

The results set forth herein are provided by SGS North America Inc.

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Automated Report

Technical Report for

AECOM, INC.

N6274223F0104 RH Fire Suppression System

60697810

SGS Job Number: FC3042

Sampling Date: 02/27/23



Report to:

AECOM, Inc
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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.

Norm Farmer
Technical Director

Client Service contact: Elvin Kumar 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001)
DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177),
AL, AK, AR, CT, IA, KY, MA, MI, MS, ND, NH, NV, OK, OR, IL, UT, VT, WA, WI, WV

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Test results relate only to samples analyzed.

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Sample Summary

AECOM, INC.

Job No: FC3042

N6274223F0104 RH Fire Suppression System
Project No: 60697810

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC3042-1	02/27/23	12:35 OS	02/28/23	AQ	Ground Water	AF-RHMW06-WGN01LF-2302W4
FC3042-2	02/27/23	10:45 OS	02/28/23	AQ	Ground Water	AF-RHMW04-WGN01LF-2302W4

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, INC.

Job No: FC3042

Site: N6274223F0104 RH Fire Suppression System

Report Date: 3/6/2023 11:07:45 AM

On 02/28/2023, 2 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4.2 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC3042 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: OP95682

Sample(s) FC3034-2MS, FC3034-2MSD were used as the QC samples indicated.

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

Narrative prepared by:

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

Summary of Hits

Job Number: FC3042
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 02/27/23



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
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FC3042-1	AF-RHMW06-WGN01LF-2302W4					
	Perfluoroheptanoic acid	0.65 J	4.4	0.88	ng/l	EPA DRAFT 1633

FC3042-2 AF-RHMW04-WGN01LF-2302W4

No hits reported in this sample.

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

Page 1 of 3

Client Sample ID:	AF-RHMW06-WGN01LF-2302W4		
Lab Sample ID:	FC3042-1	Date Sampled:	02/27/23
Matrix:	AQ - Ground Water	Date Received:	02/28/23
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	4Q41597.D	1	03/02/23 17:53	MV	03/01/23 09:30	OP95682	S4Q595
Run #2							

Run #	Initial Volume	Final Volume
Run #1	570 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	3.5 U	18	3.5	1.7	ng/l	
2706-90-3	Perfluoropentanoic acid	1.8 U	8.8	1.8	0.82	ng/l	
307-24-4	Perfluorohexanoic acid	0.88 U	4.4	0.88	0.44	ng/l	
375-85-9	Perfluoroheptanoic acid	0.65	4.4	0.88	0.44	ng/l	J
335-67-1	Perfluorooctanoic acid	0.88 U	4.4	0.88	0.44	ng/l	
375-95-1	Perfluorononanoic acid	1.8 U	4.4	1.8	0.54	ng/l	
335-76-2	Perfluorodecanoic acid	0.88 U	4.4	0.88	0.44	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	4.4	1.8	0.53	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	4.4	1.8	0.53	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	4.4	1.8	0.74	ng/l	
376-06-7	Perfluorotetradecanoic acid	0.88 U	4.4	0.88	0.44	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	0.88 U	4.4	0.88	0.44	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.5 U	4.4	3.5	0.98	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.8 U	4.4	1.8	0.61	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	0.88 U	4.4	0.88	0.44	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.8 U	4.4	1.8	0.47	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.8 U	4.4	1.8	0.50	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	4.4	1.8	0.56	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.5 U	4.4	3.5	1.0	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.0 U	18	7.0	2.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.0 U	18	7.0	3.0	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.0 U	18	7.0	3.6	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.8 U	4.4	1.8	0.59	ng/l	
31506-32-8	MeFOSA	1.8 U	4.4	1.8	0.88	ng/l	
4151-50-2	EtFOSA	1.8 U	4.4	1.8	0.88	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW06-WGN01LF-2302W4		
Lab Sample ID:	FC3042-1	Date Sampled:	02/27/23
Matrix:	AQ - Ground Water	Date Received:	02/28/23
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	3.5 U	4.4	3.5	0.88	ng/l	
2991-50-6	EtFOSAA	3.5 U	4.4	3.5	1.2	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	8.8 U	44	8.8	3.8	ng/l	
1691-99-2	EtFOSE	18 U	44	18	6.5	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	3.5 U	18	3.5	0.88	ng/l	
919005-14-4	ADONA	3.5 U	18	3.5	1.6	ng/l	
377-73-1	PFMPA	1.8 U	8.8	1.8	0.88	ng/l	
863090-89-5	PFMBA	3.5 U	8.8	3.5	1.0	ng/l	
151772-58-6	NFDHA	3.5 U	8.8	3.5	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.5 U	18	3.5	1.2	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.5 U	18	3.5	1.5	ng/l	
113507-82-7	PFEESA	1.8 U	8.8	1.8	0.68	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	8.8 U	22	8.8	4.0	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	18 U	110	18	7.7	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	18 U	110	18	6.9	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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	13C4-PFBA	110%		20-150%
	13C5-PFPeA	107%		20-150%
	13C5-PFHxA	113%		20-150%
	13C4-PFHpA	115%		20-150%
	13C8-PFOA	102%		20-150%
	13C9-PFNA	99%		20-150%
	13C6-PFDA	101%		20-150%
	13C7-PFUnDA	92%		20-150%
	13C2-PFDoDA	92%		20-150%
	13C2-PFTeDA	82%		20-150%
	13C3-PFBS	101%		20-150%
	13C3-PFHxS	103%		20-150%

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

Report of Analysis

Client Sample ID:	AF-RHMW06-WGN01LF-2302W4	
Lab Sample ID:	FC3042-1	Date Sampled: 02/27/23
Matrix:	AQ - Ground Water	Date Received: 02/28/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids: n/a
Project:	N6274223F0104 RH Fire Suppression System	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	96%		20-150%
	13C8-FOSA	97%		20-150%
	d3-MeFOSA	101%		20-150%
	d5-EtFOSA	103%		20-150%
	d3-MeFOSAA	99%		20-150%
	d5-EtFOSAA	93%		20-150%
	d7-MeFOSE	100%		20-150%
	d9-EtFOSE	105%		20-150%
	13C2-4:2FTS	100%		20-150%
	13C2-6:2FTS	107%		20-150%
	13C2-8:2FTS	105%		20-150%
	13C3-HFPO-DA	97%		20-150%

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

SGS North America Inc.

Report of Analysis

Page 1 of 3

Client Sample ID:	AF-RHMW04-WGN01LF-2302W4		
Lab Sample ID:	FC3042-2	Date Sampled:	02/27/23
Matrix:	AQ - Ground Water	Date Received:	02/28/23
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	4Q41598.D	1	03/02/23 18:07	MV	03/01/23 09:30	OP95682	S4Q595
Run #2							

Run #	Initial Volume	Final Volume
Run #1	570 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	3.5 U	18	3.5	1.7	ng/l	
2706-90-3	Perfluoropentanoic acid	1.8 U	8.8	1.8	0.82	ng/l	
307-24-4	Perfluorohexanoic acid	0.88 U	4.4	0.88	0.44	ng/l	
375-85-9	Perfluoroheptanoic acid	0.88 U	4.4	0.88	0.44	ng/l	
335-67-1	Perfluorooctanoic acid	0.88 U	4.4	0.88	0.44	ng/l	
375-95-1	Perfluorononanoic acid	1.8 U	4.4	1.8	0.54	ng/l	
335-76-2	Perfluorodecanoic acid	0.88 U	4.4	0.88	0.44	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	4.4	1.8	0.53	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	4.4	1.8	0.53	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	4.4	1.8	0.74	ng/l	
376-06-7	Perfluorotetradecanoic acid	0.88 U	4.4	0.88	0.44	ng/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	0.88 U	4.4	0.88	0.44	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.5 U	4.4	3.5	0.98	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.8 U	4.4	1.8	0.61	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	0.88 U	4.4	0.88	0.44	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.8 U	4.4	1.8	0.47	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.8 U	4.4	1.8	0.50	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	4.4	1.8	0.56	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.5 U	4.4	3.5	1.0	ng/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	7.0 U	18	7.0	2.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.0 U	18	7.0	3.0	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.0 U	18	7.0	3.6	ng/l	

PERFLUOROOCCTANE SULFONAMIDES

754-91-6	PFOSA	1.8 U	4.4	1.8	0.59	ng/l	
31506-32-8	MeFOSA	1.8 U	4.4	1.8	0.88	ng/l	
4151-50-2	EtFOSA	1.8 U	4.4	1.8	0.88	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW04-WGN01LF-2302W4		Date Sampled:	02/27/23
Lab Sample ID:	FC3042-2		Date Received:	02/28/23
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	3.5 U	4.4	3.5	0.88	ng/l	
2991-50-6	EtFOSAA	3.5 U	4.4	3.5	1.2	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	8.8 U	44	8.8	3.8	ng/l	
1691-99-2	EtFOSE	18 U	44	18	6.5	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	3.5 U	18	3.5	0.88	ng/l	
919005-14-4	ADONA	3.5 U	18	3.5	1.6	ng/l	
377-73-1	PFMPA	1.8 U	8.8	1.8	0.88	ng/l	
863090-89-5	PFMBA	3.5 U	8.8	3.5	1.0	ng/l	
151772-58-6	NFDHA	3.5 U	8.8	3.5	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.5 U	18	3.5	1.2	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.5 U	18	3.5	1.5	ng/l	
113507-82-7	PFEESA	1.8 U	8.8	1.8	0.68	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	8.8 U	22	8.8	4.0	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	18 U	110	18	7.7	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	18 U	110	18	6.9	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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	13C4-PFBA	114%		20-150%
	13C5-PFPeA	113%		20-150%
	13C5-PFHxA	115%		20-150%
	13C4-PFHpA	119%		20-150%
	13C8-PFOA	107%		20-150%
	13C9-PFNA	105%		20-150%
	13C6-PFDA	114%		20-150%
	13C7-PFUnDA	104%		20-150%
	13C2-PFDoDA	99%		20-150%
	13C2-PFTeDA	80%		20-150%
	13C3-PFBS	104%		20-150%
	13C3-PFHxS	106%		20-150%

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 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.2
4

Report of Analysis

Client Sample ID:	AF-RHMW04-WGN01LF-2302W4		Date Sampled:	02/27/23
Lab Sample ID:	FC3042-2		Date Received:	02/28/23
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	105%		20-150%
	13C8-FOSA	111%		20-150%
	d3-MeFOSA	106%		20-150%
	d5-EtFOSA	101%		20-150%
	d3-MeFOSAA	108%		20-150%
	d5-EtFOSAA	105%		20-150%
	d7-MeFOSE	105%		20-150%
	d9-EtFOSE	108%		20-150%
	13C2-4:2FTS	109%		20-150%
	13C2-6:2FTS	114%		20-150%
	13C2-8:2FTS	111%		20-150%
	13C3-HFPO-DA	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

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

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



Chain of Custody

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

Client / Reporting Information		Project Information		SGS - ORLANDO Quote #										SKIFF #			
Company Name: AECOM		Project Name: N6274223F0104 RH Fire Suppression System		<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">PFAS EPA Draft 1633</div> <div style="text-align: center;"> <p><i>OK</i></p> <p>2/27/23</p> </div> </div>										Matrix Codes 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 # 60697810															
Project Manager: Watson Tanji Email: watson.tanji@aecom.com		Fax #															
Sampler(s) Name(s) (Printed) Sampler 1: <i>Olivia Shively</i> Sampler 2: <i>Olivia Shively</i>		Client Purchase Order #															
SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH-ZnAc	DI WATER	MEDIH	PFAS EPA Draft 1633	LAB USE ONLY
1	AF-RHMW06-WGN01LF-2302W4	2/27/23	12:35	AJ, OS, MD	GW	3			X							X	
<div style="display: flex; justify-content: space-between;"> <div>INITIAL ASSESSMENT</div> <div><i>PA</i></div> </div>																	
<div style="display: flex; justify-content: space-between;"> <div>LABEL VERIFICATION</div> <div><i>OK</i> 2/27/23</div> </div>																	
Turnaround Time (Business days)				Data Deliverable Information				Comments / Remarks									
10 Day (Business) 7 Day <input checked="" type="checkbox"/> 5 Day 3 Day RUSH 2 Day RUSH 1 Day RUSH Other		Approved By: / Date:		<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S				EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW United AWP 016-51279682									
Rush T/A Data Available VIA Email or Lablink				Sample Custody must be documented below each time samples change possession, including courier delivery.													
Relinquished by Sampler/Affiliation		Date Time:		Received By/Affiliation		Relinquished By/Affiliation		Date Time:		Received By/Affiliation		Relinquished By/Affiliation		Date Time:		Received By/Affiliation	
<i>Olivia Shively/Aecom</i>		2/27/23		<i>Olivia Shively/Aecom</i>		<i>Olivia Shively/Aecom</i>		2/27/23		<i>Olivia Shively/Aecom</i>		<i>Olivia Shively/Aecom</i>		2/27/23		<i>Olivia Shively/Aecom</i>	
5		6		7		8		9		10		11		12		13	
Lab Use Only : Cooler Temperature (s) Celsius (corrected): <i>4.0</i>																	
http://www.sgs.com/en/terms-and-conditions																	

PFAS_COCs_ALL.xls Rev 031318



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

FC3042
SGS - ORLANDO JOB #:

COC #: 2302W4AFSG08
PAGE 1 OF 1

Client / Reporting Information		Project Information		SGS - ORLANDO Quote #		SKIFF #										
Company Name: AECOM		Project Name: N6274223F0104 RH Fire Suppression System		Analytical Information		Matrix Codes										
Address: 1001 Bishop St. ste 1600		Street		<div style="text-align: center;">OSL 2/27/23</div>		DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe										
City: Honolulu State: HI Zip: 96813		City: Honolulu State: Hawaii														
Project Contact: Katie Abbott Email: katie.abbott@aecom.com		Project # 60697810														
Project Manager: Watson Tanji Email: watson.tanji@aecom.com		Fax #														
Phone #: 303-796-4624 / 808-954-4512		Client Purchase Order #		PFAS EPA Draft: 1633		LAB USE ONLY										
Sampler(s) Name(s) (Printed) Sampler 1: <i>Murphy Dept</i> Sampler 2: <i>Olivia Shively</i>																
SGS Orlando Sample #	Field ID / Point of Collection	DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NOISE	HCl	NACH	PHOS	PEROX	PEROX	PEROX	DI WATER	MESH
2	AF-RHMW04-WGN01LF-2302W4	2/27/23	1045	Murphy, OS	GW	3	X									
Turnaround Time (Business days)		Data Deliverable Information		Comments / Remarks												
10 Day (Business) Approved By: / Date: 7 Day <input checked="" type="checkbox"/> 5 Day 3 Day RUSH 2 Day RUSH 1 Day RUSH Other Rush T/A Data Available VIA Email or Lablink		<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S		EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW United AWB 016-51279082												
Sample Custody must be documented below each time samples change possession, including courier delivery.																
Relinquished by Sampler/Affiliation <i>Olivia Shively/Aecom</i>	Date Time: 2/27/23	Received By/Affiliation <i>[Signature] Aecom</i>	Relinquished By/Affiliation <i>[Signature] Aecom</i>	Date Time: 2/27/23	Received By/Affiliation <i>[Signature]</i>											
Relinquished by/Affiliation	Date Time:	Received By/Affiliation	Relinquished By/Affiliation	Date Time:	Received By/Affiliation <i>[Signature] 2/27/23</i>											
5		6	7		8											

PFAS_COCs_ALL.xls Rev 031318



SGS Sample Receipt Summary

Job Number: FC3042

Client: AECOM

Project: N6274223F0104 RH Fire Suppression System

Date / Time Received: 2/28/2023 12:30:00 PM

Delivery Method: United Cargo/Airspace

Airbill #'s: United Cargo AWB #: 016-51279082

Therm ID: IR 1;

Therm CF: 0.2;

of Coolers: 1

Cooler Temps (Raw Measured) °C: Cooler 1: (4.0);

Cooler Temps (Corrected) °C: Cooler 1: (4.2);

Cooler Information

Y or N

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

Trip Blank Information

Y or N N/A

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

Sample Information

Y or N N/A

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

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____
 Test Strip Lot #: pH 0-3 230315
 Residual Chlorine Test Strip Lot #: _____

Number of 5035 Field Kits: _____
 pH 10-12 219813A

Number of Lab Filtered Metals: _____
 Other: (Specify) _____

Comments

SM001
Rev. Date 05/24/17

Technician: NATHANS

Date: 2/28/2023 12:30:00 P

Reviewer: CD

Date: 3/1/2023

FC3042: Chain of Custody

Page 3 of 3

QC Evaluation: DOD QSM5.x Limits

Job Number: FC3042
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 02/27/23

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

* Sample used for QC is not from job FC3042

5.2
5

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Instrument Blank

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q595-IBLK	4Q41588.D	1	03/02/23	MV	n/a	n/a	S4Q595

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3042-1, FC3042-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.020	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.010	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0050	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0050	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	0.00058	0.0050	0.00050	ug/l	J
375-95-1	Perfluorononanoic acid	ND	0.0050	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0050	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0050	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0050	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0050	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0050	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0050	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0050	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0050	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0050	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0050	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0050	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	0.0050	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0050	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0050	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	0.050	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.050	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.020	0.0010	ug/l	
919005-14-4	ADONA	ND	0.020	0.0019	ug/l	
377-73-1	PFMPA	ND	0.010	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.010	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.010	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.020	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.020	0.0018	ug/l	

Instrument Blank

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q595-IBLK	4Q41588.D	1	03/02/23	MV	n/a	n/a	S4Q595

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3042-1, FC3042-2

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.010	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.025	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.13	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.13	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	97% 20-150%
	13C5-PFPeA	104% 20-150%
	13C5-PFHxA	98% 20-150%
	13C4-PFHpA	106% 20-150%
	13C8-PFOA	104% 20-150%
	13C9-PFNA	103% 20-150%
	13C6-PFDA	98% 20-150%
	13C7-PFUnDA	100% 20-150%
	13C2-PFDoDA	101% 20-150%
	13C2-PFTeDA	89% 20-150%
	13C3-PFBS	106% 20-150%
	13C3-PFHxS	100% 20-150%
	13C8-PFOS	97% 20-150%
	13C8-FOSA	100% 20-150%
	d3-MeFOSA	107% 20-150%
	d5-EtFOSA	109% 20-150%
	d3-MeFOSAA	88% 20-150%
	d5-EtFOSAA	97% 20-150%
	d7-MeFOSE	110% 20-150%
	d9-EtFOSE	110% 20-150%
	13C2-4:2FTS	100% 20-150%
	13C2-6:2FTS	97% 20-150%
	13C2-8:2FTS	97% 20-150%
	13C3-HFPO-DA	92% 20-150%

Method Blank Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95682-MB	4Q41596.D	1	03/02/23	MV	03/01/23	OP95682	S4Q595

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3042-1, FC3042-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.020	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.010	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0050	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0050	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0050	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0050	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0050	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0050	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0050	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0050	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0050	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0050	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0050	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0050	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0050	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0050	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0050	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	0.0050	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0050	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0050	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	0.050	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.050	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.020	0.0010	ug/l	
919005-14-4	ADONA	ND	0.020	0.0019	ug/l	
377-73-1	PFMPA	ND	0.010	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.010	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.010	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.020	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.020	0.0018	ug/l	

Method Blank Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95682-MB	4Q41596.D	1	03/02/23	MV	03/01/23	OP95682	S4Q595

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3042-1, FC3042-2

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.010	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.025	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.13	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.13	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	111% 20-150%
	13C5-PFPeA	113% 20-150%
	13C5-PFHxA	111% 20-150%
	13C4-PFHpA	116% 20-150%
	13C8-PFOA	108% 20-150%
	13C9-PFNA	104% 20-150%
	13C6-PFDA	106% 20-150%
	13C7-PFUnDA	105% 20-150%
	13C2-PFDoDA	100% 20-150%
	13C2-PFTeDA	88% 20-150%
	13C3-PFBS	108% 20-150%
	13C3-PFHxS	112% 20-150%
	13C8-PFOS	101% 20-150%
	13C8-FOSA	99% 20-150%
	d3-MeFOSA	98% 20-150%
	d5-EtFOSA	94% 20-150%
	d3-MeFOSAA	102% 20-150%
	d5-EtFOSAA	96% 20-150%
	d7-MeFOSE	101% 20-150%
	d9-EtFOSE	108% 20-150%
	13C2-4:2FTS	110% 20-150%
	13C2-6:2FTS	111% 20-150%
	13C2-8:2FTS	117% 20-150%
	13C3-HFPO-DA	99% 20-150%

Continuing Calibration Blank

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q595-ICCB	4Q41601.D	1	03/02/23	MV	n/a	n/a	S4Q595

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP95682-MS, OP95682-MSD

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.020	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.010	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0050	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0050	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0050	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0050	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0050	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0050	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0050	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0050	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0050	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0050	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0050	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0050	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0050	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0050	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0050	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	0.0050	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0050	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0050	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	0.050	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.050	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.020	0.0010	ug/l	
919005-14-4	ADONA	ND	0.020	0.0019	ug/l	
377-73-1	PFMPA	ND	0.010	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.010	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.010	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.020	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.020	0.0018	ug/l	

Continuing Calibration Blank

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q595-ICCB	4Q41601.D	1	03/02/23	MV	n/a	n/a	S4Q595

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP95682-MS, OP95682-MSD

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.010	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.025	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.13	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.13	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101% 20-150%
	13C5-PFPeA	97% 20-150%
	13C5-PFHxA	101% 20-150%
	13C4-PFHpA	104% 20-150%
	13C8-PFOA	100% 20-150%
	13C9-PFNA	98% 20-150%
	13C6-PFDA	102% 20-150%
	13C7-PFUnDA	105% 20-150%
	13C2-PFDoDA	106% 20-150%
	13C2-PFTeDA	100% 20-150%
	13C3-PFBS	100% 20-150%
	13C3-PFHxS	99% 20-150%
	13C8-PFOS	97% 20-150%
	13C8-FOSA	103% 20-150%
	d3-MeFOSA	105% 20-150%
	d5-EtFOSA	106% 20-150%
	d3-MeFOSAA	97% 20-150%
	d5-EtFOSAA	103% 20-150%
	d7-MeFOSE	109% 20-150%
	d9-EtFOSE	108% 20-150%
	13C2-4:2FTS	100% 20-150%
	13C2-6:2FTS	113% 20-150%
	13C2-8:2FTS	107% 20-150%
	13C3-HFPO-DA	84% 20-150%

Blank Spike Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95682-LLBS	4Q41595.D	1	03/02/23	MV	03/01/23	OP95682	S4Q595

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3042-1, FC3042-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.04	0.0411	103	40-150
2706-90-3	Perfluoropentanoic acid	0.02	0.0210	105	40-150
307-24-4	Perfluorohexanoic acid	0.01	0.0101	101	40-150
375-85-9	Perfluoroheptanoic acid	0.01	0.0105	105	40-150
335-67-1	Perfluorooctanoic acid	0.01	0.0107	107	40-150
375-95-1	Perfluorononanoic acid	0.01	0.0105	105	40-150
335-76-2	Perfluorodecanoic acid	0.01	0.0098	98	40-150
2058-94-8	Perfluoroundecanoic acid	0.01	0.0109	109	40-150
307-55-1	Perfluorododecanoic acid	0.01	0.0106	106	40-150
72629-94-8	Perfluorotridecanoic acid	0.01	0.0114	114	40-150
376-06-7	Perfluorotetradecanoic acid	0.01	0.0113	113	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00887	0.0091	103	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00941	0.0107	114	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00914	0.0086	94	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00953	0.0098	103	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00928	0.0092	99	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00962	0.0077	80	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00965	0.0083	86	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0097	0.0079	81	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0375	0.0439	117	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.038	0.0405	107	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0384	0.0440	115	40-150
754-91-6	PFOSA	0.01	0.0103	103	40-150
31506-32-8	MeFOSA	0.01	0.0095	95	40-150
4151-50-2	EtFOSA	0.01	0.0101	101	40-150
2355-31-9	MeFOSAA	0.01	0.0109	109	40-150
2991-50-6	EtFOSAA	0.01	0.0120	120	40-150
24448-09-7	MeFOSE	0.1	0.108	108	40-150
1691-99-2	EtFOSE	0.1	0.103	103	40-150
13252-13-6	HFPO-DA (GenX)	0.04	0.0422	106	40-150
919005-14-4	ADONA	0.0378	0.0479	127	40-150
377-73-1	PFMPA	0.02	0.0200	100	40-150
863090-89-5	PFMBA	0.02	0.0206	103	40-150
151772-58-6	NFDHA	0.02	0.0195	98	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0374	0.0387	103	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0378	0.0351	93	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95682-LLBS	4Q41595.D	1	03/02/23	MV	03/01/23	OP95682	S4Q595

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3042-1, FC3042-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0178	0.0182	102	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.05	0.0464	93	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.25	0.284	114	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.25	0.262	105	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	114%	20-150%
	13C5-PFPeA	114%	20-150%
	13C5-PFHxA	115%	20-150%
	13C4-PFHpA	120%	20-150%
	13C8-PFOA	107%	20-150%
	13C9-PFNA	99%	20-150%
	13C6-PFDA	99%	20-150%
	13C7-PFUnDA	84%	20-150%
	13C2-PFDoDA	76%	20-150%
	13C2-PFTeDA	72%	20-150%
	13C3-PFBS	111%	20-150%
	13C3-PFHxS	111%	20-150%
	13C8-PFOS	98%	20-150%
	13C8-FOSA	104%	20-150%
	d3-MeFOSA	96%	20-150%
	d5-EtFOSA	93%	20-150%
	d3-MeFOSAA	92%	20-150%
	d5-EtFOSAA	88%	20-150%
	d7-MeFOSE	94%	20-150%
	d9-EtFOSE	98%	20-150%
	13C2-4:2FTS	114%	20-150%
	13C2-6:2FTS	112%	20-150%
	13C2-8:2FTS	99%	20-150%
	13C3-HFPO-DA	101%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95682-BS	4Q41594.D	1	03/02/23	MV	03/01/23	OP95682	S4Q595

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3042-1, FC3042-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.108	108	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0553	111	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0261	104	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0290	116	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0273	109	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0295	118	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0271	108	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0290	116	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0280	112	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0294	118	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0275	110	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0236	106	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0270	115	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0242	106	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0274	115	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0244	105	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0250	104	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0261	108	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0250	103	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.102	109	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.111	117	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.115	120	40-150
754-91-6	PFOSA	0.025	0.0276	110	40-150
31506-32-8	MeFOSA	0.025	0.0246	98	40-150
4151-50-2	EtFOSA	0.025	0.0251	100	40-150
2355-31-9	MeFOSAA	0.025	0.0260	104	40-150
2991-50-6	EtFOSAA	0.025	0.0309	124	40-150
24448-09-7	MeFOSE	0.25	0.283	113	40-150
1691-99-2	EtFOSE	0.25	0.271	108	40-150
13252-13-6	HFPO-DA (GenX)	0.1	0.112	112	40-150
919005-14-4	ADONA	0.0945	0.120	127	40-150
377-73-1	PFMPA	0.05	0.0526	105	40-150
863090-89-5	PFMBA	0.05	0.0550	110	40-150
151772-58-6	NFDHA	0.05	0.0577	115	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0935	0.117	125	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0945	0.121	128	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95682-BS	4Q41594.D	1	03/02/23	MV	03/01/23	OP95682	S4Q595

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3042-1, FC3042-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0498	112	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.130	104	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.763	122	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.737	118	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	108%	20-150%
	13C5-PFPeA	107%	20-150%
	13C5-PFHxA	106%	20-150%
	13C4-PFHpA	113%	20-150%
	13C8-PFOA	106%	20-150%
	13C9-PFNA	102%	20-150%
	13C6-PFDA	109%	20-150%
	13C7-PFUnDA	103%	20-150%
	13C2-PFDoDA	107%	20-150%
	13C2-PFTeDA	93%	20-150%
	13C3-PFBS	99%	20-150%
	13C3-PFHxS	102%	20-150%
	13C8-PFOS	93%	20-150%
	13C8-FOSA	96%	20-150%
	d3-MeFOSA	104%	20-150%
	d5-EtFOSA	95%	20-150%
	d3-MeFOSAA	95%	20-150%
	d5-EtFOSAA	95%	20-150%
	d7-MeFOSE	92%	20-150%
	d9-EtFOSE	98%	20-150%
	13C2-4:2FTS	103%	20-150%
	13C2-6:2FTS	98%	20-150%
	13C2-8:2FTS	96%	20-150%
	13C3-HFPO-DA	99%	20-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95682-MS	4Q41603.D	1	03/02/23	MV	03/01/23	OP95682	S4Q595
OP95682-MSD	4Q41604.D	1	03/02/23	MV	03/01/23	OP95682	S4Q595
FC3034-2	4Q41602.D	1	03/02/23	MV	03/01/23	OP95682	S4Q595

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3042-1, FC3042-2

CAS No.	Compound	FC3034-2 ug/l	Spike Q	ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
375-22-4	Perfluorobutanoic acid	0.0173	J	0.0877	0.109	105	0.0877	0.112	108	3	40-150/30
2706-90-3	Perfluoropentanoic acid	0.0029	J	0.0439	0.0515	111	0.0439	0.0538	116	4	40-150/30
307-24-4	Perfluorohexanoic acid	0.0045	U	0.0219	0.0220	100	0.0219	0.0231	105	5	40-150/30
375-85-9	Perfluoroheptanoic acid	0.0045	U	0.0219	0.0243	111	0.0219	0.0248	113	2	40-150/30
335-67-1	Perfluorooctanoic acid	0.0045	U	0.0219	0.0230	105	0.0219	0.0250	114	8	40-150/30
375-95-1	Perfluorononanoic acid	0.0045	U	0.0219	0.0240	109	0.0219	0.0247	113	3	40-150/30
335-76-2	Perfluorodecanoic acid	0.0045	U	0.0219	0.0244	111	0.0219	0.0224	102	9	40-150/30
2058-94-8	Perfluoroundecanoic acid	0.0045	U	0.0219	0.0245	112	0.0219	0.0247	113	1	40-150/30
307-55-1	Perfluorododecanoic acid	0.0045	U	0.0219	0.0254	116	0.0219	0.0245	112	4	40-150/30
72629-94-8	Perfluorotridecanoic acid	0.0045	U	0.0219	0.0257	117	0.0219	0.0252	115	2	40-150/30
376-06-7	Perfluorotetradecanoic acid	0.0045	U	0.0219	0.0244	111	0.0219	0.0255	116	4	40-150/30
375-73-5	Perfluorobutanesulfonic acid	0.0045	U	0.0195	0.0209	107	0.0195	0.0213	110	2	40-150/30
2706-91-4	Perfluoropentanesulfonic acid	0.0045	U	0.0206	0.0229	111	0.0206	0.0238	115	4	40-150/30
355-46-4	Perfluorohexanesulfonic acid	0.0045	U	0.02	0.0206	103	0.02	0.0217	108	5	40-150/30
375-92-8	Perfluoroheptanesulfonic acid	0.0045	U	0.0209	0.0216	103	0.0209	0.0225	108	4	40-150/30
1763-23-1	Perfluorooctanesulfonic acid	0.0045	U	0.0204	0.0201	99	0.0204	0.0200	98	0	40-150/30
68259-12-1	Perfluorononanesulfonic acid	0.0045	U	0.0211	0.0216	102	0.0211	0.0207	98	4	40-150/30
335-77-3	Perfluorodecanesulfonic acid	0.0045	U	0.0212	0.0224	106	0.0212	0.0219	103	2	40-150/30
79780-39-5	Perfluorododecanesulfonic aci	0.0045	U	0.0213	0.0210	99	0.0213	0.0212	100	1	40-150/30
757124-72-44:2	Fluorotelomer sulfonate	0.018	U	0.0822	0.0954	116	0.0822	0.102	124	7	40-150/30
27619-97-2	6:2 Fluorotelomer sulfonate	0.018	U	0.0833	0.0885	106	0.0833	0.0948	114	7	40-150/30
39108-34-4	8:2 Fluorotelomer sulfonate	0.018	U	0.0842	0.103	122	0.0842	0.0924	110	11	40-150/30
754-91-6	PFOSA	0.00063	J	0.0219	0.0223	99	0.0219	0.0238	106	7	40-150/30
31506-32-8	MeFOSA	0.0045	U	0.0219	0.0208	95	0.0219	0.0240	109	14	40-150/30
4151-50-2	EtFOSA	0.0045	U	0.0219	0.0216	98	0.0219	0.0224	102	4	40-150/30
2355-31-9	MeFOSAA	0.0045	U	0.0219	0.0241	110	0.0219	0.0229	104	5	40-150/30
2991-50-6	EtFOSAA	0.0045	U	0.0219	0.0254	116	0.0219	0.0273	124	7	40-150/30
24448-09-7	MeFOSE	0.045	U	0.219	0.232	106	0.219	0.249	114	7	40-150/30
1691-99-2	EtFOSE	0.045	U	0.219	0.241	110	0.219	0.245	112	2	40-150/30
13252-13-6	HFPO-DA (GenX)	0.018	U	0.0877	0.0962	110	0.0877	0.104	119	8	40-150/30
919005-14-4	ADONA	0.018	U	0.0829	0.109	131	0.0829	0.116	140	6	40-150/30
377-73-1	PFMPA	0.0091	U	0.0439	0.0477	109	0.0439	0.0496	113	4	40-150/30
863090-89-5	PFMBA	0.0091	U	0.0439	0.0481	110	0.0439	0.0500	114	4	40-150/30
151772-58-6	NFDHA	0.0091	U	0.0439	0.0510	116	0.0439	0.0520	119	2	40-150/30
756426-58-19	Cl-PF3ONS (F-53B Major)	0.018	U	0.082	0.102	124	0.082	0.101	123	1	40-150/30
763051-92-911	Cl-PF3OUdS (F-53B Minor)	0.018	U	0.0829	0.103	124	0.0829	0.103	124	0	40-150/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP95682-MS	4Q41603.D	1	03/02/23	MV	03/01/23	OP95682	S4Q595
OP95682-MSD	4Q41604.D	1	03/02/23	MV	03/01/23	OP95682	S4Q595
FC3034-2	4Q41602.D	1	03/02/23	MV	03/01/23	OP95682	S4Q595

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC3042-1, FC3042-2

CAS No.	Compound	FC3034-2 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
113507-82-7	PFEESA	0.0091 U	0.039	0.0426	109	0.039	0.0429	110	1	40-150/30
356-02-5	3:3 Fluorotelomer carboxylate	0.023 U	0.11	0.107	98	0.11	0.111	101	4	40-150/30
914637-49-35:3	Fluorotelomer carboxylate	0.11 U	0.548	0.645	118	0.548	0.666	121	3	40-150/30
812-70-4	7:3 Fluorotelomer carboxylate	0.11 U	0.548	0.633	115	0.548	0.654	119	3	40-150/30

CAS No.	ID Standard Recoveries	MS	MSD	FC3034-2	Limits
	13C4-PFBA	113%	113%	112%	20-150%
	13C5-PFPeA	107%	109%	109%	20-150%
	13C5-PFHxA	110%	113%	112%	20-150%
	13C4-PFHpA	116%	122%	118%	20-150%
	13C8-PFOA	110%	109%	110%	20-150%
	13C9-PFNA	109%	102%	100%	20-150%
	13C6-PFDA	103%	111%	105%	20-150%
	13C7-PFU _n DA	103%	105%	90%	20-150%
	13C2-PFD _o DA	93%	100%	87%	20-150%
	13C2-PFT _e DA	90%	89%	80%	20-150%
	13C3-PFBS	102%	103%	109%	20-150%
	13C3-PFHxS	104%	103%	108%	20-150%
	13C8-PFOS	97%	102%	96%	20-150%
	13C8-FOSA	105%	103%	104%	20-150%
	d3-MeFOSA	101%	101%		20-150%
	d5-EtFOSA	89%	98%		20-150%
	d3-MeFOSAA	99%	105%	93%	20-150%
	d5-EtFOSAA	99%	97%	92%	20-150%
	d7-MeFOSE	100%	100%		20-150%
	d9-EtFOSE	102%	104%		20-150%
	13C2-4:2FTS	105%	99%	112%	20-150%
	13C2-6:2FTS	113%	103%	108%	20-150%
	13C2-8:2FTS	98%	111%	105%	20-150%
	13C3-HFPO-DA	98%	99%		20-150%

* = Outside of Control Limits.

Injection Standard Area Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q595-CC589	Injection Date:	03/02/23
Lab File ID:	4Q41589.D	Injection Time:	15:07
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Initial Cal ^b	67359	3.10	51491	5.56	40778	7.09	21078	7.63	15586	8.13
Check Std ^c	82816	3.21	62106	5.50	47159	6.96	26009	7.48	18376	7.96
Upper Limit ^d	134718	3.61	102982	5.90	81556	7.36	42156	7.88	31172	8.36
Lower Limit ^e	20208	2.81	15447	5.10	12233	6.56	6323	7.08	4676	7.56

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	DF ^a
FC2899-4	73510	3.50	50630	5.62	41390	7.01	21390	7.52	15670	7.97	10
OP95660-MS	71500	3.21	52540	5.51	39990	6.98	19590	7.50	15690	7.96	10
OP95660-MSD	70500	3.22	52470	5.52	38280	6.99	19870	7.50	16860	7.96	10
OP95682-BS	69504	3.22	50824	5.52	40161	6.99	20514	7.50	14652	7.96	1
OP95682-LLBS	65925	3.22	47934	5.52	36869	6.98	19771	7.50	14620	7.96	1
OP95682-MB	67400	3.21	48525	5.52	38507	6.99	19982	7.50	14577	7.97	1
FC3042-1	72233	3.23	51833	5.52	41658	6.99	21386	7.51	15782	7.98	1
FC3042-2	69305	3.22	48544	5.52	38853	7.00	19869	7.52	14467	7.98	1
ZZZZZZ	68745	3.24	48361	5.50	39321	7.00	19668	7.51	15729	7.98	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q589-ICC589 4Q41235.D 02/24/23 16:44. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -70 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 = -70% of initial standard area; Retention time -0.4 minutes of check standard.

6.4.1
6

Injection Standard Area Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q595-CC589	Injection Date:	03/02/23
Lab File ID:	4Q41589.D	Injection Time:	15:07
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	5323	7.20	10319	8.28
Check Std ^c	6139	7.08	11518	8.11
Upper Limit ^d	10646	7.48	20638	8.51
Lower Limit ^e	1597	6.68	3096	7.71

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
FC2899-4	5410	7.13	10980	8.12	10
OP95660-MS	4780	7.09	11630	8.11	10
OP95660-MSD	4990	7.10	9800	8.11	10
OP95682-BS	5277	7.10	10630	8.11	1
OP95682-LLBS	4669	7.09	9448	8.11	1
OP95682-MB	4880	7.09	9995	8.12	1
FC3042-1	5324	7.10	10556	8.13	1
FC3042-2	5115	7.12	9518	8.14	1
ZZZZZZ	4817	7.10	9691	8.13	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q589-ICC589 4Q41235.D 02/24/23 16:44. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -70 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 = -70% of initial standard area; Retention time -0.4 minutes of check standard.

Injection Standard Area Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q595-CC589	Injection Date:	03/02/23
Lab File ID:	4Q41600.D	Injection Time:	18:35
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Initial Cal ^b	67359	3.10	51491	5.56	40778	7.09	21078	7.63	15586	8.13
Check Std ^c	86193	3.19	65477	5.51	51245	6.99	26425	7.50	19423	7.97
Upper Limit ^d	134718	3.59	102982	5.91	81556	7.39	42156	7.90	31172	8.37
Lower Limit ^e	20208	2.79	15447	5.11	12233	6.59	6323	7.10	4676	7.57

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	DF ^a
S4Q595-ICCB	90868	3.23	67508	5.51	52728	6.99	26842	7.51	19495	7.97	1
FC3034-2	73438	3.25	50926	5.51	41218	6.99	21304	7.51	15452	7.96	1
OP95682-MS	69350	3.24	49488	5.51	38963	6.99	19985	7.51	15120	7.98	1
OP95682-MSD	69534	3.25	48270	5.52	38631	7.00	20946	7.52	14679	7.98	1
ZZZZZZ	69311	3.23	49224	5.52	38646	7.00	19765	7.52	14899	7.99	1
ZZZZZZ	68350	3.23	45473	5.52	37952	7.01	19889	7.51	14553	7.97	1
ZZZZZZ	65895	3.22	44143	5.52	37628	7.00	18776	7.50	13152	7.96	1
ZZZZZZ	51861	3.22	46557	5.49	36853	7.00	19721	7.52	14363	7.98	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q589-ICC589 4Q41235.D 02/24/23 16:44. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -70 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 = -70% of initial standard area; Retention time -0.4 minutes of check standard.

Injection Standard Area Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q595-CC589	Injection Date:	03/02/23
Lab File ID:	4Q41600.D	Injection Time:	18:35
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	5323	7.20	10319	8.28
Check Std ^c	6501	7.09	12515	8.12
Upper Limit ^d	10646	7.49	20638	8.52
Lower Limit ^e	1597	6.69	3096	7.72

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
S4Q595-ICCB	6596	7.10	12599	8.12	1
FC3034-2	5099	7.10	10523	8.11	1
OP95682-MS	5144	7.10	10295	8.13	1
OP95682-MSD	5263	7.12	10082	8.13	1
ZZZZZZ	5045	7.12	9729	8.14	1
ZZZZZZ	4665	7.13	10181	8.12	1
ZZZZZZ	4673	7.12	9170	8.11	1
ZZZZZZ	4828	7.12	9508	8.13	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S4Q589-ICC589 4Q41235.D 02/24/23 16:44. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -70 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 = -70% of initial standard area; Retention time -0.4 minutes of check standard.

TDCA Retention Time Check

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q589-RT	Injection Date:	02/24/23
Lab File ID:	4Q41229.D	Injection Time:	15:17
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.268	--	--
TDCA	6.785	1.483	1.000
TCDCA	6.623	1.645	1.000
TUDCA	5.792	2.476	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
S4Q589-IC589	4Q41231.D	02/24/23	15:47	00:30	Mass Calibration Verification
S4Q589-IC589	4Q41232.D	02/24/23	16:01	00:44	Initial cal 1
S4Q589-IC589	4Q41233.D	02/24/23	16:16	00:59	Initial cal 2
S4Q589-IC589	4Q41234.D	02/24/23	16:30	01:13	Initial cal 3
S4Q589-ICC589	4Q41235.D	02/24/23	16:44	01:27	Initial cal 4
S4Q589-IC589	4Q41236.D	02/24/23	16:58	01:41	Initial cal 5
S4Q589-IC589	4Q41237.D	02/24/23	17:15	01:58	Initial cal 6
S4Q589-IC589	4Q41238.D	02/24/23	17:29	02:12	Initial cal 7
S4Q589-IC589	4Q41239.D	02/24/23	17:43	02:26	Initial cal 8
S4Q589-IBLK	4Q41240.D	02/24/23	17:57	02:40	Instrument Blank
S4Q589-IBLK	4Q41240.D	02/24/23	17:57	02:40	Instrument Blank
S4Q589-ICV589	4Q41241.D	02/24/23	18:11	02:54	Initial cal verification 20
S4Q589-ICV589	4Q41242.D	02/24/23	18:25	03:08	Initial cal verification 20
S4Q589-CC589	4Q41243.D	02/24/23	18:39	03:22	Continuing cal 4
S4Q589-CC589	4Q41244.D	02/24/23	18:53	03:36	Continuing cal 1.0LL
OP95578-BS	4Q41245.D	02/24/23	19:07	03:50	Blank Spike
OP95578-LLBS	4Q41246.D	02/24/23	19:21	04:04	Blank Spike
OP95578-MB	4Q41247.D	02/24/23	19:35	04:18	Method Blank
ZZZZZZ	4Q41248.D	02/24/23	19:49	04:32	(unrelated sample)
ZZZZZZ	4Q41249.D	02/24/23	20:03	04:46	(unrelated sample)
JD60392-3A	4Q41250.D	02/24/23	20:17	05:00	(used for QC only; not part of job FC3042)
OP95578-MS	4Q41251.D	02/24/23	20:31	05:14	Matrix Spike
OP95578-MSD	4Q41252.D	02/24/23	20:45	05:28	Matrix Spike Duplicate
ZZZZZZ	4Q41253.D	02/24/23	21:00	05:43	(unrelated sample)
ZZZZZZ	4Q41254.D	02/24/23	21:14	05:57	(unrelated sample)
S4Q589-CC589	4Q41255.D	02/24/23	21:28	06:11	Continuing cal 4
S4Q589-CC589	4Q41256.D	02/24/23	21:42	06:25	Continuing cal 1.0LL
S4Q589-ICCB	4Q41257.D	02/24/23	21:56	06:39	Continuing Calibration Blank
S4Q589-ICCB	4Q41257.D	02/24/23	21:56	06:39	Continuing Calibration Blank
OP95517-BS	4Q41258.D	02/24/23	22:10	06:53	Blank Spike
OP95517-LLBS	4Q41259.D	02/24/23	22:24	07:07	Blank Spike
OP95517-MB	4Q41260.D	02/24/23	22:38	07:21	Method Blank
FC2645-1	4Q41261.D	02/24/23	22:52	07:35	(used for QC only; not part of job FC3042)
OP95517-MS	4Q41262.D	02/24/23	23:06	07:49	Matrix Spike

TDCA Retention Time Check

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q589-RT	Injection Date:	02/24/23
Lab File ID:	4Q41229.D	Injection Time:	15:17
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
OP95517-MSD	4Q41263.D	02/24/23	23:20	08:03	Matrix Spike Duplicate
ZZZZZZ	4Q41264.D	02/24/23	23:34	08:17	(unrelated sample)
ZZZZZZ	4Q41265.D	02/24/23	23:48	08:31	(unrelated sample)
ZZZZZZ	4Q41266.D	02/25/23	00:02	08:45	(unrelated sample)
ZZZZZZ	4Q41267.D	02/25/23	00:16	08:59	(unrelated sample)
S4Q589-CC589	4Q41268.D	02/25/23	00:30	09:13	Continuing cal 4
S4Q589-ICCB	4Q41269.D	02/25/23	00:44	09:27	Continuing Calibration Blank
S4Q589-ICCB	4Q41269.D	02/25/23	00:44	09:27	Continuing Calibration Blank
ZZZZZZ	4Q41270.D	02/25/23	00:58	09:41	(unrelated sample)
ZZZZZZ	4Q41271.D	02/25/23	01:12	09:55	(unrelated sample)
ZZZZZZ	4Q41272.D	02/25/23	01:26	10:09	(unrelated sample)
ZZZZZZ	4Q41273.D	02/25/23	01:40	10:23	(unrelated sample)
ZZZZZZ	4Q41274.D	02/25/23	01:55	10:38	(unrelated sample)
ZZZZZZ	4Q41275.D	02/25/23	02:09	10:52	(unrelated sample)
ZZZZZZ	4Q41276.D	02/25/23	02:23	11:06	(unrelated sample)
ZZZZZZ	4Q41277.D	02/25/23	02:37	11:20	(unrelated sample)
ZZZZZZ	4Q41278.D	02/25/23	02:51	11:34	(unrelated sample)
ZZZZZZ	4Q41279.D	02/25/23	03:05	11:48	(unrelated sample)
S4Q589-CC589	4Q41280.D	02/25/23	03:19	12:02	Continuing cal 4
S4Q589-ICCB	4Q41281.D	02/25/23	03:33	12:16	Continuing Calibration Blank
S4Q589-ICCB	4Q41281.D	02/25/23	03:33	12:16	Continuing Calibration Blank
ZZZZZZ	4Q41282.D	02/25/23	03:47	12:30	(unrelated sample)
ZZZZZZ	4Q41283.D	02/25/23	04:01	12:44	(unrelated sample)
ZZZZZZ	4Q41284.D	02/25/23	04:15	12:58	(unrelated sample)
ZZZZZZ	4Q41285.D	02/25/23	04:29	13:12	(unrelated sample)
ZZZZZZ	4Q41286.D	02/25/23	04:43	13:26	(unrelated sample)
ZZZZZZ	4Q41287.D	02/25/23	04:57	13:40	(unrelated sample)
ZZZZZZ	4Q41288.D	02/25/23	05:11	13:54	(unrelated sample)
S4Q589-CC589	4Q41289.D	02/25/23	05:25	14:08	Continuing cal 4
S4Q589-CC589	4Q41290.D	02/25/23	05:39	14:22	Continuing cal 1.0LL
S4Q589-ICCB	4Q41291.D	02/25/23	05:53	14:36	Continuing Calibration Blank
S4Q589-ICCB	4Q41291.D	02/25/23	05:53	14:36	Continuing Calibration Blank
OP95331-BS	4Q41292.D	02/25/23	06:07	14:50	Blank Spike
OP95331-LLBS	4Q41293.D	02/25/23	06:22	15:05	Blank Spike
OP95331-MB	4Q41294.D	02/25/23	06:36	15:19	Method Blank
FC2386-1	4Q41295.D	02/25/23	06:50	15:33	(used for QC only; not part of job FC3042)
OP95331-BS1	4Q41296.D	02/25/23	07:04	15:47	Blank Spike
OP95331-BS2	4Q41297.D	02/25/23	07:18	16:01	Blank Spike
OP95331-BS3	4Q41298.D	02/25/23	07:32	16:15	Blank Spike
ZZZZZZ	4Q41299.D	02/25/23	07:46	16:29	(unrelated sample)
ZZZZZZ	4Q41300.D	02/25/23	08:00	16:43	(unrelated sample)
S4Q589-ECC589	4Q41301.D	02/25/23	08:14	16:57	Ending cal 4
S4Q589-ICCB	4Q41302.D	02/25/23	08:28	17:11	Continuing Calibration Blank

6.5.1

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TDCA Retention Time Check

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q595-RT	Injection Date:	03/02/23
Lab File ID:	4Q41585.D	Injection Time:	14:10
Instrument ID:	GCMS4Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.069	--	--
TDCA	6.623	1.446	1.000
TCDCA	6.449	1.620	1.000
TUDCA	5.643	2.426	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
S4Q595-IBLK	4Q41588.D	03/02/23	14:53	00:43	Instrument Blank
S4Q595-IBLK	4Q41588.D	03/02/23	14:53	00:43	Instrument Blank
S4Q595-CC589	4Q41589.D	03/02/23	15:07	00:57	Continuing cal 4
S4Q595-CC589	4Q41590.D	03/02/23	15:55	01:45	Continuing cal 1.0LL
FC2899-4	4Q41591.D	03/02/23	16:29	02:19	(used for QC only; not part of job FC3042)
OP95660-MS	4Q41592.D	03/02/23	16:43	02:33	Matrix Spike
OP95660-MSD	4Q41593.D	03/02/23	16:57	02:47	Matrix Spike Duplicate
OP95682-BS	4Q41594.D	03/02/23	17:11	03:01	Blank Spike
OP95682-LLBS	4Q41595.D	03/02/23	17:25	03:15	Blank Spike
OP95682-MB	4Q41596.D	03/02/23	17:39	03:29	Method Blank
FC3042-1	4Q41597.D	03/02/23	17:53	03:43	AF-RHMW06-WGN01LF-2302W4
FC3042-2	4Q41598.D	03/02/23	18:07	03:57	AF-RHMW04-WGN01LF-2302W4
ZZZZZ	4Q41599.D	03/02/23	18:21	04:11	(unrelated sample)
S4Q595-CC589	4Q41600.D	03/02/23	18:35	04:25	Continuing cal 4
S4Q595-ICCB	4Q41601.D	03/02/23	18:49	04:39	Continuing Calibration Blank
FC3034-2	4Q41602.D	03/02/23	19:03	04:53	(used for QC only; not part of job FC3042)
OP95682-MS	4Q41603.D	03/02/23	19:17	05:07	Matrix Spike
OP95682-MSD	4Q41604.D	03/02/23	19:31	05:21	Matrix Spike Duplicate
ZZZZZ	4Q41605.D	03/02/23	19:45	05:35	(unrelated sample)
ZZZZZ	4Q41606.D	03/02/23	19:59	05:49	(unrelated sample)
ZZZZZ	4Q41607.D	03/02/23	20:13	06:03	(unrelated sample)
ZZZZZ	4Q41608.D	03/02/23	20:27	06:17	(unrelated sample)
S4Q595-CC589	4Q41609.D	03/02/23	20:41	06:31	Continuing cal 4
S4Q595-ICCB	4Q41610.D	03/02/23	20:55	06:45	Continuing Calibration Blank
OP95684-BS	4Q41611.D	03/02/23	21:09	06:59	Blank Spike
OP95684-LLBS	4Q41612.D	03/02/23	21:23	07:13	Blank Spike
OP95684-MB	4Q41613.D	03/02/23	21:37	07:27	Method Blank
JD60788-1A	4Q41614.D	03/02/23	21:52	07:42	(used for QC only; not part of job FC3042)
OP95684-MS	4Q41615.D	03/02/23	22:06	07:56	Matrix Spike
JD60788-3A	4Q41616.D	03/02/23	22:20	08:10	(used for QC only; not part of job FC3042)
OP95684-DUP	4Q41617.D	03/02/23	22:34	08:24	Duplicate
ZZZZZ	4Q41618.D	03/02/23	22:48	08:38	(unrelated sample)
S4Q595-CC589	4Q41620.D	03/02/23	23:16	09:06	Continuing cal 4
S4Q595-CC589	4Q41621.D	03/02/23	23:30	09:20	Continuing cal 1.0LL

TDCA Retention Time Check

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S4Q595-RT	Injection Date:	03/02/23
Lab File ID:	4Q41585.D	Injection Time:	14:10
Instrument ID:	GCMS4Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q595-ICCB	4Q41622.D	03/02/23	23:44	09:34	Continuing Calibration Blank
S4Q595-ICCB	4Q41622.D	03/02/23	23:44	09:34	Continuing Calibration Blank
OP95683-BS	4Q41623.D	03/02/23	23:58	09:48	Blank Spike
OP95683-LLBS	4Q41624.D	03/03/23	00:12	10:02	Blank Spike
OP95683-MB	4Q41625.D	03/03/23	00:26	10:16	Method Blank
ZZZZZZ	4Q41626.D	03/03/23	00:40	10:30	(unrelated sample)
OP95658-BS	4Q41627.D	03/03/23	00:54	10:44	Blank Spike
OP95658-LLBS	4Q41628.D	03/03/23	01:08	10:58	Blank Spike
OP95658-MB	4Q41629.D	03/03/23	01:22	11:12	Method Blank
FC2978-1	4Q41630.D	03/03/23	01:36	11:26	(used for QC only; not part of job FC3042)
OP95658-MS	4Q41631.D	03/03/23	01:50	11:40	Matrix Spike
OP95658-MSD	4Q41632.D	03/03/23	02:05	11:55	Matrix Spike Duplicate
S4Q595-ECC589	4Q41633.D	03/03/23	02:19	12:09	Ending cal 4
S4Q595-ICCB	4Q41634.D	03/03/23	02:33	12:23	Continuing Calibration Blank
S4Q595-ICCB	4Q41634.D	03/03/23	02:33	12:23	Continuing Calibration Blank

6.5.2

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Ion Ratio Summary

Job Number: FC3042
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q595	Method: EPA DRAFT 1633
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Lab Sample ID	Lab File ID	Ion Ratios PFHpA
S4Q589-ICC589	4Q41235.D	17.4
FC3042-1	4Q41597.D	15.5
FC3042-2	4Q41598.D	

Isotope Dilution Standard Recovery Summary

Job Number: FC3042
 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
FC3042-1	4Q41597.D	110	107	113	115	102	99	101	92
FC3042-2	4Q41598.D	114	113	115	119	107	105	114	104
OP95682-BS	4Q41594.D	108	107	106	113	106	102	109	103
OP95682-LLBS	4Q41595.D	114	114	115	120	107	99	99	84
OP95682-MB	4Q41596.D	111	113	111	116	108	104	106	105
OP95682-MS	4Q41603.D	113	107	110	116	110	109	103	103
OP95682-MSD	4Q41604.D	113	109	113	122	109	102	111	105
S4Q595-IBLK	4Q41588.D	97	104	98	106	104	103	98	100
S4Q595-ICCB	4Q41601.D	101	97	101	104	100	98	102	105

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

6.7.1
6

Isotope Dilution Standard Recovery Summary

Job Number: FC3042
 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
FC3042-1	4Q41597.D	92	82	101	103	96	97	101	103
FC3042-2	4Q41598.D	99	80	104	106	105	111	106	101
OP95682-BS	4Q41594.D	107	93	99	102	93	96	104	95
OP95682-LLBS	4Q41595.D	76	72	111	111	98	104	96	93
OP95682-MB	4Q41596.D	100	88	108	112	101	99	98	94
OP95682-MS	4Q41603.D	93	90	102	104	97	105	101	89
OP95682-MSD	4Q41604.D	100	89	103	103	102	103	101	98
S4Q595-IBLK	4Q41588.D	101	89	106	100	97	100	107	109
S4Q595-ICCB	4Q41601.D	106	100	100	99	97	103	105	106

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: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Method: EPA DRAFT 1633	Matrix: AQ
------------------------	------------

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S17	S18	S19	S20	S21	S22	S23	S24
FC3042-1	4Q41597.D	99	93	100	105	100	107	105	97
FC3042-2	4Q41598.D	108	105	105	108	109	114	111	100
OP95682-BS	4Q41594.D	95	95	92	98	103	98	96	99
OP95682-LLBS	4Q41595.D	92	88	94	98	114	112	99	101
OP95682-MB	4Q41596.D	102	96	101	108	110	111	117	99
OP95682-MS	4Q41603.D	99	99	100	102	105	113	98	98
OP95682-MSD	4Q41604.D	105	97	100	104	99	103	111	99
S4Q595-IBLK	4Q41588.D	88	97	110	110	100	97	97	92
S4Q595-ICCB	4Q41601.D	97	103	109	108	100	113	107	84

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

6.7.1

6

Initial Calibration Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q589-ICC589
 Lab FileID: 4Q41235.D

Initial Calibration Report

Method Path	D:\MassHunter\methods											
Method File	1633_022423_S4Q589.quantmethod.xml											
Batch Name	D:\MassHunter\Data\022423_1633_S4Q589\QuantResults\4q589.batch.bin											
Last Calib Update	2/27/2023 9:40:45 AM											
Level Name	Calibration Files	Curve Fit	1	2	3	4	5	6	8	Avg RF	%RSD	
1	D:\MassHunter\Data\022423_1633_S4Q589\4Q41232.d	Avg RF	0.2261	0.2191	0.2299	0.2237	ISTD	0.2399	0.2522	0.2641	0.2364	6.983
2	D:\MassHunter\Data\022423_1633_S4Q589\4Q41233.d	Avg RF	0.4610	0.4616	0.4941	0.4801	ISTD	0.5226	0.5382	0.5958	0.5076	9.575
3	D:\MassHunter\Data\022423_1633_S4Q589\4Q41234.d	Avg RF	0.0463	0.0466	0.0499	0.0486	ISTD	0.0528	0.0571	0.0659	0.0524	13.396
4	D:\MassHunter\Data\022423_1633_S4Q589\4Q41235.d	Avg RF	0.9506	0.9105	0.9960	0.9867	ISTD	1.0542	1.1087	1.1191	1.0180	7.747
5	D:\MassHunter\Data\022423_1633_S4Q589\4Q41236.d	Avg RF	0.5221	0.5354	0.5750	0.5608	ISTD	0.6072	0.6438	0.6617	0.5866	9.051
6	D:\MassHunter\Data\022423_1633_S4Q589\4Q41237.d	Avg RF	0.0340	0.0306	0.0340	0.0325	ISTD	0.0335	0.0323	0.0262	0.0319	8.692
8	D:\MassHunter\Data\022423_1633_S4Q589\4Q41239.d	Avg RF	0.9071	0.7891	0.8371	0.9026	ISTD	0.9056	0.8937	0.9131	0.8783	5.353
I M4-PFBA		Avg RF	0.5993	0.5734	0.5926	0.5963	ISTD	0.6441	0.6791	0.7046	0.6214	8.910
T PFHxA		Avg RF	0.1194	0.1155	0.1249	0.1236	ISTD	0.1333	0.1382	0.1343	0.1270	6.607
T PFEEA		Avg RF	0.0444	0.0445	0.0476	0.0463	ISTD	0.0504	0.0510	0.0478	0.0474	5.485
T 3:FTCA		Avg RF	1.2478	1.2046	1.2397	1.2718	ISTD	1.3535	1.4458	1.4916	1.3221	8.381
T 7:FTCA		Avg RF	1.1296	1.0858	1.0848	1.1343	ISTD	1.2015	1.2776	1.3153	1.1756	7.822
I M4-PFHpA		Avg RF	0.6865	0.6516	0.6959	0.6817	ISTD	0.6955	0.7913	0.7663	0.7098	7.032
T PFHpA		Avg RF	0.6661	0.6891	0.8019	0.7419	ISTD	0.8067	0.8527	0.8378	0.7709	9.460
I M8-PFOA		Avg RF	0.6254	0.7645	0.6514	0.6450	ISTD	0.6681	0.7470	0.7227	0.6892	7.953
T PFOA		Avg RF	0.7465	0.7984	0.8525	0.8281	ISTD	0.8523	0.9351	0.8925	0.8437	7.279
I M9-PFNA		Avg RF					ISTD					
T PFNA		Avg RF					ISTD					
I M6-PFDA		Avg RF					ISTD					
T PFDA		Avg RF					ISTD					
I M7-PFUnDA		Avg RF					ISTD					
T PFUnDA		Avg RF					ISTD					
I M2-PFDoDA		Avg RF					ISTD					
T PFDoDA		Avg RF					ISTD					

Generated at 9:41 AM on 2/27/2023

Page 1 of 4



Initial Calibration Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q589-ICC589
 Lab FileID: 4Q41235.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	8	Avg RF	%RSD
T PFTfDA	Avg RF	0.8547	1.0469	1.0445	1.0169	1.0367	1.1261	0.9329	1.0084	8.762
I M2-PFTeDA	Avg RF	0.8051	0.8469	0.9045	0.8787	0.9682	1.0390	0.9879	0.9186	9.064
T PFTeDA					ISTD					
I M8-FOSA	Avg RF	0.9280	0.8352	0.9709	0.9336	0.9794	1.0385	1.0228	0.9584	7.113
T FOSA					ISTD					
I M3-PFBS	Avg RF	1.0250	0.9317	0.9252	0.9543	1.0083	1.0545	1.0782	0.9967	6.084
T PFBS					ISTD					
I M3-PFHKS	Avg RF	0.8606	0.7424	0.7482	0.7766	0.8341	0.8606	0.9162	0.8198	8.002
T PFPeS	Avg RF	0.9646	0.7739	0.9070	0.9151	0.9305	0.9824	1.0383	0.9303	8.861
T PFHKS					ISTD					
I M8-PFOS	Avg RF	0.8214	0.6773	0.7285	0.6732	0.7291	0.7552	0.7561	0.7344	6.931
T PFHpS	Avg RF	1.4933	1.1563	1.1585	1.0610	1.0489	1.1068	1.1129	1.1625	13.059
T PFOS	Avg RF	0.4227	0.4026	0.4225	0.3834	0.4188	0.4534	0.5227	0.4323	10.453
T PFNS	Avg RF	0.6120	0.5052	0.5484	0.4913	0.5445	0.5785	0.5986	0.5541	8.204
T PFDS	Avg RF	0.5110	0.4489	0.4847	0.4233	0.4892	0.5025	0.5511	0.4872	8.566
T PFDoDS					ISTD					
I M2-4:2FTS	Avg RF	5.7275	6.3087	7.0924	6.1781	7.1179	7.1547	7.0270	6.6580	8.674
T 4:2FTS					ISTD					
I M2-6:2FTS	Avg RF	3.8191	3.6712	3.7366	3.6570	3.8198	4.2272	3.4456	3.7681	6.344
T 6:2FTS					ISTD					
I M2-8:2FTS	Avg RF	2.3323	2.2794	2.4418	2.2487	2.4266	2.4849	2.0791	2.3275	6.023
T 8:2FTS					ISTD					
I M3-MeFOSAA	Avg RF	0.6961	0.5357	0.6938	0.6599	0.6970	0.7959	0.7968	0.6965	12.728
T MeFOSAA					ISTD					
I M3-HFO-DA	Avg RF	0.7678	0.7346	0.8293	0.7717	0.8471	0.9062	0.8623	0.8170	7.466
T HFO-DA	Avg RF	5.2858	5.2254	5.8079	5.5432	5.9975	6.3167	6.0381	5.7449	7.113
T ADONA	Avg RF	2.6814	2.6571	2.9476	2.8071	3.0577	3.3322	3.0455	2.9327	8.153
T 9CH-PF3ONS	Avg RF	2.2259	2.3316	2.5014	2.4432	2.6123	2.7052	2.3669	2.4552	6.757
T 11C-PF3OUds					ISTD					
I M5-EFOSAA	Avg RF	0.7036	0.7141	0.7858	0.7432	0.8358	0.8150	0.8854	0.7833	8.552
T EfOSAA					ISTD					
I M7-MeFOSE	Avg RF	0.9576	0.9306	0.9945	0.9589	1.0224	1.0853	1.0301	0.9970	5.332
T MeFOSE					ISTD					
I M9-EFOSE	Avg RF	0.8424	0.8145	0.9000	0.8628	0.9247	0.9930	0.9517	0.8984	7.028
T EFOSE					ISTD					

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Initial Calibration Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q589-ICC589
 Lab FileID: 4Q41235.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	8	Avg RF	%RSD
I M5-EFOSA						ISTD				
T EtFOSA	Avg RF	1.0578	0.9271	1.0082	1.0055	0.9782	1.1040	1.1118	1.0275	6.558
I M3-MeFOSA						ISTD				
T MeFOSA	Avg RF	0.8816	0.8661	0.8883	0.9056	0.9310	0.9767	0.9443	0.9134	4.288
I 13C4-PFOS						ISTD				
S d3-MeFOSAA	Linear	0.7171	0.6957	0.7507	0.6857	0.7034	0.7084	0.7033	0.7092	2.927
S 13C8-PFOS	Linear	0.9631	1.0203	1.0133	0.9857	1.0055	1.0294	1.0156	1.0047	2.276
S d5-EFOSAA	Linear	0.5801	0.5892	0.6176	0.5638	0.5670	0.5780	0.5765	0.5818	3.078
S 13C8-FOSA	Linear	1.3182	1.3982	1.4722	1.3272	1.3116	1.3810	1.4930	1.3859	5.321
S d7-MeFOSE	Linear	0.4873	0.4932	0.5000	0.4759	0.4868	0.4877	0.4853	0.4880	1.508
S d3-MeFOSA	Linear	0.6782	0.6614	0.6914	0.6120	0.6607	0.6923	0.7805	0.6824	7.493
S d9-EFOSE	Linear	0.5838	0.5918	0.5989	0.5606	0.5653	0.5768	0.5629	0.5772	2.597
S d5-EFOSA	Linear	0.7593	0.7733	0.7704	0.6976	0.7655	0.7732	0.8300	0.7671	5.031
I 13C3-PFBA						ISTD				
S 13C4-PFBA	Linear	0.8547	0.8735	0.8576	0.8590	0.8542	0.8846	0.8461	0.8614	1.526
I 18O2-PFHxS						ISTD				
S 13C2-4:2FTS	Linear	0.1673	0.1560	0.1488	0.1637	0.1432	0.1359	0.1045	0.1456	14.589
S 13C3-PFBS	Linear	2.3320	2.4322	2.5160	2.4263	2.3964	2.4586	2.2288	2.3986	3.902
S 13C2-6:2FTS	Linear	0.2151	0.2104	0.2152	0.2127	0.2030	0.1647	0.1470	0.1955	14.234
S 13C3-PFHxS	Linear	1.3847	1.4045	1.5049	1.4245	1.3933	1.4027	1.3681	1.4118	3.162
S 13C2-8:2FTS	Linear	0.3516	0.3559	0.3415	0.2911	0.2901	0.3133	0.2737	0.3167	10.465
I 13C4-PFOA						ISTD				
S 13C8-PFOA	Linear	0.8203	0.8400	0.8581	0.8165	0.8210	0.8437	0.8301	0.8328	1.821
I 13C2-PFDA						ISTD				
S 13C6-PFDA	Linear	1.1886	1.1151	1.0715	1.0949	1.0368	1.1326	1.1433	1.1118	4.475
S 13C7-PFUDA	Linear	1.1870	1.1557	1.1690	1.1344	1.0989	1.1430	1.0849	1.1390	3.218
S 13C2-PFDODA	Linear	1.3026	1.3248	1.3365	1.3376	1.2627	1.3624	1.4571	1.3405	4.501
S 13C2-PFTeDA	Linear	1.1504	1.2581	1.2084	1.2030	1.0548	1.1417	1.2270	1.1776	5.763
I 13C5-PFNA						ISTD				
S 13C9-PFNA	Linear	0.8612	0.8248	0.8852	0.8663	0.8950	0.8604	0.9126	0.8722	3.263
I 13C2-PFHxA						ISTD				
S 13C5-PPeA	Linear	0.7234	0.7231	0.7223	0.7022	0.6977	0.6886	0.6605	0.7025	3.303
S 13C5-PFHxA	Linear	1.1069	1.0930	1.1277	1.0764	1.0770	1.0808	1.0790	1.0915	1.777
S 13C3-HPOD-A	Linear	0.1581	0.1565	0.1566	0.1542	0.1527	0.1489	0.1517	0.1541	2.106
S 13C4-PFHpA	Linear	0.5702	0.5582	0.5778	0.5613	0.5590	0.5245	0.5601	0.5587	2.986

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

Initial Calibration Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q589-ICC589
 Lab FileID: 4Q41235.D

Initial Calibration Report

Compounds with Curve fitting not using Avg Response Factor:

Compound	Curve Fit	Curve Fit Formula	%RSE
S 13C4-PFBA	Linear	$y = 0.861390 * x$	
S 13C5-PFPeA	Linear	$y = 0.702548 * x$	
S 13C2-4:2FTS	Linear	$y = 0.145629 * x$	
S 13C3-PFBS	Linear	$y = 2.398603 * x$	
S 13C5-PFHxA	Linear	$y = 1.091530 * x$	
S 13C3-HFPO-DA	Linear	$y = 0.154107 * x$	
S 13C4-PFHpA	Linear	$y = 0.558728 * x$	
S 13C2-6:2FTS	Linear	$y = 0.195462 * x$	
S 13C8-PFOA	Linear	$y = 0.832822 * x$	
S 13C3-PFHxS	Linear	$y = 1.411811 * x$	
S 13C9-PFNA	Linear	$y = 0.872224 * x$	
S 13C2-8:2FTS	Linear	$y = 0.316739 * x$	
S 13C6-PEDA	Linear	$y = 1.111834 * x$	
S d3-MeFOSAA	Linear	$y = 0.709189 * x$	
S 13C8-PFOS	Linear	$y = 1.004709 * x$	
S d5-EFOSAA	Linear	$y = 0.581775 * x$	
S 13C7-PFUInDA	Linear	$y = 1.138990 * x$	
S 13C2-PFDODA	Linear	$y = 1.385921 * x$	
S 13C8-FOSA	Linear	$y = 1.177637 * x$	
S 13C2-PFTeDA	Linear	$y = 0.488014 * x$	
S d7-MeFOSE	Linear	$y = 0.682364 * x$	
S d3-MeFOSA	Linear	$y = 0.577171 * x$	
S d9-EFOSE	Linear	$y = 0.767053 * x$	
S d5-EFOSA	Linear	$y = 0.767053 * x$	

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

Initial Calibration Verification

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q589-ICV589
 Lab FileID: 4Q41241.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\022423_1633_S4Q589\s4q589.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\022423_1633_S4Q589\4Q41232.d
 2:D:\MassHunter\Data\022423_1633_S4Q589\4Q41233.d
 3:D:\MassHunter\Data\022423_1633_S4Q589\4Q41234.d
 4:D:\MassHunter\Data\022423_1633_S4Q589\4Q41235.d
 5:D:\MassHunter\Data\022423_1633_S4Q589\4Q41236.d
 6:D:\MassHunter\Data\022423_1633_S4Q589\4Q41237.d
 8:D:\MassHunter\Data\022423_1633_S4Q589\4Q41239.d

Data File: 4Q41241
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.431	8.6	108.6
13C2-6:2FTS	5.000	5.193	3.9	103.9
13C2-8:2FTS	5.000	5.793	15.9	115.9
13C2-PFDoDA	1.250	1.279	2.3	102.3
13C2-PFTeDA	1.250	1.220	-2.4	97.6
13C3-PFBS	2.500	2.481	-0.8	99.2
13C3-PFHxS	2.500	2.513	0.5	100.5
13C4-PFBA	10.000	9.893	-1.1	98.9
13C4-PFHpA	2.500	2.479	-0.8	99.2
13C5-PFHxA	2.500	2.544	1.8	101.8
13C5-PFPeA	5.000	4.980	-0.4	99.6
13C6-PFDA	1.250	1.257	0.6	100.6
13C7-PFUnDA	1.250	1.252	0.1	100.1
13C8-FOSA	2.500	2.406	-3.8	96.2
13C8-PFOA	2.500	2.521	0.8	100.8
13C8-PFOS	2.500	2.361	-5.6	94.4
13C9-PFNA	1.250	1.253	0.2	100.2
4:2FTS	9.375	9.394	0.2	100.2
6:2FTS	9.500	9.979	5.0	105.0
8:2FTS	9.600	9.176	-4.4	95.6
d3-MeFOSAA	5.000	4.950	-1.0	99.0
EtFOSAA	2.500	2.492	-0.3	99.7
FOSA	2.500	2.520	0.8	100.8
MeFOSAA	2.500	2.562	2.5	102.5
PFBA	10.000	9.977	-0.2	99.8
PFBS	2.218	2.108	-4.9	95.1
PFDA	2.500	2.526	1.0	101.0
PFDoDA	2.500	2.476	-0.9	99.1
PFDS	2.413	2.412	0.0	100.0
PFHpA	2.500	2.545	1.8	101.8
PFHpS	2.383	2.392	0.4	100.4
PFHxA	2.500	2.320	-7.2	92.8
PFHxS	2.285	2.166	-5.2	94.8
PFNA	2.500	2.431	-2.8	97.2
PFNS	2.405	2.298	-4.4	95.6
PFOA	2.500	2.400	-4.0	96.0
PFOS	2.320	2.147	-7.5	92.5
PFPeA	5.000	5.069	1.4	101.4

Initial Calibration Verification

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q589-ICV589
 Lab FileID: 4Q41241.D

PFPeS	2.353	2.325	-1.2	98.8
PFTeDA	2.500	2.564	2.5	102.5
PFTTrDA	2.500	2.524	1.0	101.0
PFUnDA	2.500	2.511	0.4	100.4
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUds	9.450	9.898	4.7	104.7
13C3-HFPO-DA	10.000	9.799	-2.0	98.0
9C1-PF3ONS	9.350	9.247	-1.1	98.9
ADONA	9.450	9.814	3.9	103.9
HFPO-DA	10.000	9.694	-3.1	96.9
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.260	-1.8	98.2
5:3FTCA	62.400	62.872	0.8	100.8
7:3FTCA	62.400	62.017	-0.6	99.4
d3-MeFOSA	2.500	2.477	-0.9	99.1
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.460	-1.6	98.4
EtFOSE	25.000	25.412	1.6	101.6
MeFOSA	2.500	2.370	-5.2	94.8
MeFOSE	25.000	25.653	2.6	102.6
PFDoDS	2.425	2.375	-2.1	97.9
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.927	-1.5	98.5
d7-MeFOSE	25.000	23.962	-4.2	95.8
d9-EtFOSE	25.000	24.235	-3.1	96.9
d5-EtFOSA	2.500	2.399	-4.1	95.9
NFDHA	5.000	4.848	-3.0	97.0
PFMBA	5.000	4.962	-0.8	99.2
PFMPA	5.000	4.911	-1.8	98.2
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.291	-3.6	96.4

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q589-ICV589
 Lab FileID: 4Q41242.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\022423_1633_S4Q589\s4q589.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\022423_1633_S4Q589\4Q41232.d
 2:D:\MassHunter\Data\022423_1633_S4Q589\4Q41233.d
 3:D:\MassHunter\Data\022423_1633_S4Q589\4Q41234.d
 4:D:\MassHunter\Data\022423_1633_S4Q589\4Q41235.d
 5:D:\MassHunter\Data\022423_1633_S4Q589\4Q41236.d
 6:D:\MassHunter\Data\022423_1633_S4Q589\4Q41237.d
 8:D:\MassHunter\Data\022423_1633_S4Q589\4Q41239.d

Data File: 4Q41242

Type : QC

Level : 20

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	4.815	-3.7	96.3
13C2-6:2FTS	5.000	5.143	2.9	102.9
13C2-8:2FTS	5.000	4.912	-1.8	98.2
13C2-PFDoDA	1.250	1.253	0.3	100.3
13C2-PFTeDA	1.250	1.169	-6.5	93.5
13C3-PFBS	2.500	2.458	-1.7	98.3
13C3-PFHxS	2.500	2.329	-6.8	93.2
13C4-PFBA	10.000	9.916	-0.8	99.2
13C4-PFHpA	2.500	2.502	0.1	100.1
13C5-PFHxA	2.500	2.497	-0.1	99.9
13C5-PFPeA	5.000	5.130	2.6	102.6
13C6-PFDA	1.250	1.207	-3.4	96.6
13C7-PFUnDA	1.250	1.272	1.7	101.7
13C8-FOSA	2.500	2.549	2.0	102.0
13C8-PFOA	2.500	2.555	2.2	102.2
13C8-PFOS	2.500	2.458	-1.7	98.3
13C9-PFNA	1.250	1.319	5.5	105.5
4:2FTS	20.000	23.915	19.6	119.6
6:2FTS	20.000	21.583	7.9	107.9
8:2FTS	20.000	23.064	15.3	115.3
d3-MeFOSAA	5.000	5.038	0.8	100.8
EtFOSAA	20.000	22.884	14.4	114.4
FOSA	20.000	22.083	10.4	110.4
MeFOSAA	20.000	22.521	12.6	112.6
PFBA	20.000	20.936	4.7	104.7
PFBS	20.000	21.930	9.6	109.6
PFDA	20.000	22.546	12.7	112.7
PFDoDA	20.000	19.499	-2.5	97.5
PFDS	20.000	22.016	10.1	110.1
PFHpA	20.000	22.887	14.4	114.4
PFHpS	20.000	22.231	11.2	111.2
PFHxA	20.000	21.582	7.9	107.9
PFHxS	20.000	23.306	16.5	116.5
PFNA	20.000	23.382	16.9	116.9
PFNS	20.000	22.048	10.2	110.2
PFOA	20.000	21.350	6.7	106.7
PFOS	20.000	16.898	-15.5	84.5
PFPeA	20.000	23.318	16.6	116.6

Initial Calibration Verification

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q589-ICV589
 Lab FileID: 4Q41242.D

PFPeS	20.000	24.176	20.9	120.9
PFTeDA	20.000	23.848	19.2	119.2
PFTTrDA	20.000	19.921	-0.4	99.6
PFUnDA	20.000	20.930	4.6	104.6
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUds	20.000	23.712	18.6	118.6
13C3-HFPO-DA	10.000	10.239	2.4	102.4
9C1-PF3ONS	20.000	23.340	16.7	116.7
ADONA	20.000	23.714	18.6	118.6
HFPO-DA	20.000	21.917	9.6	109.6
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	20.000	20.385	1.9	101.9
5:3FTCA	20.000	22.231	11.2	111.2
7:3FTCA	20.000	20.162	0.8	100.8
d3-MeFOSA	2.500	2.578	3.1	103.1
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	20.000	20.027	0.1	100.1
EtFOSE	100.000	99.570	-0.4	99.6
MeFOSA	20.000	20.513	2.6	102.6
MeFOSE	100.000	93.839	-6.2	93.8
PFDoDS	20.000	19.278	-3.6	96.4
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.009	0.2	100.2
d7-MeFOSE	25.000	25.834	3.3	103.3
d9-EtFOSE	25.000	25.197	0.8	100.8
d5-EtFOSA	2.500	2.600	4.0	104.0
NFDHA	20.000	20.802	4.0	104.0
PFMBA	20.000	21.405	7.0	107.0
PFMPA	20.000	21.868	9.3	109.3
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	20.000	19.571	-2.1	97.9

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q595-CC589
 Lab FileID: 4Q41589.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\030223_1633_S4Q595\s4q595.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\022423_1633_S4Q589\4Q41232.d
 2:D:\MassHunter\Data\022423_1633_S4Q589\4Q41233.d
 3:D:\MassHunter\Data\022423_1633_S4Q589\4Q41234.d
 4:D:\MassHunter\Data\022423_1633_S4Q589\4Q41235.d
 5:D:\MassHunter\Data\022423_1633_S4Q589\4Q41236.d
 6:D:\MassHunter\Data\022423_1633_S4Q589\4Q41237.d
 8:D:\MassHunter\Data\022423_1633_S4Q589\4Q41239.d

Data File: 4Q41589

Type : QC

Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	4.784	-4.3	95.7
13C2-6:2FTS	5.000	4.759	-4.8	95.2
13C2-8:2FTS	5.000	4.523	-9.5	90.5
13C2-PFDoDA	1.250	1.289	3.1	103.1
13C2-PFTeDA	1.250	1.167	-6.6	93.4
13C3-PFBS	2.500	2.449	-2.0	98.0
13C3-PFHxS	2.500	2.447	-2.1	97.9
13C4-PFBA	10.000	9.587	-4.1	95.9
13C4-PFHpA	2.500	2.655	6.2	106.2
13C5-PFHxA	2.500	2.537	1.5	101.5
13C5-PFPeA	5.000	5.124	2.5	102.5
13C6-PFDA	1.250	1.270	1.6	101.6
13C7-PFUnDA	1.250	1.210	-3.2	96.8
13C8-FOSA	2.500	2.598	3.9	103.9
13C8-PFOA	2.500	2.565	2.6	102.6
13C8-PFOS	2.500	2.560	2.4	102.4
13C9-PFNA	1.250	1.241	-0.7	99.3
4:2FTS	9.375	8.711	-7.1	92.9
6:2FTS	9.500	9.478	-0.2	99.8
8:2FTS	9.600	9.897	3.1	103.1
d3-MeFOSAA	5.000	5.111	2.2	102.2
EtFOSAA	2.500	2.504	0.2	100.2
FOSA	2.500	2.354	-5.8	94.2
MeFOSAA	2.500	2.392	-4.3	95.7
PFBA	10.000	9.376	-6.2	93.8
PFBS	2.218	2.025	-8.7	91.3
PFDA	2.500	2.132	-14.7	85.3
PFDoDA	2.500	2.396	-4.1	95.9
PFDS	2.413	2.265	-6.1	93.9
PFHpA	2.500	2.386	-4.6	95.4
PFHpS	2.383	2.235	-6.2	93.8
PFHxA	2.500	2.189	-12.5	87.5
PFHxS	2.285	2.088	-8.6	91.4
PFNA	2.500	2.192	-12.3	87.7
PFNS	2.405	2.169	-9.8	90.2
PFOA	2.500	2.356	-5.7	94.3
PFOS	2.320	1.977	-14.8	85.2
PFPeA	5.000	4.597	-8.1	91.9

Continuing Calibration Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q595-CC589
 Lab FileID: 4Q41589.D

PFPeS	2.353	2.370	0.7	100.7
PFTeDA	2.500	2.505	0.2	100.2
PFTTrDA	2.500	2.468	-1.3	98.7
PFUnDA	2.500	2.524	1.0	101.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUds	9.450	10.761	13.9	113.9
13C3-HFPO-DA	10.000	9.189	-8.1	91.9
9C1-PF3ONS	9.350	10.151	8.6	108.6
ADONA	9.450	10.242	8.4	108.4
HFPO-DA	10.000	9.888	-1.1	98.9
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	10.784	-13.6	86.4
5:3FTCA	62.400	60.730	-2.7	97.3
7:3FTCA	62.400	60.742	-2.7	97.3
d3-MeFOSA	2.500	2.609	4.4	104.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.348	-6.1	93.9
EtFOSE	25.000	23.774	-4.9	95.1
MeFOSA	2.500	2.552	2.1	102.1
MeFOSE	25.000	24.667	-1.3	98.7
PFDoDS	2.425	2.210	-8.9	91.1
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.831	-3.4	96.6
d7-MeFOSE	25.000	28.748	15.0	115.0
d9-EtFOSE	25.000	28.094	12.4	112.4
d5-EtFOSA	2.500	2.595	3.8	103.8
NFDHA	5.000	4.694	-6.1	93.9
PFMBA	5.000	4.516	-9.7	90.3
PFMPA	5.000	4.275	-14.5	85.5
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.192	-5.8	94.2

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q595-CC589
 Lab FileID: 4Q41590.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\030223_1633_S4Q595\s4q595.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\022423_1633_S4Q589\4Q41232.d
 2:D:\MassHunter\Data\022423_1633_S4Q589\4Q41233.d
 3:D:\MassHunter\Data\022423_1633_S4Q589\4Q41234.d
 4:D:\MassHunter\Data\022423_1633_S4Q589\4Q41235.d
 5:D:\MassHunter\Data\022423_1633_S4Q589\4Q41236.d
 6:D:\MassHunter\Data\022423_1633_S4Q589\4Q41237.d
 8:D:\MassHunter\Data\022423_1633_S4Q589\4Q41239.d

Data File: 4Q41590

Type : QC

Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.120	2.4	102.4
13C2-6:2FTS	5.000	4.590	-8.2	91.8
13C2-8:2FTS	5.000	4.755	-4.9	95.1
13C2-PFDoDA	1.250	1.273	1.9	101.9
13C2-PFTeDA	1.250	1.184	-5.3	94.7
13C3-PFBS	2.500	2.437	-2.5	97.5
13C3-PFHxS	2.500	2.501	0.0	100.0
13C4-PFBA	10.000	9.922	-0.8	99.2
13C4-PFHpA	2.500	2.280	-8.8	91.2
13C5-PFHxA	2.500	2.506	0.2	100.2
13C5-PFPeA	5.000	4.887	-2.3	97.7
13C6-PFDA	1.250	1.208	-3.4	96.6
13C7-PFUnDA	1.250	1.249	-0.1	99.9
13C8-FOSA	2.500	2.623	4.9	104.9
13C8-PFOA	2.500	2.534	1.4	101.4
13C8-PFOS	2.500	2.623	4.9	104.9
13C9-PFNA	1.250	1.233	-1.4	98.6
4:2FTS	0.750	0.589	-21.5	78.5
6:2FTS	0.760	0.656	-13.7	86.3
8:2FTS	0.768	0.668	-13.0	87.0
d3-MeFOSAA	5.000	4.718	-5.6	94.4
EtFOSAA	0.200	0.187	-6.6	93.4
FOSA	0.200	0.194	-3.0	97.0
MeFOSAA	0.200	0.187	-6.6	93.4
PFBA	0.800	0.704	-12.0	88.0
PFBS	0.177	0.140	-21.1	78.9
PFDA	0.200	0.166	-17.0	83.0
PFDoDA	0.200	0.193	-3.7	96.3
PFDS	0.193	0.166	-14.2	85.8
PFHpA	0.200	0.186	-6.8	93.2
PFHpS	0.191	0.138	-27.6	72.4
PFHxA	0.200	0.158	-21.2	78.8
PFHxS	0.183	0.173	-5.7	94.3
PFNA	0.200	0.162	-18.9	81.1
PFNS	0.192	0.154	-20.1	79.9
PFOA	0.200	0.215	7.6	107.6
PFOS	0.186	0.160	-14.2	85.8
PFPeA	0.400	0.342	-14.5	85.5

Continuing Calibration Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q595-CC589
 Lab FileID: 4Q41590.D

PFPeS	0.188	0.158	-15.7	84.3
PFTeDA	0.200	0.163	-18.4	81.6
PFTTrDA	0.200	0.178	-11.1	88.9
PFOUnDA	0.200	0.149	-25.7	74.3
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFOUnDA	---	--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	0.756	0.704	-6.8	93.2
13C3-HFPO-DA	10.000	9.062	-9.4	90.6
9C1-PF3ONS	0.748	0.724	-3.2	96.8
ADONA	0.756	0.628	-17.0	83.0
HFPO-DA	0.800	0.680	-15.0	85.0
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.795	-20.3	79.7
5:3FTCA	4.992	4.044	-19.0	81.0
7:3FTCA	4.992	4.320	-13.5	86.5
d3-MeFOSA	2.500	2.760	10.4	110.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.200	0.172	-14.0	86.0
EtFOSE	2.000	1.752	-12.4	87.6
MeFOSA	0.200	0.156	-22.1	77.9
MeFOSE	2.000	1.734	-13.3	86.7
PFOds	0.194	0.165	-15.0	85.0
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.178	3.6	103.6
d7-MeFOSE	25.000	28.179	12.7	112.7
d9-EtFOSE	25.000	28.223	12.9	112.9
d5-EtFOSA	2.500	2.729	9.2	109.2
NFDHA	0.400	0.392	-1.9	98.1
PFMBA	0.400	0.324	-19.0	81.0
PFMPA	0.400	0.320	-20.0	80.0
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	0.356	0.283	-20.4	79.6

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q595-CC589
 Lab FileID: 4Q41600.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\030223_1633_S4Q595\s4q595.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\022423_1633_S4Q589\4Q41232.d
 2:D:\MassHunter\Data\022423_1633_S4Q589\4Q41233.d
 3:D:\MassHunter\Data\022423_1633_S4Q589\4Q41234.d
 4:D:\MassHunter\Data\022423_1633_S4Q589\4Q41235.d
 5:D:\MassHunter\Data\022423_1633_S4Q589\4Q41236.d
 6:D:\MassHunter\Data\022423_1633_S4Q589\4Q41237.d
 8:D:\MassHunter\Data\022423_1633_S4Q589\4Q41239.d

Data File: 4Q41600

Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.057	1.1	101.1
13C2-6:2FTS	5.000	4.630	-7.4	92.6
13C2-8:2FTS	5.000	5.052	1.0	101.0
13C2-PFDoDA	1.250	1.266	1.3	101.3
13C2-PFTeDA	1.250	1.210	-3.2	96.8
13C3-PFBS	2.500	2.527	1.1	101.1
13C3-PFHxS	2.500	2.441	-2.4	97.6
13C4-PFBA	10.000	9.801	-2.0	98.0
13C4-PFHpA	2.500	2.631	5.2	105.2
13C5-PFHxA	2.500	2.494	-0.3	99.7
13C5-PFPeA	5.000	4.923	-1.5	98.5
13C6-PFDA	1.250	1.208	-3.4	96.6
13C7-PFUnDA	1.250	1.274	1.9	101.9
13C8-FOSA	2.500	2.409	-3.7	96.3
13C8-PFOA	2.500	2.525	1.0	101.0
13C8-PFOS	2.500	2.479	-0.8	99.2
13C9-PFNA	1.250	1.280	2.4	102.4
4:2FTS	9.375	9.274	-1.1	98.9
6:2FTS	9.500	10.056	5.8	105.8
8:2FTS	9.600	9.498	-1.1	98.9
d3-MeFOSAA	5.000	4.865	-2.7	97.3
EtFOSAA	2.500	2.534	1.4	101.4
FOSA	2.500	2.403	-3.9	96.1
MeFOSAA	2.500	2.407	-3.7	96.3
PFBA	10.000	9.138	-8.6	91.4
PFBS	2.218	2.000	-9.8	90.2
PFDA	2.500	2.416	-3.4	96.6
PFDoDA	2.500	2.392	-4.3	95.7
PFDS	2.413	2.091	-13.4	86.6
PFHpA	2.500	2.407	-3.7	96.3
PFHpS	2.383	2.285	-4.1	95.9
PFHxA	2.500	2.206	-11.8	88.2
PFHxS	2.285	2.075	-9.2	90.8
PFNA	2.500	2.237	-10.5	89.5
PFNS	2.405	2.196	-8.7	91.3
PFOA	2.500	2.331	-6.8	93.2
PFOS	2.320	1.985	-14.4	85.6
PFPeA	5.000	4.704	-5.9	94.1

Continuing Calibration Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q595-CC589
 Lab FileID: 4Q41600.D

PFPeS	2.353	2.414	2.6	102.6
PFTeDA	2.500	2.412	-3.5	96.5
PFTTrDA	2.500	2.530	1.2	101.2
PFUnDA	2.500	2.365	-5.4	94.6
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	9.450	11.518	21.9	121.9
13C3-HFPO-DA	10.000	8.497	-15.0	85.0
9C1-PF3ONS	9.350	10.838	15.9	115.9
ADONA	9.450	11.042	16.9	116.9
HFPO-DA	10.000	9.757	-2.4	97.6
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.719	-6.1	93.9
5:3FTCA	62.400	62.704	0.5	100.5
7:3FTCA	62.400	62.030	-0.6	99.4
d3-MeFOSA	2.500	2.466	-1.4	98.6
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.470	-1.2	98.8
EtFOSE	25.000	24.922	-0.3	99.7
MeFOSA	2.500	2.360	-5.6	94.4
MeFOSE	25.000	24.874	-0.5	99.5
PFDoDS	2.425	2.237	-7.8	92.2
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.089	1.8	101.8
d7-MeFOSE	25.000	26.471	5.9	105.9
d9-EtFOSE	25.000	26.124	4.5	104.5
d5-EtFOSA	2.500	2.453	-1.9	98.1
NFDHA	5.000	5.008	0.2	100.2
PFMBA	5.000	4.612	-7.8	92.2
PFMPA	5.000	4.533	-9.3	90.7
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.226	-5.0	95.0

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q595-CC589
 Lab FileID: 4Q41609.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\030223_1633_S4Q595\s4q595.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\022423_1633_S4Q589\4Q41232.d
 2:D:\MassHunter\Data\022423_1633_S4Q589\4Q41233.d
 3:D:\MassHunter\Data\022423_1633_S4Q589\4Q41234.d
 4:D:\MassHunter\Data\022423_1633_S4Q589\4Q41235.d
 5:D:\MassHunter\Data\022423_1633_S4Q589\4Q41236.d
 6:D:\MassHunter\Data\022423_1633_S4Q589\4Q41237.d
 8:D:\MassHunter\Data\022423_1633_S4Q589\4Q41239.d

Data File: 4Q41609

Type : QC

Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	4.984	-0.3	99.7
13C2-6:2FTS	5.000	5.185	3.7	103.7
13C2-8:2FTS	5.000	4.887	-2.3	97.7
13C2-PFDoDA	1.250	1.185	-5.2	94.8
13C2-PFTeDA	1.250	1.187	-5.0	95.0
13C3-PFBS	2.500	2.485	-0.6	99.4
13C3-PFHxS	2.500	2.526	1.0	101.0
13C4-PFBA	10.000	9.768	-2.3	97.7
13C4-PFHpA	2.500	2.599	3.9	103.9
13C5-PFHxA	2.500	2.508	0.3	100.3
13C5-PFPeA	5.000	4.815	-3.7	96.3
13C6-PFDA	1.250	1.211	-3.1	96.9
13C7-PFUnDA	1.250	1.198	-4.2	95.8
13C8-FOSA	2.500	2.476	-1.0	99.0
13C8-PFOA	2.500	2.458	-1.7	98.3
13C8-PFOS	2.500	2.375	-5.0	95.0
13C9-PFNA	1.250	1.213	-2.9	97.1
4:2FTS	9.375	10.092	7.7	107.7
6:2FTS	9.500	9.299	-2.1	97.9
8:2FTS	9.600	10.540	9.8	109.8
d3-MeFOSAA	5.000	4.959	-0.8	99.2
EtFOSAA	2.500	2.510	0.4	100.4
FOSA	2.500	2.342	-6.3	93.7
MeFOSAA	2.500	2.482	-0.7	99.3
PFBA	10.000	9.227	-7.7	92.3
PFBS	2.218	2.090	-5.8	94.2
PFDA	2.500	2.290	-8.4	91.6
PFDoDA	2.500	2.526	1.1	101.1
PFDS	2.413	2.429	0.7	100.7
PFHpA	2.500	2.420	-3.2	96.8
PFHpS	2.383	2.305	-3.3	96.7
PFHxA	2.500	2.131	-14.7	85.3
PFHxS	2.285	2.036	-10.9	89.1
PFNA	2.500	2.416	-3.4	96.6
PFNS	2.405	2.206	-8.3	91.7
PFOA	2.500	2.428	-2.9	97.1
PFOS	2.320	2.113	-8.9	91.1
PFPeA	5.000	4.786	-4.3	95.7

Continuing Calibration Summary

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q595-CC589
 Lab FileID: 4Q41609.D

PFPeS	2.353	2.329	-1.0	99.0
PFTeDA	2.500	2.325	-7.0	93.0
PFTTrDA	2.500	2.583	3.3	103.3
PFUnDA	2.500	2.370	-5.2	94.8
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	9.450	11.269	19.3	119.3
13C3-HFPO-DA	10.000	8.544	-14.6	85.4
9C1-PF3ONS	9.350	10.259	9.7	109.7
ADONA	9.450	11.040	16.8	116.8
HFPO-DA	10.000	9.717	-2.8	97.2
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.841	-5.1	94.9
5:3FTCA	62.400	61.802	-1.0	99.0
7:3FTCA	62.400	61.335	-1.7	98.3
d3-MeFOSA	2.500	2.491	-0.4	99.6
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	2.500	2.584	3.4	103.4
EtFOSE	25.000	24.878	-0.5	99.5
MeFOSA	2.500	2.446	-2.2	97.8
MeFOSE	25.000	24.359	-2.6	97.4
PFDoDS	2.425	2.419	-0.3	99.7
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.164	3.3	103.3
d7-MeFOSE	25.000	26.643	6.6	106.6
d9-EtFOSE	25.000	25.630	2.5	102.5
d5-EtFOSA	2.500	2.338	-6.5	93.5
NFDHA	5.000	4.731	-5.4	94.6
PFMBA	5.000	4.693	-6.1	93.9
PFMPA	5.000	4.496	-10.1	89.9
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.196	-5.7	94.3

CC Criteria: +/- 30%

Run Sequence Report

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q589	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q		
Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q589-RT	4Q41229.D	02/24/23 15:17	n/a	Retention Time Marker
S4Q589-RT	4Q41230.D	02/24/23 15:31	n/a	Retention Time Marker
S4Q589-IC589	4Q41231.D	02/24/23 15:47	n/a	Mass Calibration Verification
S4Q589-IC589	4Q41232.D	02/24/23 16:01	n/a	Initial cal 1
S4Q589-IC589	4Q41233.D	02/24/23 16:16	n/a	Initial cal 2
S4Q589-IC589	4Q41234.D	02/24/23 16:30	n/a	Initial cal 3
S4Q589-ICC589	4Q41235.D	02/24/23 16:44	n/a	Initial cal 4
S4Q589-IC589	4Q41236.D	02/24/23 16:58	n/a	Initial cal 5
S4Q589-IC589	4Q41237.D	02/24/23 17:15	n/a	Initial cal 6
S4Q589-IC589	4Q41238.D	02/24/23 17:29	n/a	Initial cal 7
S4Q589-IC589	4Q41239.D	02/24/23 17:43	n/a	Initial cal 8
S4Q589-IBLK	4Q41240.D	02/24/23 17:57	n/a	Instrument Blank
S4Q589-IBLK	4Q41240.D	02/24/23 17:57	n/a	Instrument Blank
S4Q589-ICV589	4Q41241.D	02/24/23 18:11	n/a	Initial cal verification 20
S4Q589-ICV589	4Q41242.D	02/24/23 18:25	n/a	Initial cal verification 20
S4Q589-CC589	4Q41243.D	02/24/23 18:39	n/a	Continuing cal 4
S4Q589-CC589	4Q41244.D	02/24/23 18:53	n/a	Continuing cal 1.0LL
OP95578-BS	4Q41245.D	02/24/23 19:07	OP95578	Blank Spike
OP95578-LLBS	4Q41246.D	02/24/23 19:21	OP95578	Blank Spike
OP95578-MB	4Q41247.D	02/24/23 19:35	OP95578	Method Blank
ZZZZZZ	4Q41248.D	02/24/23 19:49	OP95578	(unrelated sample)
ZZZZZZ	4Q41249.D	02/24/23 20:03	OP95578	(unrelated sample)
JD60392-3A	4Q41250.D	02/24/23 20:17	OP95578	(used for QC only; not part of job FC3042)
OP95578-MS	4Q41251.D	02/24/23 20:31	OP95578	Matrix Spike
OP95578-MSD	4Q41252.D	02/24/23 20:45	OP95578	Matrix Spike Duplicate
ZZZZZZ	4Q41253.D	02/24/23 21:00	OP95578	(unrelated sample)
ZZZZZZ	4Q41254.D	02/24/23 21:14	OP95578	(unrelated sample)
S4Q589-CC589	4Q41255.D	02/24/23 21:28	n/a	Continuing cal 4
S4Q589-CC589	4Q41256.D	02/24/23 21:42	n/a	Continuing cal 1.0LL
S4Q589-ICCB	4Q41257.D	02/24/23 21:56	n/a	Continuing Calibration Blank
S4Q589-ICCB	4Q41257.D	02/24/23 21:56	n/a	Continuing Calibration Blank
OP95517-BS	4Q41258.D	02/24/23 22:10	OP95517	Blank Spike
OP95517-LLBS	4Q41259.D	02/24/23 22:24	OP95517	Blank Spike
OP95517-MB	4Q41260.D	02/24/23 22:38	OP95517	Method Blank
FC2645-1	4Q41261.D	02/24/23 22:52	OP95517	(used for QC only; not part of job FC3042)
OP95517-MS	4Q41262.D	02/24/23 23:06	OP95517	Matrix Spike
OP95517-MSD	4Q41263.D	02/24/23 23:20	OP95517	Matrix Spike Duplicate
ZZZZZZ	4Q41264.D	02/24/23 23:34	OP95517	(unrelated sample)
ZZZZZZ	4Q41265.D	02/24/23 23:48	OP95517	(unrelated sample)
ZZZZZZ	4Q41266.D	02/25/23 00:02	OP95517	(unrelated sample)
ZZZZZZ	4Q41267.D	02/25/23 00:16	OP95517	(unrelated sample)
S4Q589-CC589	4Q41268.D	02/25/23 00:30	n/a	Continuing cal 4
S4Q589-ICCB	4Q41269.D	02/25/23 00:44	n/a	Continuing Calibration Blank
S4Q589-ICCB	4Q41269.D	02/25/23 00:44	n/a	Continuing Calibration Blank
ZZZZZZ	4Q41270.D	02/25/23 00:58	OP95517	(unrelated sample)
ZZZZZZ	4Q41271.D	02/25/23 01:12	OP95517	(unrelated sample)

Run Sequence Report

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q589	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	4Q41272.D	02/25/23 01:26	OP95517	(unrelated sample)
ZZZZZZ	4Q41273.D	02/25/23 01:40	OP95517	(unrelated sample)
ZZZZZZ	4Q41274.D	02/25/23 01:55	OP95517	(unrelated sample)
ZZZZZZ	4Q41275.D	02/25/23 02:09	OP95517	(unrelated sample)
ZZZZZZ	4Q41276.D	02/25/23 02:23	OP95517	(unrelated sample)
ZZZZZZ	4Q41277.D	02/25/23 02:37	OP95517	(unrelated sample)
ZZZZZZ	4Q41278.D	02/25/23 02:51	OP95517	(unrelated sample)
ZZZZZZ	4Q41279.D	02/25/23 03:05	OP95517	(unrelated sample)
S4Q589-CC589	4Q41280.D	02/25/23 03:19	n/a	Continuing cal 4
S4Q589-ICCB	4Q41281.D	02/25/23 03:33	n/a	Continuing Calibration Blank
S4Q589-ICCB	4Q41281.D	02/25/23 03:33	n/a	Continuing Calibration Blank
ZZZZZZ	4Q41282.D	02/25/23 03:47	OP95517	(unrelated sample)
ZZZZZZ	4Q41283.D	02/25/23 04:01	OP95517	(unrelated sample)
ZZZZZZ	4Q41284.D	02/25/23 04:15	OP95517	(unrelated sample)
ZZZZZZ	4Q41285.D	02/25/23 04:29	OP95517	(unrelated sample)
ZZZZZZ	4Q41286.D	02/25/23 04:43	OP95558	(unrelated sample)
ZZZZZZ	4Q41287.D	02/25/23 04:57	OP95558	(unrelated sample)
ZZZZZZ	4Q41288.D	02/25/23 05:11	OP95559	(unrelated sample)
S4Q589-CC589	4Q41289.D	02/25/23 05:25	n/a	Continuing cal 4
S4Q589-CC589	4Q41290.D	02/25/23 05:39	n/a	Continuing cal 1.0LL
S4Q589-ICCB	4Q41291.D	02/25/23 05:53	n/a	Continuing Calibration Blank
S4Q589-ICCB	4Q41291.D	02/25/23 05:53	n/a	Continuing Calibration Blank
OP95331-BS	4Q41292.D	02/25/23 06:07	OP95331	Blank Spike
OP95331-LLBS	4Q41293.D	02/25/23 06:22	OP95331	Blank Spike
OP95331-MB	4Q41294.D	02/25/23 06:36	OP95331	Method Blank
FC2386-1	4Q41295.D	02/25/23 06:50	OP95331	(used for QC only; not part of job FC3042)
OP95331-BS1	4Q41296.D	02/25/23 07:04	OP95331	Blank Spike
OP95331-BS2	4Q41297.D	02/25/23 07:18	OP95331	Blank Spike
OP95331-BS3	4Q41298.D	02/25/23 07:32	OP95331	Blank Spike
ZZZZZZ	4Q41299.D	02/25/23 07:46	OP95566	(unrelated sample)
ZZZZZZ	4Q41300.D	02/25/23 08:00	OP95558	(unrelated sample)
S4Q589-ECC589	4Q41301.D	02/25/23 08:14	n/a	Ending cal 4
S4Q589-ICCB	4Q41302.D	02/25/23 08:28	n/a	Continuing Calibration Blank

Run Sequence Report

Job Number: FC3042
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q595	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q		
Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q595-RT	4Q41585.D	03/02/23 14:10	n/a	Retention Time Marker
S4Q595-RT	4Q41586.D	03/02/23 14:24	n/a	Retention Time Marker
S4Q595-IBLK	4Q41588.D	03/02/23 14:53	n/a	Instrument Blank
S4Q595-IBLK	4Q41588.D	03/02/23 14:53	n/a	Instrument Blank
S4Q595-CC589	4Q41589.D	03/02/23 15:07	n/a	Continuing cal 4
S4Q595-CC589	4Q41590.D	03/02/23 15:55	n/a	Continuing cal 1.0LL
FC2899-4	4Q41591.D	03/02/23 16:29	OP95660	(used for QC only; not part of job FC3042)
OP95660-MS	4Q41592.D	03/02/23 16:43	OP95660	Matrix Spike
OP95660-MSD	4Q41593.D	03/02/23 16:57	OP95660	Matrix Spike Duplicate
OP95682-BS	4Q41594.D	03/02/23 17:11	OP95682	Blank Spike
OP95682-LLBS	4Q41595.D	03/02/23 17:25	OP95682	Blank Spike
OP95682-MB	4Q41596.D	03/02/23 17:39	OP95682	Method Blank
FC3042-1	4Q41597.D	03/02/23 17:53	OP95682	AF-RHMW06-WGN01LF-2302W4
FC3042-2	4Q41598.D	03/02/23 18:07	OP95682	AF-RHMW04-WGN01LF-2302W4
ZZZZZZ	4Q41599.D	03/02/23 18:21	OP95682	(unrelated sample)
S4Q595-CC589	4Q41600.D	03/02/23 18:35	n/a	Continuing cal 4
S4Q595-ICCB	4Q41601.D	03/02/23 18:49	n/a	Continuing Calibration Blank
FC3034-2	4Q41602.D	03/02/23 19:03	OP95682	(used for QC only; not part of job FC3042)
OP95682-MS	4Q41603.D	03/02/23 19:17	OP95682	Matrix Spike
OP95682-MSD	4Q41604.D	03/02/23 19:31	OP95682	Matrix Spike Duplicate
ZZZZZZ	4Q41605.D	03/02/23 19:45	OP95682	(unrelated sample)
ZZZZZZ	4Q41606.D	03/02/23 19:59	OP95682	(unrelated sample)
ZZZZZZ	4Q41607.D	03/02/23 20:13	OP95682	(unrelated sample)
ZZZZZZ	4Q41608.D	03/02/23 20:27	OP95278	(unrelated sample)
S4Q595-CC589	4Q41609.D	03/02/23 20:41	n/a	Continuing cal 4
S4Q595-ICCB	4Q41610.D	03/02/23 20:55	n/a	Continuing Calibration Blank
OP95684-BS	4Q41611.D	03/02/23 21:09	OP95684	Blank Spike
OP95684-LLBS	4Q41612.D	03/02/23 21:23	OP95684	Blank Spike
OP95684-MB	4Q41613.D	03/02/23 21:37	OP95684	Method Blank
JD60788-1A	4Q41614.D	03/02/23 21:52	OP95684	(used for QC only; not part of job FC3042)
OP95684-MS	4Q41615.D	03/02/23 22:06	OP95684	Matrix Spike
JD60788-3A	4Q41616.D	03/02/23 22:20	OP95684	(used for QC only; not part of job FC3042)
OP95684-DUP	4Q41617.D	03/02/23 22:34	OP95684	Duplicate
ZZZZZZ	4Q41618.D	03/02/23 22:48	OP95684	(unrelated sample)
S4Q595-CC589	4Q41620.D	03/02/23 23:16	n/a	Continuing cal 4
S4Q595-CC589	4Q41621.D	03/02/23 23:30	n/a	Continuing cal 1.0LL
S4Q595-ICCB	4Q41622.D	03/02/23 23:44	n/a	Continuing Calibration Blank
S4Q595-ICCB	4Q41622.D	03/02/23 23:44	n/a	Continuing Calibration Blank
OP95683-BS	4Q41623.D	03/02/23 23:58	OP95683	Blank Spike
OP95683-LLBS	4Q41624.D	03/03/23 00:12	OP95683	Blank Spike
OP95683-MB	4Q41625.D	03/03/23 00:26	OP95683	Method Blank
ZZZZZZ	4Q41626.D	03/03/23 00:40	OP95683	(unrelated sample)
OP95658-BS	4Q41627.D	03/03/23 00:54	OP95658	Blank Spike
OP95658-LLBS	4Q41628.D	03/03/23 01:08	OP95658	Blank Spike
OP95658-MB	4Q41629.D	03/03/23 01:22	OP95658	Method Blank
FC2978-1	4Q41630.D	03/03/23 01:36	OP95658	(used for QC only; not part of job FC3042)

Run Sequence Report

Job Number: FC3042
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q595	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
OP95658-MS	4Q41631.D	03/03/23 01:50	OP95658	Matrix Spike
OP95658-MSD	4Q41632.D	03/03/23 02:05	OP95658	Matrix Spike Duplicate
S4Q595-ECC589	4Q41633.D	03/03/23 02:19	n/a	Ending cal 4
S4Q595-ICCB	4Q41634.D	03/03/23 02:33	n/a	Continuing Calibration Blank
S4Q595-ICCB	4Q41634.D	03/03/23 02:33	n/a	Continuing Calibration Blank

6.9.2

6

MS Semi-volatiles

Raw Data

Manual Integrations
APPROVED
 (compounds with "m" flag)
 Norman Farmer
 03/03/23 16:24

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41597.d
 Operator : marthav
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 3/2/2023 5:53:17 PM
 Sample Name : FC3042-1
 Vial : P3-A7
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q595.batch.bin
 Sample Information : op95682,S4Q595,570,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.227	216.8 -> 171.9	136849	10.00 µg/L	0.037
M5-PFPeA	4.537	268.3 -> 223.0	77619	5.00 µg/L	0.000
M5-PFHxA	5.522	318.0 -> 273.0	64153	2.50 µg/L	0.012
M4-PFHpA	6.355	367.1 -> 322.0	33178	2.50 µg/L	0.012
M8-PFOA	6.988	421.1 -> 376.0	35295	2.50 µg/L	0.000
M9-PFNA	7.509	472.1 -> 427.0	18483	1.25 µg/L	0.013
M6-PFDA	7.979	519.1 -> 474.1	17642	1.25 µg/L	0.012
M7-PFUnDA	8.398	570.0 -> 525.1	16539	1.25 µg/L	0.012
M2-PFDoDA	8.806	615.1 -> 570.0	19395	1.25 µg/L	0.012
M2-PFTeDA	9.537	715.2 -> 670.0	15172	1.25 µg/L	0.037
M8-FOSA	9.545	506.1 -> 77.8	14221	2.50 µg/L	0.024
M3-PFBS	5.476	302.1 -> 79.9	12892	2.50 µg/L	0.000
M3-PFHxS	7.104	402.1 -> 79.9	7766	2.50 µg/L	0.012
M8-PFOS	8.130	507.1 -> 79.9	10207	2.50 µg/L	0.012
M2-4:2FTS	5.235	329.1 -> 80.9	1551	5.00 µg/L	0.000
M2-6:2FTS	6.761	429.1 -> 80.9	2230	5.00 µg/L	0.012
M2-8:2FTS	7.766	529.1 -> 80.9	3535	5.00 µg/L	0.000
M3-MeFOSAA	8.037	573.2 -> 419.0	14778	5.00 µg/L	0.012
M3-HFPO-DA	5.839	286.9 -> 168.9	30962	10.00 µg/L	0.012
M5-EtFOSAA	8.234	589.2 -> 419.0	11435	5.00 µg/L	0.012
M7-MeFOSE	10.450	623.2 -> 58.9	51696	25.00 µg/L	0.050
M9-EtFOSE	10.746	639.2 -> 58.9	64035	25.00 µg/L	0.050
M5-EtFOSA	10.849	531.1 -> 219.0	8342	2.50 µg/L	0.050
M3-MeFOSA	10.553	515.0 -> 219.0	7294	2.50 µg/L	0.050
13C4-PFOS	8.130	502.8 -> 79.9	10556	2.50 µg/L	0.012
13C3-PFBA	3.230	216.0 -> 172.0	72233	5.00 µg/L	0.037
18O2-PFHxS	7.103	403.0 -> 83.9	5324	2.50 µg/L	0.012
13C4-PFOA	6.988	417.1 -> 372.0	41658	2.50 µg/L	0.000
13C2-PFDA	7.980	515.1 -> 470.1	15782	1.25 µg/L	0.012
13C5-PFNA	7.509	468.0 -> 423.0	21386	1.25 µg/L	0.013
13C2-PFHxA	5.523	315.1 -> 270.0	51833	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	1551	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2230	5.36 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.1%		
13C2-8:2FTS	7.766	529.1 -> 80.9	3535	5.24 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.8%		
13C2-PFDoDA	8.806	615.1 -> 570.0	19395	1.15 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.7%		
13C2-PFTeDA	9.537	715.2 -> 670.0	15172	1.02 µg/L	0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 81.6%		
13C3-PFBS	5.476	302.1 -> 79.9	12892	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.9%		
13C3-PFHxS	7.104	402.1 -> 79.9	7766	2.58 µg/L	0.012



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 = 103.3%	
13C4-PFBA	3.227	216.8 -> 171.9	136849	11.00 µg/L	0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 110.0%	
13C4-PFHpA	6.355	367.1 -> 322.0	33178	2.86 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 114.6%	
13C5-PFHxA	5.522	318.0 -> 273.0	64153	2.83 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 113.4%	
13C5-PFPeA	4.537	268.3 -> 223.0	77619	5.33 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.6%	
13C6-PFDA	7.979	519.1 -> 474.1	17642	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C7-PFUnDA	8.398	570.0 -> 525.1	16539	1.15 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.0%	
13C8-FOSA	9.545	506.1 -> 77.8	14221	2.43 µg/L	0.024
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.2%	
13C8-PFOA	6.988	421.1 -> 376.0	35295	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C8-PFOS	8.130	507.1 -> 79.9	10207	2.41 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.2%	
13C9-PFNA	7.509	472.1 -> 427.0	18483	1.24 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.1%	
d3-MeFOSAA	8.037	573.2 -> 419.0	14778	4.93 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C3-HFPO-DA	5.839	286.9 -> 168.9	30962	9.69 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.9%	
d3-MeFOSA	10.553	515.0 -> 219.0	7294	2.53 µg/L	0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
d5-EtFOSAA	8.234	589.2 -> 419.0	11435	4.65 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.1%	
d7-MeFOSE	10.450	623.2 -> 58.9	51696	25.09 µg/L	0.050
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
d9-EtFOSE	10.746	639.2 -> 58.9	64035	26.27 µg/L	0.050
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 105.1%	
d5-EtFOSA	10.849	531.1 -> 219.0	8342	2.58 µg/L	0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.0%	

Target Compounds

QValue

4:2FTS	-	327.1 -> 307.0 327.1 -> 80.9	-	N.D.	
6:2FTS	-	427.1 -> 407.0 427.1 -> 80.9	-	N.D.	
8:2FTS	-	527.1 -> 507.0 527.1 -> 80.8	-	N.D.	
EtFOSAA	-	584.2 -> 419.1 584.2 -> 526.0	-	N.D.	
FOSA	-	498.1 -> 77.9 498.1 -> 478.0	-	N.D.	
MeFOSAA	-	570.1 -> 419.0 570.1 -> 483.0	-	N.D.	
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9 298.7 -> 98.8	-	N.D.	
PFDA	-	512.9 -> 469.0 512.9 -> 219.0	-	N.D.	
PFDODA	9.030	613.1 -> 569.0 613.1 -> 319.0	0	µg/L	m 1
PFDS	-	599.0 -> 79.9	-	N.D.	

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.368	599.0 -> 98.8				
		363.1 -> 319.0	1307	0.07 µg/L	m	96
PFHpS	-	363.1 -> 169.0	203			
		449.0 -> 79.9	-	N.D.		
PFHxA	-	449.0 -> 98.9				
		313.0 -> 269.0	-	N.D.		
PFHxS	-	313.0 -> 118.9				
		398.7 -> 79.9	-	N.D.		
PFNA	-	398.7 -> 98.9				
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	-	548.8 -> 98.9				
		413.0 -> 369.0	-	N.D.		
PFOS	-	413.0 -> 169.0				
		498.9 -> 79.9	-	N.D.		
PFPeA	-	498.9 -> 98.8				
		263.0 -> 219.0	-	N.D.		
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	9.227	713.1 -> 669.0	0	µg/L	m	1
		713.1 -> 168.9	0			
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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



7.1.1
7

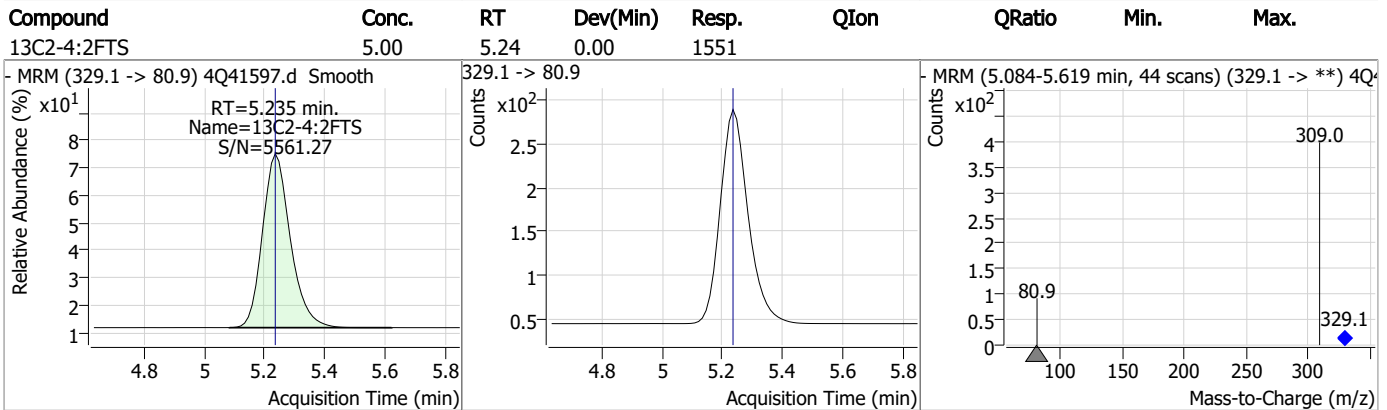
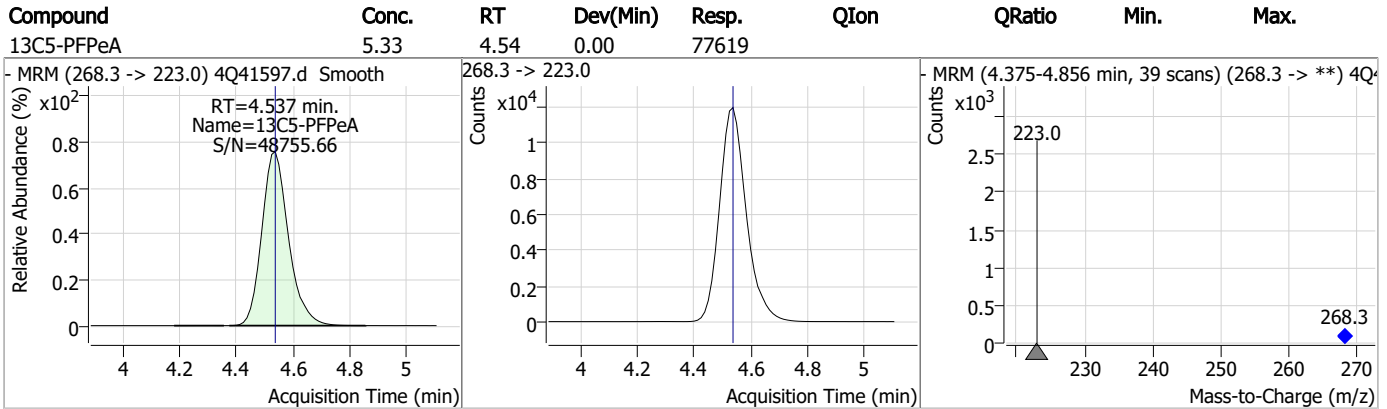
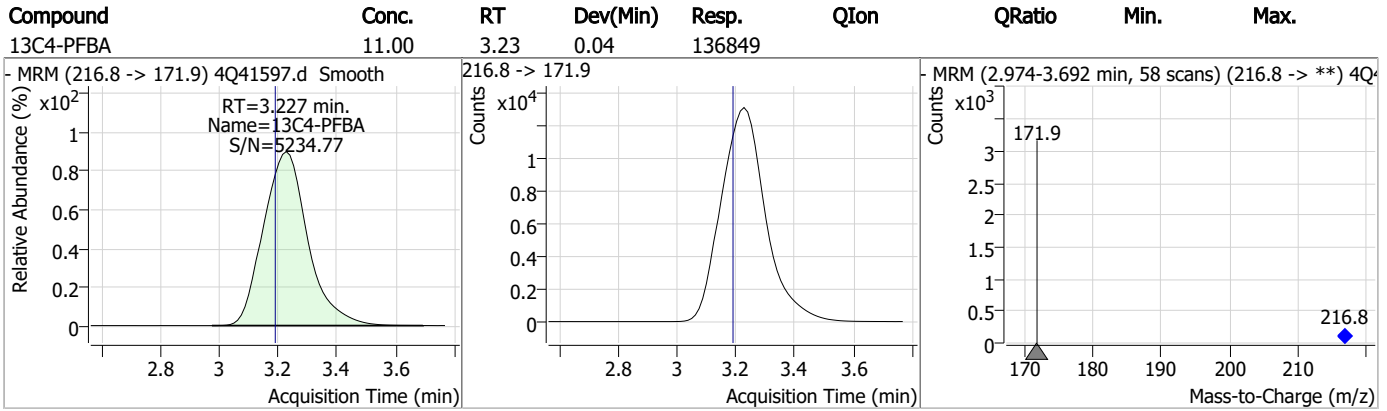
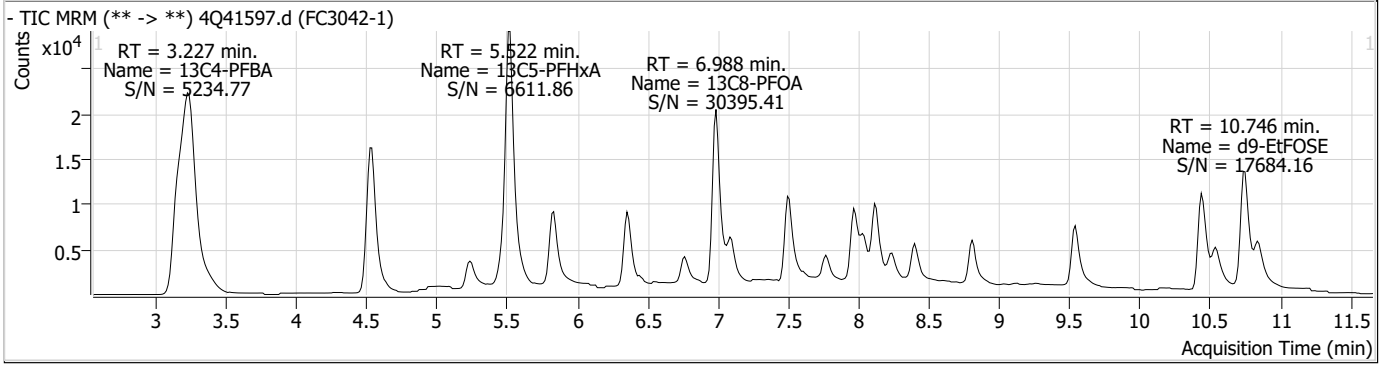
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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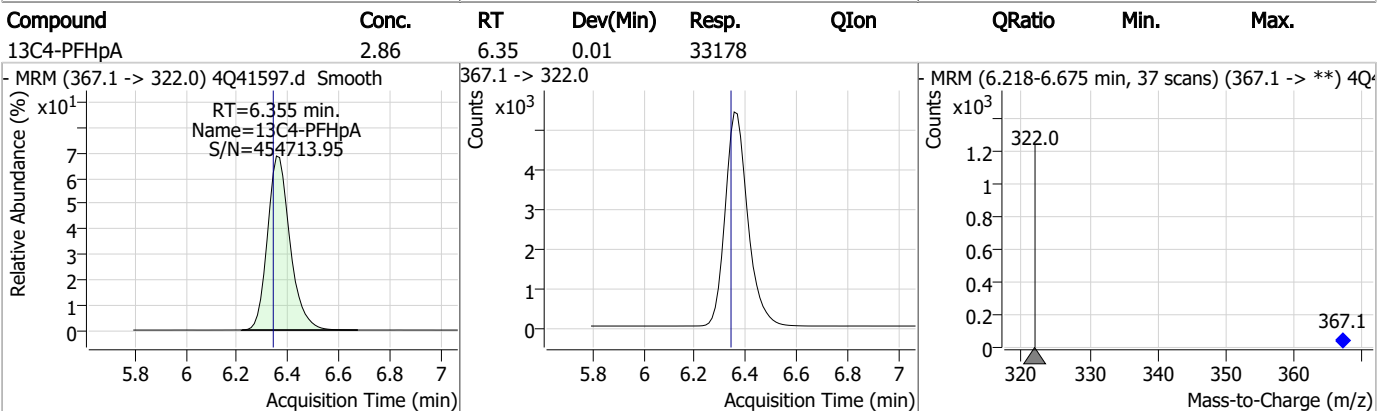
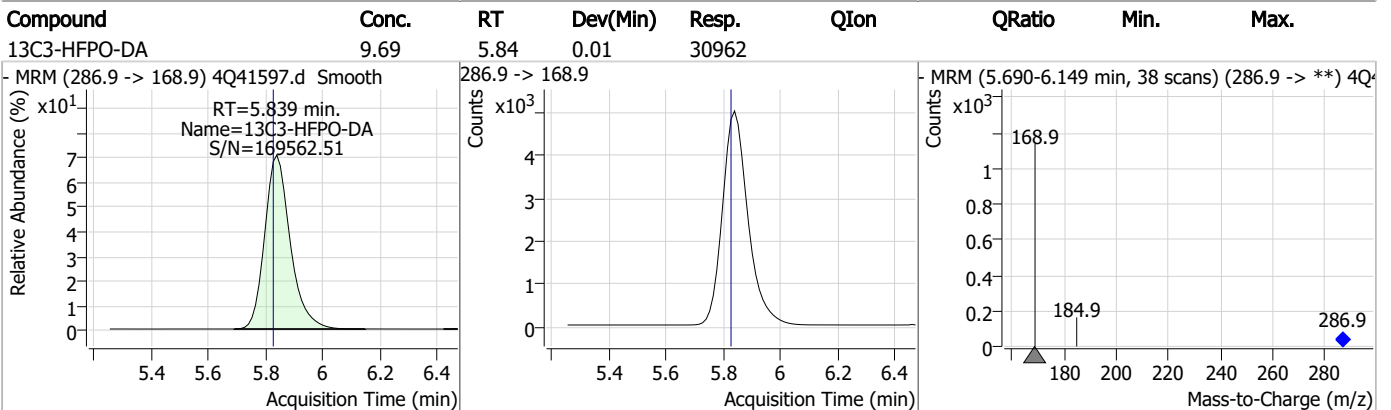
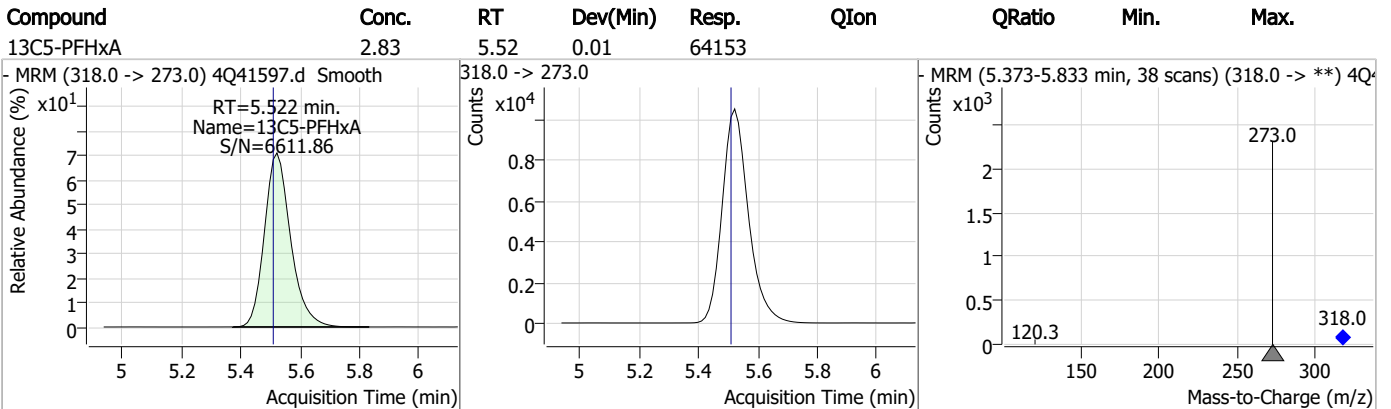
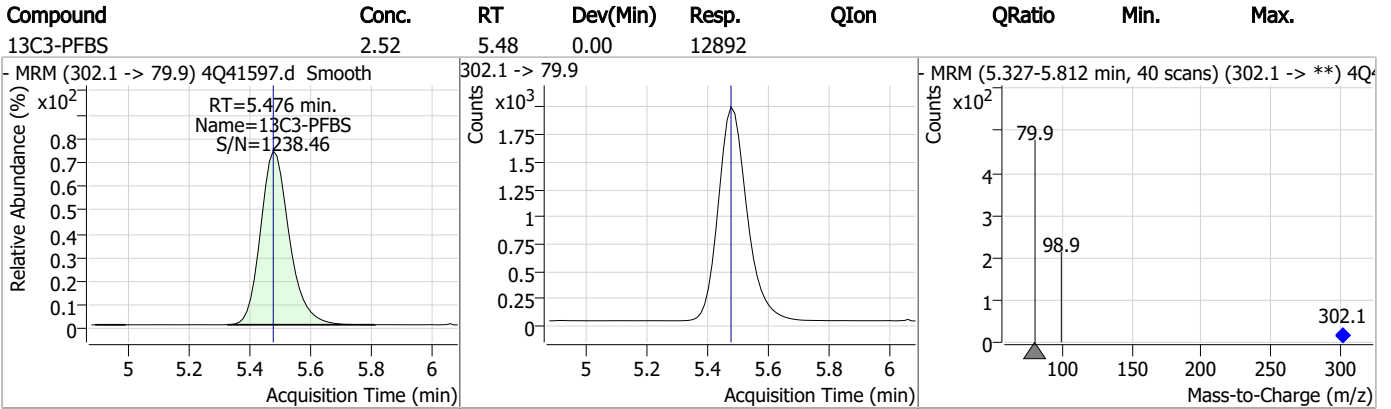
7.1.1
7



Perfluorinated Compounds by LC/MS/MS

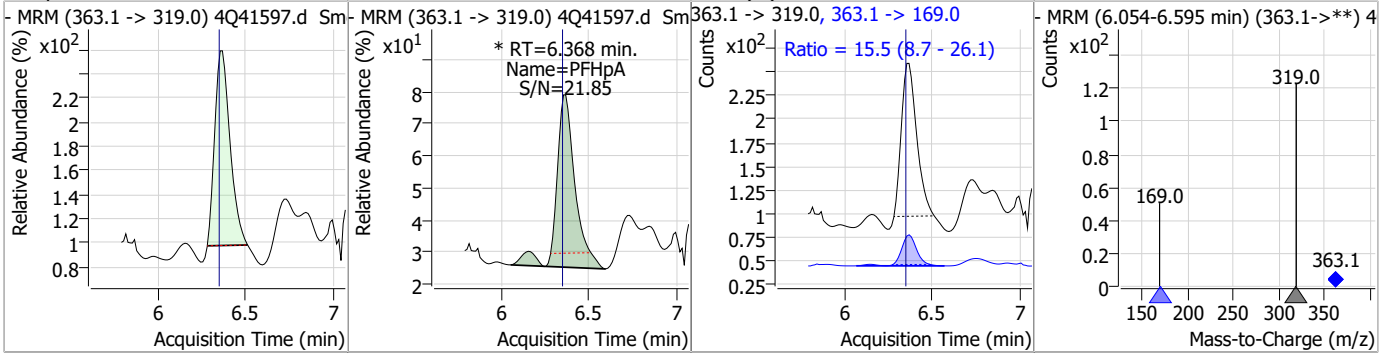


Perfluorinated Compounds by LC/MS/MS

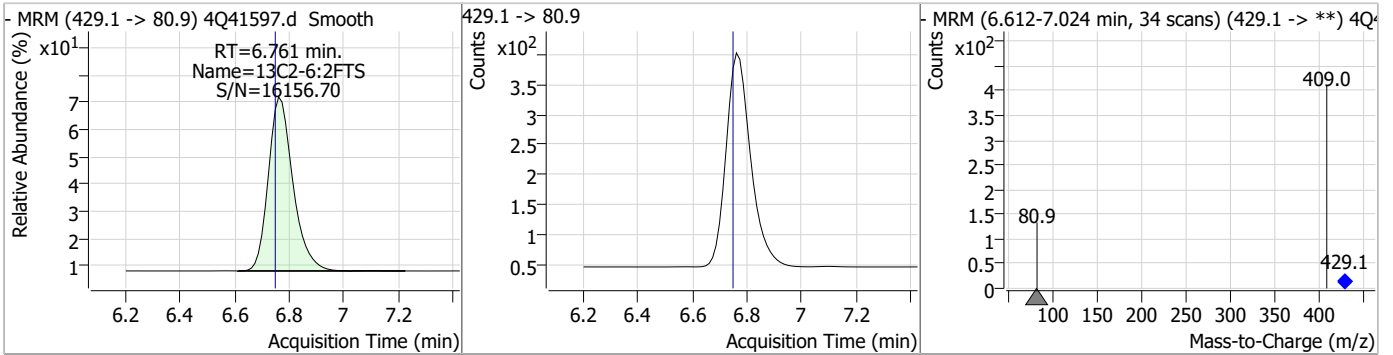


Perfluorinated Compounds by LC/MS/MS

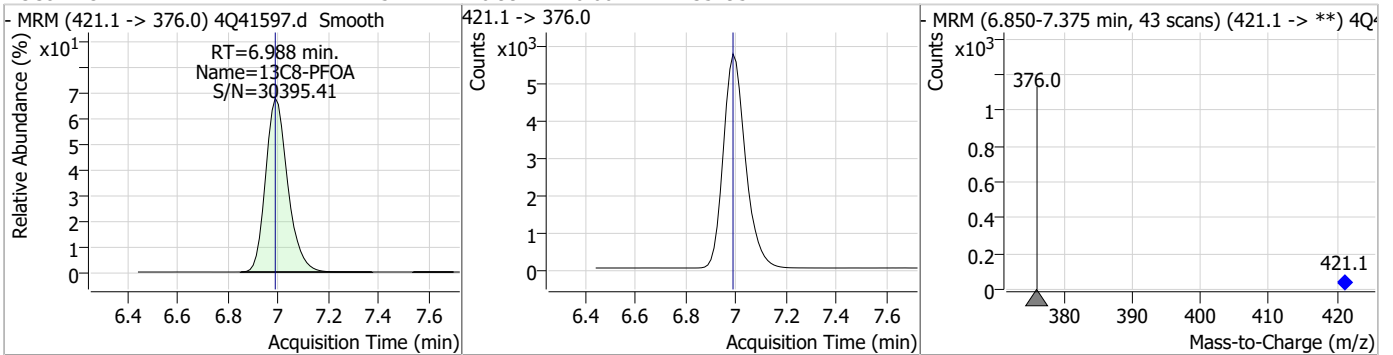
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.07	6.37	0.02	1307 (m)	363.1 -> 169.0	15.5	8.7	26.1



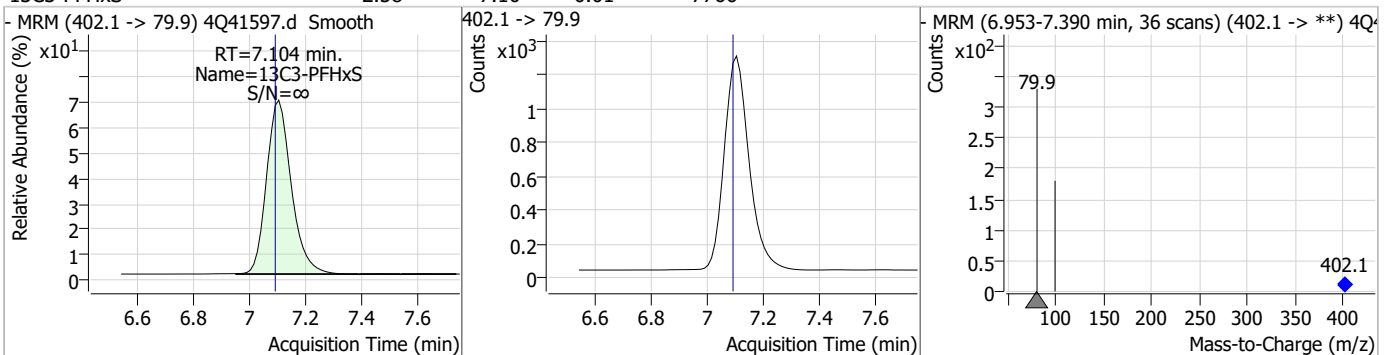
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	5.36	6.76	0.01	2230				



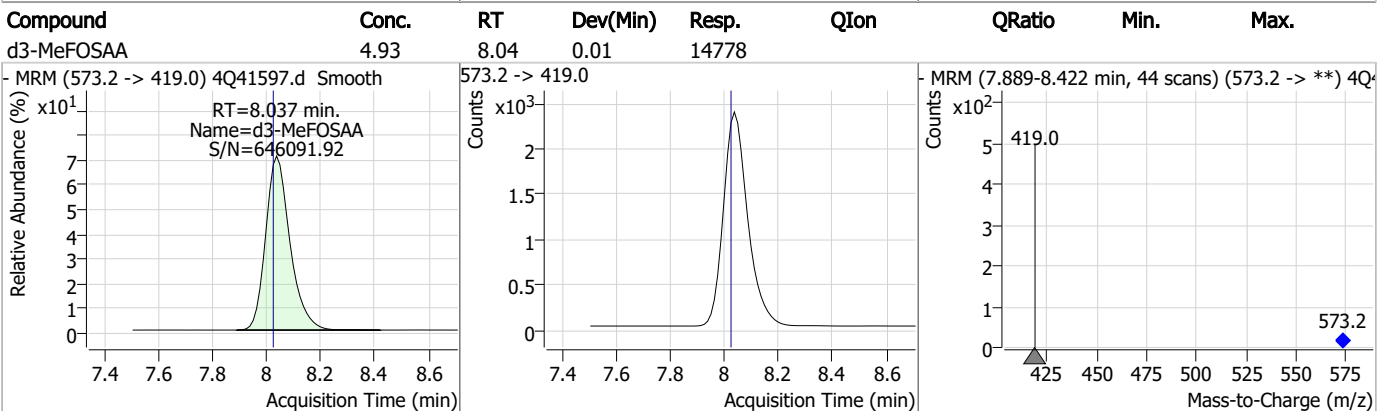
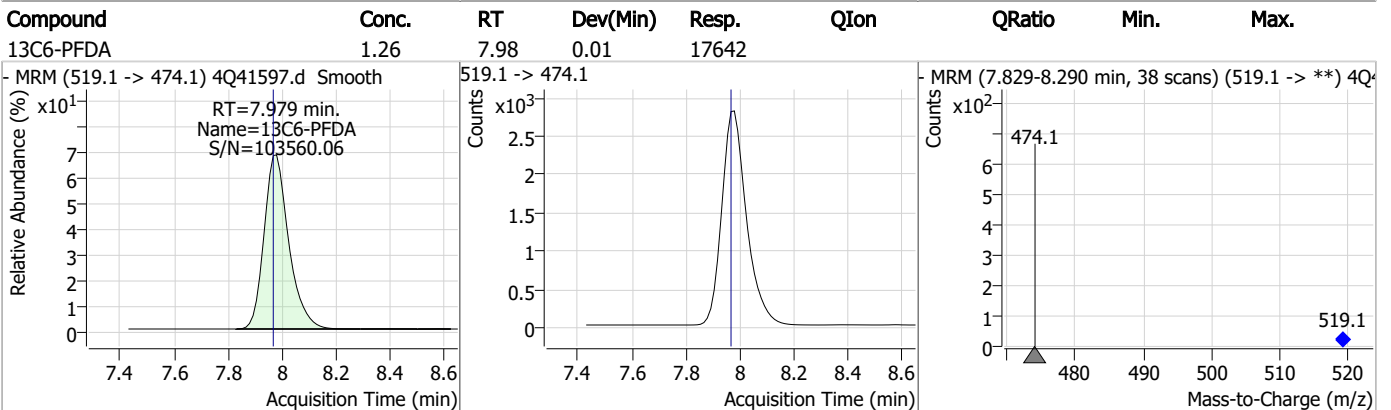
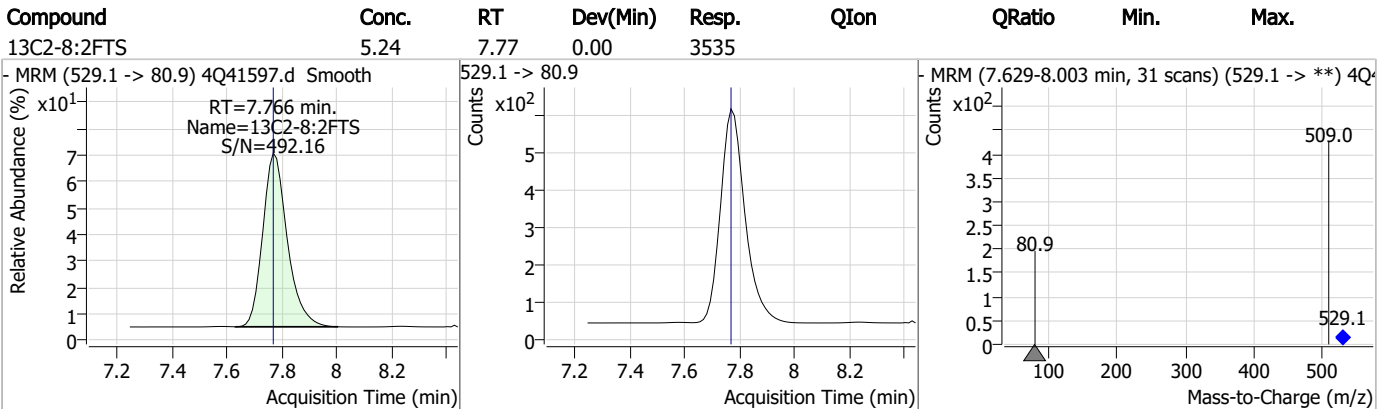
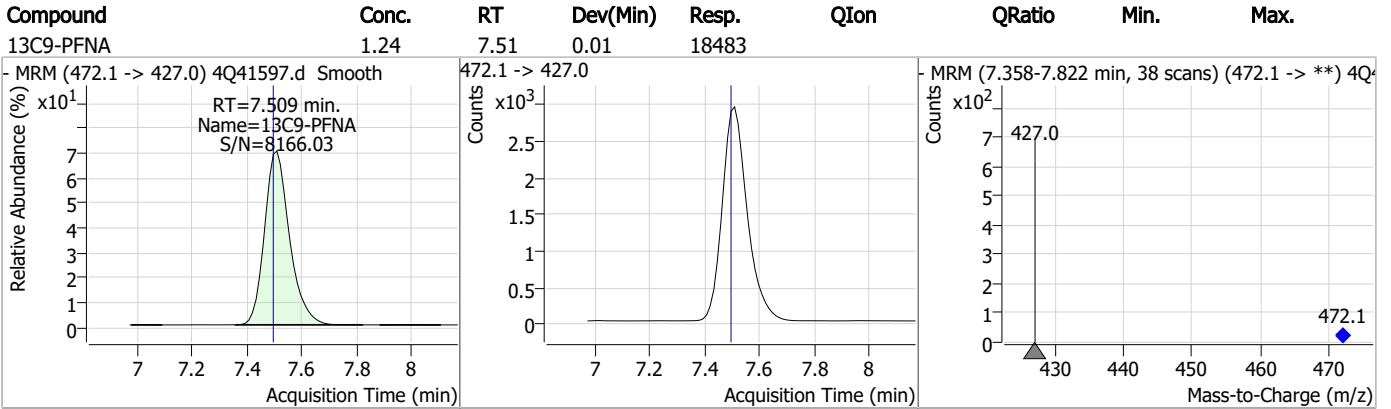
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	2.54	6.99	0.00	35295				



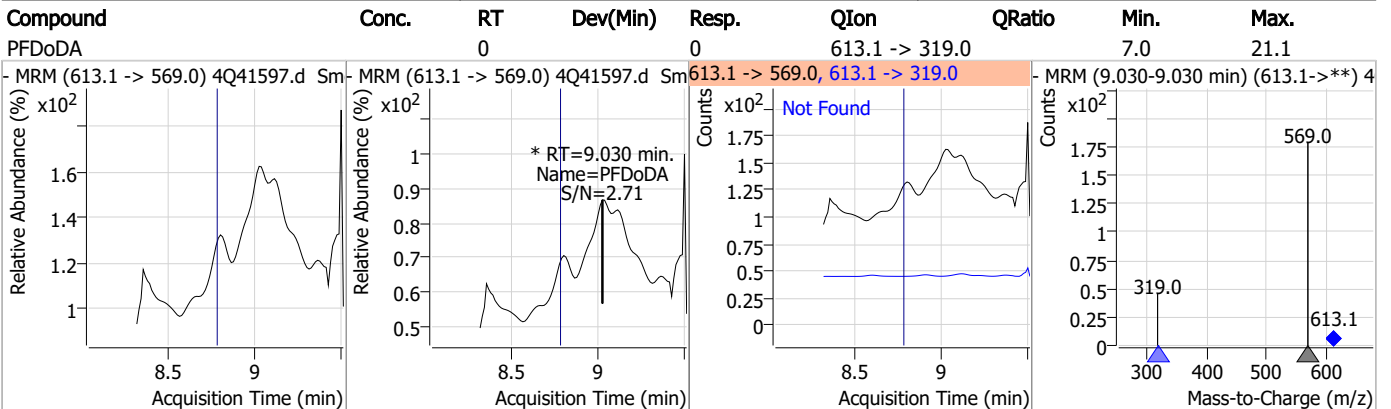
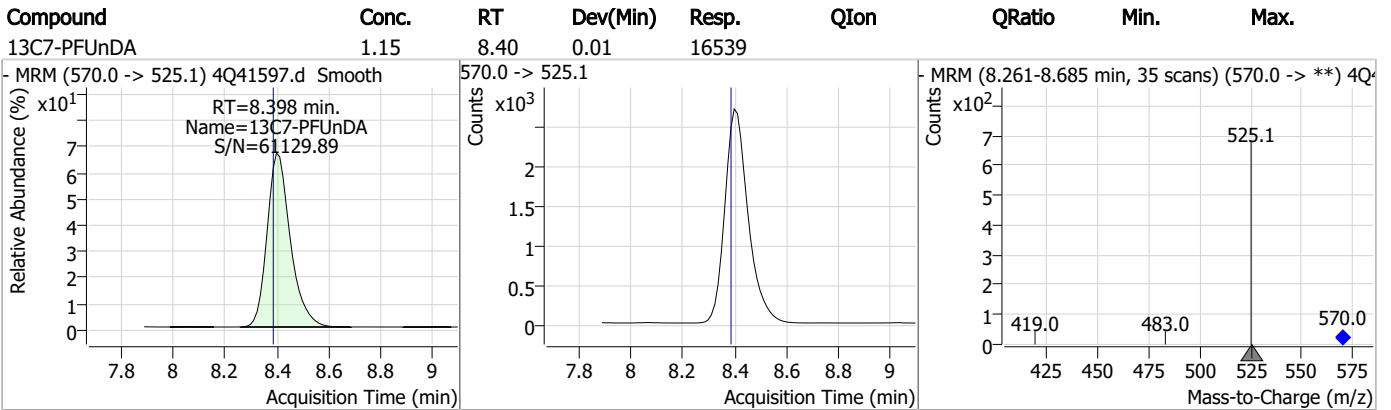
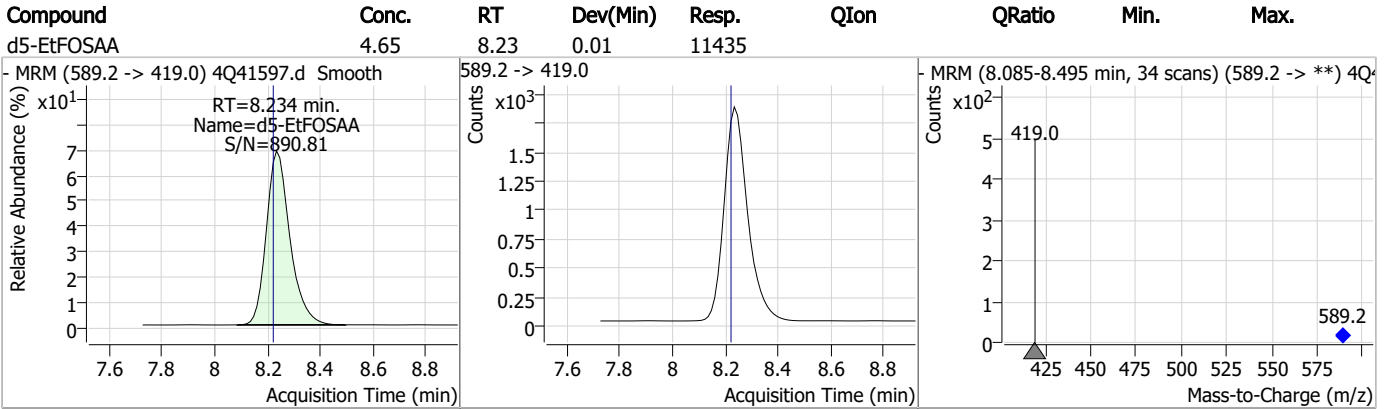
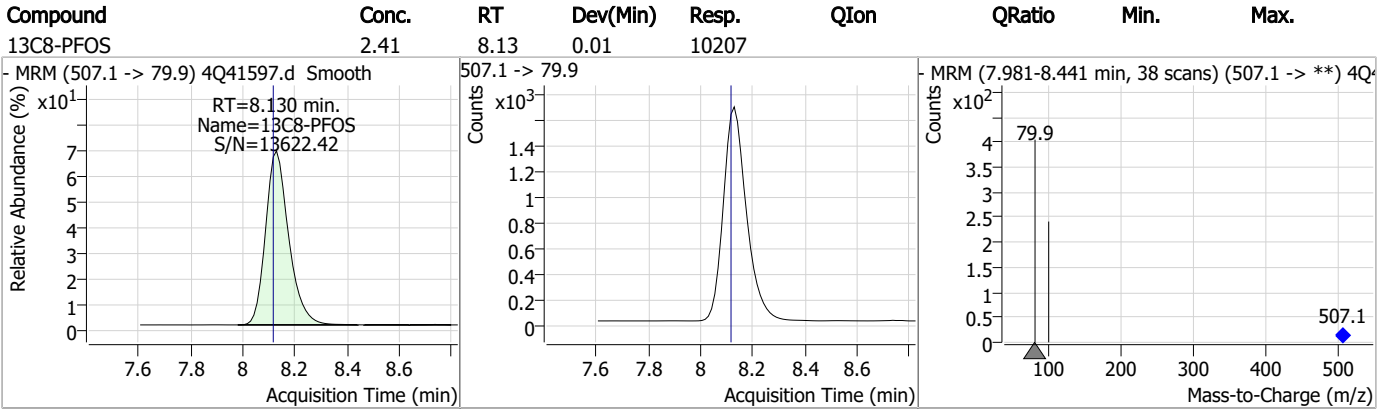
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	2.58	7.10	0.01	7766				



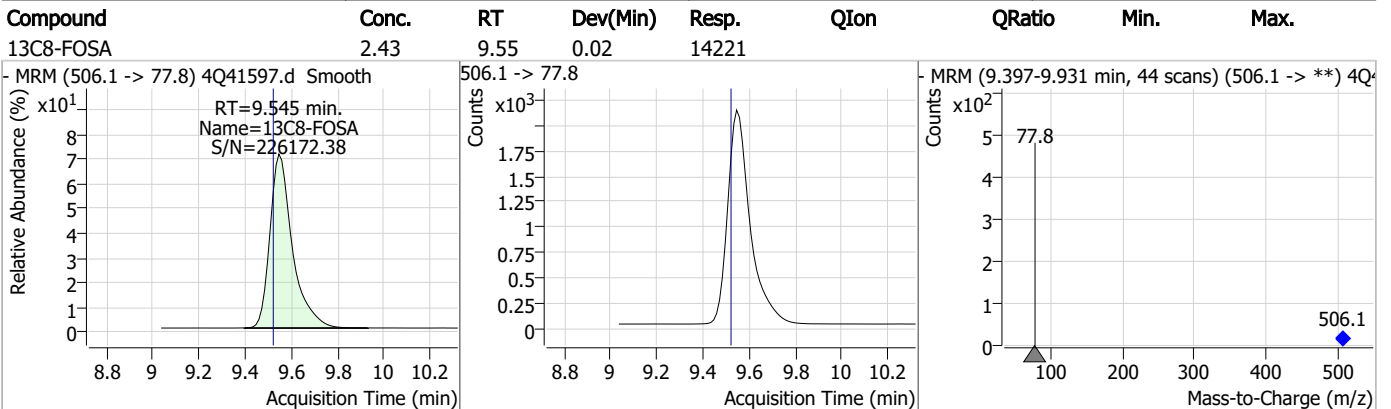
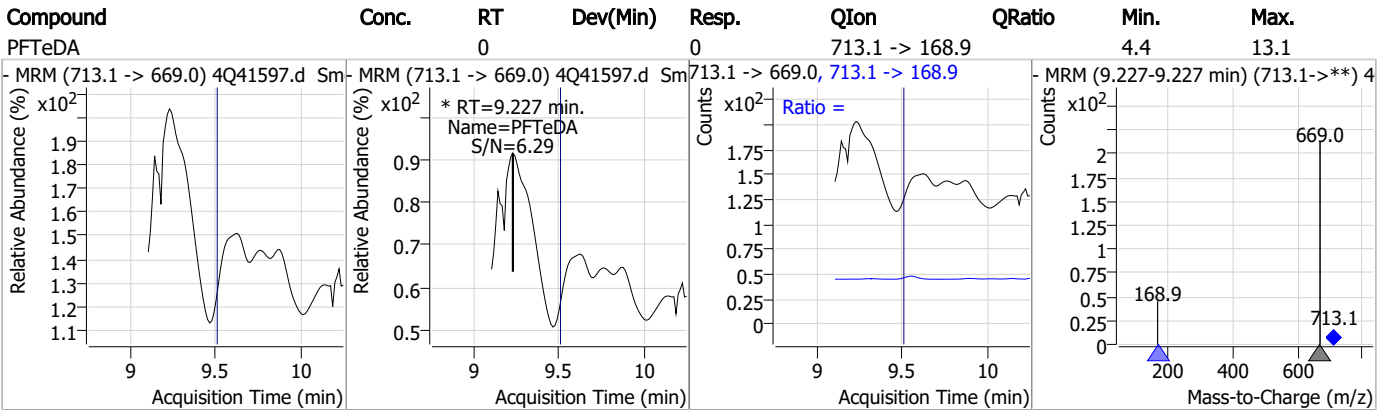
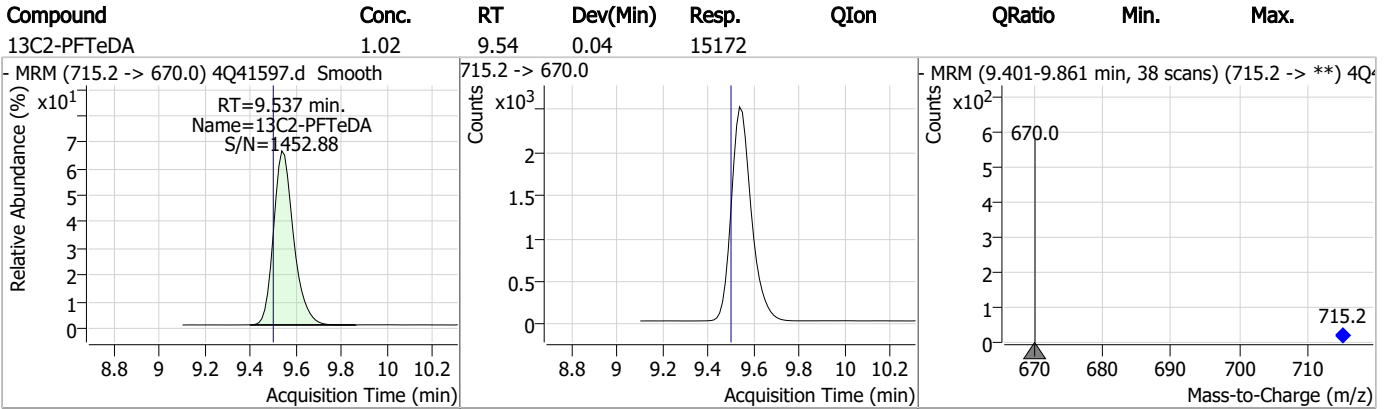
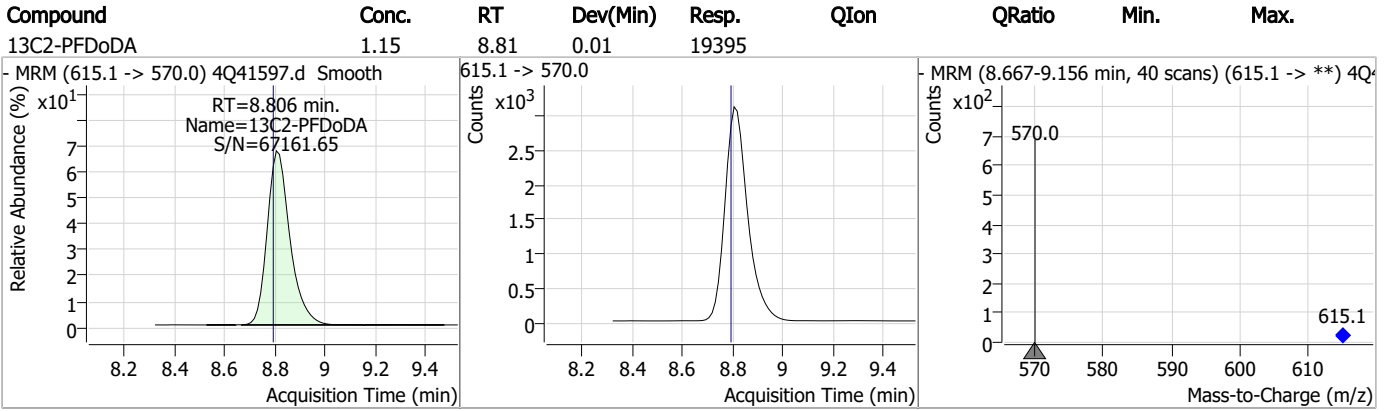
Perfluorinated Compounds by LC/MS/MS



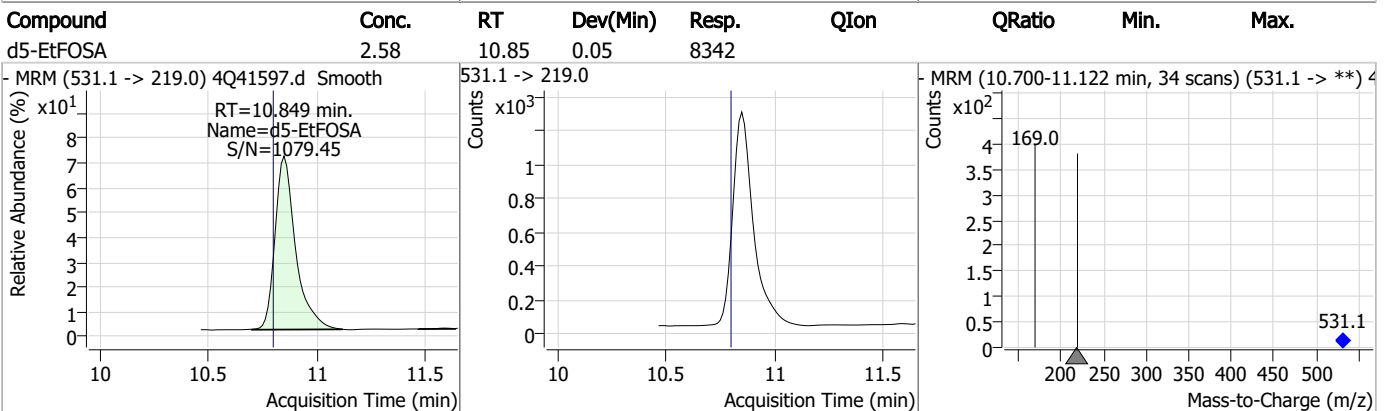
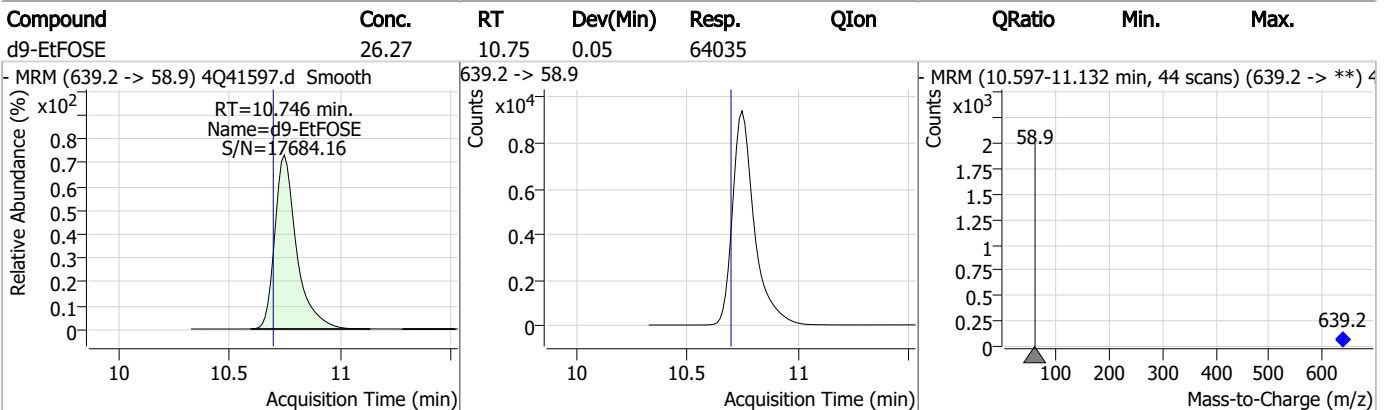
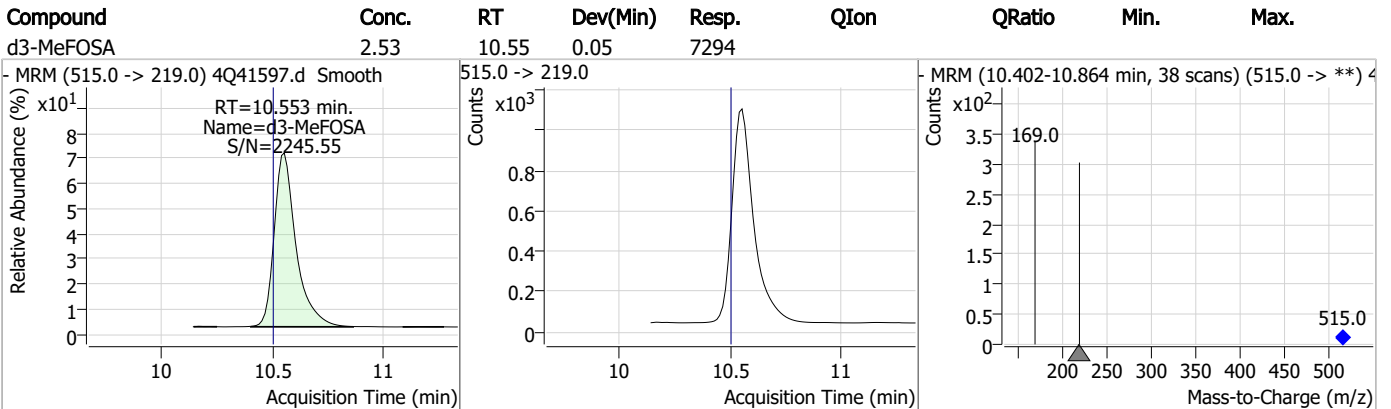
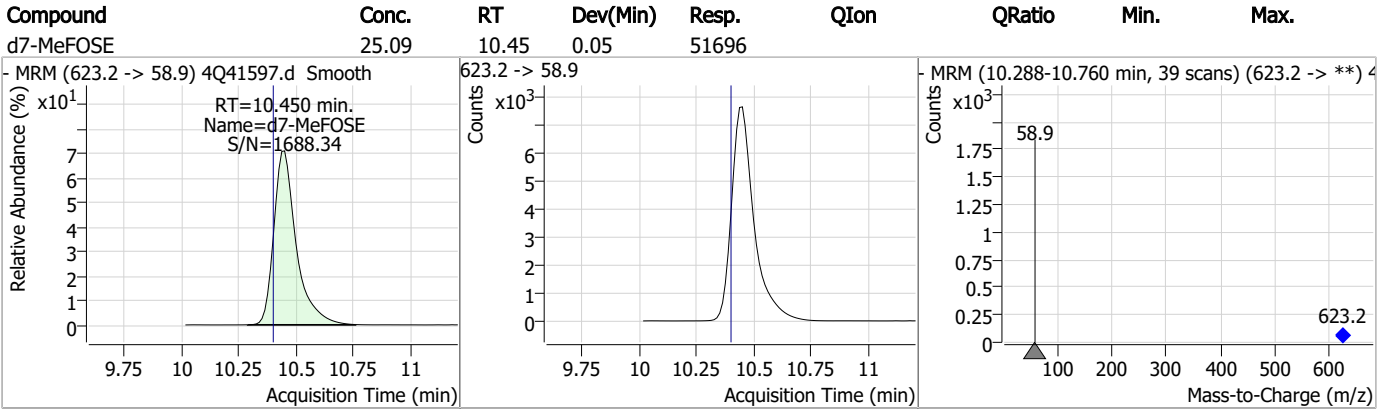
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Manual Integration Approval Summary

Sample Number: FC3042-1 Method: EPA DRAFT 1633
Lab FileID: 4Q41597.D Analyst approved: 03/03/23 15:21 Anna Ludwig
Injection Time: 03/02/23 17:53 Supervisor approved: 03/03/23 16:24 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoroheptanoic acid	375-85-9		6.37	Split peak

7.1.1.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41598.d
 Operator : marthav
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 3/2/2023 6:07:19 PM
 Sample Name : FC3042-2
 Vial : P3-A8
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q595.batch.bin
 Sample Information : op95682,S4Q595,570,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.214	216.8 -> 171.9	135898	10.00 µg/L	0.025
M5-PFPeA	4.524	268.3 -> 223.0	77316	5.00 µg/L	-0.012
M5-PFHxA	5.522	318.0 -> 273.0	61146	2.50 µg/L	0.012
M4-PFHpA	6.367	367.1 -> 322.0	32333	2.50 µg/L	0.025
M8-PFOA	7.000	421.1 -> 376.0	34773	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	18180	1.25 µg/L	0.026
M6-PFDA	7.979	519.1 -> 474.1	18392	1.25 µg/L	0.012
M7-PFUnDA	8.411	570.0 -> 525.1	17099	1.25 µg/L	0.025
M2-PFDoDA	8.831	615.1 -> 570.0	19182	1.25 µg/L	0.038
M2-PFTeDA	9.562	715.2 -> 670.0	13665	1.25 µg/L	0.062
M8-FOSA	9.558	506.1 -> 77.8	14663	2.50 µg/L	0.037
M3-PFBS	5.476	302.1 -> 79.9	12778	2.50 µg/L	0.000
M3-PFHxS	7.117	402.1 -> 79.9	7666	2.50 µg/L	0.025
M8-PFOS	8.142	507.1 -> 79.9	10082	2.50 µg/L	0.025
M2-4:2FTS	5.247	329.1 -> 80.9	1628	5.00 µg/L	0.012
M2-6:2FTS	6.774	429.1 -> 80.9	2270	5.00 µg/L	0.025
M2-8:2FTS	7.779	529.1 -> 80.9	3603	5.00 µg/L	0.012
M3-MeFOSAA	8.049	573.2 -> 419.0	14522	5.00 µg/L	0.025
M3-HFPO-DA	5.839	286.9 -> 168.9	30027	10.00 µg/L	0.012
M5-EtFOSAA	8.246	589.2 -> 419.0	11618	5.00 µg/L	0.025
M7-MeFOSE	10.462	623.2 -> 58.9	48963	25.00 µg/L	0.061
M9-EtFOSE	10.759	639.2 -> 58.9	59167	25.00 µg/L	0.062
M5-EtFOSA	10.861	531.1 -> 219.0	7368	2.50 µg/L	0.062
M3-MeFOSA	10.566	515.0 -> 219.0	6900	2.50 µg/L	0.062
13C4-PFOS	8.143	502.8 -> 79.9	9518	2.50 µg/L	0.025
13C3-PFBA	3.218	216.0 -> 172.0	69305	5.00 µg/L	0.025
18O2-PFHxS	7.116	403.0 -> 83.9	5115	2.50 µg/L	0.025
13C4-PFOA	7.000	417.1 -> 372.0	38853	2.50 µg/L	0.012
13C2-PFDA	7.980	515.1 -> 470.1	14467	1.25 µg/L	0.012
13C5-PFNA	7.522	468.0 -> 423.0	19869	1.25 µg/L	0.026
13C2-PFHxA	5.523	315.1 -> 270.0	48544	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1628	5.47 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.3%		
13C2-6:2FTS	6.774	429.1 -> 80.9	2270	5.68 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.5%		
13C2-8:2FTS	7.779	529.1 -> 80.9	3603	5.56 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.2%		
13C2-PFDoDA	8.831	615.1 -> 570.0	19182	1.24 µg/L	0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C2-PFTeDA	9.562	715.2 -> 670.0	13665	1.00 µg/L	0.062
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 80.2%		
13C3-PFBS	5.476	302.1 -> 79.9	12778	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.2%		
13C3-PFHxS	7.117	402.1 -> 79.9	7666	2.65 µg/L	0.025

7.12
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.2%	
13C4-PFBA	3.214	216.8 -> 171.9	135898	11.38 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 113.8%	
13C4-PFHpA	6.367	367.1 -> 322.0	32333	2.98 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 119.2%	
13C5-PFHxA	5.522	318.0 -> 273.0	61146	2.88 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 115.4%	
13C5-PFPeA	4.524	268.3 -> 223.0	77316	5.67 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 113.4%	
13C6-PFDA	7.979	519.1 -> 474.1	18392	1.43 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 114.3%	
13C7-PFUnDA	8.411	570.0 -> 525.1	17099	1.30 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C8-FOSA	9.558	506.1 -> 77.8	14663	2.78 µg/L	0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.2%	
13C8-PFOA	7.000	421.1 -> 376.0	34773	2.69 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.5%	
13C8-PFOS	8.142	507.1 -> 79.9	10082	2.64 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.4%	
13C9-PFNA	7.521	472.1 -> 427.0	18180	1.31 µg/L	0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.9%	
d3-MeFOSAA	8.049	573.2 -> 419.0	14522	5.38 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.6%	
13C3-HFPO-DA	5.839	286.9 -> 168.9	30027	10.03 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
d3-MeFOSA	10.566	515.0 -> 219.0	6900	2.66 µg/L	0.062
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.2%	
d5-EtFOSAA	8.246	589.2 -> 419.0	11618	5.25 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.9%	
d7-MeFOSE	10.462	623.2 -> 58.9	48963	26.35 µg/L	0.061
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 105.4%	
d9-EtFOSE	10.759	639.2 -> 58.9	59167	26.93 µg/L	0.062
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 107.7%	
d5-EtFOSA	10.861	531.1 -> 219.0	7368	2.52 µg/L	0.062
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	

Target Compounds

Compound	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	8.316	512.9 -> 469.0	0	µg/L m	1
		512.9 -> 219.0	0		
PFDODA	9.043	613.1 -> 569.0	0	µg/L m	1
		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				
PFTTrDA	9.728	663.0 -> 619.0	0		µg/L m	1
PFUnDA	-	663.0 -> 168.9	-	N.D.		
		563.1 -> 519.0				
11Cl-PF3OUdS	-	563.1 -> 269.1	-	N.D.		
		630.9 -> 450.9				
9Cl-PF3ONS	-	632.9 -> 452.9	-	N.D.		
		530.8 -> 351.0				
ADONA	-	532.8 -> 353.0	-	N.D.		
		376.9 -> 250.9				
HFPO-DA	-	376.9 -> 84.8	-	N.D.		
		284.9 -> 168.9				
3:3FTCA	-	284.9 -> 184.9	-	N.D.		
		241.0 -> 177.0				
5:3FTCA	-	241.0 -> 117.0	-	N.D.		
		341.0 -> 237.1				
7:3FTCA	-	341.0 -> 217.0	-	N.D.		
		441.0 -> 316.9				
EtFOSA	-	441.0 -> 336.9	-	N.D.		
		526.0 -> 219.0				
EtFOSE	-	526.0 -> 169.0	-	N.D.		
		630.0 -> 58.9				
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
		699.1 -> 79.9				
PFDoDS	-	699.1 -> 98.8	-	N.D.		
		295.0 -> 201.0				
NFDHA	-	295.0 -> 84.9	-	N.D.		
		279.0 -> 85.1				
PFMBA	-	229.0 -> 84.9	-	N.D.		
PFMPA	-	314.8 -> 134.9	-	N.D.		
PFEESA	-	314.8 -> 82.9	-	N.D.		

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

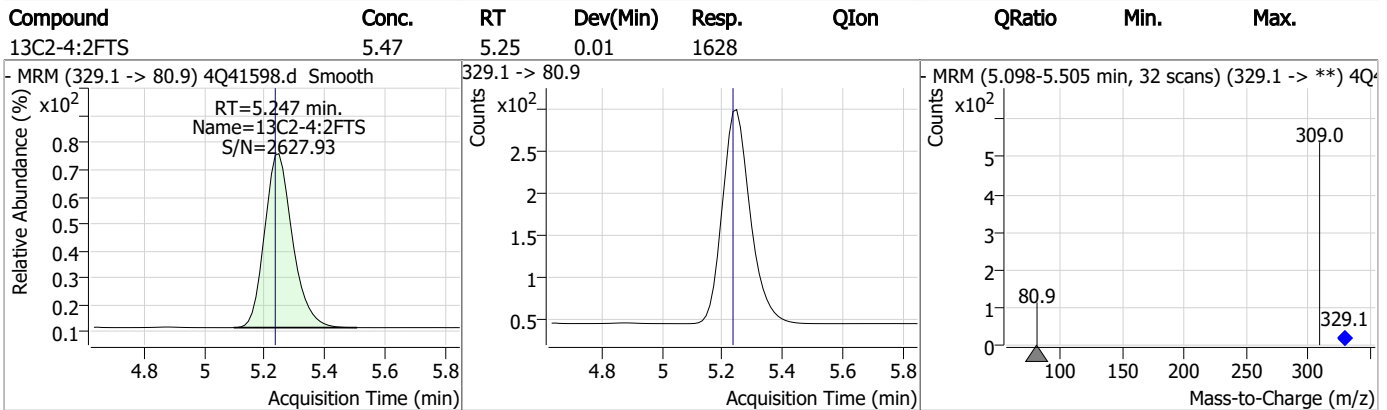
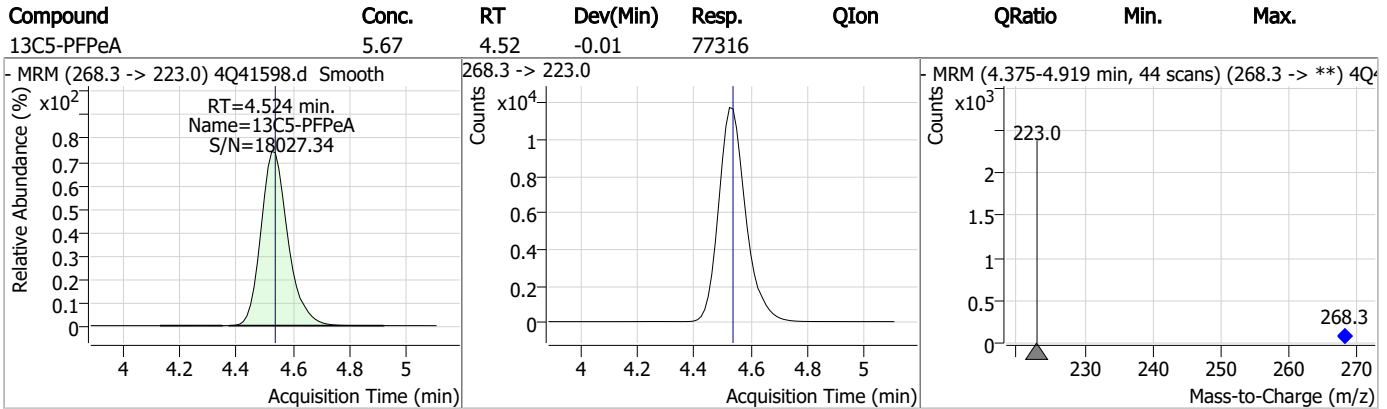
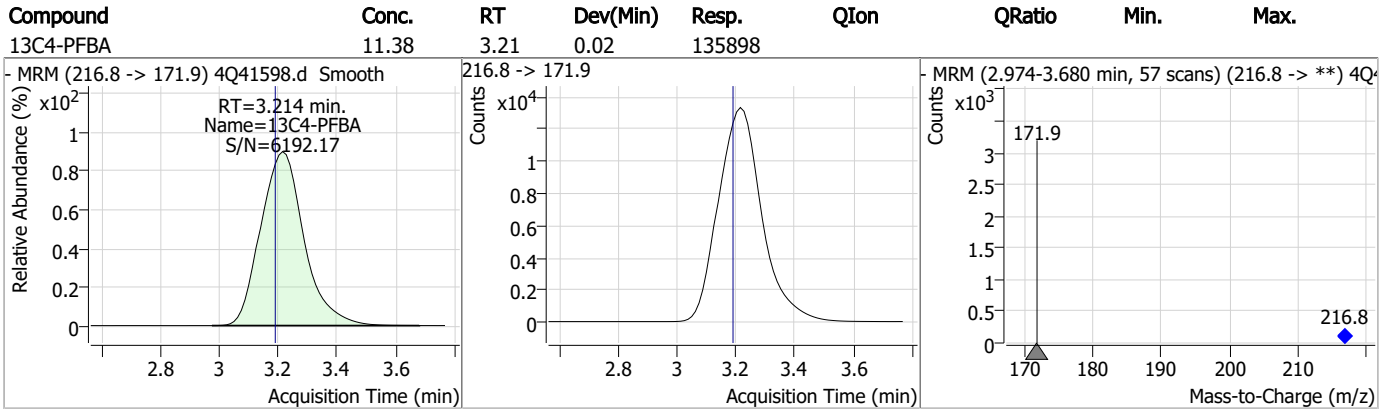
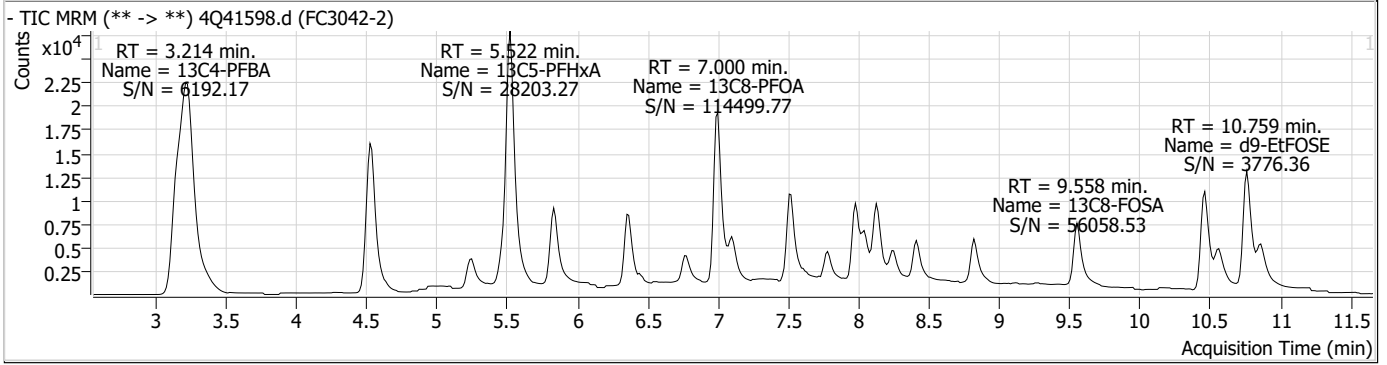
Perfluorinated Compounds by LC/MS/MS

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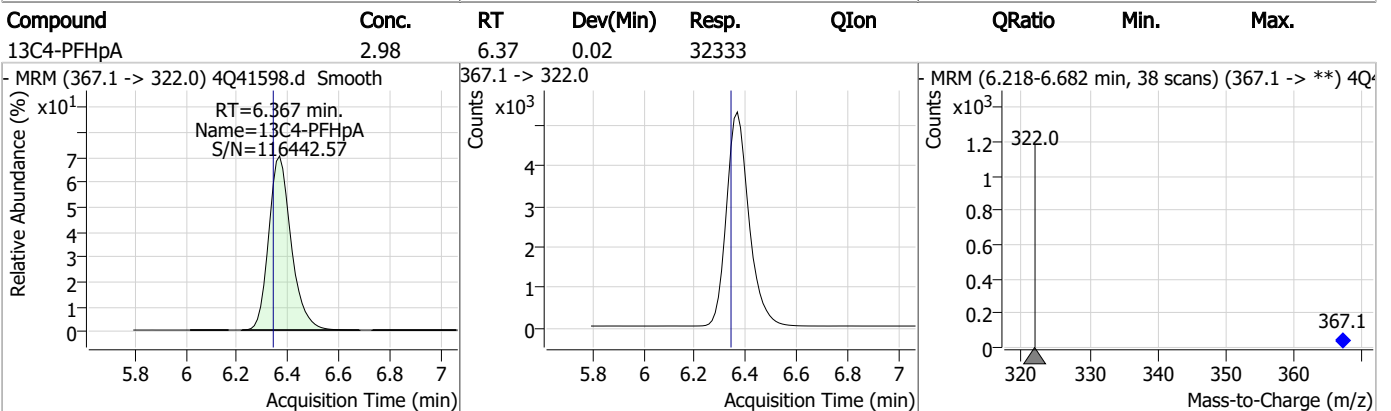
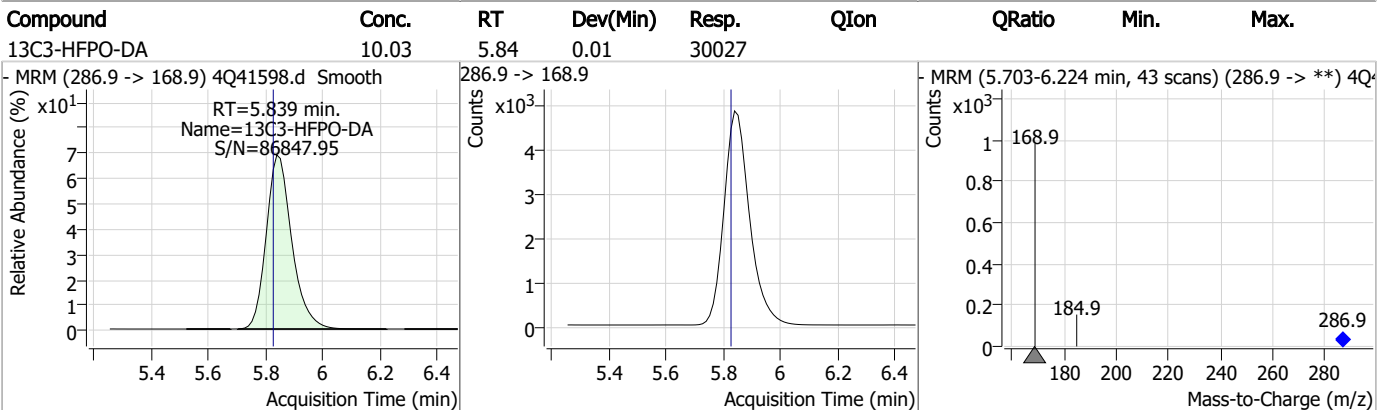
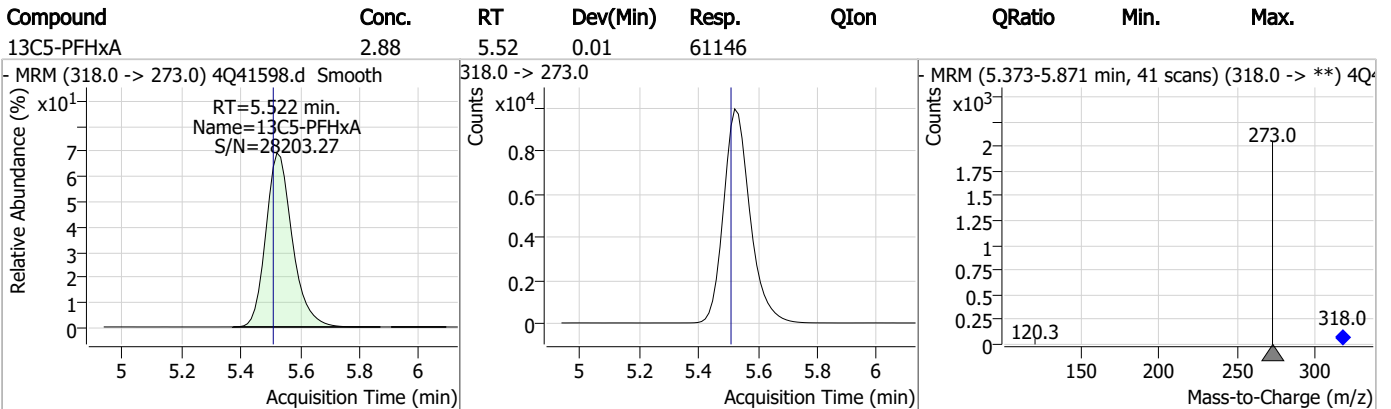
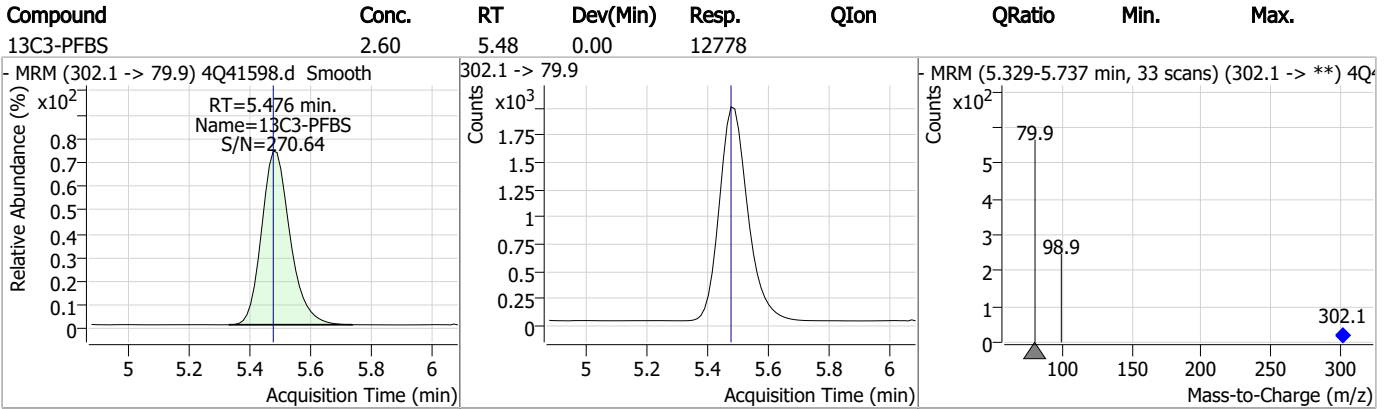
7.1.2
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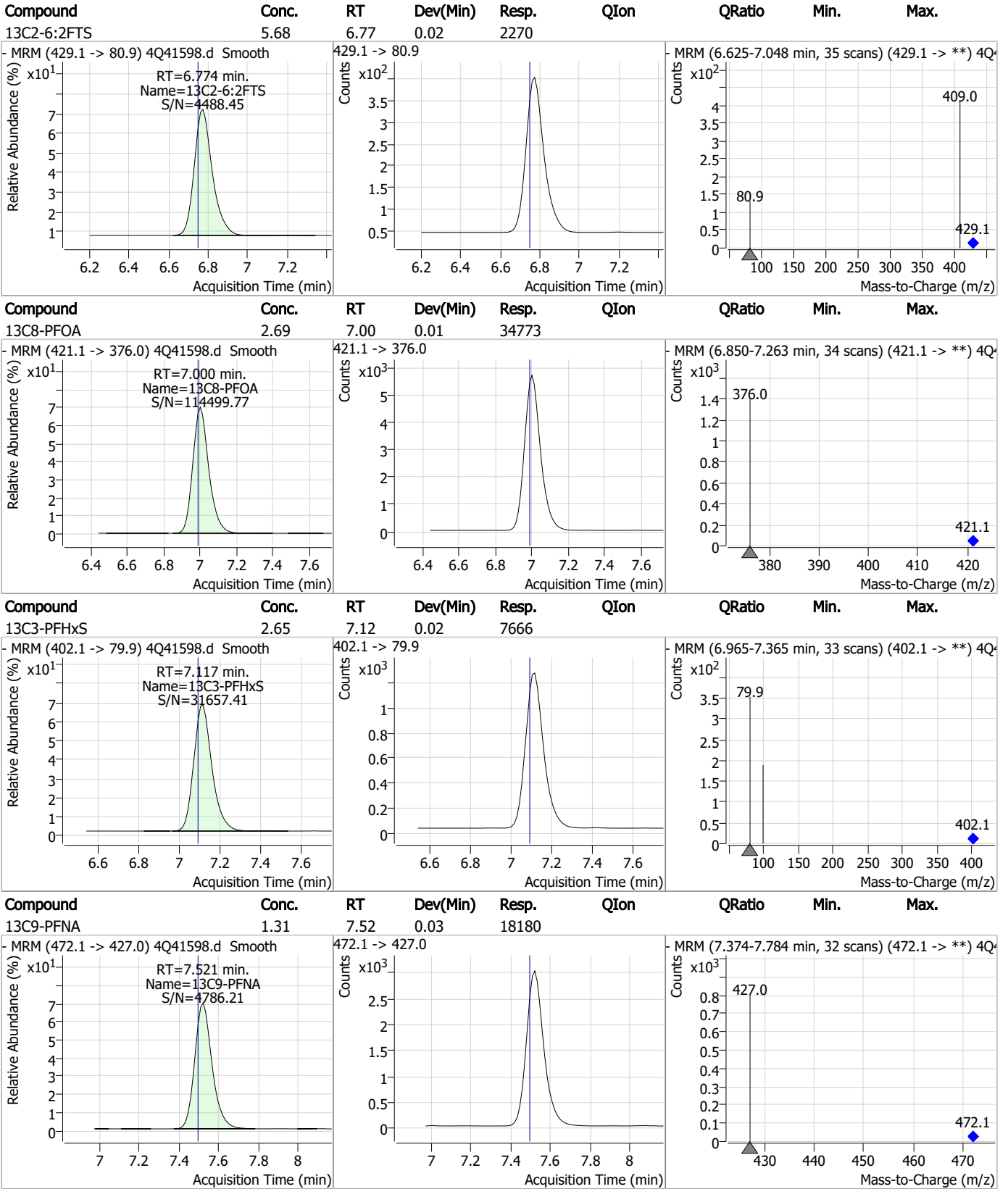
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



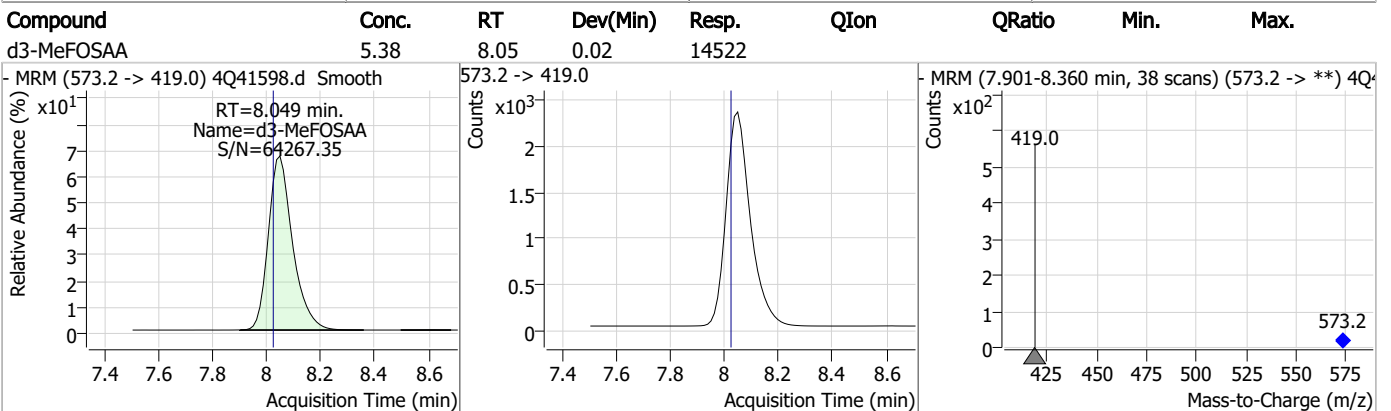
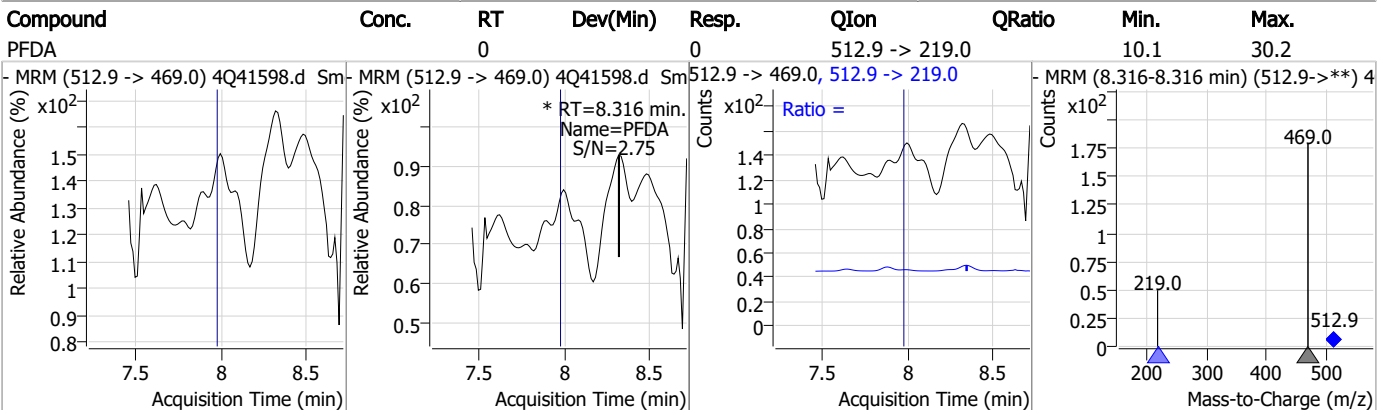
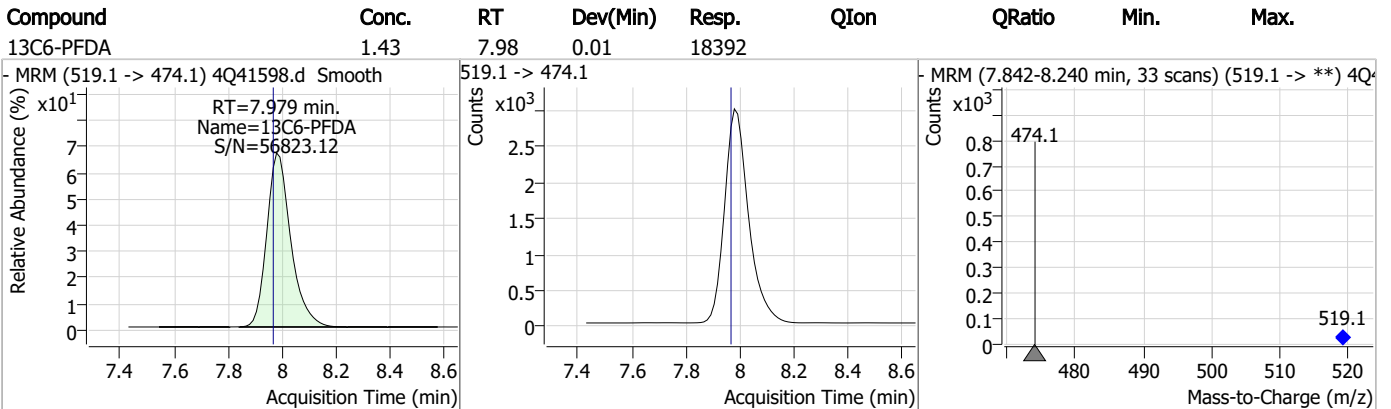
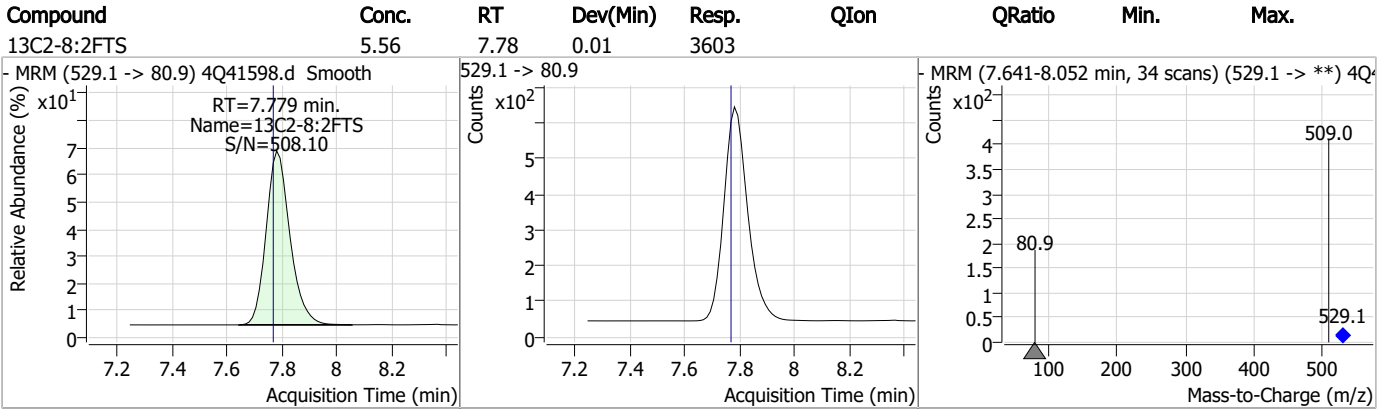
Perfluorinated Compounds by LC/MS/MS



7.1.2

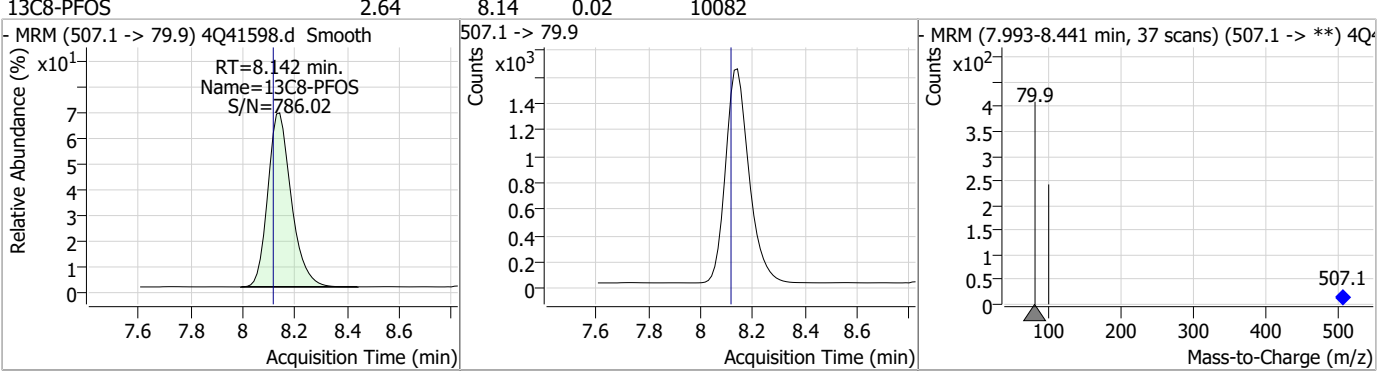
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Perfluorinated Compounds by LC/MS/MS

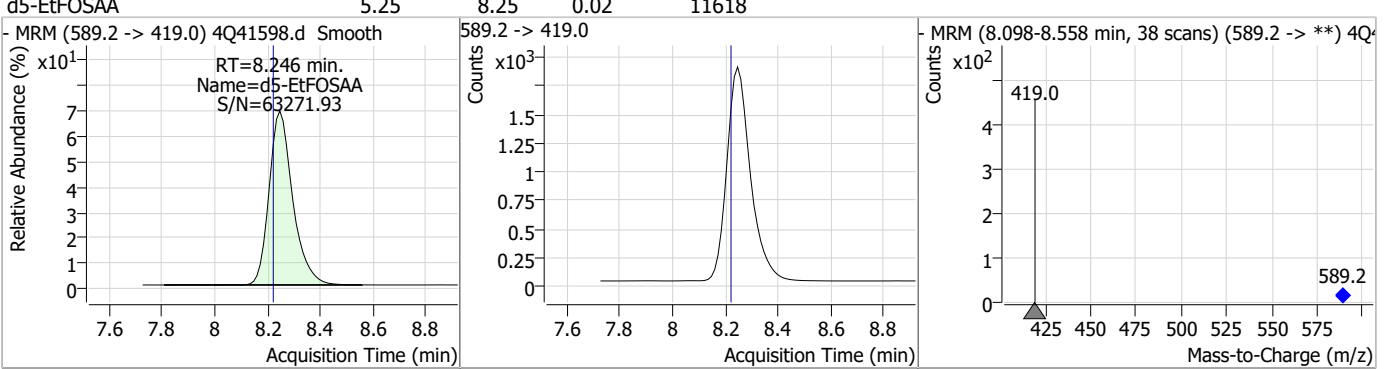


Perfluorinated Compounds by LC/MS/MS

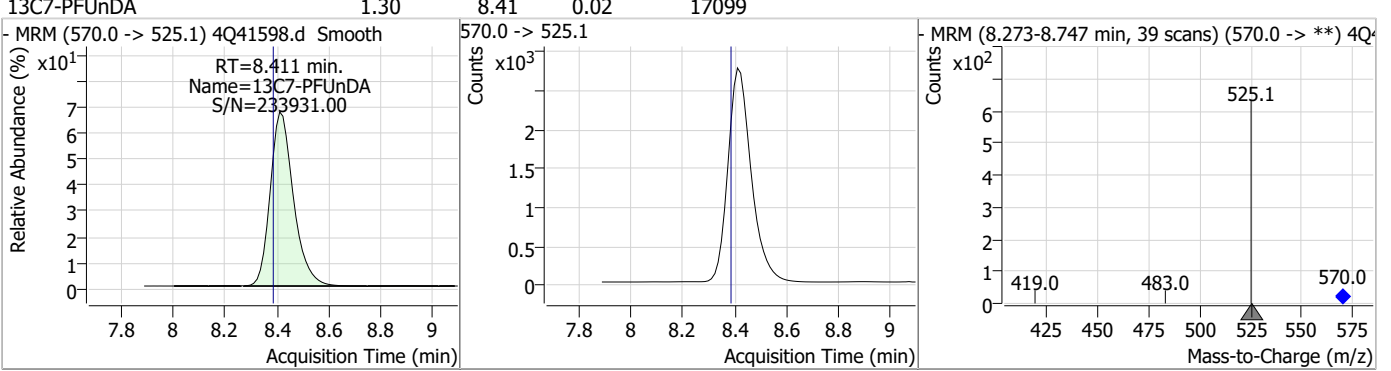
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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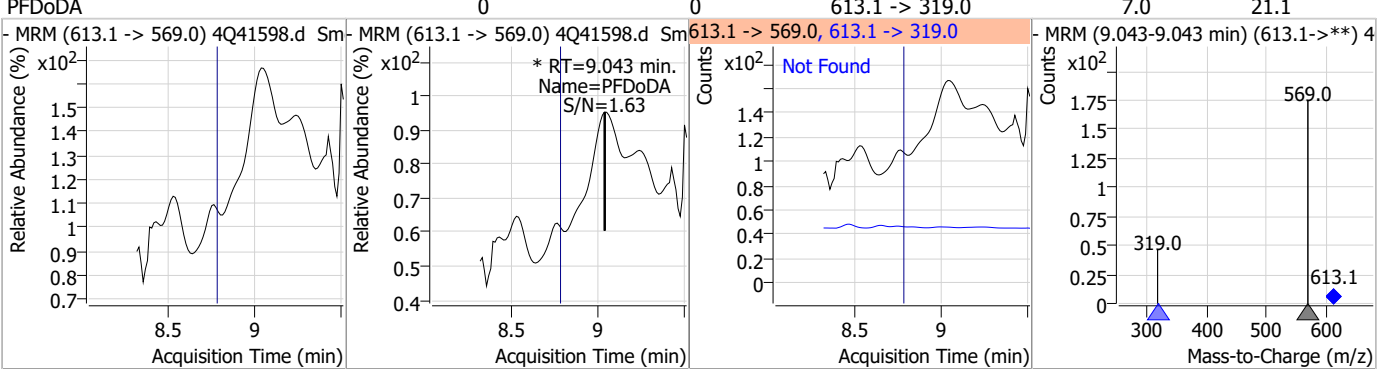
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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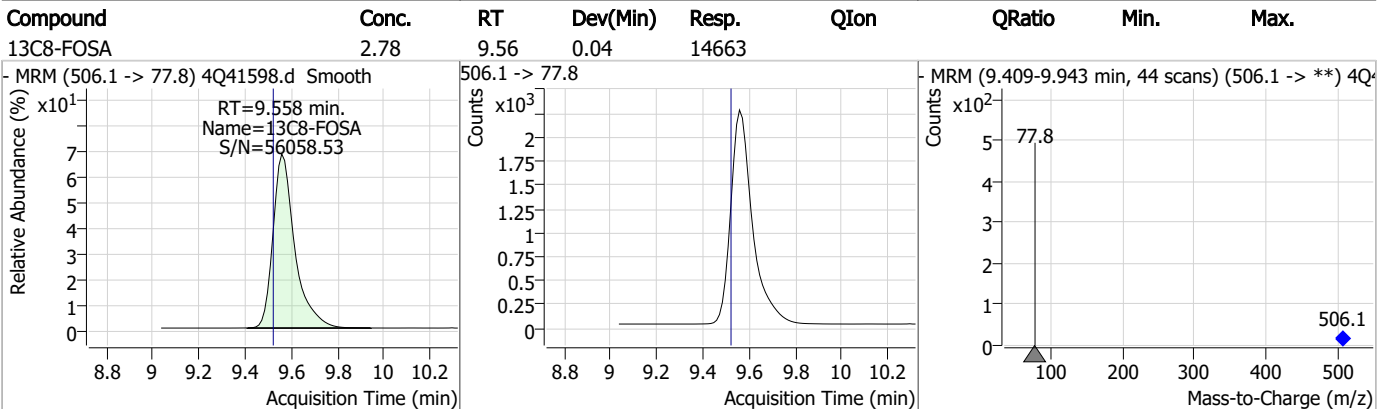
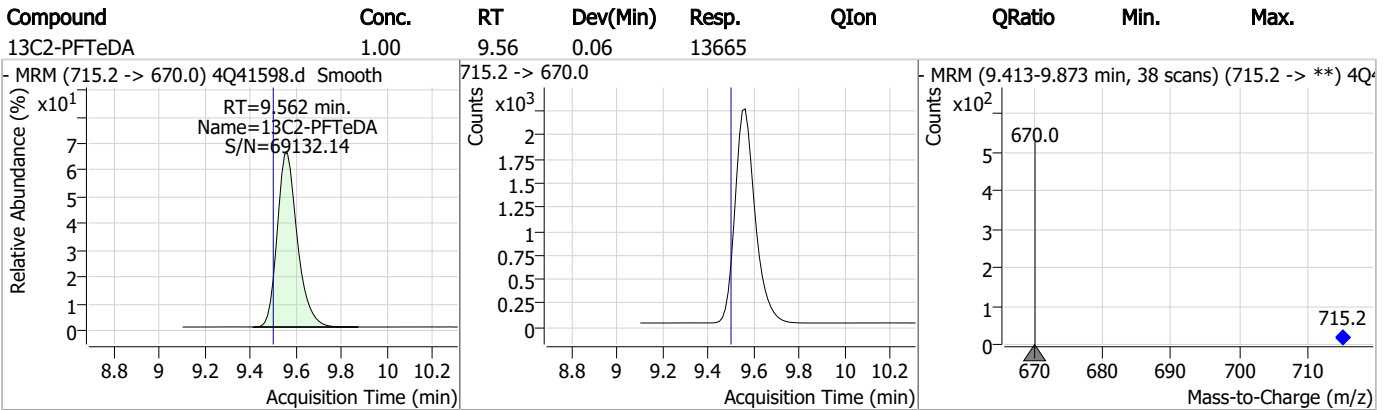
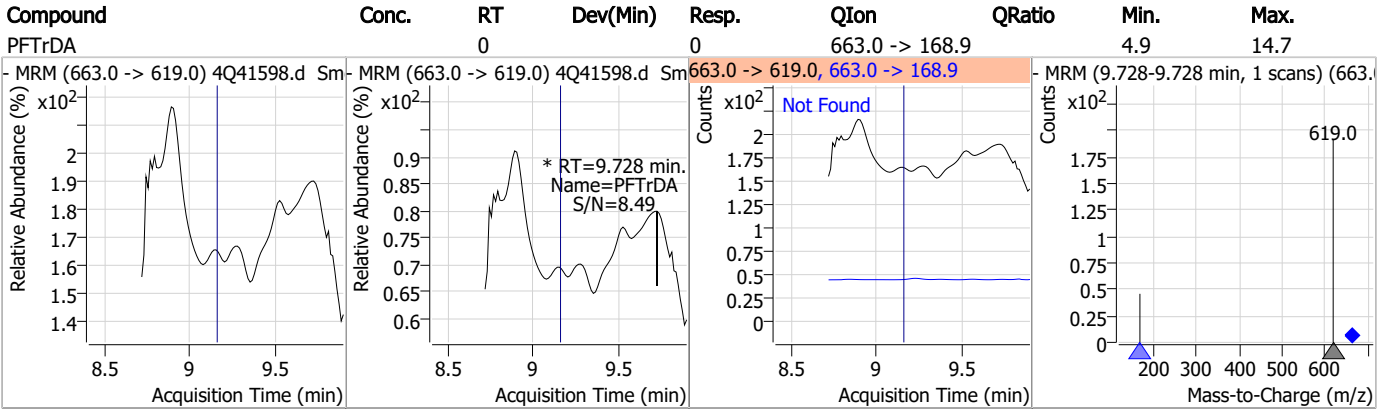
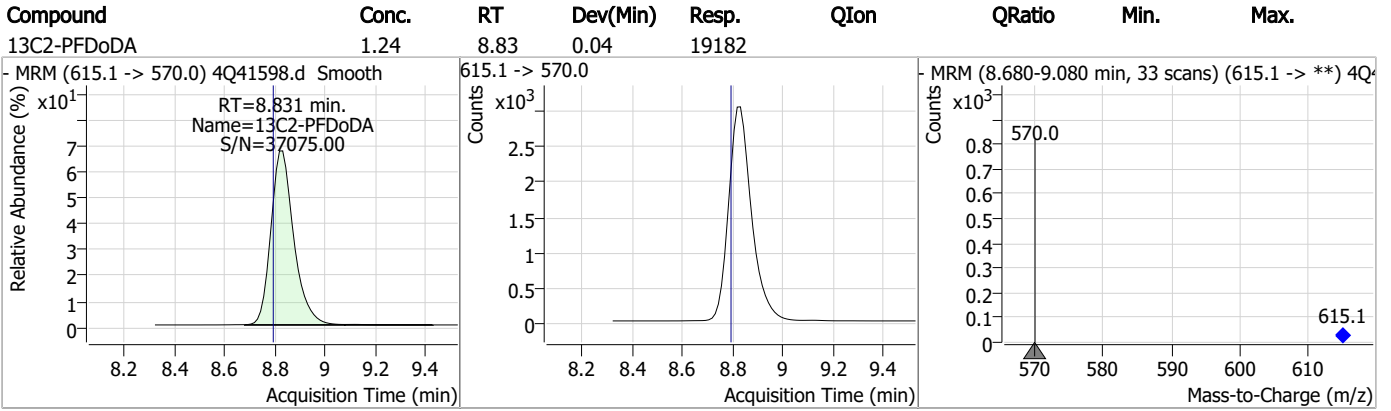
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
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Perfluorinated Compounds by LC/MS/MS

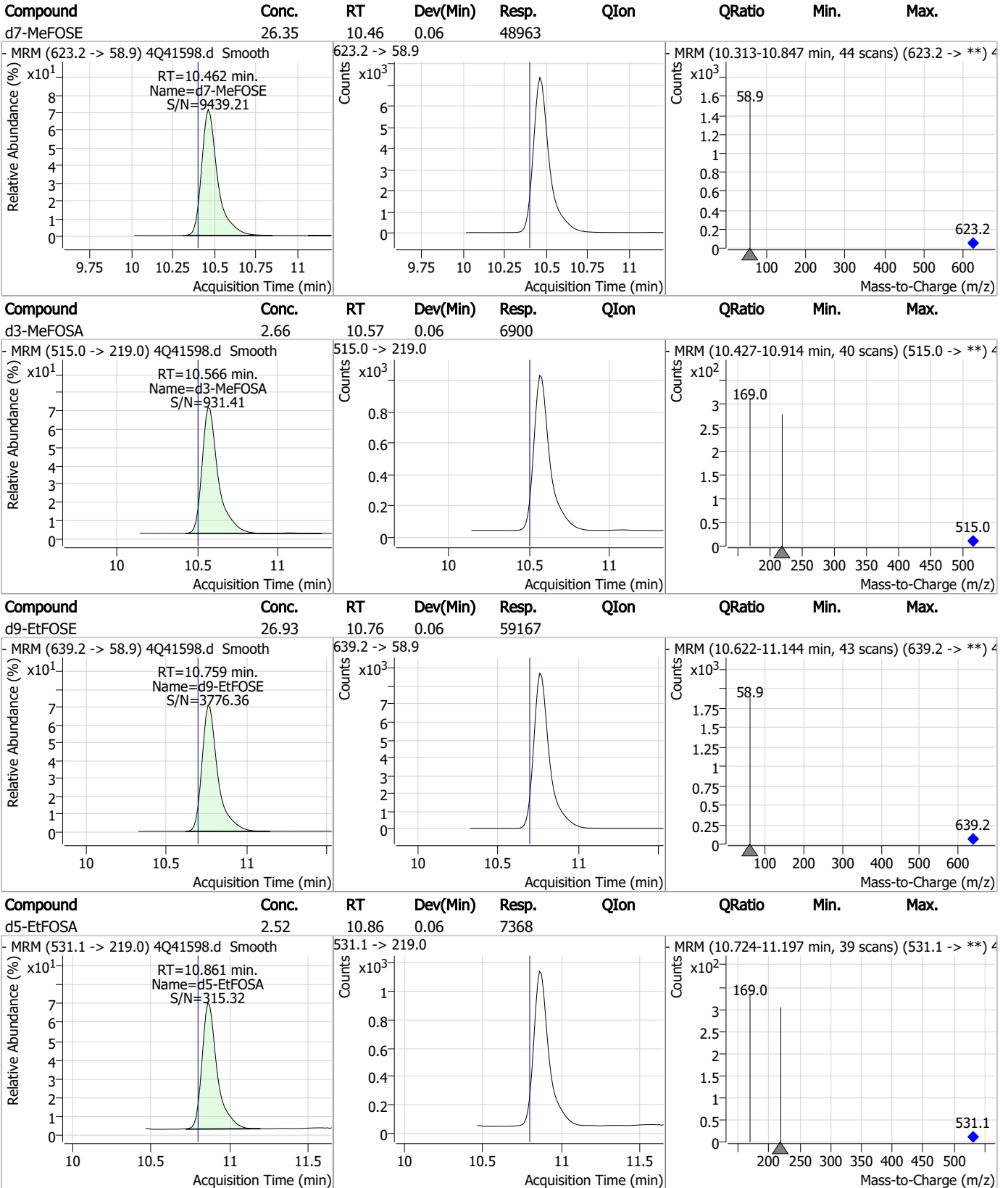


7.1.2

7



Perfluorinated Compounds by LC/MS/MS



7.1.2
7



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41596.d
 Operator : marthav
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 3/2/2023 5:39:14 PM
 Sample Name : op95682-mb
 Vial : P3-A6
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q595.batch.bin
 Sample Information : op95682,S4Q595,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.202	216.8 -> 171.9	128524	10.00 µg/L	0.013
M5-PFPeA	4.537	268.3 -> 223.0	76819	5.00 µg/L	0.000
M5-PFHxA	5.522	318.0 -> 273.0	58940	2.50 µg/L	0.012
M4-PFHpA	6.342	367.1 -> 322.0	31476	2.50 µg/L	0.000
M8-PFOA	6.988	421.1 -> 376.0	34548	2.50 µg/L	0.000
M9-PFNA	7.496	472.1 -> 427.0	18188	1.25 µg/L	0.000
M6-PFDA	7.967	519.1 -> 474.1	17147	1.25 µg/L	0.000
M7-PFUnDA	8.386	570.0 -> 525.1	17514	1.25 µg/L	0.000
M2-PFDoDA	8.793	615.1 -> 570.0	19538	1.25 µg/L	0.000
M2-PFTeDA	9.488	715.2 -> 670.0	15172	1.25 µg/L	-0.012
M8-FOSA	9.509	506.1 -> 77.8	13709	2.50 µg/L	-0.012
M3-PFBS	5.476	302.1 -> 79.9	12630	2.50 µg/L	0.000
M3-PFHxS	7.092	402.1 -> 79.9	7721	2.50 µg/L	0.000
M8-PFOS	8.117	507.1 -> 79.9	10112	2.50 µg/L	0.000
M2-4:2FTS	5.235	329.1 -> 80.9	1567	5.00 µg/L	0.000
M2-6:2FTS	6.749	429.1 -> 80.9	2112	5.00 µg/L	0.000
M2-8:2FTS	7.754	529.1 -> 80.9	3606	5.00 µg/L	-0.012
M3-MeFOSAA	8.025	573.2 -> 419.0	14391	5.00 µg/L	0.000
M3-HFPO-DA	5.827	286.9 -> 168.9	29759	10.00 µg/L	0.000
M5-EtFOSAA	8.221	589.2 -> 419.0	11144	5.00 µg/L	0.000
M7-MeFOSE	10.388	623.2 -> 58.9	49266	25.00 µg/L	-0.012
M9-EtFOSE	10.684	639.2 -> 58.9	62564	25.00 µg/L	-0.012
M5-EtFOSA	10.787	531.1 -> 219.0	7241	2.50 µg/L	-0.012
M3-MeFOSA	10.491	515.0 -> 219.0	6664	2.50 µg/L	-0.012
13C4-PFOS	8.118	502.8 -> 79.9	9995	2.50 µg/L	0.000
13C3-PFBA	3.205	216.0 -> 172.0	67400	5.00 µg/L	0.013
18O2-PFHxS	7.091	403.0 -> 83.9	4880	2.50 µg/L	0.000
13C4-PFOA	6.988	417.1 -> 372.0	38507	2.50 µg/L	0.000
13C2-PFDA	7.967	515.1 -> 470.1	14577	1.25 µg/L	0.000
13C5-PFNA	7.496	468.0 -> 423.0	19982	1.25 µg/L	0.000
13C2-PFHxA	5.523	315.1 -> 270.0	48525	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	1567	5.51 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.3%		
13C2-6:2FTS	6.749	429.1 -> 80.9	2112	5.54 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.7%		
13C2-8:2FTS	7.754	529.1 -> 80.9	3606	5.83 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.6%		
13C2-PFDoDA	8.793	615.1 -> 570.0	19538	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C2-PFTeDA	9.488	715.2 -> 670.0	15172	1.10 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.4%		
13C3-PFBS	5.476	302.1 -> 79.9	12630	2.70 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.9%		
13C3-PFHxS	7.092	402.1 -> 79.9	7721	2.80 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.1%	
13C4-PFBA	3.202	216.8 -> 171.9	128524	11.07 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 110.7%	
13C4-PFHpA	6.342	367.1 -> 322.0	31476	2.90 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 116.1%	
13C5-PFHxA	5.522	318.0 -> 273.0	58940	2.78 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.3%	
13C5-PFPeA	4.537	268.3 -> 223.0	76819	5.63 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 112.7%	
13C6-PFDA	7.967	519.1 -> 474.1	17147	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.8%	
13C7-PFUnDA	8.386	570.0 -> 525.1	17514	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.5%	
13C8-FOSA	9.509	506.1 -> 77.8	13709	2.47 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C8-PFOA	6.988	421.1 -> 376.0	34548	2.69 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.7%	
13C8-PFOS	8.117	507.1 -> 79.9	10112	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C9-PFNA	7.496	472.1 -> 427.0	18188	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.4%	
d3-MeFOSAA	8.025	573.2 -> 419.0	14391	5.08 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C3-HFPO-DA	5.827	286.9 -> 168.9	29759	9.95 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
d3-MeFOSA	10.491	515.0 -> 219.0	6664	2.44 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%	
d5-EtFOSAA	8.221	589.2 -> 419.0	11144	4.79 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.8%	
d7-MeFOSE	10.388	623.2 -> 58.9	49266	25.25 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
d9-EtFOSE	10.684	639.2 -> 58.9	62564	27.11 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 108.5%	
d5-EtFOSA	10.787	531.1 -> 219.0	7241	2.36 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.5%	

Target Compounds

Compound	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	9.169	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	9.541	663.0 -> 619.0	0	µg/L	m	1
		663.0 -> 168.9	0			
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

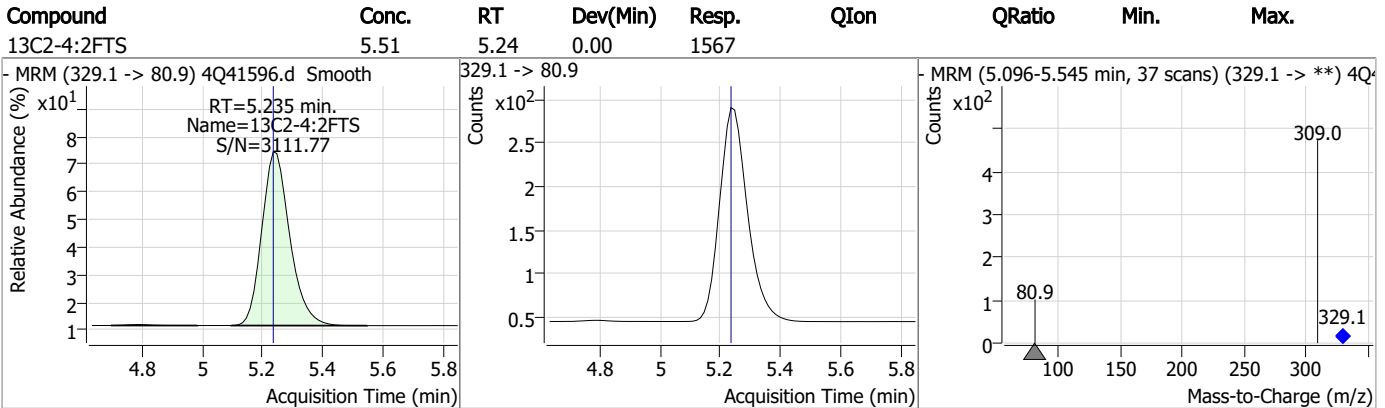
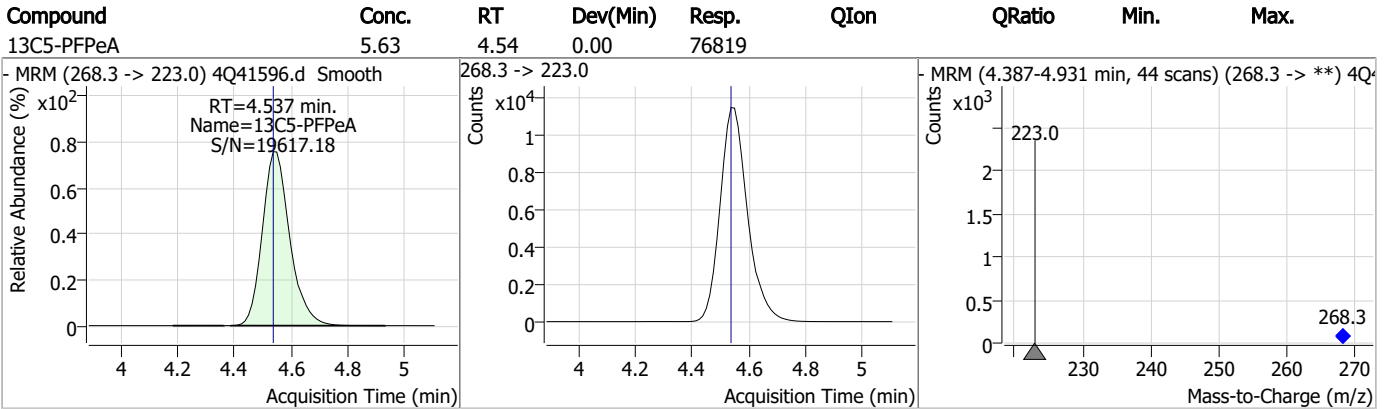
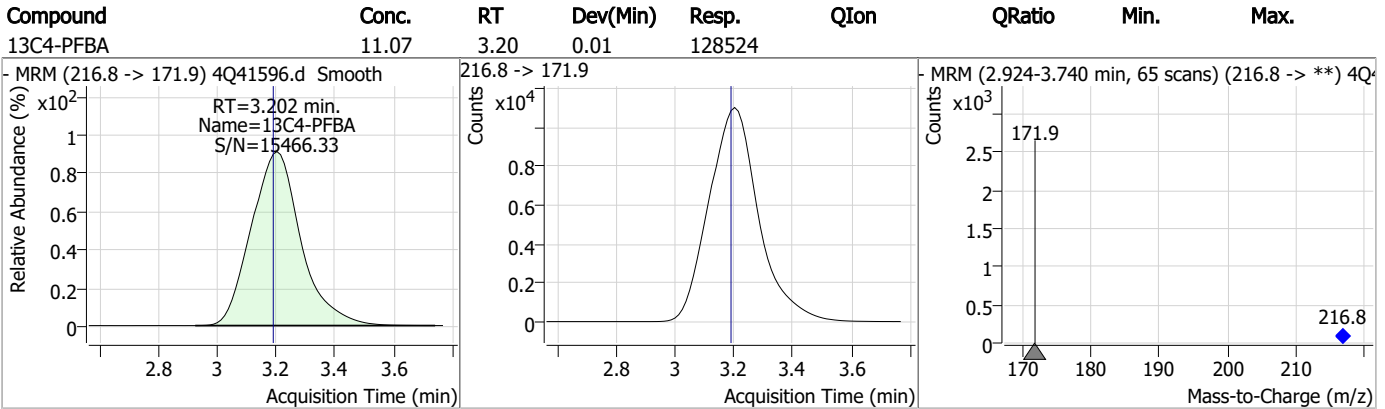
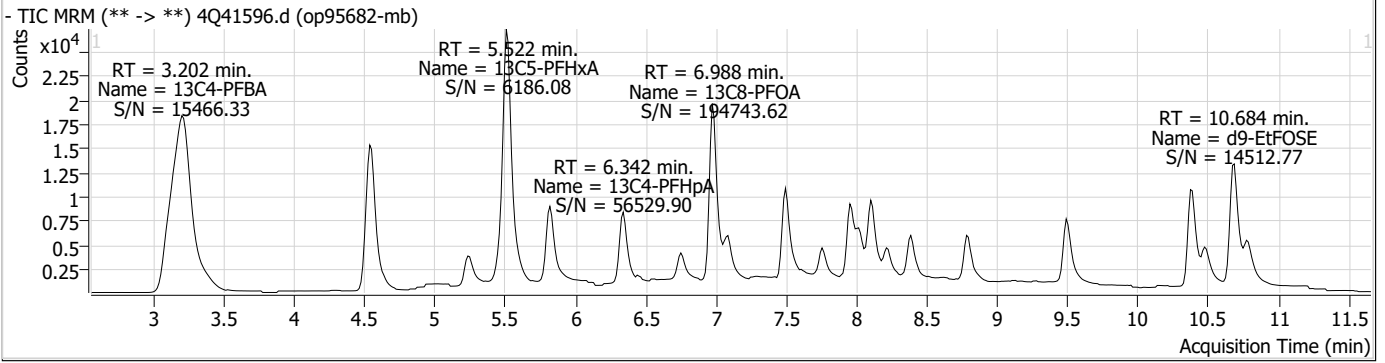
Perfluorinated Compounds by LC/MS/MS

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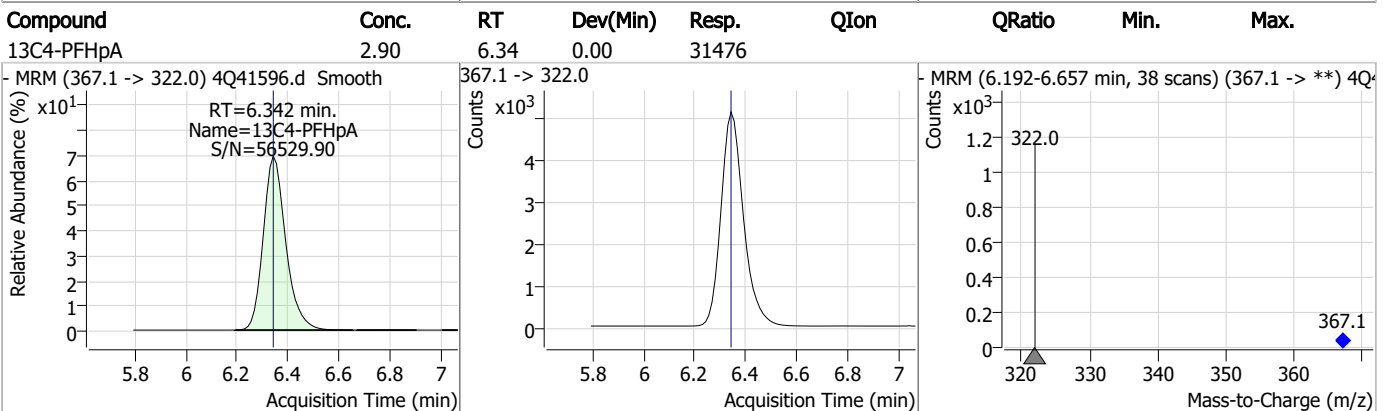
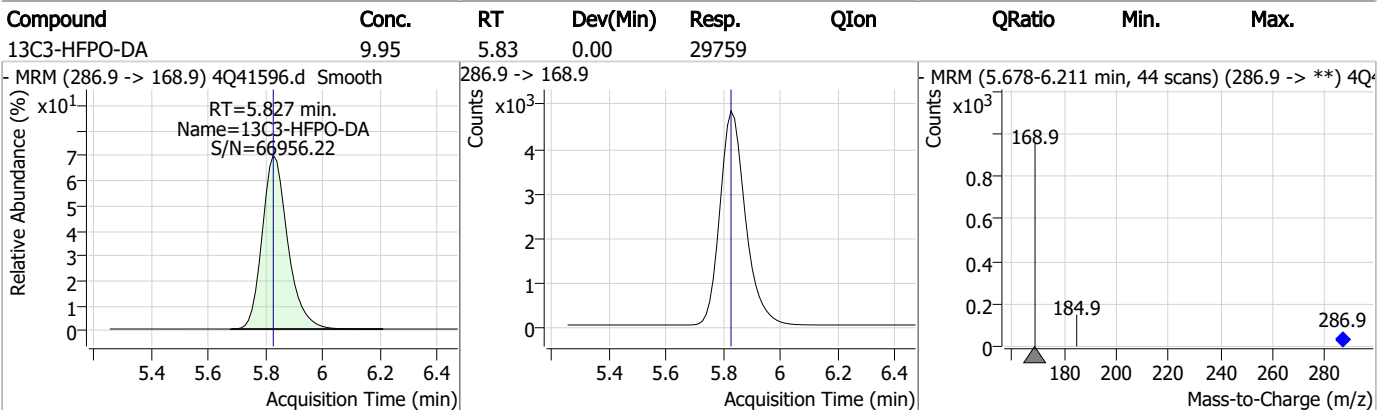
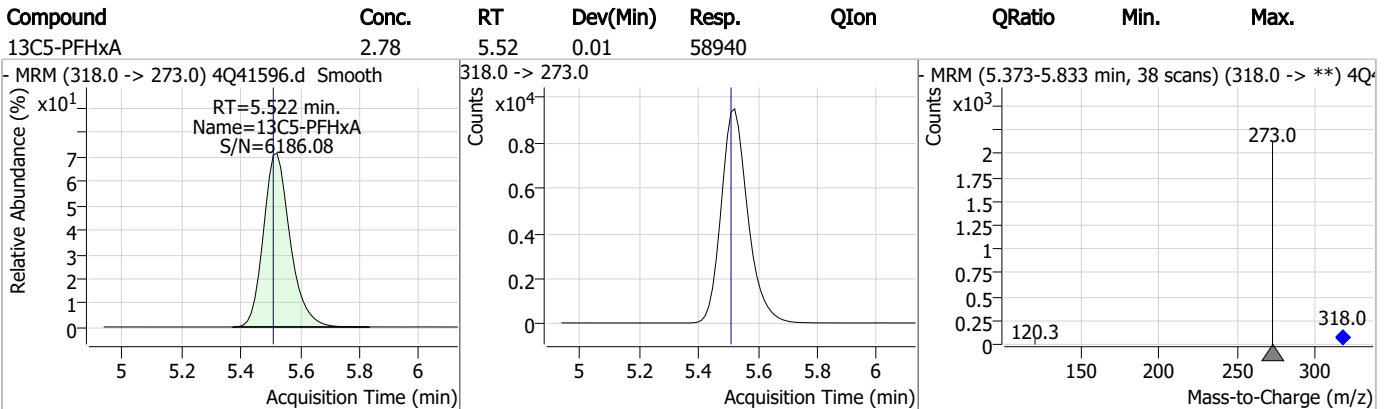
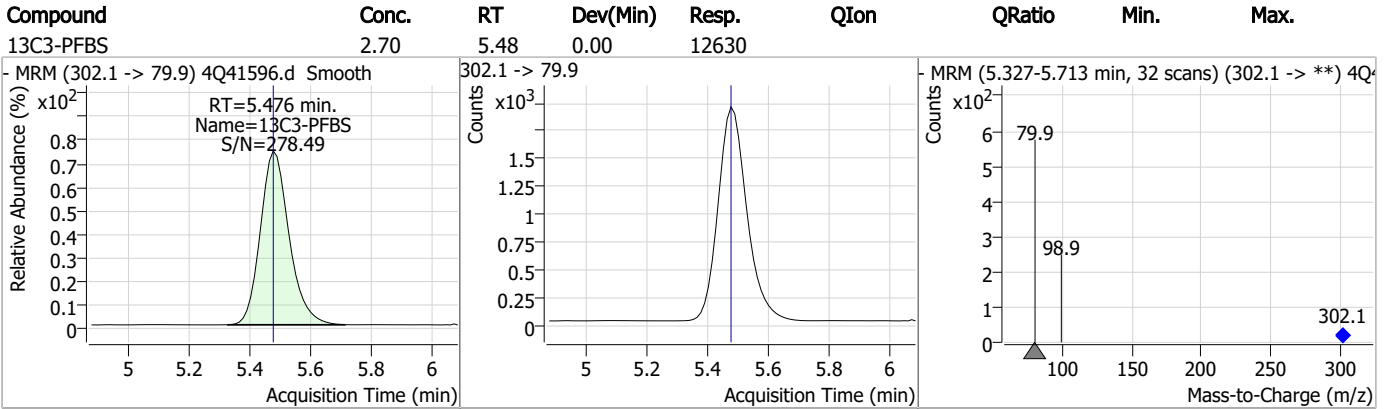
7.2.1

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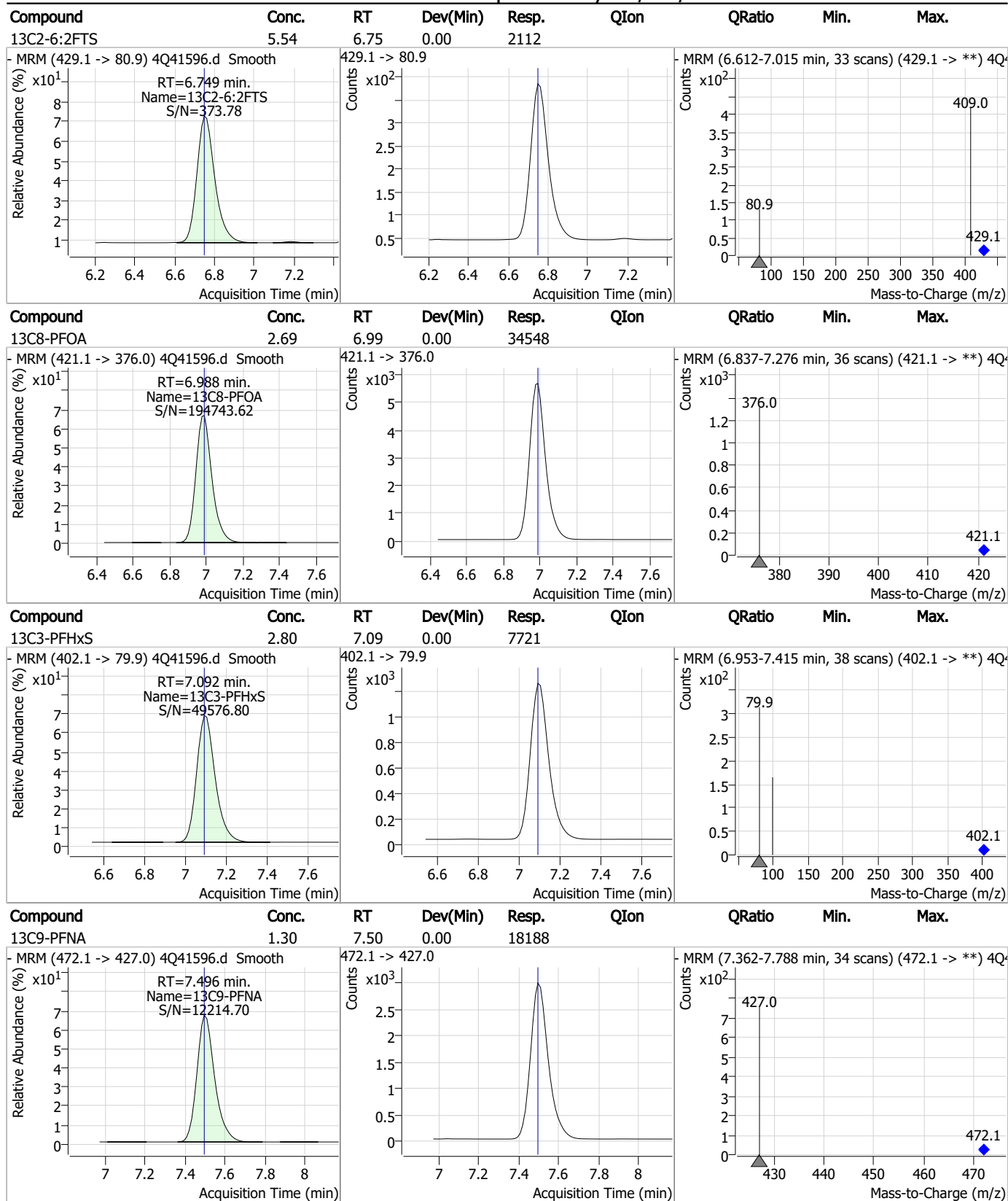
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



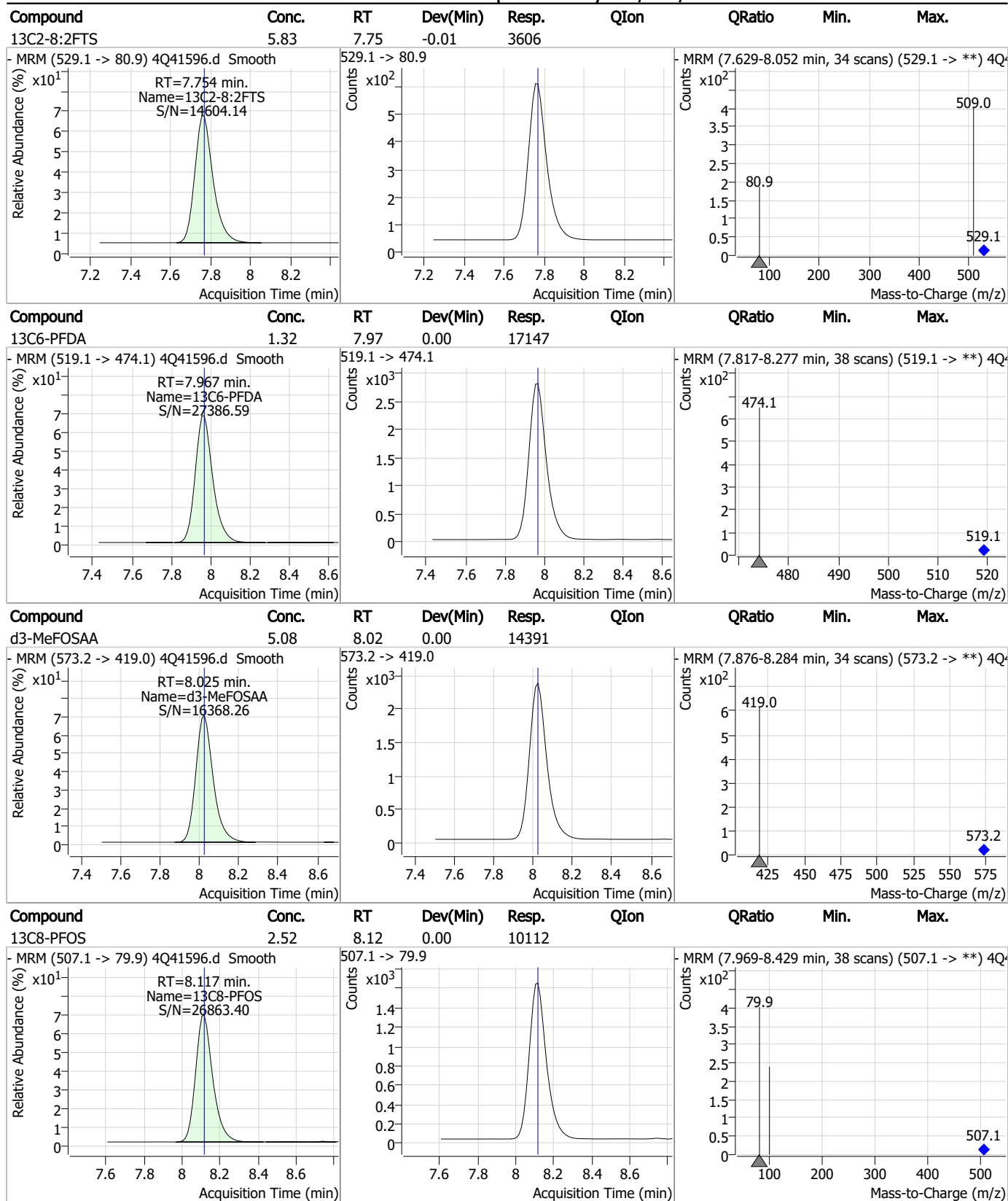
Perfluorinated Compounds by LC/MS/MS



7.2.1
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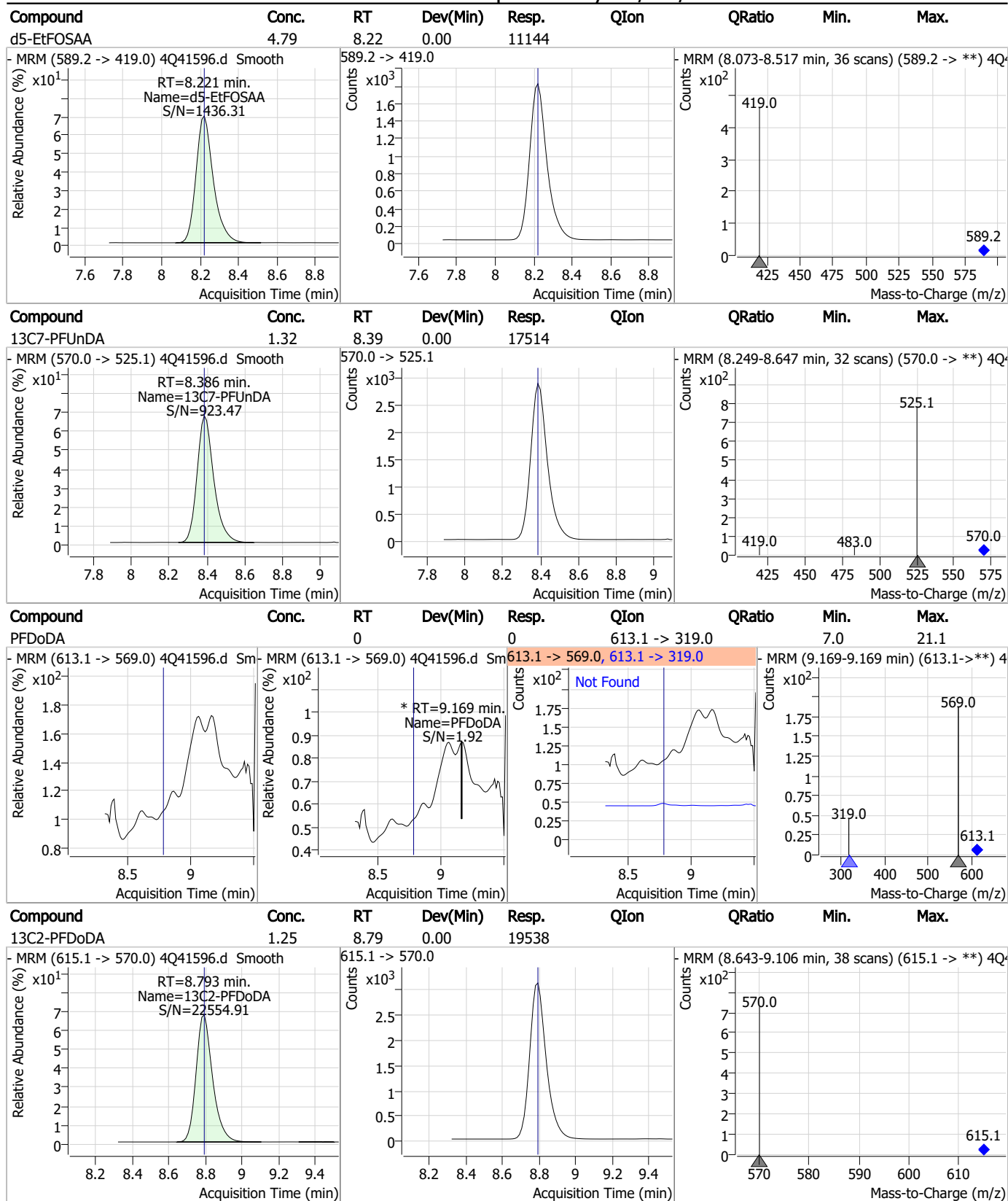


Perfluorinated Compounds by LC/MS/MS



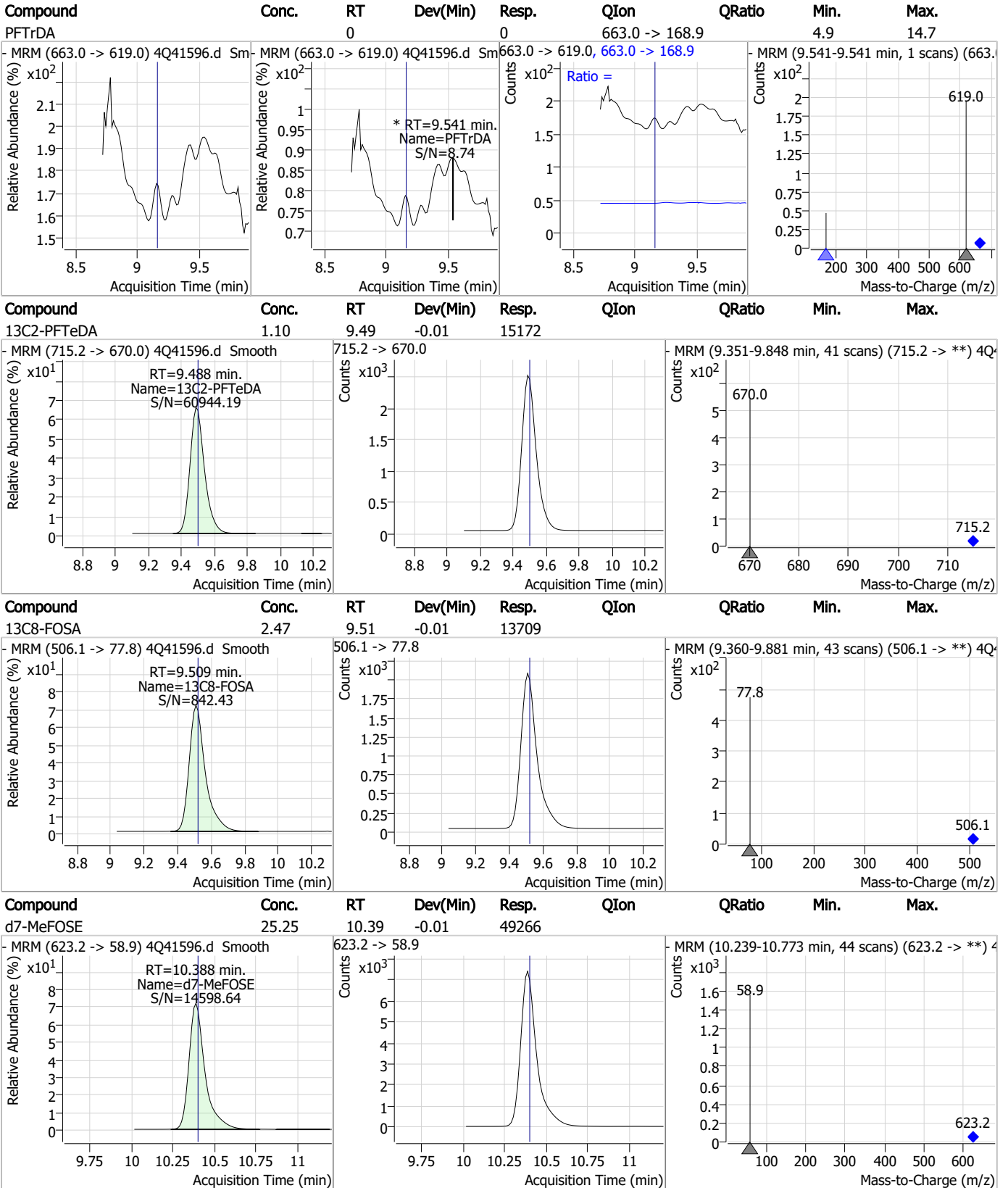
7.2.1
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Perfluorinated Compounds by LC/MS/MS



7.2.1
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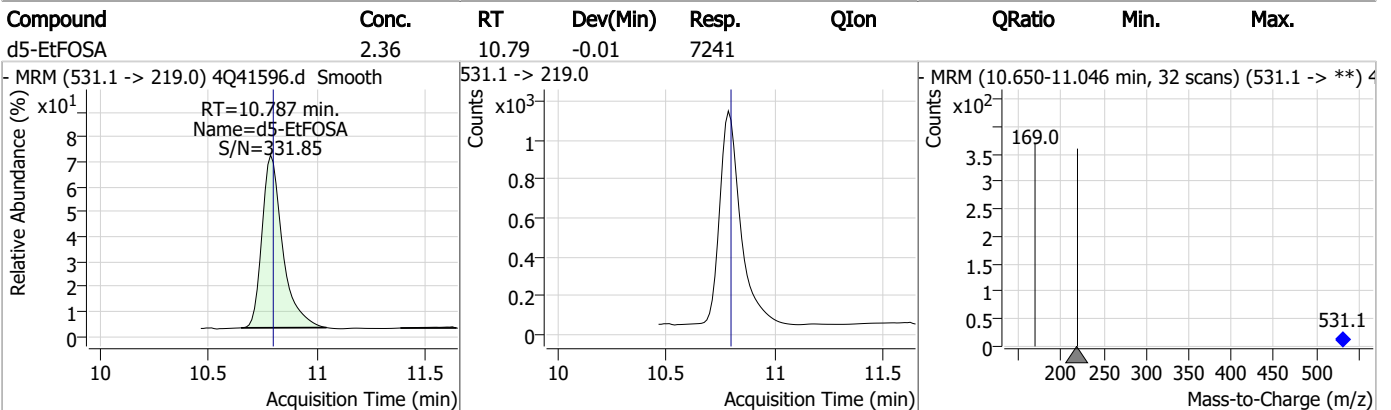
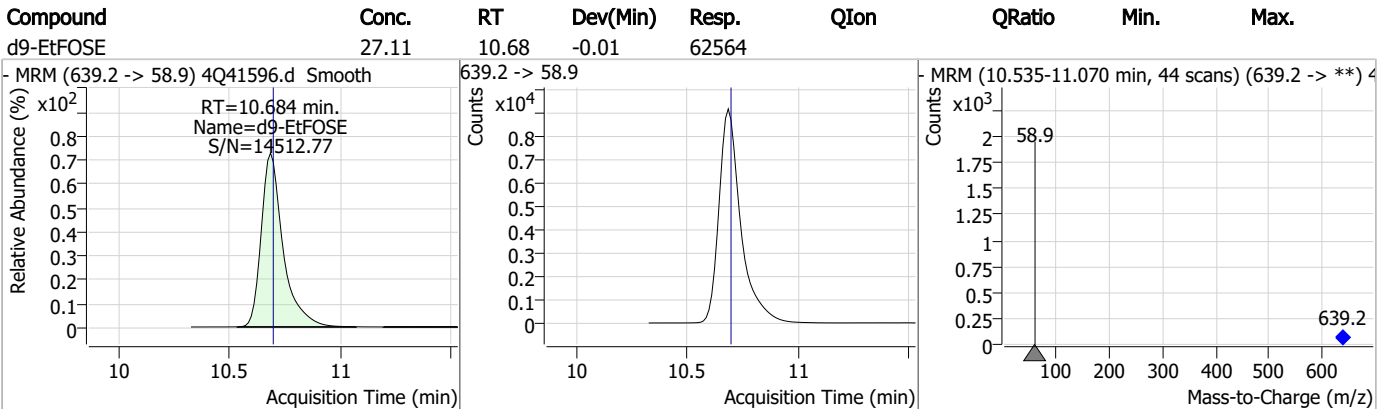
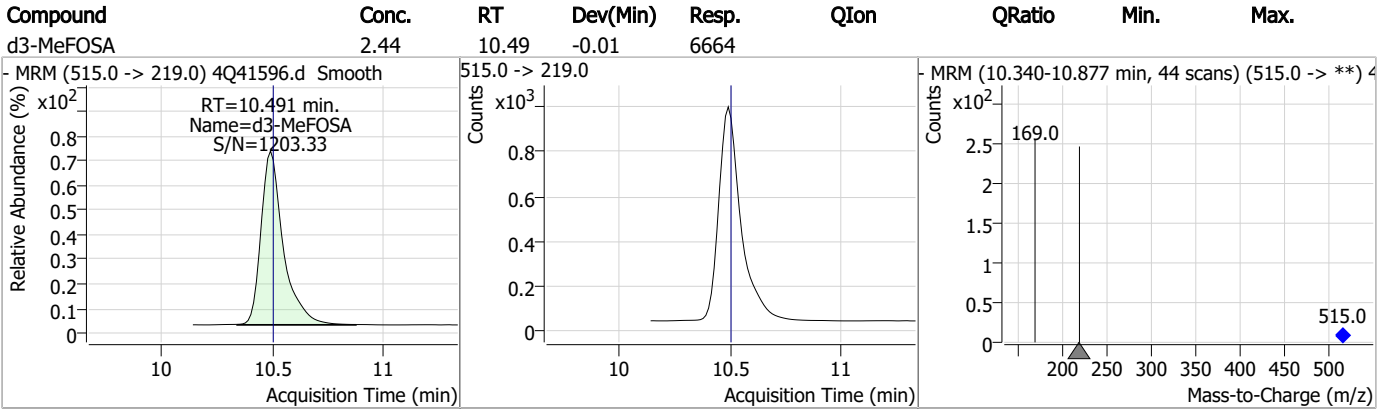
Perfluorinated Compounds by LC/MS/MS



7.2.1

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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41588.d
 Operator : marthav
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 3/2/2023 2:53:02 PM
 Sample Name : iblk
 Vial : P1-A1
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q595.batch.bin
 Sample Information : op95682,S4Q595,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.339	216.8 -> 171.9	141832	10.00 µg/L	0.150
M5-PFPeA	4.549	268.3 -> 223.0	93133	5.00 µg/L	0.012
M5-PFHxA	5.509	318.0 -> 273.0	67961	2.50 µg/L	0.000
M4-PFHpA	6.318	367.1 -> 322.0	37750	2.50 µg/L	-0.025
M8-PFOA	6.962	421.1 -> 376.0	43407	2.50 µg/L	-0.026
M9-PFNA	7.483	472.1 -> 427.0	22828	1.25 µg/L	-0.012
M6-PFDA	7.942	519.1 -> 474.1	20510	1.25 µg/L	-0.025
M7-PFUnDA	8.386	570.0 -> 525.1	21546	1.25 µg/L	0.000
M2-PFDoDA	8.793	615.1 -> 570.0	25469	1.25 µg/L	0.000
M2-PFTeDA	9.525	715.2 -> 670.0	19831	1.25 µg/L	0.025
M8-FOSA	9.534	506.1 -> 77.8	16446	2.50 µg/L	0.012
M3-PFBS	5.476	302.1 -> 79.9	15714	2.50 µg/L	0.000
M3-PFHxS	7.080	402.1 -> 79.9	8713	2.50 µg/L	-0.012
M8-PFOS	8.093	507.1 -> 79.9	11544	2.50 µg/L	-0.025
M2-4:2FTS	5.235	329.1 -> 80.9	1798	5.00 µg/L	0.000
M2-6:2FTS	6.736	429.1 -> 80.9	2344	5.00 µg/L	-0.012
M2-8:2FTS	7.741	529.1 -> 80.9	3801	5.00 µg/L	-0.025
M3-MeFOSAA	8.000	573.2 -> 419.0	14798	5.00 µg/L	-0.025
M3-HFPO-DA	5.815	286.9 -> 168.9	36089	10.00 µg/L	-0.012
M5-EtFOSAA	8.209	589.2 -> 419.0	13375	5.00 µg/L	-0.012
M7-MeFOSE	10.438	623.2 -> 58.9	63675	25.00 µg/L	0.037
M9-EtFOSE	10.734	639.2 -> 58.9	75558	25.00 µg/L	0.037
M5-EtFOSA	10.849	531.1 -> 219.0	9919	2.50 µg/L	0.050
M3-MeFOSA	10.541	515.0 -> 219.0	8655	2.50 µg/L	0.037
13C4-PFOS	8.093	502.8 -> 79.9	11877	2.50 µg/L	-0.025
13C3-PFBA	3.342	216.0 -> 172.0	84853	5.00 µg/L	0.150
18O2-PFHxS	7.079	403.0 -> 83.9	6202	2.50 µg/L	-0.012
13C4-PFOA	6.962	417.1 -> 372.0	50056	2.50 µg/L	-0.026
13C2-PFDA	7.943	515.1 -> 470.1	18846	1.25 µg/L	-0.025
13C5-PFNA	7.484	468.0 -> 423.0	25503	1.25 µg/L	-0.012
13C2-PFHxA	5.510	315.1 -> 270.0	63839	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	1798	4.98 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C2-6:2FTS	6.736	429.1 -> 80.9	2344	4.83 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.7%		
13C2-8:2FTS	7.741	529.1 -> 80.9	3801	4.84 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.7%		
13C2-PFDoDA	8.793	615.1 -> 570.0	25469	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C2-PFTeDA	9.525	715.2 -> 670.0	19831	1.12 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.4%		
13C3-PFBS	5.476	302.1 -> 79.9	15714	2.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.6%		
13C3-PFHxS	7.080	402.1 -> 79.9	8713	2.49 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C4-PFBA	3.339	216.8 -> 171.9	141832	9.70 µg/L	0.150
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C4-PFHpA	6.318	367.1 -> 322.0	37750	2.65 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.8%	
13C5-PFHxA	5.509	318.0 -> 273.0	67961	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.5%	
13C5-PFPeA	4.549	268.3 -> 223.0	93133	5.19 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C6-PFDA	7.942	519.1 -> 474.1	20510	1.22 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C7-PFUnDA	8.386	570.0 -> 525.1	21546	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C8-FOSA	9.534	506.1 -> 77.8	16446	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C8-PFOA	6.962	421.1 -> 376.0	43407	2.60 µg/L	-0.026
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.1%	
13C8-PFOS	8.093	507.1 -> 79.9	11544	2.42 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C9-PFNA	7.483	472.1 -> 427.0	22828	1.28 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.6%	
d3-MeFOSAA	8.000	573.2 -> 419.0	14798	4.39 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 87.8%	
13C3-HFPO-DA	5.815	286.9 -> 168.9	36089	9.17 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 91.7%	
d3-MeFOSA	10.541	515.0 -> 219.0	8655	2.67 µg/L	0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.8%	
d5-EtFOSAA	8.209	589.2 -> 419.0	13375	4.84 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.8%	
d7-MeFOSE	10.438	623.2 -> 58.9	63675	27.46 µg/L	0.037
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 109.9%	
d9-EtFOSE	10.734	639.2 -> 58.9	75558	27.55 µg/L	0.037
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 110.2%	
d5-EtFOSA	10.849	531.1 -> 219.0	9919	2.72 µg/L	0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.9%	

Target Compounds

Compound	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0 327.1 -> 80.9	-	N.D.	
6:2FTS	-	427.1 -> 407.0 427.1 -> 80.9	-	N.D.	
8:2FTS	-	527.1 -> 507.0 527.1 -> 80.8	-	N.D.	
EtFOSAA	-	584.2 -> 419.1 584.2 -> 526.0	-	N.D.	
FOSA	-	498.1 -> 77.9 498.1 -> 478.0	-	N.D.	
MeFOSAA	-	570.1 -> 419.0 570.1 -> 483.0	-	N.D.	
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9 298.7 -> 98.8	-	N.D.	
PFDA	-	512.9 -> 469.0 512.9 -> 219.0	-	N.D.	
PFDODA	8.794	613.1 -> 569.0 613.1 -> 319.0	0	µg/L m	1
PFDS	-	599.0 -> 79.9	-	N.D.	

7.22
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	7.302	548.8 -> 98.9	1186	0.06 µg/L	#	61
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	33	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	9.538	713.1 -> 669.0	0	µg/L	m	1
PFTrDA	-	713.1 -> 168.9	-	N.D.		
		663.0 -> 619.0				
PFUnDA	8.585	663.0 -> 168.9	0	µg/L	m	1
		563.1 -> 519.0				
11CI-PF3OUdS	-	563.1 -> 269.1	0	N.D.		
		630.9 -> 450.9				
9CI-PF3ONS	-	632.9 -> 452.9	-	N.D.		
		530.8 -> 351.0				
ADONA	-	532.8 -> 353.0	-	N.D.		
		376.9 -> 250.9				
HFPO-DA	-	376.9 -> 84.8	-	N.D.		
		284.9 -> 168.9				
3:3FTCA	-	284.9 -> 184.9	-	N.D.		
		241.0 -> 177.0				
5:3FTCA	-	241.0 -> 117.0	-	N.D.		
		341.0 -> 237.1				
7:3FTCA	-	341.0 -> 217.0	-	N.D.		
		441.0 -> 316.9				
EtFOSA	-	441.0 -> 336.9	-	N.D.		
		526.0 -> 219.0				
EtFOSE	-	526.0 -> 169.0	-	N.D.		
		630.0 -> 58.9				
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
		699.1 -> 79.9				
PFDoDS	-	699.1 -> 98.8	-	N.D.		
		295.0 -> 201.0				
NFDHA	-	295.0 -> 84.9	-	N.D.		
		279.0 -> 85.1				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

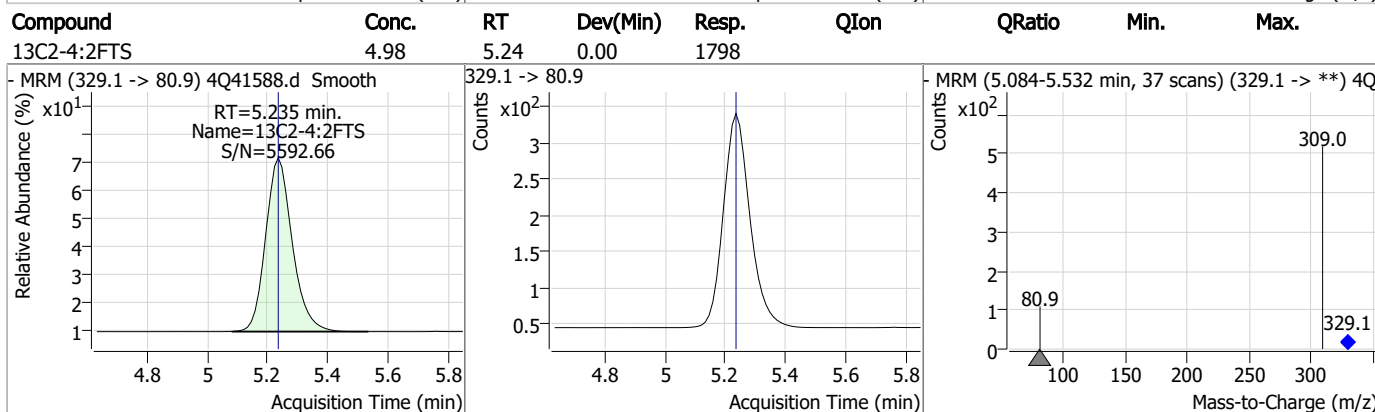
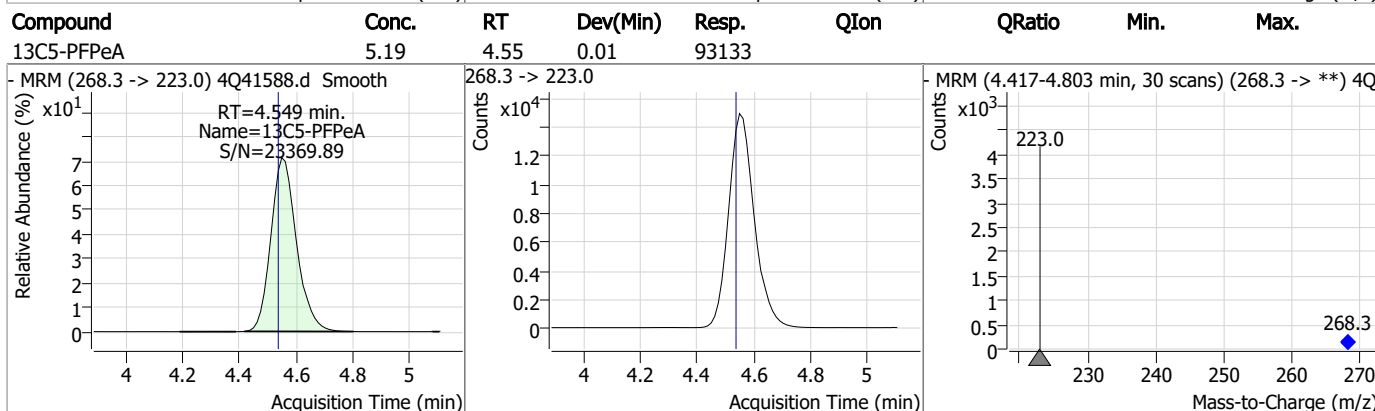
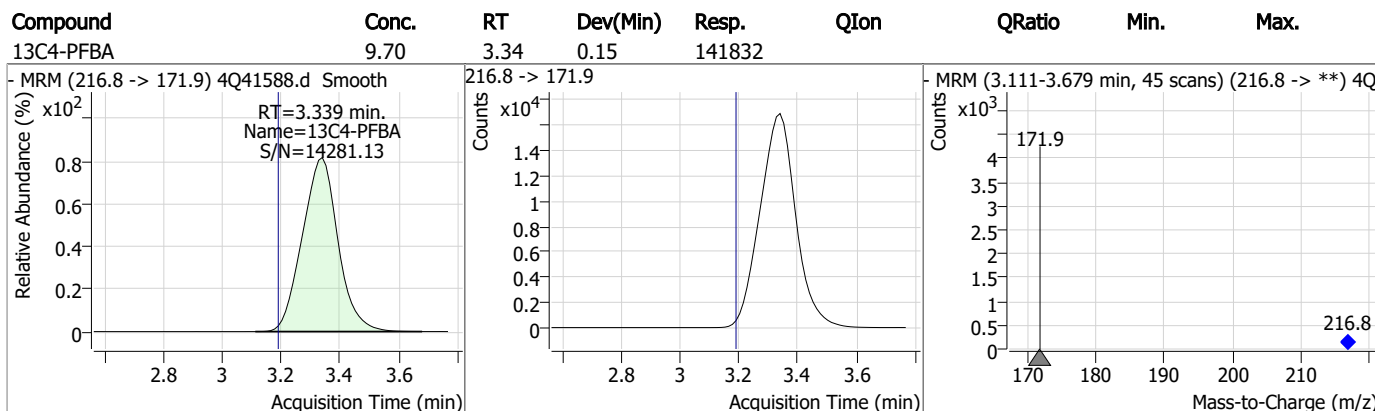
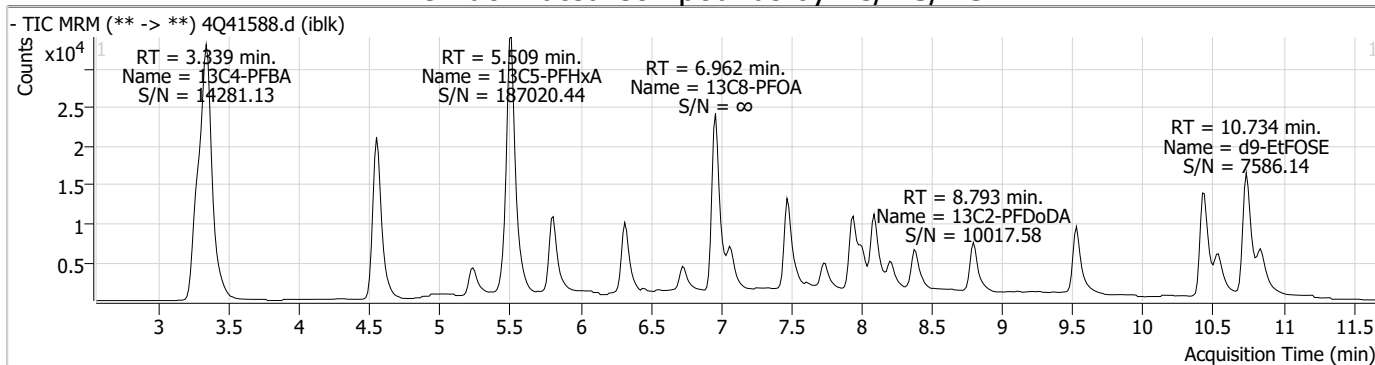
Perfluorinated Compounds by LC/MS/MS

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

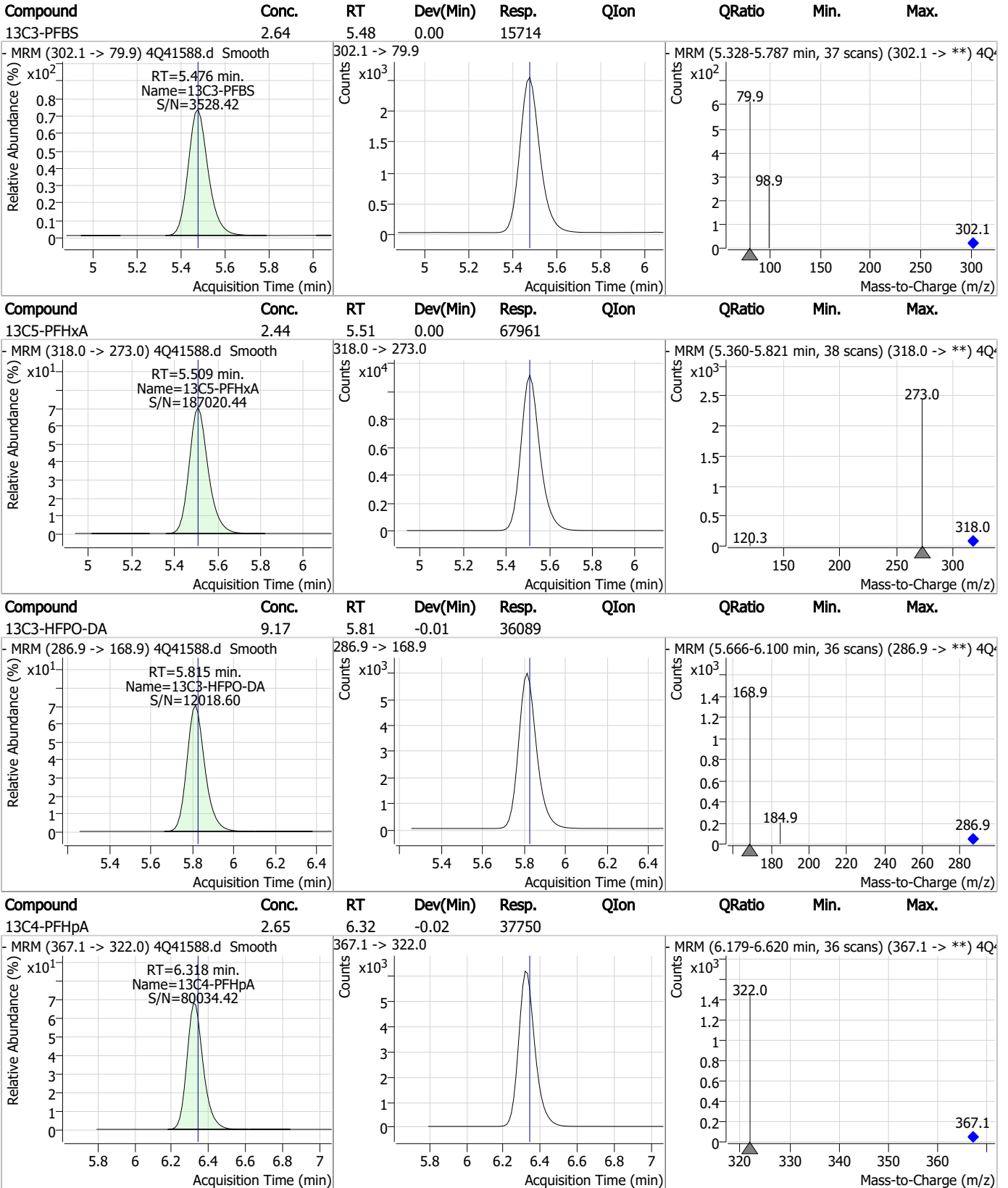
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Perfluorinated Compounds by LC/MS/MS



7.2.2
7

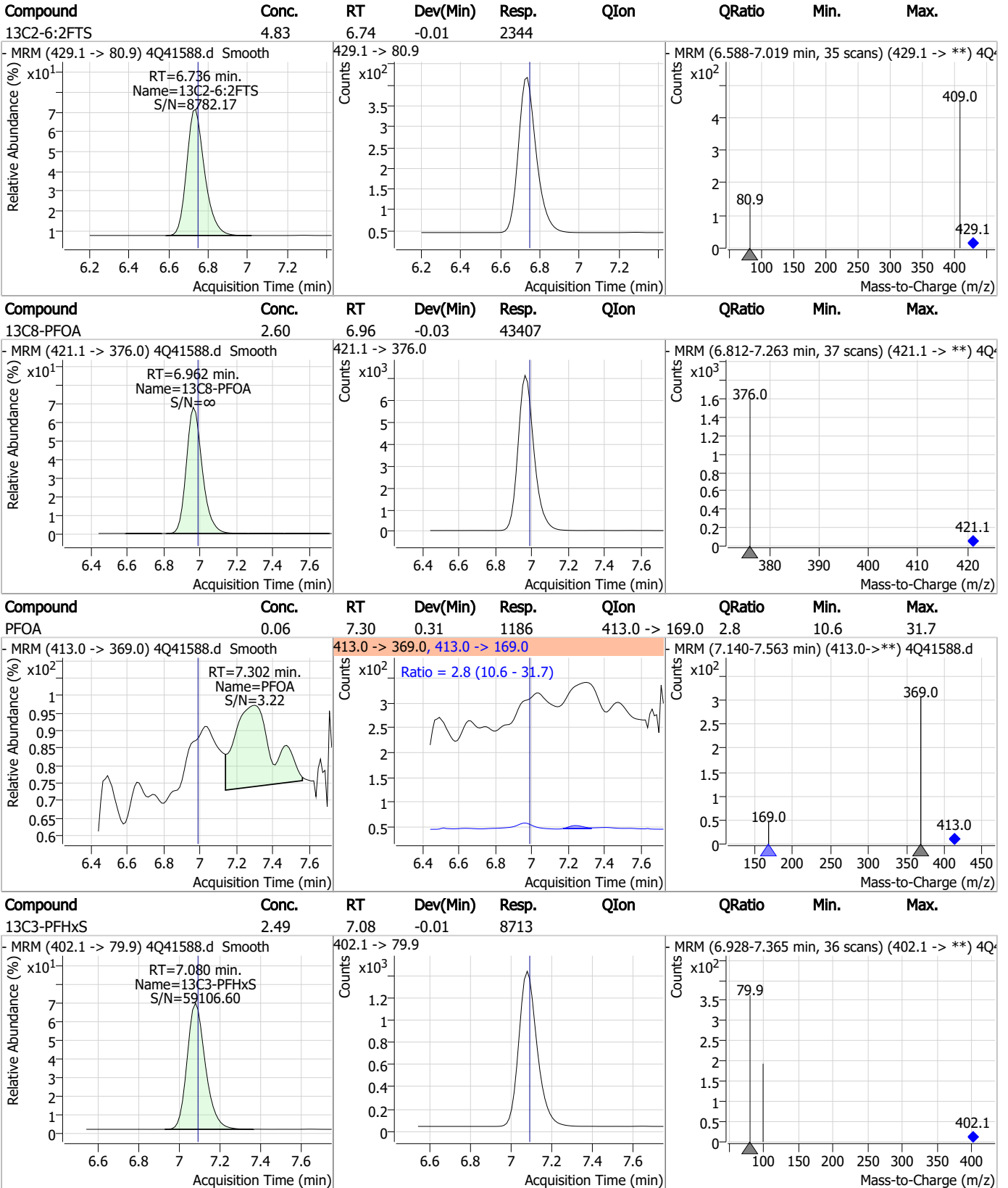
Perfluorinated Compounds by LC/MS/MS



7.2.2

7

Perfluorinated Compounds by LC/MS/MS

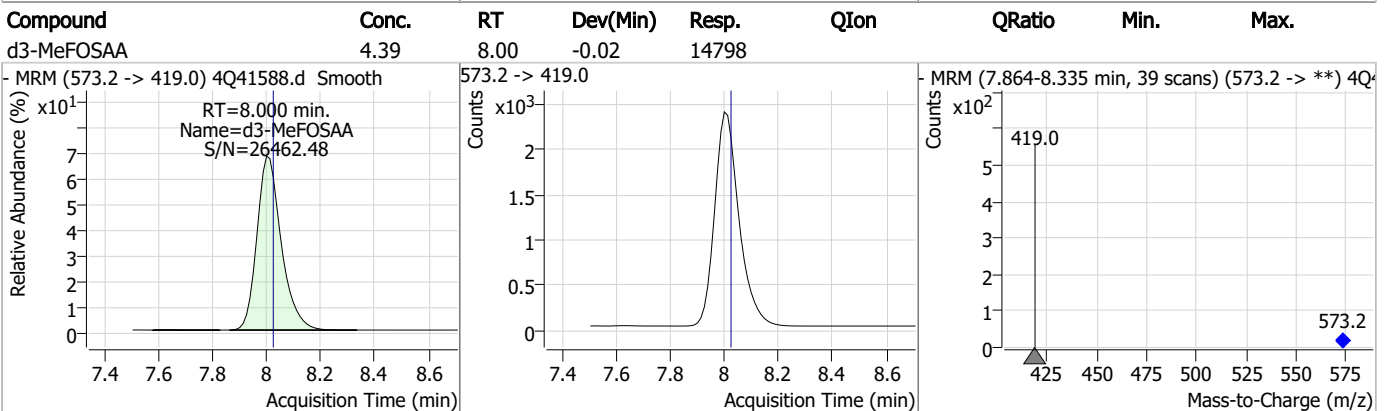
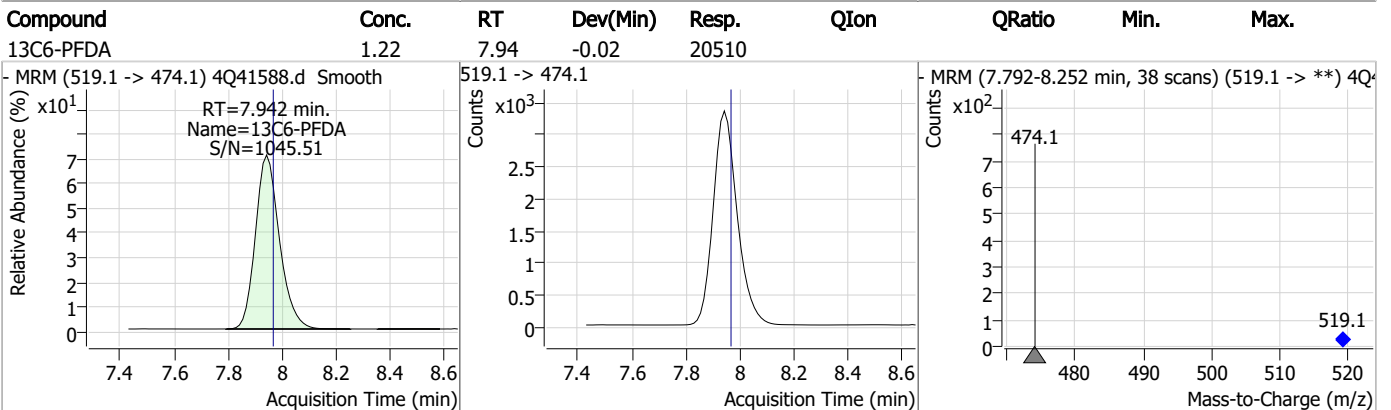
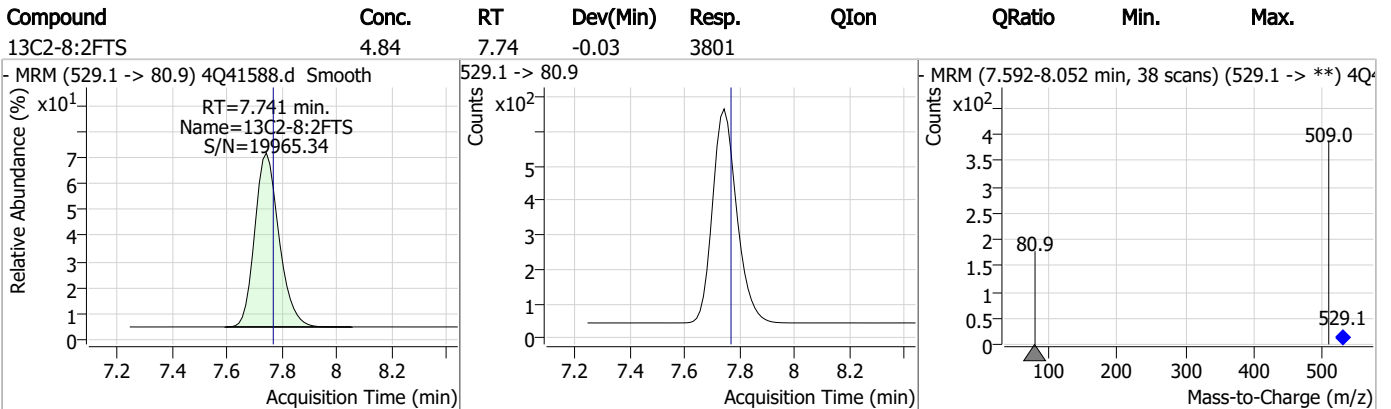
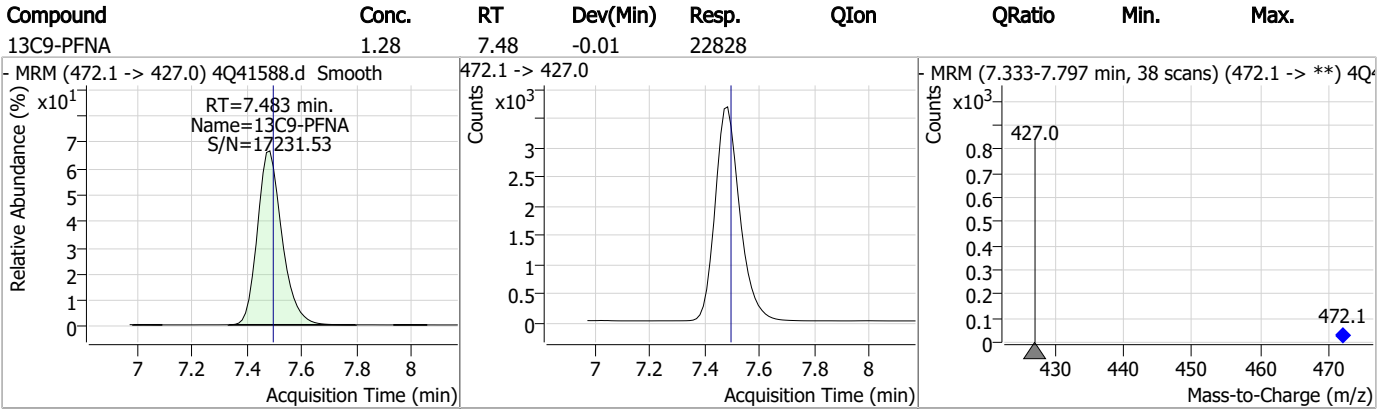


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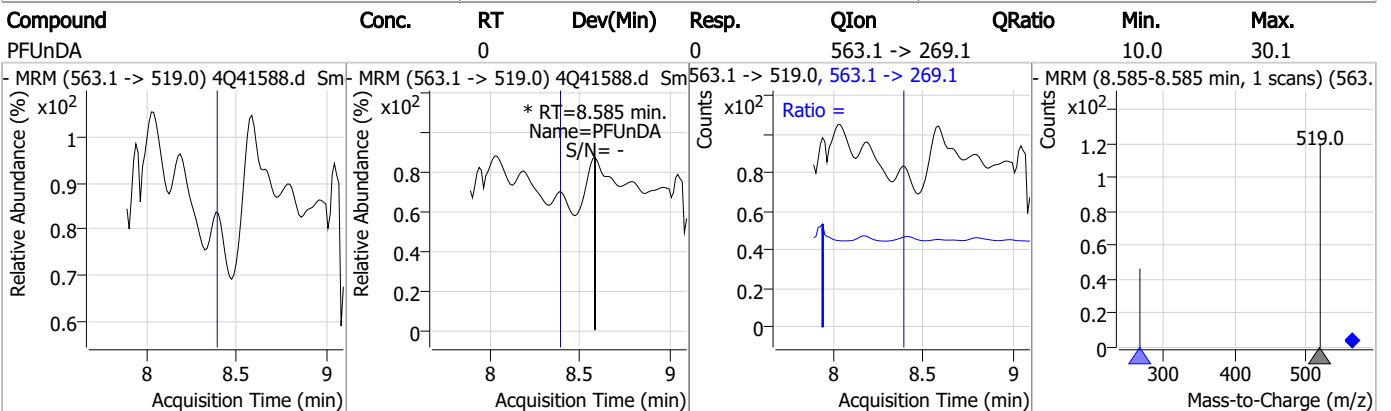
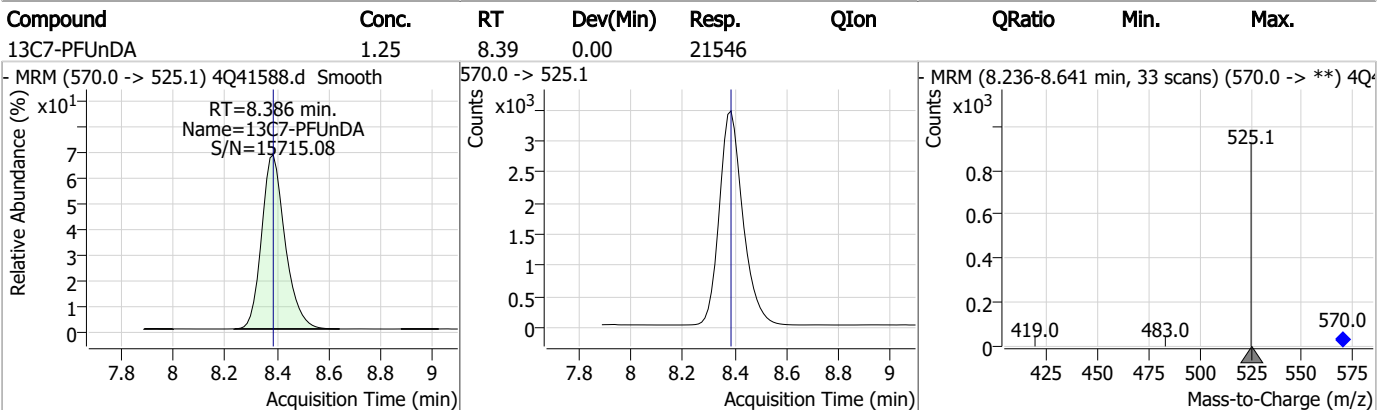
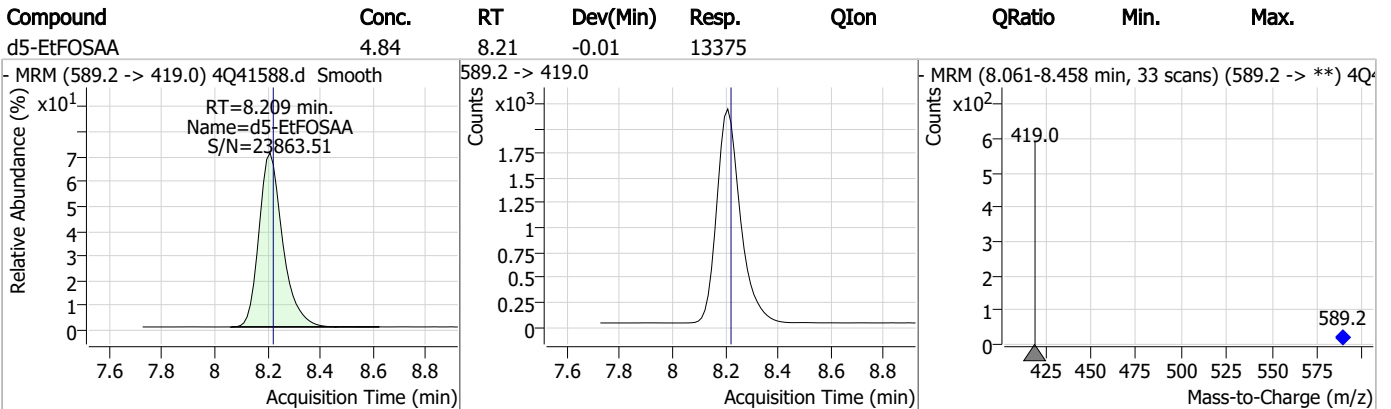
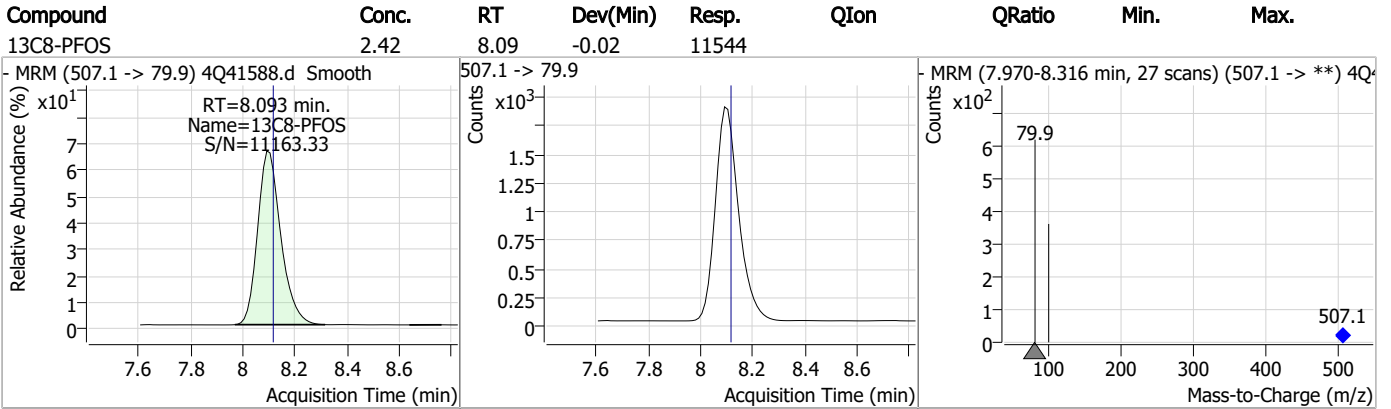
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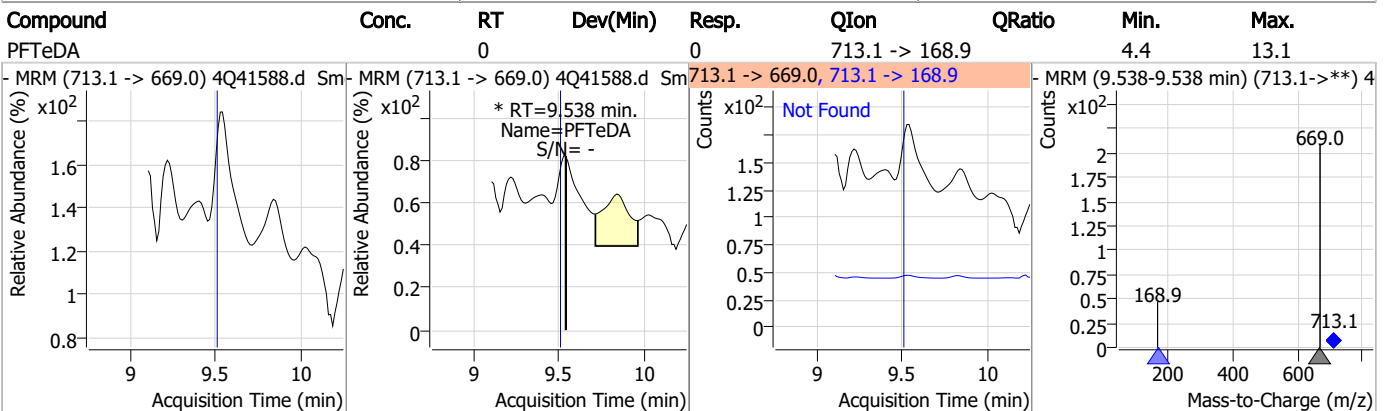
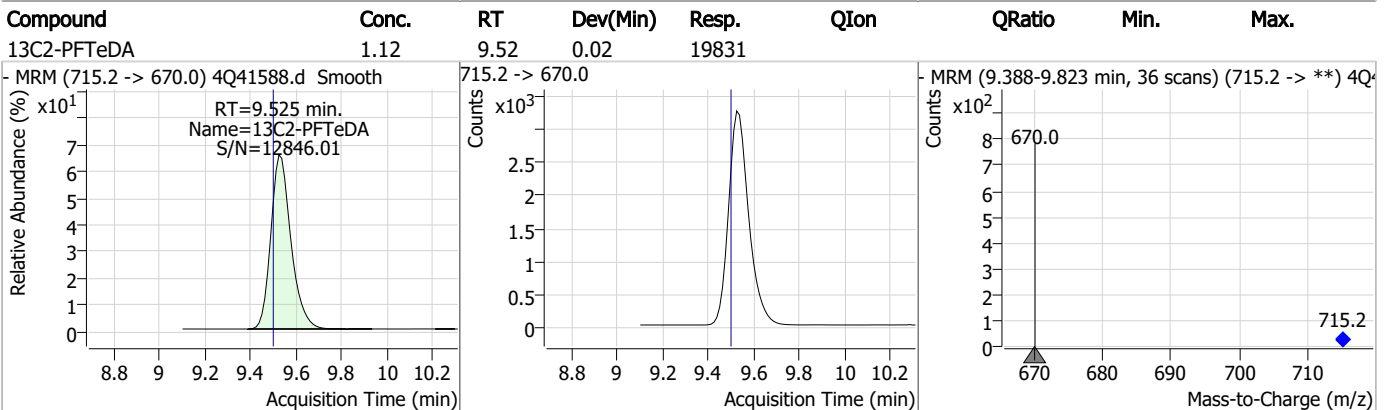
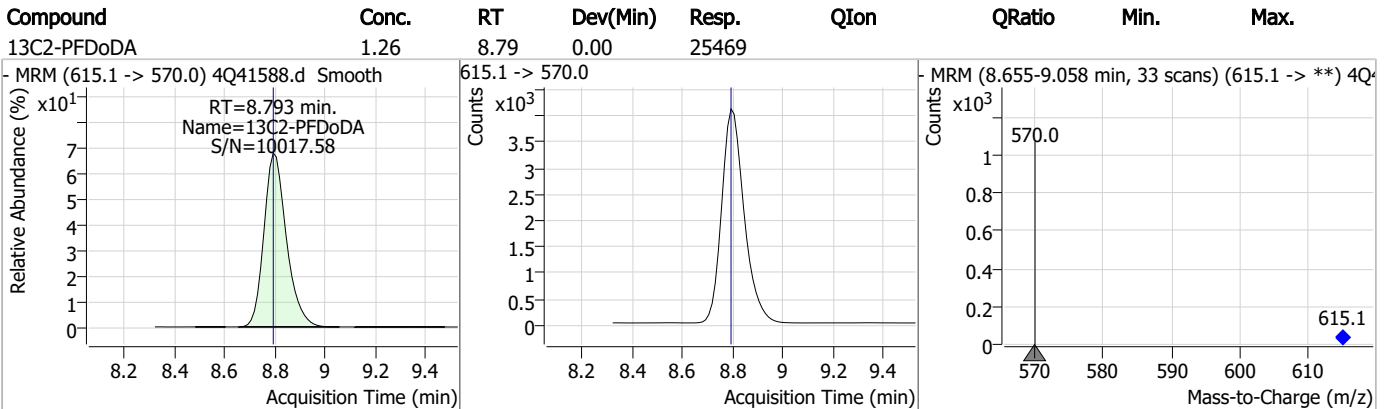
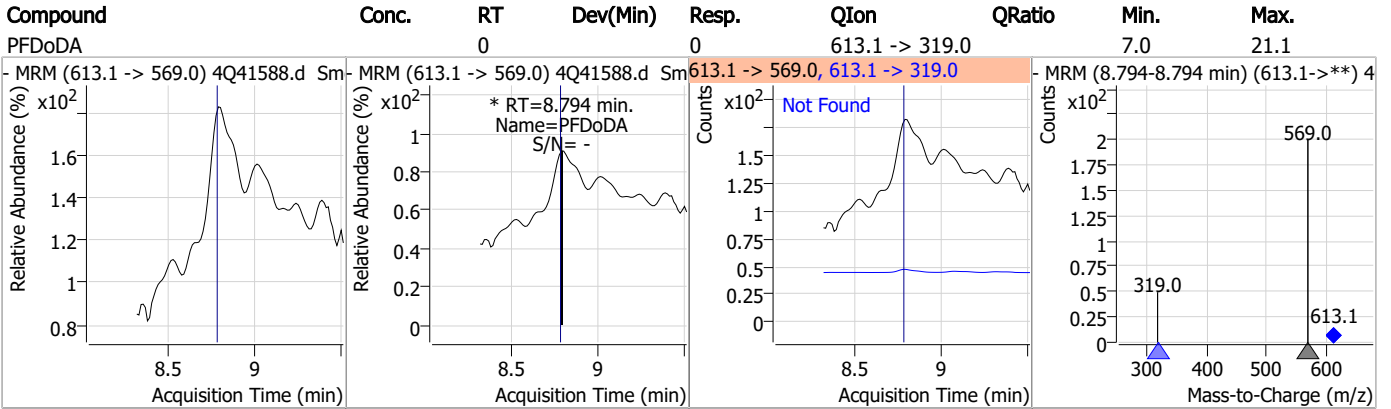
Perfluorinated Compounds by LC/MS/MS



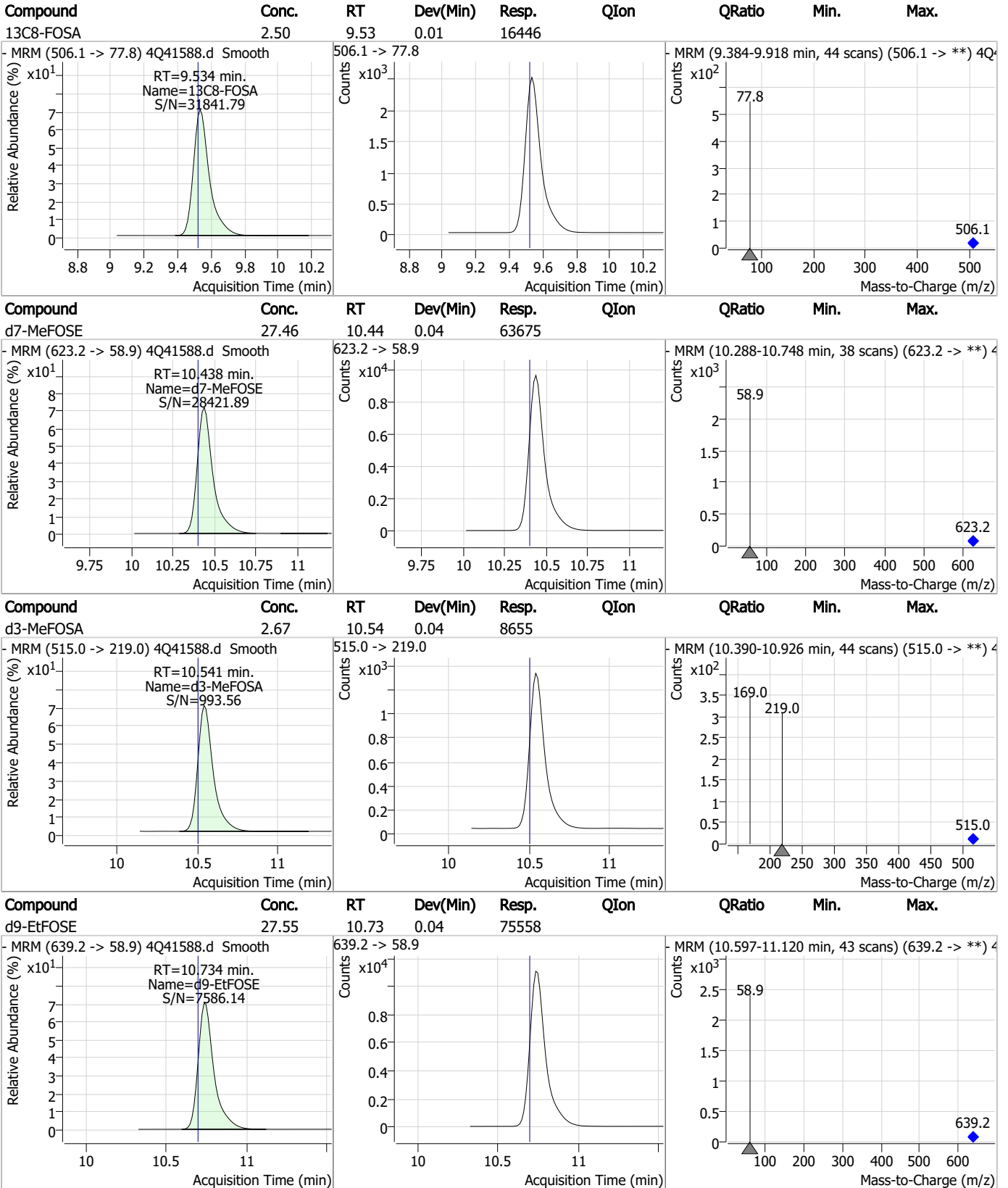
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



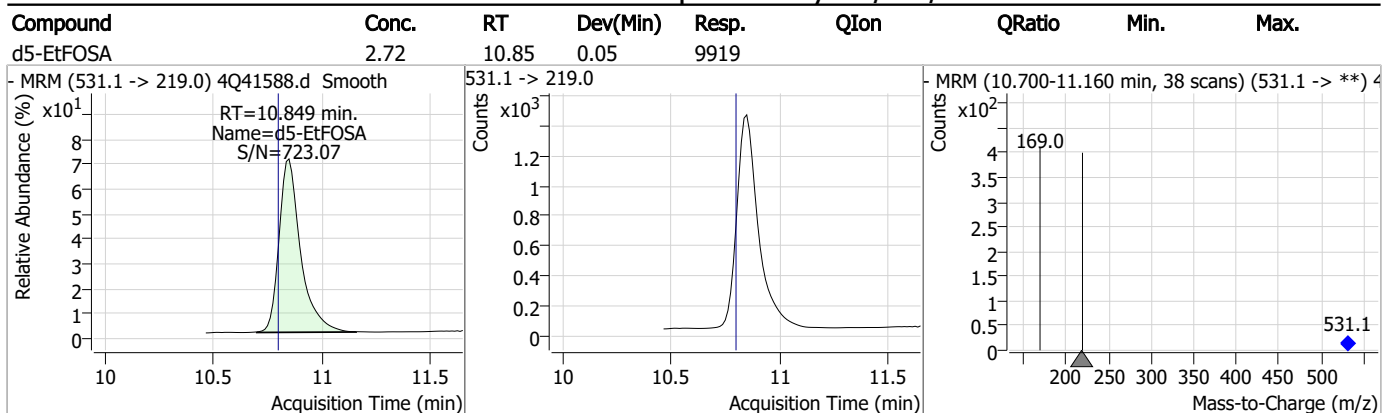
Perfluorinated Compounds by LC/MS/MS



7.2.2

7

Perfluorinated Compounds by LC/MS/MS



7.2.2
7

Perfluorinated Compounds by LC/MS/MS

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 Operator : marthav
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 3/2/2023 6:49:29 PM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q595.batch.bin
 Sample Information : op95682,S4Q595,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.227	216.8 -> 171.9	157648	10.00 µg/L	0.037
M5-PFPeA	4.524	268.3 -> 223.0	91998	5.00 µg/L	-0.012
M5-PFHxA	5.509	318.0 -> 273.0	74327	2.50 µg/L	0.000
M4-PFHpA	6.342	367.1 -> 322.0	39057	2.50 µg/L	0.000
M8-PFOA	6.988	421.1 -> 376.0	43844	2.50 µg/L	0.000
M9-PFNA	7.509	472.1 -> 427.0	22987	1.25 µg/L	0.013
M6-PFDA	7.967	519.1 -> 474.1	22192	1.25 µg/L	0.000
M7-PFUnDA	8.386	570.0 -> 525.1	23259	1.25 µg/L	0.000
M2-PFDoDA	8.793	615.1 -> 570.0	27691	1.25 µg/L	0.000
M2-PFTeDA	9.525	715.2 -> 670.0	22854	1.25 µg/L	0.025
M8-FOSA	9.534	506.1 -> 77.8	18040	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	15835	2.50 µg/L	-0.013
M3-PFHxS	7.104	402.1 -> 79.9	9219	2.50 µg/L	0.012
M8-PFOS	8.117	507.1 -> 79.9	12328	2.50 µg/L	0.000
M2-4:2FTS	5.235	329.1 -> 80.9	1927	5.00 µg/L	0.000
M2-6:2FTS	6.761	429.1 -> 80.9	2907	5.00 µg/L	0.012
M2-8:2FTS	7.766	529.1 -> 80.9	4462	5.00 µg/L	0.000
M3-MeFOSAA	8.025	573.2 -> 419.0	17301	5.00 µg/L	0.000
M3-HFPO-DA	5.827	286.9 -> 168.9	35039	10.00 µg/L	0.000
M5-EtFOSAA	8.221	589.2 -> 419.0	15101	5.00 µg/L	0.000
M7-MeFOSE	10.425	623.2 -> 58.9	67170	25.00 µg/L	0.025
M9-EtFOSE	10.721	639.2 -> 58.9	78428	25.00 µg/L	0.025
M5-EtFOSA	10.812	531.1 -> 219.0	10223	2.50 µg/L	0.012
M3-MeFOSA	10.528	515.0 -> 219.0	9057	2.50 µg/L	0.025
13C4-PFOS	8.118	502.8 -> 79.9	12599	2.50 µg/L	0.000
13C3-PFBA	3.230	216.0 -> 172.0	90868	5.00 µg/L	0.037
18O2-PFHxS	7.103	403.0 -> 83.9	6596	2.50 µg/L	0.012
13C4-PFOA	6.988	417.1 -> 372.0	52728	2.50 µg/L	0.000
13C2-PFDA	7.967	515.1 -> 470.1	19495	1.25 µg/L	0.000
13C5-PFNA	7.509	468.0 -> 423.0	26842	1.25 µg/L	0.013
13C2-PFHxA	5.510	315.1 -> 270.0	67508	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	1927	5.02 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2907	5.64 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.8%		
13C2-8:2FTS	7.766	529.1 -> 80.9	4462	5.34 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.8%		
13C2-PFDoDA	8.793	615.1 -> 570.0	27691	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.0%		
13C2-PFTeDA	9.525	715.2 -> 670.0	22854	1.24 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C3-PFBS	5.464	302.1 -> 79.9	15835	2.50 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C3-PFHxS	7.104	402.1 -> 79.9	9219	2.47 µg/L	0.012

7.2.3
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%		
13C4-PFBA	3.227	216.8 -> 171.9	157648	10.07	µg/L	0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.7%		
13C4-PFHpA	6.342	367.1 -> 322.0	39057	2.59	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.5%		
13C5-PFHxA	5.509	318.0 -> 273.0	74327	2.52	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%		
13C5-PFPeA	4.524	268.3 -> 223.0	91998	4.85	µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.0%		
13C6-PFDA	7.967	519.1 -> 474.1	22192	1.28	µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.4%		
13C7-PFUnDA	8.386	570.0 -> 525.1	23259	1.31	µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.8%		
13C8-FOSA	9.534	506.1 -> 77.8	18040	2.58	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.3%		
13C8-PFOA	6.988	421.1 -> 376.0	43844	2.50	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%		
13C8-PFOS	8.117	507.1 -> 79.9	12328	2.43	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.4%		
13C9-PFNA	7.509	472.1 -> 427.0	22987	1.23	µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.2%		
d3-MeFOSAA	8.025	573.2 -> 419.0	17301	4.84	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.8%		
13C3-HFPO-DA	5.827	286.9 -> 168.9	35039	8.42	µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 84.2%		
d3-MeFOSA	10.528	515.0 -> 219.0	9057	2.63	µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.3%		
d5-EtFOSAA	8.221	589.2 -> 419.0	15101	5.15	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.0%		
d7-MeFOSE	10.425	623.2 -> 58.9	67170	27.31	µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 109.2%		
d9-EtFOSE	10.721	639.2 -> 58.9	78428	26.96	µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 107.9%		
d5-EtFOSA	10.812	531.1 -> 219.0	10223	2.64	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.8%		

Target Compounds

Compound	RT	Transition	Response	Conc.	Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.		
		327.1 -> 80.9				
6:2FTS	-	427.1 -> 407.0	-	N.D.		
		427.1 -> 80.9				
8:2FTS	-	527.1 -> 507.0	-	N.D.		
		527.1 -> 80.8				
EtFOSAA	-	584.2 -> 419.1	-	N.D.		
		584.2 -> 526.0				
FOSA	-	498.1 -> 77.9	-	N.D.		
		498.1 -> 478.0				
MeFOSAA	-	570.1 -> 419.0	-	N.D.		
		570.1 -> 483.0				
PFBA	-	212.8 -> 168.9	-	N.D.		
PFBS	-	298.7 -> 79.9	-	N.D.		
		298.7 -> 98.8				
PFDA	8.228	512.9 -> 469.0	0	µg/L	m	1
		512.9 -> 219.0	0			
PFDODA	8.794	613.1 -> 569.0	0	µg/L	m	1
		613.1 -> 319.0				
PFDS	-	599.0 -> 79.9	-	N.D.		

7.2.3
7

Perfluorinated Compounds by LC/MS/MS

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

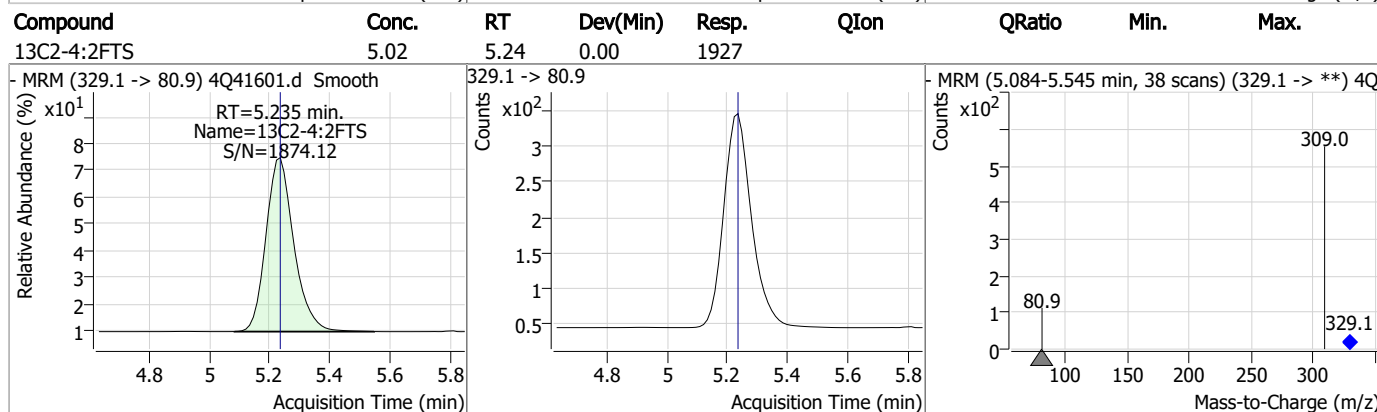
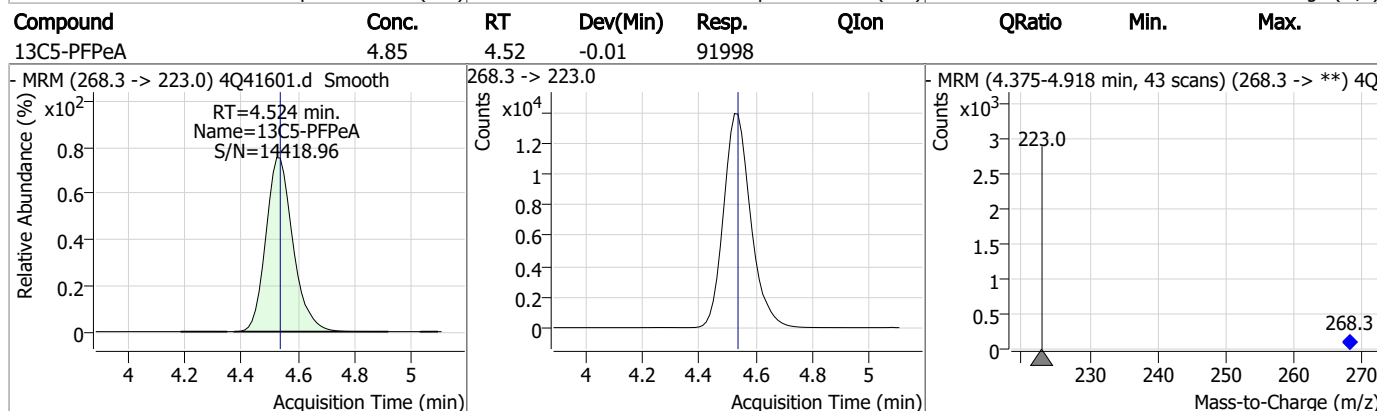
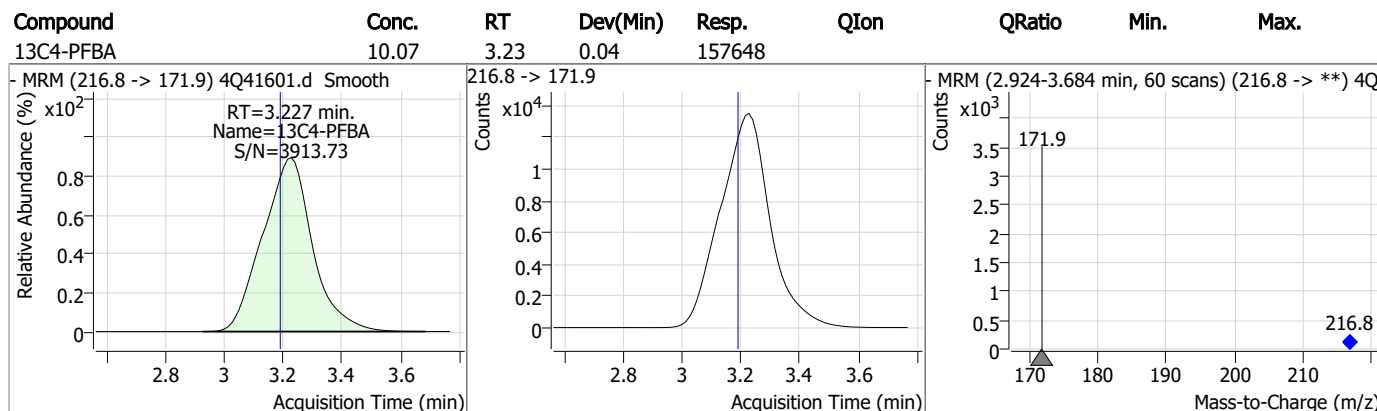
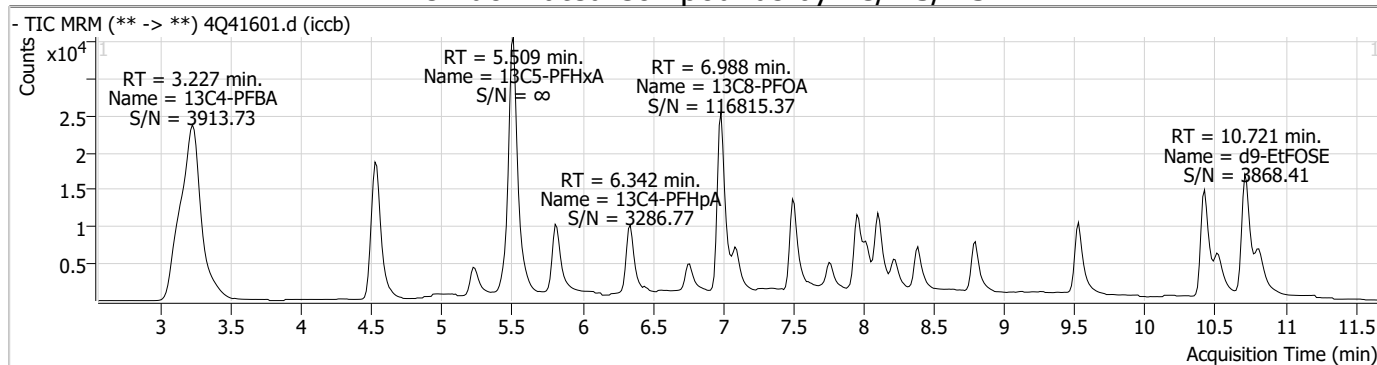
Perfluorinated Compounds by LC/MS/MS

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

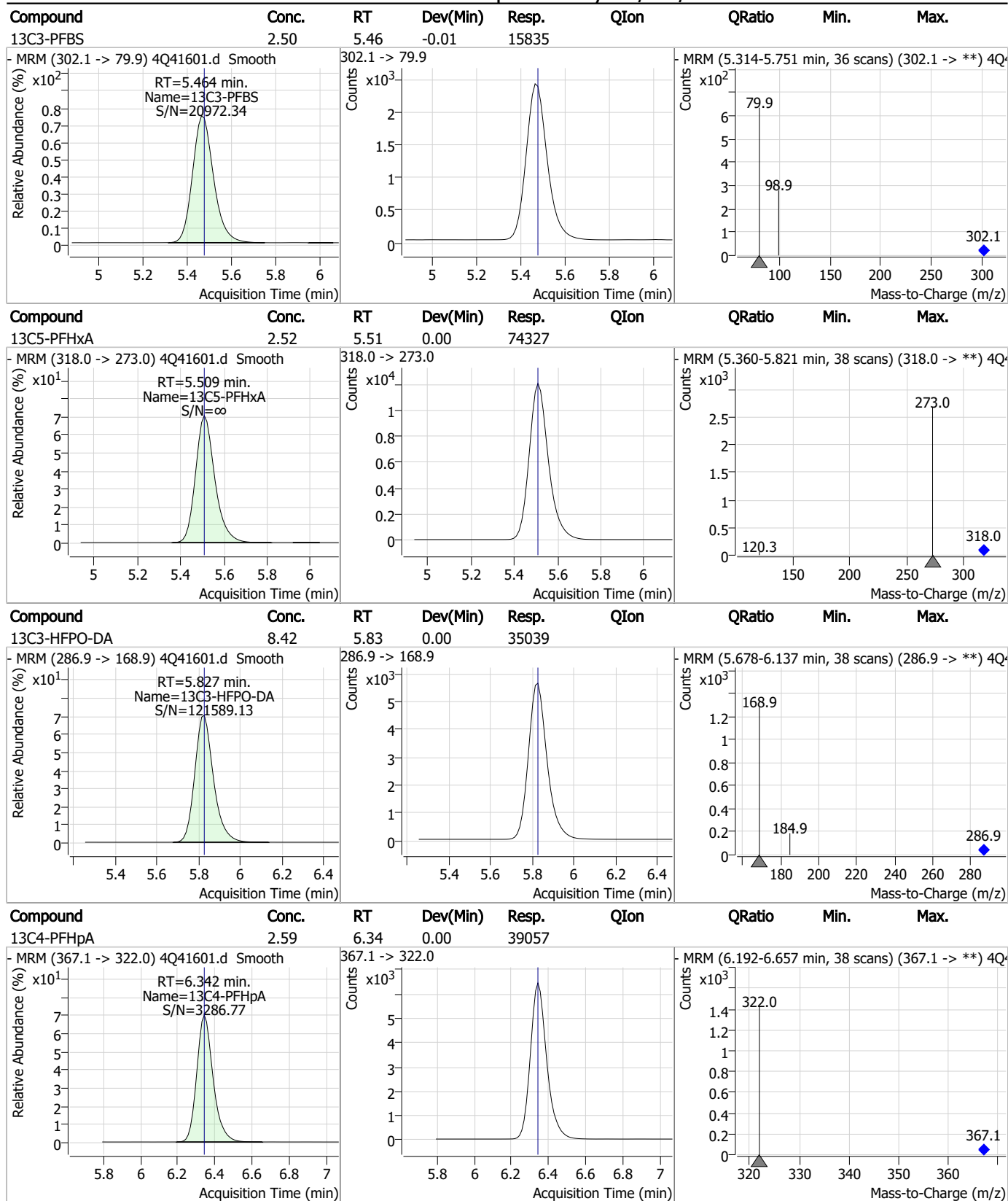
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Perfluorinated Compounds by LC/MS/MS



7.2.3
7

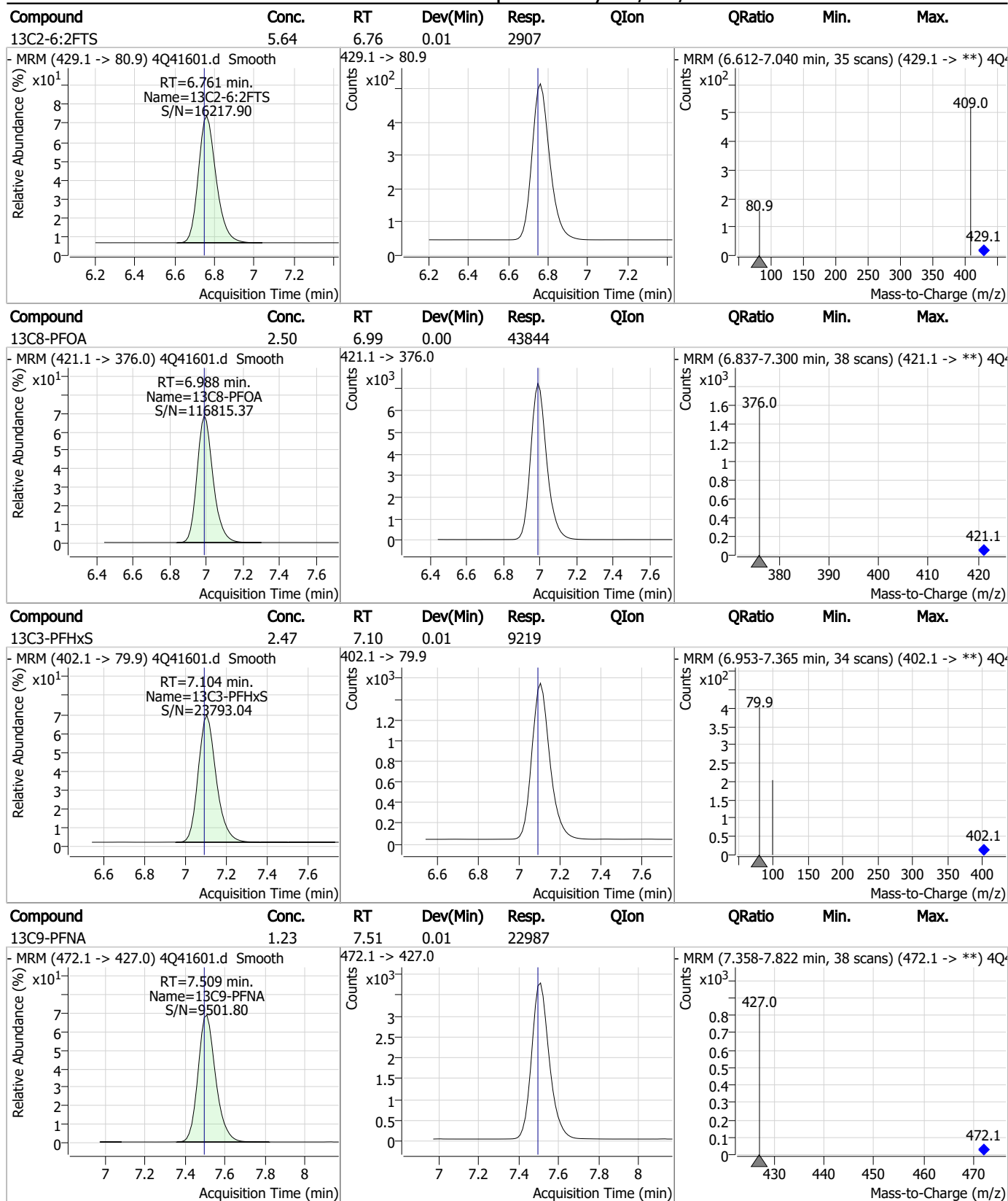
Perfluorinated Compounds by LC/MS/MS



7.2.3
7

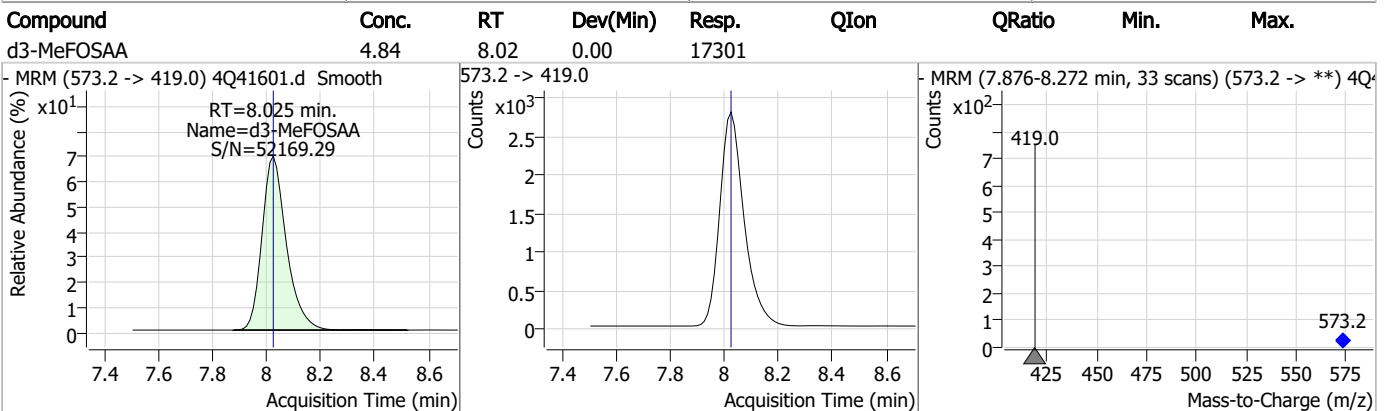
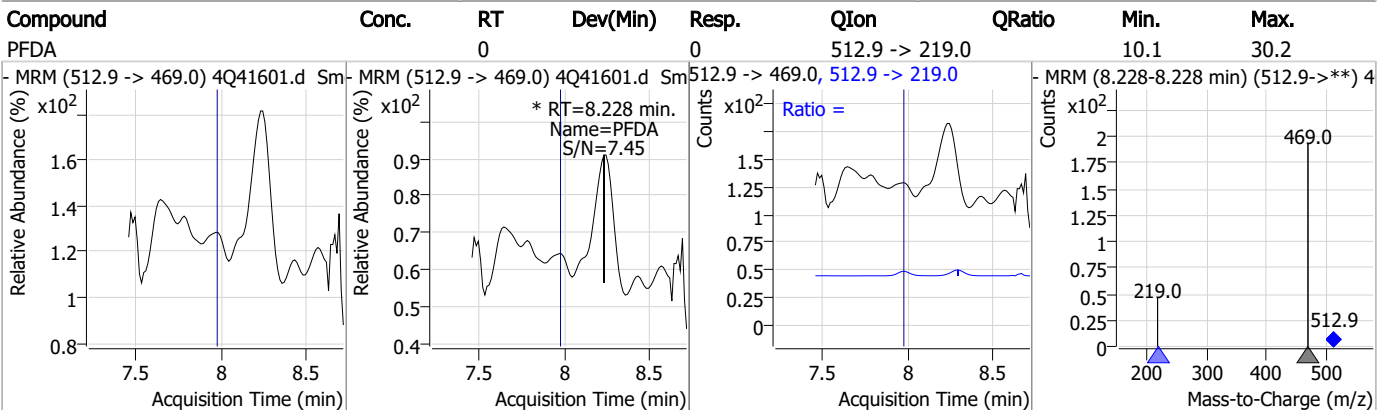
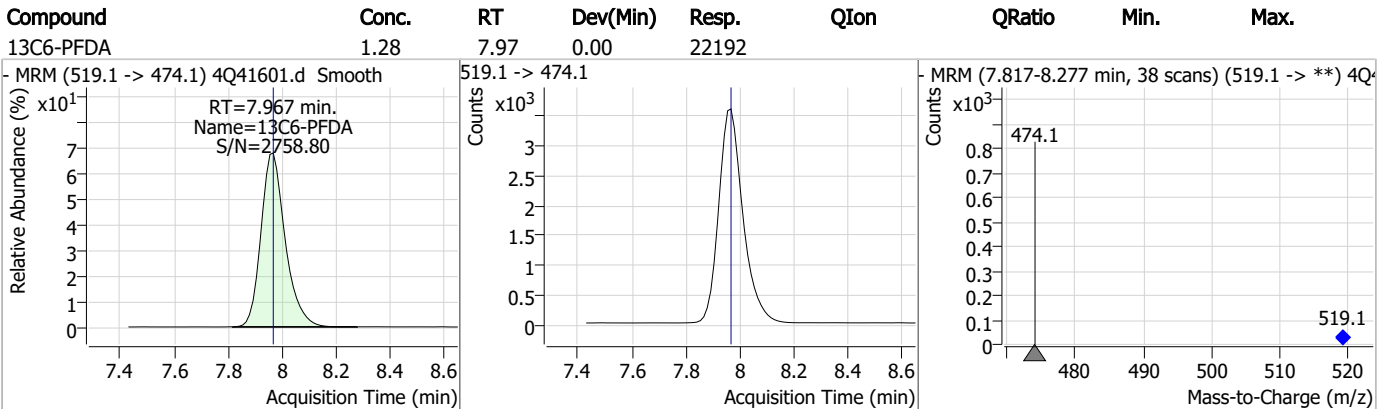
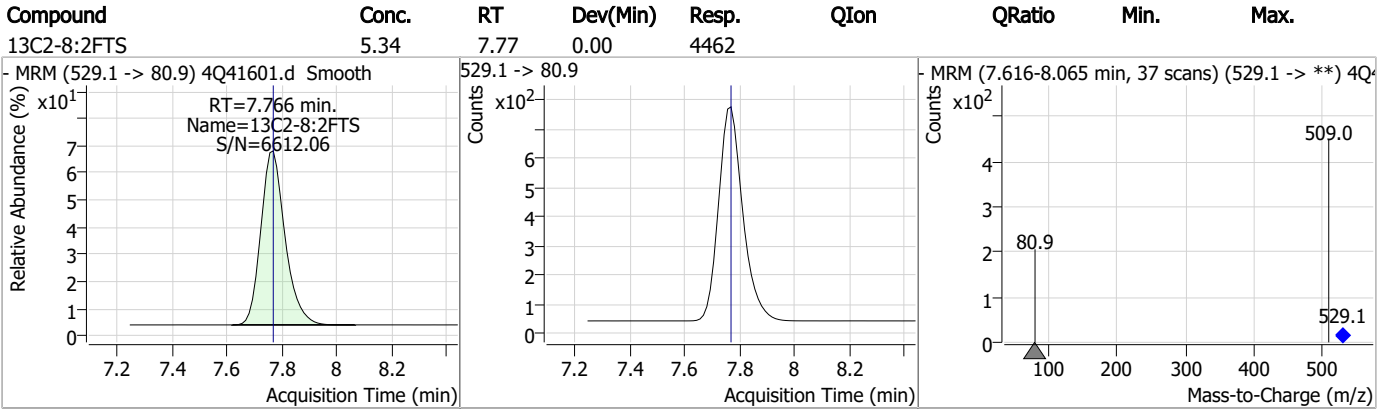


Perfluorinated Compounds by LC/MS/MS



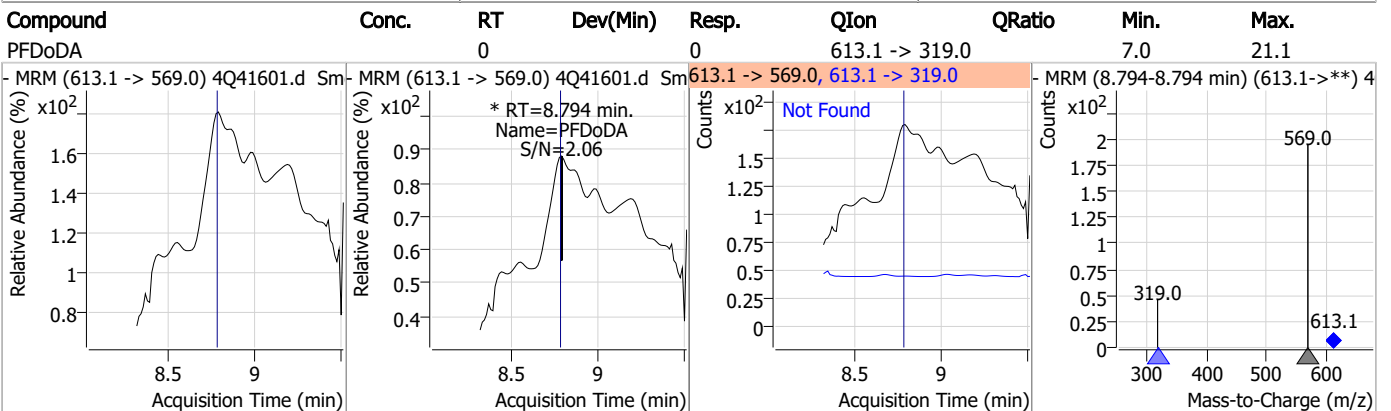
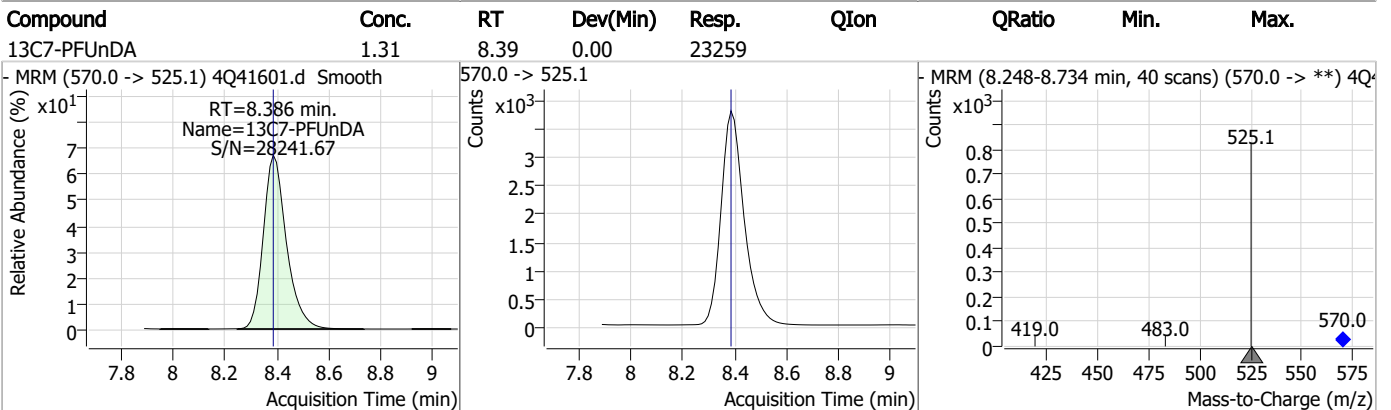
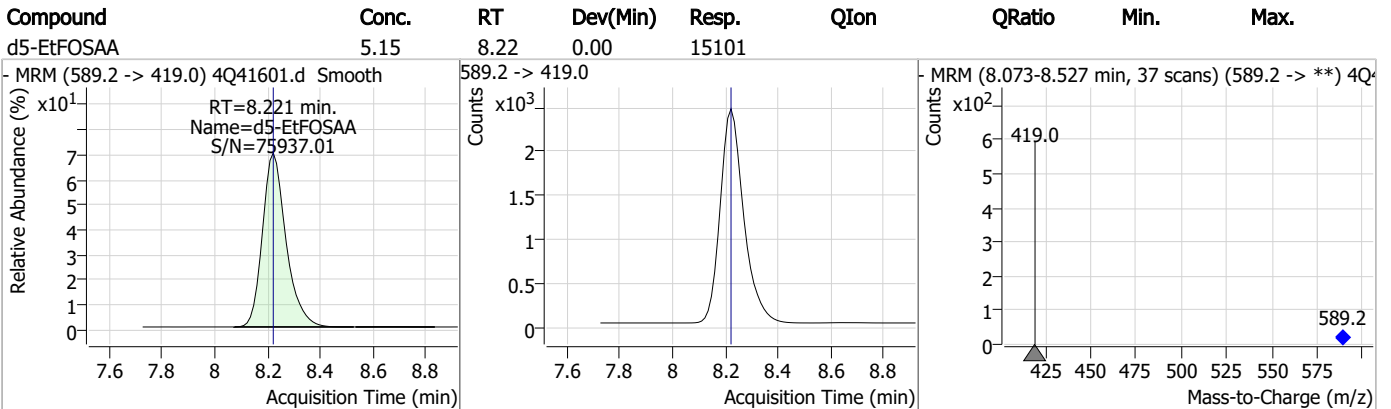
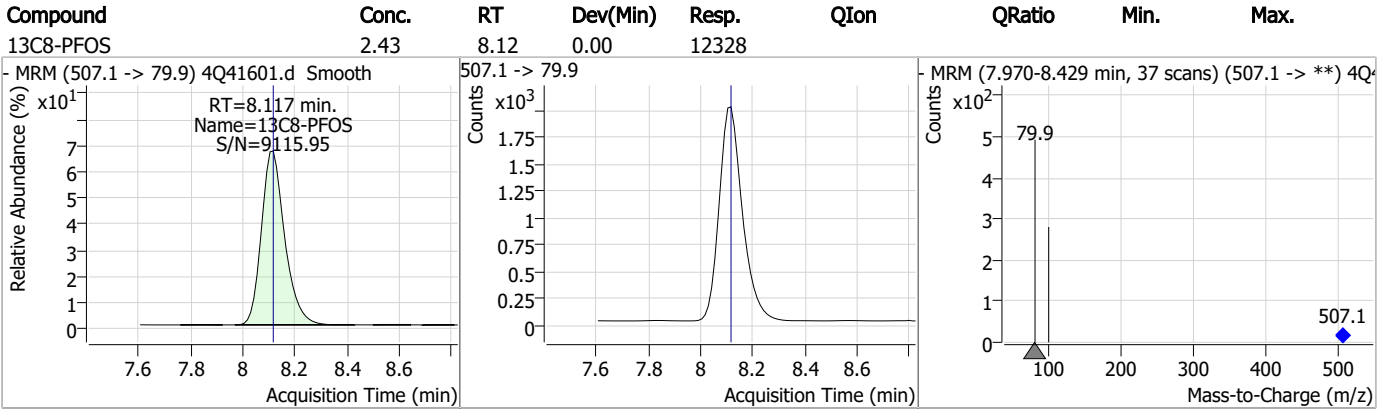
7.2.3
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Perfluorinated Compounds by LC/MS/MS



7.2.3
7

Perfluorinated Compounds by LC/MS/MS

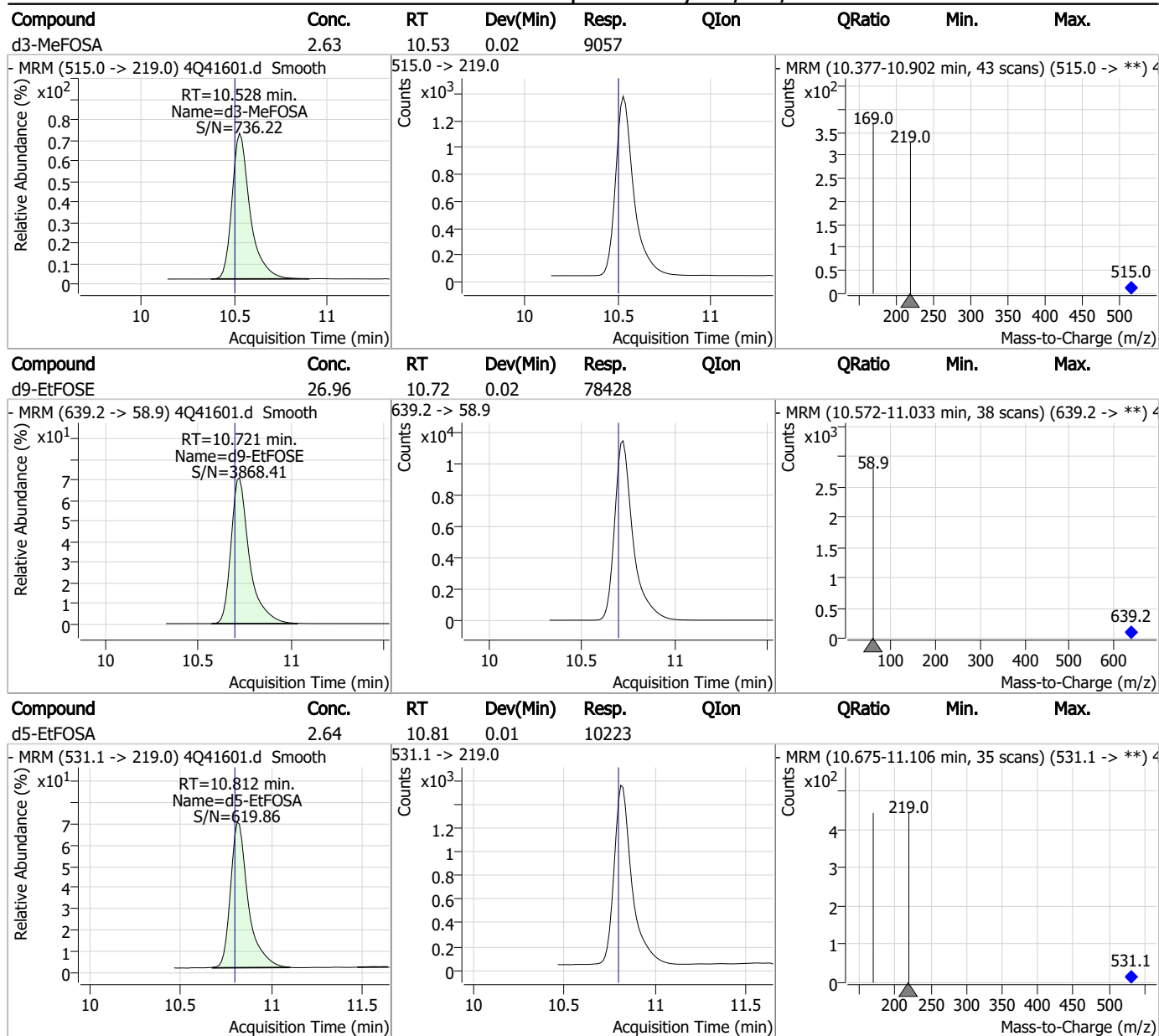


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.32	8.79	0.00	27691				
<p>MRM (615.1 -> 570.0) 4Q41601.d Smooth RT=8.793 min. Name=13C2-PFDoDA S/N=1388.64</p>			<p>615.1 -> 570.0</p>			<p>MRM (8.643-9.067 min, 35 scans) (615.1 -> **) 4Q</p>		
13C2-PFTeDA	1.24	9.52	0.02	22854				
<p>MRM (715.2 -> 670.0) 4Q41601.d Smooth RT=9.525 min. Name=13C2-PFTeDA S/N=60074.65</p>			<p>715.2 -> 670.0</p>			<p>MRM (9.376-9.854 min, 39 scans) (715.2 -> **) 4Q</p>		
13C8-FOSA	2.58	9.53	0.01	18040				
<p>MRM (506.1 -> 77.8) 4Q41601.d Smooth RT=9.534 min. Name=13C8-FOSA S/N=42822.56</p>			<p>506.1 -> 77.8</p>			<p>MRM (9.384-9.918 min, 44 scans) (506.1 -> **) 4Q</p>		
d7-MeFOSE	27.31	10.43	0.02	67170				
<p>MRM (623.2 -> 58.9) 4Q41601.d Smooth RT=10.425 min. Name=d7-MeFOSE S/N=3234.83</p>			<p>623.2 -> 58.9</p>			<p>MRM (10.276-10.810 min, 44 scans) (623.2 -> **) 4Q</p>		

7.2.3
7

Perfluorinated Compounds by LC/MS/MS



7.2.3
7



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41594.d
 Operator : marthav
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 3/2/2023 5:11:11 PM
 Sample Name : op95682-bs
 Vial : P3-A4
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q595.batch.bin
 Sample Information : op95682,S4Q595,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.214	216.8 -> 171.9	128734	10.00 µg/L	0.025
M5-PFPeA	4.537	268.3 -> 223.0	76192	5.00 µg/L	0.000
M5-PFHxA	5.522	318.0 -> 273.0	58894	2.50 µg/L	0.012
M4-PFHpA	6.342	367.1 -> 322.0	32132	2.50 µg/L	0.000
M8-PFOA	6.988	421.1 -> 376.0	35334	2.50 µg/L	0.000
M9-PFNA	7.496	472.1 -> 427.0	18297	1.25 µg/L	0.000
M6-PFDA	7.955	519.1 -> 474.1	17835	1.25 µg/L	-0.012
M7-PFUnDA	8.386	570.0 -> 525.1	17206	1.25 µg/L	0.000
M2-PFDoDA	8.780	615.1 -> 570.0	20922	1.25 µg/L	-0.013
M2-PFTeDA	9.500	715.2 -> 670.0	16067	1.25 µg/L	0.000
M8-FOSA	9.521	506.1 -> 77.8	14205	2.50 µg/L	0.000
M3-PFBS	5.476	302.1 -> 79.9	12478	2.50 µg/L	0.000
M3-PFHxS	7.104	402.1 -> 79.9	7578	2.50 µg/L	0.012
M8-PFOS	8.105	507.1 -> 79.9	9972	2.50 µg/L	-0.012
M2-4:2FTS	5.235	329.1 -> 80.9	1590	5.00 µg/L	0.000
M2-6:2FTS	6.761	429.1 -> 80.9	2021	5.00 µg/L	0.012
M2-8:2FTS	7.754	529.1 -> 80.9	3218	5.00 µg/L	-0.012
M3-MeFOSAA	8.025	573.2 -> 419.0	14366	5.00 µg/L	0.000
M3-HFPO-DA	5.827	286.9 -> 168.9	31105	10.00 µg/L	0.000
M5-EtFOSAA	8.221	589.2 -> 419.0	11758	5.00 µg/L	0.000
M7-MeFOSE	10.413	623.2 -> 58.9	47672	25.00 µg/L	0.012
M9-EtFOSE	10.709	639.2 -> 58.9	60370	25.00 µg/L	0.012
M5-EtFOSA	10.812	531.1 -> 219.0	7724	2.50 µg/L	0.012
M3-MeFOSA	10.516	515.0 -> 219.0	7539	2.50 µg/L	0.012
13C4-PFOS	8.106	502.8 -> 79.9	10630	2.50 µg/L	-0.012
13C3-PFBA	3.218	216.0 -> 172.0	69504	5.00 µg/L	0.025
18O2-PFHxS	7.103	403.0 -> 83.9	5277	2.50 µg/L	0.012
13C4-PFOA	6.988	417.1 -> 372.0	40161	2.50 µg/L	0.000
13C2-PFDA	7.955	515.1 -> 470.1	14652	1.25 µg/L	-0.012
13C5-PFNA	7.496	468.0 -> 423.0	20514	1.25 µg/L	0.000
13C2-PFHxA	5.523	315.1 -> 270.0	50824	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	1590	5.17 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.4%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2021	4.90 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C2-8:2FTS	7.754	529.1 -> 80.9	3218	4.81 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C2-PFDoDA	8.780	615.1 -> 570.0	20922	1.33 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.5%		
13C2-PFTeDA	9.500	715.2 -> 670.0	16067	1.16 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.1%		
13C3-PFBS	5.476	302.1 -> 79.9	12478	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C3-PFHxS	7.104	402.1 -> 79.9	7578	2.54 µg/L	0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C4-PFBA	3.214	216.8 -> 171.9	128734	10.75 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 107.5%	
13C4-PFHpA	6.342	367.1 -> 322.0	32132	2.83 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 113.2%	
13C5-PFHxA	5.522	318.0 -> 273.0	58894	2.65 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.2%	
13C5-PFPeA	4.537	268.3 -> 223.0	76192	5.33 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.7%	
13C6-PFDA	7.955	519.1 -> 474.1	17835	1.37 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.5%	
13C7-PFUnDA	8.386	570.0 -> 525.1	17206	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C8-FOSA	9.521	506.1 -> 77.8	14205	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.4%	
13C8-PFOA	6.988	421.1 -> 376.0	35334	2.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C8-PFOS	8.105	507.1 -> 79.9	9972	2.33 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.4%	
13C9-PFNA	7.496	472.1 -> 427.0	18297	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.3%	
d3-MeFOSAA	8.025	573.2 -> 419.0	14366	4.76 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.3%	
13C3-HFPO-DA	5.827	286.9 -> 168.9	31105	9.93 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
d3-MeFOSA	10.516	515.0 -> 219.0	7539	2.60 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.9%	
d5-EtFOSAA	8.221	589.2 -> 419.0	11758	4.75 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.1%	
d7-MeFOSE	10.413	623.2 -> 58.9	47672	22.97 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 91.9%	
d9-EtFOSE	10.709	639.2 -> 58.9	60370	24.60 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.4%	
d5-EtFOSA	10.812	531.1 -> 219.0	7724	2.37 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.7%	
Target Compounds					QValue
4:2FTS	5.236	327.1 -> 307.0	21502	10.16 µg/L	98
		327.1 -> 80.9	9229		
6:2FTS	6.762	427.1 -> 407.0	16909	11.10 µg/L	99
		427.1 -> 80.9	7299		
8:2FTS	7.754	527.1 -> 507.0	17287	11.54 µg/L	98
		527.1 -> 80.8	7580		
EtFOSAA	8.222	584.2 -> 419.1	5688	3.09 µg/L	m 92
		584.2 -> 526.0	2851		
FOSA	9.512	498.1 -> 77.9	15041	2.76 µg/L	98
		498.1 -> 478.0	484		
MeFOSAA	8.025	570.1 -> 419.0	5195	2.60 µg/L	99
		570.1 -> 483.0	1016		
PFBA	3.221	212.8 -> 168.9	32964	10.83 µg/L	100
PFBS	5.477	298.7 -> 79.9	11748	2.36 µg/L	95
		298.7 -> 98.8	4873		
PFDA	7.955	512.9 -> 469.0	29824	2.71 µg/L	100
		512.9 -> 219.0	6088		
PFDoDA	8.780	613.1 -> 569.0	39530	2.80 µg/L	100
		613.1 -> 319.0	5501		
PFDS	8.933	599.0 -> 79.9	5779	2.61 µg/L	95

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2983			
PFHpA	6.343	363.1 -> 319.0	49350	2.90	µg/L	99
		363.1 -> 169.0	8446			
PFHpS	7.636	449.0 -> 79.9	8038	2.74	µg/L	94
		449.0 -> 98.9	4261			
PFHxA	5.525	313.0 -> 269.0	53939	2.61	µg/L	99
		313.0 -> 118.9	1675			
PFHxS	7.105	398.7 -> 79.9	6822	2.42	µg/L	m 95
		398.7 -> 98.9	3548			
PFNA	7.497	463.0 -> 419.0	30634	2.95	µg/L	95
		463.0 -> 219.0	7438			
PFNS	8.537	548.8 -> 79.9	4304	2.50	µg/L	99
		548.8 -> 98.9	2132			
PFOA	6.989	413.0 -> 369.0	45417	2.73	µg/L	98
		413.0 -> 169.0	9065			
PFOS	8.106	498.9 -> 79.9	11327	2.44	µg/L	m 96
		498.9 -> 98.8	5777			
PFPeA	4.527	263.0 -> 219.0	85857	5.53	µg/L	100
PFPeS	6.419	349.1 -> 79.9	6716	2.70	µg/L	99
		349.1 -> 98.9	2928			
PFTeDA	9.501	713.1 -> 669.0	32446	2.75	µg/L	100
		713.1 -> 168.9	2795			
PFTrDA	9.154	663.0 -> 619.0	49579	2.94	µg/L	99
		663.0 -> 168.9	4726			
PFUnDA	8.386	563.1 -> 519.0	27555	2.90	µg/L	99
		563.1 -> 269.1	5640			
11CI-PF3OUdS	9.205	630.9 -> 450.9	92483	12.11	µg/L	99
		632.9 -> 452.9	28001			
9CI-PF3ONS	8.413	530.8 -> 351.0	106755	11.70	µg/L	97
		532.8 -> 353.0	32053			
ADONA	6.606	376.9 -> 250.9	215126	12.04	µg/L	100
		376.9 -> 84.8	58055			
HFPO-DA	5.828	284.9 -> 168.9	28370	11.16	µg/L	99
		284.9 -> 184.9	3484			
3:3FTCA	4.242	241.0 -> 177.0	10396	13.01	µg/L	99
		241.0 -> 117.0	1039			
5:3FTCA	6.296	341.0 -> 237.1	228248	76.28	µg/L	98
		341.0 -> 217.0	159689			
7:3FTCA	7.661	441.0 -> 316.9	82402	73.72	µg/L	99
		441.0 -> 336.9	186249			
EtFOSA	10.813	526.0 -> 219.0	7976	2.51	µg/L	87
		526.0 -> 169.0	8859			
EtFOSE	10.722	630.0 -> 58.9	58742	27.08	µg/L	100
MeFOSA	10.517	511.9 -> 219.0	6765	2.46	µg/L	74
		511.9 -> 169.0	8365			
MeFOSE	10.426	616.1 -> 58.9	53784	28.29	µg/L	100
PFDoDS	9.640	699.1 -> 79.9	4855	2.50	µg/L	97
		699.1 -> 98.8	2626			
NFDHA	5.415	295.0 -> 201.0	4329	5.77	µg/L	99
		295.0 -> 84.9	1101			
PFMBA	4.867	279.0 -> 85.1	49152	5.50	µg/L	100
PFMPA	3.807	229.0 -> 84.9	40654	5.26	µg/L	100
PFEESA	5.934	314.8 -> 134.9	72883	4.98	µg/L	99
		314.8 -> 82.9	2628			

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

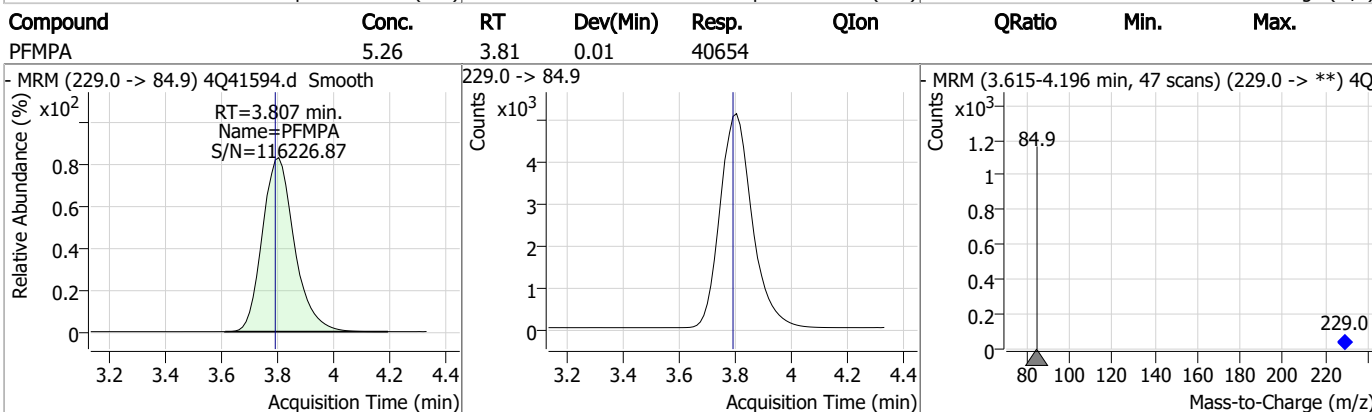
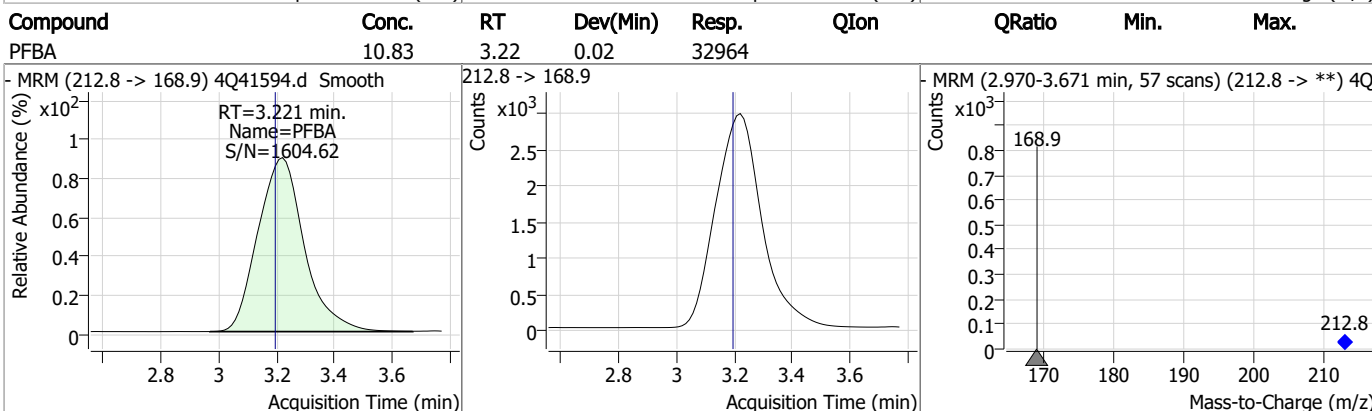
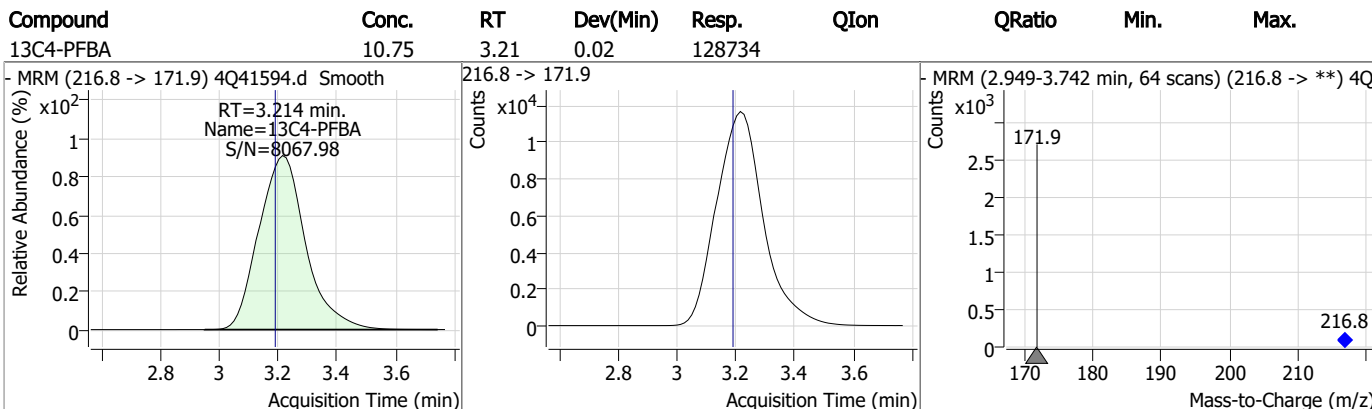
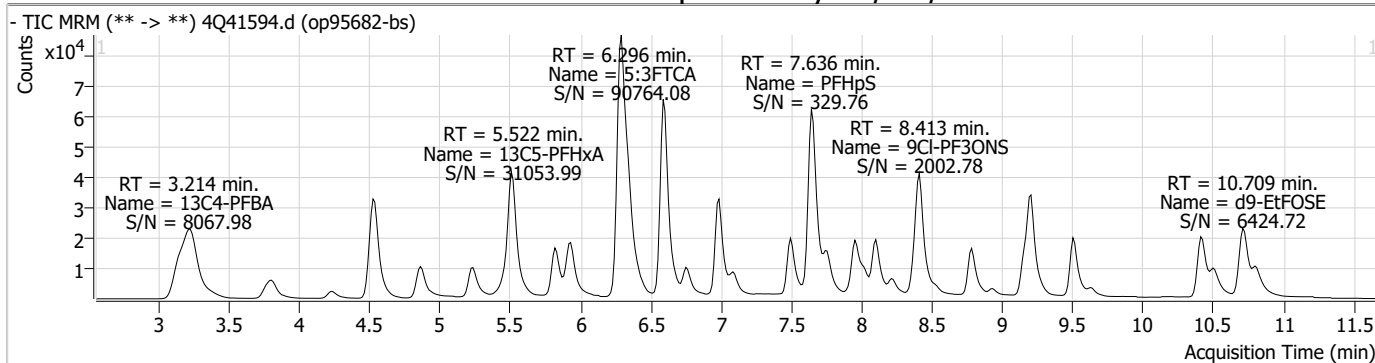
Perfluorinated Compounds by LC/MS/MS

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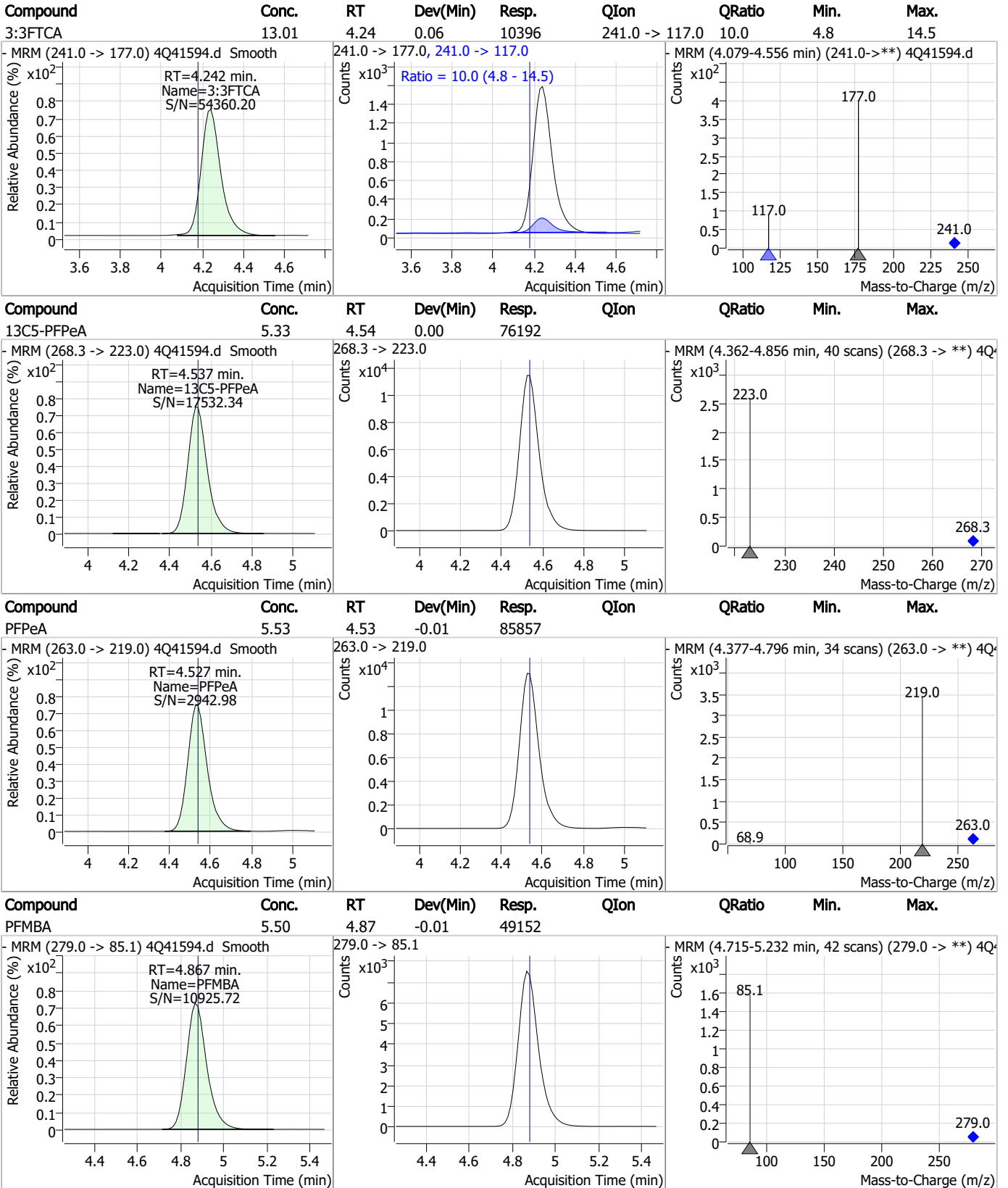
7.3.1

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

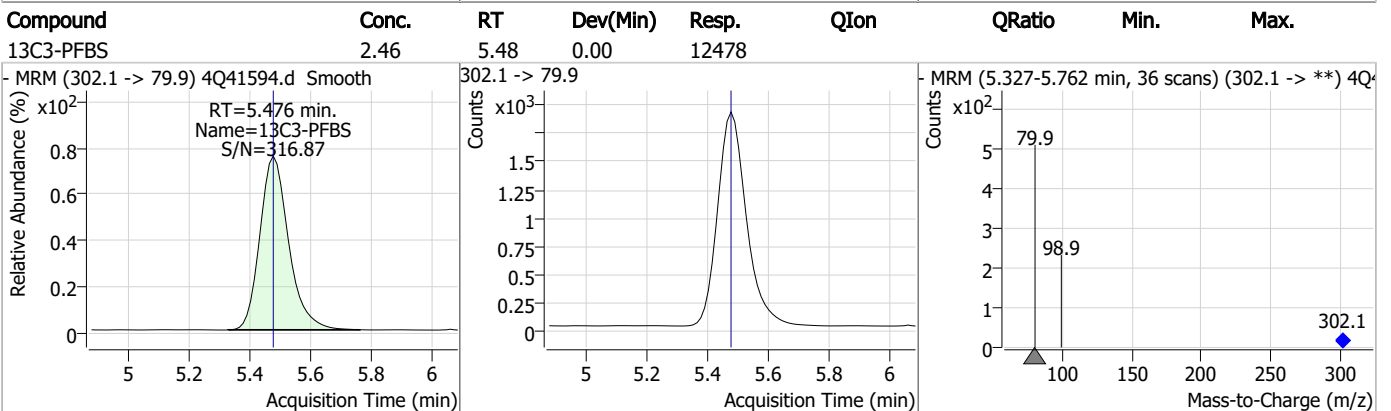
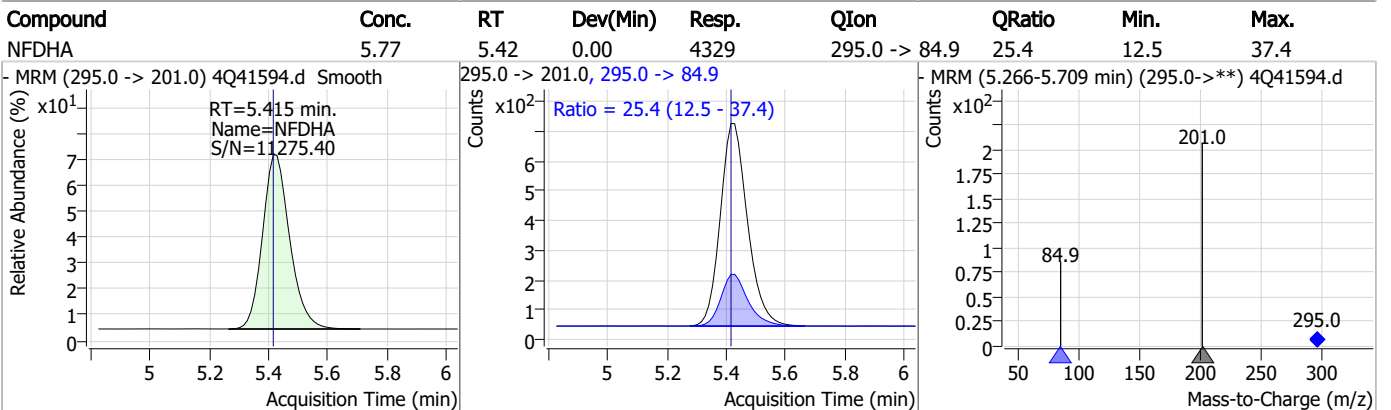
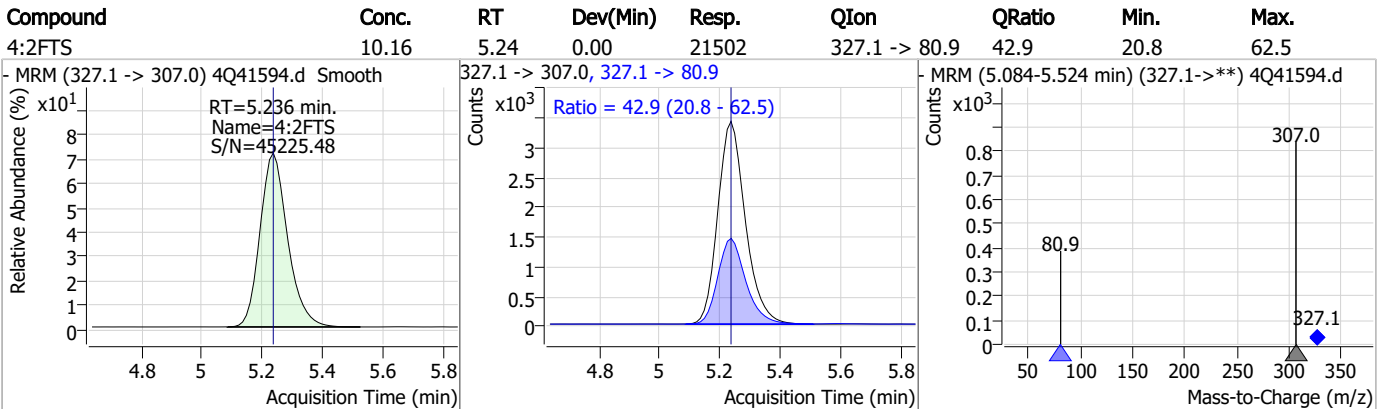
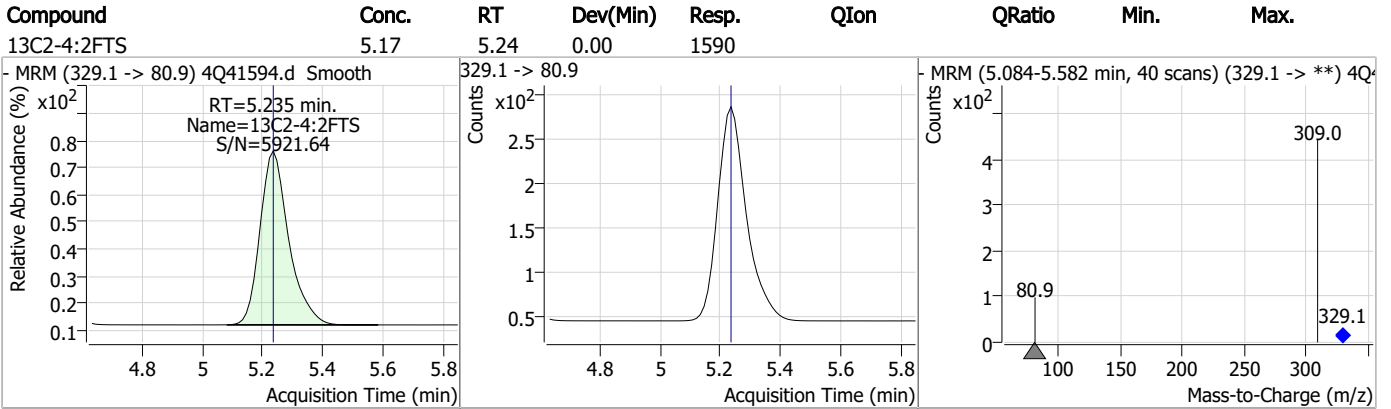


7.3.1

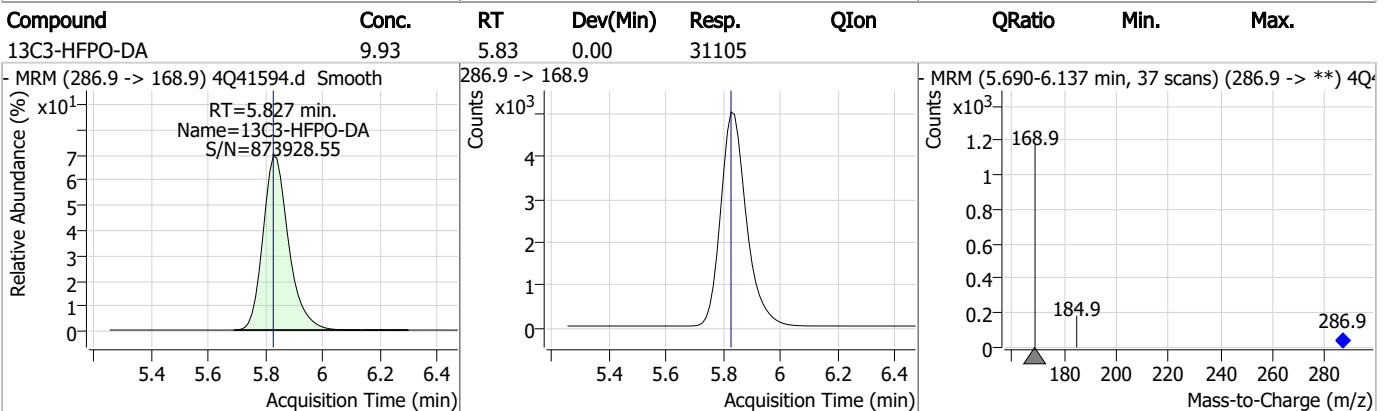
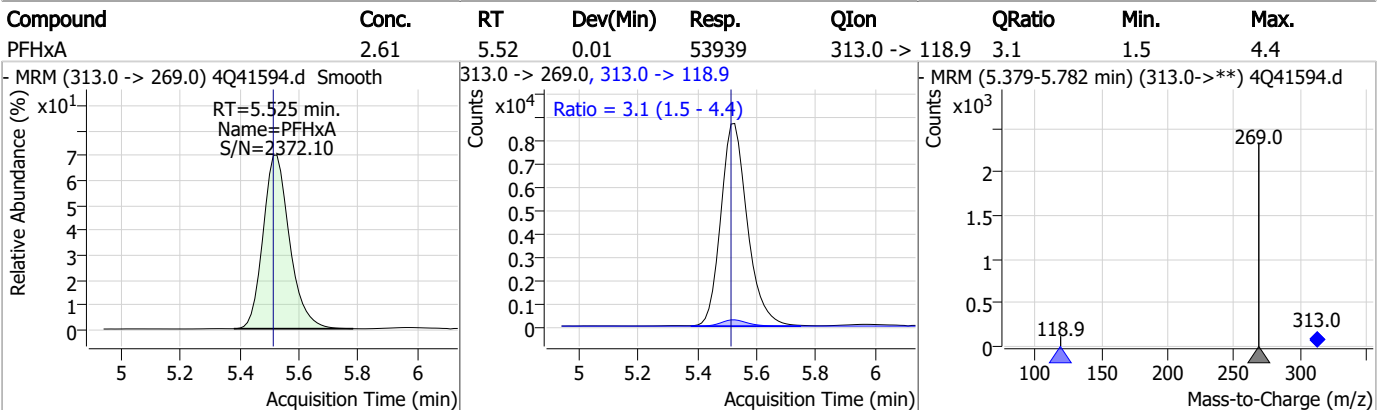
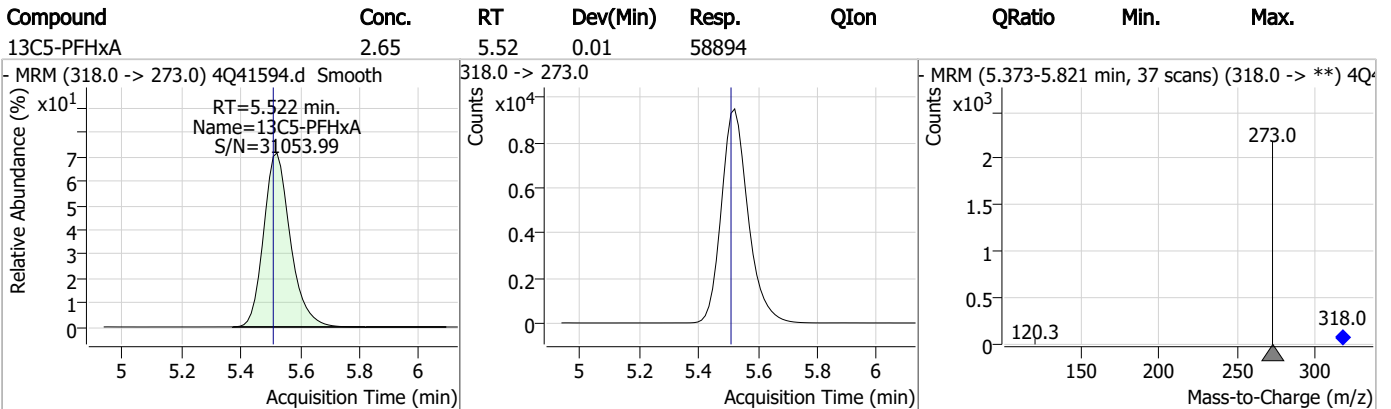
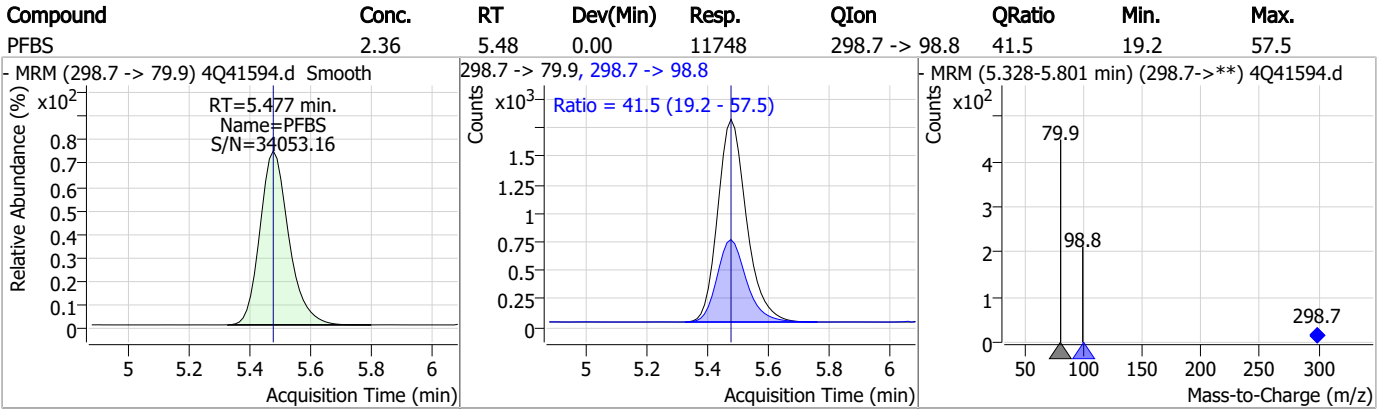
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Perfluorinated Compounds by LC/MS/MS



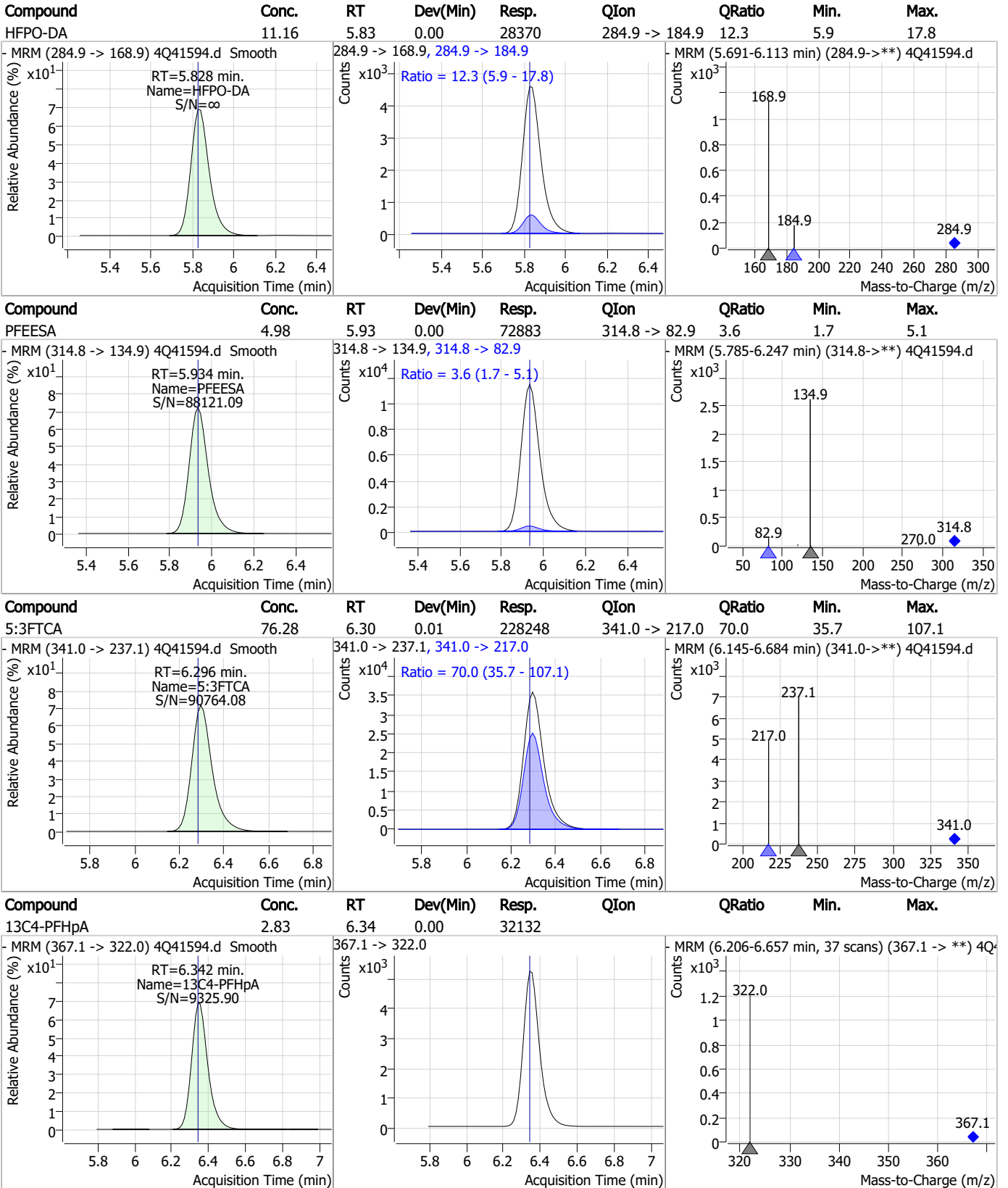
Perfluorinated Compounds by LC/MS/MS



7.3.1

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Perfluorinated Compounds by LC/MS/MS

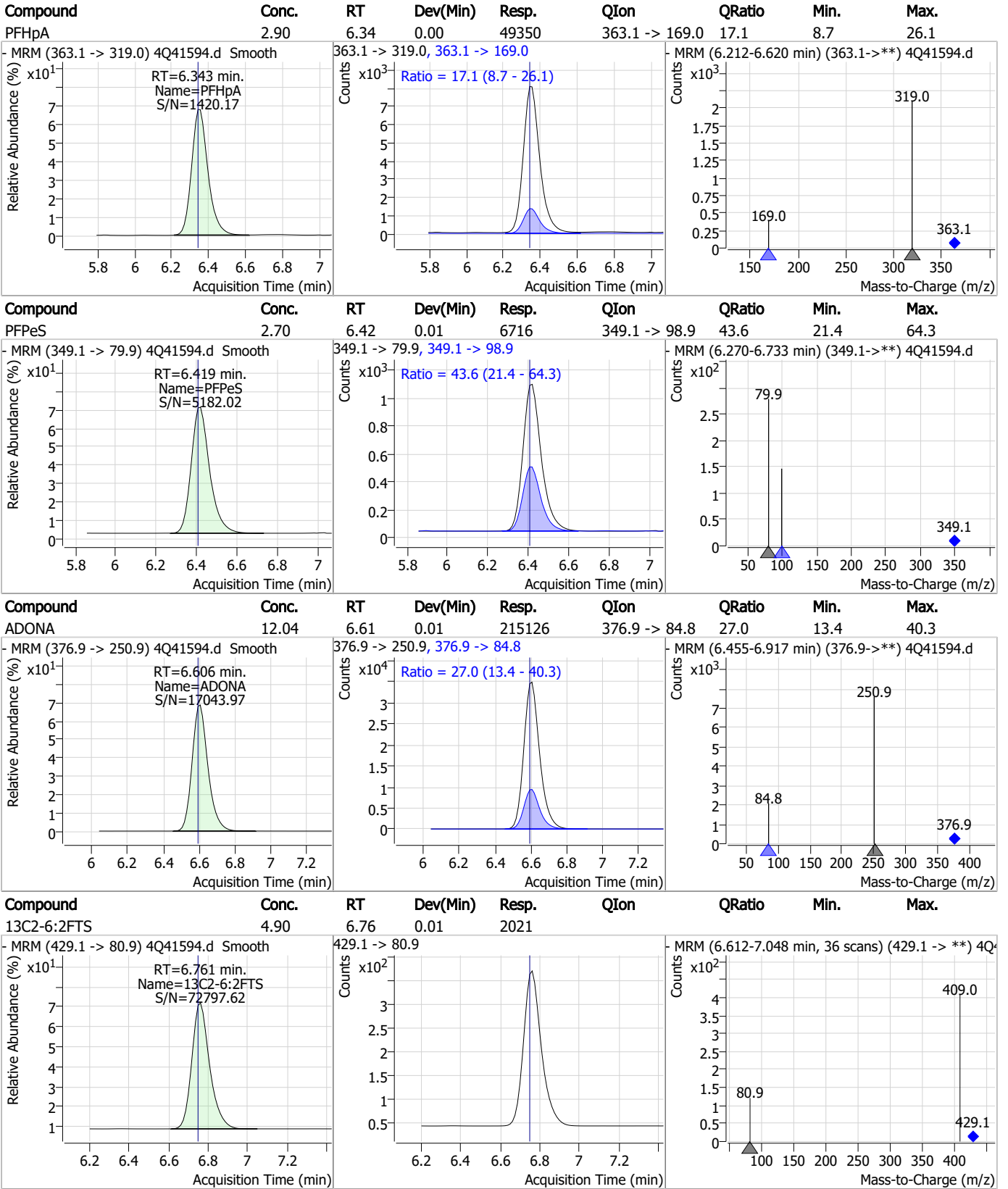


7.3.1

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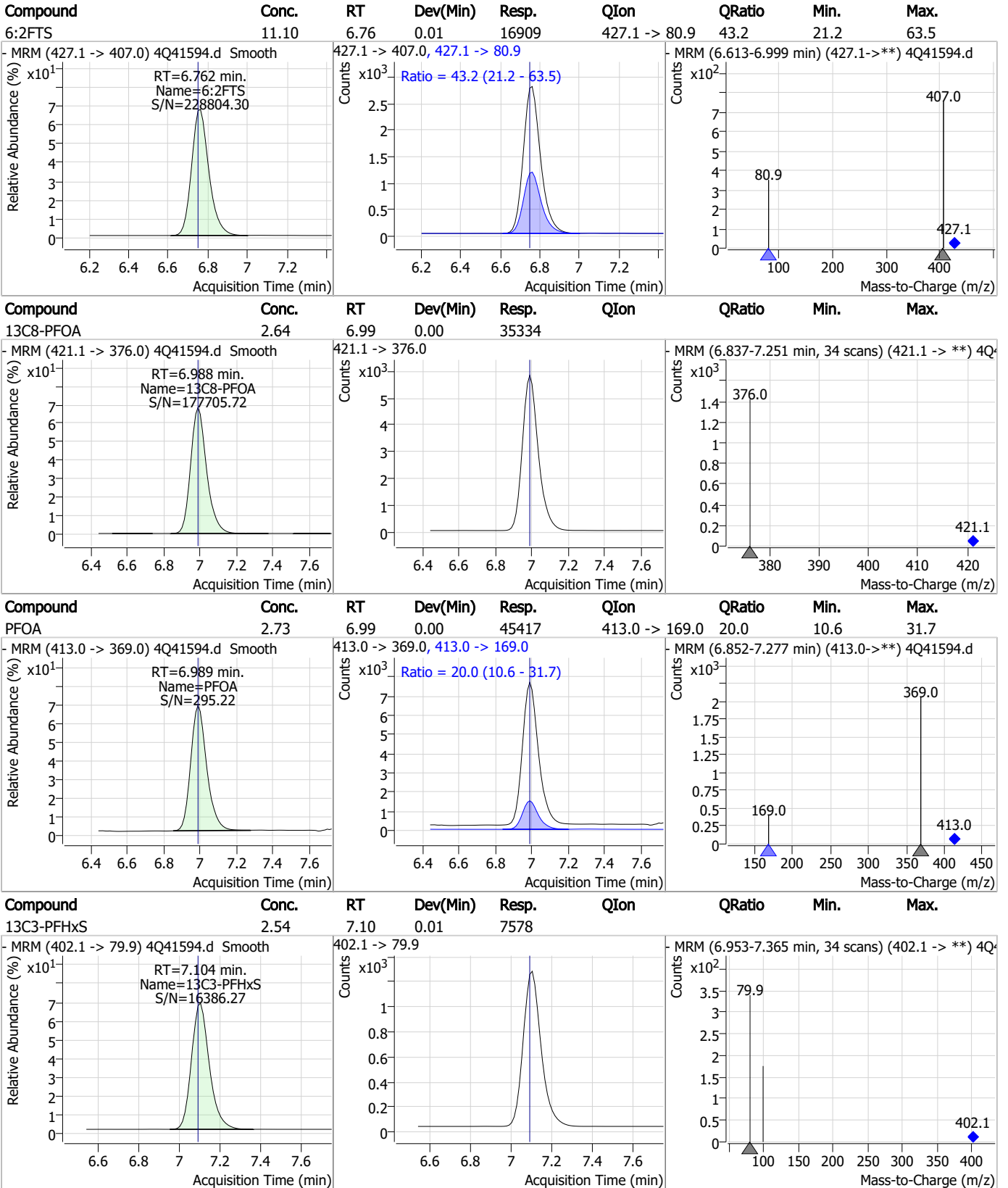
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

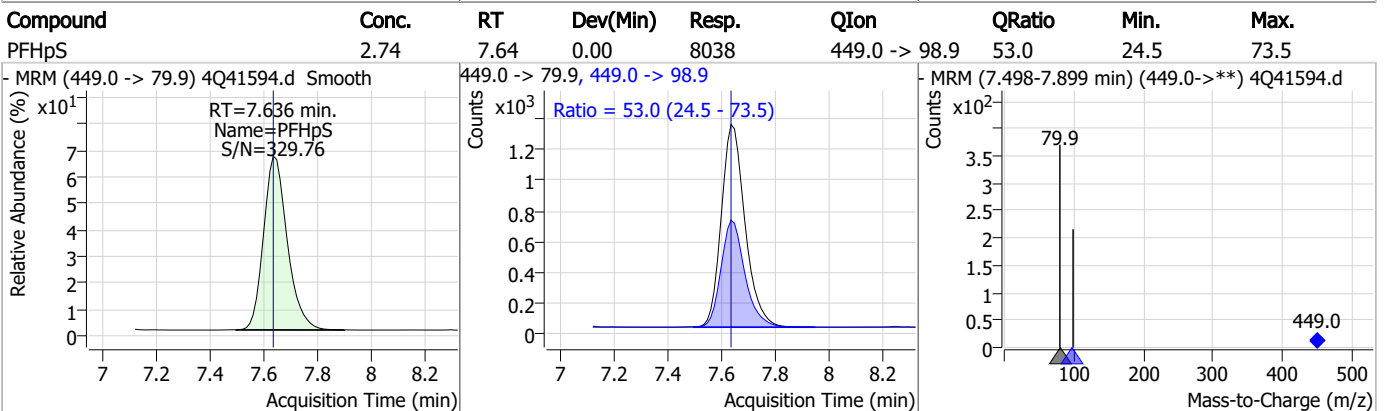
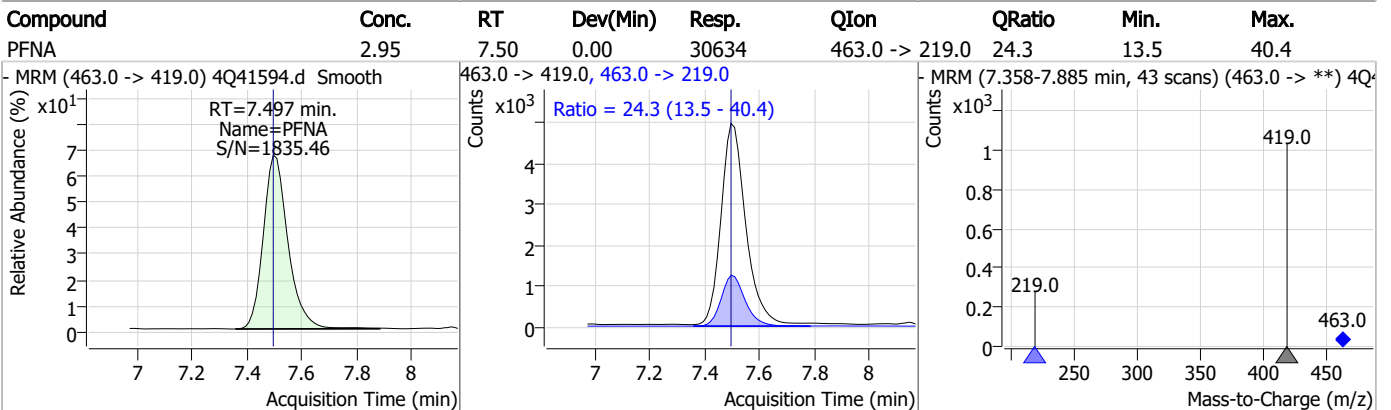
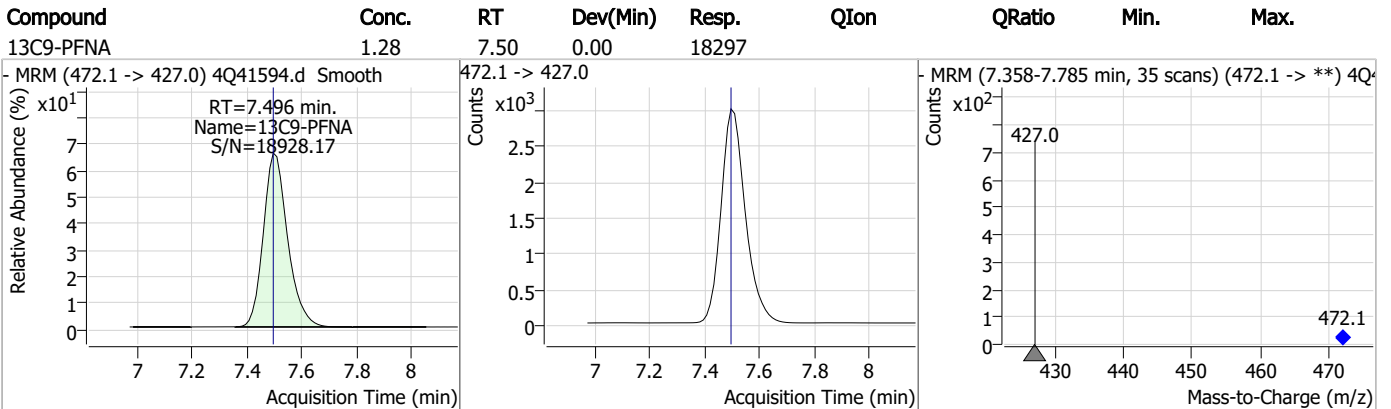
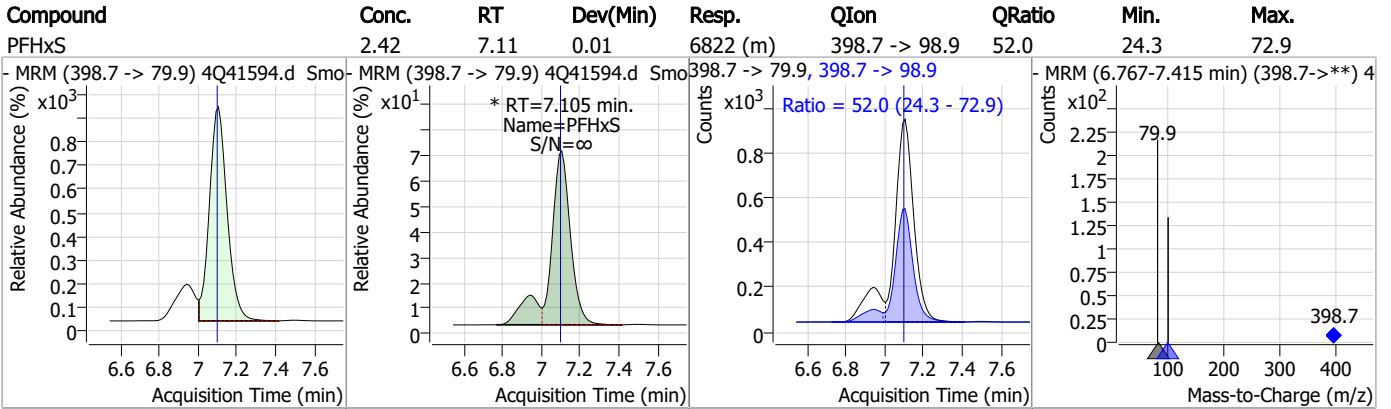


7.3.1

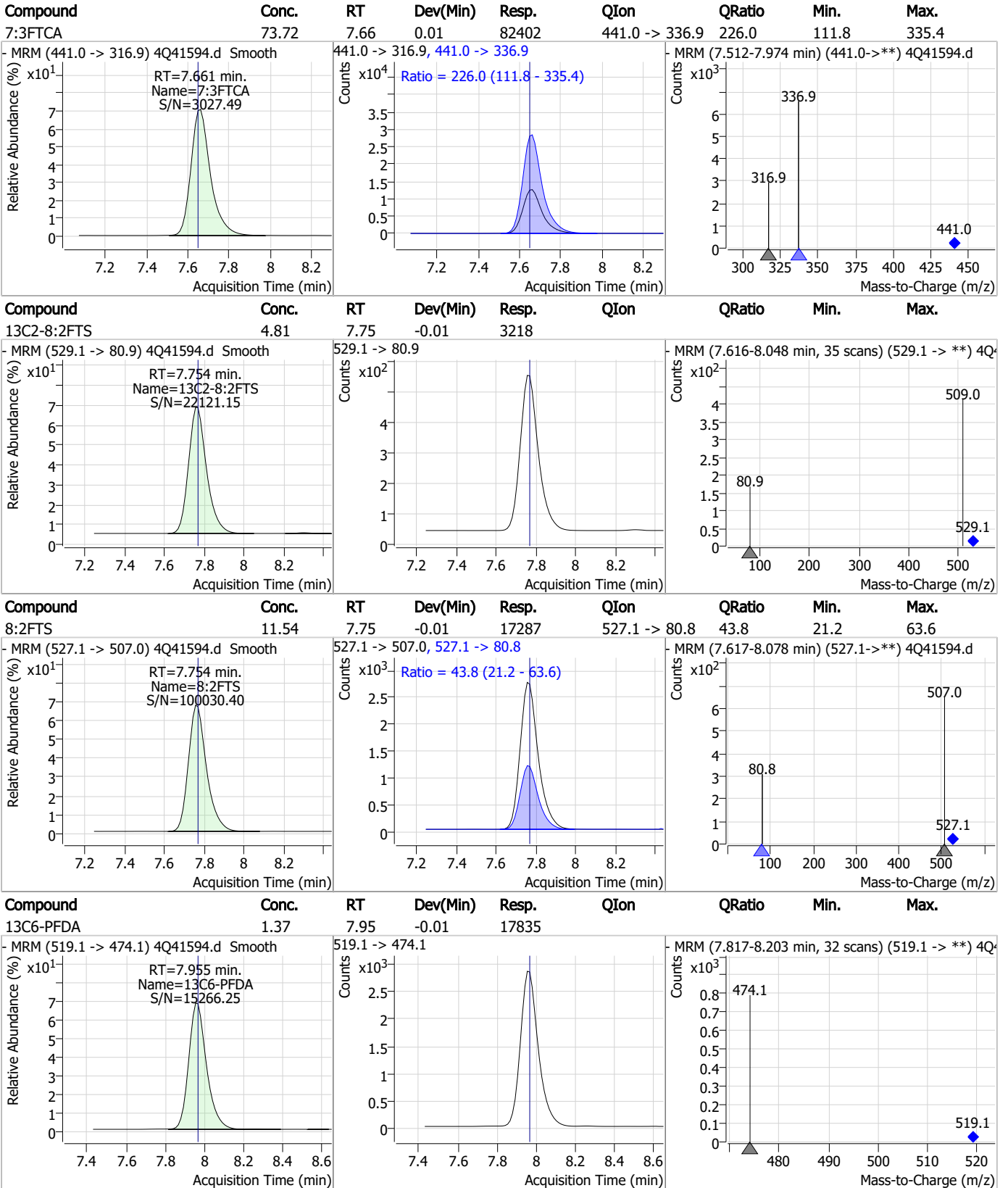
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

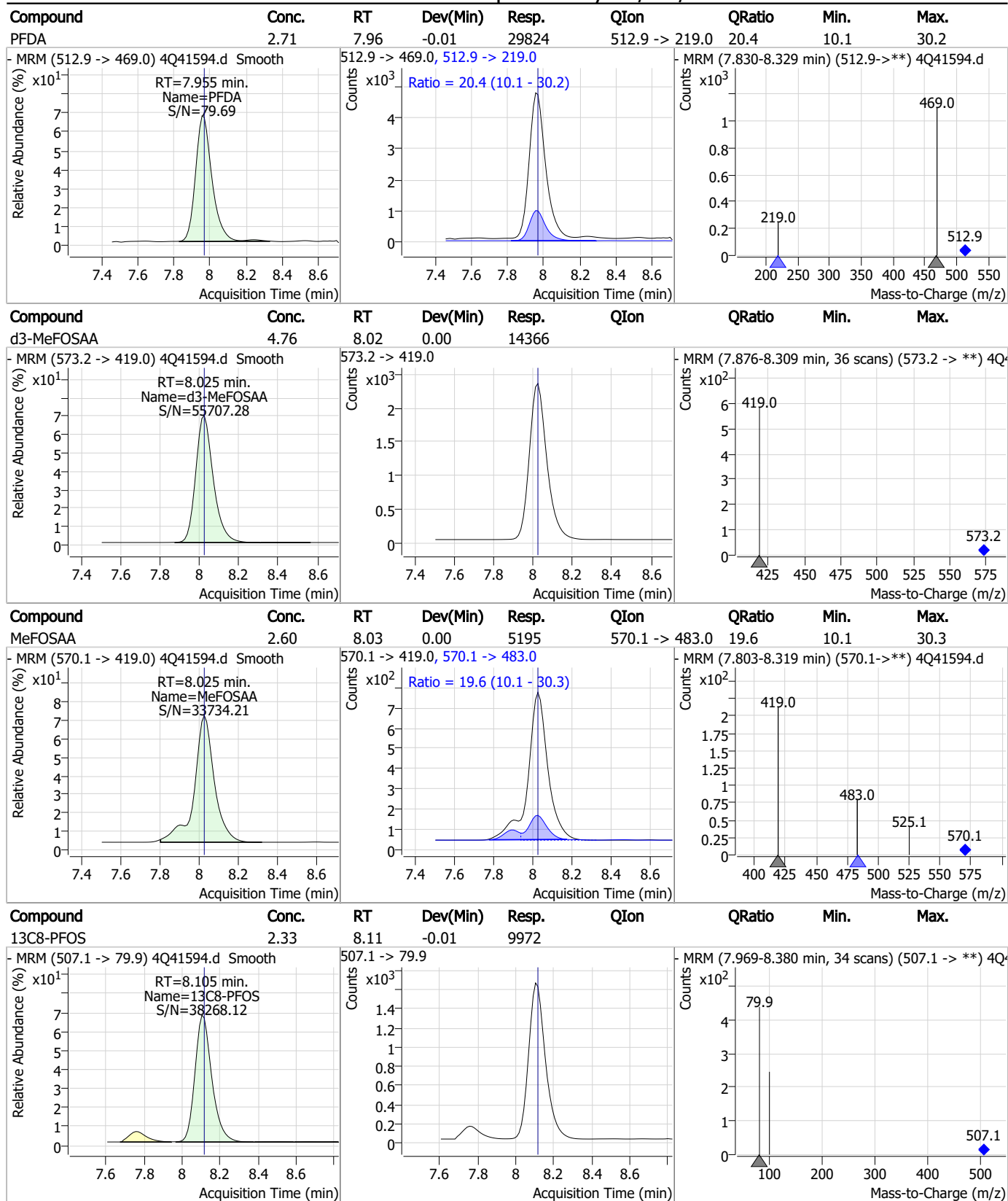


7.3.1

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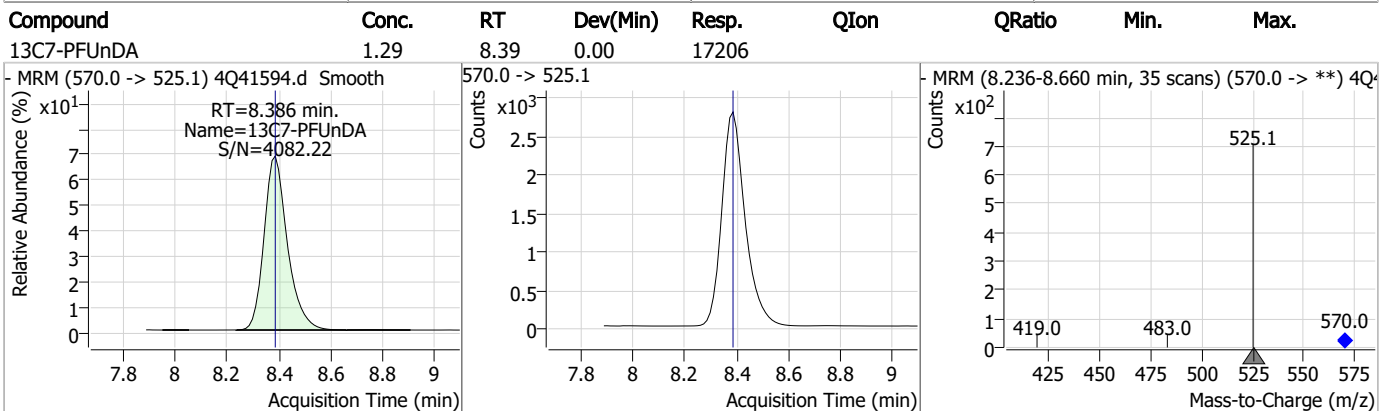
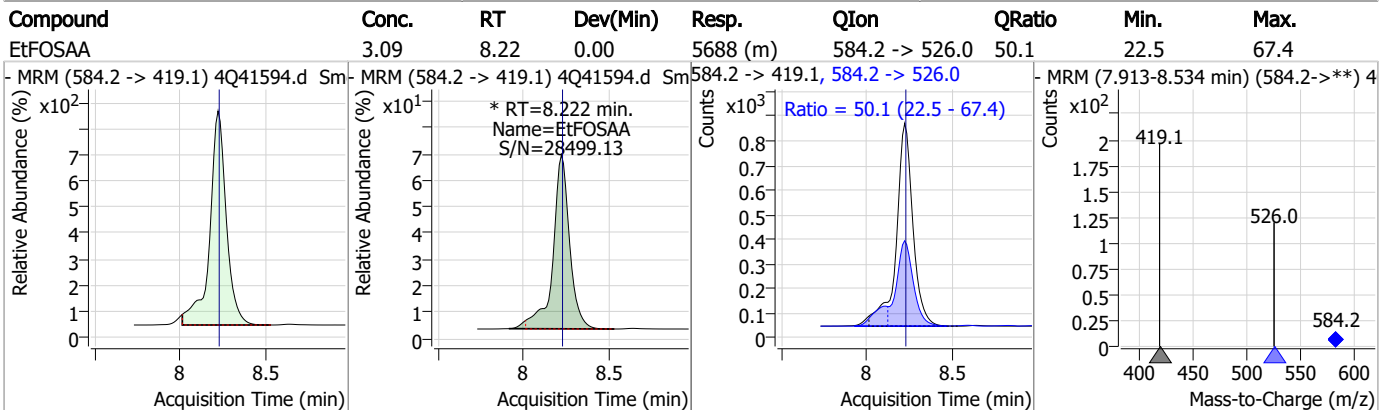
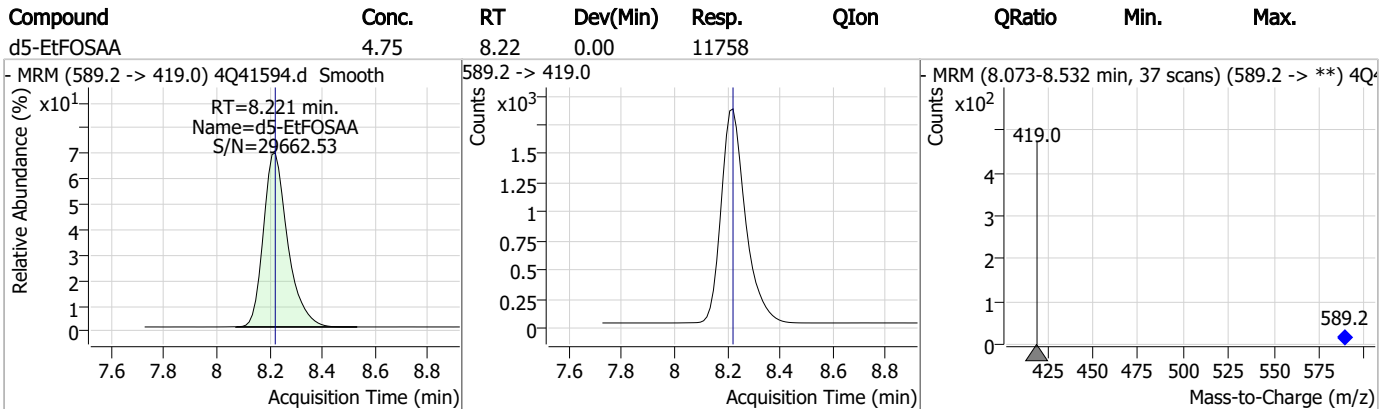
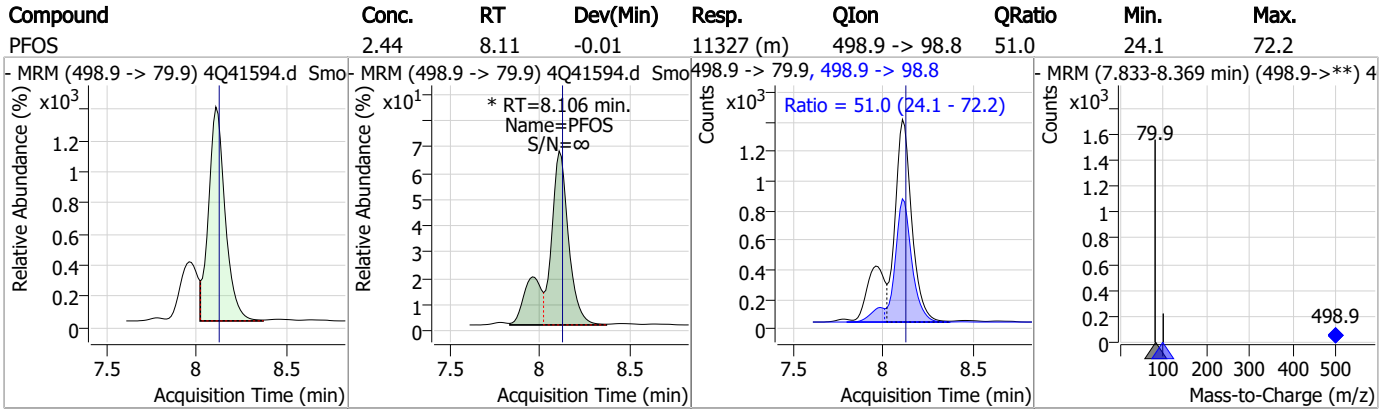


Perfluorinated Compounds by LC/MS/MS

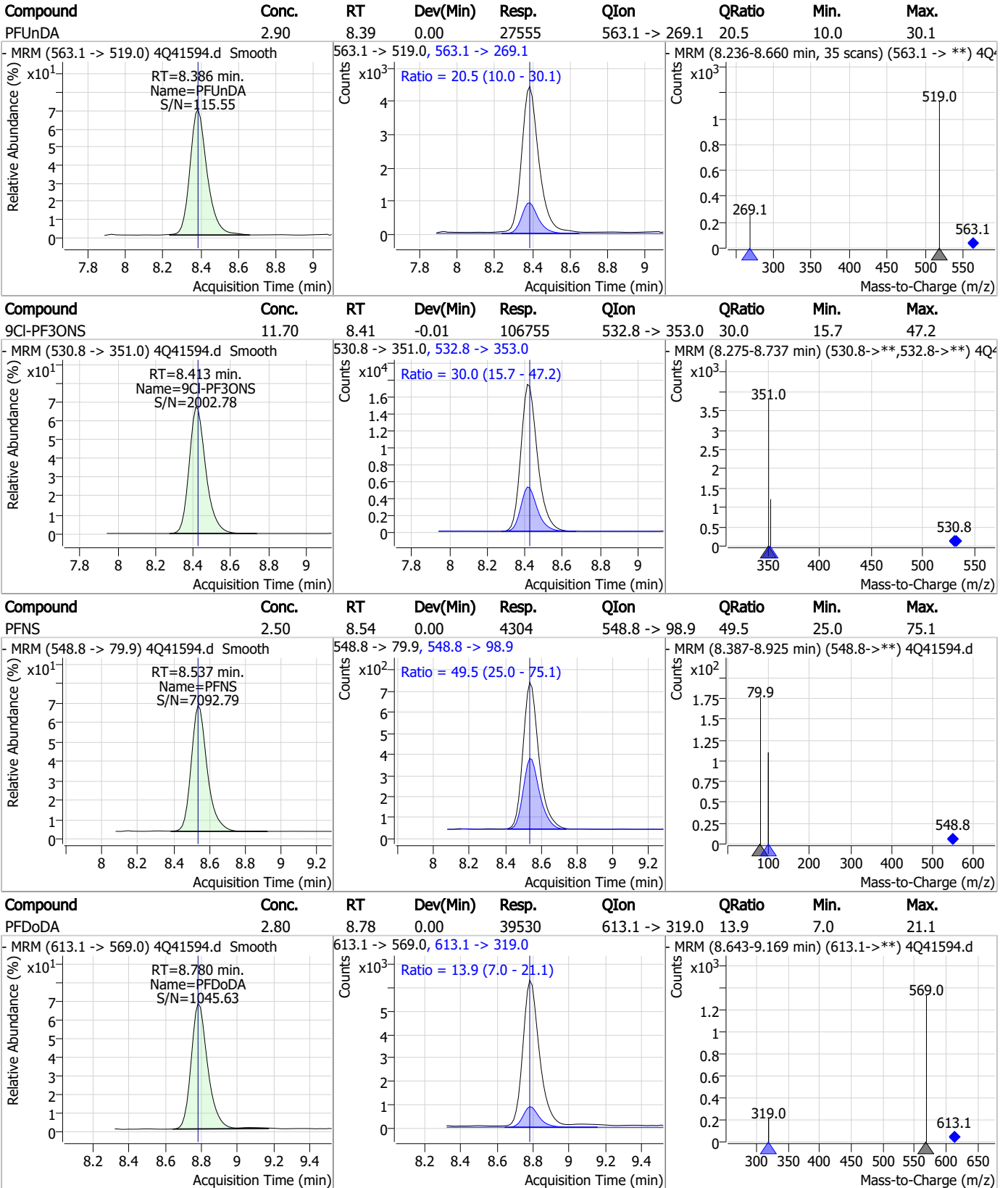


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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

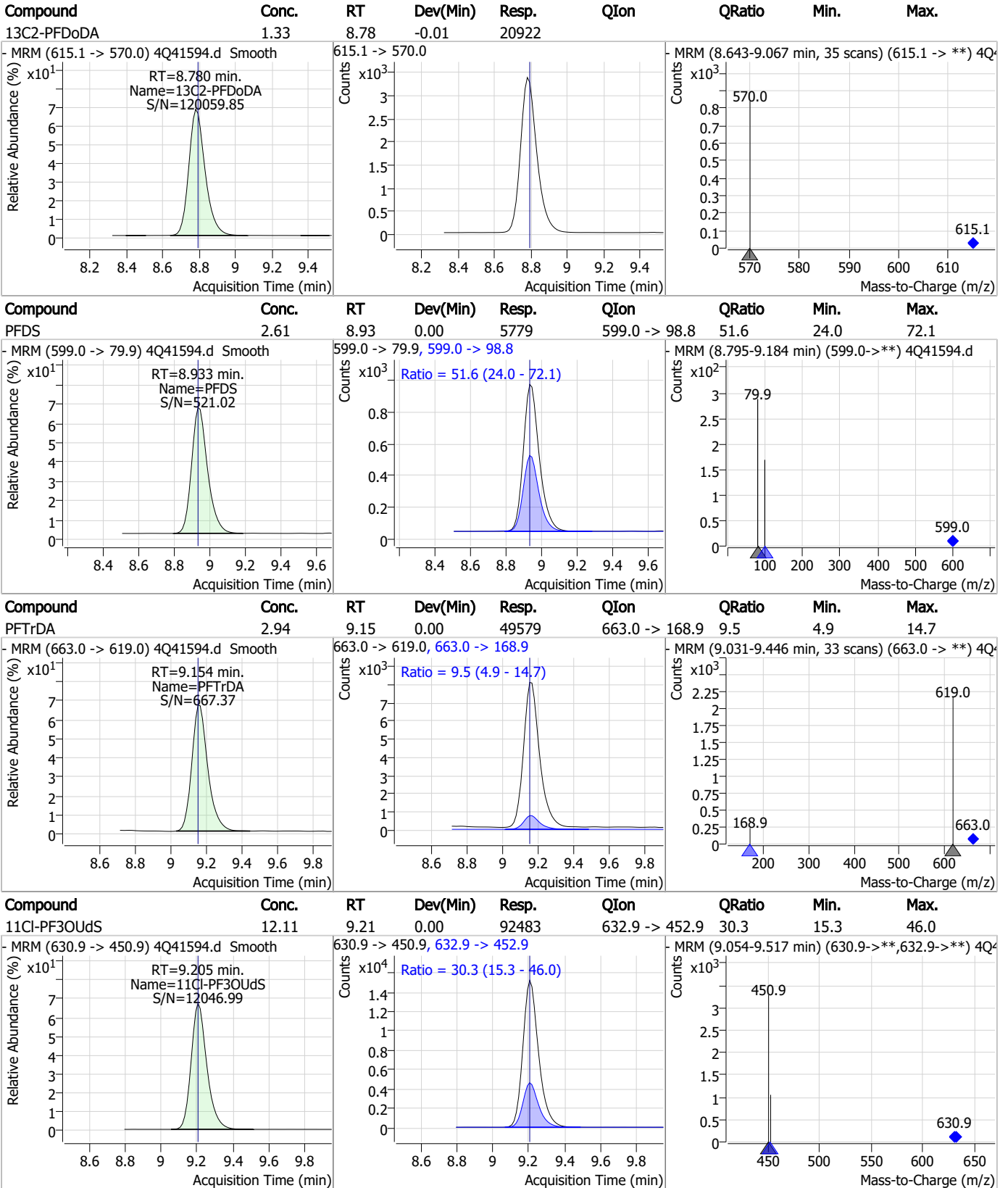


7.3.1

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Perfluorinated Compounds by LC/MS/MS

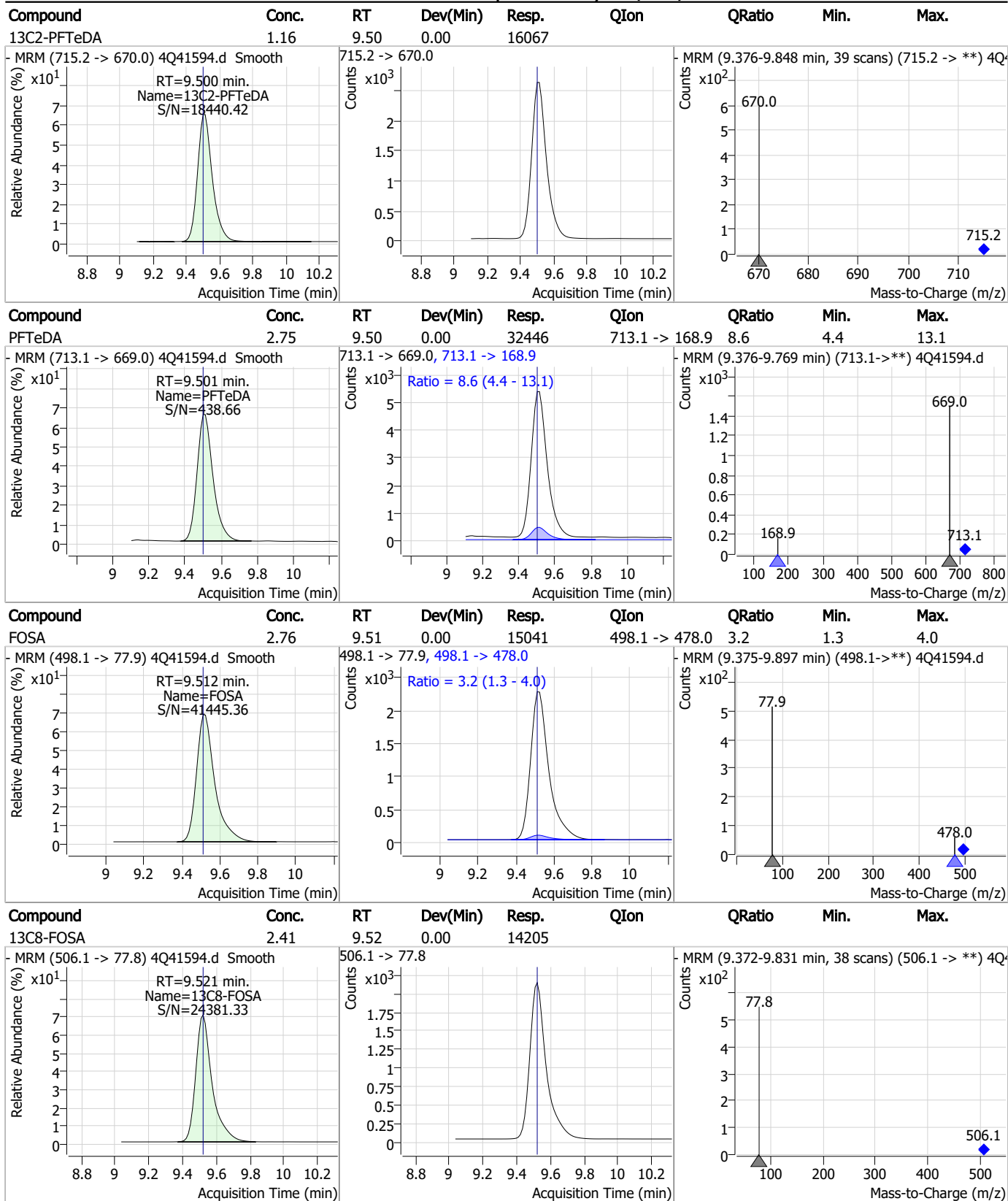


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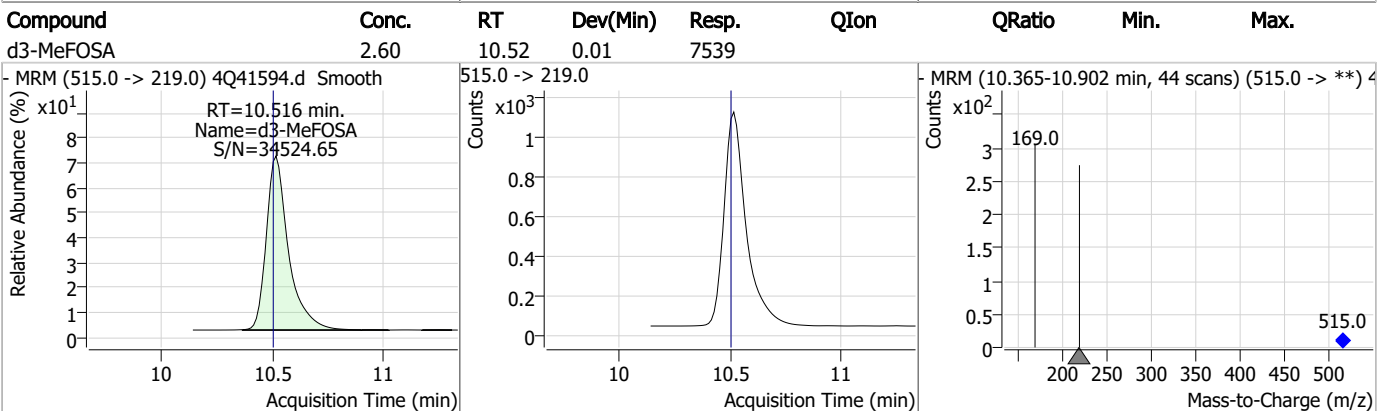
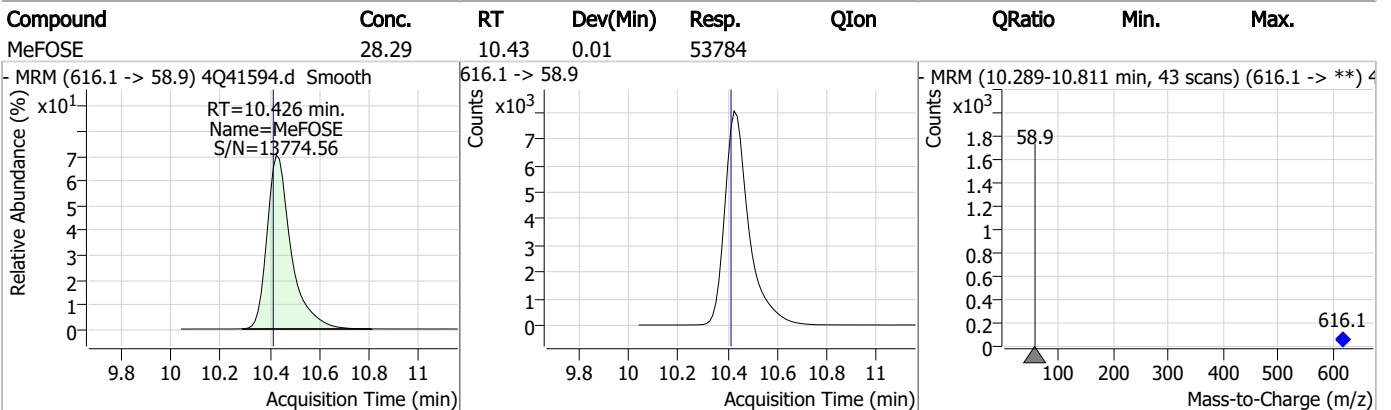
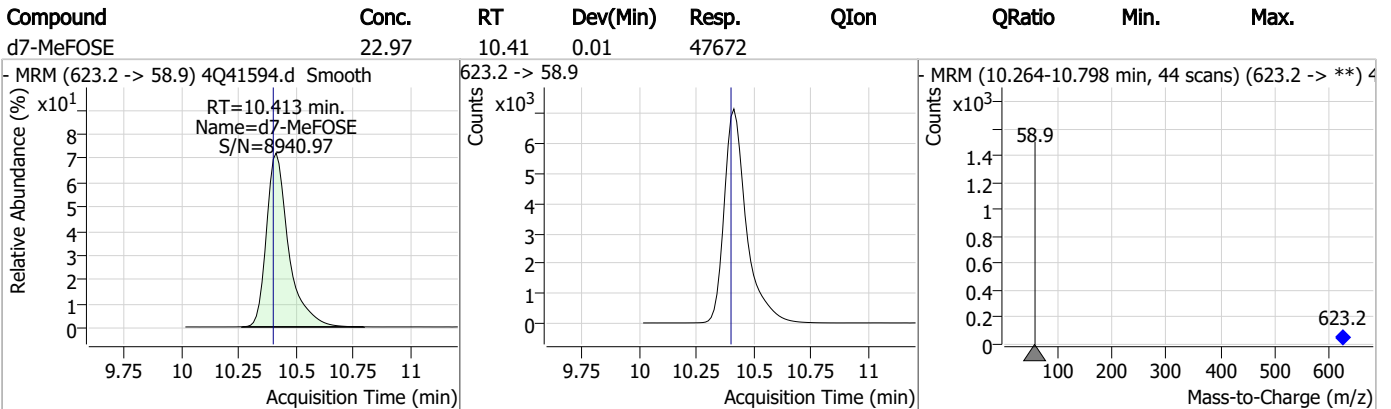
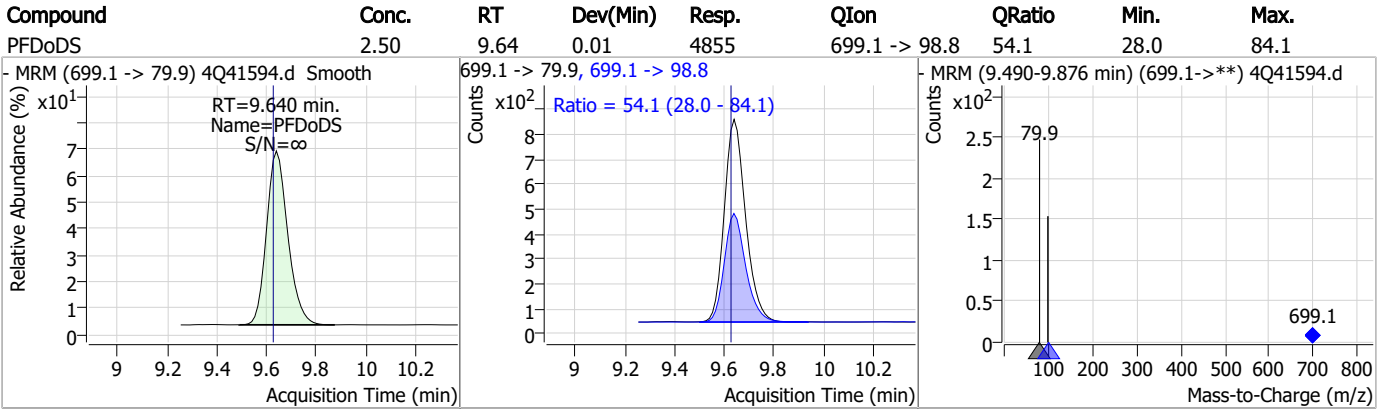


Perfluorinated Compounds by LC/MS/MS

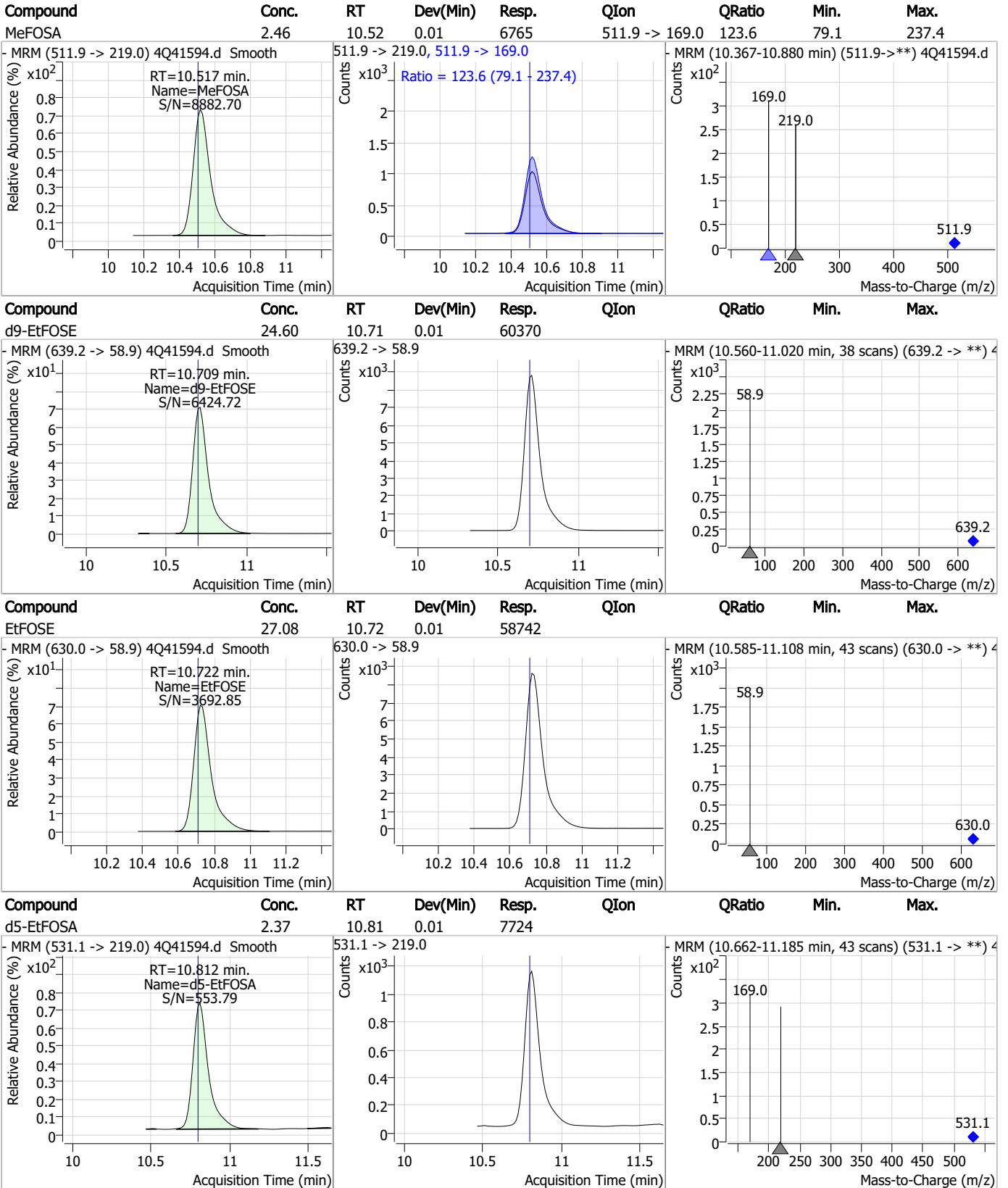


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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

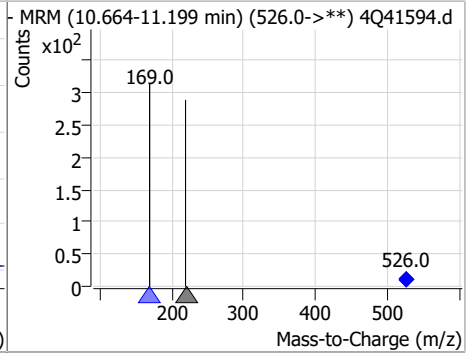
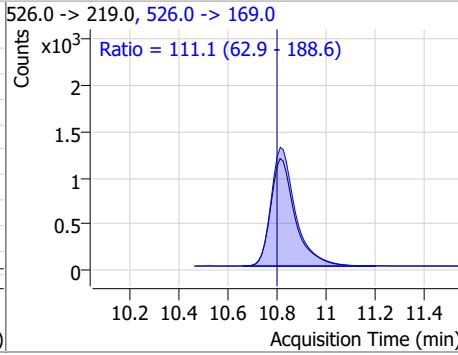
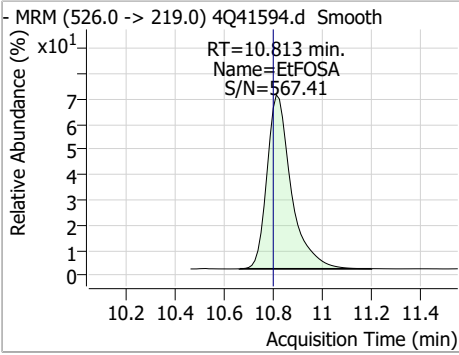


7.3.1

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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	2.51	10.81	0.01	7976	526.0 -> 169.0	111.1	62.9	188.6



7.3.1

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Manual Integration Approval Summary

Sample Number: OP95682-BS Method: EPA DRAFT 1633
Lab FileID: 4Q41594.D Analyst approved: 03/03/23 15:05 Anna Ludwig
Injection Time: 03/02/23 17:11 Supervisor approved: 03/03/23 16:24 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.11	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.11	Split peak
EtFOSAA	2991-50-6		8.22	Split peak

7.3.1.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41595.d
 Operator : marthav
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 3/2/2023 5:25:13 PM
 Sample Name : op95682-llbs:3
 Vial : P3-A5
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q595.batch.bin
 Sample Information : op95682,S4Q595,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.214	216.8 -> 171.9	129546	10.00 µg/L	0.025
M5-PFPeA	4.549	268.3 -> 223.0	76789	5.00 µg/L	0.012
M5-PFHxA	5.522	318.0 -> 273.0	60155	2.50 µg/L	0.012
M4-PFHpA	6.342	367.1 -> 322.0	32110	2.50 µg/L	0.000
M8-PFOA	6.975	421.1 -> 376.0	32850	2.50 µg/L	-0.012
M9-PFNA	7.496	472.1 -> 427.0	17009	1.25 µg/L	0.000
M6-PFDA	7.955	519.1 -> 474.1	16078	1.25 µg/L	-0.012
M7-PFUnDA	8.373	570.0 -> 525.1	14062	1.25 µg/L	-0.012
M2-PFDoDA	8.780	615.1 -> 570.0	14836	1.25 µg/L	-0.013
M2-PFTeDA	9.525	715.2 -> 670.0	12380	1.25 µg/L	0.025
M8-FOSA	9.534	506.1 -> 77.8	13675	2.50 µg/L	0.012
M3-PFBS	5.489	302.1 -> 79.9	12396	2.50 µg/L	0.012
M3-PFHxS	7.092	402.1 -> 79.9	7303	2.50 µg/L	0.000
M8-PFOS	8.105	507.1 -> 79.9	9298	2.50 µg/L	-0.012
M2-4:2FTS	5.247	329.1 -> 80.9	1554	5.00 µg/L	0.012
M2-6:2FTS	6.749	429.1 -> 80.9	2053	5.00 µg/L	0.000
M2-8:2FTS	7.754	529.1 -> 80.9	2917	5.00 µg/L	-0.012
M3-MeFOSAA	8.012	573.2 -> 419.0	12301	5.00 µg/L	-0.012
M3-HFPO-DA	5.839	286.9 -> 168.9	29793	10.00 µg/L	0.012
M5-EtFOSAA	8.209	589.2 -> 419.0	9701	5.00 µg/L	-0.012
M7-MeFOSE	10.413	623.2 -> 58.9	43168	25.00 µg/L	0.012
M9-EtFOSE	10.697	639.2 -> 58.9	53487	25.00 µg/L	0.000
M5-EtFOSA	10.799	531.1 -> 219.0	6708	2.50 µg/L	0.000
M3-MeFOSA	10.516	515.0 -> 219.0	6174	2.50 µg/L	0.012
13C4-PFOS	8.106	502.8 -> 79.9	9448	2.50 µg/L	-0.012
13C3-PFBA	3.218	216.0 -> 172.0	65925	5.00 µg/L	0.025
18O2-PFHxS	7.091	403.0 -> 83.9	4669	2.50 µg/L	0.000
13C4-PFOA	6.976	417.1 -> 372.0	36869	2.50 µg/L	-0.012
13C2-PFDA	7.955	515.1 -> 470.1	14620	1.25 µg/L	-0.012
13C5-PFNA	7.496	468.0 -> 423.0	19771	1.25 µg/L	0.000
13C2-PFHxA	5.523	315.1 -> 270.0	47934	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1554	5.71 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.3%		
13C2-6:2FTS	6.749	429.1 -> 80.9	2053	5.62 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.5%		
13C2-8:2FTS	7.754	529.1 -> 80.9	2917	4.93 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C2-PFDoDA	8.780	615.1 -> 570.0	14836	0.95 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 75.7%		
13C2-PFTeDA	9.525	715.2 -> 670.0	12380	0.90 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 71.9%		
13C3-PFBS	5.489	302.1 -> 79.9	12396	2.77 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 110.7%		
13C3-PFHxS	7.092	402.1 -> 79.9	7303	2.77 µg/L	0.000

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 = 110.8%	
13C4-PFBA	3.214	216.8 -> 171.9	129546	11.41 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 114.1%	
13C4-PFHpA	6.342	367.1 -> 322.0	32110	3.00 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 119.9%	
13C5-PFHxA	5.522	318.0 -> 273.0	60155	2.87 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 115.0%	
13C5-PFPeA	4.549	268.3 -> 223.0	76789	5.70 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.0%	
13C6-PFDA	7.955	519.1 -> 474.1	16078	1.24 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C7-PFUnDA	8.373	570.0 -> 525.1	14062	1.06 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 84.4%	
13C8-FOSA	9.534	506.1 -> 77.8	13675	2.61 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.4%	
13C8-PFOA	6.975	421.1 -> 376.0	32850	2.67 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.0%	
13C8-PFOS	8.105	507.1 -> 79.9	9298	2.45 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C9-PFNA	7.496	472.1 -> 427.0	17009	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.6%	
d3-MeFOSAA	8.012	573.2 -> 419.0	12301	4.59 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 91.8%	
13C3-HFPO-DA	5.839	286.9 -> 168.9	29793	10.08 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
d3-MeFOSA	10.516	515.0 -> 219.0	6174	2.39 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.8%	
d5-EtFOSAA	8.209	589.2 -> 419.0	9701	4.41 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 88.2%	
d7-MeFOSE	10.413	623.2 -> 58.9	43168	23.41 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 93.6%	
d9-EtFOSE	10.697	639.2 -> 58.9	53487	24.52 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.1%	
d5-EtFOSA	10.799	531.1 -> 219.0	6708	2.31 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.6%	
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	9085	4.39 µg/L	99
		327.1 -> 80.9	3830		
6:2FTS	6.749	427.1 -> 407.0	6259	4.05 µg/L	97
		427.1 -> 80.9	2791		
8:2FTS	7.754	527.1 -> 507.0	5973	4.40 µg/L	100
		527.1 -> 80.8	2532		
EtFOSAA	8.210	584.2 -> 419.1	1829	1.20 µg/L	98
		584.2 -> 526.0	796		
FOSA	9.524	498.1 -> 77.9	5401	1.03 µg/L	98
		498.1 -> 478.0	114		
MeFOSAA	8.013	570.1 -> 419.0	1872	1.09 µg/L	89
		570.1 -> 483.0	472		
PFBA	3.221	212.8 -> 168.9	12584	4.11 µg/L	100
PFBS	5.490	298.7 -> 79.9	4498	0.91 µg/L	96
		298.7 -> 98.8	1832		
PFDA	7.955	512.9 -> 469.0	9759	0.98 µg/L	96
		512.9 -> 219.0	2140		
PFDODA	8.780	613.1 -> 569.0	10643	1.06 µg/L	99
		613.1 -> 319.0	1542		
PFDS	8.945	599.0 -> 79.9	1703	0.83 µg/L	95

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	876			
PFHpA	6.343	363.1 -> 319.0	17851	1.05	µg/L	98
		363.1 -> 169.0	3266			
PFHpS	7.636	449.0 -> 79.9	2675	0.98	µg/L	93
		449.0 -> 98.9	1445			
PFHxA	5.525	313.0 -> 269.0	21394	1.01	µg/L	98
		313.0 -> 118.9	732			
PFHxS	7.093	398.7 -> 79.9	2345	0.86	µg/L	m 94
		398.7 -> 98.9	1241			
PFNA	7.497	463.0 -> 419.0	10127	1.05	µg/L	99
		463.0 -> 219.0	2648			
PFNS	8.537	548.8 -> 79.9	1239	0.77	µg/L	81
		548.8 -> 98.9	783			
PFOA	6.977	413.0 -> 369.0	16526	1.07	µg/L	97
		413.0 -> 169.0	3693			
PFOS	8.106	498.9 -> 79.9	3979	0.92	µg/L	m 96
		498.9 -> 98.8	1820			
PFPeA	4.552	263.0 -> 219.0	32789	2.10	µg/L	100
PFPeS	6.419	349.1 -> 79.9	2563	1.07	µg/L	98
		349.1 -> 98.9	1127			
PFTeDA	9.525	713.1 -> 669.0	10306	1.13	µg/L	100
		713.1 -> 168.9	886			
PFTrDA	9.166	663.0 -> 619.0	13610	1.14	µg/L	95
		663.0 -> 168.9	1576			
PFUnDA	8.374	563.1 -> 519.0	8484	1.09	µg/L	96
		563.1 -> 269.1	1554			
11CI-PF3OUdS	9.218	630.9 -> 450.9	25701	3.51	µg/L	99
		632.9 -> 452.9	7970			
9CI-PF3ONS	8.413	530.8 -> 351.0	33846	3.87	µg/L	97
		532.8 -> 353.0	10100			
ADONA	6.594	376.9 -> 250.9	81945	4.79	µg/L	99
		376.9 -> 84.8	21510			
HFPO-DA	5.840	284.9 -> 168.9	10275	4.22	µg/L	100
		284.9 -> 184.9	1204			
3:3FTCA	4.254	241.0 -> 177.0	3736	4.64	µg/L	99
		241.0 -> 117.0	349			
5:3FTCA	6.296	341.0 -> 237.1	86715	28.37	µg/L	97
		341.0 -> 217.0	59824			
7:3FTCA	7.649	441.0 -> 316.9	29885	26.18	µg/L	96
		441.0 -> 336.9	68884			
EtFOSA	10.813	526.0 -> 219.0	2771	1.00	µg/L	78
		526.0 -> 169.0	2797			
EtFOSE	10.722	630.0 -> 58.9	19843	10.32	µg/L	100
MeFOSA	10.517	511.9 -> 219.0	2134	0.95	µg/L	71
		511.9 -> 169.0	2564			
MeFOSE	10.426	616.1 -> 58.9	18569	10.79	µg/L	100
PFDoDS	9.652	699.1 -> 79.9	1439	0.79	µg/L	99
		699.1 -> 98.8	796			
NFDHA	5.428	295.0 -> 201.0	1496	1.95	µg/L	97
		295.0 -> 84.9	395			
PFMBA	4.881	279.0 -> 85.1	18582	2.06	µg/L	100
PFMPA	3.819	229.0 -> 84.9	15627	2.00	µg/L	100
PFEESA	5.934	314.8 -> 134.9	27175	1.82	µg/L	98
		314.8 -> 82.9	1084			

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

7.3.2
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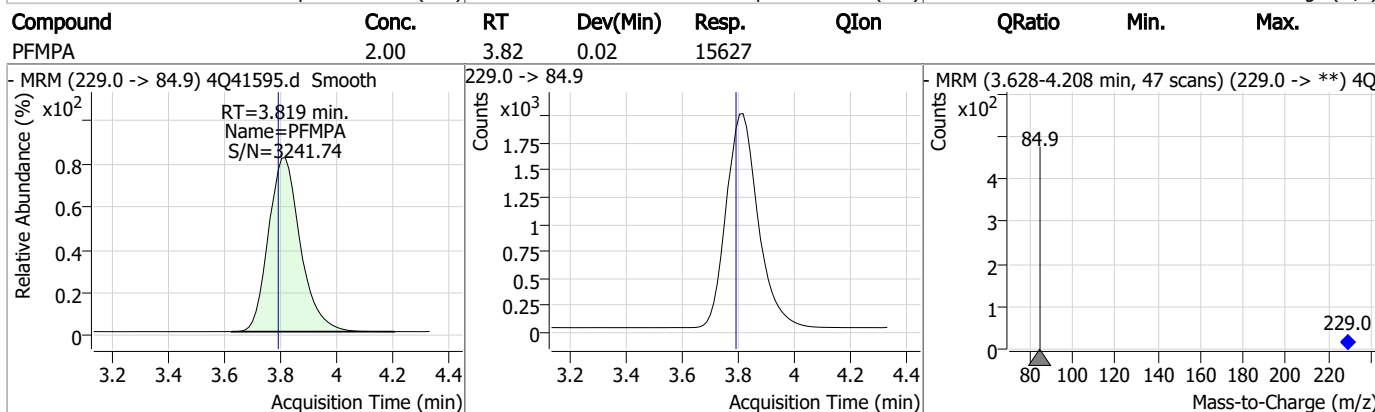
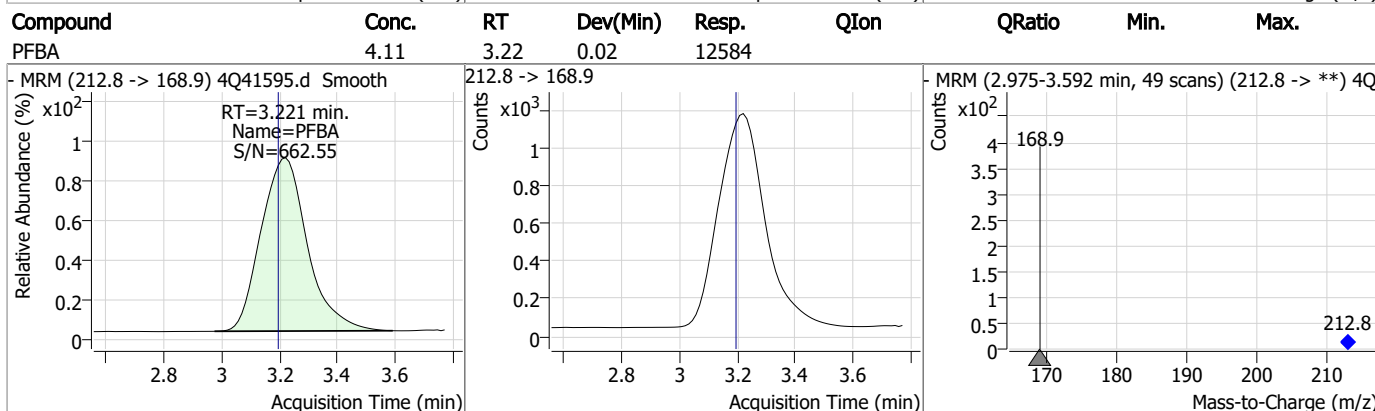
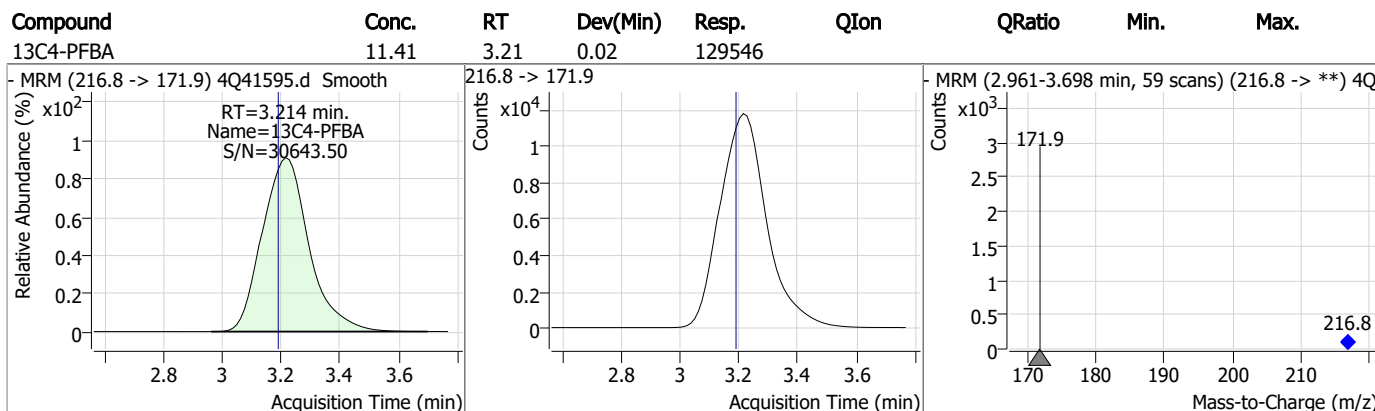
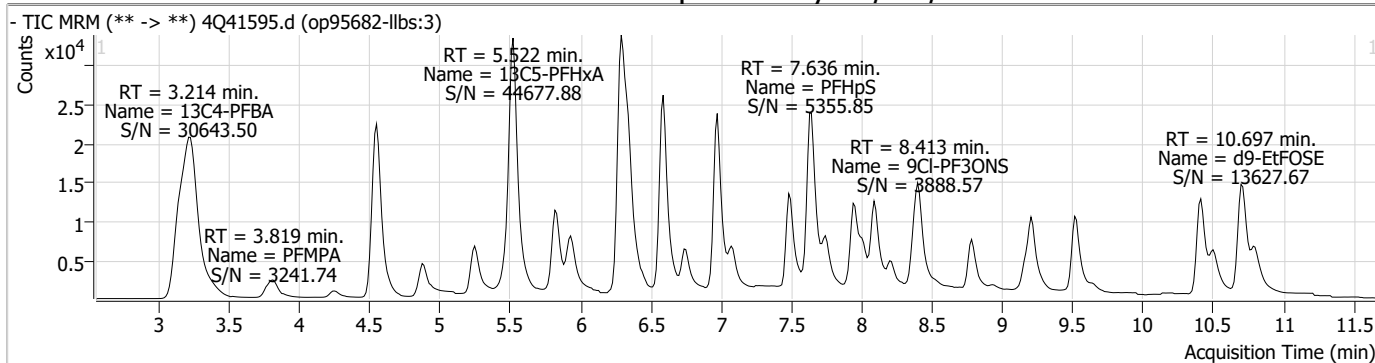
Perfluorinated Compounds by LC/MS/MS

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

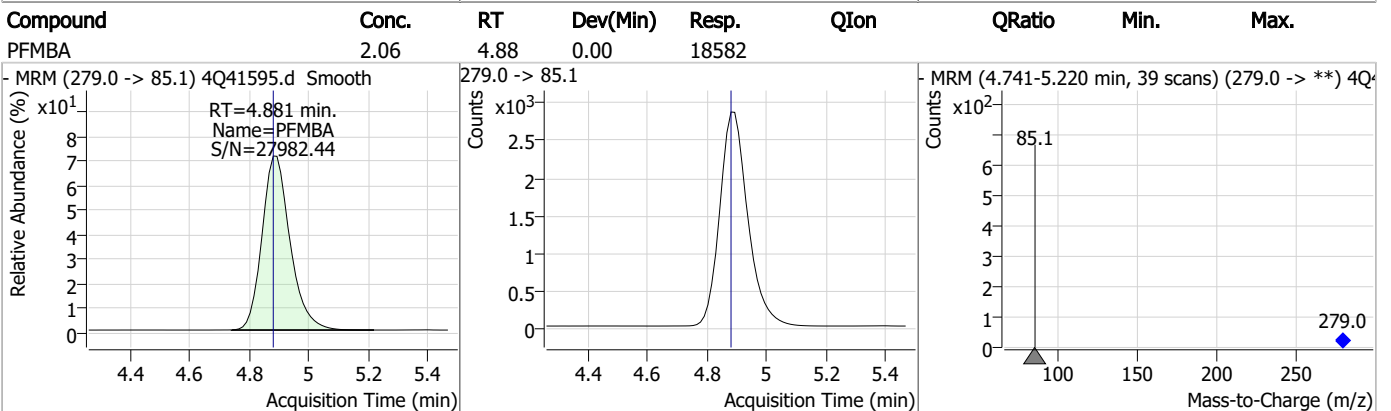
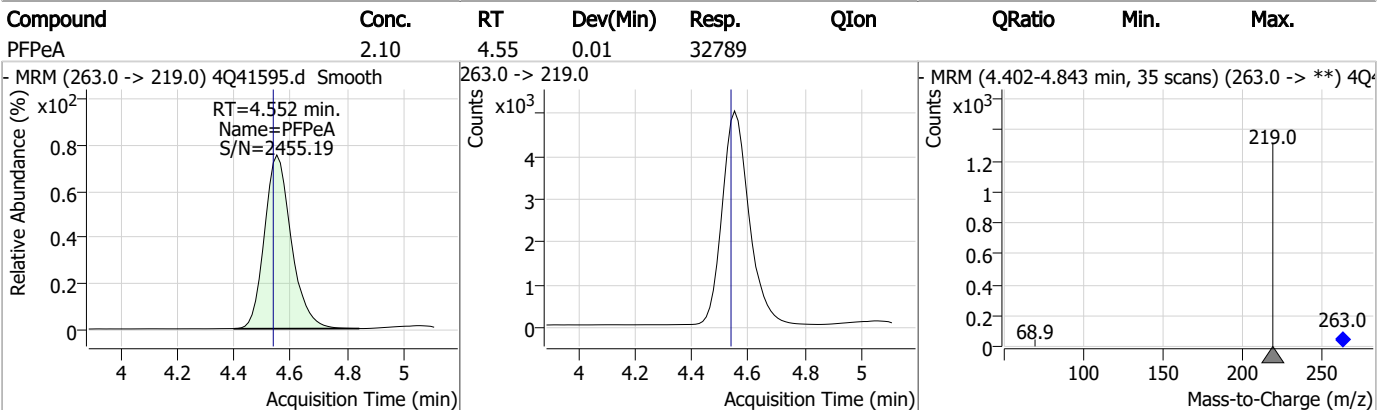
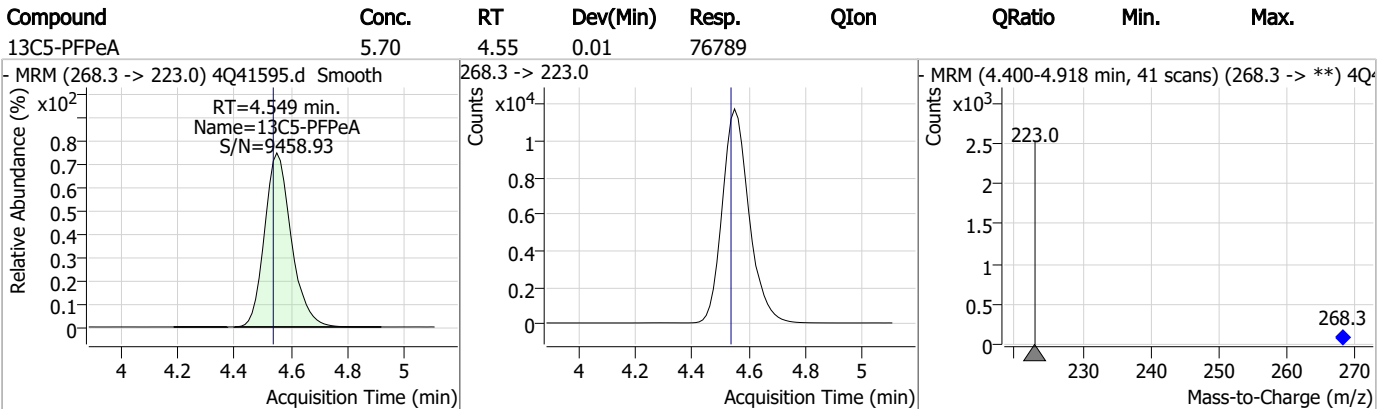
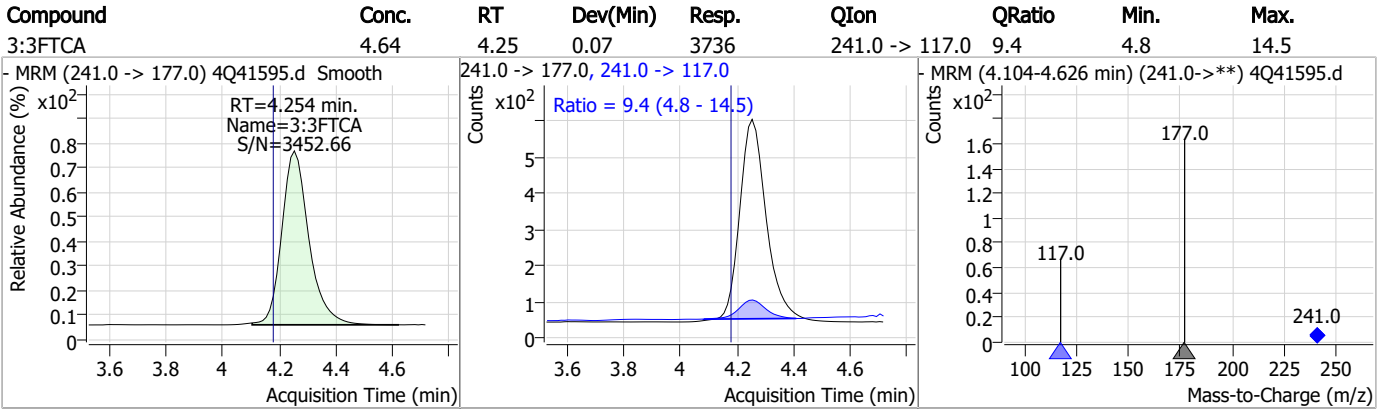
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Perfluorinated Compounds by LC/MS/MS

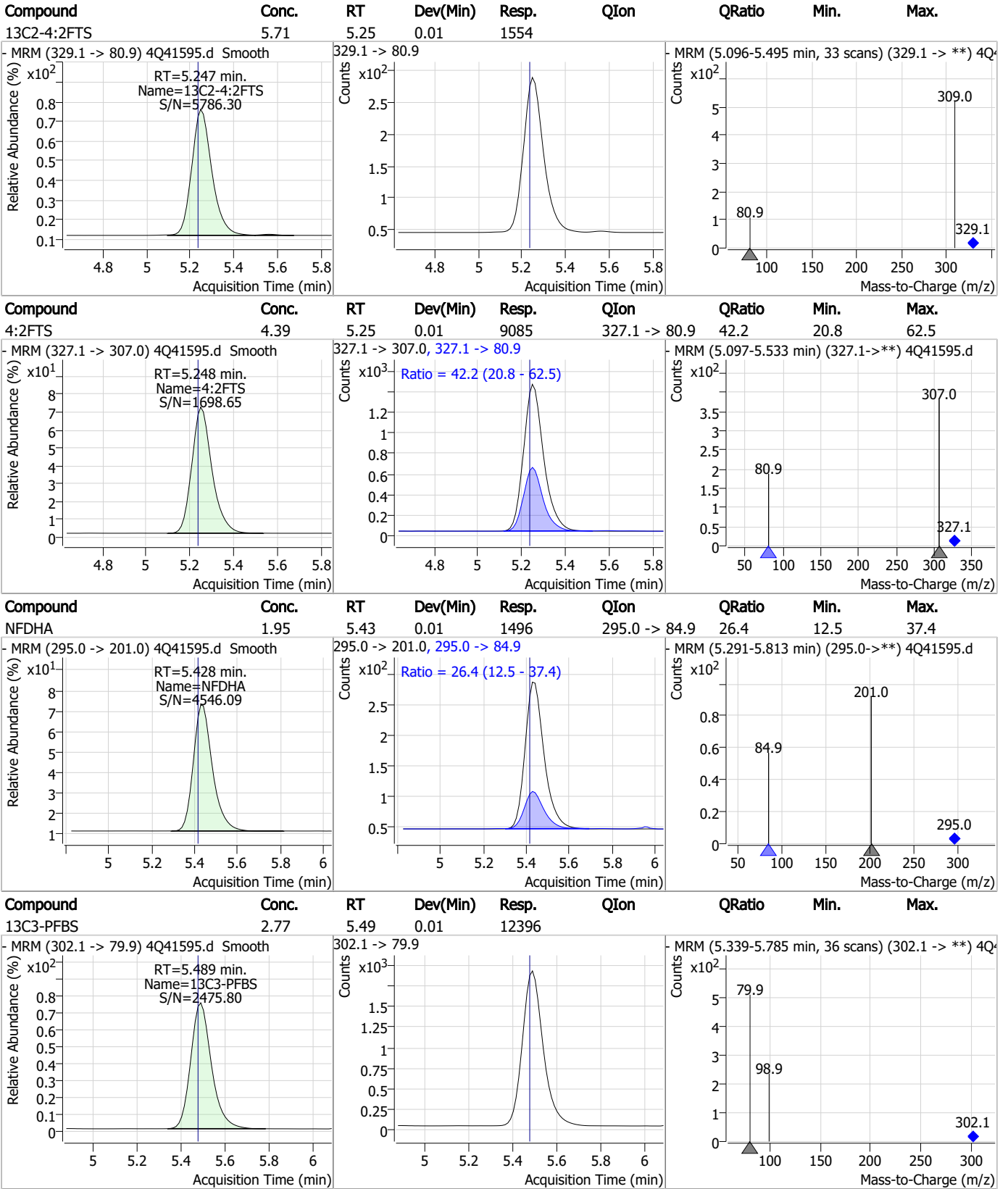


7.3.2
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Perfluorinated Compounds by LC/MS/MS



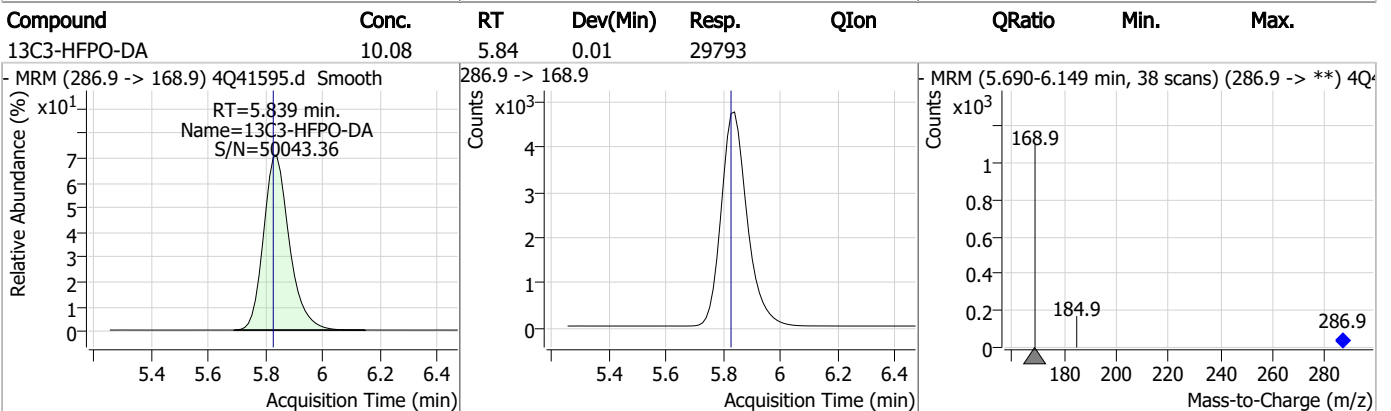
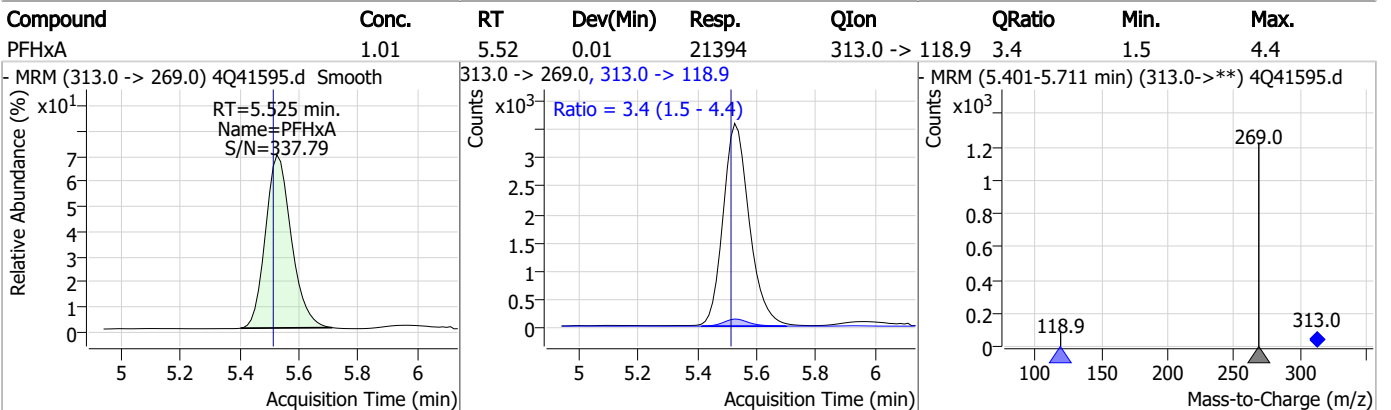
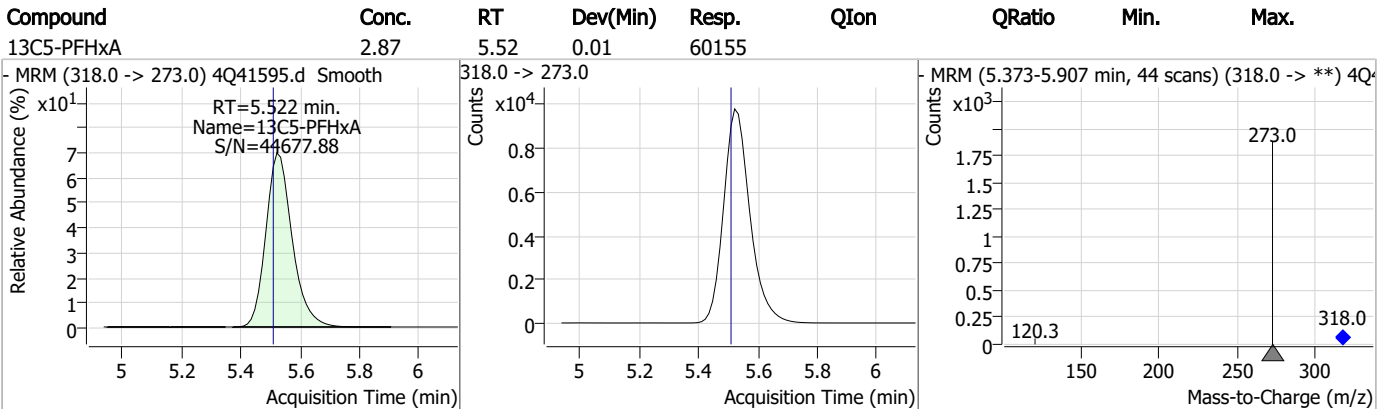
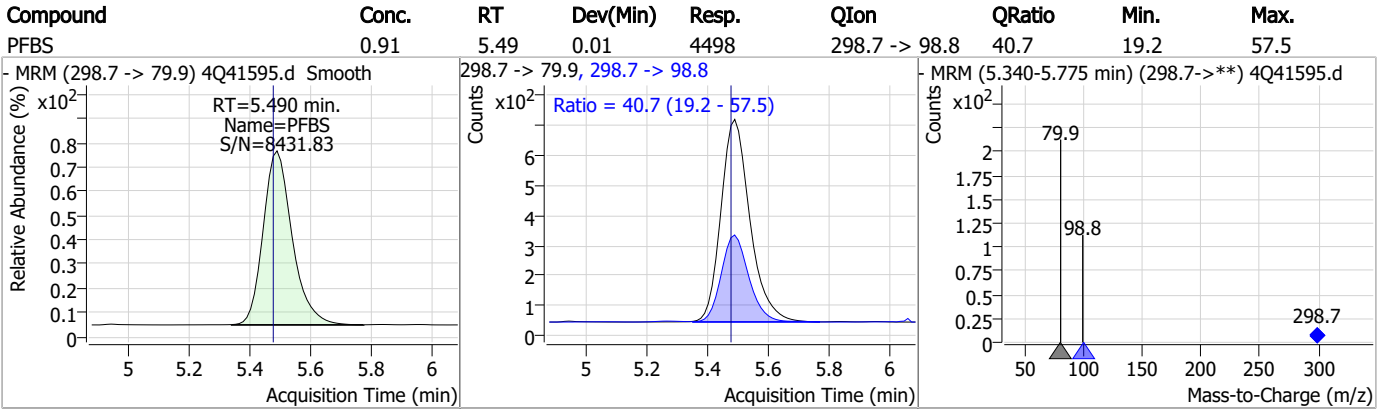
Perfluorinated Compounds by LC/MS/MS



7.3.2
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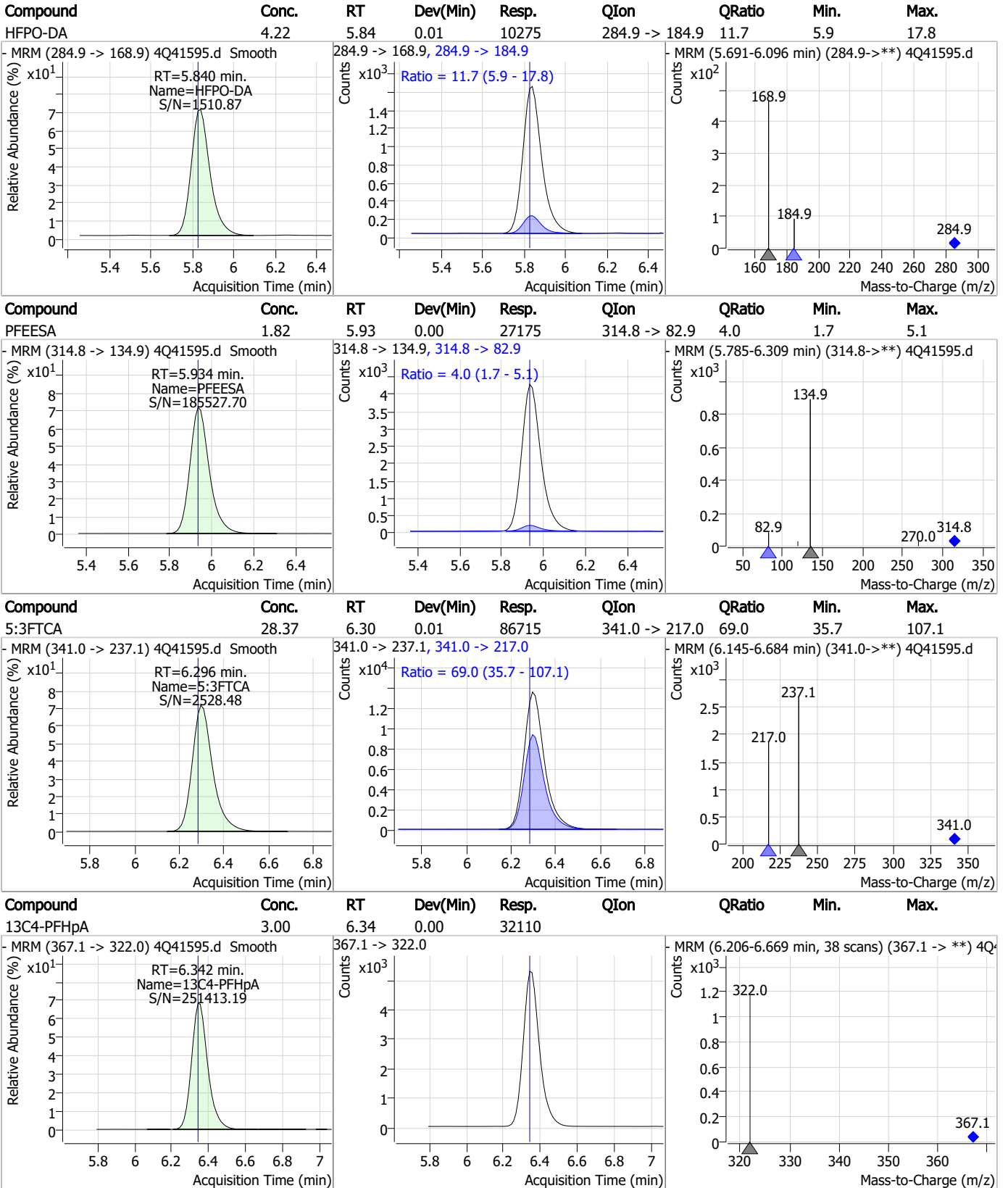
Perfluorinated Compounds by LC/MS/MS



7.3.2

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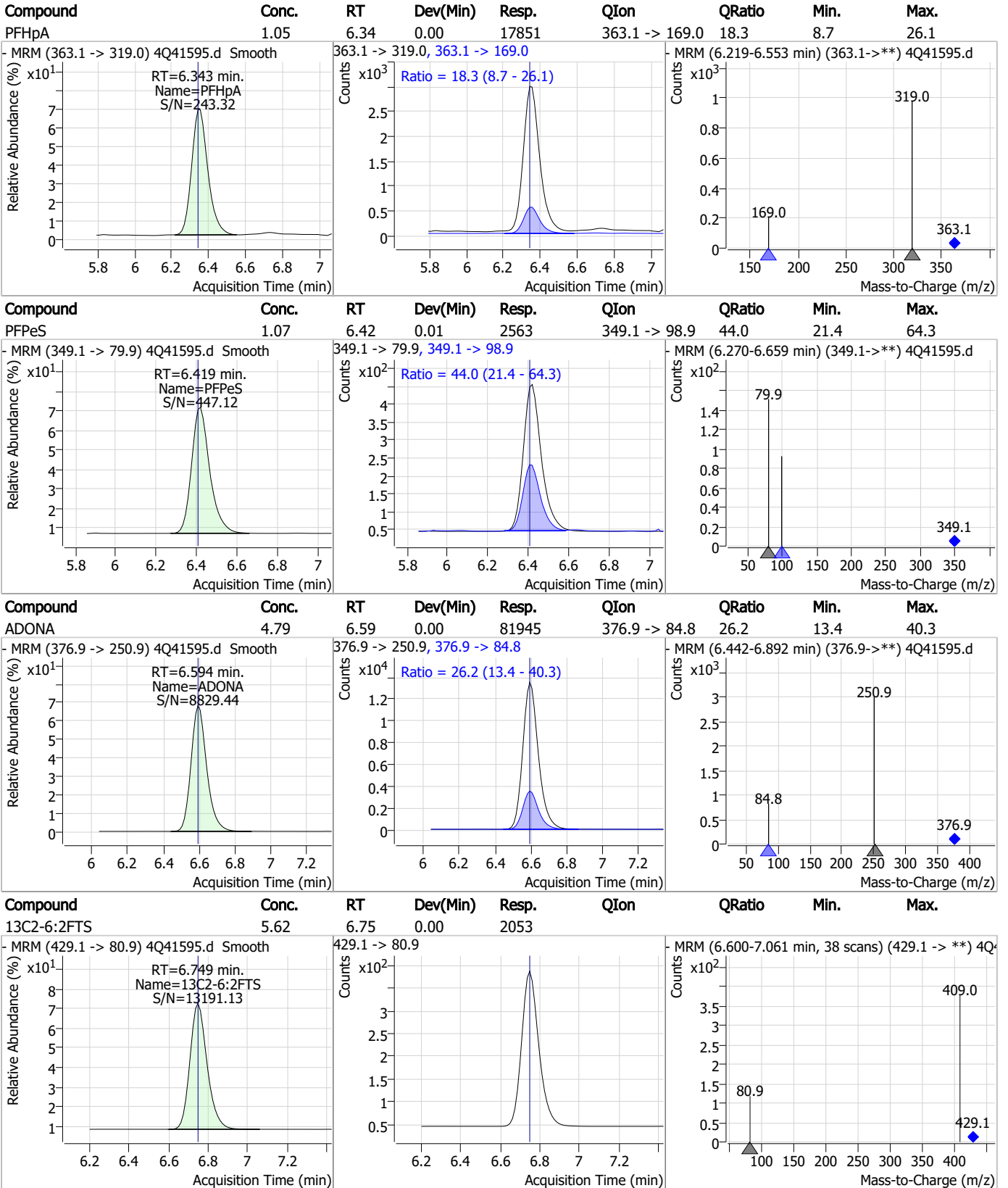
Perfluorinated Compounds by LC/MS/MS



7.3.2

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Perfluorinated Compounds by LC/MS/MS

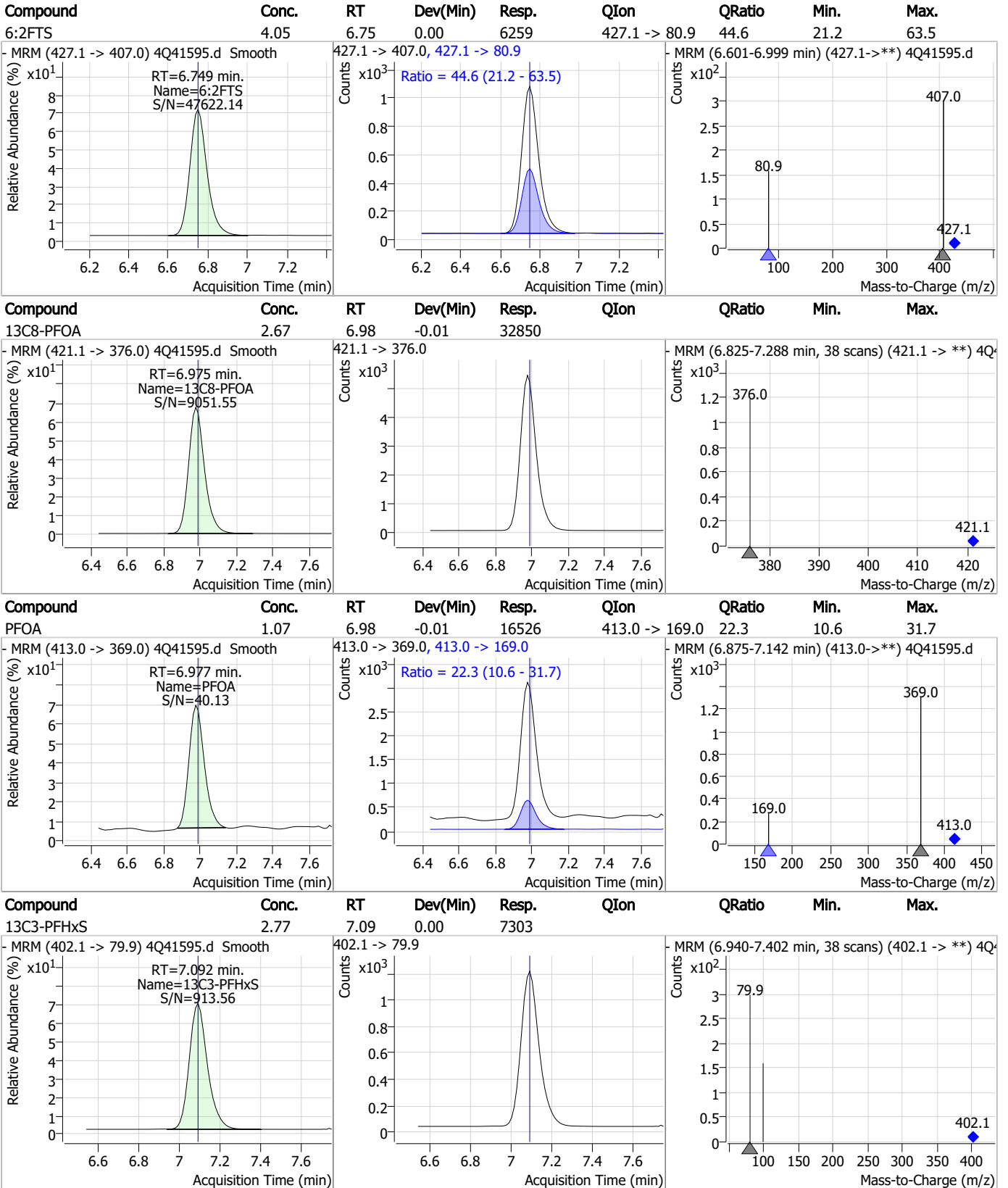


7.3.2

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Perfluorinated Compounds by LC/MS/MS

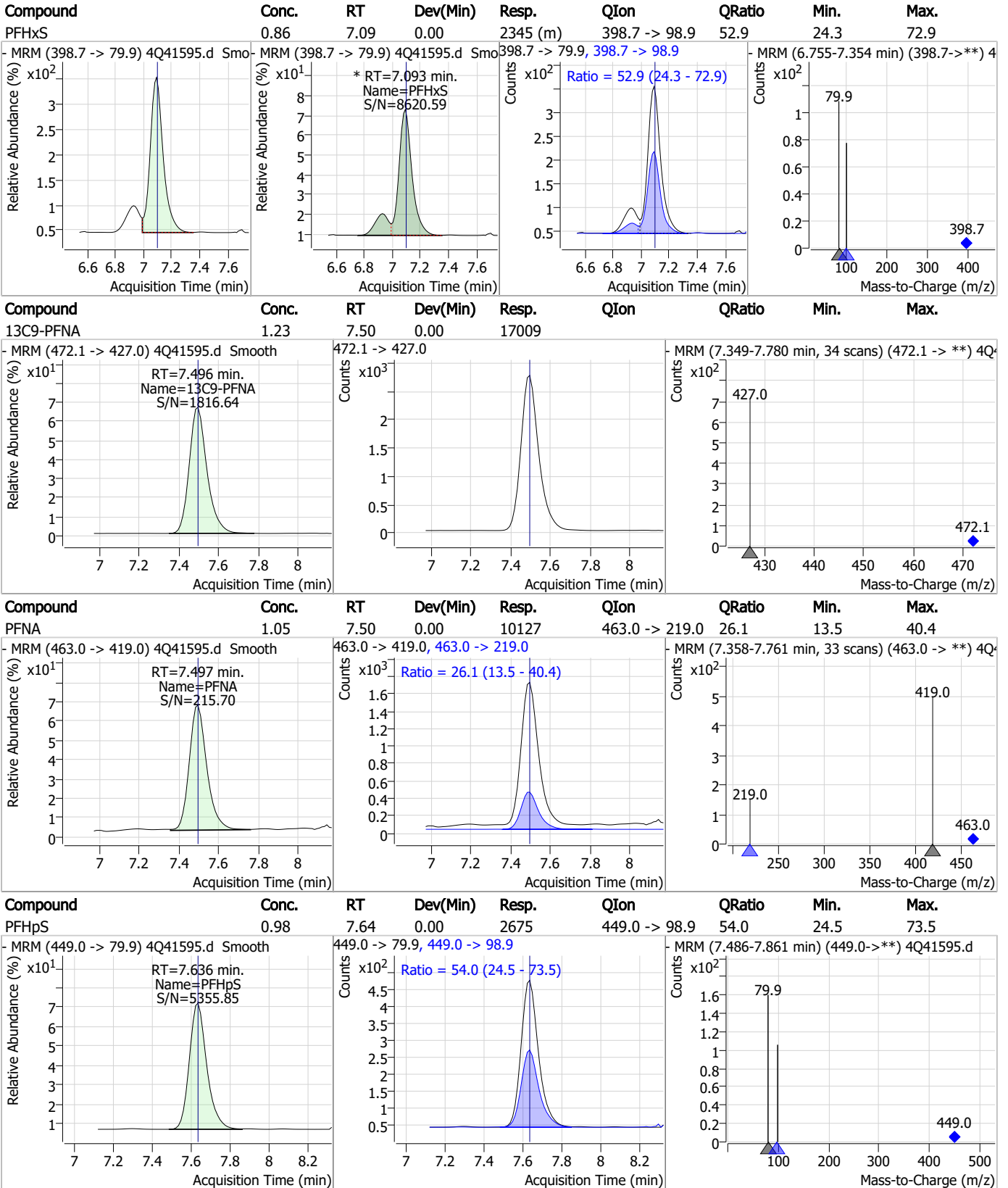


7.3.2

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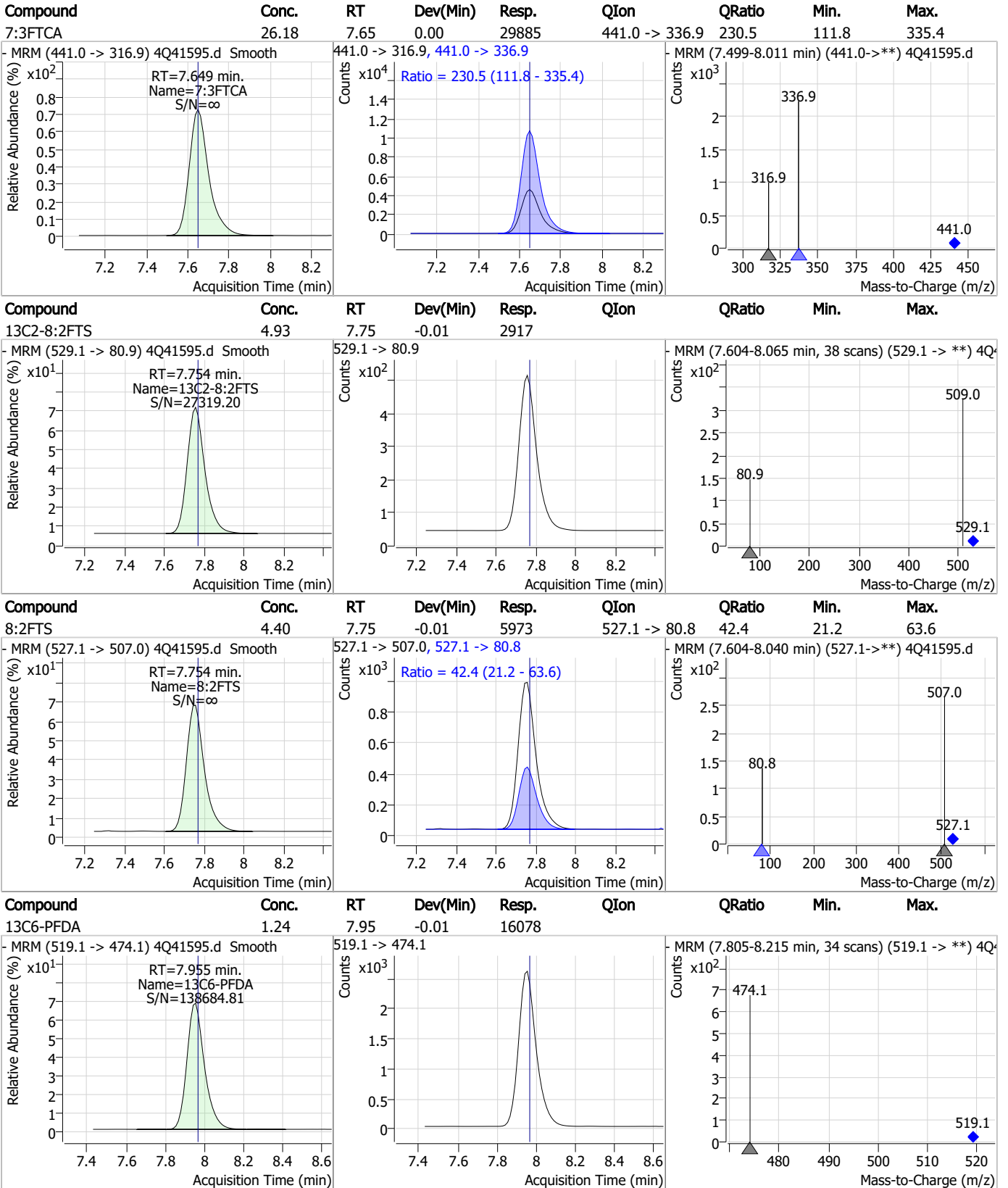
Perfluorinated Compounds by LC/MS/MS



7.3.2
7



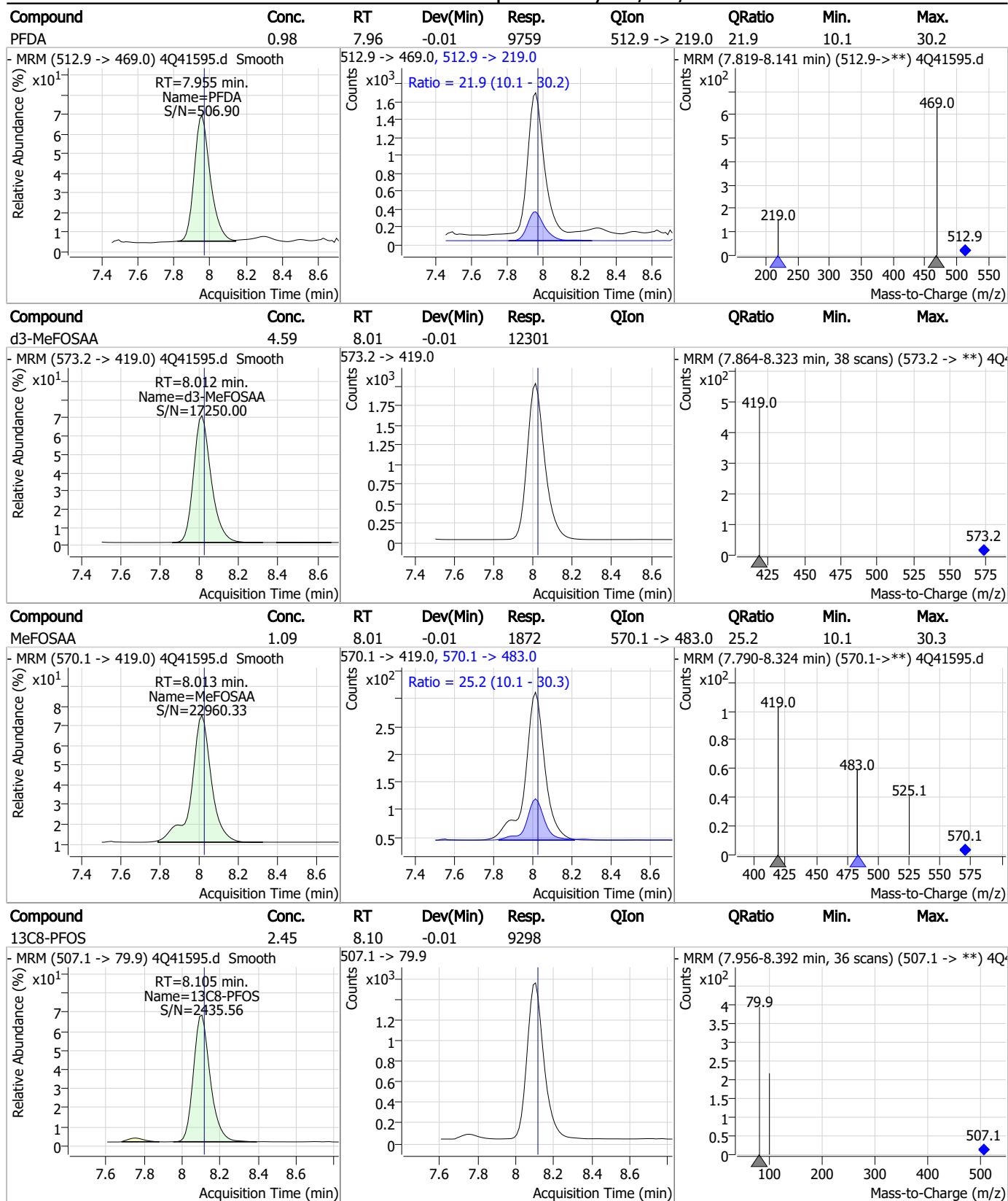
Perfluorinated Compounds by LC/MS/MS



7.3.2
7

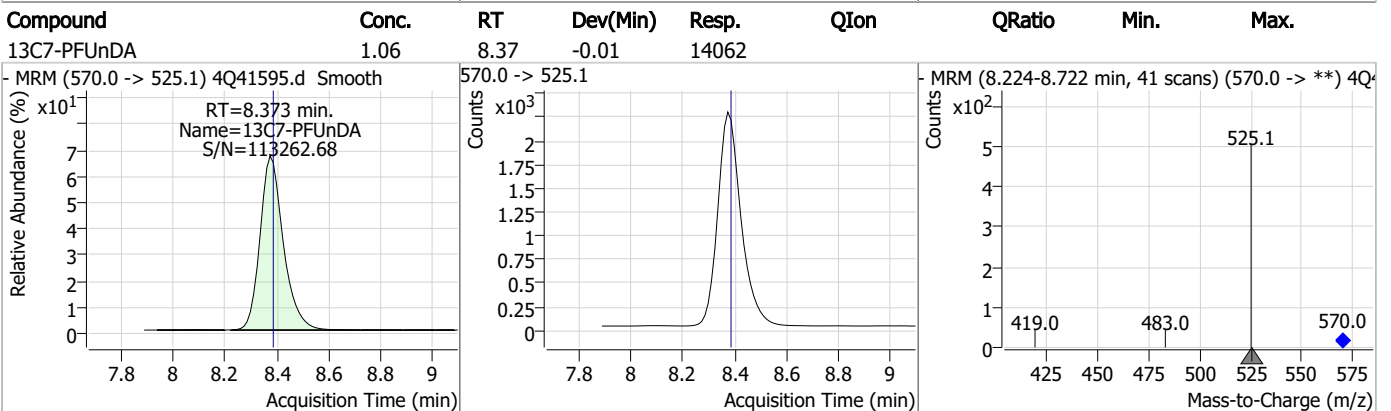
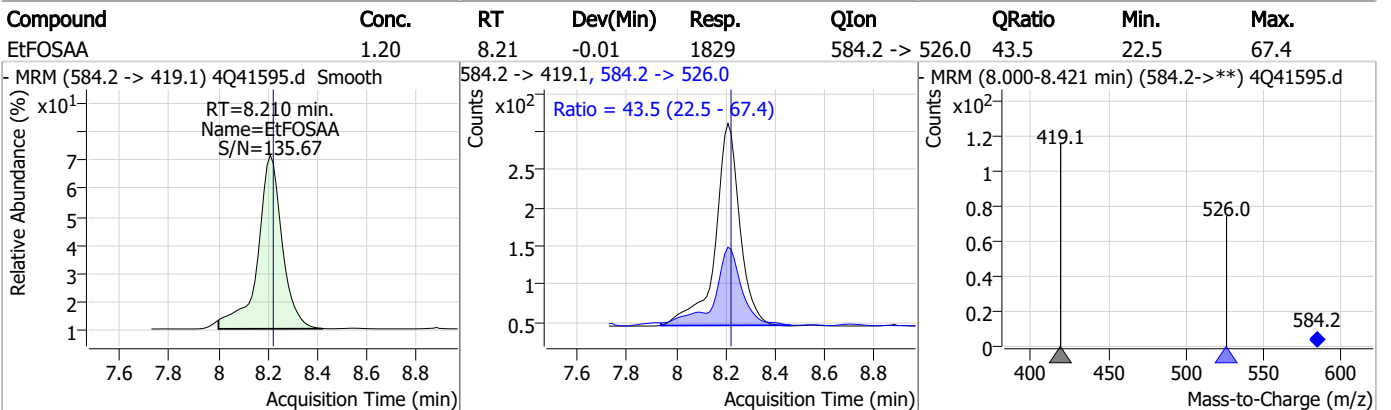
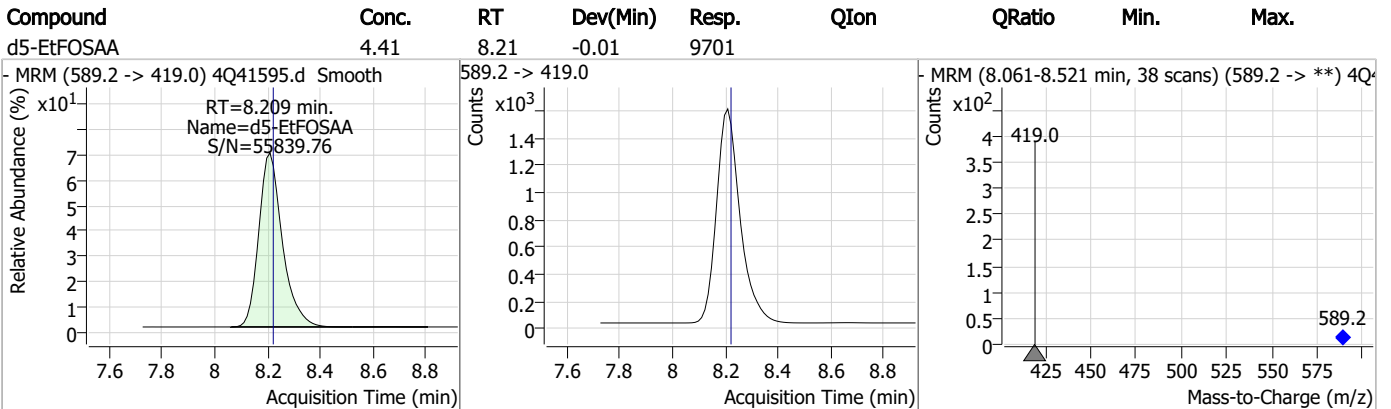
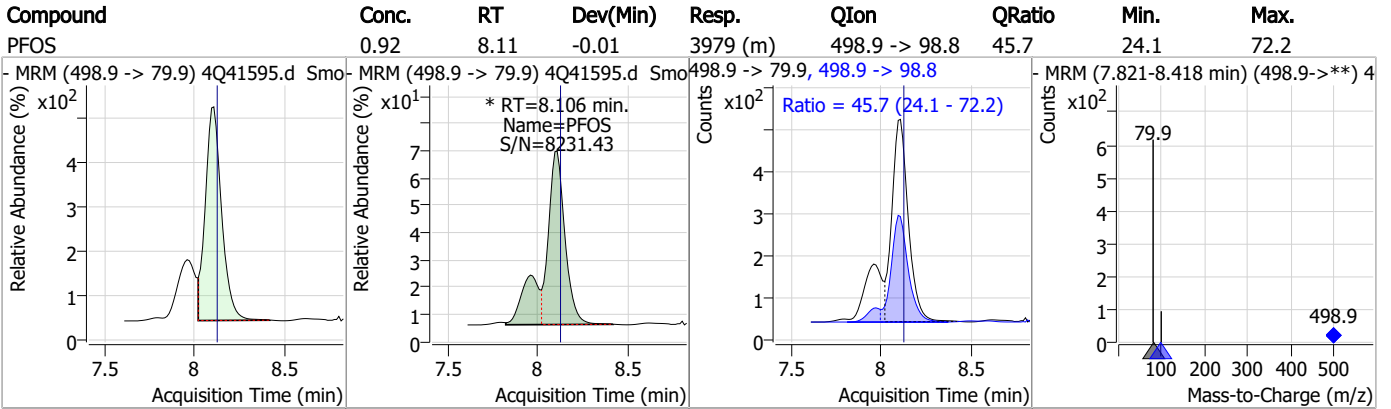


Perfluorinated Compounds by LC/MS/MS



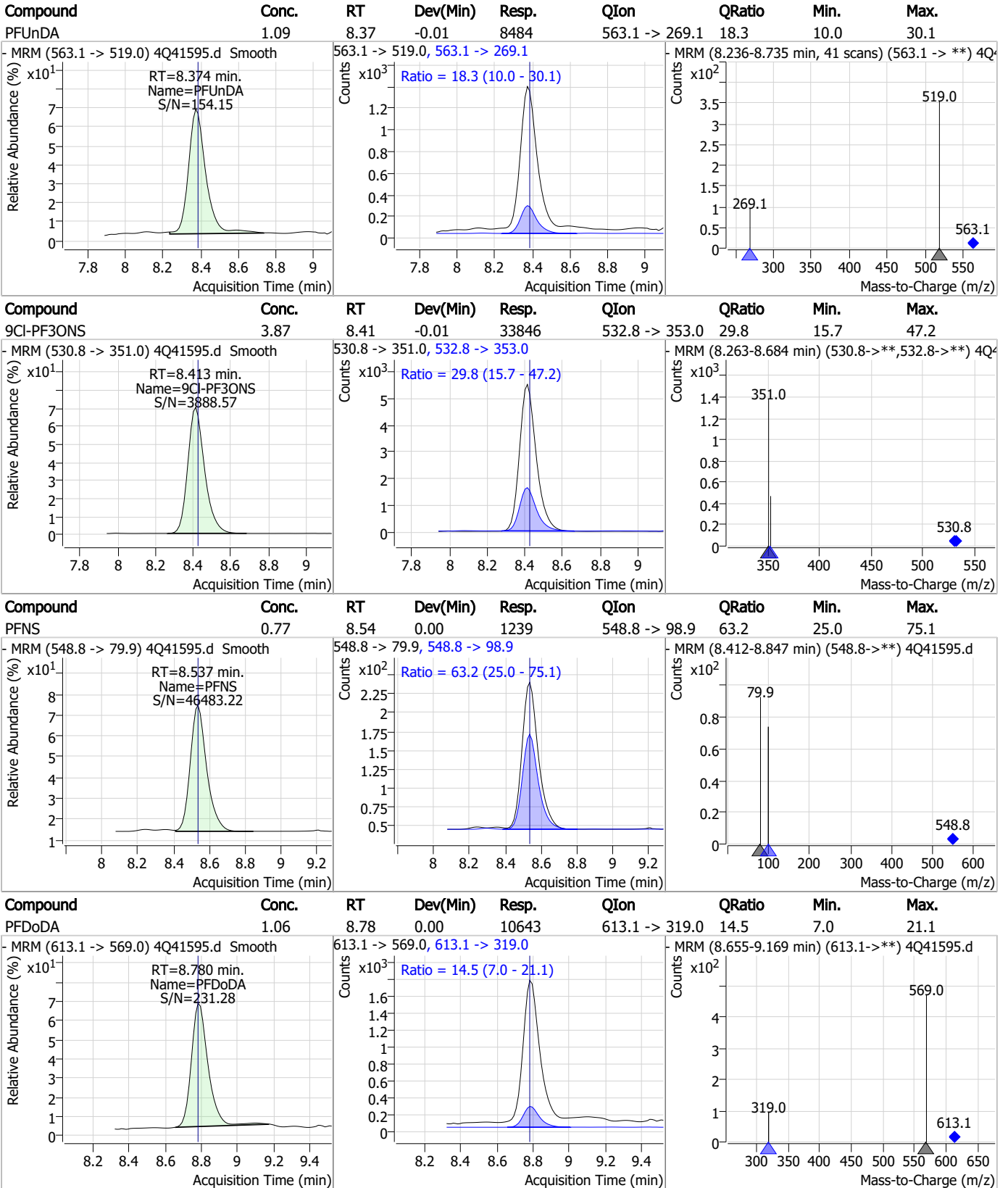
7.3.2
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Perfluorinated Compounds by LC/MS/MS



7.3.2
7

Perfluorinated Compounds by LC/MS/MS

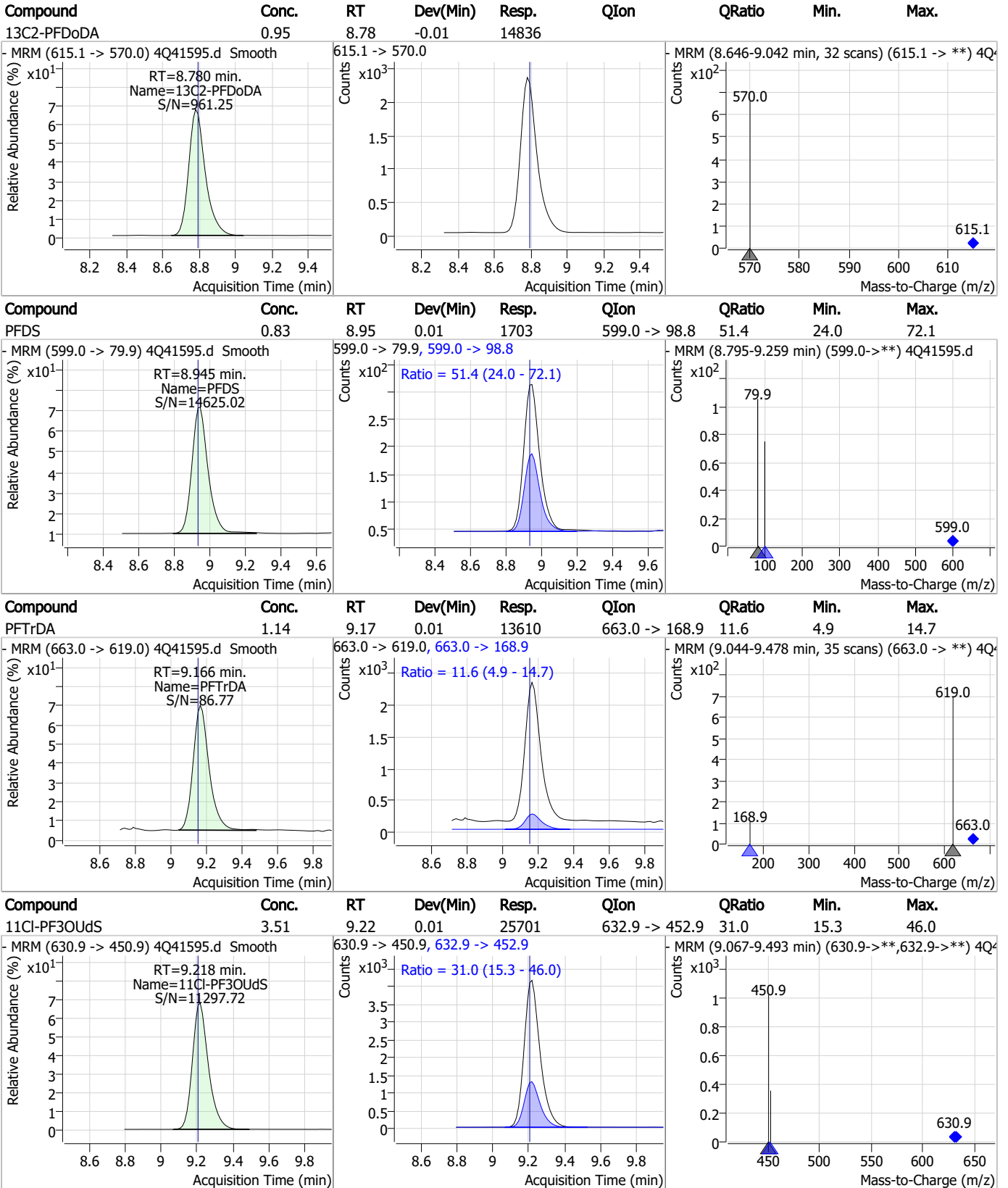


7.3.2

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Perfluorinated Compounds by LC/MS/MS

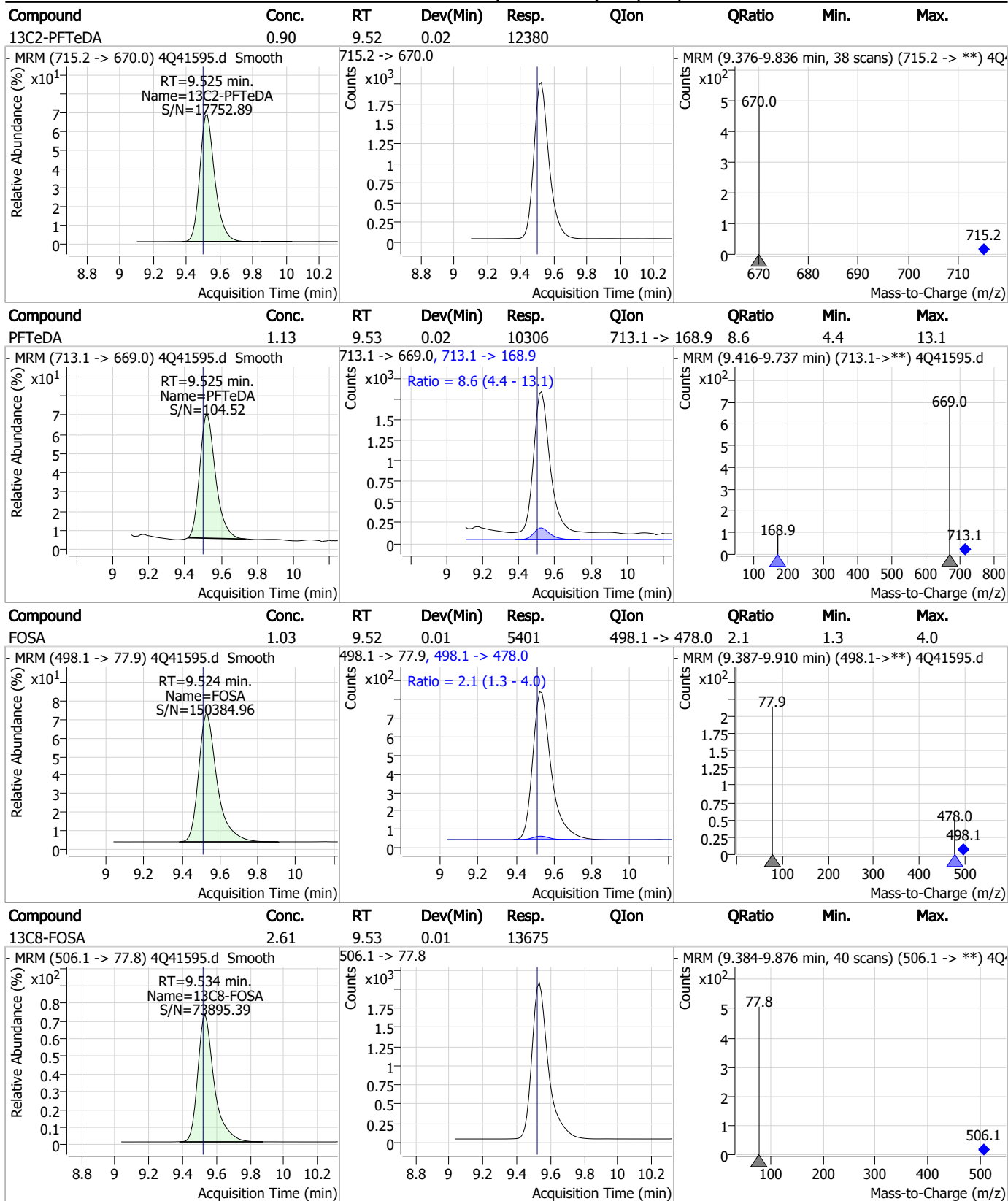


7.3.2

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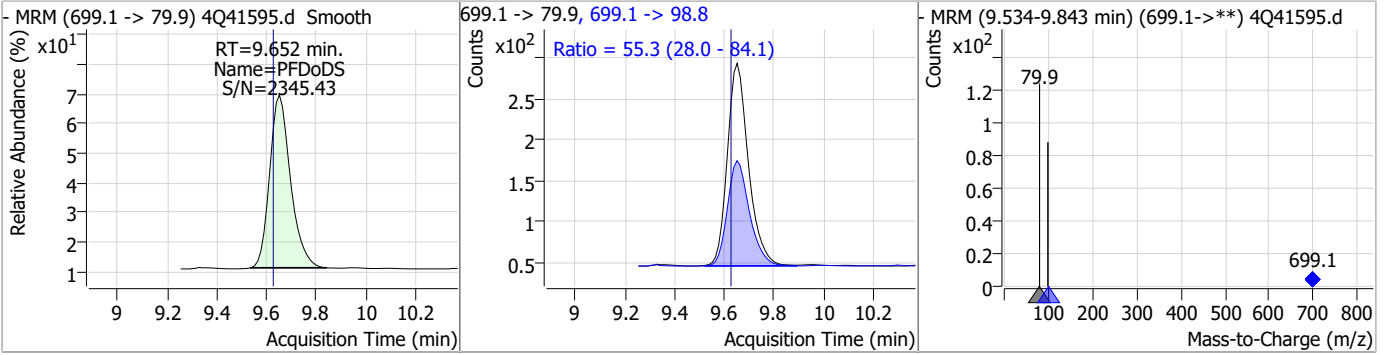
Perfluorinated Compounds by LC/MS/MS



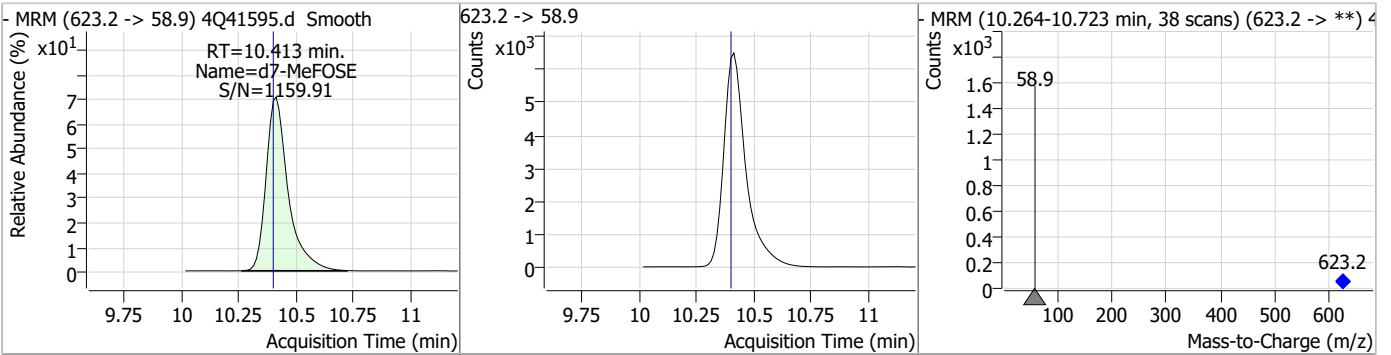
7.3.2
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Perfluorinated Compounds by LC/MS/MS

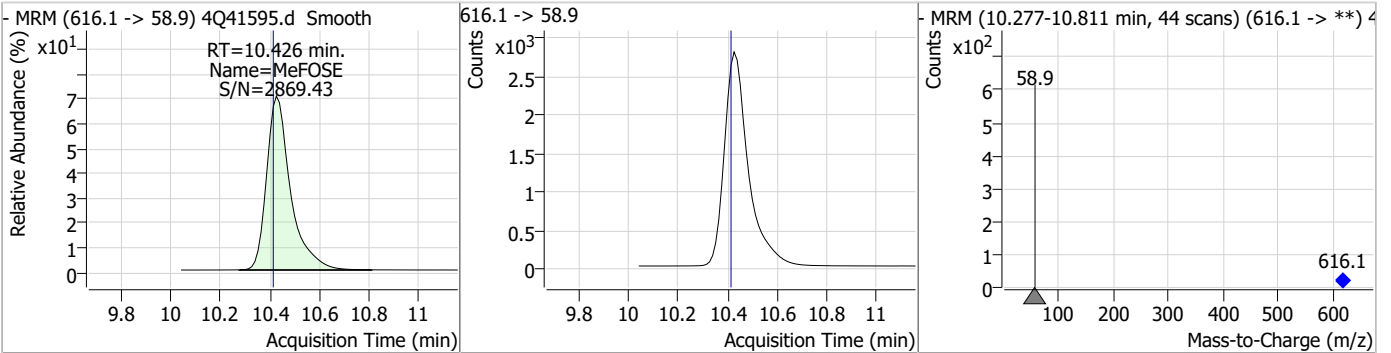
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	0.79	9.65	0.02	1439	699.1 -> 98.8	55.3	28.0	84.1



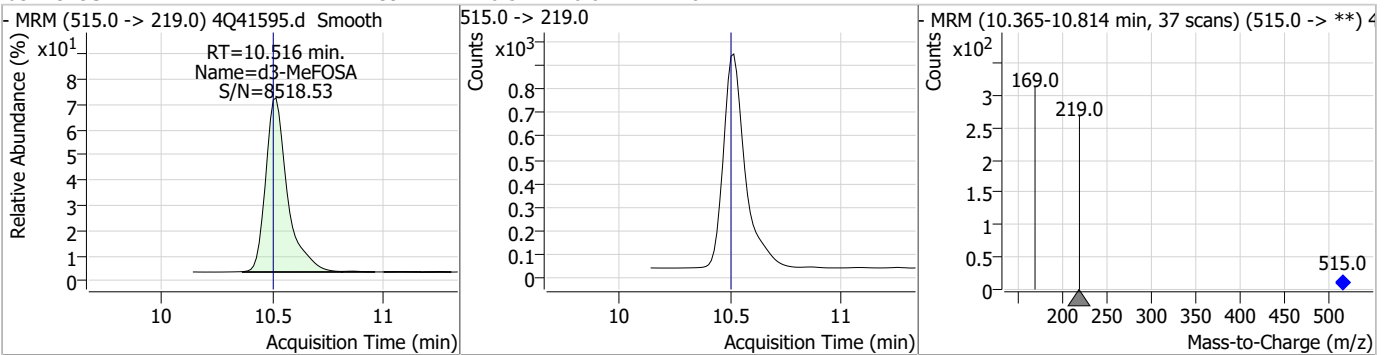
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.41	10.41	0.01	43168				



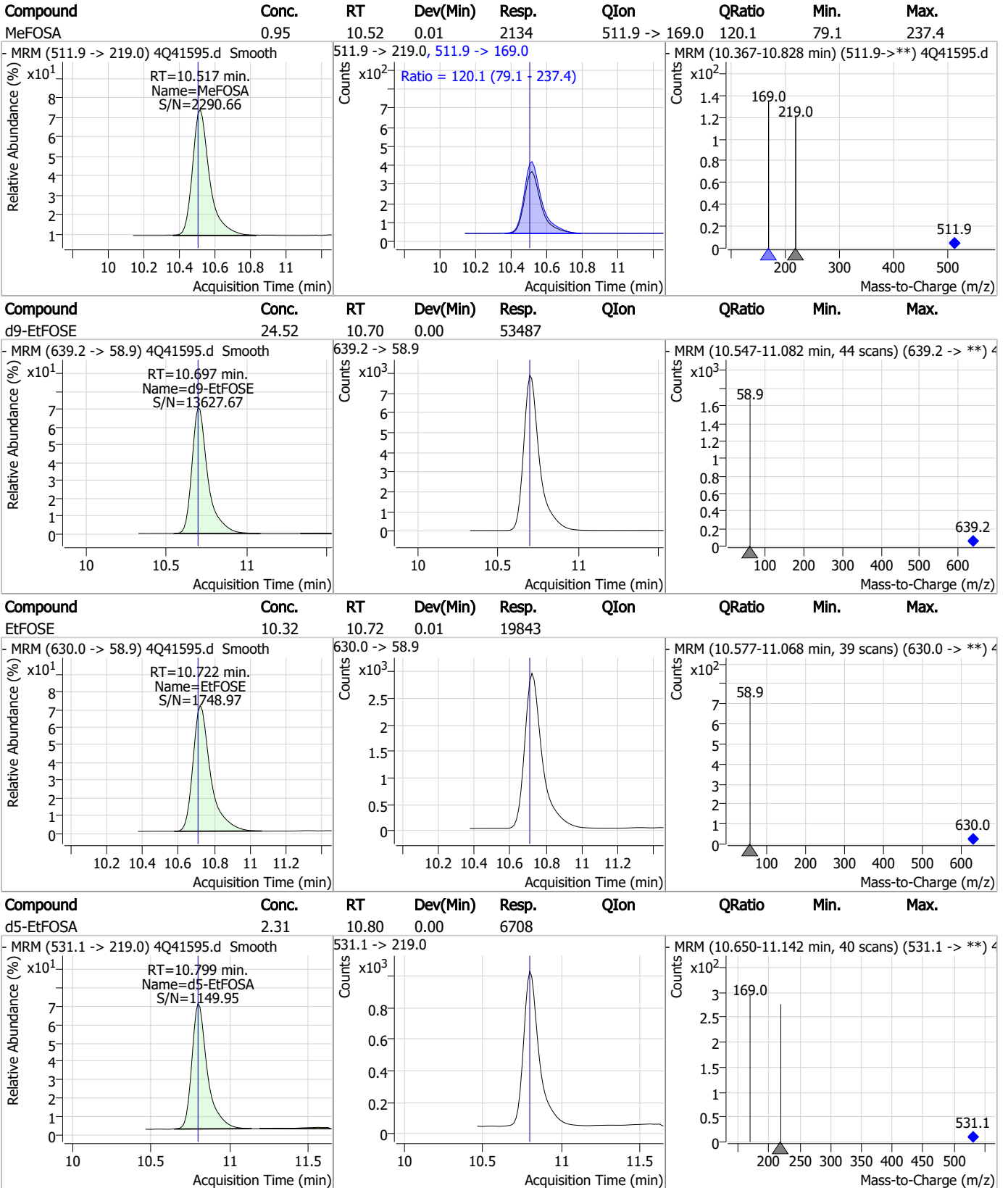
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	10.79	10.43	0.01	18569				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.39	10.52	0.01	6174				



Perfluorinated Compounds by LC/MS/MS



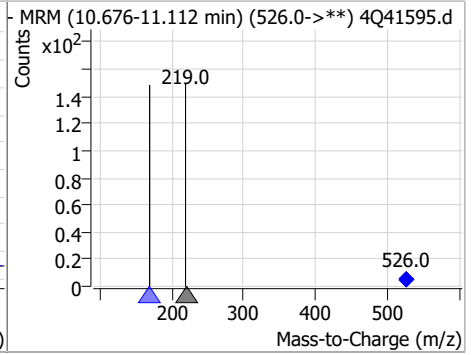
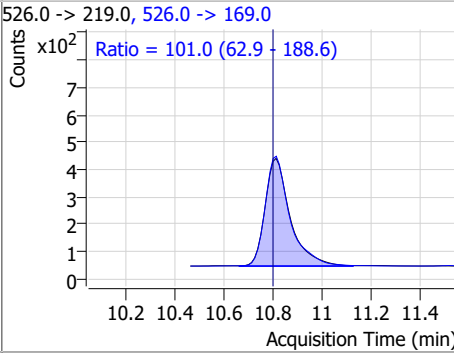
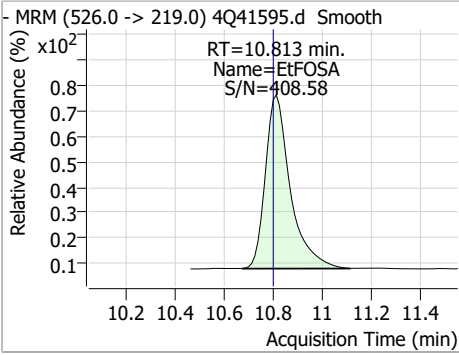
7.3.2

7



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	1.00	10.81	0.01	2771	526.0 -> 169.0	101.0	62.9	188.6



7.3.2
7



Manual Integration Approval Summary

Sample Number: OP95682-LLBS Method: EPA DRAFT 1633
Lab FileID: 4Q41595.D Analyst approved: 03/03/23 15:05 Anna Ludwig
Injection Time: 03/02/23 17:25 Supervisor approved: 03/03/23 16:24 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.09	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.11	Split peak

7.3.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41603.d
 Operator : marthav
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 3/2/2023 7:17:33 PM
 Sample Name : op95682-ms
 Vial : P3-B2
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q595.batch.bin
 Sample Information : op95682,S4Q595,570,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.239	216.8 -> 171.9	134622	10.00 µg/L	0.050
M5-PFPeA	4.537	268.3 -> 223.0	74626	5.00 µg/L	0.000
M5-PFHxA	5.509	318.0 -> 273.0	59371	2.50 µg/L	0.000
M4-PFHpA	6.355	367.1 -> 322.0	32209	2.50 µg/L	0.012
M8-PFOA	6.988	421.1 -> 376.0	35855	2.50 µg/L	0.000
M9-PFNA	7.509	472.1 -> 427.0	18933	1.25 µg/L	0.013
M6-PFDA	7.979	519.1 -> 474.1	17399	1.25 µg/L	0.012
M7-PFUnDA	8.398	570.0 -> 525.1	17701	1.25 µg/L	0.012
M2-PFDoDA	8.806	615.1 -> 570.0	18915	1.25 µg/L	0.012
M2-PFTeDA	9.550	715.2 -> 670.0	15989	1.25 µg/L	0.050
M8-FOSA	9.545	506.1 -> 77.8	15048	2.50 µg/L	0.024
M3-PFBS	5.476	302.1 -> 79.9	12622	2.50 µg/L	0.000
M3-PFHxS	7.104	402.1 -> 79.9	7580	2.50 µg/L	0.012
M8-PFOS	8.130	507.1 -> 79.9	10035	2.50 µg/L	0.012
M2-4:2FTS	5.235	329.1 -> 80.9	1573	5.00 µg/L	0.000
M2-6:2FTS	6.761	429.1 -> 80.9	2273	5.00 µg/L	0.012
M2-8:2FTS	7.766	529.1 -> 80.9	3183	5.00 µg/L	0.000
M3-MeFOSAA	8.037	573.2 -> 419.0	14494	5.00 µg/L	0.012
M3-HFPO-DA	5.827	286.9 -> 168.9	30005	10.00 µg/L	0.000
M5-EtFOSAA	8.234	589.2 -> 419.0	11822	5.00 µg/L	0.012
M7-MeFOSE	10.462	623.2 -> 58.9	50462	25.00 µg/L	0.061
M9-EtFOSE	10.771	639.2 -> 58.9	60873	25.00 µg/L	0.075
M5-EtFOSA	10.874	531.1 -> 219.0	7061	2.50 µg/L	0.075
M3-MeFOSA	10.578	515.0 -> 219.0	7123	2.50 µg/L	0.075
13C4-PFOS	8.130	502.8 -> 79.9	10295	2.50 µg/L	0.012
13C3-PFBA	3.242	216.0 -> 172.0	69350	5.00 µg/L	0.050
18O2-PFHxS	7.103	403.0 -> 83.9	5144	2.50 µg/L	0.012
13C4-PFOA	6.988	417.1 -> 372.0	38963	2.50 µg/L	0.000
13C2-PFDA	7.980	515.1 -> 470.1	15120	1.25 µg/L	0.012
13C5-PFNA	7.509	468.0 -> 423.0	19985	1.25 µg/L	0.013
13C2-PFHxA	5.510	315.1 -> 270.0	49488	2.50 µg/L	0.000

System Monitoring Compounds

13C2-4:2FTS	5.235	329.1 -> 80.9	1573	5.25 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.0%		
13C2-6:2FTS	6.761	429.1 -> 80.9	2273	5.65 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.0%		
13C2-8:2FTS	7.766	529.1 -> 80.9	3183	4.88 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.7%		
13C2-PFDoDA	8.806	615.1 -> 570.0	18915	1.17 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.3%		
13C2-PFTeDA	9.550	715.2 -> 670.0	15989	1.12 µg/L	0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.8%		
13C3-PFBS	5.476	302.1 -> 79.9	12622	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C3-PFHxS	7.104	402.1 -> 79.9	7580	2.61 µg/L	0.012

7.4.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.4%	
13C4-PFBA	3.239	216.8 -> 171.9	134622	11.27 µg/L	0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 112.7%	
13C4-PFHpA	6.355	367.1 -> 322.0	32209	2.91 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 116.5%	
13C5-PFHxA	5.509	318.0 -> 273.0	59371	2.75 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.9%	
13C5-PFPeA	4.537	268.3 -> 223.0	74626	5.37 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.3%	
13C6-PFDA	7.979	519.1 -> 474.1	17399	1.29 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.5%	
13C7-PFUnDA	8.398	570.0 -> 525.1	17701	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.8%	
13C8-FOSA	9.545	506.1 -> 77.8	15048	2.64 µg/L	0.024
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.5%	
13C8-PFOA	6.988	421.1 -> 376.0	35855	2.76 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.5%	
13C8-PFOS	8.130	507.1 -> 79.9	10035	2.43 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C9-PFNA	7.509	472.1 -> 427.0	18933	1.36 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.6%	
d3-MeFOSAA	8.037	573.2 -> 419.0	14494	4.96 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C3-HFPO-DA	5.827	286.9 -> 168.9	30005	9.84 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.4%	
d3-MeFOSA	10.578	515.0 -> 219.0	7123	2.53 µg/L	0.075
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
d5-EtFOSAA	8.234	589.2 -> 419.0	11822	4.93 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
d7-MeFOSE	10.462	623.2 -> 58.9	50462	25.11 µg/L	0.061
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.4%	
d9-EtFOSE	10.771	639.2 -> 58.9	60873	25.61 µg/L	0.075
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
d5-EtFOSA	10.874	531.1 -> 219.0	7061	2.24 µg/L	0.075
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.4%	
Target Compounds					QValue
4:2FTS	5.236	327.1 -> 307.0	22789	10.88 µg/L	98
		327.1 -> 80.9	9763		
6:2FTS	6.762	427.1 -> 407.0	17272	10.08 µg/L	99
		427.1 -> 80.9	7478		
8:2FTS	7.767	527.1 -> 507.0	17469	11.79 µg/L	98
		527.1 -> 80.8	7170		
EtFOSAA	8.235	584.2 -> 419.1	5362	2.90 µg/L	m 93
		584.2 -> 526.0	2150		
FOSA	9.549	498.1 -> 77.9	14669	2.54 µg/L	99
		498.1 -> 478.0	441		
MeFOSAA	8.038	570.1 -> 419.0	5546	2.75 µg/L	m 98
		570.1 -> 483.0	1060		
PFBA	3.233	212.8 -> 168.9	39476	12.40 µg/L	100
PFBS	5.477	298.7 -> 79.9	12017	2.39 µg/L	97
		298.7 -> 98.8	4407		
PFDA	7.968	512.9 -> 469.0	29829	2.78 µg/L	98
		512.9 -> 219.0	6331		
PFDODA	8.806	613.1 -> 569.0	36982	2.90 µg/L	99
		613.1 -> 319.0	5426		
PFDS	8.958	599.0 -> 79.9	5669	2.55 µg/L	99

7.4.1
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2777			
PFHpA	6.355	363.1 -> 319.0	47223	2.77	µg/L	99
		363.1 -> 169.0	8506			
PFHpS	7.648	449.0 -> 79.9	7248	2.46	µg/L	88
		449.0 -> 98.9	4155			
PFHxA	5.512	313.0 -> 269.0	52383	2.51	µg/L	99
		313.0 -> 118.9	1652			
PFHxS	7.105	398.7 -> 79.9	6625	2.35	µg/L	m 90
		398.7 -> 98.9	3660			
PFNA	7.510	463.0 -> 419.0	29443	2.74	µg/L	96
		463.0 -> 219.0	7341			
PFNS	8.550	548.8 -> 79.9	4278	2.47	µg/L	97
		548.8 -> 98.9	2047			
PFOA	6.989	413.0 -> 369.0	44128	2.62	µg/L	99
		413.0 -> 169.0	9586			
PFOS	8.131	498.9 -> 79.9	10697	2.29	µg/L	m 98
		498.9 -> 98.8	5308			
PFPeA	4.539	263.0 -> 219.0	89221	5.87	µg/L	100
PFPeS	6.419	349.1 -> 79.9	6497	2.61	µg/L	95
		349.1 -> 98.9	3015			
PFTeDA	9.550	713.1 -> 669.0	32624	2.78	µg/L	99
		713.1 -> 168.9	2771			
PFTrDA	9.191	663.0 -> 619.0	44707	2.93	µg/L	98
		663.0 -> 168.9	4706			
PFUnDA	8.399	563.1 -> 519.0	27291	2.80	µg/L	99
		563.1 -> 269.1	5350			
11CI-PF3OUdS	9.243	630.9 -> 450.9	86560	11.75	µg/L	97
		632.9 -> 452.9	25268			
9CI-PF3ONS	8.425	530.8 -> 351.0	101961	11.59	µg/L	97
		532.8 -> 353.0	30639			
ADONA	6.606	376.9 -> 250.9	214924	12.47	µg/L	100
		376.9 -> 84.8	57903			
HFPO-DA	5.828	284.9 -> 168.9	26885	10.97	µg/L	99
		284.9 -> 184.9	3254			
3:3FTCA	4.242	241.0 -> 177.0	9572	12.23	µg/L	98
		241.0 -> 117.0	852			
5:3FTCA	6.296	341.0 -> 237.1	221901	73.57	µg/L	99
		341.0 -> 217.0	156059			
7:3FTCA	7.661	441.0 -> 316.9	81367	72.21	µg/L	93
		441.0 -> 336.9	190533			
EtFOSA	10.888	526.0 -> 219.0	7149	2.46	µg/L	88
		526.0 -> 169.0	8007			
EtFOSE	10.797	630.0 -> 58.9	60078	27.46	µg/L	100
MeFOSA	10.580	511.9 -> 219.0	6176	2.37	µg/L	69
		511.9 -> 169.0	7297			
MeFOSE	10.487	616.1 -> 58.9	53256	26.46	µg/L	100
PFDoDS	9.690	699.1 -> 79.9	4688	2.40	µg/L	98
		699.1 -> 98.8	2551			
NFDHA	5.415	295.0 -> 201.0	4398	5.81	µg/L	99
		295.0 -> 84.9	1106			
PFMBA	4.881	279.0 -> 85.1	48000	5.48	µg/L	100
PFMPA	3.807	229.0 -> 84.9	41188	5.44	µg/L	100
PFEESA	5.934	314.8 -> 134.9	71728	4.86	µg/L	100
		314.8 -> 82.9	2471			

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

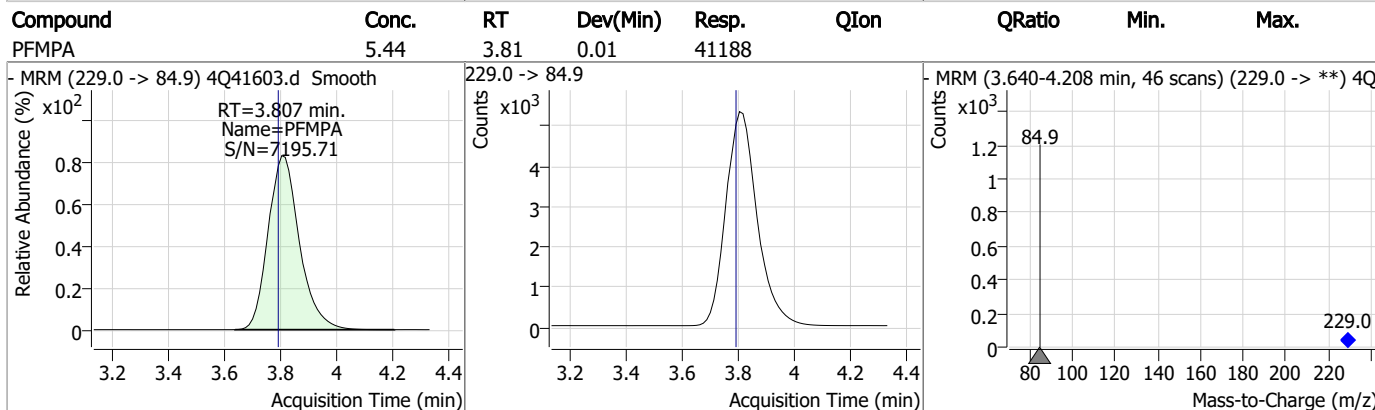
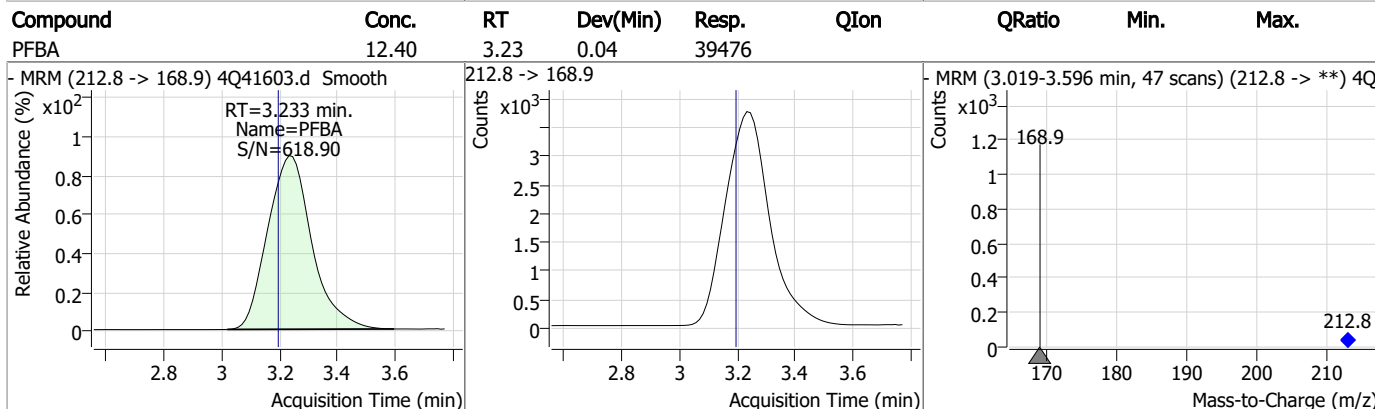
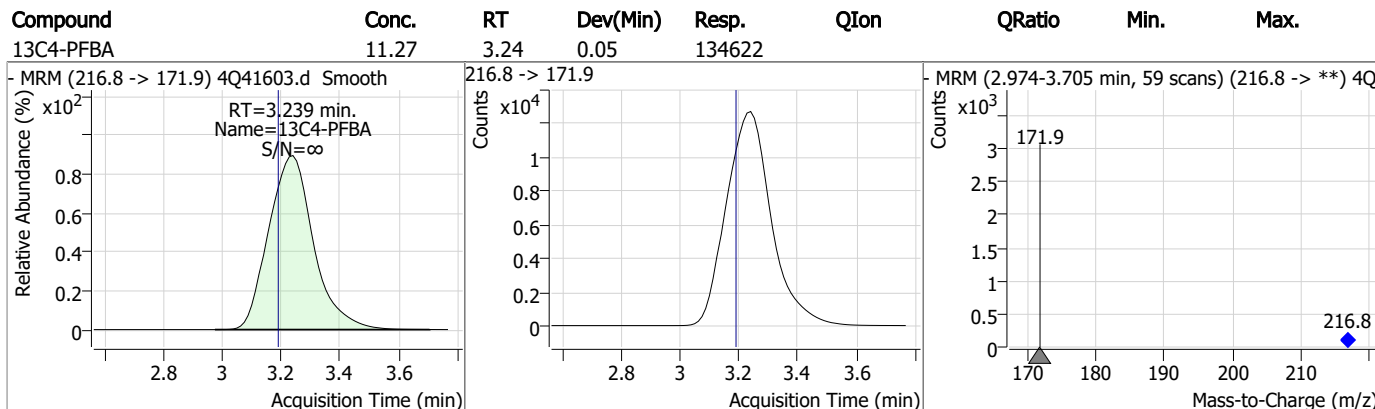
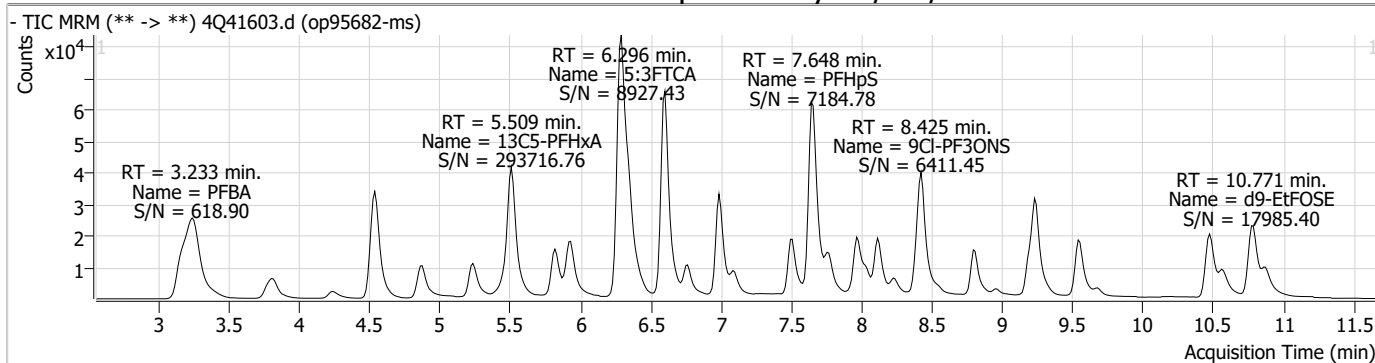
Perfluorinated Compounds by LC/MS/MS

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

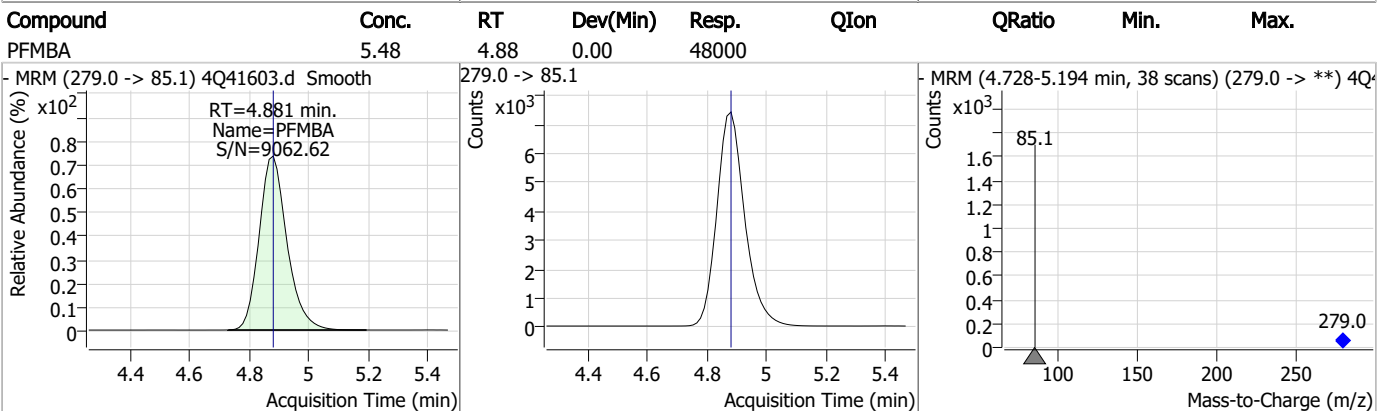
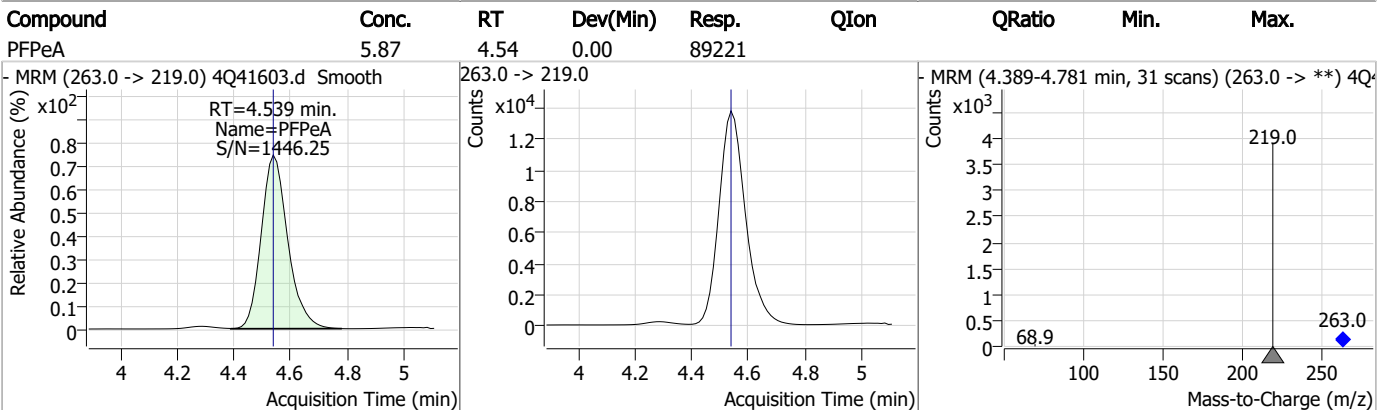
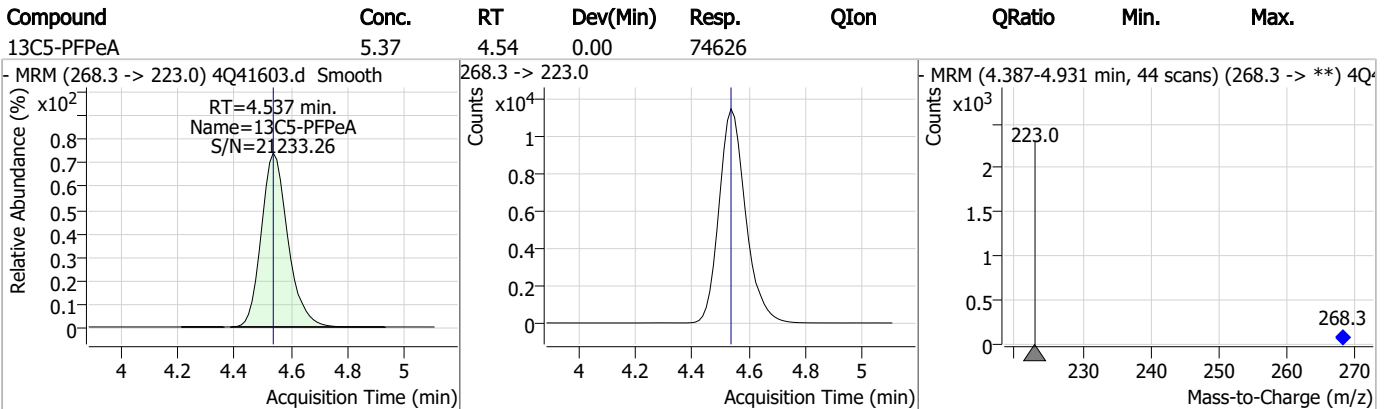
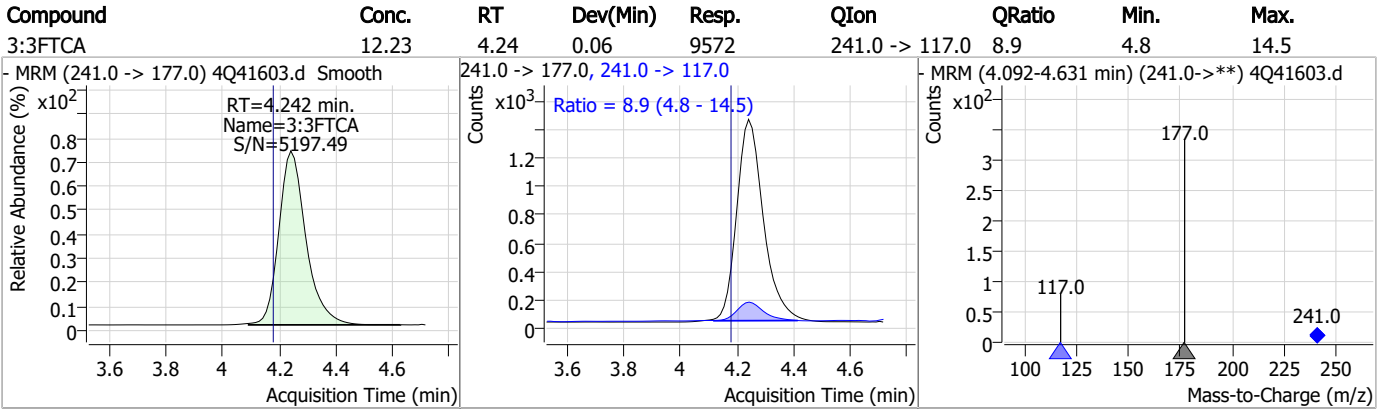
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Perfluorinated Compounds by LC/MS/MS



7.4.1
7

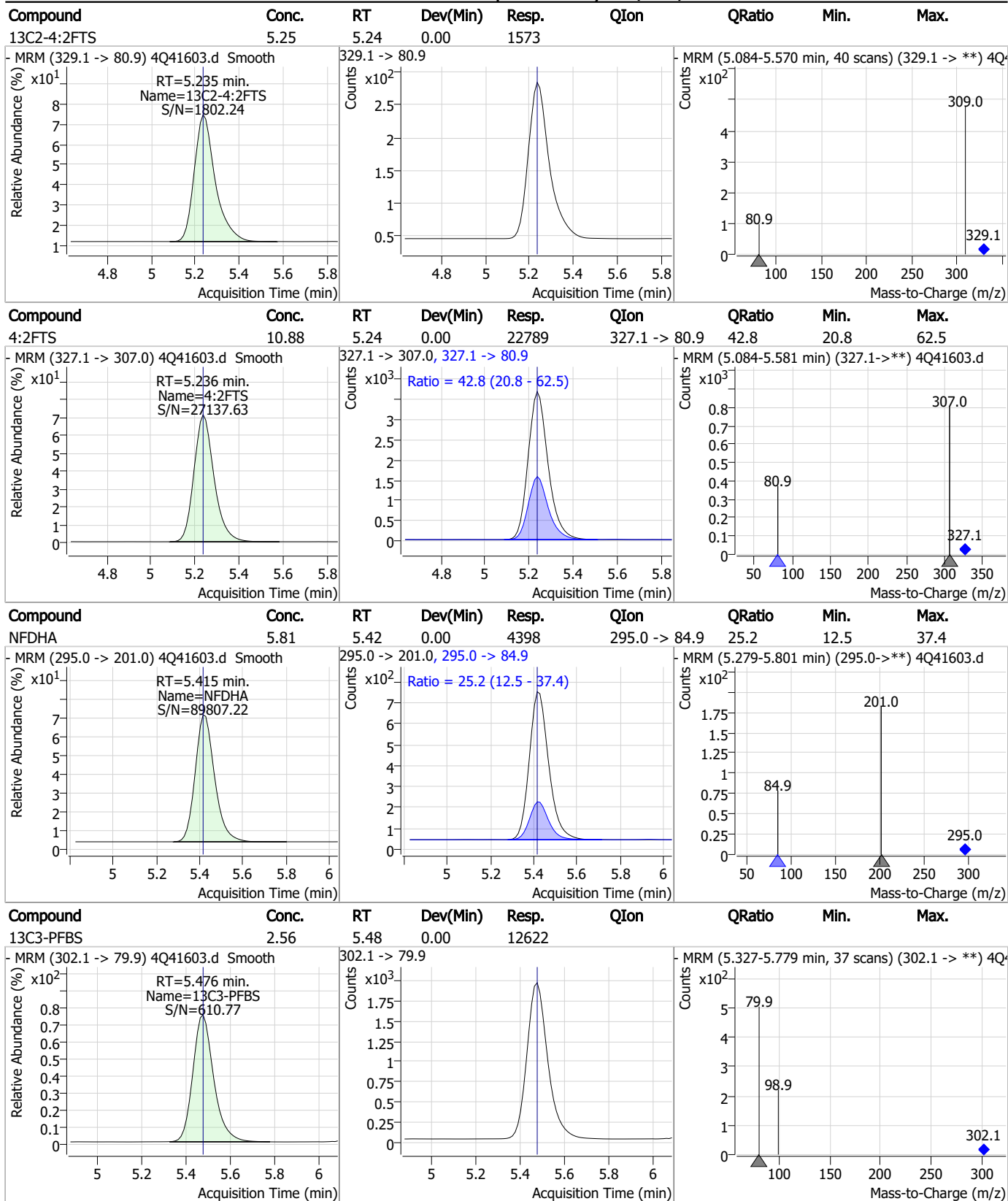
Perfluorinated Compounds by LC/MS/MS



7.4.1

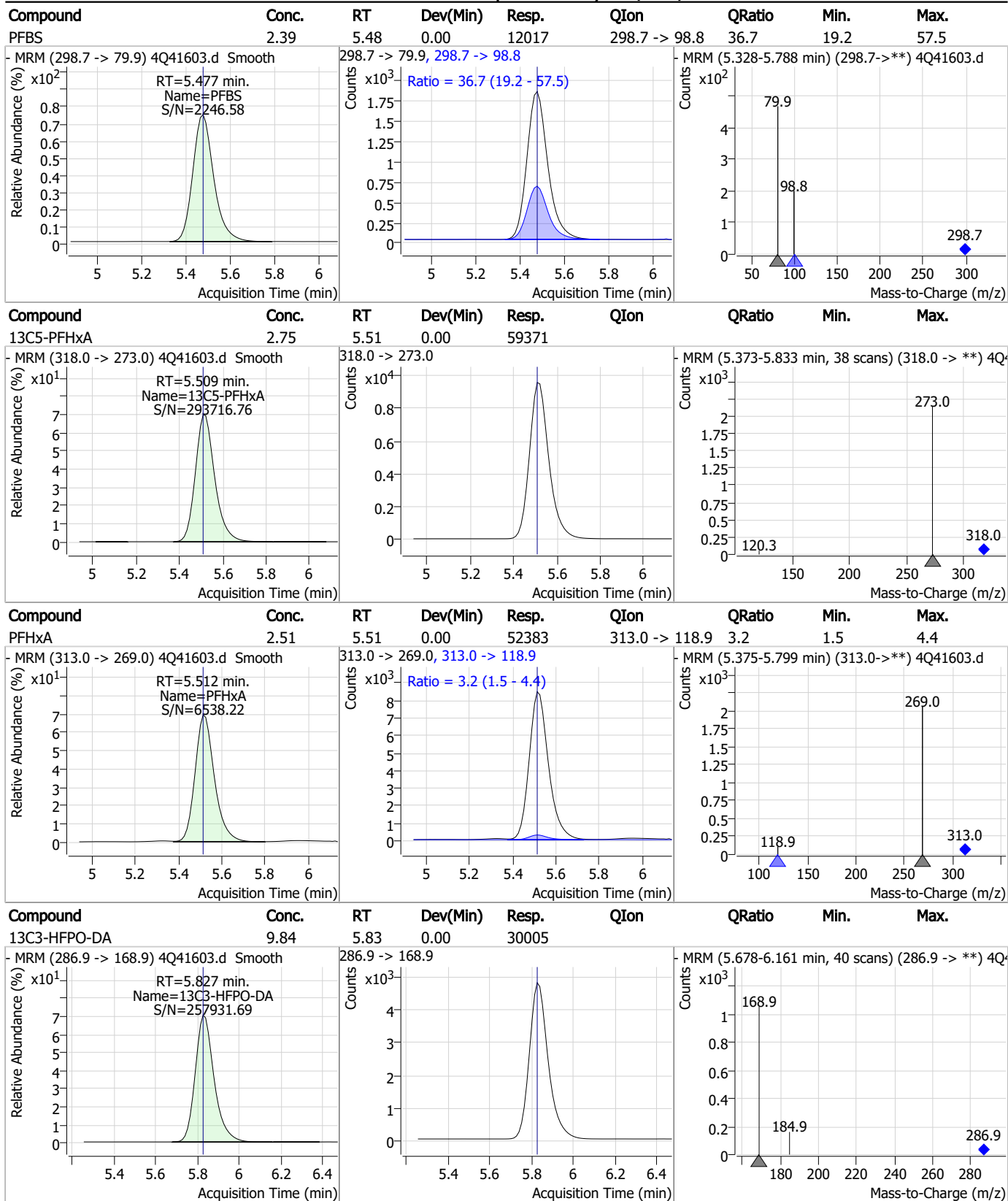
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Perfluorinated Compounds by LC/MS/MS



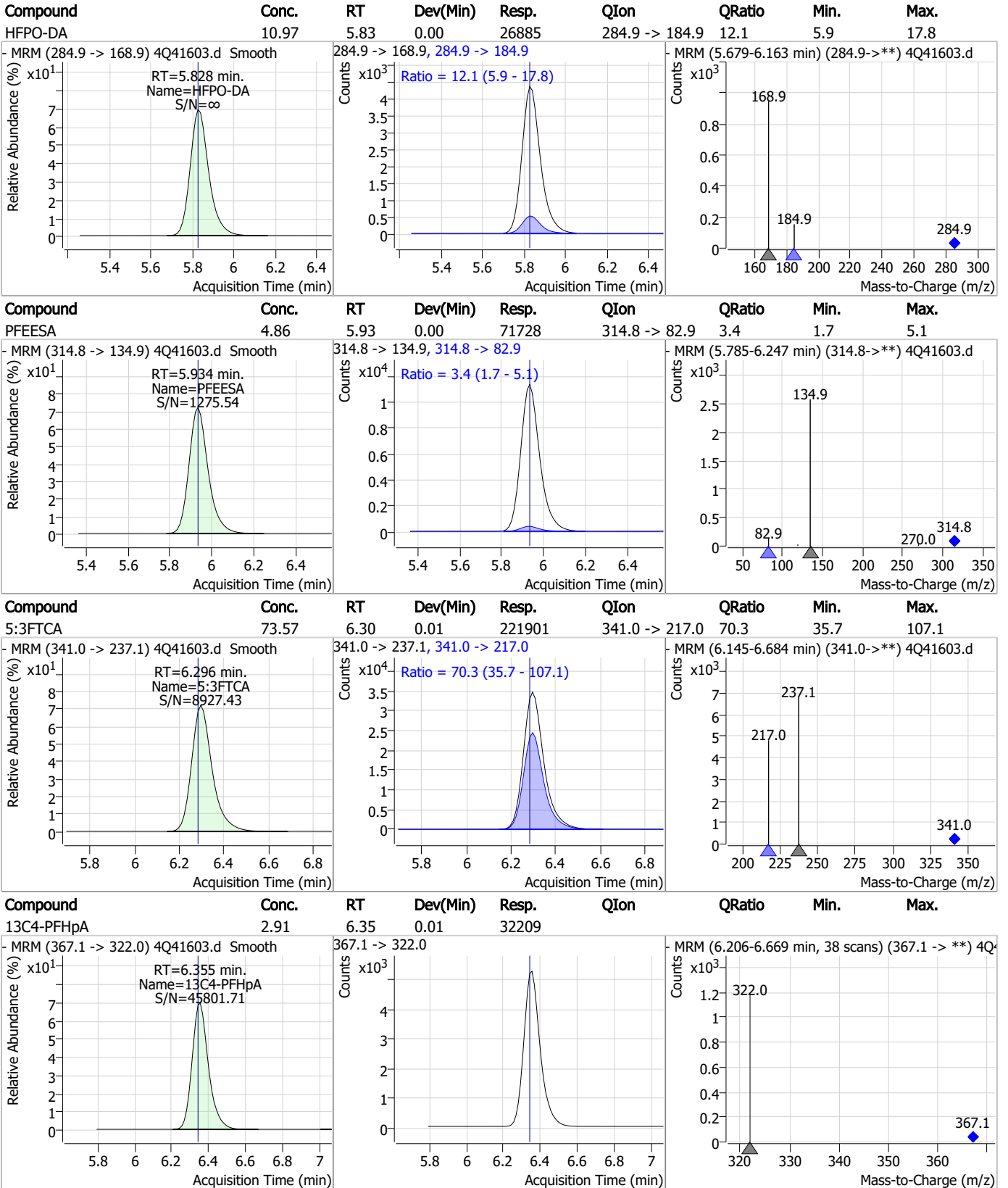
7.4.1
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Perfluorinated Compounds by LC/MS/MS



7.4.1
7

Perfluorinated Compounds by LC/MS/MS

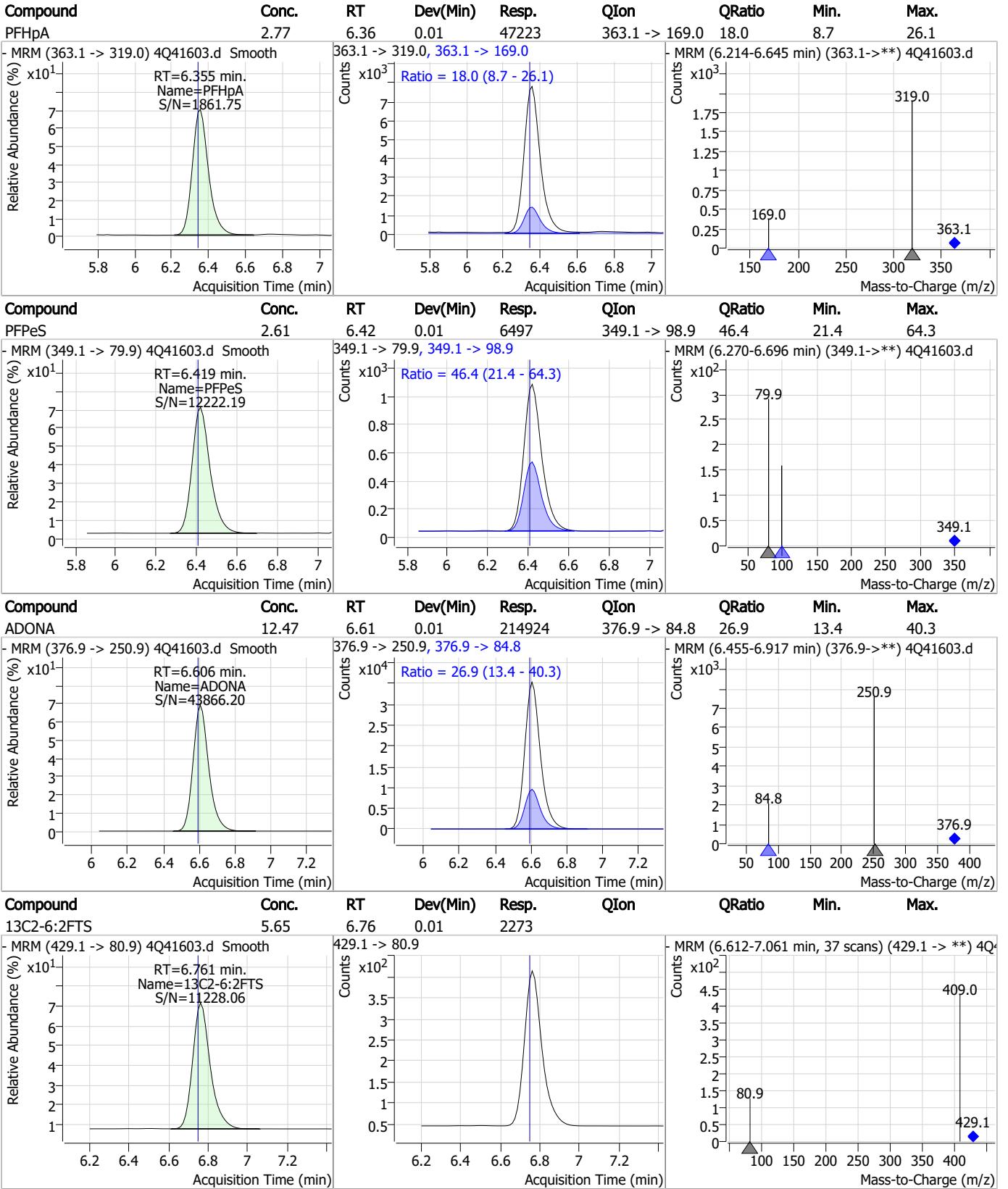


7.4.1

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Perfluorinated Compounds by LC/MS/MS

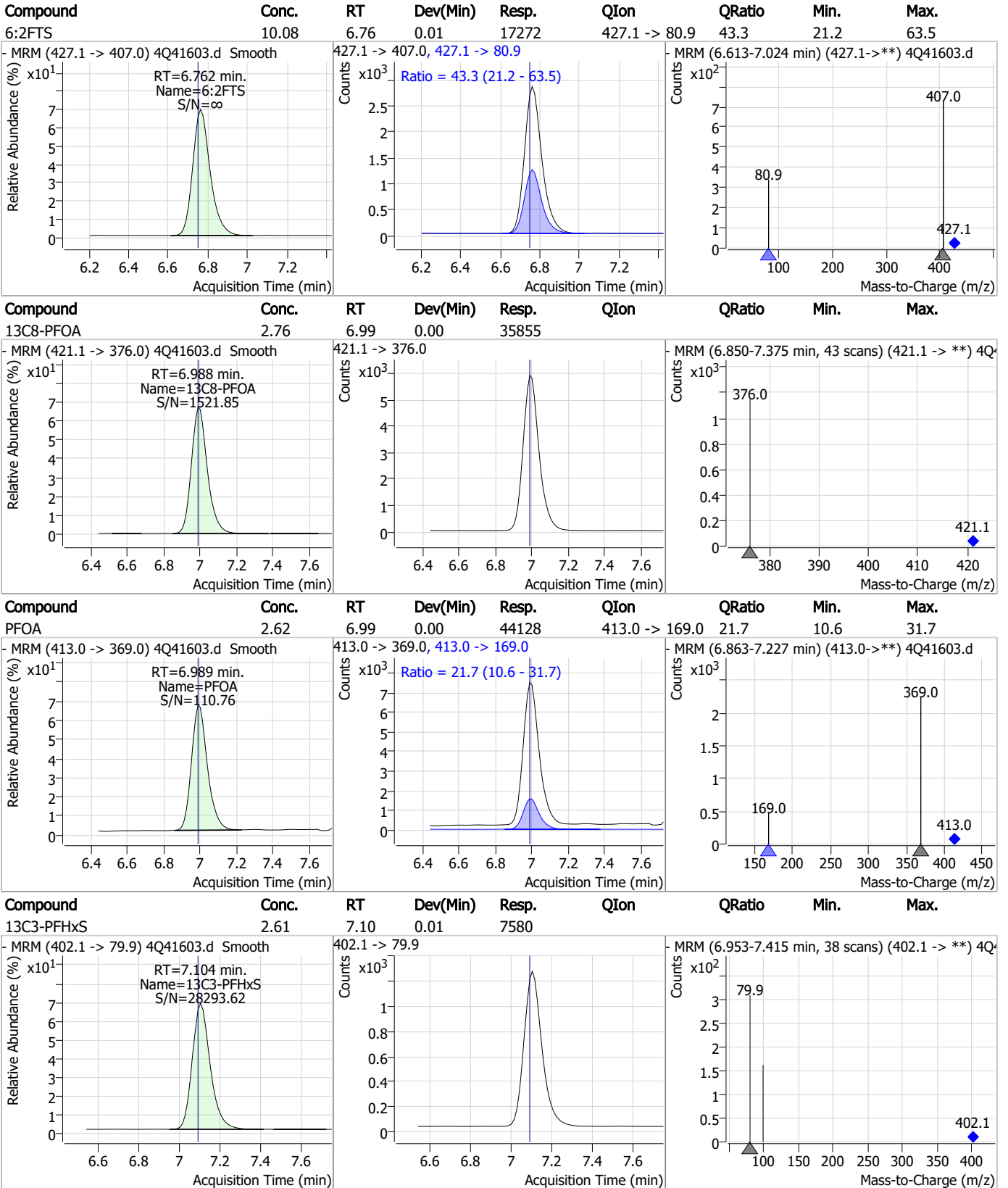


7.4.1

7



Perfluorinated Compounds by LC/MS/MS

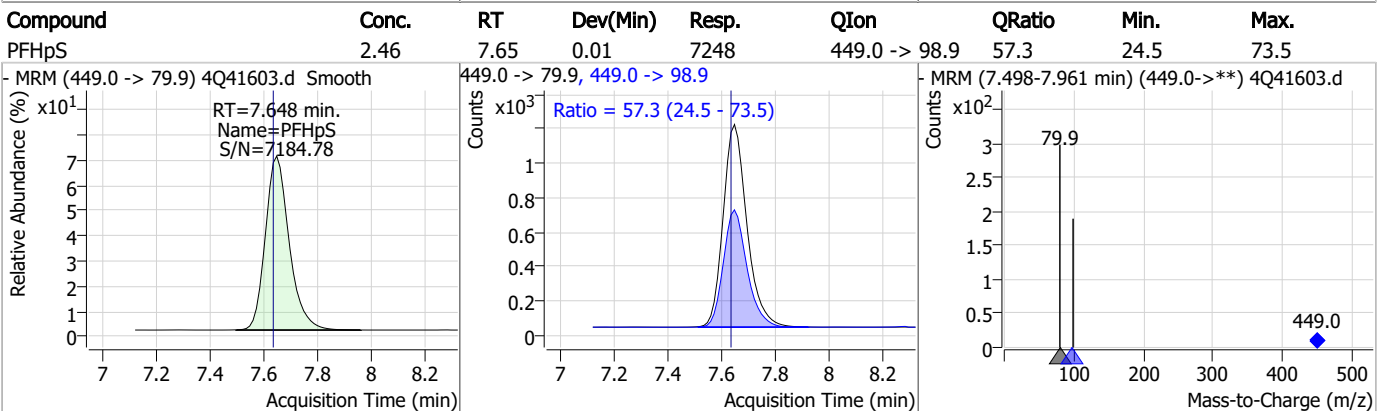
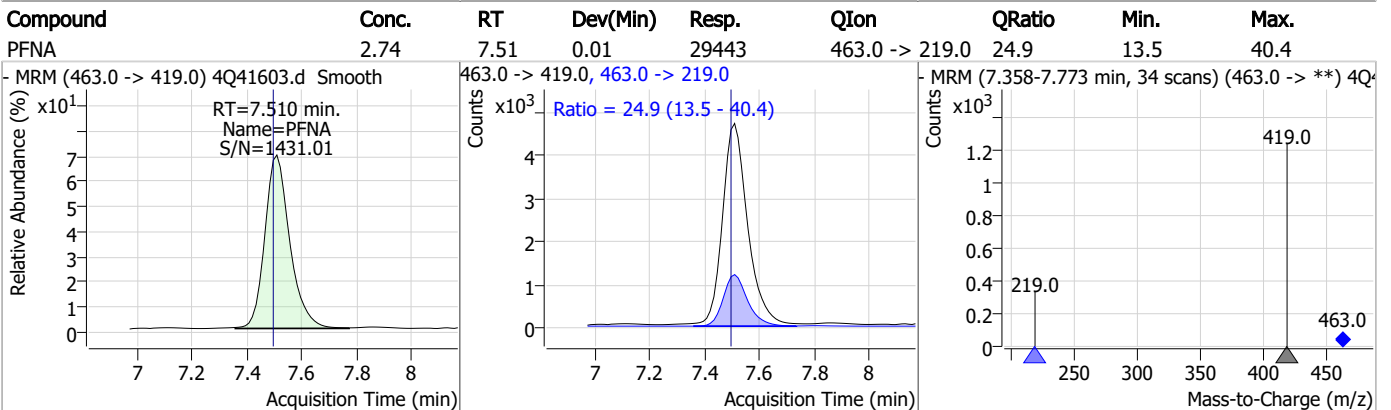
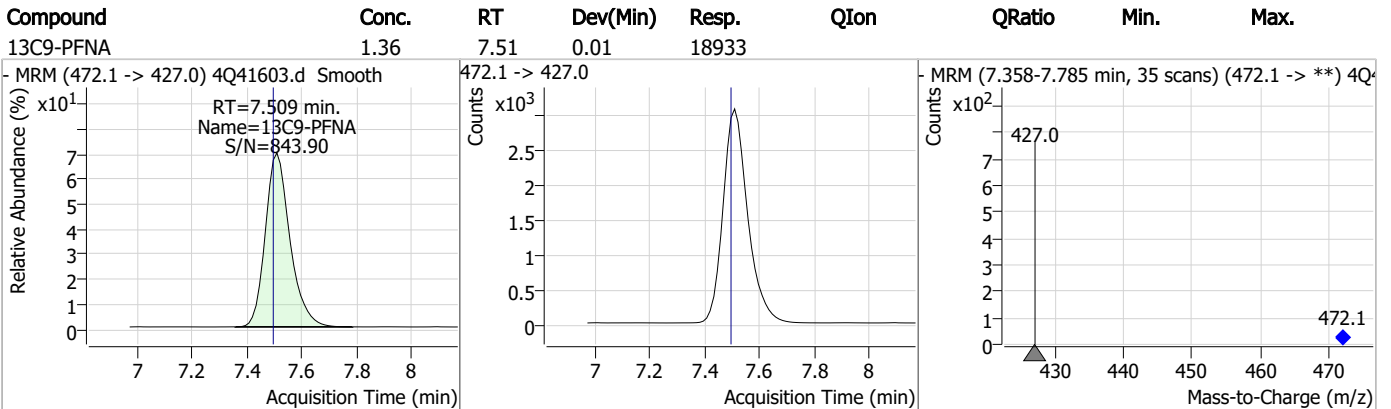
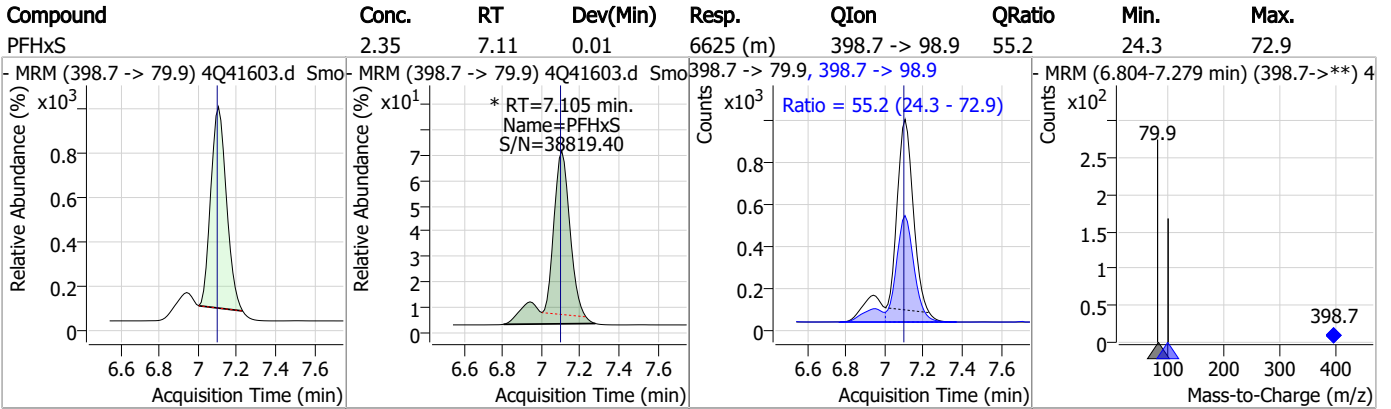


7.4.1

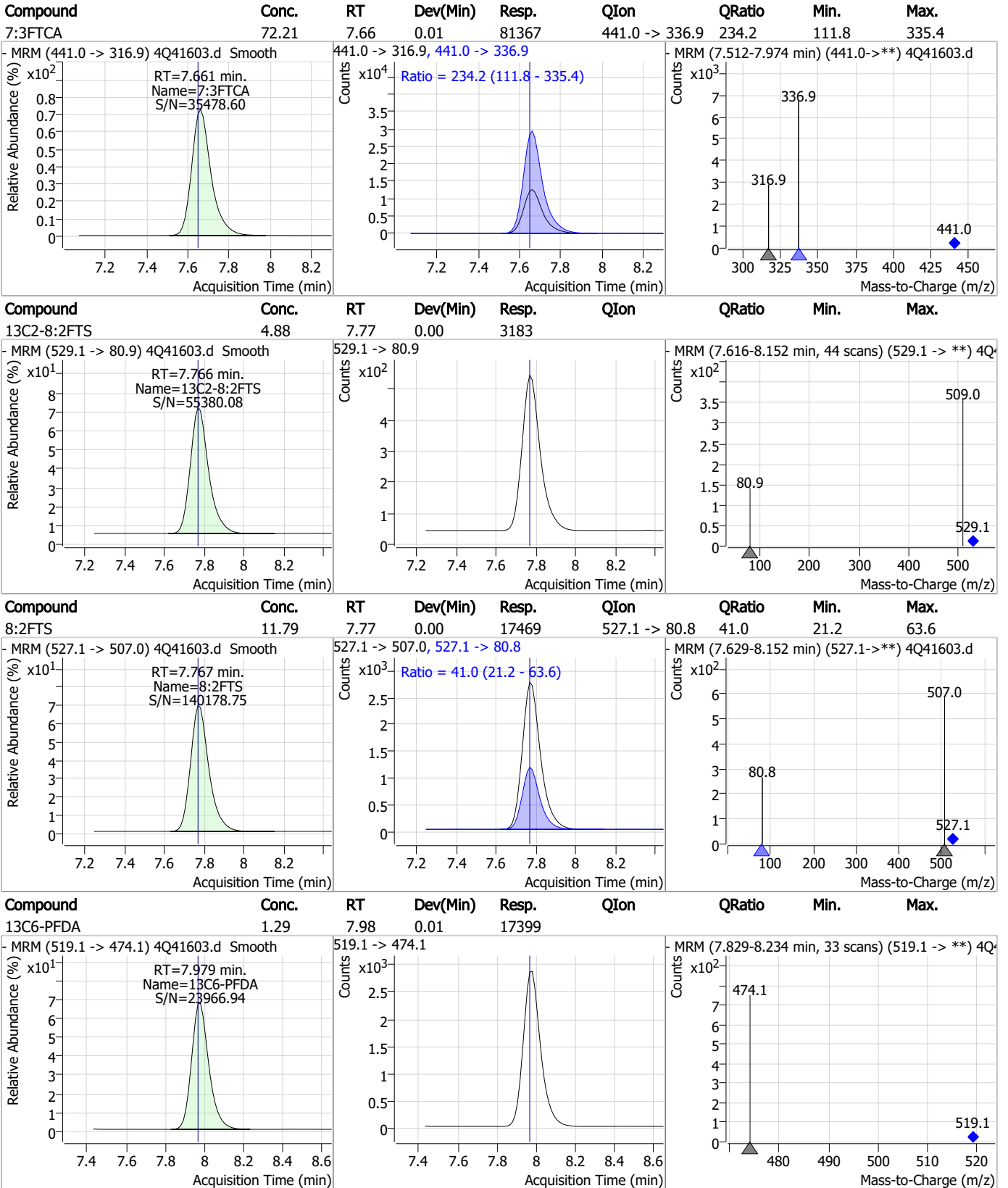
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Perfluorinated Compounds by LC/MS/MS



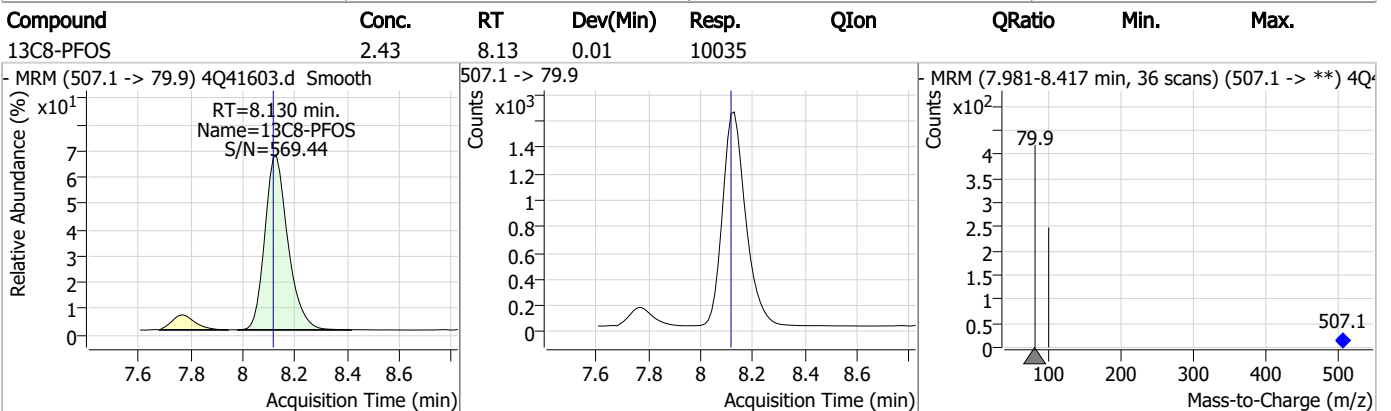
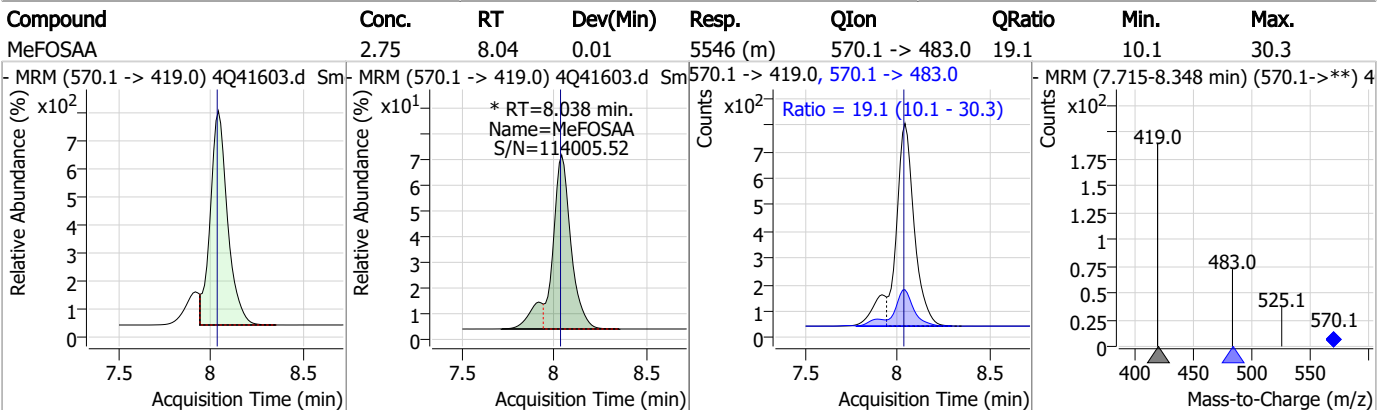
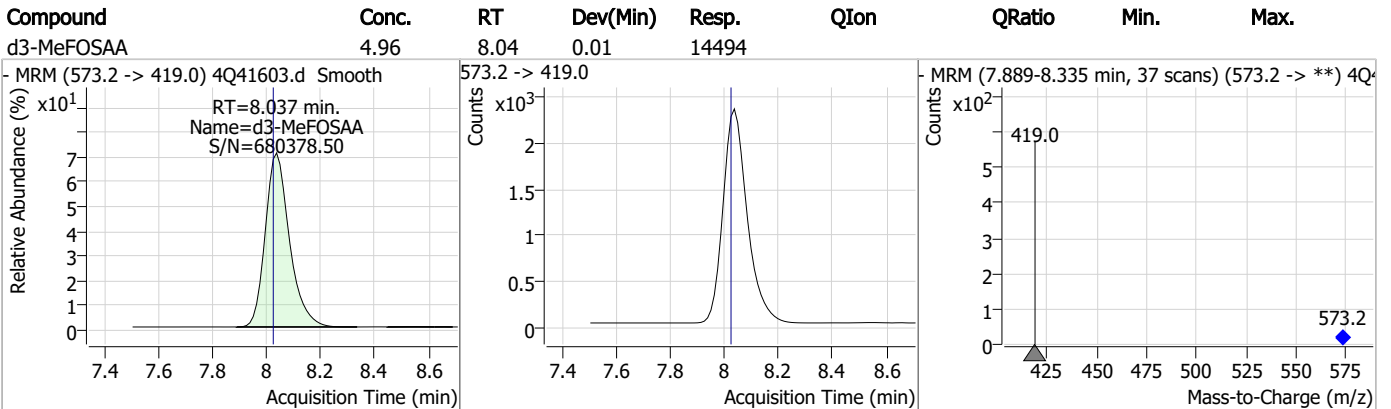
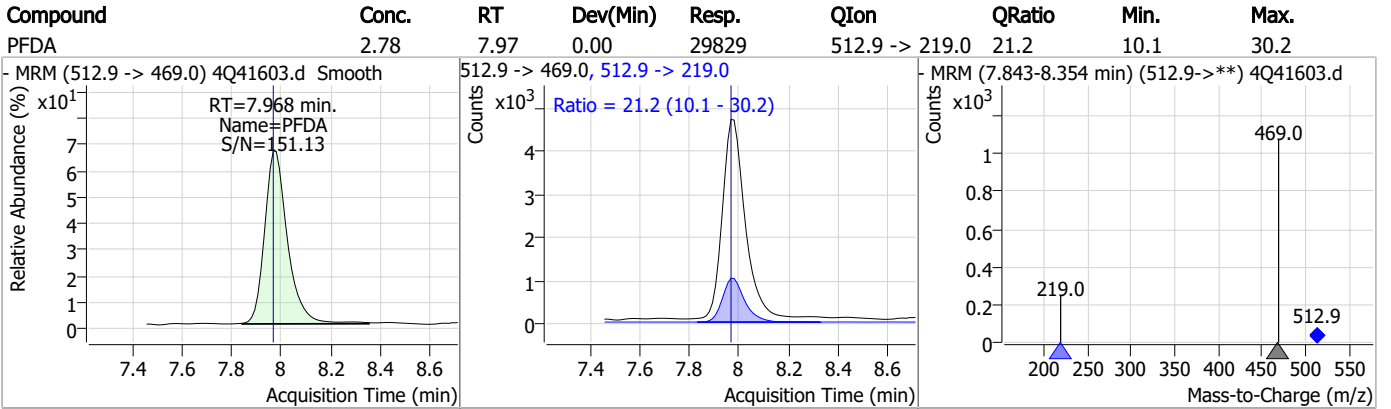
Perfluorinated Compounds by LC/MS/MS



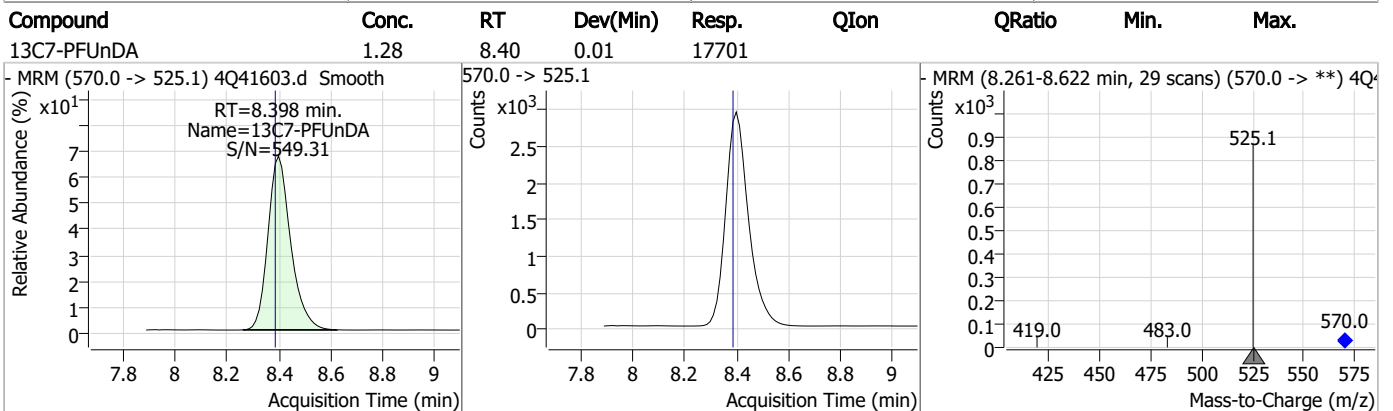
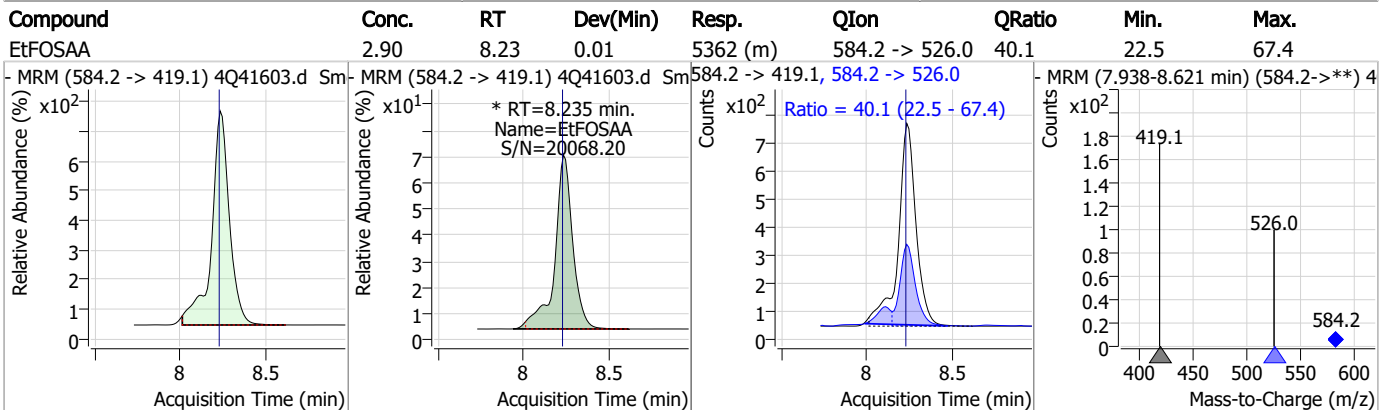
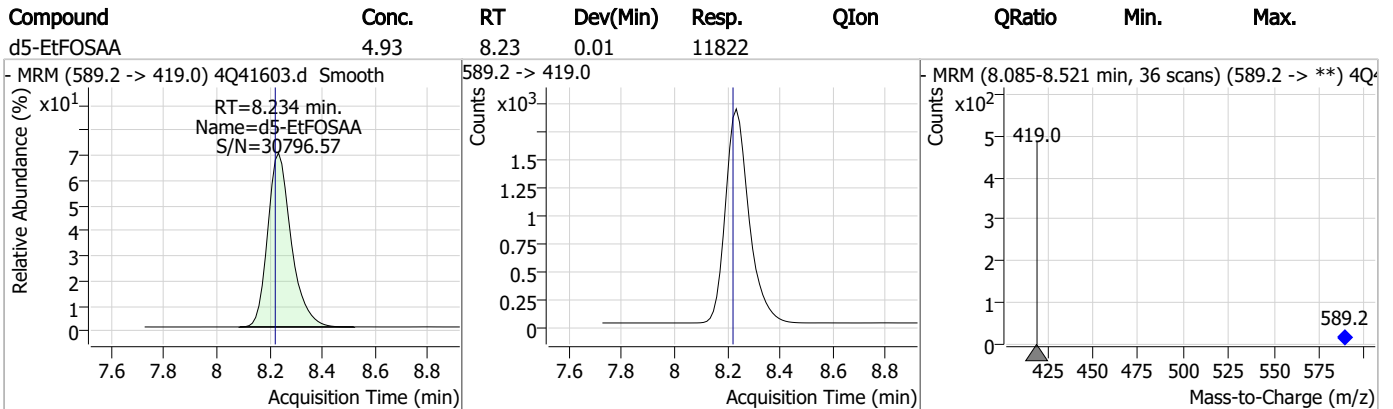
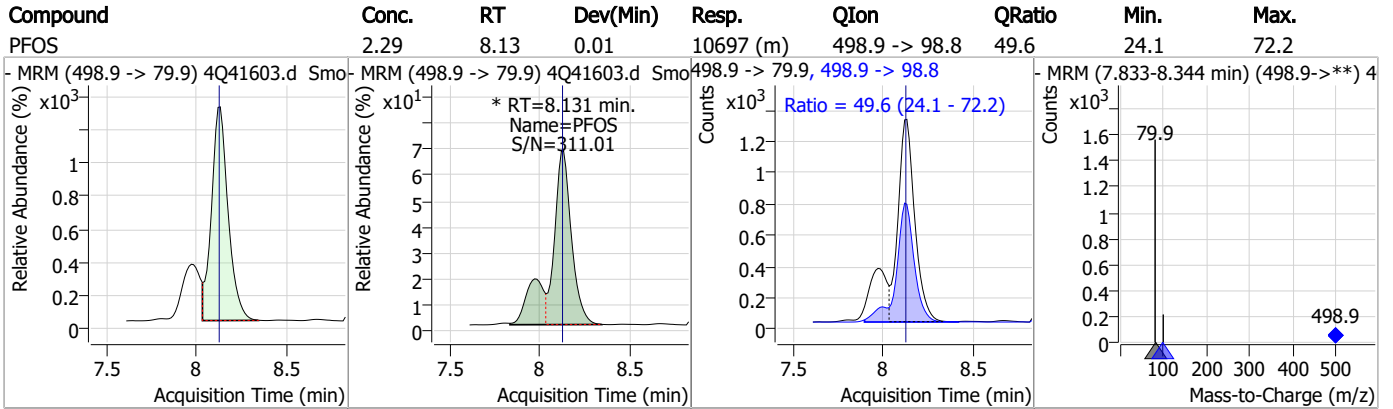
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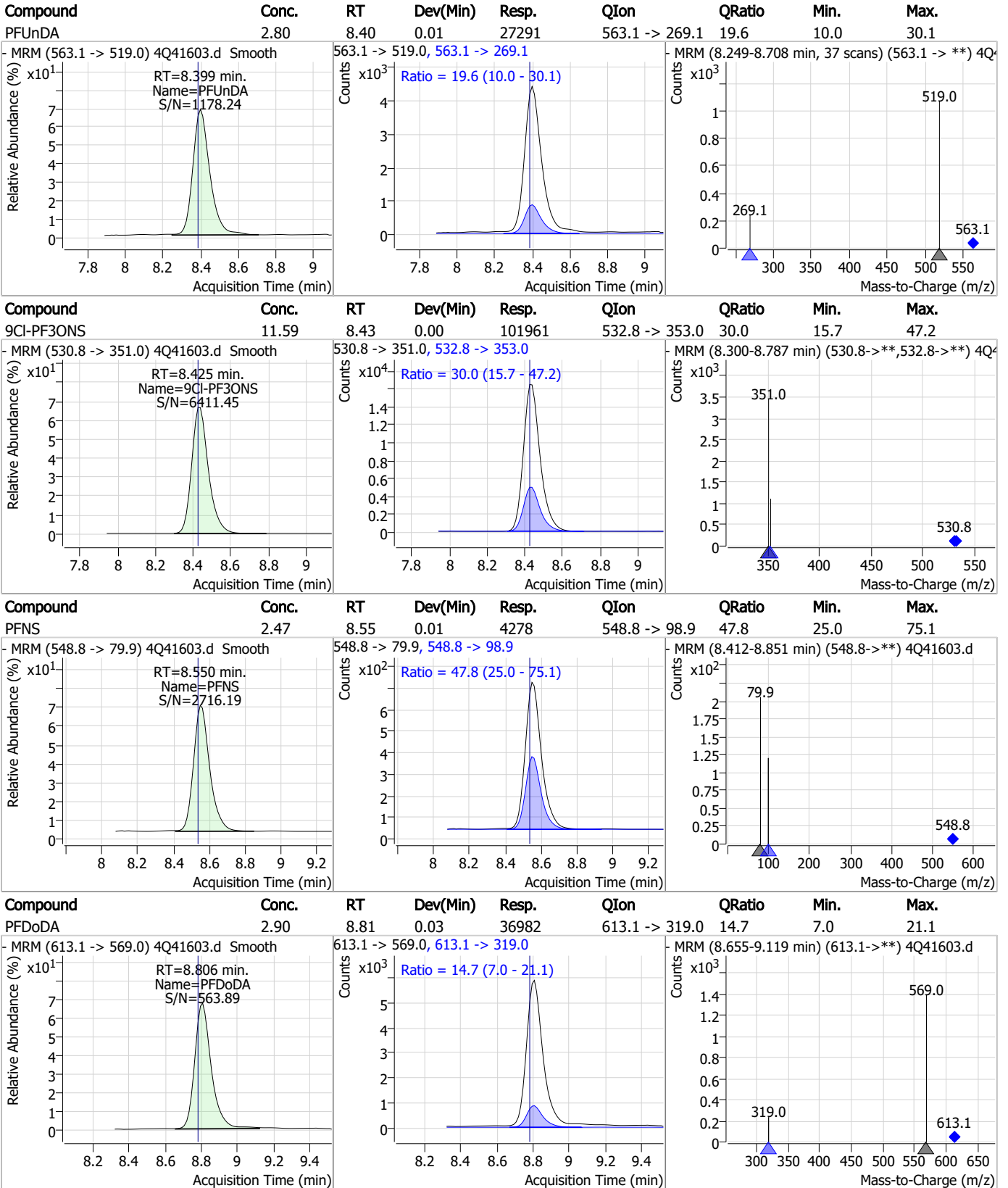
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



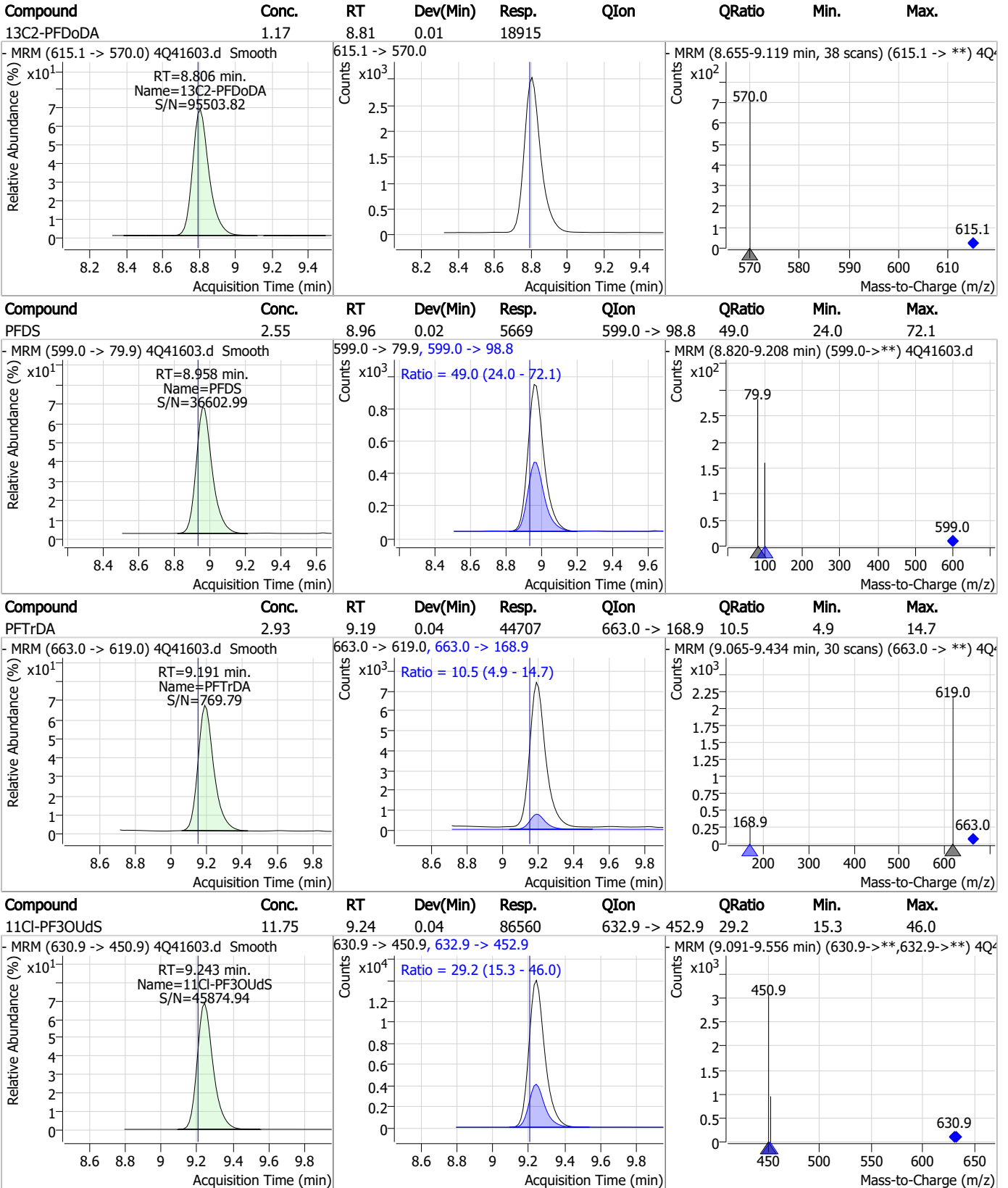
Perfluorinated Compounds by LC/MS/MS



7.4.1

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Perfluorinated Compounds by LC/MS/MS

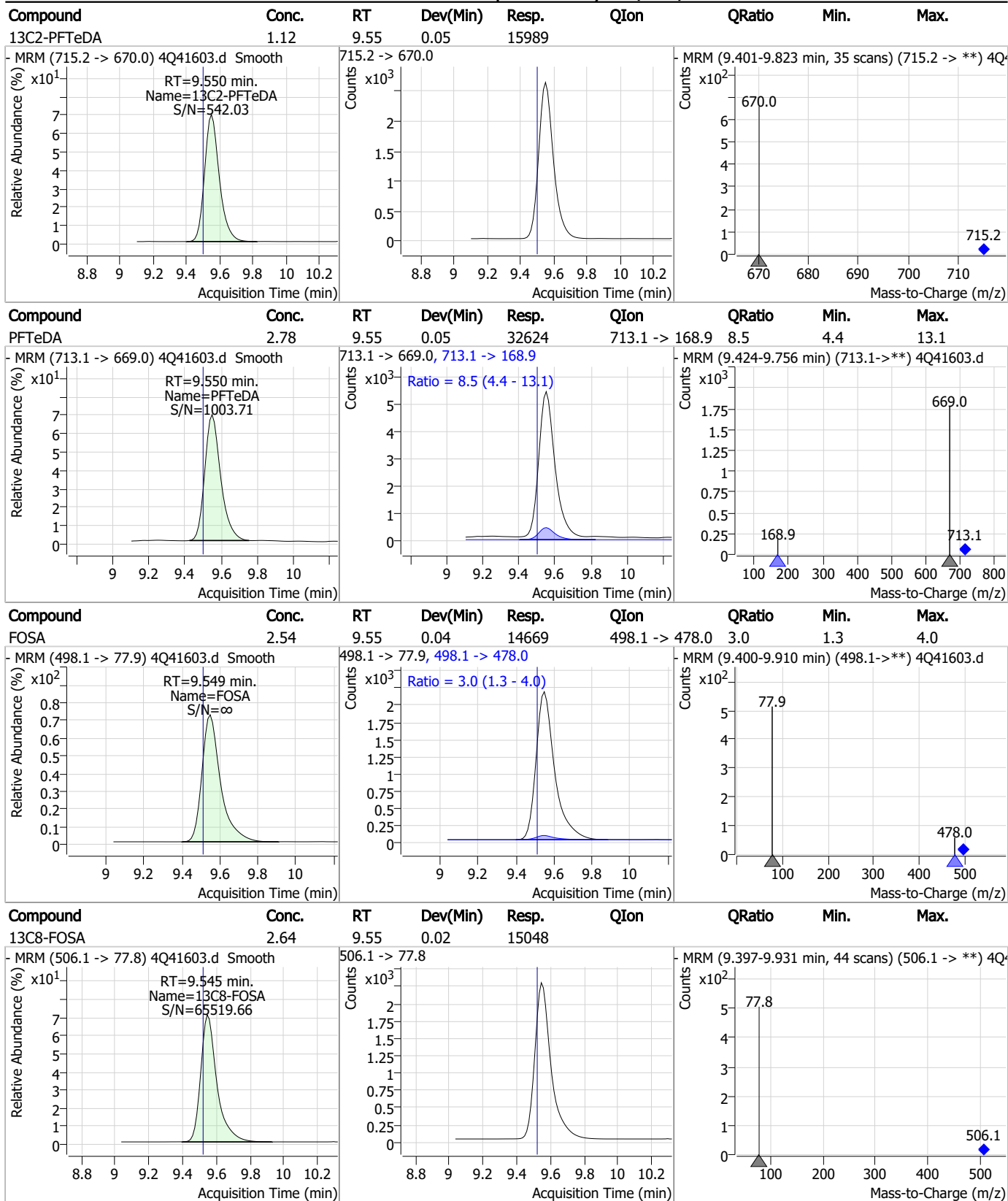


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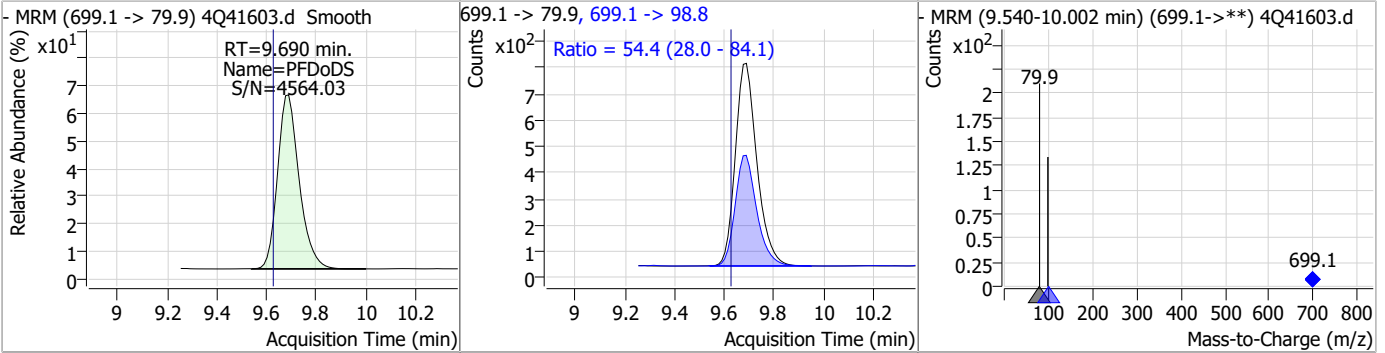
Perfluorinated Compounds by LC/MS/MS



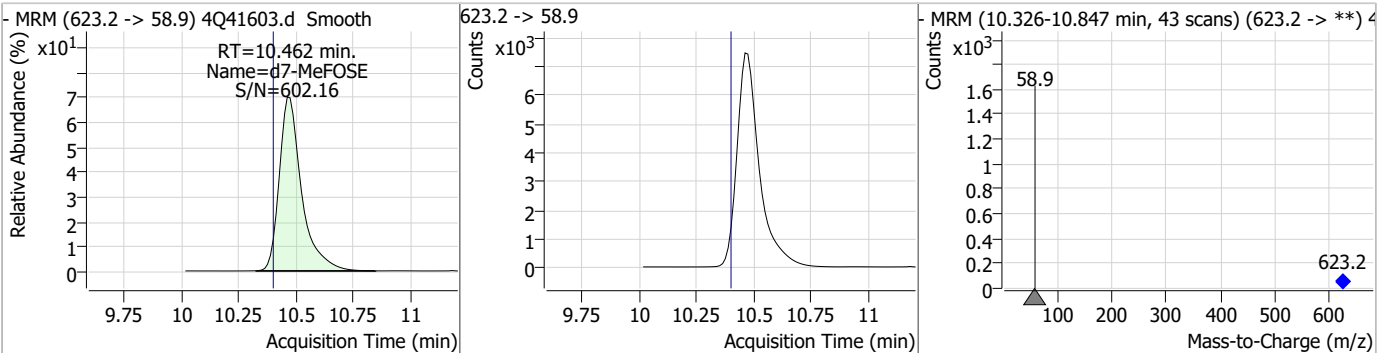
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Perfluorinated Compounds by LC/MS/MS

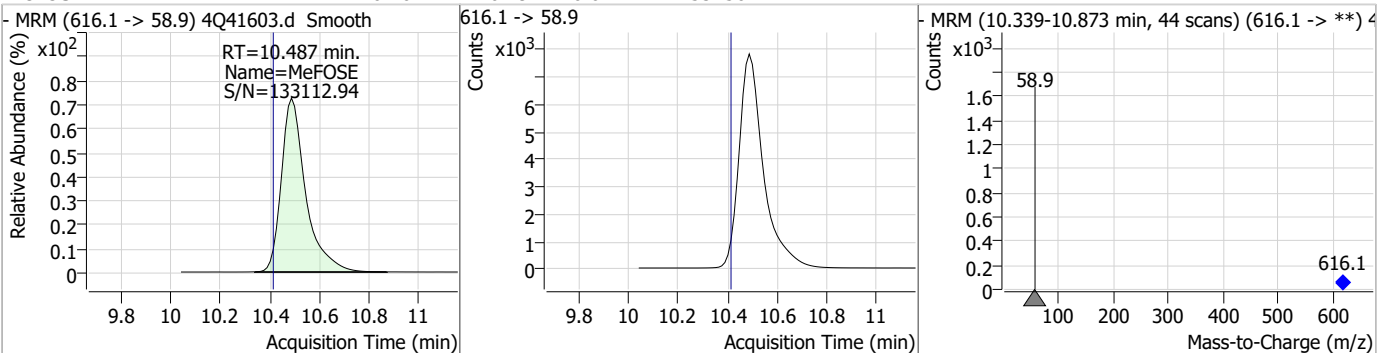
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	2.40	9.69	0.06	4688	699.1 -> 98.8	54.4	28.0	84.1



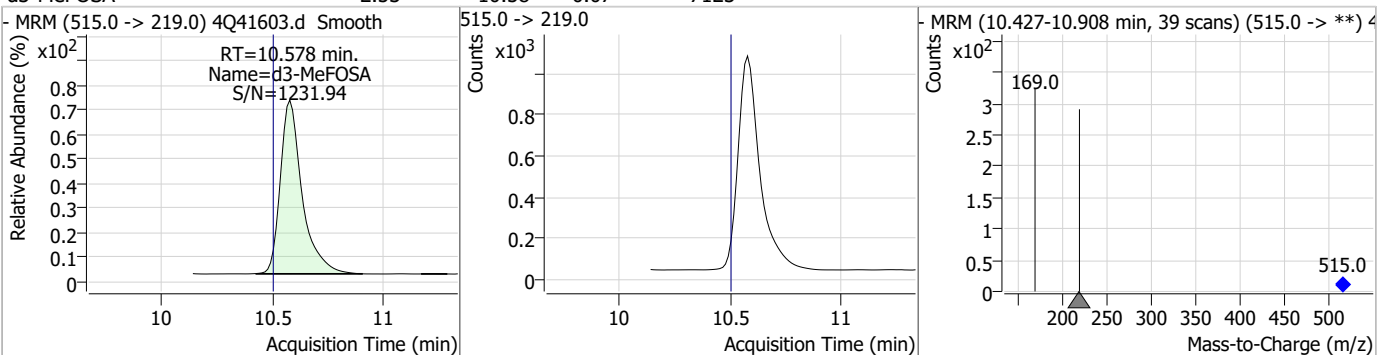
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.11	10.46	0.06	50462	623.2 -> 58.9			



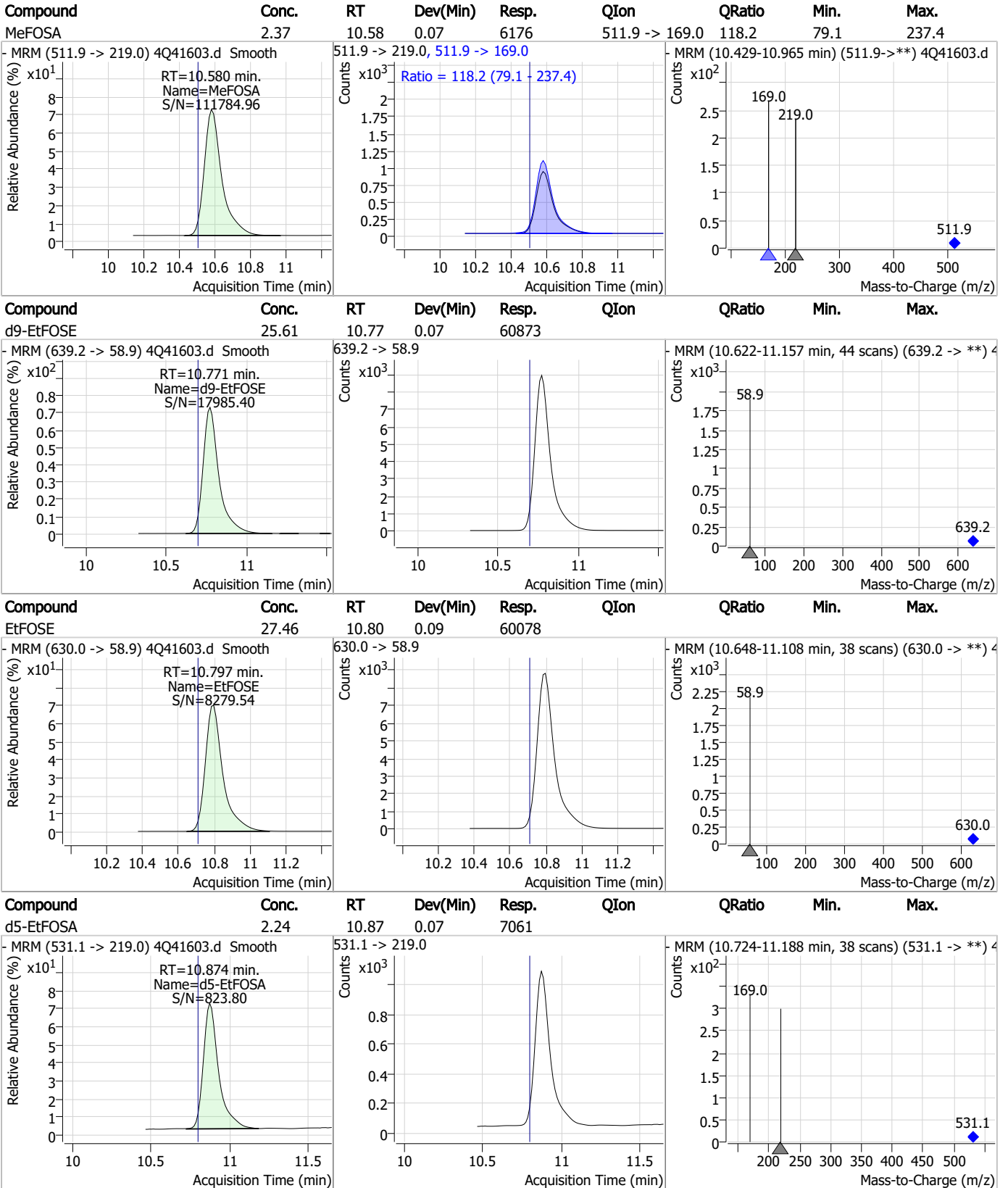
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	26.46	10.49	0.07	53256	616.1 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.53	10.58	0.07	7123	515.0 -> 169.0			



Perfluorinated Compounds by LC/MS/MS



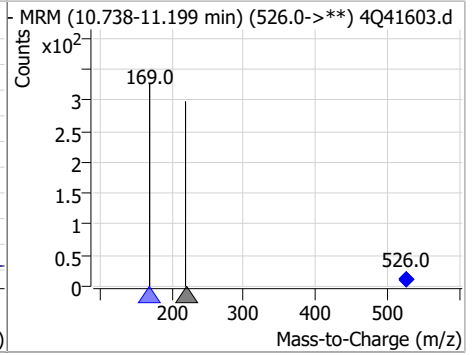
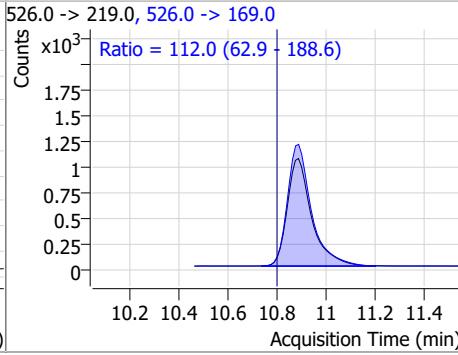
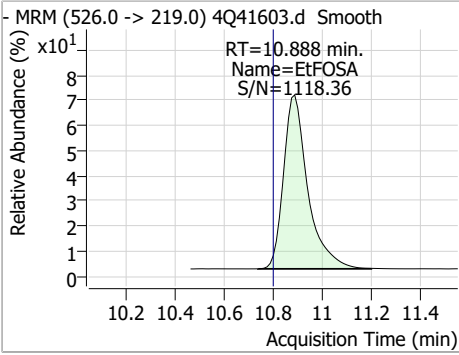
7.4.1

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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	2.46	10.89	0.09	7149	526.0 -> 169.0	112.0	62.9	188.6



7.4.1

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Manual Integration Approval Summary

Sample Number: OP95682-MS Method: EPA DRAFT 1633
Lab FileID: 4Q41603.D Analyst approved: 03/03/23 15:21 Anna Ludwig
Injection Time: 03/02/23 19:17 Supervisor approved: 03/03/23 16:24 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.11	Split peak
MeFOSAA	2355-31-9		8.04	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.13	Split peak
EtFOSAA	2991-50-6		8.23	Split peak

7.4.1.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41604.d
 Operator : marthav
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 3/2/2023 7:31:37 PM
 Sample Name : op95682-msd
 Vial : P3-B3
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q595.batch.bin
 Sample Information : op95682,S4Q595,570,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.252	216.8 -> 171.9	135335	10.00 µg/L	0.062
M5-PFPeA	4.537	268.3 -> 223.0	73847	5.00 µg/L	0.000
M5-PFHxA	5.522	318.0 -> 273.0	59718	2.50 µg/L	0.012
M4-PFHpA	6.367	367.1 -> 322.0	32862	2.50 µg/L	0.025
M8-PFOA	7.000	421.1 -> 376.0	34924	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	18702	1.25 µg/L	0.026
M6-PFDA	7.979	519.1 -> 474.1	18092	1.25 µg/L	0.012
M7-PFUnDA	8.423	570.0 -> 525.1	17583	1.25 µg/L	0.037
M2-PFDoDA	8.831	615.1 -> 570.0	19774	1.25 µg/L	0.038
M2-PFTeDA	9.575	715.2 -> 670.0	15367	1.25 µg/L	0.075
M8-FOSA	9.570	506.1 -> 77.8	14423	2.50 µg/L	0.049
M3-PFBS	5.476	302.1 -> 79.9	12965	2.50 µg/L	0.000
M3-PFHxS	7.117	402.1 -> 79.9	7655	2.50 µg/L	0.025
M8-PFOS	8.142	507.1 -> 79.9	10355	2.50 µg/L	0.025
M2-4:2FTS	5.235	329.1 -> 80.9	1520	5.00 µg/L	0.000
M2-6:2FTS	6.774	429.1 -> 80.9	2119	5.00 µg/L	0.025
M2-8:2FTS	7.779	529.1 -> 80.9	3696	5.00 µg/L	0.012
M3-MeFOSAA	8.049	573.2 -> 419.0	15015	5.00 µg/L	0.025
M3-HFPO-DA	5.839	286.9 -> 168.9	29598	10.00 µg/L	0.012
M5-EtFOSAA	8.246	589.2 -> 419.0	11349	5.00 µg/L	0.025
M7-MeFOSE	10.487	623.2 -> 58.9	49060	25.00 µg/L	0.086
M9-EtFOSE	10.796	639.2 -> 58.9	60433	25.00 µg/L	0.100
M5-EtFOSA	10.899	531.1 -> 219.0	7544	2.50 µg/L	0.100
M3-MeFOSA	10.603	515.0 -> 219.0	6964	2.50 µg/L	0.100
13C4-PFOS	8.130	502.8 -> 79.9	10082	2.50 µg/L	0.012
13C3-PFBA	3.255	216.0 -> 172.0	69534	5.00 µg/L	0.062
18O2-PFHxS	7.116	403.0 -> 83.9	5263	2.50 µg/L	0.025
13C4-PFOA	7.000	417.1 -> 372.0	38631	2.50 µg/L	0.012
13C2-PFDA	7.980	515.1 -> 470.1	14679	1.25 µg/L	0.012
13C5-PFNA	7.522	468.0 -> 423.0	20946	1.25 µg/L	0.026
13C2-PFHxA	5.523	315.1 -> 270.0	48270	2.50 µg/L	0.012
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	1520	4.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C2-6:2FTS	6.774	429.1 -> 80.9	2119	5.15 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C2-8:2FTS	7.779	529.1 -> 80.9	3696	5.54 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.9%		
13C2-PFDoDA	8.831	615.1 -> 570.0	19774	1.26 µg/L	0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.5%		
13C2-PFTeDA	9.575	715.2 -> 670.0	15367	1.11 µg/L	0.075
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.9%		
13C3-PFBS	5.476	302.1 -> 79.9	12965	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.7%		
13C3-PFHxS	7.117	402.1 -> 79.9	7655	2.58 µg/L	0.025

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C4-PFBA	3.252	216.8 -> 171.9	135335	11.30 µg/L	0.062
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 113.0%		
13C4-PFHpA	6.367	367.1 -> 322.0	32862	3.05 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 121.8%		
13C5-PFHxA	5.522	318.0 -> 273.0	59718	2.83 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 113.3%		
13C5-PFPeA	4.537	268.3 -> 223.0	73847	5.44 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.9%		
13C6-PFDA	7.979	519.1 -> 474.1	18092	1.39 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 110.9%		
13C7-PFUnDA	8.423	570.0 -> 525.1	17583	1.31 µg/L	0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 105.2%		
13C8-FOSA	9.570	506.1 -> 77.8	14423	2.58 µg/L	0.049
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.2%		
13C8-PFOA	7.000	421.1 -> 376.0	34924	2.71 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 108.5%		
13C8-PFOS	8.142	507.1 -> 79.9	10355	2.56 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C9-PFNA	7.521	472.1 -> 427.0	18702	1.28 µg/L	0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.4%		
d3-MeFOSAA	8.049	573.2 -> 419.0	15015	5.25 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.0%		
13C3-HFPO-DA	5.839	286.9 -> 168.9	29598	9.95 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.5%		
d3-MeFOSA	10.603	515.0 -> 219.0	6964	2.53 µg/L	0.100
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.2%		
d5-EtFOSAA	8.246	589.2 -> 419.0	11349	4.84 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.7%		
d7-MeFOSE	10.487	623.2 -> 58.9	49060	24.93 µg/L	0.086
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 99.7%		
d9-EtFOSE	10.796	639.2 -> 58.9	60433	25.96 µg/L	0.100
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 103.8%		
d5-EtFOSA	10.899	531.1 -> 219.0	7544	2.44 µg/L	0.100
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.5%		
Target Compounds					QValue
4:2FTS	5.236	327.1 -> 307.0	23591	11.66 µg/L	99
		327.1 -> 80.9	9979		
6:2FTS	6.774	427.1 -> 407.0	17254	10.81 µg/L	99
		427.1 -> 80.9	7471		
8:2FTS	7.779	527.1 -> 507.0	18127	10.54 µg/L	99
		527.1 -> 80.8	7794		
EtFOSAA	8.259	584.2 -> 419.1	5532	3.11 µg/L	m 97
		584.2 -> 526.0	2598		
FOSA	9.561	498.1 -> 77.9	15003	2.71 µg/L	98
		498.1 -> 478.0	498		
MeFOSAA	8.050	570.1 -> 419.0	5471	2.62 µg/L	100
		570.1 -> 483.0	1112		
PFBA	3.246	212.8 -> 168.9	40835	12.76 µg/L	100
PFBS	5.477	298.7 -> 79.9	12557	2.43 µg/L	98
		298.7 -> 98.8	4953		
PFDA	7.980	512.9 -> 469.0	28507	2.55 µg/L	98
		512.9 -> 219.0	6060		
PFDoDA	8.832	613.1 -> 569.0	37304	2.80 µg/L	99
		613.1 -> 319.0	5360		
PFDS	8.995	599.0 -> 79.9	5739	2.50 µg/L	99

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2779			
PFHpA	6.368	363.1 -> 319.0	49036	2.82	µg/L	99
		363.1 -> 169.0	8399			
PFHpS	7.661	449.0 -> 79.9	7812	2.57	µg/L	92
		449.0 -> 98.9	4234			
PFHxA	5.525	313.0 -> 269.0	55304	2.64	µg/L	100
		313.0 -> 118.9	1688			
PFHxS	7.118	398.7 -> 79.9	7045	2.47	µg/L	m 98
		398.7 -> 98.9	3529			
PFNA	7.522	463.0 -> 419.0	29917	2.82	µg/L	98
		463.0 -> 219.0	7732			
PFNS	8.587	548.8 -> 79.9	4224	2.36	µg/L	96
		548.8 -> 98.9	1995			
PFOA	7.001	413.0 -> 369.0	46726	2.85	µg/L	100
		413.0 -> 169.0	9792			
PFOS	8.131	498.9 -> 79.9	10980	2.28	µg/L	m 97
		498.9 -> 98.8	5523			
PFPeA	4.539	263.0 -> 219.0	92220	6.13	µg/L	100
PFPeS	6.432	349.1 -> 79.9	6802	2.71	µg/L	99
		349.1 -> 98.9	2890			
PFTeDA	9.575	713.1 -> 669.0	32784	2.90	µg/L	99
		713.1 -> 168.9	2744			
PFTrDA	9.216	663.0 -> 619.0	45763	2.87	µg/L	99
		663.0 -> 168.9	4339			
PFUnDA	8.423	563.1 -> 519.0	27295	2.82	µg/L	99
		563.1 -> 269.1	5378			
11CI-PF3OUdS	9.268	630.9 -> 450.9	85413	11.75	µg/L	99
		632.9 -> 452.9	26697			
9CI-PF3ONS	8.463	530.8 -> 351.0	99928	11.51	µg/L	96
		532.8 -> 353.0	29101			
ADONA	6.619	376.9 -> 250.9	223930	13.17	µg/L	99
		376.9 -> 84.8	58663			
HFPO-DA	5.840	284.9 -> 168.9	28568	11.81	µg/L	99
		284.9 -> 184.9	3240			
3:3FTCA	4.242	241.0 -> 177.0	9797	12.65	µg/L	98
		241.0 -> 117.0	878			
5:3FTCA	6.308	341.0 -> 237.1	230483	75.97	µg/L	98
		341.0 -> 217.0	161421			
7:3FTCA	7.674	441.0 -> 316.9	84489	74.55	µg/L	95
		441.0 -> 336.9	195488			
EtFOSA	10.913	526.0 -> 219.0	7929	2.56	µg/L	88
		526.0 -> 169.0	8871			
EtFOSE	10.822	630.0 -> 58.9	60778	27.99	µg/L	100
MeFOSA	10.604	511.9 -> 219.0	6950	2.73	µg/L	62
		511.9 -> 169.0	7568			
MeFOSE	10.512	616.1 -> 58.9	55431	28.33	µg/L	100
PFDoDS	9.702	699.1 -> 79.9	4866	2.41	µg/L	99
		699.1 -> 98.8	2689			
NFDHA	5.428	295.0 -> 201.0	4510	5.92	µg/L	96
		295.0 -> 84.9	1221			
PFMBA	4.881	279.0 -> 85.1	49384	5.70	µg/L	100
PFMPA	3.819	229.0 -> 84.9	42357	5.65	µg/L	100
PFEESA	5.934	314.8 -> 134.9	72596	4.89	µg/L	99
		314.8 -> 82.9	2685			

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

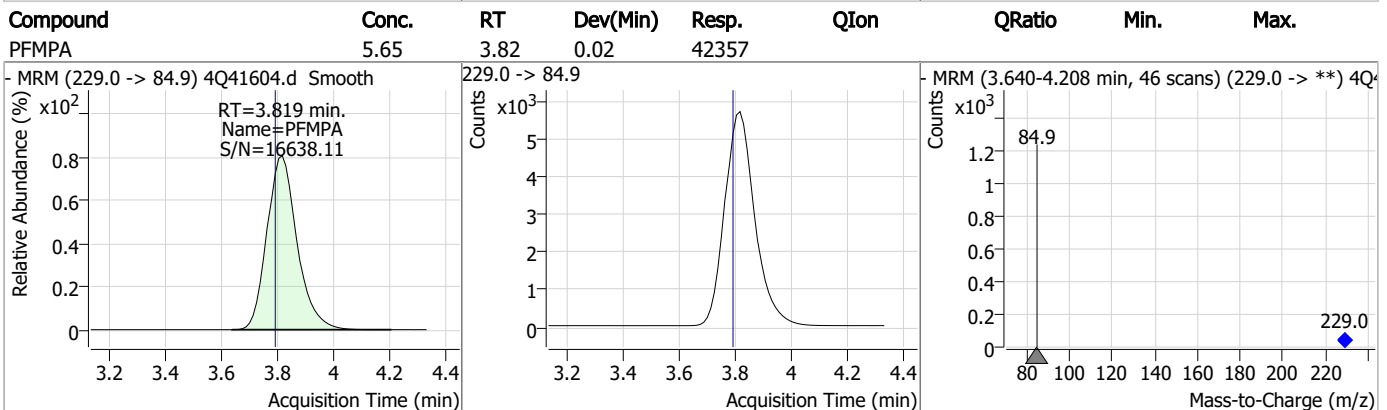
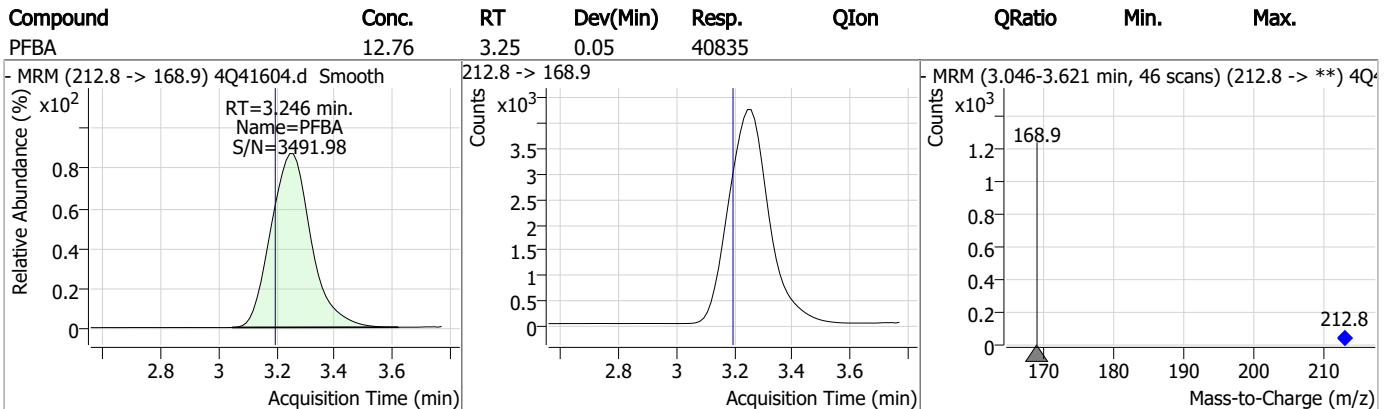
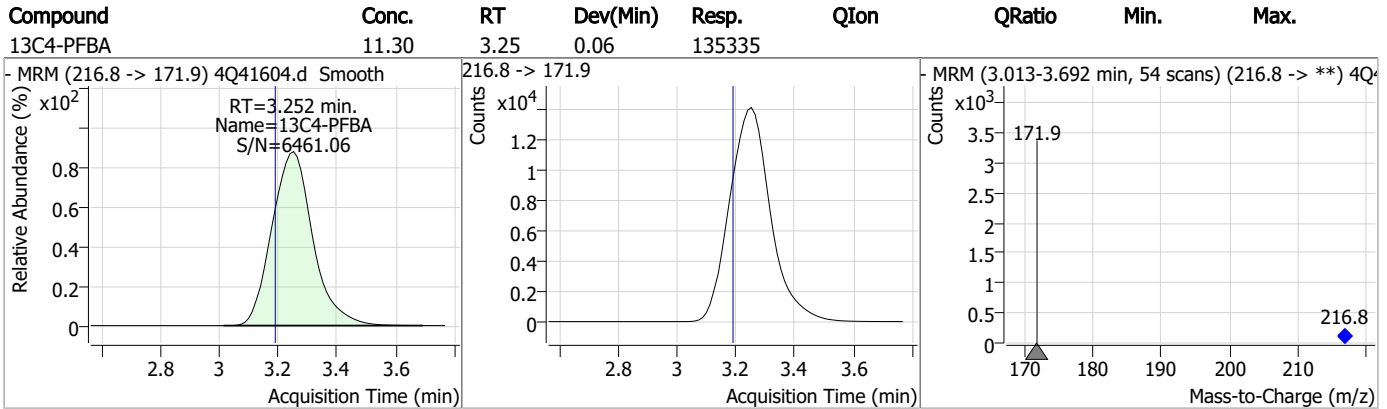
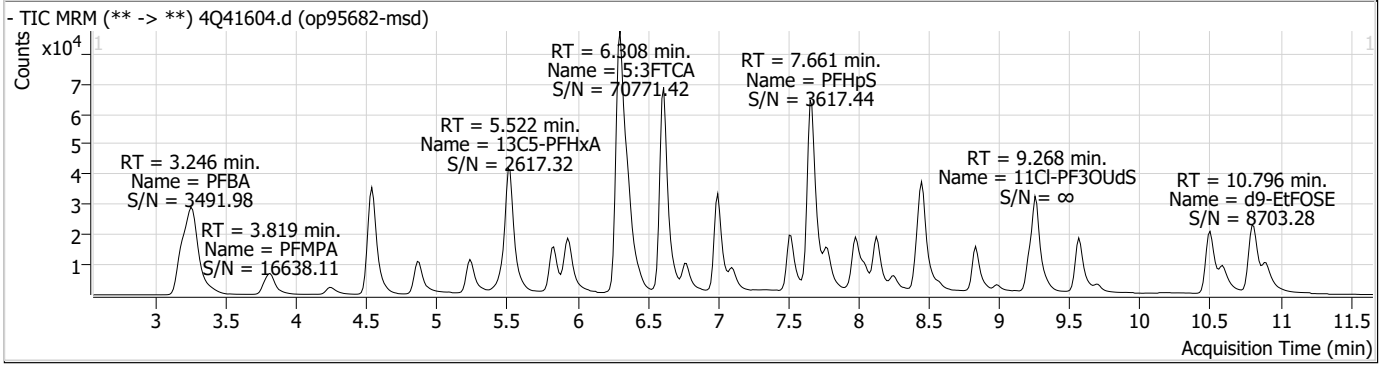
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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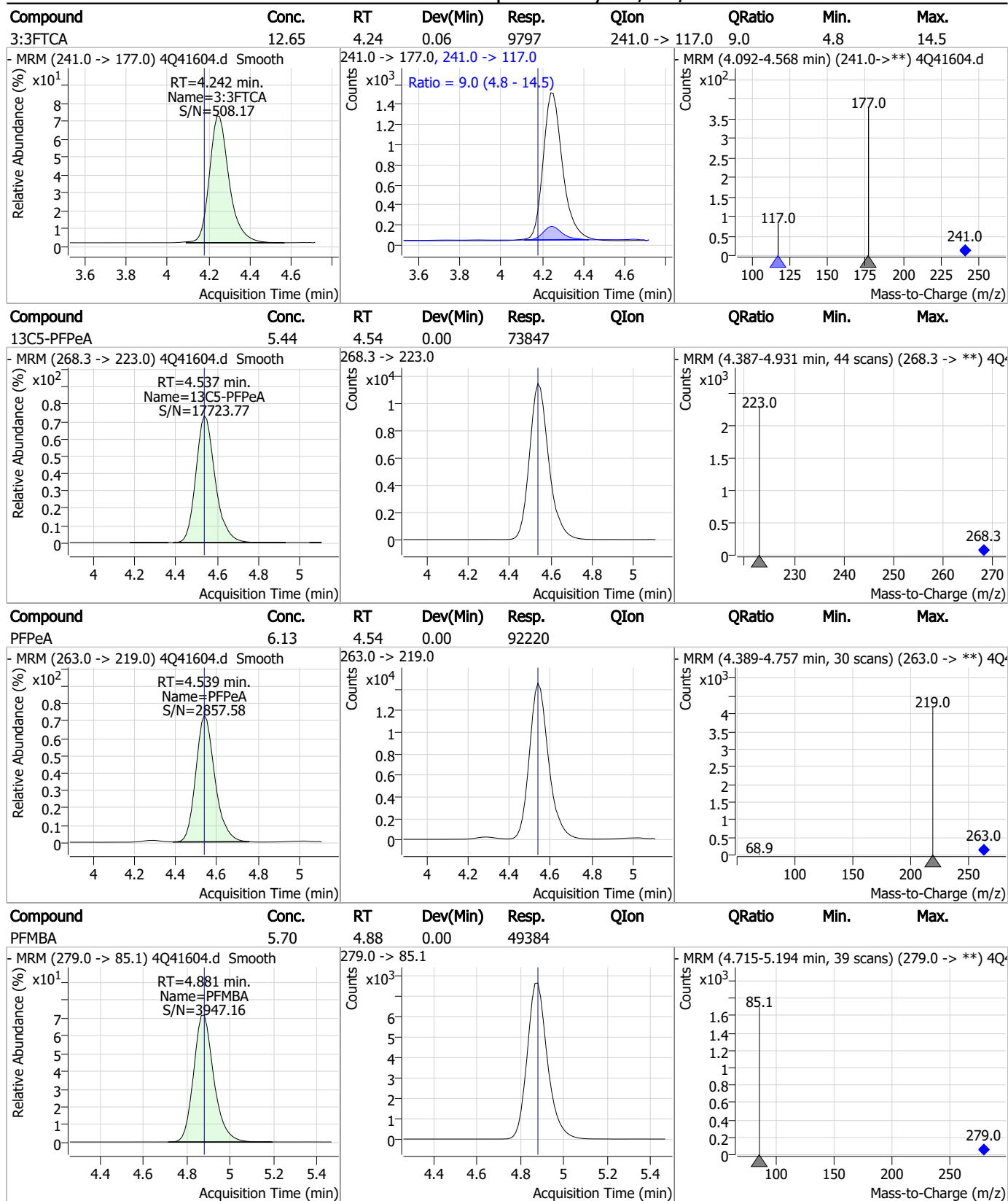
7.4.2
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Perfluorinated Compounds by LC/MS/MS



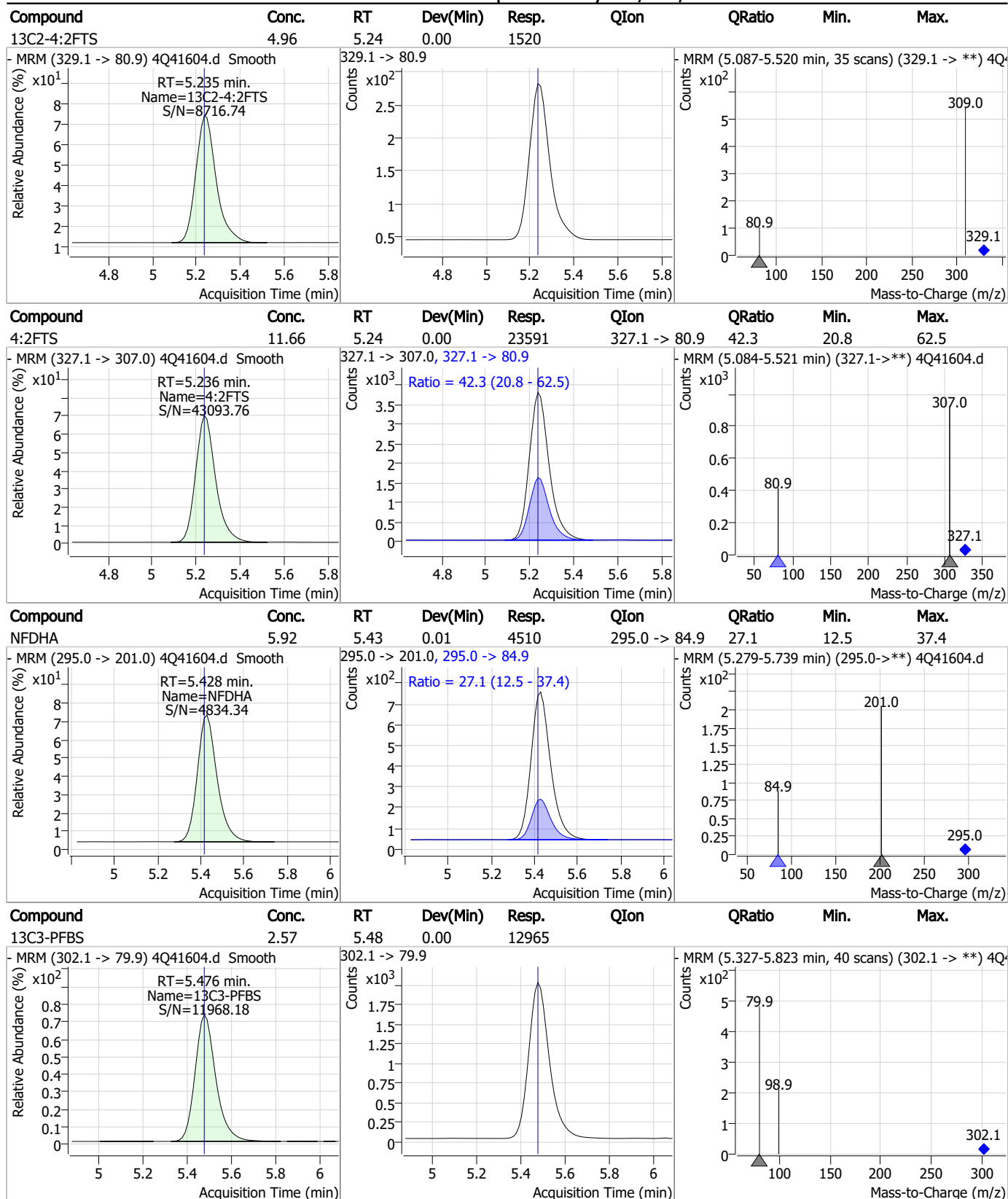
Perfluorinated Compounds by LC/MS/MS



7.4.2
7

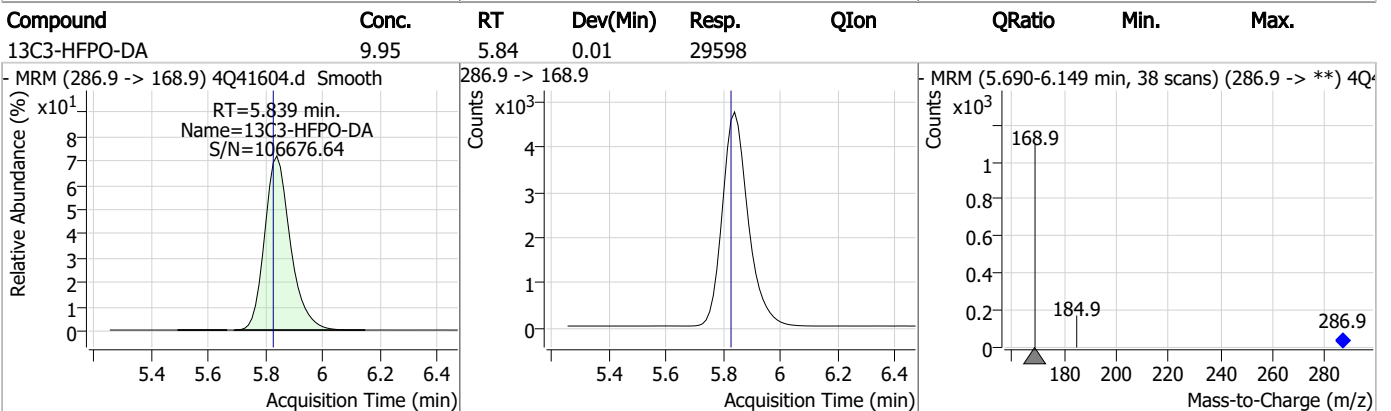
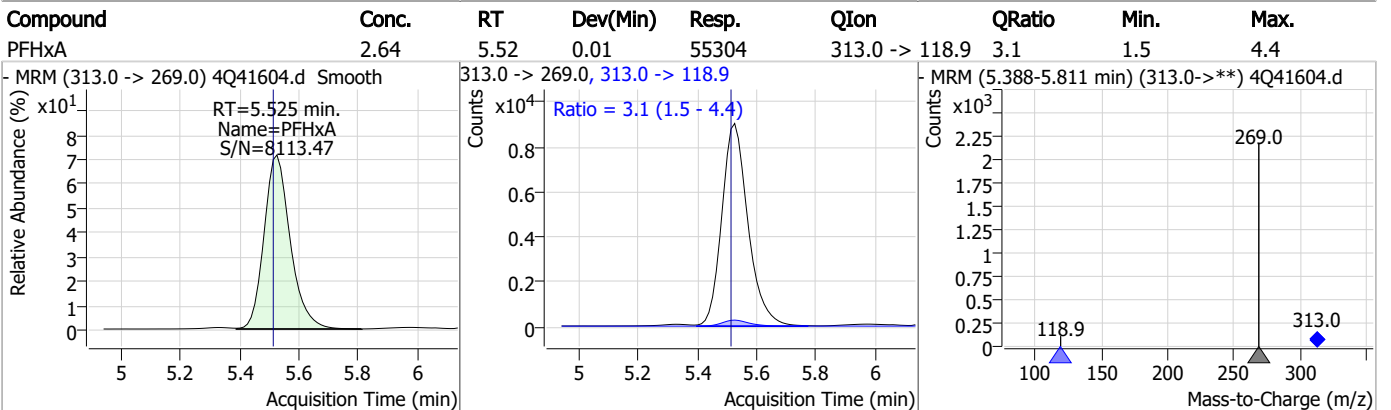
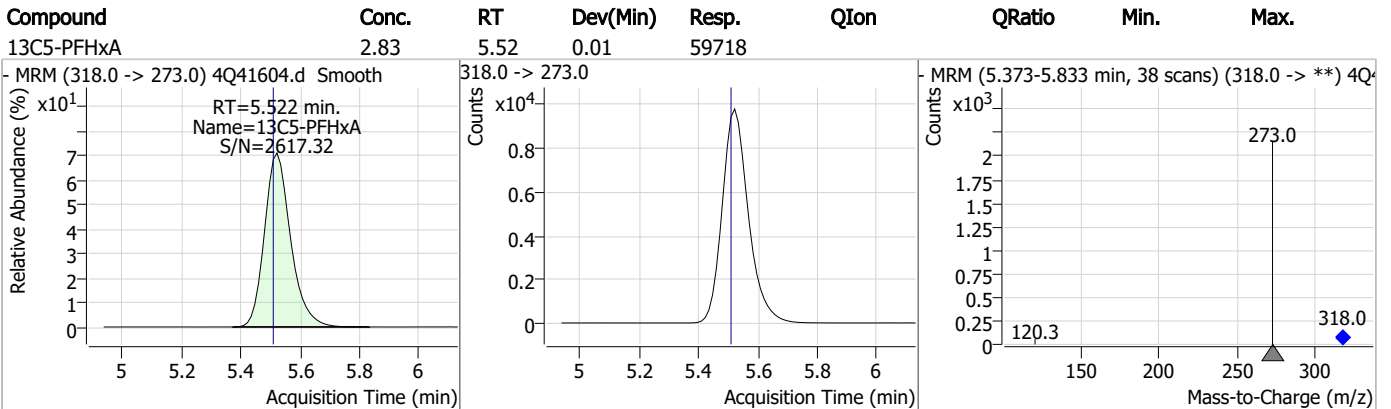
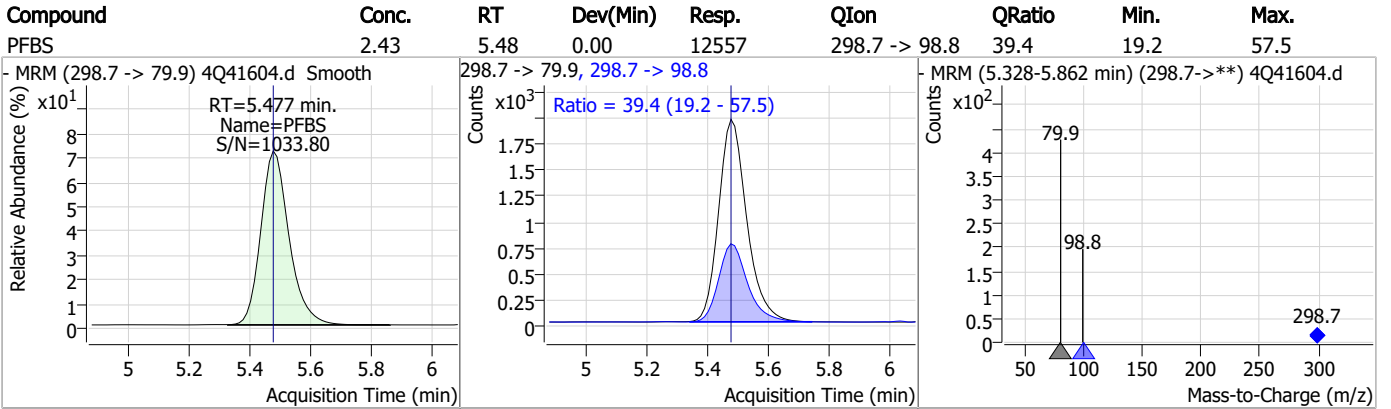


Perfluorinated Compounds by LC/MS/MS



7.4.2
7

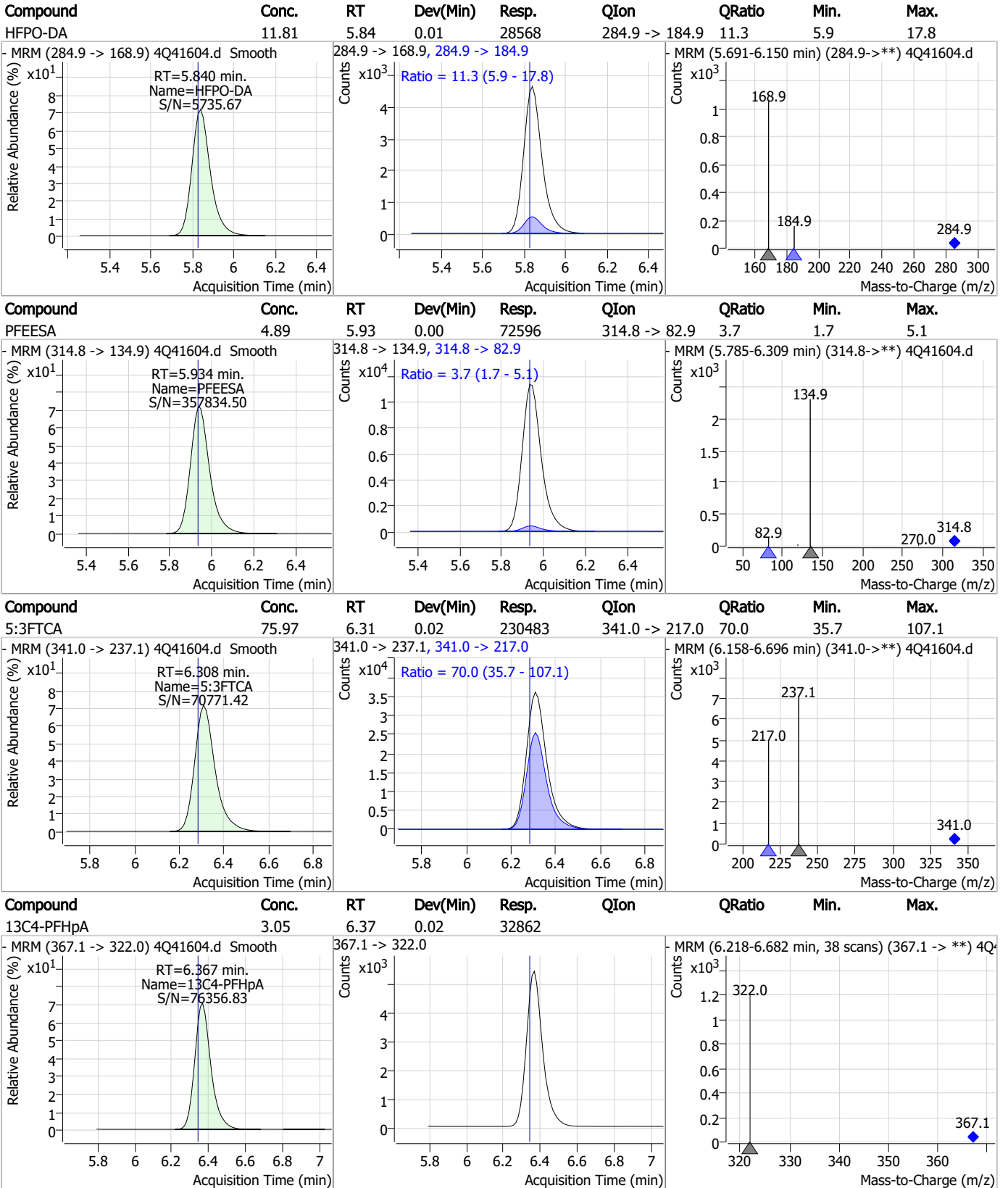
Perfluorinated Compounds by LC/MS/MS



7.4.2

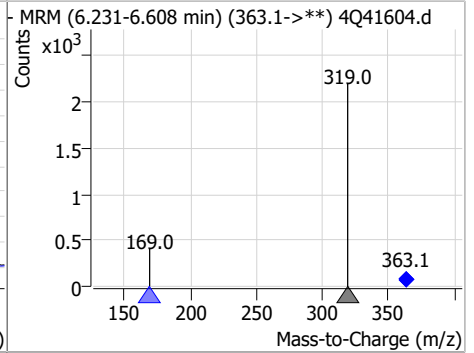
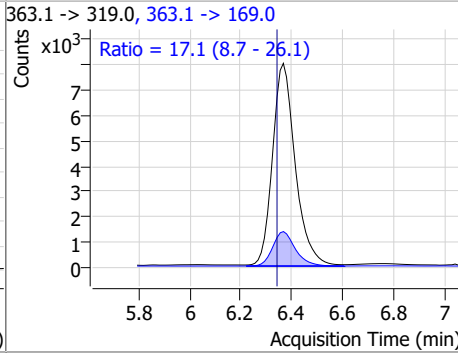
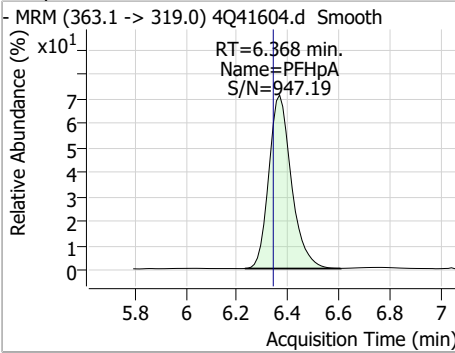
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Perfluorinated Compounds by LC/MS/MS

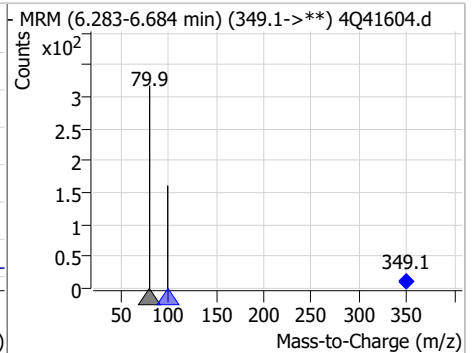
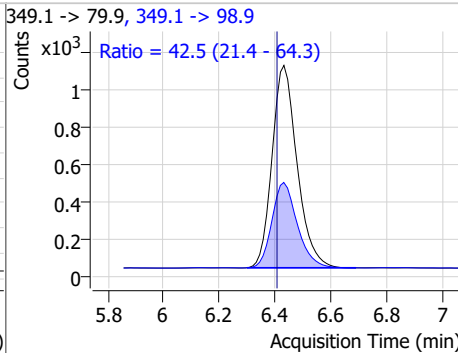
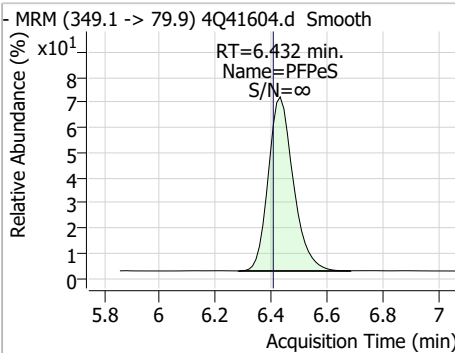


Perfluorinated Compounds by LC/MS/MS

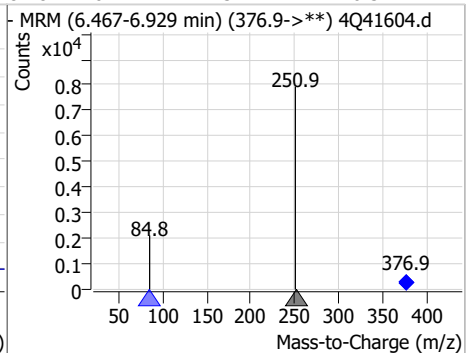
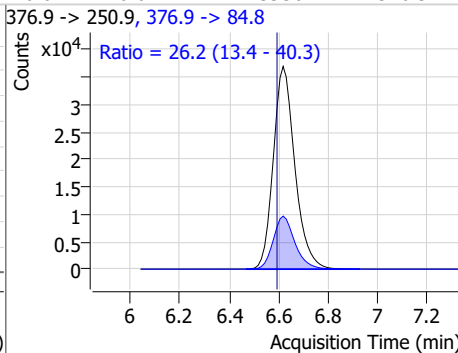
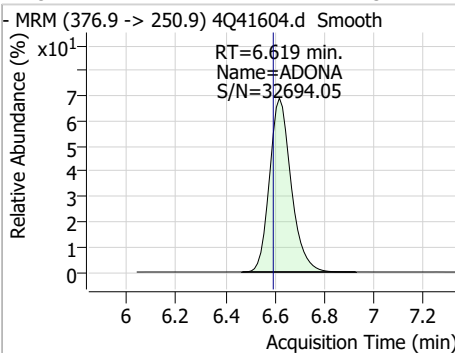
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	2.82	6.37	0.02	49036	363.1 -> 169.0	17.1	8.7	26.1



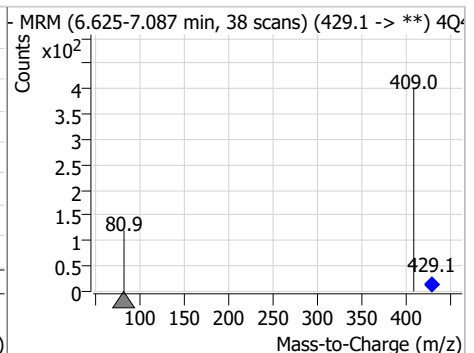
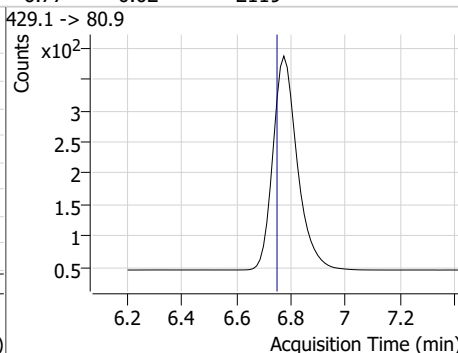
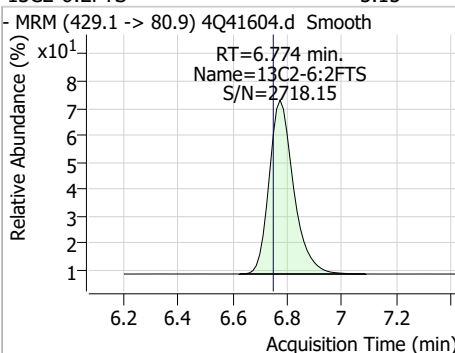
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.71	6.43	0.02	6802	349.1 -> 98.9	42.5	21.4	64.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	13.17	6.62	0.02	223930	376.9 -> 84.8	26.2	13.4	40.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	5.15	6.77	0.02	2119	429.1 -> 80.9			

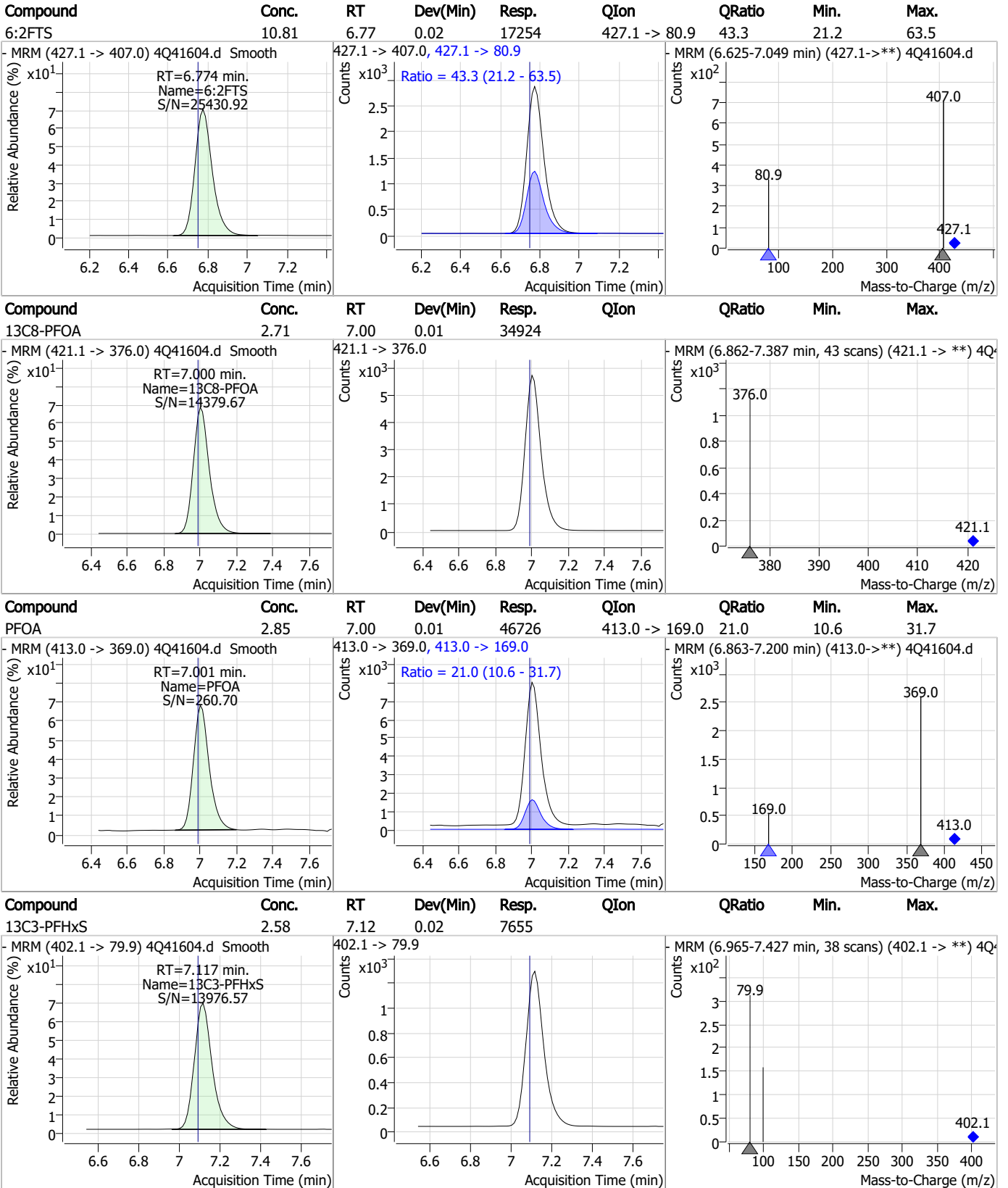


7.4.2

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Perfluorinated Compounds by LC/MS/MS

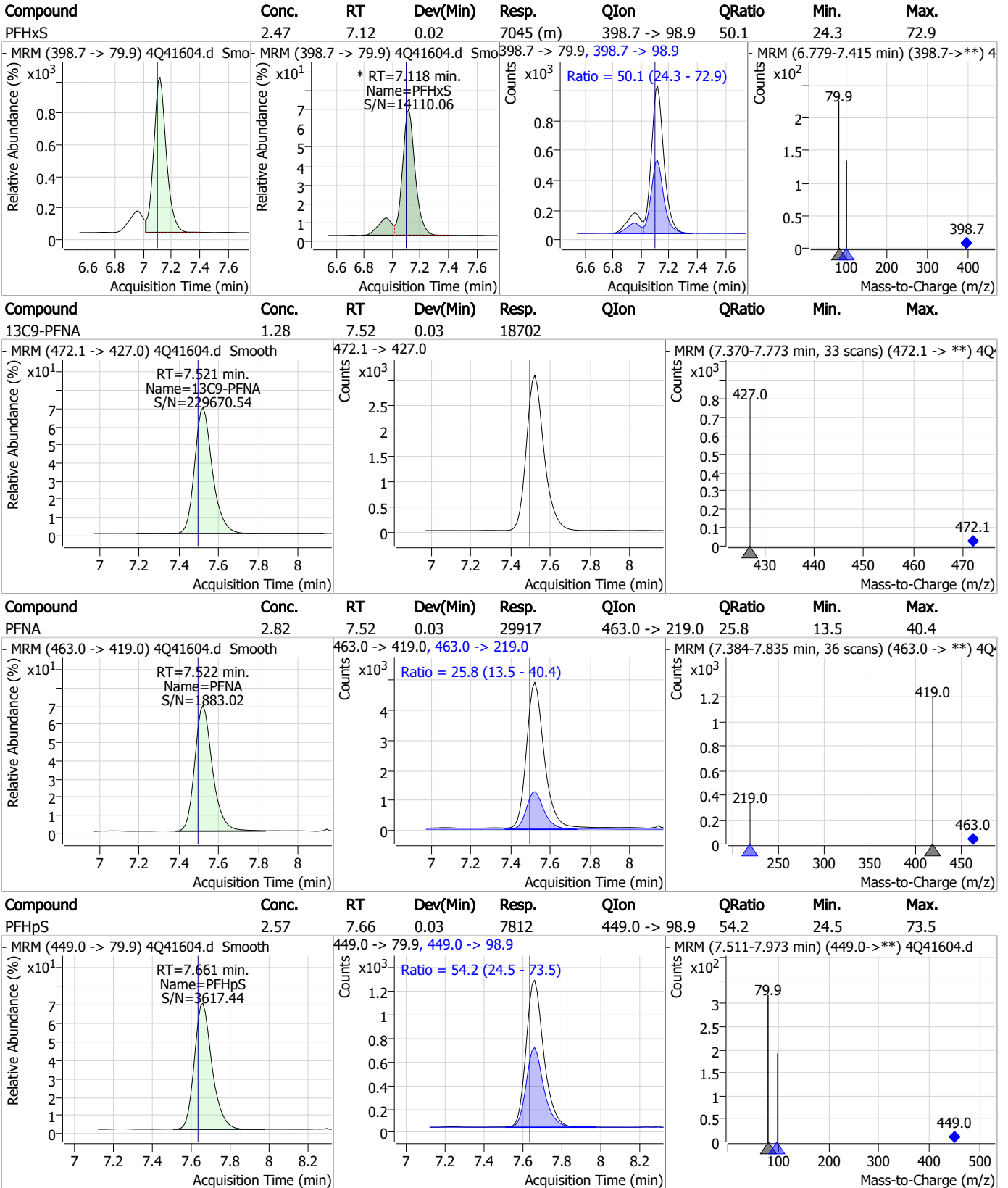


7.4.2

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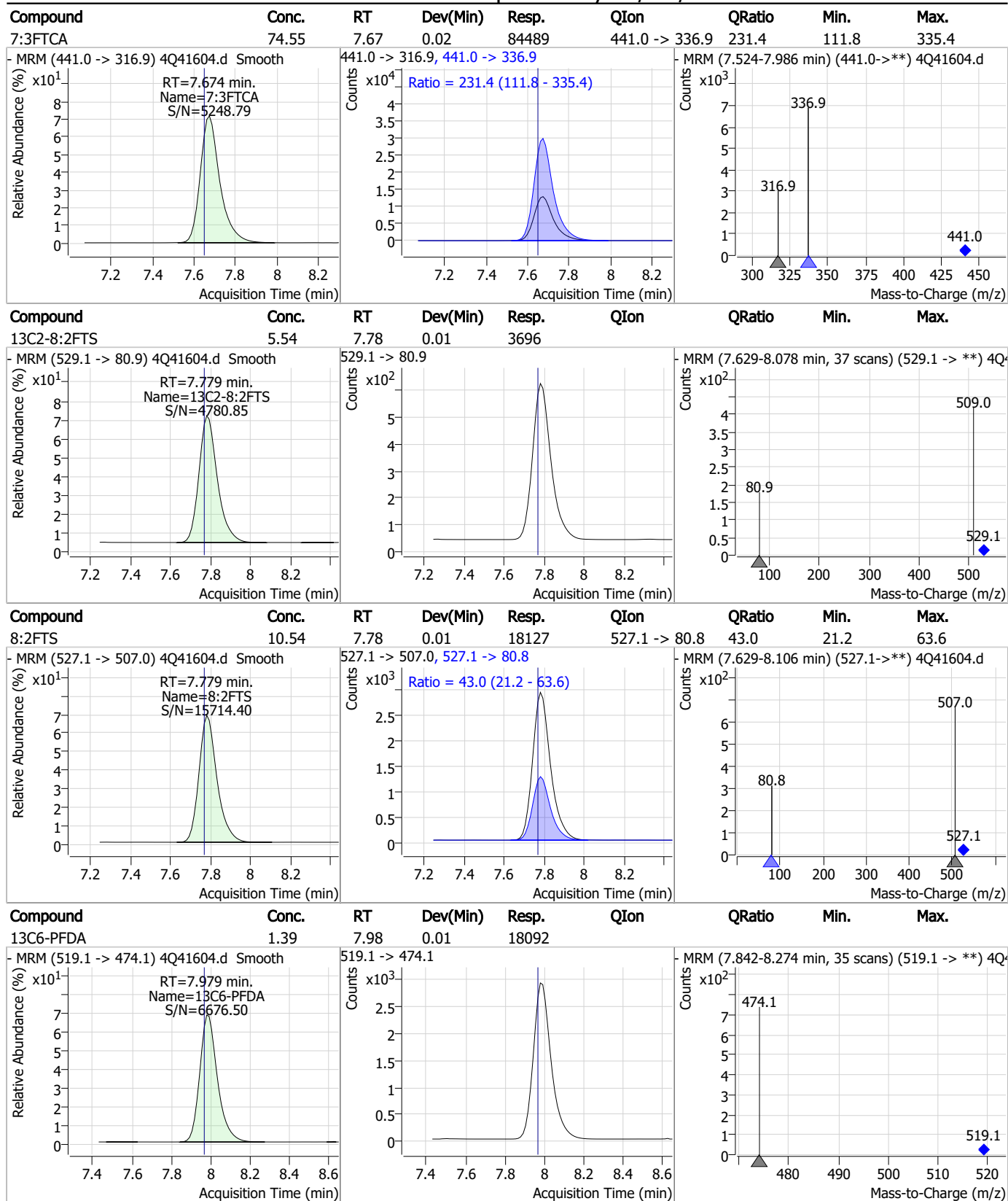
Perfluorinated Compounds by LC/MS/MS



7.4.2

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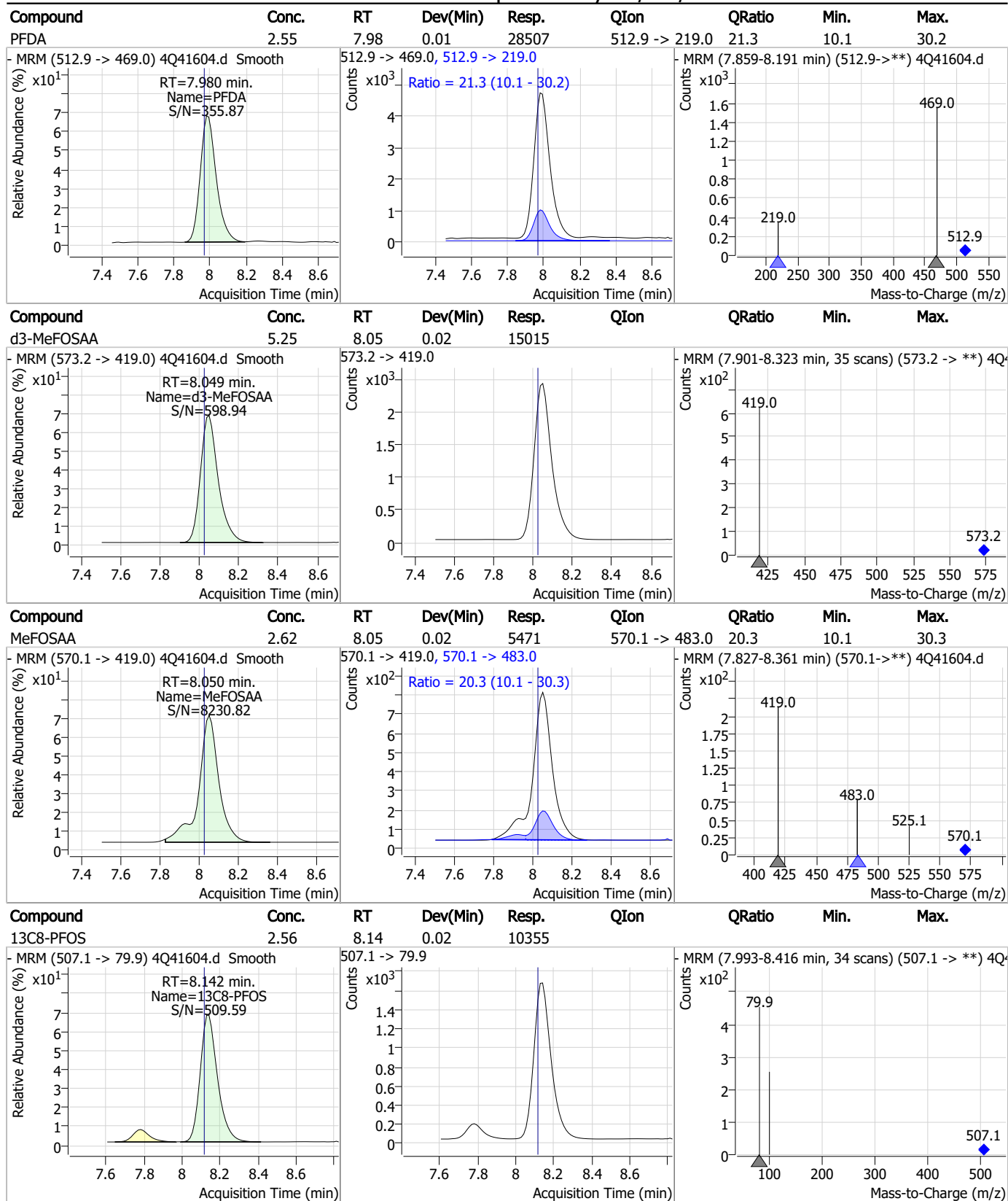
Perfluorinated Compounds by LC/MS/MS



7.4.2

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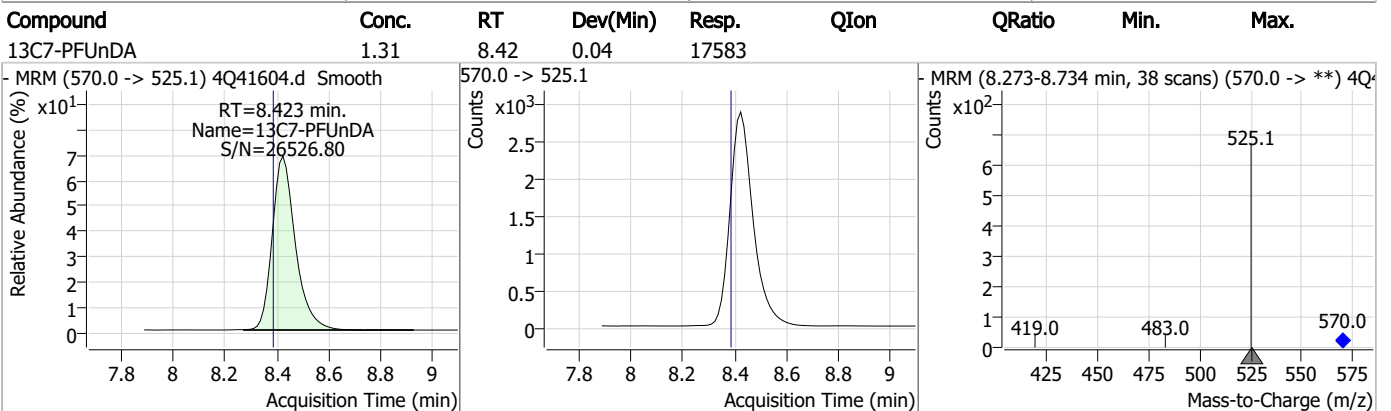
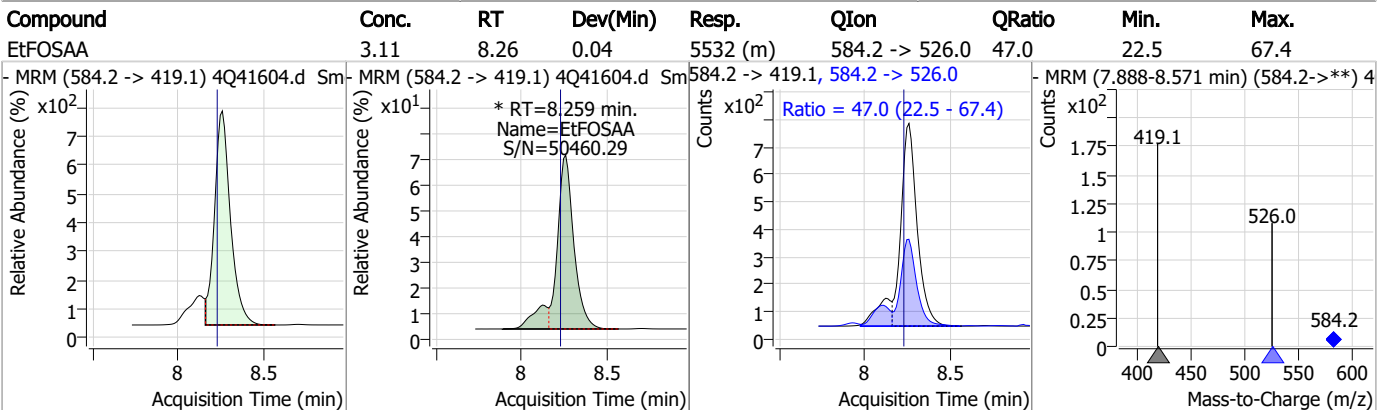
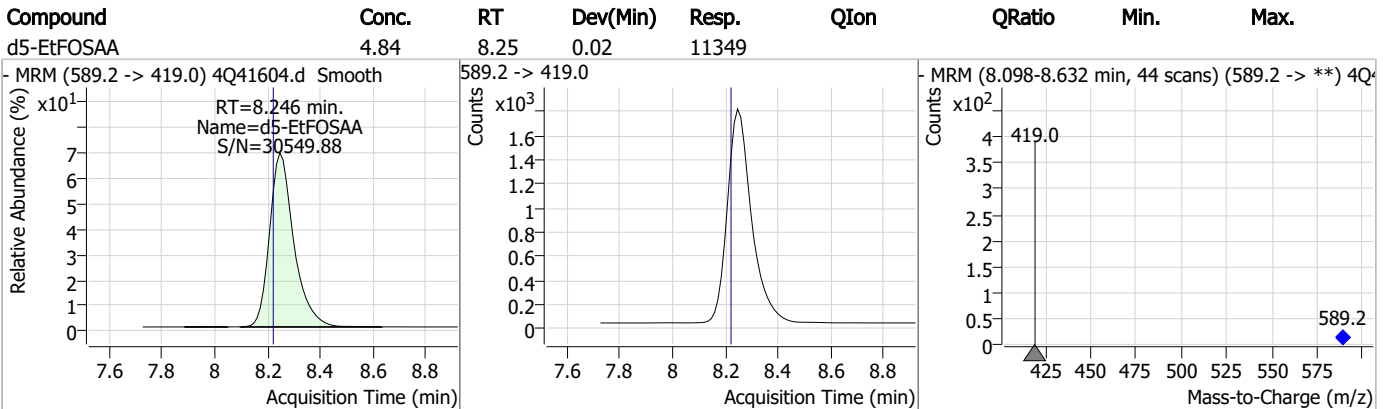
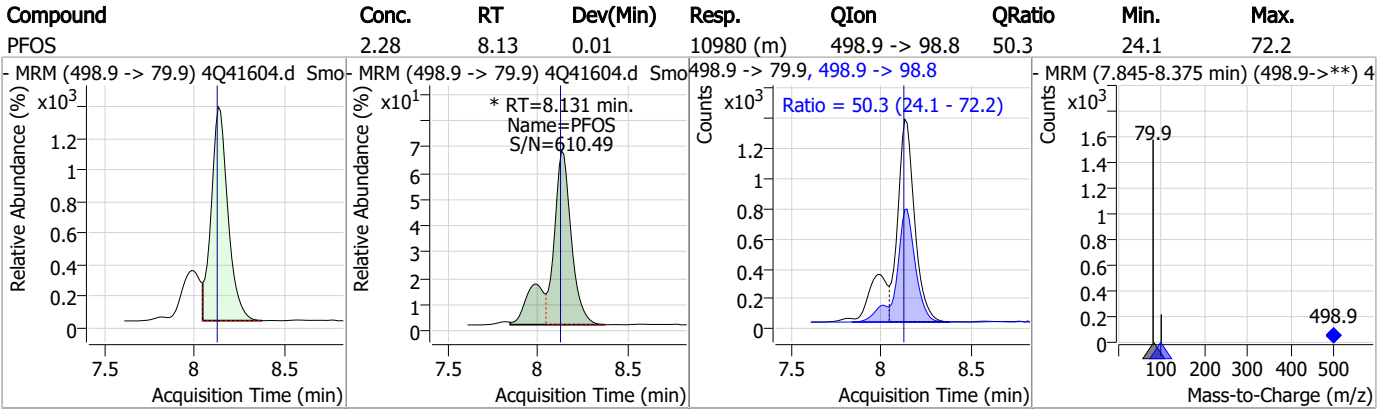
Perfluorinated Compounds by LC/MS/MS



7.4.2
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Perfluorinated Compounds by LC/MS/MS

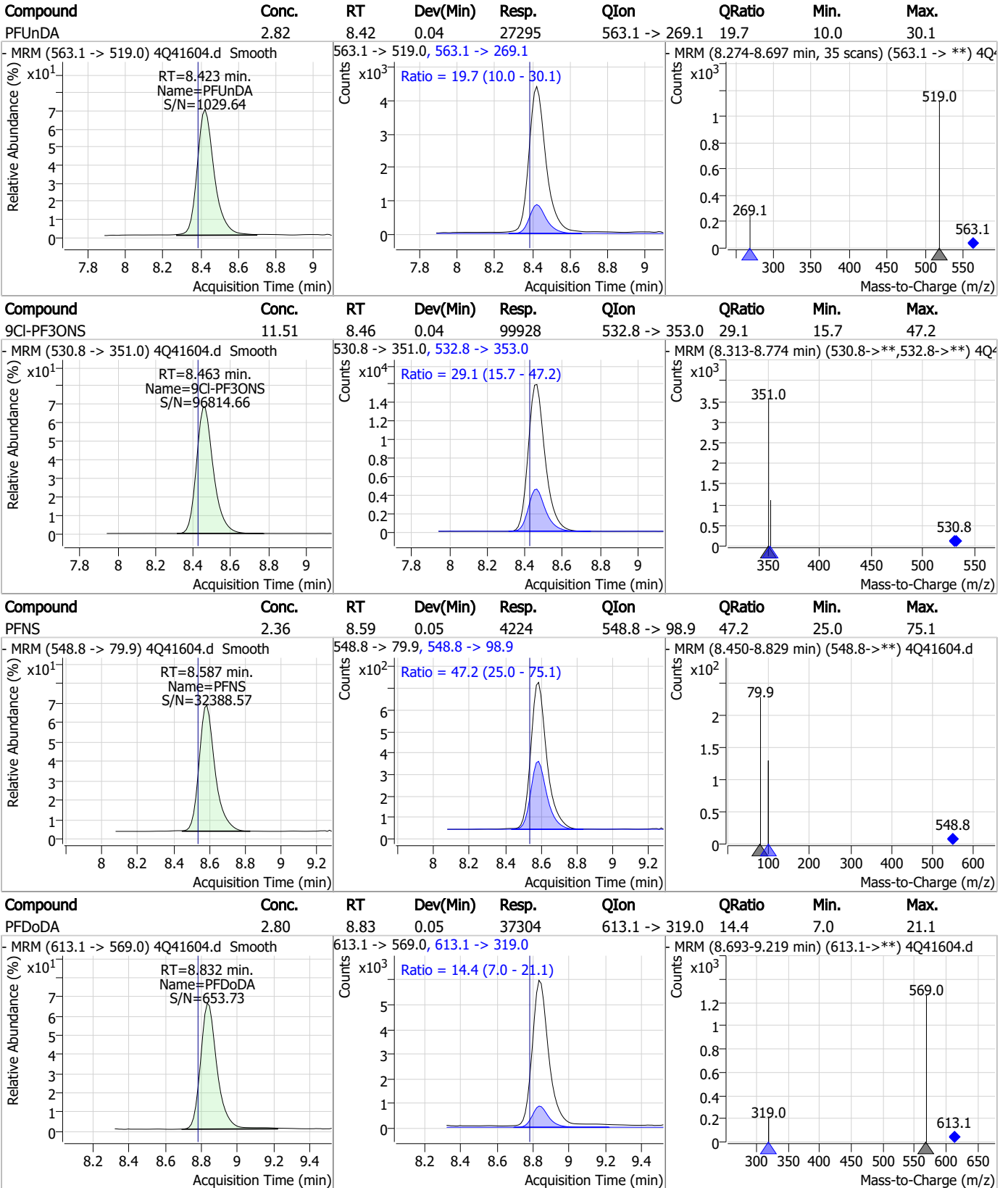


7.4.2

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Perfluorinated Compounds by LC/MS/MS

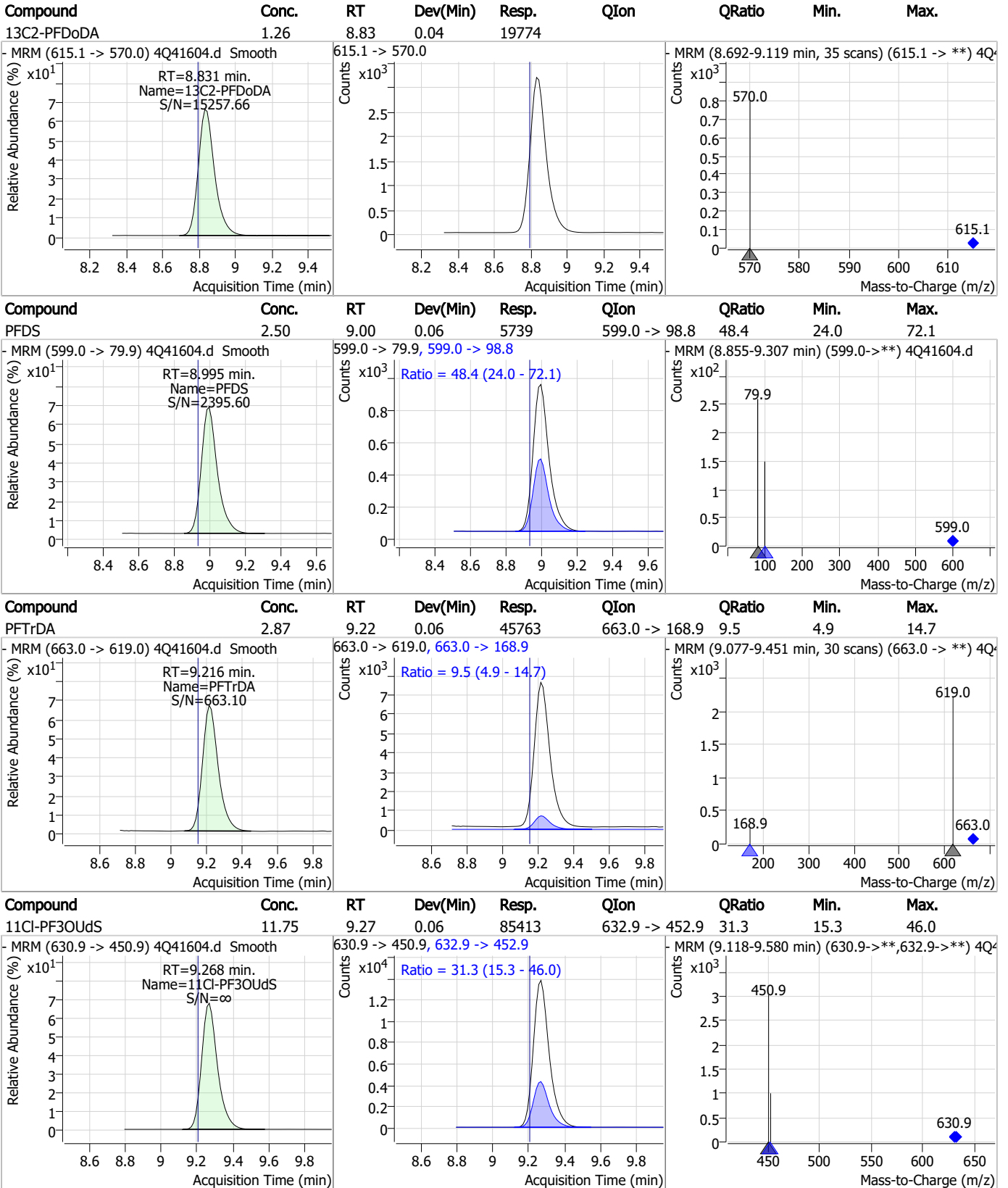


7.4.2

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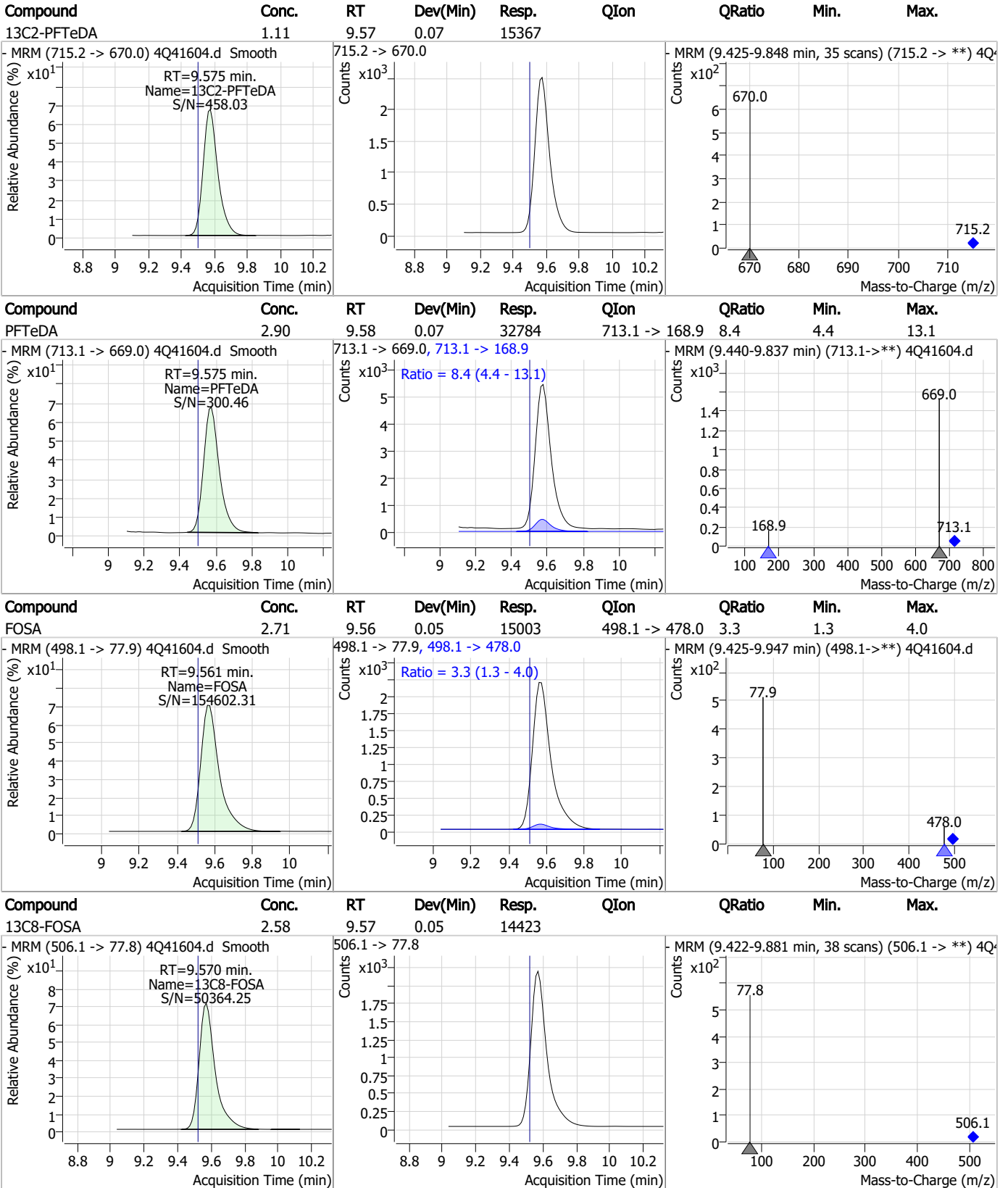
Perfluorinated Compounds by LC/MS/MS



7.4.2

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Perfluorinated Compounds by LC/MS/MS

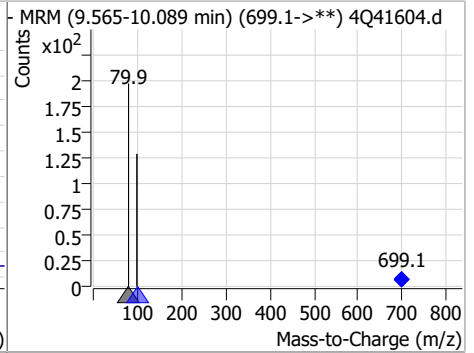
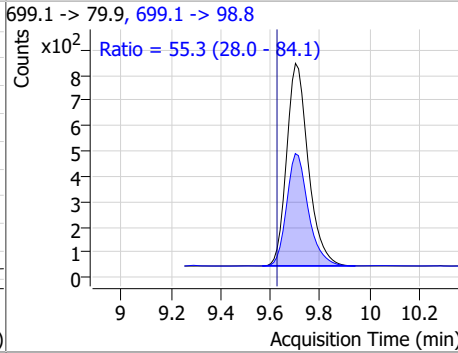
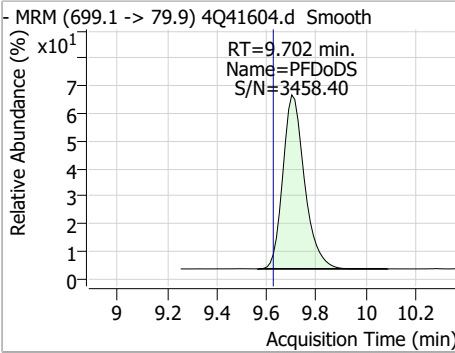


7.4.2

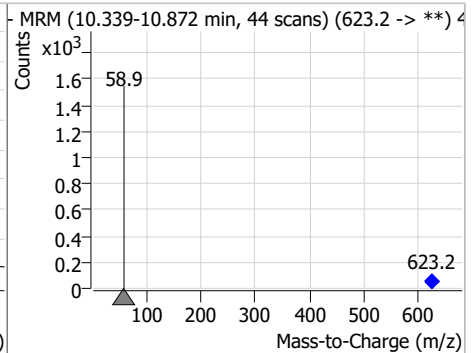
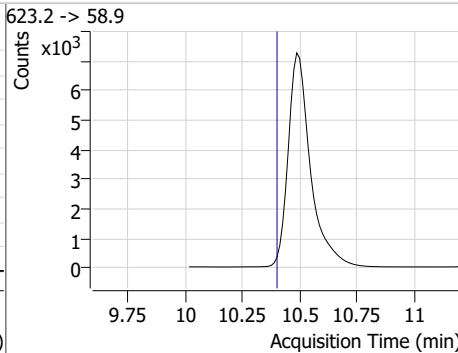
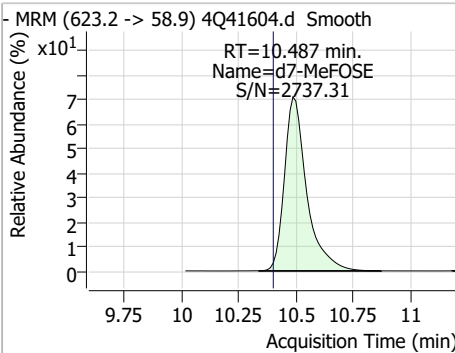
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Perfluorinated Compounds by LC/MS/MS

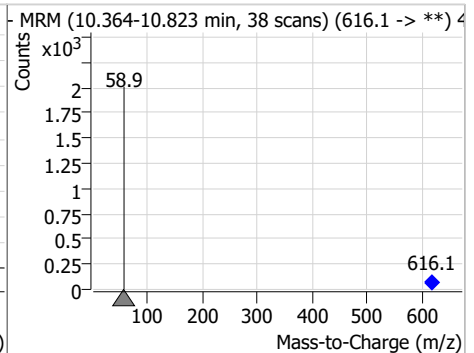
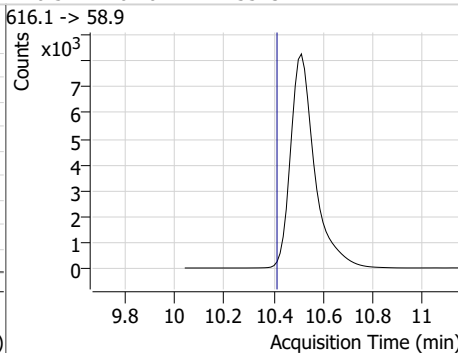
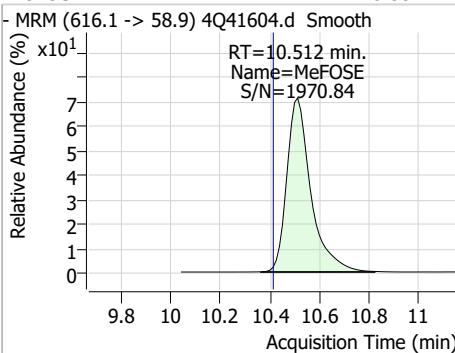
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.41	9.70	0.07	4866	699.1 -> 98.8	55.3	28.0	84.1



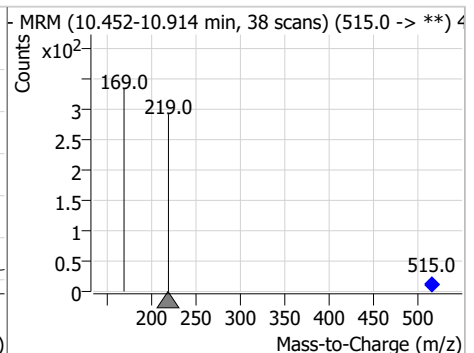
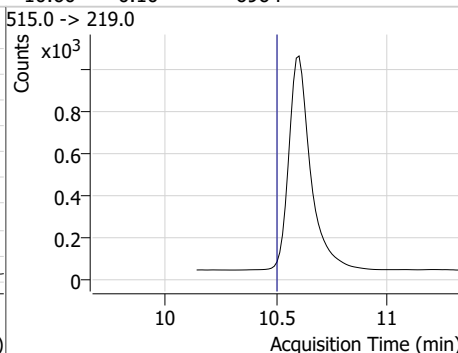
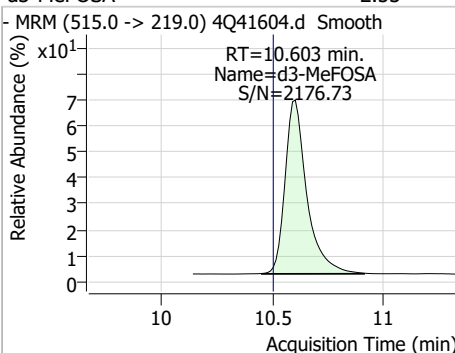
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.93	10.49	0.09	49060				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	28.33	10.51	0.10	55431				

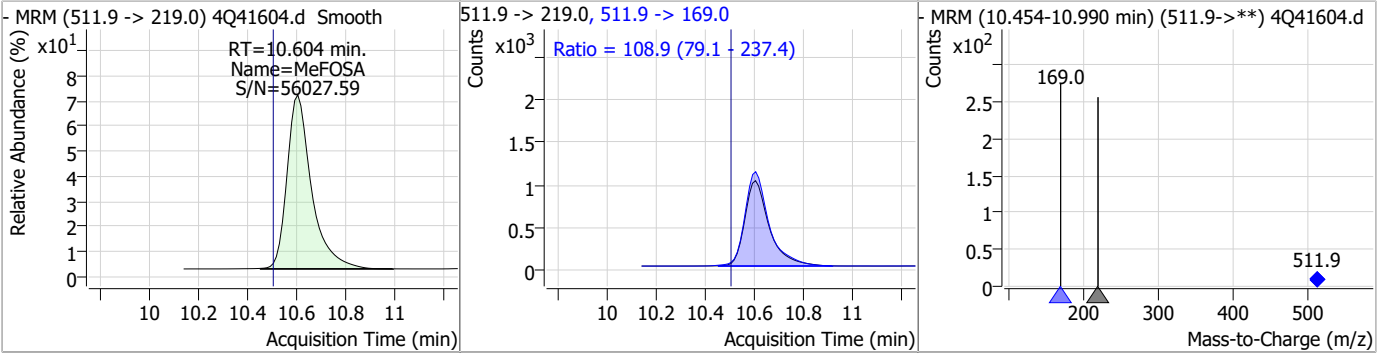


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.53	10.60	0.10	6964				

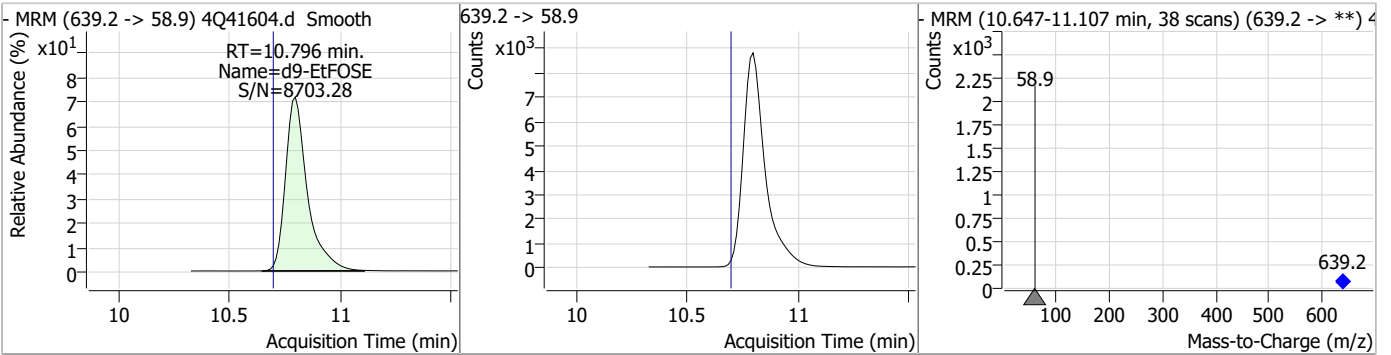


Perfluorinated Compounds by LC/MS/MS

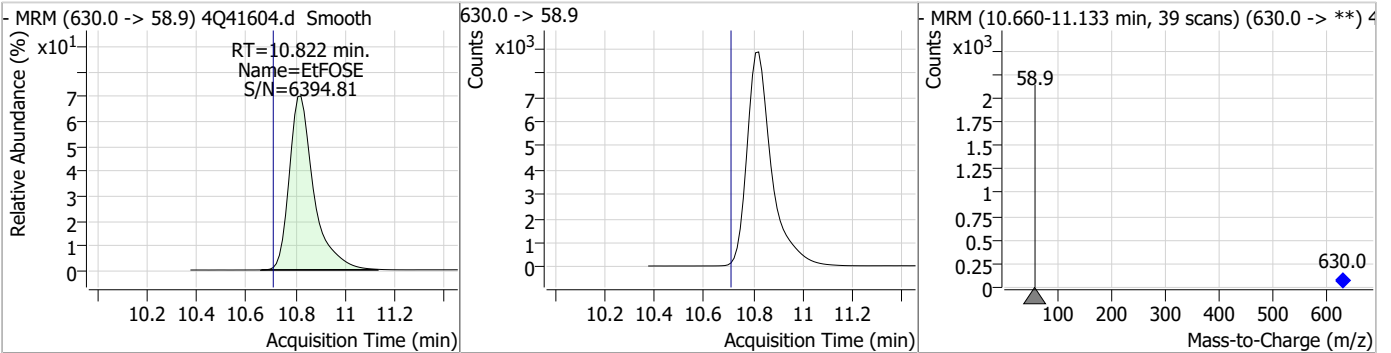
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	2.73	10.60	0.10	6950	511.9 -> 169.0	108.9	79.1	237.4



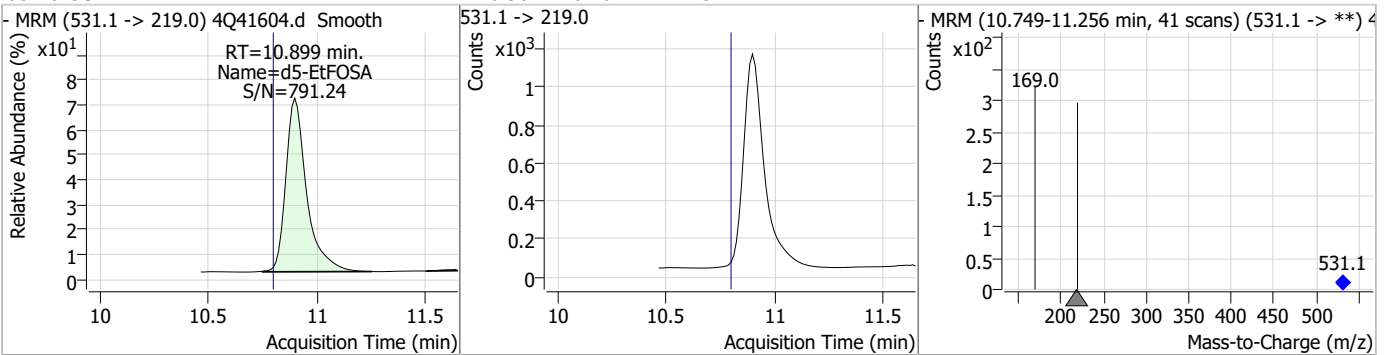
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.96	10.80	0.10	60433				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	27.99	10.82	0.11	60778				

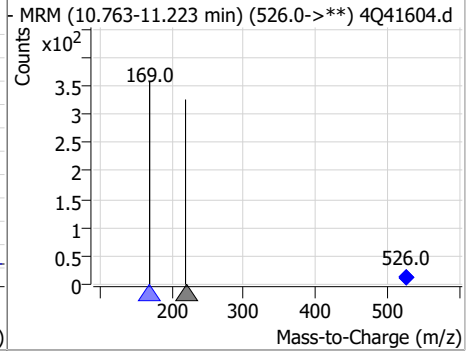
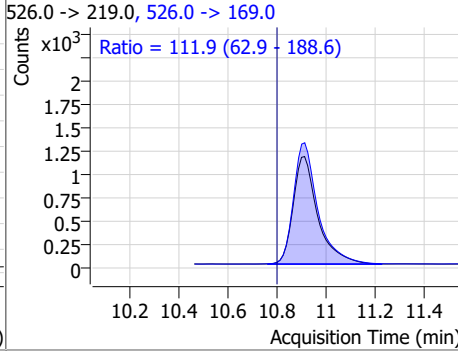
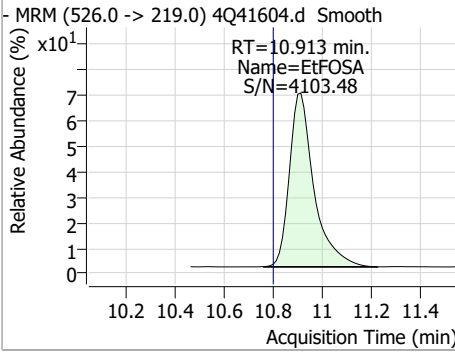


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.44	10.90	0.10	7544				



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	2.56	10.91	0.11	7929	526.0 -> 169.0	111.9	62.9	188.6



7.4.2

7

Manual Integration Approval Summary

Sample Number: OP95682-MSD Method: EPA DRAFT 1633
Lab FileID: 4Q41604.D Analyst approved: 03/03/23 15:21 Anna Ludwig
Injection Time: 03/02/23 19:31 Supervisor approved: 03/03/23 16:24 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.12	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.13	Split peak
EtFOSAA	2991-50-6		8.26	Split peak

7.4.2.1

7

Manual Integrations
APPROVED
 (compounds with "m" flag)
Norman Farmer
02/27/23 16:52

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41229.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/24/2023 3:17:29 PM
 Sample Name : RT tdca
 Vial : P1-B3
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q589_TDCA.batch.bin
 Sample Information : op95462,S4Q589,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)	QValue
Internal Standards						
M8-PFOS	8.267	507.1 -> 79.9	13607	2.50 µg/L	0.000	
13C4-PFOS	8.267	502.8 -> 79.9	13918	2.50 µg/L	0.000	
System Monitoring Compounds						
13C8-PFOS	8.267	507.1 -> 79.9	13607	2.48 µg/L	0.000	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.2%			
Target Compounds						
PFOS	8.268	498.9 -> 79.9 498.9 -> 98.8	14455 6809	3.11 µg/L	m	94
TCDCa	6.623	498.9 -> 79.9	5165	8.23 ng/ml		100
TDCA	6.785	498.9 -> 79.9	6126	10.77 ng/ml		100
TUDCA	5.792	498.9 -> 79.9	8510	7.05 ng/ml		100

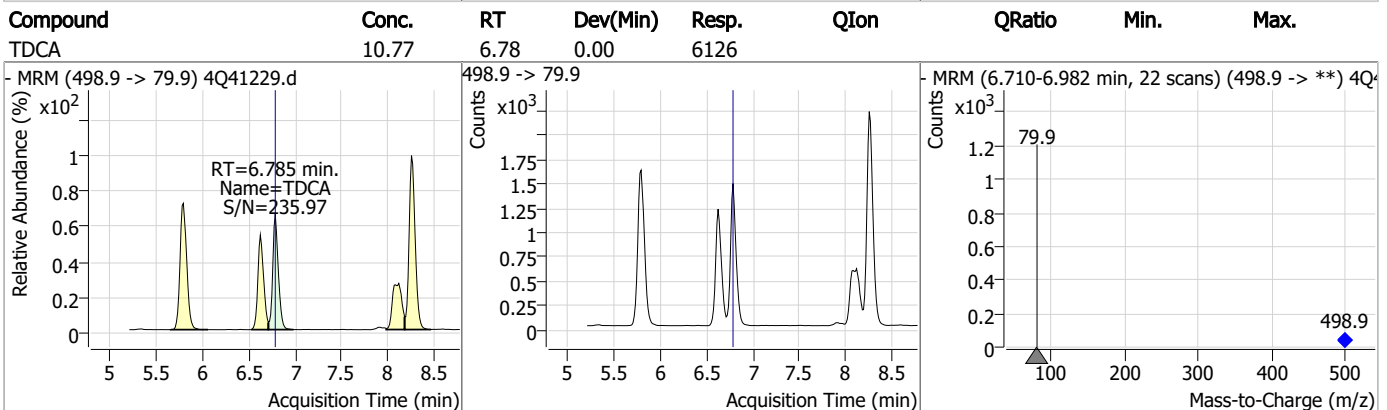
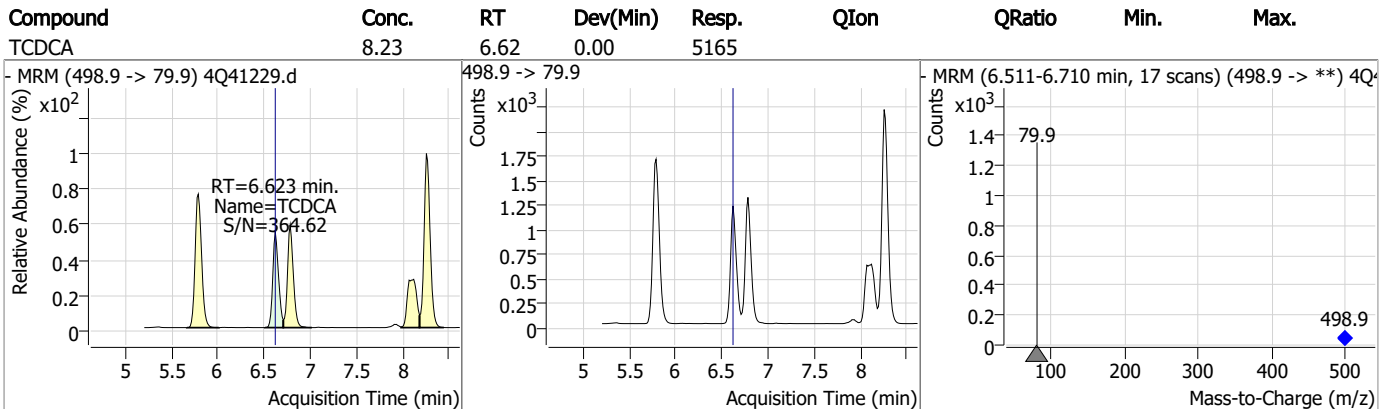
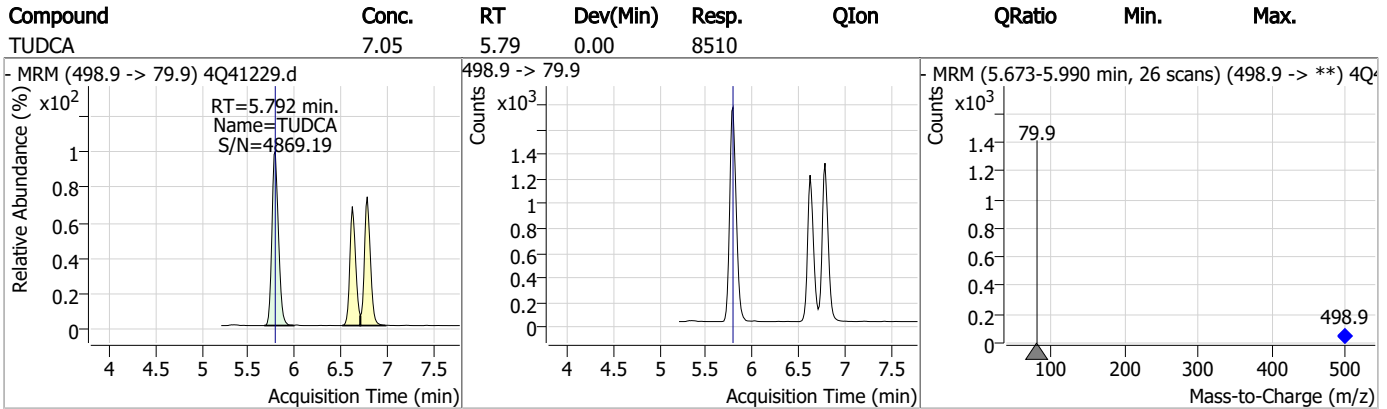
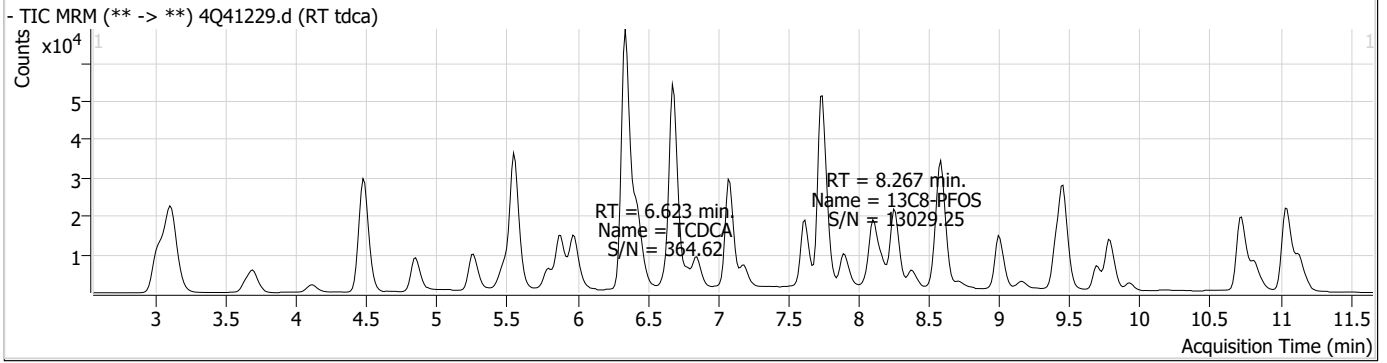
= Qualifier out of range, m = manually integrated, + = Area summed

7.5.1

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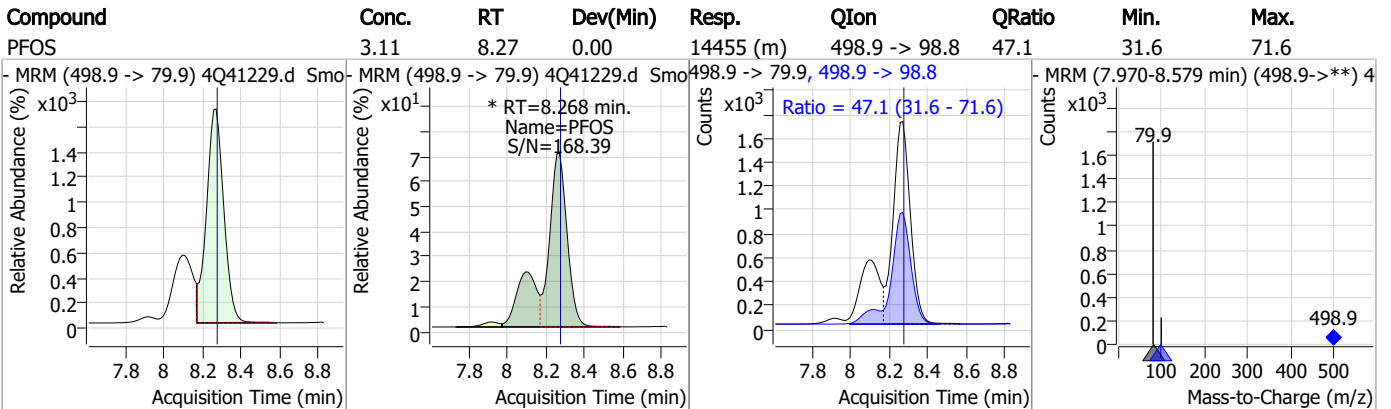
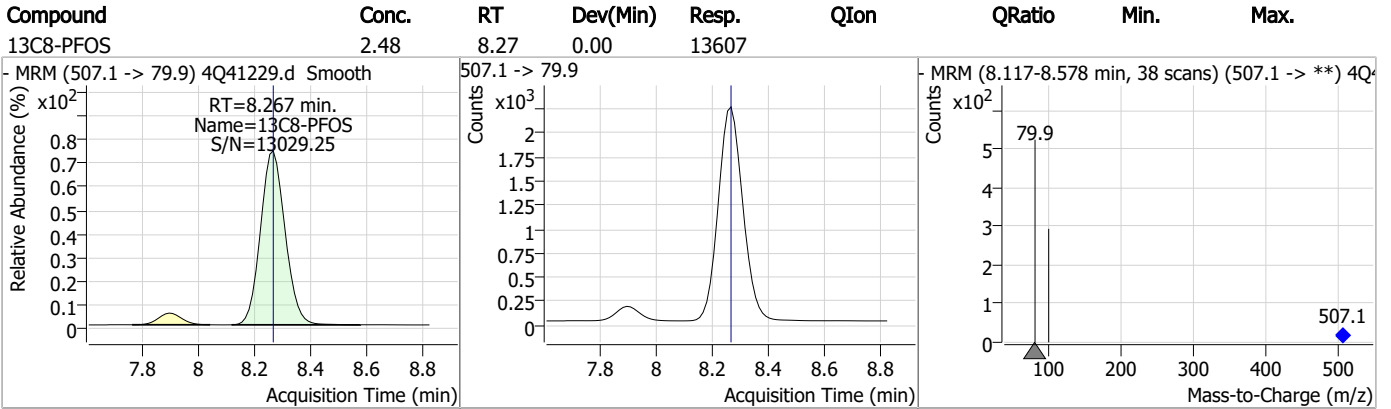
Perfluorinated Compounds by LC/MS/MS



7.5.1

7

Perfluorinated Compounds by LC/MS/MS



7.5.1
7



Manual Integration Approval Summary

Sample Number: S4Q589-RT Method: EPA DRAFT 1633
Lab FileID: 4Q41229.D Analyst approved: 02/27/23 14:05 Anna Ludwig
Injection Time: 02/24/23 15:17 Supervisor approved: 02/27/23 16:52 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.27	Split peak

7.5.1.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41230.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/24/2023 3:31:30 PM
 Sample Name : RT_br_ln
 Vial : P1-B4
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q589.batch.bin
 Sample Information : op95462,S4Q589,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.086	216.8 -> 171.9	108468	10.00 µg/L	-0.013
M5-PFPeA	4.475	268.3 -> 223.0	71044	5.00 µg/L	-0.012
M5-PFHxA	5.546	318.0 -> 273.0	54132	2.50 µg/L	-0.012
M4-PFHpA	6.429	367.1 -> 322.0	28548	2.50 µg/L	-0.014
M8-PFOA	7.088	421.1 -> 376.0	31658	2.50 µg/L	0.000
M9-PFNA	7.634	472.1 -> 427.0	18393	1.25 µg/L	0.000
M6-PFDA	8.116	519.1 -> 474.1	17199	1.25 µg/L	0.000
M7-PFUnDA	8.585	570.0 -> 525.1	17502	1.25 µg/L	0.000
M2-PFDoDA	9.017	615.1 -> 570.0	20795	1.25 µg/L	0.000
M2-PFTeDA	9.786	715.2 -> 670.0	18161	1.25 µg/L	-0.012
M8-FOSA	9.720	506.1 -> 77.8	13863	2.50 µg/L	0.000
M3-PFBS	5.489	302.1 -> 79.9	12090	2.50 µg/L	0.000
M3-PFHxS	7.204	402.1 -> 79.9	7077	2.50 µg/L	0.000
M8-PFOS	8.279	507.1 -> 79.9	10635	2.50 µg/L	0.000
M2-4:2FTS	5.247	329.1 -> 80.9	1434	5.00 µg/L	-0.012
M2-6:2FTS	6.860	429.1 -> 80.9	1703	5.00 µg/L	0.000
M2-8:2FTS	7.904	529.1 -> 80.9	3454	5.00 µg/L	-0.012
M3-MeFOSAA	8.185	573.2 -> 419.0	13766	5.00 µg/L	0.000
M3-HFPO-DA	5.889	286.9 -> 168.9	31429	10.00 µg/L	0.000
M5-EtFOSAA	8.396	589.2 -> 419.0	11811	5.00 µg/L	0.000
M7-MeFOSE	10.710	623.2 -> 58.9	49033	25.00 µg/L	0.000
M9-EtFOSE	11.020	639.2 -> 58.9	57360	25.00 µg/L	-0.012
M5-EtFOSA	11.135	531.1 -> 219.0	7873	2.50 µg/L	0.000
M3-MeFOSA	10.827	515.0 -> 219.0	6909	2.50 µg/L	0.000
13C4-PFOS	8.280	502.8 -> 79.9	9759	2.50 µg/L	0.000
13C3-PFBA	3.090	216.0 -> 172.0	63649	5.00 µg/L	-0.013
18O2-PFHxS	7.203	403.0 -> 83.9	5350	2.50 µg/L	0.000
13C4-PFOA	7.089	417.1 -> 372.0	38832	2.50 µg/L	0.000
13C2-PFDA	8.116	515.1 -> 470.1	15204	1.25 µg/L	-0.012
13C5-PFNA	7.634	468.0 -> 423.0	20627	1.25 µg/L	0.000
13C2-PFHxA	5.547	315.1 -> 270.0	48828	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.247	329.1 -> 80.9	1434	4.60 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.0%		
13C2-6:2FTS	6.860	429.1 -> 80.9	1703	4.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 81.4%		
13C2-8:2FTS	7.904	529.1 -> 80.9	3454	5.10 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C2-PFDoDA	9.017	615.1 -> 570.0	20795	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C2-PFTeDA	9.786	715.2 -> 670.0	18161	1.27 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C3-PFBS	5.489	302.1 -> 79.9	12090	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.2%		
13C3-PFHxS	7.204	402.1 -> 79.9	7077	2.34 µg/L	0.000

7.52
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.7%	
13C4-PFBA	3.086	216.8 -> 171.9	108468	9.89 µg/L	-0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C4-PFHpA	6.429	367.1 -> 322.0	28548	2.62 µg/L	-0.014
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.6%	
13C5-PFHxA	5.546	318.0 -> 273.0	54132	2.54 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C5-PFPeA	4.475	268.3 -> 223.0	71044	5.18 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C6-PFDA	8.116	519.1 -> 474.1	17199	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C7-PFUnDA	8.585	570.0 -> 525.1	17502	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C8-FOSA	9.720	506.1 -> 77.8	13863	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C8-PFOA	7.088	421.1 -> 376.0	31658	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C8-PFOS	8.279	507.1 -> 79.9	10635	2.71 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.5%	
13C9-PFNA	7.634	472.1 -> 427.0	18393	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.2%	
d3-MeFOSAA	8.185	573.2 -> 419.0	13766	4.97 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C3-HFPO-DA	5.889	286.9 -> 168.9	31429	10.44 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 104.4%	
d3-MeFOSA	10.827	515.0 -> 219.0	6909	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.7%	
d5-EtFOSAA	8.396	589.2 -> 419.0	11811	5.20 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.0%	
d7-MeFOSE	10.710	623.2 -> 58.9	49033	25.74 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.0%	
d9-EtFOSE	11.020	639.2 -> 58.9	57360	25.46 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.8%	
d5-EtFOSA	11.135	531.1 -> 219.0	7873	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.2%	
Target Compounds					QValue
4:2FTS	5.248	327.1 -> 307.0	89016	46.62 µg/L	100
		327.1 -> 80.9	38998		
6:2FTS	6.861	427.1 -> 407.0	67862	52.87 µg/L	100
		427.1 -> 80.9	29462		
8:2FTS	7.904	527.1 -> 507.0	74493	46.33 µg/L	97
		527.1 -> 80.8	32034		
EtFOSAA	8.397	584.2 -> 419.1	22858	12.35 µg/L	m 80
		584.2 -> 526.0	11497		
FOSA	9.711	498.1 -> 77.9	163422	30.75 µg/L	m 100
		498.1 -> 478.0	4238		
MeFOSAA	8.186	570.1 -> 419.0	26026	13.57 µg/L	m 98
		570.1 -> 483.0	5001		
PFBA	3.082	212.8 -> 168.9	133975	52.24 µg/L	100
PFBS	5.490	298.7 -> 79.9	55651	11.55 µg/L	99
		298.7 -> 98.8	20623		
PFDA	8.116	512.9 -> 469.0	138222	13.03 µg/L	99
		512.9 -> 219.0	26690		
PFDoDA	9.018	613.1 -> 569.0	179144	12.76 µg/L	100
		613.1 -> 319.0	25290		
PFDS	9.184	599.0 -> 79.9	27864	11.82 µg/L	94

7.5.2
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.430	599.0 -> 98.8	13460	13.11	µg/L	100
		363.1 -> 319.0	197957			
PFHpS	7.774	363.1 -> 169.0	34133	11.38	µg/L	99
		449.0 -> 79.9	35546			
PFHxA	5.549	449.0 -> 98.9	18068	12.11	µg/L	100
		313.0 -> 269.0	230305			
PFHxS	7.205	313.0 -> 118.9	7189	11.48	µg/L	m
		398.7 -> 79.9	30218			
PFNA	7.497	398.7 -> 98.9	15484	26.15	µg/L	m
		463.0 -> 419.0	273184			
PFNS	8.749	463.0 -> 219.0	73545	11.51	µg/L	95
		548.8 -> 79.9	21162			
PFOA	7.090	548.8 -> 98.9	10728	28.35	µg/L	m
		413.0 -> 369.0	421992			
PFOS	8.280	413.0 -> 169.0	89231	10.20	µg/L	m
		498.9 -> 79.9	50424			
PFPeA	4.477	498.9 -> 98.8	24106	25.72	µg/L	100
		263.0 -> 219.0	371962			
PFPeS	6.496	349.1 -> 79.9	27525	11.86	µg/L	99
		349.1 -> 98.9	12340			
PFTeDA	9.787	713.1 -> 669.0	184990	13.86	µg/L	99
		713.1 -> 168.9	15555			
PFTrDA	9.416	663.0 -> 619.0	222867	13.28	µg/L	100
		663.0 -> 168.9	21688			
PFUnDA	8.585	563.1 -> 519.0	121917	12.63	µg/L	100
		563.1 -> 269.1	23445			
11CI-PF3OUdS	9.468	630.9 -> 450.9	375497	48.66	µg/L	99
		632.9 -> 452.9	115137			
9CI-PF3ONS	8.612	530.8 -> 351.0	451602	49.00	µg/L	100
		532.8 -> 353.0	136056			
ADONA	6.693	376.9 -> 250.9	854228	47.31	µg/L	100
		376.9 -> 84.8	233311			
HFPO-DA	5.890	284.9 -> 168.9	131230	51.11	µg/L	98
		284.9 -> 184.9	15493			
3:3FTCA	4.117	241.0 -> 177.0	46902	62.95	µg/L	98
		241.0 -> 117.0	4603			
5:3FTCA	6.358	341.0 -> 237.1	883833	321.37	µg/L	100
		341.0 -> 217.0	636094			
7:3FTCA	7.749	441.0 -> 316.9	333395	324.52	µg/L	99
		441.0 -> 336.9	749468			
EtFOSA	11.136	526.0 -> 219.0	99721	30.82	µg/L	m
		526.0 -> 169.0	124966			
EtFOSE	11.046	630.0 -> 58.9	296956	144.06	µg/L	100
		511.9 -> 219.0	78484			
MeFOSA	10.828	511.9 -> 169.0	104918	31.09	µg/L	m
		616.1 -> 58.9	282630			
MeFOSE	10.724	699.1 -> 79.9	23720	144.53	µg/L	100
		699.1 -> 98.8	13294			
PFDoDS	9.926	295.0 -> 201.0	18160	11.44	µg/L	96
		295.0 -> 84.9	4503			
NFDHA	5.440	279.0 -> 85.1	213108	26.32	µg/L	95
		229.0 -> 84.9	186096			
PFMBA	4.854	314.8 -> 134.9	313848	25.57	µg/L	100
		314.8 -> 82.9	11440			
PFMPA	3.678			25.80	µg/L	100
PFEESA	5.983			23.33	µg/L	100

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

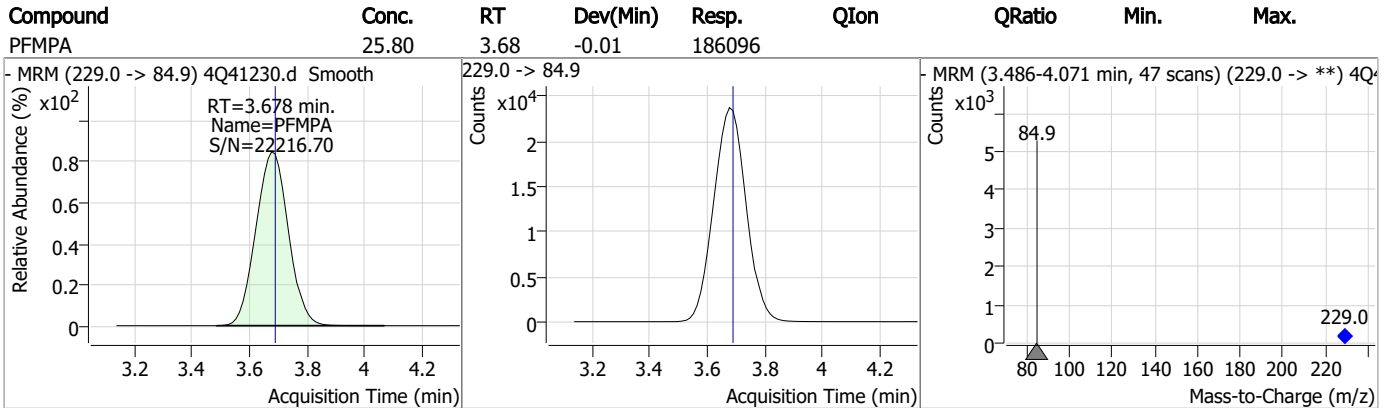
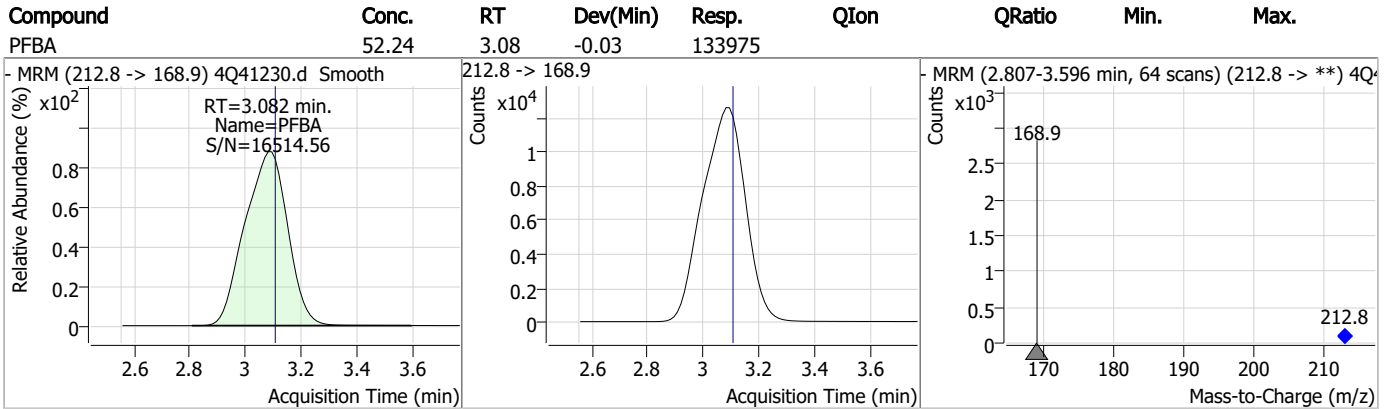
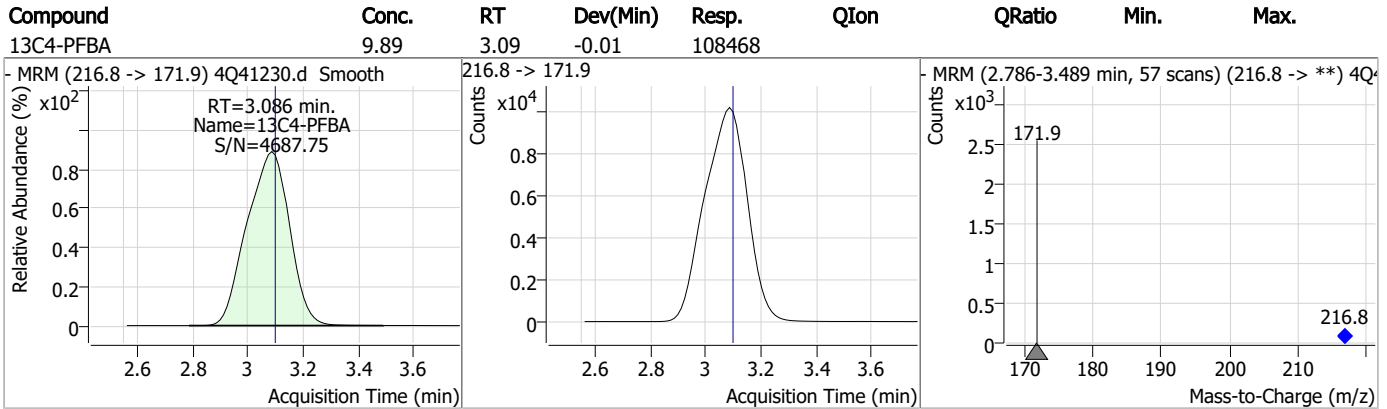
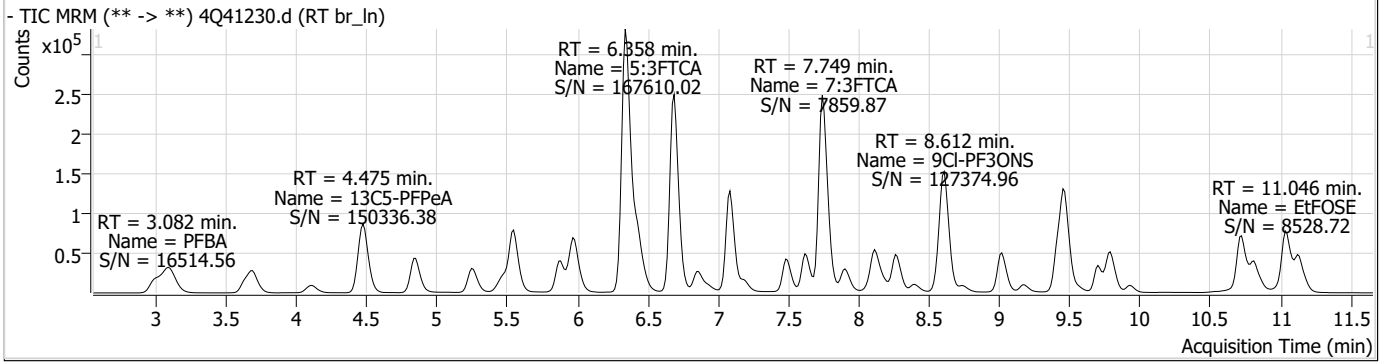
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.5.2

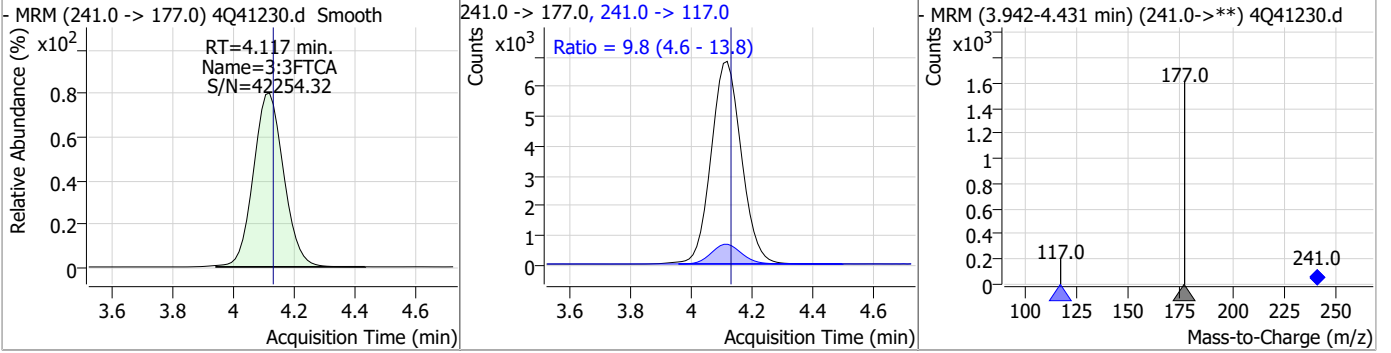
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Perfluorinated Compounds by LC/MS/MS

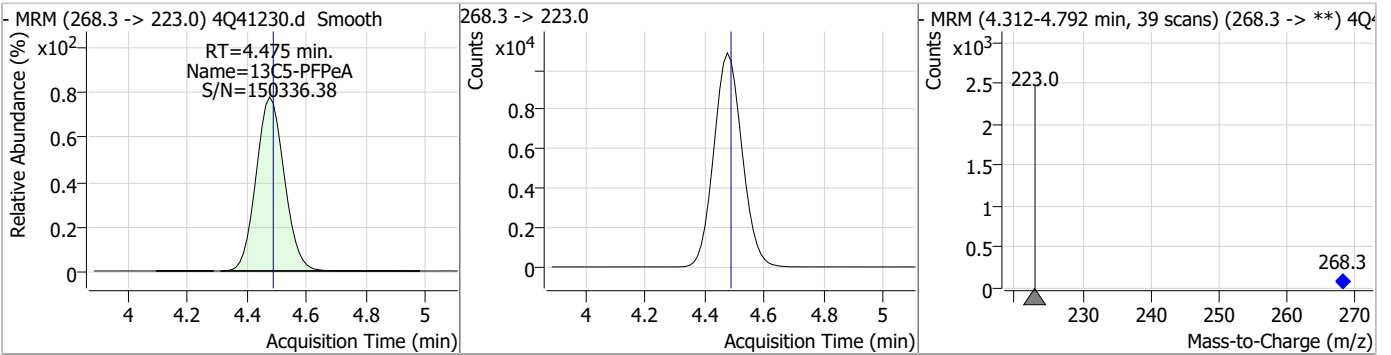


Perfluorinated Compounds by LC/MS/MS

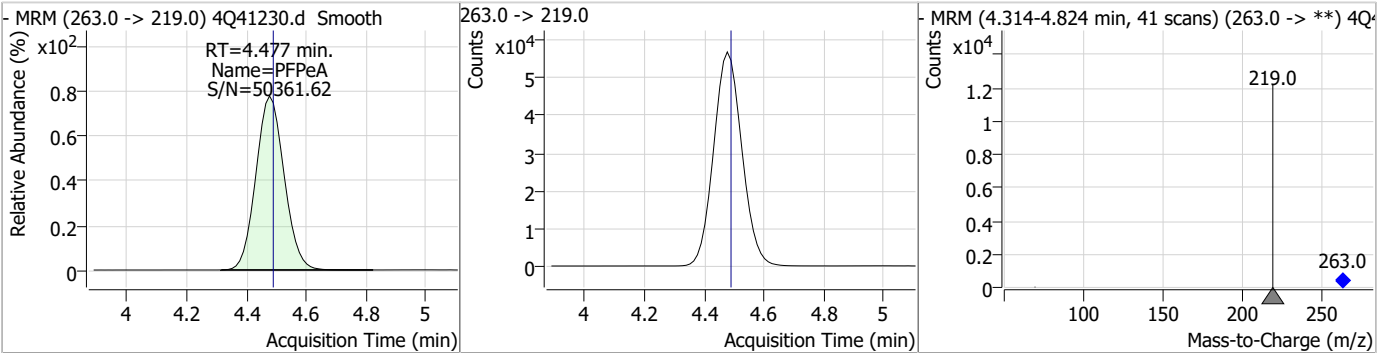
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	62.95	4.12	-0.01	46902	241.0 -> 117.0	9.8	4.6	13.8



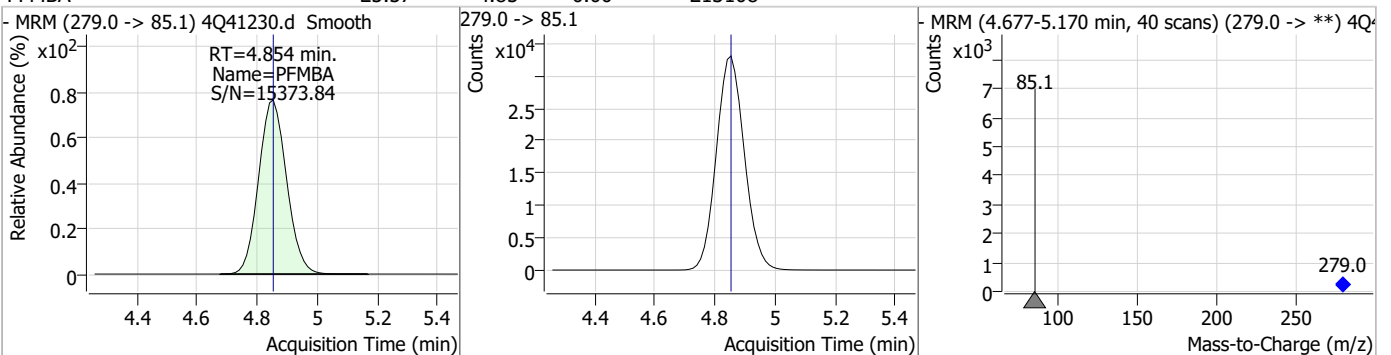
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13C5-PFPeA	5.18	4.47	-0.01	71044				



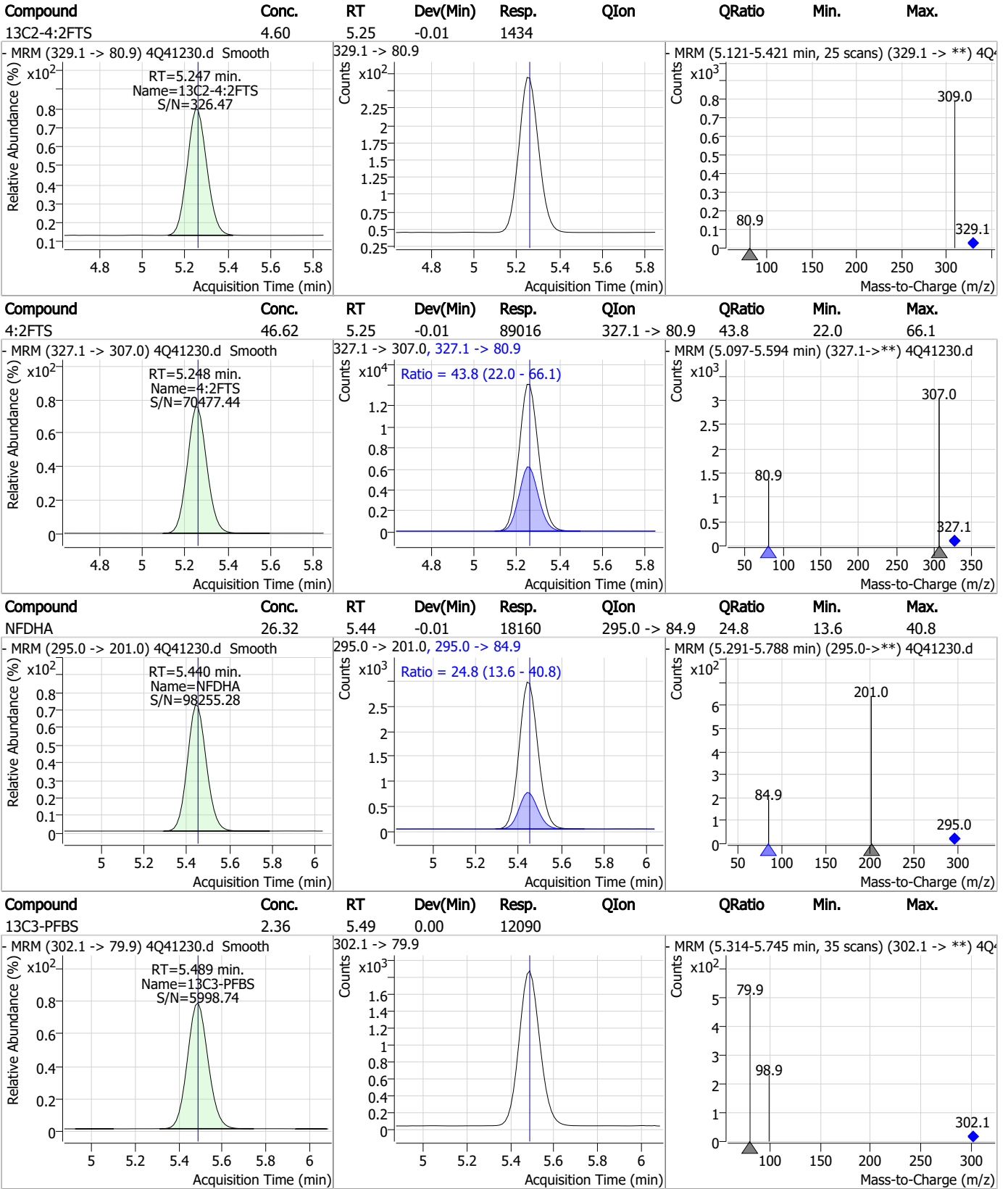
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	25.72	4.48	-0.01	371962				



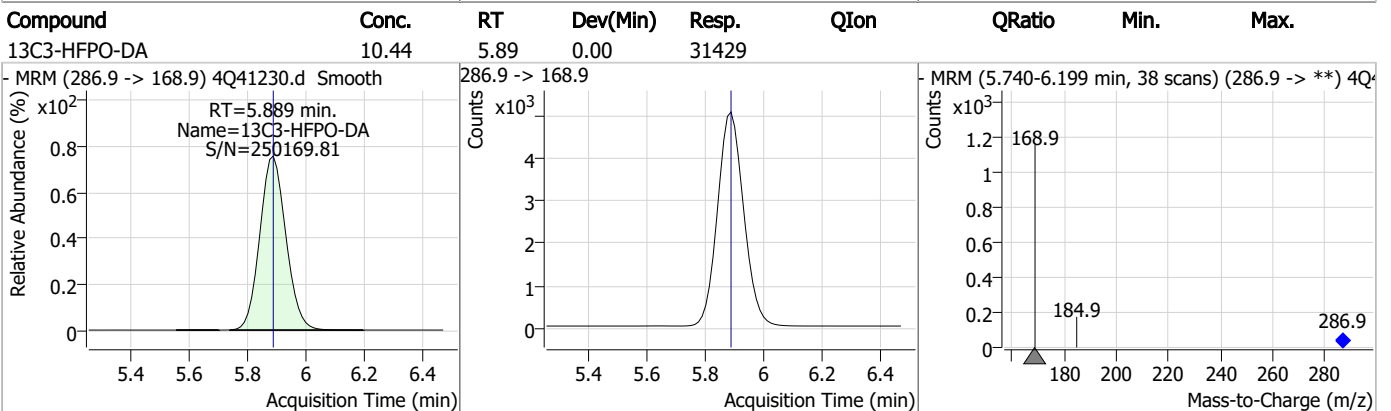
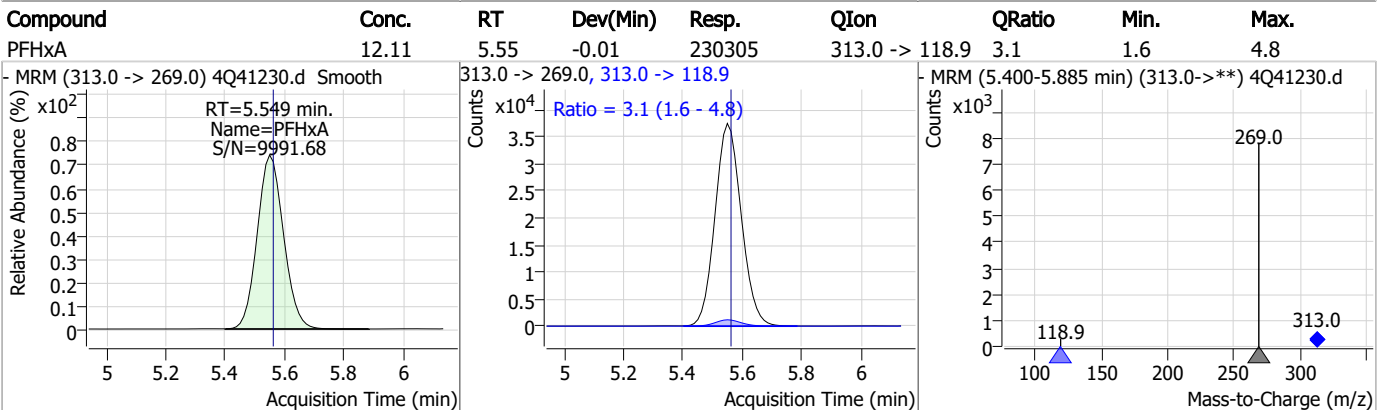
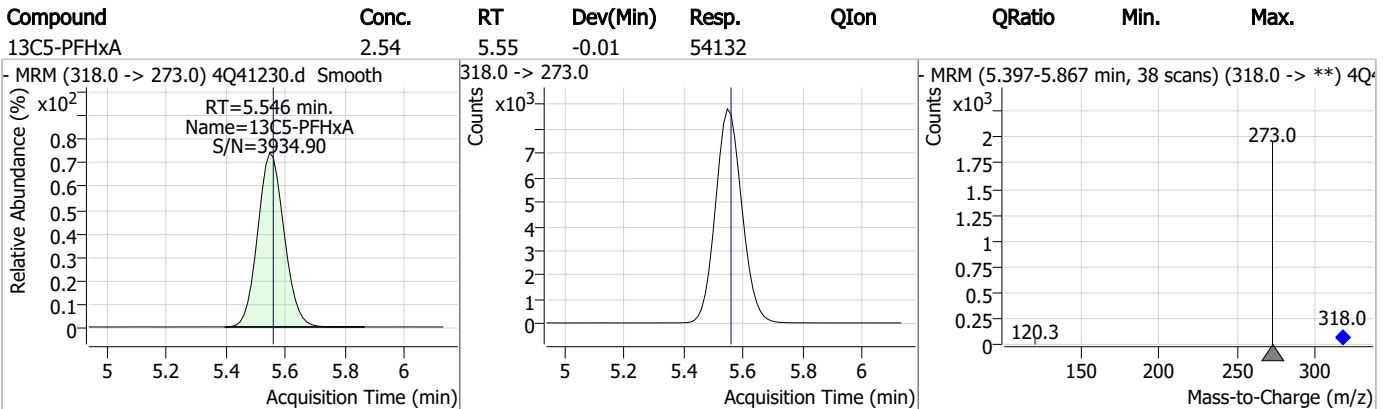
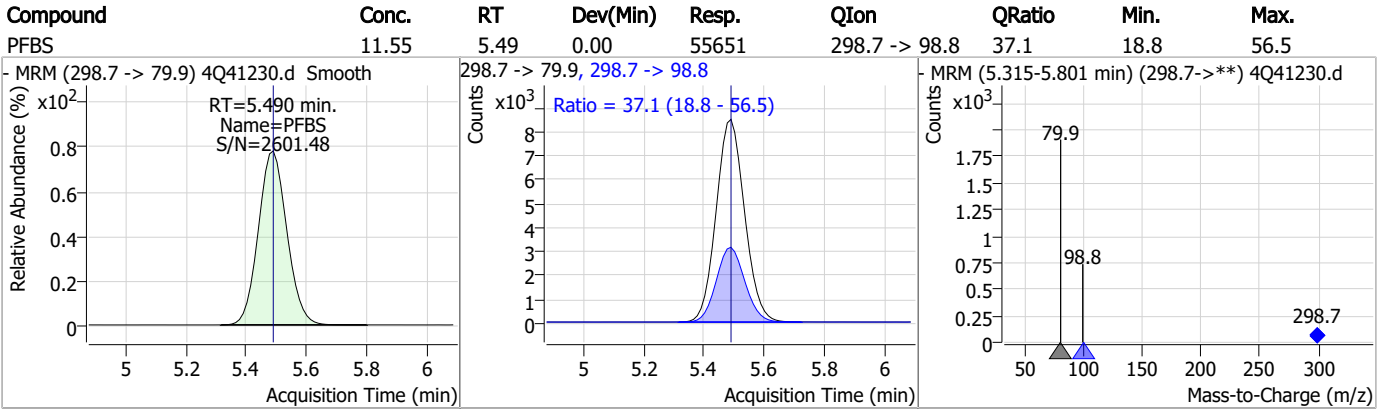
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	25.57	4.85	0.00	213108				



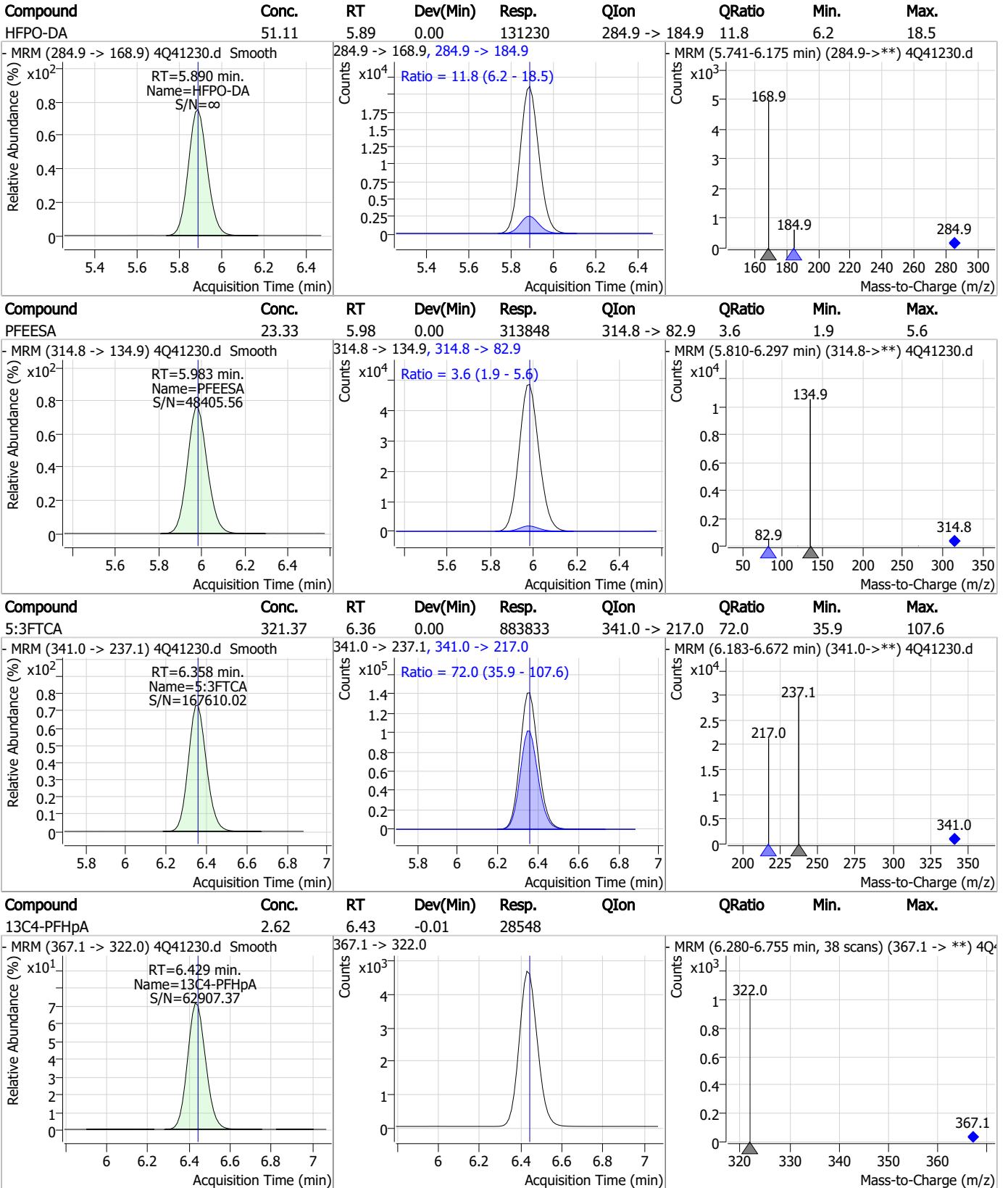
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



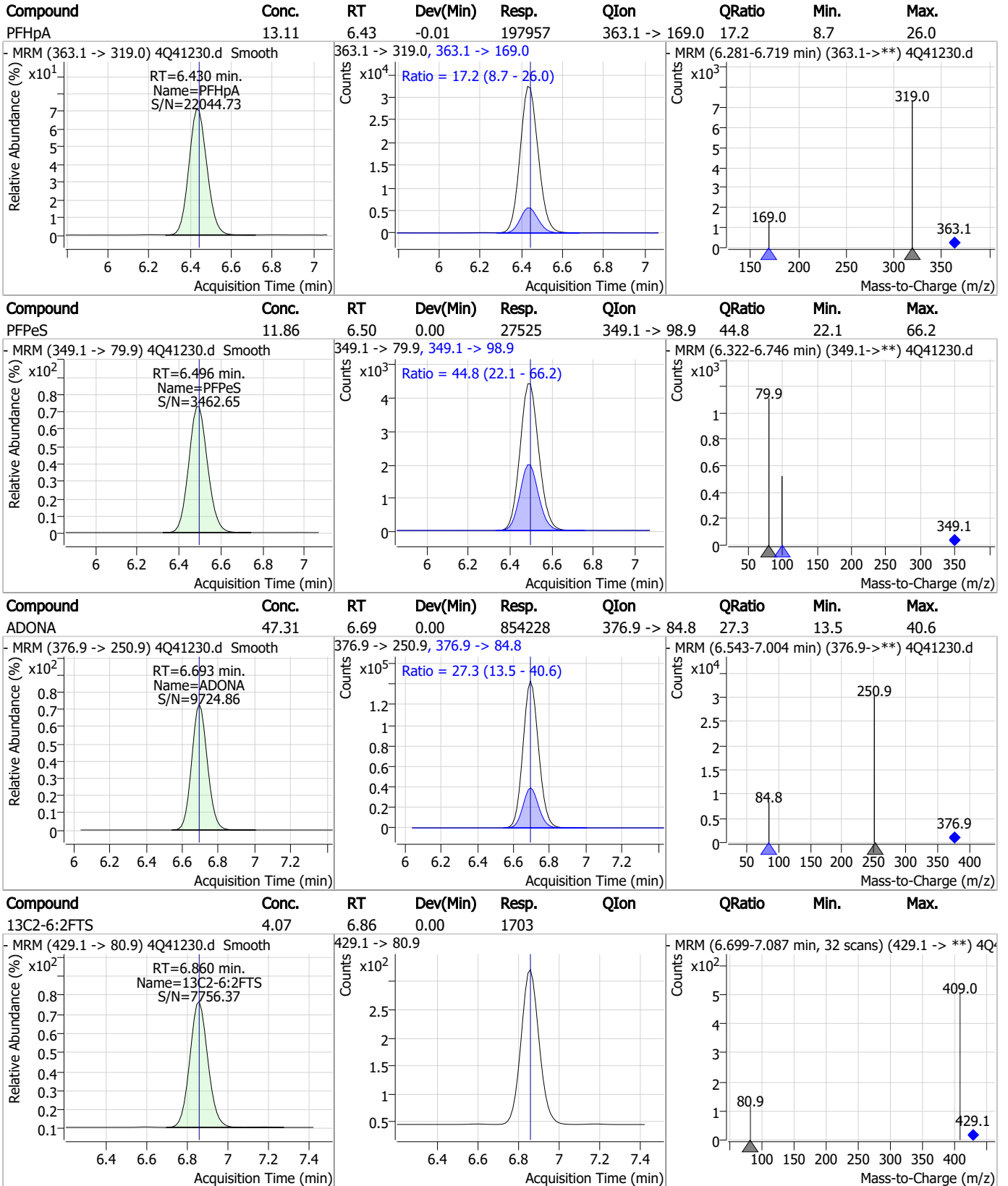
Perfluorinated Compounds by LC/MS/MS



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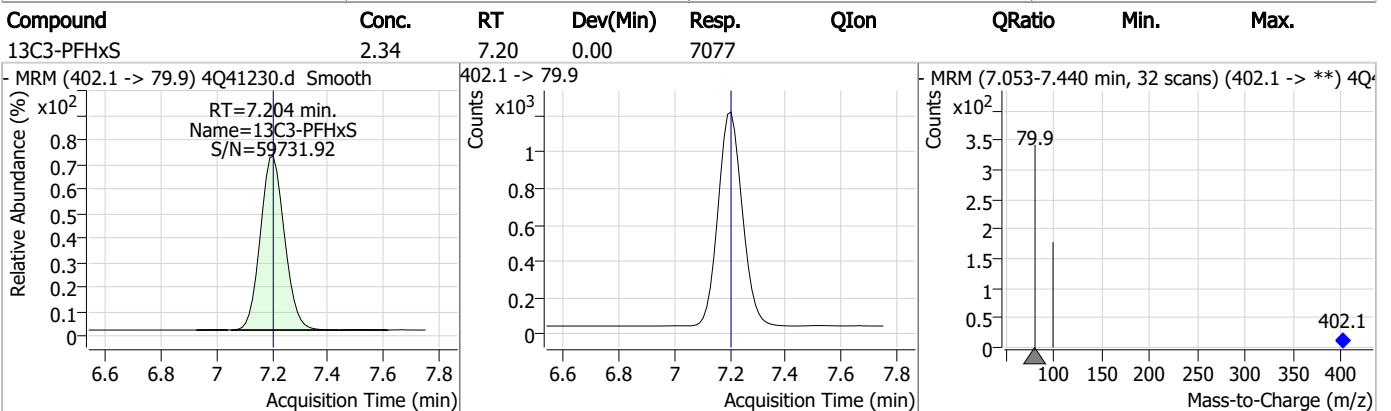
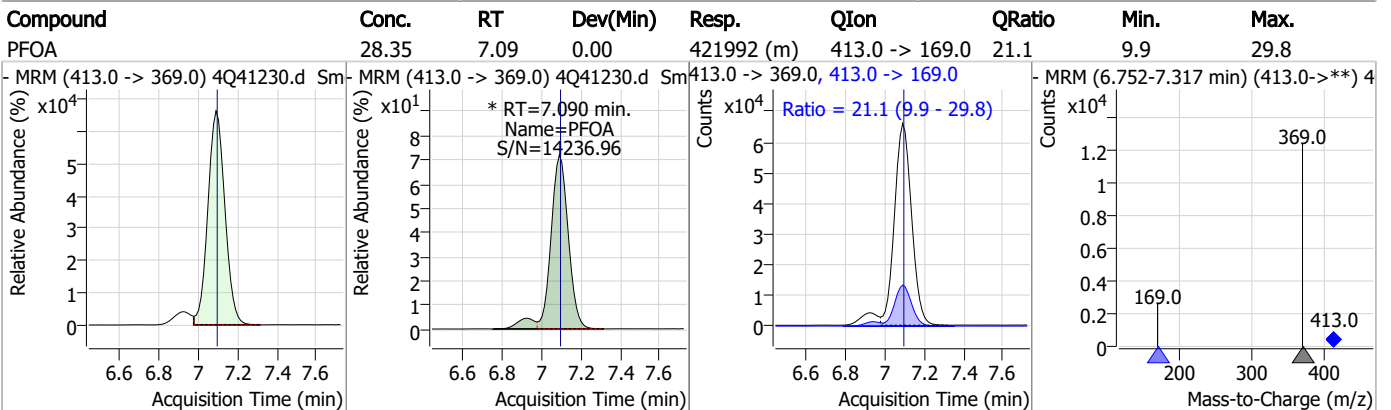
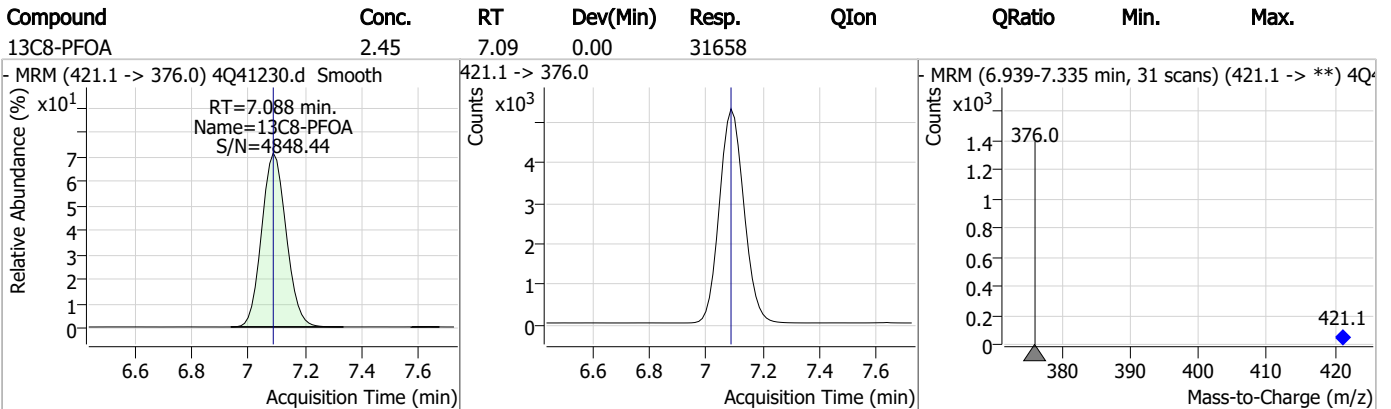
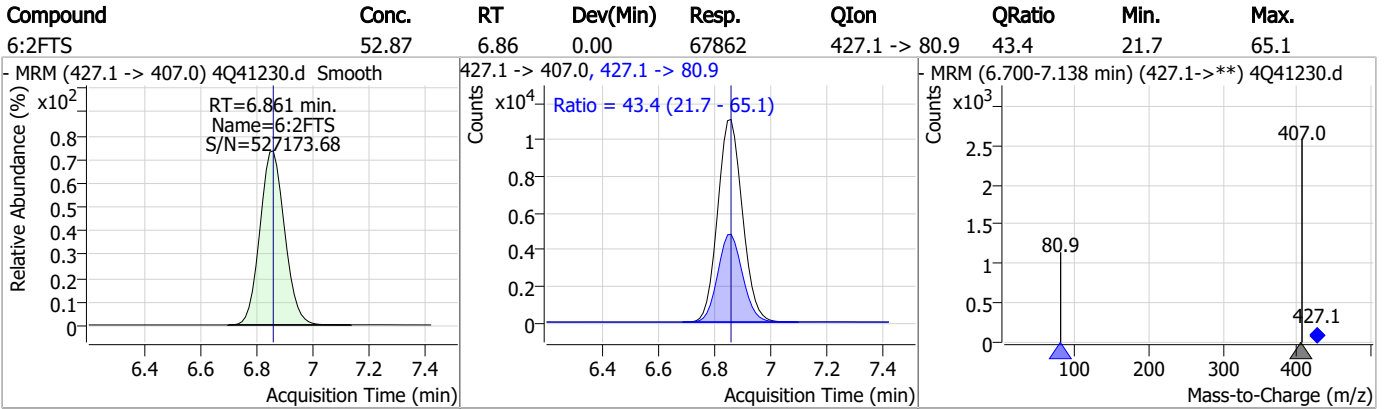
Perfluorinated Compounds by LC/MS/MS



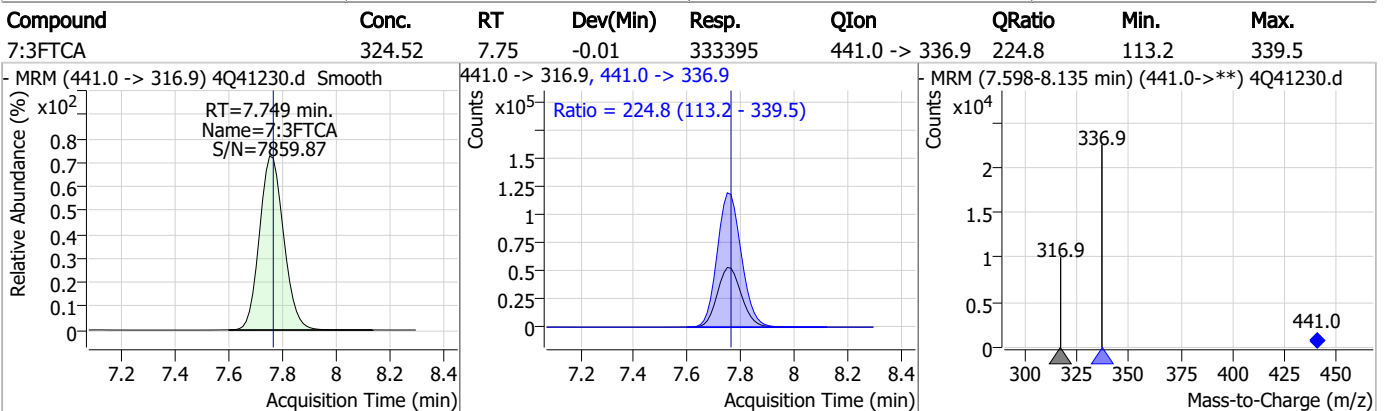
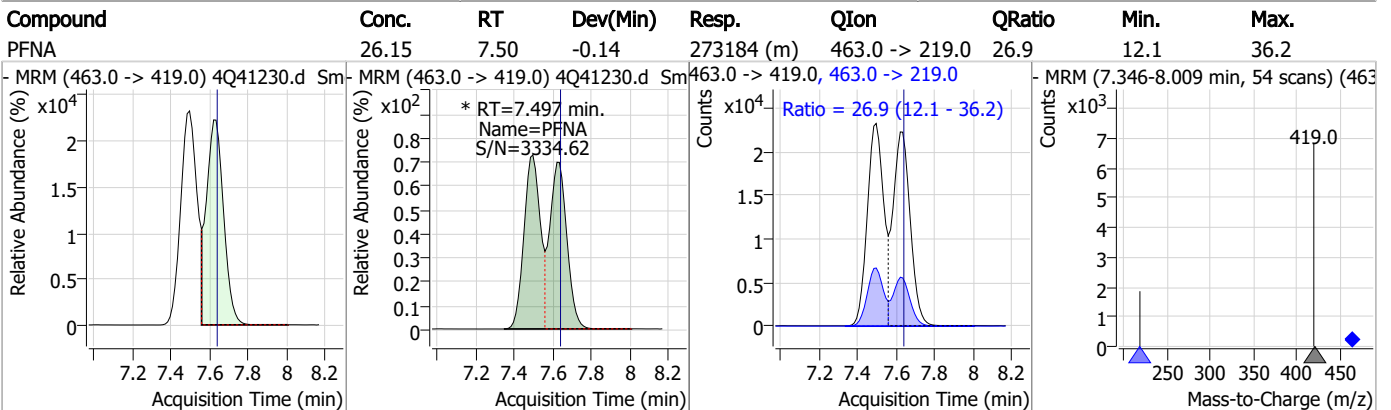
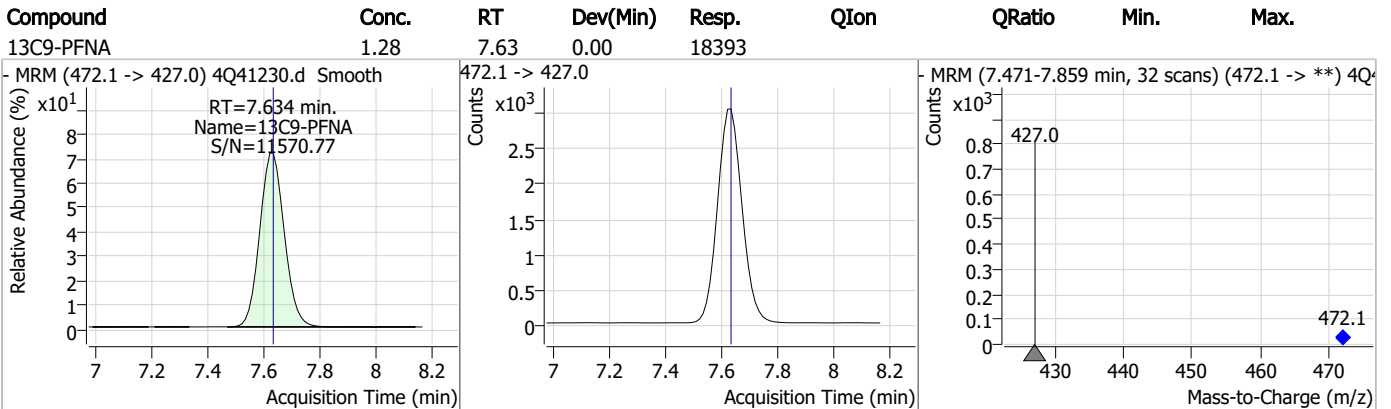
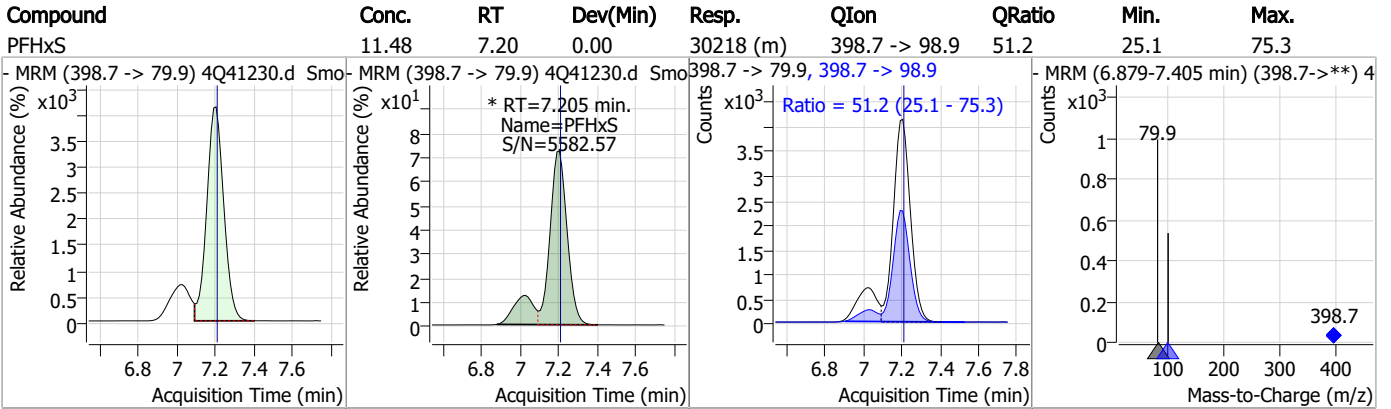
7.5.2

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



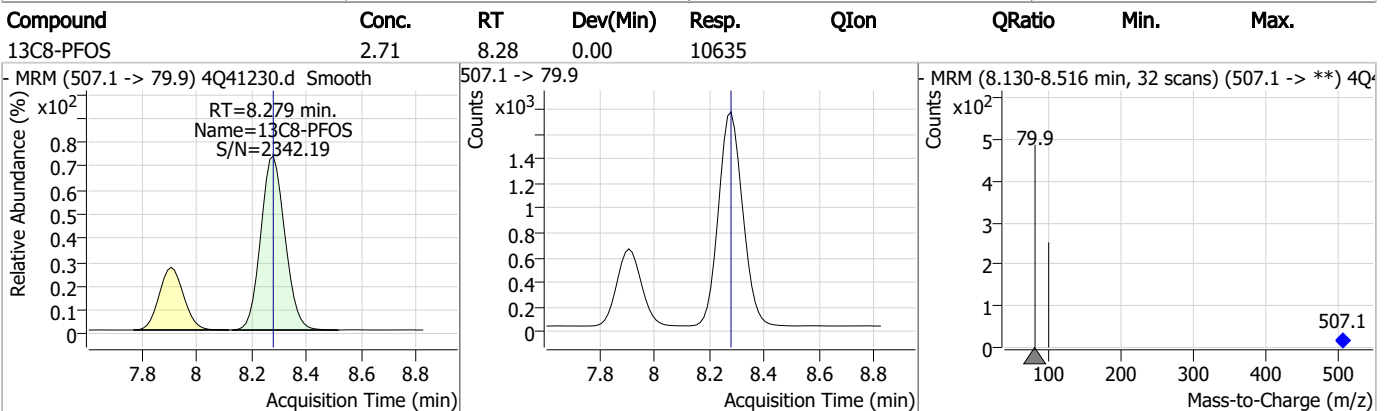
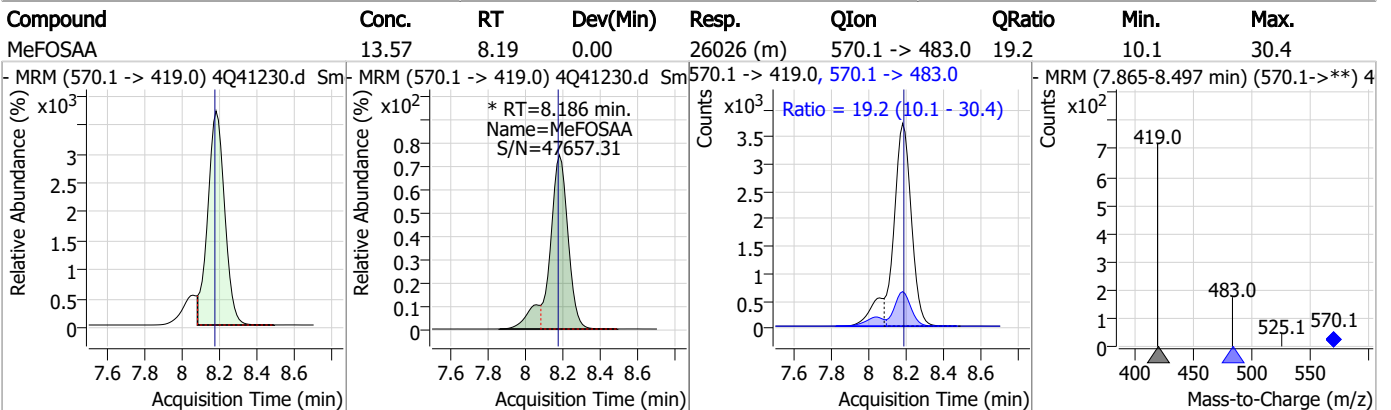
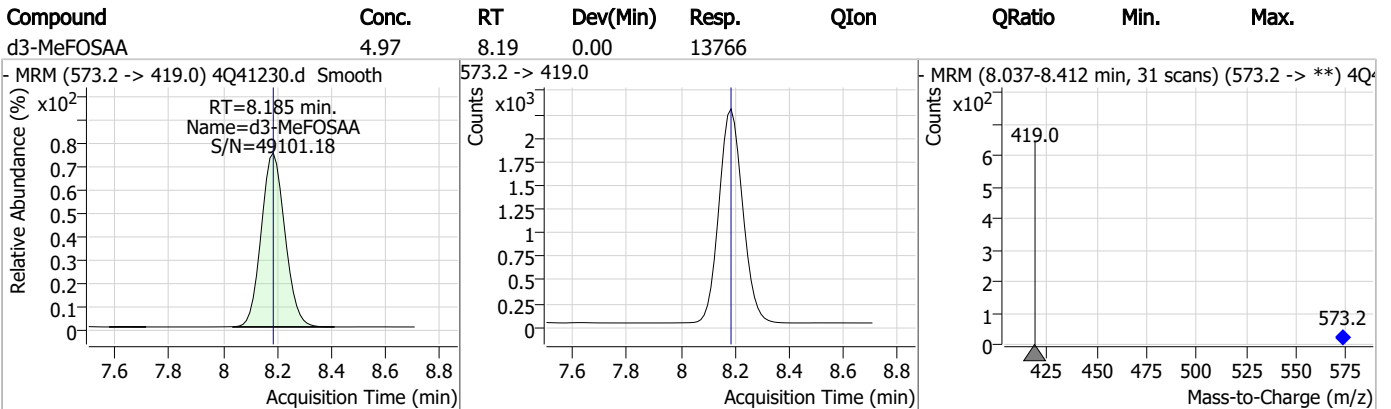
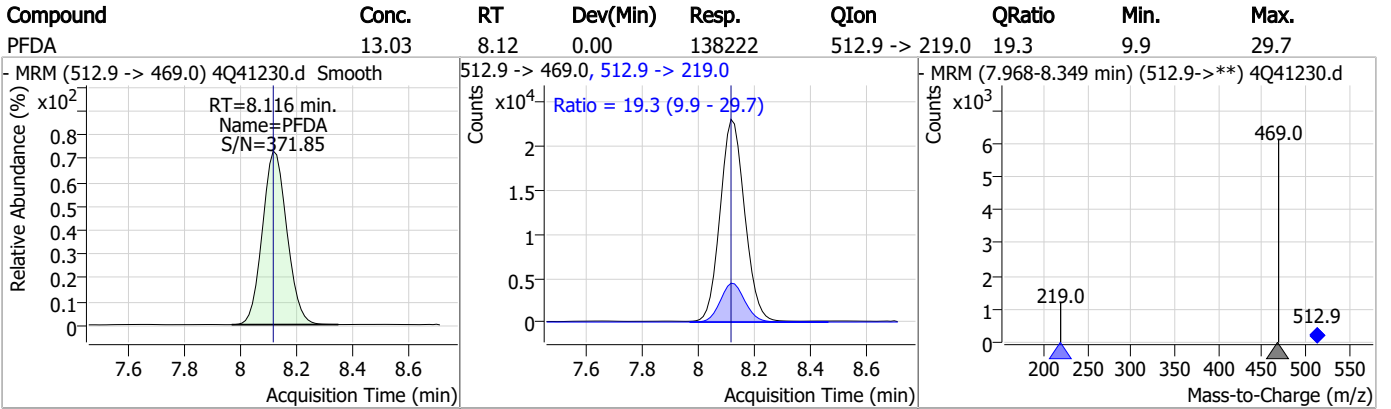
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	11.38	7.77	0.00	35546	449.0 -> 98.9	50.8	25.6	76.8
13C2-8:2FTS	5.10	7.90	-0.01	3454	529.1 -> 80.9			
8:2FTS	46.33	7.90	-0.01	74493	527.1 -> 80.8	43.0	20.5	61.4
13C6-PFDA	1.27	8.12	0.00	17199	519.1 -> 474.1			

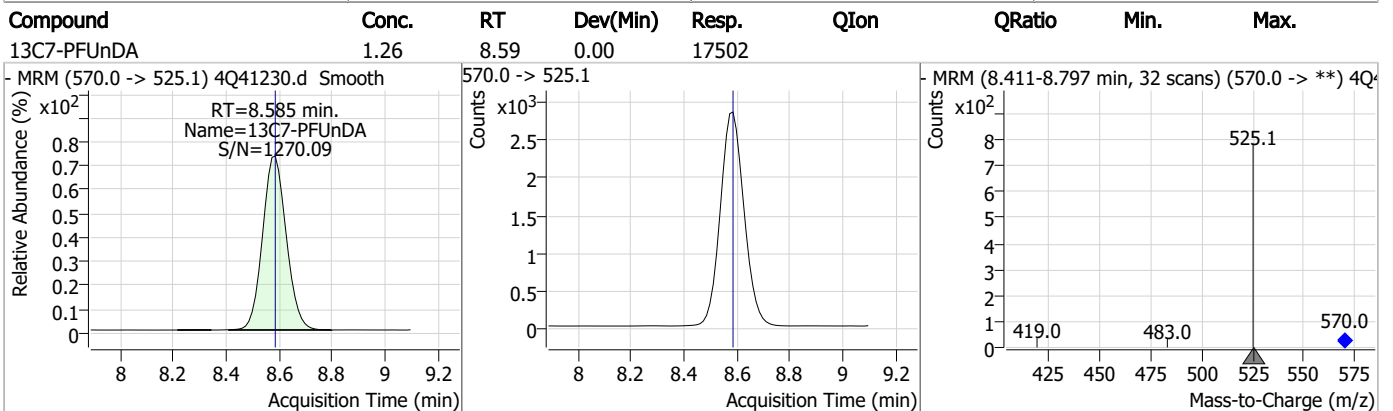
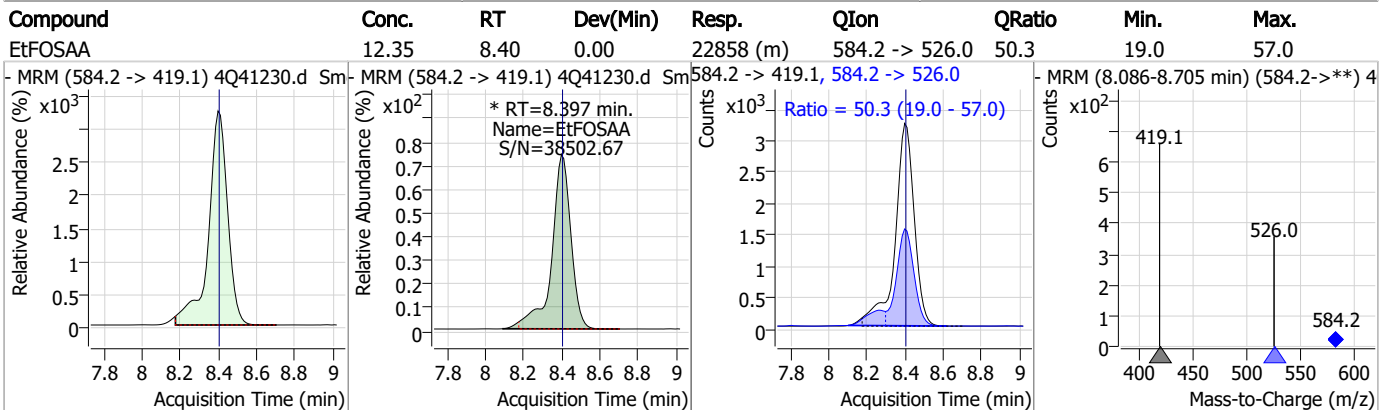
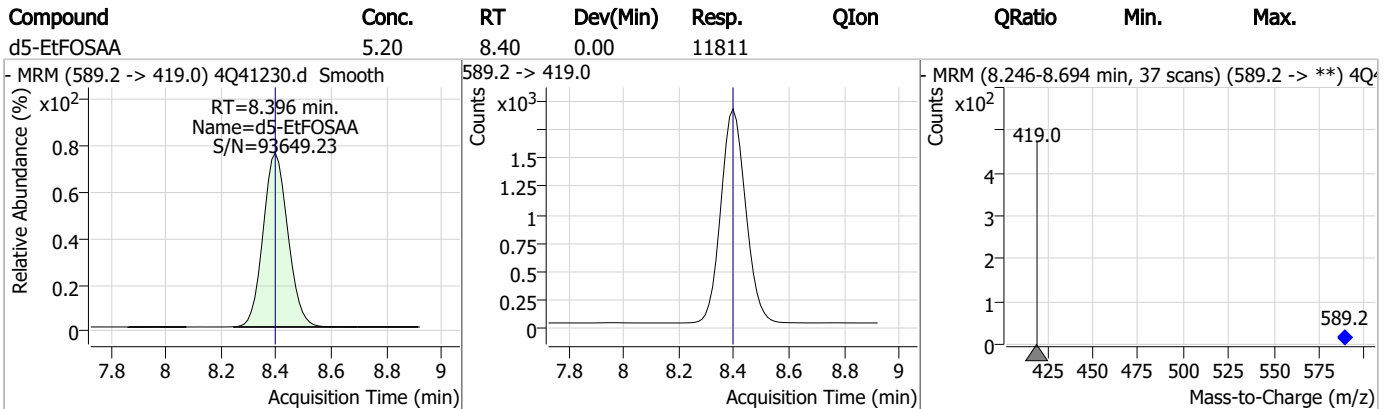
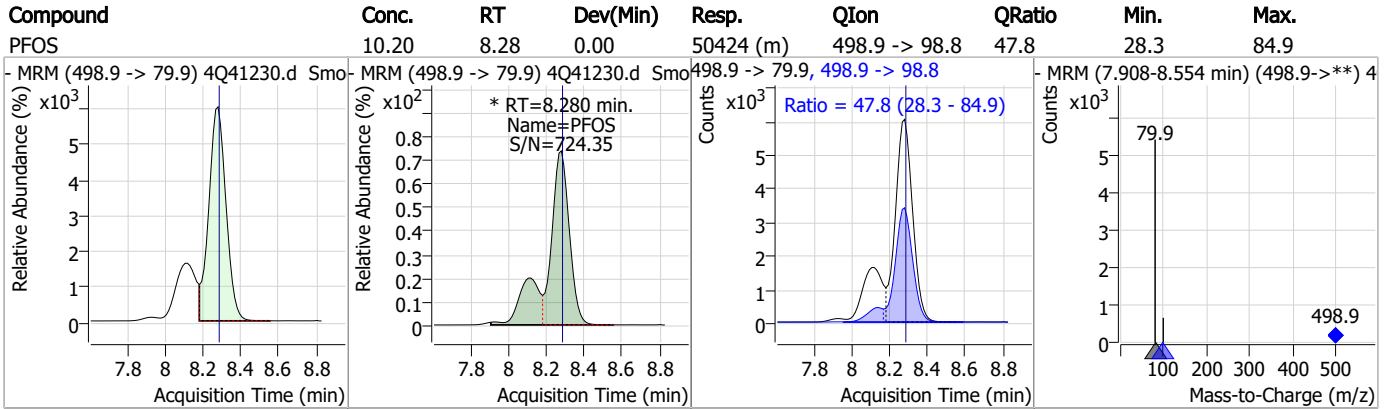
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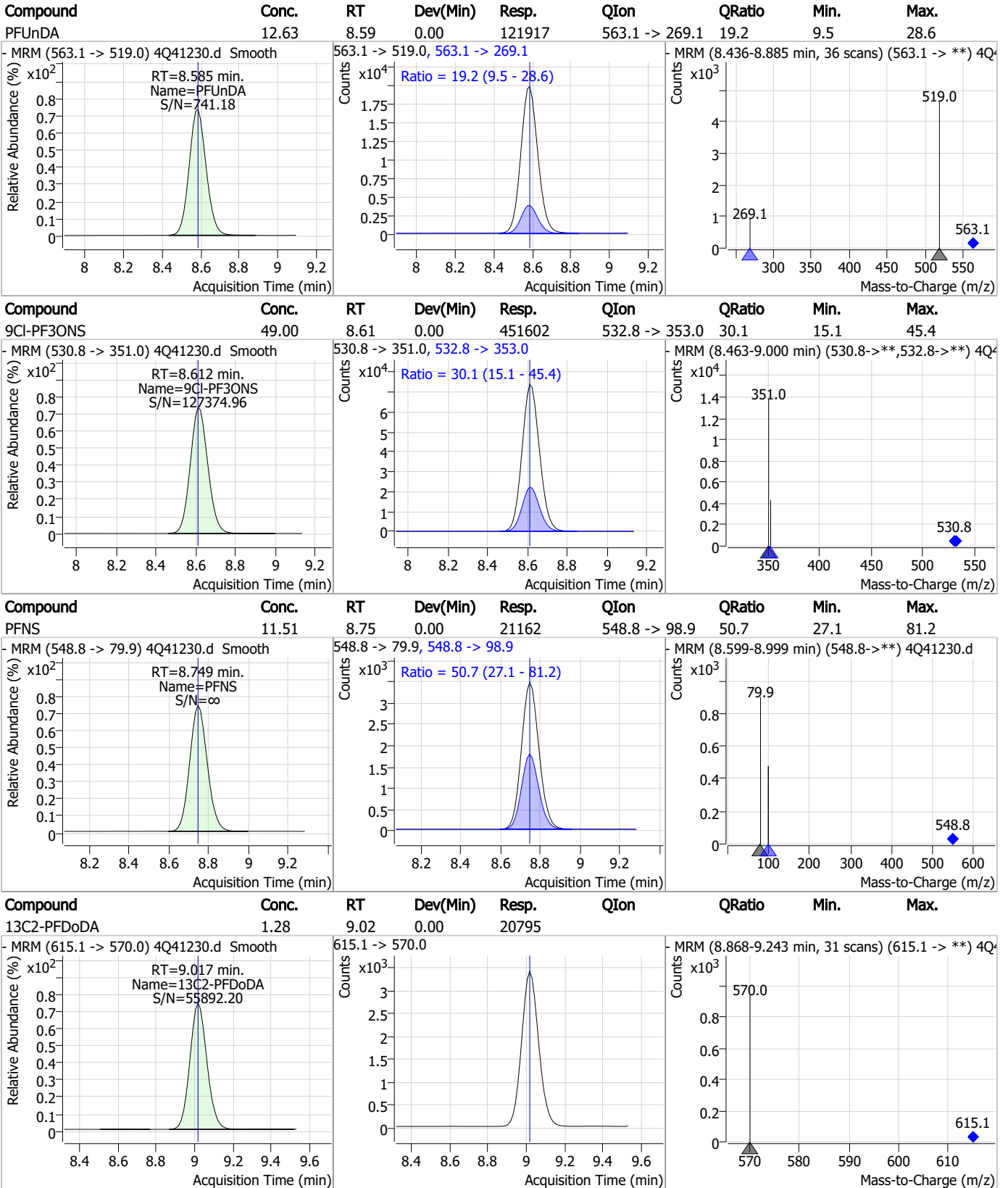
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



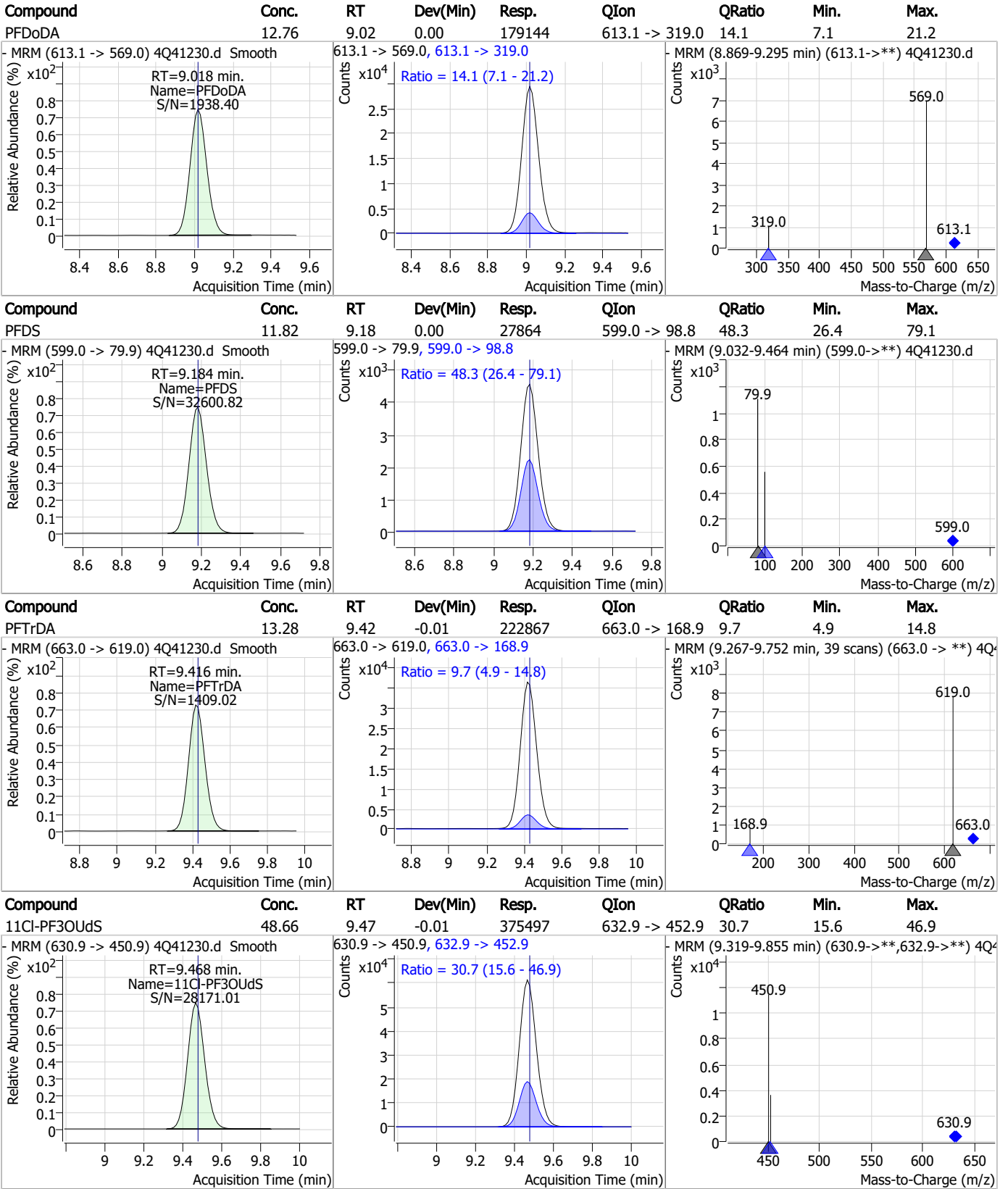
Perfluorinated Compounds by LC/MS/MS



7.5.2

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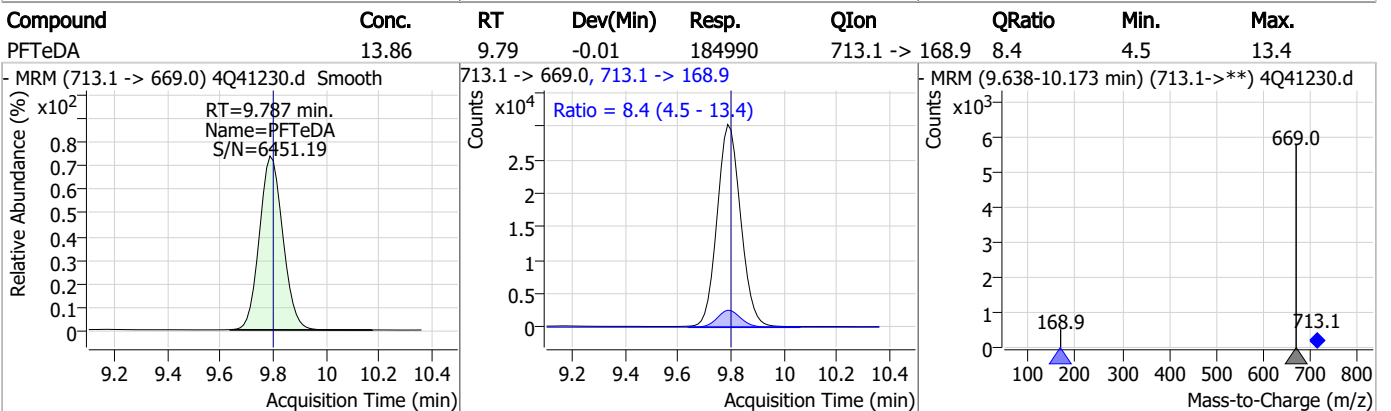
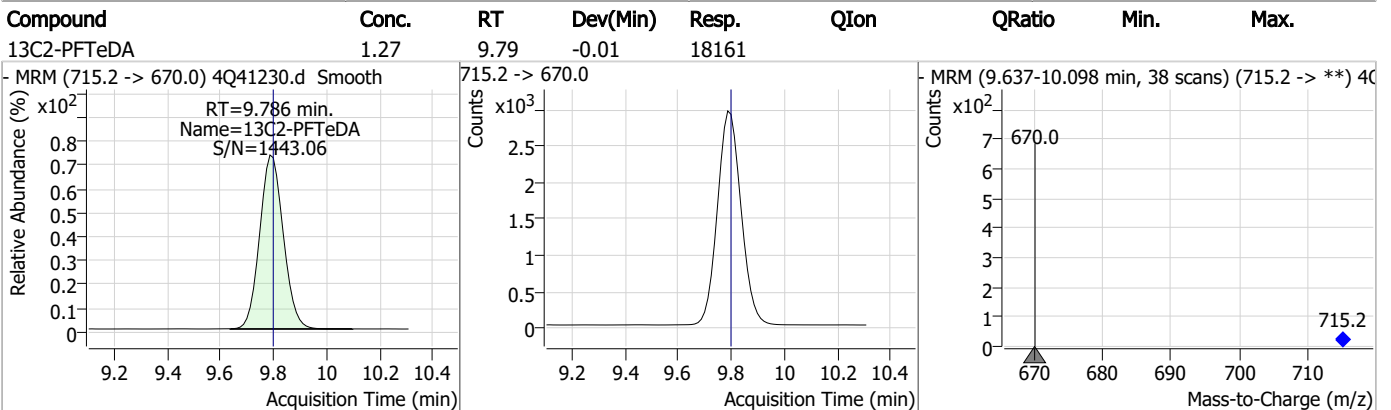
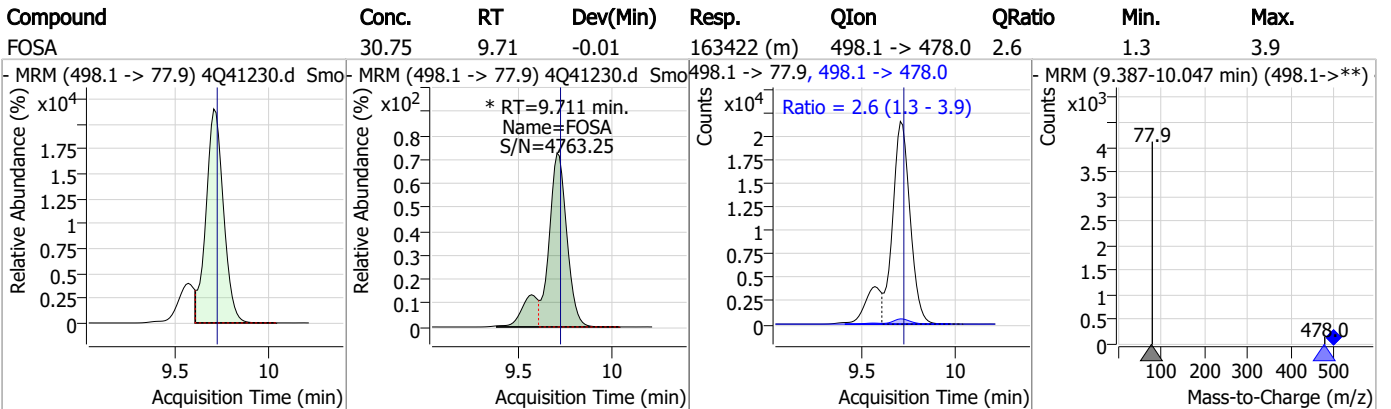
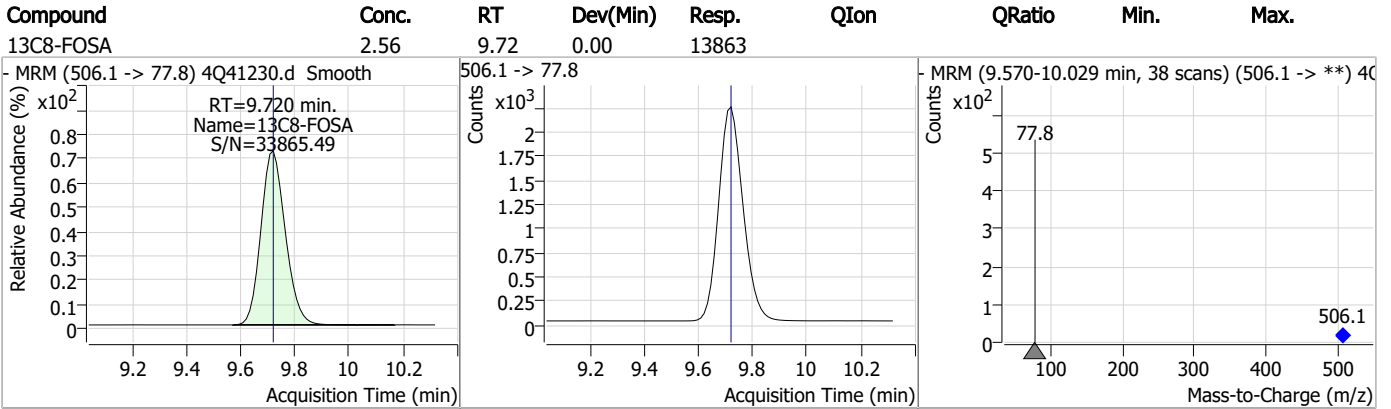
Perfluorinated Compounds by LC/MS/MS



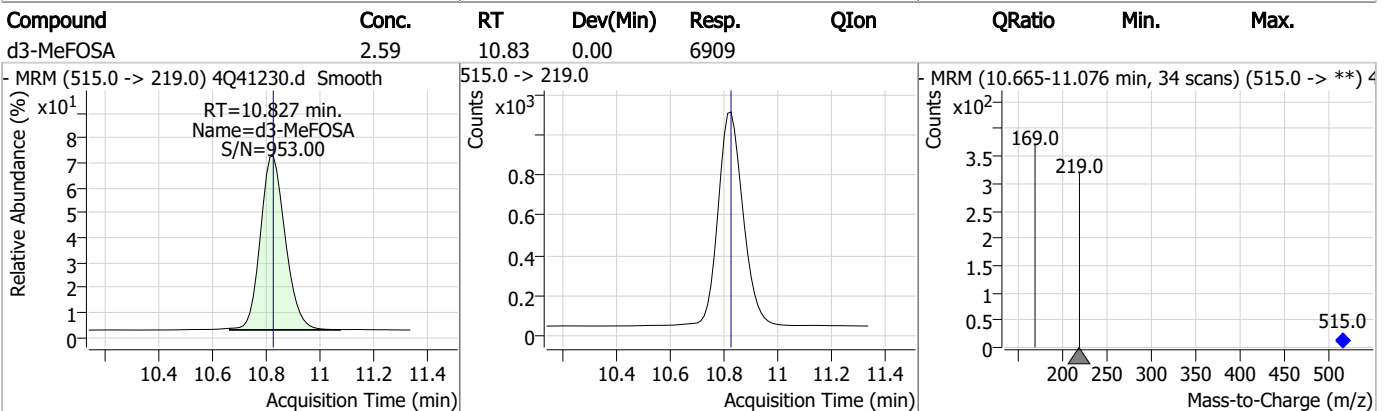
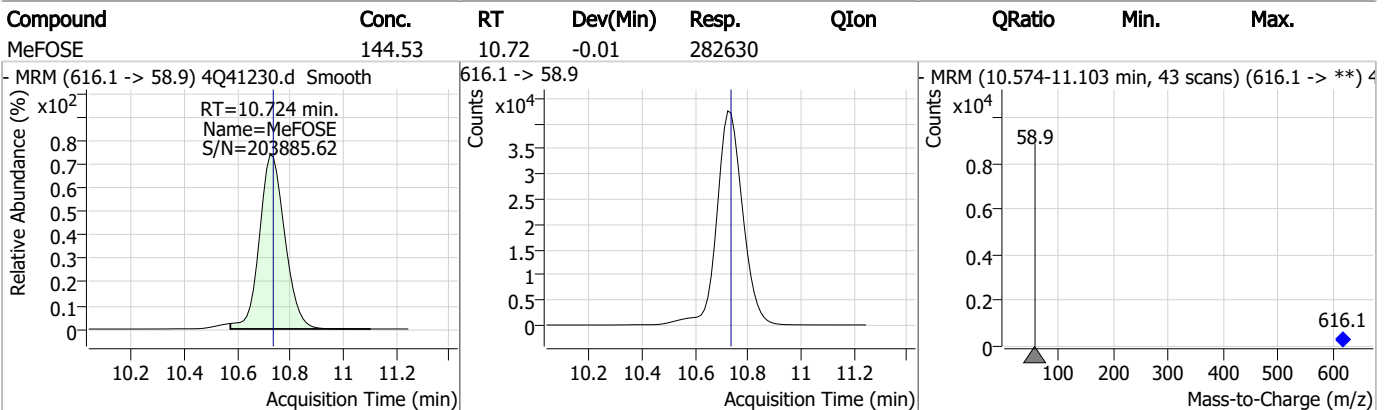
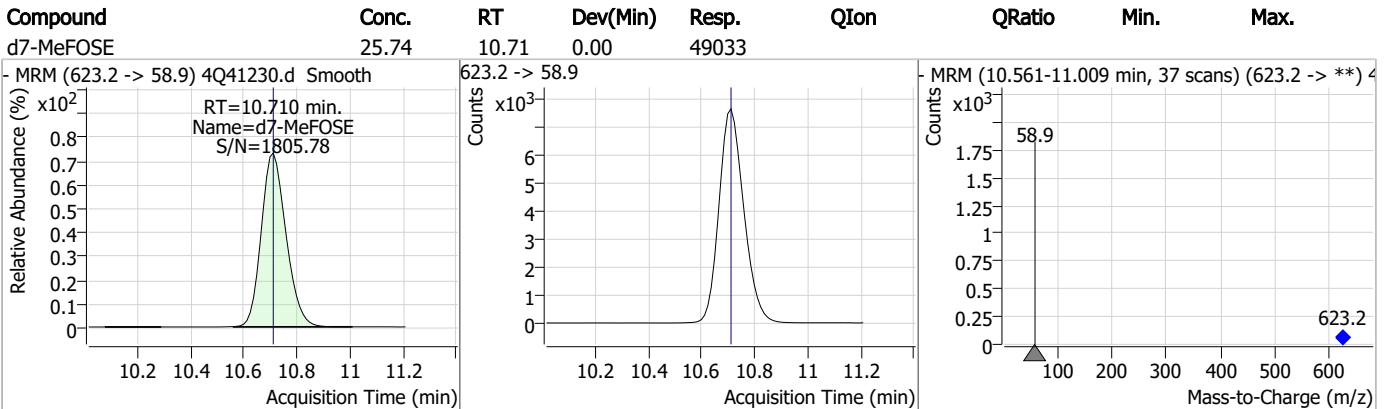
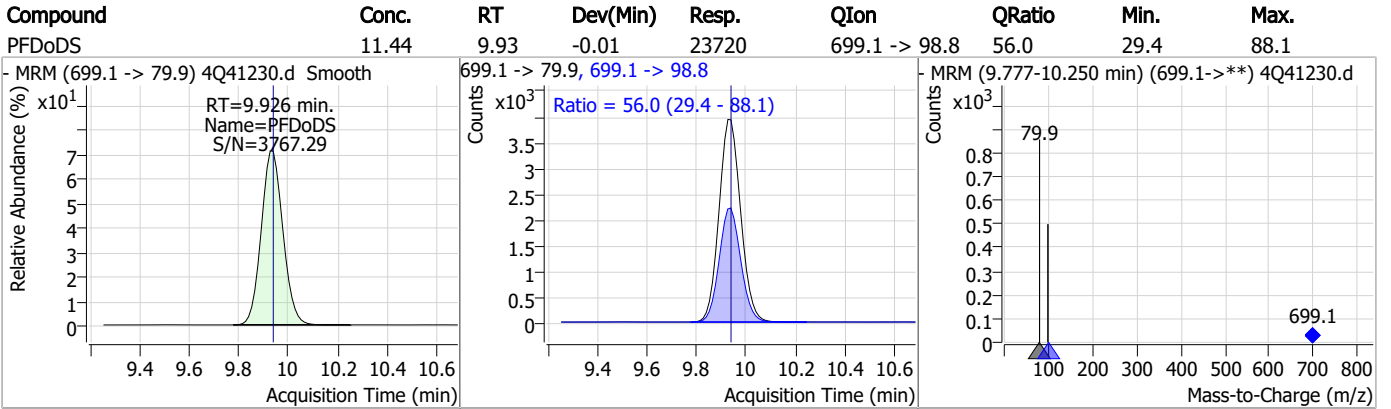
7.5.2

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Perfluorinated Compounds by LC/MS/MS

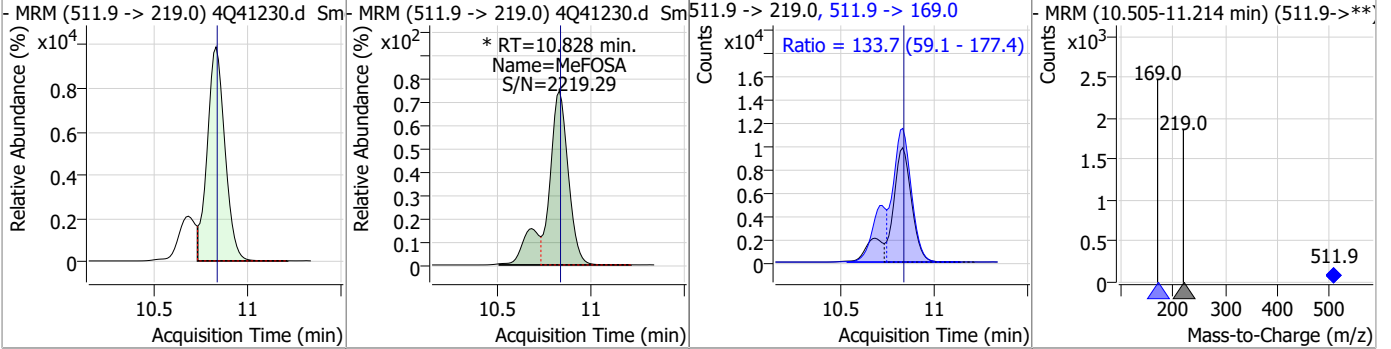


Perfluorinated Compounds by LC/MS/MS

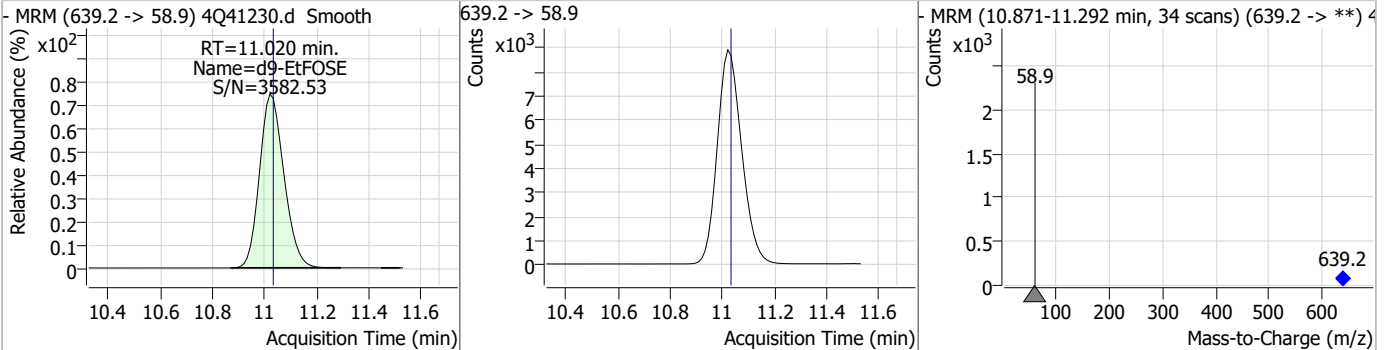


Perfluorinated Compounds by LC/MS/MS

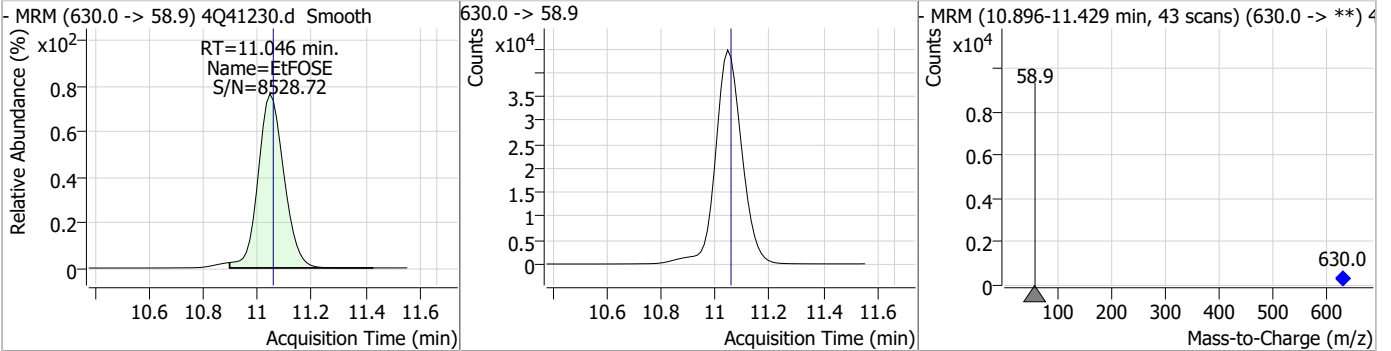
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	31.09	10.83	0.00	78484 (m)	511.9 -> 169.0	133.7	59.1	177.4



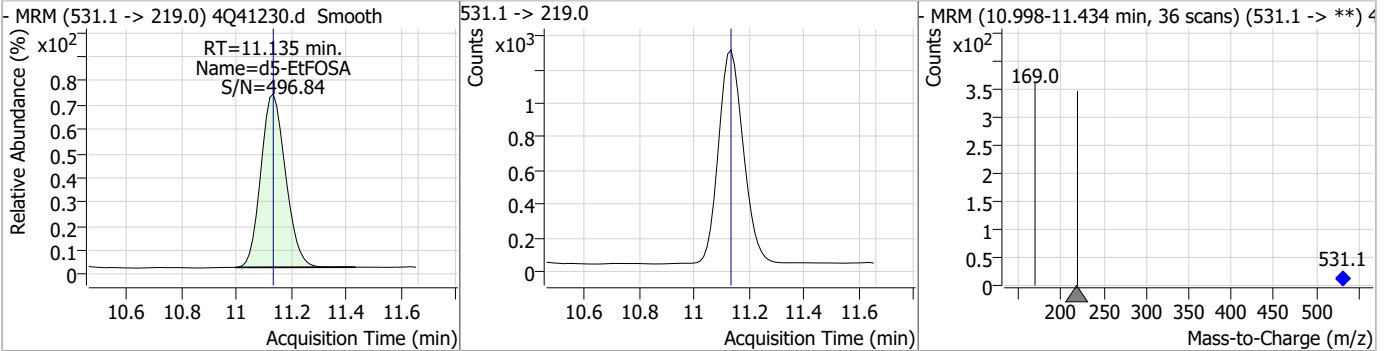
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.46	11.02	-0.01	57360				



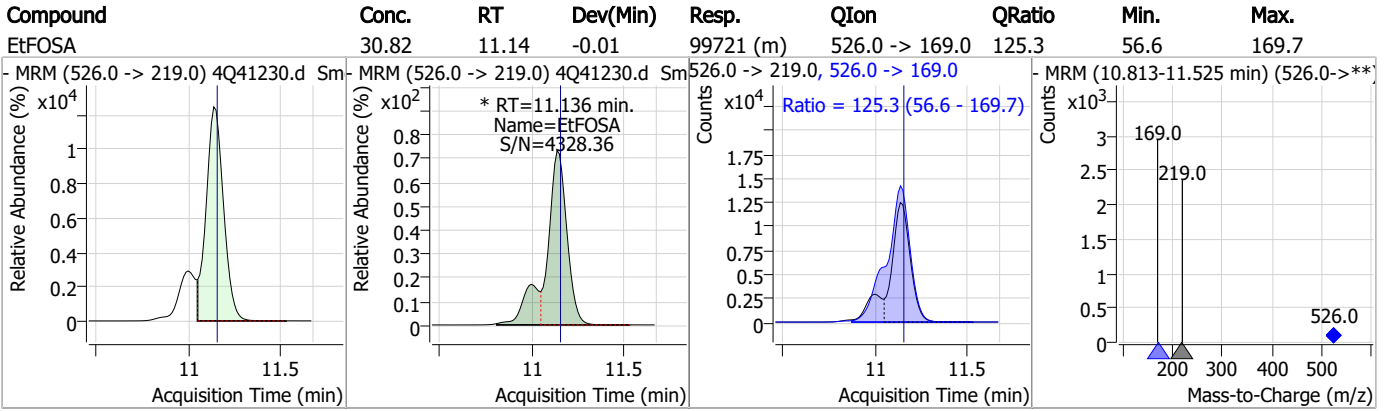
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	144.06	11.05	-0.01	296956				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.63	11.13	0.00	7873				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q589-RT Method: EPA DRAFT 1633
Lab FileID: 4Q41230.D Analyst approved: 02/27/23 14:05 Anna Ludwig
Injection Time: 02/24/23 15:31 Supervisor approved: 02/27/23 16:52 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.09	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.21	Split peak
Perfluorononanoic acid	375-95-1		7.50	Split peak
MeFOSAA	2355-31-9		8.19	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.28	Split peak
EtFOSAA	2991-50-6		8.40	Split peak
PFOSA	754-91-6		9.71	Split peak
MeFOSA	31506-32-8		10.83	Split peak
EtFOSA	4151-50-2		11.14	Split peak

7.5.2.1
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Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
 03/03/23 15:49

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41585.d
 Operator : marthav
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 3/2/2023 2:10:18 PM
 Sample Name : RT TDCA
 Vial : P1-B3
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s4q595 TDCA.batch.bin
 Sample Information : op95682,S4Q595,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)	QValue
Internal Standards							
M8-PFOS	8.068	507.1 -> 79.9	14848	2.50	µg/L	0.025	
13C4-PFOS	8.068	502.8 -> 79.9	14498	2.50	µg/L	0.025	
System Monitoring Compounds							
13C8-PFOS	8.068	507.1 -> 79.9	14848	2.60	µg/L	0.025	
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.9%				
Target Compounds							
PFOS	8.069	498.9 -> 79.9 498.9 -> 98.8	15387 7088	3.03	µg/L	m	92
TCDCa	6.449	498.9 -> 79.9	4235	6.18	ng/ml		100
TDCA	6.623	498.9 -> 79.9	4945	7.97	ng/ml		100
TUDCA	5.643	498.9 -> 79.9	6872	5.22	ng/ml		100

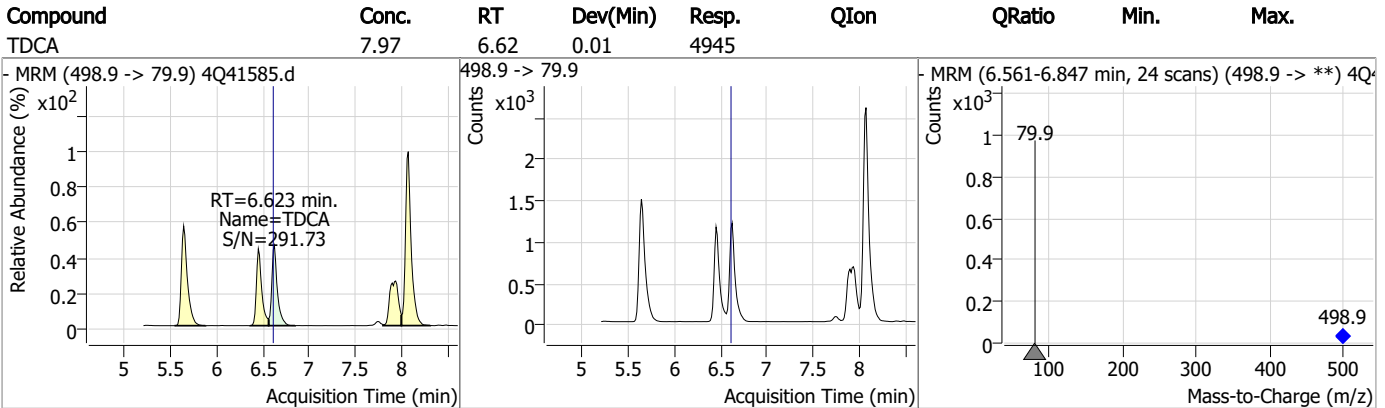
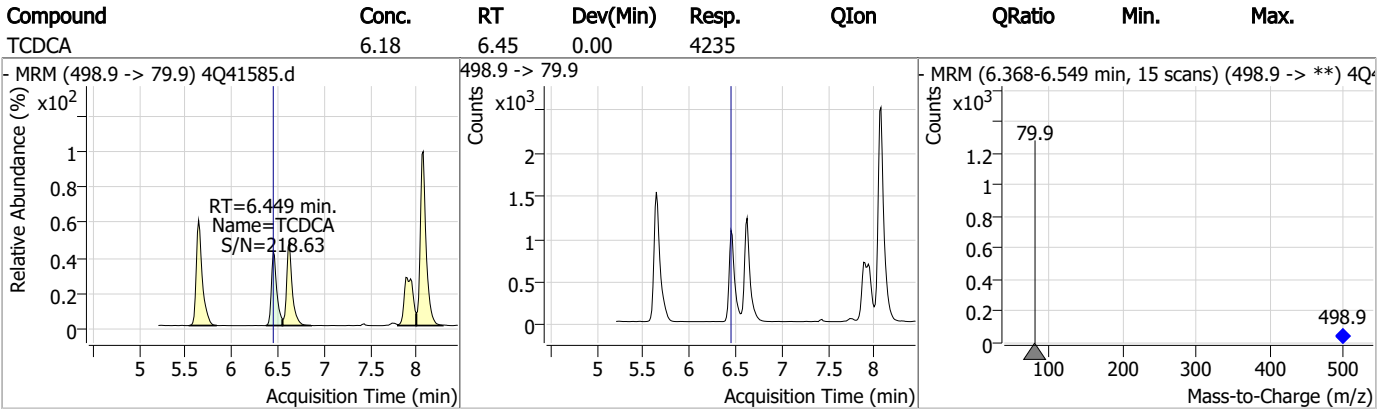
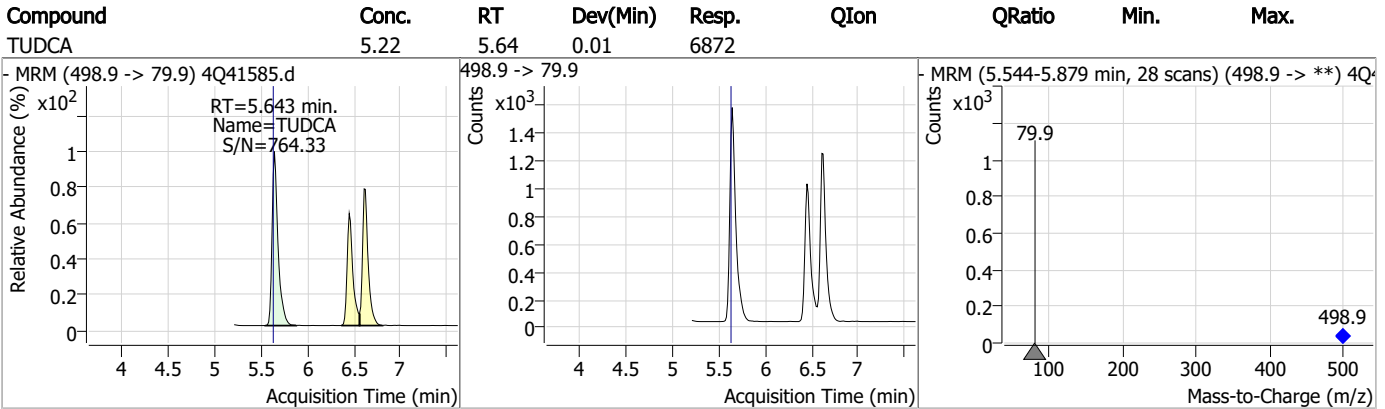
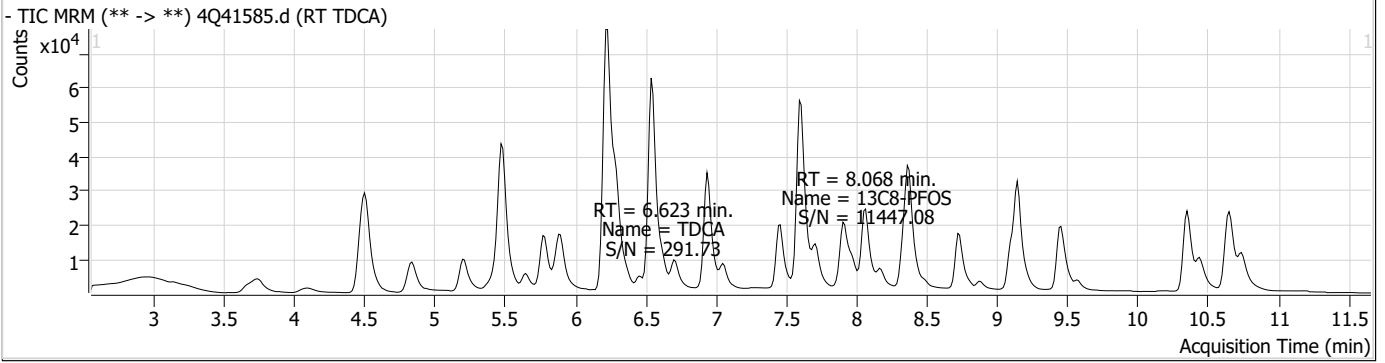
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7.5.3

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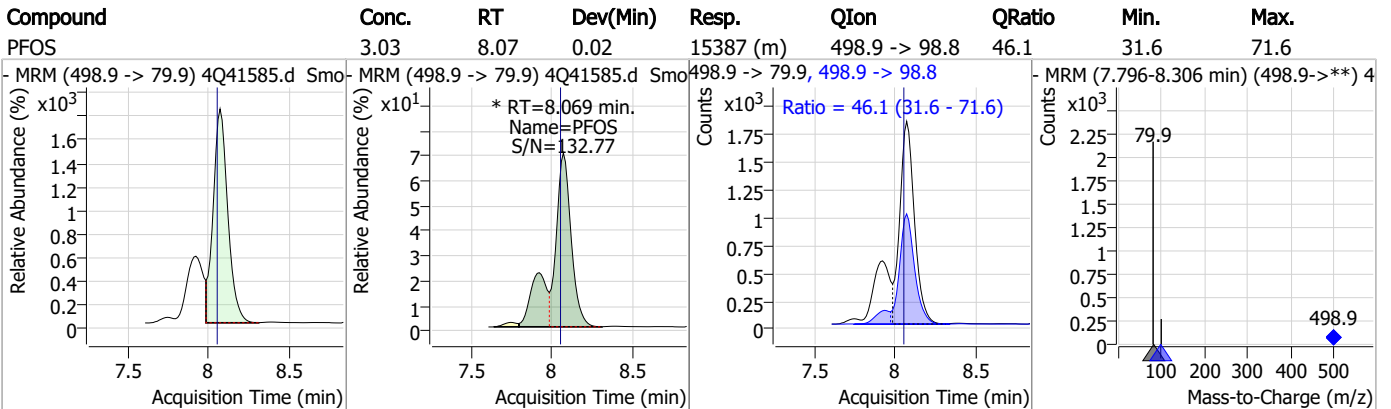
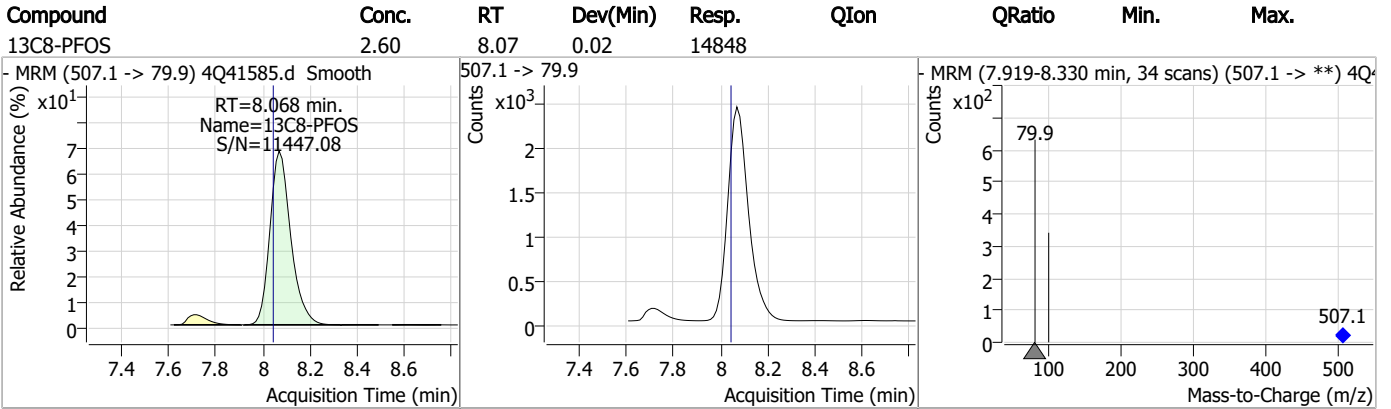
Perfluorinated Compounds by LC/MS/MS



7.5.3

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Perfluorinated Compounds by LC/MS/MS



7.5.3
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Manual Integration Approval Summary

Sample Number: S4Q595-RT Method: EPA DRAFT 1633
Lab FileID: 4Q41585.D Analyst approved: 03/03/23 15:05 Anna Ludwig
Injection Time: 03/02/23 14:10 Supervisor approved: 03/03/23 15:49 Norman Farmer

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

7.5.3.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41586.d
Operator : marthav
Acq. Method : 1633ful2l.m
Acq. Date-Time : 3/2/2023 2:24:22 PM
Sample Name : RT_BR_LN
Vial : P1-B4
DA Method File : 1633_022423_S4Q589.quantmethod.xml
Batch Name : s4q595.batch.bin
Sample Information : op95682,S4Q595,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.164	216.8 -> 171.9	110653	10.00 µg/L	-0.025
M5-PFPeA	4.512	268.3 -> 223.0	82530	5.00 µg/L	-0.025
M5-PFHxA	5.484	318.0 -> 273.0	61031	2.50 µg/L	-0.025
M4-PFHpA	6.305	367.1 -> 322.0	34199	2.50 µg/L	-0.037
M8-PFOA	6.949	421.1 -> 376.0	37719	2.50 µg/L	-0.039
M9-PFNA	7.471	472.1 -> 427.0	21251	1.25 µg/L	-0.025
M6-PFDA	7.917	519.1 -> 474.1	19438	1.25 µg/L	-0.050
M7-PFUnDA	8.349	570.0 -> 525.1	17634	1.25 µg/L	-0.037
M2-PFDoDA	8.755	615.1 -> 570.0	23266	1.25 µg/L	-0.038
M2-PFTeDA	9.500	715.2 -> 670.0	17694	1.25 µg/L	0.000
M8-FOSA	9.509	506.1 -> 77.8	15135	2.50 µg/L	-0.012
M3-PFBS	5.451	302.1 -> 79.9	14346	2.50 µg/L	-0.025
M3-PFHxS	7.065	402.1 -> 79.9	7403	2.50 µg/L	-0.027
M8-PFOS	8.080	507.1 -> 79.9	11100	2.50 µg/L	-0.037
M2-4:2FTS	5.210	329.1 -> 80.9	1338	5.00 µg/L	-0.025
M2-6:2FTS	6.724	429.1 -> 80.9	1857	5.00 µg/L	-0.025
M2-8:2FTS	7.729	529.1 -> 80.9	2853	5.00 µg/L	-0.037
M3-MeFOSAA	7.988	573.2 -> 419.0	14279	5.00 µg/L	-0.037
M3-HFPO-DA	5.790	286.9 -> 168.9	32759	10.00 µg/L	-0.037
M5-EtFOSAA	8.184	589.2 -> 419.0	11842	5.00 µg/L	-0.037
M7-MeFOSE	10.400	623.2 -> 58.9	55388	25.00 µg/L	0.000
M9-EtFOSE	10.697	639.2 -> 58.9	67121	25.00 µg/L	0.000
M5-EtFOSA	10.799	531.1 -> 219.0	8983	2.50 µg/L	0.000
M3-MeFOSA	10.503	515.0 -> 219.0	7887	2.50 µg/L	0.000
13C4-PFOS	8.081	502.8 -> 79.9	10400	2.50 µg/L	-0.037
13C3-PFBA	3.155	216.0 -> 172.0	68730	5.00 µg/L	-0.037
18O2-PFHxS	7.064	403.0 -> 83.9	5699	2.50 µg/L	-0.027
13C4-PFOA	6.950	417.1 -> 372.0	43438	2.50 µg/L	-0.038
13C2-PFDA	7.930	515.1 -> 470.1	16984	1.25 µg/L	-0.038
13C5-PFNA	7.471	468.0 -> 423.0	22074	1.25 µg/L	-0.025
13C2-PFHxA	5.485	315.1 -> 270.0	57366	2.50 µg/L	-0.025
System Monitoring Compounds					
13C2-4:2FTS	5.210	329.1 -> 80.9	1338	4.03 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 80.6%		
13C2-6:2FTS	6.724	429.1 -> 80.9	1857	4.17 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 83.4%		
13C2-8:2FTS	7.729	529.1 -> 80.9	2853	3.95 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 79.0%		
13C2-PFDoDA	8.755	615.1 -> 570.0	23266	1.28 µg/L	-0.038
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C2-PFTeDA	9.500	715.2 -> 670.0	17694	1.11 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 88.5%		
13C3-PFBS	5.451	302.1 -> 79.9	14346	2.62 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.9%		
13C3-PFHxS	7.065	402.1 -> 79.9	7403	2.30 µg/L	-0.027

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.0%	
13C4-PFBA	3.164	216.8 -> 171.9	110653	9.35 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 93.5%	
13C4-PFHpA	6.305	367.1 -> 322.0	34199	2.67 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.7%	
13C5-PFHxA	5.484	318.0 -> 273.0	61031	2.44 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.5%	
13C5-PFPeA	4.512	268.3 -> 223.0	82530	5.12 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C6-PFDA	7.917	519.1 -> 474.1	19438	1.29 µg/L	-0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.9%	
13C7-PFUnDA	8.349	570.0 -> 525.1	17634	1.14 µg/L	-0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 91.2%	
13C8-FOSA	9.509	506.1 -> 77.8	15135	2.63 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.0%	
13C8-PFOA	6.949	421.1 -> 376.0	37719	2.61 µg/L	-0.039
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.3%	
13C8-PFOS	8.080	507.1 -> 79.9	11100	2.66 µg/L	-0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.2%	
13C9-PFNA	7.471	472.1 -> 427.0	21251	1.38 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 110.4%	
d3-MeFOSAA	7.988	573.2 -> 419.0	14279	4.84 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.8%	
13C3-HFPO-DA	5.790	286.9 -> 168.9	32759	9.26 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 92.6%	
d3-MeFOSA	10.503	515.0 -> 219.0	7887	2.78 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.1%	
d5-EtFOSAA	8.184	589.2 -> 419.0	11842	4.89 µg/L	-0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.9%	
d7-MeFOSE	10.400	623.2 -> 58.9	55388	27.28 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 109.1%	
d9-EtFOSE	10.697	639.2 -> 58.9	67121	27.95 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 111.8%	
d5-EtFOSA	10.799	531.1 -> 219.0	8983	2.82 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.6%	
Target Compounds					QValue
4:2FTS	5.211	327.1 -> 307.0	92846	52.12 µg/L	100
		327.1 -> 80.9	38858		
6:2FTS	6.712	427.1 -> 407.0	67479	48.22 µg/L	98
		427.1 -> 80.9	29343		
8:2FTS	7.729	527.1 -> 507.0	70353	52.98 µg/L	99
		527.1 -> 80.8	29270		
EtFOSAA	8.185	584.2 -> 419.1	24100	12.99 µg/L	m 95
		584.2 -> 526.0	11552		
FOSA	9.512	498.1 -> 77.9	176868	30.48 µg/L	m 100
		498.1 -> 478.0	4866		
MeFOSAA	7.988	570.1 -> 419.0	26447	13.30 µg/L	96
		570.1 -> 483.0	5774		
PFBA	3.158	212.8 -> 168.9	136177	52.05 µg/L	100
PFBS	5.452	298.7 -> 79.9	56841	9.94 µg/L	99
		298.7 -> 98.8	22027		
PFDA	7.918	512.9 -> 469.0	137740	11.49 µg/L	100
		512.9 -> 219.0	27950		
PFDoDA	8.756	613.1 -> 569.0	204757	13.04 µg/L	99
		613.1 -> 319.0	29318		
PFDS	8.920	599.0 -> 79.9	29796	12.11 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.306	599.0 -> 98.8	14682	13.45	µg/L	99
		363.1 -> 319.0	243330			
PFHpS	7.611	363.1 -> 169.0	41421	11.87	µg/L	96
		449.0 -> 79.9	38704			
PFHxA	5.487	449.0 -> 98.9	19937	12.01	µg/L	99
		313.0 -> 269.0	257490			
PFHxS	7.066	313.0 -> 118.9	7917	11.85	µg/L	m
		398.7 -> 79.9	32655			
PFNA	7.460	398.7 -> 98.9	17170	23.89	µg/L	m
		463.0 -> 419.0	288343			
PFNS	8.512	463.0 -> 219.0	75978	10.51	µg/L	98
		548.8 -> 79.9	20179			
PFOA	6.951	548.8 -> 98.9	10388	26.46	µg/L	m
		413.0 -> 369.0	469253			
PFOS	8.082	413.0 -> 169.0	100638	10.49	µg/L	m
		498.9 -> 79.9	54159			
PFPeA	4.514	498.9 -> 98.8	24162	23.88	µg/L	100
		263.0 -> 219.0	401191			
PFPeS	6.382	349.1 -> 79.9	33536	13.81	µg/L	98
		349.1 -> 98.9	14732			
PFTeDA	9.501	713.1 -> 669.0	176309	13.56	µg/L	98
		713.1 -> 168.9	14218			
PFTrDA	9.141	663.0 -> 619.0	237065	12.63	µg/L	99
		663.0 -> 168.9	23878			
PFUnDA	8.349	563.1 -> 519.0	134936	13.88	µg/L	99
		563.1 -> 269.1	26249			
11Cl-PF3OUdS	9.193	630.9 -> 450.9	407963	50.72	µg/L	100
		632.9 -> 452.9	125643			
9Cl-PF3ONS	8.388	530.8 -> 351.0	480130	49.98	µg/L	99
		532.8 -> 353.0	147585			
ADONA	6.568	376.9 -> 250.9	961554	51.09	µg/L	100
		376.9 -> 84.8	260683			
HFPO-DA	5.791	284.9 -> 168.9	139185	52.00	µg/L	99
		284.9 -> 184.9	16285			
3:3FTCA	4.167	241.0 -> 177.0	49747	57.48	µg/L	99
		241.0 -> 117.0	4611			
5:3FTCA	6.246	341.0 -> 237.1	1026540	331.07	µg/L	99
		341.0 -> 217.0	720930			
7:3FTCA	7.611	441.0 -> 316.9	355743	307.14	µg/L	97
		441.0 -> 336.9	810644			
EtFOSA	10.813	526.0 -> 219.0	111972	30.33	µg/L	m
		526.0 -> 169.0	138070			
EtFOSE	10.722	630.0 -> 58.9	320150	132.72	µg/L	100
		511.9 -> 219.0	87400			
MeFOSA	10.517	511.9 -> 169.0	118441	30.33	µg/L	m
		616.1 -> 58.9	314192			
MeFOSE	10.426	699.1 -> 79.9	26092	142.23	µg/L	100
		699.1 -> 98.8	14157			
PFDoDS	9.627	295.0 -> 201.0	21776	12.06	µg/L	97
		295.0 -> 84.9	5722			
NFDHA	5.391	279.0 -> 85.1	227853	27.99	µg/L	97
		229.0 -> 84.9	188450			
PFMBA	4.854	314.8 -> 134.9	357164	23.55	µg/L	100
		314.8 -> 82.9	12284			

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

7.5.4
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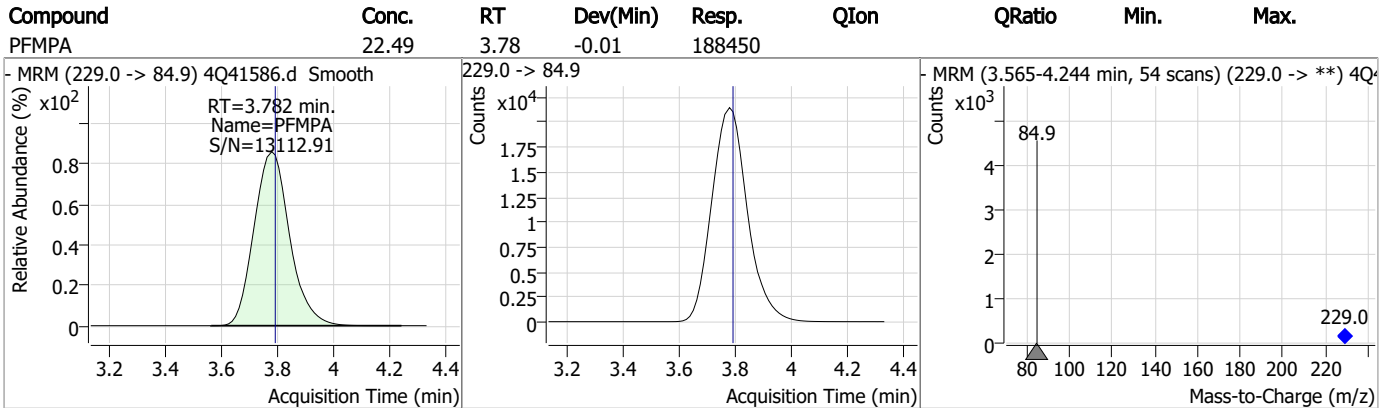
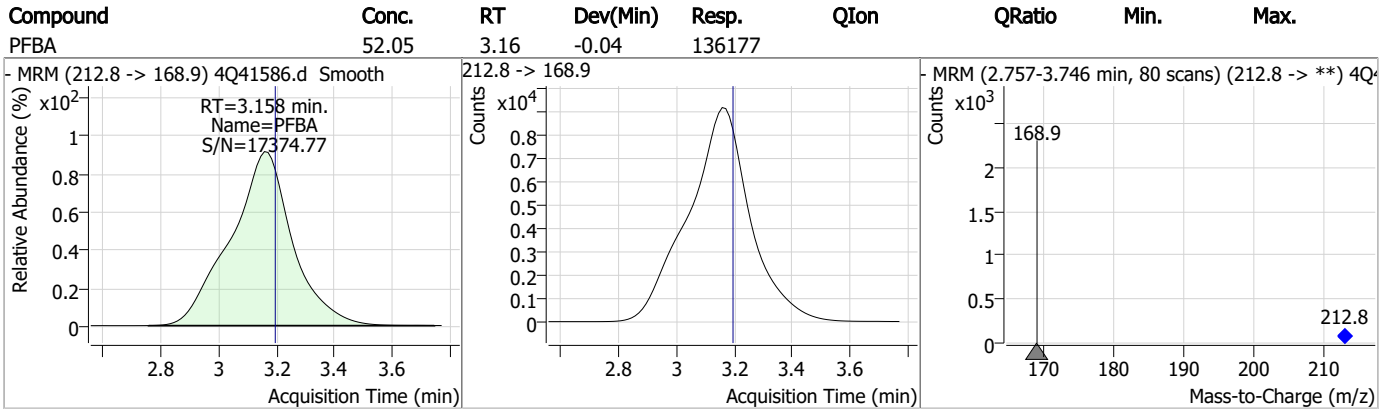
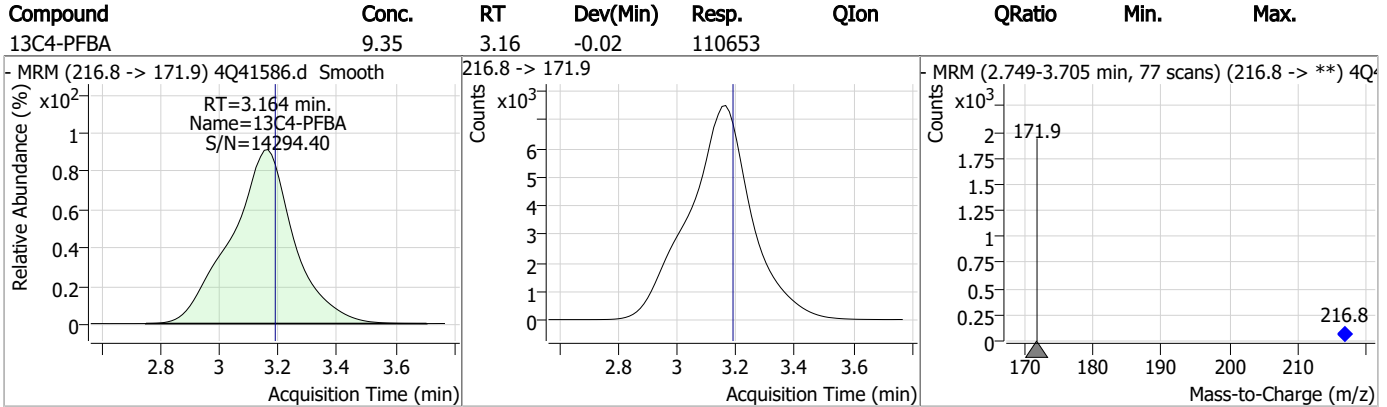
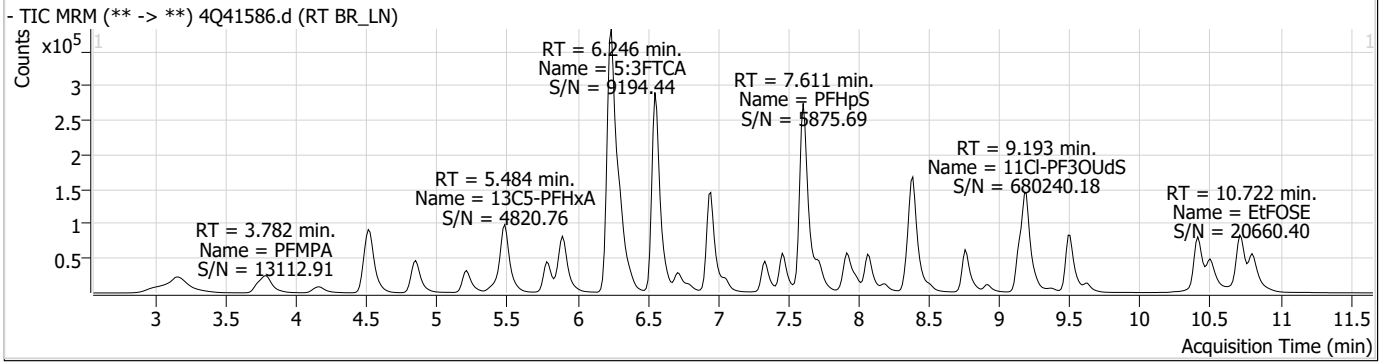
Perfluorinated Compounds by LC/MS/MS

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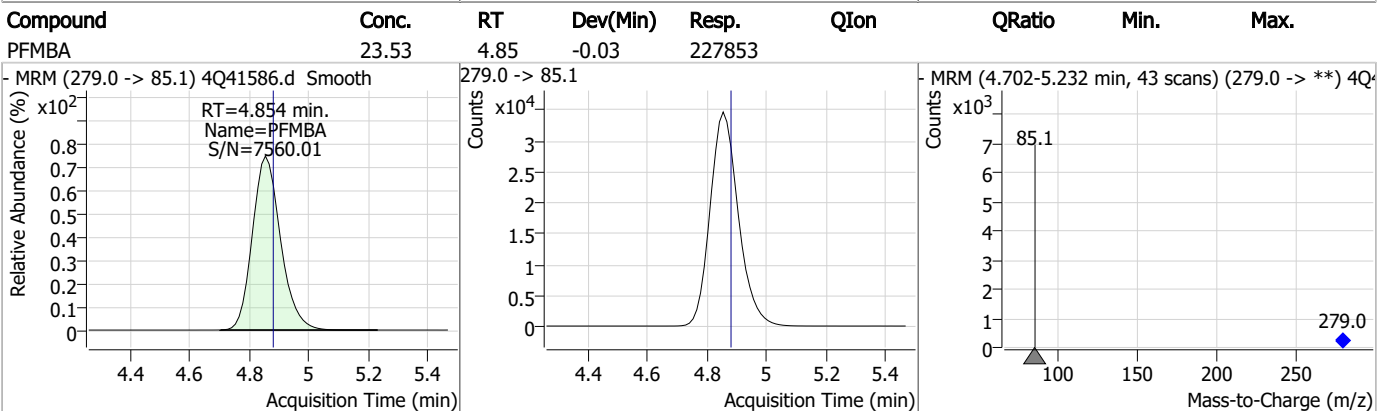
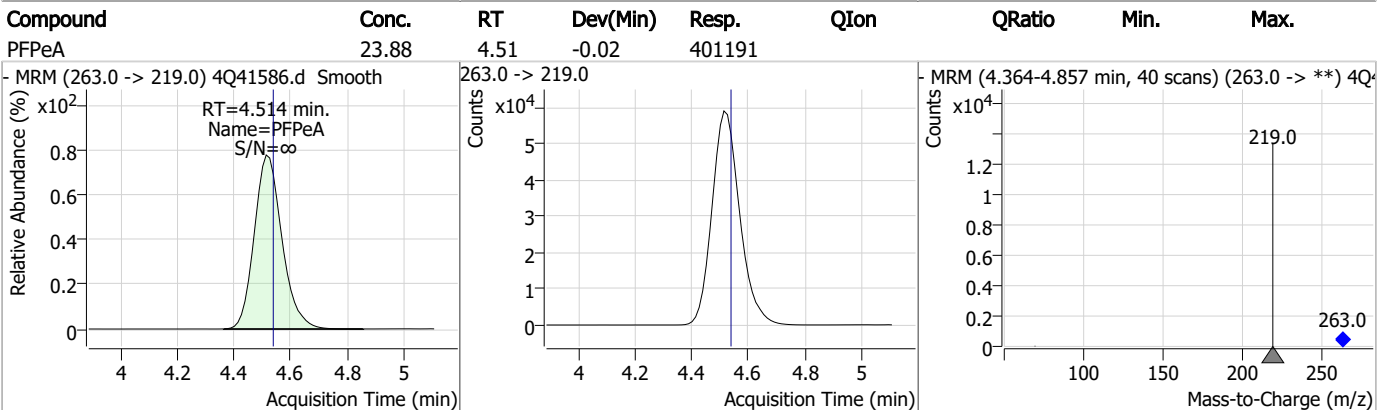
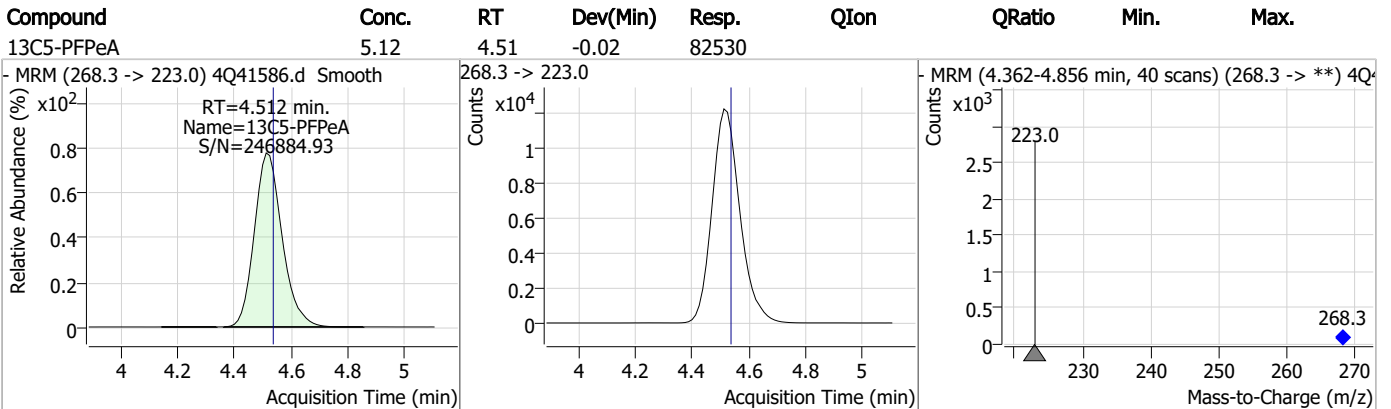
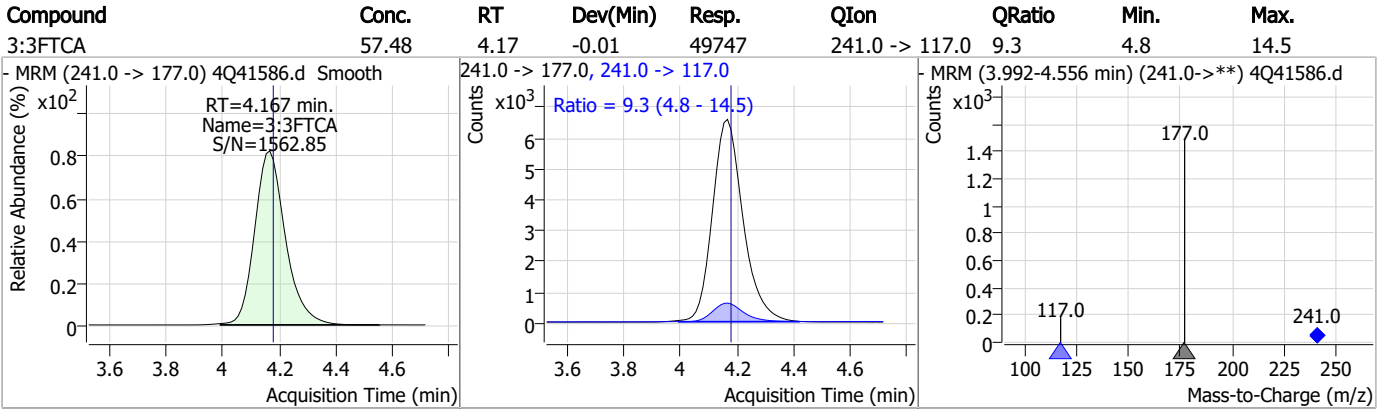
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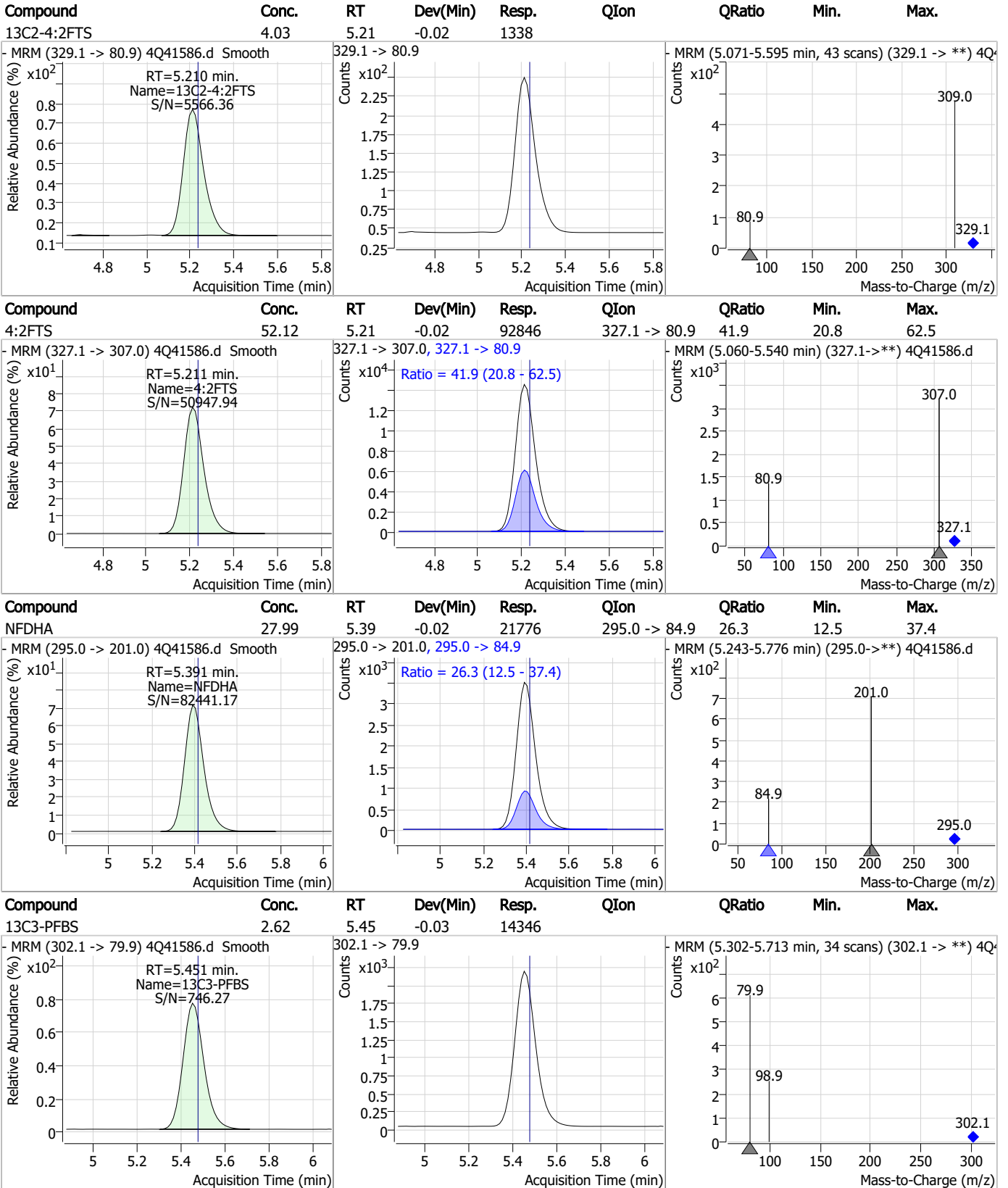
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

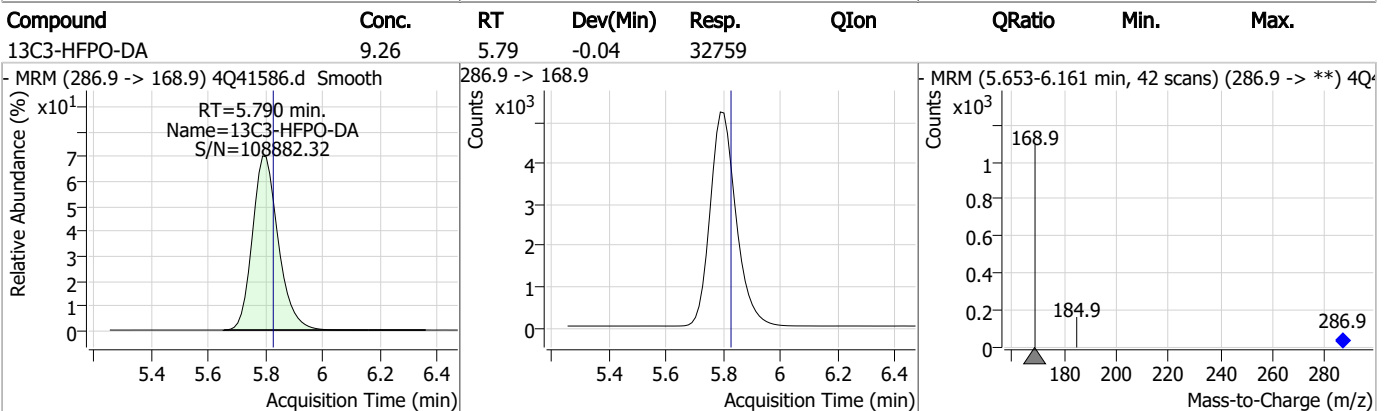
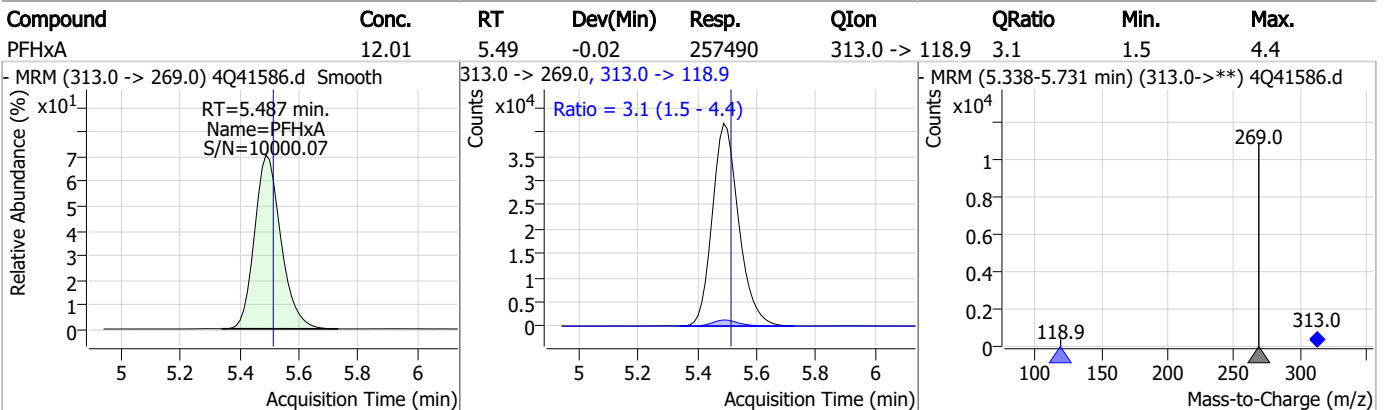
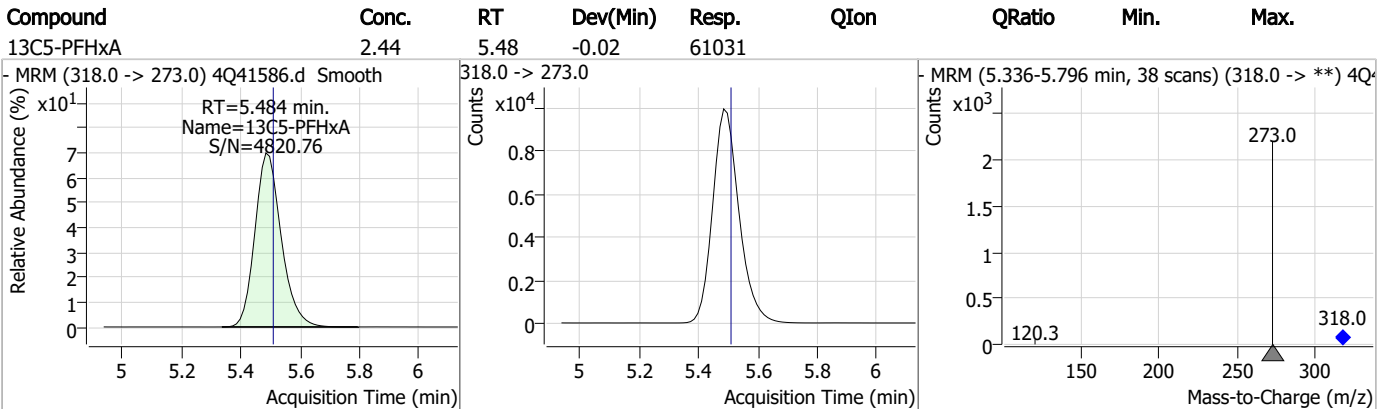
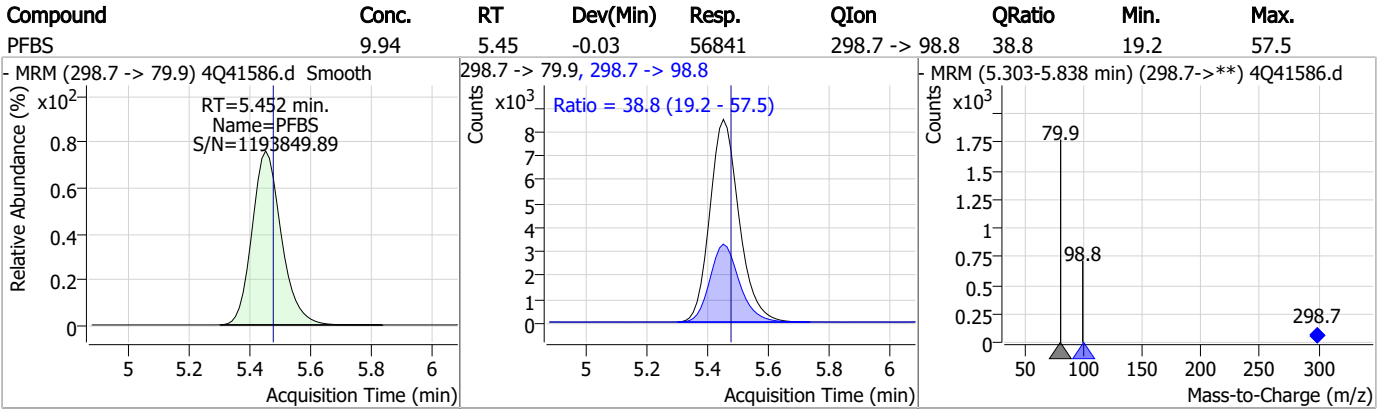


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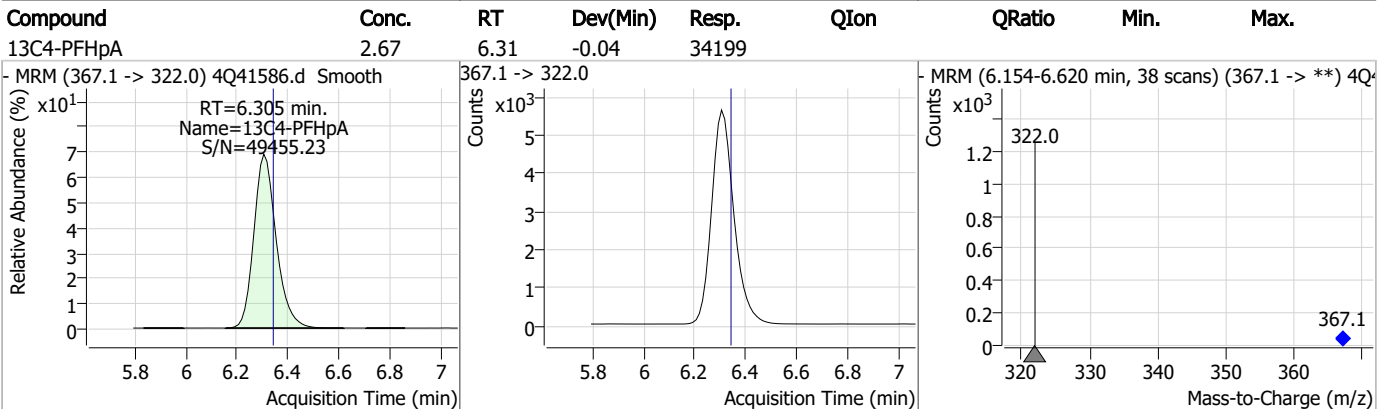
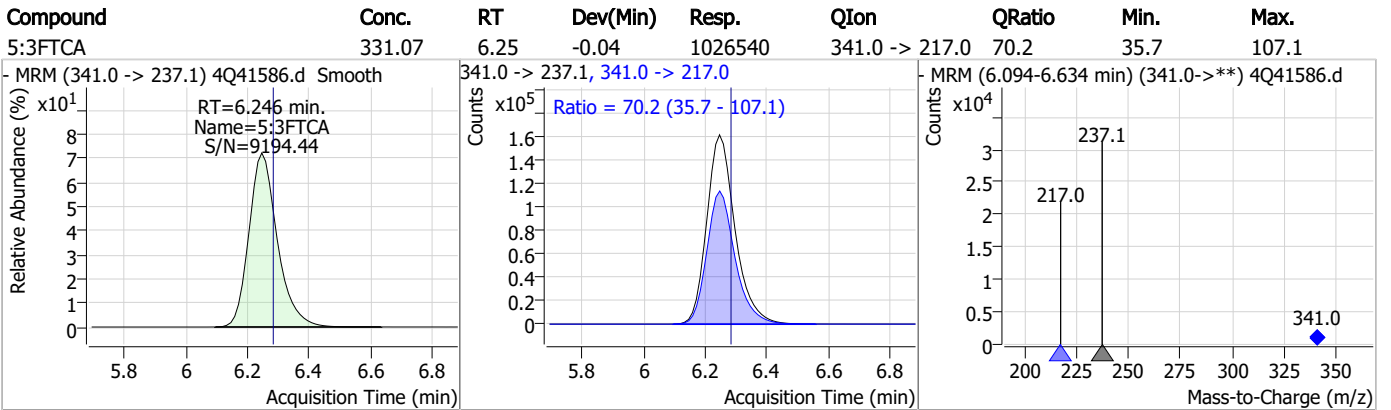
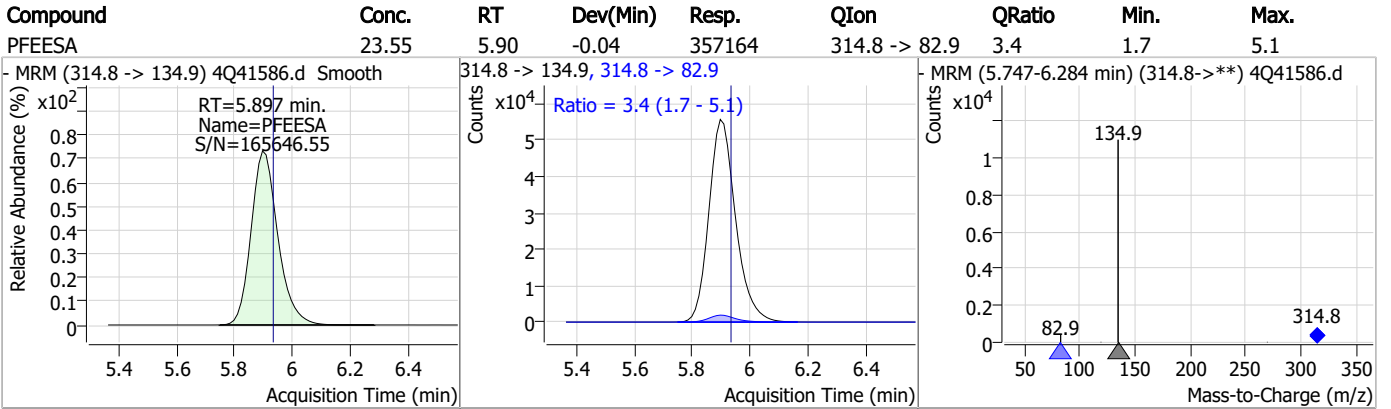
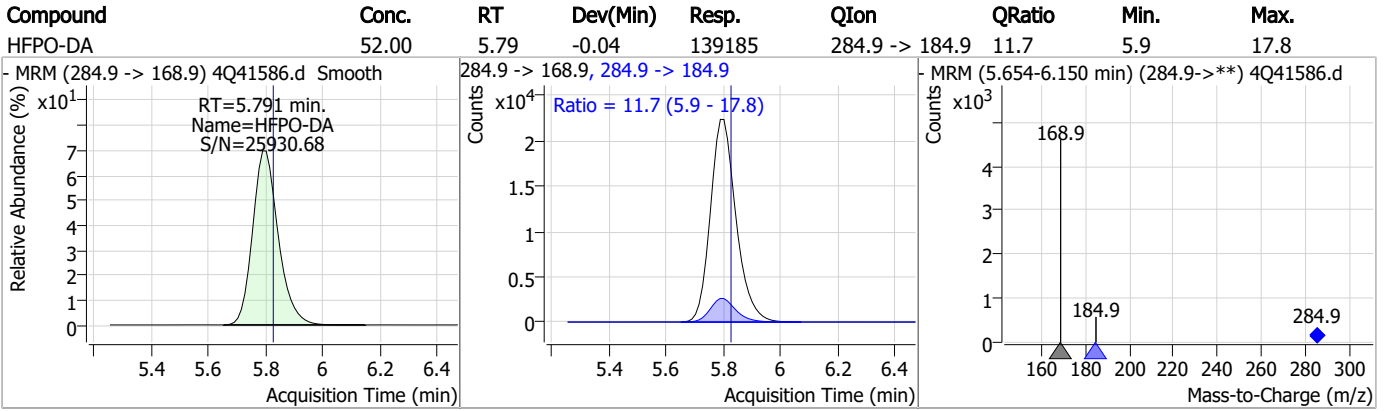
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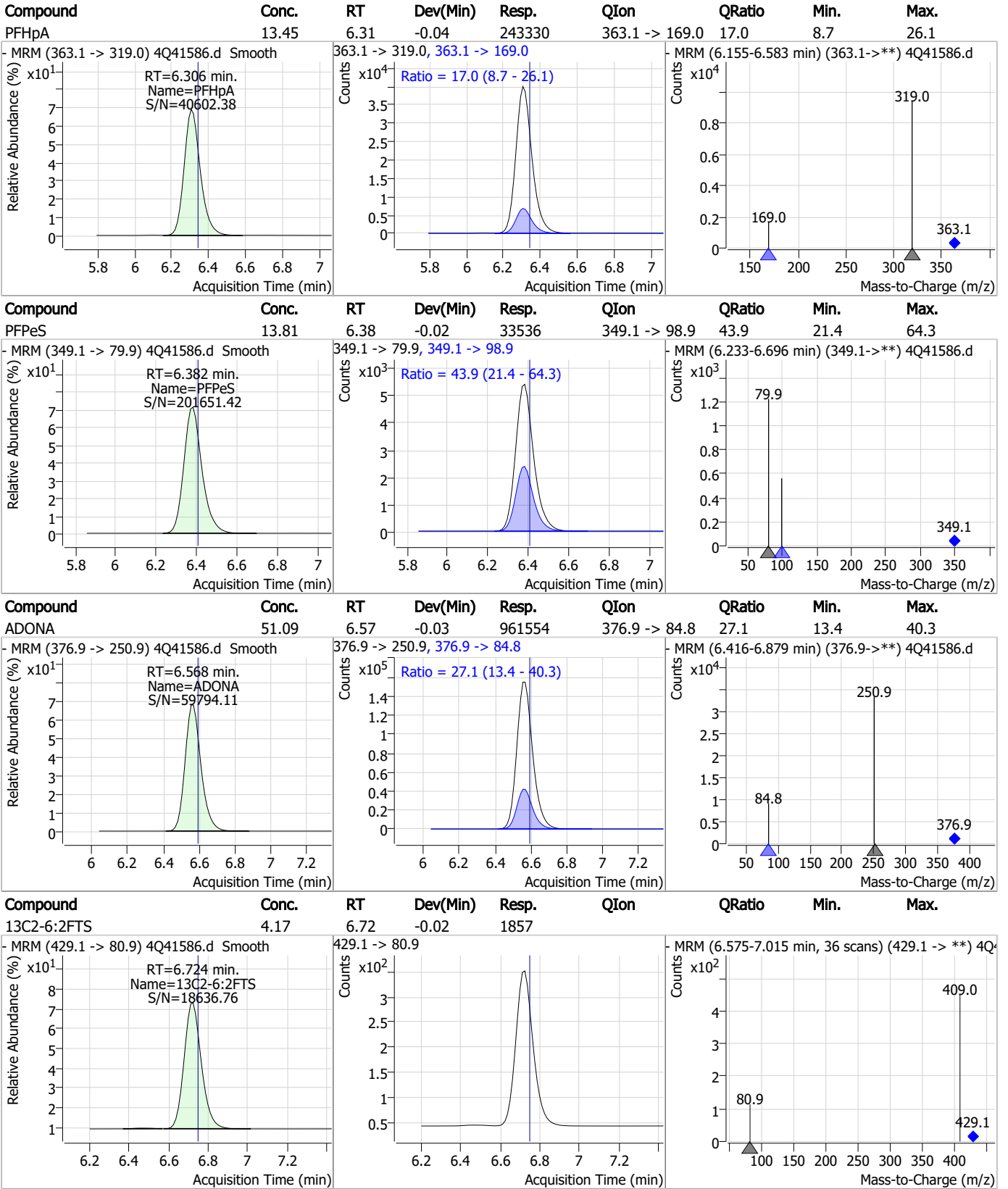
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



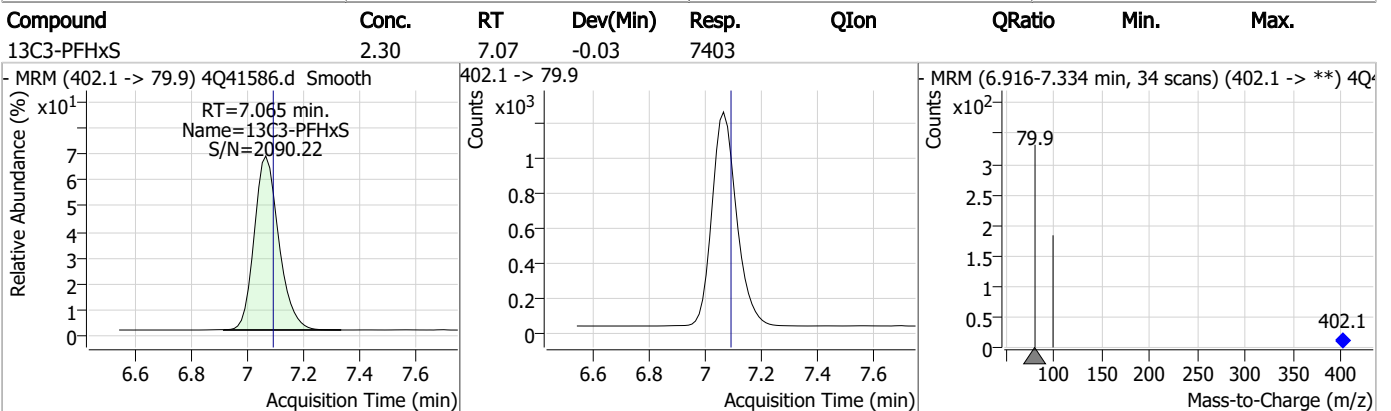
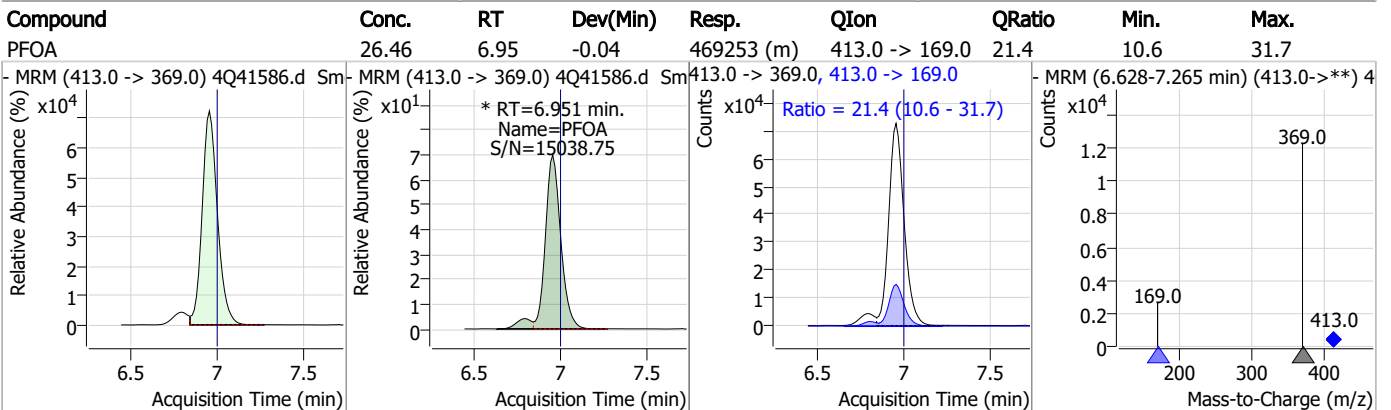
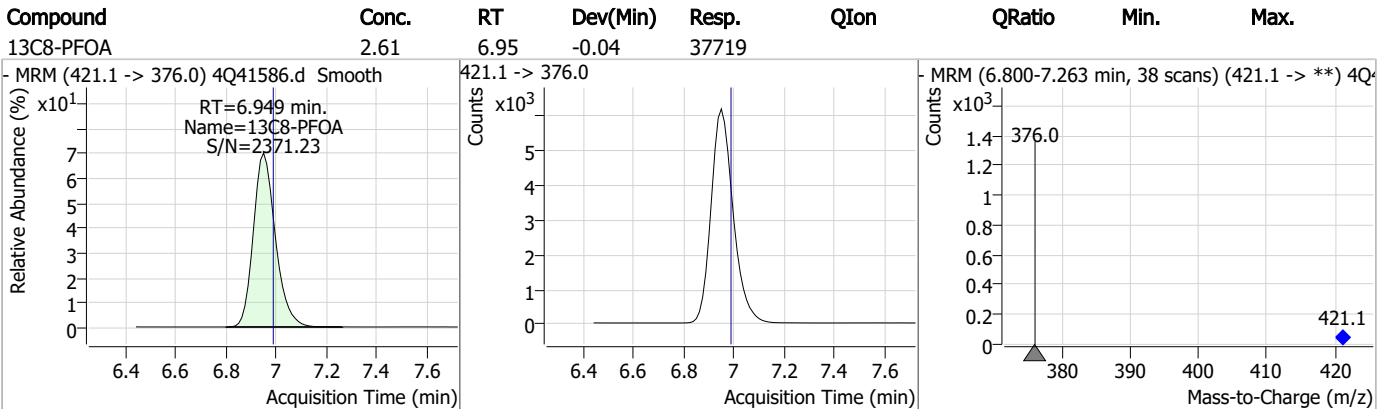
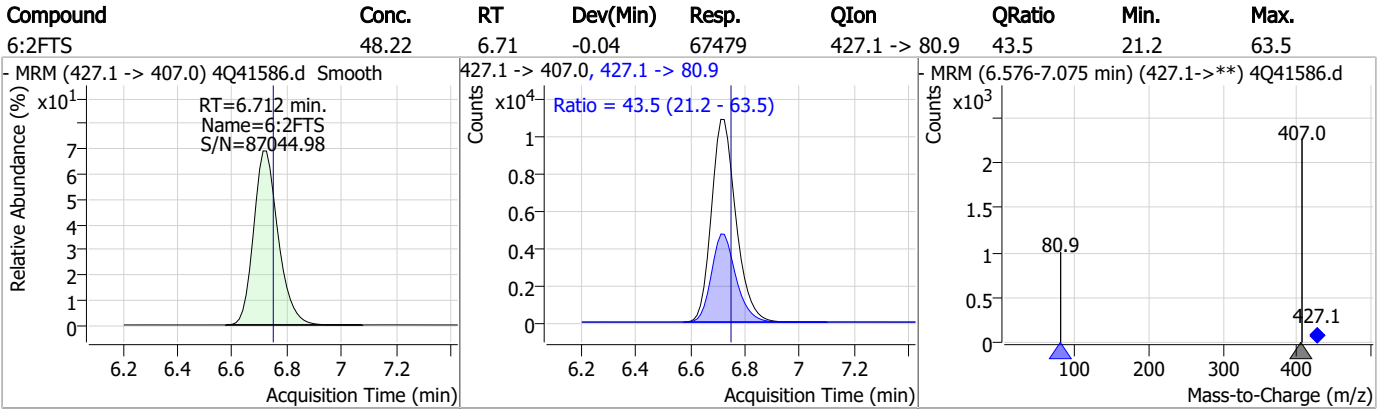
Perfluorinated Compounds by LC/MS/MS



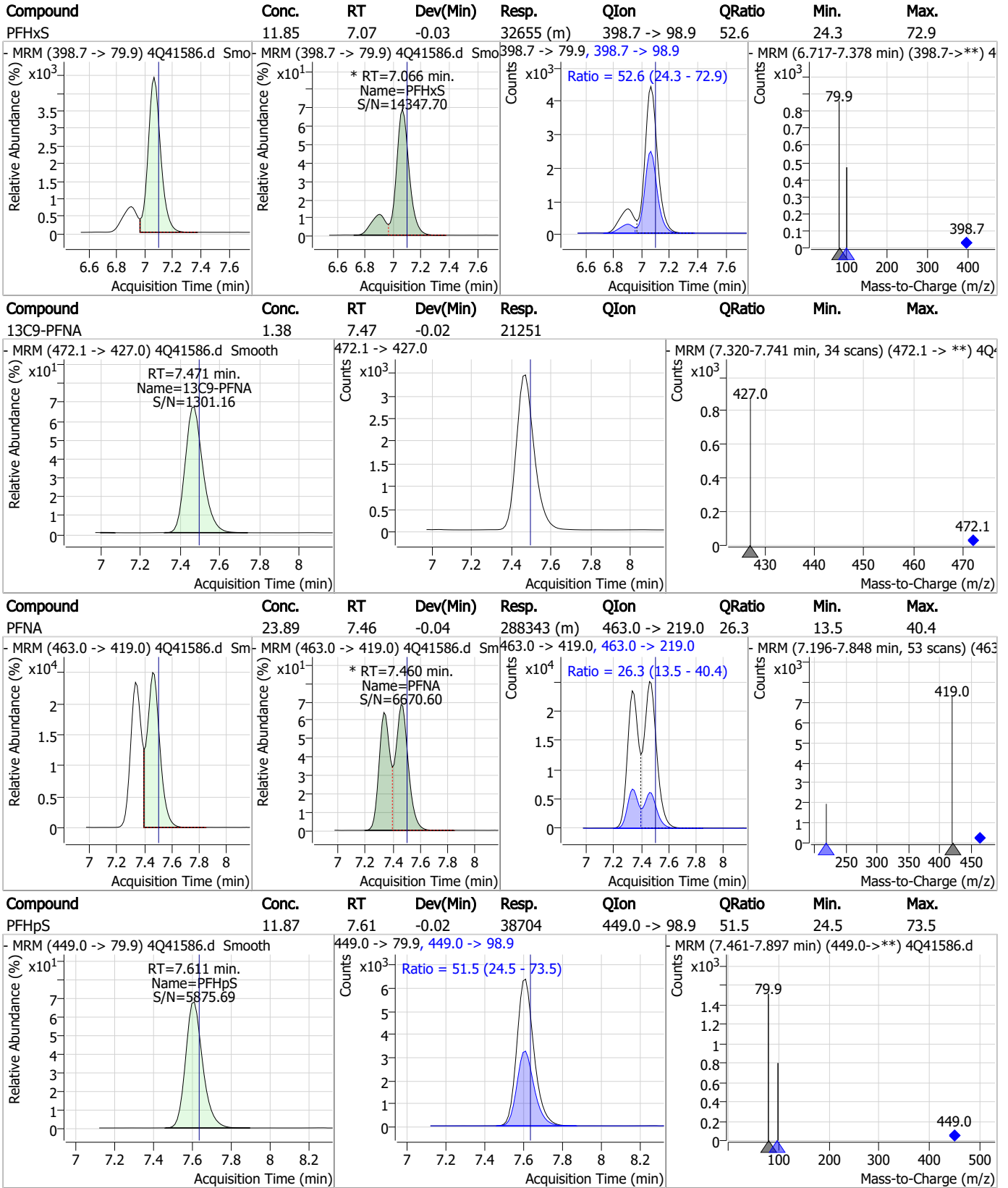
7.5.4
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Perfluorinated Compounds by LC/MS/MS



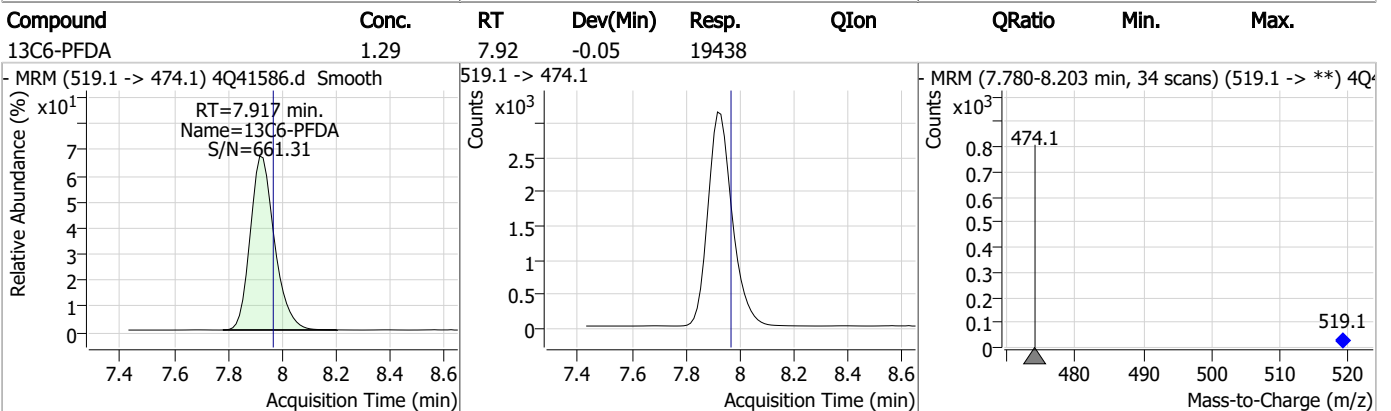
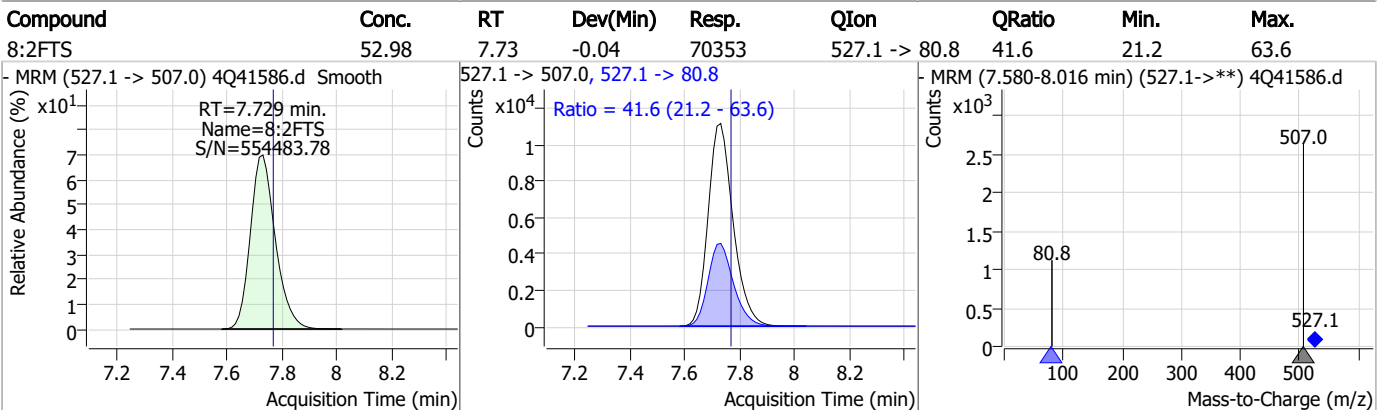
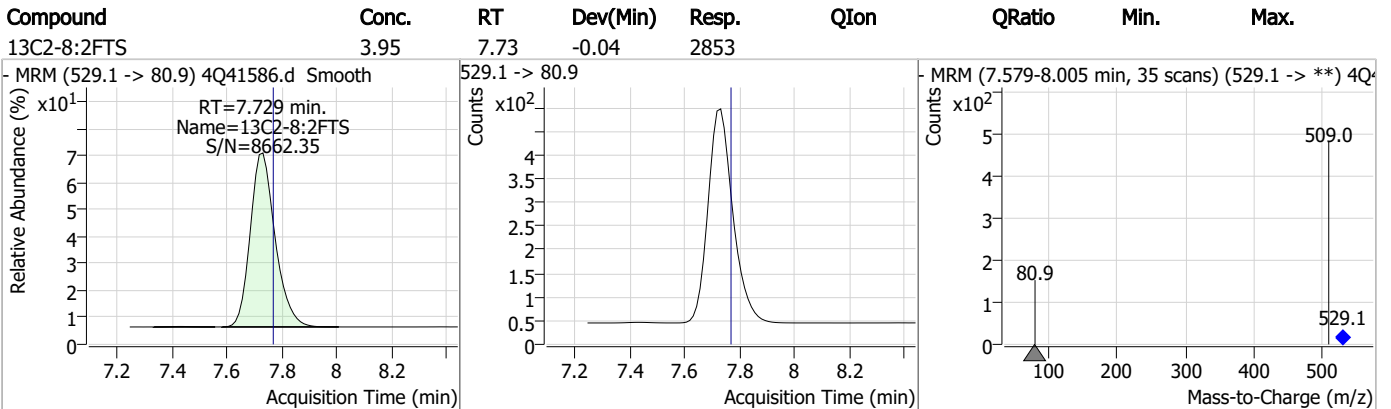
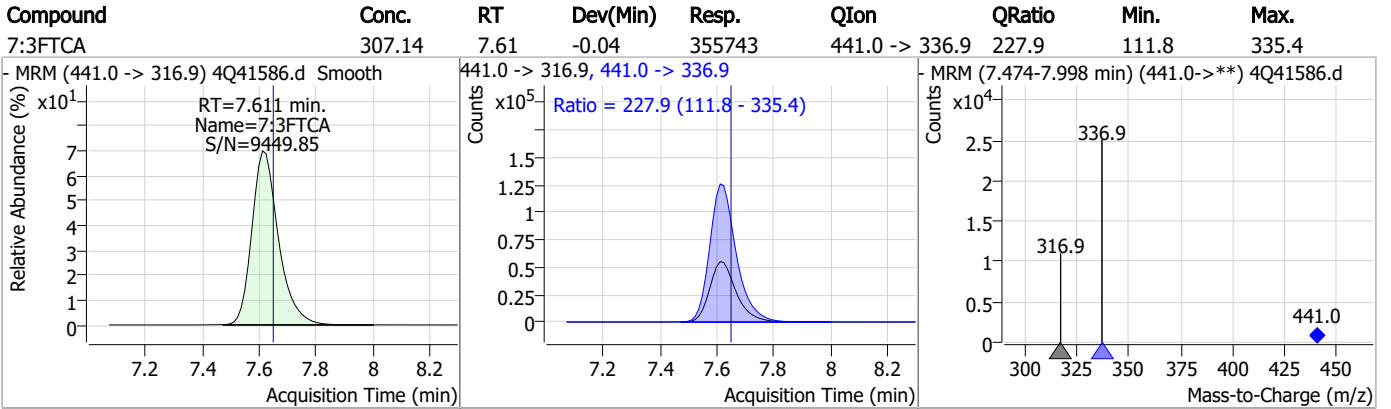
Perfluorinated Compounds by LC/MS/MS



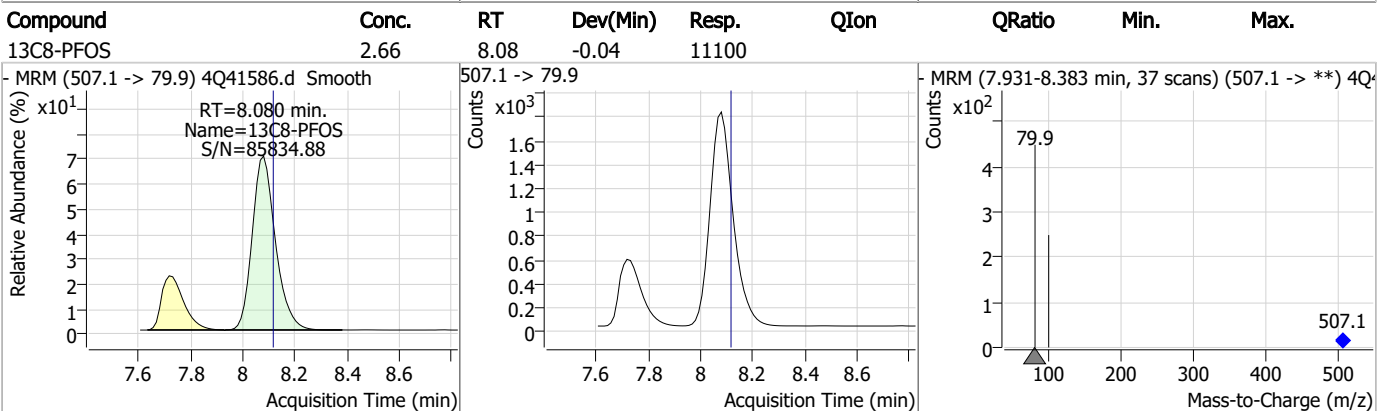
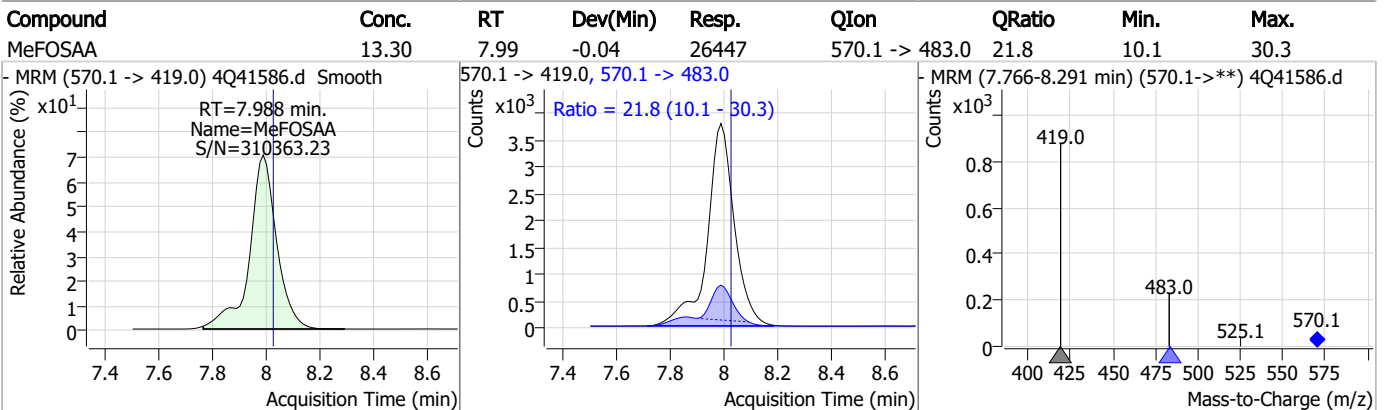
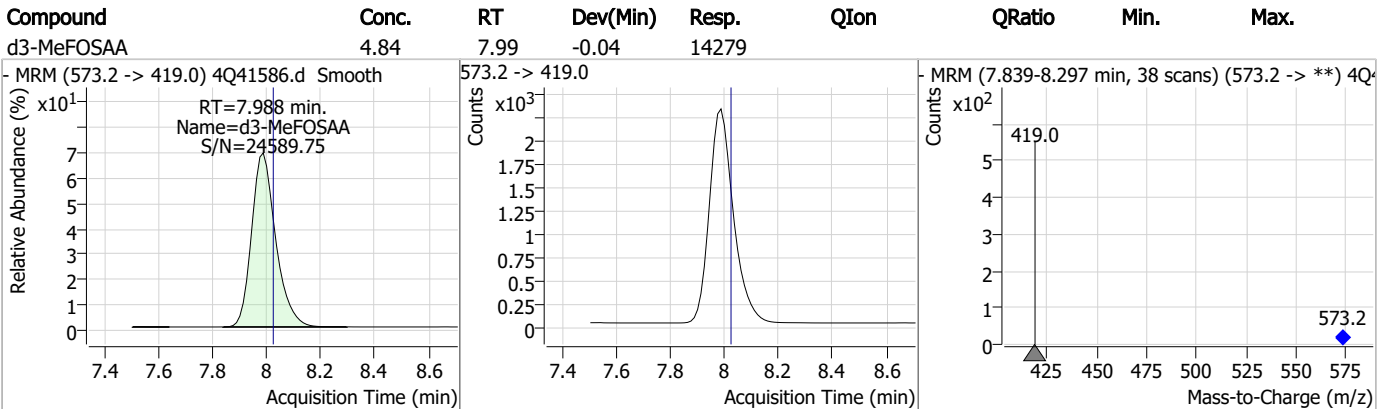
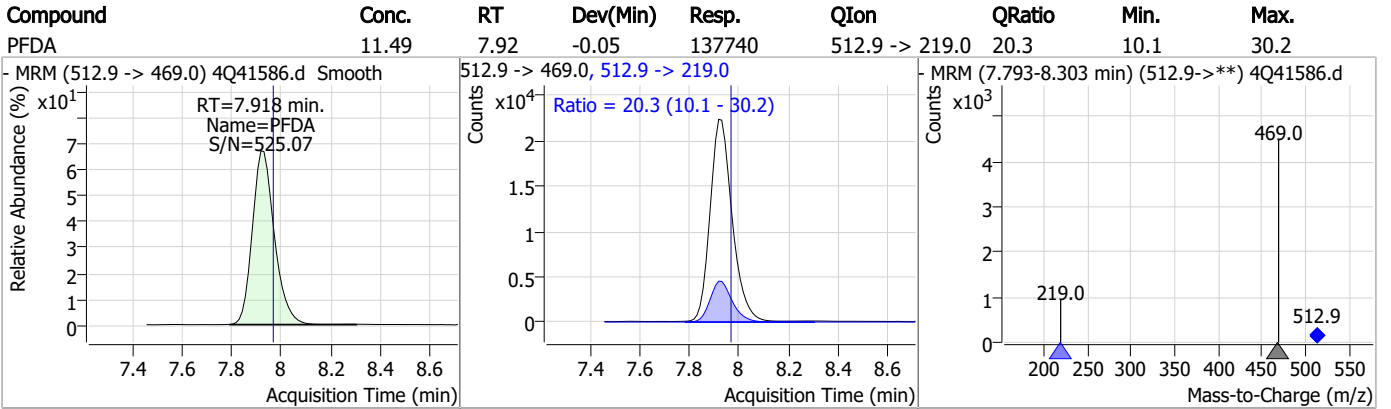
7.54

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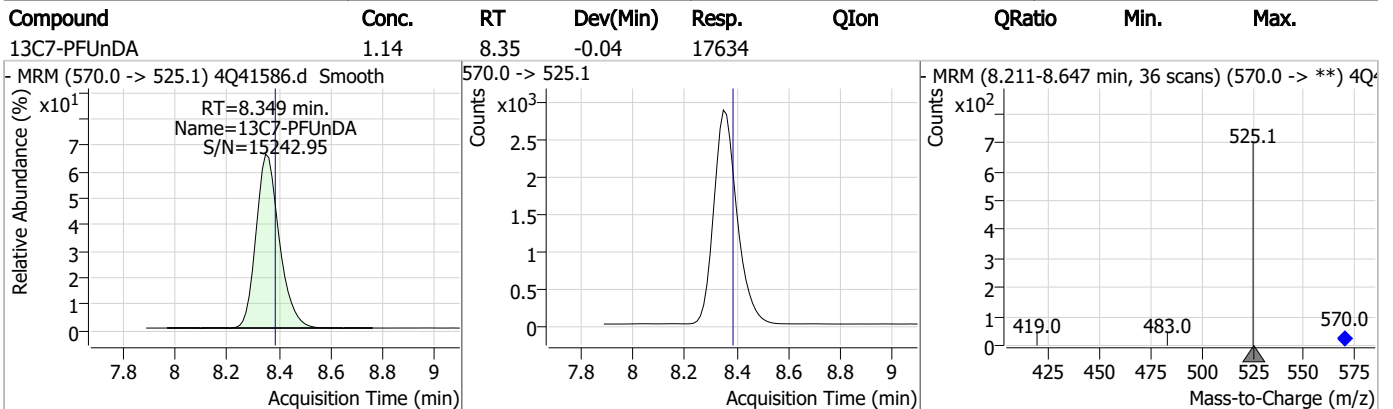
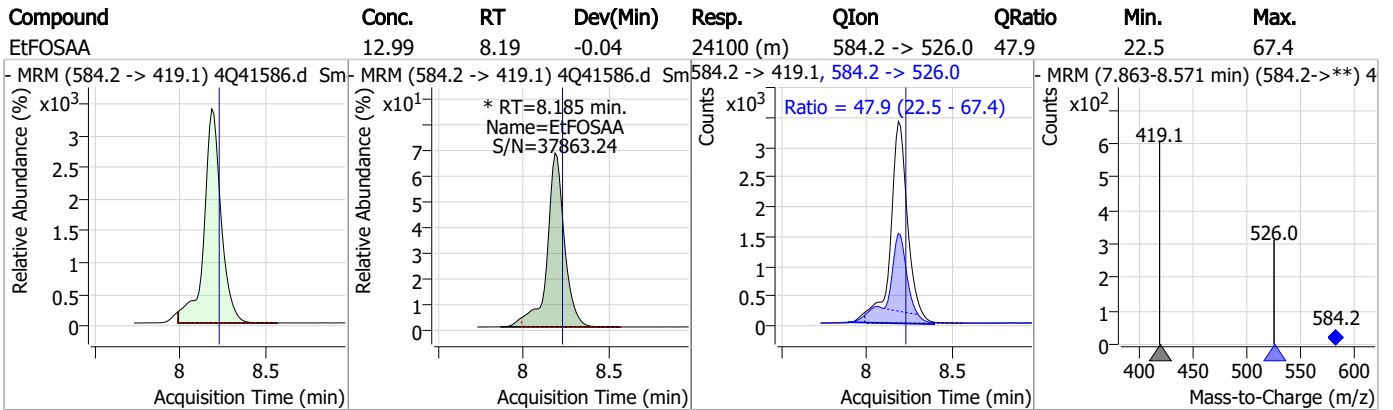
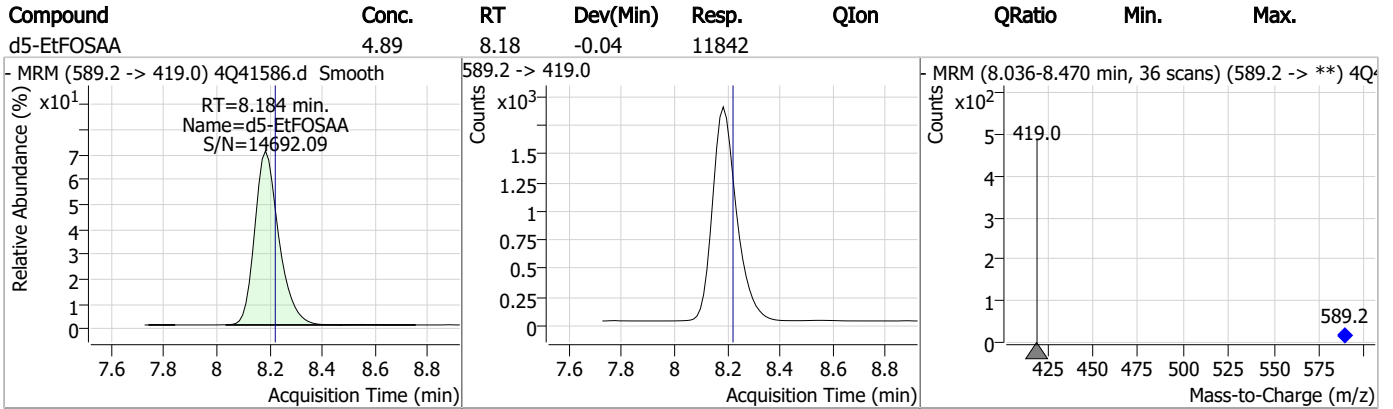
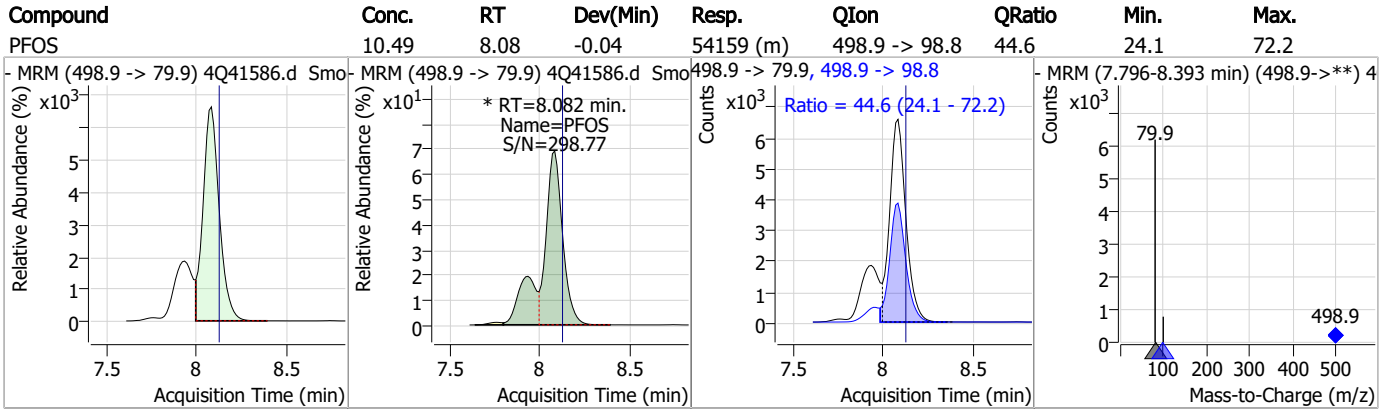
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

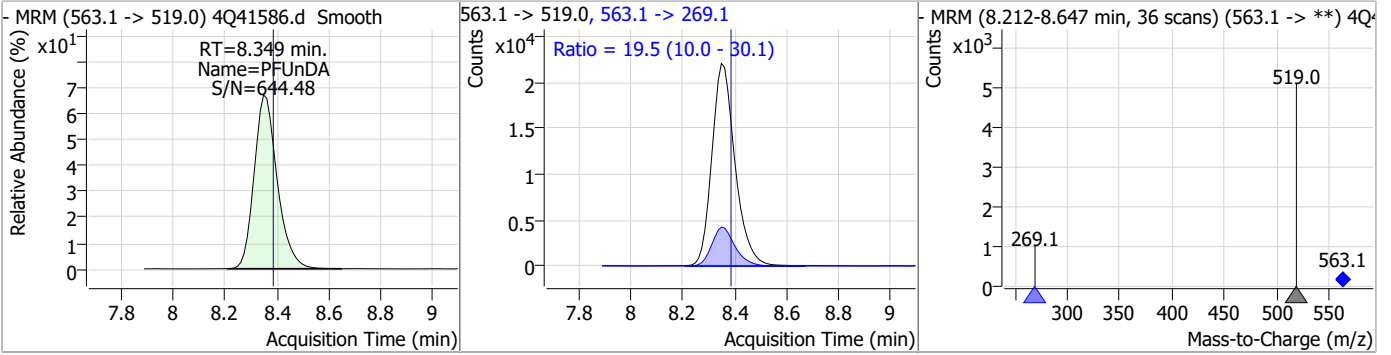


Perfluorinated Compounds by LC/MS/MS

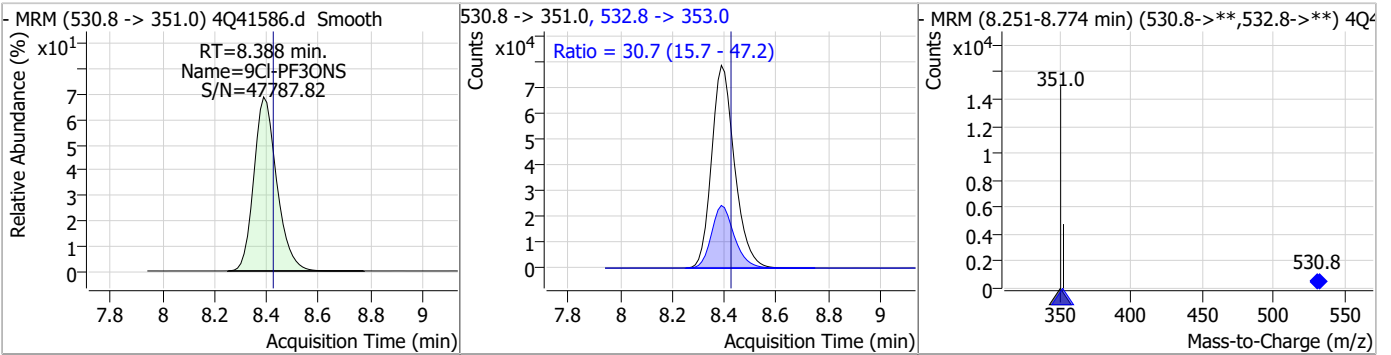


Perfluorinated Compounds by LC/MS/MS

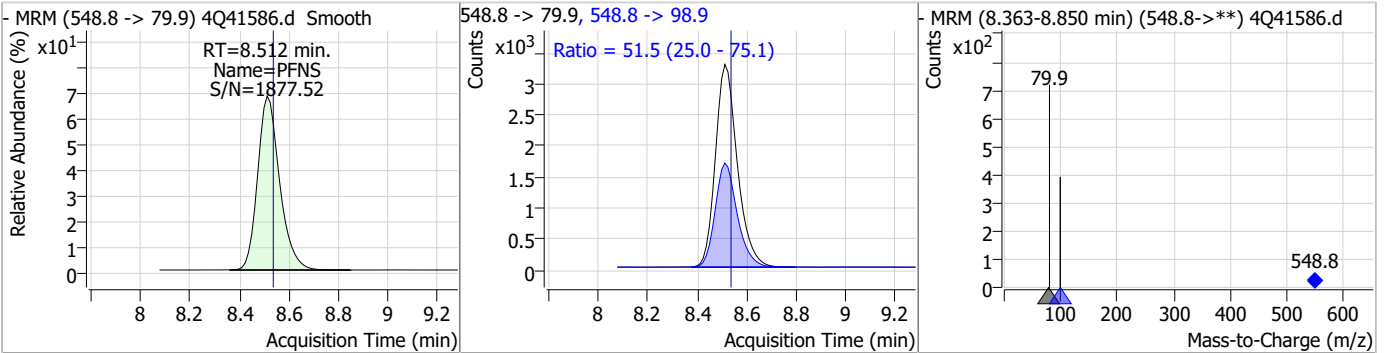
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	13.88	8.35	-0.04	134936	563.1 -> 269.1	19.5	10.0	30.1



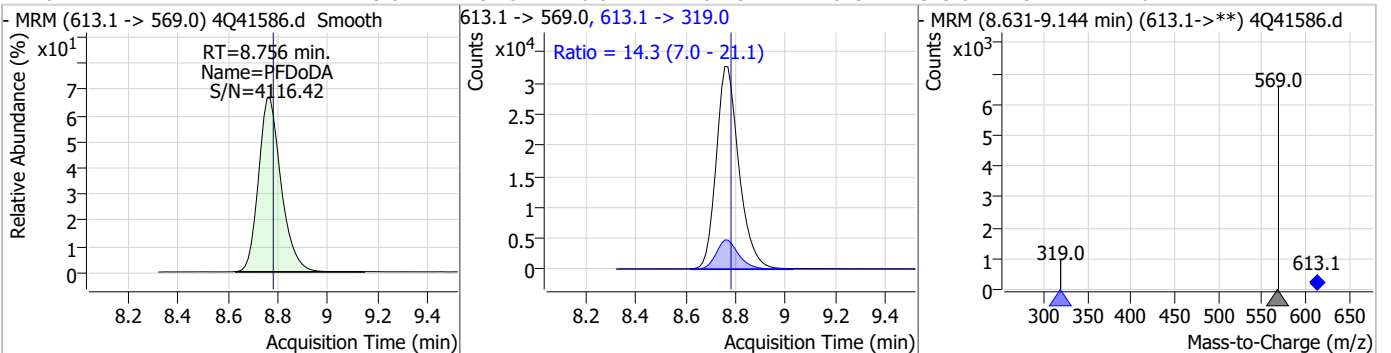
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9Cl-PF3ONS	49.98	8.39	-0.04	480130	532.8 -> 353.0	30.7	15.7	47.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	10.51	8.51	-0.02	20179	548.8 -> 98.9	51.5	25.0	75.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	13.04	8.76	-0.02	204757	613.1 -> 319.0	14.3	7.0	21.1



Perfluorinated Compounds by LC/MS/MS

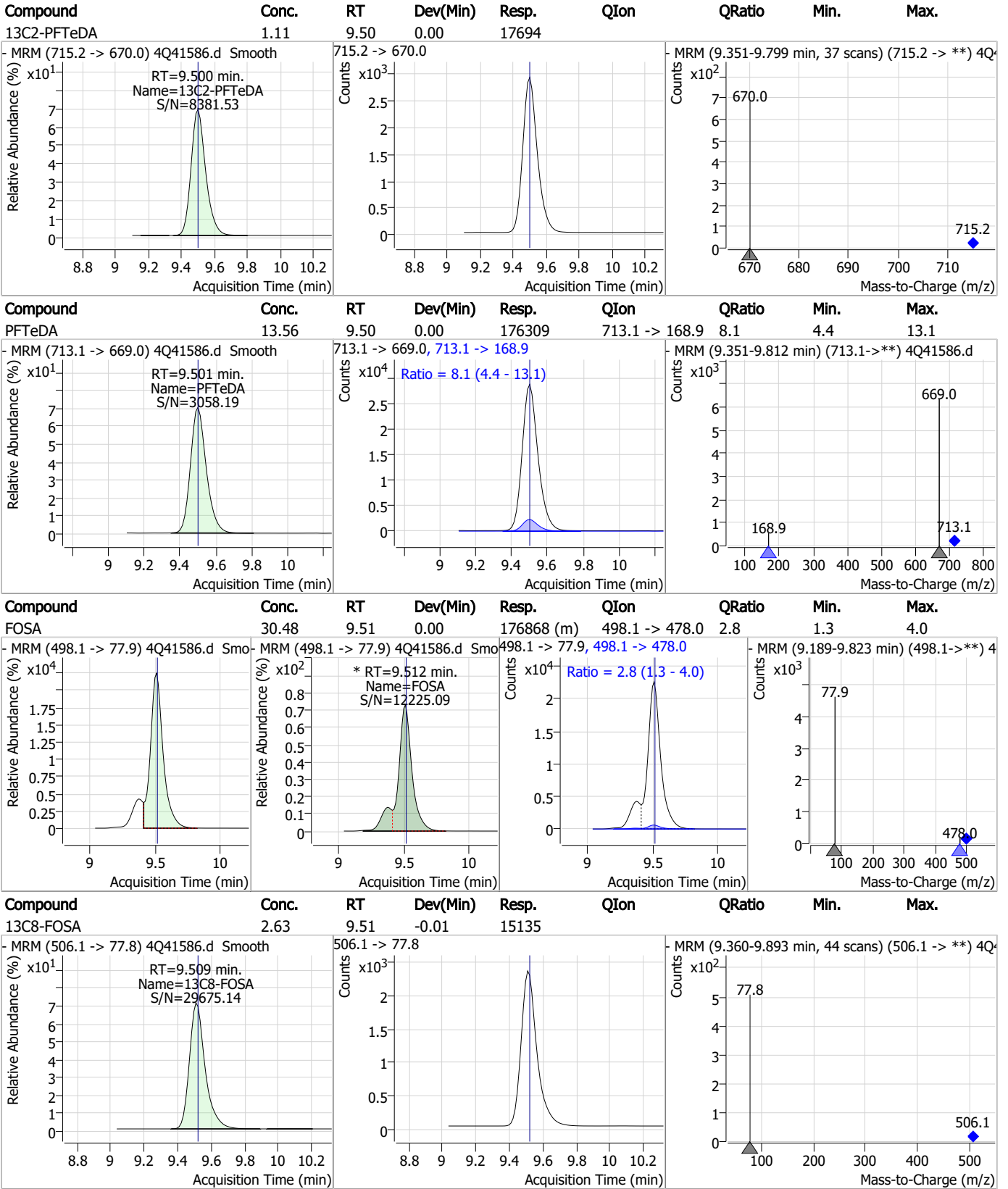
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.28	8.76	-0.04	23266				
PFDS	12.11	8.92	-0.01	29796	599.0 -> 98.8	49.3	24.0	72.1
PFTrDA	12.63	9.14	-0.01	237065	663.0 -> 168.9	10.1	4.9	14.7
11Cl-PF3OUdS	50.72	9.19	-0.01	407963	632.9 -> 452.9	30.8	15.3	46.0

7.5.4

7



Perfluorinated Compounds by LC/MS/MS



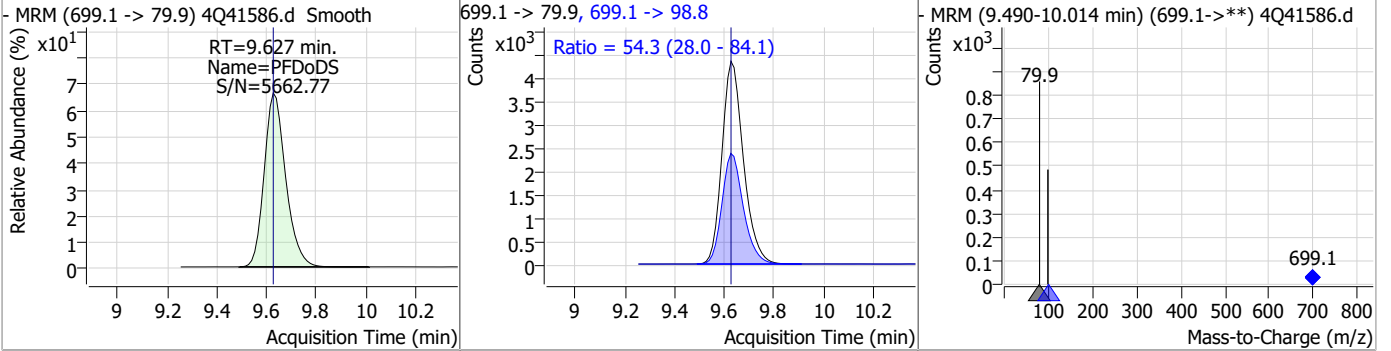
7.5.4

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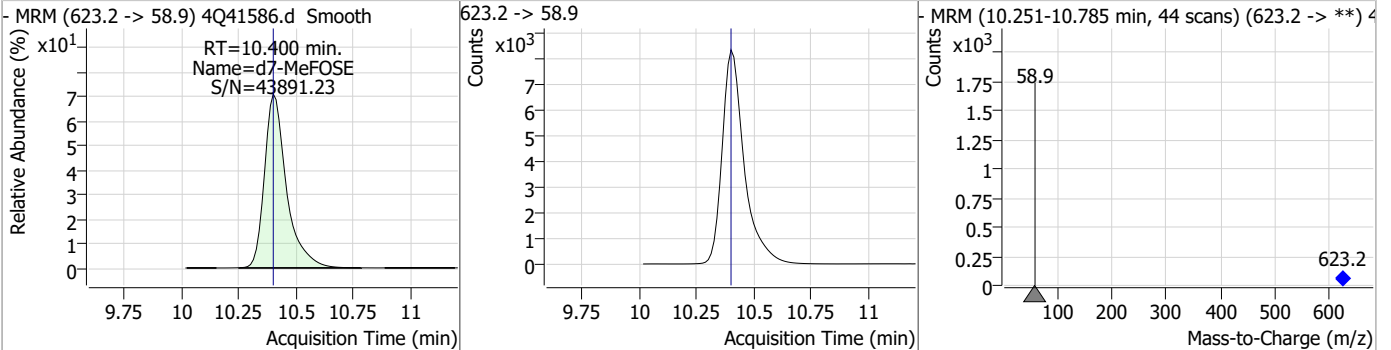


Perfluorinated Compounds by LC/MS/MS

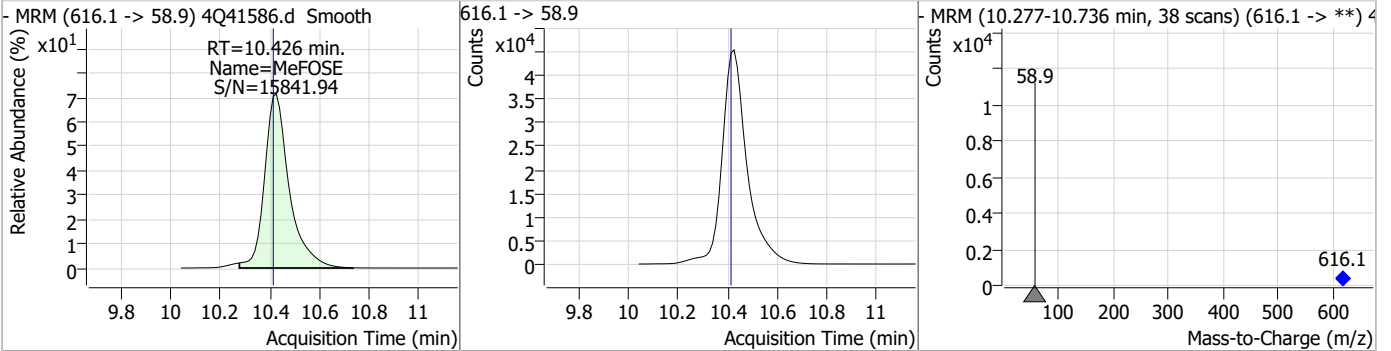
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PfDoDS	12.06	9.63	0.00	26092	699.1 -> 98.8	54.3	28.0	84.1



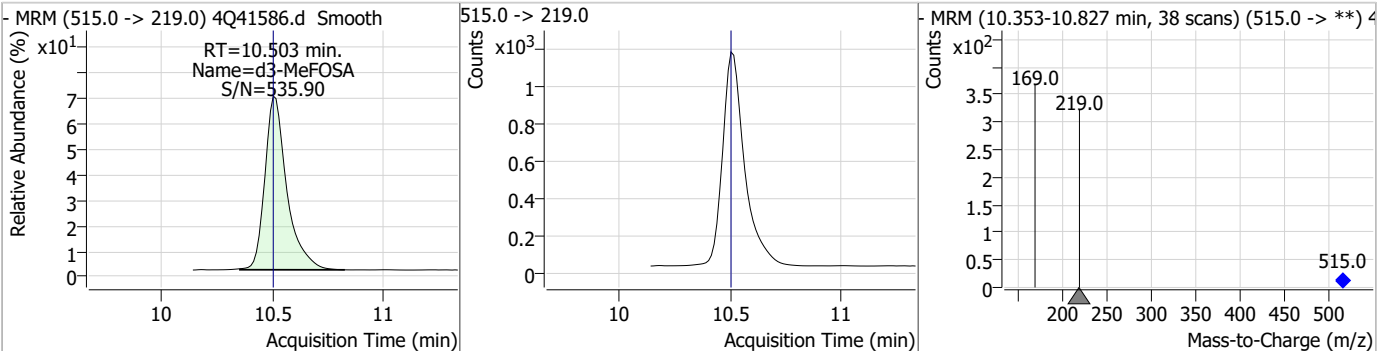
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	27.28	10.40	0.00	55388				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	142.23	10.43	0.01	314192				

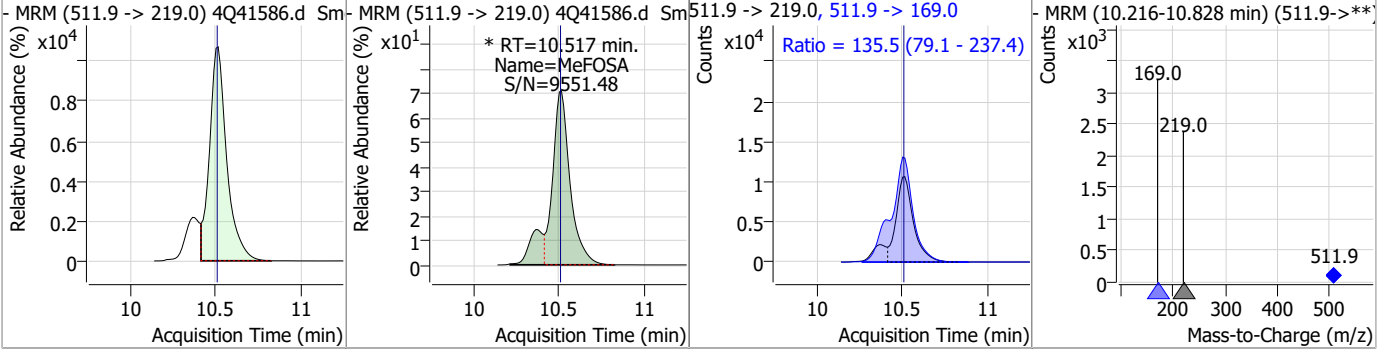


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.78	10.50	0.00	7887				

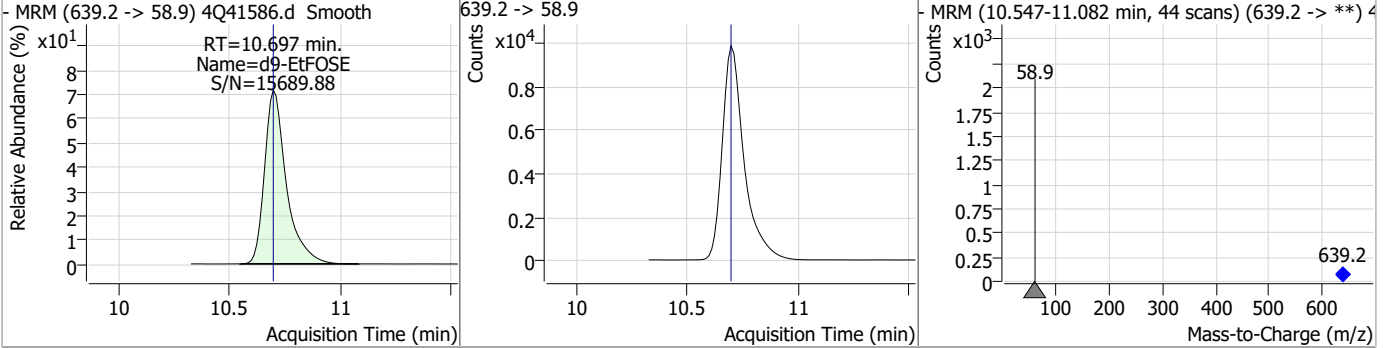


Perfluorinated Compounds by LC/MS/MS

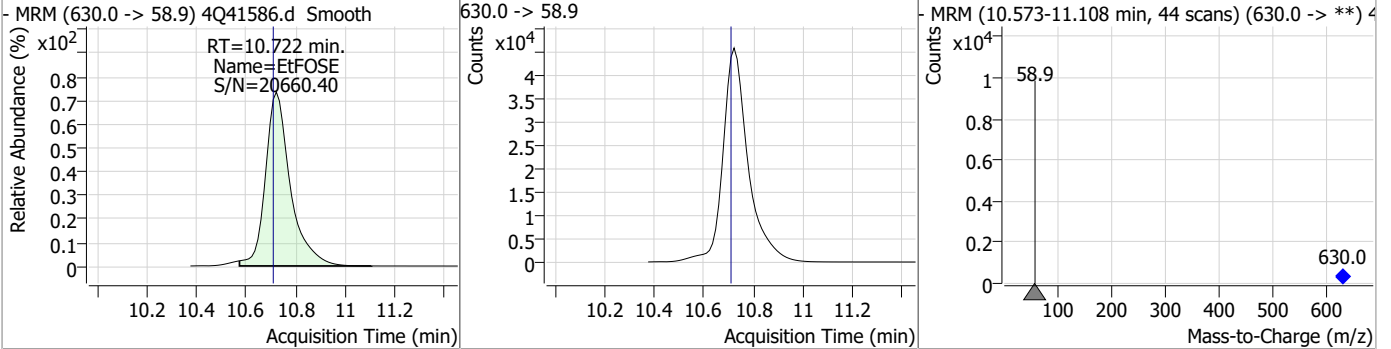
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	30.33	10.52	0.01	87400 (m)	511.9 -> 169.0	135.5	79.1	237.4



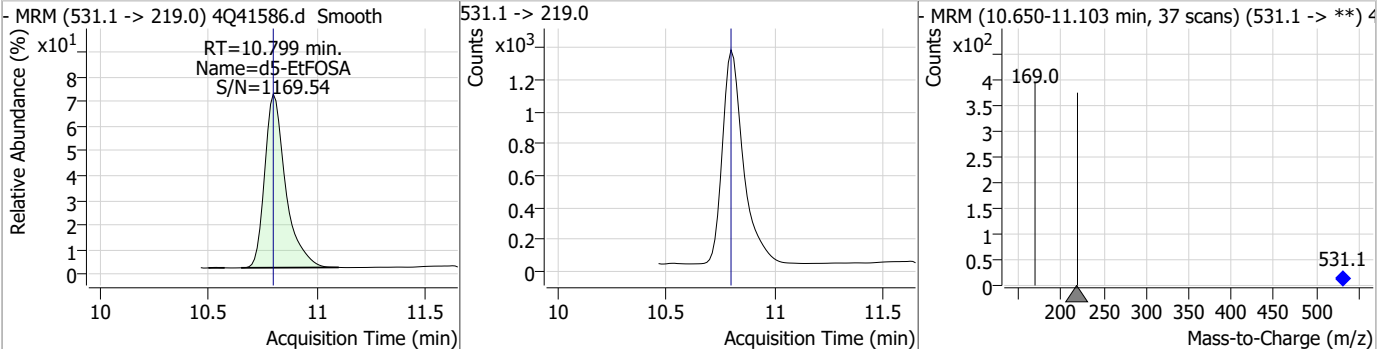
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	27.95	10.70	0.00	67121				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	132.72	10.72	0.01	320150				

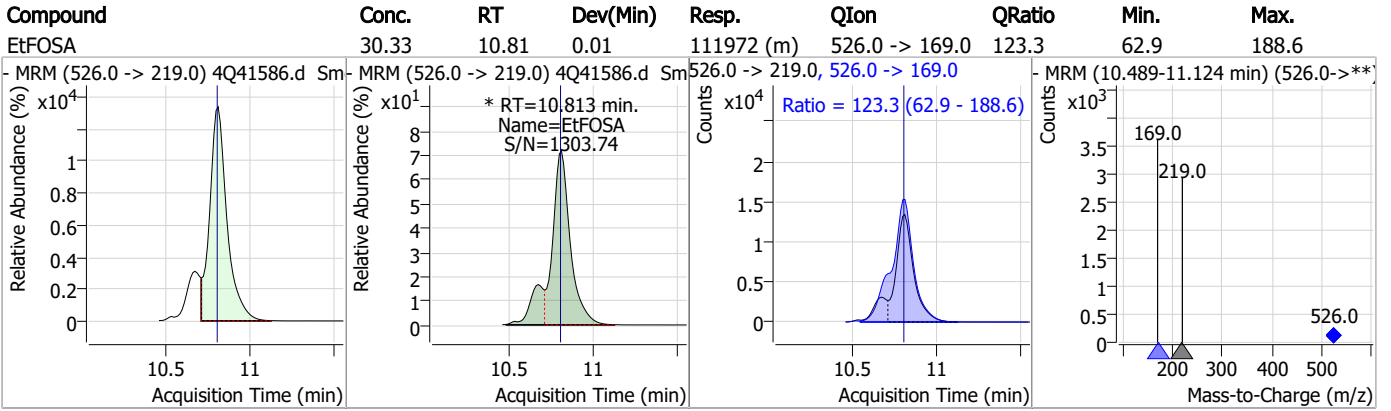


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.82	10.80	0.00	8983				



7.5.4
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Perfluorinated Compounds by LC/MS/MS



7.5.4

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Manual Integration Approval Summary

Sample Number: S4Q595-RT
Lab FileID: 4Q41586.D
Injection Time: 03/02/23 14:24

Method: EPA DRAFT 1633
Analyst approved: 03/03/23 15:05 Anna Ludwig
Supervisor approved: 03/03/23 15:49 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		6.95	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.07	Split peak
Perfluorononanoic acid	375-95-1		7.46	Poor instrument integration
Perfluorooctanesulfonic acid	1763-23-1		8.08	Split peak
EtFOSAA	2991-50-6		8.19	Split peak
PFOSA	754-91-6		9.51	Split peak
MeFOSA	31506-32-8		10.52	Split peak
EtFOSA	4151-50-2		10.81	Split peak

7.5.4.1

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 24 February 2023 12:08:38
Data Path D:\MassHunter\Tune\QQQ\G6470A\atunes.TUNE.XML
Ion Source AJS ESI
Ionization Mode AJS ESI
Tuned Resolution All
Vacuum Pressure 1.62E+0 [R] (Torr); 3.48E-5 [H] (Torr)

Source Parameters

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

QQQ Check Tune Report



Negative Results

Analyzer: MS1 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.98	-0.01	Pass	0.70	0.69	-0.01	Pass	135565
302.00	301.99	-0.01	Pass	0.70	0.71	0.01	Pass	206324
601.98	601.98	0.00	Pass	0.70	0.71	0.01	Pass	391933
1033.99	1034.01	0.02	Pass	0.70	0.71	0.01	Pass	504337
1633.95	1633.93	-0.02	Pass	0.70	0.70	0.00	Pass	912821
2233.91	2233.90	-0.01	Pass	0.70	0.73	0.03	Pass	614390

Analyzer: MS2 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.12	0.12	Pass	0.70	0.60	-0.10	Pass	37342
112.99	112.98	-0.01	Pass	0.70	0.72	0.02	Pass	110871
302.00	302.00	0.00	Pass	0.70	0.70	0.00	Pass	171036
601.98	601.99	0.01	Pass	0.70	0.70	0.00	Pass	235286
1033.99	1034.01	0.02	Pass	0.70	0.68	-0.02	Pass	127200
1633.95	1633.93	-0.02	Pass	0.70	0.70	0.00	Pass	198426
2233.91	2233.86	-0.05	Pass	0.70	0.68	-0.02	Pass	110698

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.99	0.00	Pass	1.20	1.23	0.03	Pass	176155
302.00	301.95	-0.05	Pass	1.20	1.47	0.27	Pass	256169
601.98	601.93	-0.05	Pass	1.20	1.55	0.35	Pass	600218
1033.99	1033.97	-0.02	Pass	1.20	1.56	0.36	Pass	939069
1633.95	1633.94	-0.01	Pass	1.20	1.40	0.20	Pass	2259412
2233.91	2233.87	-0.04	Pass	1.20	1.22	0.02	Pass	1358186

Analyzer: MS2 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.08	0.08	Pass	1.20	1.11	-0.09	Pass	49216
112.99	112.97	-0.02	Pass	1.20	1.21	0.01	Pass	155094
302.00	302.01	0.01	Pass	1.20	1.47	0.27	Pass	252205
601.98	602.01	0.03	Pass	1.20	1.54	0.34	Pass	444588
1033.99	1033.99	0.00	Pass	1.20	1.54	0.34	Pass	270402
1633.95	1633.88	-0.07	Pass	1.20	1.45	0.25	Pass	622501
2233.91	2233.94	0.03	Pass	1.20	1.27	0.07	Pass	458903

Analyzer: MS1 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.91	-0.08	Pass	2.50	2.56	0.06	Pass	221940
302.00	301.94	-0.06	Pass	2.50	2.81	0.31	Pass	307502
601.98	601.95	-0.03	Pass	2.50	2.86	0.36	Pass	771959
1033.99	1033.95	-0.04	Pass	2.50	2.86	0.36	Pass	1417160
1633.95	1633.92	-0.03	Pass	2.50	2.59	0.09	Pass	4524384
2233.91	2233.77	-0.14	Pass	2.50	2.45	-0.05	Pass	3534569

Analyzer: MS2 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.07	0.07	Pass	2.50	2.34	-0.16	Pass	62097
112.99	112.98	-0.01	Pass	2.50	2.49	-0.01	Pass	193650
302.00	302.00	0.00	Pass	2.50	2.72	0.22	Pass	316310
601.98	602.01	0.03	Pass	2.50	2.77	0.27	Pass	598601
1033.99	1033.99	0.00	Pass	2.50	2.78	0.28	Pass	407448
1633.95	1633.96	0.01	Pass	2.50	2.61	0.11	Pass	1141315
2233.91	2233.91	0.00	Pass	2.50	2.42	-0.08	Pass	1141725

7.6.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41232.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/24/2023 4:01:51 PM
 Sample Name : ic589-1
 Vial : P1-A2
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q589.batch.bin
 Sample Information : op95462,S4Q589,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.111	216.8 -> 171.9	116621	10.00 µg/L	0.012
M5-PFPeA	4.487	268.3 -> 223.0	73570	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	56287	2.50 µg/L	0.000
M4-PFHpA	6.443	367.1 -> 322.0	28993	2.50 µg/L	0.000
M8-PFOA	7.088	421.1 -> 376.0	33651	2.50 µg/L	0.000
M9-PFNA	7.622	472.1 -> 427.0	18281	1.25 µg/L	-0.012
M6-PFDA	8.116	519.1 -> 474.1	18657	1.25 µg/L	0.000
M7-PFUnDA	8.573	570.0 -> 525.1	18633	1.25 µg/L	-0.012
M2-PFDoDA	9.017	615.1 -> 570.0	20448	1.25 µg/L	0.000
M2-PFTeDA	9.786	715.2 -> 670.0	18058	1.25 µg/L	-0.012
M8-FOSA	9.720	506.1 -> 77.8	13687	2.50 µg/L	0.000
M3-PFBS	5.501	302.1 -> 79.9	12600	2.50 µg/L	0.012
M3-PFHxS	7.191	402.1 -> 79.9	7481	2.50 µg/L	-0.012
M8-PFOS	8.267	507.1 -> 79.9	10000	2.50 µg/L	-0.012
M2-4:2FTS	5.260	329.1 -> 80.9	1808	5.00 µg/L	0.000
M2-6:2FTS	6.860	429.1 -> 80.9	2325	5.00 µg/L	0.000
M2-8:2FTS	7.904	529.1 -> 80.9	3799	5.00 µg/L	-0.012
M3-MeFOSAA	8.185	573.2 -> 419.0	14891	5.00 µg/L	0.000
M3-HFPO-DA	5.889	286.9 -> 168.9	32167	10.00 µg/L	0.000
M5-EtFOSAA	8.396	589.2 -> 419.0	12047	5.00 µg/L	0.000
M7-MeFOSE	10.710	623.2 -> 58.9	50598	25.00 µg/L	0.000
M9-EtFOSE	11.032	639.2 -> 58.9	60615	25.00 µg/L	0.000
M5-EtFOSA	11.135	531.1 -> 219.0	7884	2.50 µg/L	0.000
M3-MeFOSA	10.827	515.0 -> 219.0	7042	2.50 µg/L	0.000
13C4-PFOS	8.267	502.8 -> 79.9	10383	2.50 µg/L	-0.012
13C3-PFBA	3.115	216.0 -> 172.0	68225	5.00 µg/L	0.013
18O2-PFHxS	7.190	403.0 -> 83.9	5403	2.50 µg/L	-0.012
13C4-PFOA	7.089	417.1 -> 372.0	41025	2.50 µg/L	0.000
13C2-PFDA	8.116	515.1 -> 470.1	15697	1.25 µg/L	-0.012
13C5-PFNA	7.622	468.0 -> 423.0	21226	1.25 µg/L	-0.012
13C2-PFHxA	5.560	315.1 -> 270.0	50851	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1808	5.74 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.9%		
13C2-6:2FTS	6.860	429.1 -> 80.9	2325	5.50 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.1%		
13C2-8:2FTS	7.904	529.1 -> 80.9	3799	5.55 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.0%		
13C2-PFDoDA	9.017	615.1 -> 570.0	20448	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C2-PFTeDA	9.786	715.2 -> 670.0	18058	1.22 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.7%		
13C3-PFBS	5.501	302.1 -> 79.9	12600	2.43 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.2%		
13C3-PFHxS	7.191	402.1 -> 79.9	7481	2.45 µg/L	-0.012

7.62
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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 = 98.1%	
13C4-PFBA	3.111	216.8 -> 171.9	116621	9.92 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C4-PFHpA	6.443	367.1 -> 322.0	28993	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C5-PFHxA	5.559	318.0 -> 273.0	56287	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C5-PFPeA	4.487	268.3 -> 223.0	73570	5.15 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.0%	
13C6-PFDA	8.116	519.1 -> 474.1	18657	1.34 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.9%	
13C7-PFUnDA	8.573	570.0 -> 525.1	18633	1.30 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.2%	
13C8-FOSA	9.720	506.1 -> 77.8	13687	2.38 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.1%	
13C8-PFOA	7.088	421.1 -> 376.0	33651	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C8-PFOS	8.267	507.1 -> 79.9	10000	2.40 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C9-PFNA	7.622	472.1 -> 427.0	18281	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.7%	
d3-MeFOSAA	8.185	573.2 -> 419.0	14891	5.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C3-HFPO-DA	5.889	286.9 -> 168.9	32167	10.26 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.6%	
d3-MeFOSA	10.827	515.0 -> 219.0	7042	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%	
d5-EtFOSAA	8.396	589.2 -> 419.0	12047	4.99 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
d7-MeFOSE	10.710	623.2 -> 58.9	50598	24.96 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
d9-EtFOSE	11.032	639.2 -> 58.9	60615	25.29 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
d5-EtFOSA	11.135	531.1 -> 219.0	7884	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	1553	0.65 µg/L	93
		327.1 -> 80.9	758		
6:2FTS	6.861	427.1 -> 407.0	1349	0.77 µg/L	98
		427.1 -> 80.9	569		
8:2FTS	7.904	527.1 -> 507.0	1361	0.77 µg/L	93
		527.1 -> 80.8	496		
EtFOSAA	8.397	584.2 -> 419.1	339	0.18 µg/L	m 89
		584.2 -> 526.0	152		
FOSA	9.711	498.1 -> 77.9	1016	0.19 µg/L	98
		498.1 -> 478.0	32		
MeFOSAA	8.186	570.1 -> 419.0	415	0.20 µg/L	82
		570.1 -> 483.0	48		
PFBA	3.120	212.8 -> 168.9	2109	0.76 µg/L	100
PFBS	5.502	298.7 -> 79.9	914	0.18 µg/L	94
		298.7 -> 98.8	311		
PFDA	8.116	512.9 -> 469.0	1988	0.17 µg/L	84
		512.9 -> 219.0	538		
PFDODA	9.018	613.1 -> 569.0	2442	0.18 µg/L	95
		613.1 -> 319.0	399		
PFDS	9.184	599.0 -> 79.9	472	0.21 µg/L	70

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	150			
PFHpA	6.444	363.1 -> 319.0	2894	0.19	µg/L	98
		363.1 -> 169.0	479			
PFHpS	7.762	449.0 -> 79.9	628	0.21	µg/L	81
		449.0 -> 98.9	238			
PFHxA	5.562	313.0 -> 269.0	4085	0.21	µg/L	99
		313.0 -> 118.9	143			
PFHxS	7.192	398.7 -> 79.9	528	0.19	µg/L	m 81
		398.7 -> 98.9	336			
PFNA	7.622	463.0 -> 419.0	2008	0.19	µg/L	89
		463.0 -> 219.0	379			
PFNS	8.749	548.8 -> 79.9	325	0.19	µg/L	84
		548.8 -> 98.9	139			
PFOA	7.090	413.0 -> 369.0	3041	0.19	µg/L	94
		413.0 -> 169.0	691			
PFOS	8.280	498.9 -> 79.9	1111	0.24	µg/L	m 95
		498.9 -> 98.8	584			
PFPeA	4.489	263.0 -> 219.0	5595	0.37	µg/L	100
PFPeS	6.496	349.1 -> 79.9	484	0.20	µg/L	97
		349.1 -> 98.9	224			
PFTeDA	9.787	713.1 -> 669.0	2326	0.18	µg/L	93
		713.1 -> 168.9	263			
PFTrDA	9.428	663.0 -> 619.0	2796	0.17	µg/L	97
		663.0 -> 168.9	312			
PFUnDA	8.585	563.1 -> 519.0	1865	0.18	µg/L	97
		563.1 -> 269.1	381			
11Cl-PF3OUdS	9.468	630.9 -> 450.9	5413	0.69	µg/L	95
		632.9 -> 452.9	1836			
9Cl-PF3ONS	8.612	530.8 -> 351.0	6452	0.68	µg/L	94
		532.8 -> 353.0	2182			
ADONA	6.693	376.9 -> 250.9	12854	0.70	µg/L	99
		376.9 -> 84.8	3556			
HFPO-DA	5.890	284.9 -> 168.9	1976	0.75	µg/L	98
		284.9 -> 184.9	260			
3:3FTCA	4.129	241.0 -> 177.0	680	0.88	µg/L	88
		241.0 -> 117.0	92			
5:3FTCA	6.358	341.0 -> 237.1	13420	4.69	µg/L	97
		341.0 -> 217.0	9325			
7:3FTCA	7.749	441.0 -> 316.9	4991	4.67	µg/L	96
		441.0 -> 336.9	11012			
EtFOSA	11.149	526.0 -> 219.0	667	0.21	µg/L	85
		526.0 -> 169.0	651			
EtFOSE	11.046	630.0 -> 58.9	4085	1.88	µg/L	100
MeFOSA	10.828	511.9 -> 219.0	497	0.19	µg/L	92
		511.9 -> 169.0	631			
MeFOSE	10.724	616.1 -> 58.9	3876	1.92	µg/L	100
PFDoDS	9.939	699.1 -> 79.9	397	0.20	µg/L	87
		699.1 -> 98.8	193			
NFDHA	5.453	295.0 -> 201.0	306	0.43	µg/L	92
		295.0 -> 84.9	95			
PFMBA	4.854	279.0 -> 85.1	3073	0.36	µg/L	100
PFMPA	3.690	229.0 -> 84.9	2713	0.36	µg/L	100
PFEESA	5.983	314.8 -> 134.9	4483	0.32	µg/L	98
		314.8 -> 82.9	193			

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

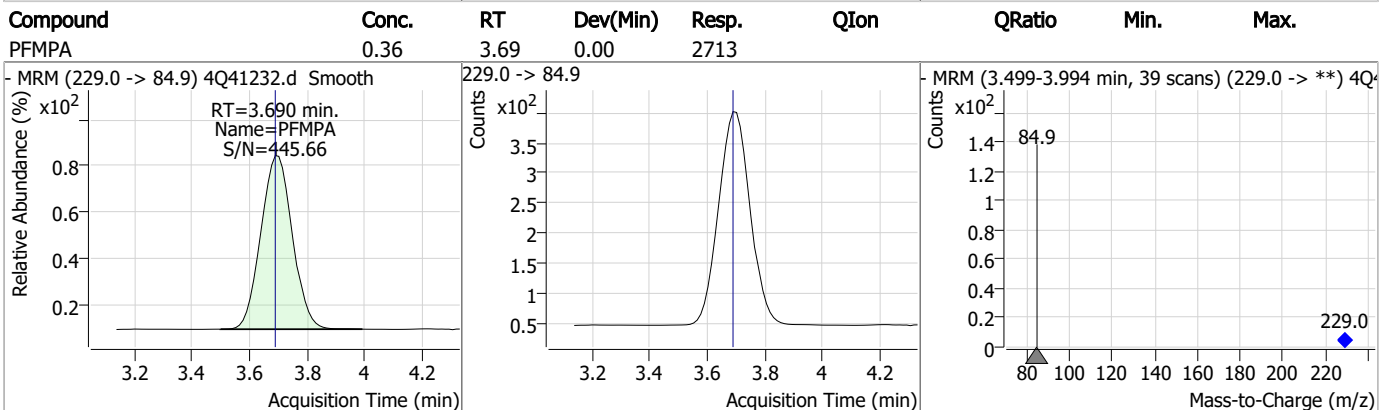
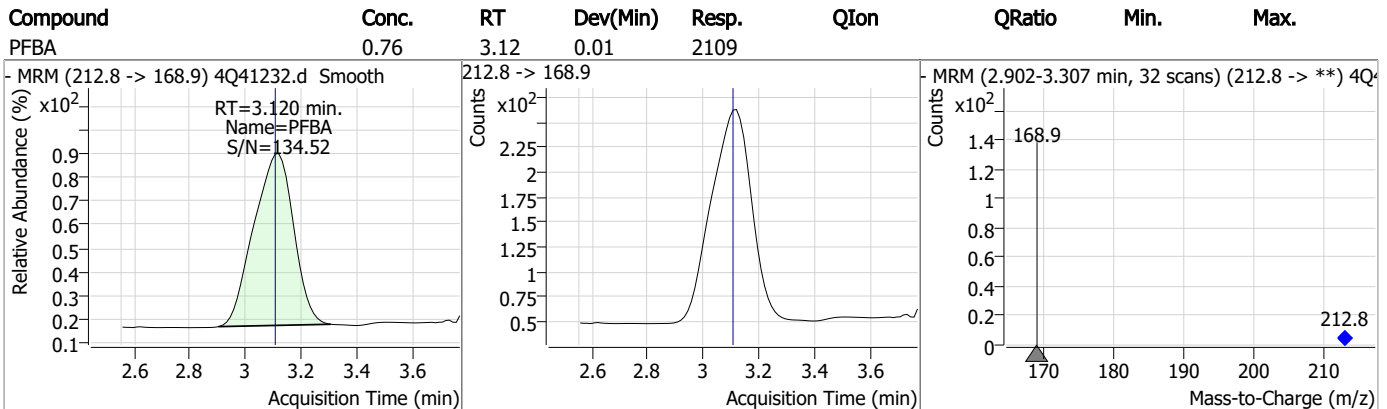
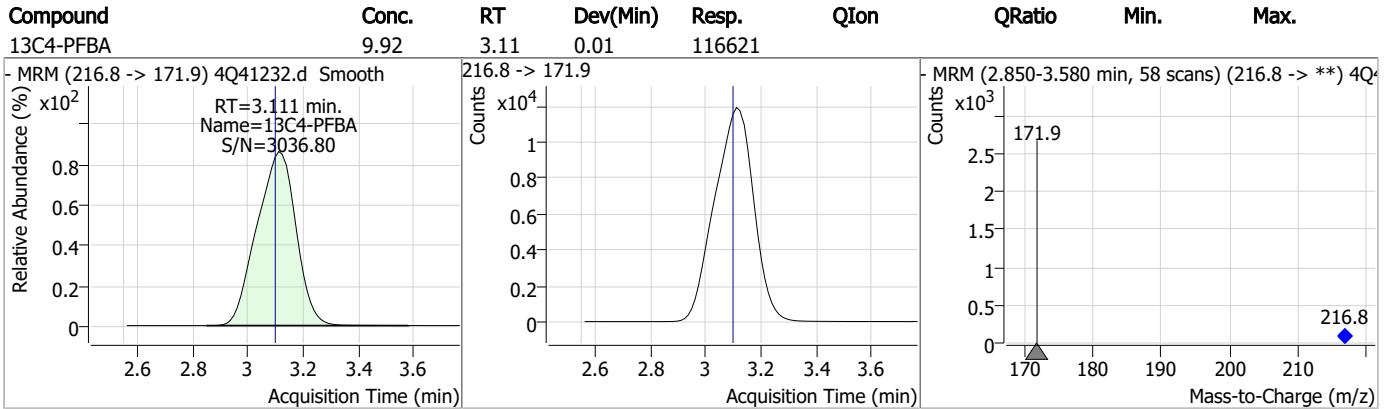
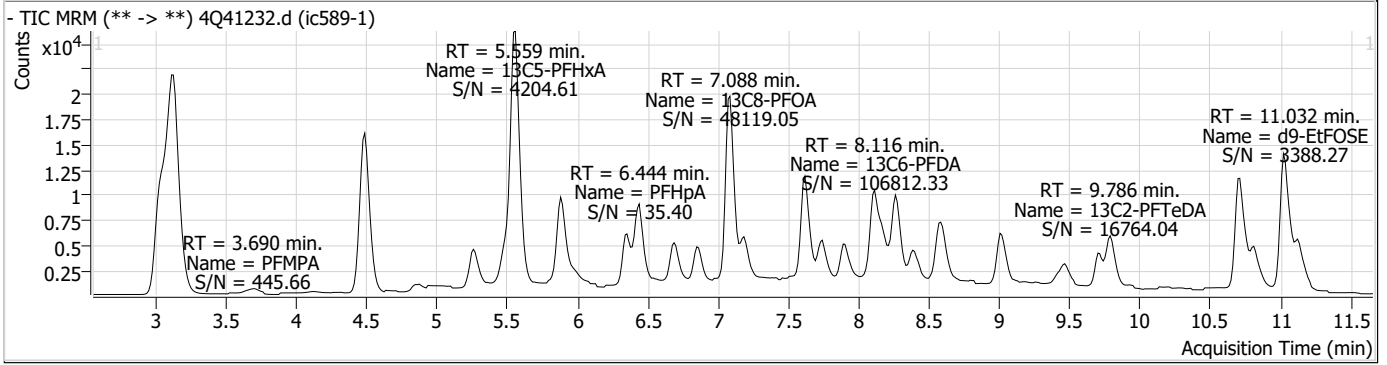
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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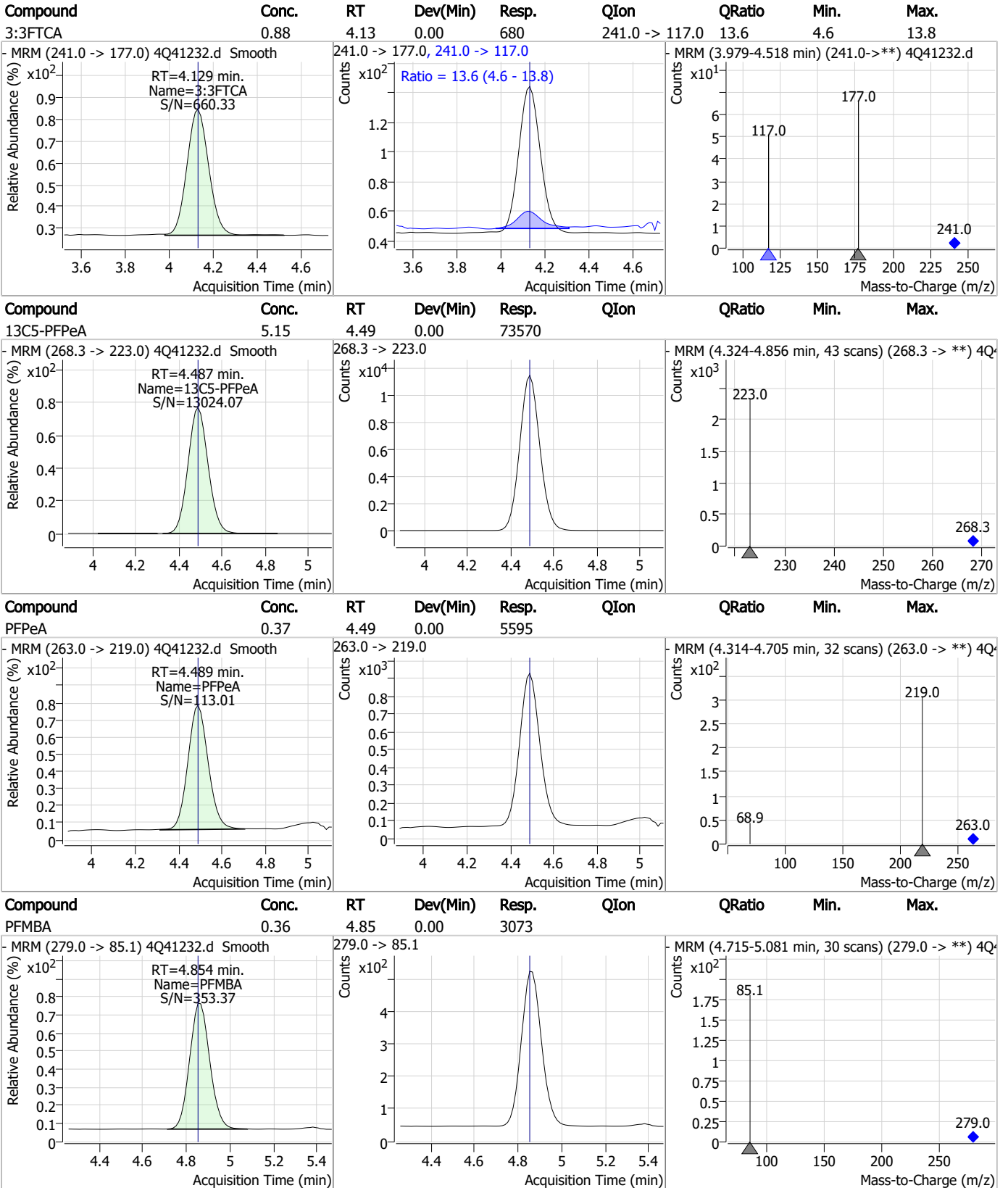
7.6.2
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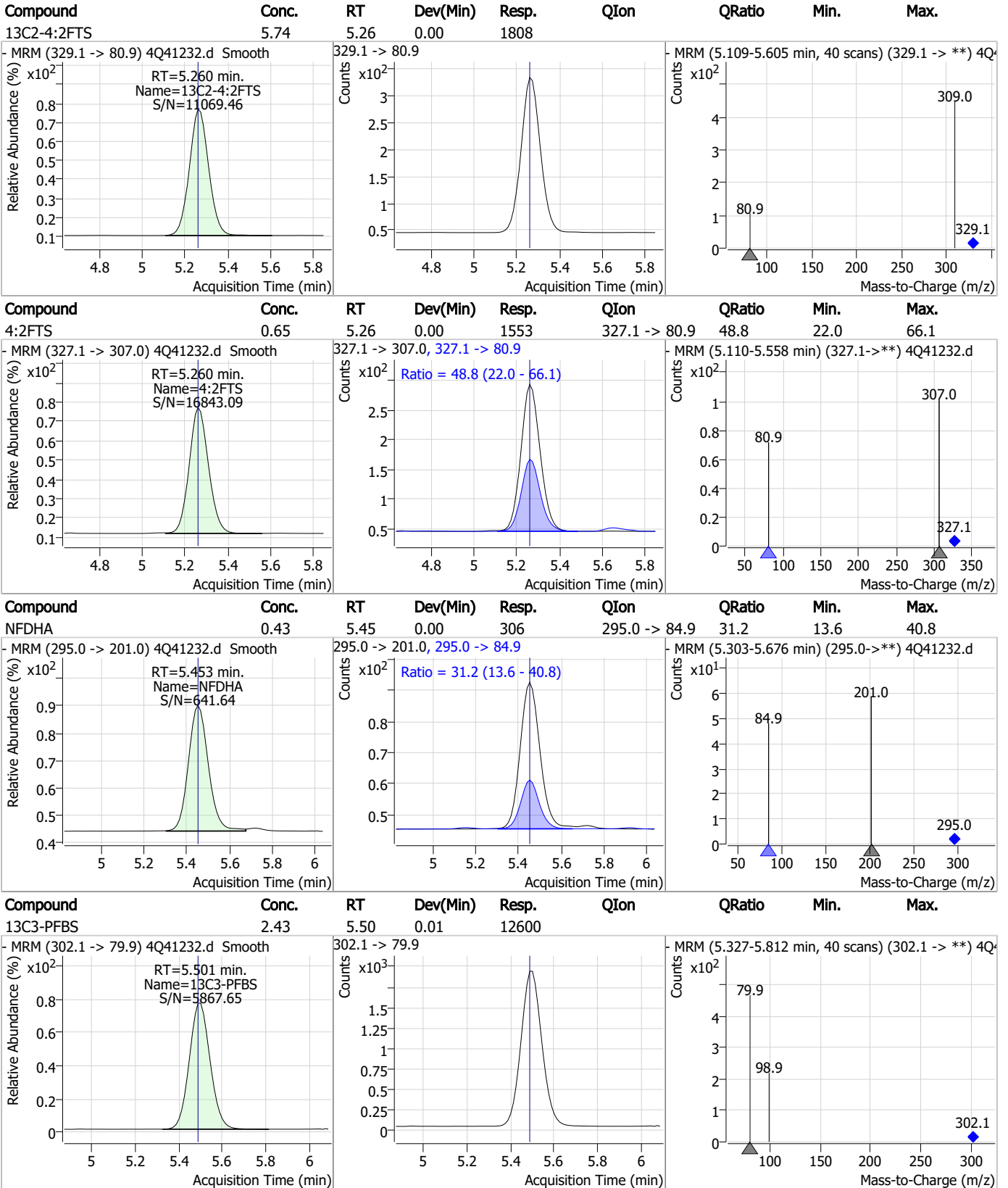
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

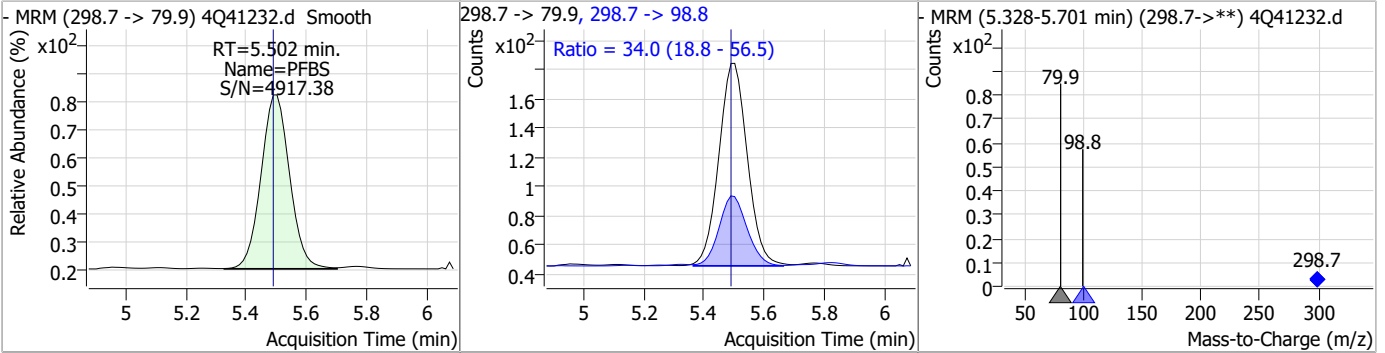


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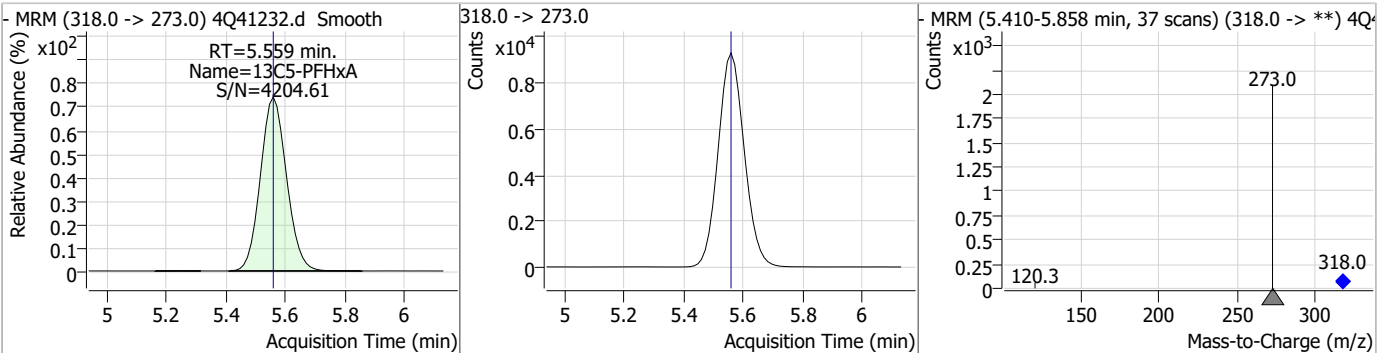
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Perfluorinated Compounds by LC/MS/MS

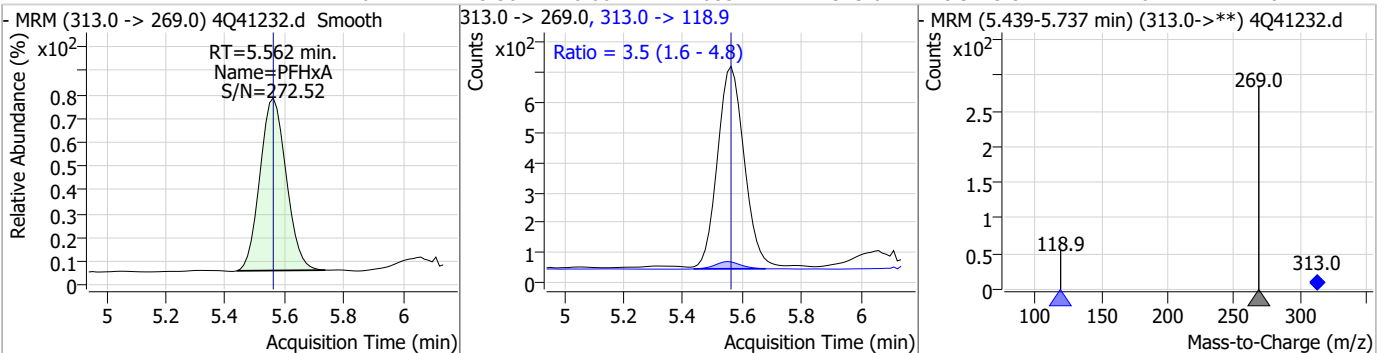
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.18	5.50	0.01	914	298.7 -> 98.8	34.0	18.8	56.5



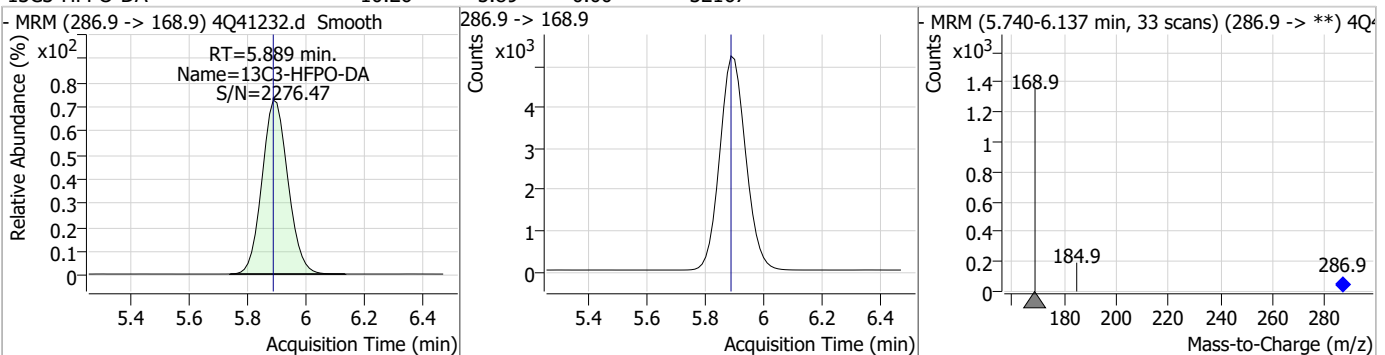
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.54	5.56	0.00	56287				



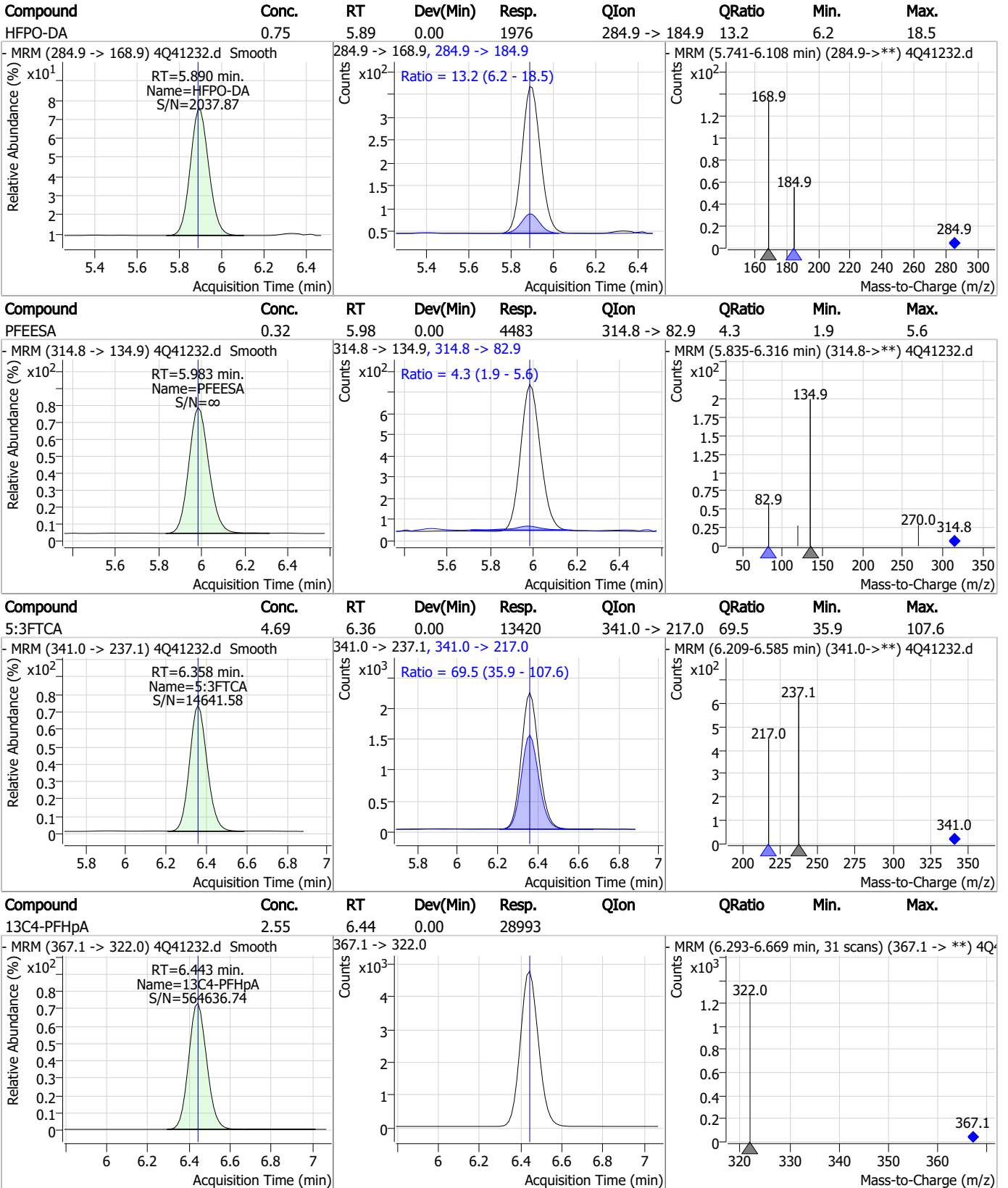
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.21	5.56	0.00	4085	313.0 -> 118.9	3.5	1.6	4.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.26	5.89	0.00	32167				



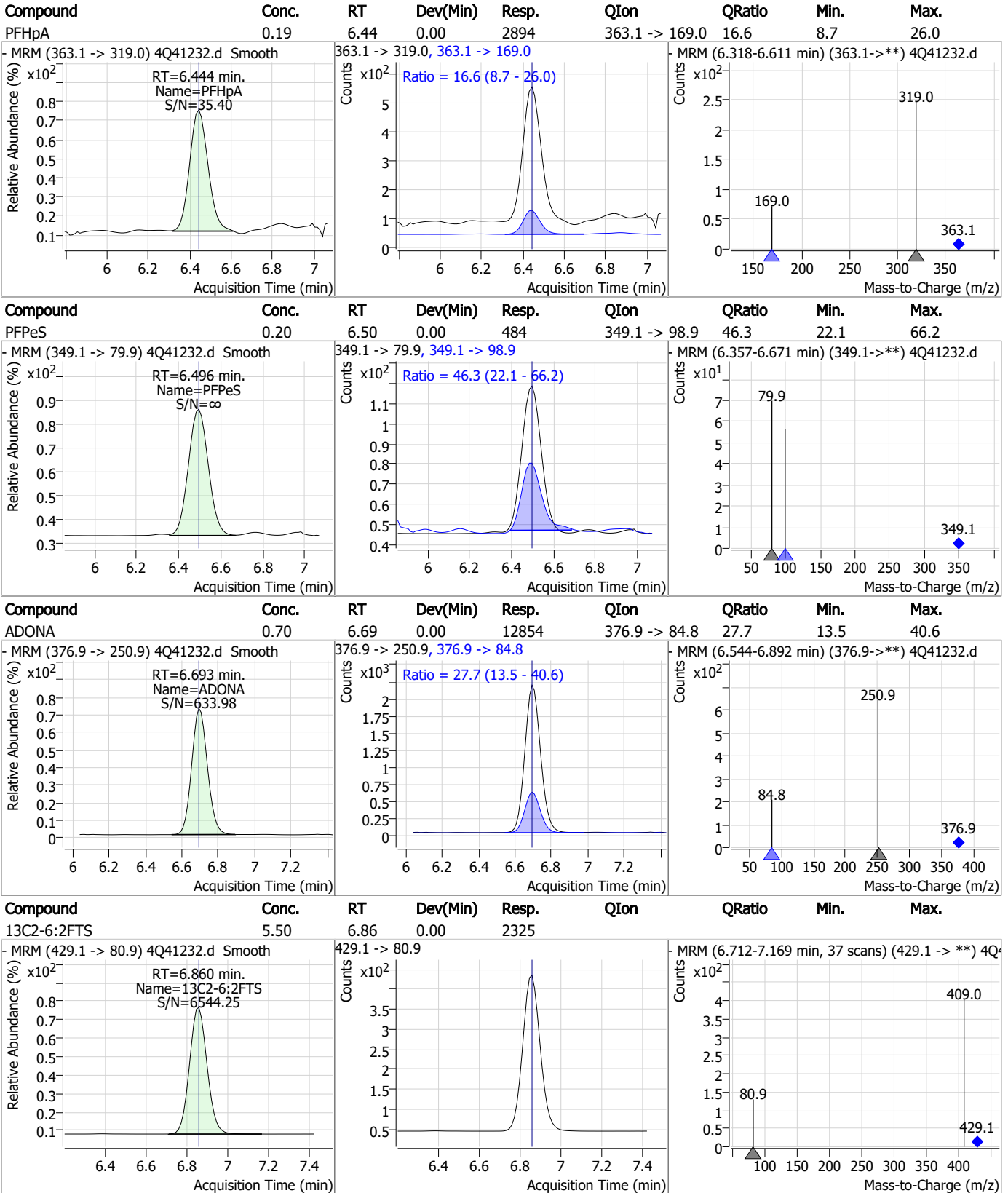
Perfluorinated Compounds by LC/MS/MS



7.6.2

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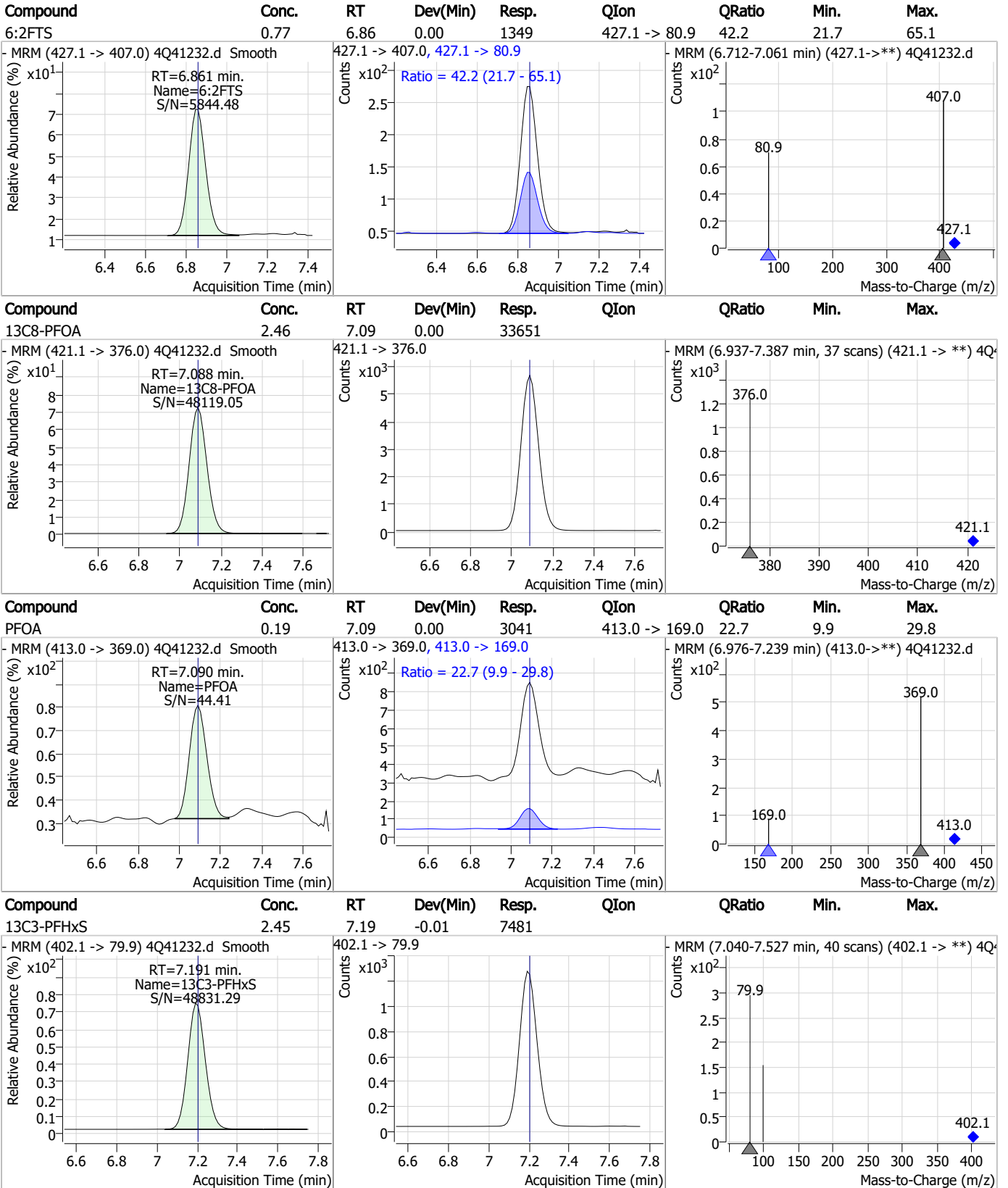
Perfluorinated Compounds by LC/MS/MS



7.6.2

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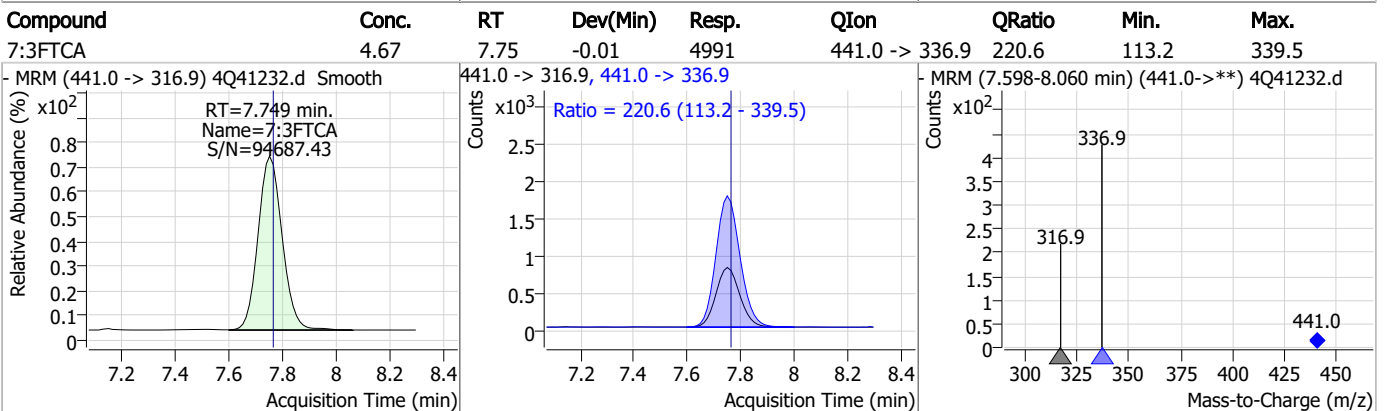
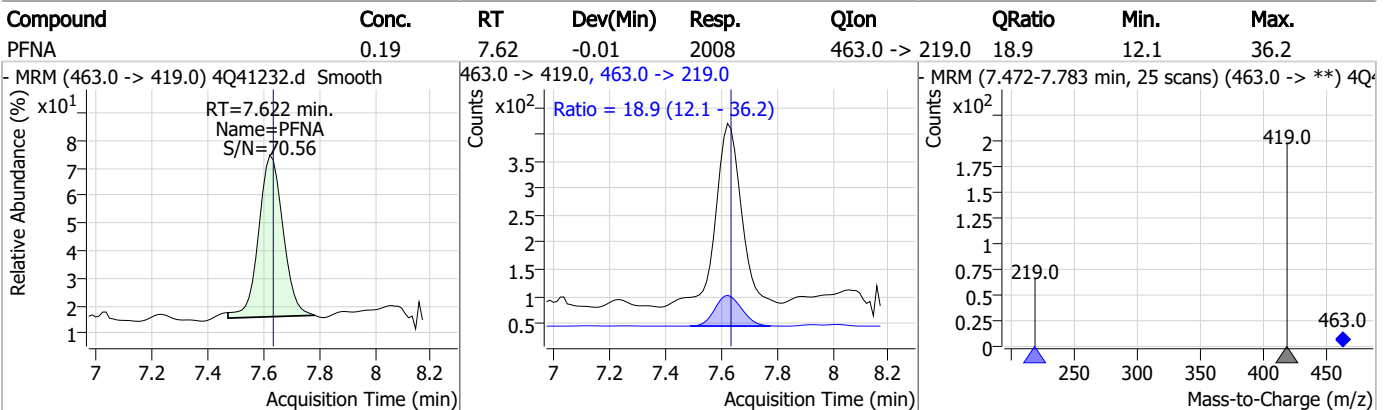
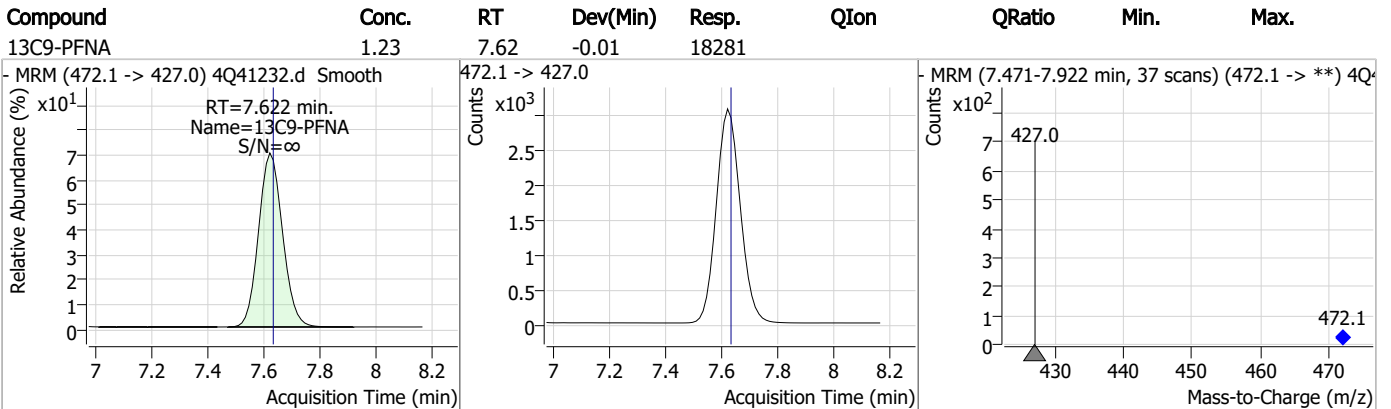
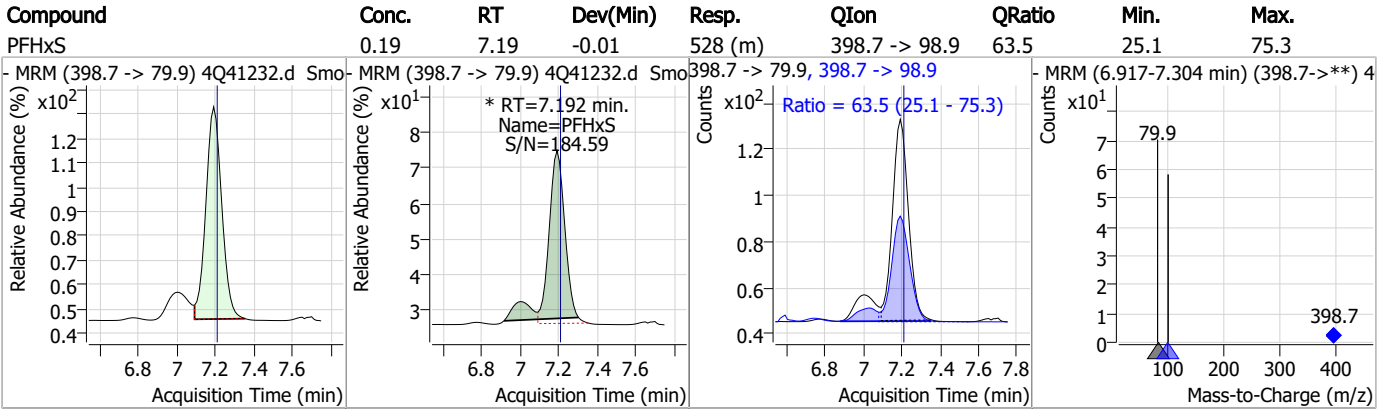
Perfluorinated Compounds by LC/MS/MS



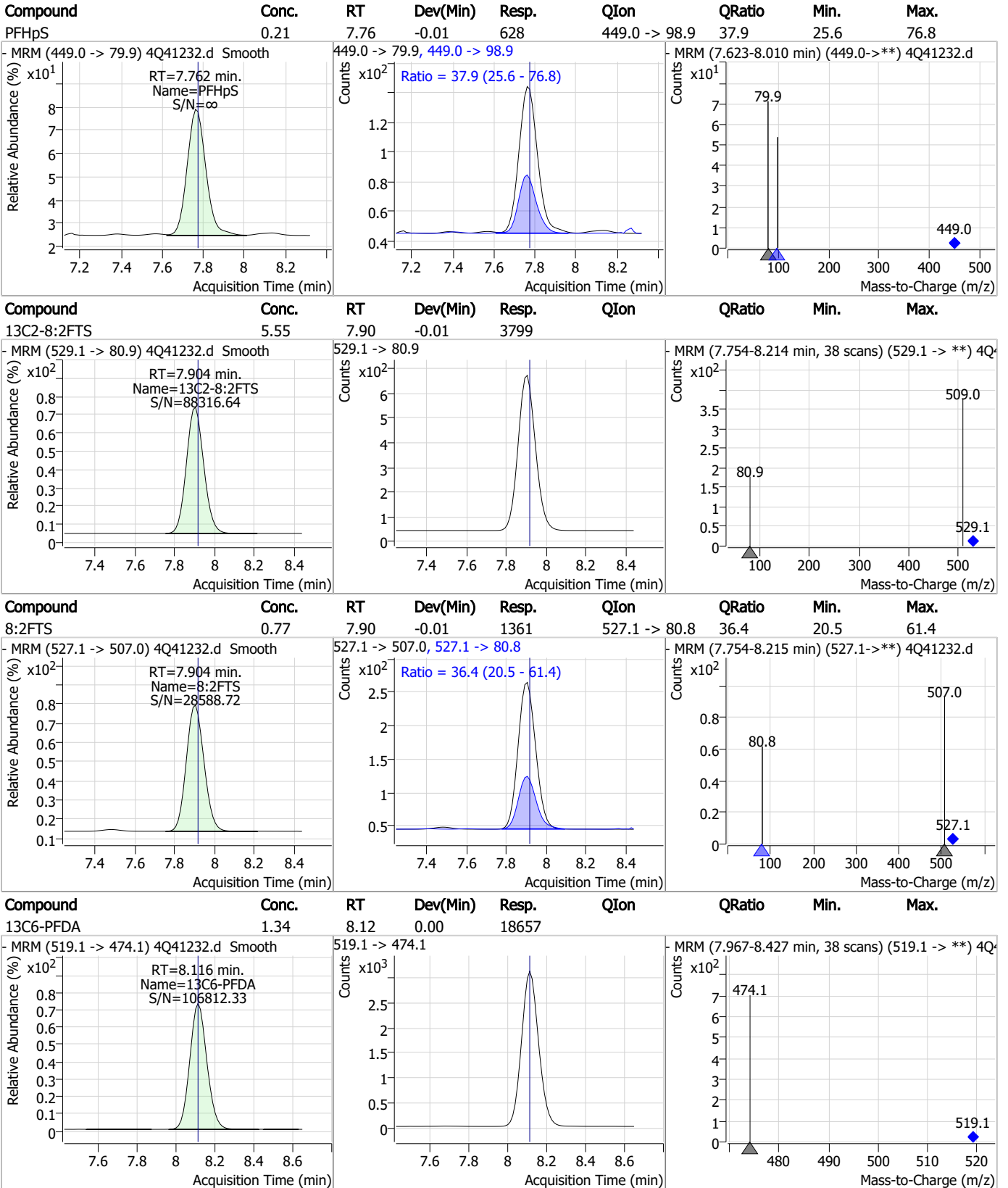
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Perfluorinated Compounds by LC/MS/MS

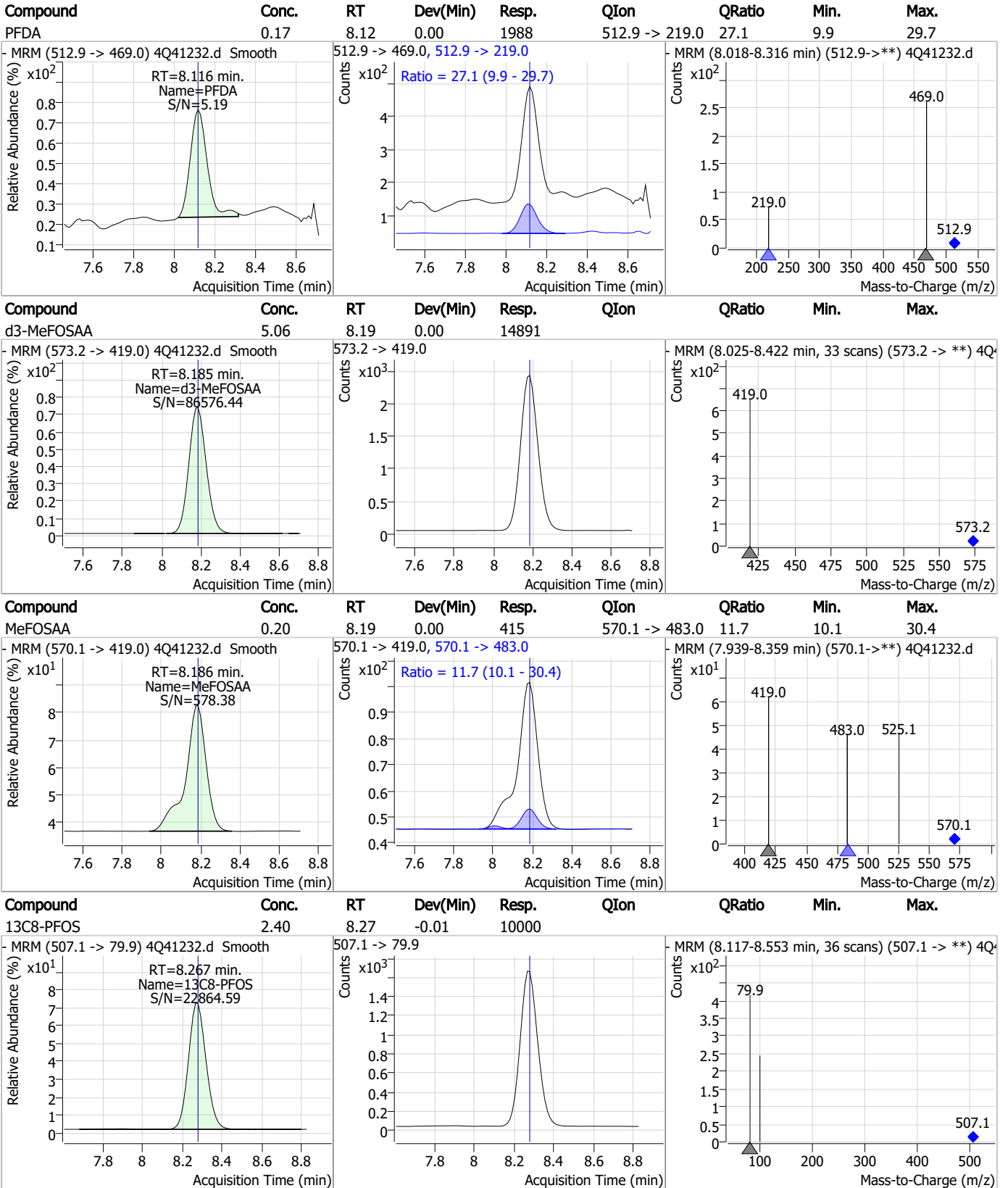


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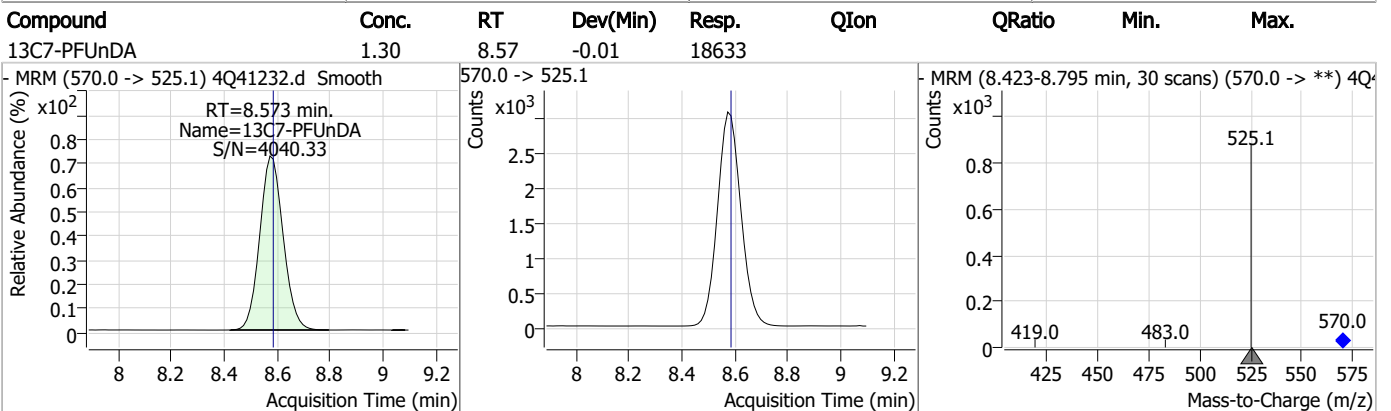
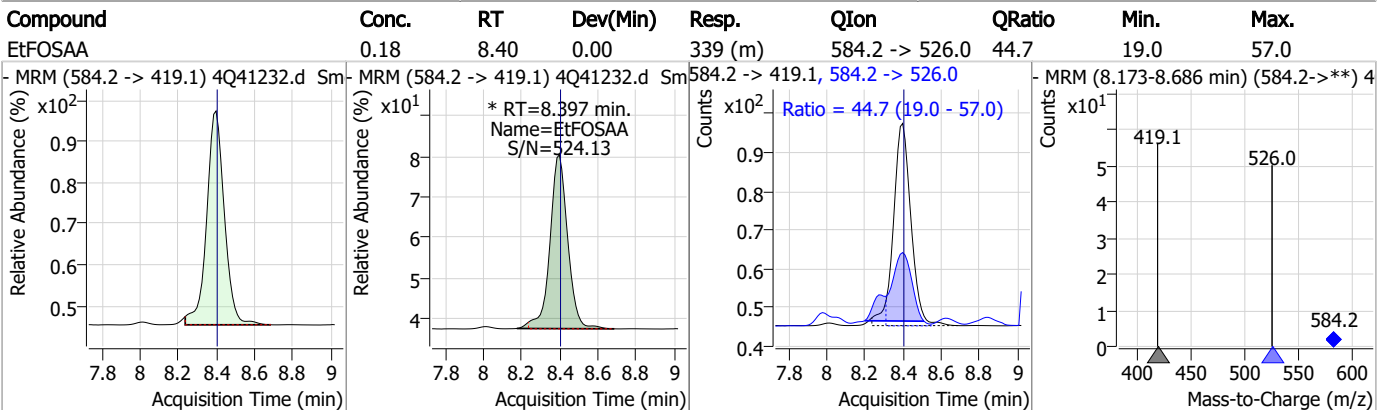
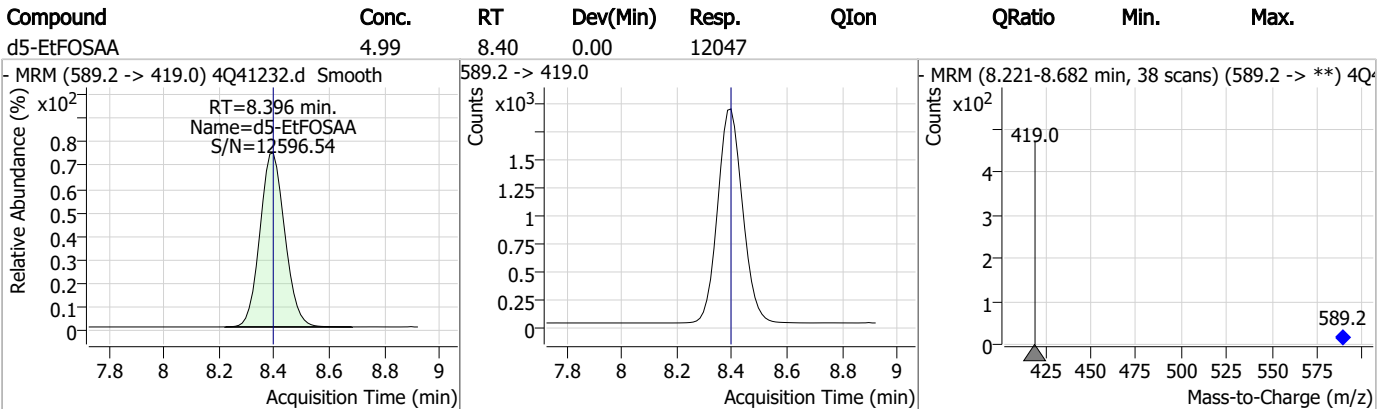
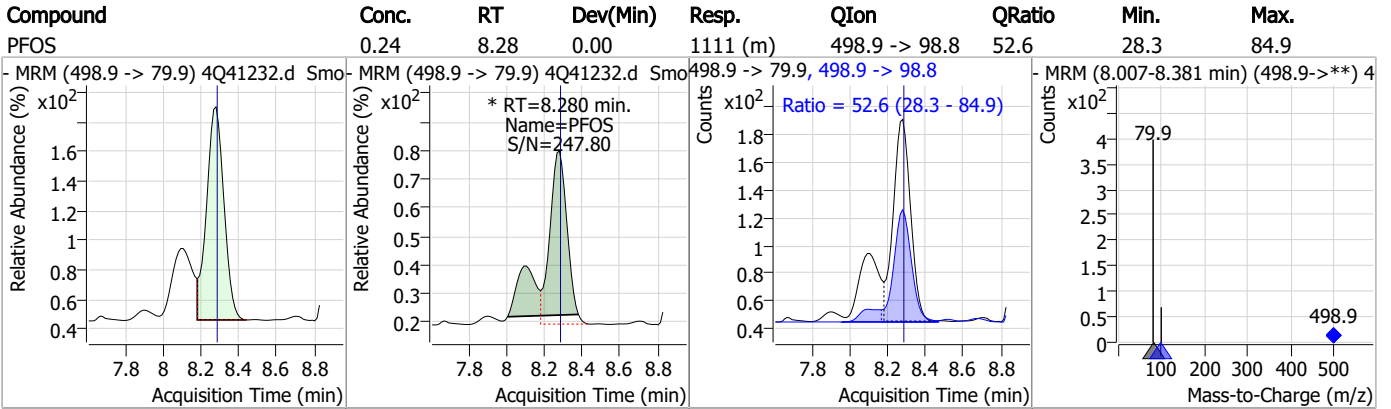


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Perfluorinated Compounds by LC/MS/MS



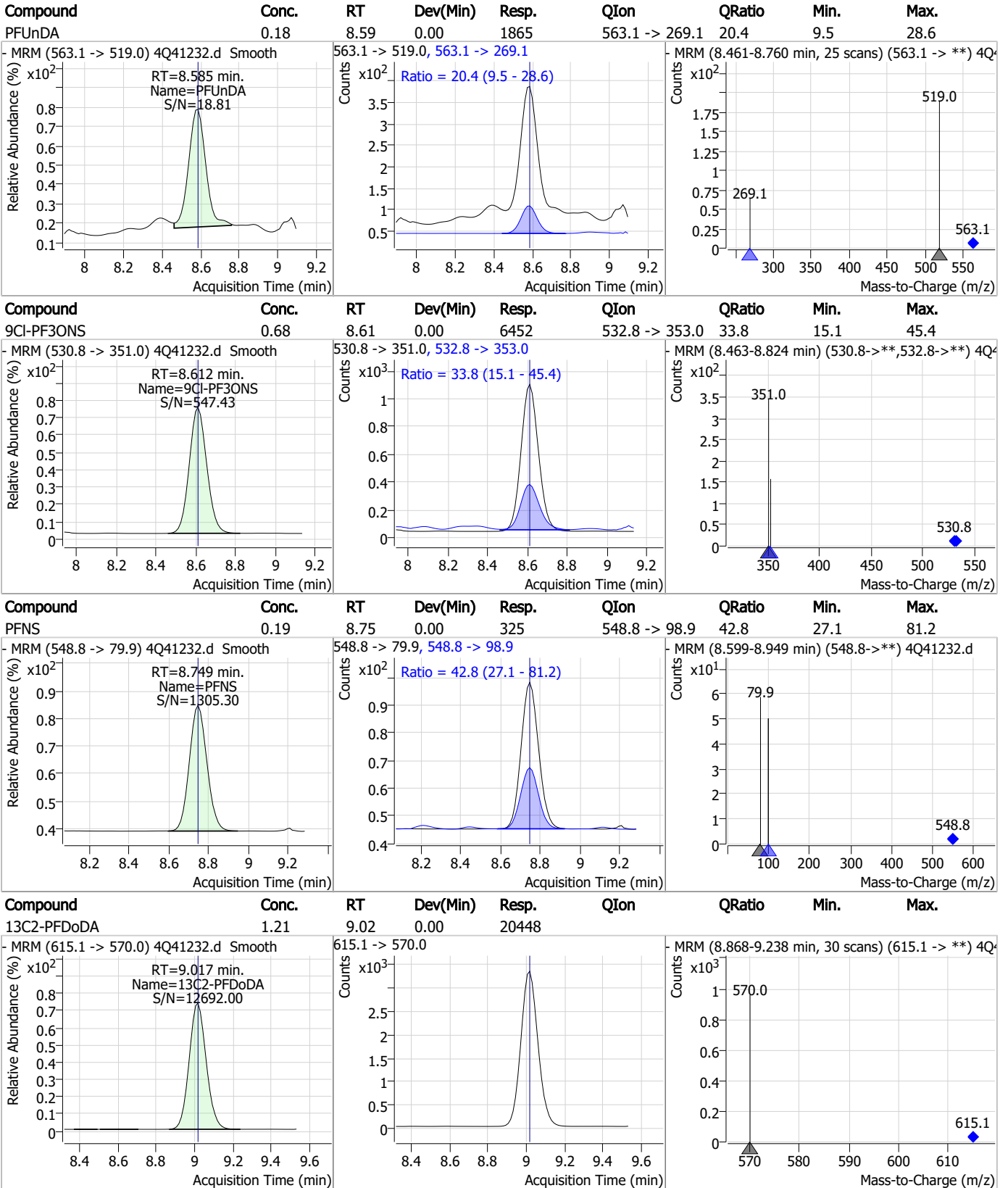
Perfluorinated Compounds by LC/MS/MS



7.6.2

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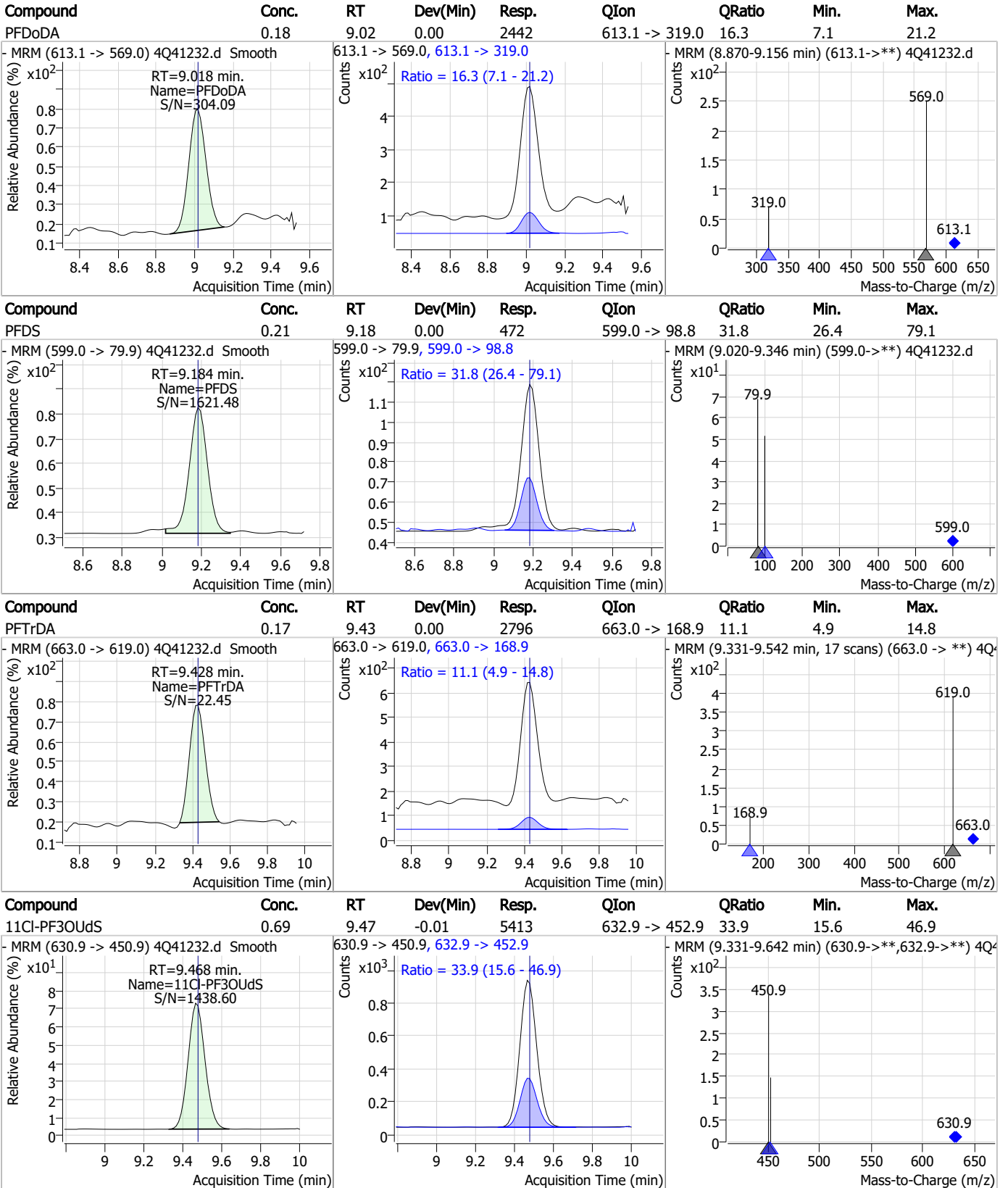


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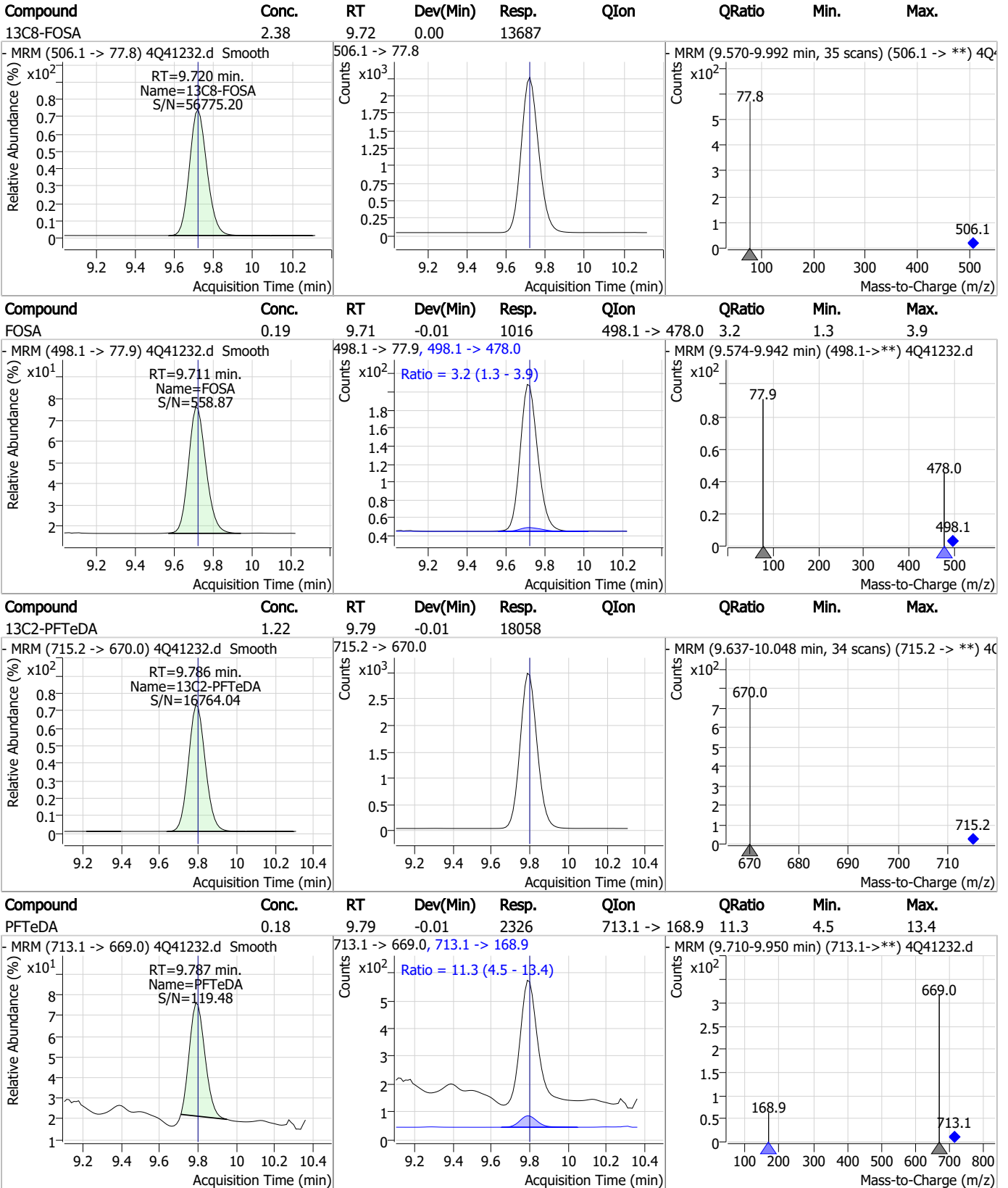
Perfluorinated Compounds by LC/MS/MS



7.6.2

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Perfluorinated Compounds by LC/MS/MS

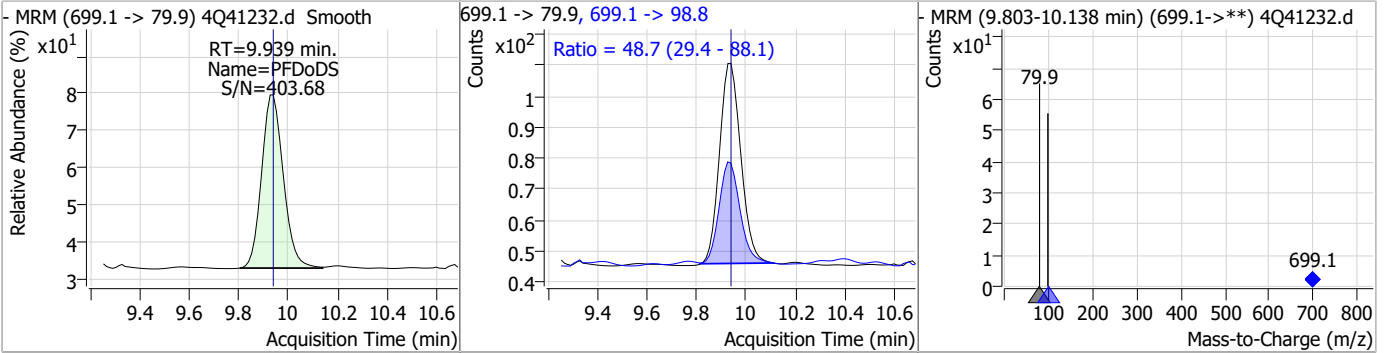


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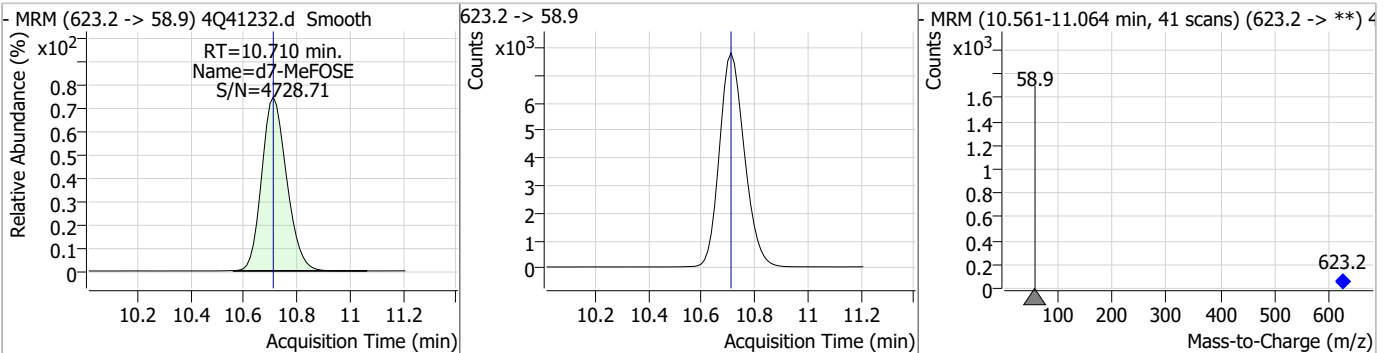
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Perfluorinated Compounds by LC/MS/MS

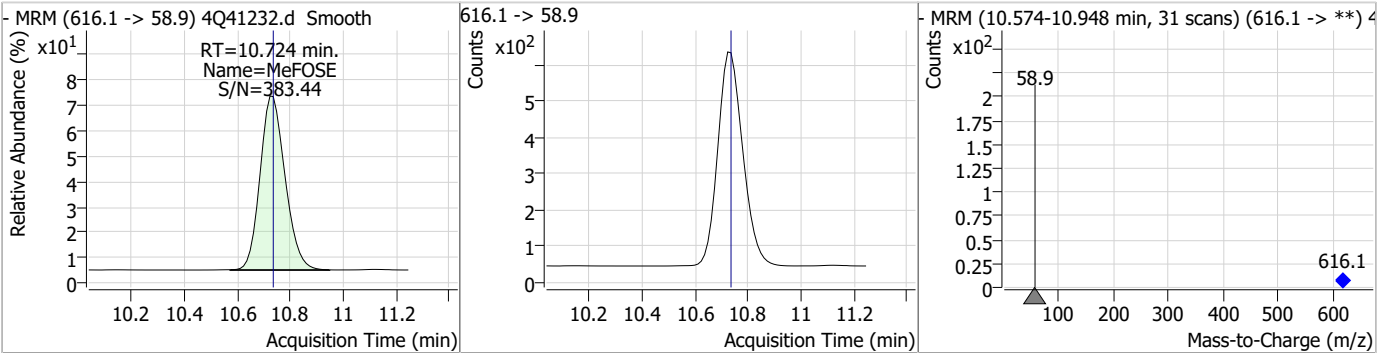
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	0.20	9.94	0.00	397	699.1 -> 98.8	48.7	29.4	88.1



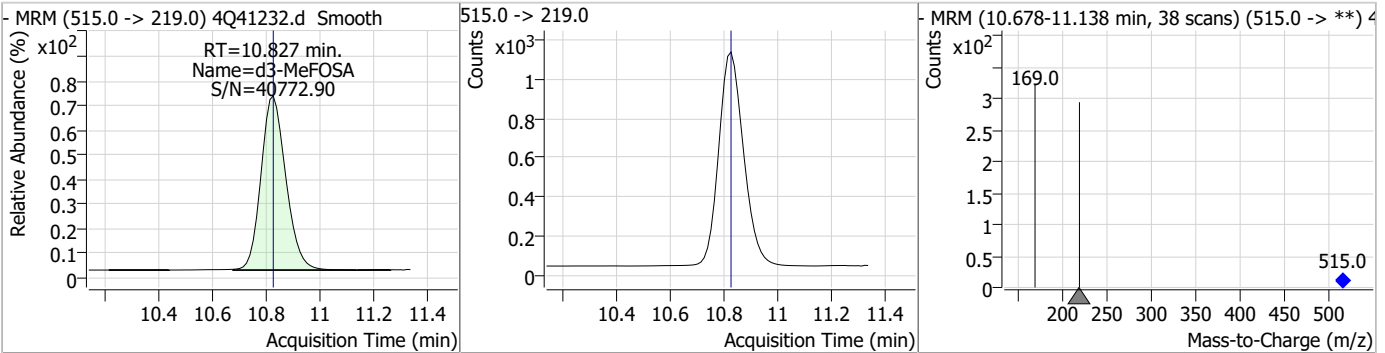
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.96	10.71	0.00	50598				



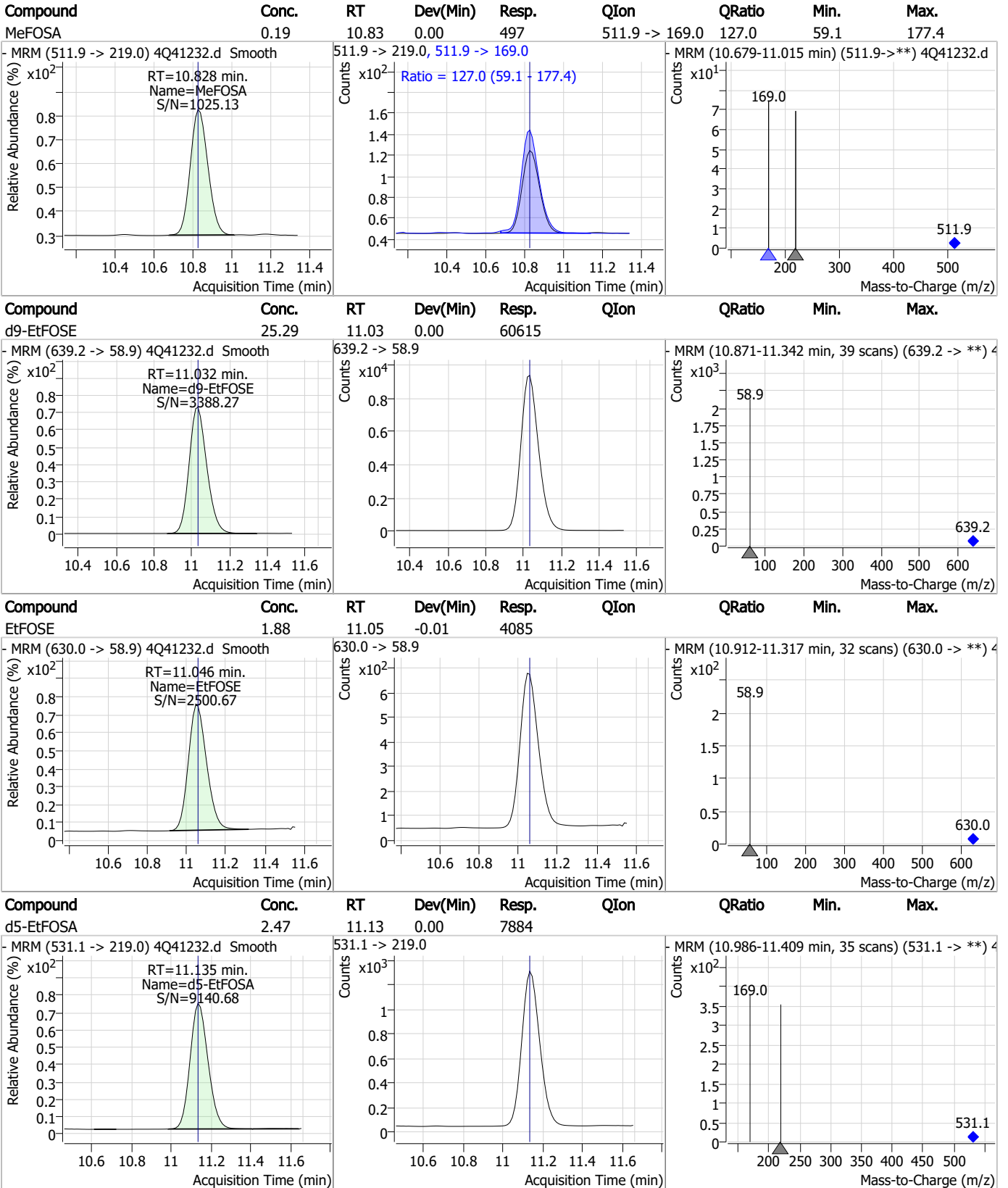
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	1.92	10.72	-0.01	3876				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.48	10.83	0.00	7042				



Perfluorinated Compounds by LC/MS/MS

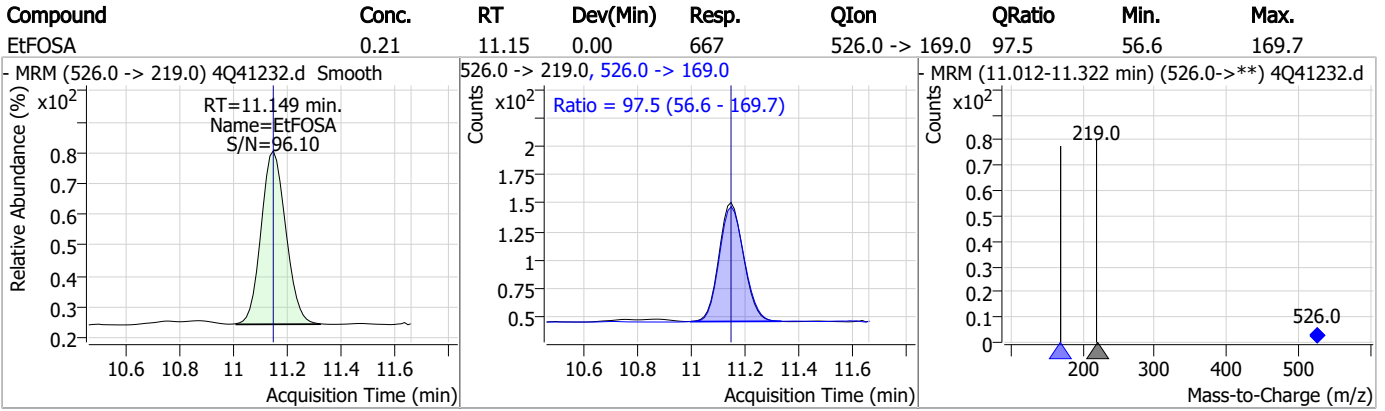


7.6.2

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Perfluorinated Compounds by LC/MS/MS



7.6.2

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Manual Integration Approval Summary

Sample Number: S4Q589-IC589 Method: EPA DRAFT 1633
Lab FileID: 4Q41232.D Analyst approved: 02/27/23 14:05 Anna Ludwig
Injection Time: 02/24/23 16:01 Supervisor approved: 02/27/23 16:52 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.19	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.28	Split peak
EtFOSAA	2991-50-6		8.40	Split peak

7.6.2.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41233.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/24/2023 4:16:25 PM
 Sample Name : ic589-2
 Vial : P1-A3
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q589.batch.bin
 Sample Information : op95462,S4Q589,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.164	216.8 -> 171.9	126426	10.00 µg/L	0.066
M5-PFPeA	4.500	268.3 -> 223.0	75001	5.00 µg/L	0.012
M5-PFHxA	5.559	318.0 -> 273.0	56684	2.50 µg/L	0.000
M4-PFHpA	6.443	367.1 -> 322.0	28950	2.50 µg/L	0.000
M8-PFOA	7.088	421.1 -> 376.0	34886	2.50 µg/L	0.000
M9-PFNA	7.634	472.1 -> 427.0	18535	1.25 µg/L	0.000
M6-PFDA	8.116	519.1 -> 474.1	17550	1.25 µg/L	0.000
M7-PFUnDA	8.573	570.0 -> 525.1	18189	1.25 µg/L	-0.012
M2-PFDoDA	9.017	615.1 -> 570.0	20851	1.25 µg/L	0.000
M2-PFTeDA	9.799	715.2 -> 670.0	19801	1.25 µg/L	0.000
M8-FOSA	9.720	506.1 -> 77.8	14742	2.50 µg/L	0.000
M3-PFBS	5.501	302.1 -> 79.9	12851	2.50 µg/L	0.012
M3-PFHxS	7.204	402.1 -> 79.9	7421	2.50 µg/L	0.000
M8-PFOS	8.279	507.1 -> 79.9	10758	2.50 µg/L	0.000
M2-4:2FTS	5.272	329.1 -> 80.9	1649	5.00 µg/L	0.012
M2-6:2FTS	6.860	429.1 -> 80.9	2223	5.00 µg/L	0.000
M2-8:2FTS	7.904	529.1 -> 80.9	3761	5.00 µg/L	-0.012
M3-MeFOSAA	8.185	573.2 -> 419.0	14670	5.00 µg/L	0.000
M3-HFPO-DA	5.901	286.9 -> 168.9	32474	10.00 µg/L	0.012
M5-EtFOSAA	8.396	589.2 -> 419.0	12426	5.00 µg/L	0.000
M7-MeFOSE	10.710	623.2 -> 58.9	51998	25.00 µg/L	0.000
M9-EtFOSE	11.032	639.2 -> 58.9	62397	25.00 µg/L	0.000
M5-EtFOSA	11.135	531.1 -> 219.0	8153	2.50 µg/L	0.000
M3-MeFOSA	10.827	515.0 -> 219.0	6973	2.50 µg/L	0.000
13C4-PFOS	8.280	502.8 -> 79.9	10544	2.50 µg/L	0.000
13C3-PFBA	3.168	216.0 -> 172.0	72366	5.00 µg/L	0.065
18O2-PFHxS	7.203	403.0 -> 83.9	5284	2.50 µg/L	0.000
13C4-PFOA	7.089	417.1 -> 372.0	41530	2.50 µg/L	0.000
13C2-PFDA	8.116	515.1 -> 470.1	15738	1.25 µg/L	-0.012
13C5-PFNA	7.634	468.0 -> 423.0	22472	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	51861	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.272	329.1 -> 80.9	1649	5.36 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.1%		
13C2-6:2FTS	6.860	429.1 -> 80.9	2223	5.38 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.6%		
13C2-8:2FTS	7.904	529.1 -> 80.9	3761	5.62 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.4%		
13C2-PFDoDA	9.017	615.1 -> 570.0	20851	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C2-PFTeDA	9.799	715.2 -> 670.0	19801	1.34 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.8%		
13C3-PFBS	5.501	302.1 -> 79.9	12851	2.54 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C3-PFHxS	7.204	402.1 -> 79.9	7421	2.49 µg/L	0.000

7.6.3
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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 = 99.5%	
13C4-PFBA	3.164	216.8 -> 171.9	126426	10.14 µg/L	0.066
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C4-PFHpA	6.443	367.1 -> 322.0	28950	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C5-PFHxA	5.559	318.0 -> 273.0	56684	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C5-PFPeA	4.500	268.3 -> 223.0	75001	5.15 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.9%	
13C6-PFDA	8.116	519.1 -> 474.1	17550	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C7-PFUnDA	8.573	570.0 -> 525.1	18189	1.27 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C8-FOSA	9.720	506.1 -> 77.8	14742	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C8-PFOA	7.088	421.1 -> 376.0	34886	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C8-PFOS	8.279	507.1 -> 79.9	10758	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C9-PFNA	7.634	472.1 -> 427.0	18535	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.6%	
d3-MeFOSAA	8.185	573.2 -> 419.0	14670	4.90 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C3-HFPO-DA	5.901	286.9 -> 168.9	32474	10.16 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
d3-MeFOSA	10.827	515.0 -> 219.0	6973	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.9%	
d5-EtFOSAA	8.396	589.2 -> 419.0	12426	5.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.3%	
d7-MeFOSE	10.710	623.2 -> 58.9	51998	25.26 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
d9-EtFOSE	11.032	639.2 -> 58.9	62397	25.63 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.5%	
d5-EtFOSA	11.135	531.1 -> 219.0	8153	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
Target Compounds					QValue
4:2FTS	5.272	327.1 -> 307.0	3900	1.78 µg/L	98
		327.1 -> 80.9	1667		
6:2FTS	6.861	427.1 -> 407.0	3101	1.85 µg/L	91
		427.1 -> 80.9	1533		
8:2FTS	7.904	527.1 -> 507.0	3292	1.88 µg/L	96
		527.1 -> 80.8	1258		
EtFOSAA	8.397	584.2 -> 419.1	887	0.46 µg/L	m 70
		584.2 -> 526.0	498		
FOSA	9.723	498.1 -> 77.9	2463	0.44 µg/L	100
		498.1 -> 478.0	66		
MeFOSAA	8.186	570.1 -> 419.0	786	0.38 µg/L	m 83
		570.1 -> 483.0	222		
PFBA	3.171	212.8 -> 168.9	5541	1.85 µg/L	100
PFBS	5.502	298.7 -> 79.9	2126	0.42 µg/L	90
		298.7 -> 98.8	928		
PFDA	8.116	512.9 -> 469.0	4838	0.45 µg/L	93
		512.9 -> 219.0	1112		
PFDODA	9.018	613.1 -> 569.0	6659	0.47 µg/L	99
		613.1 -> 319.0	976		
PFDS	9.184	599.0 -> 79.9	1050	0.44 µg/L	96

7.6.3
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	522			
PFHpA	6.444	363.1 -> 319.0	6975	0.46	µg/L	95
		363.1 -> 169.0	1070			
PFHpS	7.774	449.0 -> 79.9	1390	0.44	µg/L	100
		449.0 -> 98.9	713			
PFHxA	5.562	313.0 -> 269.0	8946	0.45	µg/L	99
		313.0 -> 118.9	269			
PFHxS	7.205	398.7 -> 79.9	1050	0.38	µg/L	m 90
		398.7 -> 98.9	598			
PFNA	7.635	463.0 -> 419.0	4831	0.46	µg/L	99
		463.0 -> 219.0	1145			
PFNS	8.749	548.8 -> 79.9	833	0.45	µg/L	84
		548.8 -> 98.9	353			
PFOA	7.090	413.0 -> 369.0	7576	0.46	µg/L	95
		413.0 -> 169.0	1690			
PFOS	8.280	498.9 -> 79.9	2309	0.46	µg/L	m 94
		498.9 -> 98.8	1213			
PFPeA	4.502	263.0 -> 219.0	13658	0.89	µg/L	100
PFPeS	6.496	349.1 -> 79.9	1038	0.43	µg/L	99
		349.1 -> 98.9	465			
PFTeDA	9.799	713.1 -> 669.0	6708	0.46	µg/L	98
		713.1 -> 168.9	646			
PFTrDA	9.428	663.0 -> 619.0	8732	0.52	µg/L	99
		663.0 -> 168.9	844			
PFUnDA	8.573	563.1 -> 519.0	5562	0.55	µg/L	92
		563.1 -> 269.1	853			
11CI-PF3OUdS	9.480	630.9 -> 450.9	14310	1.79	µg/L	99
		632.9 -> 452.9	4385			
9CI-PF3ONS	8.612	530.8 -> 351.0	16136	1.69	µg/L	100
		532.8 -> 353.0	4915			
ADONA	6.693	376.9 -> 250.9	32071	1.72	µg/L	98
		376.9 -> 84.8	9000			
HFPO-DA	5.902	284.9 -> 168.9	4771	1.80	µg/L	99
		284.9 -> 184.9	577			
3:3FTCA	4.167	241.0 -> 177.0	1743	2.22	µg/L	98
		241.0 -> 117.0	176			
5:3FTCA	6.370	341.0 -> 237.1	32690	11.35	µg/L	98
		341.0 -> 217.0	24108			
7:3FTCA	7.763	441.0 -> 316.9	12604	11.72	µg/L	98
		441.0 -> 336.9	28157			
EtFOSA	11.149	526.0 -> 219.0	1512	0.45	µg/L	99
		526.0 -> 169.0	1700			
EtFOSE	11.058	630.0 -> 58.9	10164	4.53	µg/L	100
MeFOSA	10.828	511.9 -> 219.0	1208	0.47	µg/L	91
		511.9 -> 169.0	1308			
MeFOSE	10.736	616.1 -> 58.9	9677	4.67	µg/L	100
PFDoDS	9.939	699.1 -> 79.9	937	0.45	µg/L	92
		699.1 -> 98.8	497			
NFDHA	5.465	295.0 -> 201.0	693	0.96	µg/L	94
		295.0 -> 84.9	208			
PFMBA	4.881	279.0 -> 85.1	8031	0.91	µg/L	100
PFMPA	3.727	229.0 -> 84.9	6924	0.91	µg/L	100
PFEESA	5.996	314.8 -> 134.9	11570	0.82	µg/L	99
		314.8 -> 82.9	454			

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

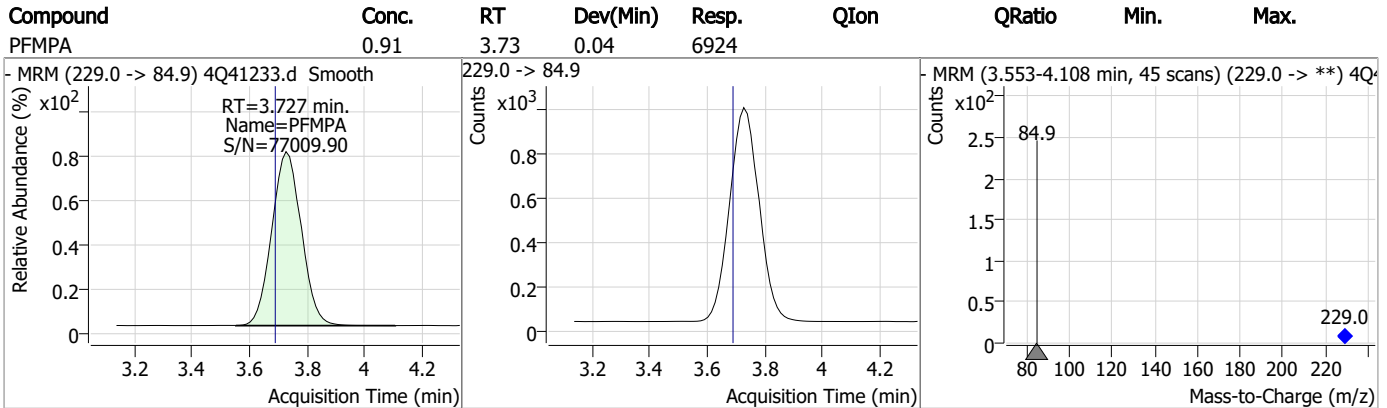
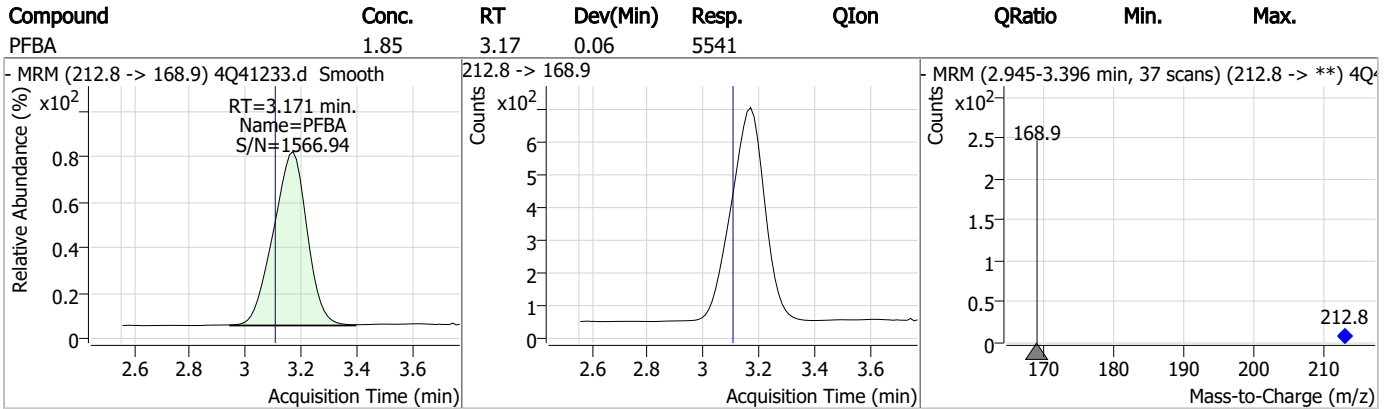
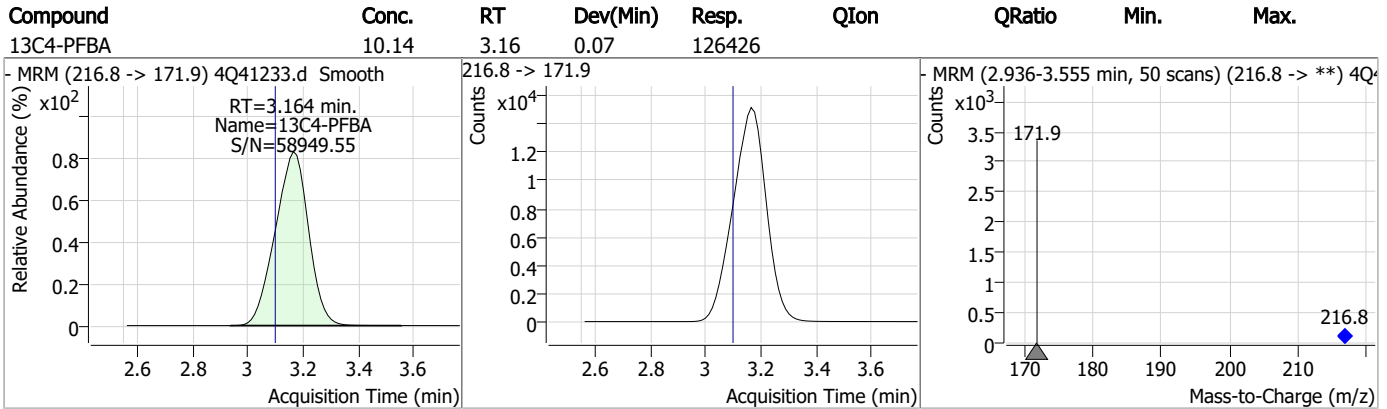
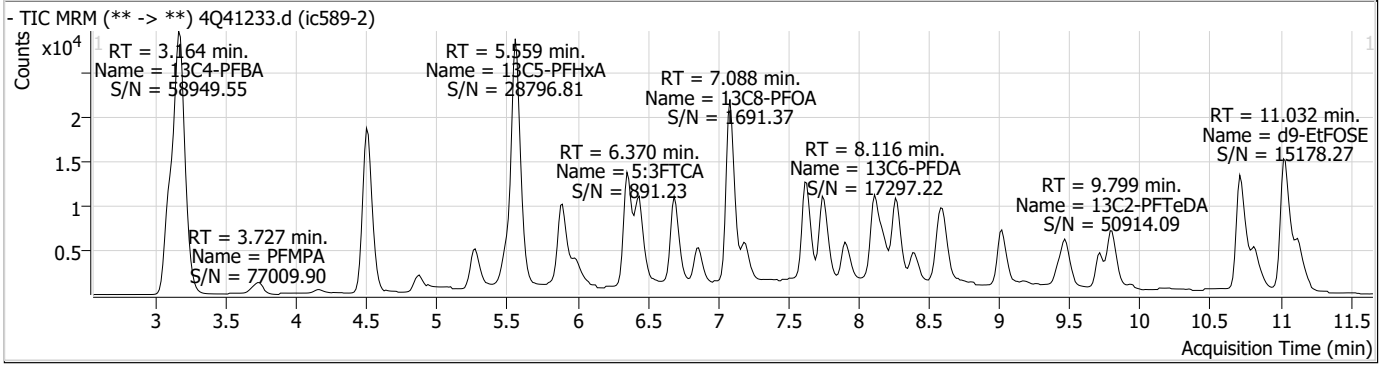
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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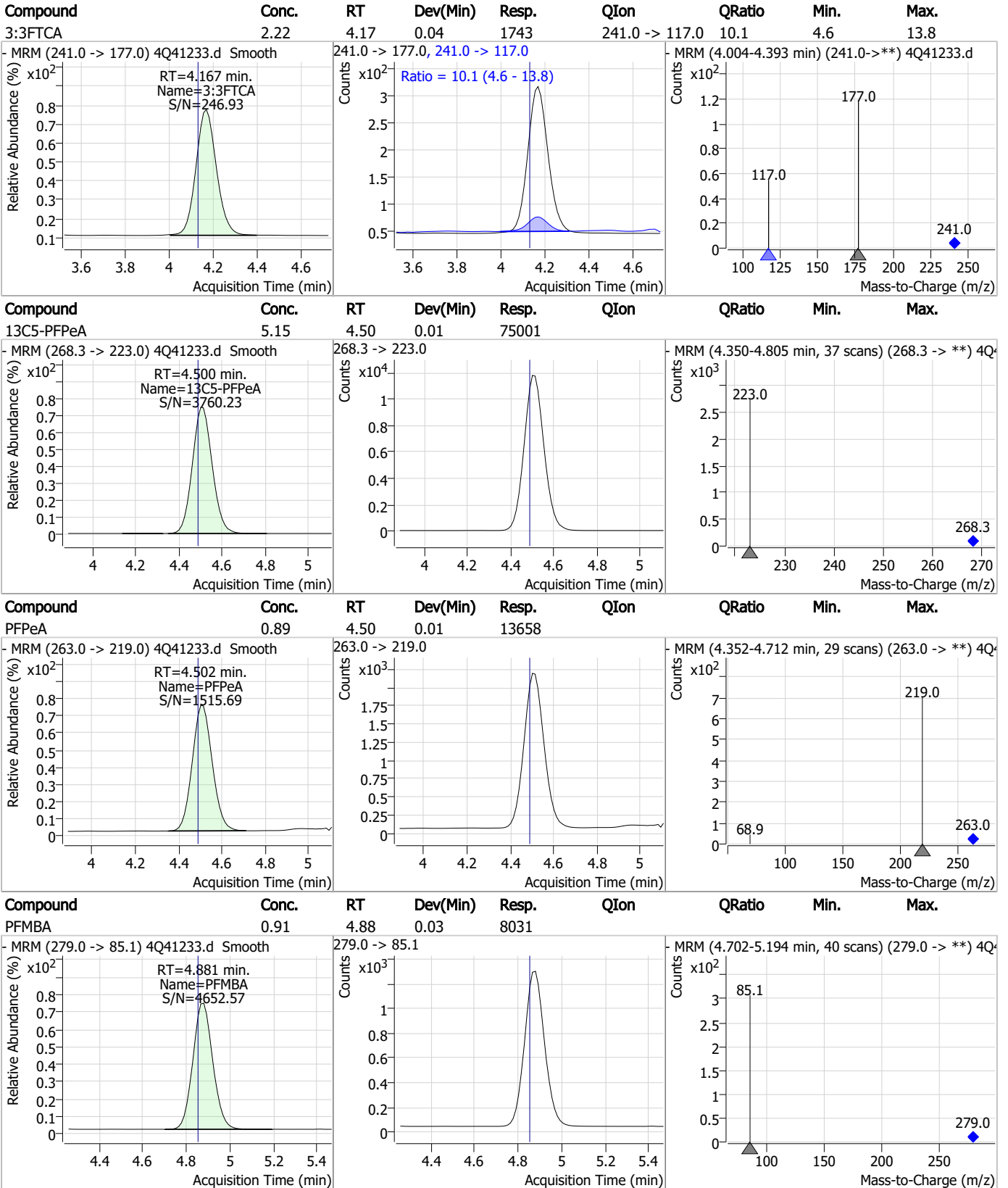
7.6.3

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

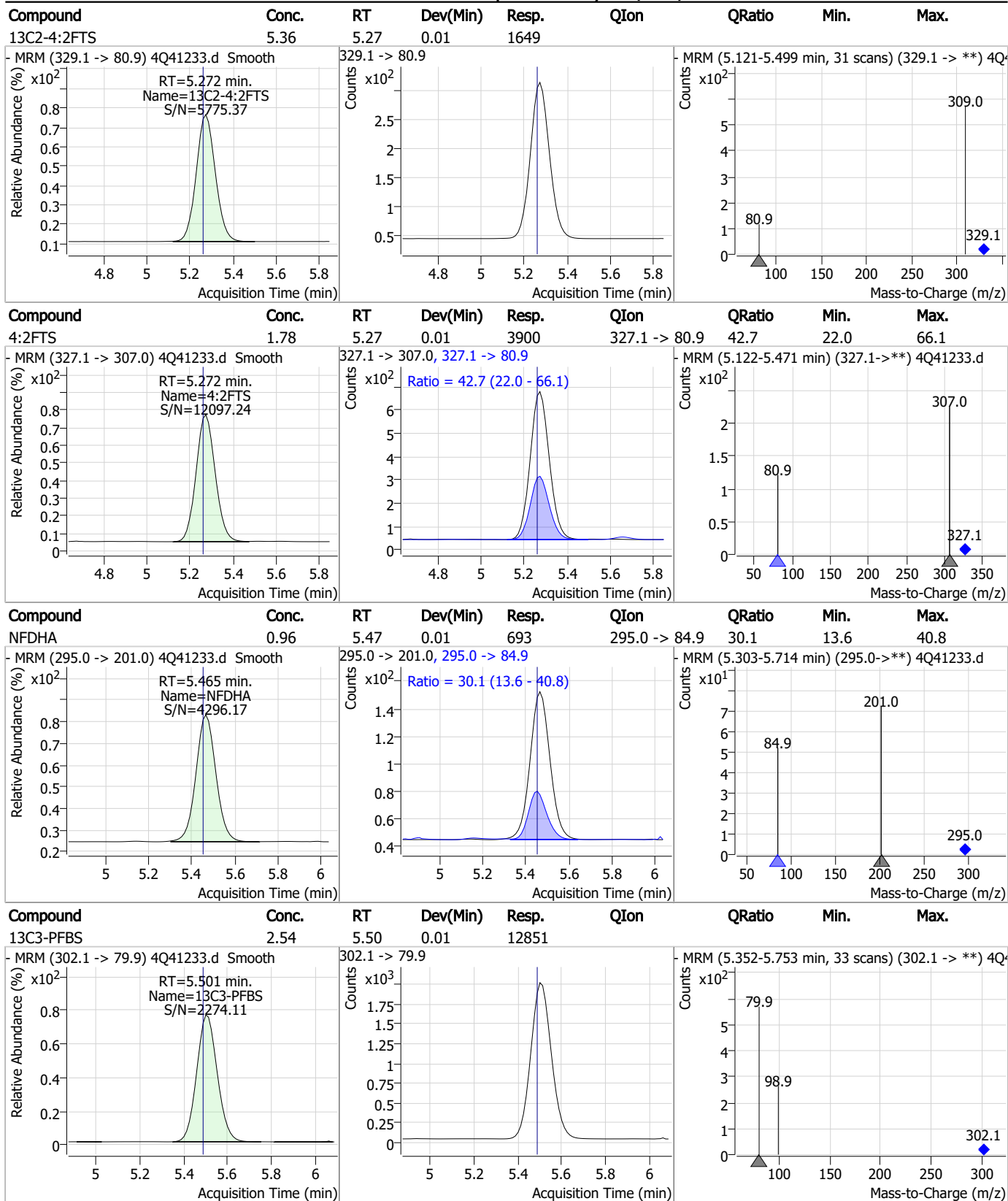


7.6.3

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Perfluorinated Compounds by LC/MS/MS

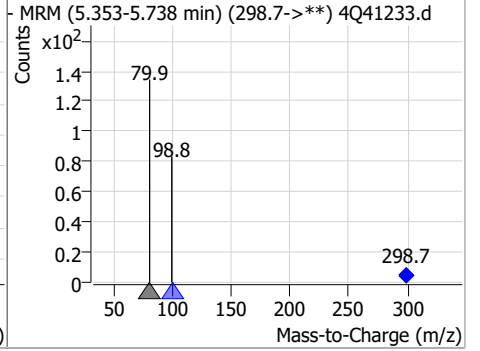
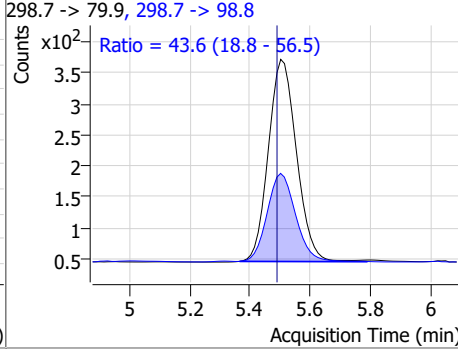
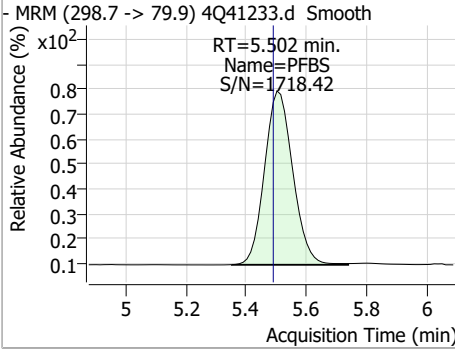


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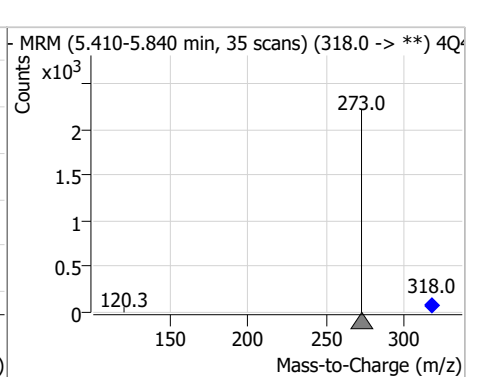
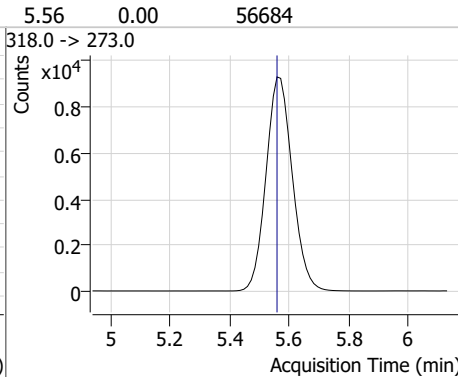
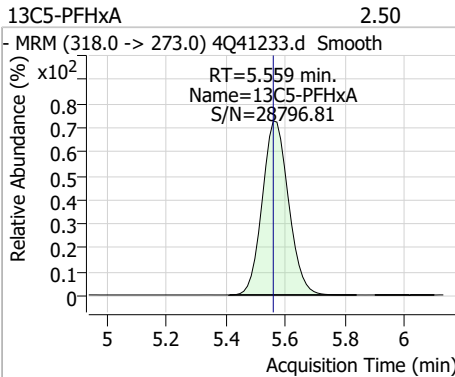
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Perfluorinated Compounds by LC/MS/MS

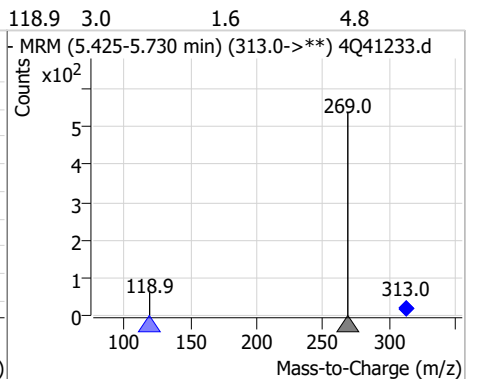
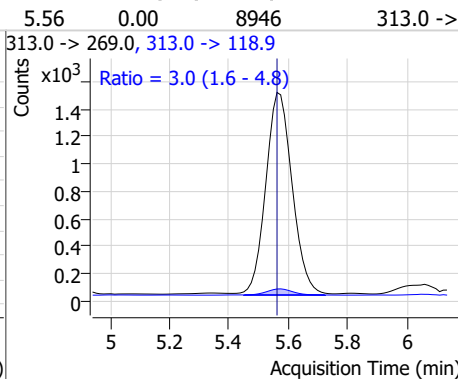
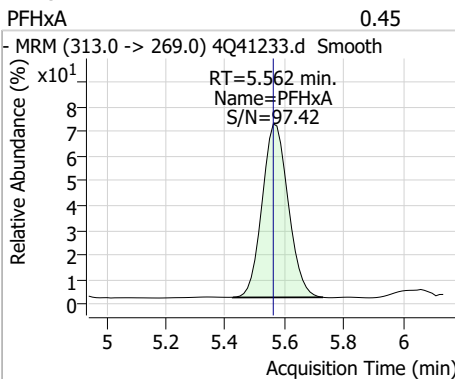
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.42	5.50	0.01	2126	298.7 -> 98.8	43.6	18.8	56.5



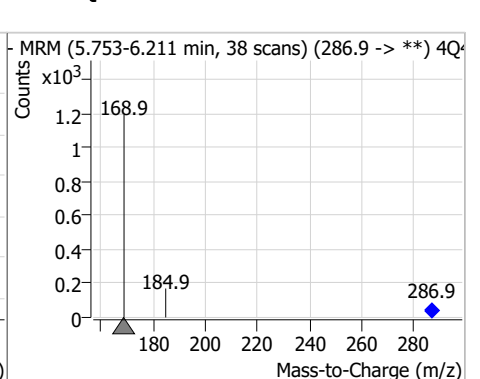
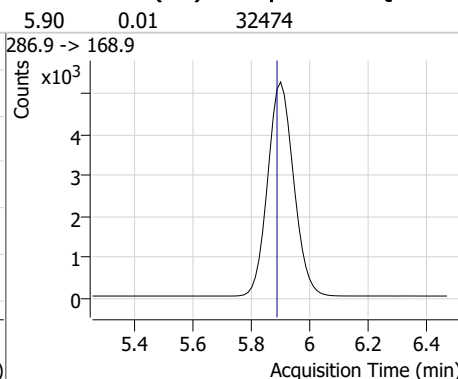
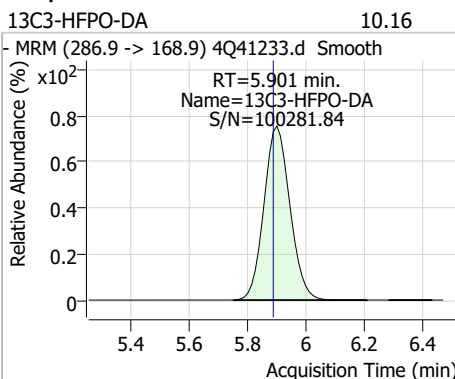
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.50	5.56	0.00	56684				



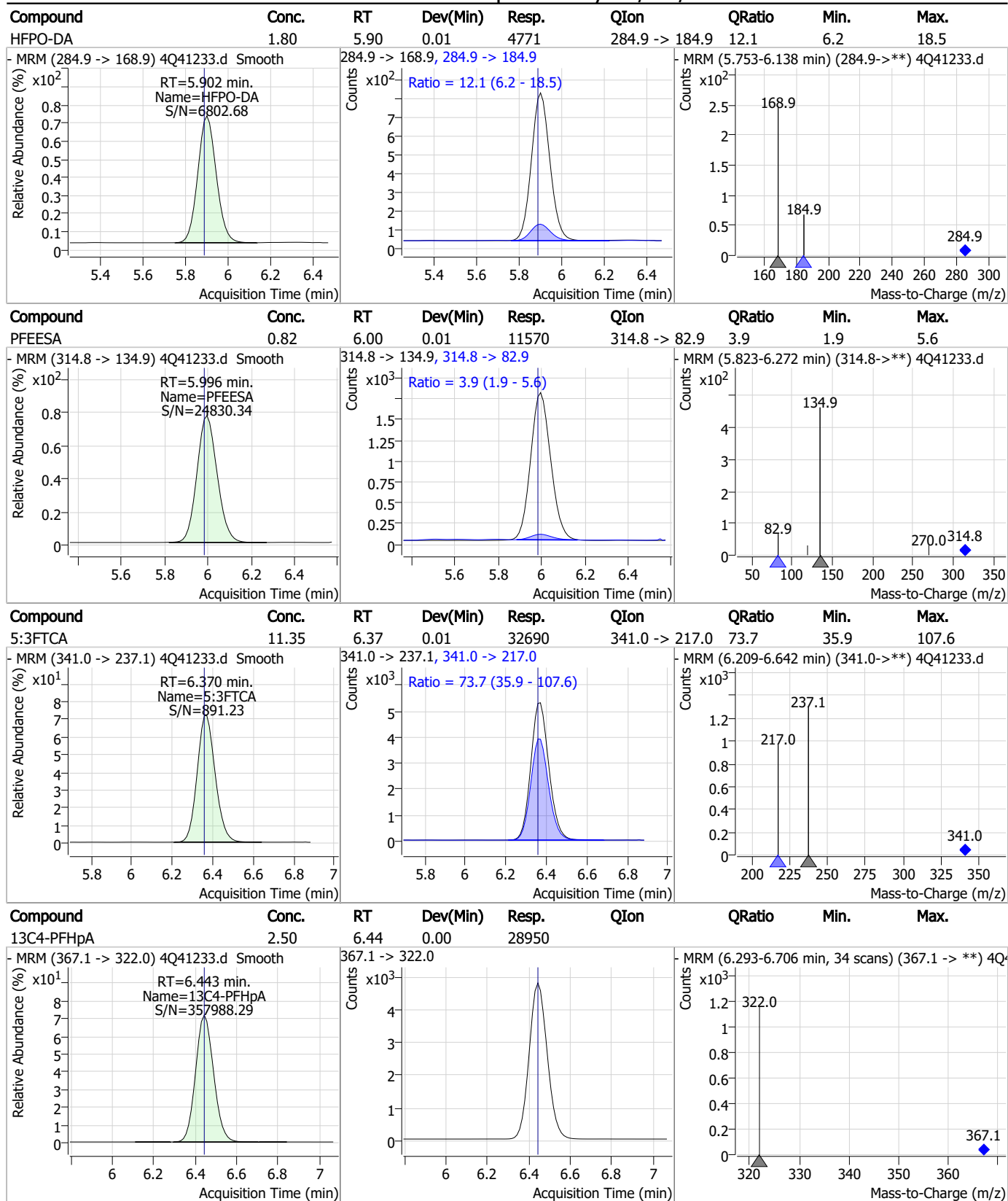
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.45	5.56	0.00	8946	313.0 -> 118.9	3.0	1.6	4.8



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.16	5.90	0.01	32474				



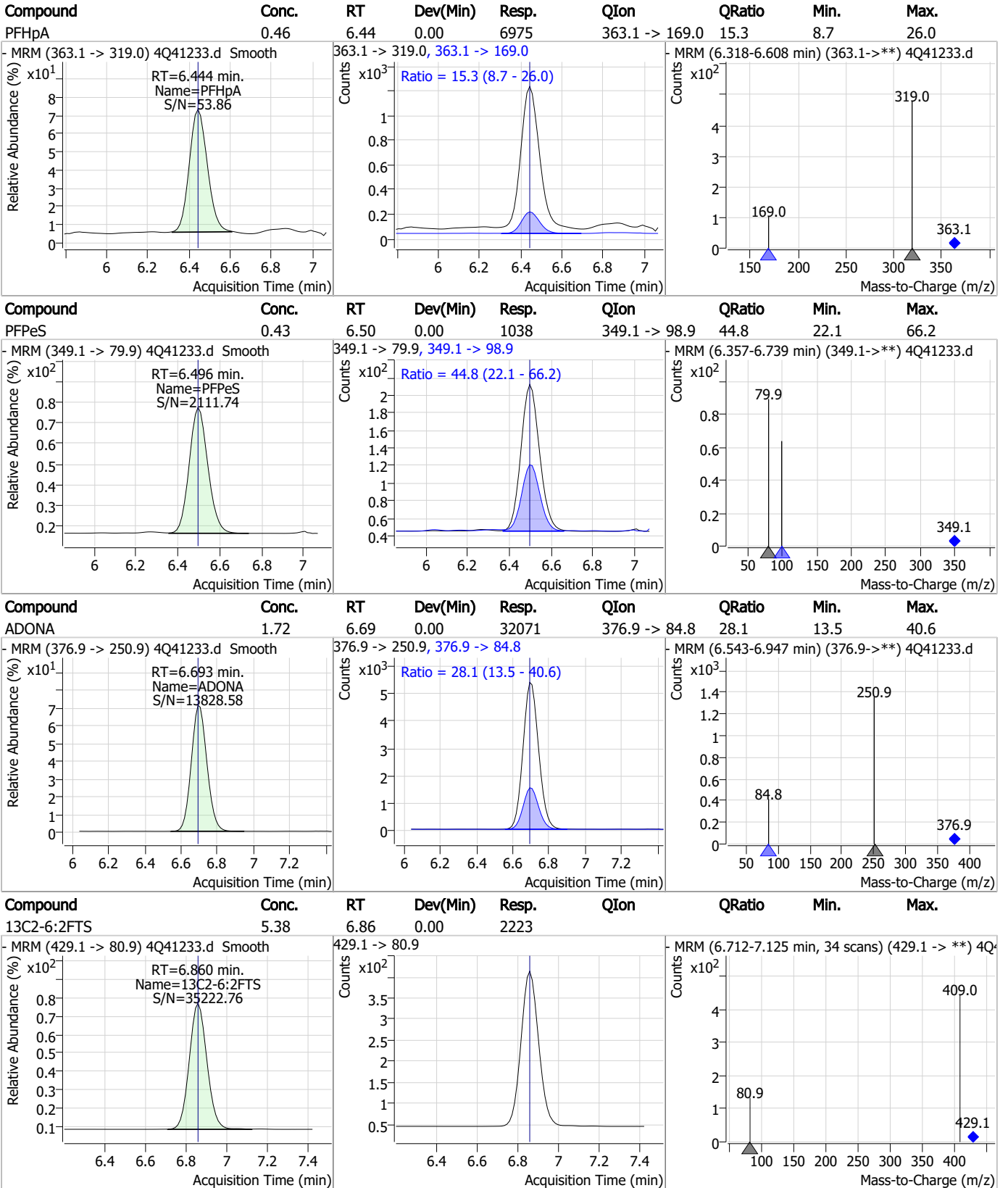
Perfluorinated Compounds by LC/MS/MS



7.6.3

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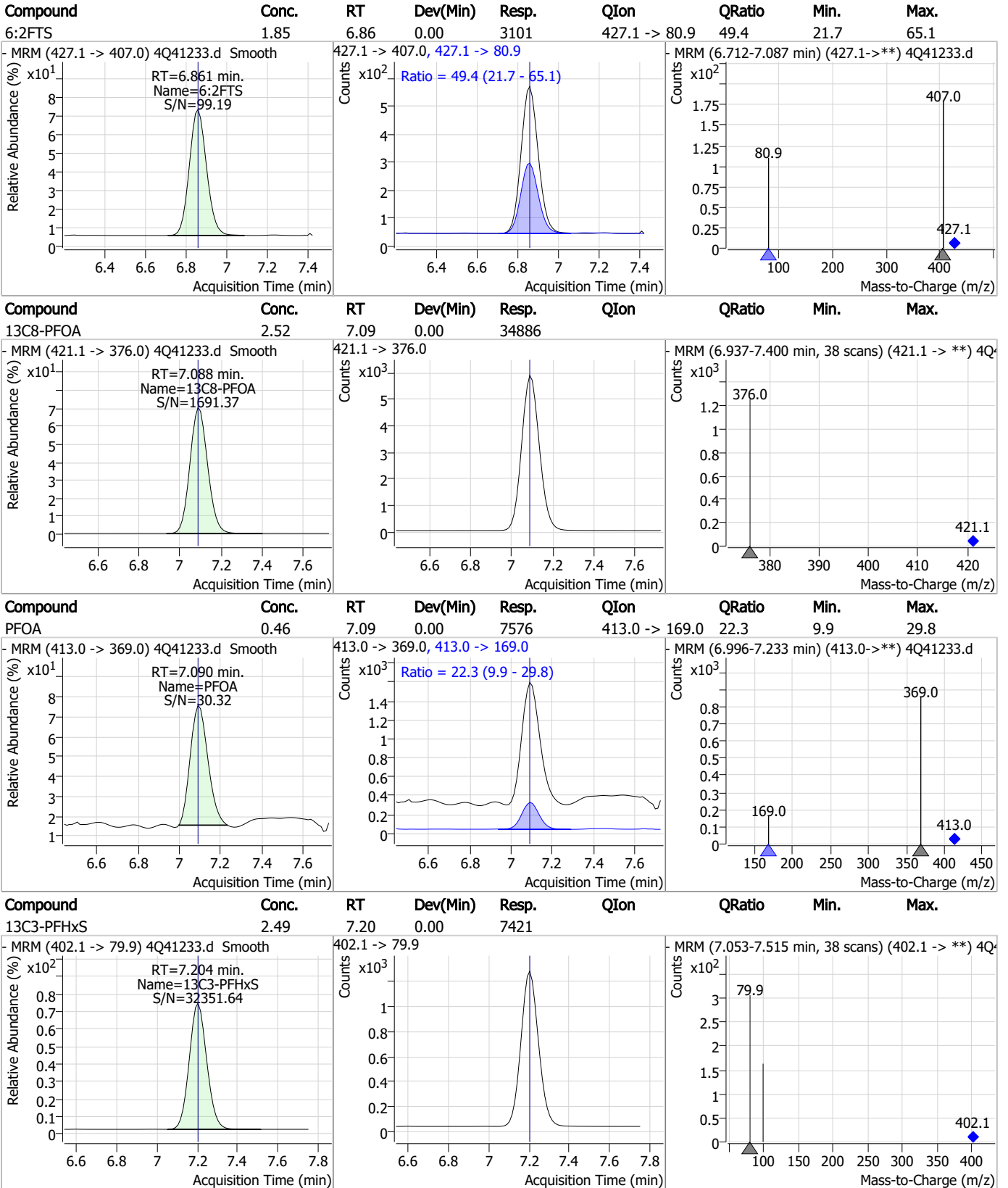
Perfluorinated Compounds by LC/MS/MS



7.6.3

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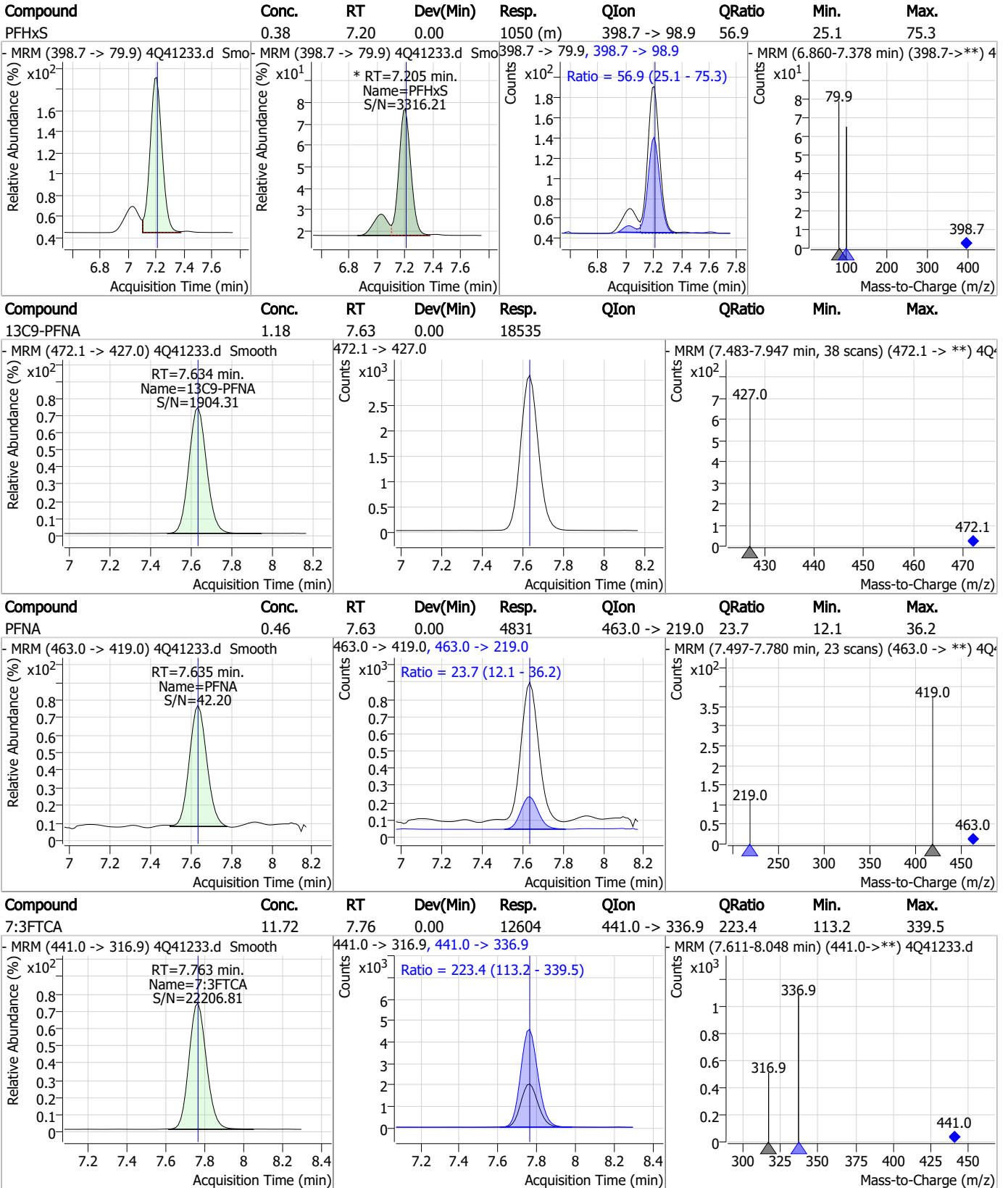
Perfluorinated Compounds by LC/MS/MS



7.6.3

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Perfluorinated Compounds by LC/MS/MS

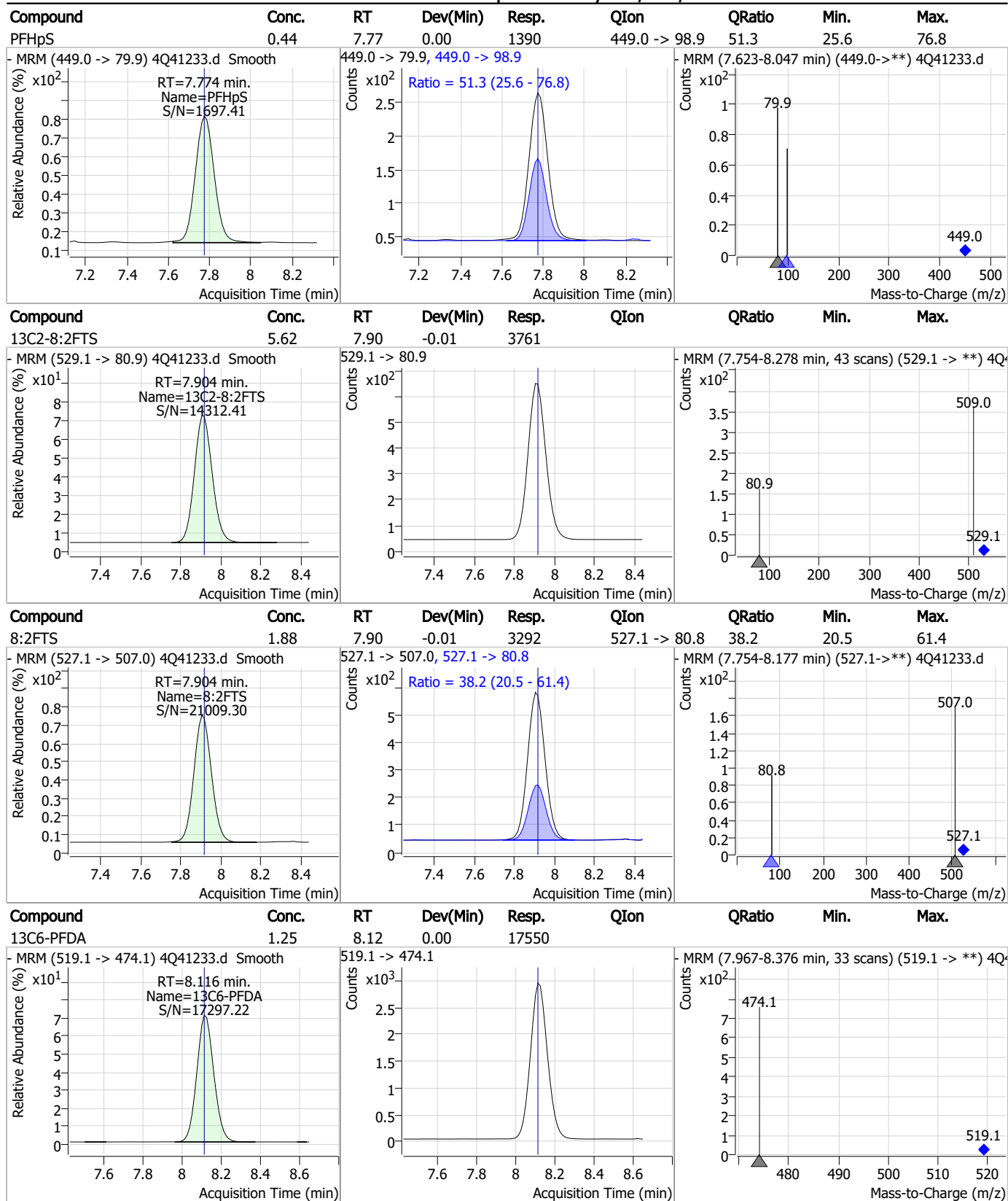


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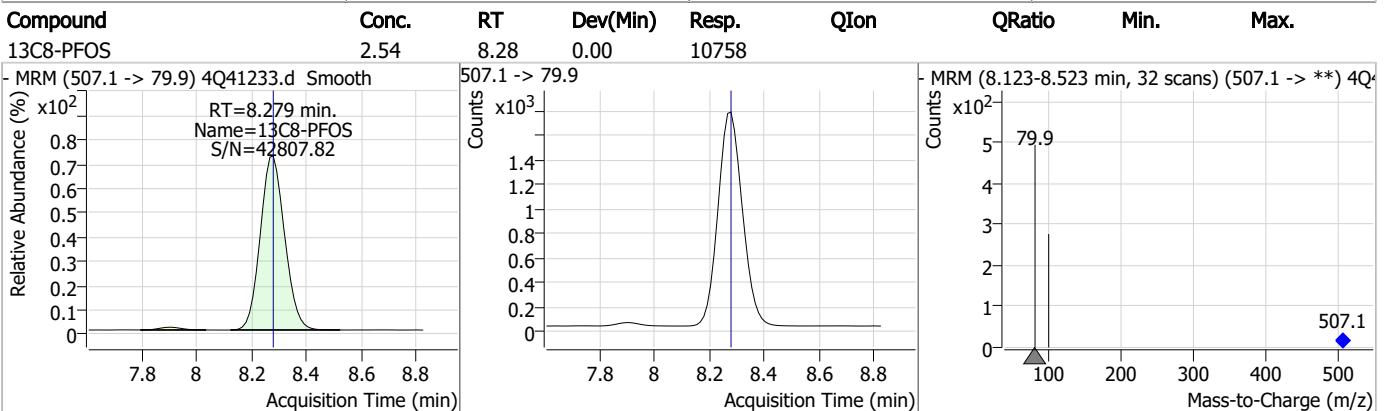
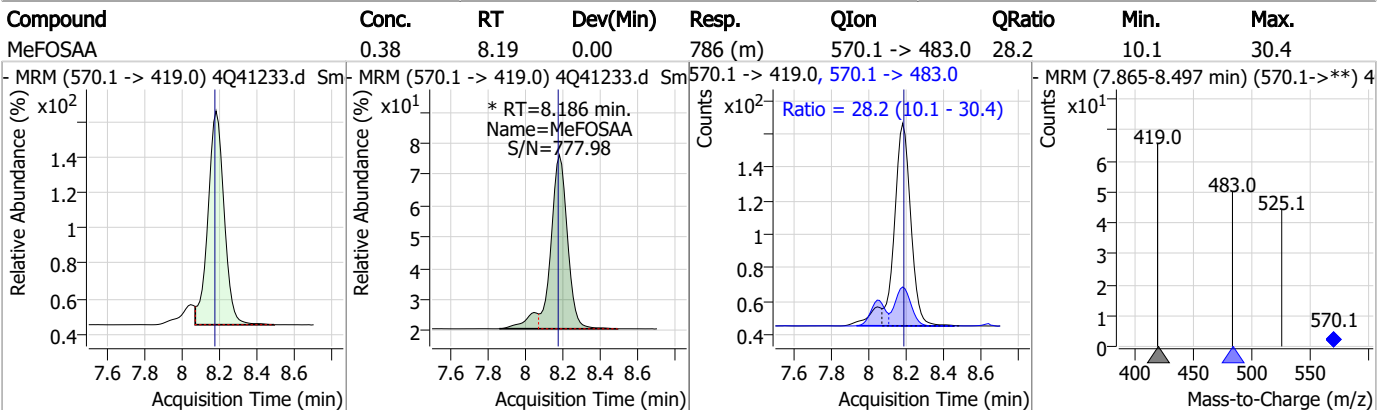
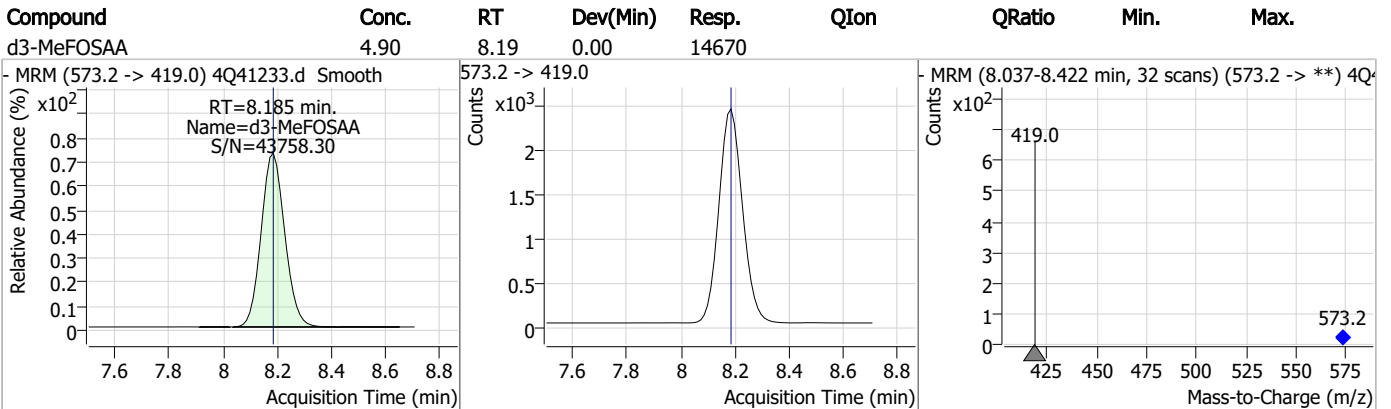
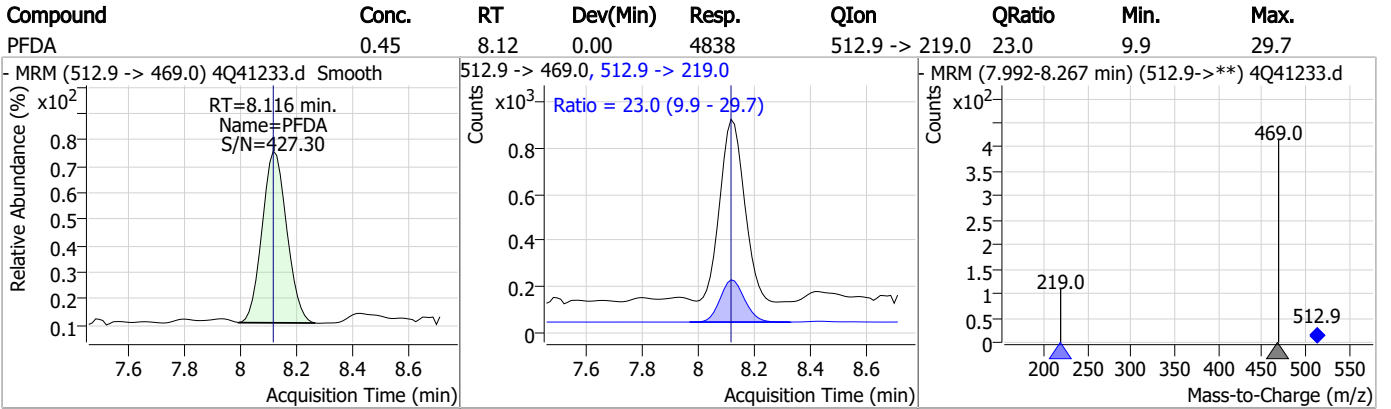


Perfluorinated Compounds by LC/MS/MS



7.6.3
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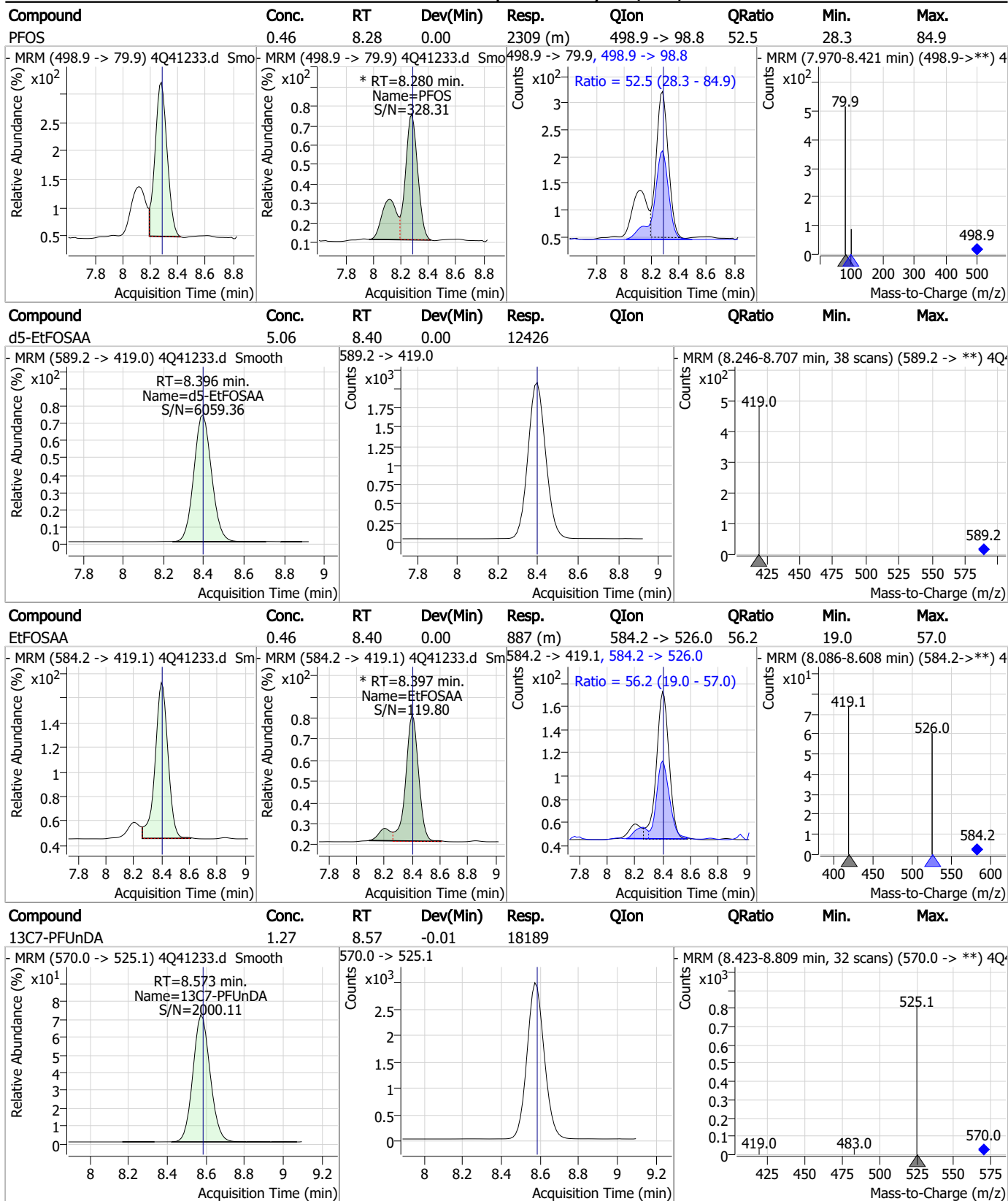
Perfluorinated Compounds by LC/MS/MS



7.6.3

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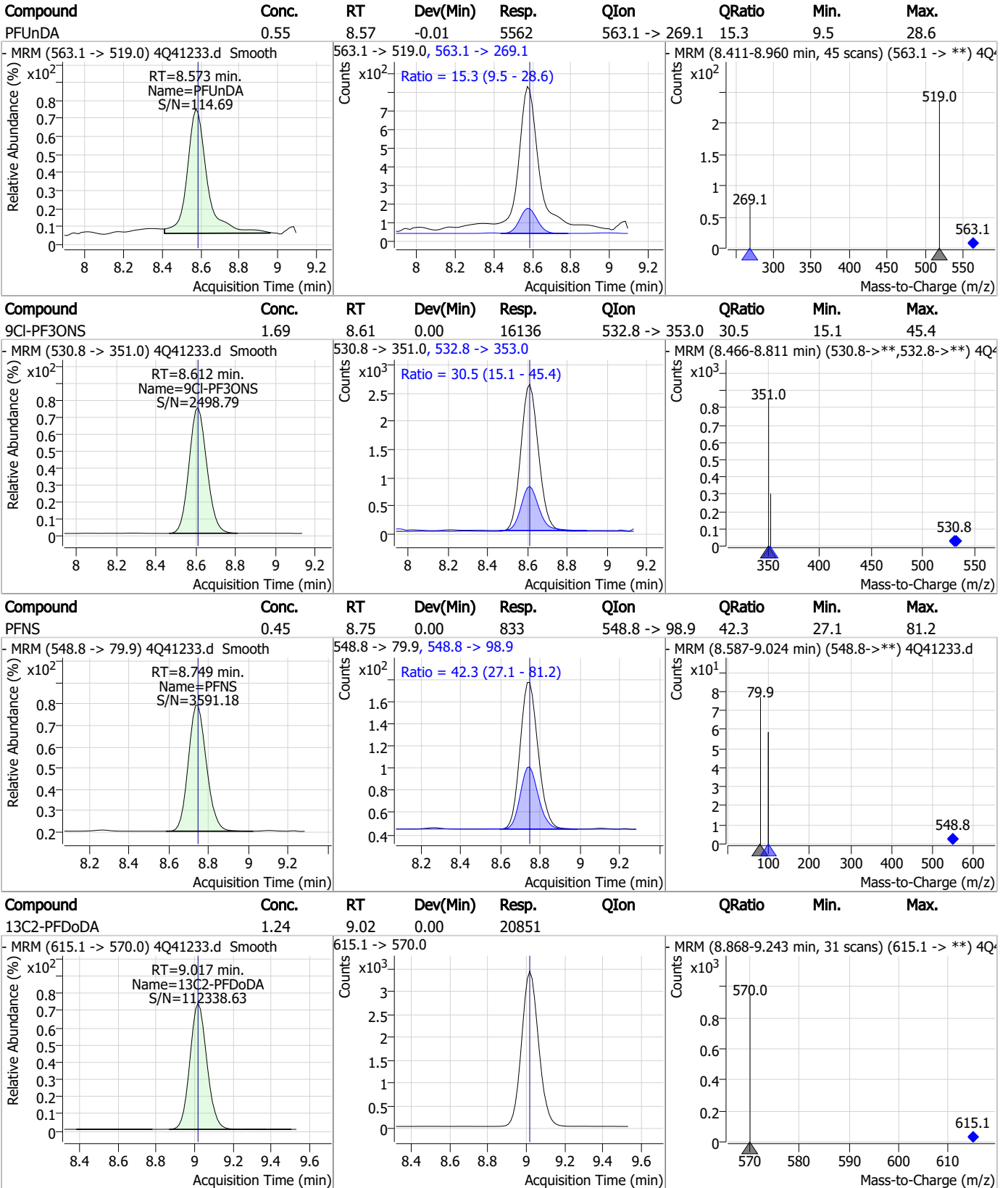
Perfluorinated Compounds by LC/MS/MS



7.6.3

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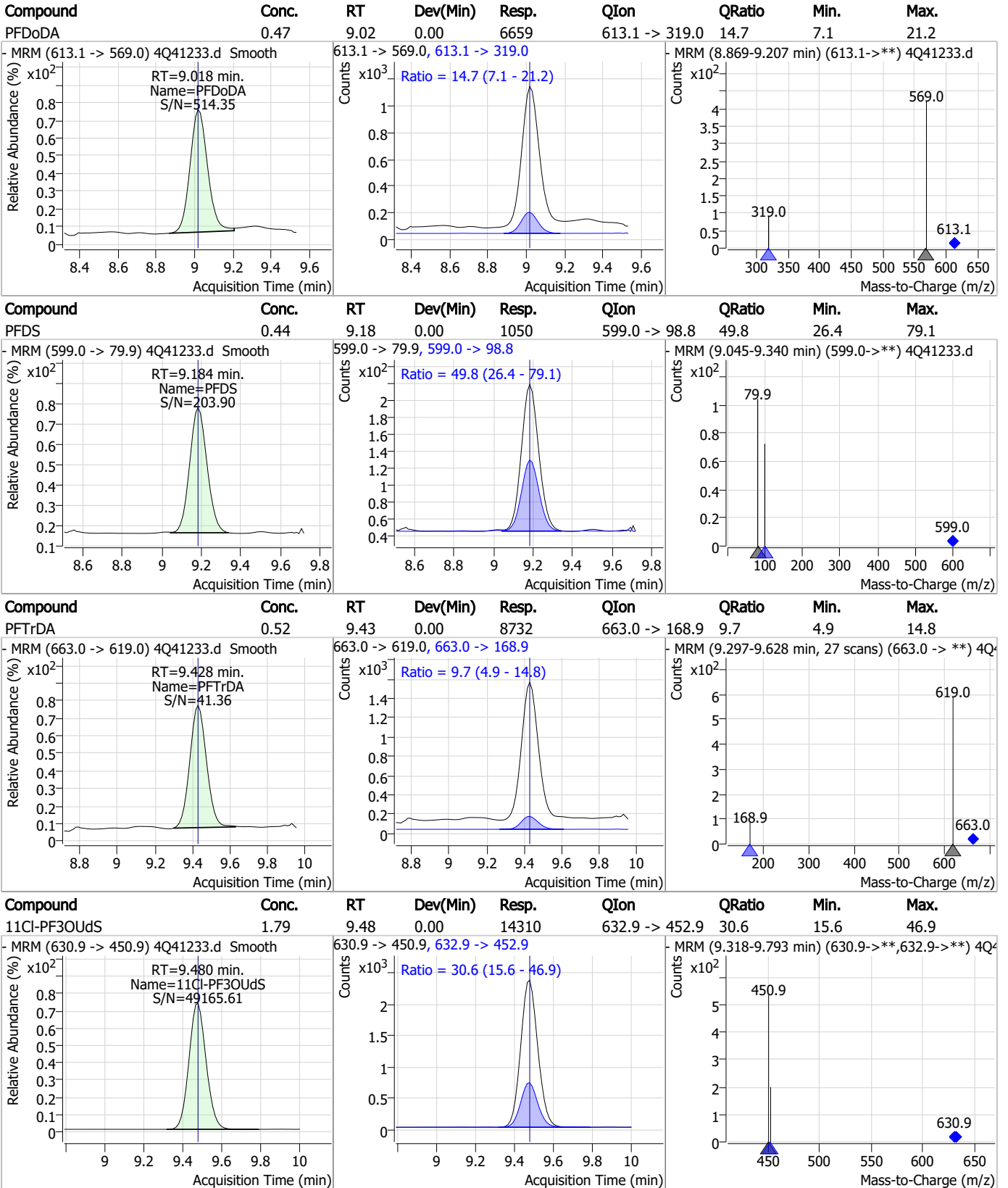
Perfluorinated Compounds by LC/MS/MS



7.6.3

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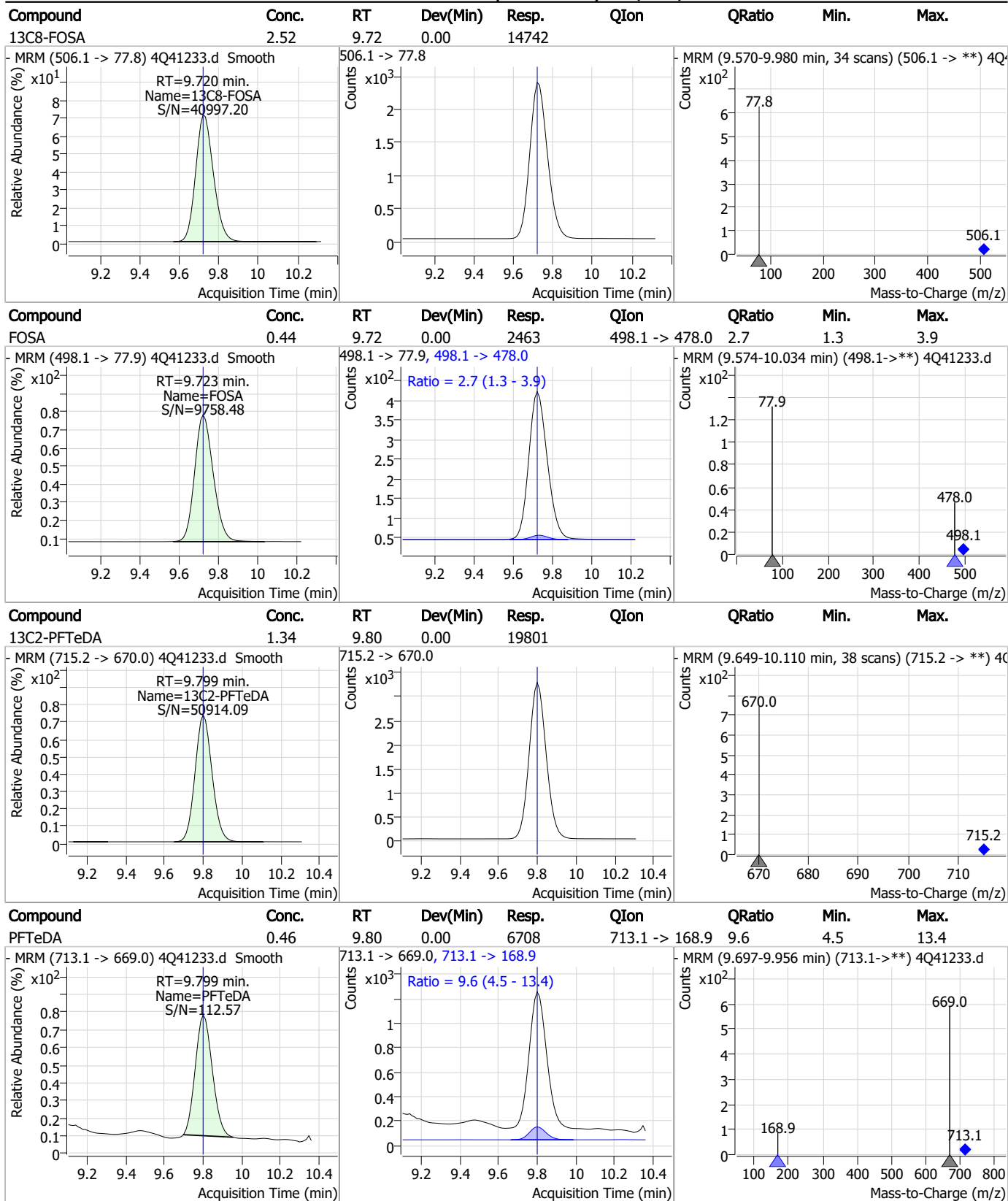
Perfluorinated Compounds by LC/MS/MS



7.6.3

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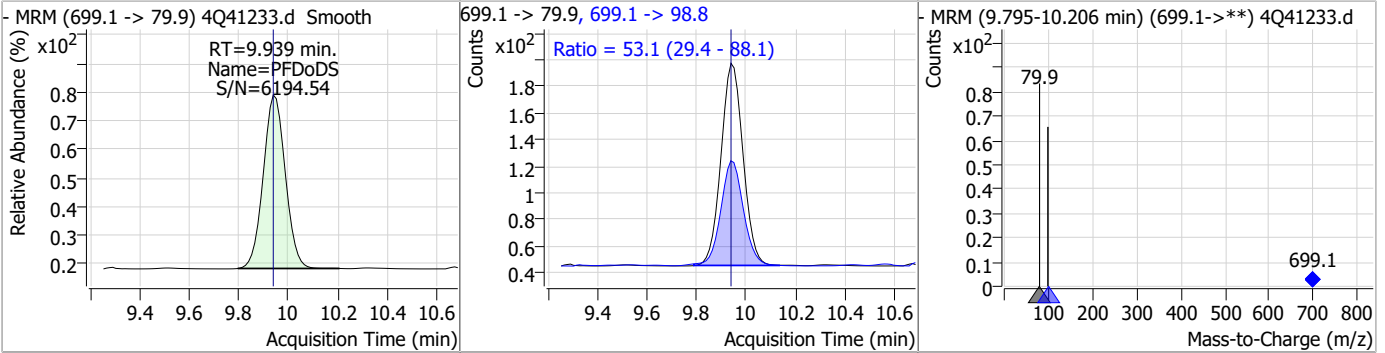
Perfluorinated Compounds by LC/MS/MS



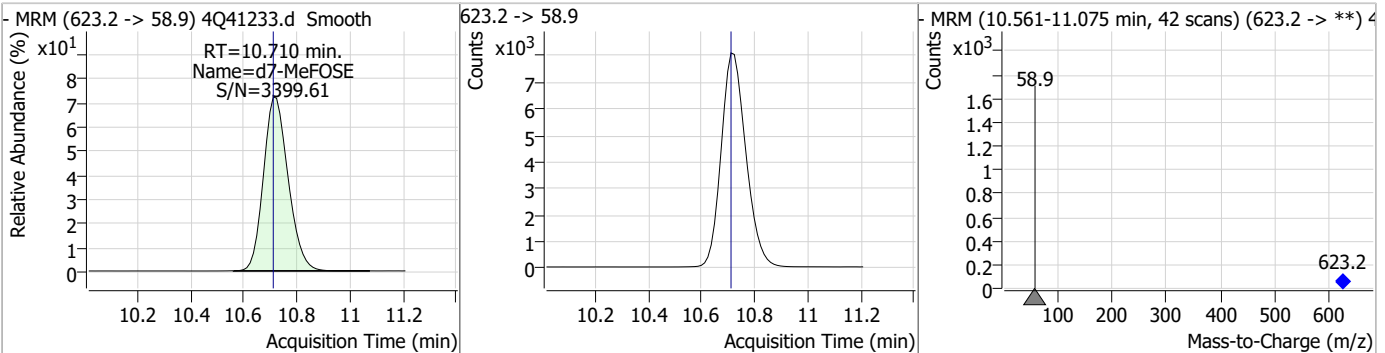
7.6.3
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Perfluorinated Compounds by LC/MS/MS

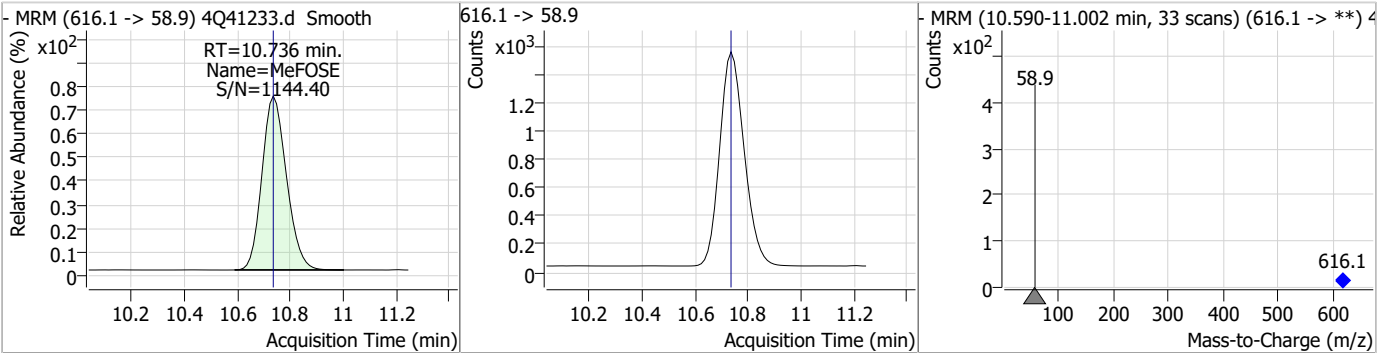
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.45	9.94	0.00	937	699.1 -> 98.8	53.1	29.4	88.1



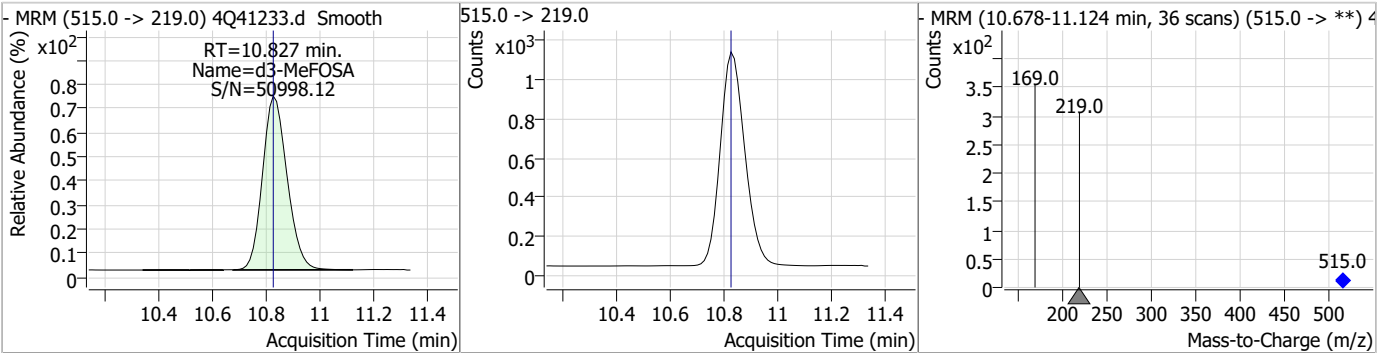
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.26	10.71	0.00	51998				



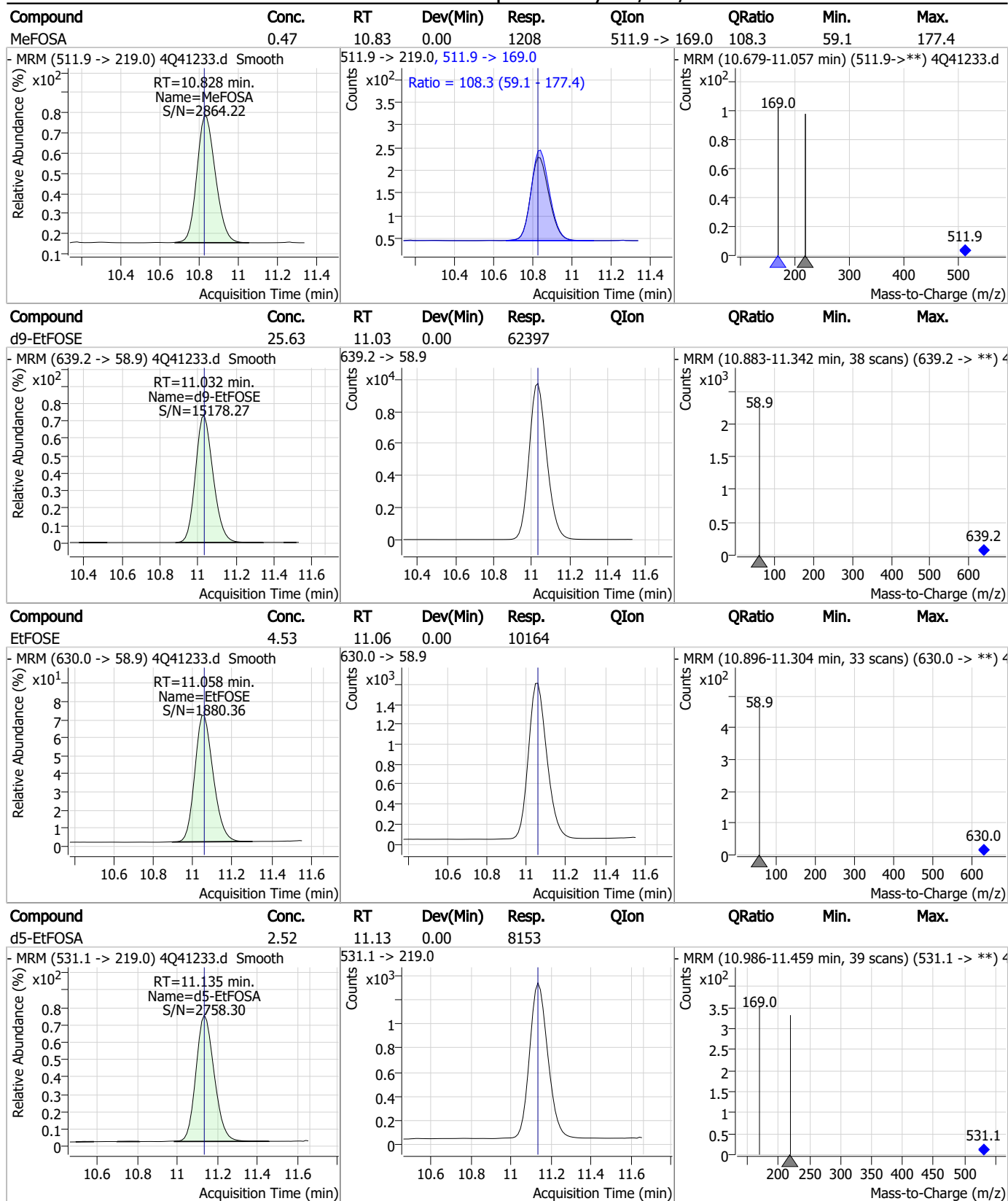
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	4.67	10.74	0.00	9677				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.42	10.83	0.00	6973				



Perfluorinated Compounds by LC/MS/MS

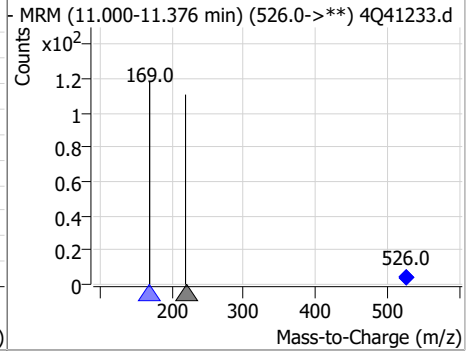
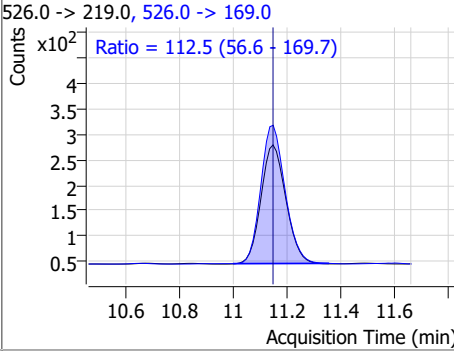
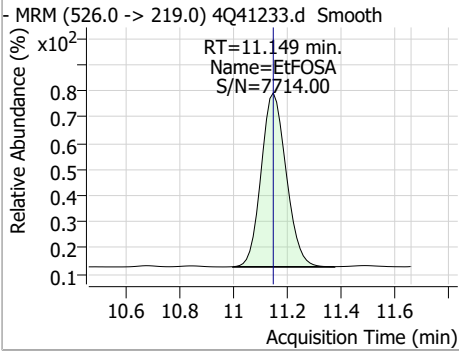


7.6.3

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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOsa	0.45	11.15	0.00	1512	526.0 -> 169.0	112.5	56.6	169.7



7.6.3

7

Manual Integration Approval Summary

Sample Number: S4Q589-IC589 Method: EPA DRAFT 1633
Lab FileID: 4Q41233.D Analyst approved: 02/27/23 14:05 Anna Ludwig
Injection Time: 02/24/23 16:16 Supervisor approved: 02/27/23 16:52 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.21	Split peak
MeFOSAA	2355-31-9		8.19	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.28	Split peak
EtFOSAA	2991-50-6		8.40	Split peak

7.6.3.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41234.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/24/2023 4:30:30 PM
 Sample Name : ic589-3
 Vial : P1-A4
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q589.batch.bin
 Sample Information : op95462,S4Q589,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.111	216.8 -> 171.9	121504	10.00 µg/L	0.012
M5-PFPeA	4.487	268.3 -> 223.0	75653	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	59054	2.50 µg/L	0.000
M4-PFHpA	6.443	367.1 -> 322.0	30257	2.50 µg/L	0.000
M8-PFOA	7.101	421.1 -> 376.0	36396	2.50 µg/L	0.012
M9-PFNA	7.634	472.1 -> 427.0	18906	1.25 µg/L	0.000
M6-PFDA	8.116	519.1 -> 474.1	17394	1.25 µg/L	0.000
M7-PFUnDA	8.585	570.0 -> 525.1	18976	1.25 µg/L	0.000
M2-PFDoDA	9.017	615.1 -> 570.0	21695	1.25 µg/L	0.000
M2-PFTeDA	9.799	715.2 -> 670.0	19616	1.25 µg/L	0.000
M8-FOSA	9.720	506.1 -> 77.8	15386	2.50 µg/L	0.000
M3-PFBS	5.501	302.1 -> 79.9	13377	2.50 µg/L	0.012
M3-PFHxS	7.204	402.1 -> 79.9	8001	2.50 µg/L	0.000
M8-PFOS	8.279	507.1 -> 79.9	10590	2.50 µg/L	0.000
M2-4:2FTS	5.260	329.1 -> 80.9	1582	5.00 µg/L	0.000
M2-6:2FTS	6.860	429.1 -> 80.9	2289	5.00 µg/L	0.000
M2-8:2FTS	7.904	529.1 -> 80.9	3632	5.00 µg/L	-0.012
M3-MeFOSAA	8.185	573.2 -> 419.0	15691	5.00 µg/L	0.000
M3-HFPO-DA	5.889	286.9 -> 168.9	32801	10.00 µg/L	0.000
M5-EtFOSAA	8.396	589.2 -> 419.0	12909	5.00 µg/L	0.000
M7-MeFOSE	10.710	623.2 -> 58.9	52251	25.00 µg/L	0.000
M9-EtFOSE	11.020	639.2 -> 58.9	62595	25.00 µg/L	-0.012
M5-EtFOSA	11.123	531.1 -> 219.0	8052	2.50 µg/L	-0.012
M3-MeFOSA	10.827	515.0 -> 219.0	7226	2.50 µg/L	0.000
13C4-PFOS	8.280	502.8 -> 79.9	10451	2.50 µg/L	0.000
13C3-PFBA	3.115	216.0 -> 172.0	70836	5.00 µg/L	0.013
18O2-PFHxS	7.203	403.0 -> 83.9	5317	2.50 µg/L	0.000
13C4-PFOA	7.101	417.1 -> 372.0	42415	2.50 µg/L	0.012
13C2-PFDA	8.116	515.1 -> 470.1	16233	1.25 µg/L	-0.012
13C5-PFNA	7.634	468.0 -> 423.0	21358	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	52368	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1582	5.11 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C2-6:2FTS	6.860	429.1 -> 80.9	2289	5.51 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.1%		
13C2-8:2FTS	7.904	529.1 -> 80.9	3632	5.39 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.8%		
13C2-PFDoDA	9.017	615.1 -> 570.0	21695	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.7%		
13C2-PFTeDA	9.799	715.2 -> 670.0	19616	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C3-PFBS	5.501	302.1 -> 79.9	13377	2.62 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.9%		
13C3-PFHxS	7.204	402.1 -> 79.9	8001	2.66 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.6%	
13C4-PFBA	3.111	216.8 -> 171.9	121504	9.96 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C4-PFHpA	6.443	367.1 -> 322.0	30257	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.4%	
13C5-PFHxA	5.559	318.0 -> 273.0	59054	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C5-PFPeA	4.487	268.3 -> 223.0	75653	5.14 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.8%	
13C6-PFDA	8.116	519.1 -> 474.1	17394	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.4%	
13C7-PFUnDA	8.585	570.0 -> 525.1	18976	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C8-FOSA	9.720	506.1 -> 77.8	15386	2.66 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.2%	
13C8-PFOA	7.101	421.1 -> 376.0	36396	2.58 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.0%	
13C8-PFOS	8.279	507.1 -> 79.9	10590	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C9-PFNA	7.634	472.1 -> 427.0	18906	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.5%	
d3-MeFOSAA	8.185	573.2 -> 419.0	15691	5.29 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.9%	
13C3-HFPO-DA	5.889	286.9 -> 168.9	32801	10.16 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
d3-MeFOSA	10.827	515.0 -> 219.0	7226	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
d5-EtFOSAA	8.396	589.2 -> 419.0	12909	5.31 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.2%	
d7-MeFOSE	10.710	623.2 -> 58.9	52251	25.61 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
d9-EtFOSE	11.020	639.2 -> 58.9	62595	25.94 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.8%	
d5-EtFOSA	11.123	531.1 -> 219.0	8052	2.51 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	10523	4.99 µg/L	97
		327.1 -> 80.9	4824		
6:2FTS	6.861	427.1 -> 407.0	8125	4.71 µg/L	97
		427.1 -> 80.9	3662		
8:2FTS	7.916	527.1 -> 507.0	8513	5.04 µg/L	99
		527.1 -> 80.8	3413		
EtFOSAA	8.409	584.2 -> 419.1	2536	1.25 µg/L	m 90
		584.2 -> 526.0	1110		
FOSA	9.723	498.1 -> 77.9	7469	1.27 µg/L	99
		498.1 -> 478.0	179		
MeFOSAA	8.186	570.1 -> 419.0	2722	1.25 µg/L	m 99
		570.1 -> 483.0	566		
PFBA	3.120	212.8 -> 168.9	13964	4.86 µg/L	100
PFBS	5.502	298.7 -> 79.9	5490	1.03 µg/L	93
		298.7 -> 98.8	2287		
PFDA	8.129	512.9 -> 469.0	13948	1.30 µg/L	97
		512.9 -> 219.0	2955		
PFDODA	9.018	613.1 -> 569.0	18496	1.26 µg/L	100
		613.1 -> 319.0	2585		
PFDS	9.184	599.0 -> 79.9	2802	1.19 µg/L	100

7.64
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	1483			
PFHpA	6.444	363.1 -> 319.0	18755	1.17	µg/L	97
		363.1 -> 169.0	3471			
PFHpS	7.774	449.0 -> 79.9	3675	1.18	µg/L	93
		449.0 -> 98.9	2059			
PFHxA	5.562	313.0 -> 269.0	24717	1.19	µg/L	100
		313.0 -> 118.9	831			
PFHxS	7.205	398.7 -> 79.9	3318	1.11	µg/L	m 98
		398.7 -> 98.9	1702			
PFNA	7.635	463.0 -> 419.0	13157	1.23	µg/L	96
		463.0 -> 219.0	3448			
PFNS	8.749	548.8 -> 79.9	2153	1.18	µg/L	94
		548.8 -> 98.9	1258			
PFOA	7.102	413.0 -> 369.0	19741	1.15	µg/L	99
		413.0 -> 169.0	4037			
PFOS	8.280	498.9 -> 79.9	5693	1.16	µg/L	m 90
		498.9 -> 98.8	2803			
PFPeA	4.489	263.0 -> 219.0	37675	2.45	µg/L	100
PFPeS	6.496	349.1 -> 79.9	2816	1.07	µg/L	97
		349.1 -> 98.9	1187			
PFTeDA	9.799	713.1 -> 669.0	17743	1.23	µg/L	99
		713.1 -> 168.9	1621			
PFTrDA	9.428	663.0 -> 619.0	22660	1.29	µg/L	99
		663.0 -> 168.9	2320			
PFUnDA	8.585	563.1 -> 519.0	12362	1.18	µg/L	99
		563.1 -> 269.1	2439			
11CI-PF3OUdS	9.480	630.9 -> 450.9	38767	4.81	µg/L	100
		632.9 -> 452.9	12064			
9CI-PF3ONS	8.625	530.8 -> 351.0	45200	4.70	µg/L	99
		532.8 -> 353.0	13821			
ADONA	6.705	376.9 -> 250.9	90013	4.78	µg/L	99
		376.9 -> 84.8	24738			
HFPO-DA	5.890	284.9 -> 168.9	13601	5.08	µg/L	97
		284.9 -> 184.9	1530			
3:3FTCA	4.129	241.0 -> 177.0	4713	5.94	µg/L	97
		241.0 -> 117.0	488			
5:3FTCA	6.358	341.0 -> 237.1	92031	30.67	µg/L	99
		341.0 -> 217.0	66737			
7:3FTCA	7.763	441.0 -> 316.9	35105	31.32	µg/L	99
		441.0 -> 336.9	80083			
EtFOSA	11.136	526.0 -> 219.0	4059	1.23	µg/L	98
		526.0 -> 169.0	4518			
EtFOSE	11.046	630.0 -> 58.9	28168	12.52	µg/L	100
MeFOSA	10.828	511.9 -> 219.0	3209	1.22	µg/L	98
		511.9 -> 169.0	3877			
MeFOSE	10.724	616.1 -> 58.9	25981	12.47	µg/L	100
PFDoDS	9.939	699.1 -> 79.9	2491	1.21	µg/L	96
		699.1 -> 98.8	1380			
NFDHA	5.453	295.0 -> 201.0	2009	2.67	µg/L	94
		295.0 -> 84.9	609			
PFMBA	4.867	279.0 -> 85.1	21751	2.45	µg/L	100
PFMPA	3.702	229.0 -> 84.9	18689	2.43	µg/L	100
PFEESA	5.983	314.8 -> 134.9	31147	2.12	µg/L	99
		314.8 -> 82.9	1210			

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

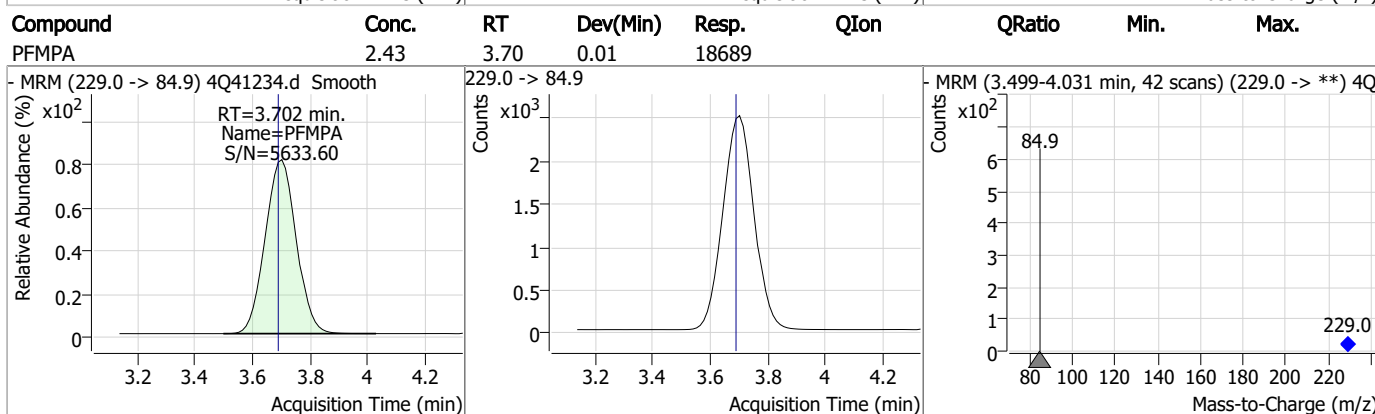
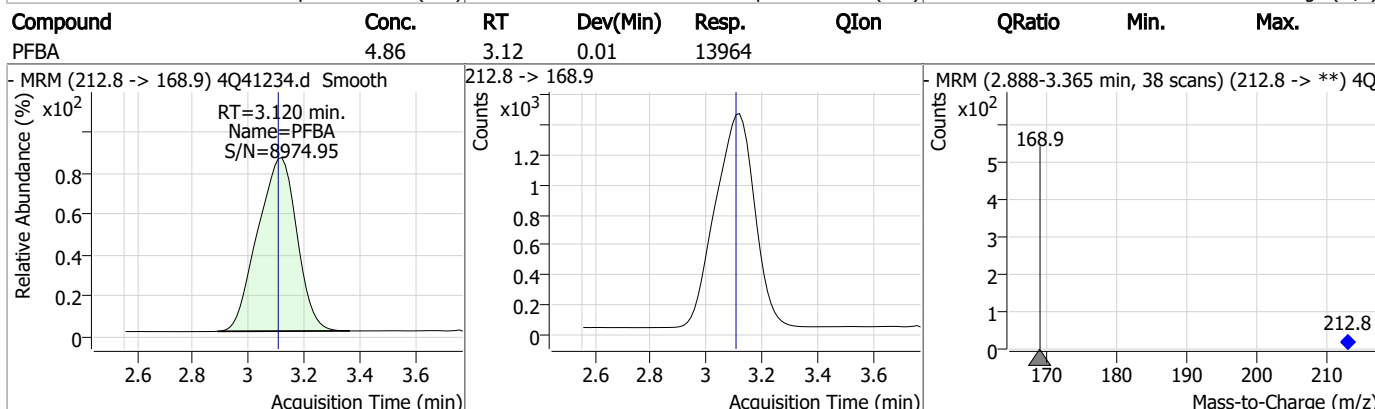
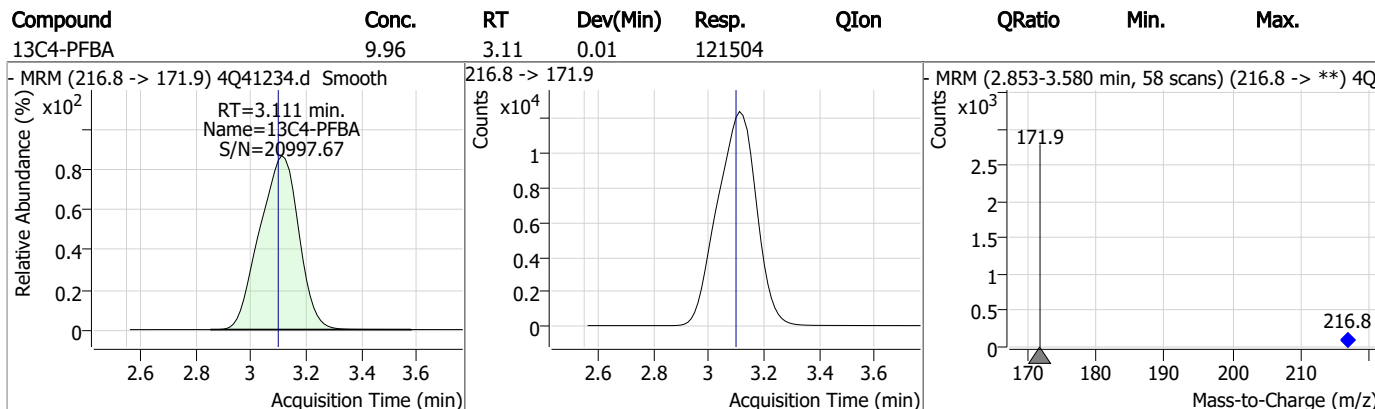
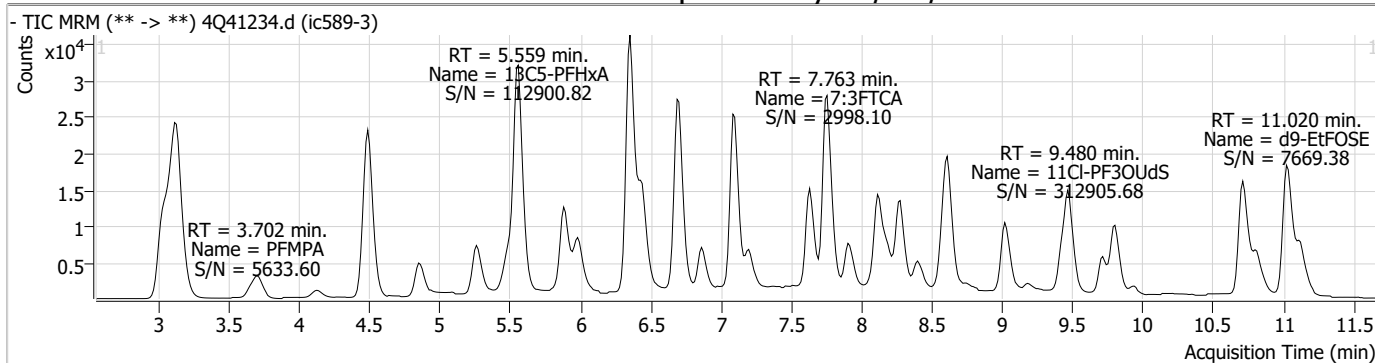
Perfluorinated Compounds by LC/MS/MS

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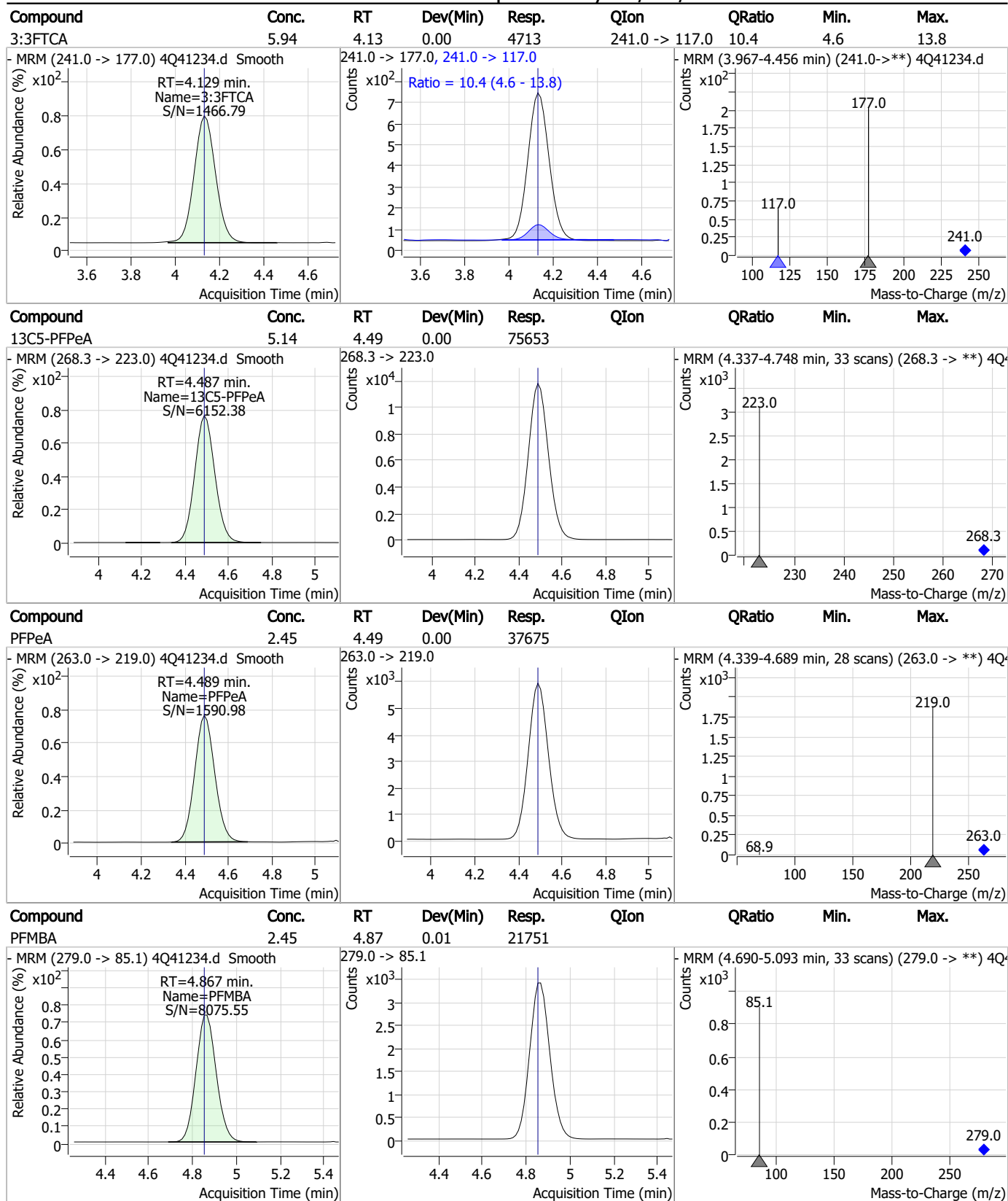
7.6.4

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Perfluorinated Compounds by LC/MS/MS



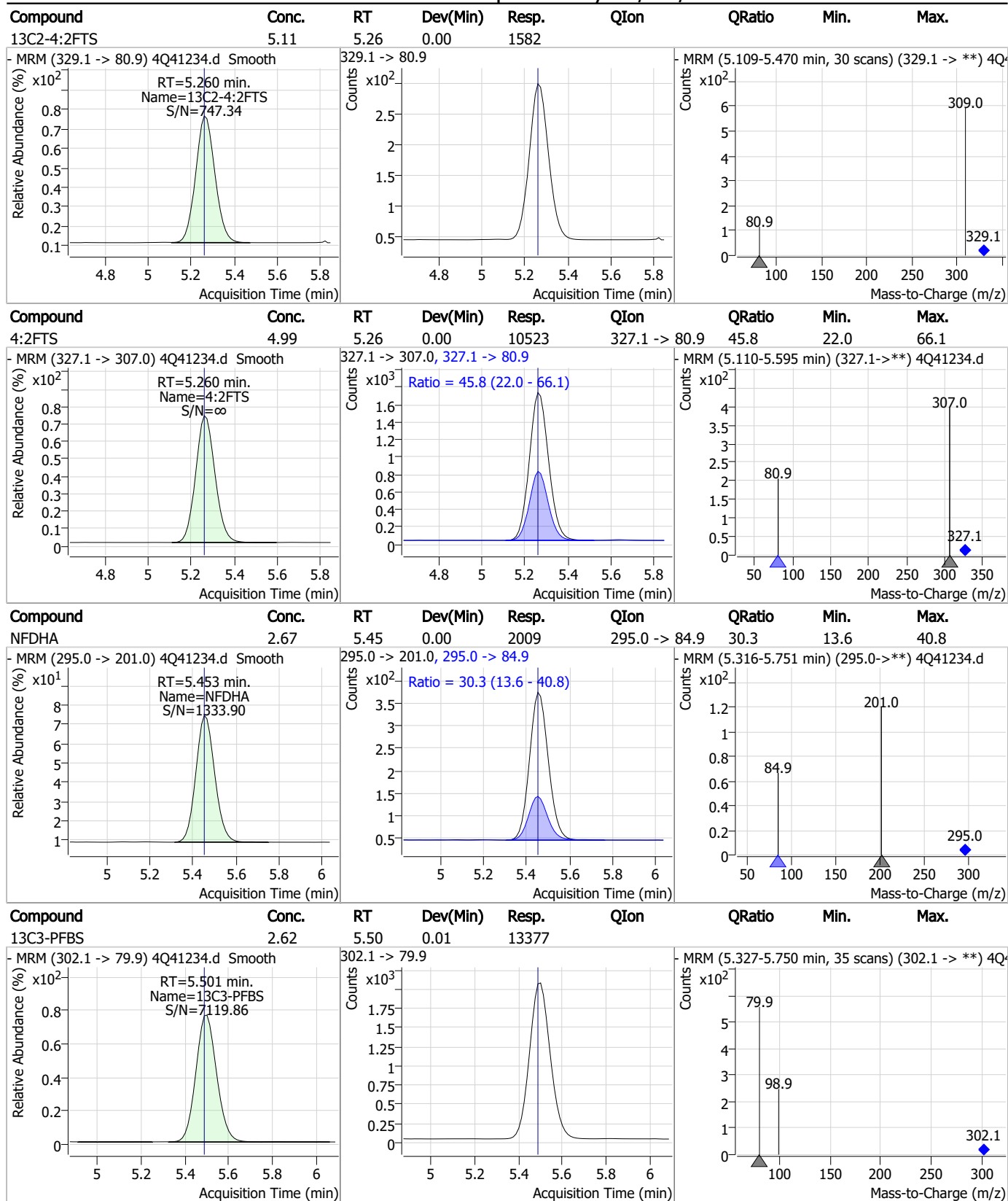
Perfluorinated Compounds by LC/MS/MS



7.6.4

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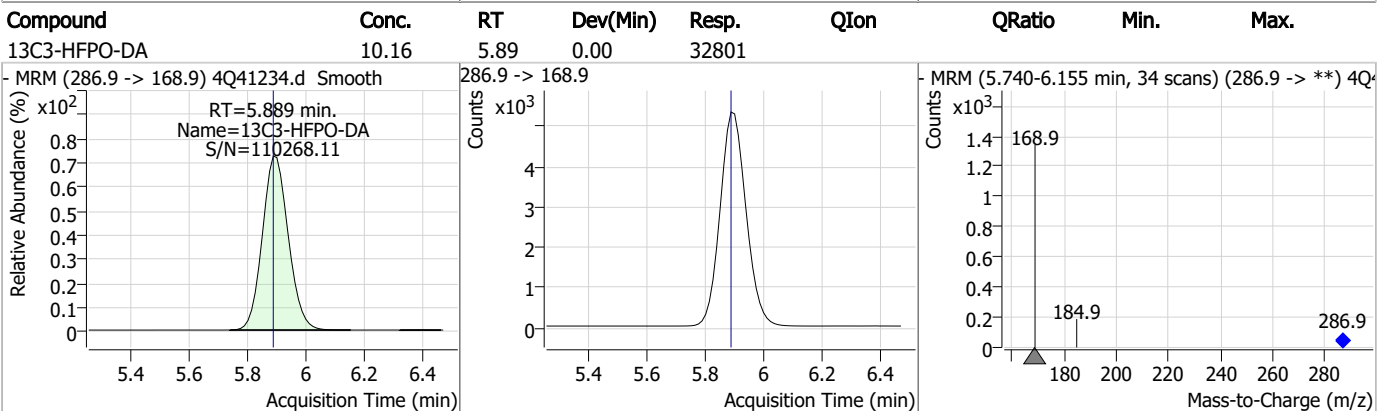
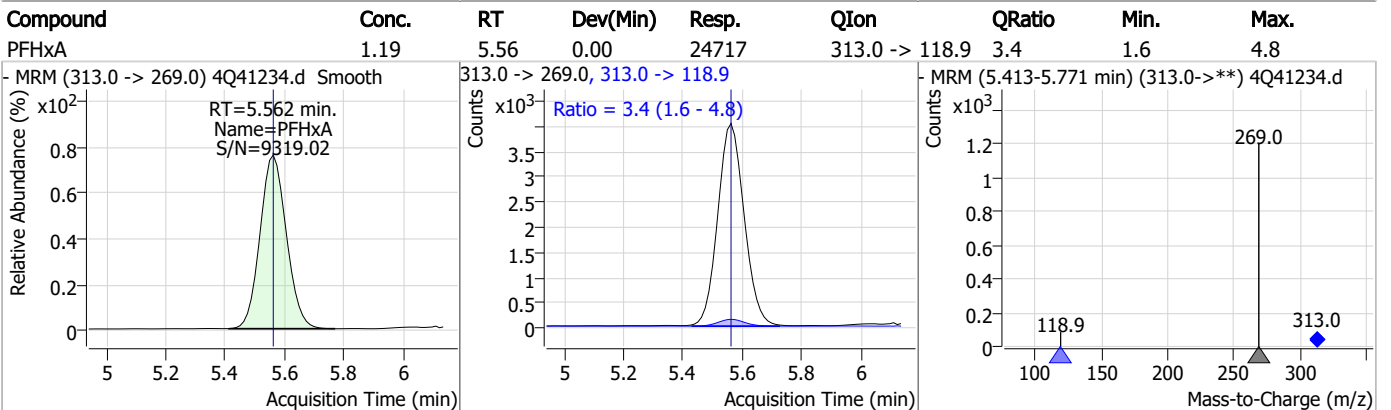
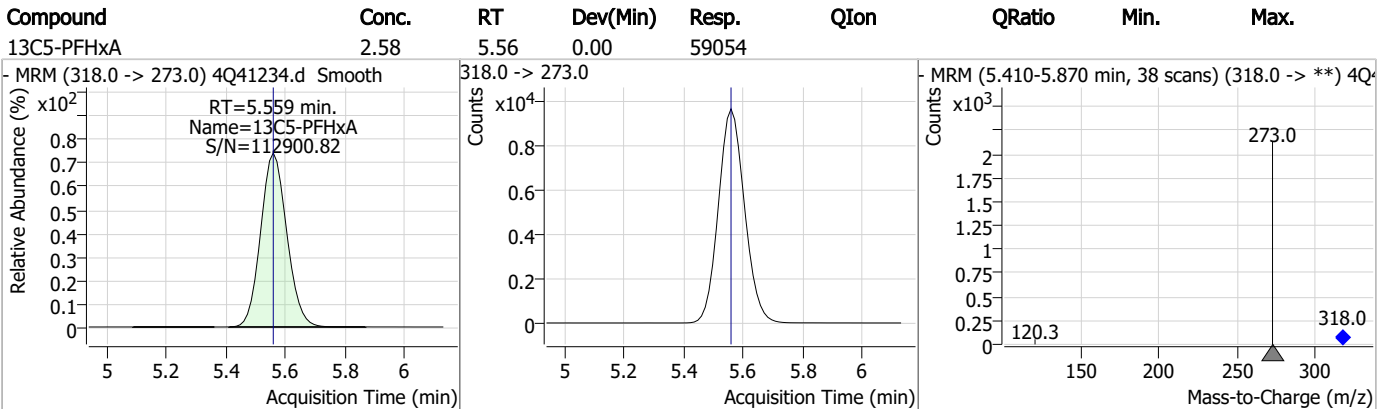
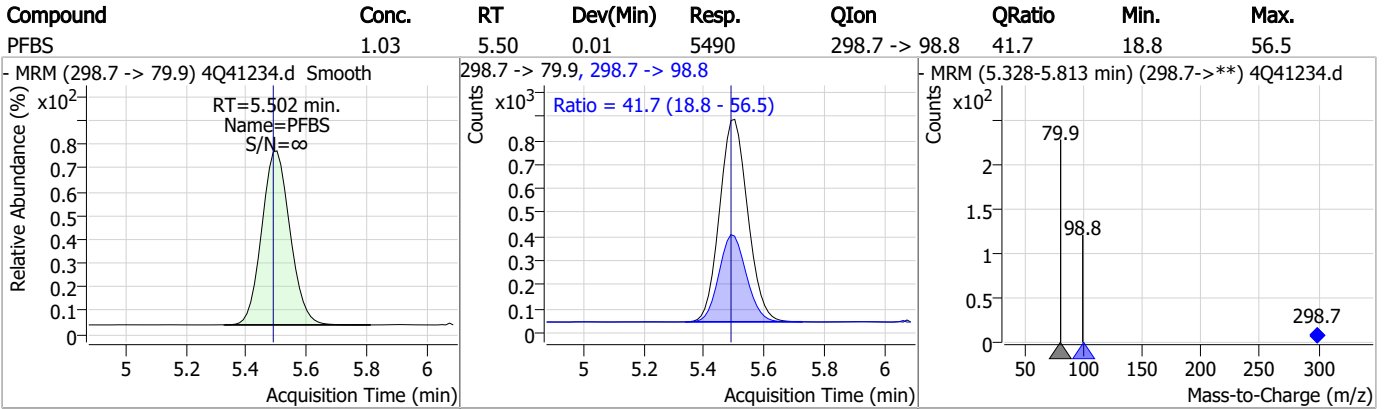
Perfluorinated Compounds by LC/MS/MS



7.6.4

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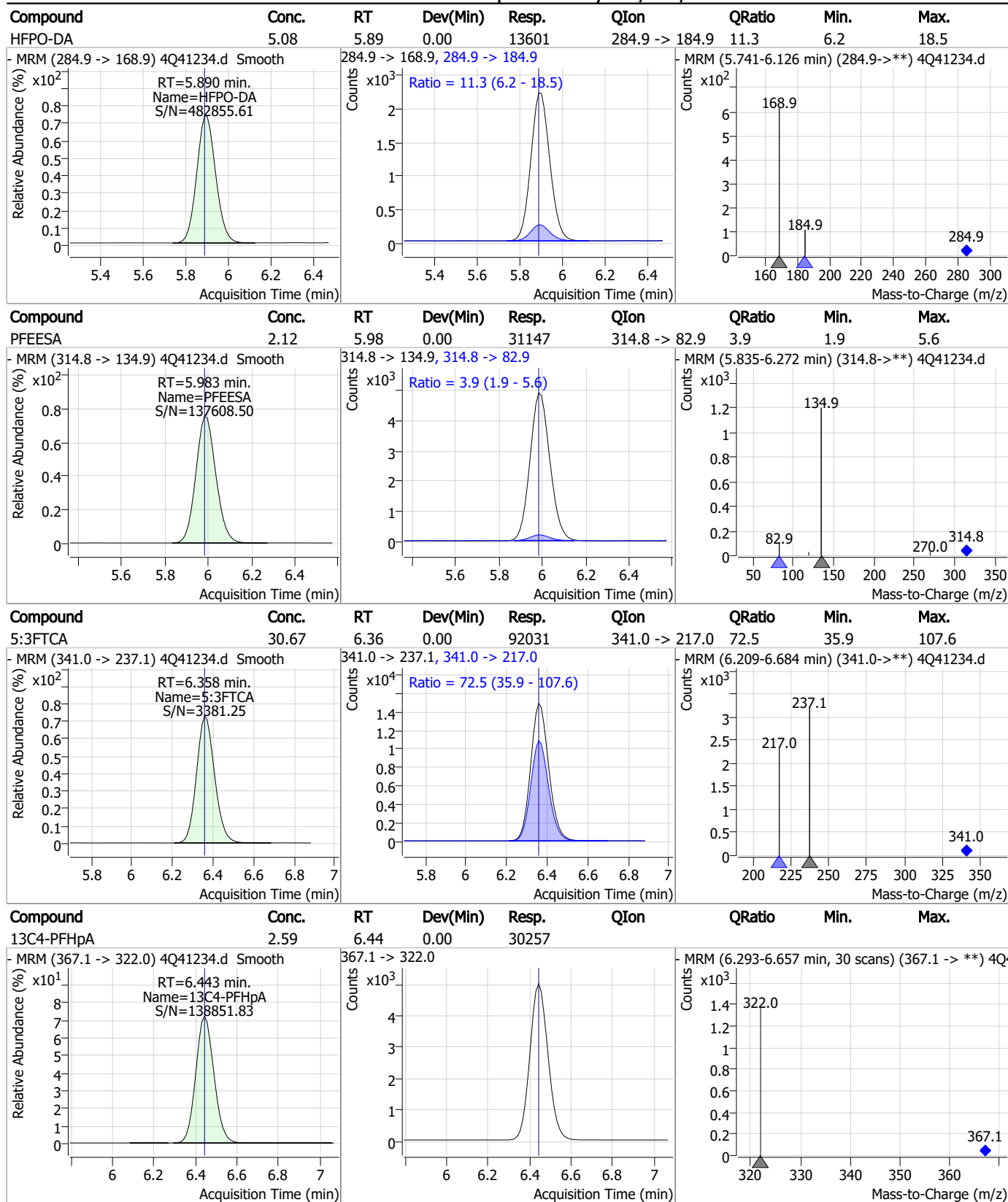
Perfluorinated Compounds by LC/MS/MS



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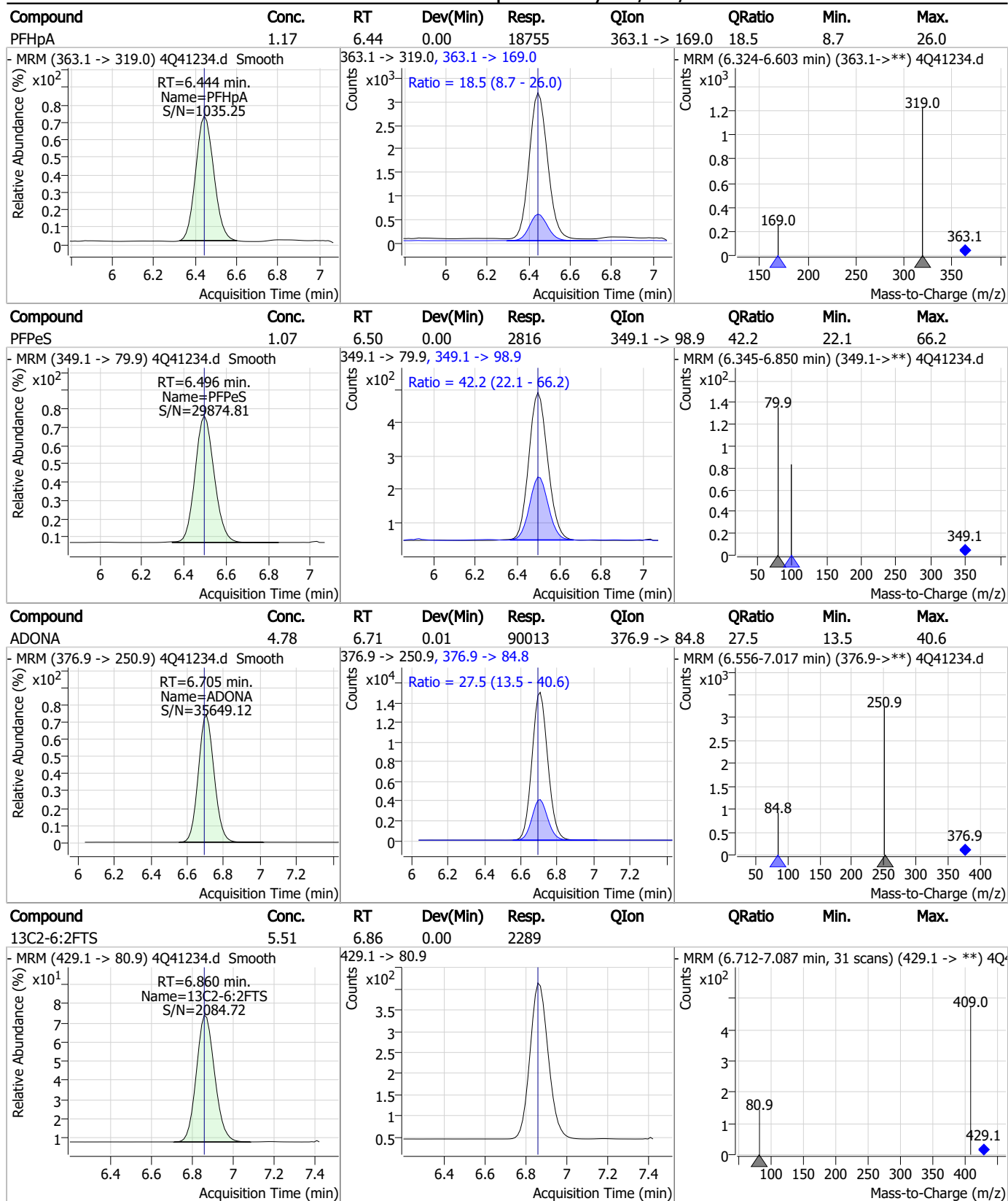
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Perfluorinated Compounds by LC/MS/MS



7.6.4
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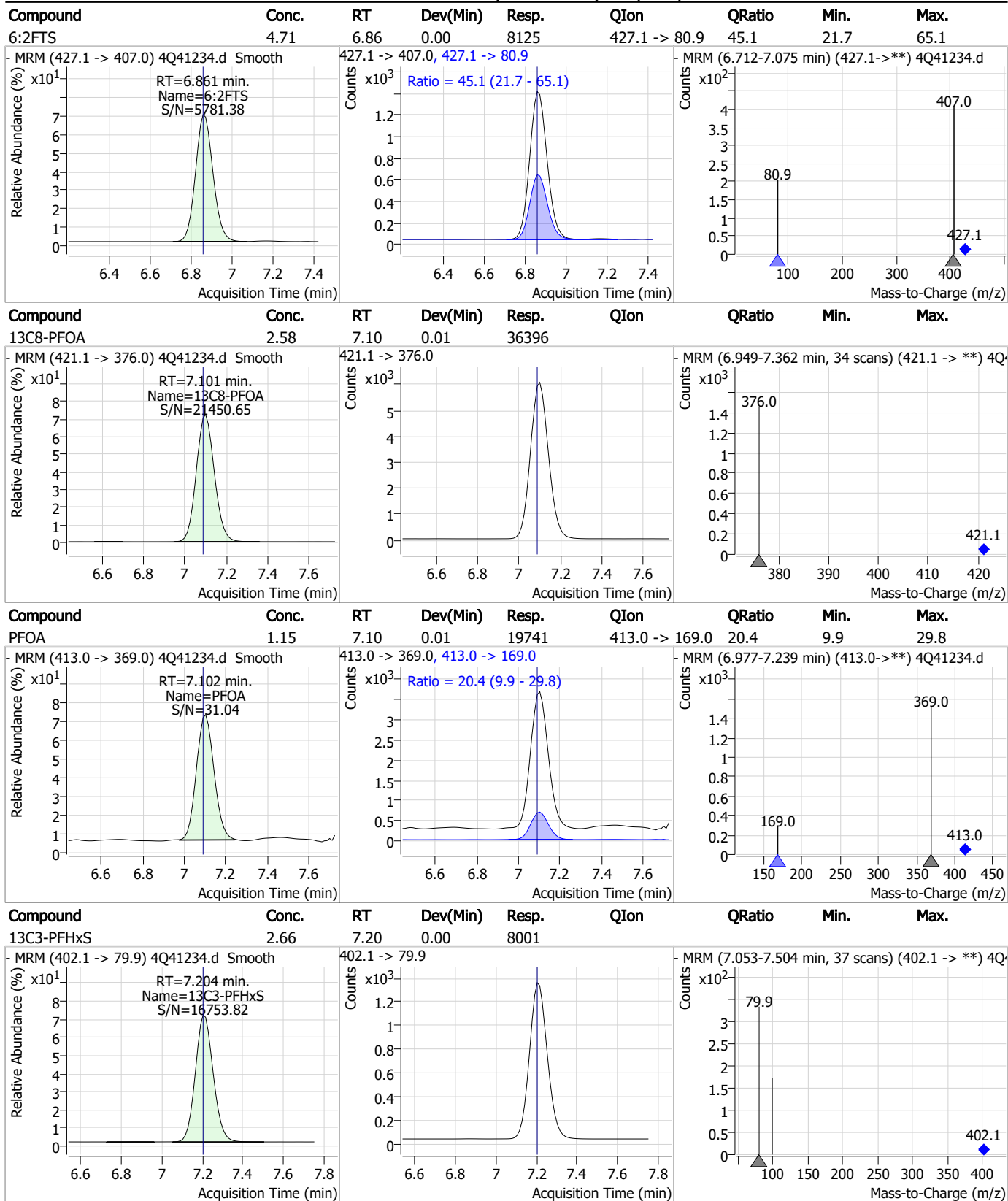
Perfluorinated Compounds by LC/MS/MS



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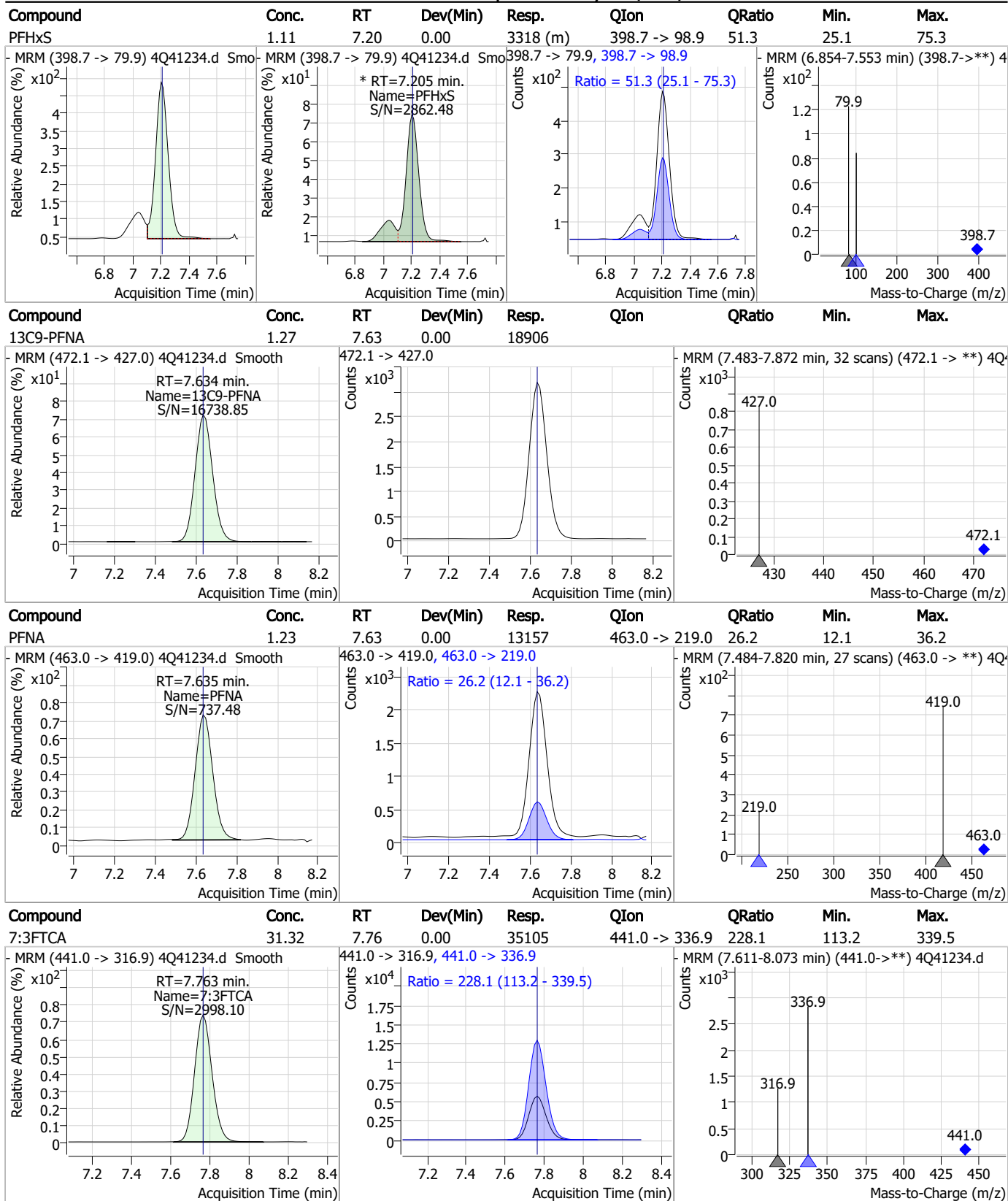
Perfluorinated Compounds by LC/MS/MS



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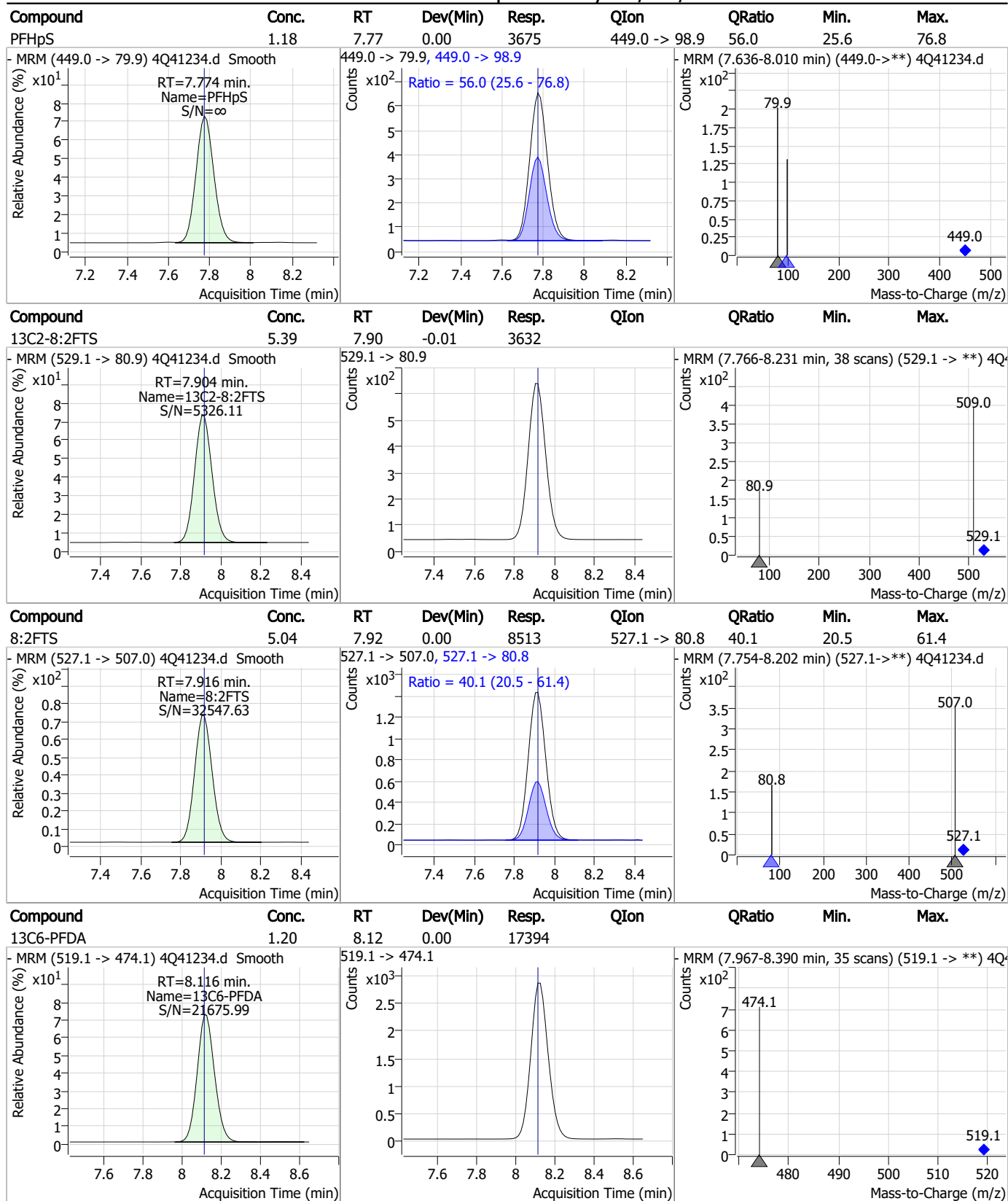
Perfluorinated Compounds by LC/MS/MS



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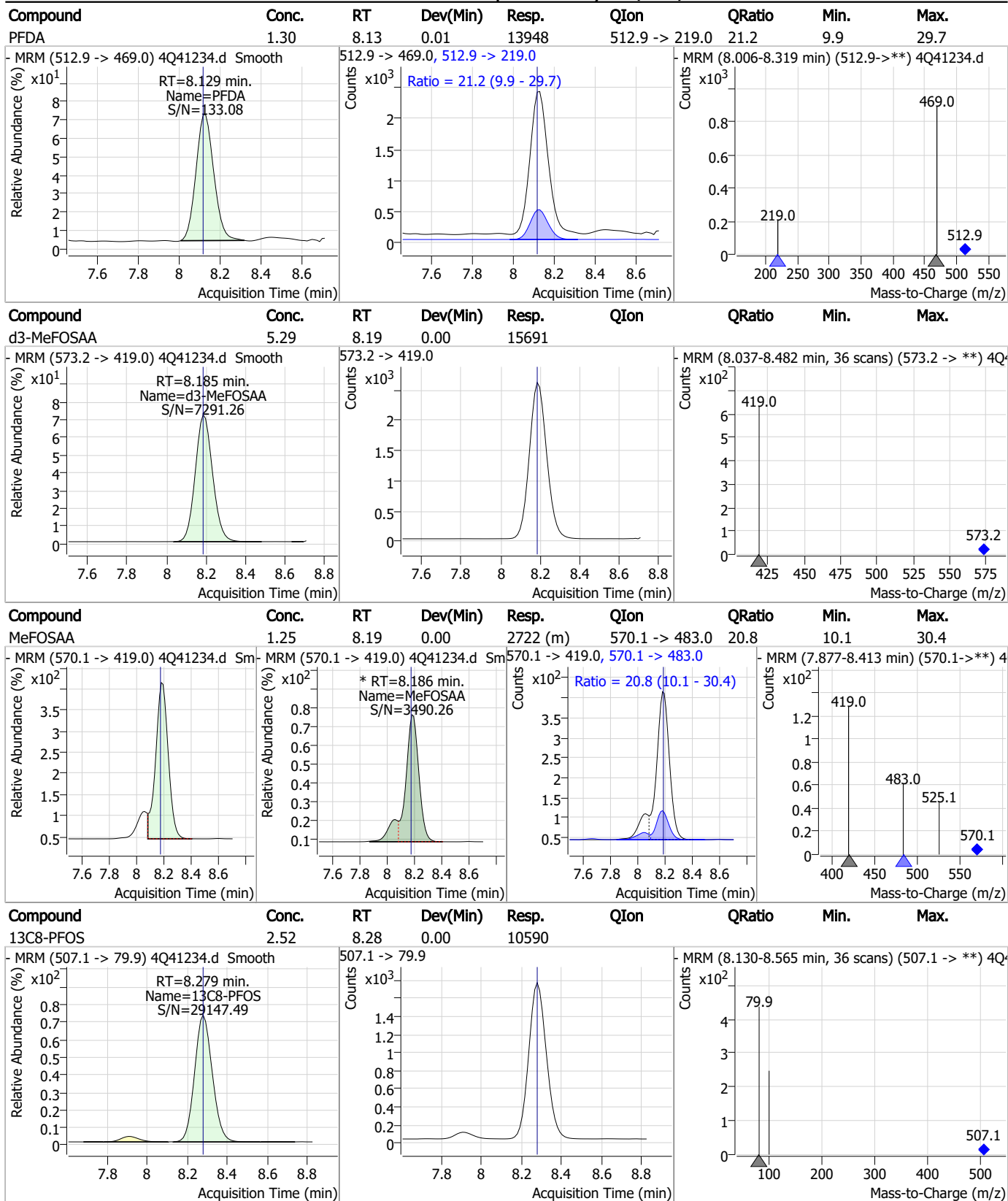
Perfluorinated Compounds by LC/MS/MS



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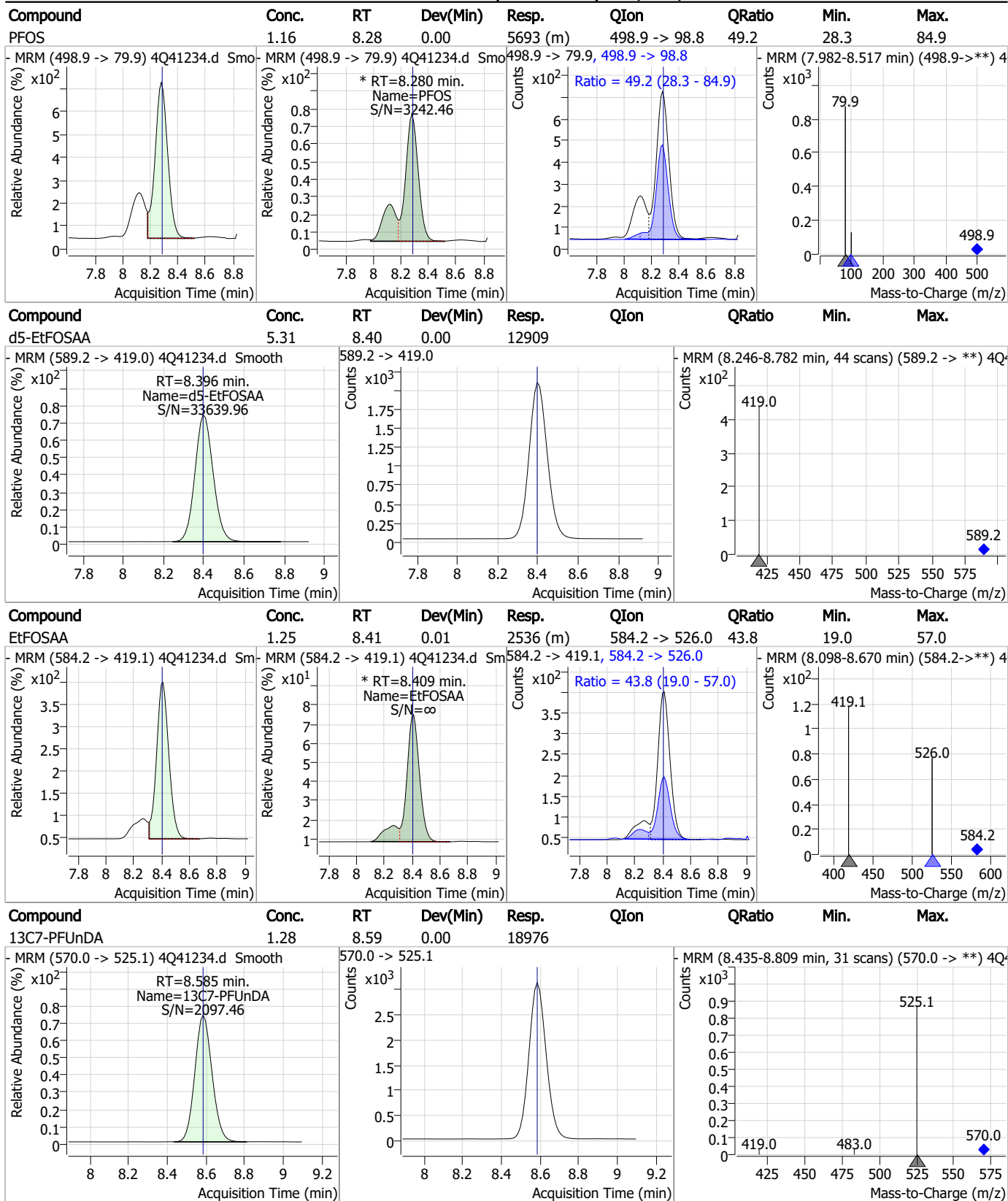
Perfluorinated Compounds by LC/MS/MS



7.6.4

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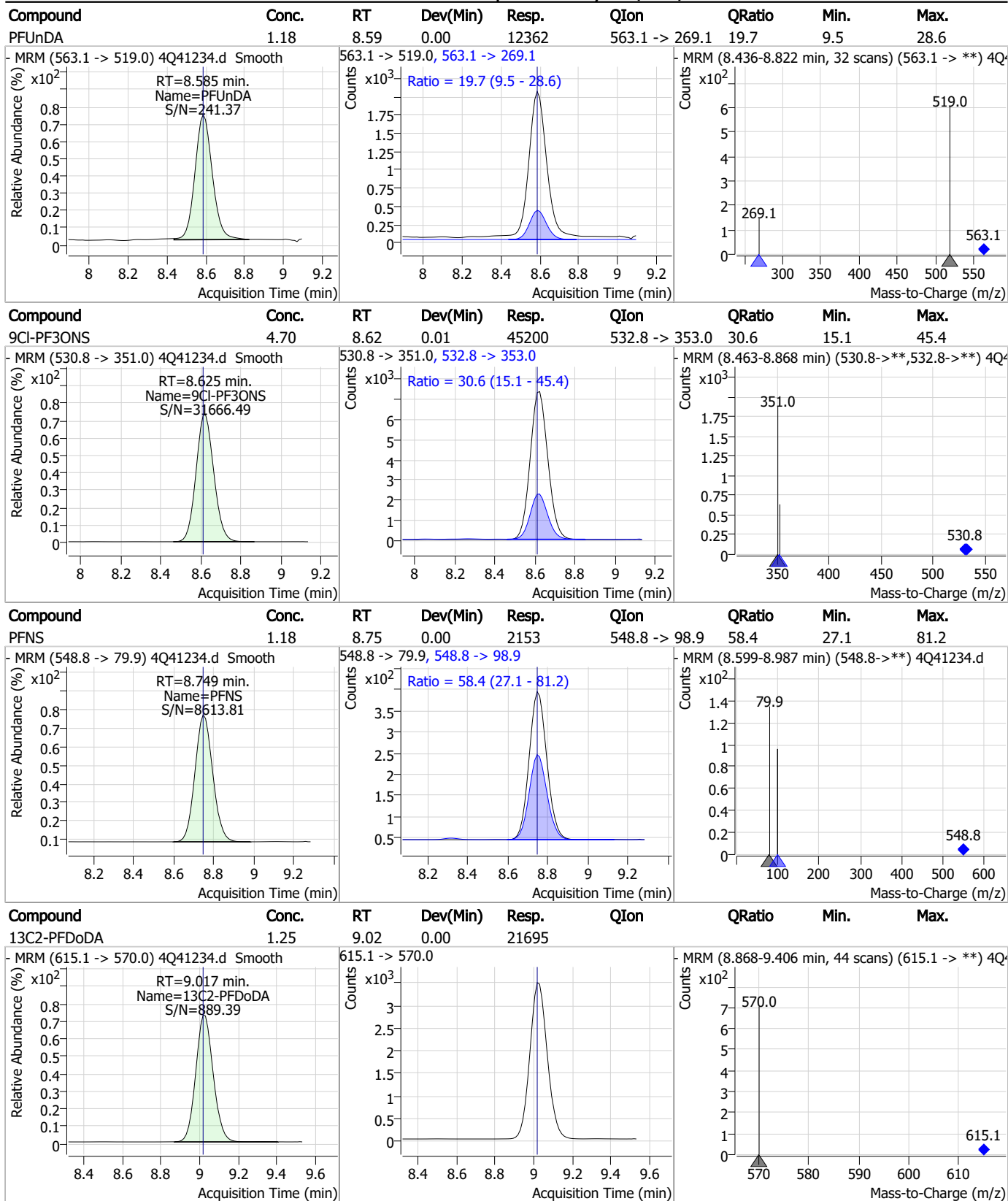
Perfluorinated Compounds by LC/MS/MS



7.6.4

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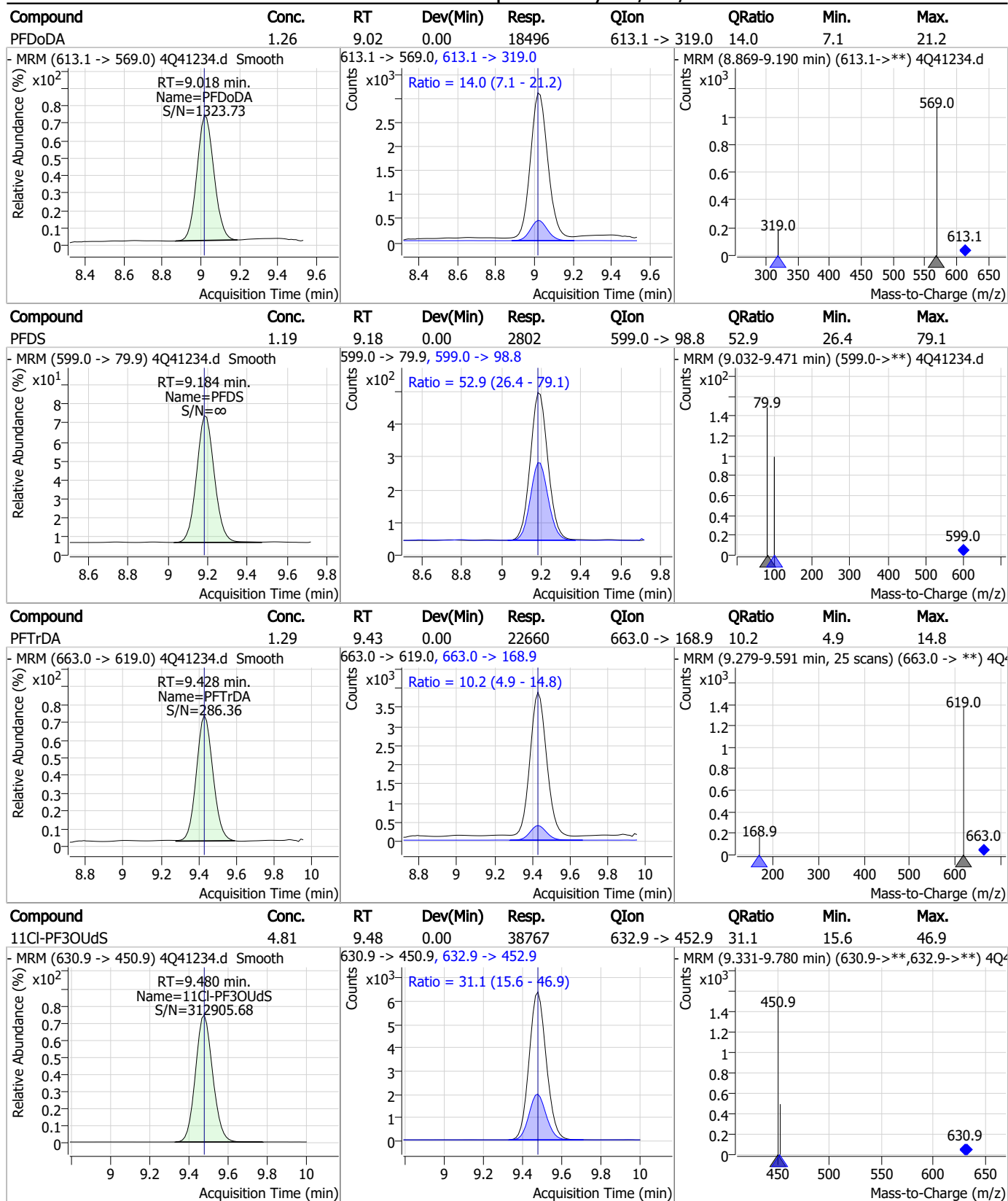
Perfluorinated Compounds by LC/MS/MS



7.6.4

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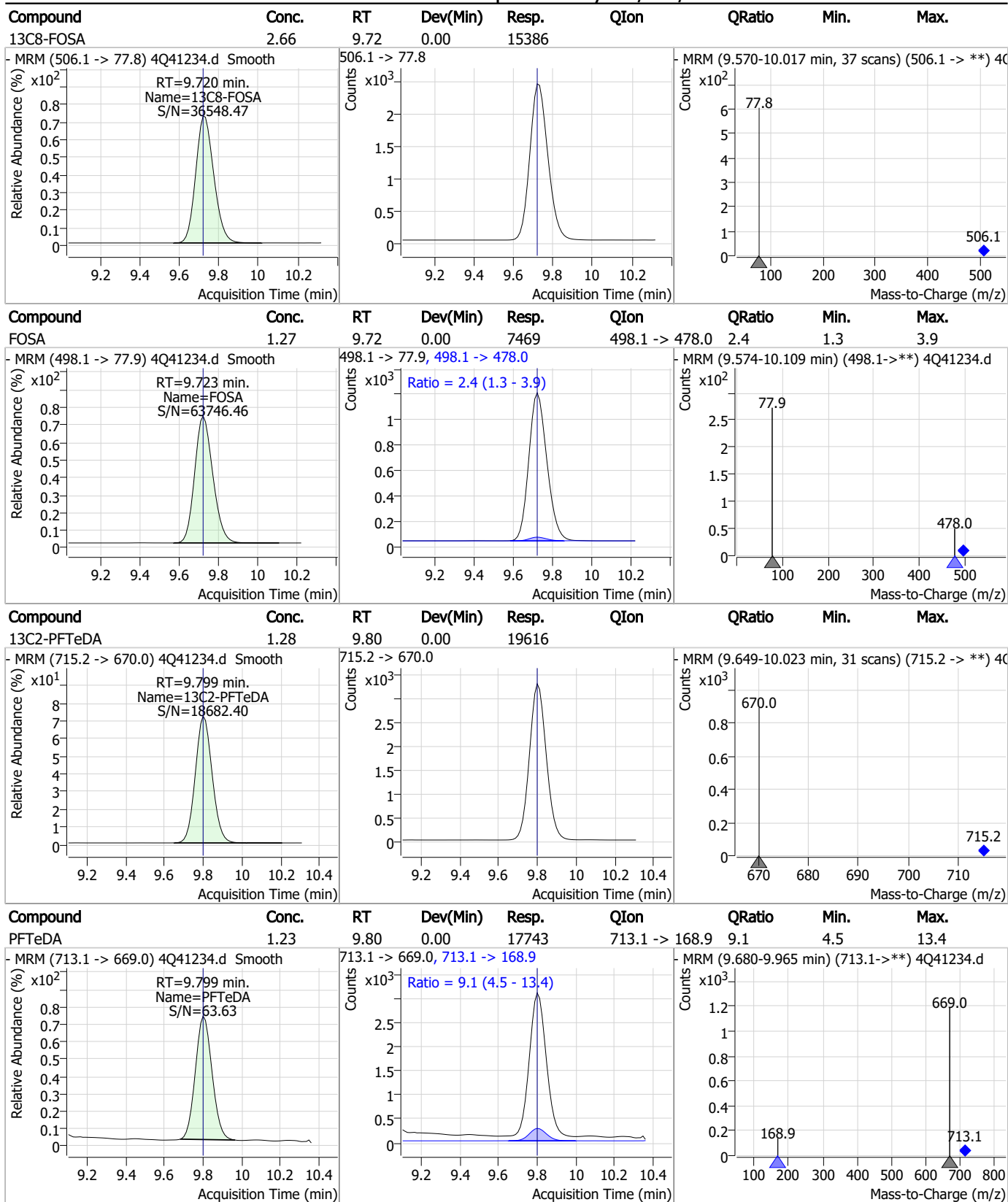
Perfluorinated Compounds by LC/MS/MS



7.6.4

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Perfluorinated Compounds by LC/MS/MS

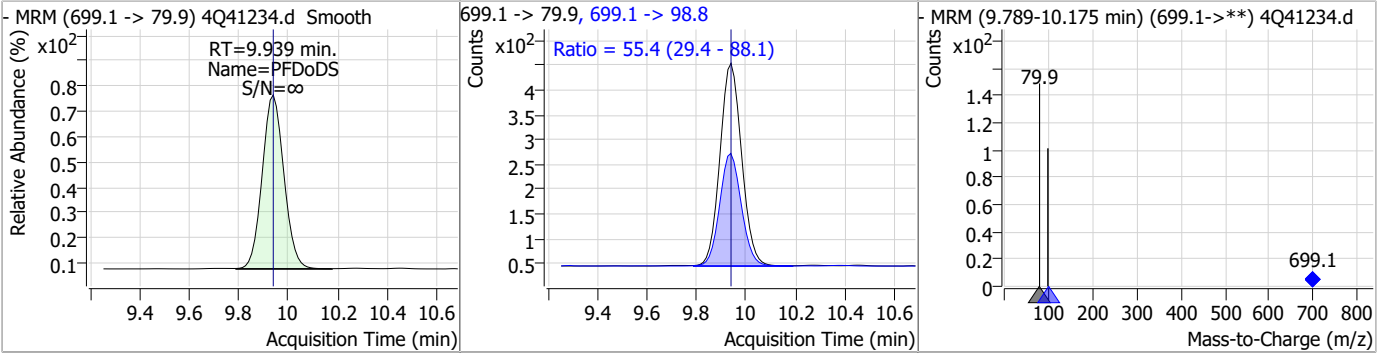


7.6.4

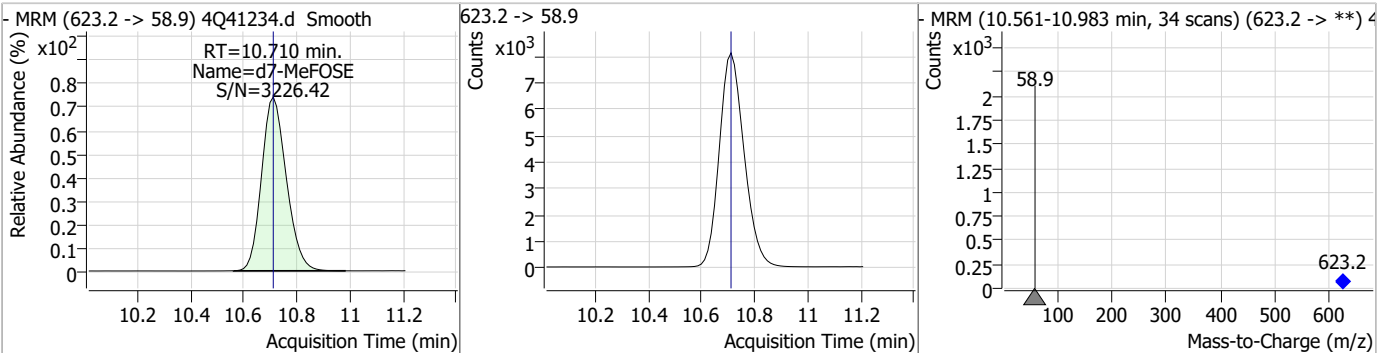
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Perfluorinated Compounds by LC/MS/MS

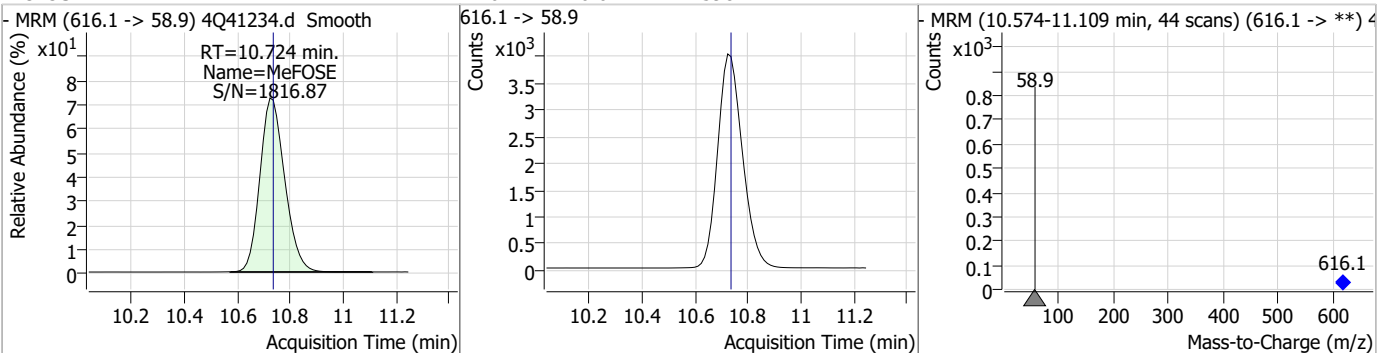
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	1.21	9.94	0.00	2491	699.1 -> 98.8	55.4	29.4	88.1



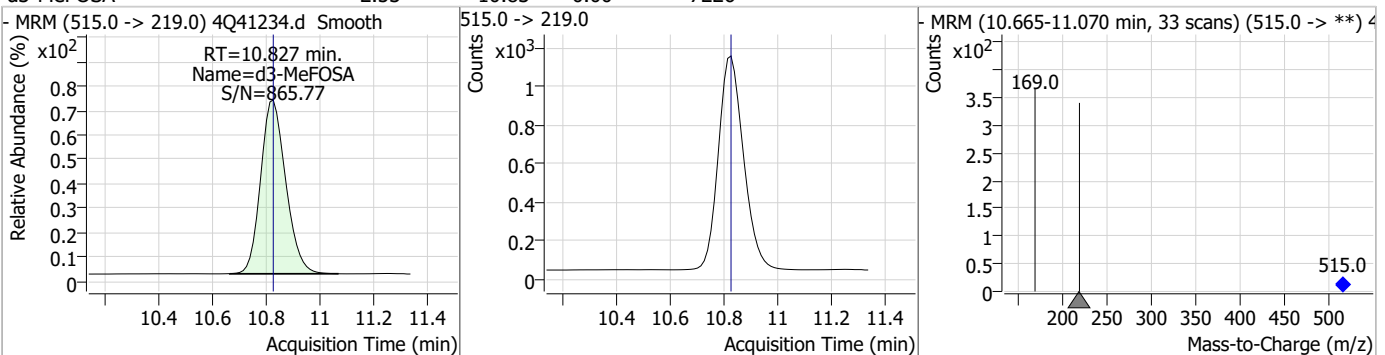
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.61	10.71	0.00	52251				



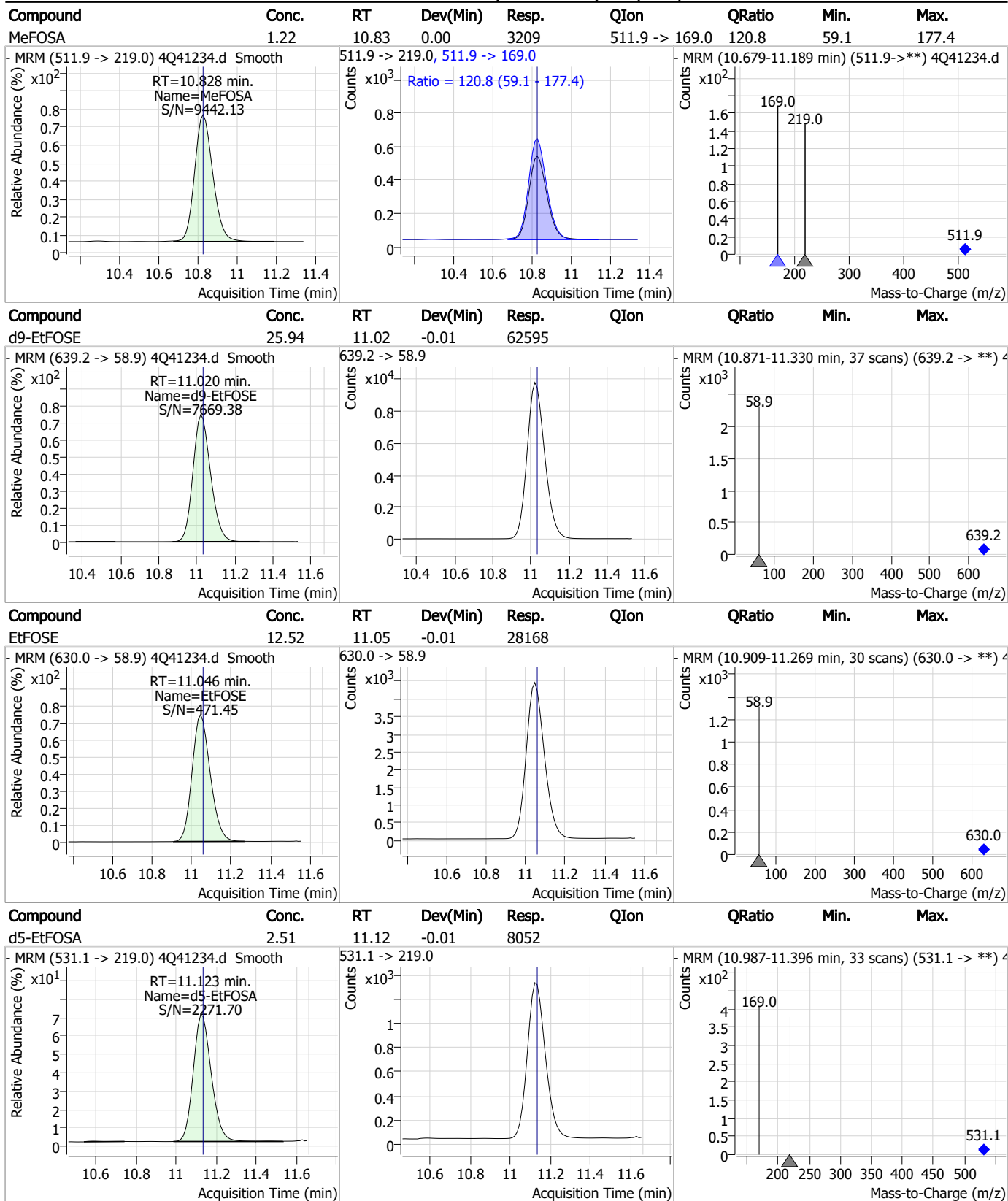
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	12.47	10.72	-0.01	25981				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.53	10.83	0.00	7226				



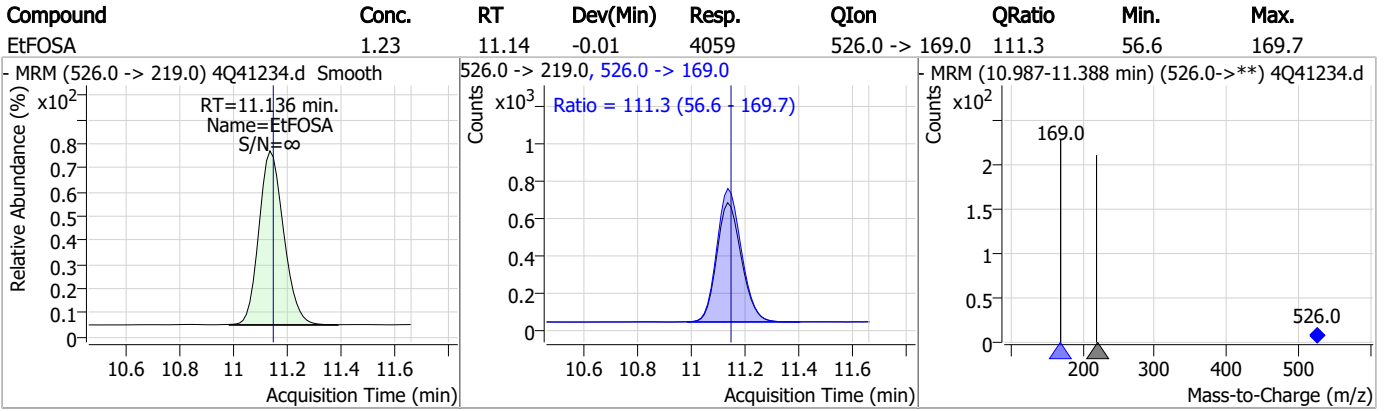
Perfluorinated Compounds by LC/MS/MS



7.6.4

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Perfluorinated Compounds by LC/MS/MS



7.6.4

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Manual Integration Approval Summary

Sample Number: S4Q589-IC589 Method: EPA DRAFT 1633
Lab FileID: 4Q41234.D Analyst approved: 02/27/23 14:05 Anna Ludwig
Injection Time: 02/24/23 16:30 Supervisor approved: 02/27/23 16:52 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.21	Split peak
MeFOSAA	2355-31-9		8.19	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.28	Split peak
EtFOSAA	2991-50-6		8.41	Split peak

7.6.4.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41235.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/24/2023 4:44:33 PM
 Sample Name : icc589-4
 Vial : P1-A5
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q589.batch.bin
 Sample Information : op95462,S4Q589,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.099	216.8 -> 171.9	126494	10.00 µg/L	0.000
M5-PFPeA	4.487	268.3 -> 223.0	79976	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	61299	2.50 µg/L	0.000
M4-PFHpA	6.443	367.1 -> 322.0	31966	2.50 µg/L	0.000
M8-PFOA	7.088	421.1 -> 376.0	37266	2.50 µg/L	0.000
M9-PFNA	7.634	472.1 -> 427.0	20122	1.25 µg/L	0.000
M6-PFDA	8.116	519.1 -> 474.1	18663	1.25 µg/L	0.000
M7-PFUnDA	8.585	570.0 -> 525.1	19335	1.25 µg/L	0.000
M2-PFDoDA	9.017	615.1 -> 570.0	22799	1.25 µg/L	0.000
M2-PFTeDA	9.799	715.2 -> 670.0	20505	1.25 µg/L	0.000
M8-FOSA	9.720	506.1 -> 77.8	15486	2.50 µg/L	0.000
M3-PFBS	5.489	302.1 -> 79.9	13726	2.50 µg/L	0.000
M3-PFHxS	7.204	402.1 -> 79.9	8059	2.50 µg/L	0.000
M8-PFOS	8.279	507.1 -> 79.9	11501	2.50 µg/L	0.000
M2-4:2FTS	5.260	329.1 -> 80.9	1852	5.00 µg/L	0.000
M2-6:2FTS	6.860	429.1 -> 80.9	2407	5.00 µg/L	0.000
M2-8:2FTS	7.916	529.1 -> 80.9	3294	5.00 µg/L	0.000
M3-MeFOSAA	8.185	573.2 -> 419.0	16001	5.00 µg/L	0.000
M3-HFPO-DA	5.889	286.9 -> 168.9	35117	10.00 µg/L	0.000
M5-EtFOSAA	8.396	589.2 -> 419.0	13157	5.00 µg/L	0.000
M7-MeFOSE	10.710	623.2 -> 58.9	55531	25.00 µg/L	0.000
M9-EtFOSE	11.032	639.2 -> 58.9	65413	25.00 µg/L	0.000
M5-EtFOSA	11.135	531.1 -> 219.0	8140	2.50 µg/L	0.000
M3-MeFOSA	10.827	515.0 -> 219.0	7141	2.50 µg/L	0.000
13C4-PFOS	8.280	502.8 -> 79.9	11668	2.50 µg/L	0.000
13C3-PFBA	3.103	216.0 -> 172.0	73632	5.00 µg/L	0.000
18O2-PFHxS	7.203	403.0 -> 83.9	5657	2.50 µg/L	0.000
13C4-PFOA	7.089	417.1 -> 372.0	45640	2.50 µg/L	0.000
13C2-PFDA	8.128	515.1 -> 470.1	17045	1.25 µg/L	0.000
13C5-PFNA	7.634	468.0 -> 423.0	23226	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	56947	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1852	5.62 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.4%		
13C2-6:2FTS	6.860	429.1 -> 80.9	2407	5.44 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.8%		
13C2-8:2FTS	7.916	529.1 -> 80.9	3294	4.60 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.9%		
13C2-PFDoDA	9.017	615.1 -> 570.0	22799	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C2-PFTeDA	9.799	715.2 -> 670.0	20505	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C3-PFBS	5.489	302.1 -> 79.9	13726	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C3-PFHxS	7.204	402.1 -> 79.9	8059	2.52 µg/L	0.000

7.65
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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	3.099	216.8 -> 171.9	126494	9.97 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C4-PFHpA	6.443	367.1 -> 322.0	31966	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C5-PFHxA	5.559	318.0 -> 273.0	61299	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C5-PFPeA	4.487	268.3 -> 223.0	79976	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C6-PFDA	8.116	519.1 -> 474.1	18663	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C7-PFUnDA	8.585	570.0 -> 525.1	19335	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C8-FOSA	9.720	506.1 -> 77.8	15486	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.8%	
13C8-PFOA	7.088	421.1 -> 376.0	37266	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C8-PFOS	8.279	507.1 -> 79.9	11501	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C9-PFNA	7.634	472.1 -> 427.0	20122	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.3%	
d3-MeFOSAA	8.185	573.2 -> 419.0	16001	4.83 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C3-HFPO-DA	5.889	286.9 -> 168.9	35117	10.00 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
d3-MeFOSA	10.827	515.0 -> 219.0	7141	2.24 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.7%	
d5-EtFOSAA	8.396	589.2 -> 419.0	13157	4.85 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.9%	
d7-MeFOSE	10.710	623.2 -> 58.9	55531	24.38 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.5%	
d9-EtFOSE	11.032	639.2 -> 58.9	65413	24.28 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.1%	
d5-EtFOSA	11.135	531.1 -> 219.0	8140	2.27 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.0%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	21457	8.70 µg/L	100
		327.1 -> 80.9	9459		
6:2FTS	6.861	427.1 -> 407.0	16724	9.22 µg/L	100
		427.1 -> 80.9	7259		
8:2FTS	7.916	527.1 -> 507.0	14220	9.27 µg/L	100
		527.1 -> 80.8	5819		
EtFOSAA	8.397	584.2 -> 419.1	4889	2.37 µg/L	m 92
		584.2 -> 526.0	2095		
FOSA	9.723	498.1 -> 77.9	14458	2.44 µg/L	100
		498.1 -> 478.0	378		
MeFOSAA	8.186	570.1 -> 419.0	5279	2.37 µg/L	m 94
		570.1 -> 483.0	1208		
PFBA	3.107	212.8 -> 168.9	28302	9.46 µg/L	100
PFBS	5.490	298.7 -> 79.9	11622	2.12 µg/L	100
		298.7 -> 98.8	4380		
PFDA	8.116	512.9 -> 469.0	27691	2.41 µg/L	100
		512.9 -> 219.0	5489		
PFDODA	9.018	613.1 -> 569.0	37760	2.45 µg/L	100
		613.1 -> 319.0	5339		
PFDS	9.184	599.0 -> 79.9	5454	2.14 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.444	599.0 -> 98.8	2875	2.40	µg/L	100
		363.1 -> 319.0	40653			
PFHpS	7.774	363.1 -> 169.0	7054	2.18	µg/L	100
		449.0 -> 79.9	7380			
PFHxA	5.562	449.0 -> 98.9	3779	2.57	µg/L	100
		313.0 -> 269.0	55326			
PFHxS	7.205	313.0 -> 118.9	1788	2.25	µg/L	95
		398.7 -> 79.9	6741			
PFNA	7.635	398.7 -> 98.9	3151	2.40	µg/L	100
		463.0 -> 419.0	27433			
PFNS	8.749	463.0 -> 219.0	6627	2.13	µg/L	100
		548.8 -> 79.9	4243			
PFOA	7.090	548.8 -> 98.9	2295	2.41	µg/L	100
		413.0 -> 369.0	42270			
PFOS	8.280	413.0 -> 169.0	8404	2.12	µg/L	87
		498.9 -> 79.9	11324			
PFPeA	4.489	498.9 -> 98.8	5337	4.85	µg/L	100
		263.0 -> 219.0	78911			
PFPeS	6.496	349.1 -> 79.9	5891	2.23	µg/L	100
		349.1 -> 98.9	2600			
PFTeDA	9.799	713.1 -> 669.0	36036	2.39	µg/L	100
		713.1 -> 168.9	3222			
PFTrDA	9.428	663.0 -> 619.0	46369	2.52	µg/L	100
		663.0 -> 168.9	4569			
PFUnDA	8.585	563.1 -> 519.0	24944	2.34	µg/L	100
		563.1 -> 269.1	4760			
11Cl-PF3OUdS	9.480	630.9 -> 450.9	81079	9.40	µg/L	100
		632.9 -> 452.9	25358			
9Cl-PF3ONS	8.612	530.8 -> 351.0	92170	8.95	µg/L	100
		532.8 -> 353.0	27905			
ADONA	6.693	376.9 -> 250.9	183953	9.12	µg/L	100
		376.9 -> 84.8	49837			
HFPO-DA	5.890	284.9 -> 168.9	27101	9.45	µg/L	100
		284.9 -> 184.9	3351			
3:3FTCA	4.129	241.0 -> 177.0	9695	11.56	µg/L	100
		241.0 -> 117.0	892			
5:3FTCA	6.358	341.0 -> 237.1	189072	60.71	µg/L	100
		341.0 -> 217.0	135652			
7:3FTCA	7.763	441.0 -> 316.9	70884	60.93	µg/L	100
		441.0 -> 336.9	160446			
EtFOSA	11.149	526.0 -> 219.0	8185	2.45	µg/L	100
		526.0 -> 169.0	9262			
EtFOSE	11.058	630.0 -> 58.9	56439	24.01	µg/L	100
		511.9 -> 219.0	6467			
MeFOSA	10.828	511.9 -> 169.0	7647	2.48	µg/L	100
		616.1 -> 58.9	53248			
MeFOSE	10.736	699.1 -> 79.9	4722	24.04	µg/L	100
		699.1 -> 98.8	2773			
PFDoDS	9.939	295.0 -> 201.0	3983	2.11	µg/L	100
		295.0 -> 84.9	1083			
NFDHA	5.453	279.0 -> 85.1	44854	5.10	µg/L	100
		229.0 -> 84.9	38393			
PFMBA	4.854	314.8 -> 134.9	65061	4.78	µg/L	100
		314.8 -> 82.9	2411			
PFMPA	3.690			4.73	µg/L	100
PFEESA	5.983			4.27	µg/L	100

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

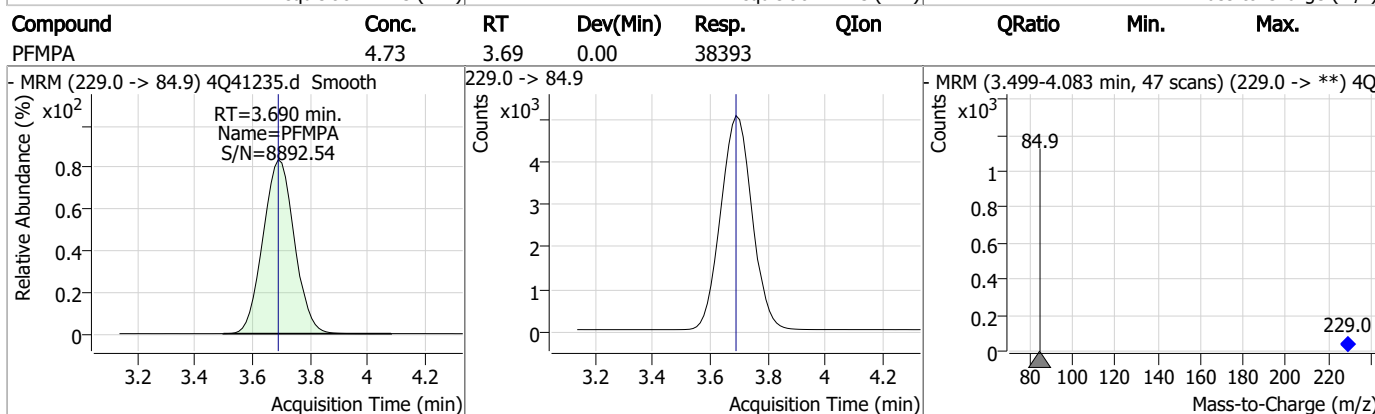
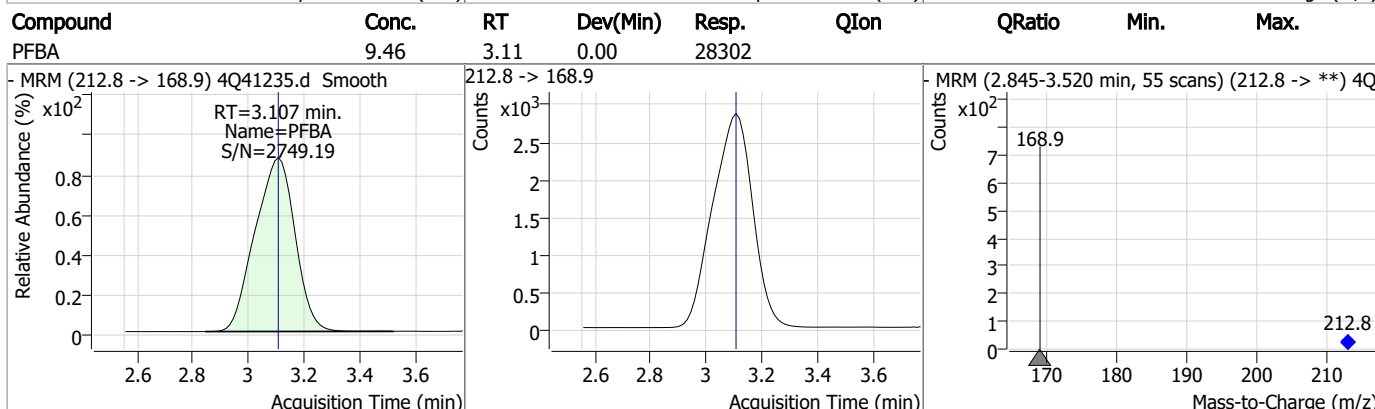
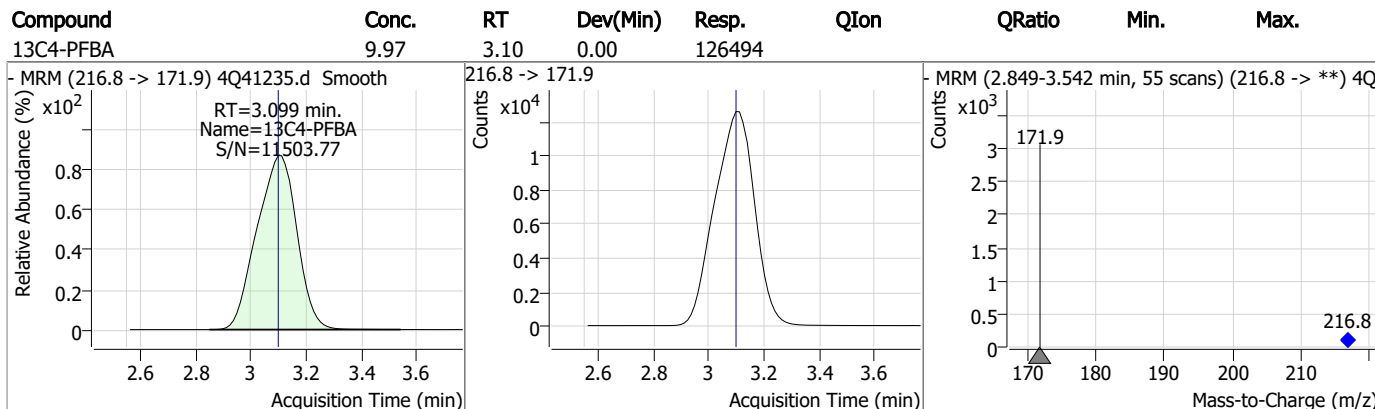
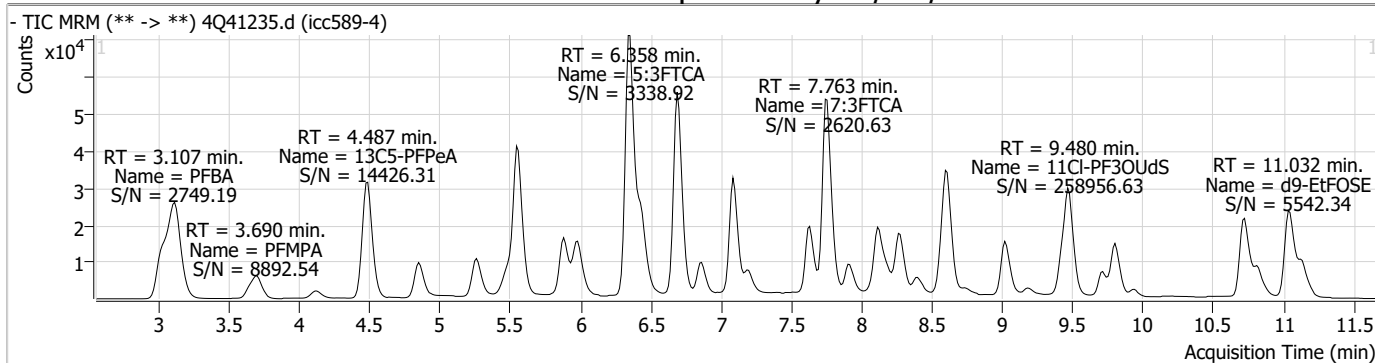
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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7.6.5
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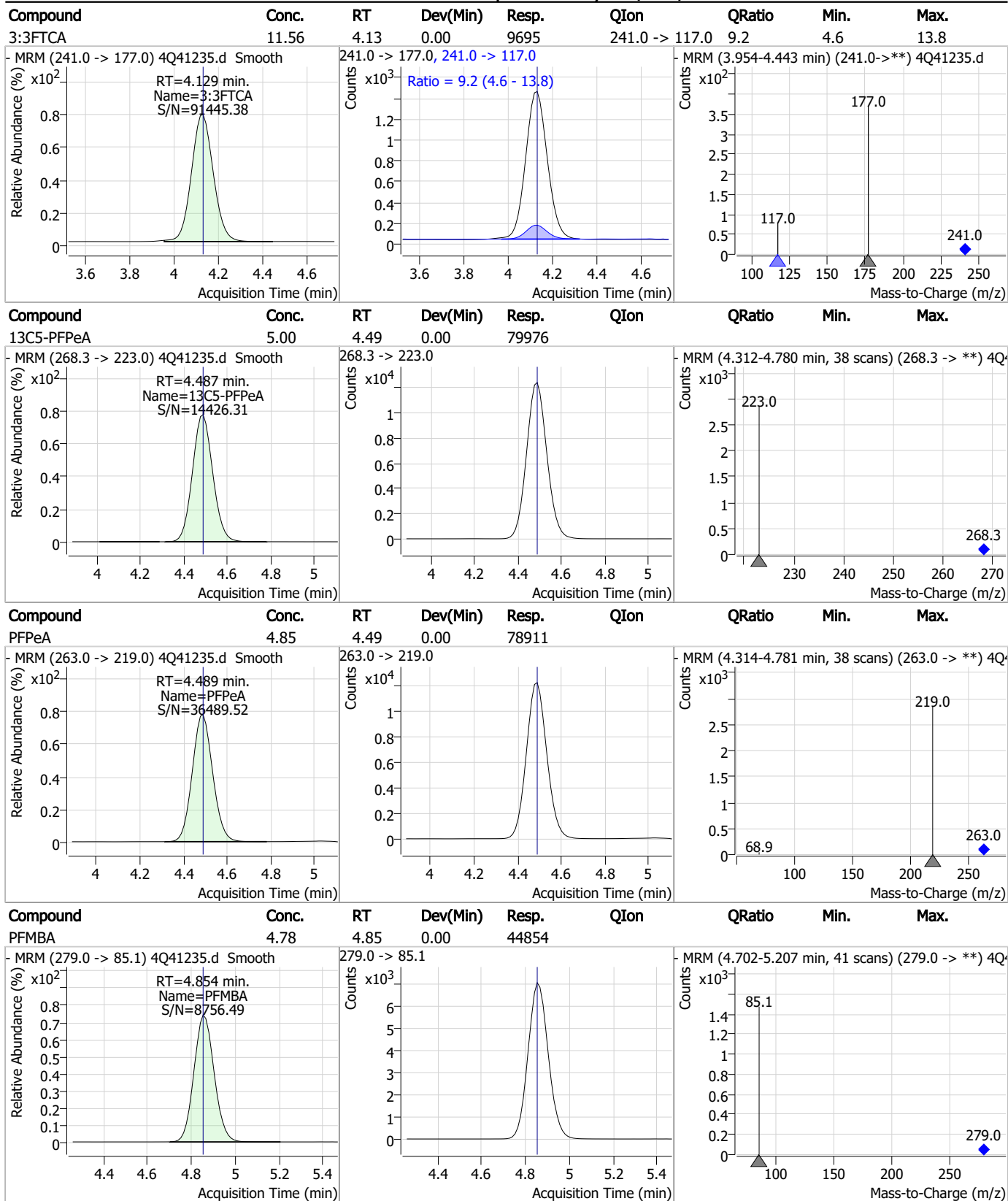
Perfluorinated Compounds by LC/MS/MS



7.6.5
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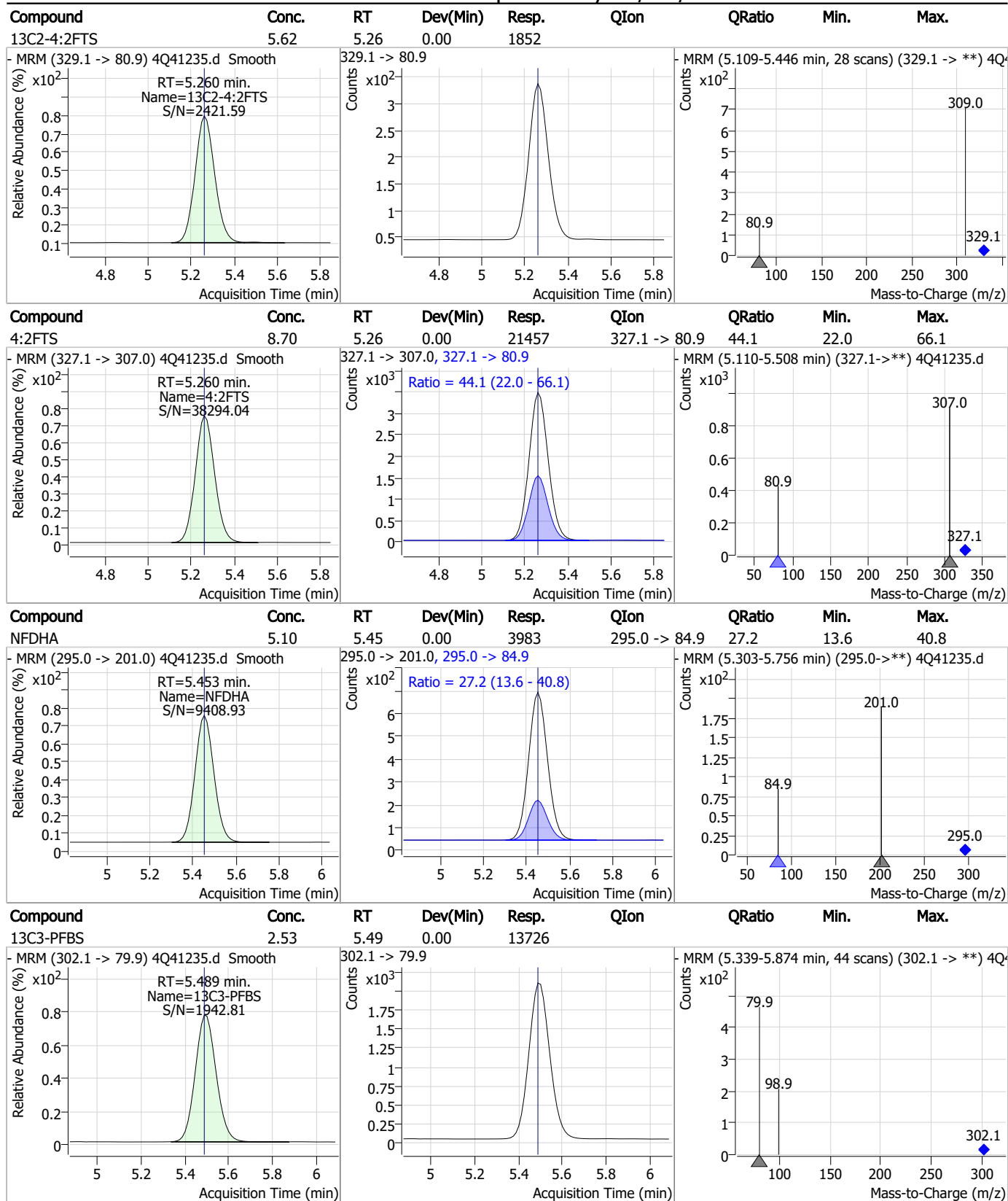


Perfluorinated Compounds by LC/MS/MS



7.6.5
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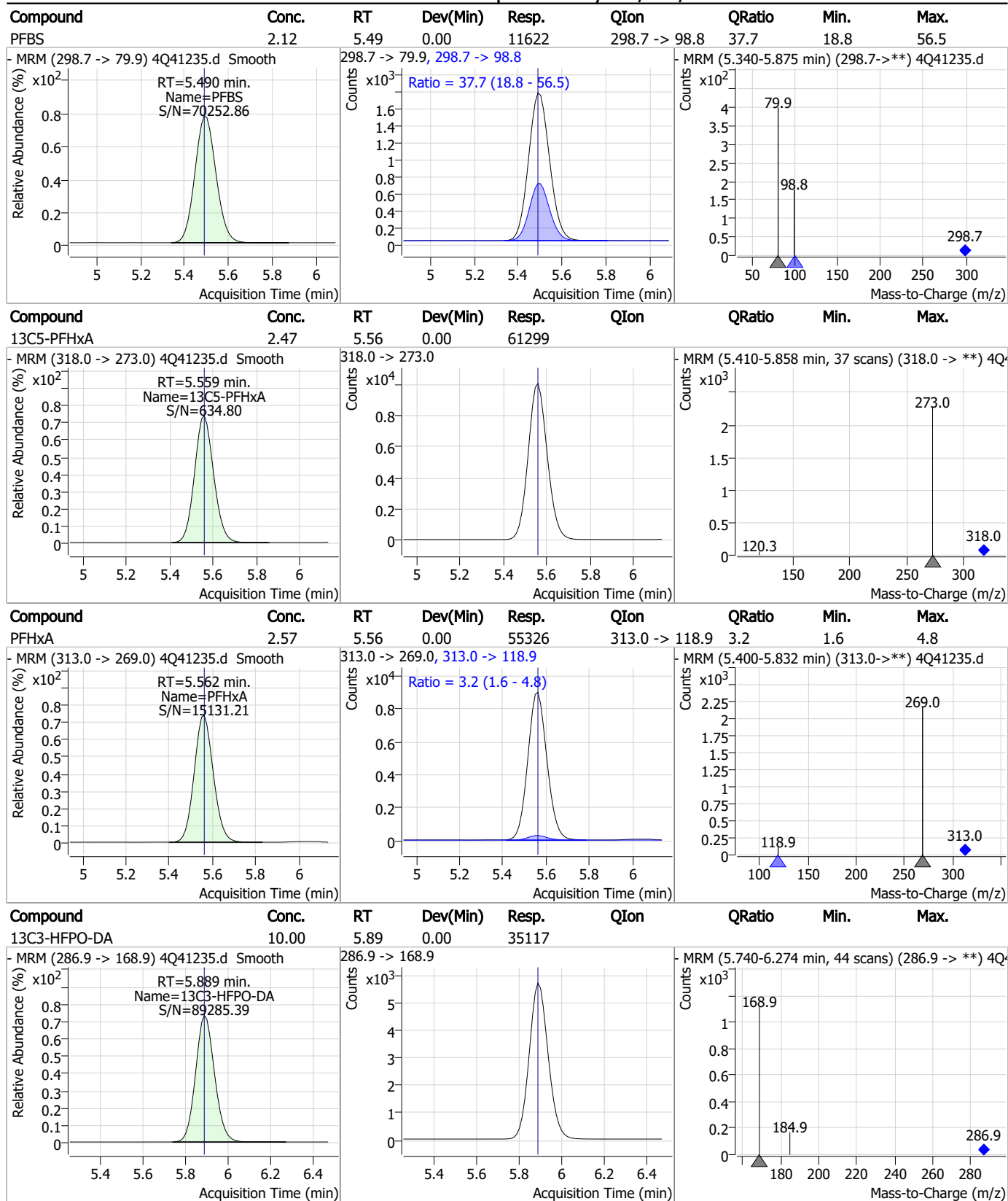
Perfluorinated Compounds by LC/MS/MS



7.6.5

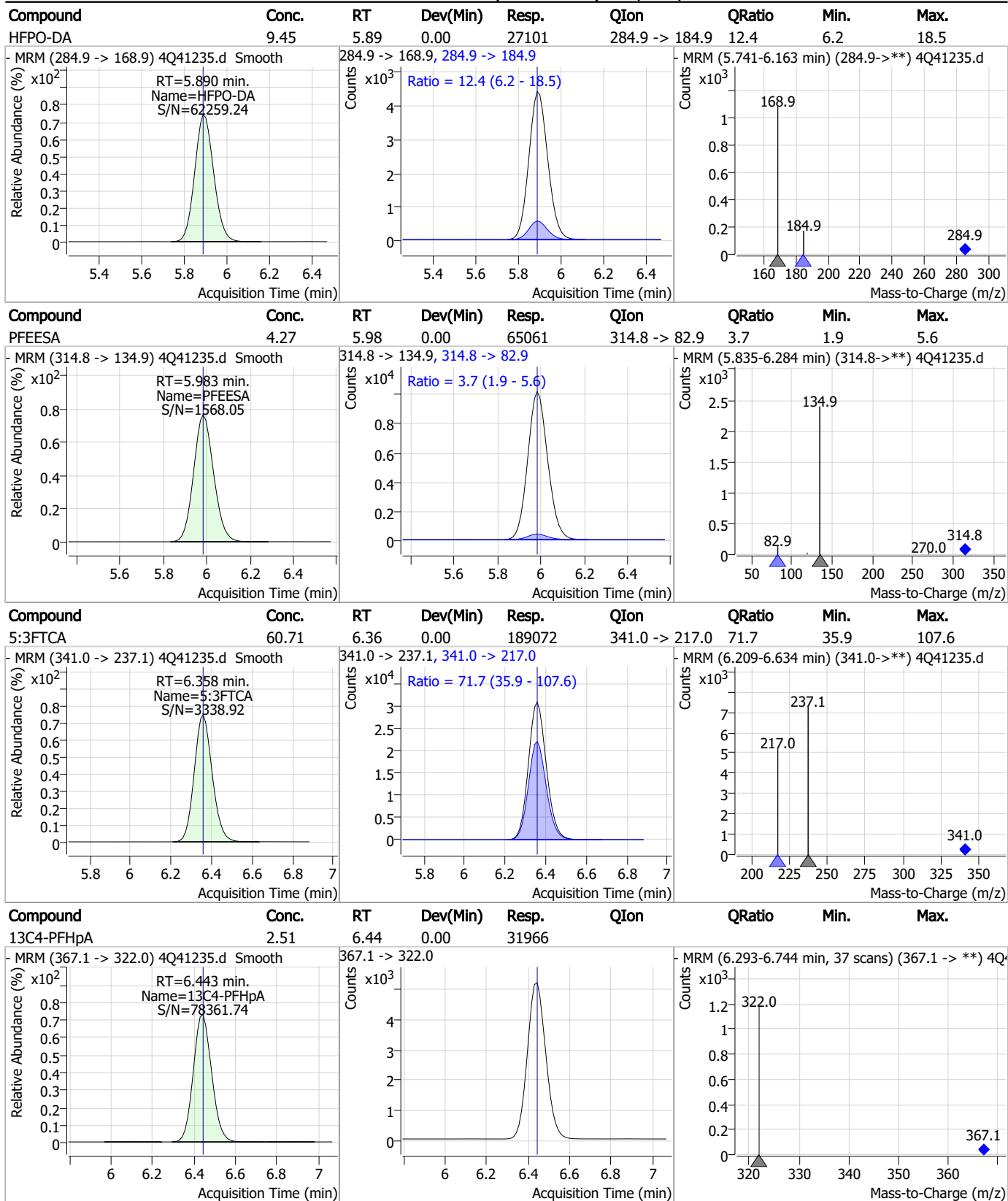
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Perfluorinated Compounds by LC/MS/MS



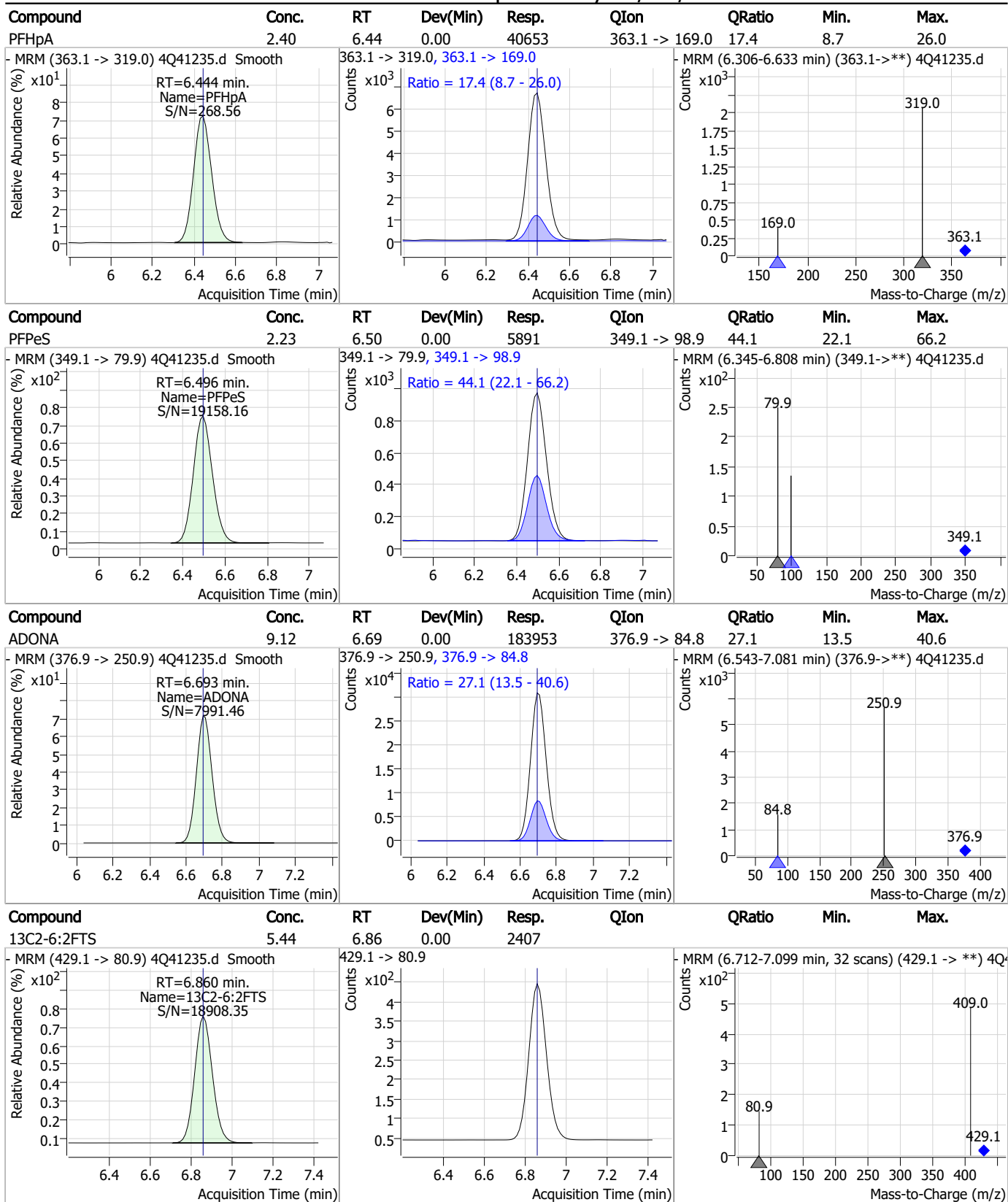
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Perfluorinated Compounds by LC/MS/MS



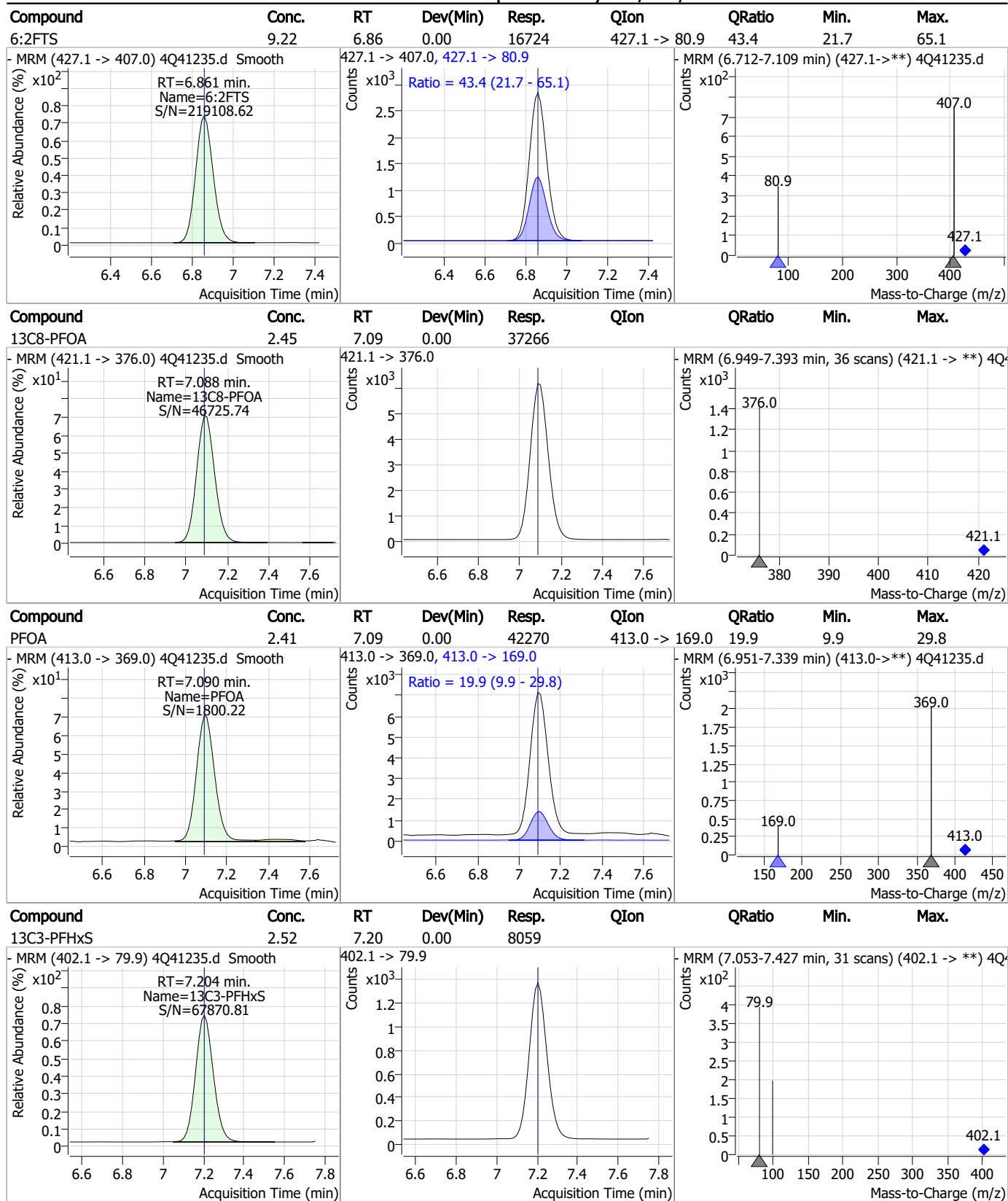
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Perfluorinated Compounds by LC/MS/MS



7.6.5
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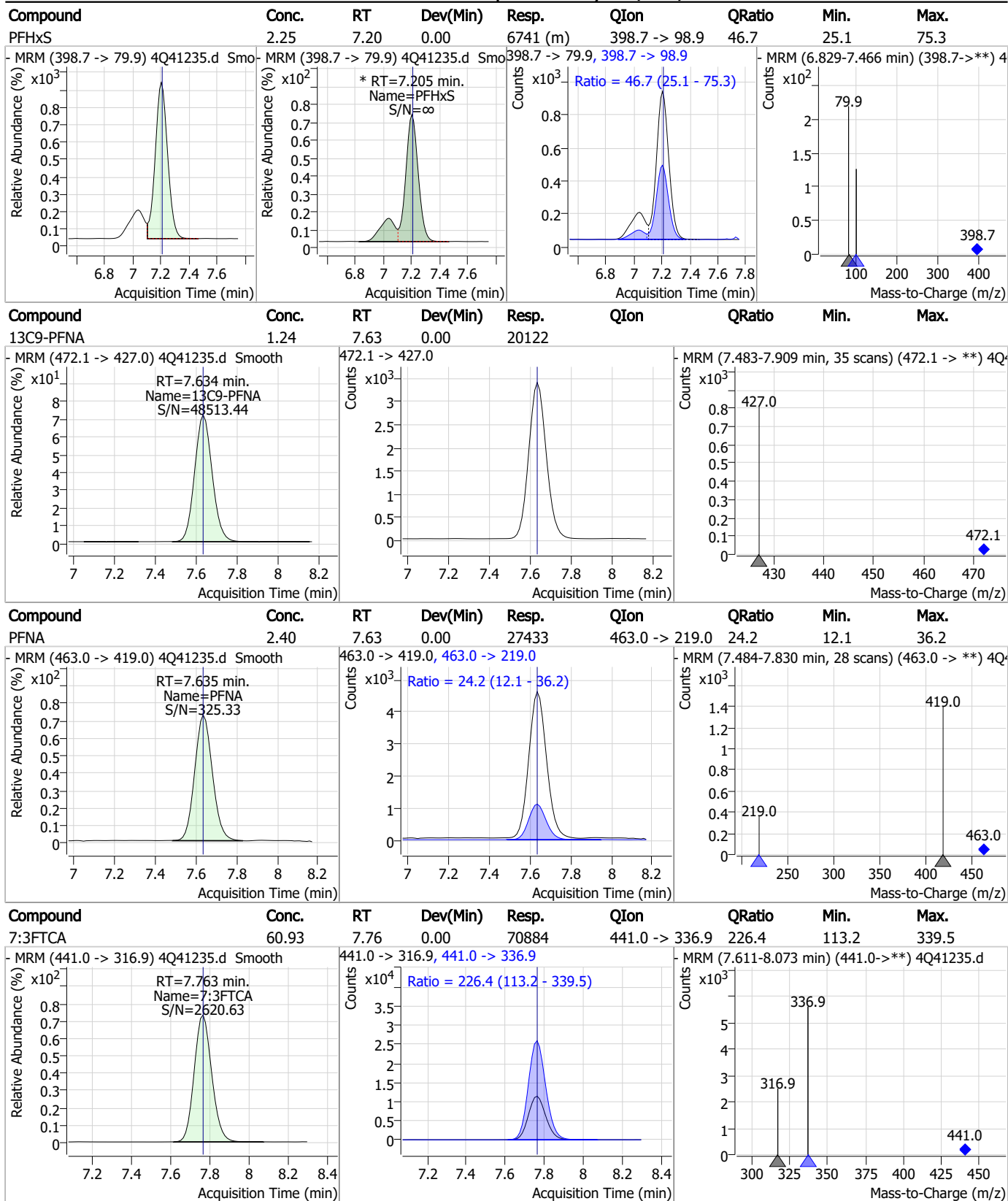
Perfluorinated Compounds by LC/MS/MS



7.6.5

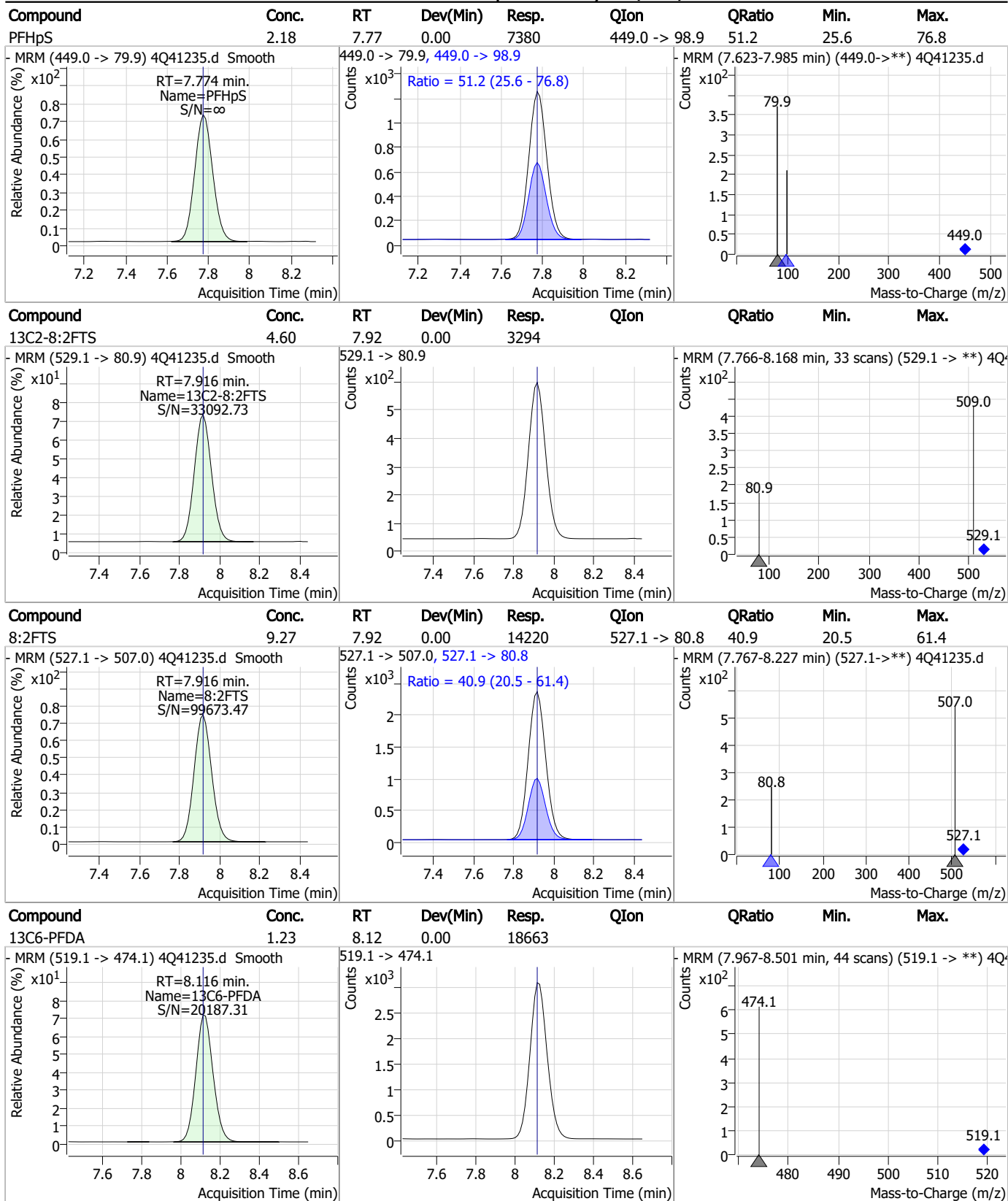
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Perfluorinated Compounds by LC/MS/MS



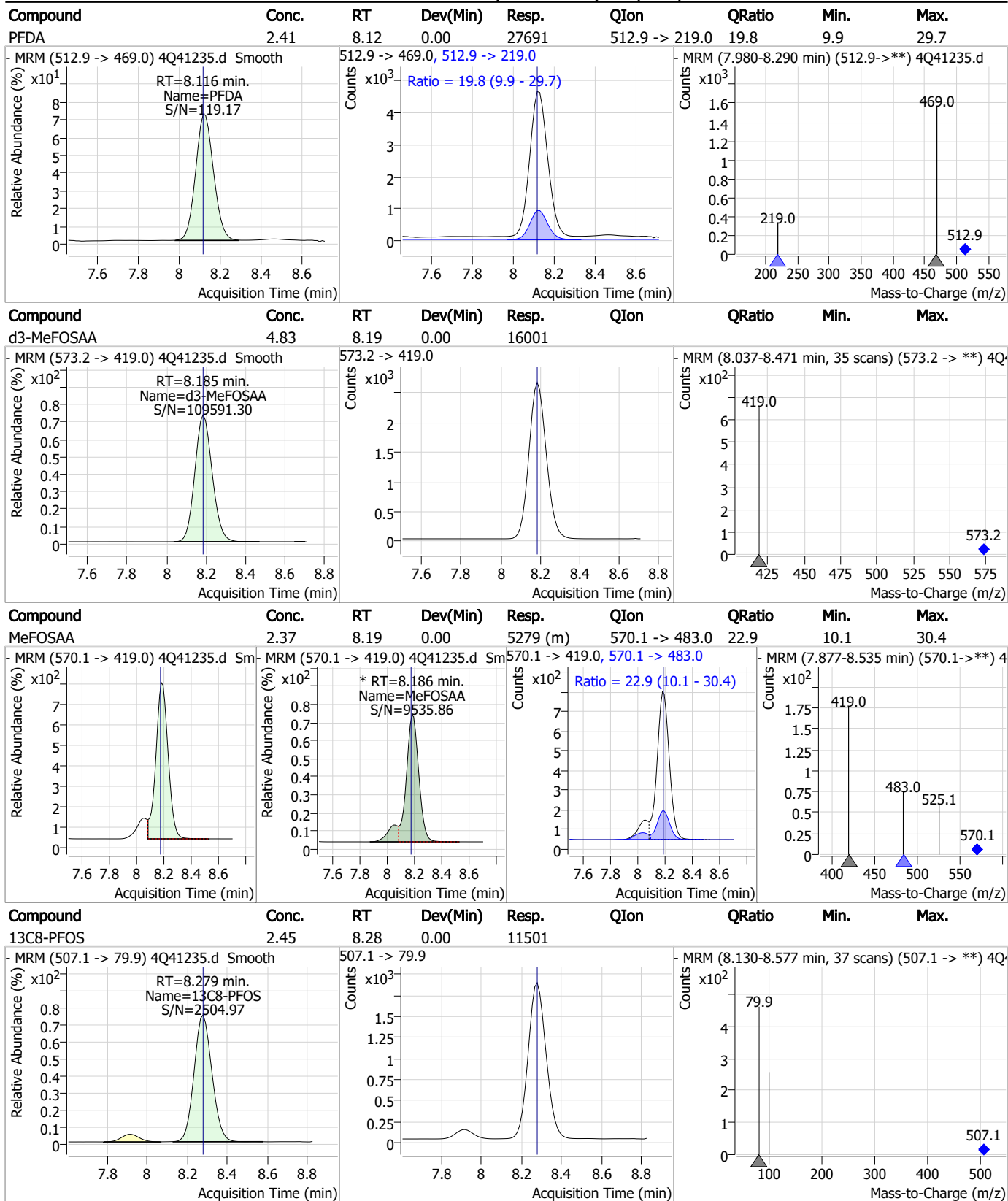
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Perfluorinated Compounds by LC/MS/MS



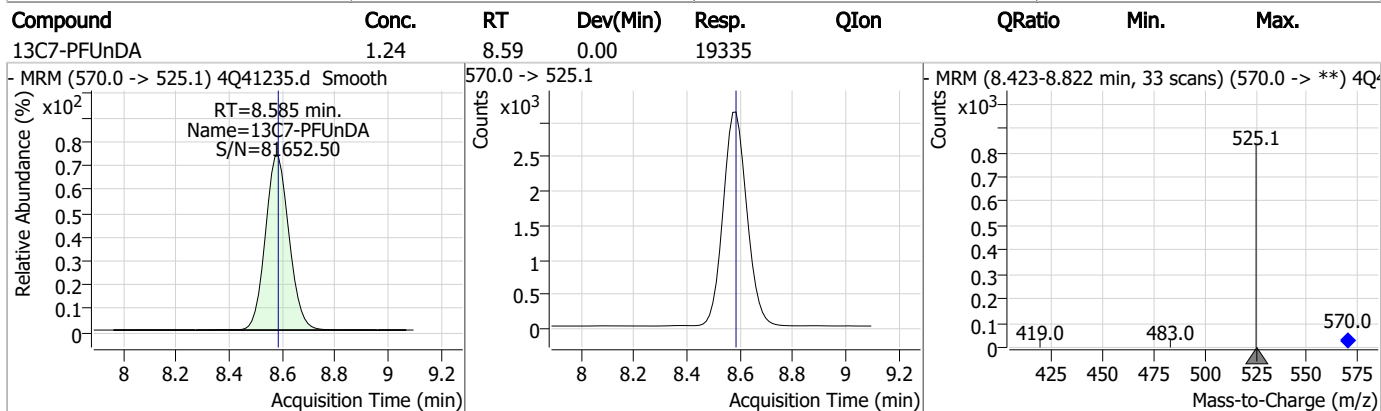
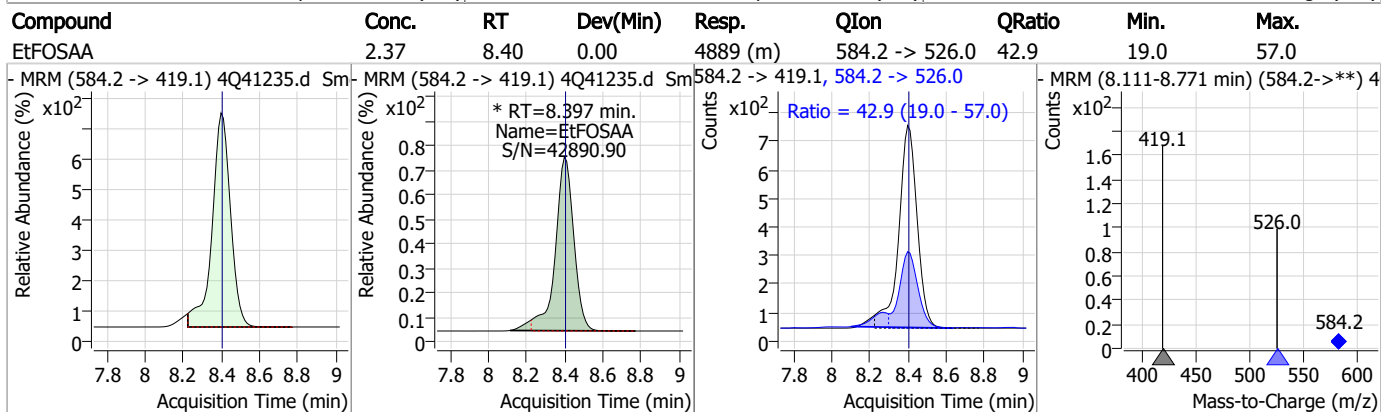
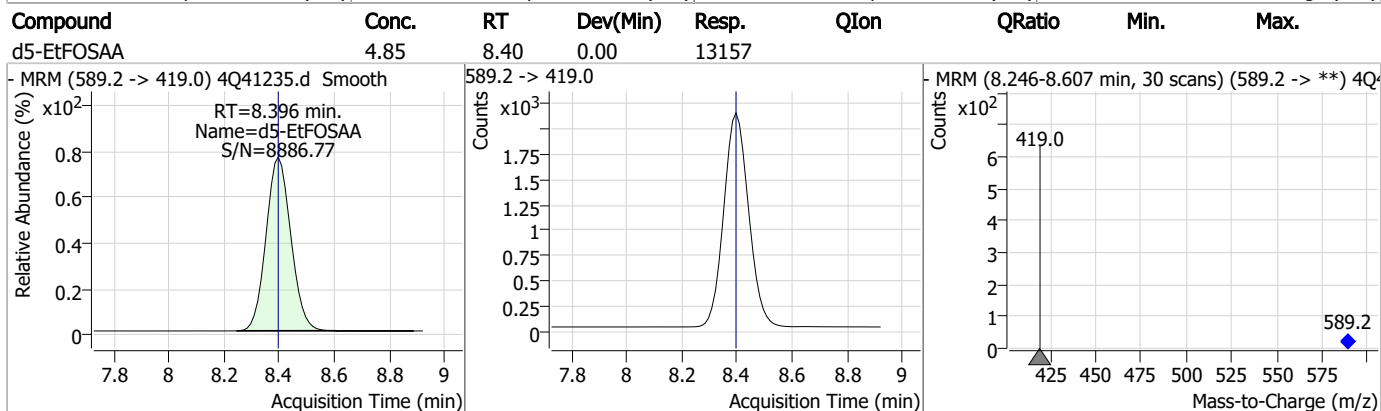
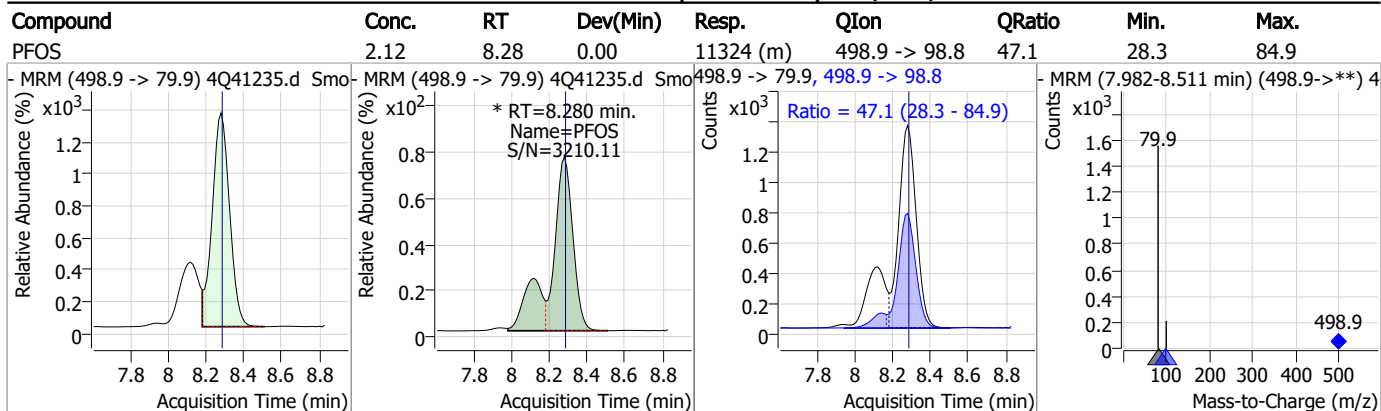
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Perfluorinated Compounds by LC/MS/MS

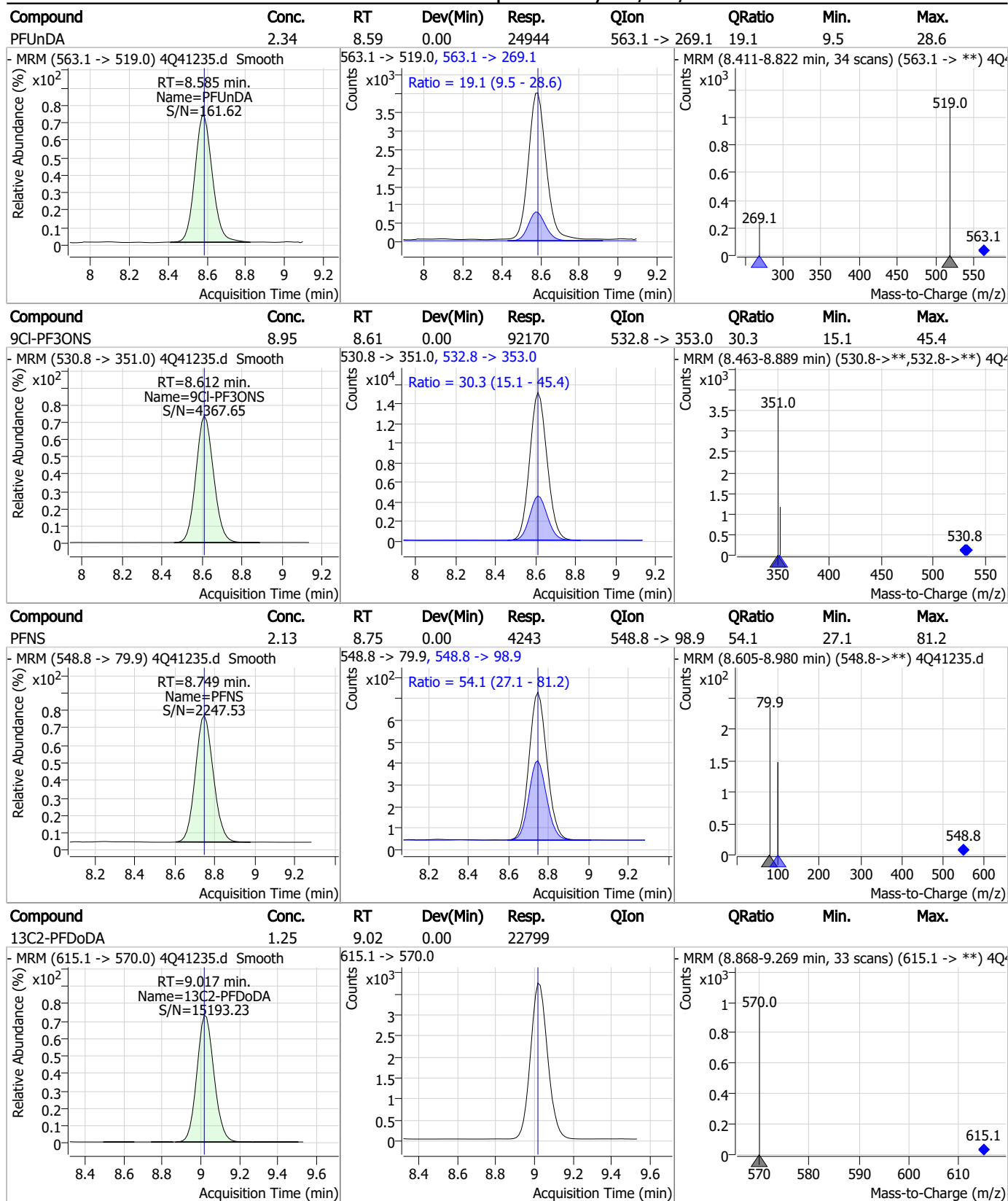


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Perfluorinated Compounds by LC/MS/MS



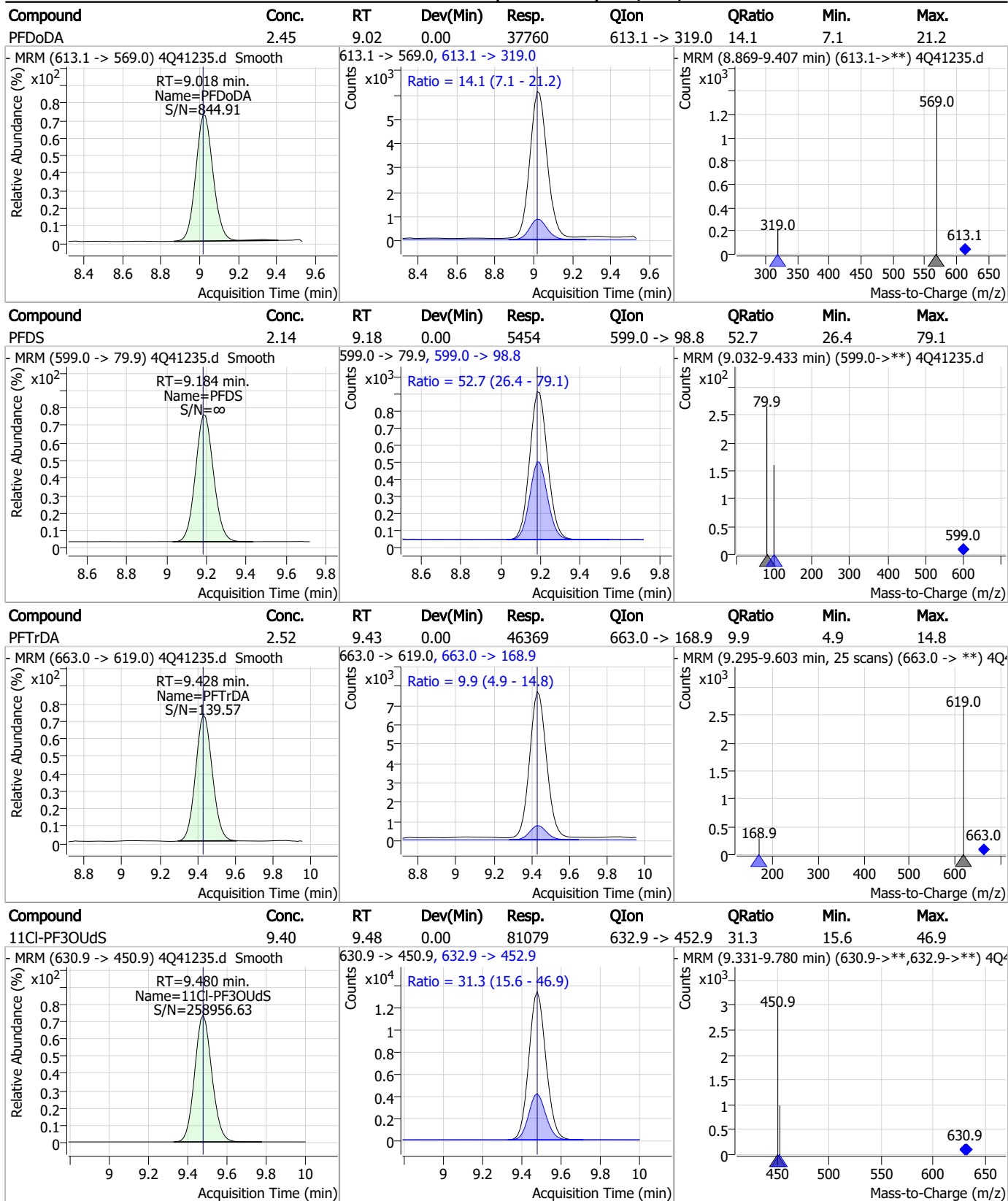
Perfluorinated Compounds by LC/MS/MS



7.6.5

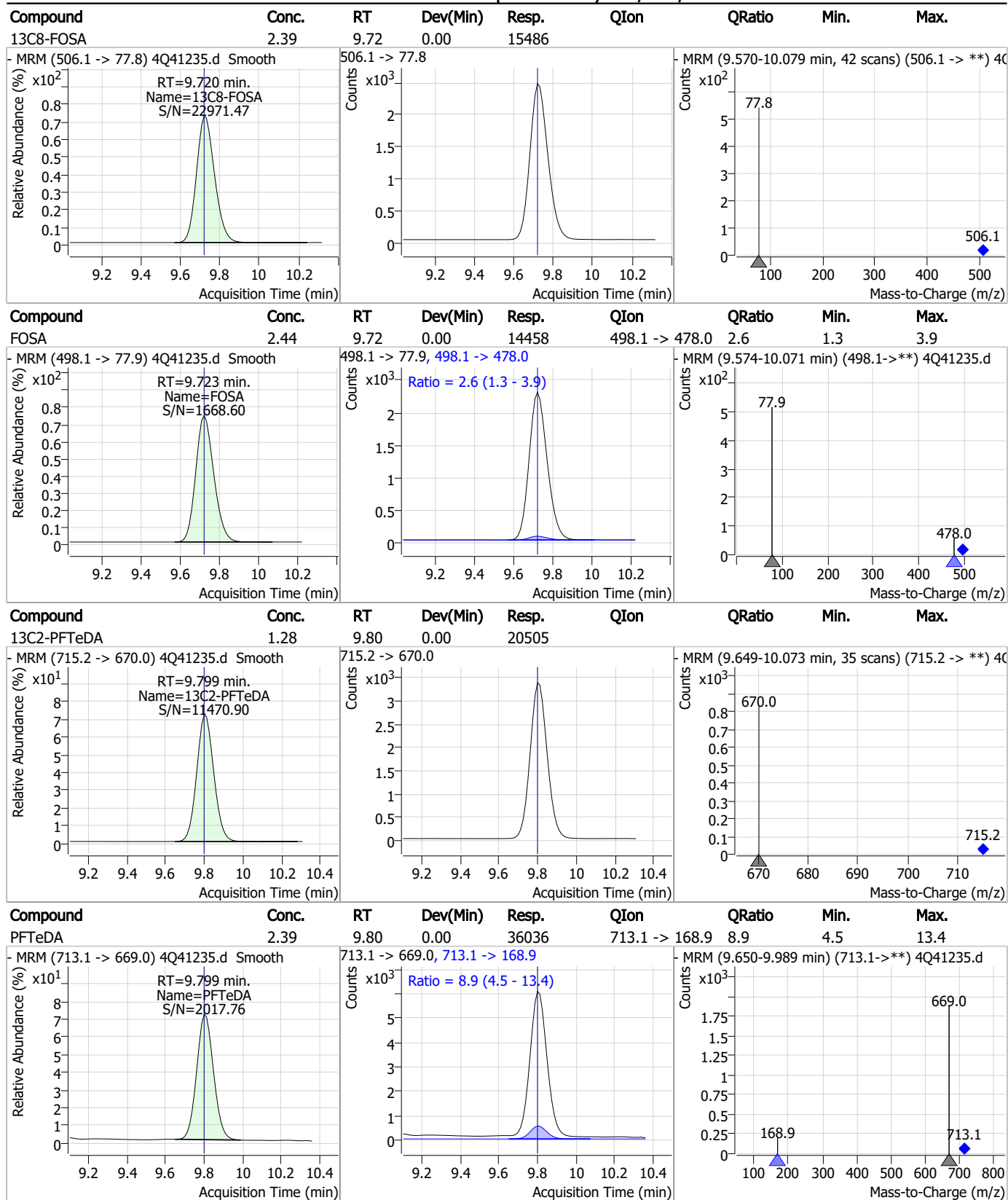
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Perfluorinated Compounds by LC/MS/MS



7.6.5
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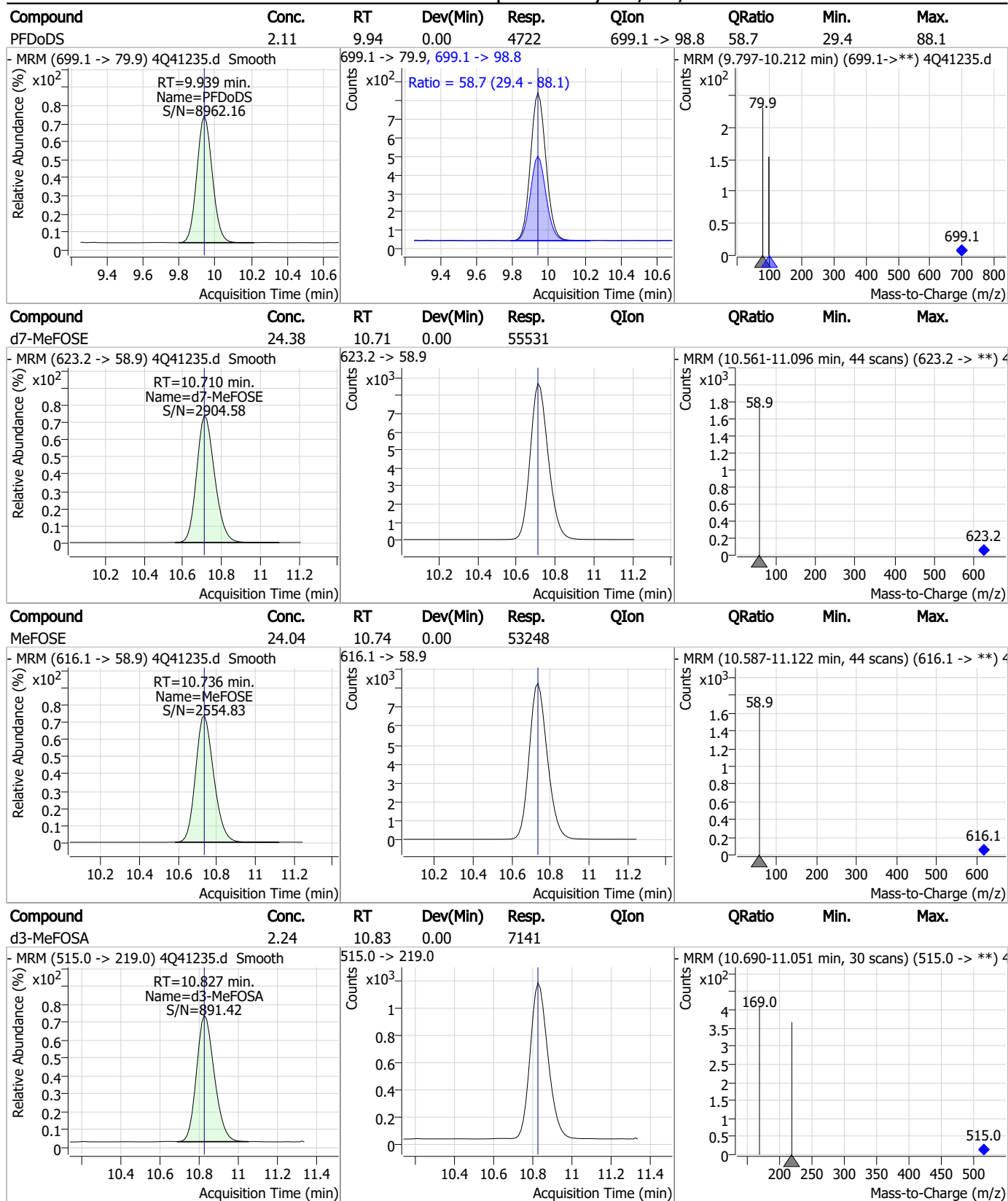
Perfluorinated Compounds by LC/MS/MS



7.6.5

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Perfluorinated Compounds by LC/MS/MS

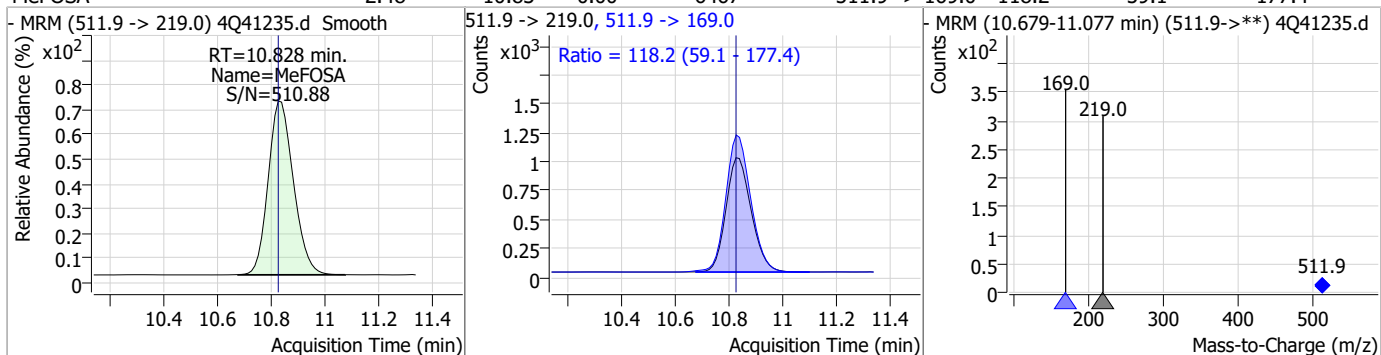


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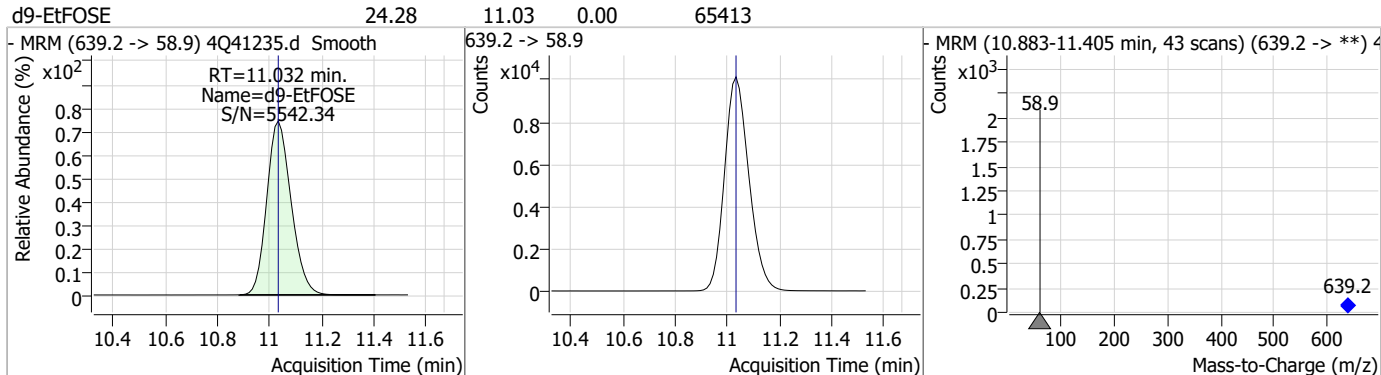
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Perfluorinated Compounds by LC/MS/MS

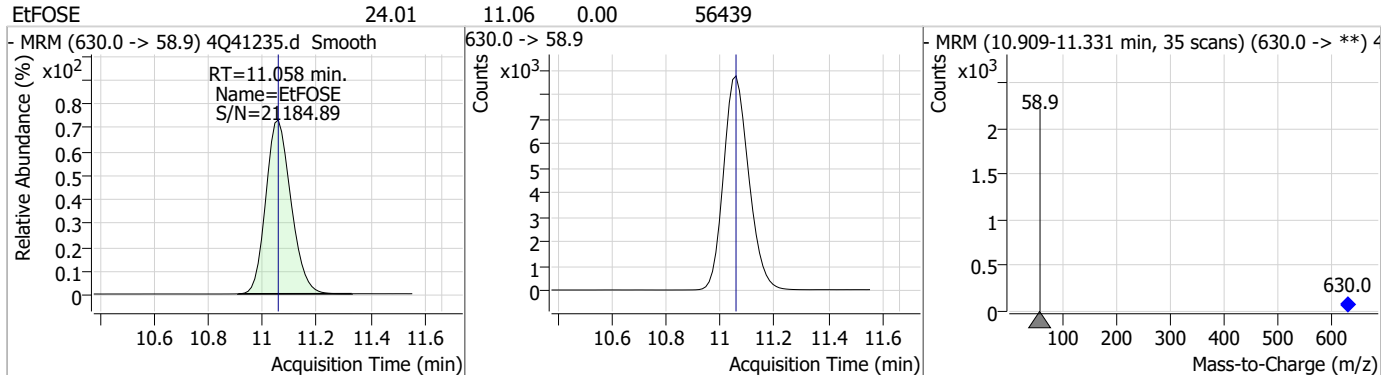
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	2.48	10.83	0.00	6467	511.9 -> 169.0	118.2	59.1	177.4



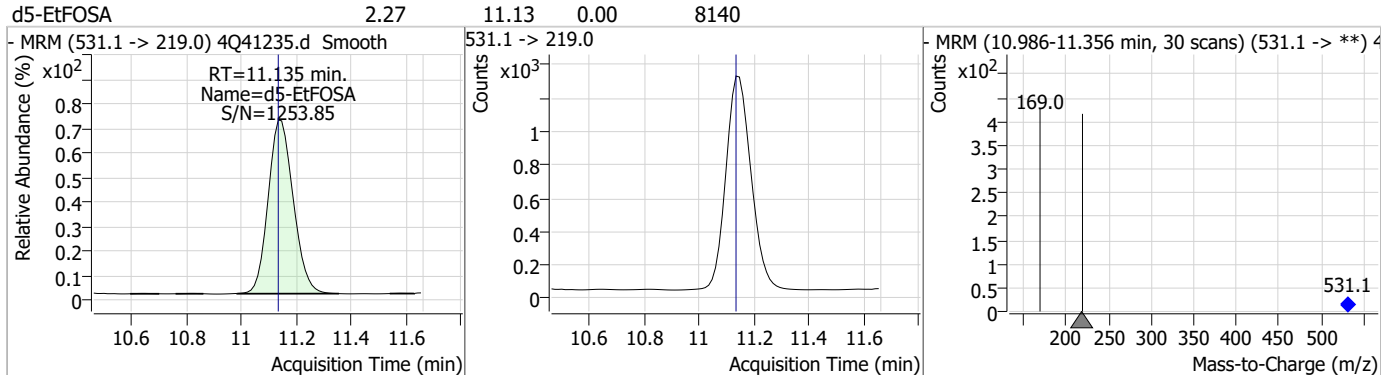
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.28	11.03	0.00	65413				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	24.01	11.06	0.00	56439				

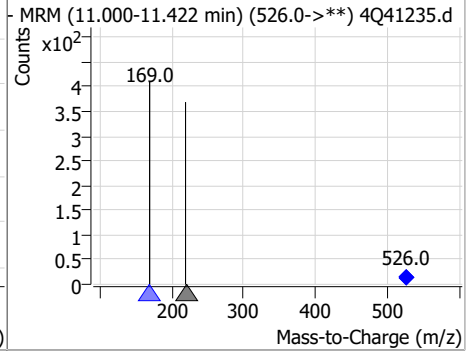
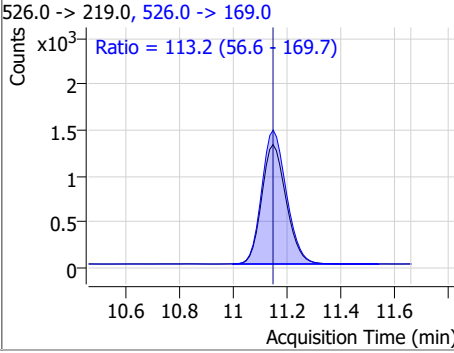
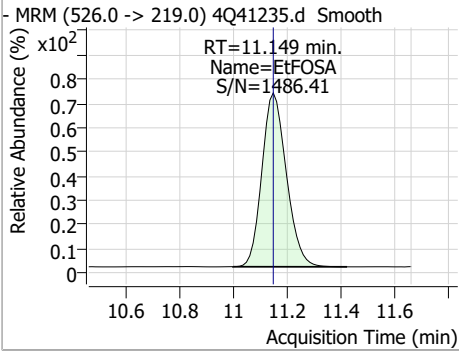


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.27	11.13	0.00	8140				



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	2.45	11.15	0.00	8185	526.0 -> 169.0	113.2	56.6	169.7



7.6.5
7

Manual Integration Approval Summary

Sample Number: S4Q589-ICC589 Method: EPA DRAFT 1633
Lab FileID: 4Q41235.D Analyst approved: 02/27/23 14:05 Anna Ludwig
Injection Time: 02/24/23 16:44 Supervisor approved: 02/27/23 16:52 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.21	Split peak
MeFOSAA	2355-31-9		8.19	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.28	Split peak
EtFOSAA	2991-50-6		8.40	Split peak

7.6.5.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41236.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/24/2023 4:58:37 PM
 Sample Name : ic589-5
 Vial : P1-A6
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q589.batch.bin
 Sample Information : op95462,S4Q589,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.111	216.8 -> 171.9	117149	10.00 µg/L	0.012
M5-PFPeA	4.487	268.3 -> 223.0	73622	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	56818	2.50 µg/L	0.000
M4-PFHpA	6.443	367.1 -> 322.0	29490	2.50 µg/L	0.000
M8-PFOA	7.101	421.1 -> 376.0	34699	2.50 µg/L	0.012
M9-PFNA	7.634	472.1 -> 427.0	19170	1.25 µg/L	0.000
M6-PFDA	8.128	519.1 -> 474.1	17505	1.25 µg/L	0.012
M7-PFUnDA	8.585	570.0 -> 525.1	18553	1.25 µg/L	0.000
M2-PFDoDA	9.017	615.1 -> 570.0	21317	1.25 µg/L	0.000
M2-PFTeDA	9.799	715.2 -> 670.0	17808	1.25 µg/L	0.000
M8-FOSA	9.720	506.1 -> 77.8	13983	2.50 µg/L	0.000
M3-PFBS	5.501	302.1 -> 79.9	12854	2.50 µg/L	0.012
M3-PFHxS	7.204	402.1 -> 79.9	7474	2.50 µg/L	0.000
M8-PFOS	8.279	507.1 -> 79.9	10720	2.50 µg/L	0.000
M2-4:2FTS	5.272	329.1 -> 80.9	1536	5.00 µg/L	0.012
M2-6:2FTS	6.860	429.1 -> 80.9	2178	5.00 µg/L	0.000
M2-8:2FTS	7.916	529.1 -> 80.9	3112	5.00 µg/L	0.000
M3-MeFOSAA	8.185	573.2 -> 419.0	14999	5.00 µg/L	0.000
M3-HFPO-DA	5.889	286.9 -> 168.9	32232	10.00 µg/L	0.000
M5-EtFOSAA	8.396	589.2 -> 419.0	12090	5.00 µg/L	0.000
M7-MeFOSE	10.723	623.2 -> 58.9	51896	25.00 µg/L	0.012
M9-EtFOSE	11.045	639.2 -> 58.9	60270	25.00 µg/L	0.012
M5-EtFOSA	11.147	531.1 -> 219.0	8161	2.50 µg/L	0.012
M3-MeFOSA	10.839	515.0 -> 219.0	7044	2.50 µg/L	0.012
13C4-PFOS	8.280	502.8 -> 79.9	10661	2.50 µg/L	0.000
13C3-PFBA	3.115	216.0 -> 172.0	68573	5.00 µg/L	0.013
18O2-PFHxS	7.203	403.0 -> 83.9	5364	2.50 µg/L	0.000
13C4-PFOA	7.101	417.1 -> 372.0	42263	2.50 µg/L	0.012
13C2-PFDA	8.128	515.1 -> 470.1	16883	1.25 µg/L	0.000
13C5-PFNA	7.634	468.0 -> 423.0	21418	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	52758	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.272	329.1 -> 80.9	1536	4.91 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C2-6:2FTS	6.860	429.1 -> 80.9	2178	5.19 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.9%		
13C2-8:2FTS	7.916	529.1 -> 80.9	3112	4.58 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.6%		
13C2-PFDoDA	9.017	615.1 -> 570.0	21317	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.2%		
13C2-PFTeDA	9.799	715.2 -> 670.0	17808	1.12 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.6%		
13C3-PFBS	5.501	302.1 -> 79.9	12854	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C3-PFHxS	7.204	402.1 -> 79.9	7474	2.47 µg/L	0.000

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C4-PFBA	3.111	216.8 -> 171.9	117149	9.92 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C4-PFHpA	6.443	367.1 -> 322.0	29490	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C5-PFHxA	5.559	318.0 -> 273.0	56818	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C5-PFPeA	4.487	268.3 -> 223.0	73622	4.97 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C6-PFDA	8.128	519.1 -> 474.1	17505	1.17 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.3%	
13C7-PFUnDA	8.585	570.0 -> 525.1	18553	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.5%	
13C8-FOSA	9.720	506.1 -> 77.8	13983	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.6%	
13C8-PFOA	7.101	421.1 -> 376.0	34699	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C8-PFOS	8.279	507.1 -> 79.9	10720	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C9-PFNA	7.634	472.1 -> 427.0	19170	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.6%	
d3-MeFOSAA	8.185	573.2 -> 419.0	14999	4.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C3-HFPO-DA	5.889	286.9 -> 168.9	32232	9.91 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.1%	
d3-MeFOSA	10.839	515.0 -> 219.0	7044	2.42 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.8%	
d5-EtFOSAA	8.396	589.2 -> 419.0	12090	4.87 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.5%	
d7-MeFOSE	10.723	623.2 -> 58.9	51896	24.94 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
d9-EtFOSE	11.045	639.2 -> 58.9	60270	24.49 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.9%	
d5-EtFOSA	11.147	531.1 -> 219.0	8161	2.50 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	40991	20.04 µg/L	99
		327.1 -> 80.9	17724		
6:2FTS	6.861	427.1 -> 407.0	31616	19.26 µg/L	99
		427.1 -> 80.9	13857		
8:2FTS	7.916	527.1 -> 507.0	28999	20.02 µg/L	97
		527.1 -> 80.8	12440		
EtFOSAA	8.397	584.2 -> 419.1	10105	5.34 µg/L	m 80
		584.2 -> 526.0	5035		
FOSA	9.723	498.1 -> 77.9	27391	5.11 µg/L	100
		498.1 -> 478.0	736		
MeFOSAA	8.186	570.1 -> 419.0	10454	5.00 µg/L	98
		570.1 -> 483.0	2217		
PFBA	3.107	212.8 -> 168.9	56212	20.30 µg/L	100
PFBS	5.502	298.7 -> 79.9	22991	4.49 µg/L	98
		298.7 -> 98.8	8382		
PFDA	8.129	512.9 -> 469.0	56485	5.23 µg/L	99
		512.9 -> 219.0	10835		
PFDODA	9.018	613.1 -> 569.0	72677	5.05 µg/L	99
		613.1 -> 319.0	10614		
PFDS	9.184	599.0 -> 79.9	11266	4.74 µg/L	92

7.66
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	5332			
PFHpA	6.444	363.1 -> 319.0	79828	5.12	µg/L	99
		363.1 -> 169.0	14190			
PFHpS	7.774	449.0 -> 79.9	14896	4.73	µg/L	99
		449.0 -> 98.9	7507			
PFHxA	5.562	313.0 -> 269.0	102909	5.16	µg/L	99
		313.0 -> 118.9	3077			
PFHxS	7.205	398.7 -> 79.9	12713	4.57	µg/L	m 98
		398.7 -> 98.9	6532			
PFNA	7.635	463.0 -> 419.0	53332	4.90	µg/L	99
		463.0 -> 219.0	13269			
PFNS	8.749	548.8 -> 79.9	8637	4.66	µg/L	96
		548.8 -> 98.9	4414			
PFOA	7.102	413.0 -> 369.0	83384	5.11	µg/L	98
		413.0 -> 169.0	17439			
PFOS	8.280	498.9 -> 79.9	20868	4.19	µg/L	m 90
		498.9 -> 98.8	10267			
PFPeA	4.489	263.0 -> 219.0	155223	10.36	µg/L	100
PFPeS	6.496	349.1 -> 79.9	11733	4.79	µg/L	100
		349.1 -> 98.9	5181			
PFTeDA	9.799	713.1 -> 669.0	68968	5.27	µg/L	99
		713.1 -> 168.9	5869			
PFTrDA	9.428	663.0 -> 619.0	88401	5.14	µg/L	100
		663.0 -> 168.9	8654			
PFUnDA	8.585	563.1 -> 519.0	49580	4.85	µg/L	100
		563.1 -> 269.1	9516			
11Cl-PF3OUdS	9.480	630.9 -> 450.9	159140	20.11	µg/L	98
		632.9 -> 452.9	47808			
9Cl-PF3ONS	8.612	530.8 -> 351.0	184300	19.50	µg/L	100
		532.8 -> 353.0	56187			
ADONA	6.705	376.9 -> 250.9	365360	19.73	µg/L	100
		376.9 -> 84.8	99408			
HFPO-DA	5.890	284.9 -> 168.9	54605	20.74	µg/L	98
		284.9 -> 184.9	6401			
3:3FTCA	4.129	241.0 -> 177.0	19391	25.11	µg/L	98
		241.0 -> 117.0	1904			
5:3FTCA	6.358	341.0 -> 237.1	377964	130.94	µg/L	100
		341.0 -> 217.0	269510			
7:3FTCA	7.763	441.0 -> 316.9	143024	132.64	µg/L	98
		441.0 -> 336.9	318034			
EtFOSA	11.161	526.0 -> 219.0	15968	4.76	µg/L	99
		526.0 -> 169.0	18262			
EtFOSE	11.058	630.0 -> 58.9	111461	51.46	µg/L	100
MeFOSA	10.841	511.9 -> 219.0	13115	5.10	µg/L	96
		511.9 -> 169.0	14901			
MeFOSE	10.736	616.1 -> 58.9	106115	51.27	µg/L	100
PFDoDS	9.939	699.1 -> 79.9	10174	4.87	µg/L	95
		699.1 -> 98.8	5583			
NFDHA	5.453	295.0 -> 201.0	7617	10.52	µg/L	98
		295.0 -> 84.9	2012			
PFMBA	4.854	279.0 -> 85.1	89414	10.35	µg/L	100
PFMPA	3.690	229.0 -> 84.9	76954	10.30	µg/L	100
PFEESA	5.983	314.8 -> 134.9	130286	9.23	µg/L	99
		314.8 -> 82.9	4312			

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

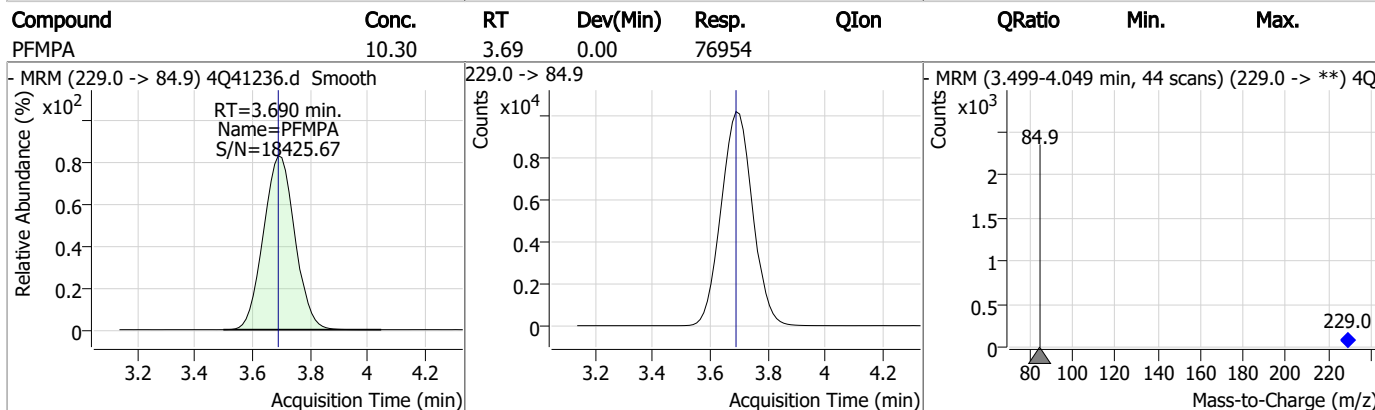
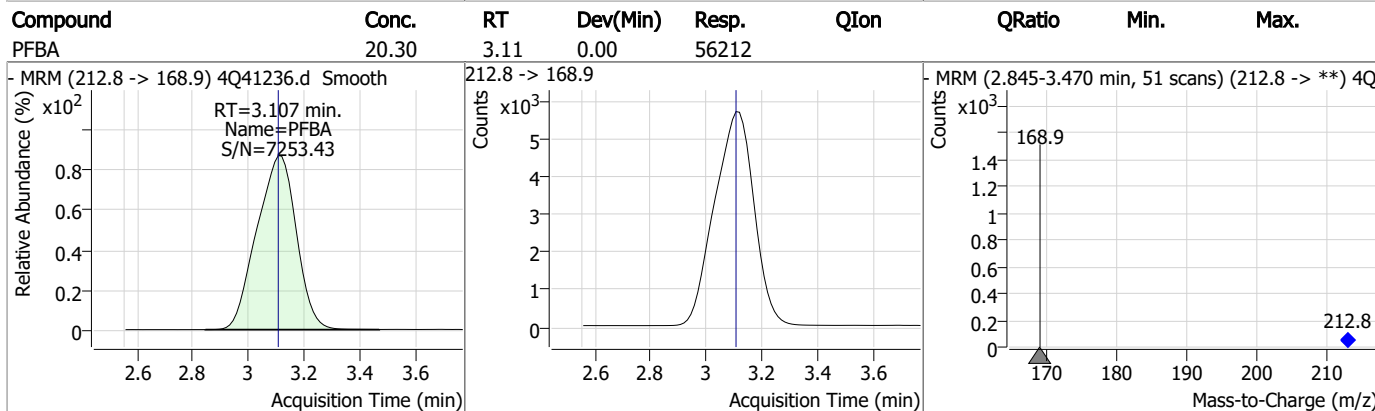
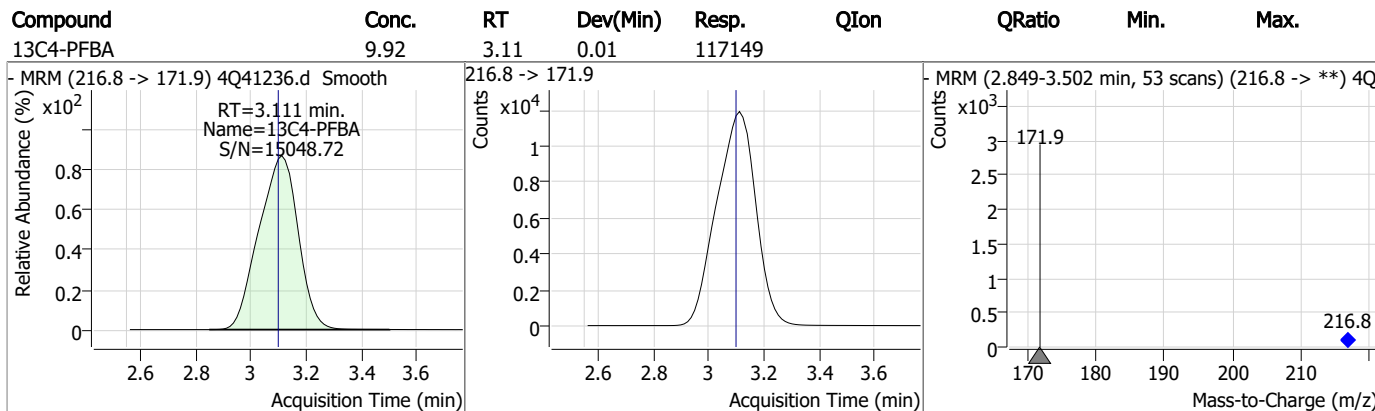
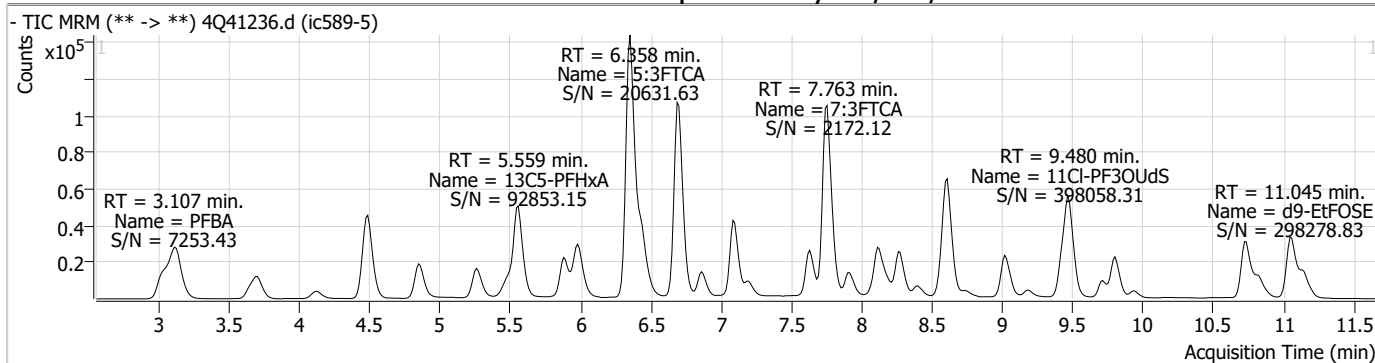
Perfluorinated Compounds by LC/MS/MS

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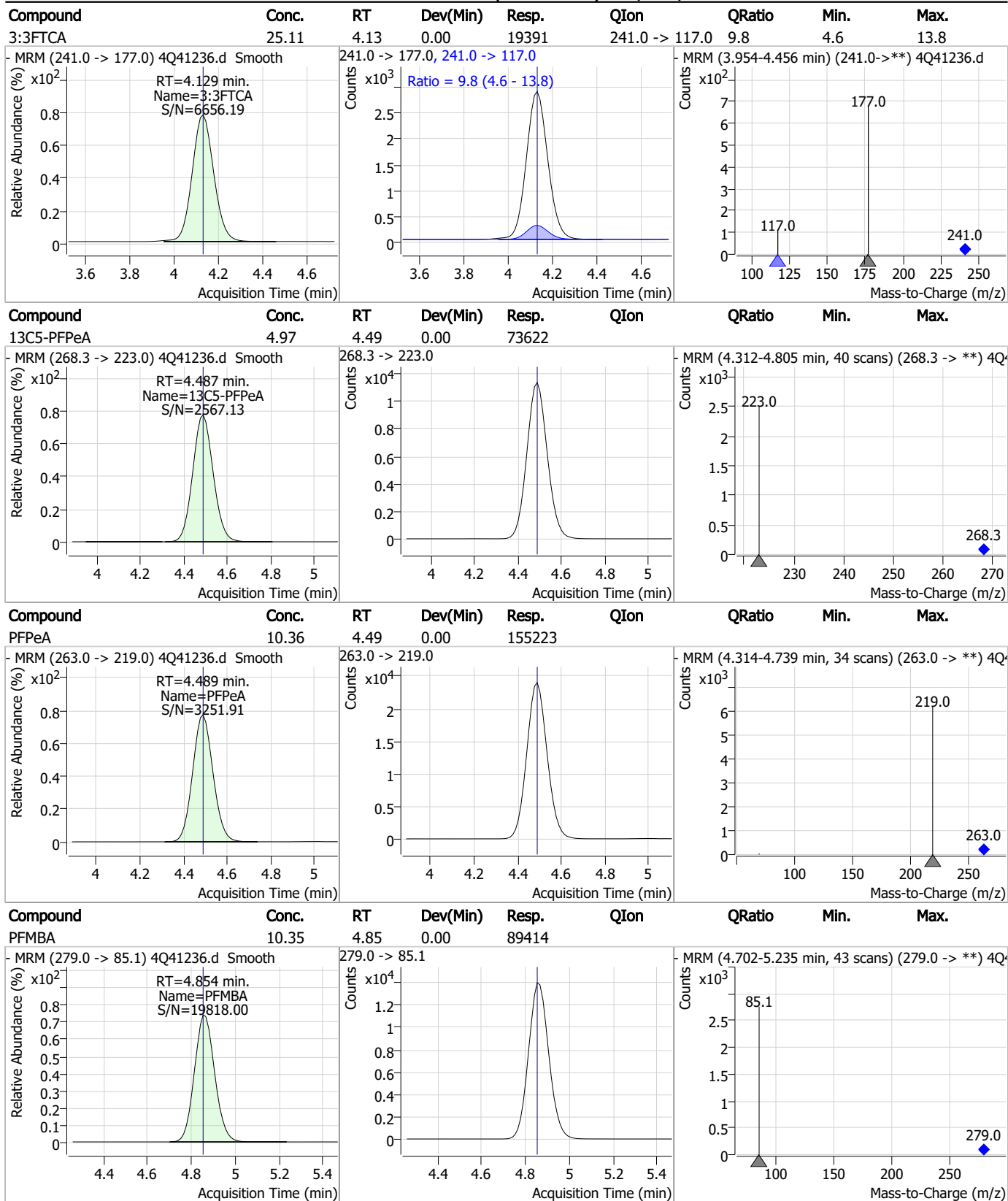
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Perfluorinated Compounds by LC/MS/MS

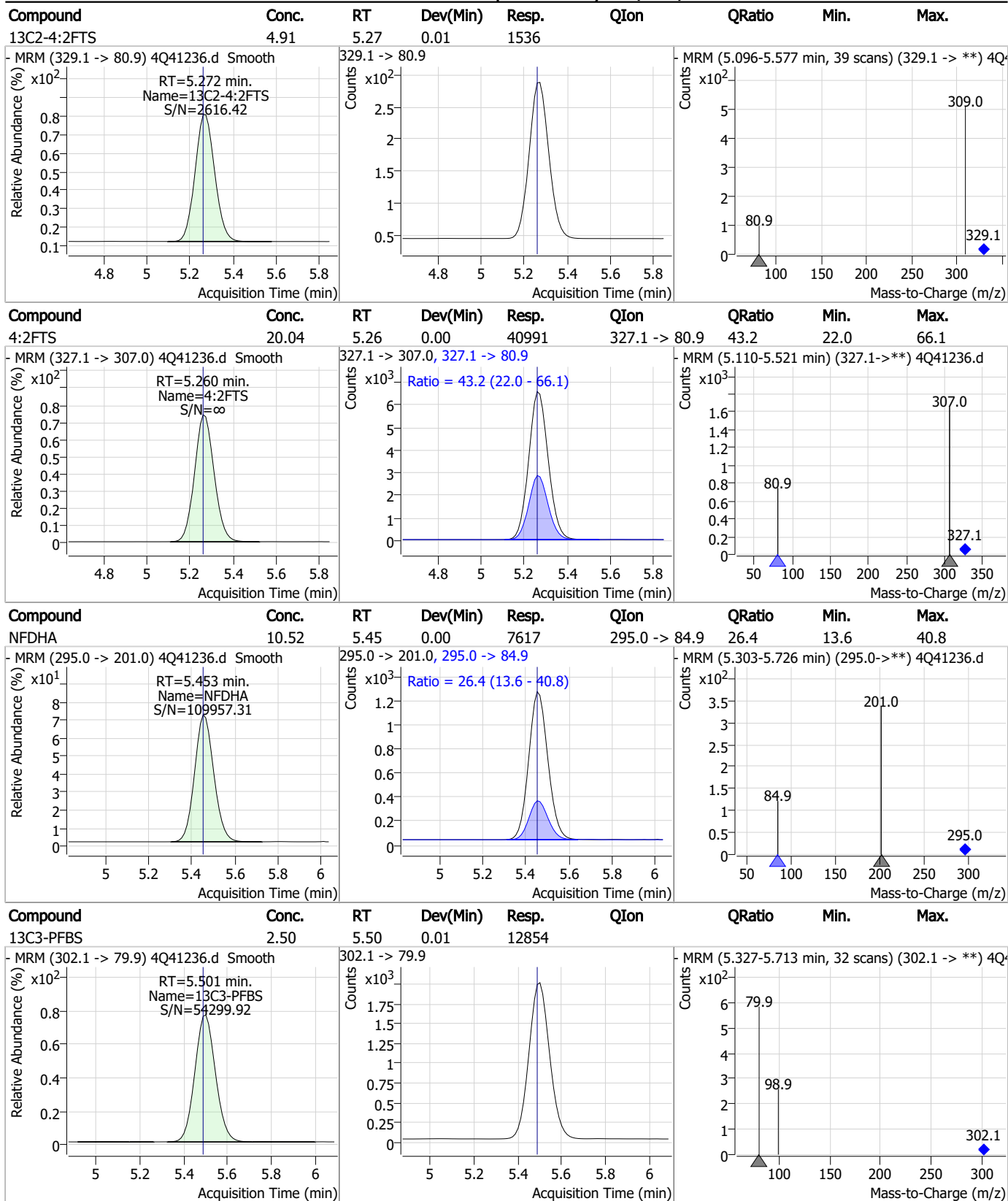


Perfluorinated Compounds by LC/MS/MS



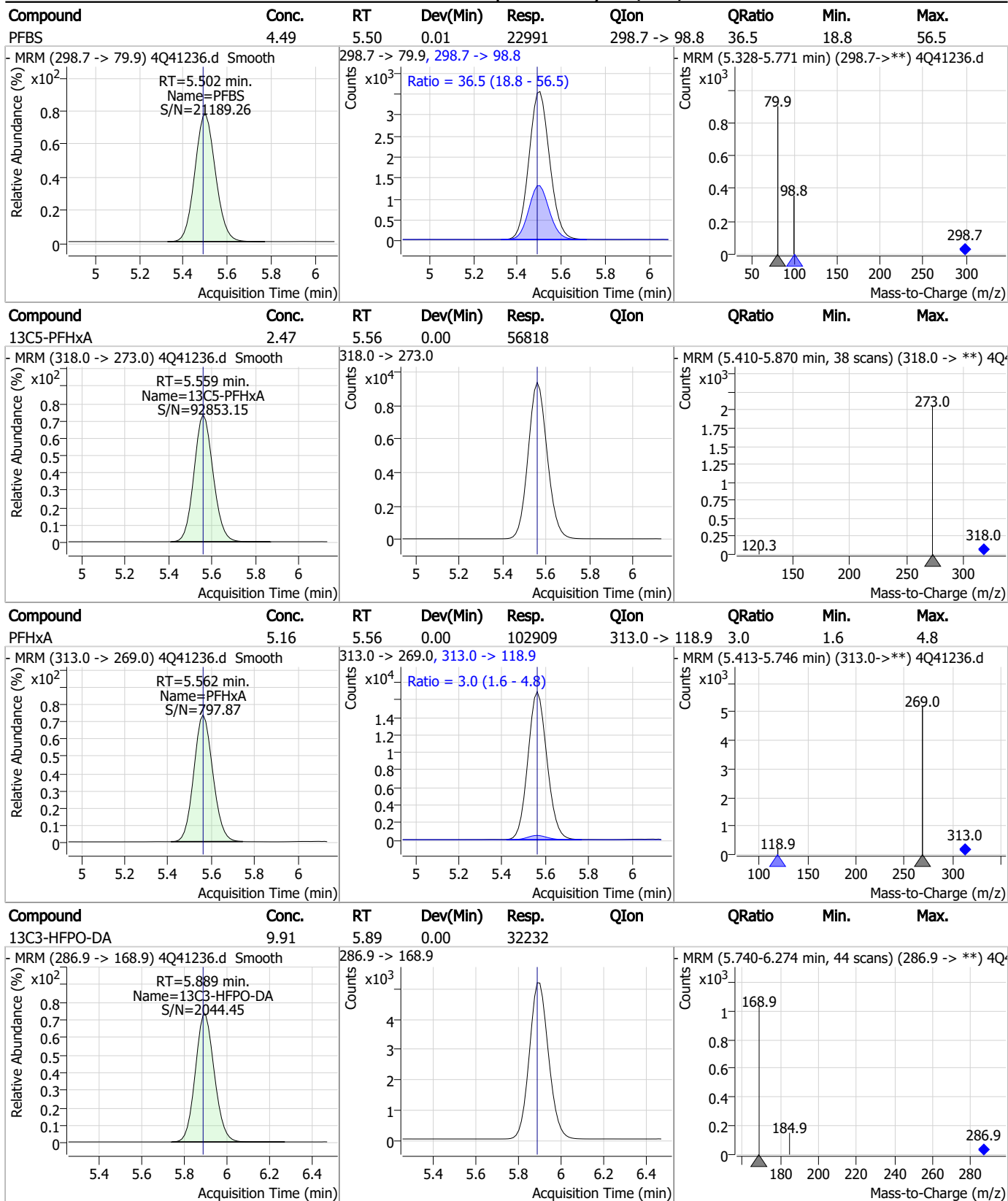
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Perfluorinated Compounds by LC/MS/MS



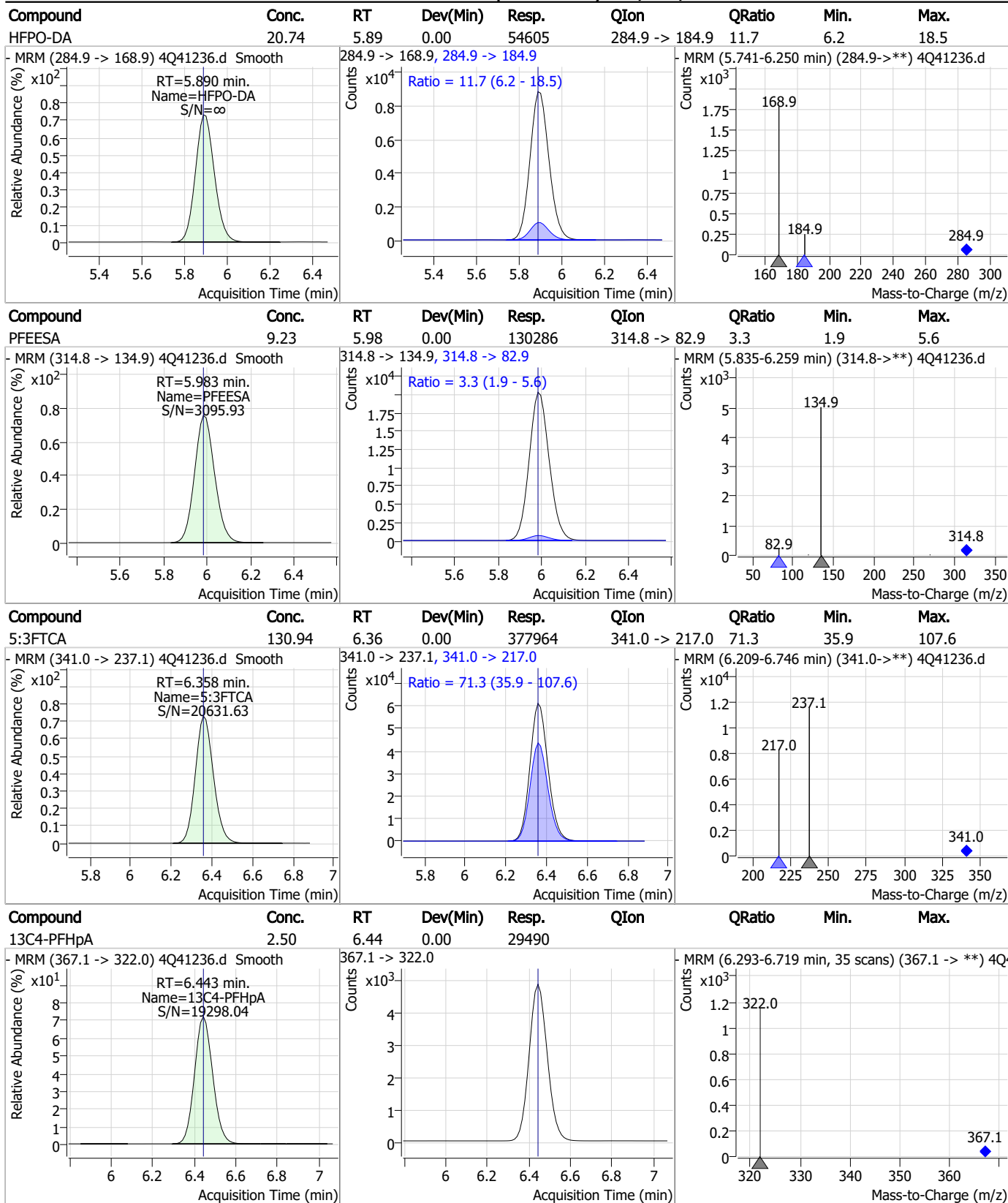
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Perfluorinated Compounds by LC/MS/MS



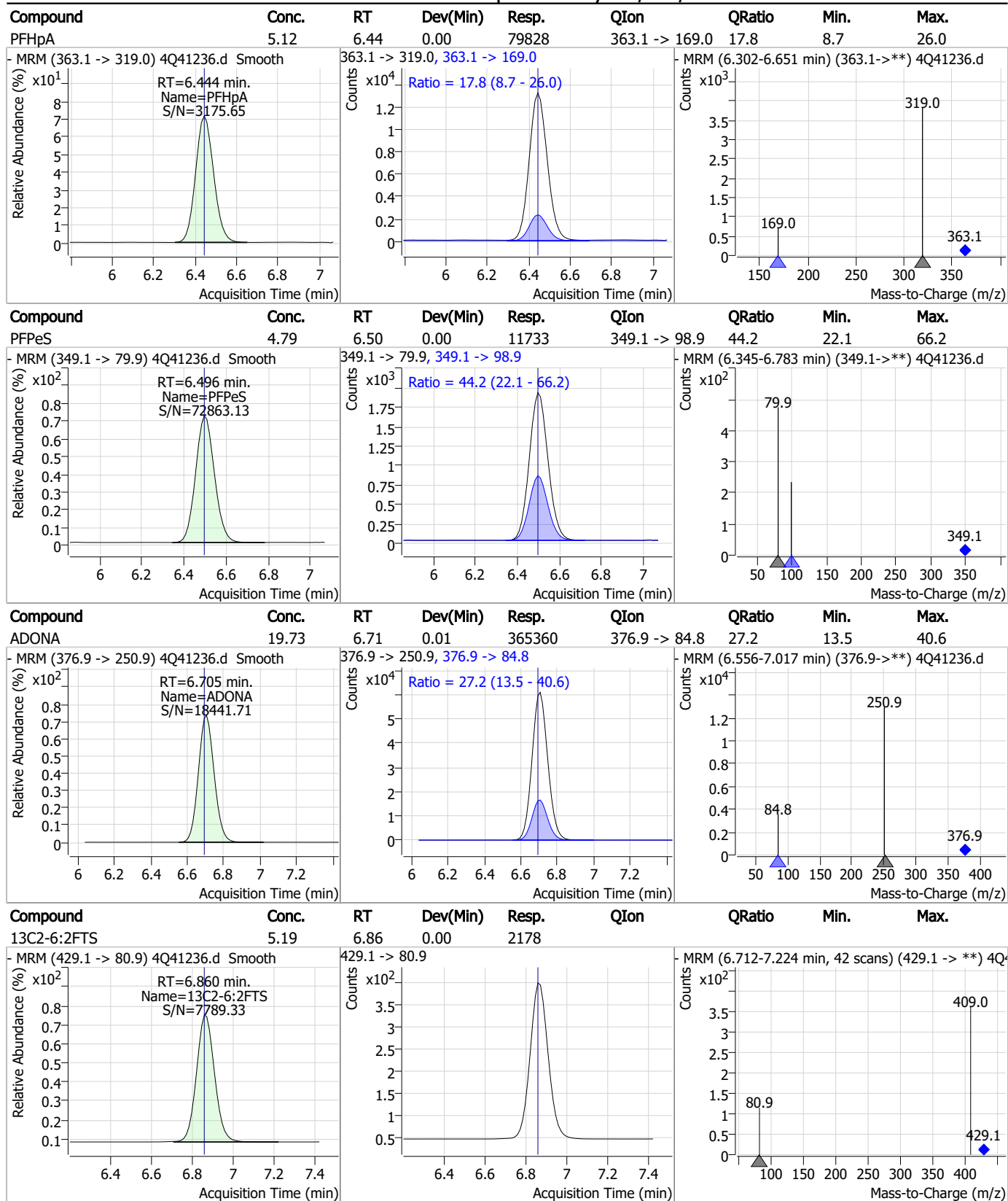
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Perfluorinated Compounds by LC/MS/MS



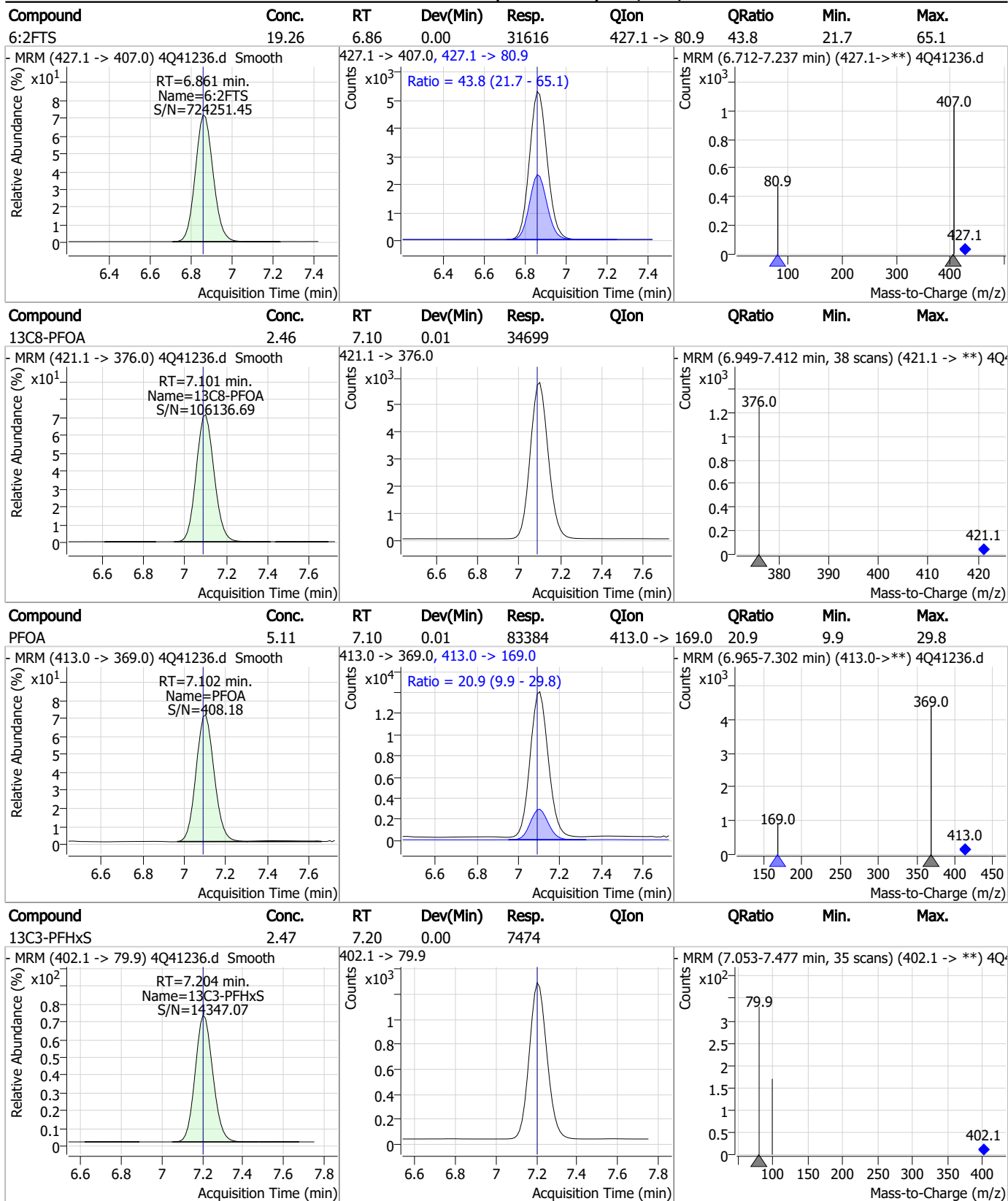
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Perfluorinated Compounds by LC/MS/MS



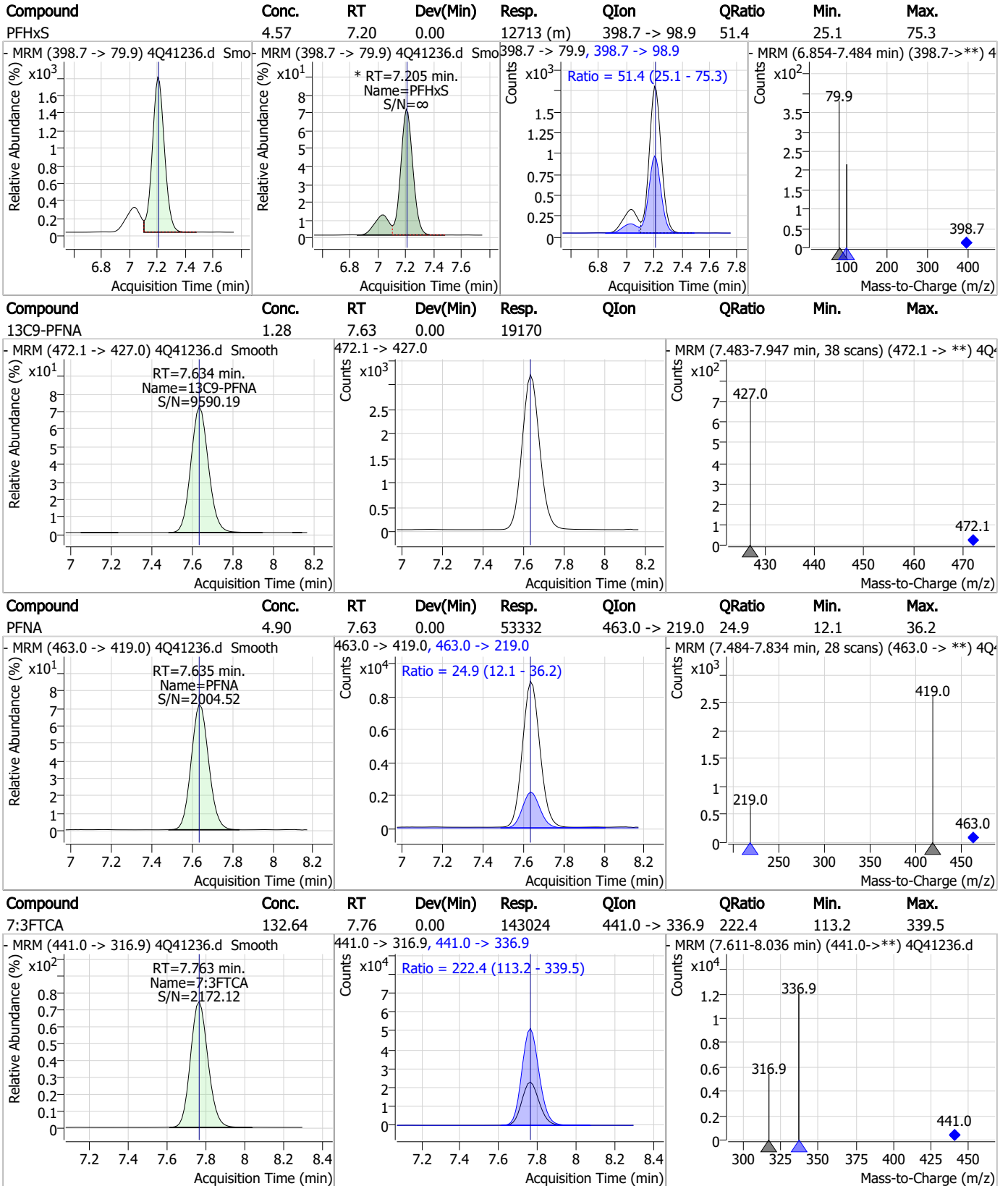
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Perfluorinated Compounds by LC/MS/MS



7.6.6
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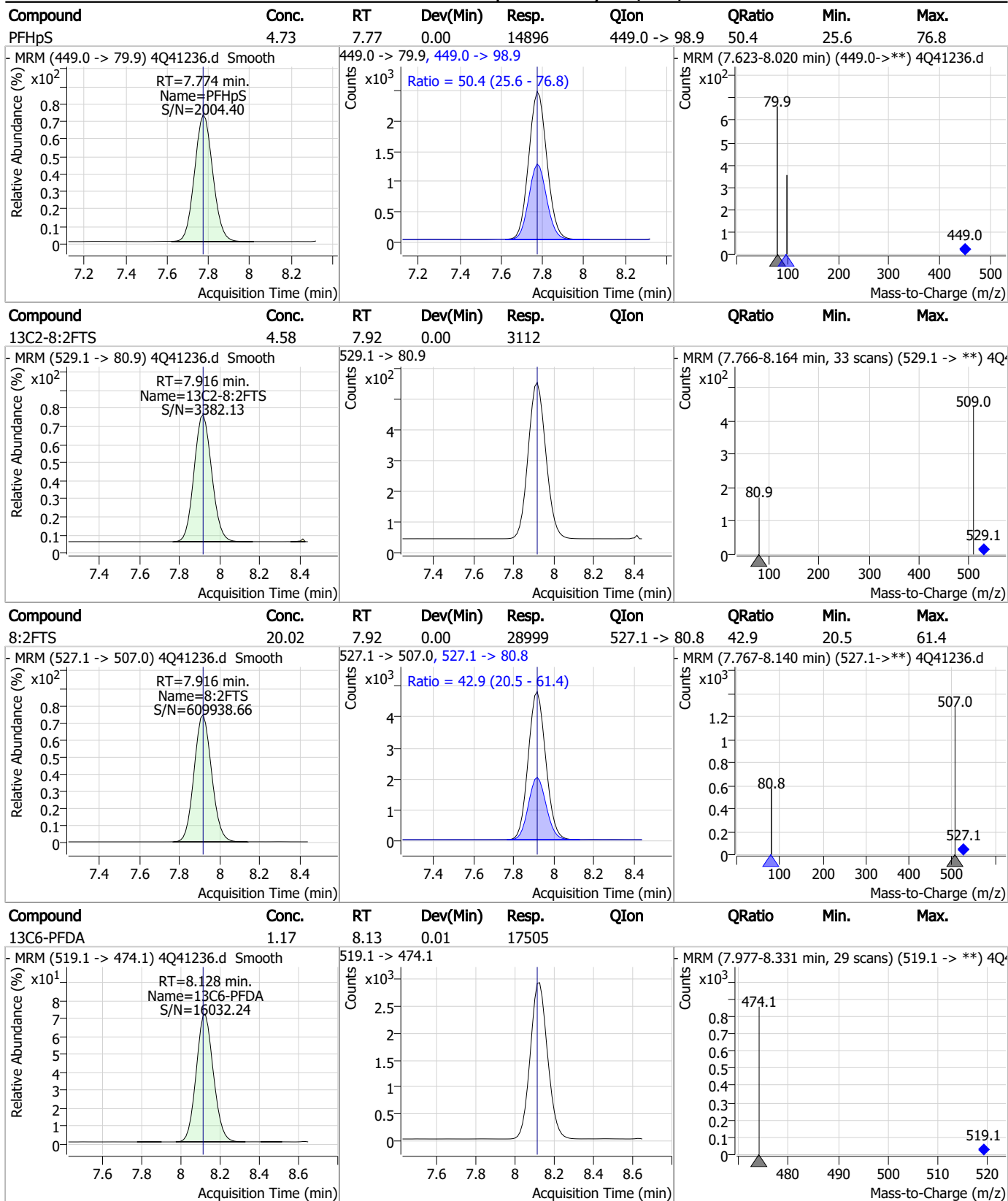
Perfluorinated Compounds by LC/MS/MS



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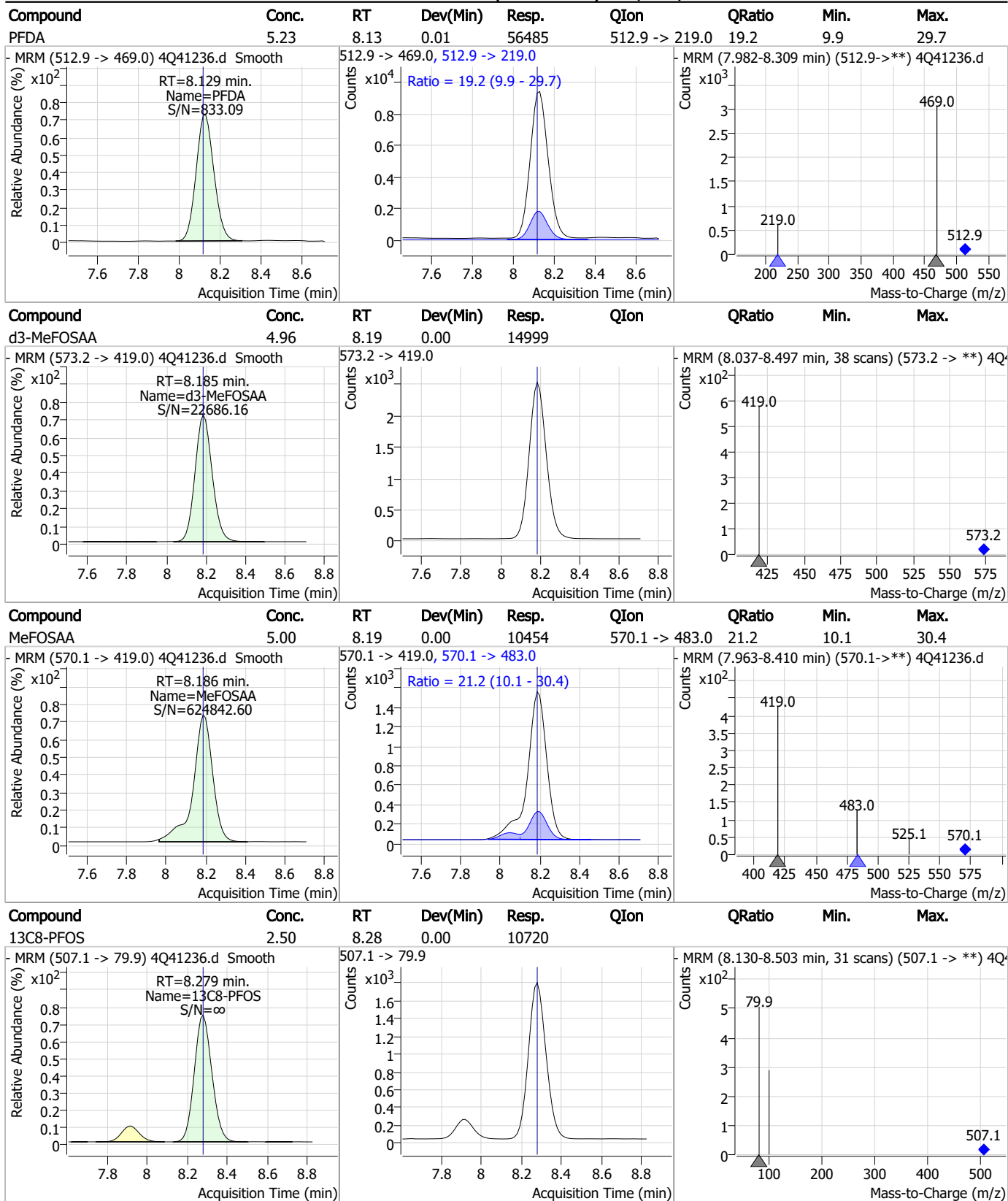
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Perfluorinated Compounds by LC/MS/MS



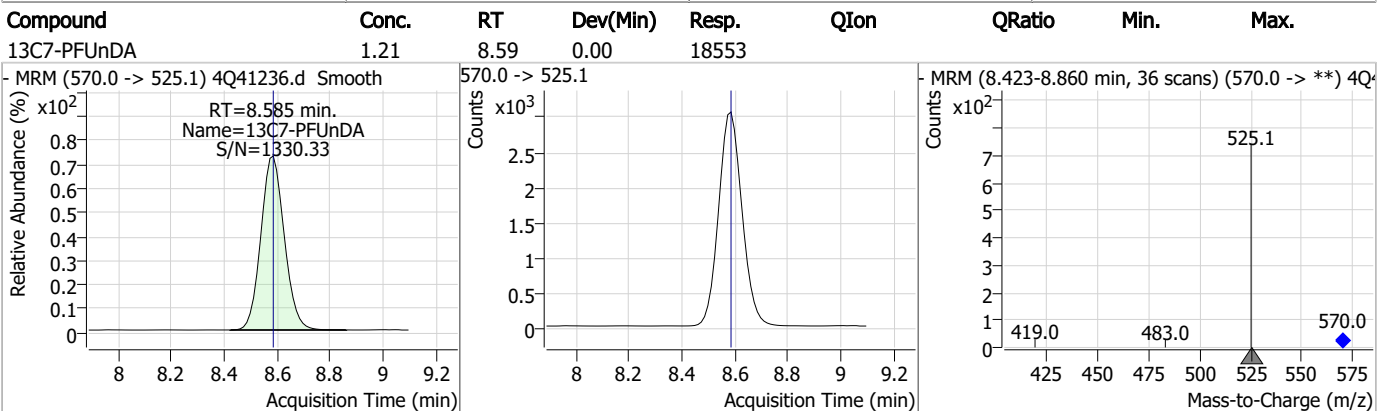
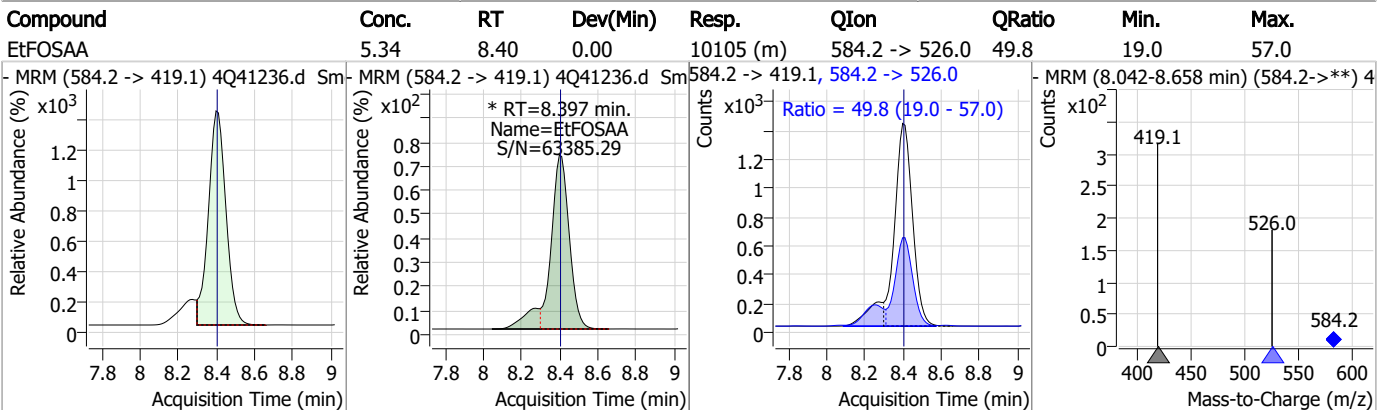
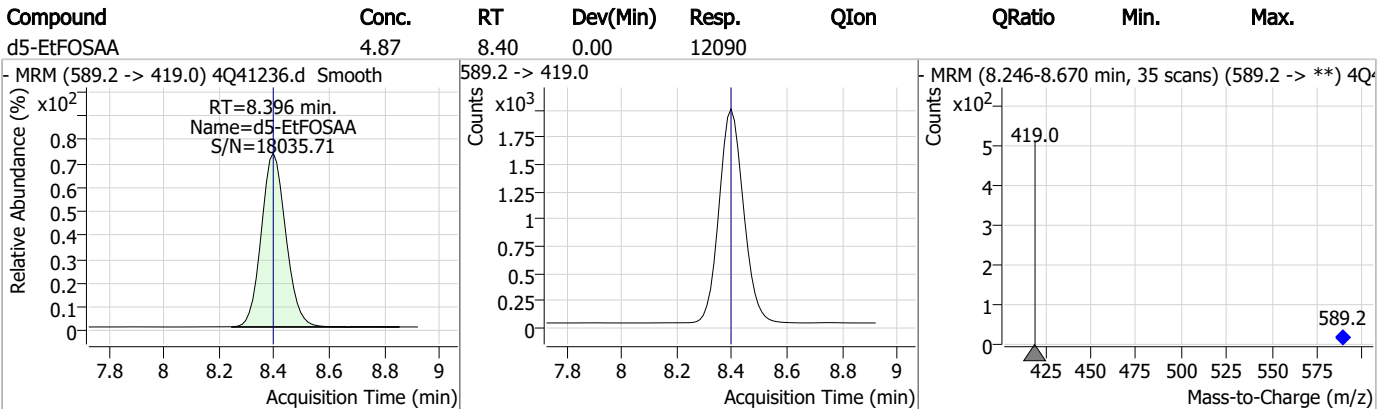
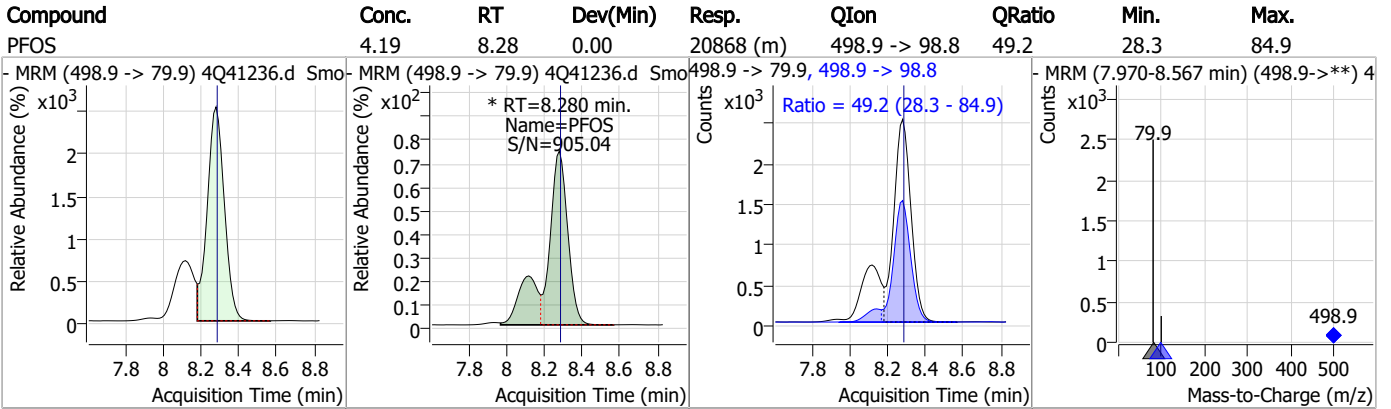
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Perfluorinated Compounds by LC/MS/MS



7.6.6
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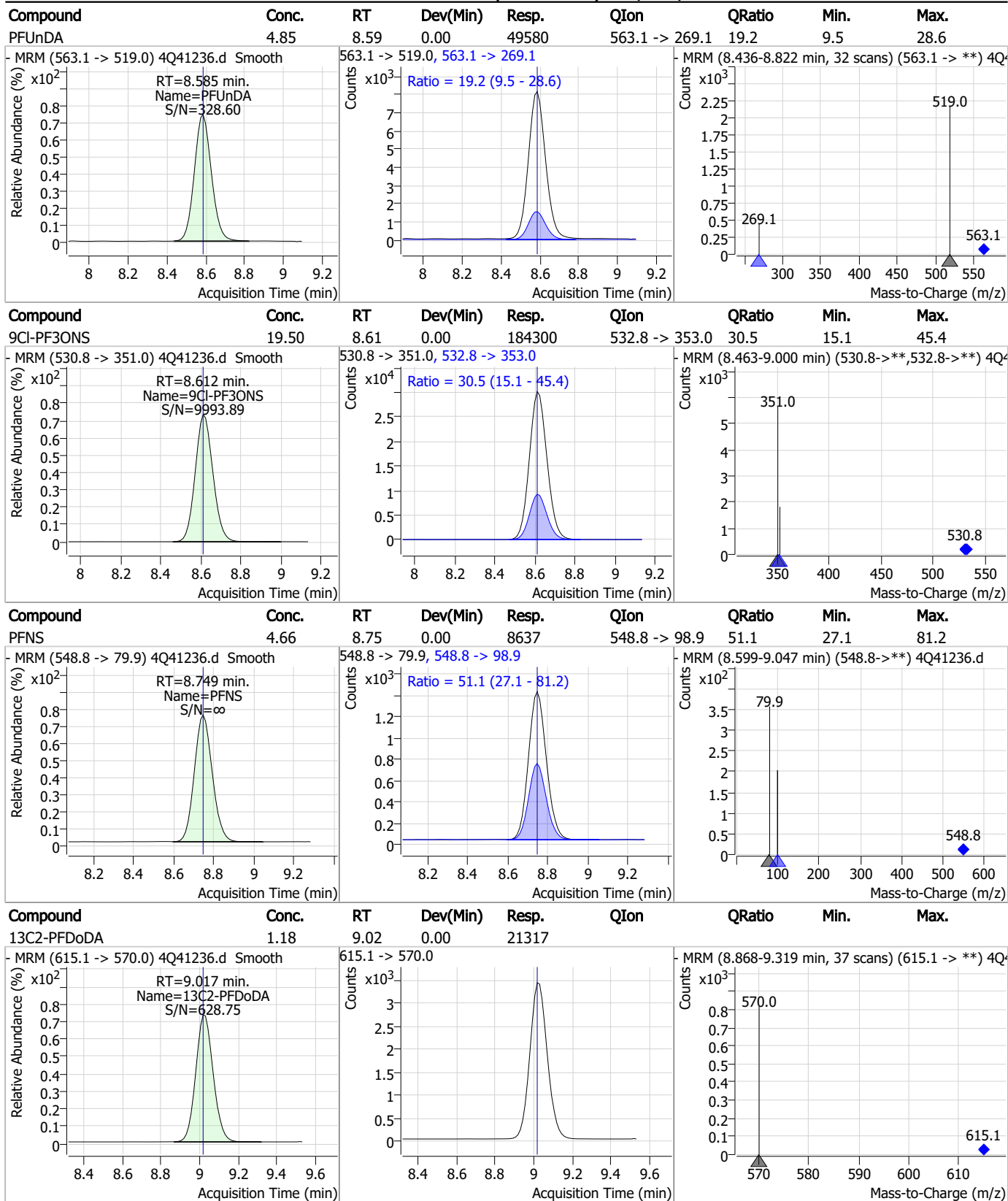
Perfluorinated Compounds by LC/MS/MS



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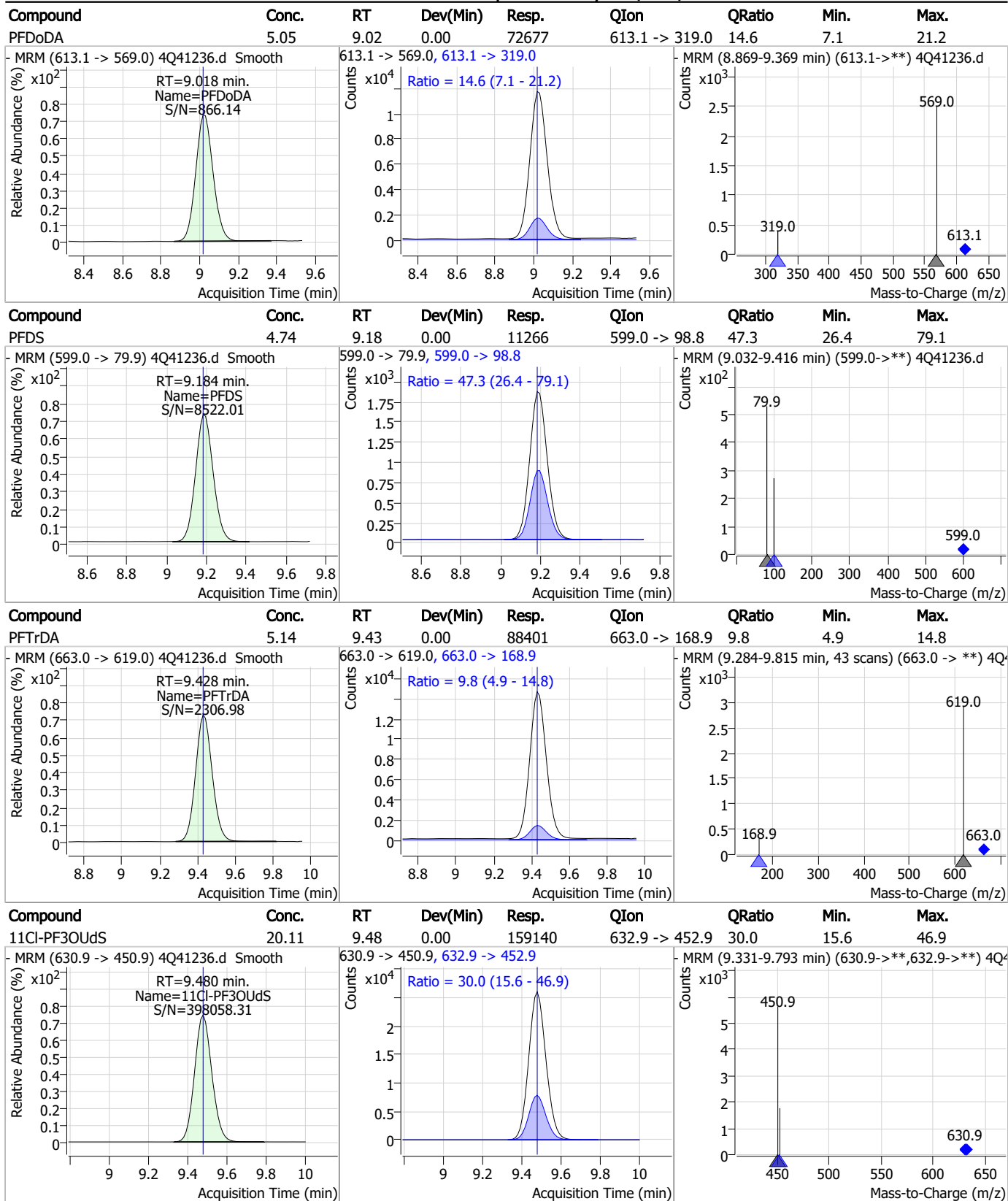
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Perfluorinated Compounds by LC/MS/MS



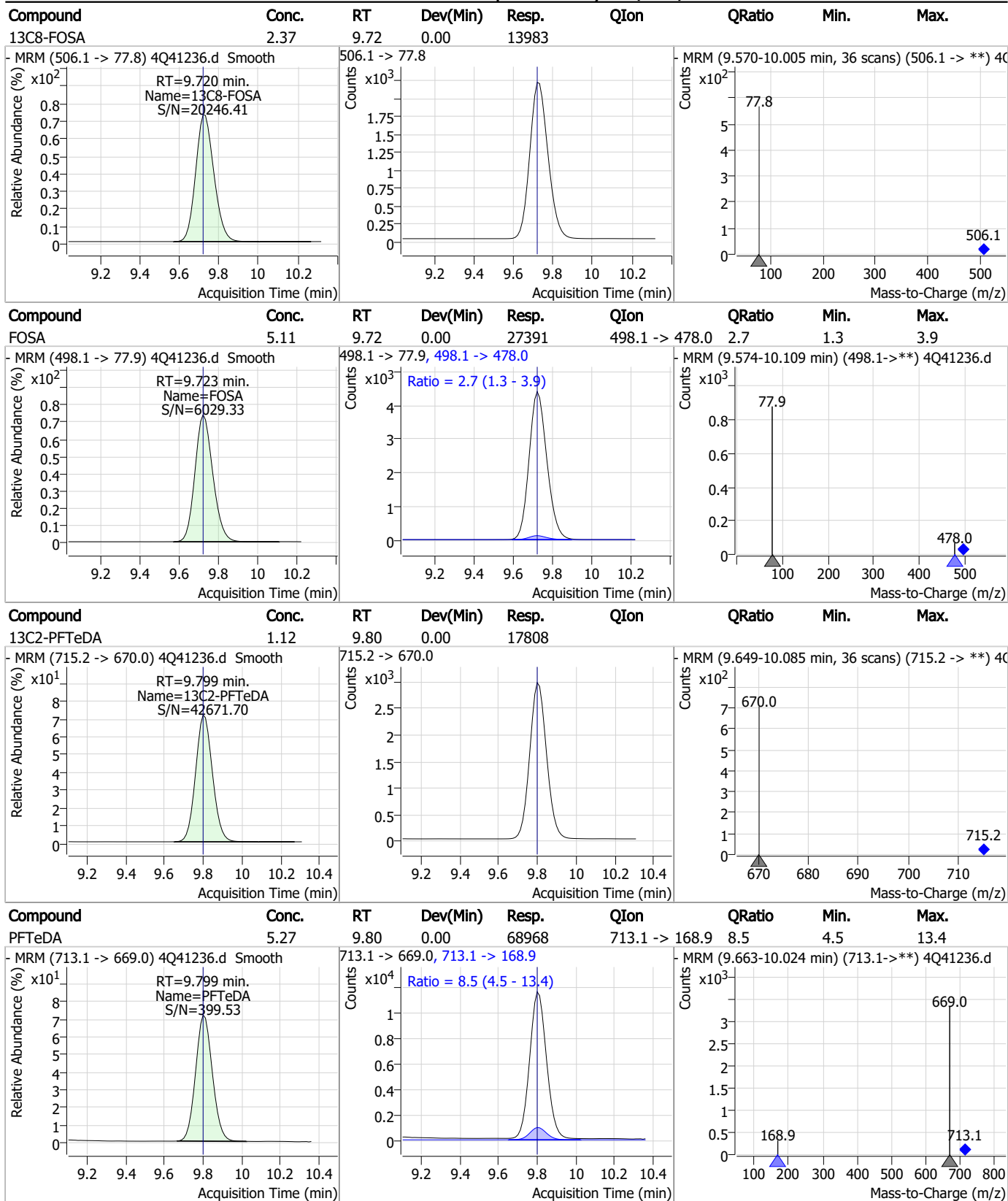
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Perfluorinated Compounds by LC/MS/MS



7.6.6
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Perfluorinated Compounds by LC/MS/MS

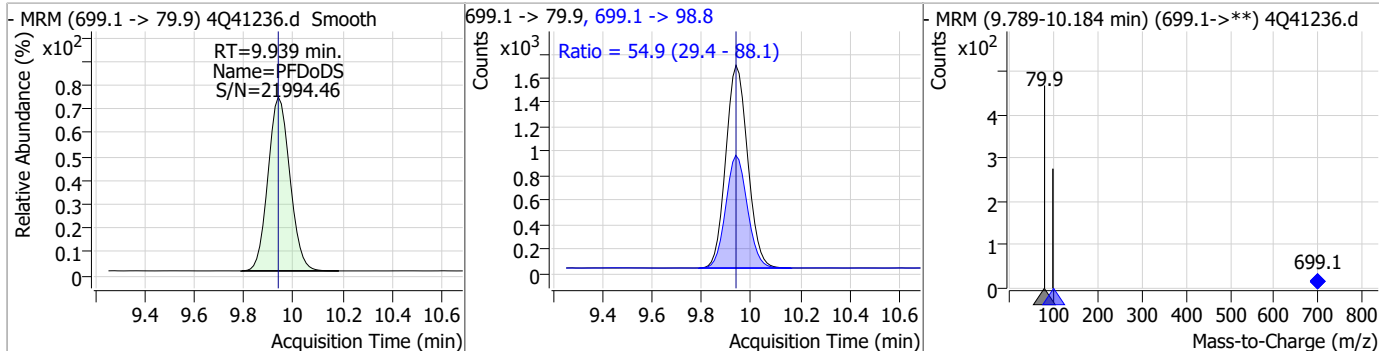


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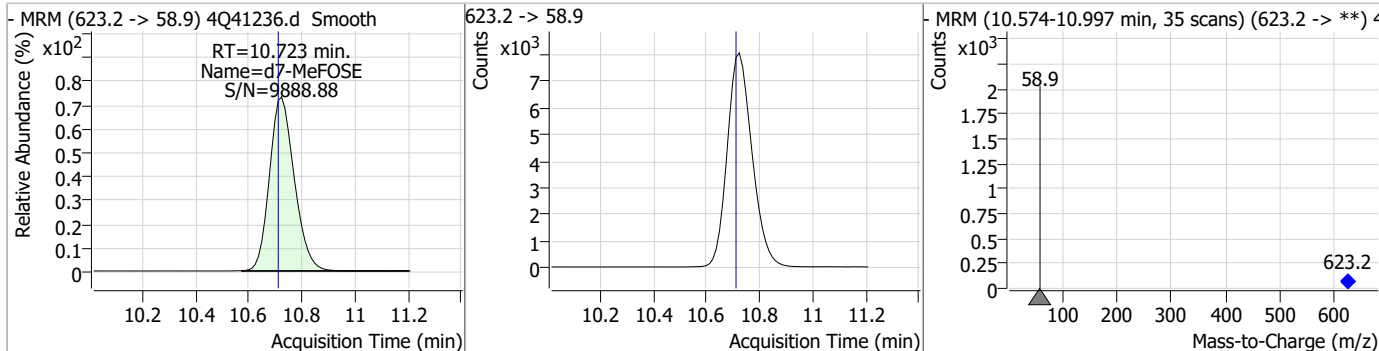
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Perfluorinated Compounds by LC/MS/MS

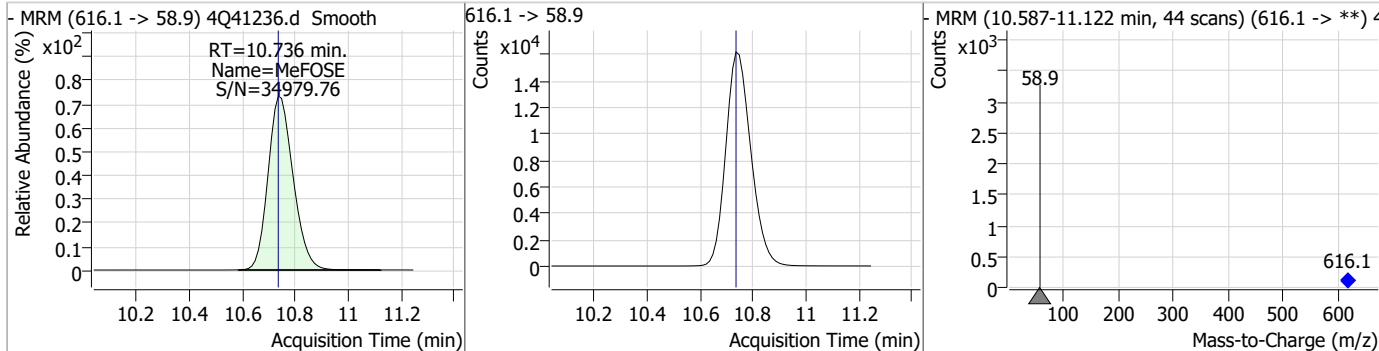
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	4.87	9.94	0.00	10174	699.1 -> 98.8	54.9	29.4	88.1



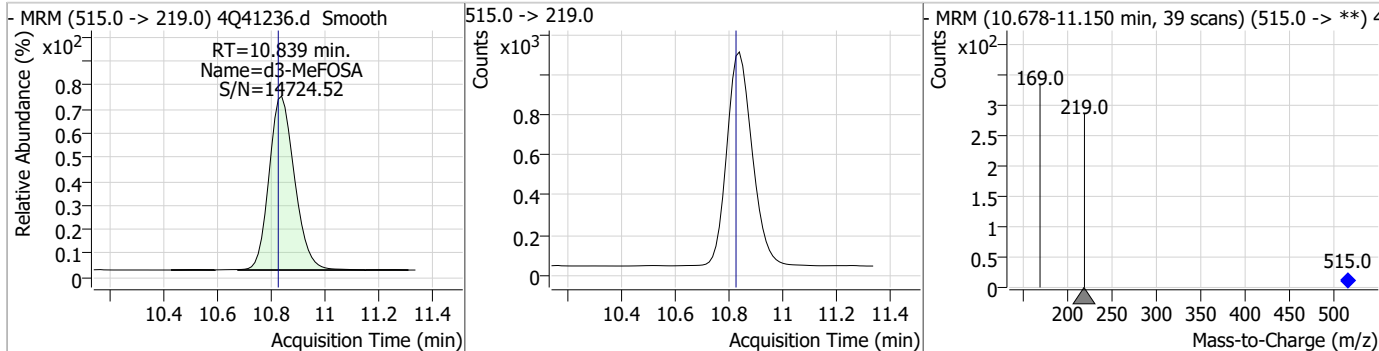
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.94	10.72	0.01	51896	623.2 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	51.27	10.74	0.00	106115	616.1 -> 58.9			

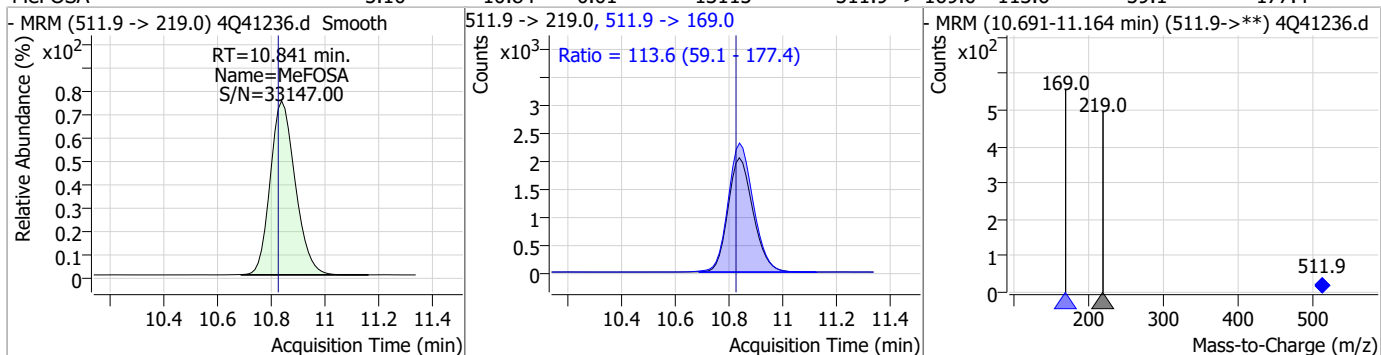


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.42	10.84	0.01	7044	515.0 -> 219.0			

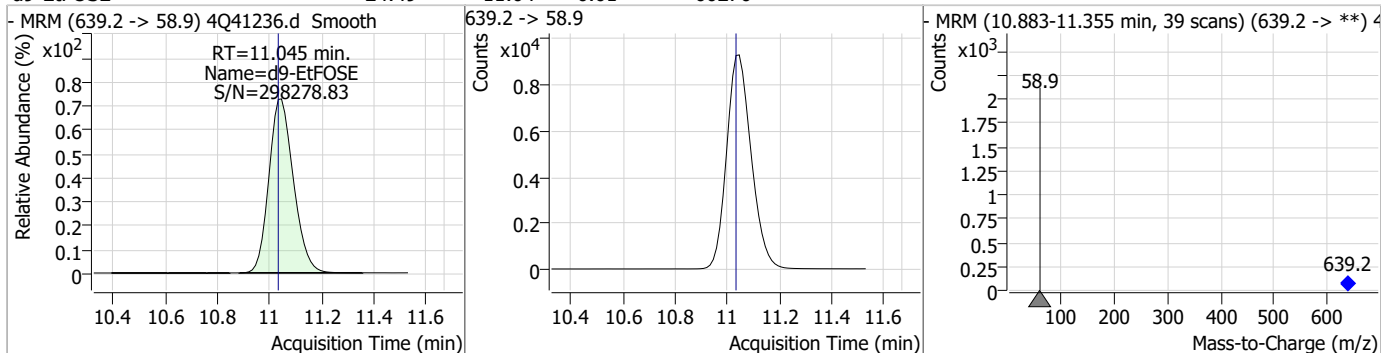


Perfluorinated Compounds by LC/MS/MS

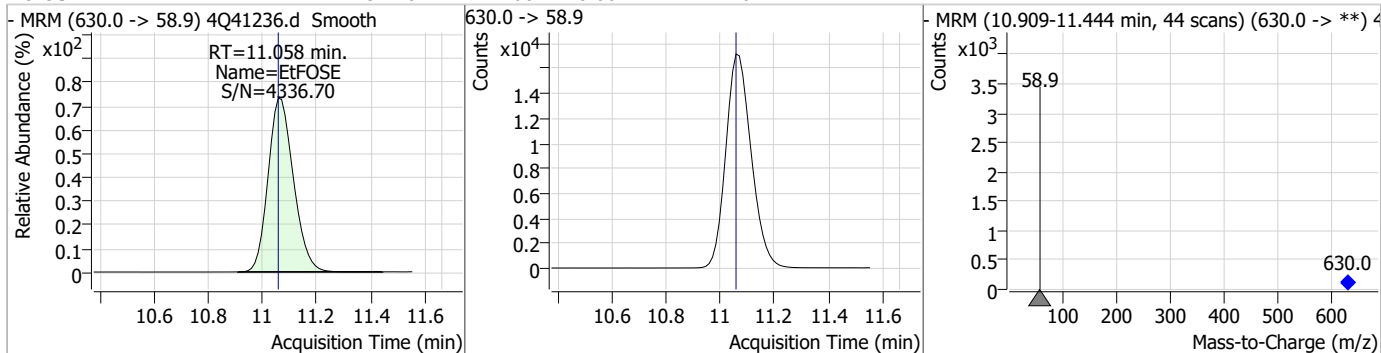
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	5.10	10.84	0.01	13115	511.9 -> 169.0	113.6	59.1	177.4



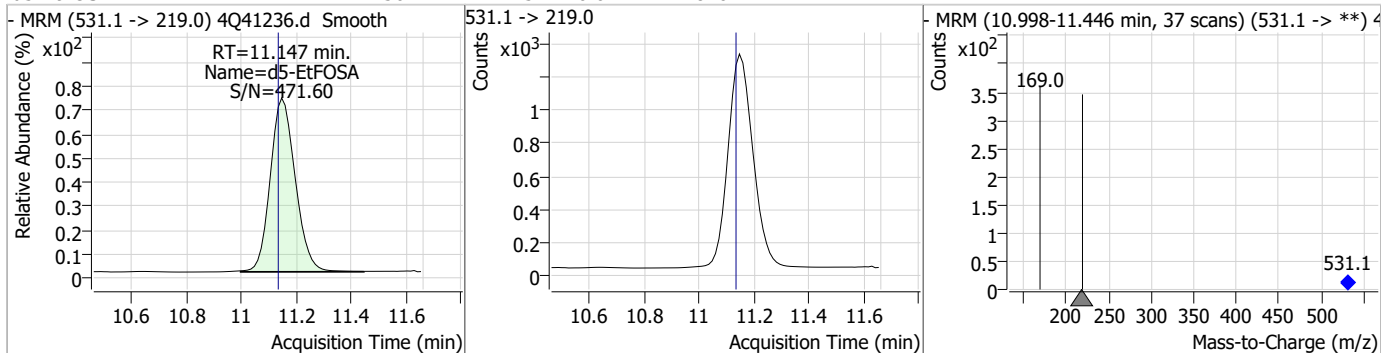
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.49	11.04	0.01	60270				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	51.46	11.06	0.00	111461				

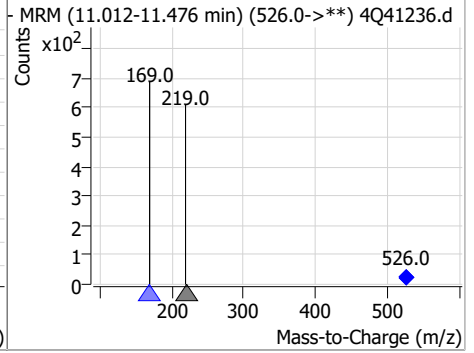
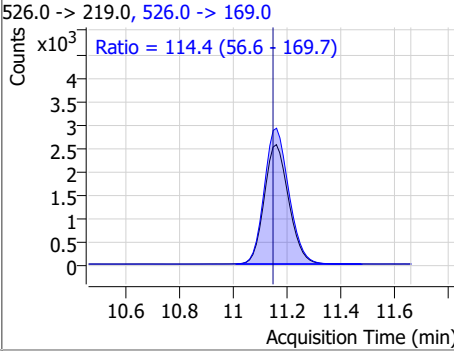
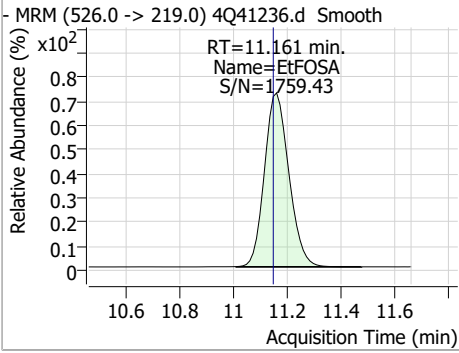


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.50	11.15	0.01	8161				



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.76	11.16	0.01	15968	526.0 -> 169.0	114.4	56.6	169.7



7.6.6

7

Manual Integration Approval Summary

Sample Number: S4Q589-IC589 Method: EPA DRAFT 1633
Lab FileID: 4Q41236.D Analyst approved: 02/27/23 14:05 Anna Ludwig
Injection Time: 02/24/23 16:58 Supervisor approved: 02/27/23 16:52 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.21	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.28	Split peak
EtFOSAA	2991-50-6		8.40	Split peak

7.6.6.1

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Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
02/27/23 16:52

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41237.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/24/2023 5:15:10 PM
 Sample Name : ic589-6
 Vial : P1-A7
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q589.batch.bin
 Sample Information : op95462,S4Q589,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.214	216.8 -> 171.9	119690	10.00 µg/L	0.116
M5-PFPeA	4.524	268.3 -> 223.0	70595	5.00 µg/L	0.037
M5-PFHxA	5.584	318.0 -> 273.0	55405	2.50 µg/L	0.025
M4-PFHpA	6.456	367.1 -> 322.0	26889	2.50 µg/L	0.012
M8-PFOA	7.101	421.1 -> 376.0	32997	2.50 µg/L	0.012
M9-PFNA	7.634	472.1 -> 427.0	17518	1.25 µg/L	0.000
M6-PFDA	8.128	519.1 -> 474.1	16733	1.25 µg/L	0.012
M7-PFUnDA	8.573	570.0 -> 525.1	16887	1.25 µg/L	-0.012
M2-PFDoDA	9.017	615.1 -> 570.0	20129	1.25 µg/L	0.000
M2-PFTeDA	9.799	715.2 -> 670.0	16868	1.25 µg/L	0.000
M8-FOSA	9.731	506.1 -> 77.8	13837	2.50 µg/L	0.012
M3-PFBS	5.526	302.1 -> 79.9	12774	2.50 µg/L	0.037
M3-PFHxS	7.216	402.1 -> 79.9	7288	2.50 µg/L	0.012
M8-PFOS	8.279	507.1 -> 79.9	10314	2.50 µg/L	0.000
M2-4:2FTS	5.284	329.1 -> 80.9	1412	5.00 µg/L	0.025
M2-6:2FTS	6.873	429.1 -> 80.9	1711	5.00 µg/L	0.012
M2-8:2FTS	7.916	529.1 -> 80.9	3255	5.00 µg/L	0.000
M3-MeFOSAA	8.185	573.2 -> 419.0	14196	5.00 µg/L	0.000
M3-HFPO-DA	5.914	286.9 -> 168.9	30535	10.00 µg/L	0.025
M5-EtFOSAA	8.396	589.2 -> 419.0	11583	5.00 µg/L	0.000
M7-MeFOSE	10.723	623.2 -> 58.9	48862	25.00 µg/L	0.012
M9-EtFOSE	11.045	639.2 -> 58.9	57790	25.00 µg/L	0.012
M5-EtFOSA	11.147	531.1 -> 219.0	7747	2.50 µg/L	0.012
M3-MeFOSA	10.839	515.0 -> 219.0	6937	2.50 µg/L	0.012
13C4-PFOS	8.280	502.8 -> 79.9	10019	2.50 µg/L	0.000
13C3-PFBA	3.218	216.0 -> 172.0	67651	5.00 µg/L	0.115
18O2-PFHxS	7.215	403.0 -> 83.9	5196	2.50 µg/L	0.012
13C4-PFOA	7.101	417.1 -> 372.0	39108	2.50 µg/L	0.012
13C2-PFDA	8.128	515.1 -> 470.1	14774	1.25 µg/L	0.000
13C5-PFNA	7.634	468.0 -> 423.0	20361	1.25 µg/L	0.000
13C2-PFHxA	5.585	315.1 -> 270.0	51261	2.50 µg/L	0.025
System Monitoring Compounds					
13C2-4:2FTS	5.284	329.1 -> 80.9	1412	4.67 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 93.3%		
13C2-6:2FTS	6.873	429.1 -> 80.9	1711	4.21 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 84.3%		
13C2-8:2FTS	7.916	529.1 -> 80.9	3255	4.95 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C2-PFDoDA	9.017	615.1 -> 570.0	20129	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C2-PFTeDA	9.799	715.2 -> 670.0	16868	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.9%		
13C3-PFBS	5.526	302.1 -> 79.9	12774	2.56 µg/L	0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C3-PFHxS	7.216	402.1 -> 79.9	7288	2.48 µg/L	0.012

7.67
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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 = 99.4%	
13C4-PFBA	3.214	216.8 -> 171.9	119690	10.27 µg/L	0.116
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C4-PFHpA	6.456	367.1 -> 322.0	26889	2.35 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.9%	
13C5-PFHxA	5.584	318.0 -> 273.0	55405	2.48 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C5-PFPeA	4.524	268.3 -> 223.0	70595	4.90 µg/L	0.037
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C6-PFDA	8.128	519.1 -> 474.1	16733	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C7-PFUnDA	8.573	570.0 -> 525.1	16887	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C8-FOSA	9.731	506.1 -> 77.8	13837	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C8-PFOA	7.101	421.1 -> 376.0	32997	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C8-PFOS	8.279	507.1 -> 79.9	10314	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C9-PFNA	7.634	472.1 -> 427.0	17518	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.6%	
d3-MeFOSAA	8.185	573.2 -> 419.0	14196	4.99 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	30535	9.66 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.6%	
d3-MeFOSA	10.839	515.0 -> 219.0	6937	2.54 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
d5-EtFOSAA	8.396	589.2 -> 419.0	11583	4.97 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
d7-MeFOSE	10.723	623.2 -> 58.9	48862	24.98 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
d9-EtFOSE	11.045	639.2 -> 58.9	57790	24.98 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
d5-EtFOSA	11.147	531.1 -> 219.0	7747	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
Target Compounds					QValue
4:2FTS	5.285	327.1 -> 307.0	94713	50.37 µg/L	99
		327.1 -> 80.9	42220		
6:2FTS	6.873	427.1 -> 407.0	68732	53.29 µg/L	99
		427.1 -> 80.9	30304		
8:2FTS	7.916	527.1 -> 507.0	77652	51.25 µg/L	98
		527.1 -> 80.8	32497		
EtFOSAA	8.397	584.2 -> 419.1	23599	13.01 µg/L	m 83
		584.2 -> 526.0	11373		
FOSA	9.723	498.1 -> 77.9	71849	13.55 µg/L	100
		498.1 -> 478.0	1832		
MeFOSAA	8.199	570.1 -> 419.0	28247	14.29 µg/L	m 100
		570.1 -> 483.0	5760		
PFBA	3.221	212.8 -> 168.9	150930	53.34 µg/L	100
PFBS	5.527	298.7 -> 79.9	59744	11.73 µg/L	98
		298.7 -> 98.8	21824		
PFDA	8.129	512.9 -> 469.0	142672	13.83 µg/L	99
		512.9 -> 219.0	27838		
PFDoDA	9.018	613.1 -> 569.0	188228	13.86 µg/L	100
		613.1 -> 319.0	26767		
PFDS	9.184	599.0 -> 79.9	28793	12.60 µg/L	92

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	13631			
PFHpA	6.456	363.1 -> 319.0	194385	13.67	µg/L	99
		363.1 -> 169.0	33118			
PFHpS	7.774	449.0 -> 79.9	37116	12.25	µg/L	100
		449.0 -> 98.9	19027			
PFHxA	5.587	313.0 -> 269.0	247581	12.72	µg/L	100
		313.0 -> 118.9	7606			
PFHxS	7.217	398.7 -> 79.9	32719	12.07	µg/L	m 100
		398.7 -> 98.9	16467			
PFNA	7.635	463.0 -> 419.0	138625	13.93	µg/L	99
		463.0 -> 219.0	34152			
PFNS	8.749	548.8 -> 79.9	22491	12.61	µg/L	95
		548.8 -> 98.9	11321			
PFOA	7.102	413.0 -> 369.0	210791	13.59	µg/L	99
		413.0 -> 169.0	42836			
PFOS	8.280	498.9 -> 79.9	52966	11.04	µg/L	m 87
		498.9 -> 98.8	24937			
PFPeA	4.527	263.0 -> 219.0	391347	27.23	µg/L	100
PFPeS	6.509	349.1 -> 79.9	29510	12.35	µg/L	100
		349.1 -> 98.9	13027			
PFTeDA	9.799	713.1 -> 669.0	175262	14.14	µg/L	98
		713.1 -> 168.9	14587			
PFTrDA	9.428	663.0 -> 619.0	226674	13.96	µg/L	100
		663.0 -> 168.9	22266			
PFUnDA	8.573	563.1 -> 519.0	126150	13.55	µg/L	99
		563.1 -> 269.1	23717			
11Cl-PF3OUdS	9.480	630.9 -> 450.9	390306	52.06	µg/L	99
		632.9 -> 452.9	120291			
9Cl-PF3ONS	8.612	530.8 -> 351.0	475671	53.12	µg/L	99
		532.8 -> 353.0	146659			
ADONA	6.705	376.9 -> 250.9	911362	51.95	µg/L	99
		376.9 -> 84.8	253384			
HFPO-DA	5.915	284.9 -> 168.9	138361	55.46	µg/L	98
		284.9 -> 184.9	15838			
3:3FTCA	4.217	241.0 -> 177.0	50283	67.92	µg/L	100
		241.0 -> 117.0	4585			
5:3FTCA	6.382	341.0 -> 237.1	955272	339.37	µg/L	100
		341.0 -> 217.0	685229			
7:3FTCA	7.775	441.0 -> 316.9	352721	335.45	µg/L	99
		441.0 -> 336.9	793309			
EtFOSA	11.161	526.0 -> 219.0	42764	13.43	µg/L	99
		526.0 -> 169.0	47755			
EtFOSE	11.071	630.0 -> 58.9	286932	138.16	µg/L	100
MeFOSA	10.841	511.9 -> 219.0	33876	13.37	µg/L	96
		511.9 -> 169.0	38695			
MeFOSE	10.749	616.1 -> 58.9	265149	136.06	µg/L	100
PFDoDS	9.939	699.1 -> 79.9	25137	12.50	µg/L	92
		699.1 -> 98.8	13244			
NFDHA	5.478	295.0 -> 201.0	17903	25.35	µg/L	100
		295.0 -> 84.9	4850			
PFMBA	4.893	279.0 -> 85.1	227236	27.44	µg/L	100
PFMPA	3.752	229.0 -> 84.9	189984	26.51	µg/L	100
PFEESA	6.008	314.8 -> 134.9	334876	24.32	µg/L	99
		314.8 -> 82.9	11604			

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

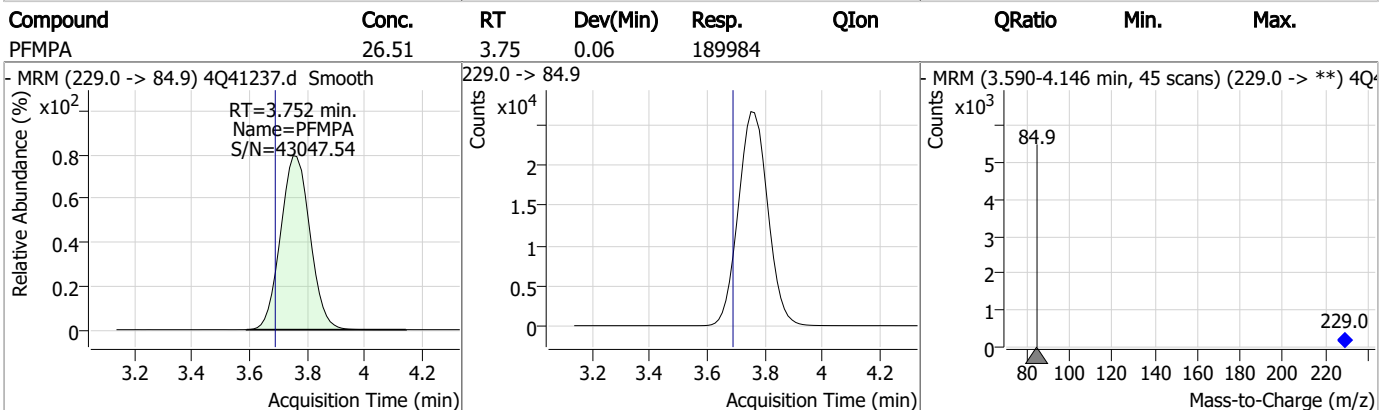
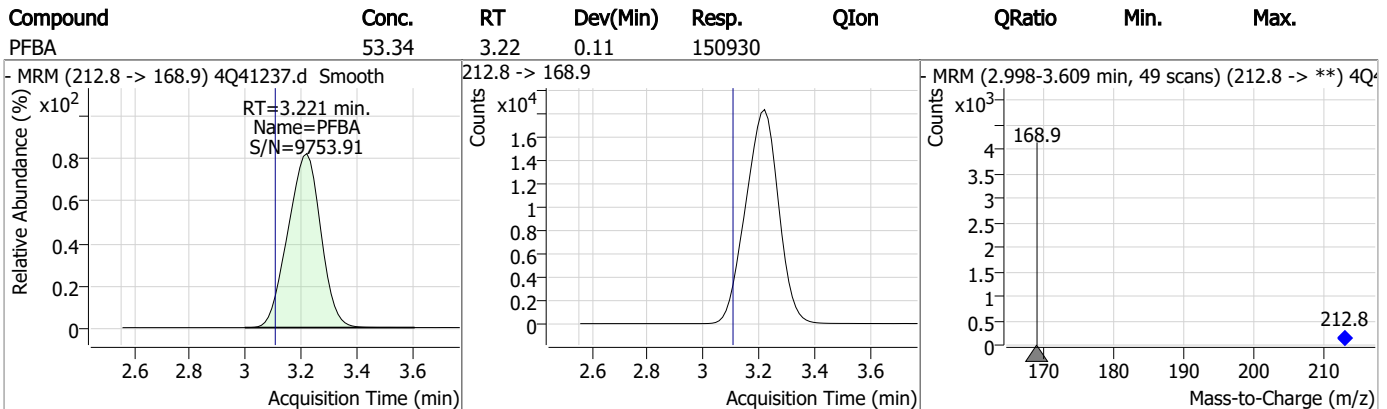
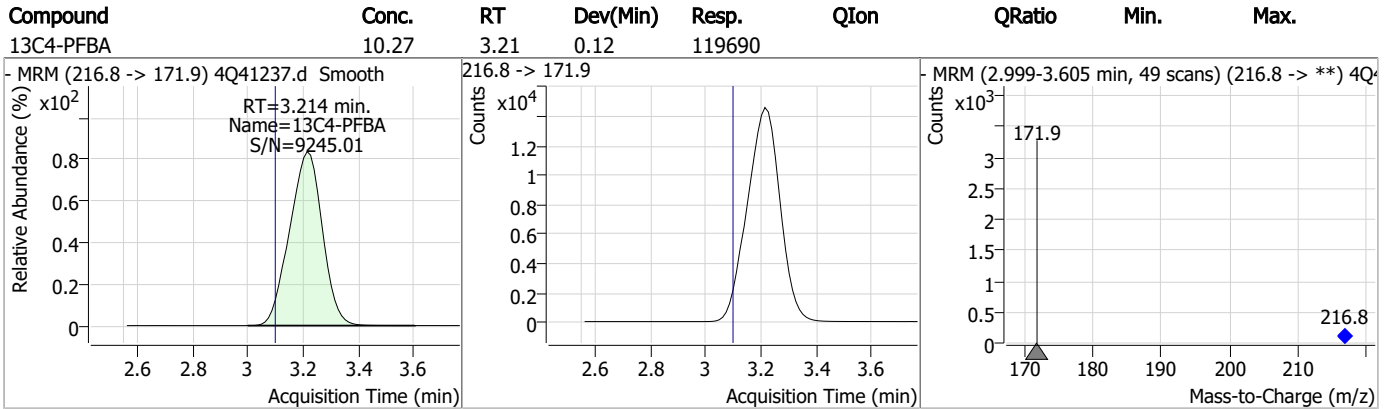
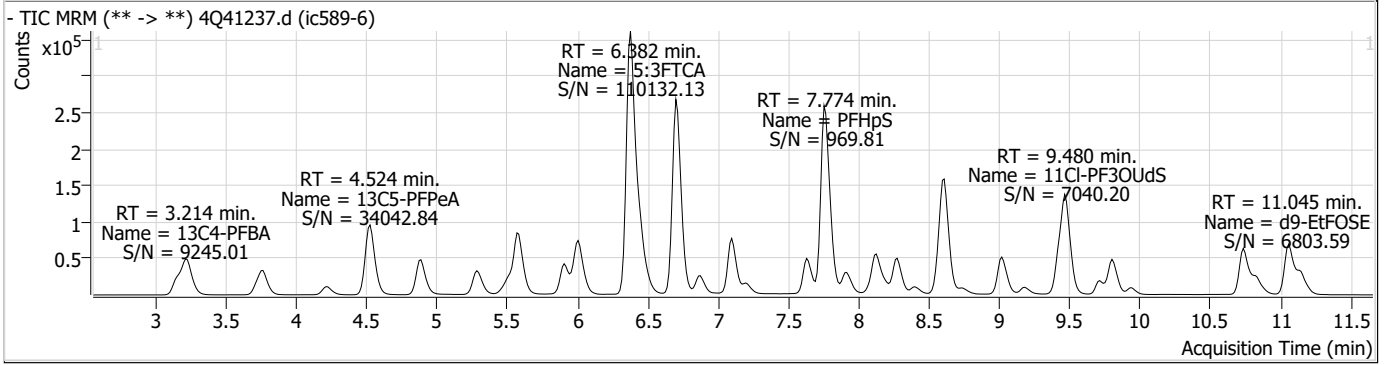
Perfluorinated Compounds by LC/MS/MS

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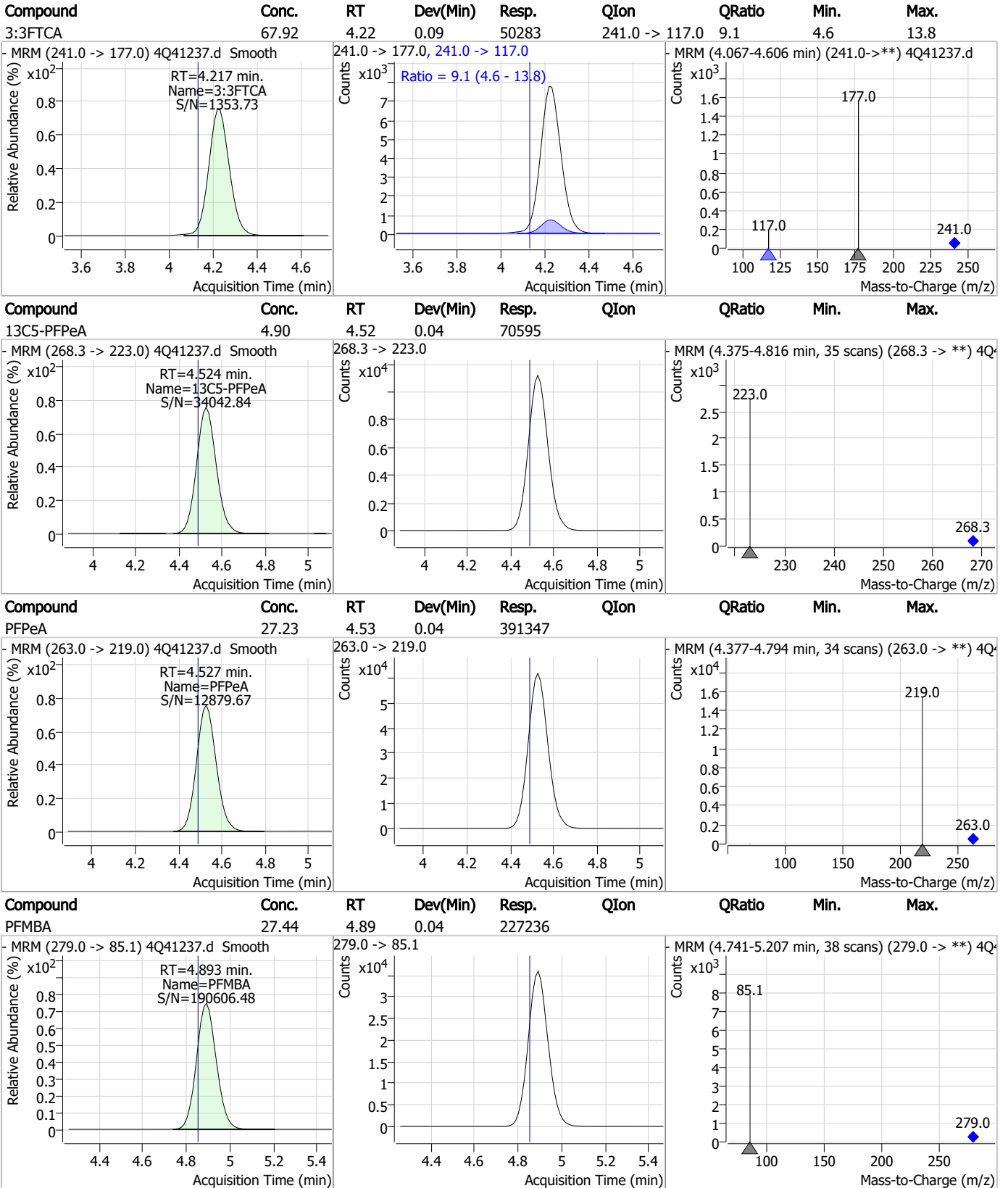
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Perfluorinated Compounds by LC/MS/MS



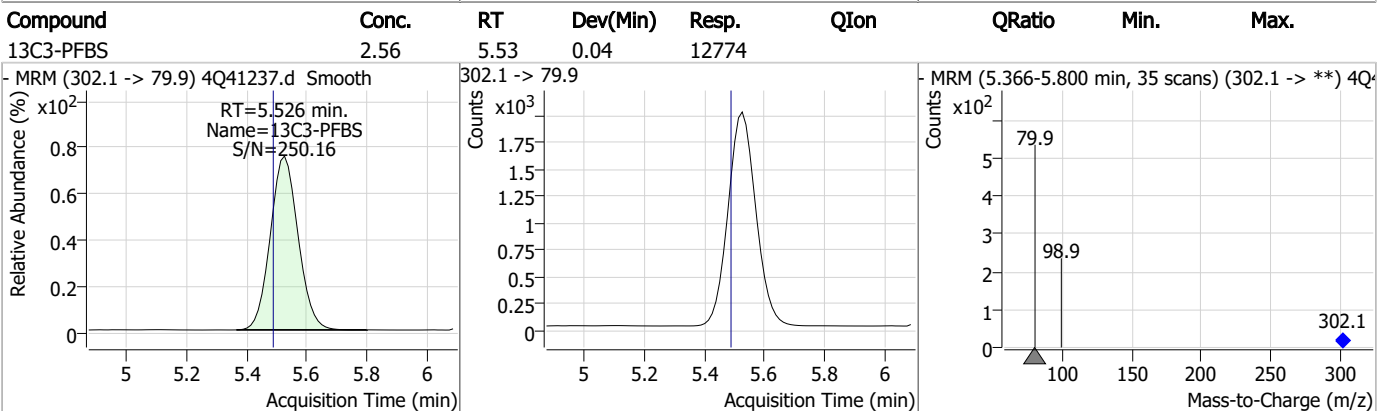
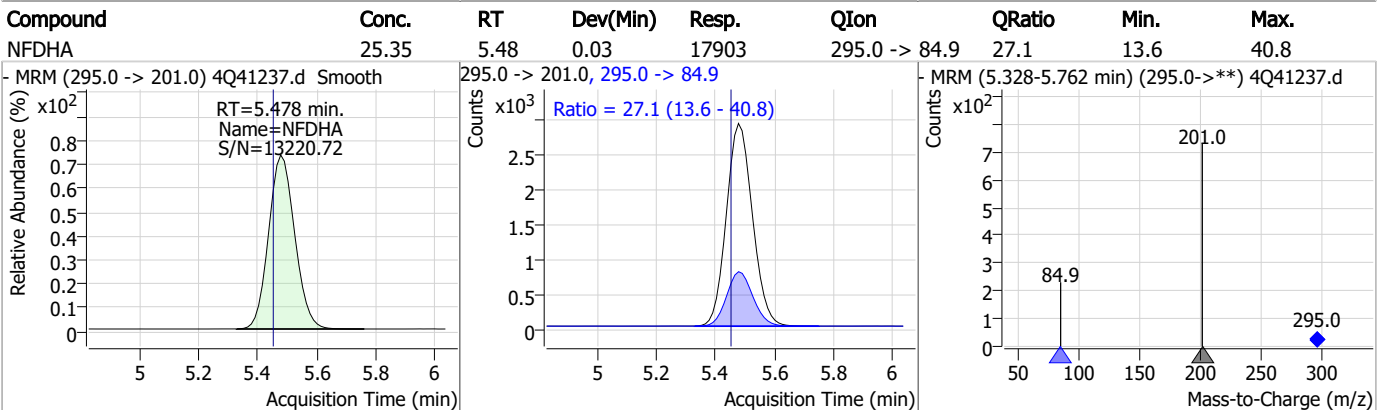
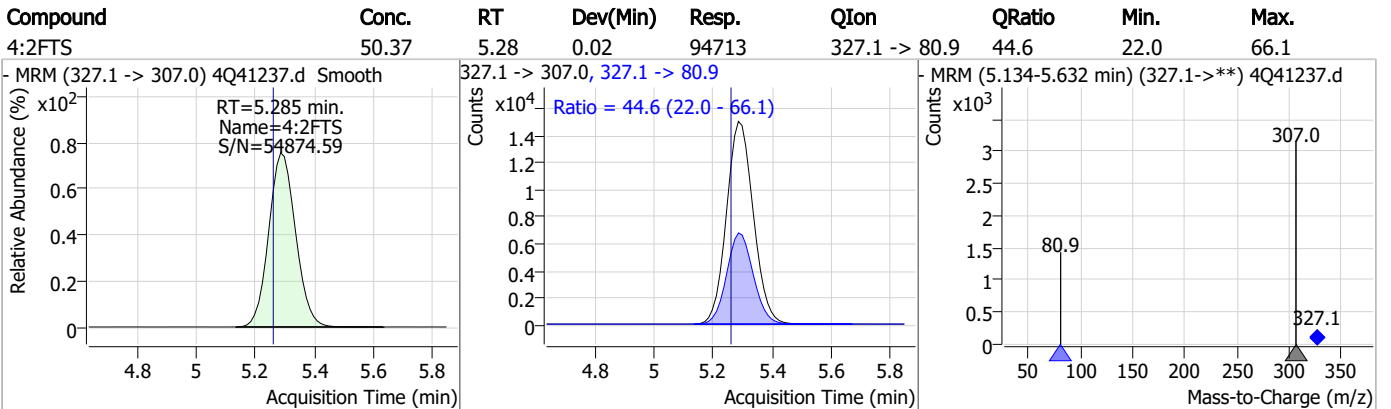
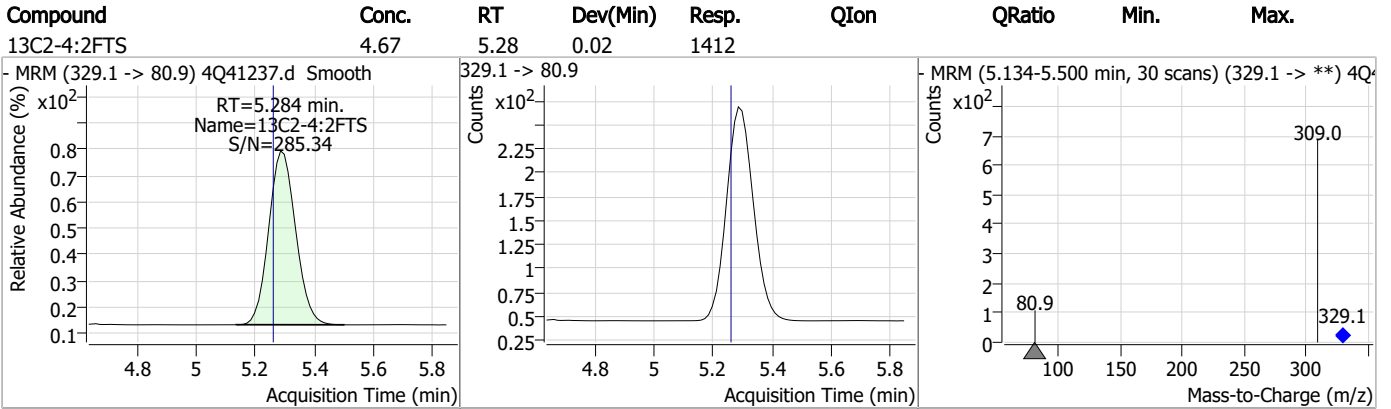
Perfluorinated Compounds by LC/MS/MS



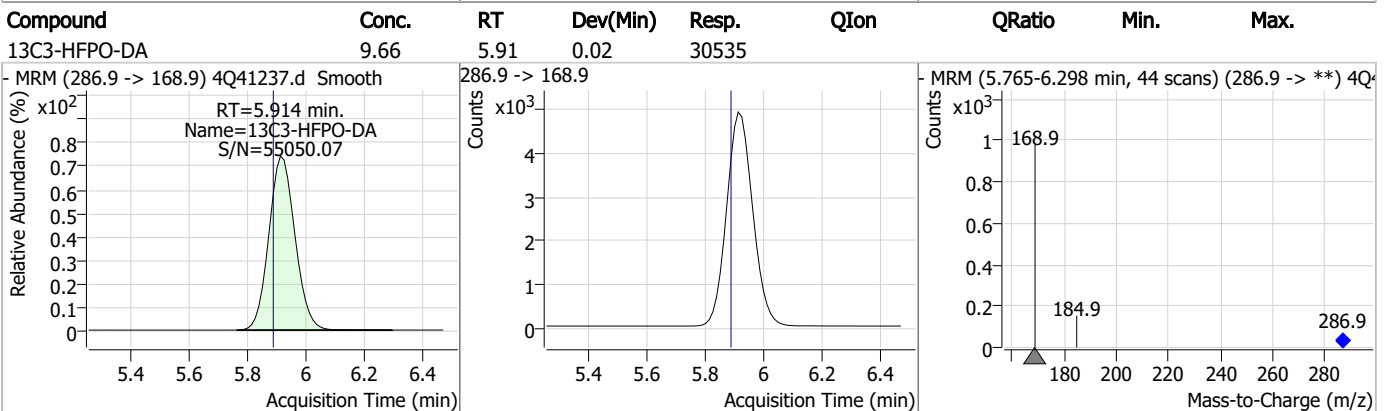
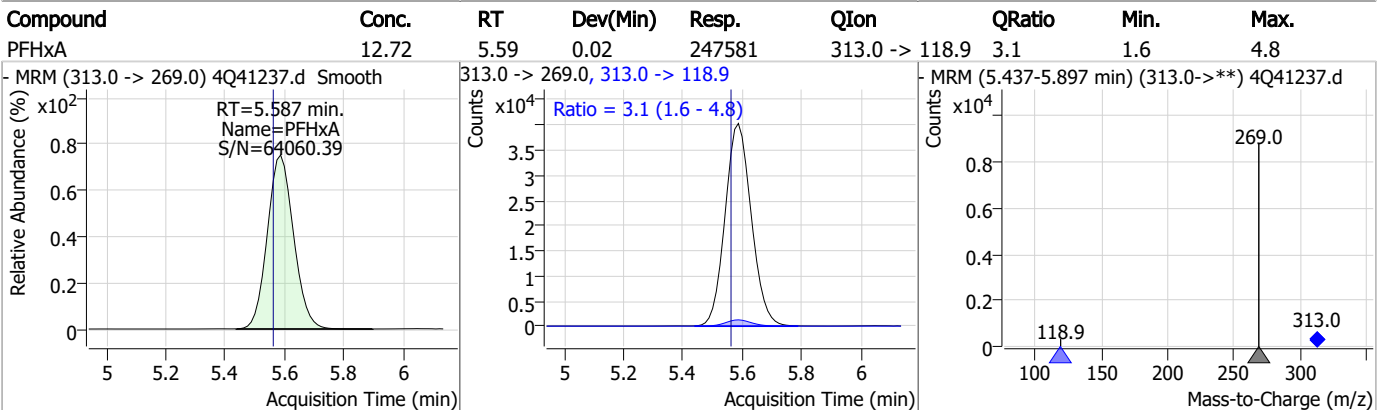
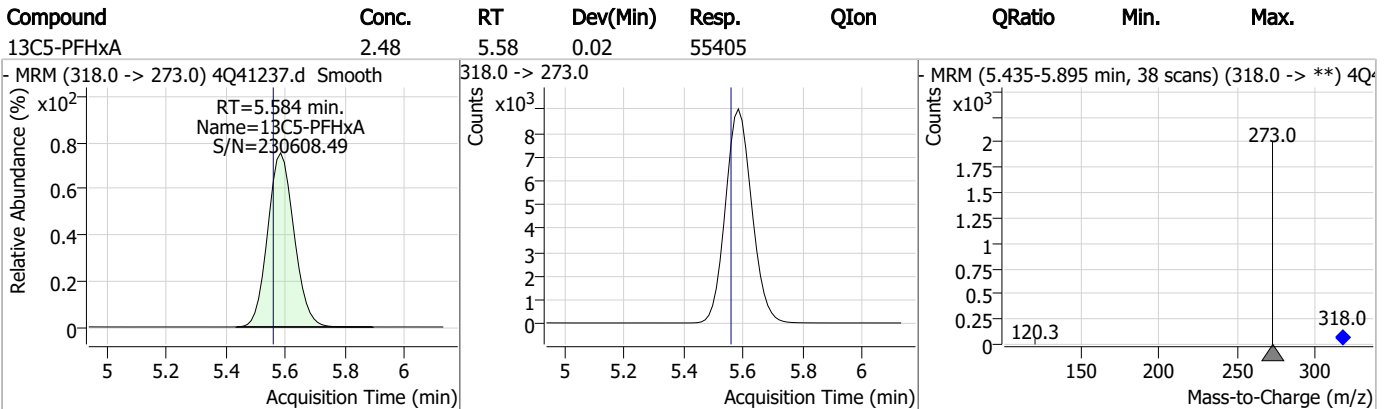
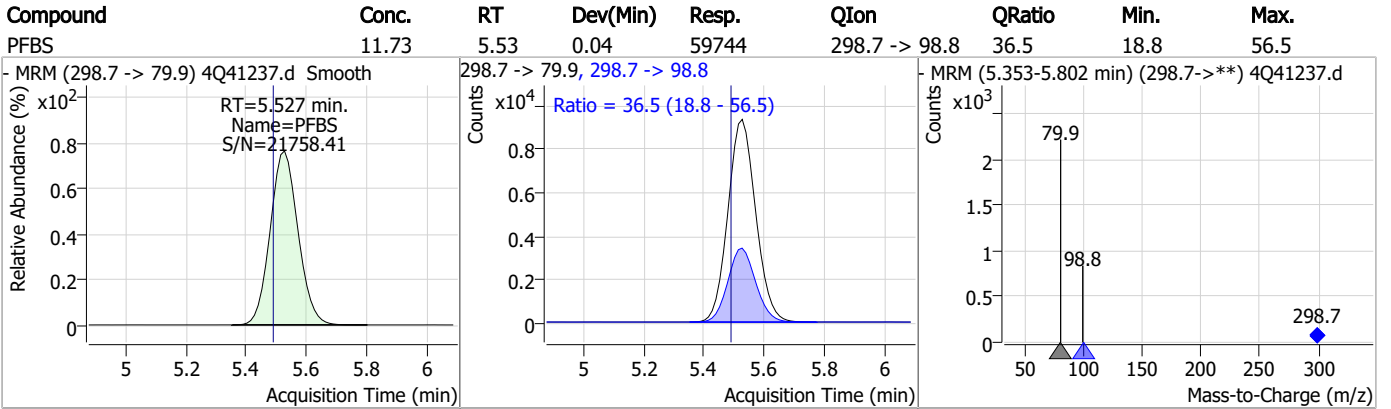
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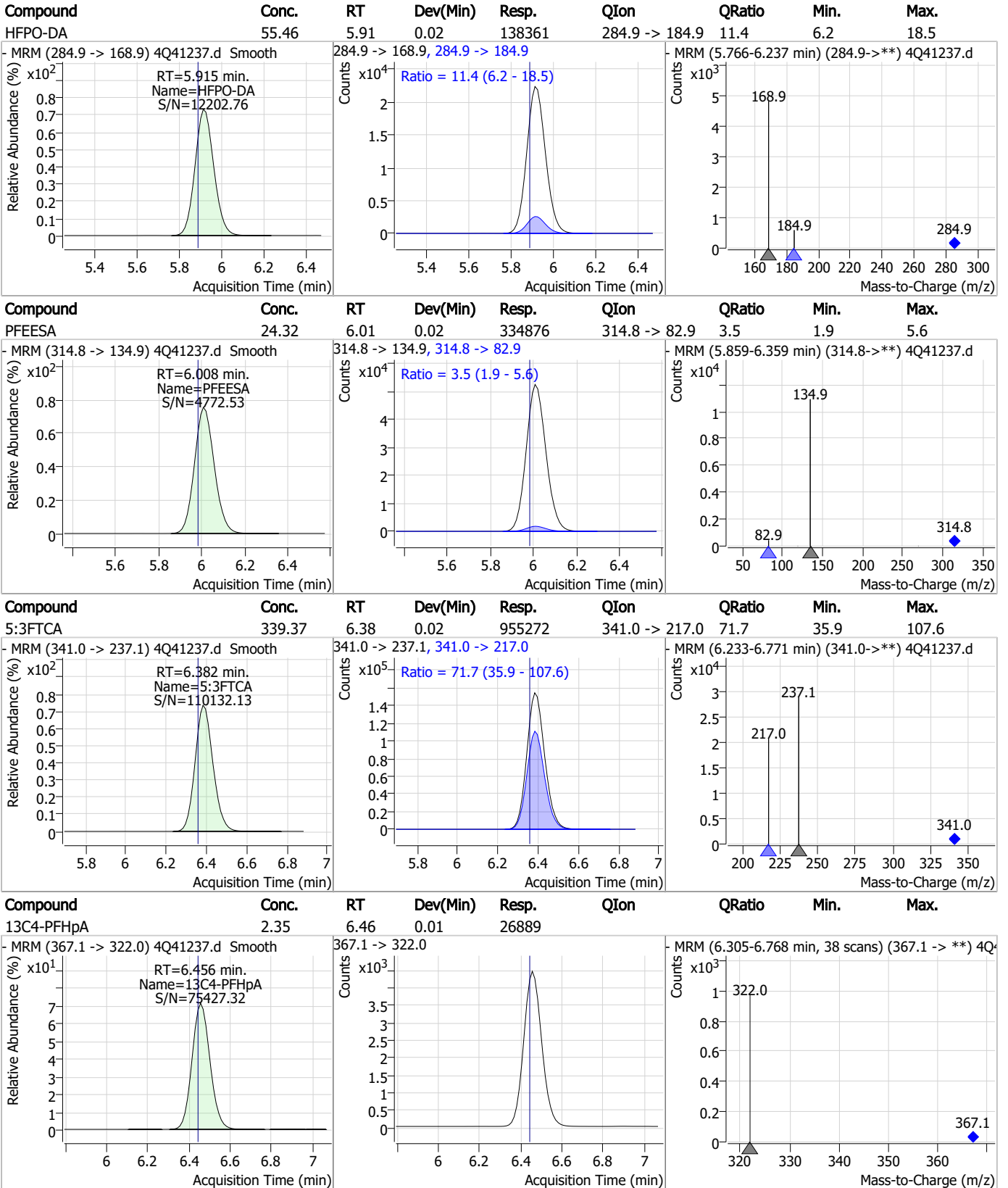
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



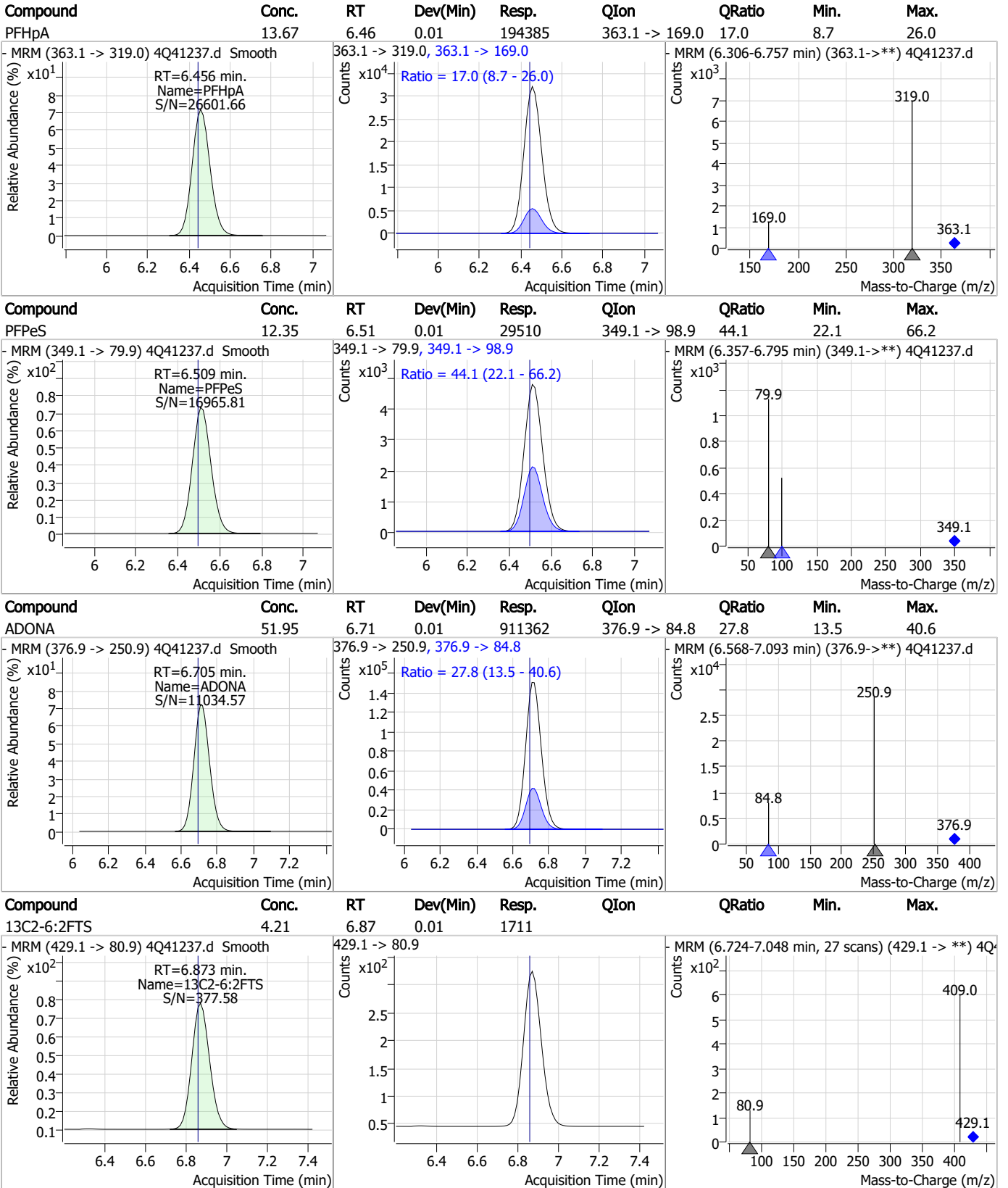
Perfluorinated Compounds by LC/MS/MS



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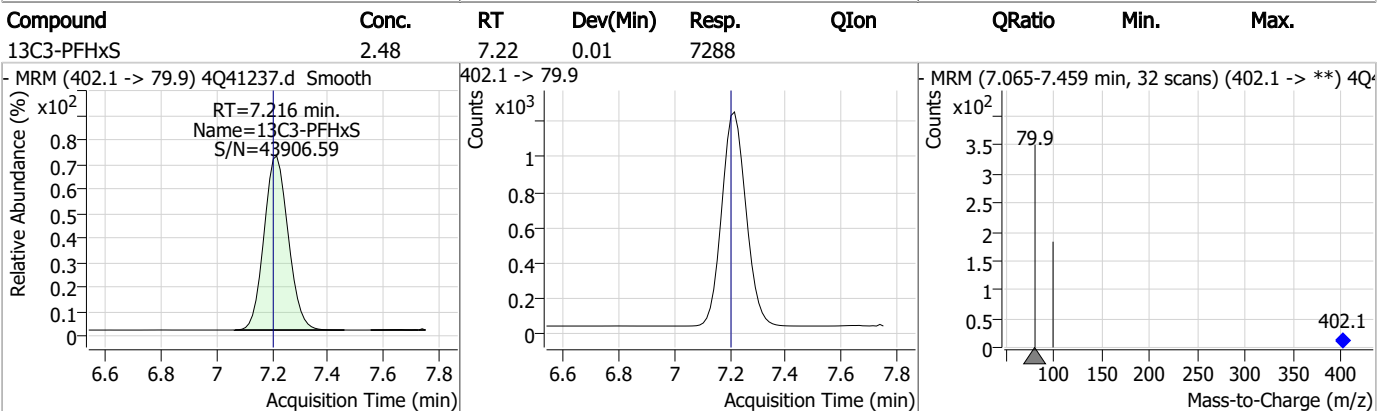
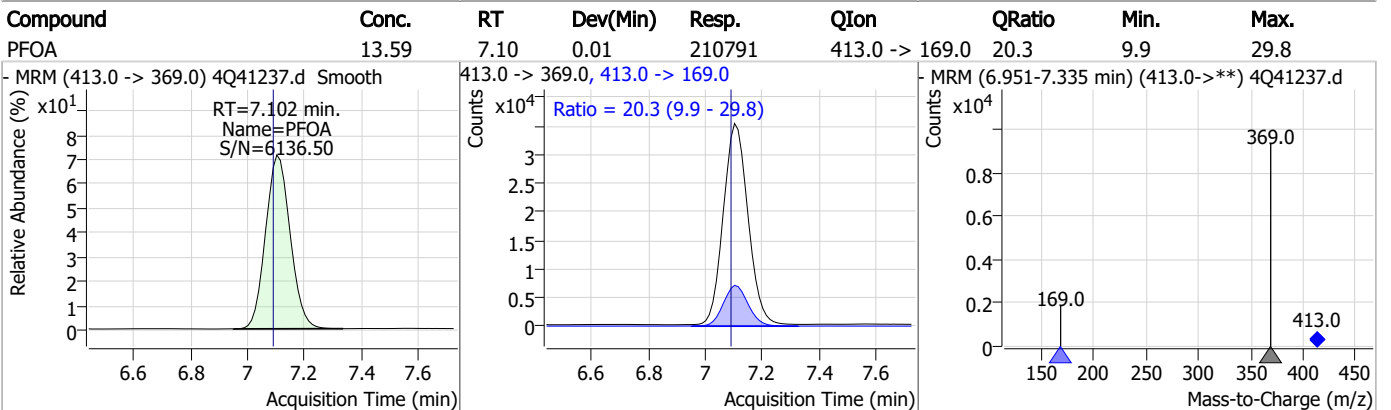
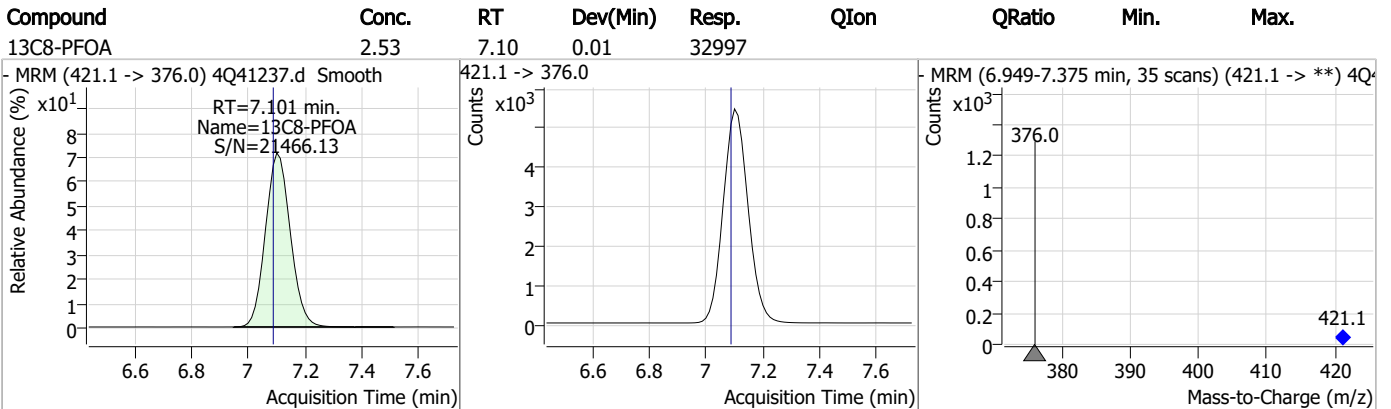
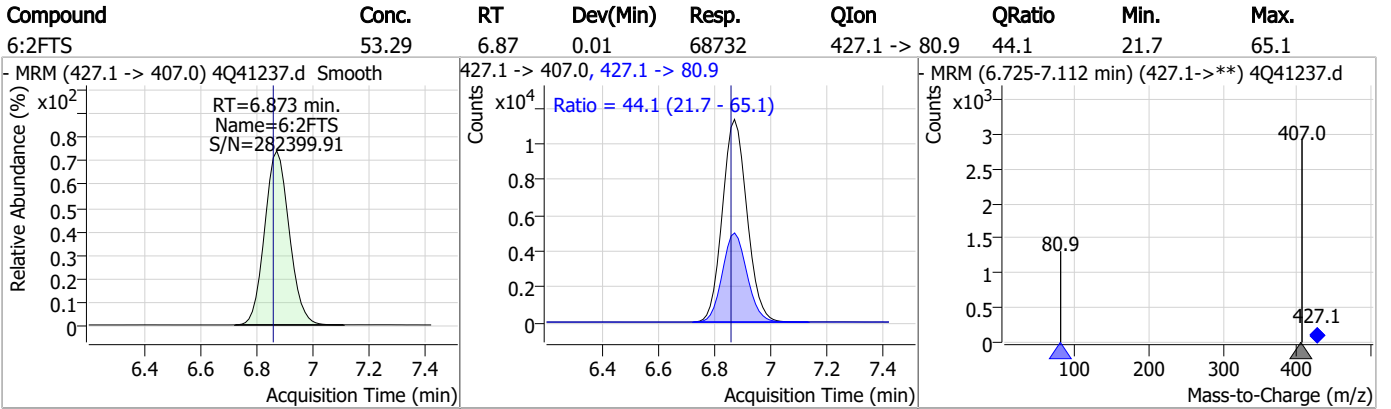
Perfluorinated Compounds by LC/MS/MS



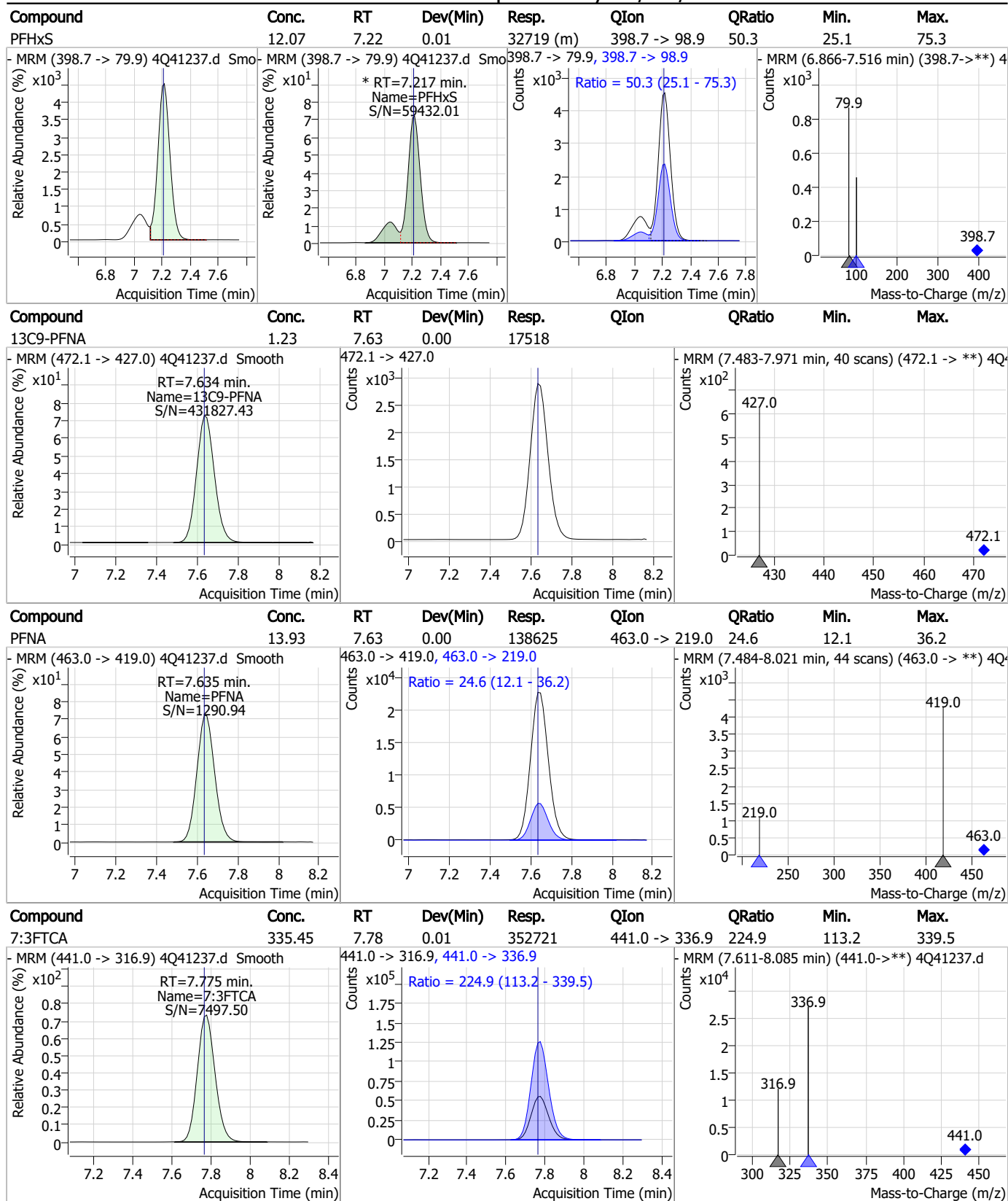
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Perfluorinated Compounds by LC/MS/MS

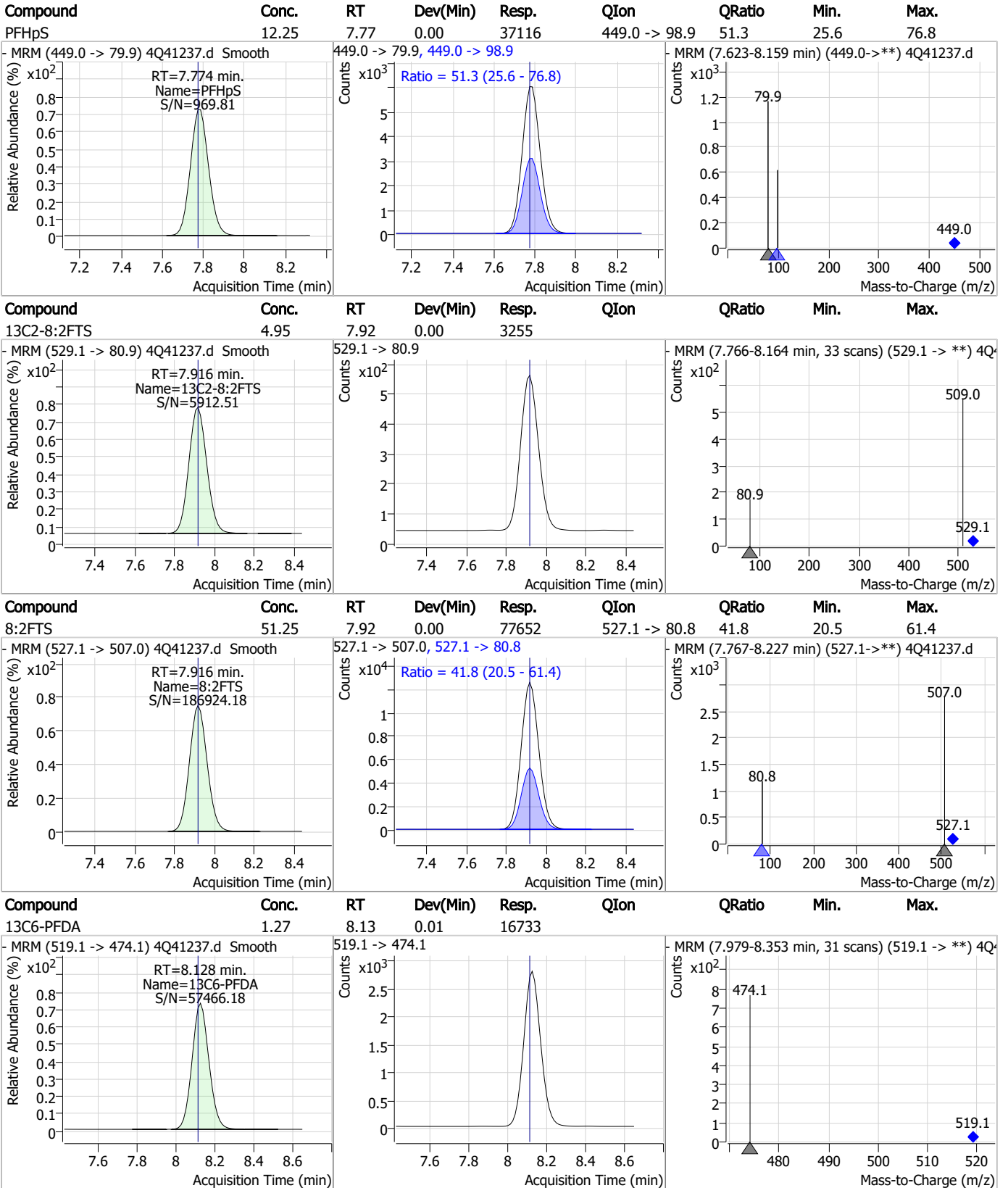


Perfluorinated Compounds by LC/MS/MS



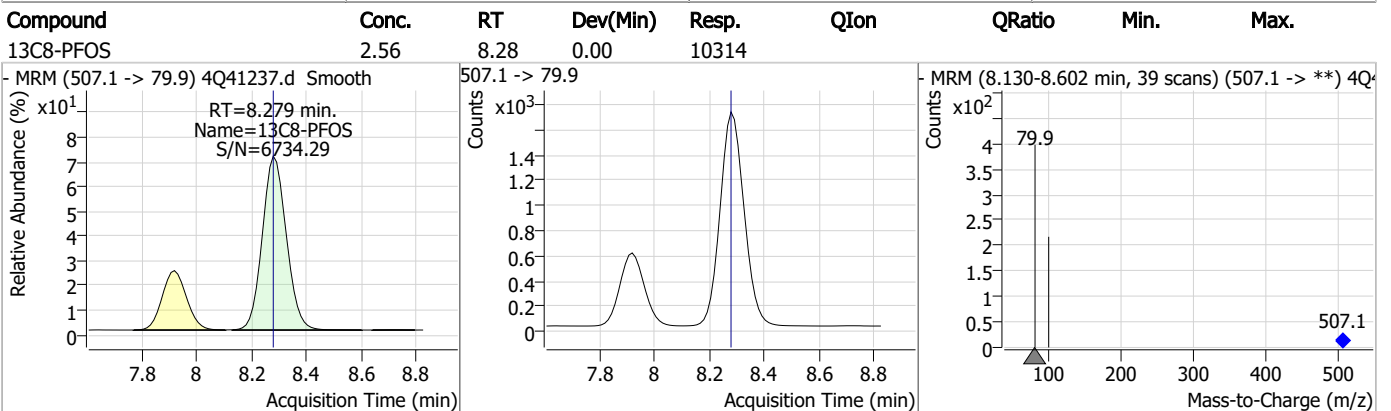
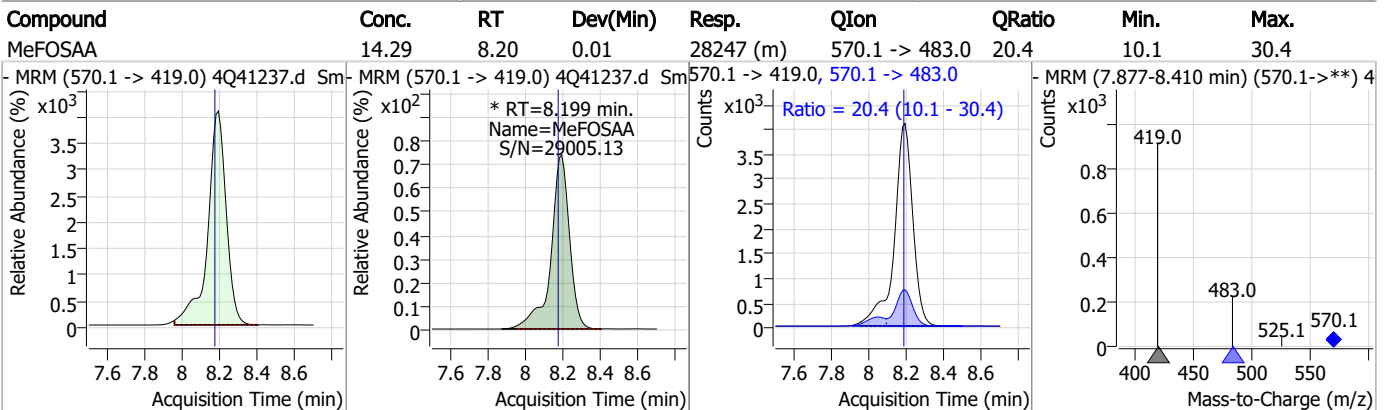
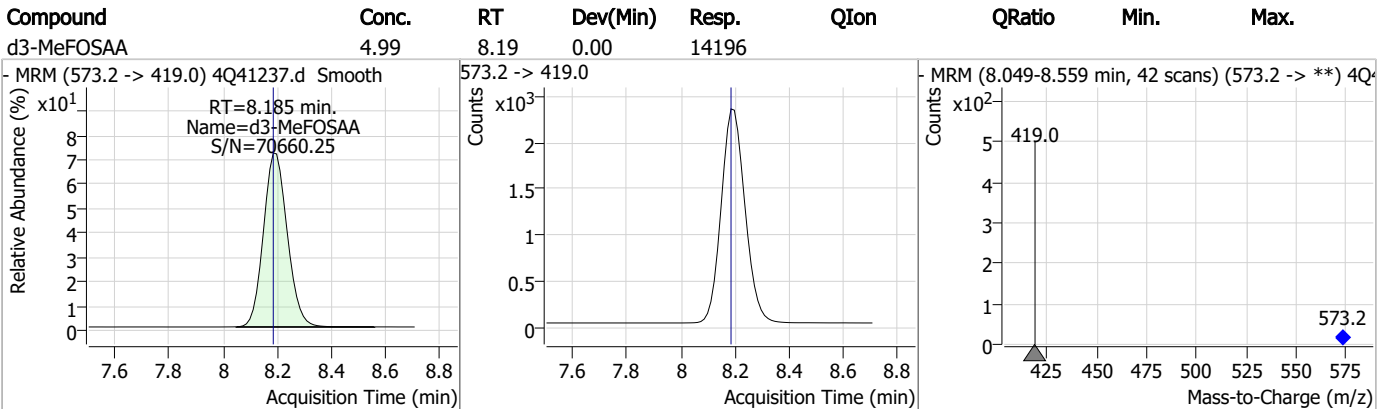
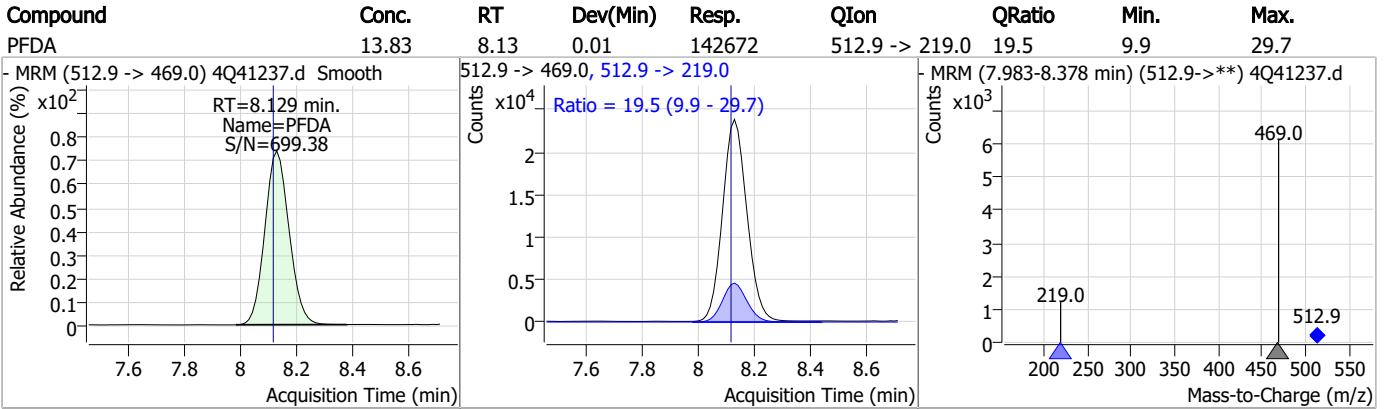
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Perfluorinated Compounds by LC/MS/MS



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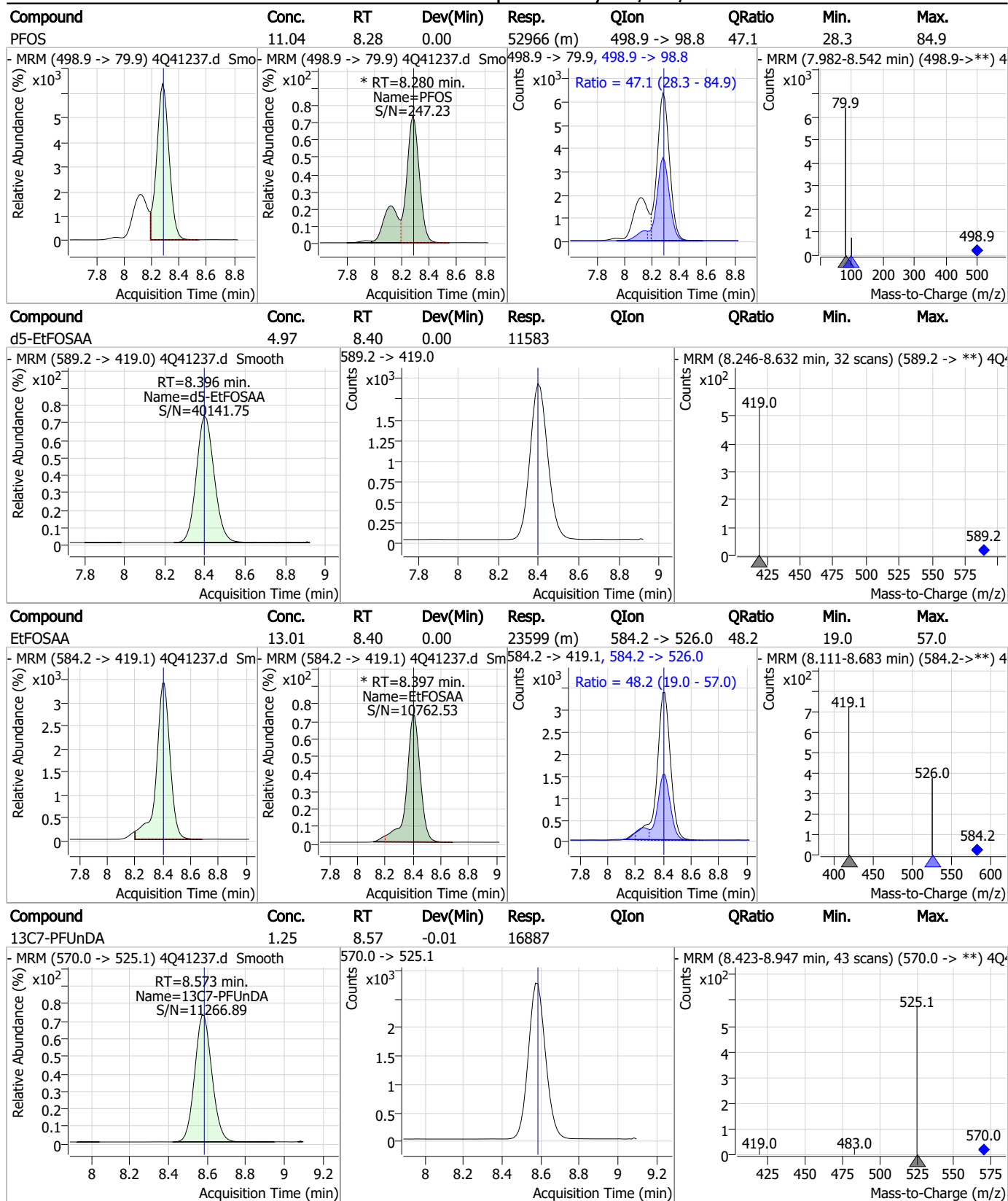
Perfluorinated Compounds by LC/MS/MS



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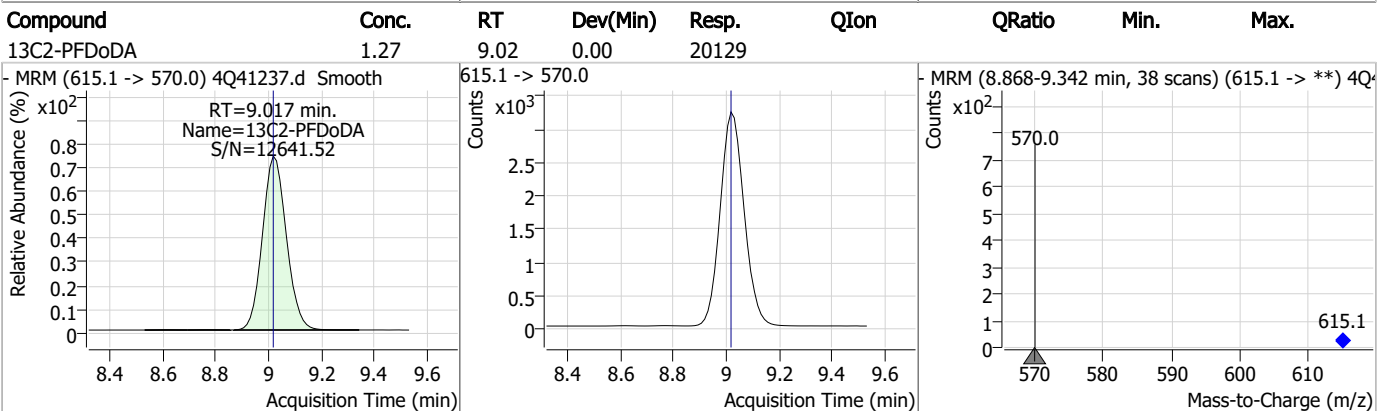
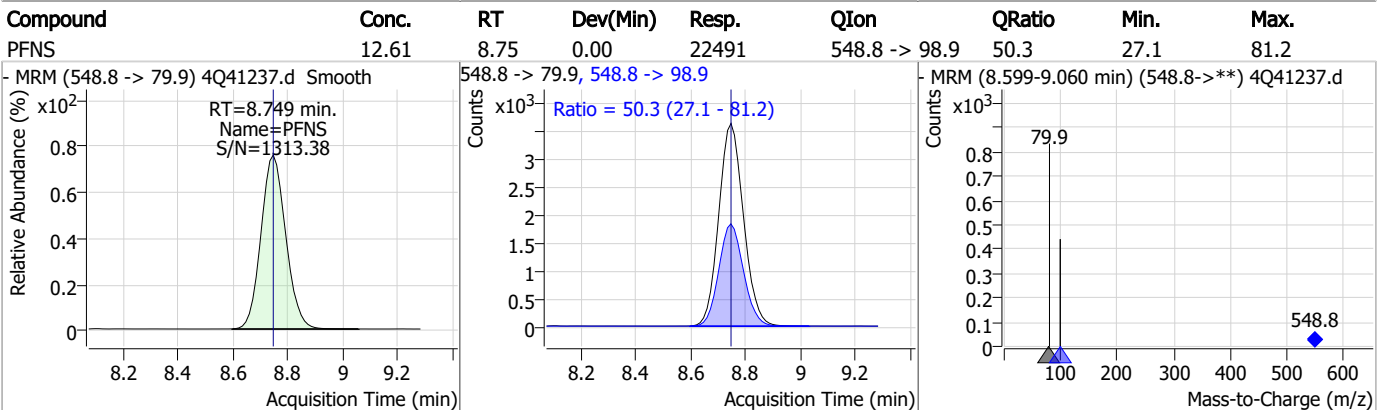
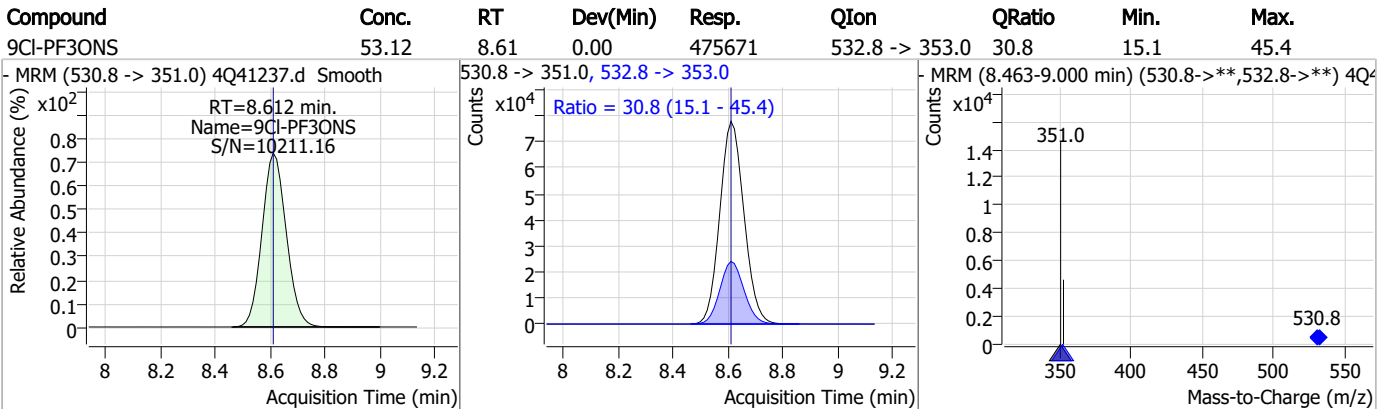
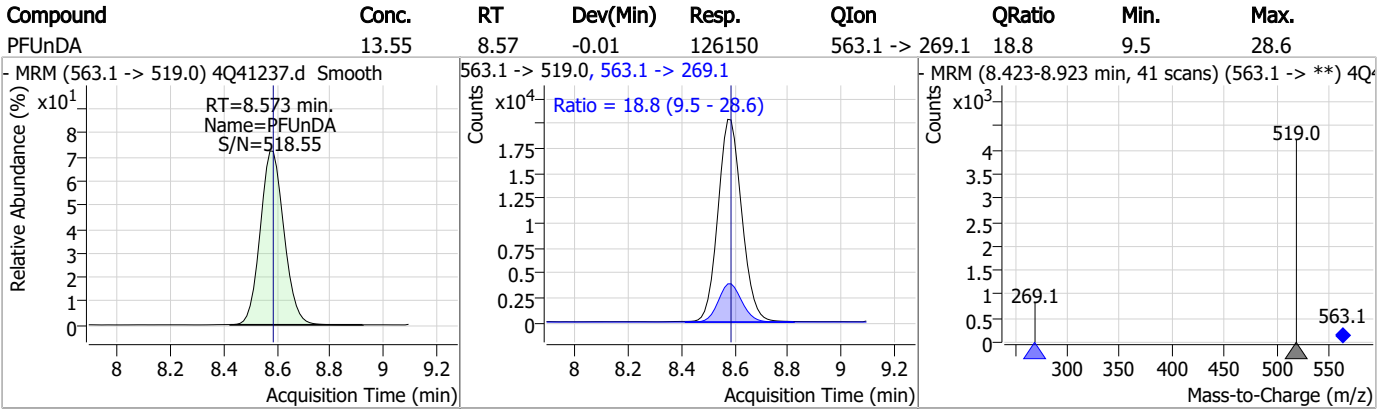
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Perfluorinated Compounds by LC/MS/MS



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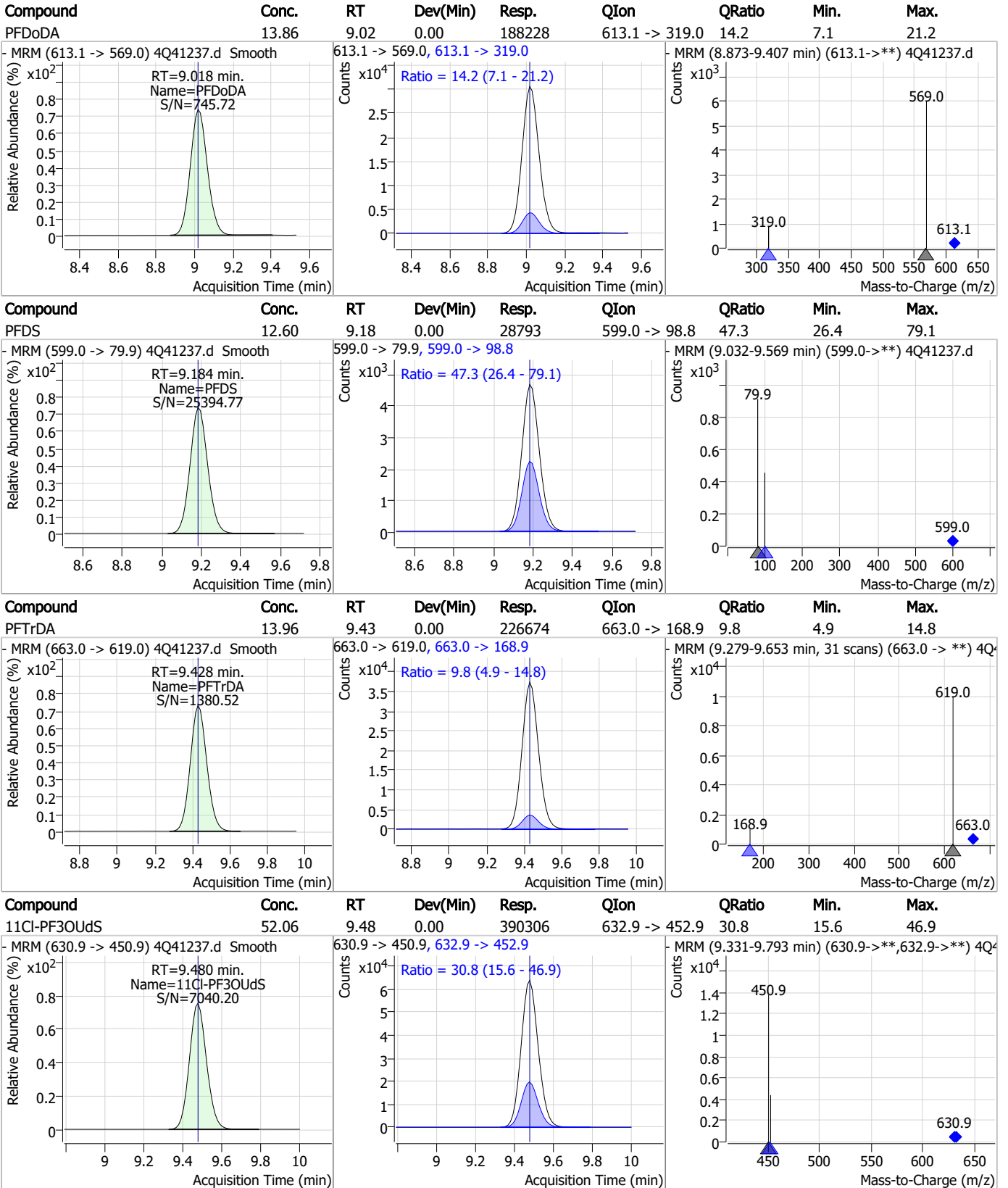
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

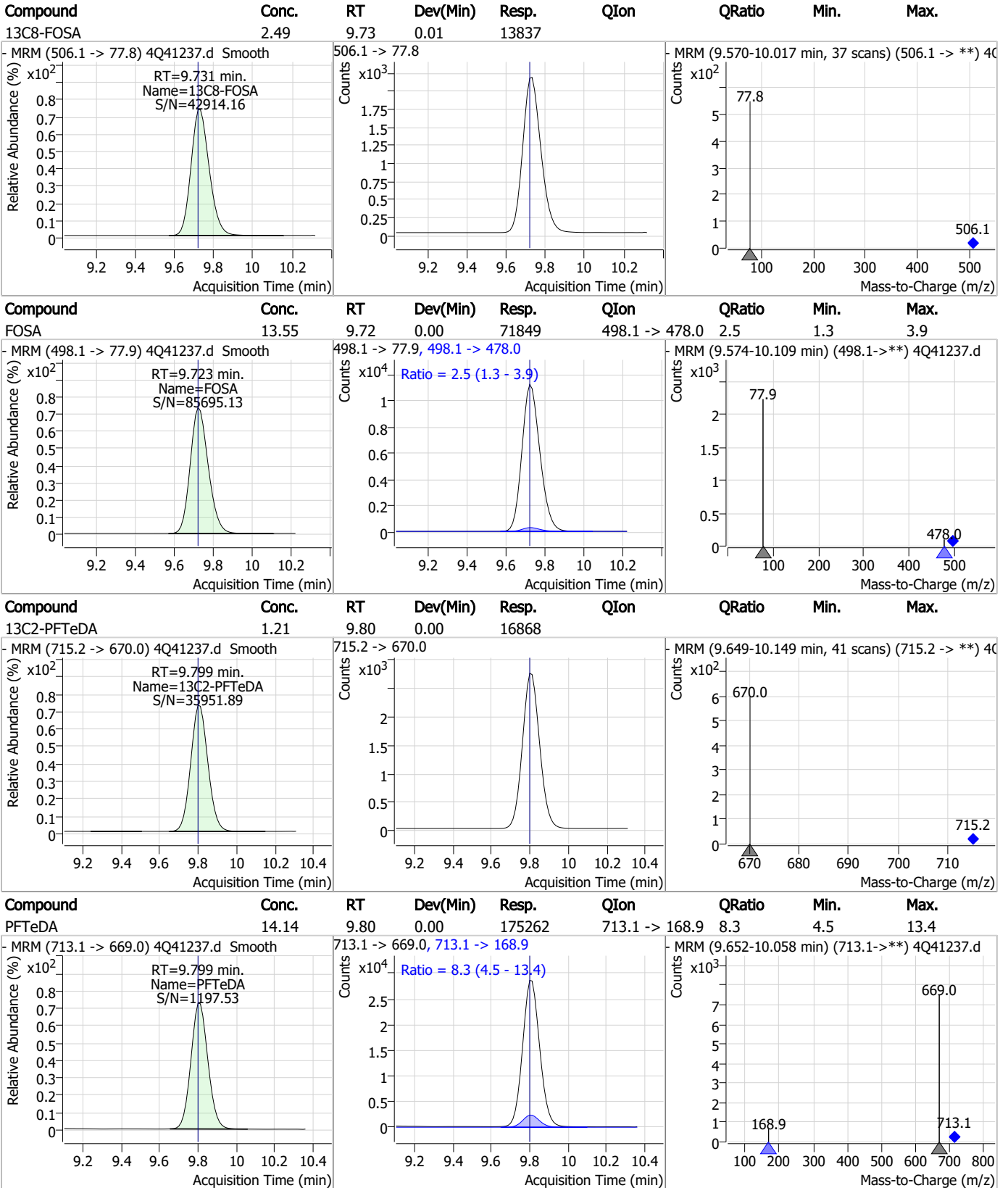


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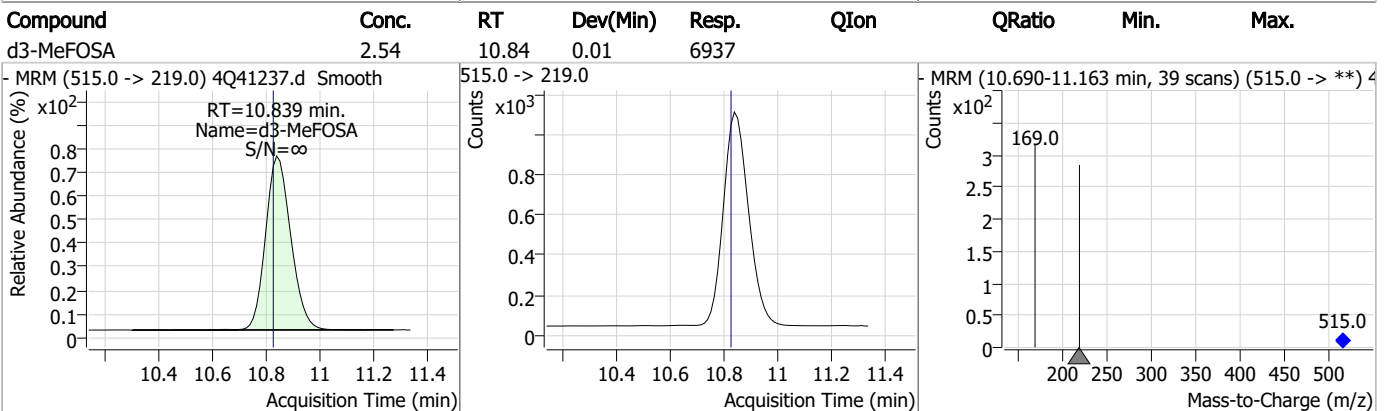
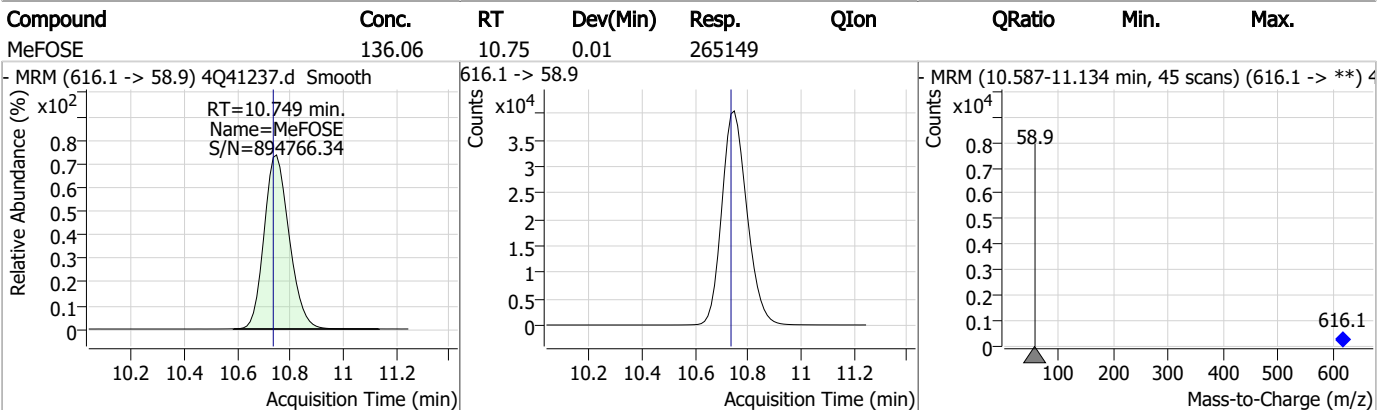
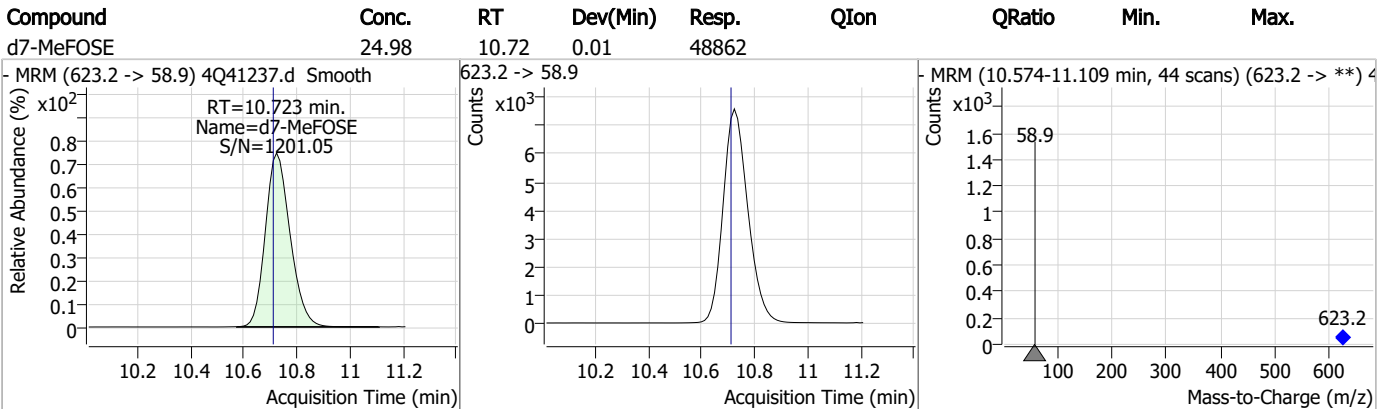
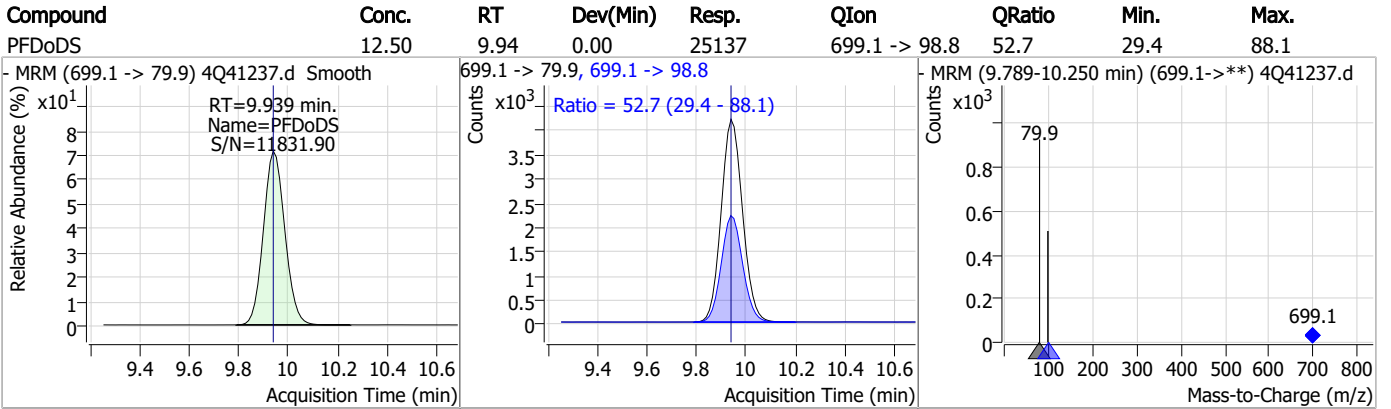
Perfluorinated Compounds by LC/MS/MS



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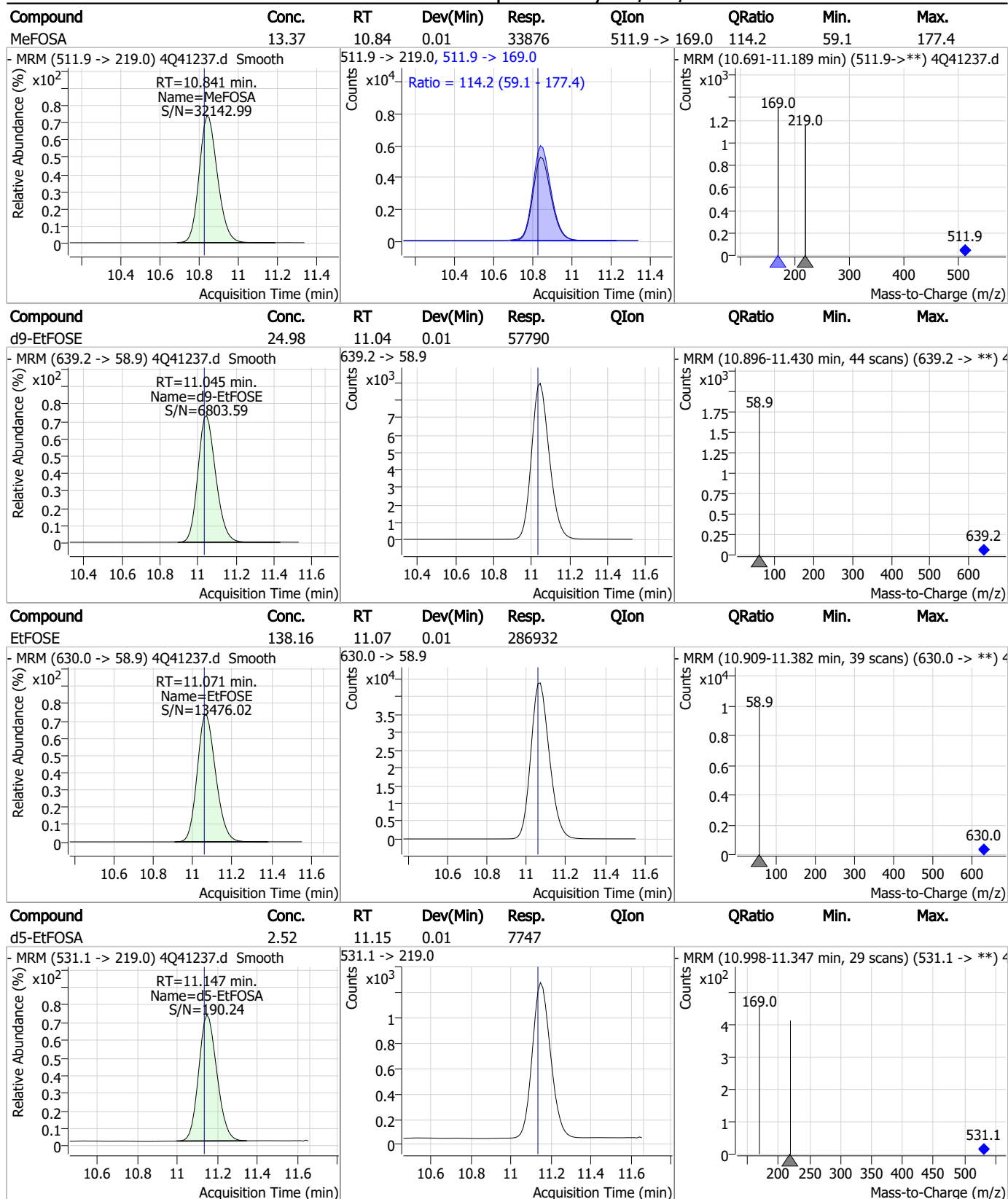
Perfluorinated Compounds by LC/MS/MS



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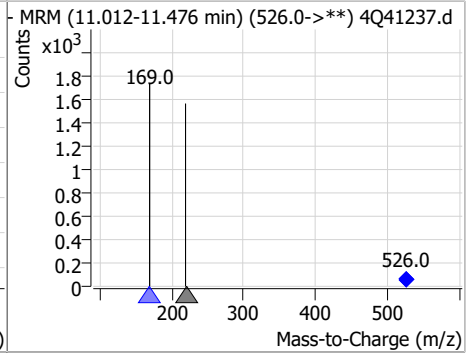
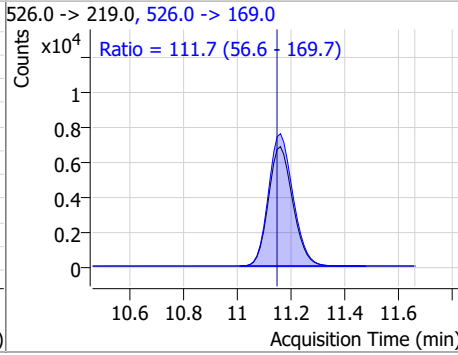
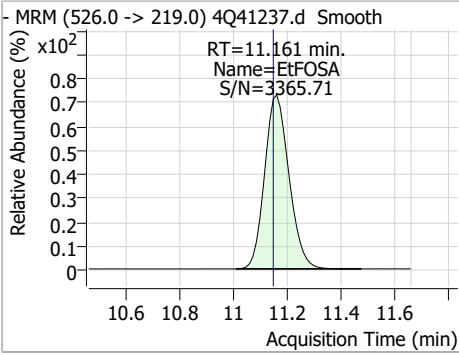
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	13.43	11.16	0.01	42764	526.0 -> 169.0	111.7	56.6	169.7



7.6.7

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Manual Integration Approval Summary

Sample Number: S4Q589-IC589 Method: EPA DRAFT 1633
Lab FileID: 4Q41237.D Analyst approved: 02/27/23 14:05 Anna Ludwig
Injection Time: 02/24/23 17:15 Supervisor approved: 02/27/23 16:52 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.22	Split peak
MeFOSAA	2355-31-9		8.20	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.28	Split peak
EtFOSAA	2991-50-6		8.40	Split peak

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Manual Integrations
APPROVED
 (compounds with "m" flag)

Norman Farmer
02/27/23 16:52

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41238.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/24/2023 5:29:14 PM
 Sample Name : ic589-7
 Vial : P1-A7
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q589.batch.bin
 Sample Information : op95462,S4Q589,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.099	216.8 -> 171.9	108995	10.00 µg/L	0.000
M5-PFPeA	4.487	268.3 -> 223.0	69426	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	54263	2.50 µg/L	0.000
M4-PFHpA	6.443	367.1 -> 322.0	27913	2.50 µg/L	0.000
M8-PFOA	7.088	421.1 -> 376.0	32356	2.50 µg/L	0.000
M9-PFNA	7.634	472.1 -> 427.0	17692	1.25 µg/L	0.000
M6-PFDA	8.128	519.1 -> 474.1	16960	1.25 µg/L	0.012
M7-PFUnDA	8.585	570.0 -> 525.1	16891	1.25 µg/L	0.000
M2-PFDoDA	9.030	615.1 -> 570.0	20719	1.25 µg/L	0.012
M2-PFTeDA	9.811	715.2 -> 670.0	17363	1.25 µg/L	0.012
M8-FOSA	9.731	506.1 -> 77.8	13368	2.50 µg/L	0.012
M3-PFBS	5.489	302.1 -> 79.9	12606	2.50 µg/L	0.000
M3-PFHxS	7.204	402.1 -> 79.9	7450	2.50 µg/L	0.000
M8-PFOS	8.279	507.1 -> 79.9	9592	2.50 µg/L	0.000
M2-4:2FTS	5.260	329.1 -> 80.9	1394	5.00 µg/L	0.000
M2-6:2FTS	6.860	429.1 -> 80.9	1851	5.00 µg/L	0.000
M2-8:2FTS	7.916	529.1 -> 80.9	2934	5.00 µg/L	0.000
M3-MeFOSAA	8.198	573.2 -> 419.0	14245	5.00 µg/L	0.012
M3-HFPO-DA	5.889	286.9 -> 168.9	29882	10.00 µg/L	0.000
M5-EtFOSAA	8.396	589.2 -> 419.0	11282	5.00 µg/L	0.000
M7-MeFOSE	10.723	623.2 -> 58.9	48411	25.00 µg/L	0.012
M9-EtFOSE	11.045	639.2 -> 58.9	57044	25.00 µg/L	0.012
M5-EtFOSA	11.147	531.1 -> 219.0	7890	2.50 µg/L	0.012
M3-MeFOSA	10.839	515.0 -> 219.0	7211	2.50 µg/L	0.012
13C4-PFOS	8.280	502.8 -> 79.9	9882	2.50 µg/L	0.000
13C3-PFBA	3.103	216.0 -> 172.0	63782	5.00 µg/L	0.000
18O2-PFHxS	7.203	403.0 -> 83.9	5331	2.50 µg/L	0.000
13C4-PFOA	7.089	417.1 -> 372.0	39057	2.50 µg/L	0.000
13C2-PFDA	8.128	515.1 -> 470.1	14864	1.25 µg/L	0.000
13C5-PFNA	7.634	468.0 -> 423.0	20451	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	50138	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1394	4.49 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.8%		
13C2-6:2FTS	6.860	429.1 -> 80.9	1851	4.44 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 88.8%		
13C2-8:2FTS	7.916	529.1 -> 80.9	2934	4.34 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 86.9%		
13C2-PFDoDA	9.030	615.1 -> 570.0	20719	1.30 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C2-PFTeDA	9.811	715.2 -> 670.0	17363	1.24 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C3-PFBS	5.489	302.1 -> 79.9	12606	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C3-PFHxS	7.204	402.1 -> 79.9	7450	2.47 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C4-PFBA	3.099	216.8 -> 171.9	108995	9.92 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C4-PFHpA	6.443	367.1 -> 322.0	27913	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.6%		
13C5-PFHxA	5.559	318.0 -> 273.0	54263	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C5-PFPeA	4.487	268.3 -> 223.0	69426	4.93 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C6-PFDA	8.128	519.1 -> 474.1	16960	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C7-PFUnDA	8.585	570.0 -> 525.1	16891	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C8-FOSA	9.731	506.1 -> 77.8	13368	2.44 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C8-PFOA	7.088	421.1 -> 376.0	32356	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C8-PFOS	8.279	507.1 -> 79.9	9592	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.6%		
13C9-PFNA	7.634	472.1 -> 427.0	17692	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.2%		
d3-MeFOSAA	8.198	573.2 -> 419.0	14245	5.08 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C3-HFPO-DA	5.889	286.9 -> 168.9	29882	9.67 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 96.7%		
d3-MeFOSA	10.839	515.0 -> 219.0	7211	2.67 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.9%		
d5-EtFOSAA	8.396	589.2 -> 419.0	11282	4.91 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.1%		
d7-MeFOSE	10.723	623.2 -> 58.9	48411	25.10 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.4%		
d9-EtFOSE	11.045	639.2 -> 58.9	57044	25.00 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 100.0%		
d5-EtFOSA	11.147	531.1 -> 219.0	7890	2.60 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.1%		
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	95288	51.33 µg/L	99
		327.1 -> 80.9	41412		
6:2FTS	6.861	427.1 -> 407.0	71078	50.94 µg/L	100
		427.1 -> 80.9	30840		
8:2FTS	7.916	527.1 -> 507.0	76868	56.27 µg/L	97
		527.1 -> 80.8	32928		
EtFOSAA	8.409	584.2 -> 419.1	25084	14.19 µg/L	m 83
		584.2 -> 526.0	12077		
FOSA	9.723	498.1 -> 77.9	70352	13.73 µg/L	99
		498.1 -> 478.0	2035		
MeFOSAA	8.199	570.1 -> 419.0	26128	13.17 µg/L	m 99
		570.1 -> 483.0	5390		
PFBA	3.107	212.8 -> 168.9	140183	54.40 µg/L	100
PFBS	5.490	298.7 -> 79.9	56741	11.29 µg/L	100
		298.7 -> 98.8	21294		
PFDA	8.129	512.9 -> 469.0	142304	13.61 µg/L	99
		512.9 -> 219.0	27787		
PFDoDA	9.030	613.1 -> 569.0	184182	13.17 µg/L	99
		613.1 -> 319.0	26546		
PFDS	9.196	599.0 -> 79.9	28629	13.47 µg/L	92

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	13537			
PFHpA	6.444	363.1 -> 319.0	203964	13.82	µg/L	100
		363.1 -> 169.0	35782			
PFHpS	7.774	449.0 -> 79.9	36087	12.81	µg/L	100
		449.0 -> 98.9	18419			
PFHxA	5.562	313.0 -> 269.0	241786	12.68	µg/L	100
		313.0 -> 118.9	7484			
PFHxS	7.205	398.7 -> 79.9	33283	12.01	µg/L	100
		398.7 -> 98.9	16757		m	
PFNA	7.635	463.0 -> 419.0	136796	13.62	µg/L	98
		463.0 -> 219.0	34138			
PFNS	8.749	548.8 -> 79.9	22088	13.32	µg/L	95
		548.8 -> 98.9	11185			
PFOA	7.090	413.0 -> 369.0	208002	13.67	µg/L	98
		413.0 -> 169.0	42927			
PFOS	8.280	498.9 -> 79.9	51682	11.59	µg/L	90
		498.9 -> 98.8	25287		m	
PFPeA	4.489	263.0 -> 219.0	387411	27.41	µg/L	100
PFPeS	6.496	349.1 -> 79.9	29373	12.02	µg/L	99
		349.1 -> 98.9	12704			
PFTeDA	9.812	713.1 -> 669.0	180959	14.18	µg/L	98
		713.1 -> 168.9	14824			
PFTrDA	9.441	663.0 -> 619.0	226358	13.54	µg/L	99
		663.0 -> 168.9	21832			
PFUnDA	8.585	563.1 -> 519.0	124032	13.32	µg/L	99
		563.1 -> 269.1	24024			
11CI-PF3OUdS	9.480	630.9 -> 450.9	384516	52.41	µg/L	99
		632.9 -> 452.9	117672			
9CI-PF3ONS	8.625	530.8 -> 351.0	473419	54.02	µg/L	100
		532.8 -> 353.0	143780			
ADONA	6.693	376.9 -> 250.9	912333	53.14	µg/L	99
		376.9 -> 84.8	252714			
HFPO-DA	5.890	284.9 -> 168.9	138474	56.72	µg/L	97
		284.9 -> 184.9	15606			
3:3FTCA	4.129	241.0 -> 177.0	49637	68.18	µg/L	100
		241.0 -> 117.0	4603			
5:3FTCA	6.358	341.0 -> 237.1	950518	344.79	µg/L	100
		341.0 -> 217.0	684321			
7:3FTCA	7.763	441.0 -> 316.9	350188	340.05	µg/L	98
		441.0 -> 336.9	782923			
EtFOSA	11.161	526.0 -> 219.0	42748	13.18	µg/L	99
		526.0 -> 169.0	47706			
EtFOSE	11.058	630.0 -> 58.9	279098	136.14	µg/L	100
MeFOSA	10.841	511.9 -> 219.0	33395	12.68	µg/L	99
		511.9 -> 169.0	39061			
MeFOSE	10.749	616.1 -> 58.9	261422	135.40	µg/L	100
PFDoDS	9.939	699.1 -> 79.9	25102	13.43	µg/L	93
		699.1 -> 98.8	13483			
NFDHA	5.453	295.0 -> 201.0	17942	25.94	µg/L	99
		295.0 -> 84.9	4929			
PFMBA	4.854	279.0 -> 85.1	225149	27.64	µg/L	100
PFMPA	3.690	229.0 -> 84.9	193976	27.52	µg/L	100
PFEESA	5.983	314.8 -> 134.9	331775	24.60	µg/L	100
		314.8 -> 82.9	12057			

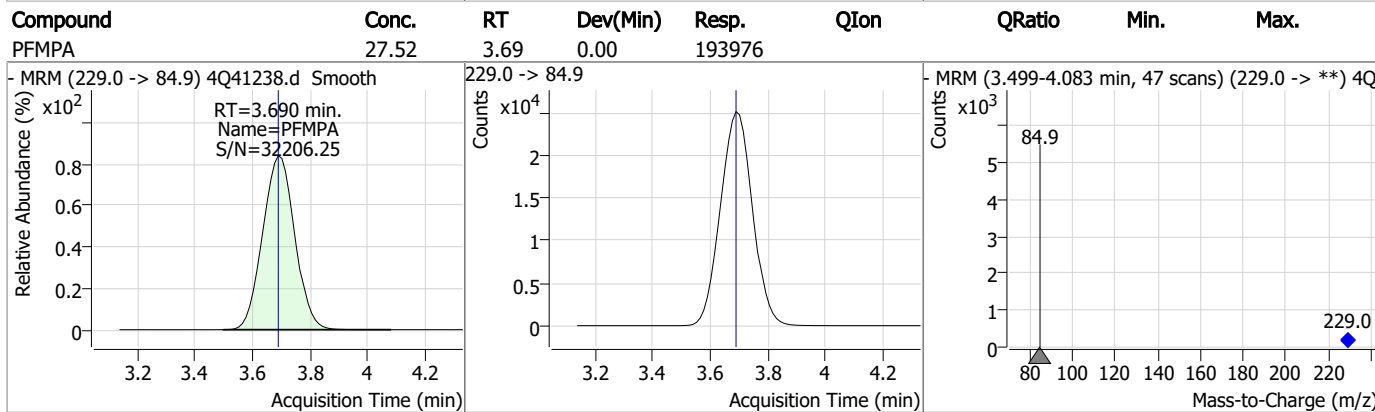
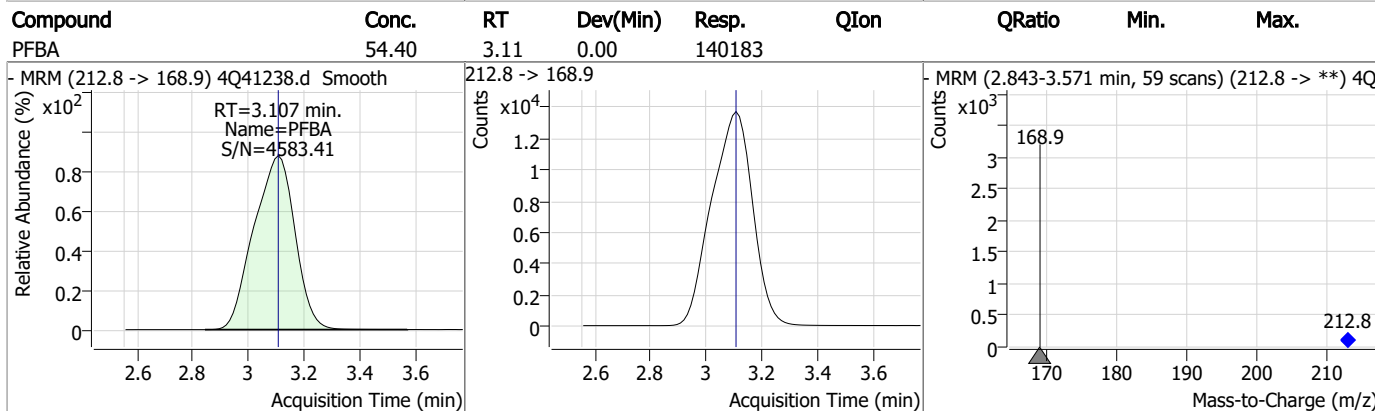
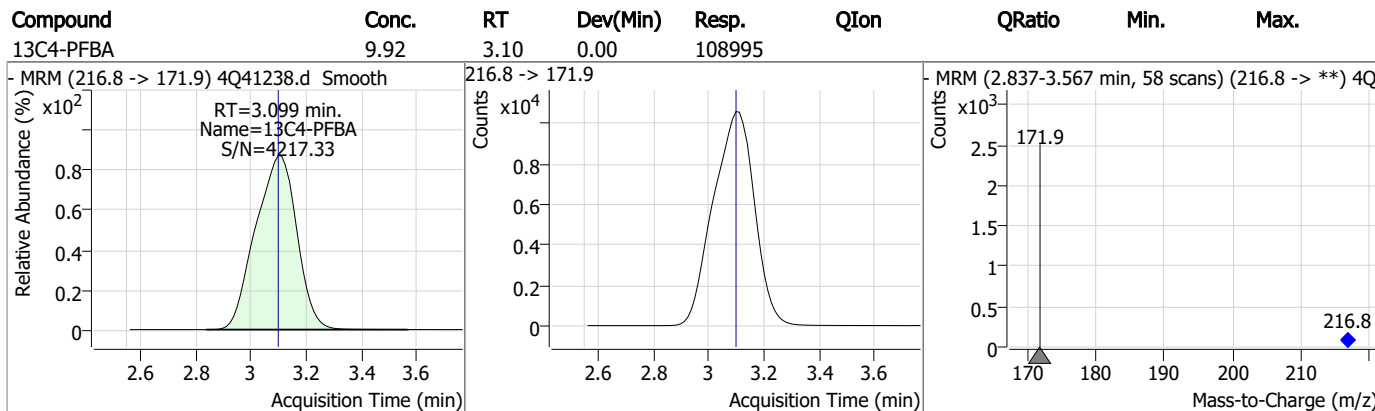
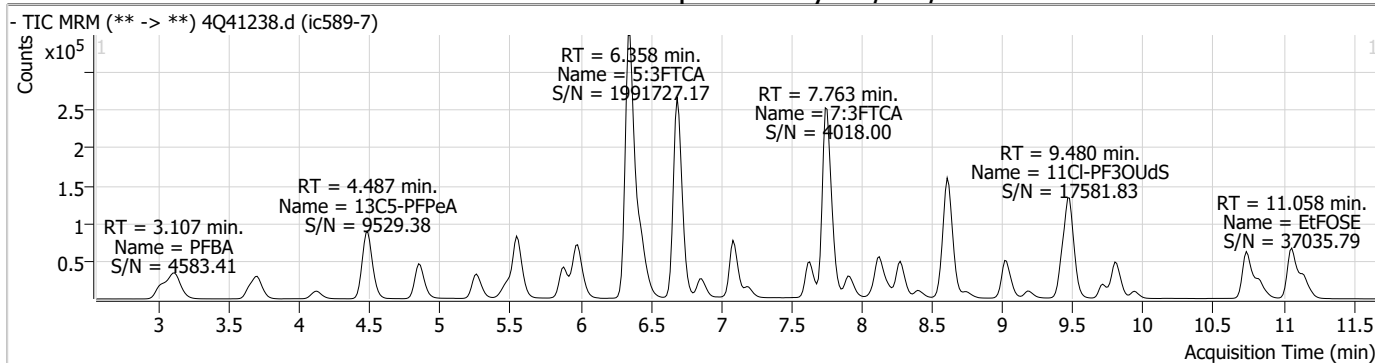
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

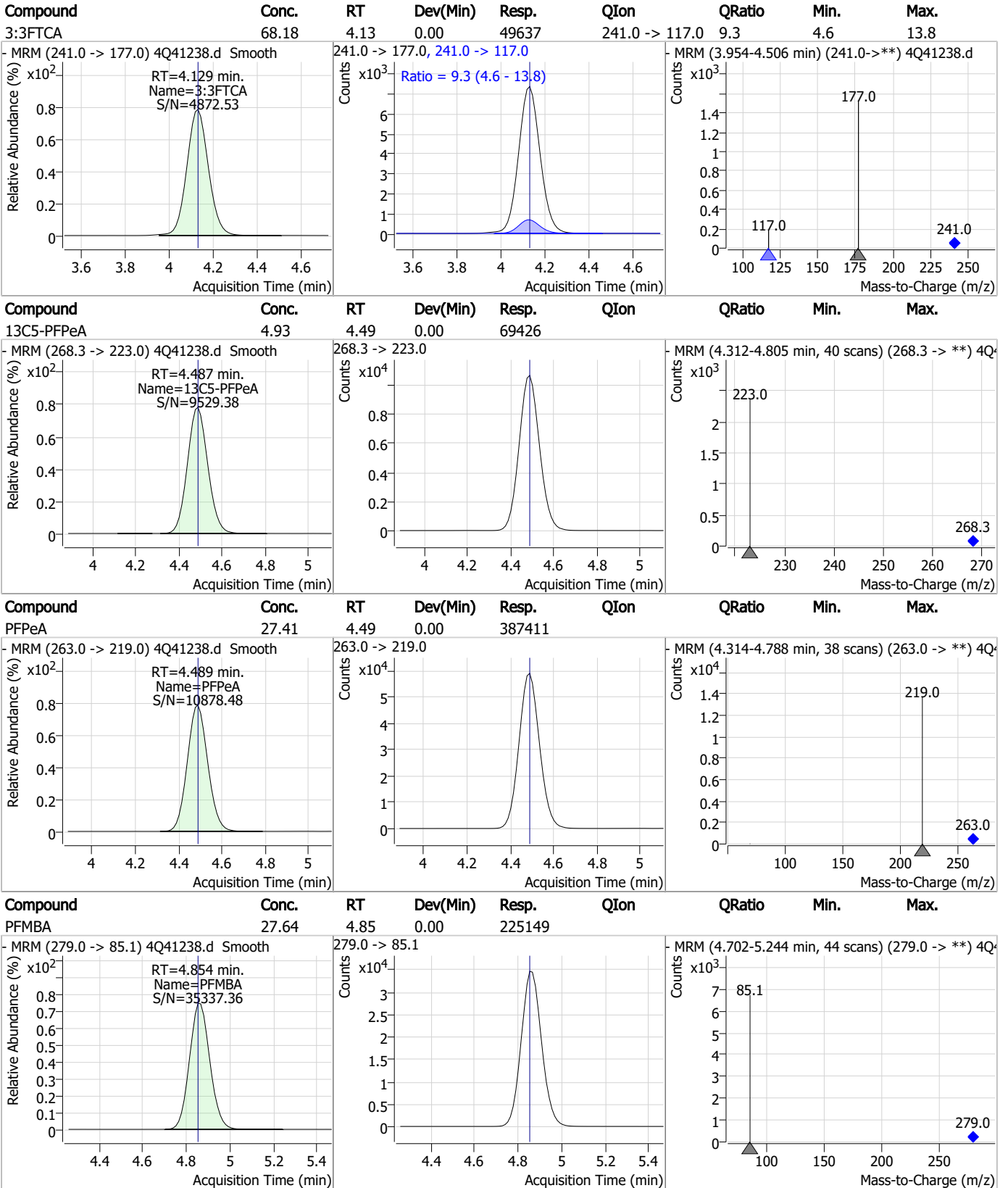
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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Perfluorinated Compounds by LC/MS/MS



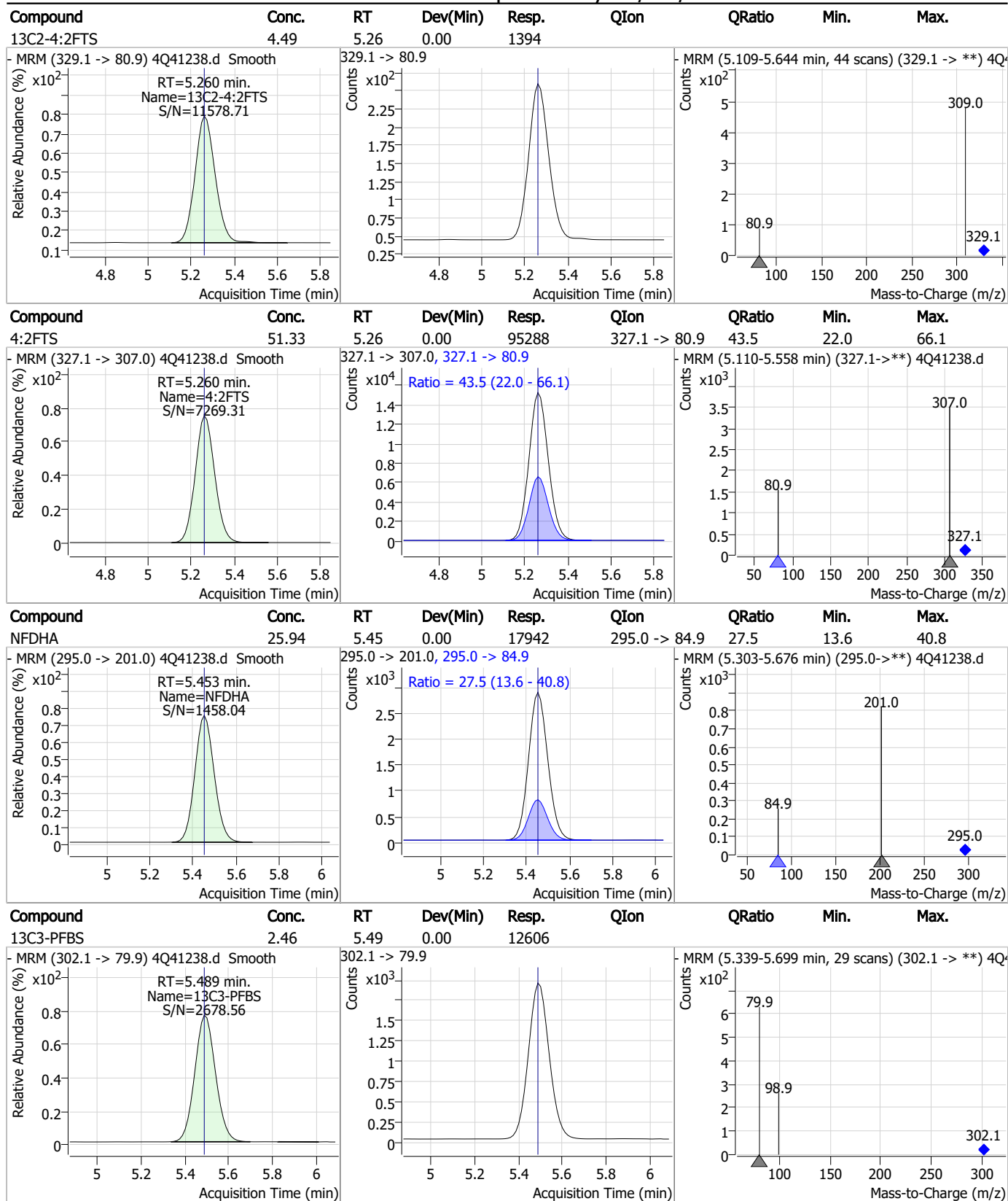
Perfluorinated Compounds by LC/MS/MS



7.6.8

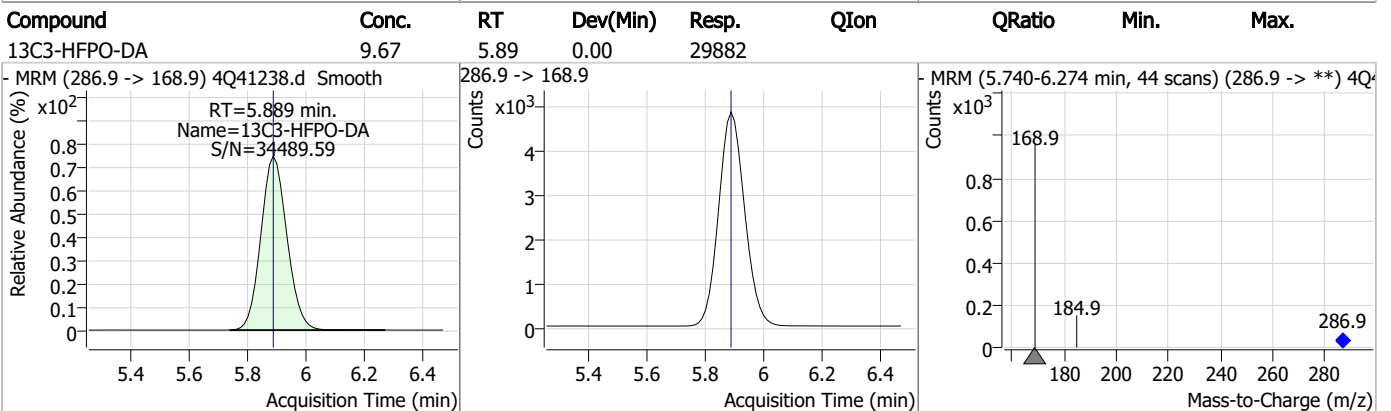
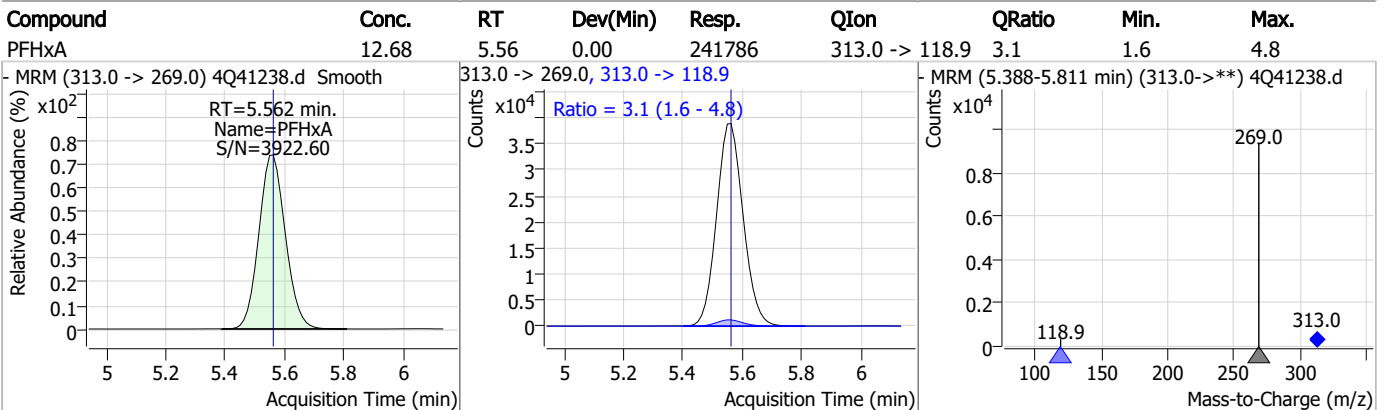
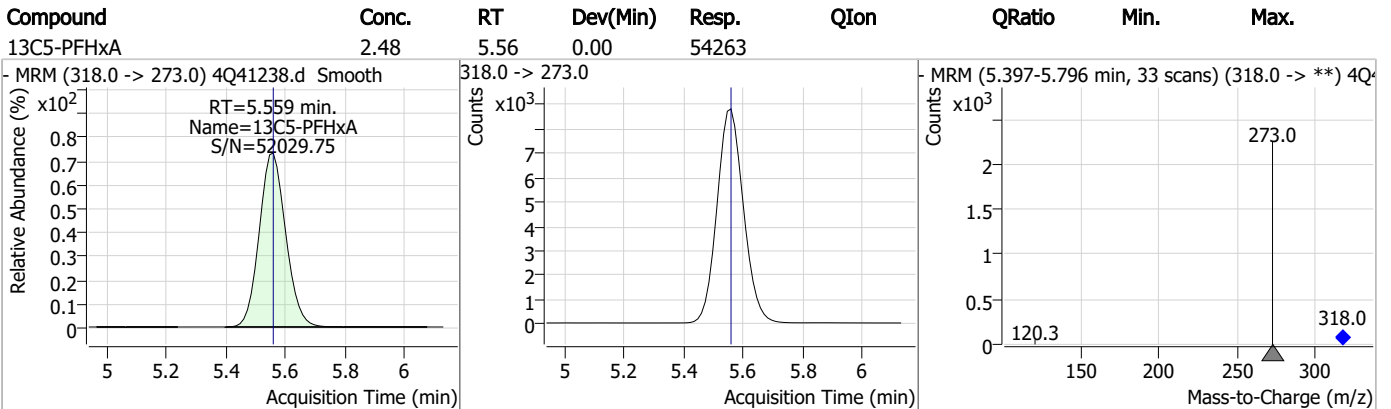
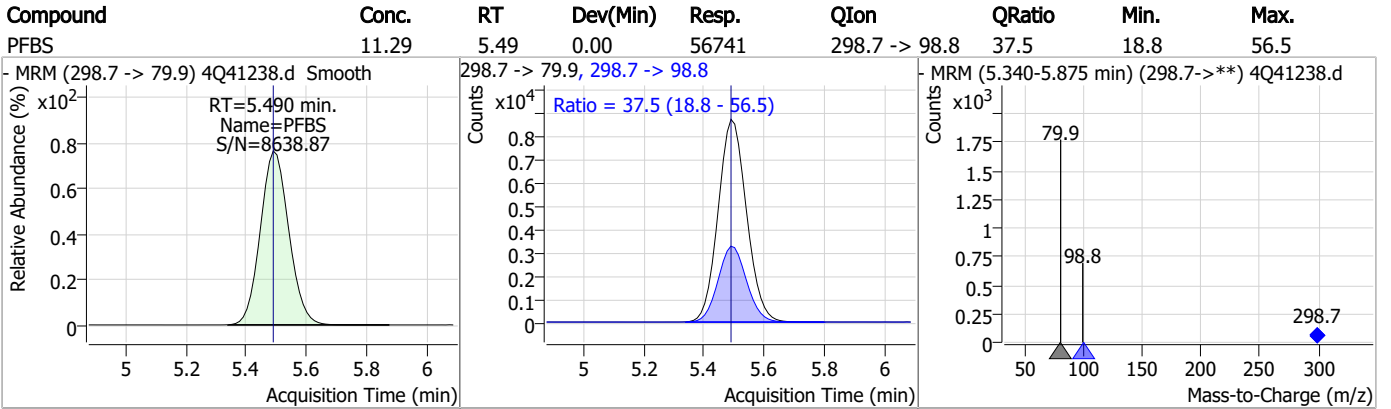
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Perfluorinated Compounds by LC/MS/MS



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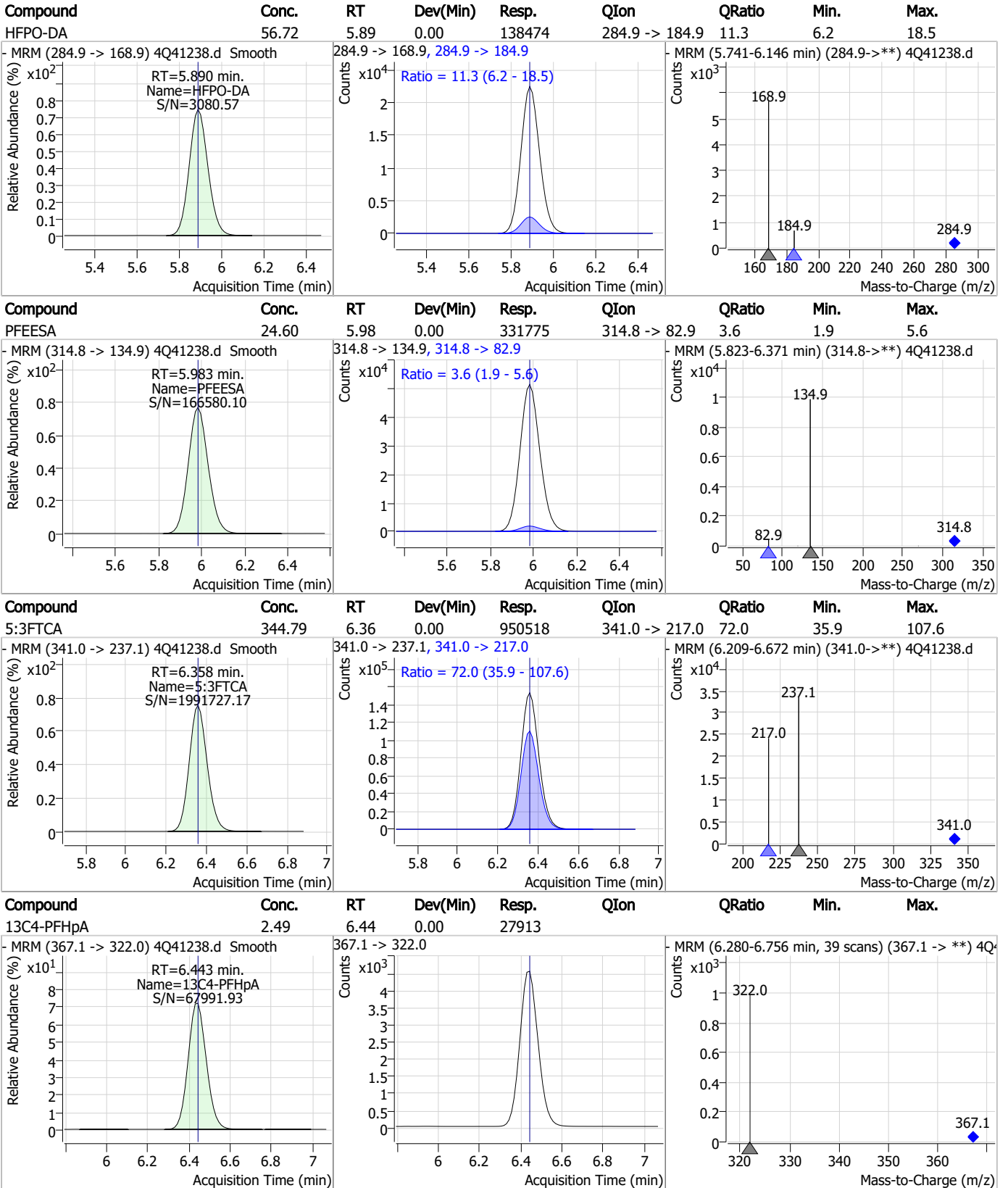
Perfluorinated Compounds by LC/MS/MS



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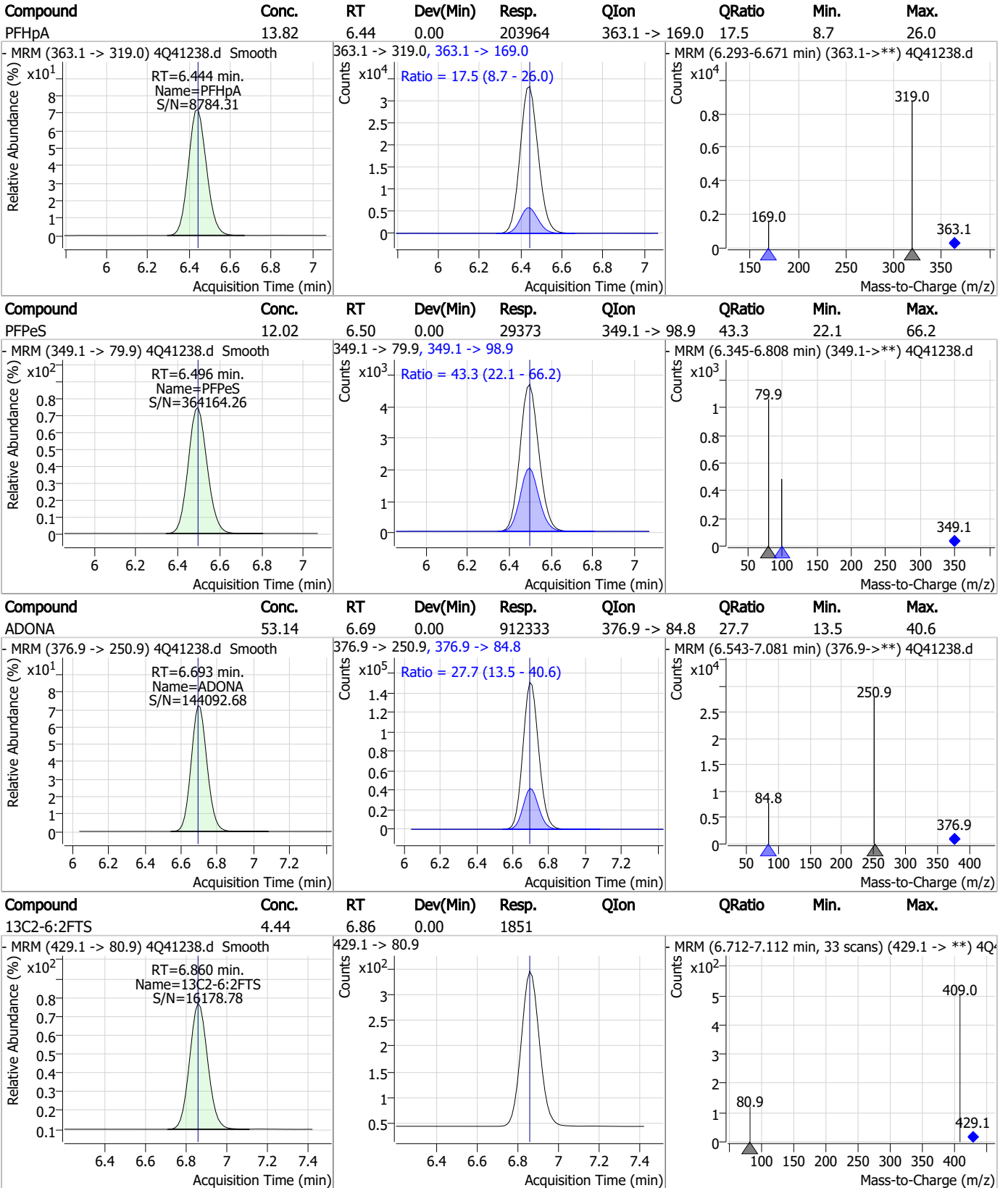
Perfluorinated Compounds by LC/MS/MS



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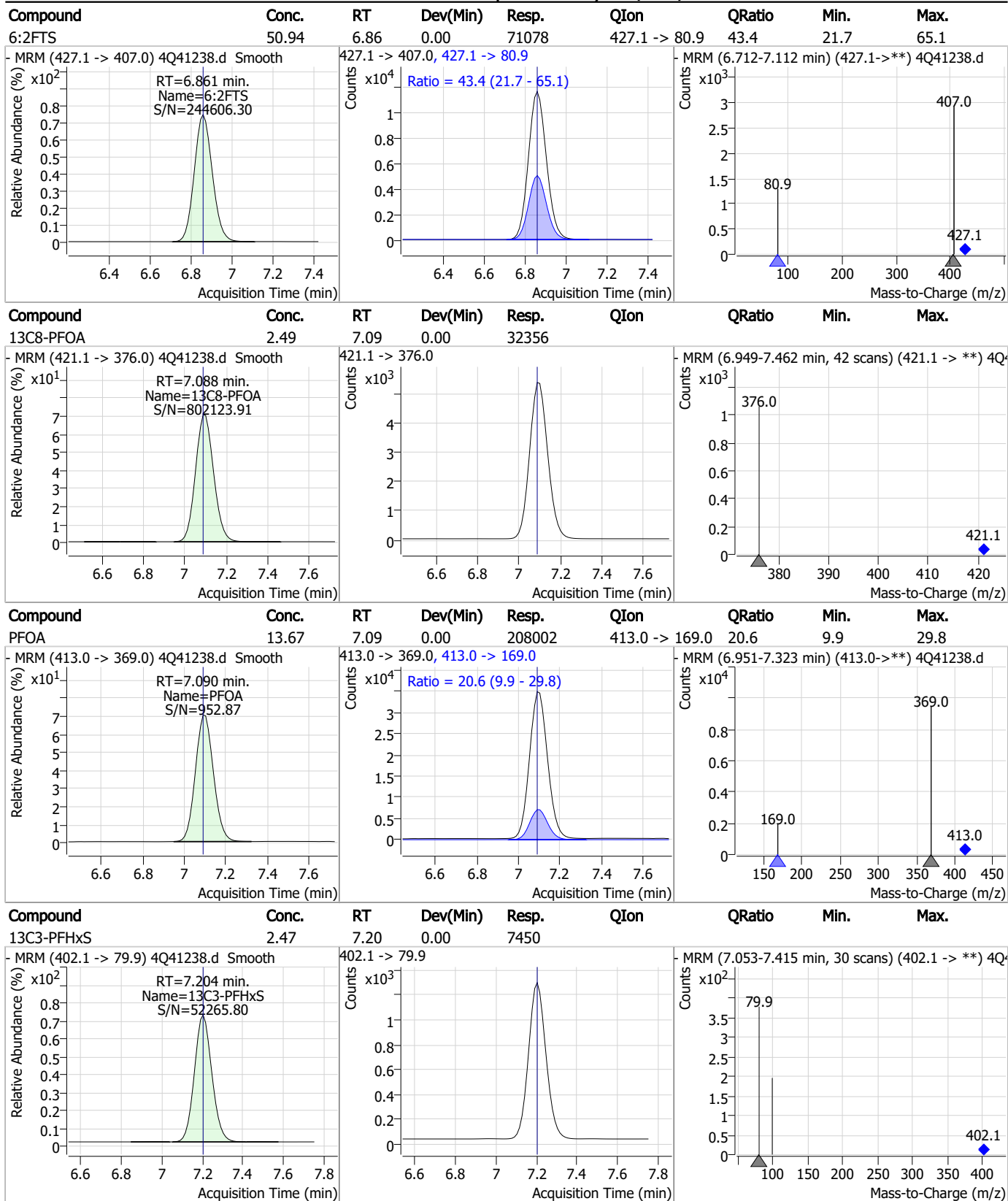
Perfluorinated Compounds by LC/MS/MS



7.6.8

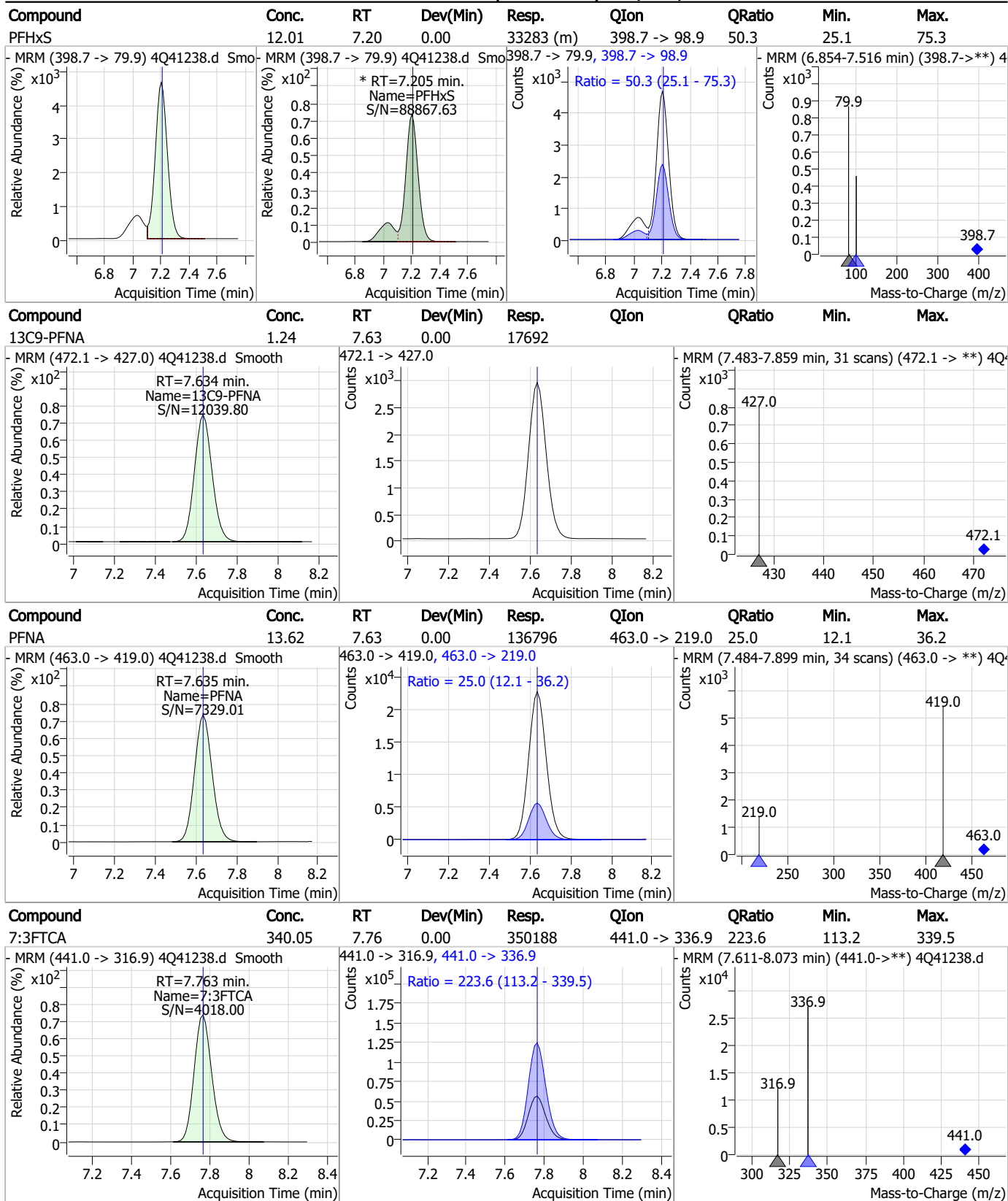
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Perfluorinated Compounds by LC/MS/MS



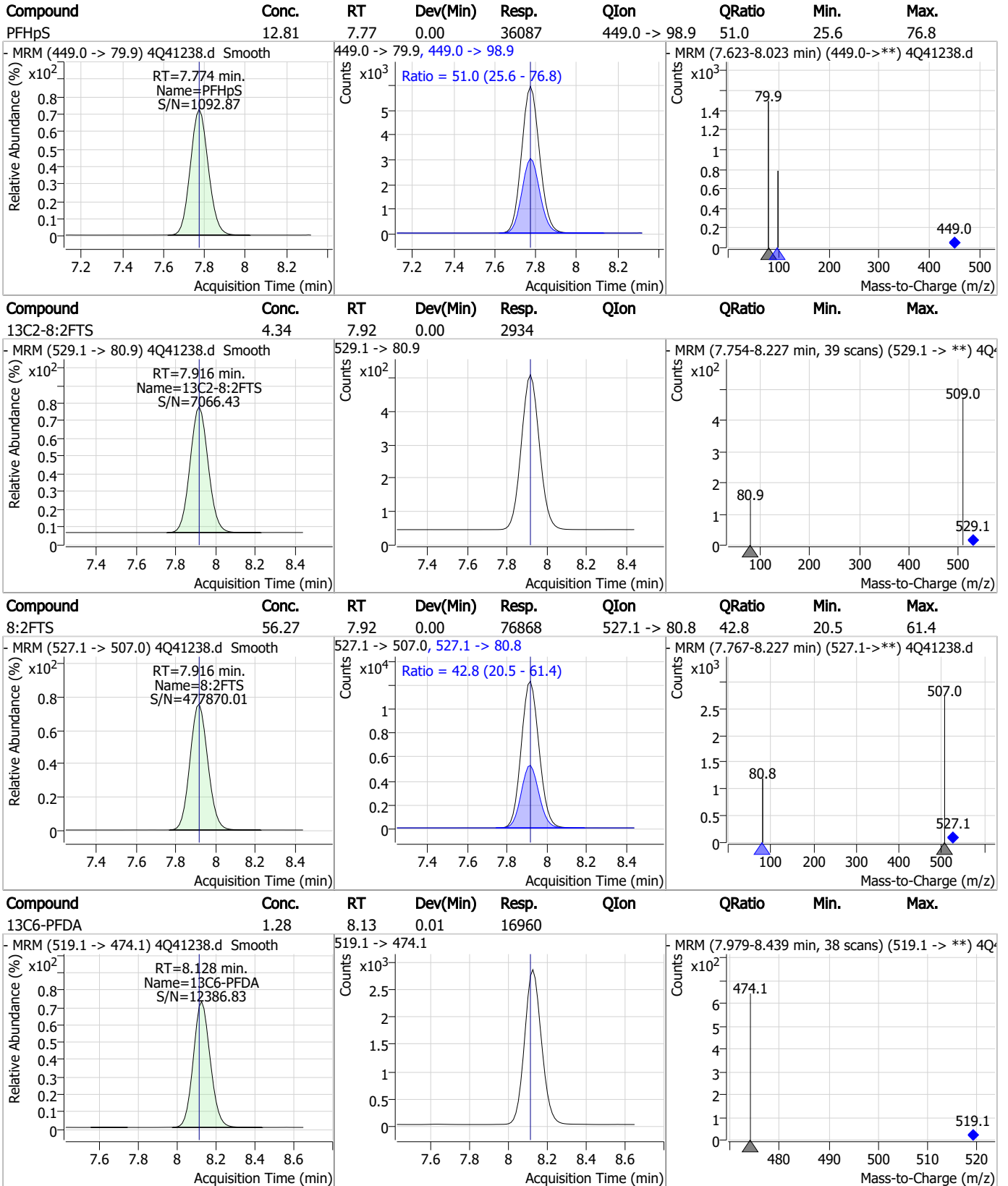
7.6.8
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

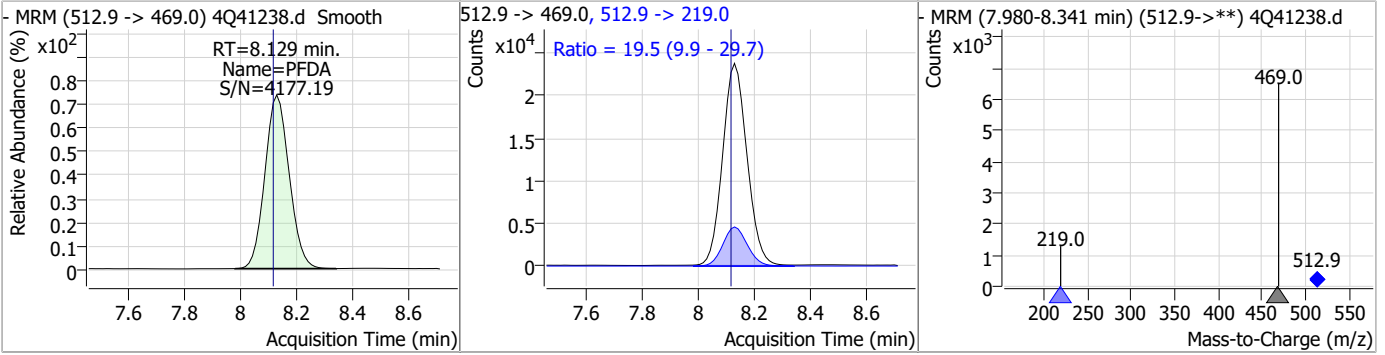


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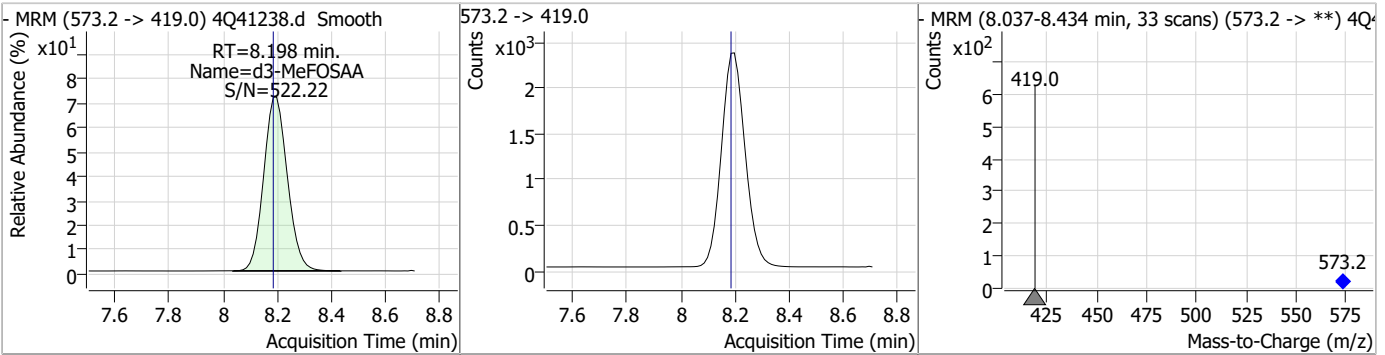
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Perfluorinated Compounds by LC/MS/MS

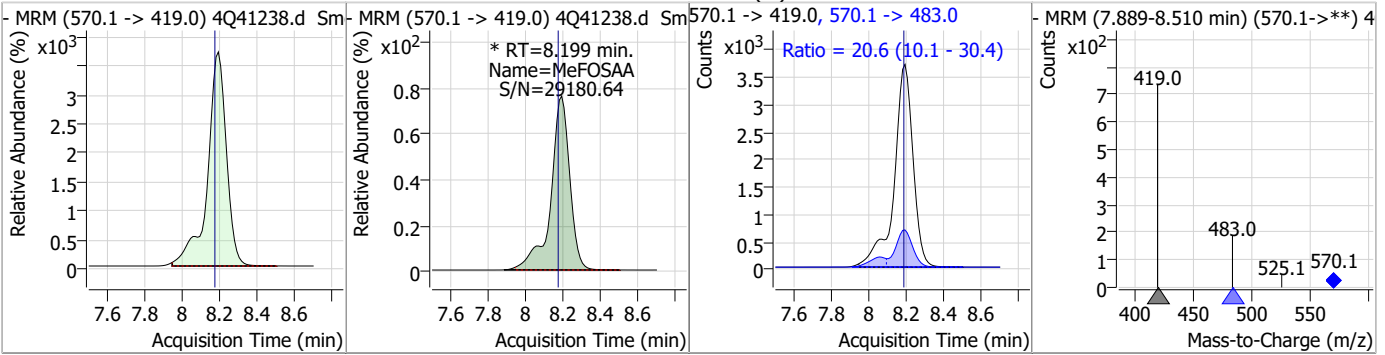
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	13.61	8.13	0.01	142304	512.9 -> 219.0	19.5	9.9	29.7



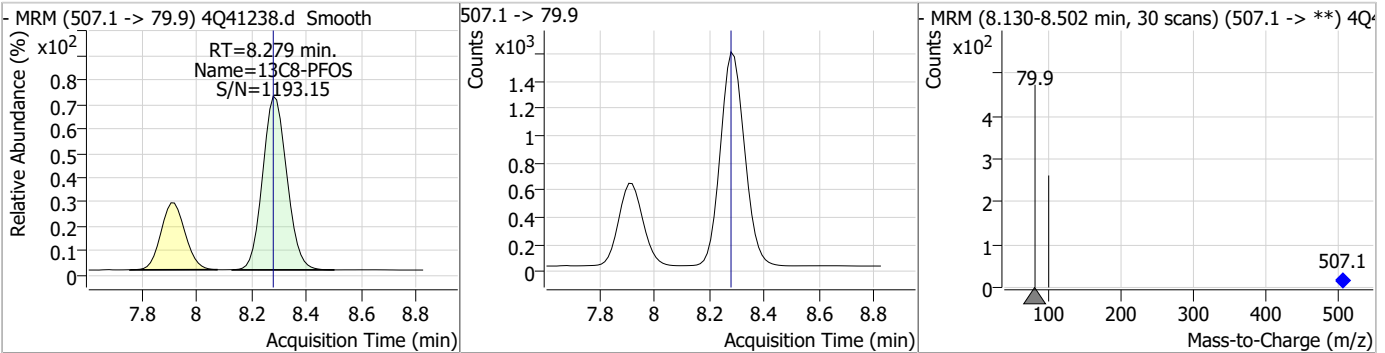
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.08	8.20	0.01	14245				



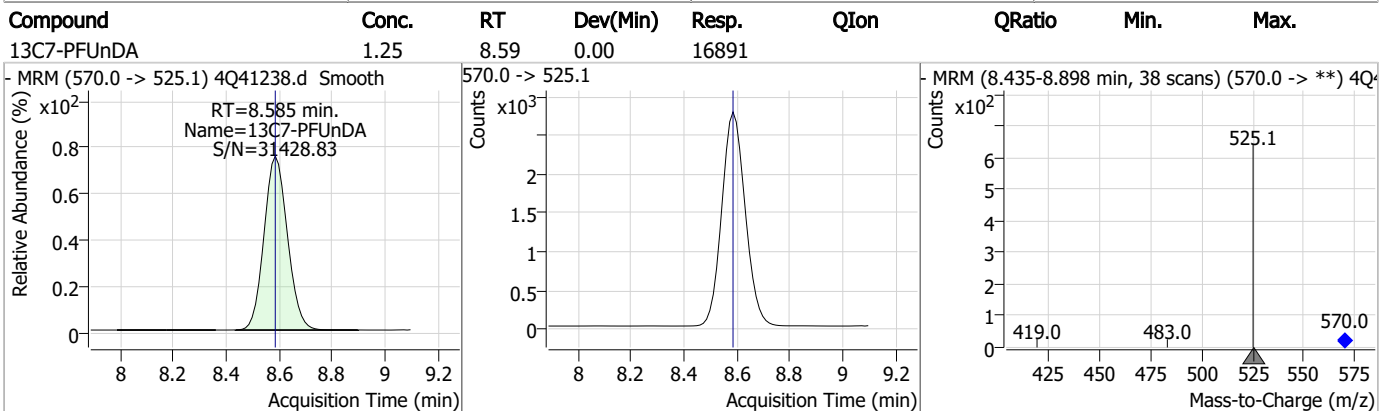
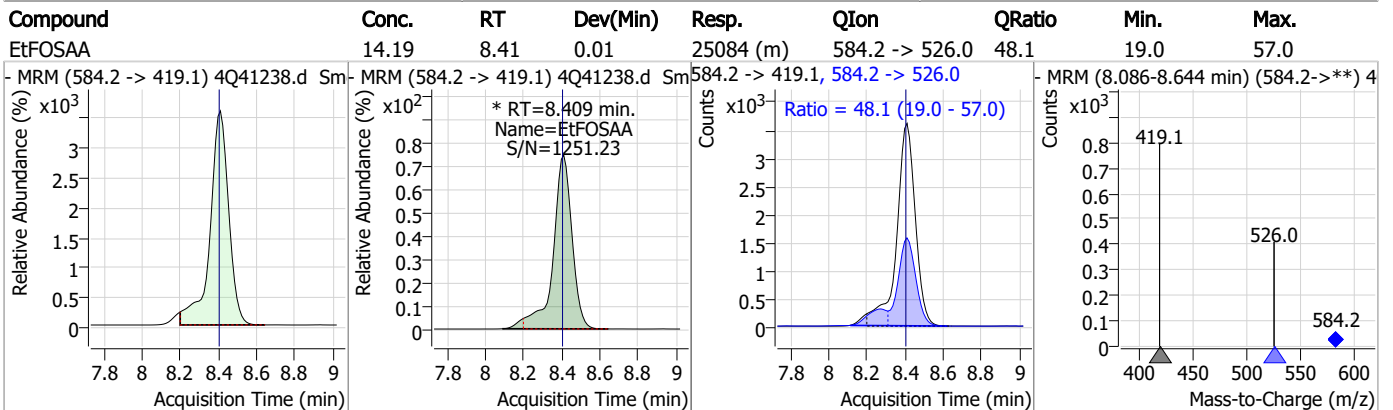
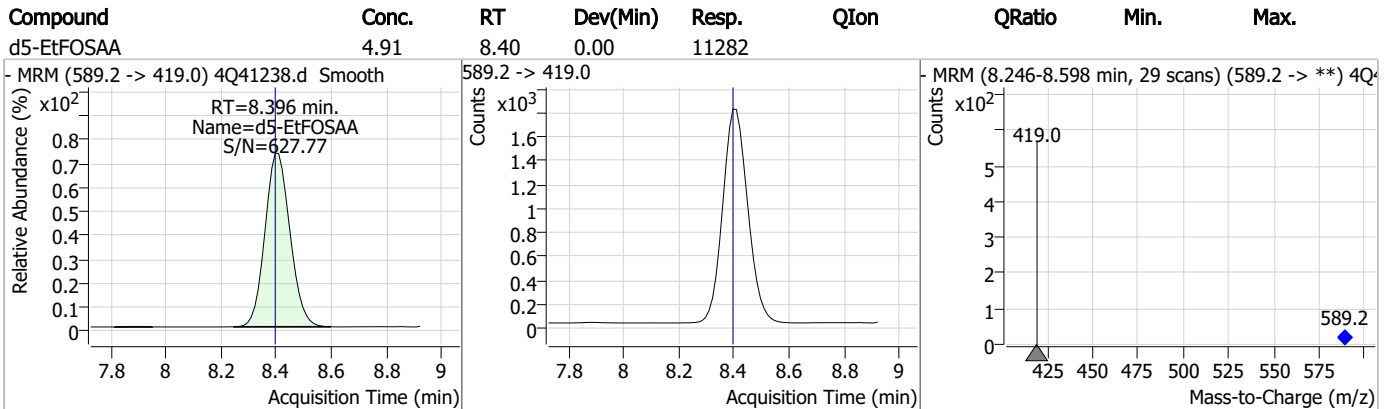
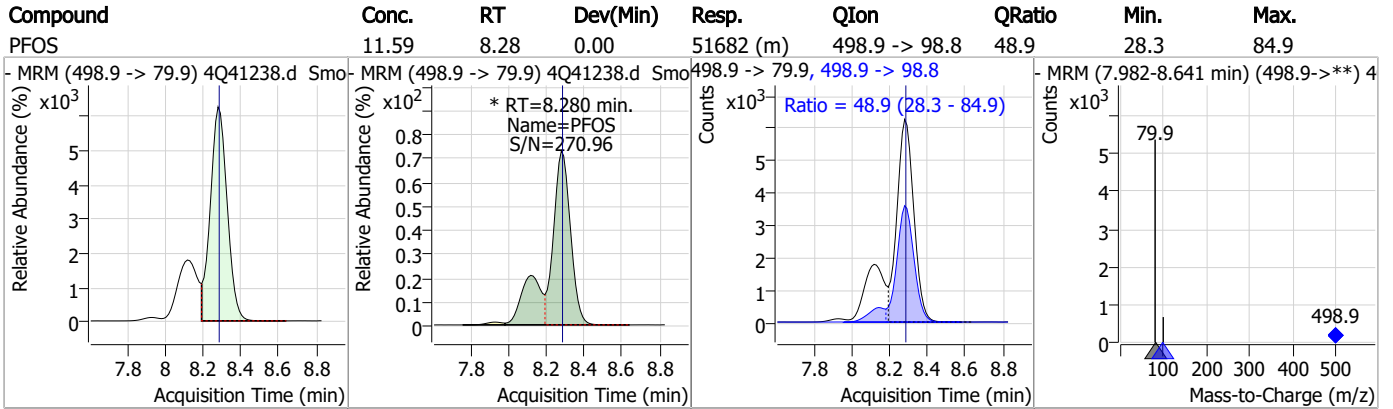
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	13.17	8.20	0.01	26128 (m)	570.1 -> 483.0	20.6	10.1	30.4



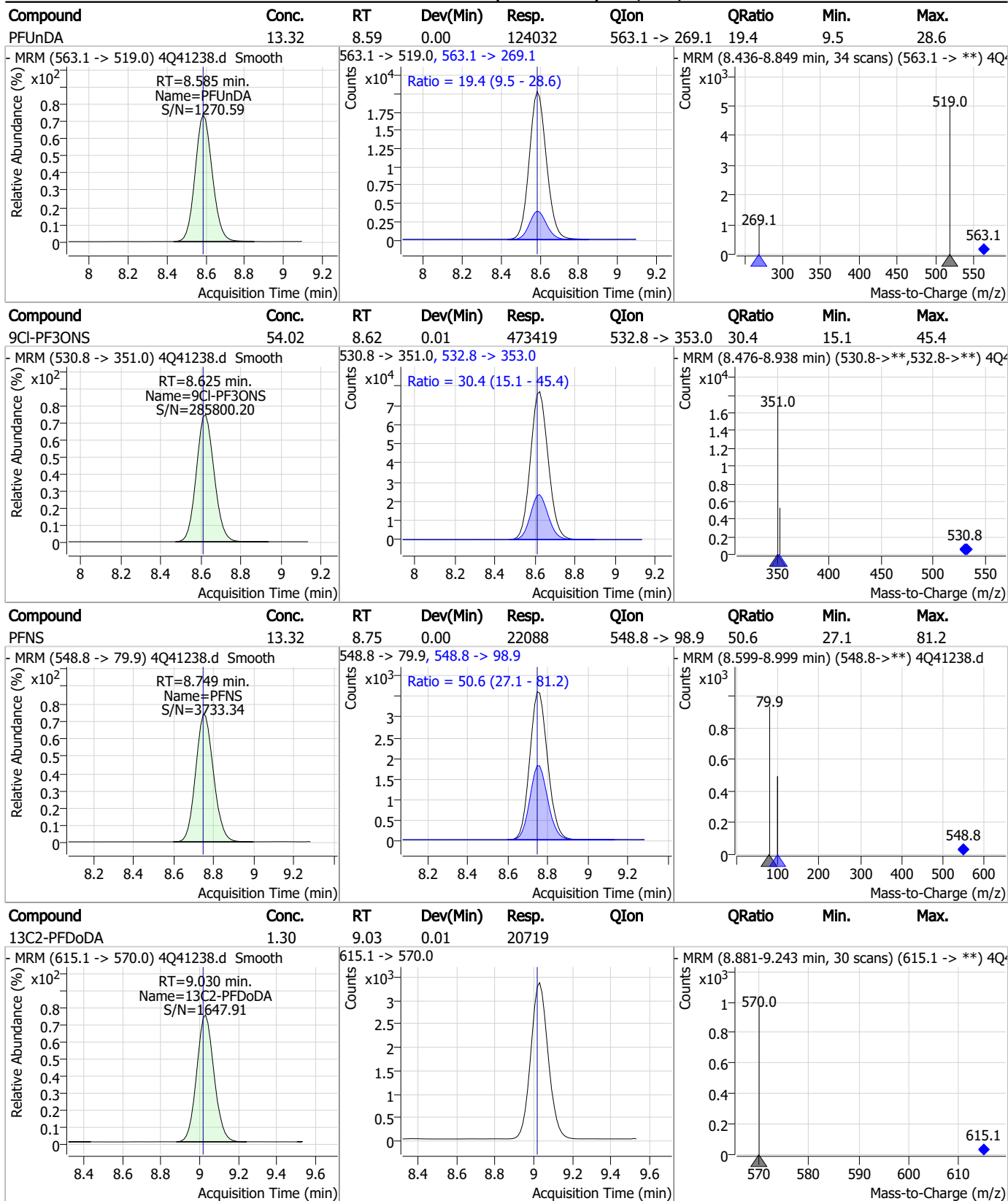
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.42	8.28	0.00	9592				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



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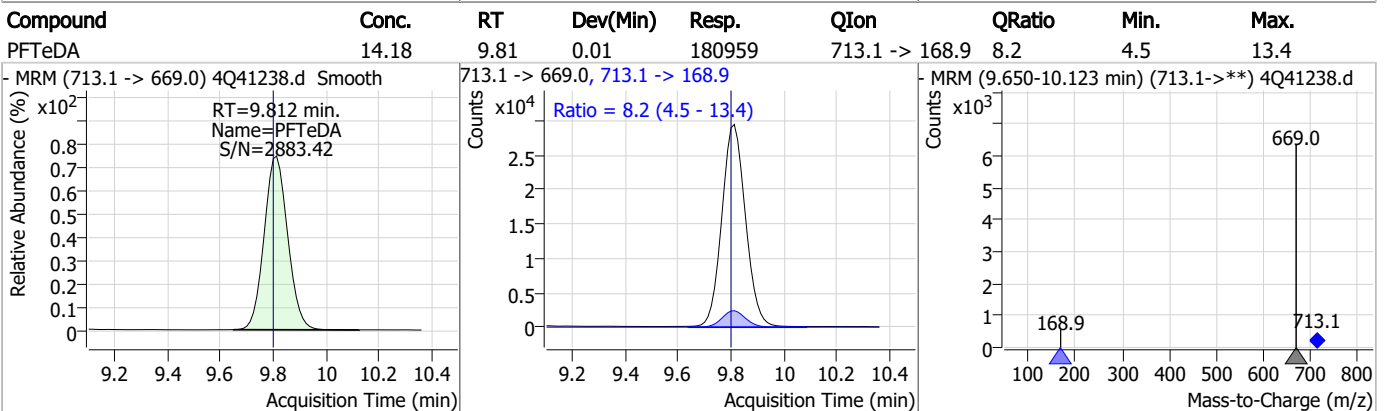
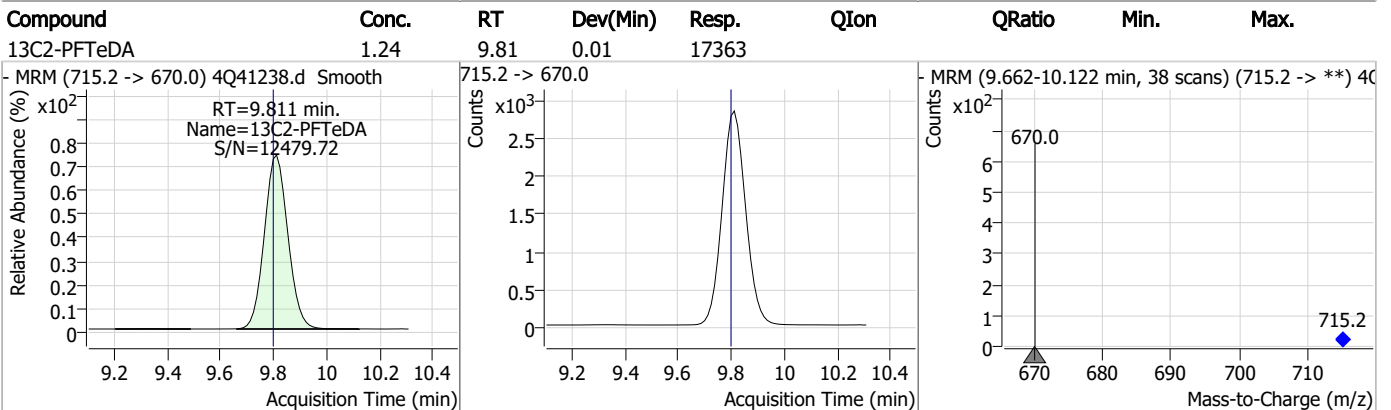
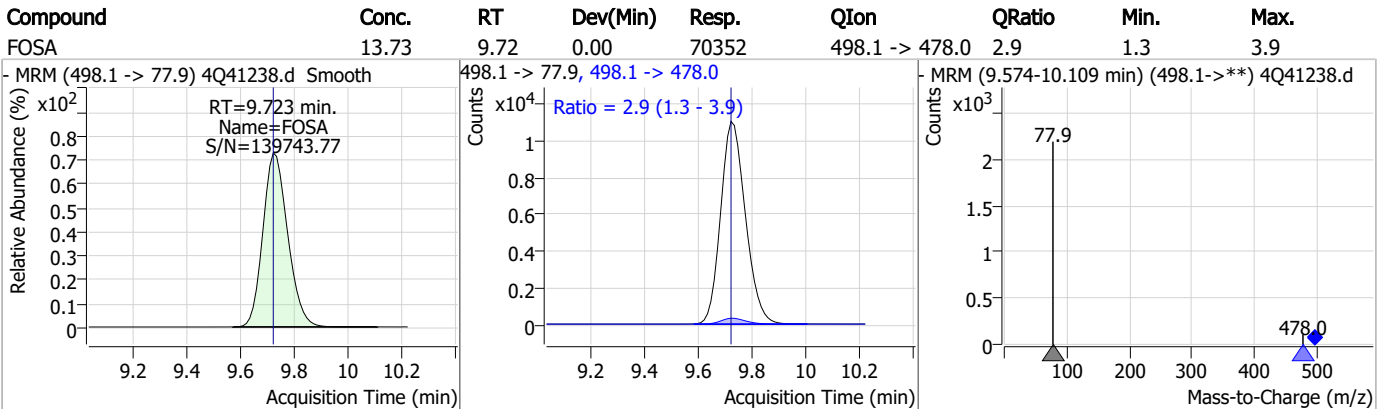
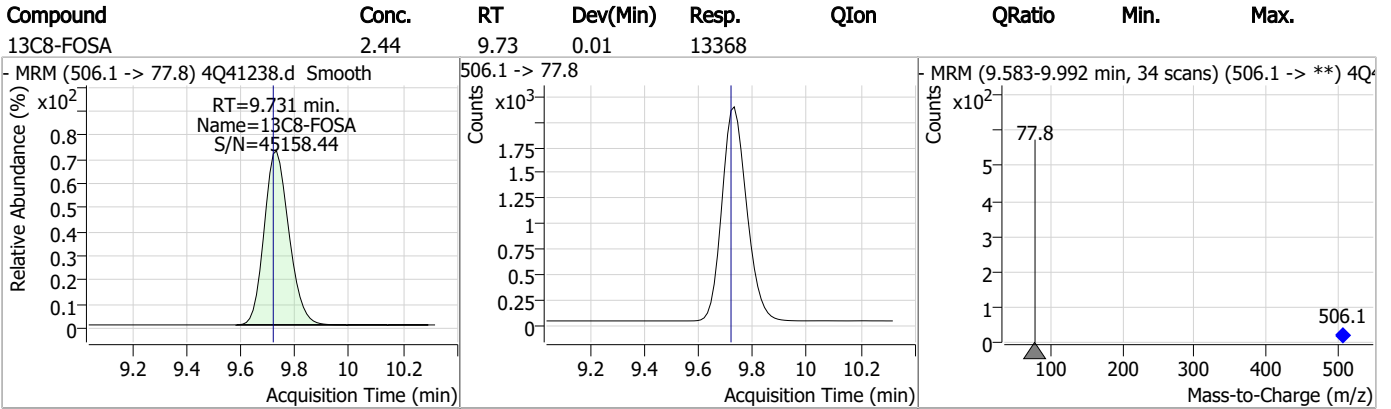
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDA	13.17	9.03	0.01	184182	613.1 -> 319.0	14.4	7.1	21.2
PFDS	13.47	9.20	0.01	28629	599.0 -> 98.8	47.3	26.4	79.1
PFTrDA	13.54	9.44	0.01	226358	663.0 -> 168.9	9.6	4.9	14.8
11CI-PF3OUds	52.41	9.48	0.00	384516	632.9 -> 452.9	30.6	15.6	46.9

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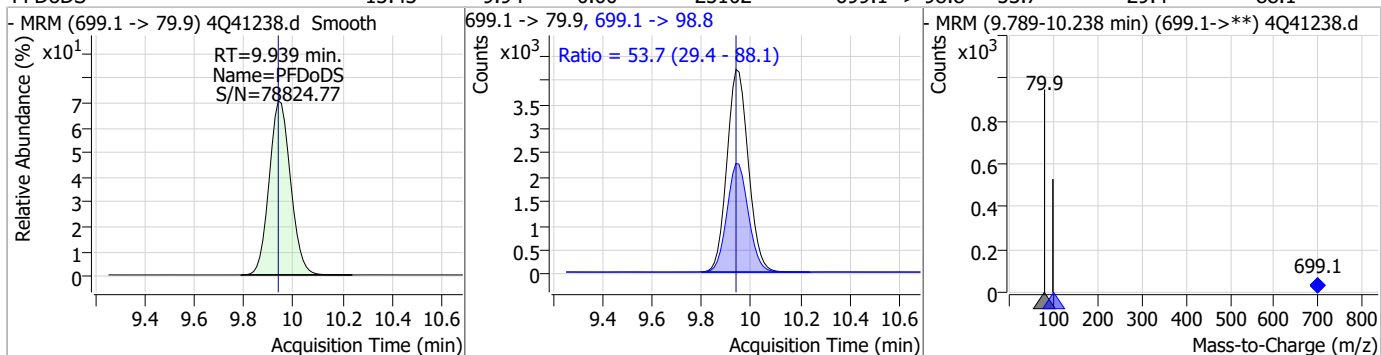
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Perfluorinated Compounds by LC/MS/MS

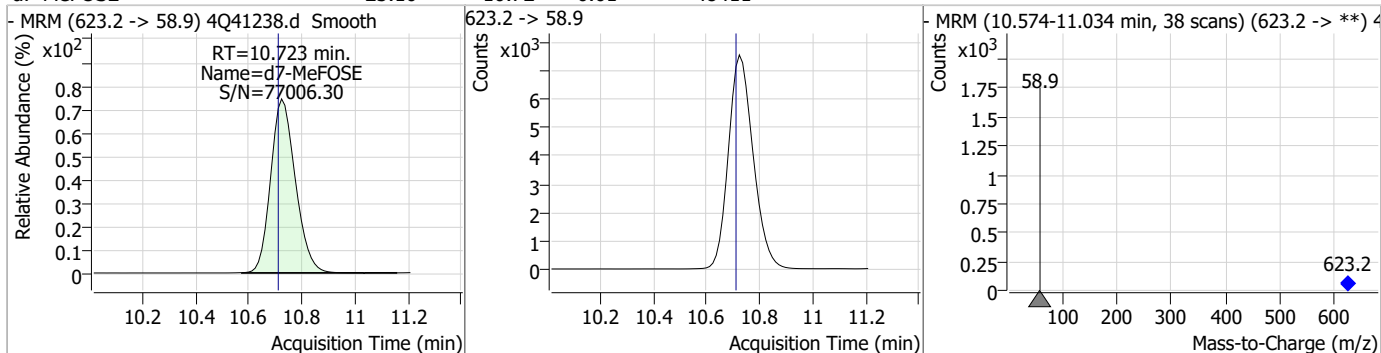


Perfluorinated Compounds by LC/MS/MS

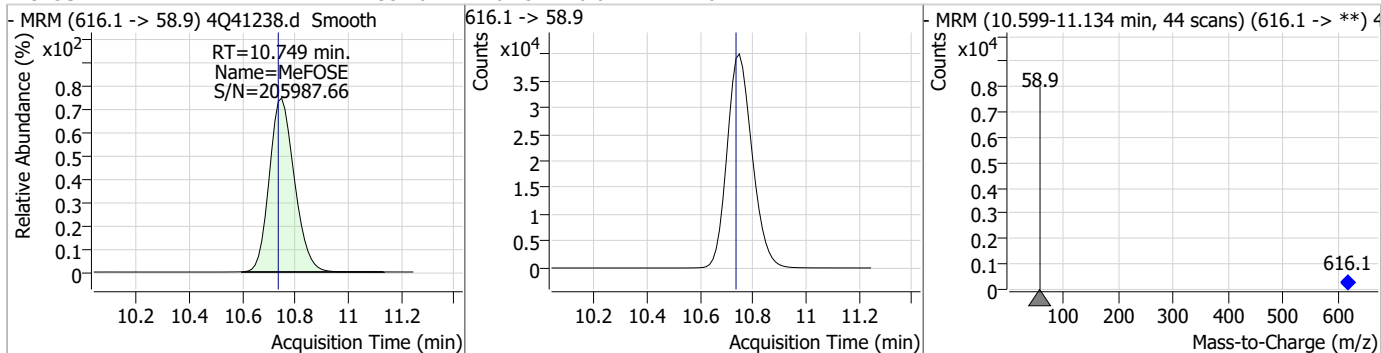
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	13.43	9.94	0.00	25102	699.1 -> 98.8	53.7	29.4	88.1



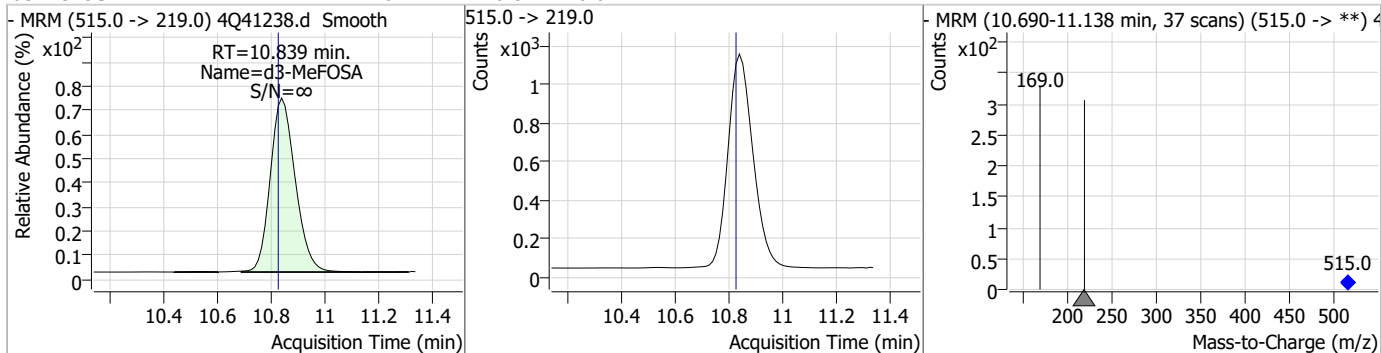
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.10	10.72	0.01	48411	623.2 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	135.40	10.75	0.01	261422	616.1 -> 58.9			

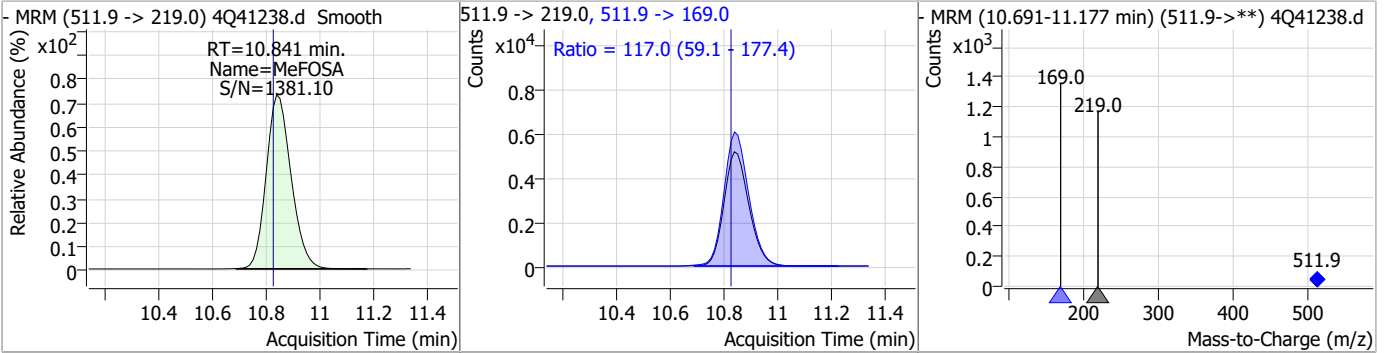


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.67	10.84	0.01	7211	515.0 -> 169.0			

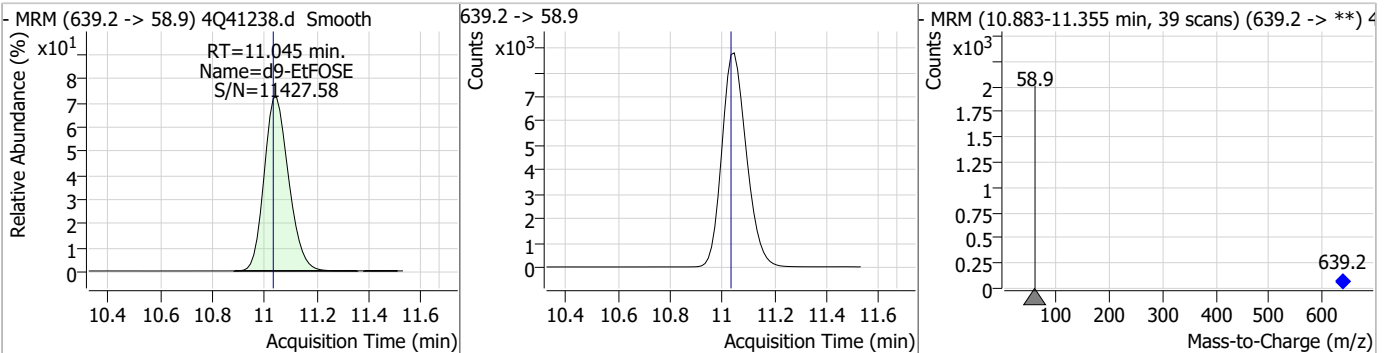


Perfluorinated Compounds by LC/MS/MS

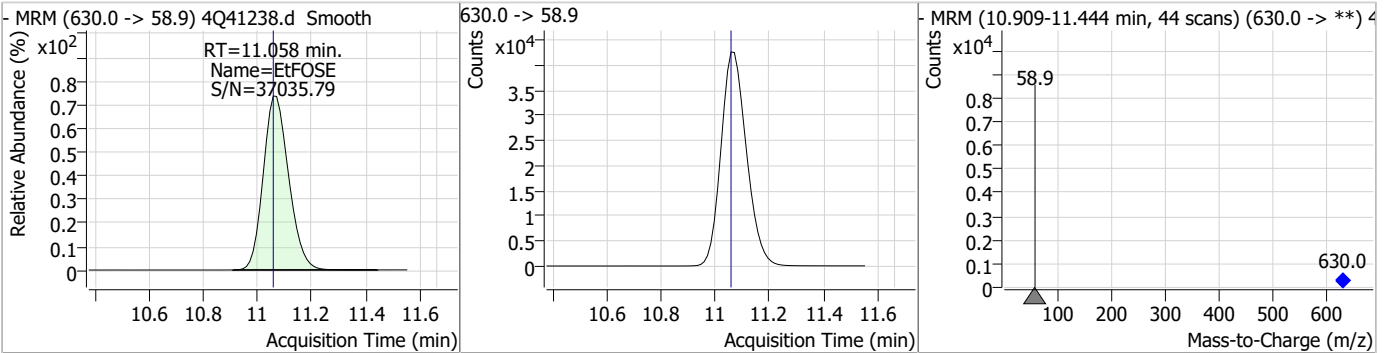
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	12.68	10.84	0.01	33395	511.9 -> 169.0	117.0	59.1	177.4



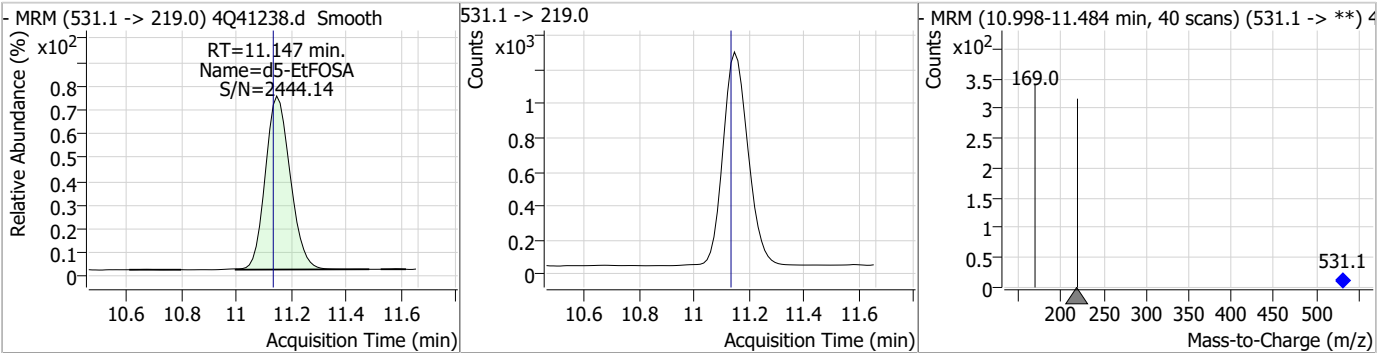
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.00	11.04	0.01	57044				



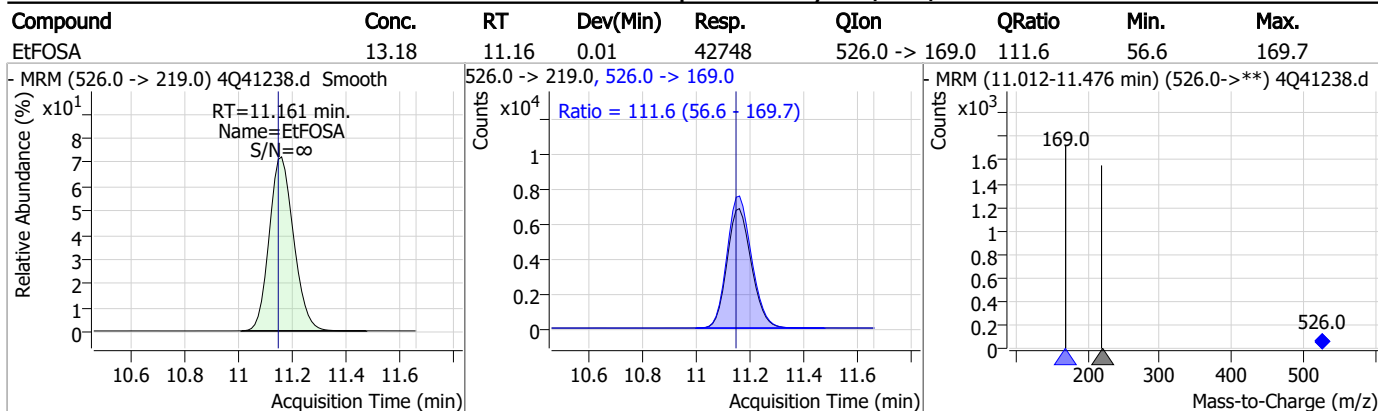
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	136.14	11.06	0.00	279098				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.60	11.15	0.01	7890				



Perfluorinated Compounds by LC/MS/MS



7.6.8
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Manual Integration Approval Summary

Sample Number: S4Q589-IC589 Method: EPA DRAFT 1633
Lab FileID: 4Q41238.D Analyst approved: 02/27/23 14:05 Anna Ludwig
Injection Time: 02/24/23 17:29 Supervisor approved: 02/27/23 16:52 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.21	Split peak
MeFOSAA	2355-31-9		8.20	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.28	Split peak
EtFOSAA	2991-50-6		8.41	Split peak

7.6.8.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41239.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/24/2023 5:43:16 PM
 Sample Name : ic589-8
 Vial : P1-A9
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q589.batch.bin
 Sample Information : op95462,S4Q589,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.099	216.8 -> 171.9	91059	10.00 µg/L	0.000
M5-PFPeA	4.475	268.3 -> 223.0	60429	5.00 µg/L	-0.012
M5-PFHxA	5.559	318.0 -> 273.0	49355	2.50 µg/L	0.000
M4-PFHpA	6.443	367.1 -> 322.0	25621	2.50 µg/L	0.000
M8-PFOA	7.101	421.1 -> 376.0	29208	2.50 µg/L	0.012
M9-PFNA	7.634	472.1 -> 427.0	16528	1.25 µg/L	0.000
M6-PFDA	8.128	519.1 -> 474.1	15382	1.25 µg/L	0.012
M7-PFUnDA	8.573	570.0 -> 525.1	14596	1.25 µg/L	-0.012
M2-PFDoDA	9.017	615.1 -> 570.0	19604	1.25 µg/L	0.000
M2-PFTeDA	9.799	715.2 -> 670.0	16508	1.25 µg/L	0.000
M8-FOSA	9.731	506.1 -> 77.8	13357	2.50 µg/L	0.012
M3-PFBS	5.501	302.1 -> 79.9	11209	2.50 µg/L	0.012
M3-PFHxS	7.204	402.1 -> 79.9	6880	2.50 µg/L	0.000
M8-PFOS	8.279	507.1 -> 79.9	9086	2.50 µg/L	0.000
M2-4:2FTS	5.260	329.1 -> 80.9	1051	5.00 µg/L	0.000
M2-6:2FTS	6.860	429.1 -> 80.9	1479	5.00 µg/L	0.000
M2-8:2FTS	7.916	529.1 -> 80.9	2753	5.00 µg/L	0.000
M3-MeFOSAA	8.185	573.2 -> 419.0	12584	5.00 µg/L	0.000
M3-HFPO-DA	5.901	286.9 -> 168.9	27749	10.00 µg/L	0.012
M5-EtFOSAA	8.396	589.2 -> 419.0	10316	5.00 µg/L	0.000
M7-MeFOSE	10.723	623.2 -> 58.9	43414	25.00 µg/L	0.012
M9-EtFOSE	11.045	639.2 -> 58.9	50362	25.00 µg/L	0.012
M5-EtFOSA	11.160	531.1 -> 219.0	7426	2.50 µg/L	0.025
M3-MeFOSA	10.839	515.0 -> 219.0	6983	2.50 µg/L	0.012
13C4-PFOS	8.280	502.8 -> 79.9	8946	2.50 µg/L	0.000
13C3-PFBA	3.090	216.0 -> 172.0	53809	5.00 µg/L	-0.013
18O2-PFHxS	7.203	403.0 -> 83.9	5029	2.50 µg/L	0.000
13C4-PFOA	7.101	417.1 -> 372.0	35187	2.50 µg/L	0.012
13C2-PFDA	8.128	515.1 -> 470.1	13454	1.25 µg/L	0.000
13C5-PFNA	7.634	468.0 -> 423.0	18111	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	45743	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1051	3.59 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 71.8%		
13C2-6:2FTS	6.860	429.1 -> 80.9	1479	3.76 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 75.2%		
13C2-8:2FTS	7.916	529.1 -> 80.9	2753	4.32 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 86.4%		
13C2-PFDoDA	9.017	615.1 -> 570.0	19604	1.36 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.7%		
13C2-PFTeDA	9.799	715.2 -> 670.0	16508	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.2%		
13C3-PFBS	5.501	302.1 -> 79.9	11209	2.32 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 92.9%		
13C3-PFHxS	7.204	402.1 -> 79.9	6880	2.42 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.9%	
13C4-PFBA	3.099	216.8 -> 171.9	91059	9.82 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C4-PFHpA	6.443	367.1 -> 322.0	25621	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C5-PFHxA	5.559	318.0 -> 273.0	49355	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C5-PFPeA	4.475	268.3 -> 223.0	60429	4.70 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.0%	
13C6-PFDA	8.128	519.1 -> 474.1	15382	1.29 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.8%	
13C7-PFUnDA	8.573	570.0 -> 525.1	14596	1.19 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.2%	
13C8-FOSA	9.731	506.1 -> 77.8	13357	2.69 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.7%	
13C8-PFOA	7.101	421.1 -> 376.0	29208	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C8-PFOS	8.279	507.1 -> 79.9	9086	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C9-PFNA	7.634	472.1 -> 427.0	16528	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.6%	
d3-MeFOSAA	8.185	573.2 -> 419.0	12584	4.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C3-HFPO-DA	5.901	286.9 -> 168.9	27749	9.84 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.4%	
d3-MeFOSA	10.839	515.0 -> 219.0	6983	2.86 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 114.4%	
d5-EtFOSAA	8.396	589.2 -> 419.0	10316	4.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.1%	
d7-MeFOSE	10.723	623.2 -> 58.9	43414	24.86 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
d9-EtFOSE	11.045	639.2 -> 58.9	50362	24.38 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.5%	
d5-EtFOSA	11.160	531.1 -> 219.0	7426	2.71 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.2%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	346226	247.36 µg/L	99
		327.1 -> 80.9	150303		
6:2FTS	6.861	427.1 -> 407.0	242076	217.17 µg/L	99
		427.1 -> 80.9	106773		
8:2FTS	7.916	527.1 -> 507.0	274752	214.38 µg/L	99
		527.1 -> 80.8	111191		
EtFOSAA	8.397	584.2 -> 419.1	114169	70.65 µg/L	m 88
		584.2 -> 526.0	51677		
FOSA	9.723	498.1 -> 77.9	341535	66.70 µg/L	100
		498.1 -> 478.0	9287		
MeFOSAA	8.186	570.1 -> 419.0	125334	71.50 µg/L	m 99
		570.1 -> 483.0	25024		
PFBA	3.095	212.8 -> 168.9	601140	279.23 µg/L	100
PFBS	5.502	298.7 -> 79.9	267998	59.97 µg/L	100
		298.7 -> 98.8	101035		
PFDA	8.129	512.9 -> 469.0	644373	67.93 µg/L	99
		512.9 -> 219.0	131153		
PFDoDA	9.018	613.1 -> 569.0	874856	66.12 µg/L	99
		613.1 -> 319.0	127091		
PFDS	9.184	599.0 -> 79.9	131220	65.16 µg/L	93

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.444	599.0 -> 98.8	62692	70.51	µg/L	100
		363.1 -> 319.0	955419			
PFHpS	7.774	363.1 -> 169.0	166240	61.32	µg/L	98
		449.0 -> 79.9	163668			
PFHxA	5.562	449.0 -> 98.9	81812	64.98	µg/L	99
		313.0 -> 269.0	1126690			
PFHxS	7.205	313.0 -> 118.9	34080	63.76	µg/L	99
		398.7 -> 79.9	163231			
PFNA	7.635	398.7 -> 98.9	82978	67.47	µg/L	98
		463.0 -> 419.0	633262			
PFNS	8.749	463.0 -> 219.0	160088	72.70	µg/L	95
		548.8 -> 79.9	114216			
PFOA	7.102	548.8 -> 98.9	57417	69.93	µg/L	99
		413.0 -> 369.0	960447			
PFOS	8.280	413.0 -> 169.0	196259	55.53	µg/L	88
		498.9 -> 79.9	234598			
PFPeA	4.477	498.9 -> 98.8	112729	137.41	µg/L	100
		263.0 -> 219.0	1690599			
PFPeS	6.496	349.1 -> 79.9	148305	65.73	µg/L	98
		349.1 -> 98.9	63214			
PFTeDA	9.799	713.1 -> 669.0	815404	67.21	µg/L	98
		713.1 -> 168.9	67221			
PFTrDA	9.428	663.0 -> 619.0	914406	57.82	µg/L	100
		663.0 -> 168.9	89854			
PFUnDA	8.573	563.1 -> 519.0	527450	65.54	µg/L	98
		563.1 -> 269.1	104796			
11Cl-PF3OUdS	9.480	630.9 -> 450.9	1551655	227.75	µg/L	100
		632.9 -> 452.9	487402			
9Cl-PF3ONS	8.612	530.8 -> 351.0	1975426	242.75	µg/L	99
		532.8 -> 353.0	612549			
ADONA	6.705	376.9 -> 250.9	3958400	248.31	µg/L	99
		376.9 -> 84.8	1090562			
HFPO-DA	5.902	284.9 -> 168.9	598211	263.86	µg/L	98
		284.9 -> 184.9	69272			
3:3FTCA	4.129	241.0 -> 177.0	248417	392.00	µg/L	99
		241.0 -> 117.0	22062			
5:3FTCA	6.358	341.0 -> 237.1	4135945	1649.45	µg/L	100
		341.0 -> 217.0	2953630			
7:3FTCA	7.763	441.0 -> 316.9	1471233	1570.70	µg/L	100
		441.0 -> 336.9	3320151			
EtFOSA	11.161	526.0 -> 219.0	206393	67.62	µg/L	98
		526.0 -> 169.0	228500			
EtFOSE	11.071	630.0 -> 58.9	1198183	662.02	µg/L	100
		511.9 -> 219.0	164831			
MeFOSA	10.853	511.9 -> 169.0	191013	64.61	µg/L	98
		616.1 -> 58.9	1118016			
MeFOSE	10.749	699.1 -> 79.9	121429	645.72	µg/L	100
		699.1 -> 98.8	65636			
PFDoDS	9.939	295.0 -> 201.0	64690	68.57	µg/L	94
		295.0 -> 84.9	17334			
NFDHA	5.453	279.0 -> 85.1	999632	102.81	µg/L	99
		279.0 -> 85.1	999632			
PFMBA	4.854	229.0 -> 84.9	900104	141.01	µg/L	100
		314.8 -> 134.9	1547546			
PFMPA	3.690	314.8 -> 134.9	1547546	146.71	µg/L	100
		314.8 -> 82.9	55855			
PFEESA	5.983	314.8 -> 134.9	1547546	126.16	µg/L	100
		314.8 -> 82.9	55855			

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

7.6.9
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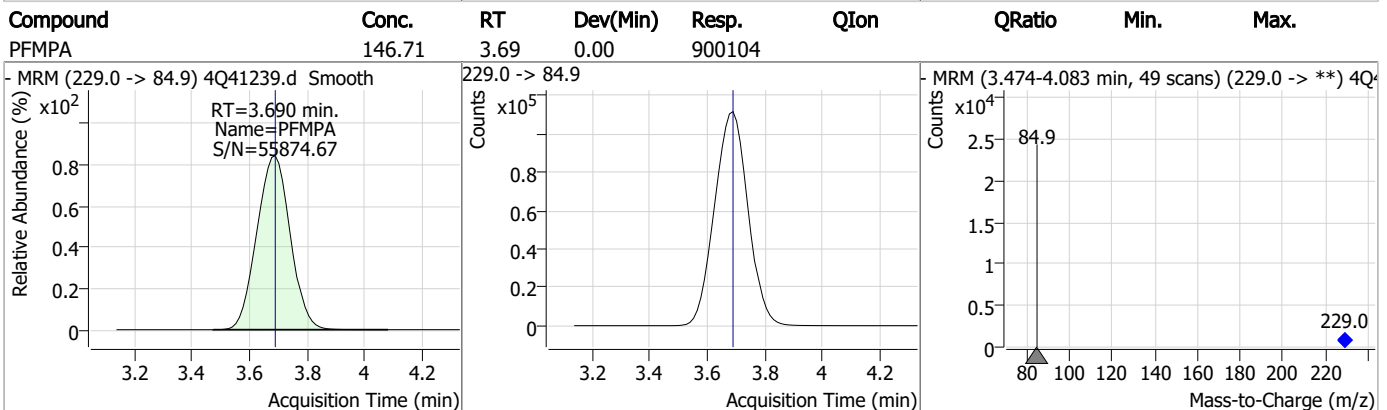
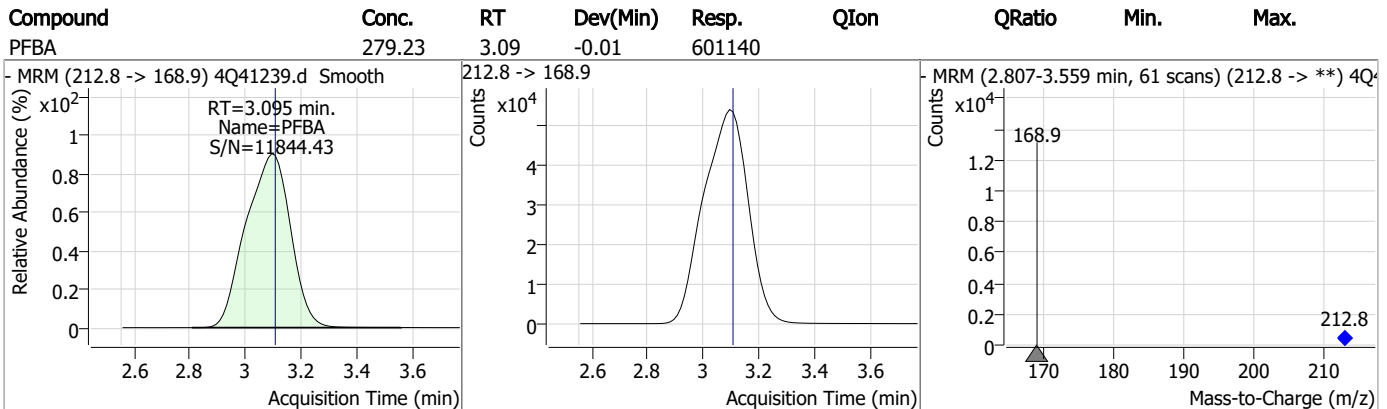
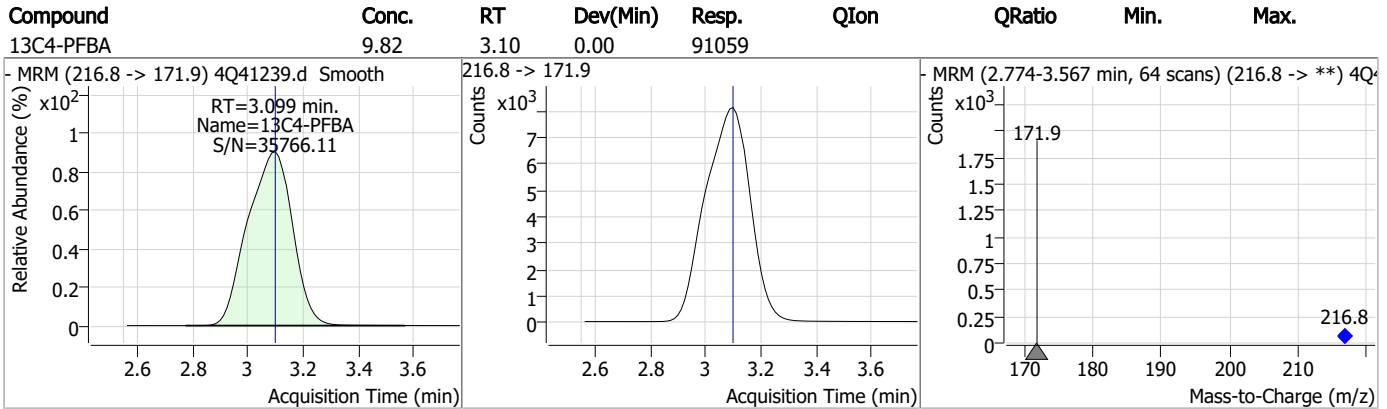
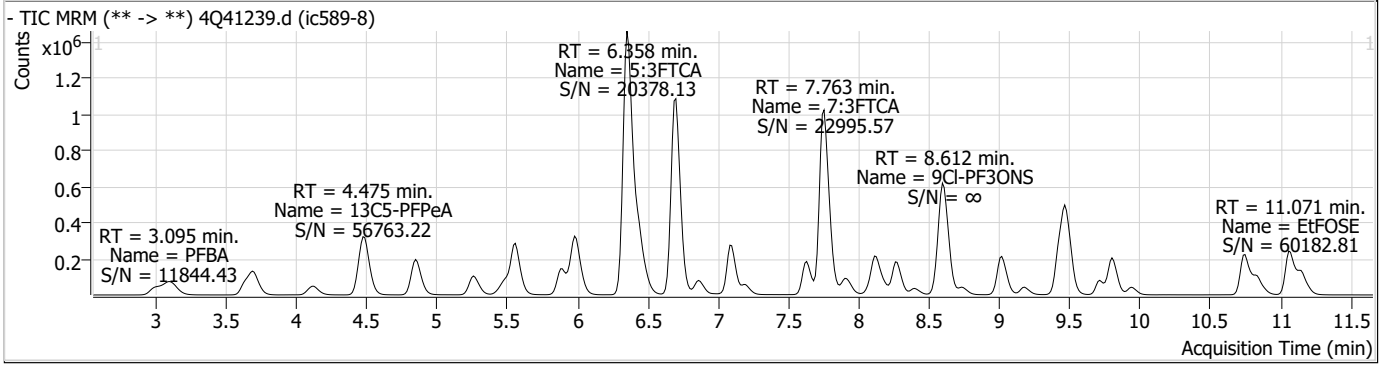
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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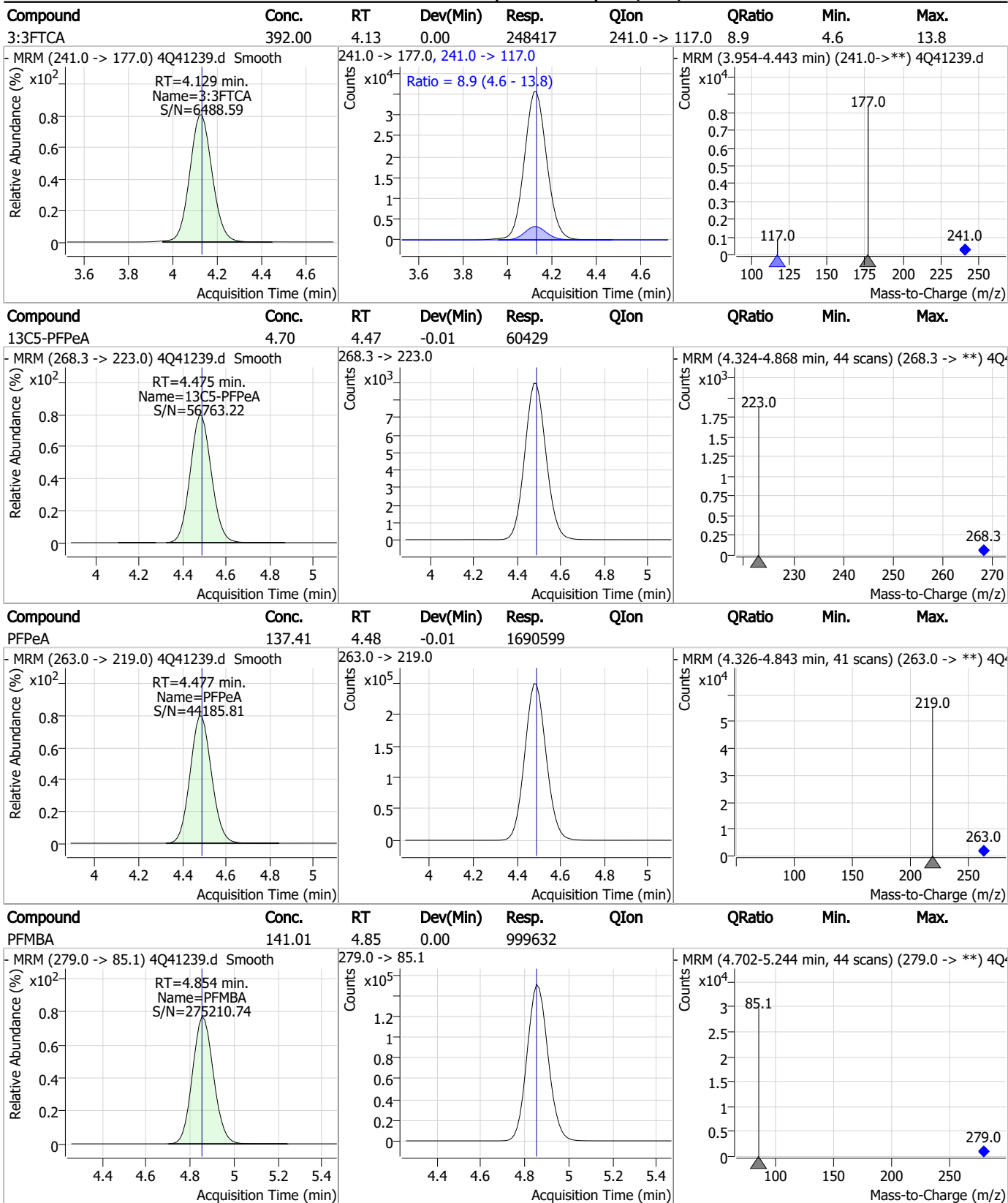
7.6.9

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Perfluorinated Compounds by LC/MS/MS

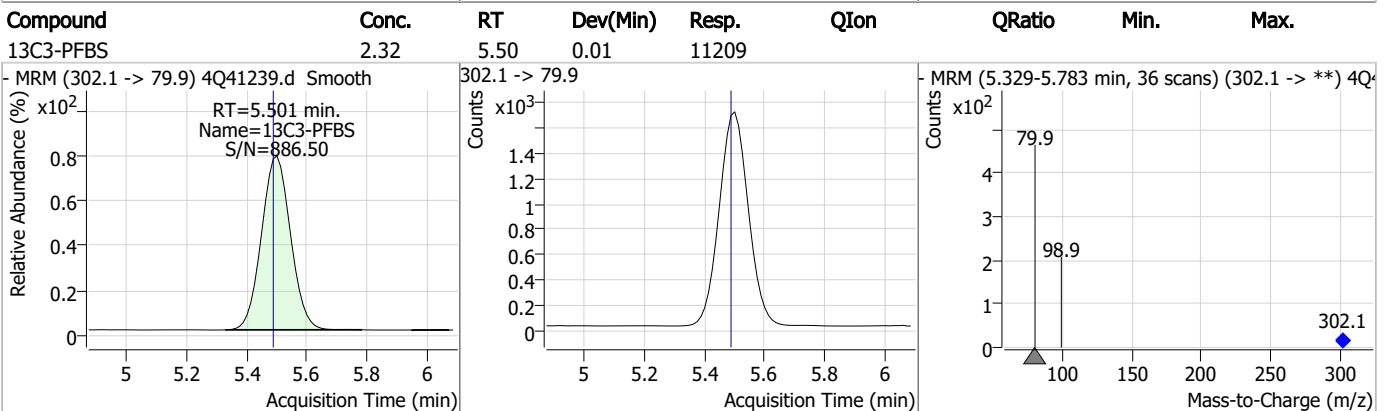
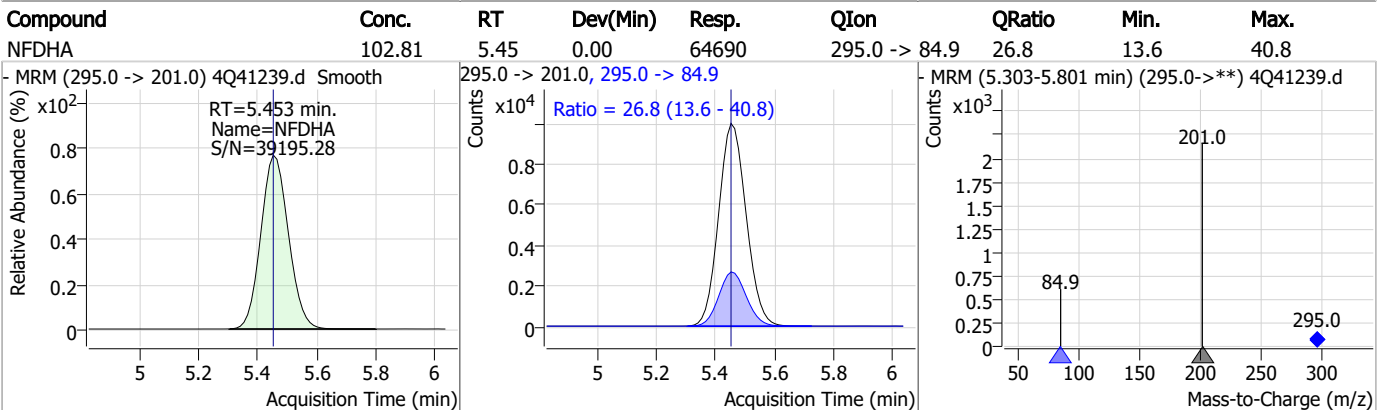
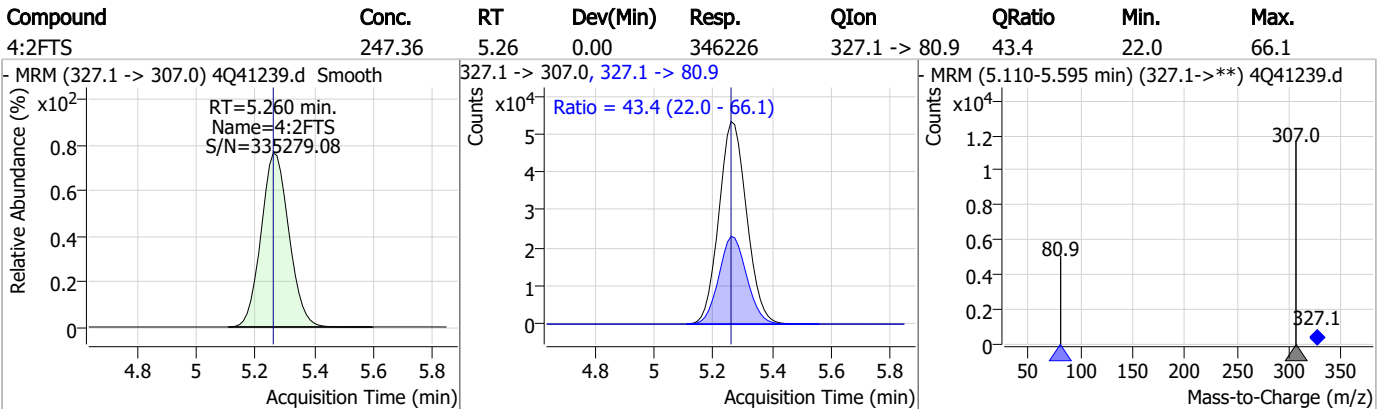
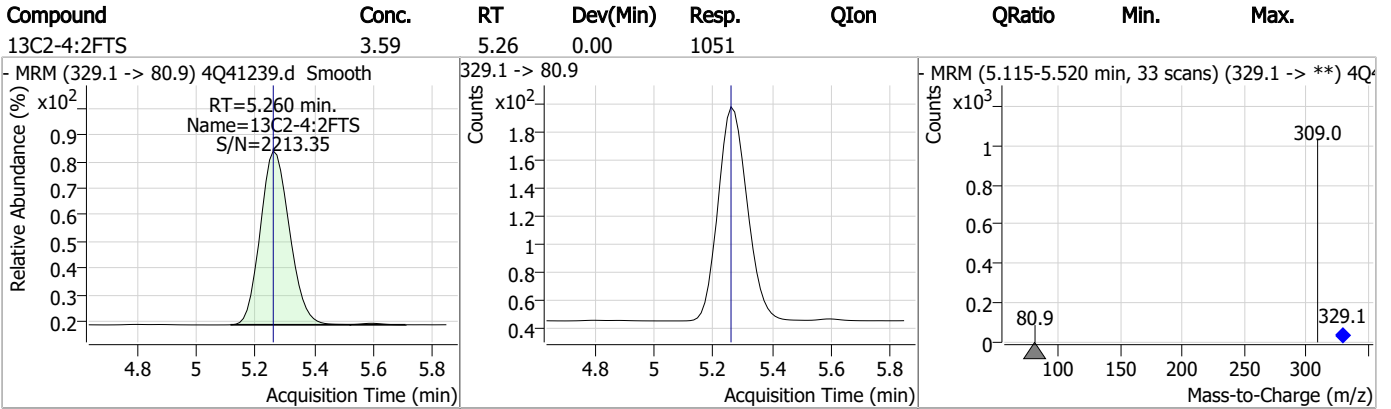


Perfluorinated Compounds by LC/MS/MS

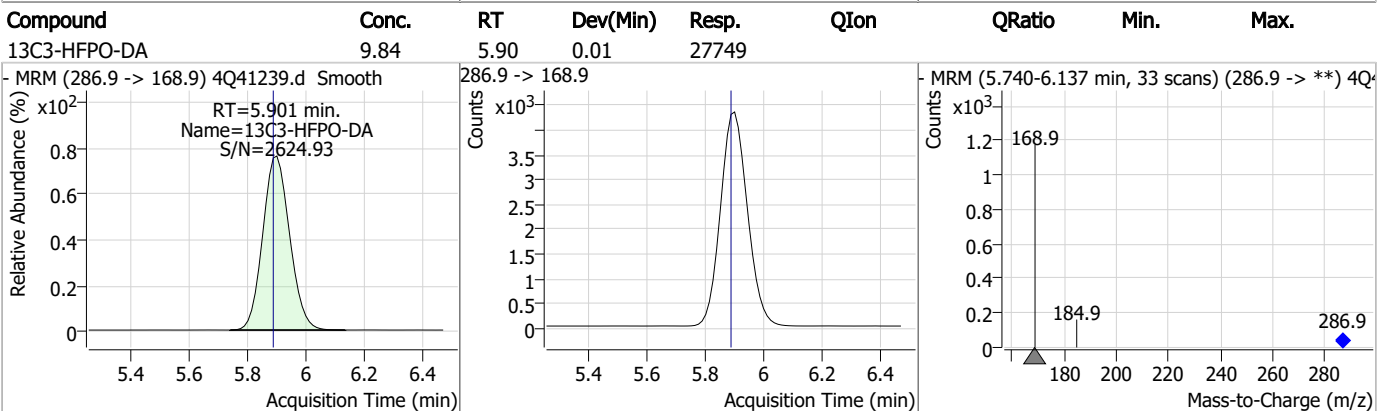
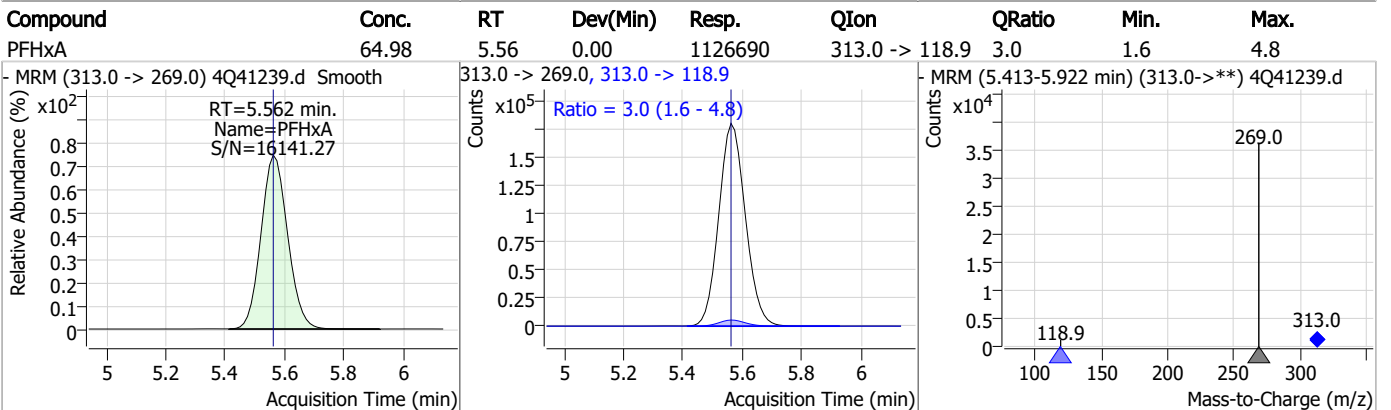
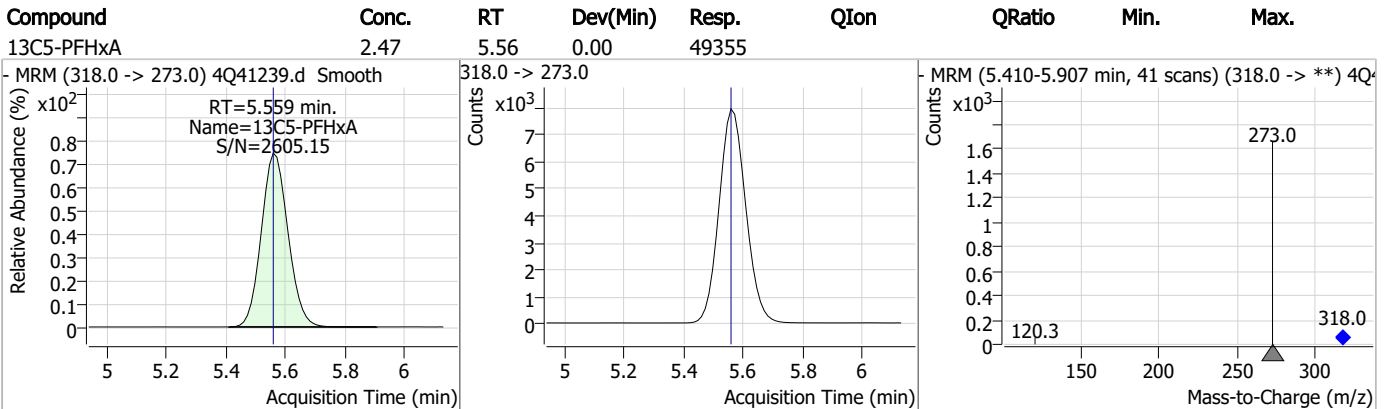
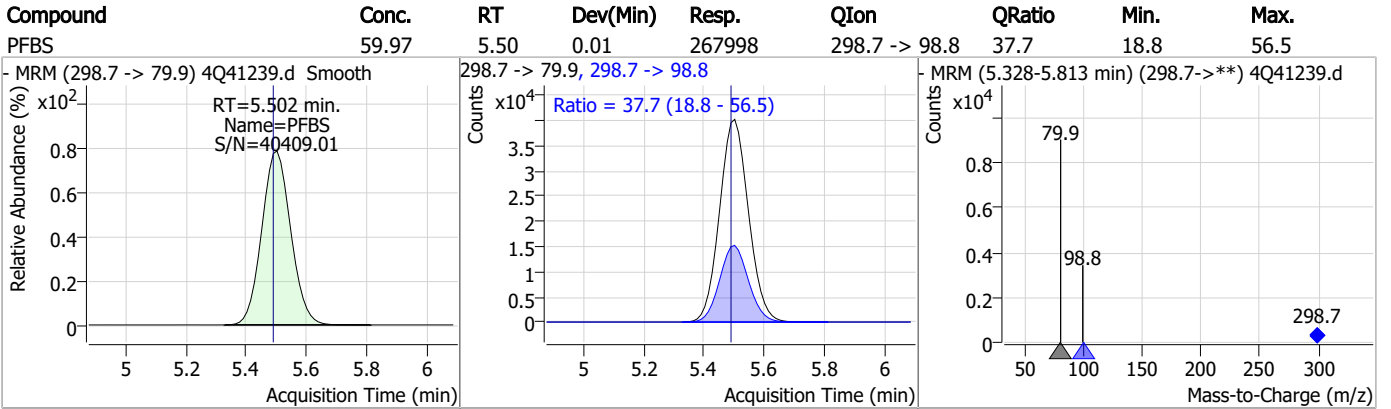


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Perfluorinated Compounds by LC/MS/MS



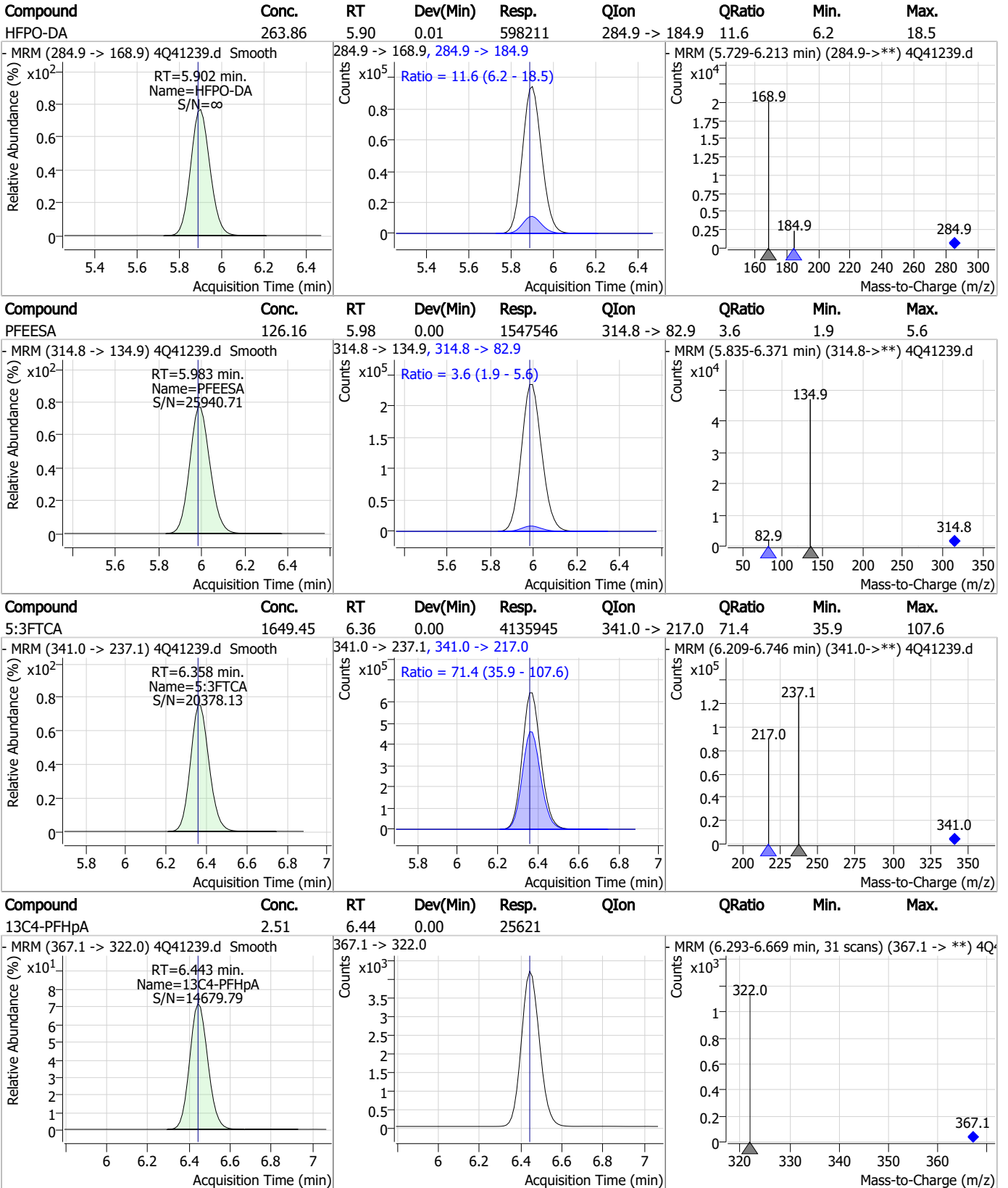
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

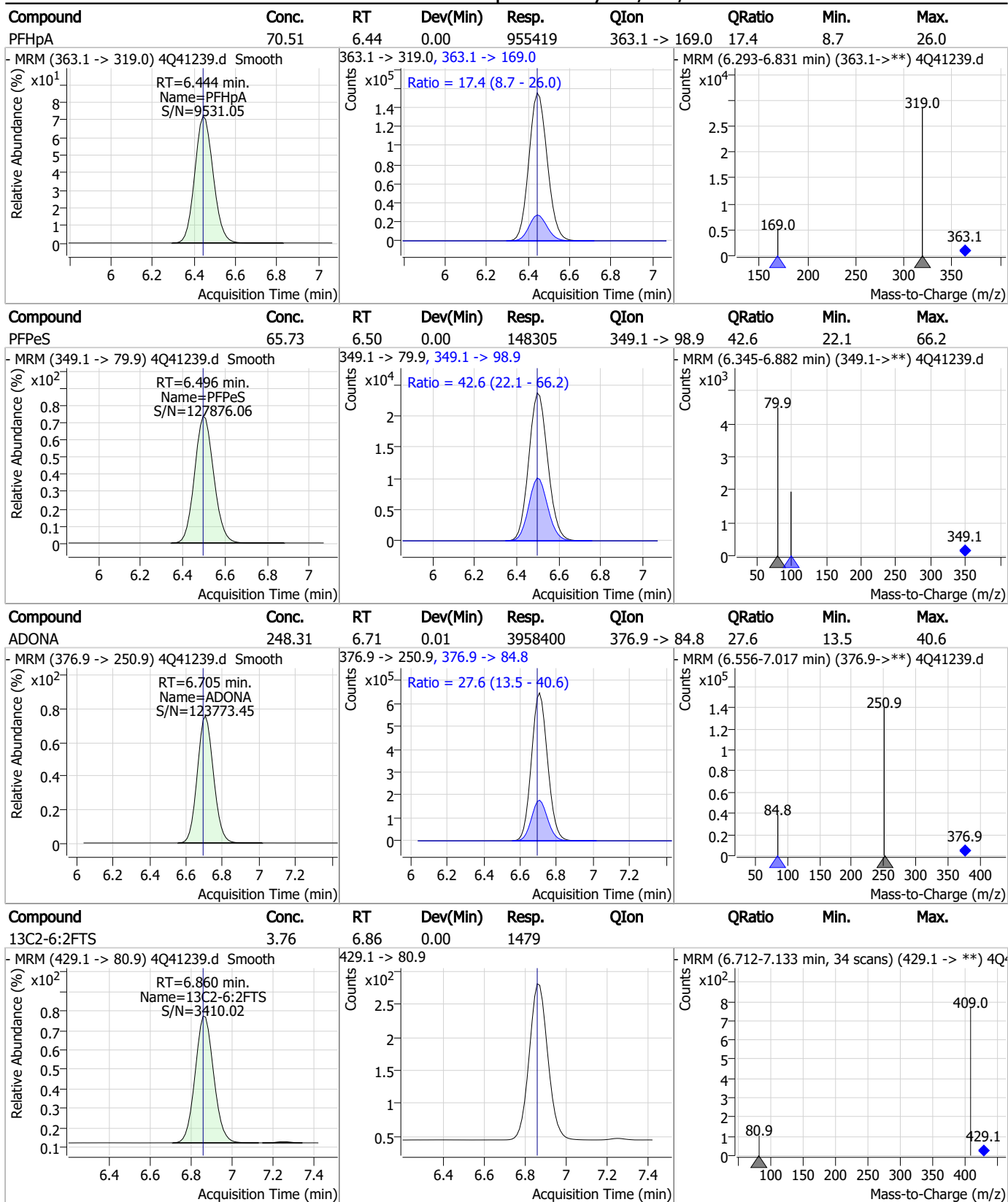


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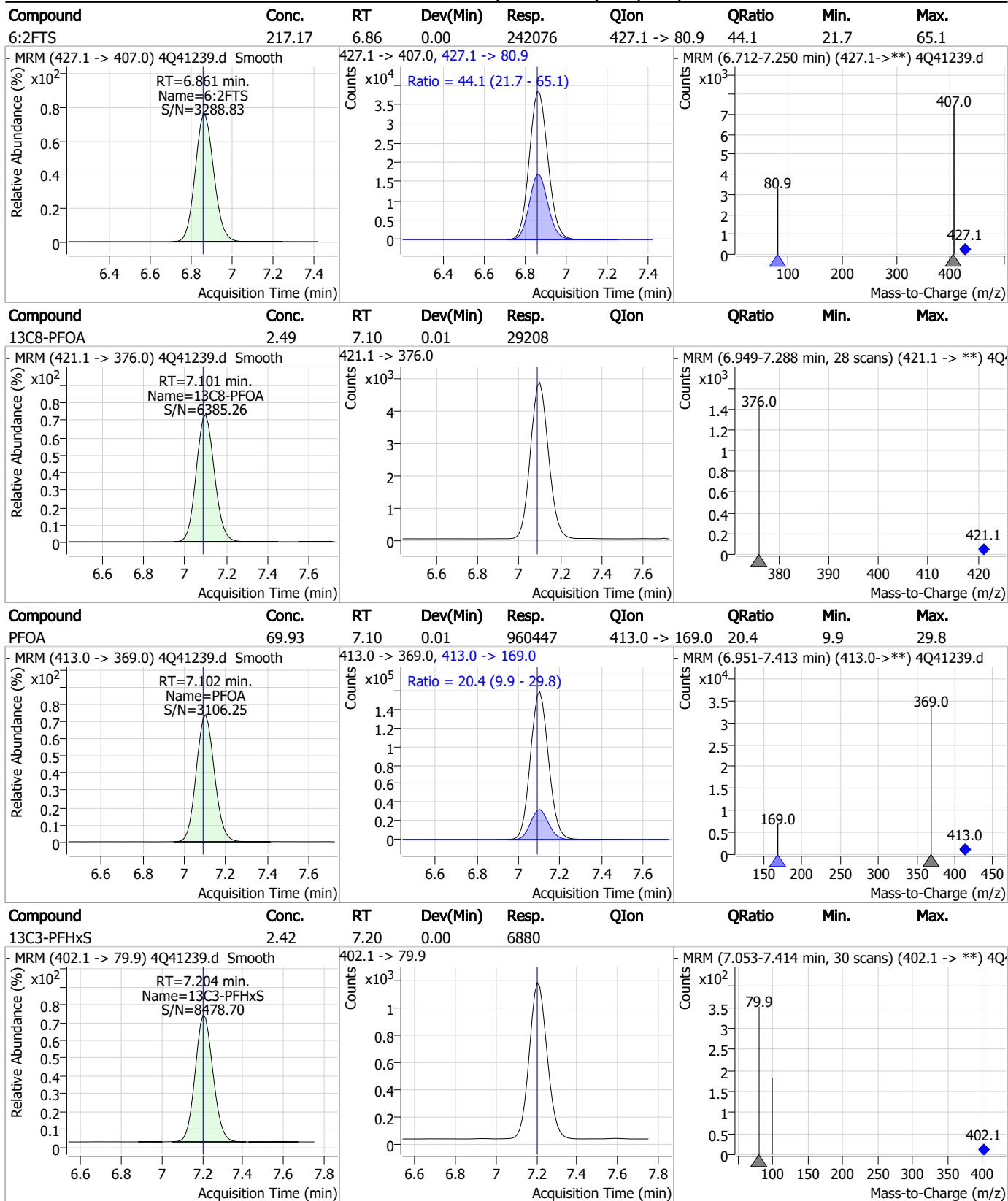


Perfluorinated Compounds by LC/MS/MS



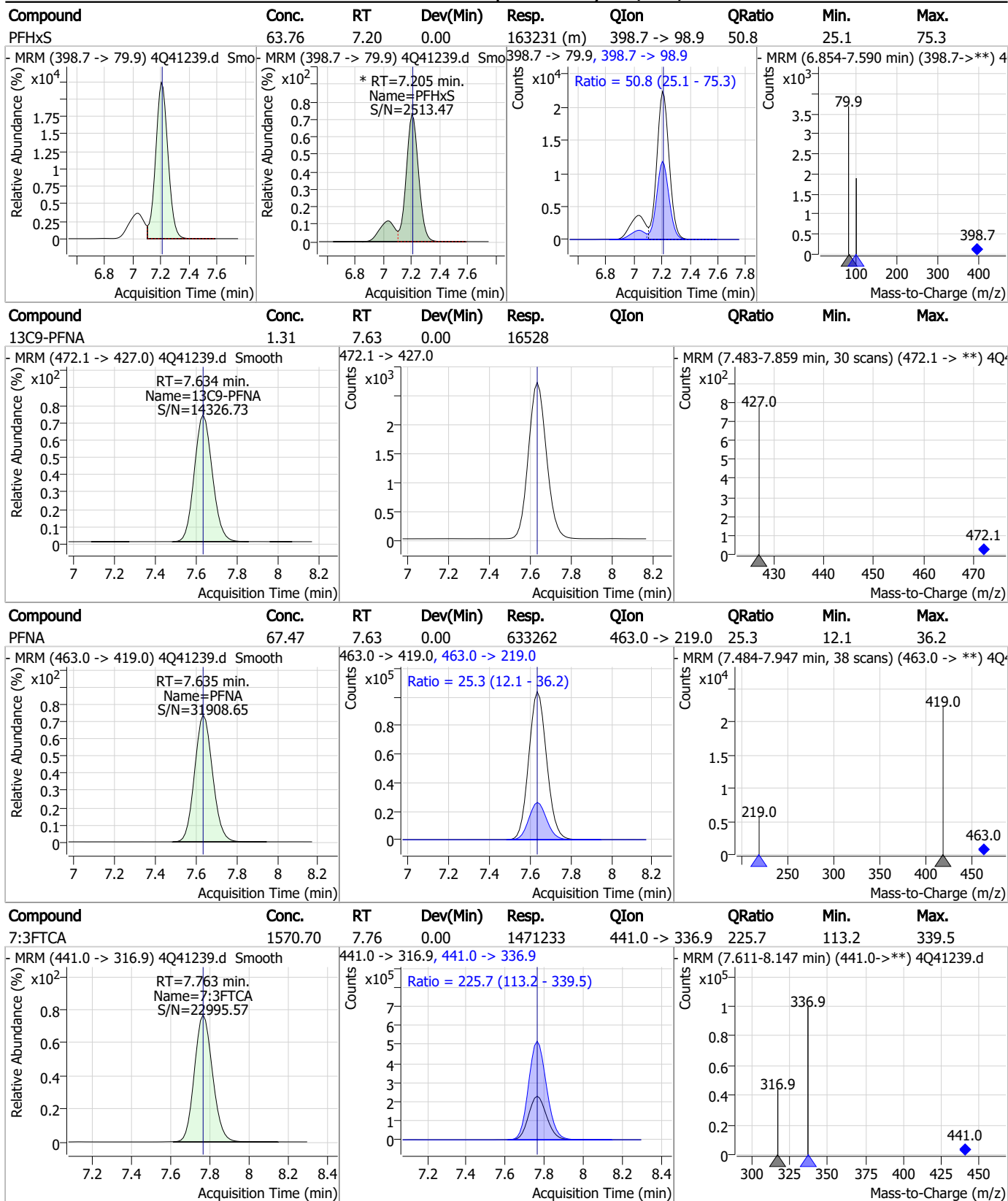
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Perfluorinated Compounds by LC/MS/MS



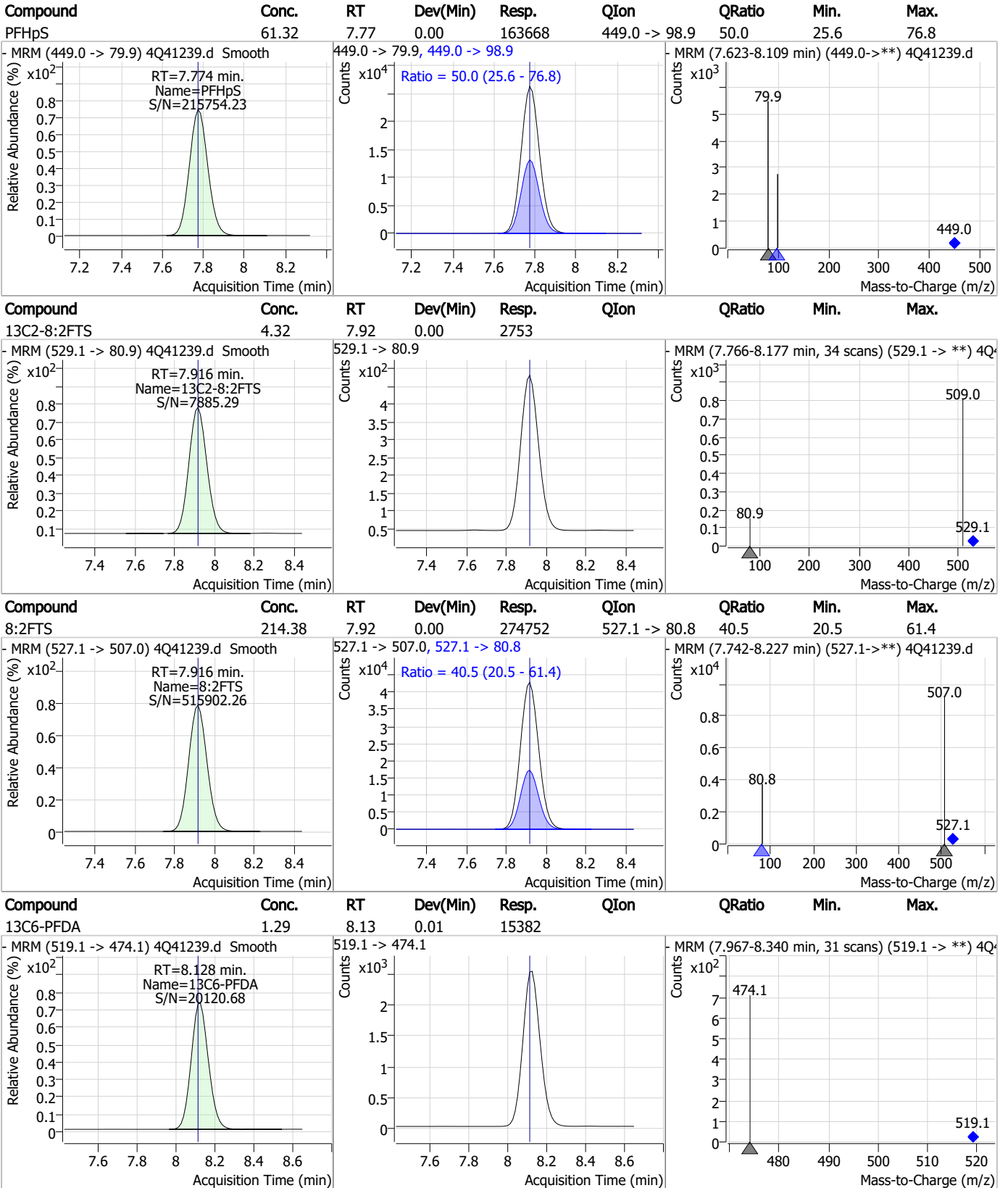
7.6.9

Perfluorinated Compounds by LC/MS/MS



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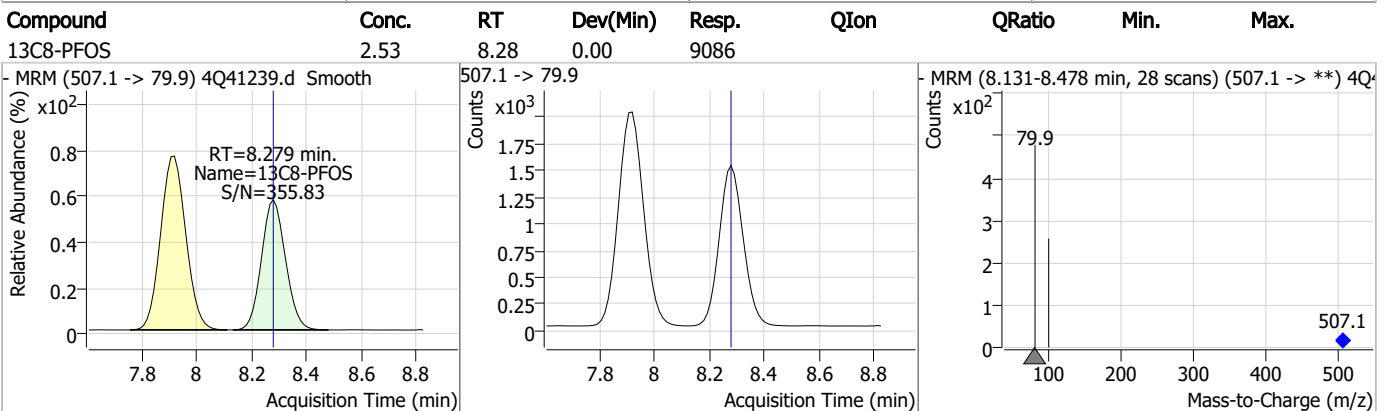
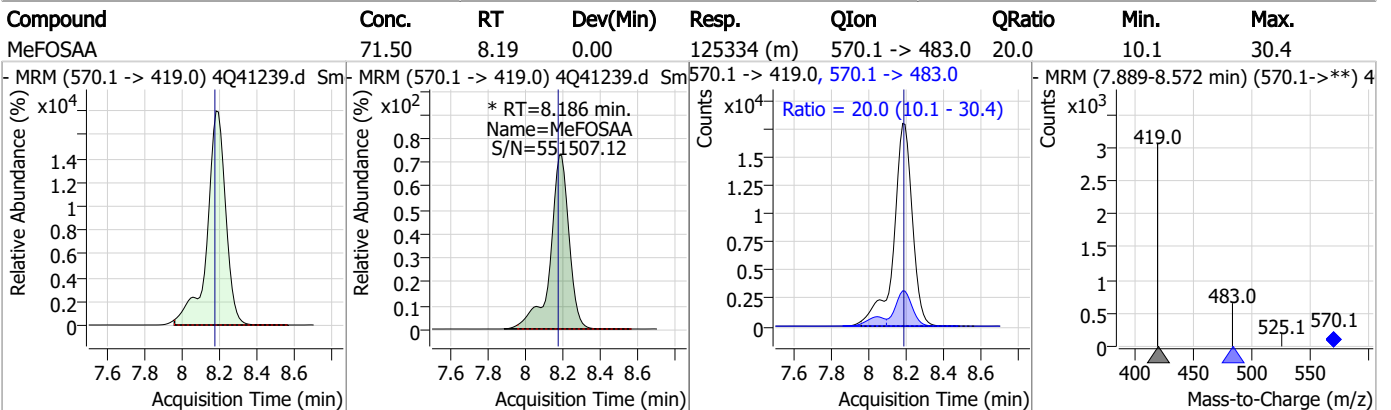
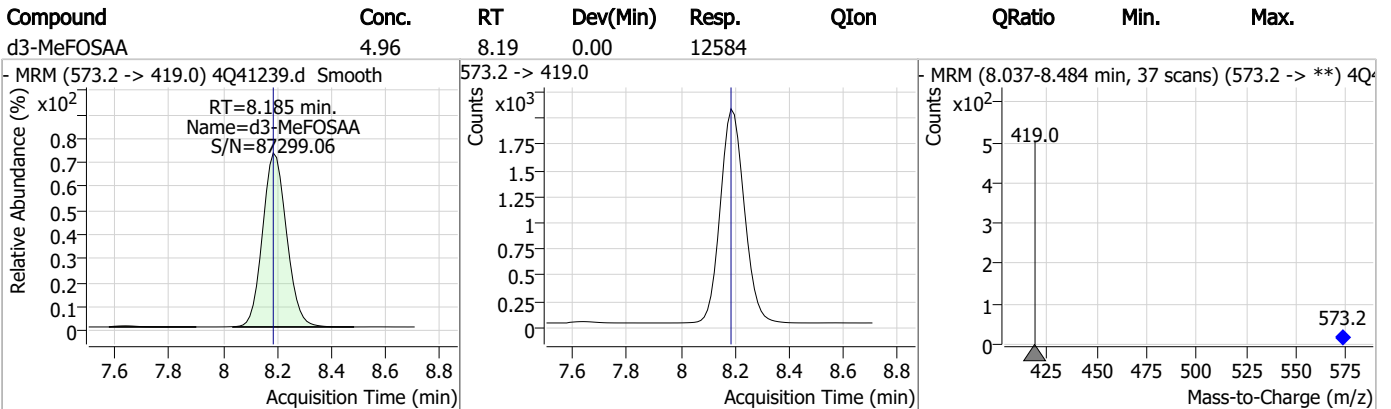
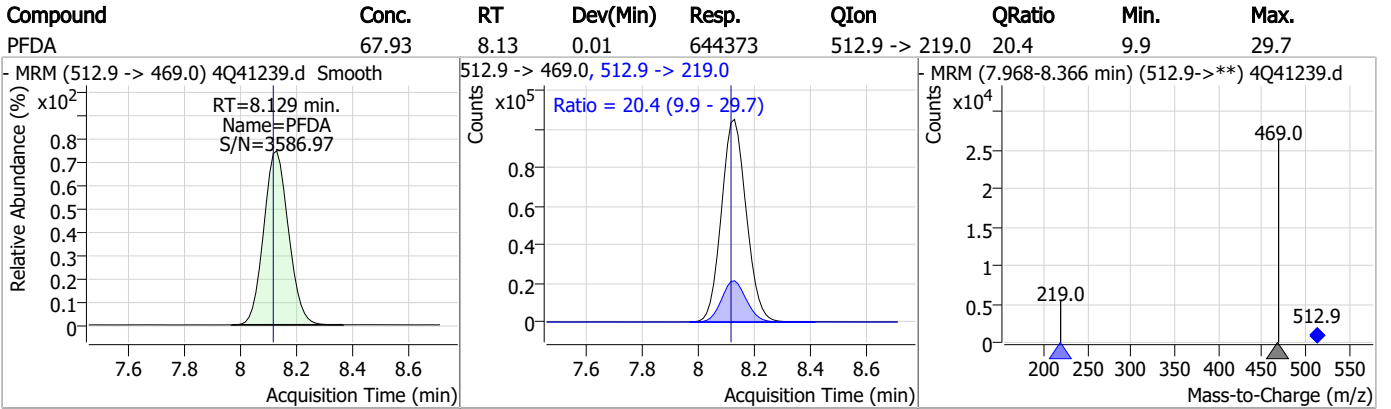
Perfluorinated Compounds by LC/MS/MS



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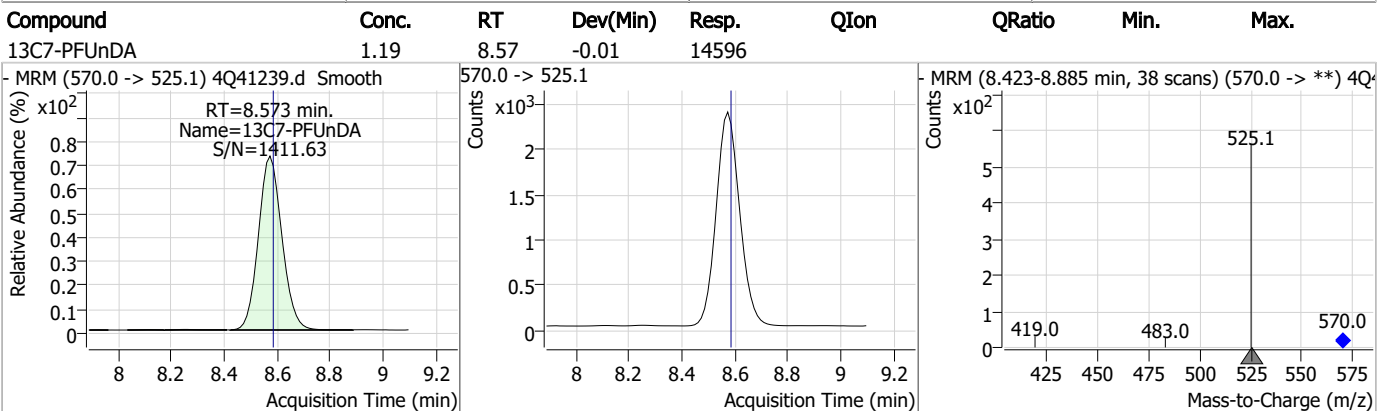
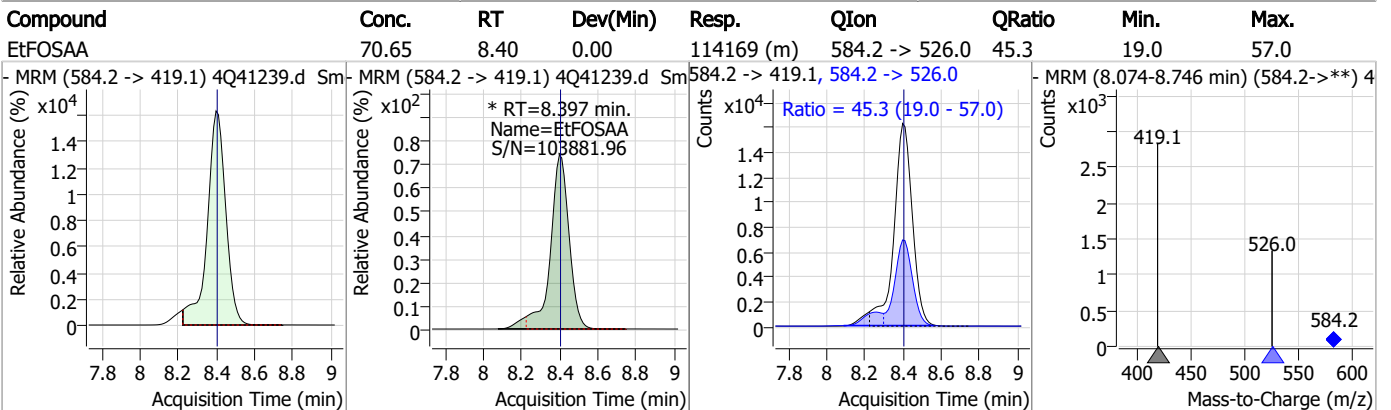
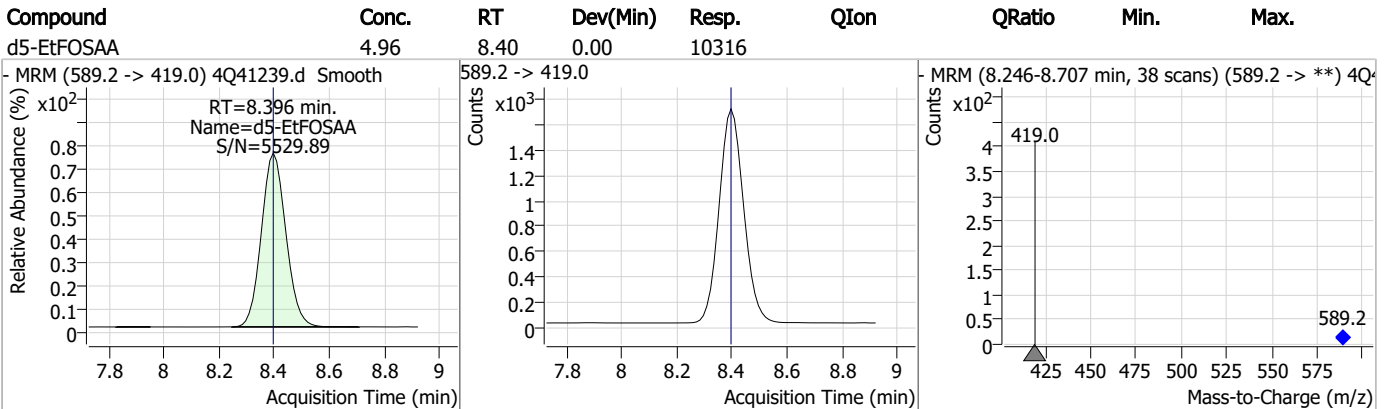
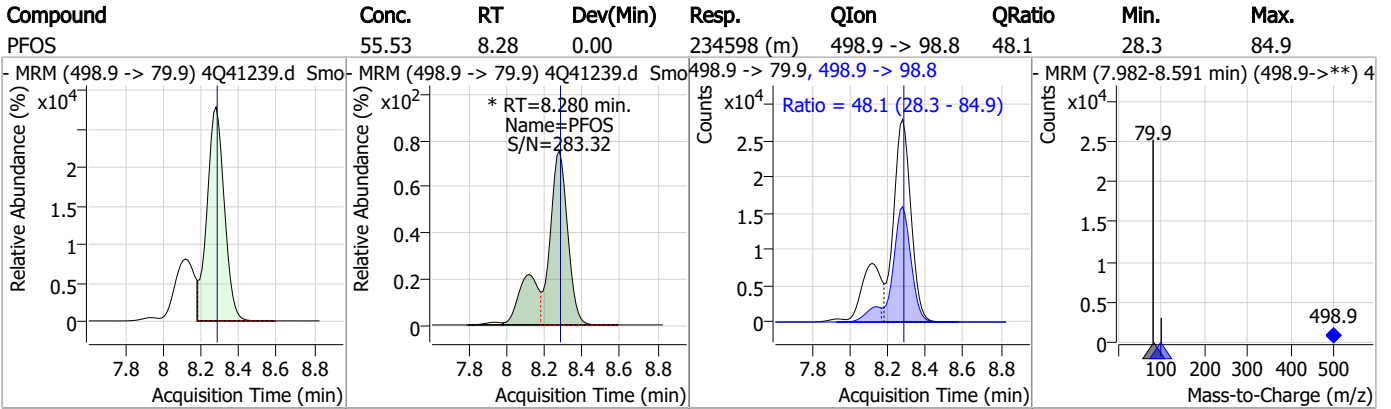
Perfluorinated Compounds by LC/MS/MS



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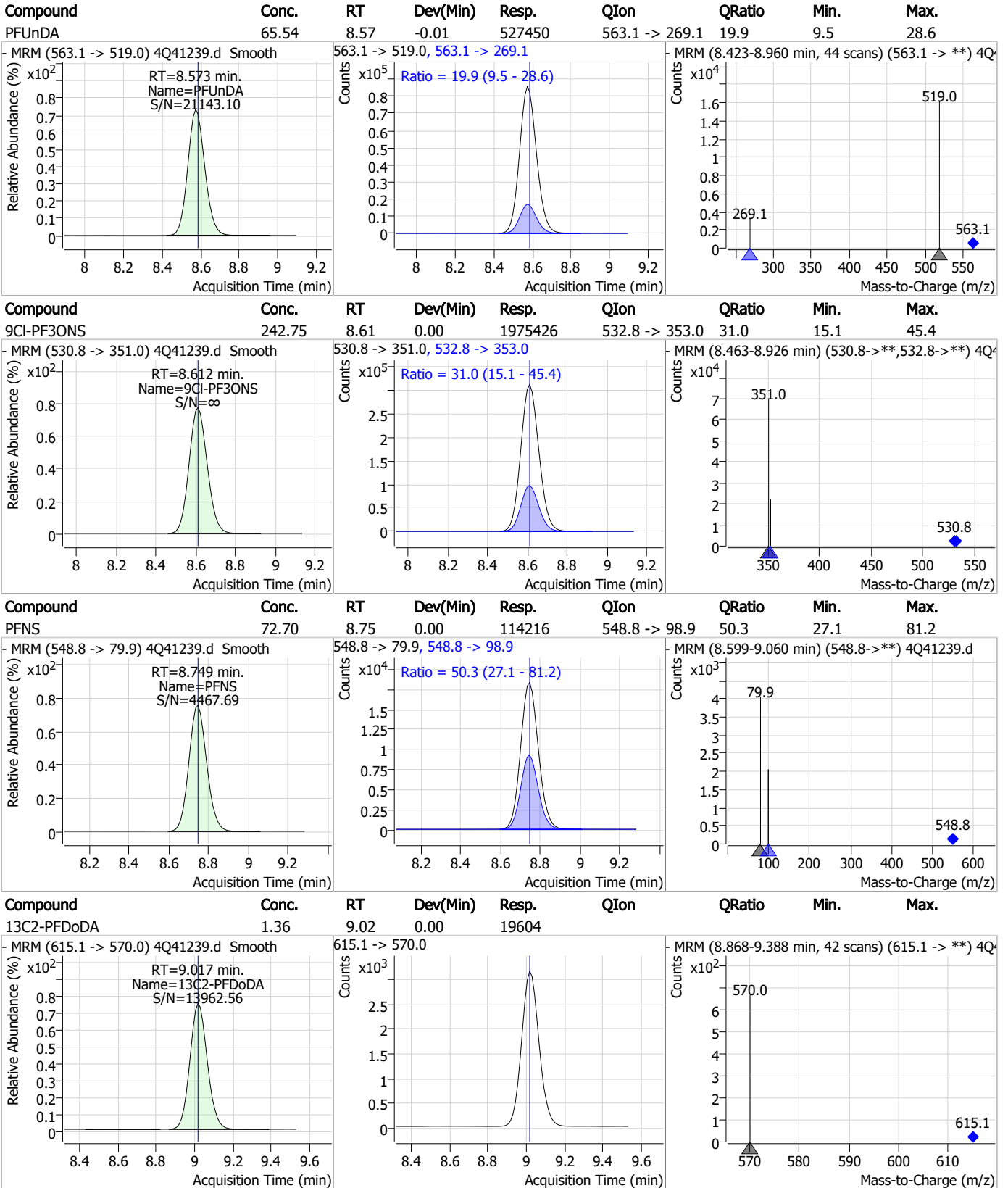
Perfluorinated Compounds by LC/MS/MS



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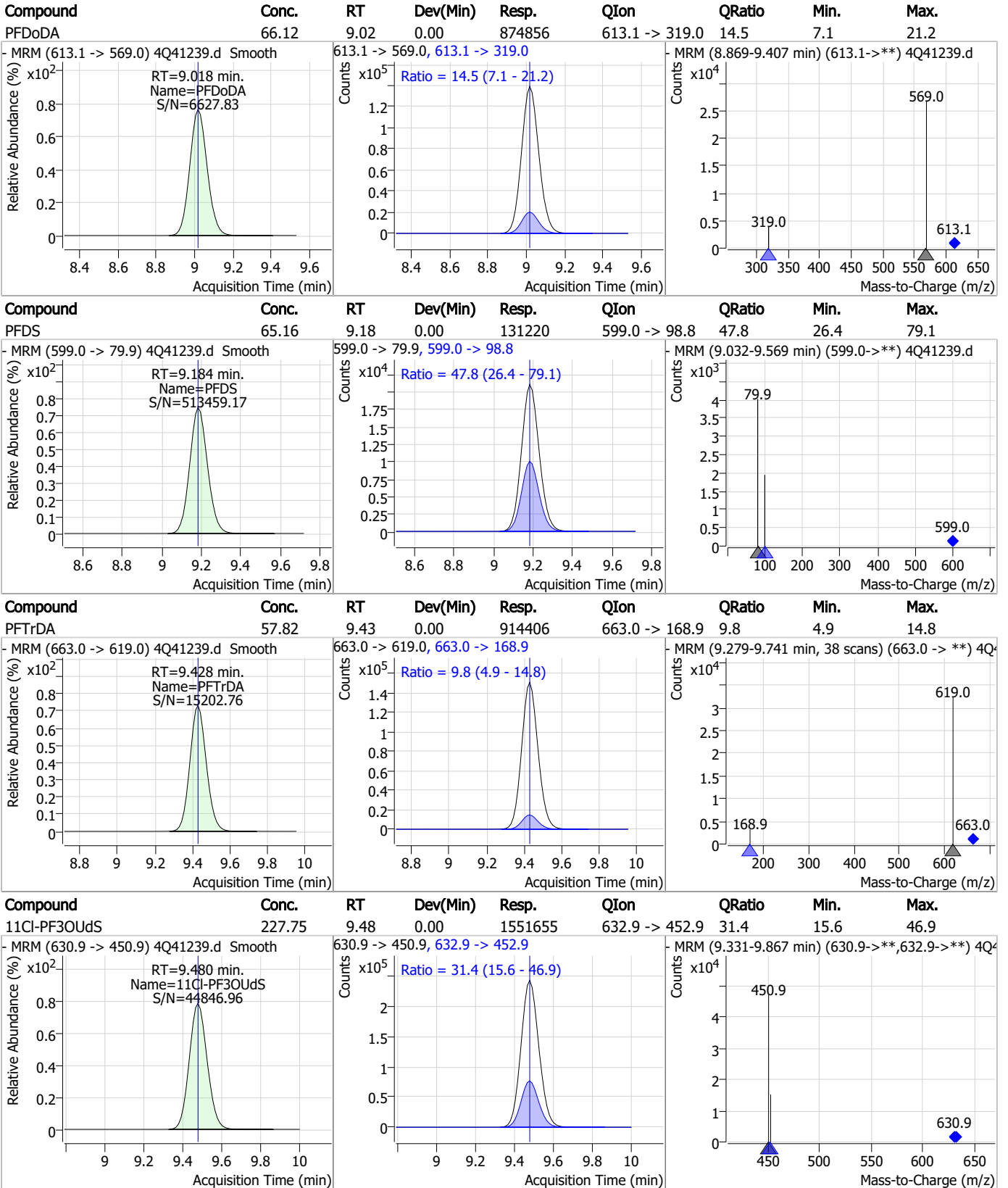
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

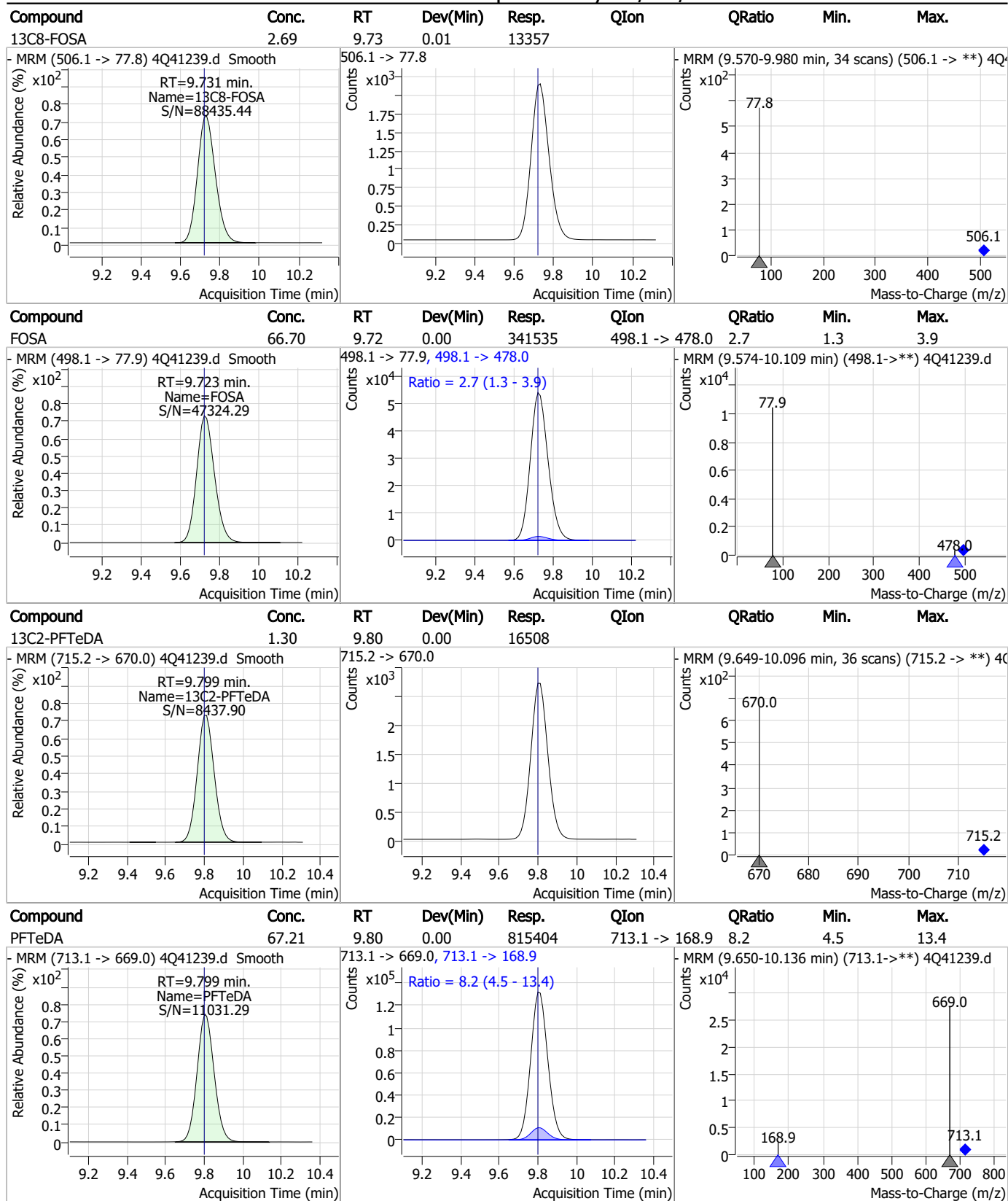


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Perfluorinated Compounds by LC/MS/MS

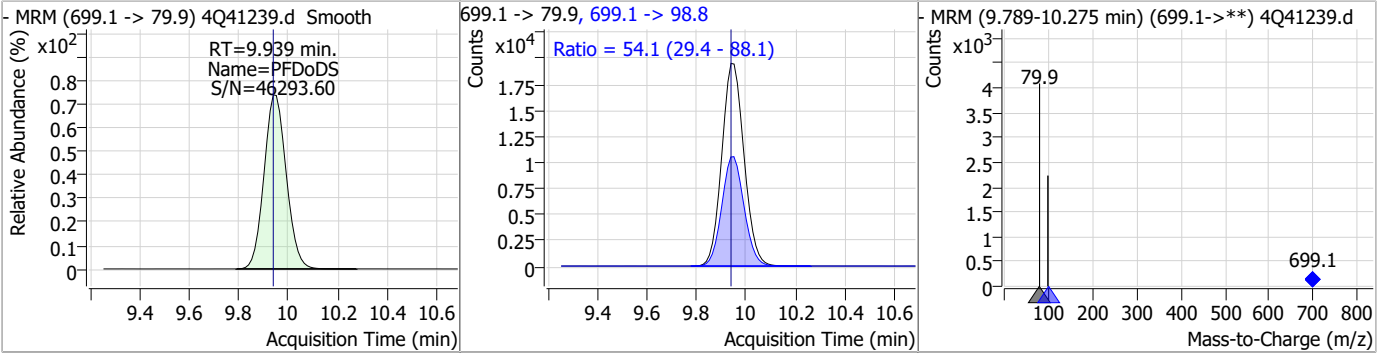


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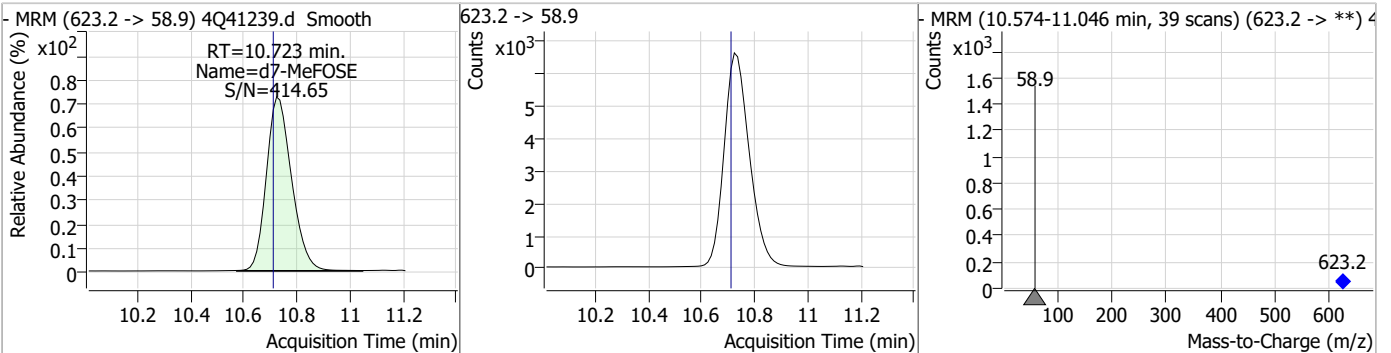


Perfluorinated Compounds by LC/MS/MS

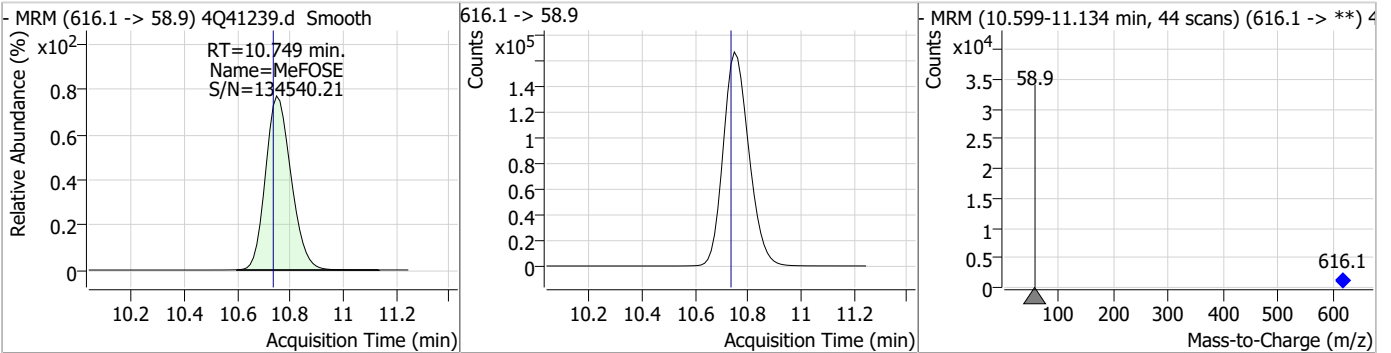
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	68.57	9.94	0.00	121429	699.1 -> 98.8	54.1	29.4	88.1



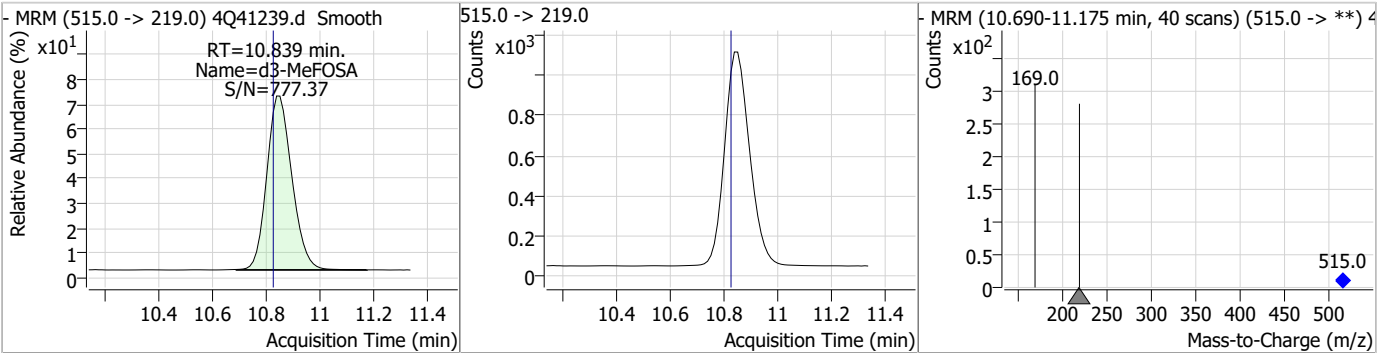
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.86	10.72	0.01	43414				



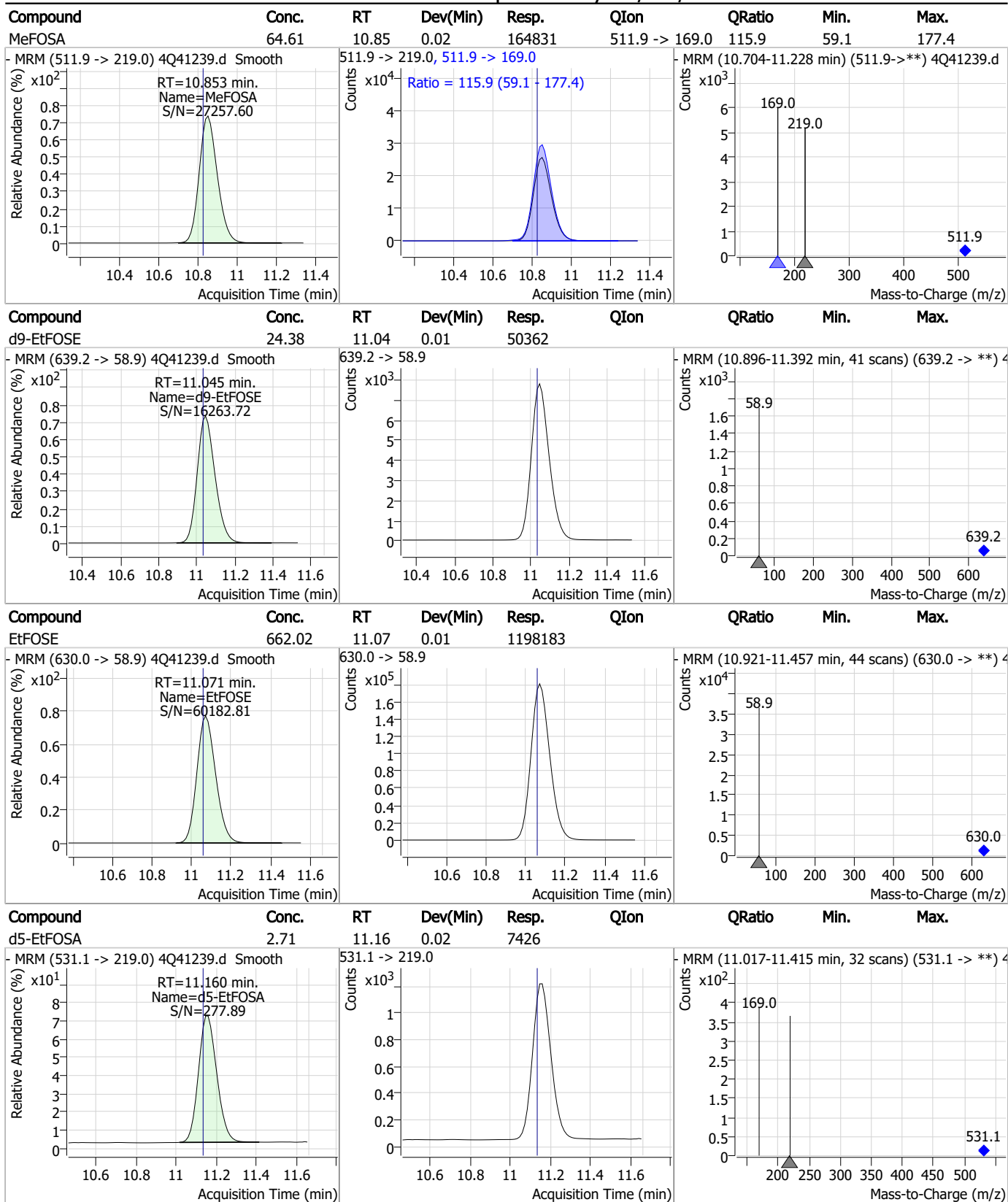
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	645.72	10.75	0.01	1118016				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.86	10.84	0.01	6983				



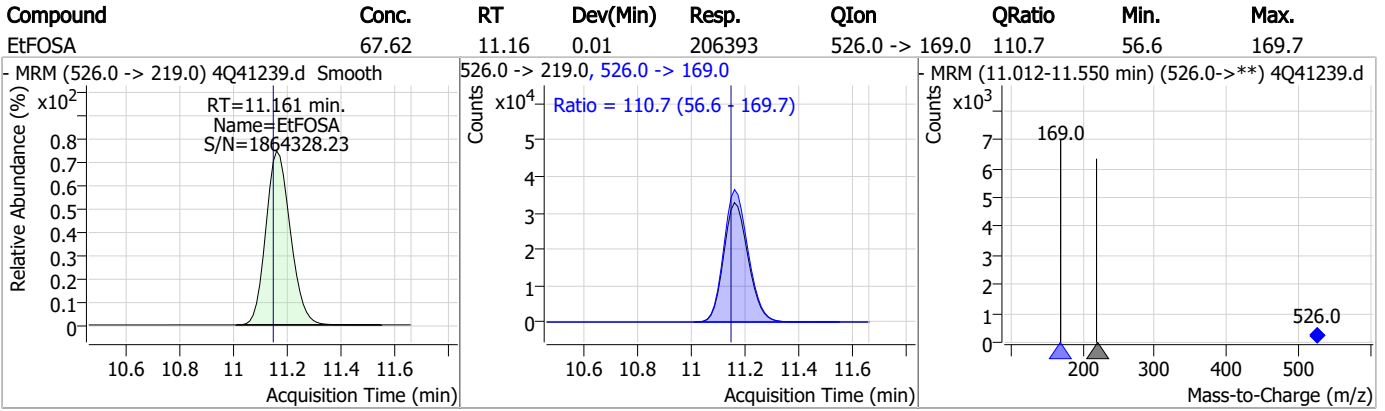
Perfluorinated Compounds by LC/MS/MS



7.6.9

7

Perfluorinated Compounds by LC/MS/MS



7.6.9

7

Manual Integration Approval Summary

Sample Number: S4Q589-IC589 Method: EPA DRAFT 1633
Lab FileID: 4Q41239.D Analyst approved: 02/27/23 14:05 Anna Ludwig
Injection Time: 02/24/23 17:43 Supervisor approved: 02/27/23 16:52 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.21	Split peak
MeFOSAA	2355-31-9		8.19	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.28	Split peak
EtFOSAA	2991-50-6		8.40	Split peak

7.6.9.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41241.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/24/2023 6:11:23 PM
 Sample Name : icv589-20
 Vial : P1-B1
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q589.batch.bin
 Sample Information : op95462,S4Q589,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.099	216.8 -> 171.9	117124	10.00 µg/L	0.000
M5-PFPeA	4.475	268.3 -> 223.0	75006	5.00 µg/L	-0.012
M5-PFHxA	5.559	318.0 -> 273.0	59544	2.50 µg/L	0.000
M4-PFHpA	6.443	367.1 -> 322.0	29698	2.50 µg/L	0.000
M8-PFOA	7.101	421.1 -> 376.0	35780	2.50 µg/L	0.012
M9-PFNA	7.634	472.1 -> 427.0	18863	1.25 µg/L	0.000
M6-PFDA	8.128	519.1 -> 474.1	17394	1.25 µg/L	0.012
M7-PFUnDA	8.585	570.0 -> 525.1	17740	1.25 µg/L	0.000
M2-PFDoDA	9.030	615.1 -> 570.0	21332	1.25 µg/L	0.012
M2-PFTeDA	9.811	715.2 -> 670.0	17874	1.25 µg/L	0.012
M8-FOSA	9.731	506.1 -> 77.8	14446	2.50 µg/L	0.012
M3-PFBS	5.489	302.1 -> 79.9	13081	2.50 µg/L	0.000
M3-PFHxS	7.204	402.1 -> 79.9	7798	2.50 µg/L	0.000
M8-PFOS	8.279	507.1 -> 79.9	10277	2.50 µg/L	0.000
M2-4:2FTS	5.260	329.1 -> 80.9	1739	5.00 µg/L	0.000
M2-6:2FTS	6.860	429.1 -> 80.9	2232	5.00 µg/L	0.000
M2-8:2FTS	7.916	529.1 -> 80.9	4033	5.00 µg/L	0.000
M3-MeFOSAA	8.198	573.2 -> 419.0	15208	5.00 µg/L	0.012
M3-HFPO-DA	5.889	286.9 -> 168.9	32377	10.00 µg/L	0.000
M5-EtFOSAA	8.396	589.2 -> 419.0	12418	5.00 µg/L	0.000
M7-MeFOSE	10.735	623.2 -> 58.9	50664	25.00 µg/L	0.025
M9-EtFOSE	11.045	639.2 -> 58.9	60603	25.00 µg/L	0.012
M5-EtFOSA	11.160	531.1 -> 219.0	7971	2.50 µg/L	0.025
M3-MeFOSA	10.852	515.0 -> 219.0	7323	2.50 µg/L	0.025
13C4-PFOS	8.280	502.8 -> 79.9	10831	2.50 µg/L	0.000
13C3-PFBA	3.103	216.0 -> 172.0	68723	5.00 µg/L	0.000
18O2-PFHxS	7.203	403.0 -> 83.9	5496	2.50 µg/L	0.000
13C4-PFOA	7.101	417.1 -> 372.0	42611	2.50 µg/L	0.012
13C2-PFDA	8.128	515.1 -> 470.1	15555	1.25 µg/L	0.000
13C5-PFNA	7.634	468.0 -> 423.0	21581	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	53600	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1739	5.43 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.6%		
13C2-6:2FTS	6.860	429.1 -> 80.9	2232	5.19 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.9%		
13C2-8:2FTS	7.916	529.1 -> 80.9	4033	5.79 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 115.9%		
13C2-PFDoDA	9.030	615.1 -> 570.0	21332	1.28 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.3%		
13C2-PFTeDA	9.811	715.2 -> 670.0	17874	1.22 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C3-PFBS	5.489	302.1 -> 79.9	13081	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C3-PFHxS	7.204	402.1 -> 79.9	7798	2.51 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C4-PFBA	3.099	216.8 -> 171.9	117124	9.89 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C4-PFHpA	6.443	367.1 -> 322.0	29698	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C5-PFHxA	5.559	318.0 -> 273.0	59544	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C5-PFPeA	4.475	268.3 -> 223.0	75006	4.98 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C6-PFDA	8.128	519.1 -> 474.1	17394	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C7-PFUnDA	8.585	570.0 -> 525.1	17740	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C8-FOSA	9.731	506.1 -> 77.8	14446	2.41 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.2%	
13C8-PFOA	7.101	421.1 -> 376.0	35780	2.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C8-PFOS	8.279	507.1 -> 79.9	10277	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.4%	
13C9-PFNA	7.634	472.1 -> 427.0	18863	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.2%	
d3-MeFOSAA	8.198	573.2 -> 419.0	15208	4.95 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C3-HFPO-DA	5.889	286.9 -> 168.9	32377	9.80 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.0%	
d3-MeFOSA	10.852	515.0 -> 219.0	7323	2.48 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	
d5-EtFOSAA	8.396	589.2 -> 419.0	12418	4.93 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.5%	
d7-MeFOSE	10.735	623.2 -> 58.9	50664	23.96 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.8%	
d9-EtFOSE	11.045	639.2 -> 58.9	60603	24.24 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.9%	
d5-EtFOSA	11.160	531.1 -> 219.0	7971	2.40 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.9%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	21751	9.39 µg/L	99
		327.1 -> 80.9	9802		
6:2FTS	6.861	427.1 -> 407.0	16782	9.98 µg/L	99
		427.1 -> 80.9	7177		
8:2FTS	7.916	527.1 -> 507.0	17228	9.18 µg/L	98
		527.1 -> 80.8	7230		
EtFOSAA	8.409	584.2 -> 419.1	4848	2.49 µg/L	m 90
		584.2 -> 526.0	2149		
FOSA	9.723	498.1 -> 77.9	13958	2.52 µg/L	100
		498.1 -> 478.0	374		
MeFOSAA	8.199	570.1 -> 419.0	5427	2.56 µg/L	m 98
		570.1 -> 483.0	1149		
PFBA	3.107	212.8 -> 168.9	27627	9.98 µg/L	100
PFBS	5.490	298.7 -> 79.9	10995	2.11 µg/L	99
		298.7 -> 98.8	4228		
PFDA	8.129	512.9 -> 469.0	27096	2.53 µg/L	100
		512.9 -> 219.0	5336		
PFDODA	9.030	613.1 -> 569.0	35654	2.48 µg/L	100
		613.1 -> 319.0	5049		
PFDS	9.196	599.0 -> 79.9	5494	2.41 µg/L	98

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.444	599.0 -> 98.8	2812	2.54	µg/L	99
		363.1 -> 319.0	39969			
PFHpS	7.774	363.1 -> 169.0	7127	2.39	µg/L	100
		449.0 -> 79.9	7222			
PFHxA	5.549	449.0 -> 98.9	3680	2.32	µg/L	100
		313.0 -> 269.0	48530			
PFHxS	7.205	313.0 -> 118.9	1601	2.17	µg/L	98
		398.7 -> 79.9	6284			
PFNA	7.635	398.7 -> 98.9	3233	2.43	µg/L	96
		463.0 -> 419.0	26038			
PFNS	8.749	463.0 -> 219.0	6827	2.30	µg/L	98
		548.8 -> 79.9	4085			
PFOA	7.102	548.8 -> 98.9	2274	2.40	µg/L	98
		413.0 -> 369.0	40386			
PFOS	8.280	413.0 -> 169.0	8360	2.15	µg/L	97
		498.9 -> 79.9	10261			
PFPeA	4.477	498.9 -> 98.8	5557	5.07	µg/L	100
		263.0 -> 219.0	77402			
PFPeS	6.496	349.1 -> 79.9	5945	2.32	µg/L	98
		349.1 -> 98.9	2547			
PFTeDA	9.812	713.1 -> 669.0	33676	2.56	µg/L	99
		713.1 -> 168.9	2858			
PFTrDA	9.441	663.0 -> 619.0	43440	2.52	µg/L	98
		663.0 -> 168.9	4566			
PFUnDA	8.585	563.1 -> 519.0	24558	2.51	µg/L	98
		563.1 -> 269.1	4424			
11CI-PF3OUdS	9.480	630.9 -> 450.9	78682	9.90	µg/L	98
		632.9 -> 452.9	23910			
9CI-PF3ONS	8.625	530.8 -> 351.0	87802	9.25	µg/L	100
		532.8 -> 353.0	26401			
ADONA	6.693	376.9 -> 250.9	182548	9.81	µg/L	99
		376.9 -> 84.8	50100			
HFPO-DA	5.890	284.9 -> 168.9	25644	9.69	µg/L	99
		284.9 -> 184.9	3066			
3:3FTCA	4.117	241.0 -> 177.0	9644	12.26	µg/L	99
		241.0 -> 117.0	915			
5:3FTCA	6.358	341.0 -> 237.1	190196	62.87	µg/L	100
		341.0 -> 217.0	136384			
7:3FTCA	7.763	441.0 -> 316.9	70082	62.02	µg/L	99
		441.0 -> 336.9	159788			
EtFOSA	11.161	526.0 -> 219.0	8059	2.46	µg/L	96
		526.0 -> 169.0	8802			
EtFOSE	11.071	630.0 -> 58.9	55346	25.41	µg/L	100
		511.9 -> 219.0	6340			
MeFOSA	10.853	511.9 -> 169.0	7411	2.37	µg/L	99
		616.1 -> 58.9	51833			
MeFOSE	10.749	699.1 -> 79.9	4756	25.65	µg/L	100
		699.1 -> 98.8	2787			
PFDoDS	9.951	295.0 -> 201.0	3680	2.37	µg/L	100
		295.0 -> 84.9	1053			
NFDHA	5.453	279.0 -> 85.1	43661	4.85	µg/L	97
		229.0 -> 84.9	37401			
PFMBA	4.854	314.8 -> 134.9	63502	4.91	µg/L	100
		314.8 -> 82.9	2497			
PFMPA	3.690			4.29	µg/L	99
PFEESA	5.983					

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



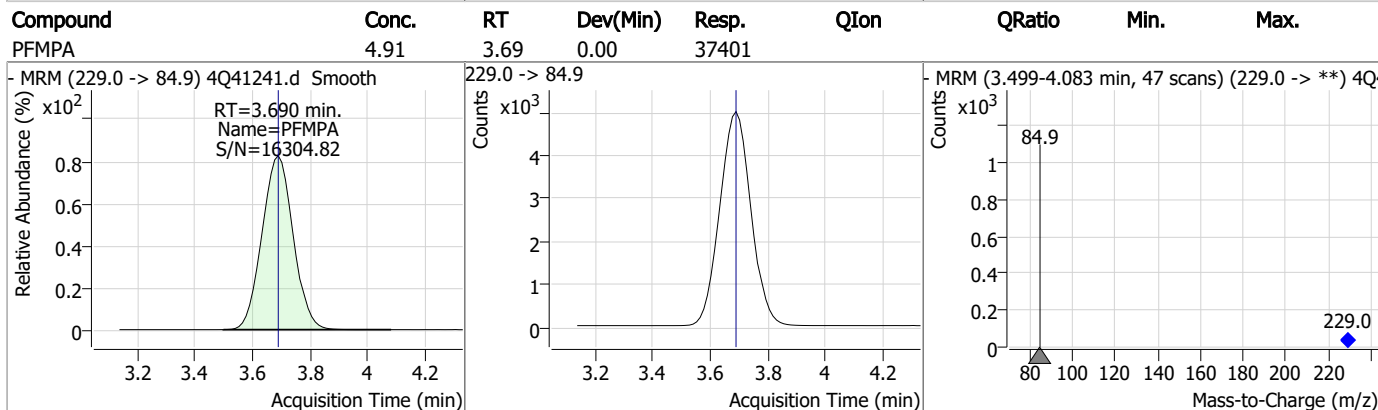
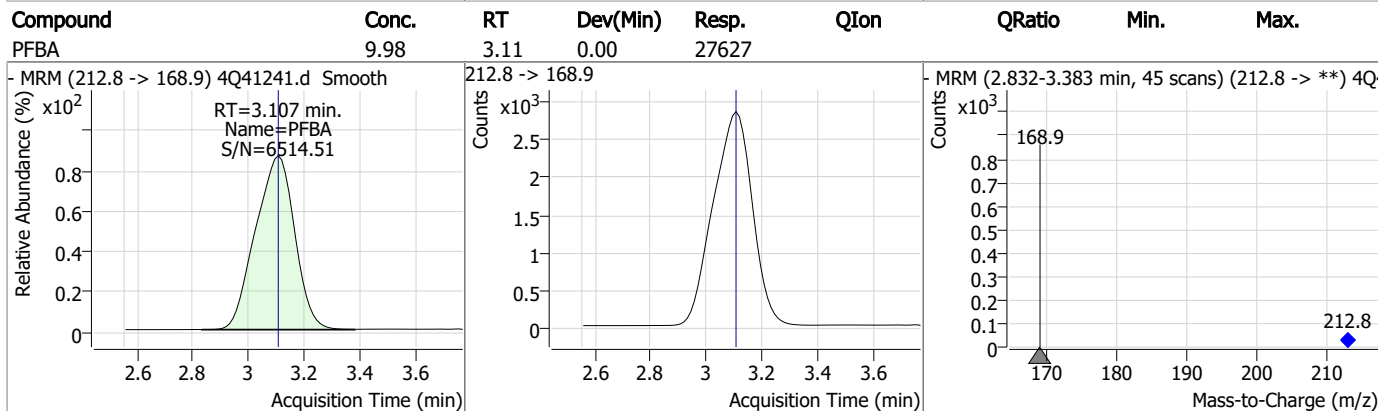
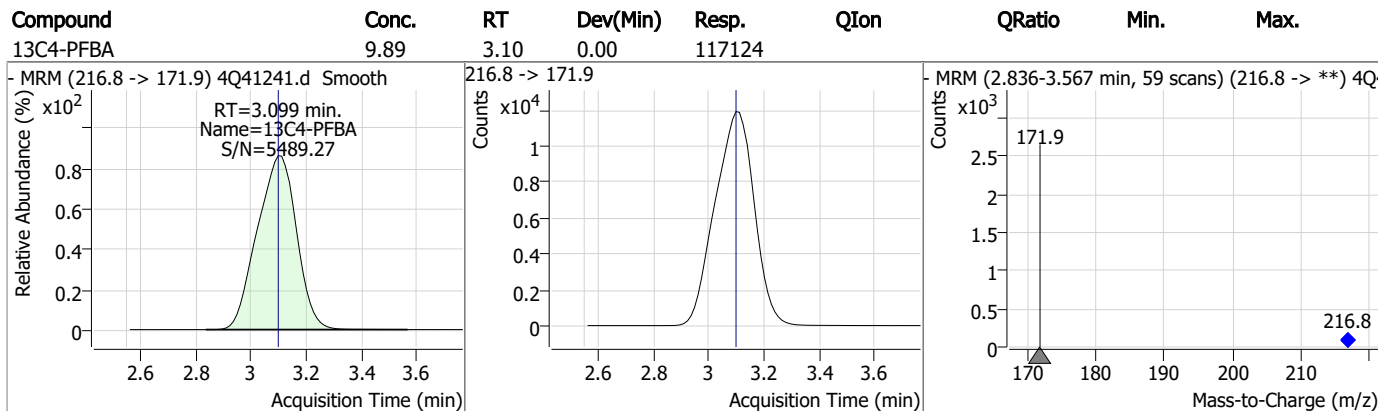
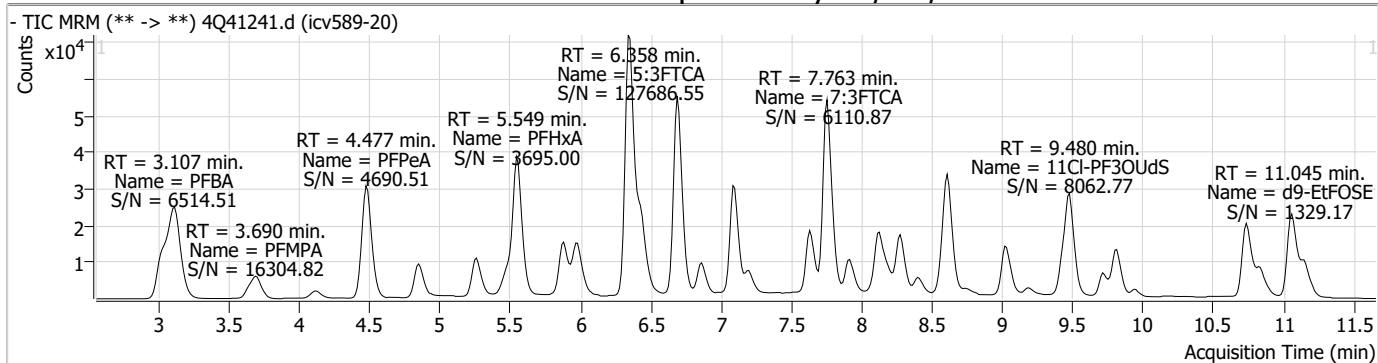
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.6.10

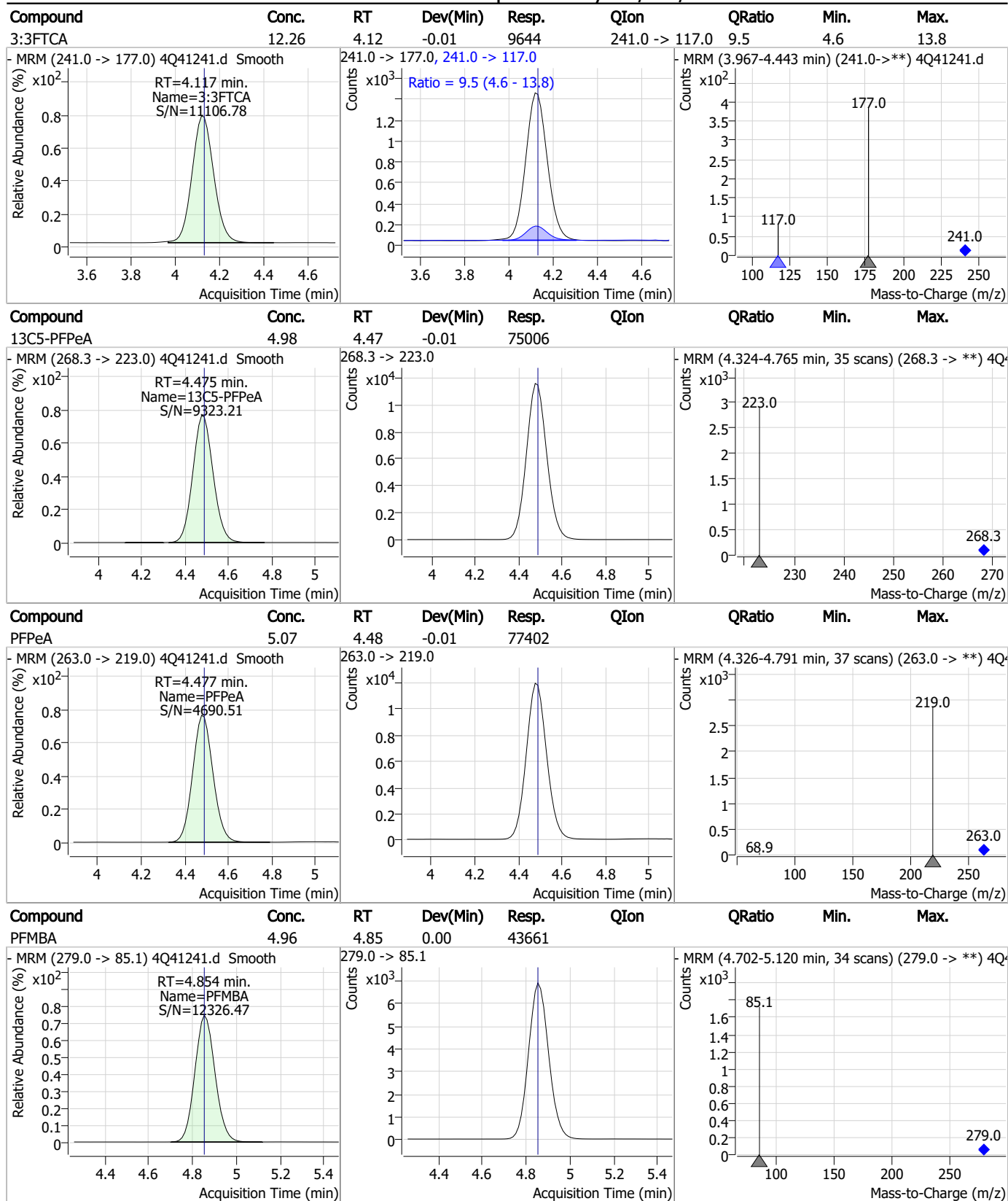
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Perfluorinated Compounds by LC/MS/MS



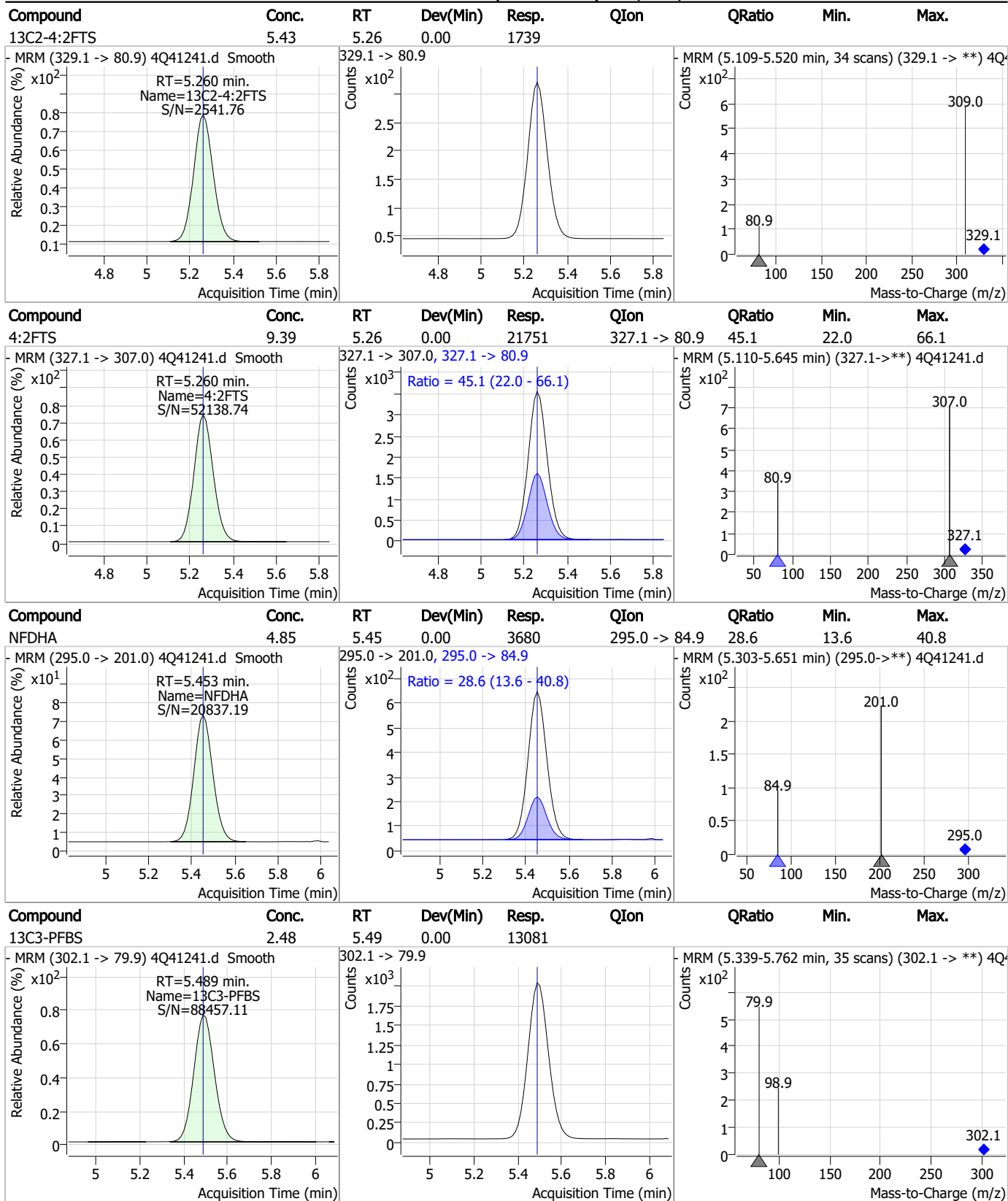
7.6.10
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Perfluorinated Compounds by LC/MS/MS



7.6.10
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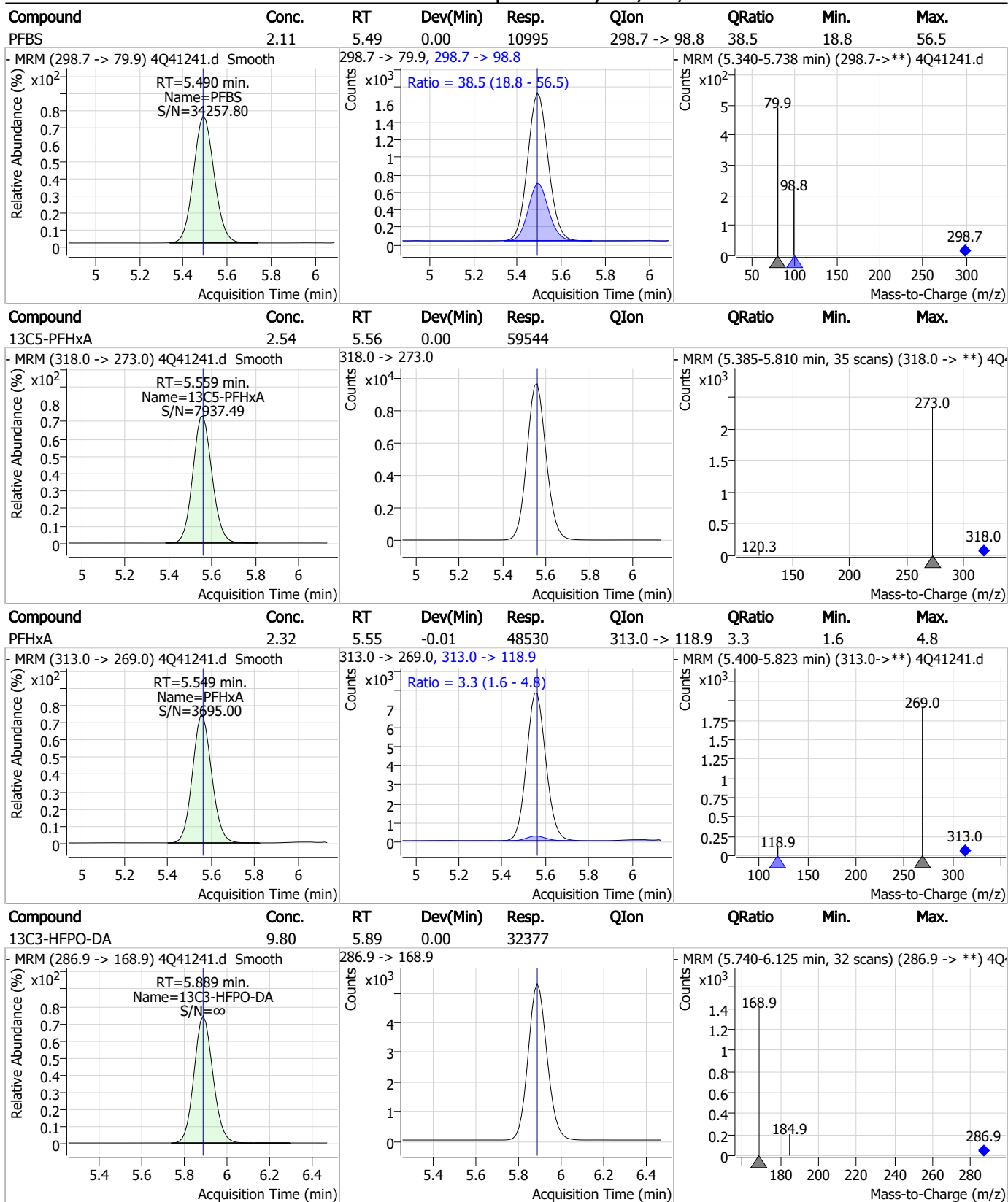
Perfluorinated Compounds by LC/MS/MS



7.6.10
7



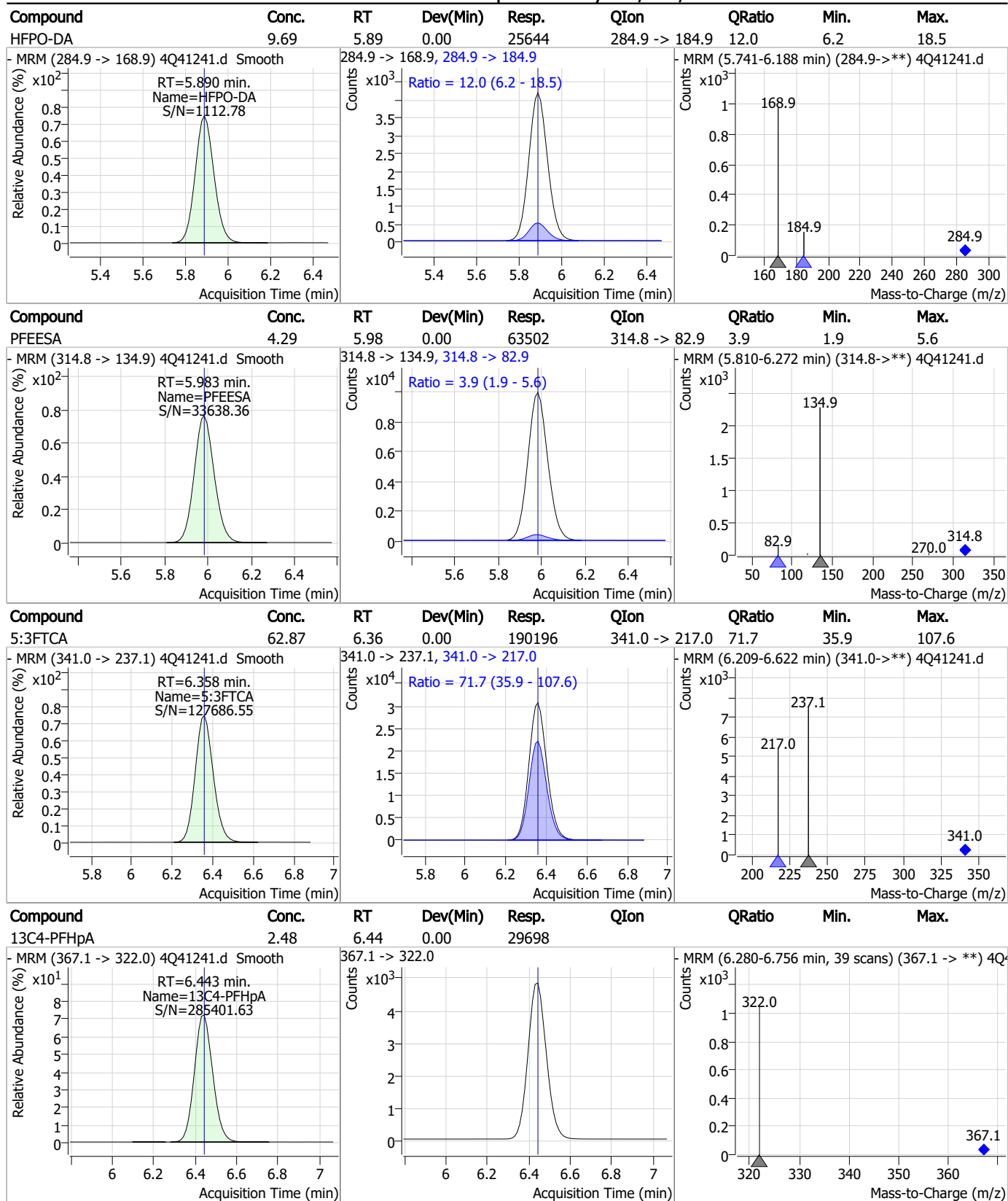
Perfluorinated Compounds by LC/MS/MS



7.6.10
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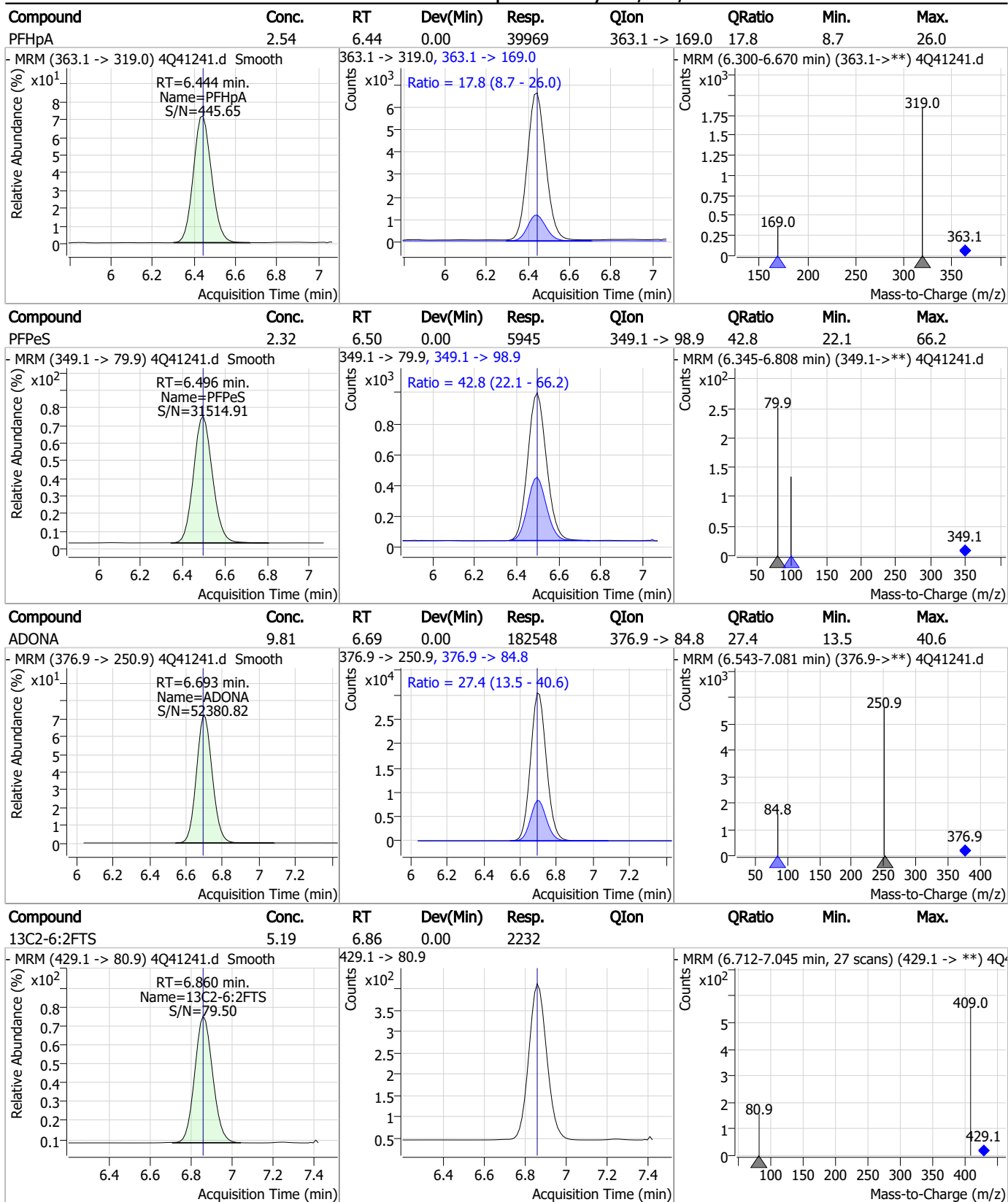
Perfluorinated Compounds by LC/MS/MS



7.6.10
7



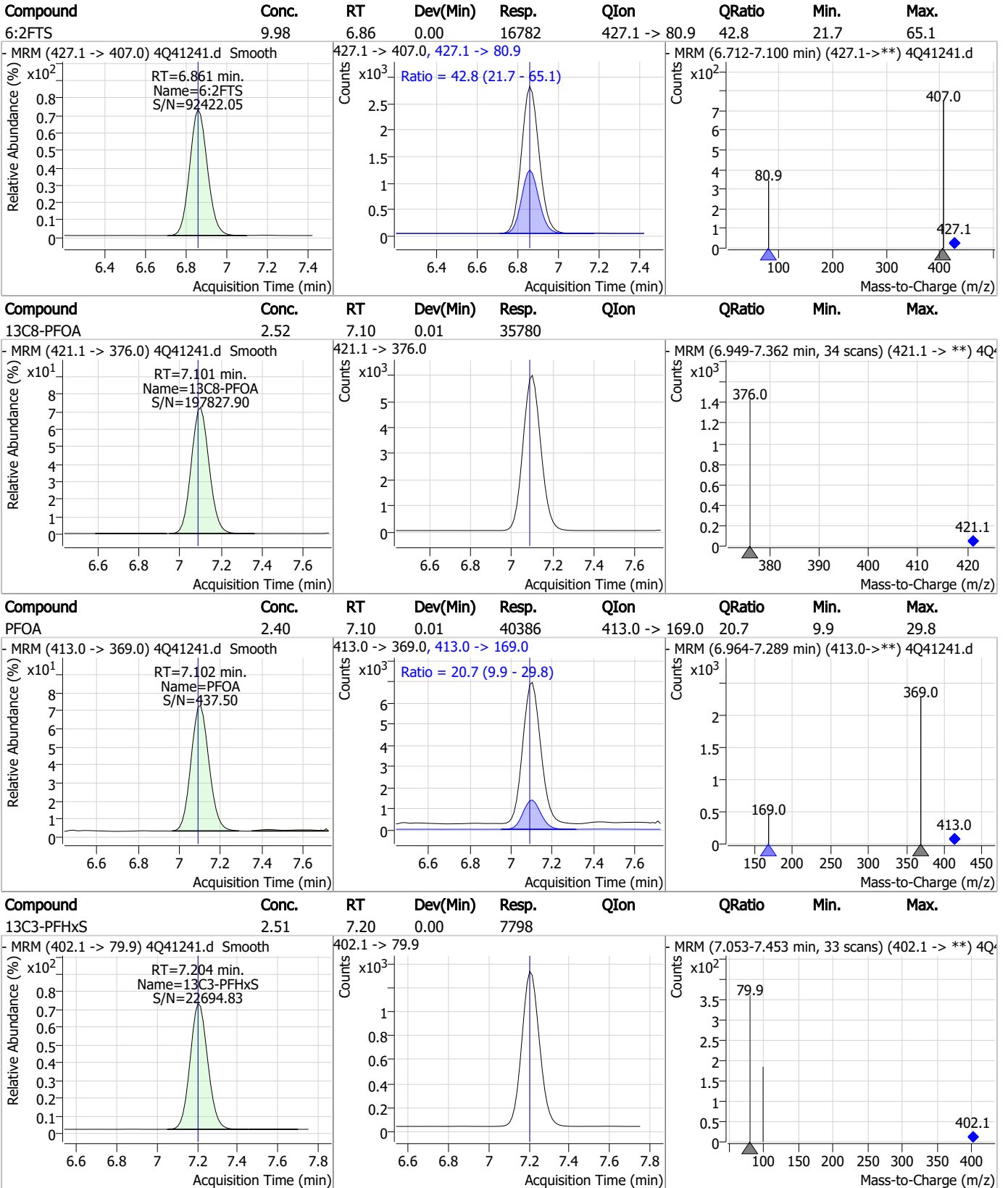
Perfluorinated Compounds by LC/MS/MS



7.6-10
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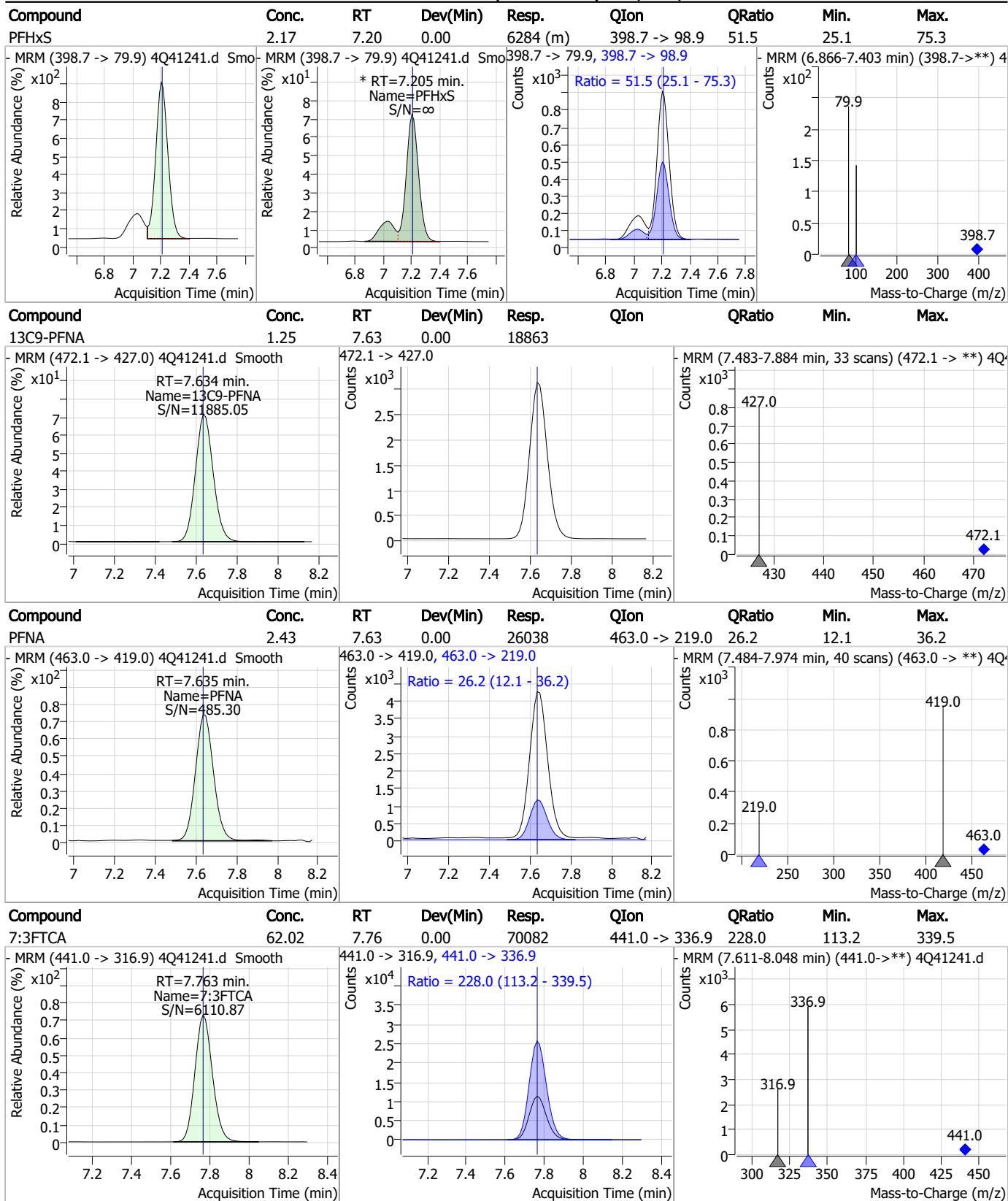
Perfluorinated Compounds by LC/MS/MS



7.6.10 7



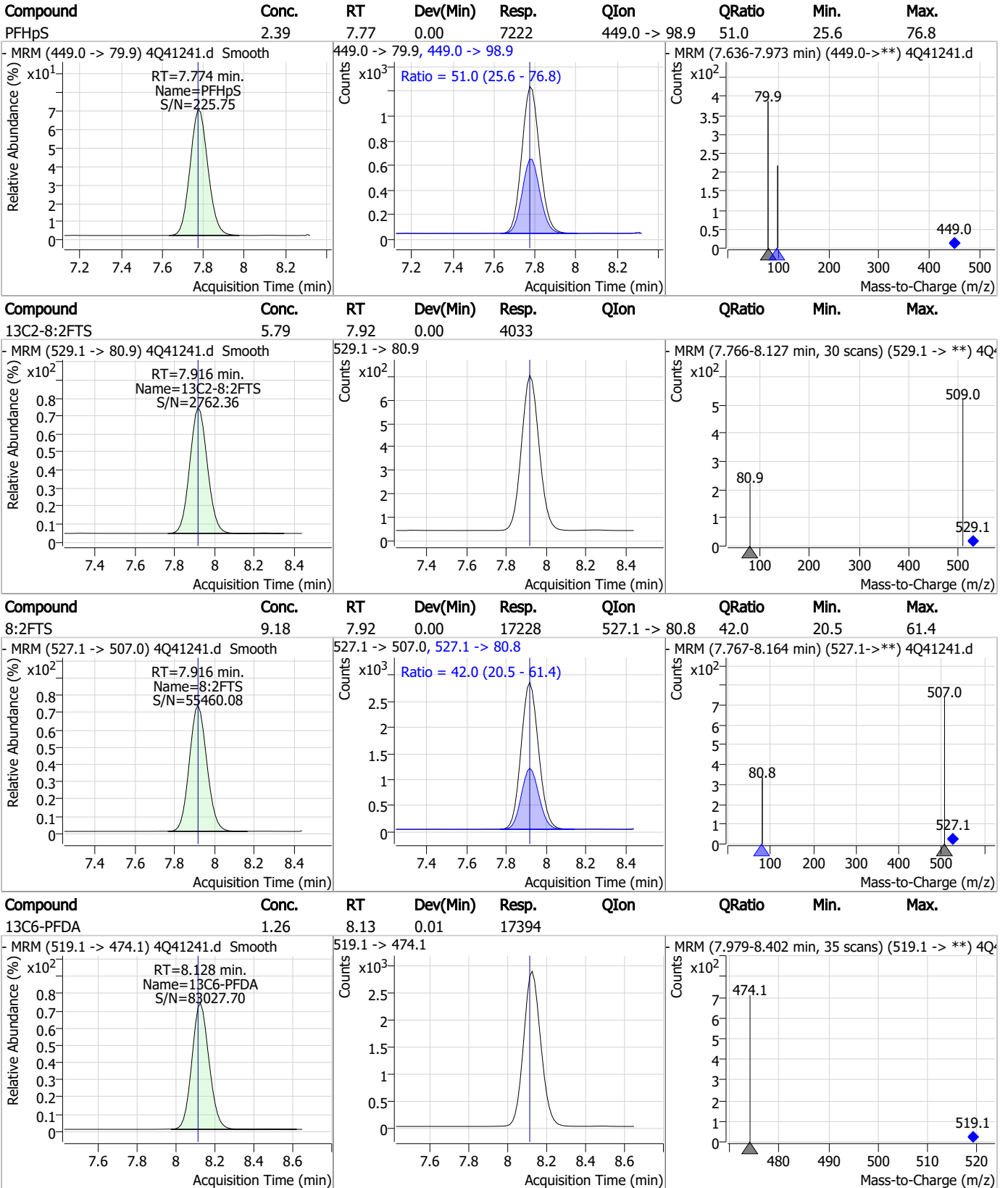
Perfluorinated Compounds by LC/MS/MS



7.6.10
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Perfluorinated Compounds by LC/MS/MS

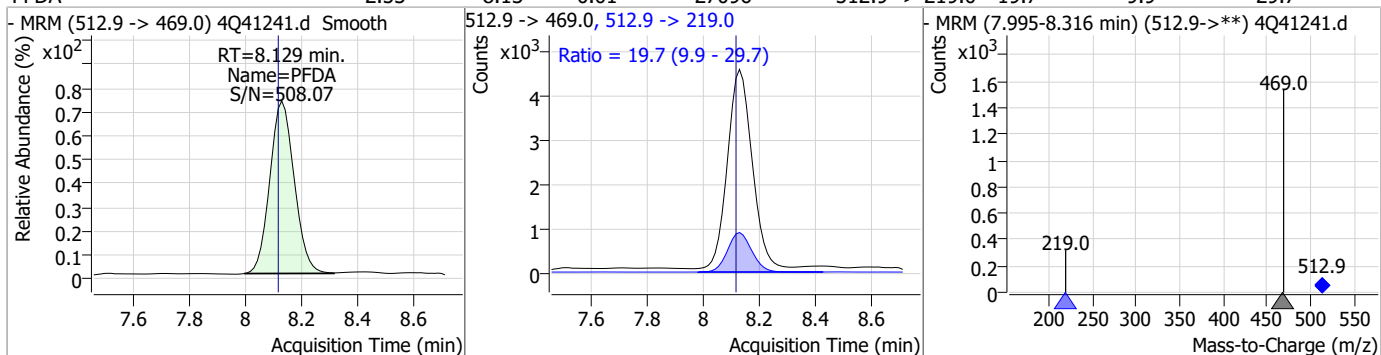


7.6.10 7

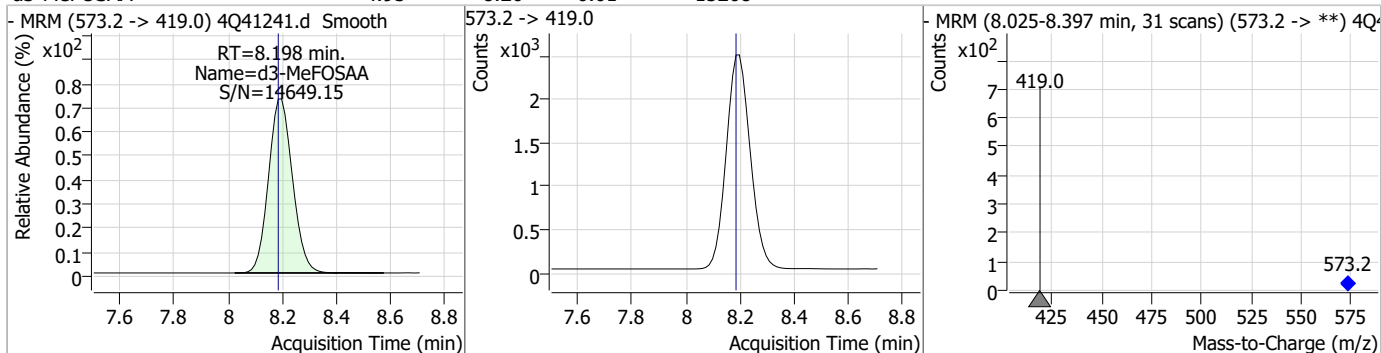


Perfluorinated Compounds by LC/MS/MS

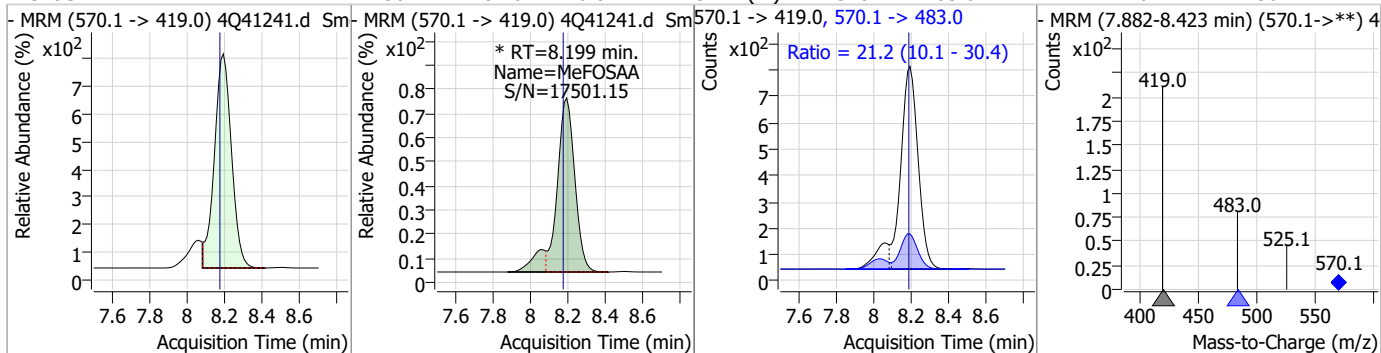
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.53	8.13	0.01	27096	512.9 -> 219.0	19.7	9.9	29.7



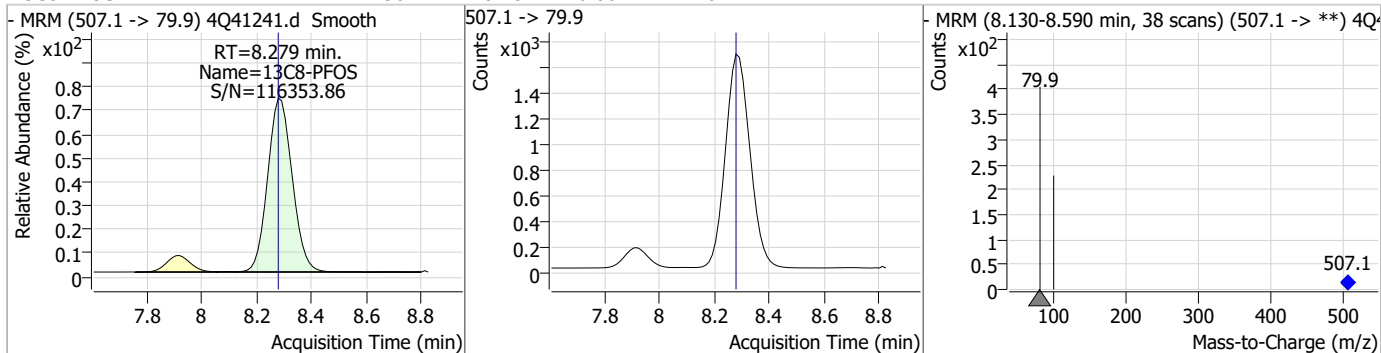
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	4.95	8.20	0.01	15208				



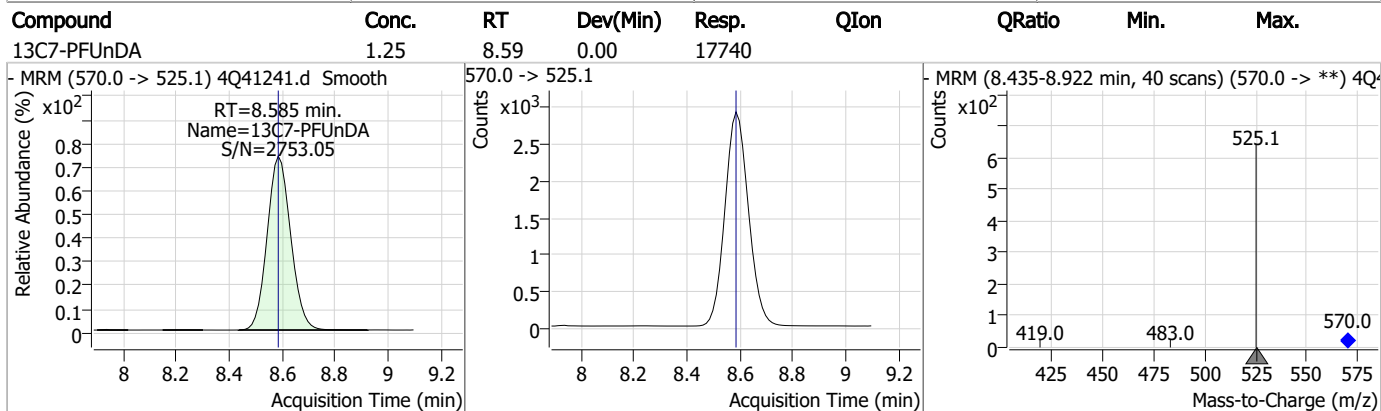
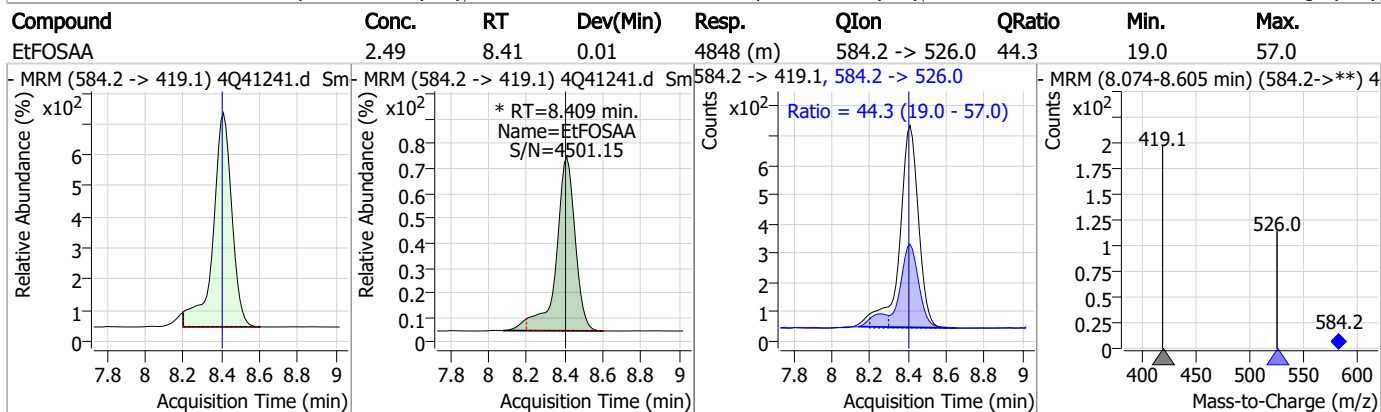
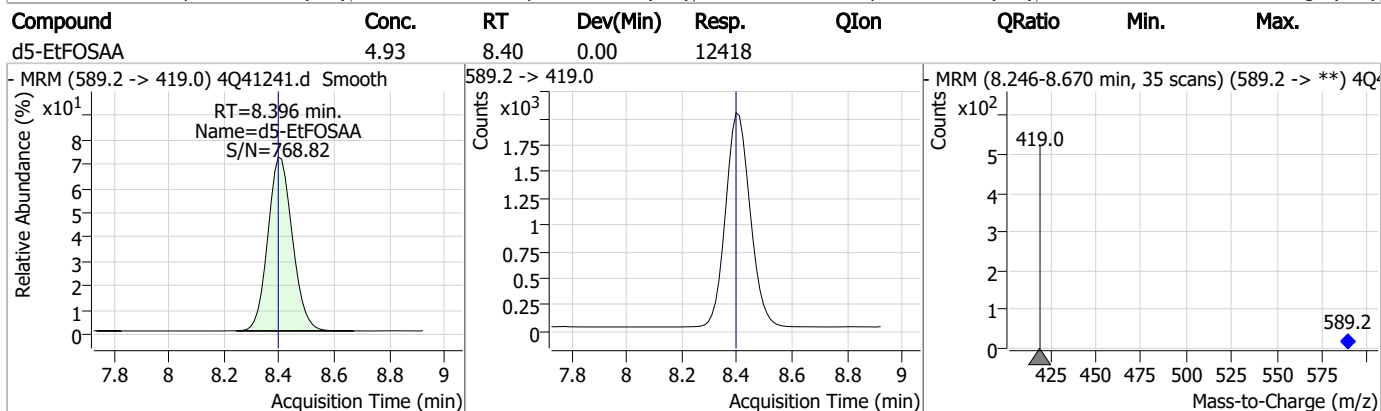
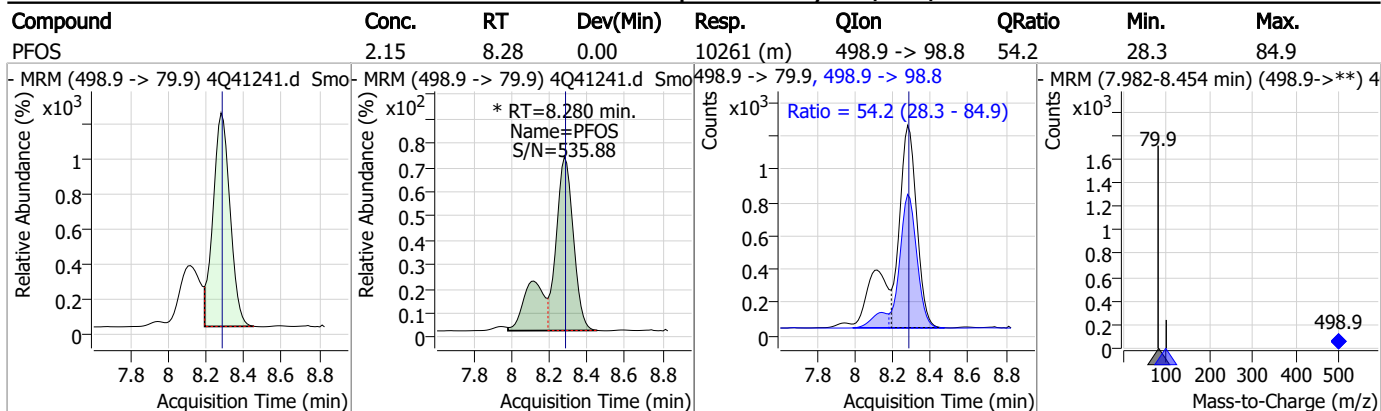
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.56	8.20	0.01	5427 (m)	570.1 -> 483.0	21.2	10.1	30.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.36	8.28	0.00	10277				

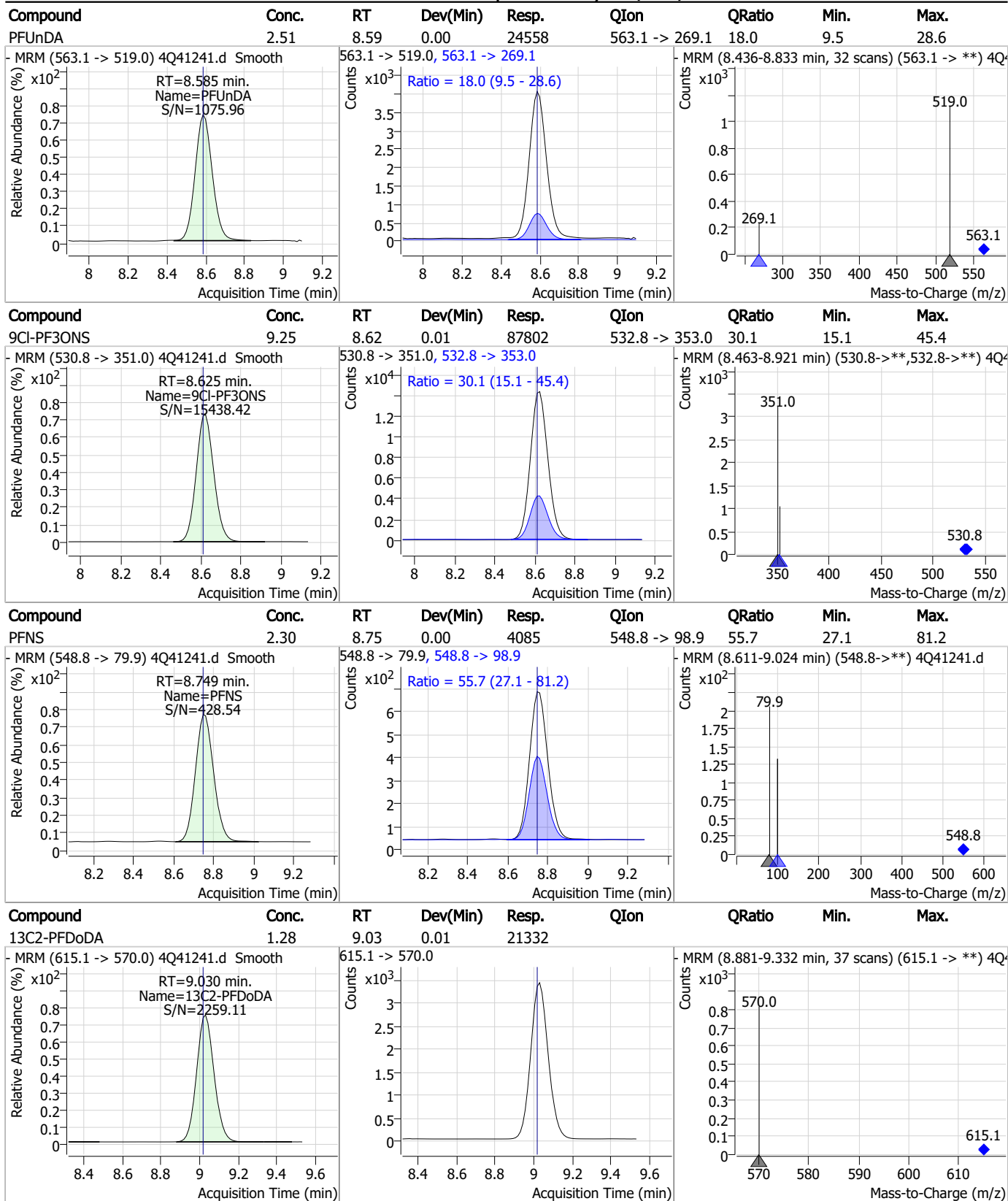


Perfluorinated Compounds by LC/MS/MS



7.6.10
7

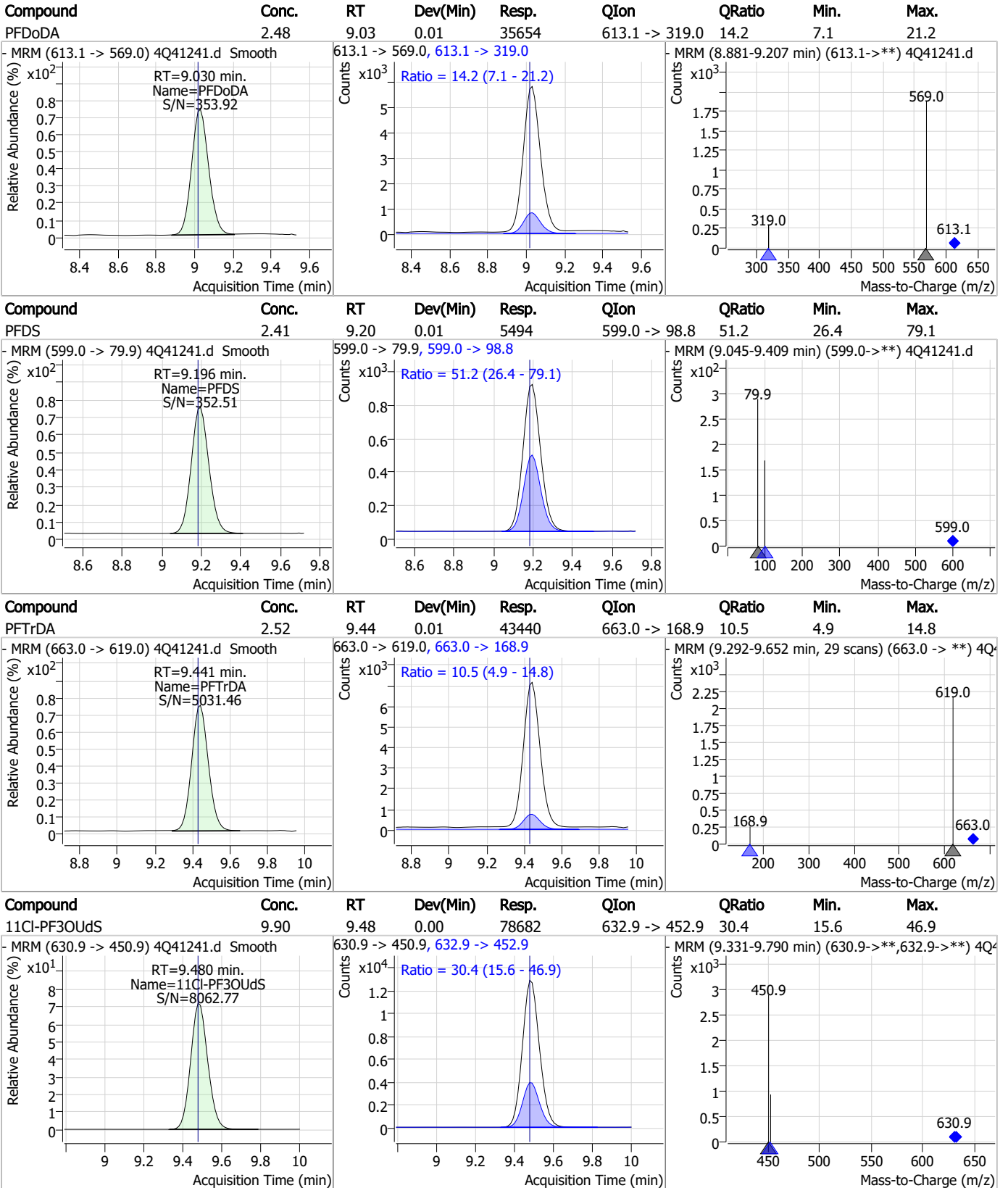
Perfluorinated Compounds by LC/MS/MS



7.6.10
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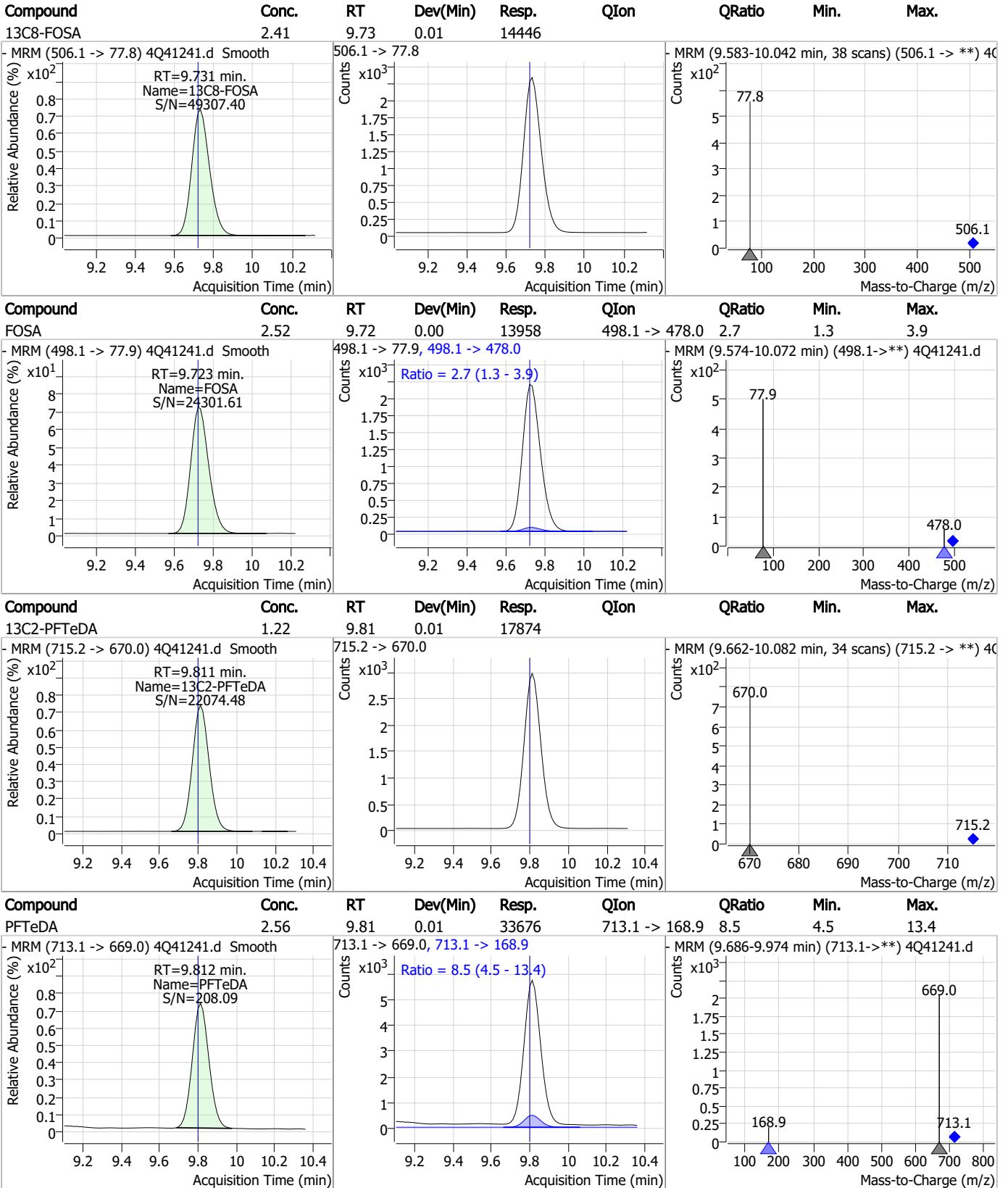
Perfluorinated Compounds by LC/MS/MS



7.6-10
7



Perfluorinated Compounds by LC/MS/MS

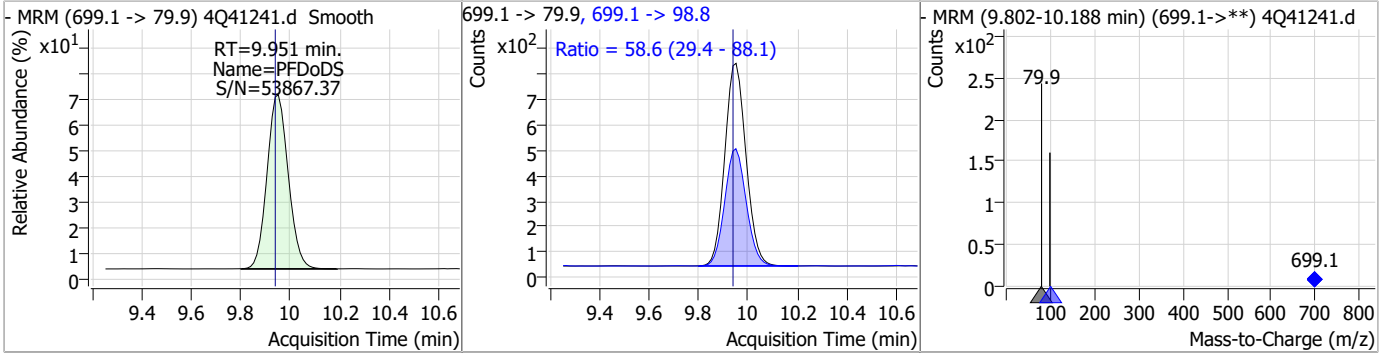


7.6.10 7

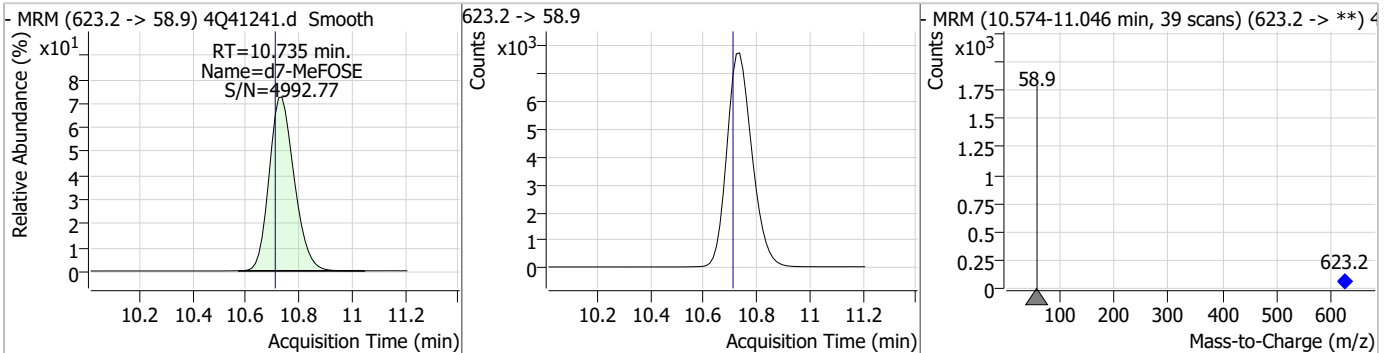


Perfluorinated Compounds by LC/MS/MS

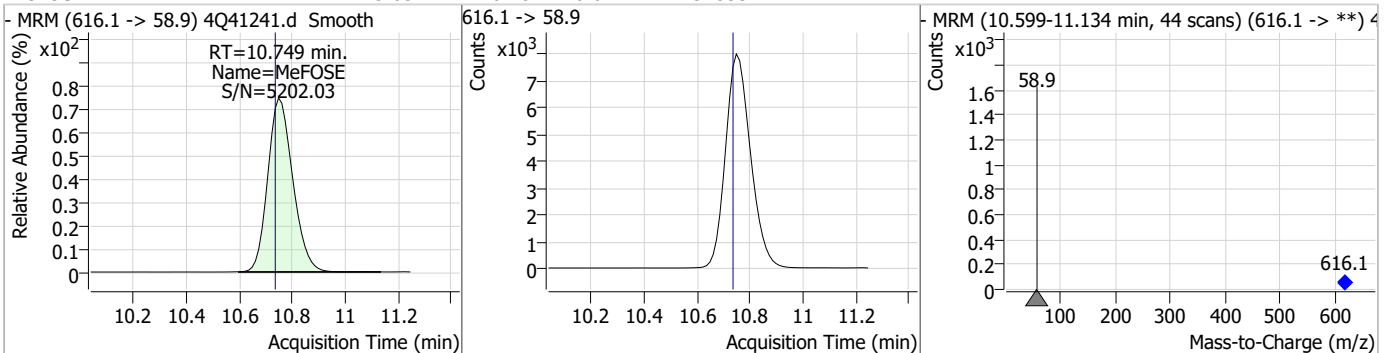
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.37	9.95	0.01	4756	699.1 -> 98.8	58.6	29.4	88.1



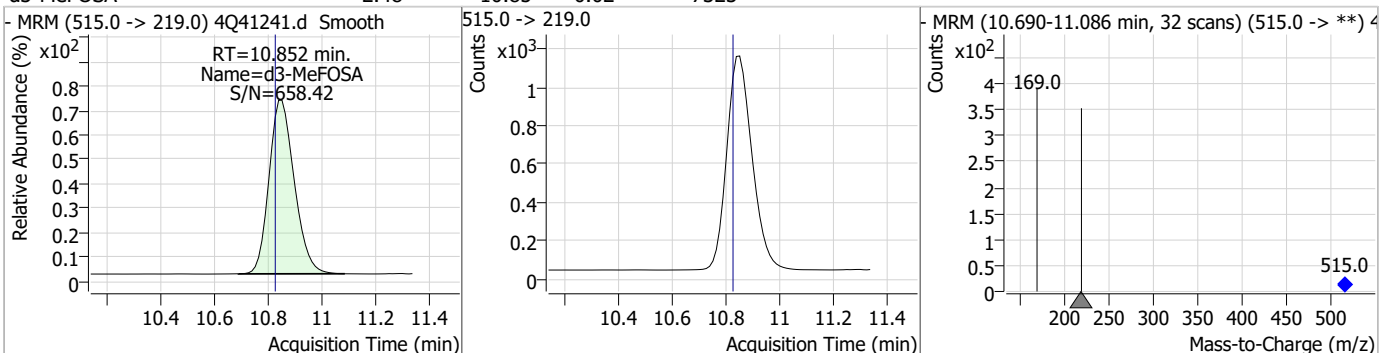
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.96	10.74	0.02	50664				



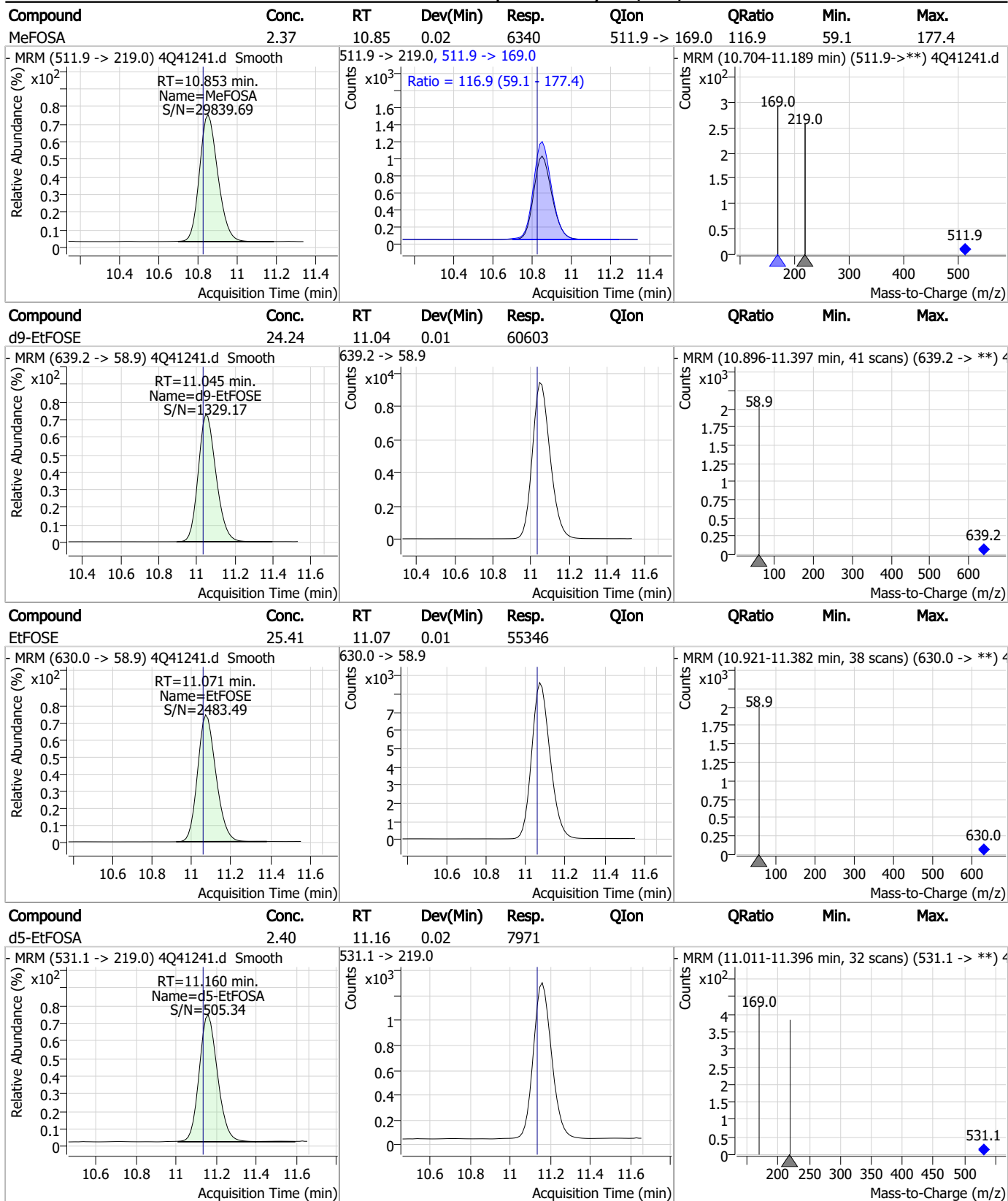
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	25.65	10.75	0.01	51833				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.48	10.85	0.02	7323				



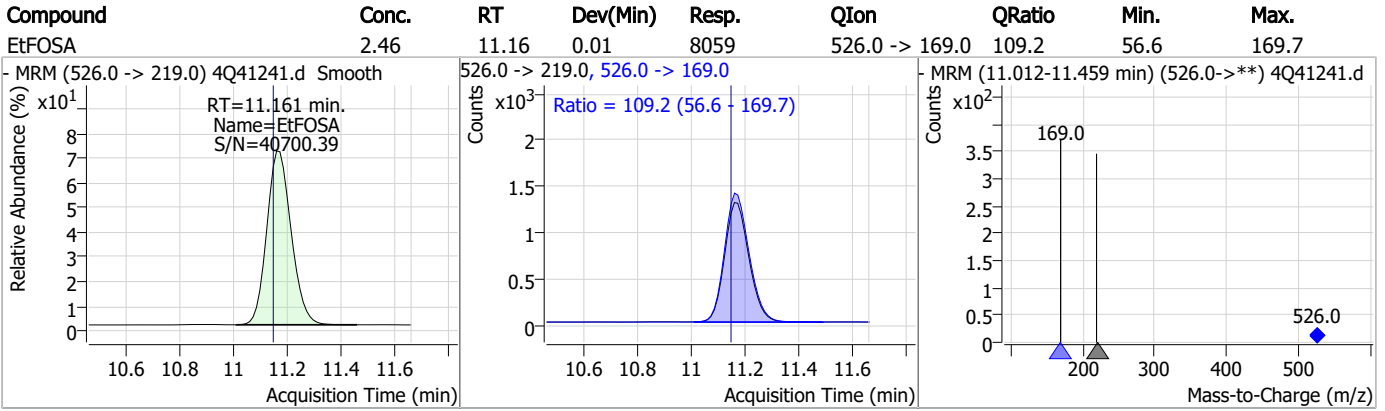
Perfluorinated Compounds by LC/MS/MS



7.6.10

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Perfluorinated Compounds by LC/MS/MS



7.6.10
7



Manual Integration Approval Summary

Sample Number: S4Q589-ICV589 Method: EPA DRAFT 1633
Lab FileID: 4Q41241.D Analyst approved: 02/27/23 14:05 Anna Ludwig
Injection Time: 02/24/23 18:11 Supervisor approved: 02/27/23 16:52 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.21	Split peak
MeFOSAA	2355-31-9		8.20	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.28	Split peak
EtFOSAA	2991-50-6		8.41	Split peak

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Manual Integrations
APPROVED
 (compounds with "m" flag)
Norman Farmer
02/27/23 16:52

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41242.d
 Operator : annal
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 2/24/2023 6:25:27 PM
 Sample Name : icv589-20
 Vial : P1-B2
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q589.batch.bin
 Sample Information : op95462,S4Q589,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.111	216.8 -> 171.9	114514	10.00 µg/L	0.012
M5-PFPeA	4.487	268.3 -> 223.0	71657	5.00 µg/L	0.000
M5-PFHxA	5.559	318.0 -> 273.0	54196	2.50 µg/L	0.000
M4-PFHpA	6.443	367.1 -> 322.0	27795	2.50 µg/L	0.000
M8-PFOA	7.101	421.1 -> 376.0	33986	2.50 µg/L	0.012
M9-PFNA	7.634	472.1 -> 427.0	18143	1.25 µg/L	0.000
M6-PFDA	8.128	519.1 -> 474.1	16300	1.25 µg/L	0.012
M7-PFUnDA	8.573	570.0 -> 525.1	17596	1.25 µg/L	-0.012
M2-PFDoDA	9.017	615.1 -> 570.0	20407	1.25 µg/L	0.000
M2-PFTeDA	9.811	715.2 -> 670.0	16720	1.25 µg/L	0.012
M8-FOSA	9.731	506.1 -> 77.8	14082	2.50 µg/L	0.012
M3-PFBS	5.489	302.1 -> 79.9	12582	2.50 µg/L	0.000
M3-PFHxS	7.204	402.1 -> 79.9	7016	2.50 µg/L	0.000
M8-PFOS	8.279	507.1 -> 79.9	9846	2.50 µg/L	0.000
M2-4:2FTS	5.260	329.1 -> 80.9	1496	5.00 µg/L	0.000
M2-6:2FTS	6.860	429.1 -> 80.9	2145	5.00 µg/L	0.000
M2-8:2FTS	7.916	529.1 -> 80.9	3320	5.00 µg/L	0.000
M3-MeFOSAA	8.185	573.2 -> 419.0	14243	5.00 µg/L	0.000
M3-HFPO-DA	5.889	286.9 -> 168.9	31371	10.00 µg/L	0.000
M5-EtFOSAA	8.396	589.2 -> 419.0	11616	5.00 µg/L	0.000
M7-MeFOSE	10.735	623.2 -> 58.9	50256	25.00 µg/L	0.025
M9-EtFOSE	11.045	639.2 -> 58.9	57971	25.00 µg/L	0.012
M5-EtFOSA	11.160	531.1 -> 219.0	7949	2.50 µg/L	0.025
M3-MeFOSA	10.852	515.0 -> 219.0	7011	2.50 µg/L	0.025
13C4-PFOS	8.280	502.8 -> 79.9	9966	2.50 µg/L	0.000
13C3-PFBA	3.115	216.0 -> 172.0	67034	5.00 µg/L	0.013
18O2-PFHxS	7.203	403.0 -> 83.9	5334	2.50 µg/L	0.000
13C4-PFOA	7.101	417.1 -> 372.0	39932	2.50 µg/L	0.012
13C2-PFDA	8.116	515.1 -> 470.1	15184	1.25 µg/L	-0.012
13C5-PFNA	7.634	468.0 -> 423.0	19716	1.25 µg/L	0.000
13C2-PFHxA	5.560	315.1 -> 270.0	49701	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.260	329.1 -> 80.9	1496	4.82 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C2-6:2FTS	6.860	429.1 -> 80.9	2145	5.14 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C2-8:2FTS	7.916	529.1 -> 80.9	3320	4.91 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.2%		
13C2-PFDoDA	9.017	615.1 -> 570.0	20407	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C2-PFTeDA	9.811	715.2 -> 670.0	16720	1.17 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.5%		
13C3-PFBS	5.489	302.1 -> 79.9	12582	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C3-PFHxS	7.204	402.1 -> 79.9	7016	2.33 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.2%	
13C4-PFBA	3.111	216.8 -> 171.9	114514	9.92 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C4-PFHpA	6.443	367.1 -> 322.0	27795	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C5-PFHxA	5.559	318.0 -> 273.0	54196	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C5-PFPeA	4.487	268.3 -> 223.0	71657	5.13 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C6-PFDA	8.128	519.1 -> 474.1	16300	1.21 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.6%	
13C7-PFUnDA	8.573	570.0 -> 525.1	17596	1.27 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C8-FOSA	9.731	506.1 -> 77.8	14082	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C8-PFOA	7.101	421.1 -> 376.0	33986	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C8-PFOS	8.279	507.1 -> 79.9	9846	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C9-PFNA	7.634	472.1 -> 427.0	18143	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.5%	
d3-MeFOSAA	8.185	573.2 -> 419.0	14243	5.04 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C3-HFPO-DA	5.889	286.9 -> 168.9	31371	10.24 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
d3-MeFOSA	10.852	515.0 -> 219.0	7011	2.58 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.1%	
d5-EtFOSAA	8.396	589.2 -> 419.0	11616	5.01 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
d7-MeFOSE	10.735	623.2 -> 58.9	50256	25.83 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.3%	
d9-EtFOSE	11.045	639.2 -> 58.9	57971	25.20 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
d5-EtFOSA	11.160	531.1 -> 219.0	7949	2.60 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.0%	
Target Compounds					QValue
4:2FTS	5.260	327.1 -> 307.0	47649	23.92 µg/L	99
		327.1 -> 80.9	20691		
6:2FTS	6.861	427.1 -> 407.0	34887	21.58 µg/L	97
		427.1 -> 80.9	15805		
8:2FTS	7.916	527.1 -> 507.0	35644	23.06 µg/L	95
		527.1 -> 80.8	15634		
EtFOSAA	8.397	584.2 -> 419.1	41641	22.88 µg/L	m 85
		584.2 -> 526.0	19667		
FOSA	9.723	498.1 -> 77.9	119214	22.08 µg/L	100
		498.1 -> 478.0	3241		
MeFOSAA	8.186	570.1 -> 419.0	44679	22.52 µg/L	m 99
		570.1 -> 483.0	9315		
PFBA	3.107	212.8 -> 168.9	56683	20.94 µg/L	100
PFBS	5.490	298.7 -> 79.9	110005	21.93 µg/L	100
		298.7 -> 98.8	41763		
PFDA	8.116	512.9 -> 469.0	226641	22.55 µg/L	98
		512.9 -> 219.0	46769		
PFDoDA	9.018	613.1 -> 569.0	268552	19.50 µg/L	100
		613.1 -> 319.0	38307		
PFDS	9.184	599.0 -> 79.9	48042	22.02 µg/L	94

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	23223			
PFHpA	6.444	363.1 -> 319.0	336416	22.89	µg/L	99
		363.1 -> 169.0	57638			
PFHpS	7.774	449.0 -> 79.9	64296	22.23	µg/L	98
		449.0 -> 98.9	31936			
PFHxA	5.562	313.0 -> 269.0	410933	21.58	µg/L	100
		313.0 -> 118.9	12661			
PFHxS	7.205	398.7 -> 79.9	60843	23.31	µg/L	m 96
		398.7 -> 98.9	29023			
PFNA	7.635	463.0 -> 419.0	240903	23.38	µg/L	97
		463.0 -> 219.0	61527			
PFNS	8.749	548.8 -> 79.9	37538	22.05	µg/L	97
		548.8 -> 98.9	19433			
PFOA	7.102	413.0 -> 369.0	341195	21.35	µg/L	98
		413.0 -> 169.0	70345			
PFOS	8.280	498.9 -> 79.9	77364	16.90	µg/L	m 86
		498.9 -> 98.8	35597			
PFPeA	4.489	263.0 -> 219.0	340180	23.32	µg/L	100
PFPeS	6.496	349.1 -> 79.9	55621	24.18	µg/L	96
		349.1 -> 98.9	23187			
PFTeDA	9.812	713.1 -> 669.0	293033	23.85	µg/L	98
		713.1 -> 168.9	24021			
PFTrDA	9.428	663.0 -> 619.0	327956	19.92	µg/L	100
		663.0 -> 168.9	32878			
PFUnDA	8.573	563.1 -> 519.0	203046	20.93	µg/L	99
		563.1 -> 269.1	39868			
11CI-PF3OUdS	9.480	630.9 -> 450.9	182636	23.71	µg/L	99
		632.9 -> 452.9	56521			
9CI-PF3ONS	8.612	530.8 -> 351.0	214723	23.34	µg/L	99
		532.8 -> 353.0	64244			
ADONA	6.705	376.9 -> 250.9	427380	23.71	µg/L	99
		376.9 -> 84.8	117474			
HFPO-DA	5.890	284.9 -> 168.9	56175	21.92	µg/L	98
		284.9 -> 184.9	6441			
3:3FTCA	4.129	241.0 -> 177.0	15319	20.39	µg/L	99
		241.0 -> 117.0	1446			
5:3FTCA	6.358	341.0 -> 237.1	61211	22.23	µg/L	99
		341.0 -> 217.0	44167			
7:3FTCA	7.763	441.0 -> 316.9	20738	20.16	µg/L	99
		441.0 -> 336.9	47150			
EtFOSA	11.161	526.0 -> 219.0	65425	20.03	µg/L	99
		526.0 -> 169.0	74923			
EtFOSE	11.071	630.0 -> 58.9	207439	99.57	µg/L	100
MeFOSA	10.853	511.9 -> 219.0	52545	20.51	µg/L	97
		511.9 -> 169.0	60655			
MeFOSE	10.749	616.1 -> 58.9	188082	93.84	µg/L	100
PFDoDS	9.951	699.1 -> 79.9	36994	19.28	µg/L	95
		699.1 -> 98.8	20345			
NFDHA	5.453	295.0 -> 201.0	14372	20.80	µg/L	100
		295.0 -> 84.9	3929			
PFMBA	4.854	279.0 -> 85.1	179944	21.41	µg/L	100
PFMPA	3.690	229.0 -> 84.9	159091	21.87	µg/L	100
PFEESA	5.983	314.8 -> 134.9	263614	19.57	µg/L	99
		314.8 -> 82.9	9126			

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



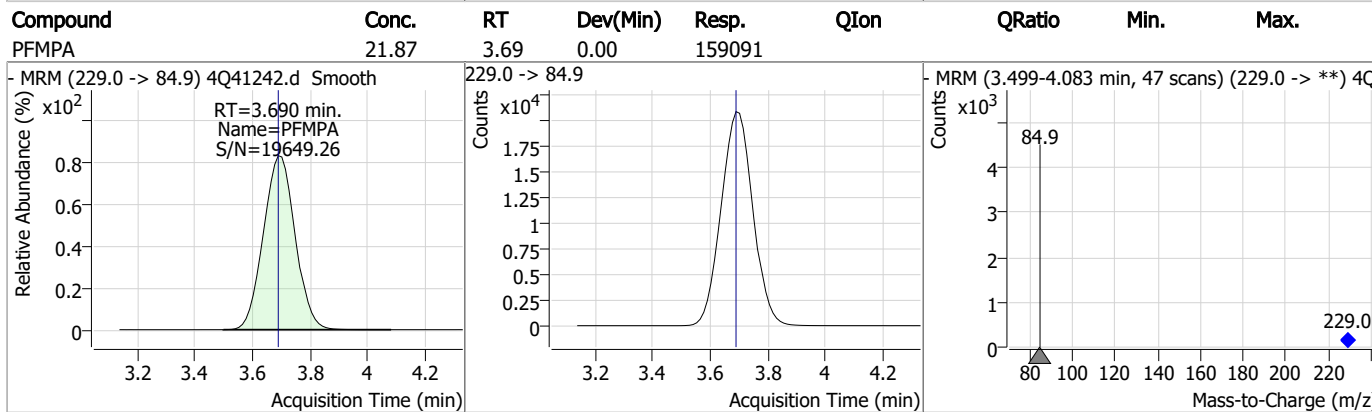
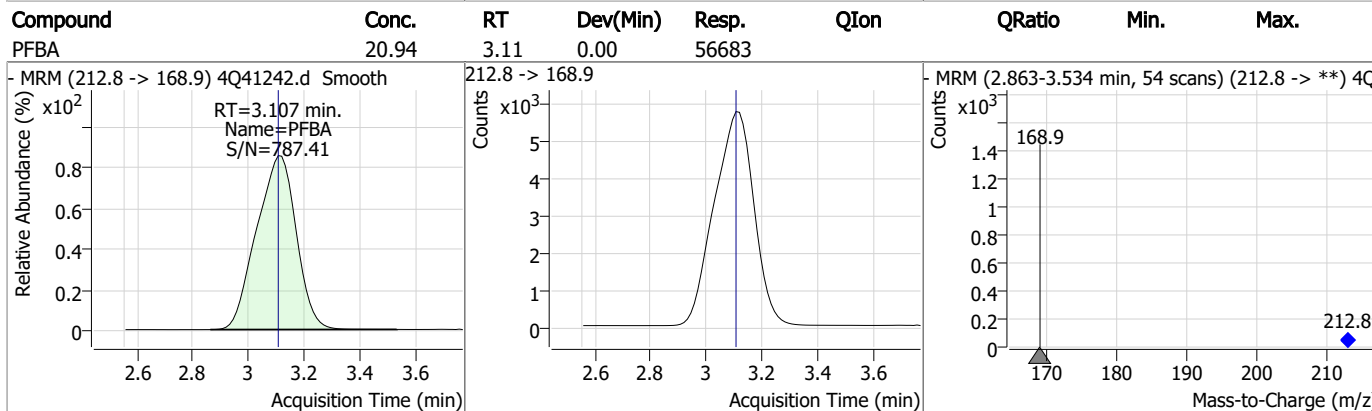
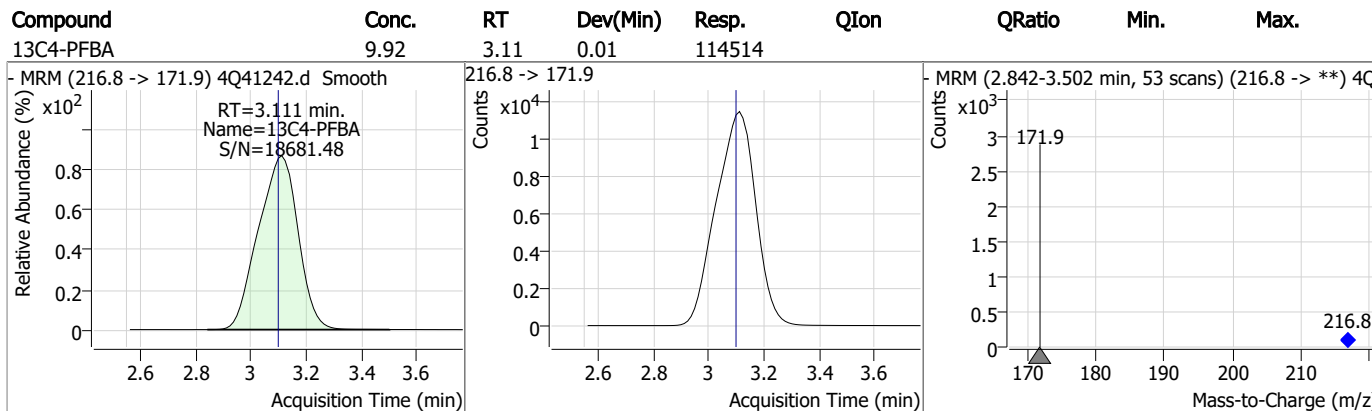
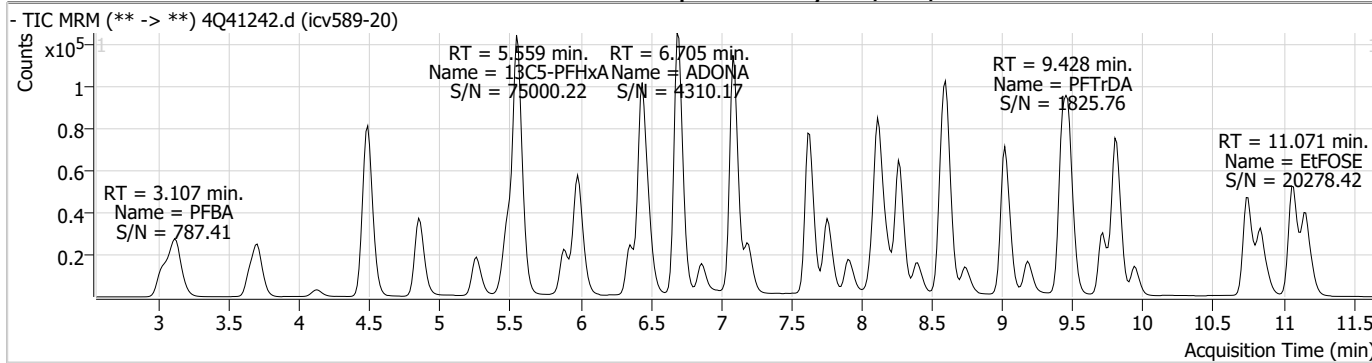
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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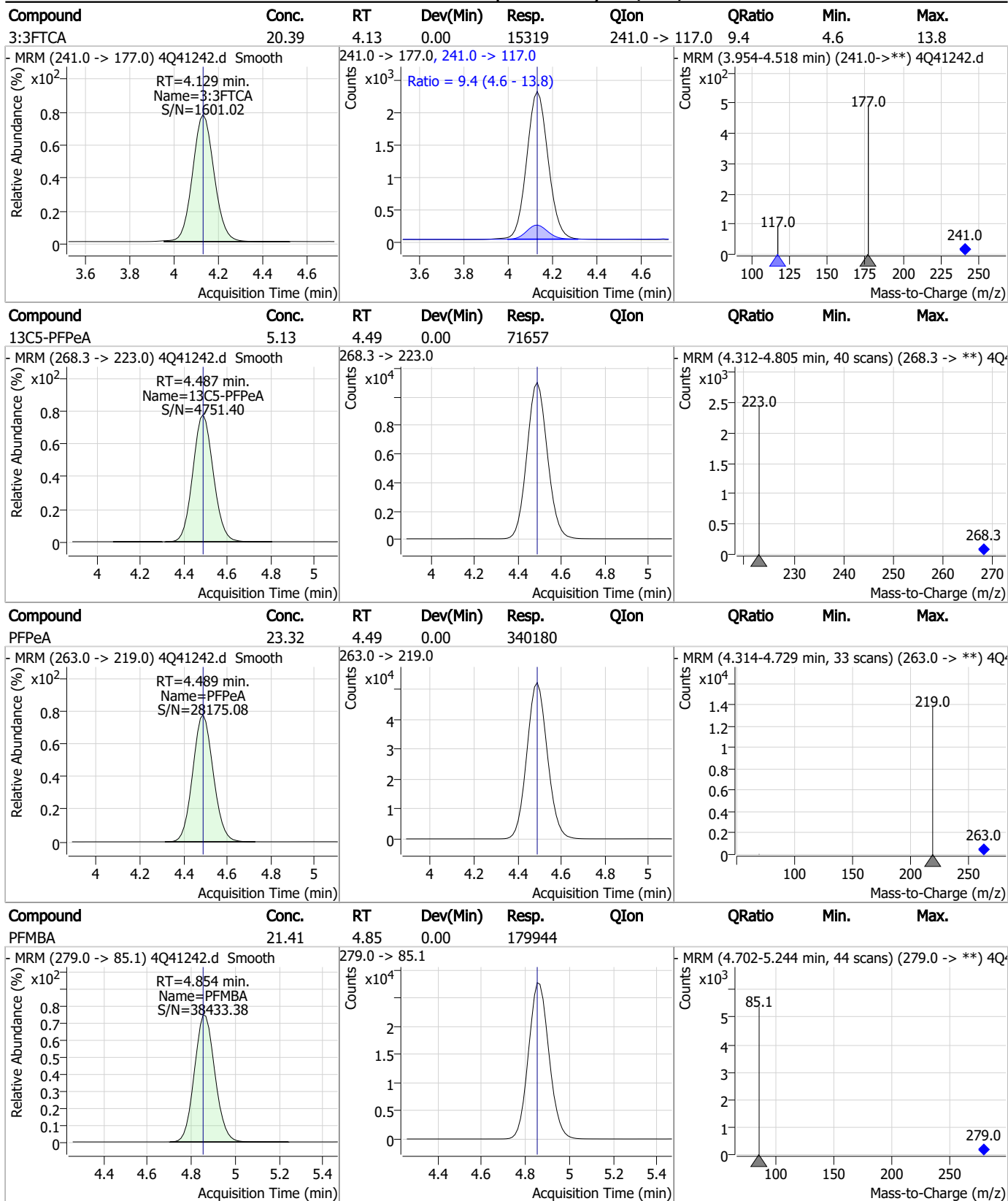
7.6.11

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Perfluorinated Compounds by LC/MS/MS



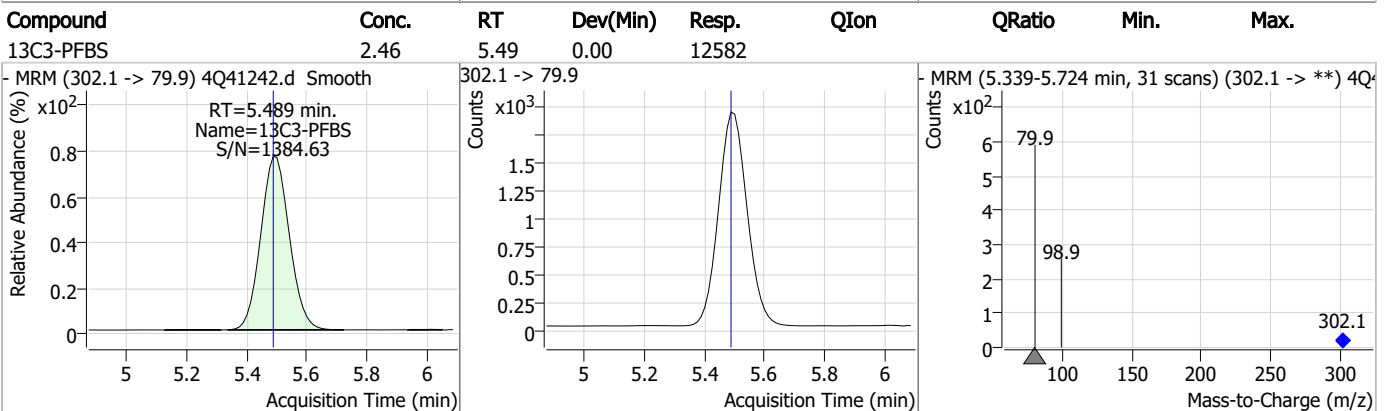
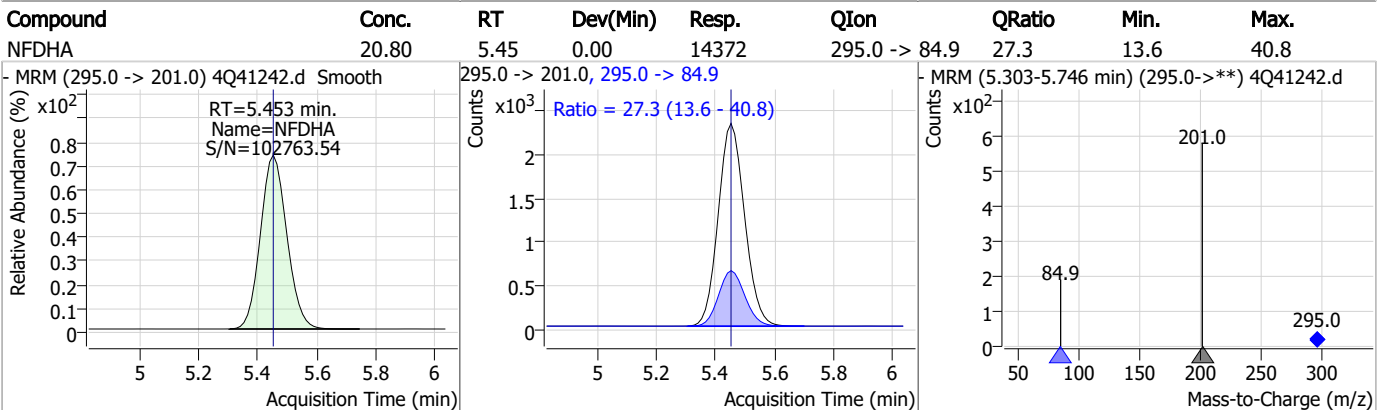
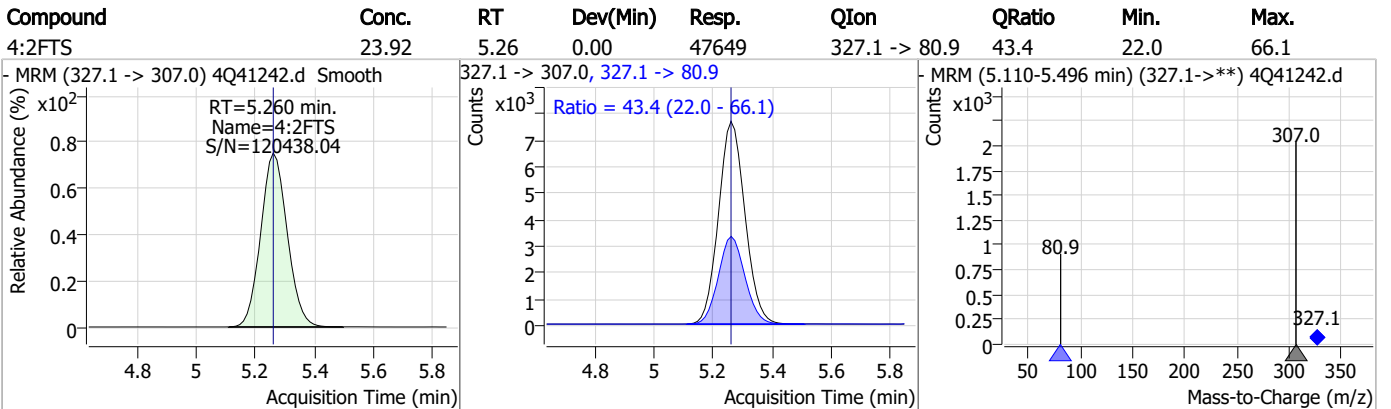
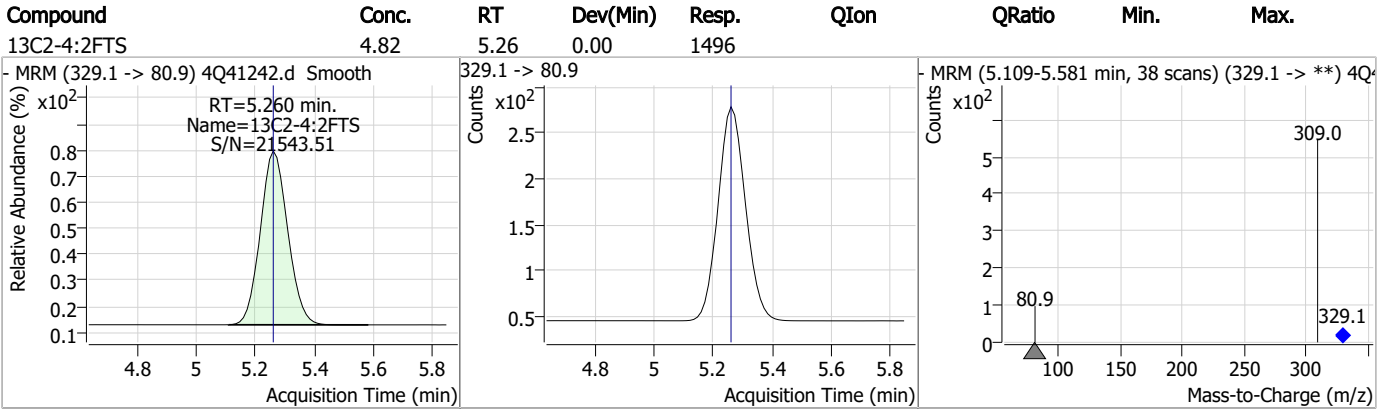
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

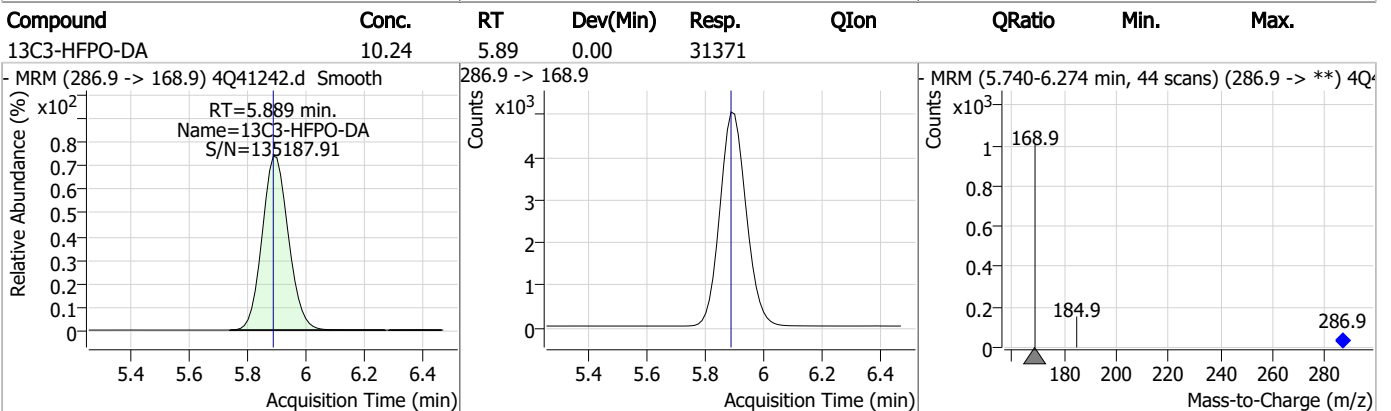
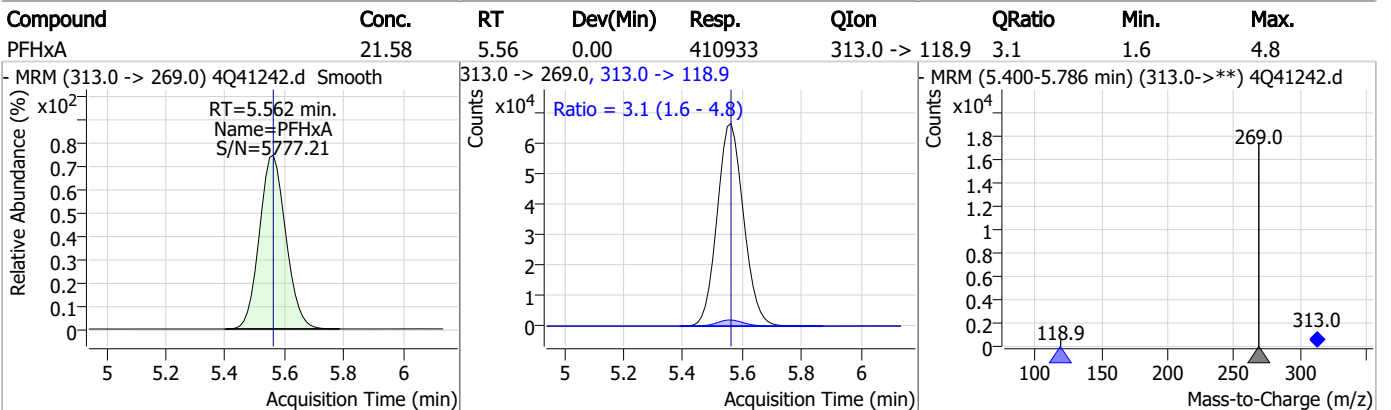
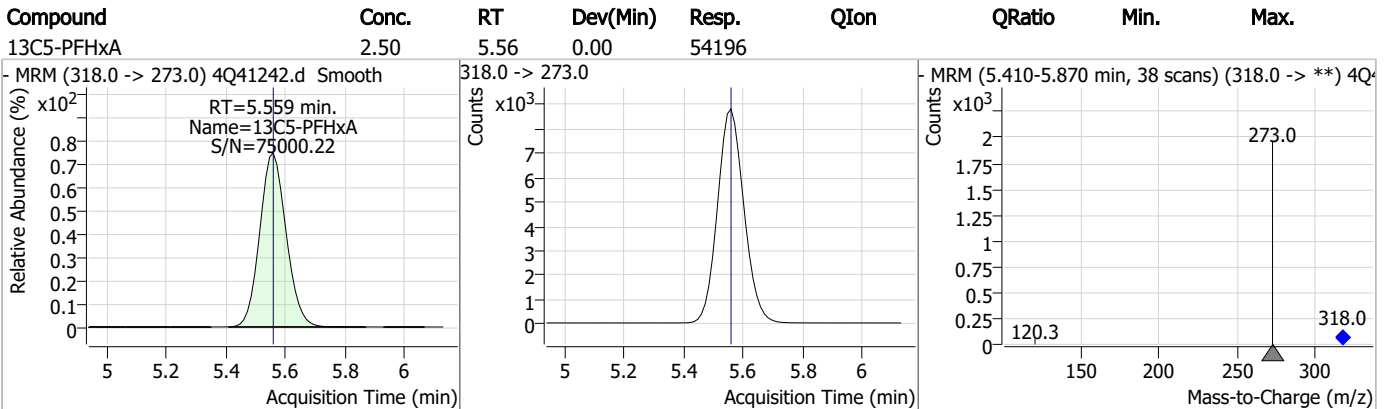
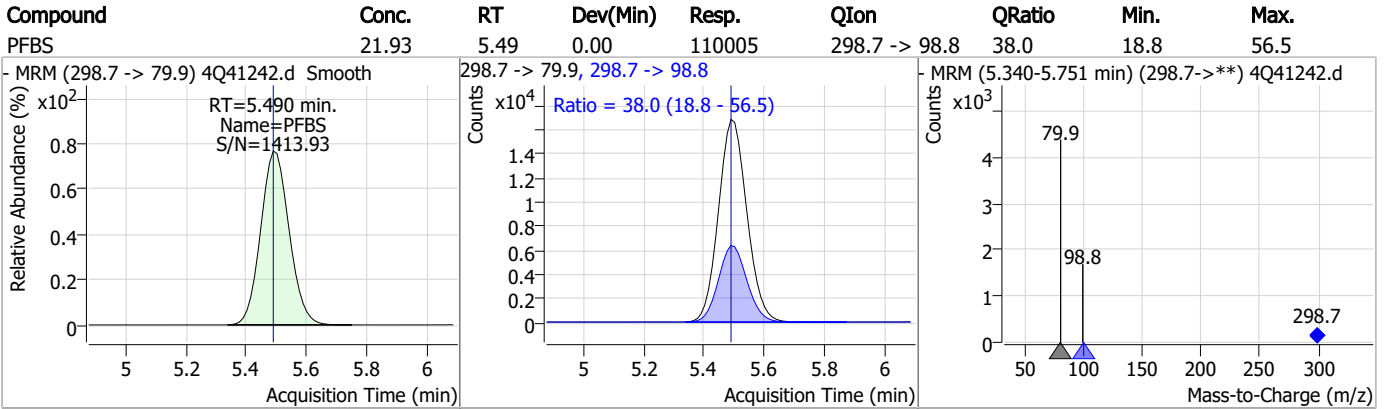


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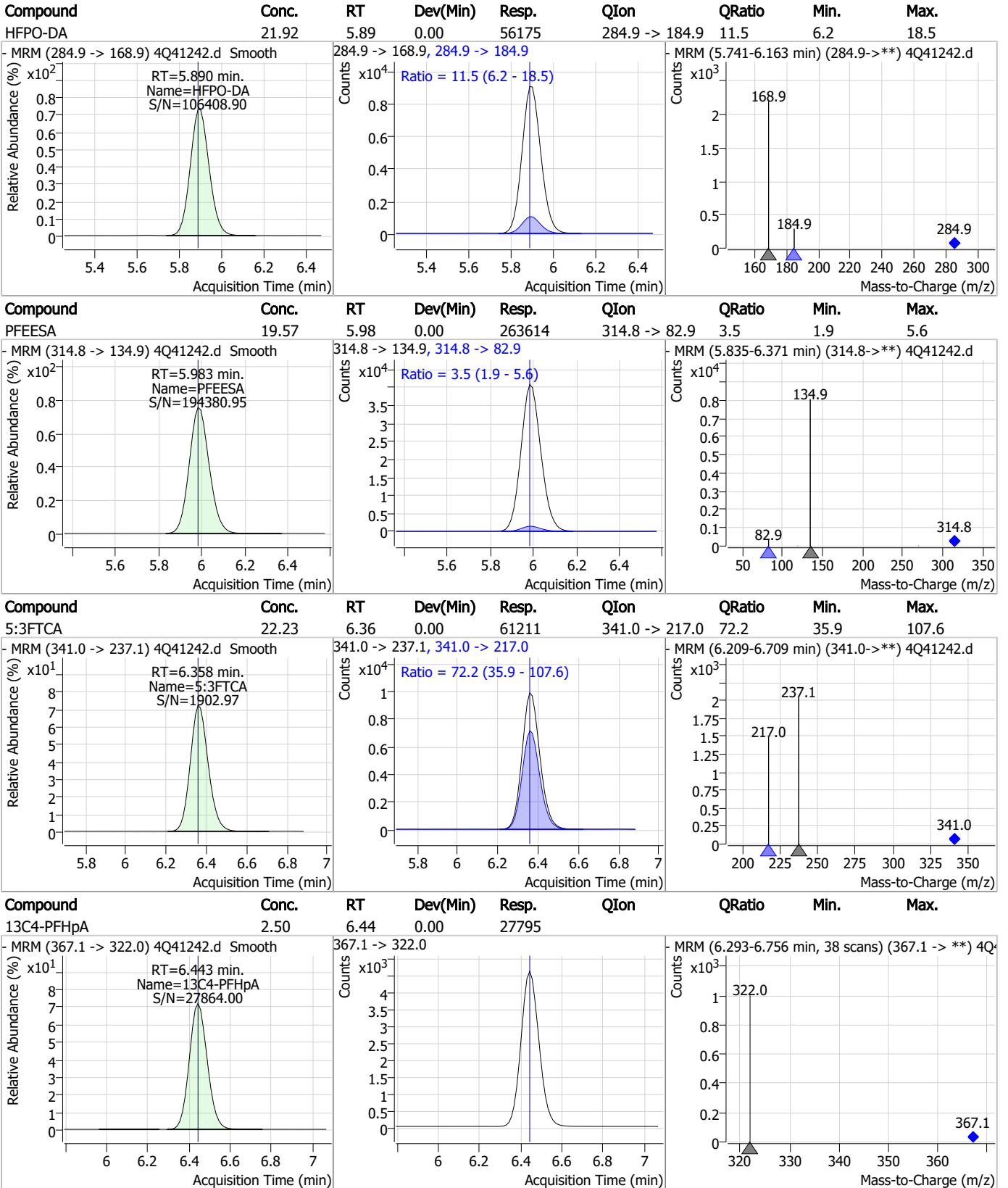
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

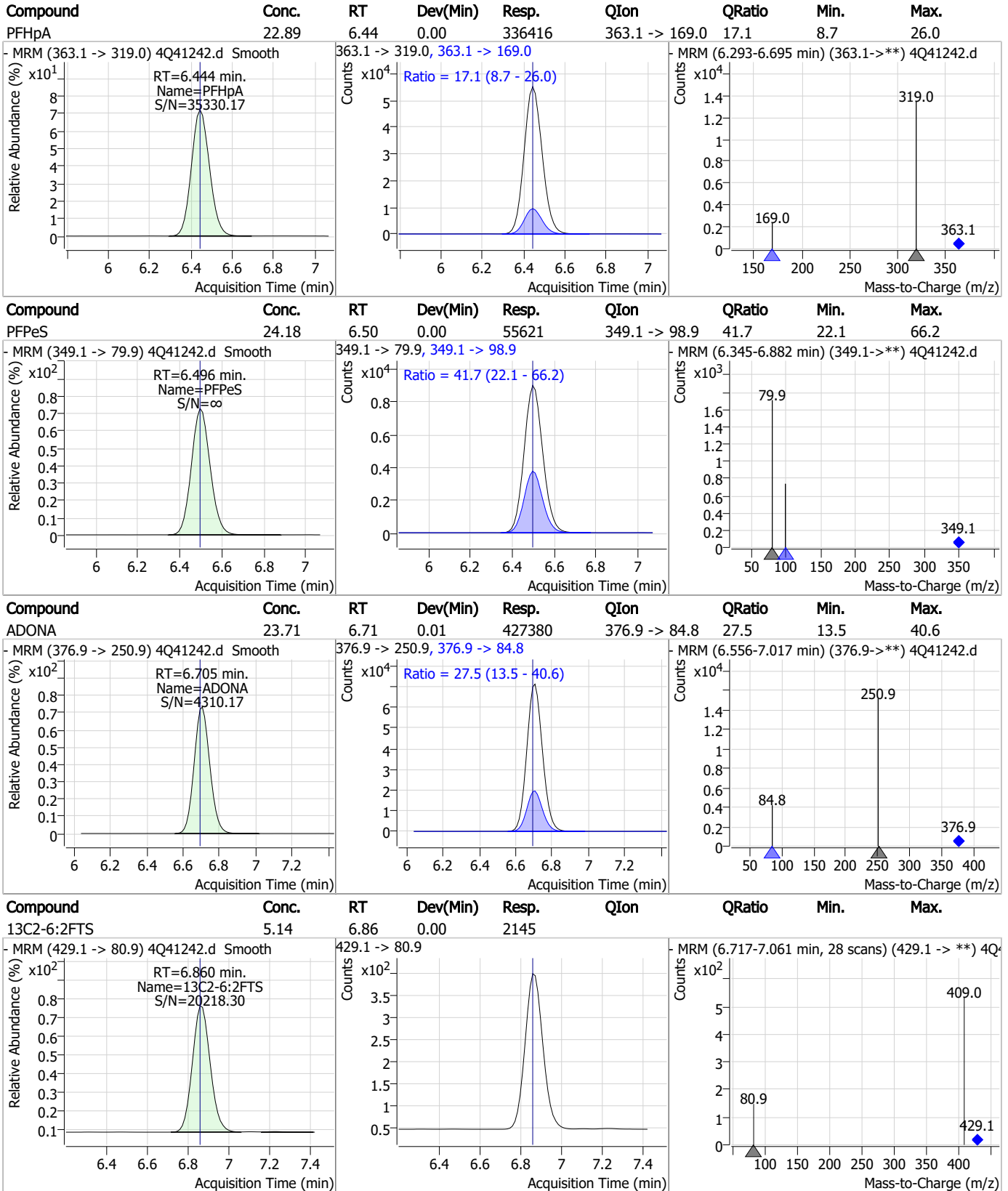


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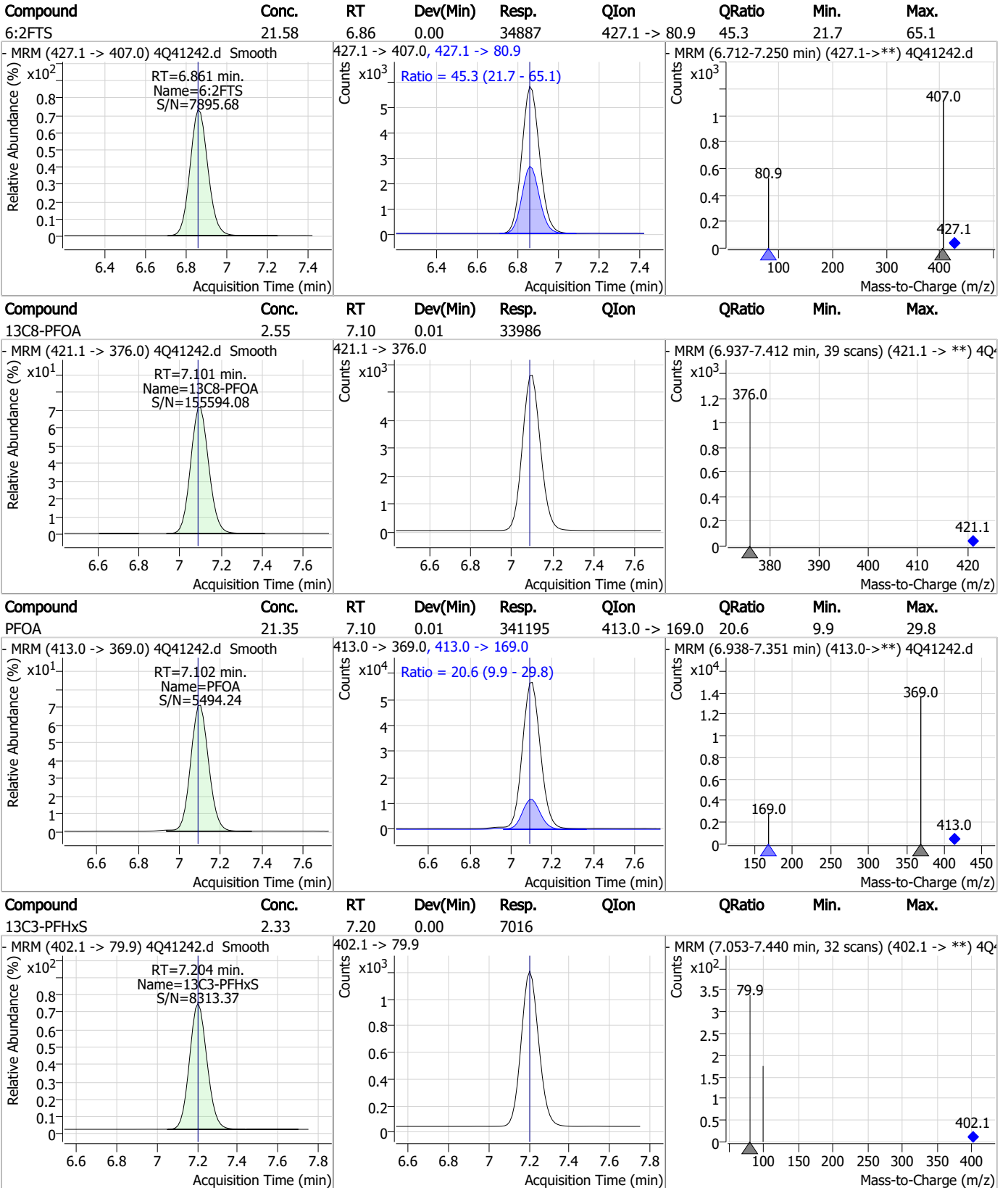
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

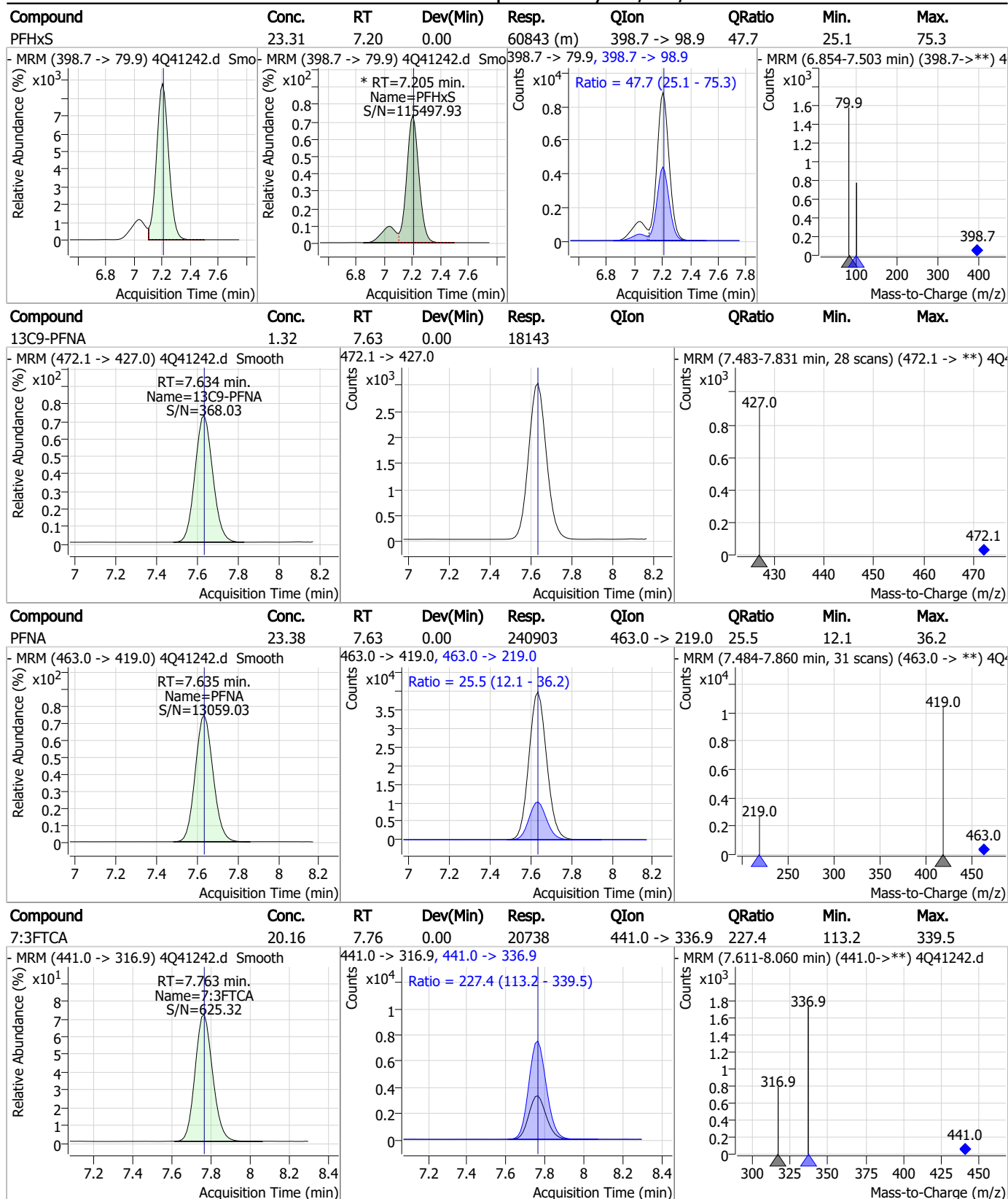


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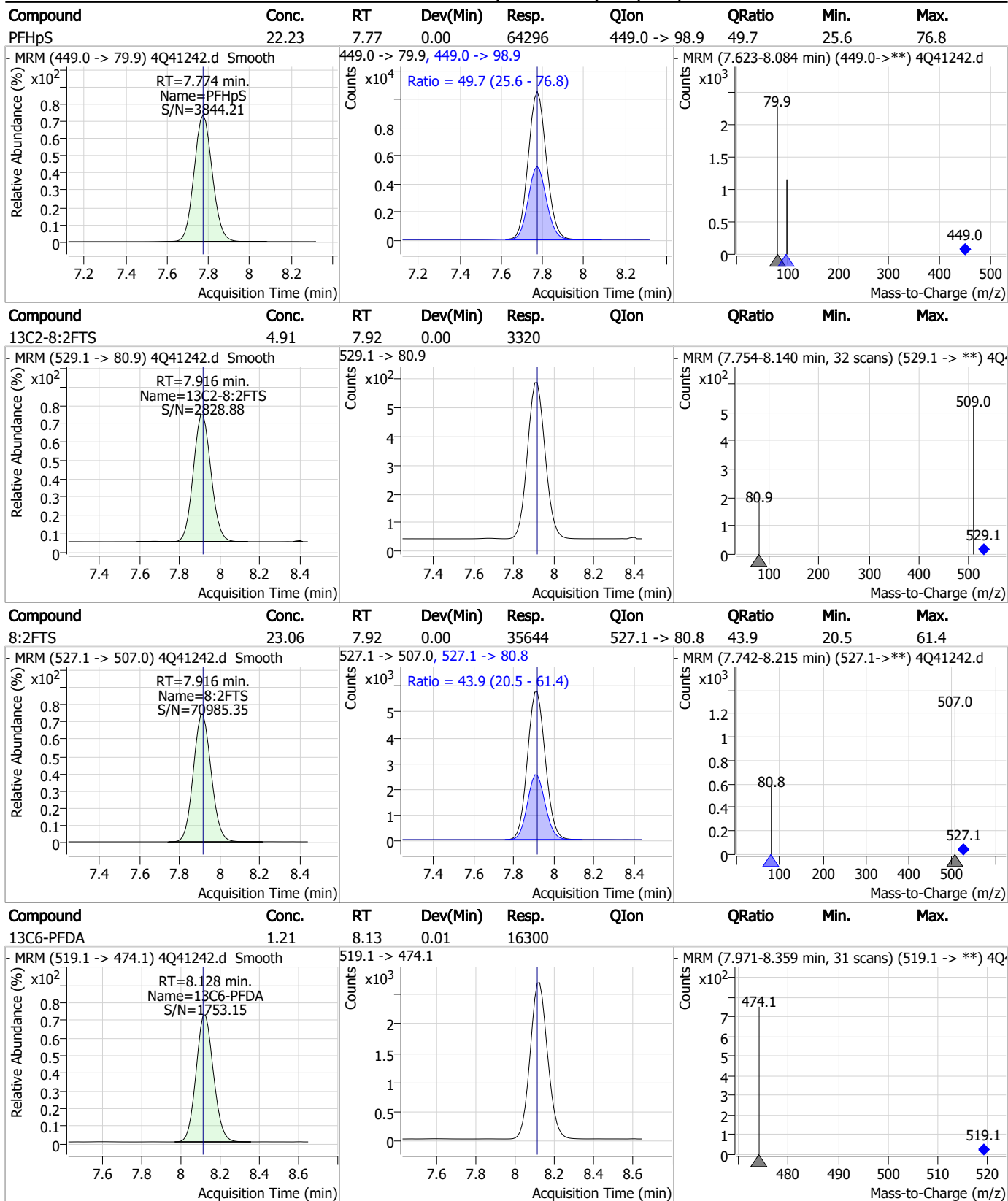
Perfluorinated Compounds by LC/MS/MS



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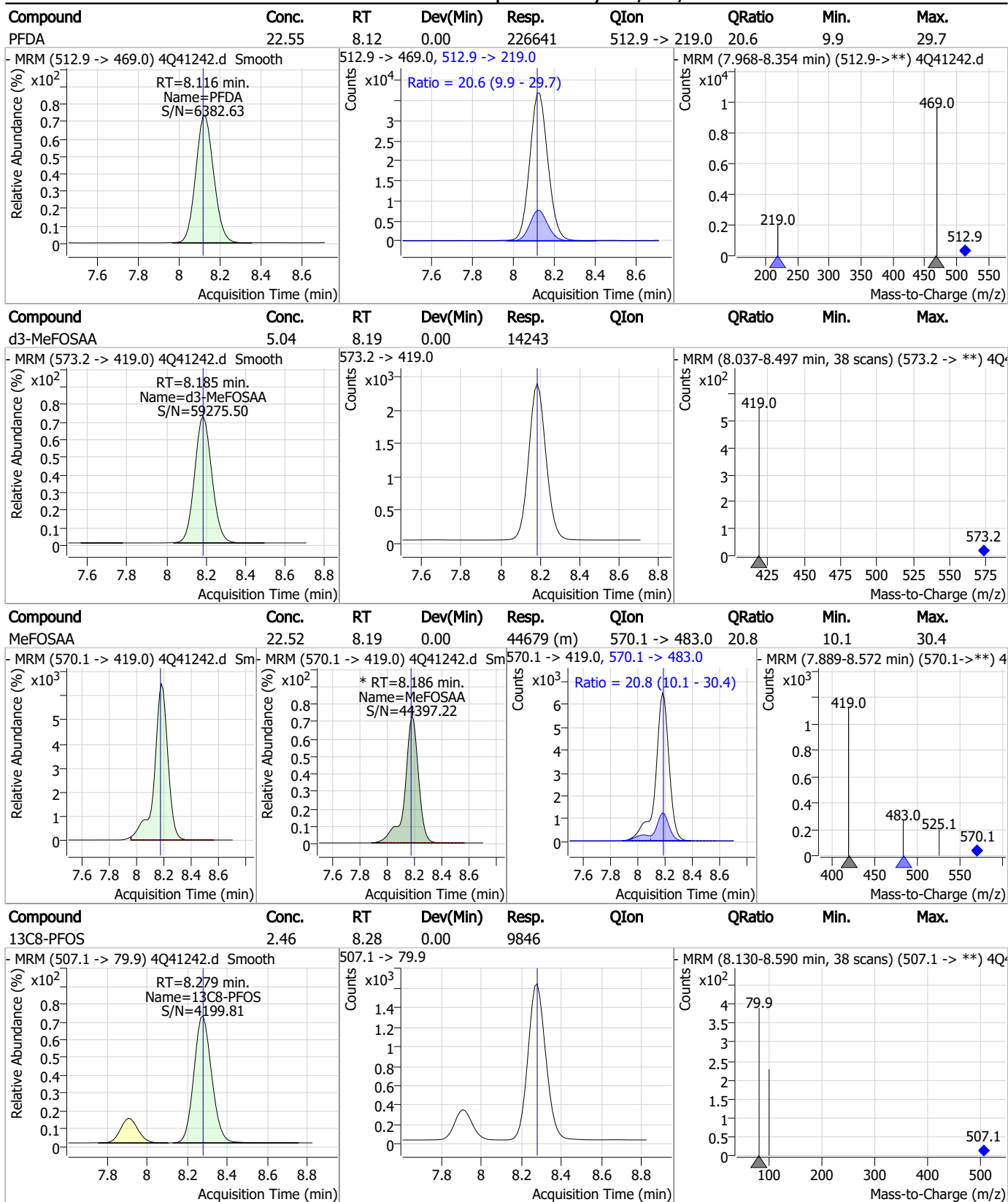
Perfluorinated Compounds by LC/MS/MS



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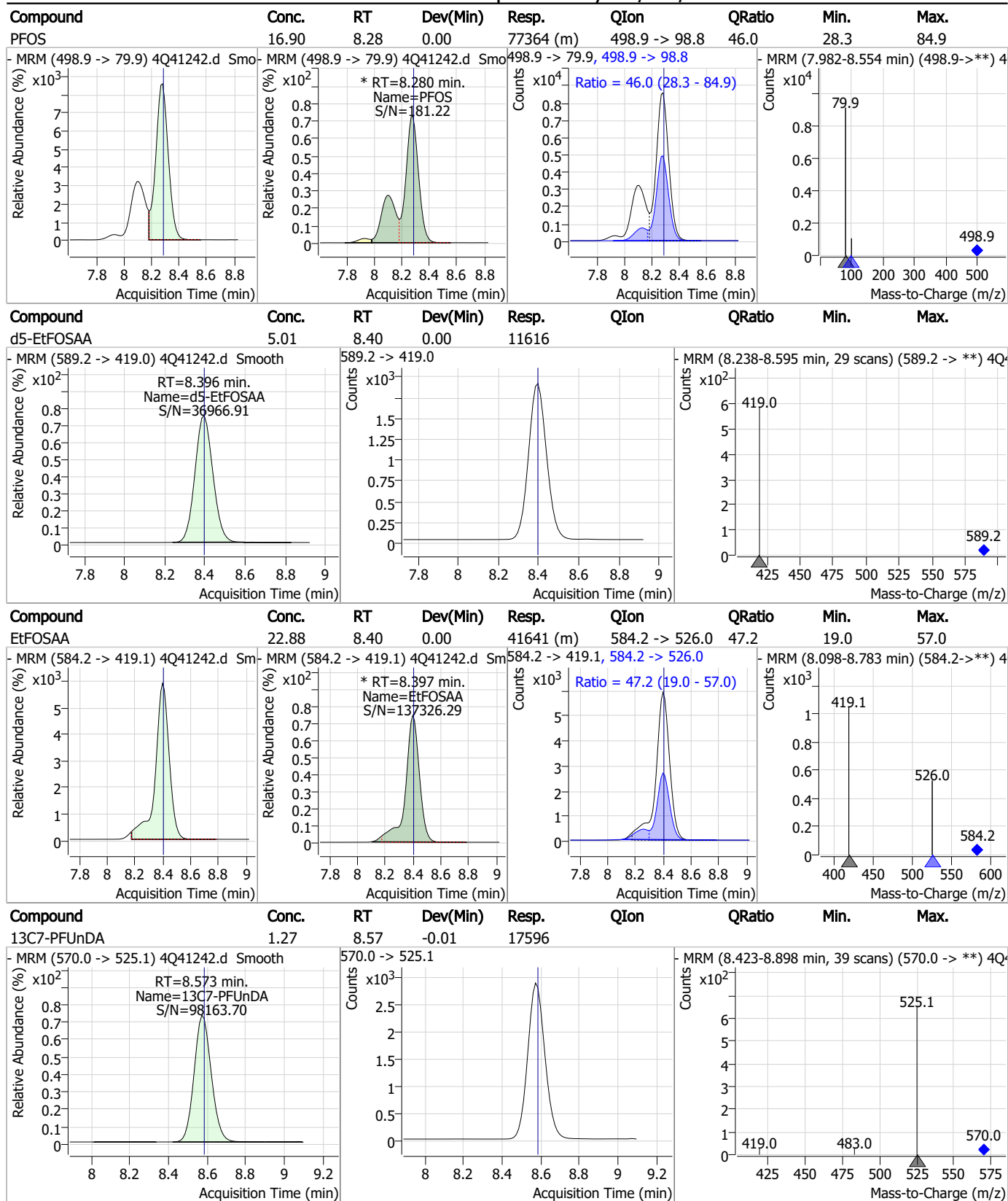
Perfluorinated Compounds by LC/MS/MS



7.6.11

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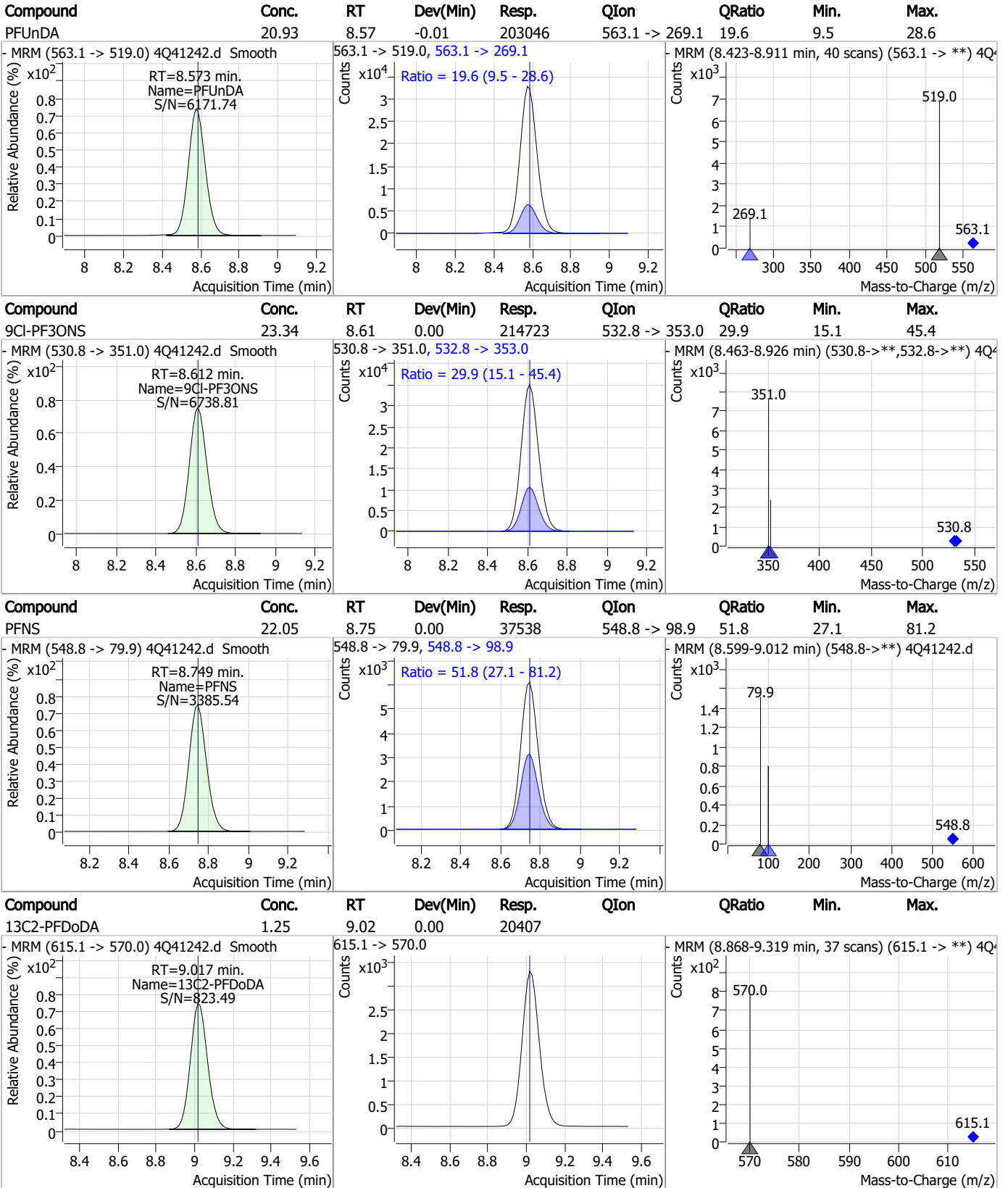
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

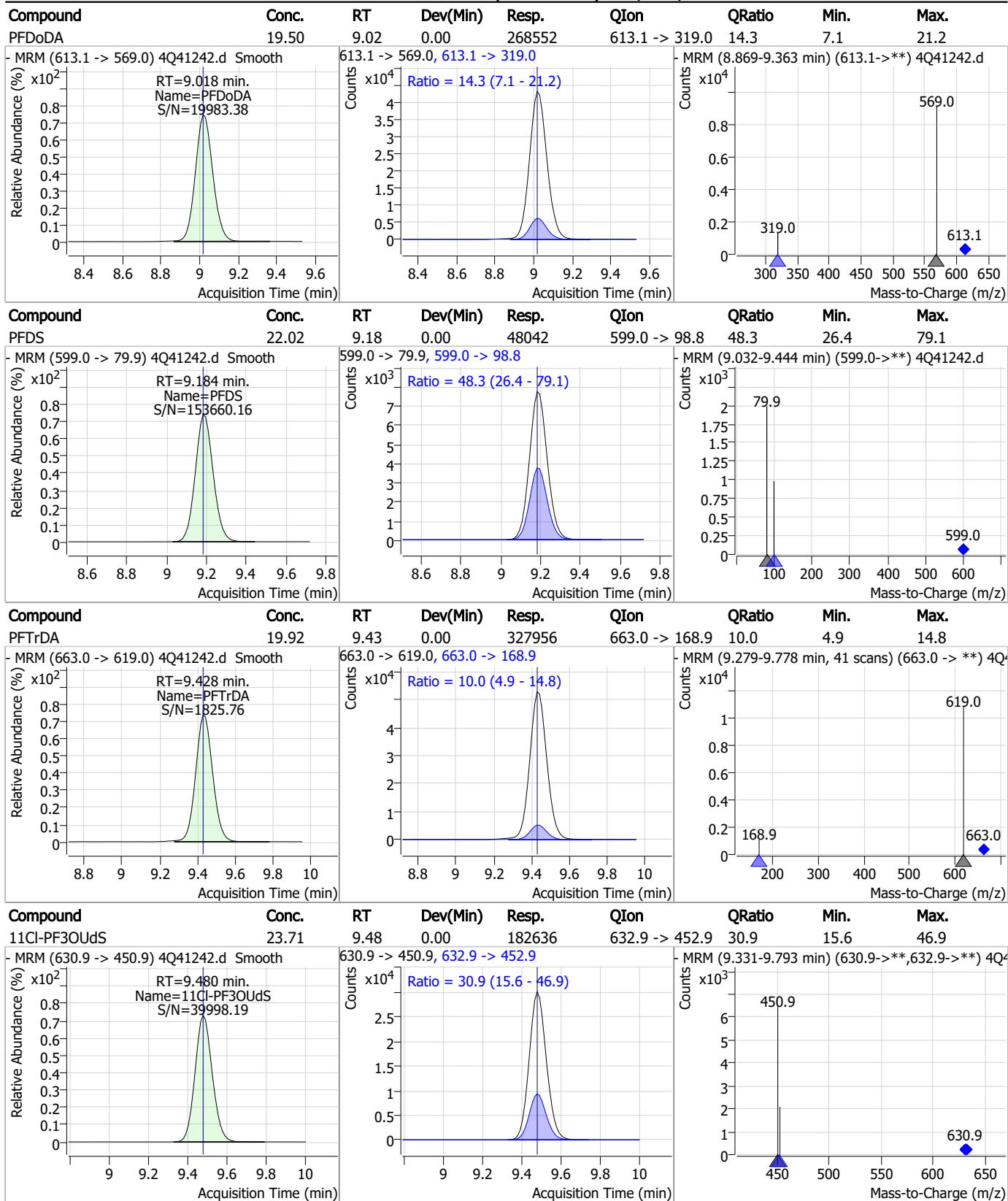


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Perfluorinated Compounds by LC/MS/MS

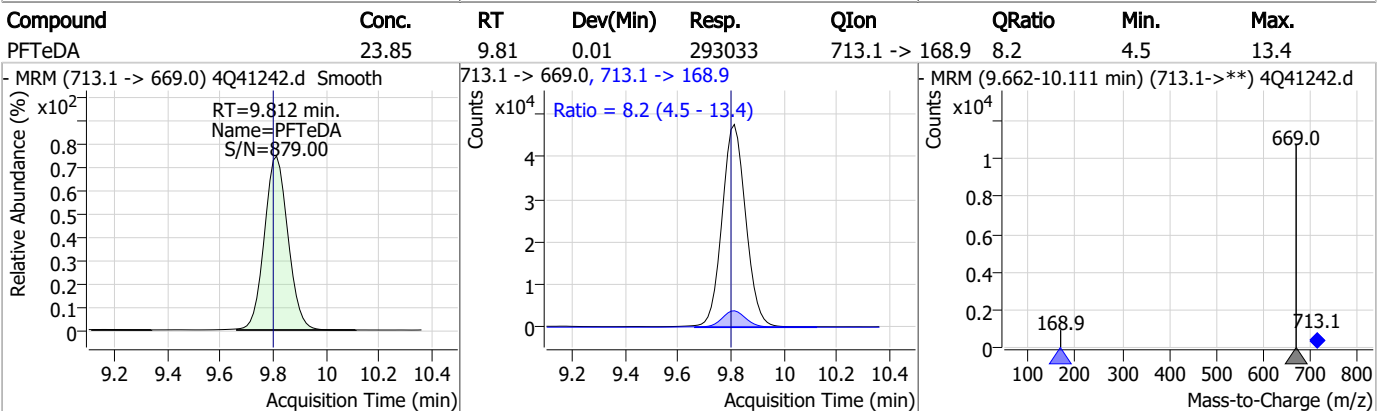
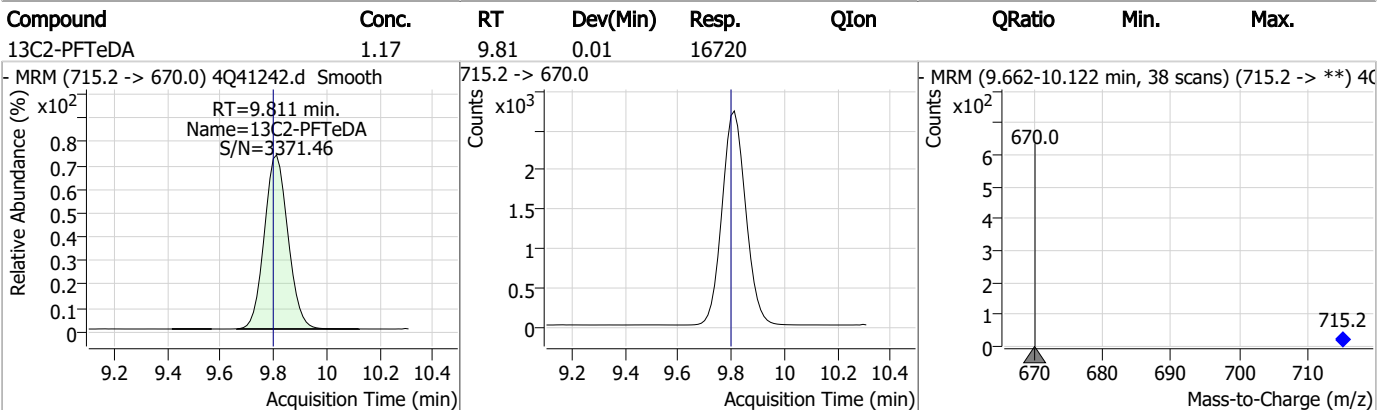
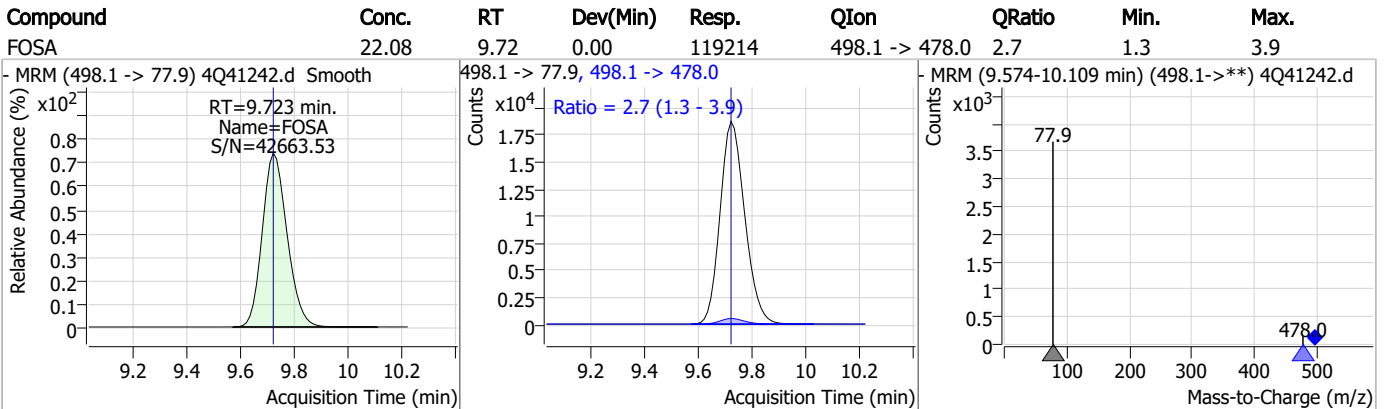
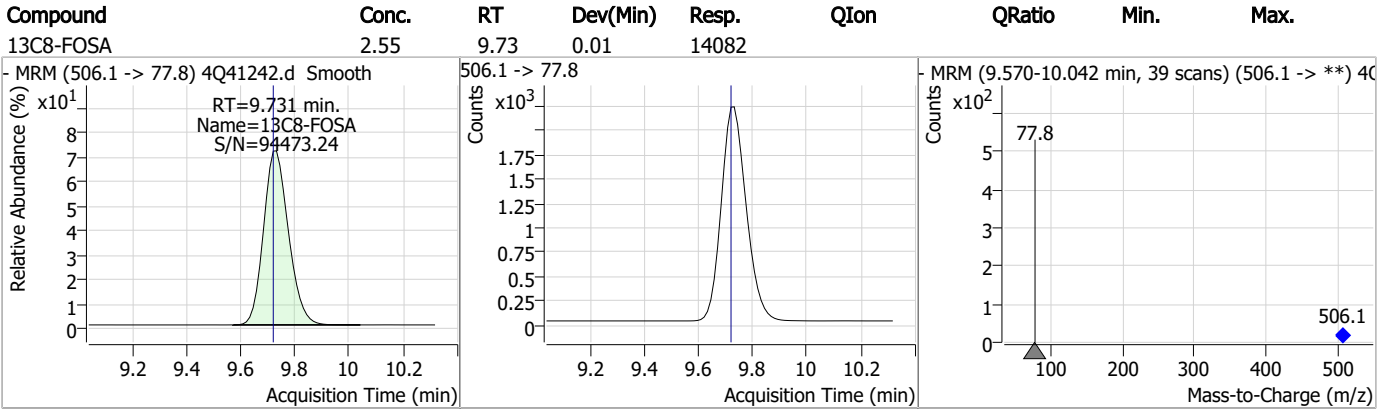


7.6.11

7



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

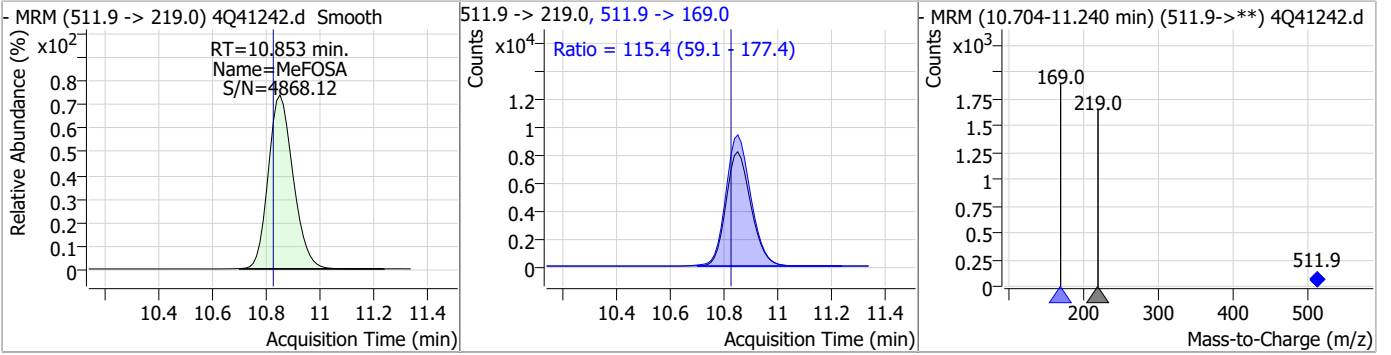
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	19.28	9.95	0.01	36994	699.1 -> 98.8	55.0	29.4	88.1
d7-MeFOSE	25.83	10.74	0.02	50256	623.2 -> 58.9	-	-	-
MeFOSE	93.84	10.75	0.01	188082	616.1 -> 58.9	-	-	-
d3-MeFOSA	2.58	10.85	0.02	7011	515.0 -> 219.0	-	-	-

7.6.11

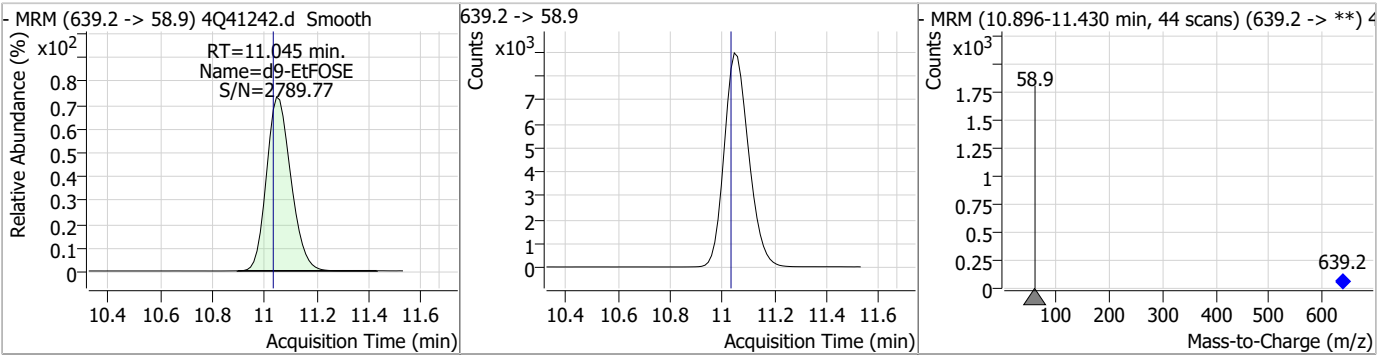
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Perfluorinated Compounds by LC/MS/MS

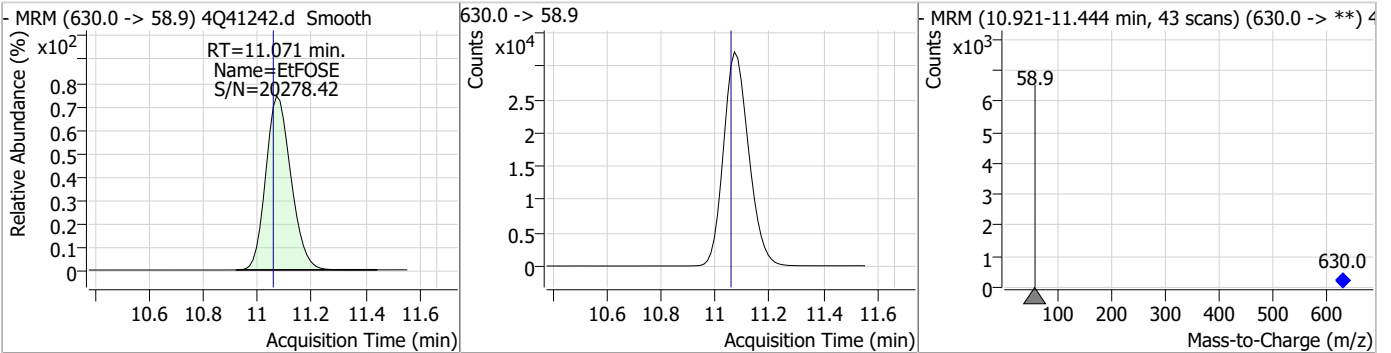
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	20.51	10.85	0.02	52545	511.9 -> 169.0	115.4	59.1	177.4



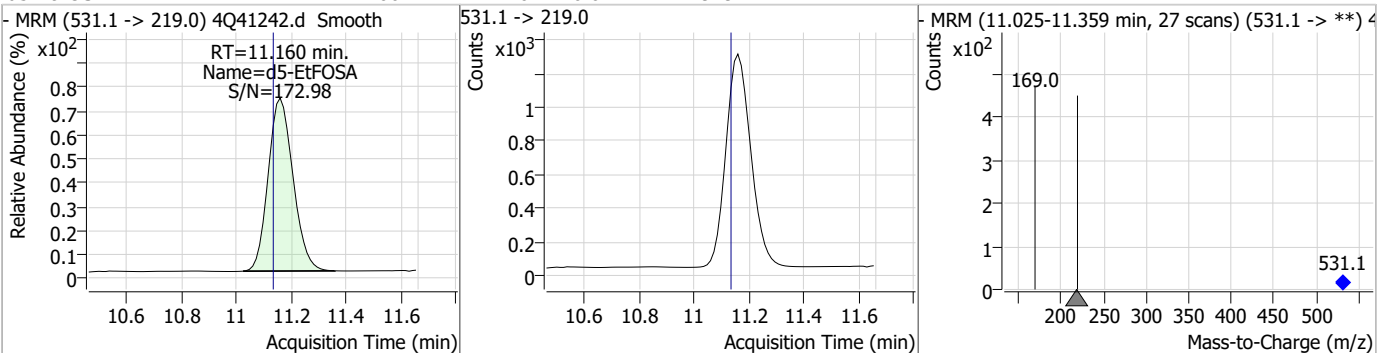
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.20	11.04	0.01	57971				



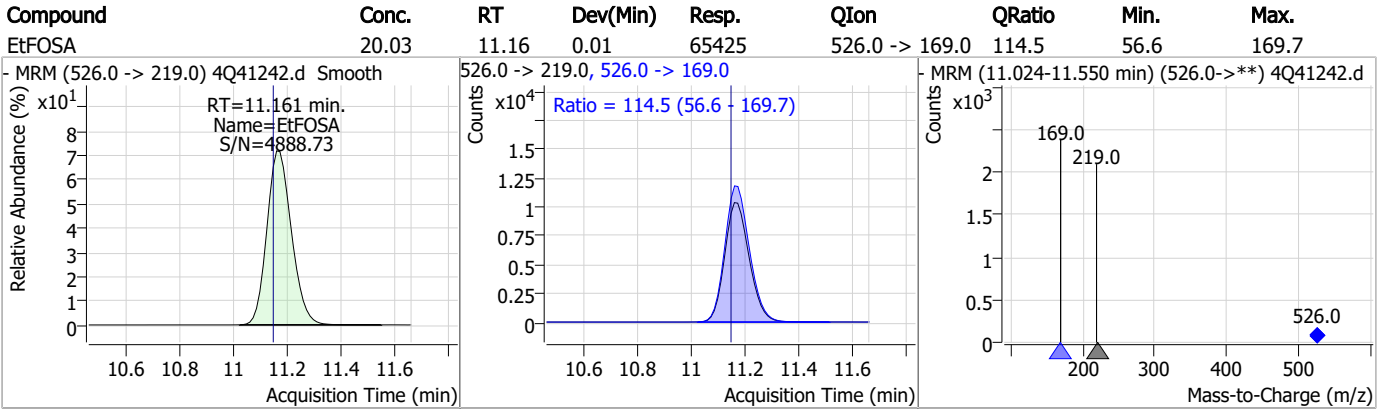
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	99.57	11.07	0.01	207439				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.60	11.16	0.02	7949				



Perfluorinated Compounds by LC/MS/MS



7.6.11

7

Manual Integration Approval Summary

Sample Number: S4Q589-ICV589 Method: EPA DRAFT 1633
Lab FileID: 4Q41242.D Analyst approved: 02/27/23 14:05 Anna Ludwig
Injection Time: 02/24/23 18:25 Supervisor approved: 02/27/23 16:52 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.21	Split peak
MeFOSAA	2355-31-9		8.19	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.28	Split peak
EtFOSAA	2991-50-6		8.40	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41589.d
 Operator : marthav
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 3/2/2023 3:07:06 PM
 Sample Name : cc589-4
 Vial : P1-A5
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q595.batch.bin
 Sample Information : op95682,S4Q595,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.202	216.8 -> 171.9	136777	10.00 µg/L	0.013
M5-PFPeA	4.524	268.3 -> 223.0	89436	5.00 µg/L	-0.012
M5-PFHxA	5.497	318.0 -> 273.0	68797	2.50 µg/L	-0.012
M4-PFHpA	6.330	367.1 -> 322.0	36847	2.50 µg/L	-0.012
M8-PFOA	6.975	421.1 -> 376.0	40302	2.50 µg/L	-0.012
M9-PFNA	7.483	472.1 -> 427.0	22518	1.25 µg/L	-0.012
M6-PFDA	7.955	519.1 -> 474.1	20765	1.25 µg/L	-0.012
M7-PFUnDA	8.373	570.0 -> 525.1	20262	1.25 µg/L	-0.012
M2-PFDoDA	8.780	615.1 -> 570.0	25406	1.25 µg/L	-0.013
M2-PFTeDA	9.525	715.2 -> 670.0	20210	1.25 µg/L	0.025
M8-FOSA	9.534	506.1 -> 77.8	16590	2.50 µg/L	0.012
M3-PFBS	5.464	302.1 -> 79.9	14424	2.50 µg/L	-0.013
M3-PFHxS	7.080	402.1 -> 79.9	8482	2.50 µg/L	-0.012
M8-PFOS	8.105	507.1 -> 79.9	11852	2.50 µg/L	-0.012
M2-4:2FTS	5.223	329.1 -> 80.9	1711	5.00 µg/L	-0.012
M2-6:2FTS	6.736	429.1 -> 80.9	2284	5.00 µg/L	-0.012
M2-8:2FTS	7.741	529.1 -> 80.9	3518	5.00 µg/L	-0.025
M3-MeFOSAA	8.012	573.2 -> 419.0	16699	5.00 µg/L	-0.012
M3-HFPO-DA	5.815	286.9 -> 168.9	35179	10.00 µg/L	-0.012
M5-EtFOSAA	8.209	589.2 -> 419.0	12950	5.00 µg/L	-0.012
M7-MeFOSE	10.425	623.2 -> 58.9	64637	25.00 µg/L	0.025
M9-EtFOSE	10.721	639.2 -> 58.9	74707	25.00 µg/L	0.025
M5-EtFOSA	10.824	531.1 -> 219.0	9172	2.50 µg/L	0.025
M3-MeFOSA	10.528	515.0 -> 219.0	8202	2.50 µg/L	0.025
13C4-PFOS	8.106	502.8 -> 79.9	11518	2.50 µg/L	-0.012
13C3-PFBA	3.205	216.0 -> 172.0	82816	5.00 µg/L	0.013
18O2-PFHxS	7.079	403.0 -> 83.9	6139	2.50 µg/L	-0.012
13C4-PFOA	6.962	417.1 -> 372.0	47159	2.50 µg/L	-0.026
13C2-PFDA	7.955	515.1 -> 470.1	18376	1.25 µg/L	-0.012
13C5-PFNA	7.484	468.0 -> 423.0	26009	1.25 µg/L	-0.012
13C2-PFHxA	5.498	315.1 -> 270.0	62106	2.50 µg/L	-0.012
System Monitoring Compounds					
13C2-4:2FTS	5.223	329.1 -> 80.9	1711	4.78 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.7%		
13C2-6:2FTS	6.736	429.1 -> 80.9	2284	4.76 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.2%		
13C2-8:2FTS	7.741	529.1 -> 80.9	3518	4.52 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 90.5%		
13C2-PFDoDA	8.780	615.1 -> 570.0	25406	1.29 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C2-PFTeDA	9.525	715.2 -> 670.0	20210	1.17 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.4%		
13C3-PFBS	5.464	302.1 -> 79.9	14424	2.45 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C3-PFHxS	7.080	402.1 -> 79.9	8482	2.45 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.9%		
13C4-PFBA	3.202	216.8 -> 171.9	136777	9.59 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C4-PFHpA	6.330	367.1 -> 322.0	36847	2.65 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.2%		
13C5-PFHxA	5.497	318.0 -> 273.0	68797	2.54 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.5%		
13C5-PFPeA	4.524	268.3 -> 223.0	89436	5.12 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C6-PFDA	7.955	519.1 -> 474.1	20765	1.27 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C7-PFUnDA	8.373	570.0 -> 525.1	20262	1.21 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.8%		
13C8-FOSA	9.534	506.1 -> 77.8	16590	2.60 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.9%		
13C8-PFOA	6.975	421.1 -> 376.0	40302	2.57 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C8-PFOS	8.105	507.1 -> 79.9	11852	2.56 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.4%		
13C9-PFNA	7.483	472.1 -> 427.0	22518	1.24 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.3%		
d3-MeFOSAA	8.012	573.2 -> 419.0	16699	5.11 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C3-HFPO-DA	5.815	286.9 -> 168.9	35179	9.19 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 91.9%		
d3-MeFOSA	10.528	515.0 -> 219.0	8202	2.61 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.4%		
d5-EtFOSAA	8.209	589.2 -> 419.0	12950	4.83 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.6%		
d7-MeFOSE	10.425	623.2 -> 58.9	64637	28.75 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 115.0%		
d9-EtFOSE	10.721	639.2 -> 58.9	74707	28.09 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 112.4%		
d5-EtFOSA	10.824	531.1 -> 219.0	9172	2.60 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.8%		
Target Compounds					QValue
4:2FTS	5.223	327.1 -> 307.0	19844	8.71 µg/L	95
		327.1 -> 80.9	8862		
6:2FTS	6.737	427.1 -> 407.0	16313	9.48 µg/L	97
		427.1 -> 80.9	6652		
8:2FTS	7.742	527.1 -> 507.0	16206	9.90 µg/L	99
		527.1 -> 80.8	6799		
EtFOSAA	8.210	584.2 -> 419.1	5079	2.50 µg/L	m 97
		584.2 -> 526.0	2173		
FOSA	9.524	498.1 -> 77.9	14972	2.35 µg/L	99
		498.1 -> 478.0	431		
MeFOSAA	8.013	570.1 -> 419.0	5564	2.39 µg/L	97
		570.1 -> 483.0	1054		
PFBA	3.196	212.8 -> 168.9	30321	9.38 µg/L	100
PFBS	5.465	298.7 -> 79.9	11643	2.02 µg/L	100
		298.7 -> 98.8	4458		
PFDA	7.955	512.9 -> 469.0	27302	2.13 µg/L	100
		512.9 -> 219.0	5551		
PFDODA	8.780	613.1 -> 569.0	41090	2.40 µg/L	100
		613.1 -> 319.0	5761		
PFDS	8.945	599.0 -> 79.9	5950	2.26 µg/L	97

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2973			
PFHpA	6.331	363.1 -> 319.0	46492	2.39	µg/L	99
		363.1 -> 169.0	8385			
PFHpS	7.623	449.0 -> 79.9	7781	2.23	µg/L	96
		449.0 -> 98.9	4026			
PFHxA	5.500	313.0 -> 269.0	52902	2.19	µg/L	100
		313.0 -> 118.9	1593			
PFHxS	7.081	398.7 -> 79.9	6590	2.09	µg/L	m 92
		398.7 -> 98.9	3541			
PFNA	7.484	463.0 -> 419.0	28031	2.19	µg/L	99
		463.0 -> 219.0	7617			
PFNS	8.537	548.8 -> 79.9	4446	2.17	µg/L	95
		548.8 -> 98.9	2083			
PFOA	6.977	413.0 -> 369.0	44658	2.36	µg/L	100
		413.0 -> 169.0	9337			
PFOS	8.106	498.9 -> 79.9	10897	1.98	µg/L	m 97
		498.9 -> 98.8	5436			
PFPeA	4.527	263.0 -> 219.0	83705	4.60	µg/L	100
PFPeS	6.394	349.1 -> 79.9	6593	2.37	µg/L	97
		349.1 -> 98.9	2963			
PFTeDA	9.525	713.1 -> 669.0	37207	2.51	µg/L	100
		713.1 -> 168.9	3174			
PFTrDA	9.166	663.0 -> 619.0	50586	2.47	µg/L	99
		663.0 -> 168.9	5171			
PFUnDA	8.374	563.1 -> 519.0	28201	2.52	µg/L	98
		563.1 -> 269.1	5879			
11CI-PF3OUdS	9.218	630.9 -> 450.9	92944	10.76	µg/L	100
		632.9 -> 452.9	28478			
9CI-PF3ONS	8.413	530.8 -> 351.0	104727	10.15	µg/L	96
		532.8 -> 353.0	30611			
ADONA	6.581	376.9 -> 250.9	206983	10.24	µg/L	100
		376.9 -> 84.8	55294			
HFPO-DA	5.816	284.9 -> 168.9	28419	9.89	µg/L	99
		284.9 -> 184.9	3226			
3:3FTCA	4.179	241.0 -> 177.0	10114	10.78	µg/L	99
		241.0 -> 117.0	1010			
5:3FTCA	6.271	341.0 -> 237.1	212265	60.73	µg/L	99
		341.0 -> 217.0	150554			
7:3FTCA	7.636	441.0 -> 316.9	79308	60.74	µg/L	99
		441.0 -> 336.9	178161			
EtFOSA	10.838	526.0 -> 219.0	8850	2.35	µg/L	88
		526.0 -> 169.0	9916			
EtFOSE	10.747	630.0 -> 58.9	63828	23.77	µg/L	100
MeFOSA	10.542	511.9 -> 219.0	7646	2.55	µg/L	66
		511.9 -> 169.0	8659			
MeFOSE	10.451	616.1 -> 58.9	63587	24.67	µg/L	100
PFDoDS	9.652	699.1 -> 79.9	5104	2.21	µg/L	99
		699.1 -> 98.8	2885			
NFDHA	5.403	295.0 -> 201.0	4117	4.69	µg/L	96
		295.0 -> 84.9	1099			
PFMBA	4.854	279.0 -> 85.1	47380	4.52	µg/L	100
PFMPA	3.794	229.0 -> 84.9	38822	4.28	µg/L	100
PFEESA	5.921	314.8 -> 134.9	71676	4.19	µg/L	100
		314.8 -> 82.9	2400			

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



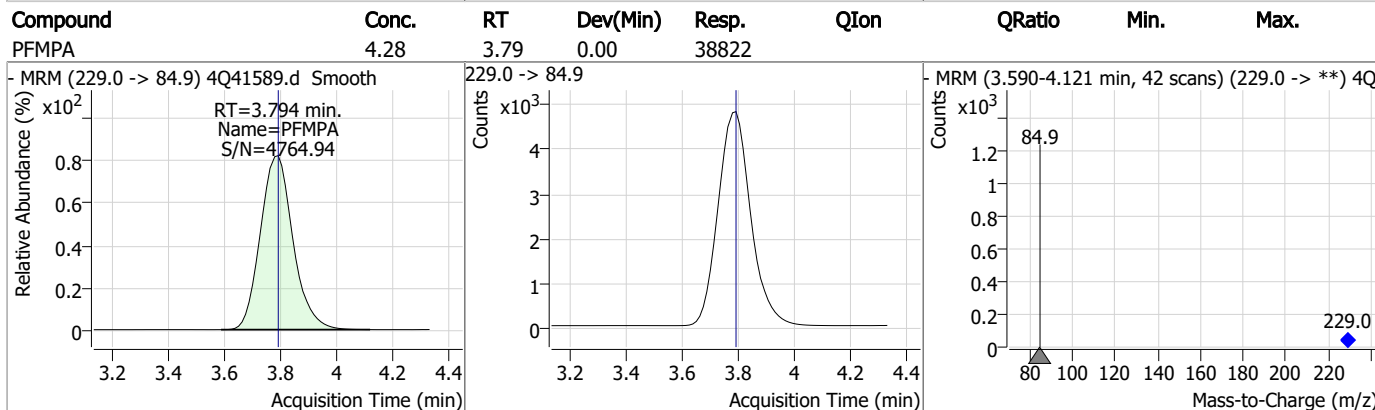
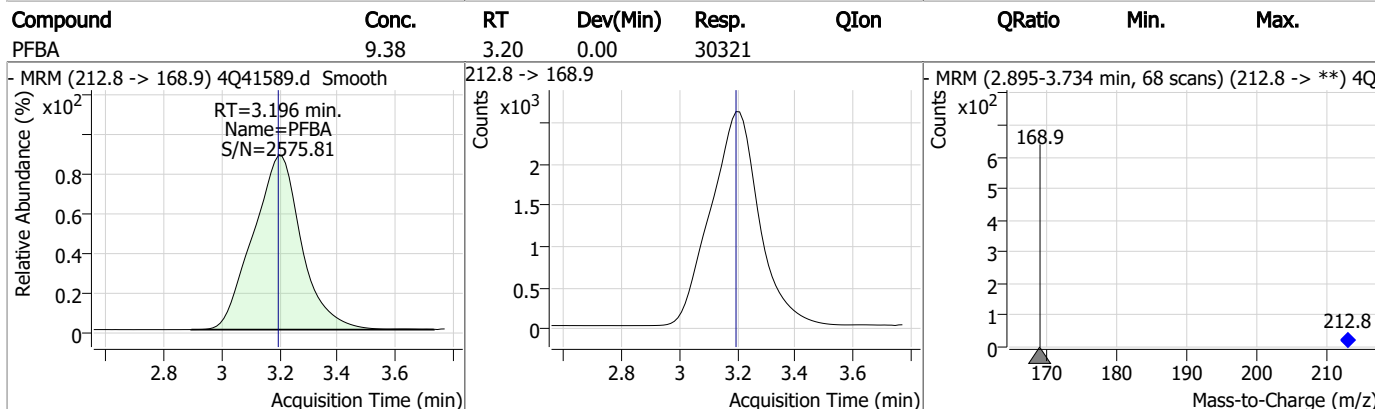
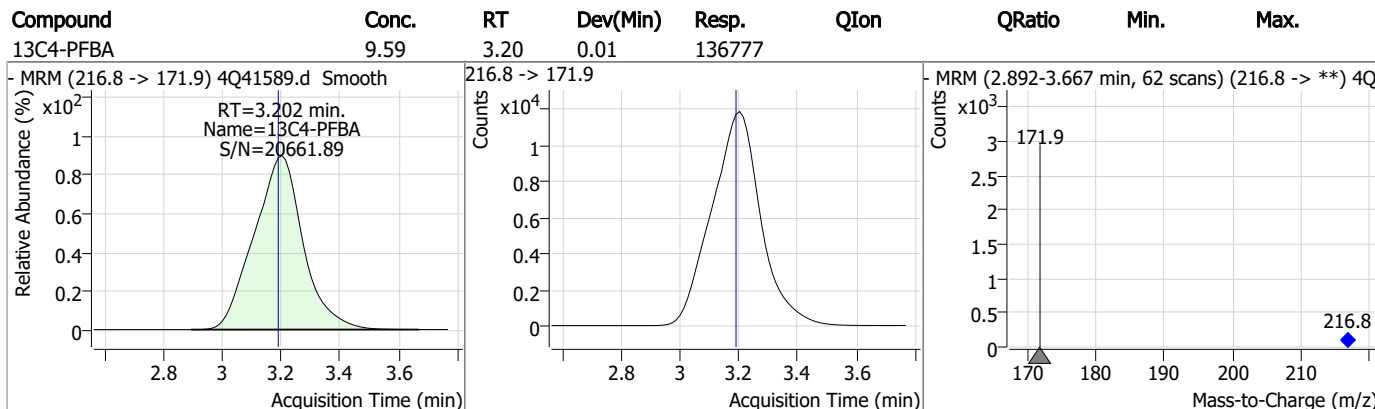
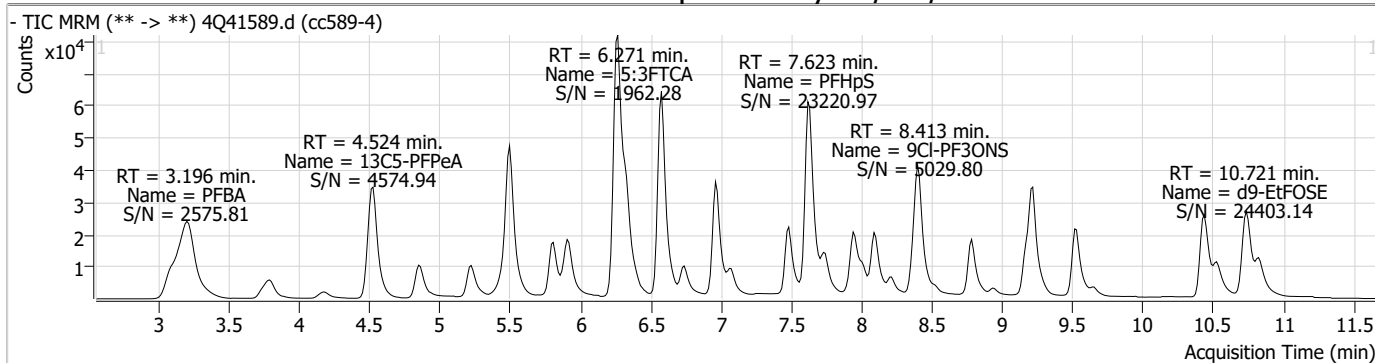
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.6.12

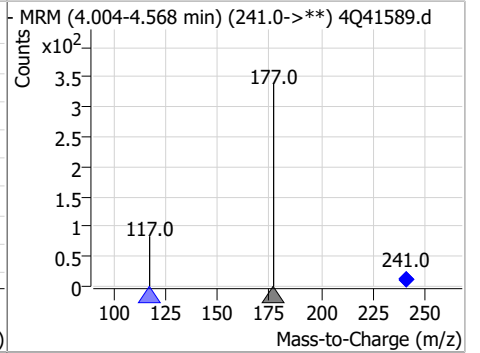
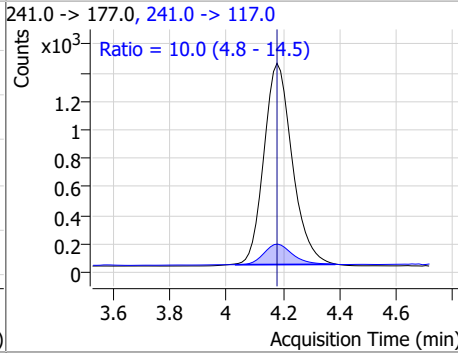
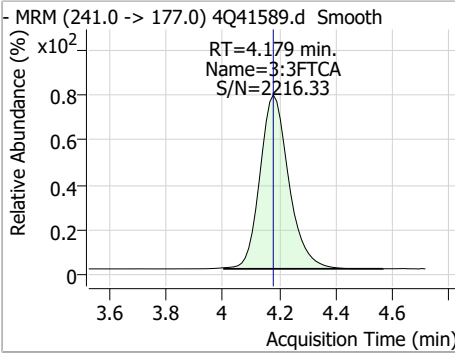
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Perfluorinated Compounds by LC/MS/MS

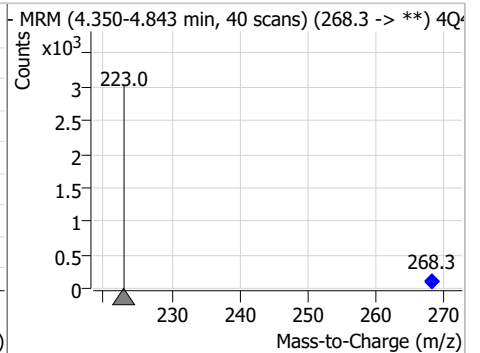
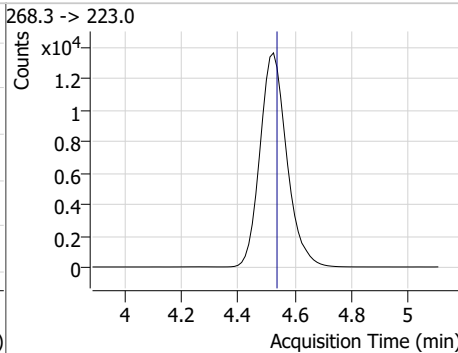
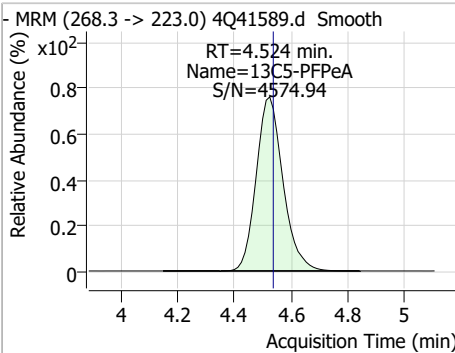


Perfluorinated Compounds by LC/MS/MS

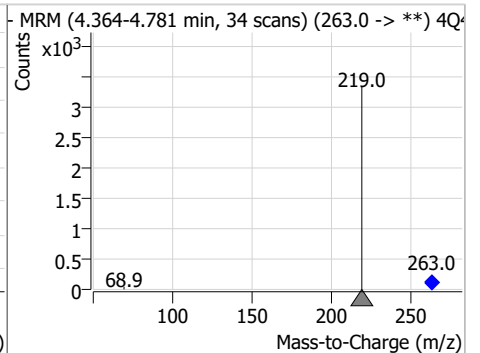
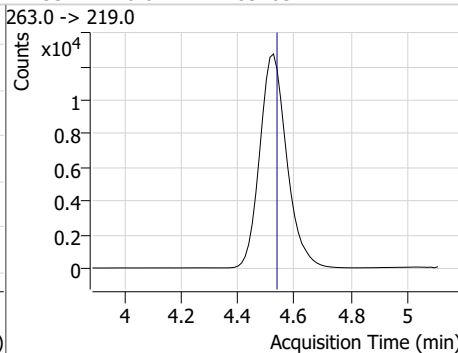
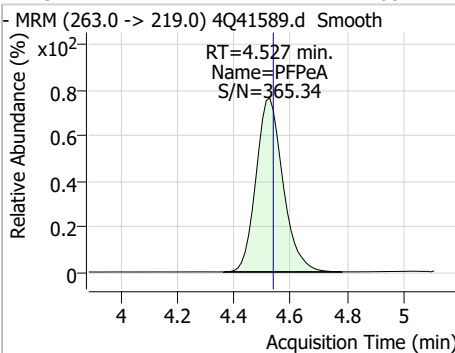
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	10.78	4.18	0.00	10114	241.0 -> 117.0	10.0	4.8	14.5



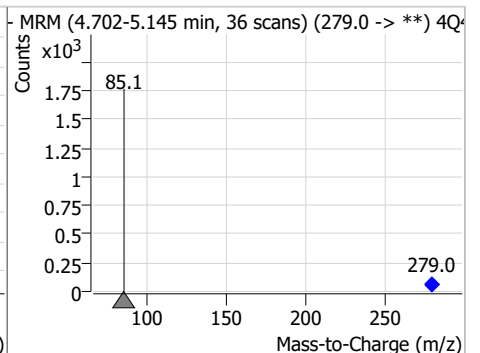
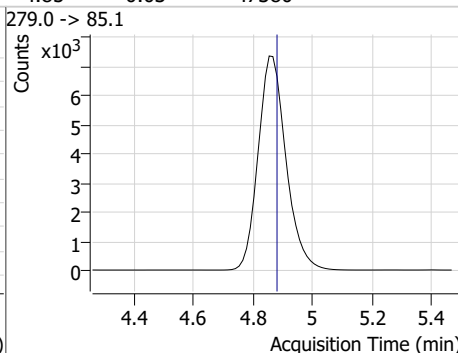
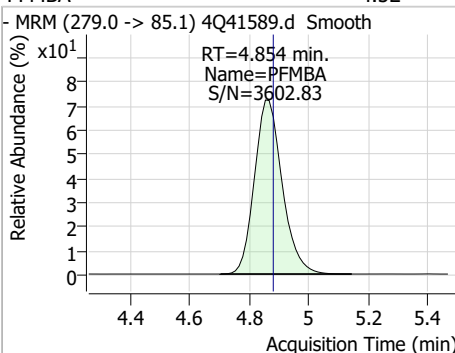
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.12	4.52	-0.01	89436				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.60	4.53	-0.01	83705				



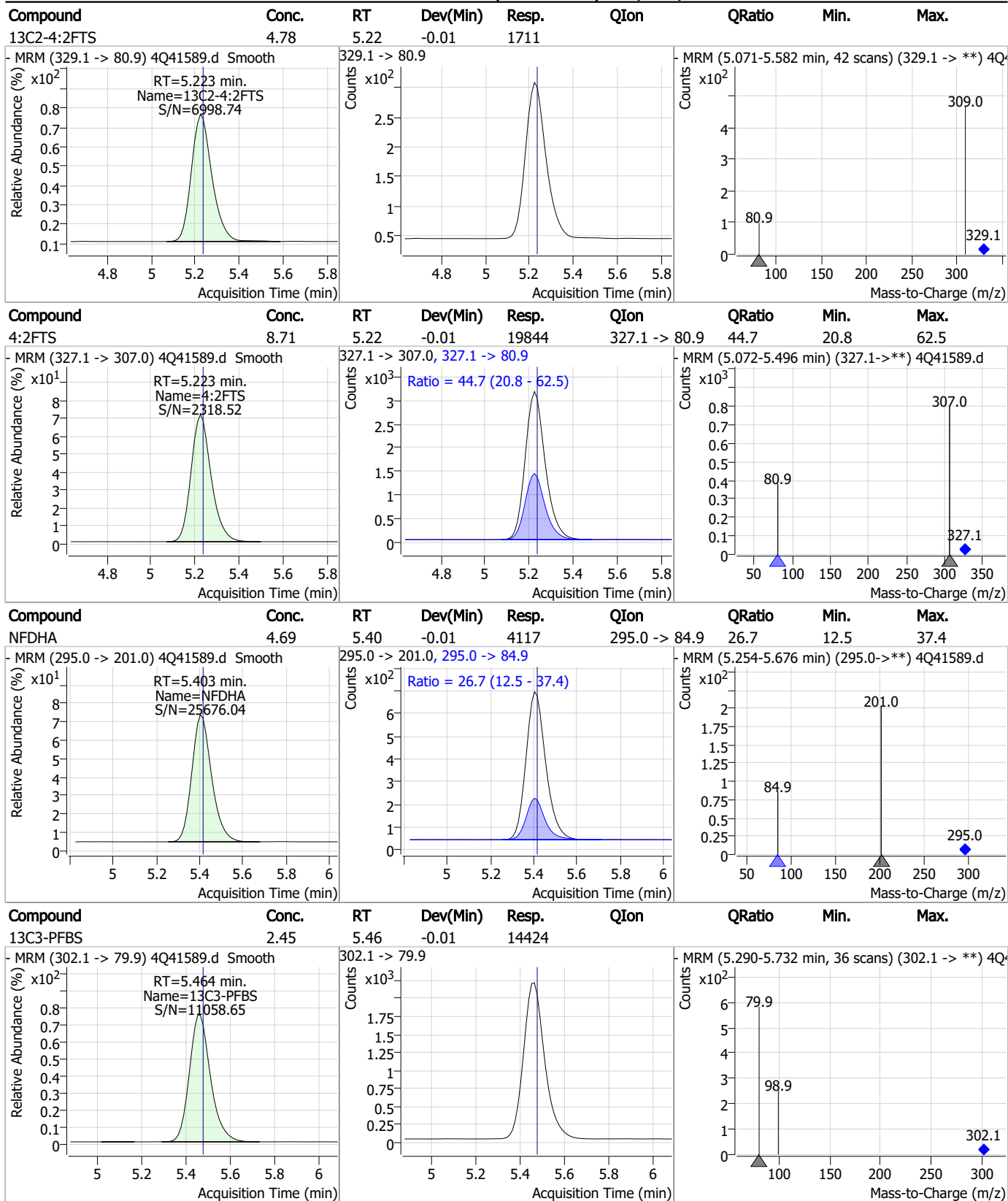
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.52	4.85	-0.03	47380				



7.6.12
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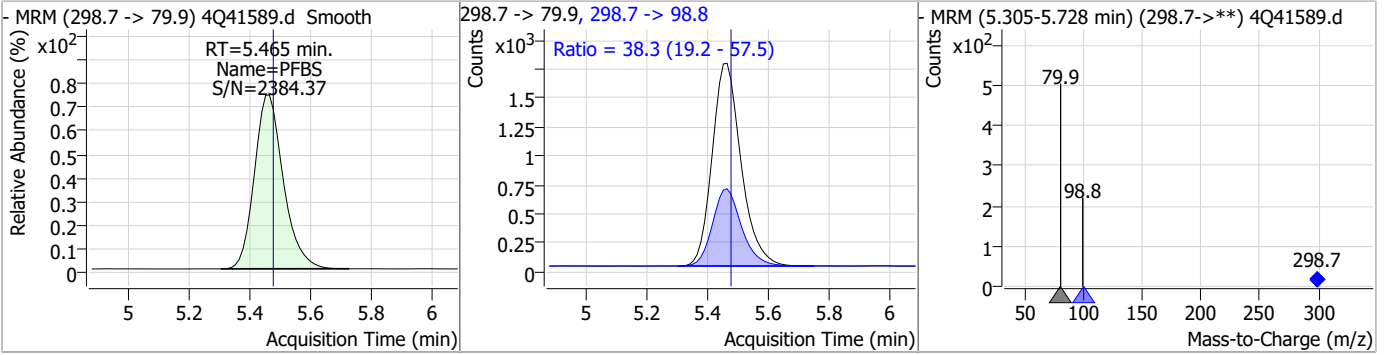
Perfluorinated Compounds by LC/MS/MS



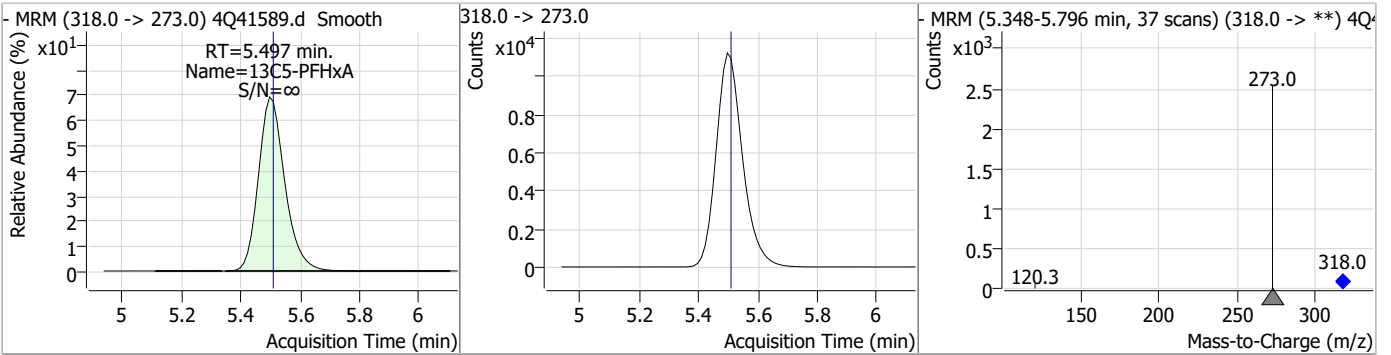
7.6.12
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Perfluorinated Compounds by LC/MS/MS

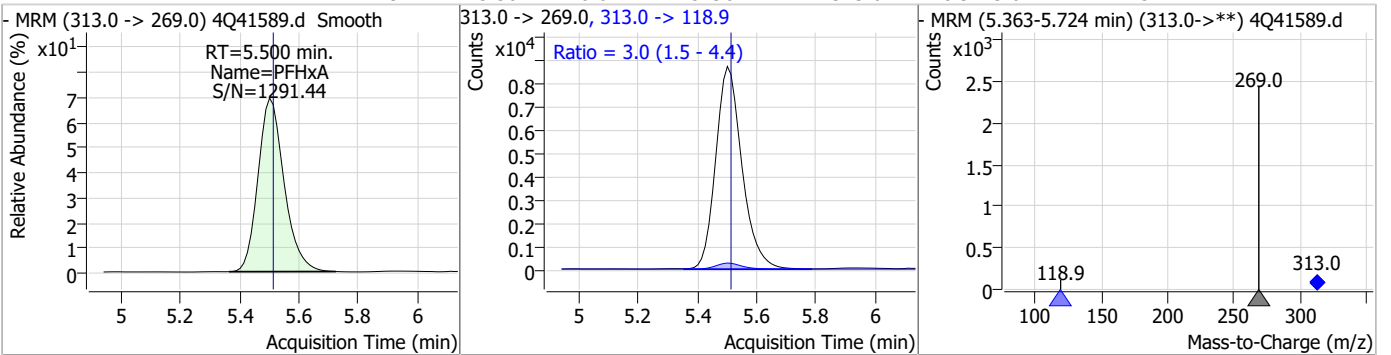
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.02	5.46	-0.01	11643	298.7 -> 98.8	38.3	19.2	57.5



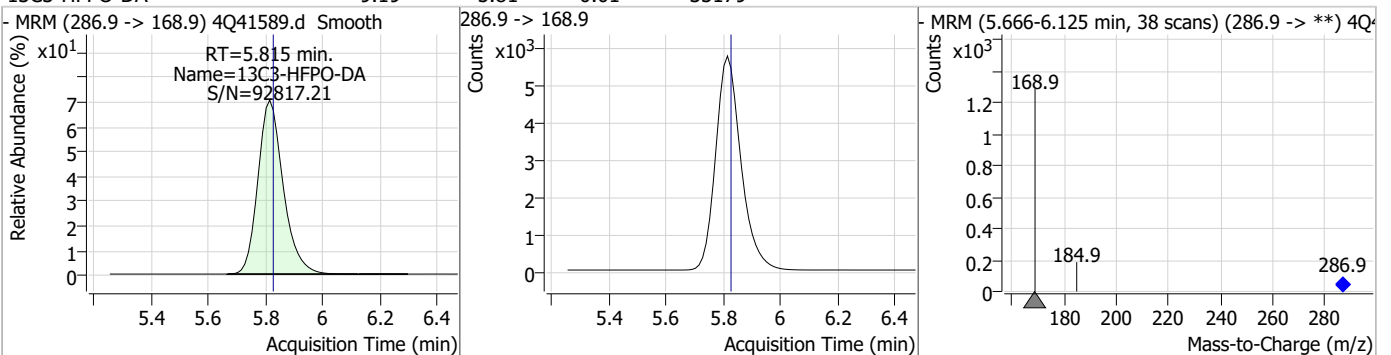
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.54	5.50	-0.01	68797				



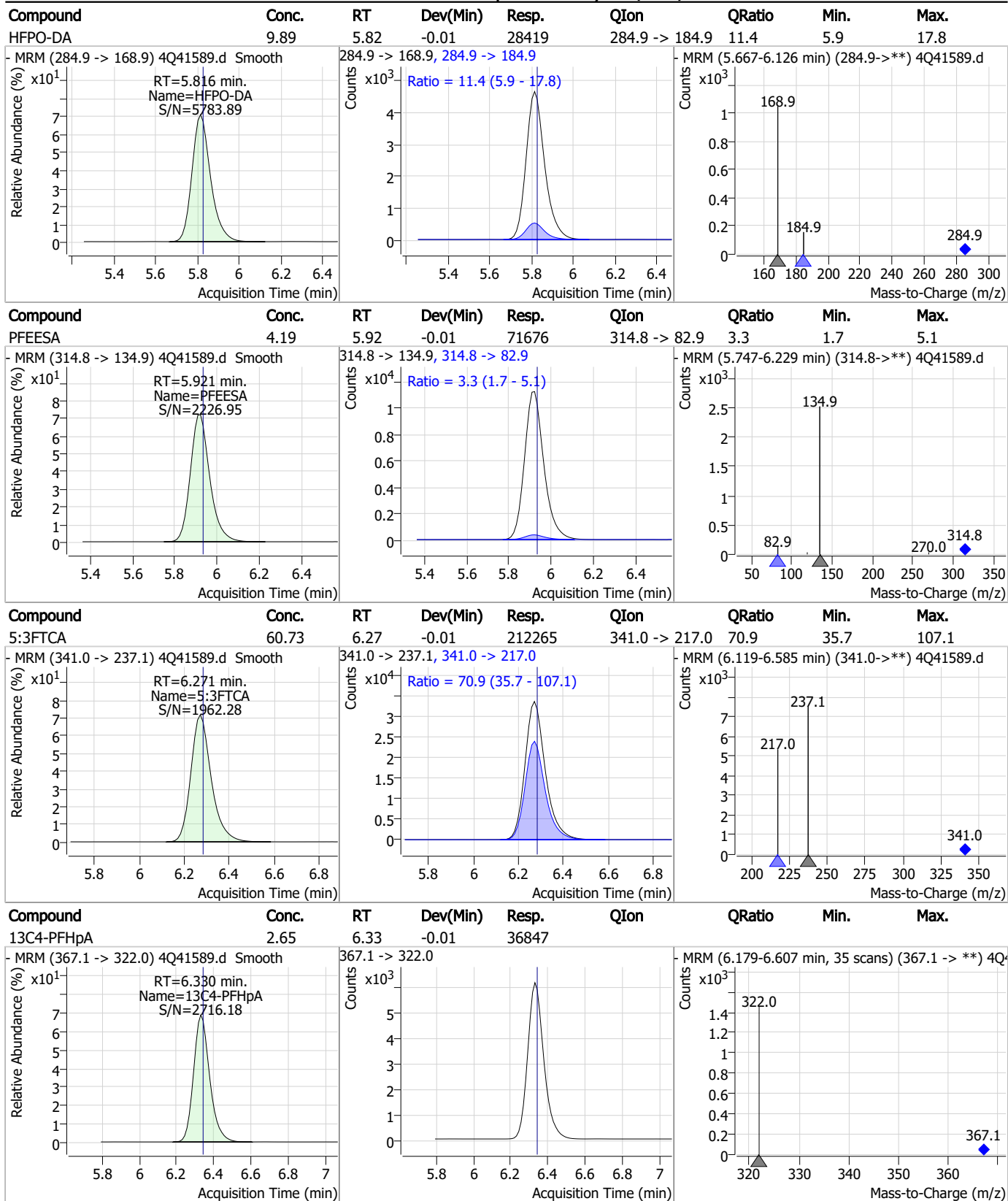
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.19	5.50	-0.01	52902	313.0 -> 118.9	3.0	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.19	5.81	-0.01	35179				



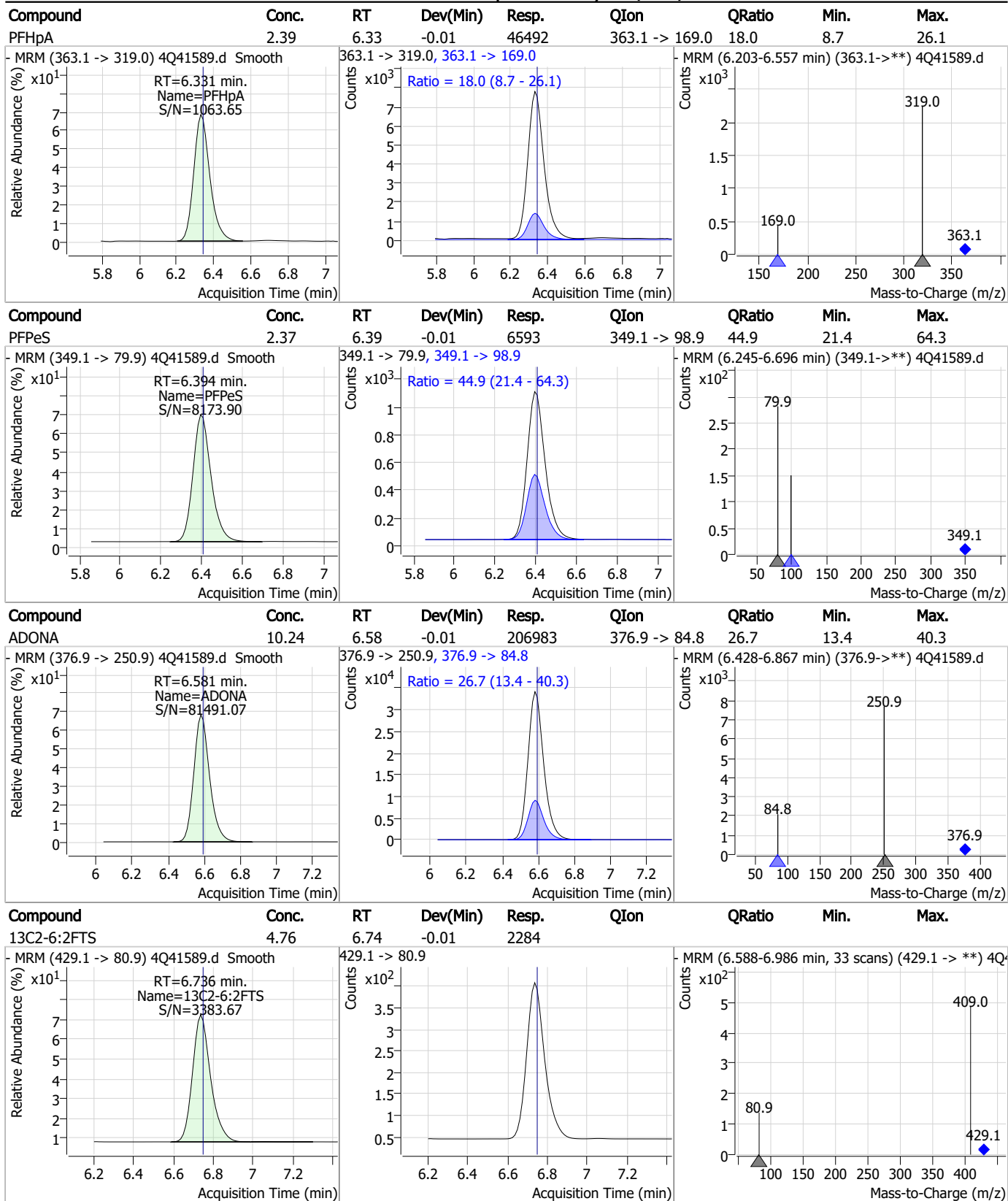
Perfluorinated Compounds by LC/MS/MS



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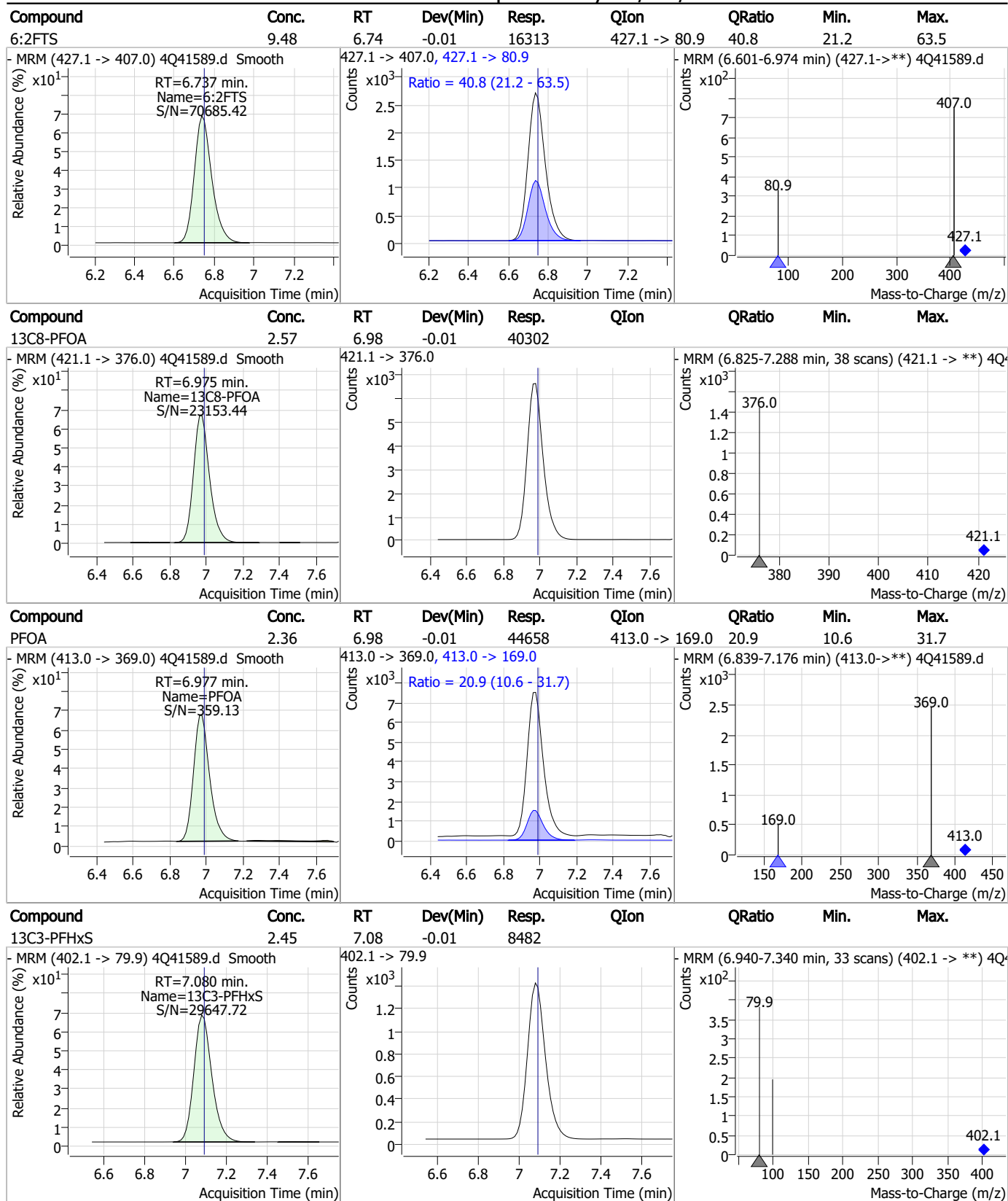


Perfluorinated Compounds by LC/MS/MS



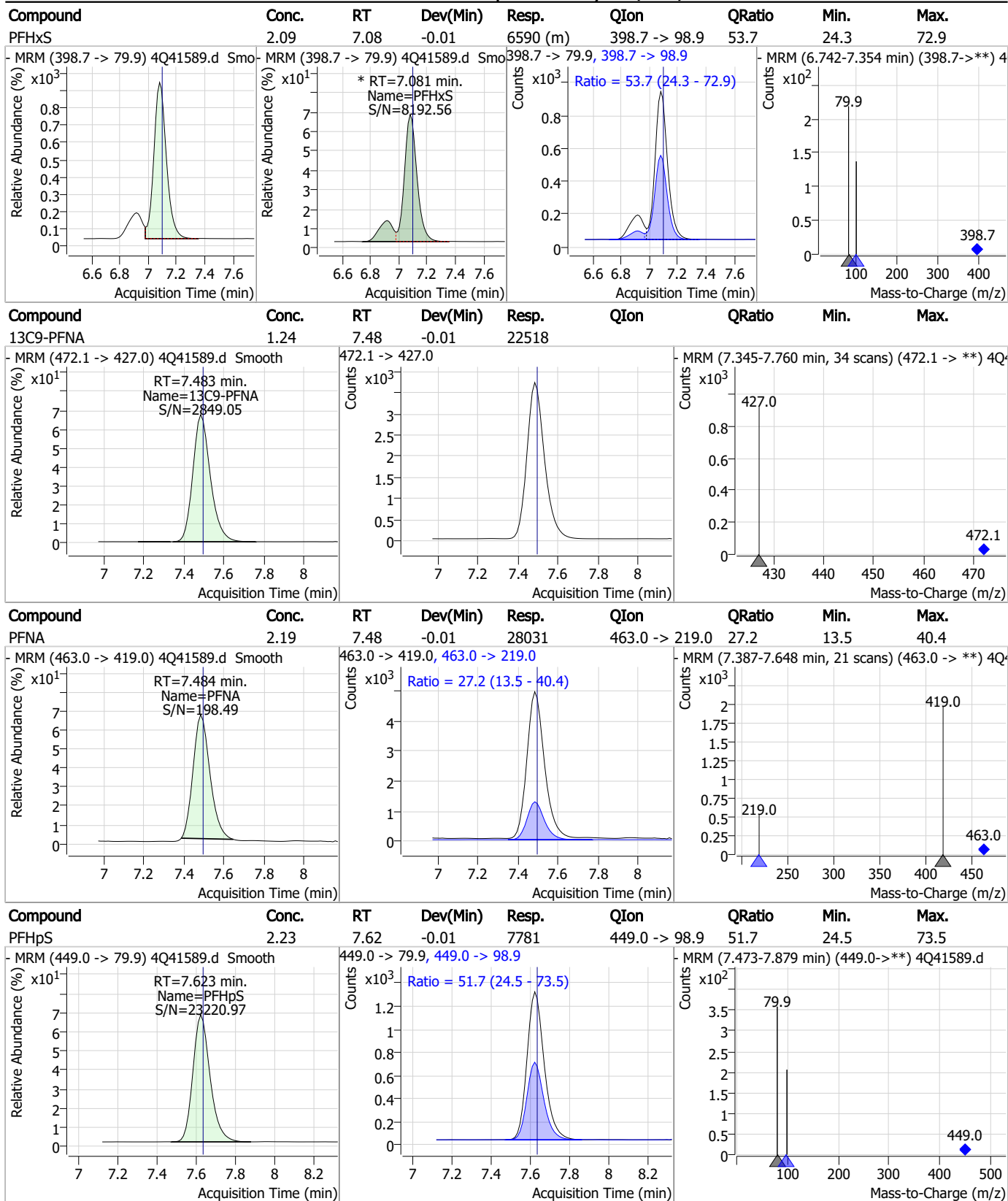
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Perfluorinated Compounds by LC/MS/MS



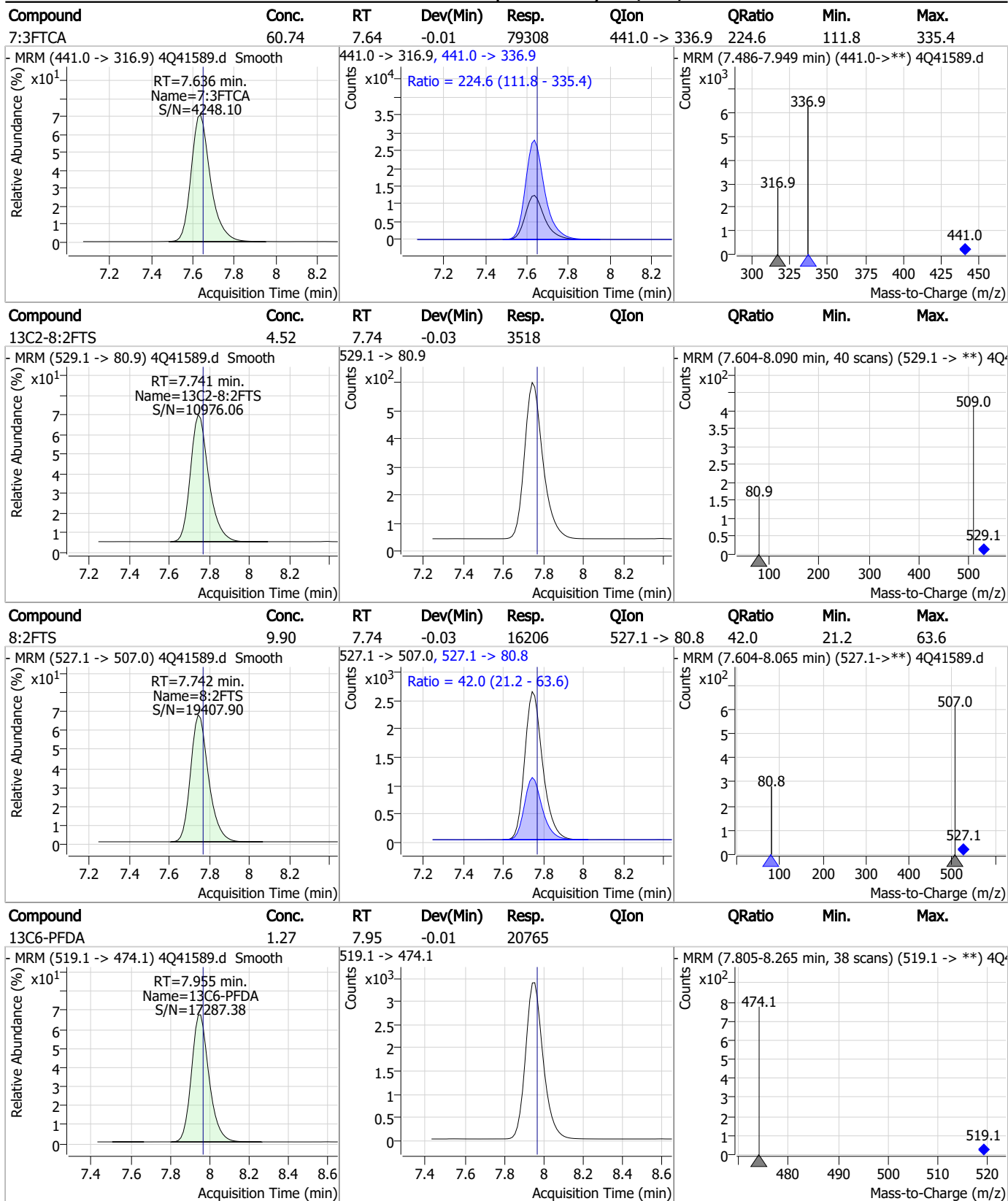
7.6.12 7

Perfluorinated Compounds by LC/MS/MS



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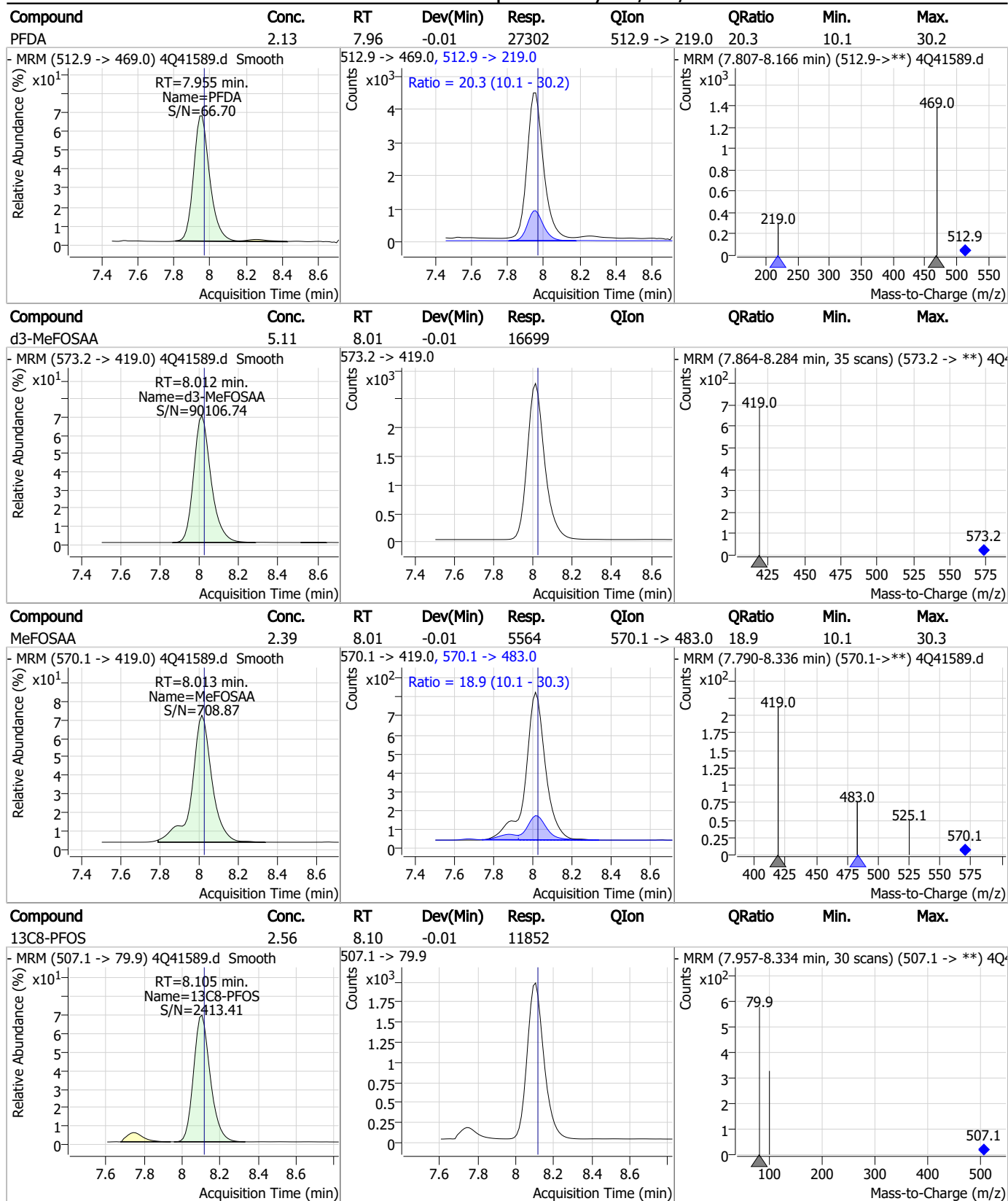
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

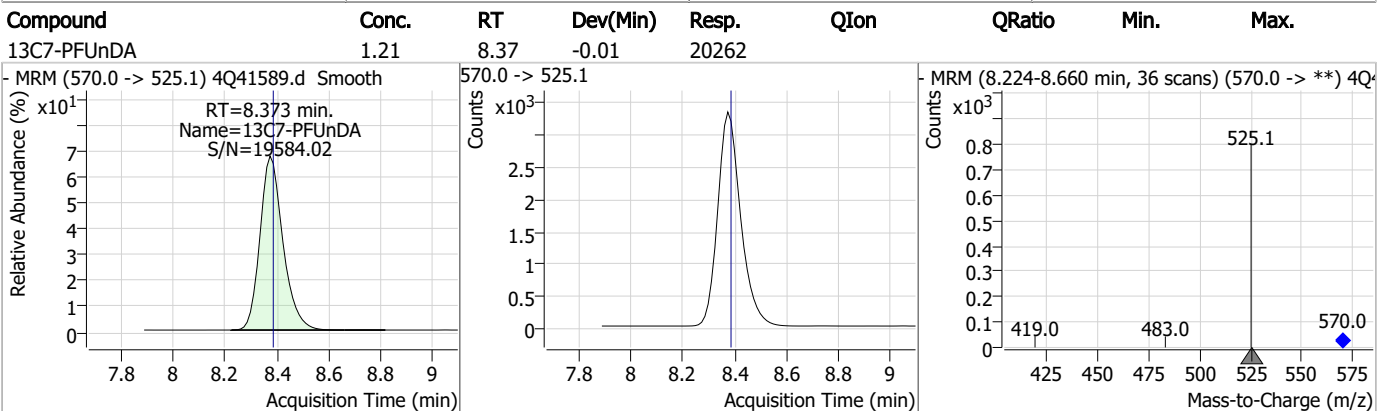
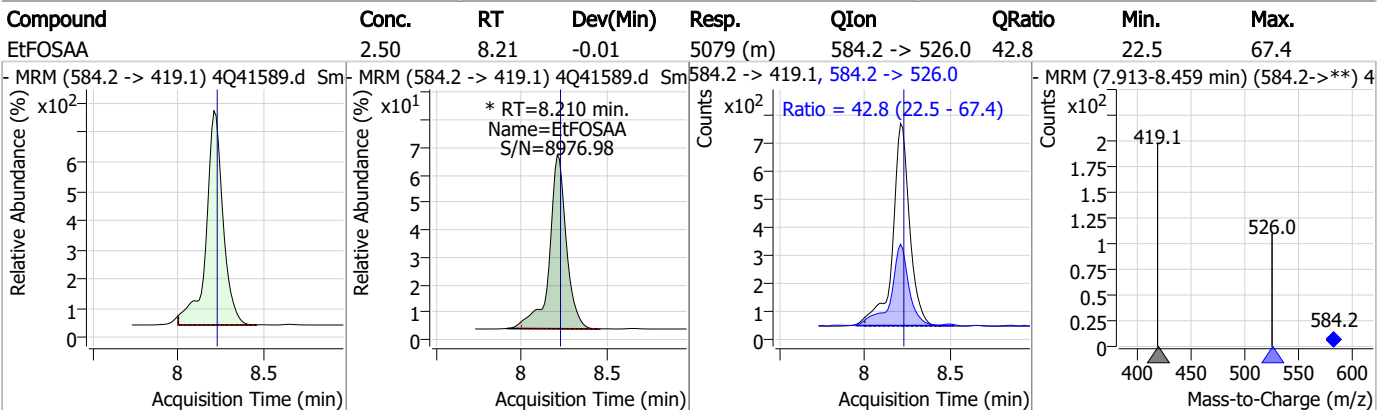
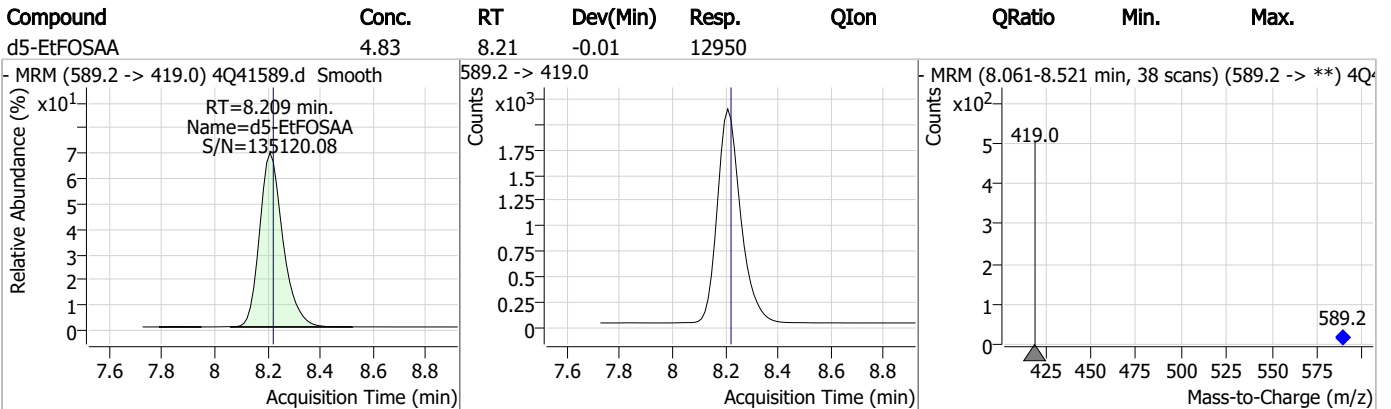
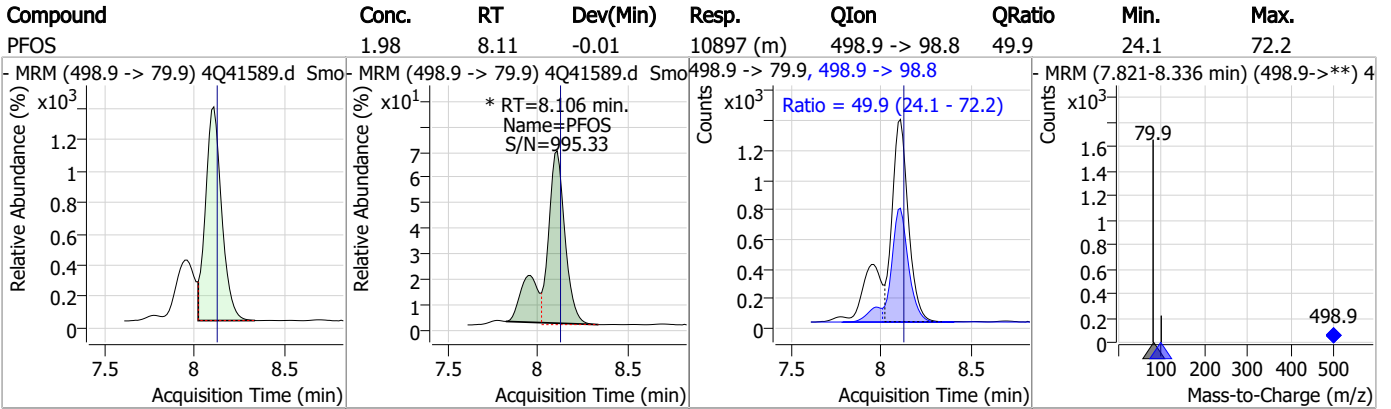


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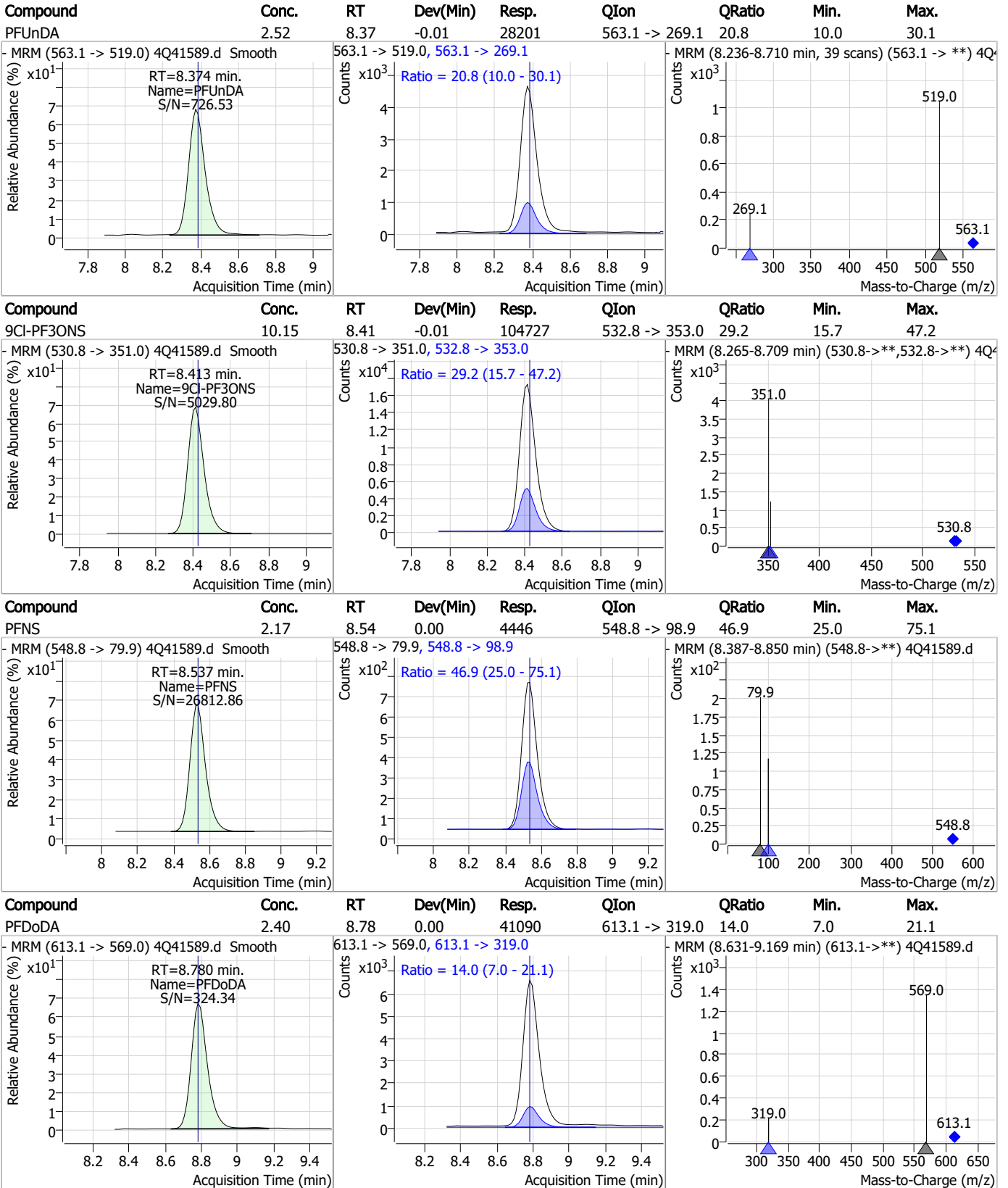
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Perfluorinated Compounds by LC/MS/MS



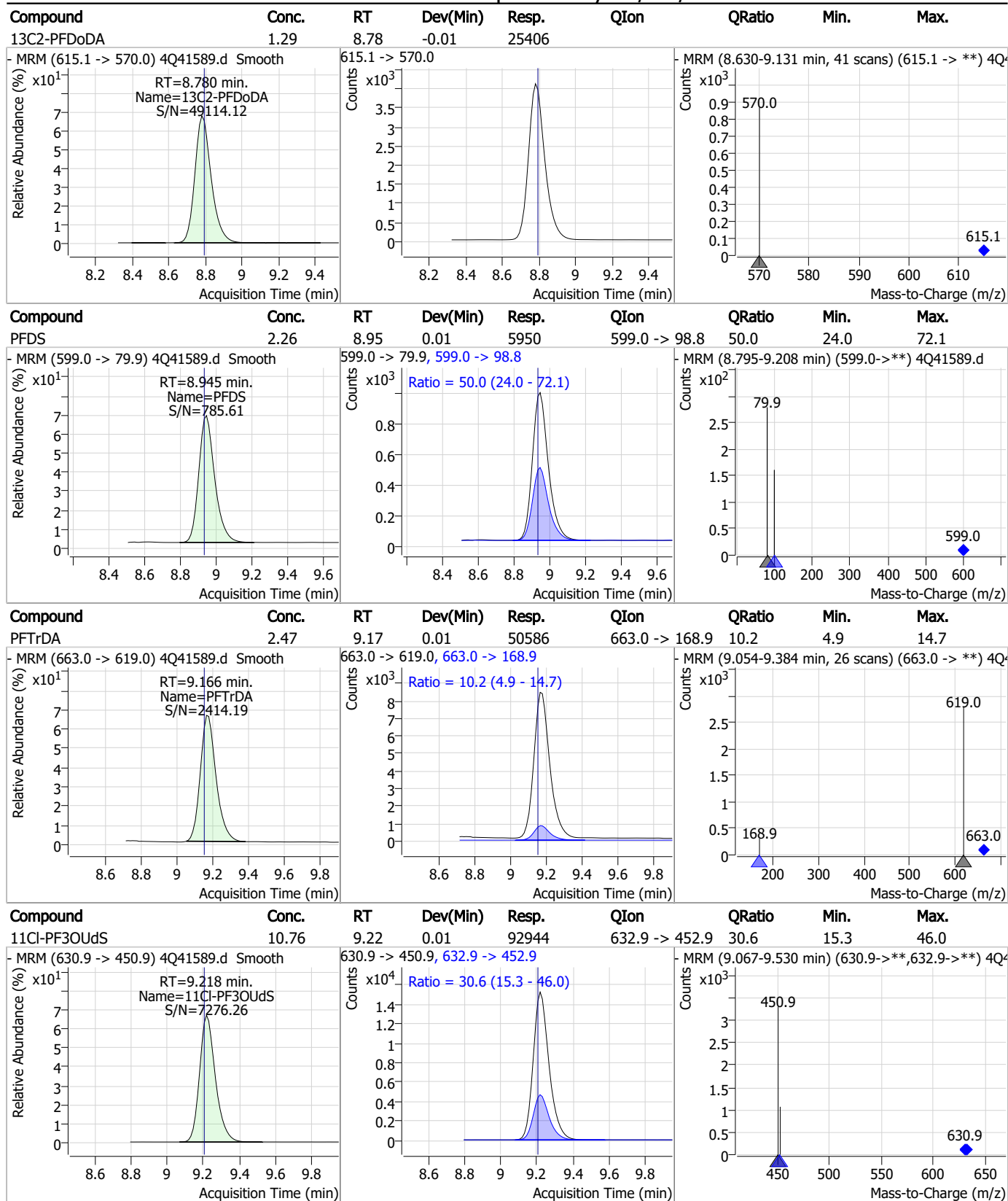
Perfluorinated Compounds by LC/MS/MS



7.6.12 7

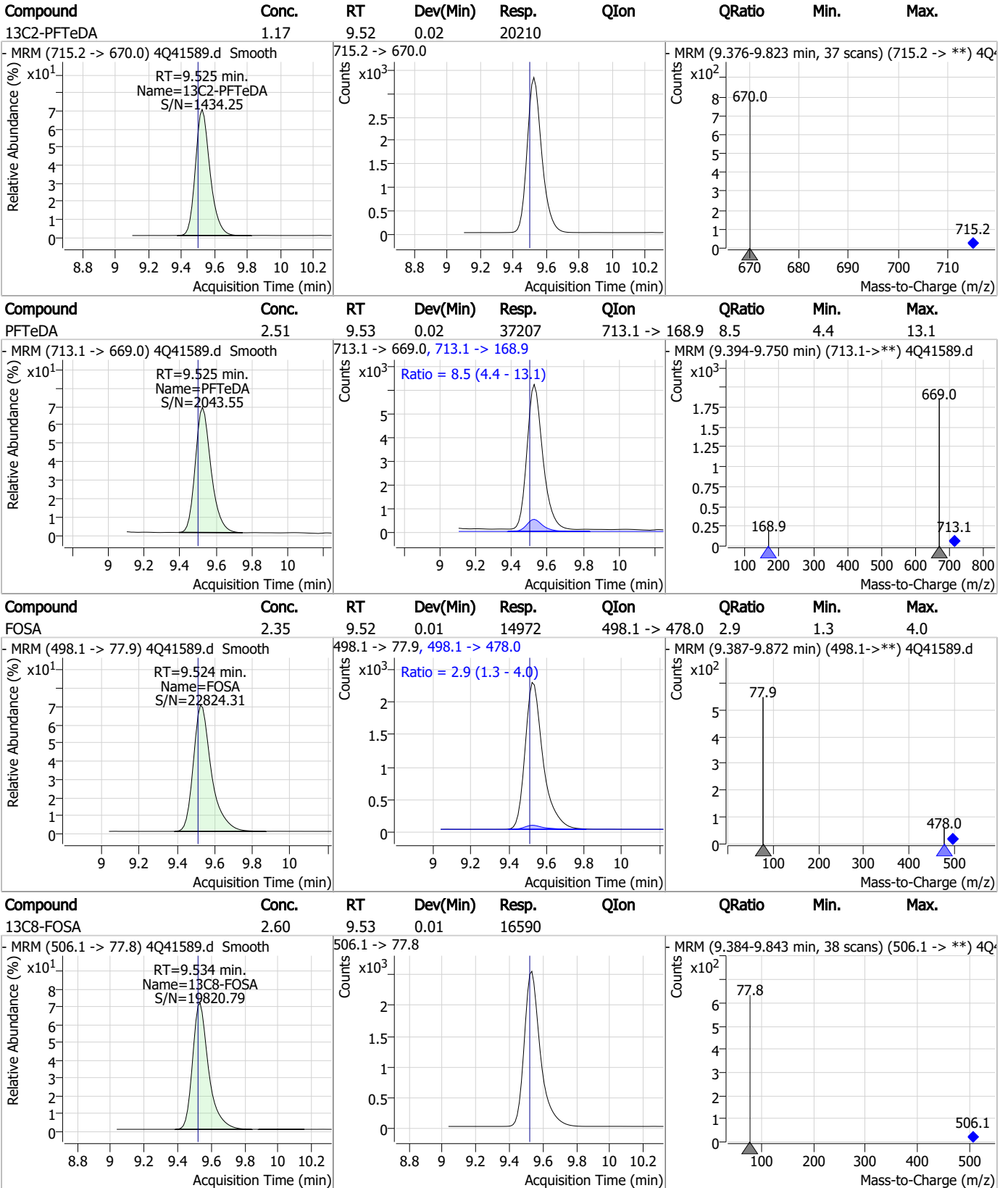


Perfluorinated Compounds by LC/MS/MS



7.6.12 7

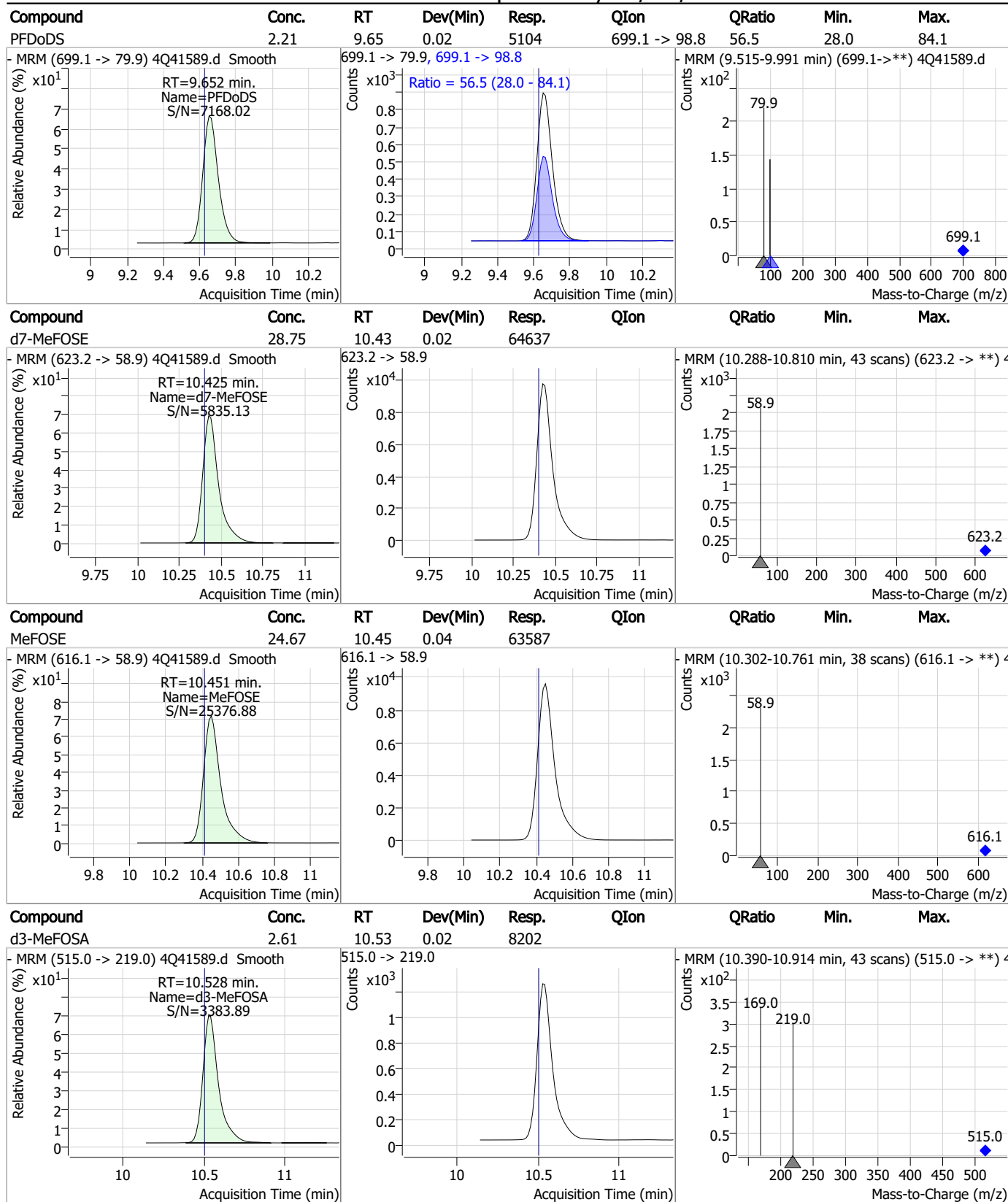
Perfluorinated Compounds by LC/MS/MS



7.6.12 7



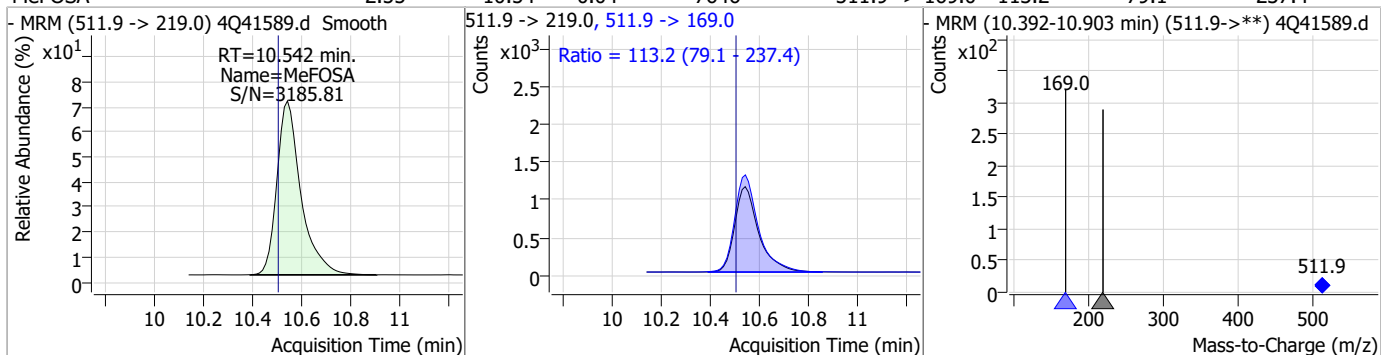
Perfluorinated Compounds by LC/MS/MS



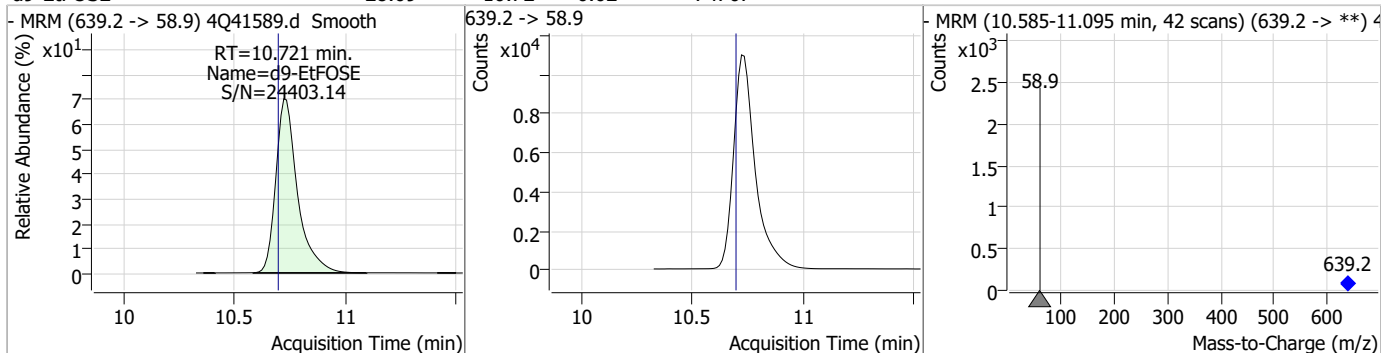
7.6.12 7

Perfluorinated Compounds by LC/MS/MS

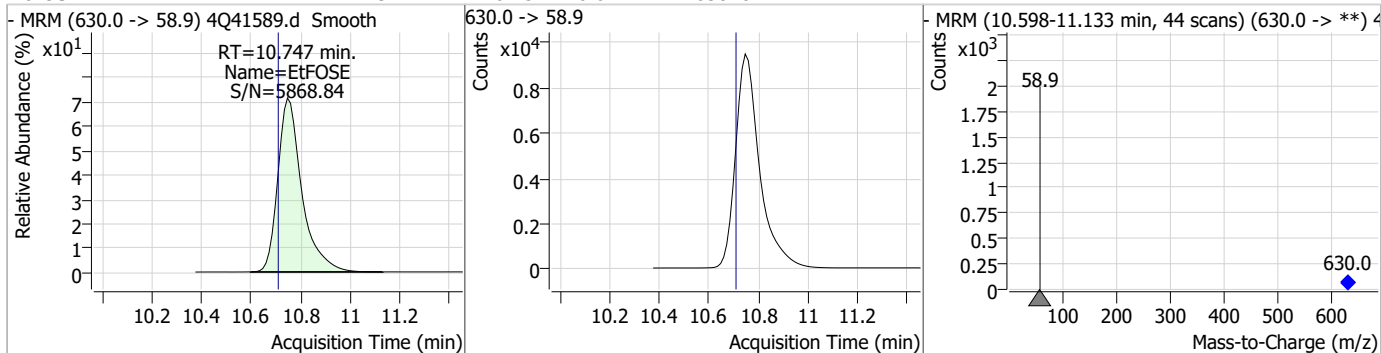
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	2.55	10.54	0.04	7646	511.9 -> 169.0	113.2	79.1	237.4



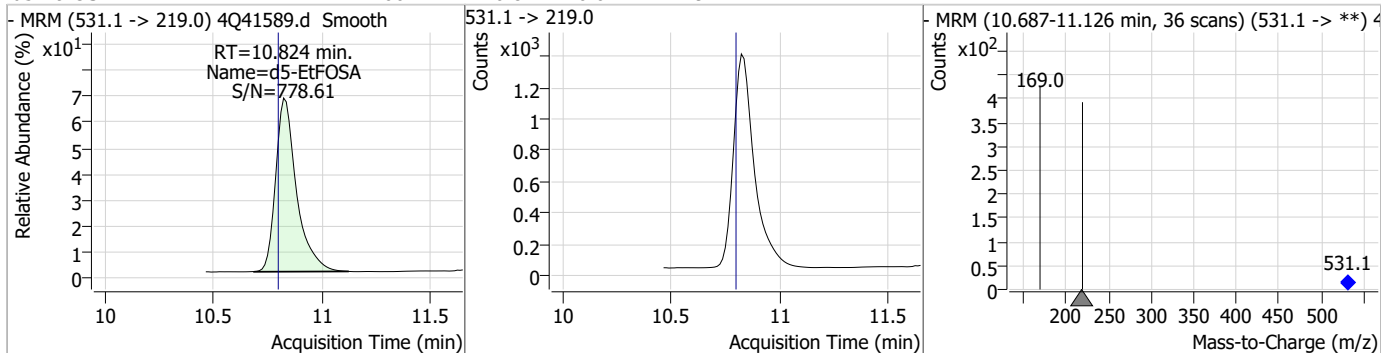
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	28.09	10.72	0.02	74707				



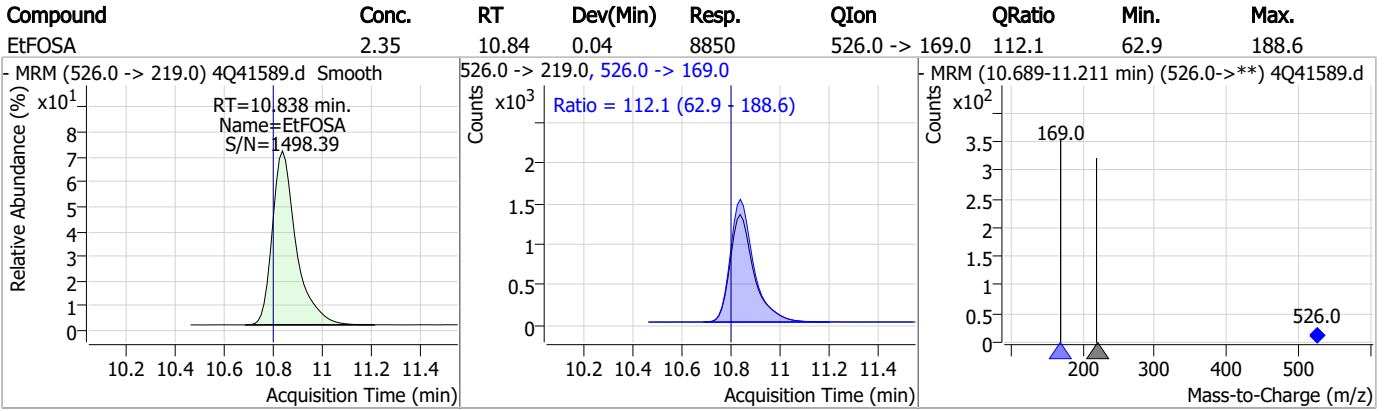
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	23.77	10.75	0.04	63828				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.60	10.82	0.02	9172				



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S4Q595-CC589 Method: EPA DRAFT 1633
Lab FileID: 4Q41589.D Analyst approved: 03/03/23 15:05 Anna Ludwig
Injection Time: 03/02/23 15:07 Supervisor approved: 03/03/23 16:08 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.08	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.11	Split peak
EtFOSAA	2991-50-6		8.21	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41590.d
 Operator : marthav
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 3/2/2023 3:55:37 PM
 Sample Name : cc589-1.0LL
 Vial : P1-A2
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q595.batch.bin
 Sample Information : op95682,S4Q595,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.452	216.8 -> 171.9	148334	10.00 µg/L	0.262
M5-PFPeA	4.612	268.3 -> 223.0	91007	5.00 µg/L	0.075
M5-PFHxA	5.559	318.0 -> 273.0	72490	2.50 µg/L	0.050
M4-PFHpA	6.380	367.1 -> 322.0	33759	2.50 µg/L	0.037
M8-PFOA	7.000	421.1 -> 376.0	41730	2.50 µg/L	0.012
M9-PFNA	7.509	472.1 -> 427.0	22096	1.25 µg/L	0.013
M6-PFDA	7.967	519.1 -> 474.1	20906	1.25 µg/L	0.000
M7-PFUnDA	8.386	570.0 -> 525.1	22144	1.25 µg/L	0.000
M2-PFDoDA	8.780	615.1 -> 570.0	26565	1.25 µg/L	-0.013
M2-PFTeDA	9.512	715.2 -> 670.0	21702	1.25 µg/L	0.012
M8-FOSA	9.534	506.1 -> 77.8	17139	2.50 µg/L	0.012
M3-PFBS	5.526	302.1 -> 79.9	14965	2.50 µg/L	0.050
M3-PFHxS	7.117	402.1 -> 79.9	9042	2.50 µg/L	0.025
M8-PFOS	8.105	507.1 -> 79.9	12429	2.50 µg/L	-0.012
M2-4:2FTS	5.284	329.1 -> 80.9	1909	5.00 µg/L	0.049
M2-6:2FTS	6.774	429.1 -> 80.9	2297	5.00 µg/L	0.025
M2-8:2FTS	7.766	529.1 -> 80.9	3856	5.00 µg/L	0.000
M3-MeFOSAA	8.025	573.2 -> 419.0	15776	5.00 µg/L	0.000
M3-HFPO-DA	5.877	286.9 -> 168.9	37016	10.00 µg/L	0.050
M5-EtFOSAA	8.221	589.2 -> 419.0	14204	5.00 µg/L	0.000
M7-MeFOSE	10.425	623.2 -> 58.9	64843	25.00 µg/L	0.025
M9-EtFOSE	10.721	639.2 -> 58.9	76810	25.00 µg/L	0.025
M5-EtFOSA	10.824	531.1 -> 219.0	9872	2.50 µg/L	0.025
M3-MeFOSA	10.528	515.0 -> 219.0	8881	2.50 µg/L	0.025
13C4-PFOS	8.106	502.8 -> 79.9	11788	2.50 µg/L	-0.012
13C3-PFBA	3.442	216.0 -> 172.0	86780	5.00 µg/L	0.250
18O2-PFHxS	7.116	403.0 -> 83.9	6401	2.50 µg/L	0.025
13C4-PFOA	7.000	417.1 -> 372.0	49433	2.50 µg/L	0.012
13C2-PFDA	7.967	515.1 -> 470.1	19456	1.25 µg/L	0.000
13C5-PFNA	7.509	468.0 -> 423.0	25693	1.25 µg/L	0.013
13C2-PFHxA	5.560	315.1 -> 270.0	66262	2.50 µg/L	0.050
System Monitoring Compounds					
13C2-4:2FTS	5.284	329.1 -> 80.9	1909	5.12 µg/L	0.049
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.4%		
13C2-6:2FTS	6.774	429.1 -> 80.9	2297	4.59 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.8%		
13C2-8:2FTS	7.766	529.1 -> 80.9	3856	4.76 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.1%		
13C2-PFDoDA	8.780	615.1 -> 570.0	26565	1.27 µg/L	-0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C2-PFTeDA	9.512	715.2 -> 670.0	21702	1.18 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.7%		
13C3-PFBS	5.526	302.1 -> 79.9	14965	2.44 µg/L	0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C3-PFHxS	7.117	402.1 -> 79.9	9042	2.50 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 = 100.0%	
13C4-PFBA	3.452	216.8 -> 171.9	148334	9.92 µg/L	0.262
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C4-PFHpA	6.380	367.1 -> 322.0	33759	2.28 µg/L	0.037
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.2%	
13C5-PFHxA	5.559	318.0 -> 273.0	72490	2.51 µg/L	0.050
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C5-PFPeA	4.612	268.3 -> 223.0	91007	4.89 µg/L	0.075
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C6-PFDA	7.967	519.1 -> 474.1	20906	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.6%	
13C7-PFUnDA	8.386	570.0 -> 525.1	22144	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C8-FOSA	9.534	506.1 -> 77.8	17139	2.62 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.9%	
13C8-PFOA	7.000	421.1 -> 376.0	41730	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C8-PFOS	8.105	507.1 -> 79.9	12429	2.62 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.9%	
13C9-PFNA	7.509	472.1 -> 427.0	22096	1.23 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.6%	
d3-MeFOSAA	8.025	573.2 -> 419.0	15776	4.72 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.4%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	37016	9.06 µg/L	0.050
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 90.6%	
d3-MeFOSA	10.528	515.0 -> 219.0	8881	2.76 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.4%	
d5-EtFOSAA	8.221	589.2 -> 419.0	14204	5.18 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.6%	
d7-MeFOSE	10.425	623.2 -> 58.9	64843	28.18 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 112.7%	
d9-EtFOSE	10.721	639.2 -> 58.9	76810	28.22 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 112.9%	
d5-EtFOSA	10.824	531.1 -> 219.0	9872	2.73 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.2%	
Target Compounds					QValue
4:2FTS	5.297	327.1 -> 307.0	1496	0.59 µg/L	99
		327.1 -> 80.9	612		
6:2FTS	6.774	427.1 -> 407.0	1135	0.66 µg/L	95
		427.1 -> 80.9	520		
8:2FTS	7.767	527.1 -> 507.0	1200	0.67 µg/L	92
		527.1 -> 80.8	567		
EtFOSAA	8.222	584.2 -> 419.1	416	0.19 µg/L	m 80
		584.2 -> 526.0	240		
FOSA	9.537	498.1 -> 77.9	1274	0.19 µg/L	99
		498.1 -> 478.0	37		
MeFOSAA	8.025	570.1 -> 419.0	410	0.19 µg/L	95
		570.1 -> 483.0	74		
PFBA	3.445	212.8 -> 168.9	2470	0.70 µg/L	100
PFBS	5.527	298.7 -> 79.9	833	0.14 µg/L	98
		298.7 -> 98.8	308		
PFDA	7.968	512.9 -> 469.0	2140	0.17 µg/L	96
		512.9 -> 219.0	467		
PFDODA	8.780	613.1 -> 569.0	3453	0.19 µg/L	100
		613.1 -> 319.0	491		
PFDS	8.945	599.0 -> 79.9	456	0.17 µg/L	94

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
PFHpA	6.380	599.0 -> 98.8	237	0.19 µg/L	97
		363.1 -> 319.0	3329		
PFHpS	7.648	363.1 -> 169.0	537	0.14 µg/L	79
		449.0 -> 79.9	505		
PFHxA	5.562	449.0 -> 98.9	318	0.16 µg/L	100
		313.0 -> 269.0	4014		
PFHxS	7.118	313.0 -> 118.9	117	0.17 µg/L	99
		398.7 -> 79.9	581		
PFNA	7.510	398.7 -> 98.9	285	0.16 µg/L	96
		463.0 -> 419.0	2036		
PFNS	8.537	463.0 -> 219.0	506	0.15 µg/L	92
		548.8 -> 79.9	330		
PFOA	7.001	548.8 -> 98.9	184	0.22 µg/L	86
		413.0 -> 369.0	4223		
PFOS	8.106	413.0 -> 169.0	614	0.16 µg/L	91
		498.9 -> 79.9	922		
PFPeA	4.614	498.9 -> 98.8	502	0.34 µg/L	100
		263.0 -> 219.0	6338		
PFPeS	6.445	349.1 -> 79.9	470	0.16 µg/L	97
		349.1 -> 98.9	209		
PFTeDA	9.513	713.1 -> 669.0	2601	0.16 µg/L	99
		713.1 -> 168.9	233		
PFTrDA	9.166	663.0 -> 619.0	3810	0.18 µg/L	96
		663.0 -> 168.9	424		
PFUnDA	8.386	563.1 -> 519.0	1815	0.15 µg/L	92
		563.1 -> 269.1	435		
11Cl-PF3OUdS	9.205	630.9 -> 450.9	6401	0.70 µg/L	94
		632.9 -> 452.9	2181		
9Cl-PF3ONS	8.413	530.8 -> 351.0	7859	0.72 µg/L	97
		532.8 -> 353.0	2604		
ADONA	6.631	376.9 -> 250.9	13351	0.63 µg/L	98
		376.9 -> 84.8	3473		
HFPO-DA	5.878	284.9 -> 168.9	2057	0.68 µg/L	89
		284.9 -> 184.9	331		
3:3FTCA	4.381	241.0 -> 177.0	759	0.80 µg/L	99
		241.0 -> 117.0	70		
5:3FTCA	6.345	341.0 -> 237.1	14894	4.04 µg/L	99
		341.0 -> 217.0	10494		
7:3FTCA	7.674	441.0 -> 316.9	5943	4.32 µg/L	97
		441.0 -> 336.9	12974		
EtFOSA	10.825	526.0 -> 219.0	698	0.17 µg/L	88
		526.0 -> 169.0	784		
EtFOSE	10.747	630.0 -> 58.9	4837	1.75 µg/L	100
		511.9 -> 219.0	505		
MeFOSA	10.530	511.9 -> 169.0	682	0.16 µg/L	82
		616.1 -> 58.9	4484		
MeFOSE	10.439	699.1 -> 79.9	399	1.73 µg/L	100
		699.1 -> 98.8	229		
PFDoDS	9.640	295.0 -> 201.0	363	0.16 µg/L	98
		295.0 -> 84.9	99		
NFDHA	5.465	279.0 -> 85.1	3460	0.39 µg/L	95
		229.0 -> 84.9	2957		
PFMBA	4.944	314.8 -> 134.9	5105	0.32 µg/L	100
		314.8 -> 82.9	241		
PFMPA	3.934			0.32 µg/L	100
PFEESA	5.971			0.28 µg/L	96

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

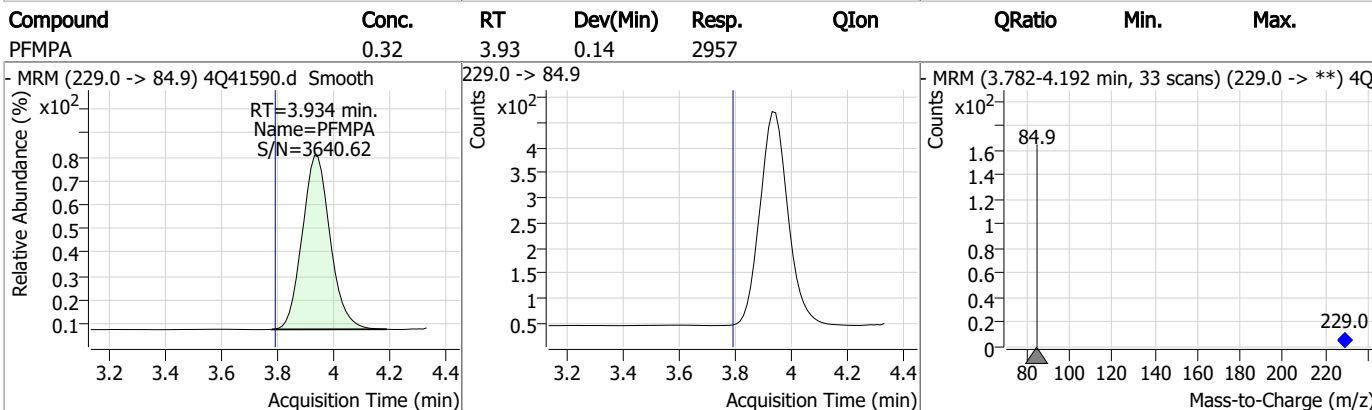
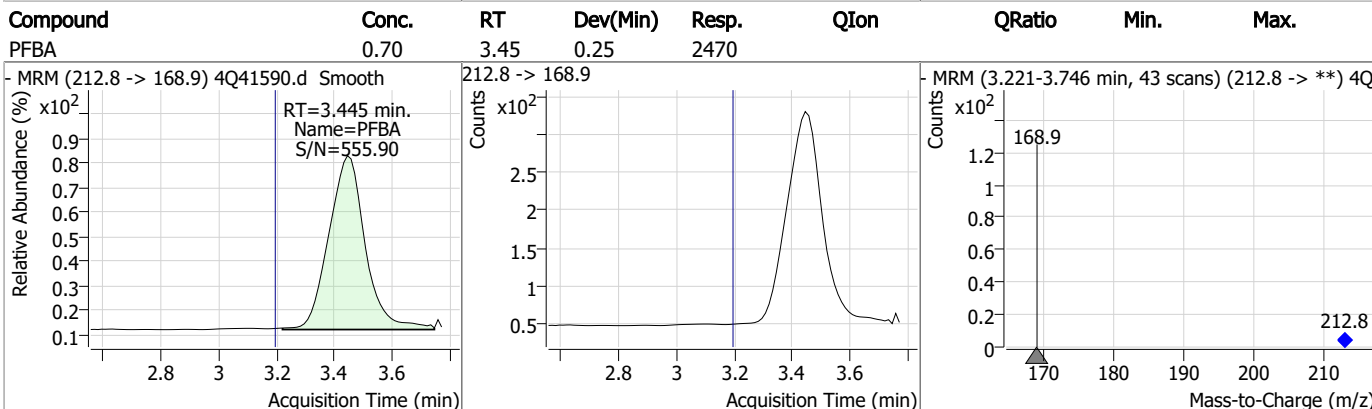
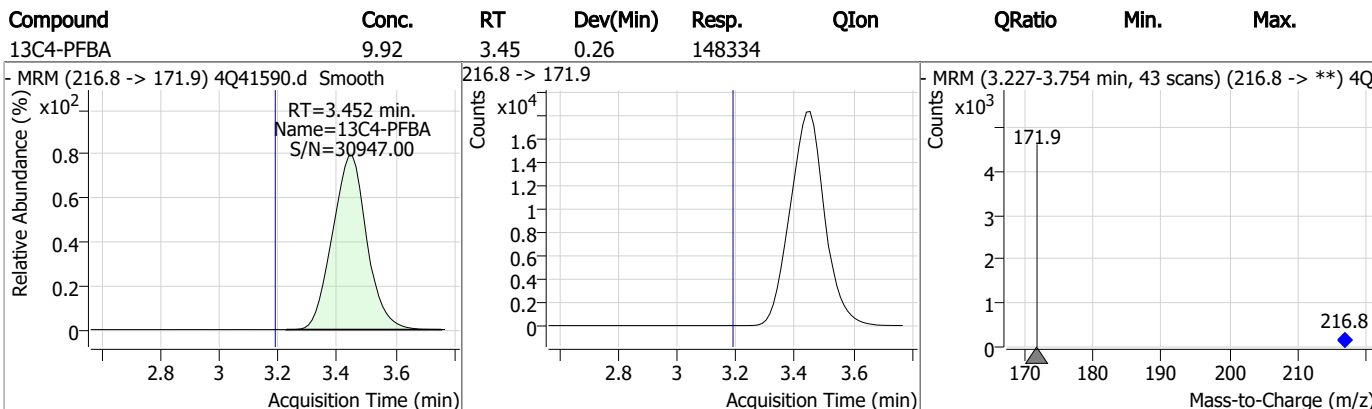
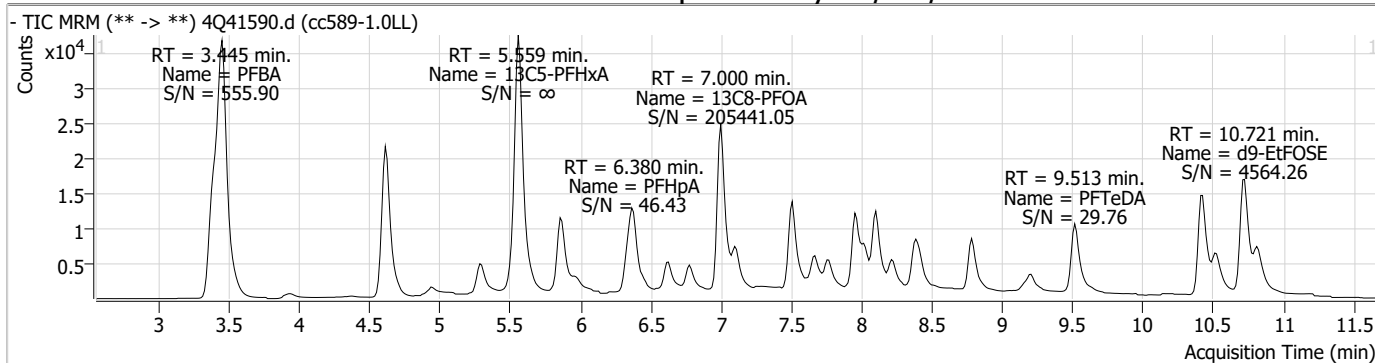
Perfluorinated Compounds by LC/MS/MS

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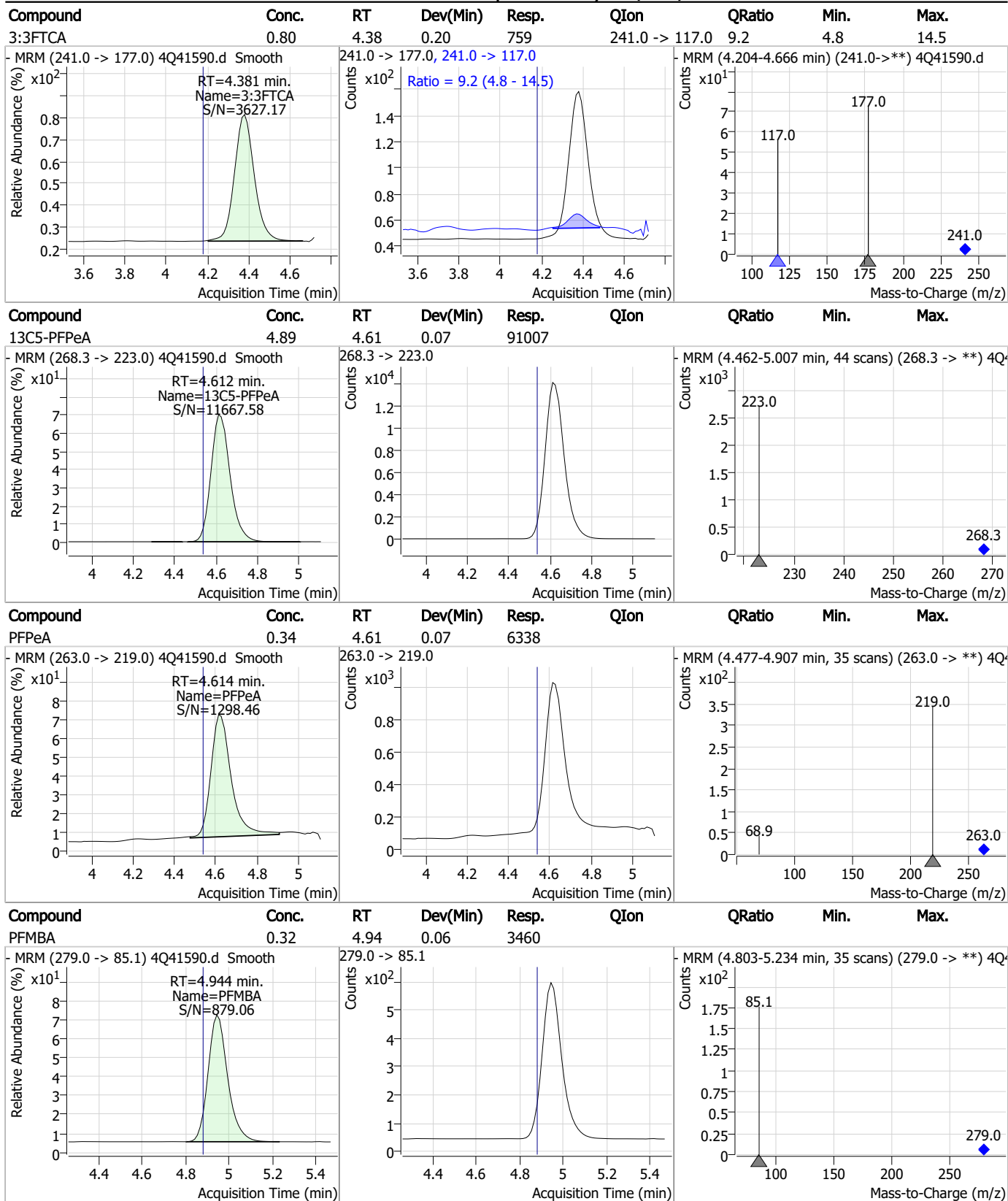
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Perfluorinated Compounds by LC/MS/MS



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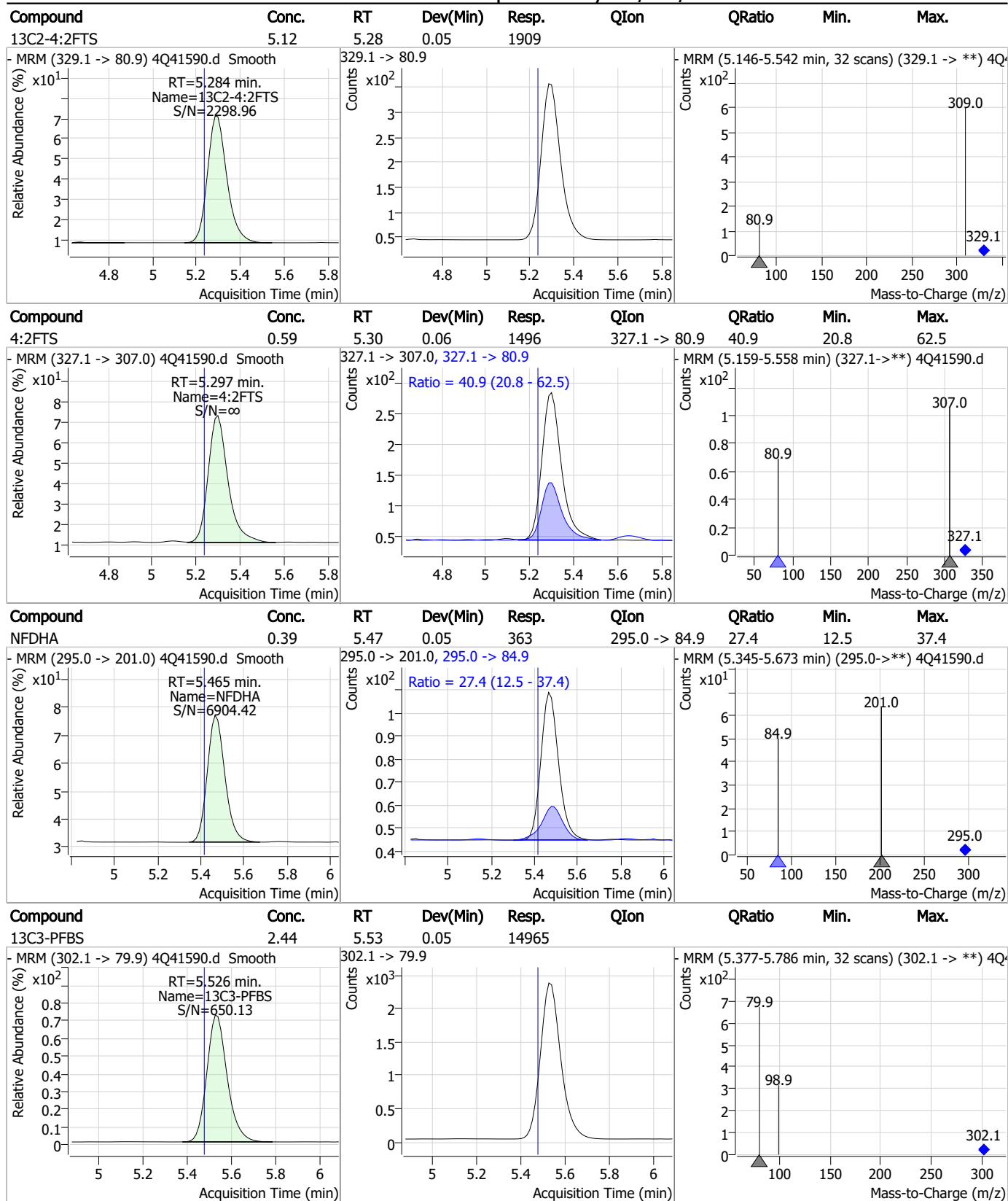
Perfluorinated Compounds by LC/MS/MS



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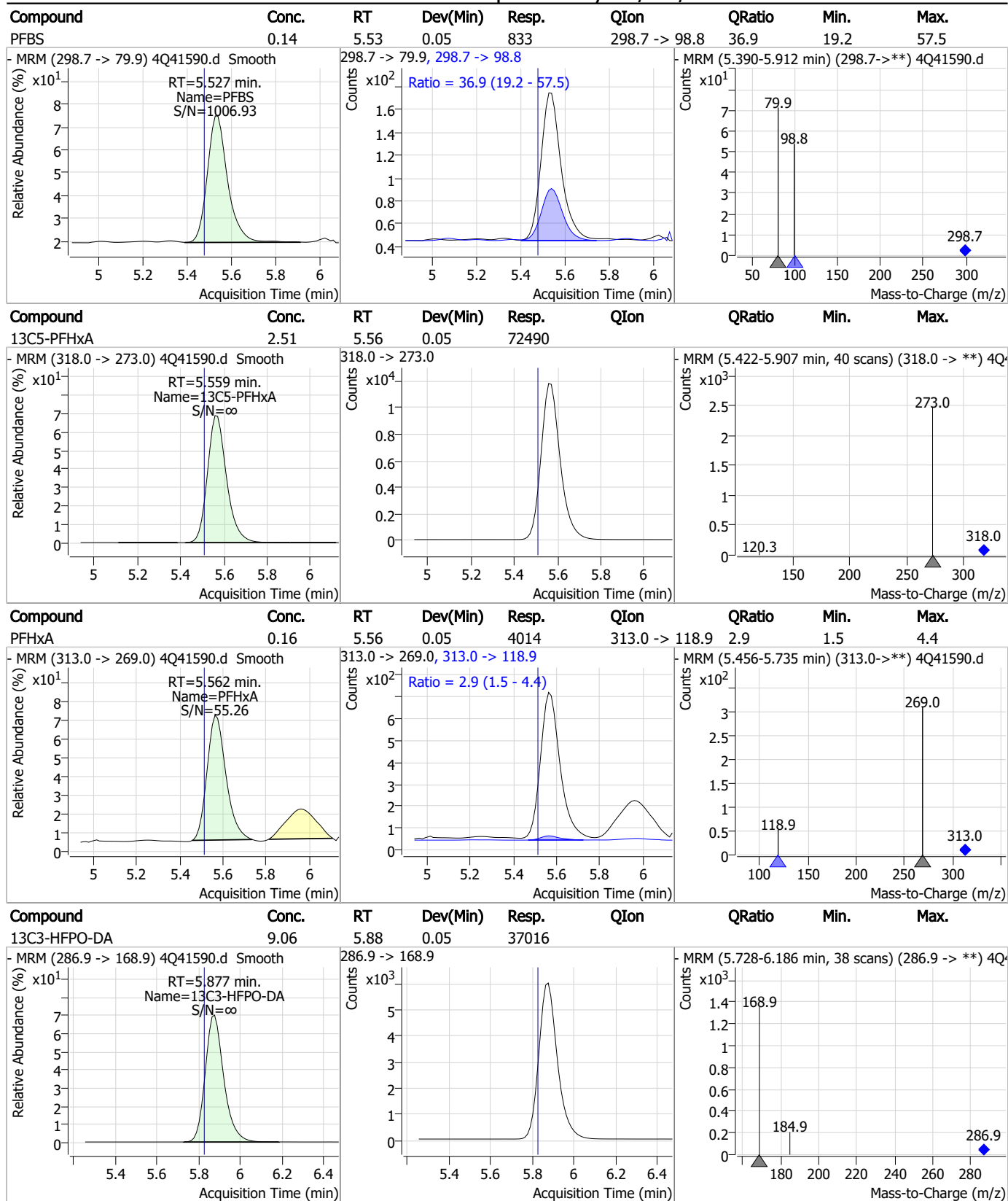
Perfluorinated Compounds by LC/MS/MS



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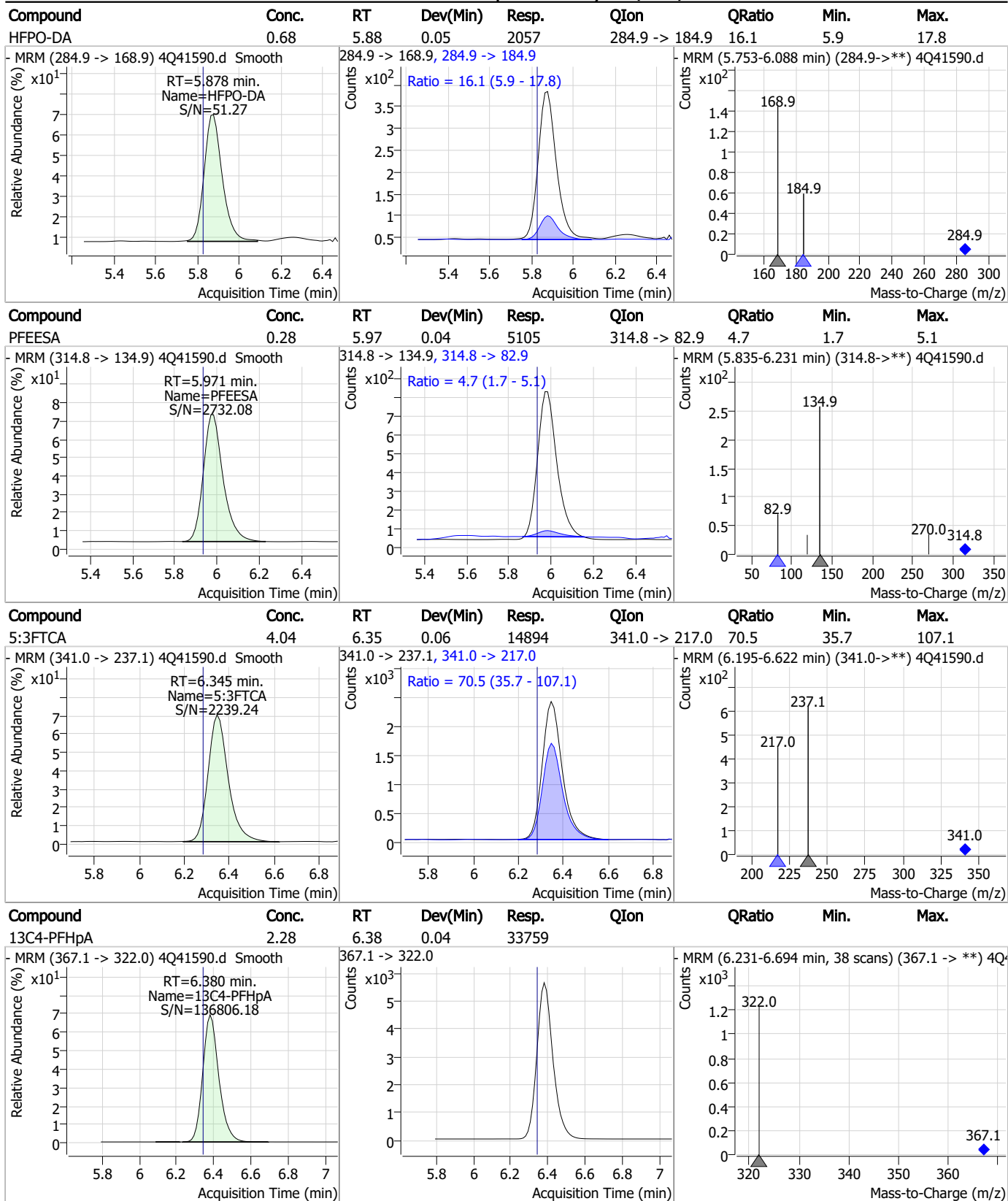
Perfluorinated Compounds by LC/MS/MS



7.6.13

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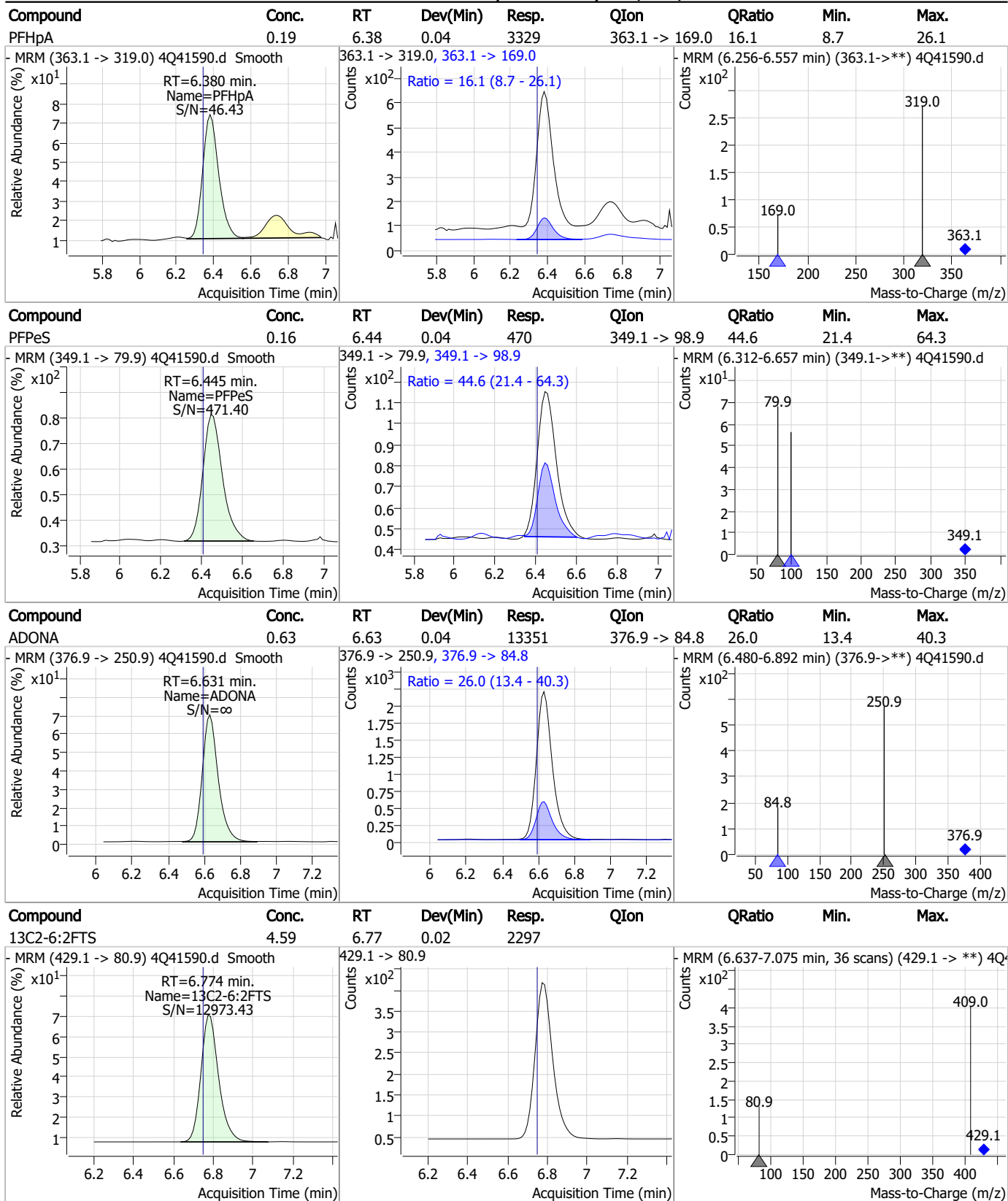
Perfluorinated Compounds by LC/MS/MS



7.6.13

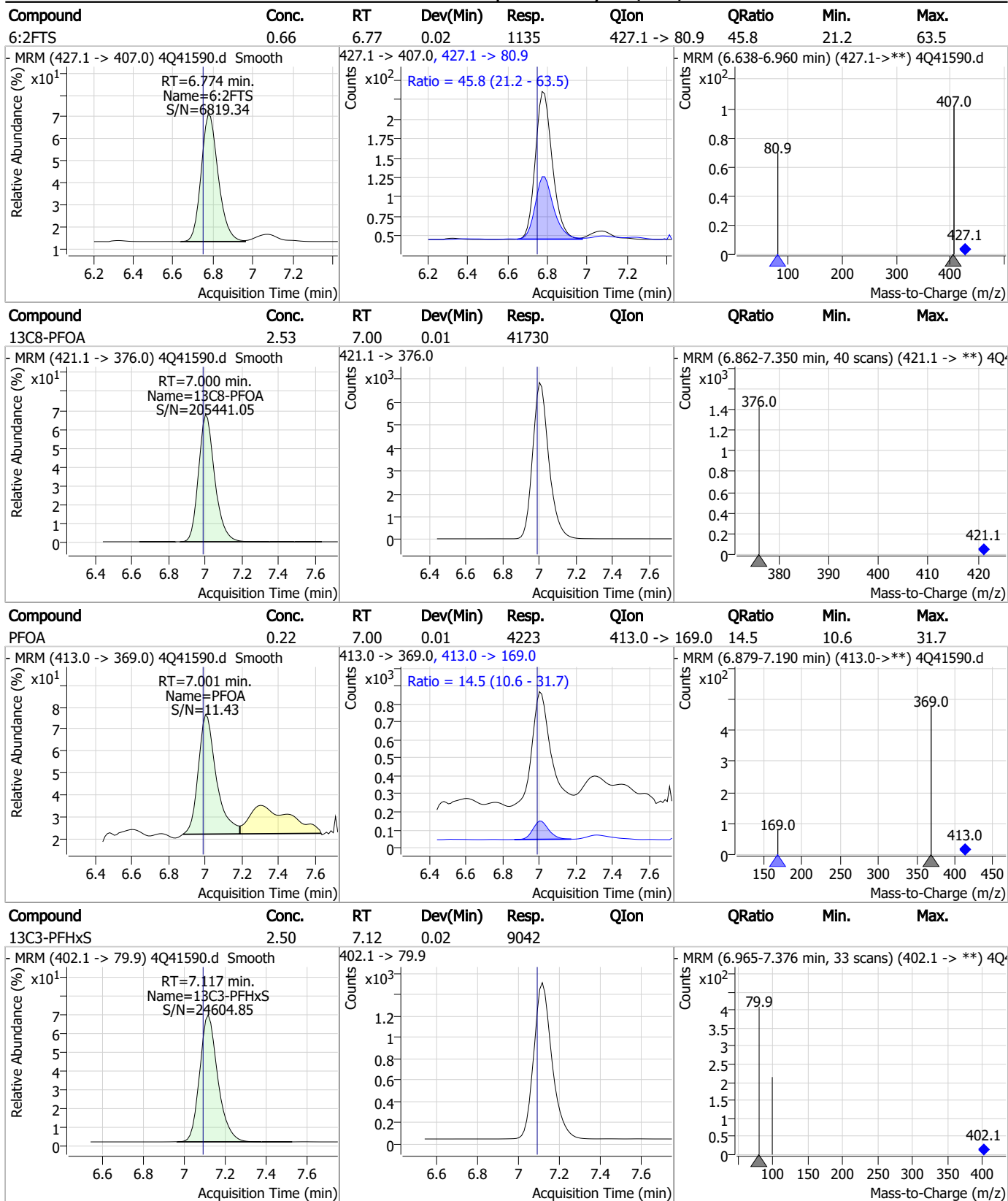
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Perfluorinated Compounds by LC/MS/MS



7.6.13
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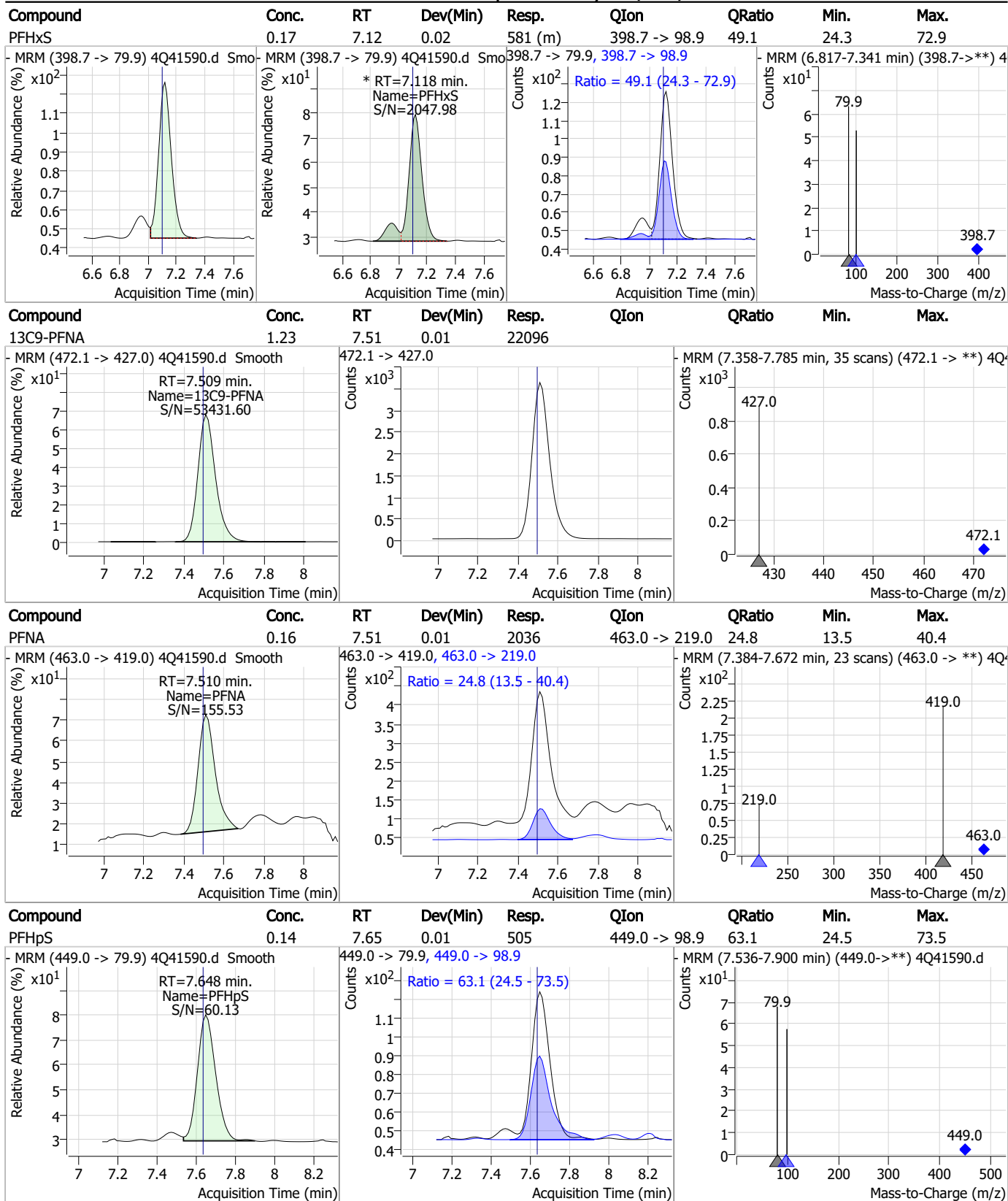
Perfluorinated Compounds by LC/MS/MS



7.6.13

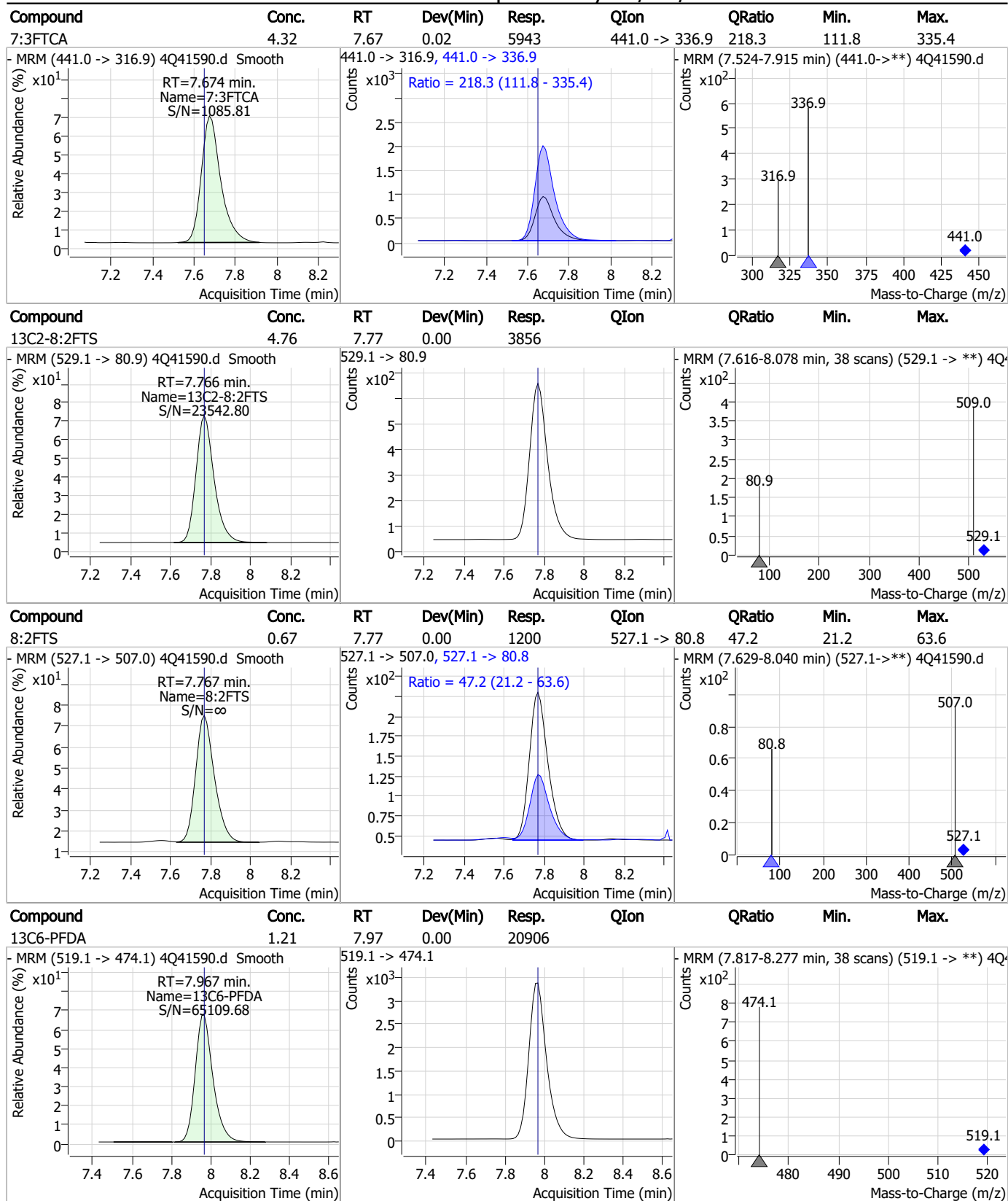
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Perfluorinated Compounds by LC/MS/MS



7.6.13

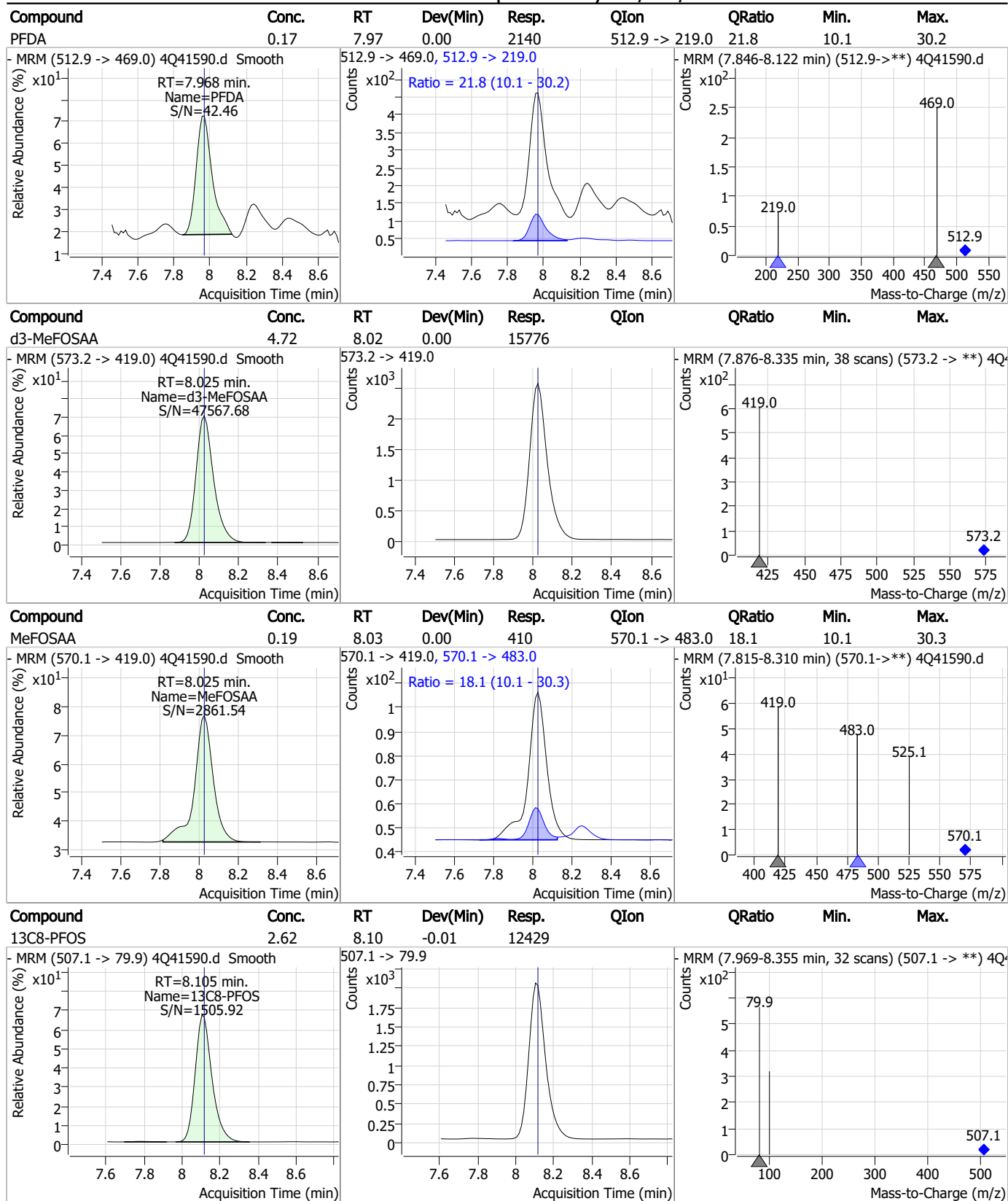
Perfluorinated Compounds by LC/MS/MS



7.6.13

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Perfluorinated Compounds by LC/MS/MS

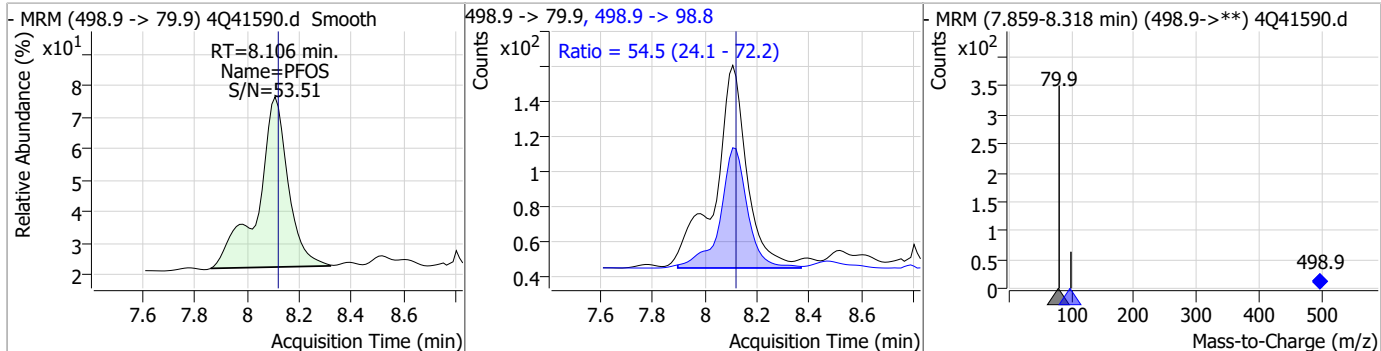


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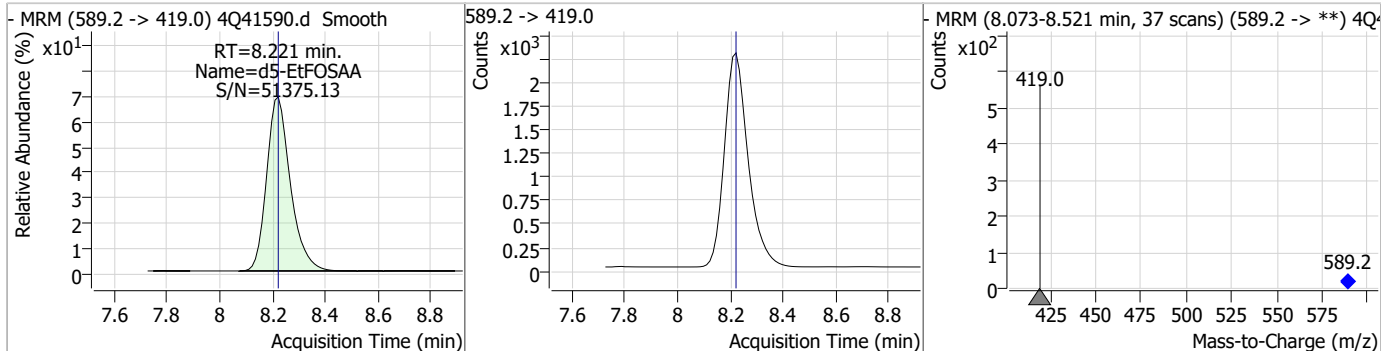
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Perfluorinated Compounds by LC/MS/MS

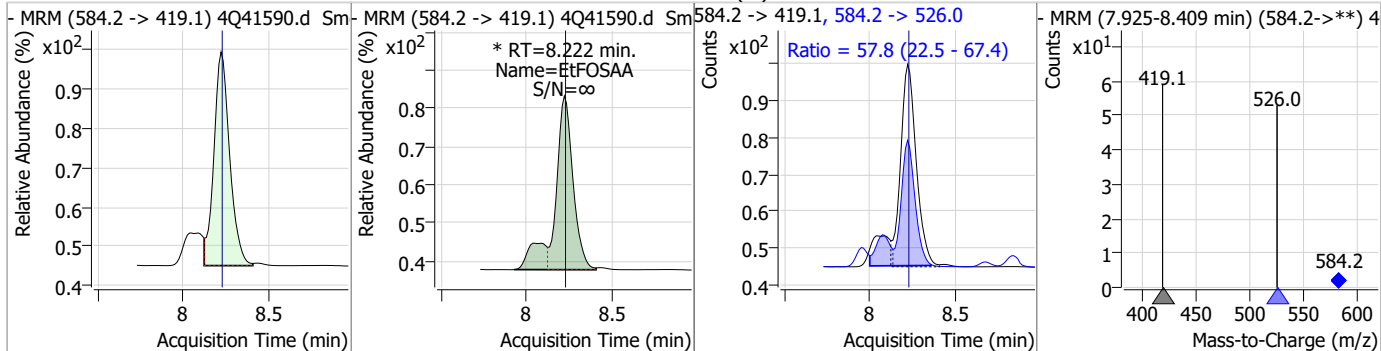
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	0.16	8.11	-0.01	922	498.9 -> 98.8	54.5	24.1	72.2



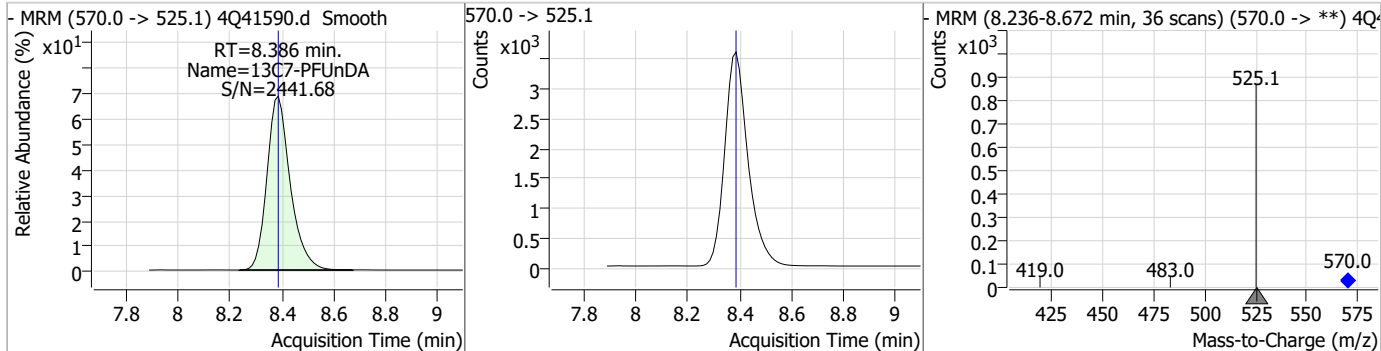
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.18	8.22	0.00	14204				



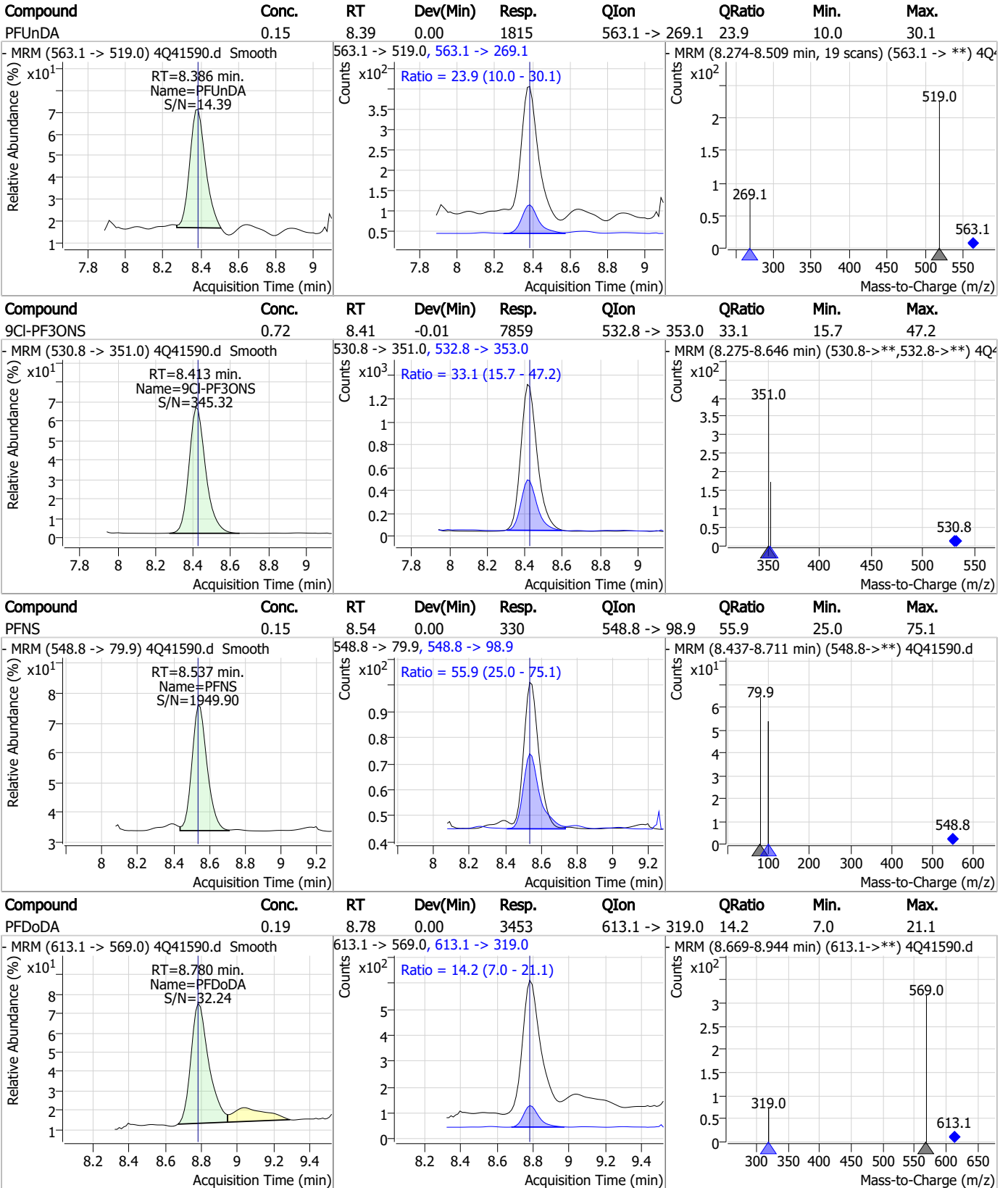
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	0.19	8.22	0.00	416 (m)	584.2 -> 526.0	57.8	22.5	67.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.25	8.39	0.00	22144				



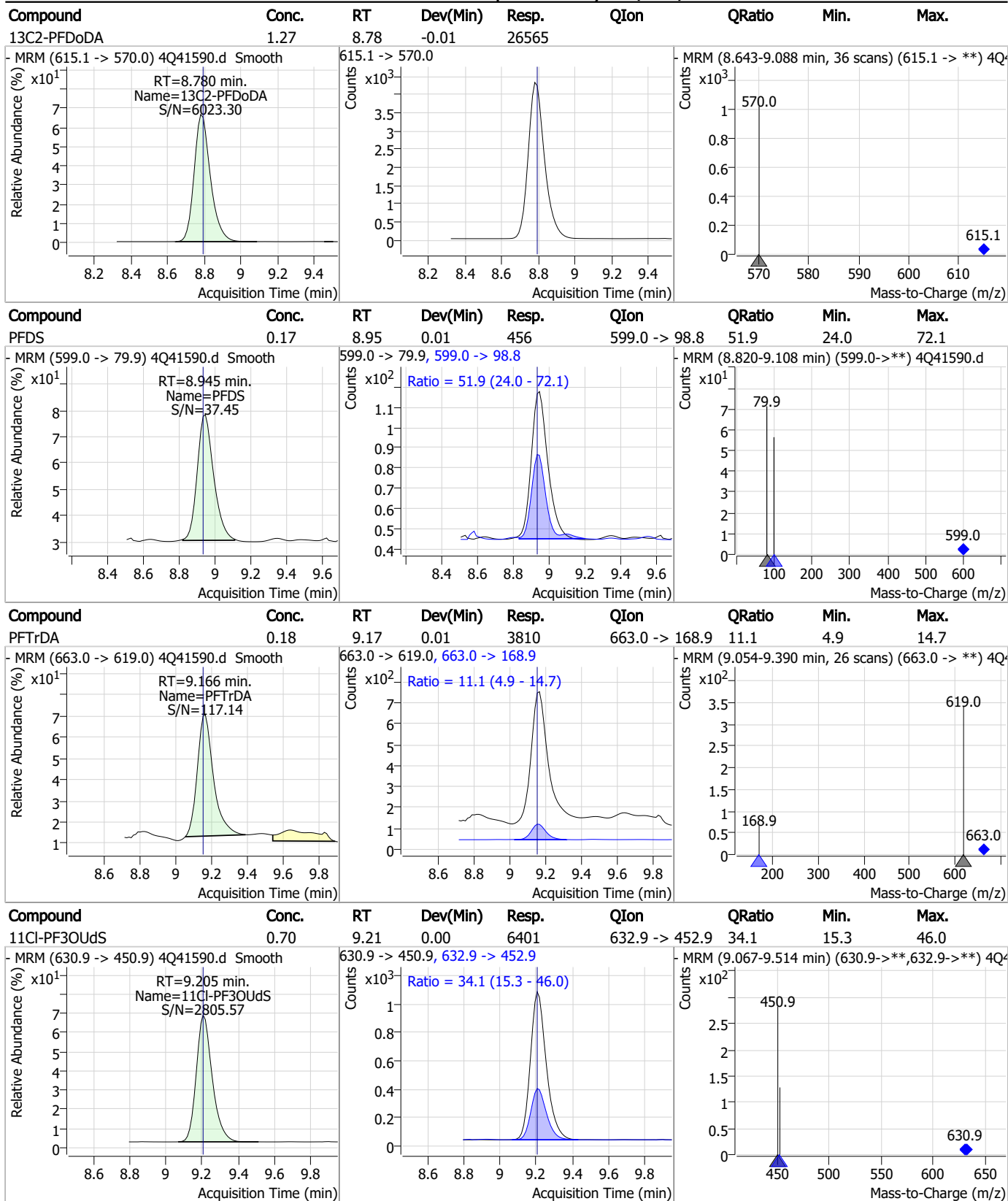
Perfluorinated Compounds by LC/MS/MS



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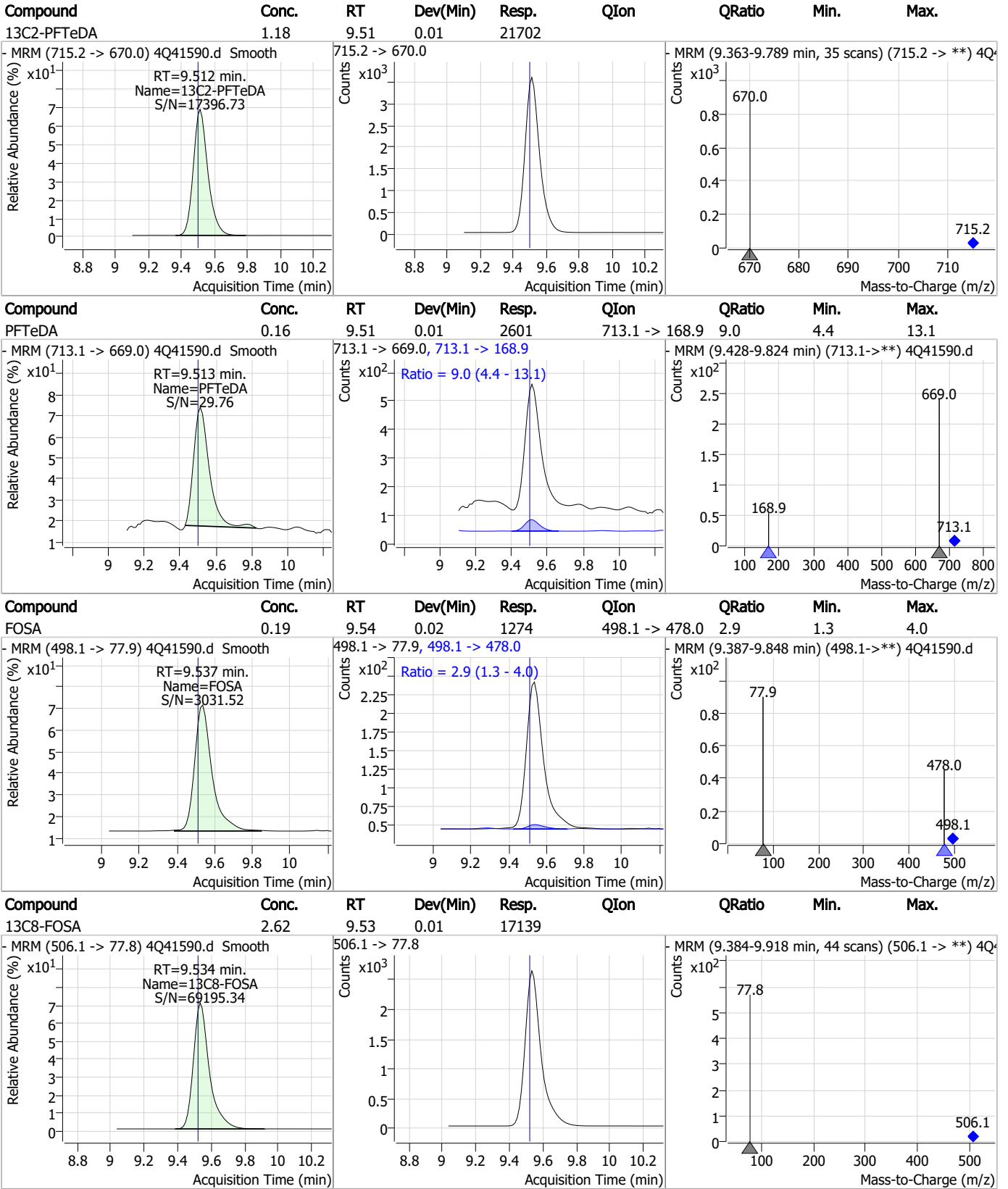


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

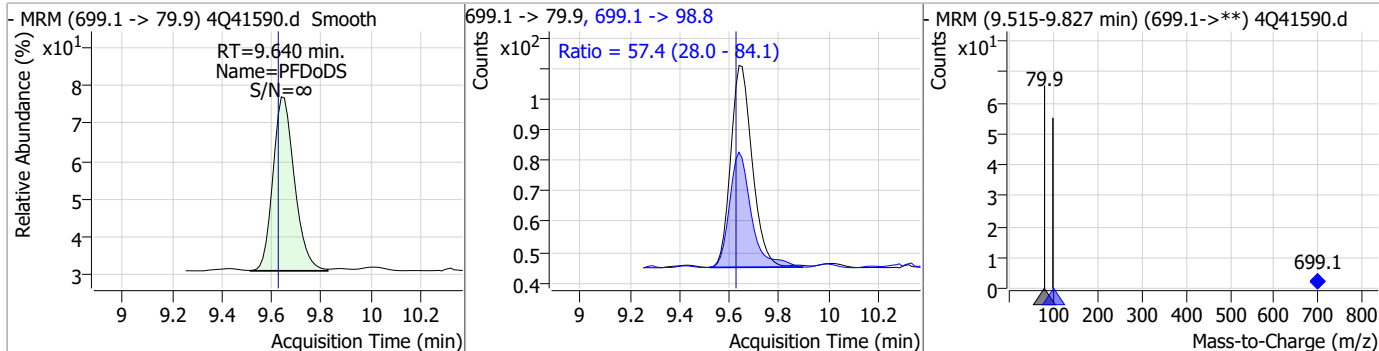


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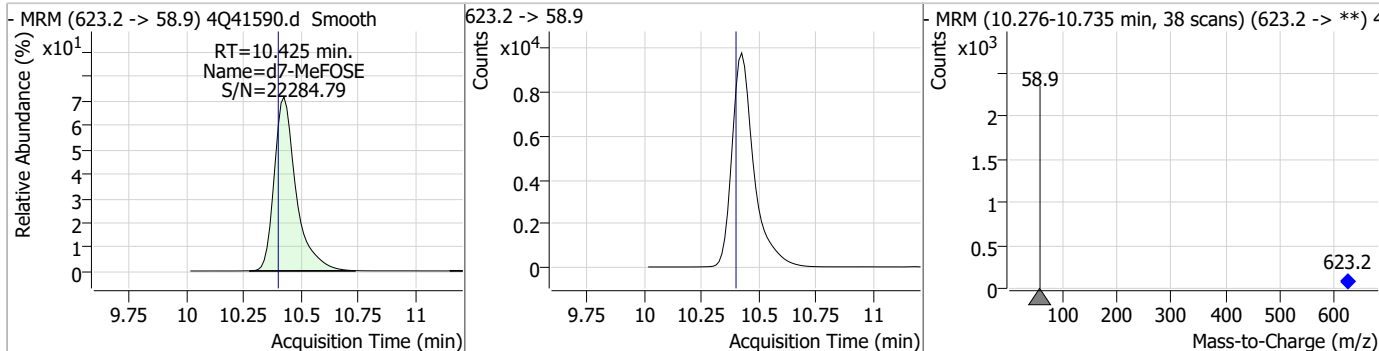


Perfluorinated Compounds by LC/MS/MS

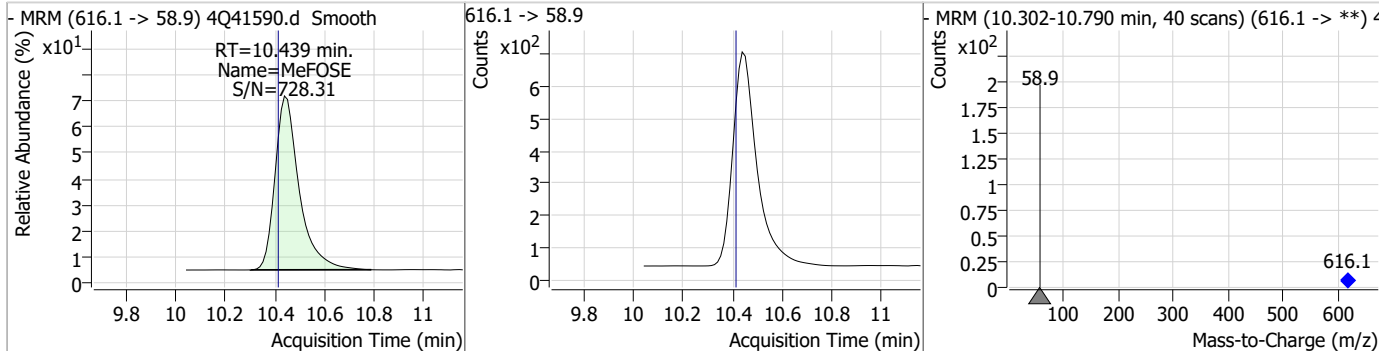
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.16	9.64	0.01	399	699.1 -> 98.8	57.4	28.0	84.1



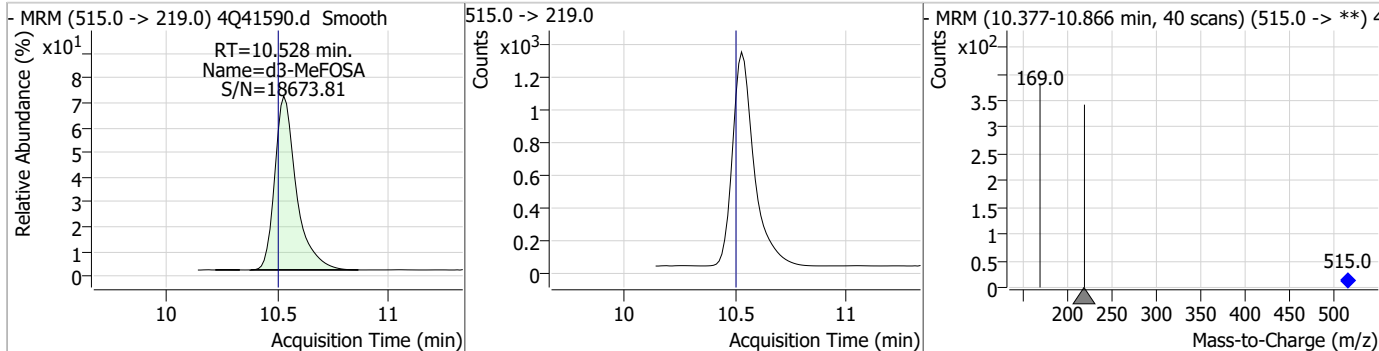
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	28.18	10.43	0.02	64843				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	1.73	10.44	0.02	4484				

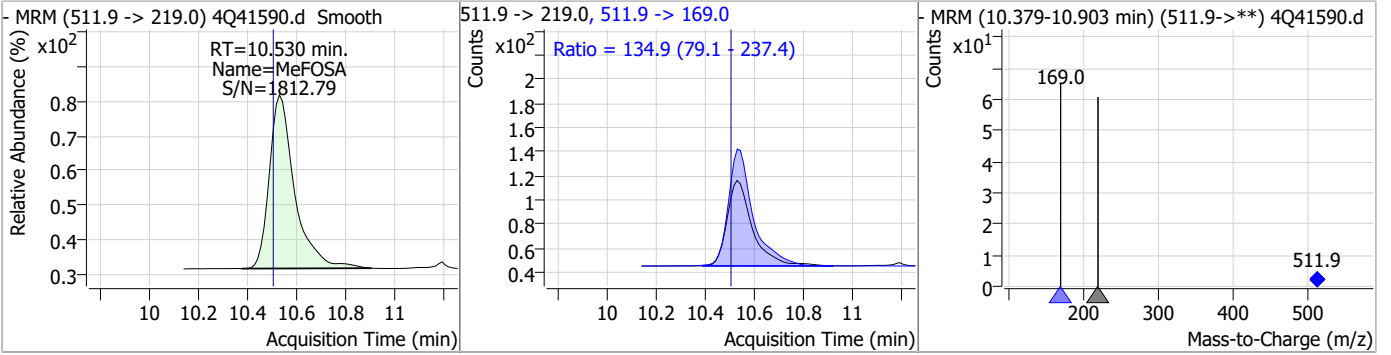


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.76	10.53	0.02	8881				

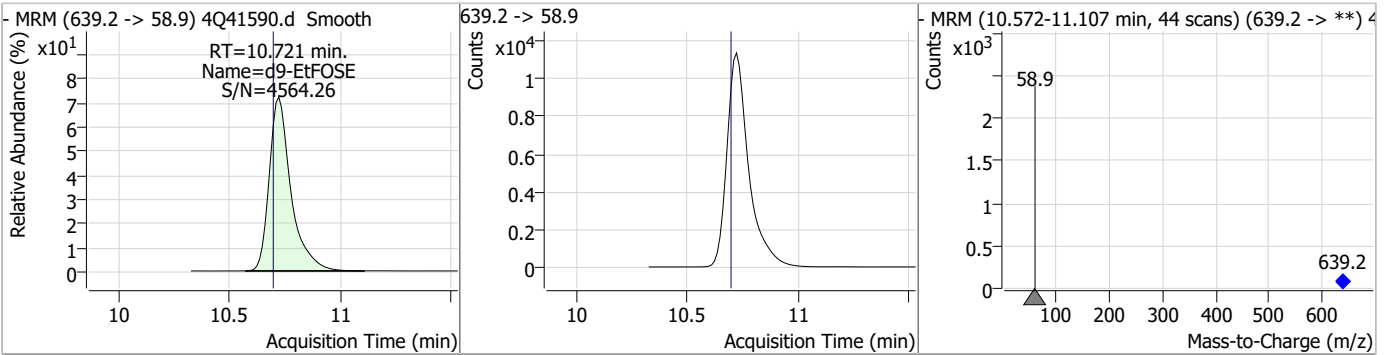


Perfluorinated Compounds by LC/MS/MS

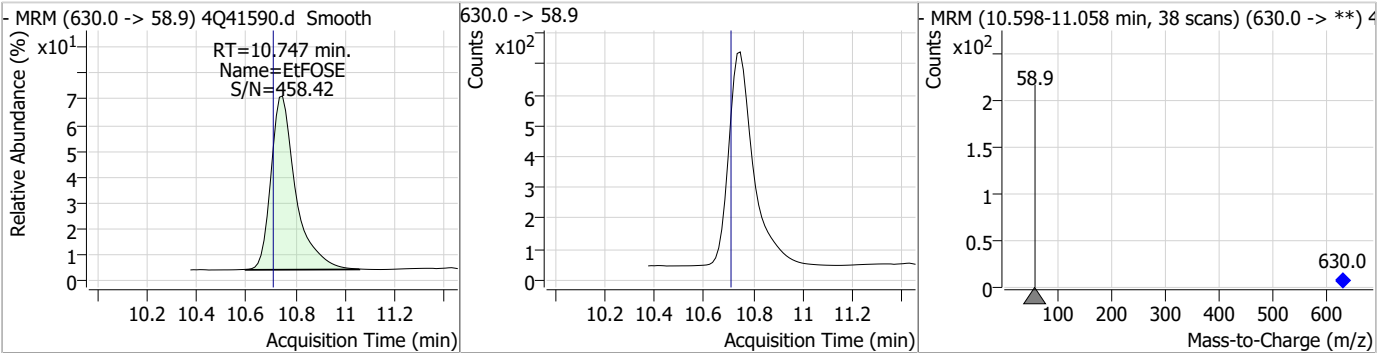
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	0.16	10.53	0.02	505	511.9 -> 169.0	134.9	79.1	237.4



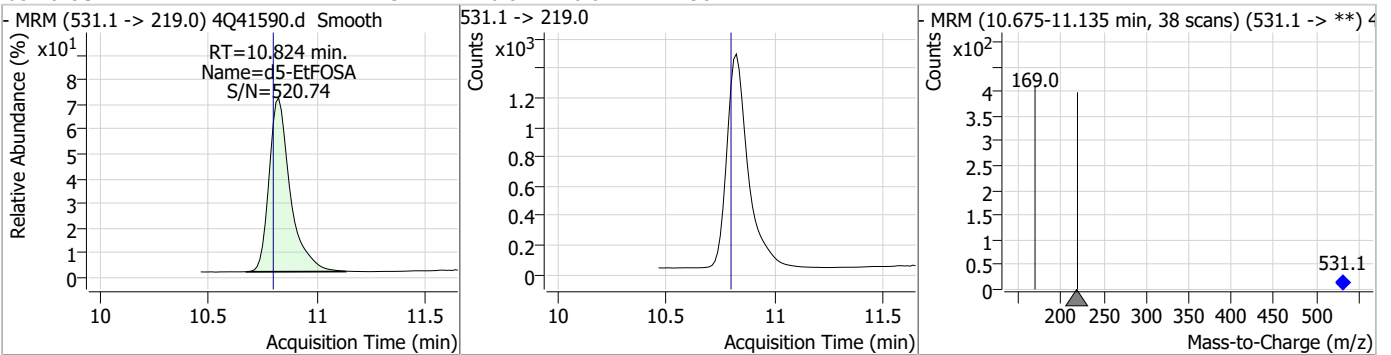
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	28.22	10.72	0.02	76810				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	1.75	10.75	0.04	4837				

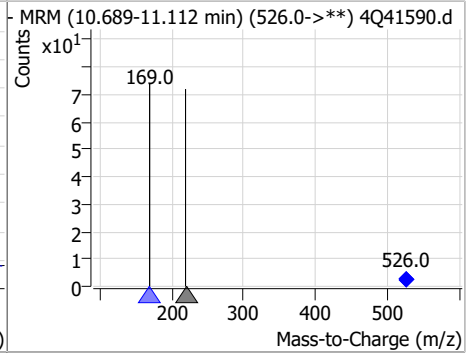
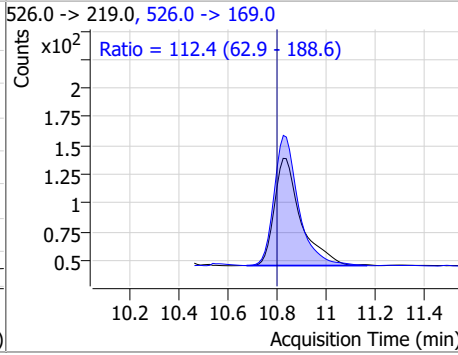
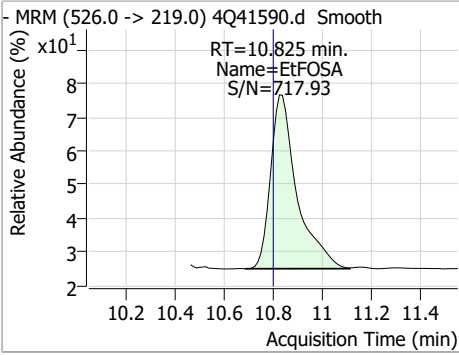


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.73	10.82	0.02	9872				



Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	0.17	10.83	0.02	698	526.0 -> 169.0	112.4	62.9	188.6



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Manual Integration Approval Summary

Sample Number: S4Q595-CC589 Method: EPA DRAFT 1633
Lab FileID: 4Q41590.D Analyst approved: 03/03/23 15:05 Anna Ludwig
Injection Time: 03/02/23 15:55 Supervisor approved: 03/03/23 16:08 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.12	Split peak
EtFOSAA	2991-50-6		8.22	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41600.d
 Operator : marthav
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 3/2/2023 6:35:23 PM
 Sample Name : cc589-4
 Vial : P1-A5
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q595.batch.bin
 Sample Information : op95682,S4Q595,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.189	216.8 -> 171.9	145542	10.00 µg/L	0.000
M5-PFPeA	4.537	268.3 -> 223.0	90594	5.00 µg/L	0.000
M5-PFHxA	5.509	318.0 -> 273.0	71288	2.50 µg/L	0.000
M4-PFHpA	6.342	367.1 -> 322.0	38504	2.50 µg/L	0.000
M8-PFOA	6.988	421.1 -> 376.0	43103	2.50 µg/L	0.000
M9-PFNA	7.496	472.1 -> 427.0	23609	1.25 µg/L	0.000
M6-PFDA	7.967	519.1 -> 474.1	20861	1.25 µg/L	0.000
M7-PFUnDA	8.386	570.0 -> 525.1	22548	1.25 µg/L	0.000
M2-PFDoDA	8.793	615.1 -> 570.0	26378	1.25 µg/L	0.000
M2-PFTeDA	9.500	715.2 -> 670.0	22147	1.25 µg/L	0.000
M8-FOSA	9.521	506.1 -> 77.8	16712	2.50 µg/L	0.000
M3-PFBS	5.476	302.1 -> 79.9	15761	2.50 µg/L	0.000
M3-PFHxS	7.092	402.1 -> 79.9	8961	2.50 µg/L	0.000
M8-PFOS	8.117	507.1 -> 79.9	12470	2.50 µg/L	0.000
M2-4:2FTS	5.235	329.1 -> 80.9	1915	5.00 µg/L	0.000
M2-6:2FTS	6.749	429.1 -> 80.9	2353	5.00 µg/L	0.000
M2-8:2FTS	7.766	529.1 -> 80.9	4161	5.00 µg/L	0.000
M3-MeFOSAA	8.025	573.2 -> 419.0	17271	5.00 µg/L	0.000
M3-HFPO-DA	5.827	286.9 -> 168.9	34295	10.00 µg/L	0.000
M5-EtFOSAA	8.221	589.2 -> 419.0	14820	5.00 µg/L	0.000
M7-MeFOSE	10.400	623.2 -> 58.9	64668	25.00 µg/L	0.000
M9-EtFOSE	10.697	639.2 -> 58.9	75481	25.00 µg/L	0.000
M5-EtFOSA	10.799	531.1 -> 219.0	9420	2.50 µg/L	0.000
M3-MeFOSA	10.503	515.0 -> 219.0	8424	2.50 µg/L	0.000
13C4-PFOS	8.118	502.8 -> 79.9	12515	2.50 µg/L	0.000
13C3-PFBA	3.193	216.0 -> 172.0	86193	5.00 µg/L	0.000
18O2-PFHxS	7.091	403.0 -> 83.9	6501	2.50 µg/L	0.000
13C4-PFOA	6.988	417.1 -> 372.0	51245	2.50 µg/L	0.000
13C2-PFDA	7.967	515.1 -> 470.1	19423	1.25 µg/L	0.000
13C5-PFNA	7.496	468.0 -> 423.0	26425	1.25 µg/L	0.000
13C2-PFHxA	5.510	315.1 -> 270.0	65477	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	1915	5.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C2-6:2FTS	6.749	429.1 -> 80.9	2353	4.63 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 92.6%		
13C2-8:2FTS	7.766	529.1 -> 80.9	4161	5.05 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.0%		
13C2-PFDoDA	8.793	615.1 -> 570.0	26378	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C2-PFTeDA	9.500	715.2 -> 670.0	22147	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.8%		
13C3-PFBS	5.476	302.1 -> 79.9	15761	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C3-PFHxS	7.092	402.1 -> 79.9	8961	2.44 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C4-PFBA	3.189	216.8 -> 171.9	145542	9.80 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C4-PFHpA	6.342	367.1 -> 322.0	38504	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.2%	
13C5-PFHxA	5.509	318.0 -> 273.0	71288	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C5-PFPeA	4.537	268.3 -> 223.0	90594	4.92 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C6-PFDA	7.967	519.1 -> 474.1	20861	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.6%	
13C7-PFUnDA	8.386	570.0 -> 525.1	22548	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C8-FOSA	9.521	506.1 -> 77.8	16712	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.3%	
13C8-PFOA	6.988	421.1 -> 376.0	43103	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C8-PFOS	8.117	507.1 -> 79.9	12470	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C9-PFNA	7.496	472.1 -> 427.0	23609	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.4%	
d3-MeFOSAA	8.025	573.2 -> 419.0	17271	4.86 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C3-HFPO-DA	5.827	286.9 -> 168.9	34295	8.50 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 85.0%	
d3-MeFOSA	10.503	515.0 -> 219.0	8424	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
d5-EtFOSAA	8.221	589.2 -> 419.0	14820	5.09 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.8%	
d7-MeFOSE	10.400	623.2 -> 58.9	64668	26.47 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 105.9%	
d9-EtFOSE	10.697	639.2 -> 58.9	75481	26.12 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 104.5%	
d5-EtFOSA	10.799	531.1 -> 219.0	9420	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.1%	
Target Compounds					QValue
4:2FTS	5.236	327.1 -> 307.0	23647	9.27 µg/L	100
		327.1 -> 80.9	9837		
6:2FTS	6.749	427.1 -> 407.0	17834	10.06 µg/L	97
		427.1 -> 80.9	7880		
8:2FTS	7.767	527.1 -> 507.0	18397	9.50 µg/L	99
		527.1 -> 80.8	7702		
EtFOSAA	8.222	584.2 -> 419.1	5883	2.53 µg/L	93
		584.2 -> 526.0	2896		
FOSA	9.512	498.1 -> 77.9	15391	2.40 µg/L	99
		498.1 -> 478.0	475		
MeFOSAA	8.025	570.1 -> 419.0	5791	2.41 µg/L	m 91
		570.1 -> 483.0	1406		
PFBA	3.196	212.8 -> 168.9	31445	9.14 µg/L	100
PFBS	5.477	298.7 -> 79.9	12566	2.00 µg/L	98
		298.7 -> 98.8	4693		
PFDA	7.968	512.9 -> 469.0	31077	2.42 µg/L	97
		512.9 -> 219.0	6643		
PFDODA	8.780	613.1 -> 569.0	42585	2.39 µg/L	98
		613.1 -> 319.0	6437		
PFDS	8.933	599.0 -> 79.9	5778	2.09 µg/L	93

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.343	599.0 -> 98.8	3064	2.41	µg/L	99
		363.1 -> 319.0	49006			
PFHpS	7.636	363.1 -> 169.0	8664	2.28	µg/L	97
		449.0 -> 79.9	8370			
PFHxA	5.512	449.0 -> 98.9	3945	2.21	µg/L	99
		313.0 -> 269.0	55239			
PFHxS	7.093	313.0 -> 118.9	1831	2.08	µg/L	99
		398.7 -> 79.9	6920			
PFNA	7.497	398.7 -> 98.9	3320	2.24	µg/L	99
		463.0 -> 419.0	29992			
PFNS	8.537	463.0 -> 219.0	7897	2.20	µg/L	89
		548.8 -> 79.9	4736			
PFOA	6.989	548.8 -> 98.9	2001	2.33	µg/L	99
		413.0 -> 369.0	47237			
PFOS	8.119	413.0 -> 169.0	9788	1.99	µg/L	100
		498.9 -> 79.9	11513			
PFPeA	4.539	498.9 -> 98.8	5525	4.70	µg/L	100
		263.0 -> 219.0	86761			
PFPeS	6.407	349.1 -> 79.9	7093	2.41	µg/L	98
		349.1 -> 98.9	3134			
PFTeDA	9.501	713.1 -> 669.0	39258	2.41	µg/L	99
		713.1 -> 168.9	3214			
PFTrDA	9.154	663.0 -> 619.0	53828	2.53	µg/L	100
		663.0 -> 168.9	5289			
PFUnDA	8.386	563.1 -> 519.0	29396	2.36	µg/L	99
		563.1 -> 269.1	6029			
11CI-PF3OUdS	9.205	630.9 -> 450.9	96982	11.52	µg/L	100
		632.9 -> 452.9	29767			
9CI-PF3ONS	8.425	530.8 -> 351.0	109000	10.84	µg/L	97
		532.8 -> 353.0	32572			
ADONA	6.594	376.9 -> 250.9	217558	11.04	µg/L	100
		376.9 -> 84.8	58275			
HFPO-DA	5.828	284.9 -> 168.9	27340	9.76	µg/L	98
		284.9 -> 184.9	3476			
3:3FTCA	4.179	241.0 -> 177.0	11134	11.72	µg/L	99
		241.0 -> 117.0	1034			
5:3FTCA	6.283	341.0 -> 237.1	227098	62.70	µg/L	98
		341.0 -> 217.0	158154			
7:3FTCA	7.649	441.0 -> 316.9	83922	62.03	µg/L	95
		441.0 -> 336.9	194730			
EtFOSA	10.801	526.0 -> 219.0	9561	2.47	µg/L	87
		526.0 -> 169.0	10582			
EtFOSE	10.710	630.0 -> 58.9	67603	24.92	µg/L	100
		511.9 -> 219.0	7263			
MeFOSA	10.505	511.9 -> 169.0	8984	2.36	µg/L	74
		616.1 -> 58.9	64152			
MeFOSE	10.414	699.1 -> 79.9	5436	24.87	µg/L	100
		699.1 -> 98.8	3258			
PFDoDS	9.627	295.0 -> 201.0	4551	2.24	µg/L	95
		295.0 -> 84.9	1187			
NFDHA	5.415	279.0 -> 85.1	49017	5.01	µg/L	98
		229.0 -> 84.9	41693			
PFMBA	4.881	314.8 -> 134.9	74879	4.61	µg/L	100
		314.8 -> 82.9	2852			
PFMPA	3.794			4.53	µg/L	100
PFEESA	5.934			4.23	µg/L	99

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

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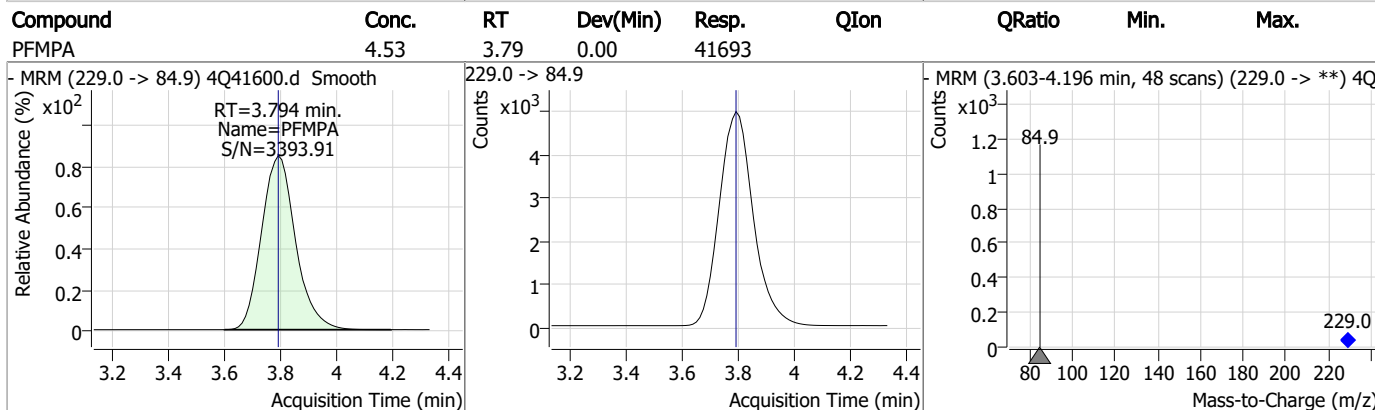
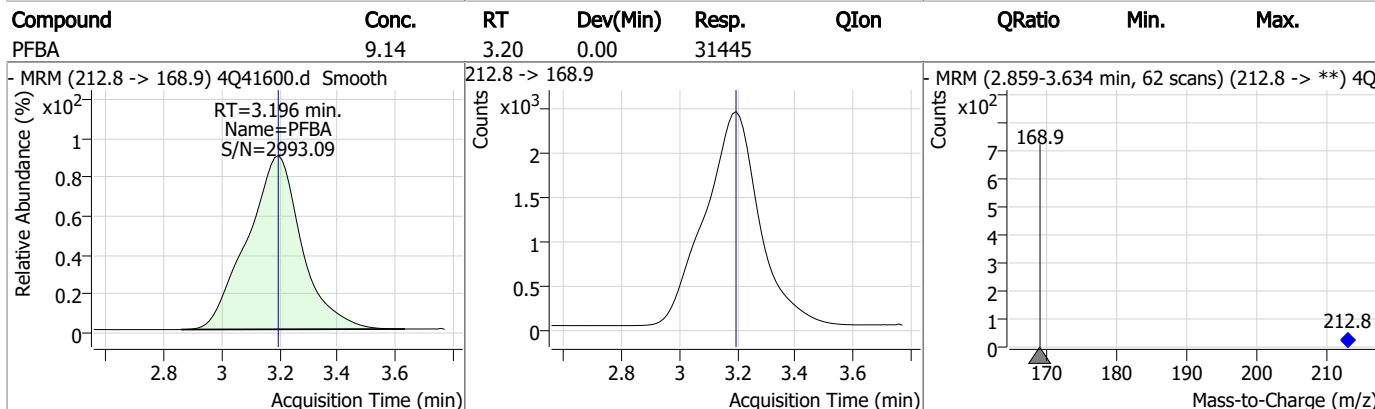
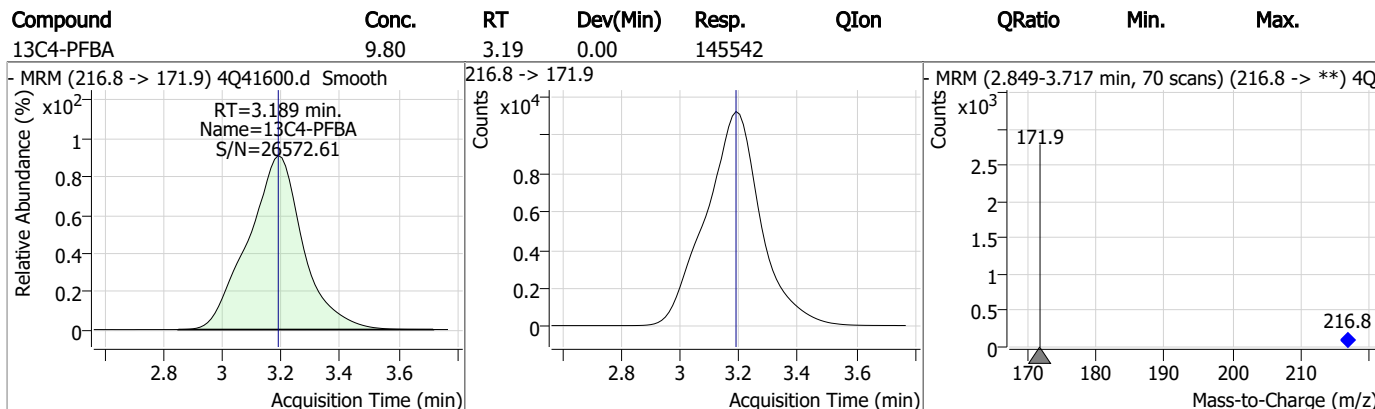
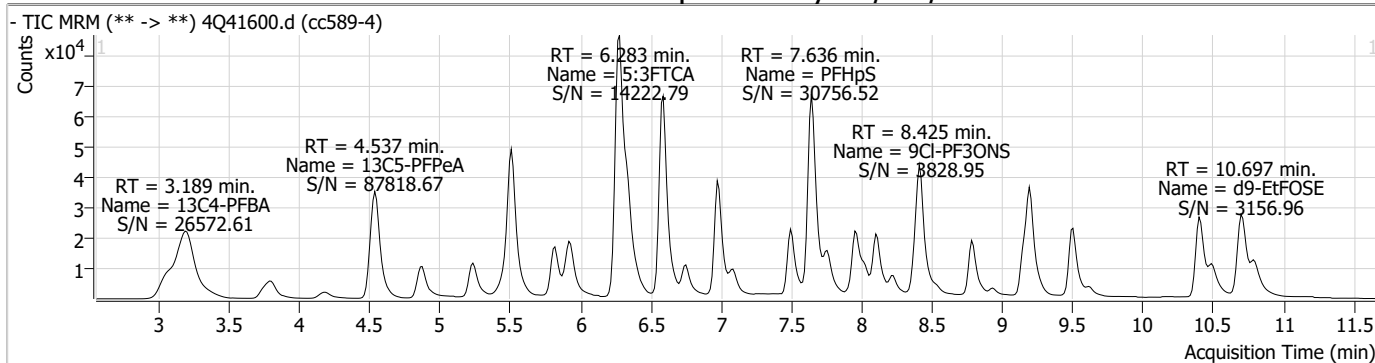
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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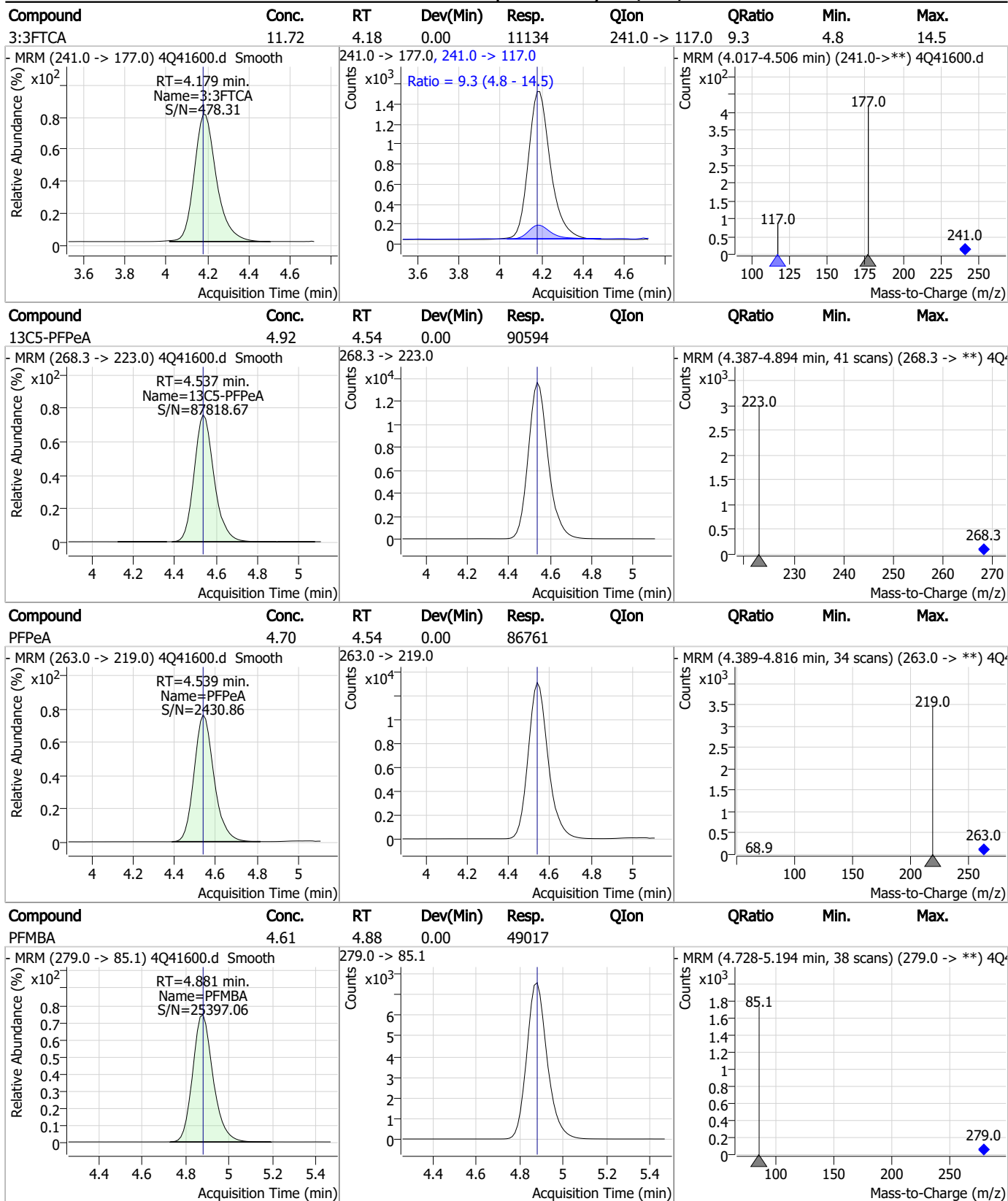
7.6.14

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Perfluorinated Compounds by LC/MS/MS



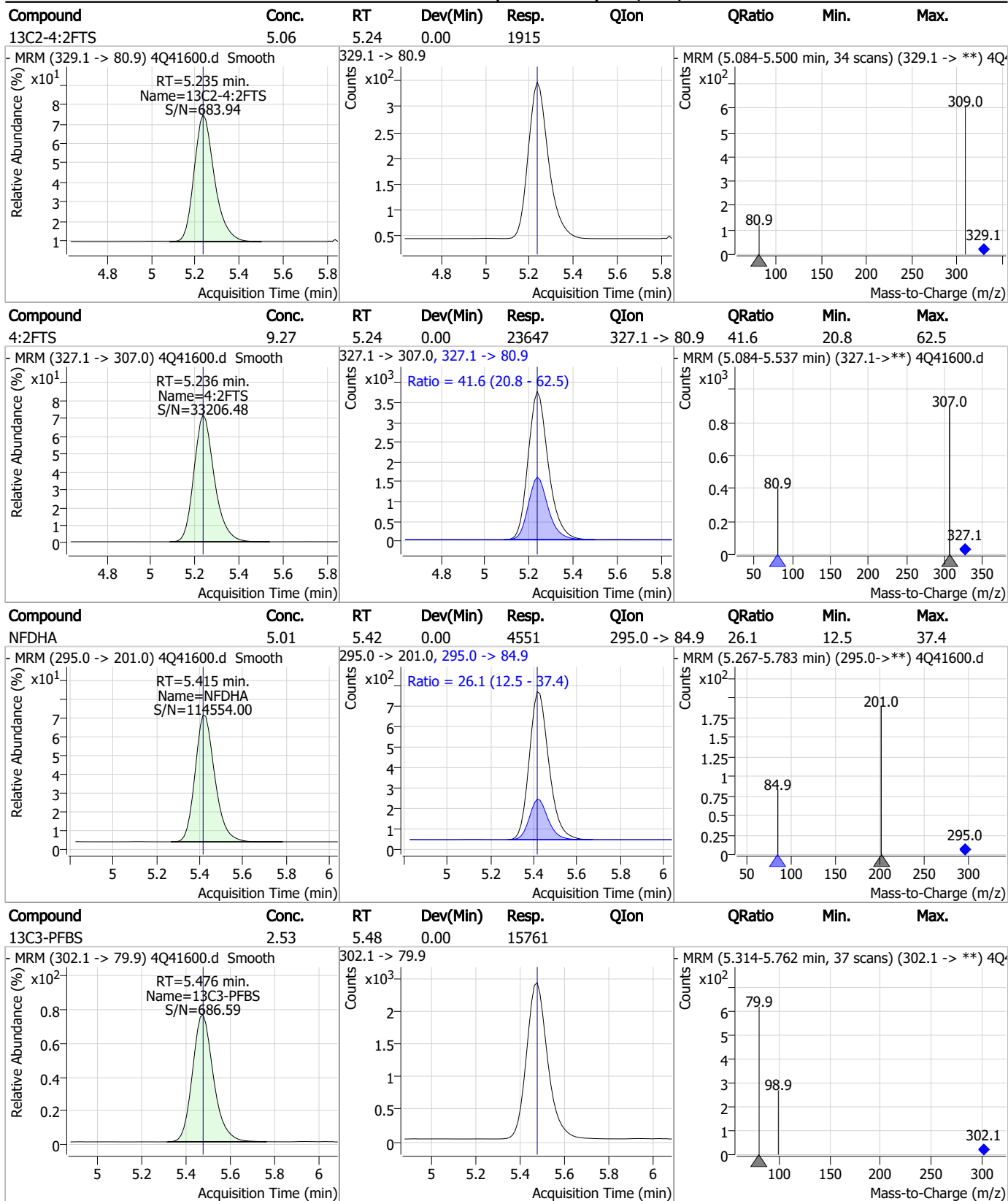
Perfluorinated Compounds by LC/MS/MS



7.6.14

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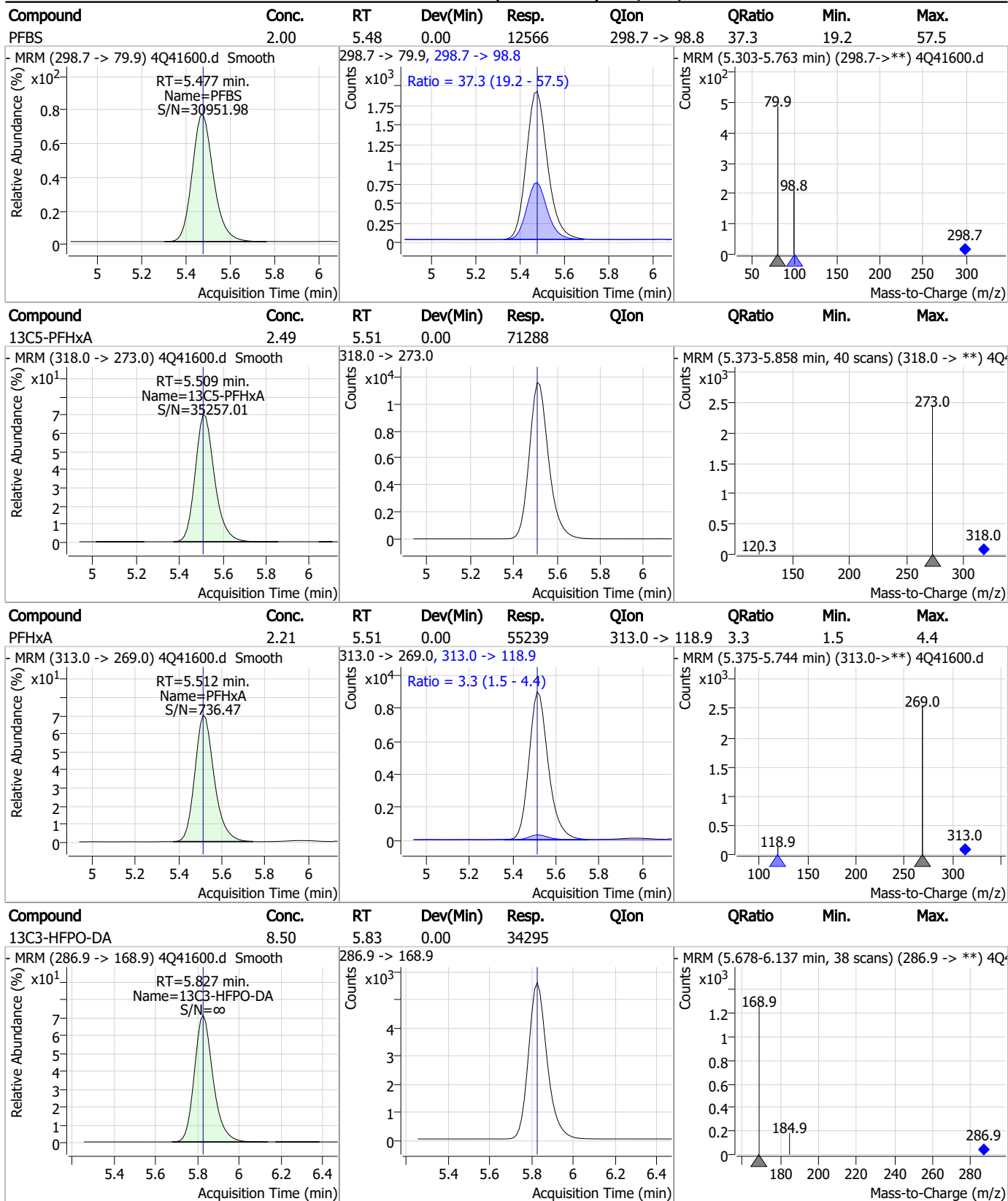
Perfluorinated Compounds by LC/MS/MS



7.6.14

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Perfluorinated Compounds by LC/MS/MS

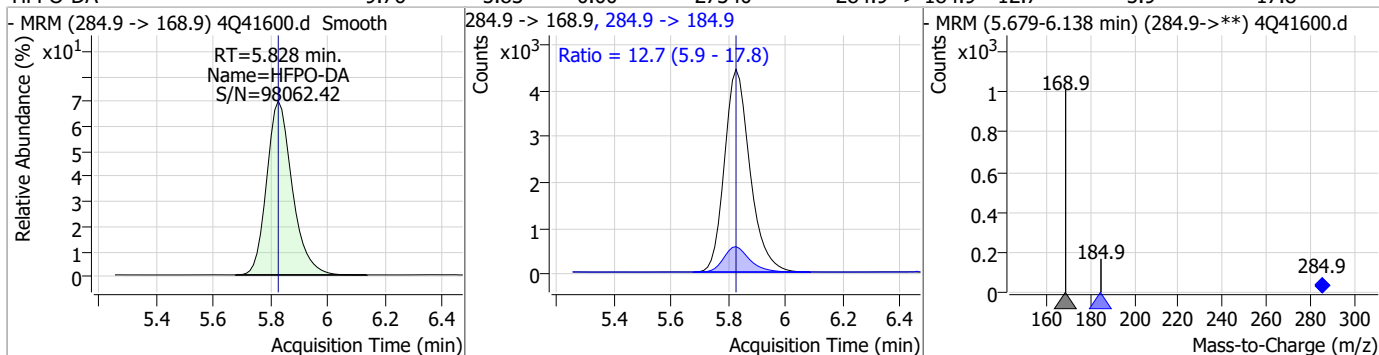


7.6.14

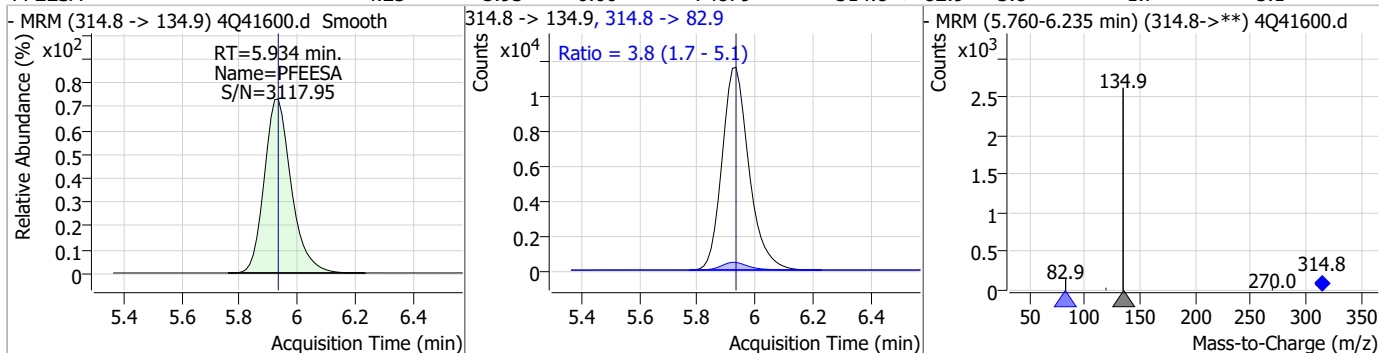
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Perfluorinated Compounds by LC/MS/MS

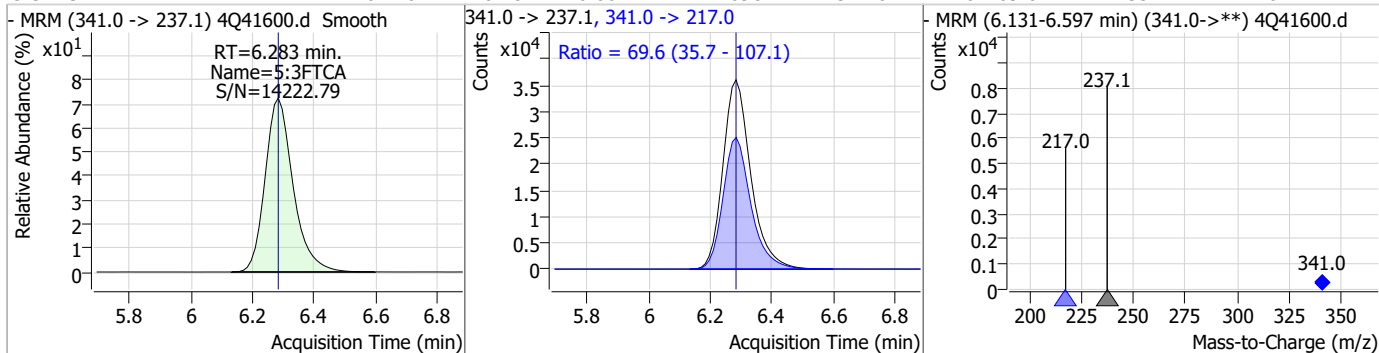
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	9.76	5.83	0.00	27340	284.9 -> 184.9	12.7	5.9	17.8



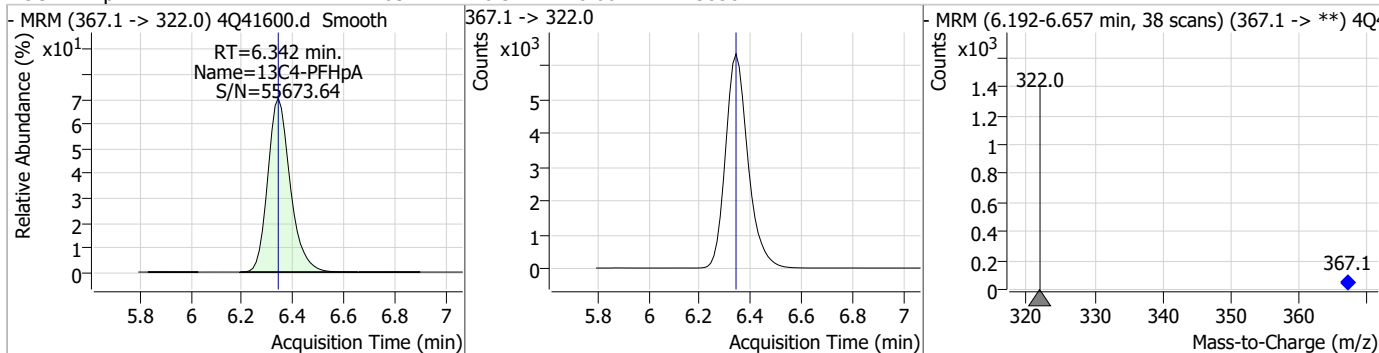
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.23	5.93	0.00	74879	314.8 -> 82.9	3.8	1.7	5.1



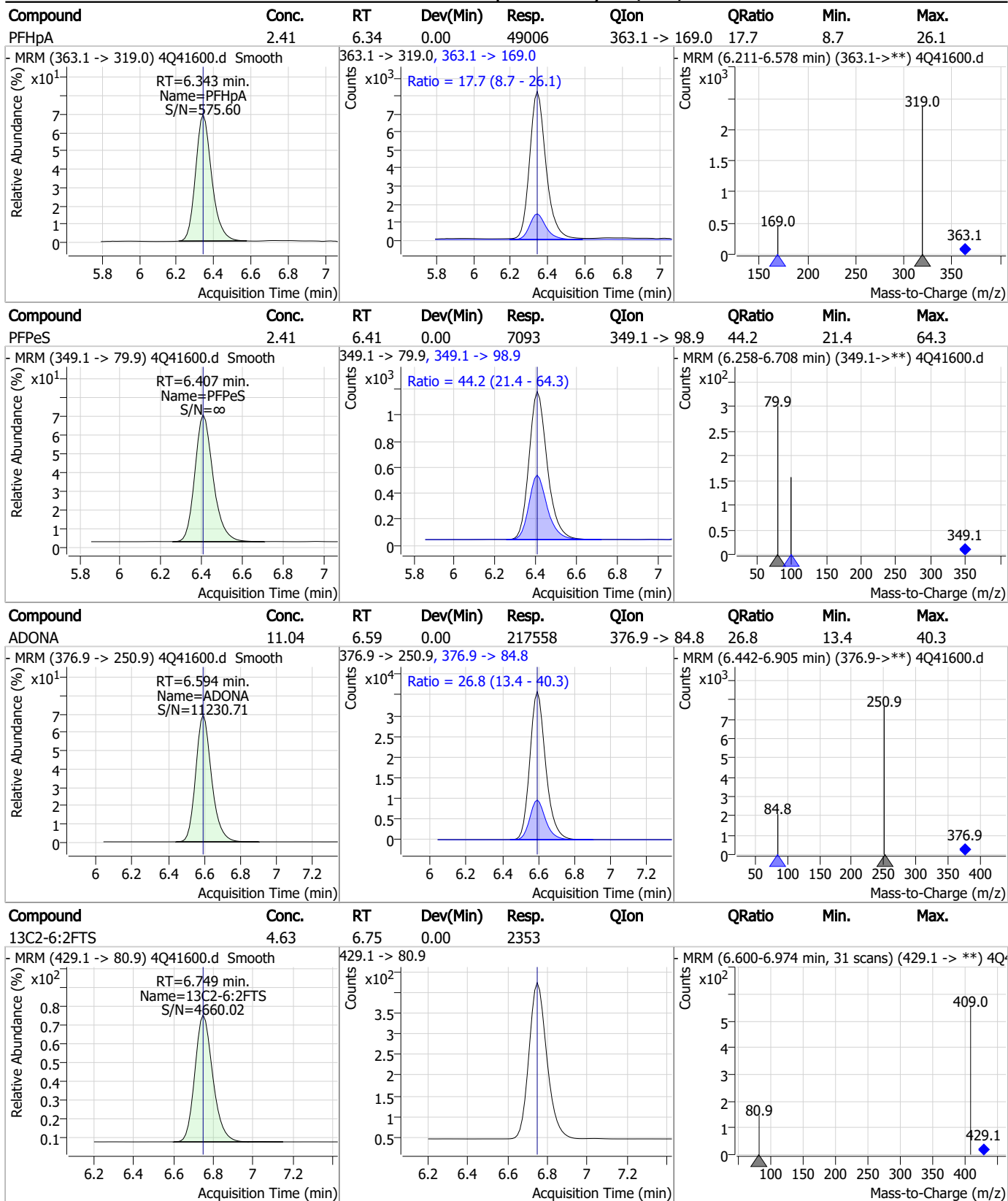
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	62.70	6.28	0.00	227098	341.0 -> 217.0	69.6	35.7	107.1



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.63	6.34	0.00	38504				



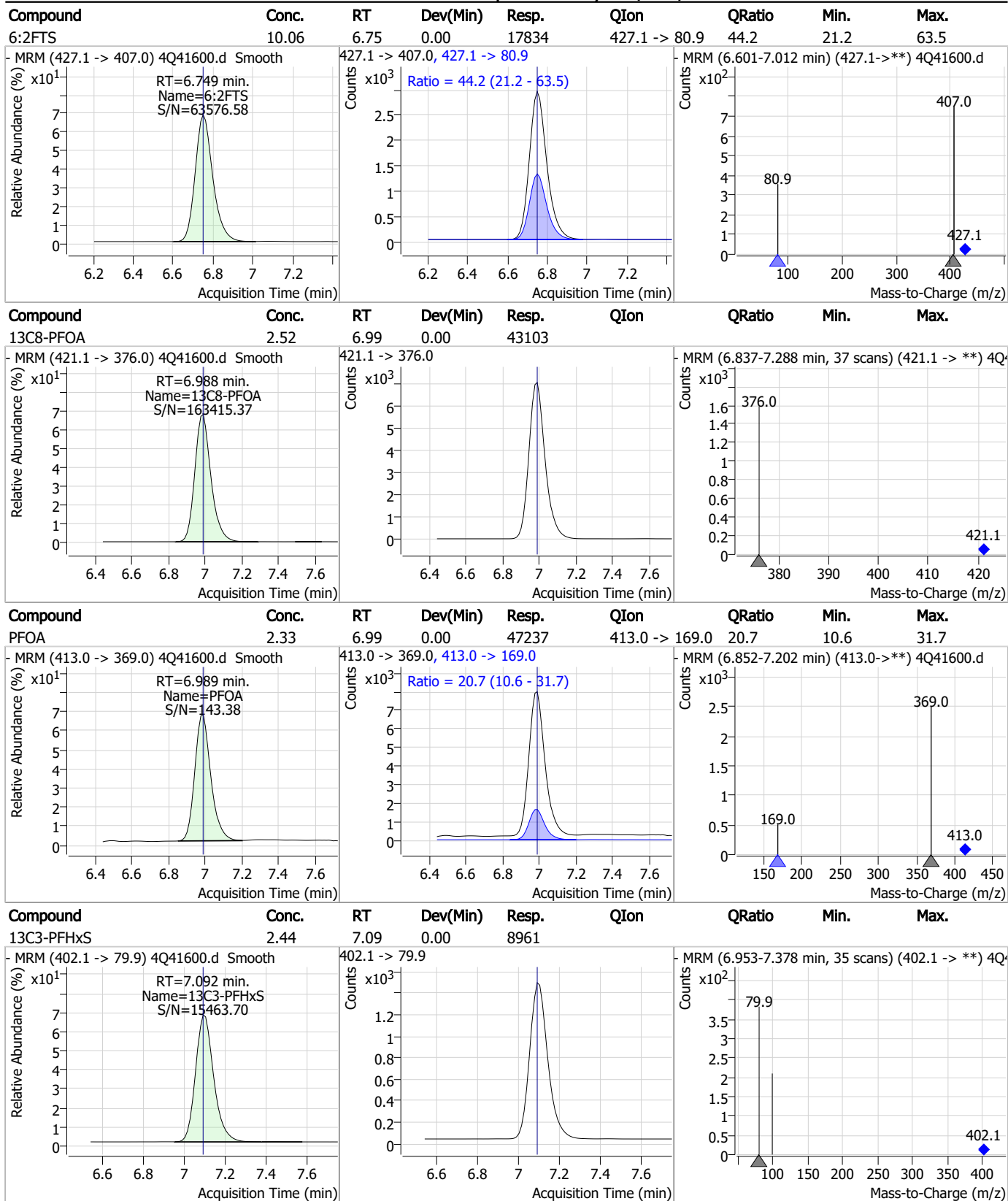
Perfluorinated Compounds by LC/MS/MS



7.6.14

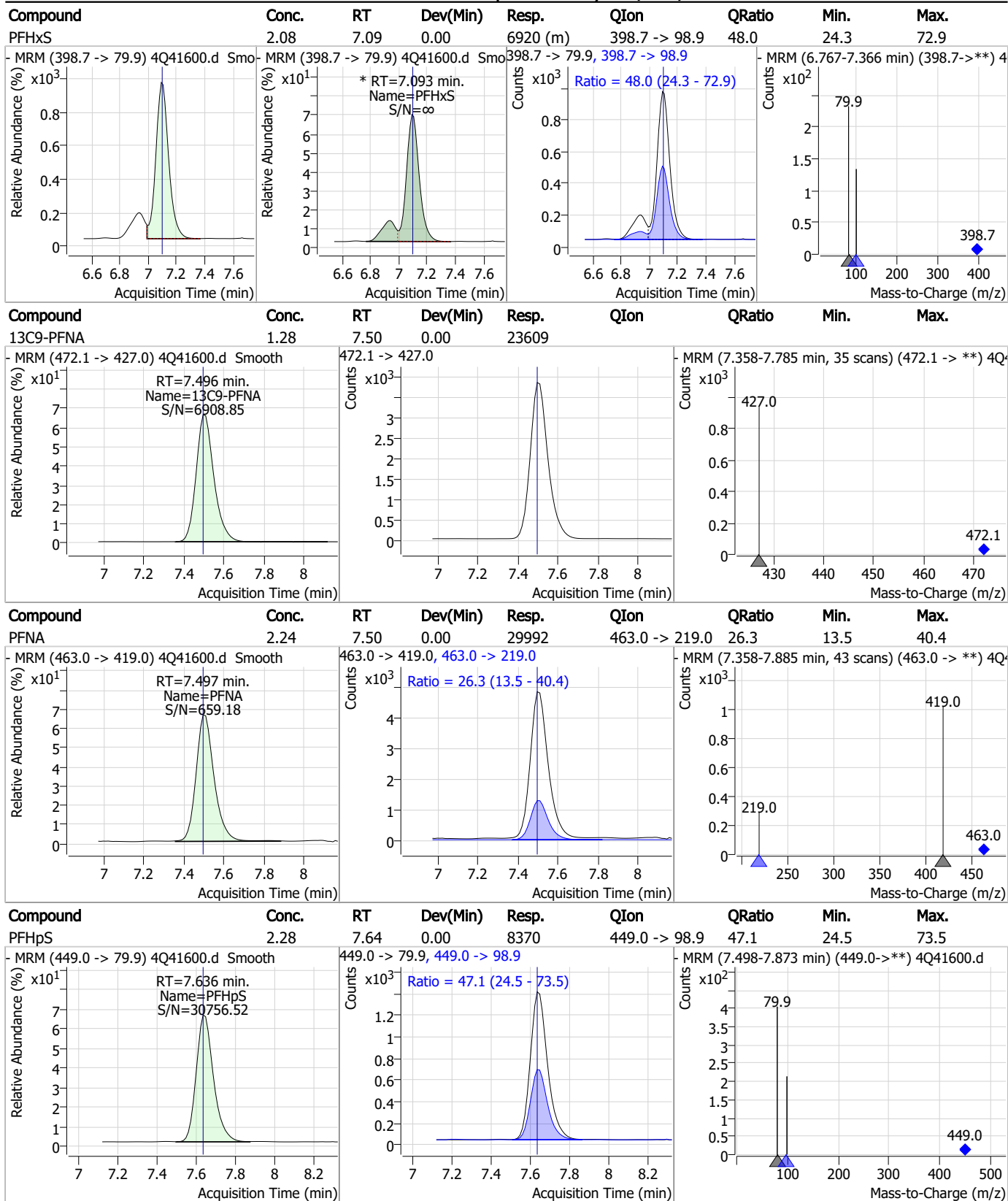
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Perfluorinated Compounds by LC/MS/MS



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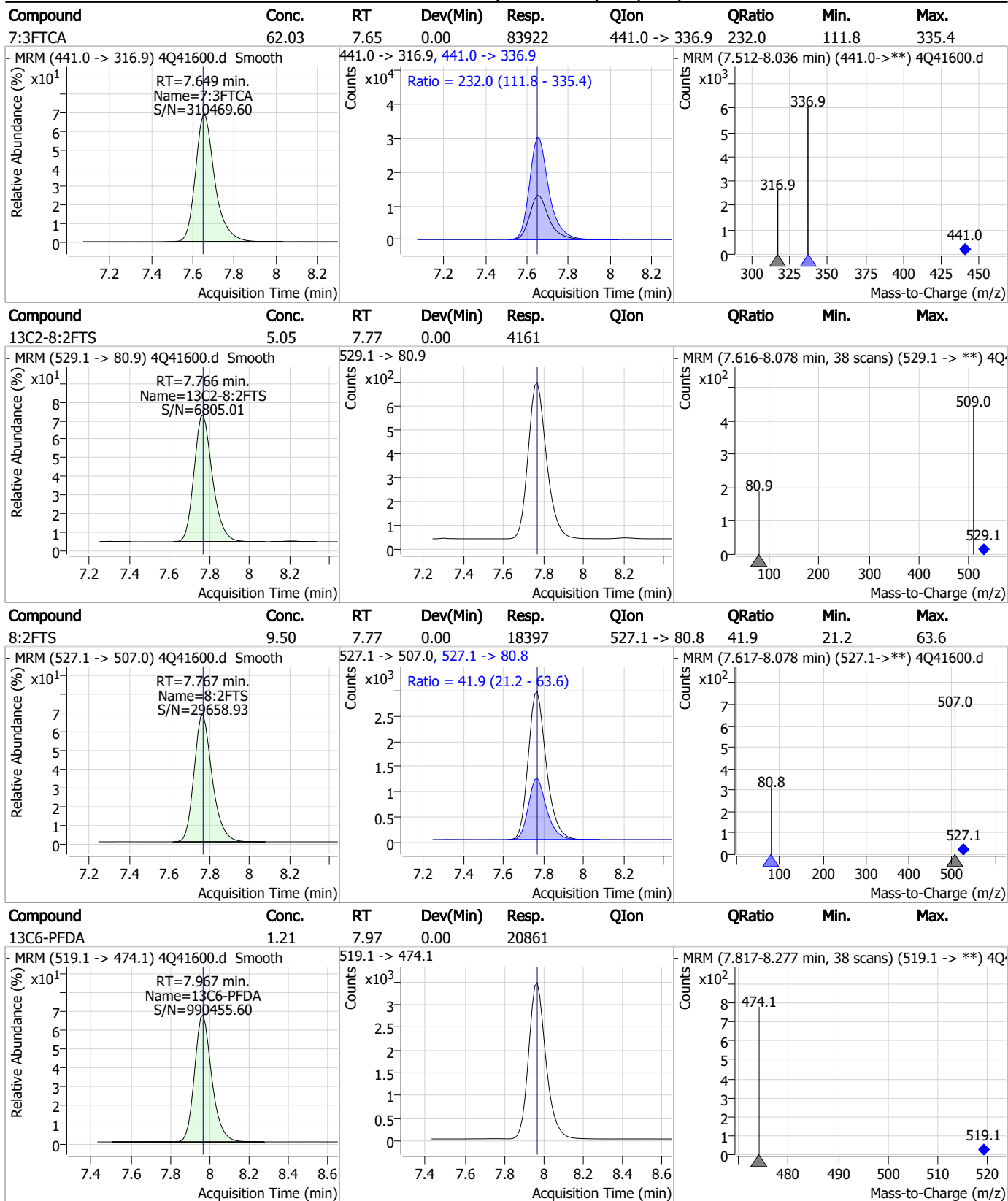
Perfluorinated Compounds by LC/MS/MS



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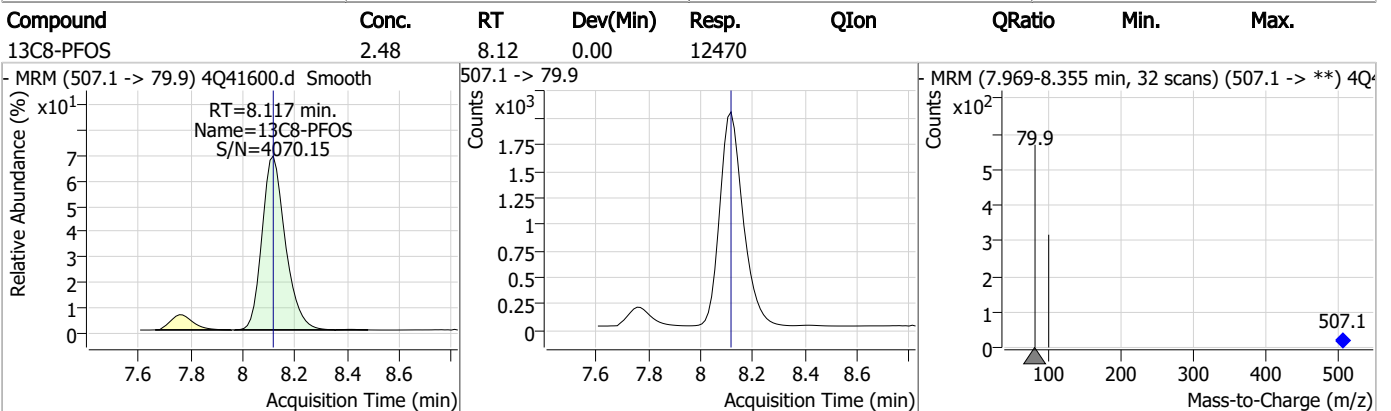
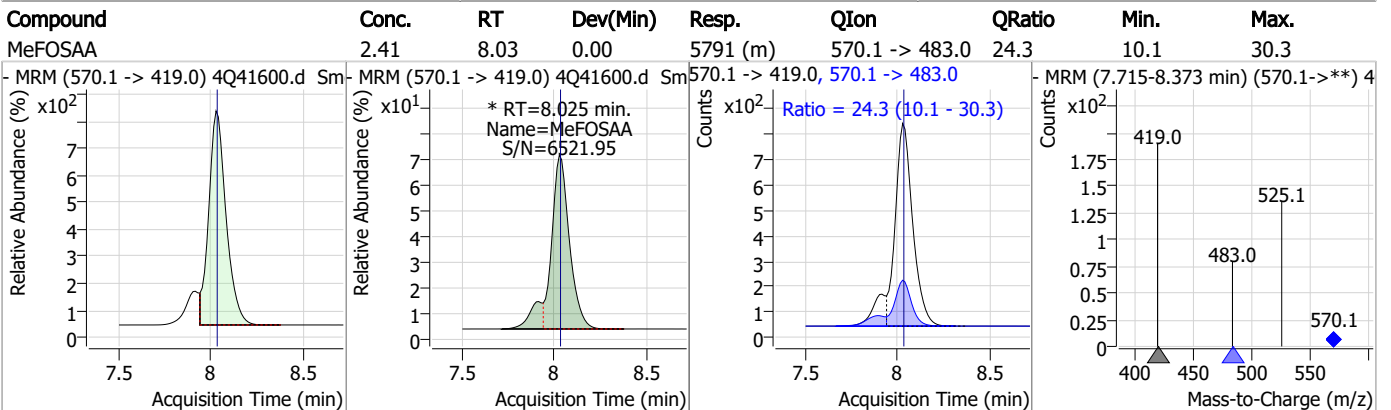
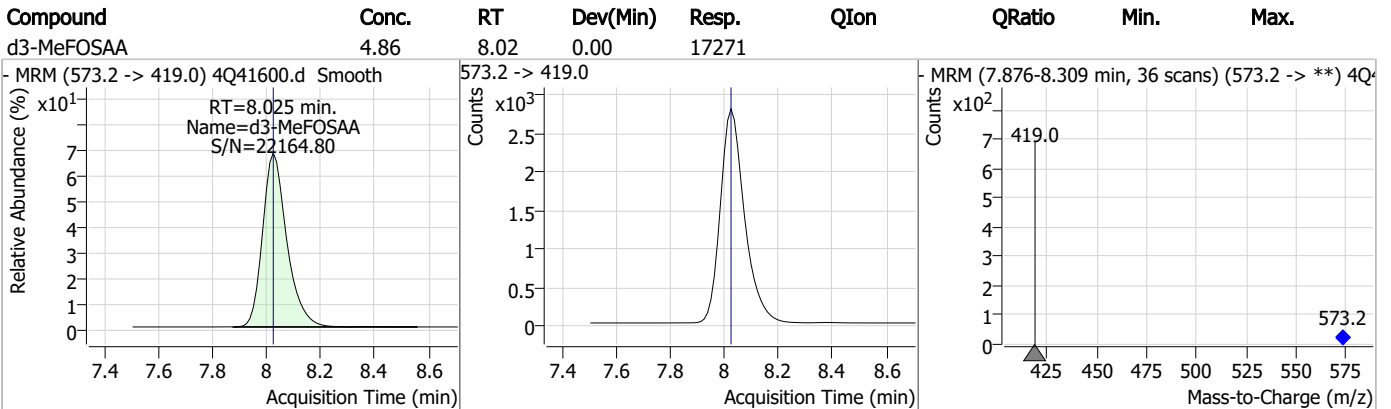
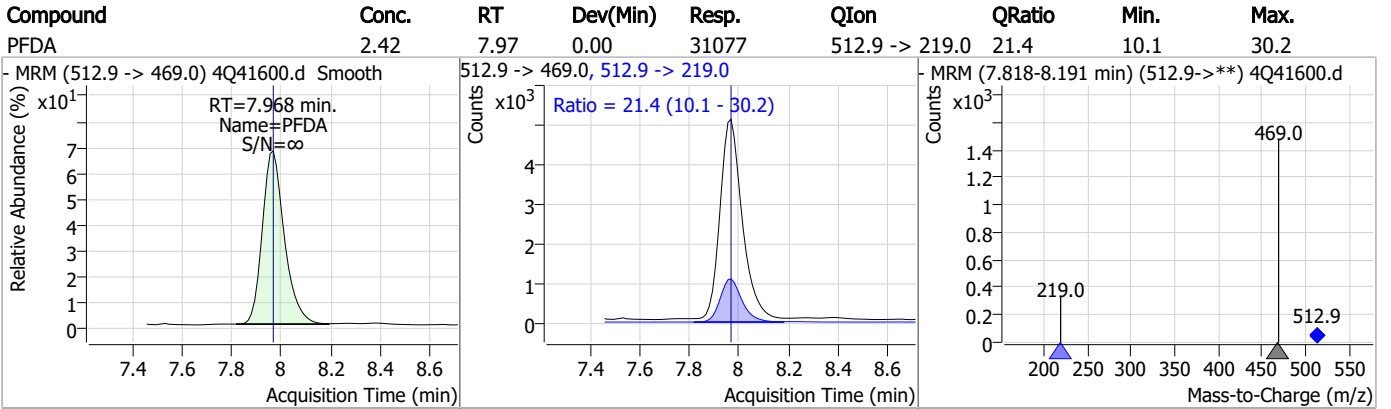
Perfluorinated Compounds by LC/MS/MS



7.6.14

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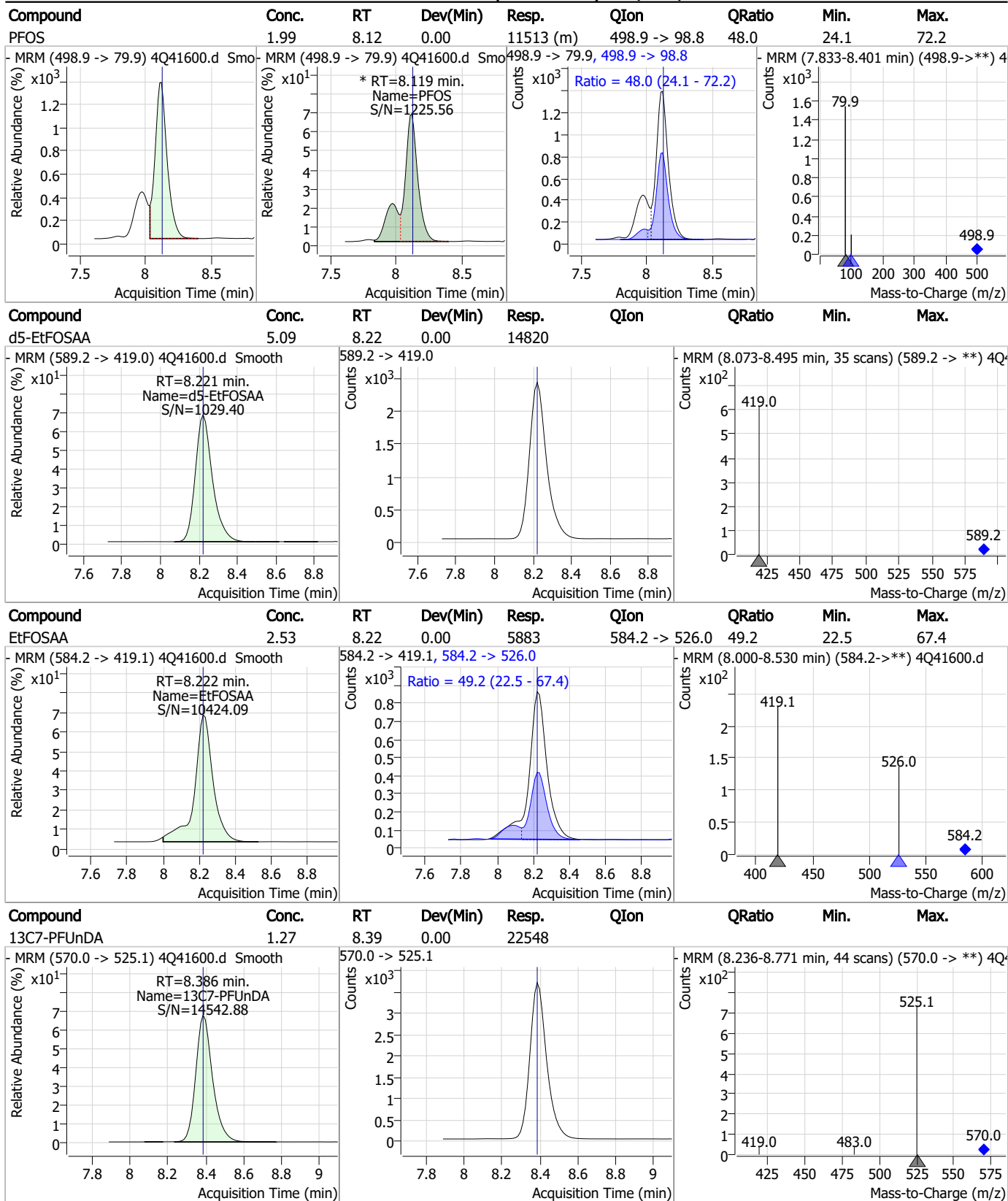
Perfluorinated Compounds by LC/MS/MS



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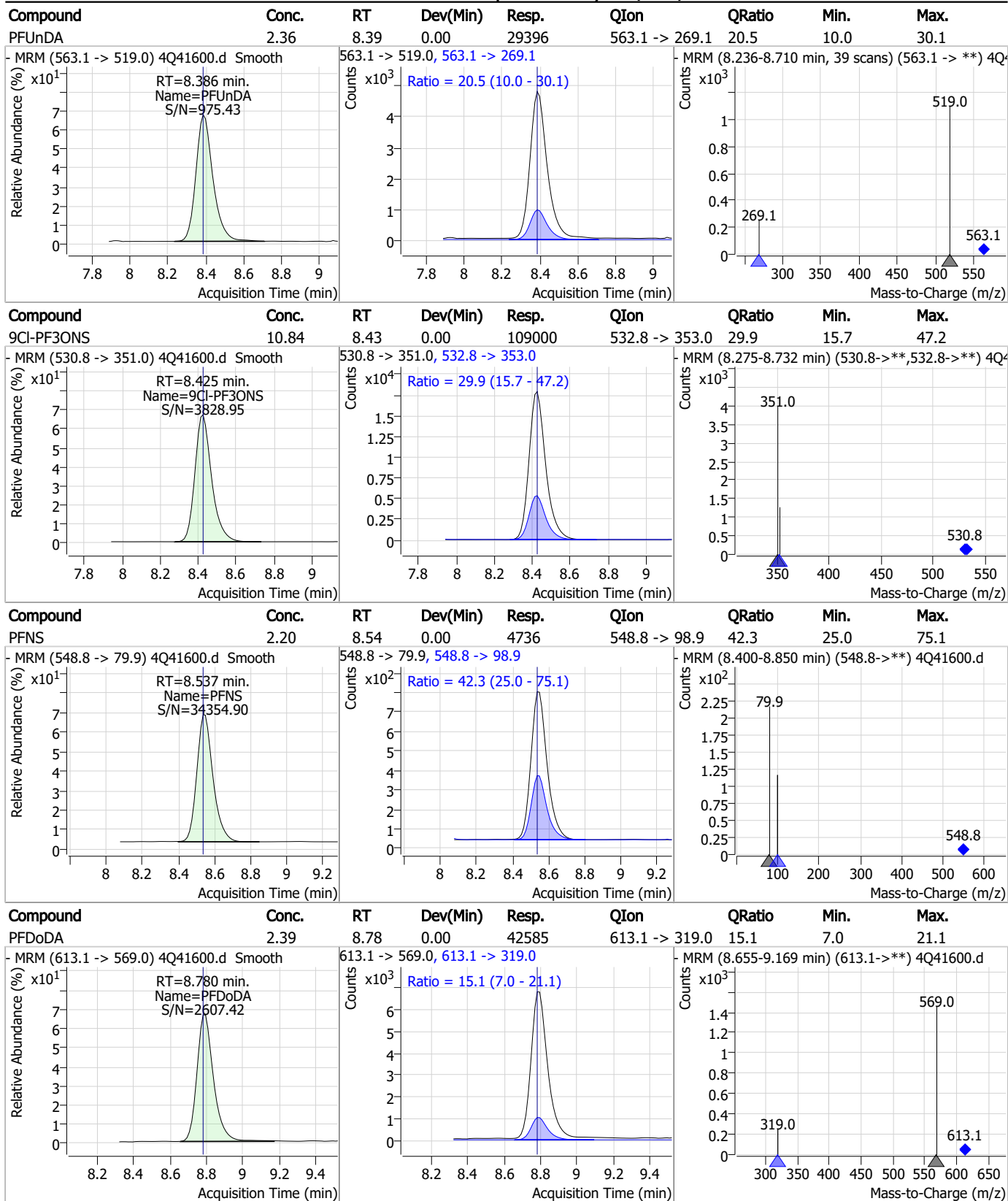
Perfluorinated Compounds by LC/MS/MS



7.6.14

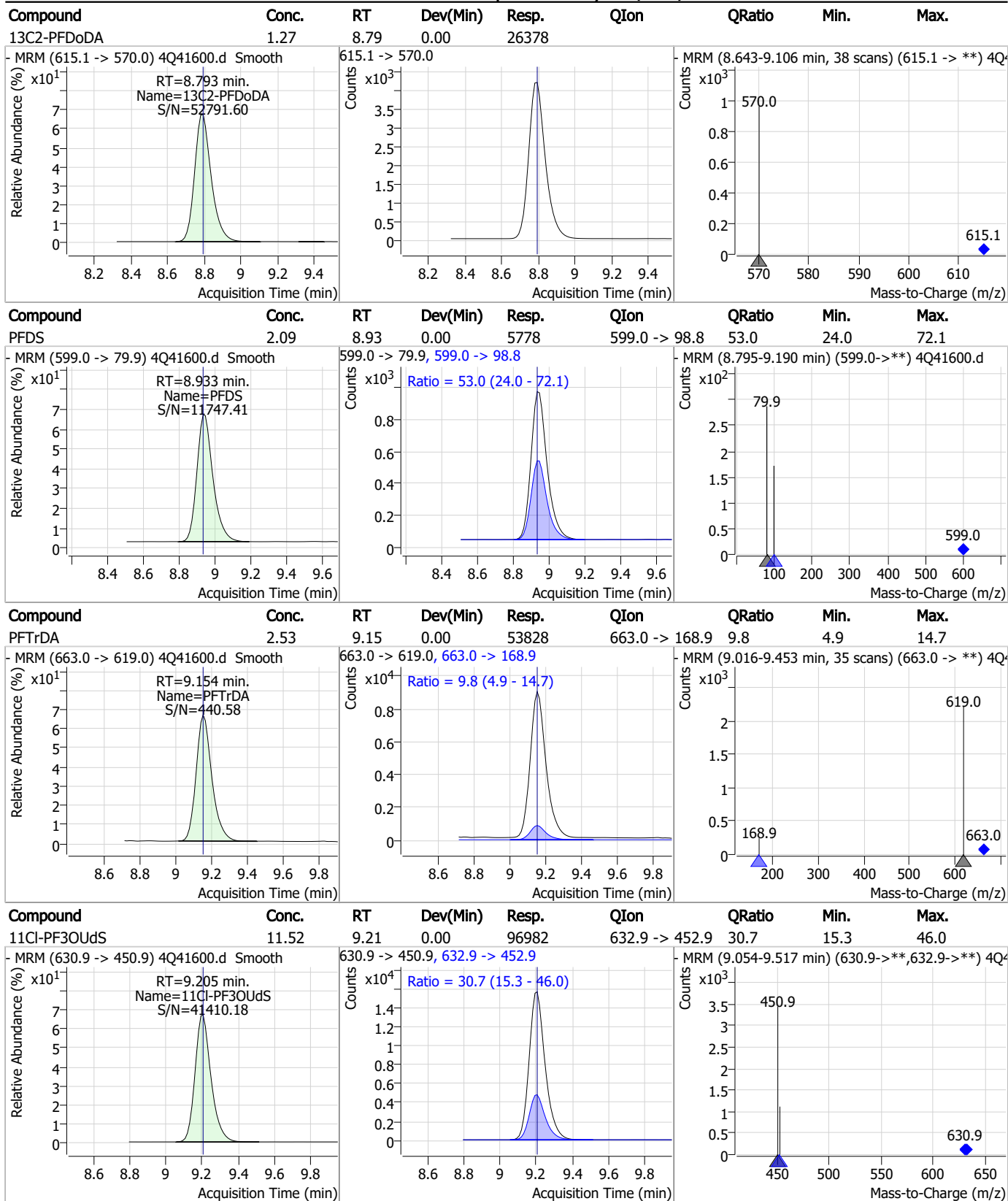
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Perfluorinated Compounds by LC/MS/MS



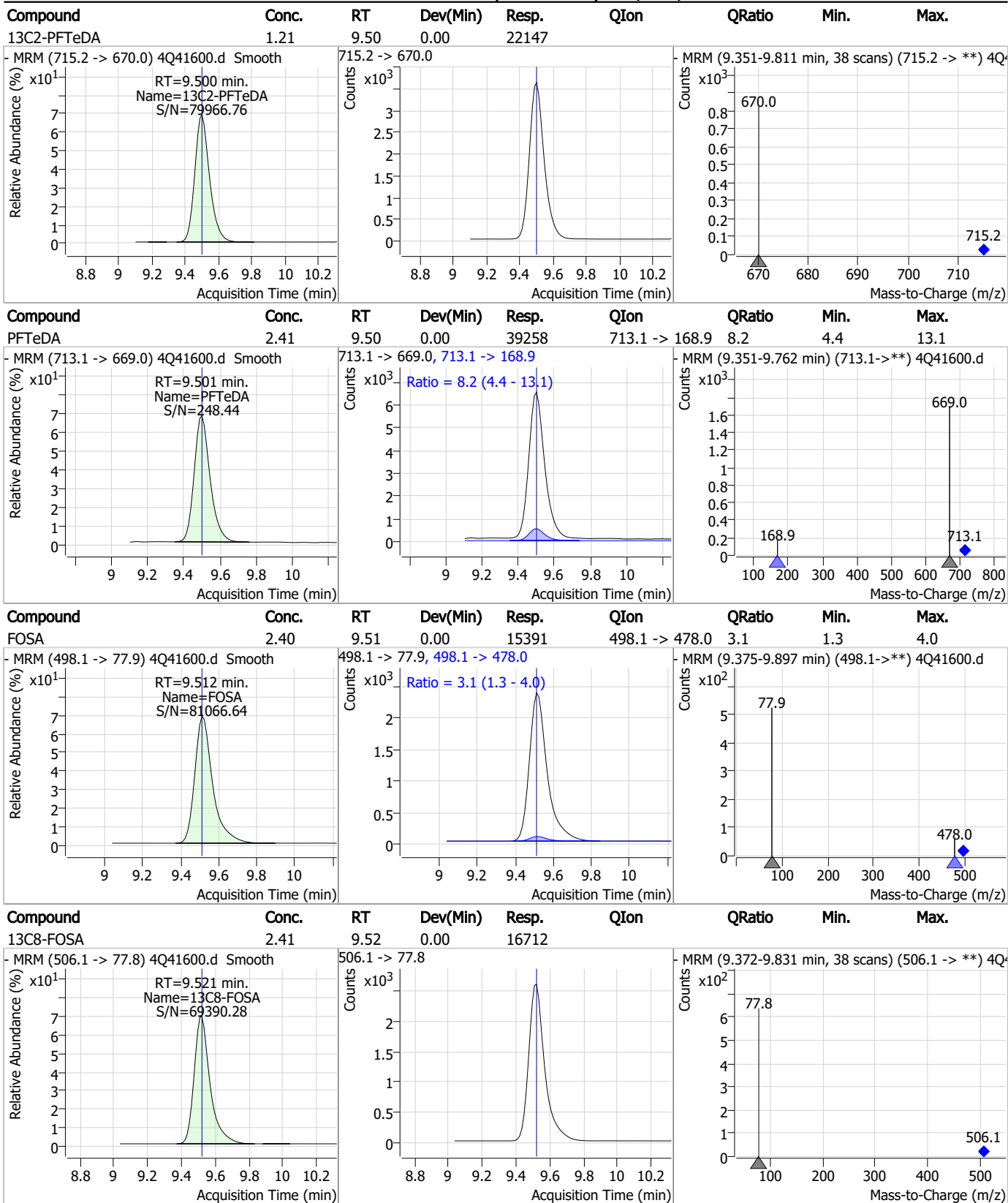
7.6.14
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Perfluorinated Compounds by LC/MS/MS



7.6.14
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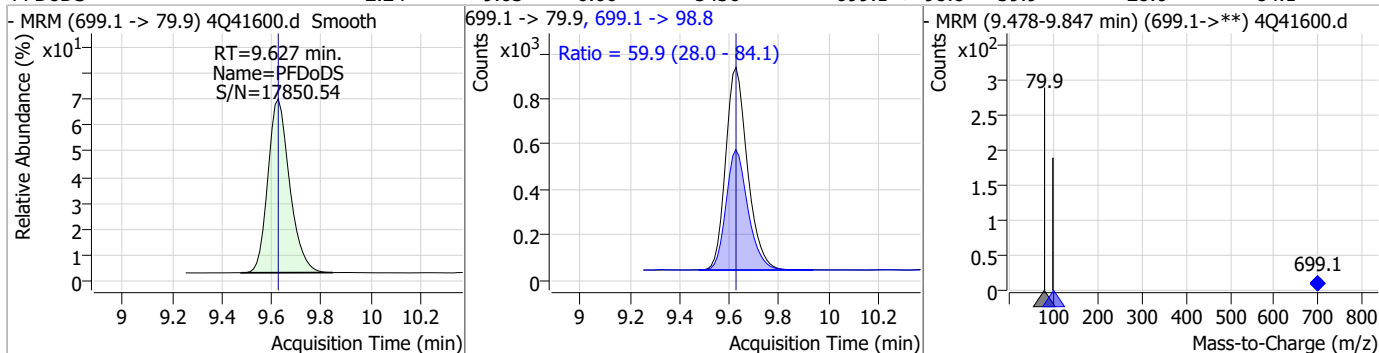
Perfluorinated Compounds by LC/MS/MS



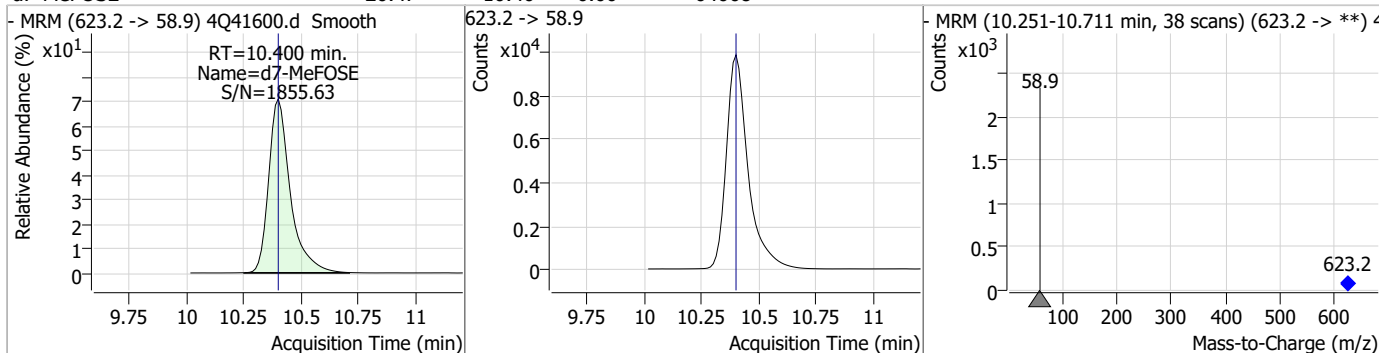
7.6.14
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Perfluorinated Compounds by LC/MS/MS

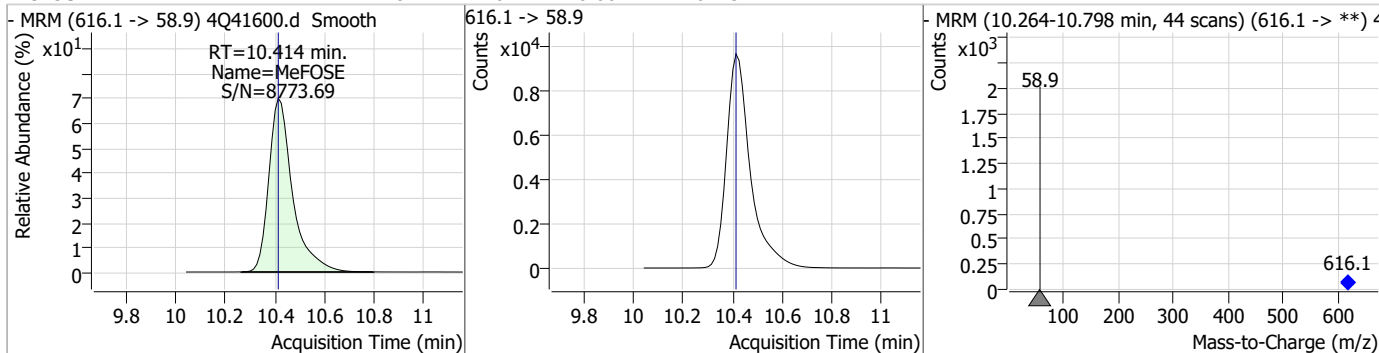
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	2.24	9.63	0.00	5436	699.1 -> 98.8	59.9	28.0	84.1



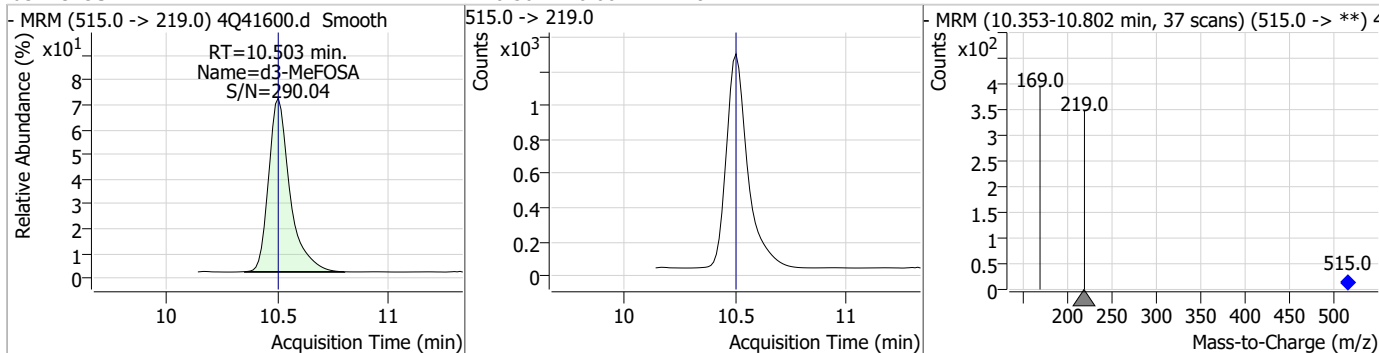
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.47	10.40	0.00	64668				



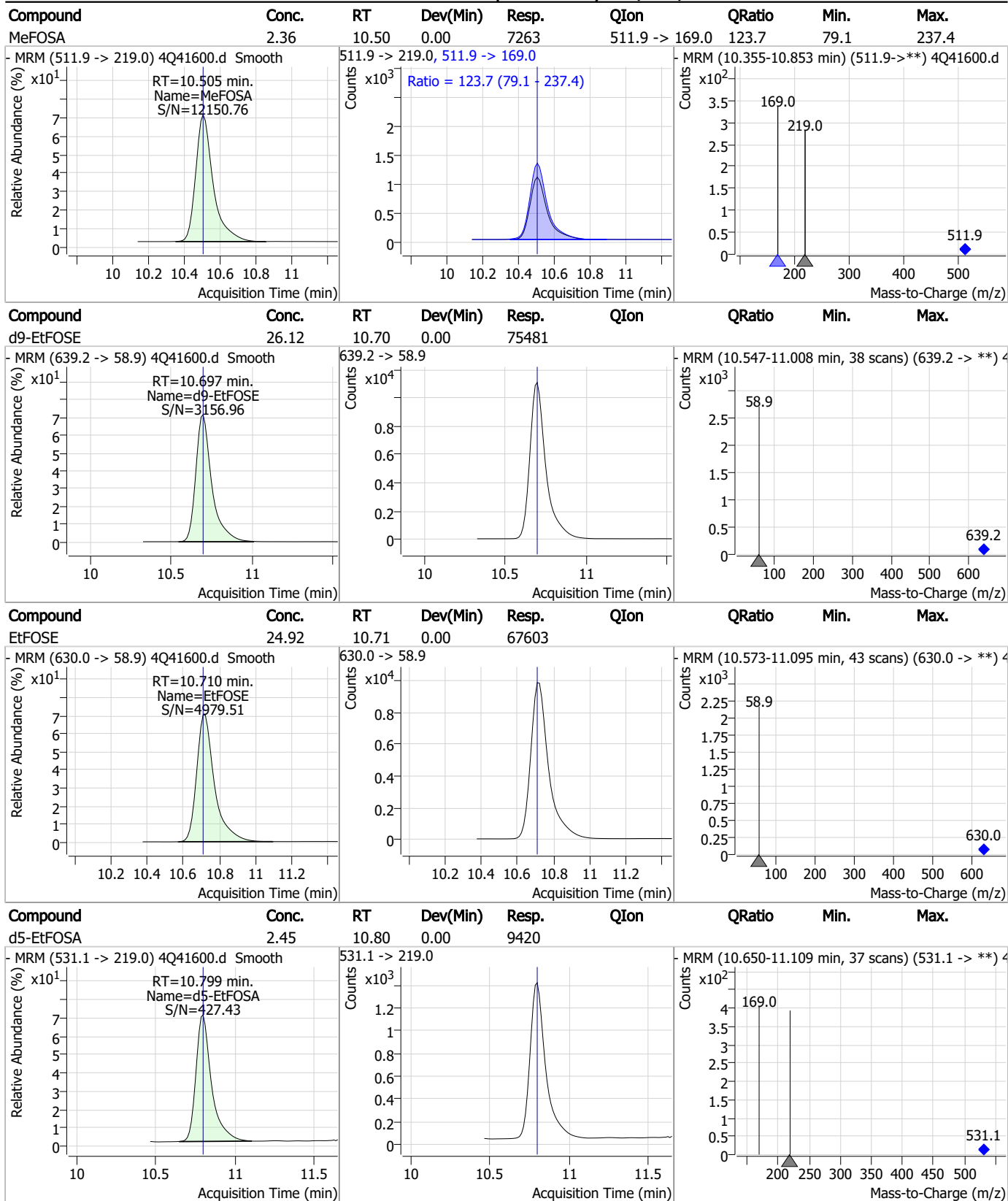
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	24.87	10.41	0.00	64152				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.47	10.50	0.00	8424				



Perfluorinated Compounds by LC/MS/MS



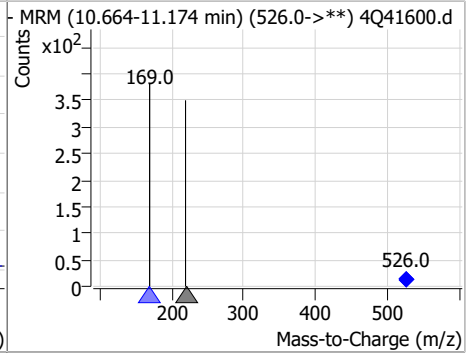
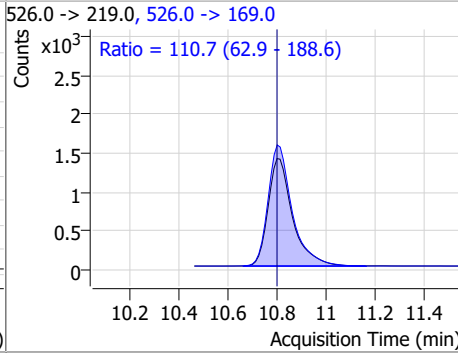
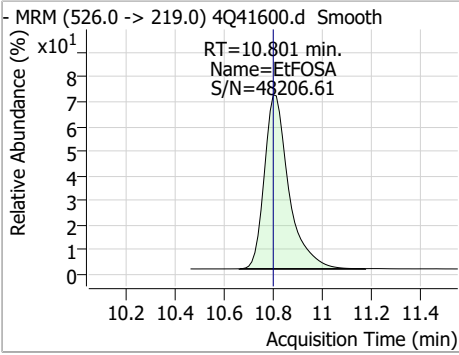
7.6.14

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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	2.47	10.80	0.00	9561	526.0 -> 169.0	110.7	62.9	188.6



7.6.14
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Manual Integration Approval Summary

Sample Number: S4Q595-CC589 Method: EPA DRAFT 1633
Lab FileID: 4Q41600.D Analyst approved: 03/03/23 15:05 Anna Ludwig
Injection Time: 03/02/23 18:35 Supervisor approved: 03/03/23 16:08 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.09	Split peak
MeFOSAA	2355-31-9		8.03	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.12	Split peak

7.6.14.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q41609.d
 Operator : marthav
 Acq. Method : 1633ful2l.m
 Acq. Date-Time : 3/2/2023 8:41:45 PM
 Sample Name : cc589-4
 Vial : P1-A5
 DA Method File : 1633_022423_S4Q589.quantmethod.xml
 Batch Name : s4q595.batch.bin
 Sample Information : op95682,S4Q595,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.152	216.8 -> 171.9	144724	10.00 µg/L	-0.037
M5-PFPeA	4.512	268.3 -> 223.0	88926	5.00 µg/L	-0.025
M5-PFHxA	5.509	318.0 -> 273.0	71955	2.50 µg/L	0.000
M4-PFHpA	6.355	367.1 -> 322.0	38169	2.50 µg/L	0.012
M8-PFOA	7.000	421.1 -> 376.0	41656	2.50 µg/L	0.012
M9-PFNA	7.521	472.1 -> 427.0	22486	1.25 µg/L	0.026
M6-PFDA	7.979	519.1 -> 474.1	21522	1.25 µg/L	0.012
M7-PFUnDA	8.423	570.0 -> 525.1	21804	1.25 µg/L	0.037
M2-PFDoDA	8.843	615.1 -> 570.0	25386	1.25 µg/L	0.050
M2-PFTeDA	9.587	715.2 -> 670.0	22347	1.25 µg/L	0.087
M8-FOSA	9.583	506.1 -> 77.8	17173	2.50 µg/L	0.062
M3-PFBS	5.464	302.1 -> 79.9	14972	2.50 µg/L	-0.013
M3-PFHxS	7.117	402.1 -> 79.9	8957	2.50 µg/L	0.025
M8-PFOS	8.142	507.1 -> 79.9	11945	2.50 µg/L	0.025
M2-4:2FTS	5.235	329.1 -> 80.9	1823	5.00 µg/L	0.000
M2-6:2FTS	6.774	429.1 -> 80.9	2546	5.00 µg/L	0.025
M2-8:2FTS	7.779	529.1 -> 80.9	3888	5.00 µg/L	0.012
M3-MeFOSAA	8.049	573.2 -> 419.0	17600	5.00 µg/L	0.025
M3-HFPO-DA	5.827	286.9 -> 168.9	34615	10.00 µg/L	0.000
M5-EtFOSAA	8.246	589.2 -> 419.0	15036	5.00 µg/L	0.025
M7-MeFOSE	10.499	623.2 -> 58.9	65075	25.00 µg/L	0.099
M9-EtFOSE	10.796	639.2 -> 58.9	74039	25.00 µg/L	0.100
M5-EtFOSA	10.911	531.1 -> 219.0	8977	2.50 µg/L	0.112
M3-MeFOSA	10.603	515.0 -> 219.0	8507	2.50 µg/L	0.100
13C4-PFOS	8.143	502.8 -> 79.9	12513	2.50 µg/L	0.025
13C3-PFBA	3.155	216.0 -> 172.0	85998	5.00 µg/L	-0.037
18O2-PFHxS	7.116	403.0 -> 83.9	6280	2.50 µg/L	0.025
13C4-PFOA	7.001	417.1 -> 372.0	50868	2.50 µg/L	0.012
13C2-PFDA	7.980	515.1 -> 470.1	19977	1.25 µg/L	0.012
13C5-PFNA	7.522	468.0 -> 423.0	26559	1.25 µg/L	0.026
13C2-PFHxA	5.510	315.1 -> 270.0	65724	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.235	329.1 -> 80.9	1823	4.98 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.7%		
13C2-6:2FTS	6.774	429.1 -> 80.9	2546	5.19 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.7%		
13C2-8:2FTS	7.779	529.1 -> 80.9	3888	4.89 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.7%		
13C2-PFDoDA	8.843	615.1 -> 570.0	25386	1.18 µg/L	0.050
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.8%		
13C2-PFTeDA	9.587	715.2 -> 670.0	22347	1.19 µg/L	0.087
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.0%		
13C3-PFBS	5.464	302.1 -> 79.9	14972	2.48 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C3-PFHxS	7.117	402.1 -> 79.9	8957	2.53 µg/L	0.025

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C4-PFBA	3.152	216.8 -> 171.9	144724	9.77 µg/L	-0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C4-PFHpA	6.355	367.1 -> 322.0	38169	2.60 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.9%	
13C5-PFHxA	5.509	318.0 -> 273.0	71955	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C5-PFPeA	4.512	268.3 -> 223.0	88926	4.81 µg/L	-0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.3%	
13C6-PFDA	7.979	519.1 -> 474.1	21522	1.21 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.9%	
13C7-PFUnDA	8.423	570.0 -> 525.1	21804	1.20 µg/L	0.037
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.8%	
13C8-FOSA	9.583	506.1 -> 77.8	17173	2.48 µg/L	0.062
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C8-PFOA	7.000	421.1 -> 376.0	41656	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C8-PFOS	8.142	507.1 -> 79.9	11945	2.38 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.0%	
13C9-PFNA	7.521	472.1 -> 427.0	22486	1.21 µg/L	0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.1%	
d3-MeFOSAA	8.049	573.2 -> 419.0	17600	4.96 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C3-HFPO-DA	5.827	286.9 -> 168.9	34615	8.54 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 85.4%	
d3-MeFOSA	10.603	515.0 -> 219.0	8507	2.49 µg/L	0.100
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
d5-EtFOSAA	8.246	589.2 -> 419.0	15036	5.16 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.3%	
d7-MeFOSE	10.499	623.2 -> 58.9	65075	26.64 µg/L	0.099
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 106.6%	
d9-EtFOSE	10.796	639.2 -> 58.9	74039	25.63 µg/L	0.100
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.5%	
d5-EtFOSA	10.911	531.1 -> 219.0	8977	2.34 µg/L	0.112
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.5%	
Target Compounds					QValue
4:2FTS	5.236	327.1 -> 307.0	24501	10.09 µg/L	97
		327.1 -> 80.9	10663		
6:2FTS	6.774	427.1 -> 407.0	17842	9.30 µg/L	98
		427.1 -> 80.9	7833		
8:2FTS	7.779	527.1 -> 507.0	19076	10.54 µg/L	98
		527.1 -> 80.8	7871		
EtFOSAA	8.259	584.2 -> 419.1	5913	2.51 µg/L	98
		584.2 -> 526.0	2744		
FOSA	9.574	498.1 -> 77.9	15420	2.34 µg/L	98
		498.1 -> 478.0	500		
MeFOSAA	8.050	570.1 -> 419.0	6084	2.48 µg/L	97
		570.1 -> 483.0	1305		
PFBA	3.158	212.8 -> 168.9	31570	9.23 µg/L	100
PFBS	5.465	298.7 -> 79.9	12474	2.09 µg/L	100
		298.7 -> 98.8	4770		
PFDA	7.980	512.9 -> 469.0	30395	2.29 µg/L	99
		512.9 -> 219.0	6226		
PFDODA	8.844	613.1 -> 569.0	43289	2.53 µg/L	99
		613.1 -> 319.0	6005		
PFDS	9.007	599.0 -> 79.9	6430	2.43 µg/L	98

7.6.15
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	3000			
PFHpA	6.355	363.1 -> 319.0	48849	2.42	µg/L	99
		363.1 -> 169.0	8664			
PFHpS	7.661	449.0 -> 79.9	8088	2.31	µg/L	96
		449.0 -> 98.9	4203			
PFHxA	5.512	313.0 -> 269.0	53884	2.13	µg/L	100
		313.0 -> 118.9	1624			
PFHxS	7.118	398.7 -> 79.9	6785	2.04	µg/L	m 96
		398.7 -> 98.9	3496			
PFNA	7.522	463.0 -> 419.0	30847	2.42	µg/L	96
		463.0 -> 219.0	7694			
PFNS	8.587	548.8 -> 79.9	4557	2.21	µg/L	94
		548.8 -> 98.9	2477			
PFOA	7.001	413.0 -> 369.0	47555	2.43	µg/L	99
		413.0 -> 169.0	9710			
PFOS	8.143	498.9 -> 79.9	11739	2.11	µg/L	m 96
		498.9 -> 98.8	5972			
PFPeA	4.514	263.0 -> 219.0	86647	4.79	µg/L	100
PFPeS	6.419	349.1 -> 79.9	6842	2.33	µg/L	98
		349.1 -> 98.9	3038			
PFTeDA	9.588	713.1 -> 669.0	38182	2.32	µg/L	100
		713.1 -> 168.9	3274			
PFTrDA	9.228	663.0 -> 619.0	52900	2.58	µg/L	100
		663.0 -> 168.9	5238			
PFUnDA	8.423	563.1 -> 519.0	28486	2.37	µg/L	100
		563.1 -> 269.1	5733			
11CI-PF3OUdS	9.281	630.9 -> 450.9	95773	11.27	µg/L	100
		632.9 -> 452.9	29436			
9CI-PF3ONS	8.463	530.8 -> 351.0	104142	10.26	µg/L	97
		532.8 -> 353.0	31023			
ADONA	6.619	376.9 -> 250.9	219544	11.04	µg/L	100
		376.9 -> 84.8	59179			
HFPO-DA	5.828	284.9 -> 168.9	27480	9.72	µg/L	99
		284.9 -> 184.9	3123			
3:3FTCA	4.154	241.0 -> 177.0	11042	11.84	µg/L	99
		241.0 -> 117.0	1037			
5:3FTCA	6.296	341.0 -> 237.1	225928	61.80	µg/L	99
		341.0 -> 217.0	159295			
7:3FTCA	7.661	441.0 -> 316.9	83758	61.33	µg/L	94
		441.0 -> 336.9	195357			
EtFOSA	10.913	526.0 -> 219.0	9534	2.58	µg/L	87
		526.0 -> 169.0	10545			
EtFOSE	10.822	630.0 -> 58.9	66196	24.88	µg/L	100
MeFOSA	10.604	511.9 -> 219.0	7602	2.45	µg/L	66
		511.9 -> 169.0	8681			
MeFOSE	10.512	616.1 -> 58.9	63219	24.36	µg/L	100
PFDoDS	9.714	699.1 -> 79.9	5630	2.42	µg/L	97
		699.1 -> 98.8	3054			
NFDHA	5.415	295.0 -> 201.0	4339	4.73	µg/L	94
		295.0 -> 84.9	1202			
PFMBA	4.854	279.0 -> 85.1	48963	4.69	µg/L	100
PFMPA	3.752	229.0 -> 84.9	40591	4.50	µg/L	100
PFEESA	5.934	314.8 -> 134.9	75047	4.20	µg/L	99
		314.8 -> 82.9	2757			

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

7.6.15
7

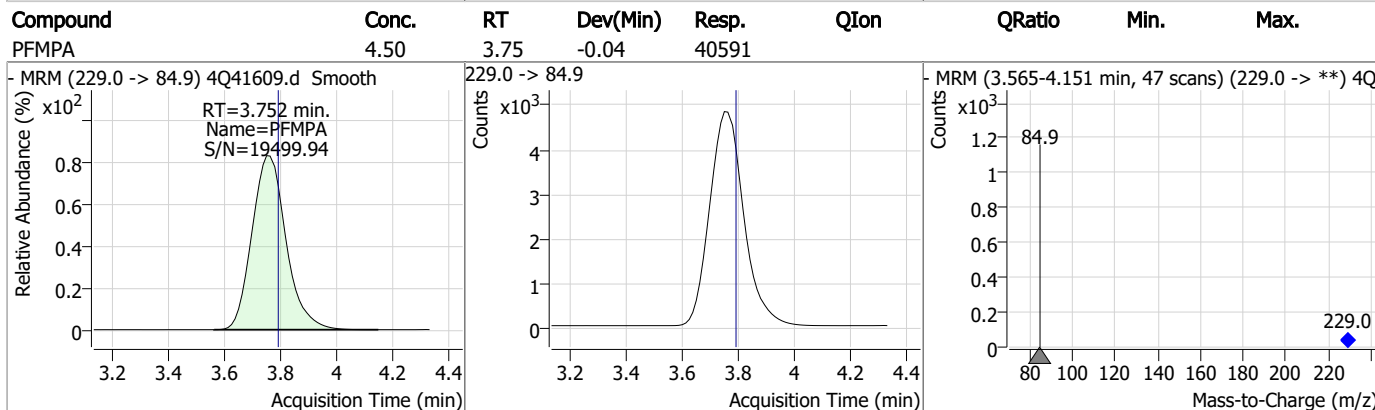
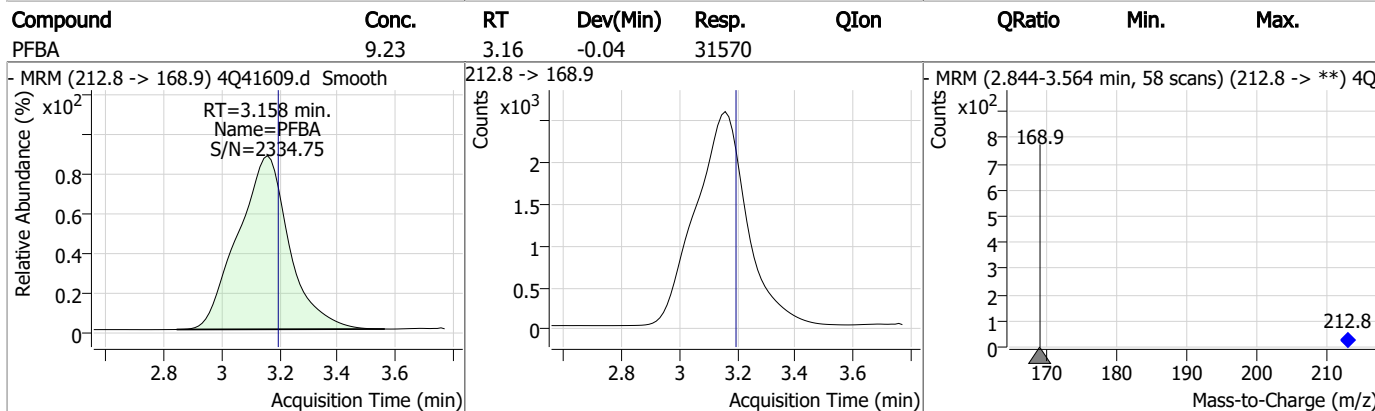
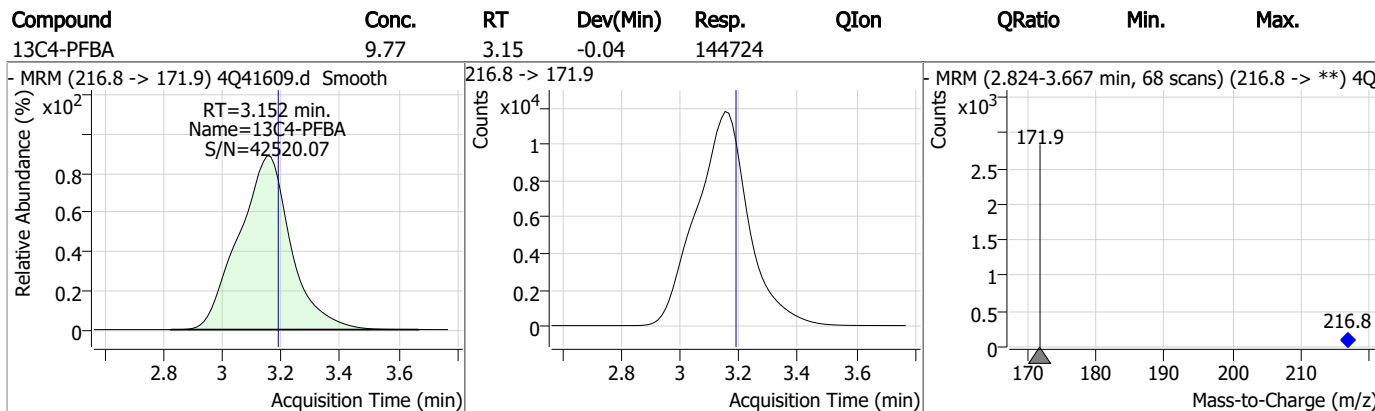
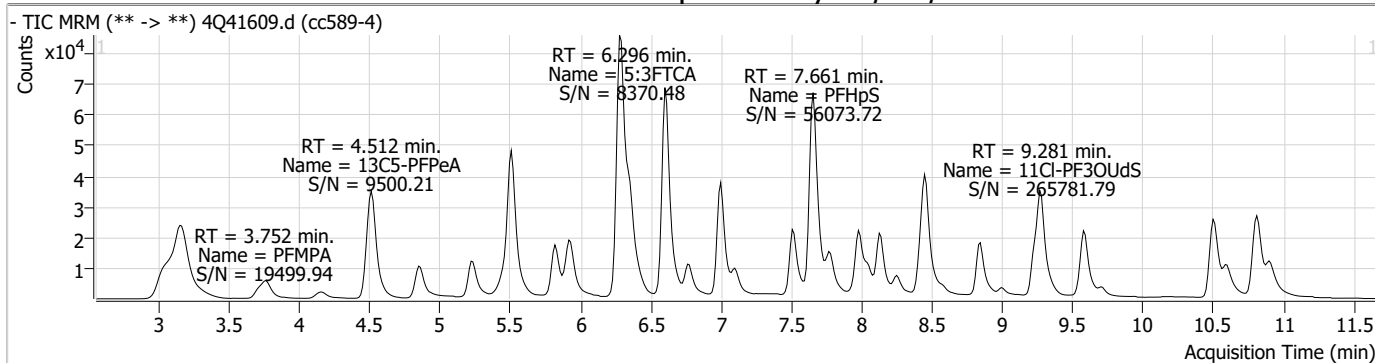
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.6.15

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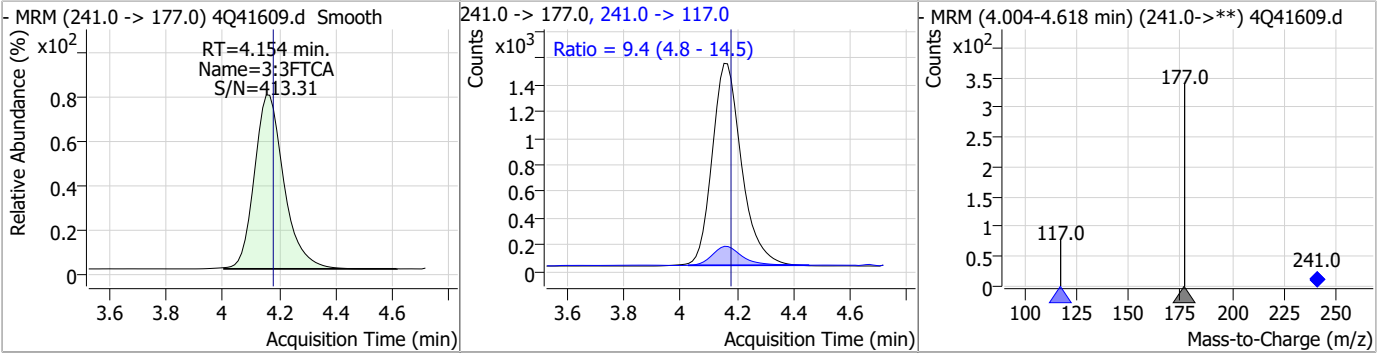
Perfluorinated Compounds by LC/MS/MS



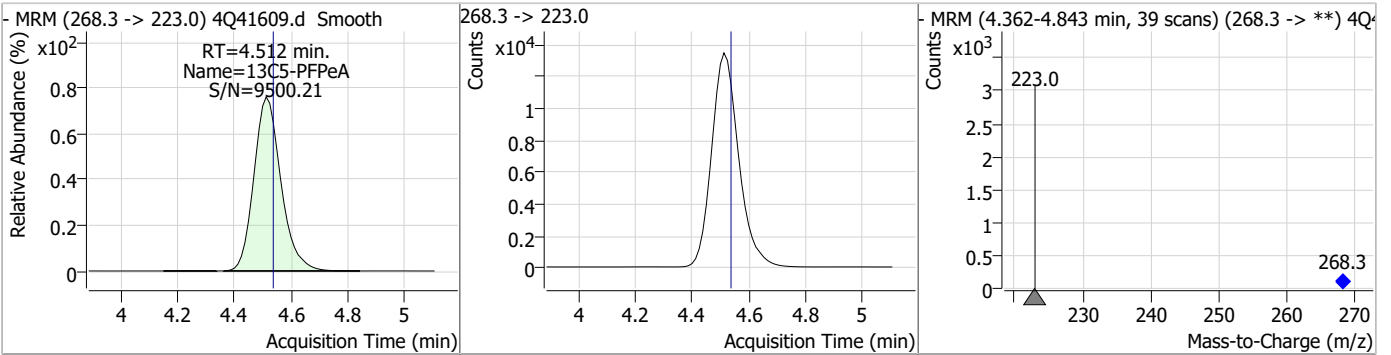
7.6.15
7

Perfluorinated Compounds by LC/MS/MS

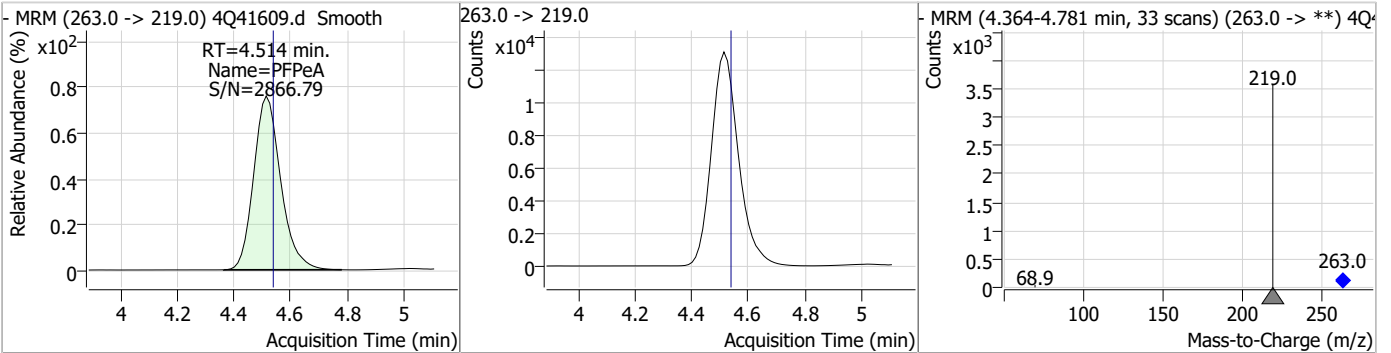
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	11.84	4.15	-0.02	11042	241.0 -> 117.0	9.4	4.8	14.5



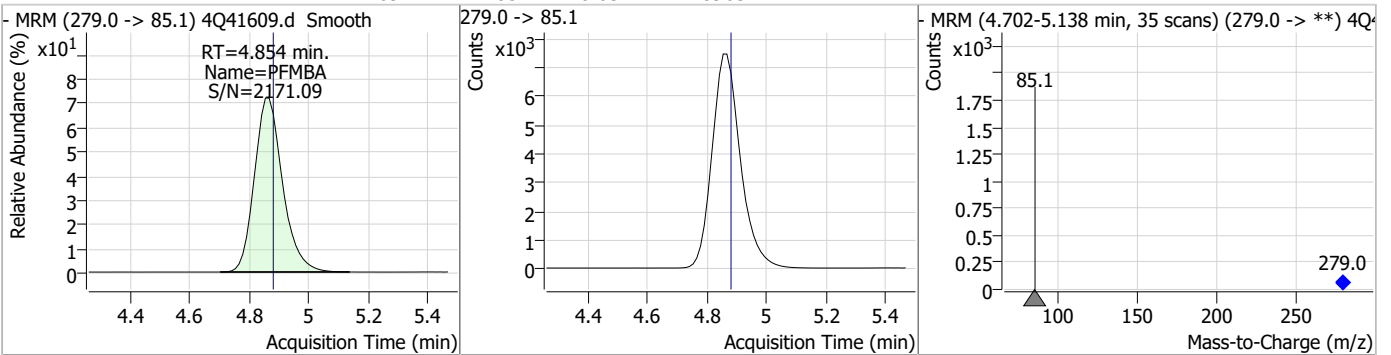
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.81	4.51	-0.02	88926				



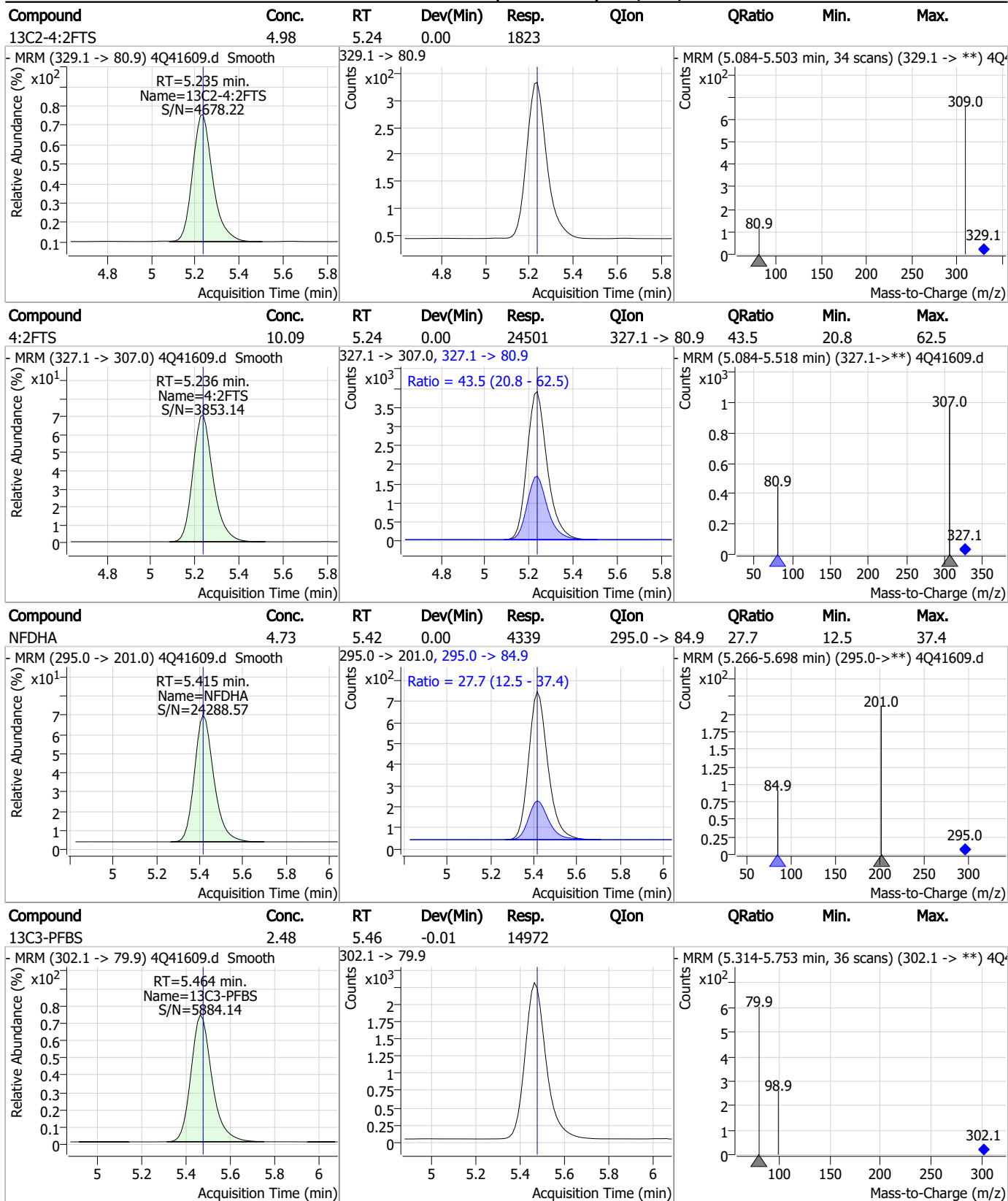
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.79	4.51	-0.02	86647				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.69	4.85	-0.03	48963				



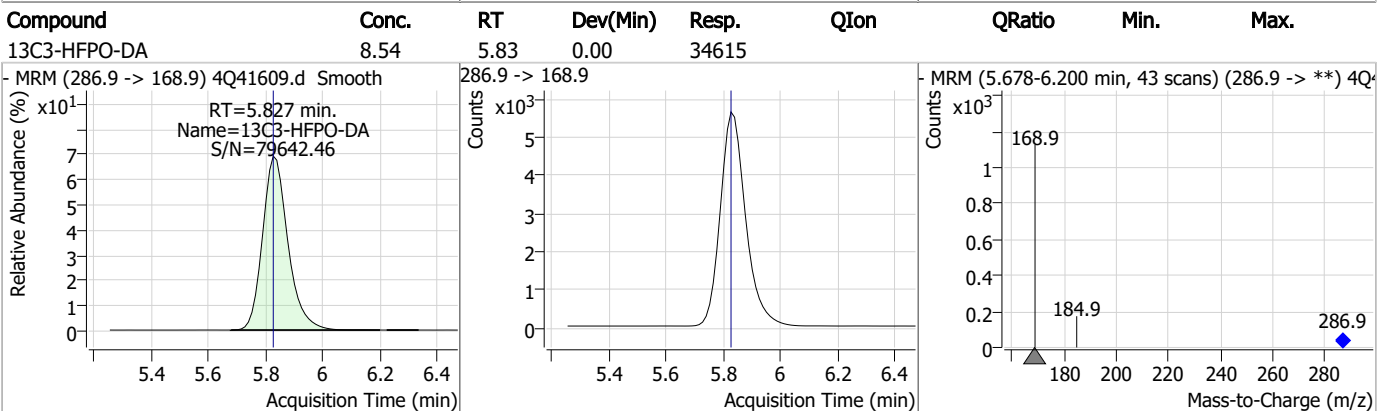
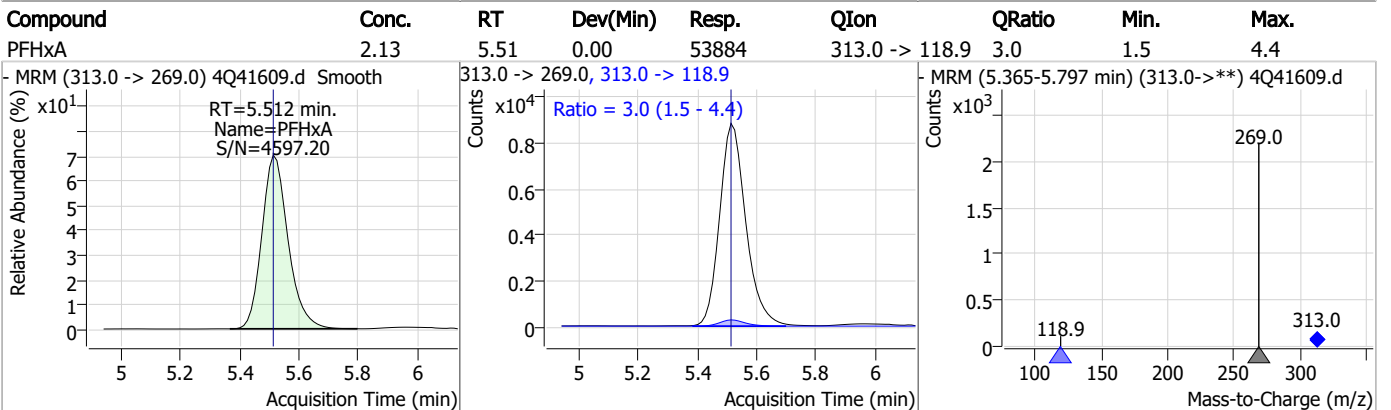
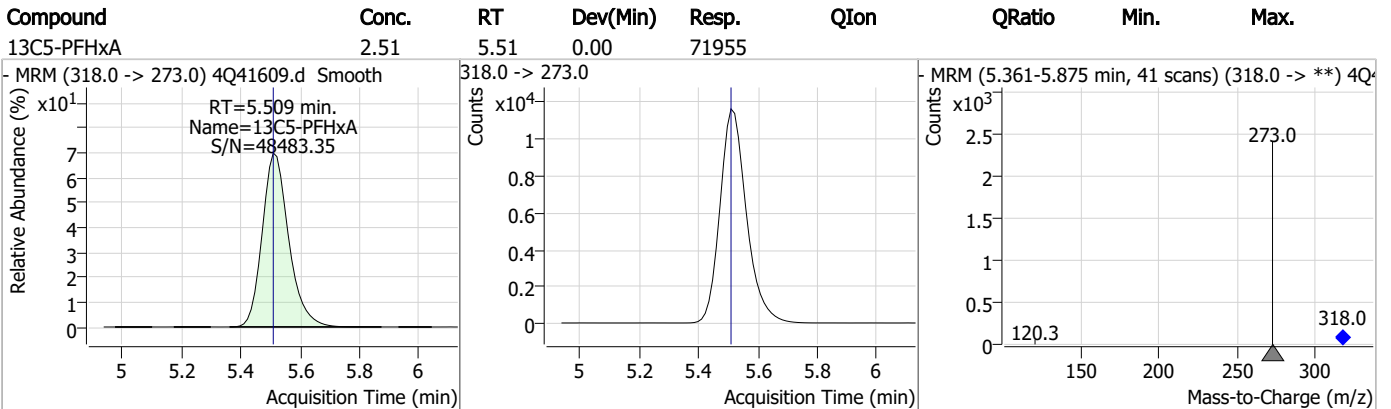
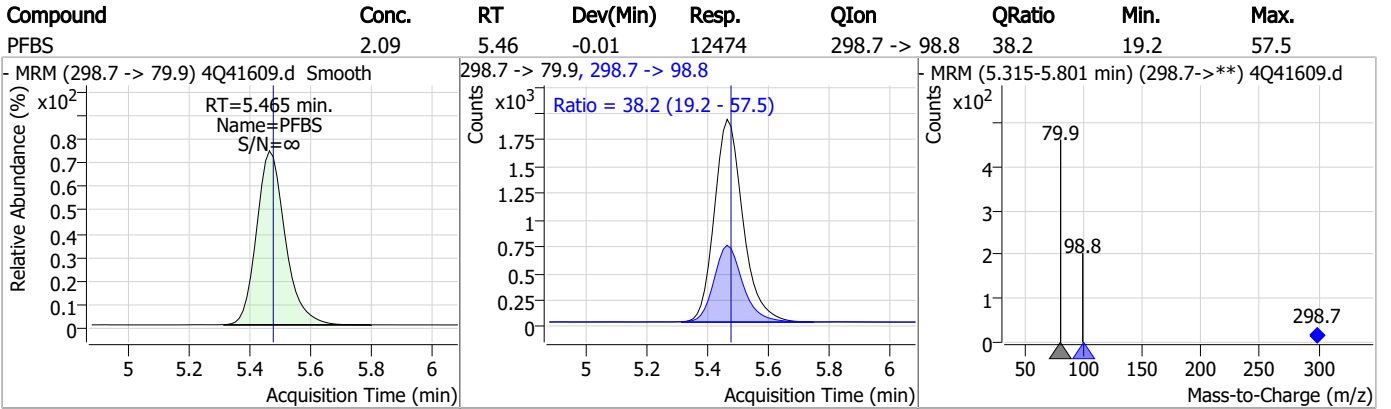
Perfluorinated Compounds by LC/MS/MS



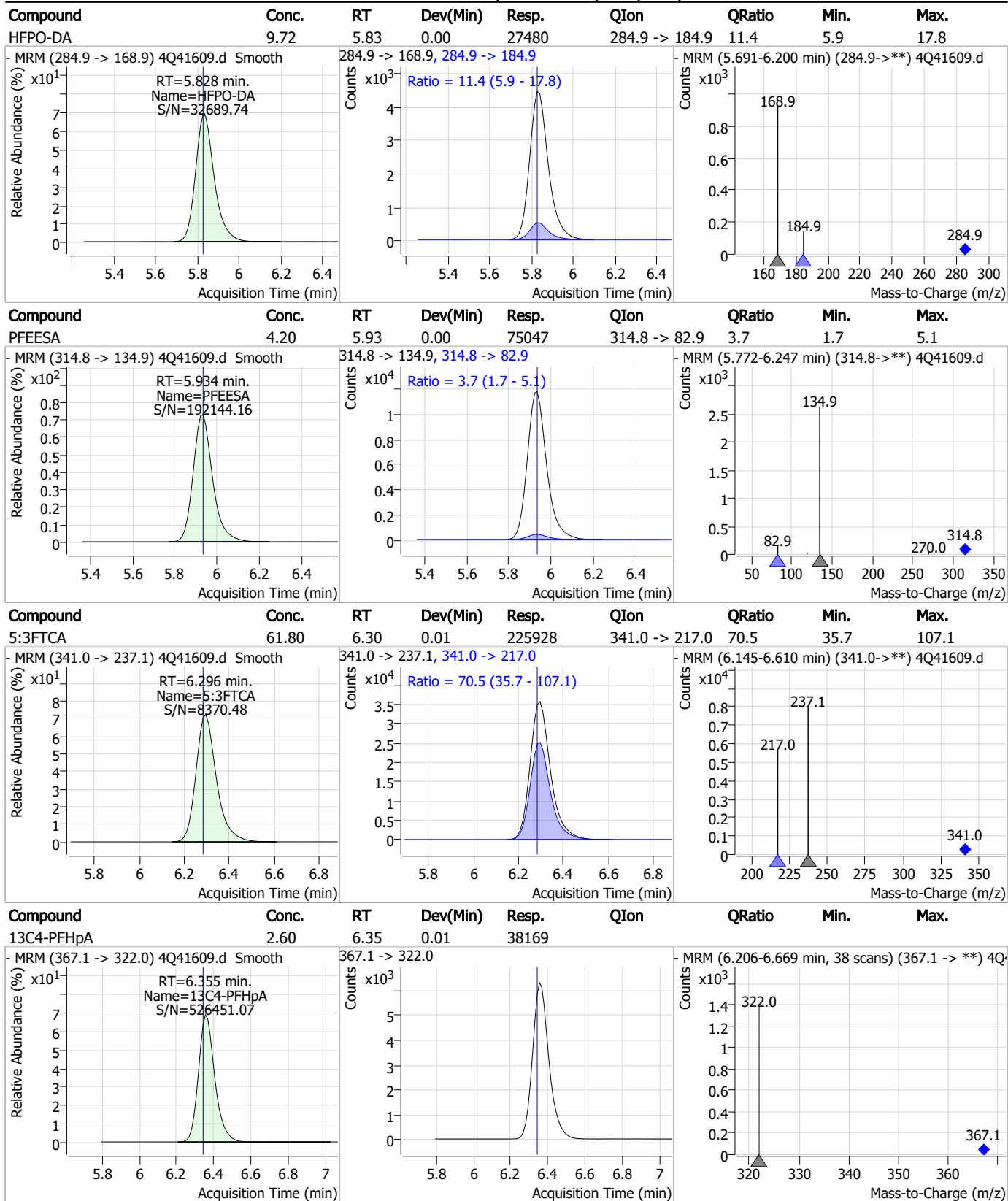
7.6.15

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Perfluorinated Compounds by LC/MS/MS

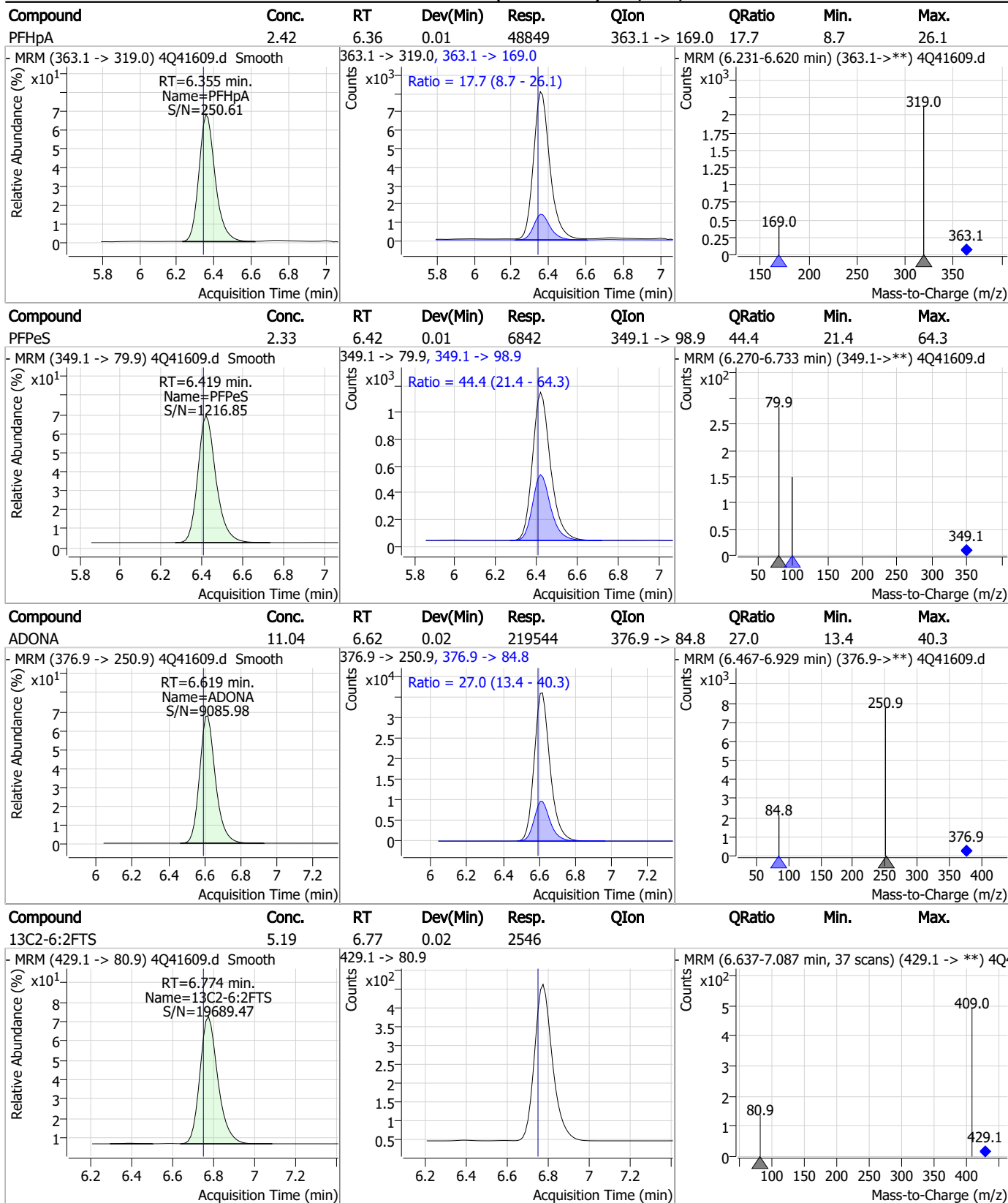


Perfluorinated Compounds by LC/MS/MS



7.6.15
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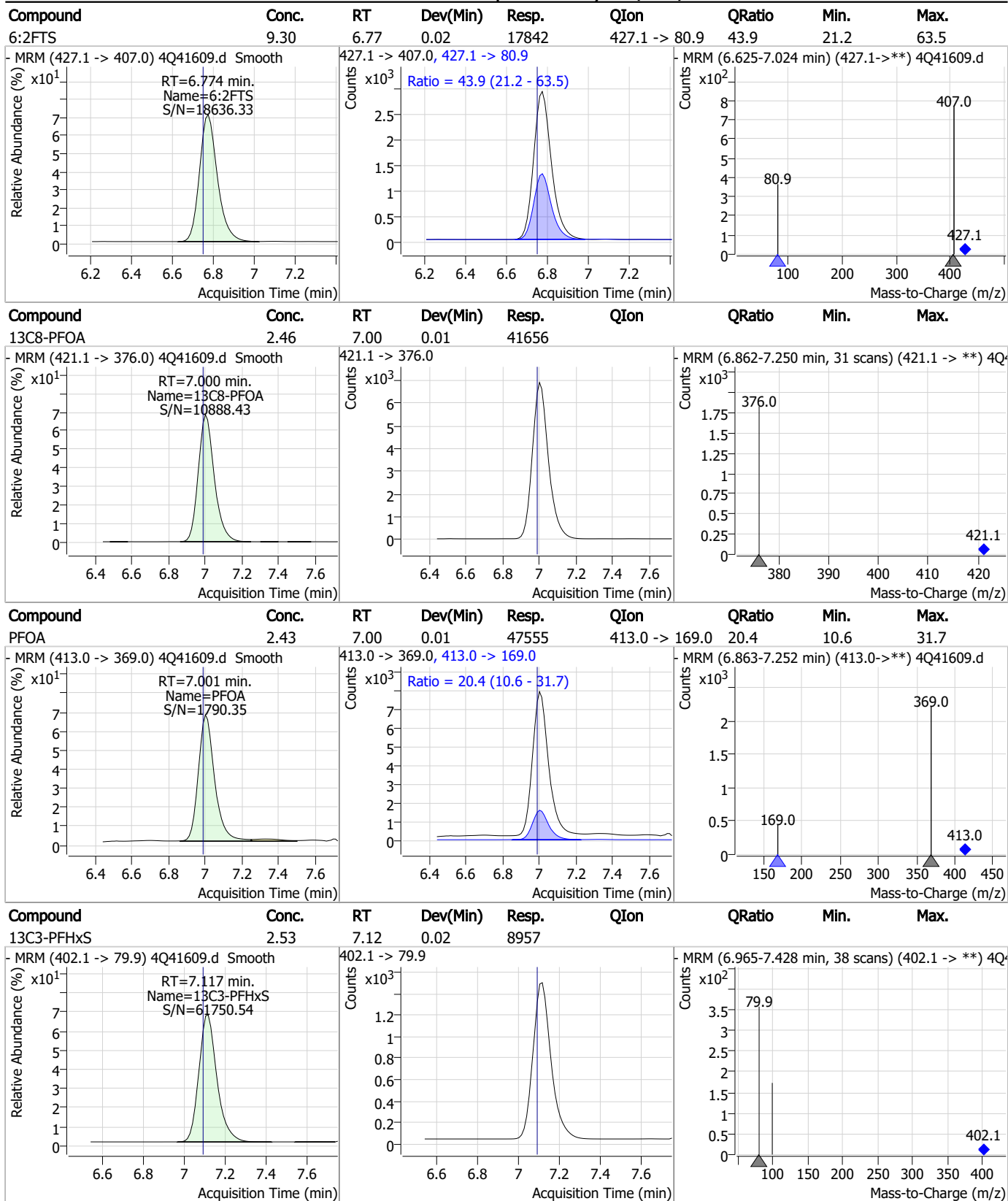
Perfluorinated Compounds by LC/MS/MS



7.6.15

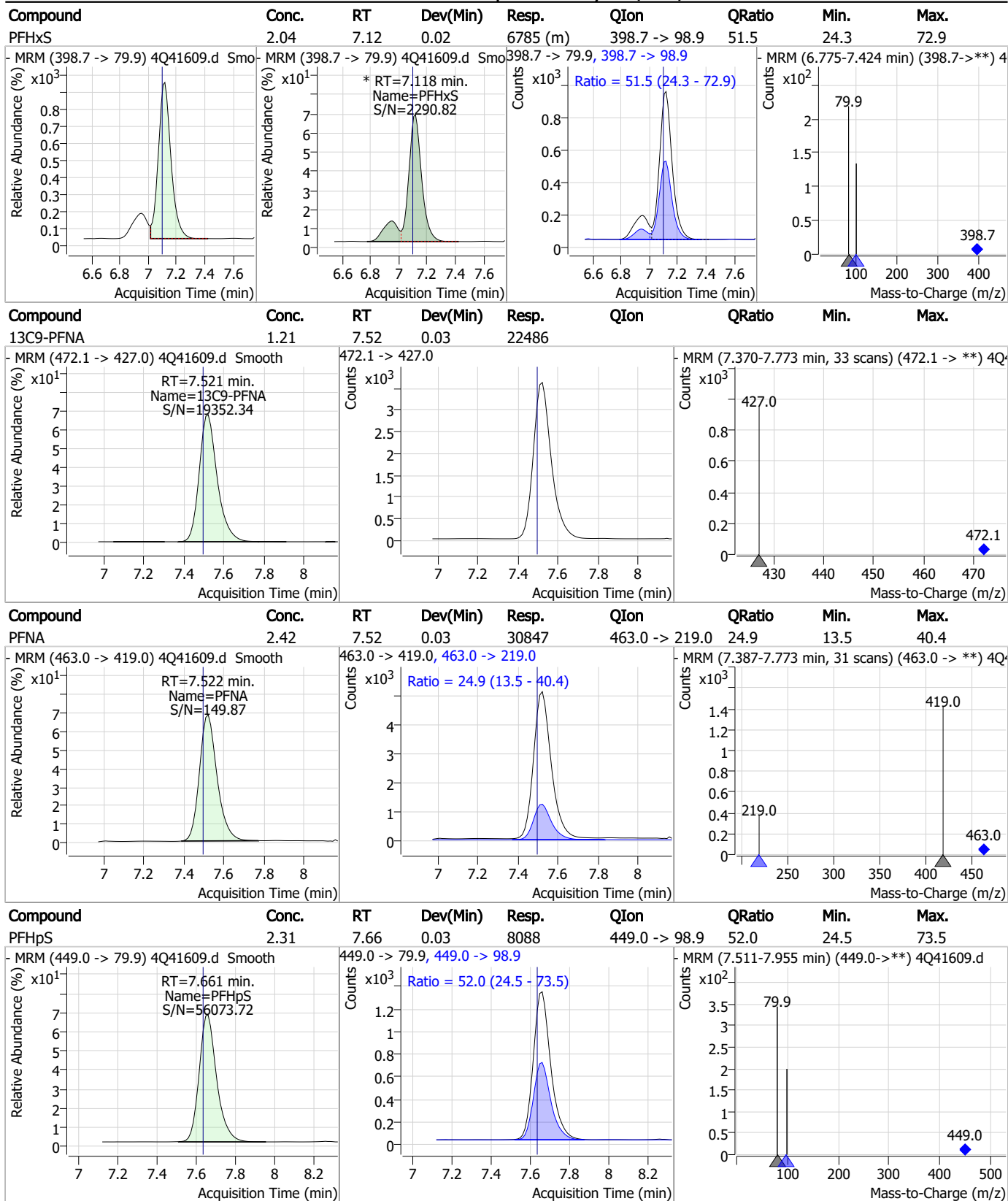
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Perfluorinated Compounds by LC/MS/MS



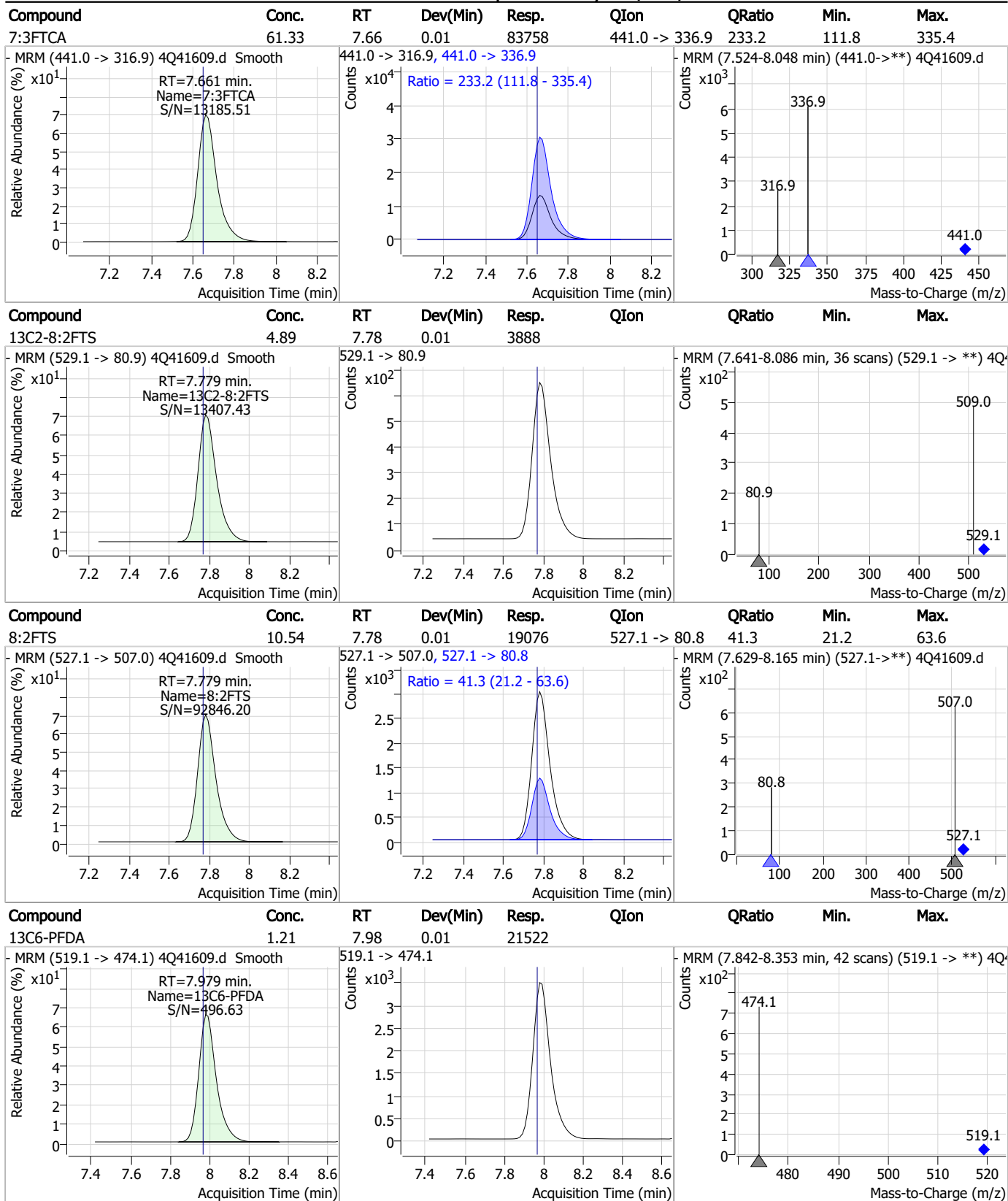
7.6.15

Perfluorinated Compounds by LC/MS/MS



7.6.15

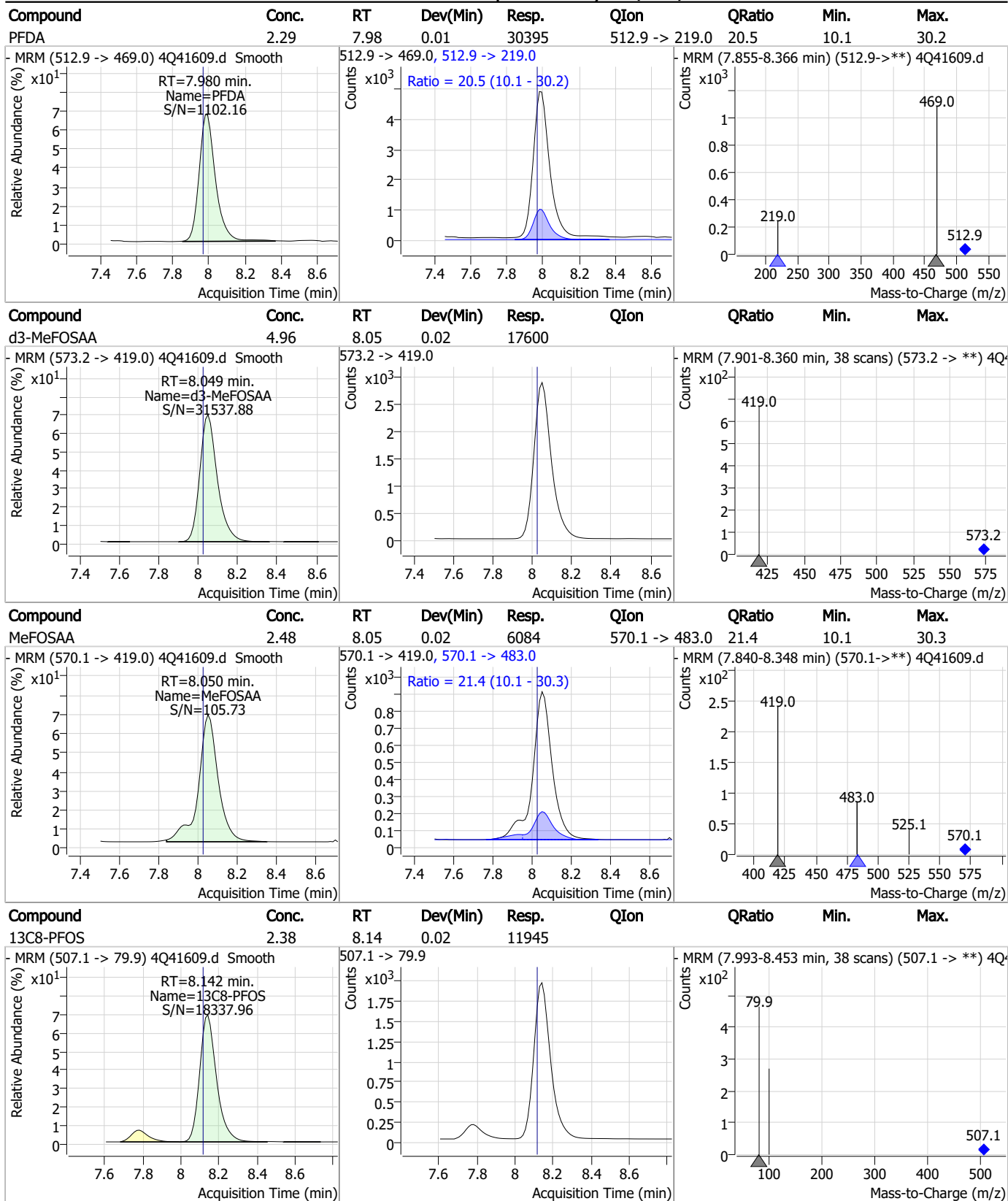
Perfluorinated Compounds by LC/MS/MS



7.6.15

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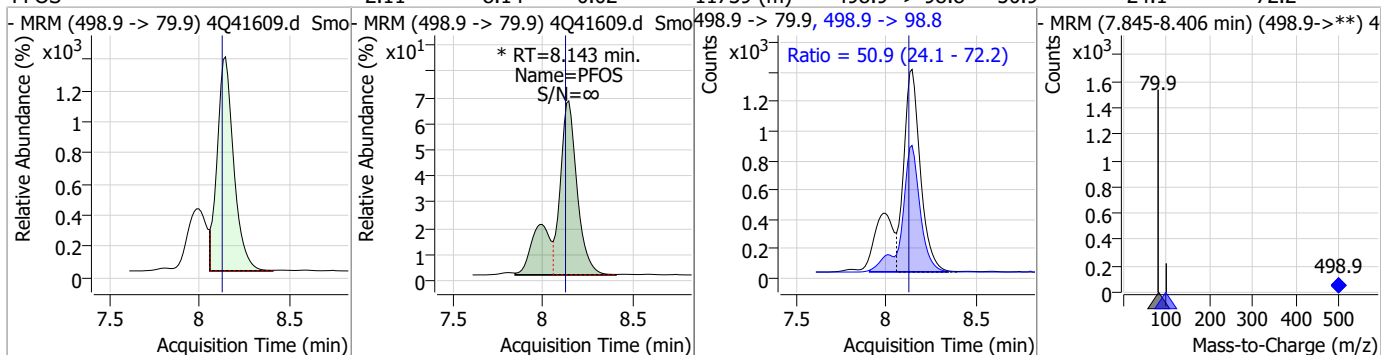
Perfluorinated Compounds by LC/MS/MS



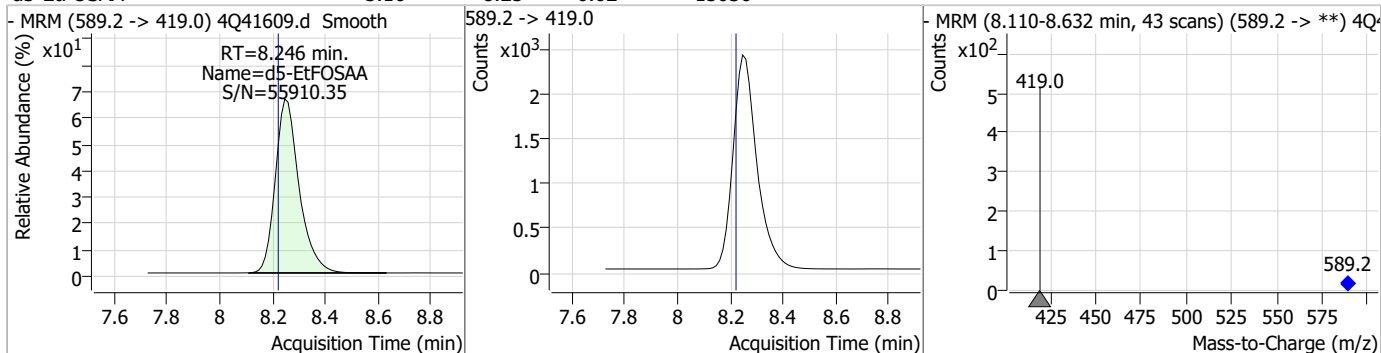
7.6.15
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Perfluorinated Compounds by LC/MS/MS

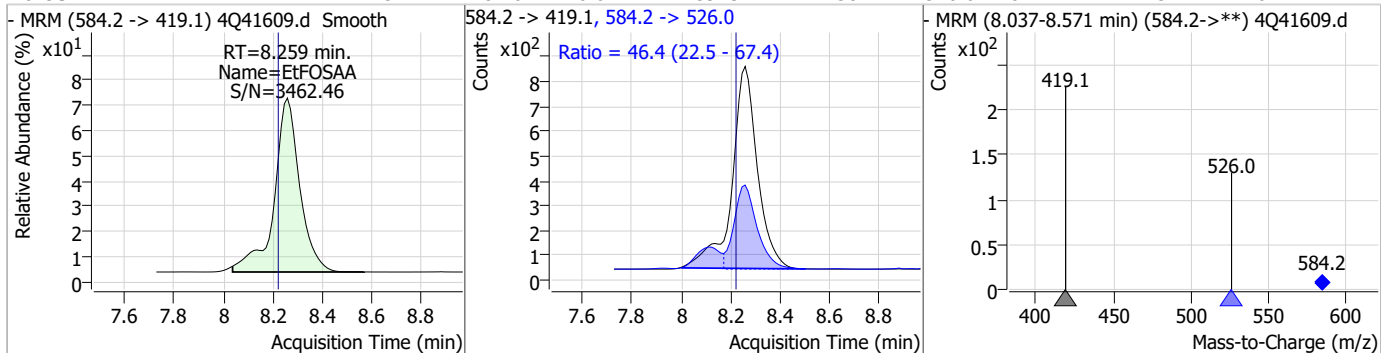
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.11	8.14	0.02	11739 (m)	498.9 -> 98.8	50.9	24.1	72.2



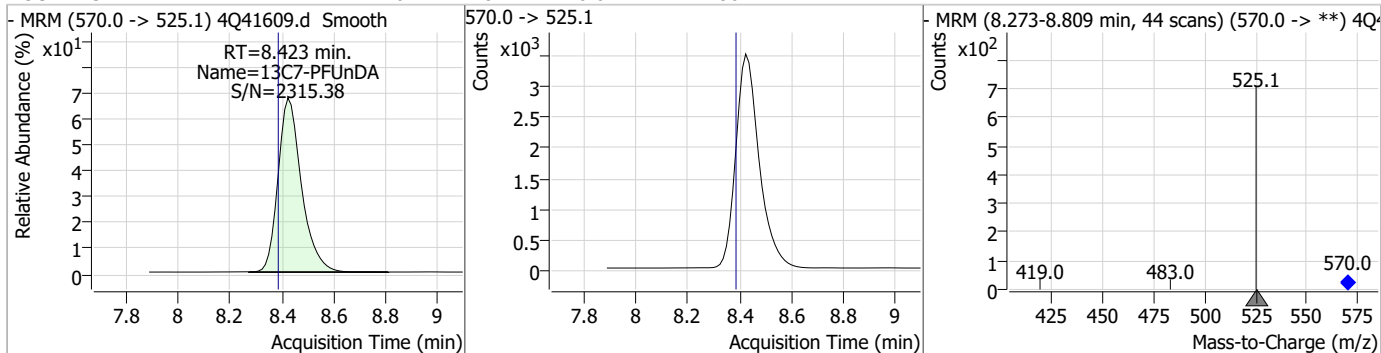
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.16	8.25	0.02	15036				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.51	8.26	0.04	5913	584.2 -> 526.0	46.4	22.5	67.4

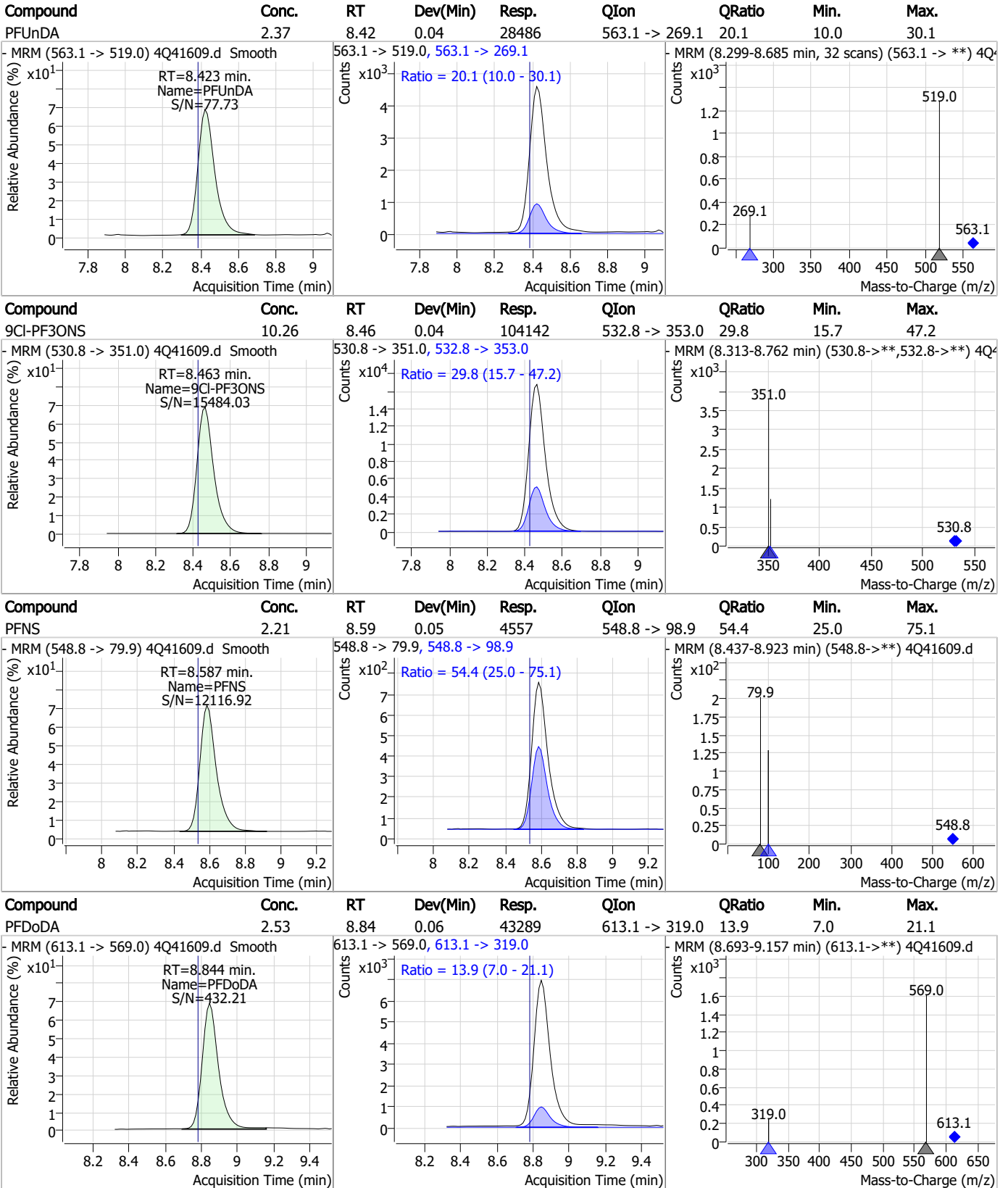


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.20	8.42	0.04	21804				



7.6.15
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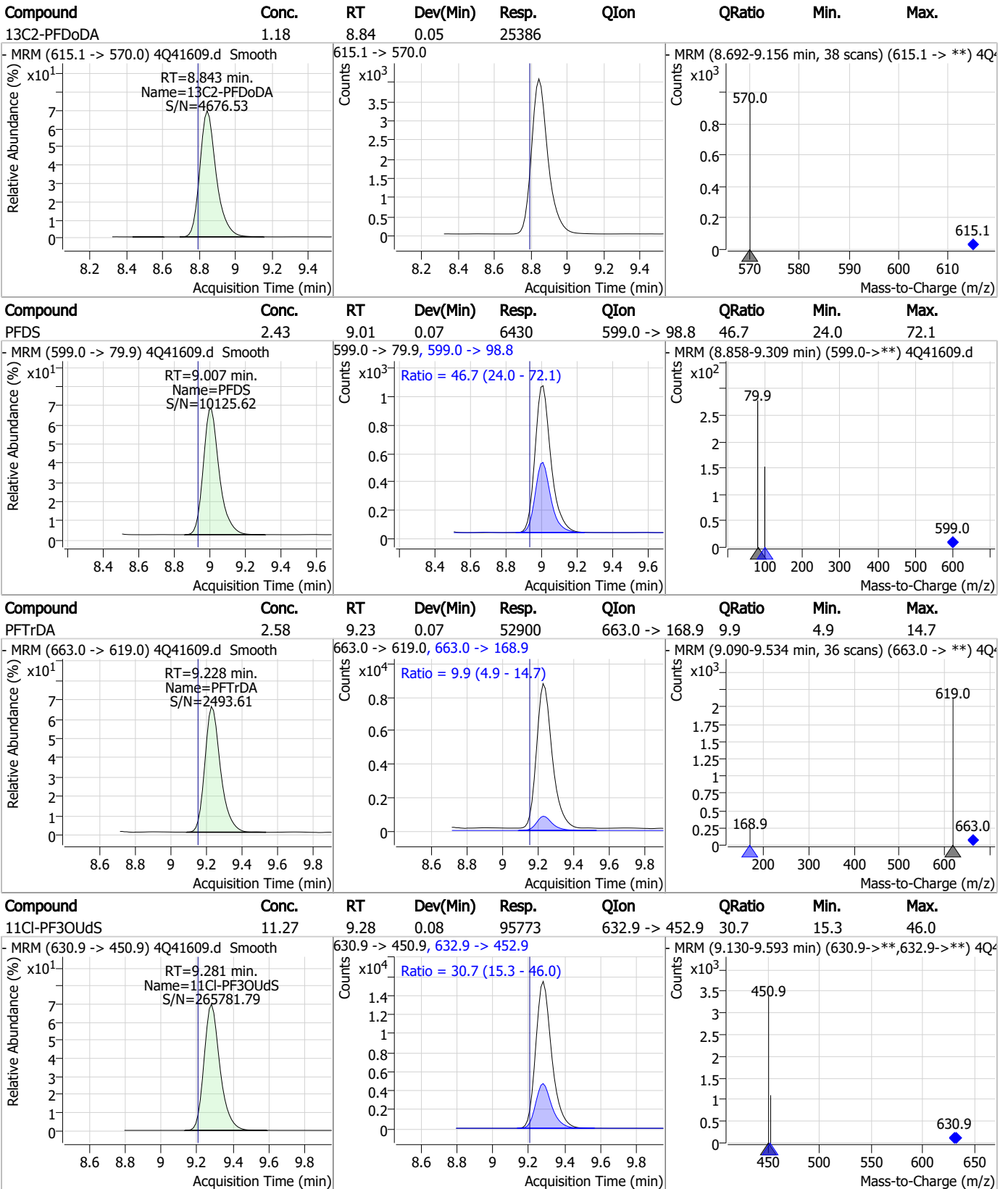
Perfluorinated Compounds by LC/MS/MS



7.6.15
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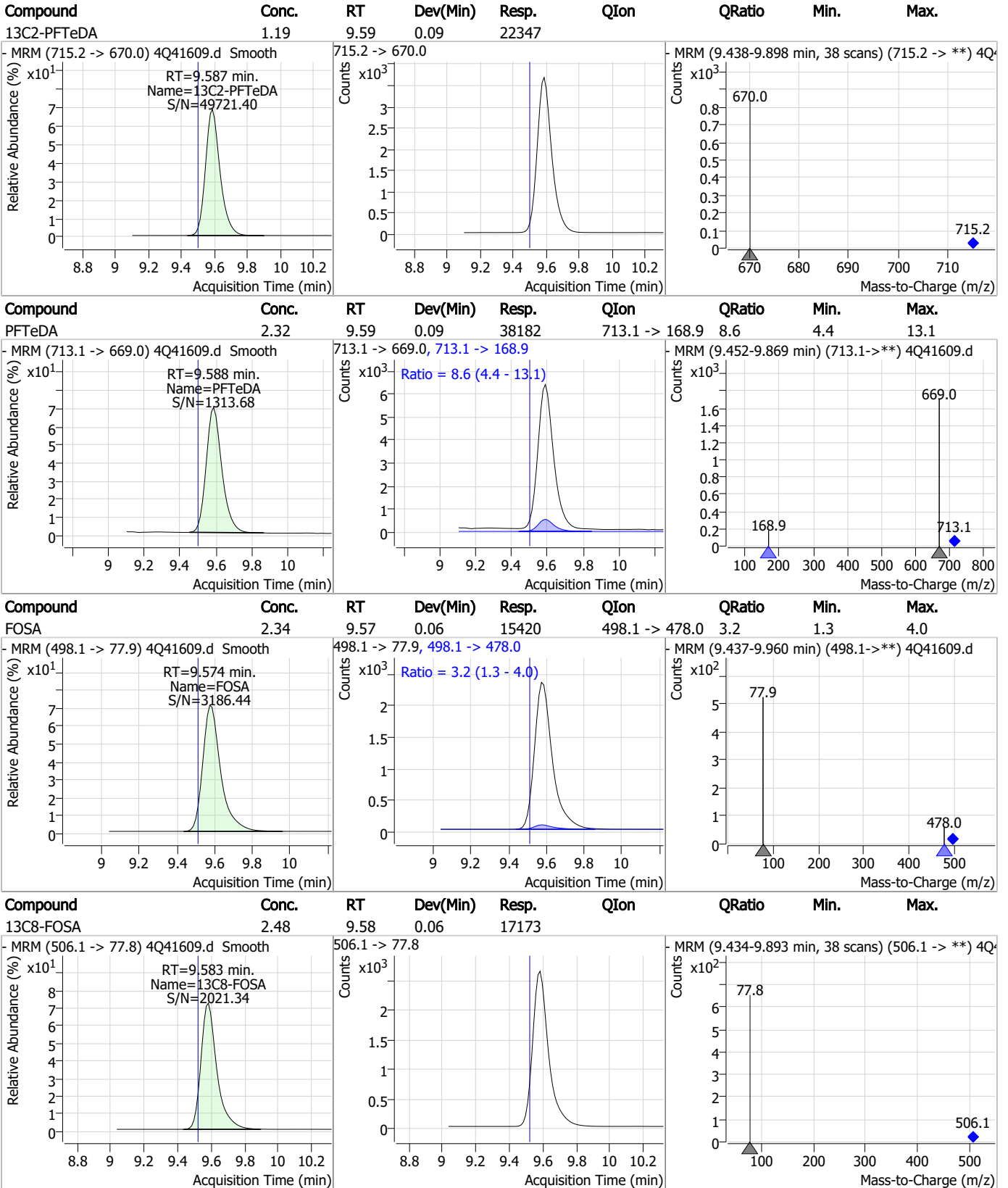
Perfluorinated Compounds by LC/MS/MS



7.6.15
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Perfluorinated Compounds by LC/MS/MS

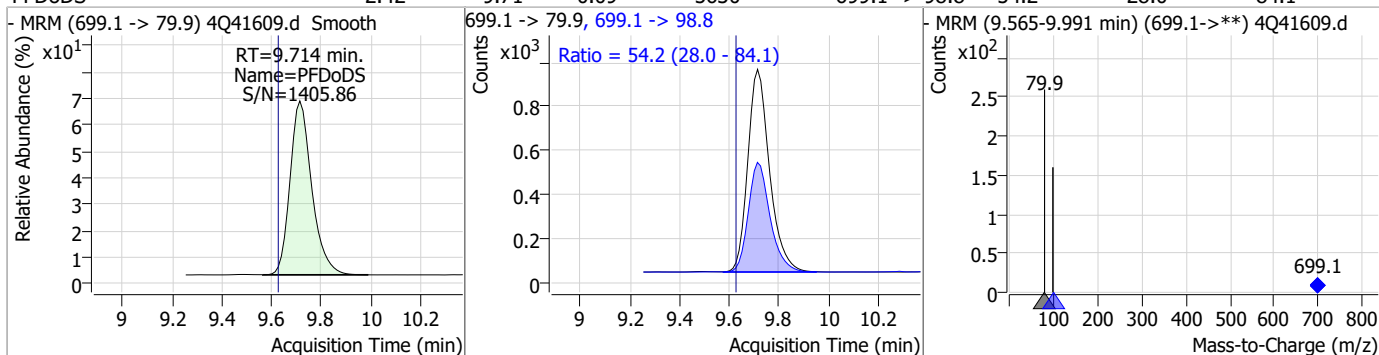


7.6.15 7

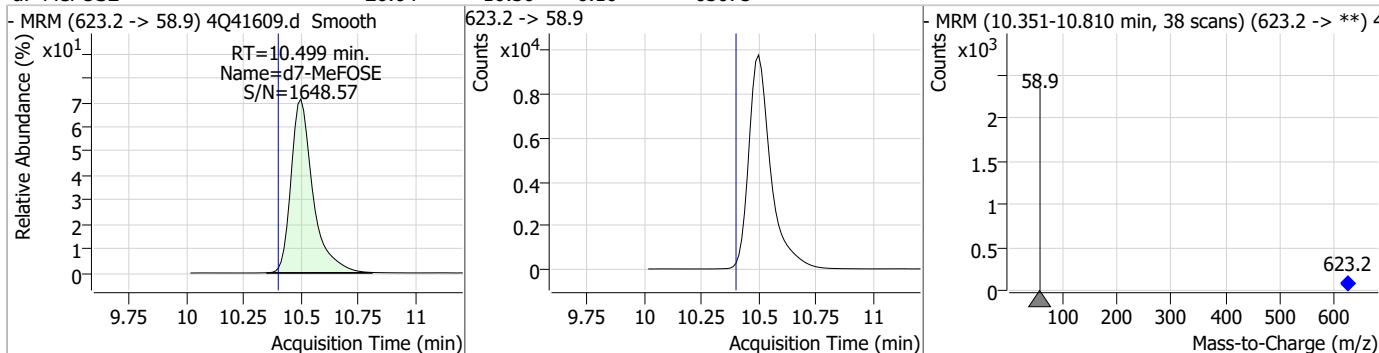


Perfluorinated Compounds by LC/MS/MS

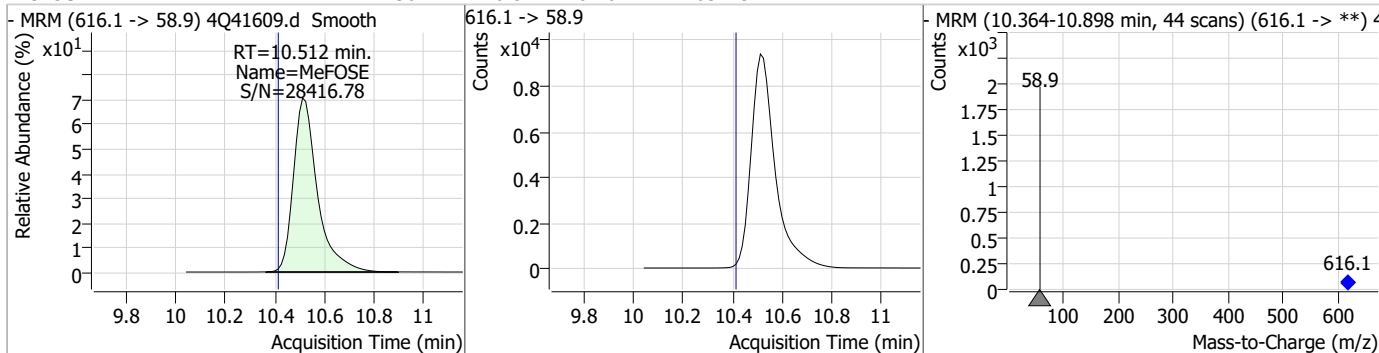
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	2.42	9.71	0.09	5630	699.1 -> 98.8	54.2	28.0	84.1



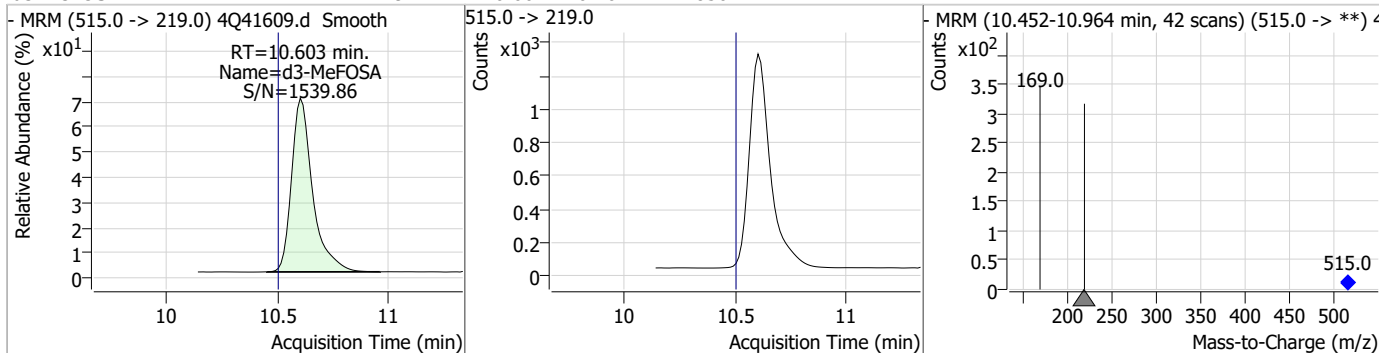
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.64	10.50	0.10	65075				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	24.36	10.51	0.10	63219				



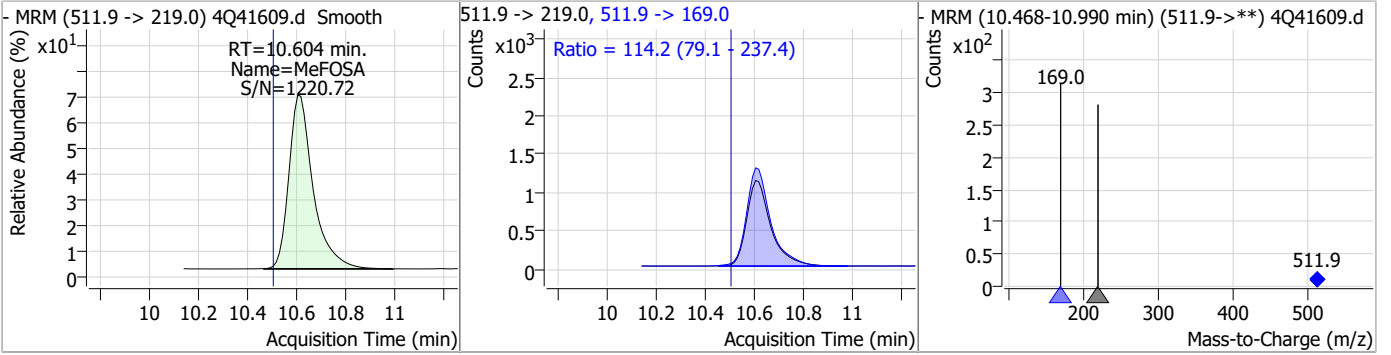
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.49	10.60	0.10	8507				



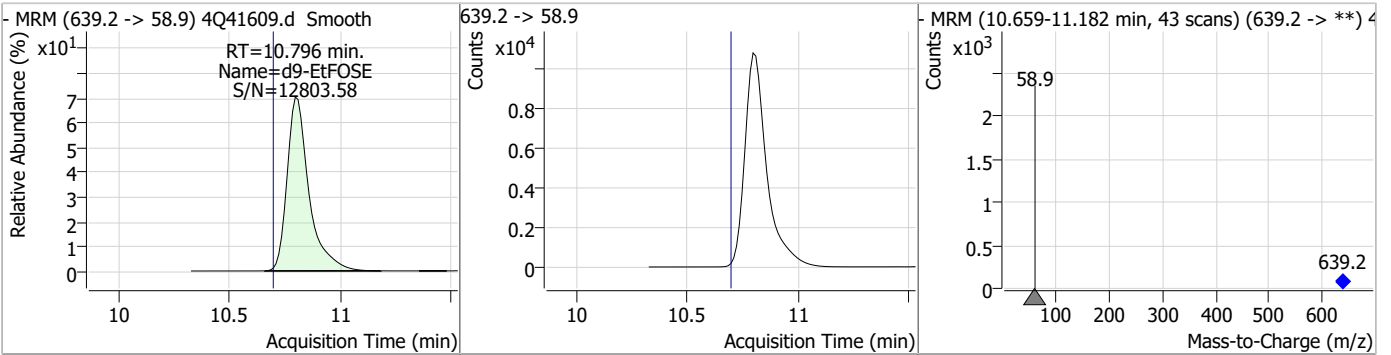
7.6.15
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Perfluorinated Compounds by LC/MS/MS

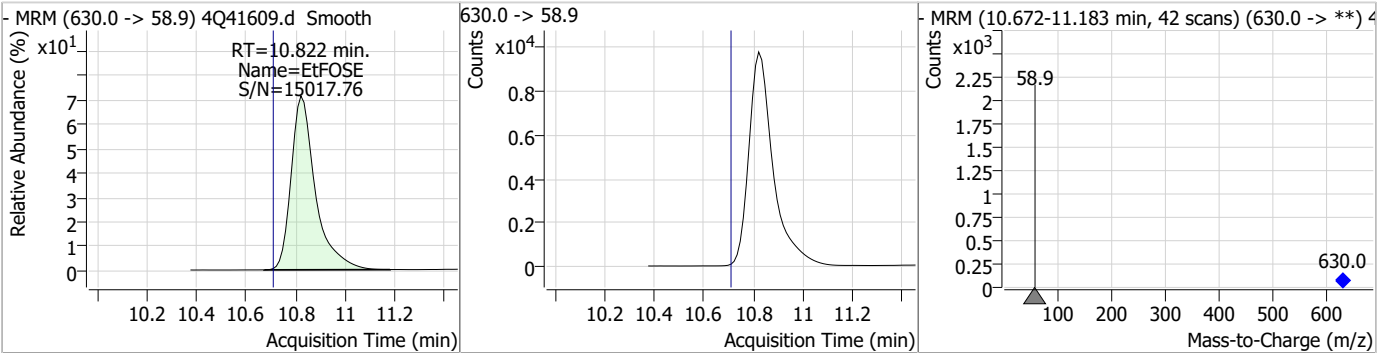
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	2.45	10.60	0.10	7602	511.9 -> 169.0	114.2	79.1	237.4



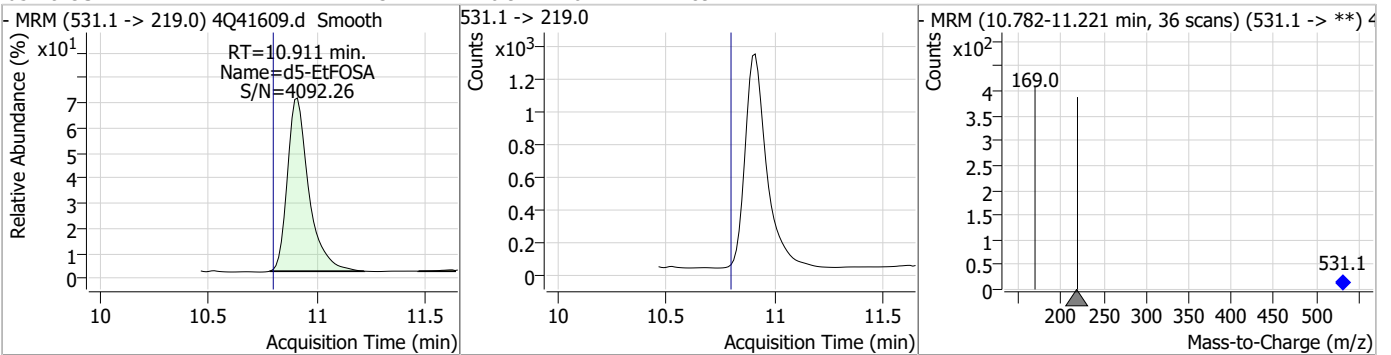
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.63	10.80	0.10	74039				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	24.88	10.82	0.11	66196				

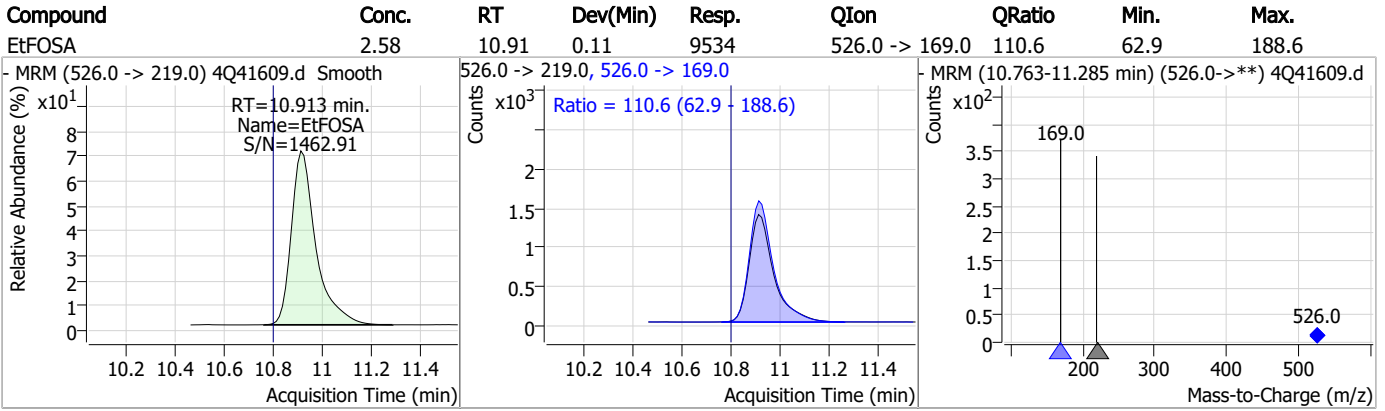


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.34	10.91	0.11	8977				



7.6.15
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Perfluorinated Compounds by LC/MS/MS



7.6.15

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Manual Integration Approval Summary

Sample Number: S4Q595-CC589 Method: EPA DRAFT 1633
Lab FileID: 4Q41609.D Analyst approved: 03/03/23 15:05 Anna Ludwig
Injection Time: 03/02/23 20:41 Supervisor approved: 03/03/23 16:08 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.12	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.14	Split peak

7.6.15.1

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SGS ORLANDO

DATE:	02/24/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

LCMS4-4Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	ID_04223_S4Q587
CAL DATE:	02/24/23
ANALYST:	AL
RUN BATCH:	S4Q589

ELUENT A LOT #:	224863 W5%ACN 214785 2mmMAMAC.11387
ELUENT B LOT #:	ACN 214785
IC/CC STD LOT #:	LCMS 2055
ICV STD LOT #:	LCMS 2055/2026
ISTD/ID STD LOT #:	11384/11383

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q41228.d	P1-A1	ccb	1633f\ul21.m	Sample		op95462,S4Q589,500,,5.0,1,water	nd
2	4Q41229.d	P1-B3	RT tdca	1633f\ul21.m	Sample		op95462,S4Q589,500,,5.0,1,water	pass
3	4Q41230.d	P1-B4	RT br. In	1633f\ul21.m	Sample		op95462,S4Q589,500,,5.0,1,water	pass
4	4Q41231.d	P1-A1	ic589-0	1633f\ul21.m	Sample		op95462,S4Q589,500,,5.0,1,water	check tune file
5	4Q41232.d	P1-A2	ic589-1	1633f\ul21.m	Calibration	1.6/500	op95462,S4Q589,500,,5.0,1,water	pass
6	4Q41233.d	P1-A3	ic589-2	1633f\ul21.m	Calibration	4/500	op95462,S4Q589,500,,5.0,1,water	pass
7	4Q41234.d	P1-A4	ic589-3	1633f\ul21.m	Calibration	10/500	op95462,S4Q589,500,,5.0,1,water	pass
8	4Q41235.d	P1-A5	icc589-4	1633f\ul21.m	Calibration	20/500	op95462,S4Q589,500,,5.0,1,water	pass
9	4Q41236.d	P1-A6	ic589-5	1633f\ul21.m	Calibration	40/500	op95462,S4Q589,500,,5.0,1,water	pass
10	4Q41237.d	P1-A7	ic589-6	1633f\ul21.m	Calibration	100/500	op95462,S4Q589,500,,5.0,1,water	pass
11	4Q41238.d	P1-A9	ic589-7	1633f\ul21.m	Calibration	200/500	op95462,S4Q589,500,,5.0,1,water	pass
12	4Q41239.d	P1-A9	ic589-8	1633f\ul21.m	Calibration	1x	op95462,S4Q589,500,,5.0,1,water	pass
13	4Q41240.d	P1-A1	iblk	1633f\ul21.m	Sample		op95462,S4Q589,500,,5.0,1,water	nd
14	4Q41241.d	P1-B1	icv589-20	1633f\ul21.m	QC	20/500	op95462,S4Q589,500,,5.0,1,water	pass
15	4Q41242.d	P1-B2	icv589-20	1633f\ul21.m	QC	100/500	op95462,S4Q589,500,,5.0,1,water	pass
16	4Q41243.d	P1-A5	cc589-4	1633f\ul21.m	QC	20/500	op95462,S4Q589,500,,5.0,1,water	pass
17	4Q41244.d	P1-A2	cc589-1,0LL	1633f\ul21.m	QC	1.6/500	op95462,S4Q589,500,,5.0,1,water	pass
18	4Q41245.d	P2-B1	op95578-bs	1633f\ul21.m	Sample		op95578,S4Q589,5.00,,5.0,1,soil	✓
19	4Q41246.d	P2-B2	op95578-llbs:2	1633f\ul21.m	Sample		op95578,S4Q589,5.00,,5.0,1,soil	✓
20	4Q41247.d	P2-B3	op95578-mb	1633f\ul21.m	Sample		op95578,S4Q589,5.00,,5.0,1,soil	✓
21	4Q41248.d	P2-B4	jd60392-1A	1633f\ul21.m	Sample		op95578,S4Q589,4.98,,5.0,1,soil	✓
22	4Q41249.d	P2-B5	jd60392-2A	1633f\ul21.m	Sample		op95578,S4Q589,5.02,,5.0,1,soil	✓
23	4Q41250.d	P2-B6	jd60392-3A	1633f\ul21.m	Sample		op95578,S4Q589,4.96,,5.0,1,soil	✓
24	4Q41251.d	P2-B7	op95578-ms	1633f\ul21.m	Sample		op95578,S4Q589,5.01,,5.0,1,soil	✓
25	4Q41252.d	P2-B8	op95578-mnsd	1633f\ul21.m	Sample		op95578,S4Q589,4.98,,5.0,1,soil	✓
26	4Q41253.d	P2-B9	jd60392-4A	1633f\ul21.m	Sample		op95578,S4Q589,4.96,,5.0,1,soil	✓
27	4Q41254.d	P2-C1	jd60392-5A	1633f\ul21.m	Sample		op95578,S4Q589,5.01,,5.0,1,soil	✓
28	4Q41255.d	P1-A5	cc589-4	1633f\ul21.m	QC	20/500	op95462,S4Q589,500,,5.0,1,water	pass
29	4Q41256.d	P1-A2	cc589-1,0LL	1633f\ul21.m	QC	1.6/500	op95462,S4Q589,500,,5.0,1,water	4.2 surr hi - pass
30	4Q41257.d	P1-A1	iccb	1633f\ul21.m	Sample		op95462,S4Q589,500,,5.0,1,water	nd
31	4Q41258.d	P2-C2	op95517-bs	1633f\ul21.m	Sample		op95517,S4Q589,5.00,,5.0,1,soil	✓
32	4Q41259.d	P2-C3	op95517-llbs:2	1633f\ul21.m	Sample		op95517,S4Q589,5.00,,5.0,1,soil	✓
33	4Q41260.d	P2-C4	op95517-mb	1633f\ul21.m	Sample		op95517,S4Q589,5.00,,5.0,1,soil	✓
34	4Q41261.d	P2-C5	fc2645-1	1633f\ul21.m	Sample		op95517,S4Q589,4.95,,5.0,1,soil	✓
35	4Q41262.d	P2-C6	op95517-ms	1633f\ul21.m	Sample		op95517,S4Q589,4.98,,5.0,1,soil	✓

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LCMS4-4Q ANALYSIS LOG

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36	4Q41263.d	P2-C7	op95517-rmsd	1633ful21.m	Sample	op95517,S4Q589,4.98,,5.0,1,soil	✓
37	4Q41264.d	P2-C8	fc2645-2	1633ful21.m	Sample	op95517,S4Q589,4.97,,5.0,1,soil	✓
38	4Q41265.d	P2-C9	fc2645-3	1633ful21.m	Sample	op95517,S4Q589,4.98,,5.0,1,soil	✓
39	4Q41266.d	P2-D1	fc2645-4	1633ful21.m	Sample	op95517,S4Q589,5.00,,5.0,1,soil	✓
40	4Q41267.d	P2-D2	fc2645-5	1633ful21.m	Sample	op95517,S4Q589,4.98,,5.0,1,soil	✓
41	4Q41268.d	P1-A5	cc589-4	20/500	QC	op95462,S4Q589,500,,5.0,1,water	pass
42	4Q41269.d	P1-A1	iccb	1633ful21.m	Sample	op95462,S4Q589,500,,5.0,1,water	nd
43	4Q41270.d	P2-D3	fc2645-6	1633ful21.m	Sample	op95517,S4Q589,5.03,,5.0,1,soil	✓
44	4Q41271.d	P2-D4	fc2645-7	1633ful21.m	Sample	op95517,S4Q589,4.95,,5.0,1,soil	✓
45	4Q41272.d	P2-D5	fc2645-8	1633ful21.m	Sample	op95517,S4Q589,5.01,,5.0,1,soil	✓
46	4Q41273.d	P2-D6	fc2645-9	1633ful21.m	Sample	op95517,S4Q589,4.96,,5.0,1,soil	✓
47	4Q41274.d	P2-D7	fc2645-10	1633ful21.m	Sample	op95517,S4Q589,5.03,,5.0,1,soil	✓
48	4Q41275.d	P2-D8	fc2645-11	1633ful21.m	Sample	op95517,S4Q589,4.98,,5.0,1,soil	✓
49	4Q41276.d	P2-D9	fc2645-12	1633ful21.m	Sample	op95517,S4Q589,5.04,,5.0,1,soil	✓
50	4Q41277.d	P2-E1	fc2645-13	1633ful21.m	Sample	op95517,S4Q589,4.95,,5.0,1,soil	✓
51	4Q41278.d	P2-E2	fc2645-14	1633ful21.m	Sample	op95517,S4Q589,5.03,,5.0,1,soil	✓
52	4Q41279.d	P2-E3	fc2645-15	1633ful21.m	Sample	op95517,S4Q589,4.97,,5.0,1,soil	✓
53	4Q41280.d	P1-A5	cc589-4	20/500	QC	op95462,S4Q589,500,,5.0,1,water	pass
54	4Q41281.d	P1-A1	iccb	1633ful21.m	Sample	op95462,S4Q589,500,,5.0,1,water	nd
55	4Q41282.d	P2-E4	fc2645-16	1633ful21.m	Sample	op95517,S4Q589,4.96,,5.0,1,soil	✓
56	4Q41283.d	P2-E5	fc2645-17	1633ful21.m	Sample	op95517,S4Q589,5.03,,5.0,1,soil	✓
57	4Q41284.d	P2-E6	fc2645-18	1633ful21.m	Sample	op95517,S4Q589,4.97,,5.0,1,soil	✓
58	4Q41285.d	P2-E7	fc2645-19	1633ful21.m	Sample	op95517,S4Q589,5.03,,5.0,1,soil	✓
59	4Q41286.d	P2-F9	fc2634-13	1633ful21.m	Sample	op95558,S4Q589,565,,5.0,2,water	✓
60	4Q41287.d	P3-A1	fc2634-14	1633ful21.m	Sample	op95558,S4Q589,565,,5.0,2,water	✓
61	4Q41288.d	P3-A2	fc2636-4	1633ful21.m	Sample	op95559,S4Q589,550,,5.0,2,water	✓
62	4Q41289.d	P1-A5	cc589-4	20/500	QC	op95462,S4Q589,500,,5.0,1,water	pass
63	4Q41290.d	P1-A2	cc589-1.0LL	1633ful21.m	QC	op95462,S4Q589,500,,5.0,1,water	pass
64	4Q41291.d	P1-A1	iccb	1633ful21.m	Sample	op95462,S4Q589,500,,5.0,1,water	nd
65	4Q41292.d	P2-E8	op95331-bs	1633ful21.m	Sample	op95331,S4Q589,500,,5.0,1,water	✓
66	4Q41293.d	P2-E9	op95331-lbs-2	1633ful21.m	Sample	op95331,S4Q589,500,,5.0,1,water	✓
67	4Q41294.d	P2-F1	op95331-mb	1633ful21.m	Sample	op95331,S4Q589,500,,5.0,1,water	✓
68	4Q41295.d	P2-F2	fc2386-1	1633ful21.m	Sample	op95331,S4Q589,500,,5.0,1,water	✓
69	4Q41296.d	P2-F3	op95331-bs1	1633ful21.m	Sample	op95331,S4Q589,465,,5.0,1,water	✓
70	4Q41297.d	P2-F4	op95331-bs2	1633ful21.m	Sample	op95331,S4Q589,500,,5.0,1,water	✓
71	4Q41298.d	P2-F5	op95331-bs3	1633ful21.m	Sample	op95331,S4Q589,500,,5.0,1,water	✓
72	4Q41299.d	P2-F7	fc2207-1	1633ful21.m	Sample	op95566,S4Q589,60,,5.0,10,water	✓
73	4Q41300.d	P2-F8	fc2634-4	1633ful21.m	Sample	op95558,S4Q589,565,,5.0,5,water	✓
74	4Q41301.d	P1-A5	ecc589-4	20/500	QC	op95462,S4Q589,500,,5.0,1,water	pass
75	4Q41302.d	P1-A1	iccb	1633ful21.m	Sample	op95462,S4Q589,500,,5.0,1,water	nd

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SGS ORLANDO

LCMS4-4Q ANALYSIS LOG

DATE:	03/02/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	6 ul
INSTRUMENT:	LCMS4-4Q

METHODS:	1633
PROC. METH:	ID_042423_S4Q589
CAL DATE:	02/24/23
ANALYST:	M. Valls AL
RUN BATCH:	S4Q595

ELUENT A LOT #:	224863 W53ACN 214785 2mmMMAAC.11387
ELUENT B LOT #:	ACN 214785
IC/CC STD LOT #:	LCMS 2055
ICV STD LOT #:	LCMS 2055/2026
ISTD/ID STD LOT #:	11384/11383

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	4Q41583.d	P1-A1	ccb	1633f1ul21.m	Sample		op95682,S4Q595,500,,5.0,1,water	nd
2	4Q41584.d	P1-A1	ccb	1633f1ul21.m	Sample		op95682,S4Q595,500,,5.0,1,water	nd
3	4Q41585.d	P1-B3	RT TDCA	1633f1ul21.m	Sample		op95682,S4Q595,500,,5.0,1,water	pass
4	4Q41586.d	P1-B4	RT BR_LN	1633f1ul21.m	Sample		op95682,S4Q595,500,,5.0,1,water	pass
5	4Q41587.d	P1-A9	high std	1633f1ul21.m	Sample		op95682,S4Q595,500,,5.0,1,water	pass
6	4Q41588.d	P1-A1	iblk	1633f1ul21.m	Sample		op95682,S4Q595,500,,5.0,1,water	nd
7	4Q41589.d	P1-A5	cc589-4	1633f1ul21.m	QC	20/500	op95682,S4Q595,500,,5.0,1,water	pass
8	4Q41590.d	P1-A2	cc589-1.0LL	1633f1ul21.m	QC	1.6/500	op95682,S4Q595,500,,5.0,1,water	pass
9	4Q41591.d	P3-A1	FC2899-4	1633f1ul21.m	Sample	50/500	op95682,S4Q595,500,,5.0,1,water	10x, instrument shut down. rr
10	4Q41592.d	P3-A1	FC2899-4	1633f1ul21.m	Sample	50/500	op95682,S4Q595,500,,5.0,1,water	✓
11	4Q41593.d	P3-A2	op95660-ms	1633f1ul21.m	Sample	50/500	op95682,S4Q595,500,,5.0,1,water	✓
12	4Q41594.d	P3-A3	op95660-msd	1633f1ul21.m	Sample	50/500	op95682,S4Q595,500,,5.0,1,water	✓
13	4Q41595.d	P3-A4	op95682-bs	1633f1ul21.m	Sample		op95682,S4Q595,500,,5.0,1,water	✓
14	4Q41596.d	P3-A5	op95682-llbs:3	1633f1ul21.m	Sample		op95682,S4Q595,500,,5.0,1,water	✓
15	4Q41597.d	P3-A6	op95682-mb	1633f1ul21.m	Sample		op95682,S4Q595,500,,5.0,1,water	✓
16	4Q41598.d	P3-A7	FC3042-1	1633f1ul21.m	Sample		op95682,S4Q595,570,,5.0,1,water	✓
17	4Q41599.d	P3-A8	FC3042-2	1633f1ul21.m	Sample		op95682,S4Q595,570,,5.0,1,water	✓
18	4Q41600.d	P3-A9	FC3034-1	1633f1ul21.m	Sample		op95682,S4Q595,570,,5.0,1,water	✓
19	4Q41601.d	P1-A5	cc589-4	1633f1ul21.m	QC	20/500	op95682,S4Q595,500,,5.0,1,water	pass
20	4Q41602.d	P1-A1	iccb	1633f1ul21.m	Sample		op95682,S4Q595,500,,5.0,1,water	nd
21	4Q41603.d	P3-B1	FC3034-2	1633f1ul21.m	Sample		op95682,S4Q595,550,,5.0,1,water	✓
22	4Q41604.d	P3-B2	op95682-ms	1633f1ul21.m	Sample		op95682,S4Q595,570,,5.0,1,water	✓
23	4Q41605.d	P3-B3	op95682-msd	1633f1ul21.m	Sample		op95682,S4Q595,570,,5.0,1,water	✓
24	4Q41606.d	P3-B4	FC3034-3	1633f1ul21.m	Sample		op95682,S4Q595,570,,5.0,1,water	✓
25	4Q41607.d	P3-B5	FC3034-4	1633f1ul21.m	Sample		op95682,S4Q595,550,,5.0,1,water	rr 2x e flag
26	4Q41608.d	P3-B6	FC3034-5	1633f1ul21.m	Sample		op95682,S4Q595,530,,5.0,1,water	rr 2x e flag
27	4Q41609.d	P3-D8	JD59280-1q	1633f1ul21.m	Sample		op95278,S4Q595,500,,5.0,1,water	✓
28	4Q41610.d	P1-A5	cc589-4	1633f1ul21.m	QC	20/500	op95682,S4Q595,500,,5.0,1,water	pass
29	4Q41611.d	P1-A1	iccb	1633f1ul21.m	Sample		op95682,S4Q595,500,,5.0,1,water	nd
30	4Q41612.d	P3-B7	op95684-bs	1633f1ul21.m	Sample		op95682,S4Q595,500,,5.0,1,water	✓
31	4Q41613.d	P3-B8	op95684-llbs:2	1633f1ul21.m	Sample		op95682,S4Q595,500,,5.0,1,water	✓
32	4Q41614.d	P3-B9	op95684-mb	1633f1ul21.m	Sample		op95682,S4Q595,500,,5.0,1,water	✓
33	4Q41615.d	P3-C1	JD60788-1A	1633f1ul21.m	Sample		op95684,S4Q595,470,,5.0,1,water	✓
34	4Q41616.d	P3-C2	op95684-ms	1633f1ul21.m	Sample		op95684,S4Q595,470,,5.0,1,water	✓
35	4Q41617.d	P3-C3	JD60788-3A	1633f1ul21.m	Sample		op95684,S4Q595,540,,5.0,1,water	✓

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SGS ORLANDO LCMS4-4Q ANALYSIS LOG

36	4Q41618.d	P3-C4	op95684-dup	1633ful21.m	Sample	op95684,S4Q595,540,,,5.0.1,water	✓
37	4Q41619.d	P3-C5	JD60842-14	1633ful21.m	Sample	op95684,S4Q595,560,,,5.0.1,water	✓
38	4Q41620.d	P3-C6	JD59734-1AR	1633ful21.m	Sample	op95684,S4Q595,270,,,5.0.1,water	XH
39	4Q41621.d	P1-A5	cc589-4	1633ful21.m	QC	20/500	pass
40	4Q41622.d	P1-A2	cc589-1.0LL	1633ful21.m	QC	1.6/500	pass
41	4Q41623.d	P1-A1	iccb	1633ful21.m	Sample	op95682,S4Q595,500,,,5.0.1,water	nd
42	4Q41624.d	P3-C7	op95683-bs	1633ful21.m	Sample	op95683,S4Q595,500,,,5.0.1,water	✓
43	4Q41625.d	P3-C8	op95683-llbs:3	1633ful21.m	Sample	op95683,S4Q595,500,,,5.0.1,water	✓
44	4Q41626.d	P3-C9	op95683-mb	1633ful21.m	Sample	op95683,S4Q595,500,,,5.0.1,water	✓
45	4Q41627.d	P3-D1	FC2545-5	1633ful21.m	Sample	op95683,S4Q595,500,,,5.0.1,water	✓
46	4Q41628.d	P3-D2	op95658-bs	1633ful21.m	Sample	op95658,S4Q595,5.00,,,5.0.1,soil	✓
47	4Q41629.d	P3-D3	op95658-llbs:3	1633ful21.m	Sample	op95658,S4Q595,5.00,,,5.0.1,soil	✓
48	4Q41630.d	P3-D4	op95658-mb	1633ful21.m	Sample	op95658,S4Q595,5.00,,,5.0.1,soil	✓
49	4Q41631.d	P3-D5	FC2978-1	1633ful21.m	Sample	op95658,S4Q595,4.99,,,5.0.1,soil	✓
50	4Q41632.d	P3-D6	op95658-ms	1633ful21.m	Sample	op95658,S4Q595,5.04,,,5.0.1,soil	✓
51	4Q41633.d	P3-D7	op95658-msd	1633ful21.m	Sample	op95658,S4Q595,5.01,,,5.0.1,soil	✓
52	4Q41634.d	P1-A5	ecc589-4	1633ful21.m	QC	20/500	pass
53	4Q41635.d	P1-A1	iccb	1633ful21.m	Sample	op95682,S4Q595,500,,,5.0.1,water	nd

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. # Lot:	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 2052	1633 prep mix	221044 Lot:	MeOH	Fisher	—	1/14/24	99.9%	92mL	100mL	92%	N/A	1/19/23	2/19/23	MV
↓	↓	219481 Lot:	NH4OH	↓	—	9/19/23	100%	3.3mL	↓	1%	↓	↓	↓	↓
↓	↓	224863 Lot:	H2O	↓	—	1/17/24	100%	1.7mL	↓	4%	↓	↓	↓	↓
↓	↓	224297 Lot:	Acetic ACID	↓	—	6/24	99.7%	0.625mL	↓	.625%	↓	↓	↓	↓
LCMS 2053	(spike) Full list std	11568	PFOA DOD 28. 4011st	SGS Standards	11/9/27	1/10/24	1.0ppm	400uL	4.0mL	100ppb	95% MeOH 5% H2O	12/4/23	3/21/23	MV
↓	↓	1987	4011st Addon#1	↓	—	3/21/23	1.0ppm	400uL	↓	↓	↓	↓	↓	↓
↓	↓	1986	4011st Add on #2	↓	—	4/18/23	1.0ppm	400uL	↓	↓	↓	↓	↓	↓
↓	↓	2054	FOSC std.	↓	—	7/27/23	5.0ppm	400uL	↓	500ppb	↓	↓	↓	↓
LCMS 2054	Fosc std.	11336	N- Et- FOSE	Wellington	5/13/27	9/19/23	50ppm	200uL	2.0mL	5ppm	95% MeOH 5% H2O	12/4/23	7/29/23	MV
↓	↓	11338	N- Me FOSE	↓	5/19/27	9/19/23	50ppm	200uL	↓	↓	↓	↓	↓	↓
LCMS 2055	1633 Cal std.	10855 J	PFAC MxH	Wellington	9/14/26	1/17/24	1-4 ppm	250uL	4mL	62.5 125 250ppb	1633 MIX	1/24/23	7/24/23	MV
↓	↓	10853 J	PFAC MxI	↓	9/14/26	1/11/24	1-10 ppm	250uL	↓	62.5 125 250ppb	↓	↓	↓	↓
↓	↓	11579 B	PFAC Mx F	↓	1/11/25	1/24/24	2ppm	500uL	↓	250ppb	↓	↓	↓	↓
↓	↓	11617 A	PFAC Mx G	↓	3/4/25	1/11/24	2ppm	250uL	↓	125ppb	↓	↓	↓	↓
↓	↓	10854 J	PFAC Mx G	↓	9/14/26	1/24/24	4-20 ppm	312 uL	↓	312/1100 ppb	↓	↓	↓	↓
↓	↓	11492	PFAC Mx J	↓	9/14/26	1/24/24	4-20 ppm	312 uL	↓	ppb	↓	↓	↓	↓
↓	↓	11603.	PFAC Mx J	↓	9/14/26	1/24/24	4-20 ppm	312 uL	↓	ppb	↓	↓	↓	↓
↓	↓			↓										

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



Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2025	List 40 (Surr) ADD-ON Isotope Mix	11333	d7-N-MeTosc	Wellington Labs	01/27/27	10/12/23	50ppm	200uL	2.0 mL	1/5ppm	9511401 570120	12/17/22	6/17/23	MW
		11460	d9-N-EtTosc		01/27/27	12/07/23		200uL						
		11339	M2-PFHxDA		11/23/28	08/23/23		40uL						
		11115	D-N-EtTosa		12/30/25	08/23/23		40uL						
		10836	PROA-Nonal											
LCMS 2026	(Spike) Full List Std.	11447	40uist ADDON#1	Absolute	06/16/27	11/29/23	1.0ppm	400uL	4.0mL	100ppb	9511401 570120	12/18/22	12/18/23	NG
		1987	40uist ADDON#1			02/21/23	1.0ppm	400uL		100ppb				NG
		1986	40uist ADDON#2			04/18/23	1.0ppm	400uL		100ppb				NG
		LCMS 2012	FOSE Std.			05/11/23	5.0ppm	400uL		500ppb				NG
LCMS 2027	(Spike) 16033 CAL Std.	10855F	PFAC-MXH	Wellington Labs	09/14/26	11/04/23	1-4 ppm	250uL	4mL	62.5/16350 ppb	16033	12/12/22	05/16/23	NG
		10853F	PFAC-MXF		09/14/26	11/22/23	1-10 ppm	250uL		62.5/16350 ppb				NG
		11493A	PFAC-MXF		05/04/23	11/29/23	2 ppm	500uL		250ppb				NG
		10854F	PFAC-MXG		03/04/25	11/22/23	2 ppm	250uL		125ppb				NG
		10857E	PFAC-MX5		10/10/23	11/22/23	4-20 ppm	312uL		312-1160 ppb				NG
LCMS 2028	537.1 DW Std.	11447	PROA-DOP (28 Comp)	Absolute	05/05/27	11/29/23	1.0ppm	400uL	4mL	100ppb	9511401 570120	12/18/22	02/14/23	NG
		LCMS 1950	537.1 DW Surr			02/21/23	10/20 ppm	400uL		100/200 ppb				NG

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

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 1987	40 List Std ADD-ON #1	10736A	10'2 FFS	Wellington Labs	03/03/26	03/31/23	50ppm	80uL	4.0mL	1ppm	05/NEOH 5/172D	10/18/22	03/21/23	NJS
		10840	FFDoS		07/01/26	10/18/23								
		10899	N-HROSA		08/03/26	08/23/23								
		10837	N-ETHOSA		08/10/26	08/23/23								
		10842	PFHDA	NS Vend	09/28/26	10/18/23								
		10841	PFODA		05/10/26	10/18/23								
		10684A	2:3FICA		11/12/25	03/21/23								
		10685A	PFPPA		11/11/25	05/12/23								
		10683A	7:3FICA		11/12/25	05/18/23								
		11117	PFEC1HS		10/14/26	06/23/23								
		10762B	PFEE5A		05/12/25	10/18/23								
		10763B	PF5CHKA		03/31/25	10/18/23								
		10764A	PFMPA		03/31/25	03/12/23								
		10765B	PF4OPFA		03/31/25	10/18/23								
		10765B	PFHDA 3.6-OFFH4PA		03/31/25	10/18/23								
						10/18/22								

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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 A 2009 B	PFC SPIKE	11483	PFOA-D00 (2850000)	Wellington Labs	08/05/27	11/08/23	1.0ppm	2mL	5mL	400ppb	95/MEOH 5/1.H2O	11/08/22	05/10/23	NG
		10829	N-ME-TOSA-M		08/22/26	09/22/23	50ppm	40uL						NG
		11294	PBSA-1		11/10/26	06/22/23								NG
		11249	FHXSA-1		12/29/26	11/03/23								NG
		11322	PFECHS		03/28/27	10/18/23								NG
LCMS A-B 2010	(SPIKE) 1623 CAL. Std.	10855F	PFAC-NXH	Wellington Labs	09/14/26	11/04/23	1-11 ppm	250uL	4mL	92.5/125/1250 ppb	1623	11/04/22	05/10/23	NG
		10853E	PFAC-MXI		09/14/26	11/04/23	1-10 ppm	250uL		162.5/125 ppb				NG
		10856I	PFAC-MXF		05/10/23	05/10/23	2 ppm	500uL		250ppb				NG
		10854E	PFAC-MXG		03/04/25	11/04/23	2 ppm	250uL		125ppb				NG
		10857D	PFAC-MXC		10/12/23	11/02/23	4-20 ppm	312uL		210/1160 ppb				NG
LCMS 2011	(SPIKE) FULL List std.	11440	PFOA-D00(G28)	Absolute	08/05/27	10/24/23	1.0ppm	400uL	4.0mL	100ppb	95/MEOH 5/1.H2O	11/11/22	02/21/23	NG
		LCMS 1987	40 List ADDON#1			02/21/23	1.0ppm	400uL		100ppb				NG
		LCMS 1986	40 List ADDON#2			01/18/23	1.0ppm	400uL		100ppb				NG
		LCMS 2012	FOSE std.			05/11/23	50ppm	400uL		500ppb				NG
LCMS 2012	FOSE std.	11336	N-ET-FOSE	Wellington Labs	05/13/27	09/19/23	50ppm	200uL	2.0mL	5ppm	95/MEOH 5/1.H2O	11/11/22	05/11/23	NG
		11336	N-ME-FOSE		05/13/27	09/19/23	50ppm	200uL						NG

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10683A



WELLINGTON LABORATORIES

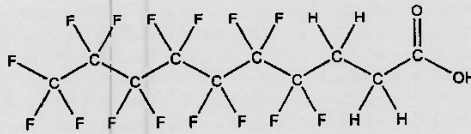
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FHpPA
COMPOUND: 3-Perfluoroheptyl propanoic acid

LOT NUMBER: FHpPA1020

STRUCTURE:

CAS #: 812-70-4



MOLECULAR FORMULA: C₁₀H₉F₁₅O₂
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/12/2020
EXPIRY DATE: (mm/dd/yyyy) 11/12/2025
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 442.12
SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: 
B.G. Chittim, General Manager

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

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Revision#:8, Revised 2020-09-10

FHpPA1020 (1 of 4)
rev0

7.8.1

7

106 84A



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPrPA

LOT NUMBER:

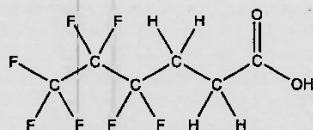
FPrPA1020

COMPOUND:

3-Perfluoropropyl propanoic acid

STRUCTURE:**CAS #:**

356-02-5

**MOLECULAR FORMULA:** $C_6H_5F_7O_2$ **MOLECULAR WEIGHT:**

242.09

CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$ **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.
- Contains <1% of the unsaturated 3:3 telomer acid ($C_8H_5F_7O_2$) as an impurity determined by ^{19}F NMR.

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Certified By:

B.G. Chittim, General Manager

Date: 11/27/2020

(mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FPePA

LOT NUMBER:

FPePA1120

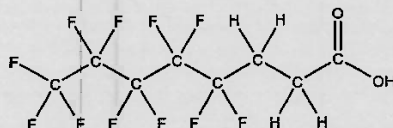
COMPOUND:

3-Perfluoropentyl propanoic acid

STRUCTURE:

CAS #:

914637-49-3



MOLECULAR FORMULA:

C₈H₅F₁₁O₂

MOLECULAR WEIGHT:

342.11

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/11/2020

EXPIRY DATE: (mm/dd/yyyy)

11/11/2025

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <1% of the unsaturated 5:3 telomer acid (C₈H₃F₁₁O₂) as an impurity determined by ¹⁹F NMR.

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Certified By:

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Date: 11/27/2020

(mm/dd/yyyy)

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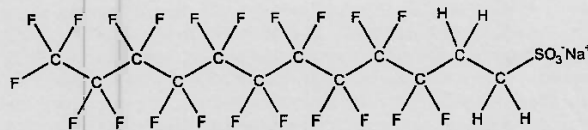


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 10:2FTS **LOT NUMBER:** 102FTS0221
COMPOUND: Sodium 1H,1H,2H,2H-perfluorododecanesulfonate

STRUCTURE: **CAS #:** 108026-35-3



MOLECULAR FORMULA: C₁₂H₄F₂₁SO₃Na **MOLECULAR WEIGHT:** 650.18
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
48.3 ± 2.4 µg/mL (10:2FTS acid)
48.2 ± 2.4 µg/mL (10:2FTS anion)
CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 03/03/2021
EXPIRY DATE: (mm/dd/yyyy) 03/03/2026
RECOMMENDED STORAGE: Refrigerate ampoule

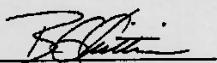
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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

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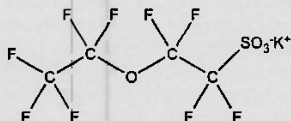
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFEESA *rec'd
8/20/21
WPH* **LOT NUMBER:** PFEESA0520

COMPOUND: Potassium perfluoro(2-ethoxyethane)sulfonate

STRUCTURE: **CAS #:** 117205-07-9



MOLECULAR FORMULA: C₄F₉SO₄K **MOLECULAR WEIGHT:** 354.19

CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt) **SOLVENT(S):** Methanol

44.6 ± 2.2 µg/ml (PFEESA acid)

44.5 ± 2.2 µg/ml (PFEESA anion)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 05/13/2020

EXPIRY DATE: (mm/dd/yyyy) 05/13/2025

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

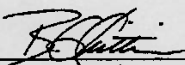
Figure 1: LC/MS Data (TIC and Mass Spectrum)

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.2% of perfluoro-n-octanoic acid (PFOA).

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Certified By:  **Date:** 05/29/2020
(mm/dd/yyyy)
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PFEESA0520 (1 of 4)
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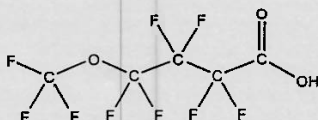
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PF5OHxA *res'd with 8/20/21* **LOT NUMBER:** PF5OHxA0320

COMPOUND: Perfluoro-5-oxahexanoic acid

SYNONYM: Perfluoro-4-methoxybutanoic acid (PFMBA)

STRUCTURE: **CAS #:** 863090-89-5



MOLECULAR FORMULA: C₅HF₉O₃ **MOLECULAR WEIGHT:** 280.05

CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 03/31/2020

EXPIRY DATE: (mm/dd/yyyy) 03/31/2025

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

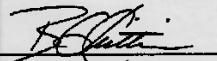
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

PF5OHxA0320 (1 of 4)
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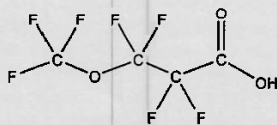
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PF4OPeA *rec'd
WPH
8/20/21* **LOT NUMBER:** PF4OPeA0320

COMPOUND: Perfluoro-4-oxapentanoic acid

SYNONYM: Perfluoro-3-methoxypropanoic acid (PFMPA)

STRUCTURE: **CAS #:** 377-73-1



MOLECULAR FORMULA: C₄HF₇O₃ **MOLECULAR WEIGHT:** 230.04

CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 03/31/2020

EXPIRY DATE: (mm/dd/yyyy) 03/31/2025

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

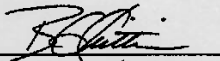
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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PF4OPeA0320 (1 of 4)
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10765 A-13



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

3,6-OPFHpA

rec'd
WPH
8/20/21

LOT NUMBER:

36OPFHpA0320

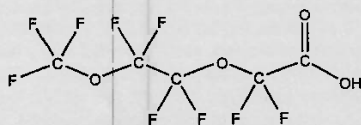
COMPOUND:

Perfluoro-3,6-dioxaheptanoic acid

STRUCTURE:

CAS #:

151772-58-6



MOLECULAR FORMULA:

C₆H₂F₉O₄

MOLECULAR WEIGHT:

296.04

CONCENTRATION:

50.0 ± 2.5 µg/ml

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/31/2020

EXPIRY DATE: (mm/dd/yyyy)

03/31/2025

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

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Certified By:

B.G. Chittim, General Manager

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

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10829



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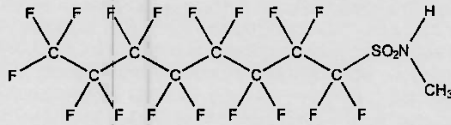
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSA-M
COMPOUND: N-methylperfluoro-1-octanesulfonamide

LOT NUMBER: NMeFOSA0721M

STRUCTURE:

CAS #: 31506-32-8



rec'd
WPL
10/5/21

MOLECULAR FORMULA: C₉H₄F₁₇NO₂S
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/03/2021
EXPIRY DATE: (mm/dd/yyyy) 08/03/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 513.17
SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: 
B.G. Chittim, General Manager

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

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Revision#:9, Revised 2020-12-23

NMeFOSA0721M (1 of 4)
rev0

7.8.1

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-EtFOSA-M

10837

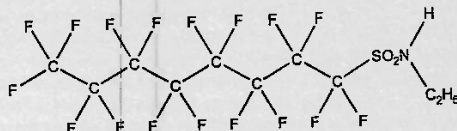
LOT NUMBER: NEtFOSA0821M

COMPOUND:

N-ethylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA:

C₁₀H₉F₁₇NO₂S

MOLECULAR WEIGHT:

527.20

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/12/2021

EXPIRY DATE: (mm/dd/yyyy)

08/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

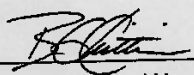
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:


B.G. Chittim, General Manager

Date: 08/16/2021

(mm/dd/yyyy)

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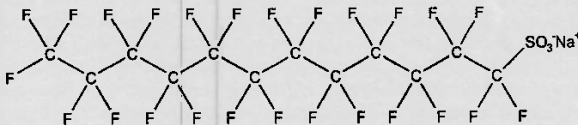
10840

PRODUCT CODE: L-PFDoS
COMPOUND: Sodium perfluoro-1-dodecanesulfonate

LOT NUMBER: LPFDoS0721

STRUCTURE:

CAS #: 1260224-54-1



MOLECULAR FORMULA: C₁₂F₂₅SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt)
48.5 ± 2.4 µg/mL (PFDoS acid)
48.4 ± 2.4 µg/mL (PFDoS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/09/2021
EXPIRY DATE: (mm/dd/yyyy) 07/09/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 722.14
SOLVENT(S): Methanol


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~0.2% of perfluoro-n-dodecanoic acid (PFDoA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

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

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PRODUCT CODE:

PFODA

10847 NG 01/18/23

LOT NUMBER:

PFODA0821

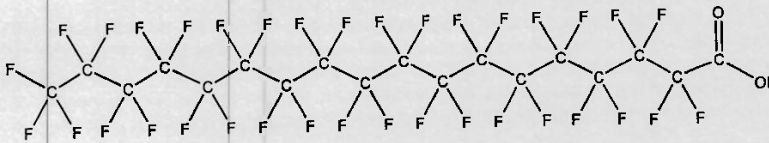
COMPOUND:

Perfluoro-n-octadecanoic acid

STRUCTURE:

CAS #:

16517-11-6



MOLECULAR FORMULA:

C₁₈H₃₅O₂

MOLECULAR WEIGHT:

914.14

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

09/03/2021

EXPIRY DATE: (mm/dd/yyyy)

09/03/2026

RECOMMENDED STORAGE:

Store ampoule at ambient temperature in a dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- The solubility of this product in methanol is very sensitive to storage conditions and solvent composition. The stated validity period applies to the sealed ampoules stored at ambient temperature.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 09/28/2021

(mm/dd/yyyy)

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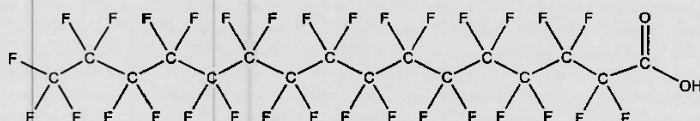
CERTIFICATE OF ANALYSIS DOCUMENTATION

10842 * NG 01/18/23

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

COMPOUND: Perfluoro-n-hexadecanoic acid

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



MOLECULAR FORMULA: C₁₆HF₃₁O₂ **MOLECULAR WEIGHT:** 814.13
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
 Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/07/2021
EXPIRY DATE: (mm/dd/yyyy) 05/07/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

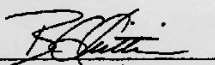
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PFAC-MXI

**Native Perfluorooctanesulfonamide
and Perfluorooctanesulfonamidoethanol
Solution/Mixture**

<u>PRODUCT CODE:</u>	PFAC-MXI
<u>LOT NUMBER:</u>	PFACMXI0921
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	09/08/2021
<u>LAST TESTED:</u> (mm/dd/yyyy)	09/14/2021
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	09/14/2026
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXI is a solution/mixture of two native perfluorooctanesulfonamides (FOSAs) and two native perfluorooctanesulfonamidoethanols (FOSEs). The components and their concentrations are given in Table A.

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Form#: 13, Issued 2004-11-10
Revision#: 3, Revised 2020-12-23

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rev0

7.8.1

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Table A: PFAC-MXI; Components and Concentrations (µg/mL; ± 5% in methanol)

Compound	Acronym	Concentration (µg/mL)	Peak Assignment in Figure 1
N-methylperfluoro-1-octanesulfonamide	N-MeFOSA	1.00	B
N-ethylperfluoro-1-octanesulfonamide	N-EtFOSA	1.00	D
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	N-MeFOSE	10.0	A
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	N-EtFOSE	10.0	C

Certified By: 
 B.G. Chittim, General Manager

Date: 09/23/2021
(mm/dd/yyyy)

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

PFACMXI0921 (3 of 5)
 rev0

7.8.1
 7

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**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PFAC-MXG

**Native Perfluoroalkyl Ether Carboxylic
Acids and Sulfonate Solution/Mixture**

<u>PRODUCT CODE:</u>	PFAC-MXG
<u>LOT NUMBER:</u>	PFACMXG1219
<u>SOLVENT(S):</u>	Methanol/Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	12/03/2019
<u>LAST TESTED:</u> (mm/dd/yyyy)	05/04/2020
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	05/04/2025
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

PFACMXG1219 (1 of 5)
rev2


7.8.1

7

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

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

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 07/30/2021
(mm/dd/yyyy)

10899



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CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-MXH

**Native Per- and Poly-fluoroalkyl Substance
Solution/Mixture**

PRODUCT CODE: PFAC-MXH
LOT NUMBER: PFACMXH0921
SOLVENT(S): Methanol / Isopropanol (2%) / Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 09/09/2021
LAST TESTED: (mm/dd/yyyy) 09/14/2021
EXPIRY DATE: (mm/dd/yyyy) 09/14/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXH is a solution/mixture of eleven native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₅, C₇, C₉, C₁₀ and C₁₂ linear; C₈ and C₈ linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide (FOSA). 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 br-NMeFOSAA
 Table C: Isomeric Components and Percent Composition of br-NEtFOSAA
 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

PFACMXH0921 (1 of 11)
 rev0

7.8.1

7

Table A: PFAC-MXH; Components and Concentrations (µg/mL, ± 5% in methanol / isopropanol (2%) / water (<1%))

Compound	Acronym	Concentration* (µg/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-butanoic acid	PFBA	4.00		1
Perfluoro-n-pentanoic acid	PFPeA	2.00		2
Perfluoro-n-hexanoic acid	PFHxA	1.00		5
Perfluoro-n-heptanoic acid	PFHpA	1.00		7
Perfluoro-n-octanoic acid	PFOA	1.00		11
Perfluoro-n-nonanoic acid	PFNA	1.00		14
Perfluoro-n-decanoic acid	PFDA	1.00		18
Perfluoro-n-undecanoic acid	PFUdA	1.00		23
Perfluoro-n-dodecanoic acid	PFDoA	1.00		26
Perfluoro-n-tridecanoic acid	PFTrDA	1.00		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1.00		29
Perfluoro-1-octanesulfonamide	FOSA	1.00		25
N-methylperfluorooctanesulfonamidoacetic acid ^a	N-MeFOSAA: linear isomer	0.760		20
	N-MeFOSAA: ∑ branched isomers	0.240		17
N-ethylperfluorooctanesulfonamidoacetic acid ^b	N-EtFOSAA: linear isomer	0.775		22
	N-EtFOSAA: ∑ branched isomers	0.225		21
Compound	Acronym	Concentration* (µg/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanesulfonate	L-PFBS	1.00	0.887	3
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	1.00	0.941	6
Potassium perfluorohexanesulfonate ^c	PFHxSK: linear isomer	0.811	0.741	9
	PFHxSK: ∑ branched isomers	0.189	0.173	8
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	1.00	0.953	12
Potassium perfluorooctanesulfonate ^d	PFOSK: linear isomer	0.788	0.732	15
	PFOSK: ∑ branched isomers	0.211	0.196	13
Sodium perfluoro-1-nonanesulfonate	L-PFNS	1.00	0.962	19
Sodium perfluoro-1-decanesulfonate	L-PFDS	1.00	0.965	24
Sodium perfluoro-1-dodecanesulfonate	L-PFDoS	1.00	0.970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4.00	3.75	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4.00	3.80	10
Sodium 1H,1H,2H,2H-perfluorodecanesulfonate	8:2FTS	4.00	3.84	16

^a See Table B for percent composition of linear and branched N-MeFOSAA isomers.
^b See Table C for percent composition of linear and branched N-EtFOSAA isomers.
^c See Table D for percent composition of linear and branched PFHxSK isomers.
^d See Table E for percent composition of linear and branched PFOSK isomers.

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 09/23/2021
(mm/dd/yyyy)

1117

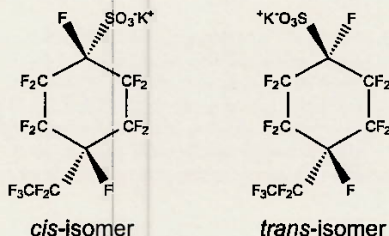


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFECHS **LOT NUMBER:** PFECHS1021
COMPOUND: Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

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



MOLECULAR FORMULA: C₈F₁₆SO₃K **MOLECULAR WEIGHT:** 500.22
CONCENTRATION: 50.0 ± 2.5 µg/mL (K salt) **SOLVENT(S):** Methanol
 46.2 ± 2.3 µg/mL (PFECHS acid)
 46.1 ± 2.3 µg/mL (PFECHS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/14/2021
EXPIRY DATE: (mm/dd/yyyy) 10/14/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

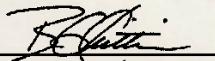
DOCUMENTATION/ DATA ATTACHED:

- 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 a mixture of the *cis/trans* isomers of PFECHS at a ratio of 1:1.27 (*cis:trans*).

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Certified By:  **Date:** 10/15/2021
 B.G. Chittim, General Manager (mm/dd/yyyy)

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

PFECHS1021 (1 of 4)
 rev0

7.8.1
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFPrS

LOT NUMBER:

LPFPrS0721

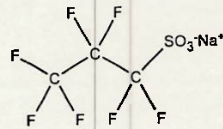
COMPOUND:

Sodium perfluoro-1-propanesulfonate

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

C₃F₇SO₃Na

MOLECULAR WEIGHT:

272.07

CONCENTRATION:

50.0 ± 2.5 µg/mL (Na salt)

46.0 ± 2.3 µg/mL (PFPrS acid)

45.8 ± 2.3 µg/mL (PFPrS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

07/12/2021

EXPIRY DATE: (mm/dd/yyyy)

07/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim, General Manager

Date: 08/04/2021

(mm/dd/yyyy)

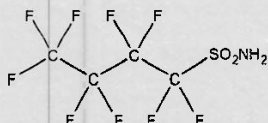
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11224


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CERTIFICATE OF ANALYSIS
 DOCUMENTATION

PRODUCT CODE: FBSA-I **LOT NUMBER:** FBSA11211
COMPOUND: Perfluoro-1-butananesulfonamide
STRUCTURE: **CAS #:** 30334-69-1



MOLECULAR FORMULA: C₄H₂F₉NO₂S **MOLECULAR WEIGHT:** 299.11
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Isopropanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/10/2021
EXPIRY DATE: (mm/dd/yyyy) 11/10/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____

B.G. Chittim, General Manager

Date: 11/10/2021

(mm/dd/yyyy)

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11225



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PRODUCT CODE:

FHxSA-I

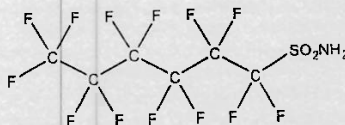
LOT NUMBER: FHxSA12211

COMPOUND:

Perfluoro-1-hexanesulfonamide

CAS #: 41997-13-1

STRUCTURE:



MOLECULAR FORMULA:

C₆H₂F₁₃NO₂S

MOLECULAR WEIGHT: 399.13

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S): Isopropanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/29/2021

EXPIRY DATE: (mm/dd/yyyy)

12/29/2026

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

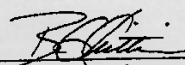
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:


B.G. Chittim, General Manager

Date: 01/10/2022
(mm/dd/yyyy)

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11336

PRODUCT CODE:

N-EtFOSE-M

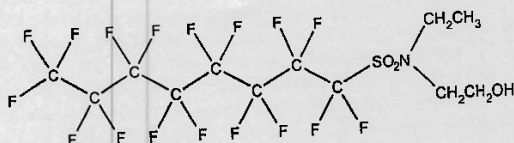
LOT NUMBER: NEtFOSE0622M

COMPOUND:

2-(N-ethylperfluoro-1-octanesulfonamido)ethanol

CAS #: 1691-99-2

STRUCTURE:



MOLECULAR FORMULA:

C₁₂H₁₀F₁₇NO₃S

MOLECULAR WEIGHT: 571.25

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/13/2022 (HRGC/LRMS)
05/13/2022 (LC/MS)

EXPIRY DATE: (mm/dd/yyyy)

05/13/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 07/13/2022
(mm/dd/yyyy)

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NEtFOSE0622M (1 of 5)
rev0

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

7.8.1
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSE-M

LOT NUMBER:

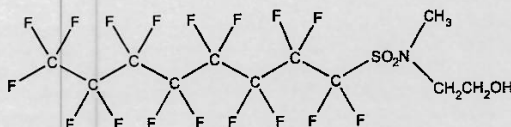
NMeFOSE0522M

COMPOUND:

2-(N-methylperfluoro-1-octanesulfonamido)ethanol

STRUCTURE:**CAS #:**

24448-09-7

**MOLECULAR FORMULA:**C₁₁H₈F₁₇NO₃S**MOLECULAR WEIGHT:**

557.22

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/13/2022 (HRGC/LRMS)

05/13/2022 (LC/MS)

EXPIRY DATE: (mm/dd/yyyy)

05/13/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)

Figure 2: LC/MS Data (Full Scan and Mass Spectrum)

Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

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Certified By:

B.G. Chittim, General Manager
Date: 06/14/2022
(mm/dd/yyyy)

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11383 A-J



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CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-ES Mass-Labelled PFAS Extraction Standard Solution/Mixture

PRODUCT CODE:	MPFAC-HIF-ES
LOT NUMBER:	MPFACHIFES0822
SOLVENT(S):	Methanol/Isopropanol (1%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	07/20/2022
LAST TESTED: (mm/dd/yyyy)	08/02/2022
EXPIRY DATE: (mm/dd/yyyy)	08/02/2025
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

MPFAC-HIF-ES is a solution/mixture of ten mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄-C₁₂, C₁₄), three mass-labelled (¹³C) perfluoroalkanesulfonates (C₄, C₆, and C₈), three mass-labelled (one ¹³C and two ²H) perfluoro-1-octanesulfonamides, three mass-labelled (¹³C) fluorotelomer sulfonates (4:2, 6:2, and 8:2), two mass-labelled (²H) perfluorooctanesulfonamidoacetic acids, two mass-labelled (²H) perfluorooctanesulfonamidoethanols, and mass-labelled (¹³C) hexafluoropropylene oxide dimer acid (GenX, M3HFPO-DA). The components and their concentrations are given in Table A.

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

Compound	Acronym	Concentration (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Perfluoro-n-(¹³ C ₄)butanoic acid	MPFBA	2000		1
Perfluoro-n-(¹³ C ₅)pentanoic acid	M5PFPeA	1000		2
Perfluoro-n-(1,2,3,4,6- ¹³ C ₅)hexanoic acid	M5PFHxA	500		5
Perfluoro-n-(1,2,3,4- ¹³ C ₆)heptanoic acid	M4PFHpA	500		7
Perfluoro-n-(¹³ C ₈)octanoic acid	M8PFOA	500		10
Perfluoro-n-(¹³ C ₉)nonanoic acid	M9PFNA	250		11
Perfluoro-n-(1,2,3,4,5,6- ¹³ C ₁₀)decanoic acid	M6PFDA	250		14
Perfluoro-n-(1,2,3,4,5,6,7- ¹³ C ₁₁)undecanoic acid	M7PFUdA	250		17
Perfluoro-n-(1,2- ¹³ C ₁₂)dodecanoic acid	MPFDoA	250		19
Perfluoro-n-(1,2- ¹³ C ₁₄)tetradecanoic acid	M2PFTeDA	250		23
Perfluoro-1-(¹³ C ₈)octanesulfonamide	M8FOSA	500		18
N-methyl-d ₃ -perfluoro-1-octanesulfonamide	d-N-MeFOSA	500		21
N-ethyl-d ₅ -perfluoro-1-octanesulfonamide	d-N-EtFOSA	500		24
N-methyl-d ₃ -perfluoro-1-octanesulfonamidoacetic acid	d3-N-MeFOSAA	1000		15
N-ethyl-d ₅ -perfluoro-1-octanesulfonamidoacetic acid	d5-N-EtFOSAA	1000		16
2-(N-methyl-d ₃ -perfluoro-1-octanesulfonamido)ethan-d ₃ -ol	d7-N-MeFOSE	5000		20
2-(N-ethyl-d ₅ -perfluoro-1-octanesulfonamido)ethan-d ₅ -ol	d9-N-EtFOSE	5000		22
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)(¹³ C ₃)propanoic acid	M3HFPO-DA	2000		6
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Sodium perfluoro-1-(2,3,4- ¹³ C ₃)butanesulfonate	M3PFBS	500	466	3
Sodium perfluoro-1-(1,2,3- ¹³ C ₃)hexanesulfonate	M3PFHxS	500	474	8
Sodium perfluoro-1-(¹³ C ₈)octanesulfonate	M8PFOS	500	479	12
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)hexanesulfonate	M2-4:2FTS	1000	938	4
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)octanesulfonate	M2-6:2FTS	1000	951	9
Sodium 1H,1H,2H,2H-perfluoro-(1,2- ¹³ C ₂)decanesulfonate	M2-8:2FTS	1000	960	13

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 08/02/2022
(mm/dd/yyyy)

11384 A-J



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-IS

Mass-Labelled Perfluoroalkyl Substance
Injection Standard Solution/Mixture

PRODUCT CODE: MPFAC-HIF-IS
LOT NUMBER: MPFACHIFIS0921
SOLVENT(S): Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 09/07/2021
LAST TESTED: (mm/dd/yyyy) 09/07/2021
EXPIRY DATE: (mm/dd/yyyy) 09/07/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

MPFAC-HIF-IS is a solution/mixture of five mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄, C₆, C₈-C₁₀) and two mass-labelled (¹⁸O and ¹³C) perfluoroalkanesulfonates (C₈ and C₉). The components and their concentrations are given in Table A.

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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


MPFACHIFIS0921 (1 of 5)
rev1

7.8.1
7

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

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

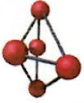
* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 10/13/2021
(mm/dd/yyyy)



Certified Reference Material CRM



CELEBRATED WEIGHT REPORT

Part Number: 64029A
Lot Number: 080522
Description: PFOA-L-D00
28 components
Expiration Date: 06/32/27
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 1.0
NIST Test ID#: 907B

Solvent(s): Methanol (1 ml KOH) 2-Propanol
Lot# 042722 (99%)
23714 (99%)
SE-05 Balances Uncertainty
0.012 Flat Uncertainty

Formulated By: Prashant Chaturan
Reviewed By: Pedro L. Planas
DATE: 06/05/22
DATE: 06/05/22

Volume(s) shown below were combined and diluted to (mL).
Note: All assigned values are within constraints.

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol (mL)	Uncertainty (mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Final Vol (mL)	Uncertainty (mL)	Assigned Value (µg/mL)	Uncertainty (µg/mL)	SOE Information (Solvent Safety Inc. On Attached pp.)
1. Perfluoro-n-butyric acid (PFBA)	99542	021022	0.02	2.00	0.017	50.1	1.00	0.02	375-22-4	N/A	N/A	N/A
2. Perfluoro-n-pentanoic acid (PFPA)	99543	060522	0.02	2.00	0.017	50.3	1.01	0.02	2706-80-3	N/A	N/A	N/A
3. Perfluoro-n-hexanoic acid (PFHxA)	99189	071122	0.02	2.00	0.017	50.2	1.00	0.02	307-24-4	N/A	N/A	N/A
4. Perfluoroheptanoic acid (PFHpA)	99197	040522	0.02	2.00	0.017	50.1	1.00	0.02	378-85-9	N/A	N/A	N/A
5. Perfluorooctanoic acid (b-PFOA)*	99202	060522	0.02	2.00	0.017	50.2	1.00	0.02	335-67-1 (L)	N/A	ip-rm 18mg/kg	N/A
6. Perfluorononanoic acid (PFNA)	99000	060222	0.02	2.00	0.017	50.1	1.00	0.02	375-95-1	N/A	N/A	N/A
7. Perfluorodecanoic acid (PFDA)	99195	041822	0.02	2.00	0.017	50.2	1.00	0.02	335-76-2	N/A	cert-57mg/kg	N/A
8. Perfluoroundecanoic acid (PFUdA)	99205	071522	0.02	2.00	0.017	50.1	1.00	0.02	2059-84-8	N/A	N/A	N/A
9. Perfluorododecanoic acid (PFDDa)	99196	071522	0.02	2.00	0.017	50.1	1.00	0.02	307-55-1	N/A	N/A	N/A
10. Perfluorotridecanoic acid (PFTRDA)	99204	021022	0.02	2.00	0.017	50.1	1.00	0.02	7269-94-6	N/A	N/A	N/A
11. Perfluorotetradecanoic acid (PFTRDA)	99203	030222	0.02	2.00	0.017	50.1	1.00	0.02	376-06-7	N/A	N/A	N/A
12. Perfluoro-1-octadecanoic acid (FOA)	3677	F0SA03221	0.02	2.00	0.017	50.0	1.00	0.05	754-91-6	N/A	N/A	N/A
13. Methylperfluorooctadecanoic acid (b-MFPOAA)*	4182	bMFPOAA021	0.02	2.00	0.017	50.0	1.00	0.05	2355-31-9 (L)	N/A	N/A	N/A
14. Methylperfluorododecanoic acid (b-MFDDAA)*	4183	bMFDDAA121	0.02	2.00	0.017	50.2	1.00	0.05	2991-50-6 (L)	N/A	N/A	N/A
15. Perfluorobutanesulfonic acid (PFBS)	99194	060522	0.02	2.00	0.017	50.2	1.00	0.02	375-73-6	N/A	N/A	N/A
16. Perfluoro-1-pentanesulfonic acid (PFPS)	99544	024222	0.02	2.00	0.017	50.1	1.00	0.02	2706-91-4	N/A	N/A	N/A
17. Perfluoroheptanesulfonic acid (PFPHS)*	99188	071522	0.02	2.00	0.017	50.2	1.00	0.02	355-46-4 (L)	N/A	N/A	N/A
18. Perfluoro-1-heptanesulfonic acid (PF1HS)	3672	LPFH0512	0.021	2.10	0.017	47.6	1.00	0.05	375-92-8	N/A	N/A	N/A
19. Heptafluorooctanesulfonic acid (b-PFOS)*	96201	030222	0.02	2.00	0.017	50.1	1.00	0.02	1783-23-1 (L)	N/A	N/A	N/A
20. Perfluoro-1-octanesulfonic acid (PFOS)	3657	LPFNS0422	0.021	2.10	0.017	48.0	1.01	0.05	68269-12-1	N/A	N/A	N/A
21. Perfluoro-1-decane sulfonic acid (PFDS)	3671	LPFDS0222	0.021	2.10	0.017	48.2	1.01	0.05	335-77-3	N/A	N/A	N/A
22. 1H,1H,2H,2H-Perfluorooctane sulfonic acid (PF2FS)	66272	090522	0.02	2.00	0.017	50.2	1.00	0.05	757184-72-4	N/A	N/A	N/A
23. 1H,1H,2H,2H-Perfluorononane sulfonic acid (PF2FN)	66273	071522	0.02	2.00	0.017	50.2	1.00	0.05	27619-97-2	N/A	N/A	N/A
24. 1H,1H,2H,2H-Perfluorodecane sulfonic acid (PF2FD)	3682	6PF1S0122	0.021	2.10	0.017	47.9	1.01	0.05	39108-34-4	N/A	N/A	N/A
25. 2-(Heptafluoroethyl)ethyl-2,3,3,3-tetrafluoropropionic acid (HFPEPA)	59665	060522	0.02	2.00	0.017	50.1	1.00	0.02	13282-13-6	N/A	N/A	N/A
26. 1-(Chlorooctadecyl)-3-oxooctadecane-1-sulfonic acid (1(C8-F)SO4S)	4185	1(C8F)SO4S022	0.021	2.10	0.017	47.1	1.00	0.05	763251-82-9	N/A	N/A	N/A
27. 1-(Chlorododecyl)-3-oxododecane-1-sulfonic acid (1(C12-F)SO4S)	4184	1(C12F)SO4S022	0.021	2.10	0.017	48.8	1.00	0.05	758426-58-1	N/A	N/A	N/A
28. Dodecafluoro-3H,4,6,8-dioxoheptanoic acid (ADONA)	4103	NDADONA022	0.021	2.10	0.017	47.1	1.00	0.05	810005-14-4	N/A	N/A	N/A
Perfluorooctanoic acid (linear)*	99202	060522	0.02	2.00	0.004	49.6	0.99	0.010	335-67-1 (L)	N/A	ip-rm 18mg/kg	N/A
Perfluorodecanoic acid (branched isomer)*	99202	060522	0.02	2.00	0.004	0.6	0.01	0.001	335-67-1 (L)	N/A	ip-rm 18mg/kg	N/A
Perfluorohexanesulfonic acid (linear)*	99198	071522	0.02	2.00	0.017	44.2	0.88	0.02	355-46-4 (L)	N/A	N/A	N/A
Perfluorohexanesulfonic acid (branched isomer)*	99198	071522	0.02	2.00	0.017	6.0	0.12	0.0021	355-46-4 (L)	N/A	N/A	N/A
Heptafluorooctanesulfonic acid (linear)*	96201	030222	0.02	2.00	0.017	38.1	0.76	0.02	1783-23-1 (L)	N/A	N/A	N/A
Heptafluorooctanesulfonic acid (branched isomer)*	96201	030222	0.02	2.00	0.017	7.5	0.15	0.003	1783-23-1 (L)	N/A	N/A	N/A
Heptafluorodecane sulfonic acid (branched isomer)*	96201	030222	0.02	2.00	0.017	4.0	0.08	0.002	1783-23-1 (L)	N/A	N/A	N/A
Heptafluorooctanesulfonic acid (branched isomer)*	96201	030222	0.02	2.00	0.017	0.5	0.010	0.0002	1783-23-1 (L)	N/A	N/A	N/A
Methylperfluoro-1-octadecanesulfonic acid (linear)*	4182	bMFPOAA021	0.02	2.00	0.017	36.0	0.72	0.04	2355-31-9 (L)	N/A	N/A	N/A
Methylperfluoro-1-octadecanesulfonic acid (branched)*	4182	bMFPOAA021	0.02	2.00	0.017	6.5	0.13	0.011	2355-31-9 (L)	N/A	N/A	N/A
Methylperfluoro-1-octadecanesulfonic acid (branched)*	4182	bMFPOAA021	0.02	2.00	0.017	6.0	0.10	0.005	2355-31-9 (L)	N/A	N/A	N/A
Methylperfluoro-1-octadecanesulfonic acid (branched)*	4182	bMFPOAA021	0.02	2.00	0.017	2.5	0.05	0.0029	2355-31-9 (L)	N/A	N/A	N/A
Methylperfluoro-1-octadecanesulfonic acid (branched)*	4183	bMFDDAA121	0.02	2.00	0.017	36.6	0.73	0.04	2991-50-6 (L)	N/A	N/A	N/A
Methylperfluoro-1-octadecanesulfonic acid (branched)*	4183	bMFDDAA121	0.02	2.00	0.017	7.7	0.15	0.009	2991-50-6 (L)	N/A	N/A	N/A
Methylperfluoro-1-octadecanesulfonic acid (branched)*	4183	bMFDDAA121	0.02	2.00	0.017	6.9	0.11	0.005	2991-50-6 (L)	N/A	N/A	N/A
Methylperfluoro-1-octadecanesulfonic acid (branched)*	4183	bMFDDAA121	0.02	2.00	0.017	0.4	0.007	0.0006	2991-50-6 (L)	N/A	N/A	N/A

A quantitative standard (Sect. 3.19) is available for PFOA that contains the linear and branched isomers (Wellington Labs, Cat. No. T-PFOA or equivalent). This qualitative PFOA standard must be purchased and used to identify isomers in the branched PFOA isomers, but the linear only PFOA standard must be used for quantitation (Sect. 12.2) until a quantitative PFOA standard containing the branched and linear isomers becomes commercially available.1

1. The certified value is the concentration calculated from the linear and branched isomer measurements unless otherwise stated.
 • Standard uncertainty is shown in parentheses, and the uncertainty is expanded to 95% confidence.
 • Standard uncertainty is certified (±0.15%) of the stated value, unless otherwise stated.
 • All standards, after opening amples, should be stored with care (light and under appropriate laboratory conditions).
 • Values are given in µg/mL unless otherwise stated.
 • Values are given in mg/kg unless otherwise stated.

rec'd 10/31/22 11492



**WELLINGTON
LABORATORIES**

**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PFAC-MXJ

**Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture**

<u>PRODUCT CODE:</u>	PFAC-MXJ
<u>LOT NUMBER:</u>	PFACMXJ0921
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	09/08/2021
<u>LAST TESTED:</u> (mm/dd/yyyy)	09/14/2021
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	09/14/2026
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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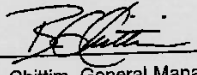
Form#:13, Issued 2004-11-10
Revision#:9, Revised 2020-12-23

PFACMXJ0921 (1 of 5)
rev1

7.8.1
7

Table 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: 10/02/2021
(mm/dd/yyyy)

11579 A-B
rec'd 12/27/22



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS
Solution/Mixture

<u>PRODUCT CODE:</u>	PFAC-MXF
<u>LOT NUMBER:</u>	PFACMXF0122
<u>SOLVENT(S):</u>	Methanol / Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	01/10/2022
<u>LAST TESTED:</u> (mm/dd/yyyy)	01/11/2022
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	01/11/2025
<u>RECOMMENDED STORAGE:</u>	Refrigerate ampoule

DESCRIPTION:

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

The individual native 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

PFACMXF0122 (1 of 5)
rev0

7.8.1

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

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

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 01/12/2022
(mm/dd/yyyy)

11603
rec'd: 01/10/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

PRODUCT CODE:	PFAC-MXJ
LOT NUMBER:	PFACMXJ0921
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	09/08/2021
LAST TESTED: (mm/dd/yyyy)	09/14/2021
EXPIRY DATE: (mm/dd/yyyy)	09/14/2026
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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


PFACMXJ0921 (1 of 5)
rev1

7.8.1

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: 10/02/2021
(mm/dd/yyyy)

11617 A-B rec'd 01/19/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS
Solution/Mixture

PRODUCT CODE:	PFAC-MXF
LOT NUMBER:	PFACMXF0122
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	01/10/2022
LAST TESTED: (mm/dd/yyyy)	01/11/2022
EXPIRY DATE: (mm/dd/yyyy)	01/11/2025
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 GenX (HFPO-DA). The components and their concentrations are given in Table A.

The individual native 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

PFACMXF0122 (1 of 5)
revD

7.8.1

7

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

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

* Concentrations have been rounded to three significant figures.

Certified By: 

B.G. Chittim, General Manager

Date: 01/12/2022
(mm/dd/yyyy)

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 03/01/23 09:30

Method: EPA 1633 Draft (QSM)

Started (mm/dd/yy 24:00)

Date/Time: 3/2/23 14:30

Finished (mm/dd/yy 24:00)

Balance ID: _____

Batch#: OP95682 Ext. By: GH

Conc. By: _____ Viald By: _____

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount (ul)	Spike Amount (ul)	Final Volume (ml)	Manifold ID	Comments
OP 95682 MB	/	500	7	N/A	25		S	E	
OP 95682 BS	/	500							
OP 95682 LLBS	/	600				200			
FC 3042-1	2	570				80			
2	2	570							
FC 3034-1	1	570							
2	1	550							
3	1	570							
4	1	550	V	V	V		V	V	
5	1	530	7	N/A	25		S	E	
OP FC 3034-2MS	3	570	7	N/A	25	200	S	E	
OP FC 3034-2MSD	4	570	7	N/A	25	200	S	E	
OP DUP									

Comments:

EIS (SURR) ID: 11636H-I Conc: 250-5000 ng/m³ Exp. Date: 02/23/24 Inj. By: GH Ver. By: AG
 SPIKE.1 ID: LCMS 20138 Conc: VARIED Exp. Date: 08/22/23 Inj. By: GH Ver. By: AG
 SPIKE.2 ID: _____ Conc: _____ Exp. Date: _____ Inj. By: _____ Ver. By: _____
 NIS (ISTD) ID: 11637D-E Conc: 250-1000 ng/m³ Exp. Date: 2/20/24 Inj. By: MW Ver. By: _____

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

Methanol Lot # 224267 1% NH4OH MeOH PF297 SPE Lot # 6464244-03
 Water Lot# OP95448 0.3M Formic Acid PF290 Syringe filter Lot # _____
 Acetic Acid# 194003 3% NH4OH Sol _____ pH paper Lot# 215322
 0.1M Formic PF296 5% Formic Acid _____ Carbon Lot# 160898

Relinquished By: Daniel D. D'Adamo Date: 03/01/23
 Accepted By: MW Date: 3/2/23

7.9.1 7