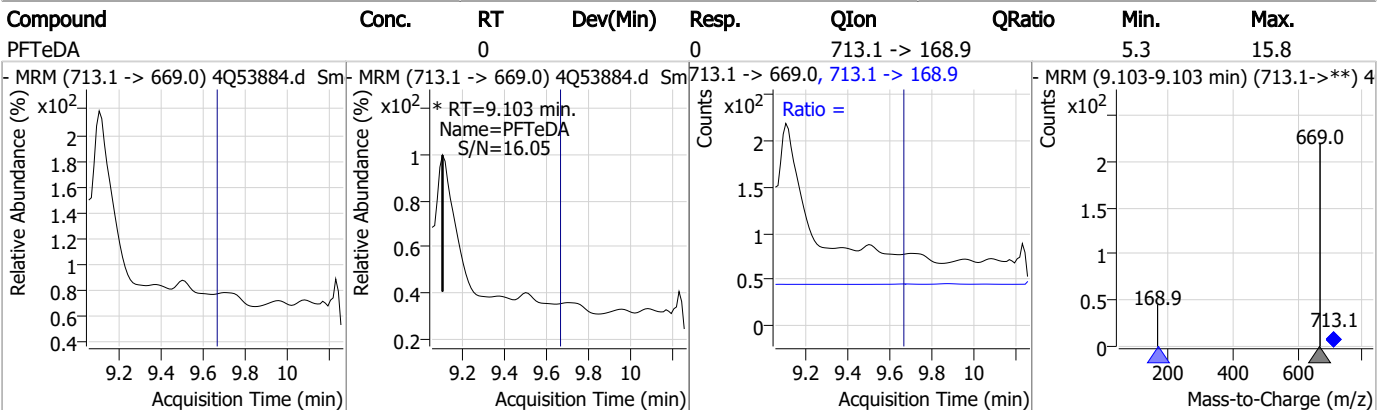
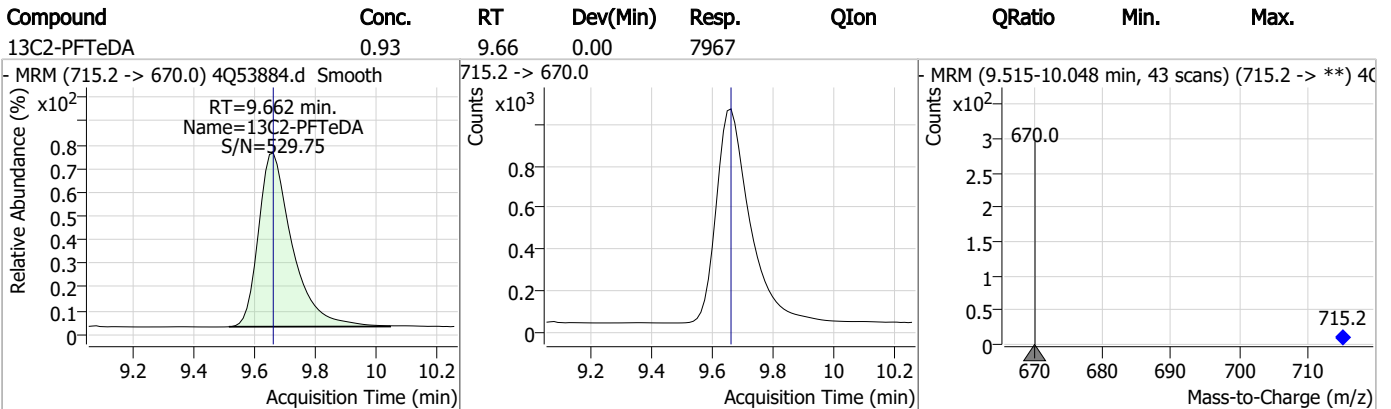
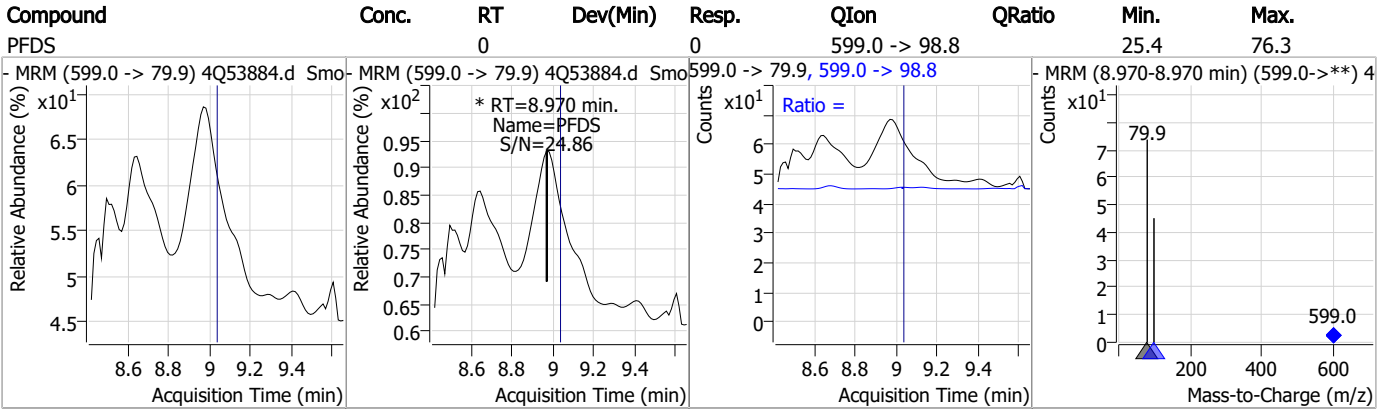


### Perfluorinated Compounds by LC/MS/MS



7.5.1  
7

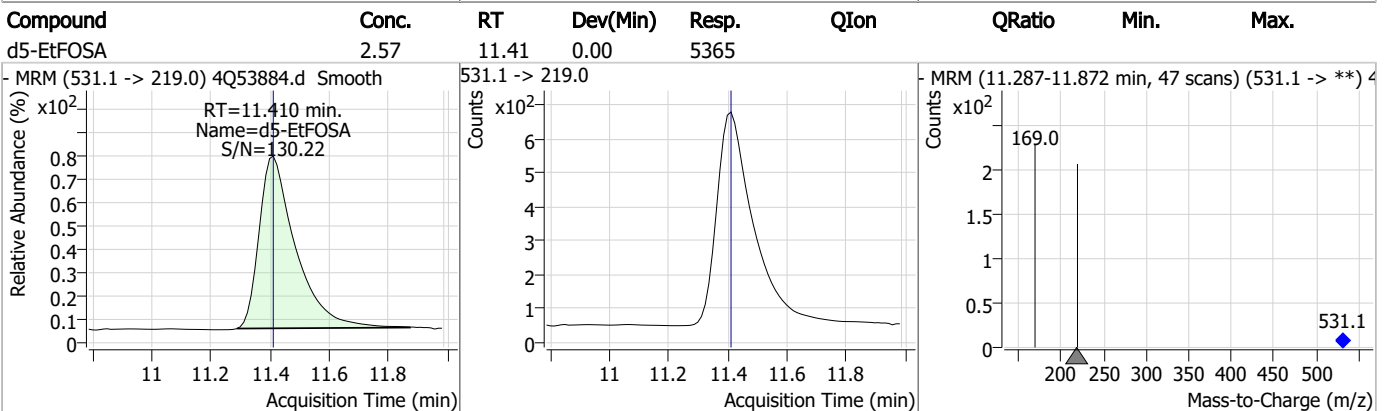
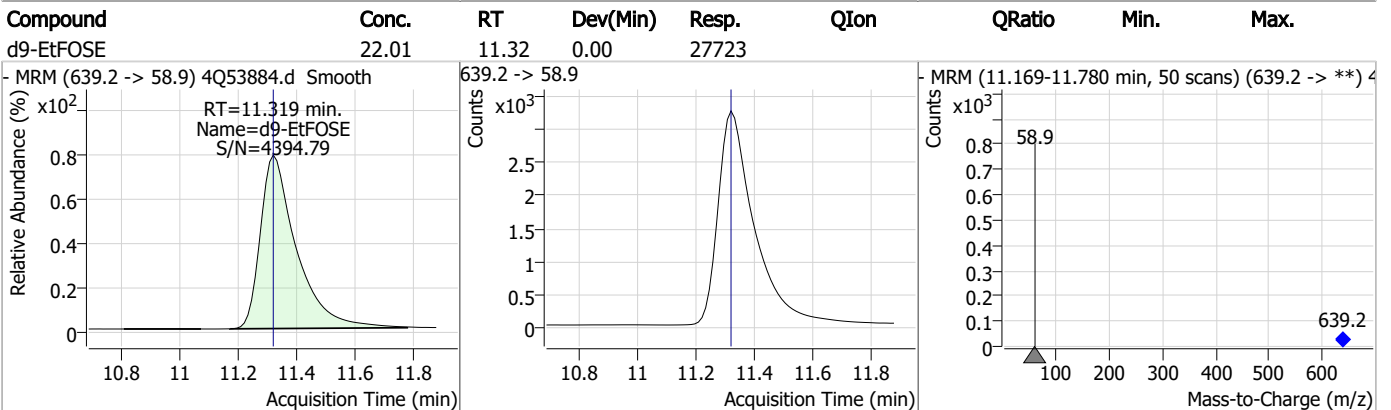
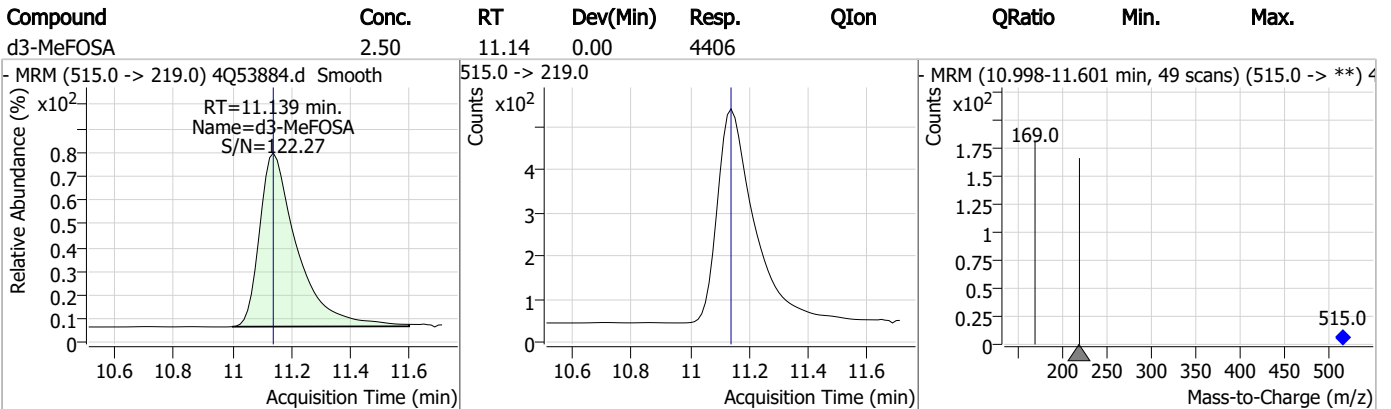
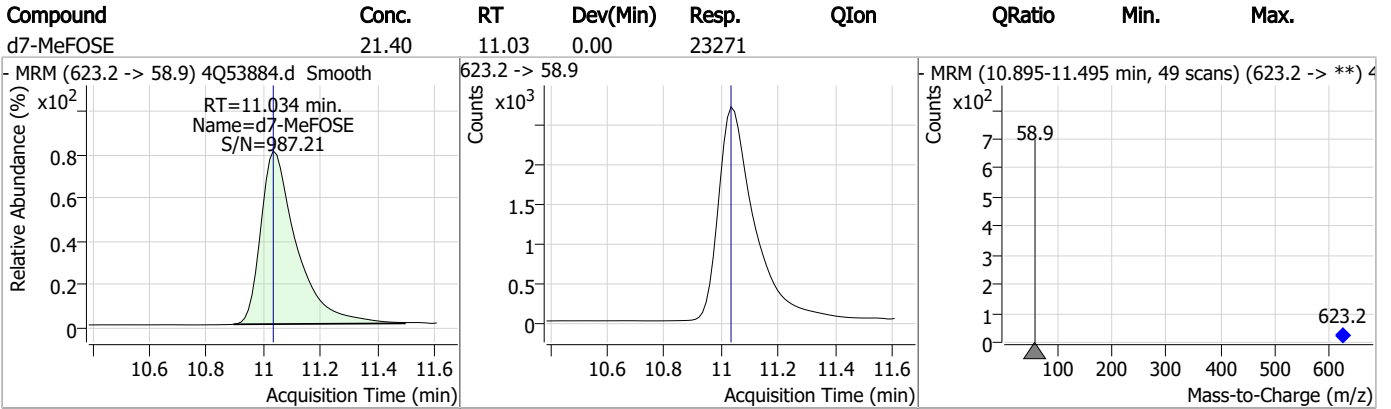
### Perfluorinated Compounds by LC/MS/MS



7.5.1

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### Perfluorinated Compounds by LC/MS/MS



Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)

Natasha Gumtie  
 11/14/23 15:48

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53728.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/13/2023 2:55:58 PM  
 Sample Name : RT TDCA  
 Vial : P1-B1  
 DA Method File : TDCA.quantmethod.xml  
 Batch Name : s4q785\_TDCA.batch.bin  
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

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

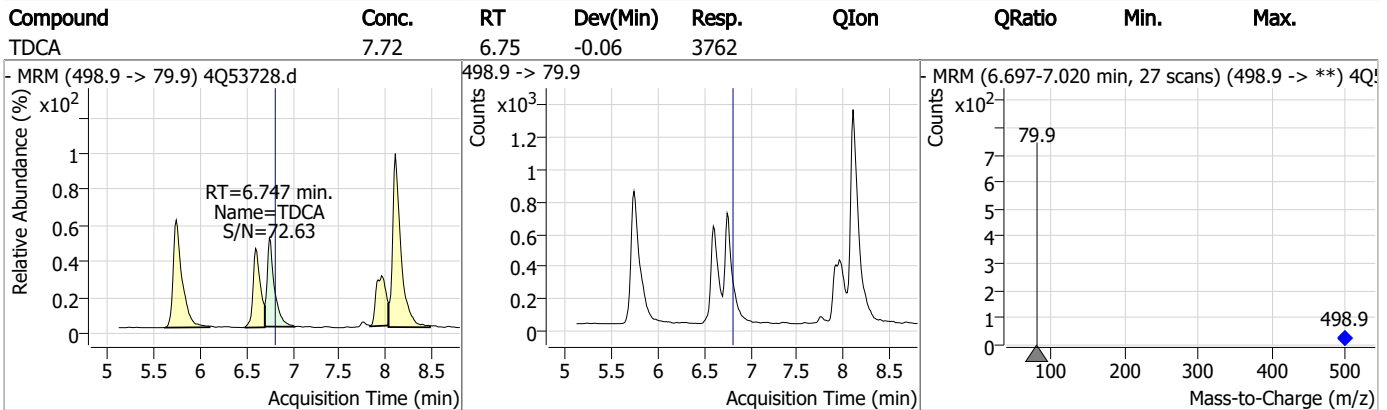
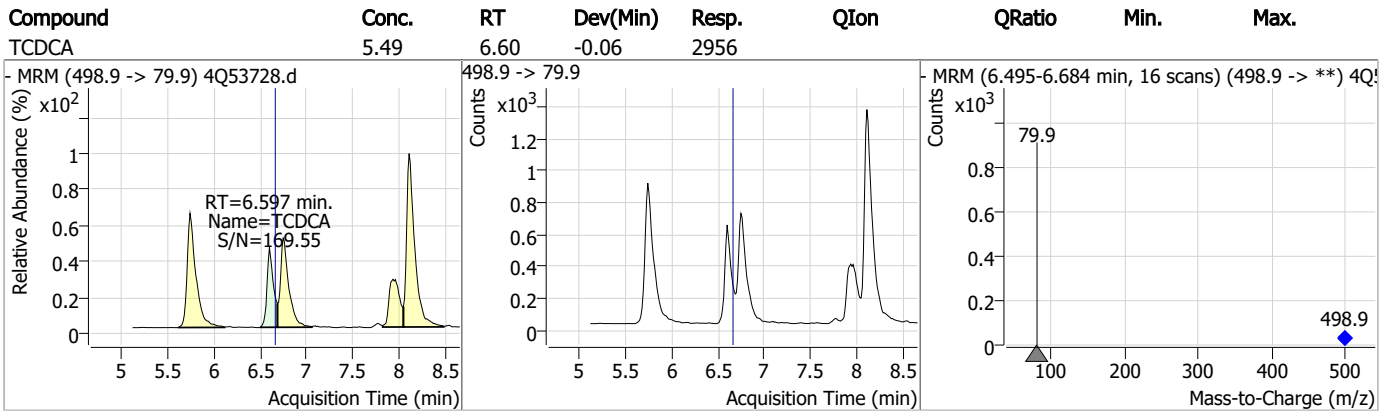
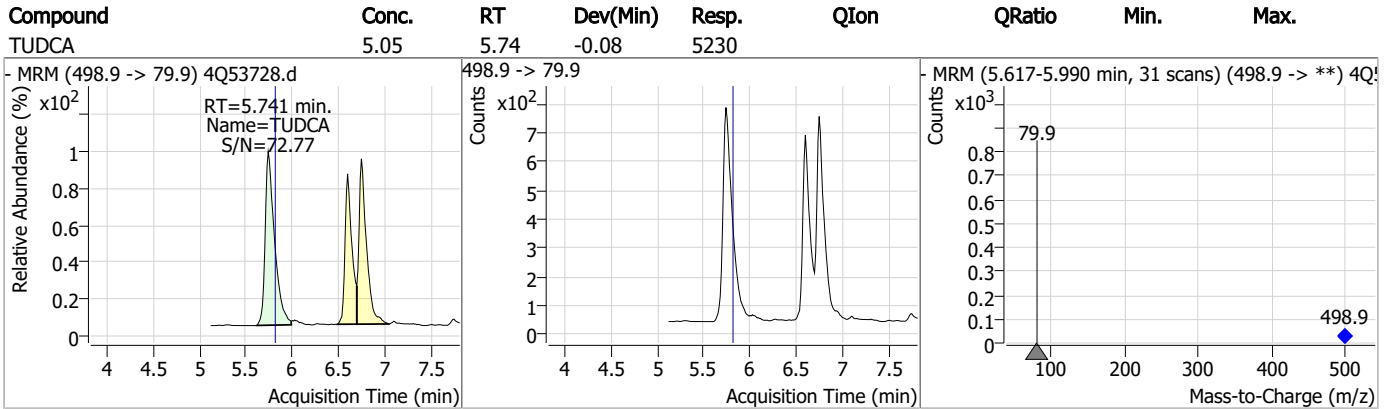
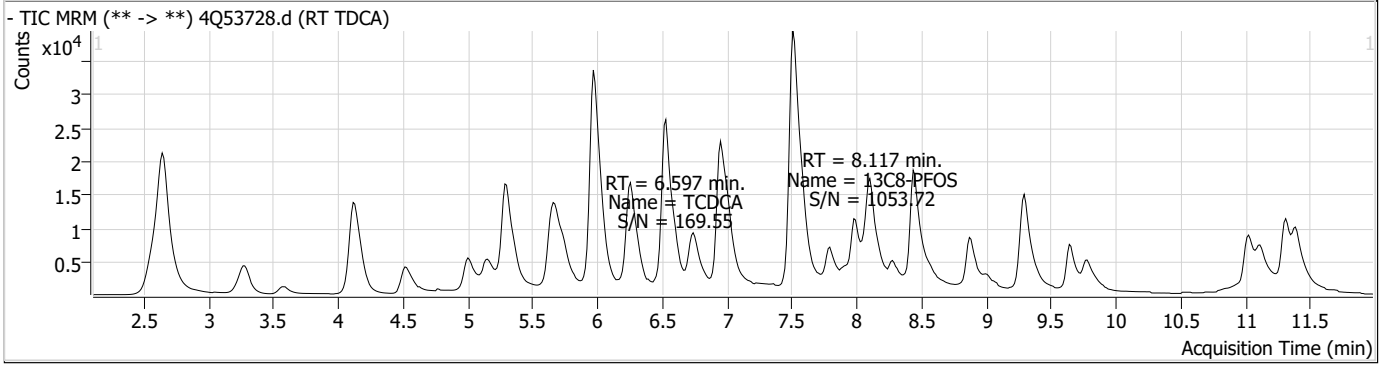
# = Qualifier out of range, m = manually integrated, + = Area summed

7.6.1  
7





### Perfluorinated Compounds by LC/MS/MS

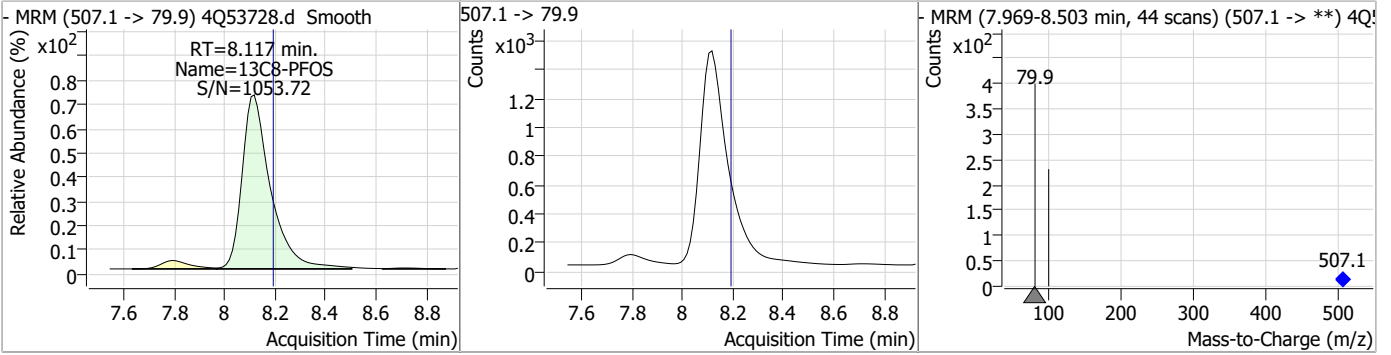


7.6.1

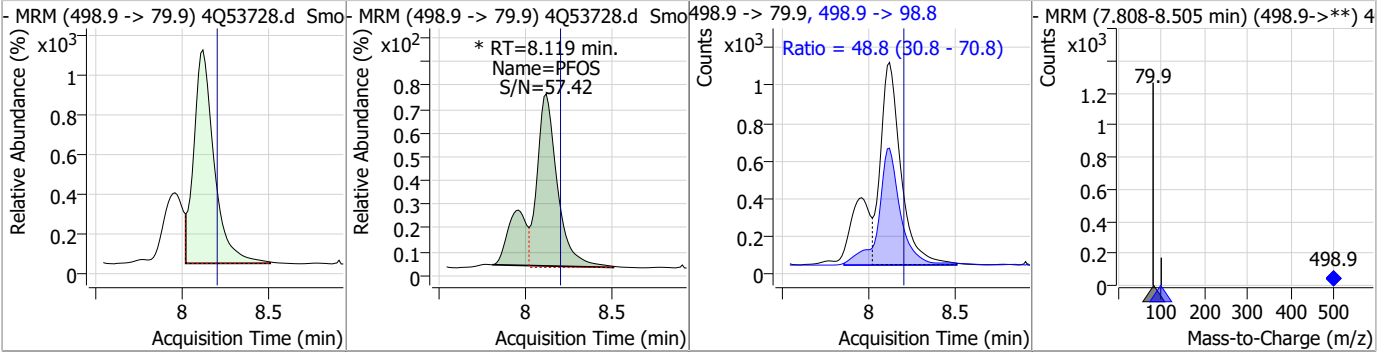
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.97	8.12	-0.08	11669				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.79	8.12	-0.08	11135 (m)	498.9 -> 98.8	48.8	30.8	70.8



7.6.1

7



# Manual Integration Approval Summary

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

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

7.6.1.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53729.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/13/2023 3:10:43 PM  
 Sample Name : RT\_BR\_LN  
 Vial : P1-B2  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q785.batch.bin  
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

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

7.6.2  
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## Perfluorinated Compounds by LC/MS/MS

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

## Perfluorinated Compounds by LC/MS/MS

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

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

7.6.2  
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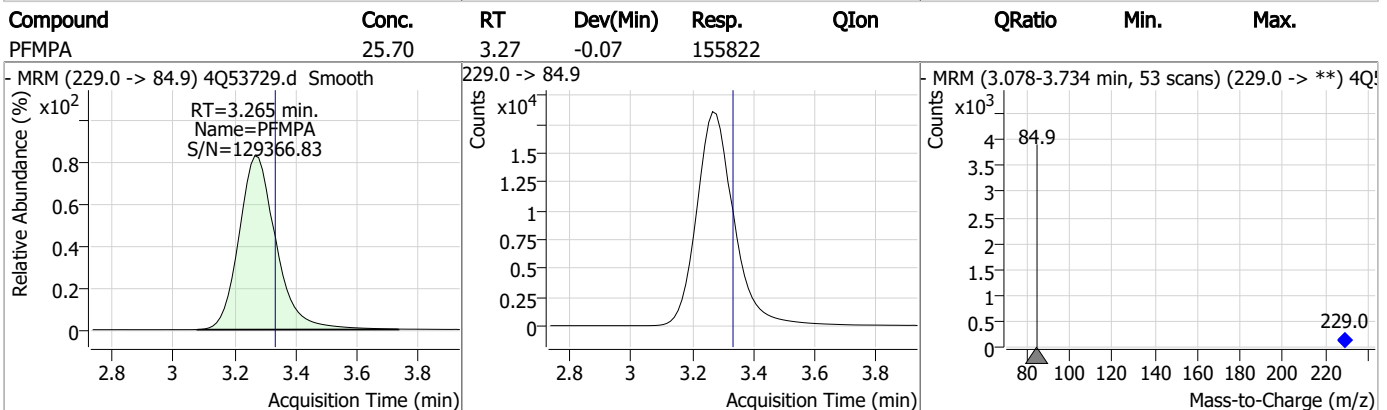
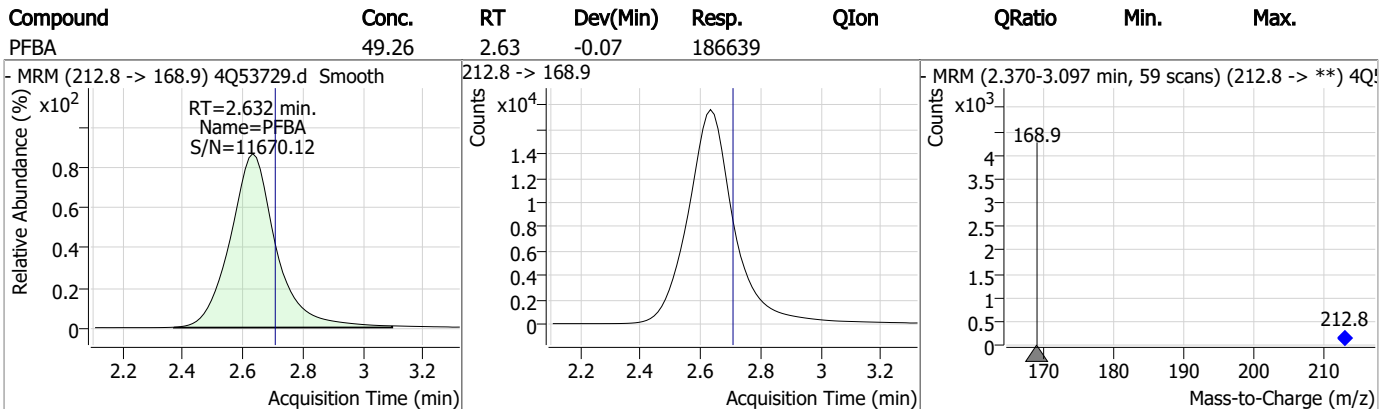
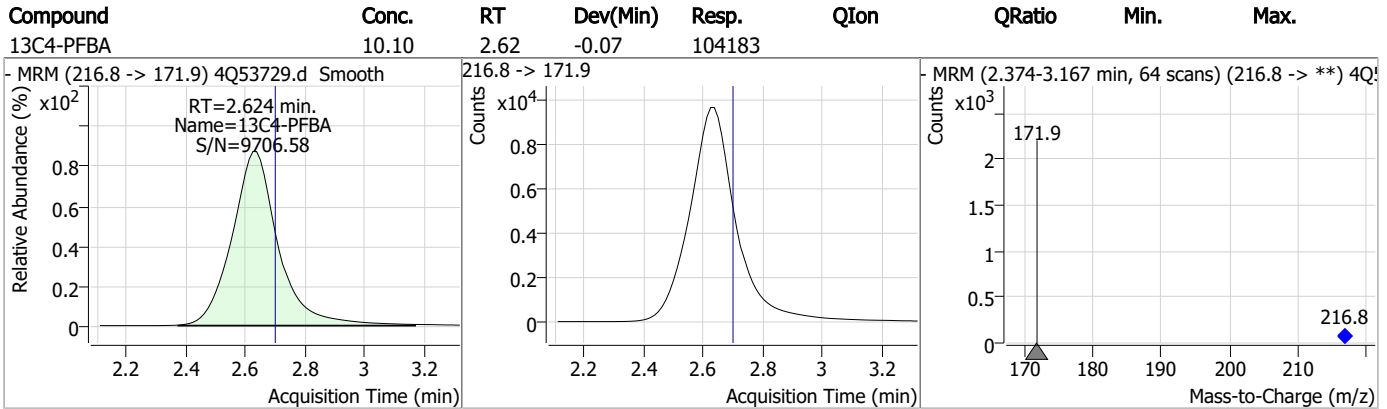
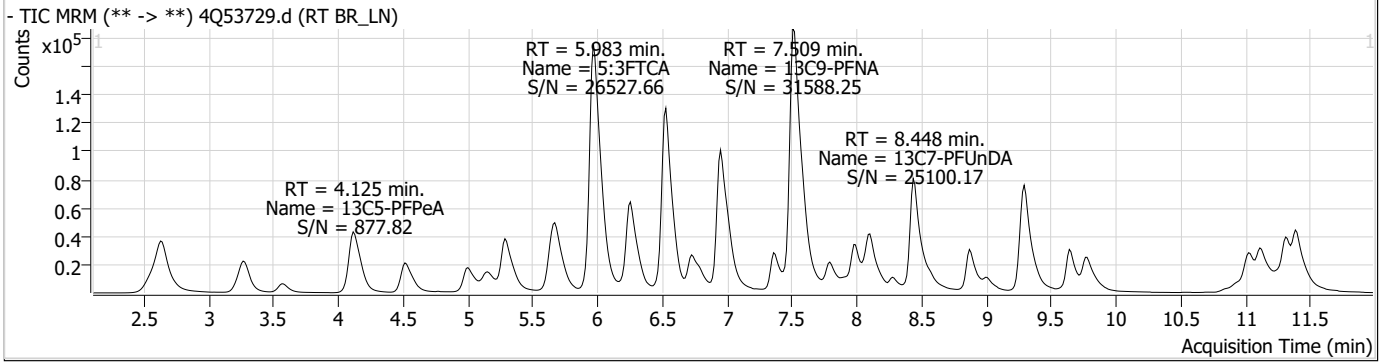
# Perfluorinated Compounds by LC/MS/MS

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

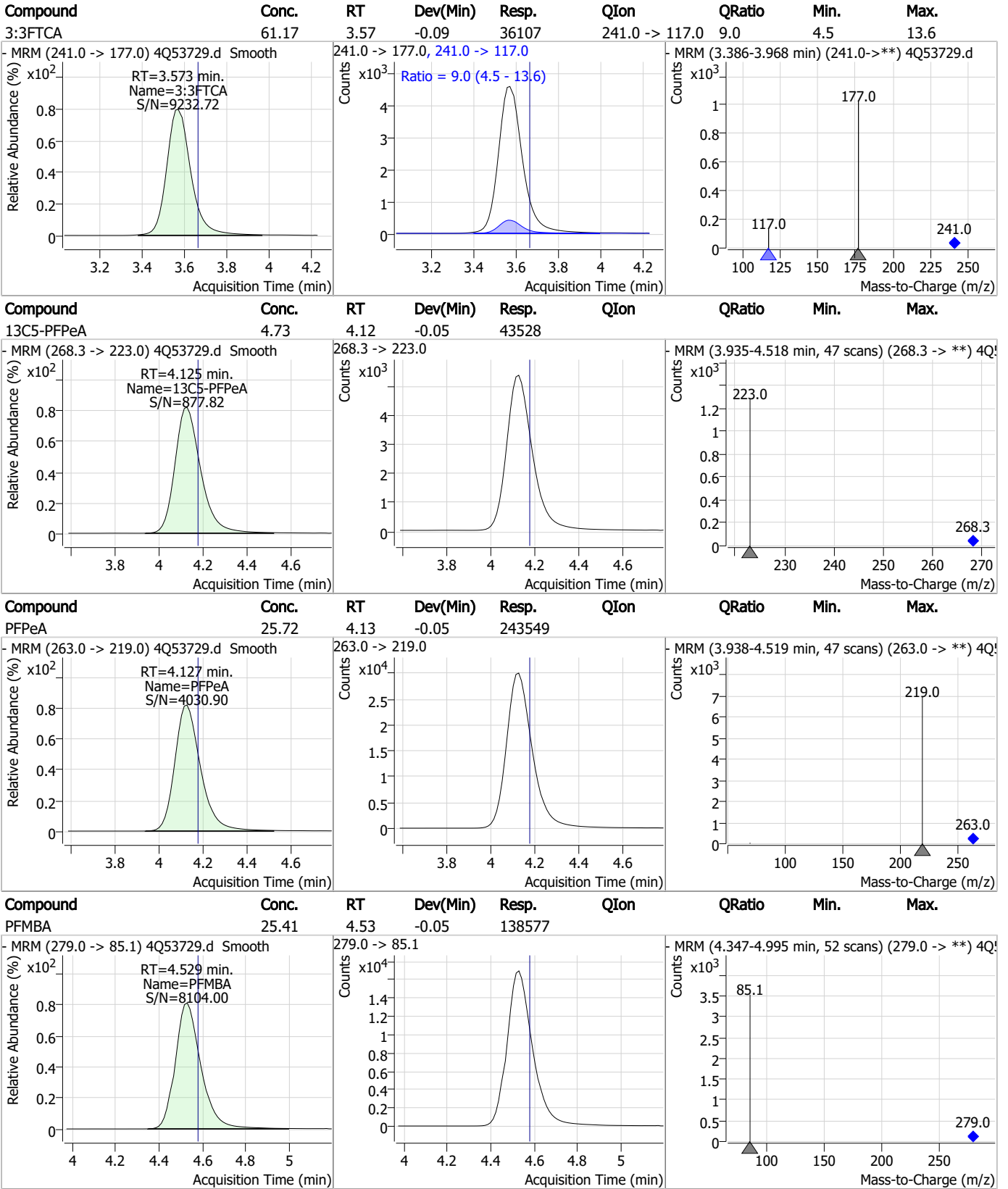
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# Perfluorinated Compounds by LC/MS/MS





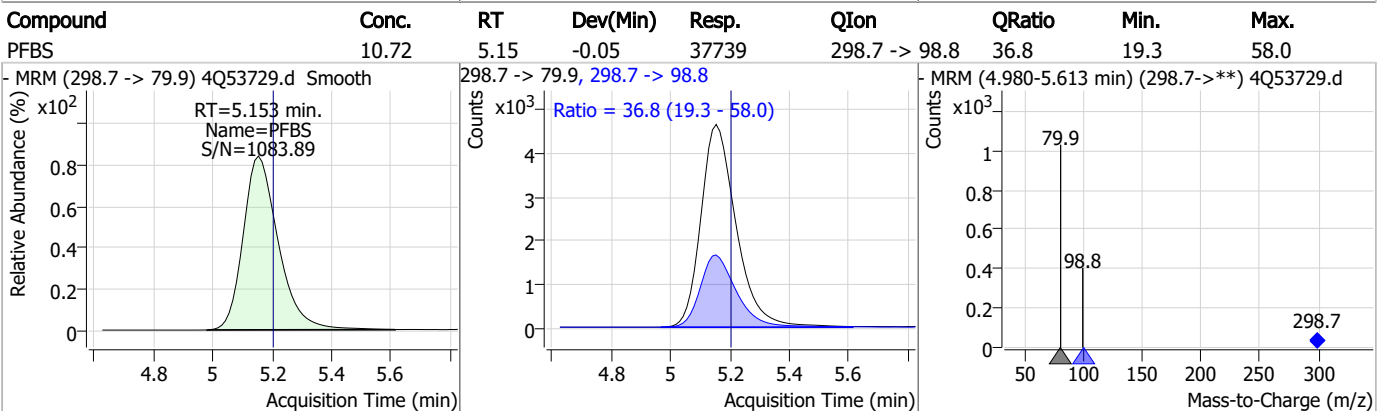
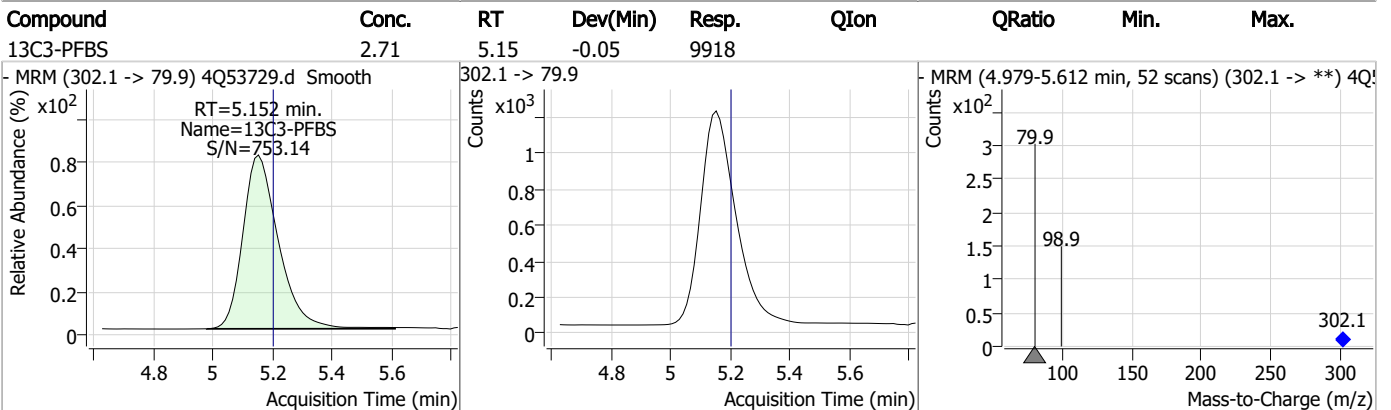
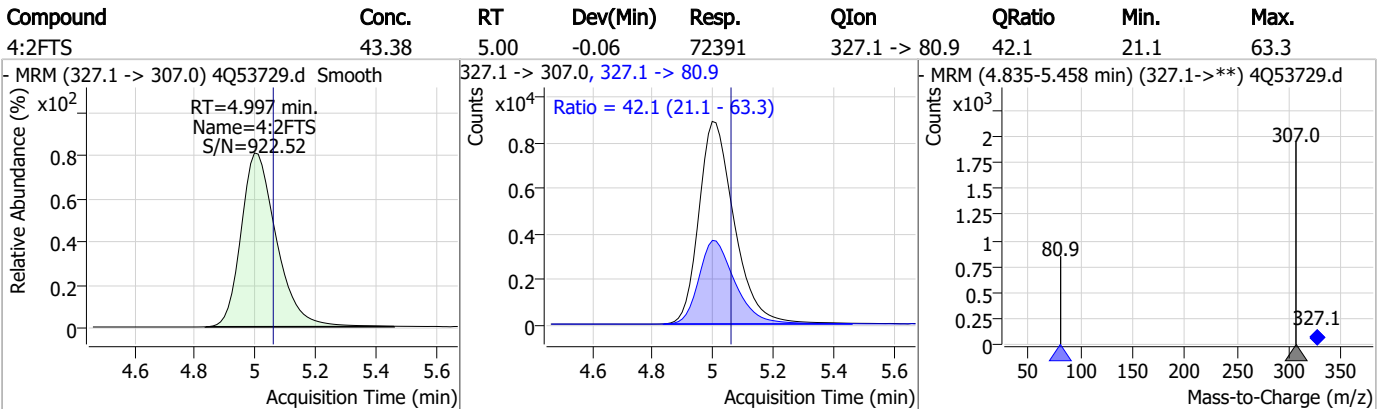
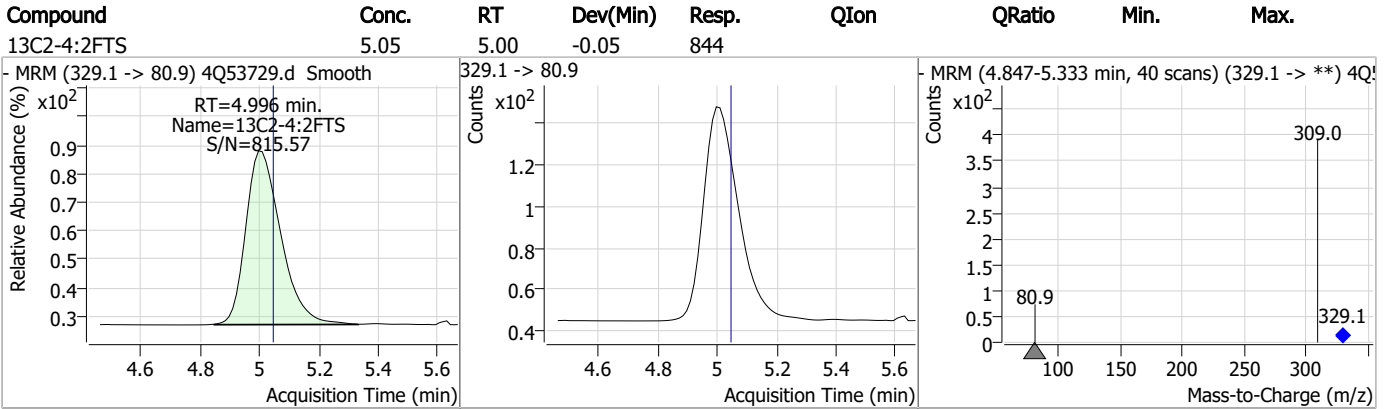
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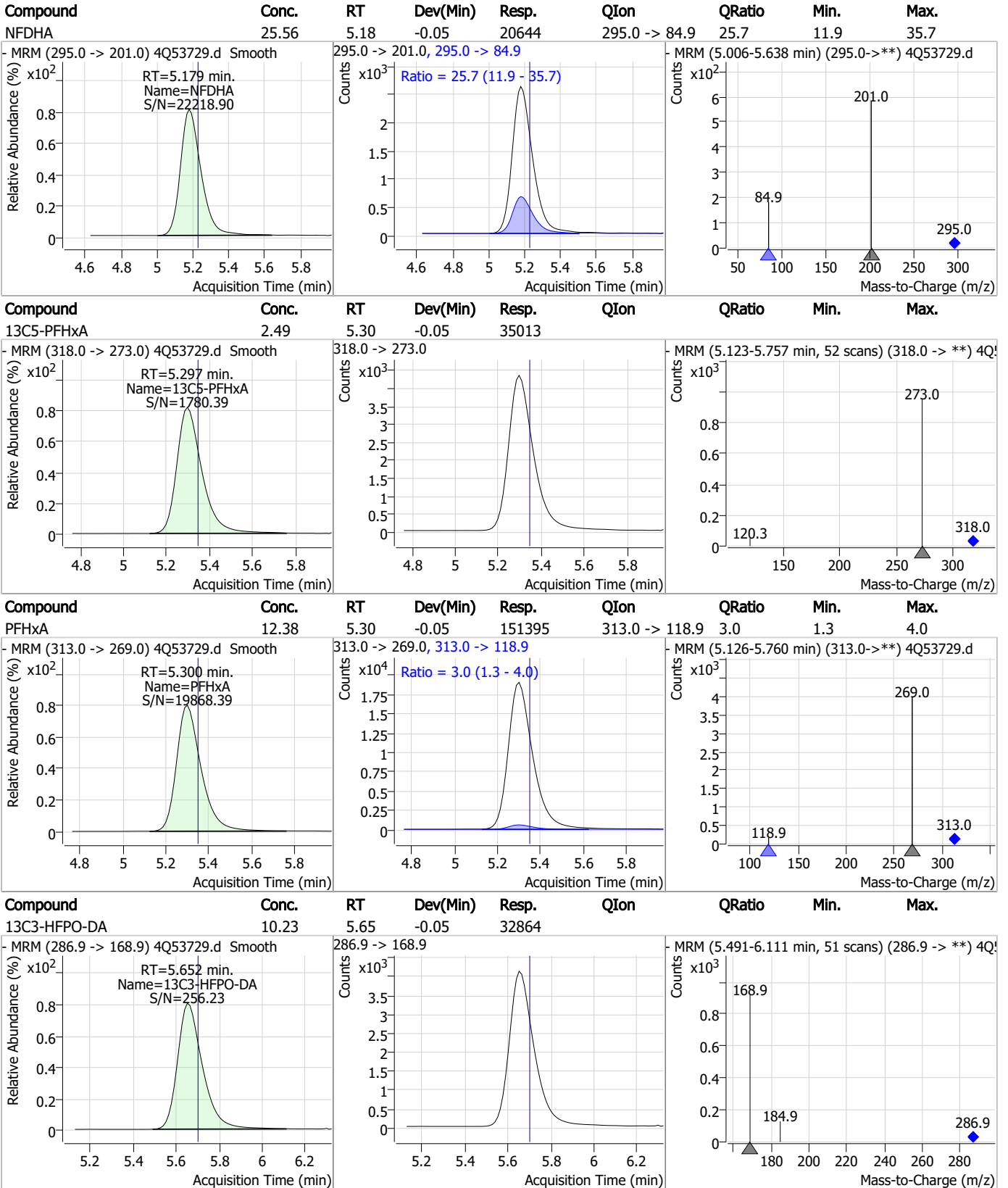
7.6.2

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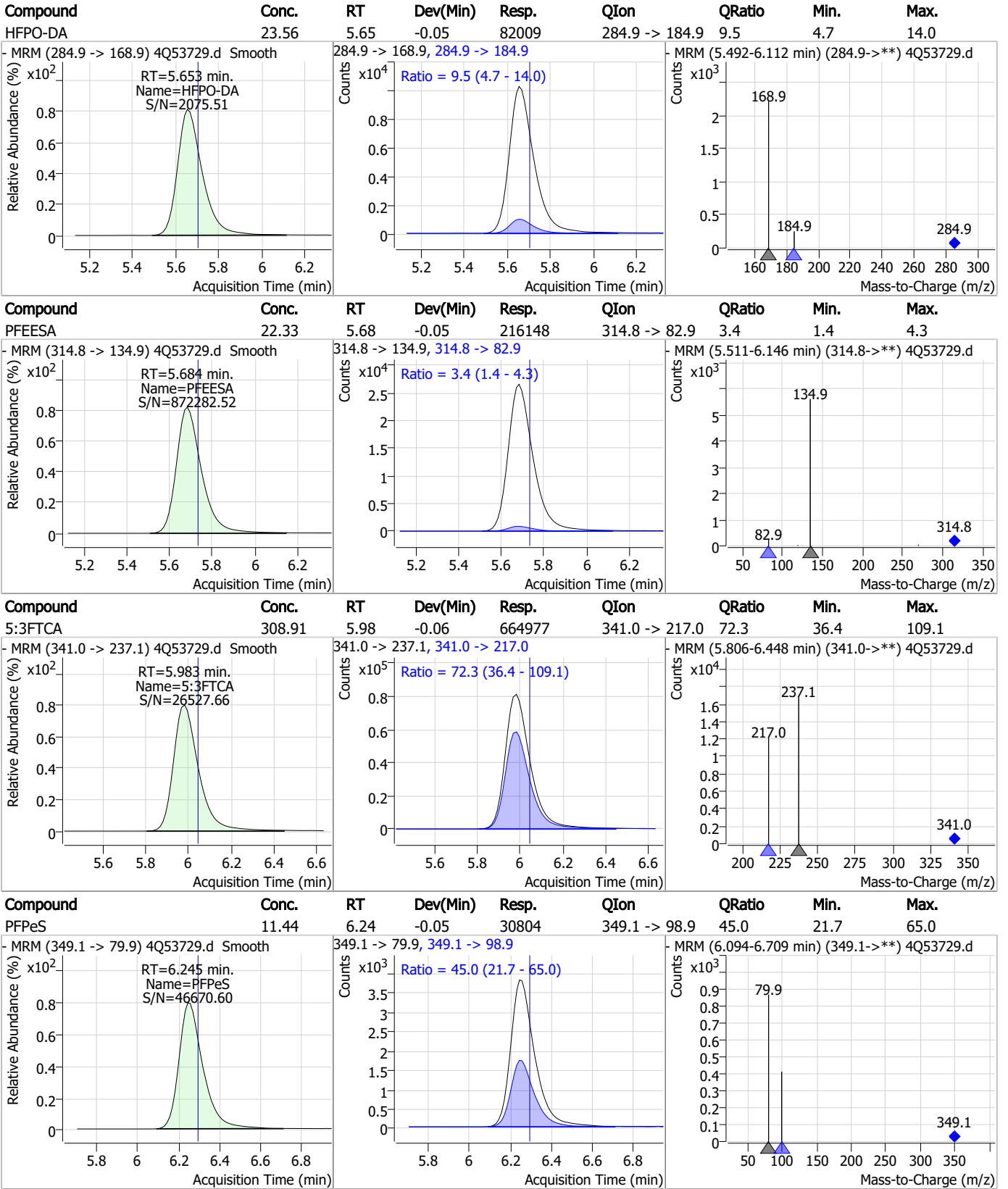
# Perfluorinated Compounds by LC/MS/MS



# Perfluorinated Compounds by LC/MS/MS



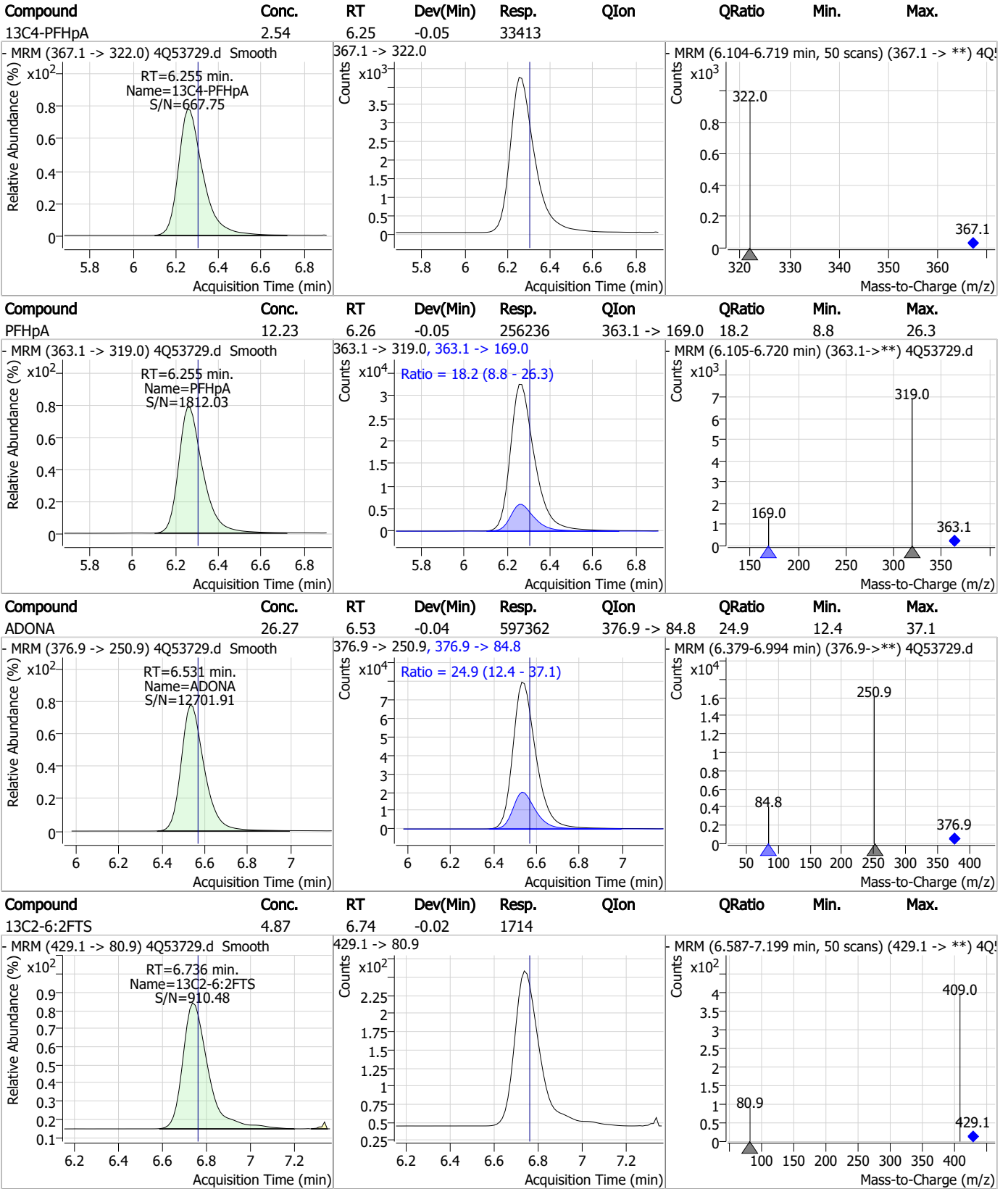
# Perfluorinated Compounds by LC/MS/MS



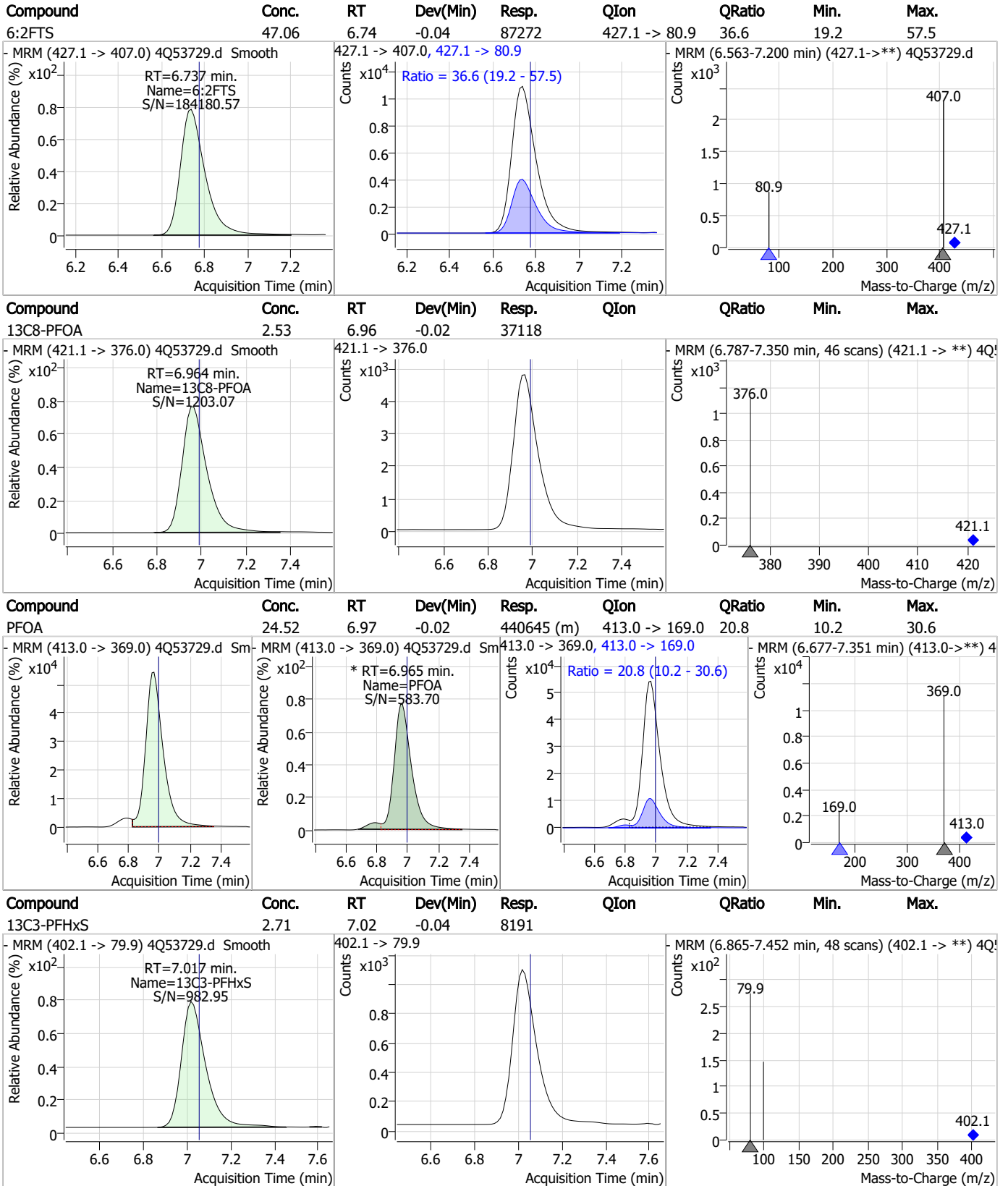
7.6.2

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# Perfluorinated Compounds by LC/MS/MS



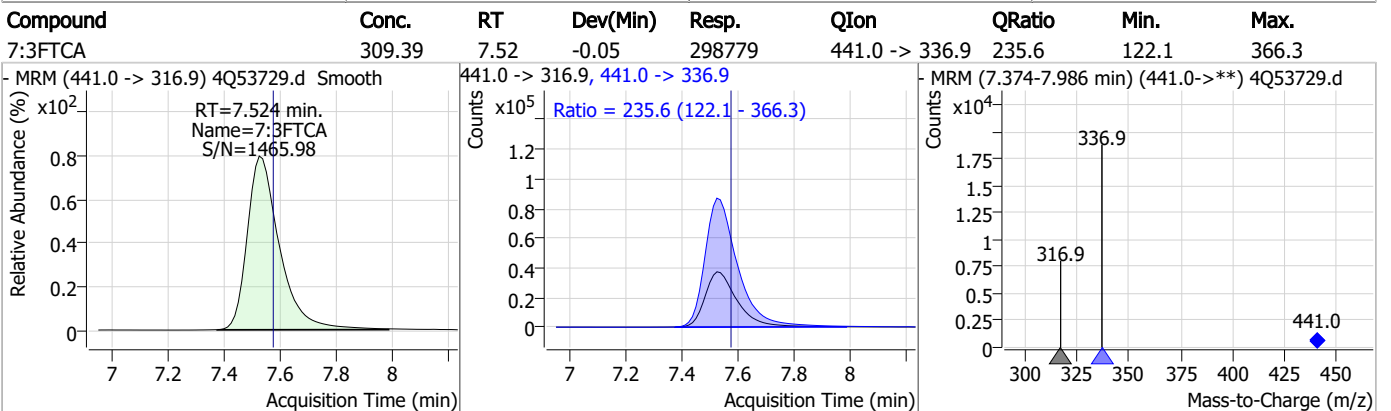
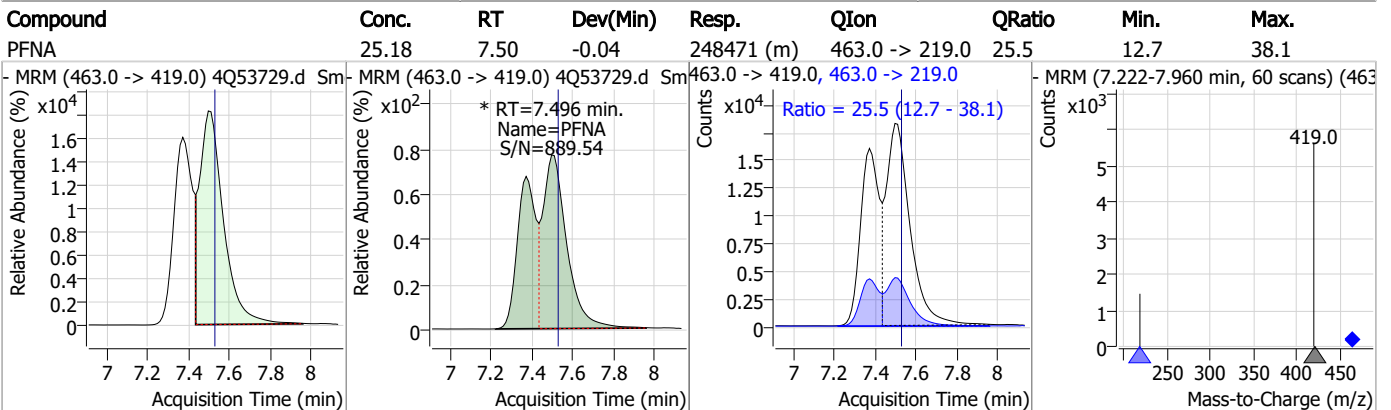
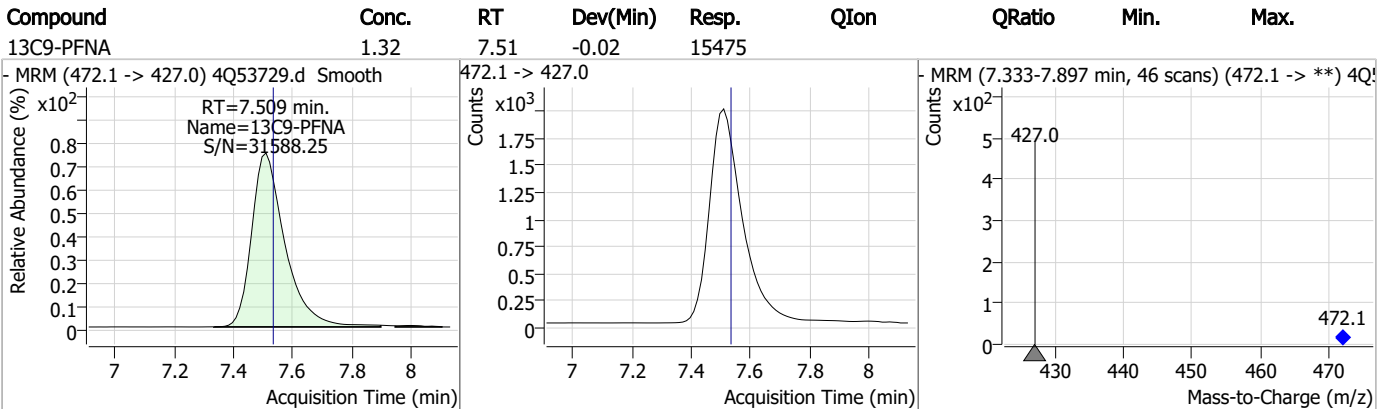
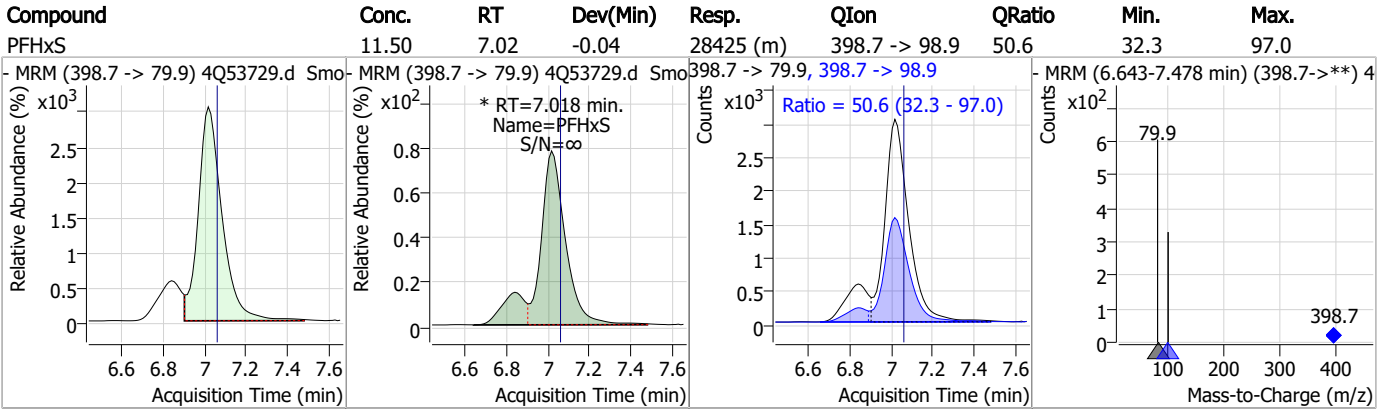
# Perfluorinated Compounds by LC/MS/MS



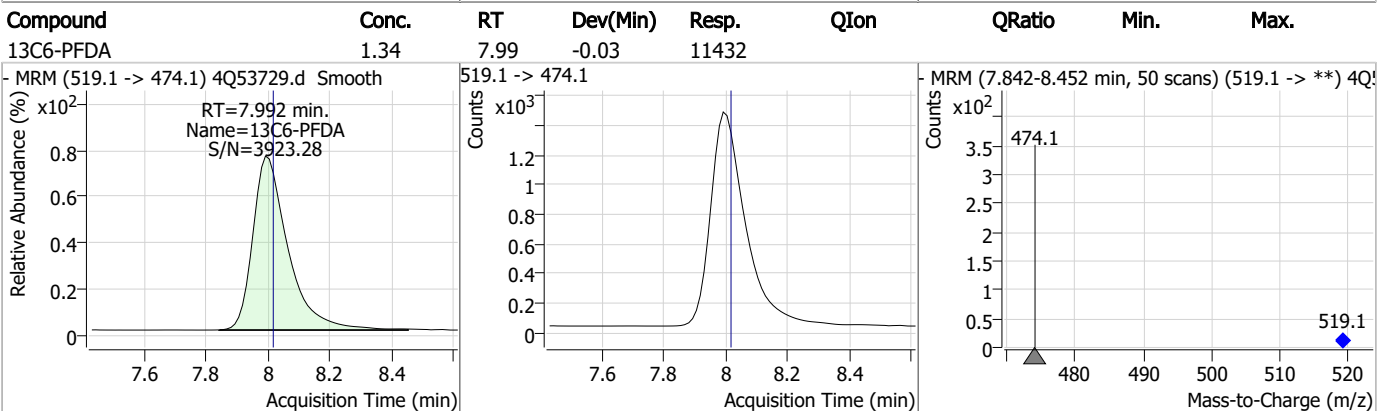
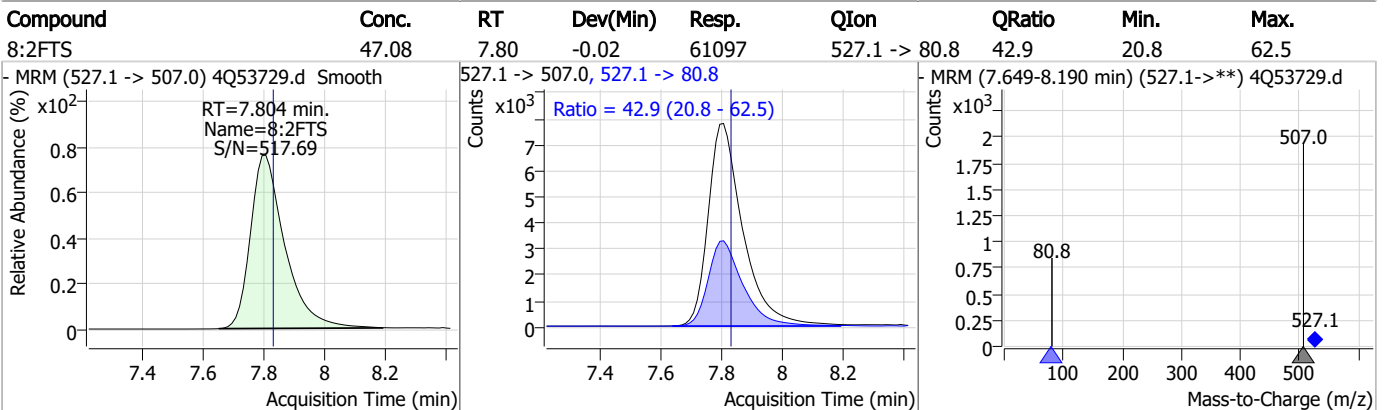
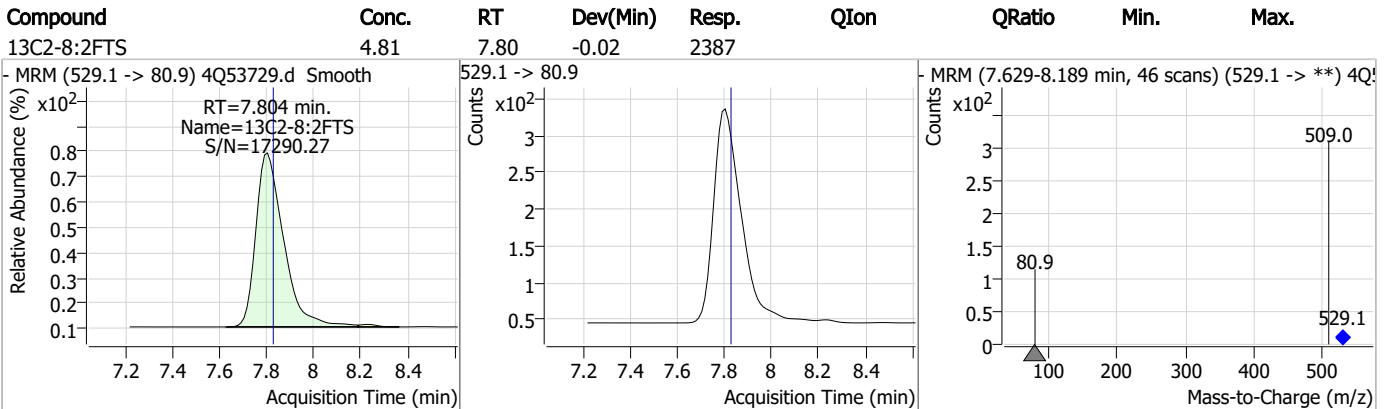
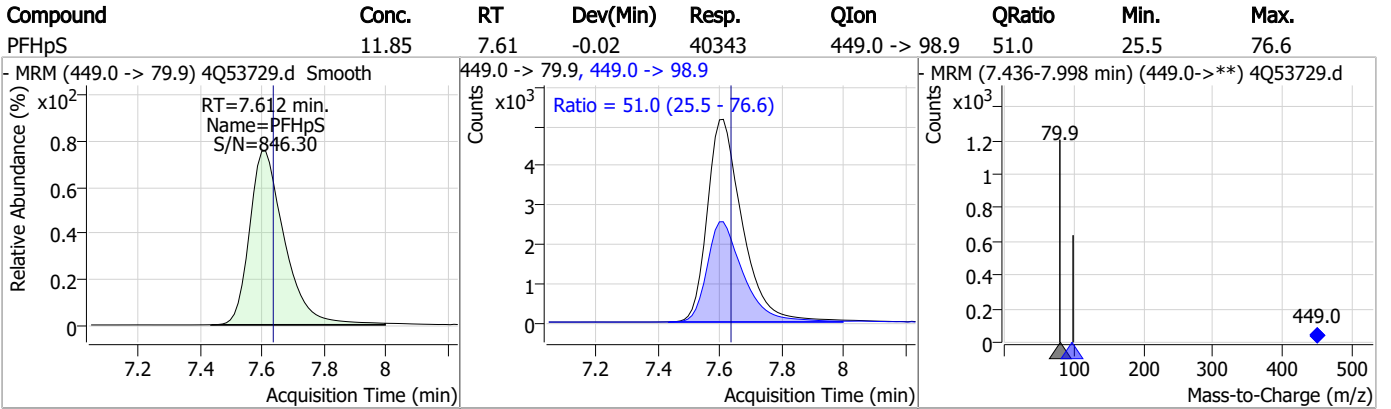
7.6.2

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# Perfluorinated Compounds by LC/MS/MS

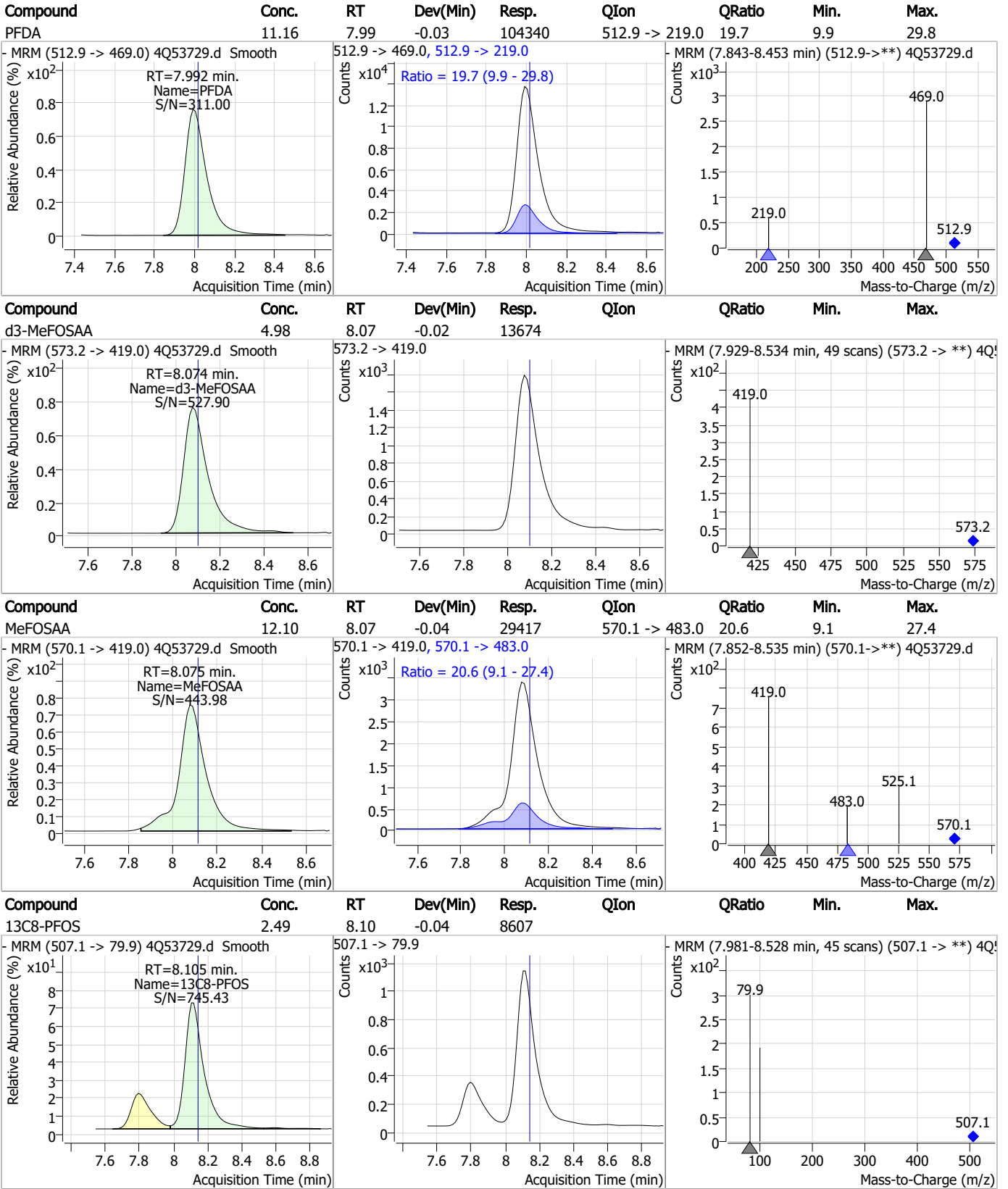


# Perfluorinated Compounds by LC/MS/MS

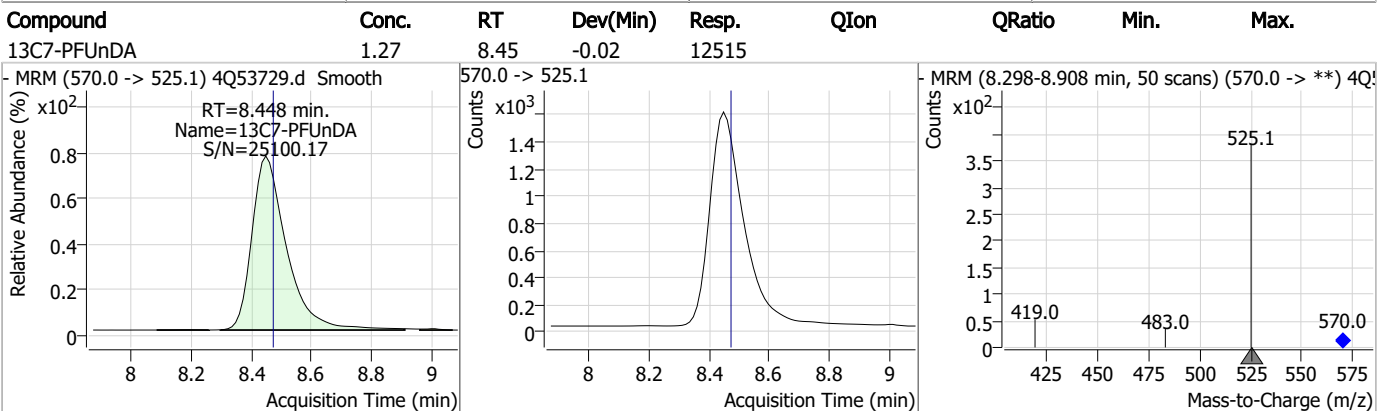
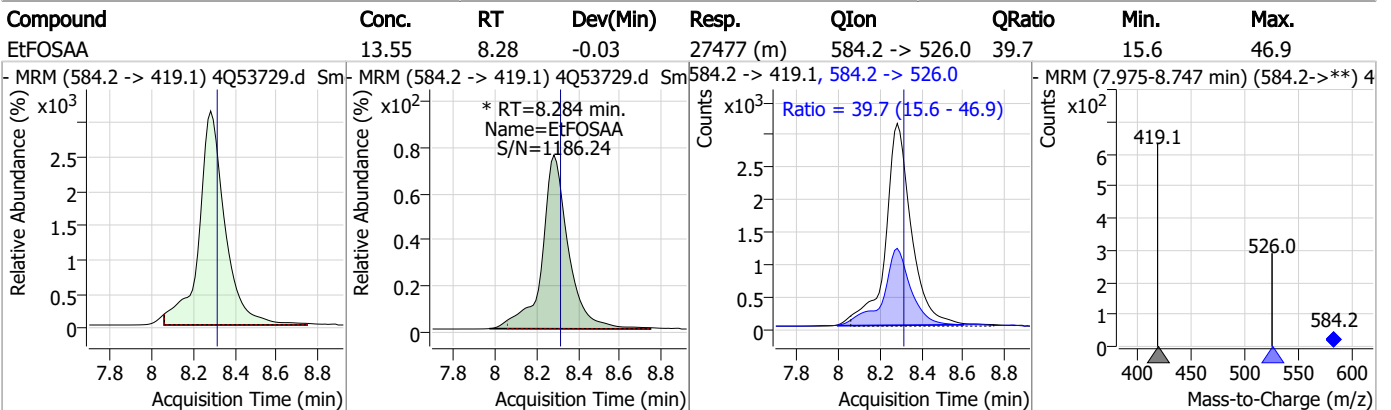
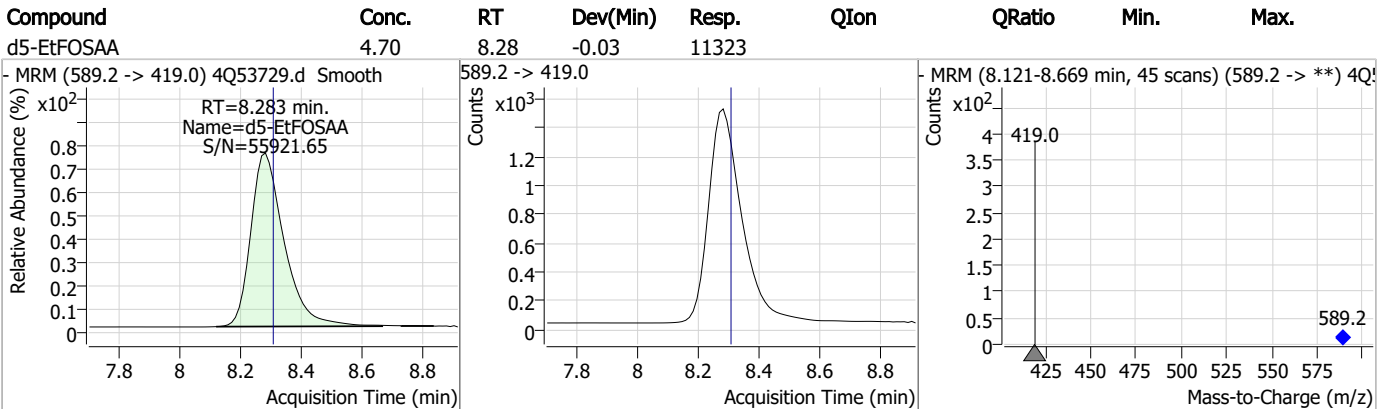
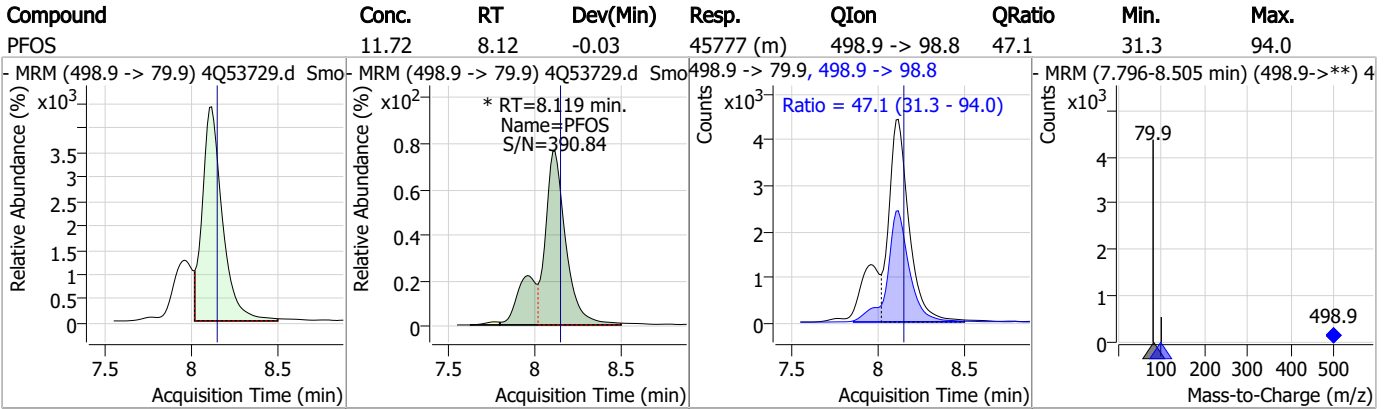




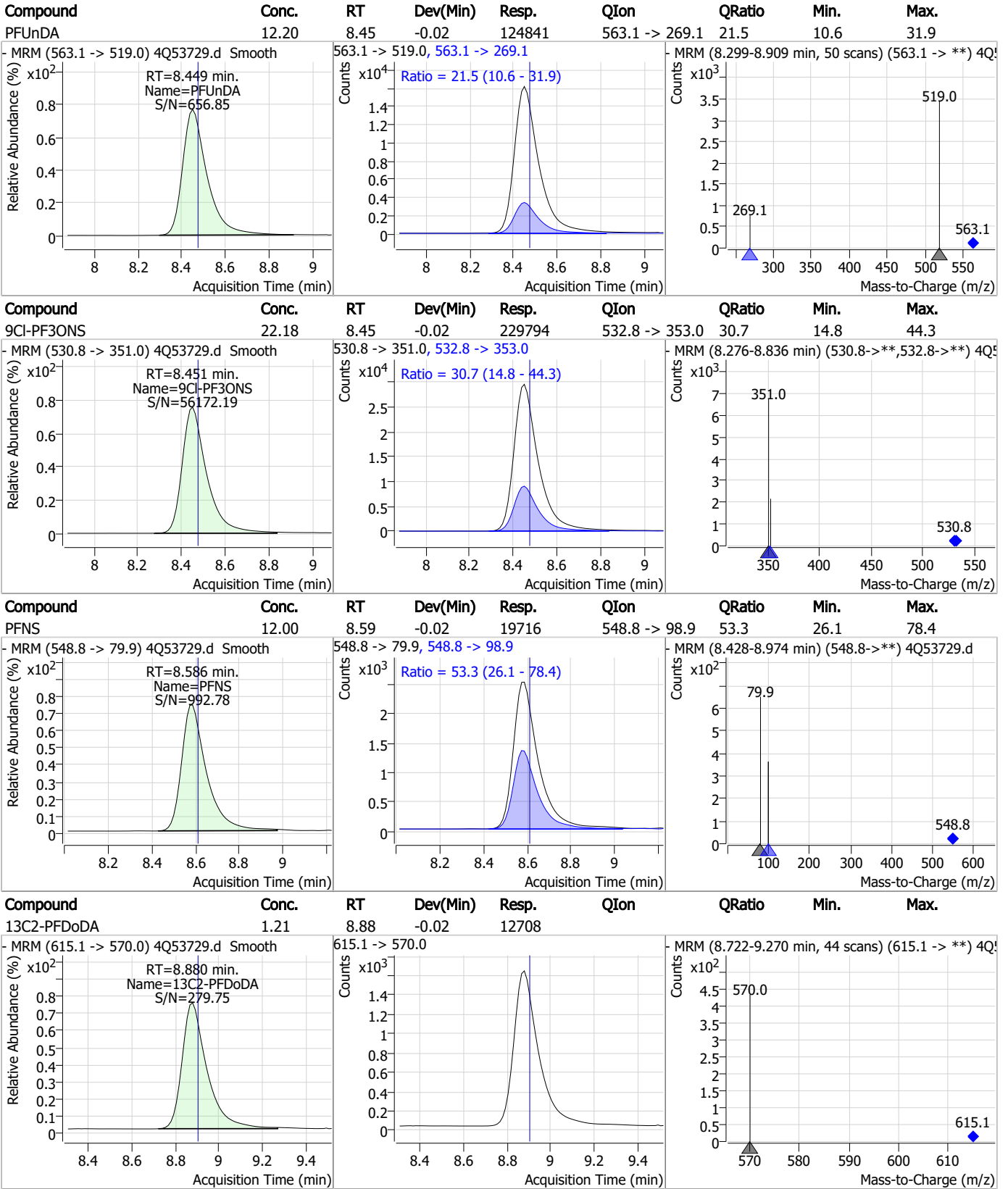
# Perfluorinated Compounds by LC/MS/MS



# Perfluorinated Compounds by LC/MS/MS



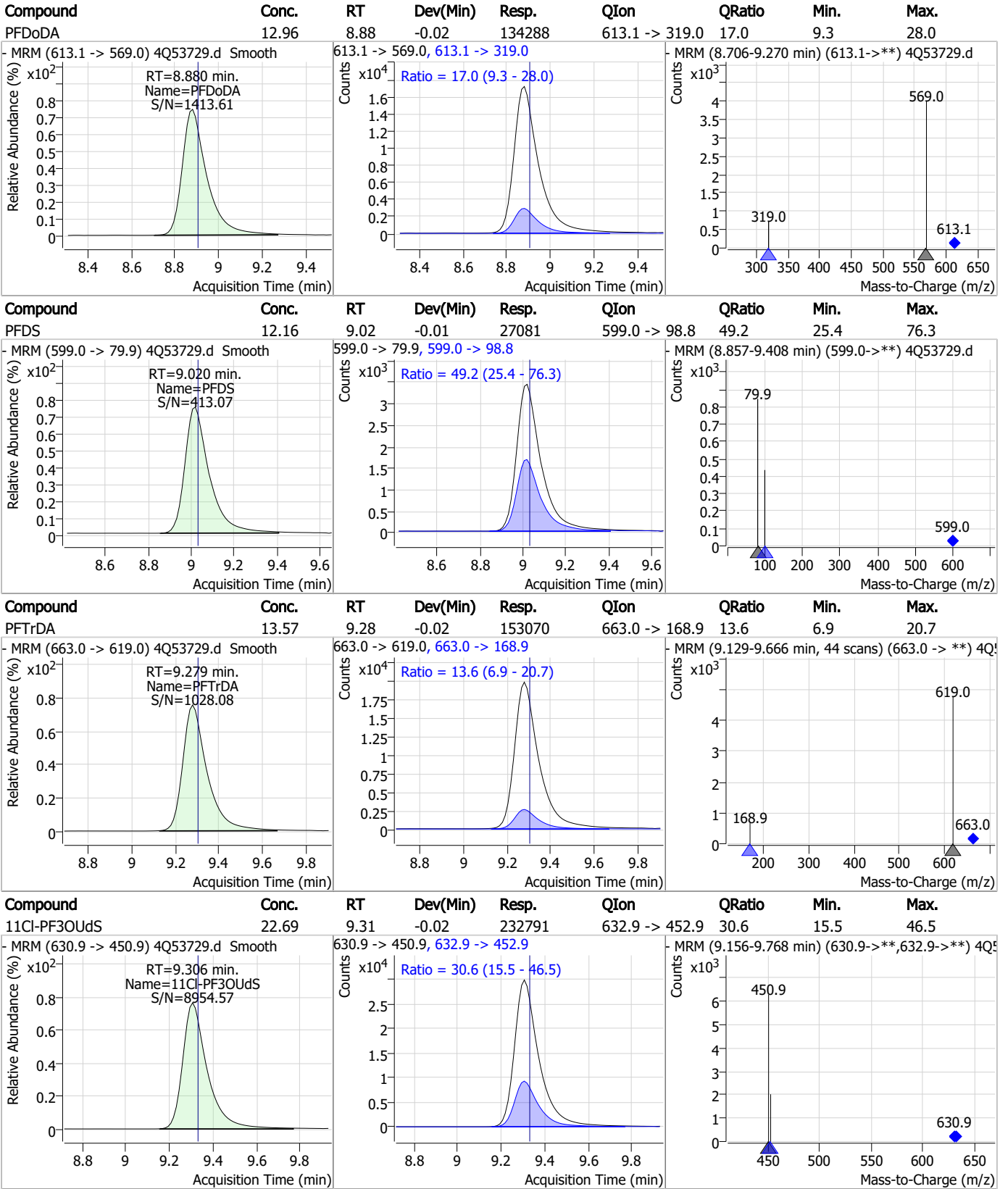
# Perfluorinated Compounds by LC/MS/MS



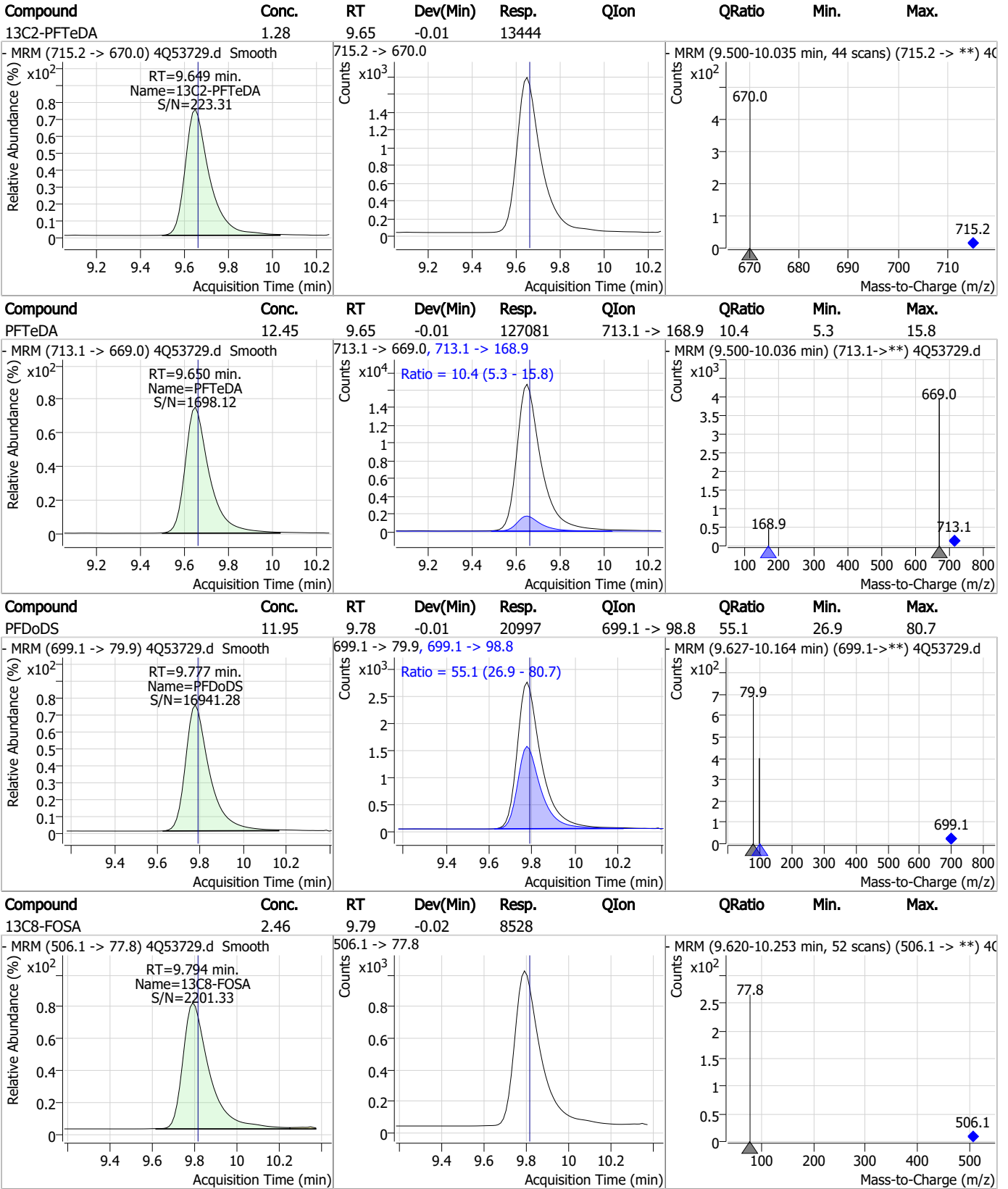
7.6.2

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# Perfluorinated Compounds by LC/MS/MS



# Perfluorinated Compounds by LC/MS/MS

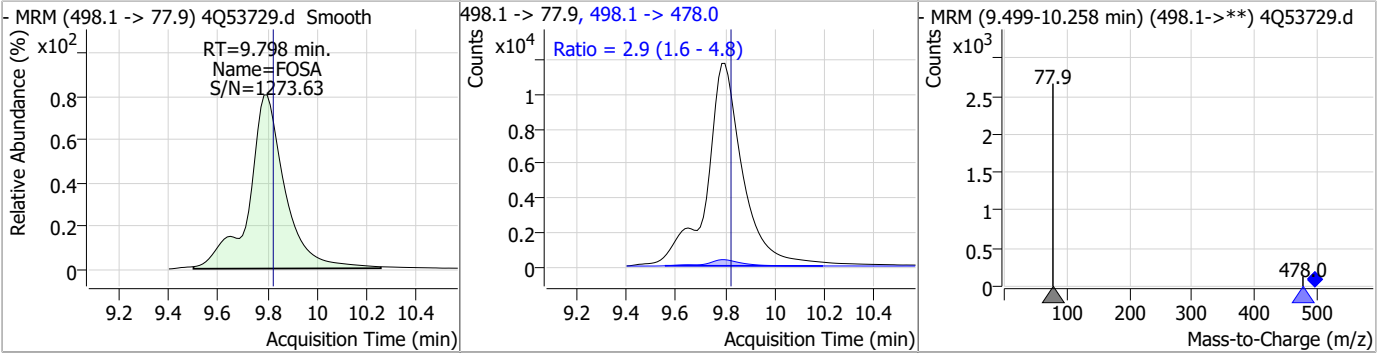


7.6.2

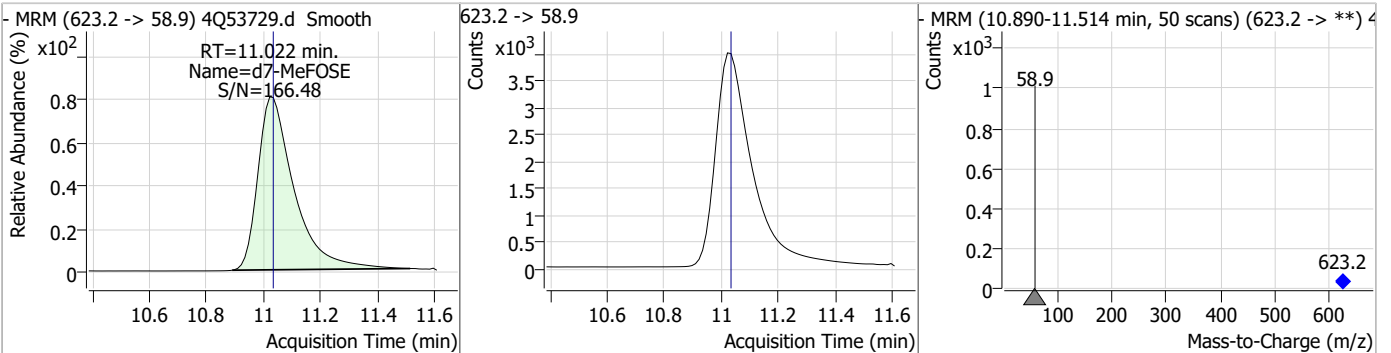
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# Perfluorinated Compounds by LC/MS/MS

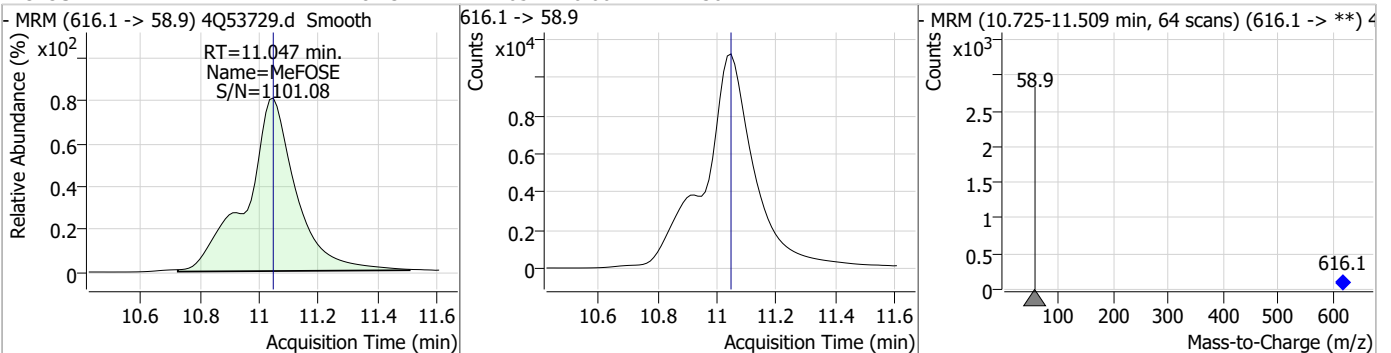
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	28.75	9.80	-0.02	119520	498.1 -> 478.0	2.9	1.6	4.8



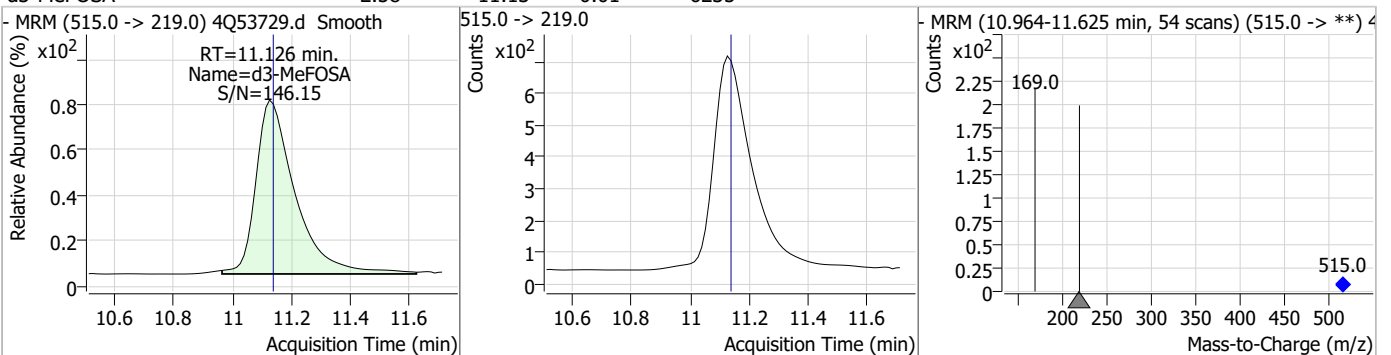
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.31	11.02	-0.01	34785				



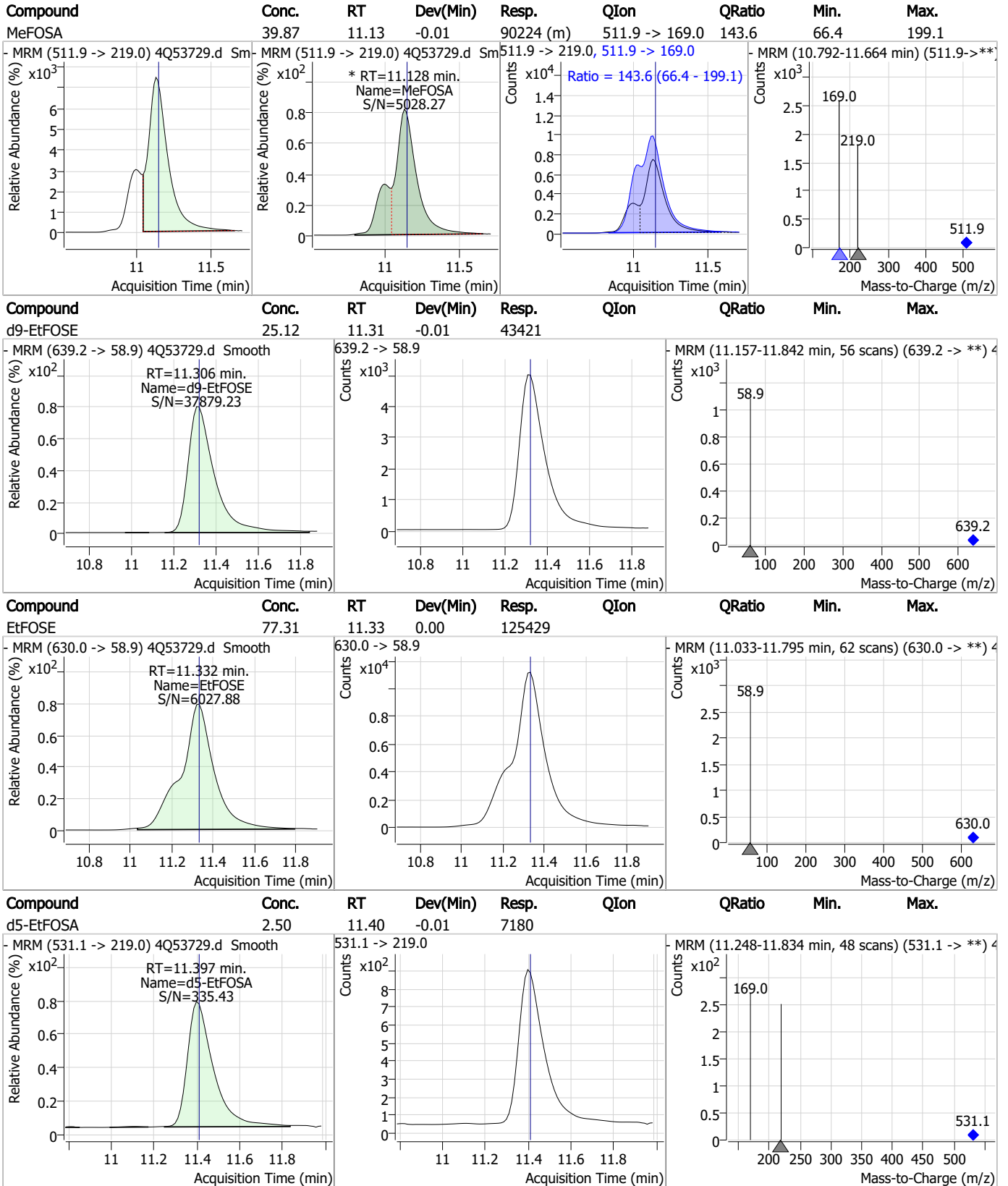
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	82.32	11.05	0.00	130471				



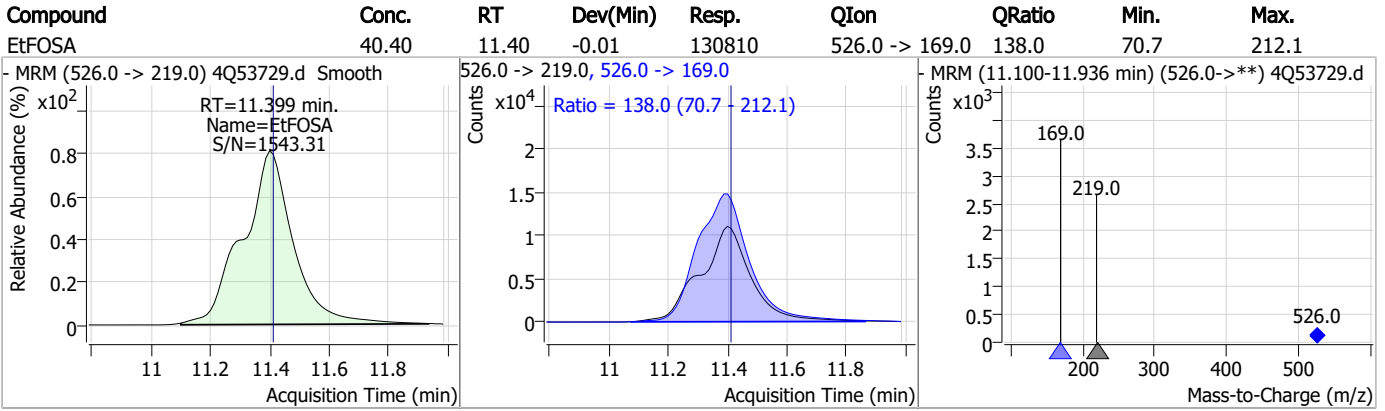
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.58	11.13	-0.01	6235				



# Perfluorinated Compounds by LC/MS/MS



# Perfluorinated Compounds by LC/MS/MS



7.6.2

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# Manual Integration Approval Summary

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

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

7.6.2.1  
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Perfluorinated Compounds by LC/MS/MS

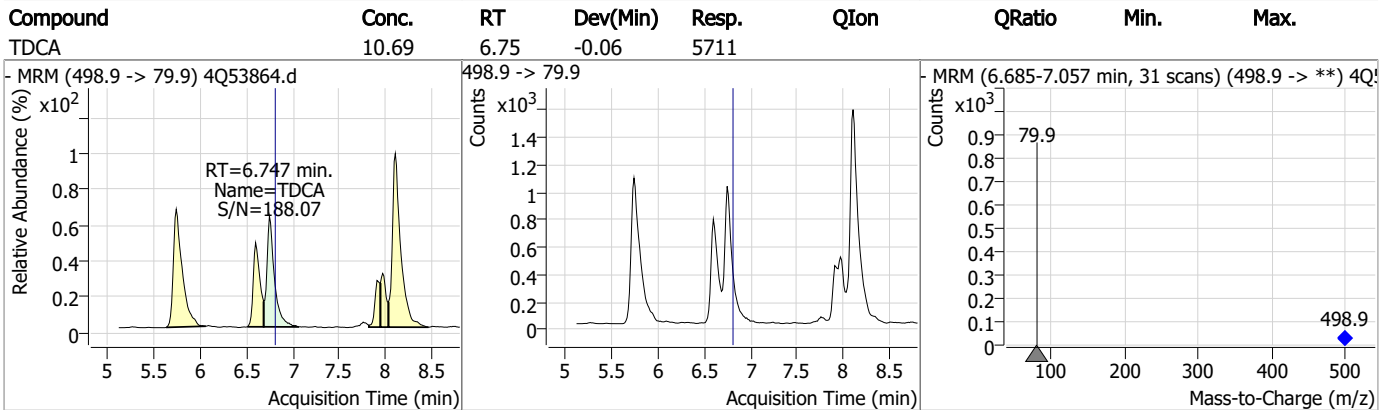
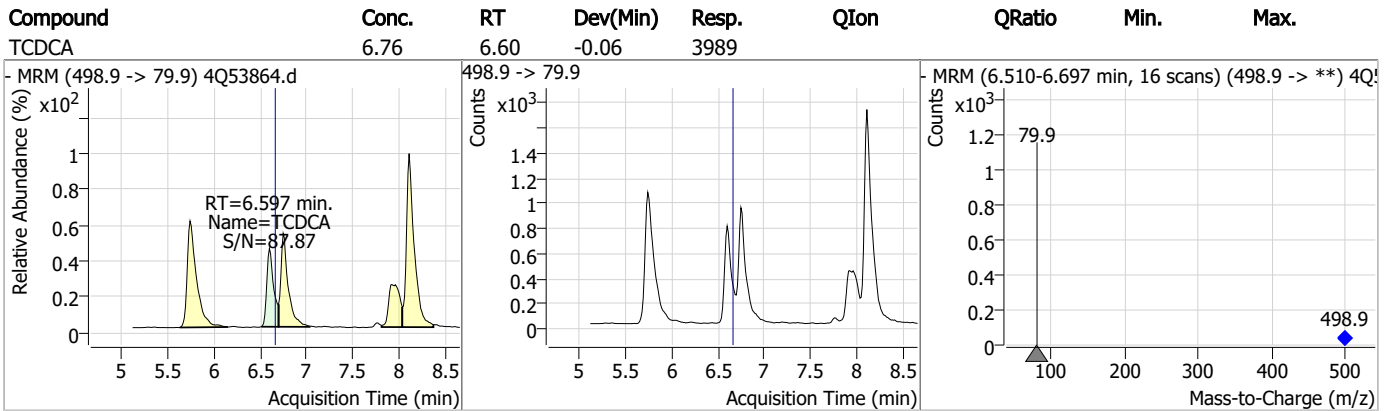
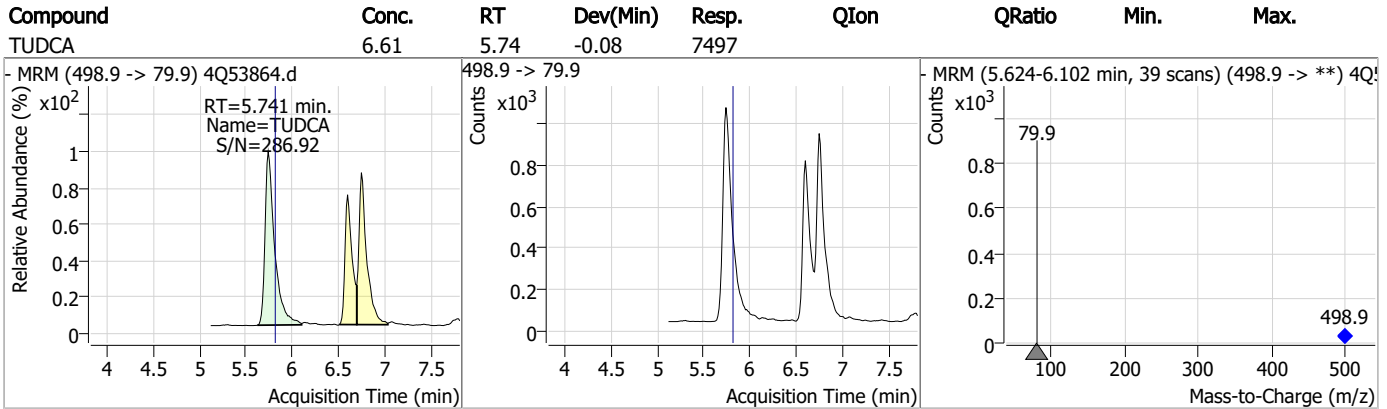
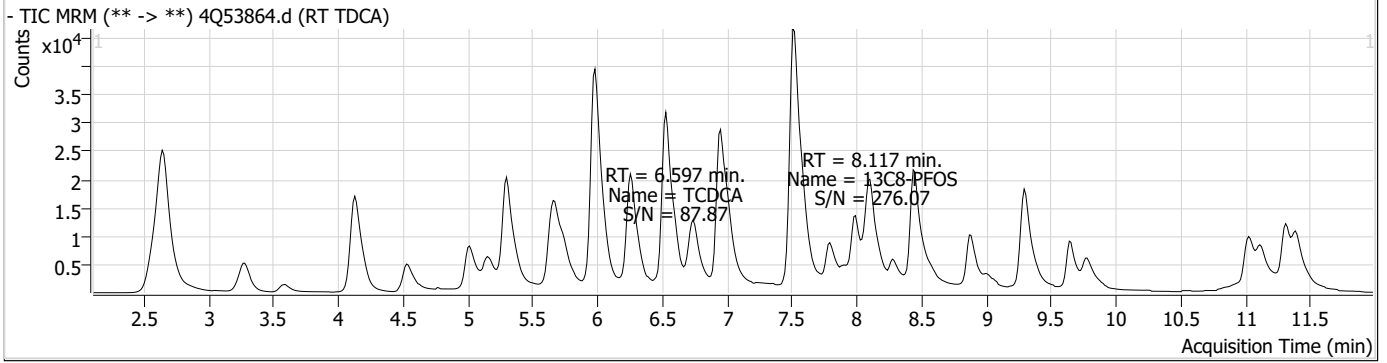
Data File : 4Q53864.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/15/2023 10:01:07 AM  
 Sample Name : RT TDCA  
 Vial : P1-B1  
 DA Method File : TDCA.quantmethod.xml  
 Batch Name : s4q786\_TDCA.batch.bin  
 Sample Information : OP98180,S4Q786,500,,,5.0,1,water

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

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

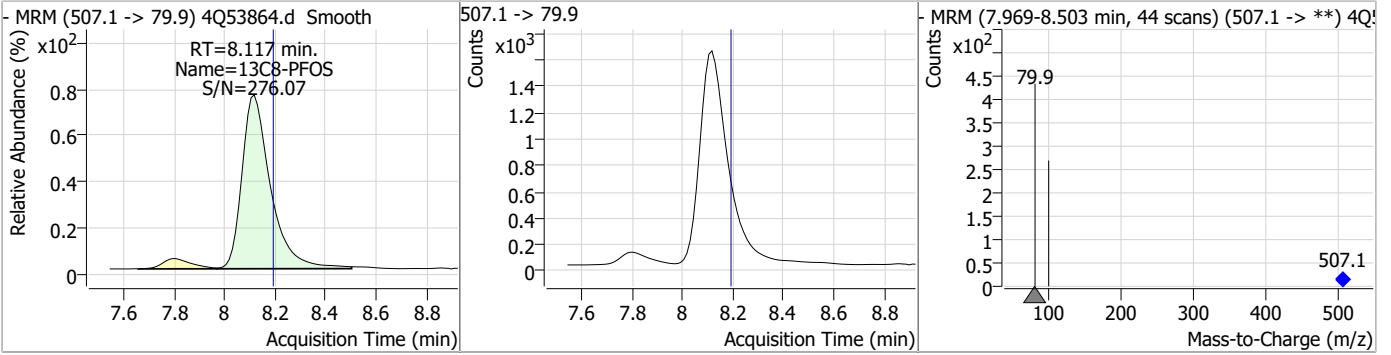
7.6.3  
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### Perfluorinated Compounds by LC/MS/MS

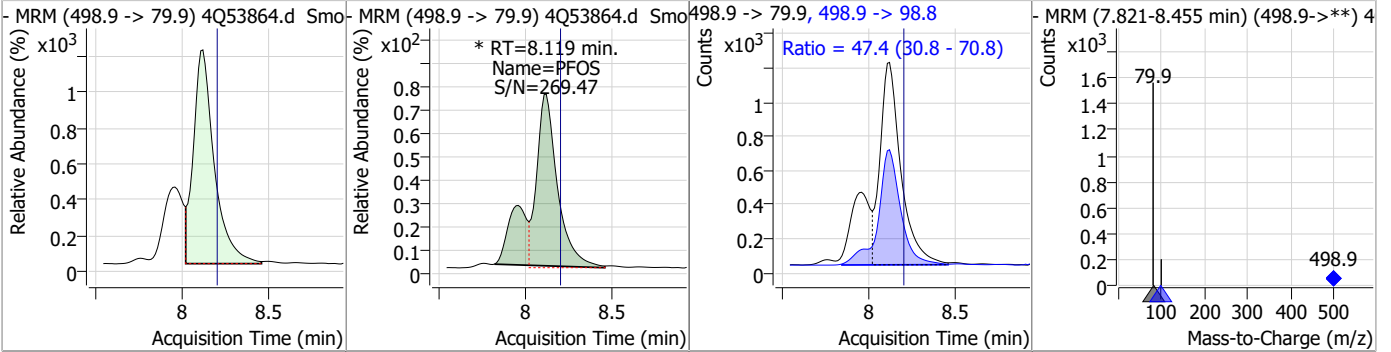


### Perfluorinated Compounds by LC/MS/MS

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



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



7.6.3

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# Manual Integration Approval Summary

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

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

7.6.3.1

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## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53865.d  
Operator : annal  
Acq. Method : 1633full\_4Q.m  
Acq. Date-Time : 11/15/2023 10:15:53 AM  
Sample Name : RT\_BR\_LN  
Vial : P1-B2  
DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
Batch Name : s4q786.batch.bin  
Sample Information : OP98180,S4Q786,500,,,5.0,1,water

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

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## Perfluorinated Compounds by LC/MS/MS

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

## Perfluorinated Compounds by LC/MS/MS

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

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

7.6.4  
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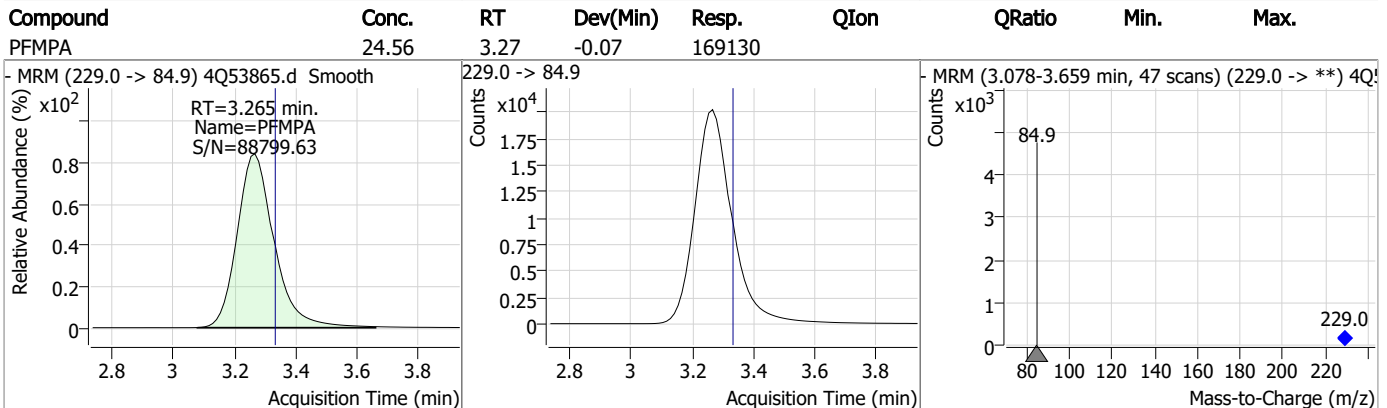
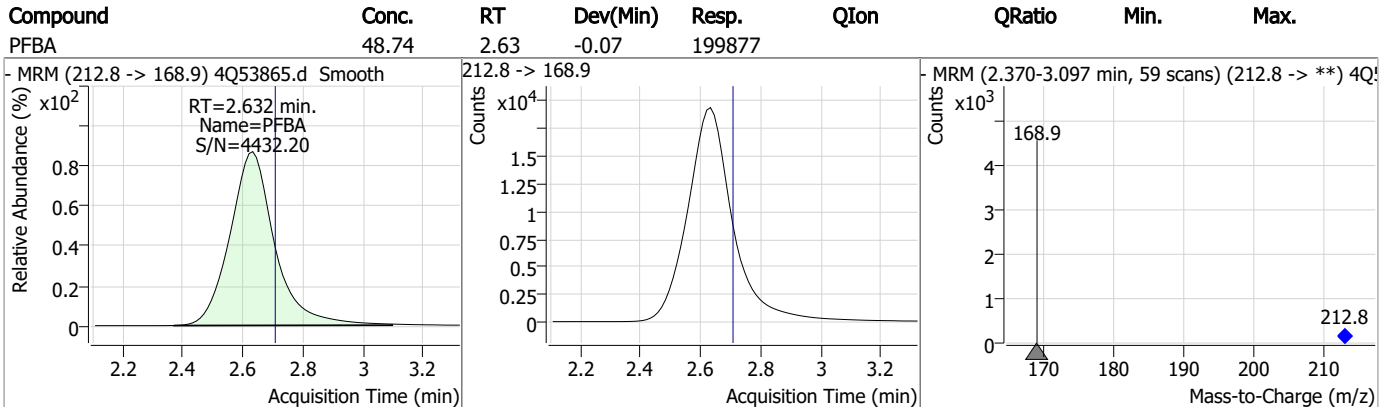
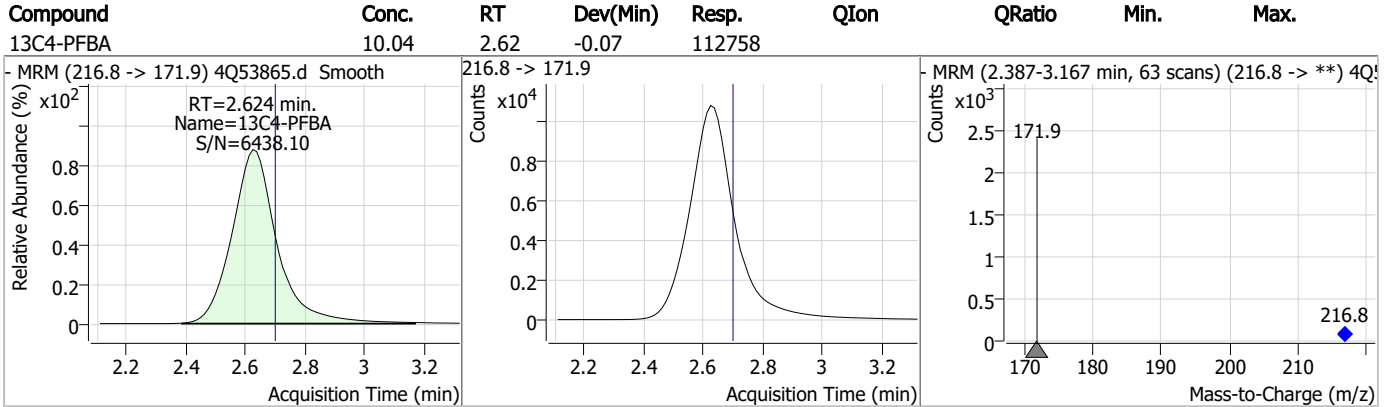
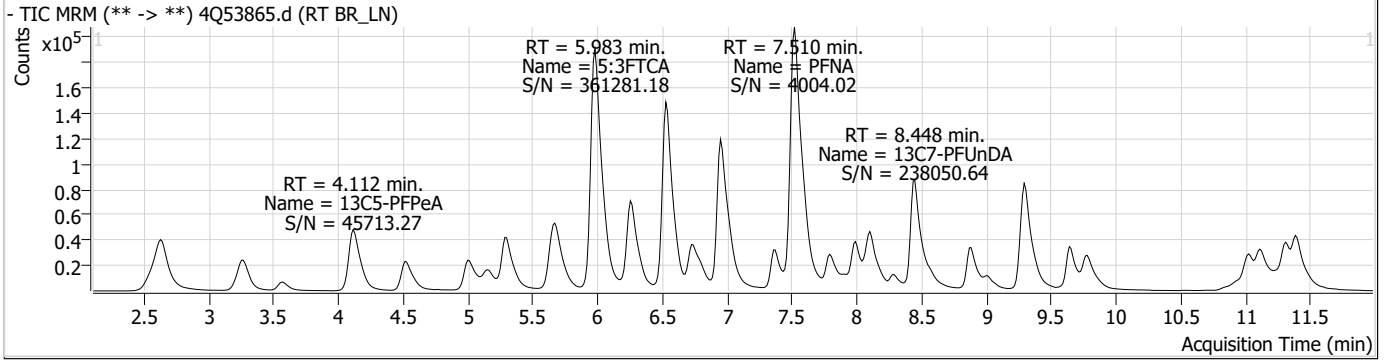
# Perfluorinated Compounds by LC/MS/MS

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

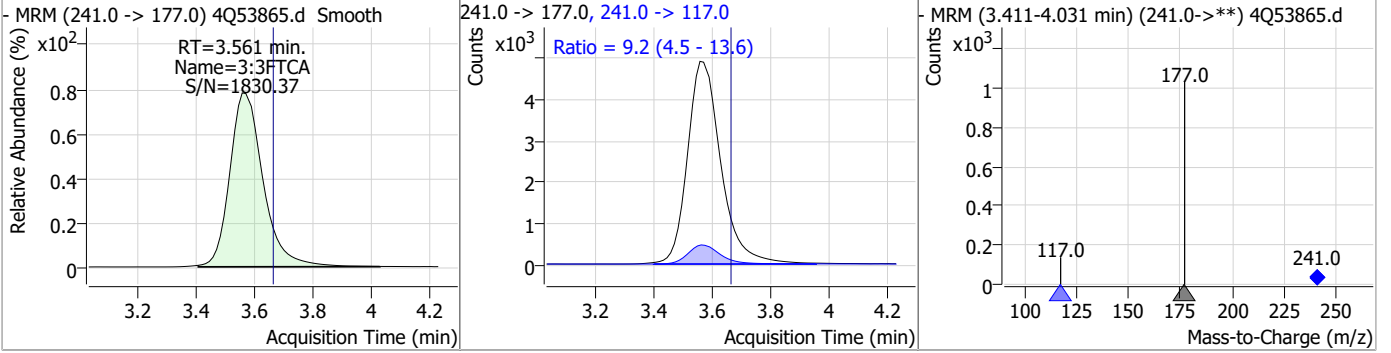
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# Perfluorinated Compounds by LC/MS/MS

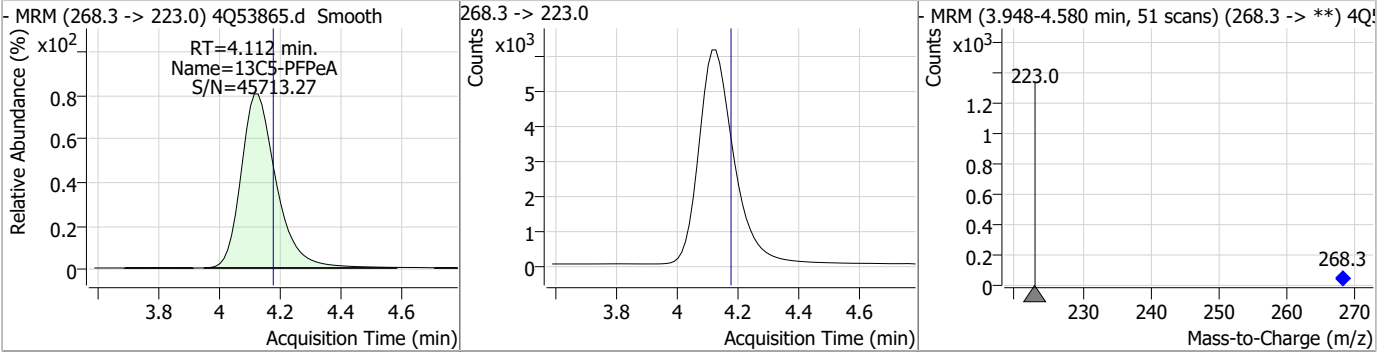


# Perfluorinated Compounds by LC/MS/MS

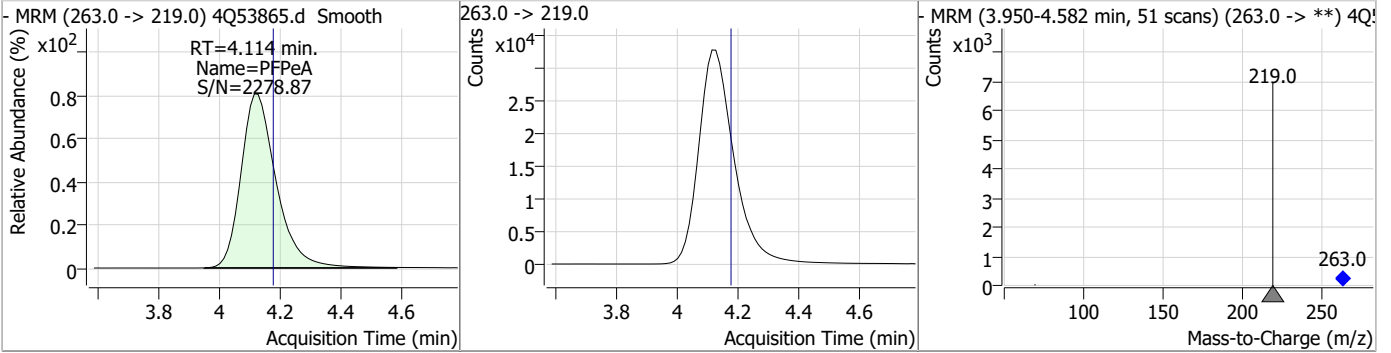
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	60.31	3.56	-0.11	38530	241.0 -> 117.0	9.2	4.5	13.6



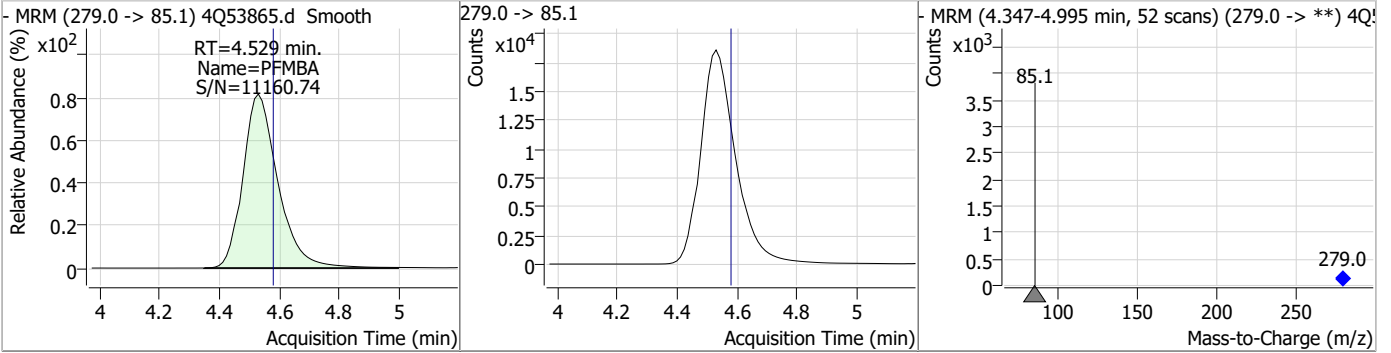
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.94	4.11	-0.06	49432				



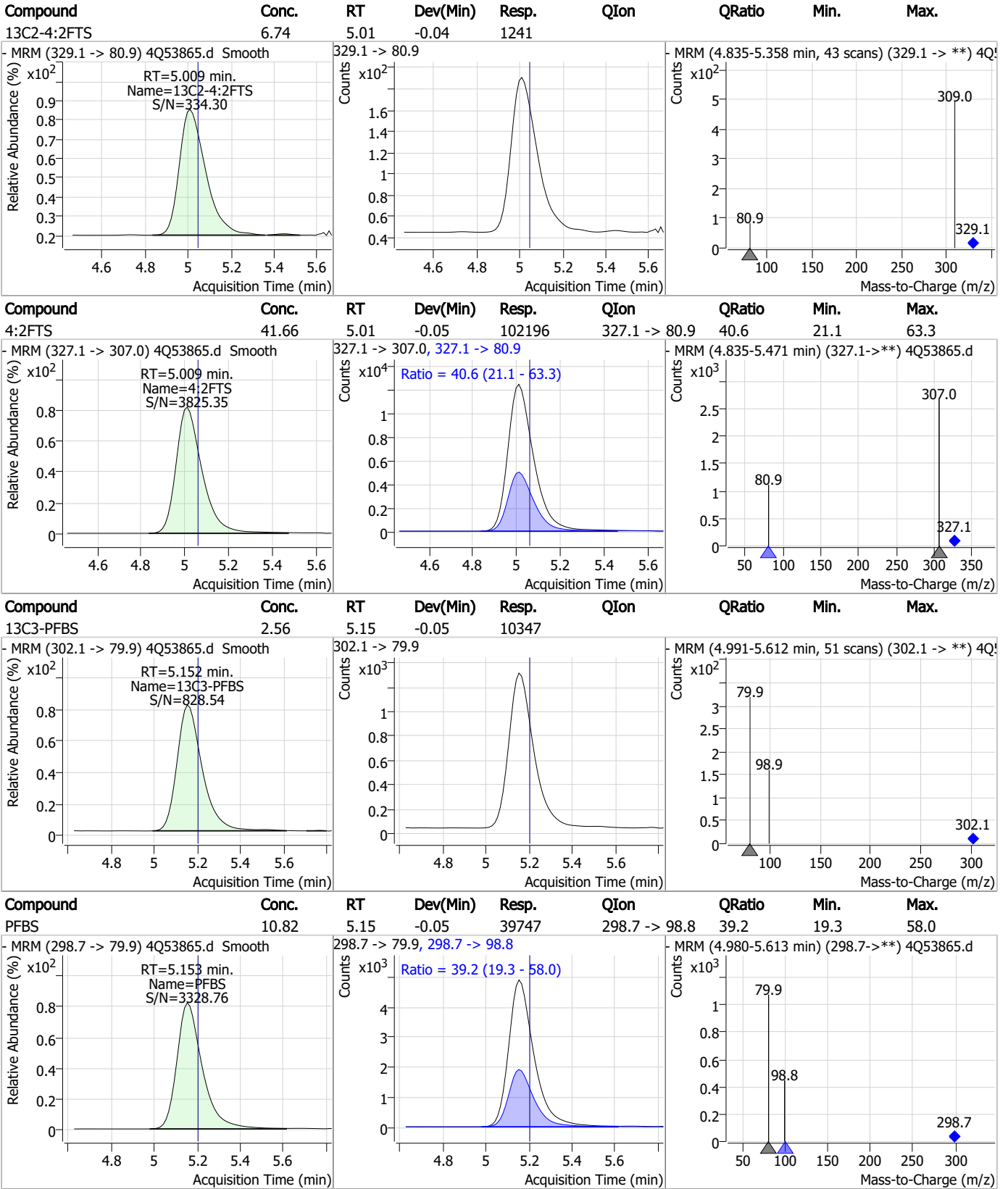
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	24.52	4.11	-0.06	263644				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	24.28	4.53	-0.05	150401				



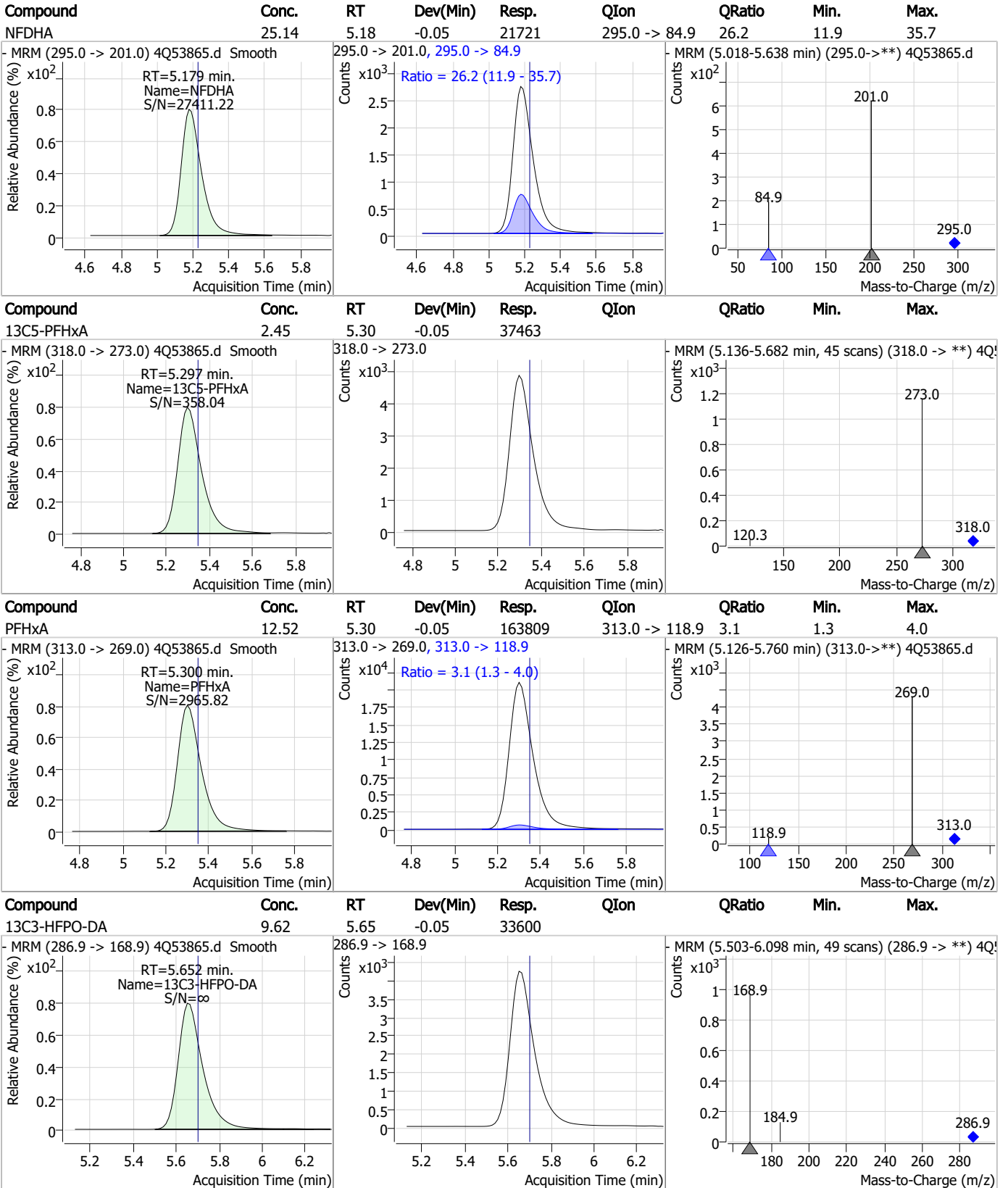
# Perfluorinated Compounds by LC/MS/MS



7.6.4

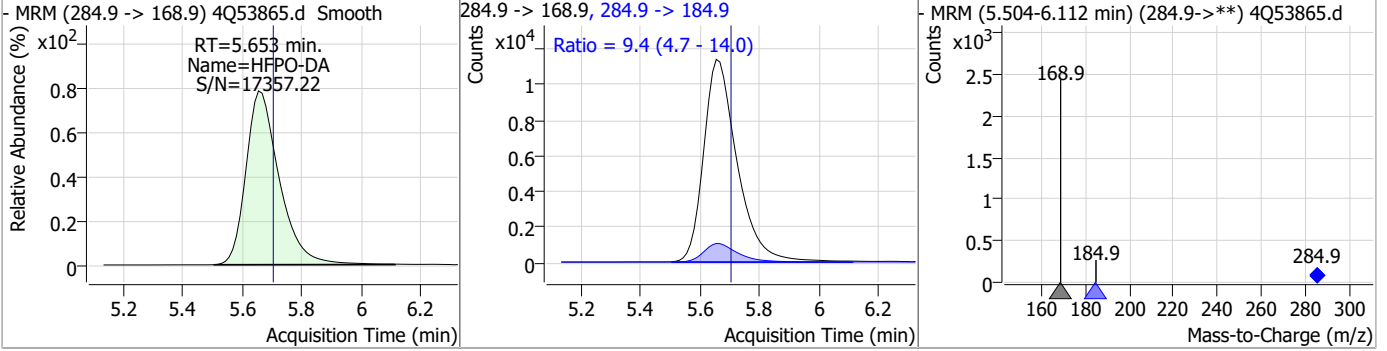
7

# Perfluorinated Compounds by LC/MS/MS

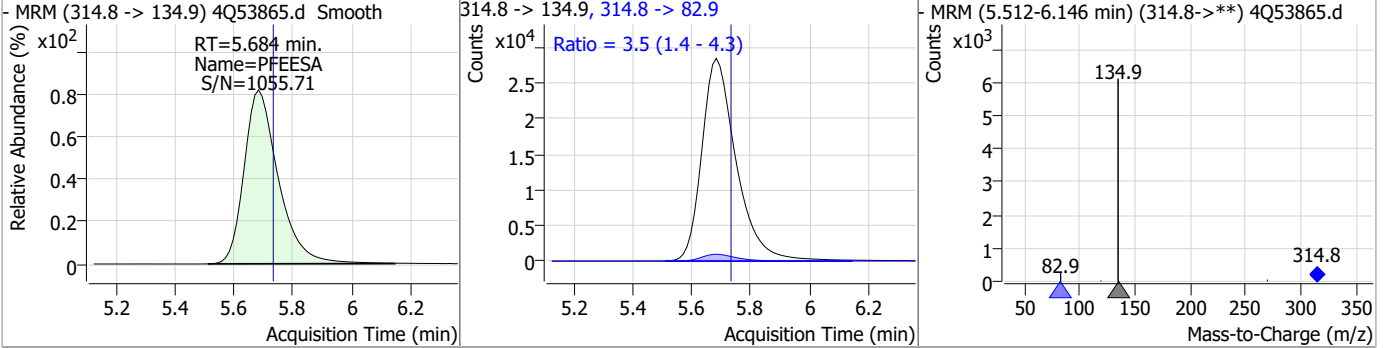


# Perfluorinated Compounds by LC/MS/MS

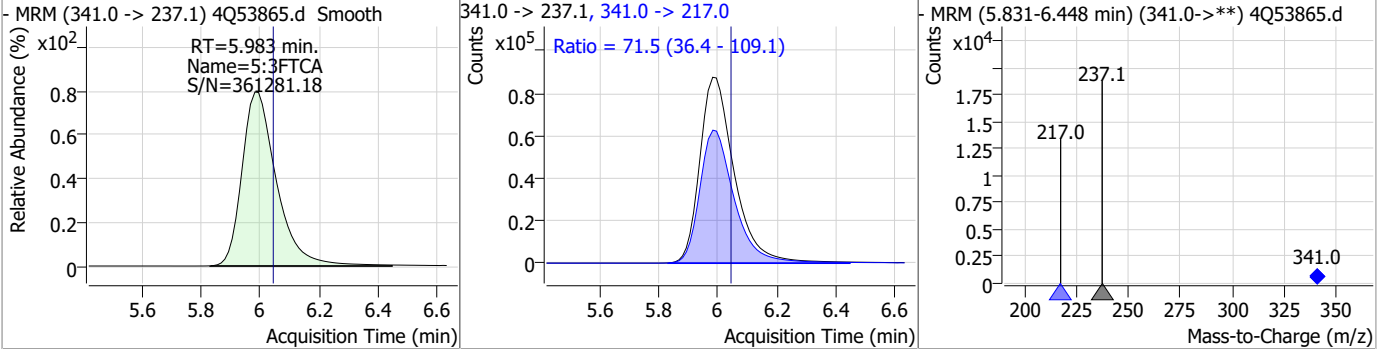
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	24.84	5.65	-0.05	88395	284.9 -> 184.9	9.4	4.7	14.0



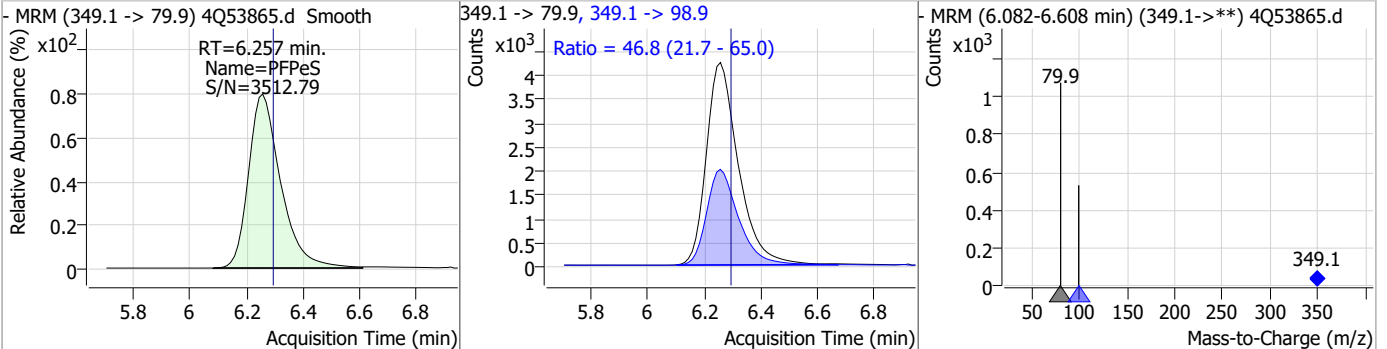
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	22.16	5.68	-0.05	229534	314.8 -> 82.9	3.5	1.4	4.3



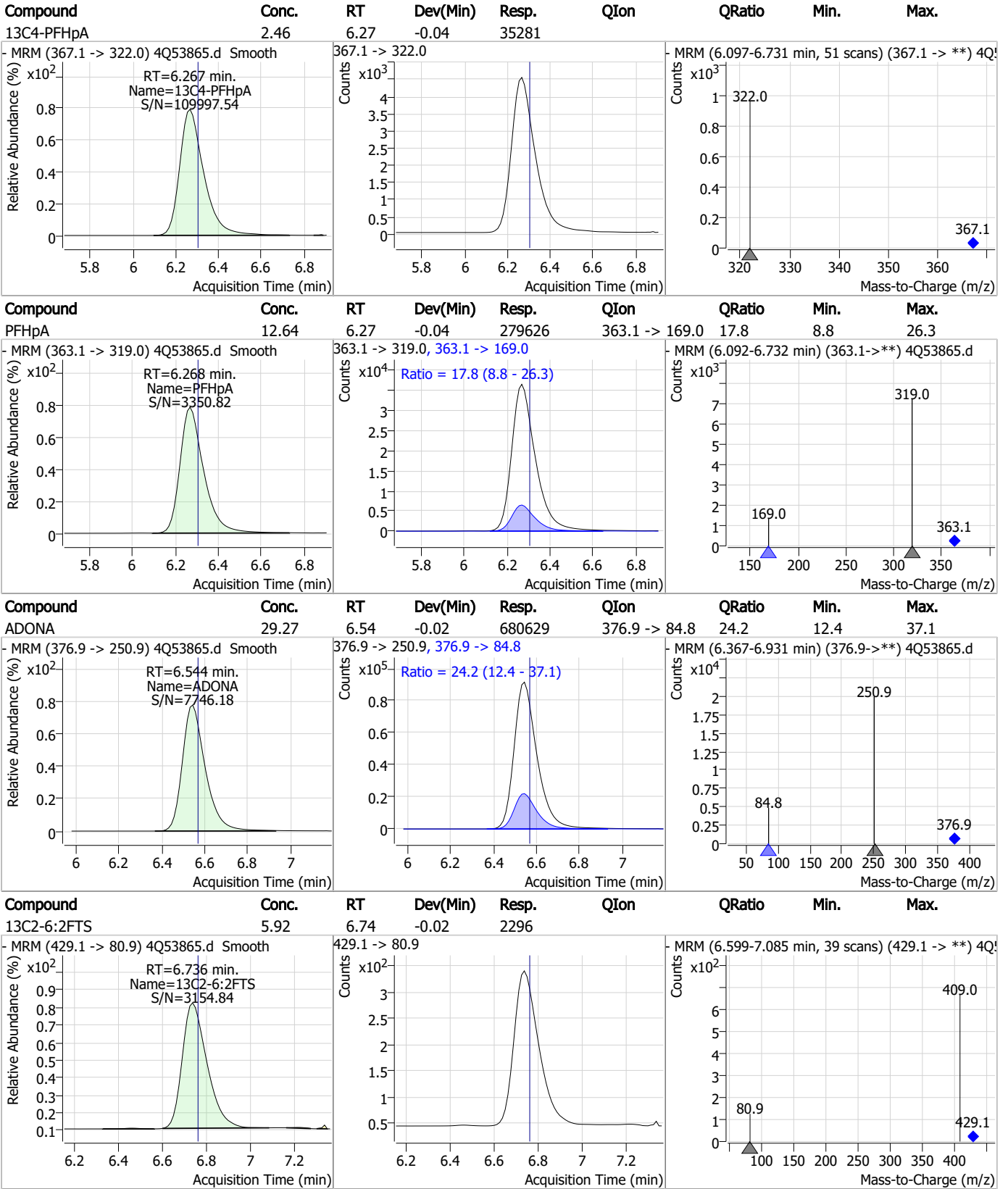
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	309.27	5.98	-0.06	712323	341.0 -> 217.0	71.5	36.4	109.1



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



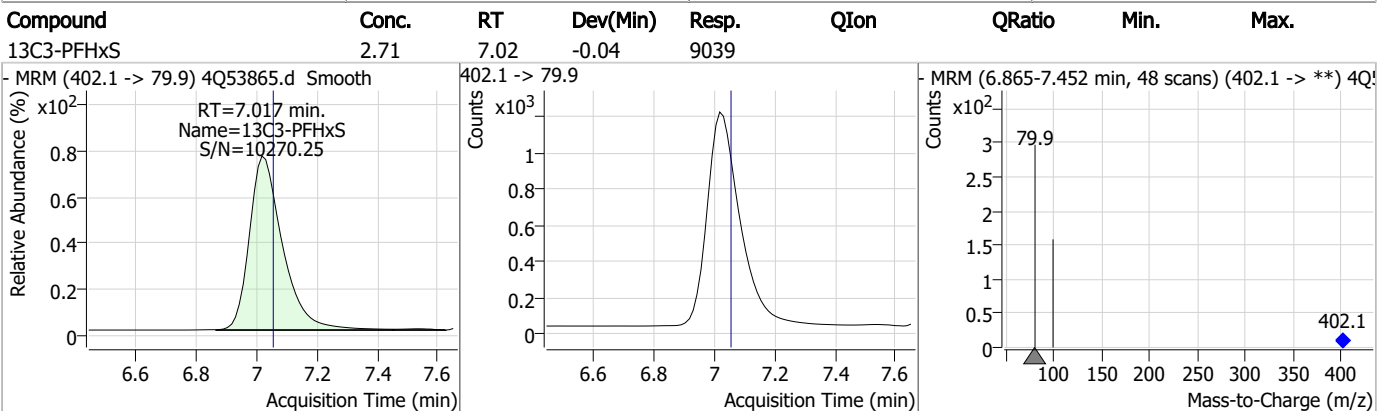
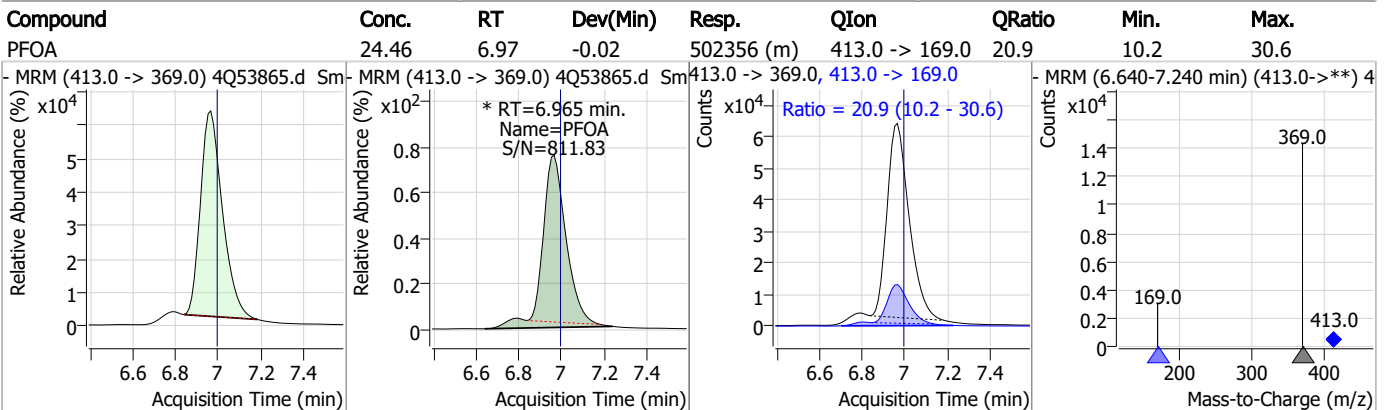
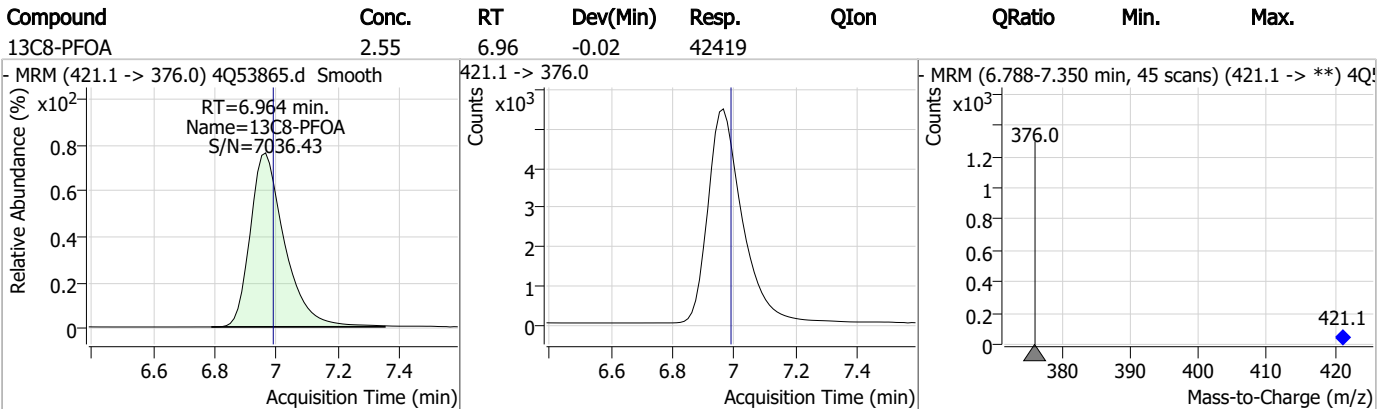
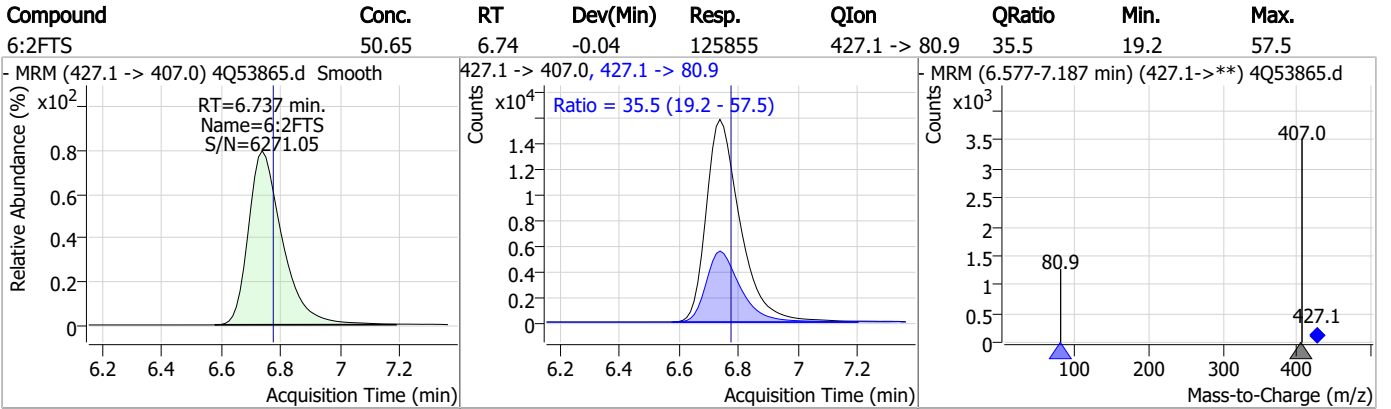
# Perfluorinated Compounds by LC/MS/MS



7.6.4

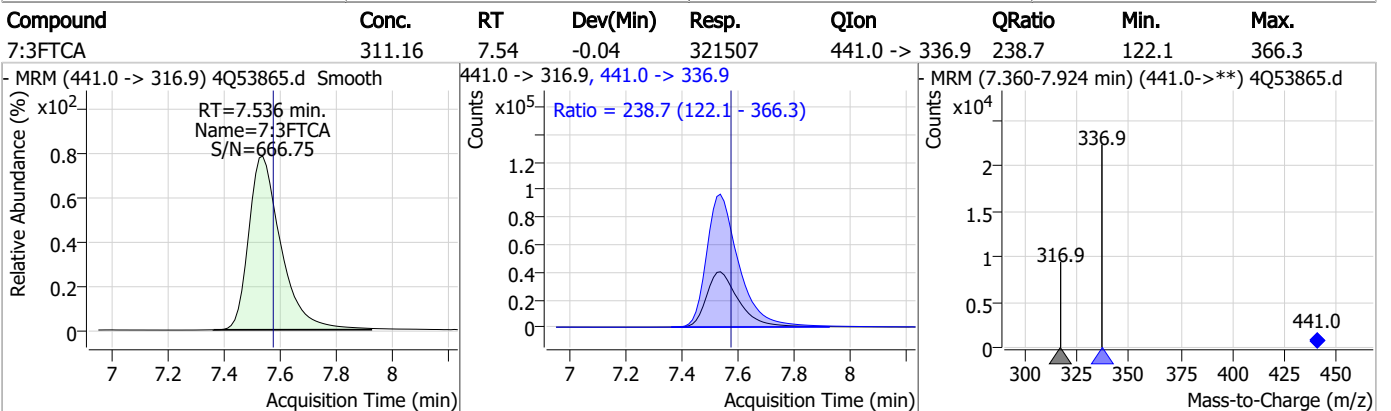
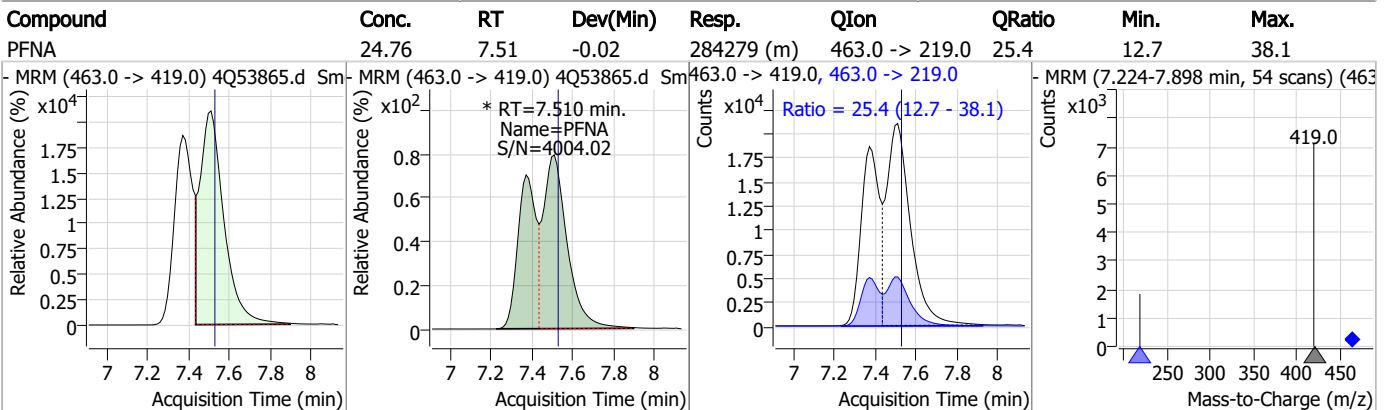
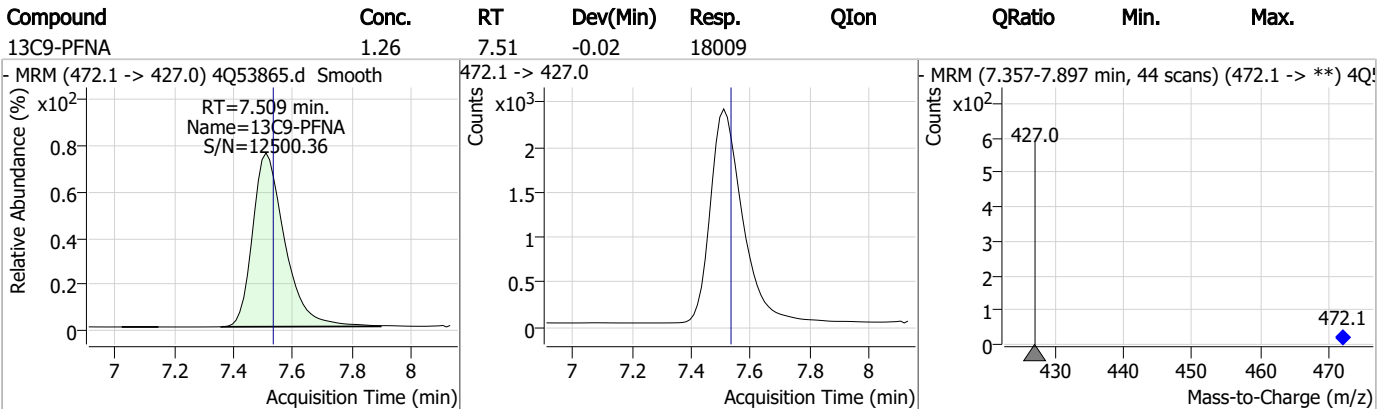
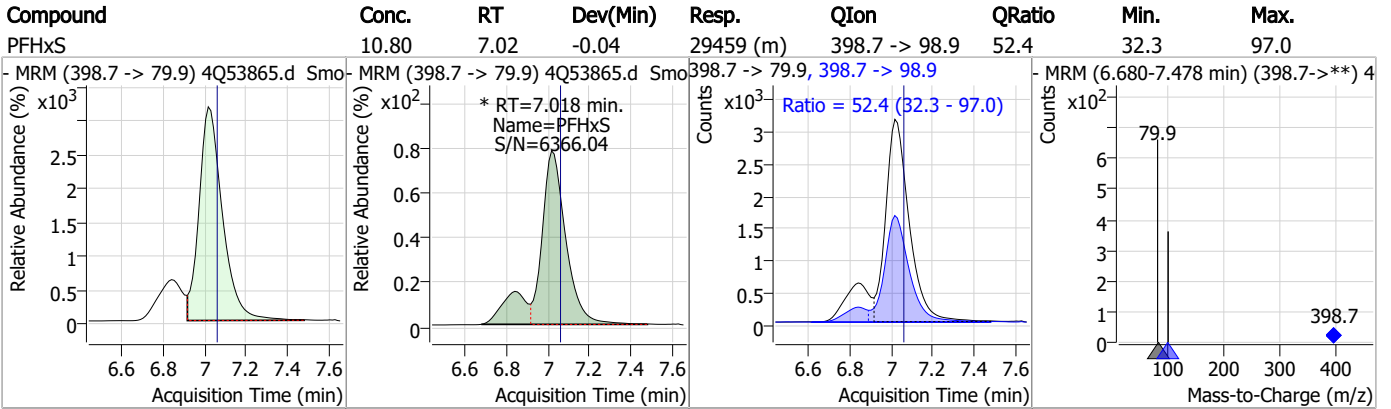
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# Perfluorinated Compounds by LC/MS/MS

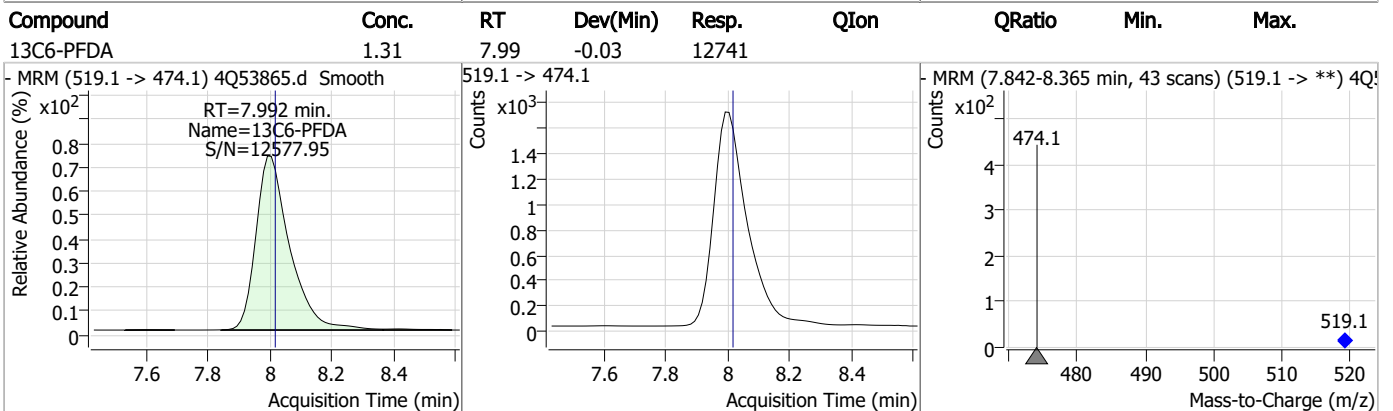
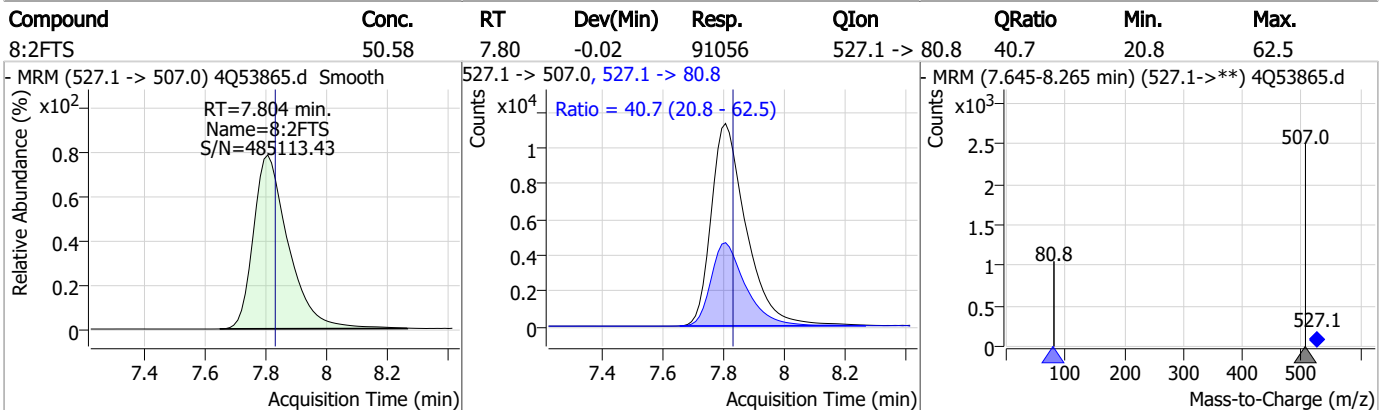
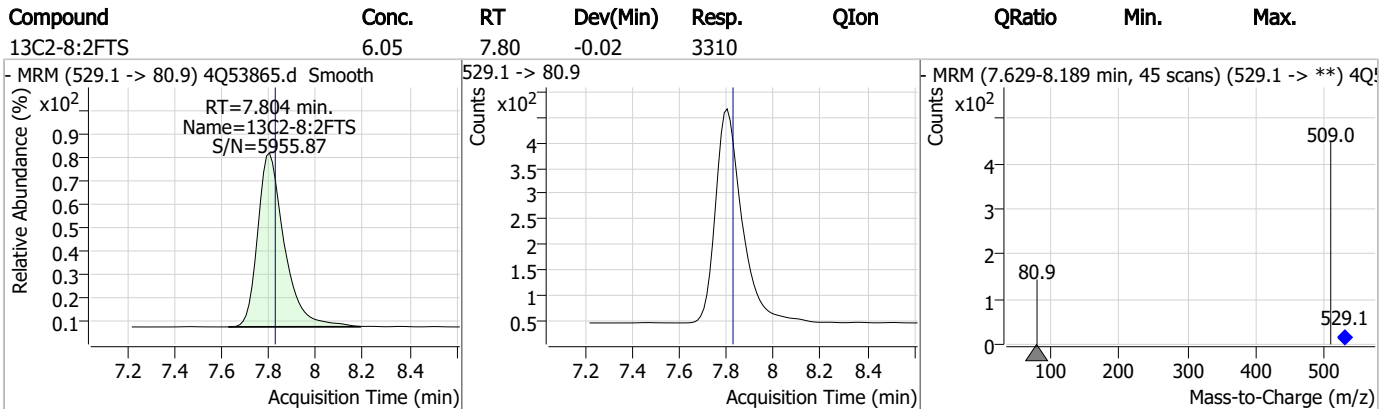
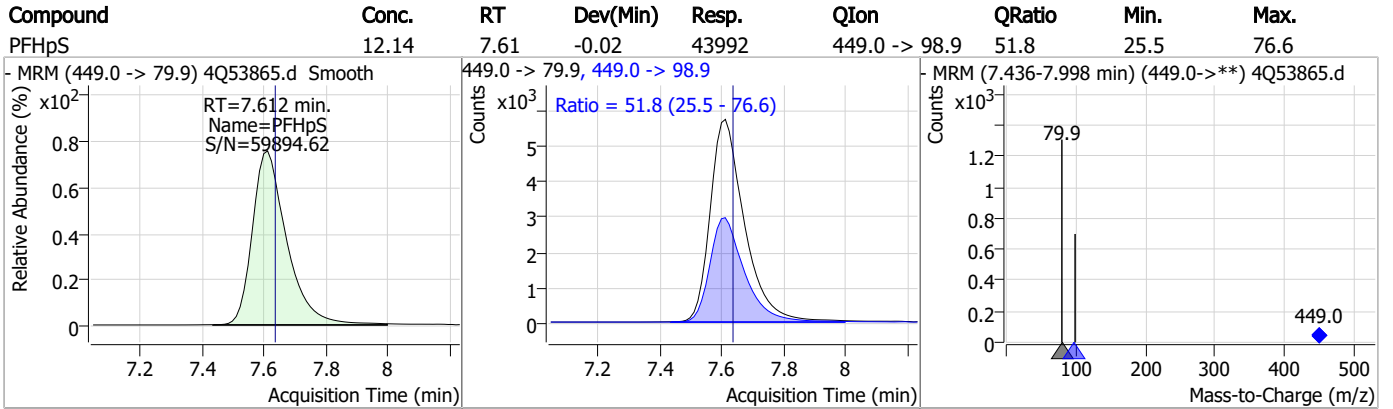




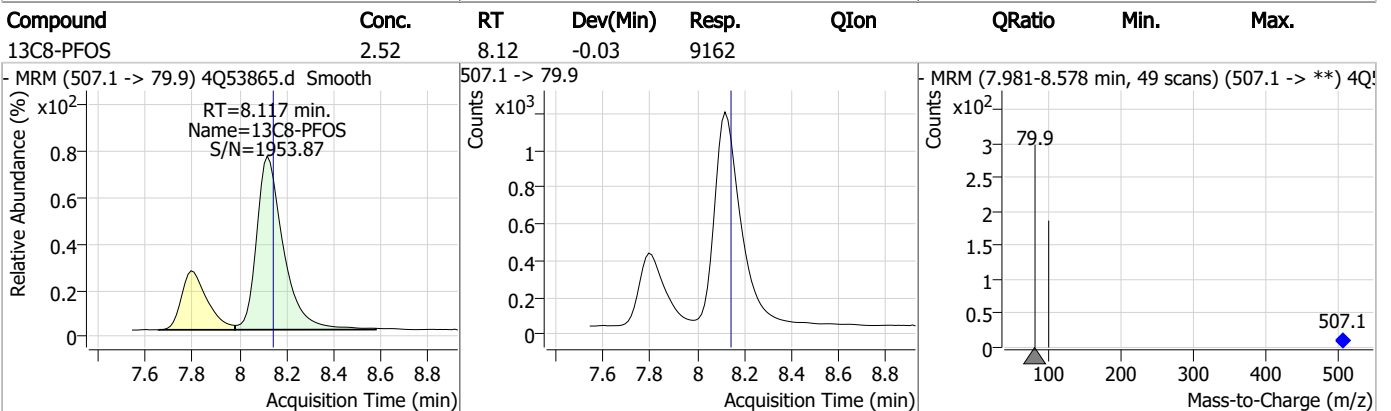
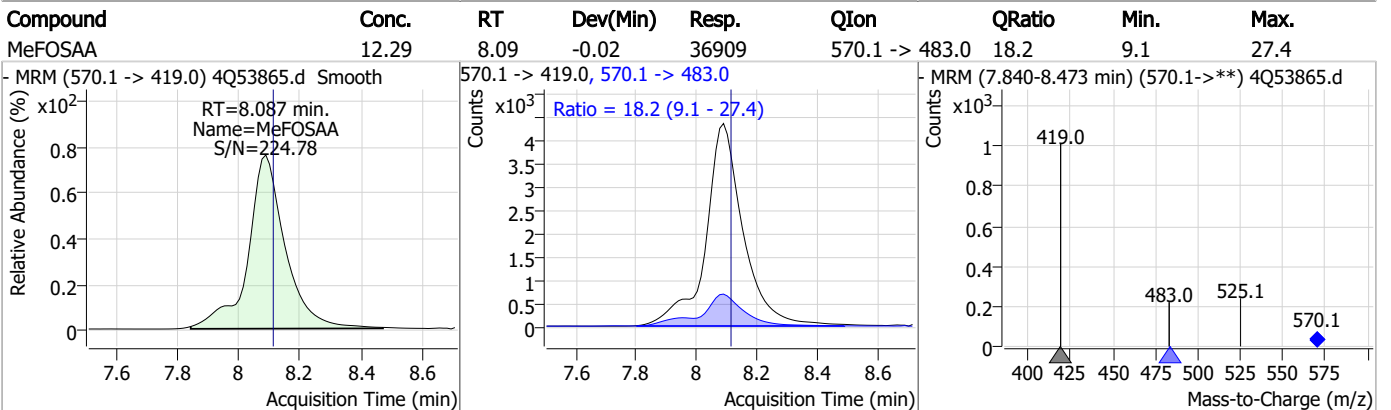
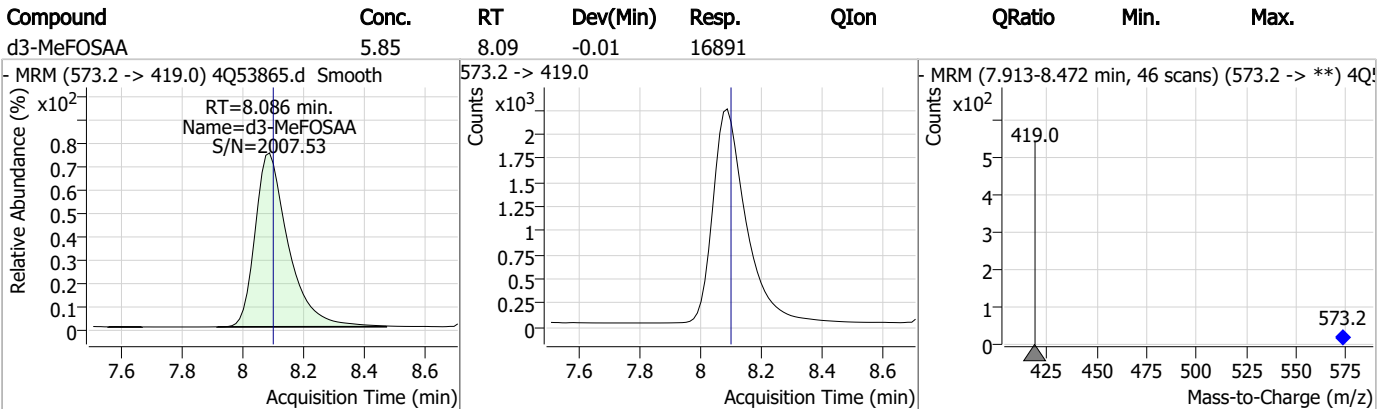
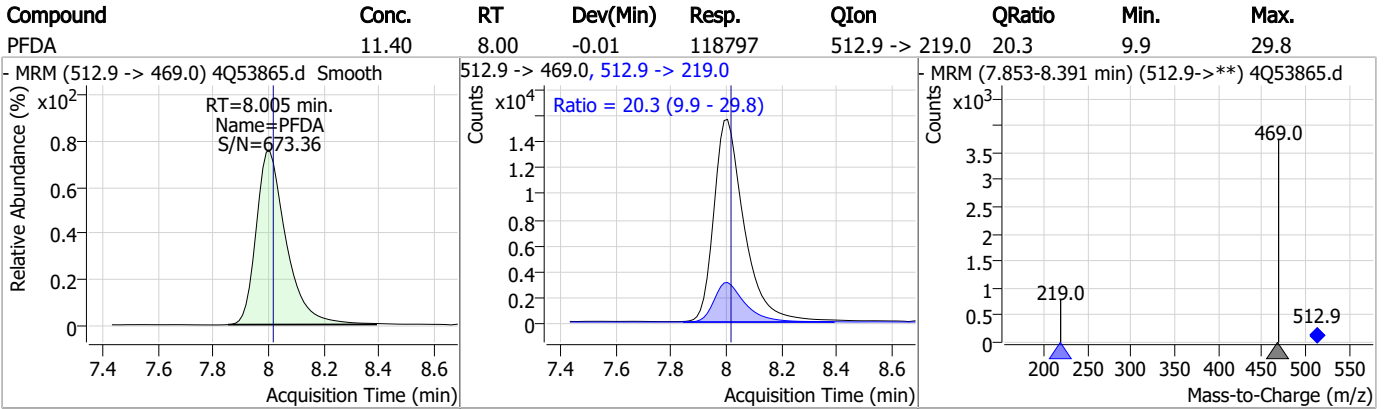
# Perfluorinated Compounds by LC/MS/MS



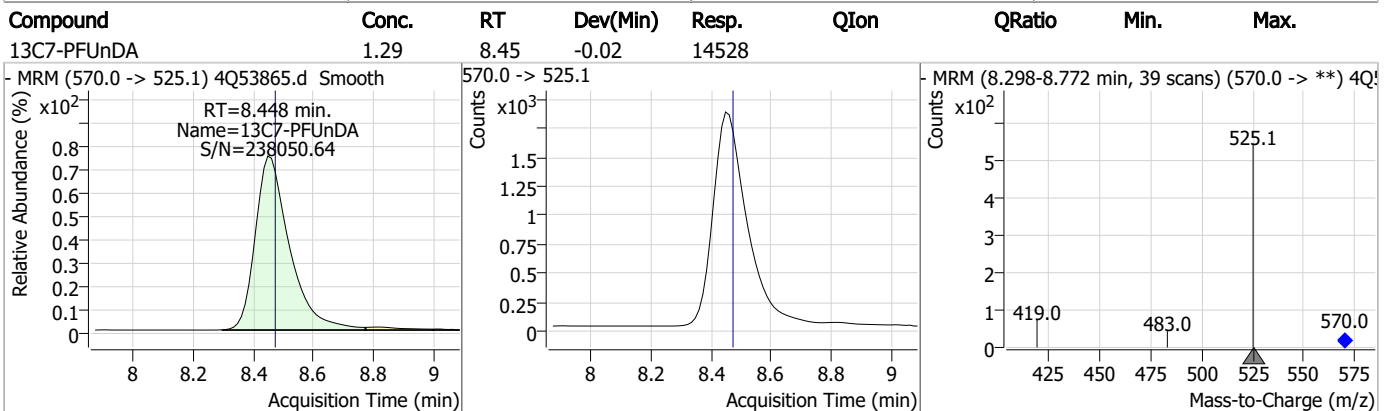
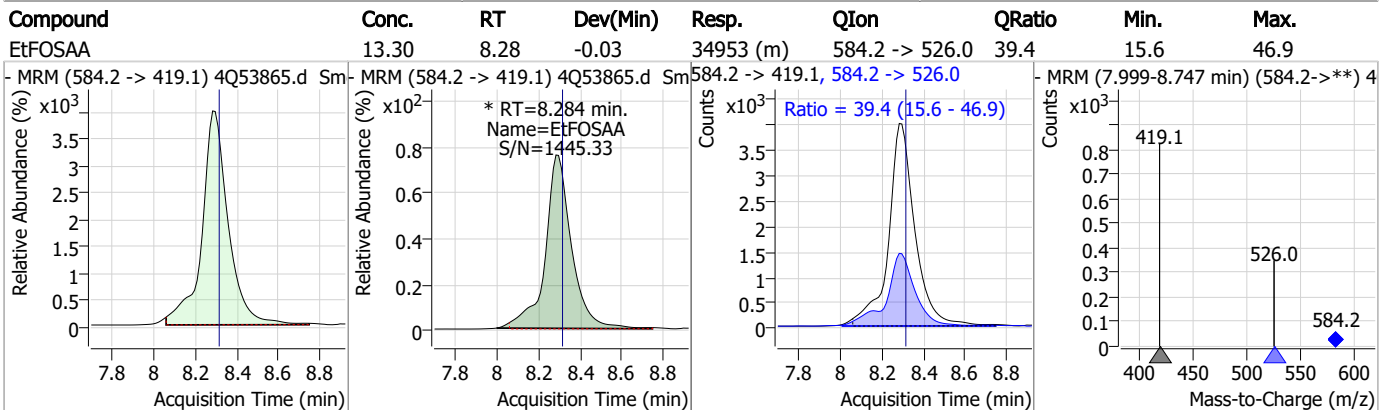
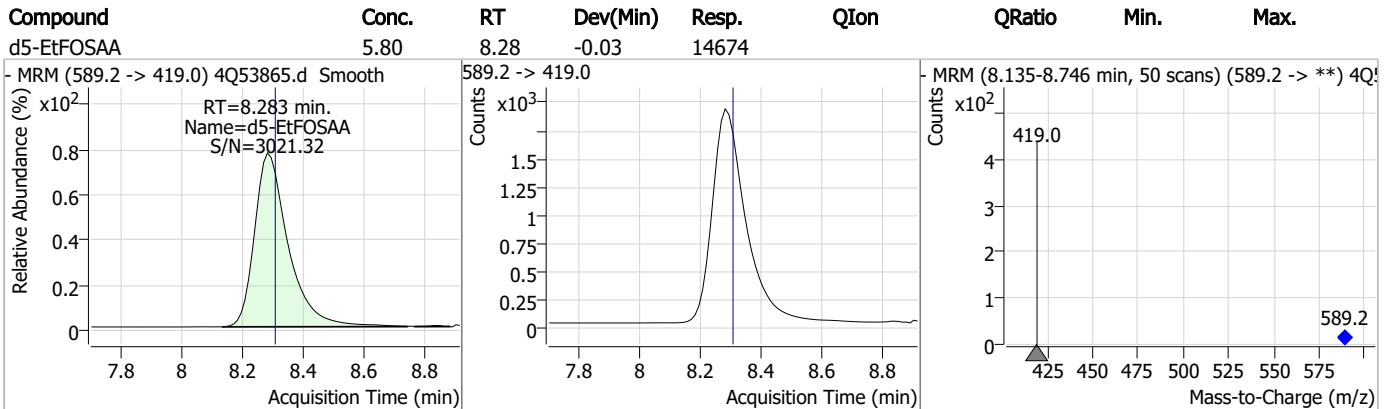
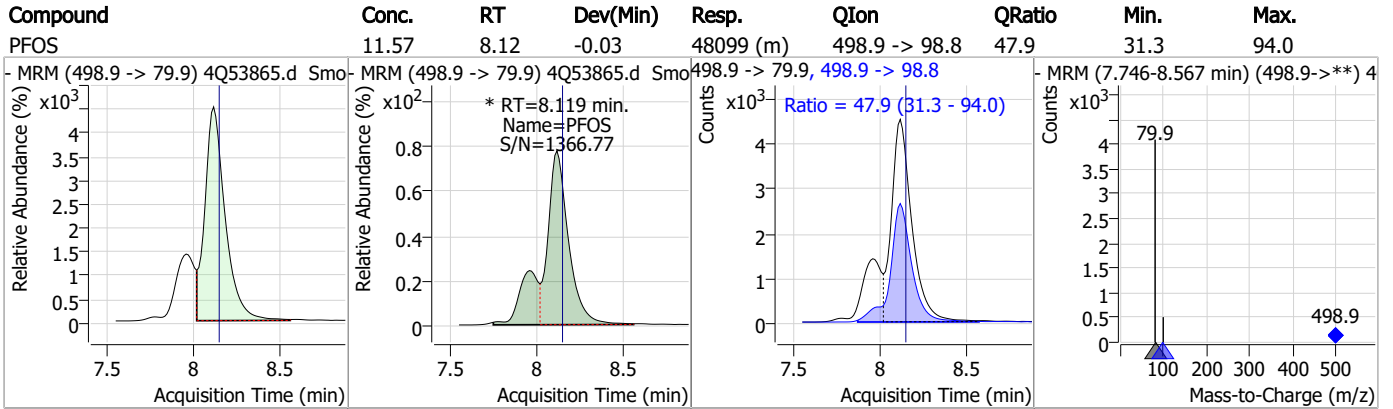
# Perfluorinated Compounds by LC/MS/MS



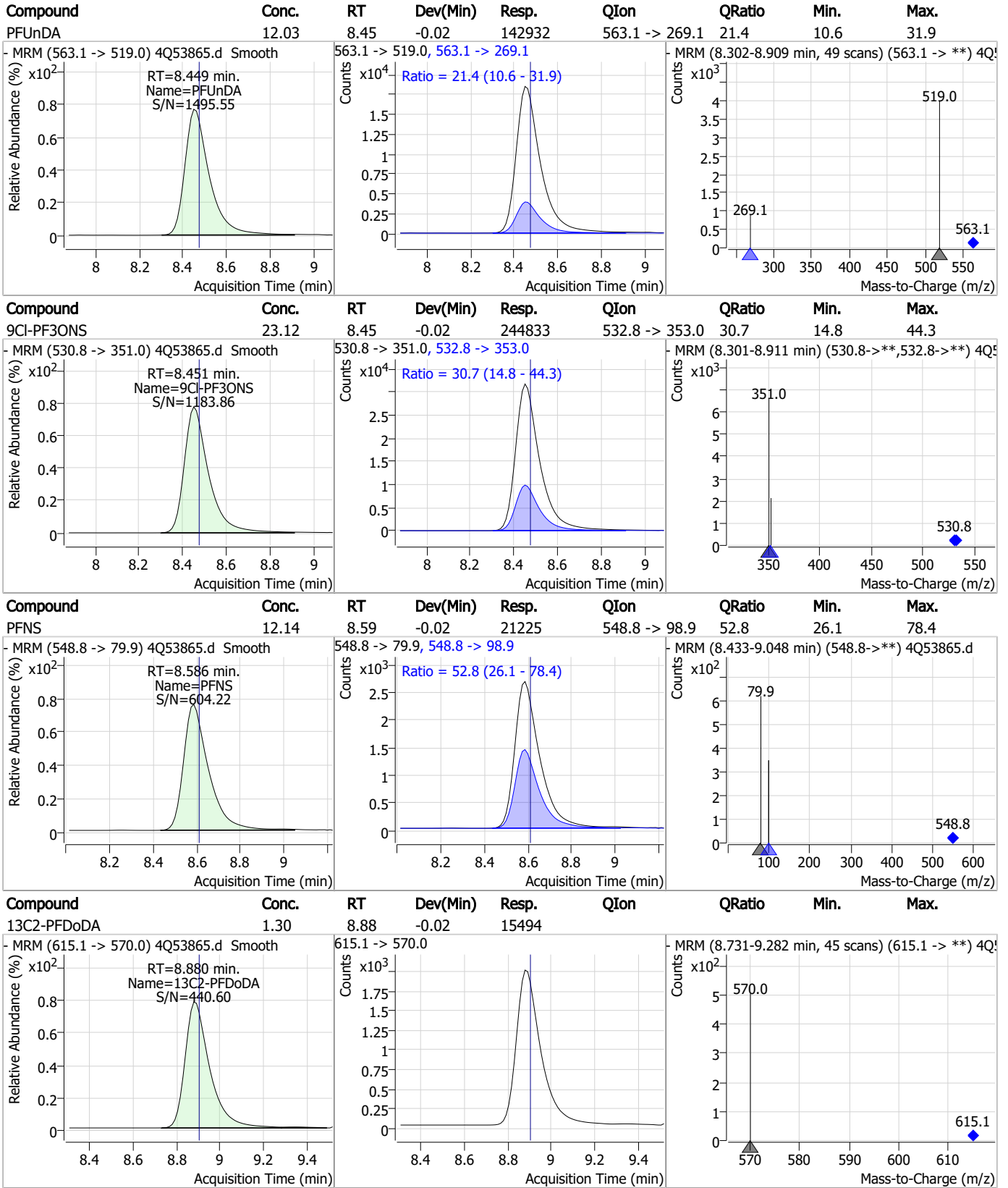
# Perfluorinated Compounds by LC/MS/MS



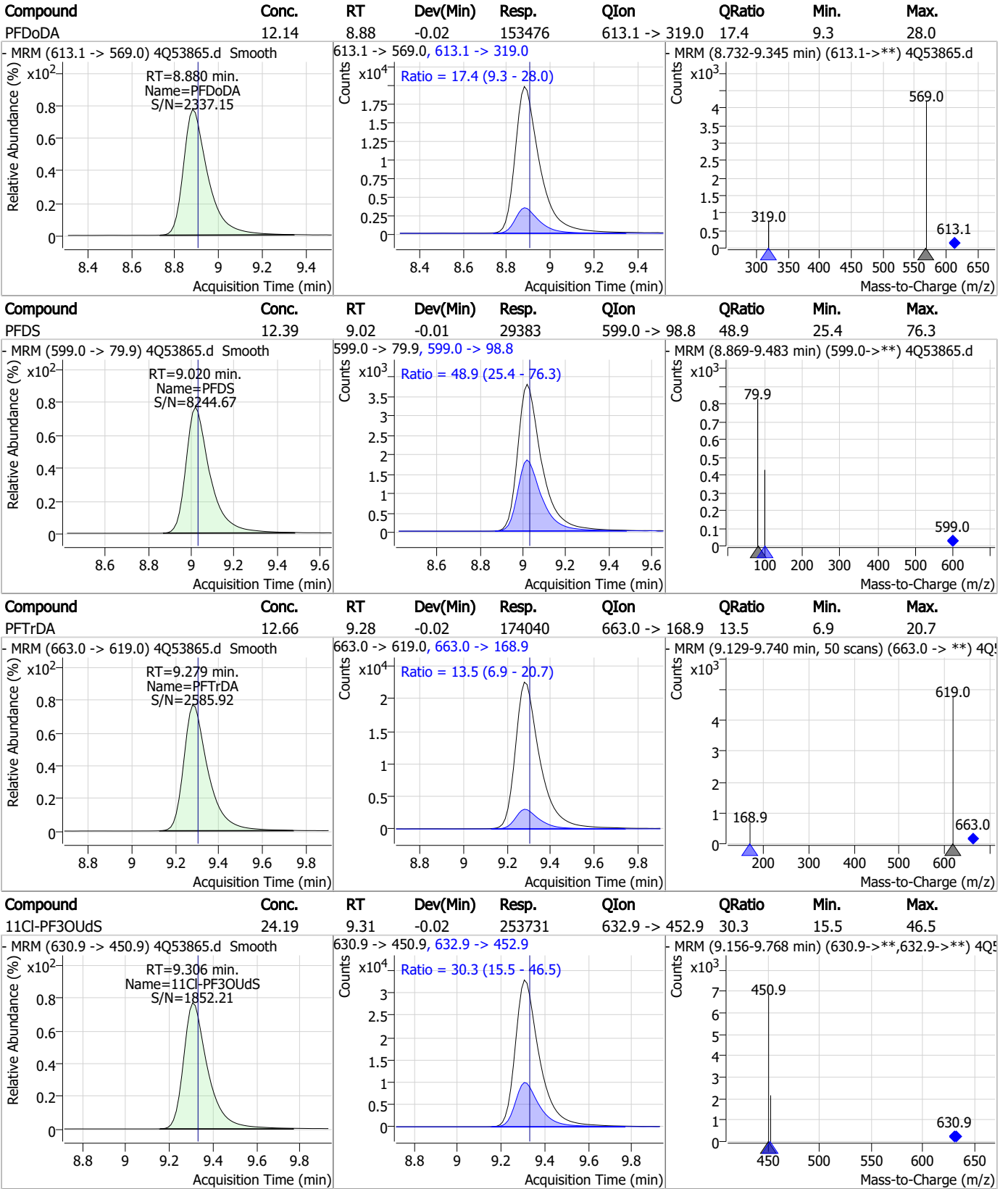
# Perfluorinated Compounds by LC/MS/MS



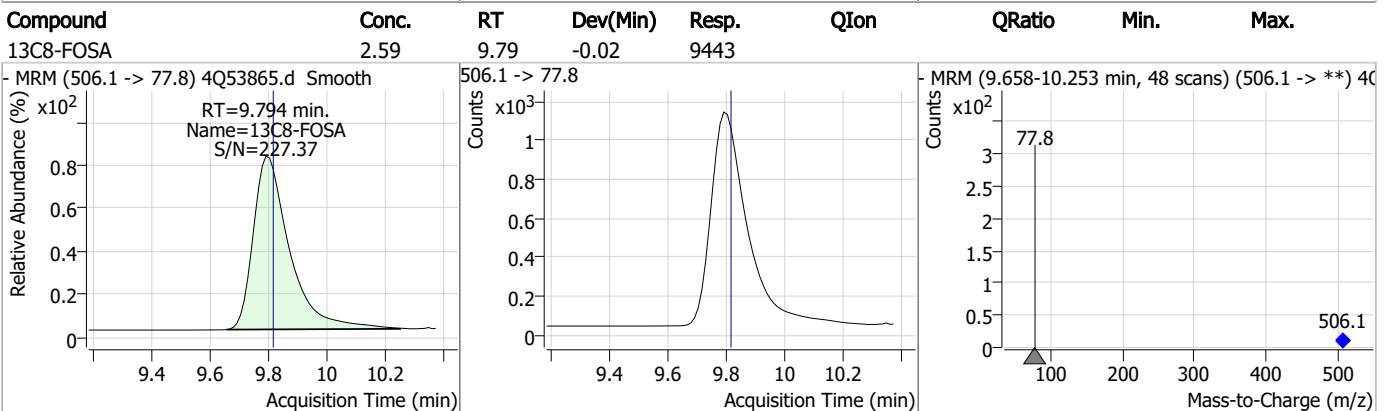
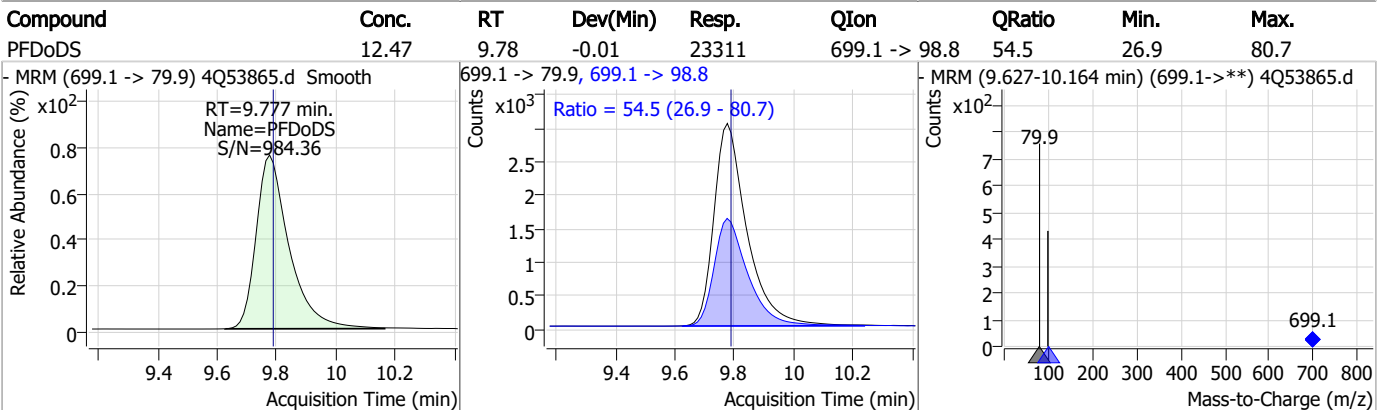
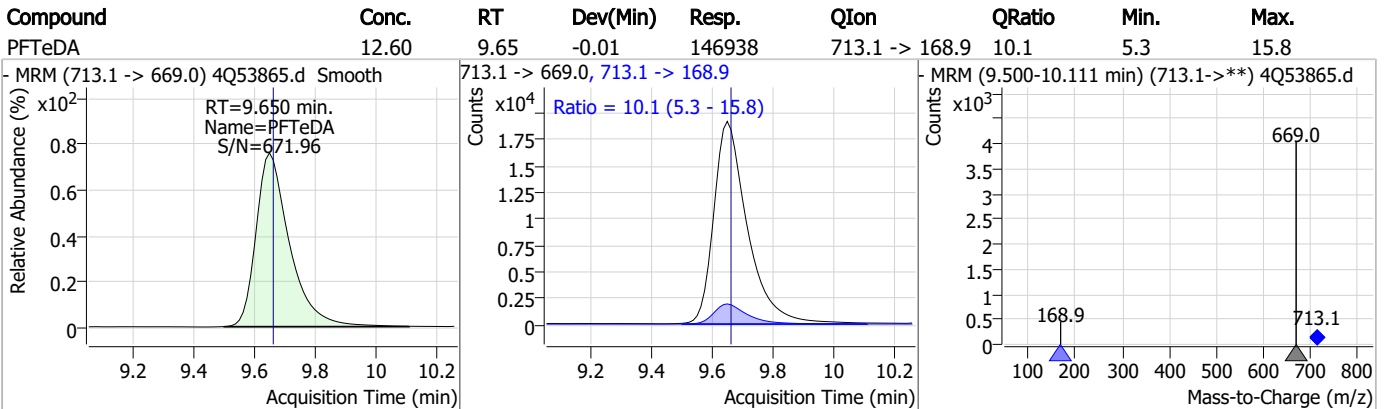
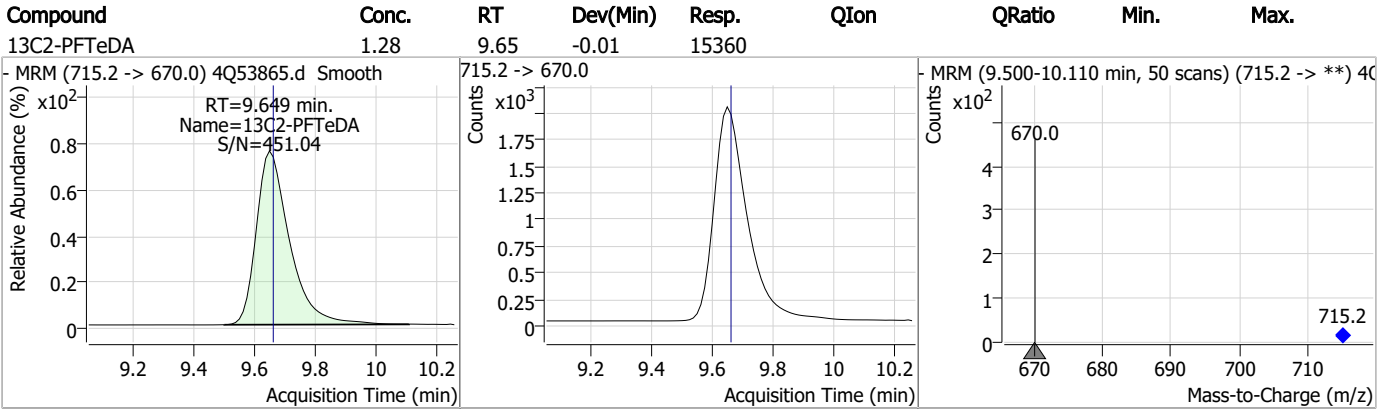
# Perfluorinated Compounds by LC/MS/MS



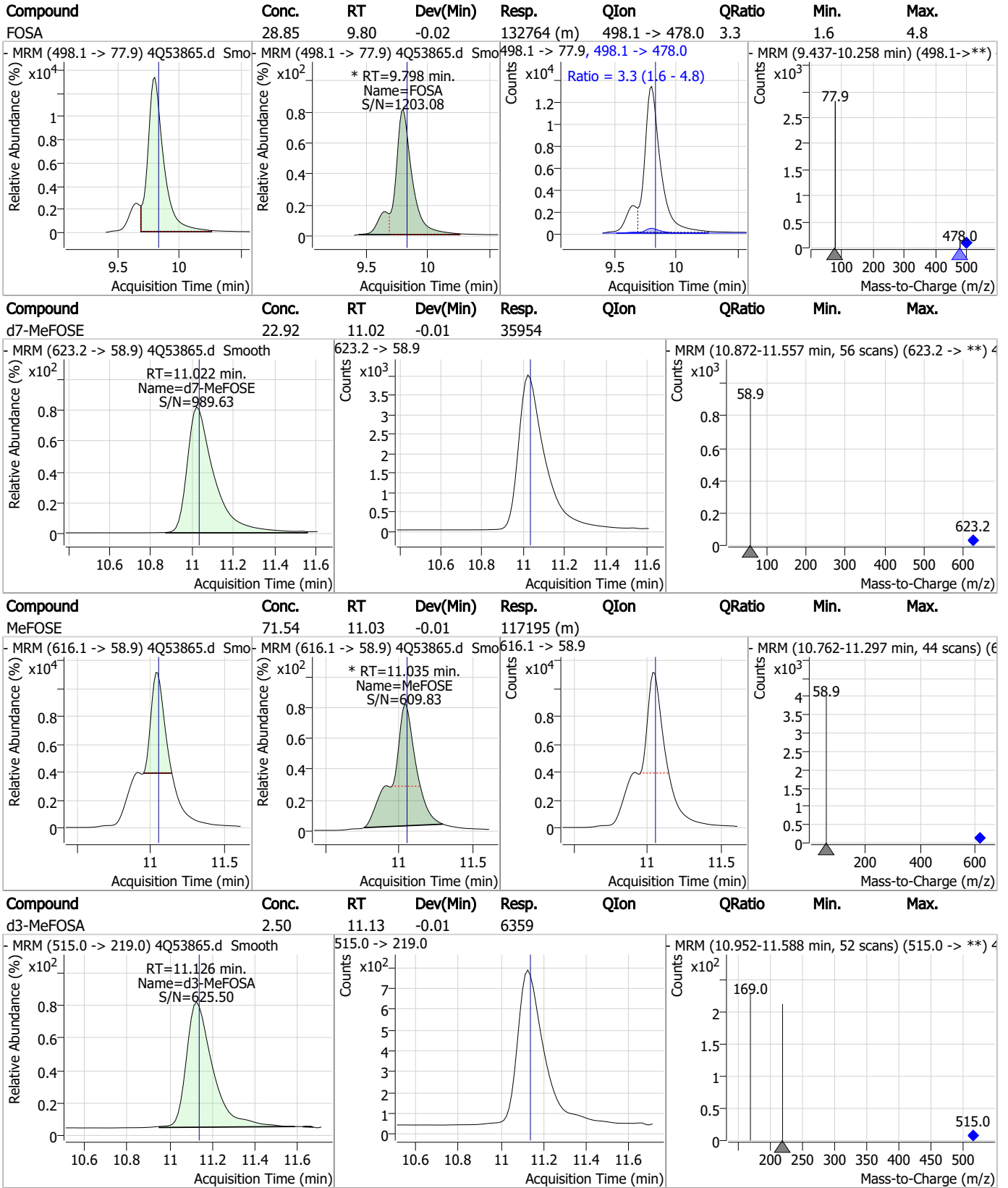
# Perfluorinated Compounds by LC/MS/MS



# Perfluorinated Compounds by LC/MS/MS



# Perfluorinated Compounds by LC/MS/MS



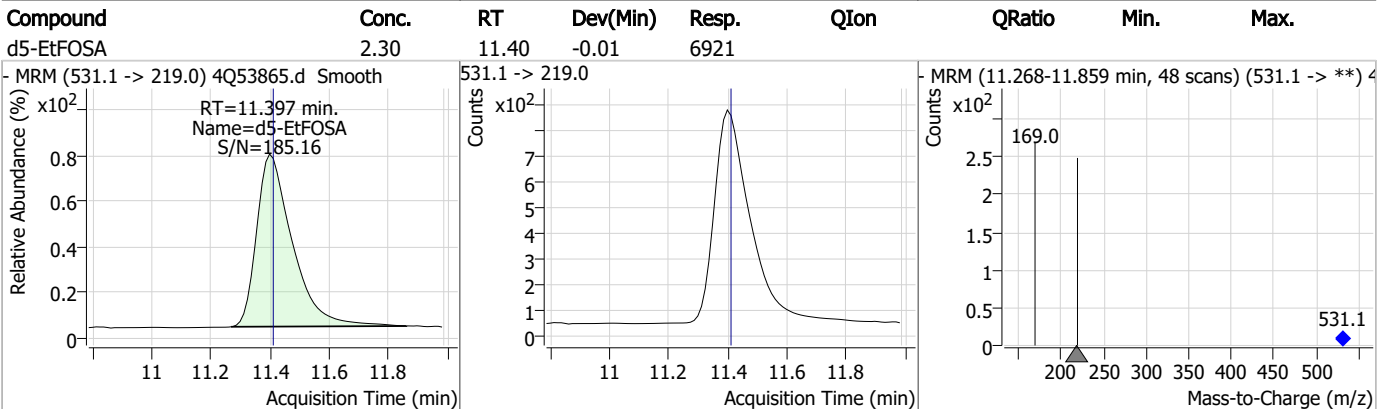
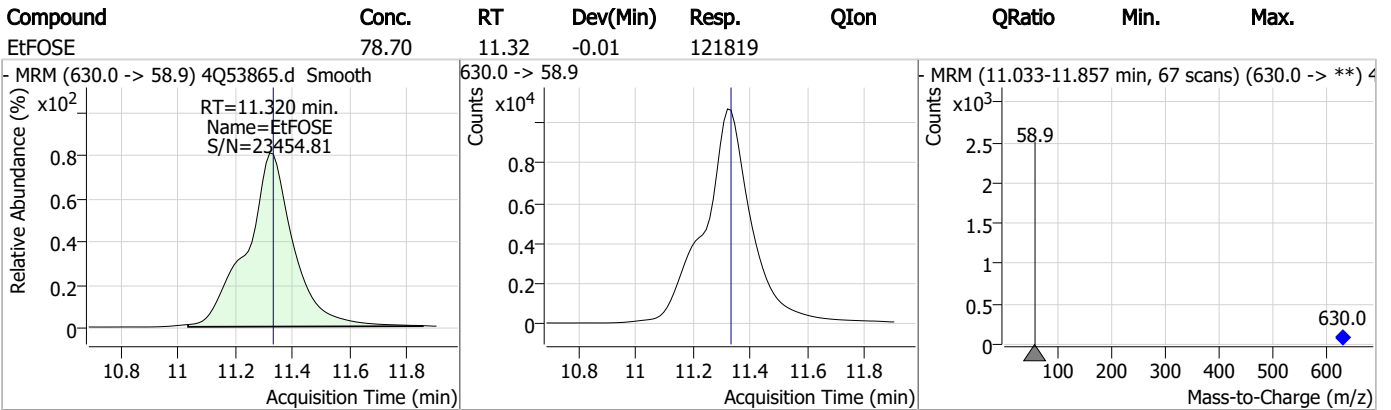
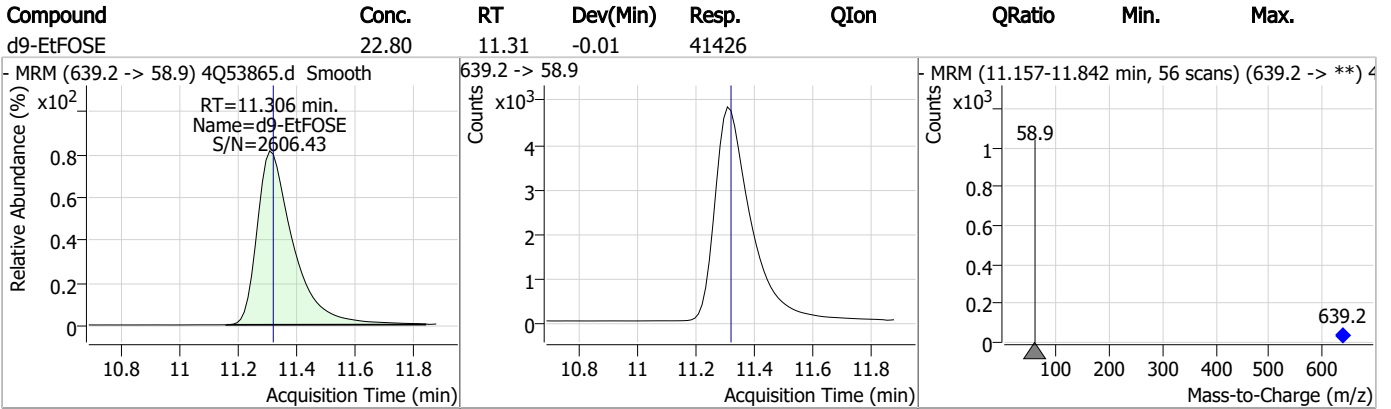
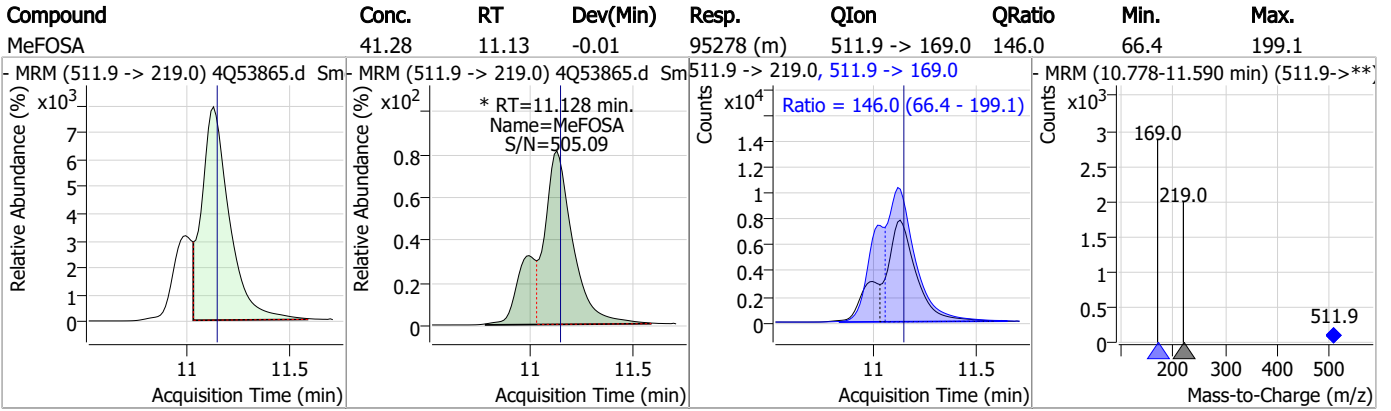
7.6.4

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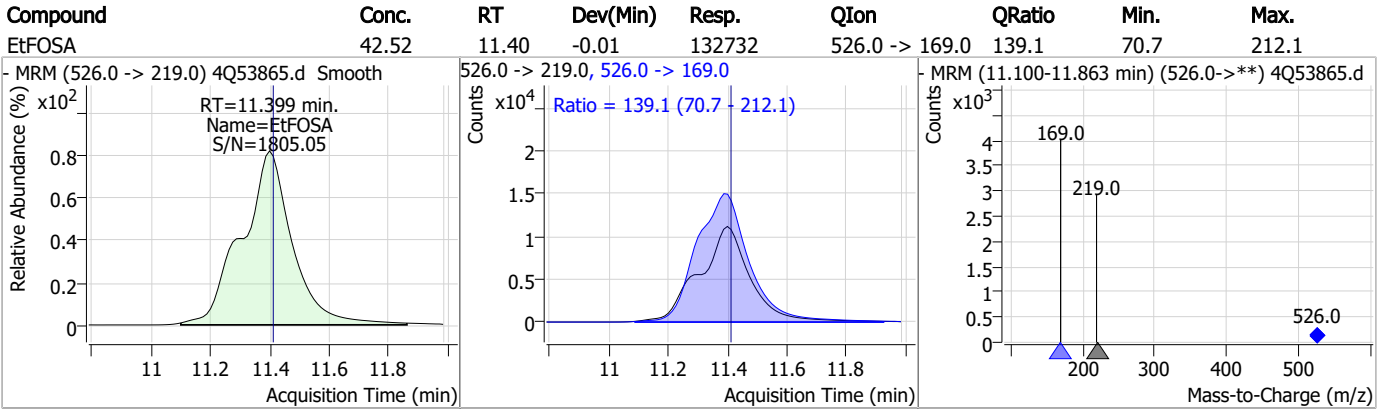




# Perfluorinated Compounds by LC/MS/MS



# Perfluorinated Compounds by LC/MS/MS



7.6.4

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# Manual Integration Approval Summary

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

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

7.6.4.1  
7

## QQQ Check Tune Report



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

**Source Parameters**

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

7.7.1

7

### QQQ Check Tune Report



#### Negative Results

**Analyzer: MS1 Polarity: Negative Width: Unit**

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

**Analyzer: MS2 Polarity: Negative Width: Unit**

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

**Analyzer: MS1 Polarity: Negative Width: Wide**

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

**Analyzer: MS2 Polarity: Negative Width: Wide**

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

**Analyzer: MS1 Polarity: Negative Width: Widest**

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

**Analyzer: MS2 Polarity: Negative Width: Widest**

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

7.7.1  
7

## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53731.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/13/2023 3:40:26 PM  
 Sample Name : ic785-1  
 Vial : P1-A2  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q785.batch.bin  
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

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

## Perfluorinated Compounds by LC/MS/MS

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

## Perfluorinated Compounds by LC/MS/MS

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

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



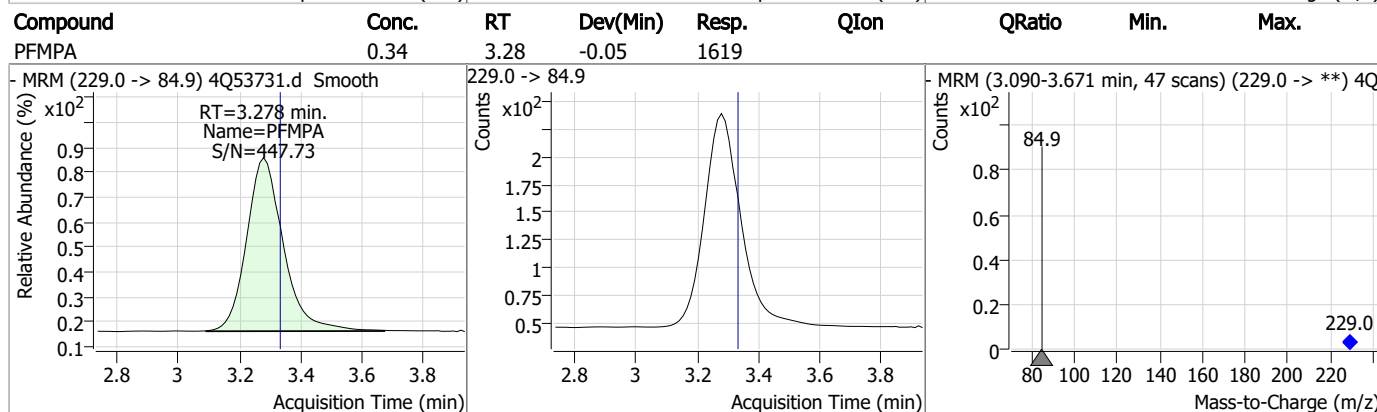
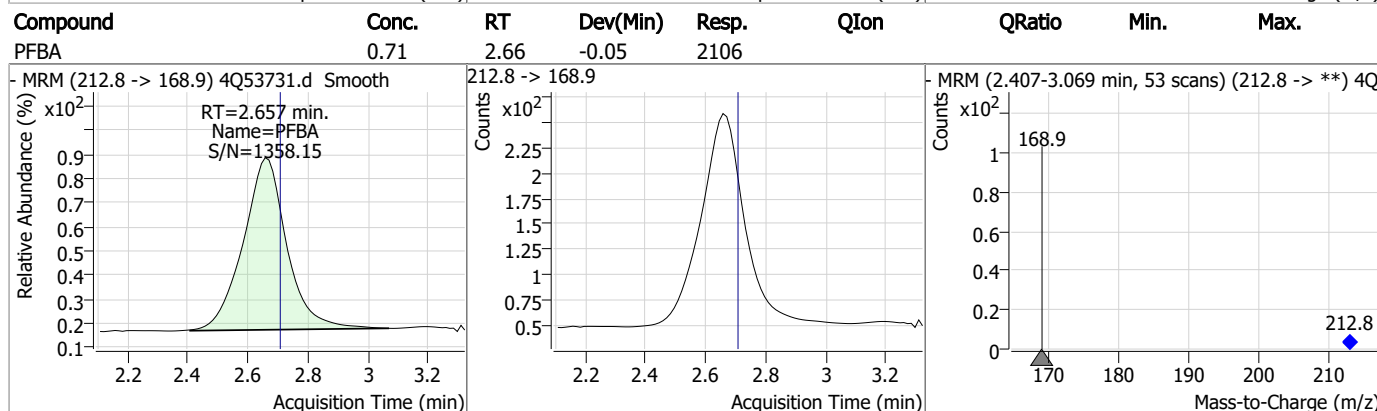
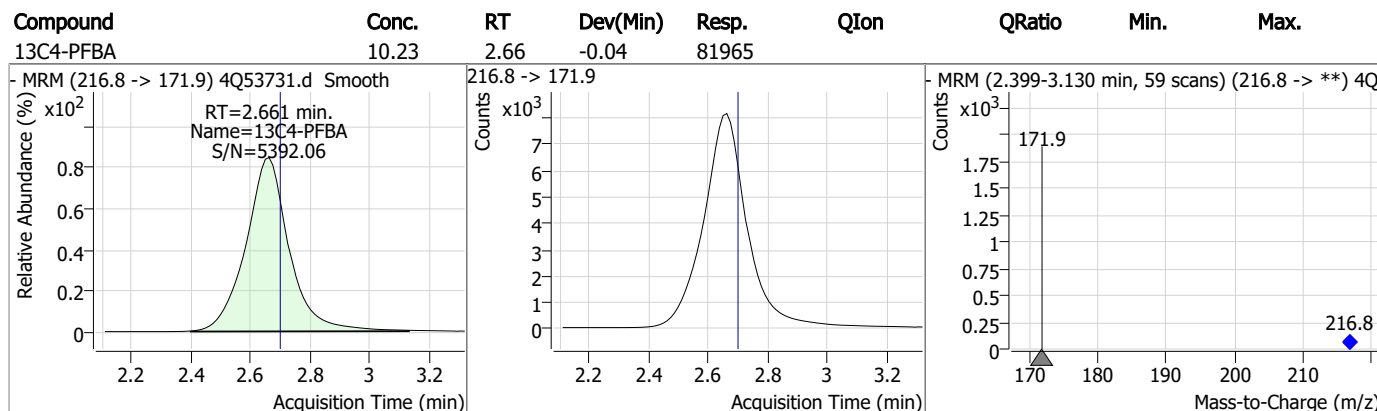
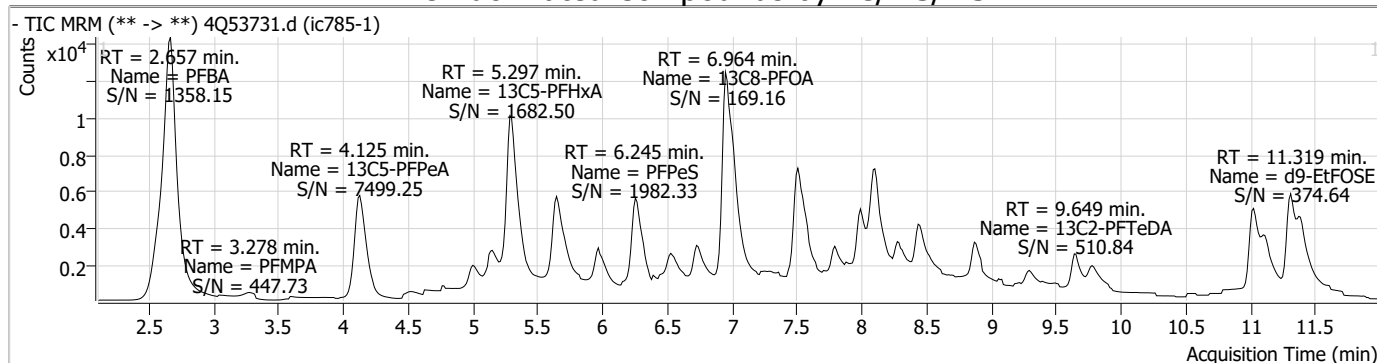
### Perfluorinated Compounds by LC/MS/MS

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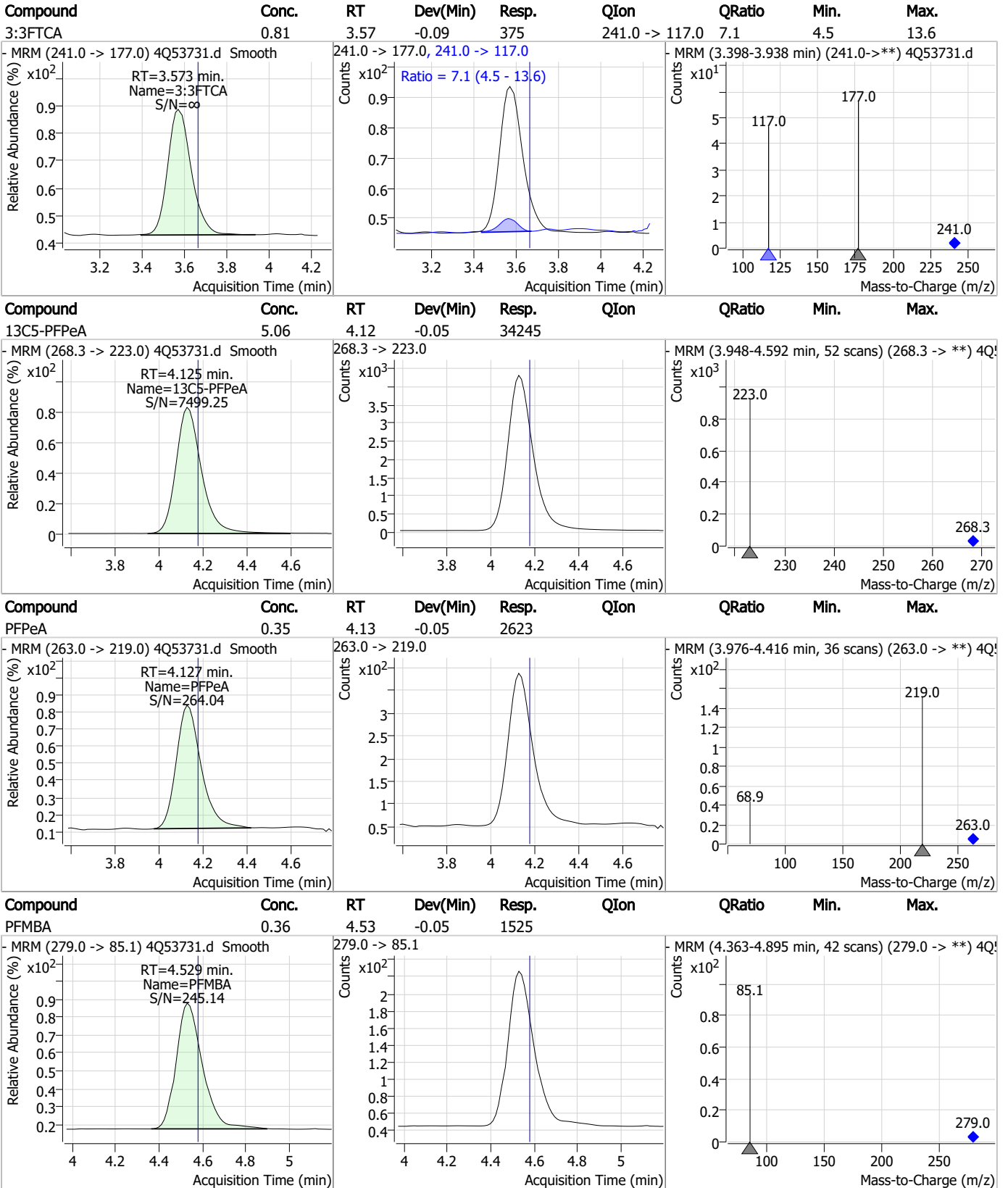


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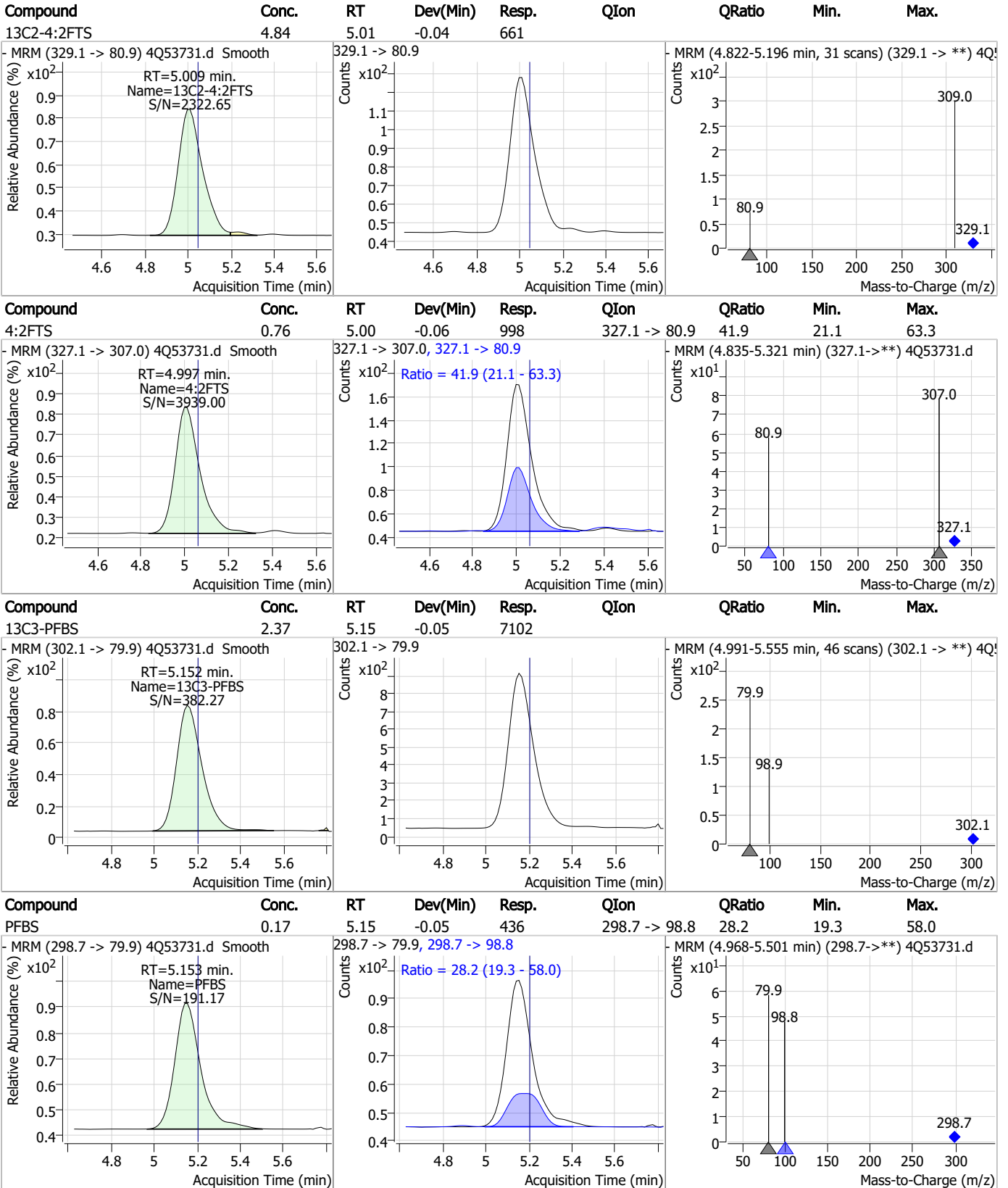


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### Perfluorinated Compounds by LC/MS/MS



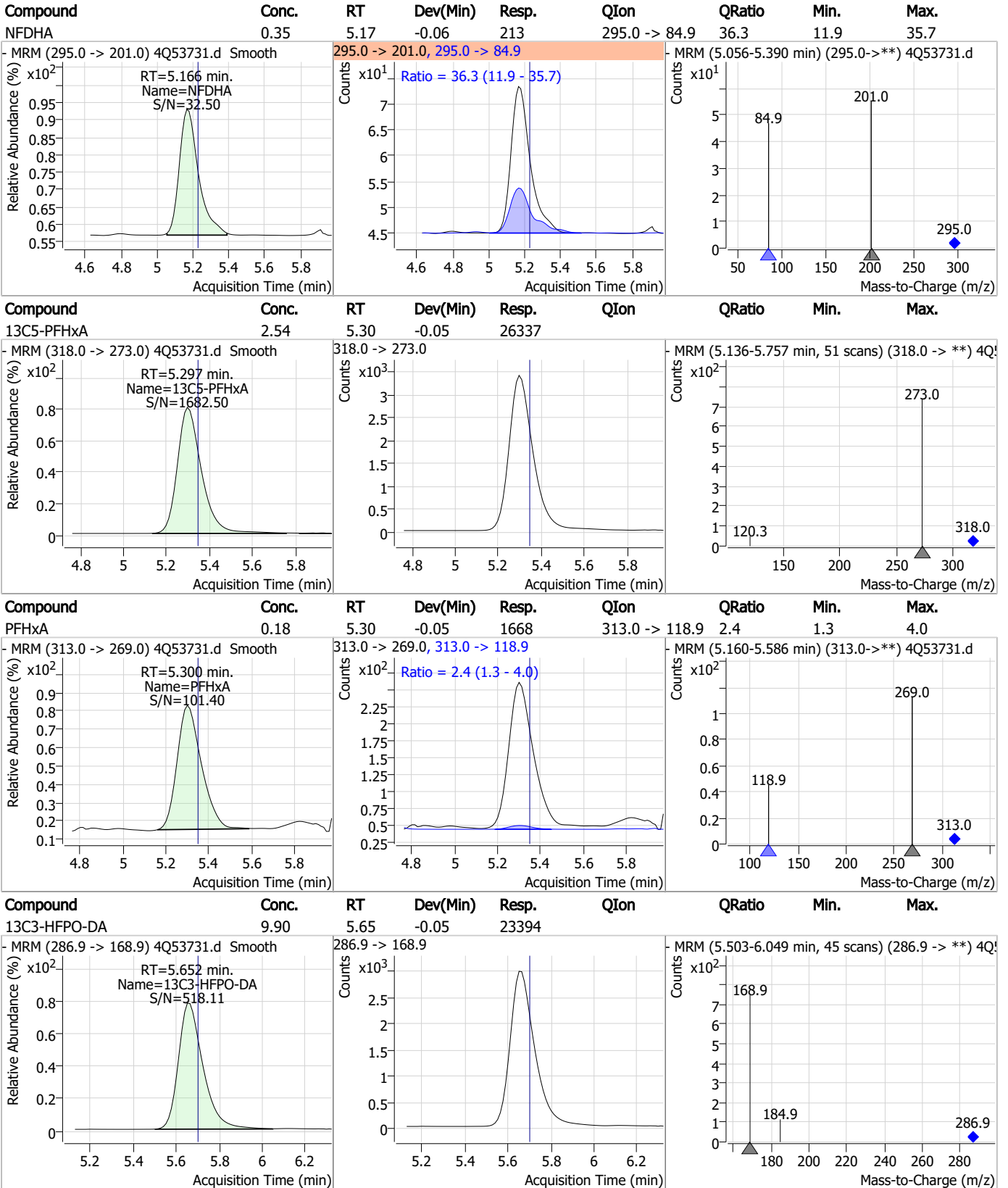
### Perfluorinated Compounds by LC/MS/MS



7.7.2

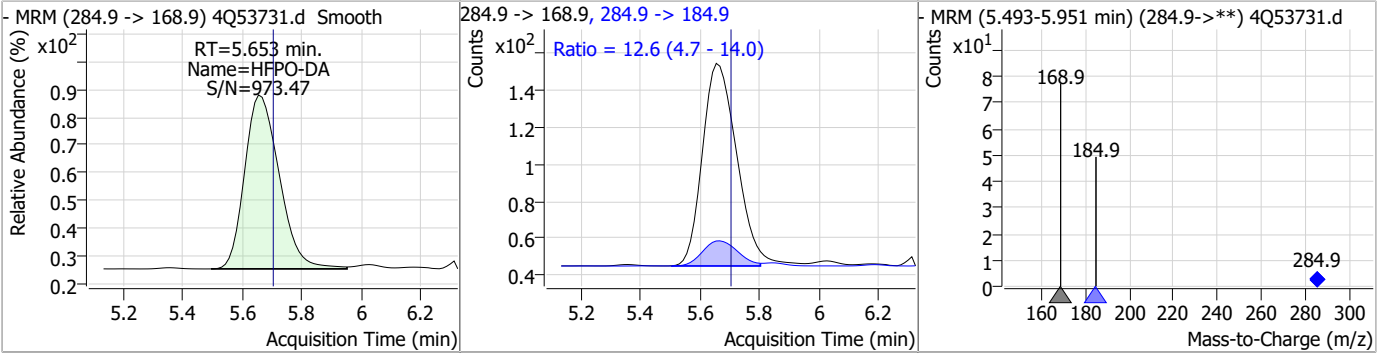
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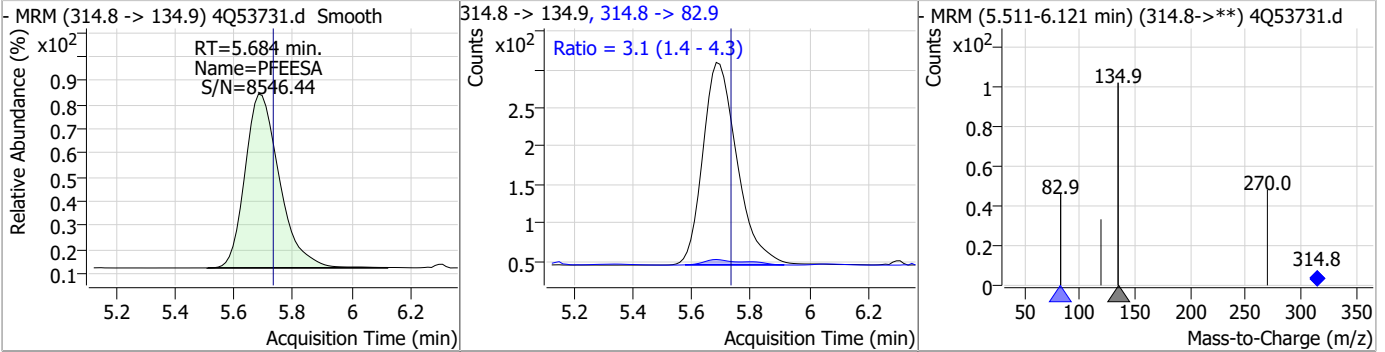


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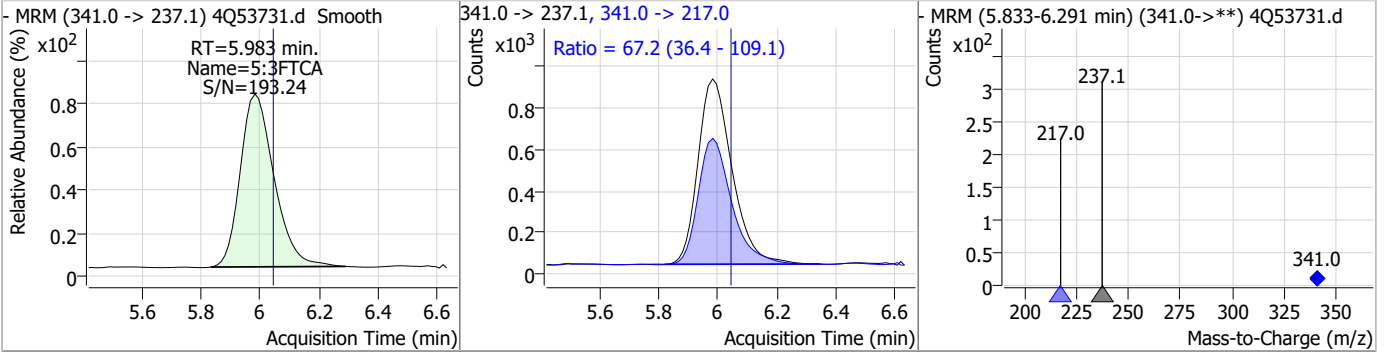
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.36	5.65	-0.05	889	284.9 -> 184.9	12.6	4.7	14.0



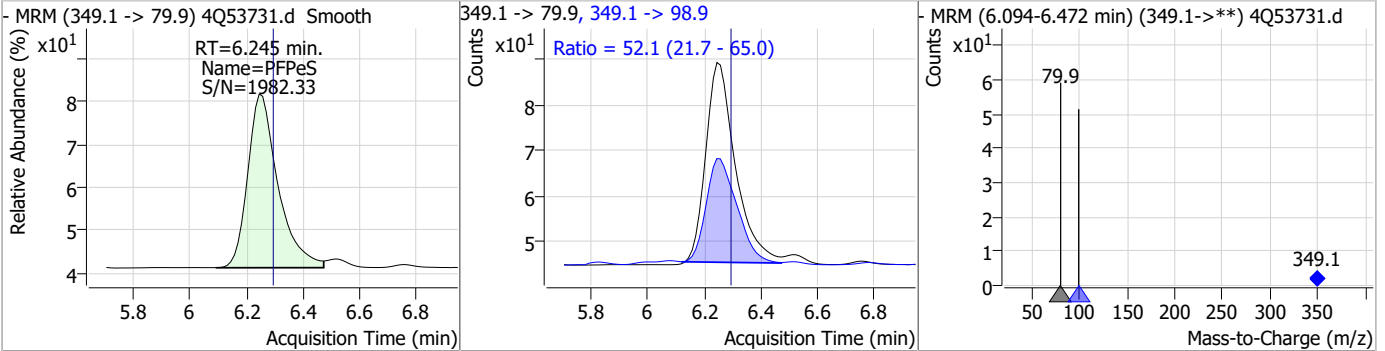
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.29	5.68	-0.05	2143	314.8 -> 82.9	3.1	1.4	4.3



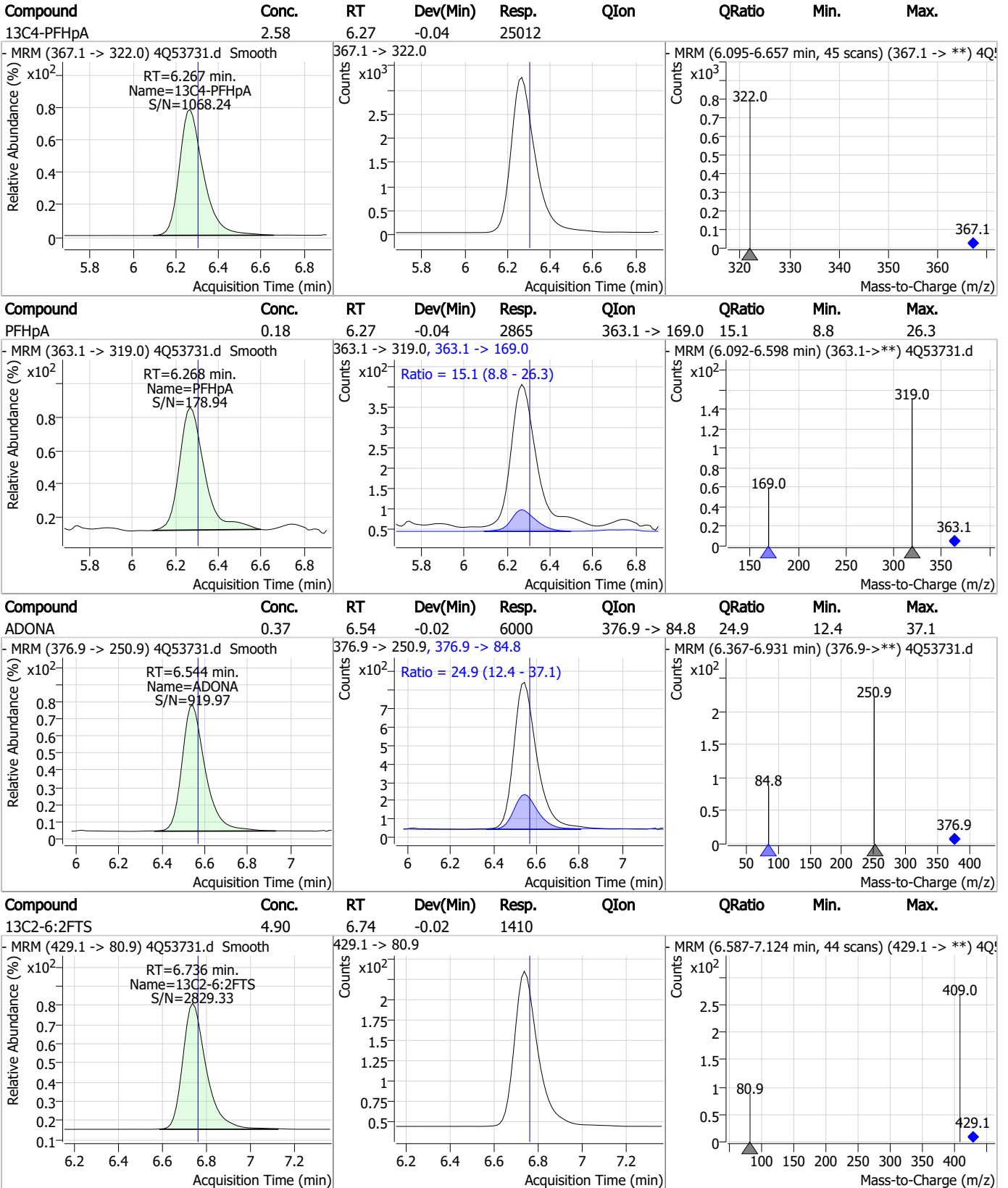
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	4.37	5.98	-0.06	7073	341.0 -> 217.0	67.2	36.4	109.1



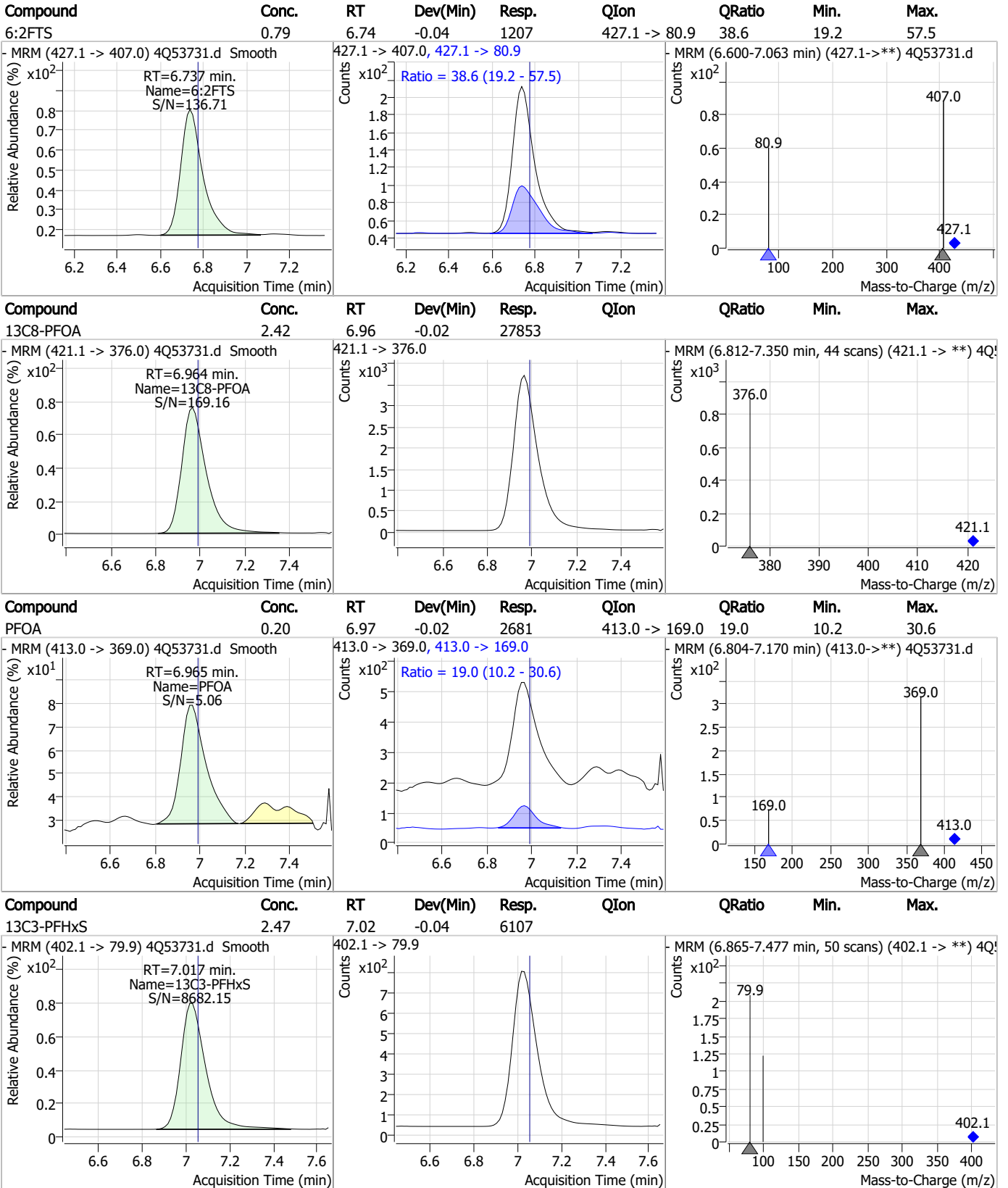
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.16	6.24	-0.05	328	349.1 -> 98.9	52.1	21.7	65.0



### Perfluorinated Compounds by LC/MS/MS

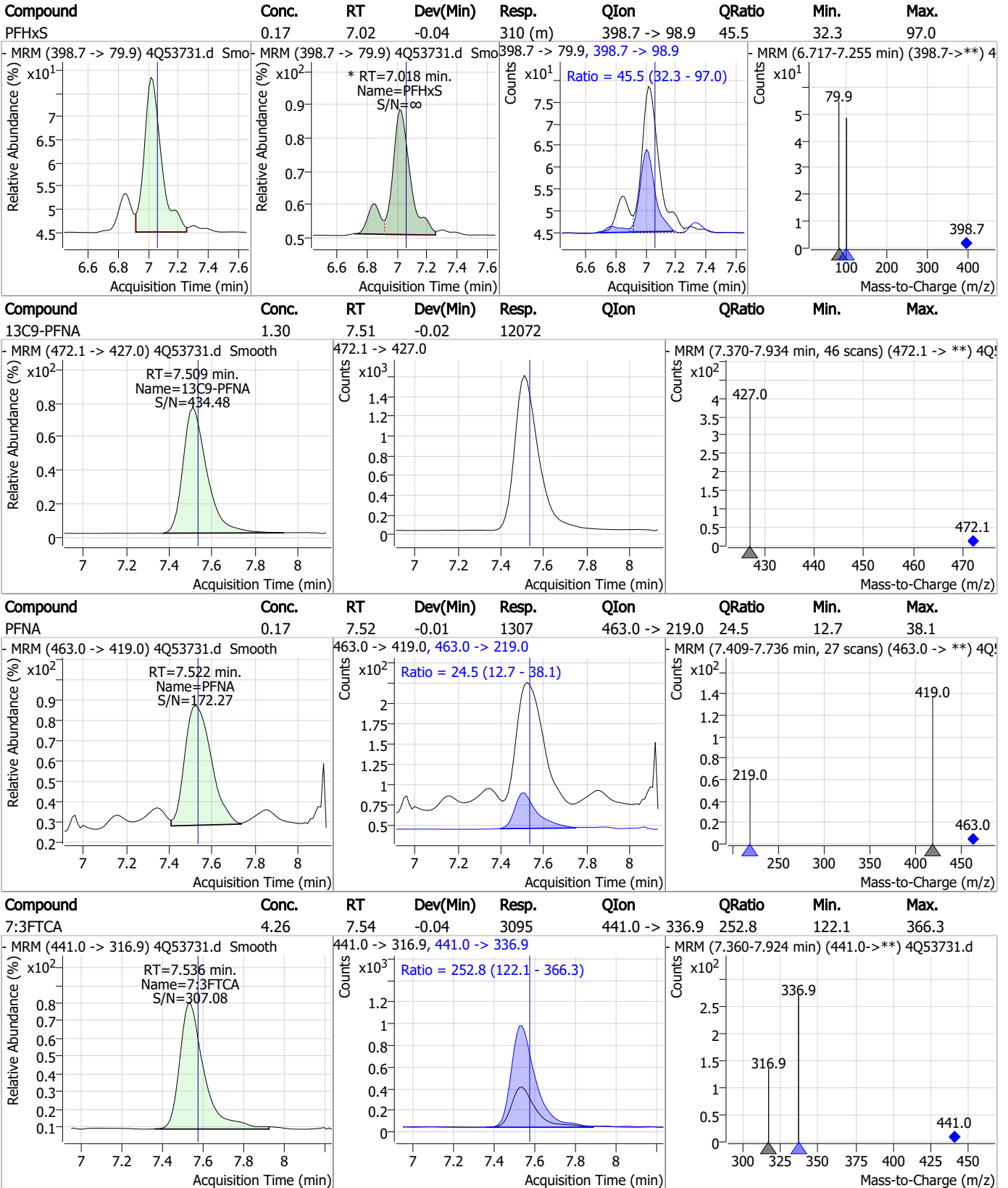


### Perfluorinated Compounds by LC/MS/MS





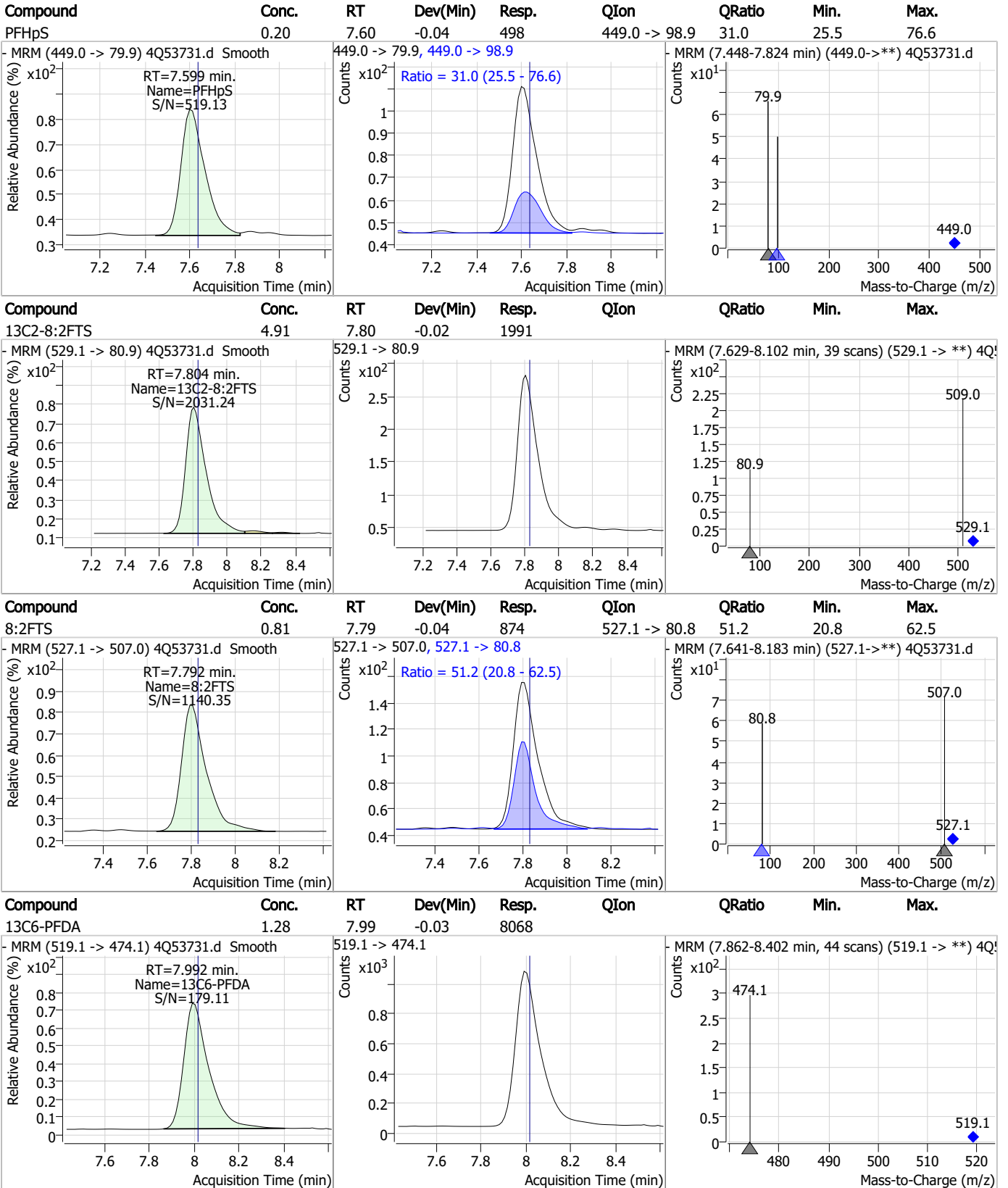
### Perfluorinated Compounds by LC/MS/MS



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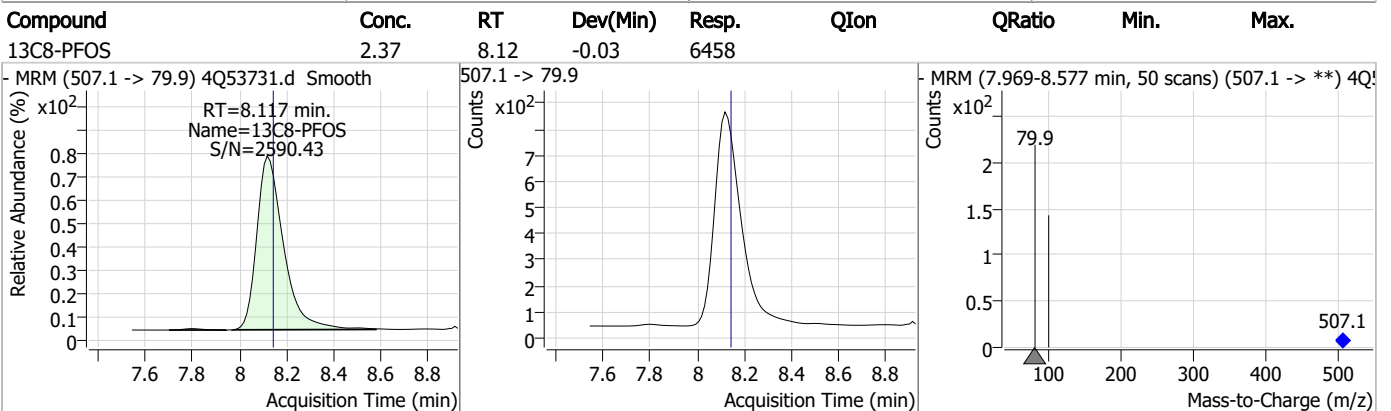
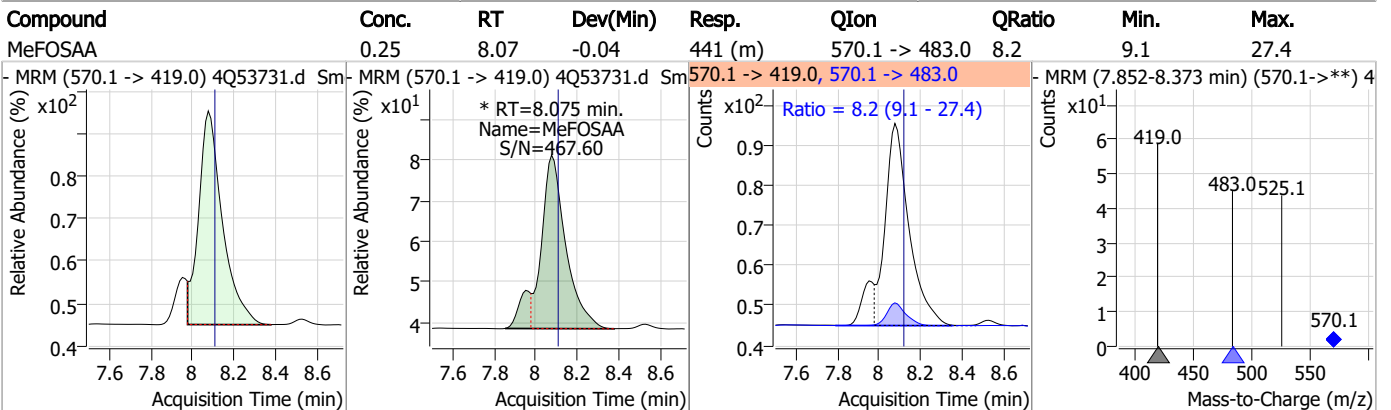
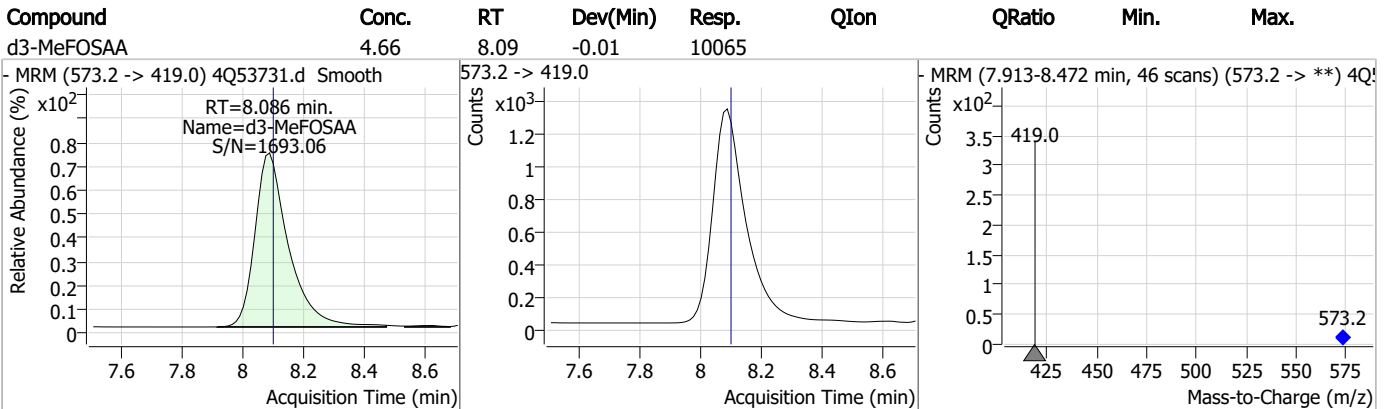
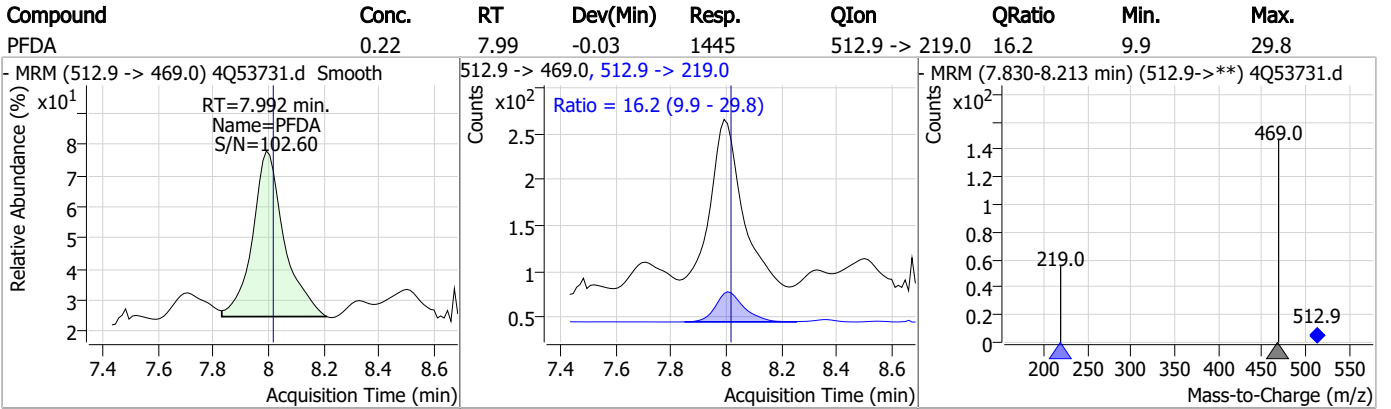
### Perfluorinated Compounds by LC/MS/MS



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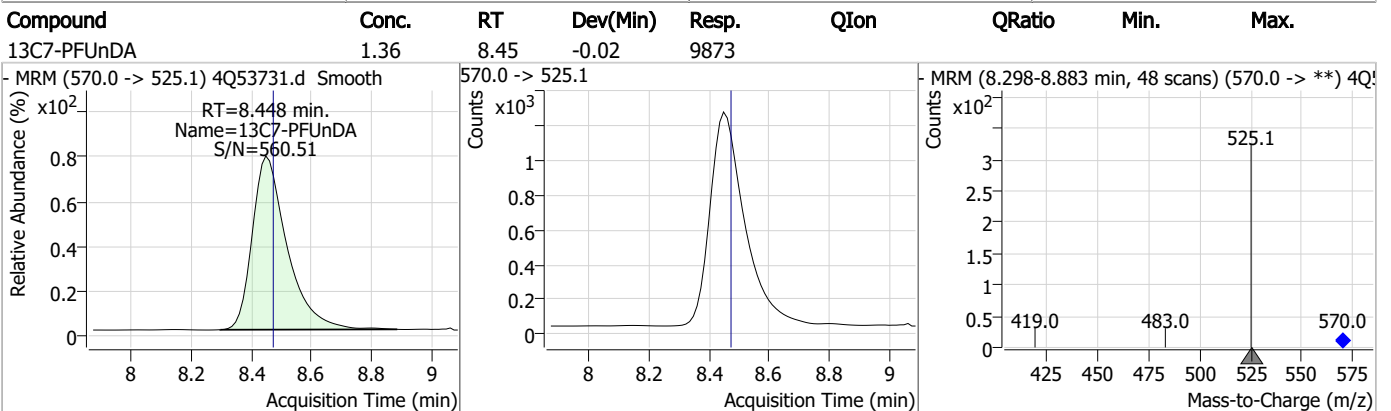
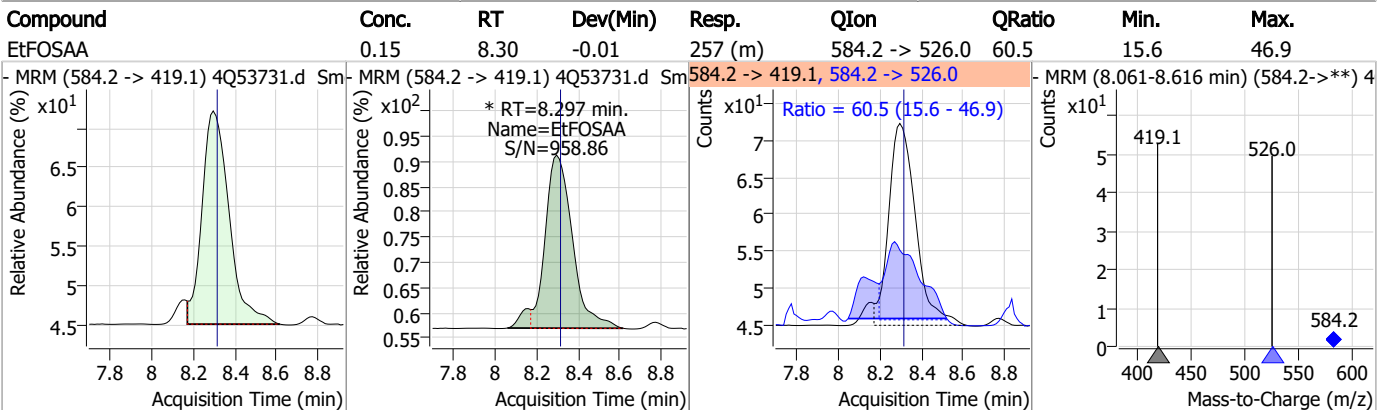
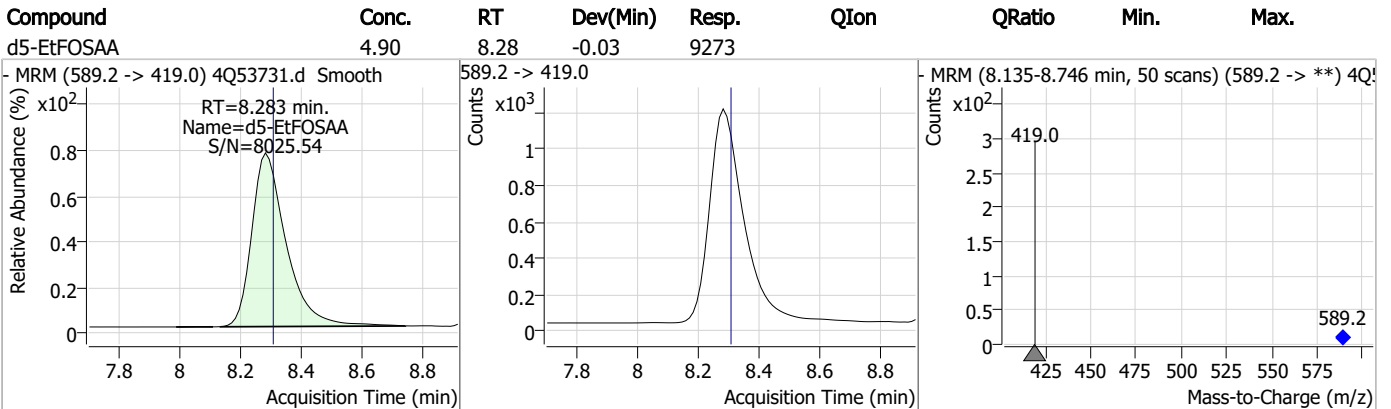
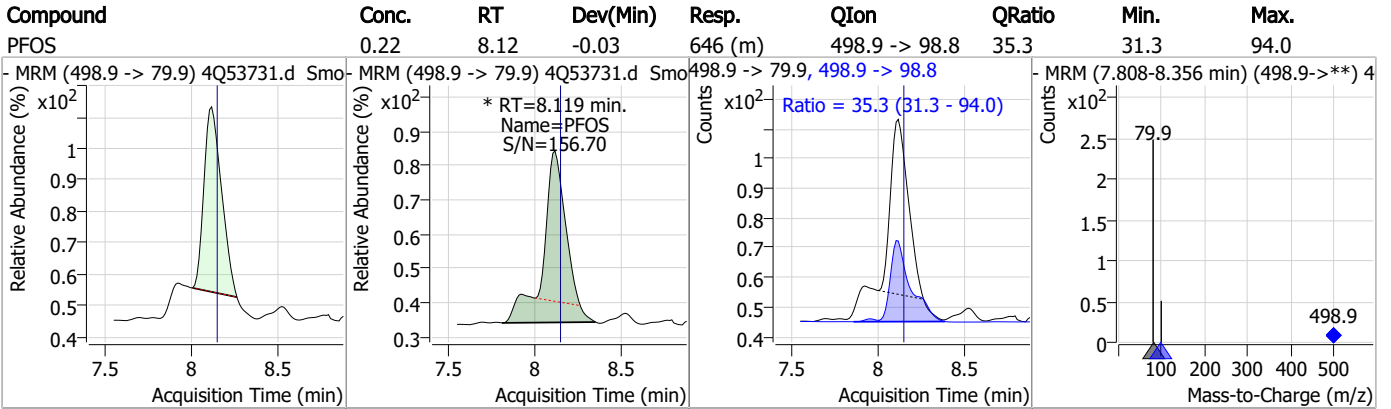
### Perfluorinated Compounds by LC/MS/MS



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### Perfluorinated Compounds by LC/MS/MS

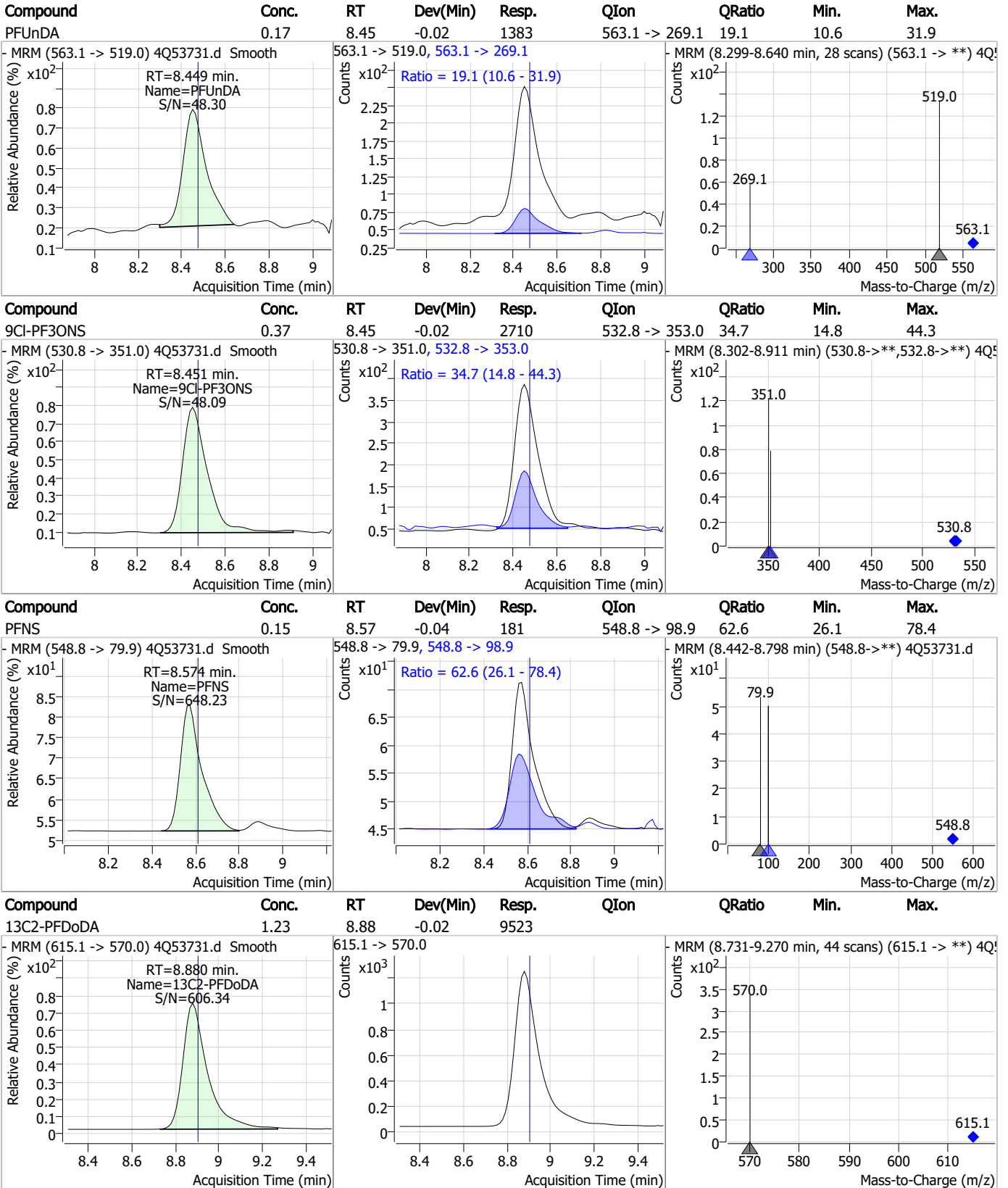


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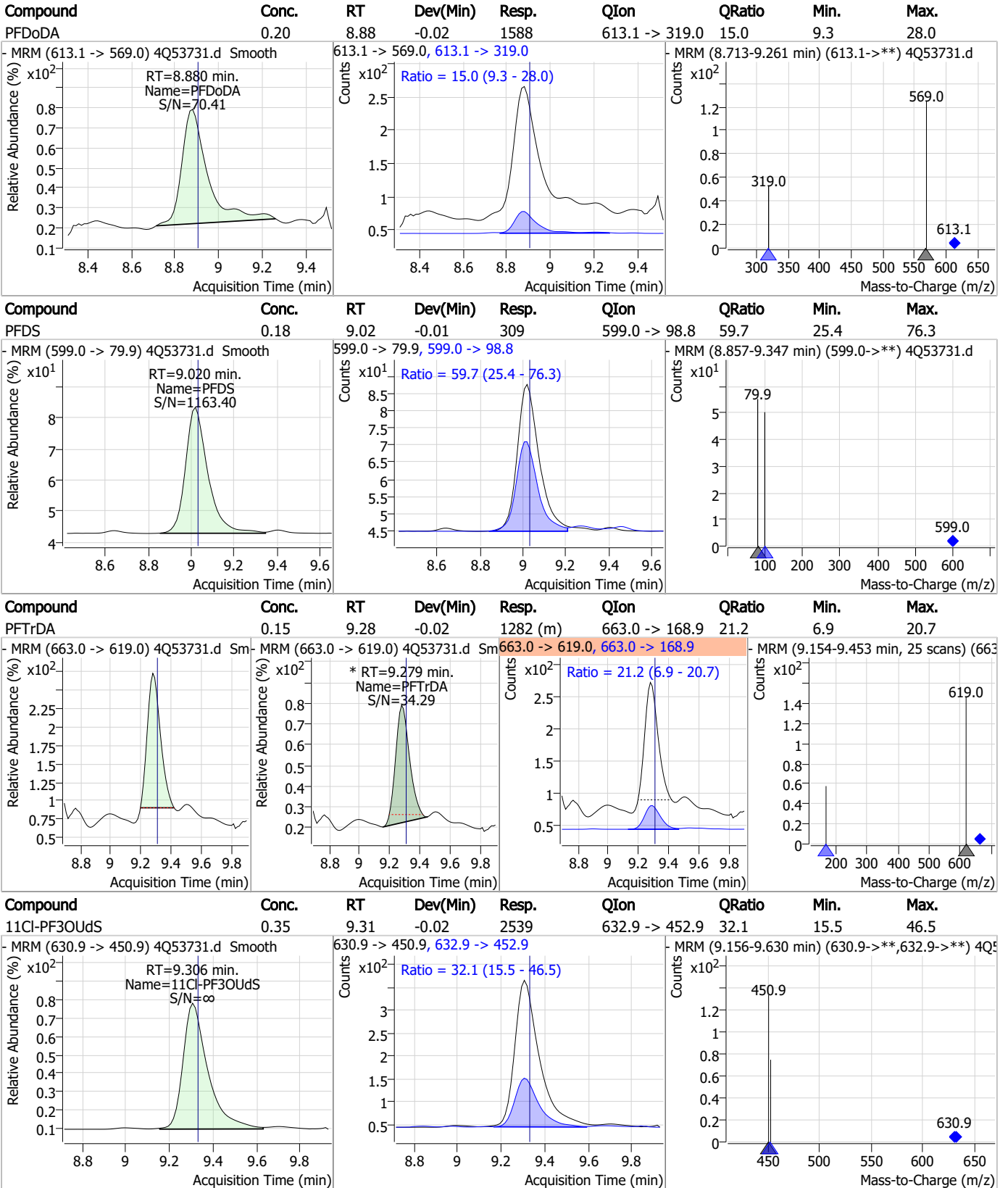
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### Perfluorinated Compounds by LC/MS/MS



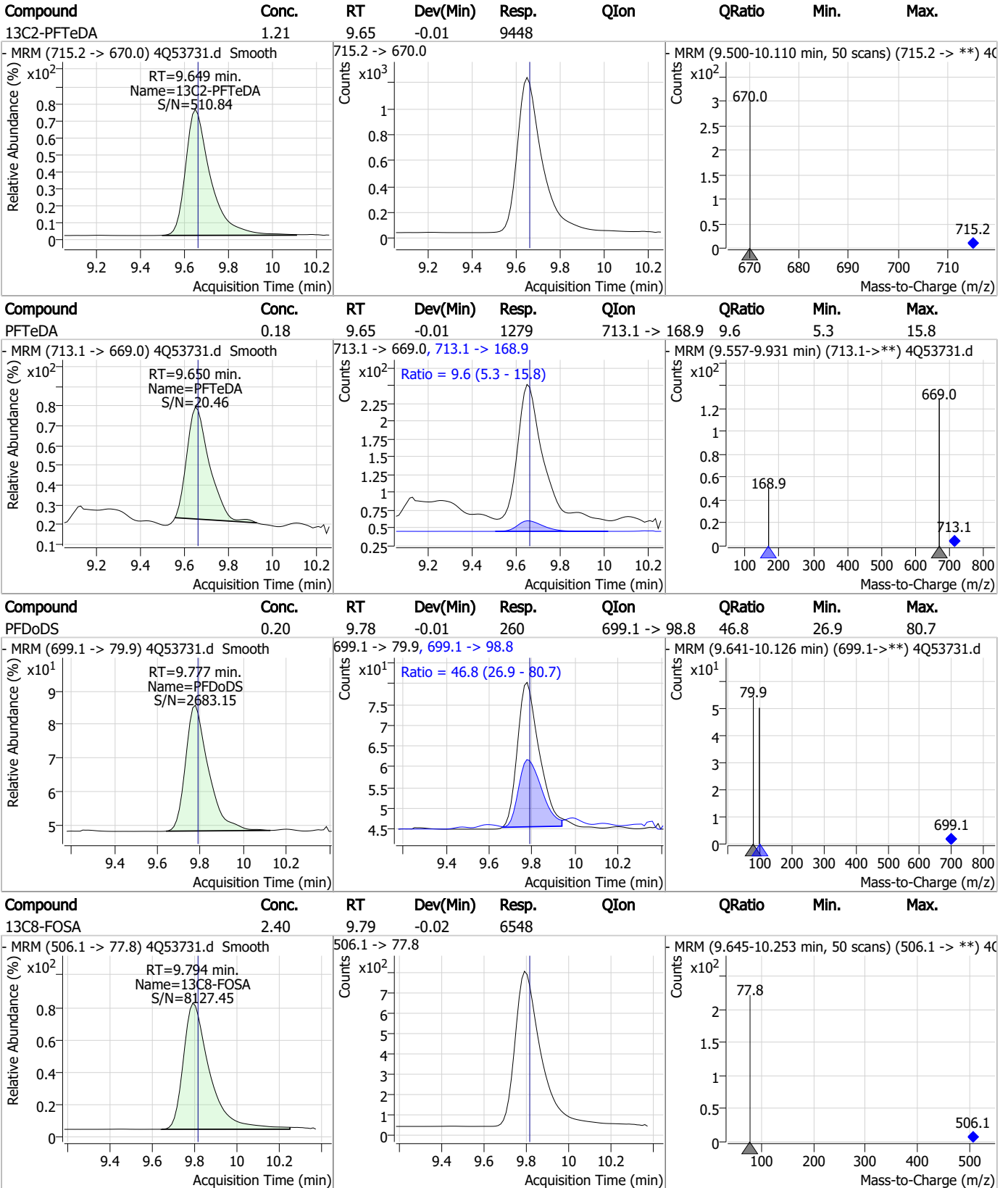
### Perfluorinated Compounds by LC/MS/MS



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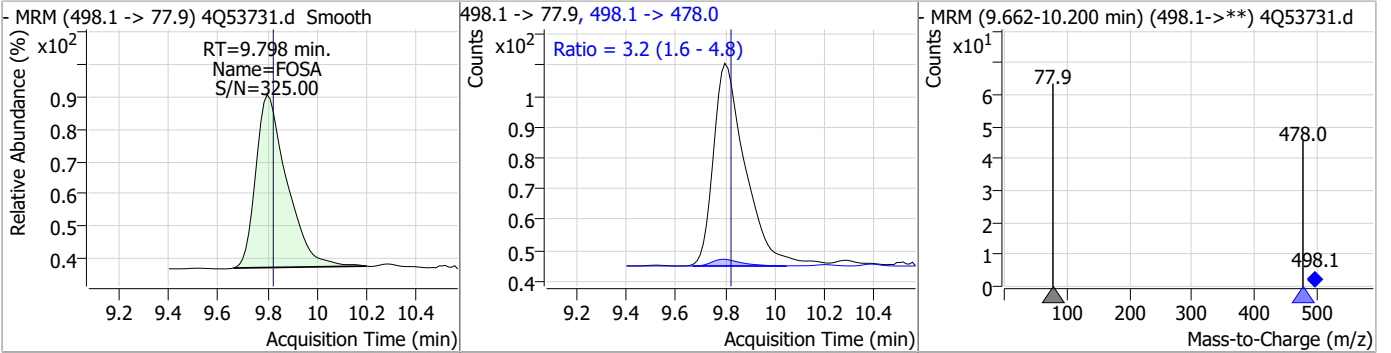


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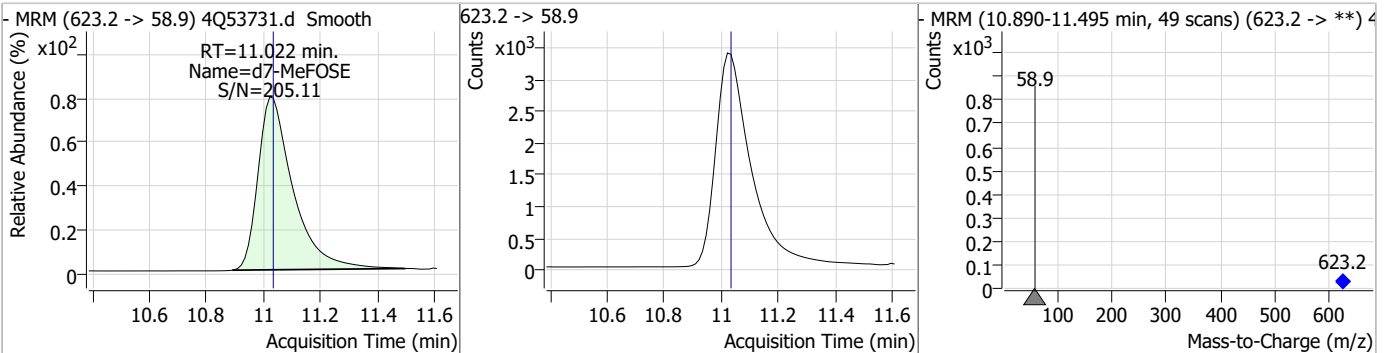
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### Perfluorinated Compounds by LC/MS/MS

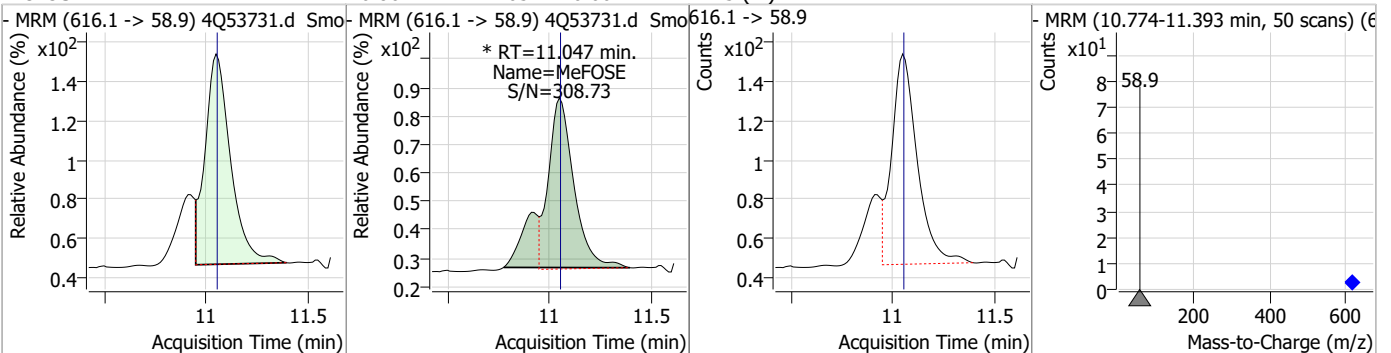
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.18	9.80	-0.02	570	498.1 -> 478.0	3.2	1.6	4.8



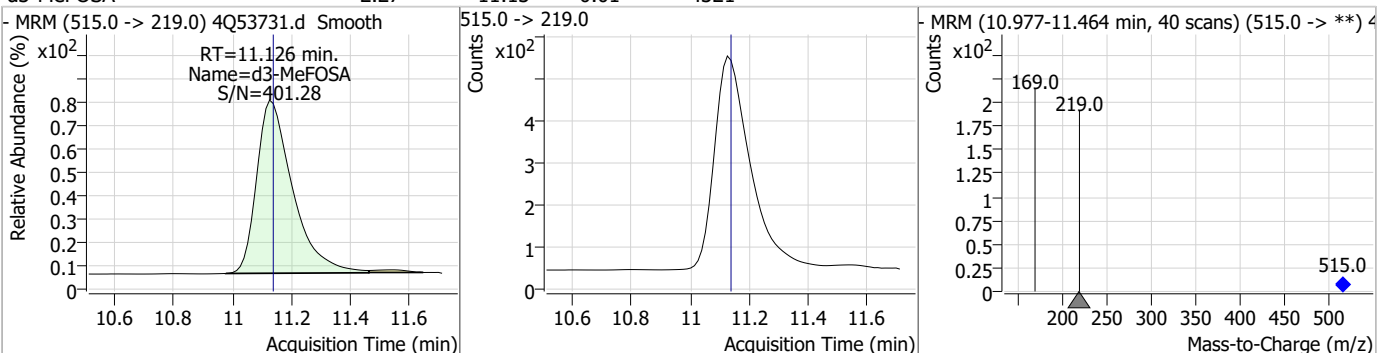
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.44	11.02	-0.01	28685				



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

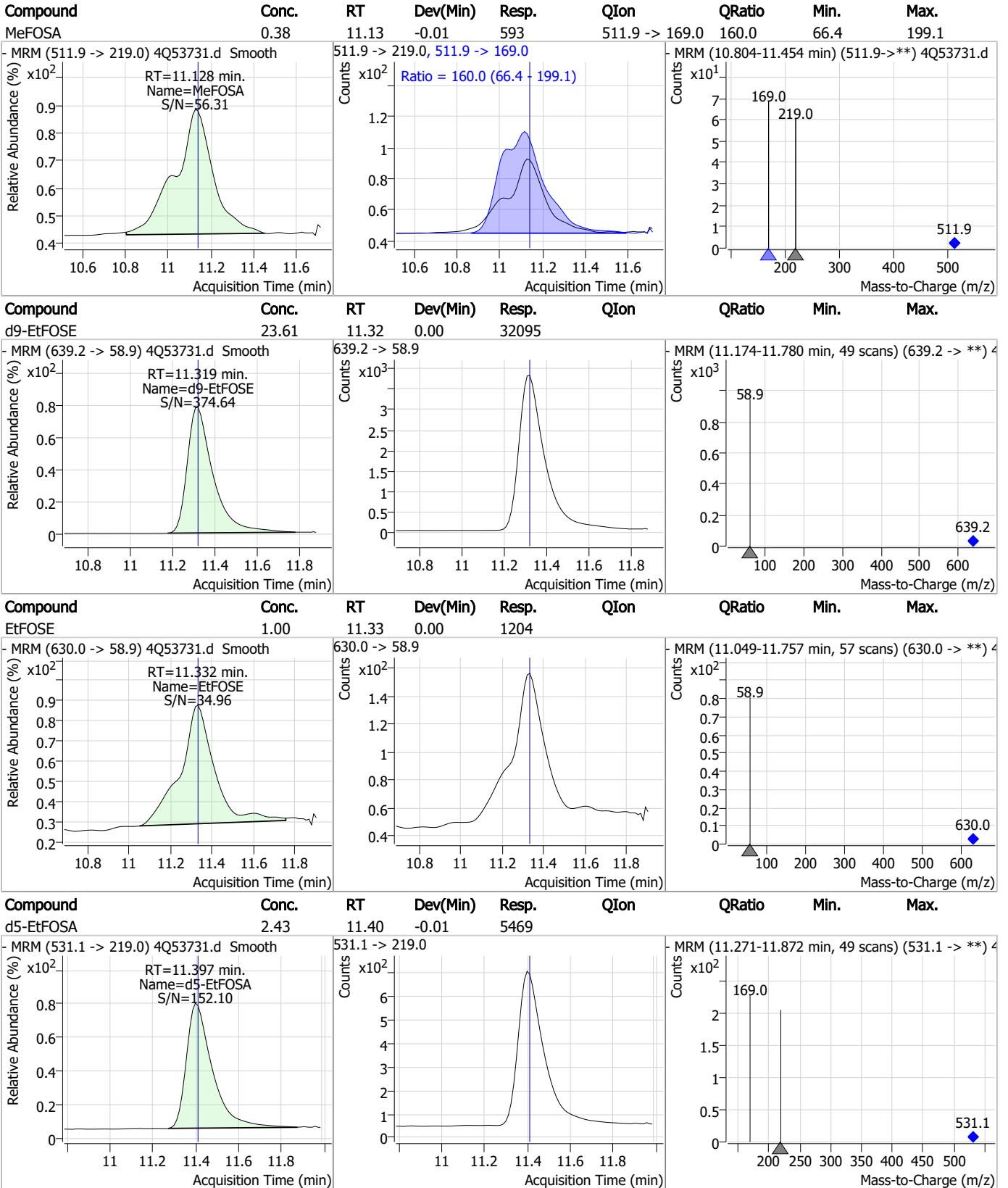


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.27	11.13	-0.01	4321				





### Perfluorinated Compounds by LC/MS/MS

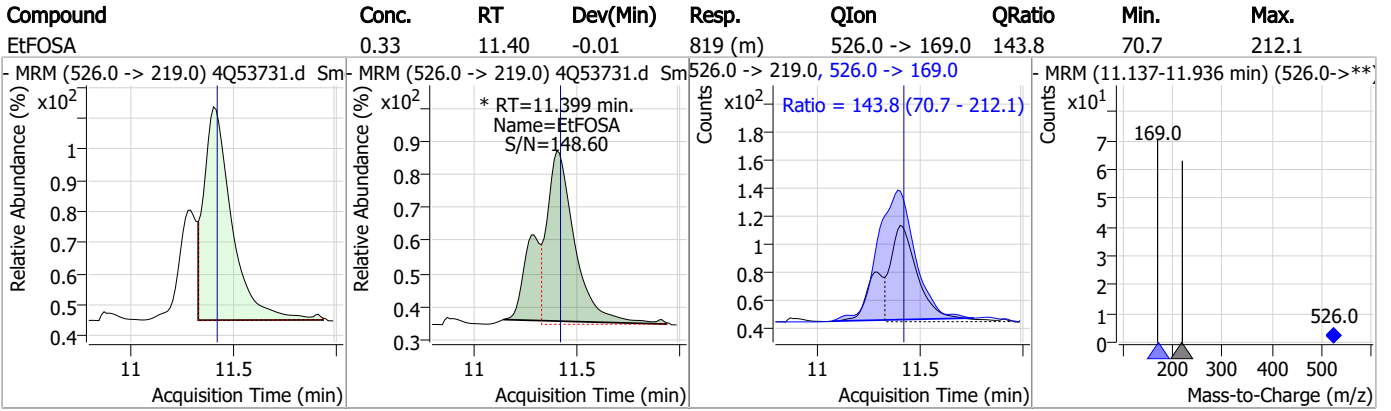


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### Perfluorinated Compounds by LC/MS/MS



7.7.2

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# Manual Integration Approval Summary

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

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

7.7.2.1  
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## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53732.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/13/2023 3:55:10 PM  
 Sample Name : ic785-2  
 Vial : P1-A3  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q785.batch.bin  
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

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

## Perfluorinated Compounds by LC/MS/MS

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

## Perfluorinated Compounds by LC/MS/MS

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

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

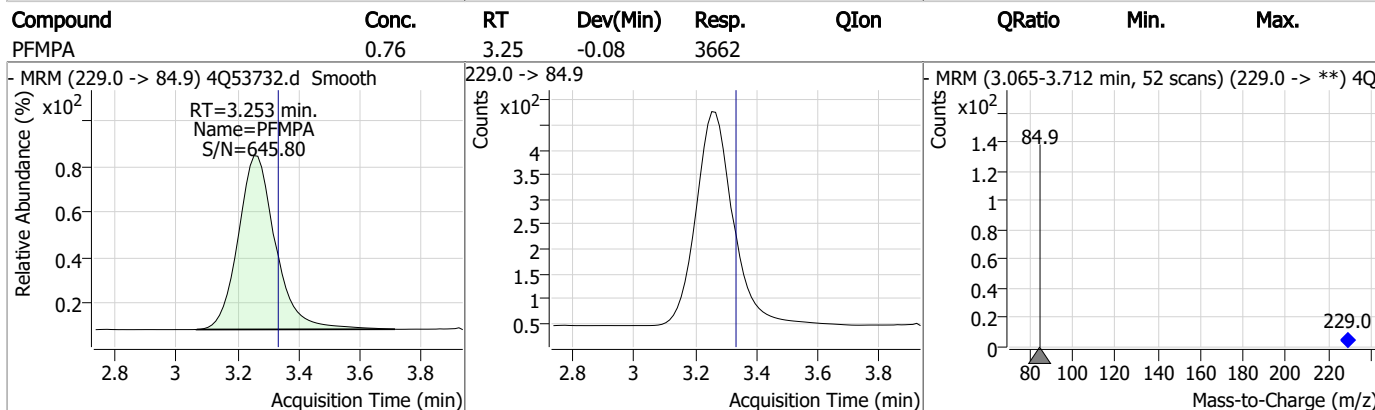
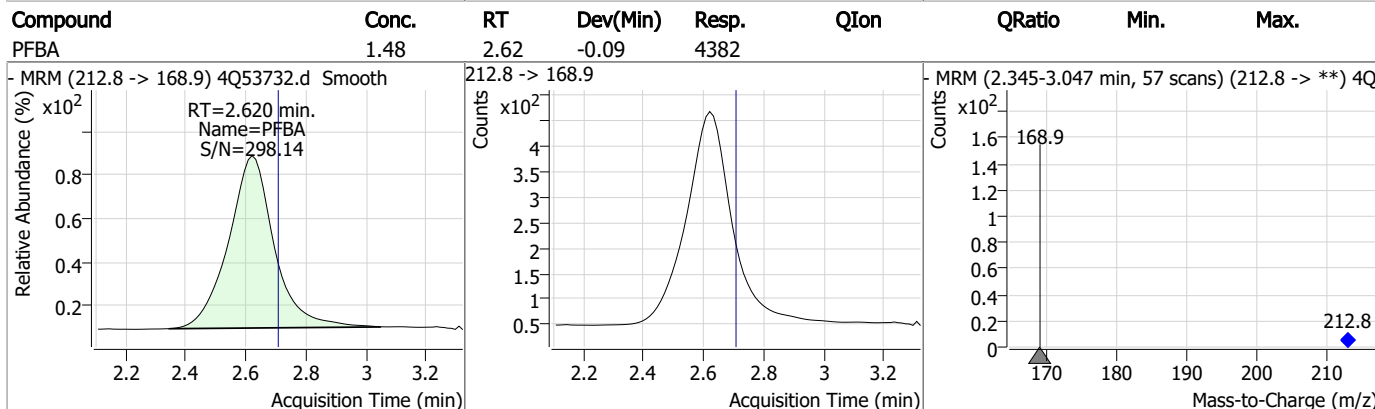
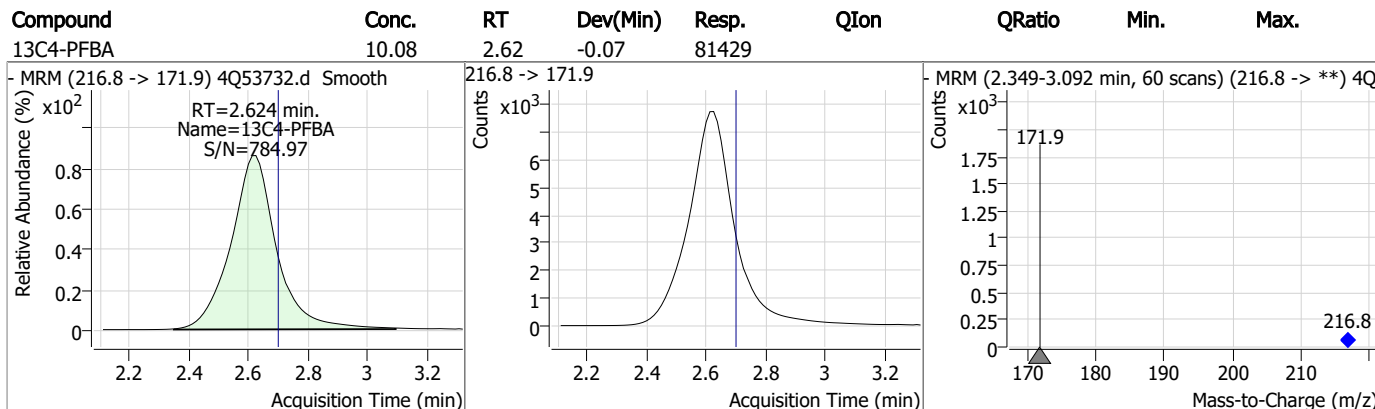
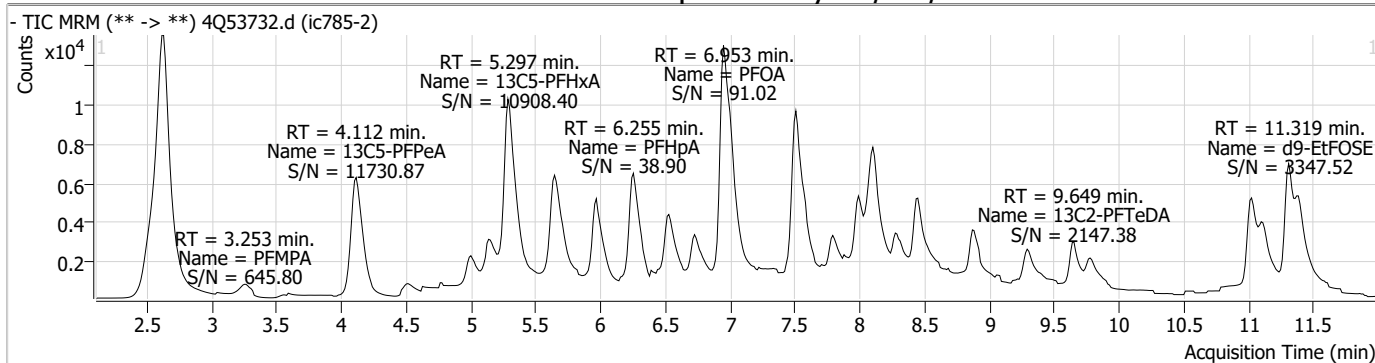
### Perfluorinated Compounds by LC/MS/MS

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

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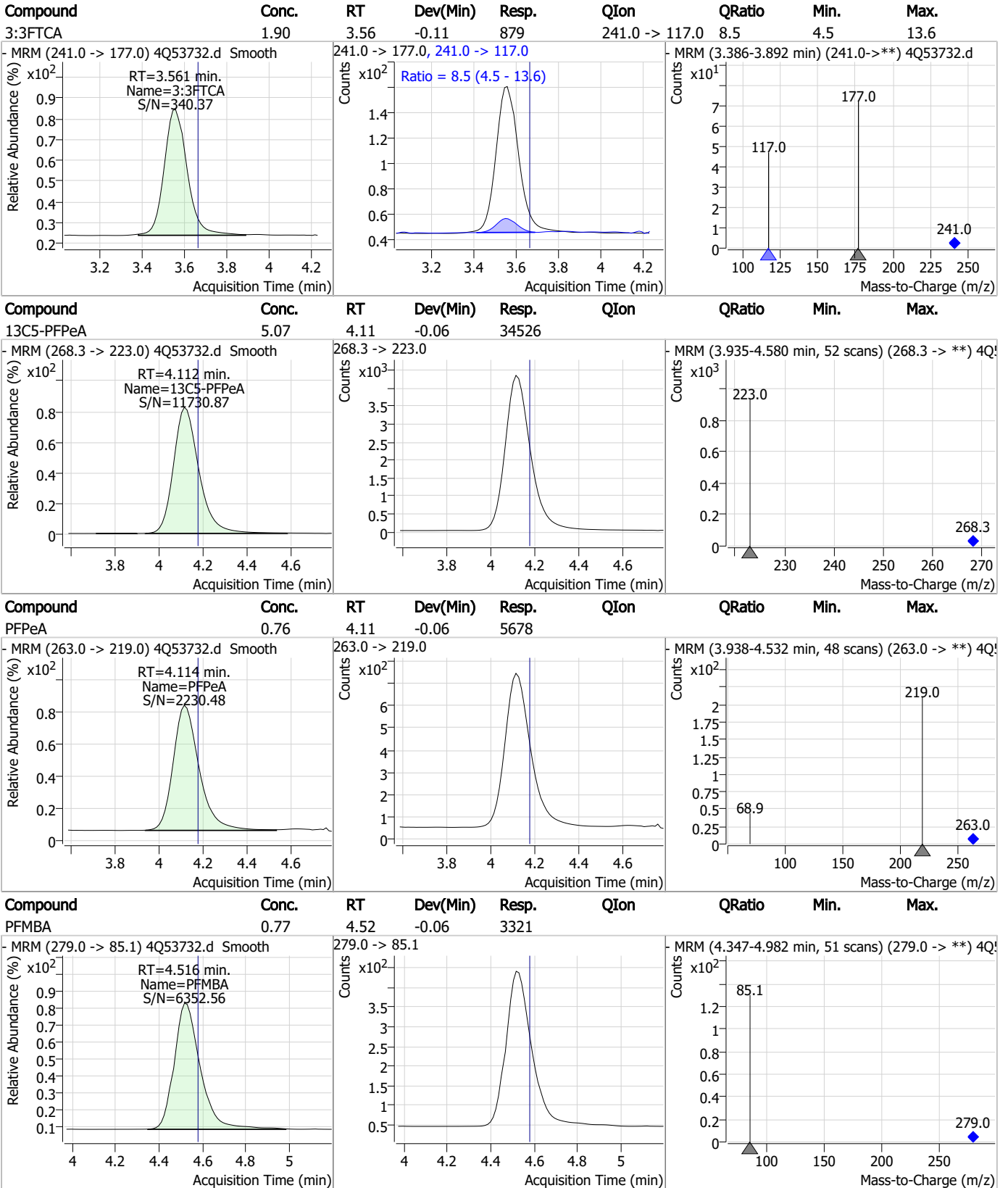
### Perfluorinated Compounds by LC/MS/MS



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### Perfluorinated Compounds by LC/MS/MS

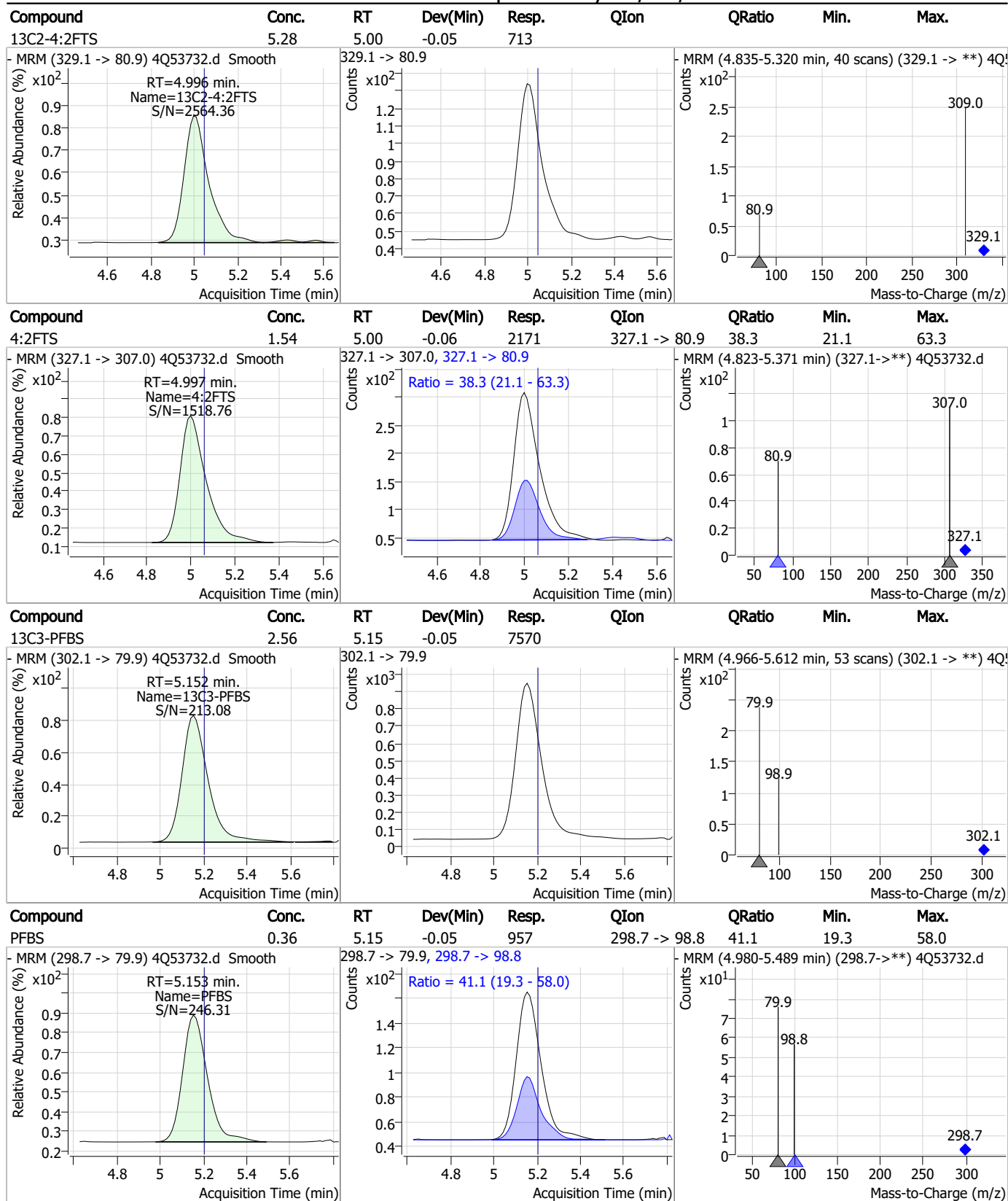


7.7.3

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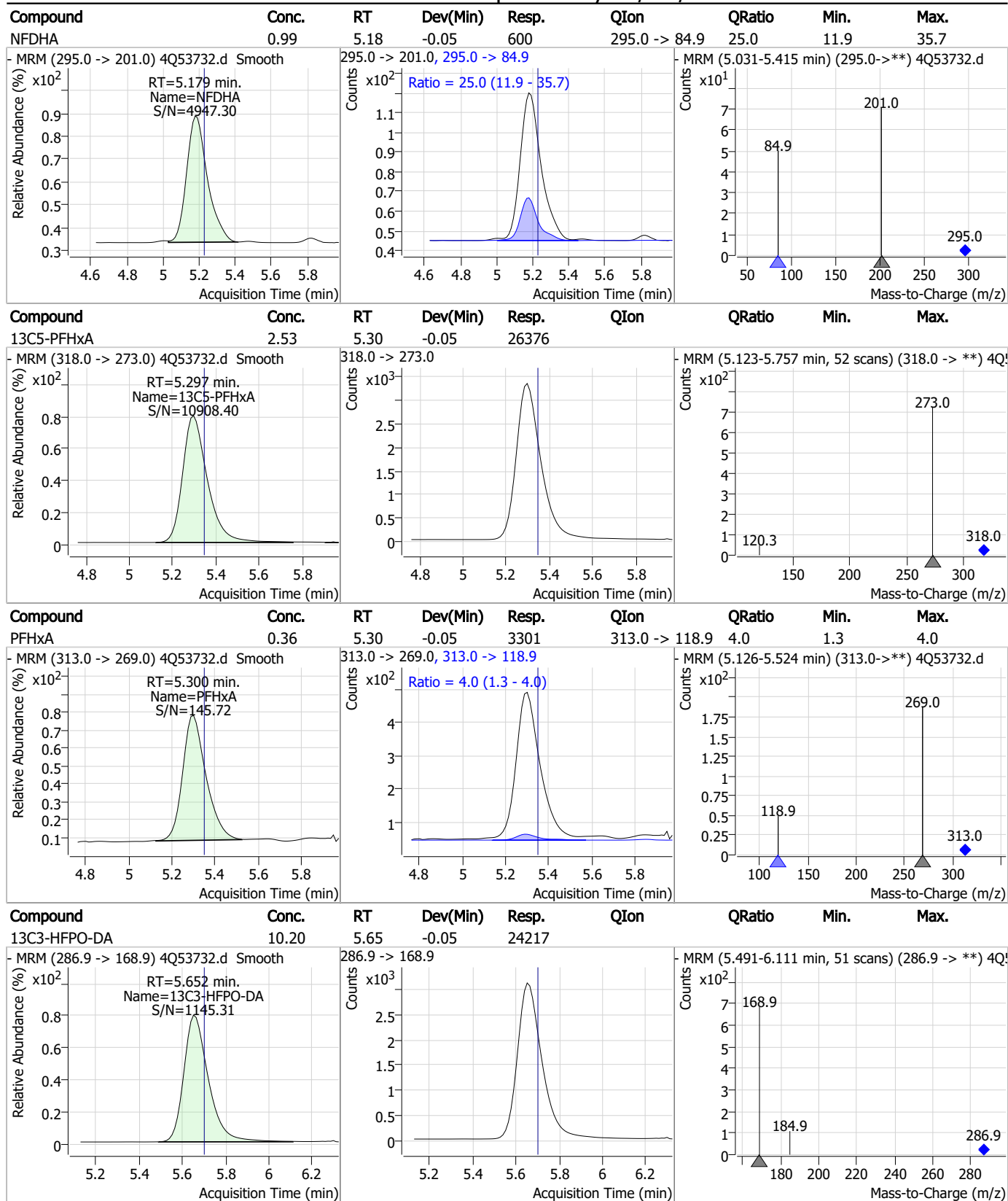
### Perfluorinated Compounds by LC/MS/MS



7.7.3

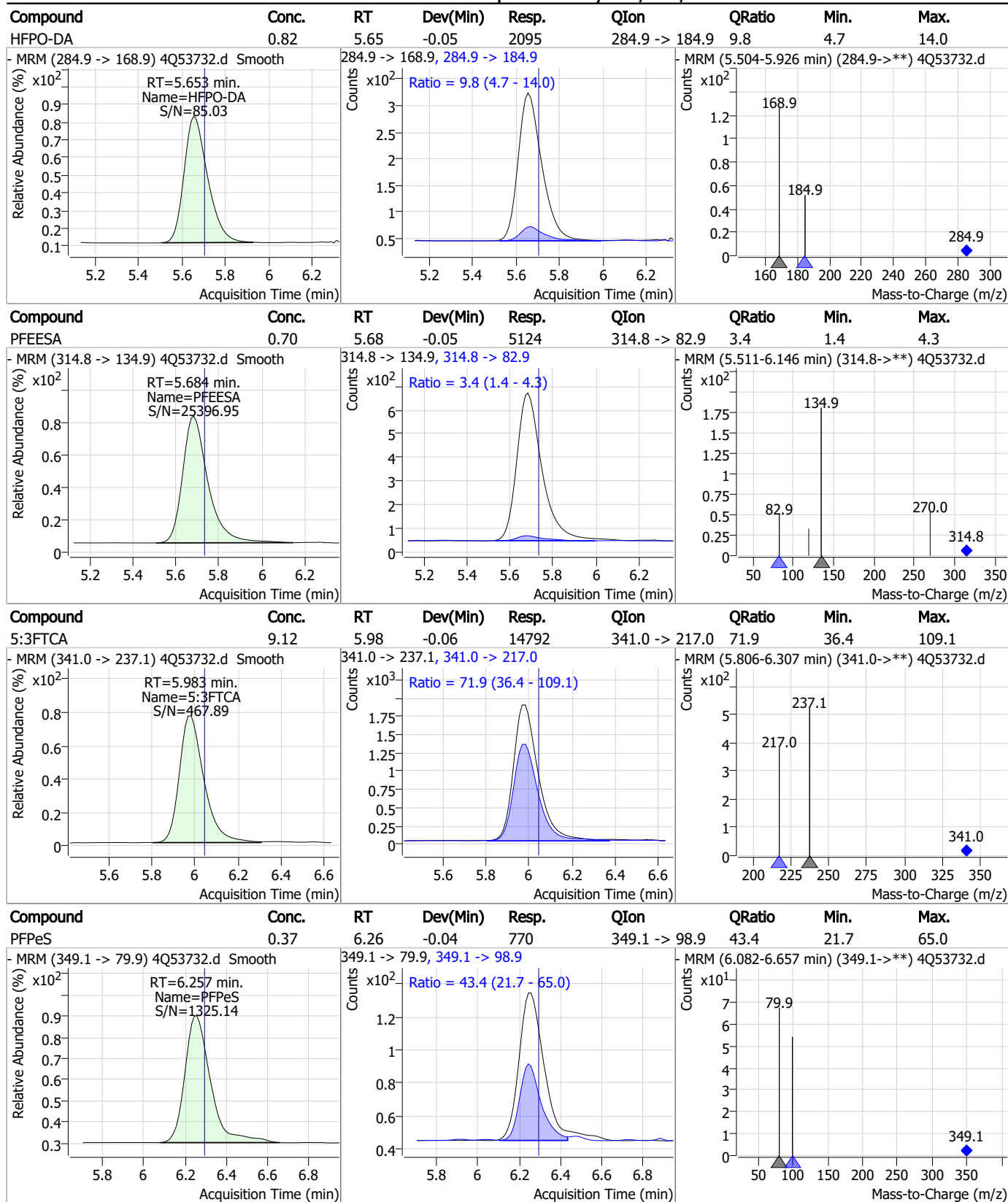
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### Perfluorinated Compounds by LC/MS/MS



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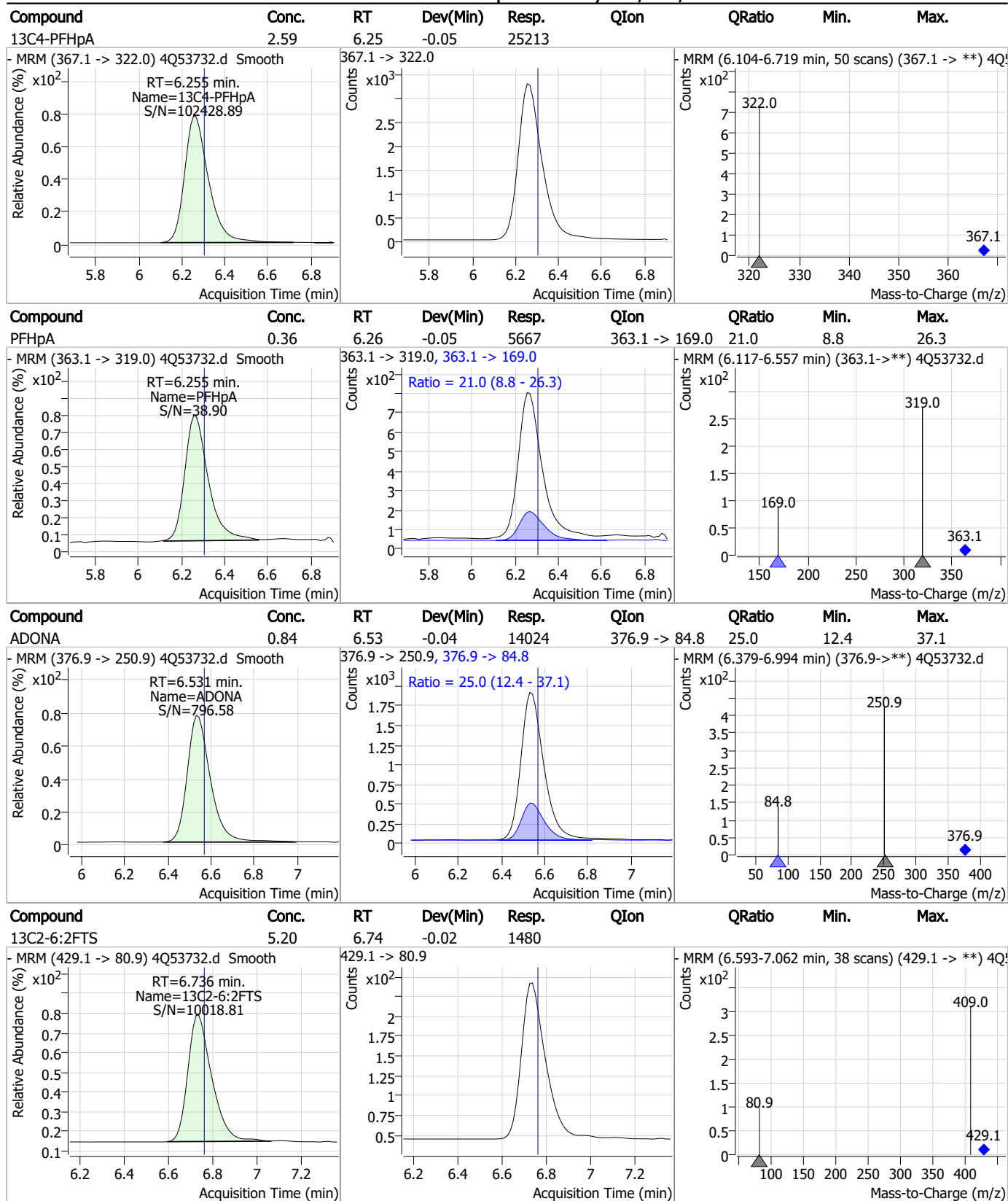
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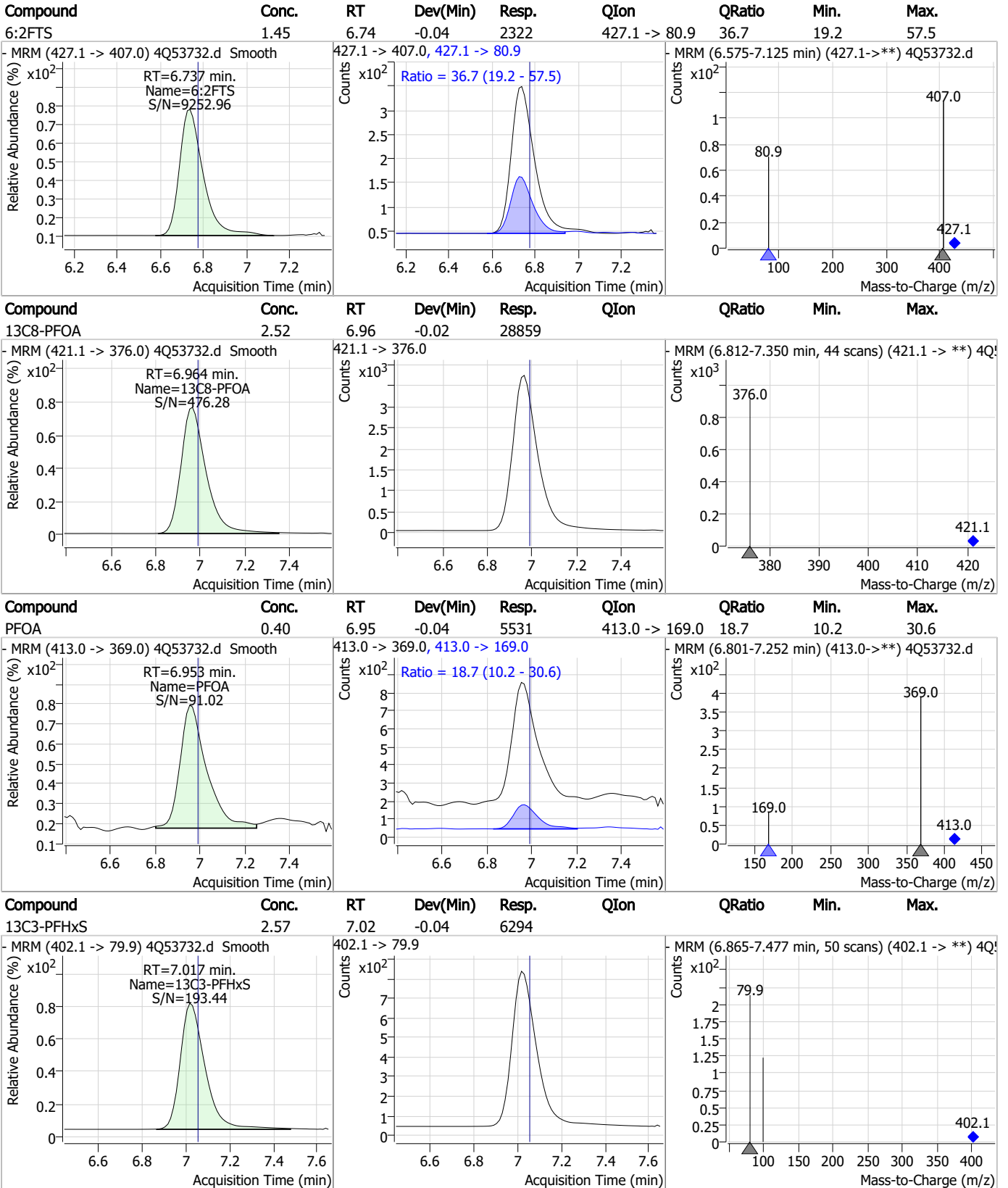
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### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

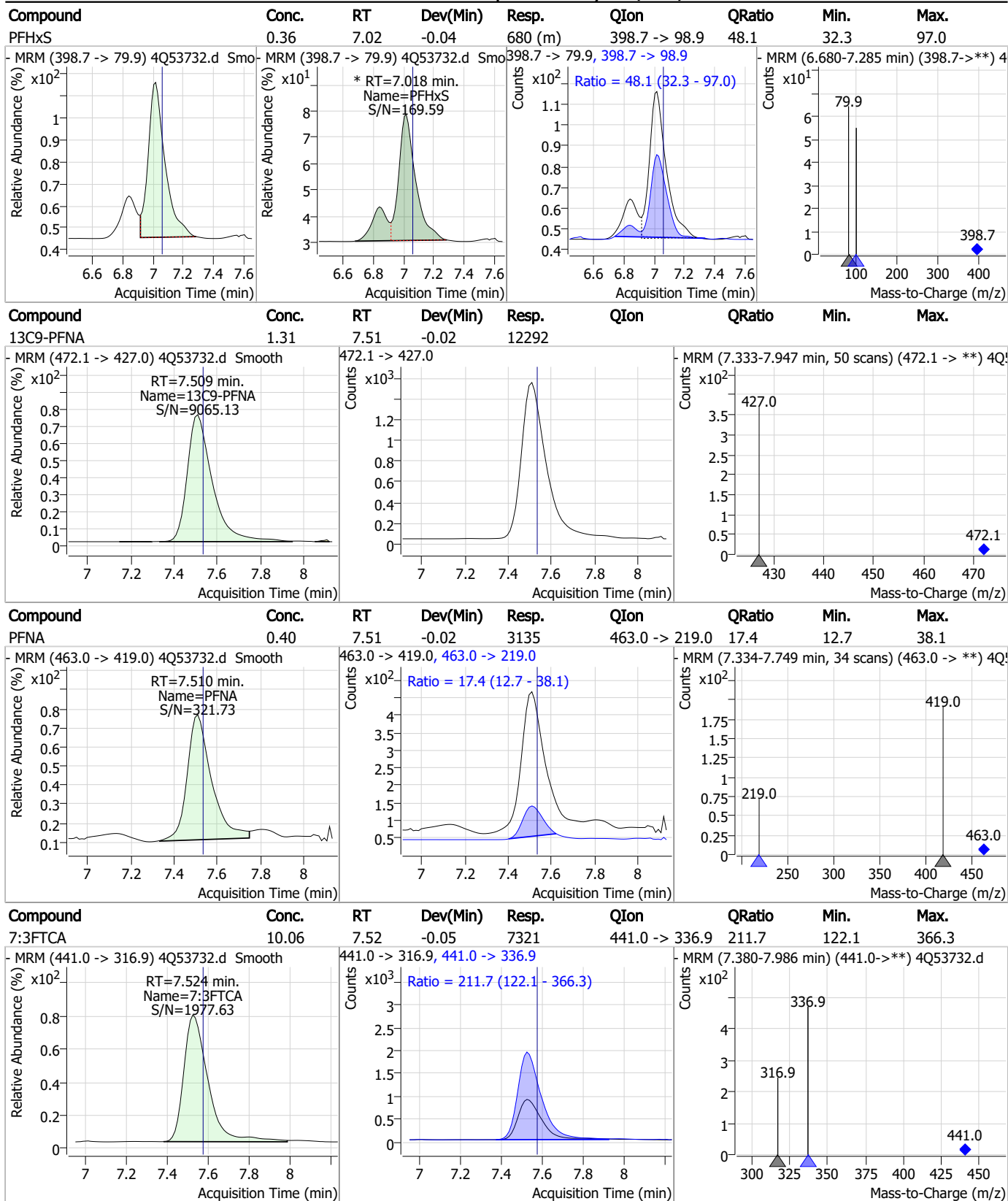


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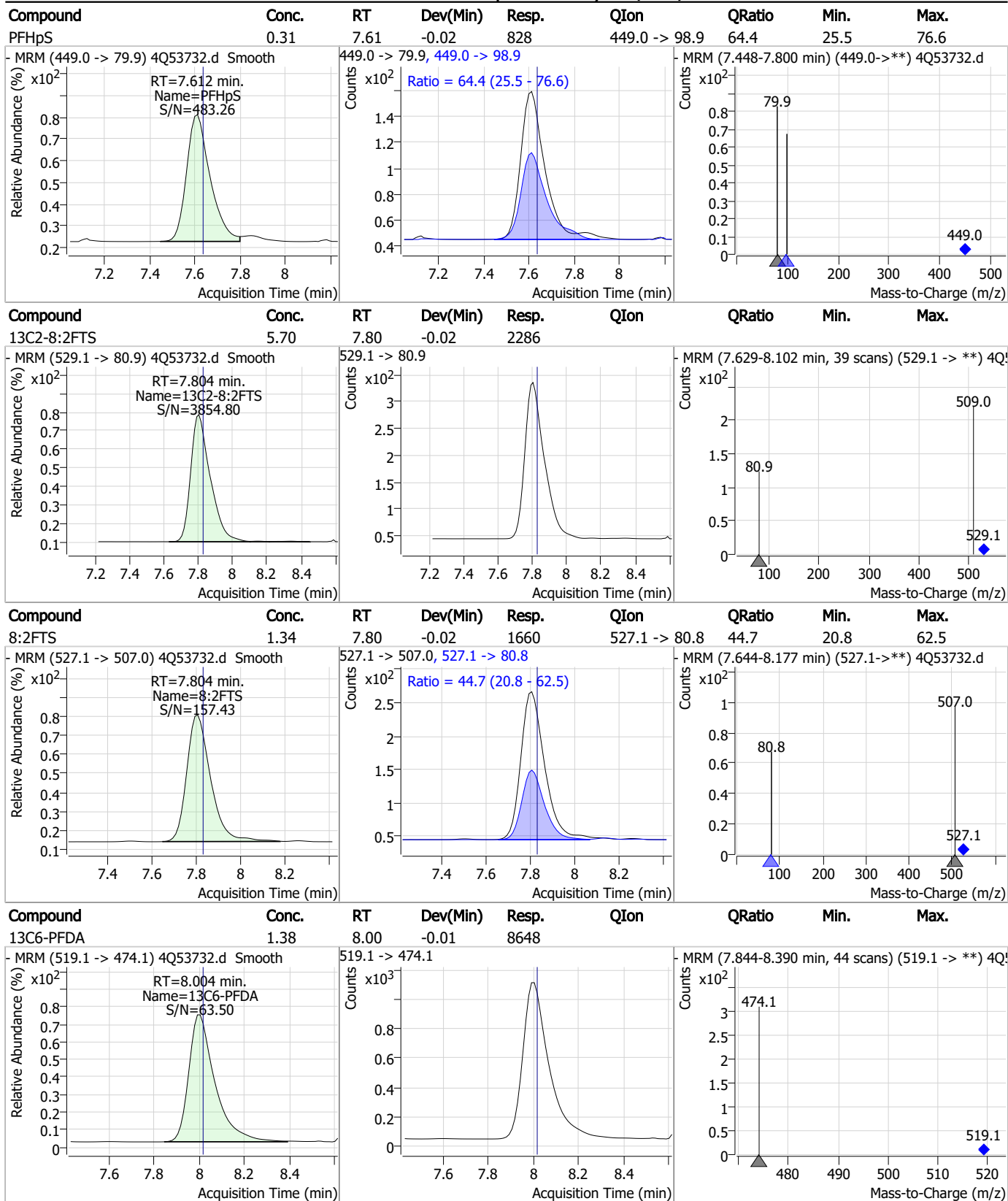


### Perfluorinated Compounds by LC/MS/MS



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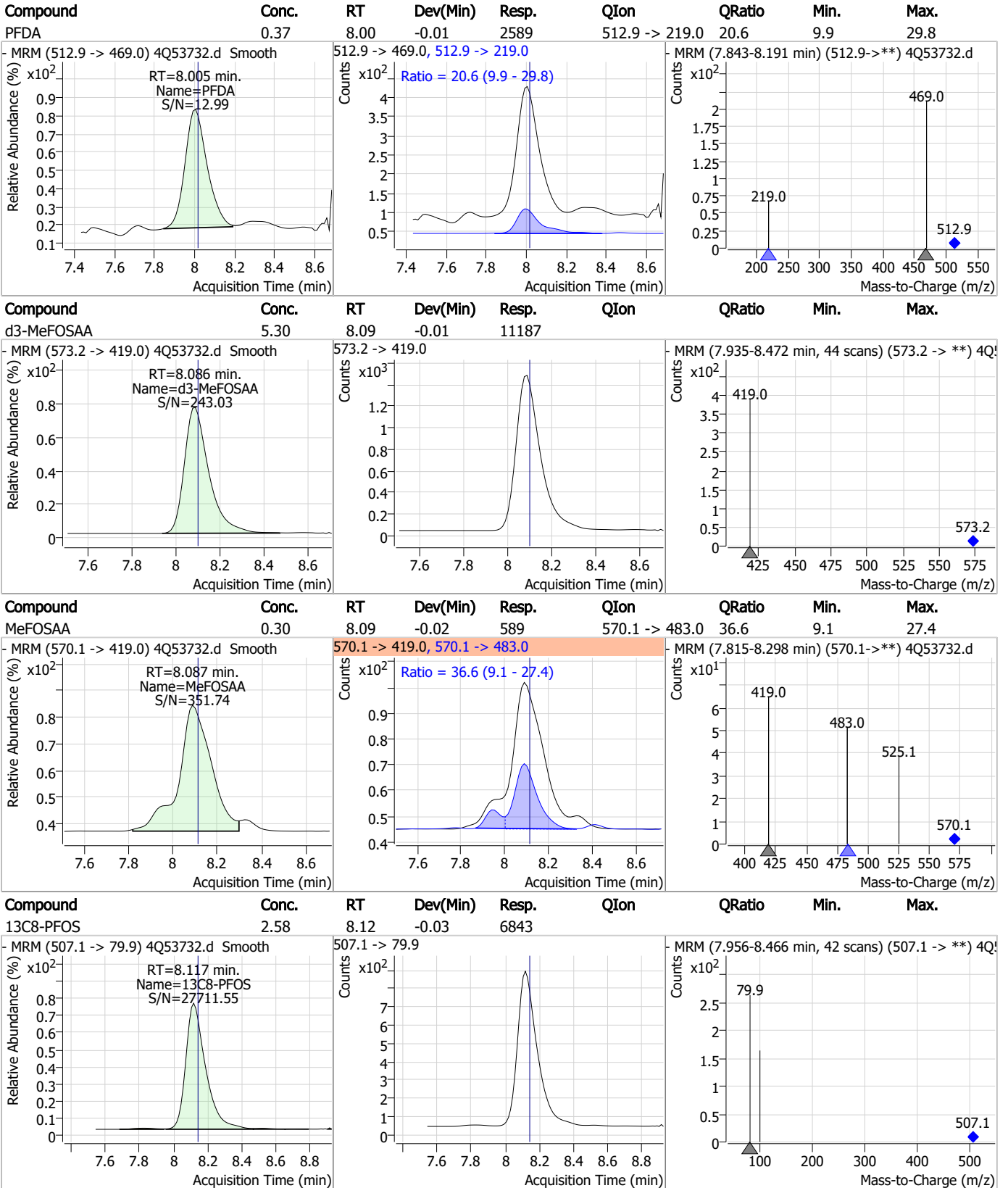
### Perfluorinated Compounds by LC/MS/MS



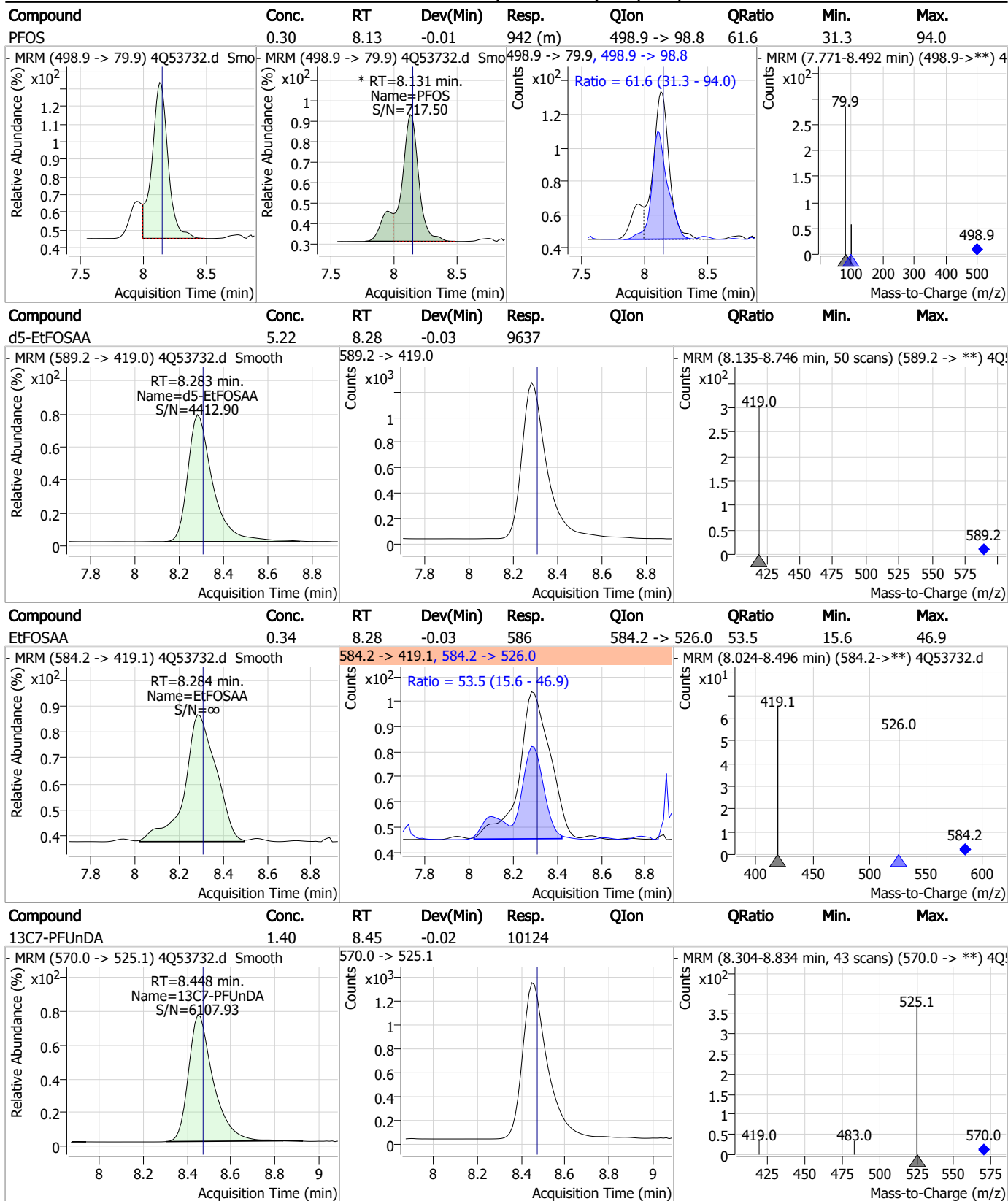
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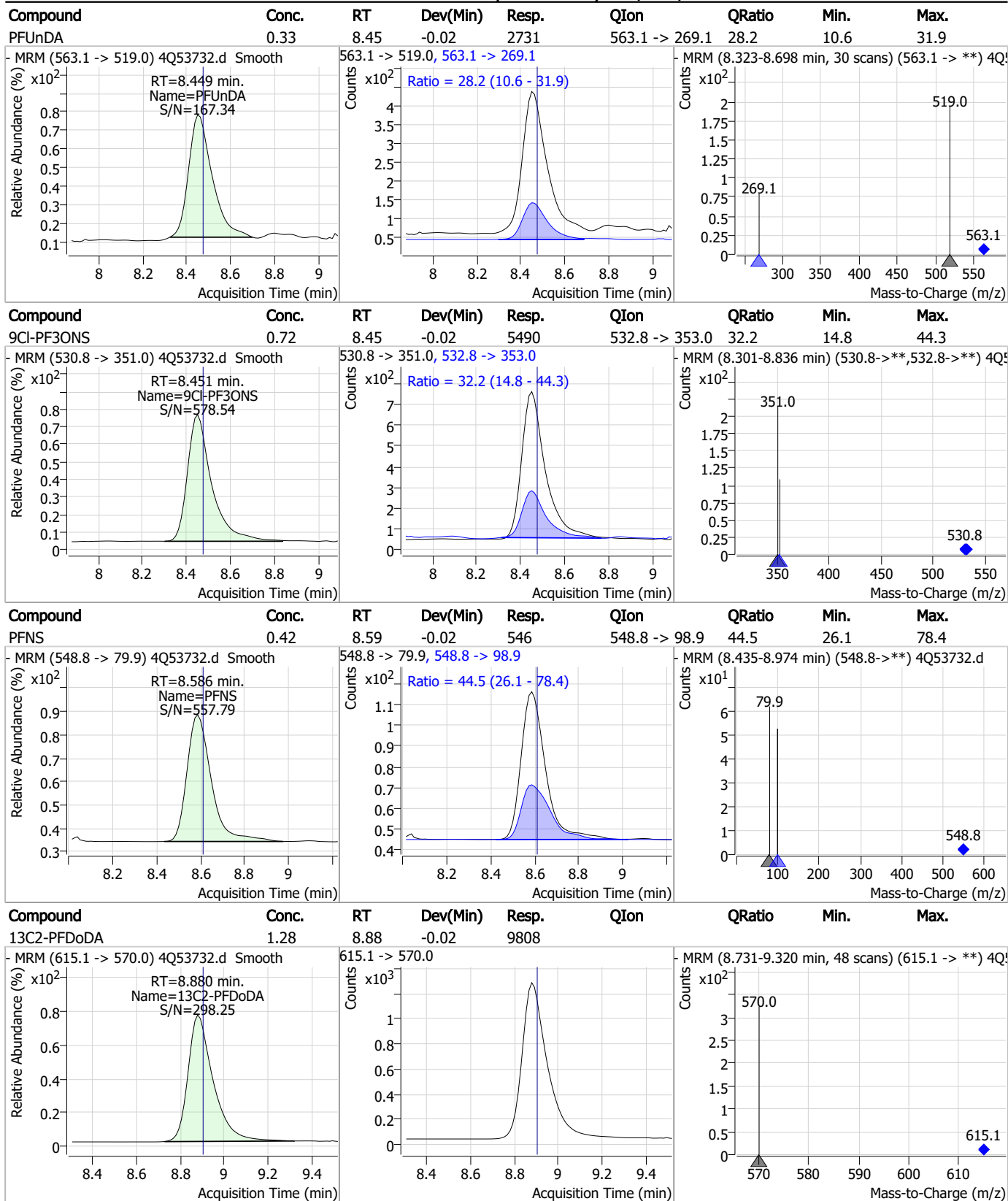


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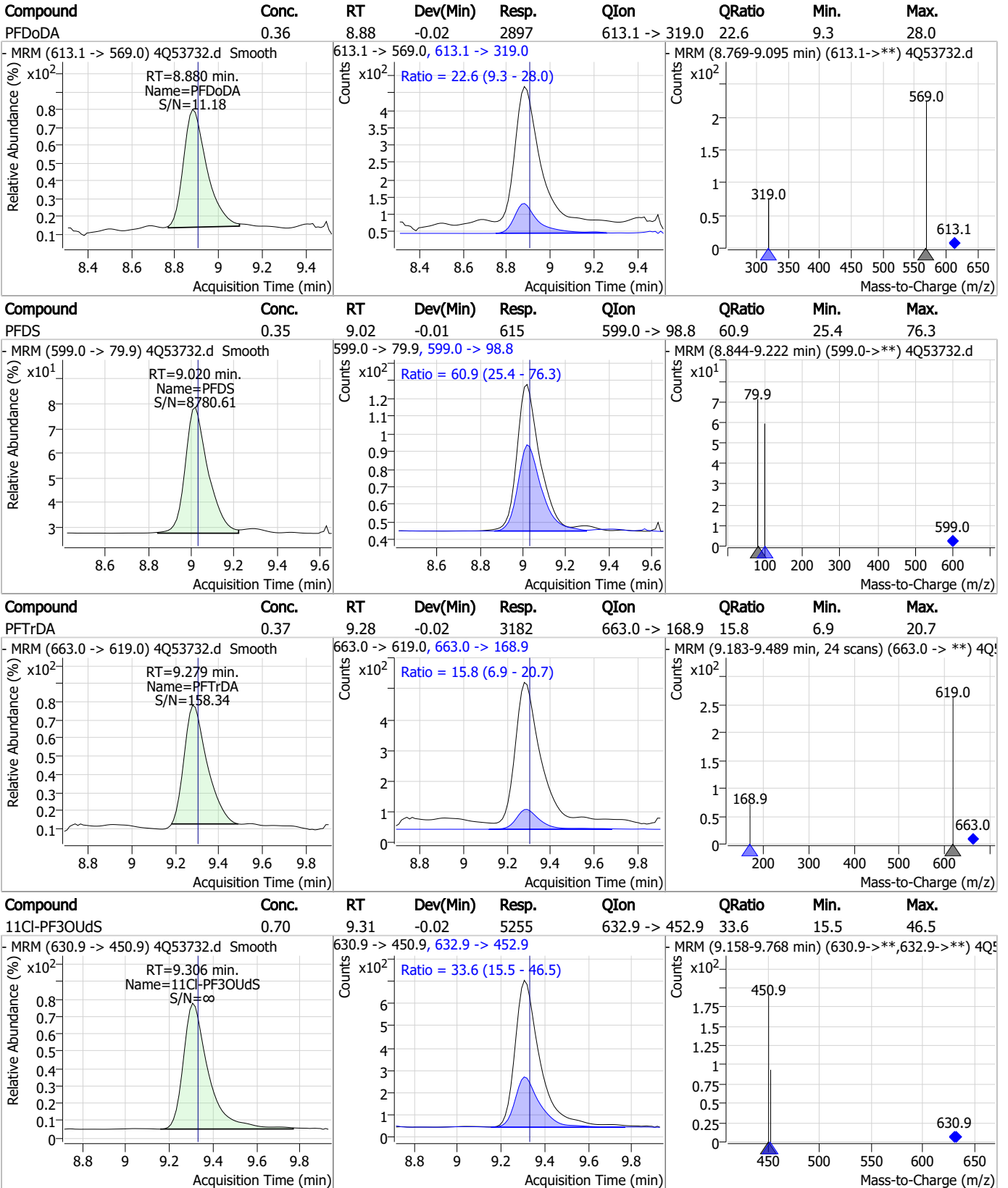
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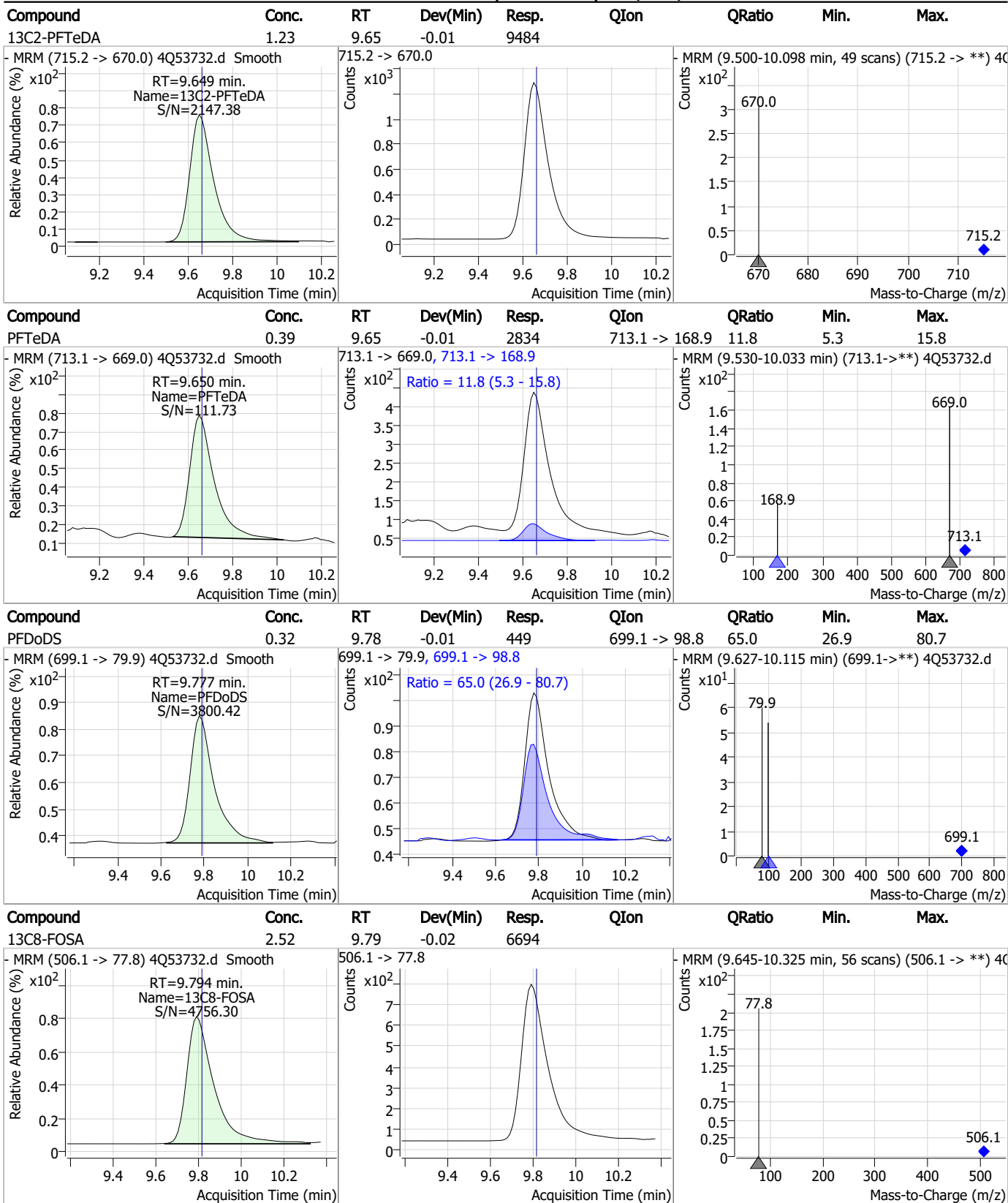


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### Perfluorinated Compounds by LC/MS/MS



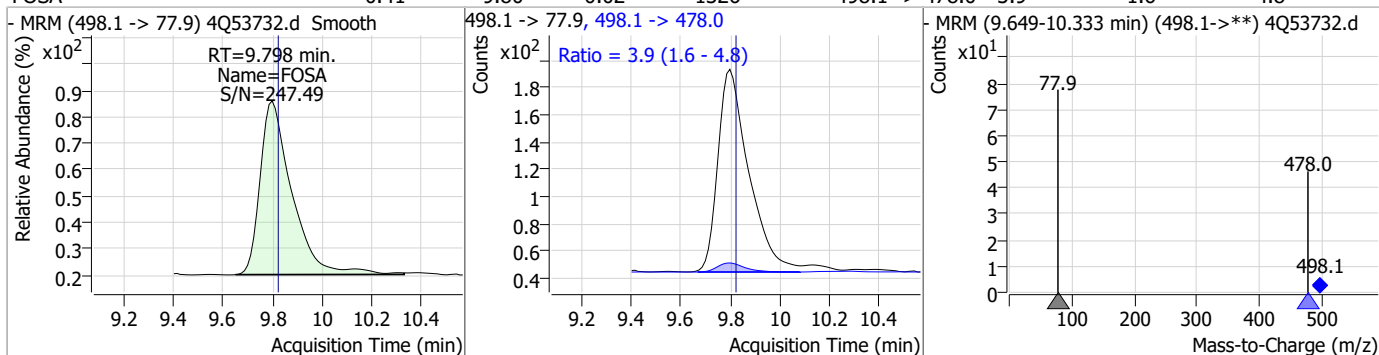
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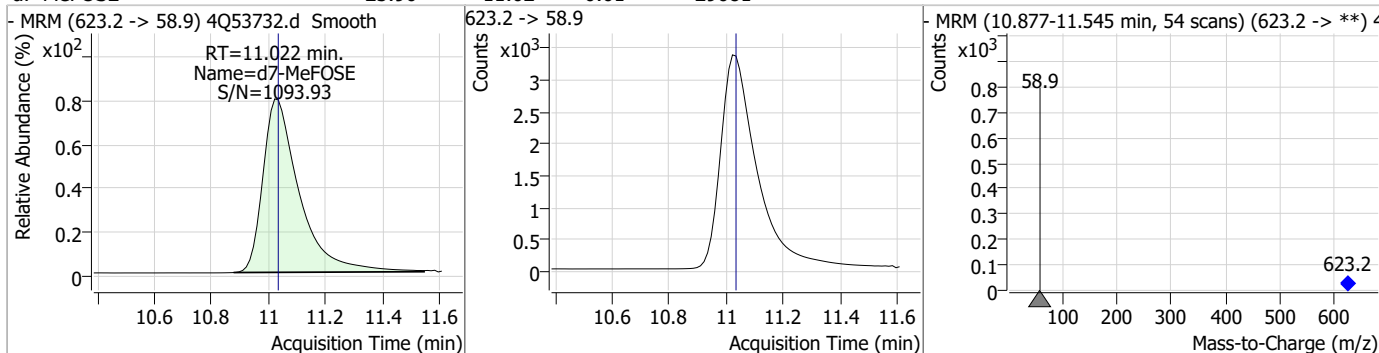
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### Perfluorinated Compounds by LC/MS/MS

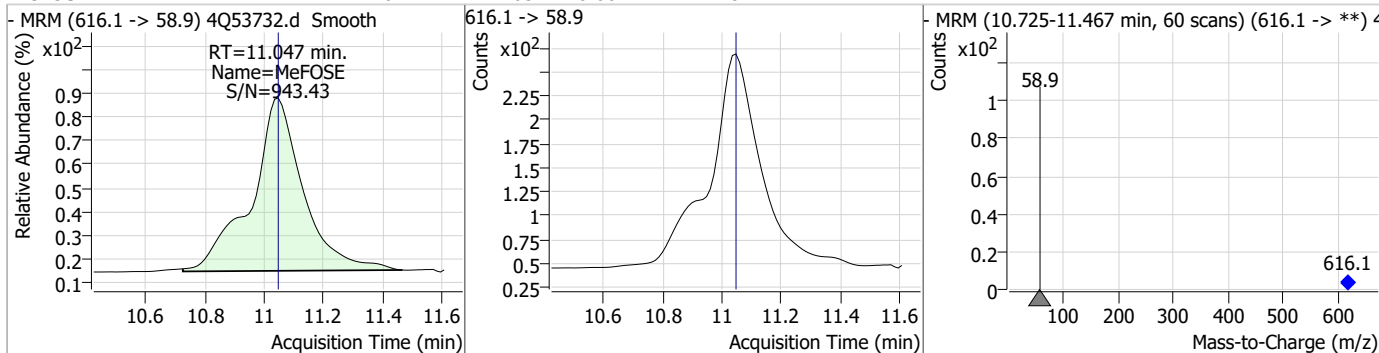
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.41	9.80	-0.02	1326	498.1 -> 478.0	3.9	1.6	4.8



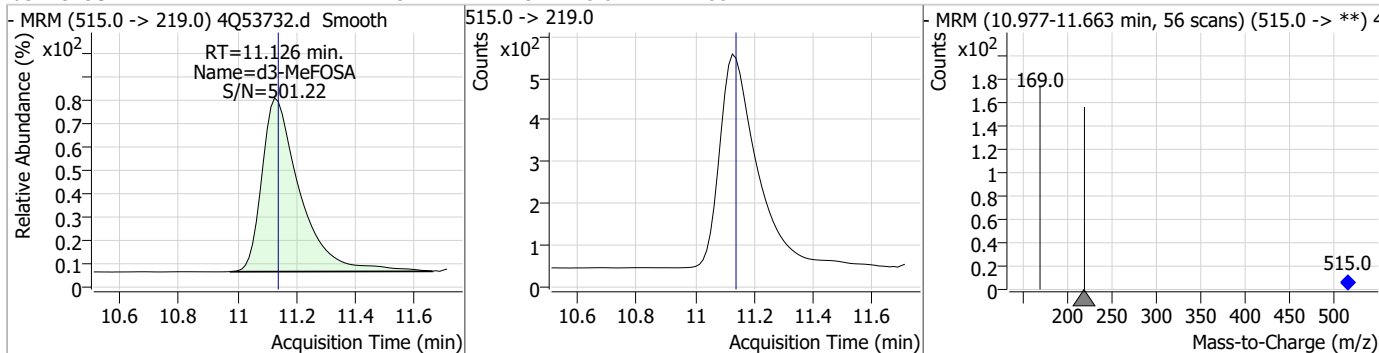
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.90	11.02	-0.01	29681				



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

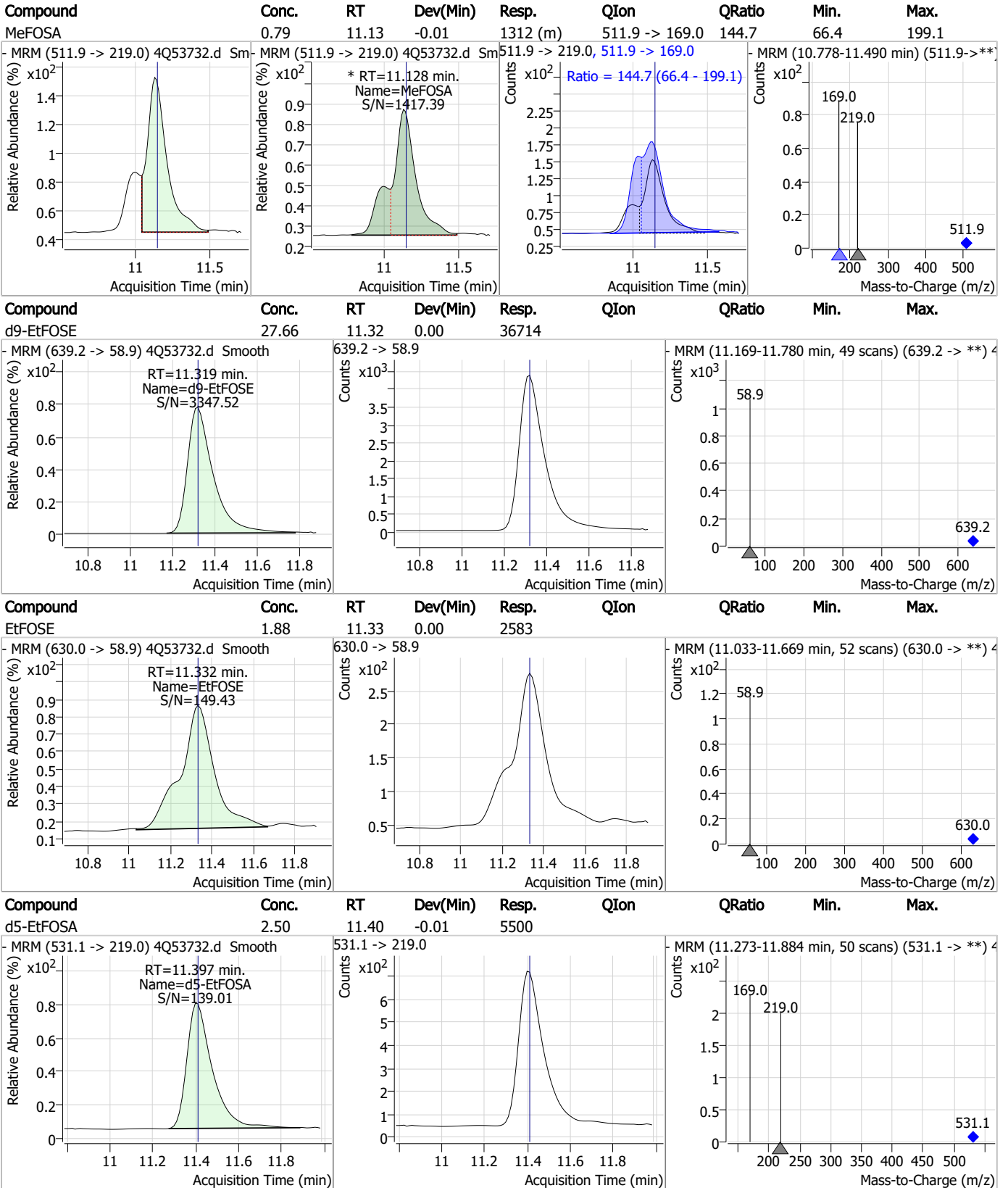


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.48	11.13	-0.01	4601				



7.7.3  
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### Perfluorinated Compounds by LC/MS/MS

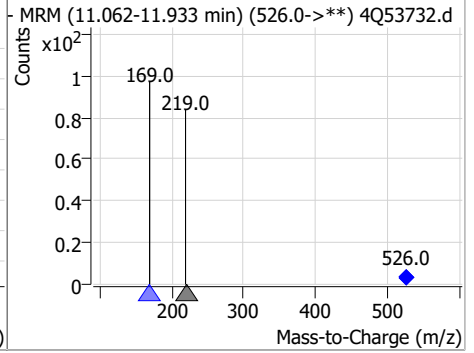
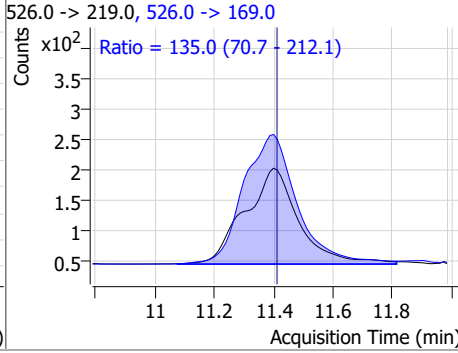
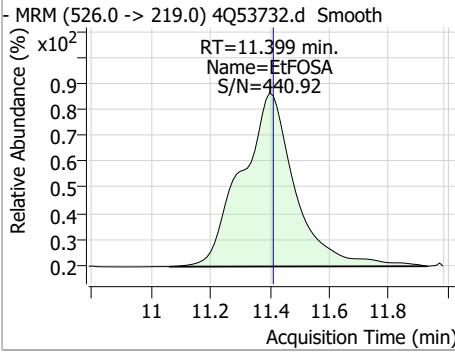


7.7.3

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Perfluorinated Compounds by LC/MS/MS

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



7.7.3

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# Manual Integration Approval Summary

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

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

7.7.3.1

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## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53733.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/13/2023 4:09:55 PM  
 Sample Name : ic785-3  
 Vial : P1-A4  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q785.batch.bin  
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

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

## Perfluorinated Compounds by LC/MS/MS

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

## Perfluorinated Compounds by LC/MS/MS

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

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

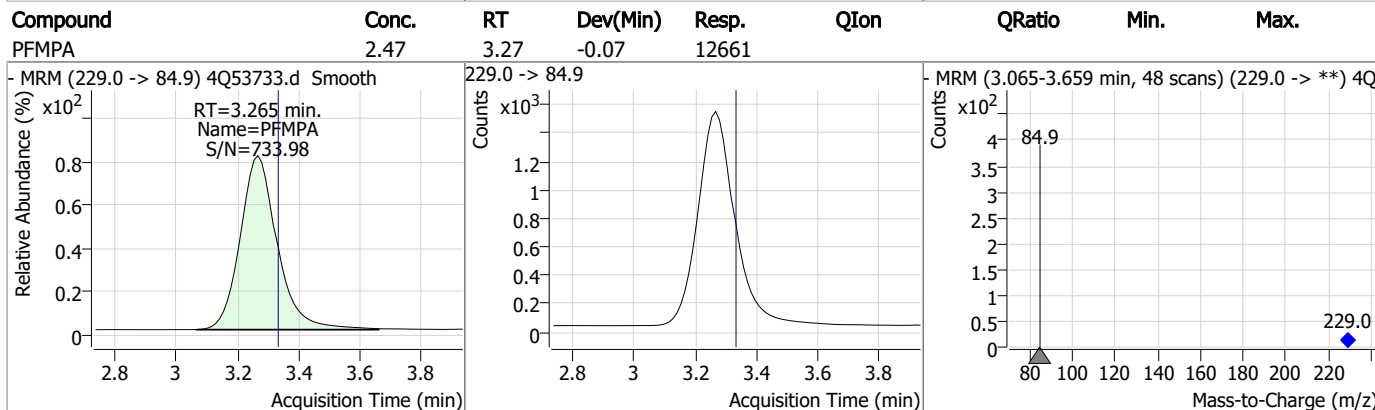
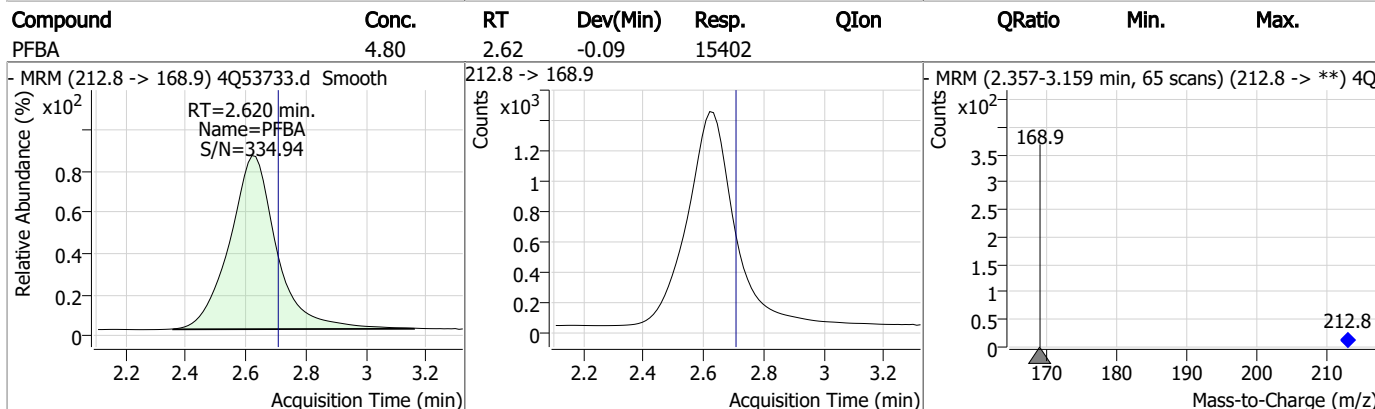
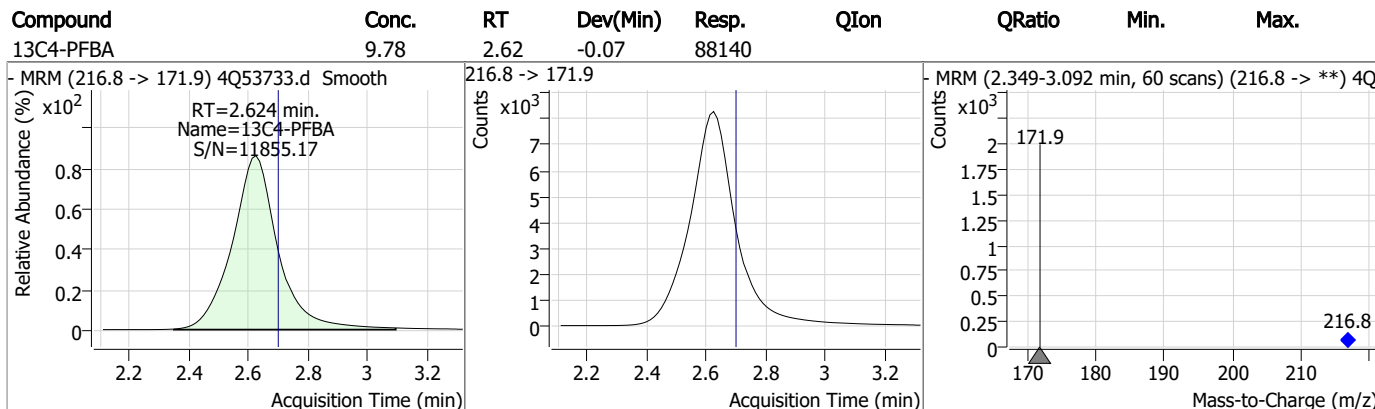
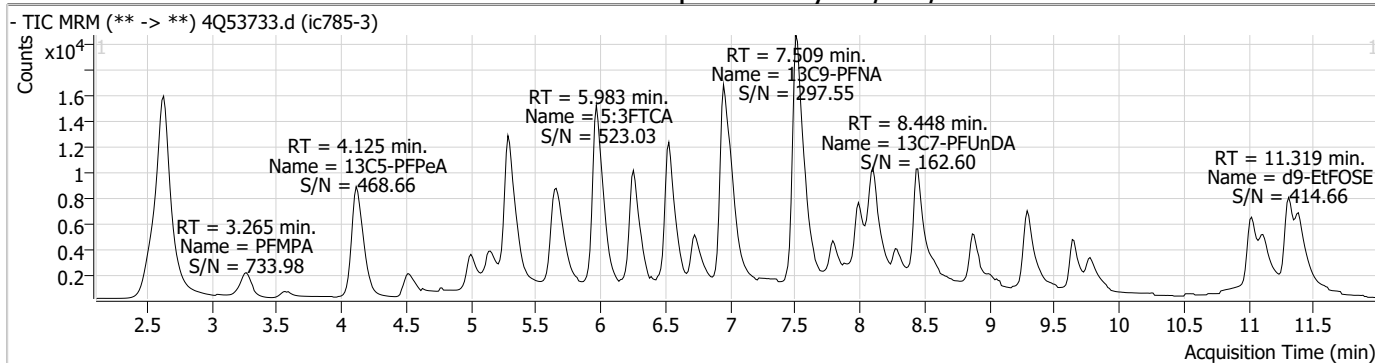
### Perfluorinated Compounds by LC/MS/MS

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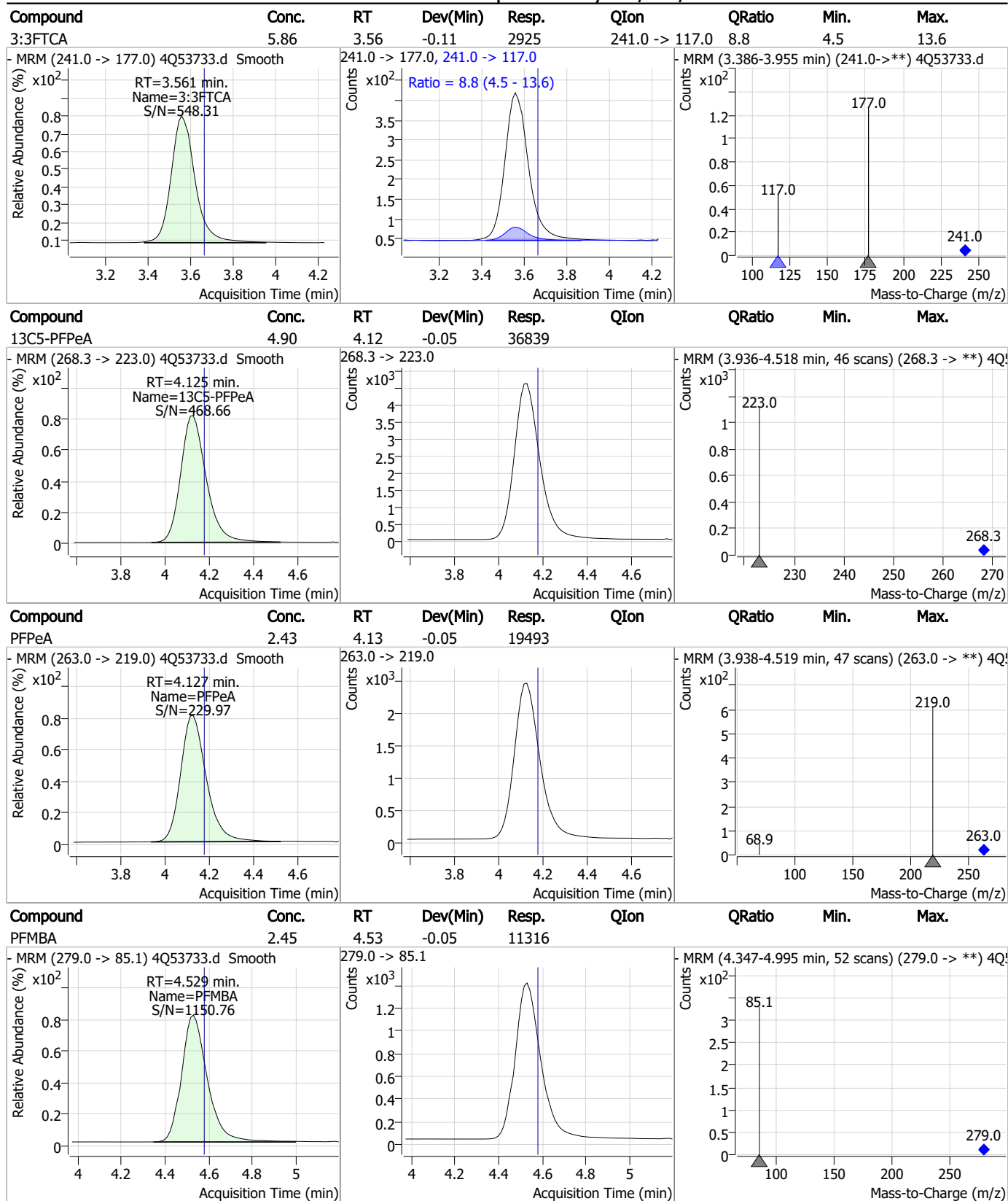
7.7.4

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### Perfluorinated Compounds by LC/MS/MS



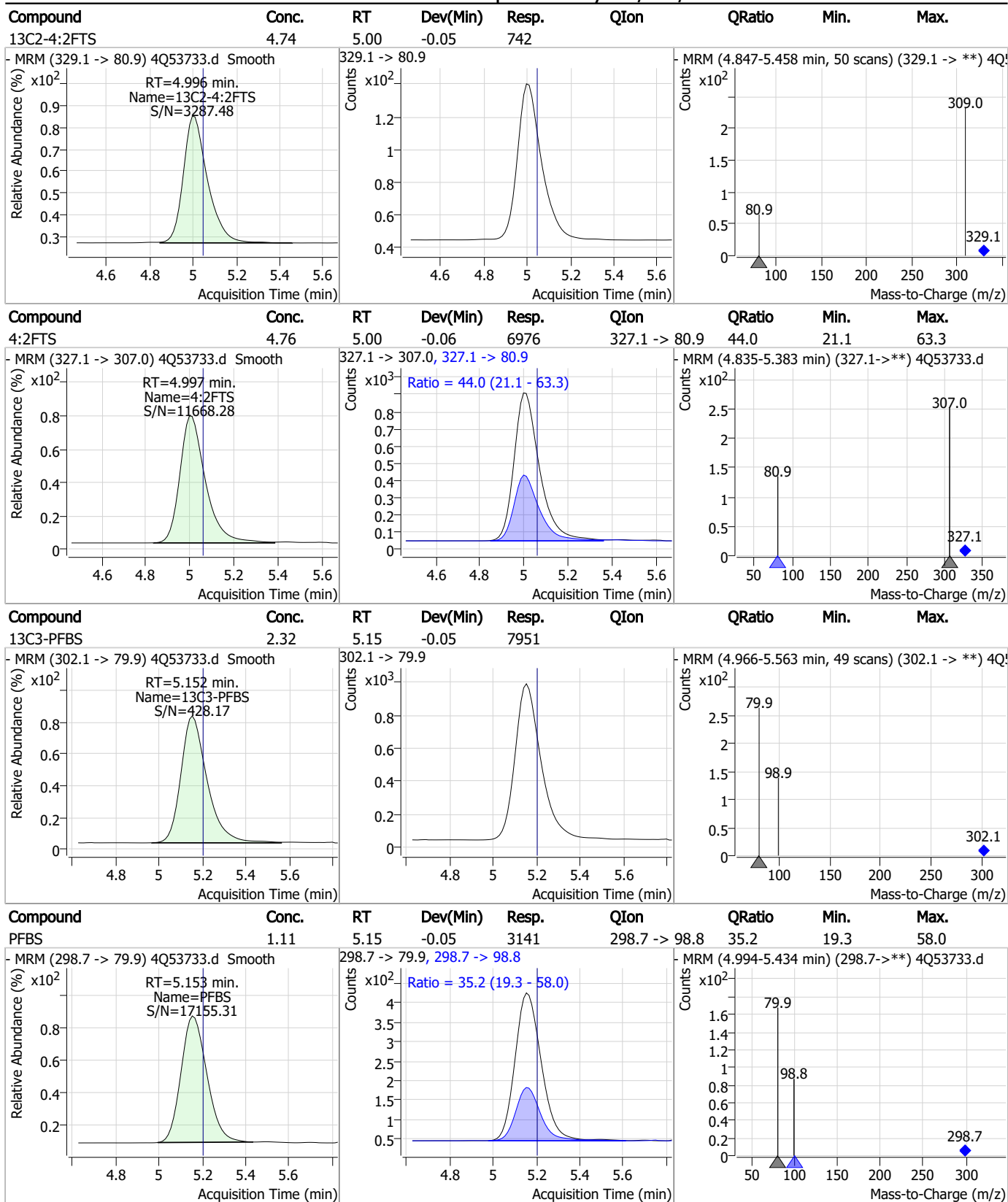
### Perfluorinated Compounds by LC/MS/MS



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### Perfluorinated Compounds by LC/MS/MS

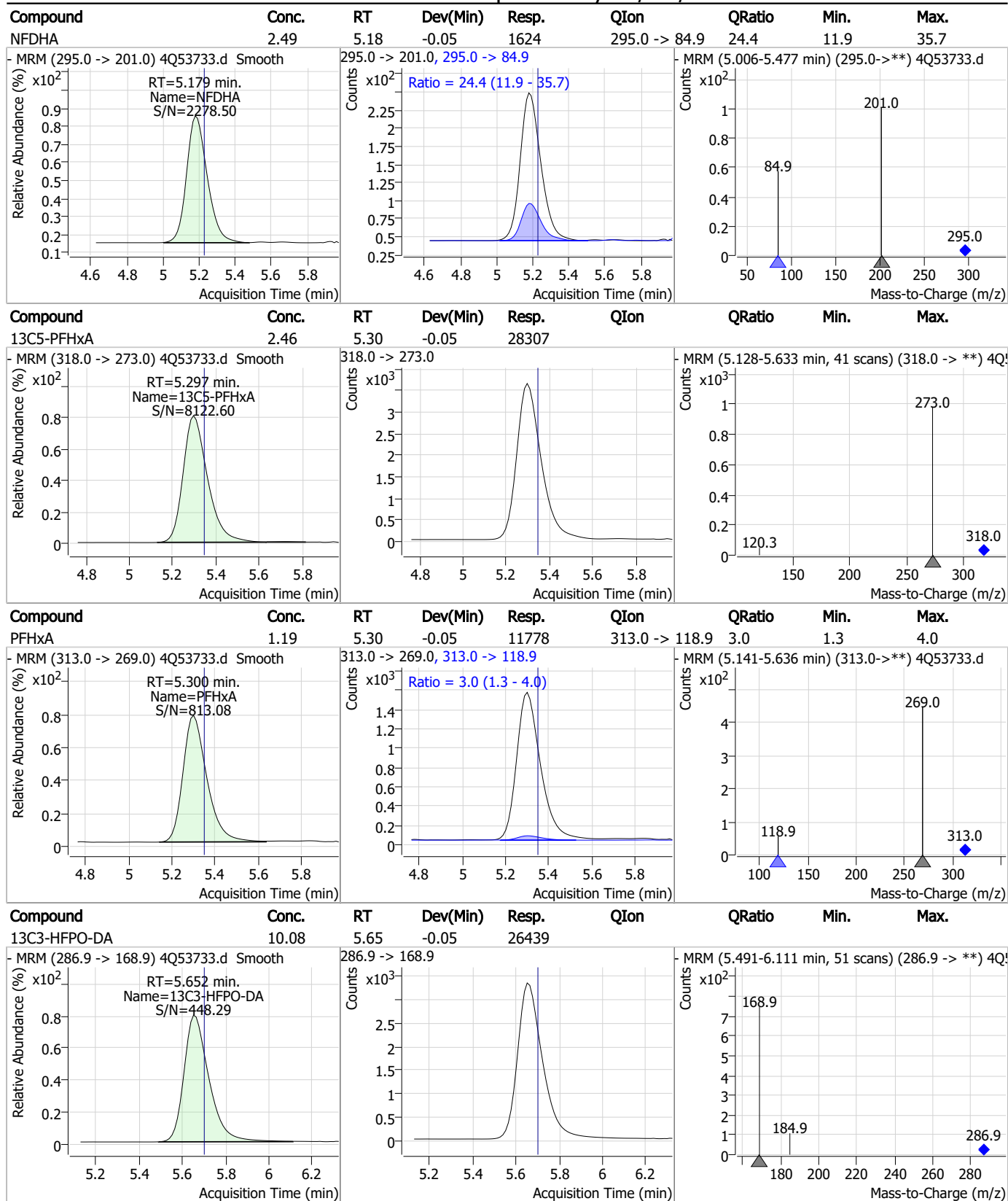


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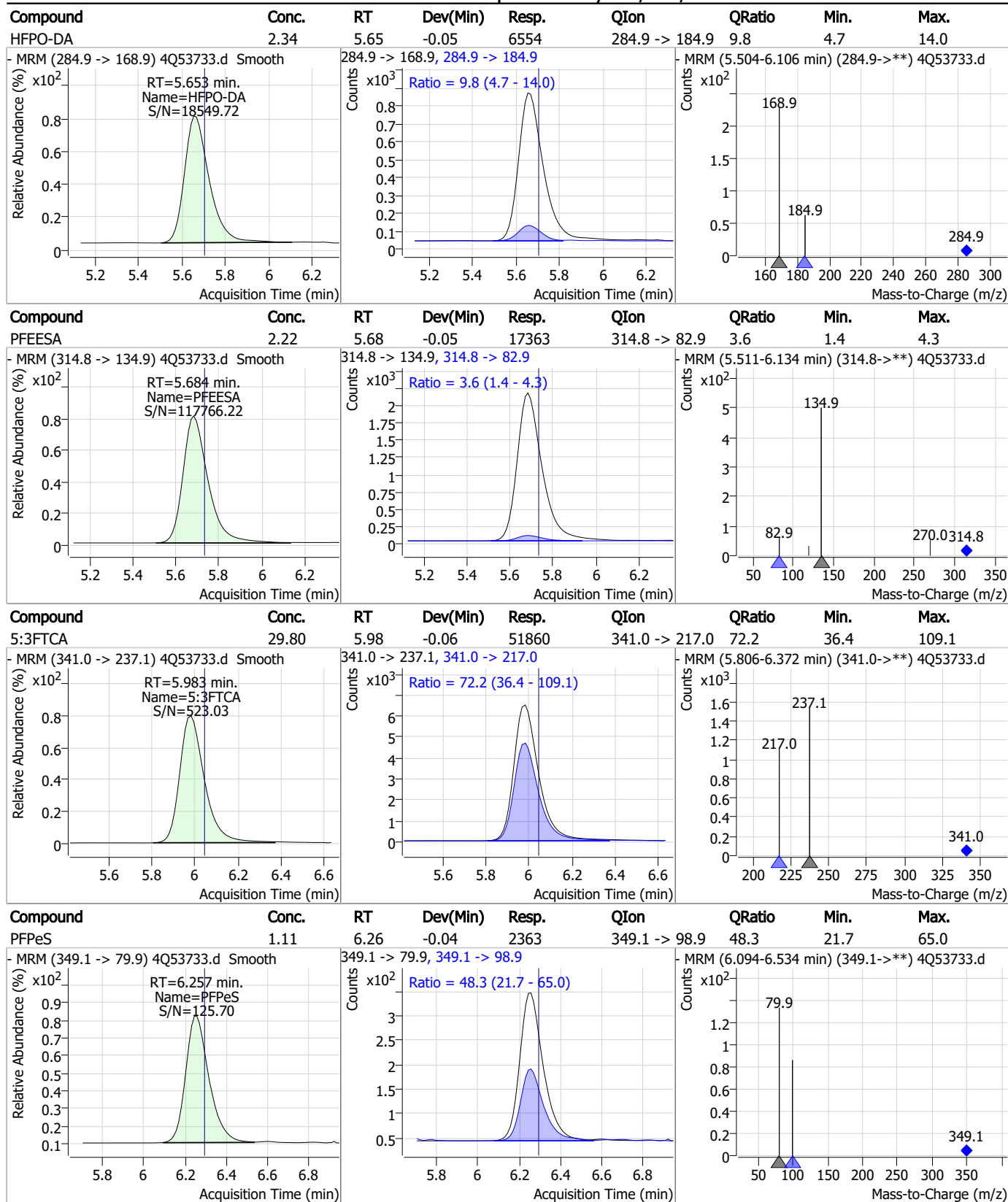


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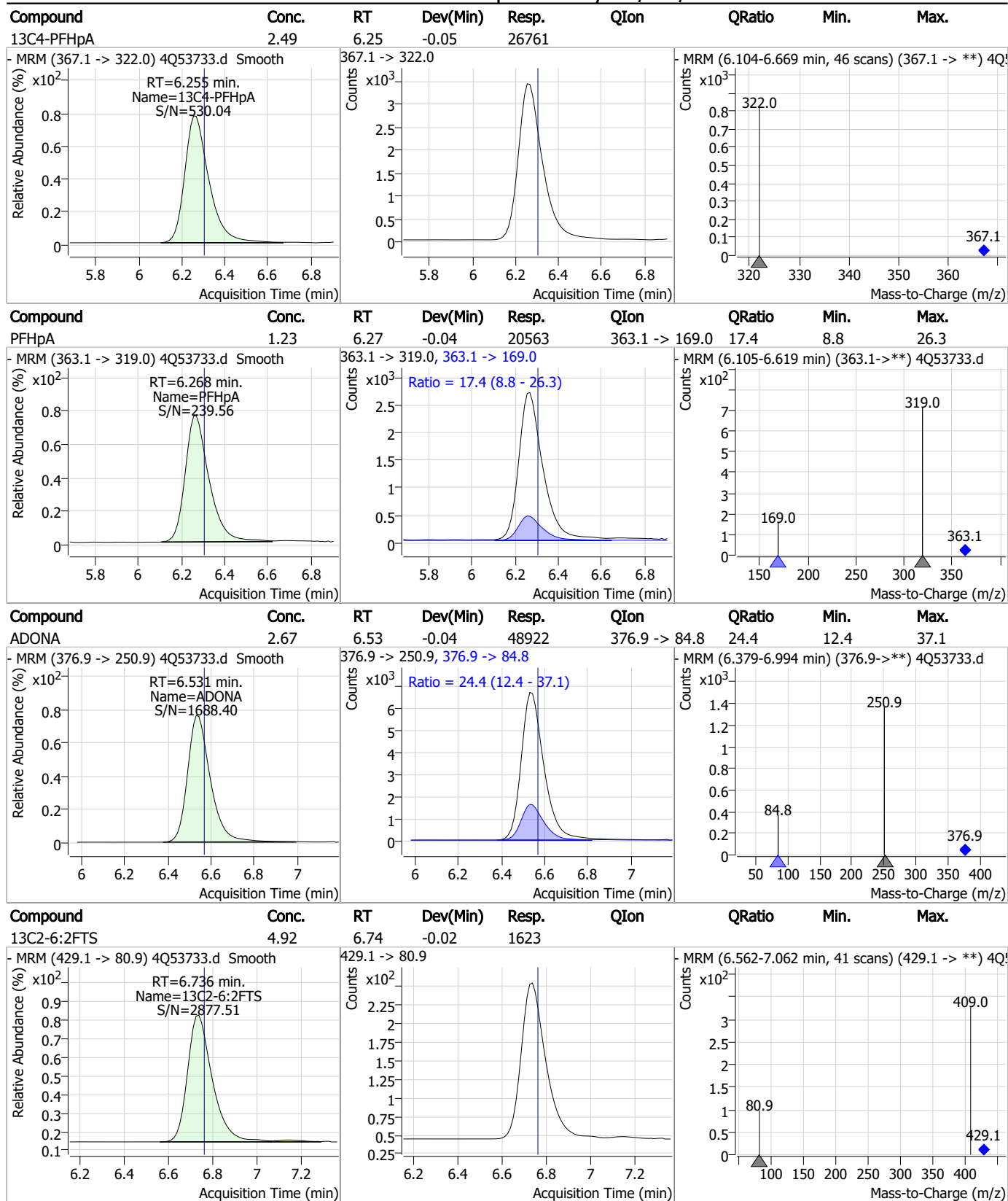
7.7.4  
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### Perfluorinated Compounds by LC/MS/MS



7.7.4  
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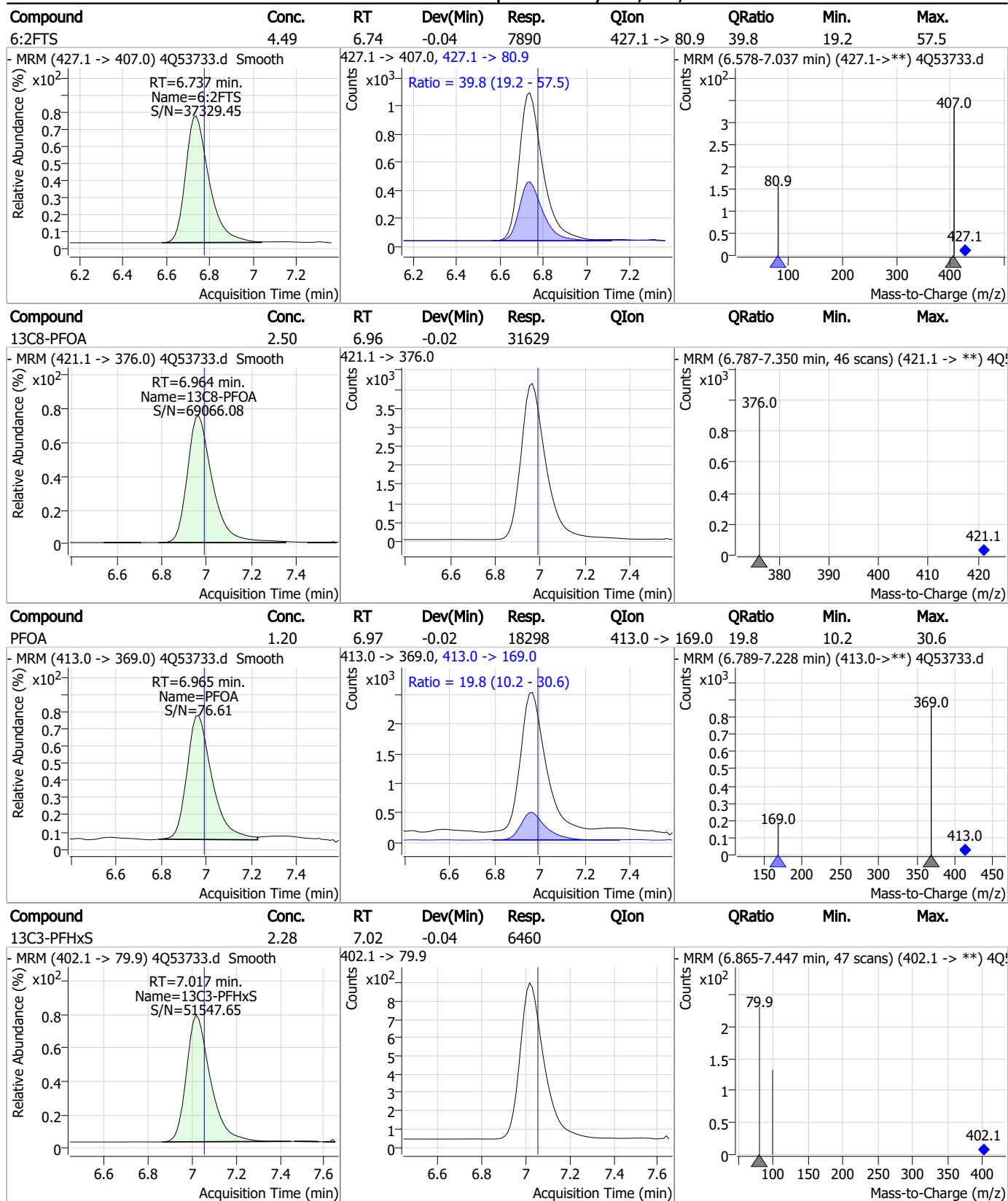
### Perfluorinated Compounds by LC/MS/MS



7.7.4

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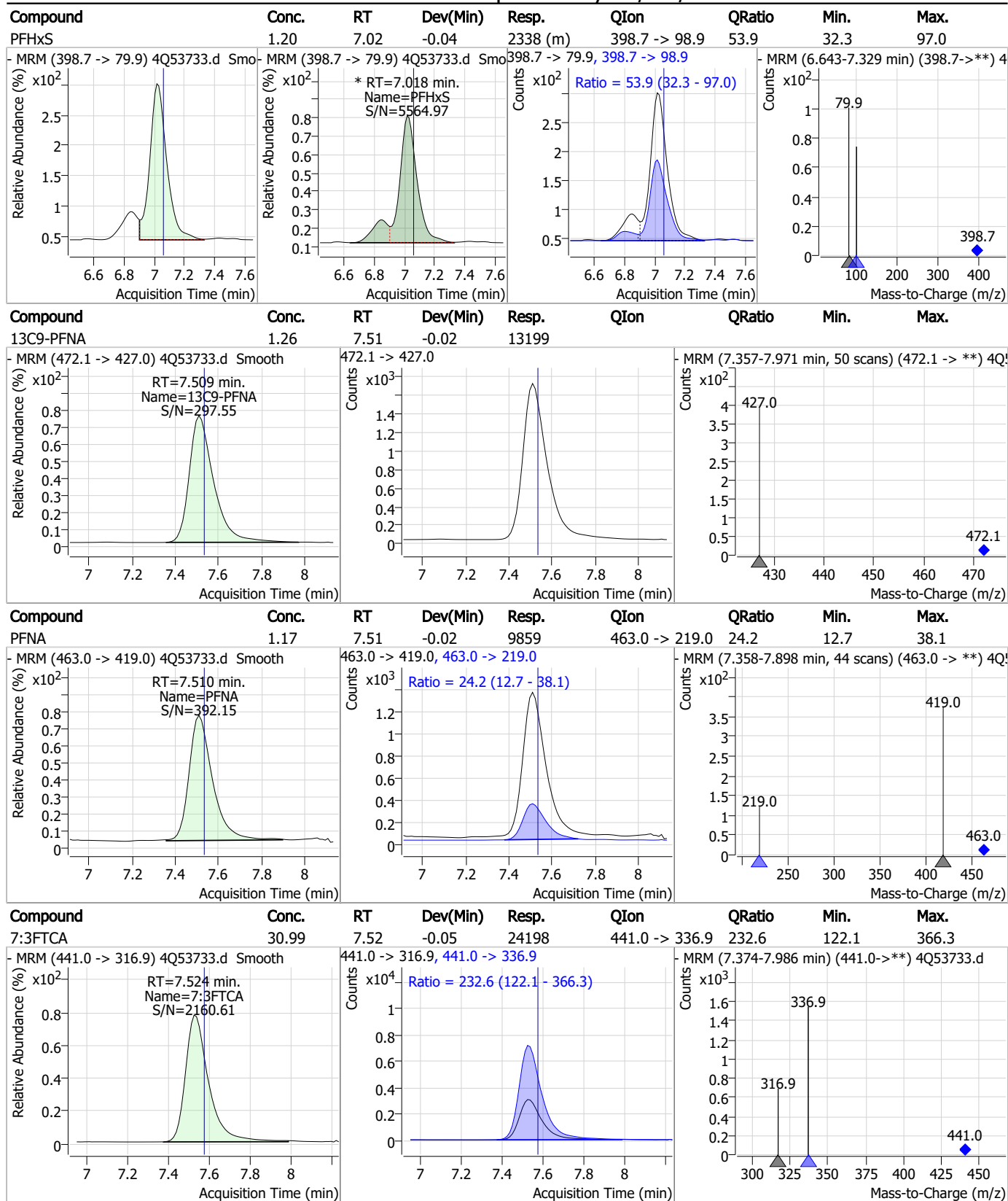
### Perfluorinated Compounds by LC/MS/MS



7.7.4

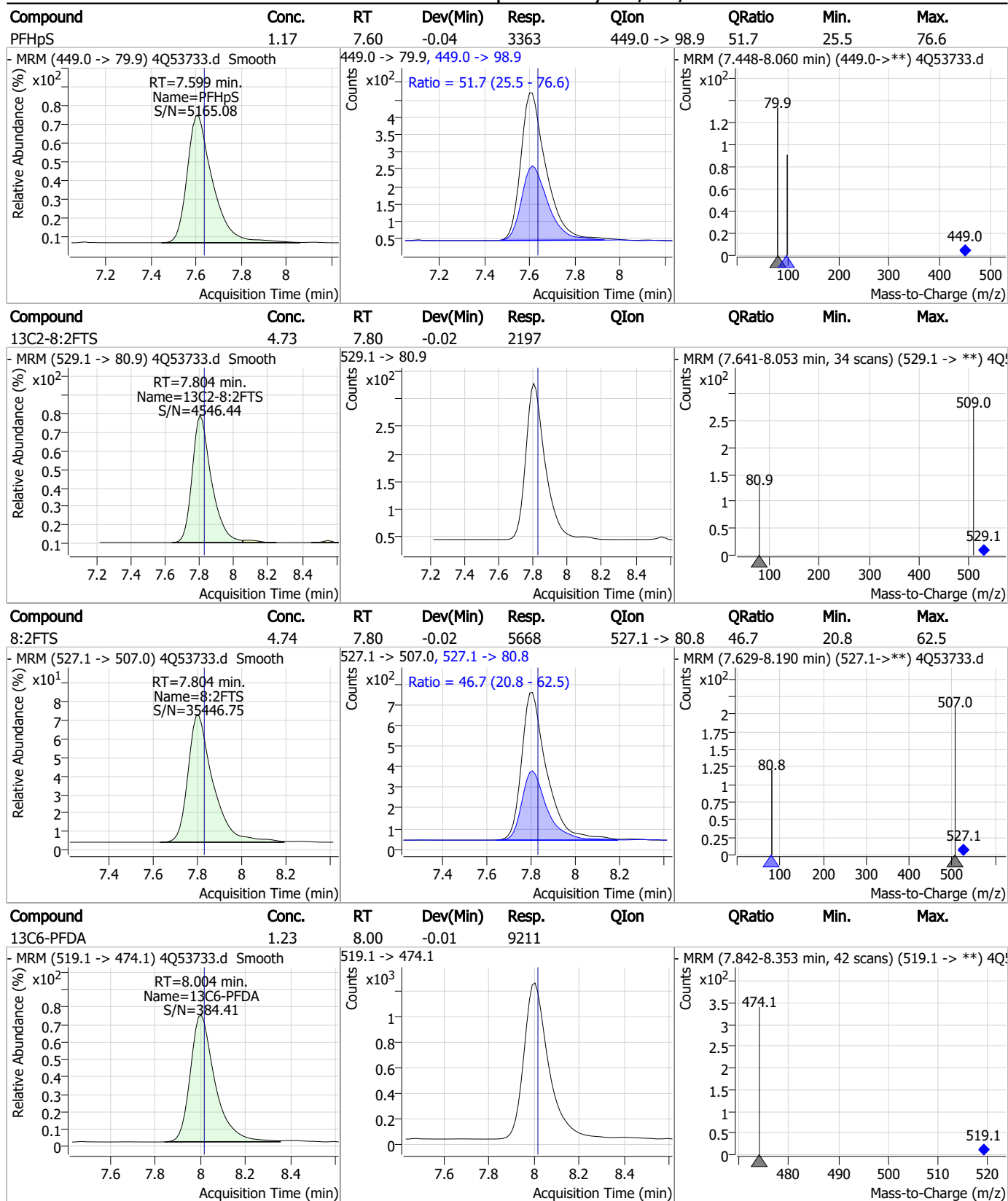
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### Perfluorinated Compounds by LC/MS/MS



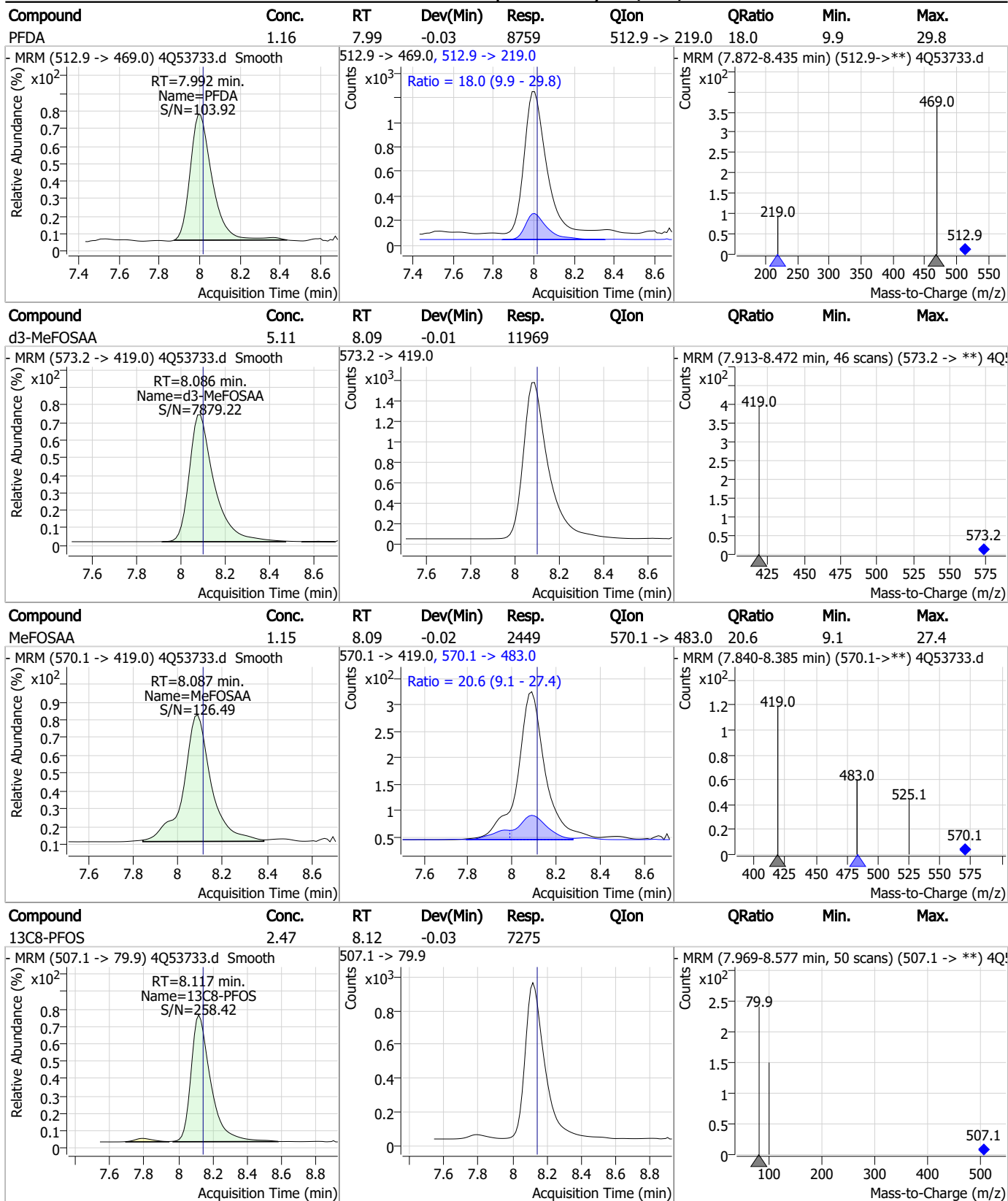
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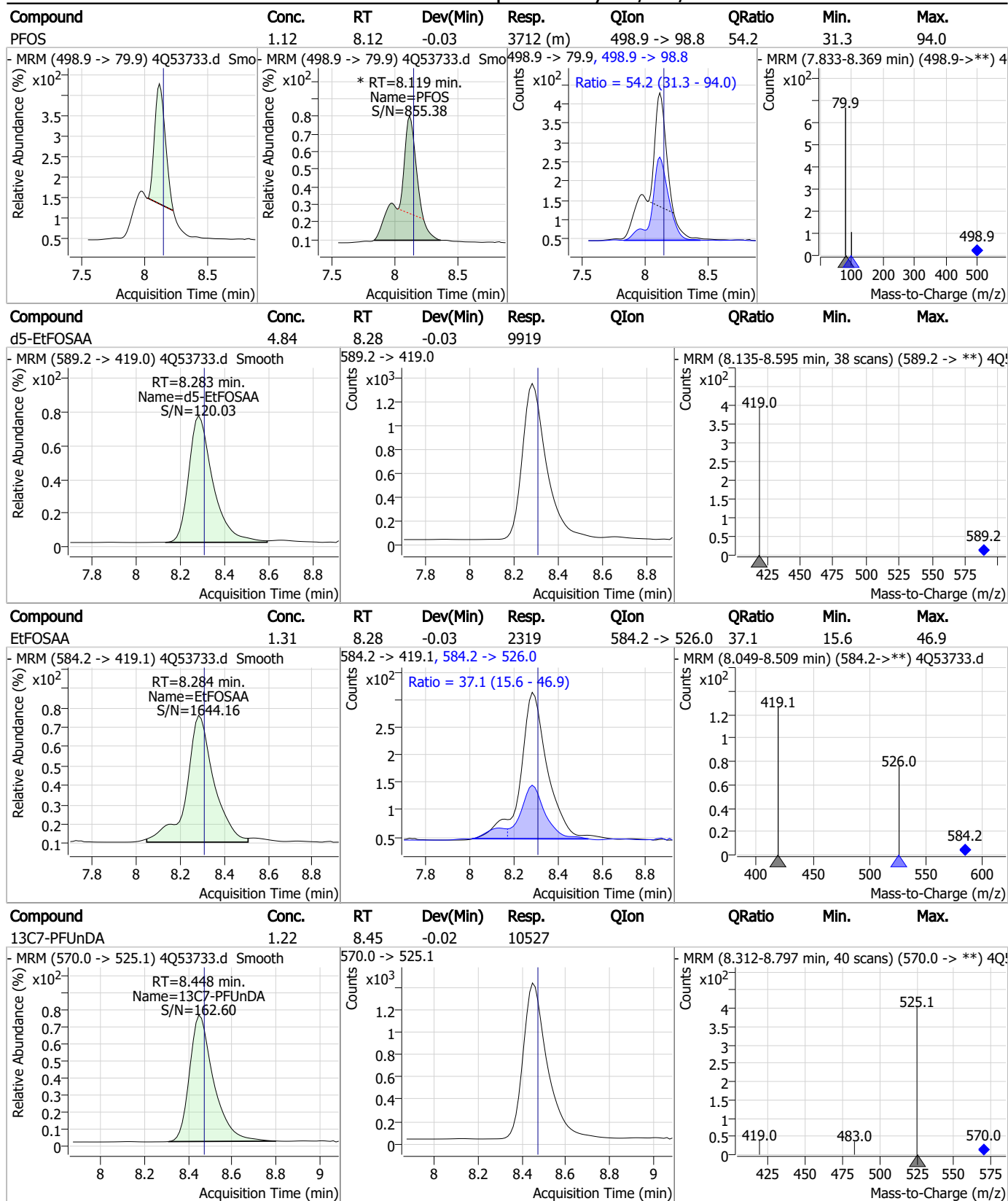
7.7.4  
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### Perfluorinated Compounds by LC/MS/MS



7.7.4  
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### Perfluorinated Compounds by LC/MS/MS

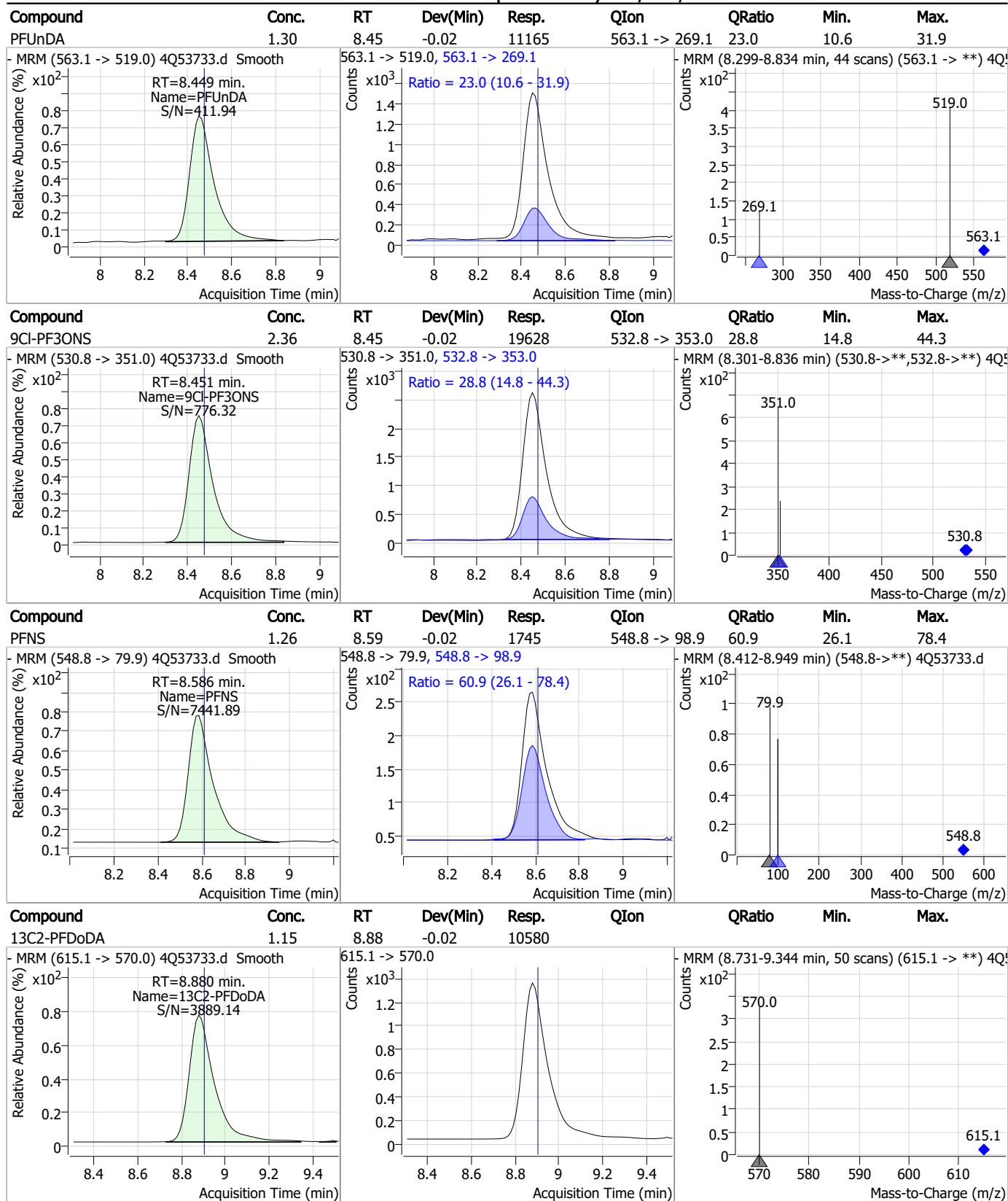


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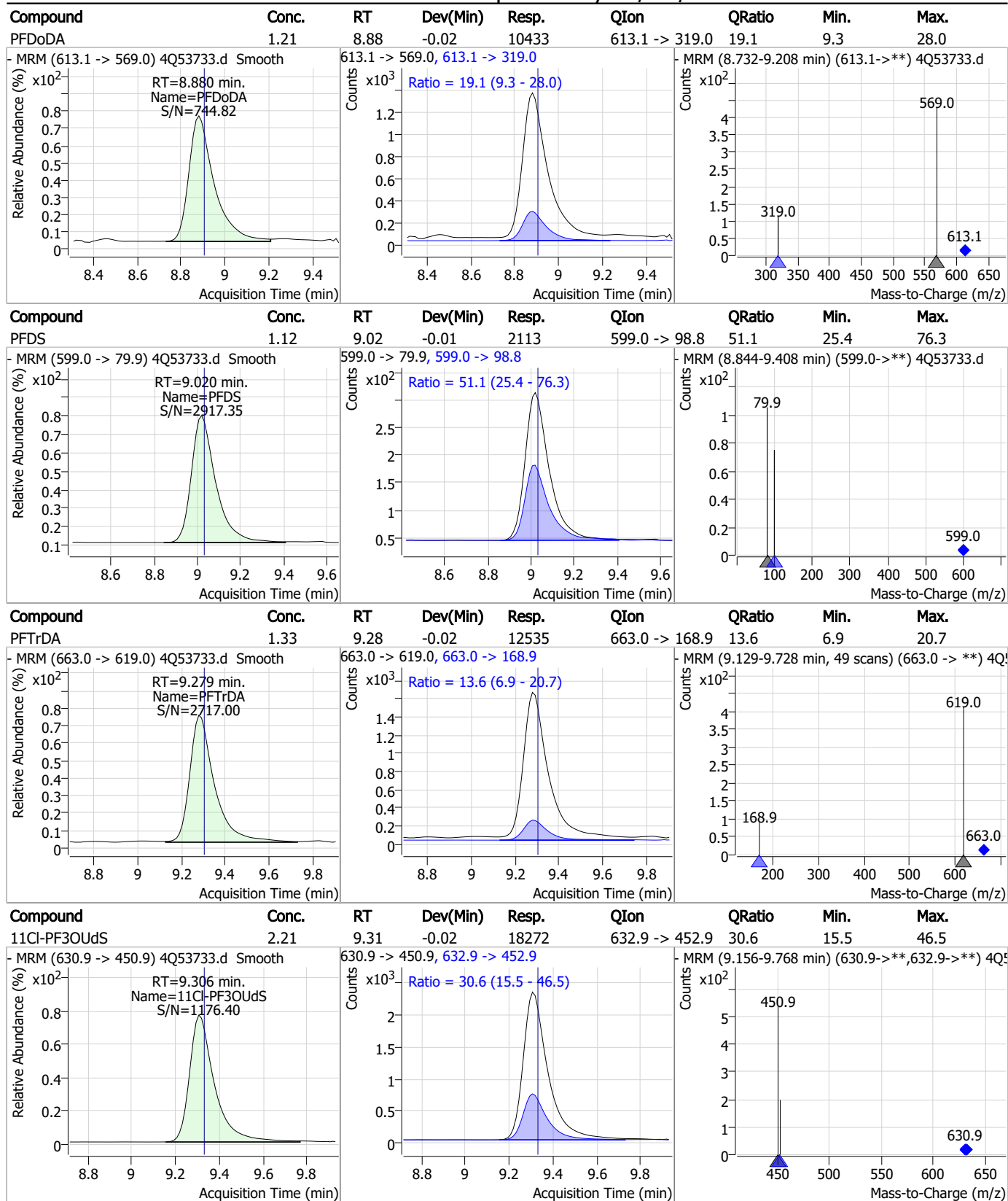
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7.7.4

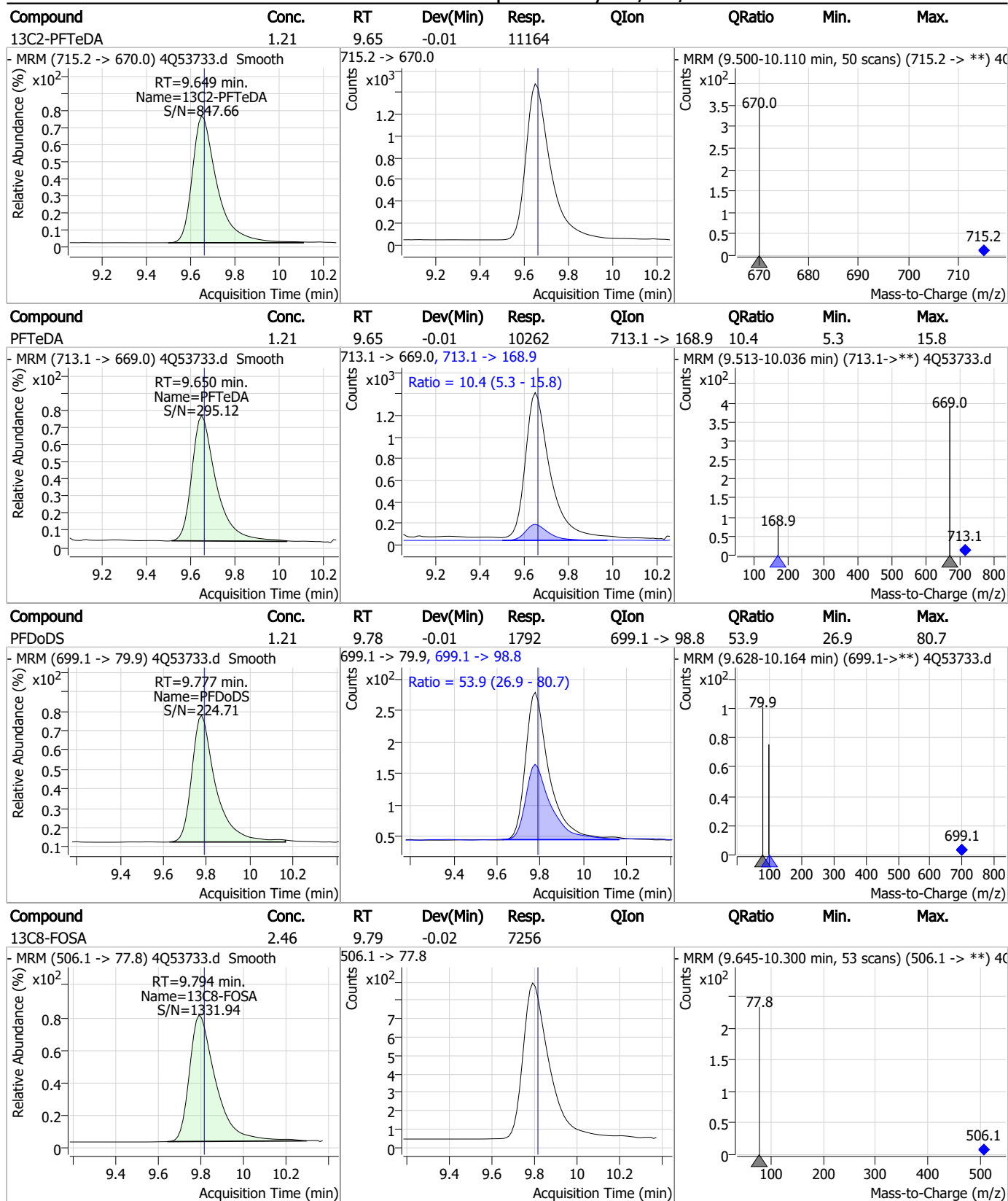
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### Perfluorinated Compounds by LC/MS/MS



7.7.4  
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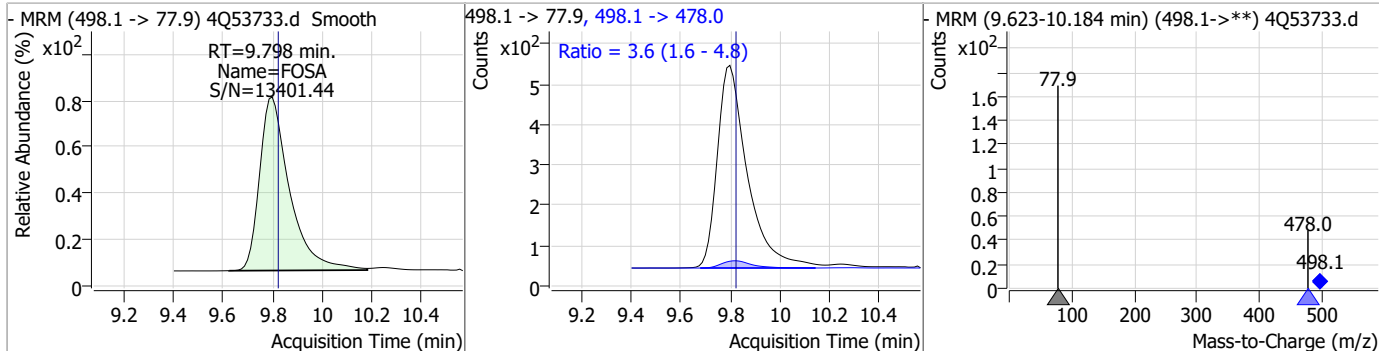
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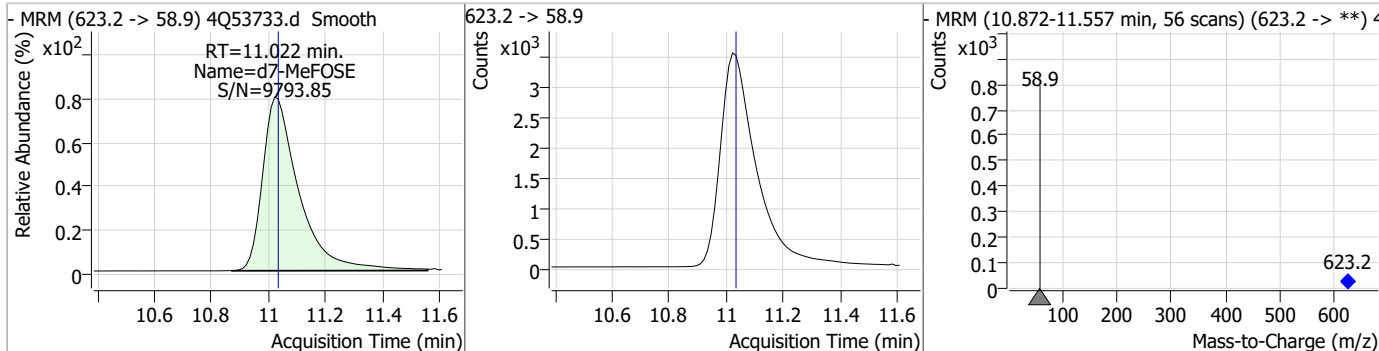
7.7.4

### Perfluorinated Compounds by LC/MS/MS

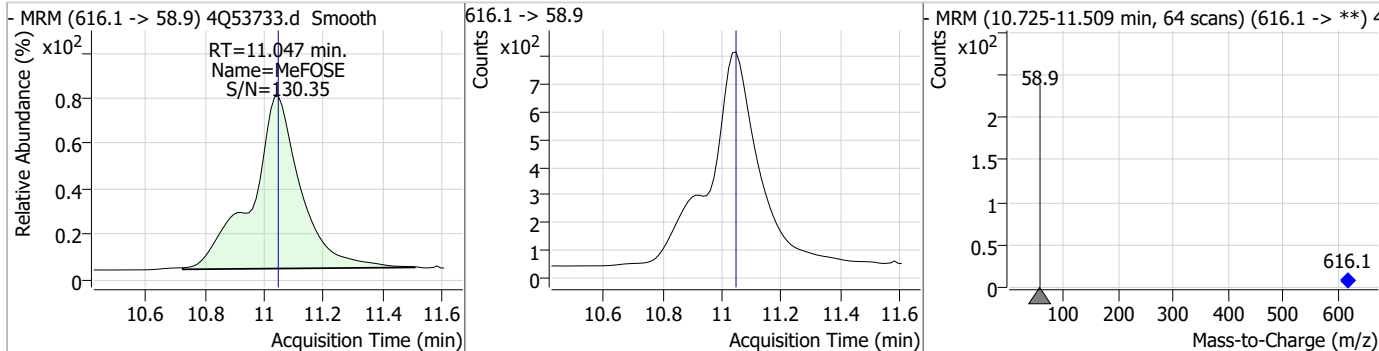
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	1.19	9.80	-0.02	4222	498.1 -> 478.0	3.6	1.6	4.8



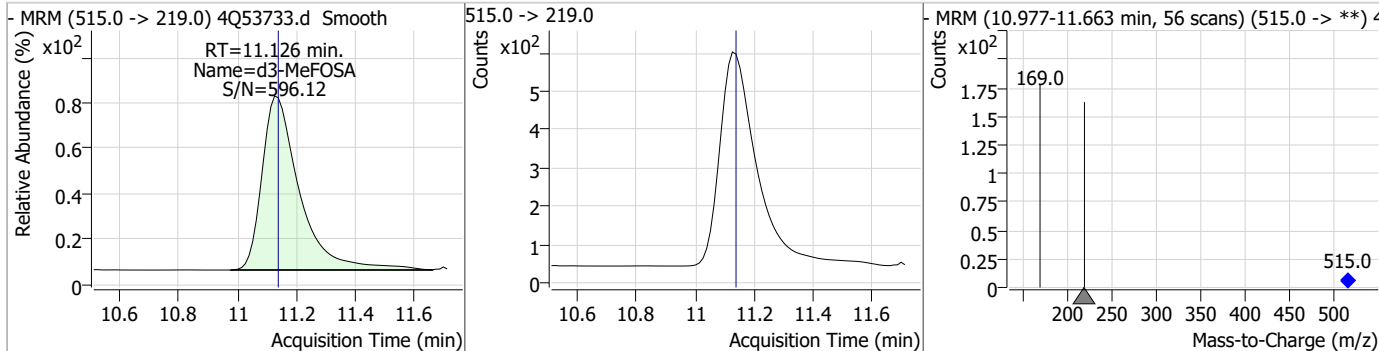
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.46	11.02	-0.01	31099				



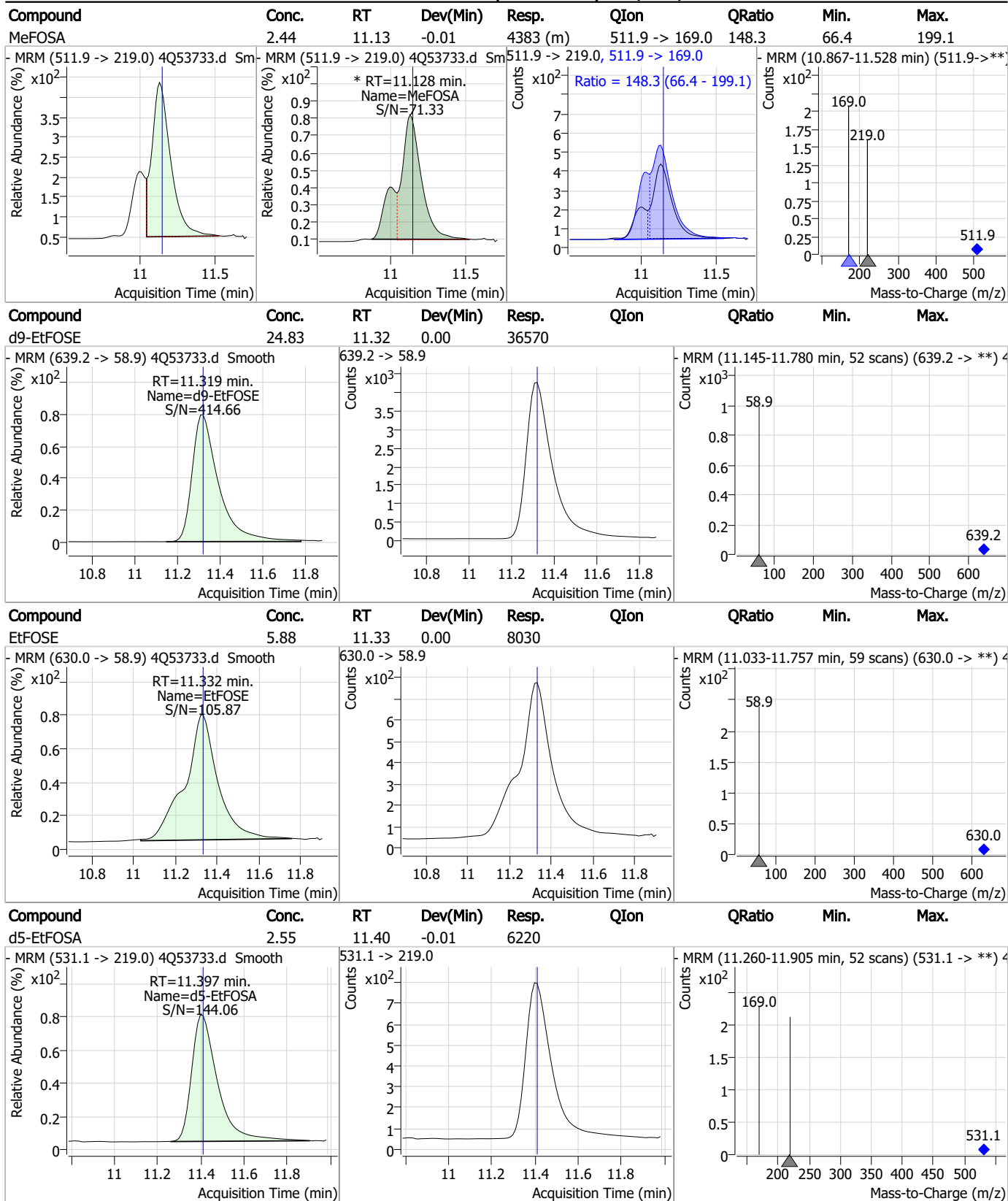
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	6.28	11.05	0.00	8900				



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

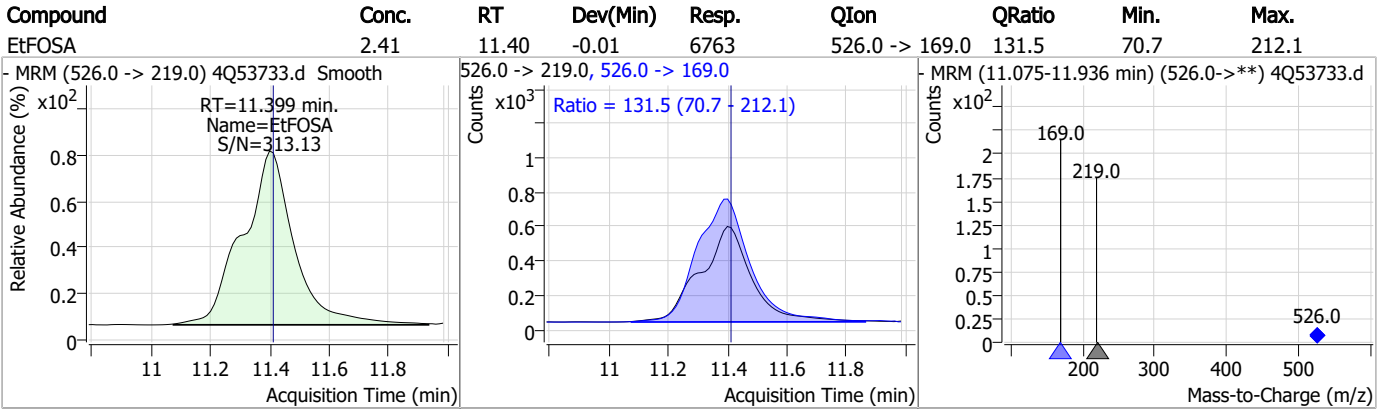


### Perfluorinated Compounds by LC/MS/MS



7.7.4  
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Perfluorinated Compounds by LC/MS/MS



7.7.4

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# Manual Integration Approval Summary

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

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

7.7.4.1  
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## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53734.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/13/2023 4:43:47 PM  
 Sample Name : icc785-4  
 Vial : P1-A5  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q785.batch.bin  
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

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



## Perfluorinated Compounds by LC/MS/MS

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

## Perfluorinated Compounds by LC/MS/MS

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

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

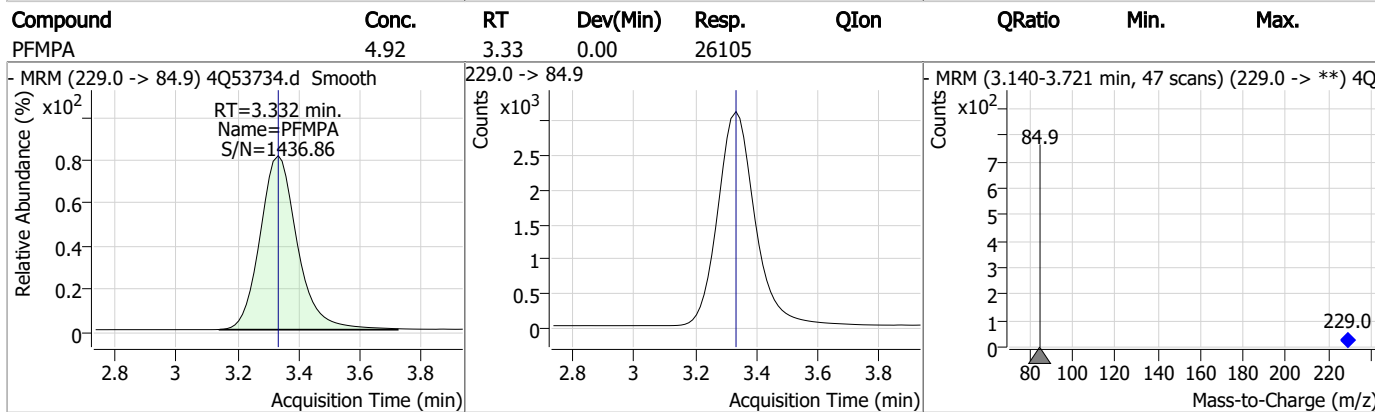
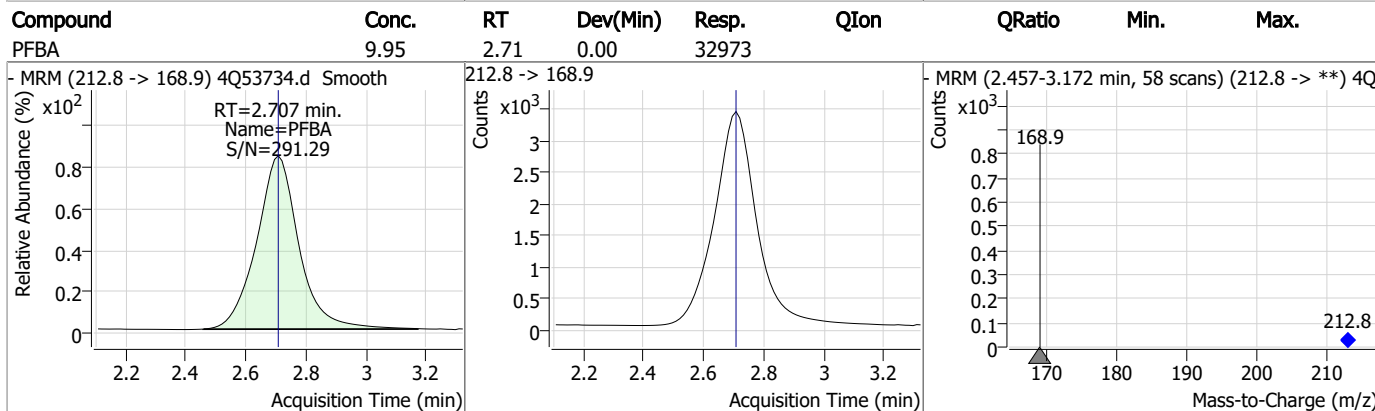
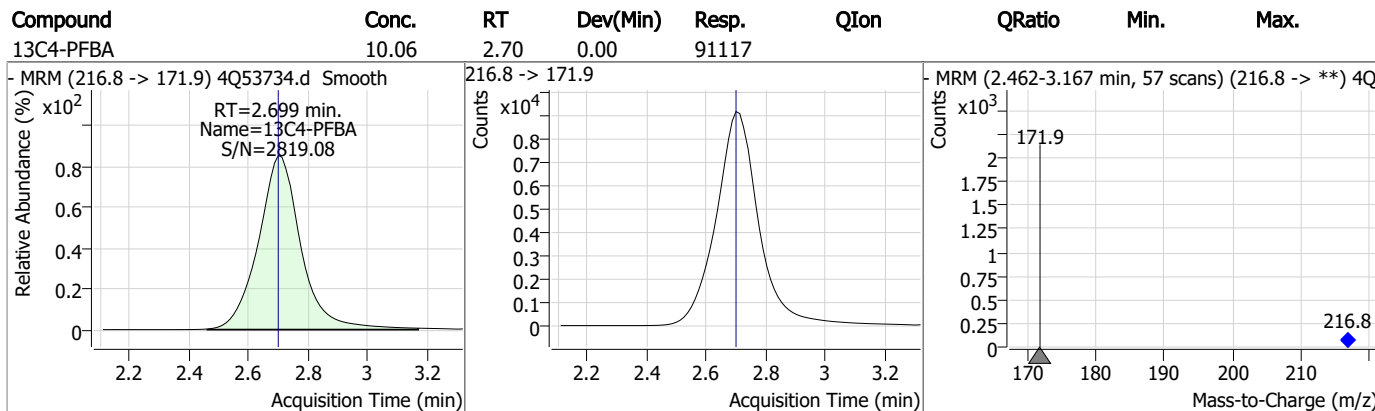
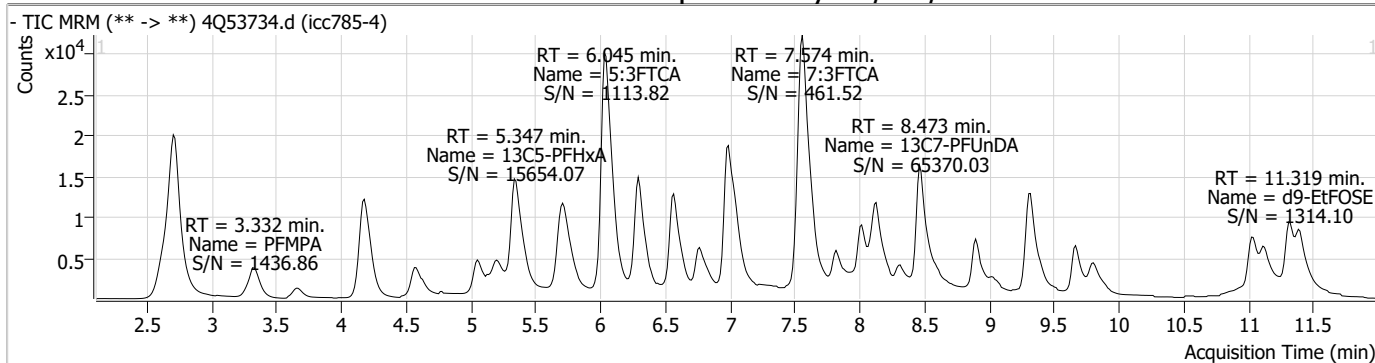
### Perfluorinated Compounds by LC/MS/MS

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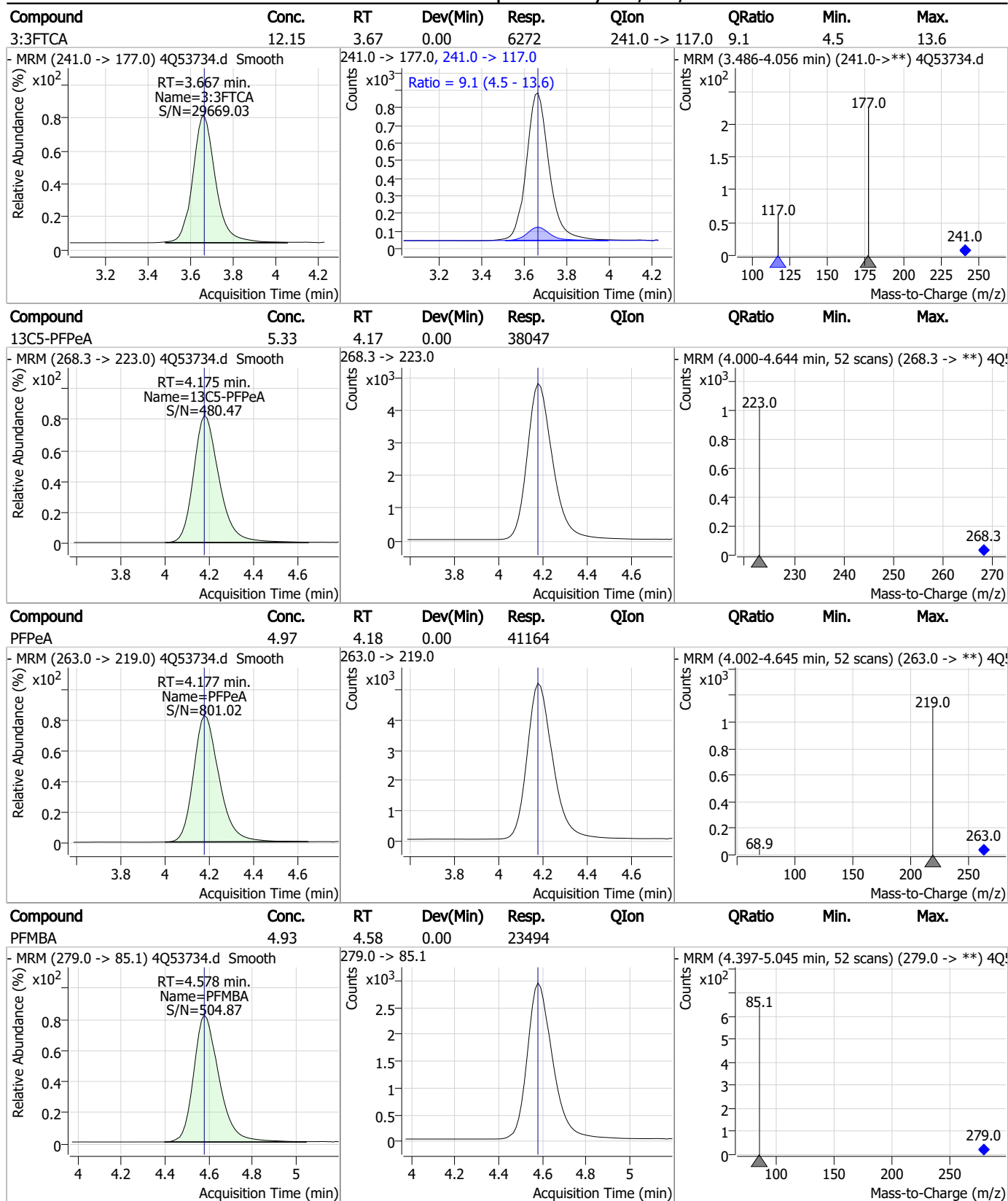
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### Perfluorinated Compounds by LC/MS/MS

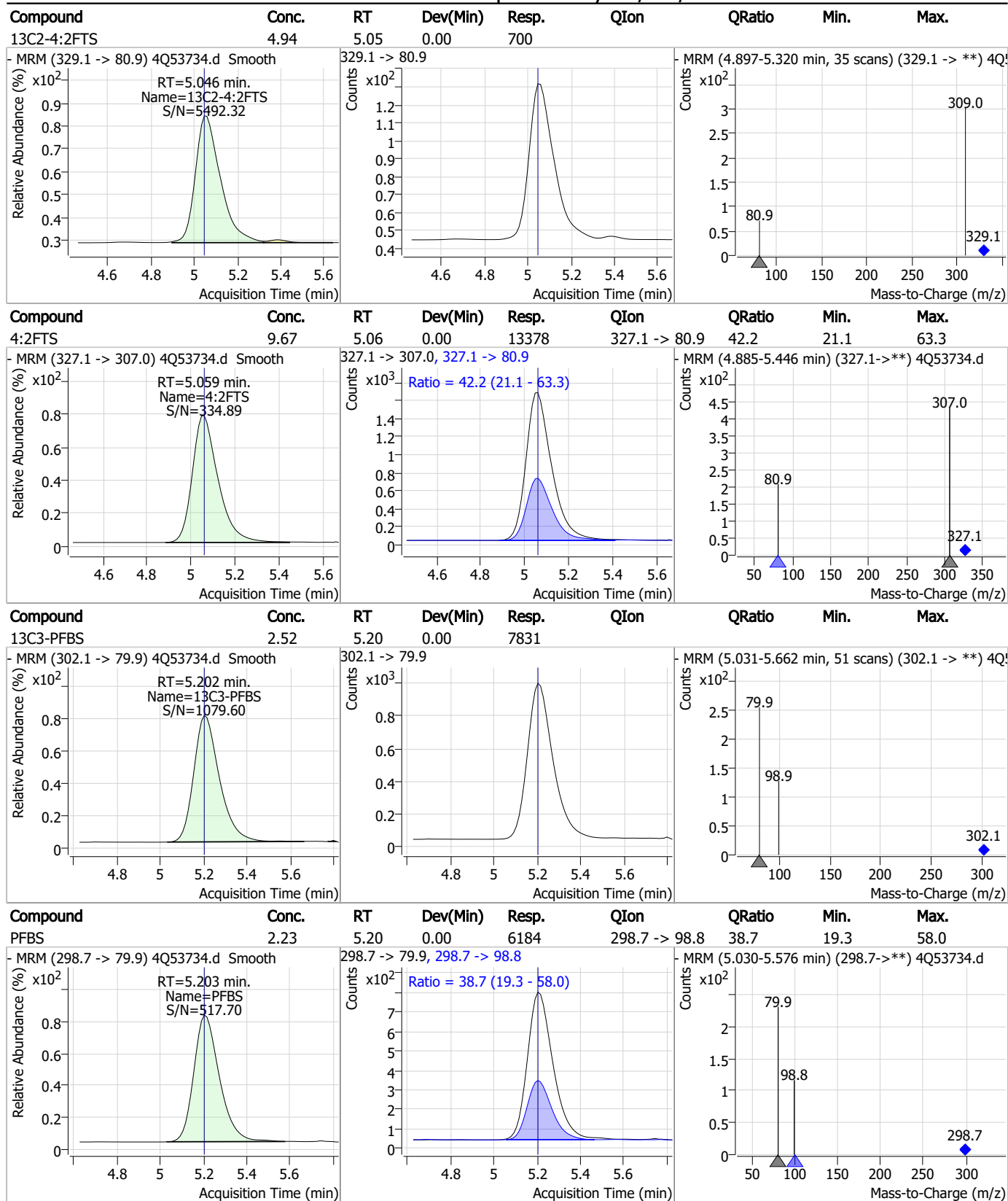


### Perfluorinated Compounds by LC/MS/MS



7.7.5  
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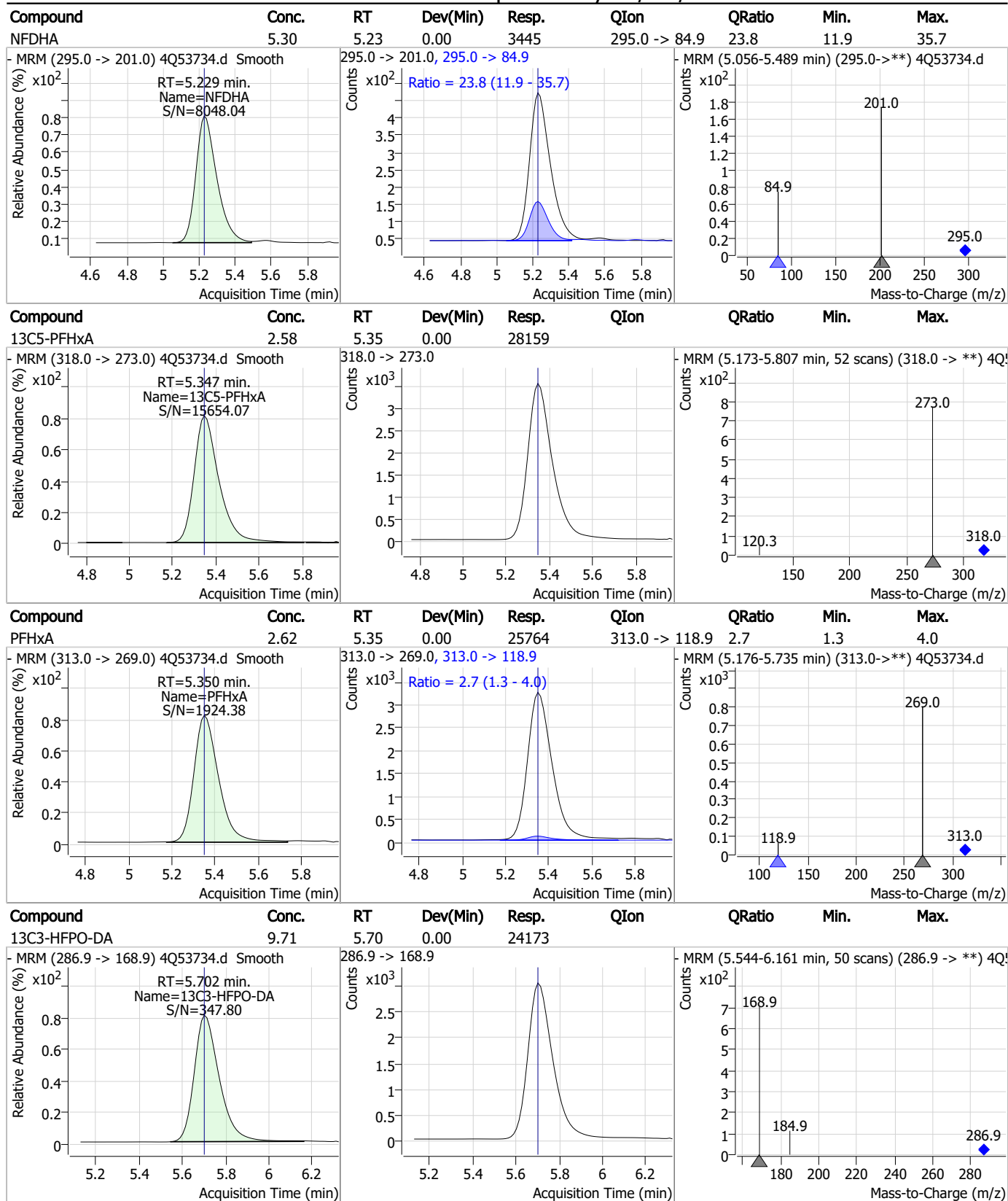
### Perfluorinated Compounds by LC/MS/MS



7.7.5

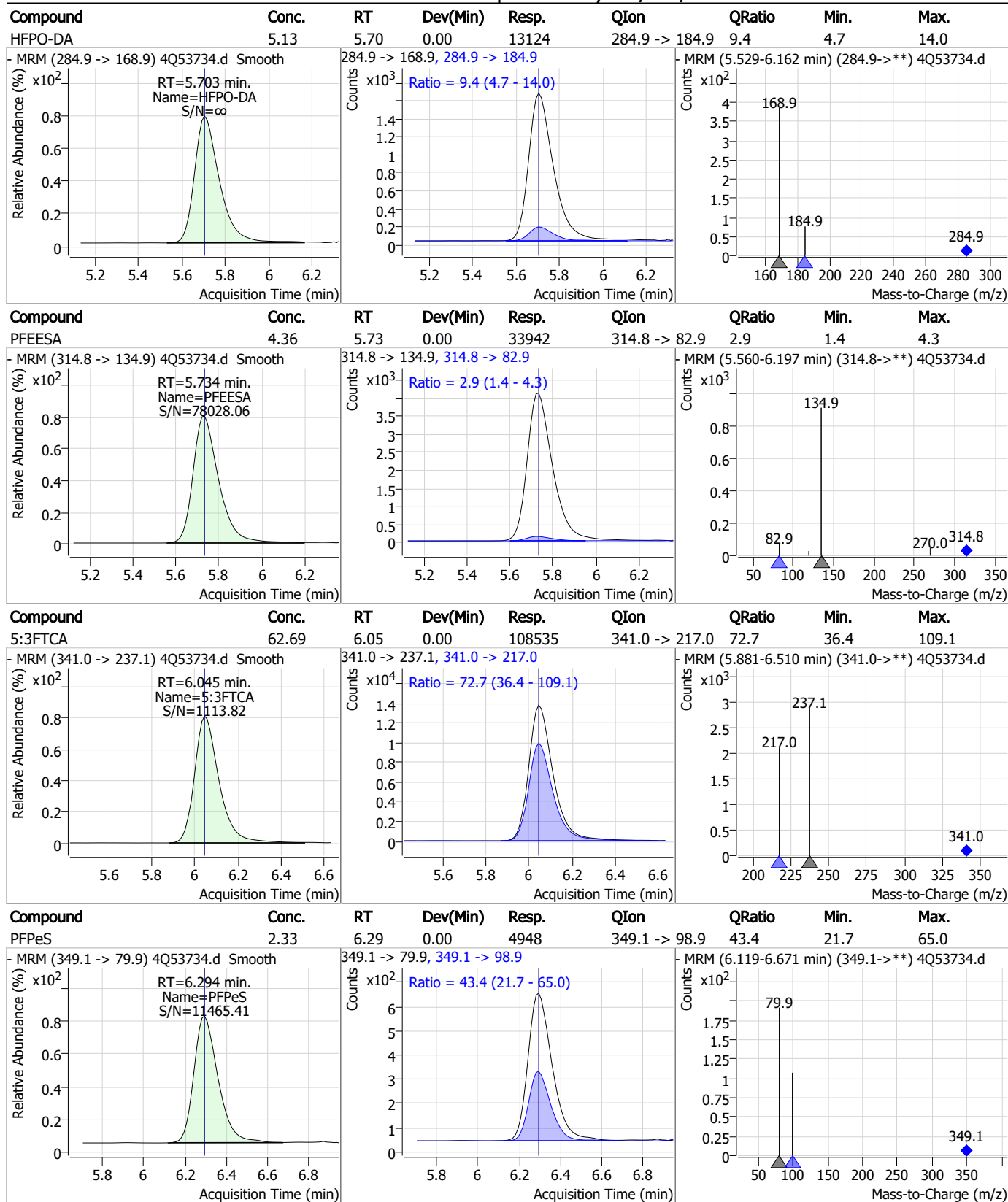
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### Perfluorinated Compounds by LC/MS/MS



7.7.5  
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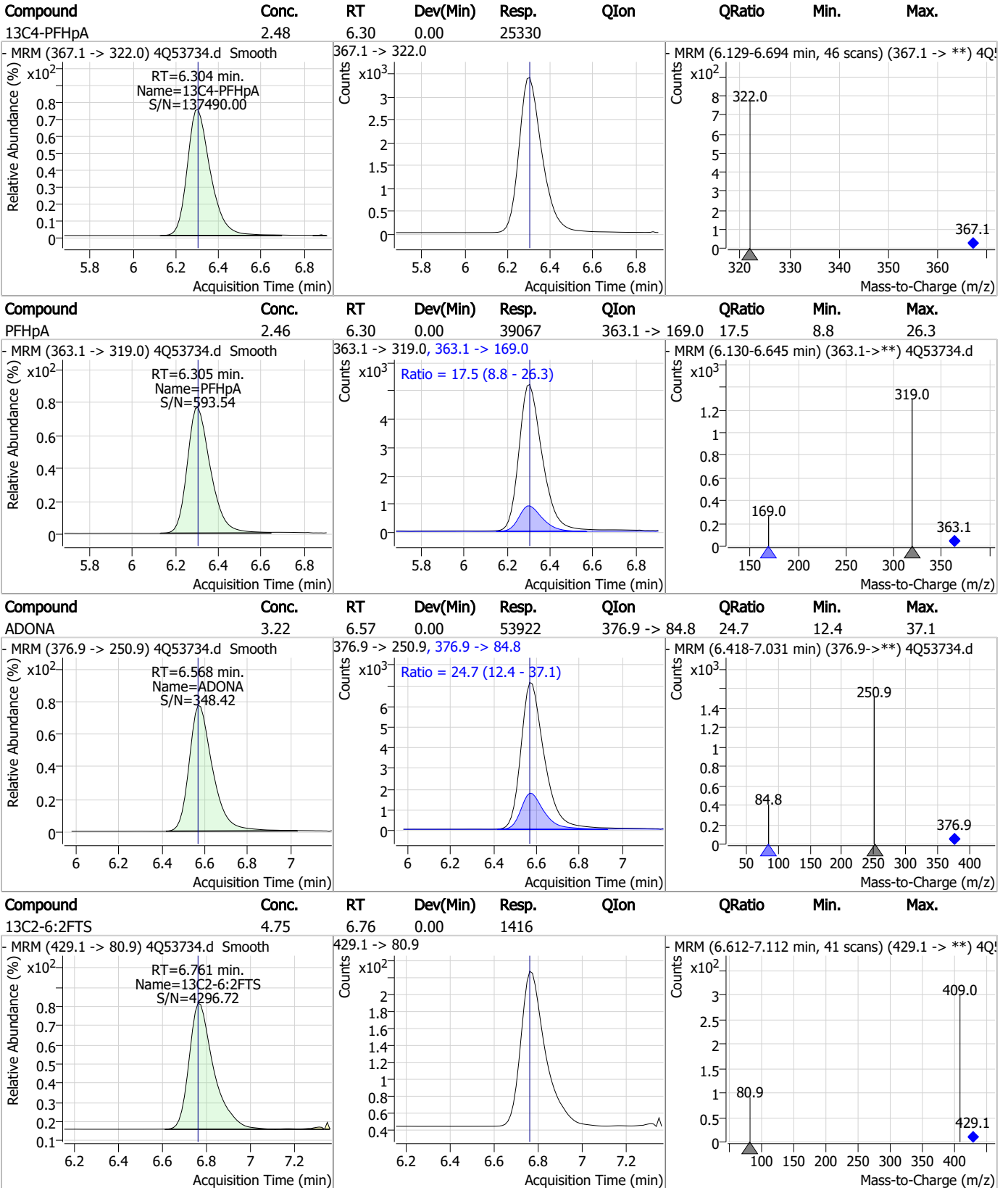
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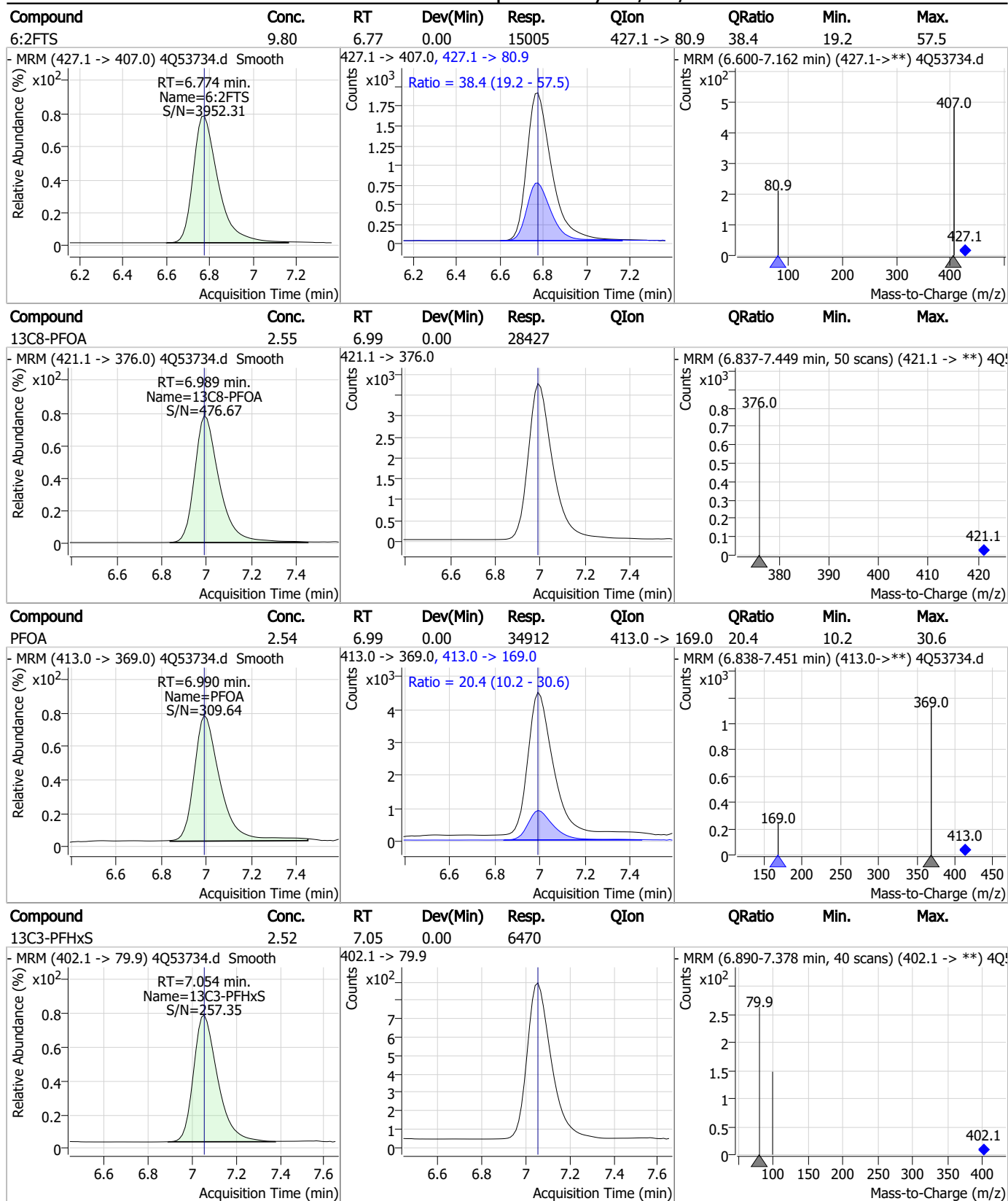
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### Perfluorinated Compounds by LC/MS/MS



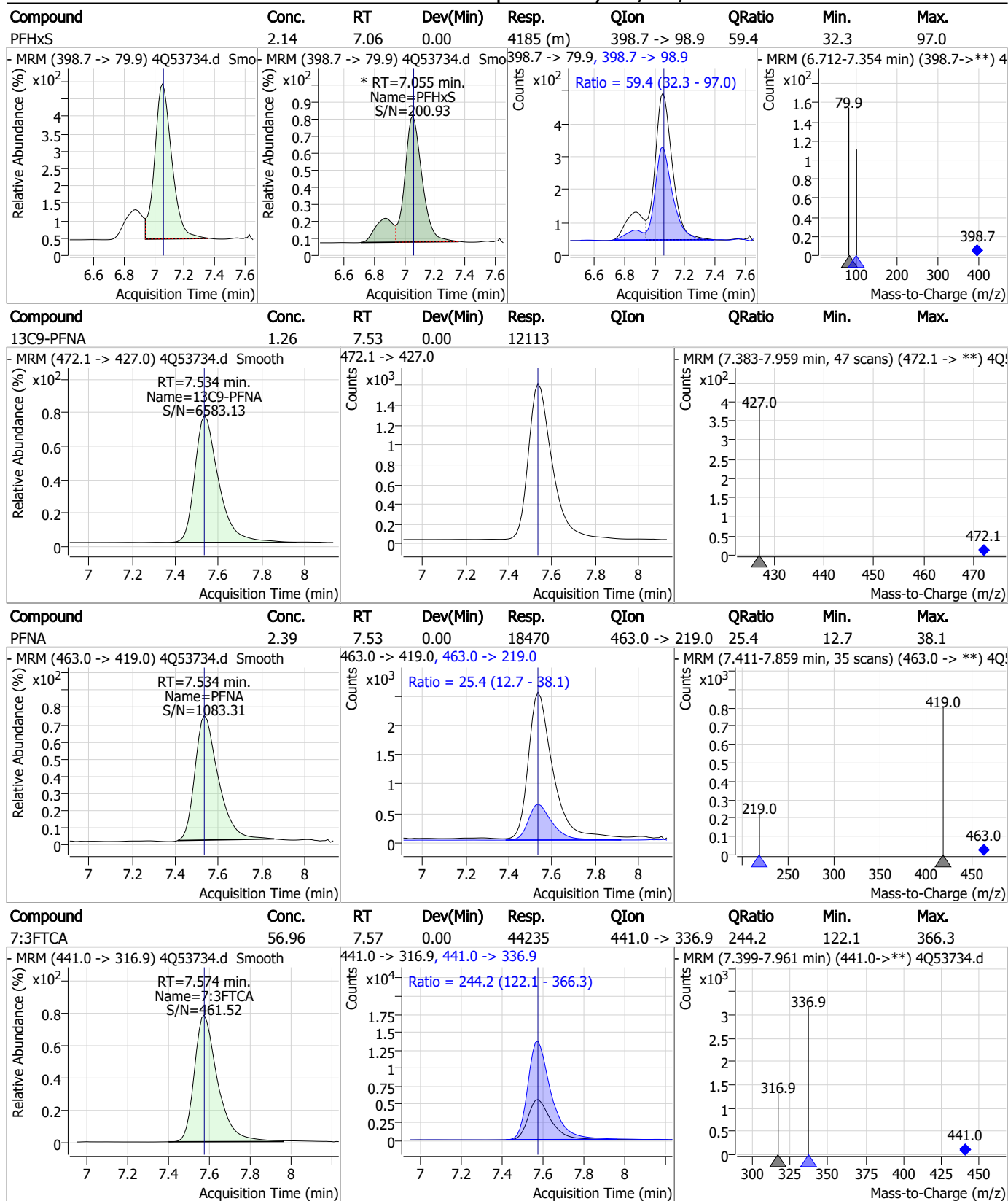
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7.7.5

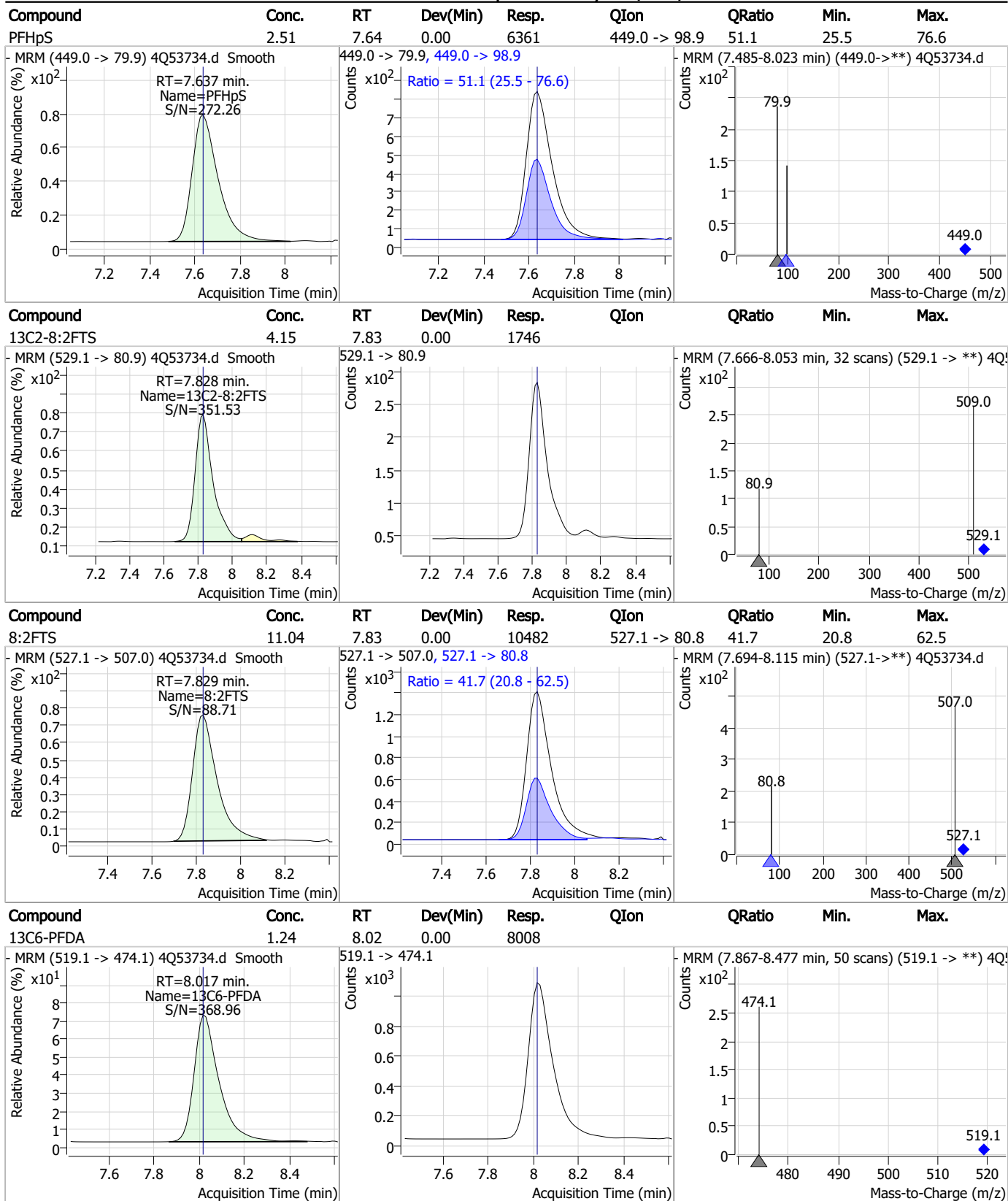
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### Perfluorinated Compounds by LC/MS/MS



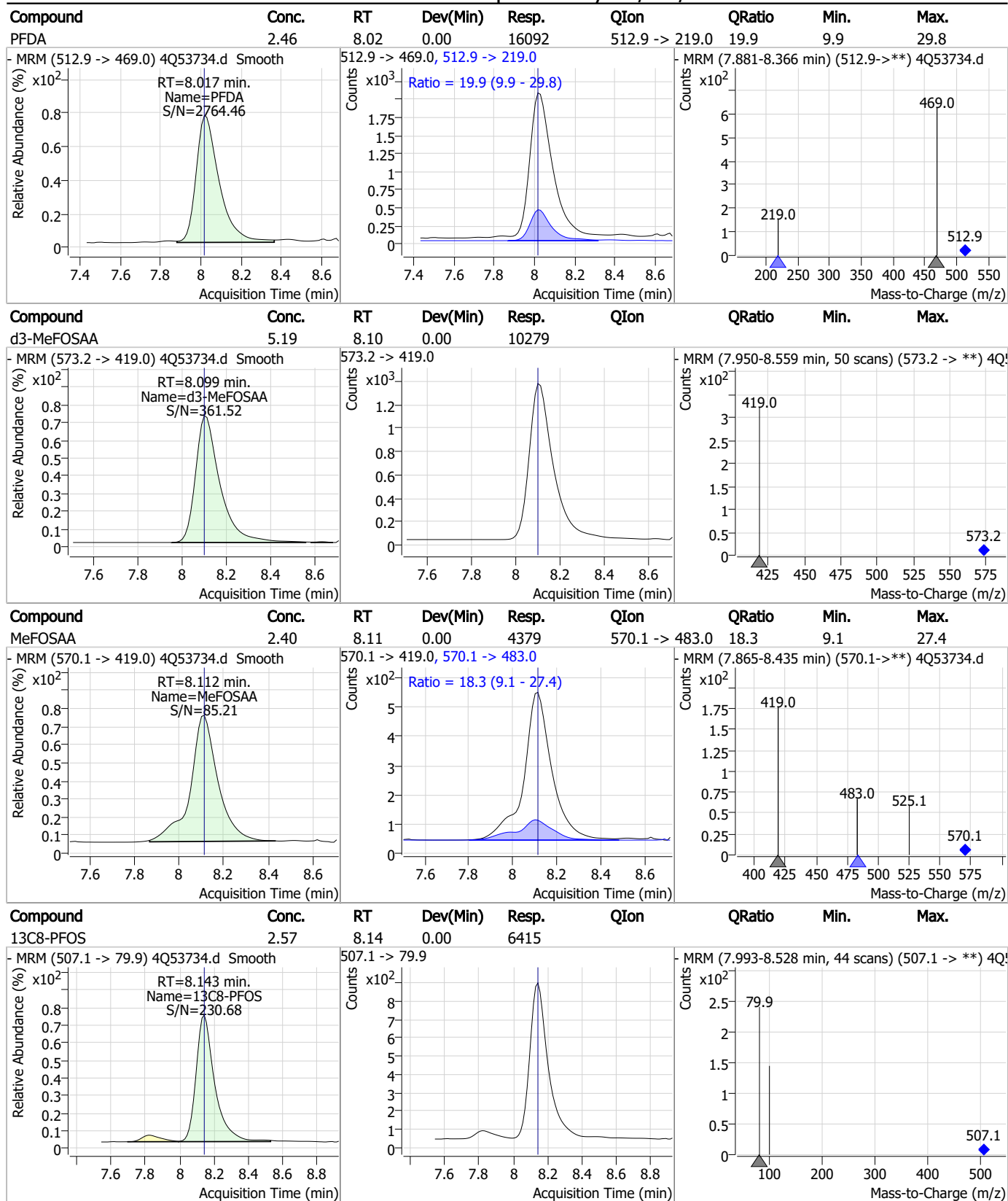
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### Perfluorinated Compounds by LC/MS/MS



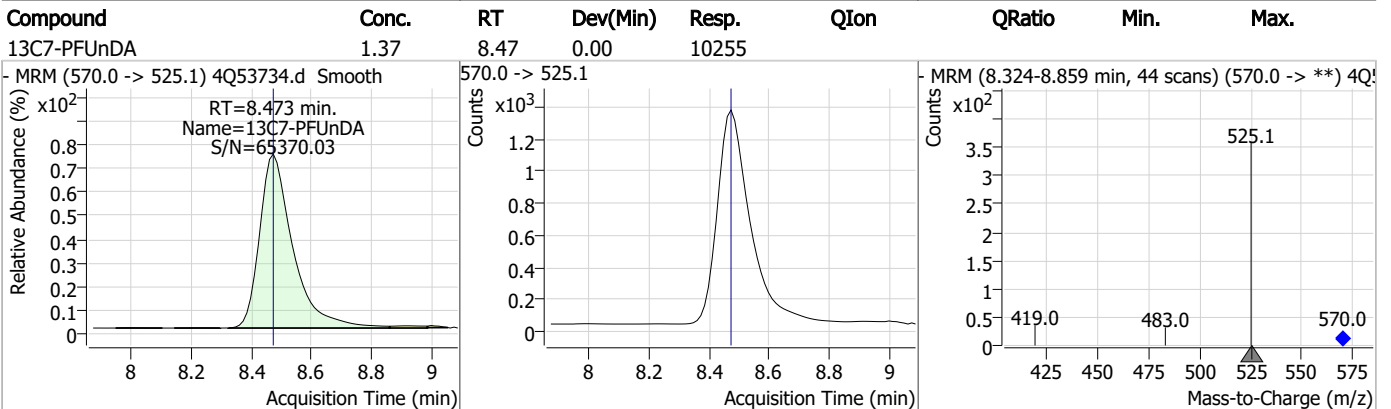
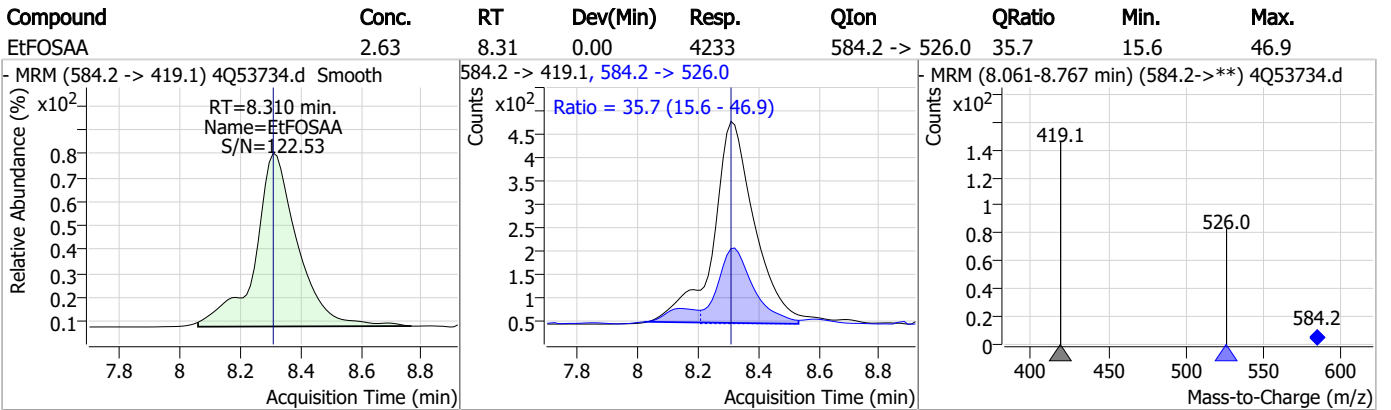
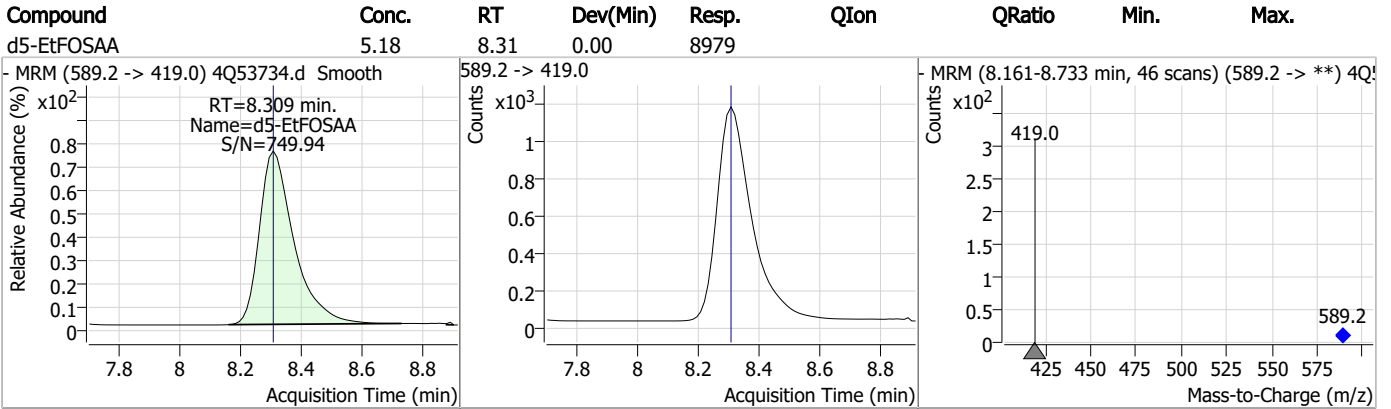
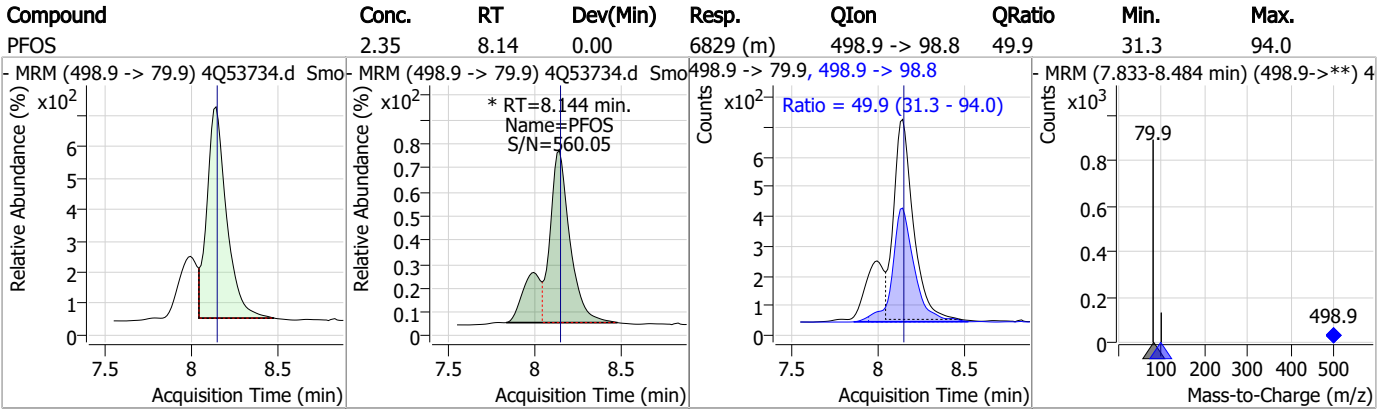
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### Perfluorinated Compounds by LC/MS/MS



7.7.5  
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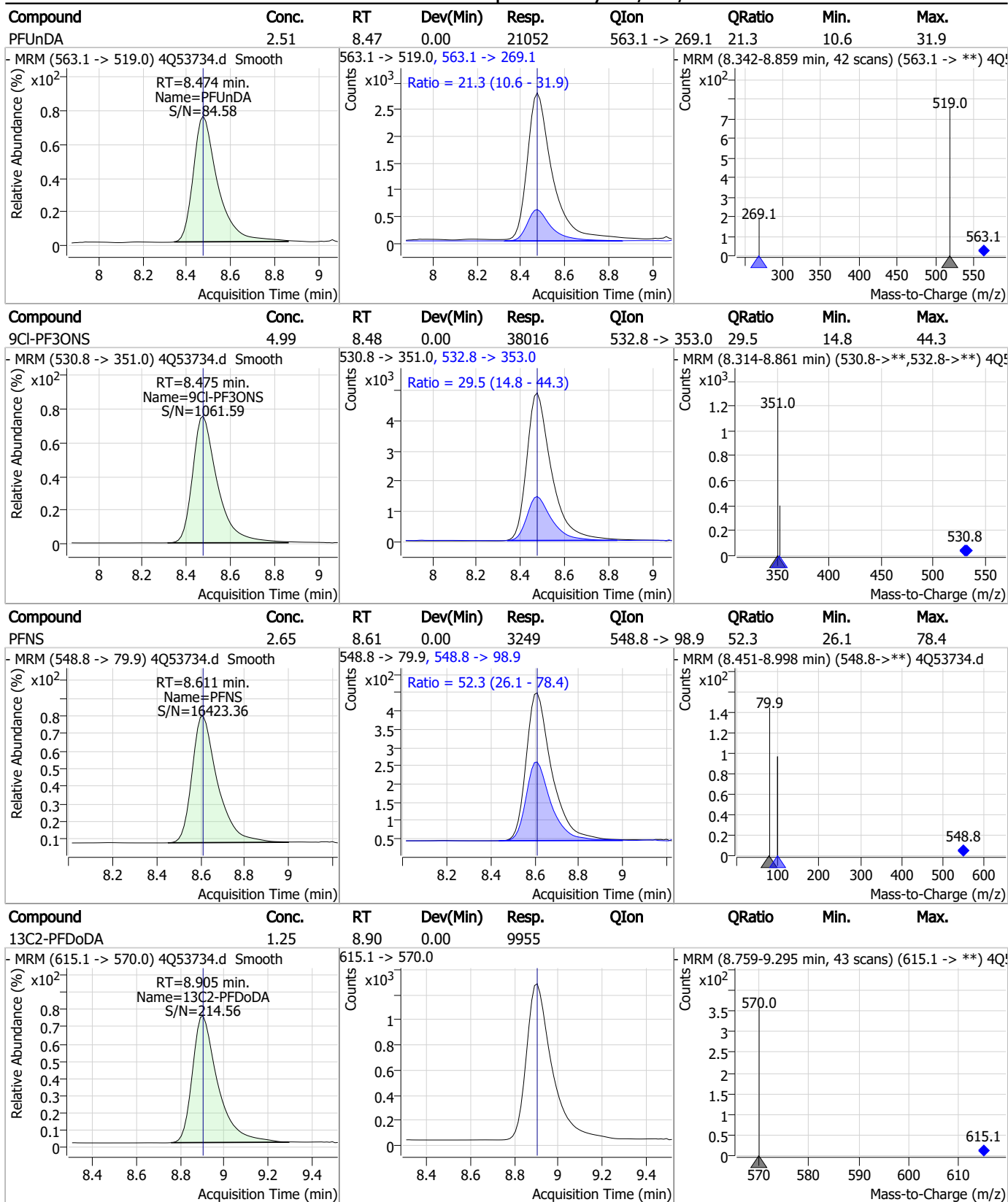
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7.7.5

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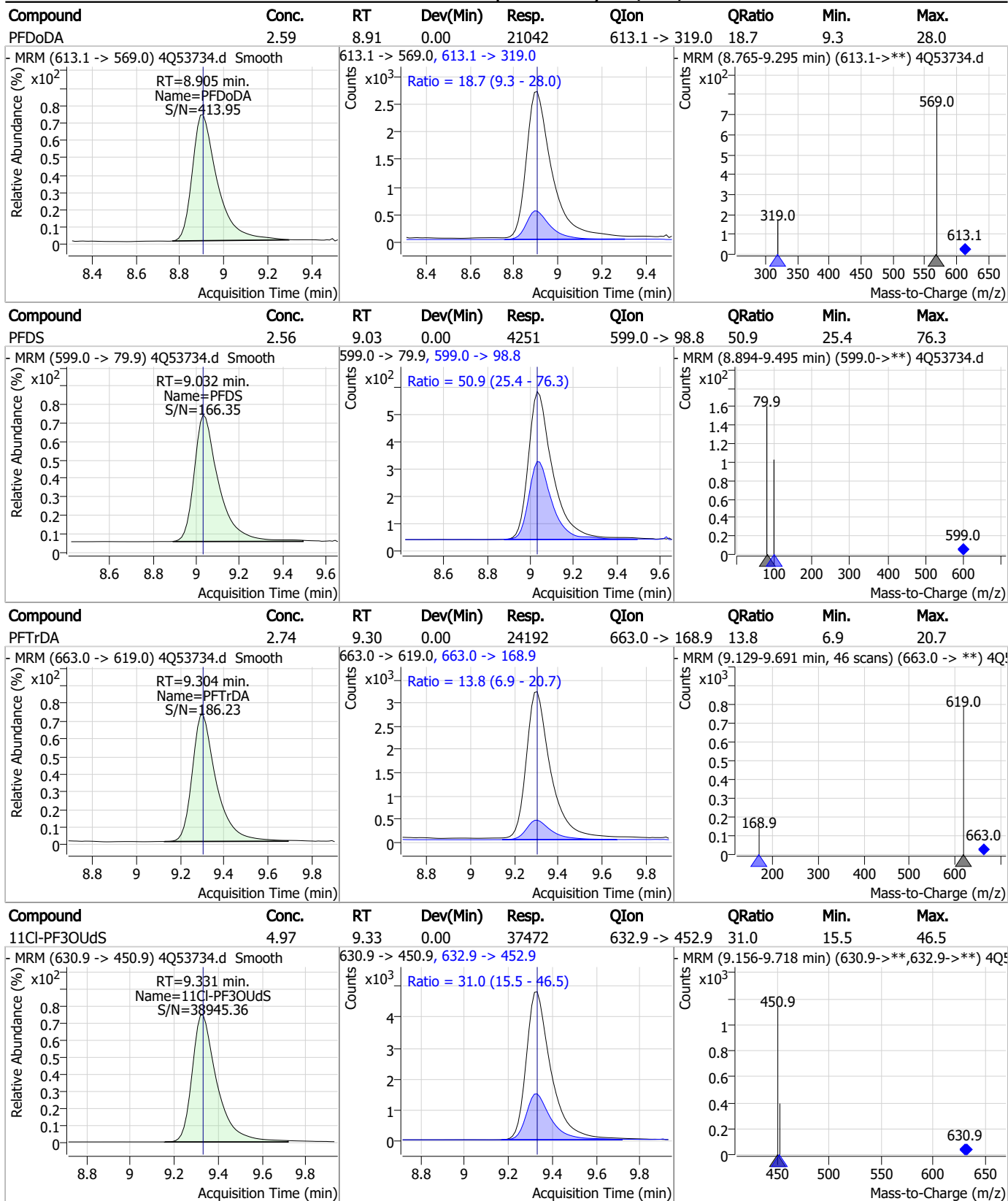
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7.7.5

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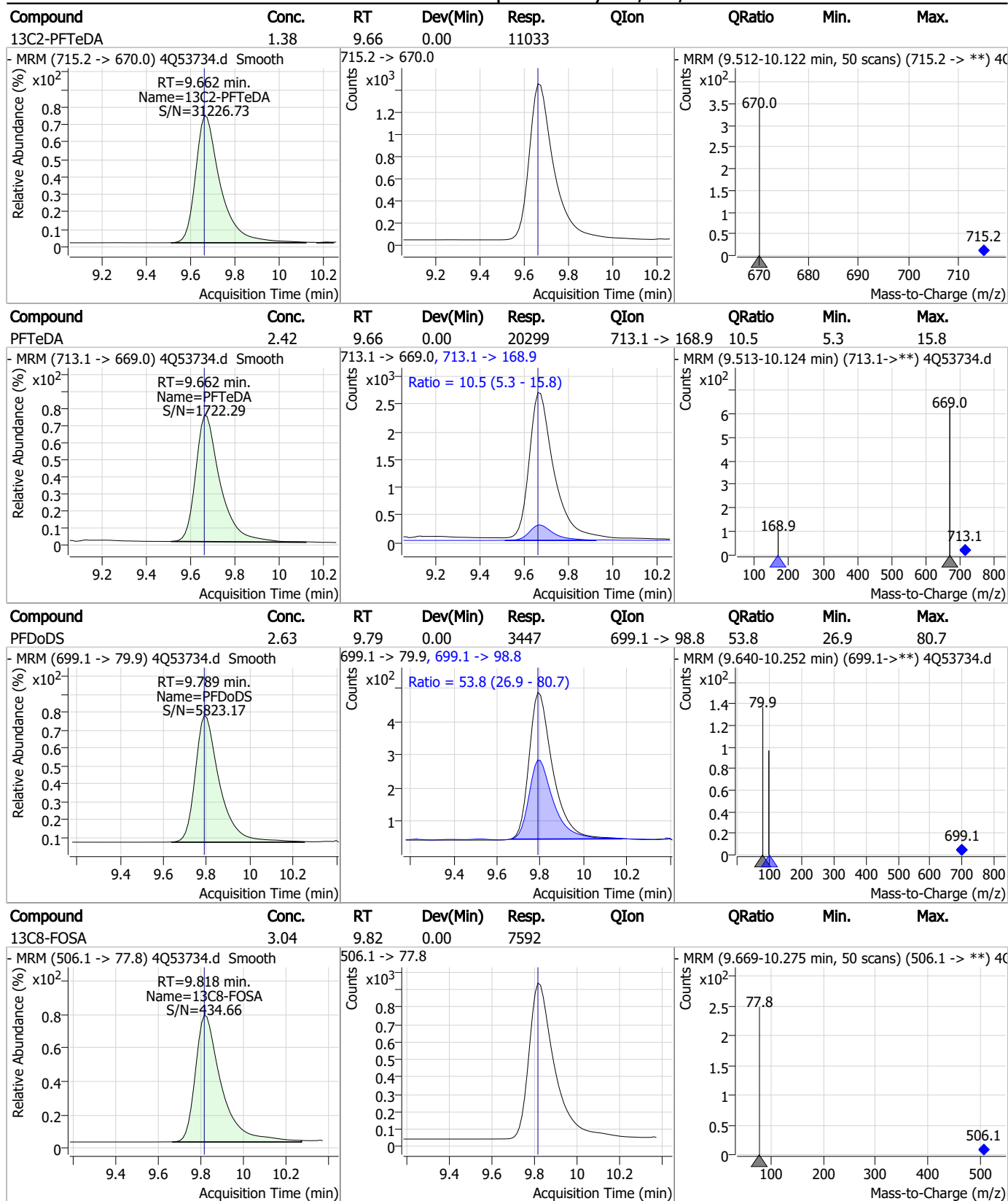
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7.7.5  
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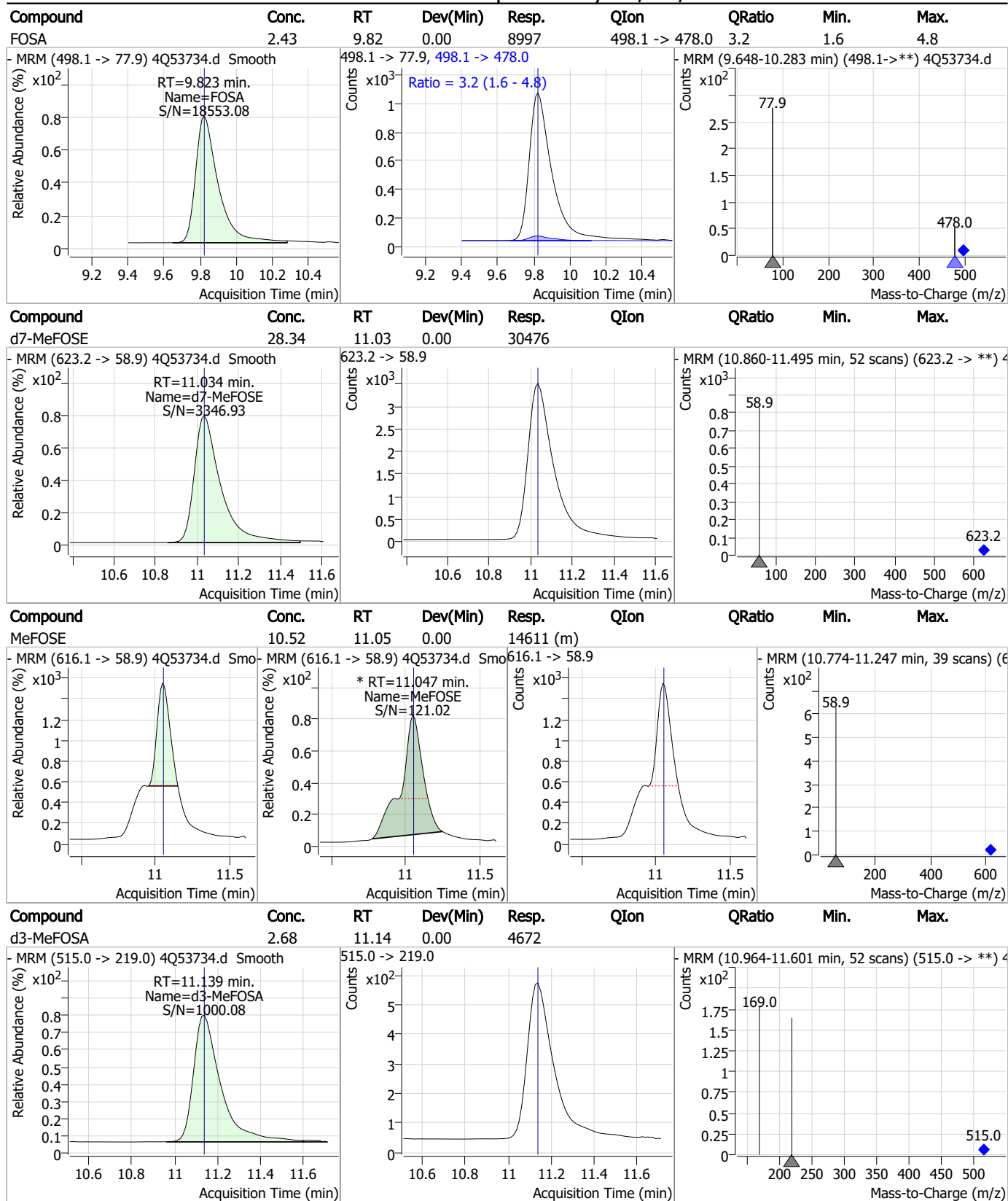


### Perfluorinated Compounds by LC/MS/MS



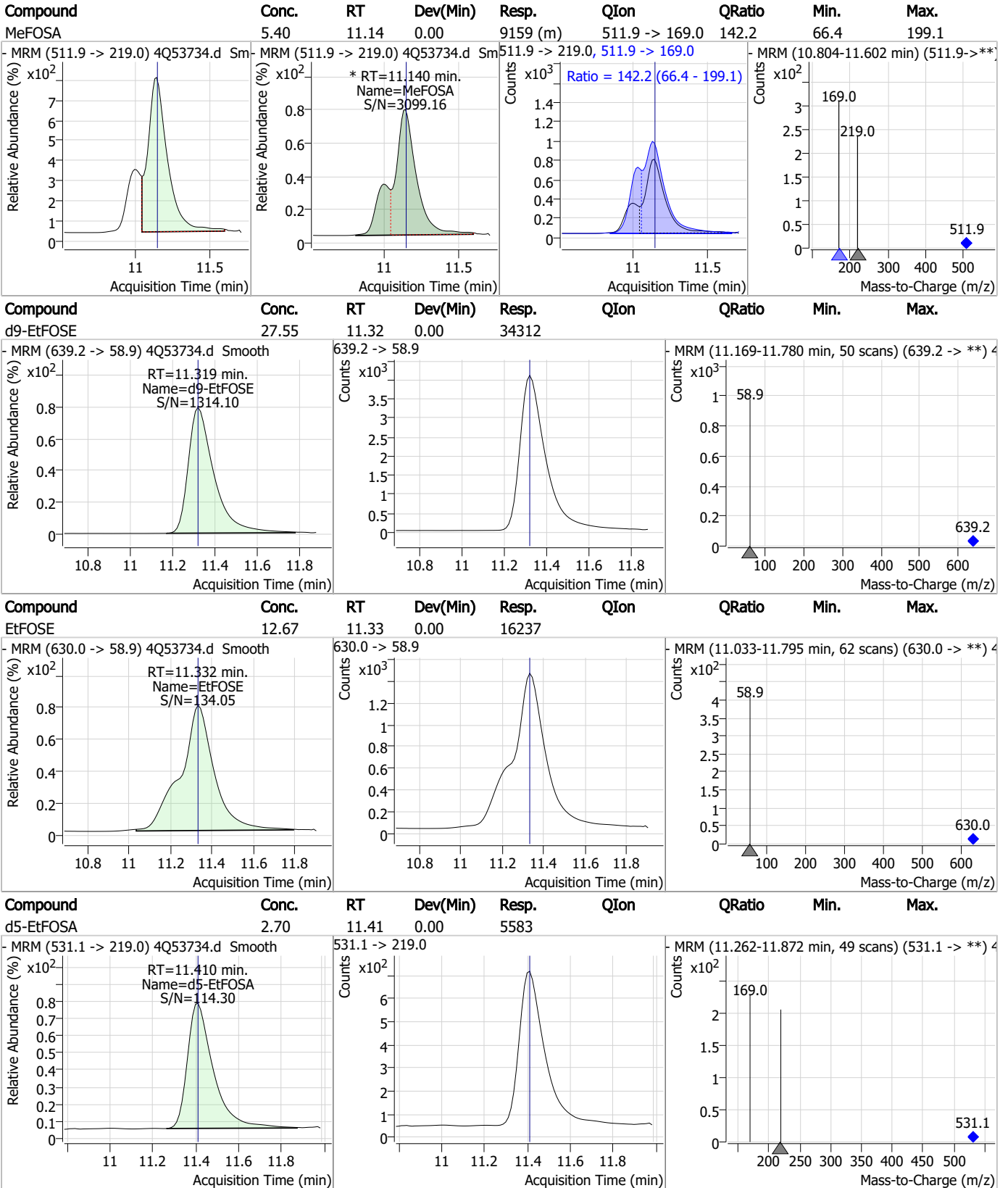
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### Perfluorinated Compounds by LC/MS/MS



7.7.5  
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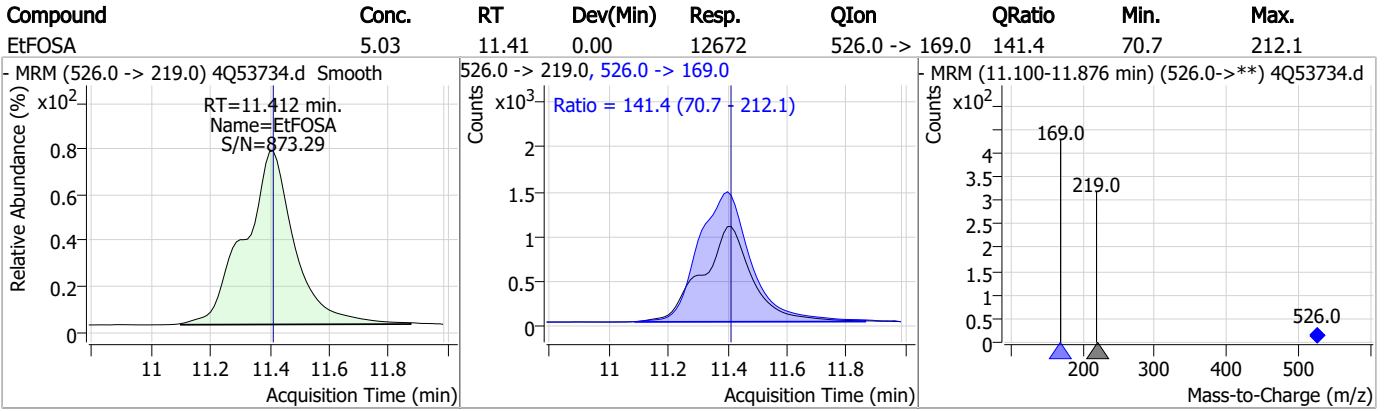
### Perfluorinated Compounds by LC/MS/MS



7.7.5

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### Perfluorinated Compounds by LC/MS/MS



7.7.5

7

# Manual Integration Approval Summary

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

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

7.7.5.1

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## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53735.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/13/2023 4:58:34 PM  
 Sample Name : ic785-5  
 Vial : P1-A6  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q785.batch.bin  
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

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

## Perfluorinated Compounds by LC/MS/MS

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

## Perfluorinated Compounds by LC/MS/MS

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

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



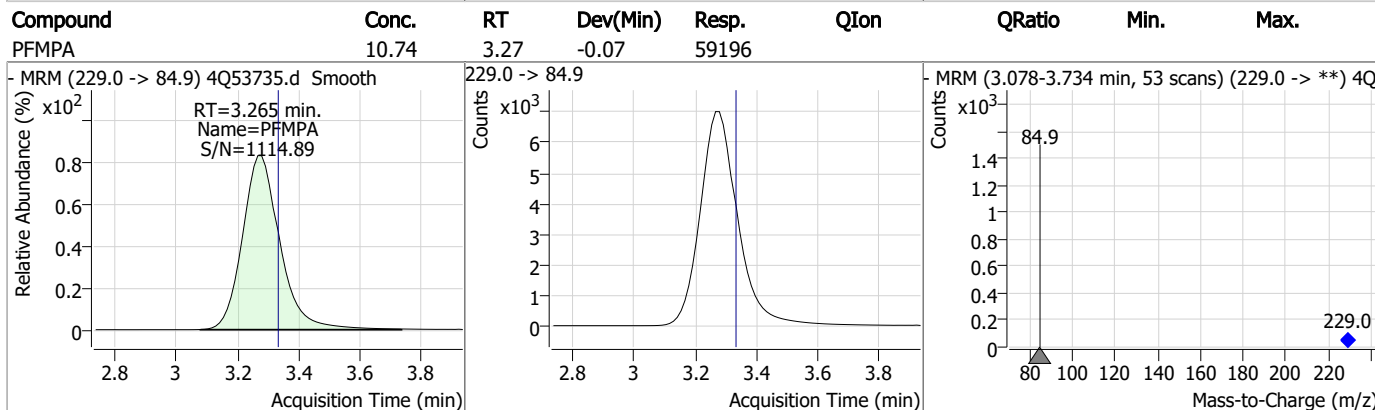
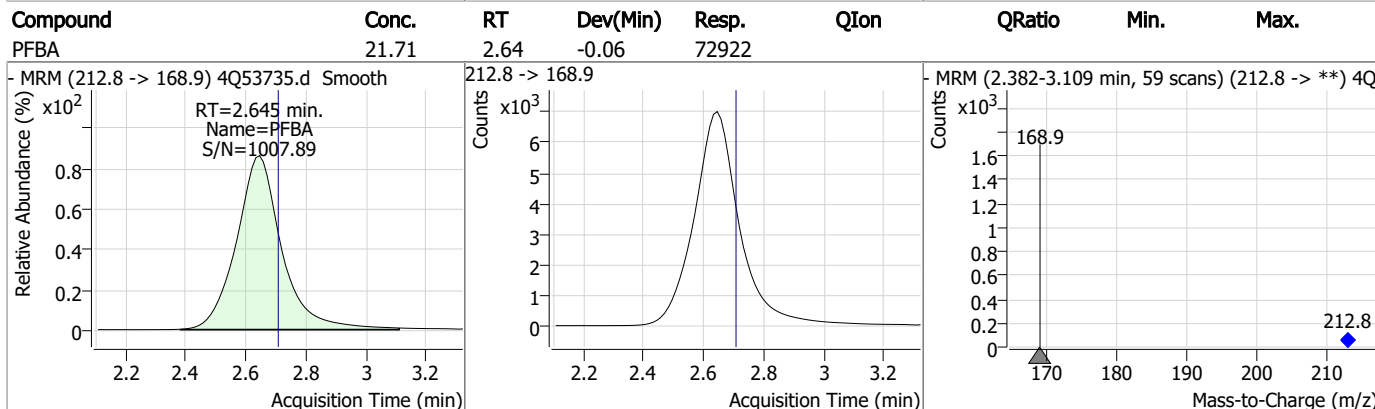
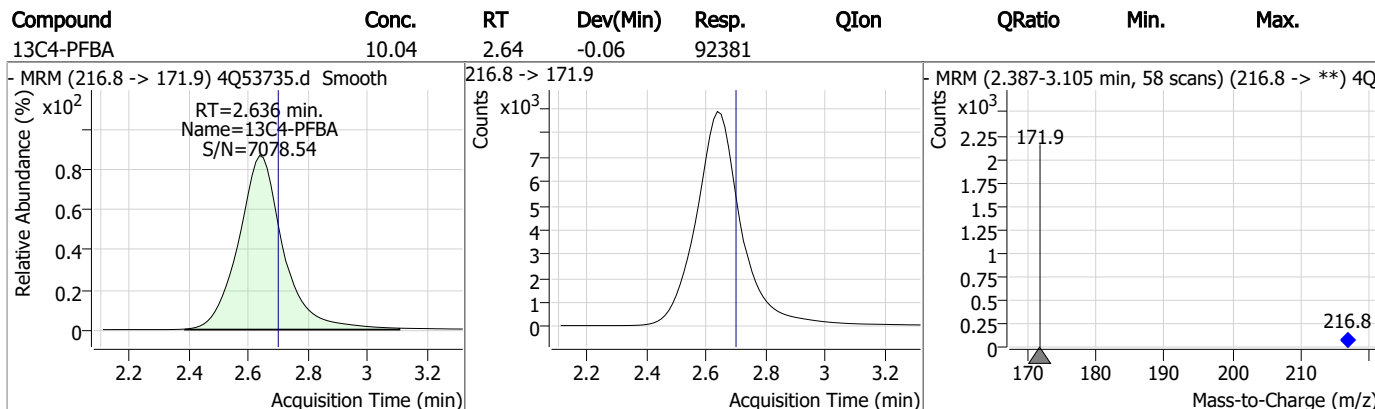
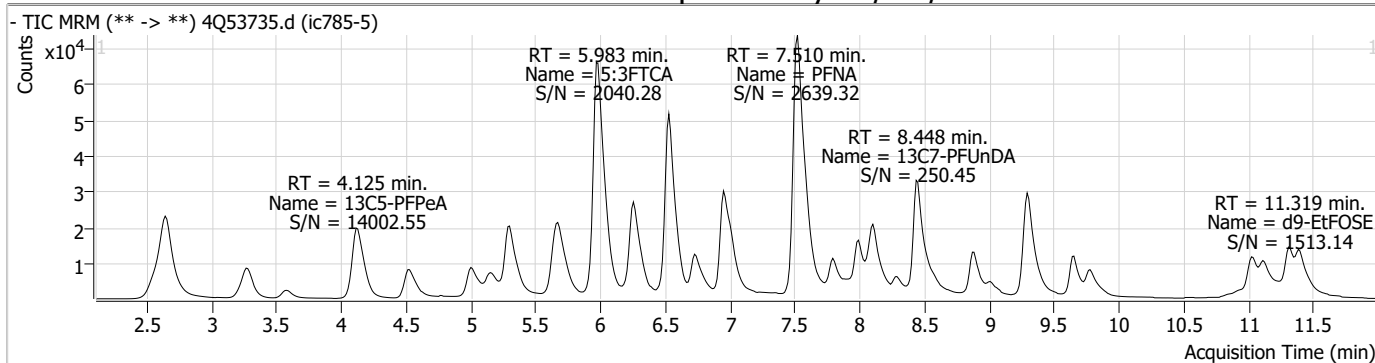
### Perfluorinated Compounds by LC/MS/MS

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

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### Perfluorinated Compounds by LC/MS/MS



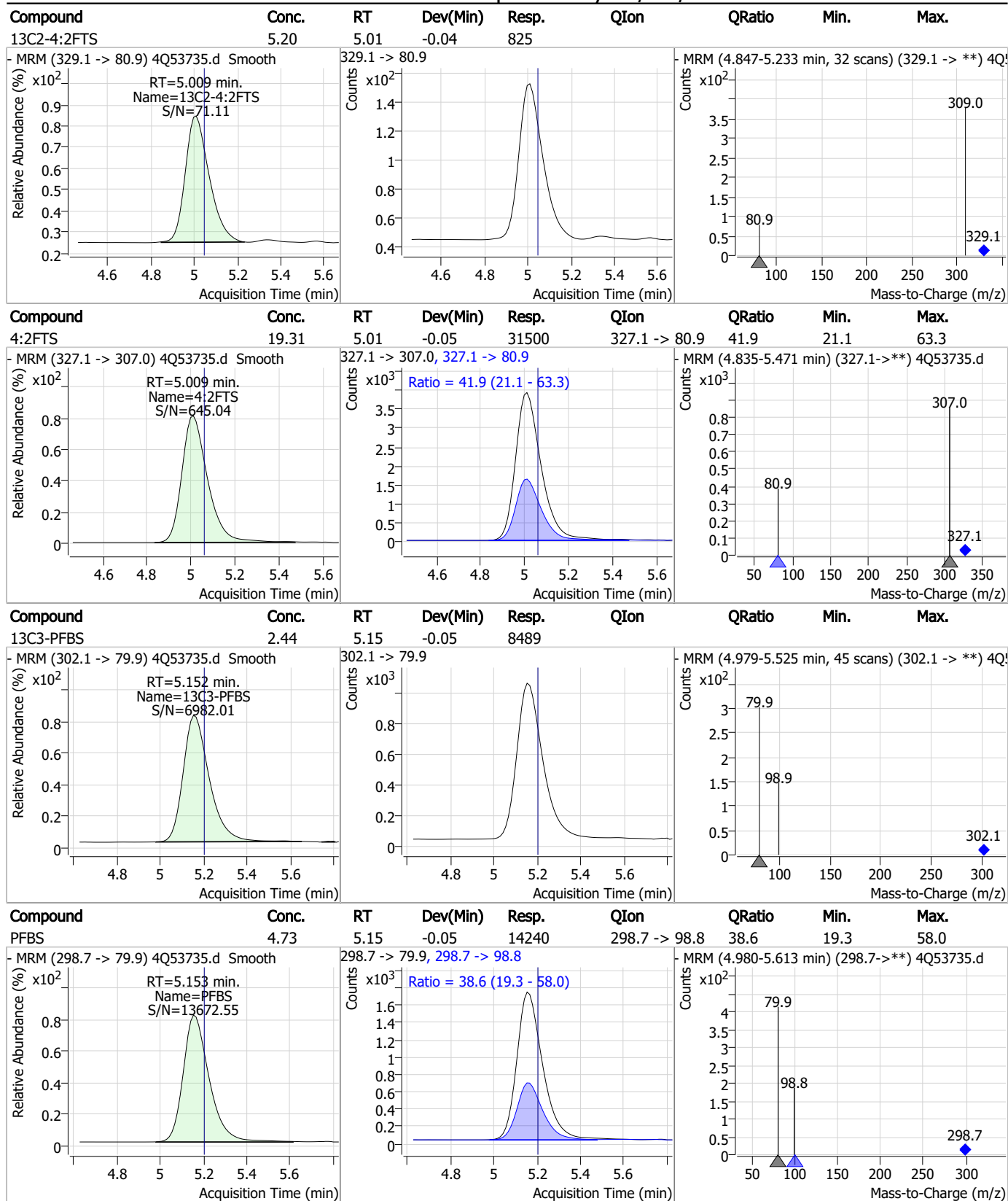
7.7.6  
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### Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	25.69	3.57	-0.09	13444	241.0 -> 117.0	8.9	4.5	13.6
- MRM (241.0 -> 177.0) 4Q53735.d Smooth			241.0 -> 177.0, 241.0 -> 117.0			- MRM (3.398-3.968 min) (241.0->**) 4Q53735.d		
13C5-PFPeA	5.12	4.12	-0.05	39544				
- MRM (268.3 -> 223.0) 4Q53735.d Smooth			268.3 -> 223.0			- MRM (3.948-4.592 min, 52 scans) (268.3 -> **) 4Q53735.d		
PFPeA	10.64	4.13	-0.05	91562				
- MRM (263.0 -> 219.0) 4Q53735.d Smooth			263.0 -> 219.0			- MRM (3.950-4.569 min, 50 scans) (263.0 -> **) 4Q53735.d		
PFMBA	10.67	4.53	-0.05	52874				
- MRM (279.0 -> 85.1) 4Q53735.d Smooth			279.0 -> 85.1			- MRM (4.347-4.995 min, 52 scans) (279.0 -> **) 4Q53735.d		

7.7.6  
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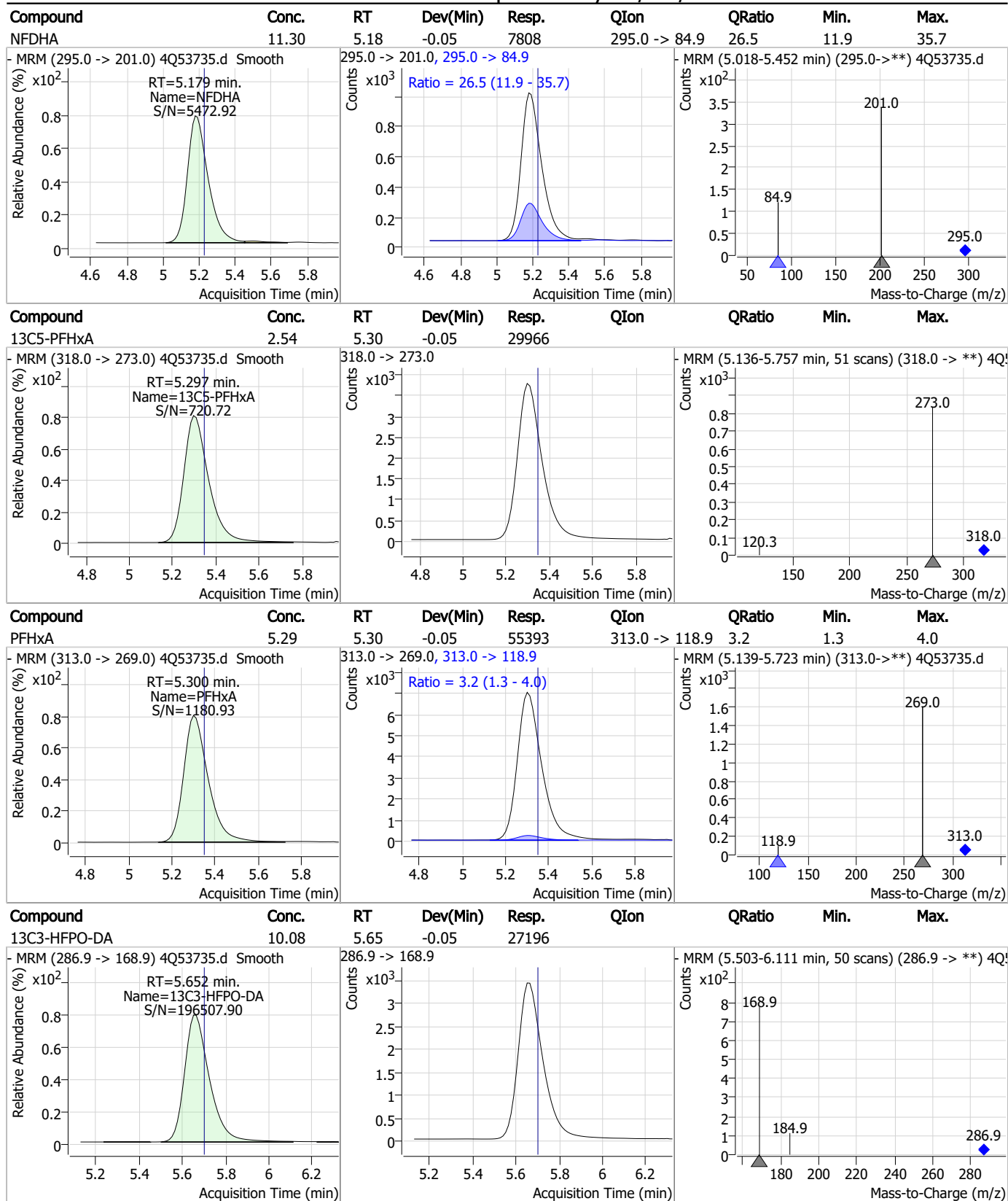
### Perfluorinated Compounds by LC/MS/MS



7.7.6

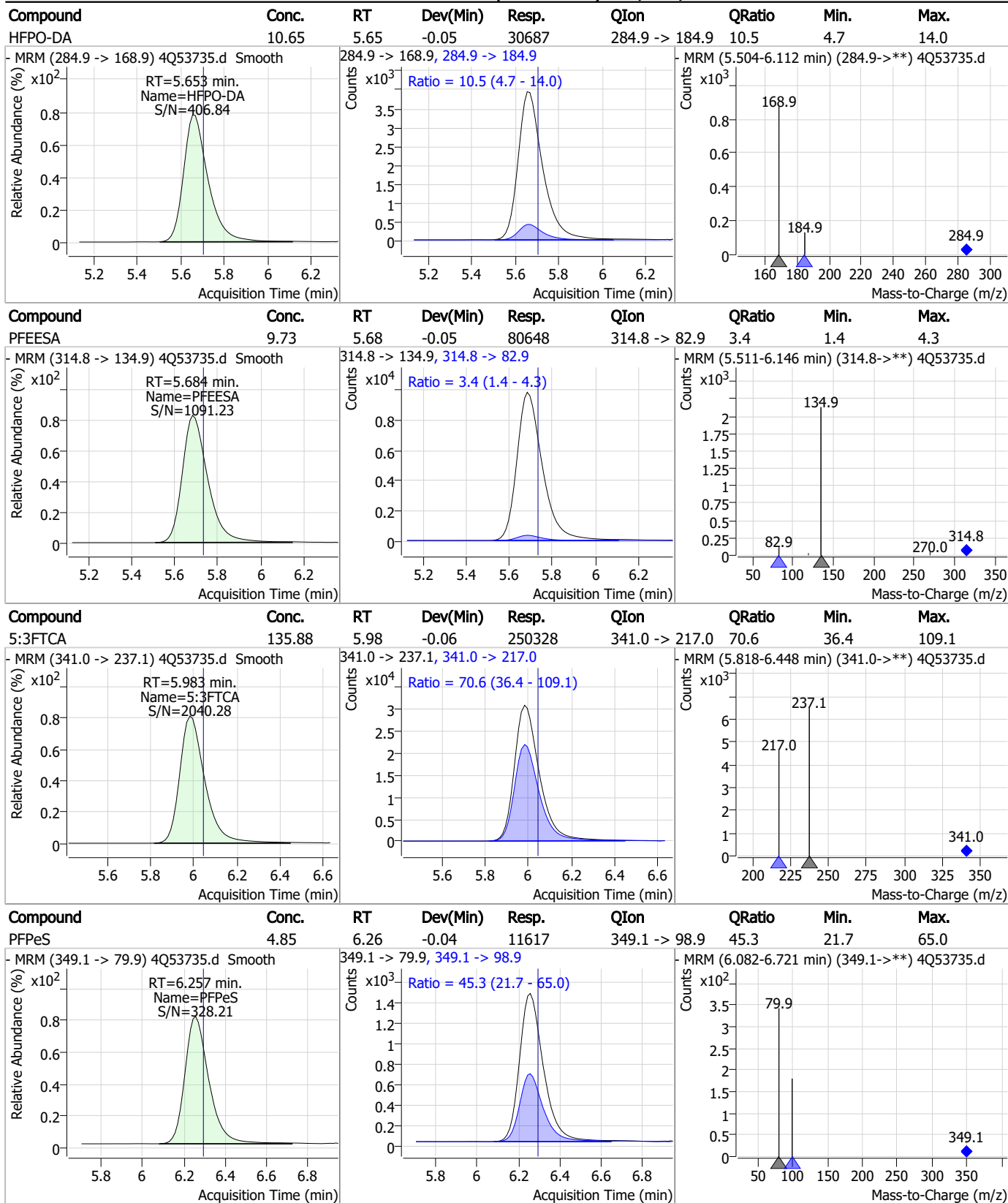
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### Perfluorinated Compounds by LC/MS/MS



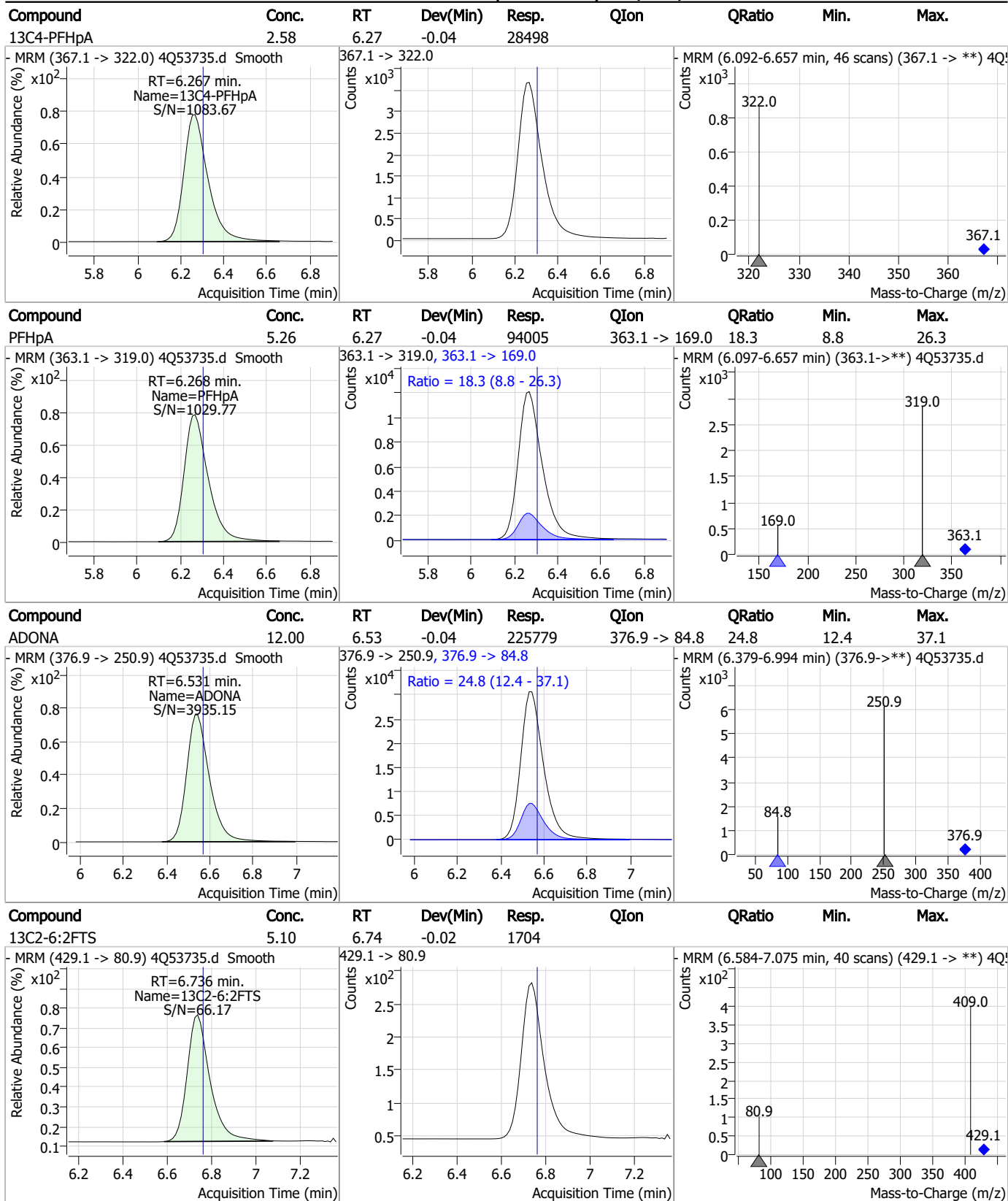
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### Perfluorinated Compounds by LC/MS/MS



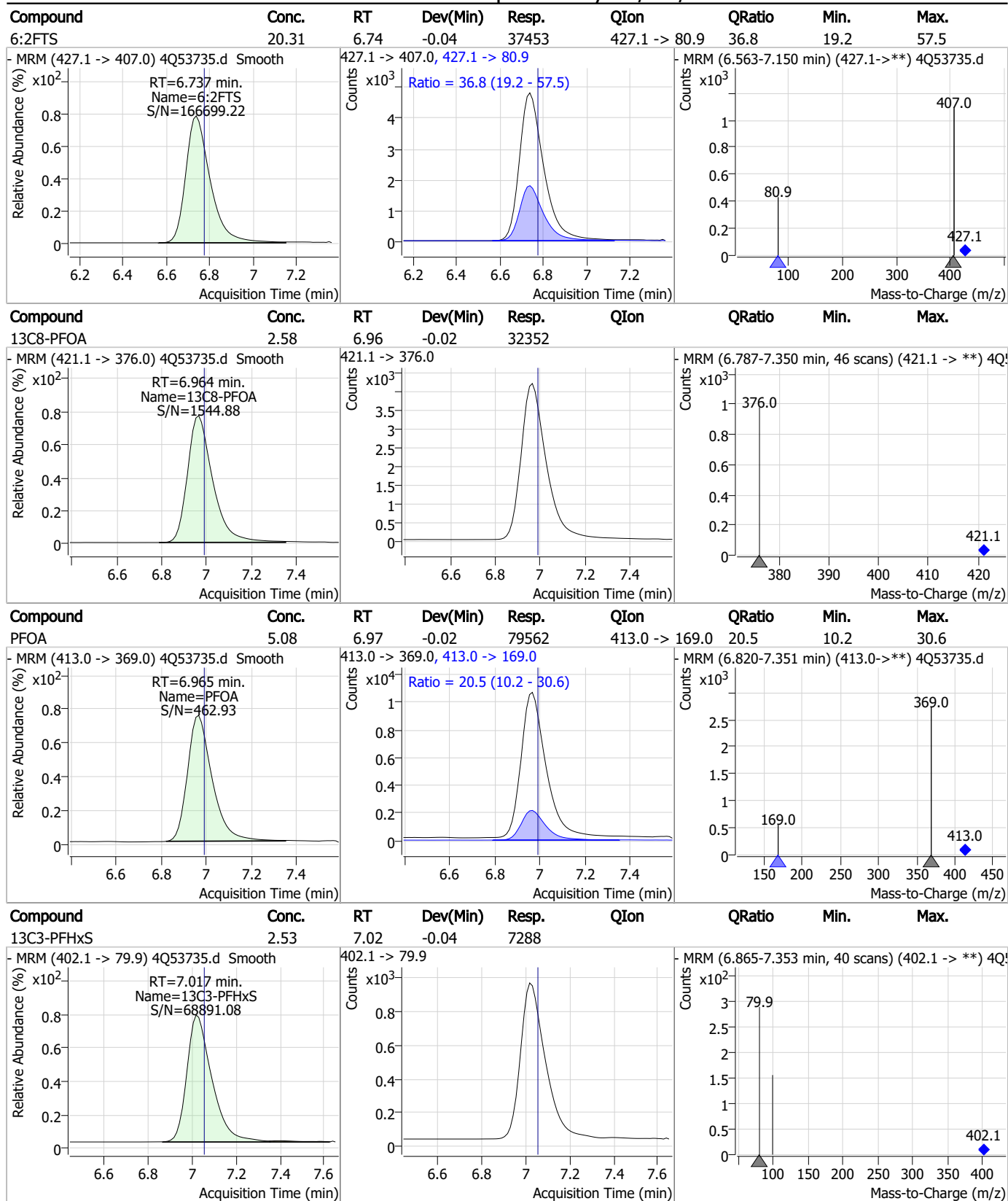
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### Perfluorinated Compounds by LC/MS/MS



7.7.6  
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### Perfluorinated Compounds by LC/MS/MS

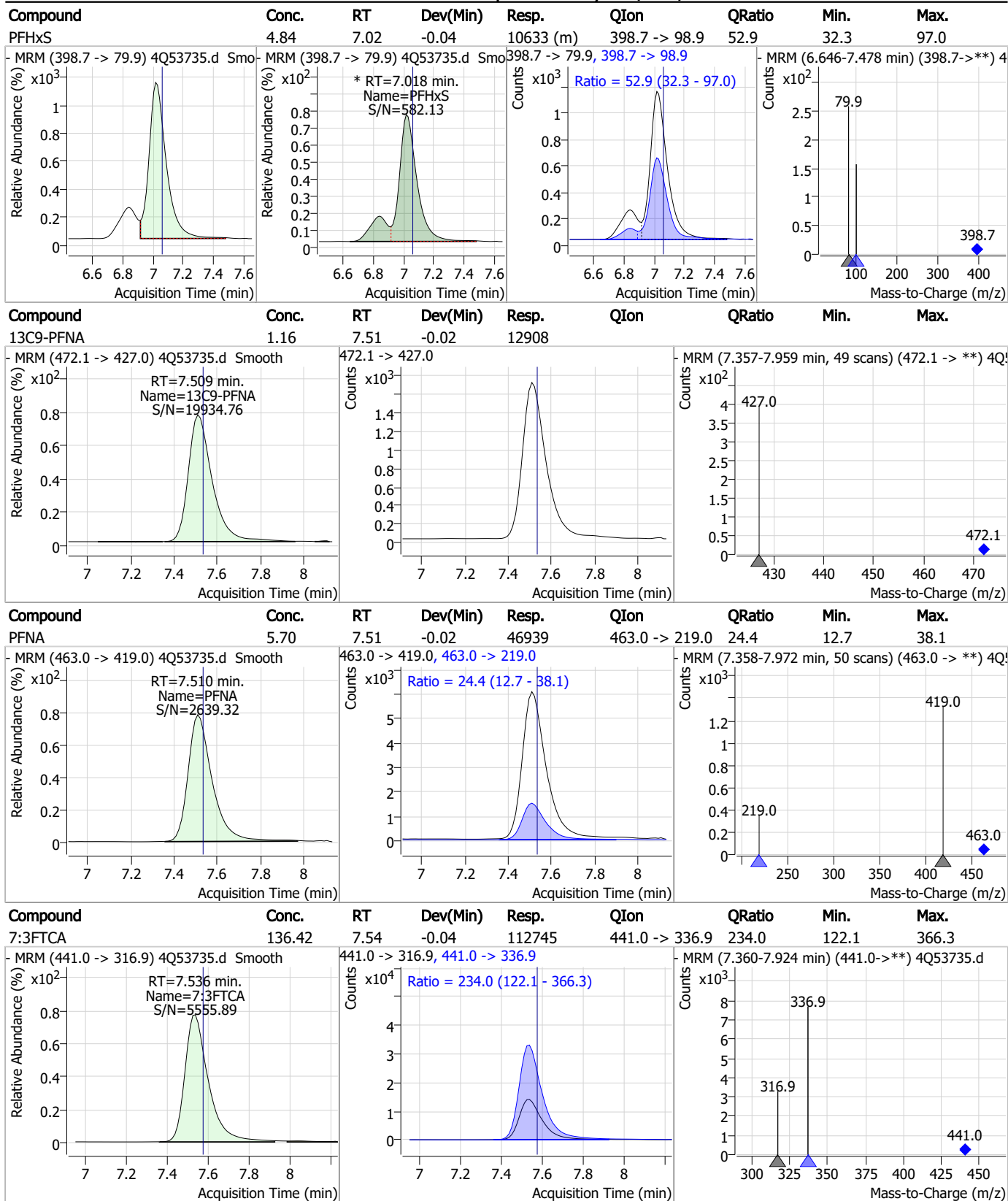


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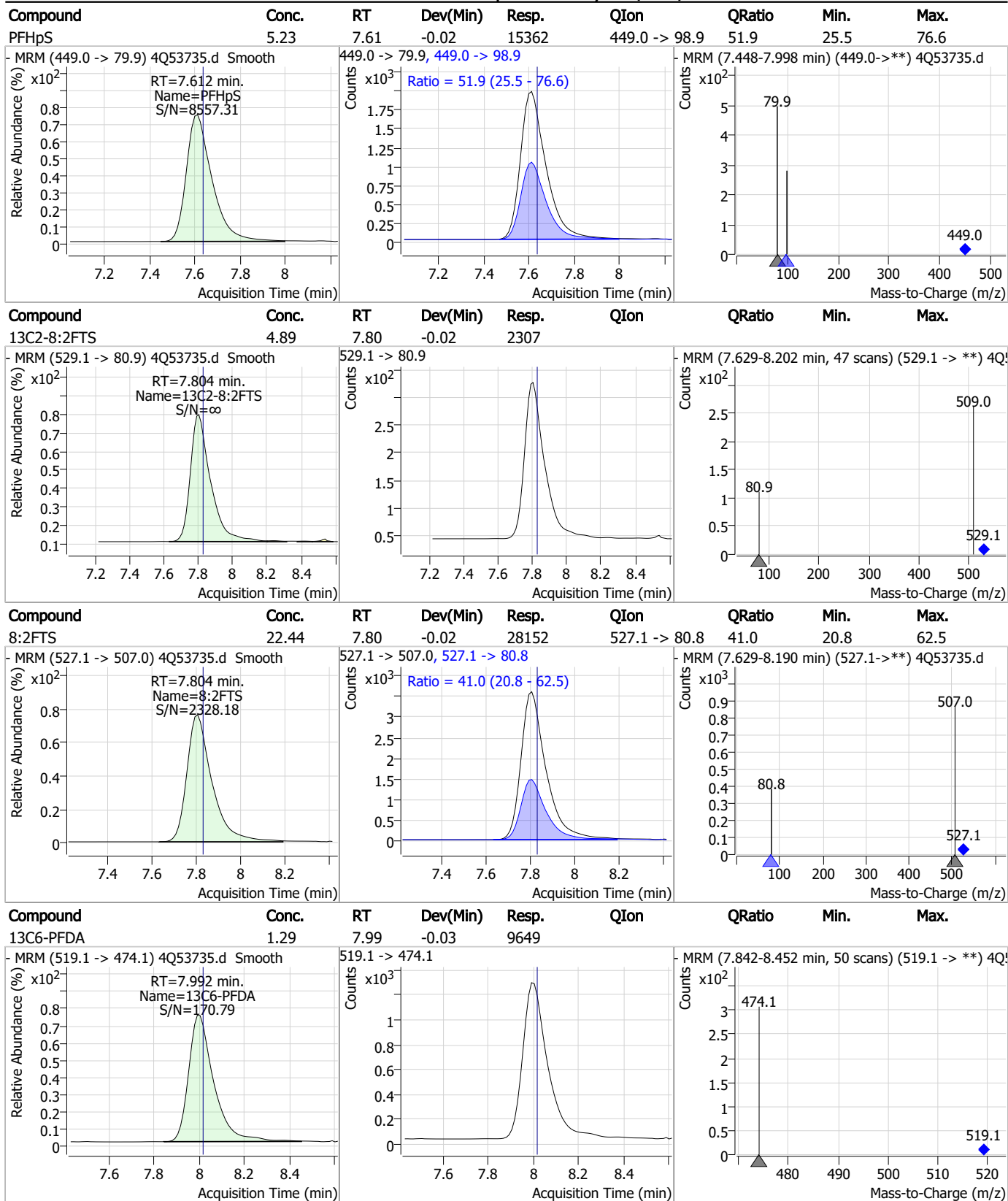


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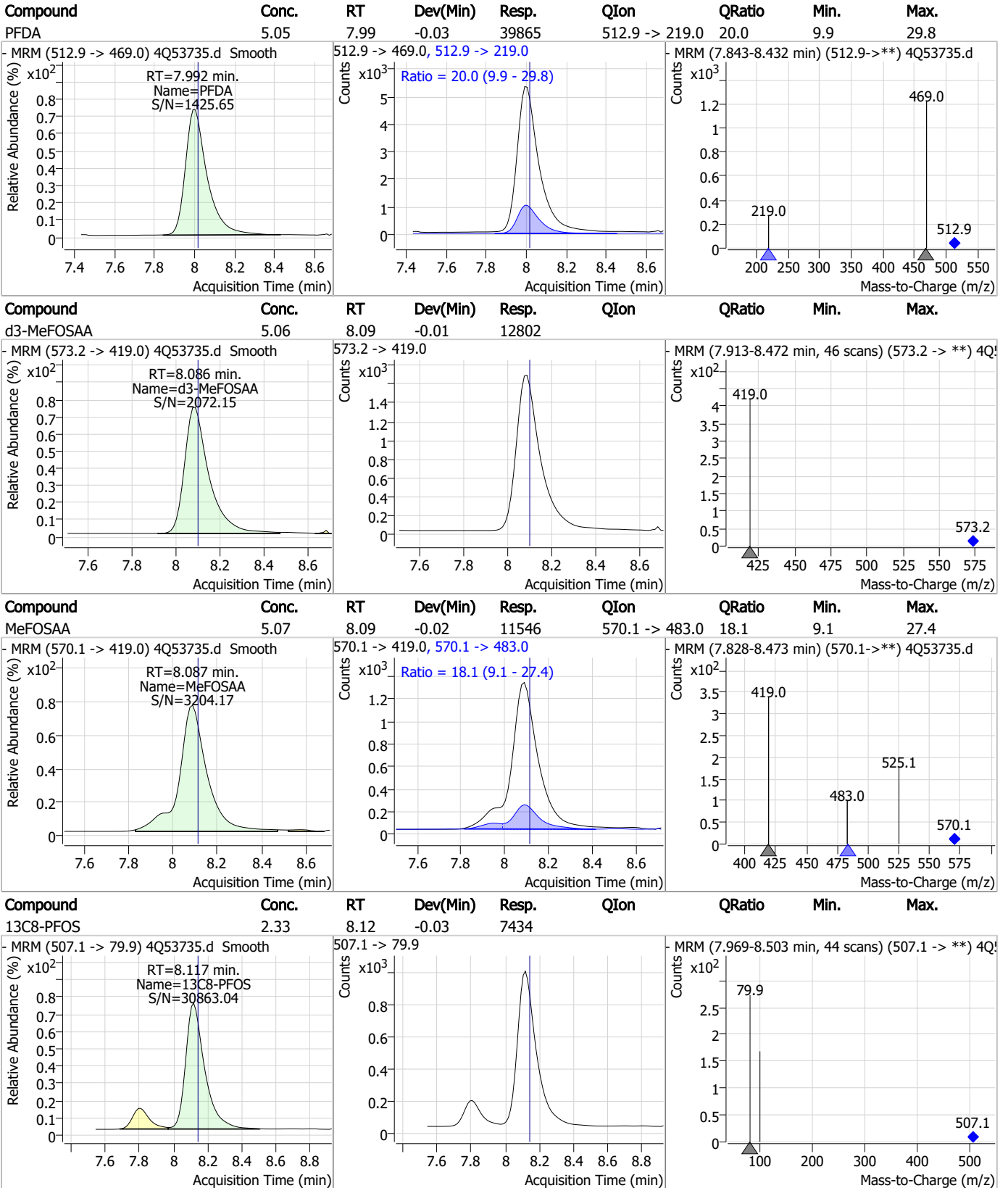
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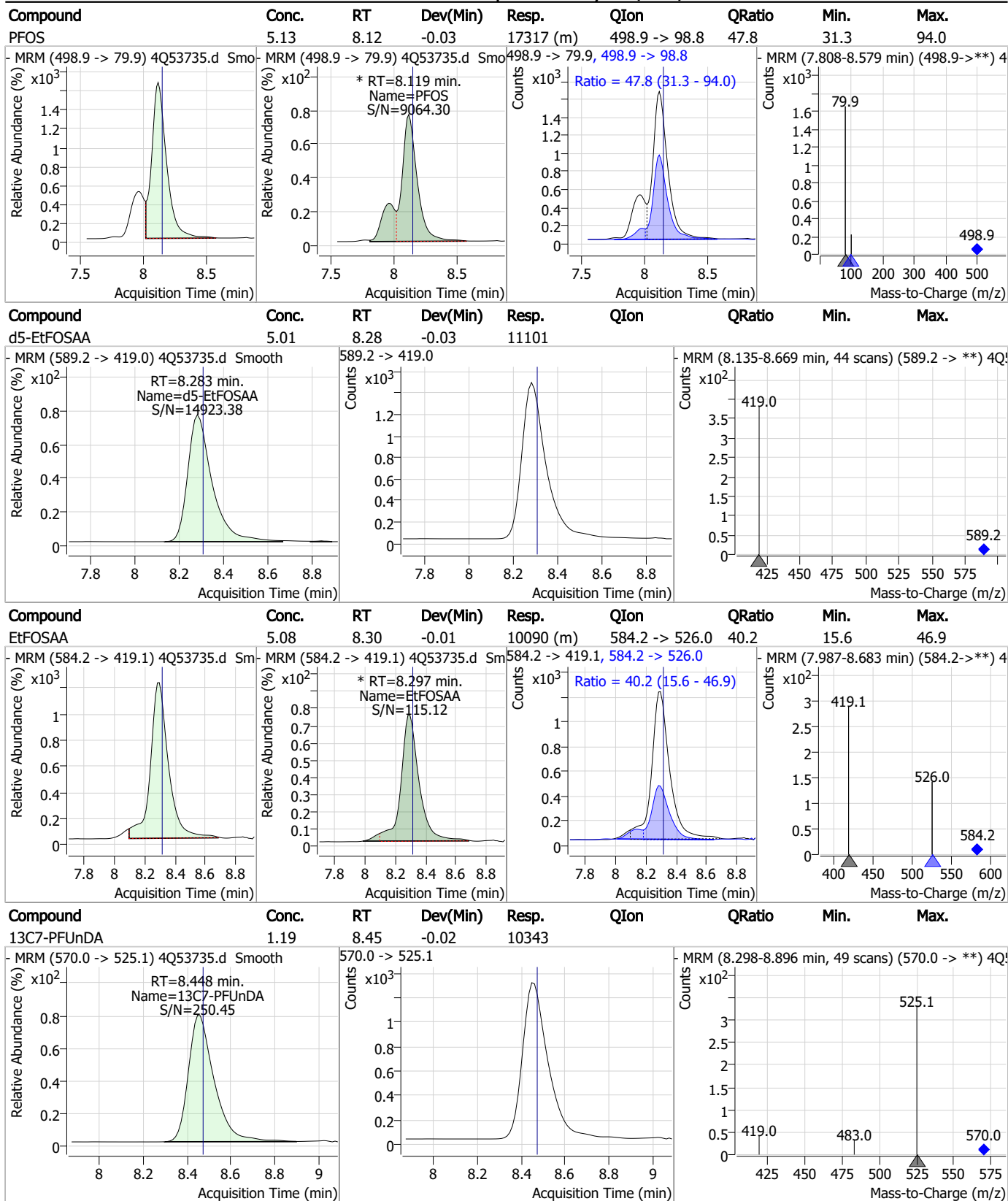
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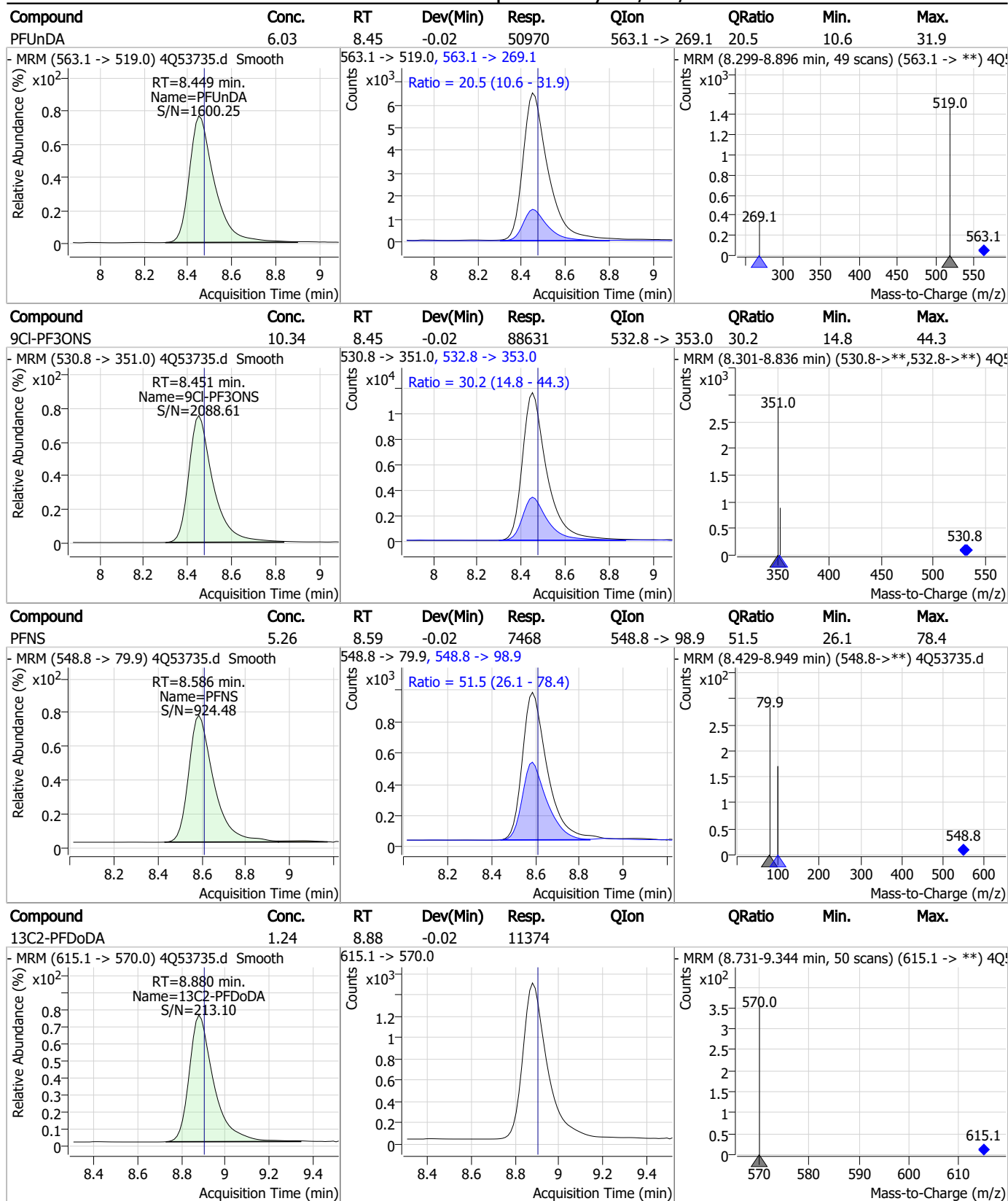
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### Perfluorinated Compounds by LC/MS/MS



7.7.6  
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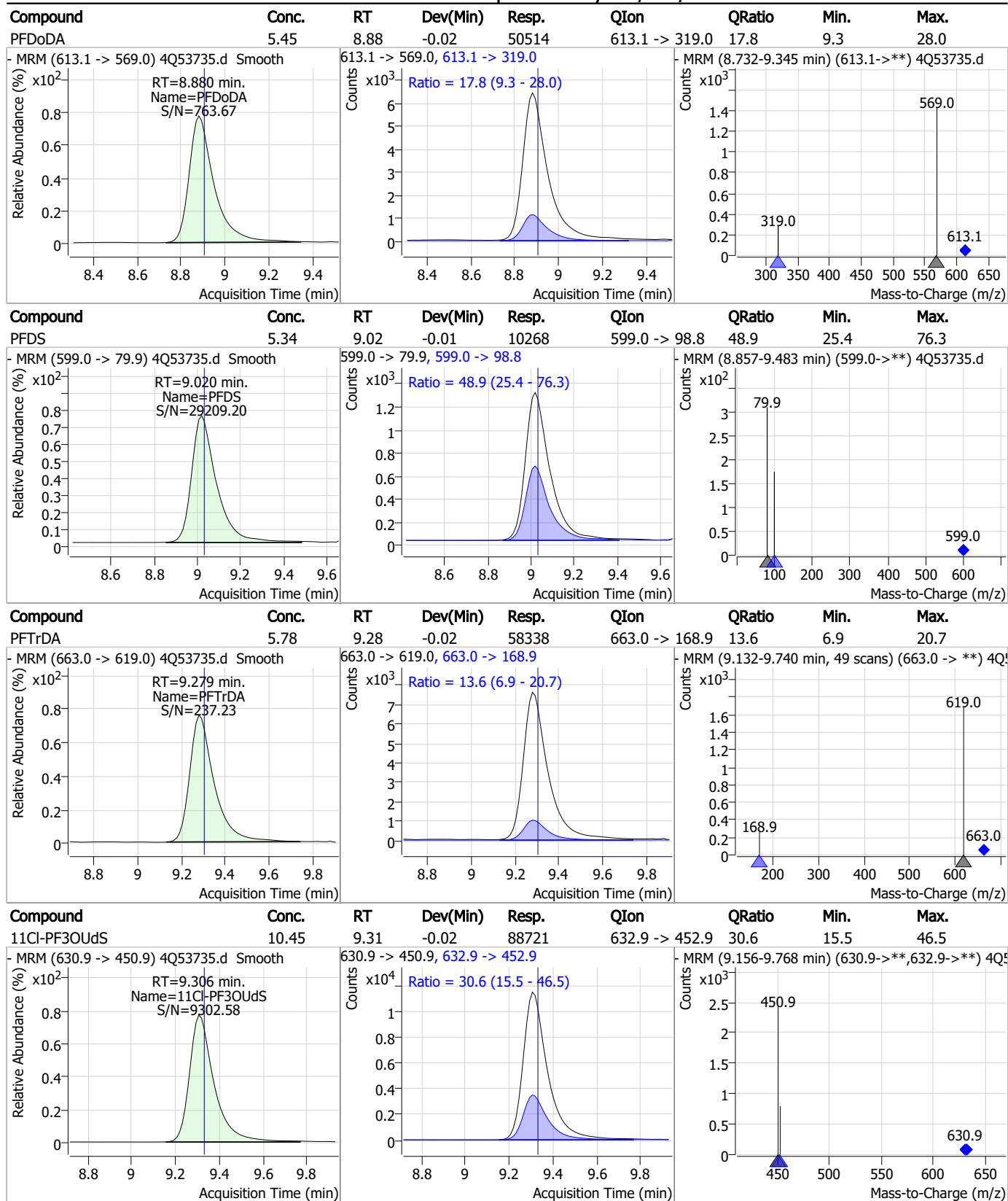
### Perfluorinated Compounds by LC/MS/MS



7.7.6  
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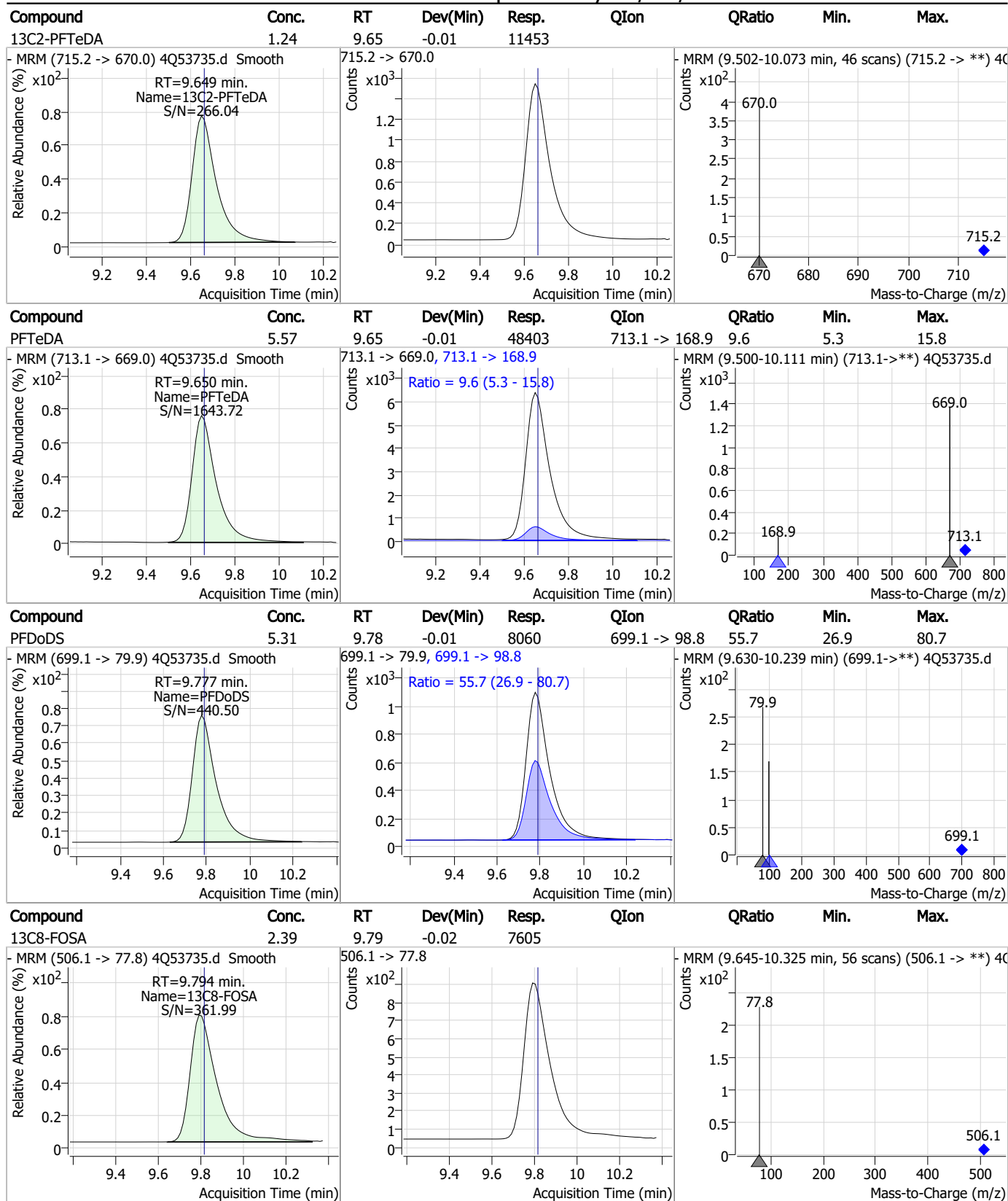


### Perfluorinated Compounds by LC/MS/MS



7.7.6  
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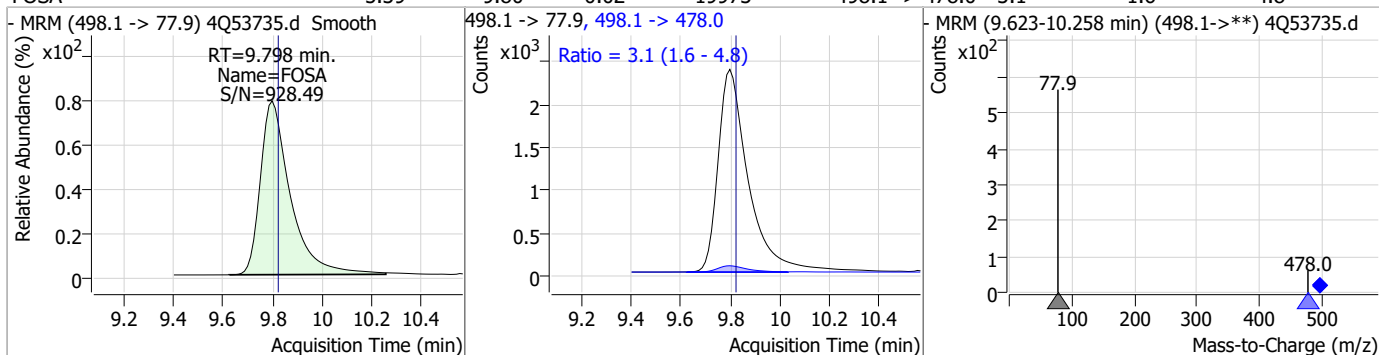
### Perfluorinated Compounds by LC/MS/MS



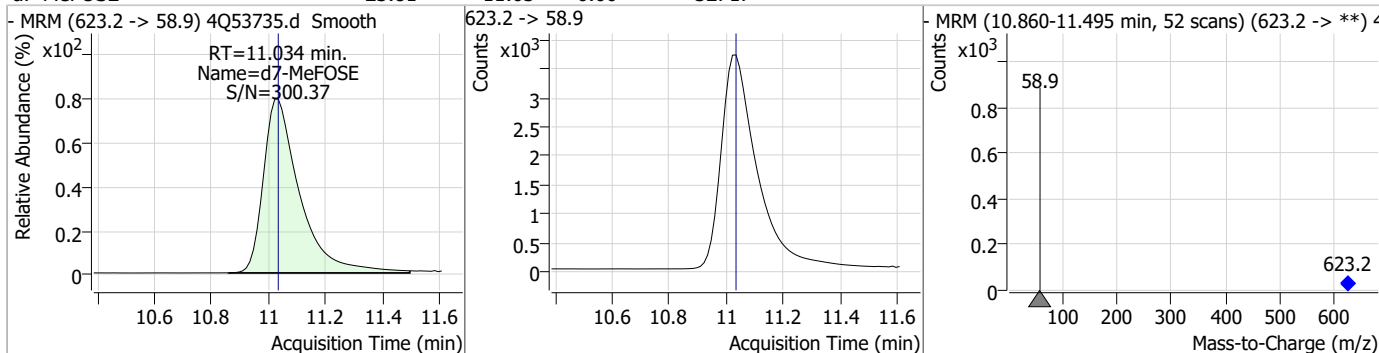
7.7.6  
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### Perfluorinated Compounds by LC/MS/MS

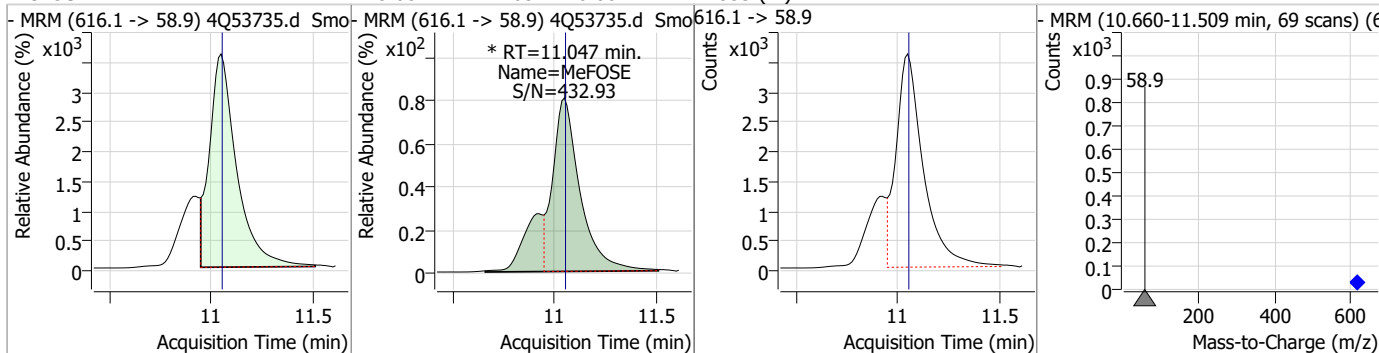
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	5.39	9.80	-0.02	19973	498.1 -> 478.0	3.1	1.6	4.8



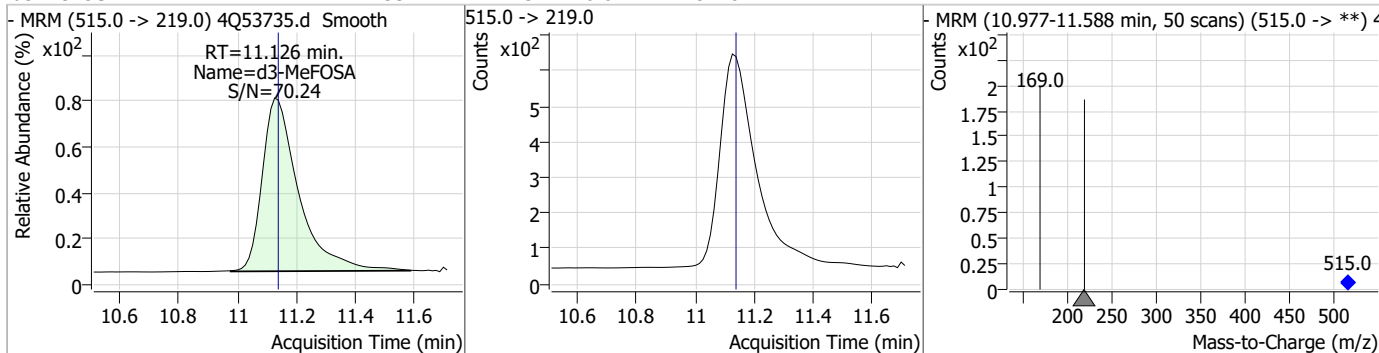
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.81	11.03	0.00	32717				



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



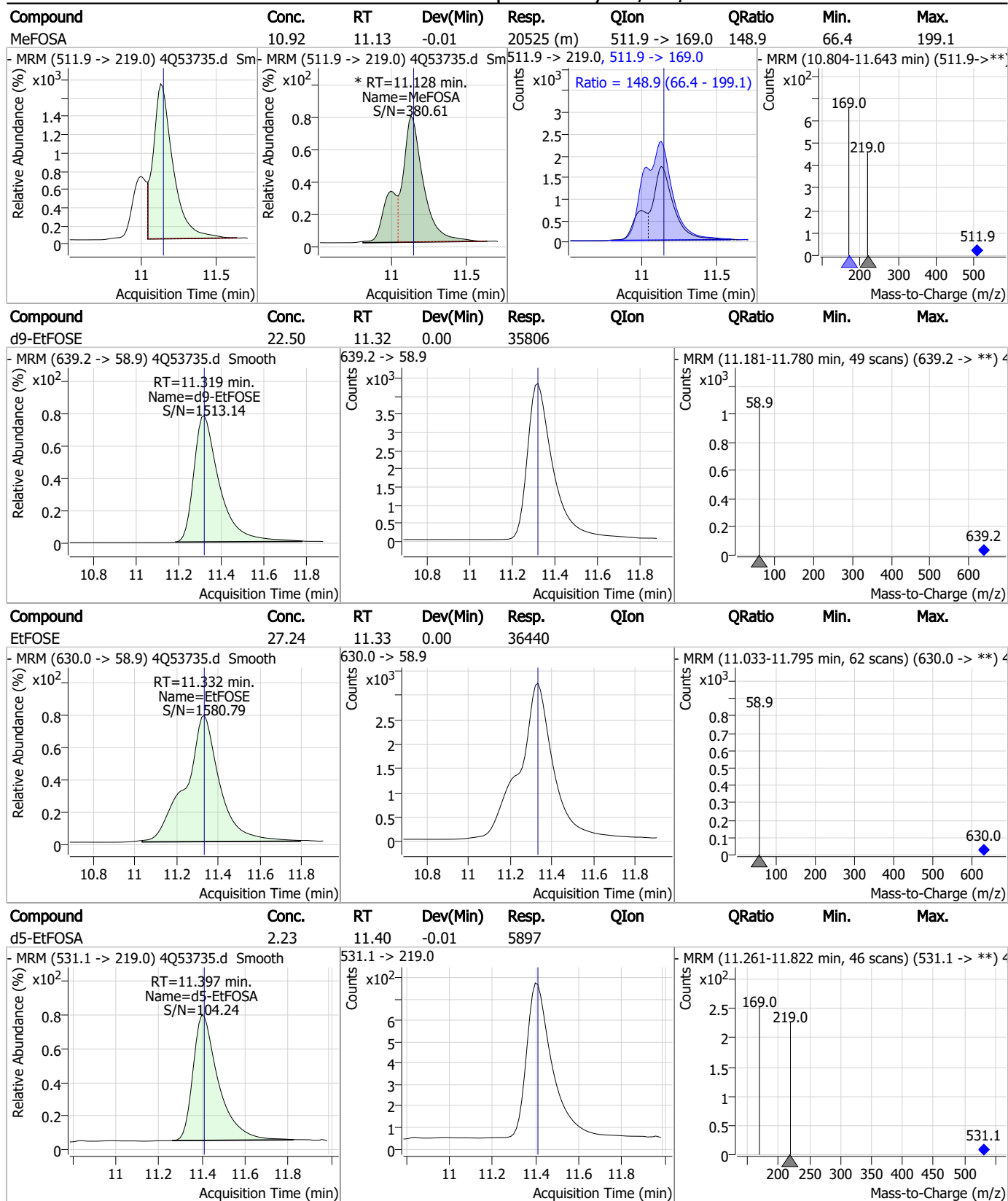
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.33	11.13	-0.01	5178				



7.7.6  
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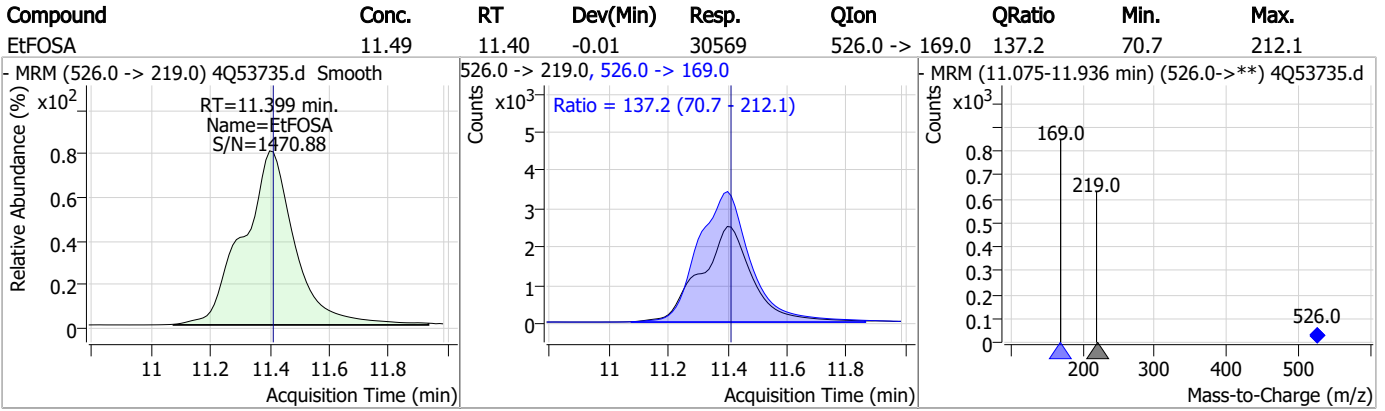


### Perfluorinated Compounds by LC/MS/MS



7.7.6  
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### Perfluorinated Compounds by LC/MS/MS



7.7.6

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# Manual Integration Approval Summary

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

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

7.7.6.1

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Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)

Natasha Gumtje  
 11/14/23 15:48

### Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53736.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/13/2023 5:13:19 PM  
 Sample Name : ic785-6  
 Vial : P1-A7  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q785.batch.bin  
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

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

7.7.7  
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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 = 99.5%	
13C4-PFBA	2.624	216.8 -> 171.9	101423	10.09 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C4-PFHpA	6.267	367.1 -> 322.0	33077	2.48 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C5-PFHxA	5.297	318.0 -> 273.0	35040	2.46 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C5-PFPeA	4.112	268.3 -> 223.0	44264	4.75 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.0%	
13C6-PFDA	8.004	519.1 -> 474.1	12122	1.26 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C7-PFUnDA	8.448	570.0 -> 525.1	13587	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.5%	
13C8-FOSA	9.794	506.1 -> 77.8	8881	2.41 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.2%	
13C8-PFOA	6.964	421.1 -> 376.0	37726	2.44 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C8-PFOS	8.117	507.1 -> 79.9	9931	2.69 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.7%	
13C9-PFNA	7.509	472.1 -> 427.0	17045	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.2%	
d3-MeFOSAA	8.074	573.2 -> 419.0	14049	4.80 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C3-HFPO-DA	5.652	286.9 -> 168.9	32031	9.85 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.5%	
d3-MeFOSA	11.126	515.0 -> 219.0	6280	2.44 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.5%	
d5-EtFOSAA	8.283	589.2 -> 419.0	13039	5.08 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.7%	
d7-MeFOSE	11.022	623.2 -> 58.9	38218	24.02 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.1%	
d9-EtFOSE	11.319	639.2 -> 58.9	45896	24.91 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.6%	
d5-EtFOSA	11.397	531.1 -> 219.0	7680	2.51 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.5%	
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.009	327.1 -> 307.0	70971	38.05 µg/L	98
		327.1 -> 80.9	28881		
6:2FTS	6.737	427.1 -> 407.0	85547	38.12 µg/L	97
		427.1 -> 80.9	31437		
8:2FTS	7.804	527.1 -> 507.0	60896	34.15 µg/L	99
		527.1 -> 80.8	25806		
EtFOSAA	8.284	584.2 -> 419.1	25163	10.78 µg/L	m 82
		584.2 -> 526.0	10299		
FOSA	9.798	498.1 -> 77.9	45724	10.56 µg/L	100
		498.1 -> 478.0	1439		
MeFOSAA	8.087	570.1 -> 419.0	27131	10.87 µg/L	98
		570.1 -> 483.0	5190		
PFBA	2.620	212.8 -> 168.9	163791	44.41 µg/L	100
PFBS	5.153	298.7 -> 79.9	32775	9.35 µg/L	99
		298.7 -> 98.8	12468		
PFDA	7.992	512.9 -> 469.0	94868	9.57 µg/L	100
		512.9 -> 219.0	18740		
PFDoDA	8.880	613.1 -> 569.0	117847	9.67 µg/L	98
		613.1 -> 319.0	20743		
PFDS	9.020	599.0 -> 79.9	23899	9.30 µg/L	98

## Perfluorinated Compounds by LC/MS/MS

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

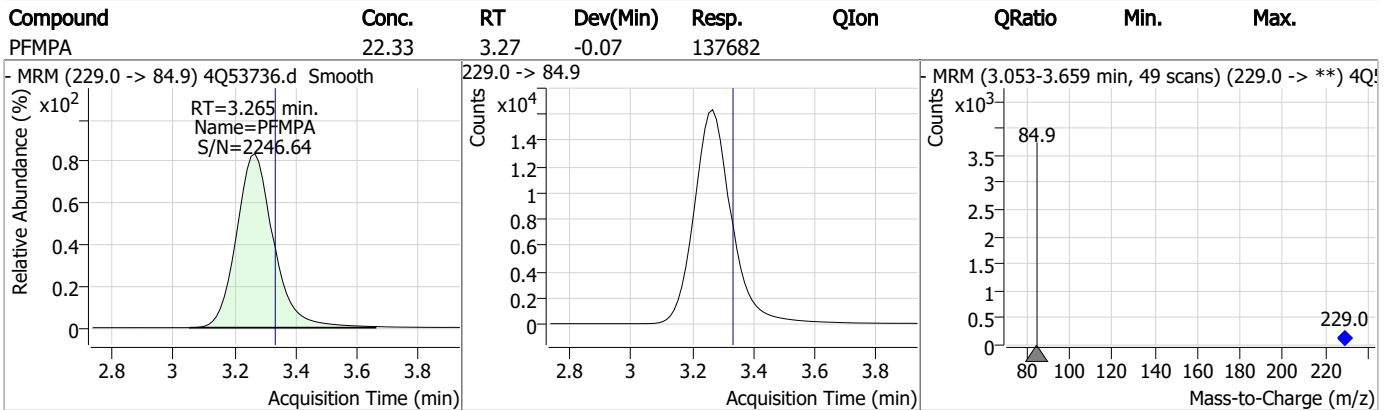
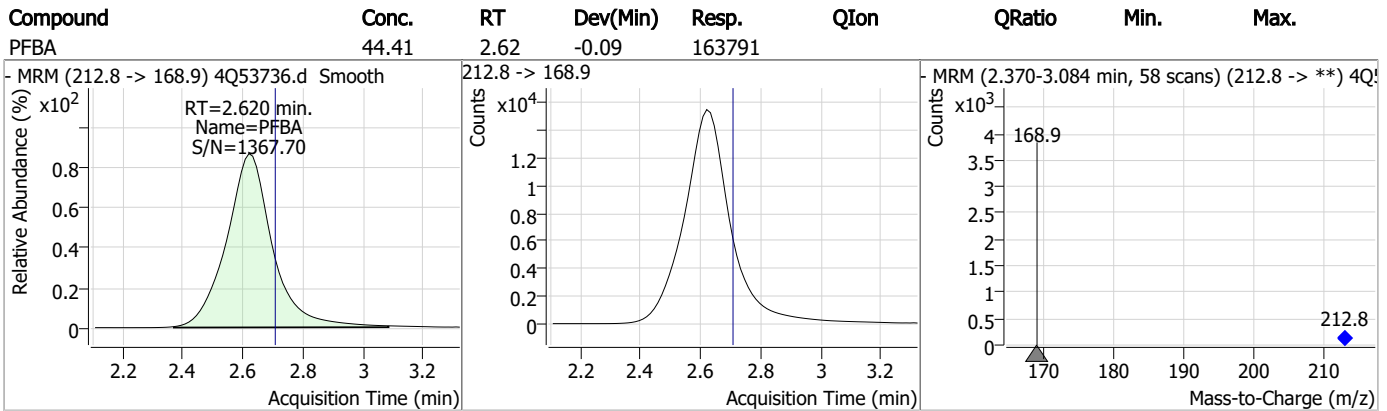
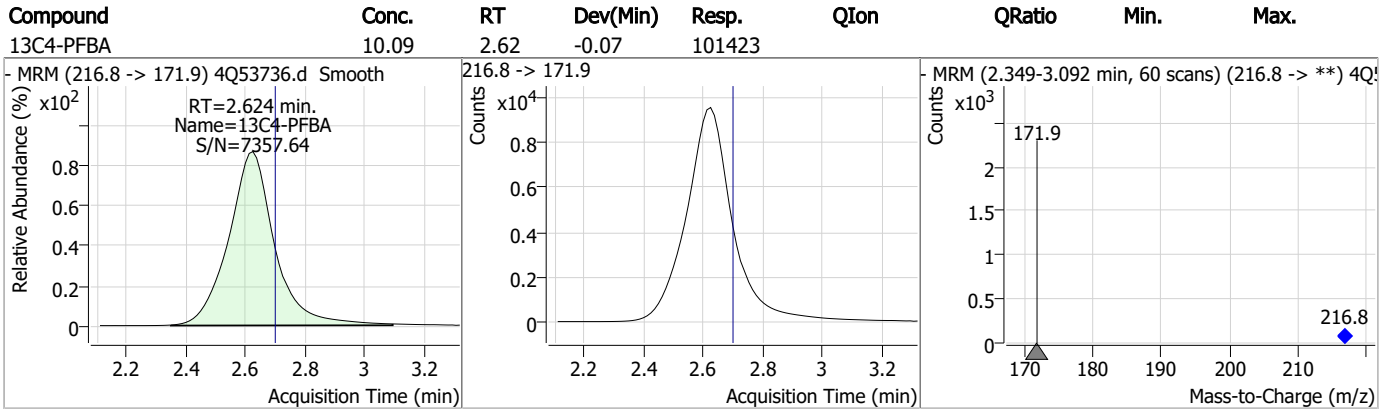
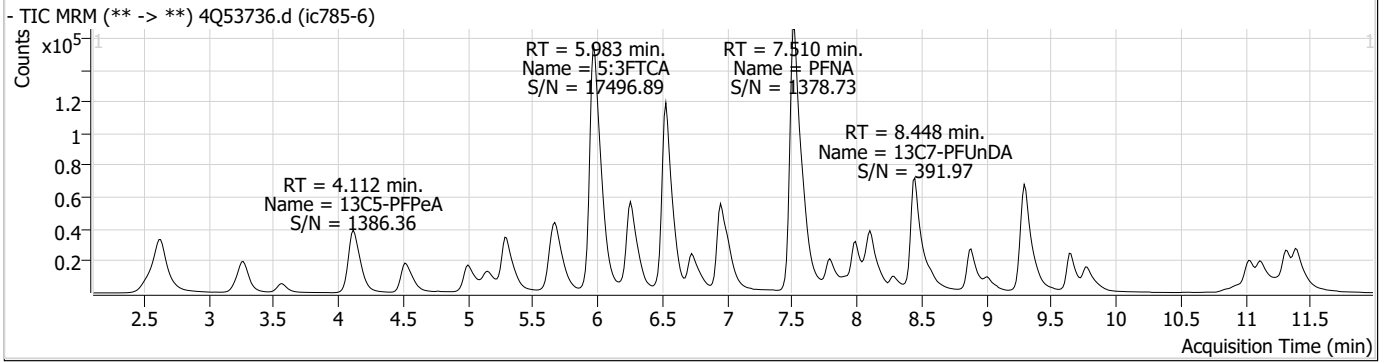
# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS

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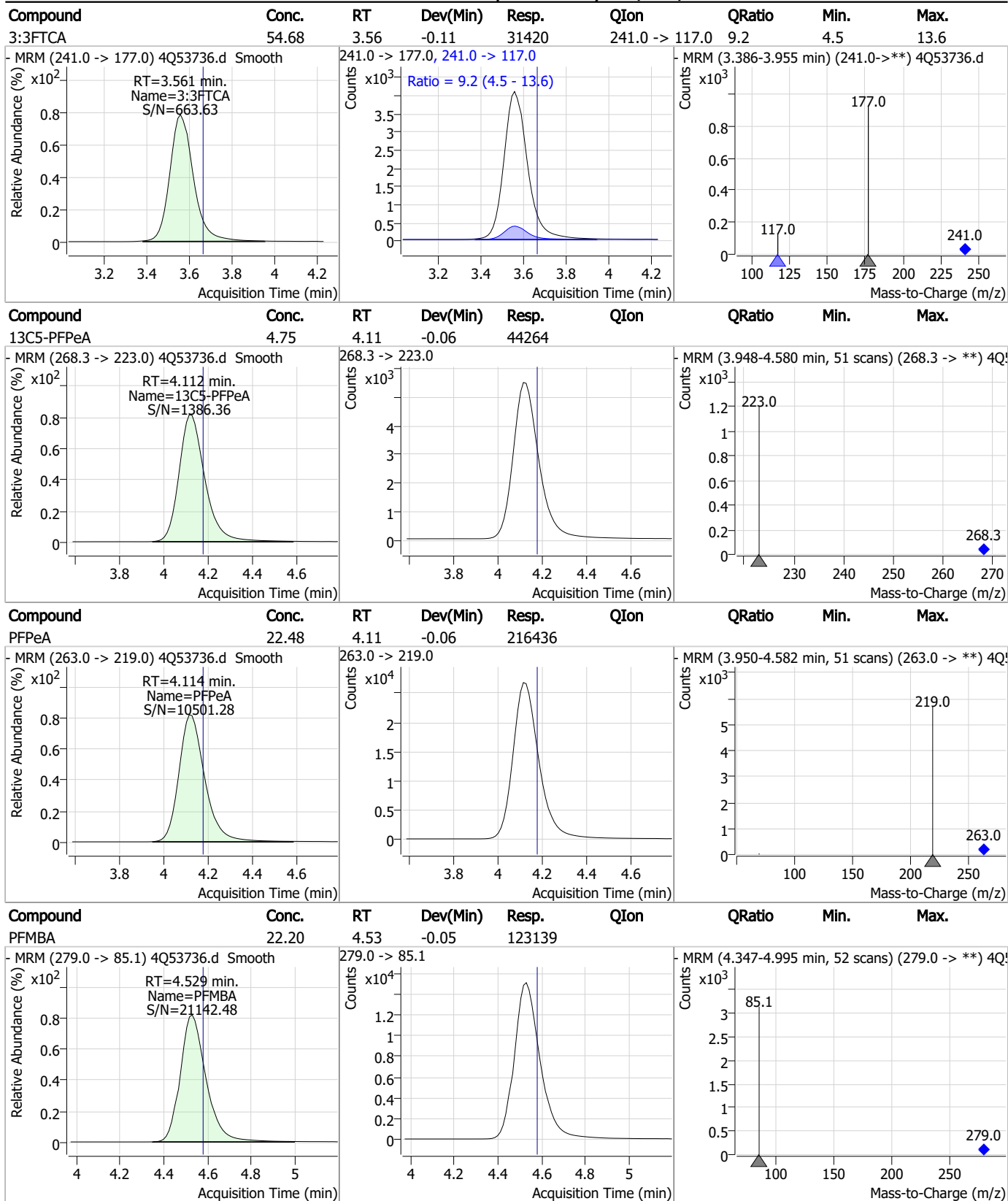
7.7.7  
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### Perfluorinated Compounds by LC/MS/MS



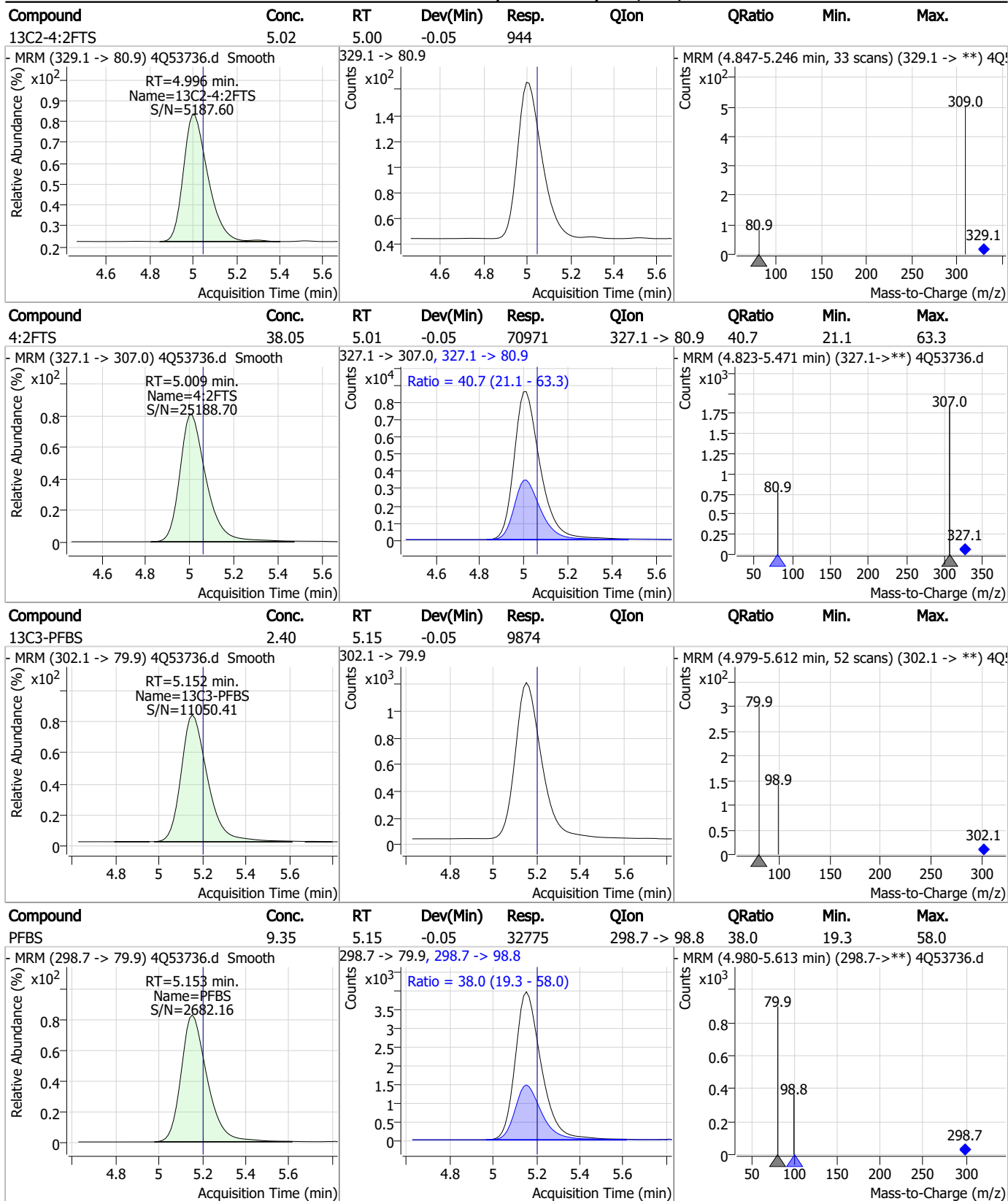


### Perfluorinated Compounds by LC/MS/MS



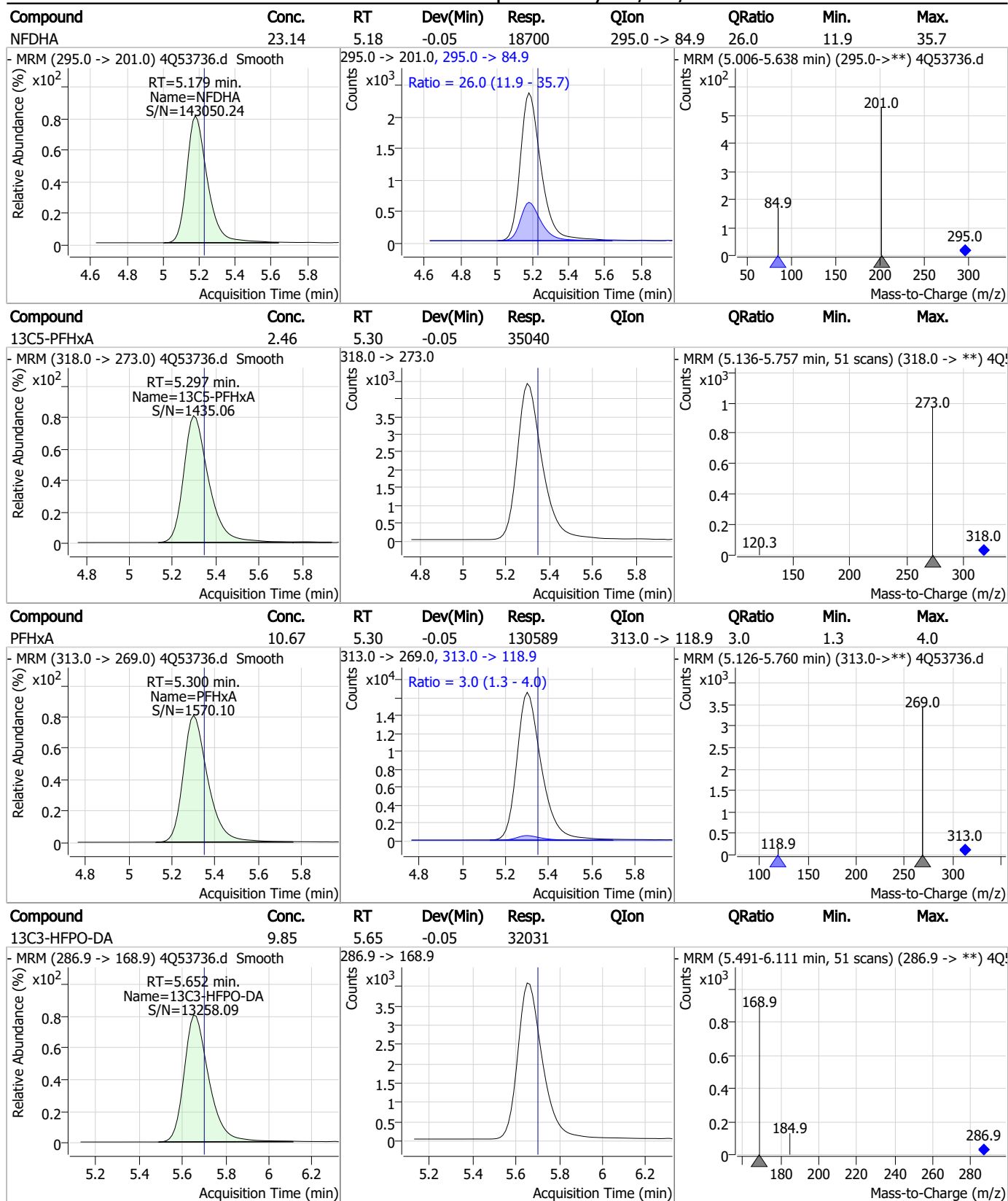
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### Perfluorinated Compounds by LC/MS/MS



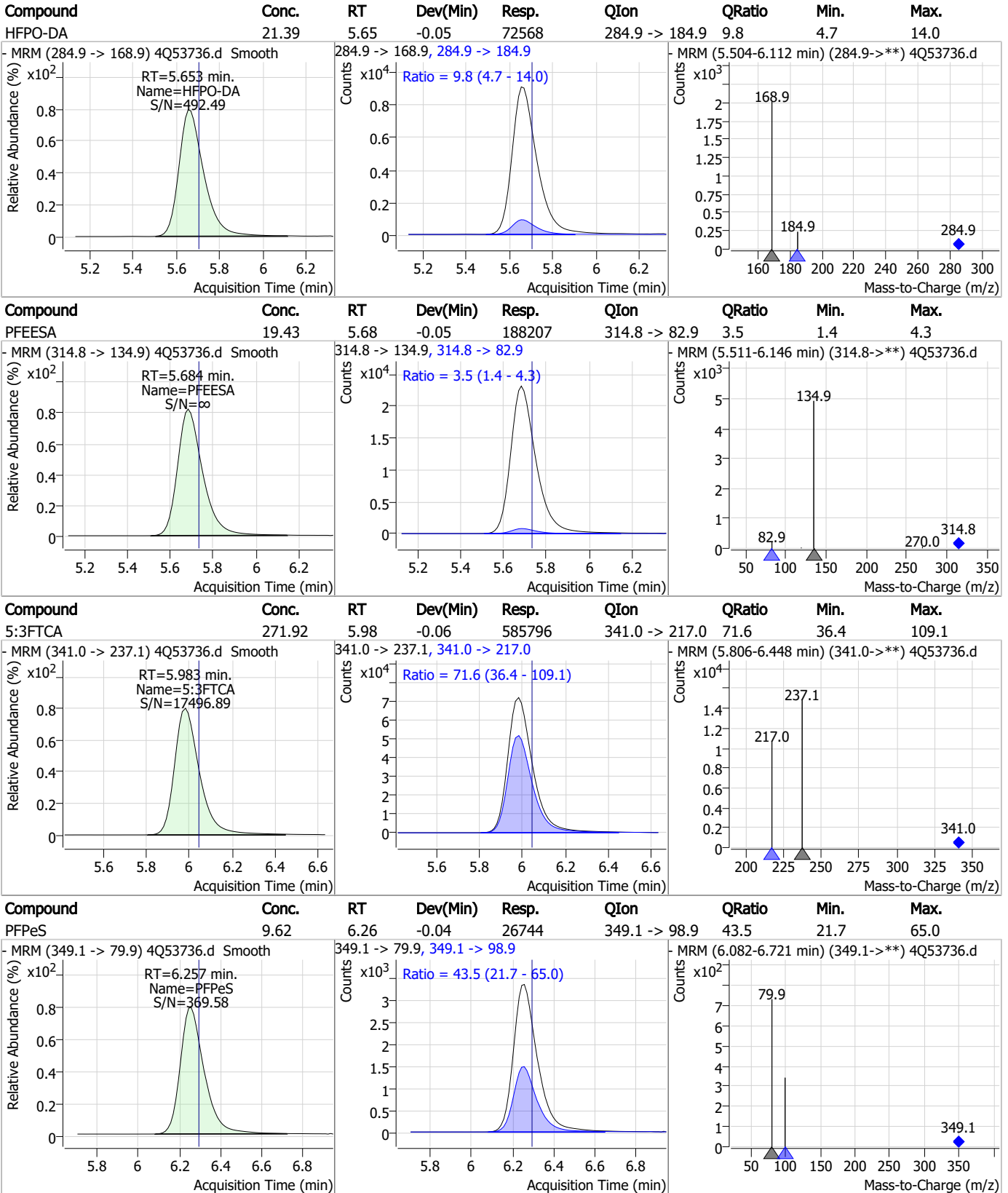
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### Perfluorinated Compounds by LC/MS/MS



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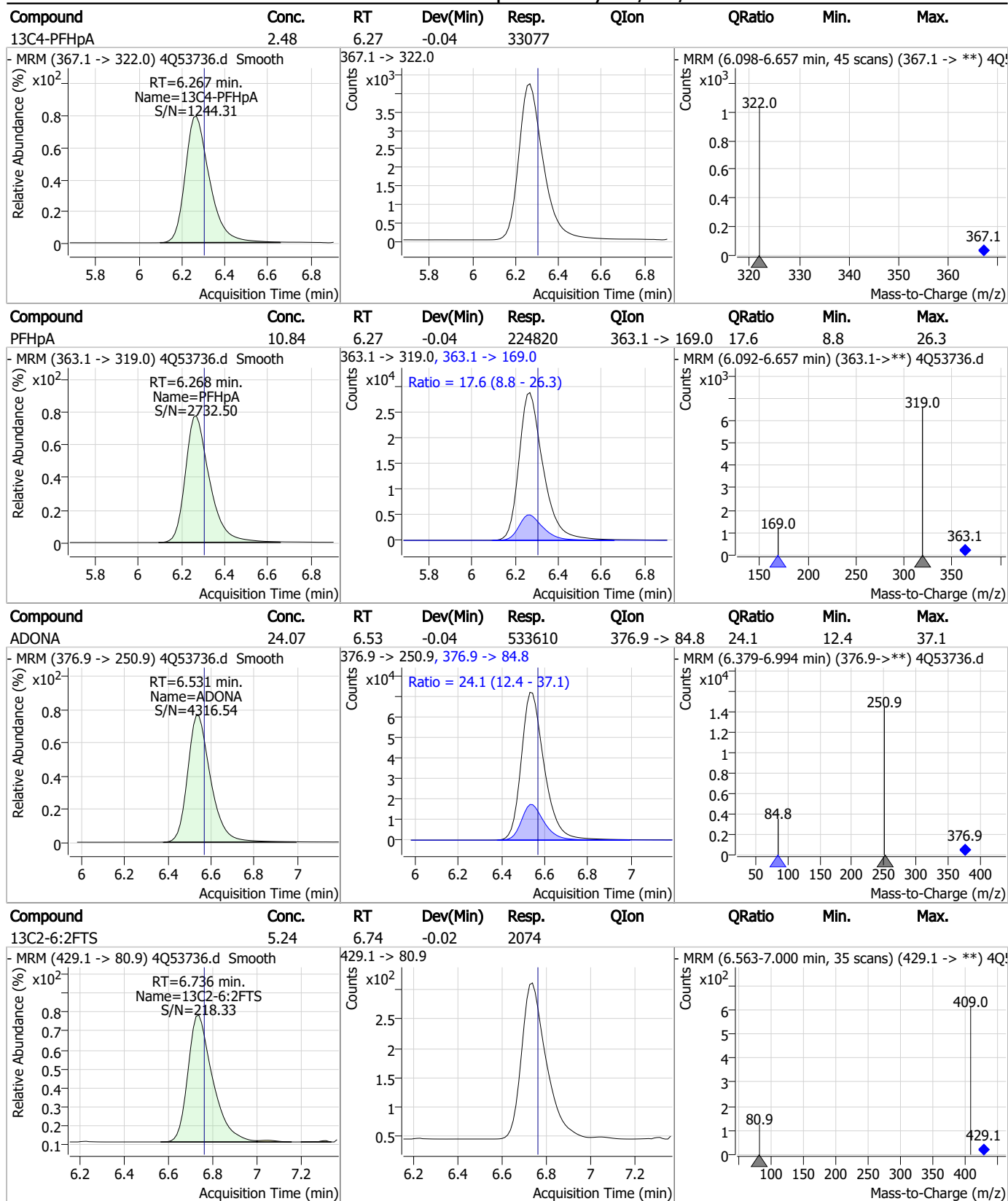
### Perfluorinated Compounds by LC/MS/MS



7.7.7

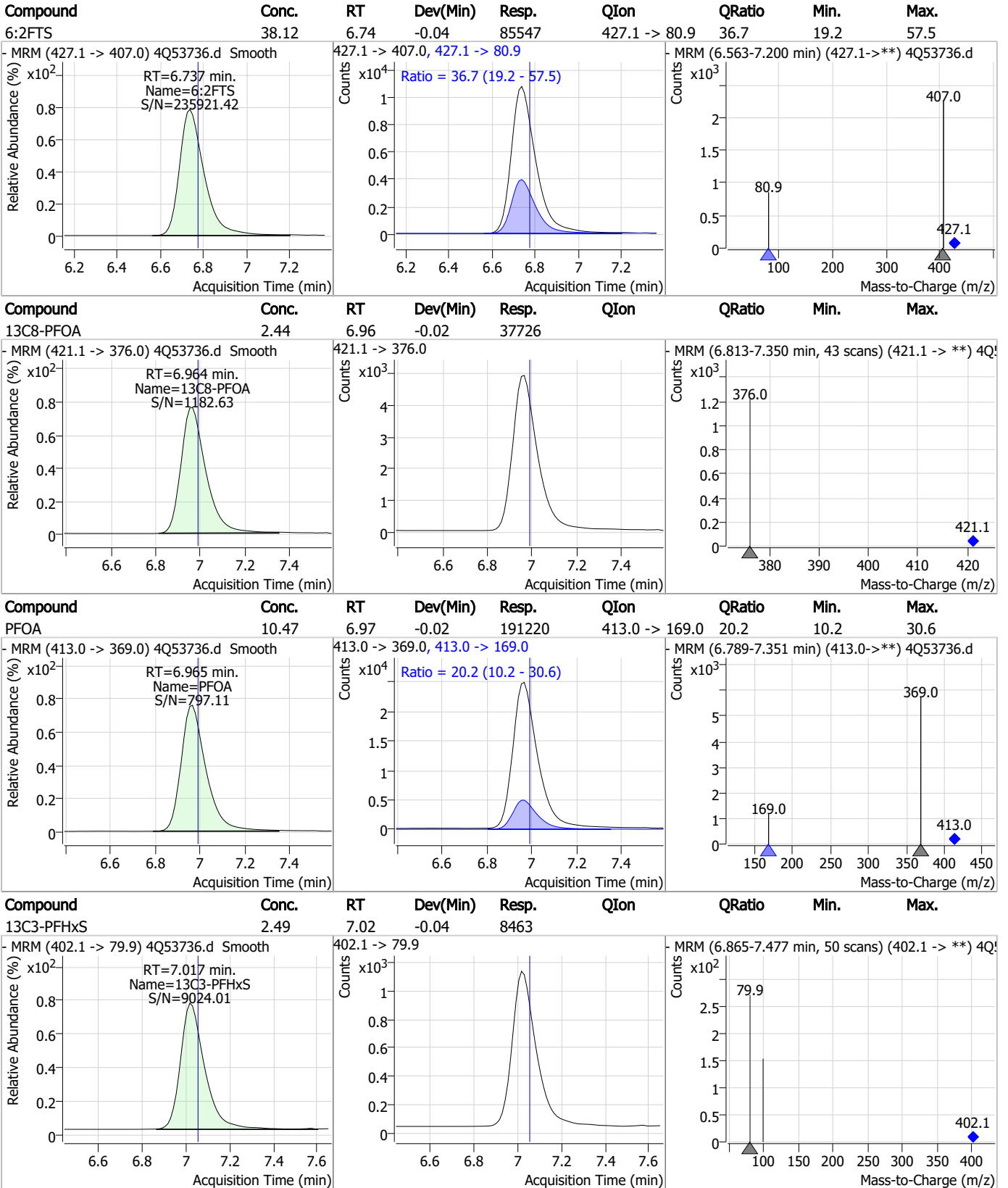
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### Perfluorinated Compounds by LC/MS/MS



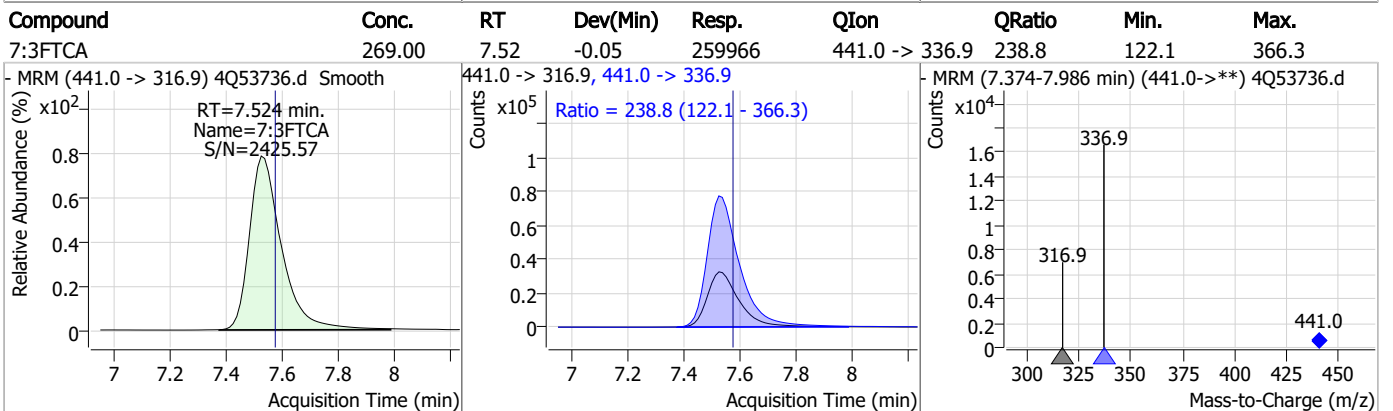
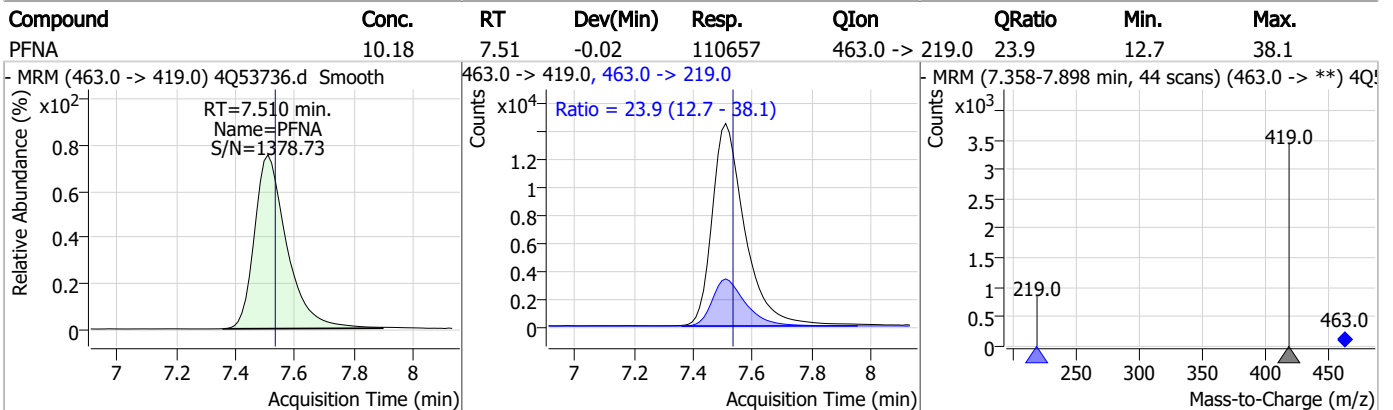
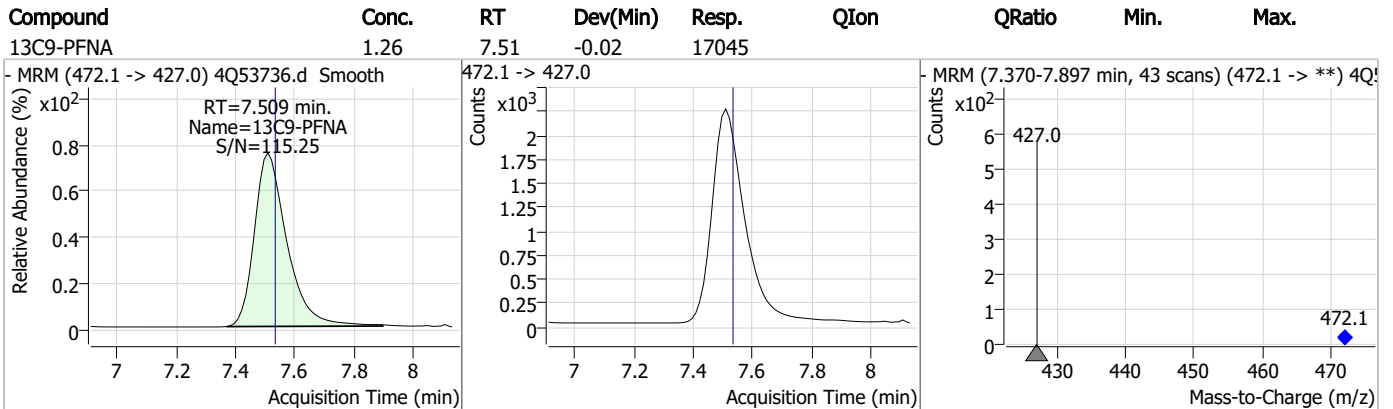
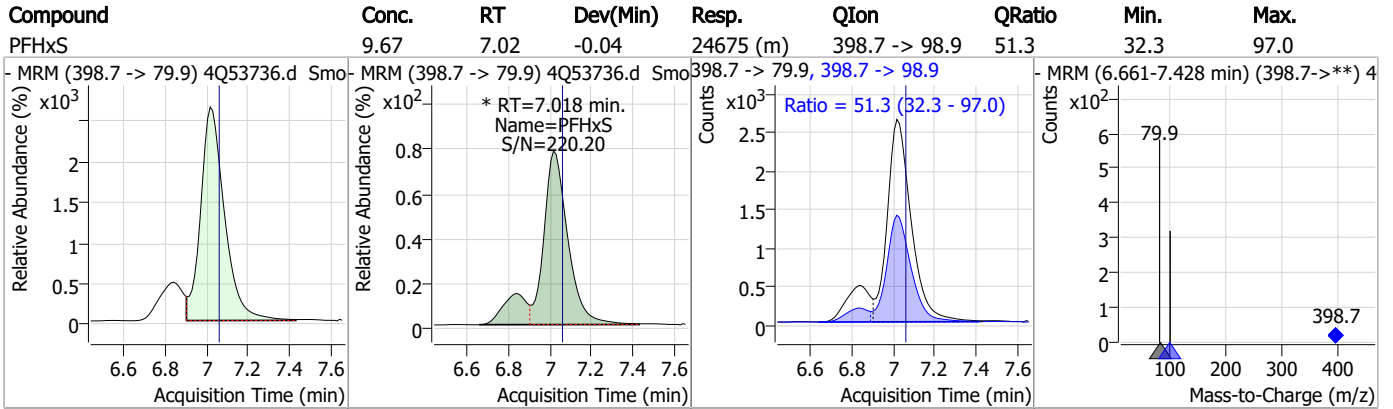
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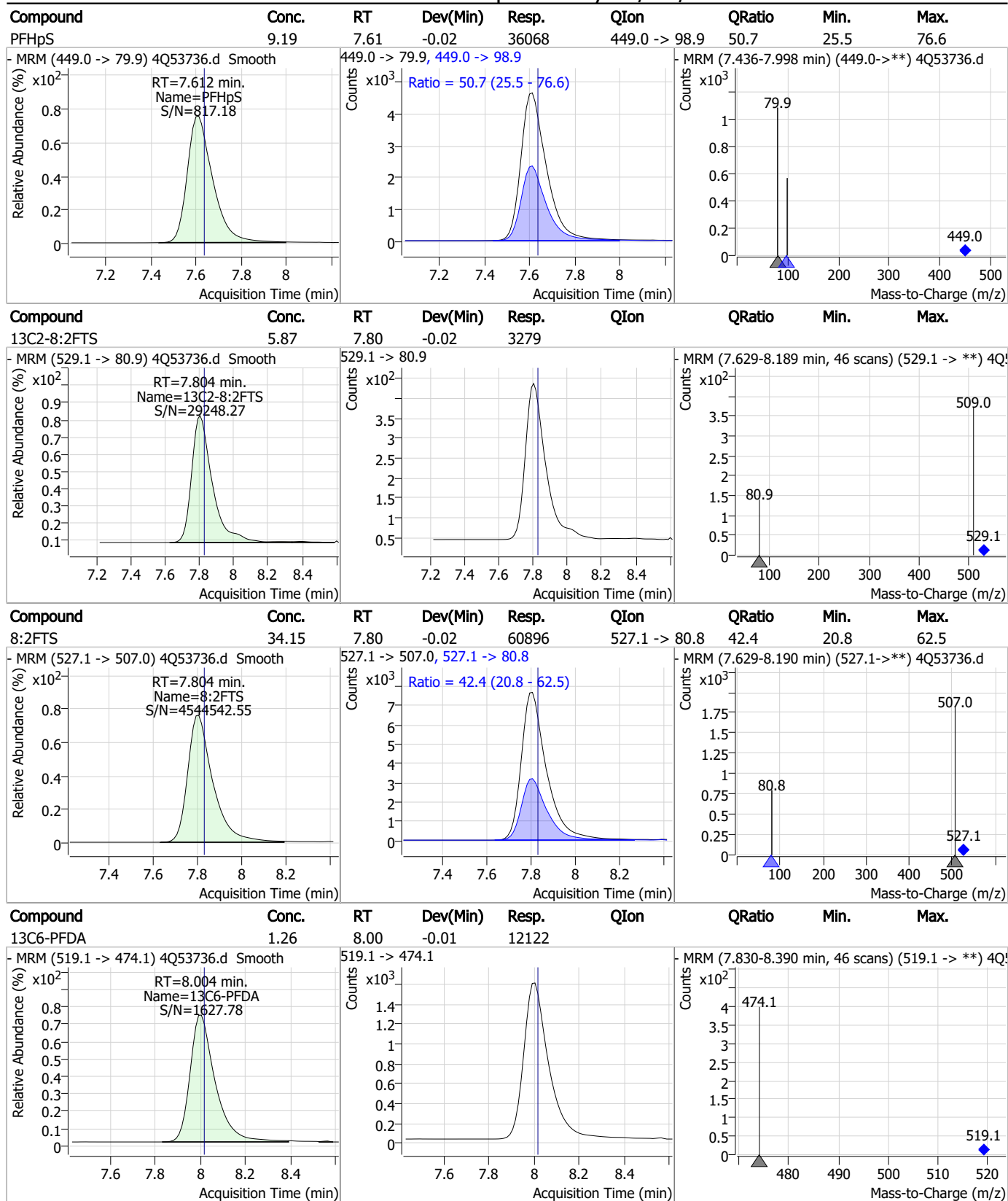


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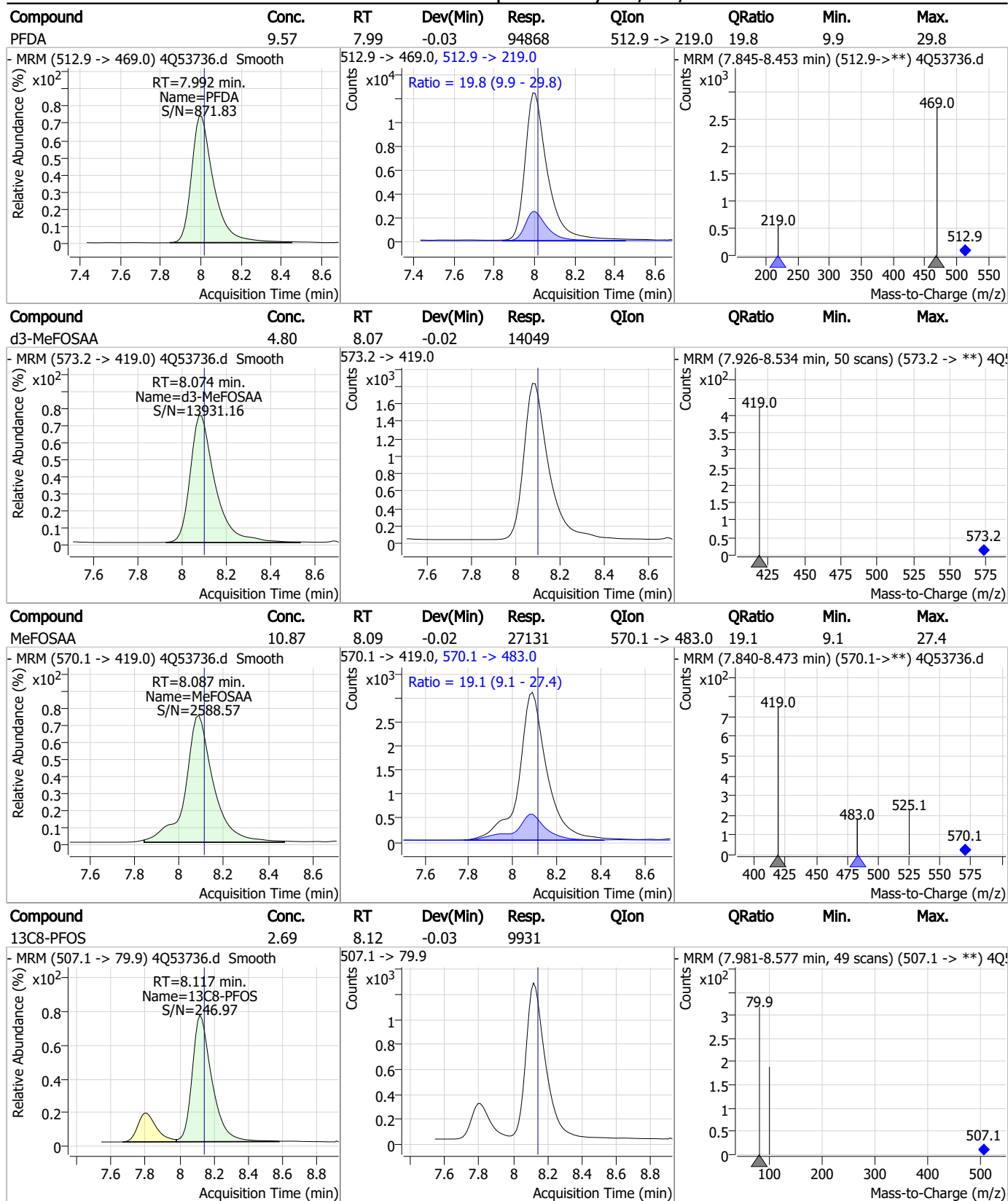
### Perfluorinated Compounds by LC/MS/MS



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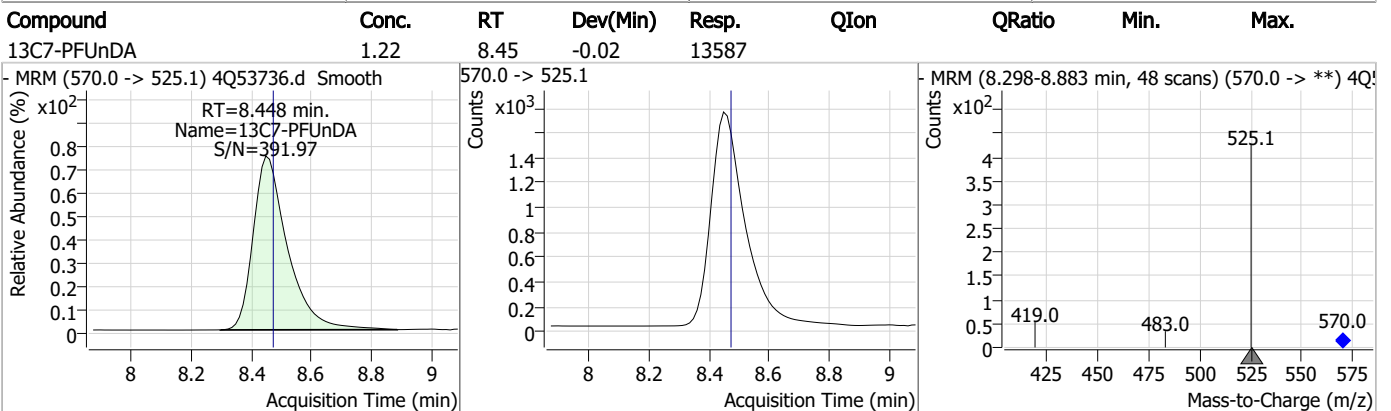
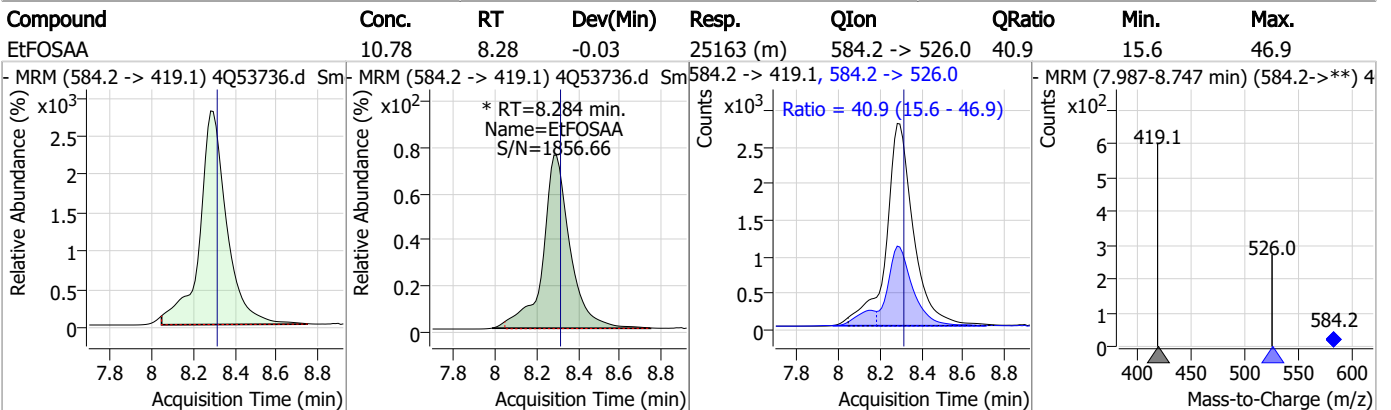
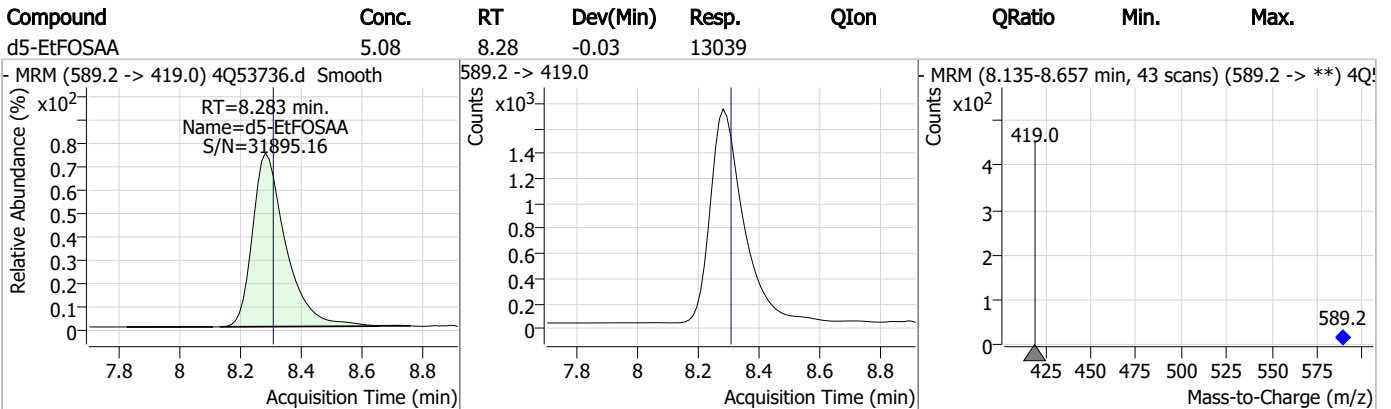
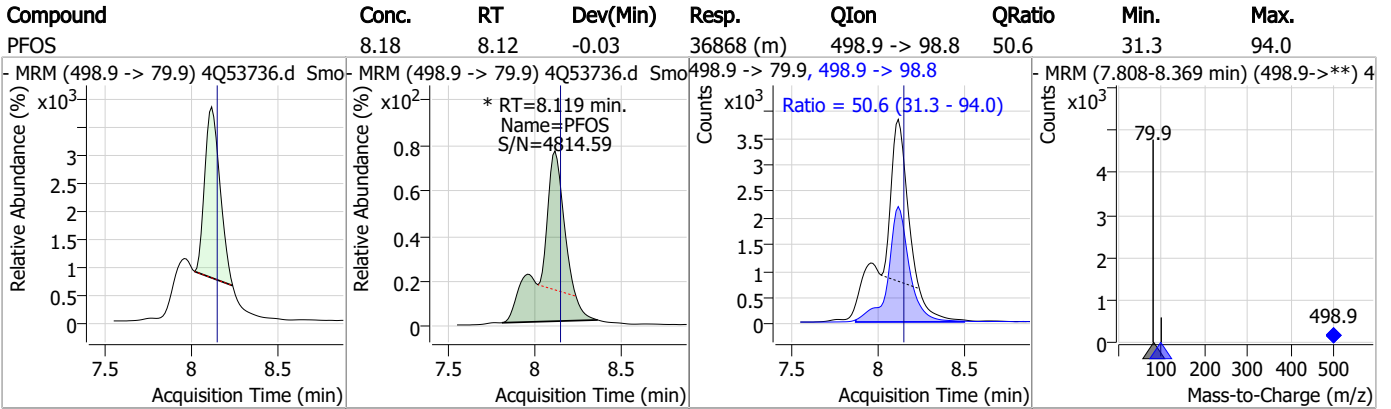


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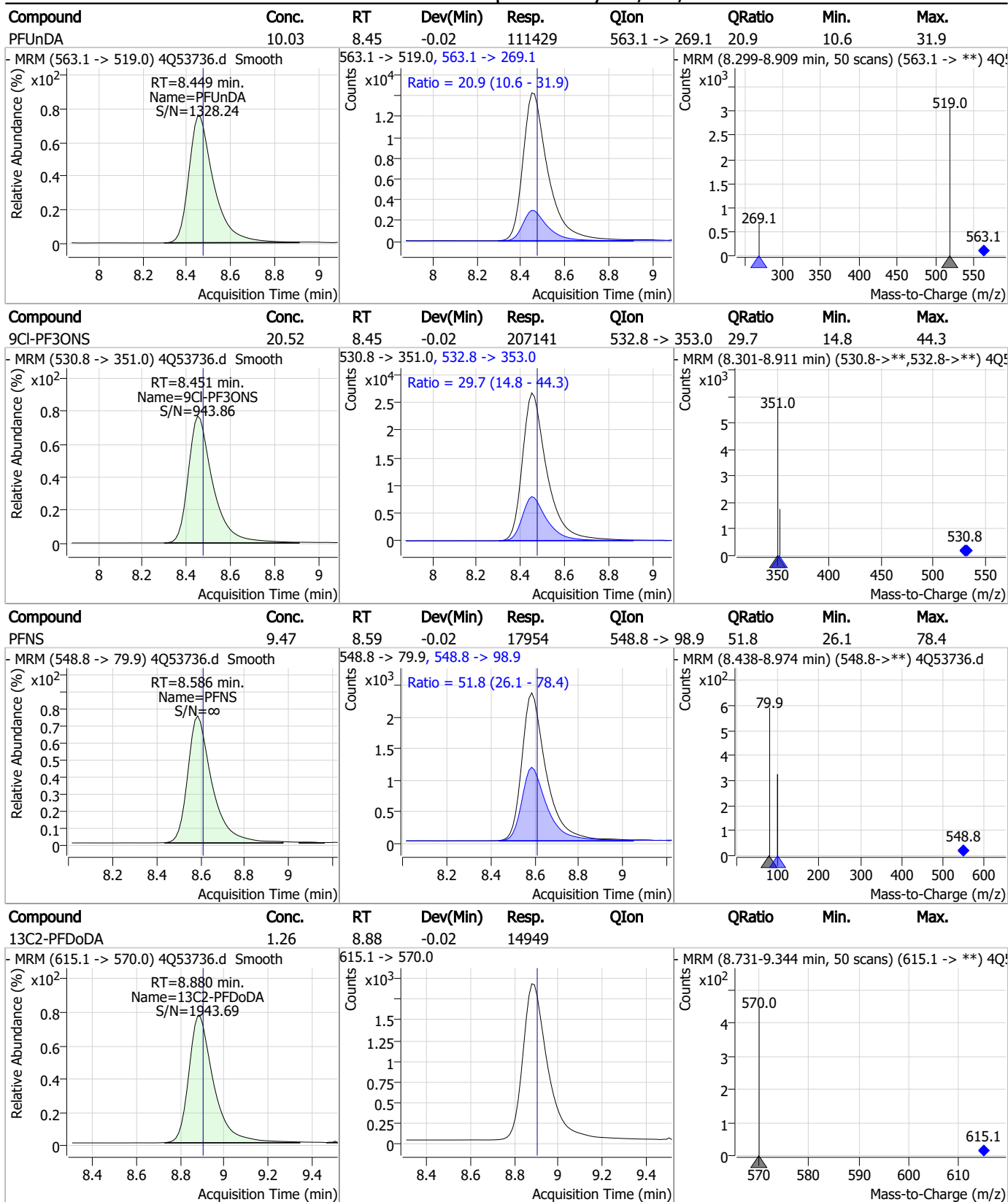


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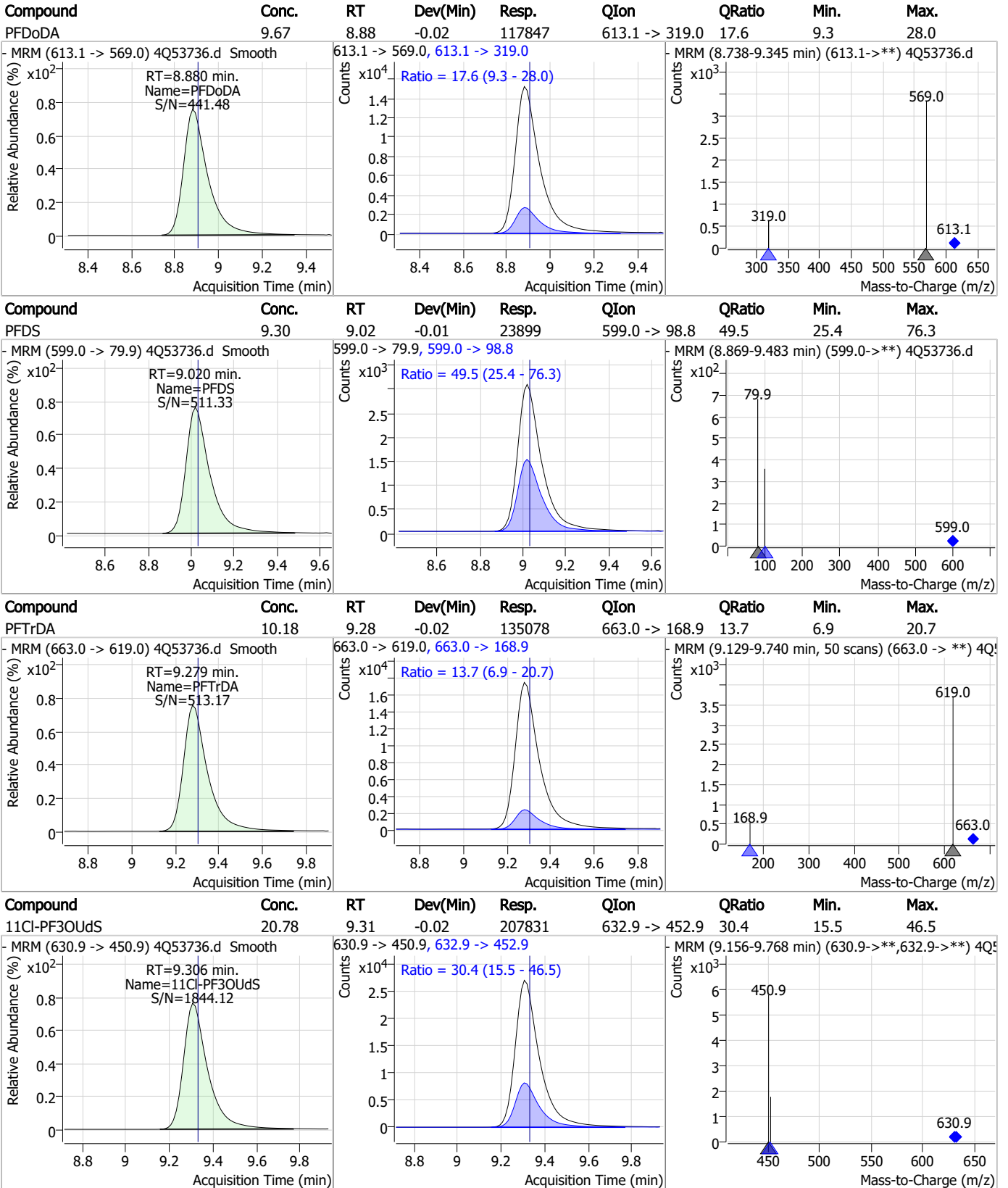


### Perfluorinated Compounds by LC/MS/MS



7.7.7  
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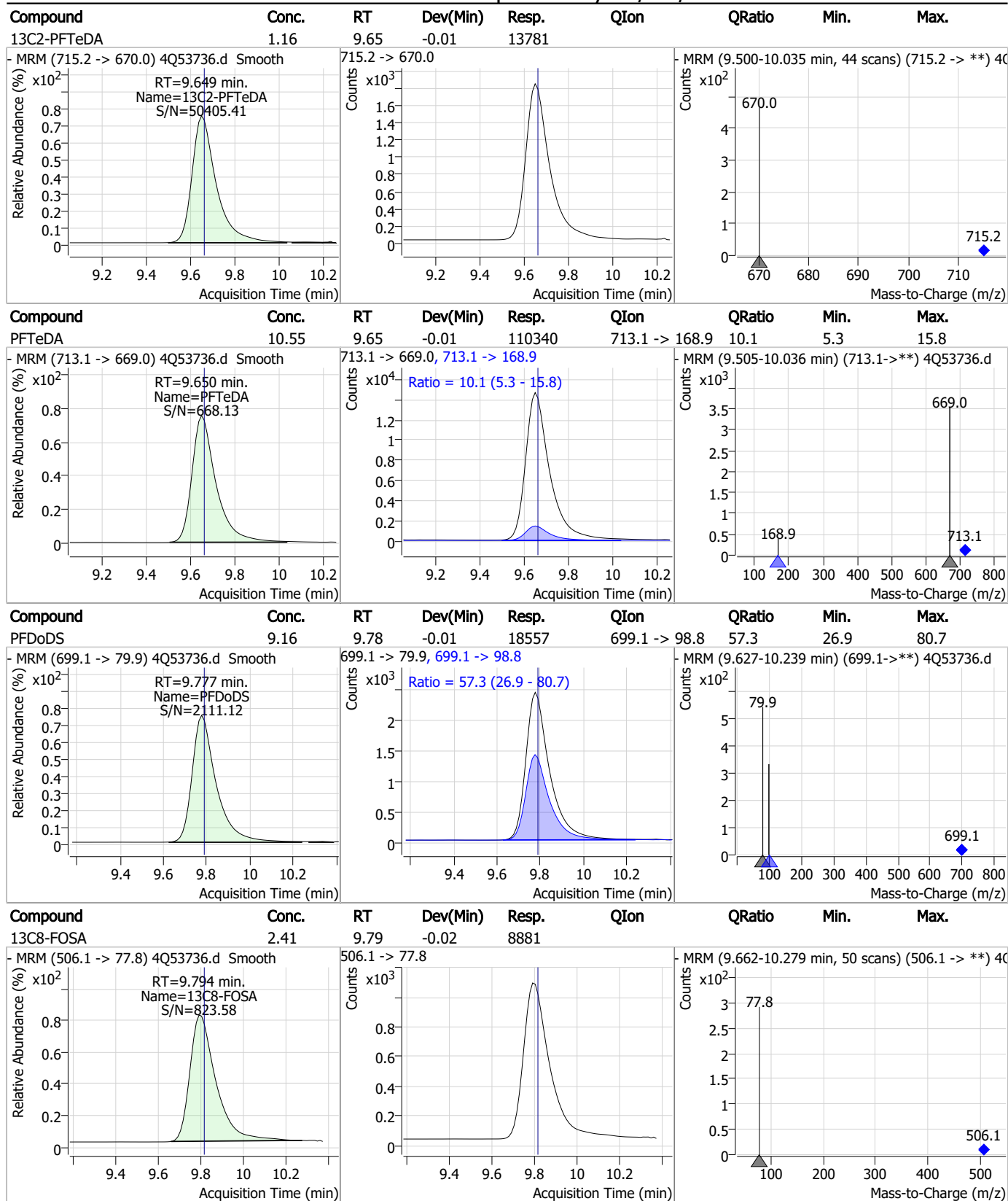
### Perfluorinated Compounds by LC/MS/MS



7.7.7  
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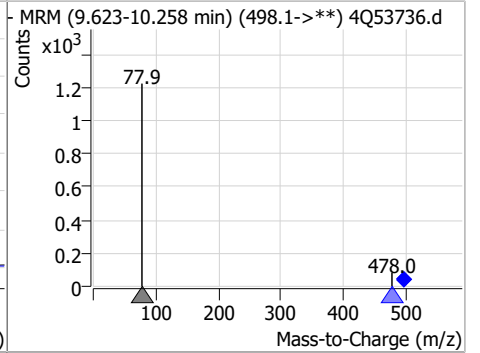
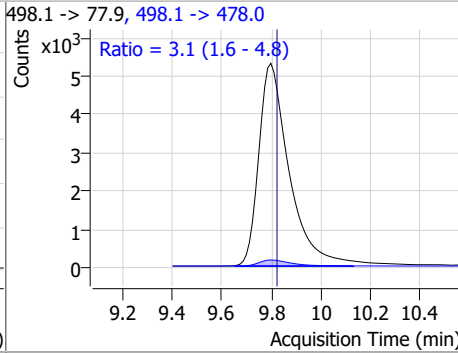
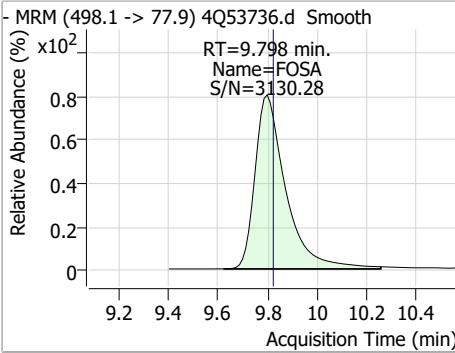
### Perfluorinated Compounds by LC/MS/MS



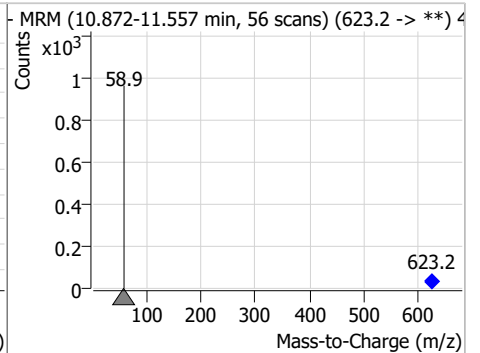
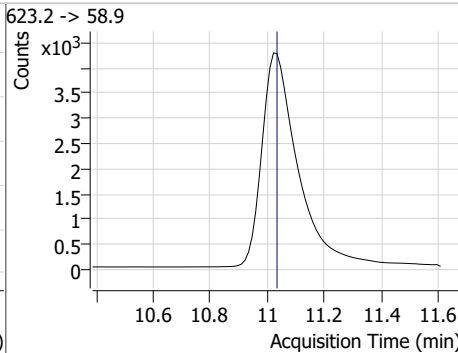
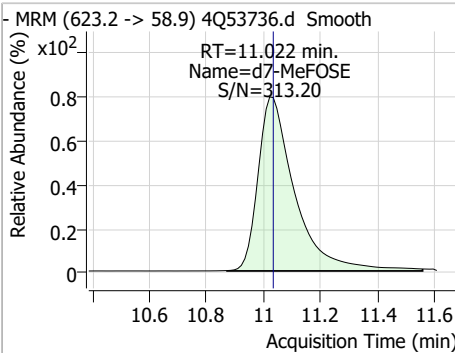
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### Perfluorinated Compounds by LC/MS/MS

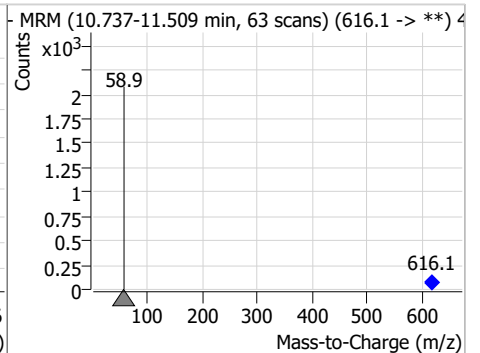
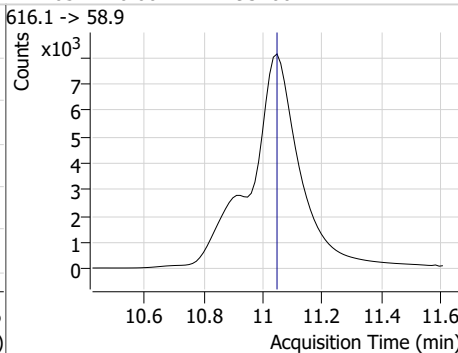
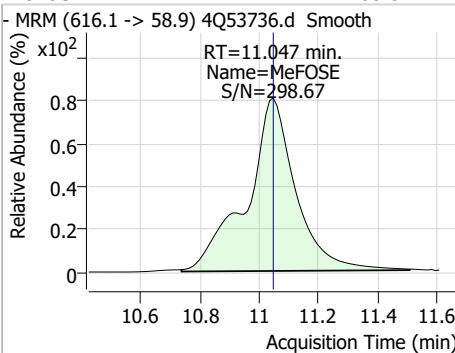
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	10.56	9.80	-0.02	45724	498.1 -> 478.0	3.1	1.6	4.8



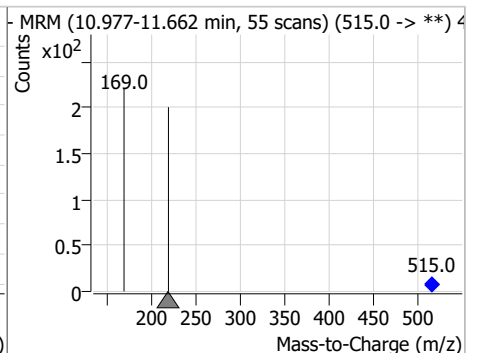
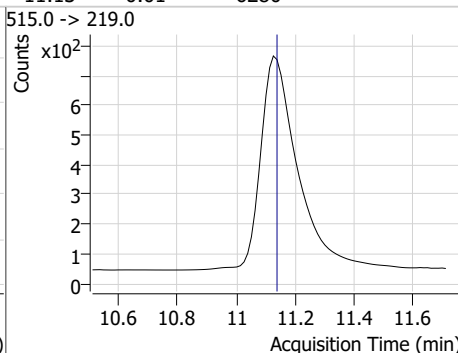
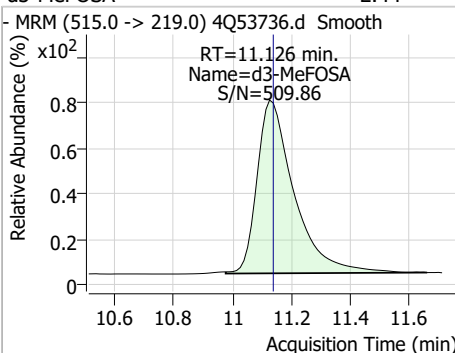
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.02	11.02	-0.01	38218				



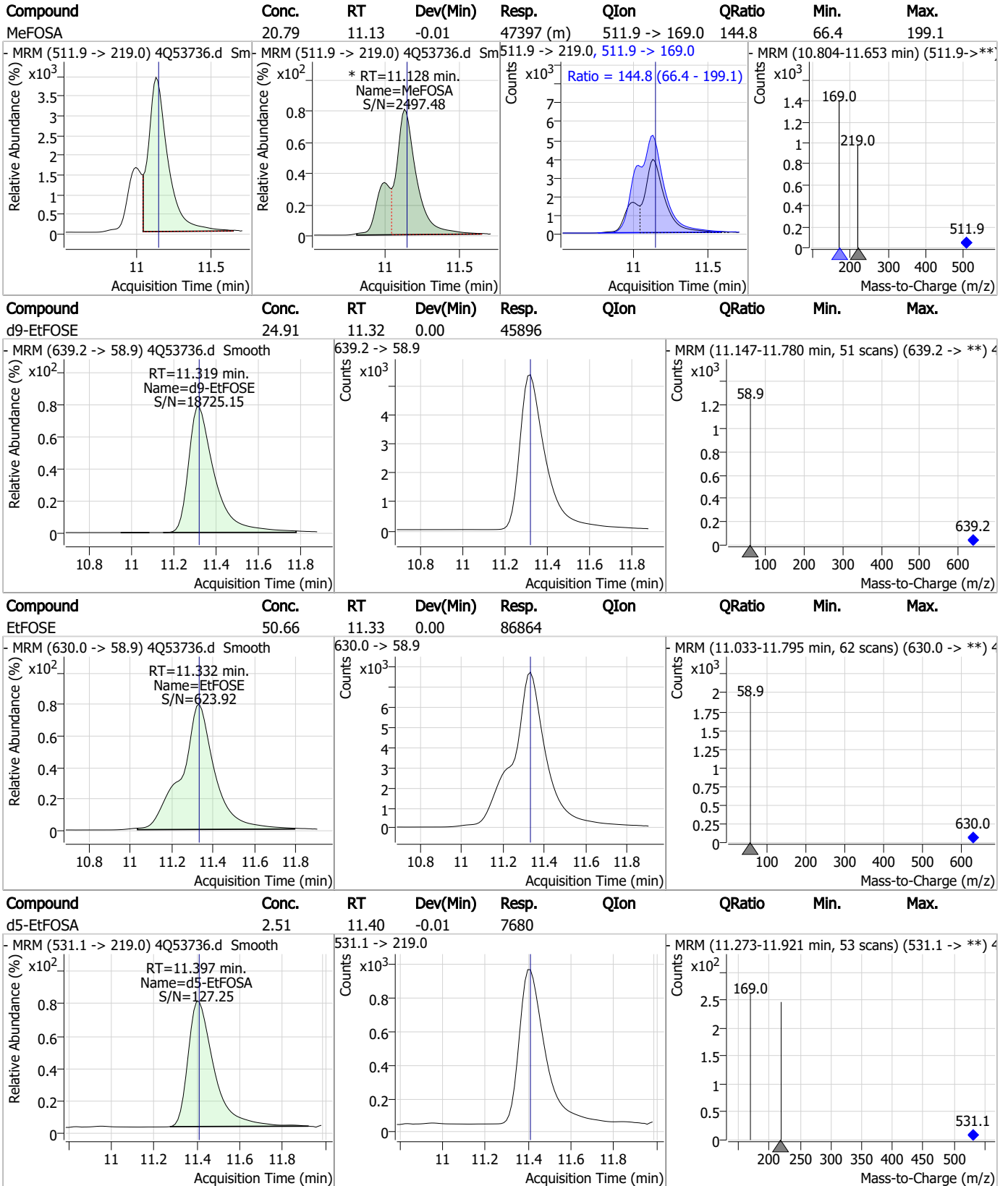
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	53.52	11.05	0.00	93200				



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



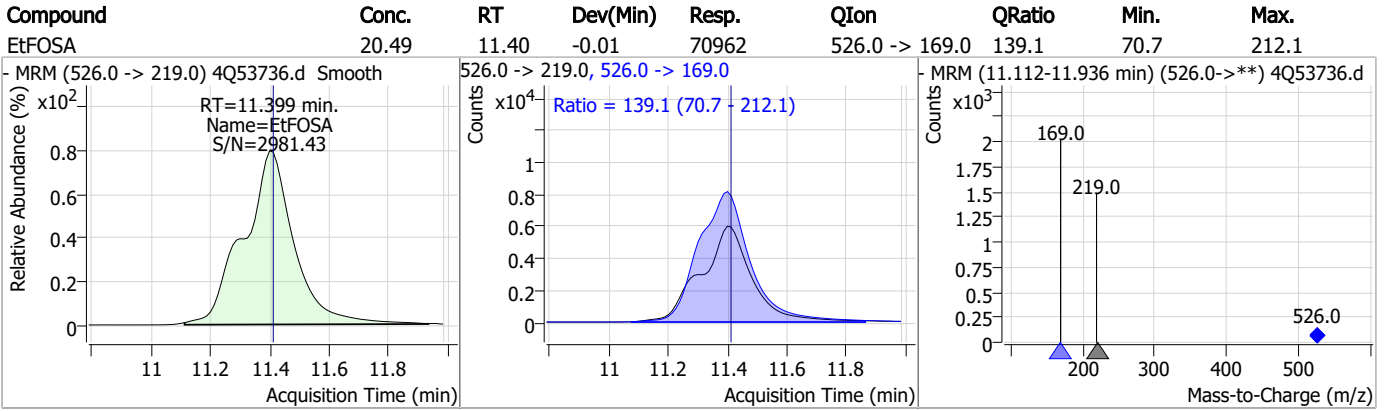
### Perfluorinated Compounds by LC/MS/MS



7.7.7

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### Perfluorinated Compounds by LC/MS/MS



7.7.7  
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# Manual Integration Approval Summary

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

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

7.7.7.1

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Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)

Natasha Gumtje  
 11/14/23 15:48

## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53737.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/13/2023 5:28:03 PM  
 Sample Name : ic785-7  
 Vial : P1-A8  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q785.batch.bin  
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

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

## Perfluorinated Compounds by LC/MS/MS

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

## Perfluorinated Compounds by LC/MS/MS

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

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

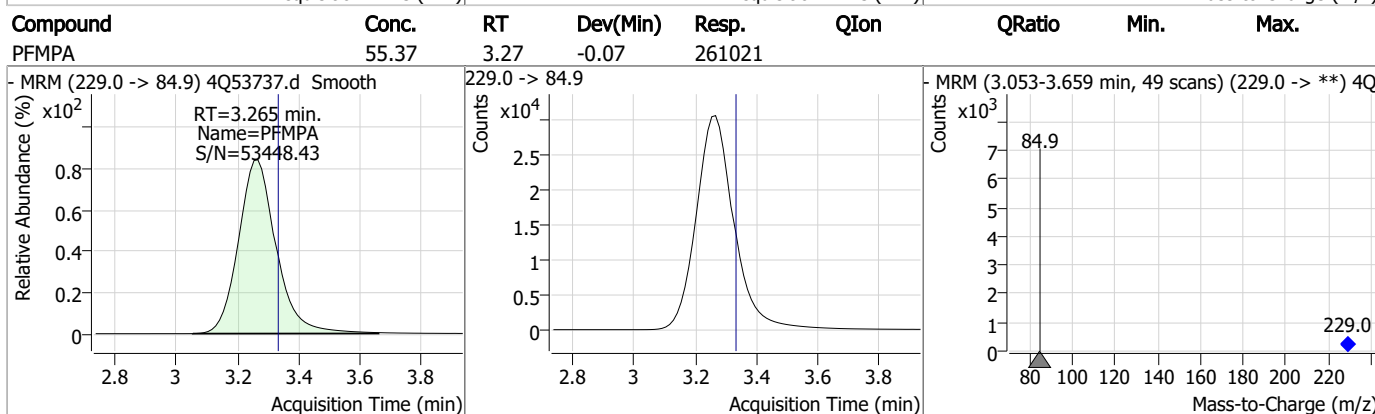
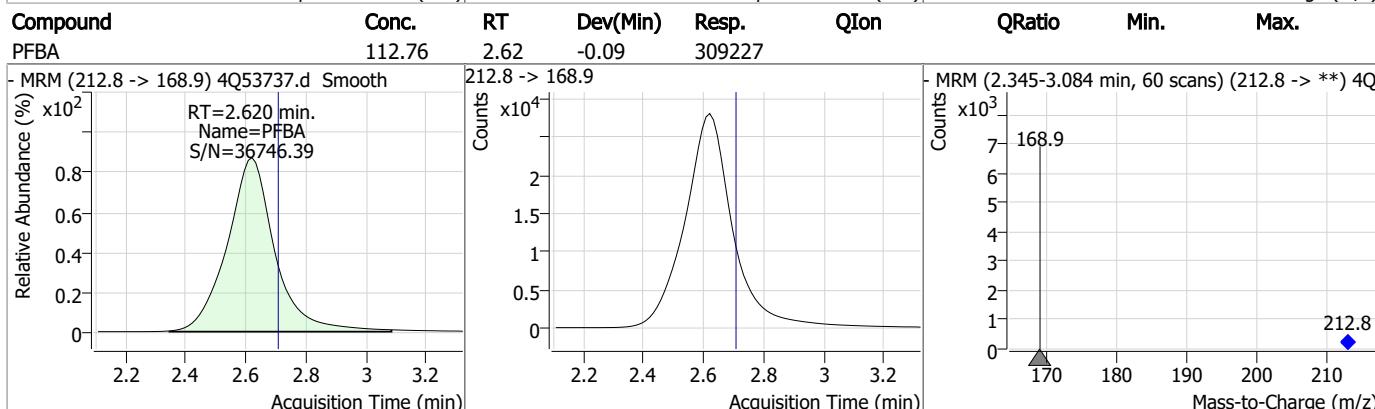
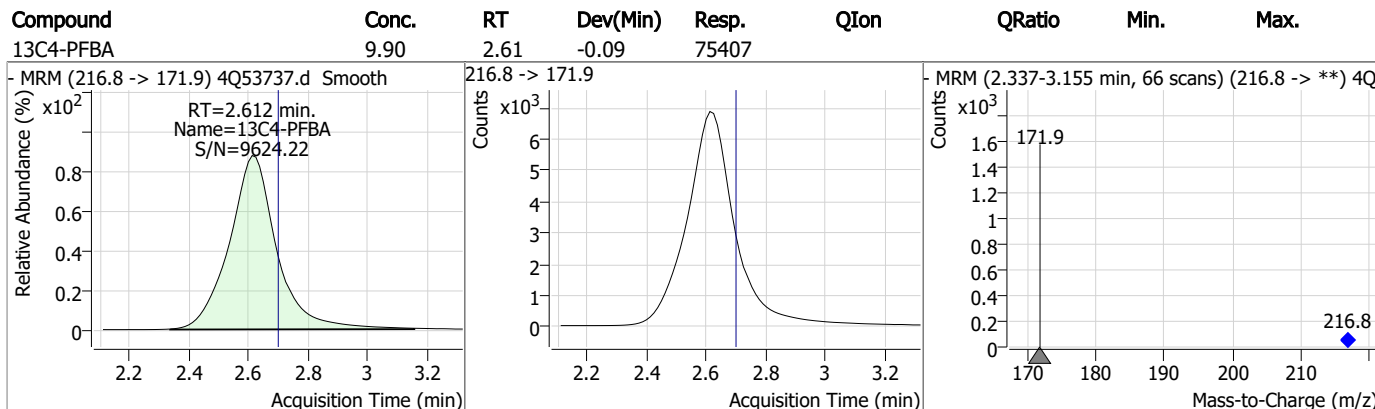
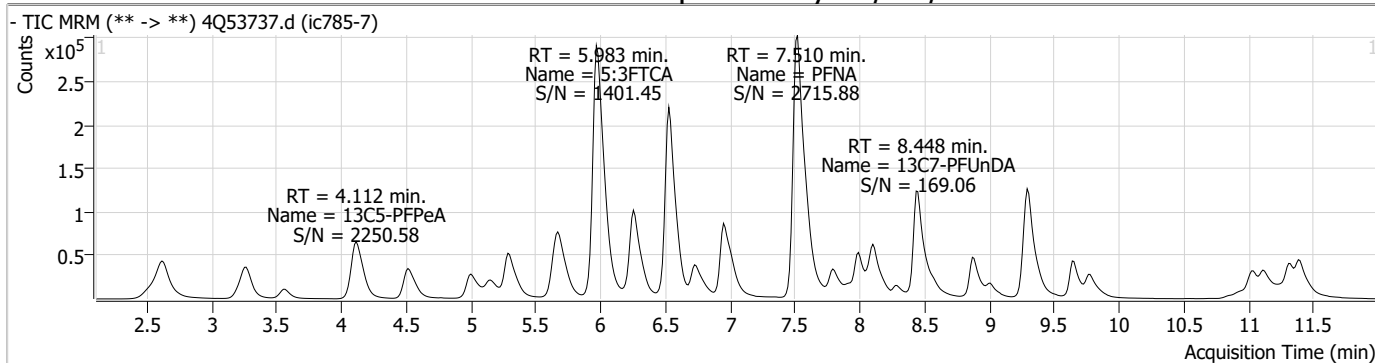
### Perfluorinated Compounds by LC/MS/MS

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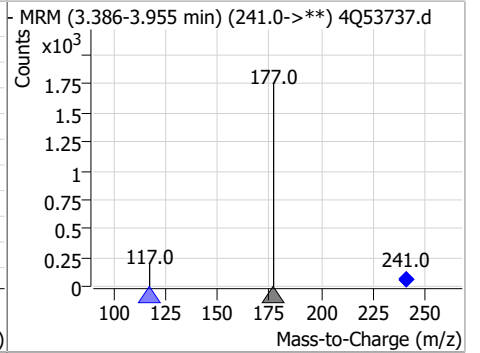
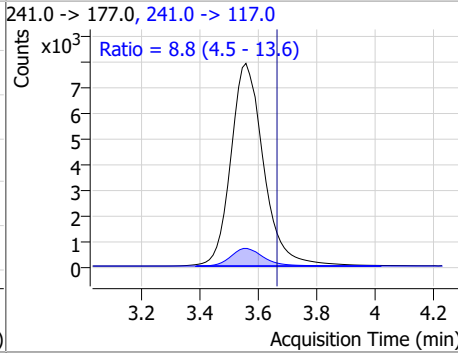
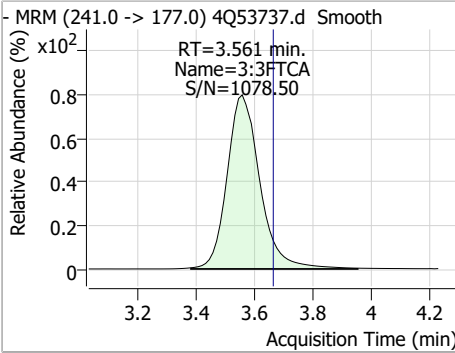


### Perfluorinated Compounds by LC/MS/MS

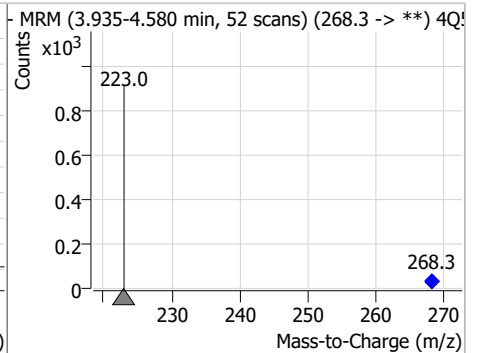
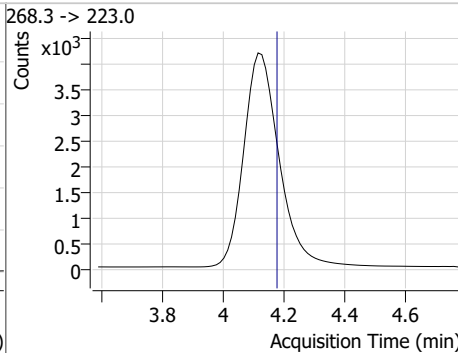
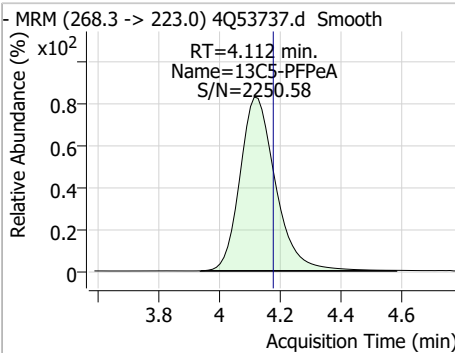


### Perfluorinated Compounds by LC/MS/MS

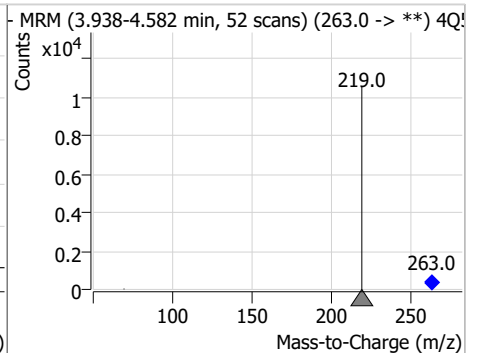
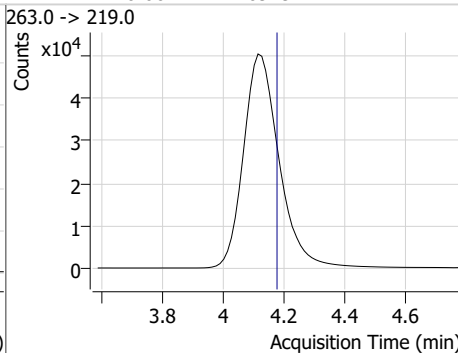
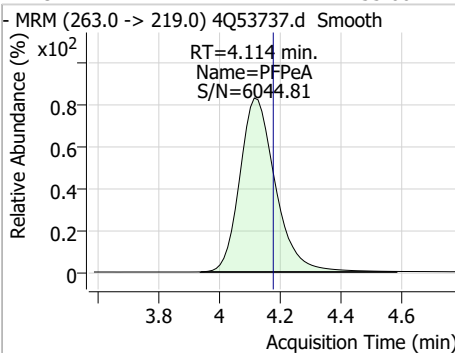
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	144.07	3.56	-0.11	61547	241.0 -> 117.0	8.8	4.5	13.6



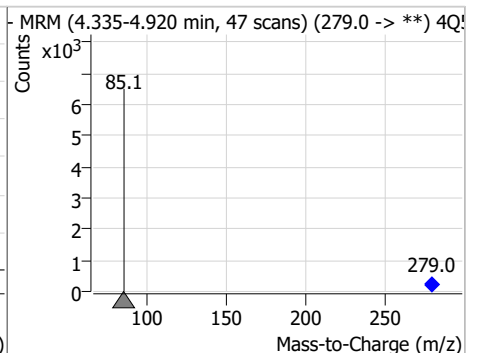
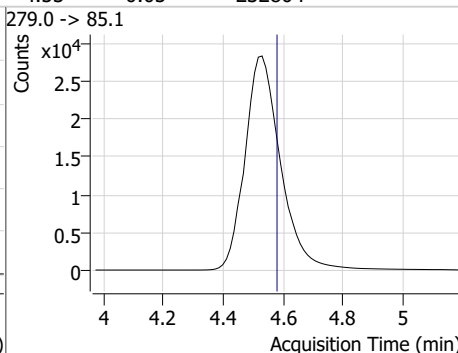
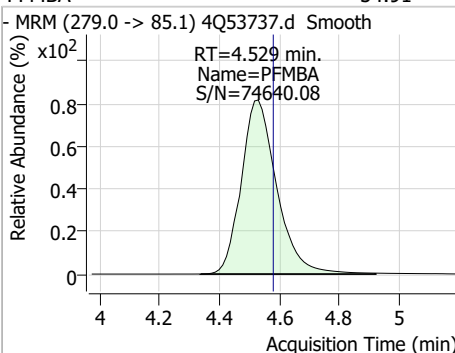
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.96	4.11	-0.06	33838				



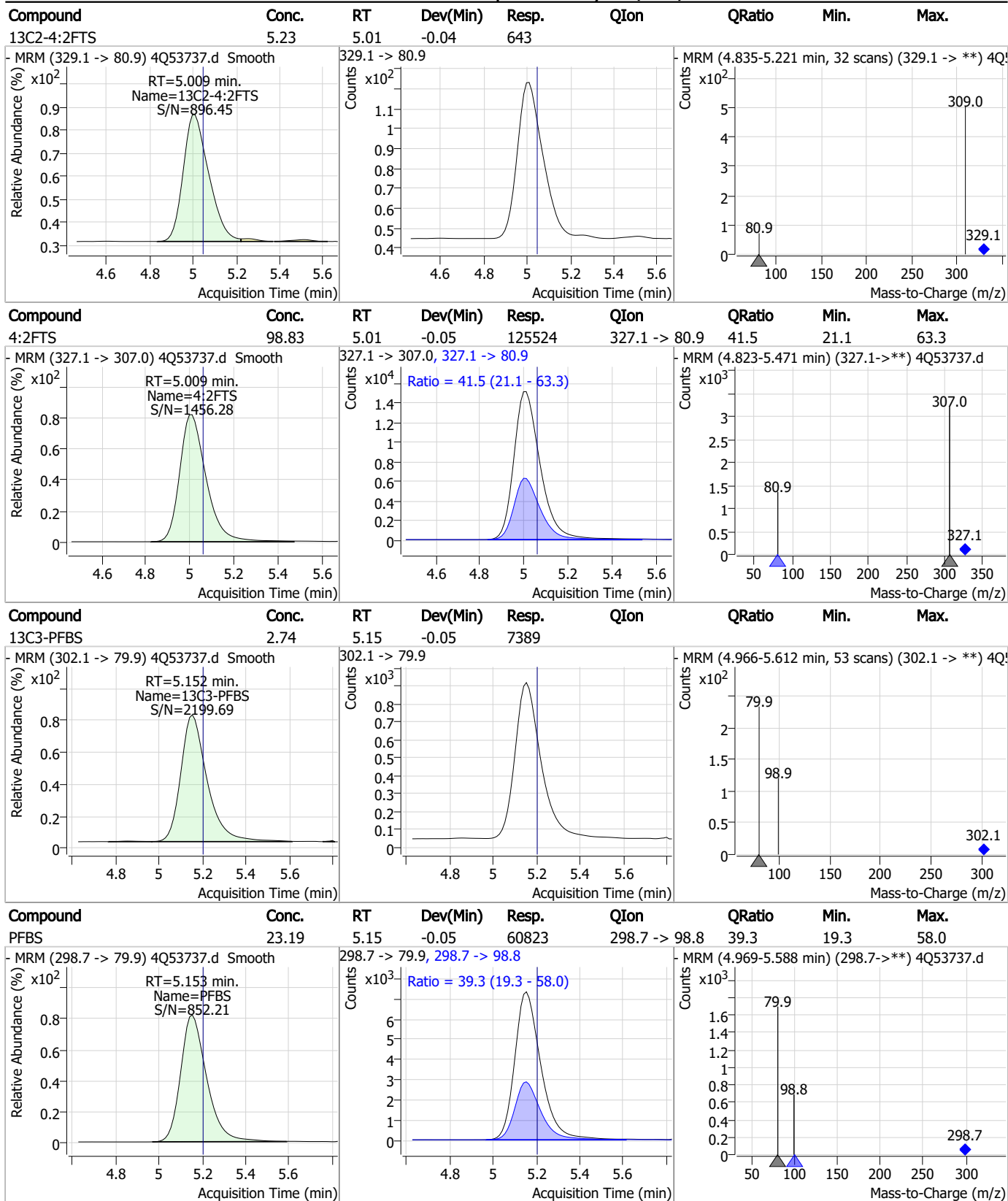
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	55.60	4.11	-0.06	409292				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	54.91	4.53	-0.05	232804				



### Perfluorinated Compounds by LC/MS/MS



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### Perfluorinated Compounds by LC/MS/MS

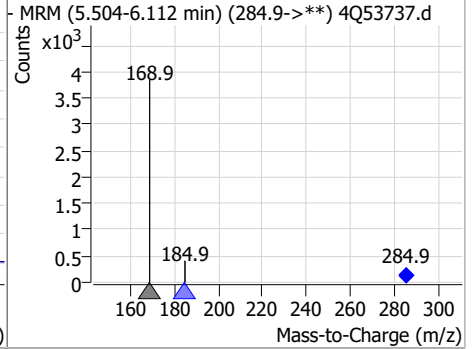
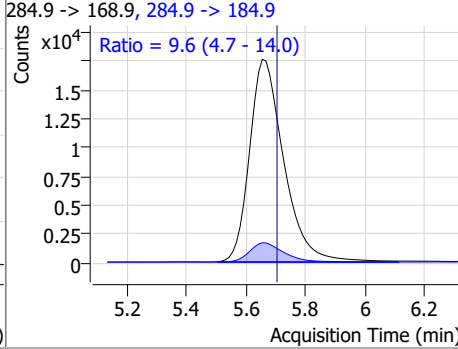
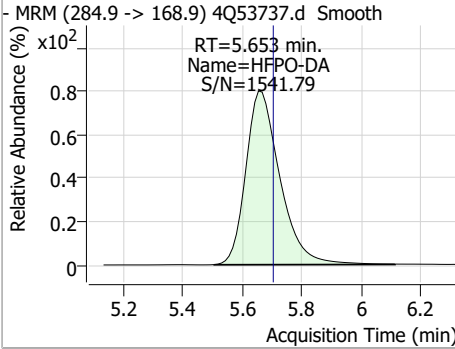
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	55.10	5.18	-0.05	32631	295.0 -> 84.9	27.0	11.9	35.7
- MRM (295.0 -> 201.0) 4Q53737.d Smooth			295.0 -> 201.0, 295.0 -> 84.9		- MRM (5.006-5.638 min) (295.0->**) 4Q53737.d			
13C5-PFHxA	2.46	5.30	-0.05	25676				
- MRM (318.0 -> 273.0) 4Q53737.d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

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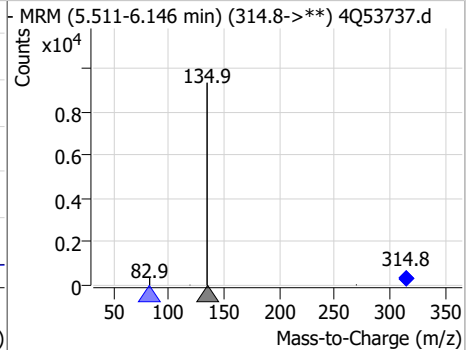
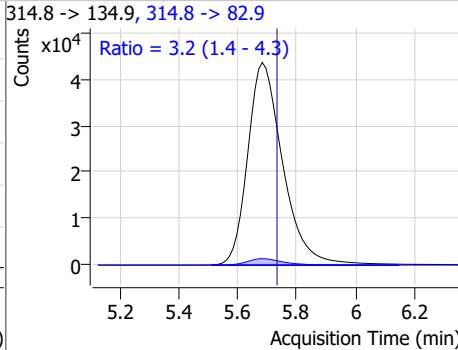
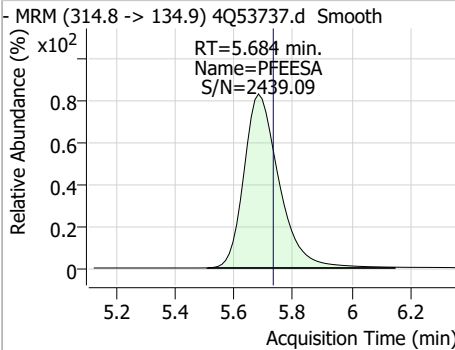
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### Perfluorinated Compounds by LC/MS/MS

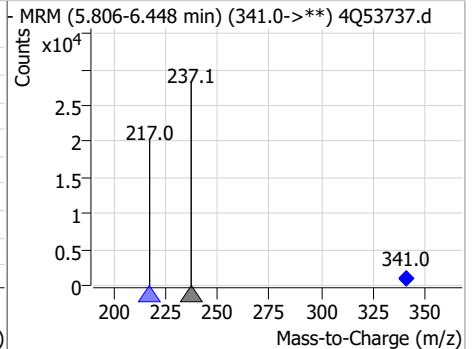
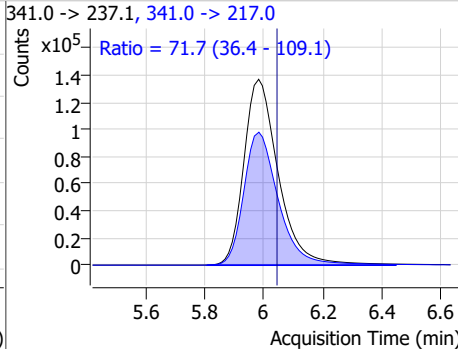
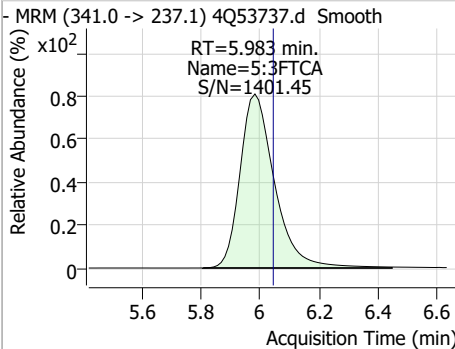
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	55.87	5.65	-0.05	140545	284.9 -> 184.9	9.6	4.7	14.0



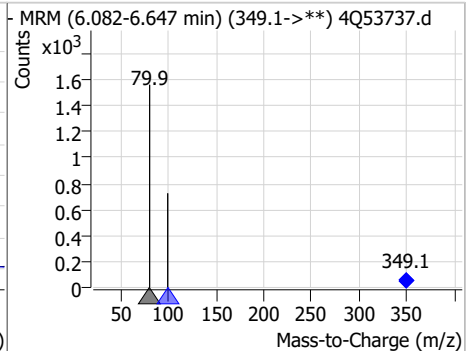
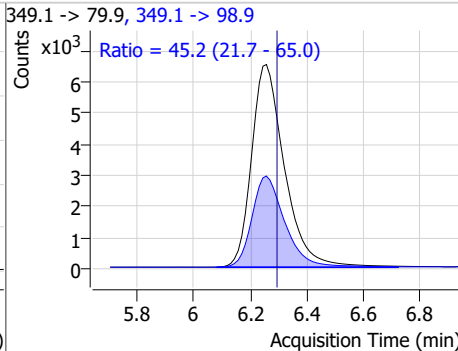
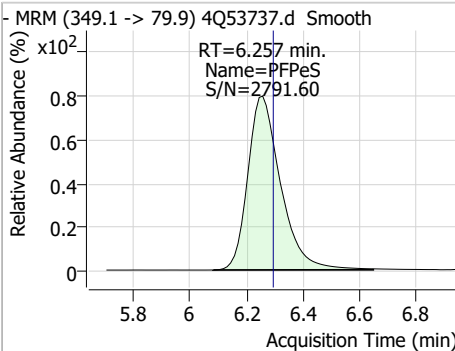
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	50.77	5.68	-0.05	360443	314.8 -> 82.9	3.2	1.4	4.3



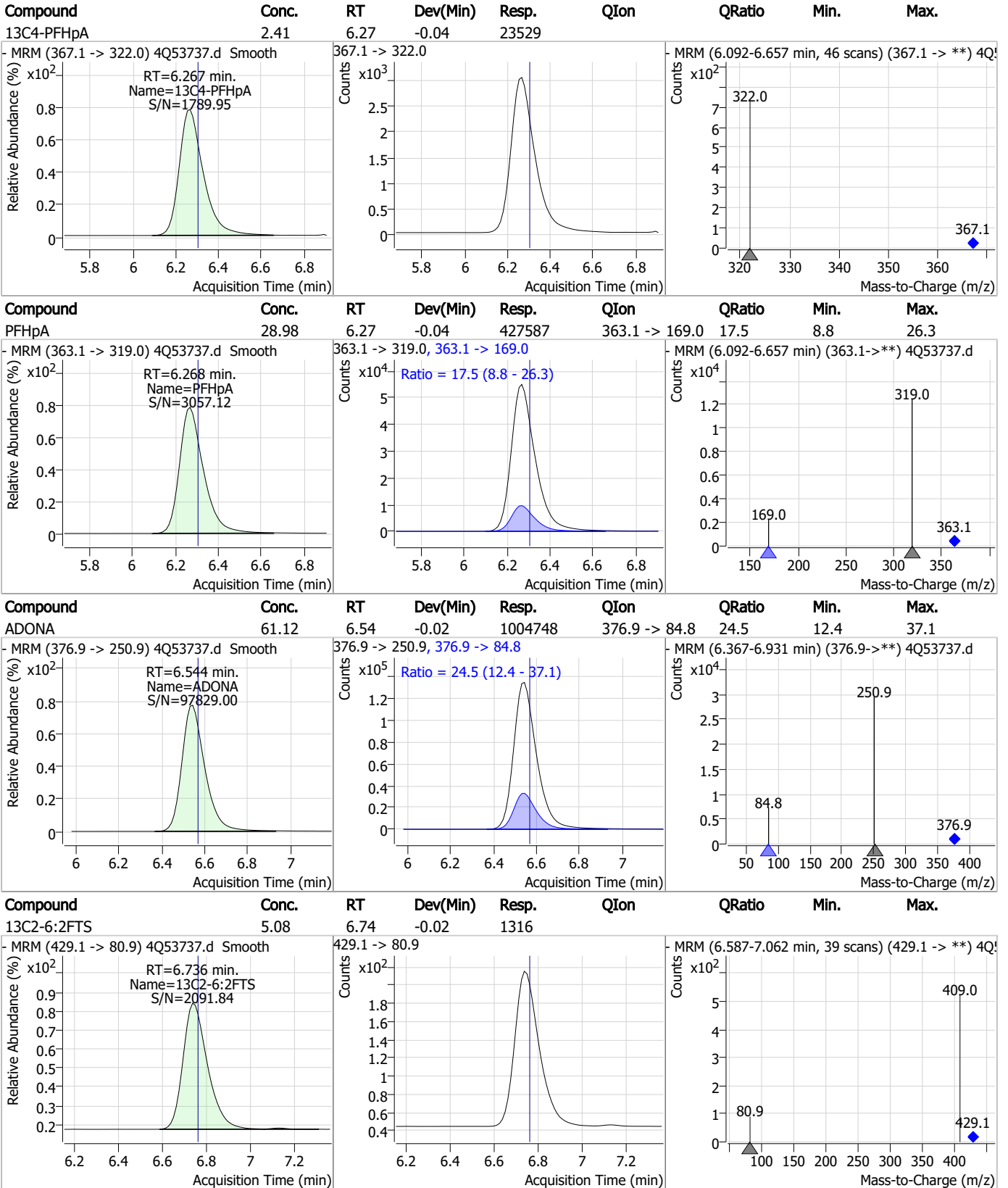
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	705.63	5.98	-0.06	1113871	341.0 -> 217.0	71.7	36.4	109.1



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



### Perfluorinated Compounds by LC/MS/MS

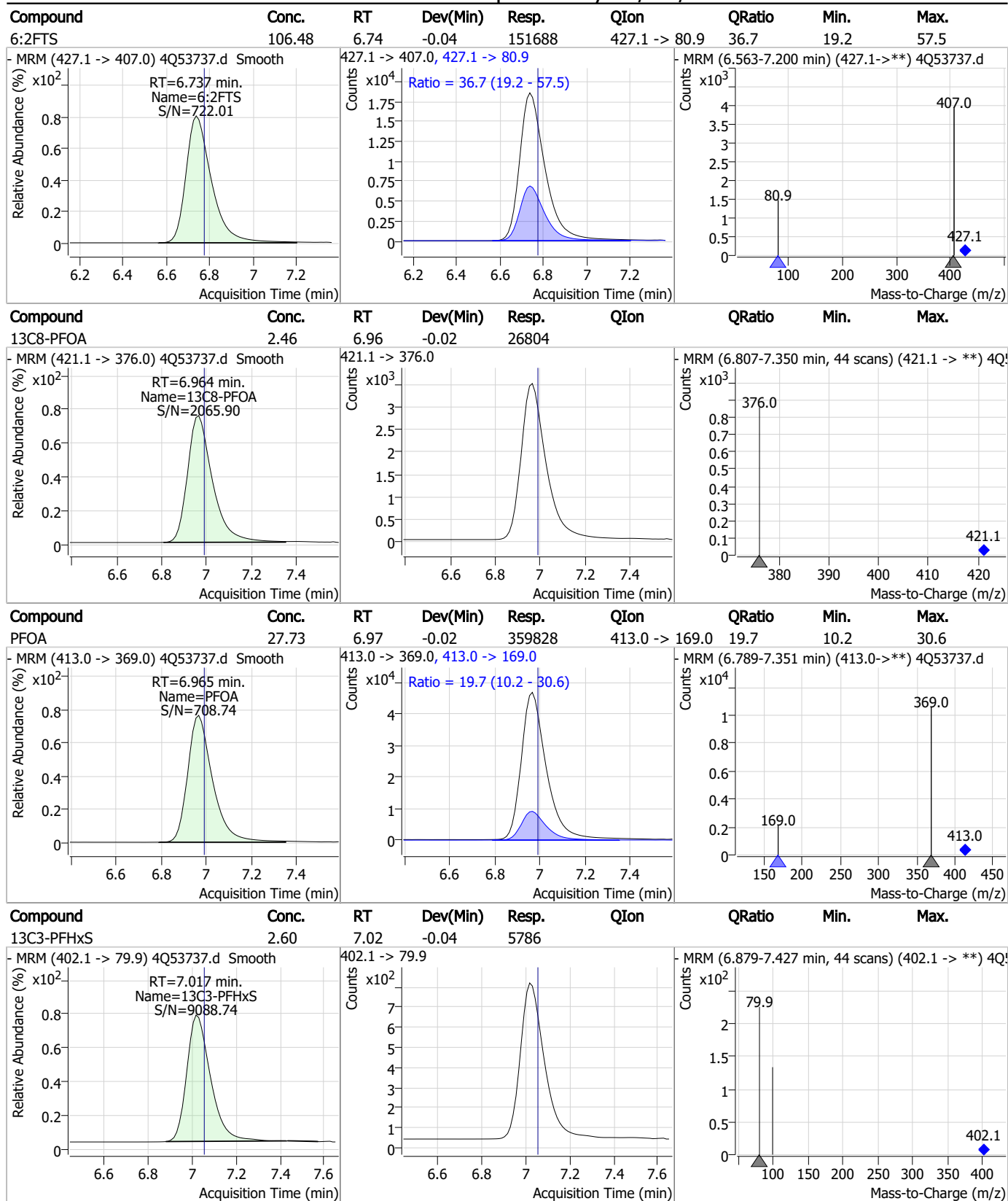


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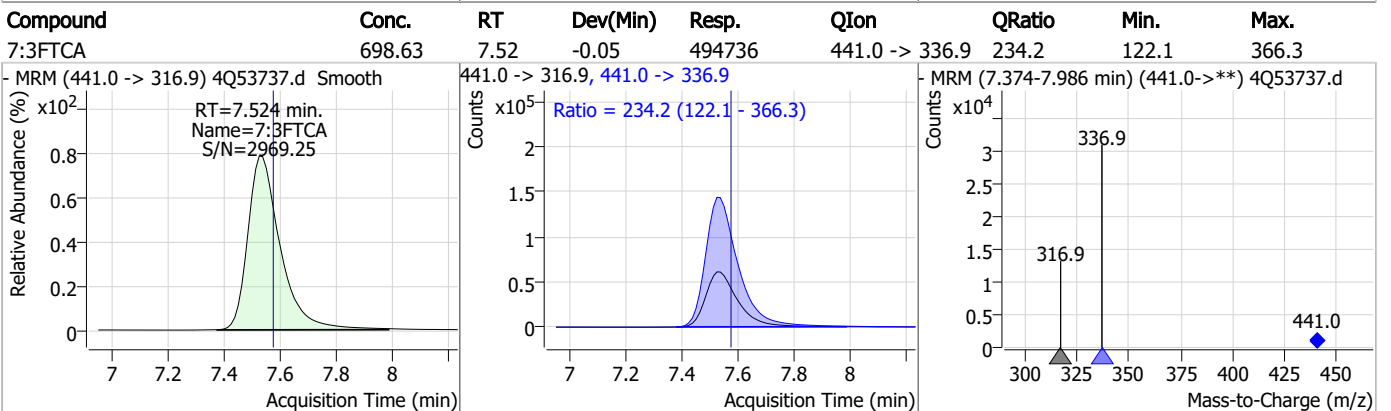
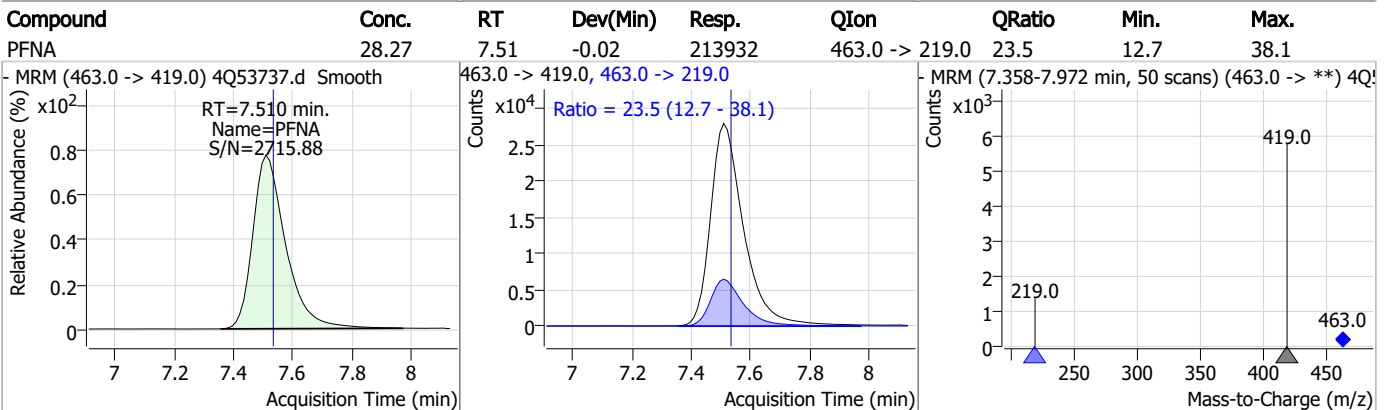
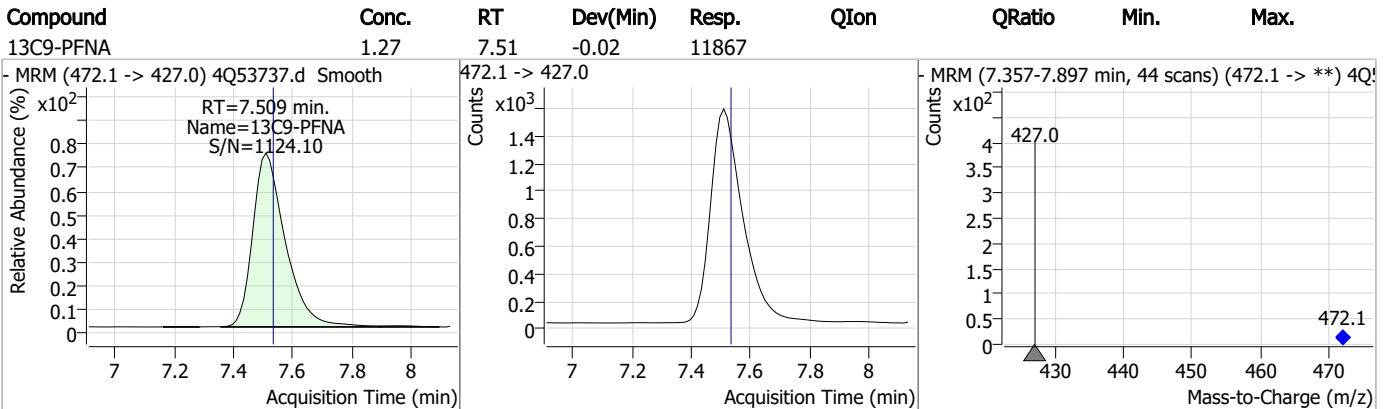
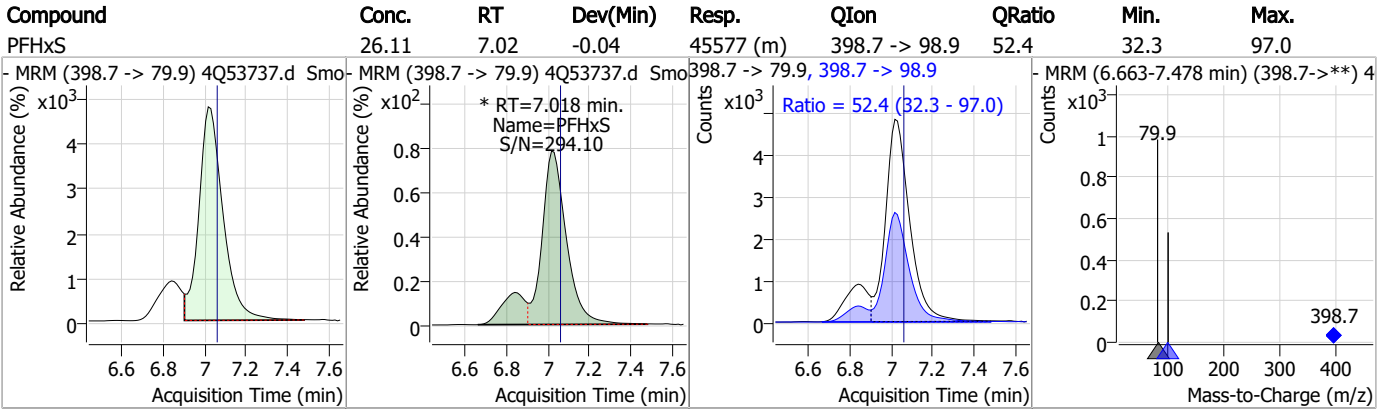


### Perfluorinated Compounds by LC/MS/MS

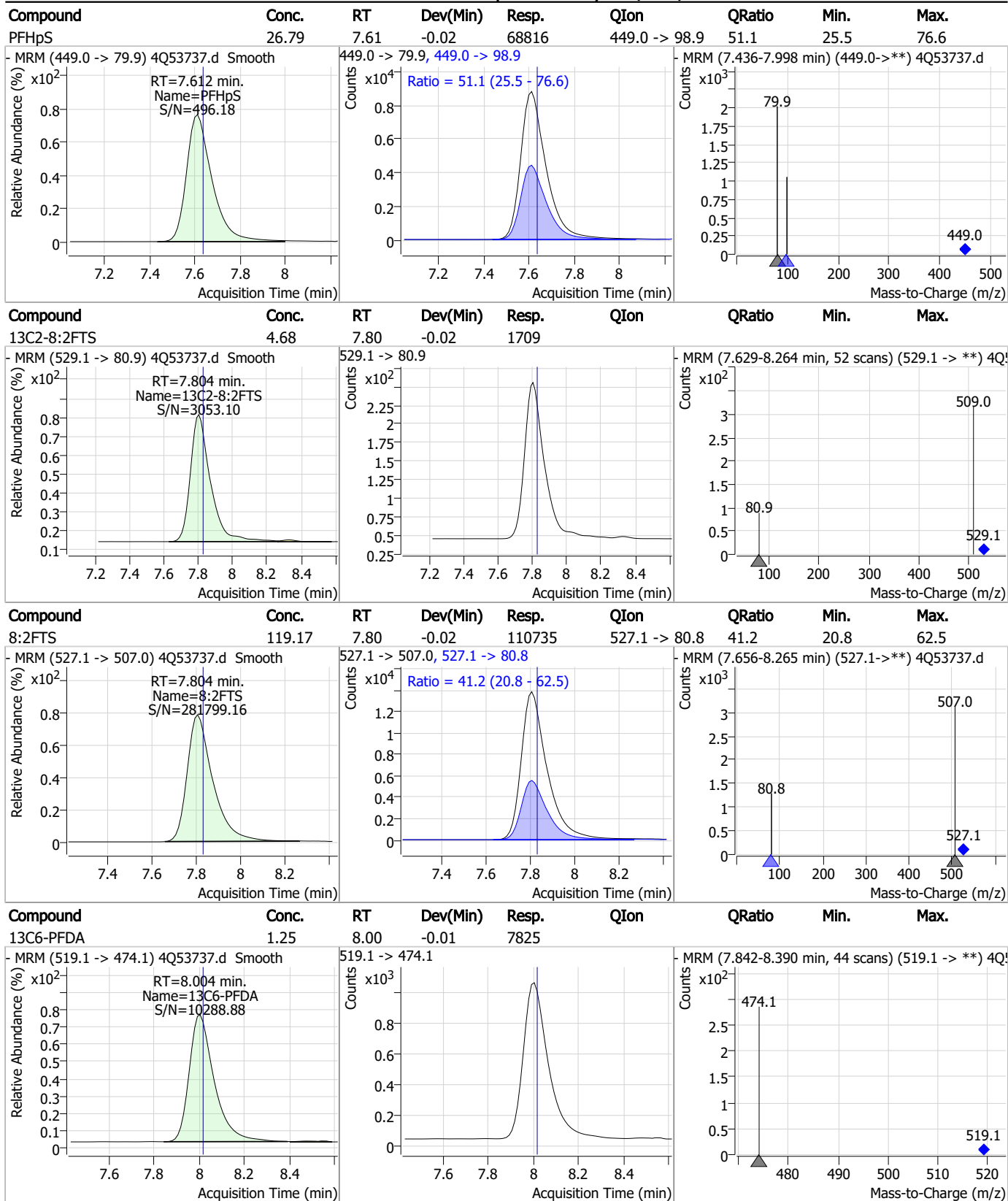


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### Perfluorinated Compounds by LC/MS/MS

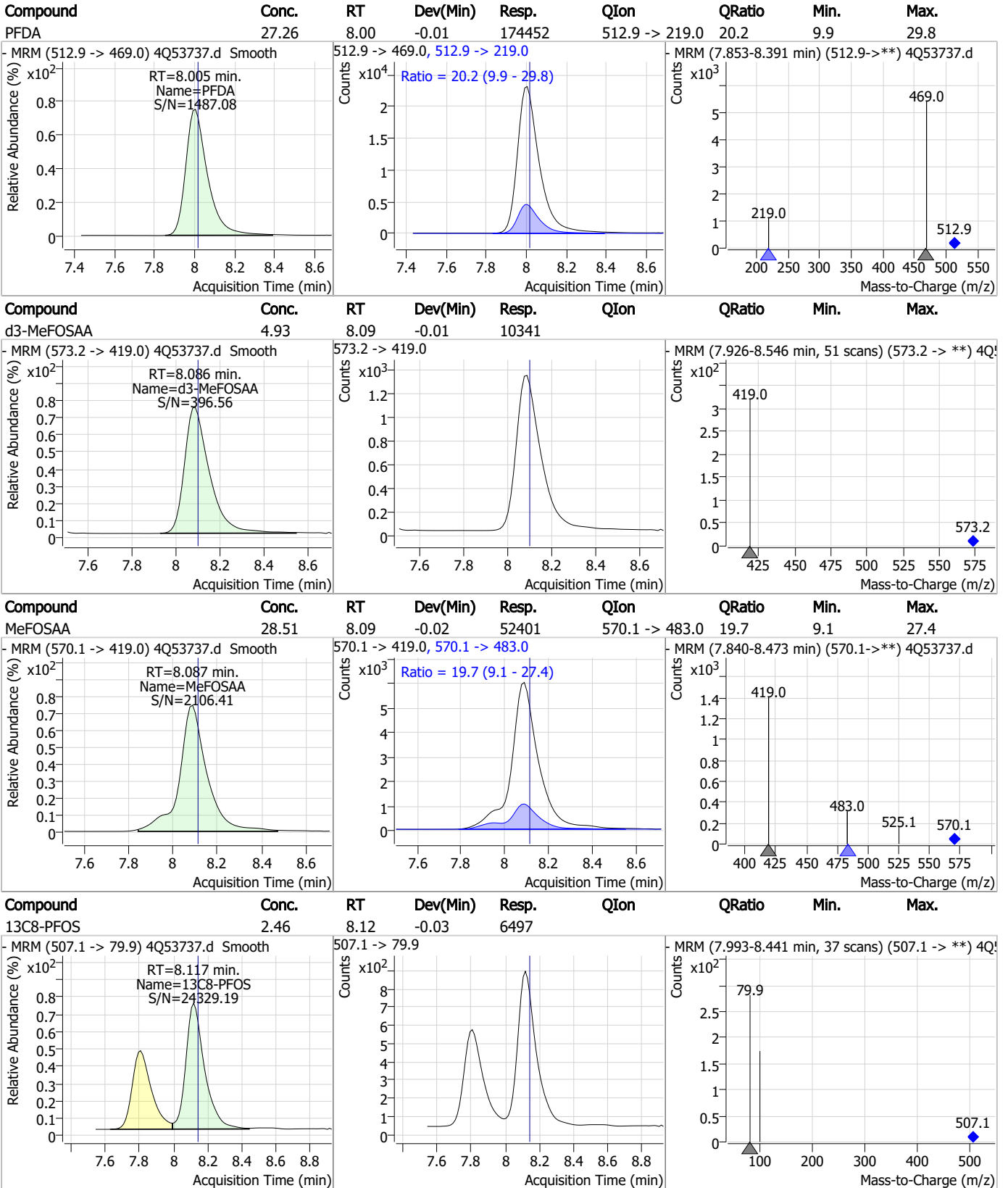


### Perfluorinated Compounds by LC/MS/MS



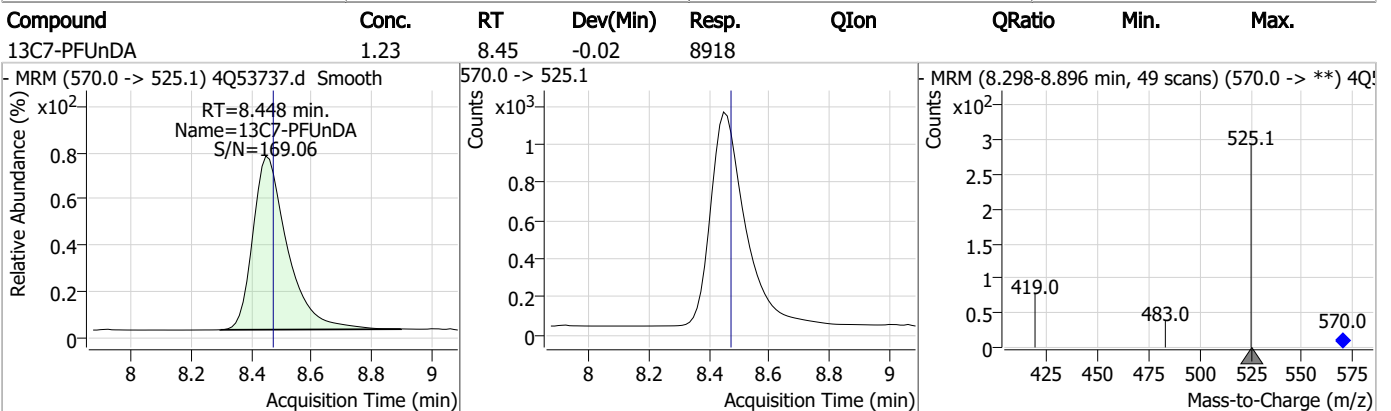
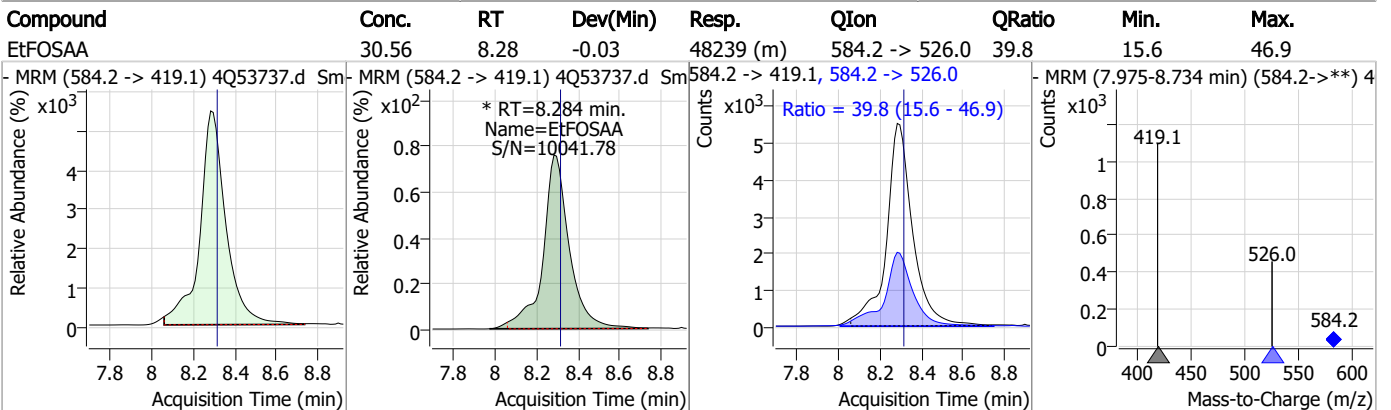
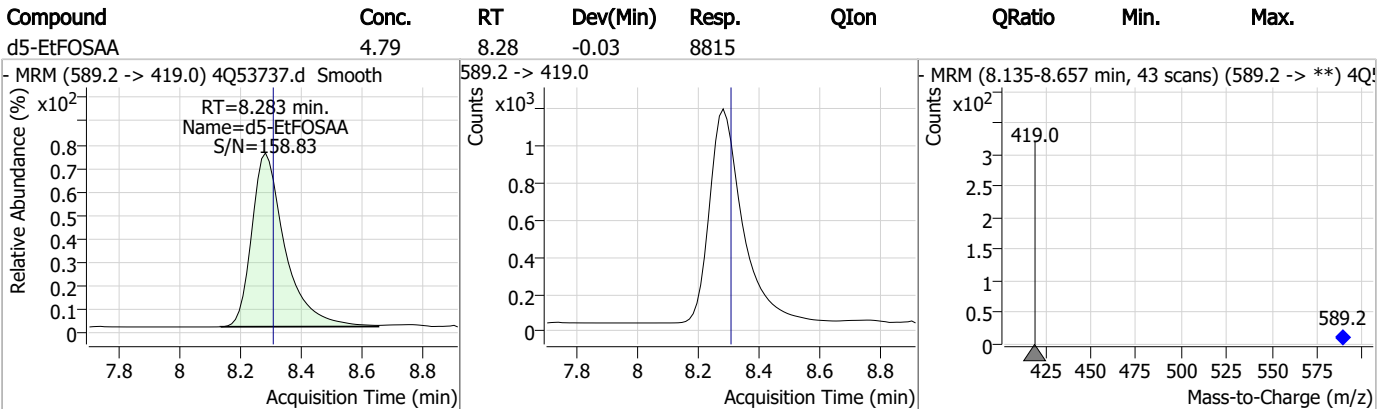
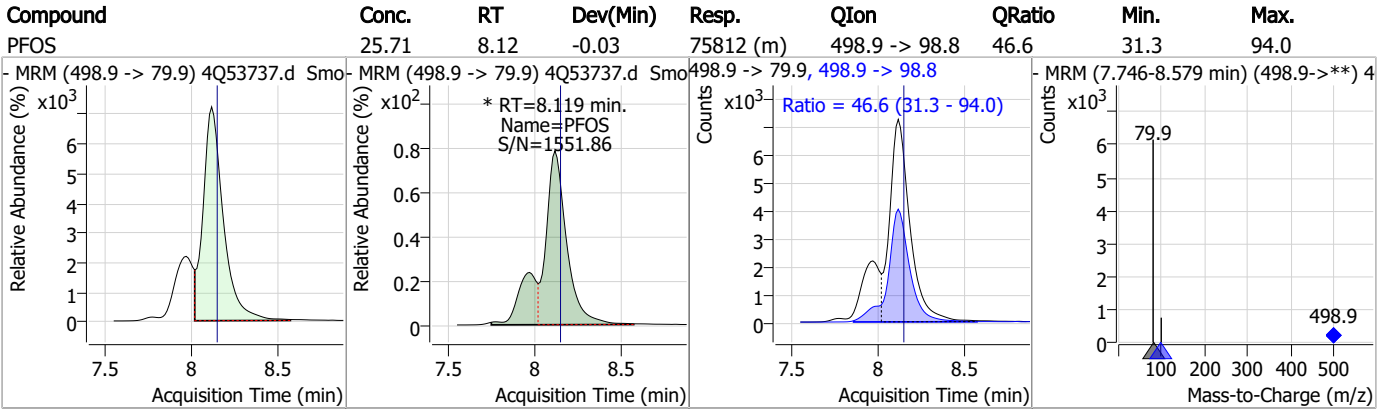
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### Perfluorinated Compounds by LC/MS/MS



7.7.8  
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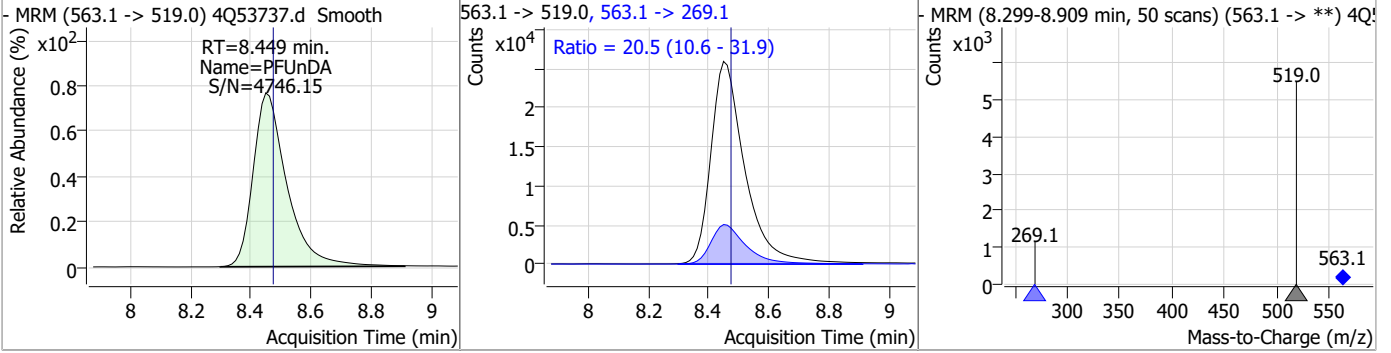
### Perfluorinated Compounds by LC/MS/MS



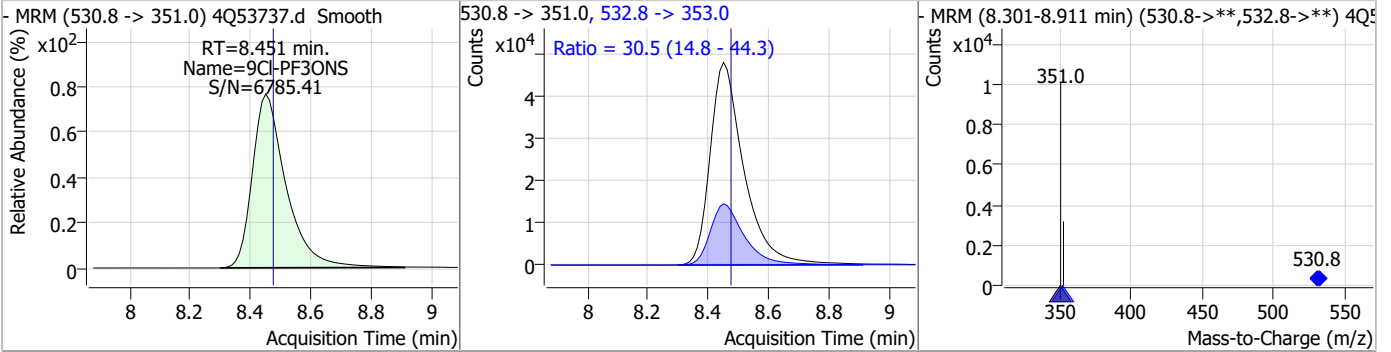


### Perfluorinated Compounds by LC/MS/MS

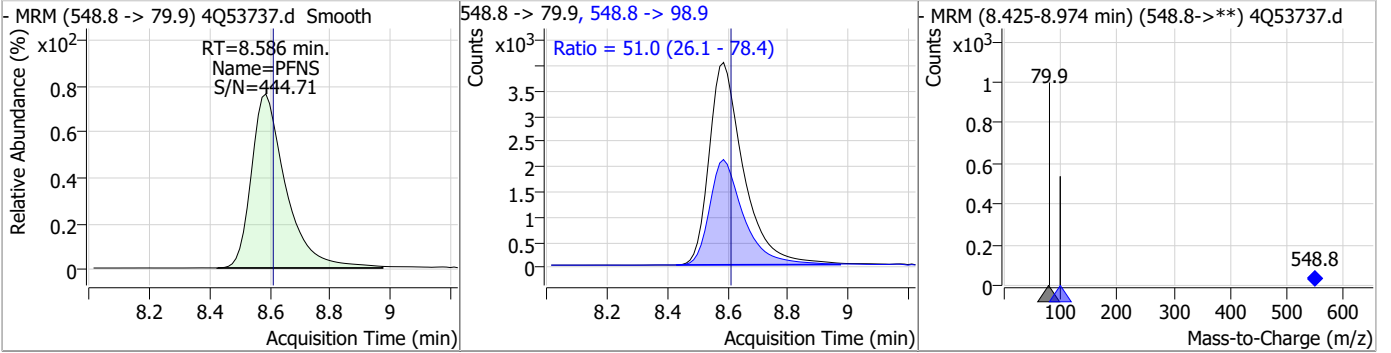
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	27.46	8.45	-0.02	200284	563.1 -> 269.1	20.5	10.6	31.9



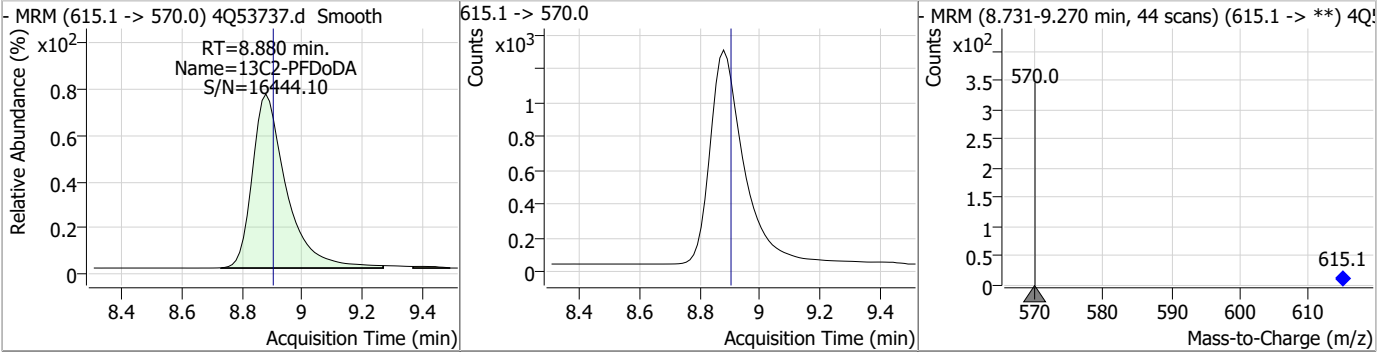
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	49.63	8.45	-0.02	371609	532.8 -> 353.0	30.5	14.8	44.3



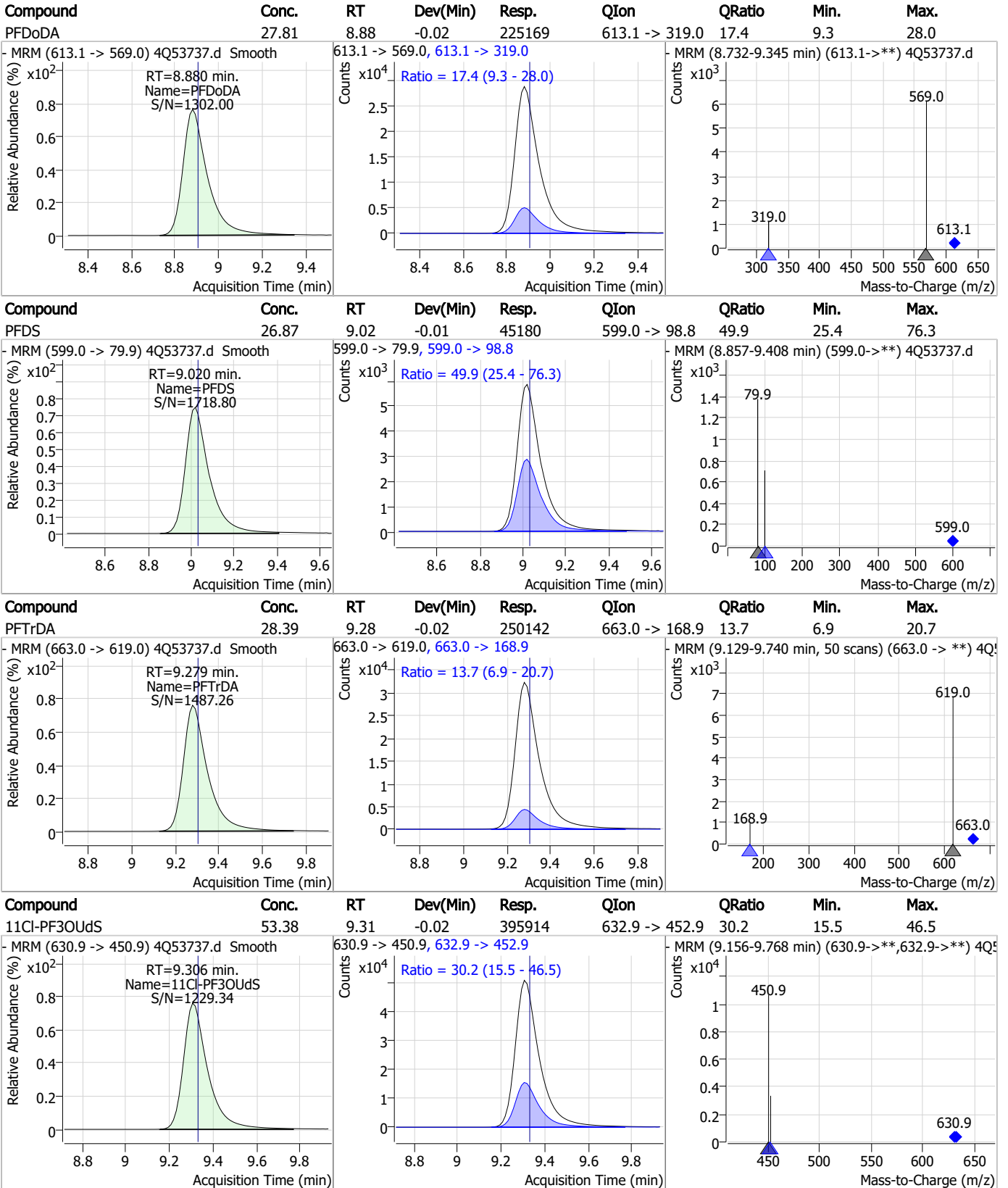
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	25.84	8.59	-0.02	32044	548.8 -> 98.9	51.0	26.1	78.4



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



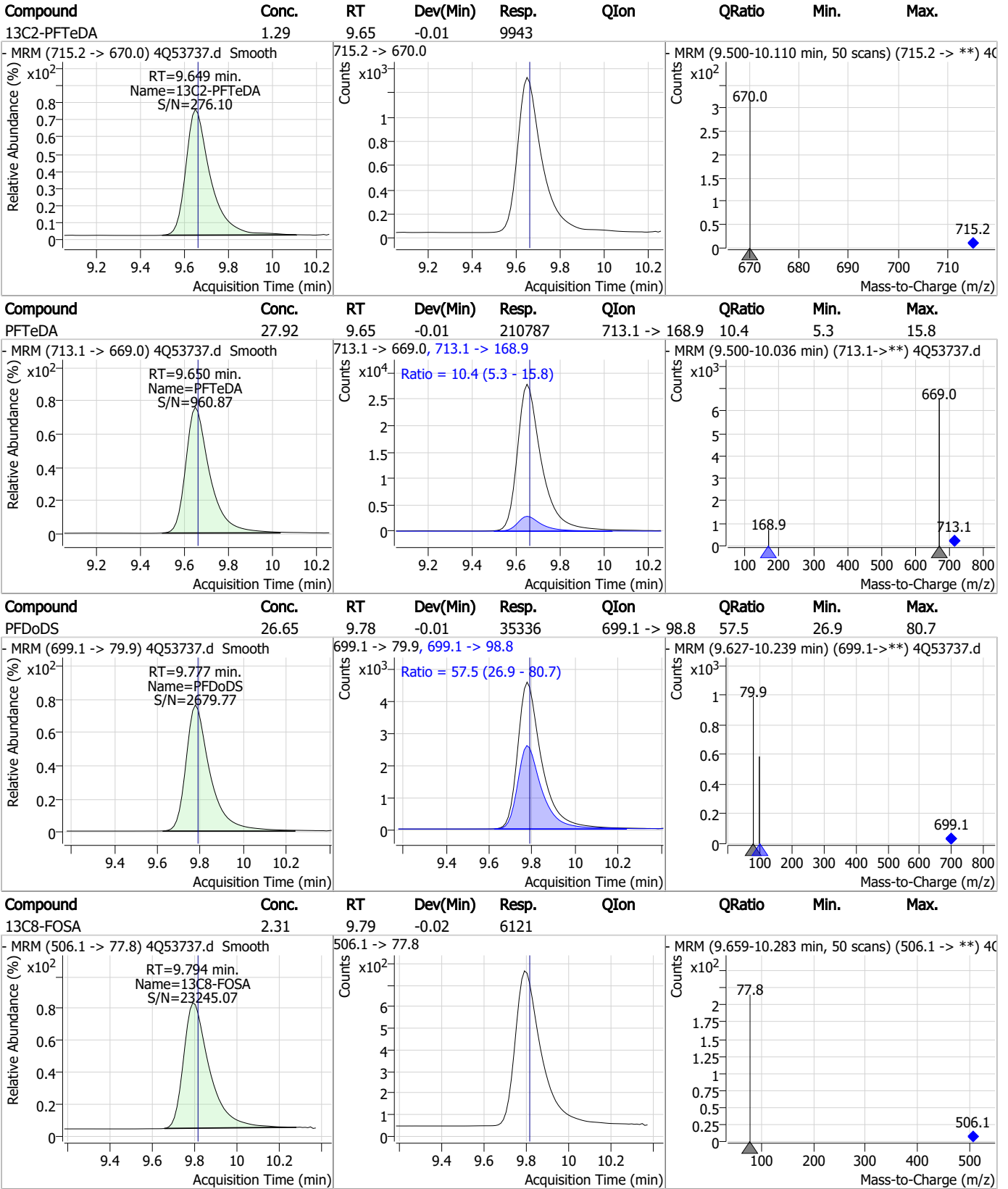
### Perfluorinated Compounds by LC/MS/MS



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### Perfluorinated Compounds by LC/MS/MS

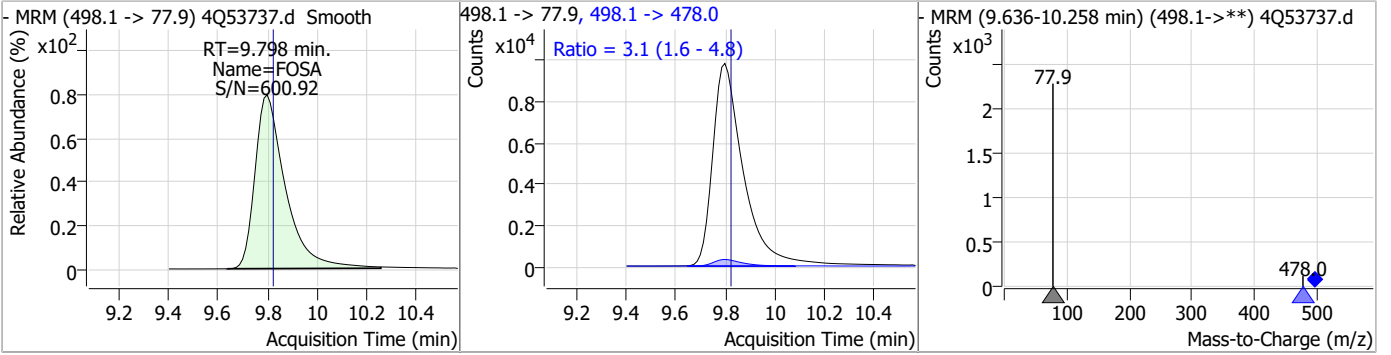


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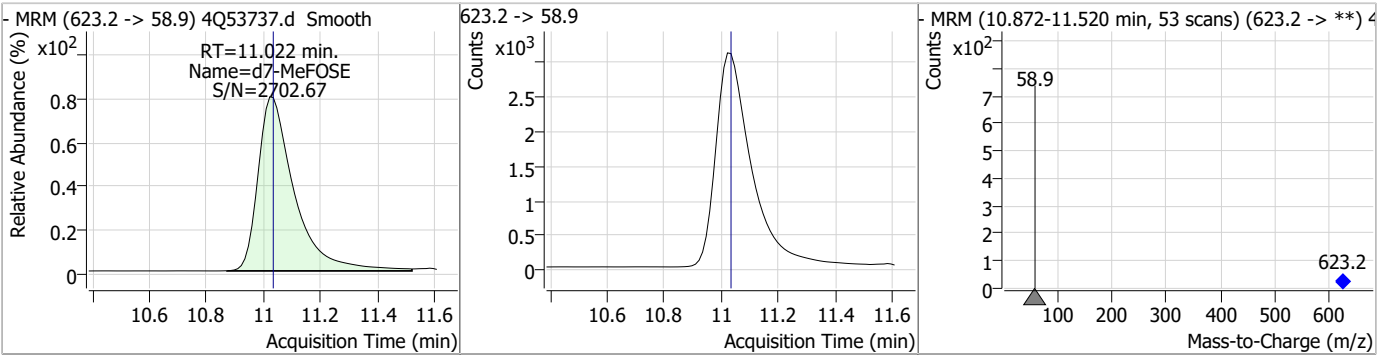
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### Perfluorinated Compounds by LC/MS/MS

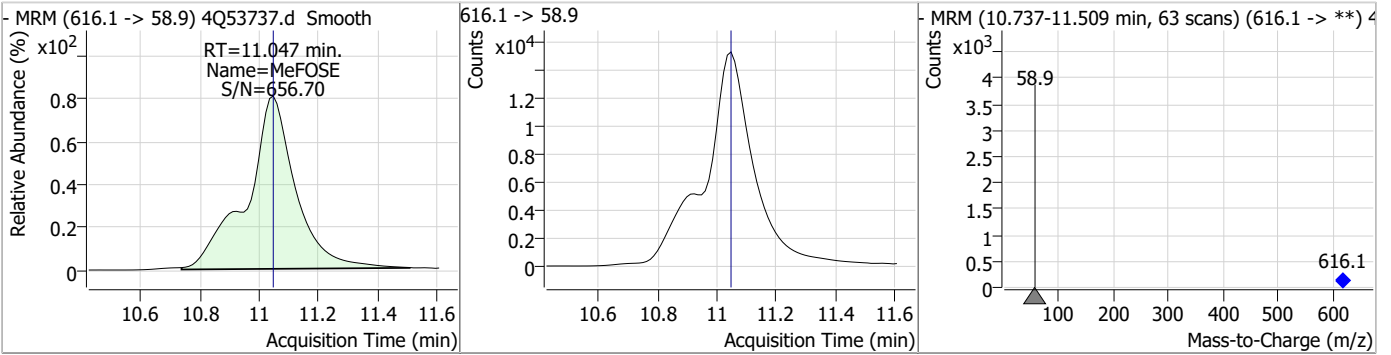
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	28.16	9.80	-0.02	84016	498.1 -> 478.0	3.1	1.6	4.8



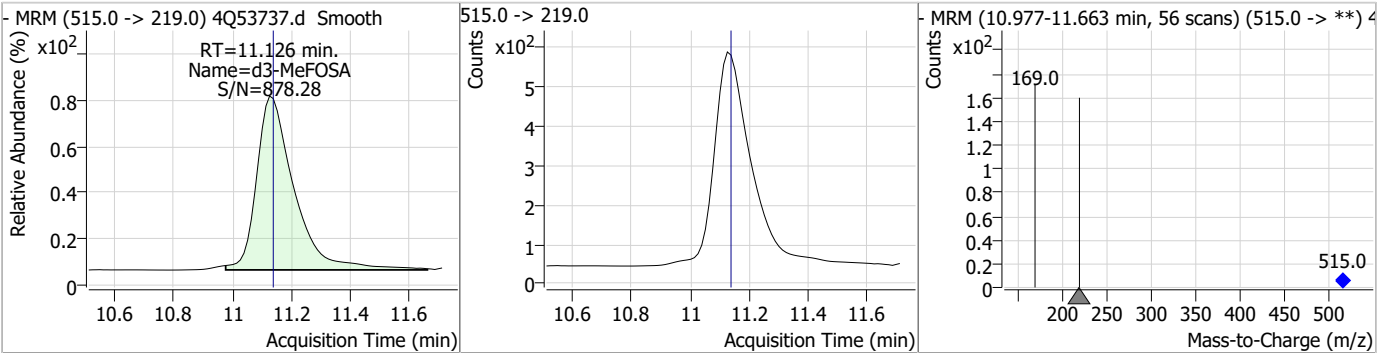
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.99	11.02	-0.01	27365	623.2 -> 58.9			



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

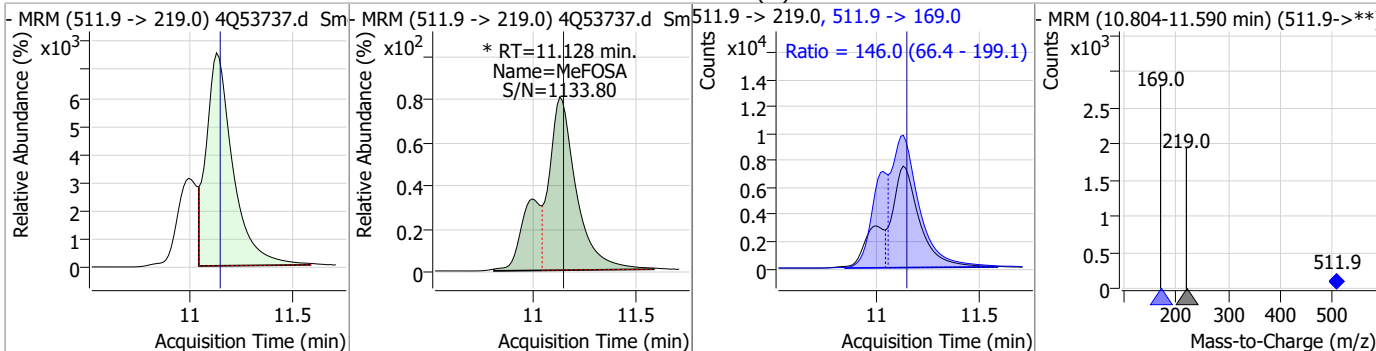


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.60	11.13	-0.01	4810	515.0 -> 169.0			

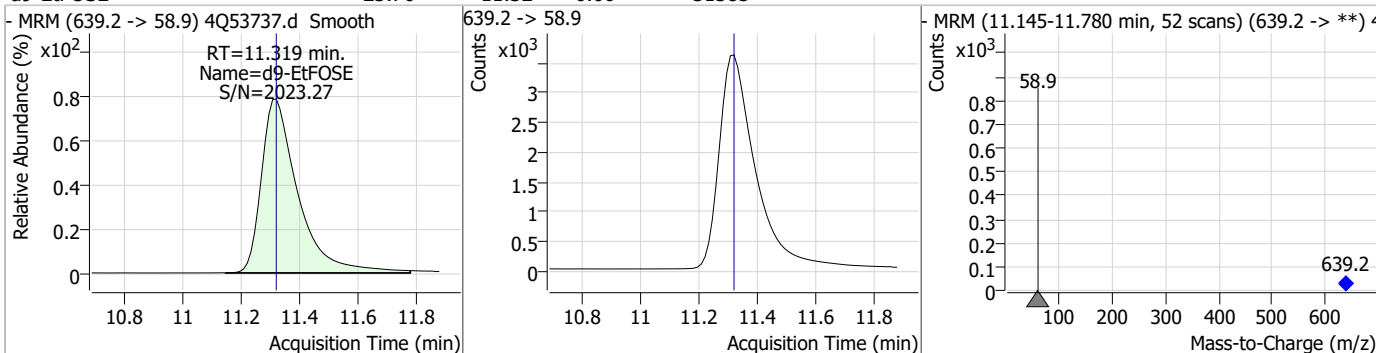


### Perfluorinated Compounds by LC/MS/MS

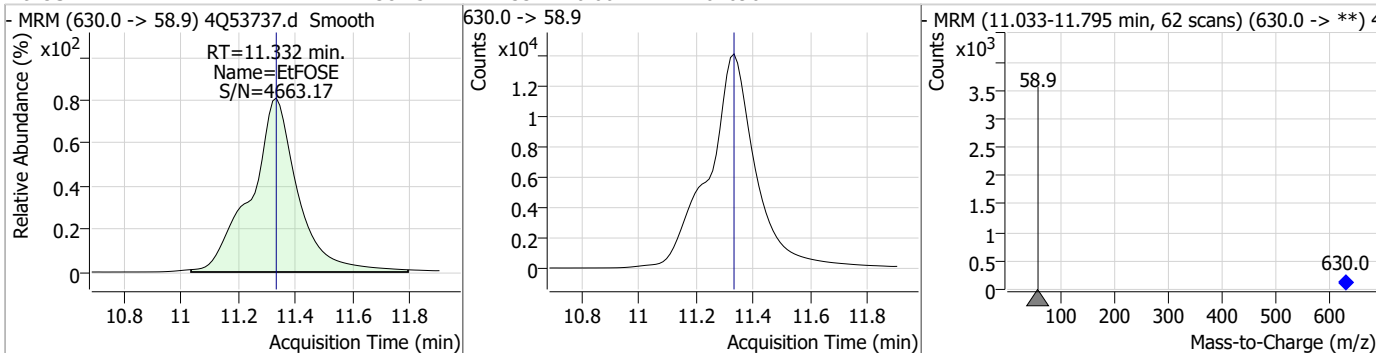
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	51.49	11.13	-0.01	89879 (m)	511.9 -> 169.0	146.0	66.4	199.1



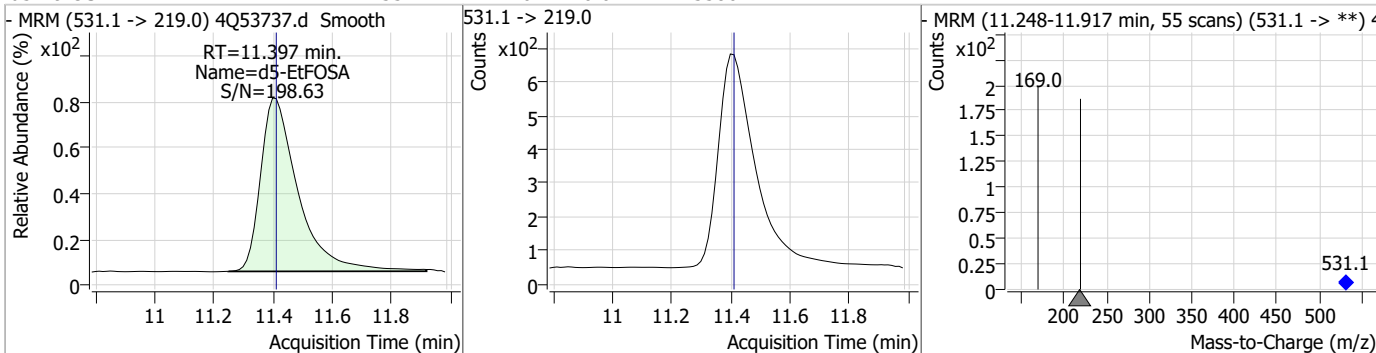
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	23.76	11.32	0.00	31385				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	138.75	11.33	0.00	162696				

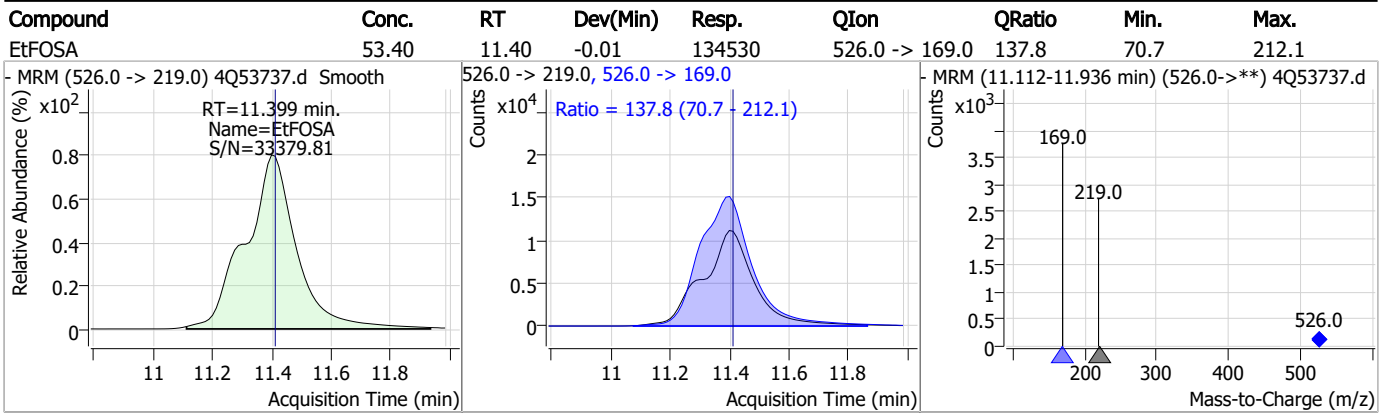


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.55	11.40	-0.01	5586				



7.7.8  
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### Perfluorinated Compounds by LC/MS/MS



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# Manual Integration Approval Summary

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

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

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53738.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/13/2023 5:42:50 PM  
 Sample Name : ic785-8  
 Vial : P1-A9  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q785.batch.bin  
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

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

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### Perfluorinated Compounds by LC/MS/MS

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

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Perfluorinated Compounds by LC/MS/MS

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

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

7.7.9  
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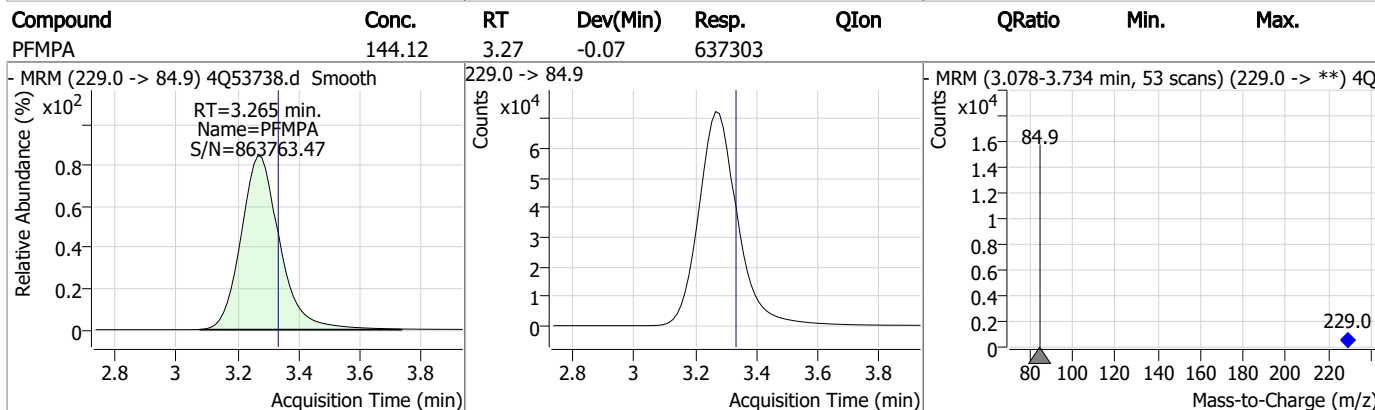
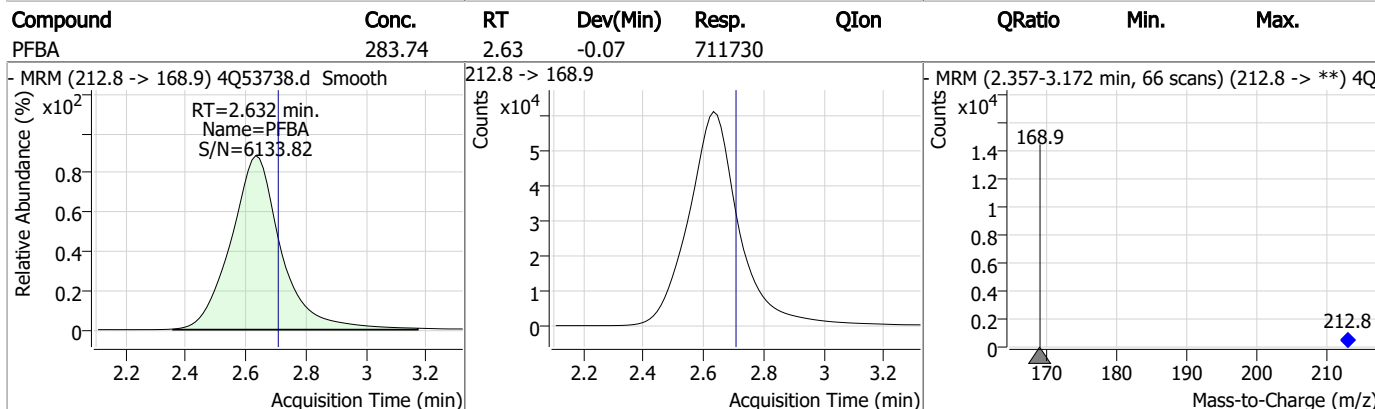
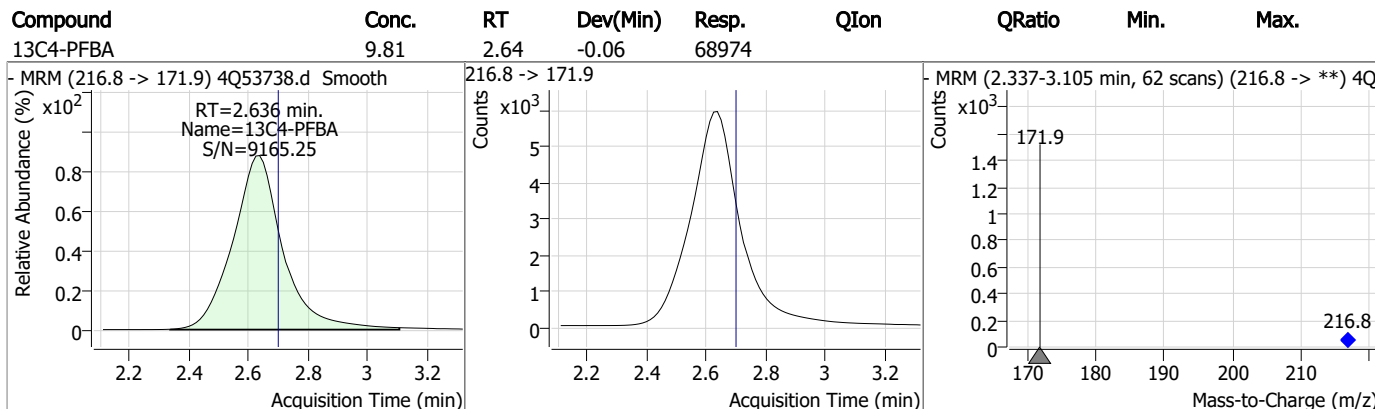
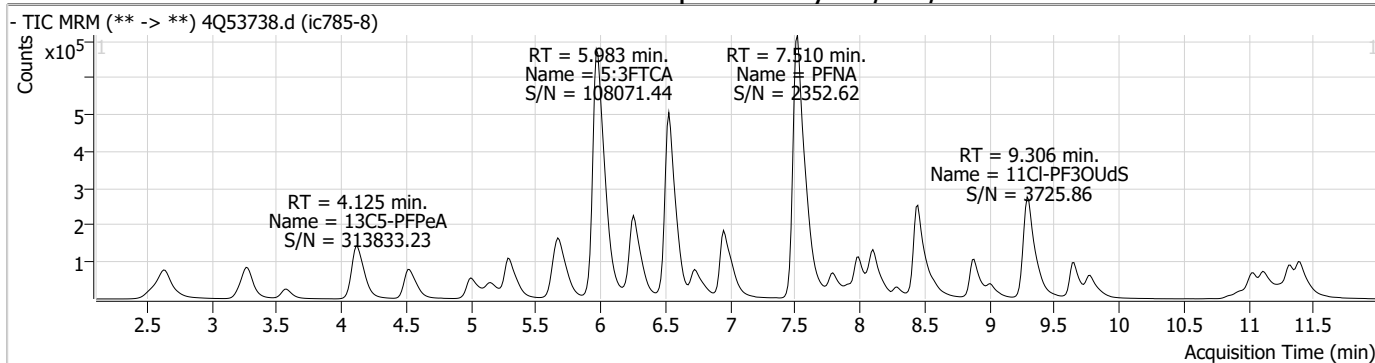
### Perfluorinated Compounds by LC/MS/MS

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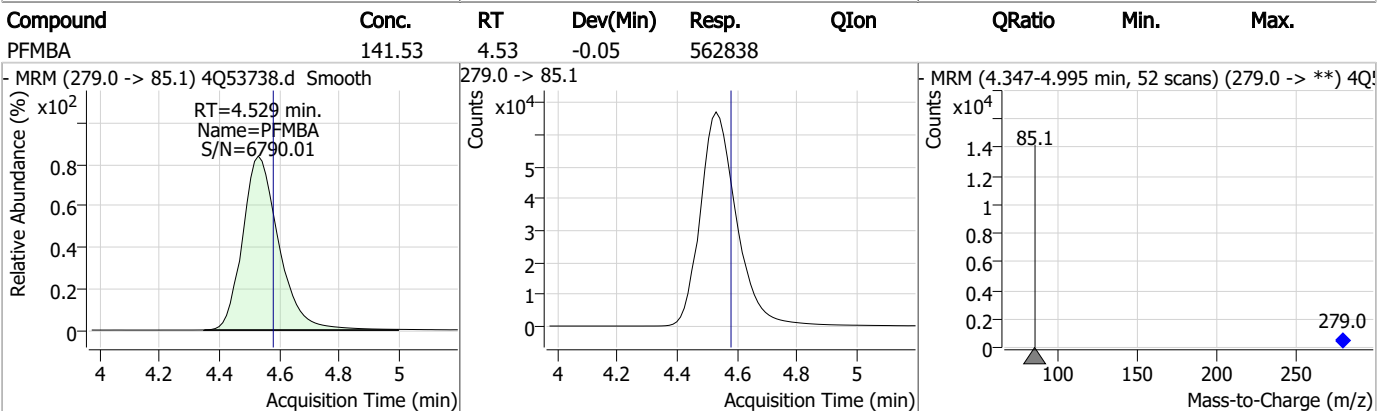
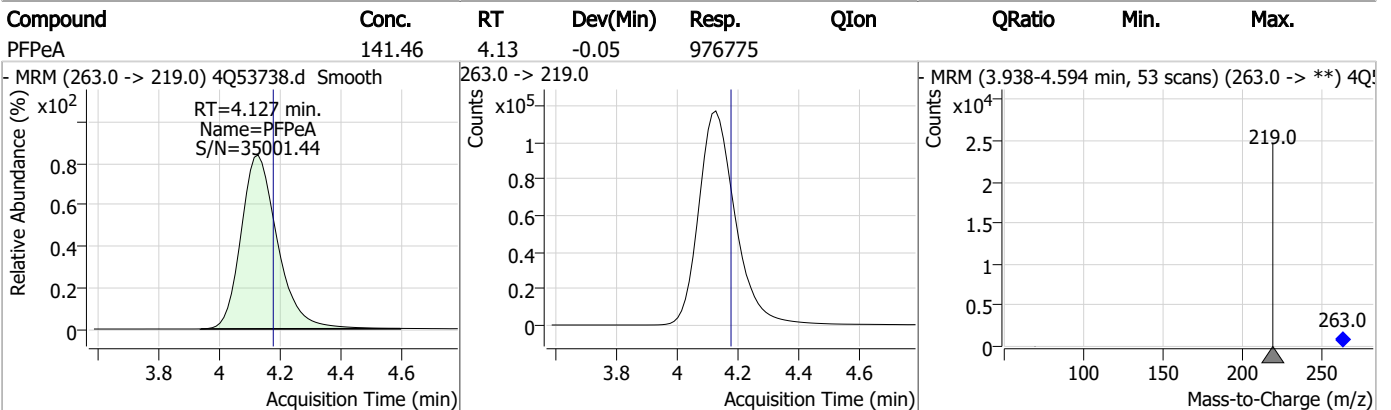
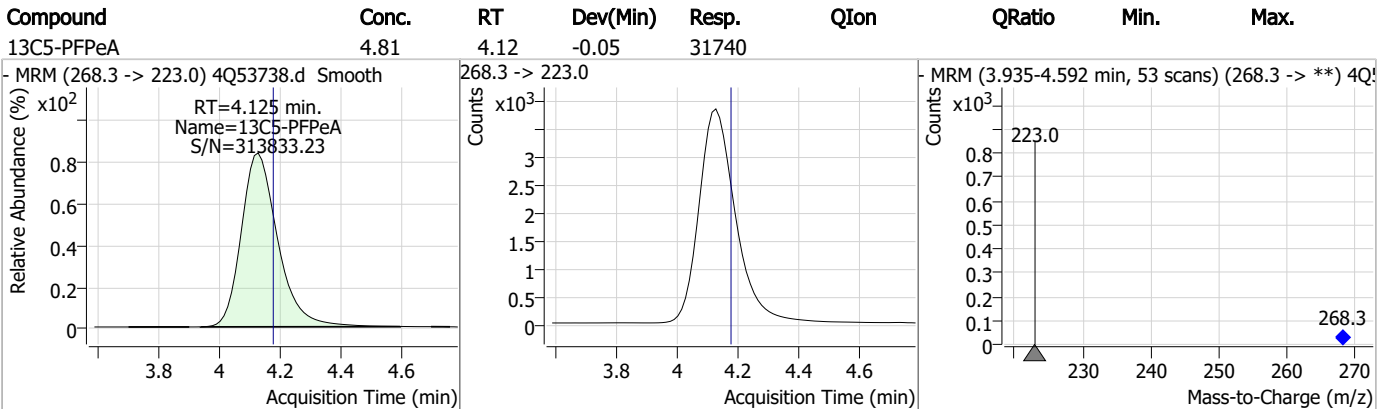
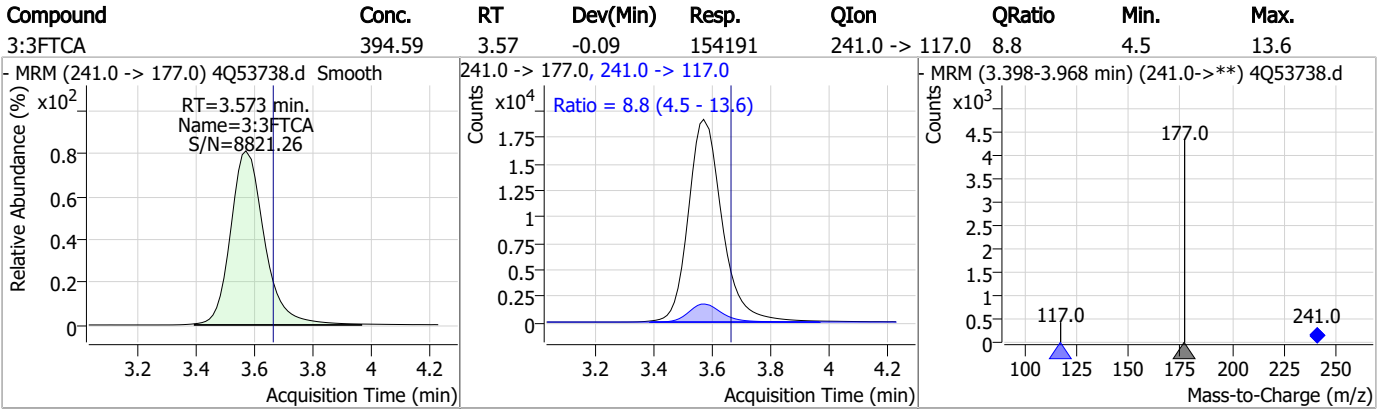
7.7.9

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### Perfluorinated Compounds by LC/MS/MS



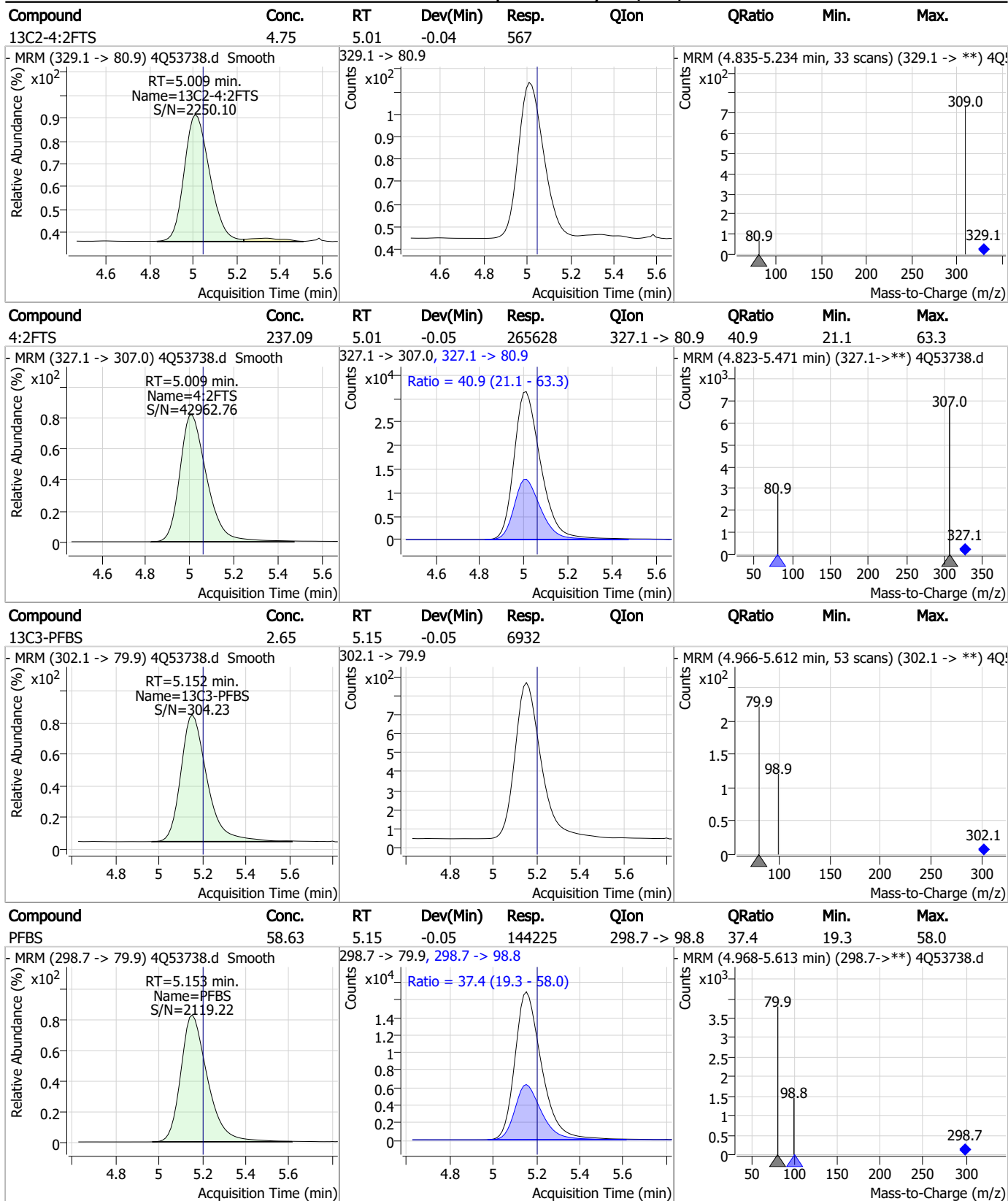
### Perfluorinated Compounds by LC/MS/MS



7.7.9

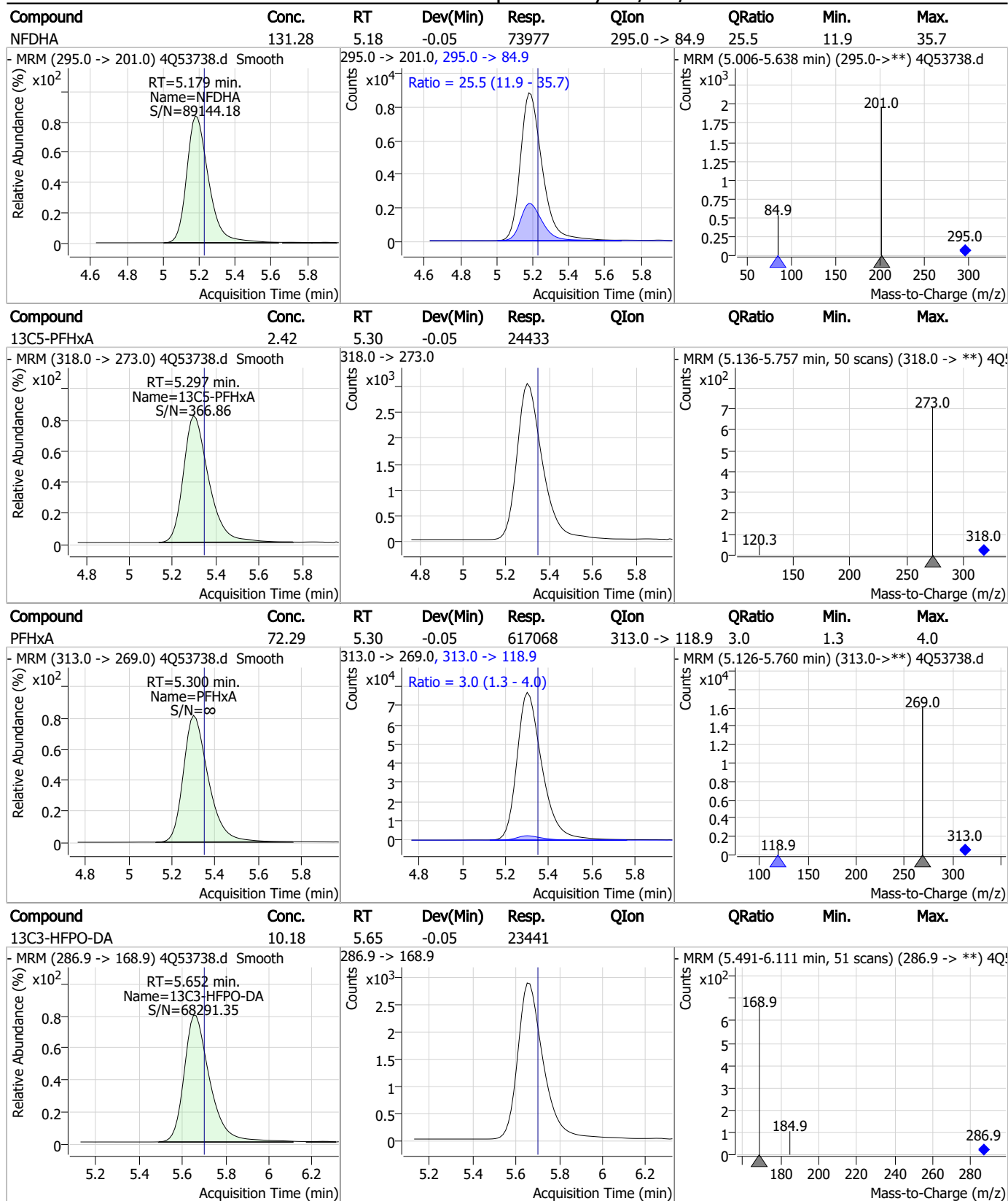
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### Perfluorinated Compounds by LC/MS/MS



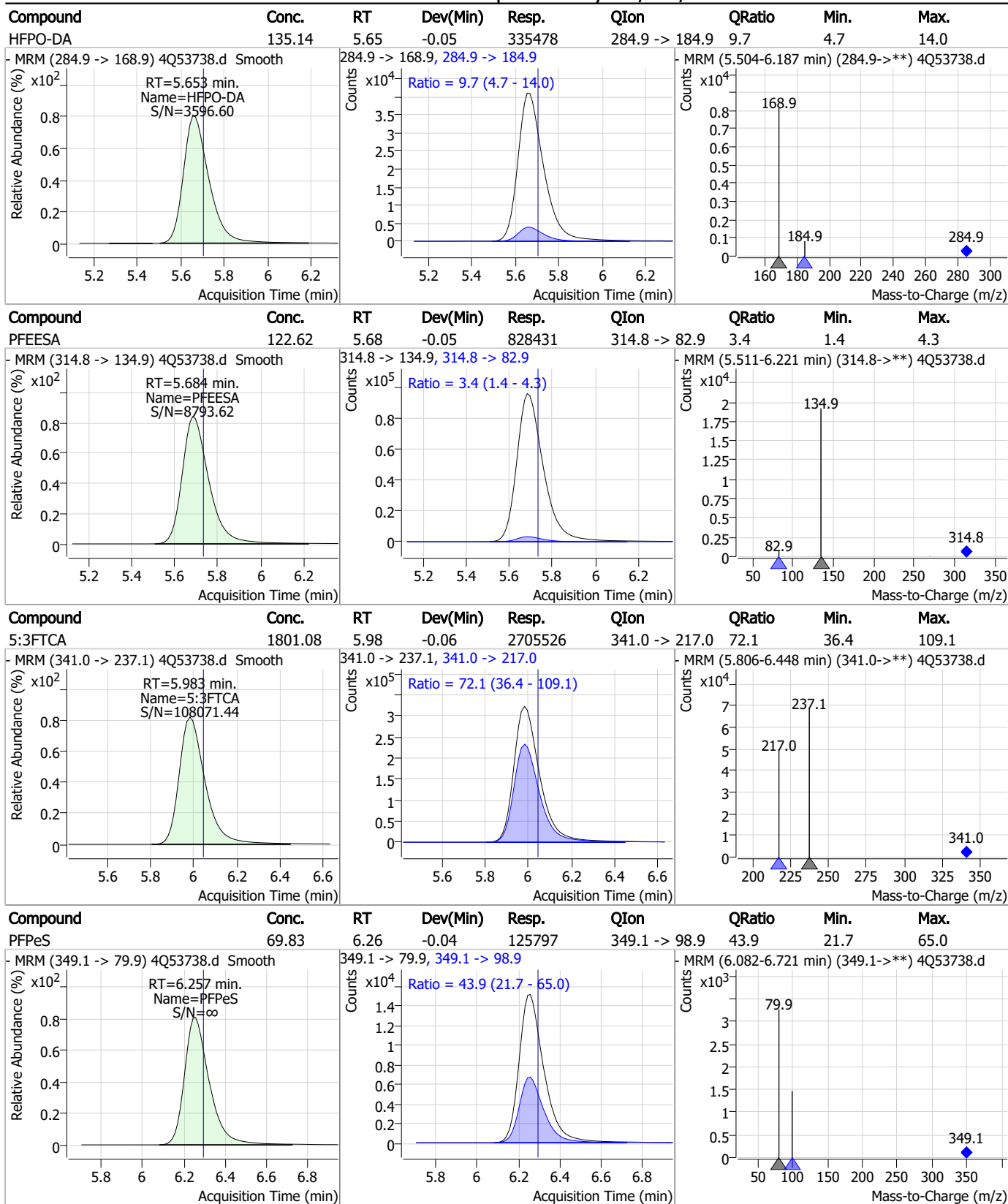
7.7.9  
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### Perfluorinated Compounds by LC/MS/MS



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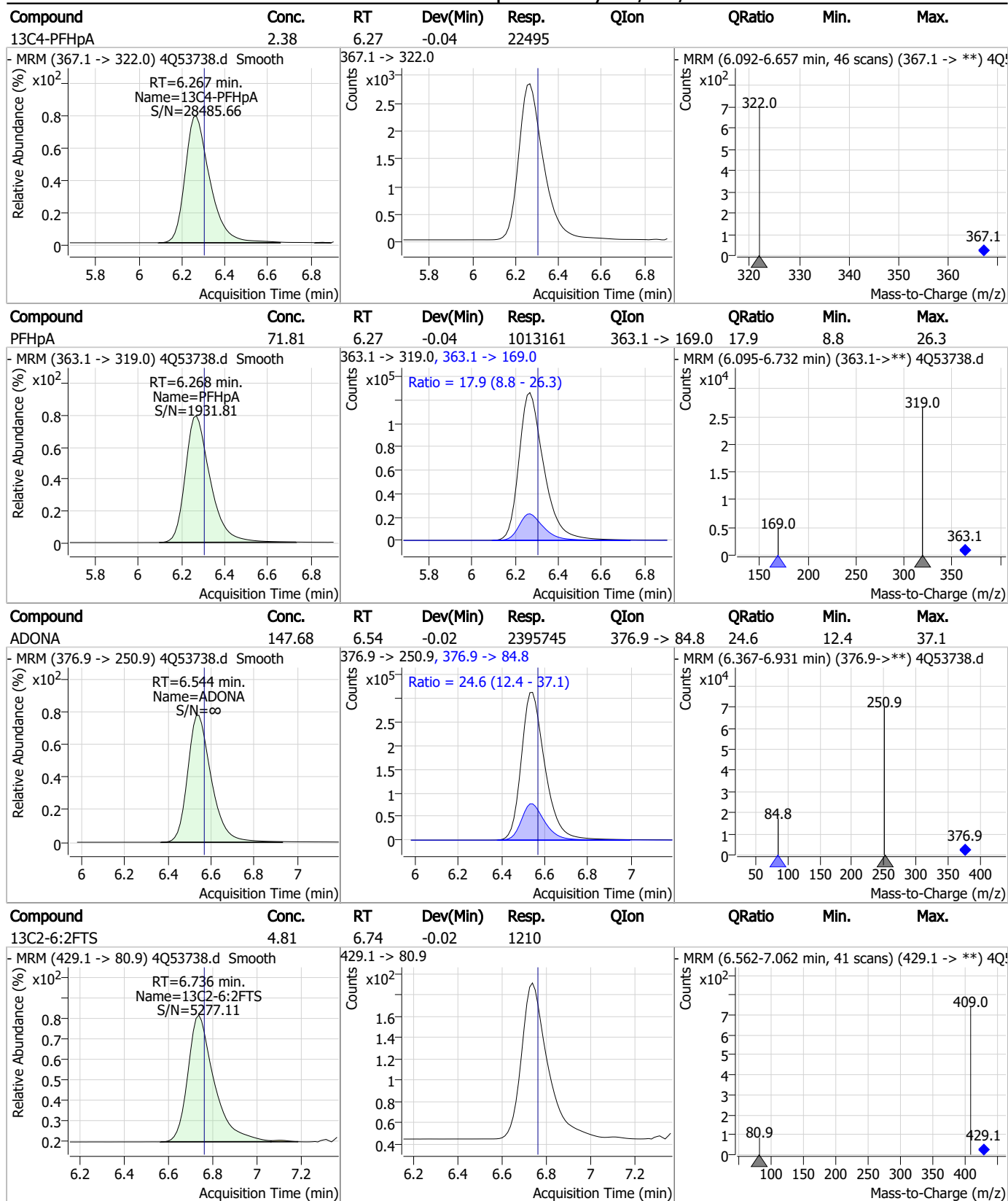
### Perfluorinated Compounds by LC/MS/MS



7.7.9  
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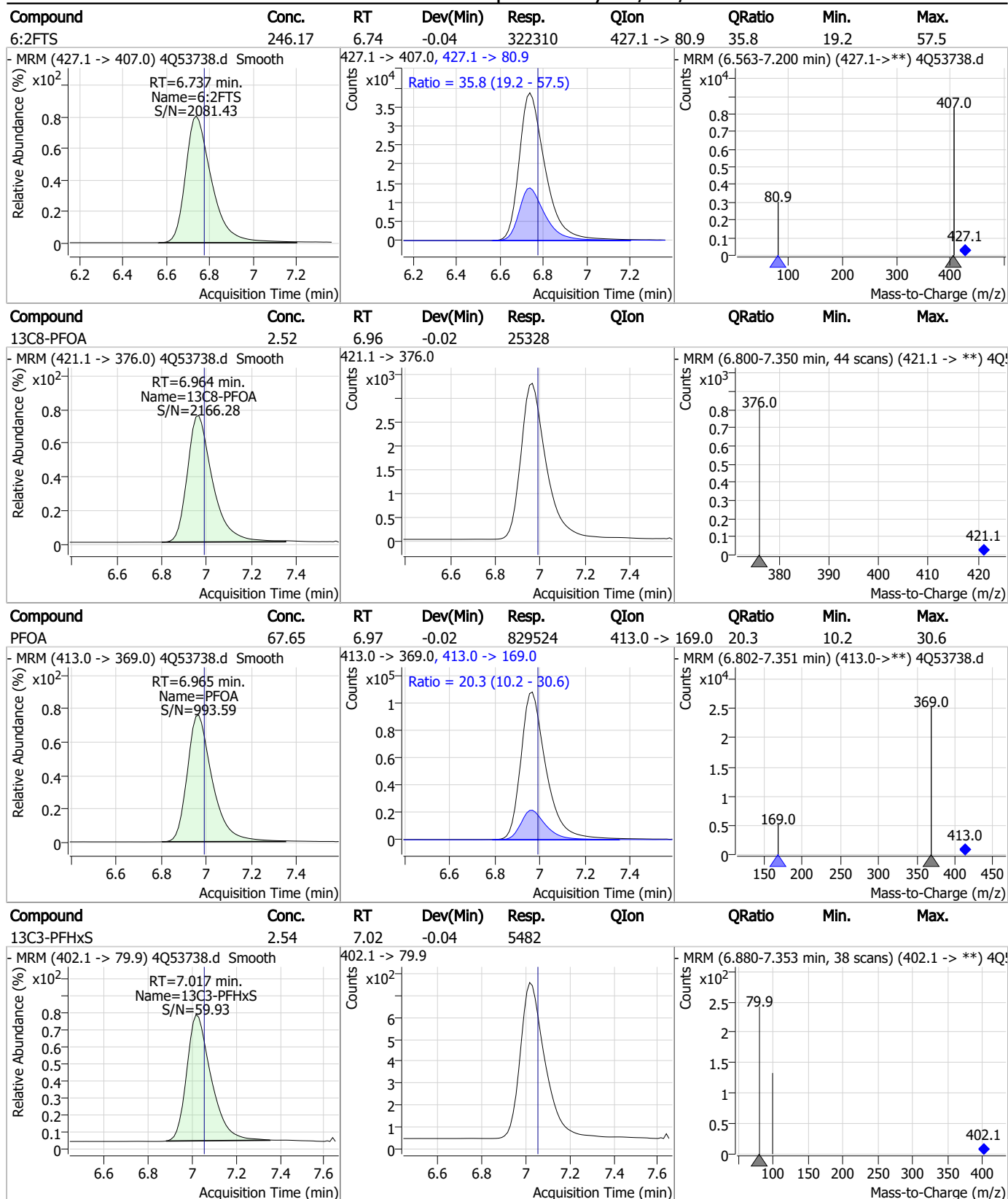


### Perfluorinated Compounds by LC/MS/MS



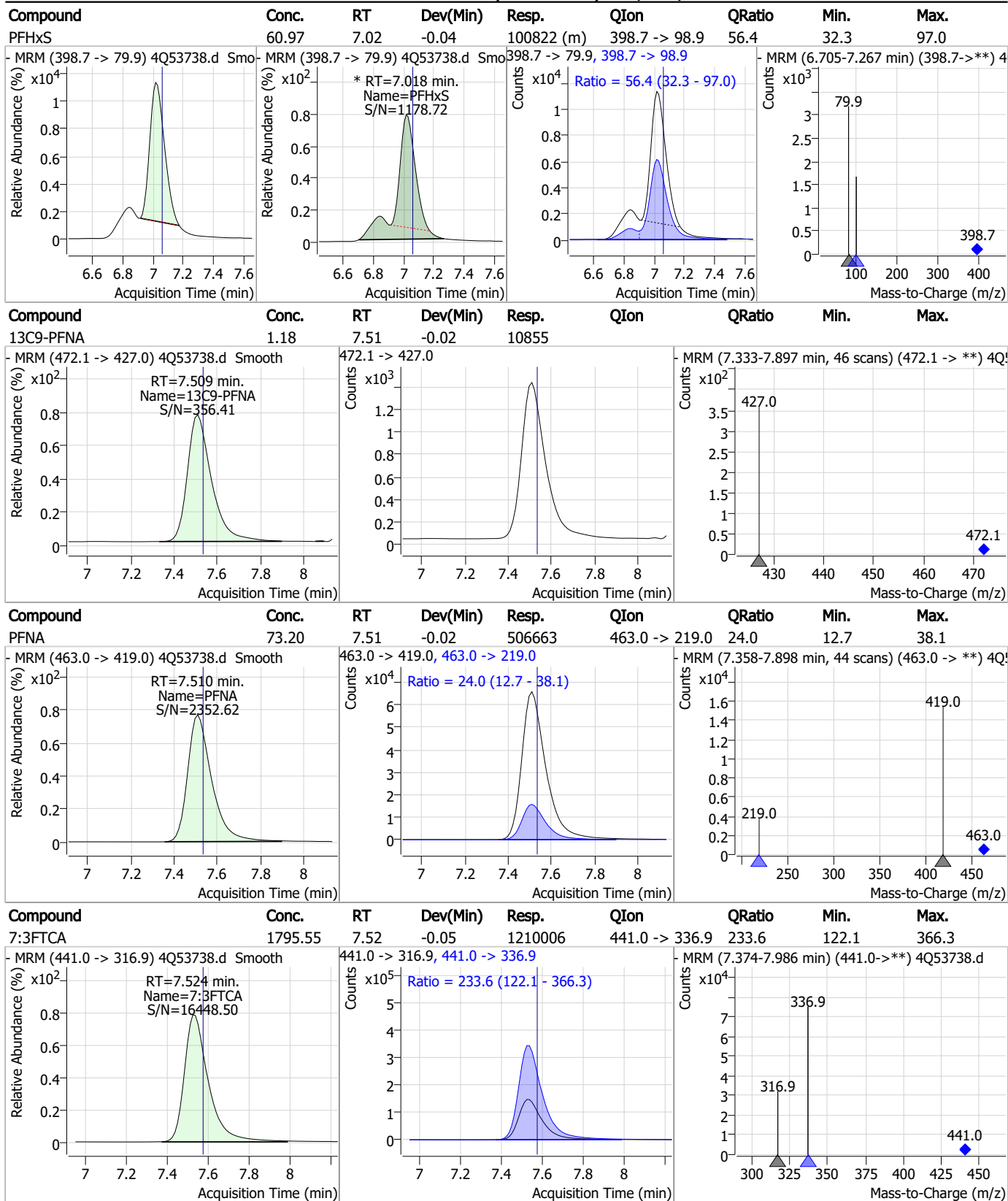
7.7.9  
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### Perfluorinated Compounds by LC/MS/MS



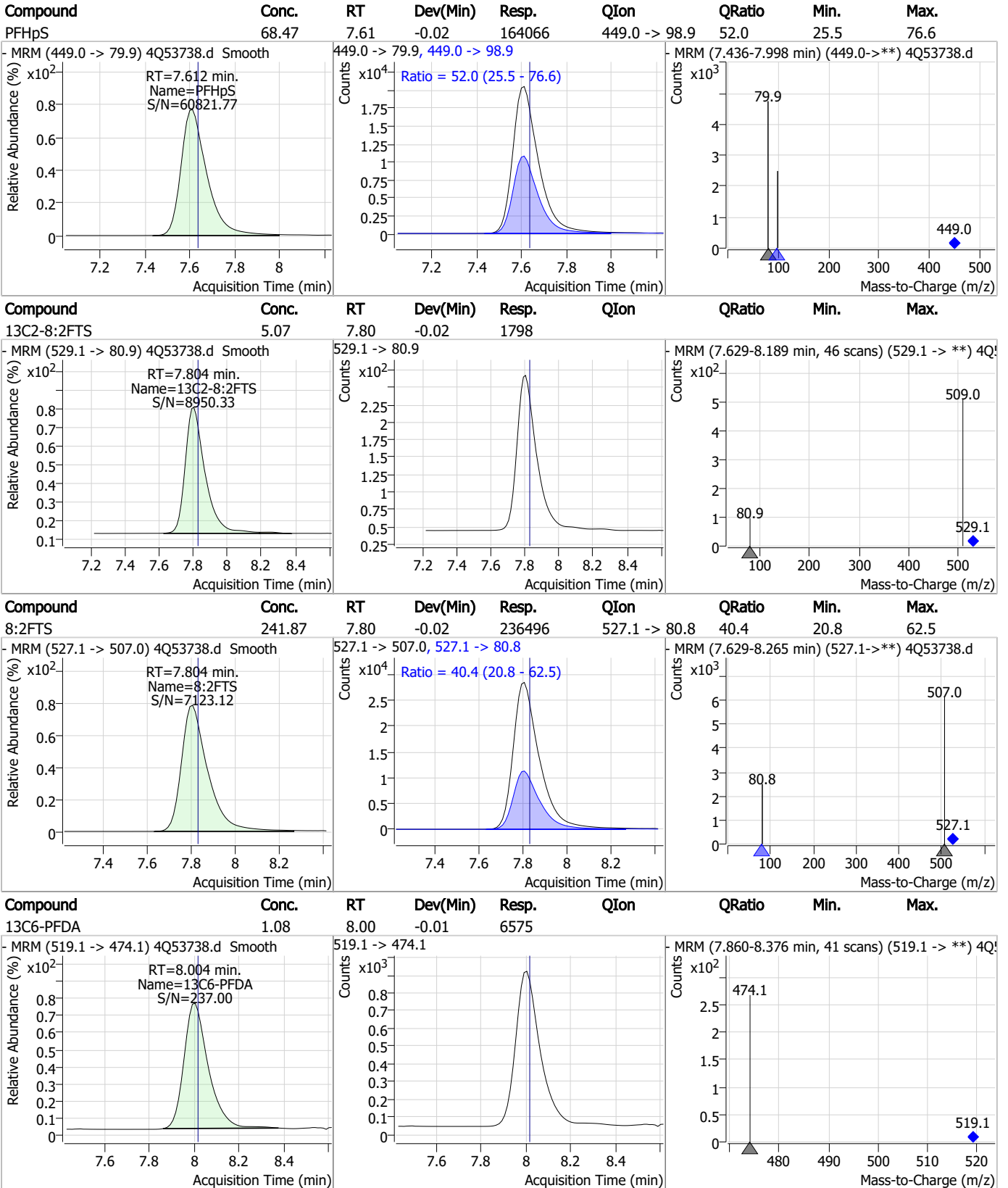
7.7.9  
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### Perfluorinated Compounds by LC/MS/MS



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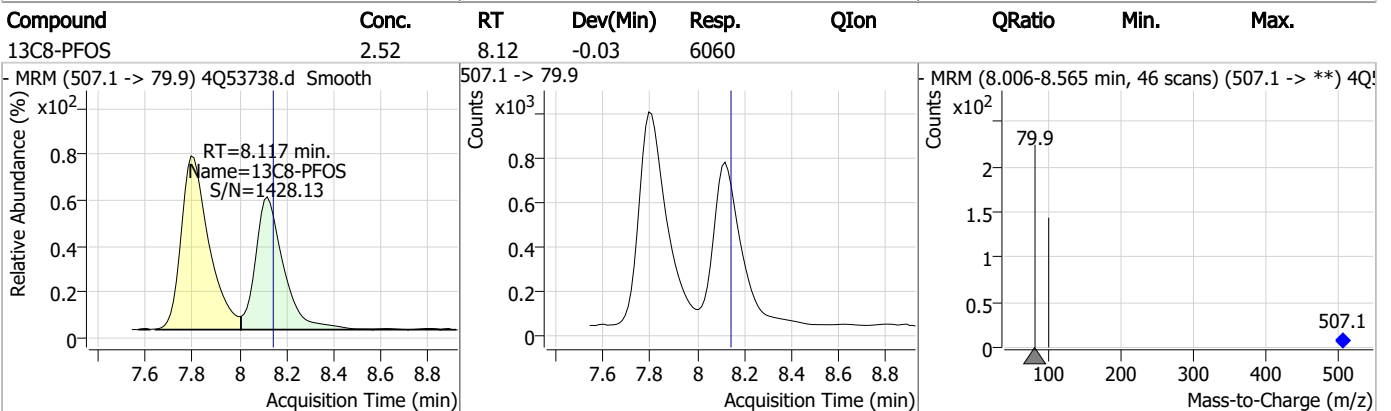
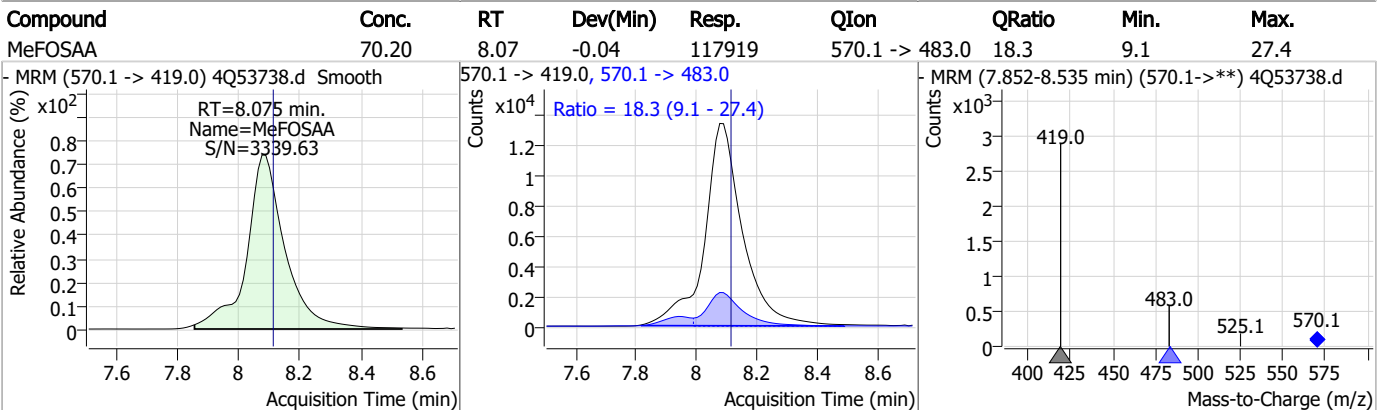
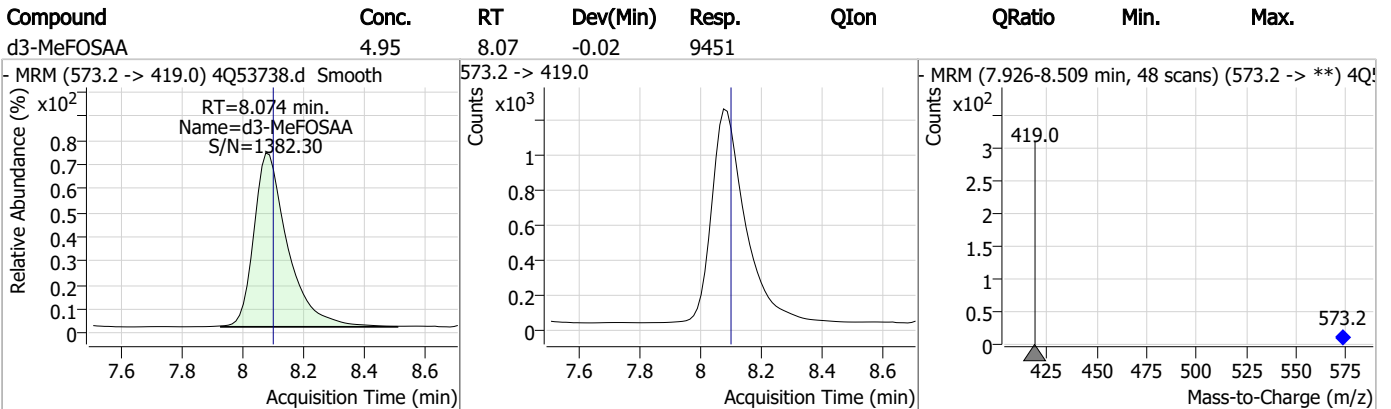
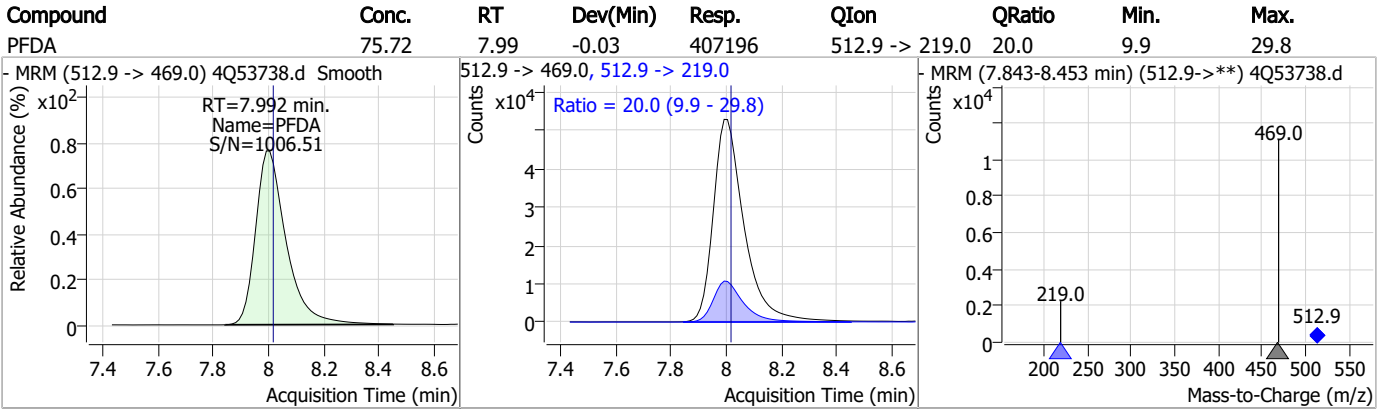
### Perfluorinated Compounds by LC/MS/MS



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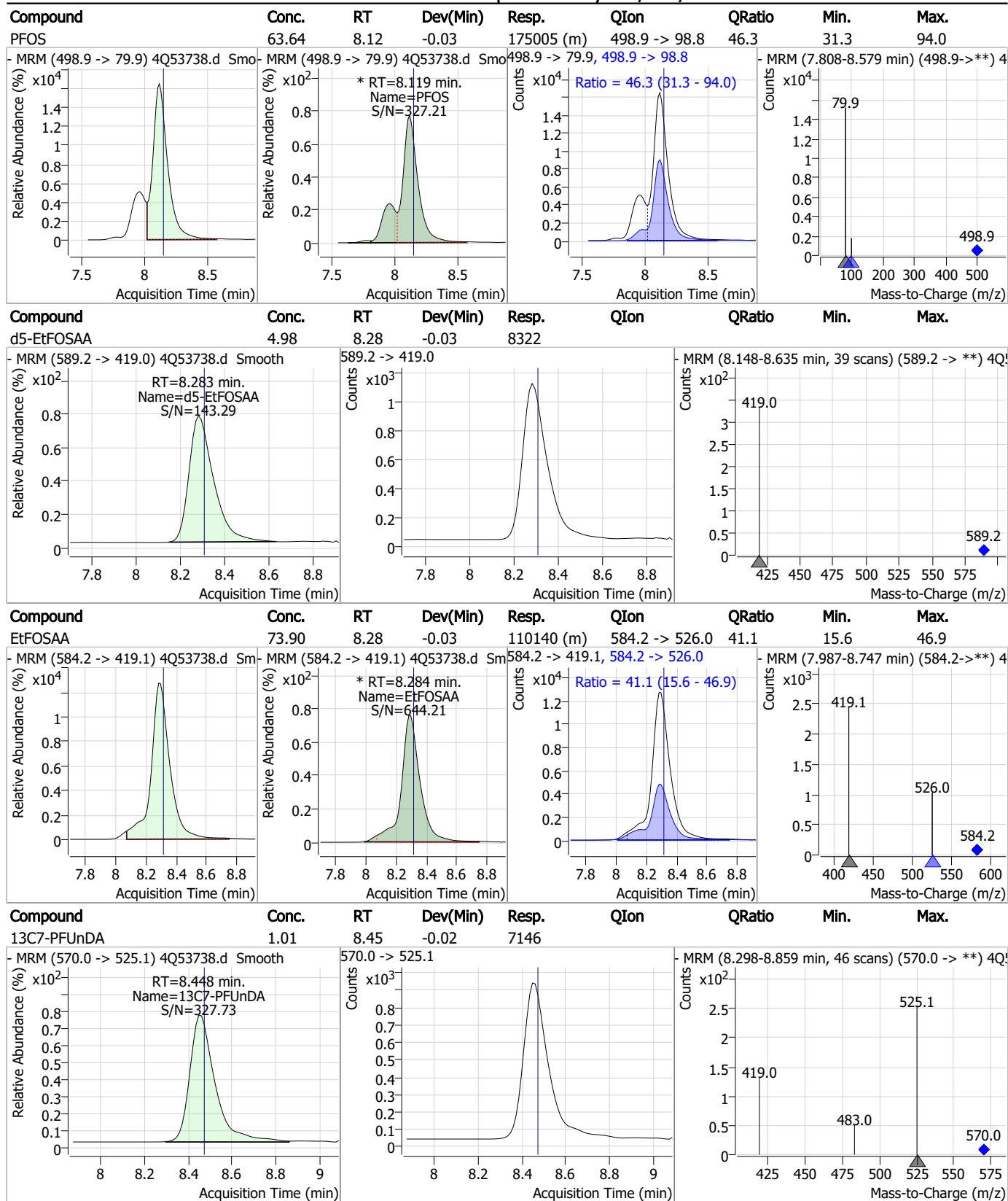
### Perfluorinated Compounds by LC/MS/MS



7.7.9

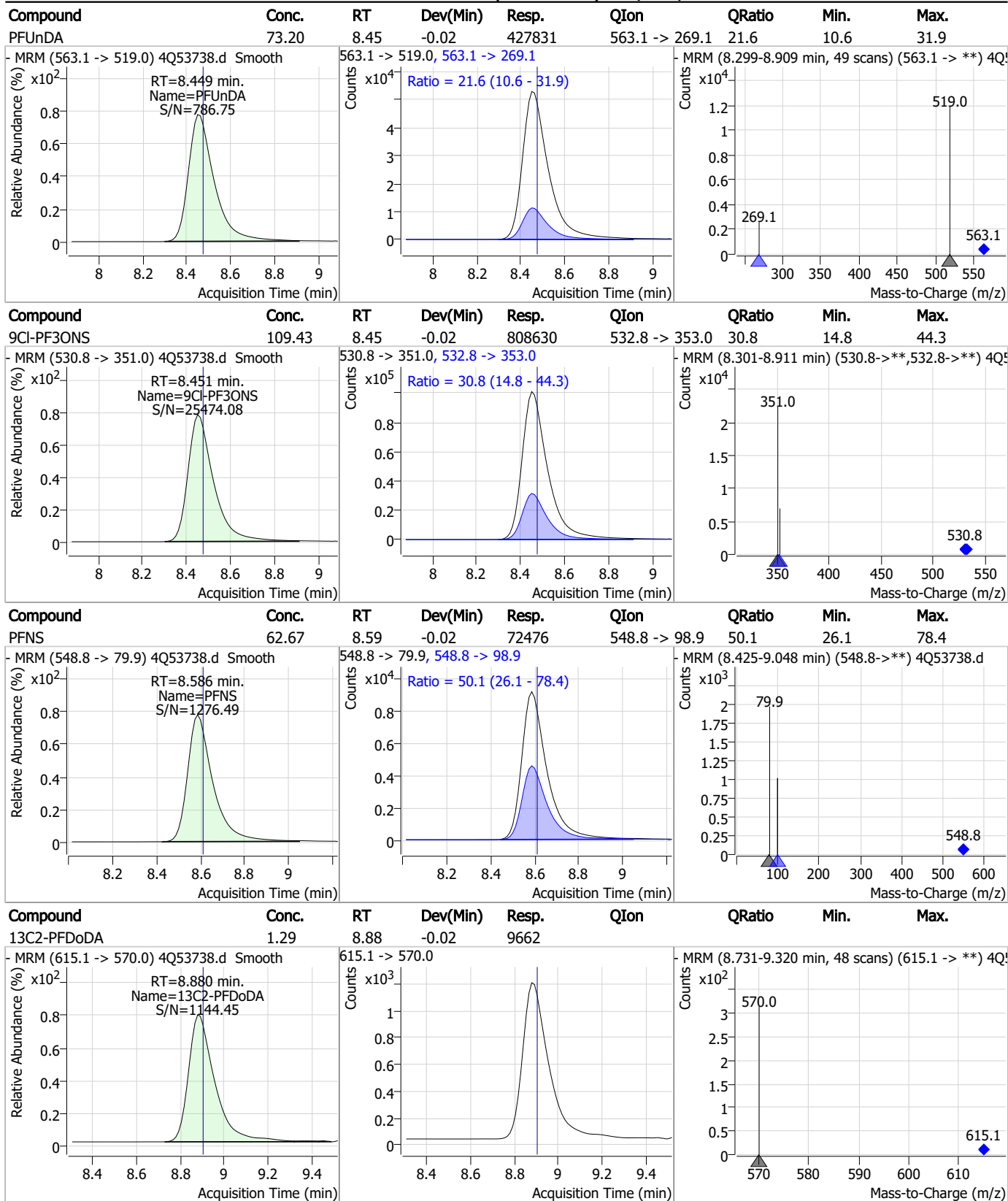
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### Perfluorinated Compounds by LC/MS/MS



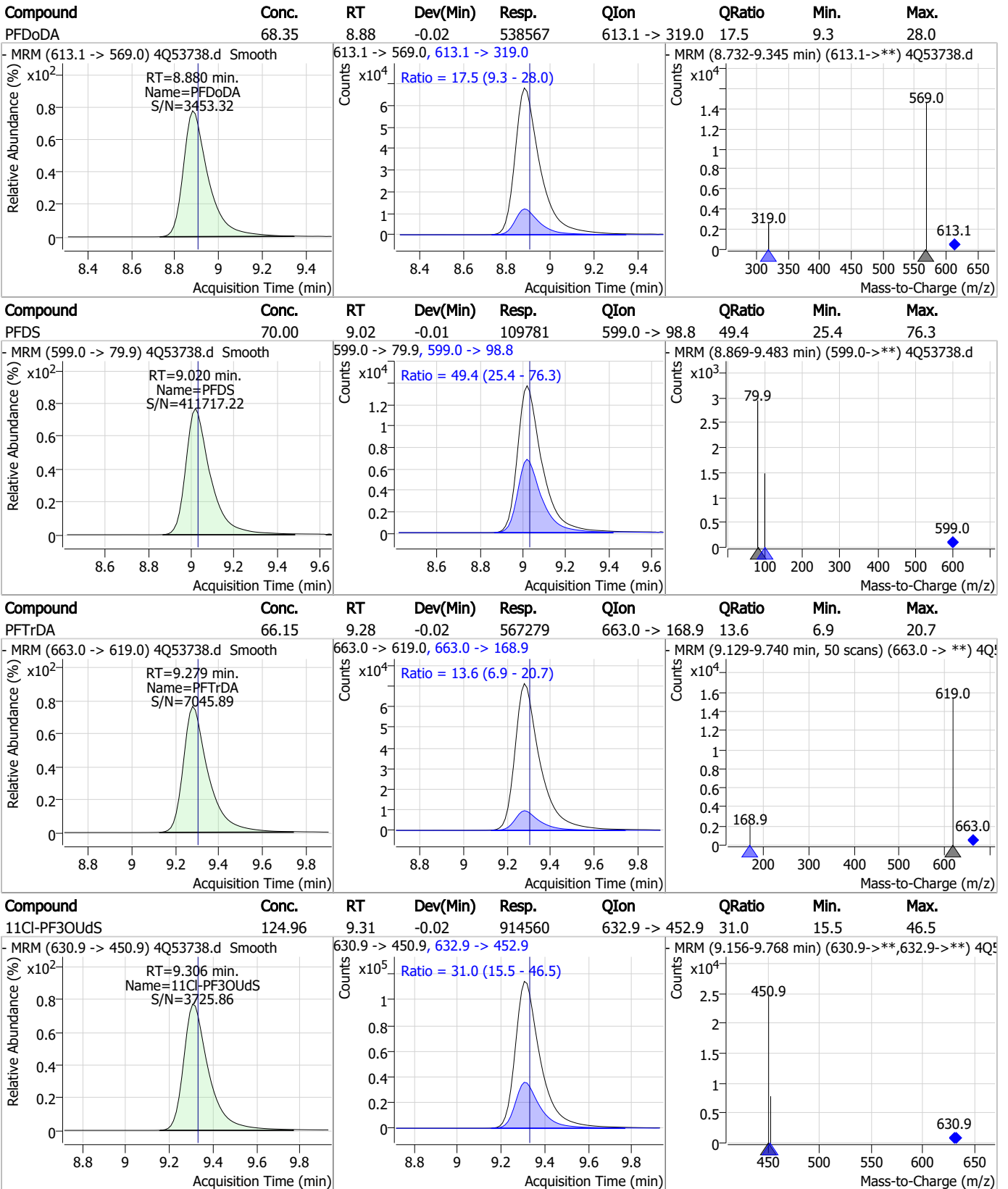
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### Perfluorinated Compounds by LC/MS/MS



7.7.9  
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Perfluorinated Compounds by LC/MS/MS

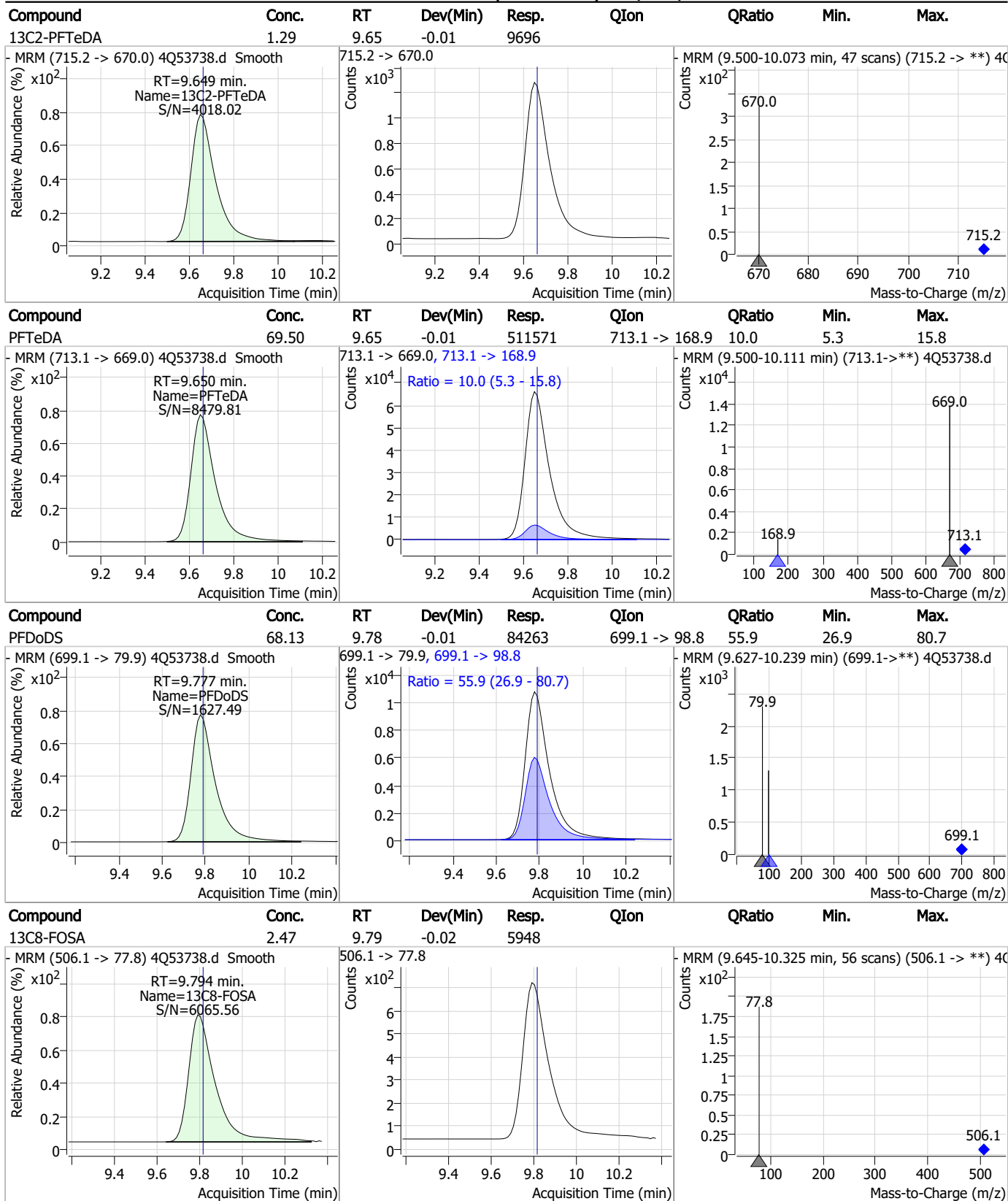


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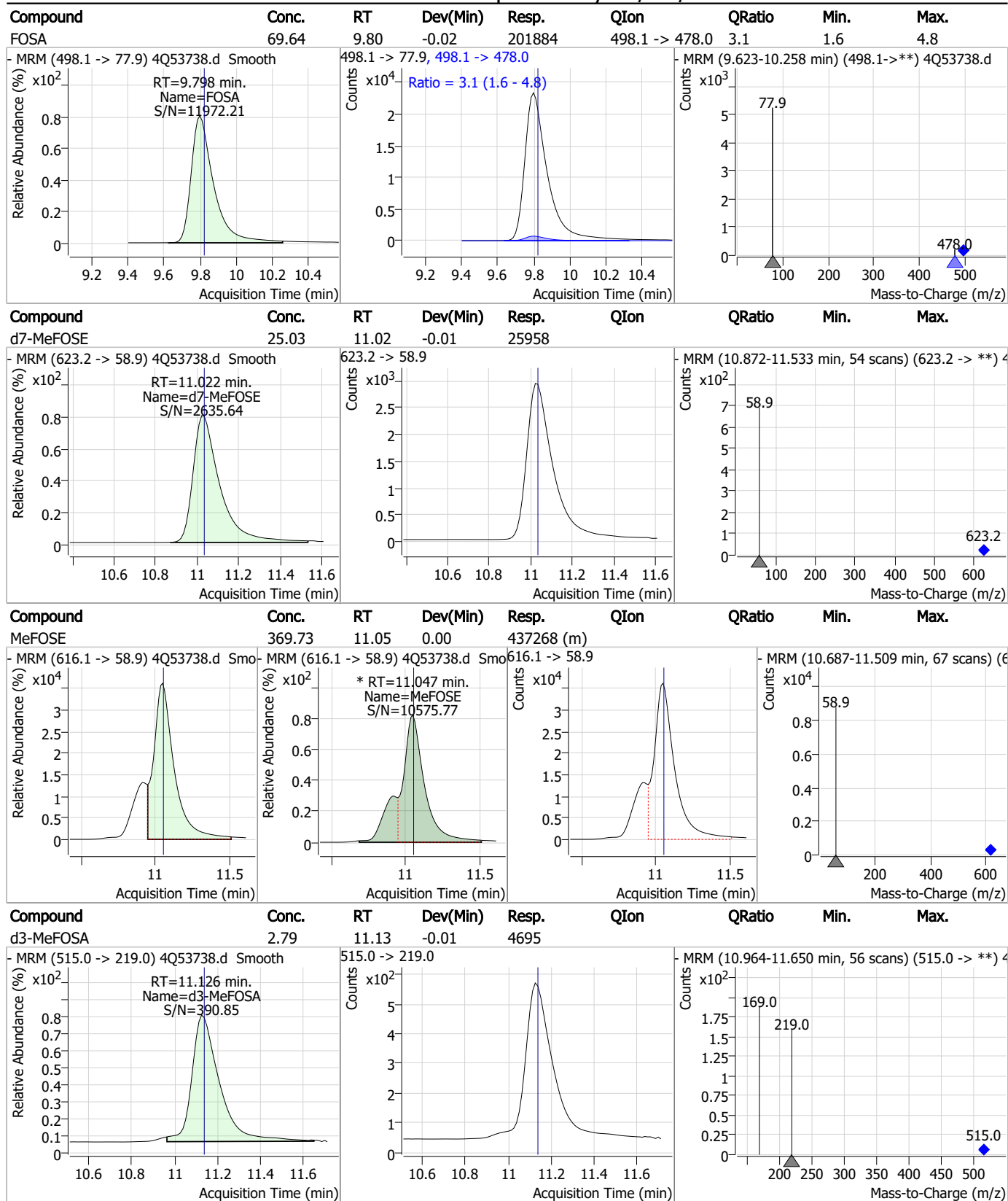


### Perfluorinated Compounds by LC/MS/MS



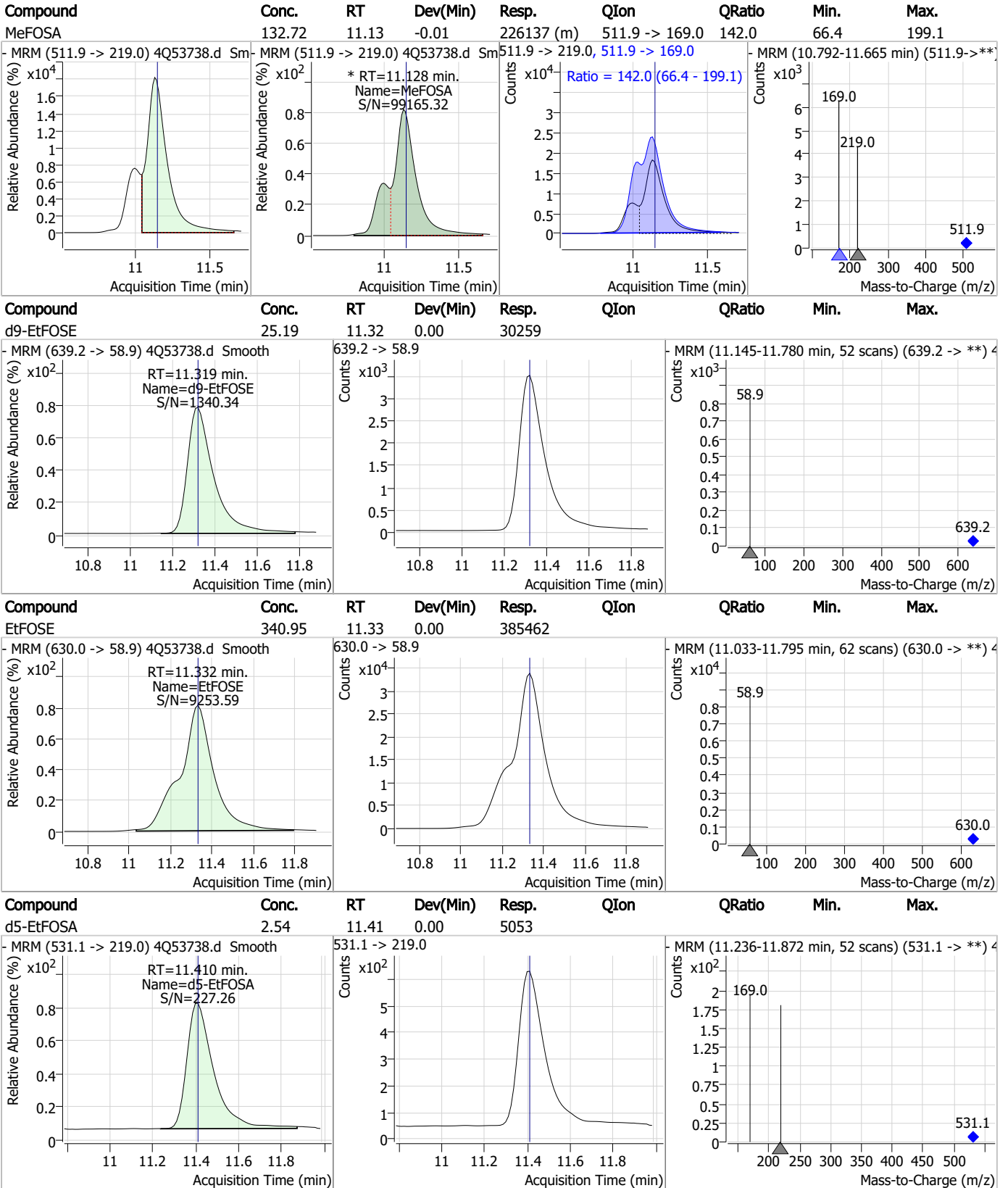
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### Perfluorinated Compounds by LC/MS/MS



7.7.9  
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### Perfluorinated Compounds by LC/MS/MS

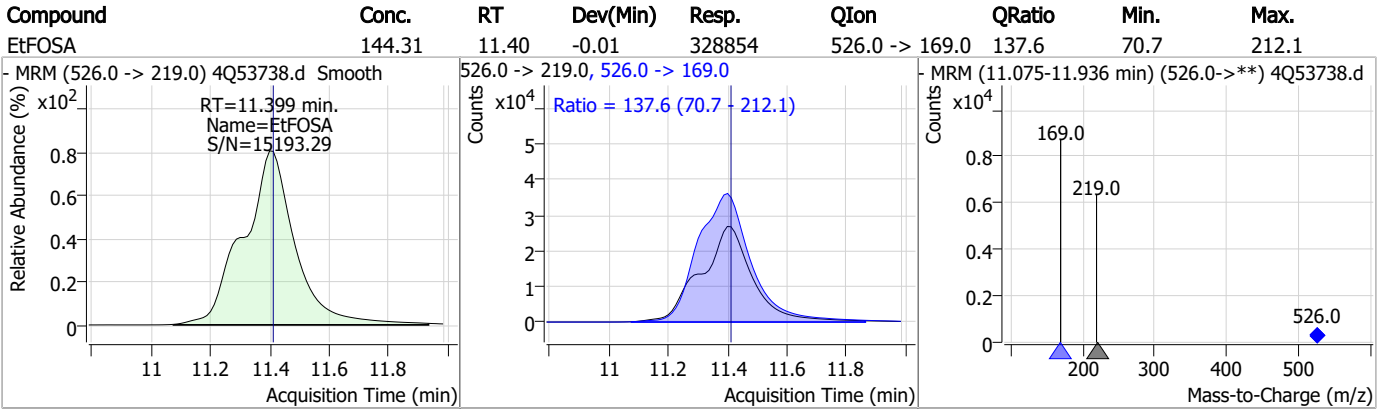


7.7.9

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### Perfluorinated Compounds by LC/MS/MS



7.7.9

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# Manual Integration Approval Summary

Sample Number: S4Q785-IC785      Method: EPA DRAFT 1633  
Lab FileID: 4Q53738.D      Analyst approved: 11/14/23 13:55 Anna Ludwig  
Injection Time: 11/13/23 17:42      Supervisor approved: 11/14/23 15:48 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak
MeFOSE	24448-09-7		11.05	Split peak
MeFOSA	31506-32-8		11.13	Split peak

7.7.9.1  
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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53740.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/13/2023 6:12:22 PM  
 Sample Name : icv785-4  
 Vial : P1-B3  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q785.batch.bin  
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.624	216.8 -> 171.9	91086	10.00 µg/L	-0.075
M5-PFPeA	4.112	268.3 -> 223.0	38704	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	30443	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	28170	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	31628	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	13639	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	9559	1.25 µg/L	-0.013
M7-PFUnDA	8.448	570.0 -> 525.1	11458	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	11245	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	11351	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	7646	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	8546	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6570	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7558	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	925	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1632	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2328	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	13119	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	26751	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	10087	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	31421	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	36290	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	6039	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4833	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6428	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	43251	5.00 µg/L	-0.075
18O2-PFHxS	7.016	403.0 -> 83.9	4466	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	36230	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	10134	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	13040	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	32003	2.50 µg/L	-0.050
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.009	329.1 -> 80.9	925	6.05 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.0%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1632	5.07 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2328	5.13 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C2-PFDoDA	8.880	615.1 -> 570.0	11245	1.23 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.4%		
13C2-PFTeDA	9.649	715.2 -> 670.0	11351	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C3-PFBS	5.152	302.1 -> 79.9	8546	2.55 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C3-PFHxS	7.017	402.1 -> 79.9	6570	2.37 µg/L	-0.037

7.7.10  
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### Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.9%		
13C4-PFBA	2.624	216.8 -> 171.9	91086	10.11 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C4-PFHpA	6.267	367.1 -> 322.0	28170	2.52 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C5-PFHxA	5.297	318.0 -> 273.0	30443	2.55 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C5-PFPeA	4.112	268.3 -> 223.0	38704	4.96 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C6-PFDA	8.004	519.1 -> 474.1	9559	1.28 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C7-PFUnDA	8.448	570.0 -> 525.1	11458	1.33 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.4%		
13C8-FOSA	9.794	506.1 -> 77.8	7646	2.49 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C8-PFOA	6.964	421.1 -> 376.0	31628	2.45 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C8-PFOS	8.117	507.1 -> 79.9	7558	2.46 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C9-PFNA	7.509	472.1 -> 427.0	13639	1.33 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.1%		
d3-MeFOSAA	8.074	573.2 -> 419.0	13119	5.38 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.6%		
13C3-HFPO-DA	5.652	286.9 -> 168.9	26751	9.82 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 98.2%		
d3-MeFOSA	11.126	515.0 -> 219.0	4833	2.25 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.1%		
d5-EtFOSAA	8.283	589.2 -> 419.0	10087	4.72 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.5%		
d7-MeFOSE	11.022	623.2 -> 58.9	31421	23.73 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 94.9%		
d9-EtFOSE	11.319	639.2 -> 58.9	36290	23.66 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 94.6%		
d5-EtFOSA	11.397	531.1 -> 219.0	6039	2.37 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.9%		
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.009	327.1 -> 307.0	15577	8.52 µg/L	99
		327.1 -> 80.9	6429		
6:2FTS	6.737	427.1 -> 407.0	18273	10.34 µg/L	99
		427.1 -> 80.9	6878		
8:2FTS	7.804	527.1 -> 507.0	13418	10.60 µg/L	96
		527.1 -> 80.8	5943		
EtFOSAA	8.284	584.2 -> 419.1	5237	2.90 µg/L	m 86
		584.2 -> 526.0	2047		
FOSA	9.798	498.1 -> 77.9	8990	2.41 µg/L	100
		498.1 -> 478.0	283		
MeFOSAA	8.087	570.1 -> 419.0	5522	2.37 µg/L	97
		570.1 -> 483.0	1087		
PFBA	2.620	212.8 -> 168.9	32434	9.79 µg/L	100
PFBS	5.153	298.7 -> 79.9	6169	2.03 µg/L	98
		298.7 -> 98.8	2466		
PFDA	8.005	512.9 -> 469.0	18159	2.32 µg/L	98
		512.9 -> 219.0	3796		
PFDODA	8.880	613.1 -> 569.0	22197	2.42 µg/L	99
		613.1 -> 319.0	4210		
PFDS	9.020	599.0 -> 79.9	4552	2.33 µg/L	97

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	2419	2.48	µg/L	97
		363.1 -> 319.0	43766			
PFHpS	7.612	363.1 -> 169.0	8154	2.49	µg/L	95
		449.0 -> 79.9	7429			
PFHxA	5.300	449.0 -> 98.9	3547	2.32	µg/L	97
		313.0 -> 269.0	24623			
PFHxS	7.018	313.0 -> 118.9	923	2.55	µg/L	m
		398.7 -> 79.9	5053			
PFNA	7.510	398.7 -> 98.9	2592	2.44	µg/L	98
		463.0 -> 419.0	21232			
PFNS	8.586	463.0 -> 219.0	5203	2.38	µg/L	99
		548.8 -> 79.9	3435			
PFOA	6.965	548.8 -> 98.9	1813	2.36	µg/L	98
		413.0 -> 369.0	36189			
PFOS	8.119	413.0 -> 169.0	7700	2.15	µg/L	m
		498.9 -> 79.9	7372			
PFPeA	4.114	498.9 -> 98.8	4045	4.92	µg/L	100
		263.0 -> 219.0	41399			
PFPeS	6.257	349.1 -> 79.9	4953	2.29	µg/L	87
		349.1 -> 98.9	2558			
PFTeDA	9.650	713.1 -> 669.0	20611	2.39	µg/L	99
		713.1 -> 168.9	2264			
PFTrDA	9.279	663.0 -> 619.0	26131	2.62	µg/L	100
		663.0 -> 168.9	3635			
PFUnDA	8.449	563.1 -> 519.0	23372	2.49	µg/L	99
		563.1 -> 269.1	4920			
11CI-PF3OUdS	9.306	630.9 -> 450.9	39295	4.70	µg/L	100
		632.9 -> 452.9	12136			
9CI-PF3ONS	8.451	530.8 -> 351.0	40084	4.75	µg/L	99
		532.8 -> 353.0	12107			
ADONA	6.544	376.9 -> 250.9	102870	5.56	µg/L	99
		376.9 -> 84.8	25018			
HFPO-DA	5.665	284.9 -> 168.9	13709	4.84	µg/L	98
		284.9 -> 184.9	1377			
3:3FTCA	3.561	241.0 -> 177.0	6152	11.92	µg/L	98
		241.0 -> 117.0	526			
5:3FTCA	5.983	341.0 -> 237.1	110953	59.28	µg/L	99
		341.0 -> 217.0	79965			
7:3FTCA	7.524	441.0 -> 316.9	50091	59.66	µg/L	98
		441.0 -> 336.9	120956			
EtFOSA	11.399	526.0 -> 219.0	13974	5.13	µg/L	95
		526.0 -> 169.0	18861			
EtFOSE	11.332	630.0 -> 58.9	17339	12.79	µg/L	100
		511.9 -> 219.0	9616			
MeFOSA	11.128	511.9 -> 169.0	13744	5.48	µg/L	91
		616.1 -> 58.9	18129			
MeFOSE	11.047	699.1 -> 79.9	3715	12.66	µg/L	100
		699.1 -> 98.8	2076			
PFDoDS	9.777	295.0 -> 201.0	3611	2.41	µg/L	97
		295.0 -> 84.9	956			
NFDHA	5.179	279.0 -> 85.1	23702	5.14	µg/L	95
		229.0 -> 84.9	26450			
PFMBA	4.529	314.8 -> 134.9	36393	4.89	µg/L	100
PFMPA	3.265	314.8 -> 82.9	1306	4.91	µg/L	100
PFEESA	5.684			4.32	µg/L	98

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





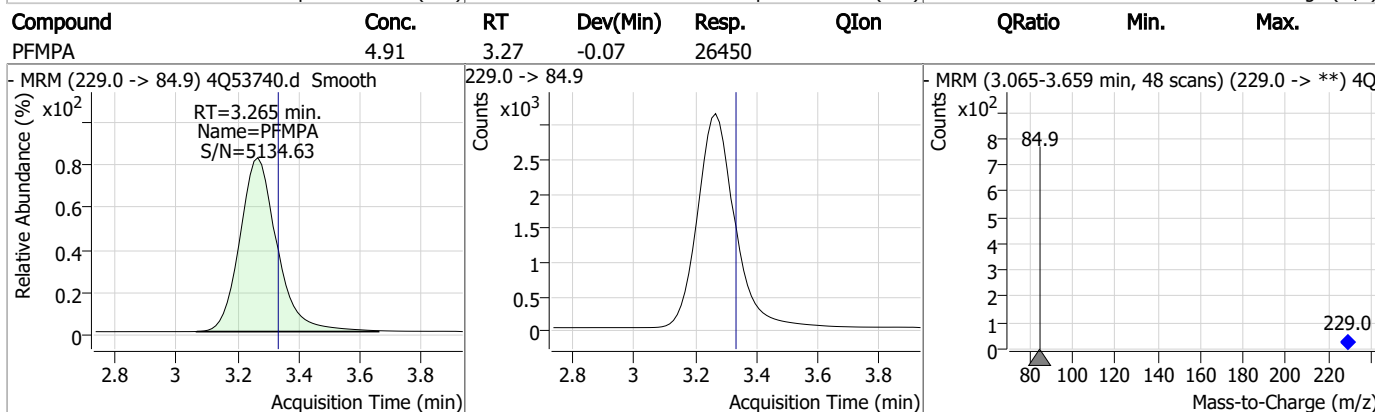
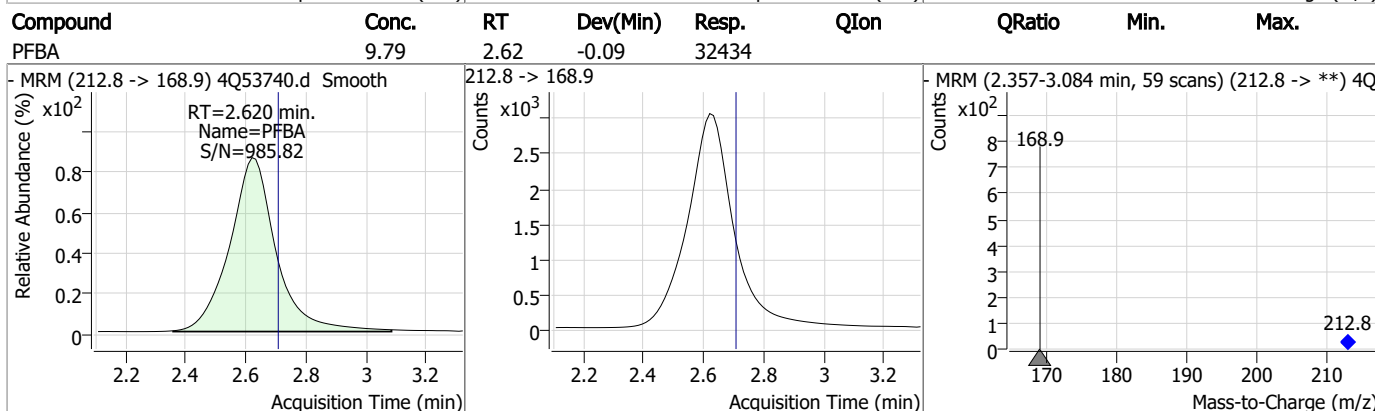
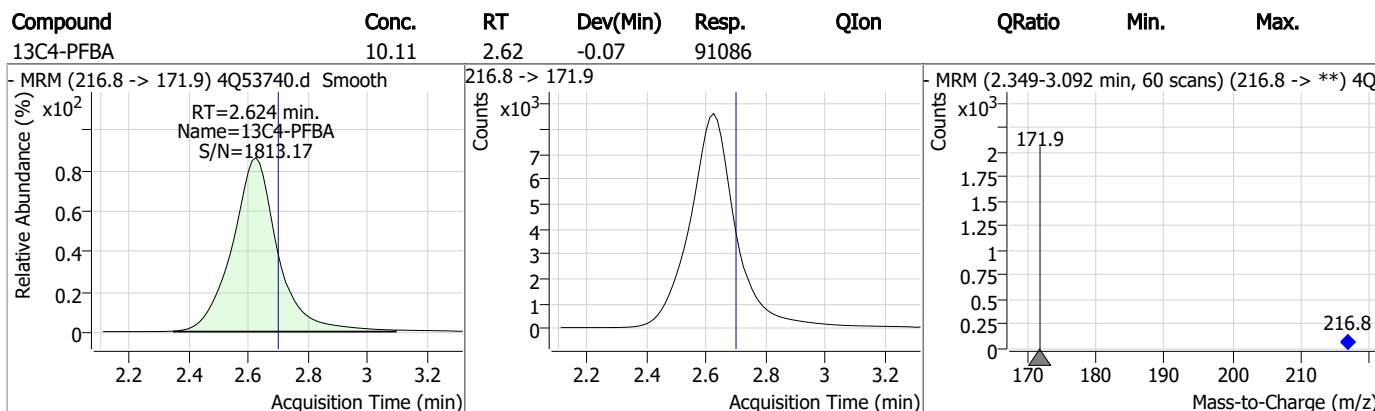
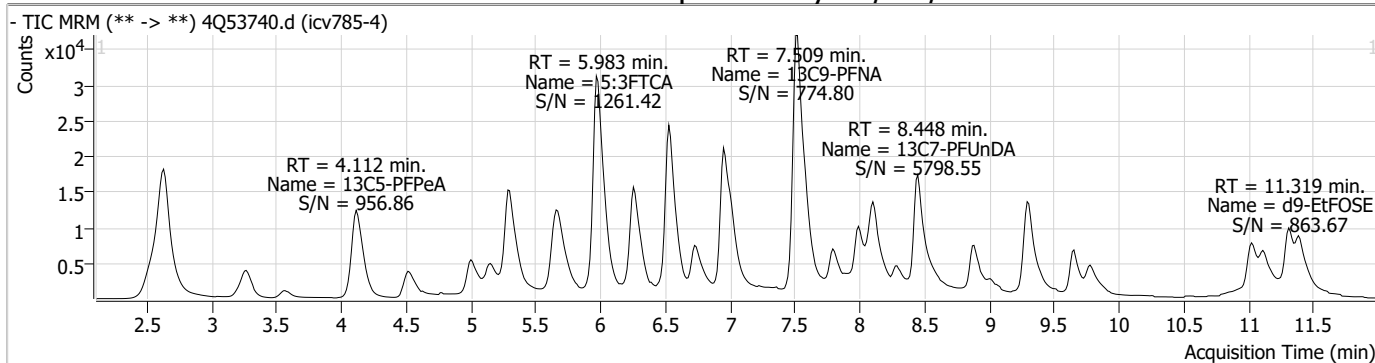
### Perfluorinated Compounds by LC/MS/MS

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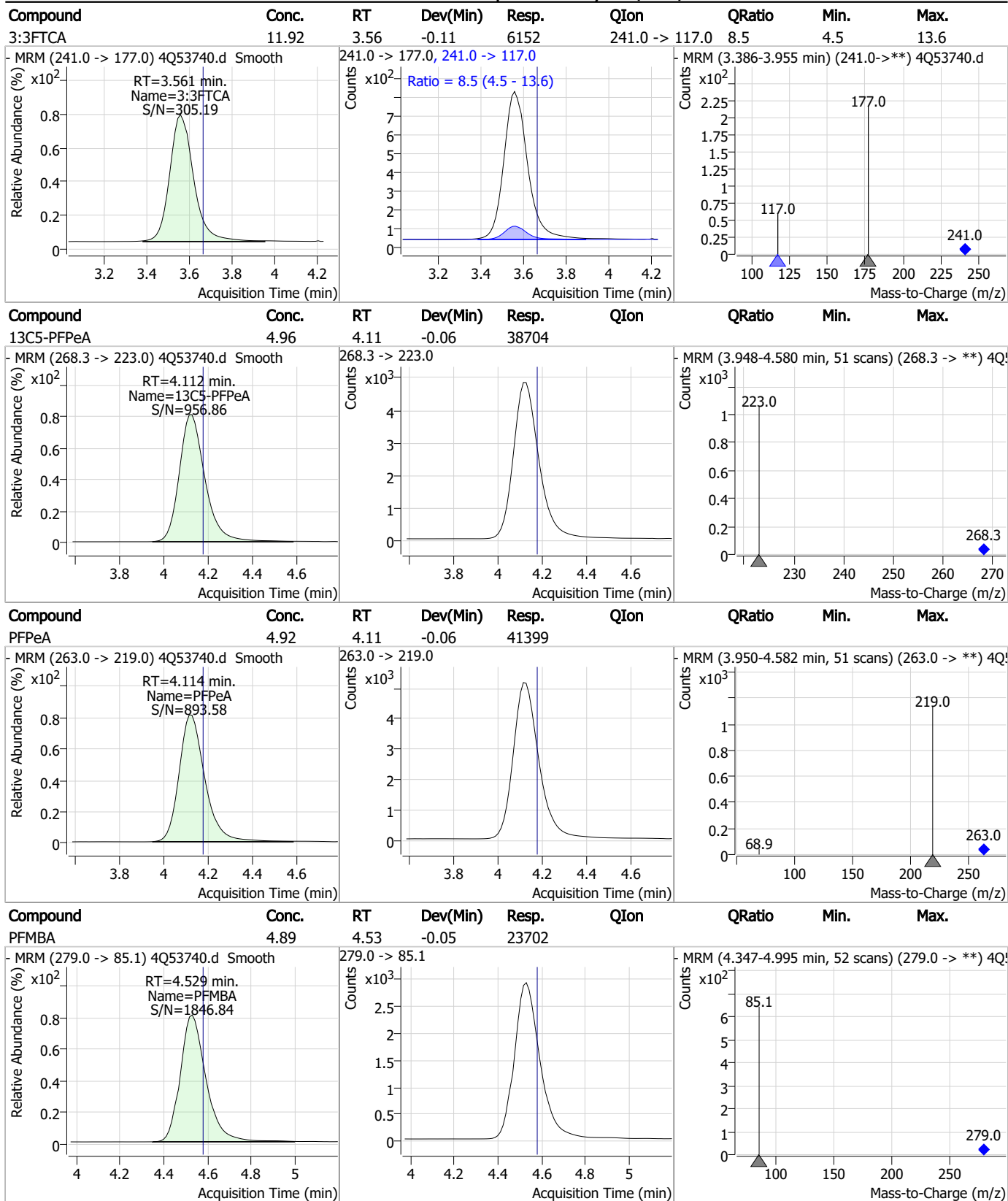
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### Perfluorinated Compounds by LC/MS/MS

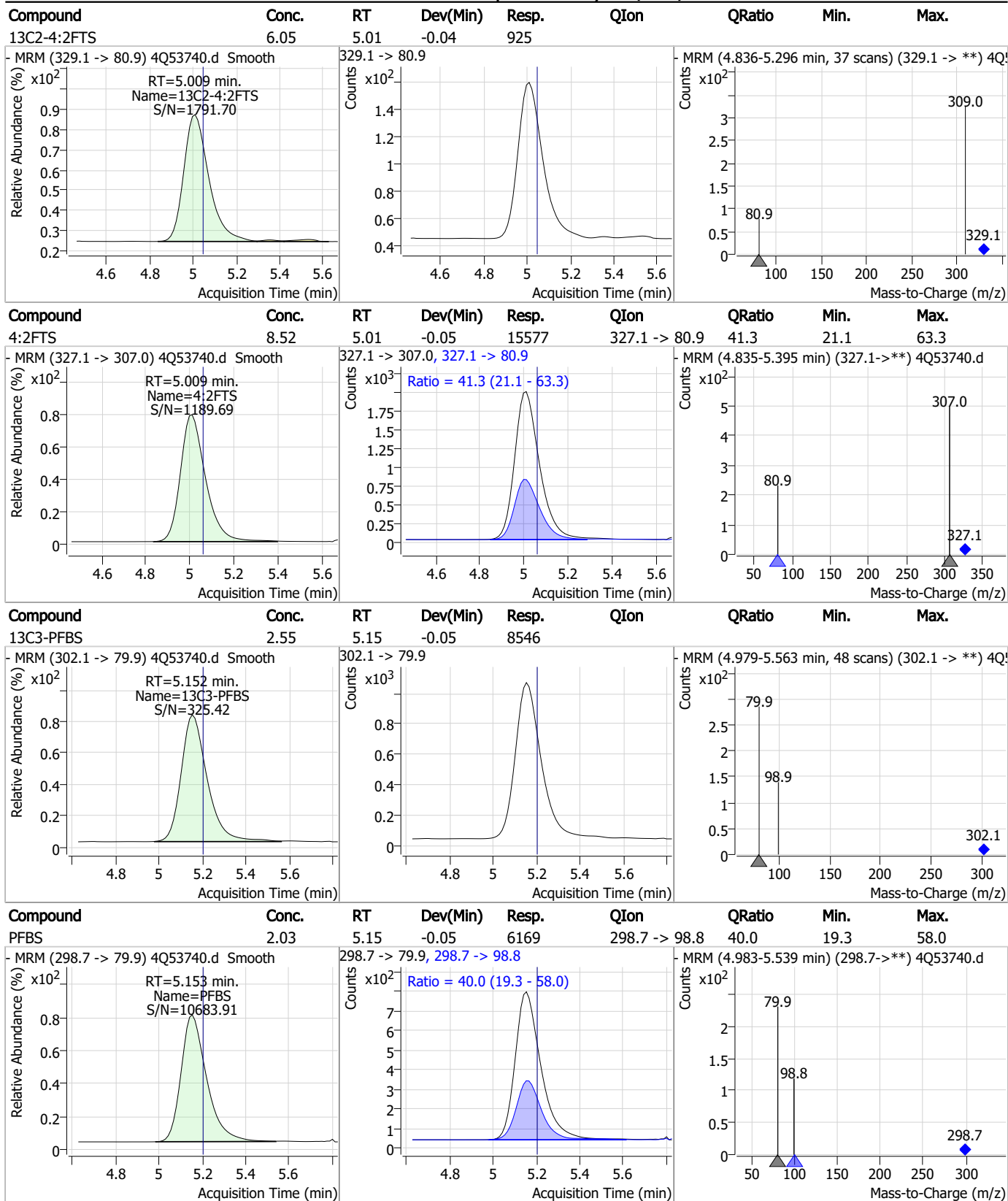


### Perfluorinated Compounds by LC/MS/MS



7.7.10 7

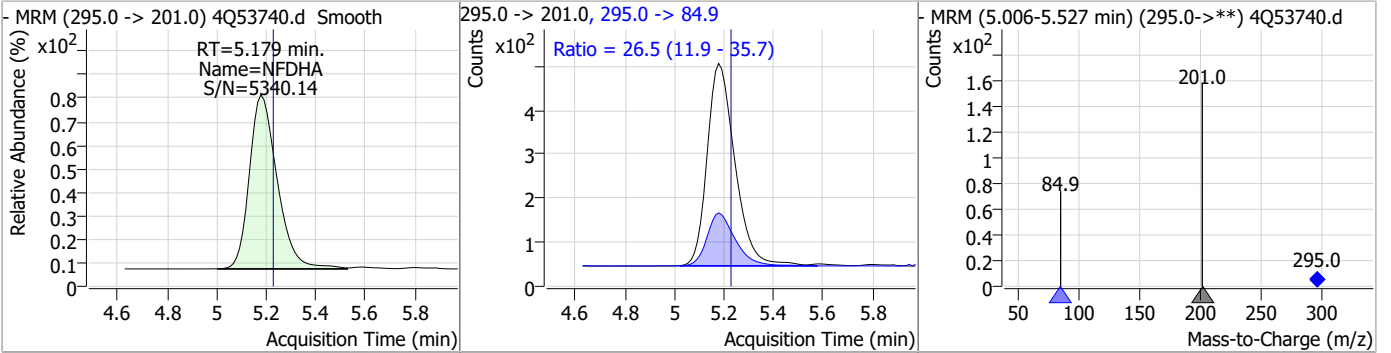
### Perfluorinated Compounds by LC/MS/MS



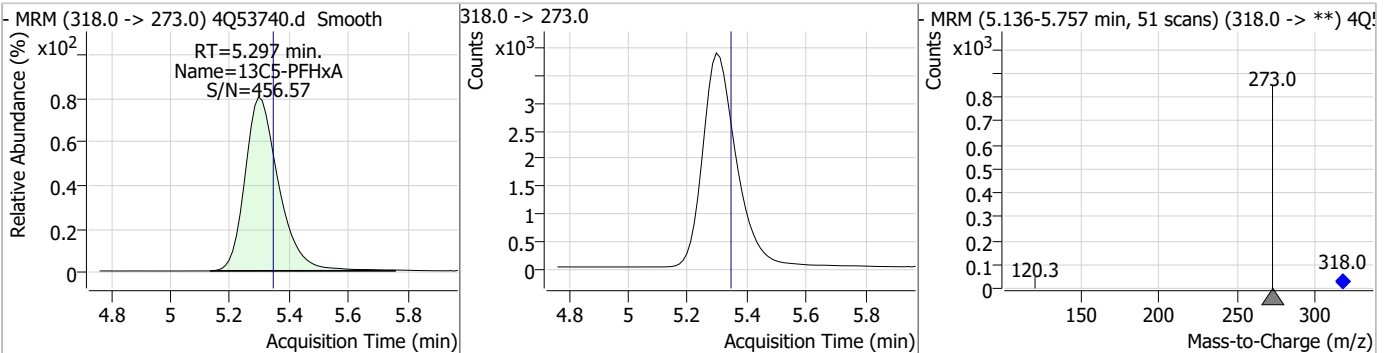
7.7.10 7

### Perfluorinated Compounds by LC/MS/MS

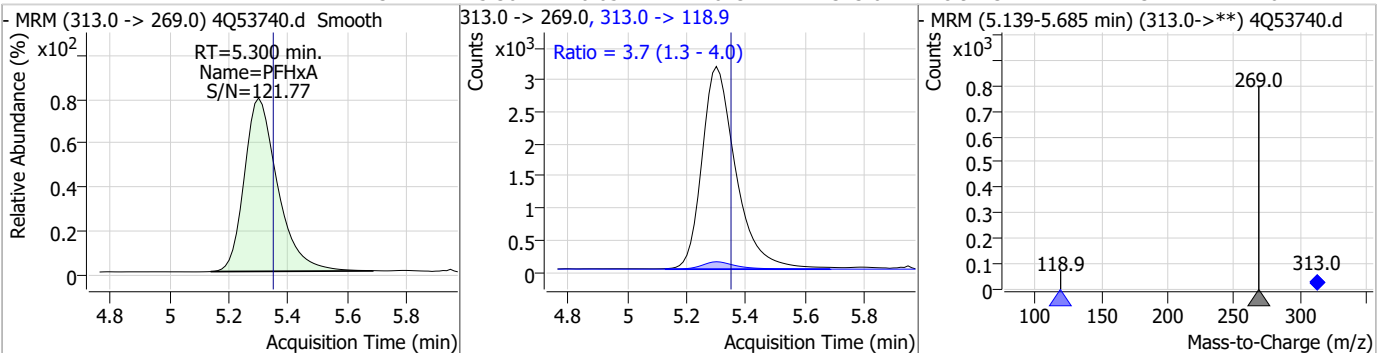
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
NFDHA	5.14	5.18	-0.05	3611	295.0 -> 84.9	26.5	11.9	35.7



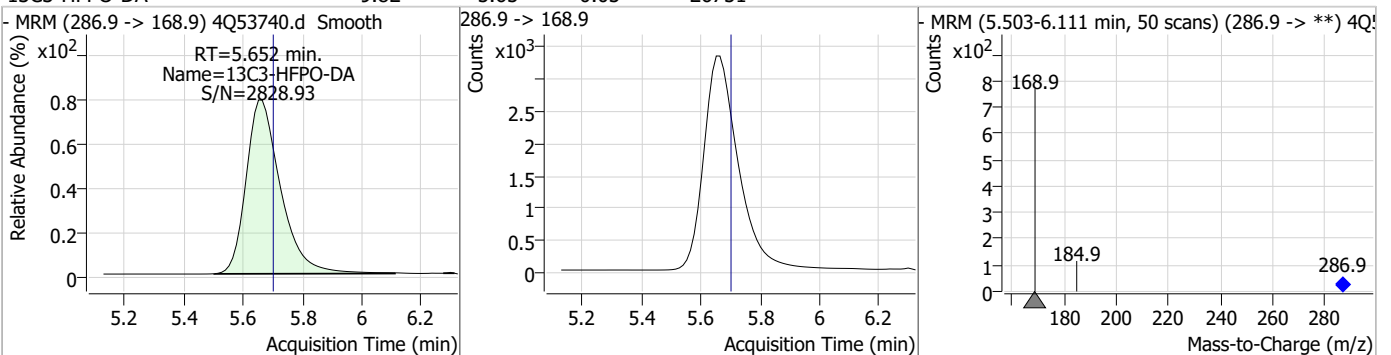
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.55	5.30	-0.05	30443				



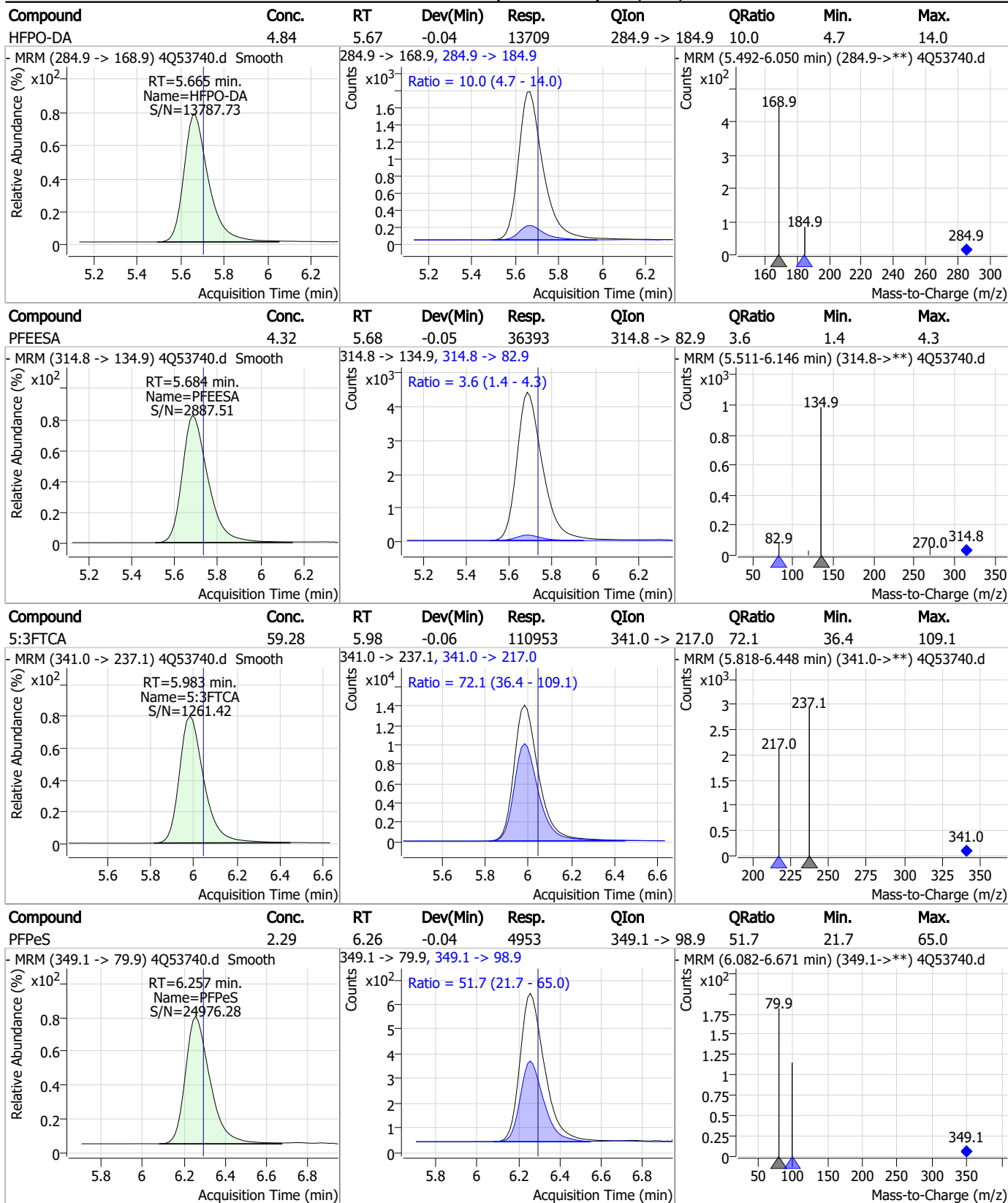
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.32	5.30	-0.05	24623	313.0 -> 118.9	3.7	1.3	4.0



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

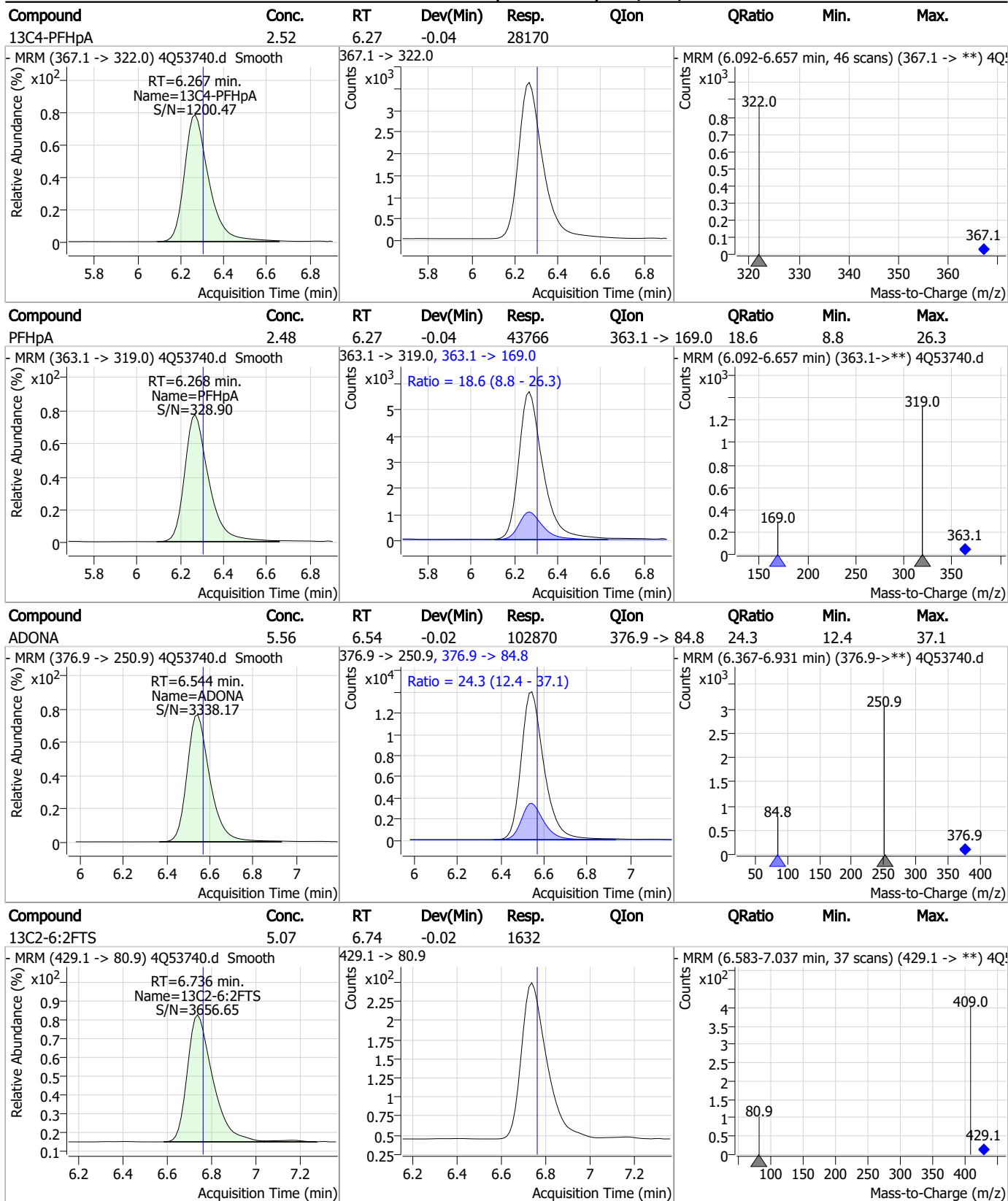


### Perfluorinated Compounds by LC/MS/MS



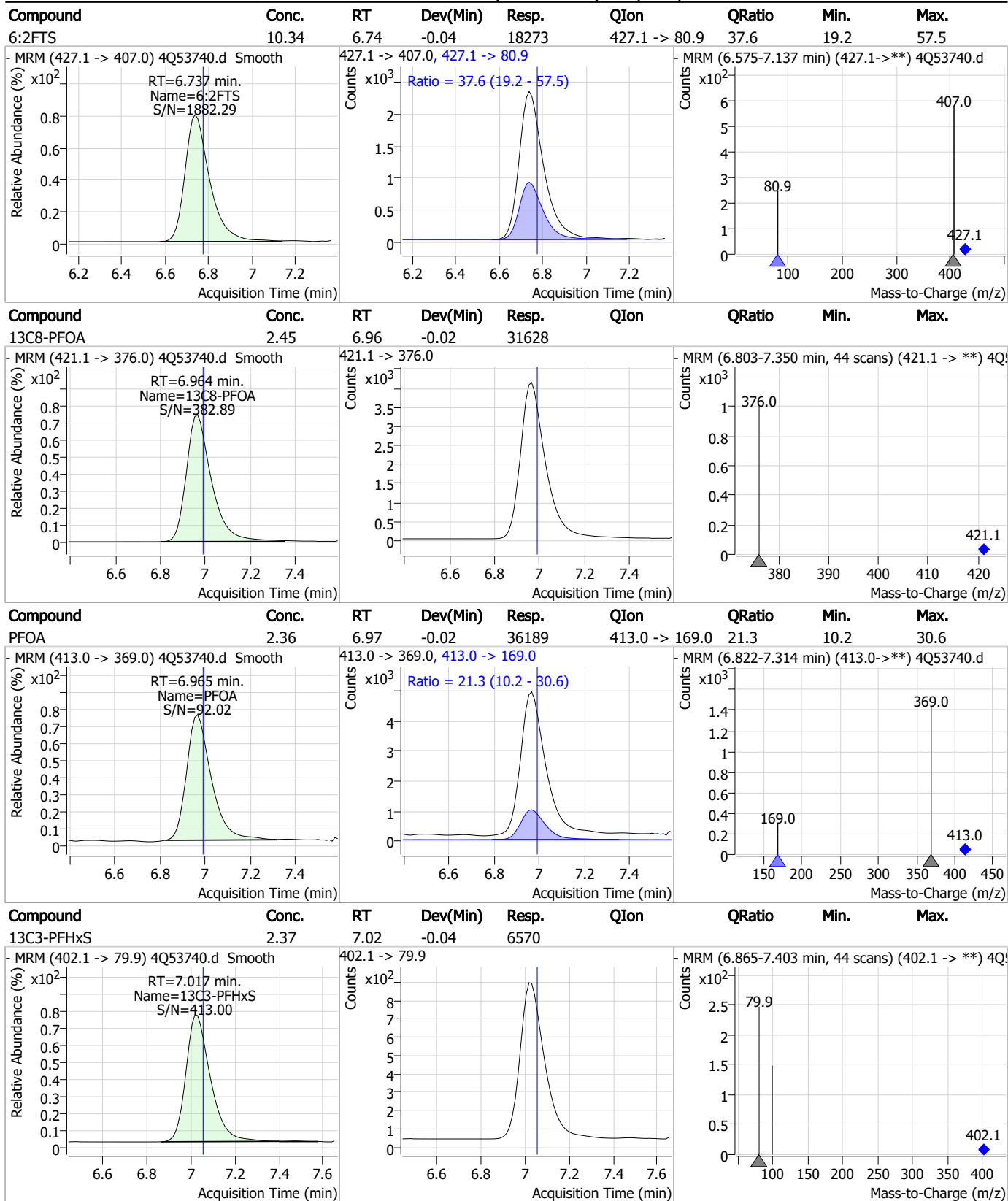
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### Perfluorinated Compounds by LC/MS/MS



7.7.10 7

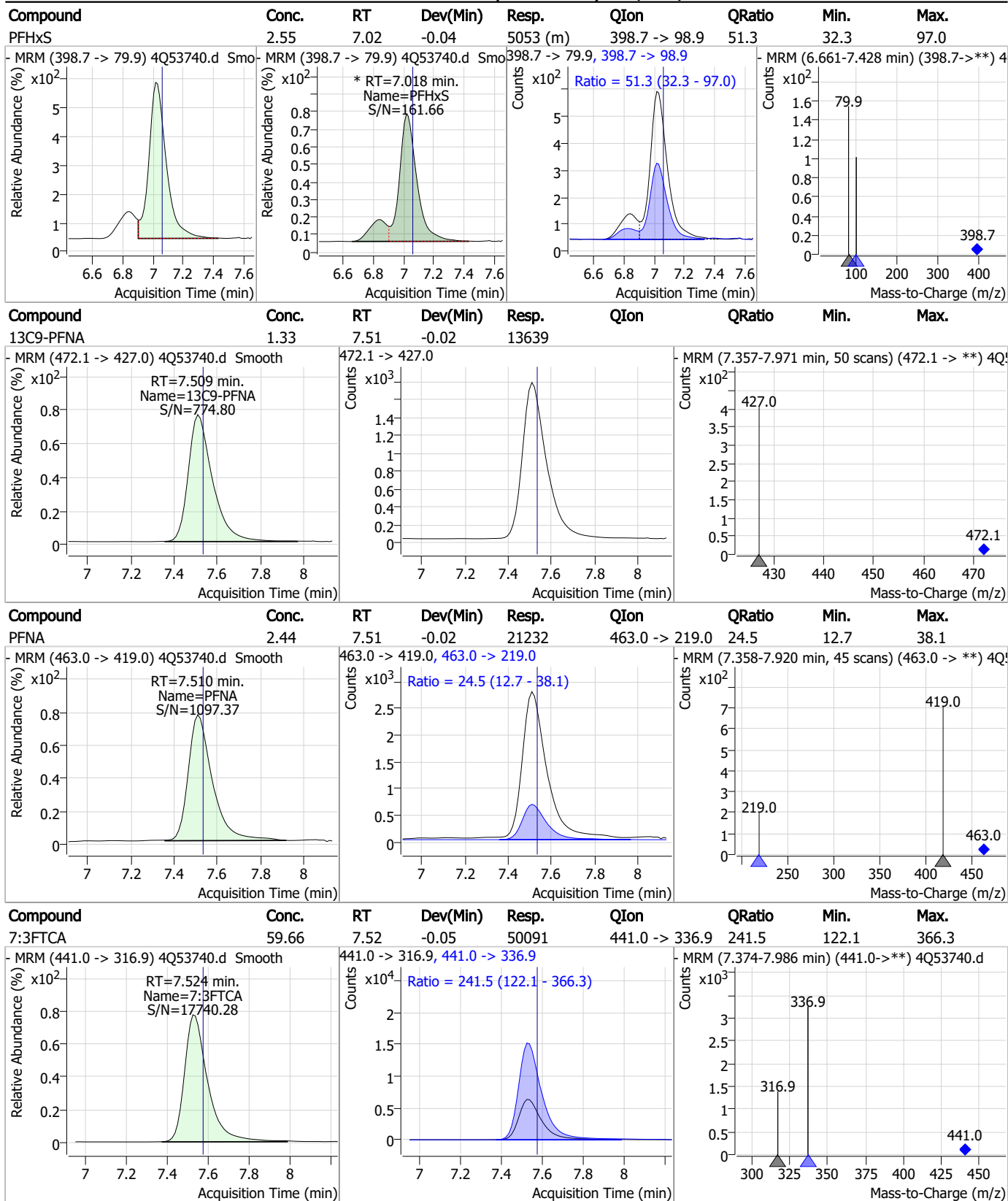
### Perfluorinated Compounds by LC/MS/MS



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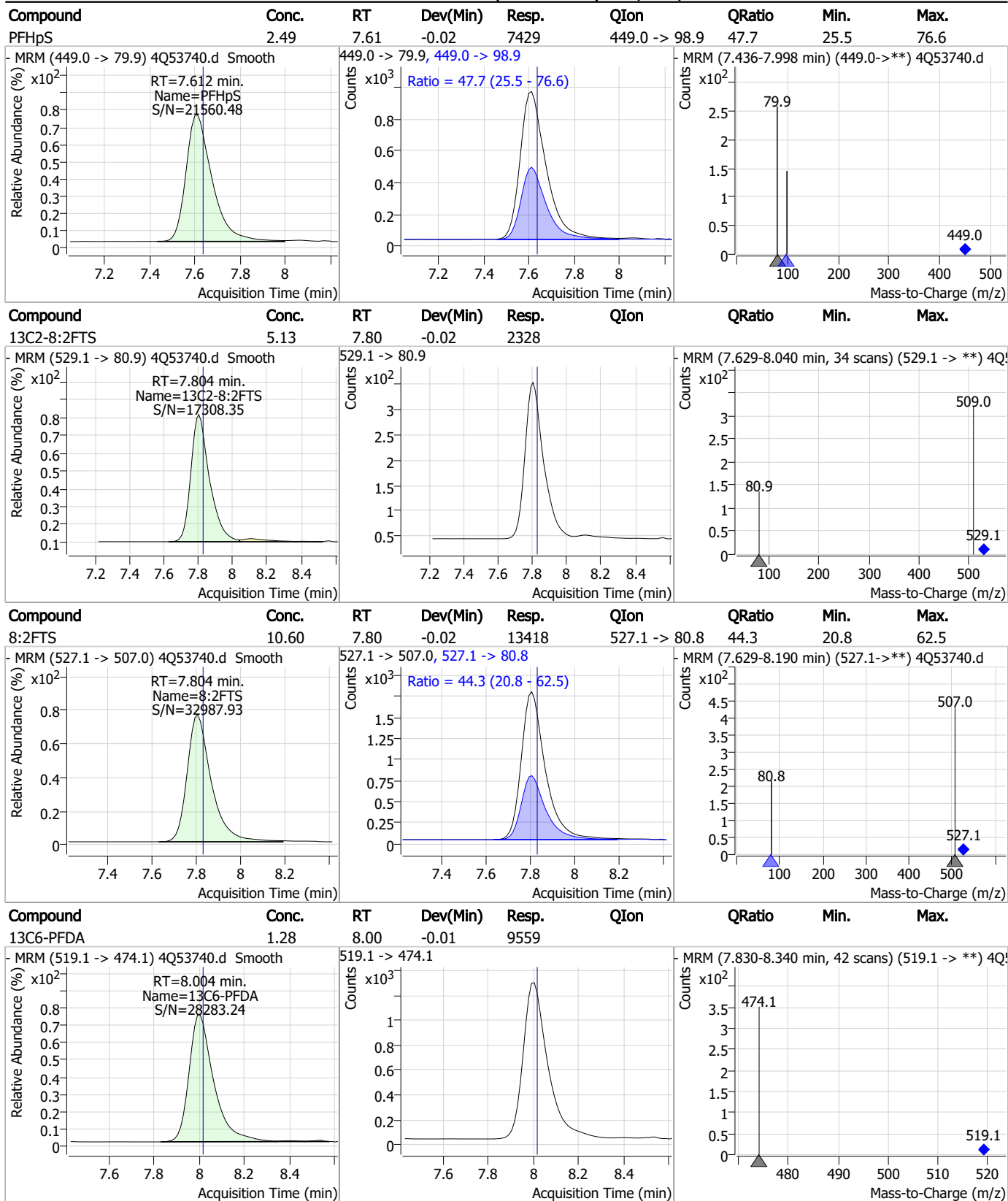


### Perfluorinated Compounds by LC/MS/MS



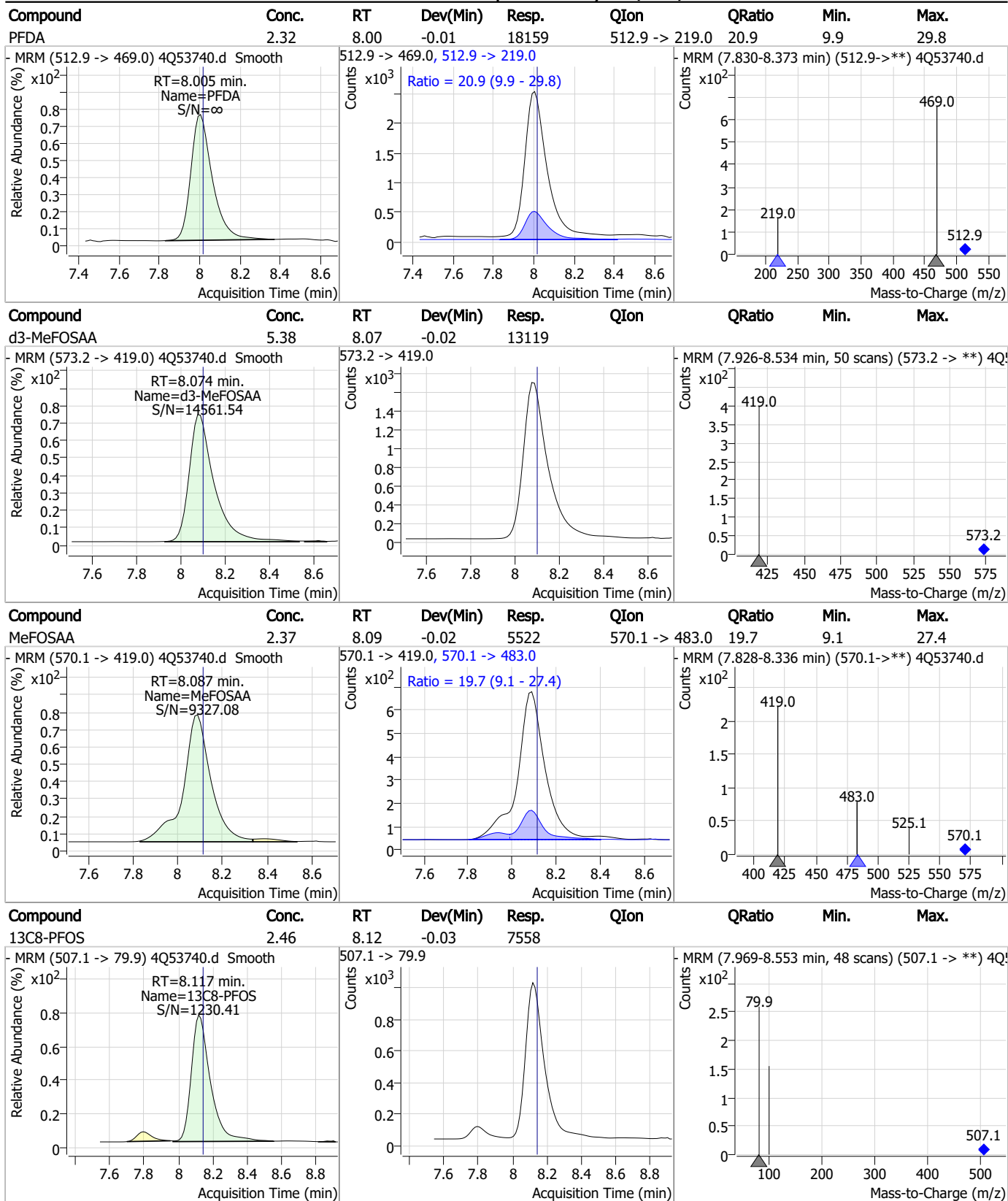
7.7.10 7

### Perfluorinated Compounds by LC/MS/MS



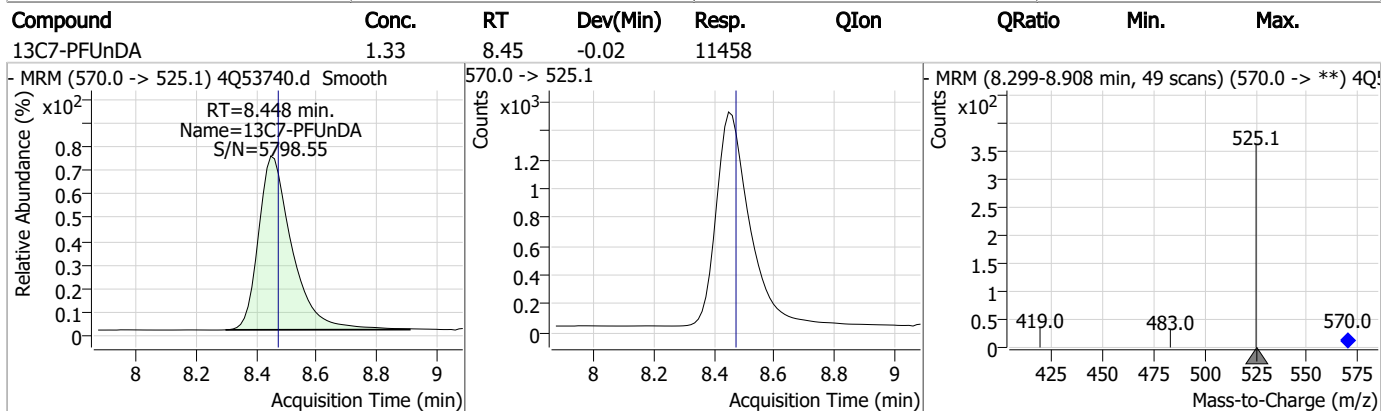
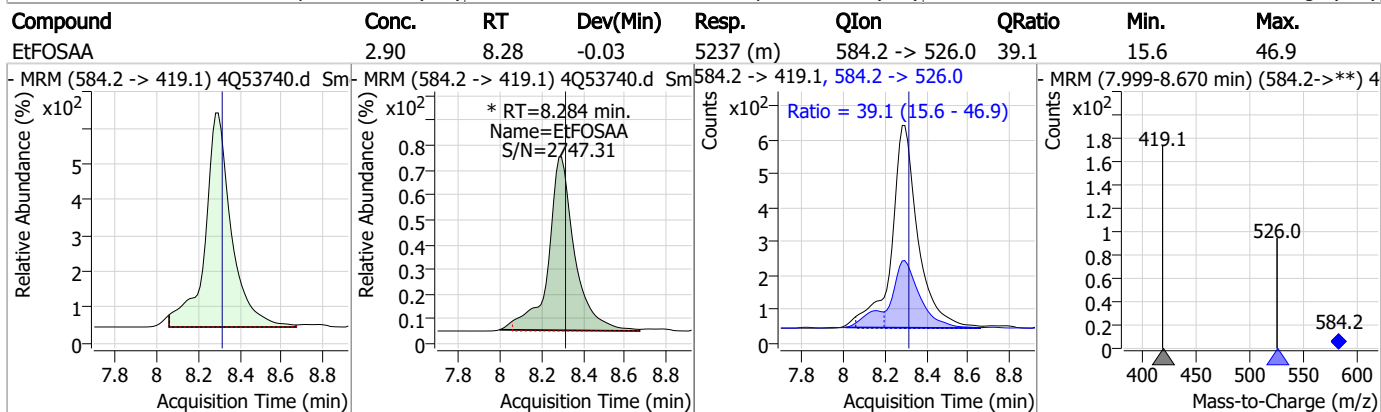
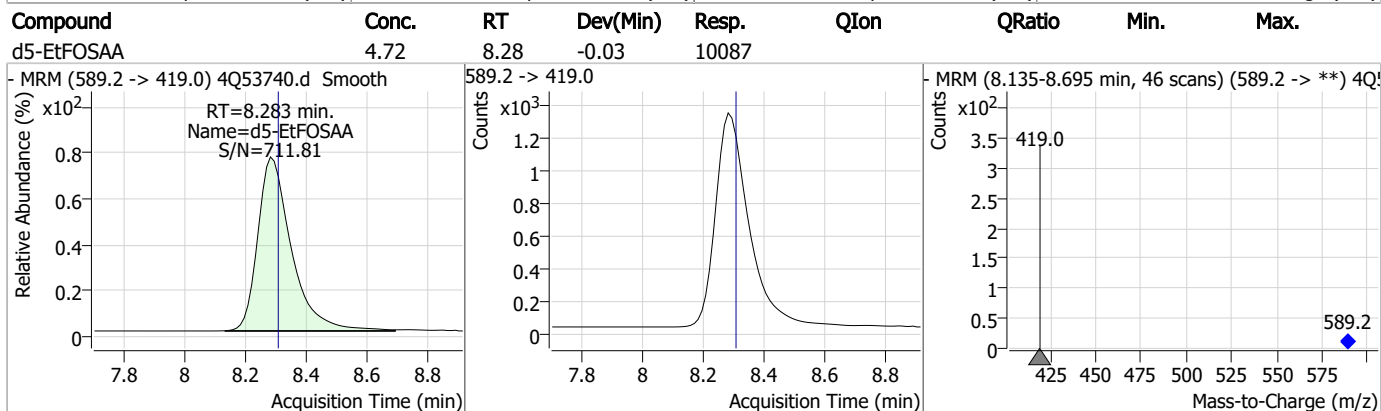
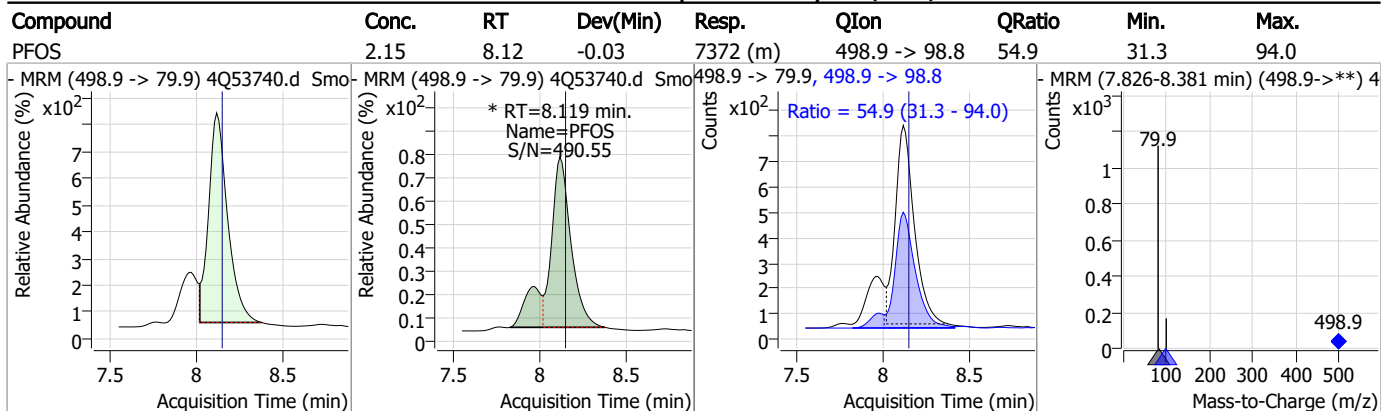
7.7.10 7

### Perfluorinated Compounds by LC/MS/MS

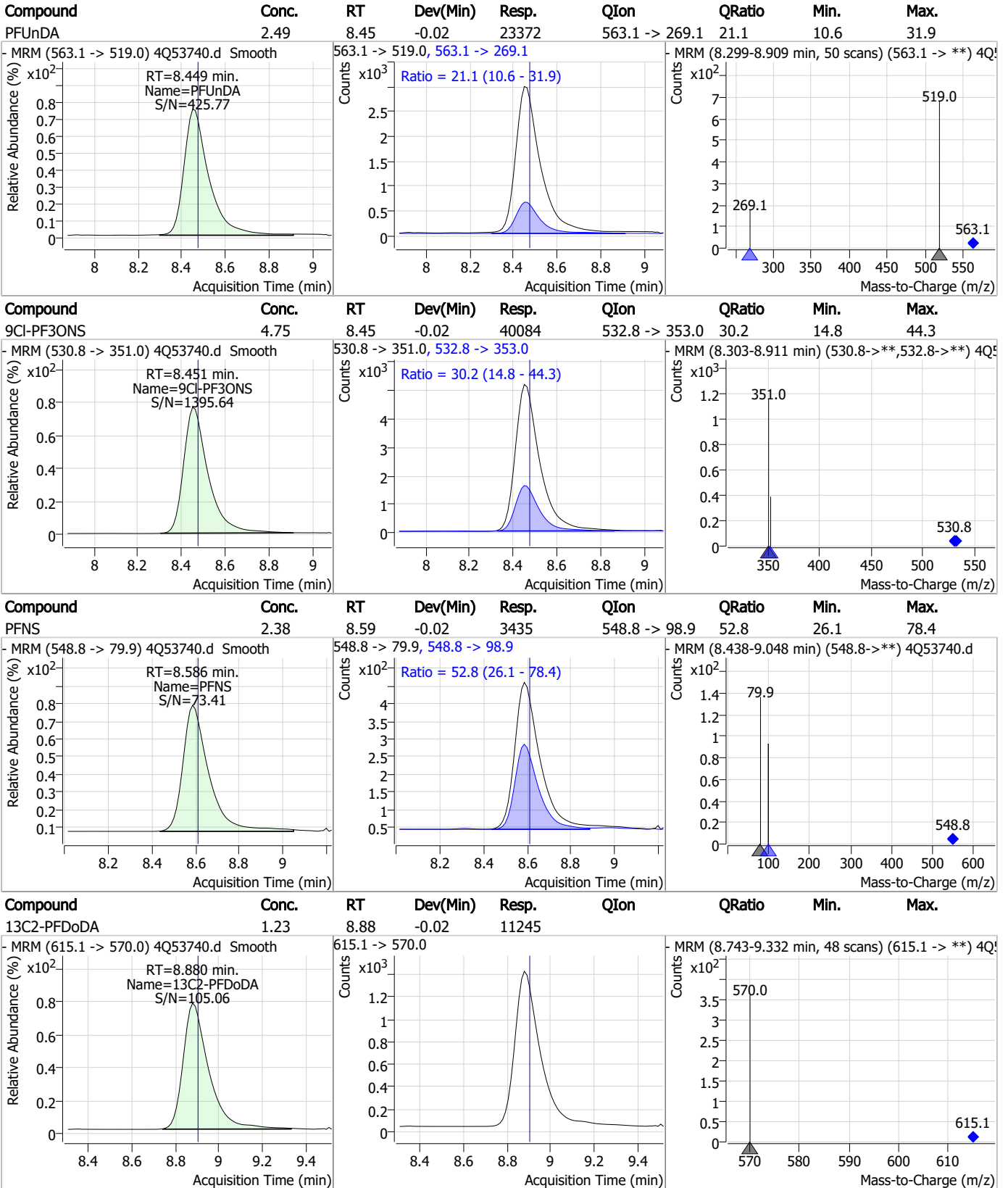


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### Perfluorinated Compounds by LC/MS/MS



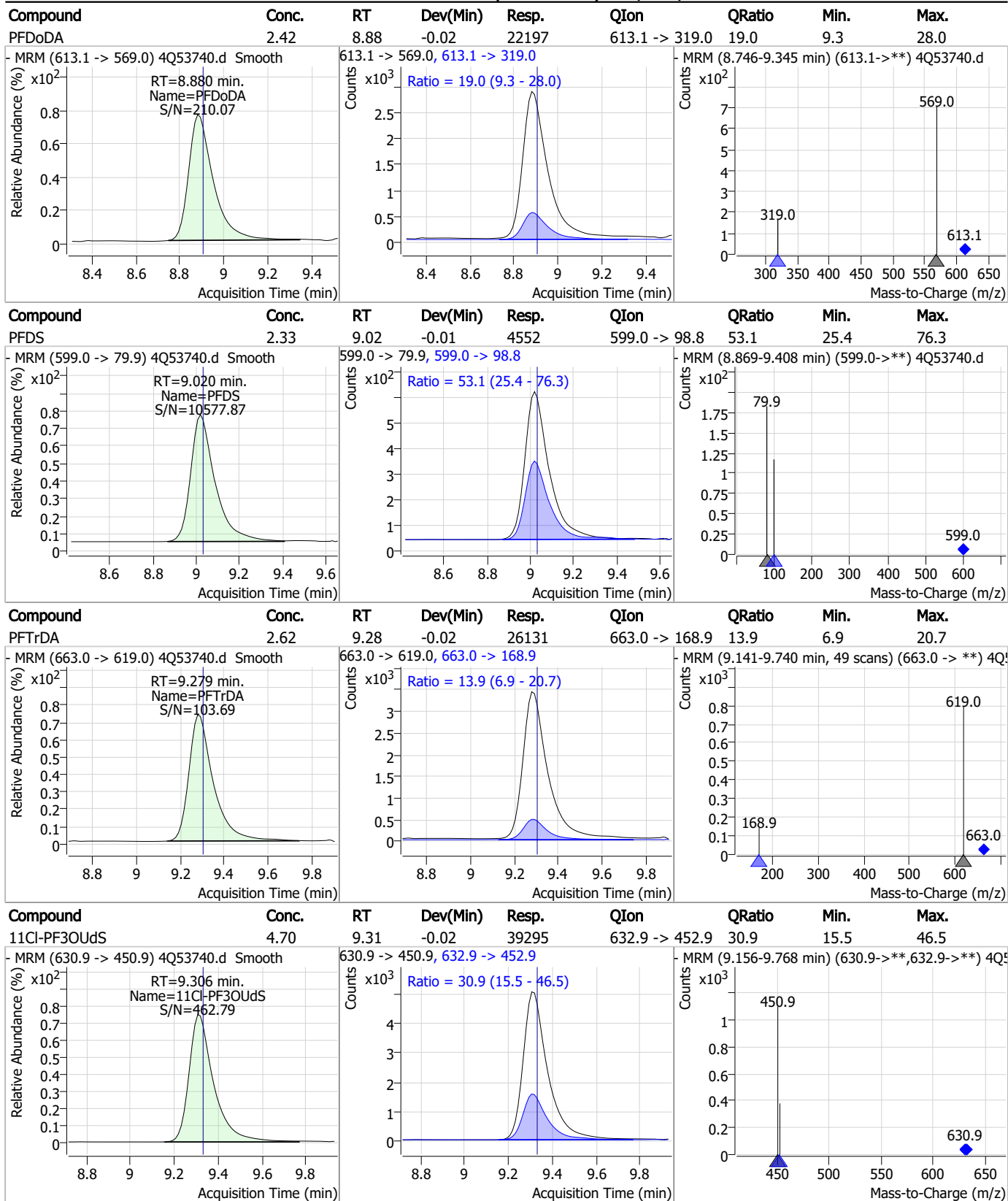
### Perfluorinated Compounds by LC/MS/MS



7.7.10 7

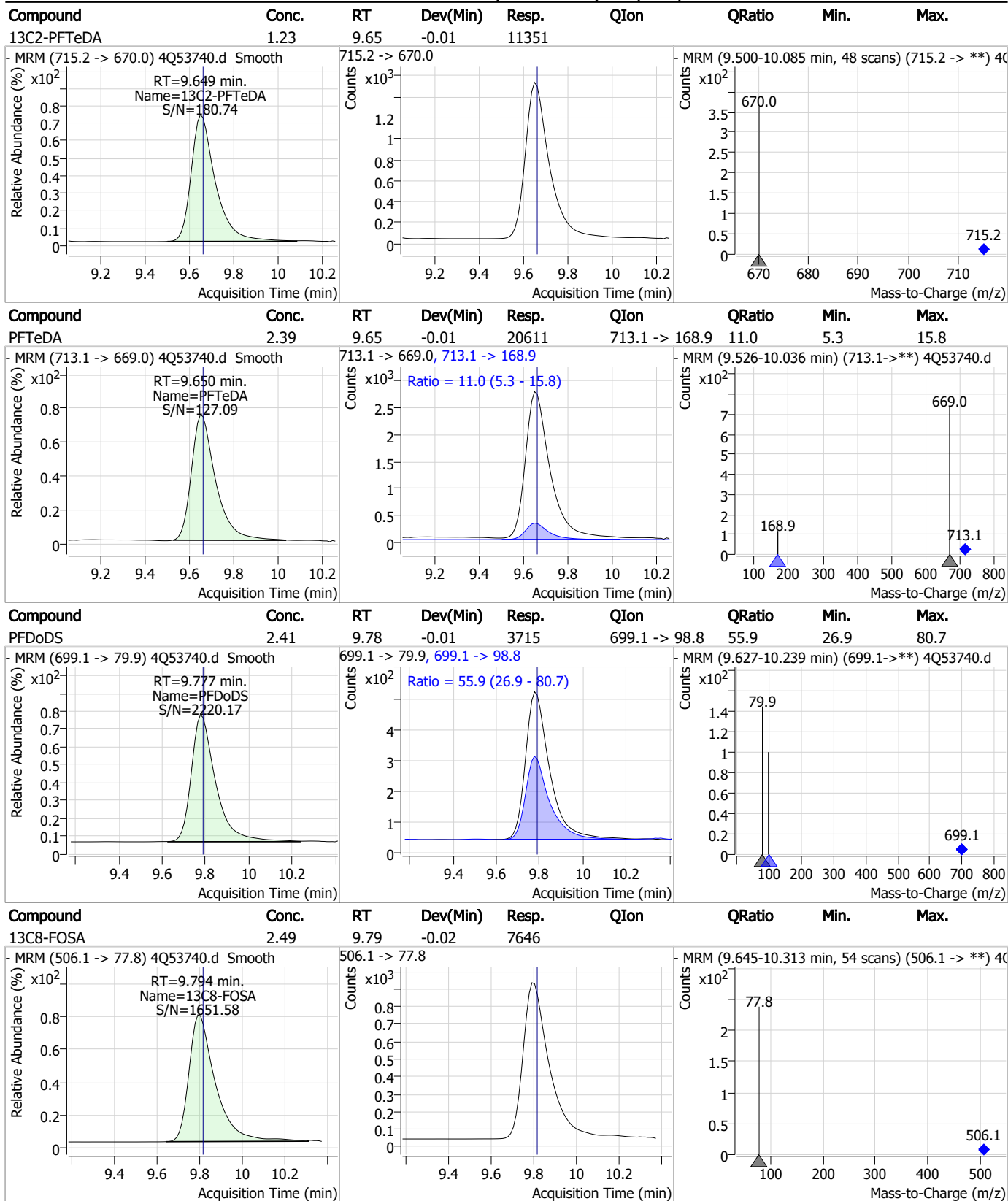


### Perfluorinated Compounds by LC/MS/MS



7.7.10  
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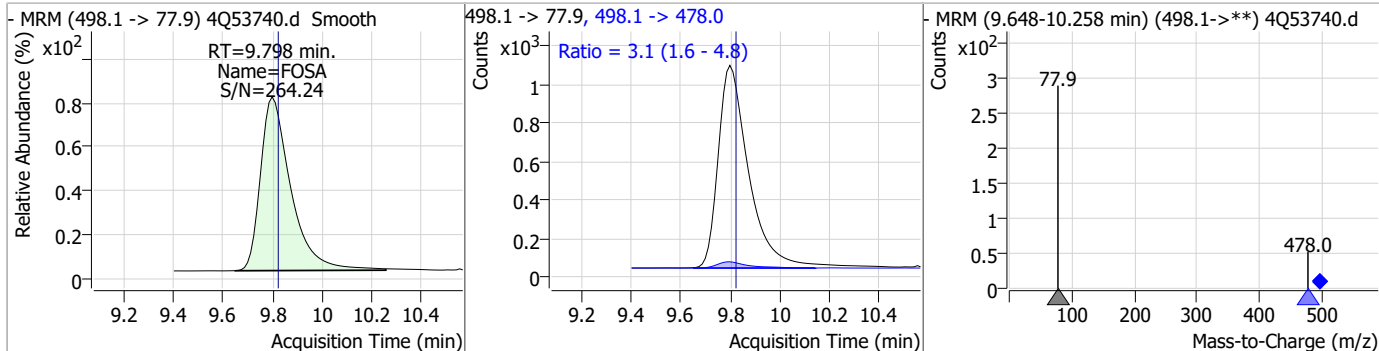
### Perfluorinated Compounds by LC/MS/MS



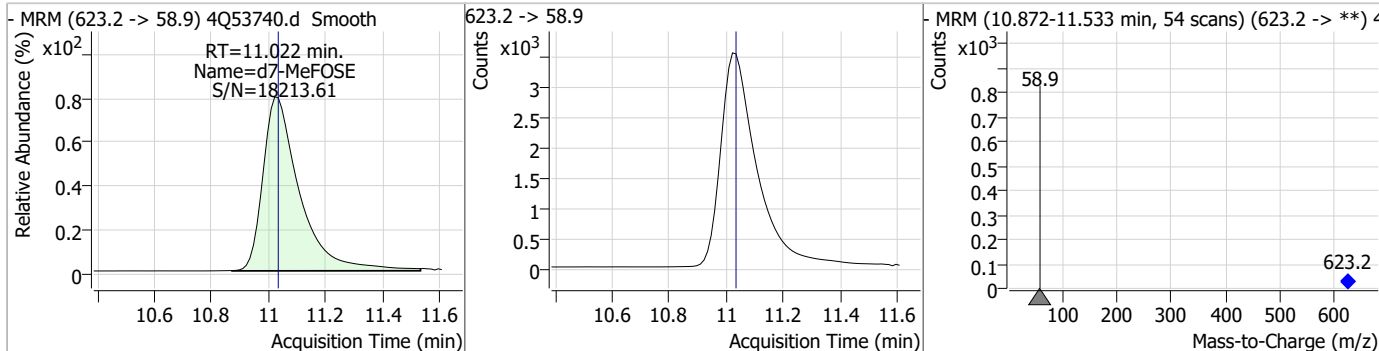
7.7.10  
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### Perfluorinated Compounds by LC/MS/MS

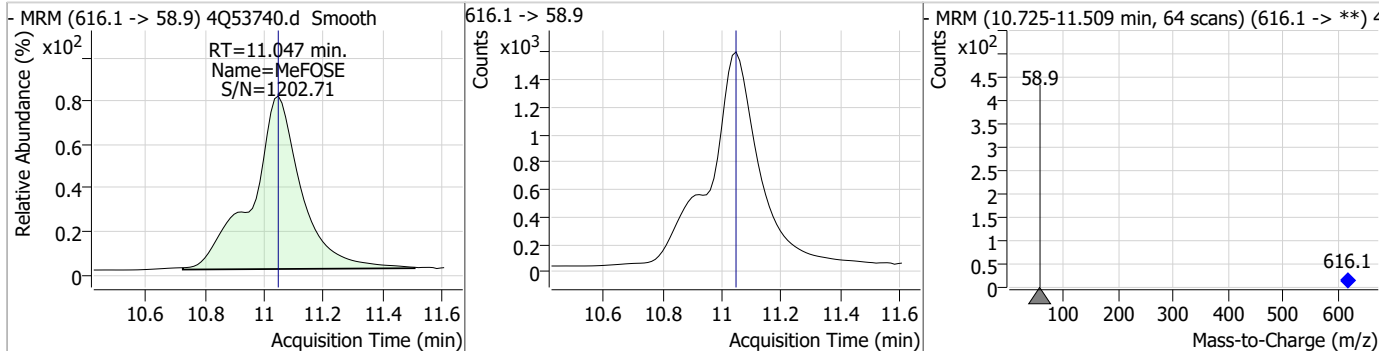
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.41	9.80	-0.02	8990	498.1 -> 478.0	3.1	1.6	4.8



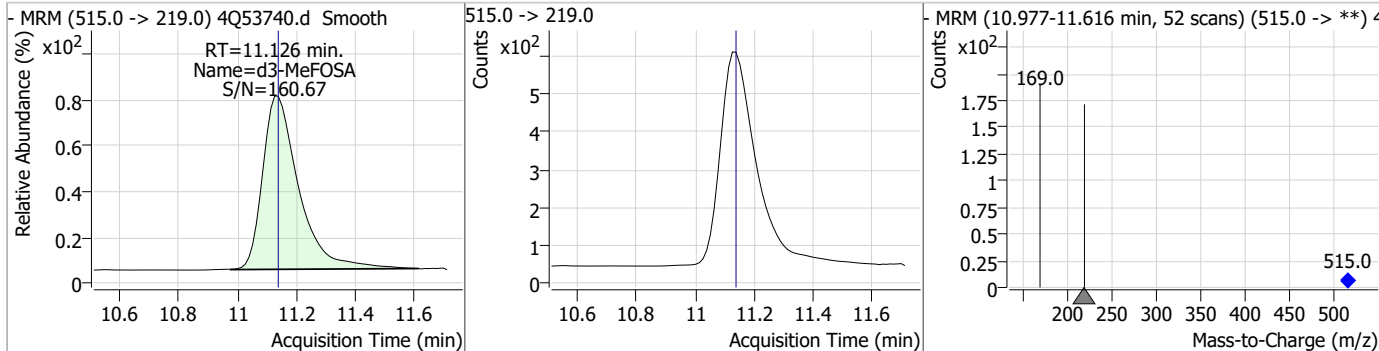
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.73	11.02	-0.01	31421				



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

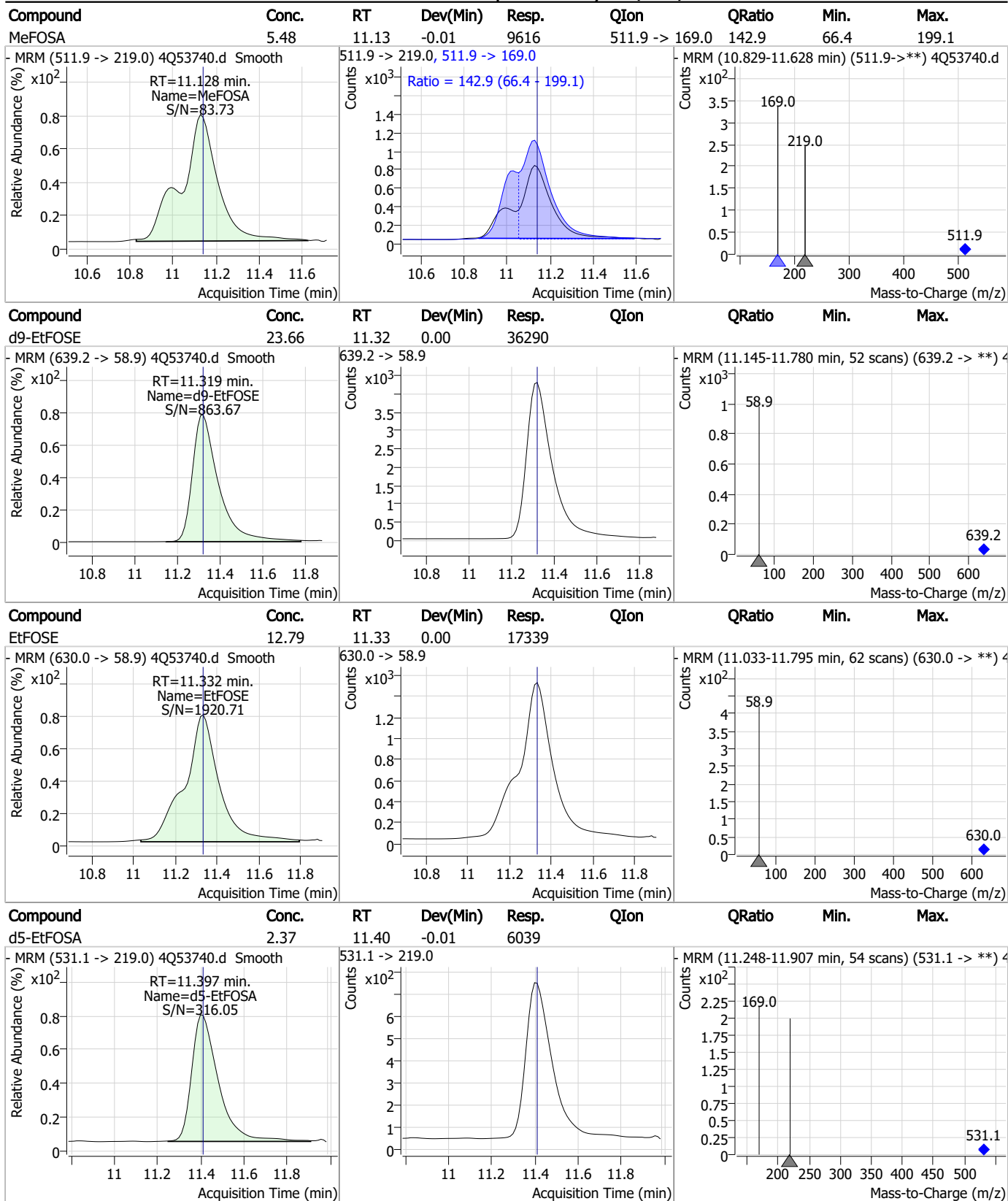


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.25	11.13	-0.01	4833				



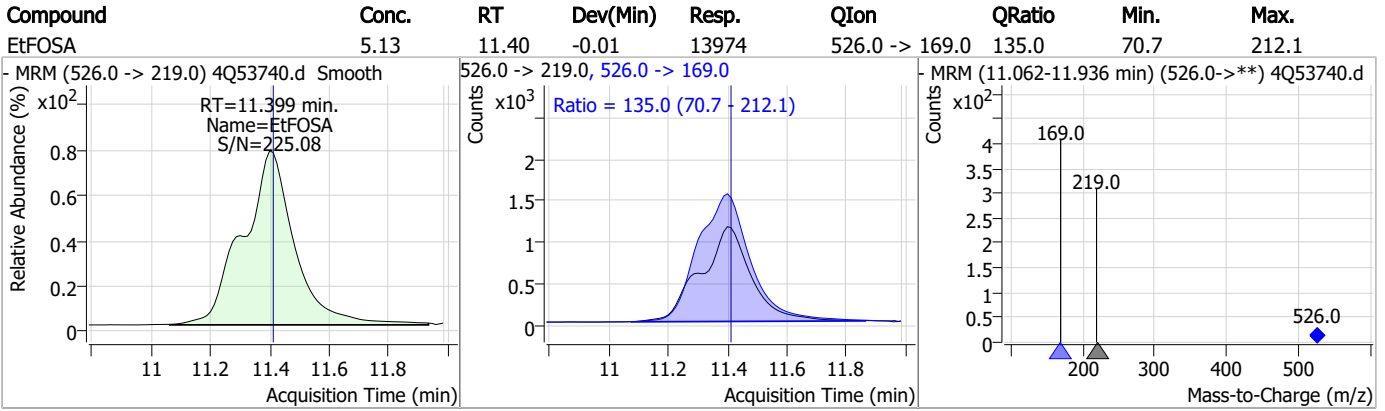


### Perfluorinated Compounds by LC/MS/MS



7.7.10  
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### Perfluorinated Compounds by LC/MS/MS



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# Manual Integration Approval Summary

Sample Number: S4Q785-ICV785      Method: EPA DRAFT 1633  
Lab FileID: 4Q53740.D      Analyst approved: 11/14/23 13:55 Anna Ludwig  
Injection Time: 11/13/23 18:12      Supervisor approved: 11/14/23 15:48 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Poorly defined baseline
Perfluorooctanesulfonic acid	1763-23-1		8.12	Poorly defined baseline
EtFOSAA	2991-50-6		8.28	Poorly defined baseline

7.7.10.1

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### Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53741.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/13/2023 6:27:06 PM  
 Sample Name : icv785-20  
 Vial : P1-B4  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q785.batch.bin  
 Sample Information : OP98180,S4Q785,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.624	216.8 -> 171.9	114032	10.00 µg/L	-0.075
M5-PFPeA	4.125	268.3 -> 223.0	48802	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	36604	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	33820	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	40160	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	16154	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	10950	1.25 µg/L	-0.025
M7-PFUnDA	8.448	570.0 -> 525.1	12821	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	14297	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	14337	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	9003	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	10592	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	8648	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	9394	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	1010	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	1962	5.00 µg/L	-0.025
M2-8:2FTS	7.791	529.1 -> 80.9	2981	5.00 µg/L	-0.037
M3-MeFOSAA	8.074	573.2 -> 419.0	15147	5.00 µg/L	-0.025
M3-HFPO-DA	5.664	286.9 -> 168.9	33895	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	12771	5.00 µg/L	-0.026
M7-MeFOSE	11.034	623.2 -> 58.9	36558	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	45246	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	7410	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	6246	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	7933	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	54544	5.00 µg/L	-0.075
18O2-PFHxS	7.028	403.0 -> 83.9	5428	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	43091	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	12041	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	16894	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	39940	2.50 µg/L	-0.050
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.009	329.1 -> 80.9	1010	5.44 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.7%		
13C2-6:2FTS	6.736	429.1 -> 80.9	1962	5.01 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C2-8:2FTS	7.791	529.1 -> 80.9	2981	5.40 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.1%		
13C2-PFDoDA	8.880	615.1 -> 570.0	14297	1.32 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.3%		
13C2-PFTeDA	9.649	715.2 -> 670.0	14337	1.31 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.9%		
13C3-PFBS	5.152	302.1 -> 79.9	10592	2.60 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.1%		
13C3-PFHxS	7.017	402.1 -> 79.9	8648	2.57 µg/L	-0.037

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### Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.8%	
13C4-PFBA	2.624	216.8 -> 171.9	114032	10.03 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C4-PFHpA	6.267	367.1 -> 322.0	33820	2.43 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.1%	
13C5-PFHxA	5.297	318.0 -> 273.0	36604	2.46 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C5-PFPeA	4.125	268.3 -> 223.0	48802	5.01 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C6-PFDA	7.992	519.1 -> 474.1	10950	1.24 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C7-PFUnDA	8.448	570.0 -> 525.1	12821	1.25 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C8-FOSA	9.794	506.1 -> 77.8	9003	2.37 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.0%	
13C8-PFOA	6.964	421.1 -> 376.0	40160	2.61 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.4%	
13C8-PFOS	8.117	507.1 -> 79.9	9394	2.48 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C9-PFNA	7.509	472.1 -> 427.0	16154	1.21 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.0%	
d3-MeFOSAA	8.074	573.2 -> 419.0	15147	5.04 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C3-HFPO-DA	5.664	286.9 -> 168.9	33895	9.97 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
d3-MeFOSA	11.126	515.0 -> 219.0	6246	2.36 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.4%	
d5-EtFOSAA	8.283	589.2 -> 419.0	12771	4.85 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.9%	
d7-MeFOSE	11.034	623.2 -> 58.9	36558	22.37 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.5%	
d9-EtFOSE	11.319	639.2 -> 58.9	45246	23.90 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.6%	
d5-EtFOSA	11.397	531.1 -> 219.0	7410	2.36 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.4%	
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.009	327.1 -> 307.0	39198	19.65 µg/L	97
		327.1 -> 80.9	15770		
6:2FTS	6.737	427.1 -> 407.0	46482	21.89 µg/L	97
		427.1 -> 80.9	16903		
8:2FTS	7.804	527.1 -> 507.0	32210	19.87 µg/L	98
		527.1 -> 80.8	13749		
EtFOSAA	8.284	584.2 -> 419.1	46920	20.52 µg/L	m 89
		584.2 -> 526.0	17412		
FOSA	9.798	498.1 -> 77.9	79745	18.17 µg/L	99
		498.1 -> 478.0	2382		
MeFOSAA	8.087	570.1 -> 419.0	49844	18.51 µg/L	100
		570.1 -> 483.0	9185		
PFBA	2.632	212.8 -> 168.9	74350	17.93 µg/L	100
PFBS	5.153	298.7 -> 79.9	67891	18.06 µg/L	99
		298.7 -> 98.8	26629		
PFDA	8.005	512.9 -> 469.0	175213	19.56 µg/L	99
		512.9 -> 219.0	35862		
PFDODA	8.880	613.1 -> 569.0	201555	17.28 µg/L	97
		613.1 -> 319.0	34837		
PFDS	9.020	599.0 -> 79.9	45623	18.77 µg/L	98

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	22708			
PFHpA	6.268	363.1 -> 319.0	407172	19.20	µg/L	100
		363.1 -> 169.0	71534			
PFHpS	7.612	449.0 -> 79.9	66588	17.93	µg/L	98
		449.0 -> 98.9	35104			
PFHxA	5.300	313.0 -> 269.0	255480	19.98	µg/L	99
		313.0 -> 118.9	7731			
PFHxS	7.018	398.7 -> 79.9	53093	20.35	µg/L	m 80
		398.7 -> 98.9	26166			
PFNA	7.510	463.0 -> 419.0	216665	21.04	µg/L	96
		463.0 -> 219.0	50650			
PFNS	8.586	548.8 -> 79.9	32286	18.01	µg/L	100
		548.8 -> 98.9	16926			
PFOA	6.965	413.0 -> 369.0	343611	17.67	µg/L	99
		413.0 -> 169.0	68741			
PFOS	8.119	498.9 -> 79.9	73552	17.25	µg/L	m 77
		498.9 -> 98.8	33191			
PFPeA	4.127	263.0 -> 219.0	201339	18.96	µg/L	100
PFPeS	6.257	349.1 -> 79.9	54956	19.34	µg/L	97
		349.1 -> 98.9	24914			
PFTeDA	9.650	713.1 -> 669.0	215283	19.78	µg/L	100
		713.1 -> 168.9	22797			
PFTrDA	9.279	663.0 -> 619.0	225487	17.77	µg/L	100
		663.0 -> 168.9	31179			
PFUnDA	8.449	563.1 -> 519.0	198138	18.90	µg/L	99
		563.1 -> 269.1	41086			
11CI-PF3OUdS	9.306	630.9 -> 450.9	203142	19.20	µg/L	100
		632.9 -> 452.9	62725			
9CI-PF3ONS	8.451	530.8 -> 351.0	199647	18.69	µg/L	99
		532.8 -> 353.0	59514			
ADONA	6.531	376.9 -> 250.9	500837	21.35	µg/L	99
		376.9 -> 84.8	122103			
HFPO-DA	5.665	284.9 -> 168.9	67567	18.82	µg/L	99
		284.9 -> 184.9	6525			
3:3FTCA	3.561	241.0 -> 177.0	11639	18.02	µg/L	100
		241.0 -> 117.0	1051			
5:3FTCA	5.983	341.0 -> 237.1	44194	19.64	µg/L	98
		341.0 -> 217.0	31569			
7:3FTCA	7.524	441.0 -> 316.9	17750	17.58	µg/L	99
		441.0 -> 336.9	43521			
EtFOSA	11.412	526.0 -> 219.0	58275	17.44	µg/L	76
		526.0 -> 169.0	65298			
EtFOSE	11.332	630.0 -> 58.9	164806	97.49	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	40712	17.96	µg/L	87
		511.9 -> 169.0	47976			
MeFOSE	11.047	616.1 -> 58.9	163247	98.01	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	33921	17.69	µg/L	96
		699.1 -> 98.8	19282			
NFDHA	5.179	295.0 -> 201.0	17138	20.30	µg/L	97
		295.0 -> 84.9	4293			
PFMBA	4.529	279.0 -> 85.1	110466	18.07	µg/L	100
PFMPA	3.265	229.0 -> 84.9	124349	18.29	µg/L	100
PFEESA	5.684	314.8 -> 134.9	177172	17.51	µg/L	98
		314.8 -> 82.9	6058			

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



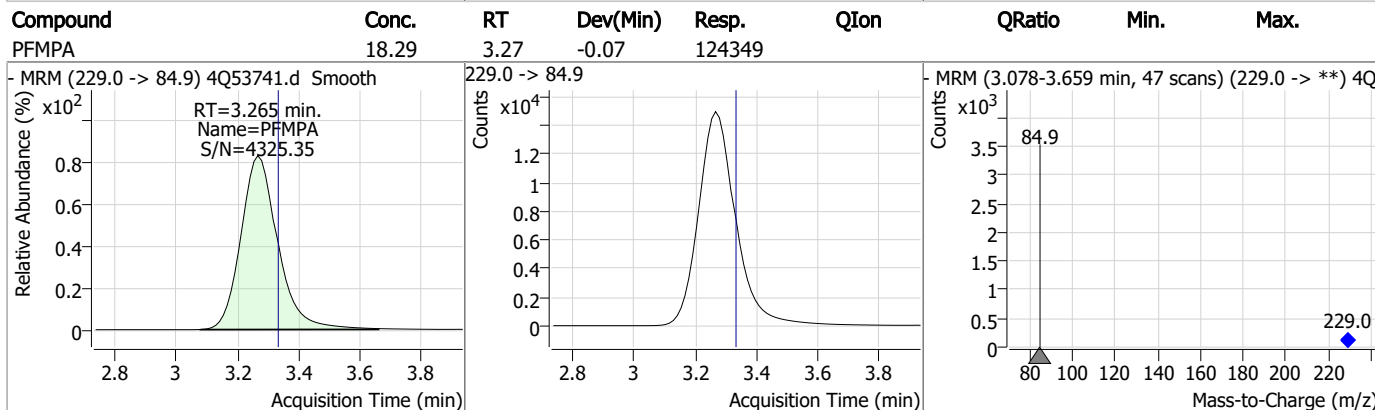
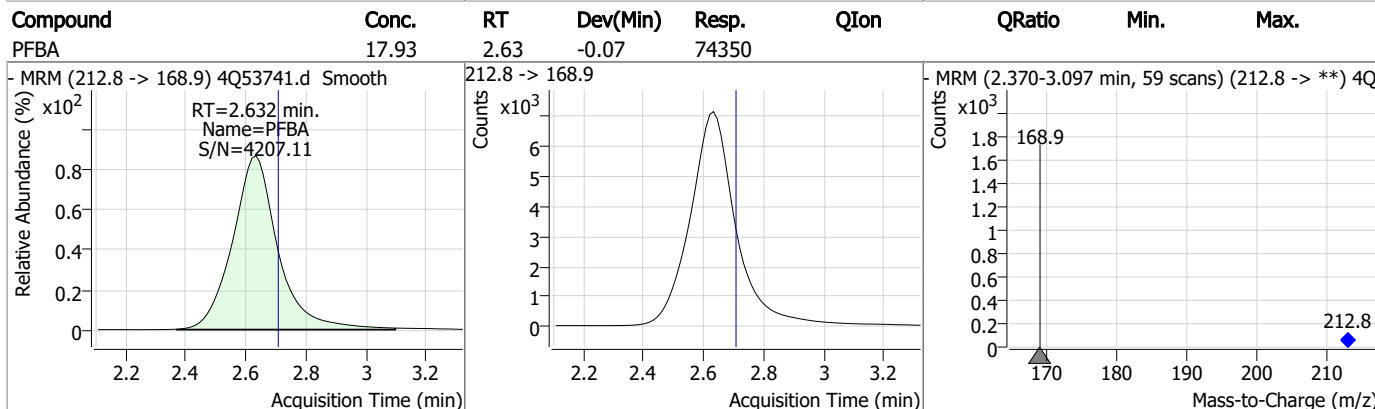
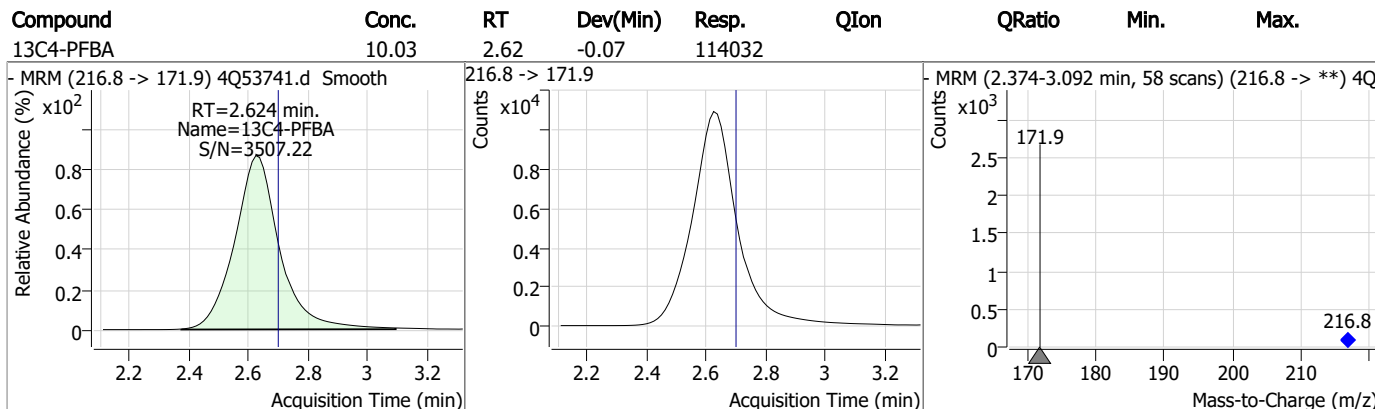
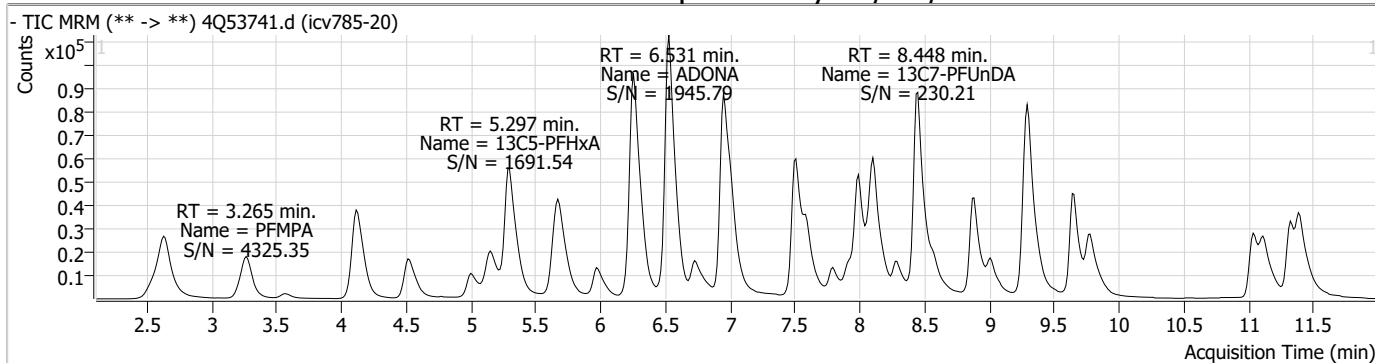
### Perfluorinated Compounds by LC/MS/MS

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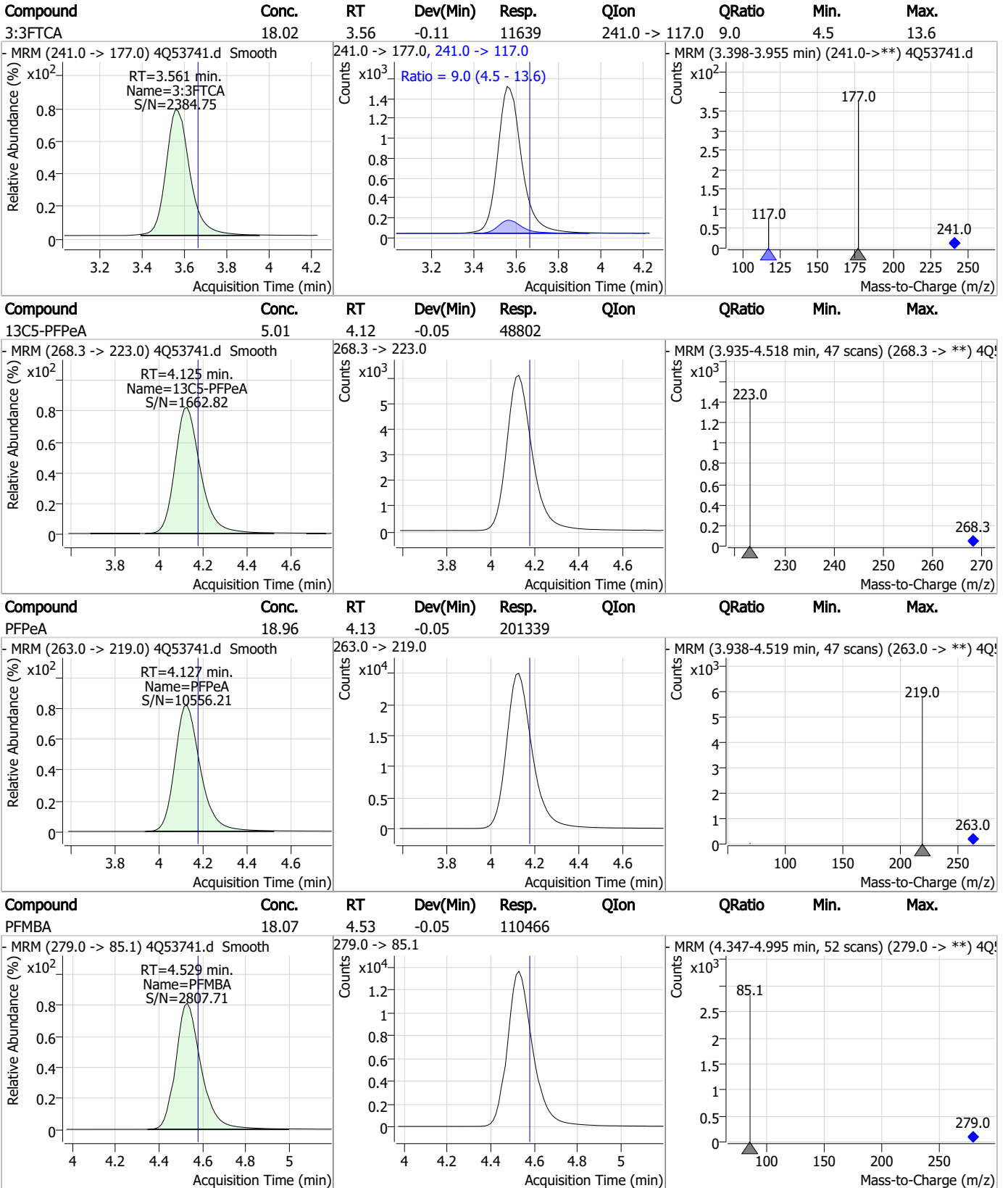
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### Perfluorinated Compounds by LC/MS/MS





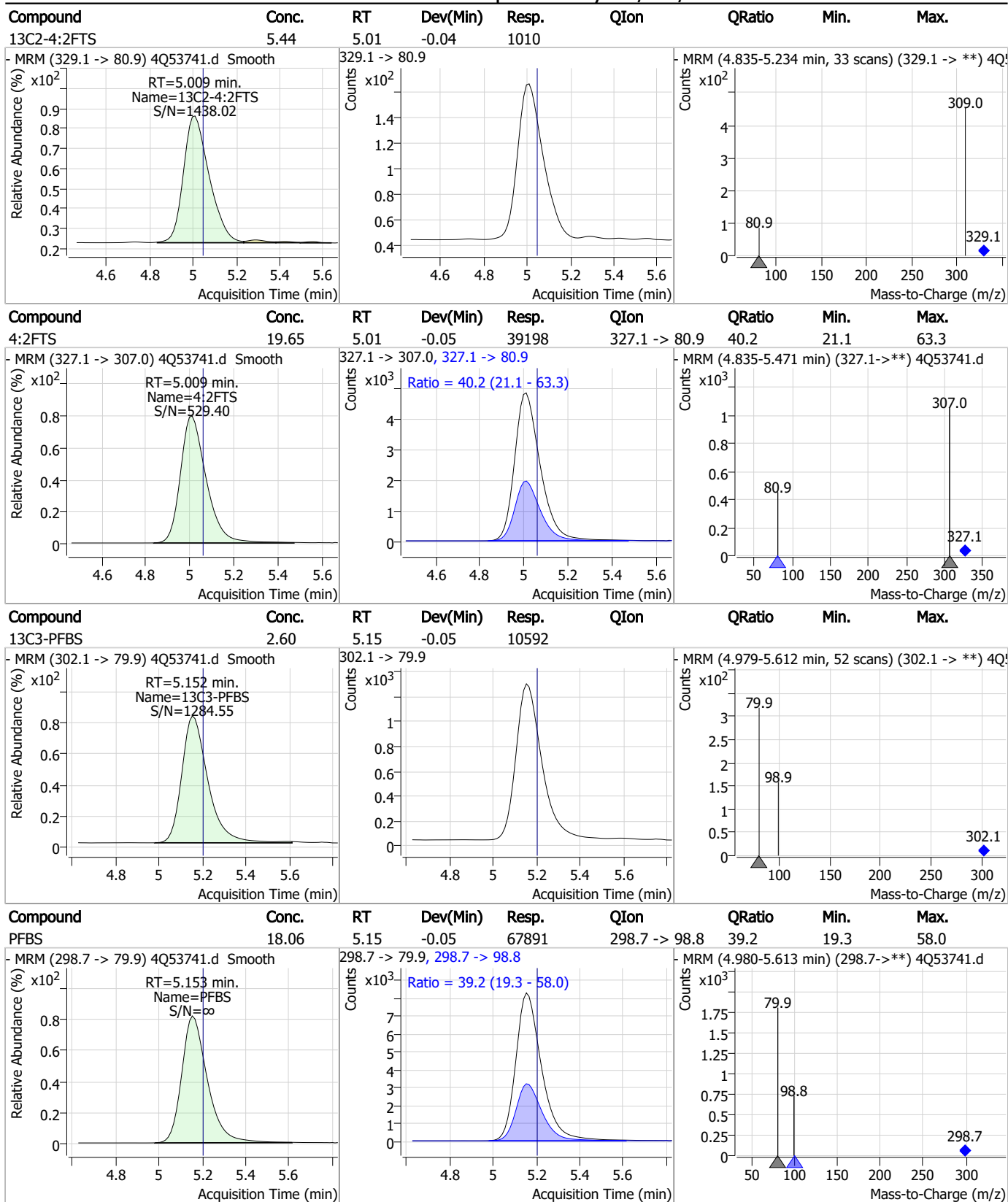
### Perfluorinated Compounds by LC/MS/MS



7.7.11

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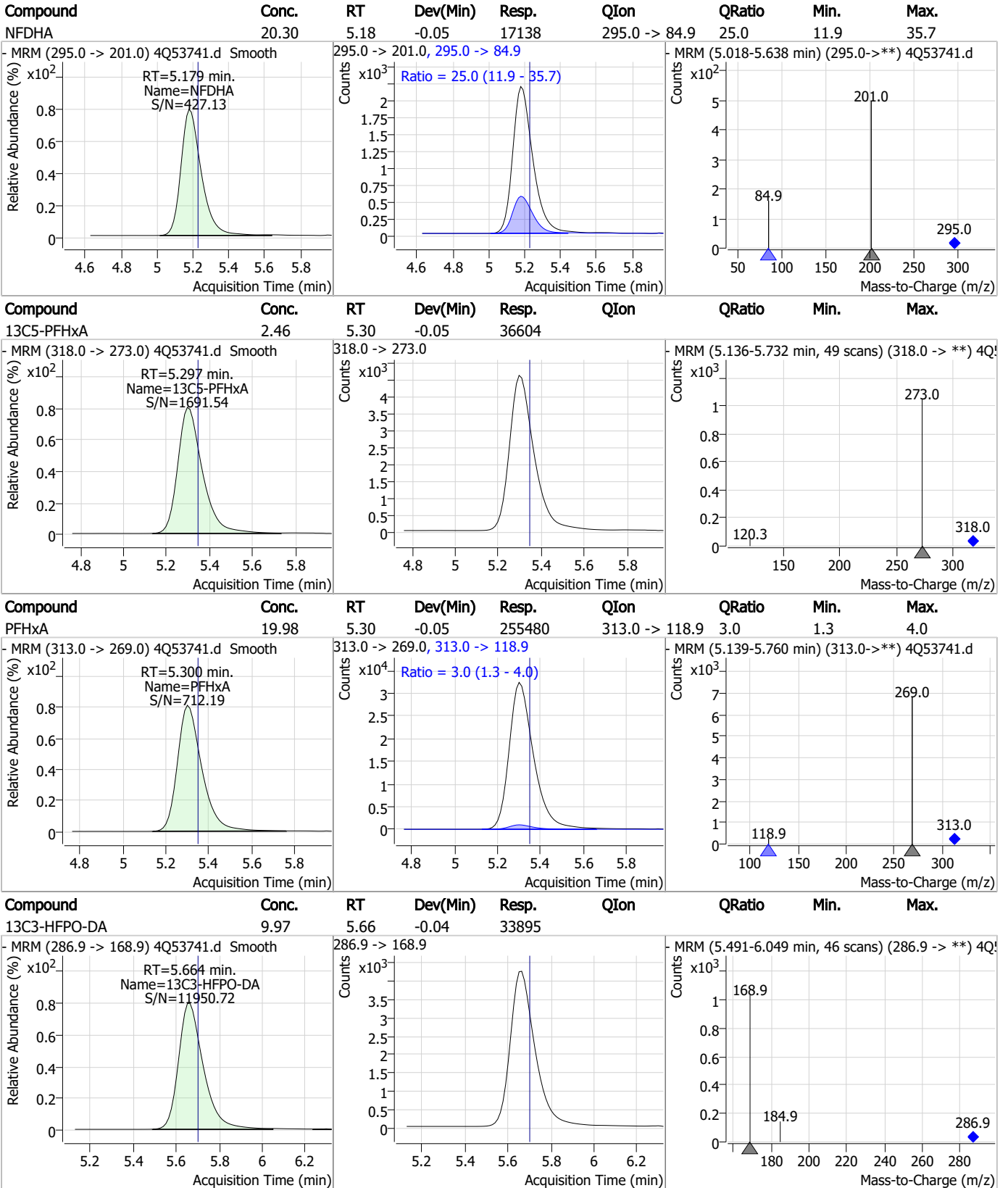
### Perfluorinated Compounds by LC/MS/MS



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### Perfluorinated Compounds by LC/MS/MS

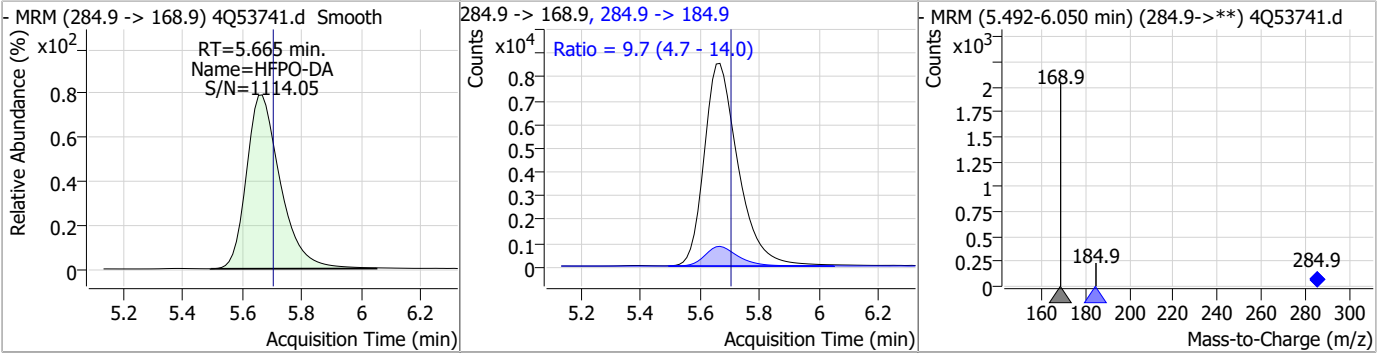


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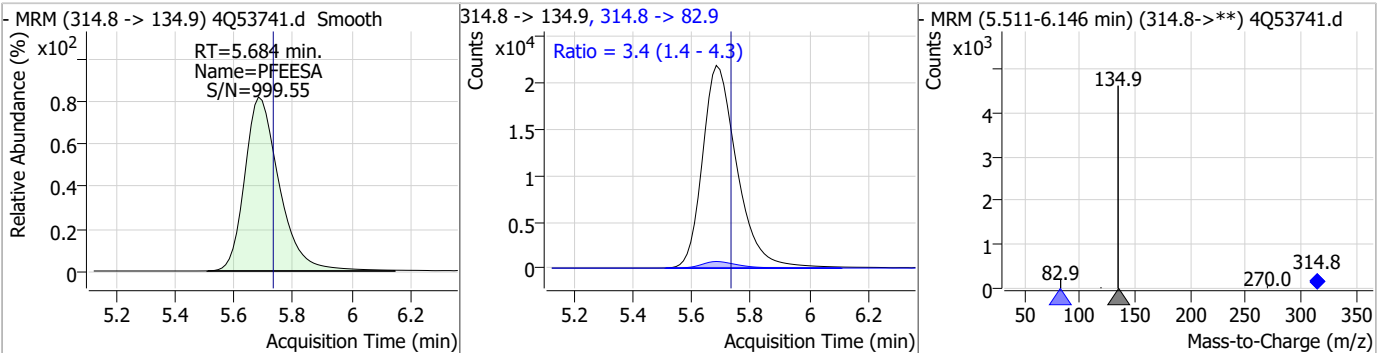
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### Perfluorinated Compounds by LC/MS/MS

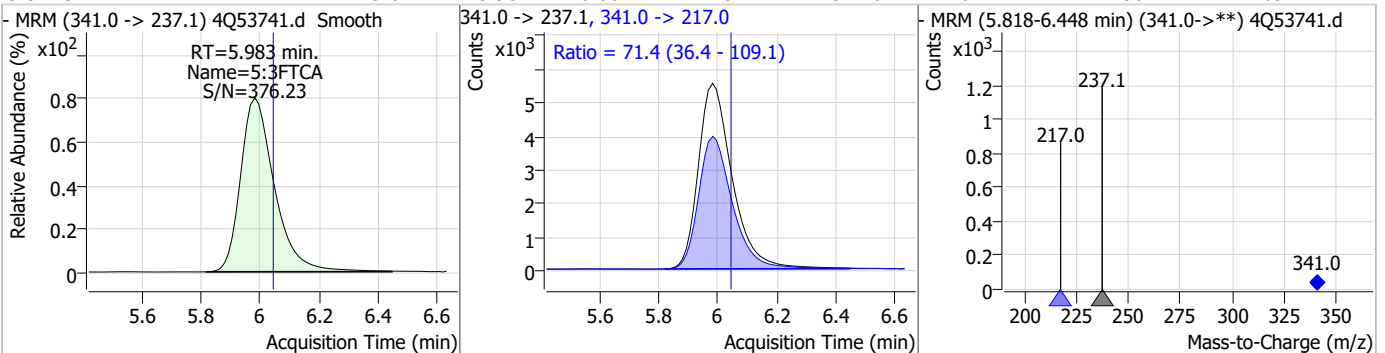
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	18.82	5.67	-0.04	67567	284.9 -> 184.9	9.7	4.7	14.0



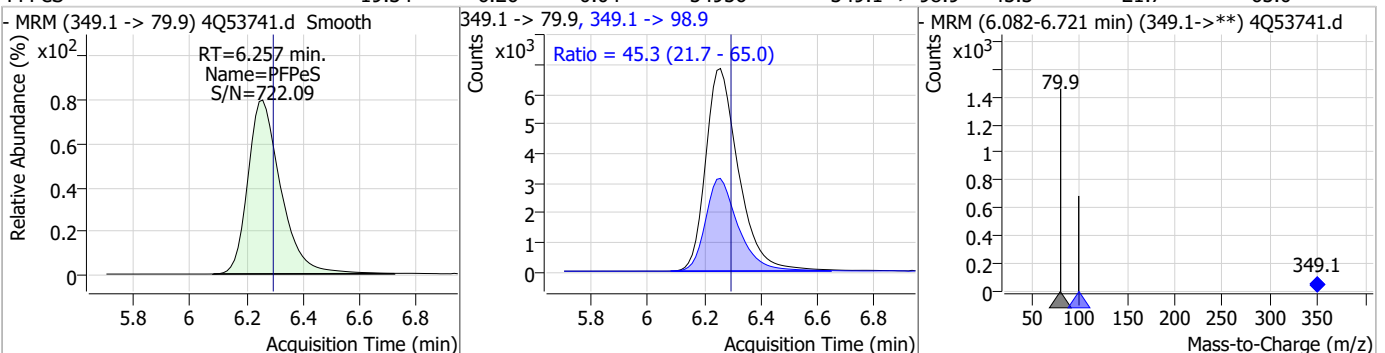
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	17.51	5.68	-0.05	177172	314.8 -> 82.9	3.4	1.4	4.3



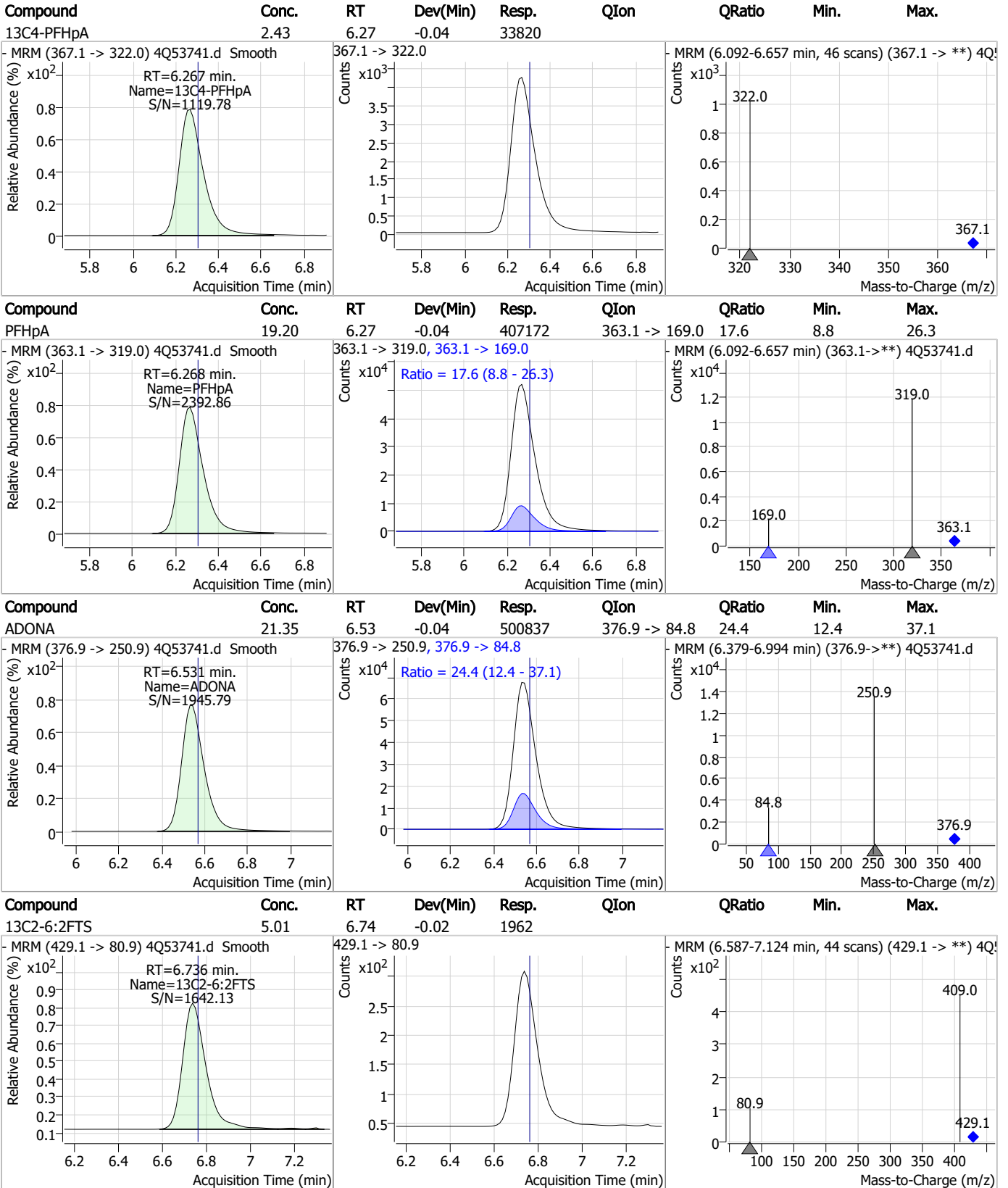
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	19.64	5.98	-0.06	44194	341.0 -> 217.0	71.4	36.4	109.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	19.34	6.26	-0.04	54956	349.1 -> 98.9	45.3	21.7	65.0



### Perfluorinated Compounds by LC/MS/MS

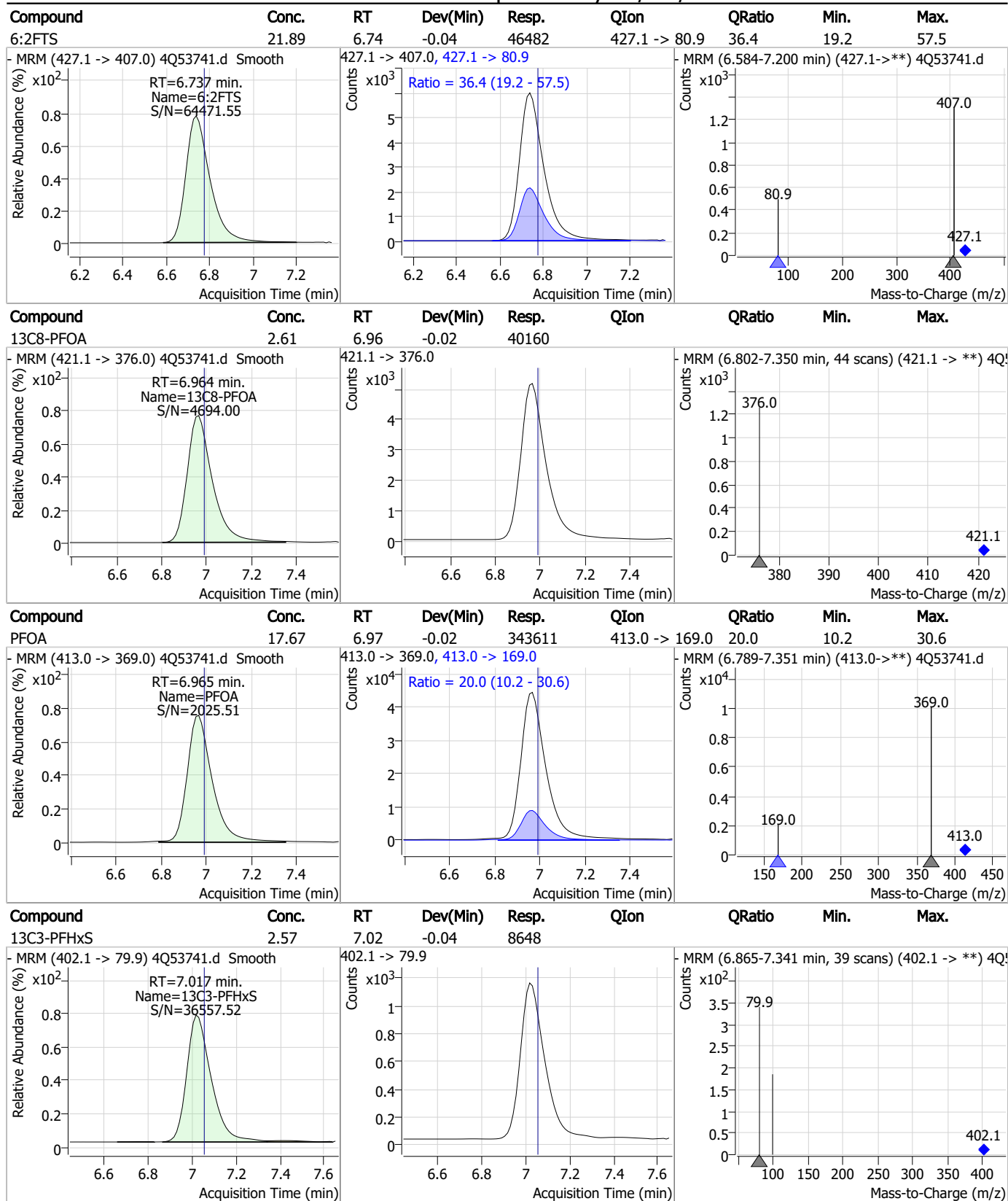


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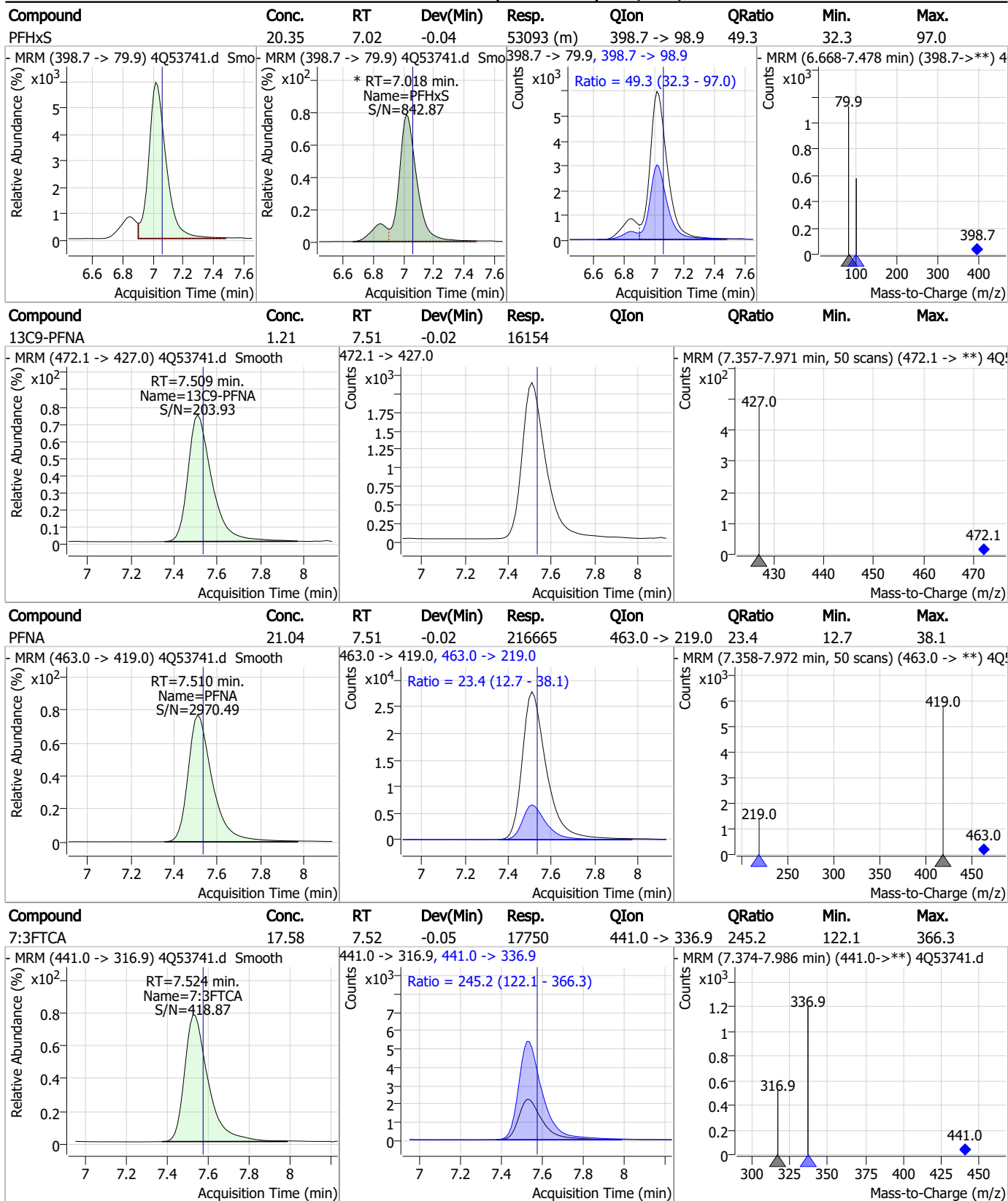
### Perfluorinated Compounds by LC/MS/MS



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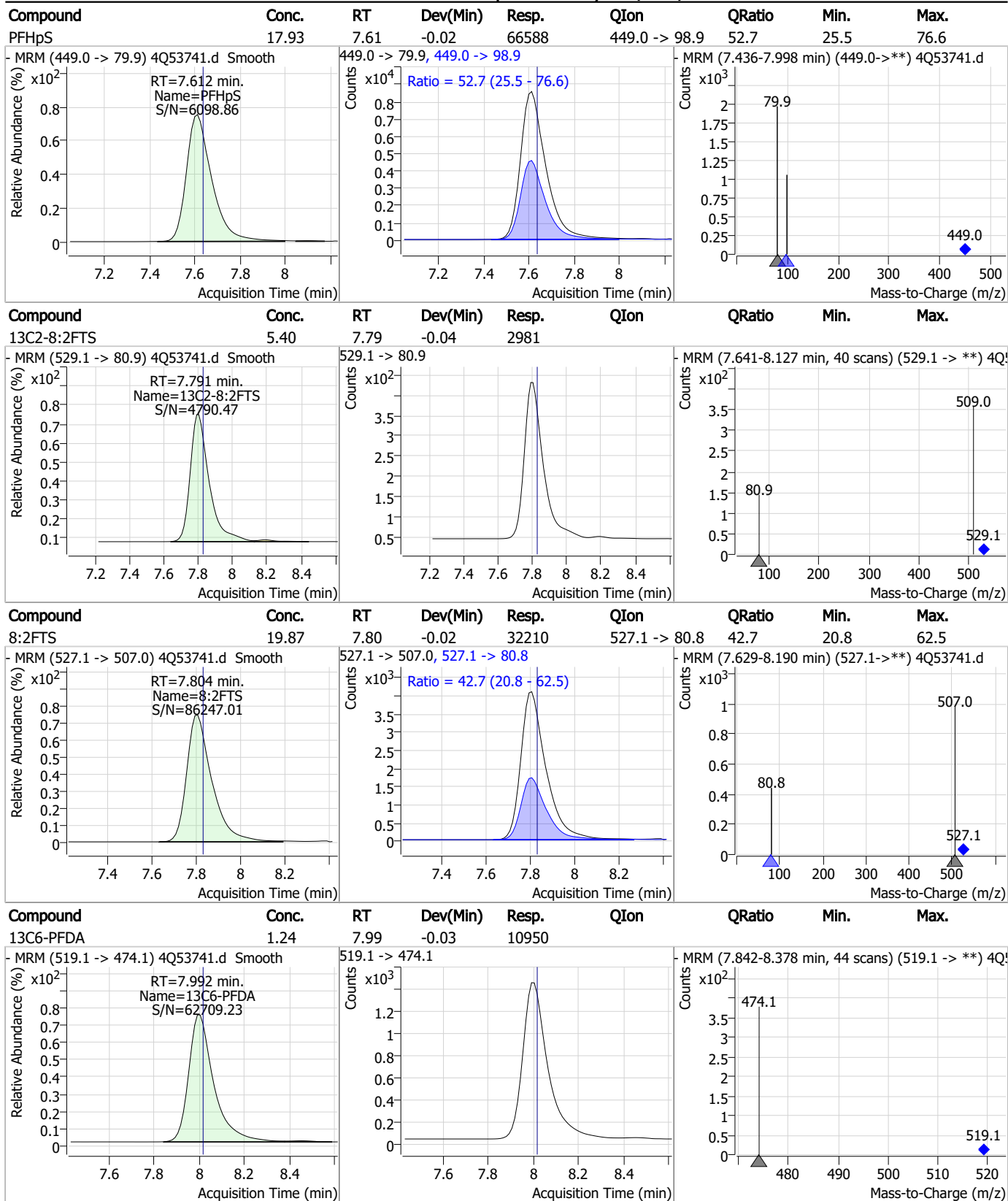
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### Perfluorinated Compounds by LC/MS/MS



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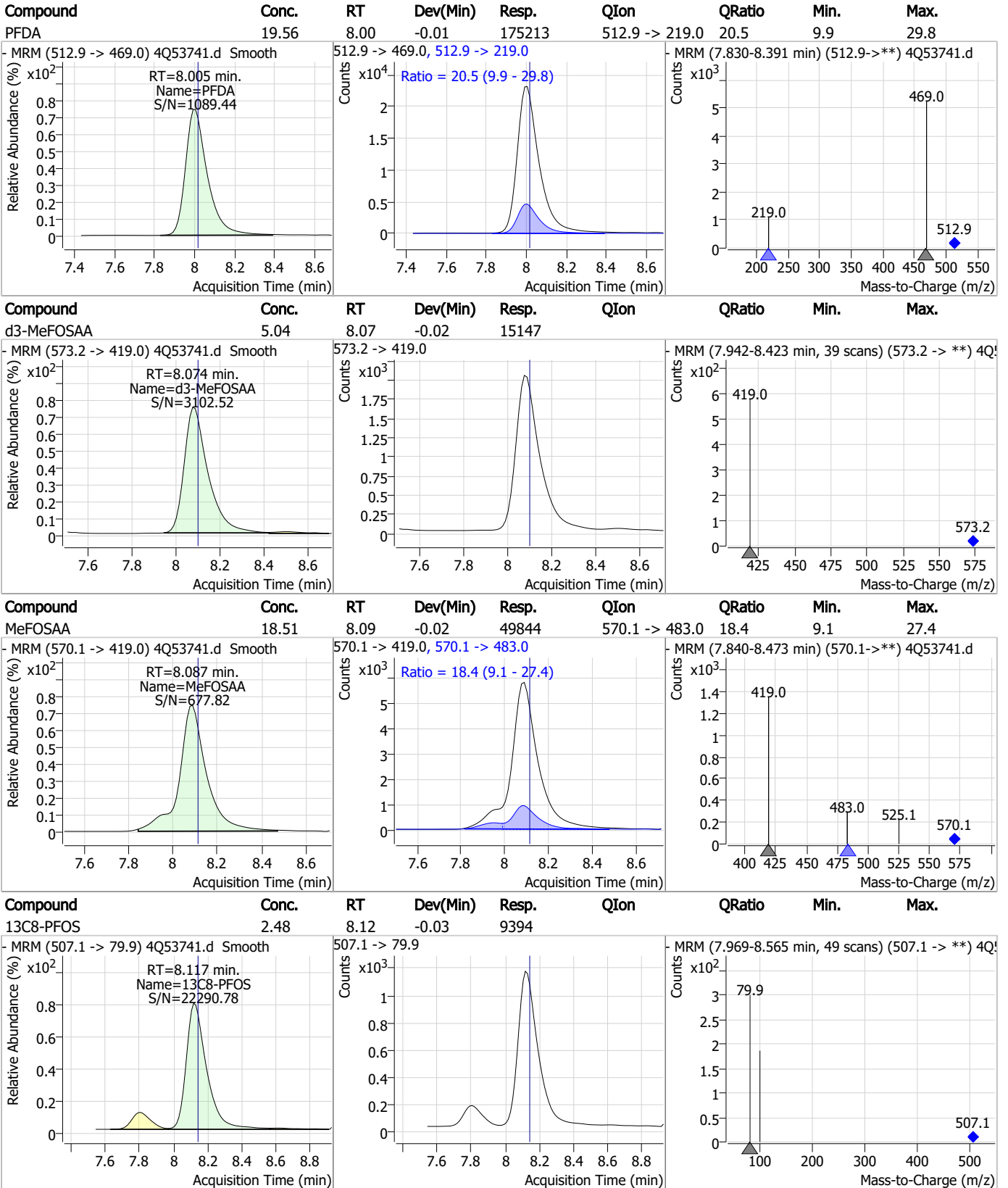
### Perfluorinated Compounds by LC/MS/MS



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### Perfluorinated Compounds by LC/MS/MS

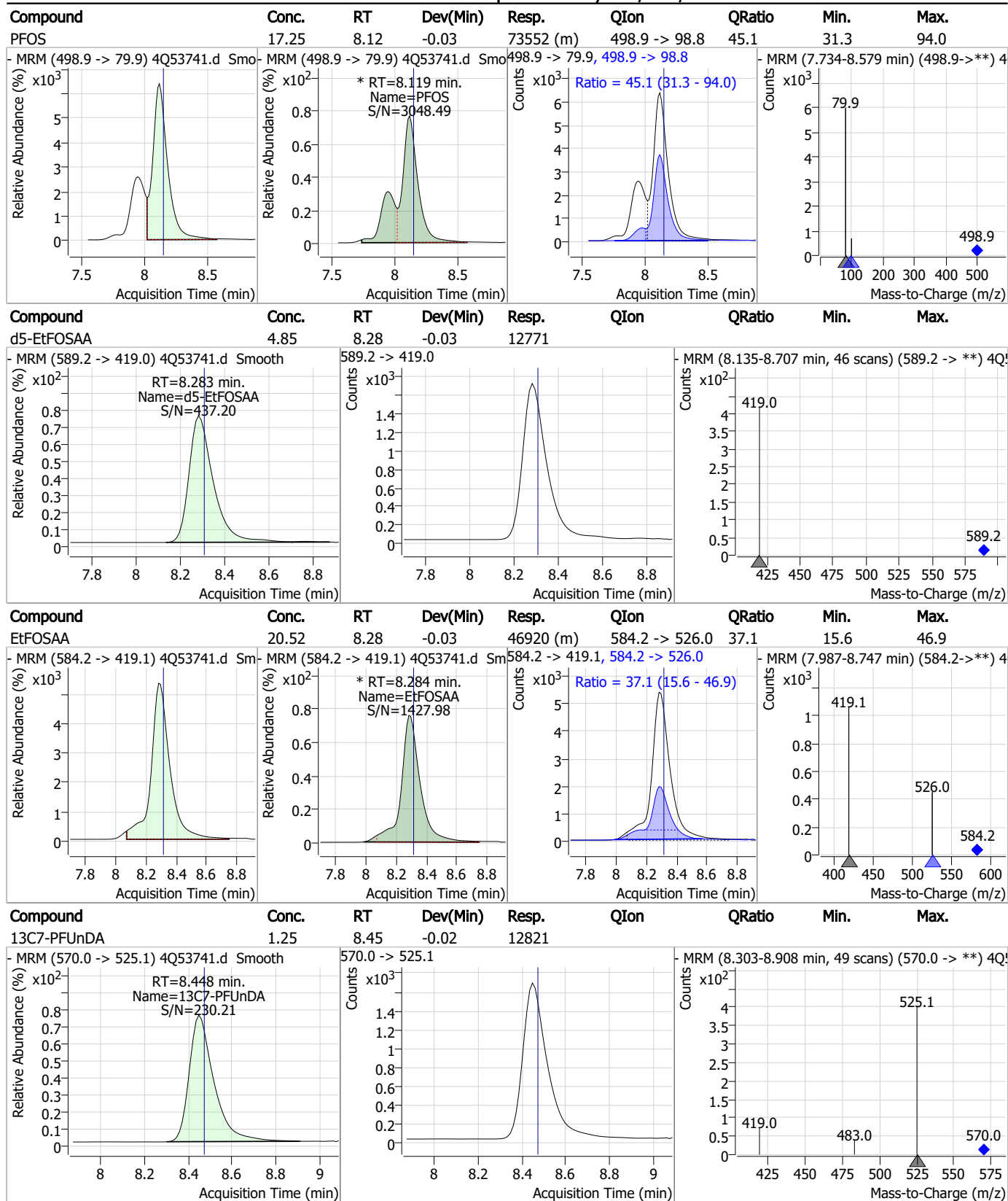


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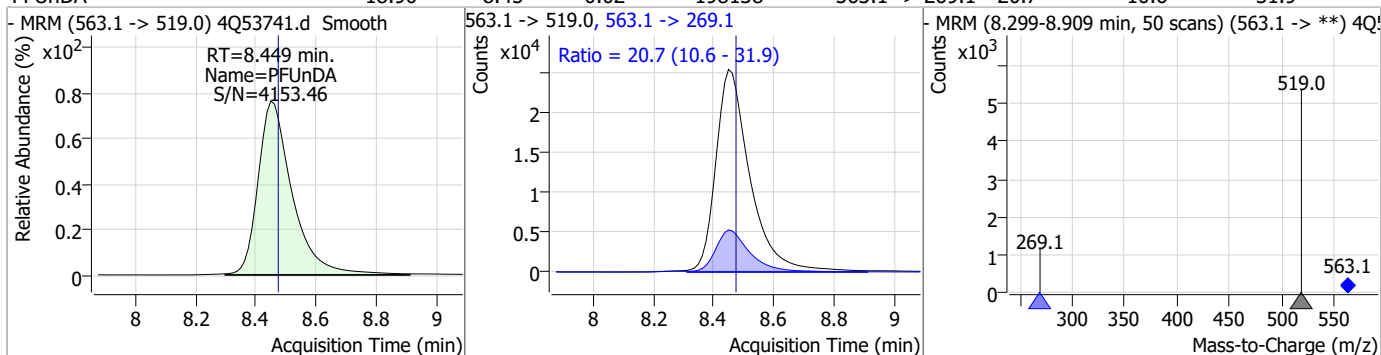
### Perfluorinated Compounds by LC/MS/MS



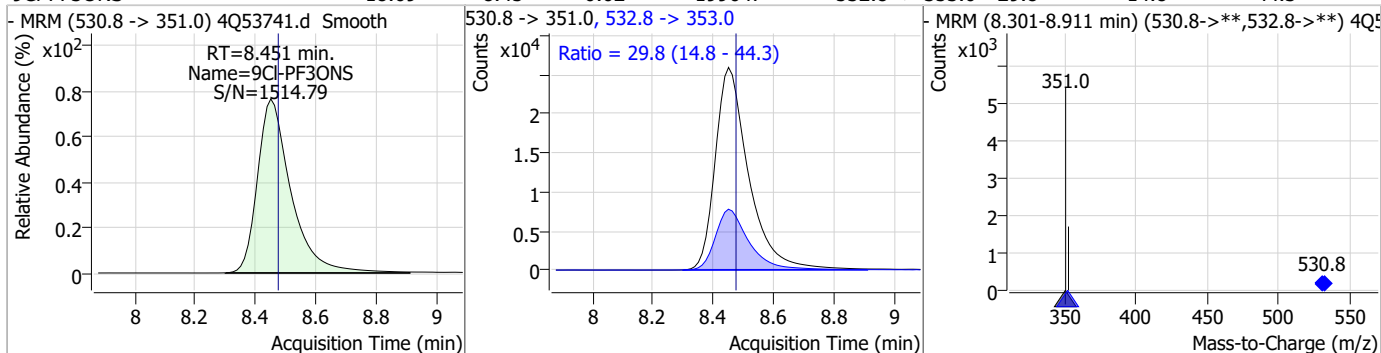
7.7.11  
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### Perfluorinated Compounds by LC/MS/MS

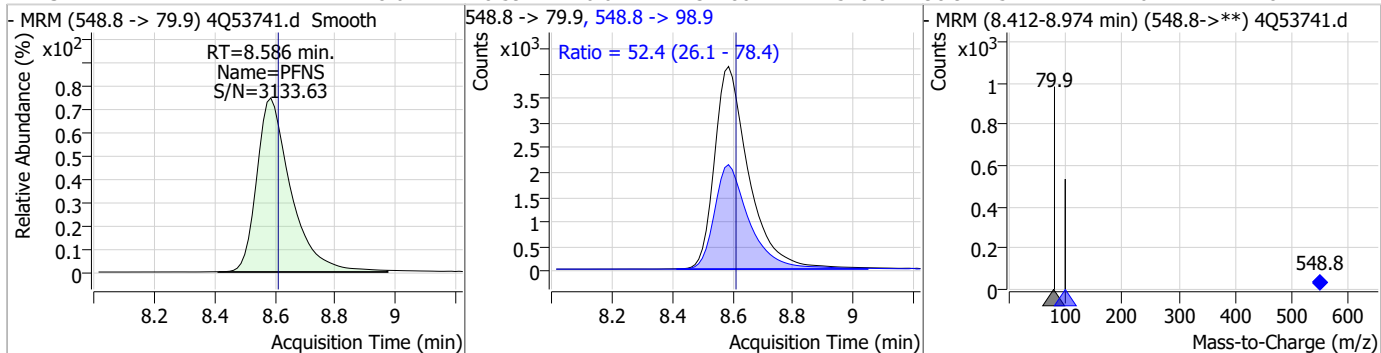
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	18.90	8.45	-0.02	198138	563.1 -> 269.1	20.7	10.6	31.9



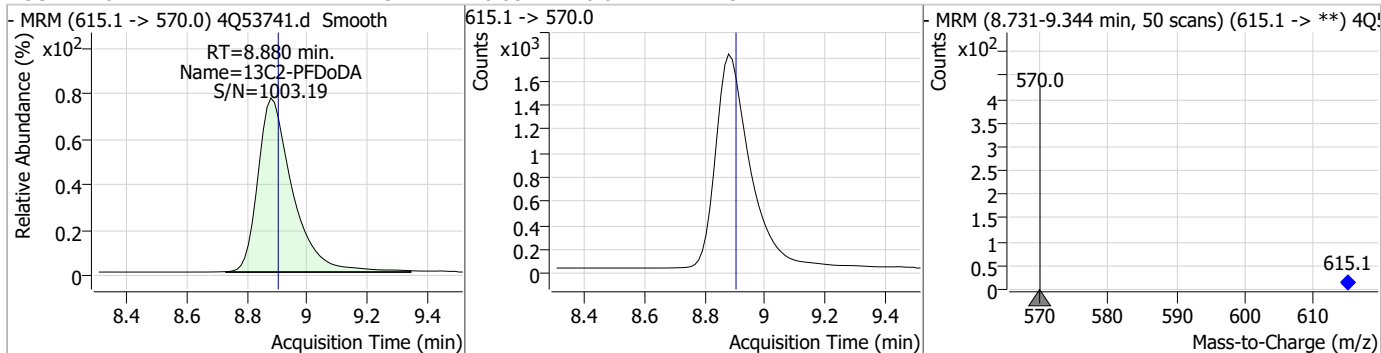
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	18.69	8.45	-0.02	199647	532.8 -> 353.0	29.8	14.8	44.3



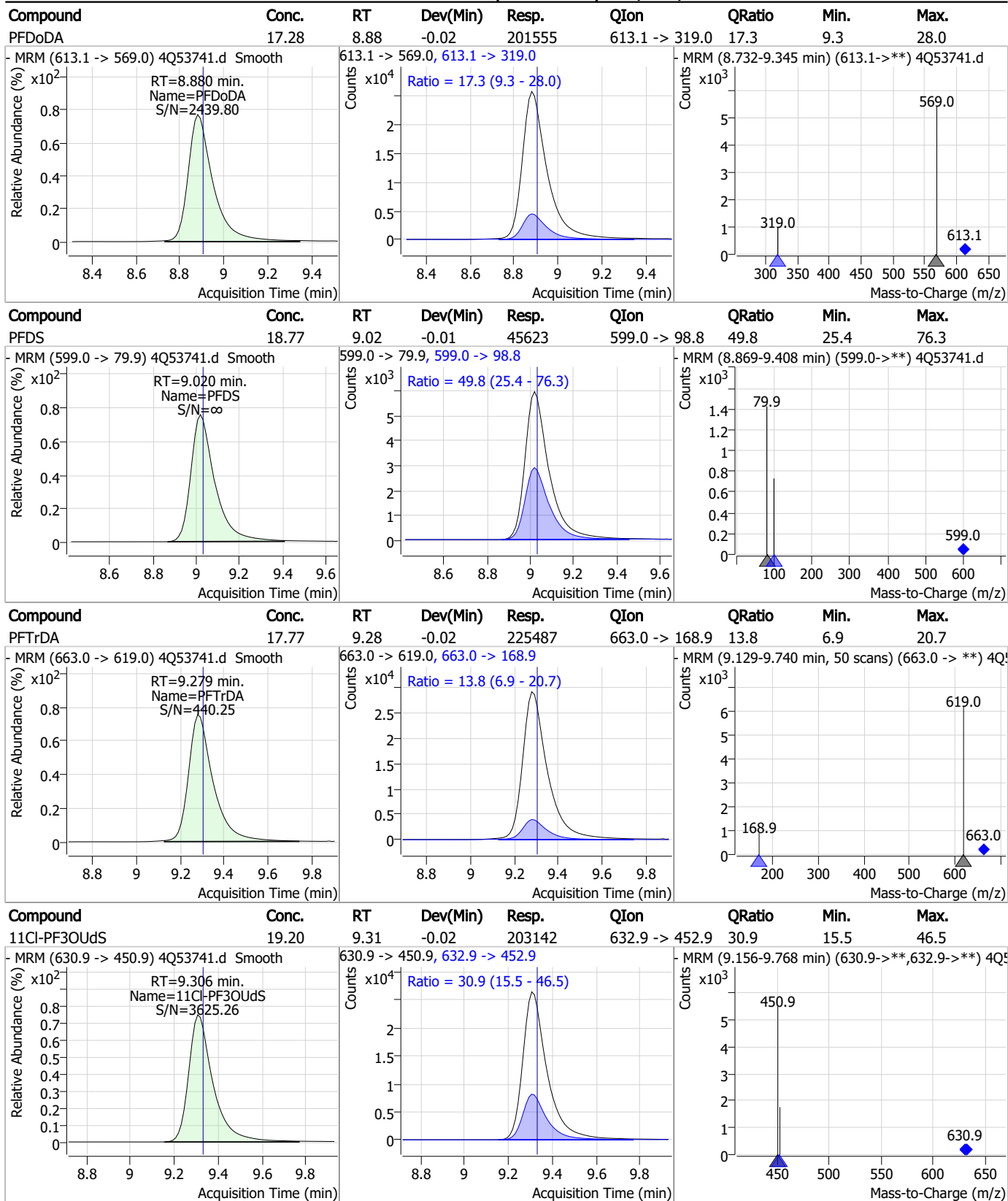
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	18.01	8.59	-0.02	32286	548.8 -> 98.9	52.4	26.1	78.4



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

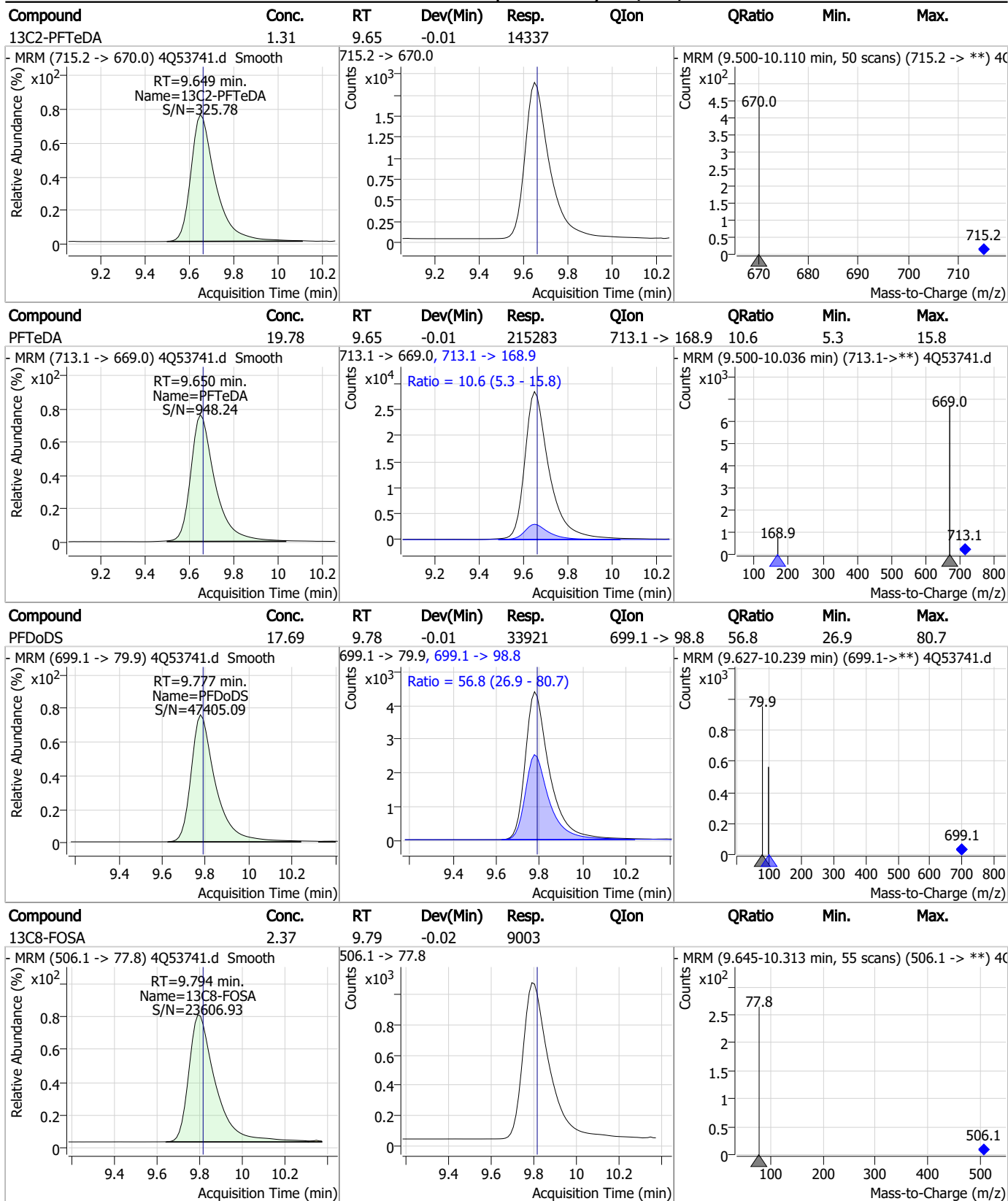


### Perfluorinated Compounds by LC/MS/MS



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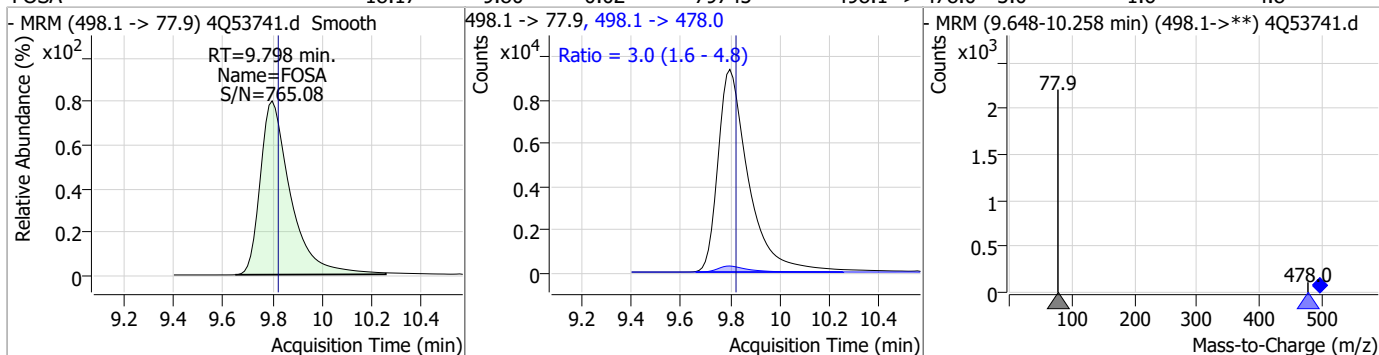
### Perfluorinated Compounds by LC/MS/MS



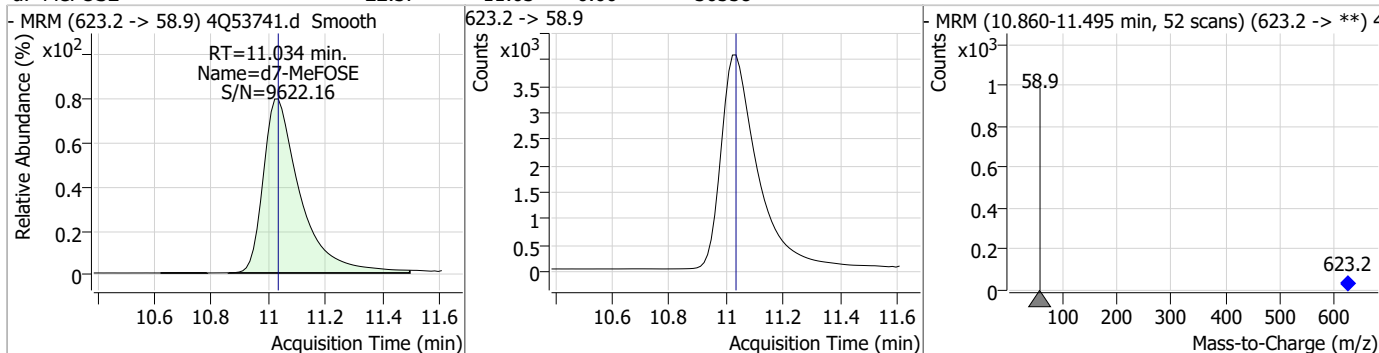
7.7.11  
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### Perfluorinated Compounds by LC/MS/MS

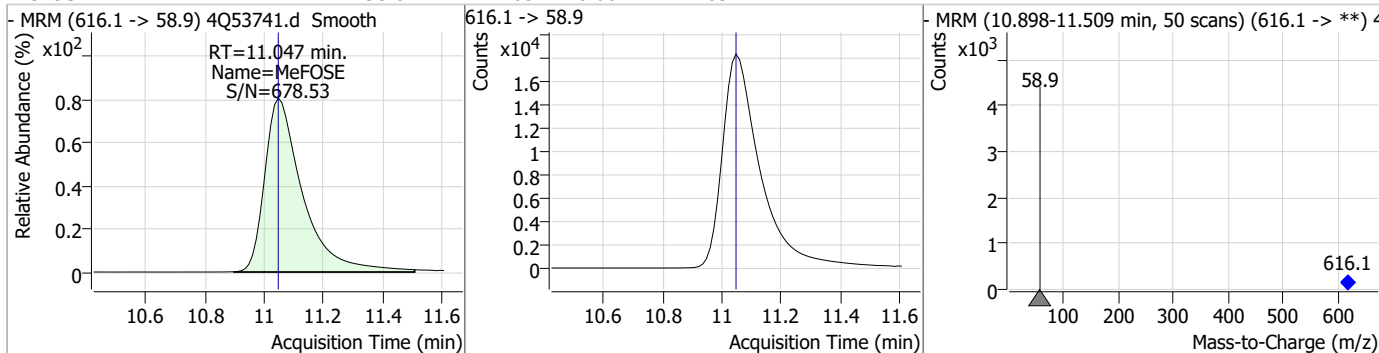
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	18.17	9.80	-0.02	79745	498.1 -> 478.0	3.0	1.6	4.8



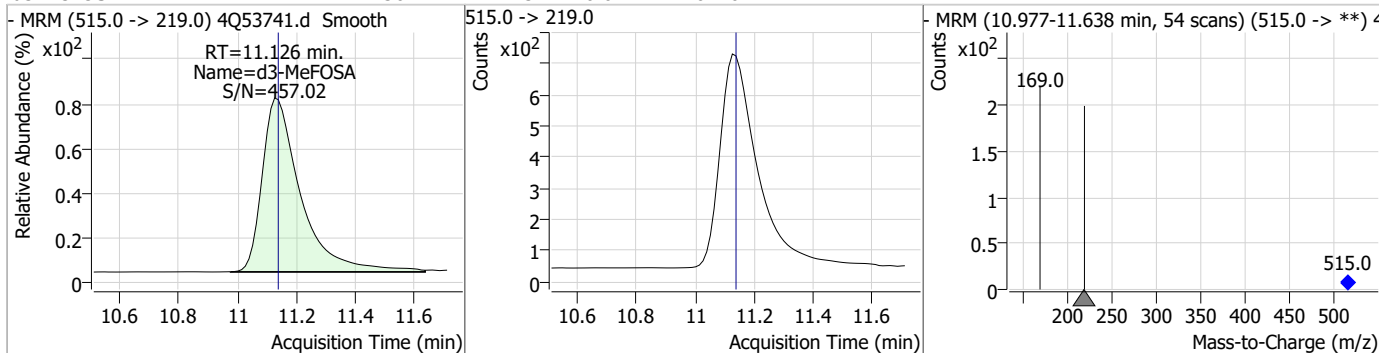
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	22.37	11.03	0.00	36558	623.2 -> 58.9			



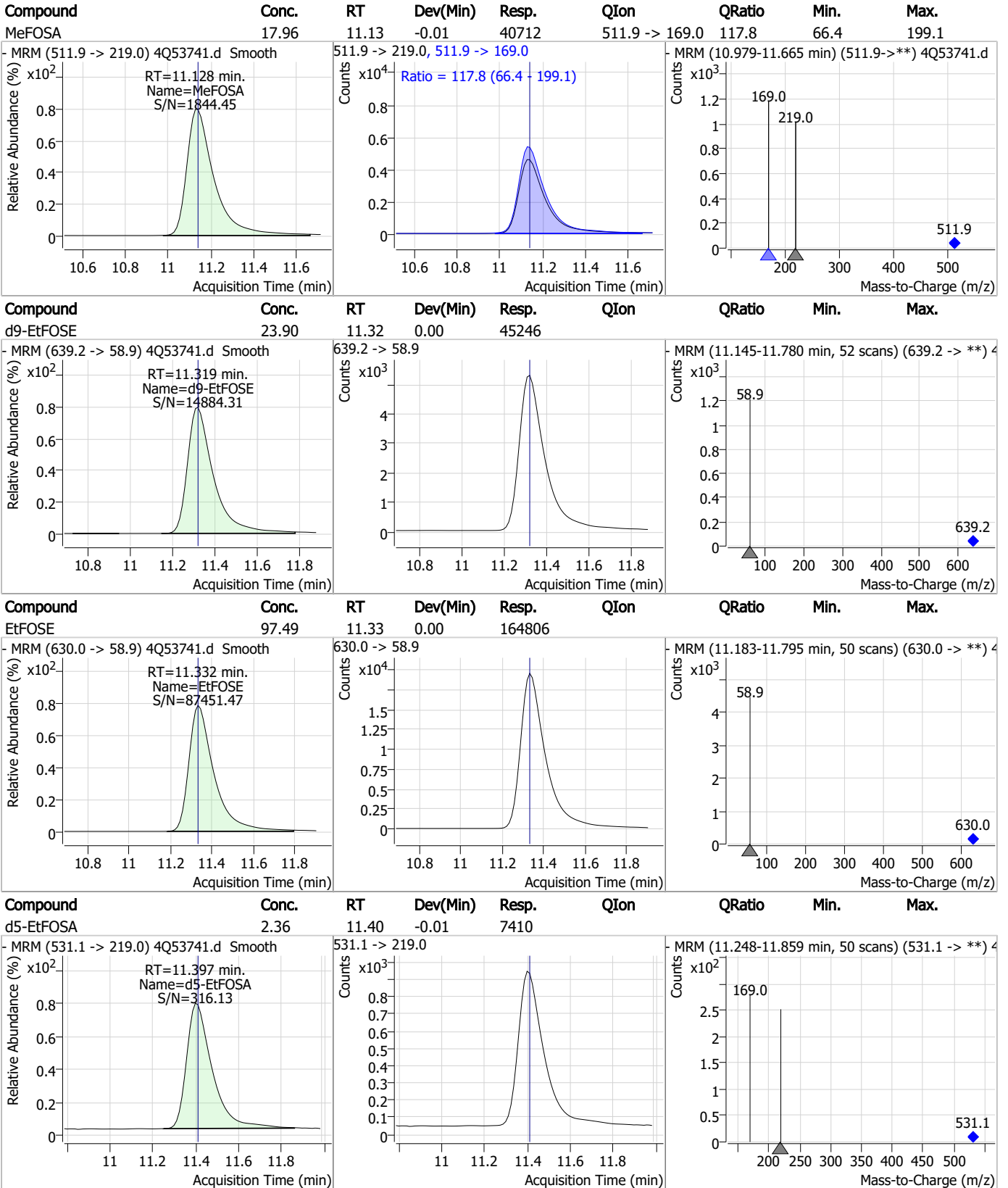
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	98.01	11.05	0.00	163247	616.1 -> 58.9			



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



### Perfluorinated Compounds by LC/MS/MS

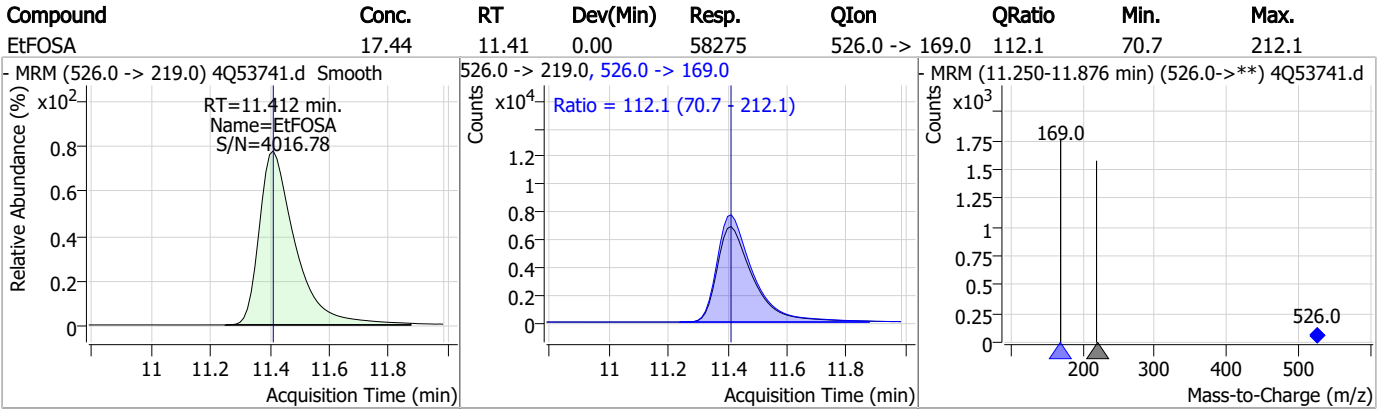


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### Perfluorinated Compounds by LC/MS/MS



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# Manual Integration Approval Summary

Sample Number: S4Q785-ICV785      Method: EPA DRAFT 1633  
Lab FileID: 4Q53741.D      Analyst approved: 11/14/23 13:55 Anna Ludwig  
Injection Time: 11/13/23 18:27      Supervisor approved: 11/14/23 15:48 Natasha Gumtie

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

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## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53868.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/15/2023 11:00:07 AM  
 Sample Name : cc785-4  
 Vial : P1-A5  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q786.batch.bin  
 Sample Information : OP98180,S4Q786,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.624	216.8 -> 171.9	91802	10.00 µg/L	-0.075
M5-PFPeA	4.125	268.3 -> 223.0	39480	5.00 µg/L	-0.050
M5-PFHxA	5.297	318.0 -> 273.0	29372	2.50 µg/L	-0.050
M4-PFHpA	6.267	367.1 -> 322.0	29164	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	35919	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	14631	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	10004	1.25 µg/L	-0.013
M7-PFUnDA	8.449	570.0 -> 525.1	11927	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	12132	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	12126	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	7478	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	8594	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	7074	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7942	2.50 µg/L	-0.026
M2-4:2FTS	5.009	329.1 -> 80.9	1172	5.00 µg/L	-0.037
M2-6:2FTS	6.736	429.1 -> 80.9	2392	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	3169	5.00 µg/L	-0.025
M3-MeFOSAA	8.074	573.2 -> 419.0	15436	5.00 µg/L	-0.025
M3-HFPO-DA	5.664	286.9 -> 168.9	26871	10.00 µg/L	-0.037
M5-EtFOSAA	8.283	589.2 -> 419.0	12583	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	32789	25.00 µg/L	-0.012
M9-EtFOSE	11.319	639.2 -> 58.9	39854	25.00 µg/L	0.000
M5-EtFOSA	11.398	531.1 -> 219.0	6281	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	5089	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6650	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	44587	5.00 µg/L	-0.075
18O2-PFHxS	7.016	403.0 -> 83.9	4185	2.50 µg/L	-0.038
13C4-PFOA	6.964	417.1 -> 372.0	39721	2.50 µg/L	-0.025
13C2-PFDA	7.992	515.1 -> 470.1	11103	1.25 µg/L	-0.037
13C5-PFNA	7.509	468.0 -> 423.0	15273	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	32831	2.50 µg/L	-0.050
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.009	329.1 -> 80.9	1172	8.18 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 163.6%		
13C2-6:2FTS	6.736	429.1 -> 80.9	2392	7.93 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 158.6%		
13C2-8:2FTS	7.804	529.1 -> 80.9	3169	7.45 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 149.0%		
13C2-PFDoDA	8.880	615.1 -> 570.0	12132	1.21 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C2-PFTeDA	9.649	715.2 -> 670.0	12126	1.20 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.2%		
13C3-PFBS	5.152	302.1 -> 79.9	8594	2.74 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.5%		
13C3-PFHxS	7.017	402.1 -> 79.9	7074	2.73 µg/L	-0.037

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### Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.1%		
13C4-PFBA	2.624	216.8 -> 171.9	91802	9.88 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C4-PFHpA	6.267	367.1 -> 322.0	29164	2.55 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C5-PFHxA	5.297	318.0 -> 273.0	29372	2.40 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C5-PFPeA	4.125	268.3 -> 223.0	39480	4.93 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C6-PFDA	8.004	519.1 -> 474.1	10004	1.22 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C7-PFUnDA	8.449	570.0 -> 525.1	11927	1.26 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C8-FOSA	9.794	506.1 -> 77.8	7478	2.35 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.1%		
13C8-PFOA	6.964	421.1 -> 376.0	35919	2.53 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C8-PFOS	8.117	507.1 -> 79.9	7942	2.50 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C9-PFNA	7.509	472.1 -> 427.0	14631	1.21 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.2%		
d3-MeFOSAA	8.074	573.2 -> 419.0	15436	6.12 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.4%		
13C3-HFPO-DA	5.664	286.9 -> 168.9	26871	9.62 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 96.2%		
d3-MeFOSA	11.126	515.0 -> 219.0	5089	2.29 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.8%		
d5-EtFOSAA	8.283	589.2 -> 419.0	12583	5.70 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.9%		
d7-MeFOSE	11.022	623.2 -> 58.9	32789	23.93 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 95.7%		
d9-EtFOSE	11.319	639.2 -> 58.9	39854	25.12 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.5%		
d5-EtFOSA	11.398	531.1 -> 219.0	6281	2.39 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.4%		
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.009	327.1 -> 307.0	20859	9.01 µg/L	99
		327.1 -> 80.9	8690		
6:2FTS	6.737	427.1 -> 407.0	24949	9.64 µg/L	98
		427.1 -> 80.9	9344		
8:2FTS	7.804	527.1 -> 507.0	17670	10.25 µg/L	98
		527.1 -> 80.8	7570		
EtFOSAA	8.284	584.2 -> 419.1	5756	2.55 µg/L	m 73
		584.2 -> 526.0	2666		
FOSA	9.798	498.1 -> 77.9	9325	2.56 µg/L	99
		498.1 -> 478.0	317		
MeFOSAA	8.087	570.1 -> 419.0	6074	2.21 µg/L	94
		570.1 -> 483.0	1278		
PFBA	2.620	212.8 -> 168.9	33322	9.98 µg/L	100
PFBS	5.153	298.7 -> 79.9	6444	2.11 µg/L	93
		298.7 -> 98.8	2762		
PFDA	7.992	512.9 -> 469.0	19739	2.41 µg/L	98
		512.9 -> 219.0	4099		
PFDODA	8.880	613.1 -> 569.0	25420	2.57 µg/L	96
		613.1 -> 319.0	4283		
PFDS	9.020	599.0 -> 79.9	5067	2.47 µg/L	95

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.268	599.0 -> 98.8	2402	2.48	µg/L	99
		363.1 -> 319.0	45312			
PFHpS	7.612	363.1 -> 169.0	8176	2.26	µg/L	98
		449.0 -> 79.9	7111			
PFHxA	5.300	449.0 -> 98.9	3740	2.61	µg/L	99
		313.0 -> 269.0	26767			
PFHxS	7.018	313.0 -> 118.9	816	2.52	µg/L	m
		398.7 -> 79.9	5382			
PFNA	7.510	398.7 -> 98.9	2740	2.59	µg/L	98
		463.0 -> 419.0	24182			
PFNS	8.574	463.0 -> 219.0	5904	2.39	µg/L	93
		548.8 -> 79.9	3625			
PFOA	6.965	548.8 -> 98.9	2072	2.37	µg/L	99
		413.0 -> 369.0	41140			
PFOS	8.119	413.0 -> 169.0	8610	2.37	µg/L	m
		498.9 -> 79.9	8557			
PFPeA	4.127	498.9 -> 98.8	3731	4.92	µg/L	100
		263.0 -> 219.0	42228			
PFPeS	6.257	349.1 -> 79.9	5664	2.44	µg/L	97
		349.1 -> 98.9	2576			
PFTeDA	9.650	713.1 -> 669.0	22977	2.50	µg/L	99
		713.1 -> 168.9	2460			
PFTrDA	9.279	663.0 -> 619.0	27426	2.55	µg/L	98
		663.0 -> 168.9	3980			
PFUnDA	8.449	563.1 -> 519.0	24074	2.47	µg/L	99
		563.1 -> 269.1	5203			
11CI-PF3OUdS	9.306	630.9 -> 450.9	39980	4.77	µg/L	99
		632.9 -> 452.9	12550			
9CI-PF3ONS	8.451	530.8 -> 351.0	41962	4.95	µg/L	96
		532.8 -> 353.0	13293			
ADONA	6.544	376.9 -> 250.9	110431	5.94	µg/L	99
		376.9 -> 84.8	26484			
HFPO-DA	5.665	284.9 -> 168.9	14260	5.01	µg/L	99
		284.9 -> 184.9	1411			
3:3FTCA	3.561	241.0 -> 177.0	6112	11.75	µg/L	99
		241.0 -> 117.0	544			
5:3FTCA	5.983	341.0 -> 237.1	115044	63.71	µg/L	97
		341.0 -> 217.0	81156			
7:3FTCA	7.524	441.0 -> 316.9	53232	65.71	µg/L	95
		441.0 -> 336.9	125580			
EtFOSA	11.399	526.0 -> 219.0	13940	4.92	µg/L	99
		526.0 -> 169.0	19591			
EtFOSE	11.332	630.0 -> 58.9	18414	12.37	µg/L	100
		511.9 -> 219.0	9768			
MeFOSA	11.128	511.9 -> 169.0	14088	5.29	µg/L	m
		616.1 -> 58.9	19075			
MeFOSE	11.047	699.1 -> 79.9	3718	12.77	µg/L	100
		699.1 -> 98.8	2088			
PFDoDS	9.777	295.0 -> 201.0	3736	2.29	µg/L	97
		295.0 -> 84.9	967			
NFDHA	5.179	279.0 -> 85.1	24360	5.52	µg/L	96
		229.0 -> 84.9	27519			
PFMBA	4.529	314.8 -> 134.9	37615	4.63	µg/L	100
		314.8 -> 82.9	1137			

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



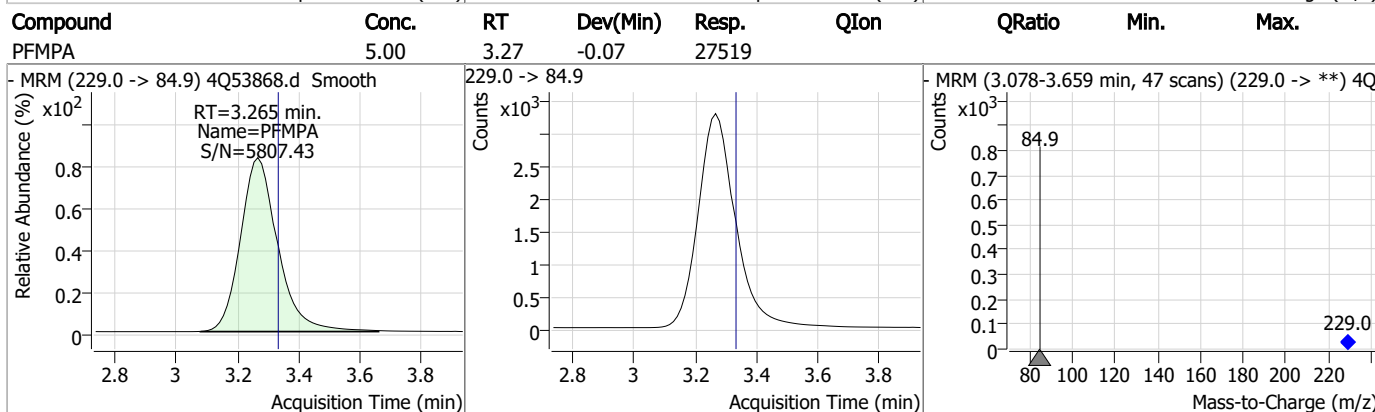
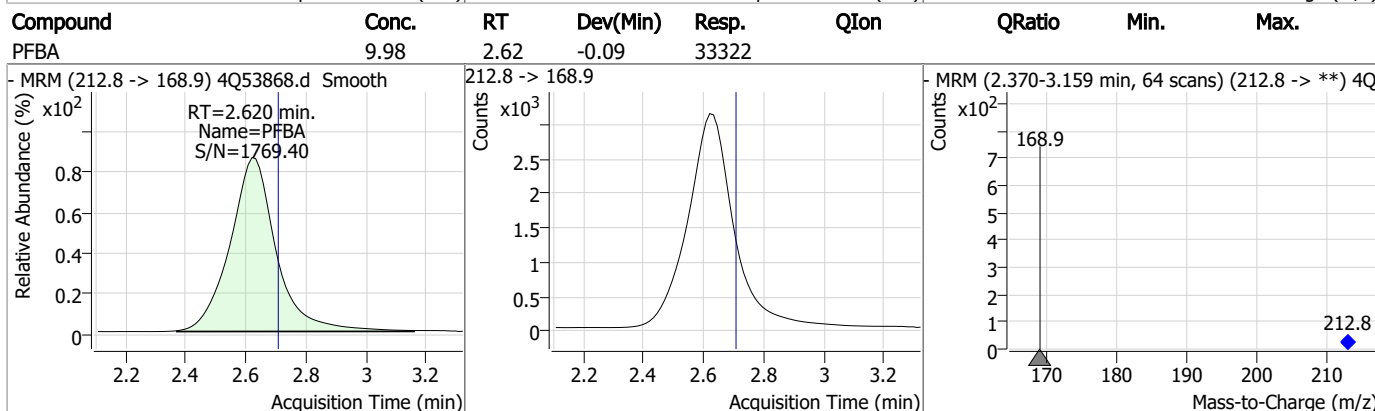
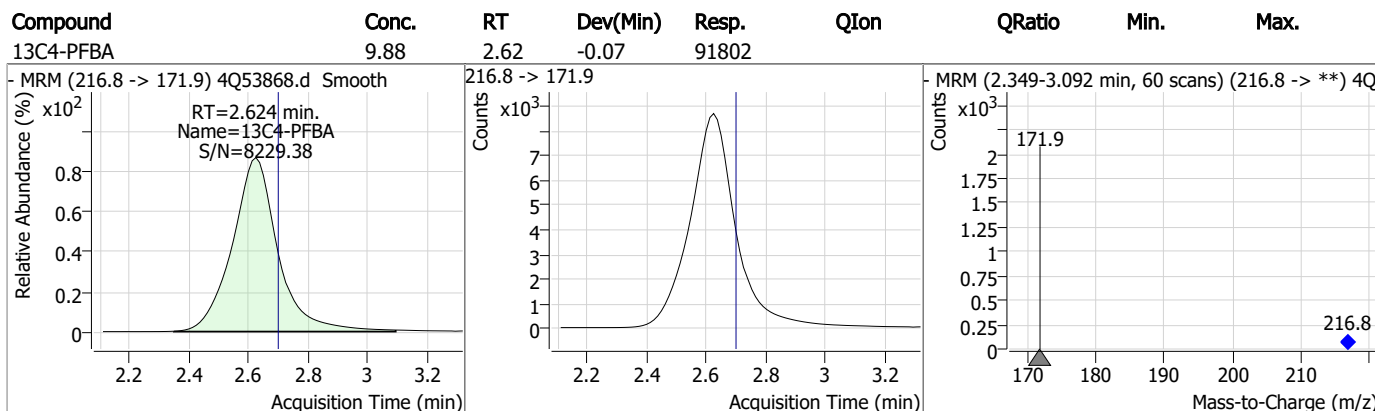
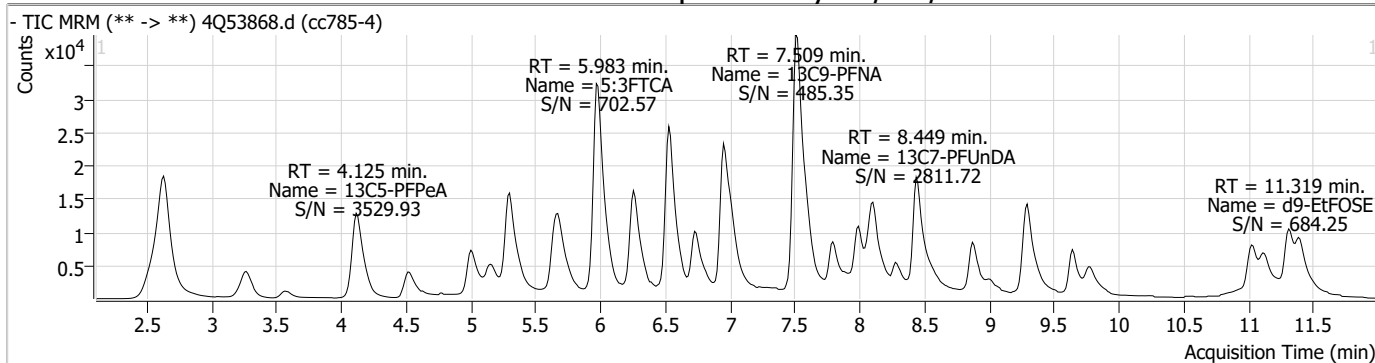
### Perfluorinated Compounds by LC/MS/MS

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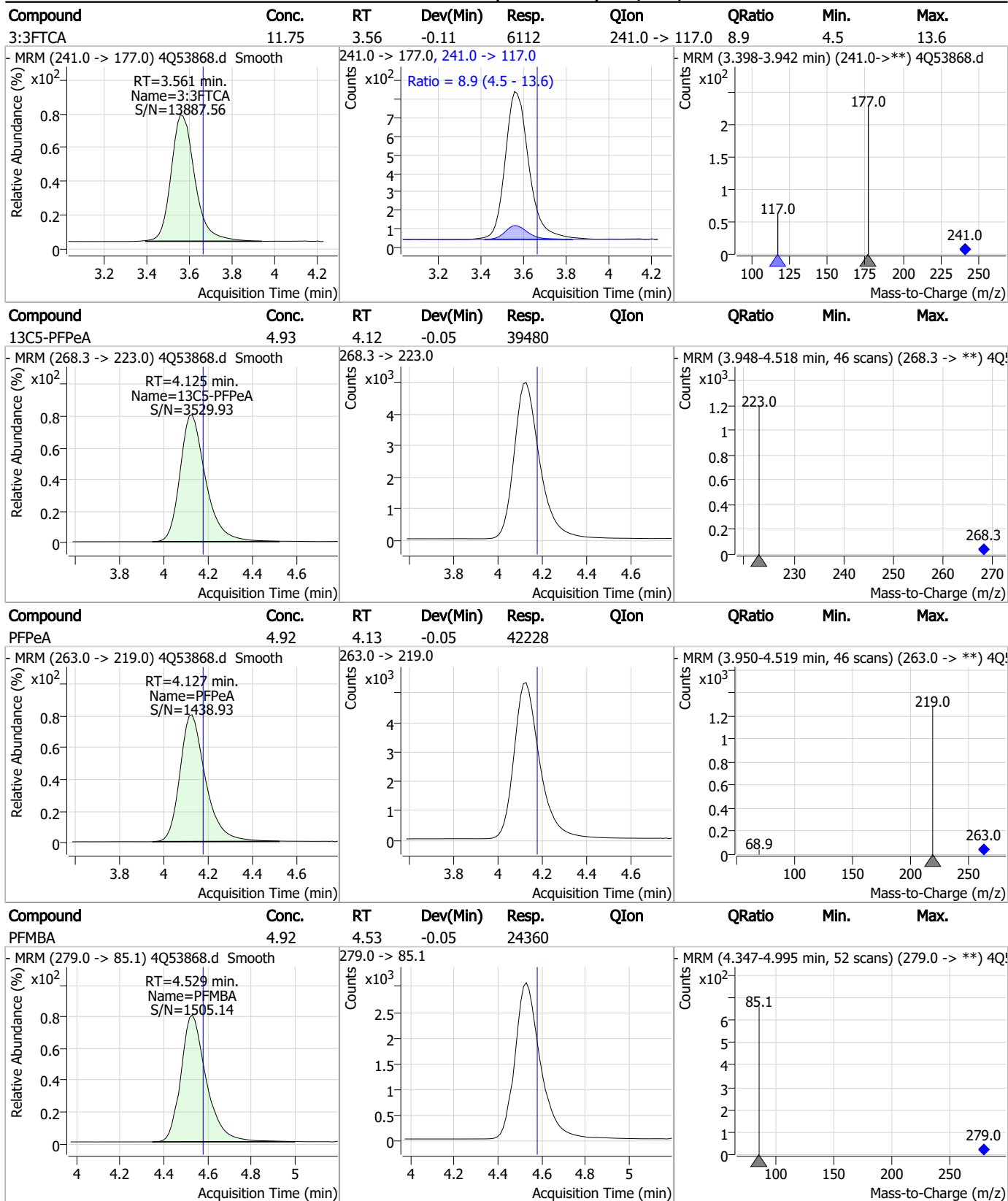
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### Perfluorinated Compounds by LC/MS/MS

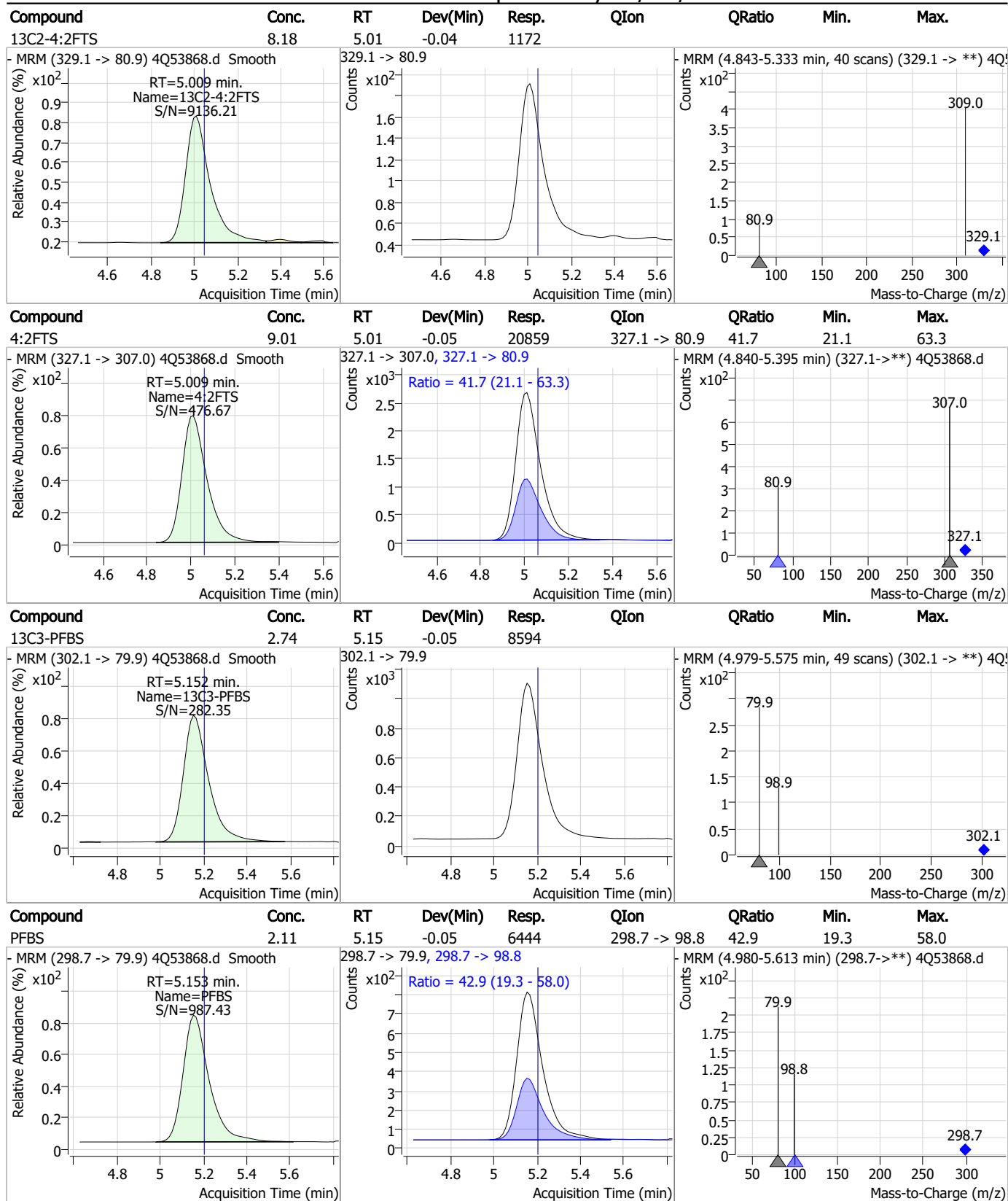


### Perfluorinated Compounds by LC/MS/MS



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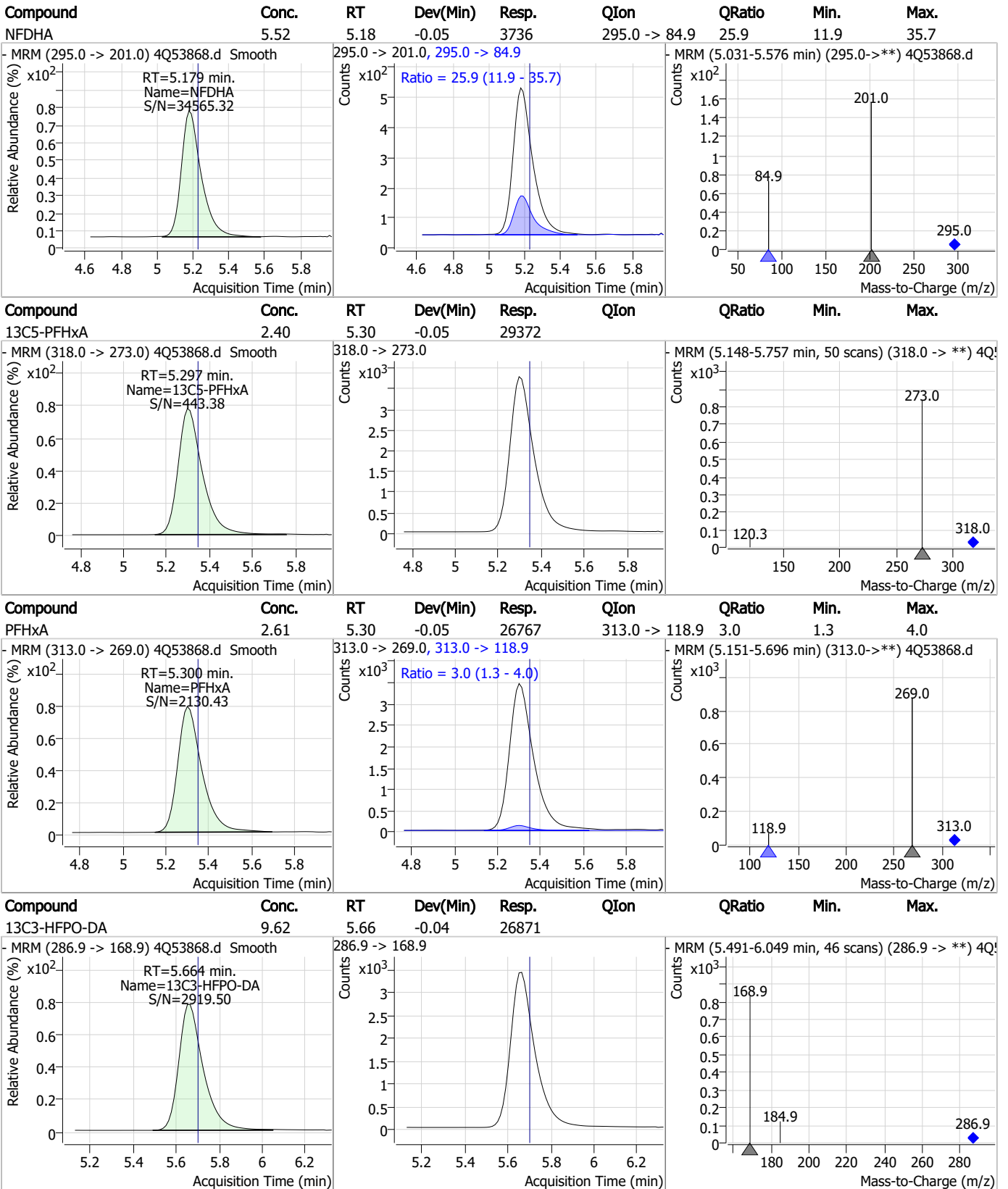
### Perfluorinated Compounds by LC/MS/MS



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### Perfluorinated Compounds by LC/MS/MS

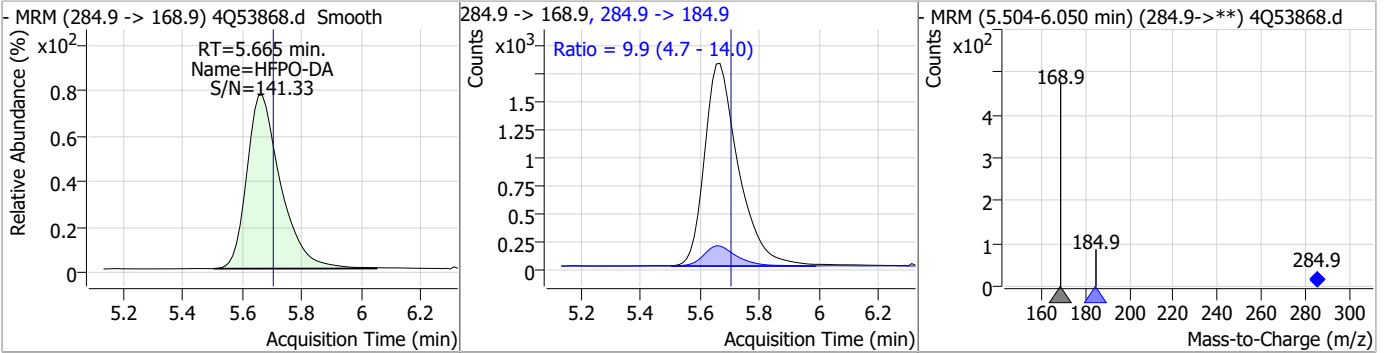


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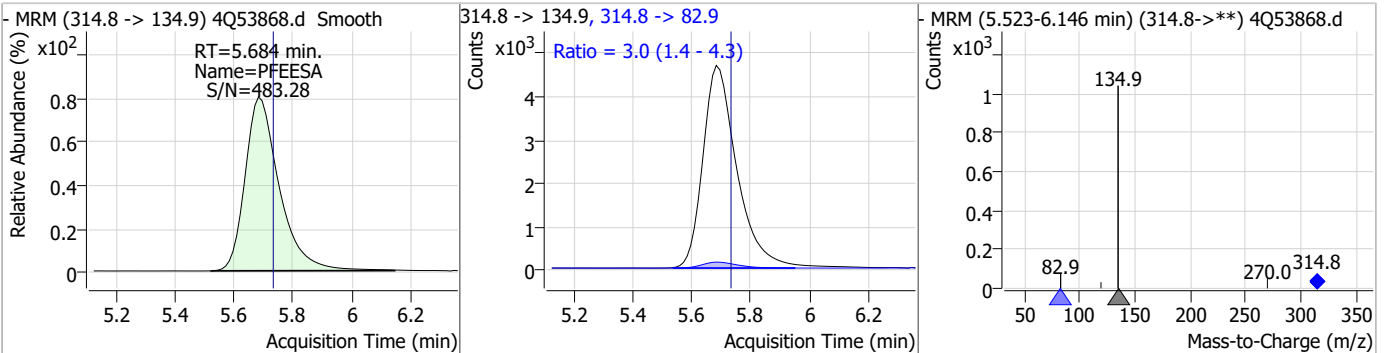


### Perfluorinated Compounds by LC/MS/MS

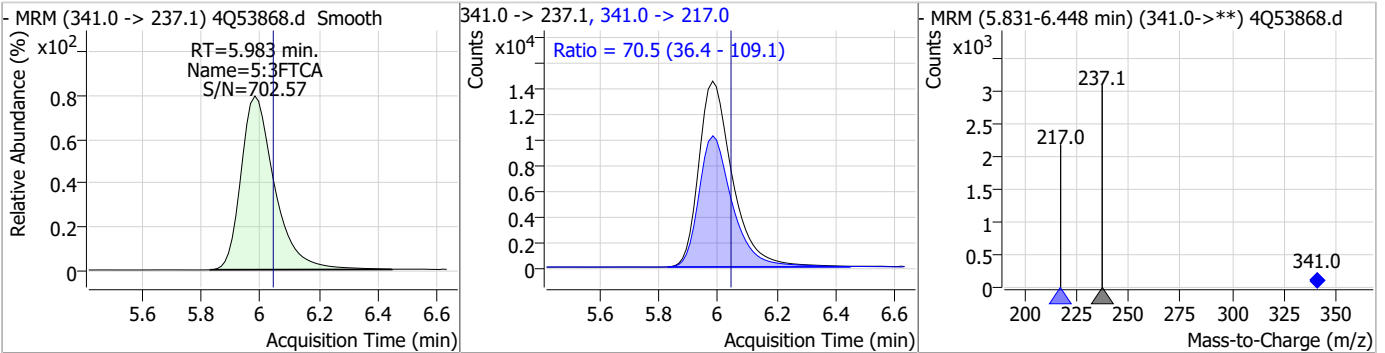
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	5.01	5.67	-0.04	14260	284.9 -> 184.9	9.9	4.7	14.0



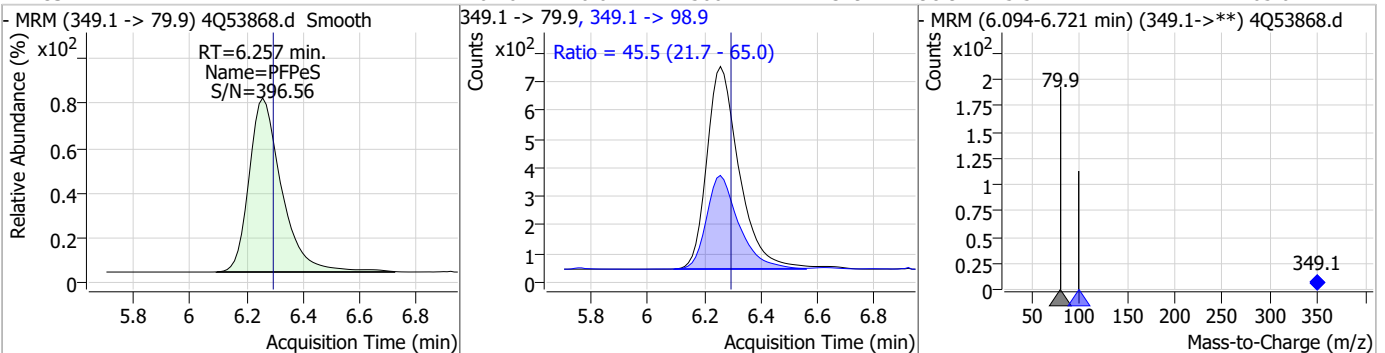
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.63	5.68	-0.05	37615	314.8 -> 82.9	3.0	1.4	4.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	63.71	5.98	-0.06	115044	341.0 -> 217.0	70.5	36.4	109.1

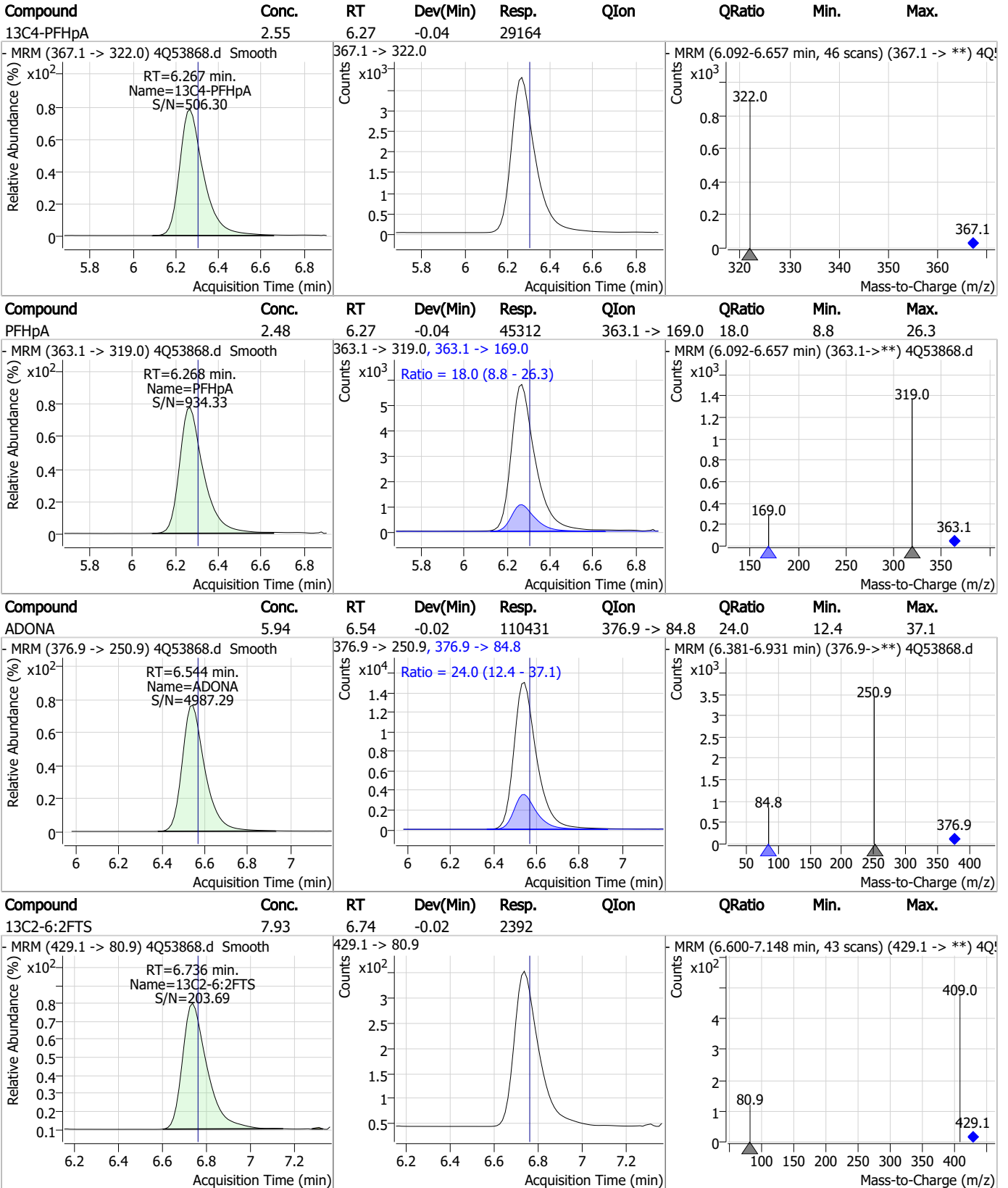


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.44	6.26	-0.04	5664	349.1 -> 98.9	45.5	21.7	65.0



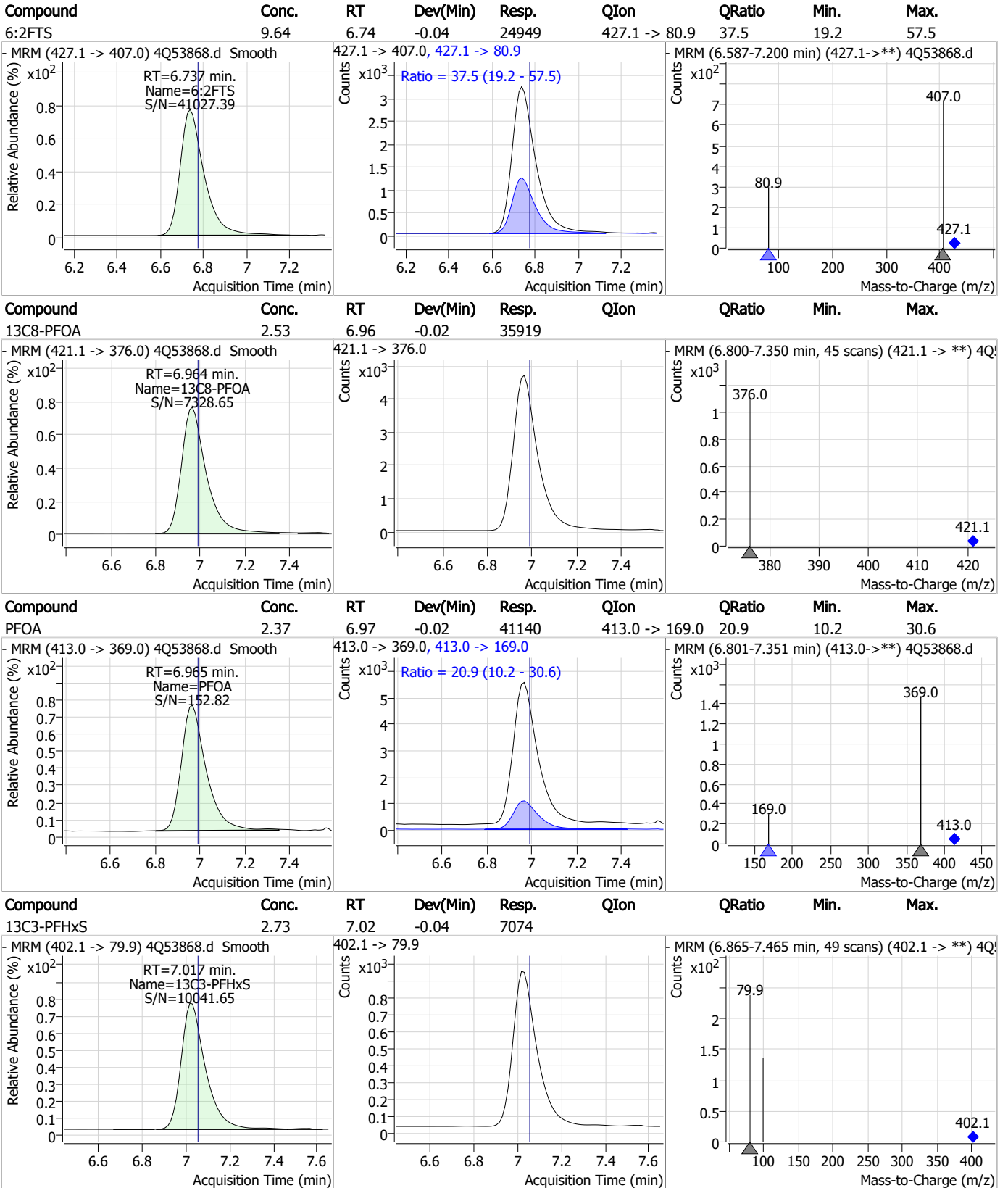
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### Perfluorinated Compounds by LC/MS/MS



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### Perfluorinated Compounds by LC/MS/MS

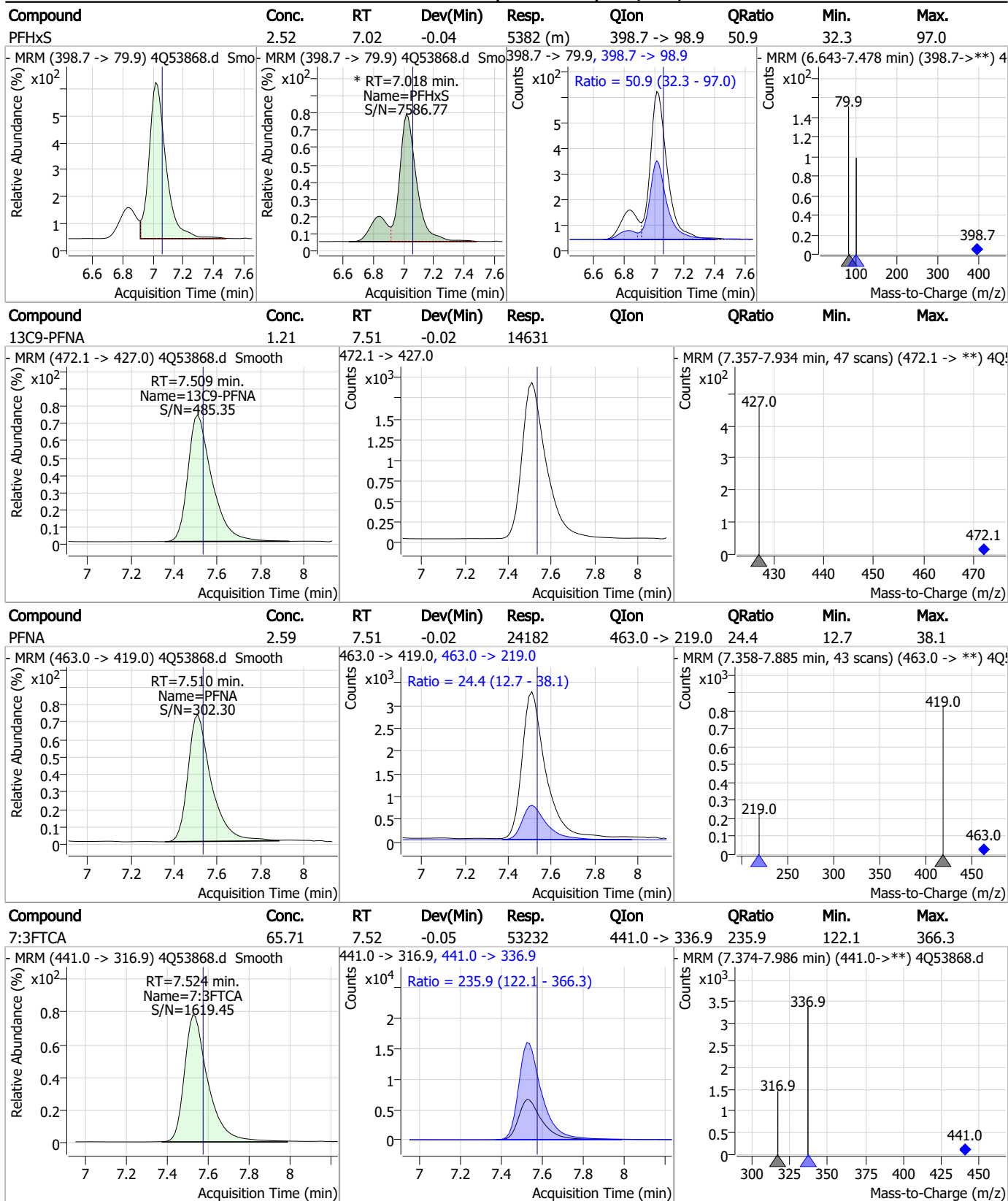


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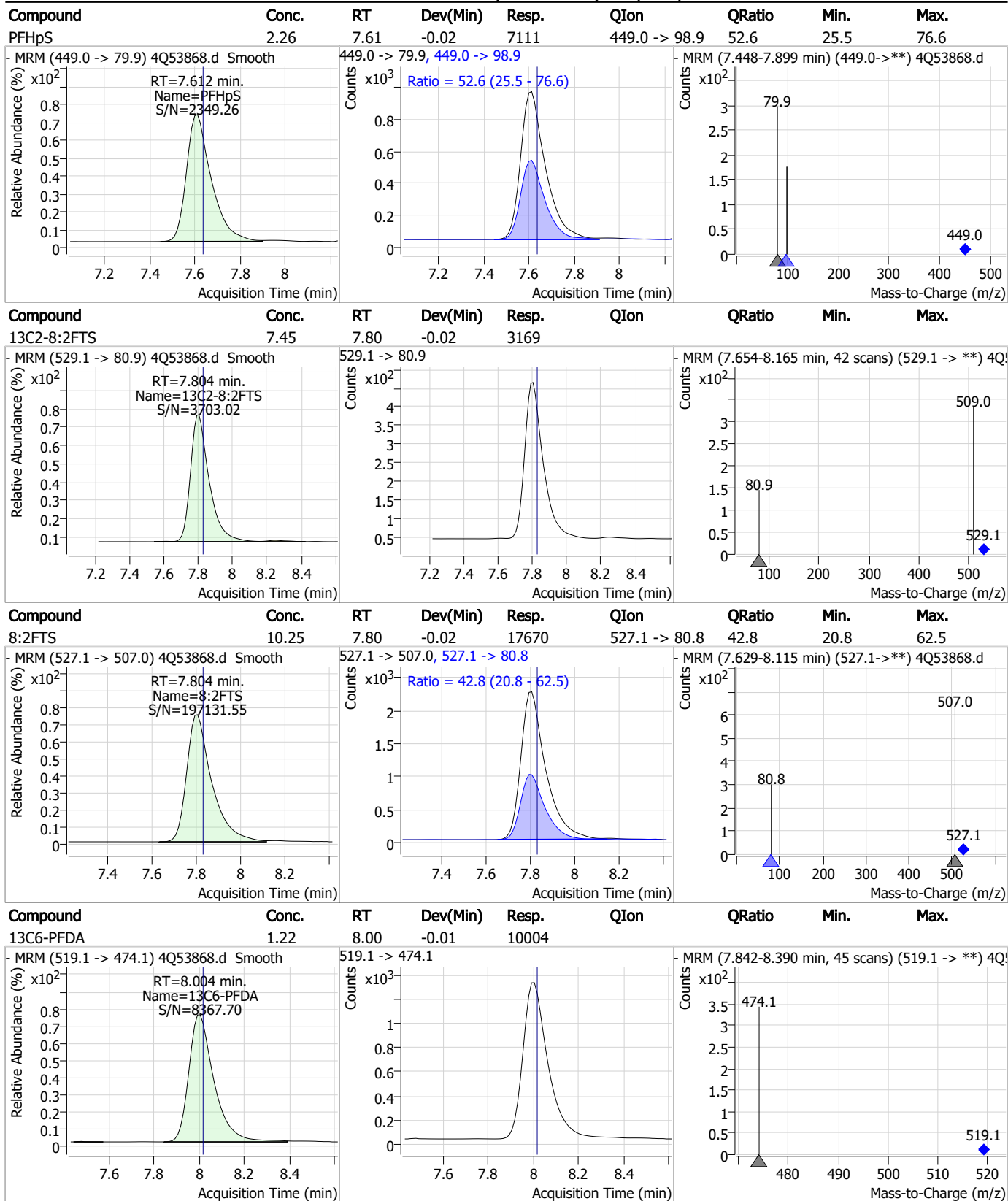


### Perfluorinated Compounds by LC/MS/MS



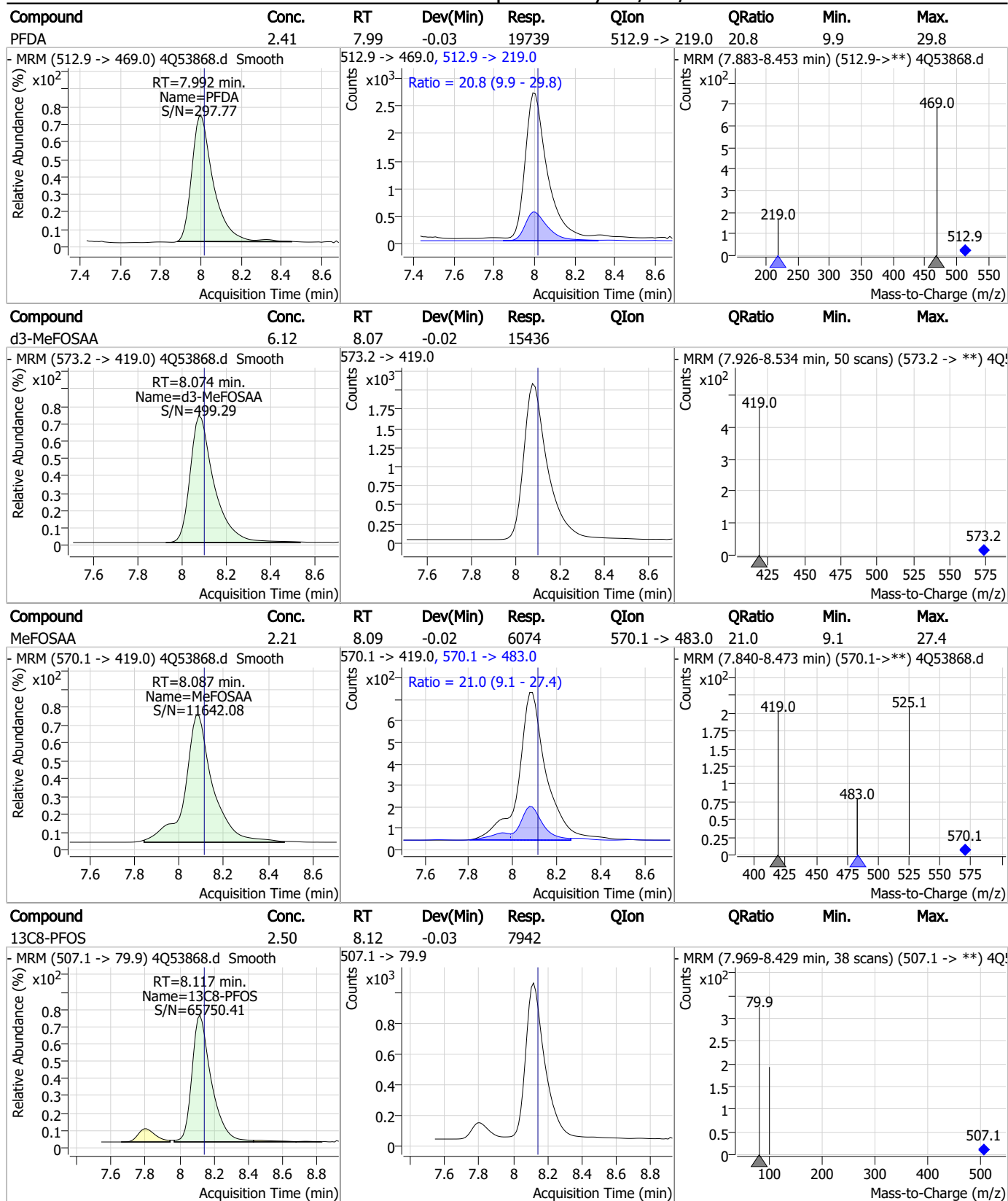
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### Perfluorinated Compounds by LC/MS/MS



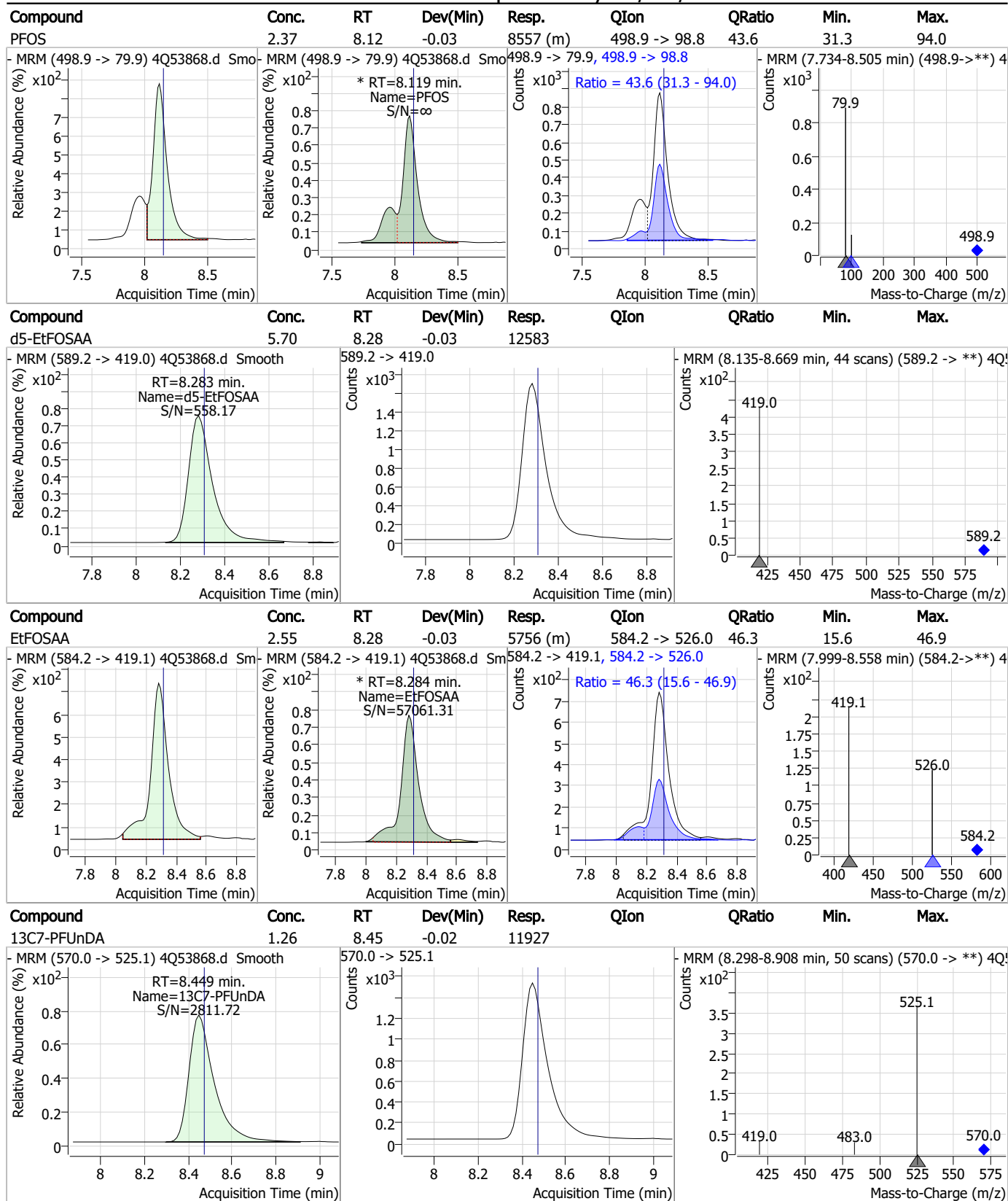
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### Perfluorinated Compounds by LC/MS/MS



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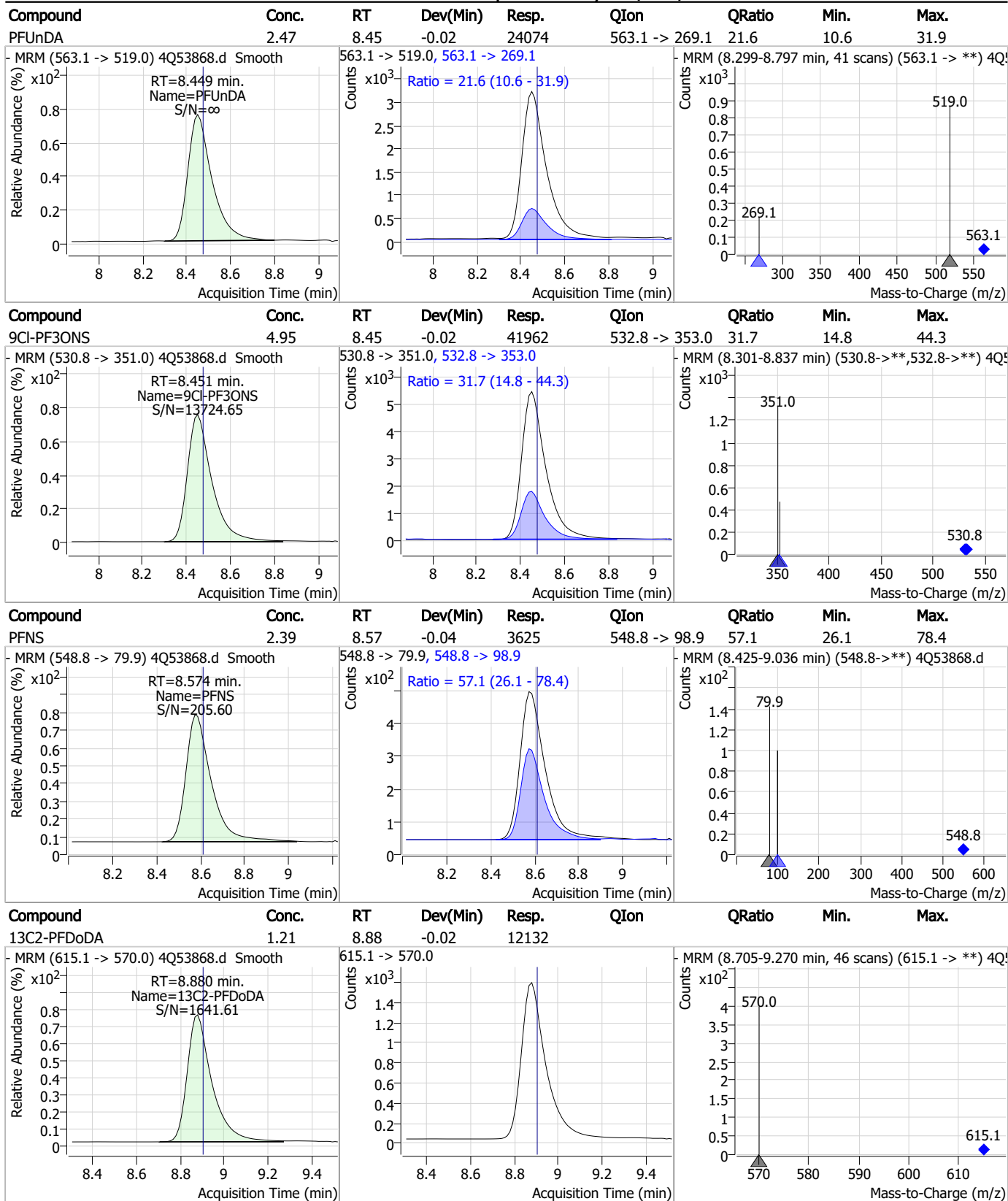
### Perfluorinated Compounds by LC/MS/MS



7.7.12  
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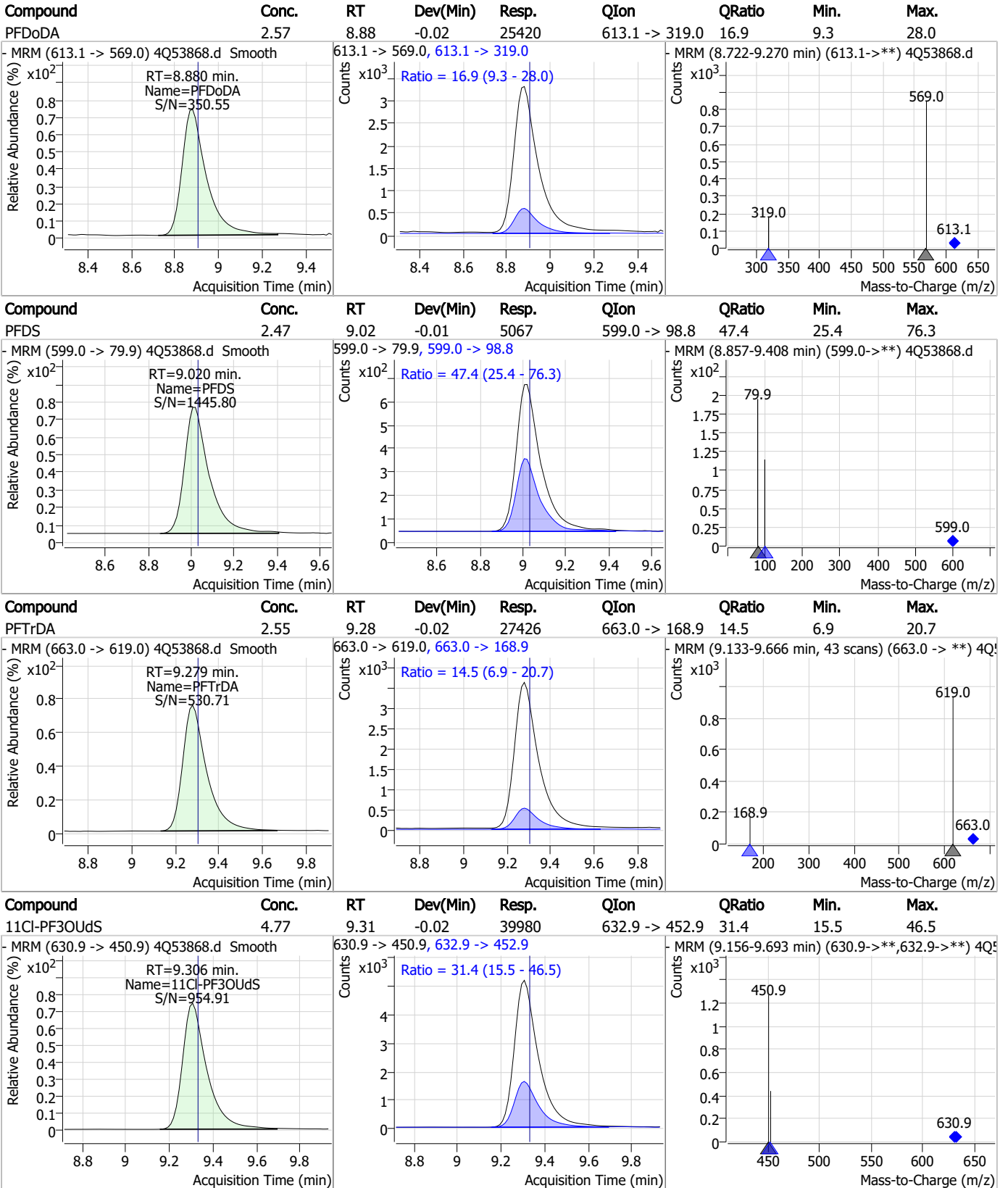


### Perfluorinated Compounds by LC/MS/MS



7.7.12  
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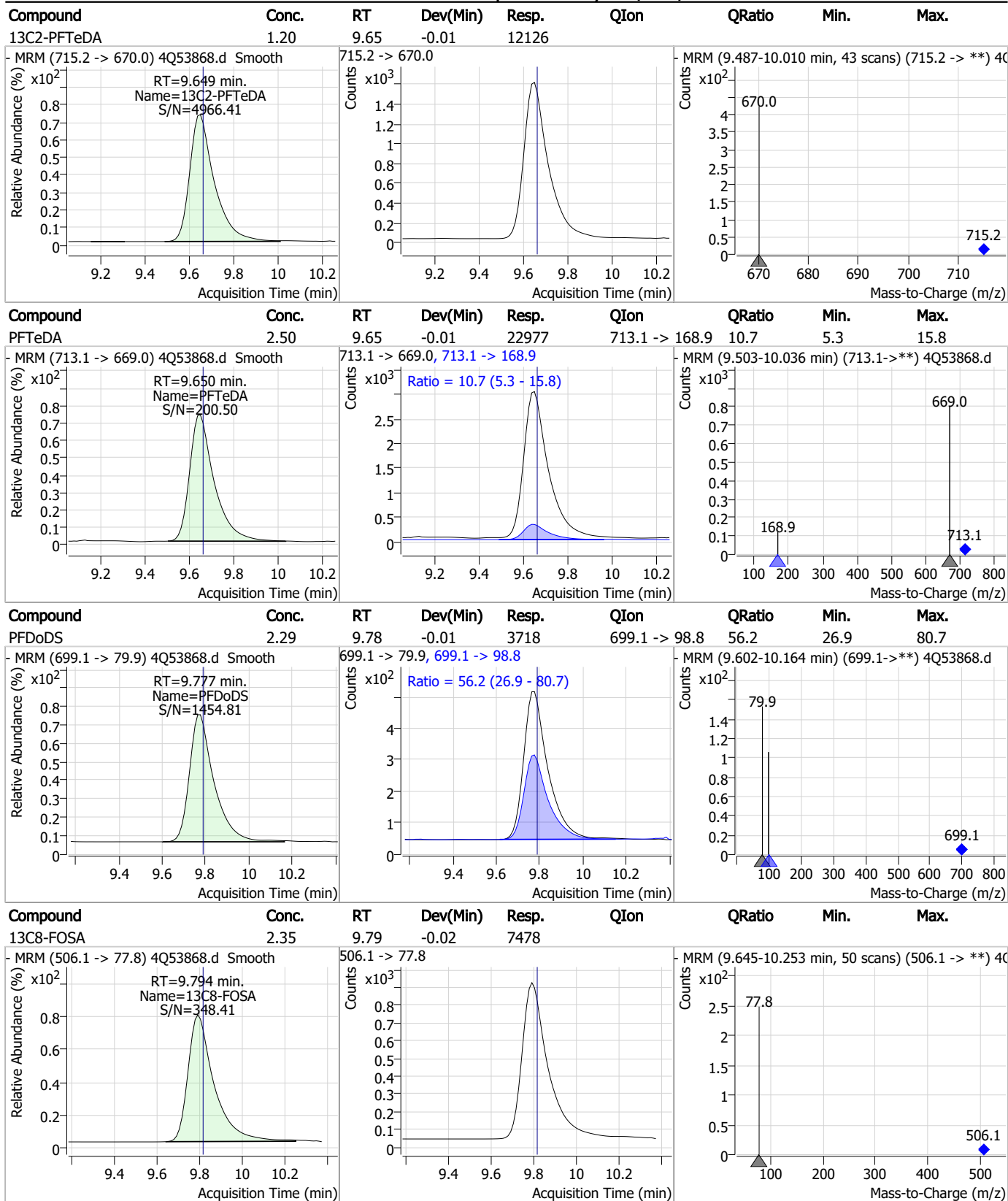
### Perfluorinated Compounds by LC/MS/MS



7.7.12  
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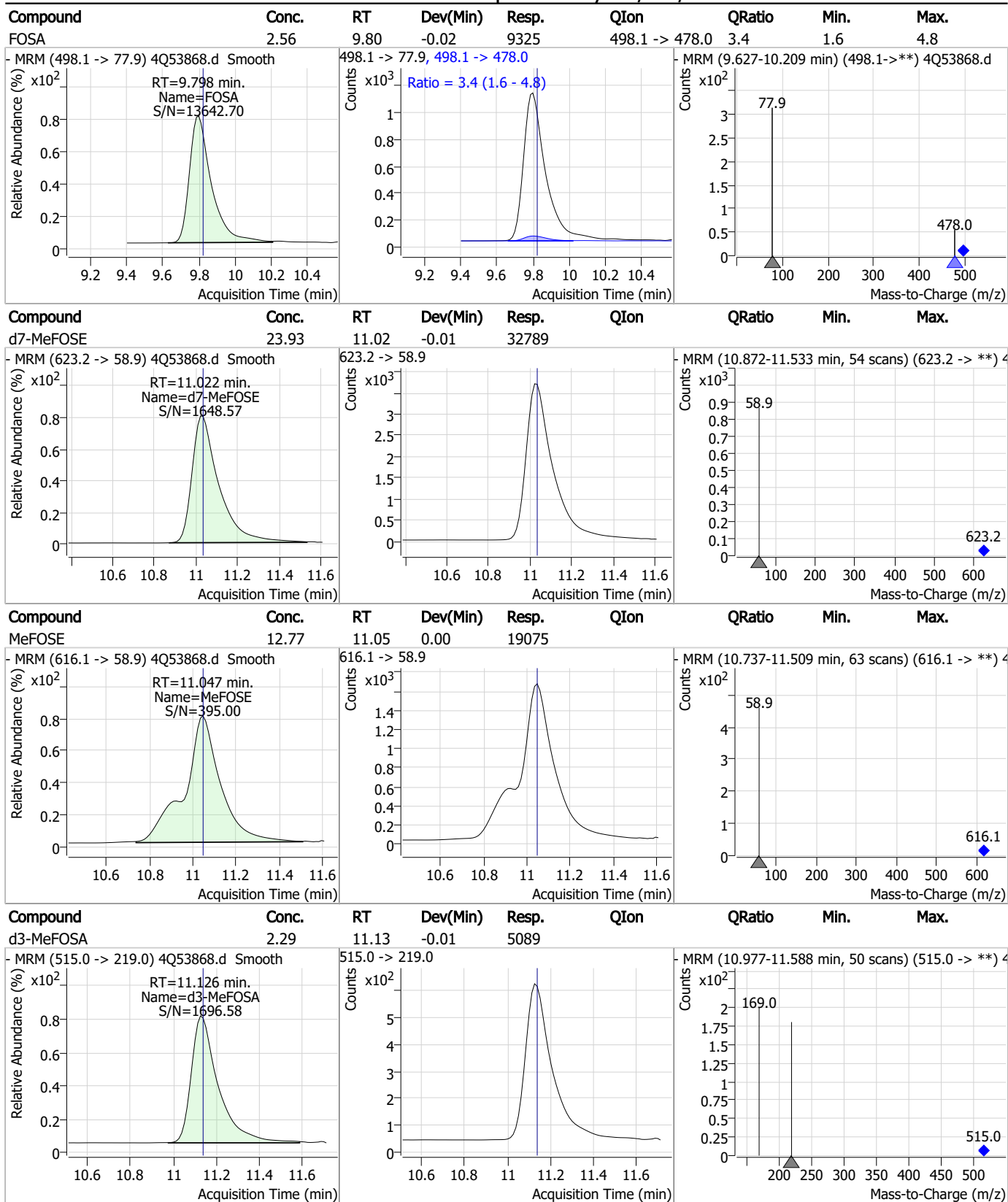
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7.7.12  
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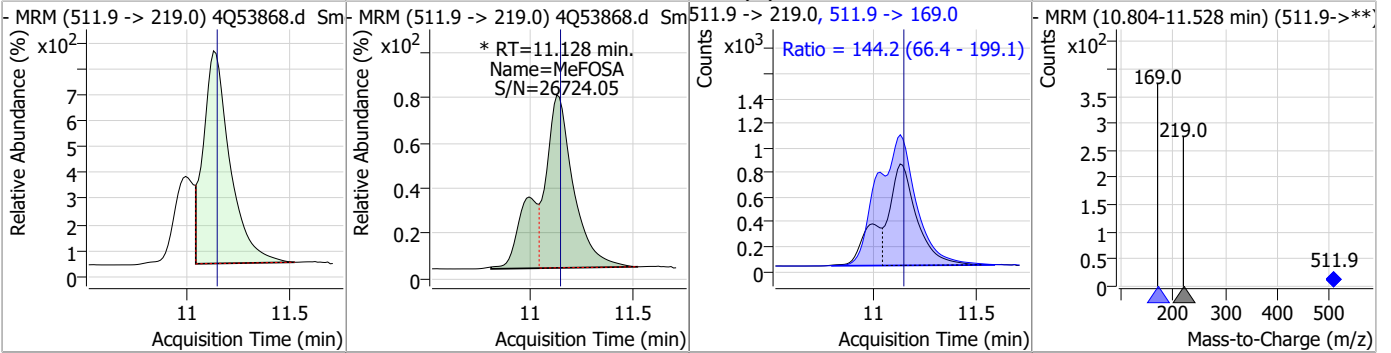
### Perfluorinated Compounds by LC/MS/MS



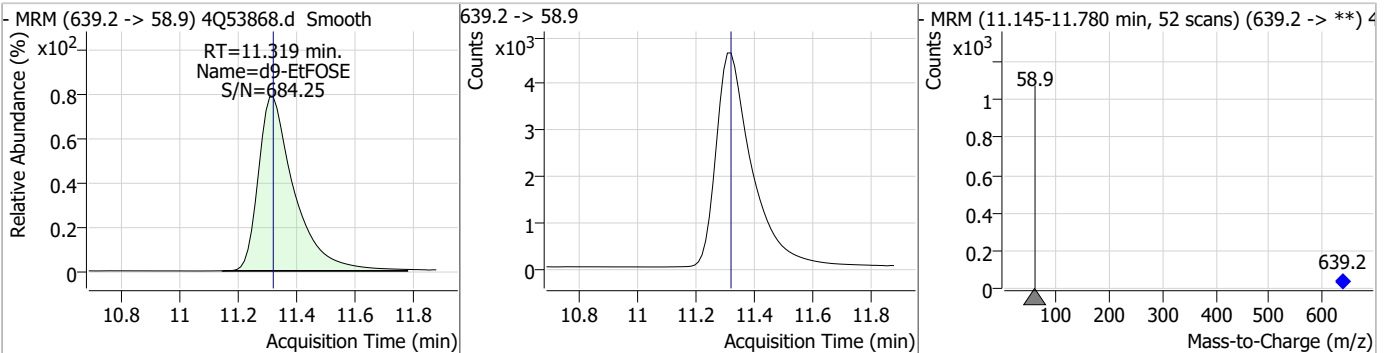
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### Perfluorinated Compounds by LC/MS/MS

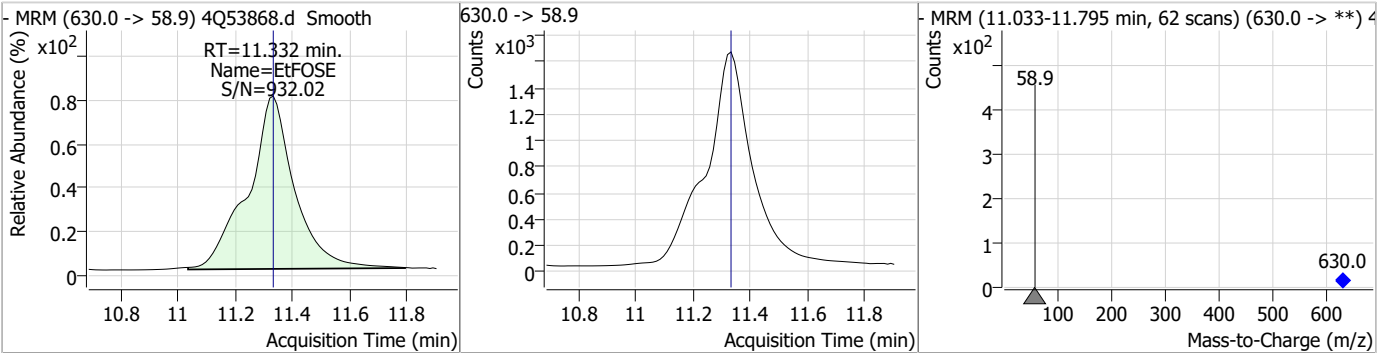
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	5.29	11.13	-0.01	9768 (m)	511.9 -> 169.0	144.2	66.4	199.1



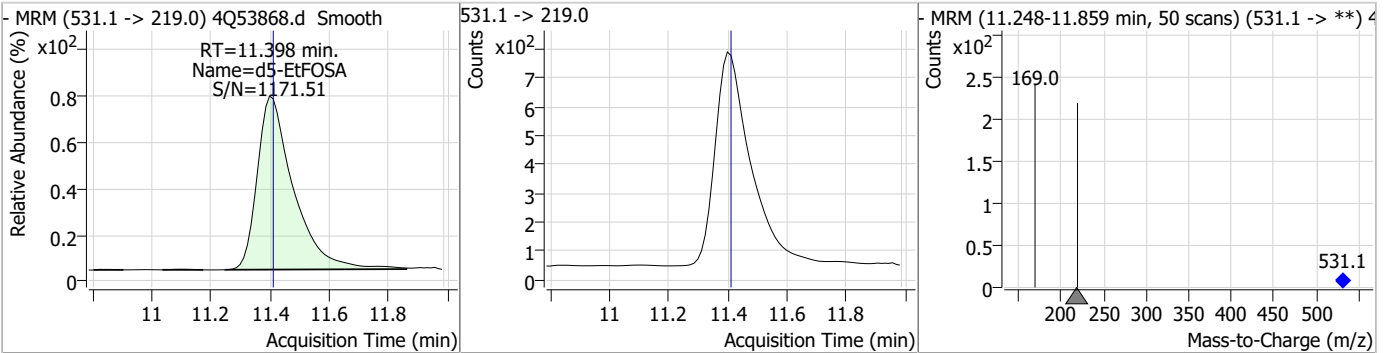
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.12	11.32	0.00	39854				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.37	11.33	0.00	18414				

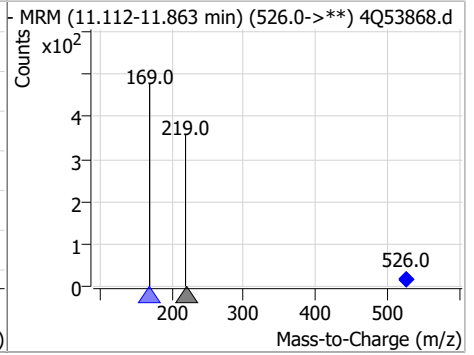
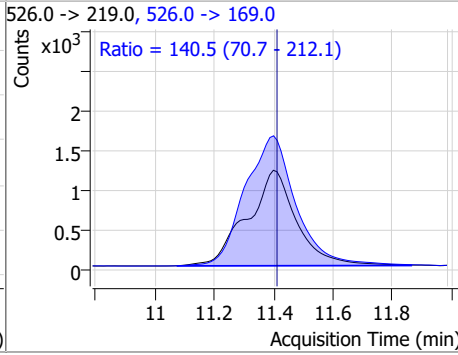
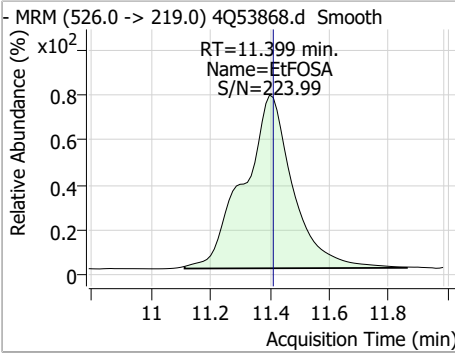


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.39	11.40	-0.01	6281				



### Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.92	11.40	-0.01	13940	526.0 -> 169.0	140.5	70.7	212.1



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# Manual Integration Approval Summary

Sample Number: S4Q786-CC785      Method: EPA DRAFT 1633  
Lab FileID: 4Q53868.D      Analyst approved: 11/16/23 13:59 Anna Ludwig  
Injection Time: 11/15/23 11:00      Supervisor approved: 11/16/23 15:17 Natasha Gumtie

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

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### Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53869.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/15/2023 11:14:54 AM  
 Sample Name : cc785-1.0LL  
 Vial : P1-A2  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q786.batch.bin  
 Sample Information : OP98180,S4Q786,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.624	216.8 -> 171.9	85627	10.00 µg/L	-0.075
M5-PFPeA	4.112	268.3 -> 223.0	37035	5.00 µg/L	-0.062
M5-PFHxA	5.297	318.0 -> 273.0	27803	2.50 µg/L	-0.050
M4-PFHpA	6.255	367.1 -> 322.0	26229	2.50 µg/L	-0.050
M8-PFOA	6.952	421.1 -> 376.0	32268	2.50 µg/L	-0.037
M9-PFNA	7.509	472.1 -> 427.0	13613	1.25 µg/L	-0.025
M6-PFDA	7.992	519.1 -> 474.1	9566	1.25 µg/L	-0.025
M7-PFUnDA	8.449	570.0 -> 525.1	10720	1.25 µg/L	-0.025
M2-PFDoDA	8.880	615.1 -> 570.0	11568	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	10880	1.25 µg/L	-0.012
M8-FOSA	9.794	506.1 -> 77.8	7004	2.50 µg/L	-0.025
M3-PFBS	5.152	302.1 -> 79.9	7787	2.50 µg/L	-0.050
M3-PFHxS	7.017	402.1 -> 79.9	6686	2.50 µg/L	-0.037
M8-PFOS	8.117	507.1 -> 79.9	7042	2.50 µg/L	-0.026
M2-4:2FTS	4.996	329.1 -> 80.9	1136	5.00 µg/L	-0.050
M2-6:2FTS	6.736	429.1 -> 80.9	2263	5.00 µg/L	-0.025
M2-8:2FTS	7.791	529.1 -> 80.9	3189	5.00 µg/L	-0.037
M3-MeFOSAA	8.074	573.2 -> 419.0	14274	5.00 µg/L	-0.025
M3-HFPO-DA	5.652	286.9 -> 168.9	25508	10.00 µg/L	-0.050
M5-EtFOSAA	8.283	589.2 -> 419.0	11380	5.00 µg/L	-0.026
M7-MeFOSE	11.022	623.2 -> 58.9	30222	25.00 µg/L	-0.012
M9-EtFOSE	11.306	639.2 -> 58.9	35249	25.00 µg/L	-0.012
M5-EtFOSA	11.398	531.1 -> 219.0	5720	2.50 µg/L	-0.012
M3-MeFOSA	11.126	515.0 -> 219.0	4724	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	6076	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	41289	5.00 µg/L	-0.075
18O2-PFHxS	7.016	403.0 -> 83.9	4113	2.50 µg/L	-0.038
13C4-PFOA	6.952	417.1 -> 372.0	36340	2.50 µg/L	-0.037
13C2-PFDA	7.992	515.1 -> 470.1	9850	1.25 µg/L	-0.037
13C5-PFNA	7.509	468.0 -> 423.0	13026	1.25 µg/L	-0.025
13C2-PFHxA	5.298	315.1 -> 270.0	30505	2.50 µg/L	-0.050
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	4.996	329.1 -> 80.9	1136	8.07 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 161.4%		
13C2-6:2FTS	6.736	429.1 -> 80.9	2263	7.63 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 152.6%		
13C2-8:2FTS	7.791	529.1 -> 80.9	3189	7.63 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 152.5%		
13C2-PFDoDA	8.880	615.1 -> 570.0	11568	1.30 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.1%		
13C2-PFTeDA	9.649	715.2 -> 670.0	10880	1.22 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C3-PFBS	5.152	302.1 -> 79.9	7787	2.52 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C3-PFHxS	7.017	402.1 -> 79.9	6686	2.62 µg/L	-0.037

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### Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.9%	
13C4-PFBA	2.624	216.8 -> 171.9	85627	9.95 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C4-PFHpA	6.255	367.1 -> 322.0	26229	2.46 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C5-PFHxA	5.297	318.0 -> 273.0	27803	2.44 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C5-PFPeA	4.112	268.3 -> 223.0	37035	4.98 µg/L	-0.062
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C6-PFDA	7.992	519.1 -> 474.1	9566	1.32 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C7-PFUnDA	8.449	570.0 -> 525.1	10720	1.28 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C8-FOSA	9.794	506.1 -> 77.8	7004	2.41 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.5%	
13C8-PFOA	6.952	421.1 -> 376.0	32268	2.49 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C8-PFOS	8.117	507.1 -> 79.9	7042	2.43 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.1%	
13C9-PFNA	7.509	472.1 -> 427.0	13613	1.33 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.0%	
d3-MeFOSAA	8.074	573.2 -> 419.0	14274	6.19 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 123.9%	
13C3-HFPO-DA	5.652	286.9 -> 168.9	25508	9.83 µg/L	-0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.3%	
d3-MeFOSA	11.126	515.0 -> 219.0	4724	2.33 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.2%	
d5-EtFOSAA	8.283	589.2 -> 419.0	11380	5.64 µg/L	-0.026
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 112.8%	
d7-MeFOSE	11.022	623.2 -> 58.9	30222	24.15 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.6%	
d9-EtFOSE	11.306	639.2 -> 58.9	35249	24.31 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.3%	
d5-EtFOSA	11.398	531.1 -> 219.0	5720	2.38 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.1%	
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	4.997	327.1 -> 307.0	1511	0.67 µg/L	100
		327.1 -> 80.9	634		
6:2FTS	6.737	427.1 -> 407.0	1644	0.67 µg/L	99
		427.1 -> 80.9	624		
8:2FTS	7.792	527.1 -> 507.0	1136	0.66 µg/L	98
		527.1 -> 80.8	459		
EtFOSAA	8.284	584.2 -> 419.1	499	0.24 µg/L	m 93
		584.2 -> 526.0	174		
FOSA	9.798	498.1 -> 77.9	666	0.19 µg/L	# 95
		498.1 -> 478.0	10		
MeFOSAA	8.075	570.1 -> 419.0	399	0.16 µg/L	m 93
		570.1 -> 483.0	85		
PFBA	2.620	212.8 -> 168.9	2159	0.69 µg/L	100
PFBS	5.166	298.7 -> 79.9	402	0.15 µg/L	97
		298.7 -> 98.8	149		
PFDA	7.992	512.9 -> 469.0	1188	0.15 µg/L	m 95
		512.9 -> 219.0	263		
PFDODA	8.880	613.1 -> 569.0	1529	0.16 µg/L	96
		613.1 -> 319.0	257		
PFDS	9.020	599.0 -> 79.9	332	0.18 µg/L	99

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.255	599.0 -> 98.8	168	0.18	µg/L	94
		363.1 -> 319.0	3008			
PFHpS	7.599	363.1 -> 169.0	451	0.15	µg/L	99
		449.0 -> 79.9	424			
PFHxA	5.300	449.0 -> 98.9	215	0.17	µg/L	97
		313.0 -> 269.0	1652			
PFHxS	7.018	313.0 -> 118.9	30	0.19	µg/L	m
		398.7 -> 79.9	392			
PFNA	7.497	398.7 -> 98.9	201	0.16	µg/L	94
		463.0 -> 419.0	1415			
PFNS	8.586	463.0 -> 219.0	318	0.20	µg/L	97
		548.8 -> 79.9	275			
PFOA	6.965	548.8 -> 98.9	138	0.19	µg/L	98
		413.0 -> 369.0	2954			
PFOS	8.119	413.0 -> 169.0	635	0.18	µg/L	m
		498.9 -> 79.9	563			
PFPeA	4.127	498.9 -> 98.8	264	0.35	µg/L	100
		263.0 -> 219.0	2783			
PFPeS	6.257	349.1 -> 79.9	403	0.18	µg/L	100
		349.1 -> 98.9	174			
PFTeDA	9.650	713.1 -> 669.0	1278	0.15	µg/L	#
		713.1 -> 168.9	209			
PFTrDA	9.279	663.0 -> 619.0	1774	0.17	µg/L	96
		663.0 -> 168.9	218			
PFUnDA	8.449	563.1 -> 519.0	1530	0.17	µg/L	93
		563.1 -> 269.1	277			
11Cl-PF3OUdS	9.306	630.9 -> 450.9	2581	0.32	µg/L	97
		632.9 -> 452.9	757			
9Cl-PF3ONS	8.451	530.8 -> 351.0	2742	0.34	µg/L	95
		532.8 -> 353.0	739			
ADONA	6.531	376.9 -> 250.9	6993	0.40	µg/L	100
		376.9 -> 84.8	1733			
HFPO-DA	5.653	284.9 -> 168.9	889	0.33	µg/L	#
		284.9 -> 184.9	137			
3:3FTCA	3.561	241.0 -> 177.0	383	0.79	µg/L	91
		241.0 -> 117.0	47			
5:3FTCA	5.983	341.0 -> 237.1	7024	4.11	µg/L	98
		341.0 -> 217.0	5246			
7:3FTCA	7.524	441.0 -> 316.9	3086	4.02	µg/L	86
		441.0 -> 336.9	8290			
EtFOSA	11.399	526.0 -> 219.0	1003	0.39	µg/L	100
		526.0 -> 169.0	1414			
EtFOSE	11.332	630.0 -> 58.9	1250	0.95	µg/L	100
		511.9 -> 219.0	549			
MeFOSA	11.128	511.9 -> 169.0	967	0.32	µg/L	63
		616.1 -> 58.9	1345			
MeFOSE	11.035	699.1 -> 79.9	229	0.98	µg/L	100
		699.1 -> 98.8	139			
PFDoDS	9.777	295.0 -> 201.0	239	0.16	µg/L	90
		295.0 -> 84.9	61			
NFDHA	5.154	279.0 -> 85.1	1545	0.37	µg/L	97
		279.0 -> 85.1	1545			
PFMBA	4.529	229.0 -> 84.9	1799	0.33	µg/L	100
		229.0 -> 84.9	1799			
PFMPA	3.265	314.8 -> 134.9	2381	0.35	µg/L	100
		314.8 -> 82.9	110			
PFEESA	5.684	314.8 -> 134.9	2381	0.31	µg/L	#
		314.8 -> 82.9	110			

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



7.7.13  
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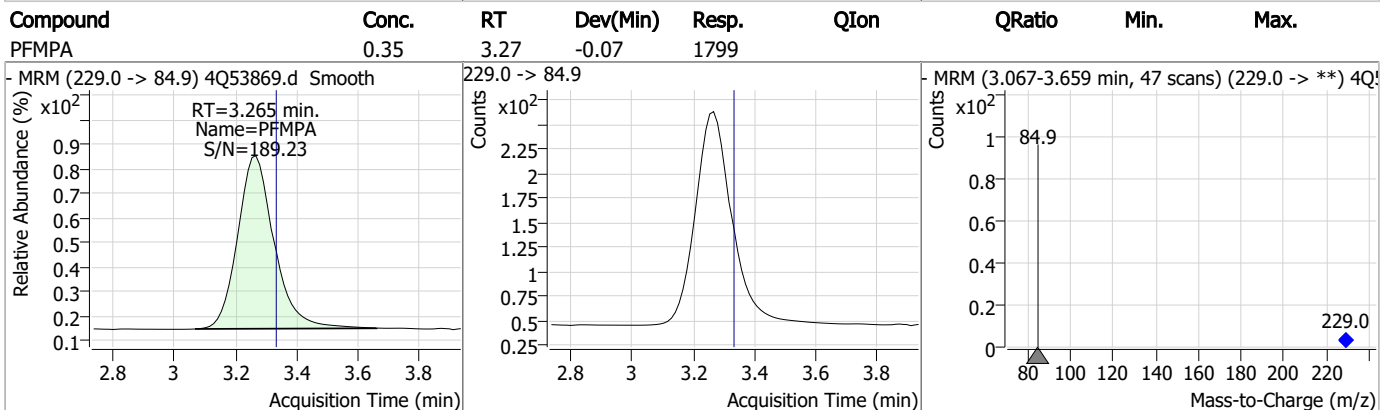
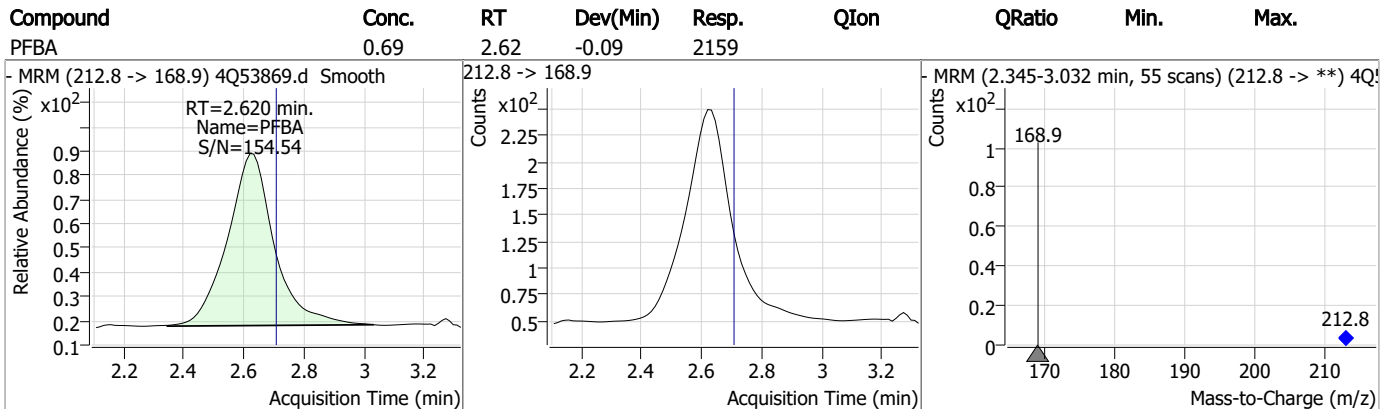
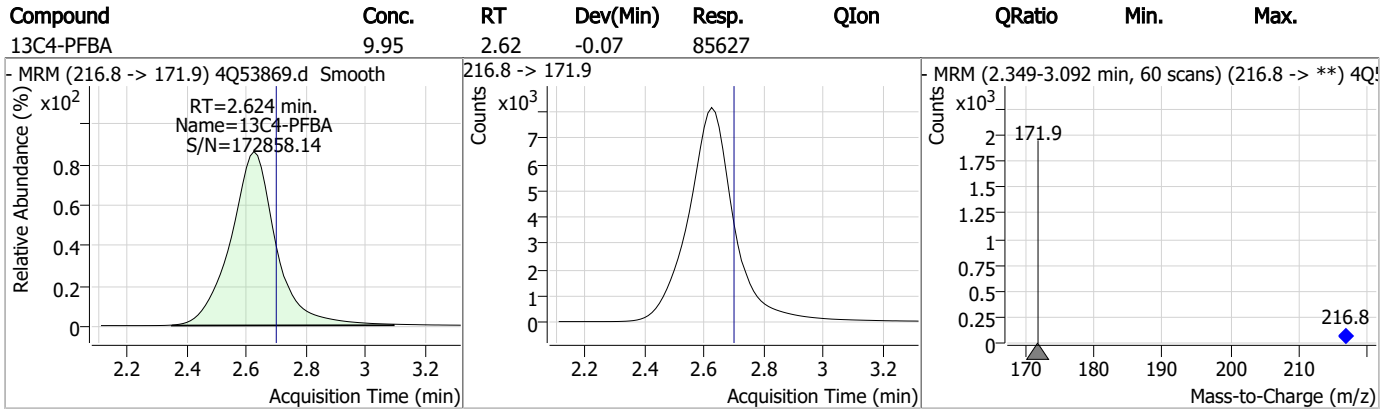
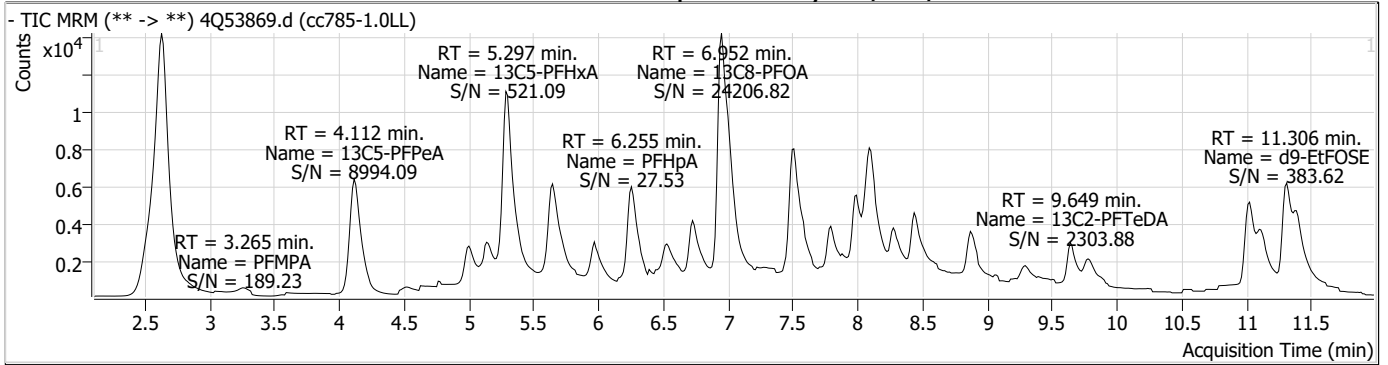
### Perfluorinated Compounds by LC/MS/MS

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

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### Perfluorinated Compounds by LC/MS/MS

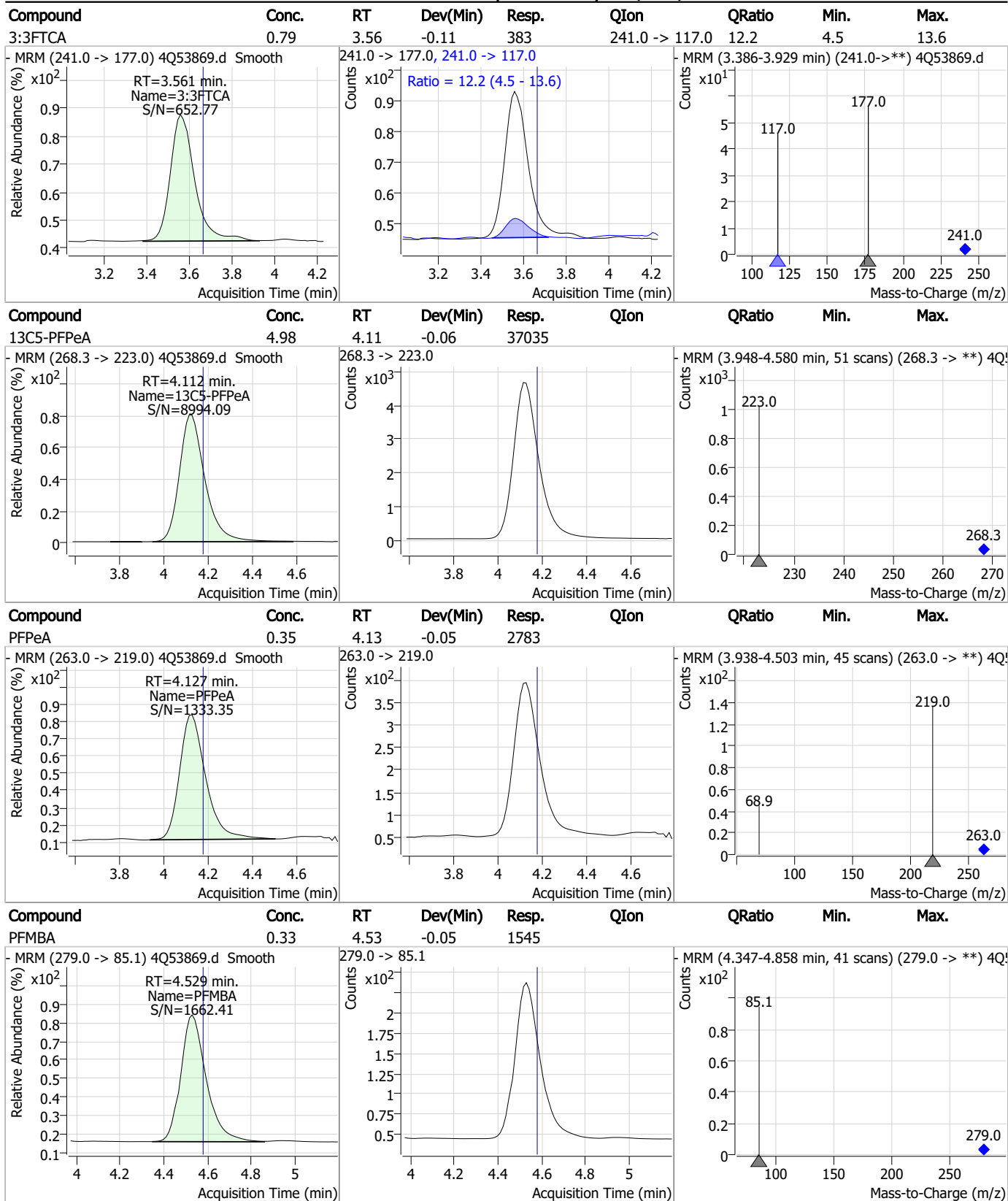


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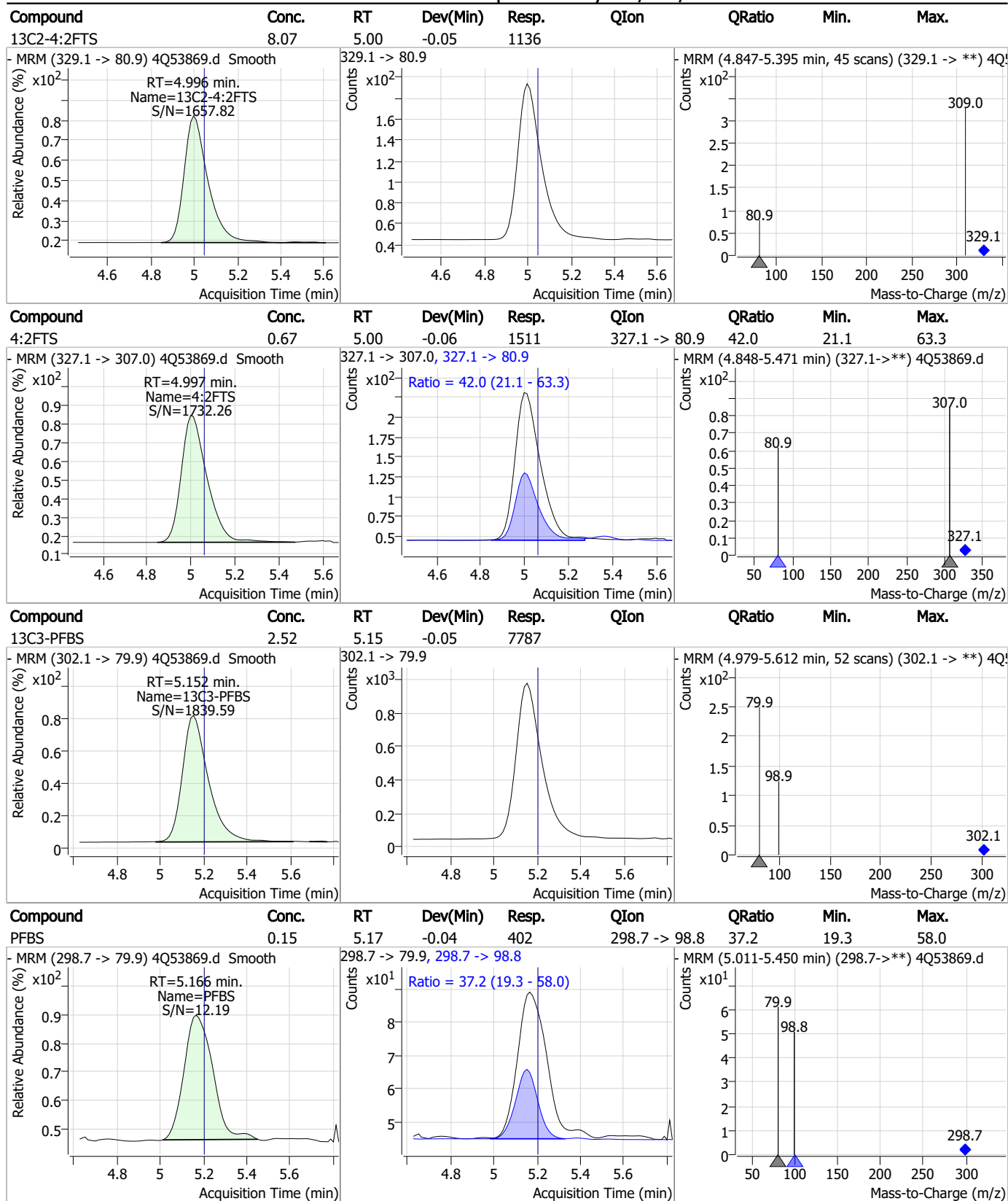


### Perfluorinated Compounds by LC/MS/MS



7.7.13 7

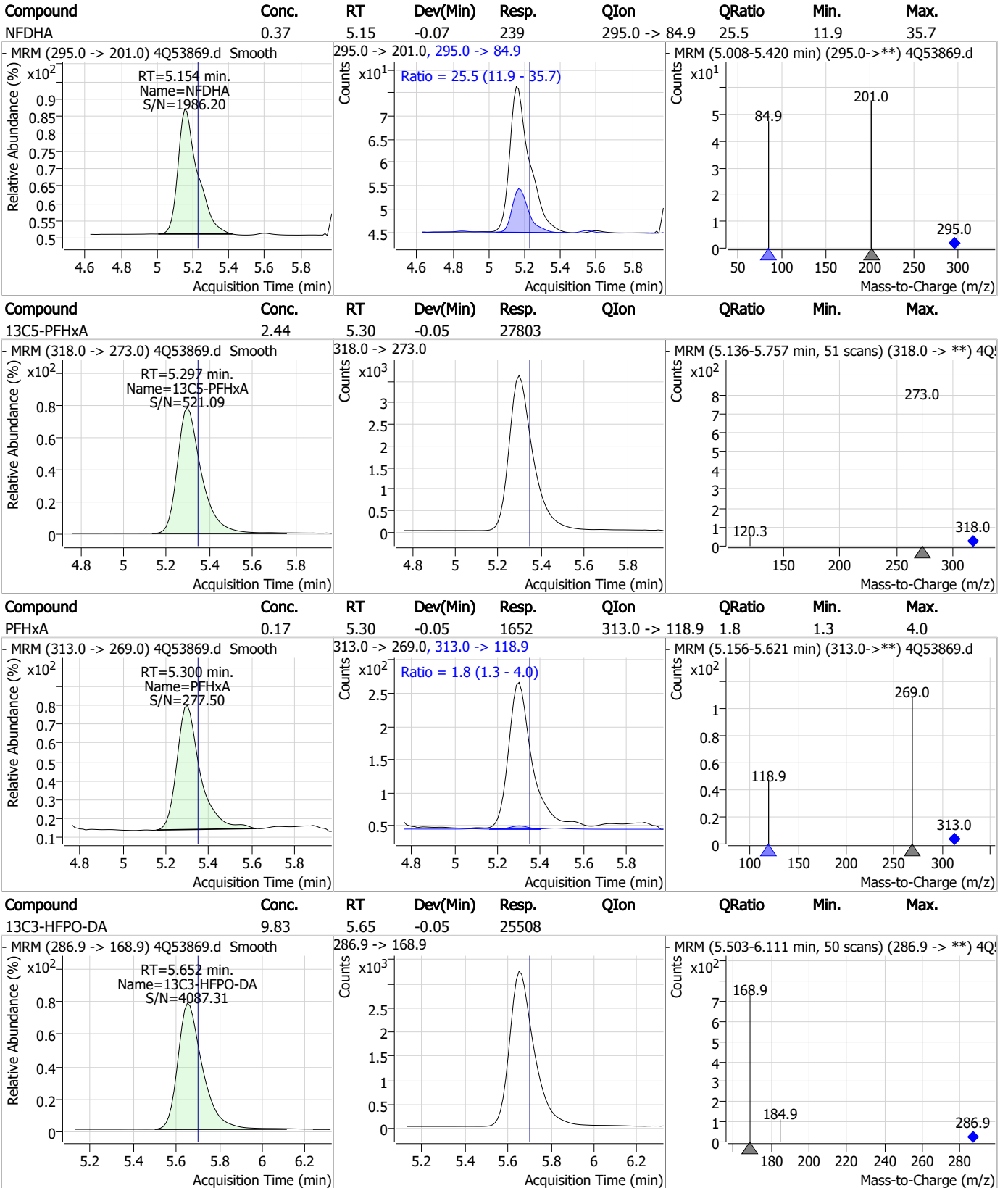
### Perfluorinated Compounds by LC/MS/MS



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### Perfluorinated Compounds by LC/MS/MS

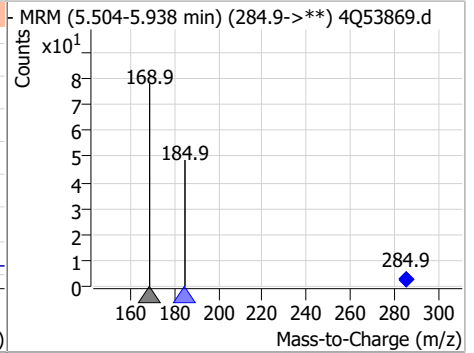
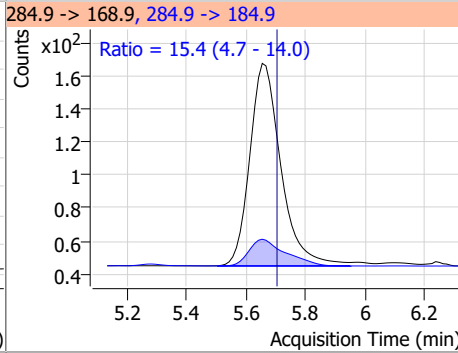
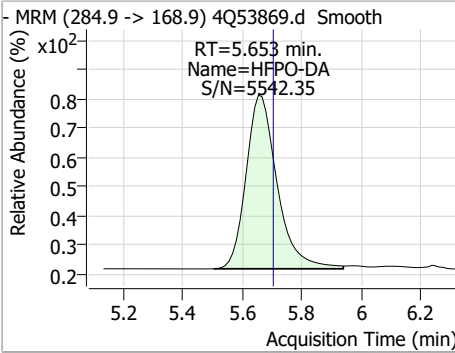


7.7.13 7

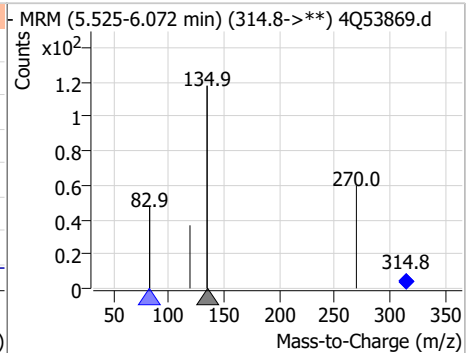
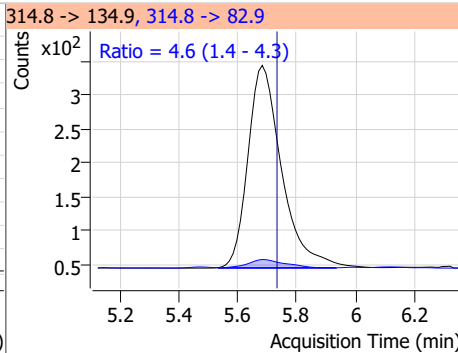
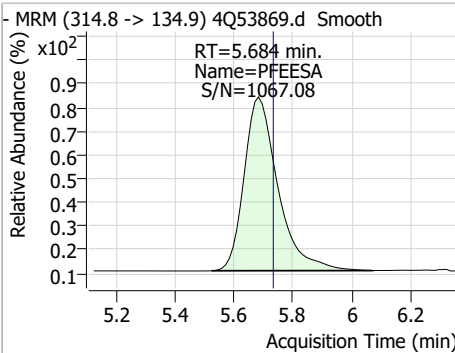


### Perfluorinated Compounds by LC/MS/MS

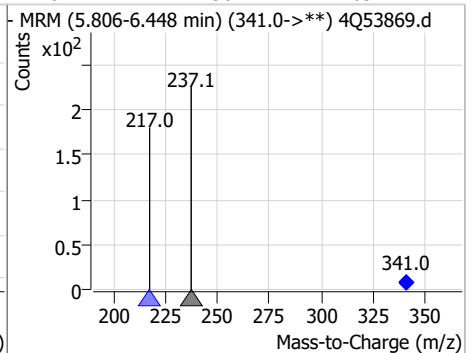
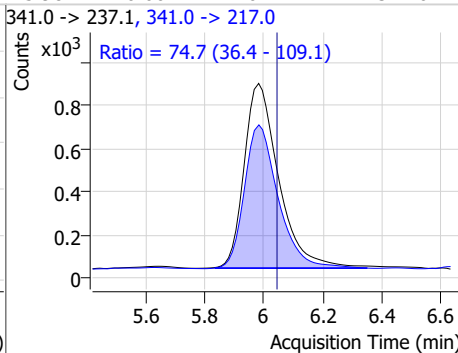
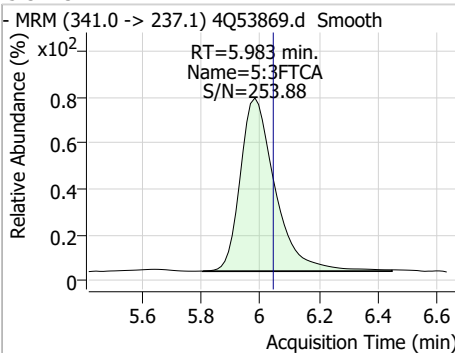
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.33	5.65	-0.05	889	284.9 -> 184.9	15.4	4.7	14.0



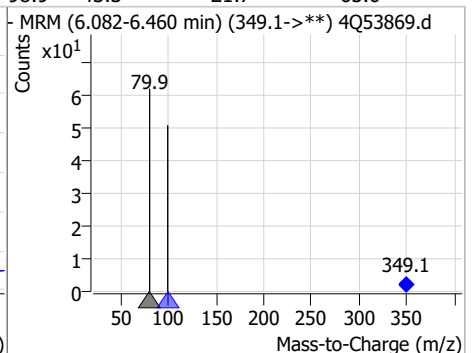
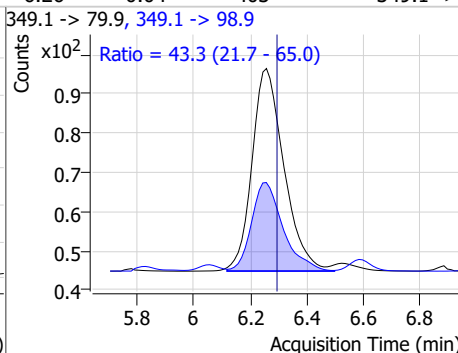
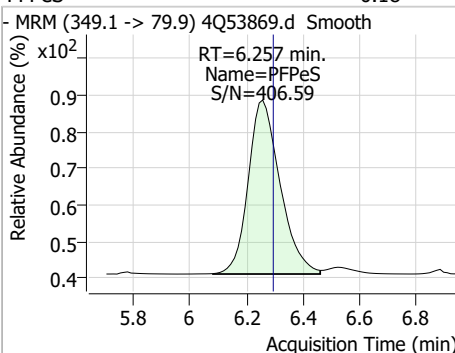
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.31	5.68	-0.05	2381	314.8 -> 82.9	4.6	1.4	4.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	4.11	5.98	-0.06	7024	341.0 -> 217.0	74.7	36.4	109.1

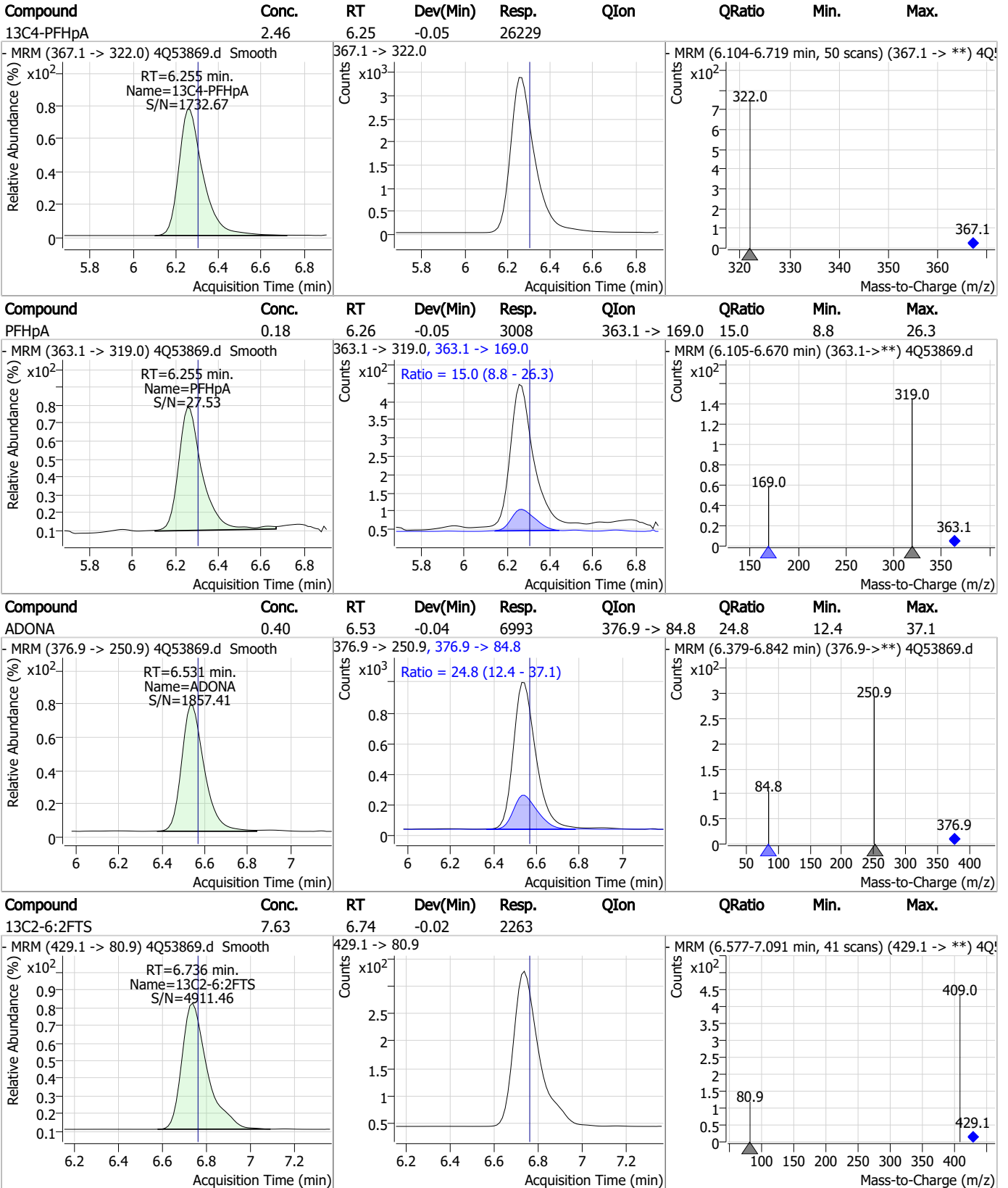


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.18	6.26	-0.04	403	349.1 -> 98.9	43.3	21.7	65.0





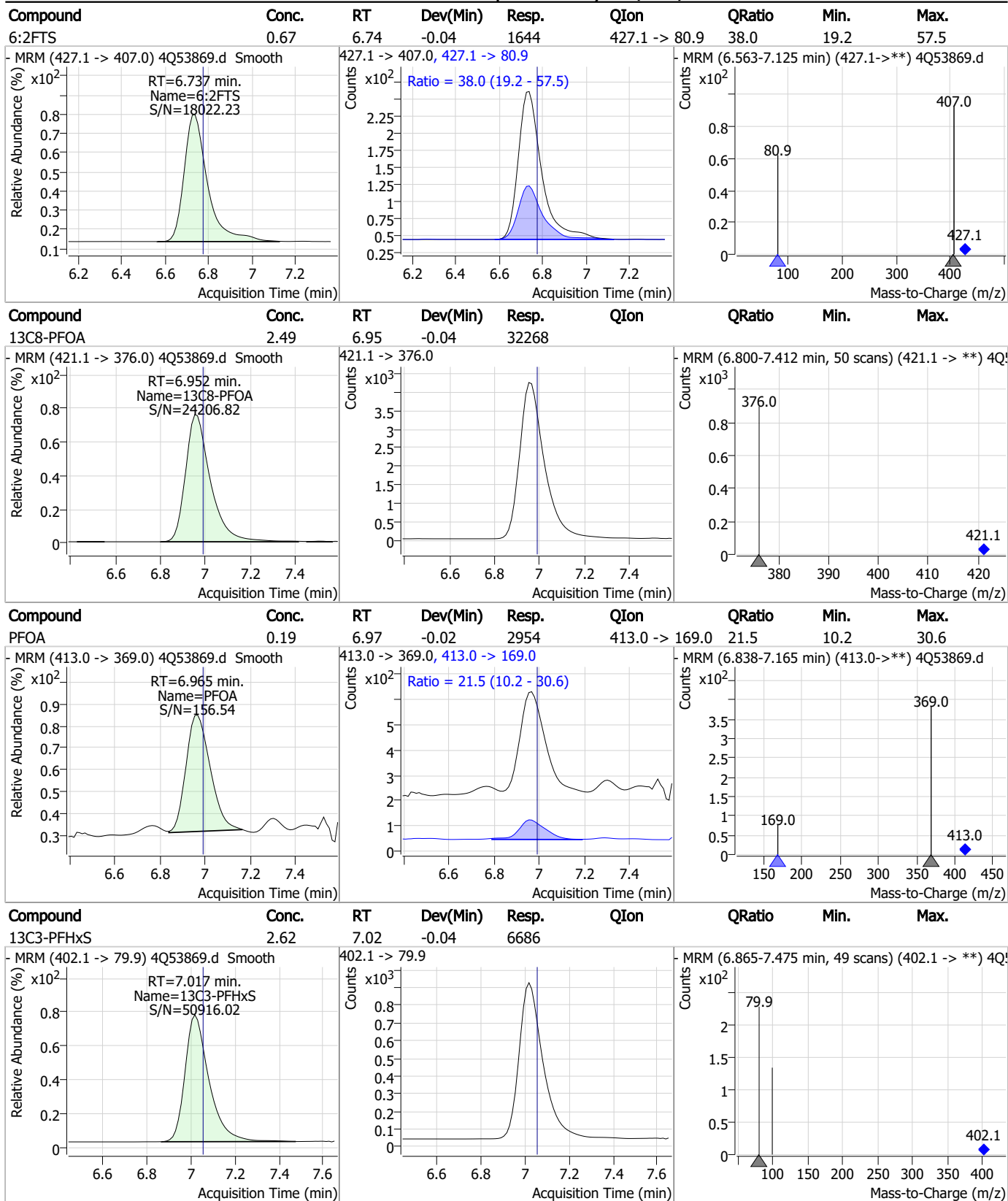
### Perfluorinated Compounds by LC/MS/MS



7.7.13 7

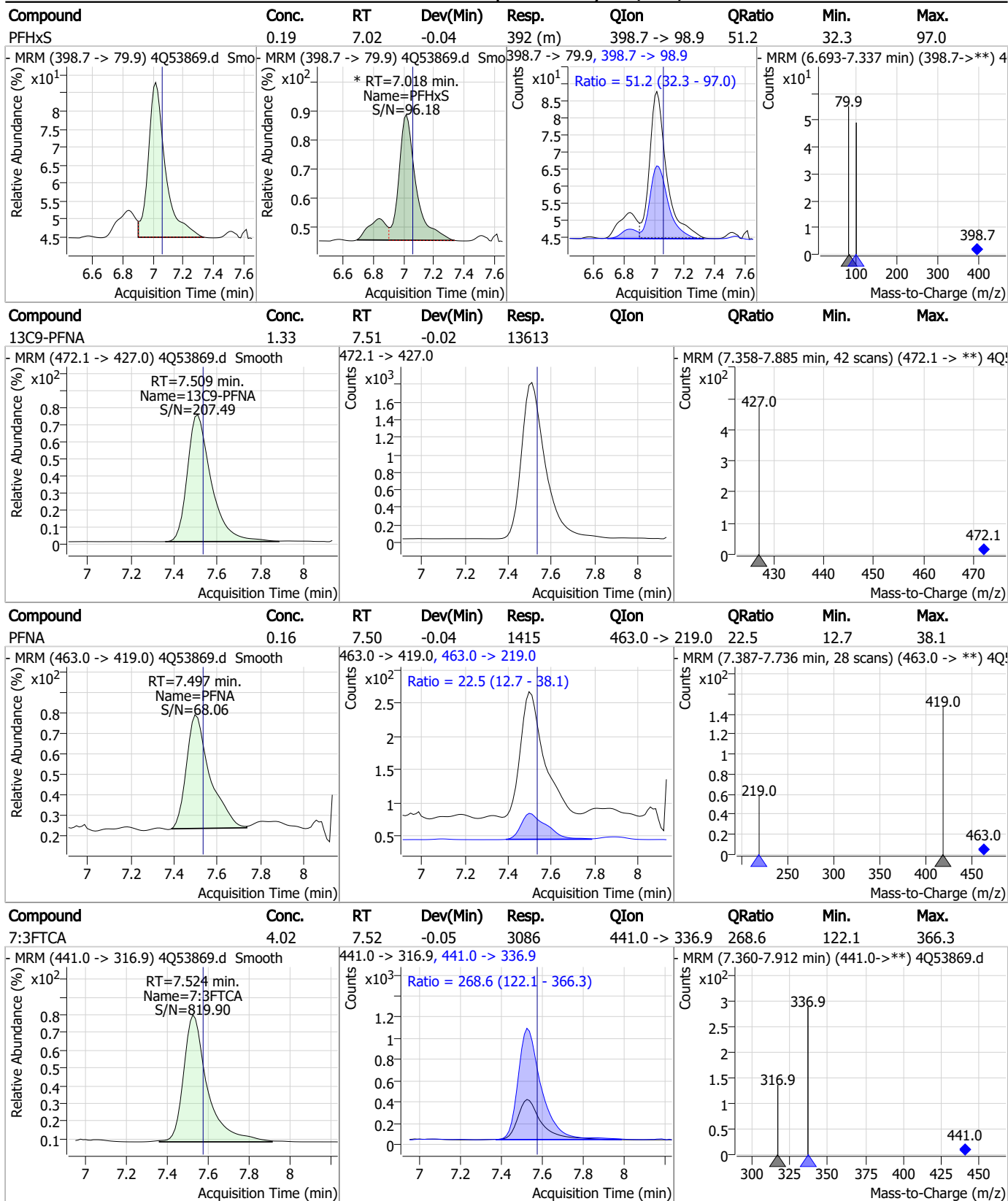


### Perfluorinated Compounds by LC/MS/MS



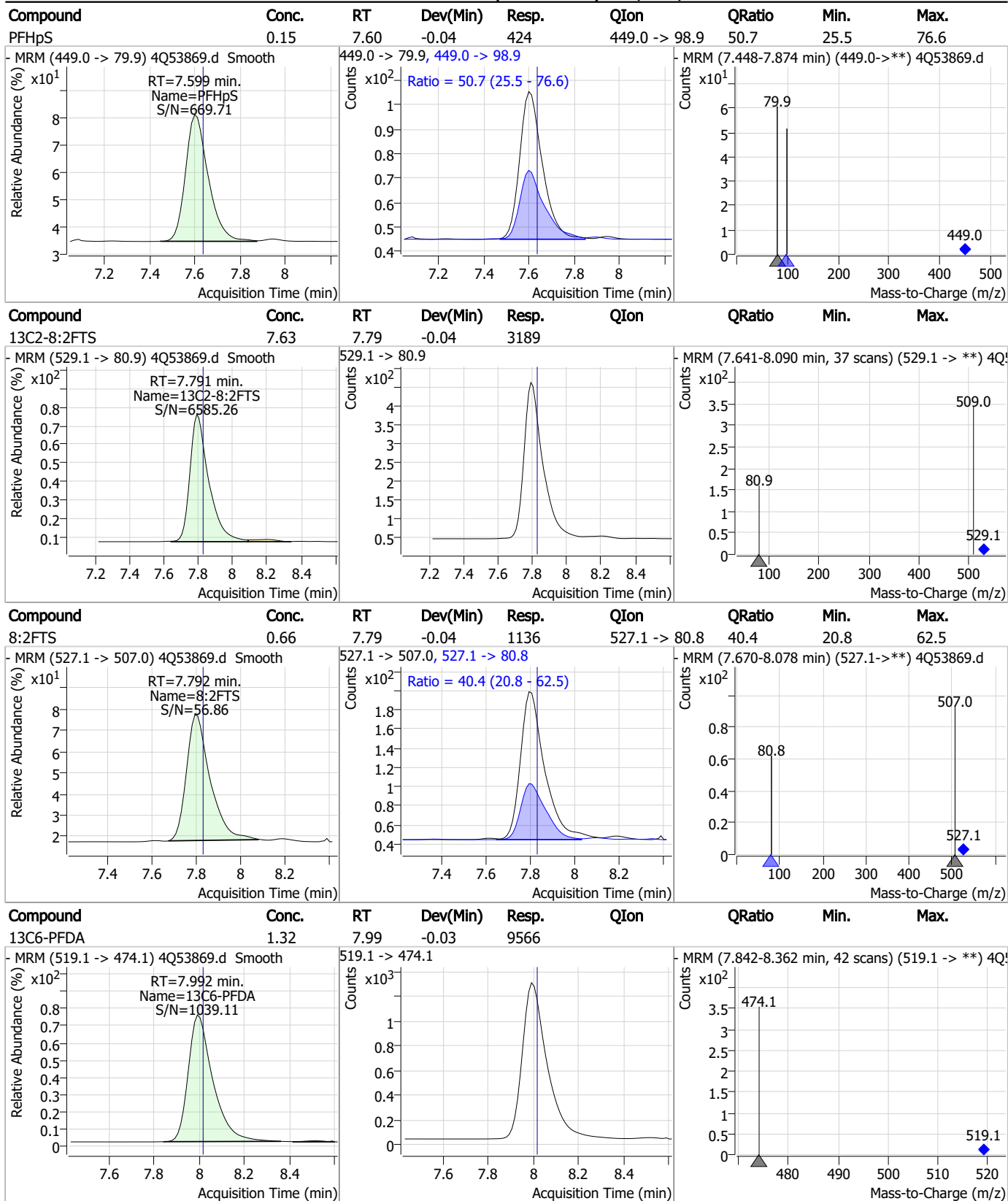
7.7.13 7

### Perfluorinated Compounds by LC/MS/MS



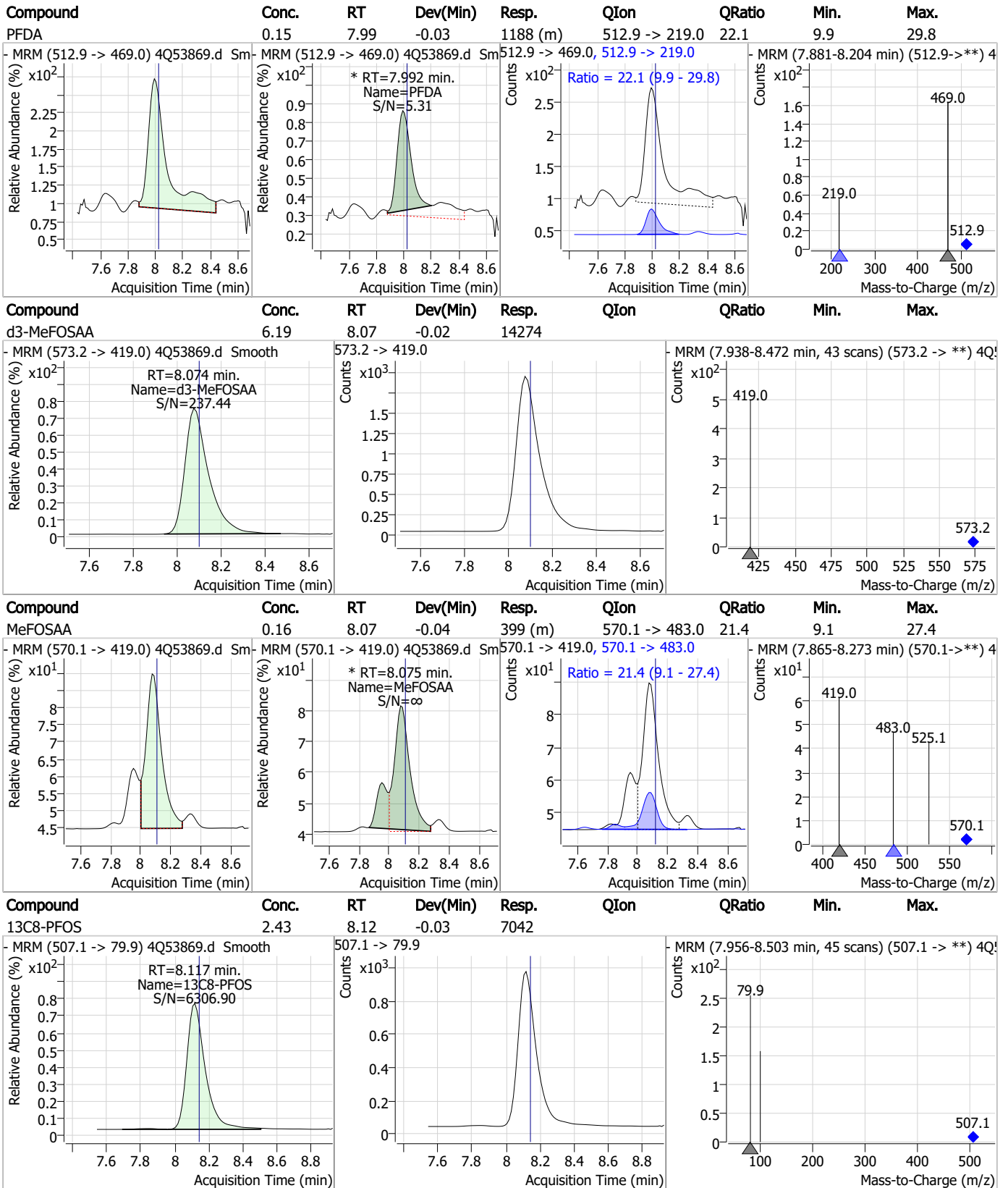
7.7.13  
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### Perfluorinated Compounds by LC/MS/MS



7.7.13  
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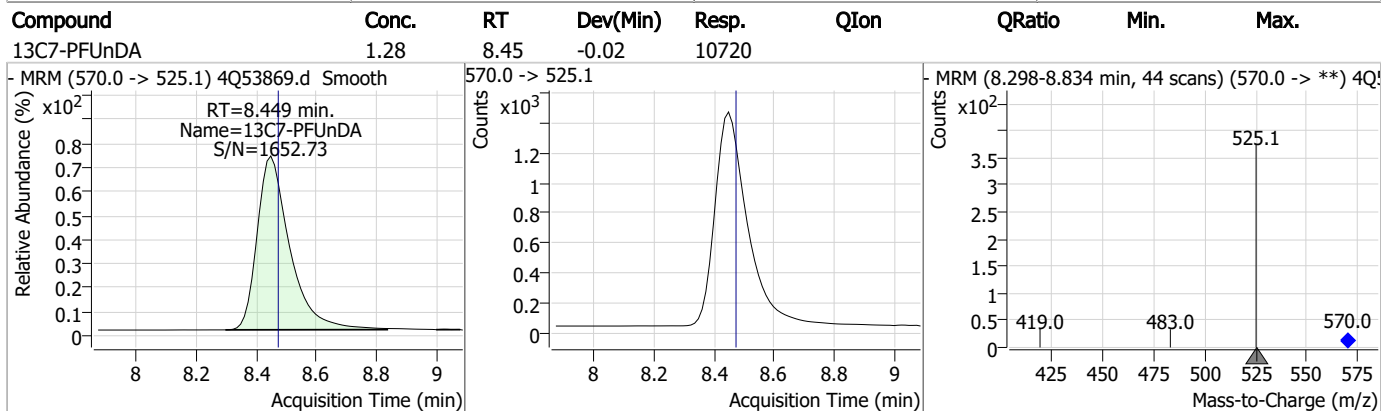
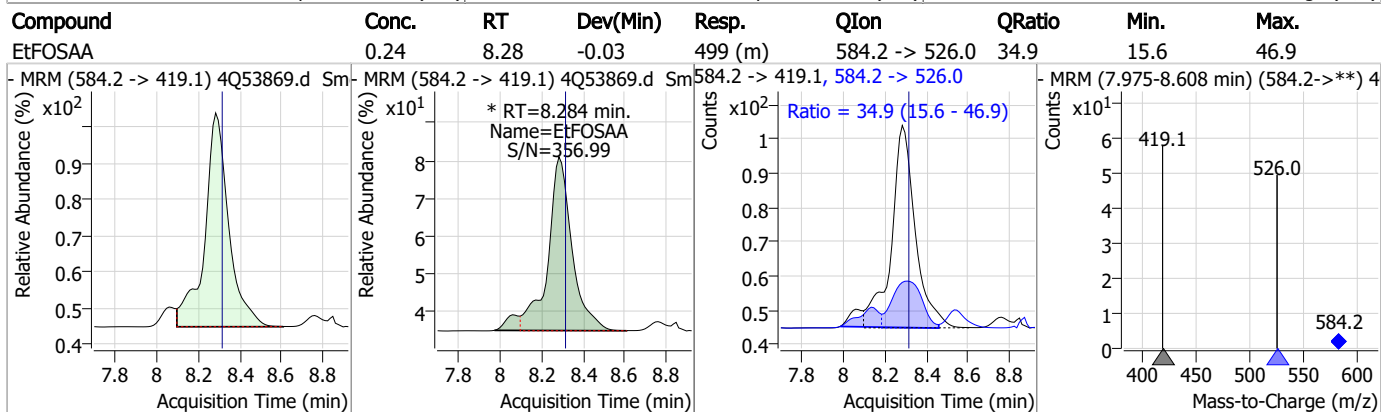
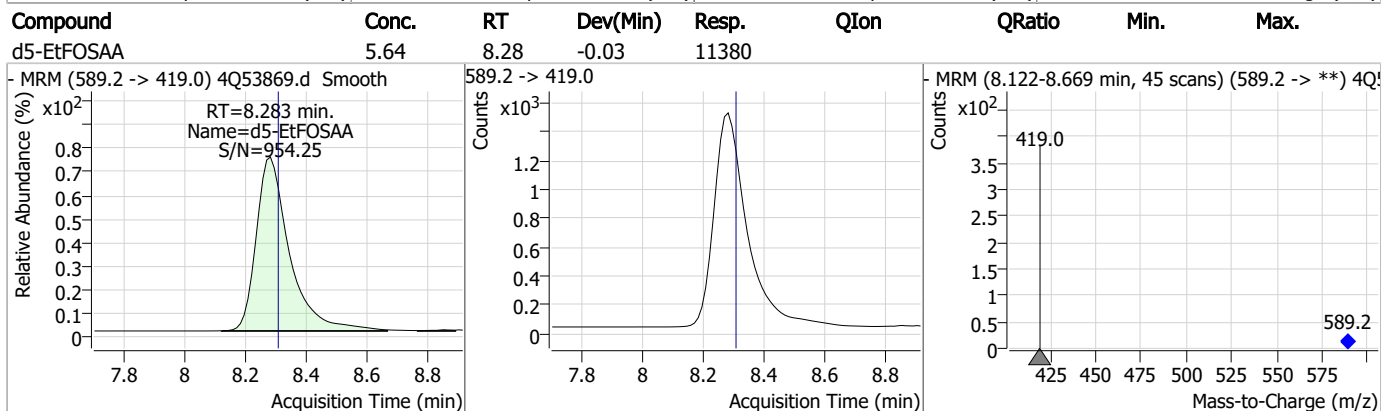
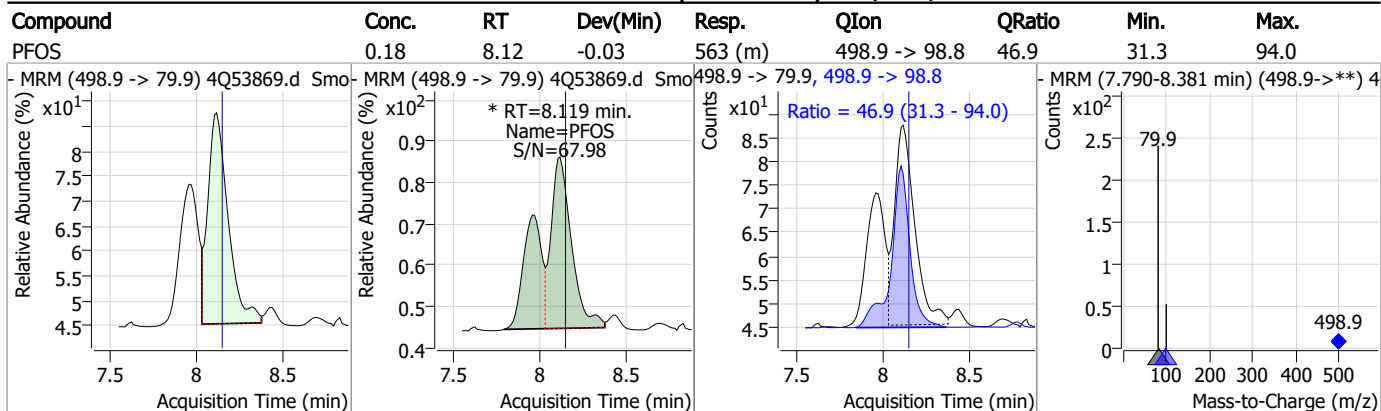
### Perfluorinated Compounds by LC/MS/MS



7.7.13  
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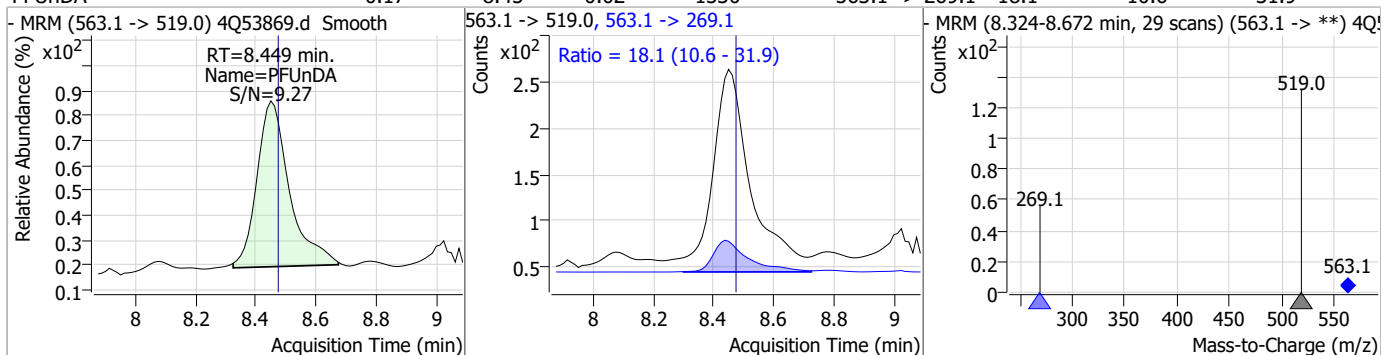
### Perfluorinated Compounds by LC/MS/MS



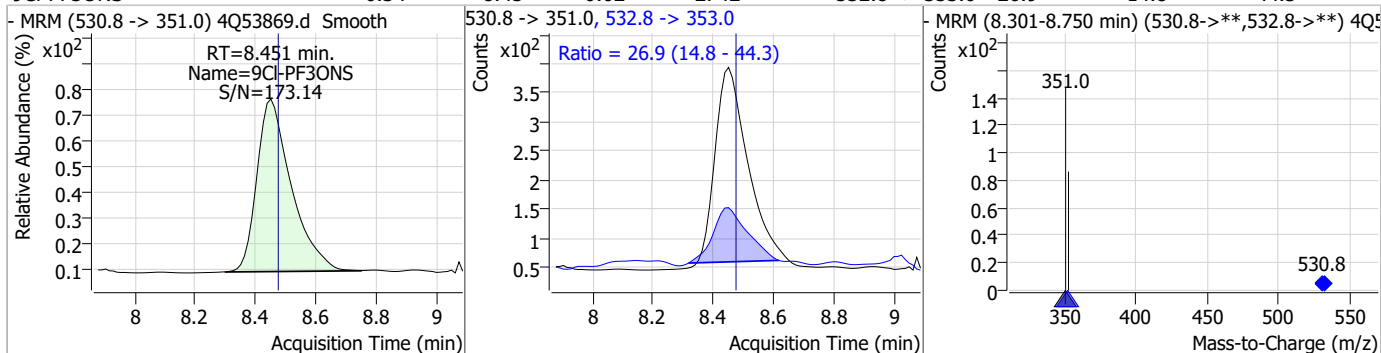
7.7.13  
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### Perfluorinated Compounds by LC/MS/MS

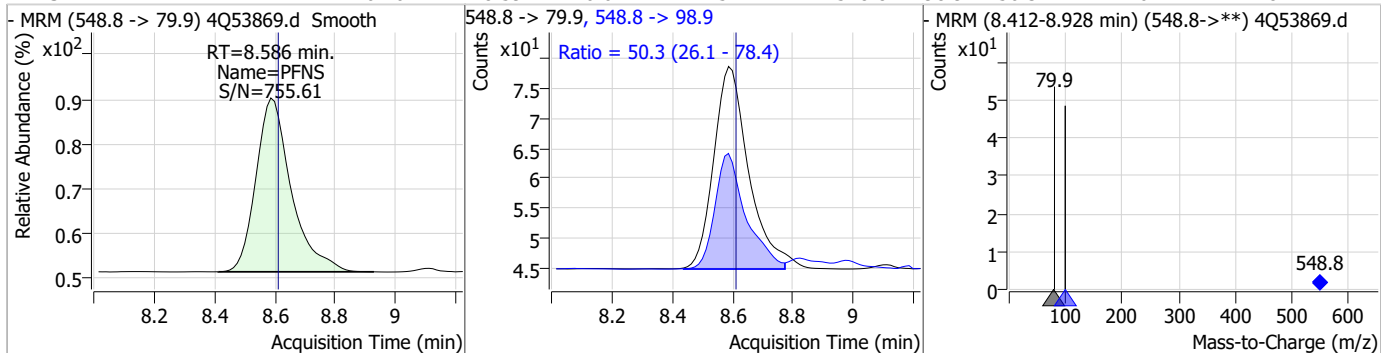
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	0.17	8.45	-0.02	1530	563.1 -> 269.1	18.1	10.6	31.9



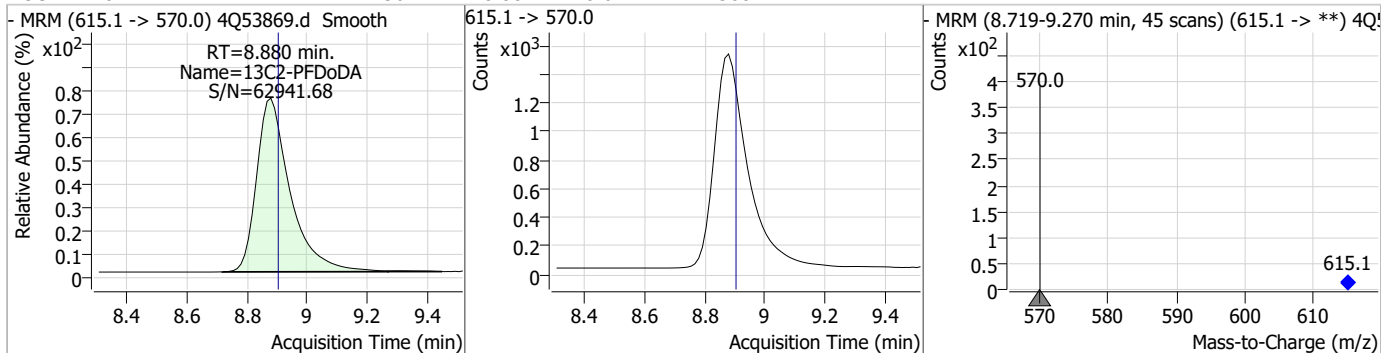
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	0.34	8.45	-0.02	2742	532.8 -> 353.0	26.9	14.8	44.3



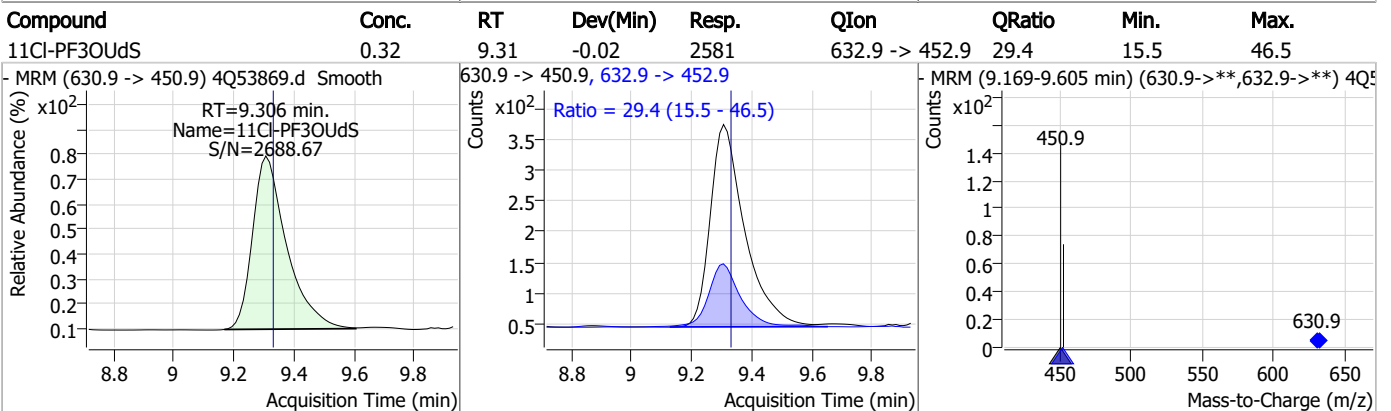
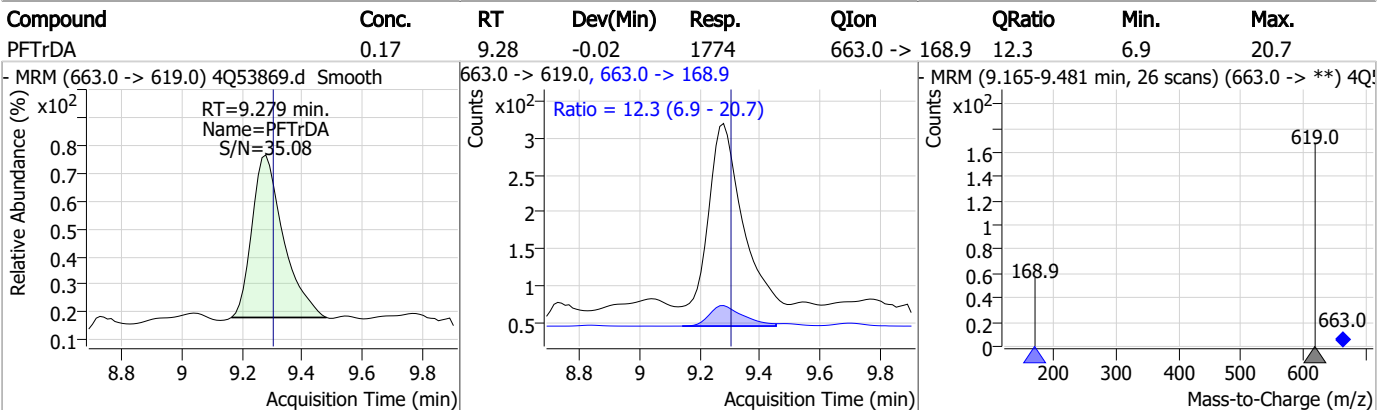
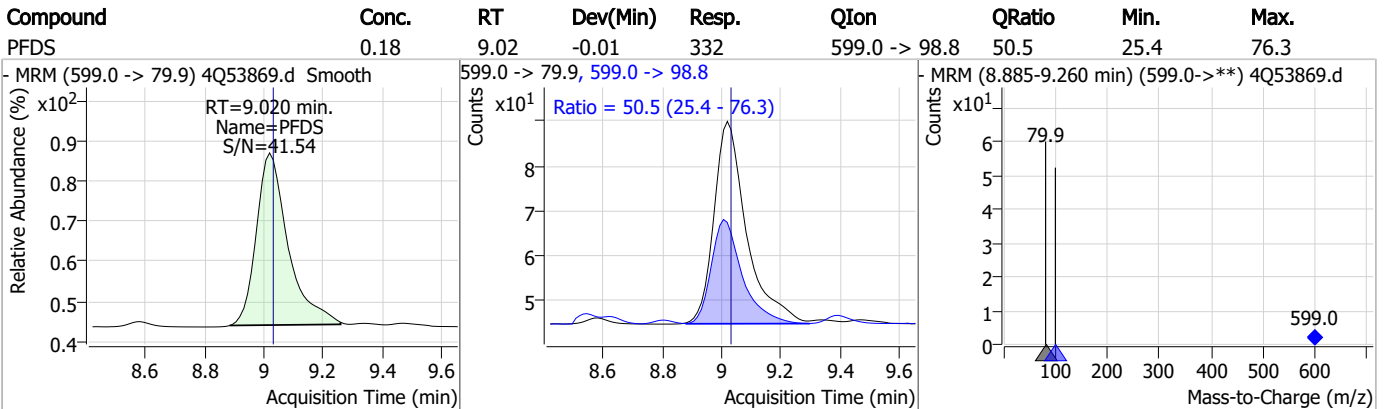
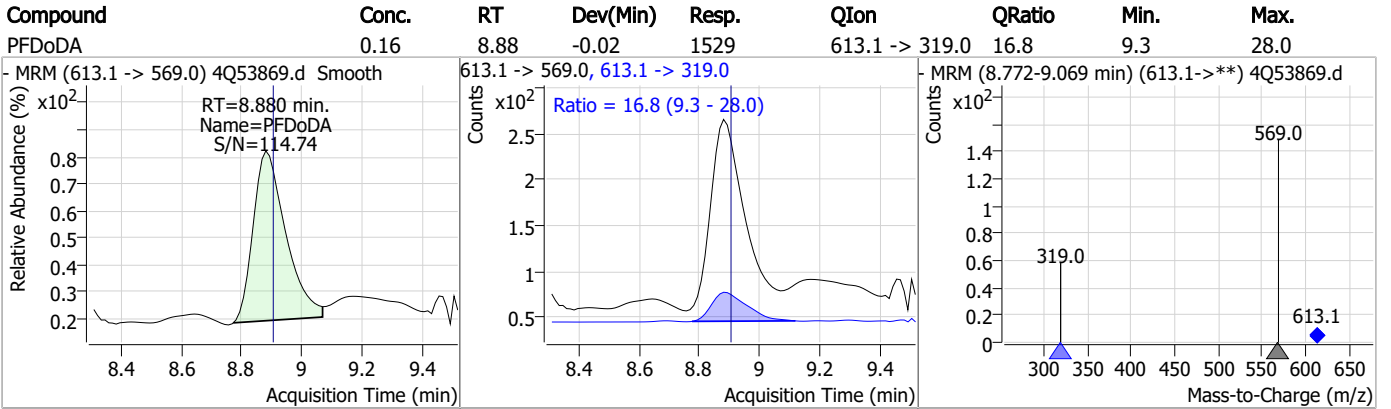
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	0.20	8.59	-0.02	275	548.8 -> 98.9	50.3	26.1	78.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.30	8.88	-0.02	11568				



### Perfluorinated Compounds by LC/MS/MS

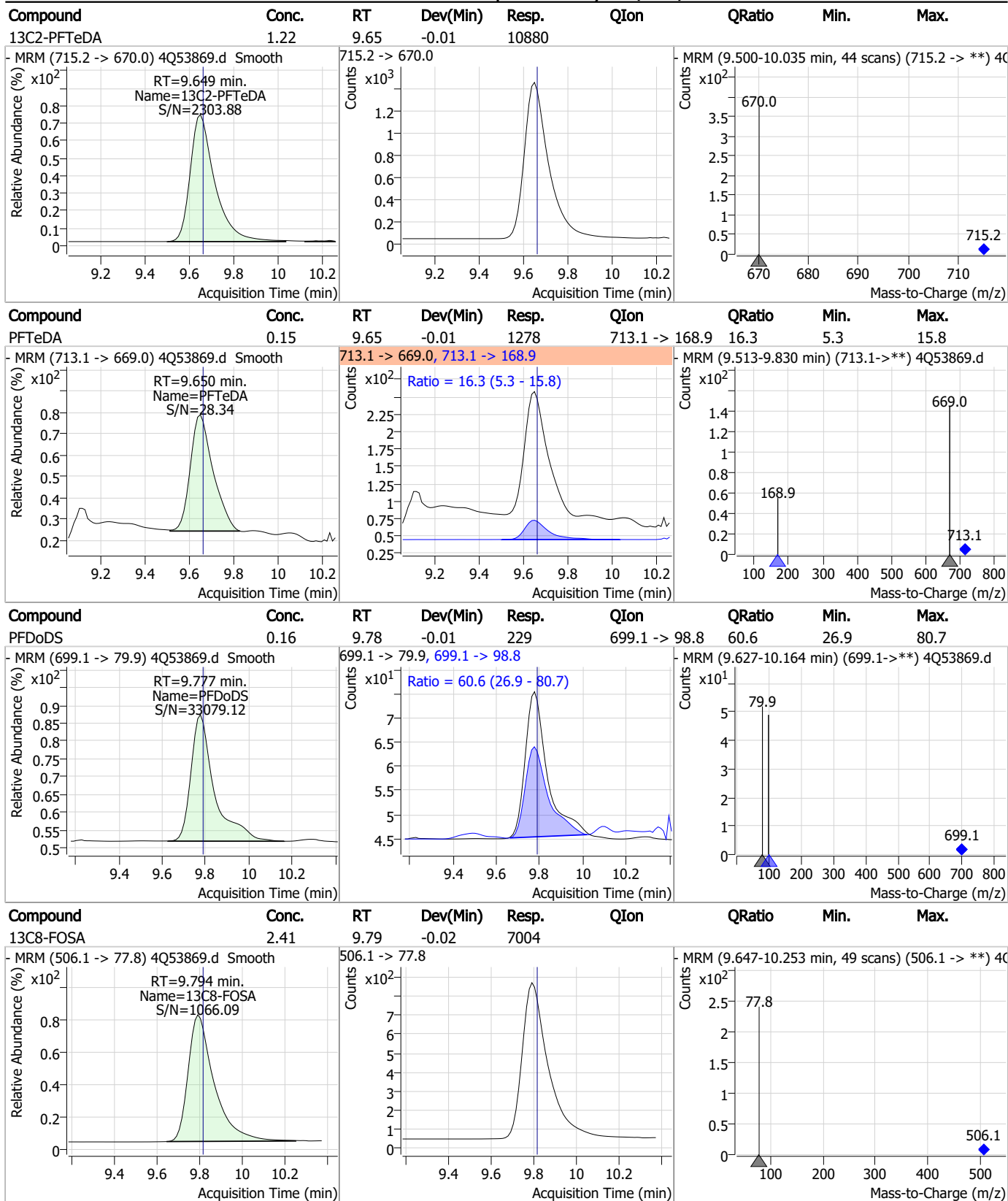


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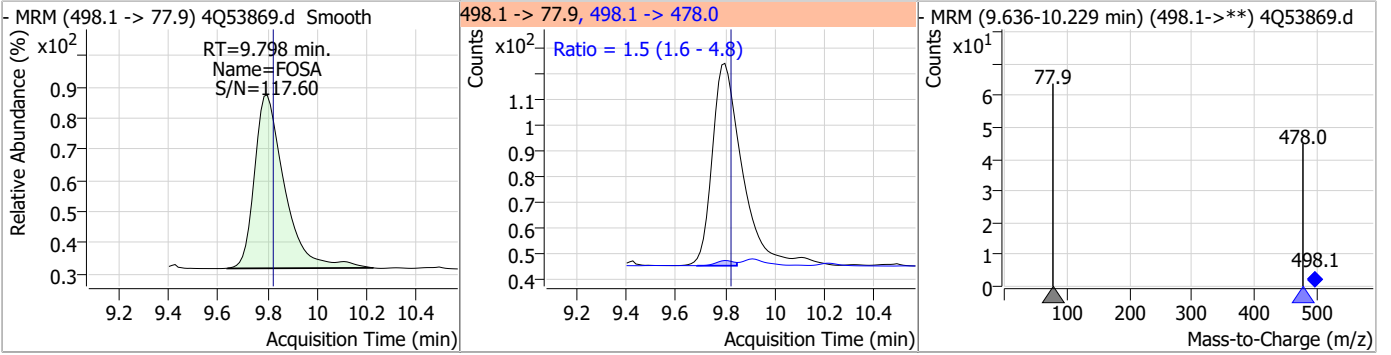
### Perfluorinated Compounds by LC/MS/MS



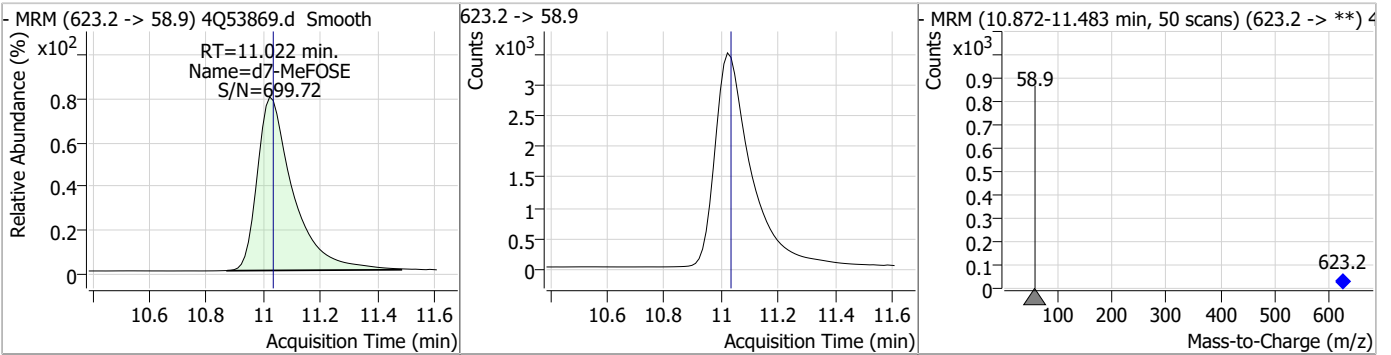
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### Perfluorinated Compounds by LC/MS/MS

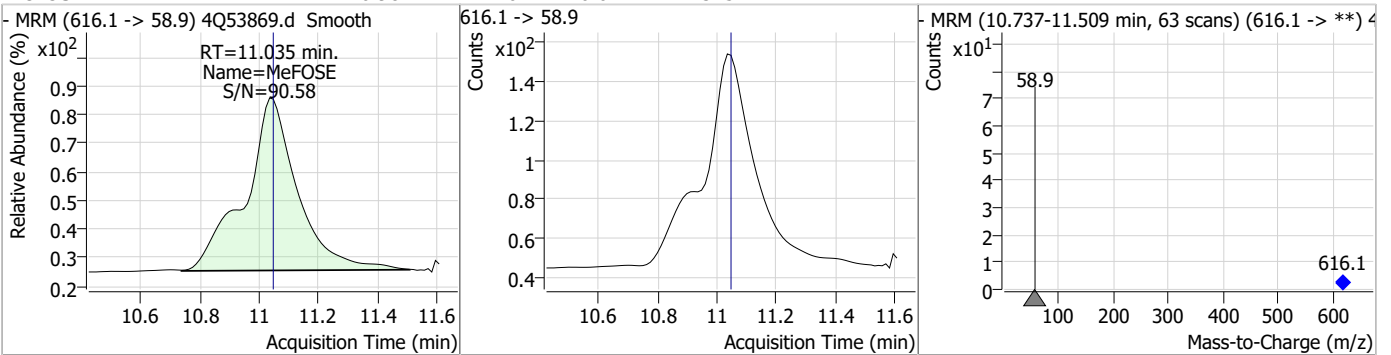
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.19	9.80	-0.02	666	498.1 -> 478.0	1.5	1.6	4.8



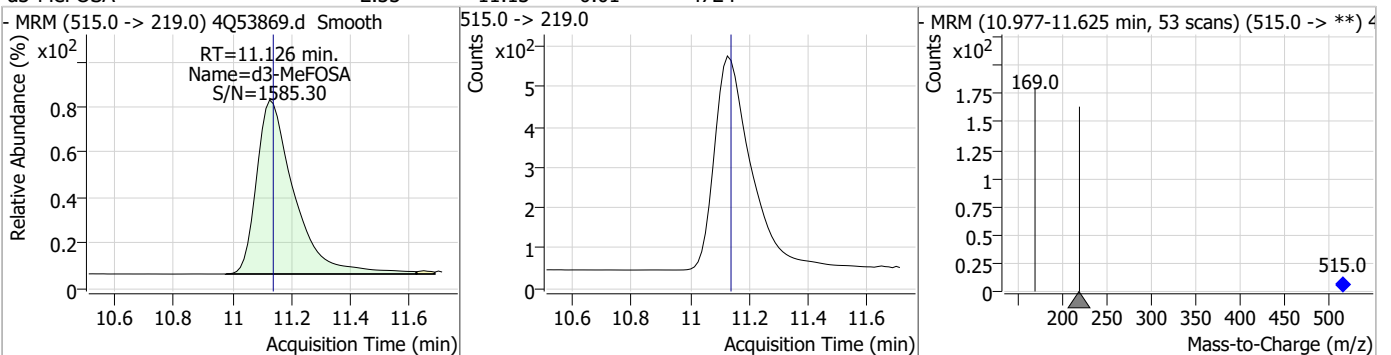
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.15	11.02	-0.01	30222				



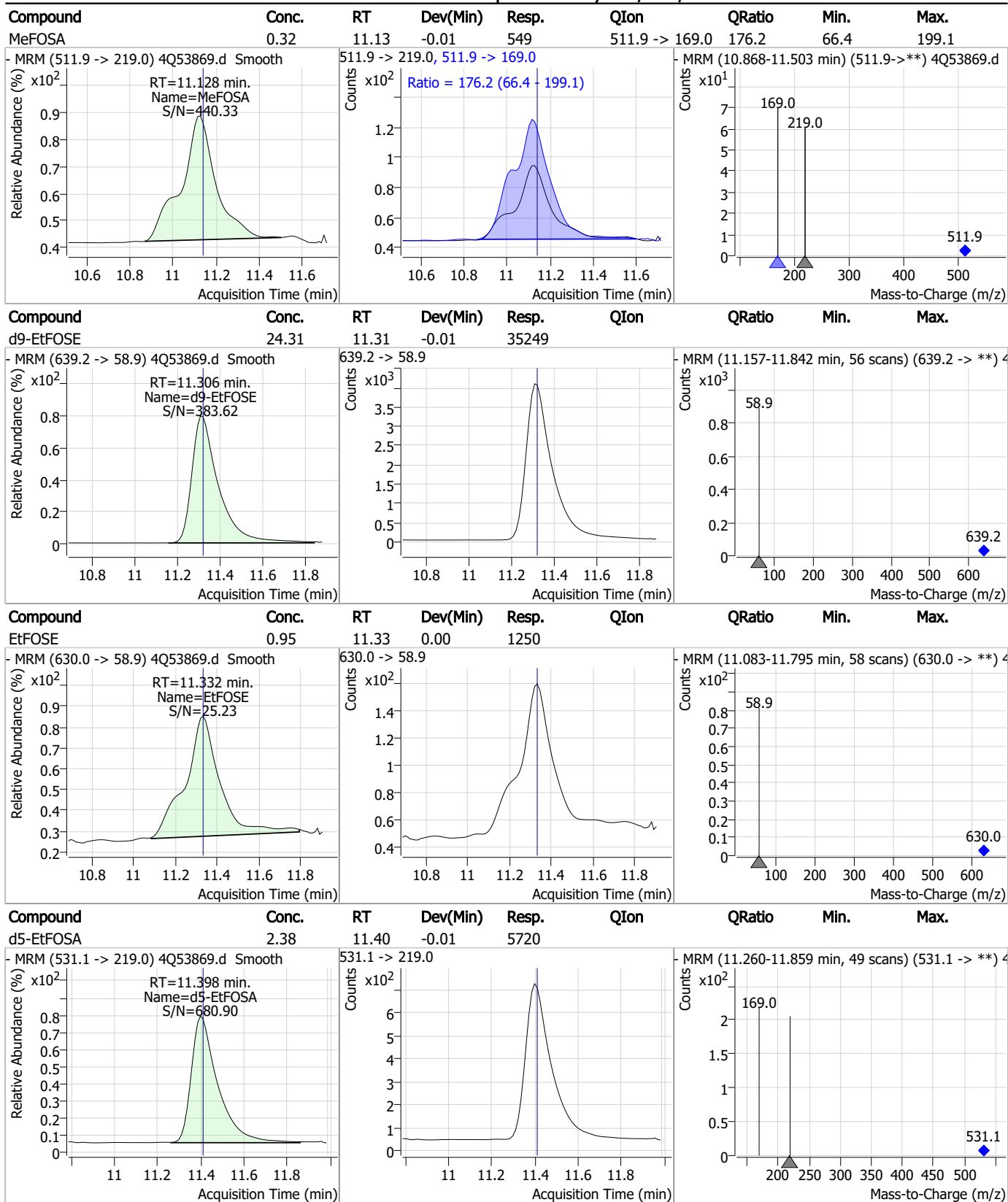
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	0.98	11.04	-0.01	1345				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.33	11.13	-0.01	4724				

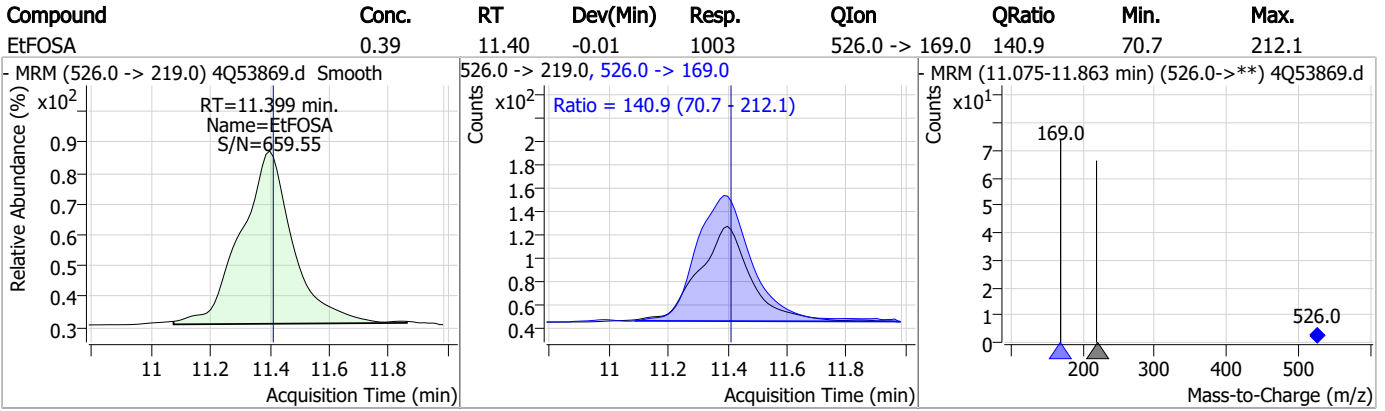


### Perfluorinated Compounds by LC/MS/MS



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### Perfluorinated Compounds by LC/MS/MS



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# Manual Integration Approval Summary

Sample Number: S4Q786-CC785      Method: EPA DRAFT 1633  
Lab FileID: 4Q53869.D      Analyst approved: 11/16/23 15:48 Anna Ludwig  
Injection Time: 11/15/23 11:14      Supervisor approved: 11/16/23 16:30 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.02	Split peak
Perfluorodecanoic acid	335-76-2		7.99	Poorly defined baseline
MeFOSAA	2355-31-9		8.07	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.28	Split peak

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### Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53879.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/15/2023 1:53:52 PM  
 Sample Name : cc785-4  
 Vial : P1-A5  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q786.batch.bin  
 Sample Information : OP98180,S4Q786,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.624	216.8 -> 171.9	92305	10.00 µg/L	-0.075
M5-PFPeA	4.125	268.3 -> 223.0	40016	5.00 µg/L	-0.050
M5-PFHxA	5.310	318.0 -> 273.0	29697	2.50 µg/L	-0.037
M4-PFHpA	6.267	367.1 -> 322.0	28707	2.50 µg/L	-0.037
M8-PFOA	6.964	421.1 -> 376.0	34613	2.50 µg/L	-0.025
M9-PFNA	7.509	472.1 -> 427.0	14435	1.25 µg/L	-0.025
M6-PFDA	8.004	519.1 -> 474.1	10488	1.25 µg/L	-0.013
M7-PFUnDA	8.461	570.0 -> 525.1	11922	1.25 µg/L	-0.012
M2-PFDoDA	8.880	615.1 -> 570.0	12003	1.25 µg/L	-0.025
M2-PFTeDA	9.649	715.2 -> 670.0	11875	1.25 µg/L	-0.012
M8-FOSA	9.806	506.1 -> 77.8	7852	2.50 µg/L	-0.012
M3-PFBS	5.152	302.1 -> 79.9	8411	2.50 µg/L	-0.050
M3-PFHxS	7.029	402.1 -> 79.9	7350	2.50 µg/L	-0.025
M8-PFOS	8.117	507.1 -> 79.9	8054	2.50 µg/L	-0.026
M2-4:2FTS	5.021	329.1 -> 80.9	1091	5.00 µg/L	-0.025
M2-6:2FTS	6.736	429.1 -> 80.9	2124	5.00 µg/L	-0.025
M2-8:2FTS	7.804	529.1 -> 80.9	2835	5.00 µg/L	-0.025
M3-MeFOSAA	8.086	573.2 -> 419.0	14619	5.00 µg/L	-0.012
M3-HFPO-DA	5.664	286.9 -> 168.9	26750	10.00 µg/L	-0.037
M5-EtFOSAA	8.296	589.2 -> 419.0	11838	5.00 µg/L	-0.014
M7-MeFOSE	11.034	623.2 -> 58.9	31830	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	35953	25.00 µg/L	0.000
M5-EtFOSA	11.397	531.1 -> 219.0	5959	2.50 µg/L	-0.012
M3-MeFOSA	11.139	515.0 -> 219.0	4895	2.50 µg/L	0.000
13C4-PFOS	8.118	502.8 -> 79.9	6237	2.50 µg/L	-0.026
13C3-PFBA	2.628	216.0 -> 172.0	44679	5.00 µg/L	-0.075
18O2-PFHxS	7.028	403.0 -> 83.9	4635	2.50 µg/L	-0.025
13C4-PFOA	6.964	417.1 -> 372.0	38495	2.50 µg/L	-0.025
13C2-PFDA	8.004	515.1 -> 470.1	10461	1.25 µg/L	-0.025
13C5-PFNA	7.509	468.0 -> 423.0	14995	1.25 µg/L	-0.025
13C2-PFHxA	5.311	315.1 -> 270.0	33710	2.50 µg/L	-0.037
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.021	329.1 -> 80.9	1091	6.88 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 137.6%		
13C2-6:2FTS	6.736	429.1 -> 80.9	2124	6.35 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 127.1%		
13C2-8:2FTS	7.804	529.1 -> 80.9	2835	6.02 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 120.3%		
13C2-PFDoDA	8.880	615.1 -> 570.0	12003	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.7%		
13C2-PFTeDA	9.649	715.2 -> 670.0	11875	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C3-PFBS	5.152	302.1 -> 79.9	8411	2.42 µg/L	-0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.8%		
13C3-PFHxS	7.029	402.1 -> 79.9	7350	2.56 µg/L	-0.025

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C4-PFBA	2.624	216.8 -> 171.9	92305	9.91 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C4-PFHpA	6.267	367.1 -> 322.0	28707	2.44 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C5-PFHxA	5.310	318.0 -> 273.0	29697	2.36 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.5%		
13C5-PFPeA	4.125	268.3 -> 223.0	40016	4.87 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C6-PFDA	8.004	519.1 -> 474.1	10488	1.36 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 109.0%		
13C7-PFUnDA	8.461	570.0 -> 525.1	11922	1.34 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.2%		
13C8-FOSA	9.806	506.1 -> 77.8	7852	2.63 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.3%		
13C8-PFOA	6.964	421.1 -> 376.0	34613	2.52 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C8-PFOS	8.117	507.1 -> 79.9	8054	2.70 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.2%		
13C9-PFNA	7.509	472.1 -> 427.0	14435	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.7%		
d3-MeFOSAA	8.086	573.2 -> 419.0	14619	6.18 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.6%		
13C3-HFPO-DA	5.664	286.9 -> 168.9	26750	9.32 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 93.2%		
d3-MeFOSA	11.139	515.0 -> 219.0	4895	2.35 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.1%		
d5-EtFOSAA	8.296	589.2 -> 419.0	11838	5.71 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.3%		
d7-MeFOSE	11.034	623.2 -> 58.9	31830	24.77 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.1%		
d9-EtFOSE	11.319	639.2 -> 58.9	35953	24.16 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 96.6%		
d5-EtFOSA	11.397	531.1 -> 219.0	5959	2.41 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.5%		
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.009	327.1 -> 307.0	19687	9.13 µg/L	98
		327.1 -> 80.9	8583		
6:2FTS	6.737	427.1 -> 407.0	23558	10.25 µg/L	98
		427.1 -> 80.9	8779		
8:2FTS	7.804	527.1 -> 507.0	16945	10.99 µg/L	99
		527.1 -> 80.8	7007		
EtFOSAA	8.297	584.2 -> 419.1	5897	2.78 µg/L	m 85
		584.2 -> 526.0	2341		
FOSA	9.798	498.1 -> 77.9	9220	2.41 µg/L	99
		498.1 -> 478.0	259		
MeFOSAA	8.087	570.1 -> 419.0	6561	2.53 µg/L	92
		570.1 -> 483.0	1427		
PFBA	2.632	212.8 -> 168.9	33883	10.09 µg/L	100
PFBS	5.153	298.7 -> 79.9	6582	2.20 µg/L	97
		298.7 -> 98.8	2430		
PFDA	8.005	512.9 -> 469.0	19657	2.29 µg/L	97
		512.9 -> 219.0	4199		
PFDODA	8.880	613.1 -> 569.0	25097	2.56 µg/L	97
		613.1 -> 319.0	4402		
PFDS	9.020	599.0 -> 79.9	4824	2.31 µg/L	99

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2437			
PFHpA	6.268	363.1 -> 319.0	45499	2.53	µg/L	99
		363.1 -> 169.0	8129			
PFHpS	7.612	449.0 -> 79.9	7549	2.37	µg/L	96
		449.0 -> 98.9	3634			
PFHxA	5.300	313.0 -> 269.0	25986	2.50	µg/L	98
		313.0 -> 118.9	875			
PFHxS	7.030	398.7 -> 79.9	5141	2.32	µg/L	m 81
		398.7 -> 98.9	2558			
PFNA	7.522	463.0 -> 419.0	23770	2.58	µg/L	97
		463.0 -> 219.0	5673			
PFNS	8.586	548.8 -> 79.9	3804	2.48	µg/L	96
		548.8 -> 98.9	1885			
PFOA	6.965	413.0 -> 369.0	41140	2.46	µg/L	100
		413.0 -> 169.0	8487			
PFOS	8.119	498.9 -> 79.9	7974	2.18	µg/L	m 81
		498.9 -> 98.8	3809			
PFPeA	4.127	263.0 -> 219.0	42984	4.94	µg/L	100
PFPeS	6.257	349.1 -> 79.9	5502	2.28	µg/L	96
		349.1 -> 98.9	2538			
PFTeDA	9.650	713.1 -> 669.0	22147	2.46	µg/L	100
		713.1 -> 168.9	2311			
PFTrDA	9.292	663.0 -> 619.0	28176	2.64	µg/L	100
		663.0 -> 168.9	3841			
PFUnDA	8.461	563.1 -> 519.0	24993	2.56	µg/L	100
		563.1 -> 269.1	5372			
11CI-PF3OUdS	9.306	630.9 -> 450.9	40083	4.80	µg/L	99
		632.9 -> 452.9	12280			
9CI-PF3ONS	8.463	530.8 -> 351.0	41730	4.95	µg/L	97
		532.8 -> 353.0	13016			
ADONA	6.544	376.9 -> 250.9	108357	5.85	µg/L	100
		376.9 -> 84.8	26494			
HFPO-DA	5.665	284.9 -> 168.9	14878	5.25	µg/L	98
		284.9 -> 184.9	1495			
3:3FTCA	3.561	241.0 -> 177.0	6209	11.87	µg/L	100
		241.0 -> 117.0	563			
5:3FTCA	5.996	341.0 -> 237.1	114906	62.94	µg/L	99
		341.0 -> 217.0	82121			
7:3FTCA	7.536	441.0 -> 316.9	53720	65.59	µg/L	94
		441.0 -> 336.9	125555			
EtFOSA	11.412	526.0 -> 219.0	13834	5.15	µg/L	98
		526.0 -> 169.0	19192			
EtFOSE	11.332	630.0 -> 58.9	17030	12.68	µg/L	100
MeFOSA	11.128	511.9 -> 219.0	9818	5.53	µg/L	m 94
		511.9 -> 169.0	13734			
MeFOSE	11.047	616.1 -> 58.9	18603	12.83	µg/L	100
PFDoDS	9.777	699.1 -> 79.9	3760	2.29	µg/L	92
		699.1 -> 98.8	2234			
NFDHA	5.191	295.0 -> 201.0	3490	5.10	µg/L	90
		295.0 -> 84.9	1007			
PFMBA	4.529	279.0 -> 85.1	24516	4.89	µg/L	100
PFMPA	3.265	229.0 -> 84.9	27571	4.95	µg/L	100
PFEESA	5.696	314.8 -> 134.9	37350	4.55	µg/L	98
		314.8 -> 82.9	1342			

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



7.7.14  
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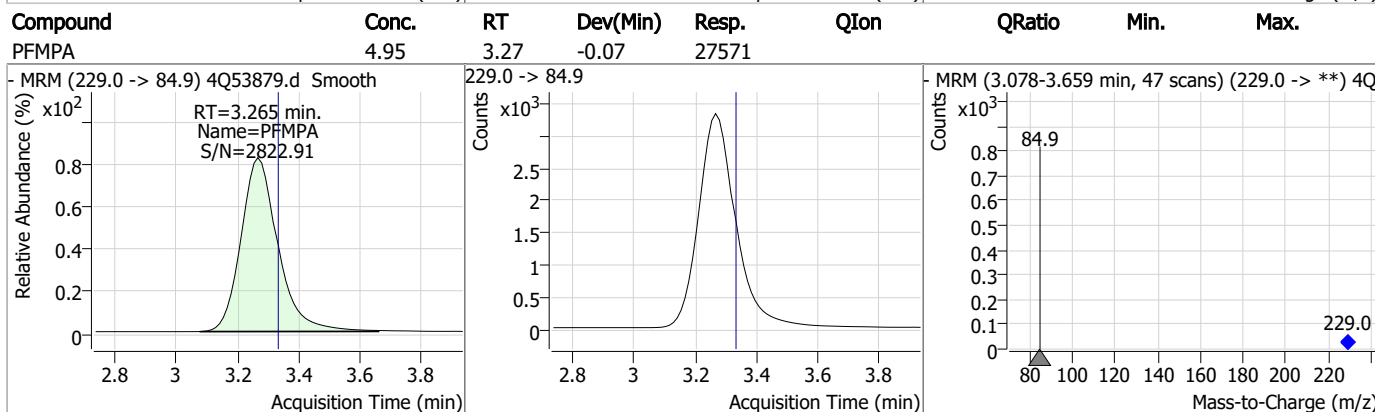
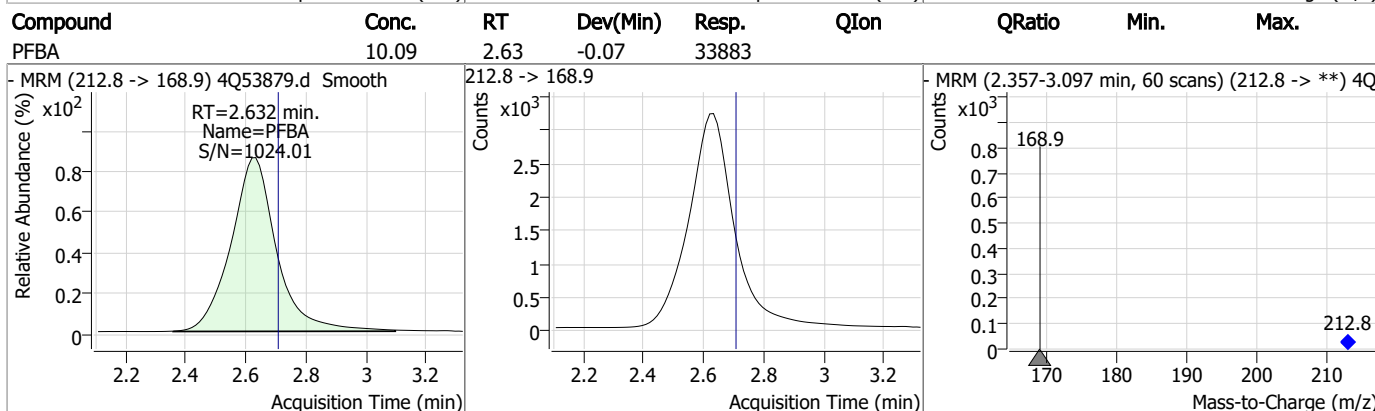
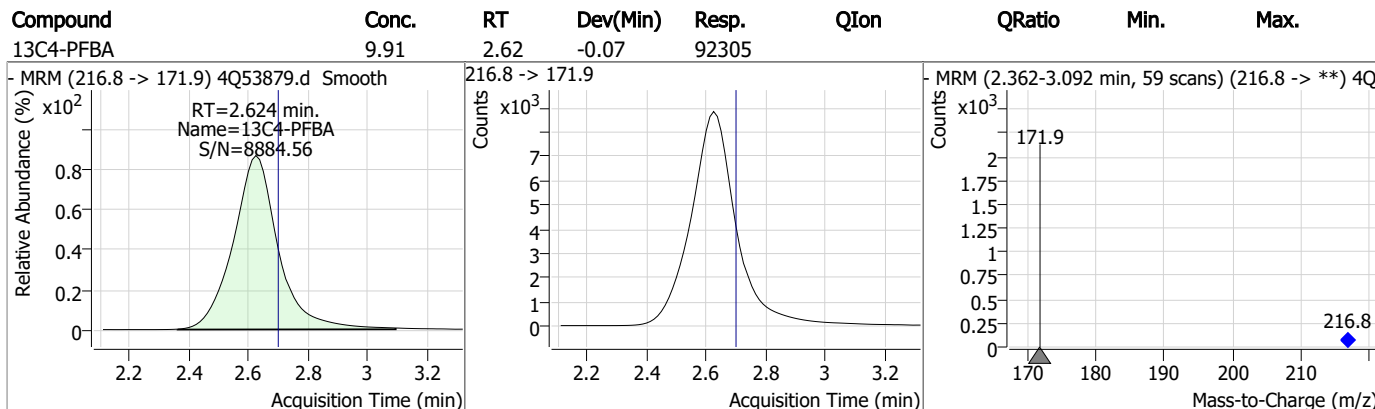
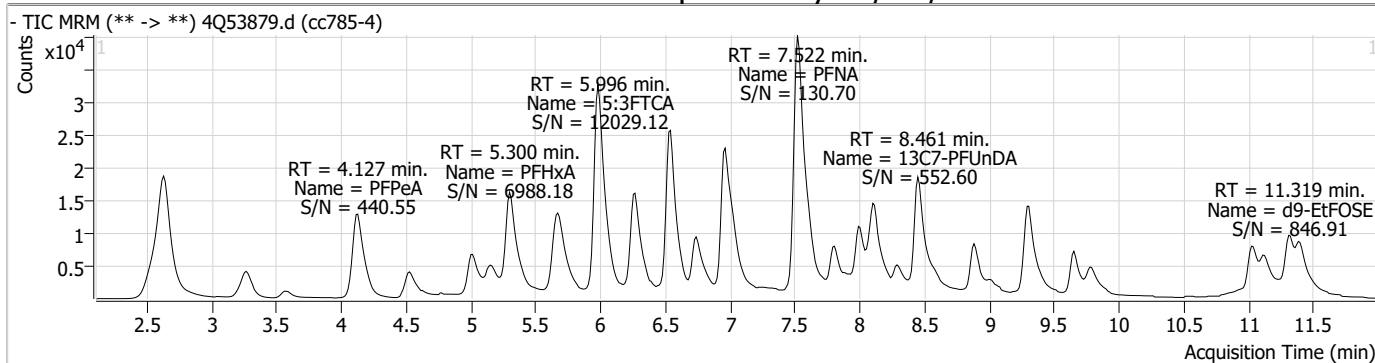
### Perfluorinated Compounds by LC/MS/MS

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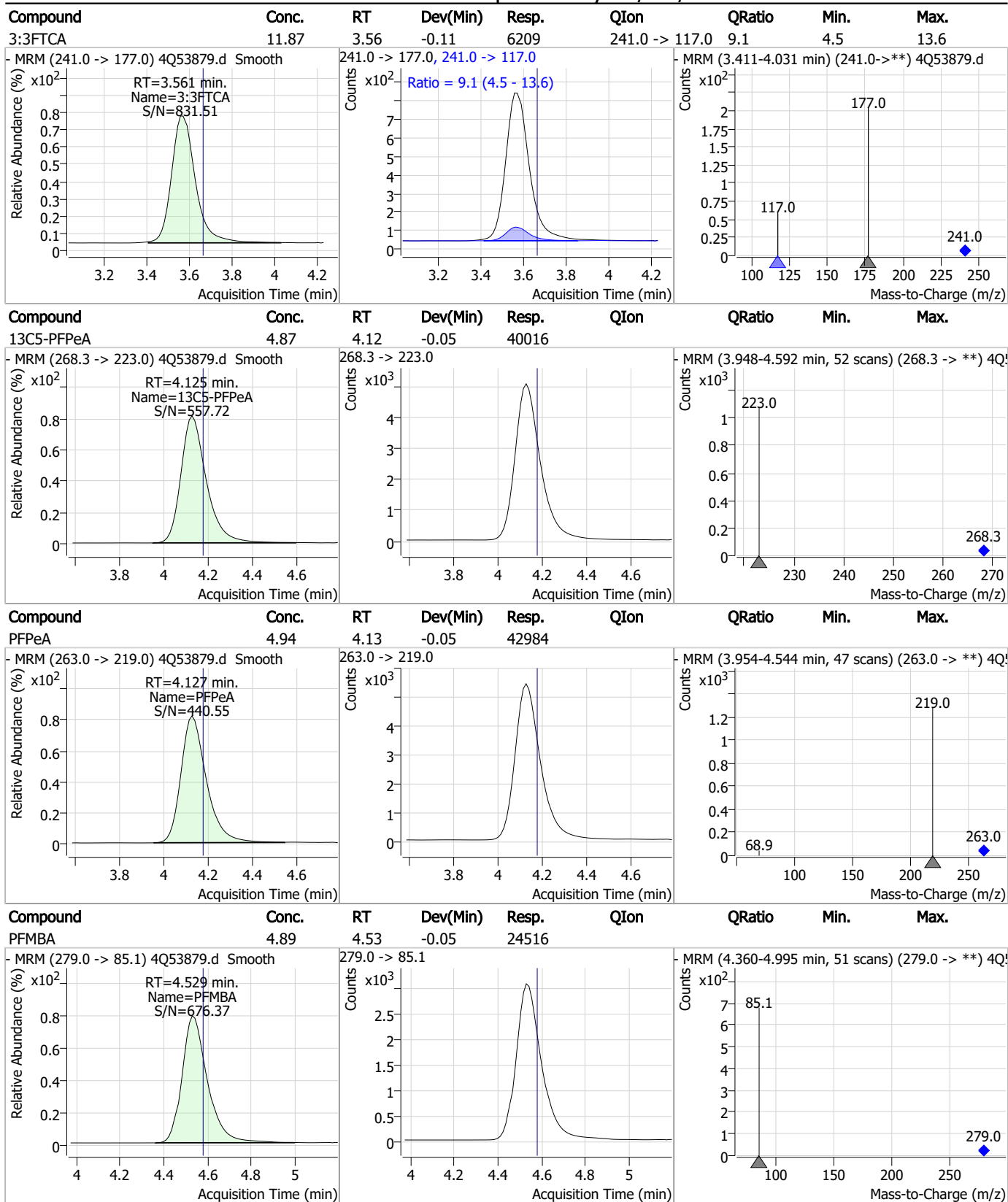
7.7.14

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### Perfluorinated Compounds by LC/MS/MS



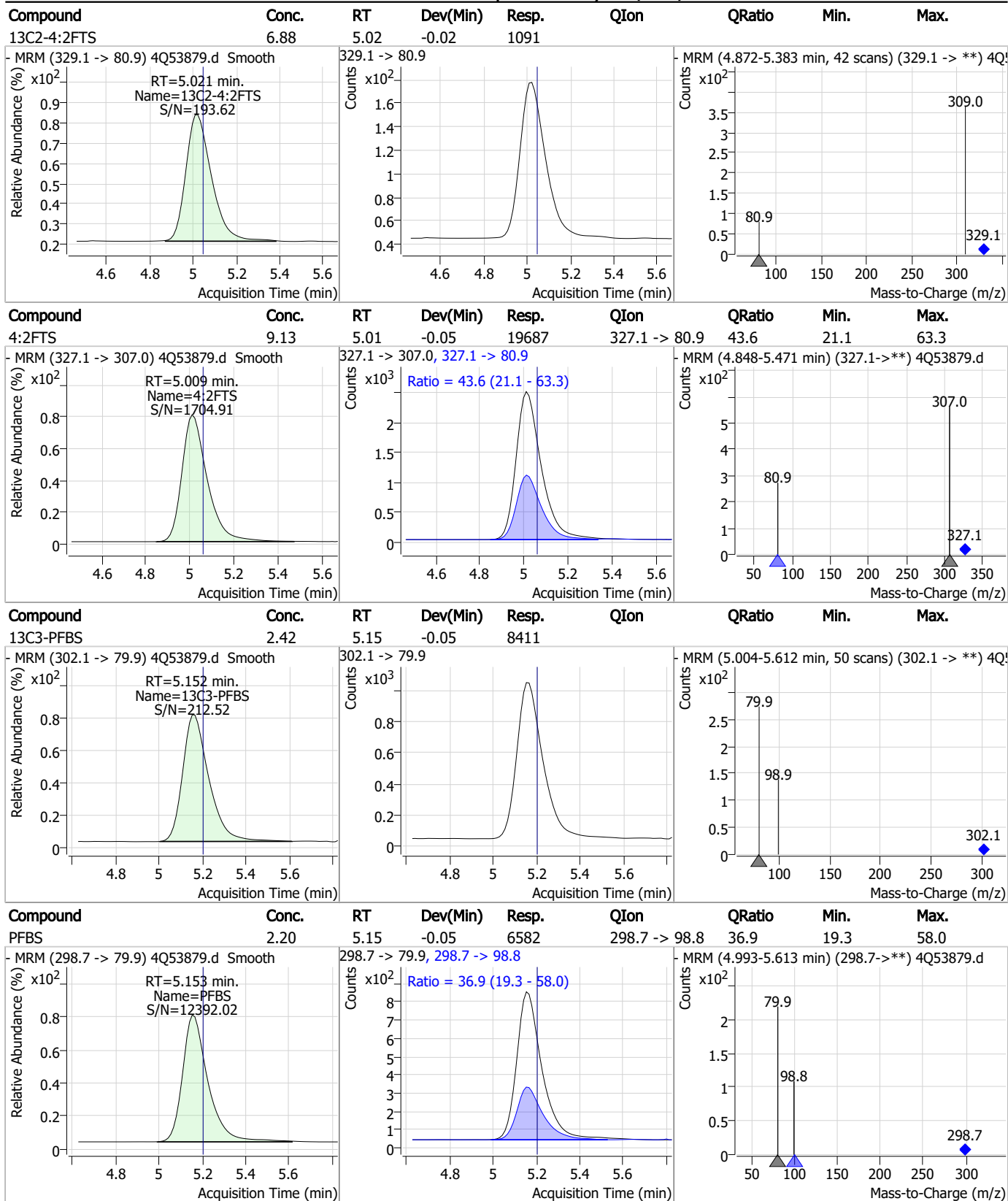
### Perfluorinated Compounds by LC/MS/MS



7.7.14

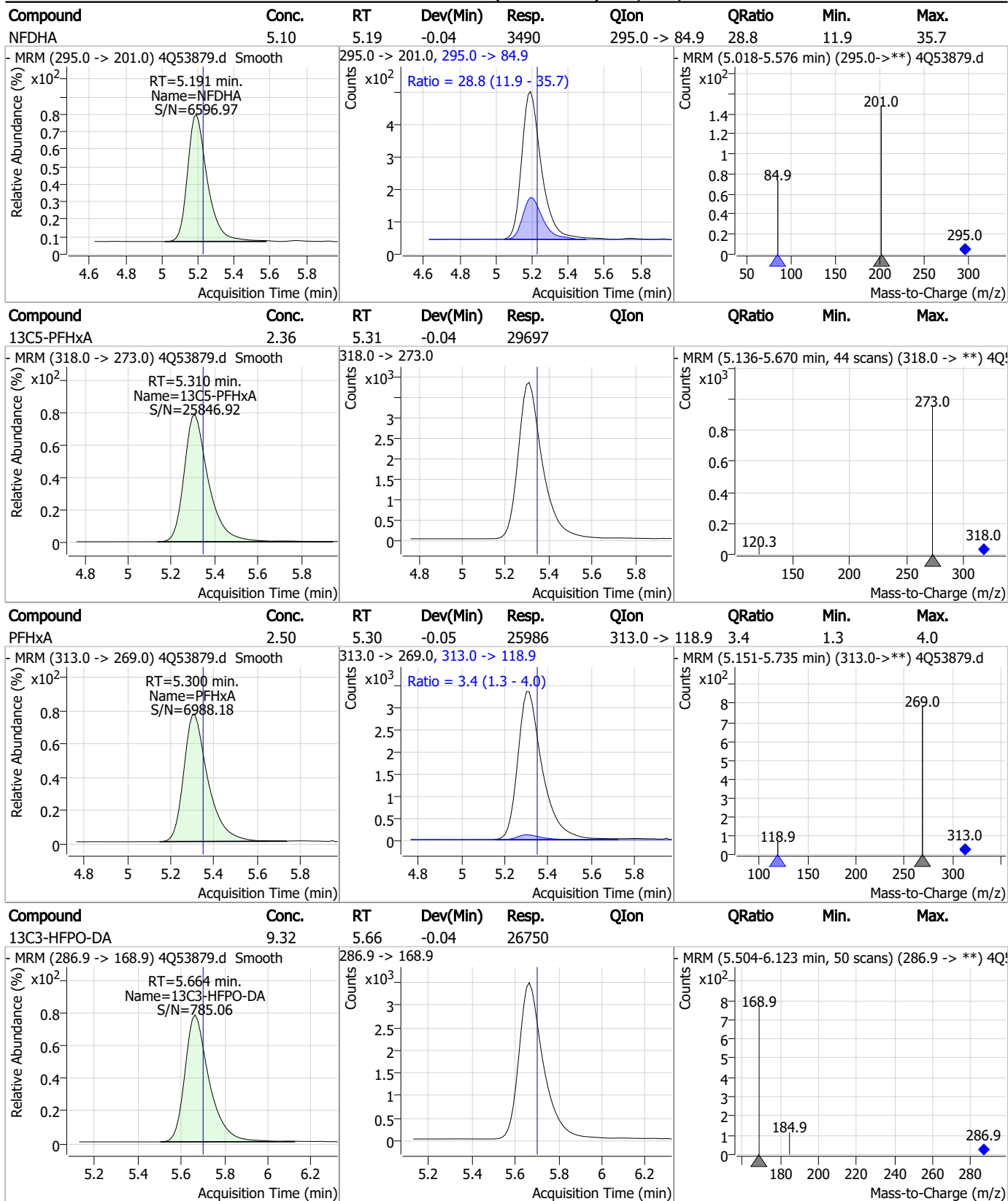
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### Perfluorinated Compounds by LC/MS/MS



7.7.14  
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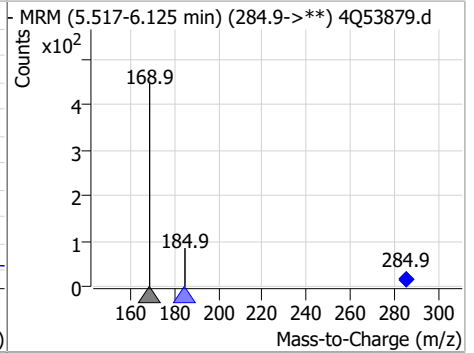
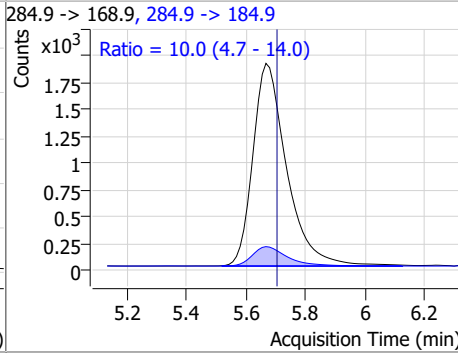
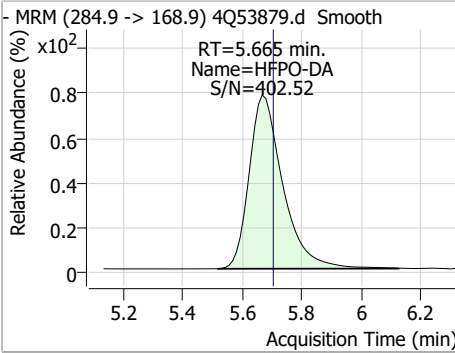
### Perfluorinated Compounds by LC/MS/MS



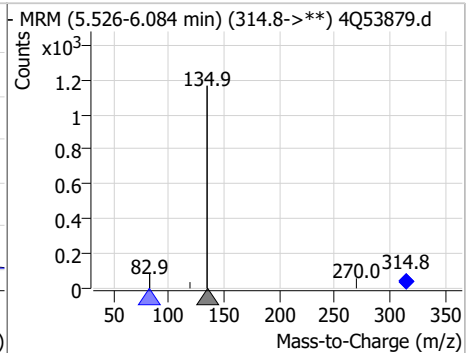
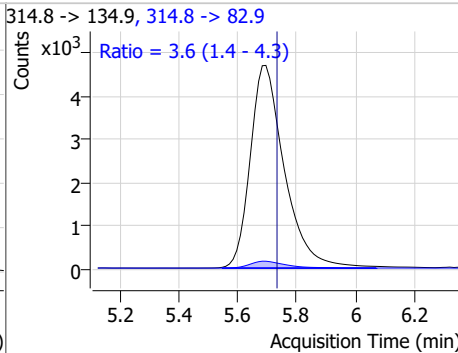
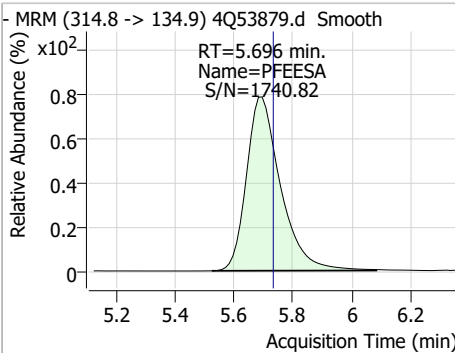
7.7.14  
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### Perfluorinated Compounds by LC/MS/MS

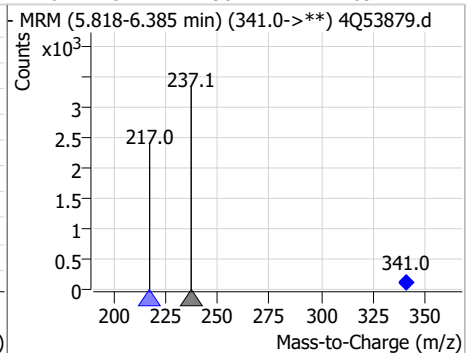
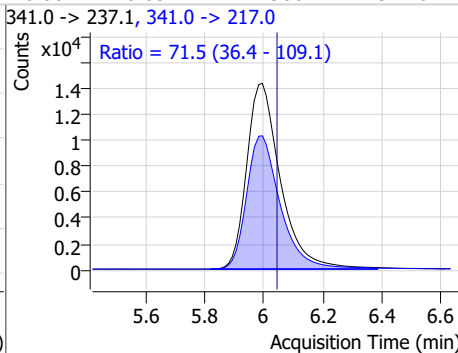
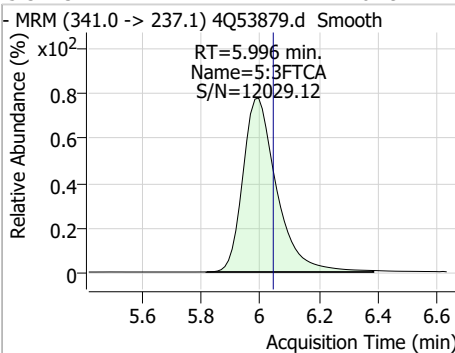
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	5.25	5.67	-0.04	14878	284.9 -> 184.9	10.0	4.7	14.0



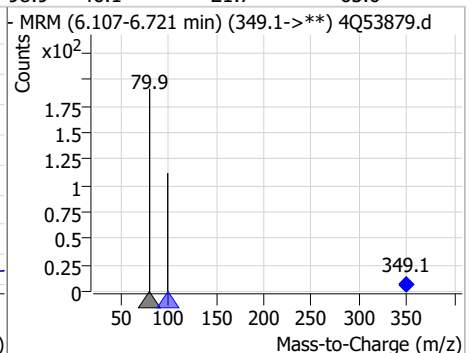
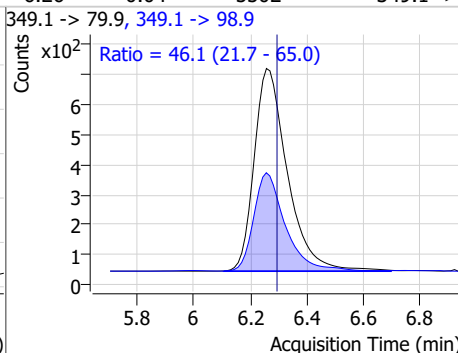
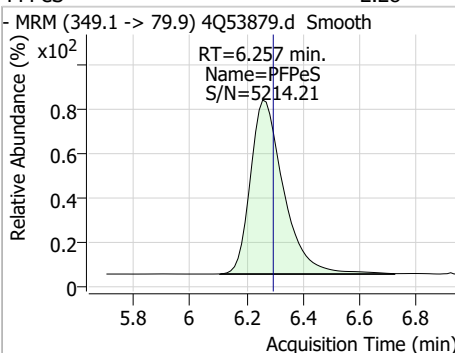
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.55	5.70	-0.04	37350	314.8 -> 82.9	3.6	1.4	4.3



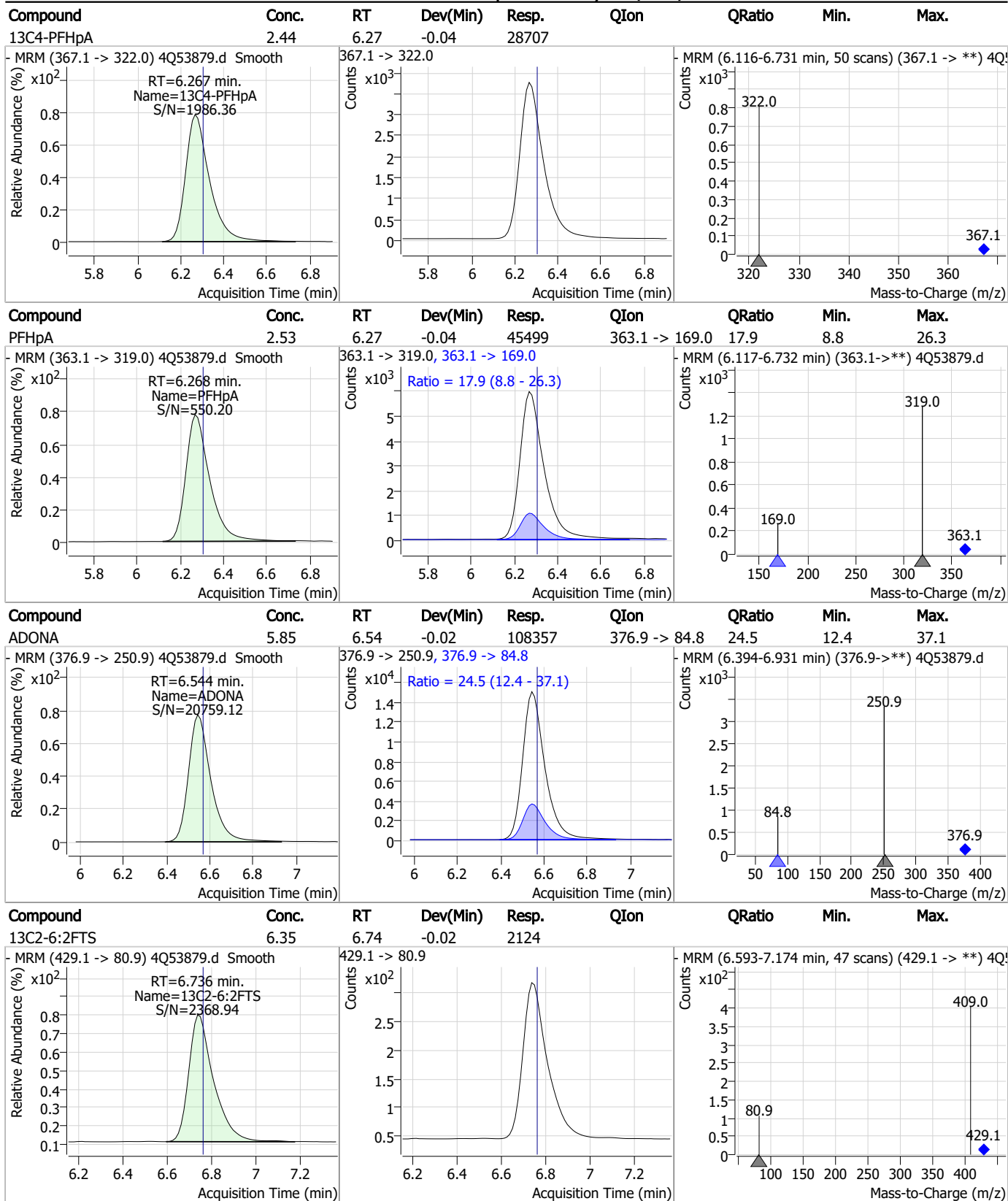
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	62.94	6.00	-0.05	114906	341.0 -> 217.0	71.5	36.4	109.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.28	6.26	-0.04	5502	349.1 -> 98.9	46.1	21.7	65.0

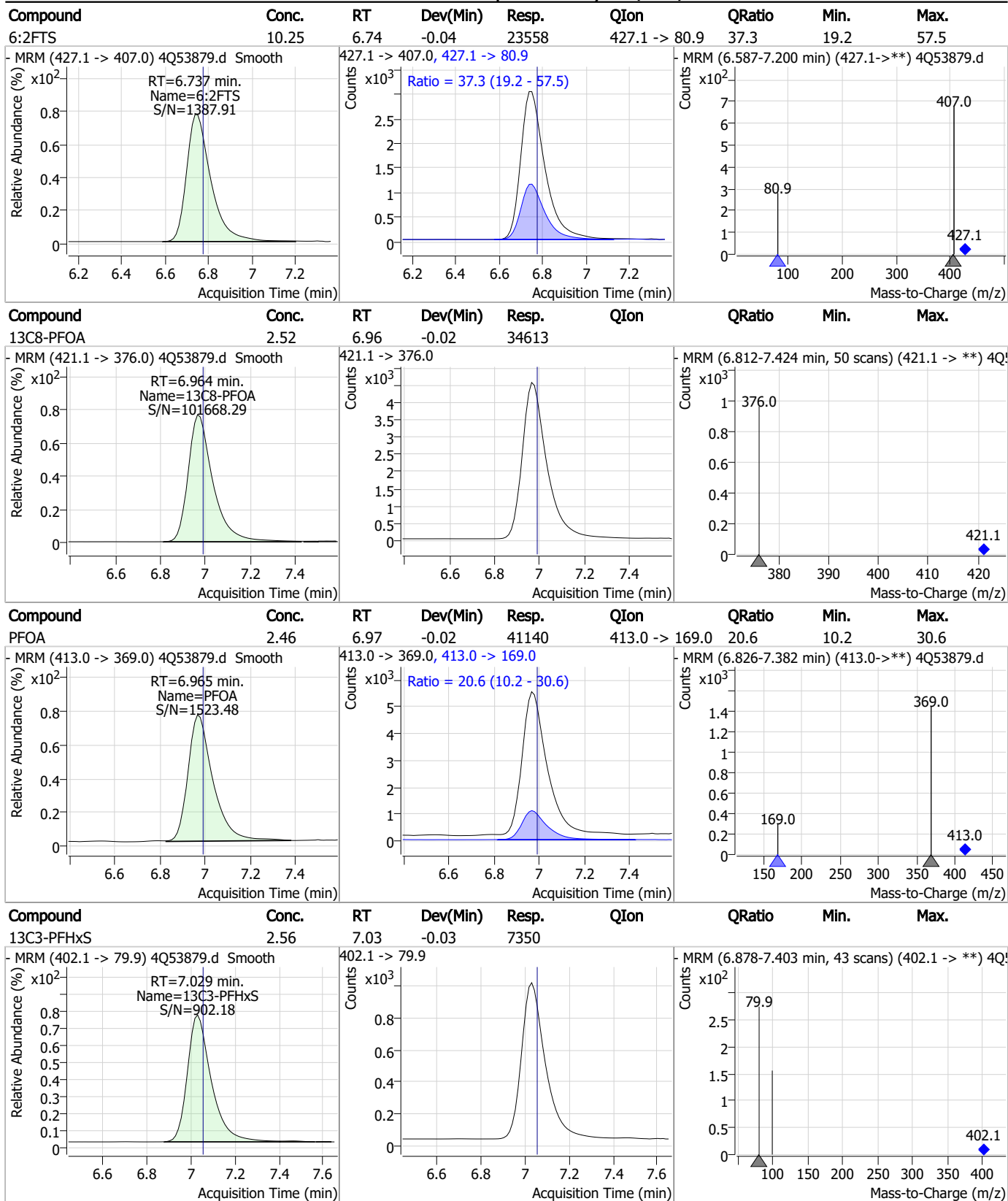


### Perfluorinated Compounds by LC/MS/MS



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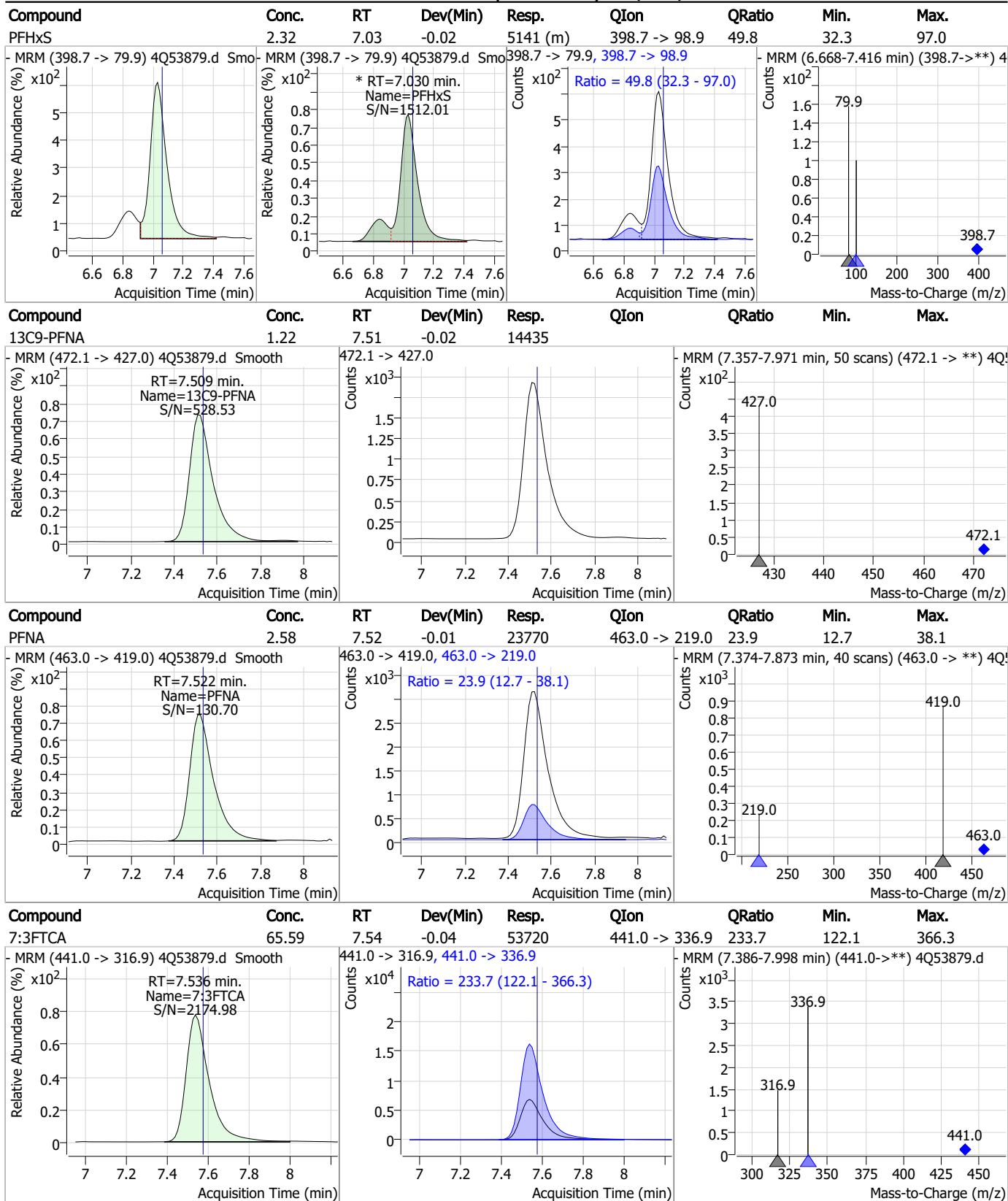
### Perfluorinated Compounds by LC/MS/MS



7.7.14

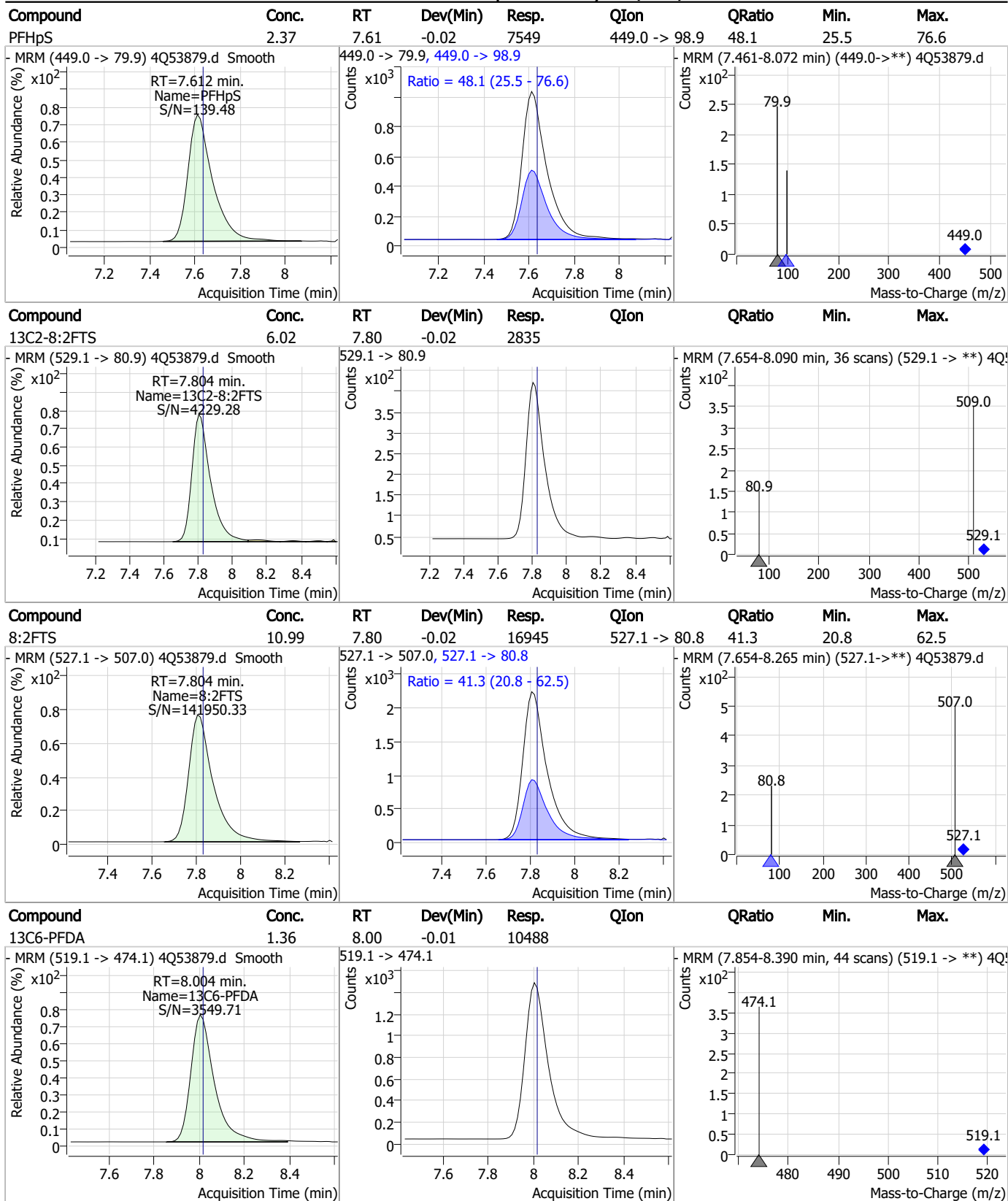


### Perfluorinated Compounds by LC/MS/MS



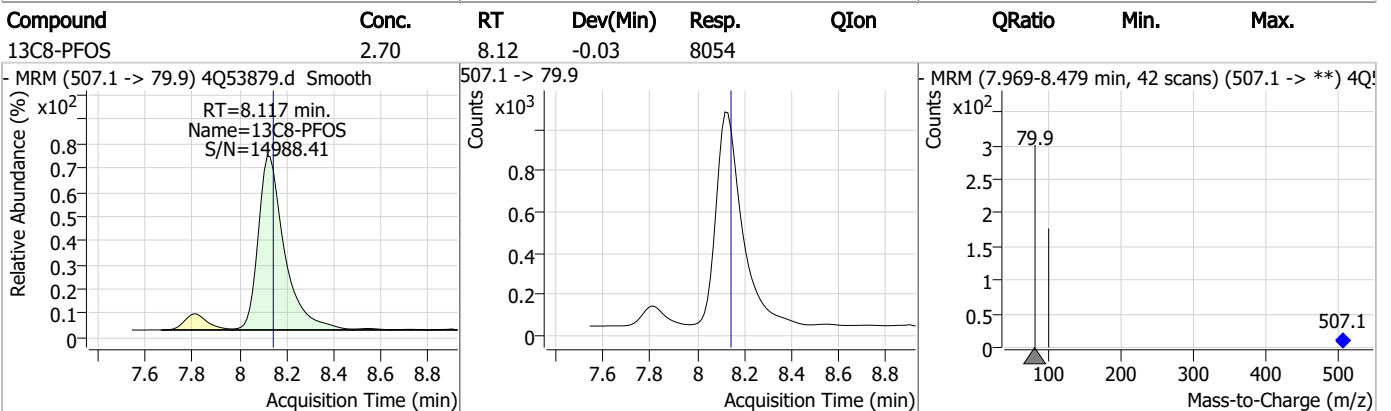
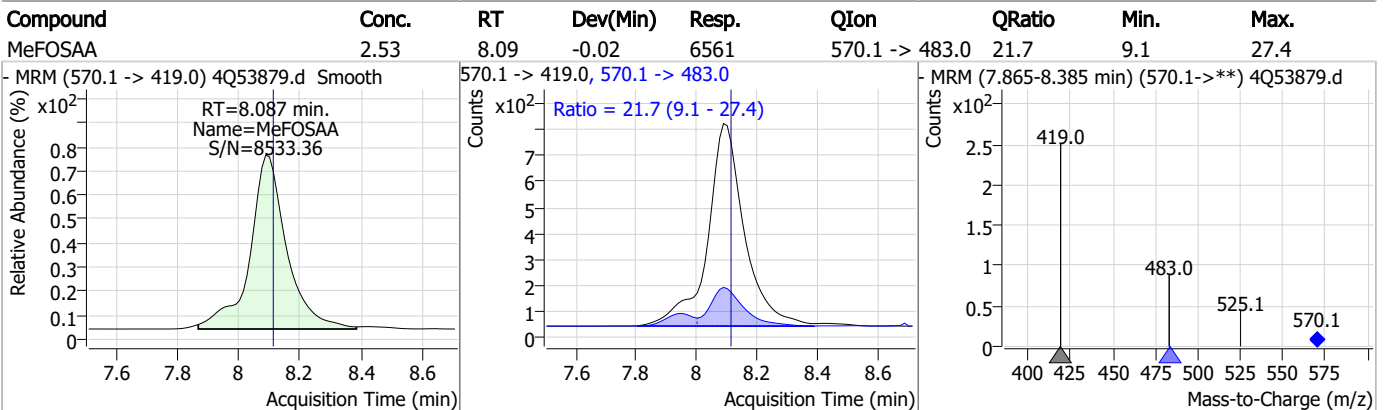
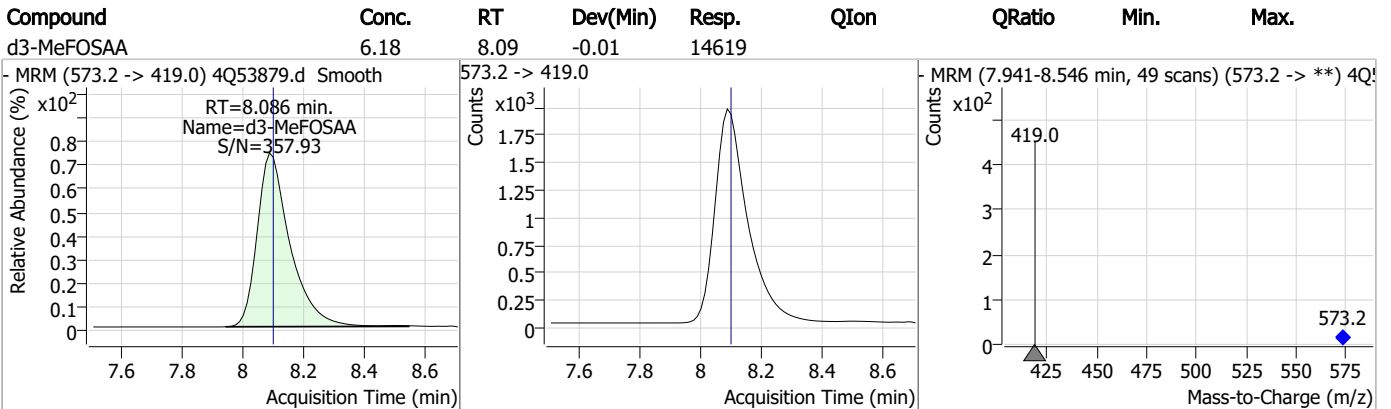
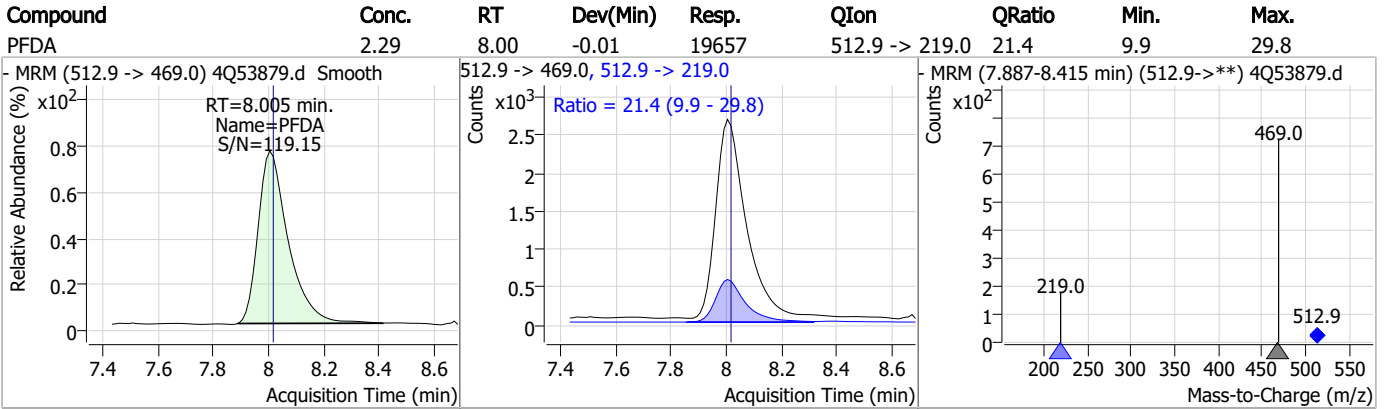
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### Perfluorinated Compounds by LC/MS/MS

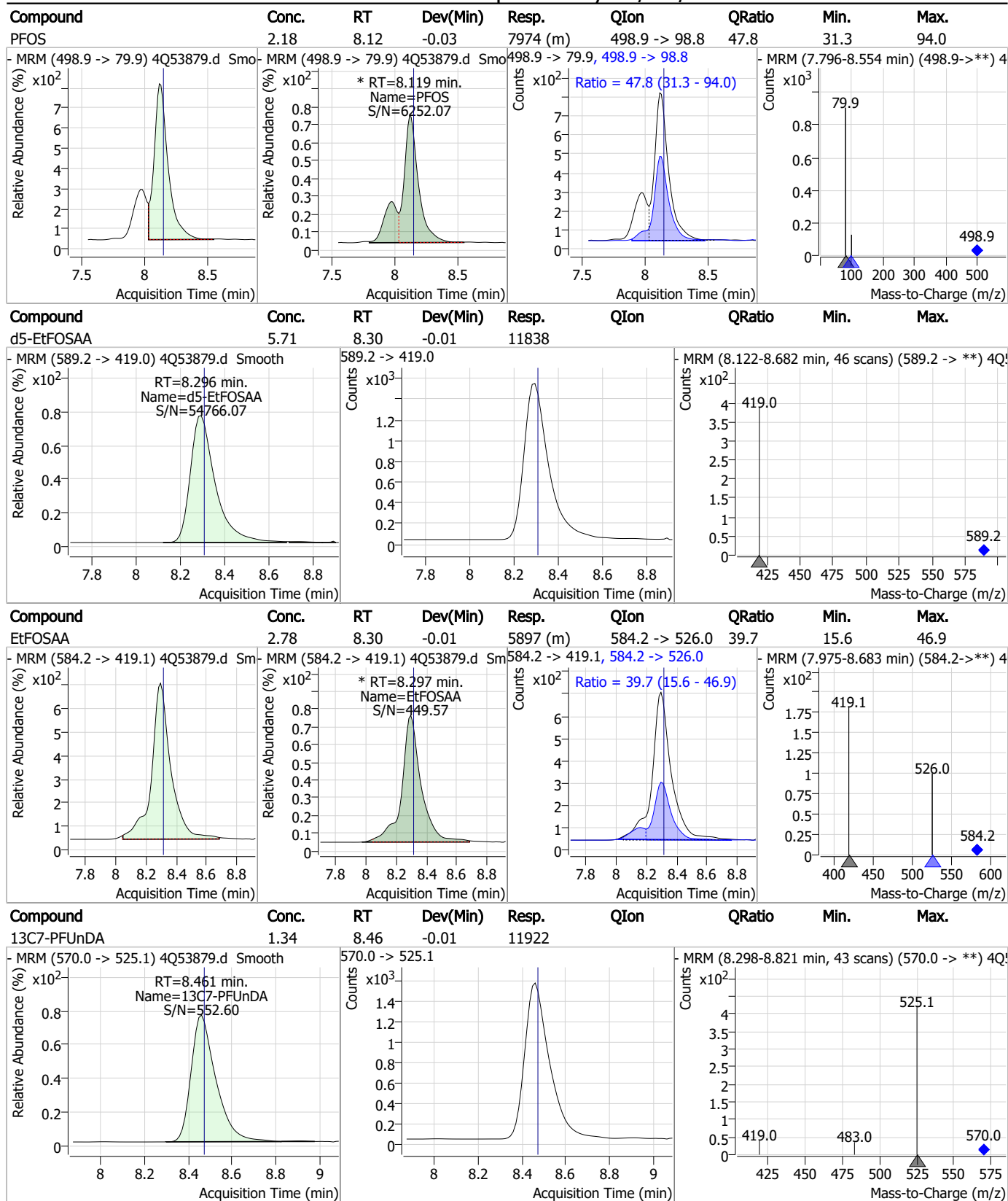


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### Perfluorinated Compounds by LC/MS/MS

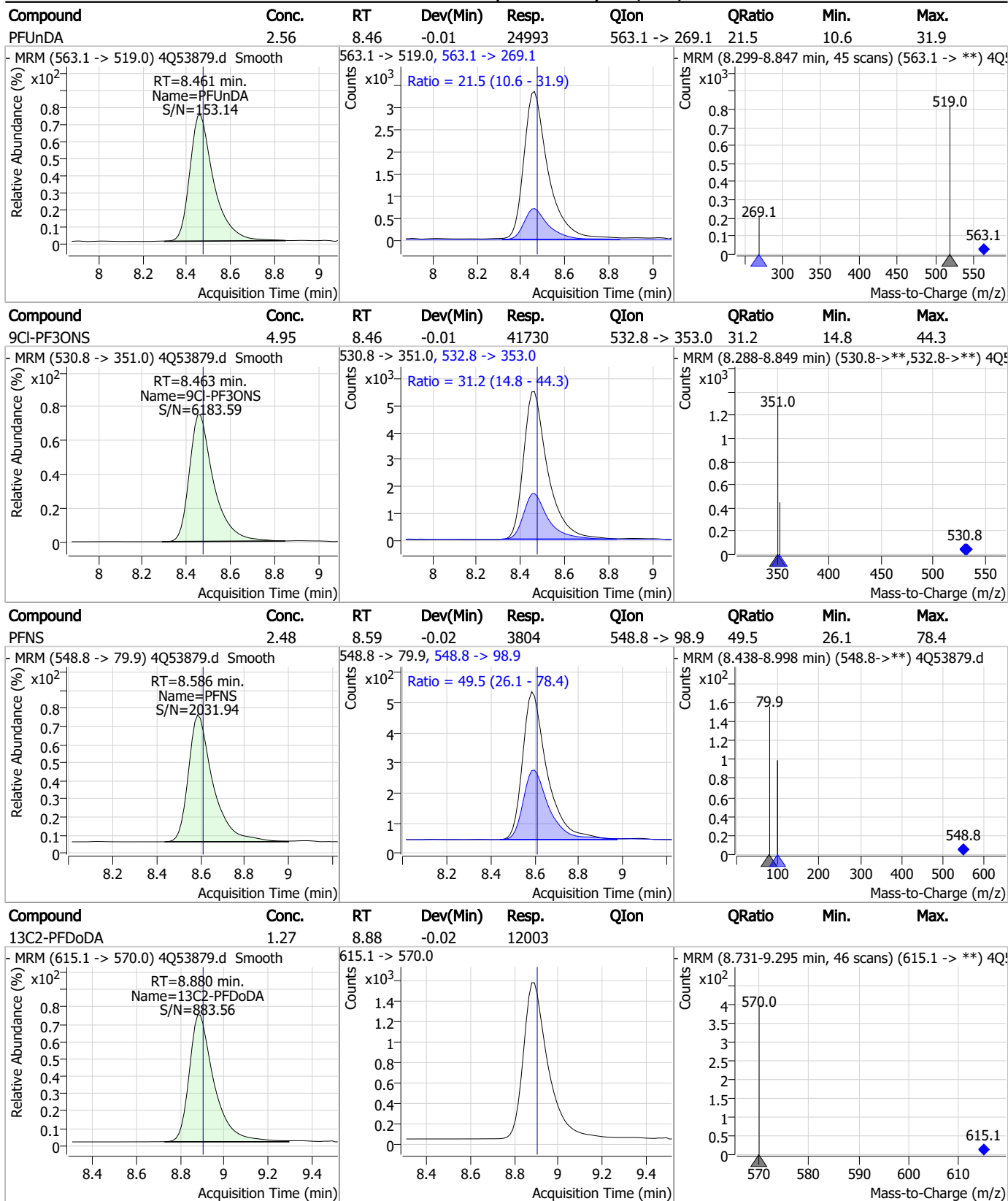


### Perfluorinated Compounds by LC/MS/MS



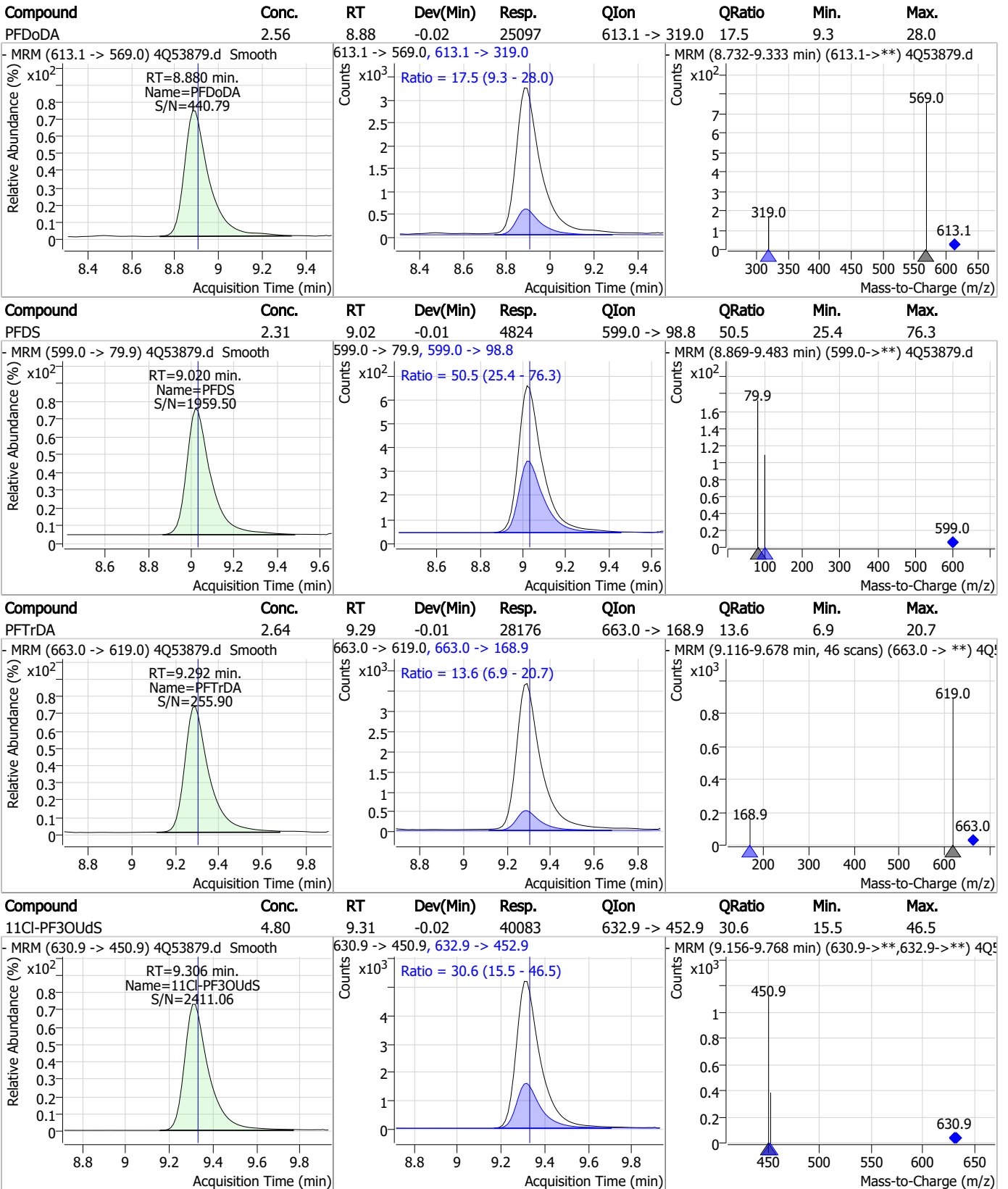
7.7.14  
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### Perfluorinated Compounds by LC/MS/MS



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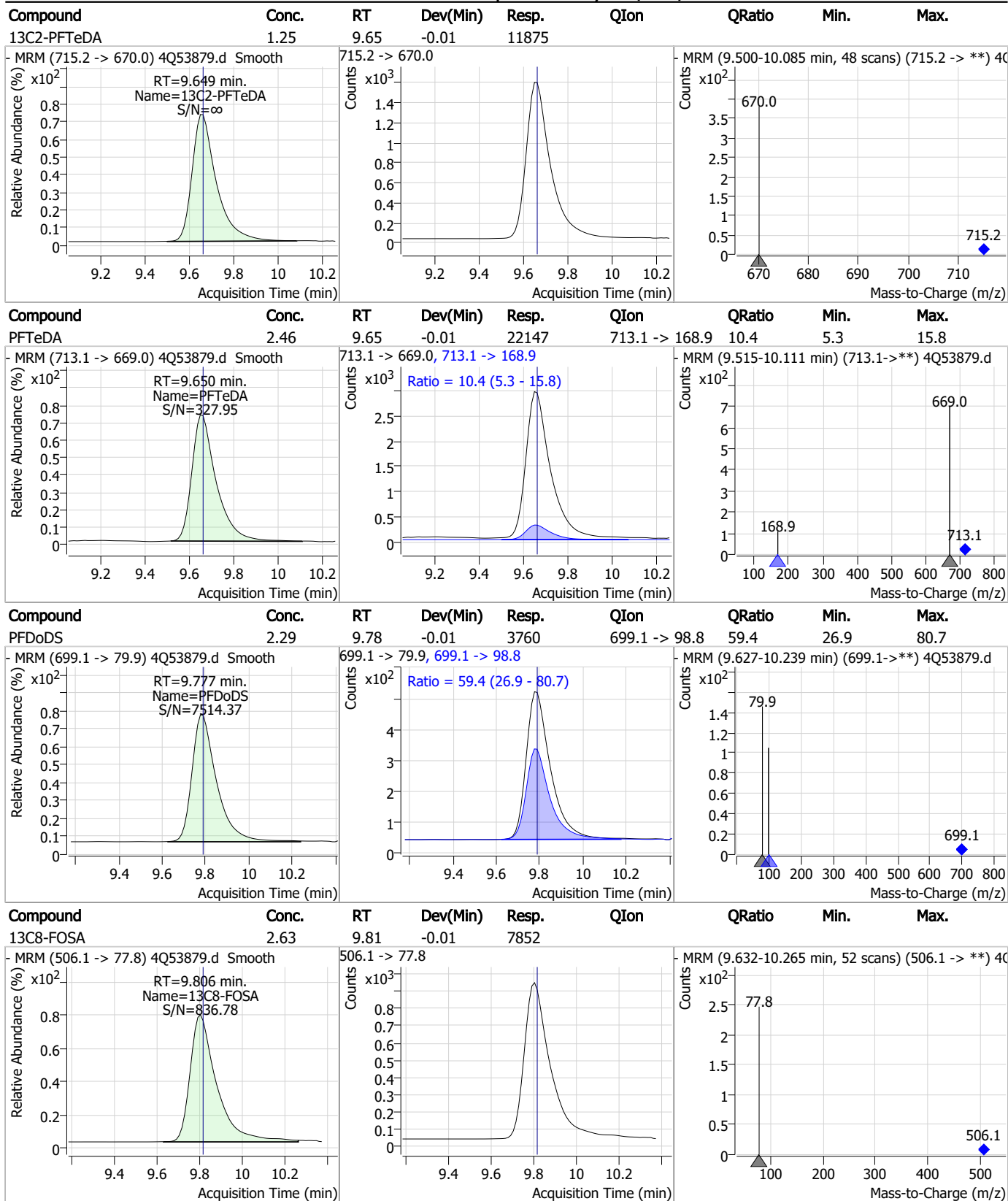
### Perfluorinated Compounds by LC/MS/MS



7.7.14  
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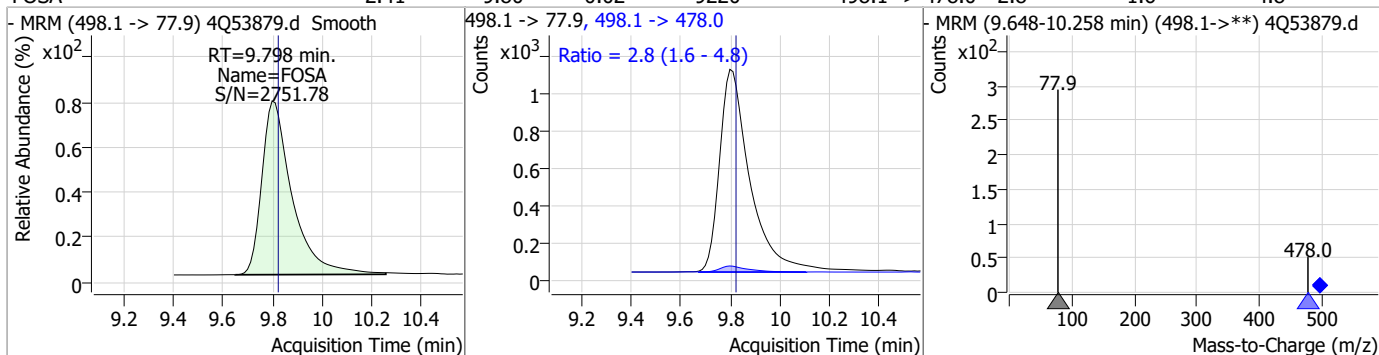
### Perfluorinated Compounds by LC/MS/MS



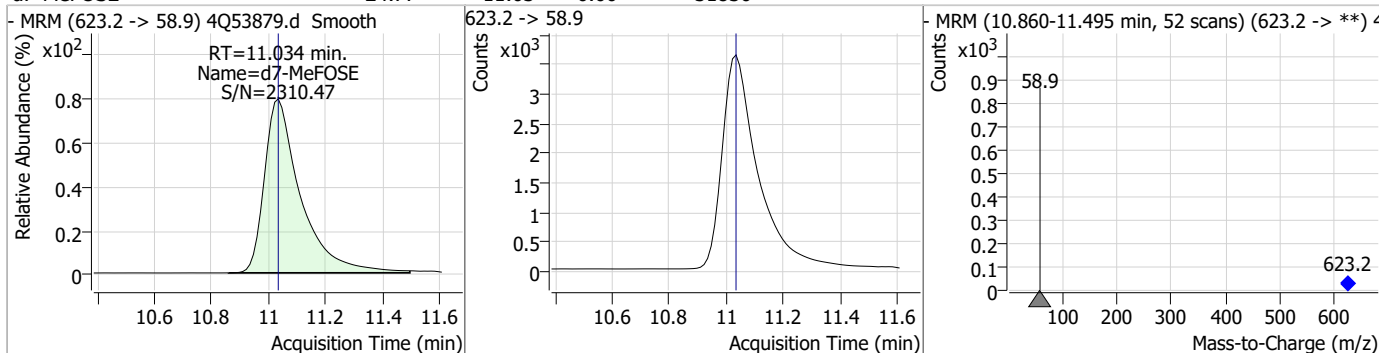
7.7.14

### Perfluorinated Compounds by LC/MS/MS

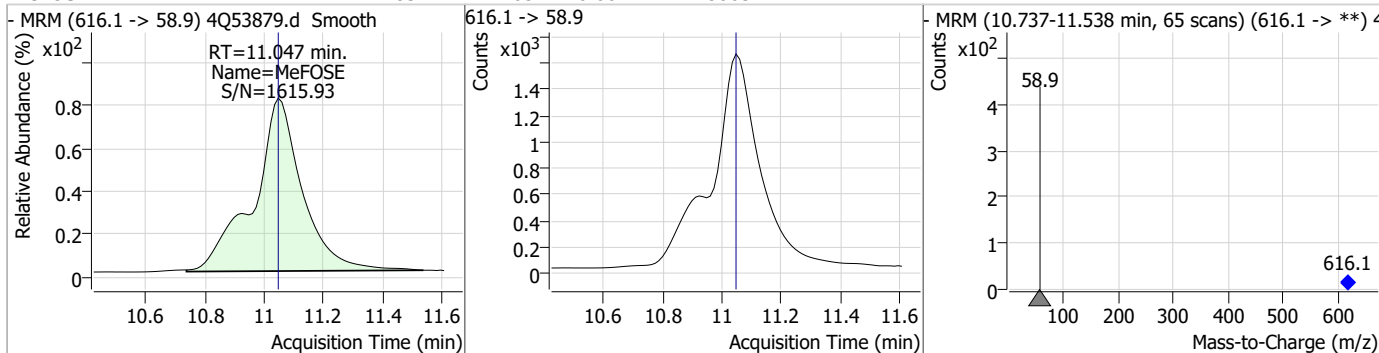
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.41	9.80	-0.02	9220	498.1 -> 478.0	2.8	1.6	4.8



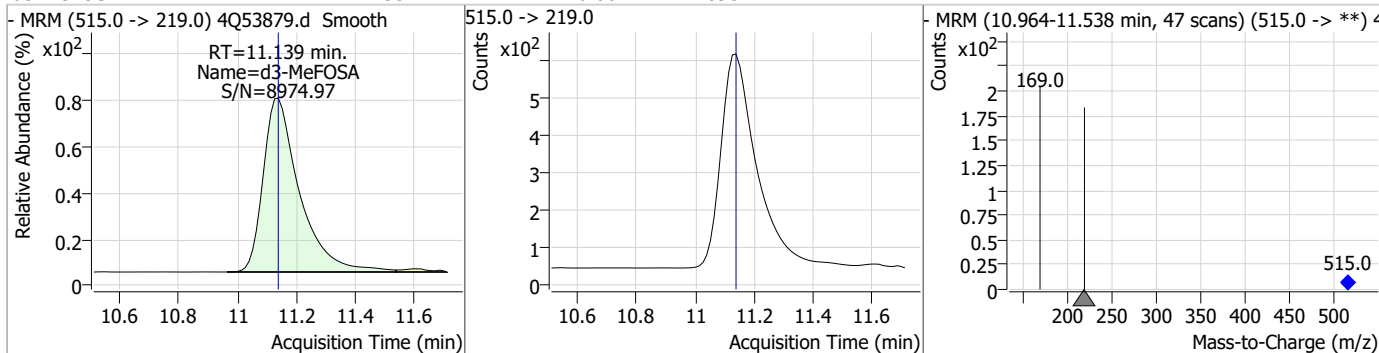
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.77	11.03	0.00	31830				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.83	11.05	0.00	18603				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.35	11.14	0.00	4895				

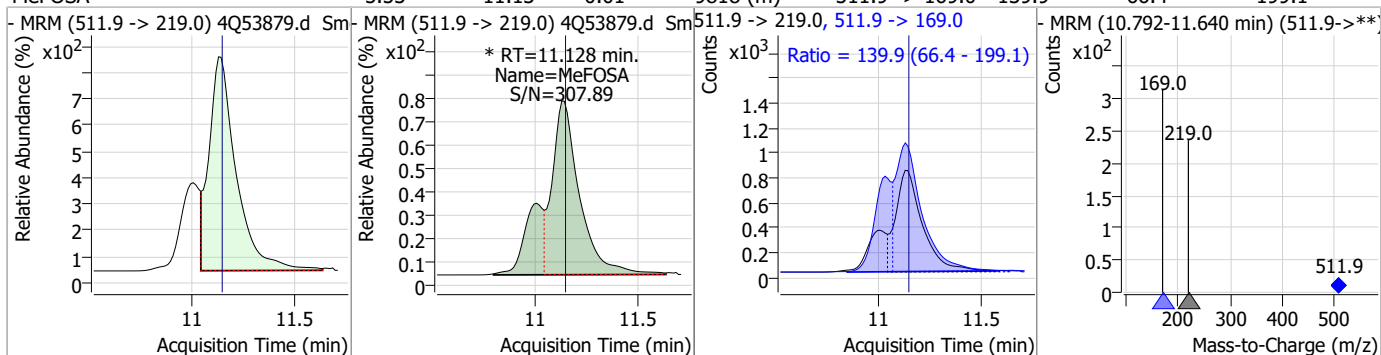


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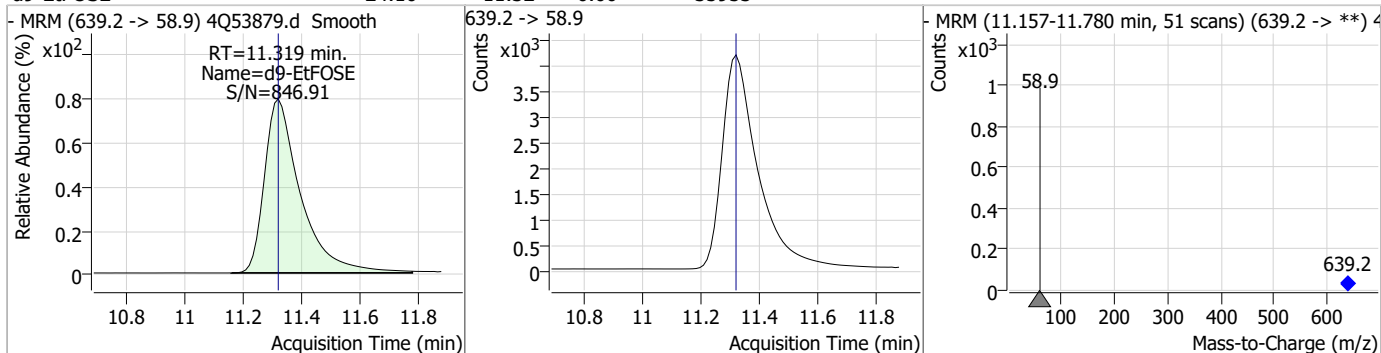


### Perfluorinated Compounds by LC/MS/MS

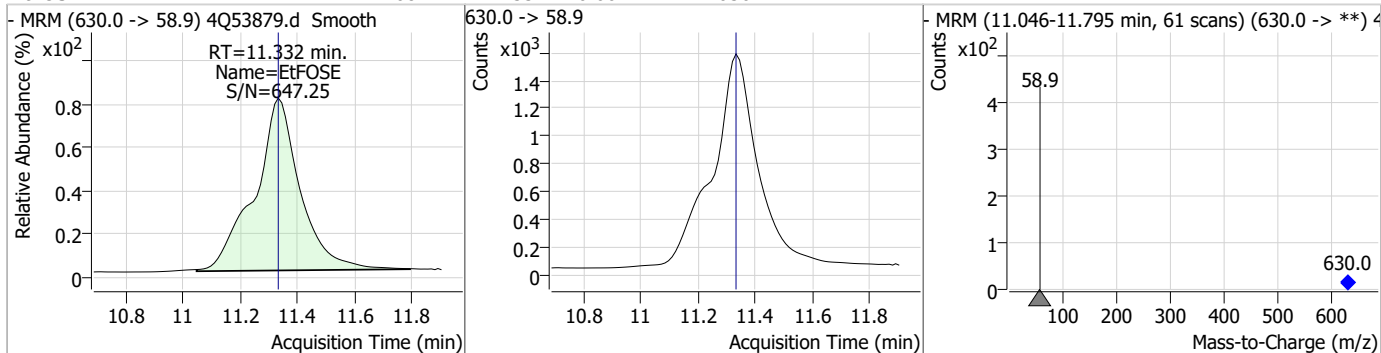
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	5.53	11.13	-0.01	9818 (m)	511.9 -> 169.0	139.9	66.4	199.1



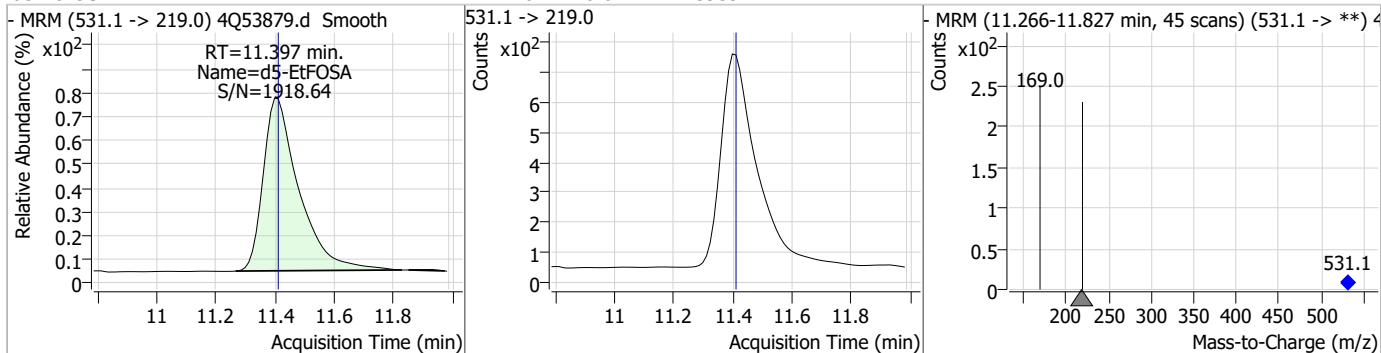
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.16	11.32	0.00	35953				



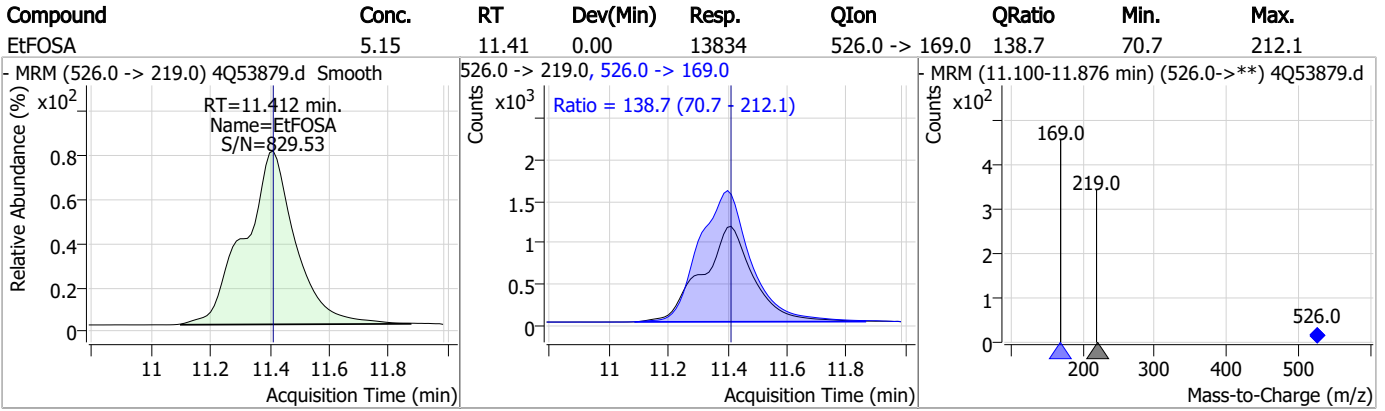
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	12.68	11.33	0.00	17030				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.41	11.40	-0.01	5959				



### Perfluorinated Compounds by LC/MS/MS



7.7.14  
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# Manual Integration Approval Summary

Sample Number: S4Q786-CC785      Method: EPA DRAFT 1633  
Lab FileID: 4Q53879.D      Analyst approved: 11/16/23 13:59 Anna Ludwig  
Injection Time: 11/15/23 13:53      Supervisor approved: 11/16/23 15:17 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.03	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
MeFOSA	31506-32-8		11.13	Split peak

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## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q53890.d  
 Operator : annal  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 11/15/2023 4:36:11 PM  
 Sample Name : cc785-4  
 Vial : P1-A5  
 DA Method File : 1633\_111323\_S4Q785.quantmethod.xml  
 Batch Name : s4q786.batch.bin  
 Sample Information : OP98180,S4Q786,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.624	216.8 -> 171.9	94542	10.00 µg/L	-0.075
M5-PFPeA	4.125	268.3 -> 223.0	40212	5.00 µg/L	-0.050
M5-PFHxA	5.310	318.0 -> 273.0	31027	2.50 µg/L	-0.037
M4-PFHpA	6.280	367.1 -> 322.0	29572	2.50 µg/L	-0.025
M8-PFOA	6.976	421.1 -> 376.0	35670	2.50 µg/L	-0.012
M9-PFNA	7.521	472.1 -> 427.0	14645	1.25 µg/L	-0.012
M6-PFDA	8.017	519.1 -> 474.1	9871	1.25 µg/L	0.000
M7-PFUnDA	8.461	570.0 -> 525.1	12014	1.25 µg/L	-0.012
M2-PFDoDA	8.892	615.1 -> 570.0	11537	1.25 µg/L	-0.012
M2-PFTeDA	9.662	715.2 -> 670.0	11962	1.25 µg/L	0.000
M8-FOSA	9.806	506.1 -> 77.8	7962	2.50 µg/L	-0.012
M3-PFBS	5.165	302.1 -> 79.9	8501	2.50 µg/L	-0.038
M3-PFHxS	7.029	402.1 -> 79.9	7047	2.50 µg/L	-0.025
M8-PFOS	8.130	507.1 -> 79.9	7903	2.50 µg/L	-0.013
M2-4:2FTS	5.021	329.1 -> 80.9	1014	5.00 µg/L	-0.025
M2-6:2FTS	6.748	429.1 -> 80.9	1937	5.00 µg/L	-0.012
M2-8:2FTS	7.816	529.1 -> 80.9	2762	5.00 µg/L	-0.012
M3-MeFOSAA	8.086	573.2 -> 419.0	13648	5.00 µg/L	-0.012
M3-HFPO-DA	5.677	286.9 -> 168.9	27455	10.00 µg/L	-0.025
M5-EtFOSAA	8.296	589.2 -> 419.0	11473	5.00 µg/L	-0.014
M7-MeFOSE	11.034	623.2 -> 58.9	32187	25.00 µg/L	0.000
M9-EtFOSE	11.319	639.2 -> 58.9	36270	25.00 µg/L	0.000
M5-EtFOSA	11.410	531.1 -> 219.0	6325	2.50 µg/L	0.000
M3-MeFOSA	11.139	515.0 -> 219.0	4582	2.50 µg/L	0.000
13C4-PFOS	8.130	502.8 -> 79.9	6277	2.50 µg/L	-0.013
13C3-PFBA	2.628	216.0 -> 172.0	45392	5.00 µg/L	-0.075
18O2-PFHxS	7.028	403.0 -> 83.9	4662	2.50 µg/L	-0.025
13C4-PFOA	6.977	417.1 -> 372.0	39607	2.50 µg/L	-0.012
13C2-PFDA	8.017	515.1 -> 470.1	10798	1.25 µg/L	-0.012
13C5-PFNA	7.522	468.0 -> 423.0	14043	1.25 µg/L	-0.012
13C2-PFHxA	5.311	315.1 -> 270.0	32664	2.50 µg/L	-0.037
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.021	329.1 -> 80.9	1014	6.36 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 127.1%		
13C2-6:2FTS	6.748	429.1 -> 80.9	1937	5.76 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.2%		
13C2-8:2FTS	7.816	529.1 -> 80.9	2762	5.83 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.6%		
13C2-PFDoDA	8.892	615.1 -> 570.0	11537	1.18 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.7%		
13C2-PFTeDA	9.662	715.2 -> 670.0	11962	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C3-PFBS	5.165	302.1 -> 79.9	8501	2.43 µg/L	-0.038
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C3-PFHxS	7.029	402.1 -> 79.9	7047	2.44 µg/L	-0.025

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### Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C4-PFBA	2.624	216.8 -> 171.9	94542	10.00 µg/L	-0.075
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C4-PFHpA	6.280	367.1 -> 322.0	29572	2.60 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.8%		
13C5-PFHxA	5.310	318.0 -> 273.0	31027	2.55 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C5-PFPeA	4.125	268.3 -> 223.0	40212	5.05 µg/L	-0.050
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C6-PFDA	8.017	519.1 -> 474.1	9871	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C7-PFUnDA	8.461	570.0 -> 525.1	12014	1.31 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.7%		
13C8-FOSA	9.806	506.1 -> 77.8	7962	2.65 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.1%		
13C8-PFOA	6.976	421.1 -> 376.0	35670	2.52 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C8-PFOS	8.130	507.1 -> 79.9	7903	2.64 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C9-PFNA	7.521	472.1 -> 427.0	14645	1.32 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.8%		
d3-MeFOSAA	8.086	573.2 -> 419.0	13648	5.73 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.7%		
13C3-HFPO-DA	5.677	286.9 -> 168.9	27455	9.88 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 98.8%		
d3-MeFOSA	11.139	515.0 -> 219.0	4582	2.19 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 87.5%		
d5-EtFOSAA	8.296	589.2 -> 419.0	11473	5.50 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.1%		
d7-MeFOSE	11.034	623.2 -> 58.9	32187	24.89 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.6%		
d9-EtFOSE	11.319	639.2 -> 58.9	36270	24.22 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 96.9%		
d5-EtFOSA	11.410	531.1 -> 219.0	6325	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.8%		
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.022	327.1 -> 307.0	18048	9.00 µg/L	99
		327.1 -> 80.9	7506		
6:2FTS	6.749	427.1 -> 407.0	20997	10.02 µg/L	97
		427.1 -> 80.9	7732		
8:2FTS	7.816	527.1 -> 507.0	15400	10.25 µg/L	98
		527.1 -> 80.8	6649		
EtFOSAA	8.297	584.2 -> 419.1	5731	2.79 µg/L	m 77
		584.2 -> 526.0	2512		
FOSA	9.810	498.1 -> 77.9	9603	2.47 µg/L	98
		498.1 -> 478.0	257		
MeFOSAA	8.099	570.1 -> 419.0	6099	2.51 µg/L	90
		570.1 -> 483.0	1378		
PFBA	2.632	212.8 -> 168.9	34747	10.11 µg/L	100
PFBS	5.166	298.7 -> 79.9	6586	2.18 µg/L	98
		298.7 -> 98.8	2610		
PFDA	8.017	512.9 -> 469.0	20336	2.52 µg/L	98
		512.9 -> 219.0	3850		
PFDODA	8.893	613.1 -> 569.0	24462	2.60 µg/L	99
		613.1 -> 319.0	4418		
PFDS	9.032	599.0 -> 79.9	5004	2.45 µg/L	99

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.280	599.0 -> 98.8	2573	2.48	µg/L	98
		363.1 -> 319.0	46047			
PFHpS	7.612	363.1 -> 169.0	8453	2.45	µg/L	97
		449.0 -> 79.9	7668			
PFHxA	5.313	449.0 -> 98.9	3770	2.40	µg/L	99
		313.0 -> 269.0	26050			
PFHxS	7.030	313.0 -> 118.9	806	2.35	µg/L	90
		398.7 -> 79.9	5001			
PFNA	7.522	398.7 -> 98.9	2860	2.43	µg/L	98
		463.0 -> 419.0	22678			
PFNS	8.598	463.0 -> 219.0	5584	2.61	µg/L	90
		548.8 -> 79.9	3941			
PFOA	6.978	548.8 -> 98.9	1797	2.31	µg/L	100
		413.0 -> 369.0	39863			
PFOS	8.131	413.0 -> 169.0	8182	2.35	µg/L	81
		498.9 -> 79.9	8418			
PFPeA	4.127	498.9 -> 98.8	4056	4.93	µg/L	100
		263.0 -> 219.0	43127			
PFPeS	6.269	349.1 -> 79.9	5383	2.32	µg/L	93
		349.1 -> 98.9	2570			
PFTeDA	9.662	713.1 -> 669.0	22563	2.48	µg/L	100
		713.1 -> 168.9	2407			
PFTrDA	9.292	663.0 -> 619.0	27953	2.73	µg/L	99
		663.0 -> 168.9	4025			
PFUnDA	8.461	563.1 -> 519.0	24718	2.52	µg/L	98
		563.1 -> 269.1	5522			
11CI-PF3OUdS	9.319	630.9 -> 450.9	40850	4.77	µg/L	98
		632.9 -> 452.9	13114			
9CI-PF3ONS	8.463	530.8 -> 351.0	42861	4.95	µg/L	100
		532.8 -> 353.0	12595			
ADONA	6.556	376.9 -> 250.9	108091	5.69	µg/L	99
		376.9 -> 84.8	26047			
HFPO-DA	5.678	284.9 -> 168.9	14452	4.97	µg/L	97
		284.9 -> 184.9	1514			
3:3FTCA	3.573	241.0 -> 177.0	6375	11.90	µg/L	98
		241.0 -> 117.0	539			
5:3FTCA	5.996	341.0 -> 237.1	116727	61.19	µg/L	97
		341.0 -> 217.0	82127			
7:3FTCA	7.536	441.0 -> 316.9	53322	62.31	µg/L	96
		441.0 -> 336.9	126943			
EtFOSA	11.412	526.0 -> 219.0	14527	5.09	µg/L	96
		526.0 -> 169.0	19747			
EtFOSE	11.332	630.0 -> 58.9	17944	13.24	µg/L	100
		511.9 -> 219.0	9496			
MeFOSA	11.140	511.9 -> 169.0	14708	5.71	µg/L	81
		616.1 -> 58.9	19355			
MeFOSE	11.060	699.1 -> 79.9	3699	13.20	µg/L	100
		699.1 -> 98.8	2098			
PFDoDS	9.789	295.0 -> 201.0	3595	2.29	µg/L	96
		295.0 -> 84.9	1005			
NFDHA	5.191	279.0 -> 85.1	24655	5.02	µg/L	92
		229.0 -> 84.9	28309			
PFMBA	4.541	314.8 -> 134.9	38563	4.89	µg/L	100
		314.8 -> 82.9	1318			
PFMPA	3.265			5.05	µg/L	100
PFEESA	5.696			4.50	µg/L	98

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



7.7.15  
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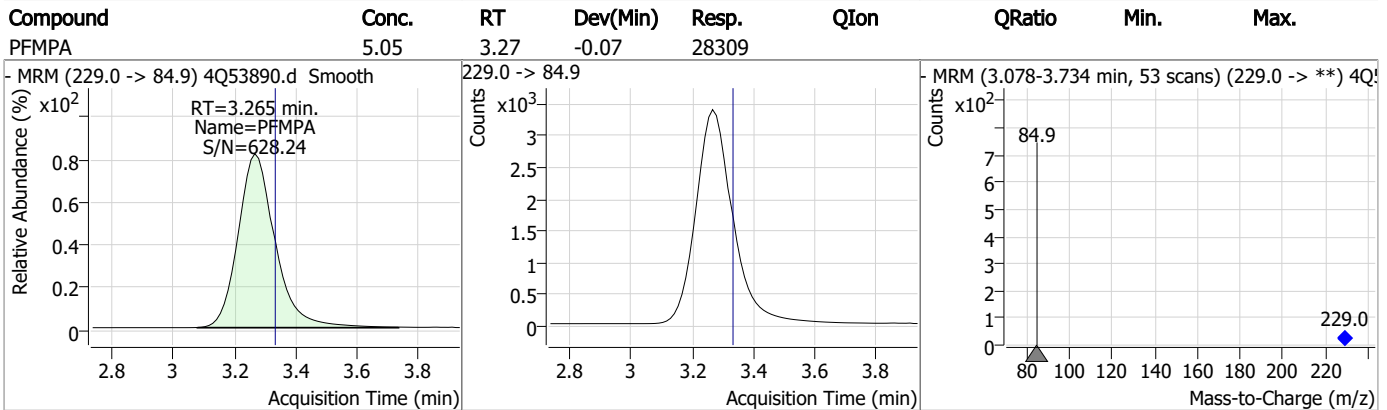
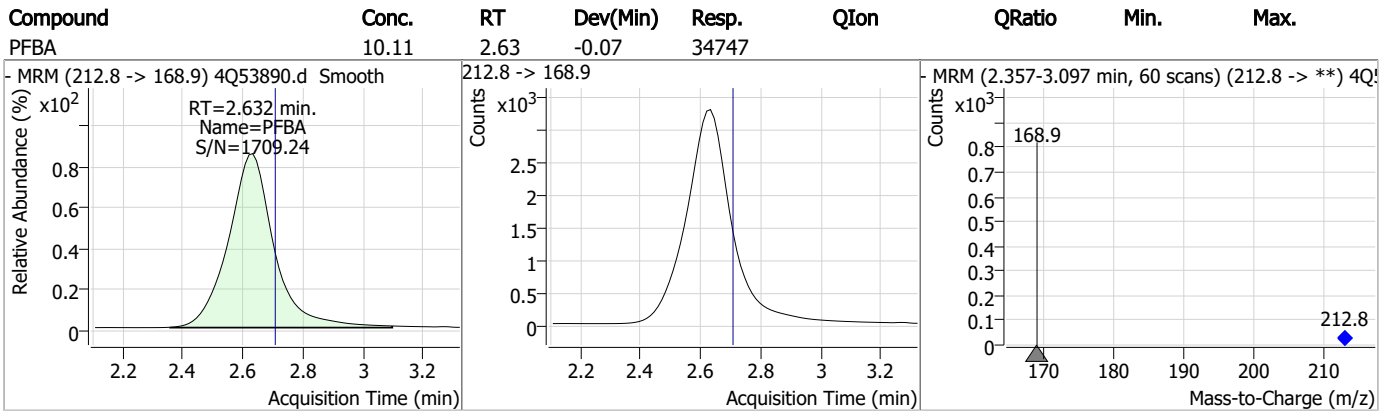
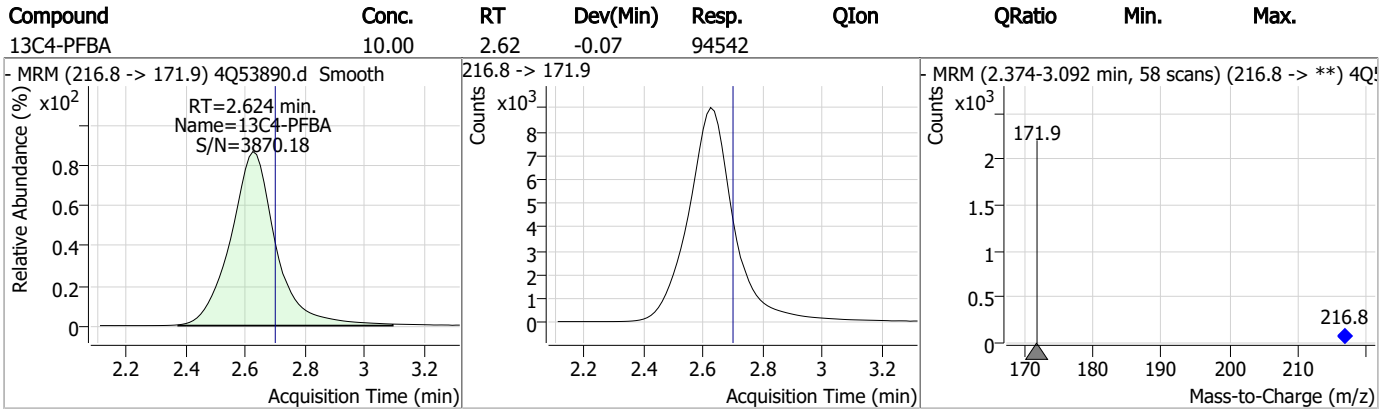
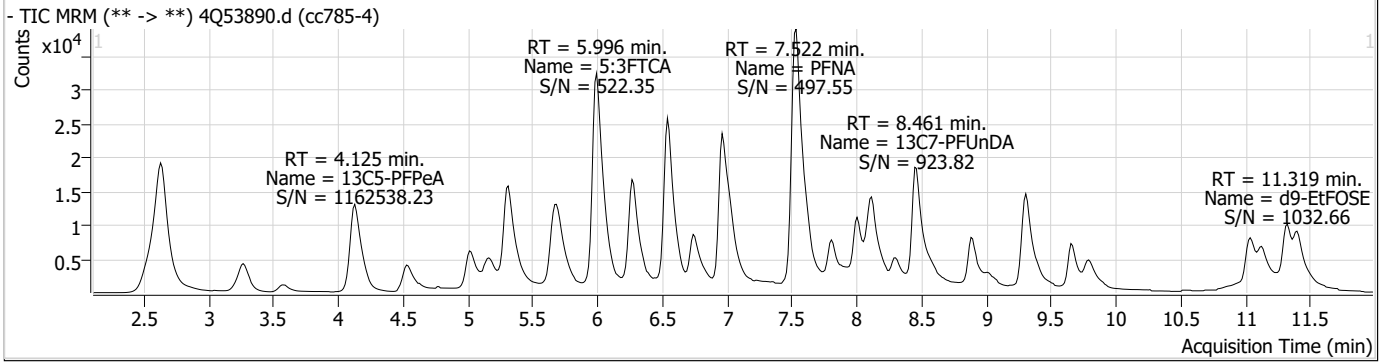
### Perfluorinated Compounds by LC/MS/MS

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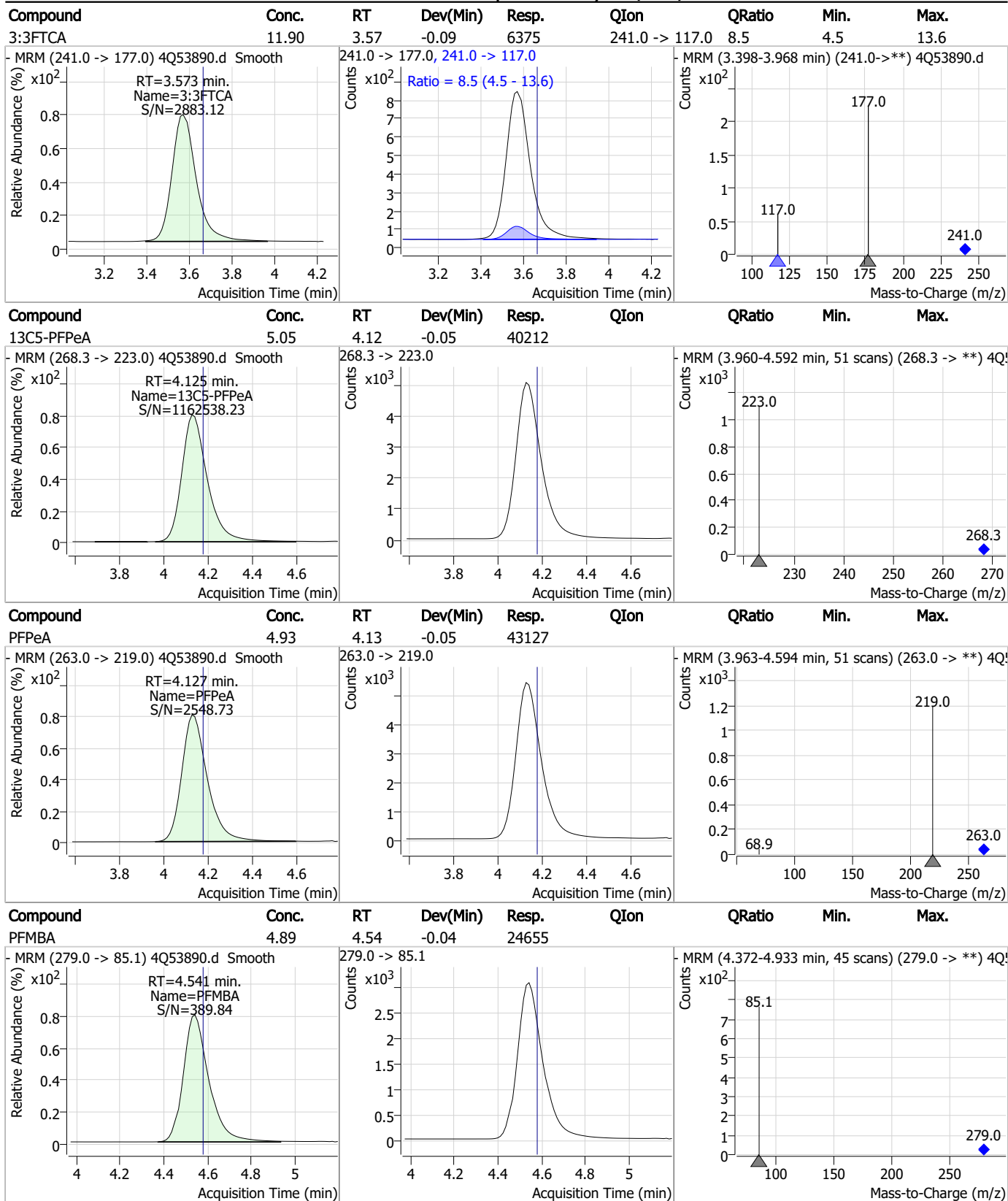
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### Perfluorinated Compounds by LC/MS/MS



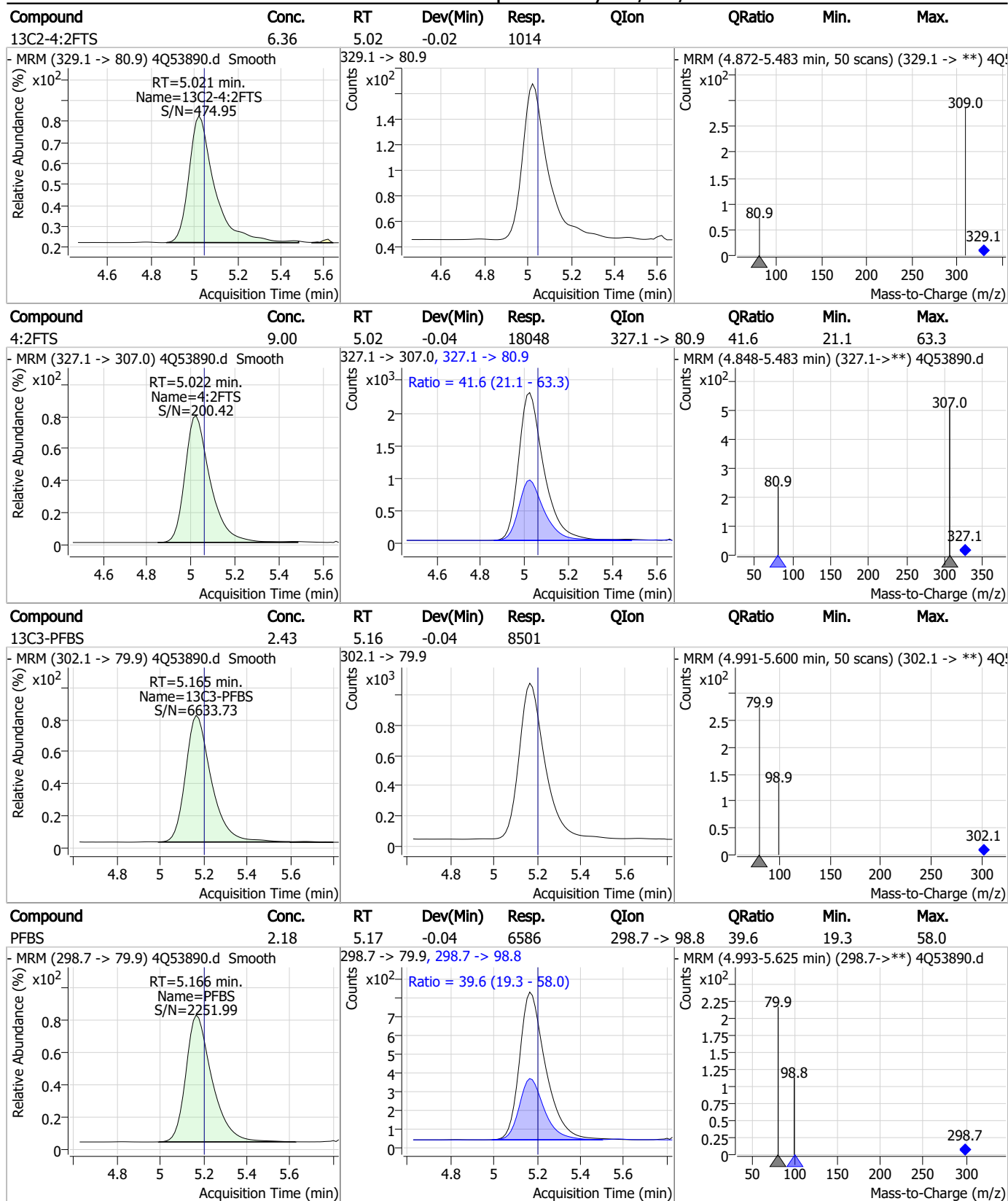


### Perfluorinated Compounds by LC/MS/MS



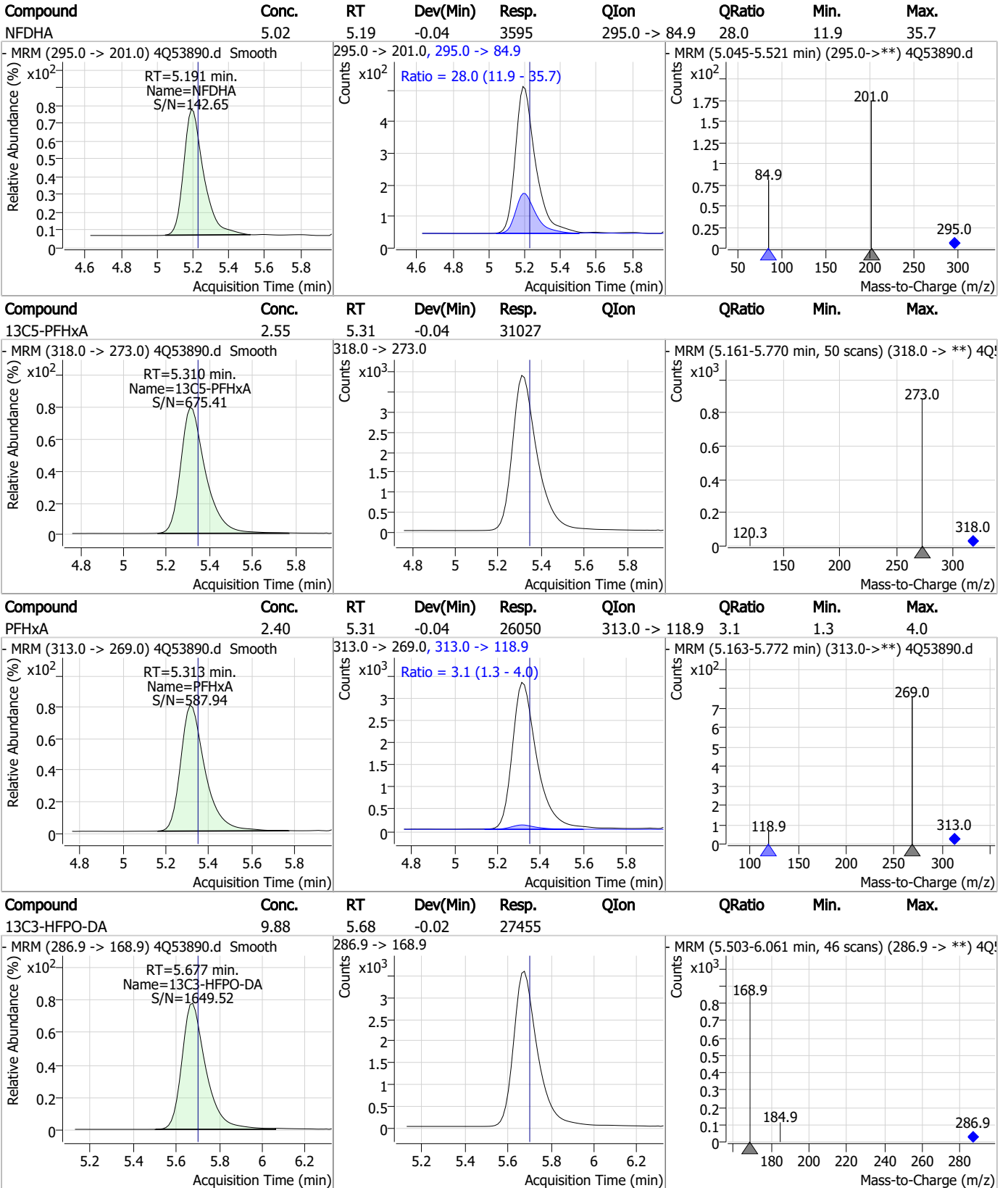
7.7.15

### Perfluorinated Compounds by LC/MS/MS



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### Perfluorinated Compounds by LC/MS/MS

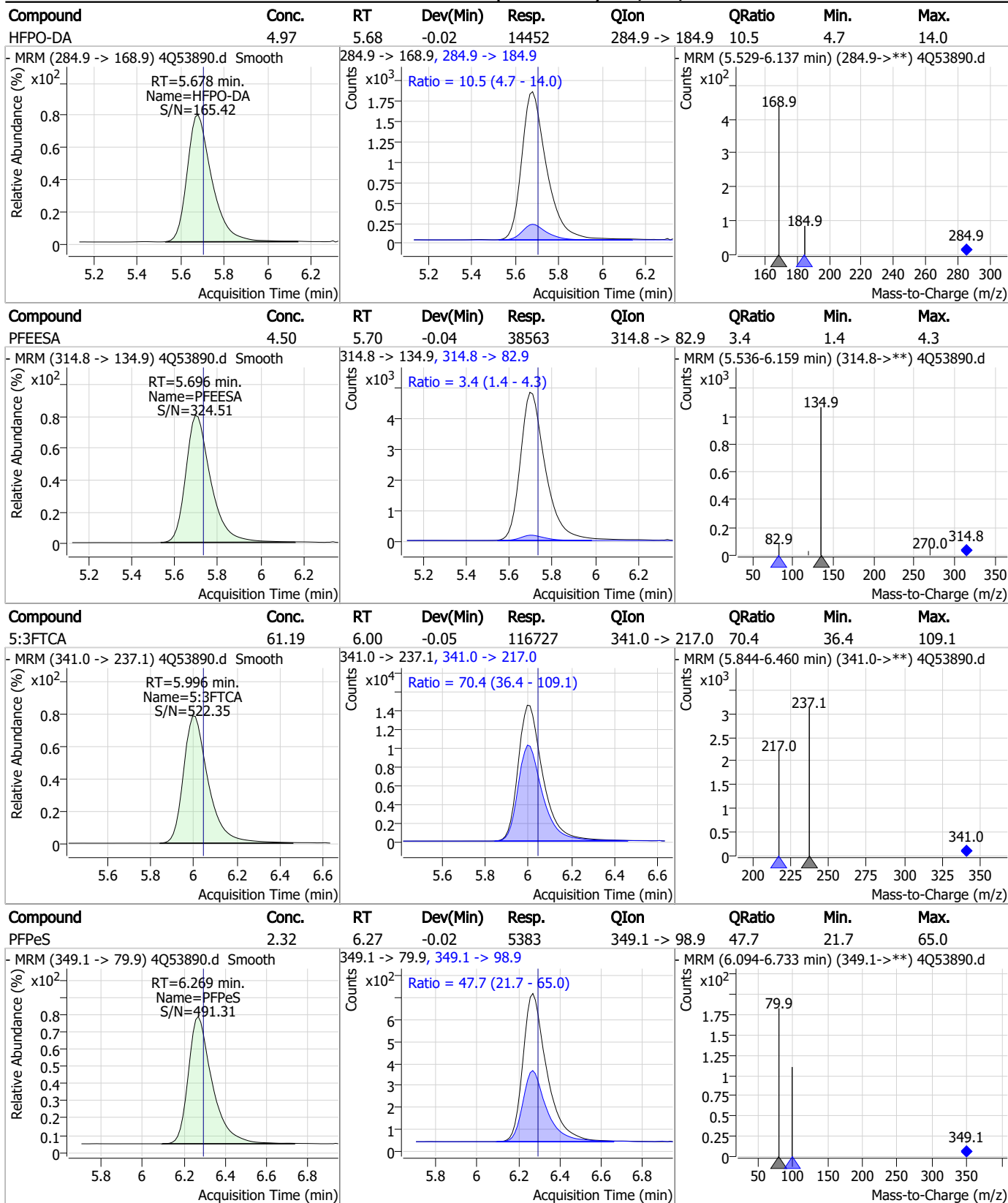


7.7.15

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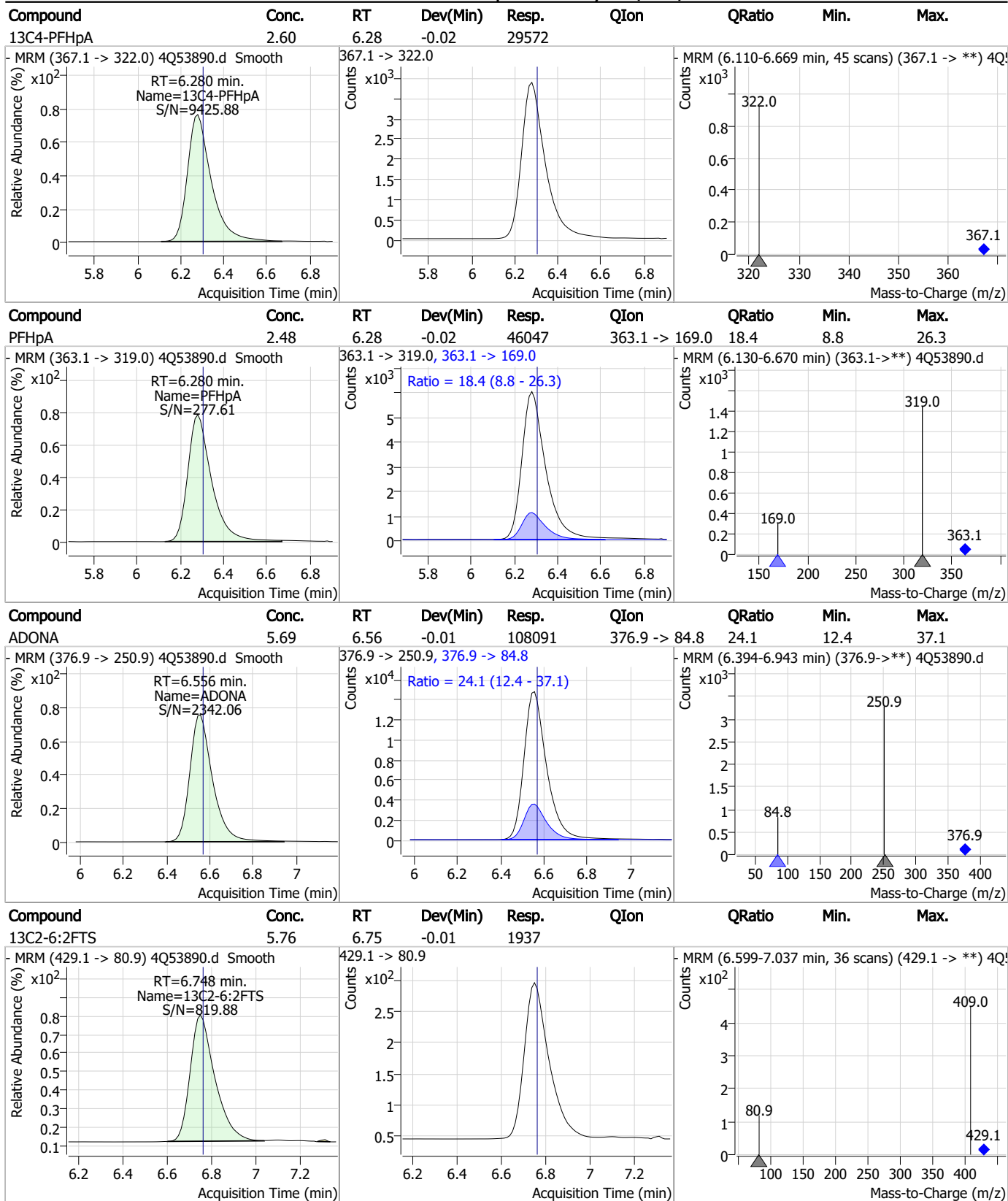


### Perfluorinated Compounds by LC/MS/MS



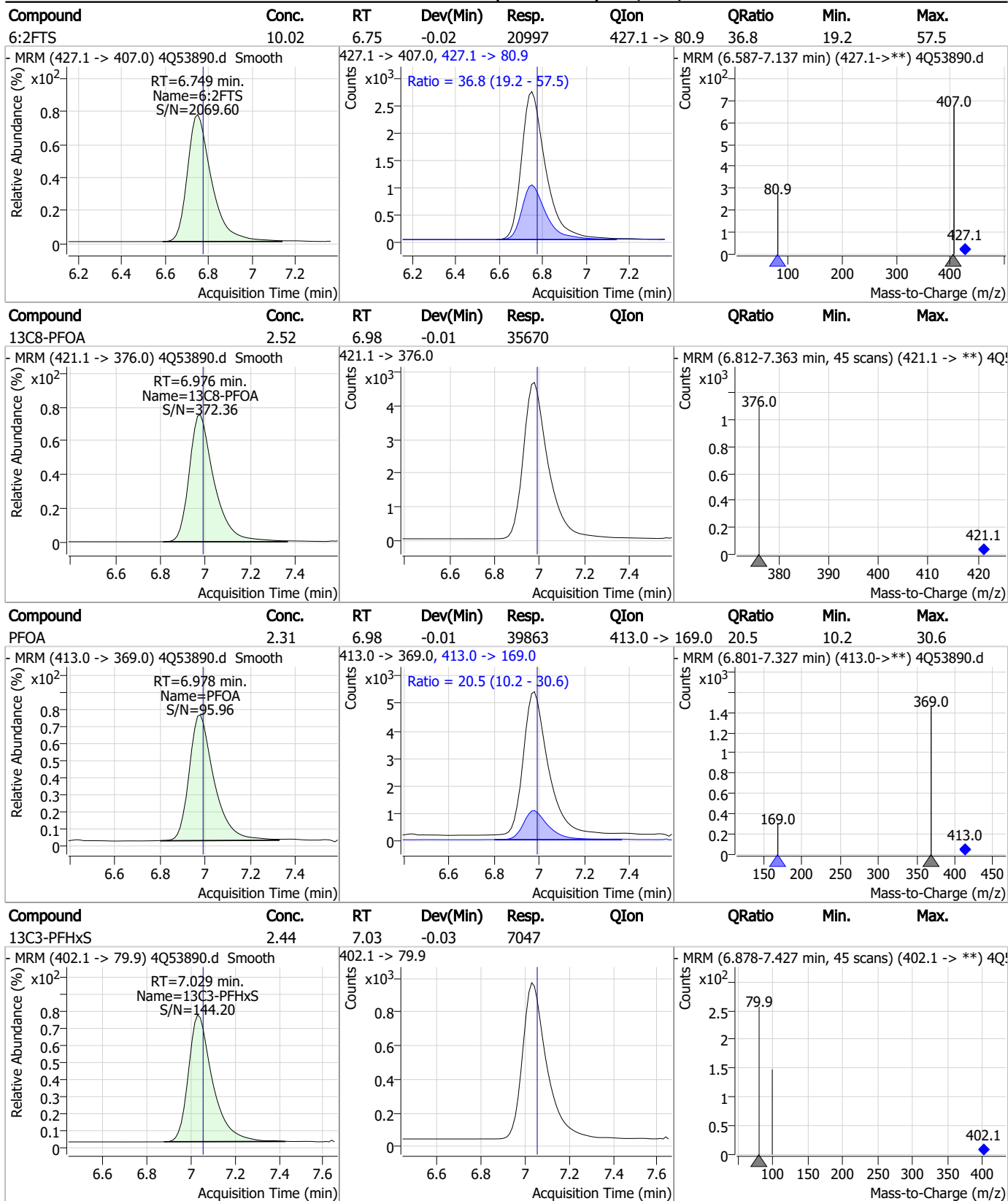
7.7.15  
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### Perfluorinated Compounds by LC/MS/MS



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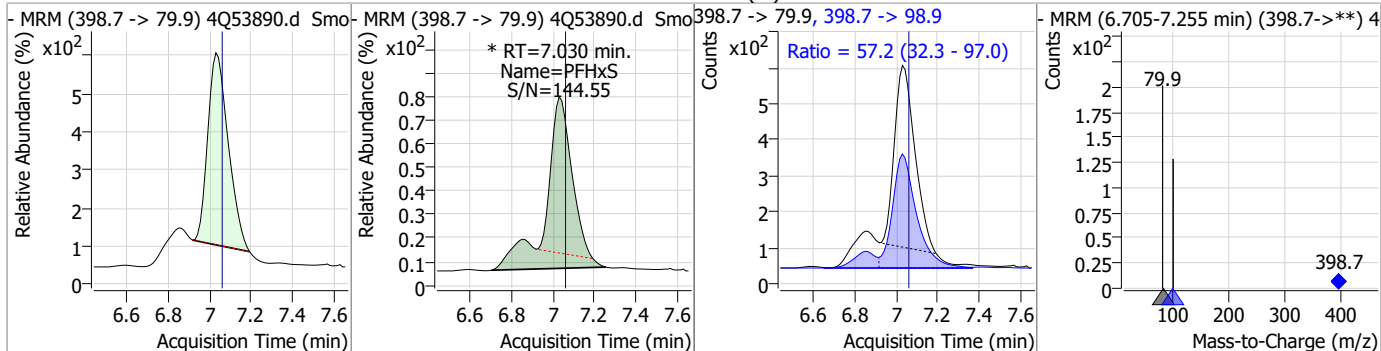
### Perfluorinated Compounds by LC/MS/MS



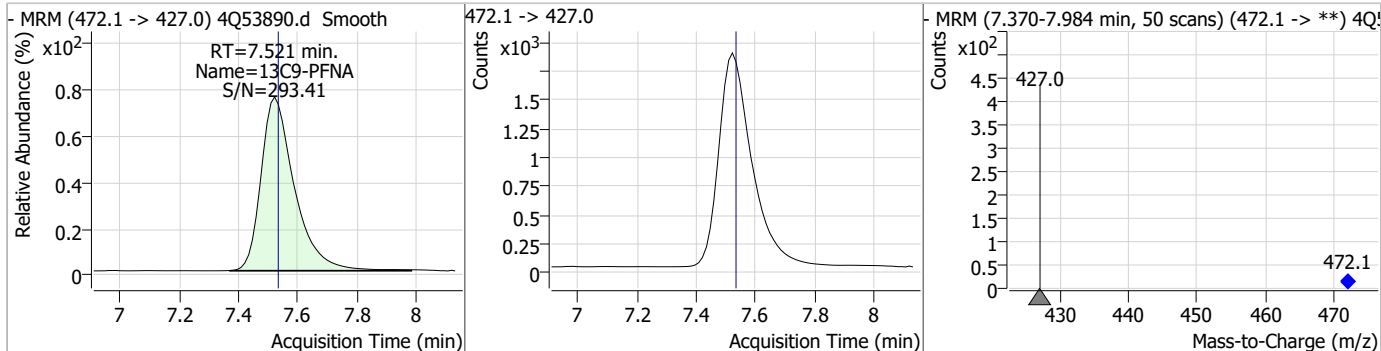
7.7.15 7

### Perfluorinated Compounds by LC/MS/MS

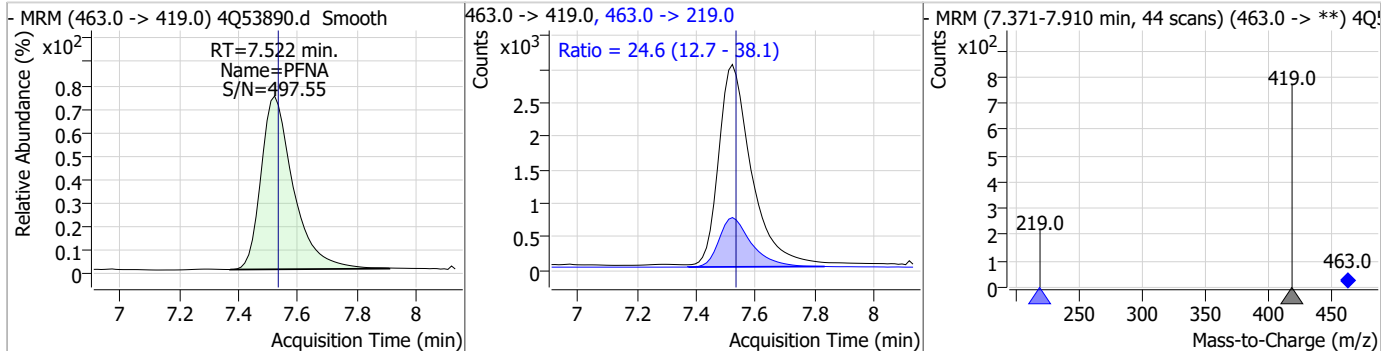
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	2.35	7.03	-0.02	5001 (m)	398.7 -> 98.9	57.2	32.3	97.0



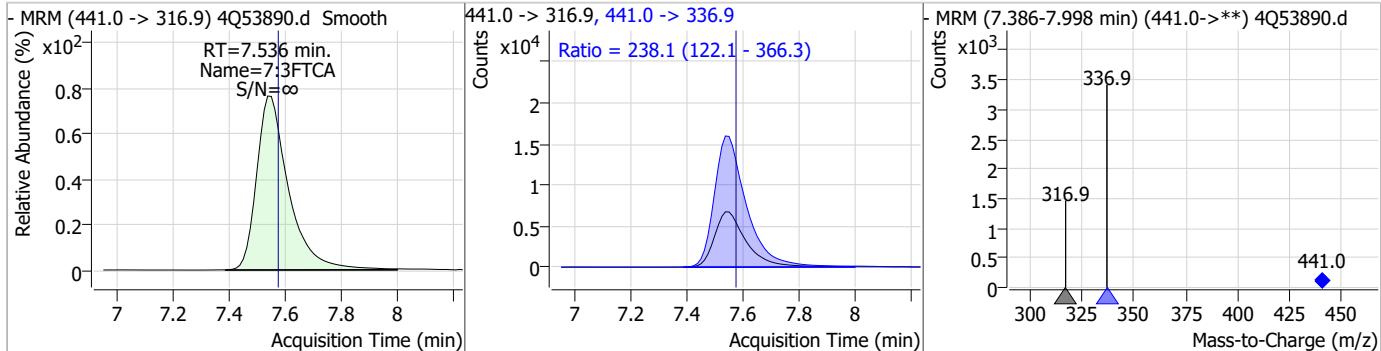
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.32	7.52	-0.01	14645				



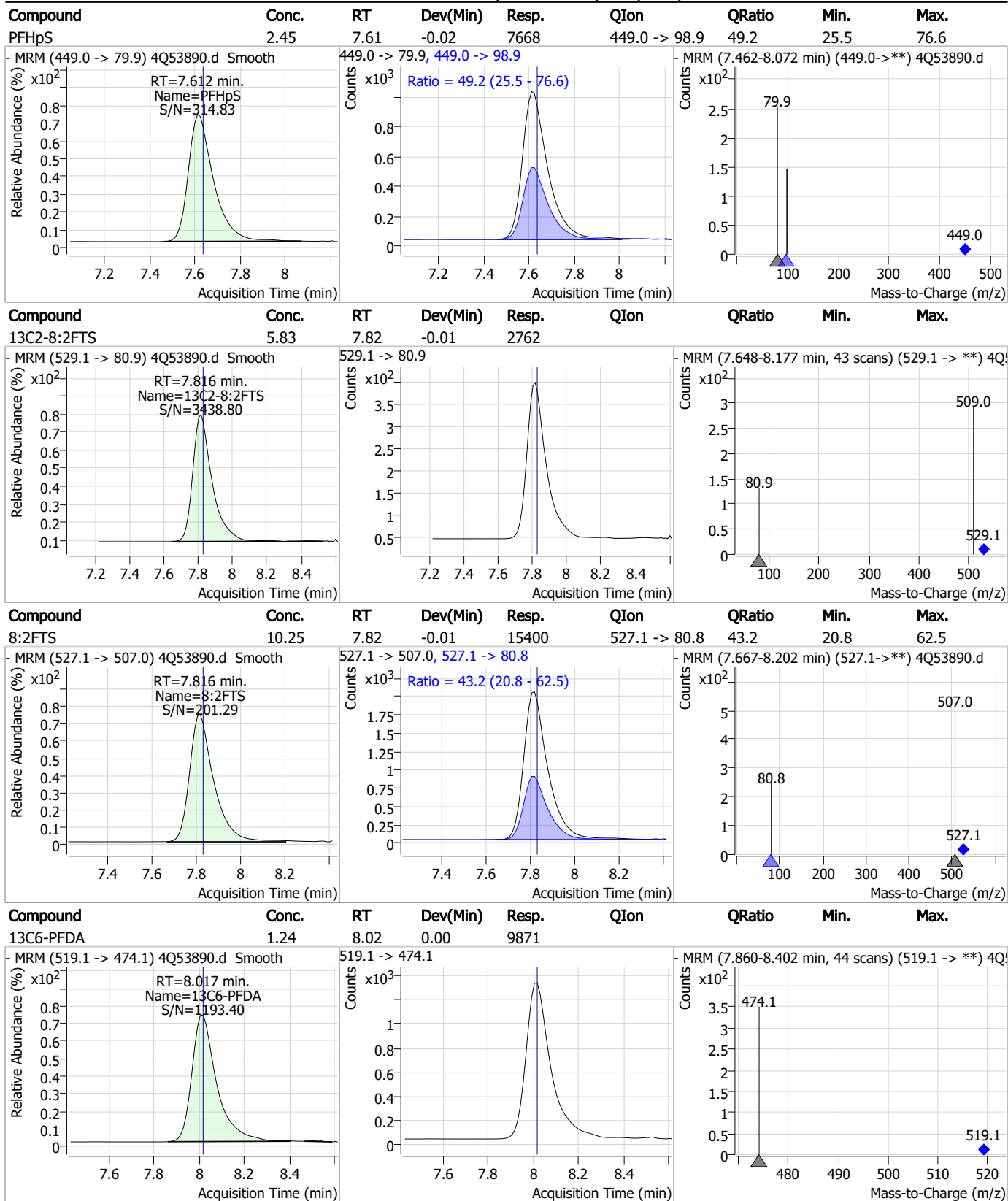
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	2.43	7.52	-0.01	22678	463.0 -> 219.0	24.6	12.7	38.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	62.31	7.54	-0.04	53322	441.0 -> 336.9	238.1	122.1	366.3



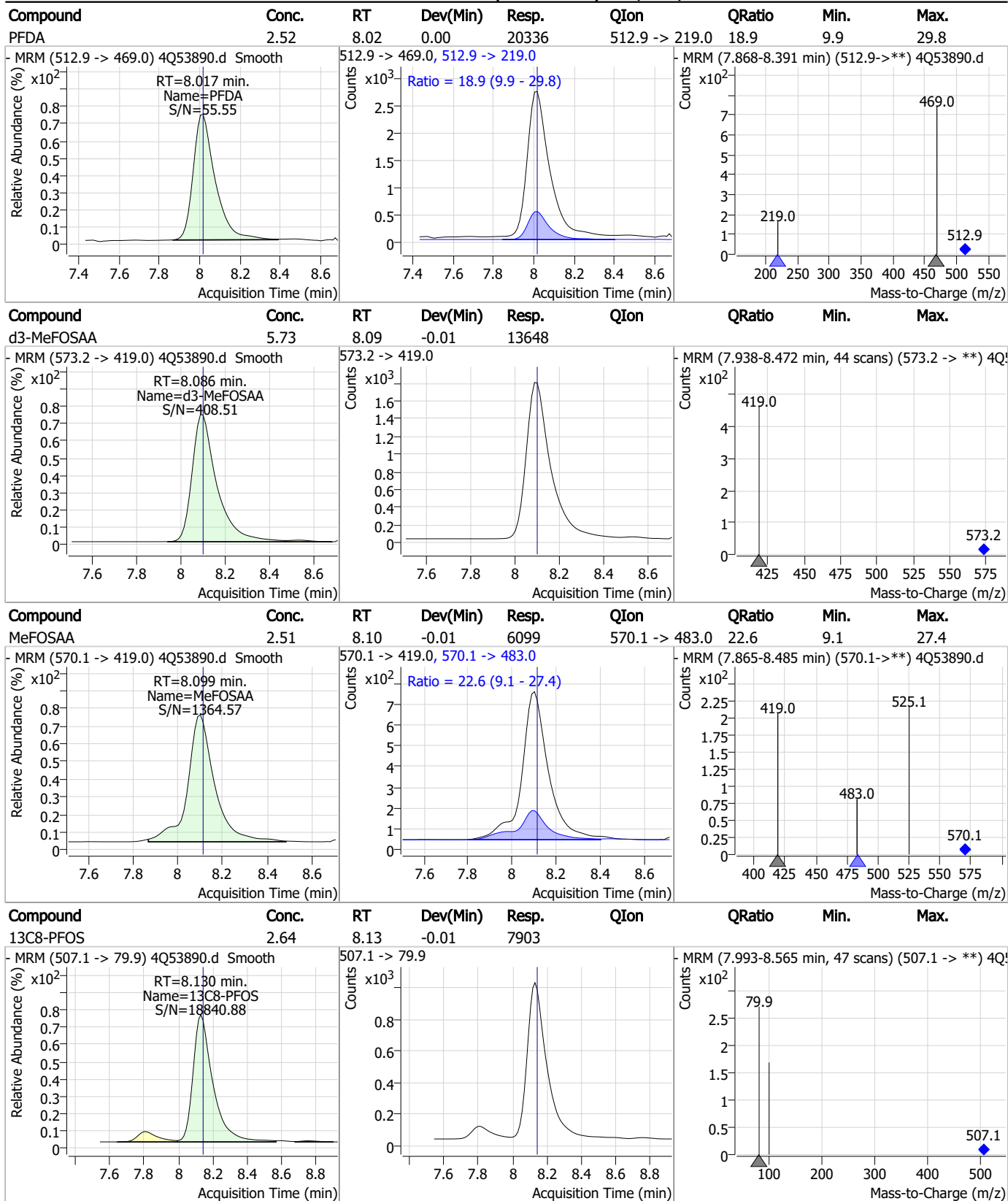
### Perfluorinated Compounds by LC/MS/MS



7.7.15  
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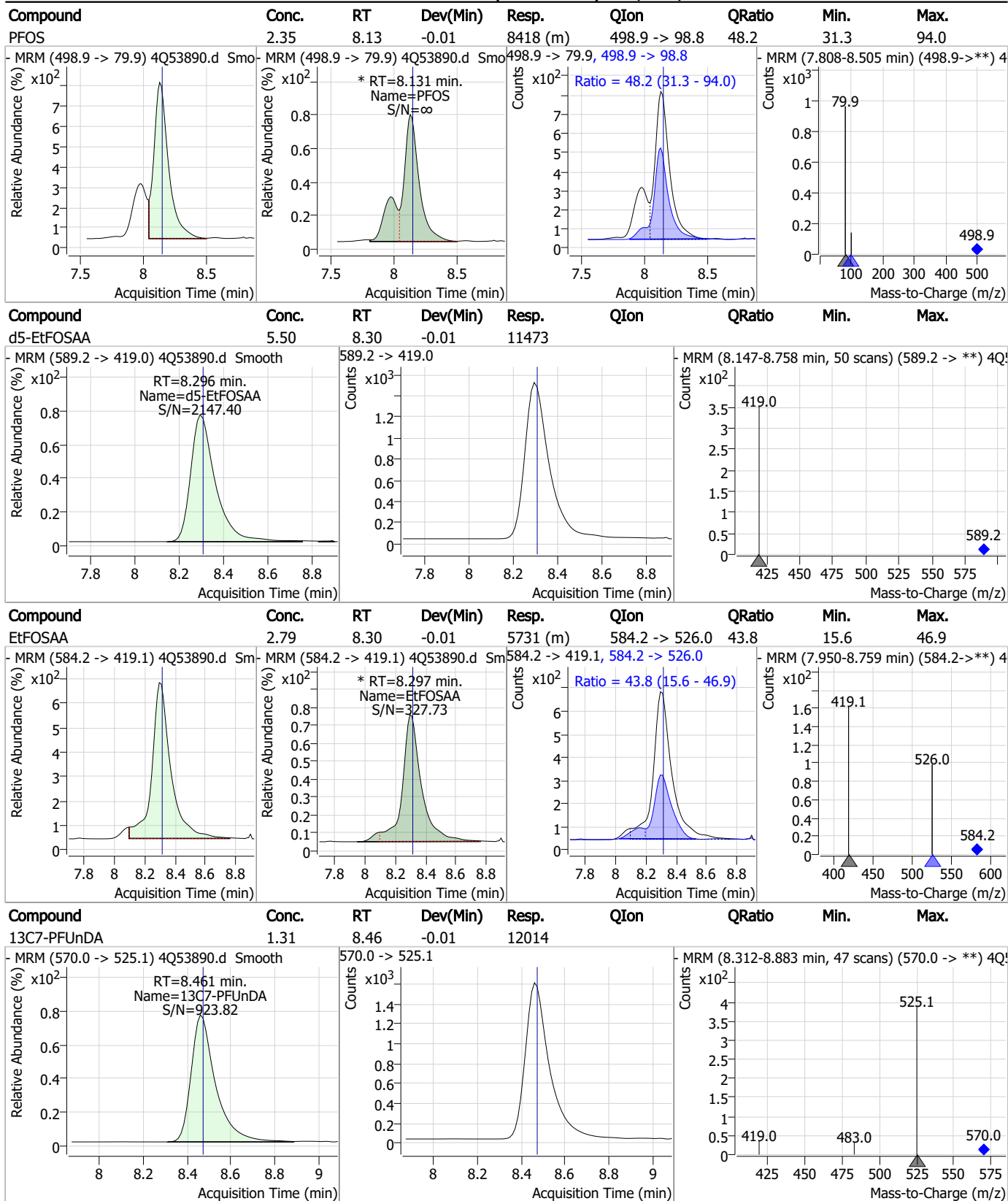


### Perfluorinated Compounds by LC/MS/MS



7.7.15  
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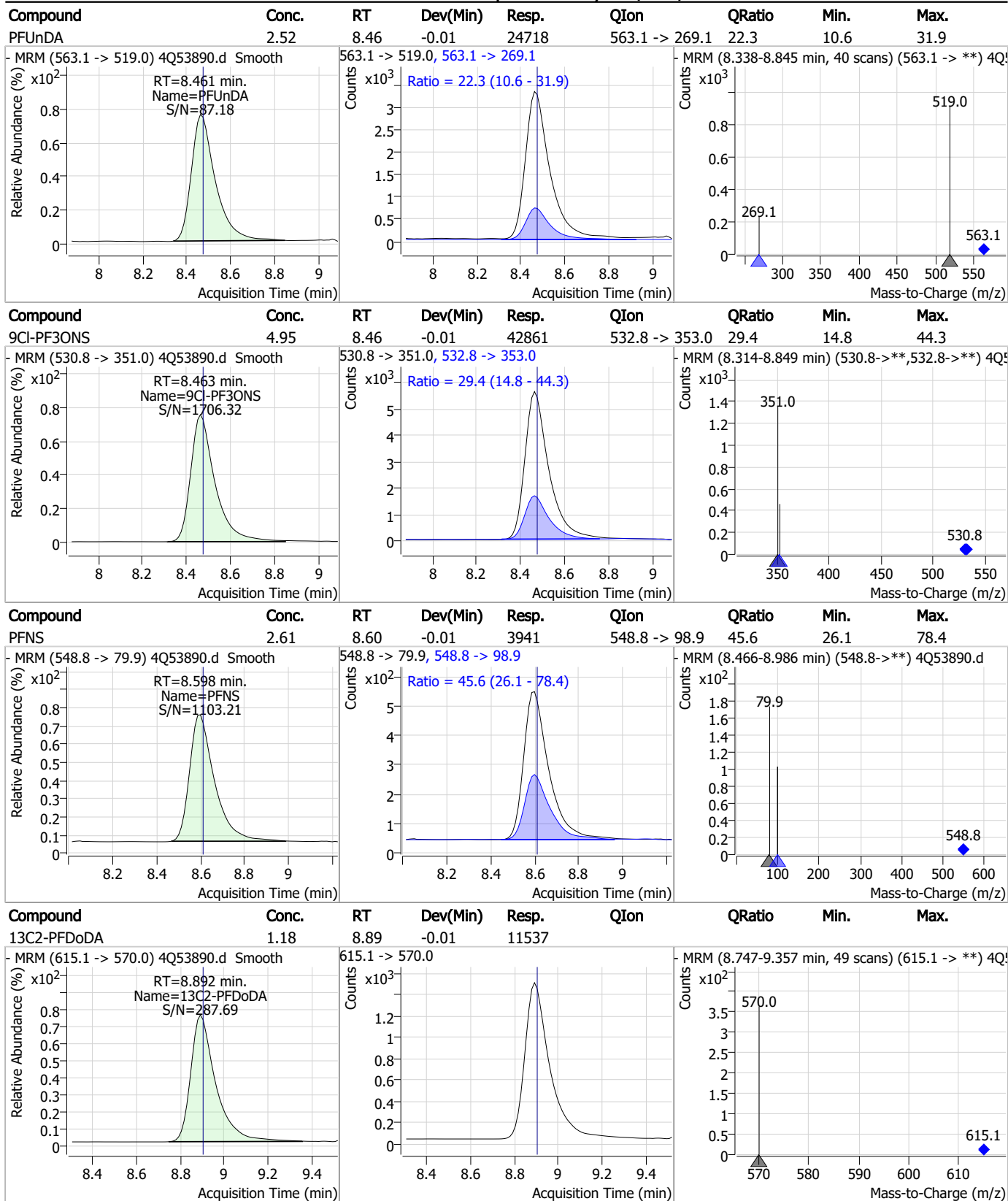
### Perfluorinated Compounds by LC/MS/MS



7.7.15

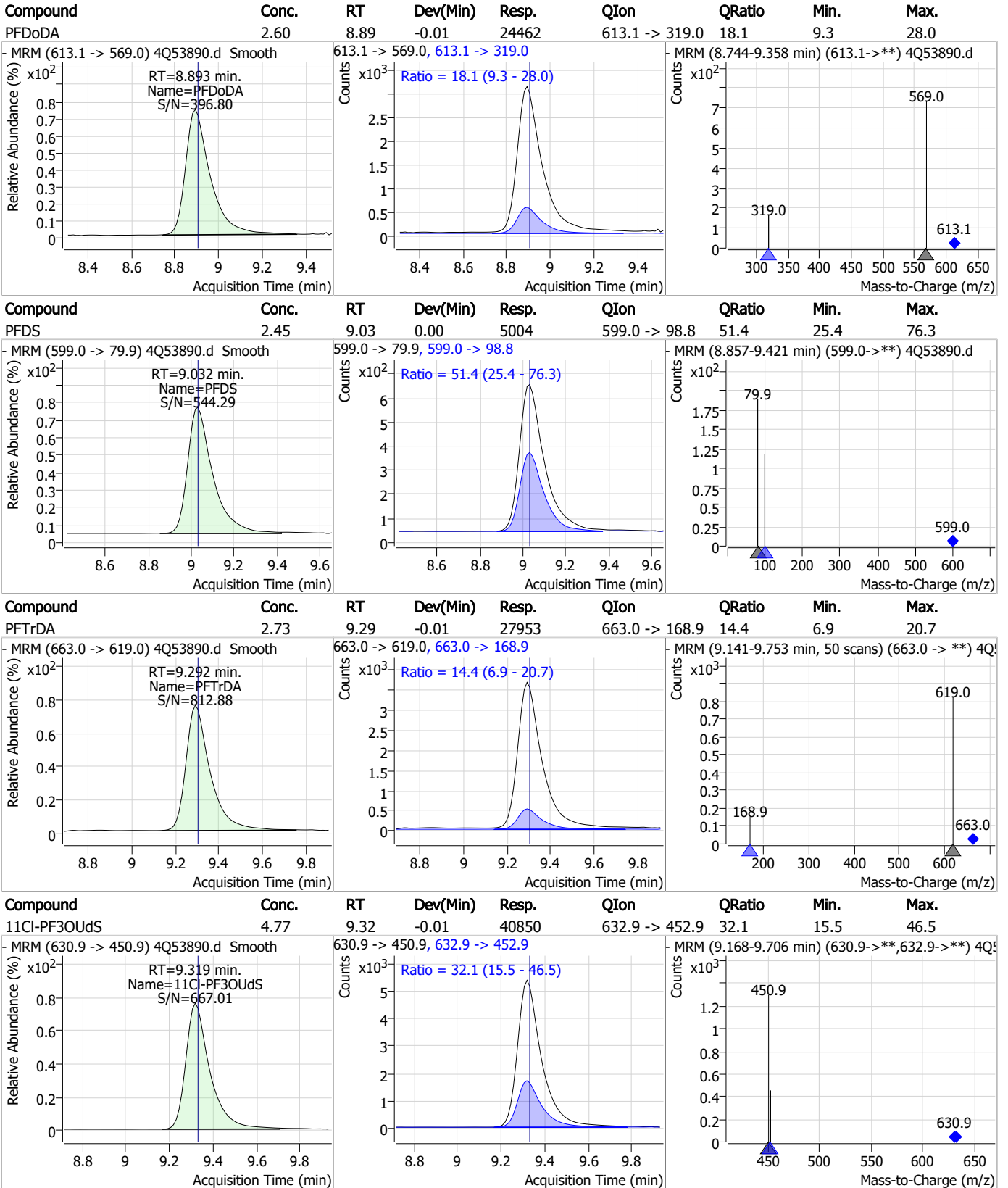
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### Perfluorinated Compounds by LC/MS/MS



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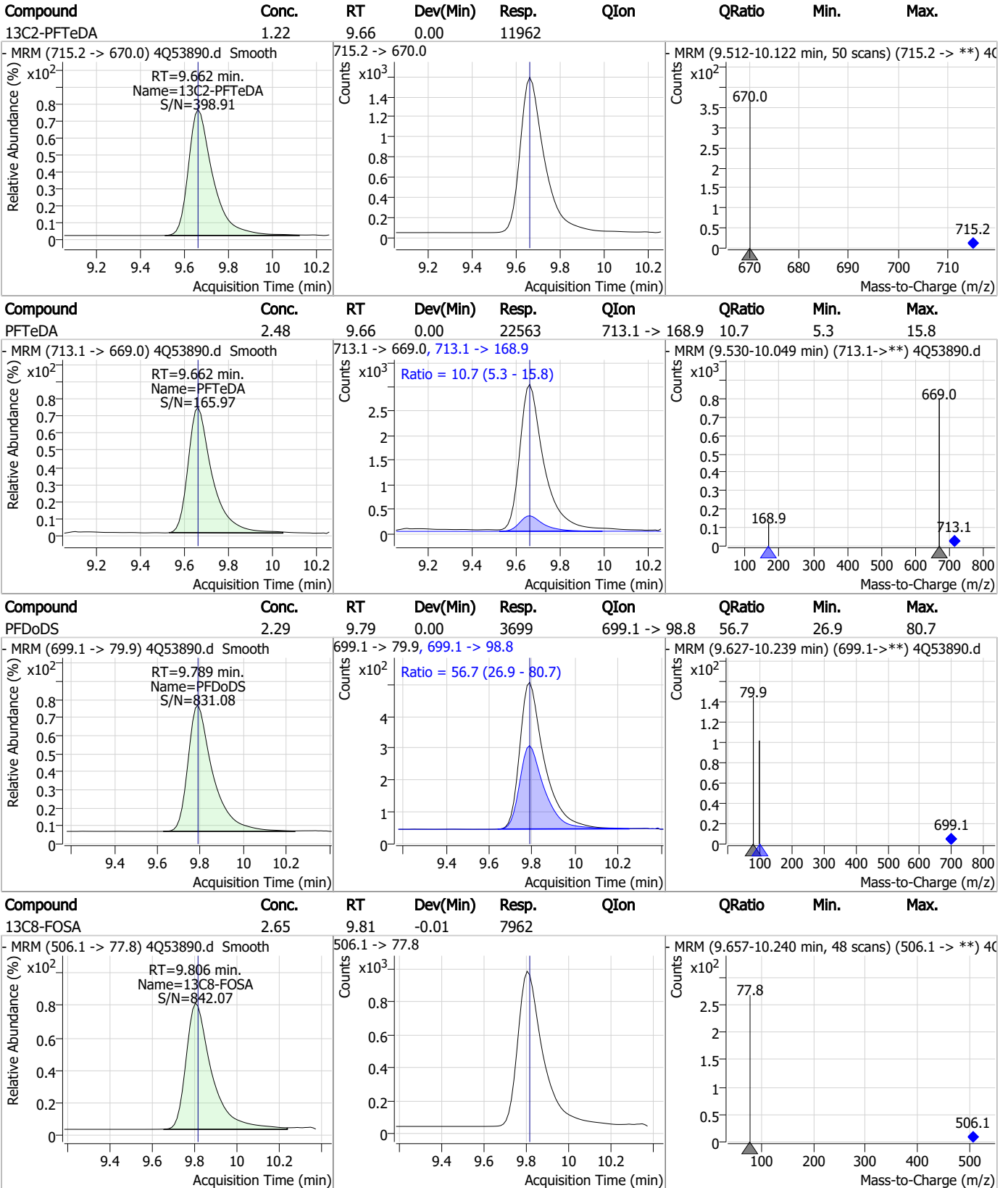
### Perfluorinated Compounds by LC/MS/MS



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### Perfluorinated Compounds by LC/MS/MS

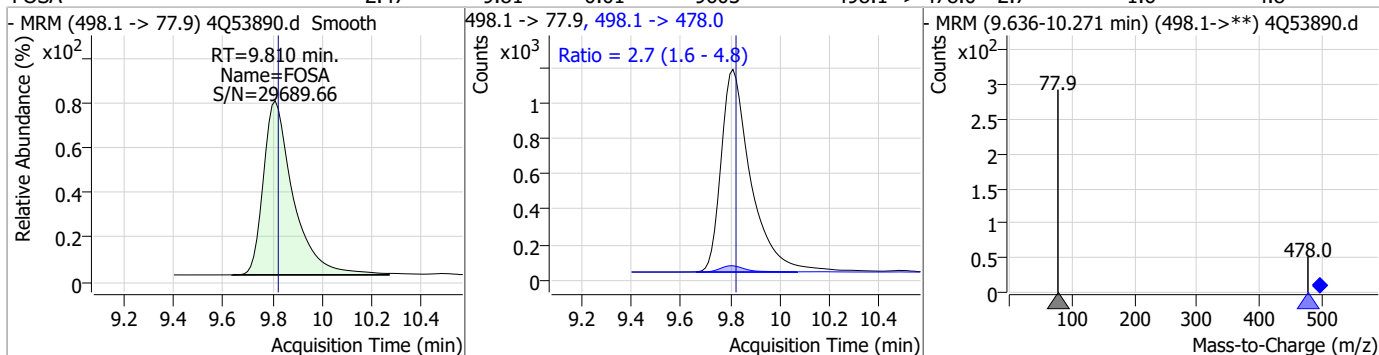


7.7.15 7

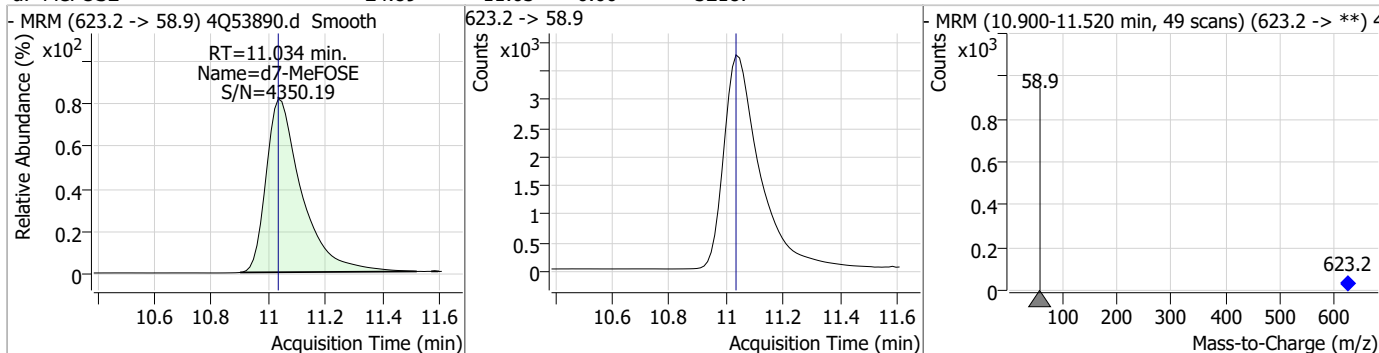


### Perfluorinated Compounds by LC/MS/MS

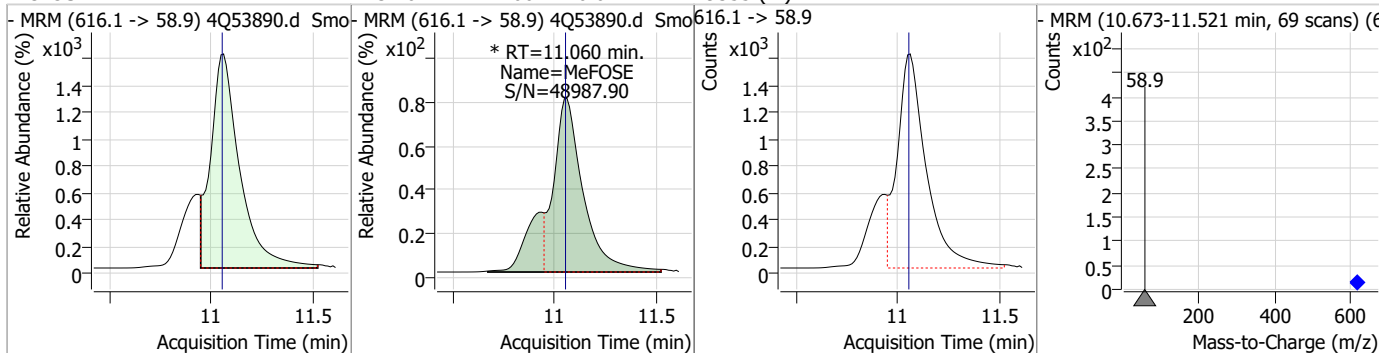
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.47	9.81	-0.01	9603	498.1 -> 478.0	2.7	1.6	4.8



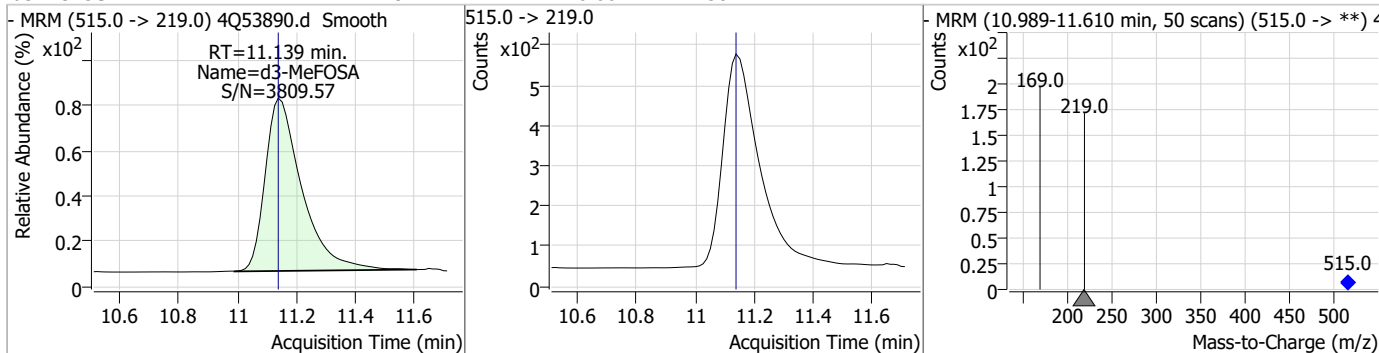
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.89	11.03	0.00	32187	623.2 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	13.20	11.06	0.01	19355 (m)	616.1 -> 58.9			

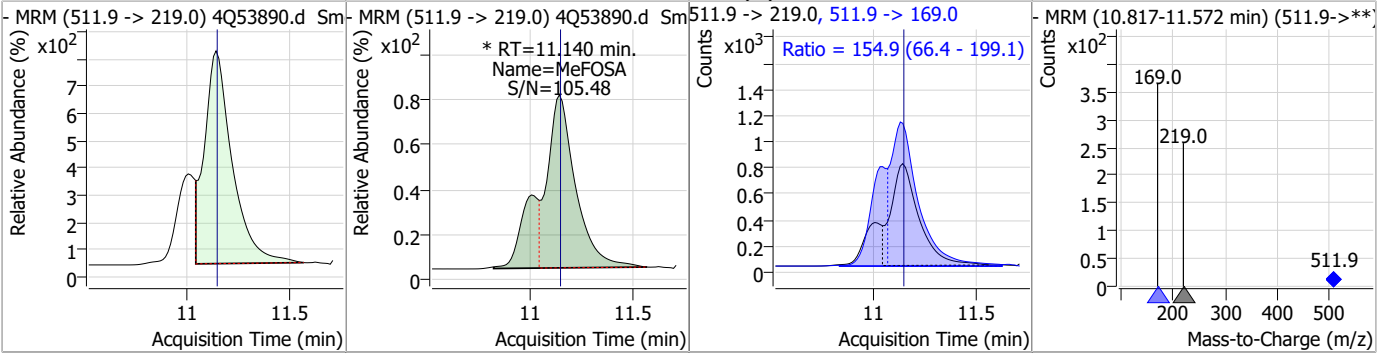


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.19	11.14	0.00	4582	515.0 -> 219.0			

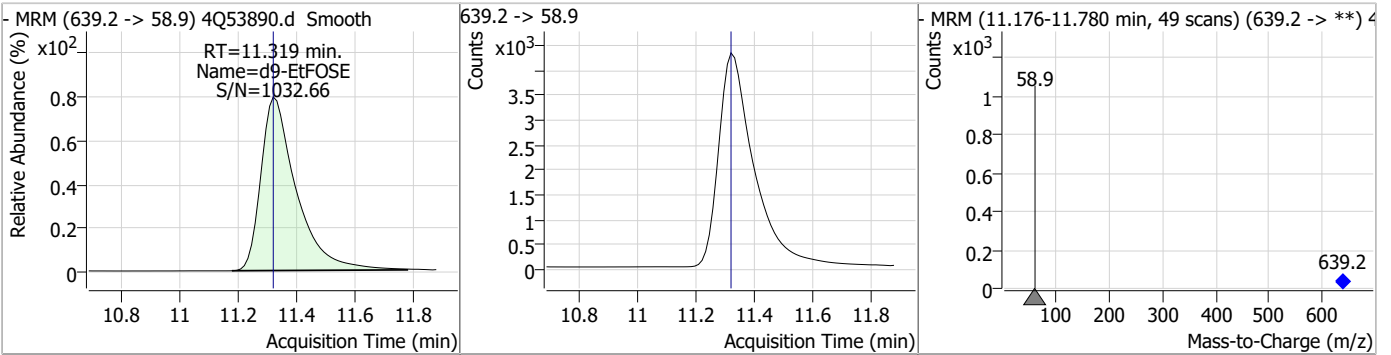


### Perfluorinated Compounds by LC/MS/MS

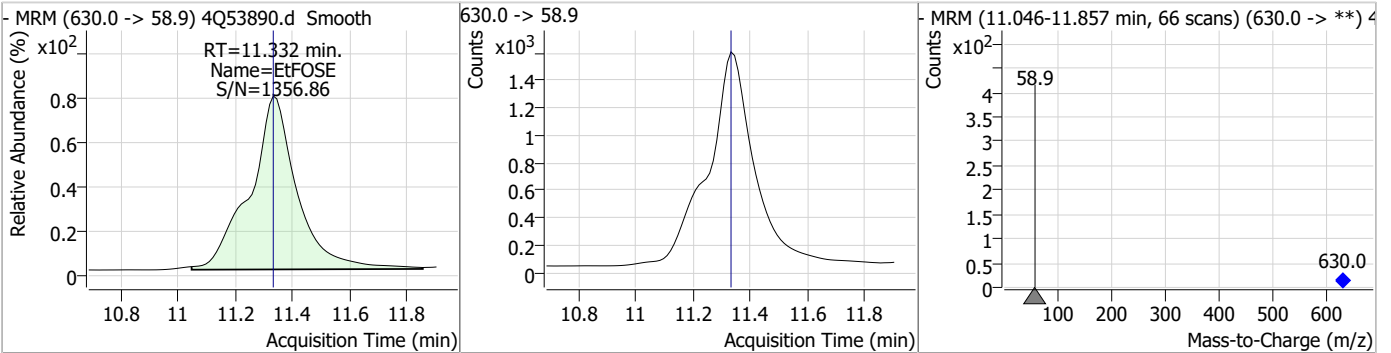
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	5.71	11.14	0.00	9496 (m)	511.9 -> 169.0	154.9	66.4	199.1



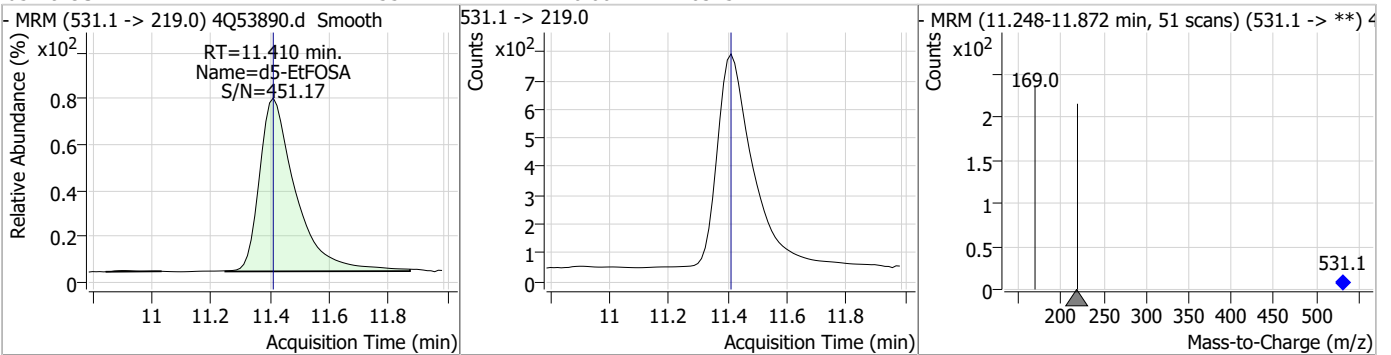
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.22	11.32	0.00	36270				



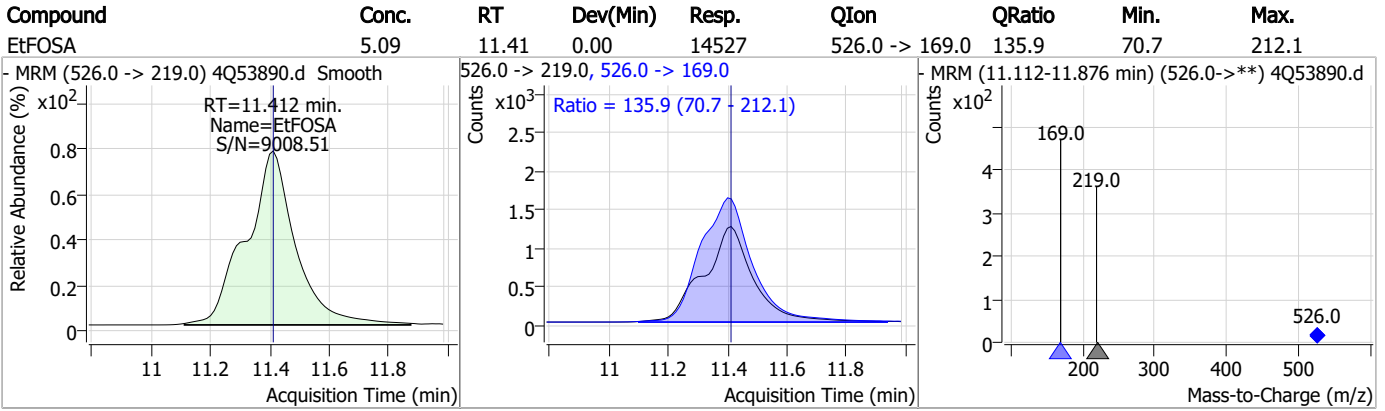
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	13.24	11.33	0.00	17944				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.55	11.41	0.00	6325				



### Perfluorinated Compounds by LC/MS/MS



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# Manual Integration Approval Summary

Sample Number: S4Q786-CC785      Method: EPA DRAFT 1633  
Lab FileID: 4Q53890.D      Analyst approved: 11/16/23 13:59 Anna Ludwig  
Injection Time: 11/15/23 16:36      Supervisor approved: 11/16/23 15:17 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.03	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.13	Split peak
EtFOSAA	2991-50-6		8.30	Split peak
MeFOSE	24448-09-7		11.06	Split peak
MeFOSA	31506-32-8		11.14	Split peak

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SGS ORLANDO

DATE:	11/13/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_111323_S4Q785
CAL DATE:	11/13/23
ANALYST:	AL
RUN BATCH:	S4Q785

ELUENT A LOT #:	233675 W5%ACN 226166 2mMAMAC.11706
ELUENT B LOT #:	ACN 226166
IC/CC STD LOT #:	LCMS 2192E
ICV STD LOT #:	LCMS 2199
ISTD/D STD LOT #:	12087D + 12030I

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q53716.d	P1-B9	ccb	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
2	4Q53717.d	P1-B9	ccb	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
3	4Q53718.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
4	4Q53719.d	P1-B2	RT BR_LN	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
5	4Q53720.d	P1-A9	high std	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
6	4Q53721.d	P1-A1	iblk	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
7	4Q53722.d	P1-A5	cc784-4	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
8	4Q53723.d	P1-A2	cc784-1.0LL	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	adona fail low
9	4Q53724.d	P1-A2	cc784-1.0LL	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	fail - recal
10	4Q53725.d	P1-A2	cc784-1.0LL	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	fail - recal
11	4Q53726.d	P1-B9	ccb	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
12	4Q53727.d	P1-B9	ccb	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
13	4Q53728.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
14	4Q53729.d	P1-B2	RT BR_LN	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	pass
15	4Q53730.d	P1-A1	ic785-0	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	check tune file
16	4Q53731.d	P1-A2	ic785-1	1633full_4Q.m	Calibration	1.6/500	OP98180,S4Q785:500,,,5.0,1,water	pass
17	4Q53732.d	P1-A3	ic785-2	1633full_4Q.m	Calibration	3.2/500	OP98180,S4Q785:500,,,5.0,1,water	pass
18	4Q53733.d	P1-A4	ic785-3	1633full_4Q.m	Calibration	10/500	OP98180,S4Q785:500,,,5.0,1,water	pass
19	4Q53734.d	P1-A5	ic785-4	1633full_4Q.m	Calibration	20/500	OP98180,S4Q785:500,,,5.0,1,water	adona 68.2% - pass
20	4Q53735.d	P1-A6	ic785-5	1633full_4Q.m	Calibration	40/500	OP98180,S4Q785:500,,,5.0,1,water	pass
21	4Q53736.d	P1-A7	ic785-6	1633full_4Q.m	Calibration	100/500	OP98180,S4Q785:500,,,5.0,1,water	pass
22	4Q53737.d	P1-A8	ic785-7	1633full_4Q.m	Calibration	200/500	OP98180,S4Q785:500,,,5.0,1,water	pass
23	4Q53738.d	P1-A9	ic785-8	1633full_4Q.m	Calibration	1x	OP98180,S4Q785:500,,,5.0,1,water	pass
24	4Q53739.d	P1-A1	iblk	1633full_4Q.m	Sample		OP98180,S4Q785:500,,,5.0,1,water	nd
25	4Q53740.d	P1-B3	icv785-4	1633full_4Q.m	QC	20/500	OP98180,S4Q785:500,,,5.0,1,water	pass
26	4Q53741.d	P1-B4	icv785-20	1633full_4Q.m	QC	100/500	OP98180,S4Q785:500,,,5.0,1,water	pass
27	4Q53742.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	OP98180,S4Q785:500,,,5.0,1,water	pass
28	4Q53743.d	P1-A2	cc785-1.0LL	1633full_4Q.m	QC	1.6/500	OP98180,S4Q785:500,,,5.0,1,water	pass
29	4Q53744.d	P4-D1	op9997-bs	1633full_4Q.m	Sample		OP99997,S4Q785:500,,,5.0,1,water	✓
30	4Q53745.d	P4-D2	op9997-llbs:3	1633full_4Q.m	Sample		OP99997,S4Q785:500,,,5.0,1,water	✓
31	4Q53746.d	P4-D3	op9997-mb	1633full_4Q.m	Sample		OP99997,S4Q785:500,,,5.0,1,water	✓
32	4Q53747.d	P4-D4	fc11014-1	1633full_4Q.m	Sample		OP99997,S4Q785:520,,,5.0,1,water	✓
33	4Q53748.d	P4-D5	fc11062-1	1633full_4Q.m	Sample		OP99997,S4Q785:530,,,5.0,1,water	✓
34	4Q53749.d	P4-D6	fc11062-2	1633full_4Q.m	Sample		OP99997,S4Q785:520,,,5.0,1,water	✓
35	4Q53750.d	P4-D7	op99997-ms	1633full_4Q.m	Sample		OP99997,S4Q785:520,,,5.0,1,water	✓

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LCMS4-4Q ANALYSIS LOG

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36	4Q53751.d	P4-D8	fc11062-3	1633full_4Q.m	Sample	OP99997.S4Q785.530,,,5.0,1,water	✓
37	4Q53752.d	P4-D9	op99997-dup	1633full_4Q.m	Sample	OP99997.S4Q785.530,,,5.0,1,water	✓
38	4Q53753.d	P4-E1	fc11062-4	1633full_4Q.m	Sample	OP99997.S4Q785.500,,,5.0,1,water	✓
39	4Q53754.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	pass
40	4Q53755.d	P1-A1	iccb	1633full_4Q.m	Sample	OP98180.S4Q785.500,,,5.0,1,water	nd
41	4Q53756.d	P4-E2	fc11062-5	1633full_4Q.m	Sample	OP99997.S4Q785.540,,,5.0,1,water	✓
42	4Q53757.d	P4-E3	fc11062-6	1633full_4Q.m	Sample	OP99997.S4Q785.550,,,5.0,1,water	✓
43	4Q53758.d	P5-F8	op99956-bs	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1,water	✓
44	4Q53759.d	P5-F9	op99956-llbs:3	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1,water	✓
45	4Q53760.d	P6-A1	op99956-mb	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1,water	✓
46	4Q53761.d	P6-A2	fc10708-1	1633full_4Q.m	Sample	OP99956.S4Q785.525,,,5.0,1,water	✓
47	4Q53762.d	P6-A3	fc10708-2	1633full_4Q.m	Sample	OP99956.S4Q785.520,,,5.0,1,water	✓
48	4Q53763.d	P6-A4	fc10708-3	1633full_4Q.m	Sample	OP99956.S4Q785.530,,,5.0,1,water	✓
49	4Q53764.d	P6-A5	fc10708-4	1633full_4Q.m	Sample	OP99956.S4Q785.525,,,5.0,1,water	✓
50	4Q53765.d	P6-A6	fc10708-5	1633full_4Q.m	Sample	OP99956.S4Q785.525,,,5.0,1,water	✓
51	4Q53766.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	pass
52	4Q53767.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1,water	nd
53	4Q53768.d	P6-A7	fc10708-6	1633full_4Q.m	Sample	OP99956.S4Q785.525,,,5.0,1,water	✓
54	4Q53769.d	P6-A8	fc10708-7	1633full_4Q.m	Sample	OP99956.S4Q785.520,,,5.0,1,water	✓
55	4Q53770.d	P6-A9	fc10708-8	1633full_4Q.m	Sample	OP99956.S4Q785.520,,,5.0,1,water	✓
56	4Q53771.d	P6-B1	fc10708-9	1633full_4Q.m	Sample	OP99956.S4Q785.525,,,5.0,1,water	✓
57	4Q53772.d	P6-B2	fc10708-10	1633full_4Q.m	Sample	OP99956.S4Q785.520,,,5.0,1,water	✓
58	4Q53773.d	P6-B3	fc10708-11	1633full_4Q.m	Sample	OP99956.S4Q785.530,,,5.0,1,water	✓
59	4Q53774.d	P6-B4	fc10708-12	1633full_4Q.m	Sample	OP99956.S4Q785.530,,,5.0,1,water	✓
60	4Q53775.d	P6-B5	fc10708-13	1633full_4Q.m	Sample	OP99956.S4Q785.525,,,5.0,1,water	✓
61	4Q53776.d	P6-B6	fc10708-14	1633full_4Q.m	Sample	OP99956.S4Q785.525,,,5.0,1,water	✓
62	4Q53777.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	pass
63	4Q53778.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1,water	nd
64	4Q53779.d	P6-B7	fc10708-15	1633full_4Q.m	Sample	OP99956.S4Q785.525,,,5.0,1,water	✓
65	4Q53780.d	P6-B8	op99956-ms	1633full_4Q.m	Sample	OP99956.S4Q785.520,,,5.0,1,water	✓
66	4Q53781.d	P6-B9	op99956-msd	1633full_4Q.m	Sample	OP99956.S4Q785.530,,,5.0,1,water	✓
67	4Q53782.d	P6-C1	fc10708-16	1633full_4Q.m	Sample	OP99956.S4Q785.530,,,5.0,1,water	✓
68	4Q53783.d	P6-C2	fc10708-17	1633full_4Q.m	Sample	OP99956.S4Q785.530,,,5.0,1,water	✓
69	4Q53784.d	P6-C3	op99926-bs	1633full_4Q.m	Sample	OP99926.S4Q785.500,,,5.0,1,water	3:3 high - ok
70	4Q53785.d	P6-C4	op99926-llbs:3	1633full_4Q.m	Sample	OP99926.S4Q785.500,,,5.0,1,water	✓
71	4Q53786.d	P6-C5	op99926-mb	1633full_4Q.m	Sample	OP99926.S4Q785.500,,,5.0,1,water	✓
72	4Q53787.d	P6-C6	fc10691-1	1633full_4Q.m	Sample	OP99926.S4Q785.520,,,5.0,1,water	✓
73	4Q53788.d	P6-C7	fc10691-2	1633full_4Q.m	Sample	OP99926.S4Q785.520,,,5.0,1,water	✓
74	4Q53789.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	pass
75	4Q53790.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1,water	nd
76	4Q53791.d	P6-C8	fc10703-1	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1,water	✓
77	4Q53792.d	P6-C9	op99926-ms	1633full_4Q.m	Sample	OP99926.S4Q785.540,,,5.0,1,water	✓
78	4Q53793.d	P6-D1	fc10703-2	1633full_4Q.m	Sample	OP99926.S4Q785.535,,,5.0,1,water	✓

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SGS ORLANDO LCMS4-4Q ANALYSIS LOG

79	4Q53794.d	P6-D2	op99926-dup	1633full_4Q.m	Sample	OP99926.S4Q785.535,,,5.0,1,water	✓
80	4Q53795.d	P6-D3	fc10703-3	1633full_4Q.m	Sample	OP99926.S4Q785.540,,,5.0,1,water	✓
81	4Q53796.d	P6-D4	fc10703-4	1633full_4Q.m	Sample	OP99926.S4Q785.535,,,5.0,1,water	✓
82	4Q53797.d	P6-D5	fc10703-5	1633full_4Q.m	Sample	OP99926.S4Q785.530,,,5.0,1,water	✓
83	4Q53798.d	P6-D6	fc10703-6	1633full_4Q.m	Sample	OP99926.S4Q785.550,,,5.0,1,water	✓
84	4Q53799.d	P6-D7	fc10703-7	1633full_4Q.m	Sample	OP99926.S4Q785.530,,,5.0,1,water	✓
85	4Q53800.d	P6-D8	fc10703-8	1633full_4Q.m	Sample	OP99926.S4Q785.550,,,5.0,1,water	rr 2x e flag
86	4Q53801.d	P1-A5	cc785-4	1633full_4Q.m	QC	OP99956.S4Q785.500,,,5.0,1,water	pass
87	4Q53802.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1,water	nd
88	4Q53803.d	P6-D9	fc10703-9	1633full_4Q.m	Sample	OP99926.S4Q785.545,,,5.0,1,water	✓
89	4Q53804.d	P6-E1	fc10703-10	1633full_4Q.m	Sample	OP99926.S4Q785.535,,,5.0,1,water	✓
90	4Q53805.d	P6-E2	fc10703-11	1633full_4Q.m	Sample	OP99926.S4Q785.525,,,5.0,1,water	✓
91	4Q53806.d	P6-E3	fc10703-12	1633full_4Q.m	Sample	OP99926.S4Q785.525,,,5.0,1,water	✓
92	4Q53807.d	P6-E4	fc10703-13	1633full_4Q.m	Sample	OP99926.S4Q785.535,,,5.0,1,water	✓
93	4Q53808.d	P6-E5	fc10636-32	1633full_4Q.m	Sample	OP99872.S4Q785.370,,,5.0,10,water	✓
94	4Q53809.d	P6-E6	fc10636-39	1633full_4Q.m	Sample	OP99872.S4Q785.390,,,5.0,10,water	✓
95	4Q53810.d	P6-E7	fc10636-41	1633full_4Q.m	Sample	OP99872.S4Q785.415,,,5.0,10,water	✓
96	4Q53811.d	P6-E8	fc10643-1	1633full_4Q.m	Sample	OP99872.S4Q785.380,,,5.0,5,water	✓
97	4Q53812.d	P1-A5	ecc785-4	1633full_4Q.m	QC	OP99956.S4Q785.500,,,5.0,1,water	pass
98	4Q53813.d	P1-A1	iccb	1633full_4Q.m	Sample	OP99956.S4Q785.500,,,5.0,1,water	nd



SGS ORLANDO

DATE:	11/15/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_111323_S4Q785
CAL DATE:	11/13/23
ANALYST:	AL
RUN BATCH:	S4Q786

ELUENT A LOT #:	233675 W5%A/CN 226166 2mMAMAC. 11706
ELUENT B LOT #:	ACN 226166
IC/CC STD LOT #:	LCMS 2192E
ICV STD LOT #:	LCMS 2199
ISTD/ID STD LOT #:	12087D + 12030I

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q53862.d	P1-B9	ccb	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	nd
2	4Q53863.d	P1-B9	ccb	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	nd
3	4Q53864.d	P1-B1	RT TDCA	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	pass
4	4Q53865.d	P1-B2	RT BR_LN	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	pass
5	4Q53866.d	P1-A9	high std	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	pass
6	4Q53867.d	P1-A1	iblk	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	nd
7	4Q53868.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	OP98180,S4Q786,500,,,5.0,1,water	pass
8	4Q53869.d	P1-A2	cc785-1.0LL	1633full_4Q.m	QC	1.6/500	OP98180,S4Q786,500,,,5.0,1,water	pass
9	4Q53870.d	P6-E9	fc10703-8	1633full_4Q.m	Sample	250/500	OP99926,S4Q786,550,,,5.0,2,water	✓
10	4Q53871.d	P1-F3	op58-bs	1633full_4Q.m	Sample		OP58,S4Q786,500,,,5.0,1,water	3:3 high, ok
11	4Q53872.d	P1-F4	op58-llbs:3	1633full_4Q.m	Sample		OP58,S4Q786,500,,,5.0,1,water	✓
12	4Q53873.d	P1-F5	op58-mb	1633full_4Q.m	Sample		OP58,S4Q786,500,,,5.0,1,water	✓
13	4Q53874.d	P1-F6	fc10561-9	1633full_4Q.m	Sample		OP58,S4Q786,420,,,5.0,1,water	✓
14	4Q53875.d	P1-F7	fc10636-23	1633full_4Q.m	Sample		OP58,S4Q786,65,,,5.0,1,water	✓
15	4Q53876.d	P1-F8	fc10636-23	1633full_4Q.m	Sample		OP58,S4Q786,65,,,5.0,10,water	✓
16	4Q53877.d	P1-F9	fc10636-28	1633full_4Q.m	Sample		OP58,S4Q786,60,,,5.0,1,water	✓
17	4Q53878.d	P2-A1	fc10636-28	1633full_4Q.m	Sample		OP58,S4Q786,60,,,5.0,10,water	✓
18	4Q53879.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	OP98180,S4Q786,500,,,5.0,1,water	pass
19	4Q53880.d	P1-A1	iccb	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	nd
20	4Q53881.d	P2-A2	fc11101-1	1633full_4Q.m	Sample		OP58,S4Q786,525,,,5.0,1,water	✓
21	4Q53882.d	P2-A3	op58-ms	1633full_4Q.m	Sample		OP58,S4Q786,535,,,5.0,1,water	✓
22	4Q53883.d	P2-A4	fc11101-2	1633full_4Q.m	Sample		OP58,S4Q786,545,,,5.0,1,water	rr 5x
23	4Q53884.d	P2-A5	op58-dup	1633full_4Q.m	Sample		OP58,S4Q786,540,,,5.0,1,water	rr 5x
24	4Q53885.d	P2-A6	fc11101-3	1633full_4Q.m	Sample		OP58,S4Q786,530,,,5.0,1,water	✓
25	4Q53886.d	P2-A7	fc11101-4	1633full_4Q.m	Sample		OP58,S4Q786,530,,,5.0,1,water	✓
26	4Q53887.d	P2-A8	fc11101-5	1633full_4Q.m	Sample		OP58,S4Q786,525,,,5.0,1,water	✓
27	4Q53888.d	P2-A9	fc11160-1	1633full_4Q.m	Sample		OP58,S4Q786,525,,,5.0,1,water	✓
28	4Q53889.d	P2-B1	fc11160-2	1633full_4Q.m	Sample		OP58,S4Q786,525,,,5.0,1,water	✓
29	4Q53890.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	OP98180,S4Q786,500,,,5.0,1,water	pass
30	4Q53891.d	P1-A1	iccb	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	nd
31	4Q53892.d	P6-F1	op99927-bs	1633full_4Q.m	Sample		OP99927,S4Q786,125,,,5.0,1,water	3:3 high, ok
32	4Q53893.d	P6-F2	op99927-llbs:2	1633full_4Q.m	Sample		OP99927,S4Q786,125,,,5.0,1,water	✓
33	4Q53894.d	P6-F3	op99927-mb	1633full_4Q.m	Sample		OP99927,S4Q786,125,,,5.0,1,water	✓
34	4Q53895.d	P6-F4	fc10789-1	1633full_4Q.m	Sample		OP99927,S4Q786,30,,,5.0,1,water	✓
35	4Q53896.d	P6-F5	fc10789-2	1633full_4Q.m	Sample		OP99927,S4Q786,45,,,5.0,1,water	✓

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LCMS4-4Q ANALYSIS LOG

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36	4Q53897.d	P6-F6	fc10789-3	1633full_4Q.m	Sample		OP99927,S4Q786,95,,,5.0,1,water	✓
37	4Q53898.d	P6-F7	fc10789-4	1633full_4Q.m	Sample		OP99927,S4Q786,100,,,5.0,1,water	✓
38	4Q53899.d	P6-F8	fc10789-5	1633full_4Q.m	Sample		OP99927,S4Q786,90,,,5.0,1,water	✓
39	4Q53900.d	P6-F9	fc10789-6	1633full_4Q.m	Sample		OP99927,S4Q786,95,,,5.0,1,water	✓
40	4Q53901.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	OP98180,S4Q786,500,,,5.0,1,water	pass
41	4Q53902.d	P1-A1	iccb	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	nd
42	4Q53903.d	P1-C1	fc10789-7	1633full_4Q.m	Sample		OP99927,S4Q786,95,,,5.0,1,water	✓
43	4Q53904.d	P1-C2	fc10789-8	1633full_4Q.m	Sample		OP99927,S4Q786,90,,,5.0,1,water	✓
44	4Q53905.d	P1-C3	fc10789-9	1633full_4Q.m	Sample		OP99927,S4Q786,1145,,,5.0,1,water	✓
45	4Q53906.d	P1-C4	fc10789-10	1633full_4Q.m	Sample		OP99927,S4Q786,125,,,5.0,1,water	✓
46	4Q53907.d	P1-C5	fc10789-11	1633full_4Q.m	Sample		OP99927,S4Q786,115,,,5.0,1,water	✓
47	4Q53908.d	P1-C6	fc10789-12	1633full_4Q.m	Sample		OP99927,S4Q786,125,,,5.0,1,water	✓
48	4Q53909.d	P1-C7	fc10789-13	1633full_4Q.m	Sample		OP99927,S4Q786,110,,,5.0,1,water	✓
49	4Q53910.d	P1-C8	fc10789-14	1633full_4Q.m	Sample		OP99927,S4Q786,120,,,5.0,1,water	✓
50	4Q53911.d	P1-C9	fc10949-1	1633full_4Q.m	Sample		OP99927,S4Q786,125,,,5.0,1,water	add eis
51	4Q53912.d	P1-D1	fc10949-1A	1633full_4Q.m	Sample		OP99927,S4Q786,125,,,5.0,1,water	add eis
52	4Q53913.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	OP98180,S4Q786,500,,,5.0,1,water	pass
53	4Q53914.d	P1-A1	iccb	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	nd
54	4Q53915.d	P1-D2	op80-bs	1633full_4Q.m	Sample		OP80,S4Q786,500,,,5.0,1,water	✓
55	4Q53916.d	P1-D3	op80-llbs:3	1633full_4Q.m	Sample		OP80,S4Q786,500,,,5.0,1,water	✓
56	4Q53917.d	P1-D4	op80-mb	1633full_4Q.m	Sample		OP80,S4Q786,500,,,5.0,1,water	✓
57	4Q53918.d	P1-D5	fc10666-9	1633full_4Q.m	Sample		OP80,S4Q786,485,,,5.0,1,water	✓
58	4Q53919.d	P1-D6	fc10843-1	1633full_4Q.m	Sample		OP80,S4Q786,465,,,5.0,1,water	✓
59	4Q53920.d	P1-D7	fc10843-2	1633full_4Q.m	Sample		OP80,S4Q786,440,,,5.0,1,water	✓
60	4Q53921.d	P1-D8	fc10843-3	1633full_4Q.m	Sample		OP80,S4Q786,450,,,5.0,1,water	✓
61	4Q53922.d	P1-D9	fc10843-4	1633full_4Q.m	Sample		OP80,S4Q786,510,,,5.0,1,water	✓
62	4Q53923.d	P1-E1	fc10843-5	1633full_4Q.m	Sample		OP80,S4Q786,475,,,5.0,1,water	✓
63	4Q53924.d	P1-E2	fc10843-7	1633full_4Q.m	Sample		OP80,S4Q786,475,,,5.0,1,water	✓
64	4Q53925.d	P1-A5	cc785-4	1633full_4Q.m	QC	20/500	OP98180,S4Q786,500,,,5.0,1,water	pass
65	4Q53926.d	P1-A1	iccb	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	nd
66	4Q53927.d	P1-E3	fc10843-8	1633full_4Q.m	Sample		OP80,S4Q786,480,,,5.0,1,water	rr 5x e flag
67	4Q53928.d	P1-E4	fc10843-11	1633full_4Q.m	Sample		OP80,S4Q786,490,,,5.0,1,water	rr 1 co
68	4Q53929.d	P1-E5	op80-ms	1633full_4Q.m	Sample		OP80,S4Q786,470,,,5.0,1,water	wait for sample
69	4Q53930.d	P1-E6	op80-msd	1633full_4Q.m	Sample		OP80,S4Q786,465,,,5.0,1,water	wait for sample
70	4Q53931.d	P1-E7	fc10894-1	1633full_4Q.m	Sample		OP80,S4Q786,505,,,5.0,1,water	✓
71	4Q53932.d	P1-E8	fc10894-2	1633full_4Q.m	Sample		OP80,S4Q786,495,,,5.0,1,water	✓
72	4Q53933.d	P1-E9	fc10894-3	1633full_4Q.m	Sample		OP80,S4Q786,510,,,5.0,1,water	✓
73	4Q53934.d	P1-F1	fc10894-4	1633full_4Q.m	Sample		OP80,S4Q786,485,,,5.0,1,water	✓
74	4Q53935.d	P1-F2	fc10894-5	1633full_4Q.m	Sample		OP80,S4Q786,505,,,5.0,1,water	✓
75	4Q53936.d	P1-A5	ecc785-4	1633full_4Q.m	QC	20/500	OP98180,S4Q786,500,,,5.0,1,water	pass
76	4Q53937.d	P1-A1	iccb	1633full_4Q.m	Sample		OP98180,S4Q786,500,,,5.0,1,water	nd

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2192A-C	1033 Cal wtd. (spike)	LCMS 2191	PFA-01 Big-L-Pre	Sgs Labs	n/a	12/28/23	2ppm	250uL	4 mL	125 312.5ppb	1033 1033 126880LD	9/24/23	12/28/23 12/16/23	MW
		11940	PFAC	Wellington	4-19-28	9/21/23	1-4 ppm	250uL		42.5 125 250ppb				
		11908	MXH			9/24/23								
		11947B	PFAC		3-24-26	9/15/24	2ppm	250uL		125ppb				
		11969	MXF			9/24/24								
		11948A	PFAC		12-1-27	9/15/24	2ppm	250uL		125ppb				
		11948B	MXG			9/24/24								
		11971	PFAC		3-28-28	9/15/24	4-20 ppm	312 uL		312 1100 ppb				
		12016A	MXJ			9/24/24								
LCMS 2193	FOSE Std	11409	N-ET-FOSE	Wellington Labs	05/13/27	09/25/24	50ppm	200uL	2.0 mL	5ppb	95% MeOH 5% H2O	09/25/23	03/25/24	JR
		11410	N-Me-FOSE		05/13/27	09/25/24								
LCMS 2194	Full List 40 Spike (cont std)	11904/ 12006	PFOA- DOP (25 Comp)	Absolute	03/13/28	09/11/24	1.0 ppm	400uL	4.0 mL	100ppb	95% MeOH 5% H2O	09/15/23	10/18/23	JR
		LCMS 2179	40 List Add-on#1	SGS Std	-	10/18/23								
		LCMS 2156	40 List Add-on#2		-	02/07/24								
		LCMS 2193	FOSE Std.		-	03/25/24	5.0 ppm			500ppb				
LCMS 2195	PFC Spike	12006	PFOA- DOP (25 Comp)	Absolute	04/26/28	09/19/24	1.0 ppm	2 mL	5.0 mL	400ppb	95% MeOH 5% H2O	07/28/23	03/19/24	JR
		11432	N-Me- FOSAM	Wellington Labs	02/28/27	03/19/24	50 ppm	40 uL						
		11793	FESK-1		02/01/28	08/08/24								
		11792	FA-SA-1		12/01/27	08/08/24								
		11332	PFECHS		03/28/27	04/18/24								

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

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



Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2188A-J	PFC ID SURR (10MB)	11986 A-J	MPFAC-24ES	Wellington Labs	06/08/22	09/19/24	1.0 ppm	1.2 mL	~2.5 mL	0.5 ppm	95% MeOH 5% H <sub>2</sub> O	9/19/23	03/19/24	JR
LCMS 2189A	↓	11811	M3HFP-DA	↓	04/03/26	09/06/24	50 ppm	24 μL	↓	↓	↓	↓	↓	↓
LCMS 2190	↓	11709	D-N-Me FOSA-M	↓	11/11/27	08/12/24	↓	↓	↓	↓	↓	↓	↓	↓
LCMS 2191	T-PFOA STD. (BT)	10818	T-PFOA	Wellington Labs	01/08/26	10/27/25	50 ppm	8 μL	4 mL	100 ppb	95% MeOH 5% H <sub>2</sub> O	09/21/23	10/27/23	AL
LCMS 2192	PFAC DTD (copy)	11946B	PFAC MxH	Wellington Labs	4-19-28	9/21/24	1-4 ppm	250 μL	4 mL	62.5 125 250 ppb	1033 MUX (26884)	9/21/23	12/8/23	MJ
LCMS 2193	↓	LCMS 2154	BR-LN Et+Me	Sgs Labo	MA	12/8/23	2 ppm	250 μL	↓	312.5 ppb	↓	↓	↓	↓
LCMS 2194	↓	11947B	PFAC Mx F	Wellington Labs	3-24-26	9/15/24	2 ppm	250 μL	↓	12.5 ppb	↓	↓	↓	↓
LCMS 2195	↓	11947C	PFAC Mx J	↓	3-28-28	9/15/24	4-20 ppm	250 μL	↓	312.1160 ppb	↓	↓	↓	↓
LCMS 2196	↓	11948	PFAC Mx G	↓	12/1/27	9/15/24	2 ppm	250 μL	↓	12.5 ppb	↓	↓	↓	↓
LCMS 2197	1033 BR-LN Me + Et fosa	11497	br-N me fosa	Wellington Labs	8/23/27	12/28/23	50 ppm	100 μL	2.5 mL	2 ppm	1033 MUX (18084)	9/24/23	12/28/23	MJ
LCMS 2198	↓	11498	br-N Et fosa	↓	10/7/27	12/28/23	↓	100 μL	↓	2 ppm	↓	↓	↓	↓
LCMS 2199	↓	11795	br-N me fosa	↓	10/7/27	06/28/24	↓	250 μL	↓	5 ppm	↓	↓	↓	↓
LCMS 2200	↓	11796	br-N Et fosa	↓	10/7/27	06/28/24	↓	250 μL	↓	5 ppm	↓	↓	↓	↓
						Continue next page								

\* based on date opened as specified in each SGS - Orlando SOP. Page 6 of 50

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2156	L157 40 ADD ON #2	11513	FBSA-1	Wellington	11/10/26	4/18/24	50 ppm	80 uL	4.0 mL	1 ppm	95% meth 5% H2O	8/7/23	2/7/24	MW
		11514	FHXSA1		12/29/26	4/18/24					(3760)			
		11140B	I-PFAS		7/12/26	5/9/24								
LCMS 2157	1033 RT BR-LN	11496	br-Fosa	Wellington	10/7/27	12/28/23	50 ppm	10 uL 5 uL	5 mL	100 ppb	1033 mix	8/7/23	12/28/23	MW
		11497	br-N MeFosa		8/23/27			10 uL			(4930)			
		11498	br-N EHFosa		10/7/27									
		11494	br-N MeFose		10/7/27									
		11495	br-N EHFose		10/7/27									
		11502	T-PFOA		01/27/27									
		11527	IPPFNA		01/10/27									
LCMS 2158 AE	1033 Cul std. SPIKE	LCMS 2159 (2140)	Br-LN E+Me PFAC	SGS LABO	N/A	12/28/23	2 ppm 5 ppm	25 uL	4 mL	125 312.5 ppb	1033 mix 2.088 uL	8/7/23	12/28/23	MW
		11930	MXH	Wellington	4/19/28	7/31/24 8/7/24	1-4 ppm			62.5 125 ppb				
		11931A	PFAC		3/24/26	7-31-24 8-7-24	2 ppm			125 ppb				
		11931B	MXF		12/1/27	7-31-24 8-7-24	2 ppm			125 ppb				
		11907	PFAC		3-28-28	7-31-24 8-7-24	4-20 ppm	312 uL		312 1100 ppb				
		11932A	MXG											
		11933A	PFAC											
		11933B	MXJ											

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2192A	1033 Cal std. (spike)	LCMS 2191	PFAC	SGS Labs	n/a	12/28/23	2 ppm	250 uL	4 mL	125	1633	9/24/23	12/28/23	NR
		11940	PFAC		4-19-28	9/21/23	1-4 ppm	250 uL		125	1633	9/24/23	12/28/23	
		11908	MXH	Washington	4-19-28	9/24/23	1-4 ppm	250 uL		250 ppb	1633	9/24/23	12/28/23	
		11947B	PFAC		3-24-26	9/15/24	2 ppm	250 uL		125 ppb	1633	9/24/23	12/28/23	
		11964	MXF		12-1-27	9/24/24	2 ppm	250 uL		125 ppb	1633	9/24/23	12/28/23	
		11948A	PFAC		3-28-28	9/15/24	4-20 ppm	312 uL		312	1633	9/24/23	12/28/23	
		11948B	MXG		05/13/27	09/25/24	50 ppm	200 uL	2.0 mL	5 ppb	95/Meth 09/25/23	09/25/23	03/25/24	JR
		11971	PFAC		05/13/27	09/25/24	↓	↓	↓	↓	↓	↓	↓	↓
		11992	MXJ		03/13/28	09/11/24	1.0 ppm	400 uL	4.0 mL	100 ppb	95/Meth 09/25/23	09/25/23	10/16/23	JR
LCMS 2193	FOSE Std	11409	N-ET-FOSE	Washington Labs	05/13/27	09/25/24	↓	↓	↓	↓	↓	↓	↓	↓
		11410	N-Me-FOSE		05/13/27	09/25/24	↓	↓	↓	↓	↓	↓	↓	↓
LCMS 2194	Full List 40 Spike (cal std)	11904/12006	PFAC-Dep (28 comp)	Absolute	03/13/28	09/11/24	1.0 ppm	400 uL	4.0 mL	100 ppb	95/Meth 09/25/23	09/25/23	10/16/23	JR
		LCMS 2179	40 List Add-m#1	SGS Std	-	10/18/23	↓	↓	↓	↓	↓	↓	↓	↓
		LCMS 2150	40 List Add-m#2		-	02/07/24	↓	↓	↓	↓	↓	↓	↓	↓
		LCMS 2193	FOSE Std.		-	03/25/24	5.0 ppm	↓	↓	500 ppb	↓	↓	↓	↓
LCMS 2195	PFC Spike	12006	PFAC-Dep (28 comp)	Absolute	06/26/28	09/19/24	1.0 ppm	2 mL	5.0 mL	400 ppb	95/Meth 09/28/23	09/28/23	03/13/24	JR
		11432	N-Me FOSA-M	Washington Labs	02/28/27	03/13/24	50 ppm	40 uL	↓	↓	↓	↓	↓	↓
		11793	FBSA-1		02/01/28	08/08/24	↓	↓	↓	↓	↓	↓	↓	↓
		11792	FH-SA-1		12/01/27	08/08/24	↓	↓	↓	↓	↓	↓	↓	↓
		11332	PFECHS		03/28/27	04/18/24	↓	↓	↓	↓	↓	↓	↓	↓

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

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12087 A-J  
rec'd: 10/11/23

# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### MPFAC-HIF-ES

#### Mass-Labelled PFAS Extraction Standard Solution/Mixture

**PRODUCT CODE:** MPFAC-HIF-ES  
**LOT NUMBER:** MPFACHIFES0623  
**SOLVENT(S):** Methanol/Isopropanol (1%)/Water (<1%)  
**DATE PREPARED:** (mm/dd/yyyy) 06/19/2023  
**LAST TESTED:** (mm/dd/yyyy) 06/20/2023  
**EXPIRY DATE:** (mm/dd/yyyy) 06/20/2026  
**RECOMMENDED STORAGE:** Refrigerate ampoule

#### DESCRIPTION:

MPFAC-HIF-ES is a solution/mixture of ten mass-labelled (<sup>13</sup>C) perfluoroalkylcarboxylic acids (C<sub>4</sub>-C<sub>12</sub>, C<sub>14</sub>), three mass-labelled (<sup>13</sup>C) perfluoroalkanesulfonates (C<sub>4</sub>, C<sub>6</sub>, and C<sub>8</sub>), three mass-labelled (one <sup>13</sup>C and two <sup>2</sup>H) perfluoro-1-octanesulfonamides, three mass-labelled (<sup>13</sup>C) fluorotelomer sulfonates (4:2, 6:2, and 8:2), two mass-labelled (<sup>2</sup>H) perfluorooctanesulfonamidoacetic acids, two mass-labelled (<sup>2</sup>H) perfluorooctanesulfonamidoethanols, and mass-labelled (<sup>13</sup>C) hexafluoropropylene oxide dimer acid (<sup>13</sup>C<sub>5</sub>-GenX, M3HFPO-DA). The components and their concentrations are given in Table A.

The individual <sup>13</sup>C-labelled components all have chemical purities >98% and isotopic purities of ≥99%. The individual <sup>2</sup>H-labelled components all have chemical purities >98% and isotopic purities of ≥98%.

#### DOCUMENTATION/ DATA ATTACHED:

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

#### ADDITIONAL INFORMATION:

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

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

MPFACHIFES0623 (1 of 7)  
 rev0

7.9.1  
7

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

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-( <sup>13</sup> C <sub>4</sub> )butanoic acid	MPFBA	2000		1
Perfluoro-n-( <sup>13</sup> C <sub>5</sub> )pentanoic acid	M5PFPeA	1000		2
Perfluoro-n-(1,2,3,4,6- <sup>13</sup> C <sub>6</sub> )hexanoic acid	M5PFHxA	500		5
Perfluoro-n-(1,2,3,4- <sup>13</sup> C <sub>4</sub> )heptanoic acid	M4PFHpA	500		7
Perfluoro-n-( <sup>13</sup> C <sub>8</sub> )octanoic acid	M8PFOA	500		10
Perfluoro-n-( <sup>13</sup> C <sub>9</sub> )nonanoic acid	M9PFNA	250		11
Perfluoro-n-(1,2,3,4,5,6- <sup>13</sup> C <sub>6</sub> )decanoic acid	M6PFDA	250		14
Perfluoro-n-(1,2,3,4,5,6,7- <sup>13</sup> C <sub>7</sub> )undecanoic acid	M7PFUdA	250		18
Perfluoro-n-(1,2- <sup>13</sup> C <sub>2</sub> )dodecanoic acid	MPFDoA	250		19
Perfluoro-n-(1,2- <sup>13</sup> C <sub>2</sub> )tetradecanoic acid	M2PFTeDA	250		24
Perfluoro-1-( <sup>13</sup> C <sub>8</sub> )octanesulfonamide	M8FOSA	500		16
N-Methyl-d <sub>3</sub> -perfluoro-1-octanesulfonamide	d-N-MeFOSA	500		21
N-Ethyl-d <sub>5</sub> -perfluoro-1-octanesulfonamide	d-N-EtFOSA	500		23
N-Methyl-d <sub>3</sub> -perfluoro-1-octanesulfonamidoacetic acid	d3-N-MeFOSAA	1000		15
N-Ethyl-d <sub>5</sub> -perfluoro-1-octanesulfonamidoacetic acid	d5-N-EtFOSAA	1000		17
2-(N-Methyl-d <sub>3</sub> -perfluoro-1-octanesulfonamido)ethan-d <sub>4</sub> -ol	d7-N-MeFOSE	5000		20
2-(N-Ethyl-d <sub>5</sub> -perfluoro-1-octanesulfonamido)ethan-d <sub>4</sub> -ol	d9-N-EtFOSE	5000		22
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)( <sup>13</sup> C <sub>3</sub> )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- <sup>13</sup> C <sub>3</sub> )butanesulfonate	M3PFBS	500	466	3
Sodium perfluoro-1-(1,2,3- <sup>13</sup> C <sub>3</sub> )hexanesulfonate	M3PFHxS	500	474	8
Sodium perfluoro-1-( <sup>13</sup> C <sub>8</sub> )octanesulfonate	M8PFOS	500	479	12
Sodium 1H,1H,2H,2H-perfluoro-(1,2- <sup>13</sup> C <sub>2</sub> )hexanesulfonate	M2-4:2FTS	1000	938	4
Sodium 1H,1H,2H,2H-perfluoro-(1,2- <sup>13</sup> C <sub>2</sub> )octanesulfonate	M2-6:2FTS	1000	951	9
Sodium 1H,1H,2H,2H-perfluoro-(1,2- <sup>13</sup> C <sub>2</sub> )decanesulfonate	M2-8:2FTS	1000	960	13

\* Concentrations have been rounded to three significant figures.

Certified By:   
B.G. Chittim, General Manager

Date: 06/22/2023  
(mm/dd/yyyy)

12030 A-5  
rec'd: 09/18/23



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### MPFAC-HIF-IS

**Mass-Labelled PFAS Injection  
Standard Solution/Mixture**

**PRODUCT CODE:** MPFAC-HIF-IS  
**LOT NUMBER:** MPFACHIFIS0723  
**SOLVENT(S):** Methanol/Water (<1%)  
**DATE PREPARED:** (mm/dd/yyyy) 07/05/2023  
**LAST TESTED:** (mm/dd/yyyy) 07/05/2023  
**EXPIRY DATE:** (mm/dd/yyyy) 07/05/2028  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

#### DESCRIPTION:

MPFAC-HIF-IS is a solution/mixture of five mass-labelled (<sup>13</sup>C) perfluoroalkylcarboxylic acids (C<sub>4</sub>, C<sub>6</sub>, C<sub>8</sub>-C<sub>10</sub>) and two mass-labelled (<sup>18</sup>O and <sup>13</sup>C) perfluoroalkanesulfonates (C<sub>8</sub> and C<sub>9</sub>). The components and their concentrations are given in Table A.

The individual mass-labelled perfluoroalkylcarboxylic acids and perfluoroalkanesulfonates all have chemical purities of >98% and isotopic purities of ≥99% per <sup>13</sup>C or >94% per <sup>18</sup>O.

#### DOCUMENTATION/ DATA ATTACHED:

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

#### ADDITIONAL INFORMATION:

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

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

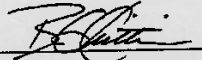
MPFACHIFIS0723 (1 of 5)  
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**Table A: MPFAC-HIF-IS; Components and Concentrations (ng/mL, ± 5% in methanol/water (<1%))**

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

\* Concentrations have been rounded to three significant figures.

Certified By:   
B.G. Chittim, General Manager

Date: 07/07/2023  
(mm/dd/yyyy)



12016 A-B  
rec'd: 09/11/23



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic  
Acid Solution/Mixture

<b><u>PRODUCT CODE:</u></b>	PFAC-MXJ
<b><u>LOT NUMBER:</u></b>	PFACMXJ0323
<b><u>SOLVENT(S):</u></b>	Methanol
<b><u>DATE PREPARED:</u></b> (mm/dd/yyyy)	03/27/2023
<b><u>LAST TESTED:</u></b> (mm/dd/yyyy)	03/28/2023
<b><u>EXPIRY DATE:</u></b> (mm/dd/yyyy)	03/28/2028
<b><u>RECOMMENDED STORAGE:</u></b>	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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PFACMXJ0323 (1 of 5)  
 rev0

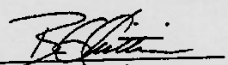
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A:

PFAC-MXJ; Components and Concentrations ( $\mu\text{g/mL}$ ;  $\pm 5\%$  in methanol)

Compound	Acronym	Concentration ( $\mu\text{g/mL}$ )
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By:

  
B.G. Chittim, General Manager

Date: 04/12/2023  
(mm/dd/yyyy)

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

PFACMXJ0323 (3 of 5)  
rev0

7.9.1  
7



**Certified Reference Material CRM**



**CERTIFIED WEIGHT REPORT**

Part Number: 64029  
Lot Number: 062623  
Description: PFOA-DOD  
3 components  
Preparator (P):  
Preparator (C):  
DUTB

Substrate(s):  
Methanol (1 ml) (NIST)  
2-Propanol (2%)  
Lot: 040729 (95%)  
39500 (2%)  
Formulated By: Prakash Chakraborty  
Reviewed By: Aditi Rastogi

Volume(s) shown below were combined and diluted to (ml):  
Note: All assigned values are mean concentrations.

Component	Part Number	Lot Number	Dilution Factor	Initial Vol. (ml)	Uncertainty (1-sigma)	Final Conc. (µg/ml)	Initial Conc. (µg/ml)	Final Uncertainty (1-sigma)	Assigned Value (µg/ml)	Uncertainty (1-sigma)	Assigned Value (µg/ml)	Uncertainty (1-sigma)
1. Perfluoro-n-butanoic acid (PFBA)	95242	110422	0.02	2.00	0.017	50.1	1.00	0.02	375.29-4	N/A	N/A	N/A
2. Perfluoro-pentanoic acid (PFPA)	95243	011722	0.02	2.00	0.017	50.3	1.00	0.02	370.29-3	N/A	N/A	N/A
3. Perfluoro-hexanoic acid (PFHxA)	91197	071023	0.02	2.00	0.017	50.2	1.00	0.02	371.29-4	N/A	N/A	N/A
4. Perfluoro-heptanoic acid (PFHpA)	91197	110622	0.02	2.00	0.017	50.1	1.00	0.02	374.54-3	N/A	N/A	N/A
5. Perfluoro-octanoic acid (PFODA)	95202	09522	0.02	2.00	0.017	50.2	1.00	0.02	374.29-1 (L)	N/A	N/A	Incert. 100%
6. Perfluoro-nonoic acid (PFNA)	95203	110622	0.02	2.00	0.017	50.1	1.00	0.02	374.54-2	N/A	N/A	Incert. 100%
7. Perfluoro-decanoic acid (PFDA)	91195	110622	0.02	2.00	0.017	50.0	1.00	0.02	375.29-4	N/A	N/A	Incert. 100%
8. Perfluoro-undecanoic acid (PFUDA)	95205	092423	0.02	2.00	0.017	50.2	1.00	0.02	375.29-4	N/A	N/A	N/A
9. Perfluoro-dodecanoic acid (PFDDA)	91198	092423	0.02	2.00	0.017	50.1	1.00	0.02	375.29-4	N/A	N/A	N/A
10. Perfluoro-tridecanoic acid (PFTrDA)	95204	110622	0.02	2.00	0.017	50.1	1.00	0.02	375.29-4	N/A	N/A	N/A
11. Perfluoro-tetradecanoic acid (PFTrDA)	95203	030223	0.02	2.00	0.017	50.0	1.00	0.02	374.54-3	N/A	N/A	N/A
12. Perfluoro-1-iodooctadecanoic acid (PF18IDA)	3677	PFSA1221	0.02	2.00	0.017	50.0	1.00	0.02	375.29-4 (L)	N/A	N/A	N/A
13. Methylperfluorooctadecanoic acid (PF18MPOA)	4162	PF18MPOA029	0.02	2.00	0.017	50.0	1.00	0.02	375.29-4 (L)	N/A	N/A	N/A
14. Methylperfluorooctadecanoic acid (PF18MPOA)	4163	PF18MPOA122	0.02	2.00	0.017	50.0	1.00	0.02	375.29-4 (L)	N/A	N/A	N/A
15. Perfluorobutanesulfonic acid (PFBS)	91194	090522	0.02	2.00	0.017	50.2	1.00	0.02	375.29-4	N/A	N/A	N/A
16. Perfluoropentanesulfonic acid (PFPS)	95244	091522	0.02	2.00	0.017	50.1	1.00	0.02	375.29-4	N/A	N/A	N/A
17. Perfluorohexanesulfonic acid (PFHxS)	91196	090923	0.02	2.00	0.017	50.0	1.00	0.02	375.29-4 (L)	N/A	N/A	N/A
18. Perfluoroheptanesulfonic acid (PFHpS)	3672	LFPHS0622	0.02	2.00	0.017	49.8	1.00	0.02	375.29-4 (L)	N/A	N/A	N/A
19. Heptafluoroisobutanesulfonic acid (PFOS)	95201	090923	0.02	2.00	0.017	50.1	1.00	0.02	375.29-4 (L)	N/A	N/A	N/A
20. Perfluoro-1-nonanesulfonic acid (PFNS)	3957	LFPS1122	0.02	2.00	0.017	49.0	1.00	0.02	375.29-4 (L)	N/A	N/A	N/A
21. Perfluoro-1-decanesulfonic acid (PFDS)	3671	LPDS1122	0.02	2.00	0.017	49.2	1.00	0.02	375.29-4 (L)	N/A	N/A	N/A
22. 1H,1H,2H,2H-Perfluorooctane sulfonic acid (4:2 FTBS)	6571	090522	0.02	2.00	0.017	50.2	1.00	0.02	375.29-4 (L)	N/A	N/A	N/A
23. 1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTBS)	6572	091023	0.02	2.00	0.017	50.2	1.00	0.02	375.29-4 (L)	N/A	N/A	N/A
24. 1H,1H,2H,2H-Perfluorodecane sulfonic acid (6:2 FTBS)	3682	PF12S023	0.02	2.00	0.017	49.2	1.00	0.02	375.29-4 (L)	N/A	N/A	N/A
25. 2-Hydroxyperfluoro-2,2,3,3-tetrafluoropropyl sulfonic acid (PFPS-DA)	39565	090523	0.02	2.00	0.017	49.2	1.00	0.02	375.29-4 (L)	N/A	N/A	N/A
26. 1-Chloro-2,2,2-trifluoroethyl sulfonic acid (1:1-CPFOES)	4165	1:1CPFOES0125	0.02	2.00	0.017	49.1	1.00	0.02	375.29-4 (L)	N/A	N/A	N/A
27. 9-Chloro-2,2,2-trifluoro-nonyl sulfonic acid (9:1-CPFOES)	4164	9:1CPFOES0125	0.02	2.00	0.017	49.8	1.00	0.02	375.29-4 (L)	N/A	N/A	N/A
28. Dodecafluoro-3H,4,β-dioxanone sulfonic acid (ADONA)	4163	NADONA0125	0.02	2.00	0.017	47.1	1.00	0.02	375.29-4 (L)	N/A	N/A	N/A
Perfluorooctanoic acid (linear)*	95202	090522	0.02	2.00	0.004	49.6	0.99	0.010	335.67-1 (L)	N/A	N/A	Incert. 100%
Perfluorooctanoic acid (branched isomer)*	95202	090522	0.02	2.00	0.004	0.5	0.01	0.001	335.67-1 (L)	N/A	N/A	Incert. 100%
Perfluorohexanesulfonic acid (linear)*	91196	090923	0.02	2.00	0.017	44.0	0.98	0.02	355.46-4 (L)	N/A	N/A	N/A
Perfluorohexanesulfonic acid (branched isomer)*	91196	090923	0.02	2.00	0.017	0.0	0.12	0.000	355.46-4 (L)	N/A	N/A	N/A
Heptafluoroisobutanesulfonic acid (linear)*	95201	090923	0.02	2.00	0.017	38.1	0.76	0.02	1789.29-1 (L)	N/A	N/A	N/A
Heptafluoroisobutanesulfonic acid (branched isomer)*	95201	090923	0.02	2.00	0.017	7.5	0.15	0.003	1789.29-1 (L)	N/A	N/A	N/A
Heptafluorooctanesulfonic acid (branched isomer)*	95201	090923	0.02	2.00	0.017	4.0	0.08	0.002	1789.29-1 (L)	N/A	N/A	N/A
Heptafluorodecane sulfonic acid (branched isomer)*	95201	090923	0.02	2.00	0.017	0.5	0.010	0.0002	1789.29-1 (L)	N/A	N/A	N/A
M-Methylperfluoro-1-octadecanesulfonic acid (linear)*	4162	PF18MPOA029	0.02	2.00	0.017	38.0	0.72	0.04	2555.31-9 (L)	N/A	N/A	N/A
M-Methylperfluoro-1-octadecanesulfonic acid (branched)*	4162	PF18MPOA029	0.02	2.00	0.017	0.5	0.13	0.011	2555.31-9 (L)	N/A	N/A	N/A
M-Methylperfluoro-1-tetradecanesulfonic acid (linear)*	4162	PF14MPOA029	0.02	2.00	0.017	5.0	0.10	0.005	2555.31-9 (L)	N/A	N/A	N/A
M-Methylperfluoro-1-tetradecanesulfonic acid (branched)*	4162	PF14MPOA029	0.02	2.00	0.017	2.5	0.05	0.0009	2555.31-9 (L)	N/A	N/A	N/A
N-Ethylperfluoro-1-octadecanesulfonic acid (linear)*	4163	PF18EPOA029	0.02	2.00	0.017	36.5	0.73	0.04	2961.59-5 (L)	N/A	N/A	N/A
N-Ethylperfluoro-1-octadecanesulfonic acid (branched)*	4163	PF18EPOA029	0.02	2.00	0.017	7.7	0.15	0.009	2961.59-5 (L)	N/A	N/A	N/A
M-Ethylperfluoro-1-octadecanesulfonic acid (linear)*	4163	PF18EPOA029	0.02	2.00	0.017	5.3	0.11	0.005	2961.59-5 (L)	N/A	N/A	N/A
M-Ethylperfluoro-1-octadecanesulfonic acid (branched)*	4163	PF18EPOA029	0.02	2.00	0.017	0.4	0.007	0.0006	2961.59-5 (L)	N/A	N/A	N/A

\*Qualitative standard (Sect. 3.13) is available for PFOA that contains the linear and branched isomers (Wellington Labs, Cat. No. T-PFOA, or equivalent). This PFOA standard must be purchased and used to identify the retention times of the branched PFOA isomers. The PFOA standard must be used for quantitation (Sect. 12.2) until a quantitative PFOA standard containing the branched and linear isomers becomes commercially available.

\*The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise noted.  
 \*Standard uncertainty is given in parentheses following the certified value. Relative uncertainty is given in percent.  
 \*All standards, after opening amples, should be stored with caps tight and under nitrogen atmosphere to prevent degradation.  
 \*Certification Reference Material (CRM) is a material that is certified by a government agency or an independent organization.  
 NIST Reference Material 1397, U.S. Environmental Protection Agency, Washington, DC, 1994.

12006  
Rec'd: 09/07/23

11994  
rec'd: 08/13/23



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

FPePA (5:3)

**LOT NUMBER:**

FPePA0722

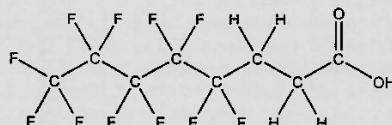
**COMPOUND:**

3-Perfluoropentyl propanoic acid

**STRUCTURE:**

**CAS #:**

914637-49-3



**MOLECULAR FORMULA:**

$C_8H_5F_{11}O_2$

**MOLECULAR WEIGHT:**

342.11

**CONCENTRATION:**

$50.0 \pm 2.5 \mu\text{g/mL}$

**SOLVENT(S):**

Methanol

**CHEMICAL PURITY:**

>98%

**LAST TESTED:** (mm/dd/yyyy)

08/02/2022

**EXPIRY DATE:** (mm/dd/yyyy)

08/02/2027

**RECOMMENDED STORAGE:**

Refrigerate ampoule

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains <0.5% of the unsaturated 5:3 telomer acid ( $C_8H_3F_{11}O_2$ ) as an impurity determined by <sup>1</sup>H NMR.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

**Certified By:**

B.G. Chittim, General Manager

**Date:** 08/10/2022

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA  
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

11992  
rec'd 08/13/23



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic  
Acid Solution/Mixture

**PRODUCT CODE:** PFAC-MXJ  
**LOT NUMBER:** PFACMXJ0323  
**SOLVENT(S):** Methanol  
**DATE PREPARED:** (mm/dd/yyyy) 03/27/2023  
**LAST TESTED:** (mm/dd/yyyy) 03/28/2023  
**EXPIRY DATE:** (mm/dd/yyyy) 03/28/2028  
**RECOMMENDED STORAGE:** Refrigerate ampoule

### DESCRIPTION:

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

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

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:


- See page 2 for further details.

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**Table A: PFAC-MXJ; Components and Concentrations ( $\mu\text{g}/\text{mL}$ ;  $\pm 5\%$  in methanol)**

Compound	Acronym	Concentration ( $\mu\text{g}/\text{mL}$ )
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By:   
B.G. Chittim, General Manager

Date: 04/12/2023  
(mm/dd/yyyy)

11971  
rec'd: 08/22/23



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic  
Acid Solution/Mixture

**PRODUCT CODE:** PFAC-MXJ  
**LOT NUMBER:** PFACMXJ0323  
**SOLVENT(S):** Methanol  
**DATE PREPARED:** (mm/dd/yyyy) 03/27/2023  
**LAST TESTED:** (mm/dd/yyyy) 03/28/2023  
**EXPIRY DATE:** (mm/dd/yyyy) 03/28/2028  
**RECOMMENDED STORAGE:** Refrigerate ampoule

#### DESCRIPTION:

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

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

#### DOCUMENTATION/ DATA ATTACHED:

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

#### ADDITIONAL INFORMATION:

- See page 2 for further details.

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7.9.1  
7

**Table A:**

**PFAC-MXJ; Components and Concentrations (µg/mL; ± 5% in methanol)**

Compound	Acronym	Concentration (µg/mL)
3-Perfluoropropyl propanoic acid	FPrPA	4.00
3-Perfluoropentyl propanoic acid	FPePA	20.0
3-Perfluoroheptyl propanoic acid	FHpPA	20.0

Certified By: \_\_\_\_\_

B.G. Chittim, General Manager

Date: 04/12/2023

(mm/dd/yyyy)



11968  
rec'd 08/22/23



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### PFAC-MXH

Native PFAS  
Solution/Mixture

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

#### DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C<sub>4</sub>-C<sub>14</sub>), eight native perfluoroalkanesulfonates (C<sub>4</sub>, C<sub>6</sub>, C<sub>7</sub>, C<sub>8</sub>, C<sub>10</sub> and C<sub>12</sub> linear; C<sub>6</sub> and C<sub>8</sub> linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide. The components and their concentrations are given in Table A.

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

#### DOCUMENTATION/ DATA ATTACHED:

- Table A: Components and Concentrations of the Solution/Mixture
- Table B: Isomeric Components and Percent Composition of N-MeFOSAA
- Table C: Isomeric Components and Percent Composition of N-EtFOSAA
- Table D: Isomeric Components and Percent Composition of PFHxSK
- Table E: Isomeric Components and Percent Composition of PFOSK
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

#### ADDITIONAL INFORMATION:

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

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

PFACMXH0423 (1 of 11)  
rev1

7.9.1  
7

e A:

**PFAC-MXH; Components and Concentrations**  
(ng/mL, ± 5% in methanol/isopropanol (2%)/water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-butanoic acid	PFBA	4000		1
Perfluoro-n-pentanoic acid	PFPeA	2000		2
Perfluoro-n-hexanoic acid	PFHxA	1000		5
Perfluoro-n-heptanoic acid	PFHpA	1000		7
Perfluoro-n-octanoic acid	PFOA	1000		11
Perfluoro-n-nonanoic acid	PFNA	1000		14
Perfluoro-n-decanoic acid	PFDA	1000		18
Perfluoro-n-undecanoic acid	PFUdA	1000		23
Perfluoro-n-dodecanoic acid	PFDoA	1000		26
Perfluoro-n-tridecanoic acid	PFTTrDA	1000		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1000		29
Perfluoro-1-octanesulfonamide	FOSA	1000		24
N-Methylperfluorooctanesulfonamidoacetic acid <sup>a</sup>	N-MeFOSAA: linear isomer	760		20
	N-MeFOSAA: ∑ branched isomers	240		17
N-Ethylperfluorooctanesulfonamidoacetic acid <sup>b</sup>	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanesulfonate	L-PFBS	1000	887	3
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	1000	941	6
Potassium perfluorohexanesulfonate <sup>c</sup>	PFHxSK: linear isomer	811	741	9
	PFHxSK: ∑ branched isomers	189	173	8
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	1000	953	12
Potassium perfluorooctanesulfonate <sup>d</sup>	PFOSK: linear isomer	788	732	15
	PFOSK: ∑ branched isomers	211	196	13
Sodium perfluoro-1-nonanesulfonate	L-PFNS	1000	962	19
Sodium perfluoro-1-decanesulfonate	L-PFDS	1000	965	25
Sodium perfluoro-1-dodecanesulfonate	L-PFDoS	1000	970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4000	3750	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4000	3800	10
Sodium 1H,1H,2H,2H-perfluorodecanesulfonate	8:2FTS	4000	3840	16

<sup>a</sup> See Table B for percent composition of linear and branched N-MeFOSAA isomers.

<sup>b</sup> See Table C for percent composition of linear and branched N-EtFOSAA isomers.

<sup>c</sup> See Table D for percent composition of linear and branched PFHxSK isomers.

<sup>d</sup> See Table E for percent composition of linear and branched PFOSK isomers.

\* Concentrations have been rounded to three significant figures.

Certified By:   
B.G. Chittim, General Manager

Date: 05/11/2023  
(mm/dd/yyyy)

11948 A-B  
rec'd: 08/09/23



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### PFAC-MXG

Native Perfluoroalkyl Ether Carboxylic  
Acids and Sulfonate Solution/Mixture

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

### DESCRIPTION:

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

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

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

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


PFACMXG1122 (1 of 5)  
rev0

7.9.1  
7

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

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-4-oxapentanoic acid	PF4OPeA	2000		A
Perfluoro-5-oxahexanoic acid	PF5OHxA	2000		B
Perfluoro-3,6-dioxahexanoic acid	3,6-OPFHxA	2000		D
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro(2-ethoxyethane)sulfonate	PFEESA	2000	1780	C

\* Concentrations have been rounded to three significant figures.

Certified By:   
 B.G. Chittim, General Manager

Date: 12/09/2022  
(mm/dd/yyyy)

11947A-B  
rec'd: 08/09/23



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### PFAC-MXF

#### Native Replacement PFAS Solution/Mixture

**PRODUCT CODE:** PFAC-MXF  
**LOT NUMBER:** PFACMXF0323  
**SOLVENT(S):** Methanol / Water (<1%)  
**DATE PREPARED:** (mm/dd/yyyy) 03/23/2023  
**LAST TESTED:** (mm/dd/yyyy) 03/24/2023  
**EXPIRY DATE:** (mm/dd/yyyy) 03/24/2026  
**RECOMMENDED STORAGE:** Refrigerate ampoule

#### DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonanoate (NaDONA), the major and minor components of F-53B (9Cl-PF3ONS and 11Cl-PF3OUdS), and hexafluoropropylene oxide dimer acid (GenX, HFPO-DA). The components and their concentrations are given in Table A.

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

#### DOCUMENTATION/ DATA ATTACHED:

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

#### ADDITIONAL INFORMATION:

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

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

PFACMXF0323 (1 of 5)  
rev0

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**Table A: PFAC-MXF; Components and Concentrations (ng/mL; ± 5% in Methanol/Water (<1%))**

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid	HFPO-DA	2000		A
Sodium dodecafluoro-3H-4,8-dioxanonoate	NaDONA	2000	1890	B
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate	11Cl-PF3OUdS	2000	1890	D

\* Concentrations have been rounded to three significant figures.

Certified By:   
 B.G. Chittim, General Manager

Date: 03/29/2023  
(mm/dd/yyyy)

11946 A-B  
rec'd: 08/09/23



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### PFAC-MXH

Native PFAS  
Solution/Mixture

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

### DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C<sub>4</sub>-C<sub>14</sub>), eight native perfluoroalkanesulfonates (C<sub>4</sub>, C<sub>6</sub>, C<sub>7</sub>, C<sub>8</sub>, C<sub>10</sub> and C<sub>12</sub> linear; C<sub>6</sub> and C<sub>8</sub> 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, ± 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 <sup>a</sup>	N-MeFOSAA: linear isomer	760		20
	N-MeFOSAA: ∑ branched isomers	240		17
N-Ethylperfluorooctanesulfonamidoacetic acid <sup>b</sup>	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanesulfonate	L-PFBS	1000	887	3
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	1000	941	6
Potassium perfluorohexanesulfonate <sup>c</sup>	PFHxSK: linear isomer	811	741	9
	PFHxSK: ∑ branched isomers	189	173	8
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	1000	953	12
Potassium perfluorooctanesulfonate <sup>d</sup>	PFOSK: linear isomer	788	732	15
	PFOSK: ∑ branched isomers	211	196	13
Sodium perfluoro-1-nonanesulfonate	L-PFNS	1000	962	19
Sodium perfluoro-1-decanesulfonate	L-PFDS	1000	965	25
Sodium perfluoro-1-dodecanesulfonate	L-PFDoS	1000	970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4000	3750	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4000	3800	10
Sodium 1H,1H,2H,2H-perfluorodecanesulfonate	8:2FTS	4000	3840	16

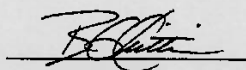
<sup>a</sup> See Table B for percent composition of linear and branched N-MeFOSAA isomers.

<sup>b</sup> See Table C for percent composition of linear and branched N-EtFOSAA isomers.

<sup>c</sup> See Table D for percent composition of linear and branched PFHxSK isomers.

<sup>d</sup> See Table E for percent composition of linear and branched PFOSK isomers.

\* Concentrations have been rounded to three significant figures.

Certified By:   
B.G. Chittim, General Manager

Date: 05/11/2023  
(mm/dd/yyyy)



11796  
rec'd: 05/15/23



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### br-NEtFOSE

2-(N-Ethylperfluorooctanesulfonamido)ethanol  
Isomeric Mix

<b>PRODUCT CODE:</b>	br-NEtFOSE
<b>LOT NUMBER:</b>	brNEtFOSE1022
<b>CONCENTRATION:</b>	50.0 ± 2.5 µg/mL
<b>SOLVENT(S):</b>	Methanol
<b>DATE PREPARED:</b> (mm/dd/yyyy)	09/12/2022
<b>LAST TESTED:</b> (mm/dd/yyyy)	09/12/2022 (HRGC/LRMS) 10/07/2022 (LC/MS)
<b>EXPIRY DATE:</b> (mm/dd/yyyy)	10/07/2027
<b>RECOMMENDED STORAGE:</b>	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 <sup>19</sup>F-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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brNEtFOSE1022 (1 of 7)  
rev1

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11795  
rec'd 10/15/23



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### br-NMeFOSE

2-(N-Methylperfluorooctanesulfonamido)ethanol  
Isomeric Mix

**PRODUCT CODE:** br-NMeFOSE  
**LOT NUMBER:** brNMeFOSE0922  
**CONCENTRATION:** 50.0 ± 2.5 µg/mL  
**SOLVENT(S):** Methanol  
**DATE PREPARED:** (mm/dd/yyyy) 09/02/2022  
**LAST TESTED:** (mm/dd/yyyy) 09/07/2022 (HRGC/LRMS)  
 10/07/2022 (LC/MS)  
**EXPIRY DATE:** (mm/dd/yyyy) 10/07/2027  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

### DESCRIPTION:

The chemical purity has been determined to be ≥98% 2-(N-methylperfluorooctanesulfonamido)ethanol linear and branched isomers. The full name, structure, and percent composition for each of the isomeric components are given in Table A.

### DOCUMENTATION/ DATA ATTACHED:

- Table A: Isomeric Components and Percent Composition by <sup>19</sup>F-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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brNMeFOSE0922 (1 of 7)  
rev1

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11794  
rec'd: 05/15/23



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

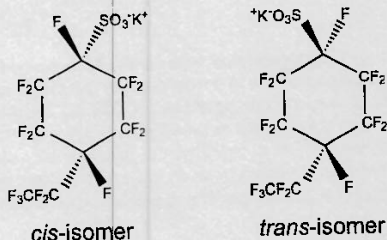
PFECHS

**LOT NUMBER:** PFECHS0223

**COMPOUND:**

Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

**STRUCTURE:**



**CAS #:** 335-24-0

**MOLECULAR FORMULA:**

C<sub>9</sub>F<sub>15</sub>SO<sub>3</sub>K

**MOLECULAR WEIGHT:** 500.22

**CONCENTRATION:**

50.0 ± 2.5 µg/mL (K salt)  
46.2 ± 2.3 µg/mL (PFECHS acid)  
46.1 ± 2.3 µg/mL (PFECHS anion)

**SOLVENT(S):** Methanol

**CHEMICAL PURITY:**

>98%

**LAST TESTED:** (mm/dd/yyyy)

03/14/2023

**EXPIRY DATE:** (mm/dd/yyyy)

03/14/2028

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains a mixture of the *cis/trans* isomers of PFECHS at a ratio of 1:1.27 (*cis:trans*, by <sup>19</sup>F NMR).

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Certified By:

B.G. Chittim, General Manager

Date: 03/16/2023  
(mm/dd/yyyy)

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11762 rec'd: 04/20/23

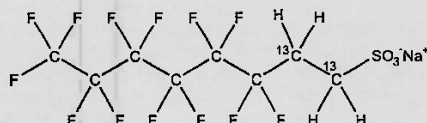


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** M2-6:2FTS **LOT NUMBER:** M262FTS1122  
**COMPOUND:** Sodium 1H,1H,2H,2H-perfluoro-(1,2-<sup>13</sup>C<sub>2</sub>)octanesulfonate

**STRUCTURE:** **CAS #:** 2708218-89-5



**MOLECULAR FORMULA:** <sup>13</sup>C<sub>2</sub><sup>12</sup>C<sub>6</sub>H<sub>4</sub>F<sub>13</sub>SO<sub>3</sub>Na **MOLECULAR WEIGHT:** 452.13  
**CONCENTRATION:** 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol  
47.6 ± 2.4 µg/mL (M2-6:2FTS acid)  
47.5 ± 2.4 µg/mL (M2-6:2FTS anion)  
**CHEMICAL PURITY:** >98% **ISOTOPIC PURITY:** ≥99% <sup>13</sup>C  
**LAST TESTED:** (mm/dd/yyyy) 11/24/2022 (1,2-<sup>13</sup>C<sub>2</sub>)  
**EXPIRY DATE:** (mm/dd/yyyy) 11/24/2027  
**RECOMMENDED STORAGE:** Refrigerate ampoule

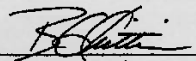
### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 6:2FTS contains 4.22% of <sup>34</sup>S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

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**Certified By:**   
B.G. Chittim, General Manager

**Date:** 12/13/2022  
(mm/dd/yyyy)

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11649 Rec. 02/13/23

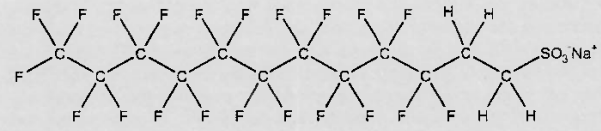


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** 10:2FTS **LOT NUMBER:** 102FTS1122  
**COMPOUND:** Sodium 1H,1H,2H,2H-perfluorododecanesulfonate

**STRUCTURE:** **CAS #:** 108026-35-3



**MOLECULAR FORMULA:** C<sub>12</sub>H<sub>4</sub>F<sub>21</sub>SO<sub>3</sub>Na **MOLECULAR WEIGHT:** 650.18  
**CONCENTRATION:** 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol  
48.3 ± 2.4 µg/mL (10:2FTS acid)  
48.2 ± 2.4 µg/mL (10:2FTS anion)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 12/01/2022  
**EXPIRY DATE:** (mm/dd/yyyy) 12/01/2027  
**RECOMMENDED STORAGE:** Refrigerate ampoule

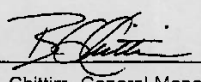
**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

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**Certified By:**  **Date:** 12/09/2022  
B.G. Chittim, General Manager (mm/dd/yyyy)

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Revision# 9, Revised 2020-12-23

102FTS1122 (1 of 4)  
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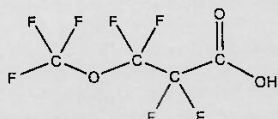
11648 Rec. 02/13/23



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** PF4OPeA **LOT NUMBER:** PF4OPeA0722  
**COMPOUND:** Perfluoro-4-oxapentanoic acid  
**SYNONYM:** Perfluoro-3-methoxypropanoic acid (PFMPA) **CAS #:** 377-73-1  
**STRUCTURE:**



**MOLECULAR FORMULA:** C<sub>4</sub>HF<sub>7</sub>O<sub>3</sub> **MOLECULAR WEIGHT:** 230.04  
**CONCENTRATION:** 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol  
Water (<1%)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 08/02/2022  
**EXPIRY DATE:** (mm/dd/yyyy) 08/02/2027  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

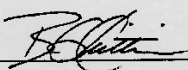
### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

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

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Certified By:   
B.G. Chittim, General Manager

Date: 08/15/2022  
(mm/dd/yyyy)

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11514 rec'd 11/14/22

# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

FHxSA-I

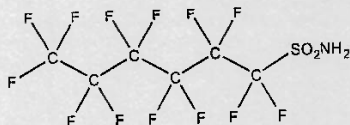
**LOT NUMBER:** FHxSA1221I

**COMPOUND:**

Perfluoro-1-hexanesulfonamide

**CAS #:** 41997-13-1

**STRUCTURE:**



**MOLECULAR FORMULA:**

C<sub>6</sub>H<sub>2</sub>F<sub>13</sub>NO<sub>2</sub>S

**MOLECULAR WEIGHT:** 399.13

**CONCENTRATION:**

50.0 ± 2.5 µg/mL

**SOLVENT(S):**

Isopropanol

**CHEMICAL PURITY:**

>98%

**LAST TESTED:** (mm/dd/yyyy)

12/29/2021

**EXPIRY DATE:** (mm/dd/yyyy)

12/29/2026

**RECOMMENDED STORAGE:**

Refrigerate ampoule

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

Date: 01/10/2022  
(mm/dd/yyyy)

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FHxSA1221I (1 of 4)



1513 rec'd 11/14/22



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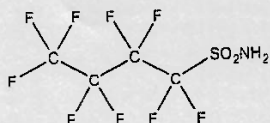
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** FBSA-I  
**COMPOUND:** Perfluoro-1-butanefulfonamide

**LOT NUMBER:** FBSA11211

**STRUCTURE:**

**CAS #:** 30334-69-1



**MOLECULAR FORMULA:** C<sub>4</sub>H<sub>2</sub>F<sub>9</sub>NO<sub>2</sub>S  
**CONCENTRATION:** 50.0 ± 2.5 µg/mL

**MOLECULAR WEIGHT:** 299.11  
**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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# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### br-NEtFOSA

#### N-Ethylperfluorooctanesulfonamide Isomeric Mix

<b><u>PRODUCT CODE:</u></b>	br-NEtFOSA
<b><u>LOT NUMBER:</u></b>	brNEtFOSA0922
<b><u>CONCENTRATION:</u></b>	50.0 ± 2.5 µg/mL
<b><u>SOLVENT(S):</u></b>	Methanol
<b><u>DATE PREPARED:</u></b> (mm/dd/yyyy)	08/23/2022
<b><u>LAST TESTED:</u></b> (mm/dd/yyyy)	10/07/2022
<b><u>EXPIRY DATE:</u></b> (mm/dd/yyyy)	10/07/2027
<b><u>RECOMMENDED STORAGE:</u></b>	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 <sup>19</sup>F-NMR
- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (SIR)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

#### ADDITIONAL INFORMATION:

- See page 2 for further details.
- CAS #: 4151-50-2 (for linear isomer).

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Revision#:9, Revised 2020-12-23

brNEtFOSA0922 (1 of 6)  
rev1

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7

11497



# WELLINGTON LABORATORIES

## 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 <sup>19</sup>F-NMR  
 Figure 1: LC/MS Data (Full Scan and Mass Spectrum)  
 Figure 2: LC/MS Data (SIR)  
 Figure 3: LC/MS/MS Data (Selected MRM Transitions)

#### ADDITIONAL INFORMATION:

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

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 Revision#:9, Revised 2020-12-23

brNMeFOSA0822 (1 of 6)  
 rev1

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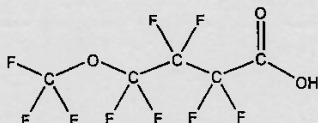
11465



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** PF5OHxA **LOT NUMBER:** PF5OHxA0722  
**COMPOUND:** Perfluoro-5-oxahexanoic acid  
**SYNONYM:** Perfluoro-4-methoxybutanoic acid (PFMBA)  
**STRUCTURE:** **CAS #:** 863090-89-5



**MOLECULAR FORMULA:**  $C_6H_9F_9O_3$  **MOLECULAR WEIGHT:** 280.05  
**CONCENTRATION:**  $50.0 \pm 2.5 \mu\text{g/mL}$  **SOLVENT(S):** Methanol  
 Water (<1%)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 08/02/2022  
**EXPIRY DATE:** (mm/dd/yyyy) 08/02/2027  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

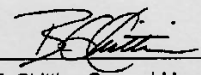
### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

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

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**Certified By:**   
 B.G. Chittim, General Manager

**Date:** 08/26/2022  
 (mm/dd/yyyy)

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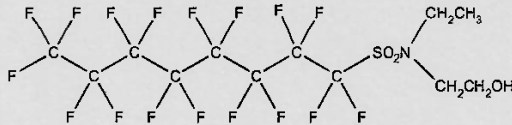
# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

n, 09/27/2

**PRODUCT CODE:** N-EtFOSE-M **LOT NUMBER:** NEtFOSE0622M  
**COMPOUND:** 2-(N-ethylperfluoro-1-octanesulfonamido)ethanol

**STRUCTURE:** **CAS #:** 1691-99-2



11409

**MOLECULAR FORMULA:** C<sub>12</sub>H<sub>16</sub>F<sub>17</sub>NO<sub>3</sub>S **MOLECULAR WEIGHT:** 571.25  
**CONCENTRATION:** 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 05/13/2022 (HRGC/LRMS)  
05/13/2022 (LC/MS)  
**EXPIRY DATE:** (mm/dd/yyyy) 05/13/2027  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

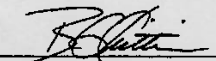
**DOCUMENTATION/ DATA ATTACHED:**

- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

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

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# WELLINGTON LABORATORIES

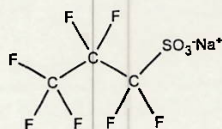
## CERTIFICATE OF ANALYSIS DOCUMENTATION

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

**LOT NUMBER:** LPFPrS0721

**STRUCTURE:**

**CAS #:** Not available



**MOLECULAR FORMULA:** C<sub>3</sub>F<sub>7</sub>SO<sub>3</sub>Na  
**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

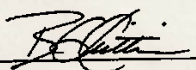
**DOCUMENTATION/ DATA ATTACHED:**

- 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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FPrPA(3:3FTEA) 1116 B



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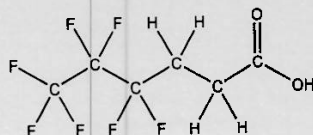
**CERTIFICATE OF ANALYSIS**  
DOCUMENTATION

**PRODUCT CODE:** FPrPA  
**COMPOUND:** 3-Perfluoropropyl propanoic acid

**LOT NUMBER:** FPrPA0122

**STRUCTURE:**

**CAS #:** 356-02-5



**MOLECULAR FORMULA:** C<sub>6</sub>H<sub>5</sub>F<sub>7</sub>O<sub>2</sub>  
**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

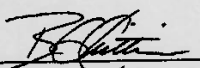
**DOCUMENTATION/ DATA ATTACHED:**

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 (C<sub>6</sub>H<sub>3</sub>F<sub>7</sub>O<sub>2</sub>) as an impurity determined by <sup>19</sup>F NMR.

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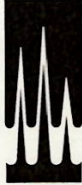
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(mm/dd/yyyy)

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1116 A.B NW

1116B on the back NW



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

FHpPA

**LOT NUMBER:**

FHpPA1020

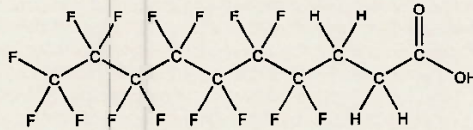
**COMPOUND:**

3-Perfluoroheptyl propanoic acid

**STRUCTURE:**

**CAS #:**

812-70-4



**MOLECULAR FORMULA:**

C<sub>10</sub>H<sub>5</sub>F<sub>15</sub>O<sub>2</sub>

**MOLECULAR WEIGHT:**

442.12

**CONCENTRATION:**

50.0 ± 2.5 µg/mL

**SOLVENT(S):**

Methanol

**CHEMICAL PURITY:**

>98%

**LAST TESTED:** (mm/dd/yyyy)

11/12/2020

**EXPIRY DATE:** (mm/dd/yyyy)

11/12/2025

**RECOMMENDED STORAGE:**

Refrigerate ampoule

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

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**Certified By:**

B.G. Chittim, General Manager

**Date:** 11/27/2020

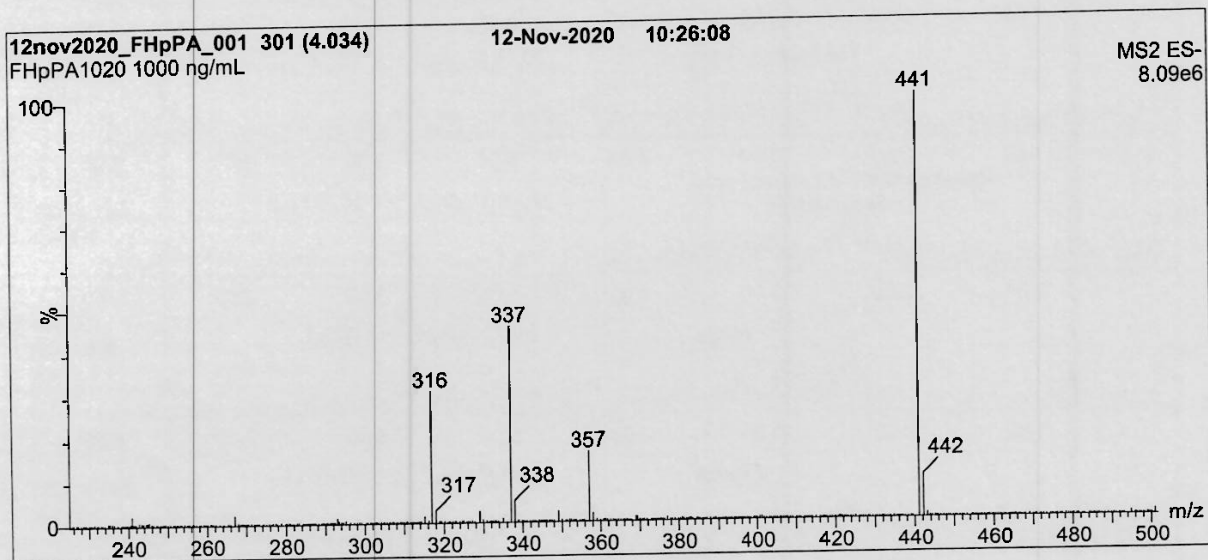
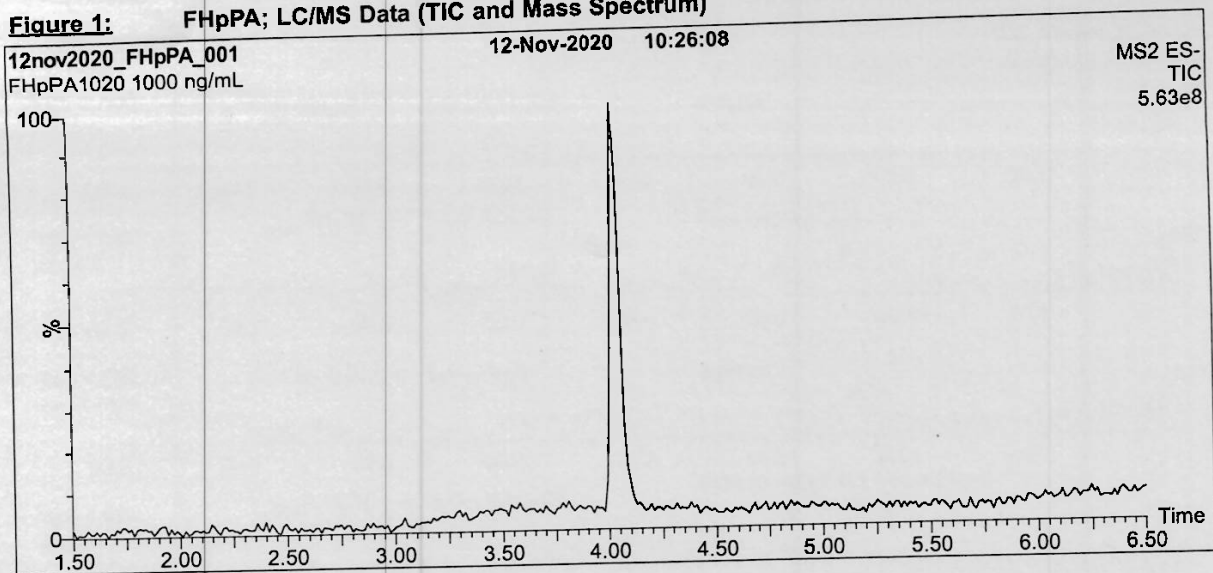
(mm/dd/yyyy)

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Revision#: 8, Revised 2020-09-10

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**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 RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 45% H<sub>2</sub>O / 55% (80:20 MeOH:ACN)  
(both with 10 mM NH<sub>4</sub>OAc 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  $\mu$ 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



# WELLINGTON LABORATORIES

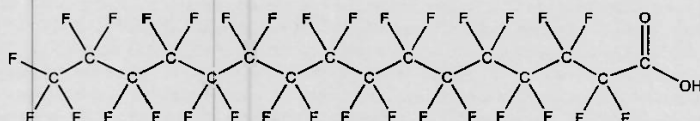
## CERTIFICATE OF ANALYSIS DOCUMENTATION

10842 \* NG 01/18/23

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

**COMPOUND:** Perfluoro-n-hexadecanoic acid

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



**MOLECULAR FORMULA:** C<sub>16</sub>HF<sub>31</sub>O<sub>2</sub> **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

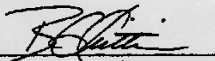
**DOCUMENTATION/ DATA ATTACHED:**

- 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

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# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

PFODA

10847 NS 01/18/23

**LOT NUMBER:**

PFODA0821

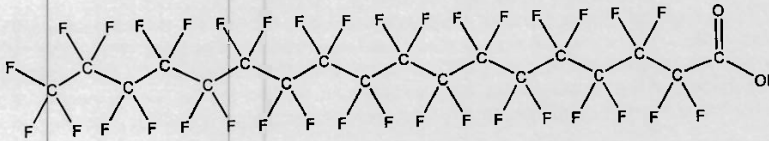
**COMPOUND:**

Perfluoro-n-octadecanoic acid

**STRUCTURE:**

**CAS #:**

16517-11-6



**MOLECULAR FORMULA:**

C<sub>18</sub>H<sub>35</sub>O<sub>2</sub>

**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 ampoules 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.

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Certified By:

B.G. Chittim, General Manager

Date: 09/28/2021

(mm/dd/yyyy)

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**CERTIFICATE OF ANALYSIS**  
DOCUMENTATION

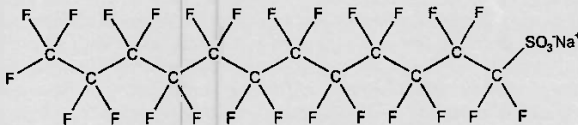
10840

**PRODUCT CODE:** L-PFDoS  
**COMPOUND:** Sodium perfluoro-1-dodecanesulfonate

**LOT NUMBER:** LPFDoS0721

**STRUCTURE:**

**CAS #:** 1260224-54-1



**MOLECULAR FORMULA:** C<sub>12</sub>F<sub>25</sub>SO<sub>3</sub>Na  
**CONCENTRATION:** 50.0 ± 2.5 µg/mL (Na salt)  
48.5 ± 2.4 µg/mL (PFDoS acid)  
48.4 ± 2.4 µg/mL (PFDoS anion)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 07/09/2021  
**EXPIRY DATE:** (mm/dd/yyyy) 07/09/2026  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**MOLECULAR WEIGHT:** 722.14  
**SOLVENT(S):** Methanol

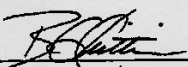
**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains ~0.2% of perfluoro-n-dodecanoic acid (PFDoA).

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**Certified By:**   
B.G. Chittim, General Manager  
**Date:** 07/16/2021  
(mm/dd/yyyy)

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# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

N-EtFOSA-M

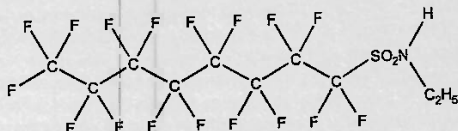
10837

**LOT NUMBER:** NEtFOSA0821M

**COMPOUND:**

N-ethylperfluoro-1-octanesulfonamide

**STRUCTURE:**



**CAS #:** 4151-50-2

**MOLECULAR FORMULA:**

C<sub>10</sub>H<sub>9</sub>F<sub>17</sub>NO<sub>2</sub>S

**MOLECULAR WEIGHT:**

527.20

**CONCENTRATION:**

50.0 ± 2.5 µg/mL

**SOLVENT(S):**

Methanol

**CHEMICAL PURITY:**

>98%

**LAST TESTED:** (mm/dd/yyyy)

08/12/2021

**EXPIRY DATE:** (mm/dd/yyyy)

08/12/2026

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

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**Certified By:**

B.G. Chittim, General Manager

**Date:** 08/16/2021  
(mm/dd/yyyy)

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10765 A-13



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

3,6-OPFHpA

*rec'd  
WPH  
8/20/21*

**LOT NUMBER:**

36OPFHpA0320

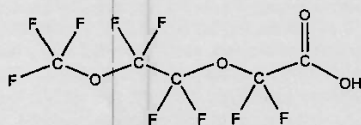
**COMPOUND:**

Perfluoro-3,6-dioxaheptanoic acid

**STRUCTURE:**

**CAS #:**

151772-58-6



**MOLECULAR FORMULA:**

C<sub>6</sub>H<sub>2</sub>F<sub>9</sub>O<sub>4</sub>

**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.

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**Certified By:**

B.G. Chittim, General Manager

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

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11969  
rec'd: 08/22/23



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### PFAC-MXF

Native Replacement PFAS  
Solution/Mixture

**PRODUCT CODE:** PFAC-MXF  
**LOT NUMBER:** PFACMXF0323  
**SOLVENT(S):** Methanol / Water (<1%)  
**DATE PREPARED:** (mm/dd/yyyy) 03/23/2023  
**LAST TESTED:** (mm/dd/yyyy) 03/24/2023  
**EXPIRY DATE:** (mm/dd/yyyy) 03/24/2026  
**RECOMMENDED STORAGE:** Refrigerate ampoule

### DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonanoate (NaDONA), the major and minor components of F-53B (9CI-PF3ONS and 11CI-PF3OUdS), and hexafluoropropylene oxide dimer acid (GenX, HFPO-DA). The components and their concentrations are given in Table A.

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

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

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

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**Tab A:**

**PFAC-MXF; Components and Concentrations (ng/mL; ± 5% in Methanol/Water (<1%))**

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid	HFPO-DA	2000		A
Sodium dodecafluoro-3H-4,8-dioxananoate	NaDONA	2000	1890	B
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate	11Cl-PF3OUdS	2000	1890	D

\* Concentrations have been rounded to three significant figures.

Certified By:   
B.G. Chittim, General Manager

Date: 03/29/2023  
(mm/dd/yyyy)

