September 20, 2017 Service Request No:E1700950

Dawn Denham
Weston Solutions, Inc.
5599 San Felipe, Suite 700
Houston, TX 77056

Laboratory Results for: TCEQ Superfund Sites

Dear Dawn,

Enclosed are the results of the sample(s) submitted to our laboratory September 12, 2017
For your reference, these analyses have been assigned our service request number **E1700950.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the final complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. In accordance to the TNI 2009 Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My extension is 2284. You may also contact me via email at Nicole.Brown@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Nicole Brown
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 713 266 1599 | FAX +1 713 266 0130
ALS Group USA, Corp.
dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Environmental			LRC Date: 09/21/17					
Project Name:TCEQ Superfund Sites 02444.034.001.0001			Laboratory Job Number: E1700950					
Reviewer Name: Nicole Brown			Prep Batch Number(s): EQ1700406					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]	
R1	OI	**Chain-of-custody (C-O-C)**						
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X					
		Were all departures from standard conditions described in an exception report?	X					
R2	OI	**Sample and quality control (QC) identification**						
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
R3	OI	**Test reports**						
		Were all samples prepared and analyzed within holding times?	X					
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X					
		Were calculations checked by a peer or supervisor?	X					
		Were all analyte identifications checked by a peer or supervisor?	X					
		Were sample detection limits reported for all analytes not detected?	X					
		Were all results for soil and sediment samples reported on a dry weight basis?	X					
		Were % moisture (or solids) reported for all soil and sediment samples?	X					
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X			
		If required for the project, TICs reported?			X			
R4	O	**Surrogate recovery data**						
		Were surrogates added prior to extraction?	X					
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1	
R5	OI	**Test reports/summary forms for blank samples**						
		Were appropriate type(s) of blanks analyzed?	X					
		Were blanks analyzed at the appropriate frequency?	X					
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		Were blank concentrations < MQL?	X					
R6	OI	**Laboratory control samples (LCS):**						
		Were all COCs included in the LCS?	X					
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X					
		Were LCSs analyzed at the required frequency?	X					
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X					
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X					
		Was the LCSD RPD within QC limits?	X					
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**						
		Were the project/method specified analytes included in the MS and MSD?			X			
		Were MS/MSD analyzed at the appropriate frequency?			X			
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X			
		Were MS/MSD RPDs within laboratory QC limits?			X			
R8	OI	**Analytical duplicate data**						
		Were appropriate analytical duplicates analyzed for each matrix?			X			
		Were analytical duplicates analyzed at the appropriate frequency?			X			
		Were RPDs or relative standard deviations within the laboratory QC limits?			X			
R9	OI	**Method quantitation limits (MQLs):**						
		Are the MQLs for each method analyte included in the laboratory data package?	X					
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X					
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X					
R10	OI	**Other problems/anomalies**						
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				2, 3	
		Were all necessary corrective actions performed for the reported data?	X					
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X					
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X					

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Reviewer Name: Nicole Brown			Prep Batch Number(s): EQ1700406					
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Reportable Data	
Laboratory Name: ALS Environmental	LRC Date: 09/21/17
Project Name:TCEQ Superfund Sites 02444.034.001.0001	Laboratory Job Number: E1700950
Reviewer Name: Nicole Brown	Prep Batch Number(s): EQ1700406

ER#[5]	Description
1	Quantification of the native 2,3,7,8-substituted congeners is based on isotopic dilution, which automatically corrects for variation in extraction efficiency and provides accurate values even with poor recovery. Samples that had recoveries of labeled standards outside the acceptance limits are qualified with 'Y' flags on the Labeled Compound summary pages. In all cases, the signal-to-noise ratios are greater than 10:1 and detection limits were below the Method Reporting Limits.
2	Samples analyzed on the DB-5MSUI column were analyzed under conditions where sufficient separation between 2,3,7,8-TCDF and its closest eluter was achieved. Confirmation of this result was not required.
3	EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
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R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

ALS Environmental

Client:	Weston Solutions	**Service Request No.:**	E1700950
Project:	TCEQ Superfund Sites	**Date Received:**	09/11/17
Sample Matrix:	Soil		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One soil sample was received for analysis at ALS Environmental in Houston on 09/11/17.

The sample was received at 1.6 °C in good condition and is consistent with the accompanying chain of custody form. The sample was stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

B flags – Method Blanks

The Method Blank EQ1700406-01 contained low levels of 1234678-HpCDD, OCDD and 1234678-HpCDF below the Method Reporting Limit (MRL). The associated compounds in the samples are flagged with 'B' flags where the sample result is less than ten times the level detected in the method blank.

MS/MSD

EQ1700406: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of an MS/MSD for this extraction batch.

2378-TCDF

Samples analyzed on the DB-5MSUI column were analyzed under conditions where sufficient separation between 2,3,7,8-TCDF and its closest eluter was achieved. Confirmation of this result was not required.

Y flags – Labeled Standards

Quantification of the native 2,3,7,8-substituted congeners is based on isotopic dilution, which automatically corrects for variation in extraction efficiency and provides accurate values even with poor recovery. Samples that had recoveries of labeled standards outside the acceptance limits are qualified with 'Y' flags on the Labeled Compound summary pages. In all cases, the signal-to-noise ratios are greater than 10:1 and detection limits were below the Method Reporting Limits.

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

Detection Limits

Detection limits are calculated for each analyte in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

The TEQ Summary results for each sample have been calculated by ALS/Houston to include:

- WHO-1998 TEFs, for PCBs, PCDDs, 21 PCDFs for humans and wildlife. (M. Van den Berg, et al., Environ Health Perspect 106: 775-792, 1998)
- Non-detected compounds reported as ND = ½ * Detection Limit

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E1700950-001	Hall So-1	9/11/2017	1215

Service Request Summary

Folder #: **E1700950**
Client Name: Weston Solutions, Incorporated
Project Name: TCEQ Superfund Sites
Project Number: 02444.034.001.0001

Report To: Dawn Denham
Weston Solutions, Inc.
5599 San Felipe, Suite 700
Houston, TX 77056
USA
Phone Number: 713-985-6610
Cell Number: 832-347-3421
Fax Number: 713-985-6703
E-mail: dawn.denham@westonsolutions.com

Project Chemist: Nicole Brown
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 09/12/17
Internal Due Date: 9/18/2017
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number:
EDD: No EDD Specified

1 4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
Location: EHRMS-WIC 10D
Pressure Gas:
Rush

				HOUSTON	
Lab Samp No.	**Client Samp No**	**Matrix**	**Collected**	PCDD PCDF/8290	Total Solids/ALS SOP
E1700950-001	Hall So-1	Soil	09/11/17 1215	**IV**	**IV**

Folder Comments:

Rush 4-5 bus day TAT.
8290 confirmed 09/11/17
1998 TEFs,NDs = 1/2 EDLs. TRRP LRC
CC: Nan Toole on final reports. NB 09/11/17.

Superset Summary

Service Request: E1700950 **SuperSet Reference:** 17-0000436895 rev 00

Analytical Method: **8290**

Calibrations: 09/01/17

Data Files:

Raw Data	Begin CCAL	Method Blank	Lab ID
P407967	P407962	P407966	E1700950-001
P407966	P407962	P407966	EQ1700406-01
P407981	P407971	P407966	EQ1700406-02
P407982	P407971	P407966	EQ1700406-03

Data Qualifiers

HRMS Qualifier Set

B Indicates the associated analyte was found in the method blank at >1/10th the reported value.
E Estimated value. The reported concentration is above the calibration range of the instrument.
H Sample extracted and/or analyzed out of suggested holding time.
J Estimated value. The reported concentration is below the MRL.
K The ion abundance ratio between the primary and secondary ions were outside of theoretical acceptance limits.The concentration of this analyte should be considered as an estimate.
P Chlorodiphenyl ether interference was present at the retention time of the target analyte. Reported result should be considered an estimate.
Q Monitored lock-mass indicates matrix-interference. Reported result is estimated.
S Signal saturated detector. Result reported from dilution.
U Compound was analyzed for, but was not detected (ND).
X See Case Narrative.
Y Isotopically Labeled Standard recovery outside of acceptance limits. In all cases, the signal-to-nois ratios are greater than 10:1, making the recoveries acceptable.
i The MDL/MRL have been elevated due to a matrix interference.

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

ALS Environmental

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
American Association for Laboratory Accreditation	2897.01	11/30/2017
Arizona Department of Health Services	AZ0793	5/27/2018
Arkansas Department of Environmental Quality	17-027-0	3/27/2018
California Department of Health Services	2452	2/28/2018
Florida Department of Health	E87611	7/31/2018
Hawaii Department of Health	TX02694	4/30/2018
Illinois Environmental Protection Agency	004112	5/9/2018
Kansas Department of Health and Environment	E-10406	9/30/2017
Louisiana Department of Environmental Quality	03048	6/30/2018
Louisiana Department of Health and Hospitals	LA150026	12/31/2017
Maine Center for Disease Control and Prevention	2014019	6/5/2018
Maryland Department of the Environment	343	6/30/2018
Michigan Depratment of Environmental Quality	9971	6/5/2018
Minnesota Department of Health	840911	12/31/2017
Nebraska Department of Health and Human Services	NE-OS-25-13	4/30/2018
Nevada Department of Concervation and Natural Resources	TX014112013-2	7/31/2018
New Mexico Environment Department	TX02694	4/30/2018
New York Department of Health	11707	3/31/2018
Oklahoma Department of Environmental Quality	2014 124	8/31/2018
Oregon Environmental Laboratory Accreditation Program	TX200002-009	3/24/2018
Pennsylvania Department of Environmental Protection	68-03441	6/30/2018
Tennessee Department of Environment and Concervation	04016	6/30/2018
Texas Commision on Environmental Quality	TX104704231-17-18	4/30/2018
United States Department of Agriculture	P330-14-00067	6/19/2018
Utah Department of Health Environmental Laboratory Certification	TX02694	7/31/2018
Washington Department of Health	c819	11/14/2017
West Virginia Department of Environmental Protection	347	6/30/2018

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID E 1700950 DB-5MSUI SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date:	Analyst:	Samples:
09/19/17	TC	-001

Second Level - Data Review – to be filled by person doing peer review

Date:	Analyst:	Samples:
09/19/17	LKL	001

PEER REVIEW PAGE2015

Chain of Custody

ALS Environmental - Houston HRMS
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CHAIN OF CUSTODY / LABORATORY ANALYSIS REQUEST FORM

ALS Environmental
10450 Stancliff Road, Suite 210 Houston, TX 77099 Phone 713-266-1599
www.alsglobal.com

Page ____

E1700950
Weston Solutions, Inc.
TCEQ Superfund Sites

5

Project Name: TCEQ Superfund Sites	Project Number: 02444.034.001.0001
Report To: Dawn.Denham@WestonSolutions.com	Report CC:
Company/Address: Weston Solutions, 5599 San Felipe, Ste 700, Houston, TX 77056	
Phone #: 7139856610	FAX #:
Sampler's Signature:	Sampler's Printed Name: Michael Kanarek

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

CLIENT SAMPLE ID	LAB ID	SAMPLING DATE	SAMPLING TIME	Matrix	NUMBER OF CONTAINERS		8290 or 8280 Dioxins Furans	REMARKS
					Preservative		0	
Hall SO-1		9/11/17	1215	S	1		X	

Preservative Key
0. None
1. HCL
2. HNO3
3. H2SO4
4. NaOH
5. Zn. Acetate
6. MeOH
7. NaHSO4

Special Instructions/Comments: **RUSH!!! 72 hour TAT!!!**

TURNAROUND REQUIREMENTS
X RUSH (SURCHARGES APPLY)
___ STANDARD
REQUESTED FAX DATE
REQUESTED REPORT DATE

REPORT REQUIREMENTS
___ I. Results Only
___ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
___ III. Results + QC and Calibration Summaries
X IV. Data Validation Report with Raw Data
Edata ___ Yes ___ No

INVOICE INFORMATION
P.O. # ___
Bill to ___

Relinquished By	Received By	Relinquished By	Received By	Relinquished By	Received By
Signature	Signature	Signature	Signature	Signature	Signature
Printed Name: Michael Kanarek	Printed Name: J. Matthews	Printed Name	Printed Name	Printed Name	Printed Name
Firm: Weston Solutions	Firm: ALS Hou	Firm	Firm	Firm	Firm
Date/Time: 9/11/17 18:38	Date/Time: 9/11/17 18:38	Date/Time	Date/Time	Date/Time	Date/Time

Cooler - Green Temp 1.1 1120 CF0.5

ALS Environmental

Cooler Receipt Form

Project Chemist: NB

Client/Project: WESTON

Thermometer ID: SMOU - IR20

Date/Time Received: 9-12-17 1838 Initials: CG

Date/Time Logged in: 9-12-17 Initials: CG

1. Method of delivery: ◯ US Mail ◯ Fed Ex ◯ UPS ◯ DHL ◯ Courier ✓ Client
2. Samples received in: ✓ Cooler ◯ Box ◯ Envelope ◯ Other
3. Were custody seals on coolers? ◯ Yes ✓ No
   Were they intact? ◯ Yes ◯ No ✓ N/A
   Were they signed and dated? ◯ Yes ◯ No ✓ N/A
   If yes, how many and where? —
4. Packing Material: ◯ Inserts ✓ Baggies ✓ Bubble Wrap ◯ Gel Packs ✓ Wet Ice ◯ Sleeves ◯ Other
5. Foreign or Regulated Soil? ◯ Yes ✓ No Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
—		9-11-17	1840	JM	1.1/1.6	☐
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ✓ Yes ◯ No
7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ✓ Yes ◯ No
8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ✓ Yes ◯ No
9. Were appropriate bottles/containers and volumes received for the requested tests? ✓ Yes ◯ No
10. Did sample labels and tags agree with custody documents? ✓ Yes ◯ No

Notes, Discrepancies, & Resolutions:

Service request Label: E1700950 Weston Solutions, Inc. TCEQ Superfund Sites 5

Effective 10/04/2013 ALS Environmental - Houston HR.

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SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 298030 **Prep WorkFlow:** OrgExtDioxS(30) **Status:** Prepped
Team: Semivoa GCMS/ALOPEZ **Prep Method:** Method **Prep Date/Time:** 9/14/17 05:00 PM

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E1700950-001	Hall So-1	.01	8290/PCDD PCDF			Soil	10.030g	Brown Soil
2	EQ1700406-01	MB		8290A/PCDD PCDF			Solid	10.122g	
3	EQ1700406-02	LCS		8290A/PCDD PCDF			Solid	10.189g	
4	EQ1700406-03	DLCS		8290A/PCDD PCDF			Solid	10.028g	
5	K1709456-018	IN86-17	.01	8290A/PCDD PCDF			Sediment	20.203g	Grey Soil
6	K1709456-019	IN87-17	.01	8290A/PCDD PCDF			Sediment	20.189g	Grey Soil
7	K1709456-020	IN88-17	.01	8290A/PCDD PCDF			Sediment	20.762g	White Soil
8	K1709456-021	IN89-17	.01	8290A/PCDD PCDF			Sediment	20.862g	KMCCOY K-Balance-47 / Brown Gravel
9	K1709456-022	IN90-17	.01	8290A/PCDD PCDF			Sediment	20.960g	White soil
10	K1709456-023	IN92-17	.01	8290A/PCDD PCDF			Sediment	20.304g	Grey Soil
11	K1709456-024	IN94-17	.01	8290A/PCDD PCDF			Sediment	20.221g	Tan Soil
12	K1709456-025	IN96-17	.01	8290A/PCDD PCDF			Sediment	20.077g	Tan Soil
13	K1709456-026	IN98-17	.01	8290A/PCDD PCDF			Sediment	20.535g	Brown Gravel
14	K1709456-027	IN99-17	.01	8290A/PCDD PCDF			Sediment	19.931g	Tan Soil
15	K1709456-028	IN100-17	.01	8290A/PCDD PCDF			Sediment	20.409g	Tan Soil
16	K1709456-029	IN101-17	.01	8290A/PCDD PCDF			Sediment	20.470g	Tan Soil

Spiking Solutions

Name: 1613B Matrix Working Standard Inventory ID 183440 Logbook Ref: 183440 JG 8/17/17 2-20 ng/mL Expires On: 02/13/2018

EQ1700406-02	100.00µL	EQ1700406-02	100.00µL	EQ1700406-03	100.00µL	EQ1700406-03	100.00µL

Name: 8290/1613B Cleanup Working Standard Inventory ID 183803 Logbook Ref: 183803 JG 9/5/17 8 ng/mL Expires On: 10/29/2017

E1700950-001	100.00µL	EQ1700406-01	100.00µL	EQ1700406-01	100.00µL	EQ1700406-02	100.00µL	EQ1700406-02	100.00µL	EQ1700406-03	100.00µL
EQ1700406-03	100.00µL	K1709456-018	100.00µL	K1709456-019	100.00µL	K1709456-020	100.00µL	K1709456-021	100.00µL	K1709456-022	100.00µL
K1709456-023	100.00µL	K1709456-024	100.00µL	K1709456-025	100.00µL	K1709456-026	100.00µL	K1709456-027	100.00µL	K1709456-028	100.00µL
K1709456-029	100.00µL										

Name: 1613B Labeled Working Standard Inventory ID 183984 Logbook Ref: 183984 Jr 2-4ng/ml 9/13/17 Expires On: 10/31/2017

E1700950-001	1,000.00µL	EQ1700406-01	1,000.00µL	EQ1700406-01	1,000.00µL	EQ1700406-02	1,000.00µL	EQ1700406-02	1,000.00µL	EQ1700406-03	1,000.00µL
EQ1700406-03	1,000.00µL	K1709456-018	1,000.00µL	K1709456-019	1,000.00µL	K1709456-020	1,000.00µL	K1709456-021	1,000.00µL	K1709456-022	1,000.00µL
K1709456-023	1,000.00µL	K1709456-024	1,000.00µL	K1709456-025	1,000.00µL	K1709456-026	1,000.00µL	K1709456-027	1,000.00µL	K1709456-028	1,000.00µL
K1709456-029	1,000.00µL										

Preparation Information Benchsheet

Prep Run#: 298030 **Prep WorkFlow:** OrgExtDioxS(30) **Status:** Prepped
Team: Semivoa GCMS/ALOPEZ **Prep Method:** Method **Prep Date/Time:** 9/14/17 05:00 PM

Preparation Materials

Carbon, High Purity	JR7/18/2017 (182733)	Ethyl Acetate 99.9% Minimum EtOAc	AL 3/3/17 (179750)	Glass Wool	JG 07/06/2017 (182496)
Hexanes 95%	JG 8/22/17 (183603)	Dichloromethane (Methylene Chloride) 99.9% MeCl2	JG 7/17/2017 (182665)	Sodium Hydroxide 1N NaOH	sodium hydroxide (180303)
Sodium Sulfate Anhydrous Reagent Grade Na2SO4	AL 6/8/17 (181861)	Tridecane (n-Tridecane)	JG 7/18/17 (182731)	Silica Gel	JR7/18/2017 (182734)
sulfuric acid	JG 7/20/17 (182760)	Toluene 99.9% Minimum	AL 9/6/17 (183870)		

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	9/14/17 17:00	Started:	9/15/17 13:00	Started:	9/16/17 09:00	Started:	9/16/17 12:00
Finished:	9/15/17 12:00	Finished:	9/15/17 14:00	Finished:	9/16/17 12:00	Finished:	9/16/17 15:00
By:	ALOPEZ	By:	TWOODS	By:	TWOODS	By:	TWOODS
Comments		Comments		Comments		Comments	

Comments: _____

Reviewed By: tw Date: 09/19/17

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

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Analytical Results

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ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Weston Solutions, Incorporated	**Service Request:**	E1700950
Project:	TCEQ Superfund Sites/02444.034.001.0001	**Date Collected:**	09/11/17 12:15
Sample Matrix:	Soil	**Date Received:**	09/12/17 18:40
Sample Name:	Hall So-1	**Units:**	ng/Kg
Lab Code:	E1700950-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	8290	**Date Analyzed:**	09/19/17 10:41
Prep Method:	Method	**Date Extracted:**	9/14/17
Sample Amount:	10.030g	**Instrument Name:**	E-HRMS-06
		GC Column:	DB-5MSUI
Data File Name:	P407967	**Blank File Name:**	P407966
ICAL Date:	09/01/17	**Cal Ver. File Name:**	P407962

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.239	0.547			1
1,2,3,7,8-PeCDD	1.99**J**		0.652	2.73	1.64	1.000	1
1,2,3,4,7,8-HxCDD	ND	U	0.442	2.73			1
1,2,3,6,7,8-HxCDD	87.0		0.494	2.73	1.23	1.000	1
1,2,3,7,8,9-HxCDD	23.5		0.455	2.73	1.16	1.007	1
1,2,3,4,6,7,8-HpCDD	443		0.939	2.73	1.05	1.000	1
OCDD	2380		3.02	5.47	0.89	1.000	1
2,3,7,8-TCDF	0.638		0.219	0.547	0.68	1.001	1
1,2,3,7,8-PeCDF	ND	U	0.692	2.73			1
2,3,4,7,8-PeCDF	ND	U	0.708	2.73			1
1,2,3,4,7,8-HxCDF	1.99**J**		0.703	2.73	1.08	1.000	1
1,2,3,6,7,8-HxCDF	1.56**J**		0.701	2.73	1.17	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.599	2.73			1
2,3,4,6,7,8-HxCDF	2.74		0.728	2.73	1.34	1.000	1
1,2,3,4,6,7,8-HpCDF	98.5		0.790	2.73	1.02	1.000	1
1,2,3,4,7,8,9-HpCDF	3.58		1.05	2.73	0.98	1.000	1
OCDF	164		1.09	5.47	0.83	1.006	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Weston Solutions, Incorporated	**Service Request:**	E1700950
Project:	TCEQ Superfund Sites/02444.034.001.0001	**Date Collected:**	09/11/17 12:15
Sample Matrix:	Soil	**Date Received:**	09/12/17 18:40
Sample Name:	Hall So-1	**Units:**	ng/Kg
Lab Code:	E1700950-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	8290	**Date Analyzed:**	09/19/17 10:41
Prep Method:	Method	**Date Extracted:**	9/14/17
Sample Amount:	10.030g	**Instrument Name:**	E-HRMS-06
		GC Column:	DB-5MSUI
Data File Name:	P407967	**Blank File Name:**	P407966
ICAL Date:	09/01/17	**Cal Ver. File Name:**	P407962

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	0.634		0.239	0.547	0.76		1
Total Penta-Dioxins	5.30		0.652	2.73	1.62		1
Total Hexa-Dioxins	683		0.464	2.73	1.25		1
Total Hepta-Dioxins	867		0.939	2.73	1.04		1
Total Tetra-Furans	4.06		0.219	0.547	0.73		1
Total Penta-Furans	15.3		0.700	2.73	1.36		1
Total Hexa-Furans	112		0.680	2.73	1.28		1
Total Hepta-Furans	308		0.906	2.73	1.02		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Weston Solutions, Incorporated	**Service Request:**	E1700950
Project:	TCEQ Superfund Sites/02444.034.001.0001	**Date Collected:**	09/11/17 12:15
Sample Matrix:	Soil	**Date Received:**	09/12/17 18:40
Sample Name:	Hall So-1	**Units:**	Percent
Lab Code:	E1700950-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	8290	**Date Analyzed:**	09/19/17 10:41
Prep Method:	Method	**Date Extracted:**	9/14/17
Sample Amount:	10.030g	**Instrument Name:**	E-HRMS-06
		GC Column:	DB-5MSUI
Data File Name:	P407967	**Blank File Name:**	P407966
ICAL Date:	09/01/17	**Cal Ver. File Name:**	P407962

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
C13-2,3,7,8-TCDD	2000	1388.024	69		40-135	0.76	1.021
C13-1,2,3,7,8-PeCDD	2000	1374.135	69		40-135	1.59	1.185
C13-1,2,3,4,7,8-HxCDD	2000	1111.290	56		40-135	1.26	0.991
C13-1,2,3,6,7,8-HxCDD	2000	1130.330	57		40-135	1.25	0.993
C13-1,2,3,4,6,7,8-HpCDD	2000	955.084	48		40-135	1.04	1.064
C13-OCDD	4000	1302.736	33	**Y**	40-135	0.91	1.137
C13-2,3,7,8-TCDF	2000	1232.421	62		40-135	0.77	0.993
C13-1,2,3,7,8-PeCDF	2000	1351.786	68		40-135	1.58	1.143
C13-2,3,4,7,8-PeCDF	2000	1360.983	68		40-135	1.60	1.175
C13-1,2,3,4,7,8-HxCDF	2000	1029.254	51		40-135	0.50	0.970
C13-1,2,3,6,7,8-HxCDF	2000	1094.996	55		40-135	0.52	0.973
C13-1,2,3,7,8,9-HxCDF	2000	1413.201	71		40-135	0.52	1.008
C13-2,3,4,6,7,8-HxCDF	2000	1132.976	57		40-135	0.53	0.987
C13-1,2,3,4,6,7,8-HpCDF	2000	941.085	47		40-135	0.44	1.040
C13-1,2,3,4,7,8,9-HpCDF	2000	1061.800	53		40-135	0.43	1.077
CL37-2,3,7,8-TCDD	800	559.636	70		40-135	NA	1.021

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Weston Solutions, Incorporated	**Service Request:**	E1700950
Project:	TCEQ Superfund Sites/02444.034.001.0001	**Date Collected:**	09/11/17 12:15
Sample Matrix:	Soil	**Date Received:**	09/12/17 18:40
Sample Name:	Hall So-1	**Units:**	ng/Kg
Lab Code:	E1700950-001	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 8290

Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.239	0.547	1	1	0.274
1,2,3,7,8-PeCDD	**1.99**	0.652	2.73	1	1	1.99
1,2,3,4,7,8-HxCDD	ND	0.442	2.73	1	0.1	0.137
1,2,3,6,7,8-HxCDD	**87.0**	0.494	2.73	1	0.1	8.70
1,2,3,7,8,9-HxCDD	**23.5**	0.455	2.73	1	0.1	2.35
1,2,3,4,6,7,8-HpCDD	**443**	0.939	2.73	1	0.01	4.43
OCDD	**2380**	3.02	5.47	1	0.0001	0.238
2,3,7,8-TCDF	**0.638**	0.219	0.547	1	0.1	0.0638
1,2,3,7,8-PeCDF	ND	0.692	2.73	1	0.05	0.0683
2,3,4,7,8-PeCDF	ND	0.708	2.73	1	0.5	0.683
1,2,3,4,7,8-HxCDF	**1.99**	0.703	2.73	1	0.1	0.199
1,2,3,6,7,8-HxCDF	**1.56**	0.701	2.73	1	0.1	0.156
1,2,3,7,8,9-HxCDF	ND	0.599	2.73	1	0.1	0.137
2,3,4,6,7,8-HxCDF	**2.74**	0.728	2.73	1	0.1	0.274
1,2,3,4,6,7,8-HpCDF	**98.5**	0.790	2.73	1	0.01	0.985
1,2,3,4,7,8,9-HpCDF	**3.58**	1.05	2.73	1	0.01	0.0358
OCDF	**164**	1.09	5.47	1	0.0001	0.0164
		Total TEQ				20.7

1998 WHO TEFs, ND = 0.5

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Weston Solutions, Incorporated	**Service Request:**	E1700950
Project:	TCEQ Superfund Sites/02444.034.001.0001	**Date Collected:**	09/11/17 12:15
Sample Matrix:	Soil	**Date Received:**	09/12/17 18:40
Sample Name:	Hall So-1	**Units:**	Percent
Lab Code:	E1700950-001	**Basis:**	As Received

Total Solids

Analysis Method:	ALS SOP	**Date Analyzed:**	09/15/17 16:56
	5.802g		NA
			E-Balance-01

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Solids	91.2		-	-			1

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Analytical Report

Client:	Weston Solutions, Incorporated	**Service Request:**	E1700950
Project:	TCEQ Superfund Sites/02444.034.001.0001	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700406-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	8290	**Date Analyzed:**	09/19/17 09:53
Prep Method:	Method	**Date Extracted:**	9/14/17
Sample Amount:	10.122g	**Instrument Name:**	E-HRMS-06
		GC Column:	DB-5MSUI
Data File Name:	P407966	**Blank File Name:**	P407966
ICAL Date:	09/01/17	**Cal Ver. File Name:**	P407962

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.335	0.494			1
1,2,3,7,8-PeCDD	ND	U	0.119	2.47			1
1,2,3,4,7,8-HxCDD	ND	U	0.0890	2.47			1
1,2,3,6,7,8-HxCDD	ND	U	0.0966	2.47			1
1,2,3,7,8,9-HxCDD	ND	U	0.0901	2.47			1
1,2,3,4,6,7,8-HpCDD	0.374**JK**		0.0982	2.47	0.58	1.000	1
OCDD	4.84**J**		0.212	4.94	0.86	1.000	1
2,3,7,8-TCDF	ND	U	0.313	0.494			1
1,2,3,7,8-PeCDF	ND	U	0.107	2.47			1
2,3,4,7,8-PeCDF	ND	U	0.104	2.47			1
1,2,3,4,7,8-HxCDF	ND	U	0.0744	2.47			1
1,2,3,6,7,8-HxCDF	ND	U	0.0716	2.47			1
1,2,3,7,8,9-HxCDF	ND	U	0.0742	2.47			1
2,3,4,6,7,8-HxCDF	ND	U	0.0699	2.47			1
1,2,3,4,6,7,8-HpCDF	0.0701**JK**		0.0455	2.47	0.66	1.001	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.0572	2.47			1
OCDF	ND	U	0.272	4.94			1

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Analytical Report

Client:	Weston Solutions, Incorporated	**Service Request:**	E1700950
Project:	TCEQ Superfund Sites/02444.034.001.0001	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700406-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	8290	**Date Analyzed:**	09/19/17 09:53
Prep Method:	Method	**Date Extracted:**	9/14/17
Sample Amount:	10.122g	**Instrument Name:**	E-HRMS-06
		GC Column:	DB-5MSUI
Data File Name:	P407966	**Blank File Name:**	P407966
ICAL Date:	09/01/17	**Cal Ver. File Name:**	P407962

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.335	0.494			1
Total Penta-Dioxins	ND	U	0.119	2.47			1
Total Hexa-Dioxins	ND	U	0.0919	2.47			1
Total Hepta-Dioxins	0.614**J**		0.0982	2.47	1.05		1
Total Tetra-Furans	ND	U	0.313	0.494			1
Total Penta-Furans	ND	U	0.105	2.47			1
Total Hexa-Furans	ND	U	0.0724	2.47			1
Total Hepta-Furans	0.152**J**		0.0508	2.47	1.20		1

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Analytical Report

Client:	Weston Solutions, Incorporated	**Service Request:**	E1700950
Project:	TCEQ Superfund Sites/02444.034.001.0001	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	EQ1700406-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	8290	**Date Analyzed:**	09/19/17 09:53
Prep Method:	Method	**Date Extracted:**	9/14/17
Sample Amount:	10.122g	**Instrument Name:**	E-HRMS-06
		GC Column:	DB-5MSUI
Data File Name:	P407966	**Blank File Name:**	P407966
ICAL Date:	09/01/17	**Cal Ver. File Name:**	P407962

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
C13-2,3,7,8-TCDD	2000	676.699	34	**Y**	40-135	0.77	1.021
C13-1,2,3,7,8-PeCDD	2000	943.877	47		40-135	1.55	1.185
C13-1,2,3,4,7,8-HxCDD	2000	962.538	48		40-135	1.26	0.991
C13-1,2,3,6,7,8-HxCDD	2000	988.396	49		40-135	1.29	0.994
C13-1,2,3,4,6,7,8-HpCDD	2000	936.430	47		40-135	1.05	1.066
C13-OCDD	4000	1526.472	38	**Y**	40-135	0.89	1.139
C13-2,3,7,8-TCDF	2000	570.867	29	**Y**	40-135	0.76	0.993
C13-1,2,3,7,8-PeCDF	2000	853.888	43		40-135	1.58	1.143
C13-2,3,4,7,8-PeCDF	2000	898.456	45		40-135	1.56	1.175
C13-1,2,3,4,7,8-HxCDF	2000	821.719	41		40-135	0.50	0.971
C13-1,2,3,6,7,8-HxCDF	2000	905.515	45		40-135	0.51	0.974
C13-1,2,3,7,8,9-HxCDF	2000	1059.256	53		40-135	0.51	1.008
C13-2,3,4,6,7,8-HxCDF	2000	963.830	48		40-135	0.51	0.988
C13-1,2,3,4,6,7,8-HpCDF	2000	875.068	44		40-135	0.44	1.041
C13-1,2,3,4,7,8,9-HpCDF	2000	968.736	48		40-135	0.43	1.078
CL37-2,3,7,8-TCDD	800	276.134	35	**Y**	40-135	NA	1.021

Accuracy & Precision

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dba ALS Environmental

QA/QC Report

Client:	Weston Solutions, Incorporated	**Service Request:**	E1700950
Project:	TCEQ Superfund Sites/02444.034.001.0001	**Date Analyzed:**	09/19/17
Sample Matrix:	Soil	**Date Extracted:**	09/14/17

Duplicate Lab Control Sample Summary
Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	8290	**Units:**	ng/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	562479

	Lab Control Sample EQ1700406-02			Duplicate Lab Control Sample EQ1700406-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,2,3,4,6,7,8-HpCDD	102	98.1	104	104	99.7	104	70-130	2	25
1,2,3,4,6,7,8-HpCDF	98.1	98.1	100	95.5	99.7	96	70-130	3	25
1,2,3,4,7,8,9-HpCDF	98.0	98.1	100	97.8	99.7	98	70-130	<1	25
1,2,3,4,7,8-HxCDD	96.9	98.1	99	96.6	99.7	97	70-130	<1	25
1,2,3,4,7,8-HxCDF	97.8	98.1	100	102	99.7	102	70-130	4	25
1,2,3,6,7,8-HxCDD	108	98.1	110	107	99.7	107	70-130	1	25
1,2,3,6,7,8-HxCDF	98.6	98.1	99	96.3	99.7	98	70-130	2	25
1,2,3,7,8,9-HxCDD	105	98.1	107	107	99.7	107	70-130	2	25
1,2,3,7,8,9-HxCDF	88.5	98.1	90	91.6	99.7	92	70-130	3	25
1,2,3,7,8-PeCDD	105	98.1	107	105	99.7	105	70-130	<1	25
1,2,3,7,8-PeCDF	96.3	98.1	98	96.1	99.7	96	70-130	<1	25
2,3,4,6,7,8-HxCDF	98.3	98.1	100	96.2	99.7	97	70-130	2	25
2,3,4,7,8-PeCDF	100	98.1	102	102	99.7	104	70-130	2	25
2,3,7,8-TCDD	19.3	19.6	98	18.4	19.9	92	70-130	5	25
2,3,7,8-TCDF	21.0	19.6	107	20.4	19.9	102	70-130	3	25
OCDD	205	196	104	206	199	104	70-130	<1	25
OCDF	224	196	114	231	199	116	70-130	3	25

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Weston Solutions, Incorporated	**Service Request:**	E1700950
Project:	TCEQ Superfund Sites/02444.034.001.0001	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700406-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	8290	**Date Analyzed:**	09/19/17 23:06
Prep Method:	Method	**Date Extracted:**	9/14/17
Sample Amount:	10.189g	**Instrument Name:**	E-HRMS-06
		GC Column:	DB-5MSUI
Data File Name:	P407981	**Blank File Name:**	P407966
ICAL Date:	09/01/17	**Cal Ver. File Name:**	P407971

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	19.3		0.332	0.491	0.80	1.001	1
1,2,3,7,8-PeCDD	105		0.129	2.45	1.52	1.001	1
1,2,3,4,7,8-HxCDD	96.9		0.0706	2.45	1.22	1.000	1
1,2,3,6,7,8-HxCDD	108		0.0782	2.45	1.28	1.000	1
1,2,3,7,8,9-HxCDD	105		0.0723	2.45	1.31	1.006	1
1,2,3,4,6,7,8-HpCDD	102		0.135	2.45	1.03	1.000	1
OCDD	205		0.646	4.91	0.89	1.000	1
2,3,7,8-TCDF	21.0		0.400	0.491	0.77	1.000	1
1,2,3,7,8-PeCDF	96.3		0.401	2.45	1.58	1.001	1
2,3,4,7,8-PeCDF	100		0.388	2.45	1.58	1.001	1
1,2,3,4,7,8-HxCDF	97.8		0.0959	2.45	1.24	1.000	1
1,2,3,6,7,8-HxCDF	98.6		0.0926	2.45	1.22	1.000	1
1,2,3,7,8,9-HxCDF	88.5		0.109	2.45	1.28	1.000	1
2,3,4,6,7,8-HxCDF	98.3		0.0990	2.45	1.23	1.000	1
1,2,3,4,6,7,8-HpCDF	98.1		0.308	2.45	1.03	1.000	1
1,2,3,4,7,8,9-HpCDF	98.0		0.394	2.45	1.01	1.000	1
OCDF	224		0.498	4.91	0.90	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Weston Solutions, Incorporated	**Service Request:**	E1700950
Project:	TCEQ Superfund Sites/02444.034.001.0001	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700406-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	8290	**Date Analyzed:**	09/19/17 23:06
Prep Method:	Method	**Date Extracted:**	9/14/17
Sample Amount:	10.189g	**Instrument Name:**	E-HRMS-06
		GC Column:	DB-5MSUI
Data File Name:	P407981	**Blank File Name:**	P407966
ICAL Date:	09/01/17	**Cal Ver. File Name:**	P407971

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	19.3		0.332	0.491	0.80		1
Total Penta-Dioxins	105		0.129	2.45	1.52		1
Total Hexa-Dioxins	310		0.0738	2.45	1.22		1
Total Hepta-Dioxins	102		0.135	2.45	1.03		1
Total Tetra-Furans	21.2		0.400	0.491	0.85		1
Total Penta-Furans	197		0.394	2.45	1.33		1
Total Hexa-Furans	383		0.0986	2.45	1.24		1
Total Hepta-Furans	196		0.347	2.45	1.03		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Weston Solutions, Incorporated	**Service Request:**	E1700950
Project:	TCEQ Superfund Sites/02444.034.001.0001	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1700406-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	8290	**Date Analyzed:**	09/19/17 23:06
Prep Method:	Method	**Date Extracted:**	9/14/17
Sample Amount:	10.189g	**Instrument Name:**	E-HRMS-06
		GC Column:	DB-5MSUI
Data File Name:	P407981	**Blank File Name:**	P407966
ICAL Date:	09/01/17	**Cal Ver. File Name:**	P407971

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
C13-2,3,7,8-TCDD	2000	793.973	40		40-135	0.78	1.021
C13-1,2,3,7,8-PeCDD	2000	1095.259	55		40-135	1.55	1.186
C13-1,2,3,4,7,8-HxCDD	2000	1075.797	54		40-135	1.24	0.991
C13-1,2,3,6,7,8-HxCDD	2000	1134.030	57		40-135	1.23	0.994
C13-1,2,3,4,6,7,8-HpCDD	2000	996.244	50		40-135	1.03	1.066
C13-OCDD	4000	1612.005	40		40-135	0.90	1.139
C13-2,3,7,8-TCDF	2000	682.050	34	**Y**	40-135	0.78	0.993
C13-1,2,3,7,8-PeCDF	2000	1001.025	50		40-135	1.61	1.143
C13-2,3,4,7,8-PeCDF	2000	1063.793	53		40-135	1.56	1.176
C13-1,2,3,4,7,8-HxCDF	2000	980.349	49		40-135	0.52	0.971
C13-1,2,3,6,7,8-HxCDF	2000	1080.142	54		40-135	0.52	0.974
C13-1,2,3,7,8,9-HxCDF	2000	1173.128	59		40-135	0.51	1.008
C13-2,3,4,6,7,8-HxCDF	2000	1053.887	53		40-135	0.53	0.988
C13-1,2,3,4,6,7,8-HpCDF	2000	966.943	48		40-135	0.44	1.042
C13-1,2,3,4,7,8,9-HpCDF	2000	1066.907	53		40-135	0.44	1.079
CL37-2,3,7,8-TCDD	800	302.230	38	**Y**	40-135	NA	1.022

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Weston Solutions, Incorporated	**Service Request:**	E1700950
Project:	TCEQ Superfund Sites/02444.034.001.0001	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700406-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	8290	**Date Analyzed:**	09/19/17 23:55
Prep Method:	Method	**Date Extracted:**	9/14/17
Sample Amount:	10.028g	**Instrument Name:**	E-HRMS-06
		GC Column:	DB-5MSUI
Data File Name:	P407982	**Blank File Name:**	P407966
ICAL Date:	09/01/17	**Cal Ver. File Name:**	P407971

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	18.4		1.29	1.29	0.76	1.001	1
1,2,3,7,8-PeCDD	105		0.168	2.49	1.52	1.000	1
1,2,3,4,7,8-HxCDD	96.6		0.0916	2.49	1.24	1.000	1
1,2,3,6,7,8-HxCDD	107		0.103	2.49	1.27	1.000	1
1,2,3,7,8,9-HxCDD	107		0.0944	2.49	1.23	1.007	1
1,2,3,4,6,7,8-HpCDD	104		0.209	2.49	1.04	1.000	1
OCDD	206		0.756	4.99	0.88	1.000	1
2,3,7,8-TCDF	20.4		1.62	1.62	0.72	1.001	1
1,2,3,7,8-PeCDF	96.1		0.456	2.49	1.53	1.001	1
2,3,4,7,8-PeCDF	102		0.414	2.49	1.55	1.001	1
1,2,3,4,7,8-HxCDF	102		0.162	2.49	1.27	1.000	1
1,2,3,6,7,8-HxCDF	96.3		0.149	2.49	1.23	1.000	1
1,2,3,7,8,9-HxCDF	91.6		0.172	2.49	1.26	1.000	1
2,3,4,6,7,8-HxCDF	96.2		0.160	2.49	1.22	1.000	1
1,2,3,4,6,7,8-HpCDF	95.5		0.241	2.49	1.00	1.000	1
1,2,3,4,7,8,9-HpCDF	97.8		0.314	2.49	1.03	1.000	1
OCDF	231		0.714	4.99	0.89	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Weston Solutions, Incorporated	**Service Request:**	E1700950
Project:	TCEQ Superfund Sites/02444.034.001.0001	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700406-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	8290	**Date Analyzed:**	09/19/17 23:55
Prep Method:	Method	**Date Extracted:**	9/14/17
Sample Amount:	10.028g	**Instrument Name:**	E-HRMS-06
		GC Column:	DB-5MSUI
Data File Name:	P407982	**Blank File Name:**	P407966
ICAL Date:	09/01/17	**Cal Ver. File Name:**	P407971

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	18.4		1.29	1.29	0.76		1
Total Penta-Dioxins	105		0.168	2.49	1.52		1
Total Hexa-Dioxins	310		0.0964	2.49	1.24		1
Total Hepta-Dioxins	105		0.209	2.49	1.19		1
Total Tetra-Furans	20.4		1.62	1.62	0.72		1
Total Penta-Furans	198		0.435	2.49	1.41		1
Total Hexa-Furans	386		0.160	2.49	1.27		1
Total Hepta-Furans	193		0.275	2.49	1.00		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Weston Solutions, Incorporated	**Service Request:**	E1700950
Project:	TCEQ Superfund Sites/02444.034.001.0001	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1700406-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	8290	**Date Analyzed:**	09/19/17 23:55
Prep Method:	Method	**Date Extracted:**	9/14/17
Sample Amount:	10.028g	**Instrument Name:**	E-HRMS-06
		GC Column:	DB-5MSUI
Data File Name:	P407982	**Blank File Name:**	P407966
ICAL Date:	09/01/17	**Cal Ver. File Name:**	P407971

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
C13-2,3,7,8-TCDD	2000	728.819	36	**Y**	40-135	0.76	1.021
C13-1,2,3,7,8-PeCDD	2000	1004.178	50		40-135	1.58	1.186
C13-1,2,3,4,7,8-HxCDD	2000	995.152	50		40-135	1.27	0.991
C13-1,2,3,6,7,8-HxCDD	2000	1016.857	51		40-135	1.24	0.994
C13-1,2,3,4,6,7,8-HpCDD	2000	933.348	47		40-135	1.04	1.066
C13-OCDD	4000	1514.306	38	**Y**	40-135	0.87	1.139
C13-2,3,7,8-TCDF	2000	637.086	32	**Y**	40-135	0.78	0.993
C13-1,2,3,7,8-PeCDF	2000	906.086	45		40-135	1.56	1.143
C13-2,3,4,7,8-PeCDF	2000	989.089	49		40-135	1.58	1.176
C13-1,2,3,4,7,8-HxCDF	2000	867.866	43		40-135	0.51	0.971
C13-1,2,3,6,7,8-HxCDF	2000	997.070	50		40-135	0.53	0.974
C13-1,2,3,7,8,9-HxCDF	2000	1070.810	54		40-135	0.52	1.008
C13-2,3,4,6,7,8-HxCDF	2000	973.407	49		40-135	0.50	0.988
C13-1,2,3,4,6,7,8-HpCDF	2000	906.711	45		40-135	0.42	1.042
C13-1,2,3,4,7,8,9-HpCDF	2000	1012.256	51		40-135	0.42	1.079
CL37-2,3,7,8-TCDD	800	315.496	39	**Y**	40-135	NA	1.023

Chromatograms and Selected Ion Monitoring

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 320, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
HALL SO-1

Run #12 Filename p407967 Samp: 1 Inj: 1 Acquired: 19-SEP-17 10:41:33
Processed: 19-SEP-17 14:54:48 Sample ID: E1700950-001

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	27:58	4.772e+01	7.030e+01	0.68	yes	no	0.885
2	Unk	1,2,3,7,8-PeCDF	NotFnd	*	*	*	no	yes	0.984
3	Unk	2,3,4,7,8-PeCDF	NotFnd	*	*	*	no	yes	0.943
4	Unk	1,2,3,4,7,8-HxCDF	35:46	2.064e+02	1.910e+02	1.08	yes	no	1.230
5	Unk	1,2,3,6,7,8-HxCDF	35:53	1.824e+02	1.558e+02	1.17	yes	no	1.148
6	Unk	2,3,4,6,7,8-HxCDF	36:23	3.212e+02	2.399e+02	1.34	yes	no	1.133
7	Unk	1,2,3,7,8,9-HxCDF	NotFnd	*	*	*	no	yes	1.172
8	Unk	1,2,3,4,6,7,8-HpCDF	38:20	8.348e+03	8.177e+03	1.02	yes	no	1.377
9	Unk	1,2,3,4,7,8,9-HpCDF	39:42	2.608e+02	2.667e+02	0.98	yes	no	1.301
10	Unk	OCDF	42:08	5.331e+03	6.390e+03	0.83	yes	no	1.114
11	Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	yes	0.966
12	Unk	1,2,3,7,8-PeCDD	33:23	2.030e+02	1.238e+02	1.64	yes	no	0.851
13	Unk	1,2,3,4,7,8-HxCDD	NotFnd	*	*	*	no	no	0.966
14	Unk	1,2,3,6,7,8-HxCDD	36:37	7.263e+03	5.914e+03	1.23	yes	no	0.938
15	Unk	1,2,3,7,8,9-HxCDD	36:52	1.978e+03	1.701e+03	1.16	yes	no	0.980
16	Unk	1,2,3,4,6,7,8-HpCDD	39:13	2.660e+04	2.536e+04	1.05	yes	no	0.975
17	Unk	OCDD	41:55	7.461e+04	8.361e+04	0.89	yes	no	1.033
18	IS	13C-2,3,7,8-TCDF	27:57	1.992e+04	2.577e+04	0.77	yes	no	1.176
19	IS	13C-1,2,3,7,8-PeCDF	32:10	3.091e+04	1.960e+04	1.58	yes	no	1.185
20	IS	13C-2,3,4,7,8-PeCDF	33:05	3.035e+04	1.893e+04	1.60	yes	no	1.149
21	IS	13C-1,2,3,4,7,8-HxCDF	35:45	1.189e+04	2.357e+04	0.50	yes	no	1.068
22	IS	13C-1,2,3,6,7,8-HxCDF	35:52	1.408e+04	2.728e+04	0.52	yes	no	1.171
23	IS	13C-2,3,4,6,7,8-HxCDF	36:23	1.359e+04	2.585e+04	0.53	yes	no	1.079
24	IS	13C-1,2,3,7,8,9-HxCDF	37:09	1.425e+04	2.764e+04	0.52	yes	no	0.919
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:19	8.089e+03	1.854e+04	0.44	yes	no	0.877
26	IS	13C-1,2,3,4,7,8,9-HpCDF	39:41	7.455e+03	1.732e+04	0.43	yes	no	0.723
27	IS	13C-2,3,7,8-TCDD	28:45	1.812e+04	2.378e+04	0.76	yes	no	0.958
28	IS	13C-1,2,3,7,8-PeCDD	33:22	2.585e+04	1.629e+04	1.59	yes	no	0.973
29	IS	13C-1,2,3,4,7,8-HxCDD	36:31	1.930e+04	1.532e+04	1.26	yes	no	0.966
30	IS	13C-1,2,3,6,7,8-HxCDD	36:36	1.962e+04	1.569e+04	1.25	yes	no	0.968
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:13	1.341e+04	1.290e+04	1.04	yes	no	0.854
32	IS	13C-OCDD	41:54	1.336e+04	1.472e+04	0.91	yes	no	0.668
33	RS/RT	13C-1,2,3,4-TCDD	28:09	2.756e+04	3.548e+04	0.78	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	36:51	3.562e+04	2.890e+04	1.23	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	28:45	1.750e+04				no	0.992

$$\text{OCDD} = \frac{(7.461e{+}04 + 8.361e{+}04)\ \times 4000\ \text{pg} \times 1}{(1.336e{+}04 + 1.472e{+}04) \times 10.030\ \text{g} \times 91.2\ /\ 100 \times 1.033} = 2385\ \text{ng/kg}$$

MM 09/19/17

ALS ENVIRONMENTAL -- HOUSTON HRMS
10450 Stancliff Rd., Suite 115
Houston, TX 77099
Office(281)530-5656. Fax(281)530-5887

ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
HALL SO-1

Run #12 Filename p407967 Samp: 1 Inj: 1 Acquired: 19-SEP-17 10:41:33
Processed: 19-SEP-17 14:54:48 LAB. ID: E1700950-001

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	9.56e+03	9.32e+02	1.0e+01	1.17e+04	2.08e+03	5.6e+00
2	1,2,3,7,8-PeCDF	*	6.63e+03	*	*	5.19e+03	*
3	2,3,4,7,8-PeCDF	*	6.63e+03	*	*	5.19e+03	*
4	1,2,3,4,7,8-HxCDF	4.45e+04	7.18e+03	6.2e+00	3.85e+04	4.98e+03	7.7e+00
5	1,2,3,6,7,8-HxCDF	4.14e+04	7.18e+03	5.8e+00	3.31e+04	4.98e+03	6.7e+00
6	2,3,4,6,7,8-HxCDF	6.81e+04	7.18e+03	9.5e+00	5.49e+04	4.98e+03	1.1e+01
7	1,2,3,7,8,9-HxCDF	*	7.18e+03	*	*	4.98e+03	*
8	1,2,3,4,6,7,8-HpCDF	1.88e+06	6.46e+03	2.9e+02	1.84e+06	5.51e+03	3.3e+02
9	1,2,3,4,7,8,9-HpCDF	5.87e+04	6.46e+03	9.1e+00	5.42e+04	5.51e+03	9.8e+00
10	OCDF	9.23e+05	1.34e+03	6.9e+02	1.09e+06	4.07e+03	2.7e+02
11	2,3,7,8-TCDD	*	2.64e+03	*	*	8.52e+02	*
12	1,2,3,7,8-PeCDD	3.93e+04	4.15e+03	9.5e+00	2.42e+04	4.22e+03	5.7e+00
13	1,2,3,4,7,8-HxCDD	*	2.92e+03	*	*	2.59e+03	*
14	1,2,3,6,7,8-HxCDD	1.46e+06	2.92e+03	5.0e+02	1.18e+06	2.59e+03	4.5e+02
15	1,2,3,7,8,9-HxCDD	4.02e+05	2.92e+03	1.4e+02	3.17e+05	2.59e+03	1.2e+02
16	1,2,3,4,6,7,8-HpCDD	5.16e+06	4.54e+03	1.1e+03	4.98e+06	4.24e+03	1.2e+03
17	OCDD	1.29e+07	7.09e+03	1.8e+03	1.46e+07	6.83e+03	2.1e+03
18	13C-2,3,7,8-TCDF	3.69e+06	1.58e+04	2.3e+02	4.80e+06	5.72e+03	8.4e+02
19	13C-1,2,3,7,8-PeCDF	5.78e+06	4.76e+03	1.2e+03	3.68e+06	4.67e+03	7.9e+02
20	13C-2,3,4,7,8-PeCDF	5.90e+06	4.76e+03	1.2e+03	3.73e+06	4.67e+03	8.0e+02
21	13C-1,2,3,4,7,8-HxCDF	2.59e+06	3.42e+03	7.6e+02	5.06e+06	3.14e+03	1.6e+03
22	13C-1,2,3,6,7,8-HxCDF	2.79e+06	3.42e+03	8.2e+02	5.44e+06	3.14e+03	1.7e+03
23	13C-2,3,4,6,7,8-HxCDF	2.78e+06	3.42e+03	8.1e+02	5.24e+06	3.14e+03	1.7e+03
24	13C-1,2,3,7,8,9-HxCDF	3.22e+06	3.42e+03	9.4e+02	6.20e+06	3.14e+03	2.0e+03
25	13C-1,2,3,4,6,7,8-HpCDF	1.83e+06	2.52e+03	7.3e+02	4.16e+06	2.60e+03	1.6e+03
26	13C-1,2,3,4,7,8,9-HpCDF	1.44e+06	2.52e+03	5.7e+02	3.39e+06	2.60e+03	1.3e+03
27	13C-2,3,7,8-TCDD	3.60e+06	6.13e+03	5.9e+02	4.66e+06	3.03e+03	1.5e+03
28	13C-1,2,3,7,8-PeCDD	5.01e+06	6.26e+03	8.0e+02	3.20e+06	6.63e+03	4.8e+02
29	13C-1,2,3,4,7,8-HxCDD	3.96e+06	3.29e+03	1.2e+03	3.08e+06	2.14e+03	1.4e+03
30	13C-1,2,3,6,7,8-HxCDD	3.62e+06	3.29e+03	1.1e+03	2.86e+06	2.14e+03	1.3e+03
31	13C-1,2,3,4,6,7,8-HpCDD	2.66e+06	1.65e+03	1.6e+03	2.56e+06	1.03e+03	2.5e+03
32	13C-OCDD	2.31e+06	2.45e+03	9.4e+02	2.56e+06	1.58e+03	1.6e+03
33	13C-1,2,3,4-TCDD	5.13e+06	6.13e+03	8.4e+02	6.60e+06	3.03e+03	2.2e+03
34	13C-1,2,3,7,8,9-HxCDD	6.28e+06	3.29e+03	1.9e+03	5.10e+06	2.14e+03	2.4e+03
35	37Cl-2,3,7,8-TCDD	3.49e+06	1.87e+03	1.9e+03			

---Sample Calculation---

$$\text{D/L TCDD} = \frac{2.5 \times (2.640e{+}03 + 8.520e{+}02) \times 2000}{(3.595e{+}06 + 4.657e{+}06) \times (\qquad\qquad) \times 0.966} =$$

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Peak List Summary

CLIENT ID.

HALL SO-1

Entry: 36 Totals Name: Total Tetra-Furans

Run: 12 File: p407967 Sample:1 Injection:1 Function:1

Acquired: 19-SEP-17 10:41:33 Processed: 19-SEP-17 14:54:48

Mass: 303.9020 305.8990 Tot Response: 7.52e+02 RRF: 0.8851

#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	24:23	1.41e+02	1.92e+02	0.73	yes	3.33e+02		n	n
2	24:54	5.81e+01	6.70e+01	0.87	yes	1.25e+02		n	n
3	26:44	2.69e+01	3.47e+01	0.78	yes	6.16e+01		n	n
4	27:09	3.16e+01	4.64e+01	0.68	yes	7.80e+01		n	n
5	27:23	1.64e+01	1.97e+01	0.83	yes	3.61e+01		n	n
6	27:58	4.77e+01	7.03e+01	0.68	yes	1.18e+02	2,3,7,8-TCDF	n	n

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Peak List Summary

CLIENT ID.

HALL SO-1

Entry: 37 Totals Name: Total Tetra-Dioxins

Run: 12 File: p407967 Sample:1 Injection:1 Function:1

Acquired: 19-SEP-17 10:41:33 Processed: 19-SEP-17 14:54:48

Mass: 319.8970 321.8940 Tot Response: 1.17e+02 RRF: 0.9663

#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	25:14	5.06e+01	6.68e+01	0.76	yes	1.17e+02		n	n

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Peak List Summary

CLIENT ID.

HALL SO-1

Entry: 38 Totals Name: Total Penta-Furans1

Run: 12 File: p407967 Sample:1 Injection:1 Function:1

Acquired: 19-SEP-17 10:41:33 Processed: 19-SEP-17 14:54:48

Mass: 339.8600 341.8570 Tot Response: 2.35e+03 RRF: 0.9636

#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	29:46	1.42e+03	9.27e+02	1.54	yes	2.35e+03	n	n

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Peak List Summary

CLIENT ID.

HALL SO-1

Entry: 39 Totals Name: Total Penta-Furans2

Run: 12 File: p407967 Sample:1 Injection:1 Function:2

Acquired: 19-SEP-17 10:41:33 Processed: 19-SEP-17 14:54:48

Mass: 339.8600 341.8570 Tot Response: 1.00e+03 RRF: 0.9636

#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	31:16	3.58e+02	2.63e+02	1.36	yes	6.21e+02		n	y
2	31:48	1.41e+02	1.02e+02	1.38	yes	2.43e+02		y	y
3	32:26	8.15e+01	5.91e+01	1.38	yes	1.41e+02		n	y

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Peak List Summary

CLIENT ID.

HALL SO-1

Entry: 40 Totals Name: Total Penta-Dioxins

Run: 12 File: p407967 Sample:1 Injection:1 Function:2

Acquired: 19-SEP-17 10:41:33 Processed: 19-SEP-17 14:54:48

Mass: 355.8550 357.8520 Tot Response: 8.69e+02 RRF: 0.8509

#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	32:26	1.67e+02	1.04e+02	1.62	yes	2.71e+02		n	n
2	32:39	1.73e+02	9.81e+01	1.77	yes	2.71e+02		n	n
3	33:23	2.03e+02	1.24e+02	1.64	yes	3.27e+02	1,2,3,7,8-PeCDD	n	n

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Peak List Summary

CLIENT ID.

HALL SO-1

Entry: 41 Totals Name: Total Hexa-Furans

Run: 12 File: p407967 Sample:1 Injection:1 Function:3

Acquired: 19-SEP-17 10:41:33 Processed: 19-SEP-17 14:54:48

Mass: 373.8210 375.8180 Tot Response: 2.36e+04 RRF: 1.170

#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	34:39	5.00e+02	3.89e+02	1.28	yes	8.88e+02		n	n
2	34:49	4.07e+03	3.22e+03	1.27	yes	7.29e+03		n	n
3	35:09	1.28e+02	9.21e+01	1.39	yes	2.20e+02		n	n
4	35:20	7.71e+03	6.21e+03	1.24	yes	1.39e+04		n	n
5	35:46	2.06e+02	1.91e+02	1.08	yes	3.97e+02	1,2,3,4,7,8-HxCDF	n	n
6	35:53	1.82e+02	1.56e+02	1.17	yes	3.38e+02	1,2,3,6,7,8-HxCDF	n	n
7	36:23	3.21e+02	2.40e+02	1.34	yes	5.61e+02	2,3,4,6,7,8-HxCDF	n	n

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Peak List Summary

CLIENT ID.

HALL SO-1

Entry: 42 Totals Name: Total Hexa-Dioxins

Run: 12 File: p407967 Sample:1 Injection:1 Function:3

Acquired: 19-SEP-17 10:41:33 Processed: 19-SEP-17 14:54:48

Mass: 389.8160 391.8130 Tot Response: 1.05e+05 RRF: 0.9610

#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	35:10	7.63e+03	6.10e+03	1.25	yes	1.37e+04		n	n
2	35:55	4.11e+04	3.32e+04	1.24	yes	7.42e+04		n	n
3	36:37	7.26e+03	5.91e+03	1.23	yes	1.32e+04	1,2,3,6,7,8-HxCDD	n	n
4	36:52	1.98e+03	1.70e+03	1.16	yes	3.68e+03	1,2,3,7,8,9-HxCDD	n	n

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Peak List Summary

CLIENT ID.

HALL SO-1

Entry: 43 Totals Name: Total Hepta-Furans

Run: 12 File: p407967 Sample:1 Injection:1 Function:4

Acquired: 19-SEP-17 10:41:33 Processed: 19-SEP-17 14:54:48

Mass: 407.7820 409.7790 Tot Response: 4.95e+04 RRF: 1.343

#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	38:20	8.35e+03	8.18e+03	1.02	yes	1.65e+04	1,2,3,4,6,7,8-HpCDF	n	n
2	38:43	1.65e+04	1.60e+04	1.03	yes	3.24e+04		n	n
3	39:42	2.61e+02	2.67e+02	0.98	yes	5.27e+02	1,2,3,4,7,8,9-HpCDF	n	n

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Peak List Summary

CLIENT ID.

HALL SO-1

Entry: 44 Totals Name: Total Hepta-Dioxins

Run: 12 File: p407967 Sample:1 Injection:1 Function:4

Acquired: 19-SEP-17 10:41:33 Processed: 19-SEP-17 14:54:48

Mass: 423.7770 425.7740 Tot Response: 1.02e+05 RRF: 0.9755

#	RT	Resp	Resp	Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	38:34	2.54e+04	2.44e+04	1.04	yes	4.98e+04		n	n
2	39:13	2.66e+04	2.54e+04	1.05	yes	5.20e+04	1,2,3,4,6,7,8-HpCDD	n	n

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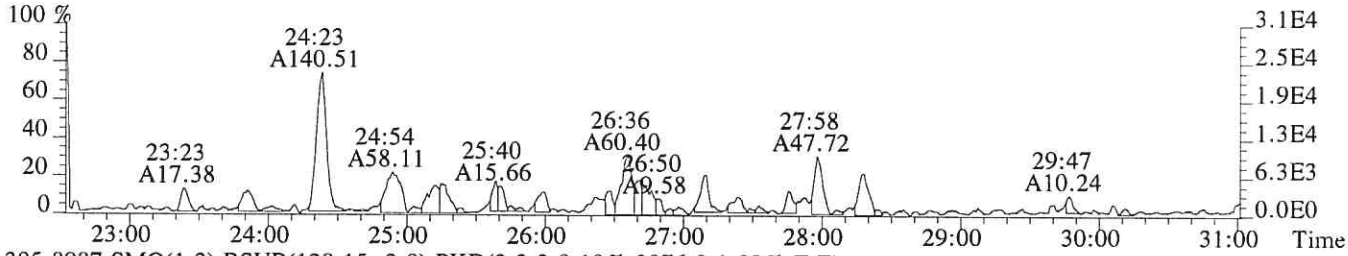
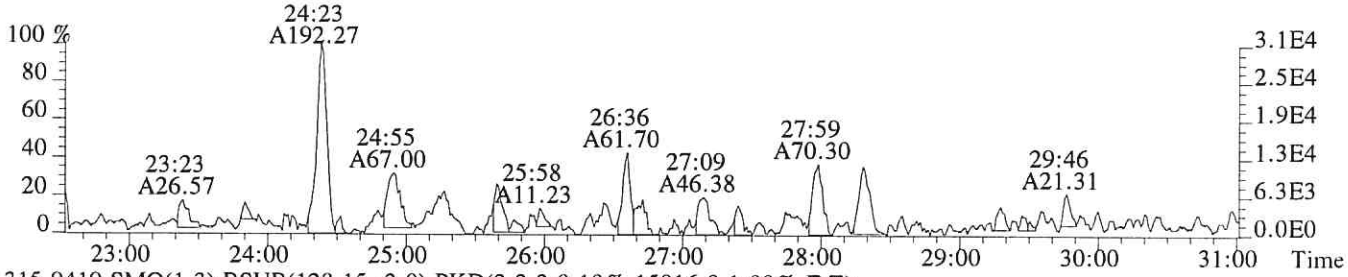
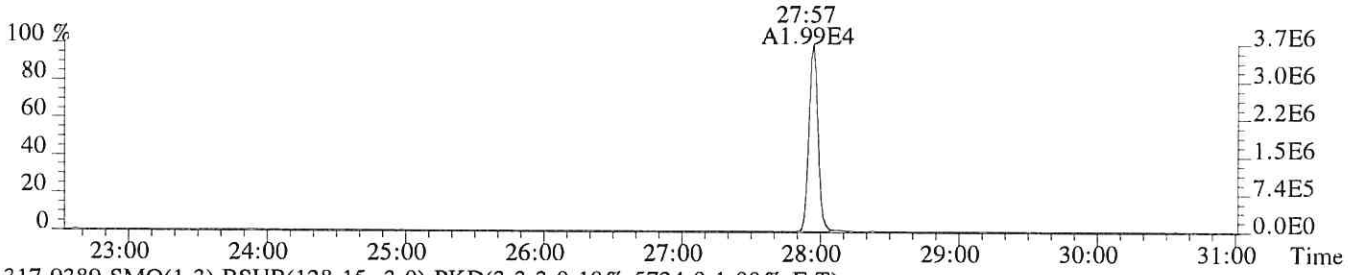
File:P407967 #1-602 Acq:19-SEP-2017 10:41:33 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1700950-001
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,932.0,1.00%,F,T)



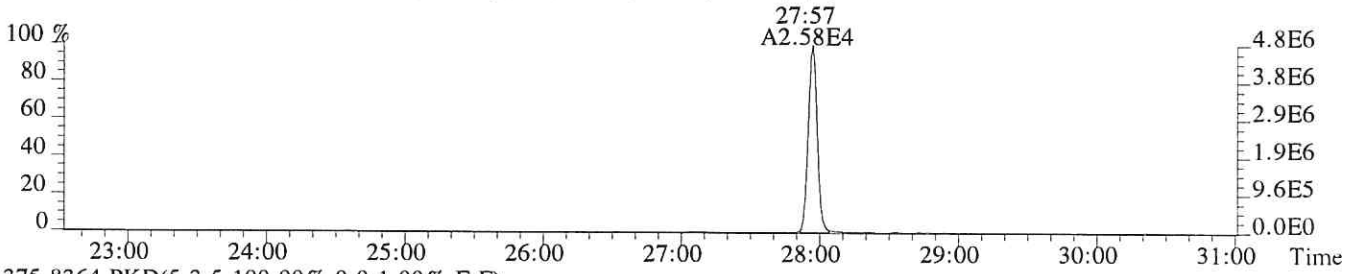
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2076.0,1.00%,F,T)



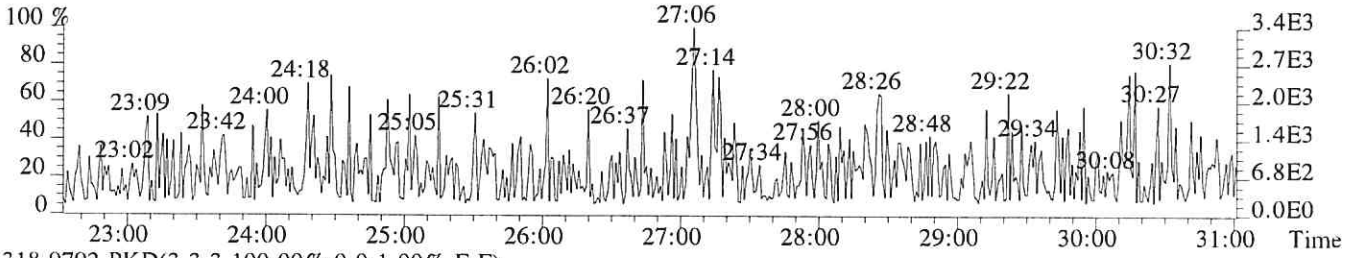
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,15816.0,1.00%,F,T)



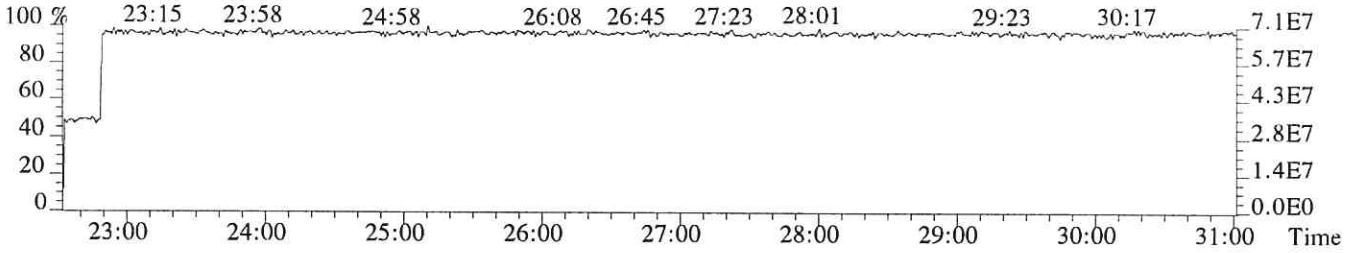
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5724.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

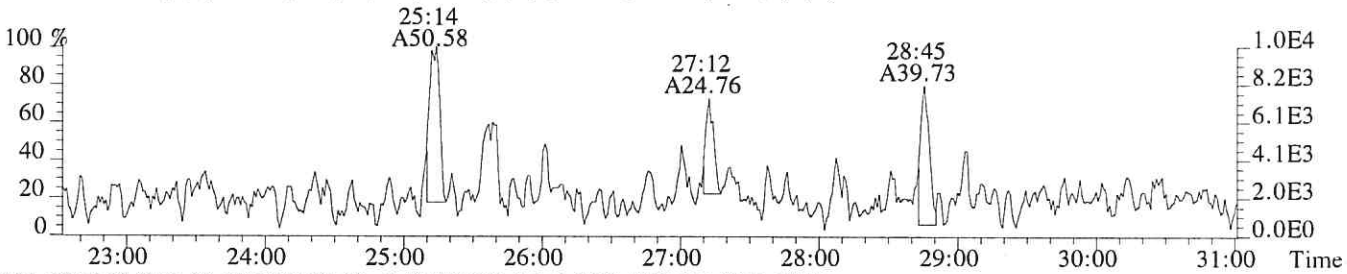


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

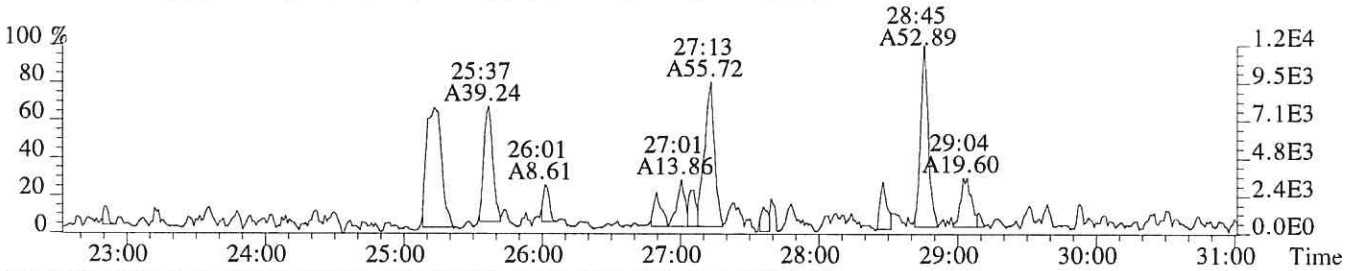


File:P407967 #1-602 Acq:19-SEP-2017 10:41:33 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1700950-001

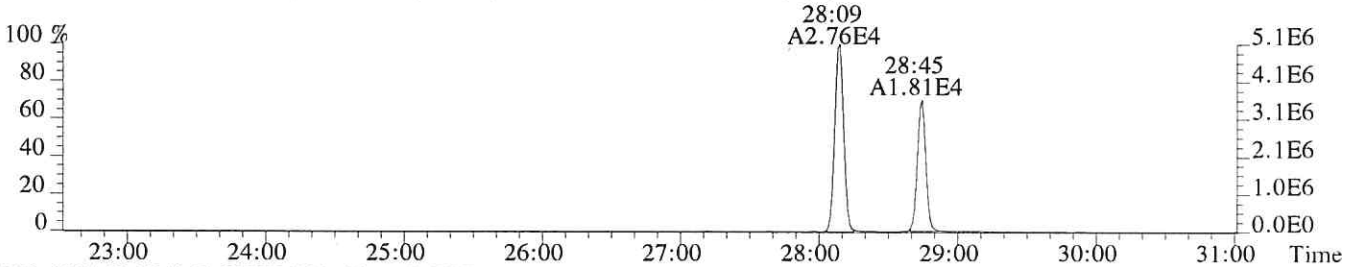
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2640.0,1.00%,F,T)



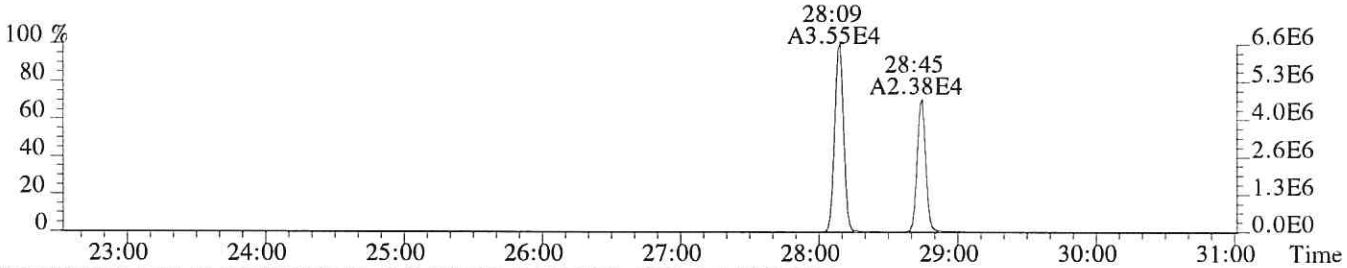
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,852.0,1.00%,F,T)



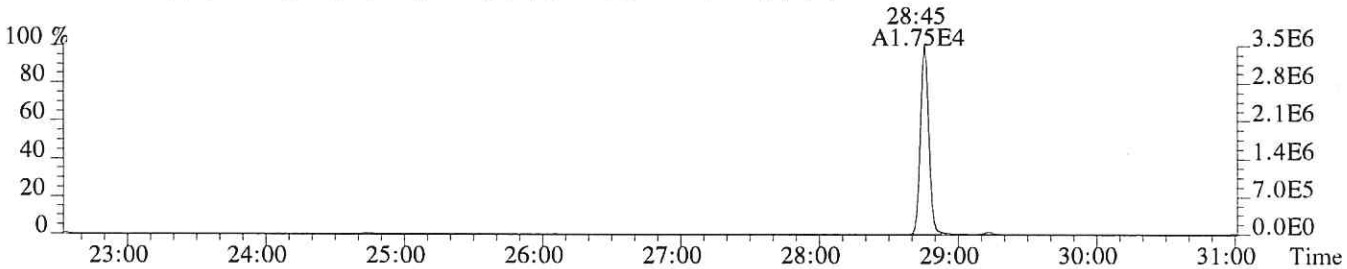
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6132.0,1.00%,F,T)



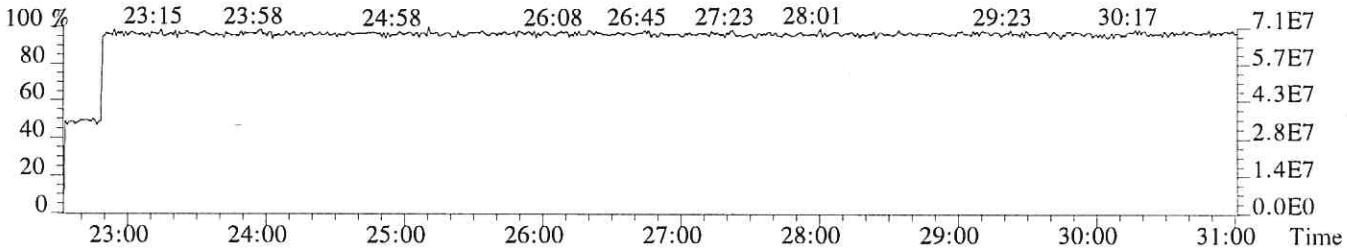
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3032.0,1.00%,F,T)



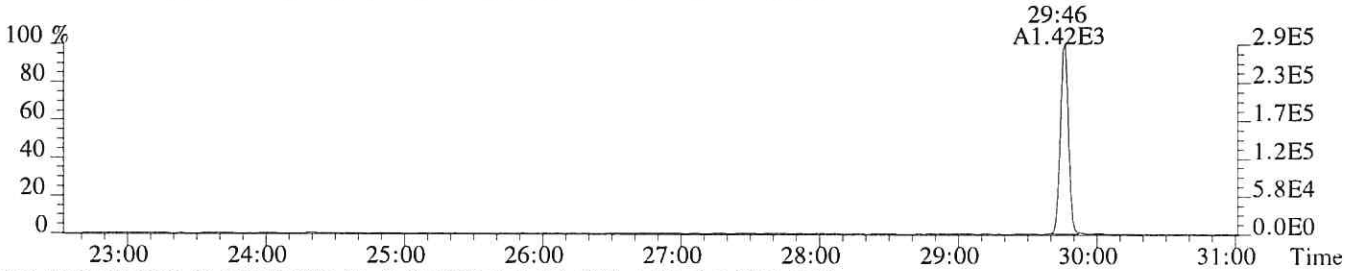
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1872.0,1.00%,F,T)



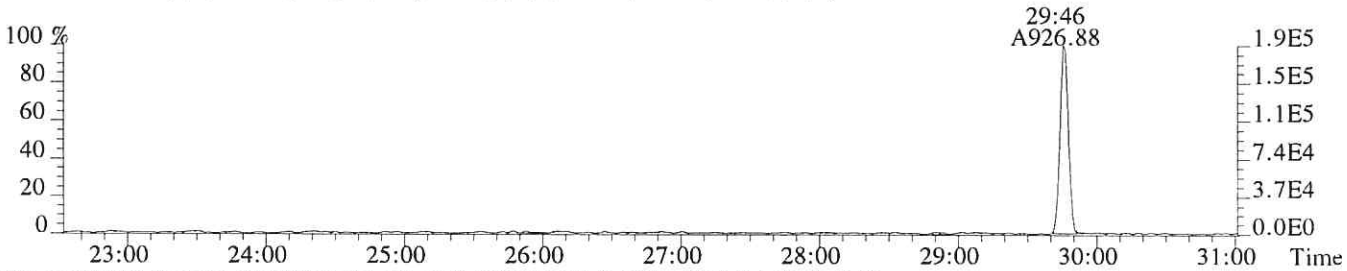
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



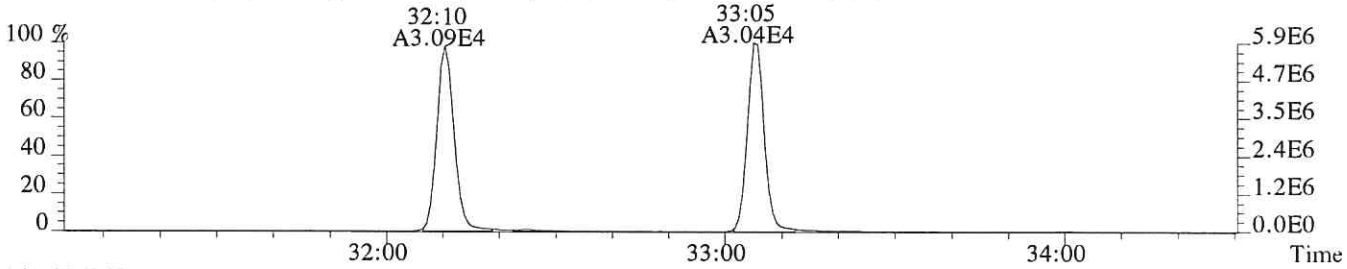
File:P407967 #1-602 Acq:19-SEP-2017 10:41:33 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1700950-001
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,696.0,1.00%,F,T)



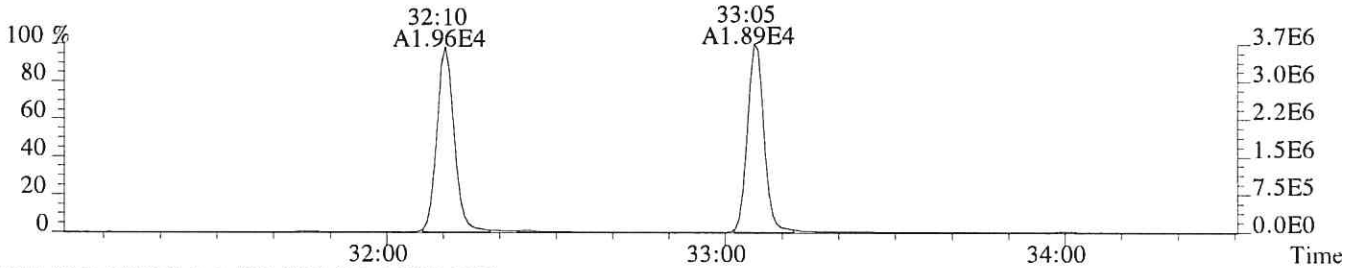
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1492.0,1.00%,F,T)



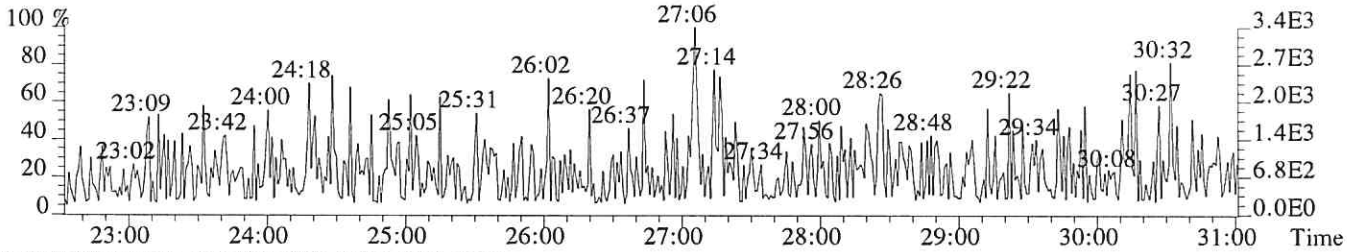
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4764.0,1.00%,F,T)



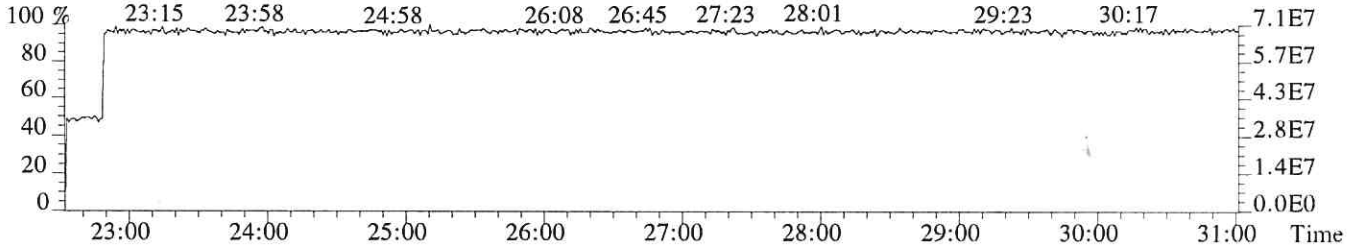
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4668.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

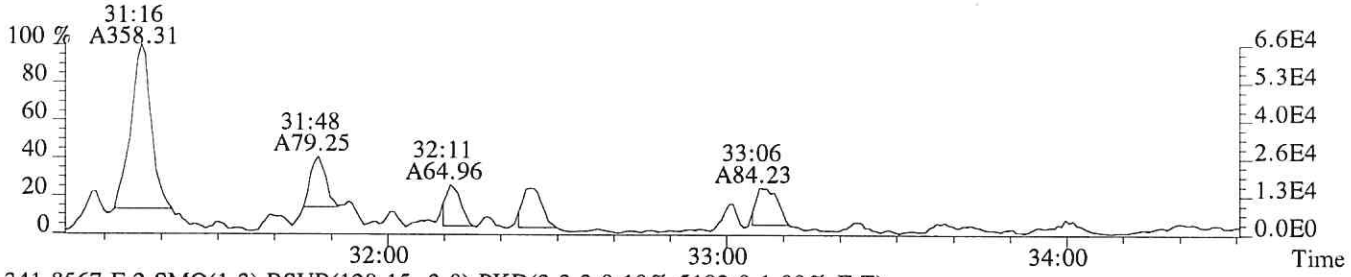


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

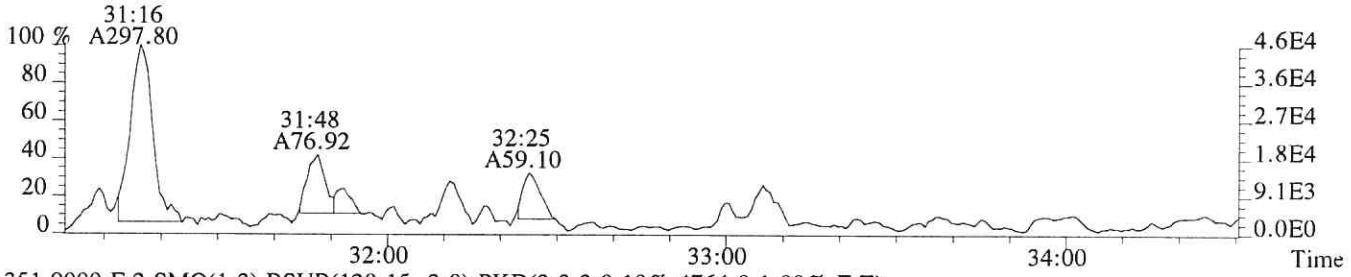


File:P407967 #1-312 Acq:19-SEP-2017 10:41:33 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1700950-001

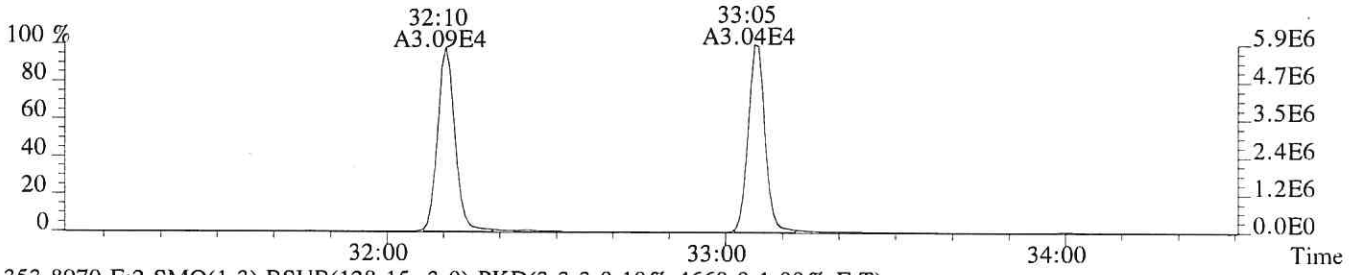
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6628.0,1.00%,F,T)



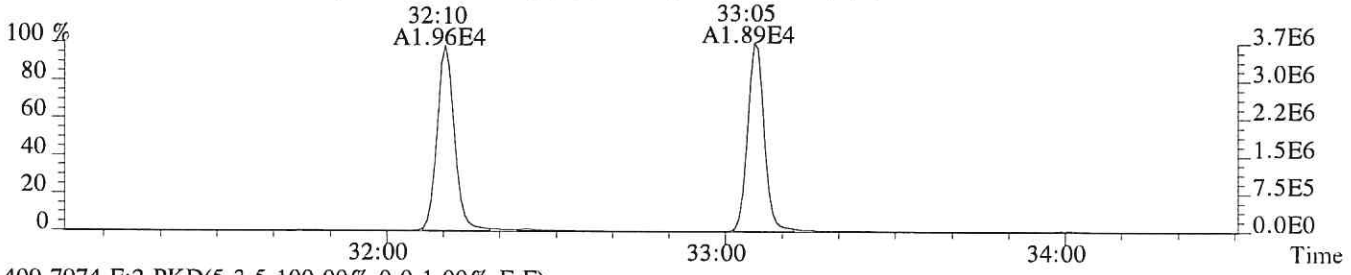
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5192.0,1.00%,F,T)



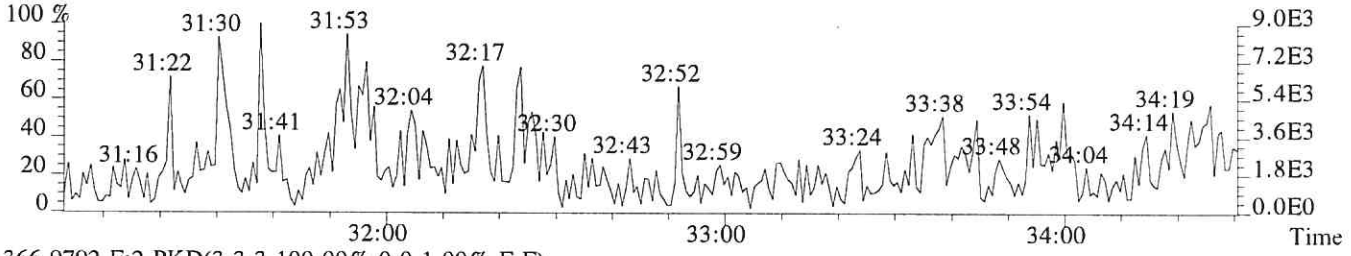
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4764.0,1.00%,F,T)



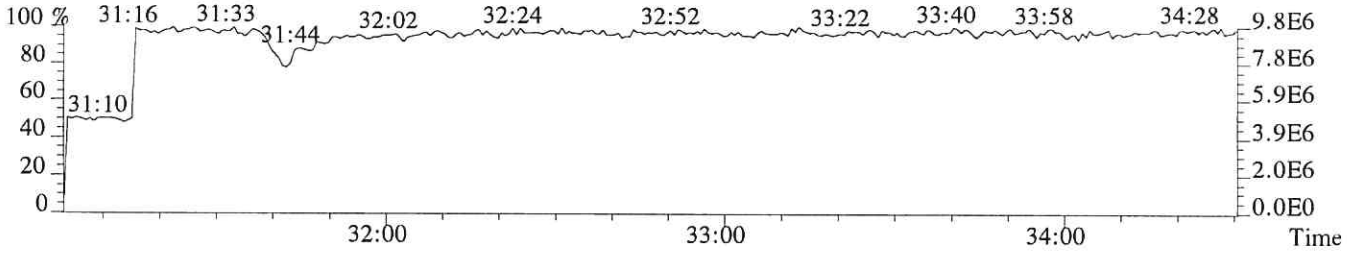
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4668.0,1.00%,F,T)



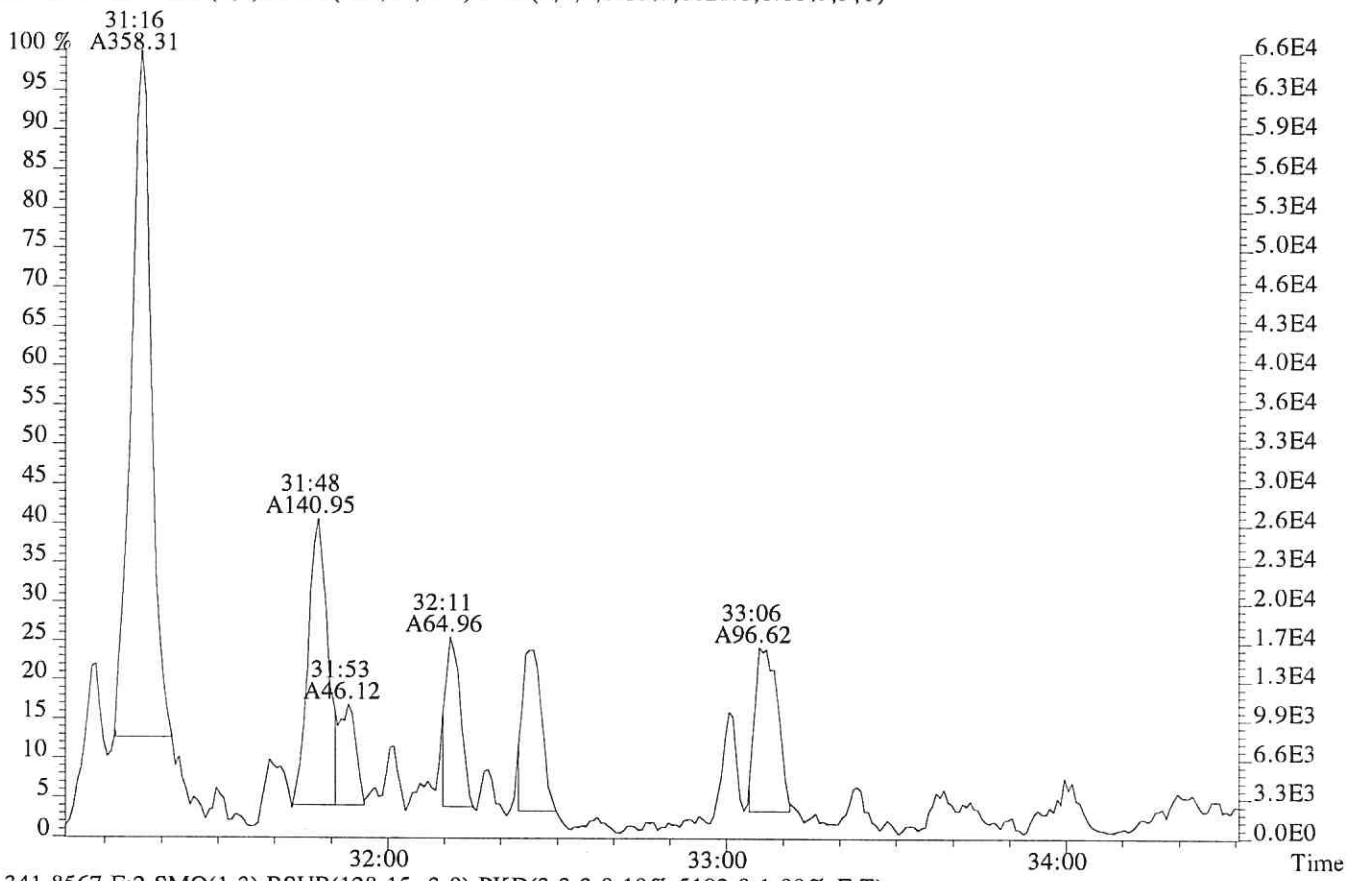
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



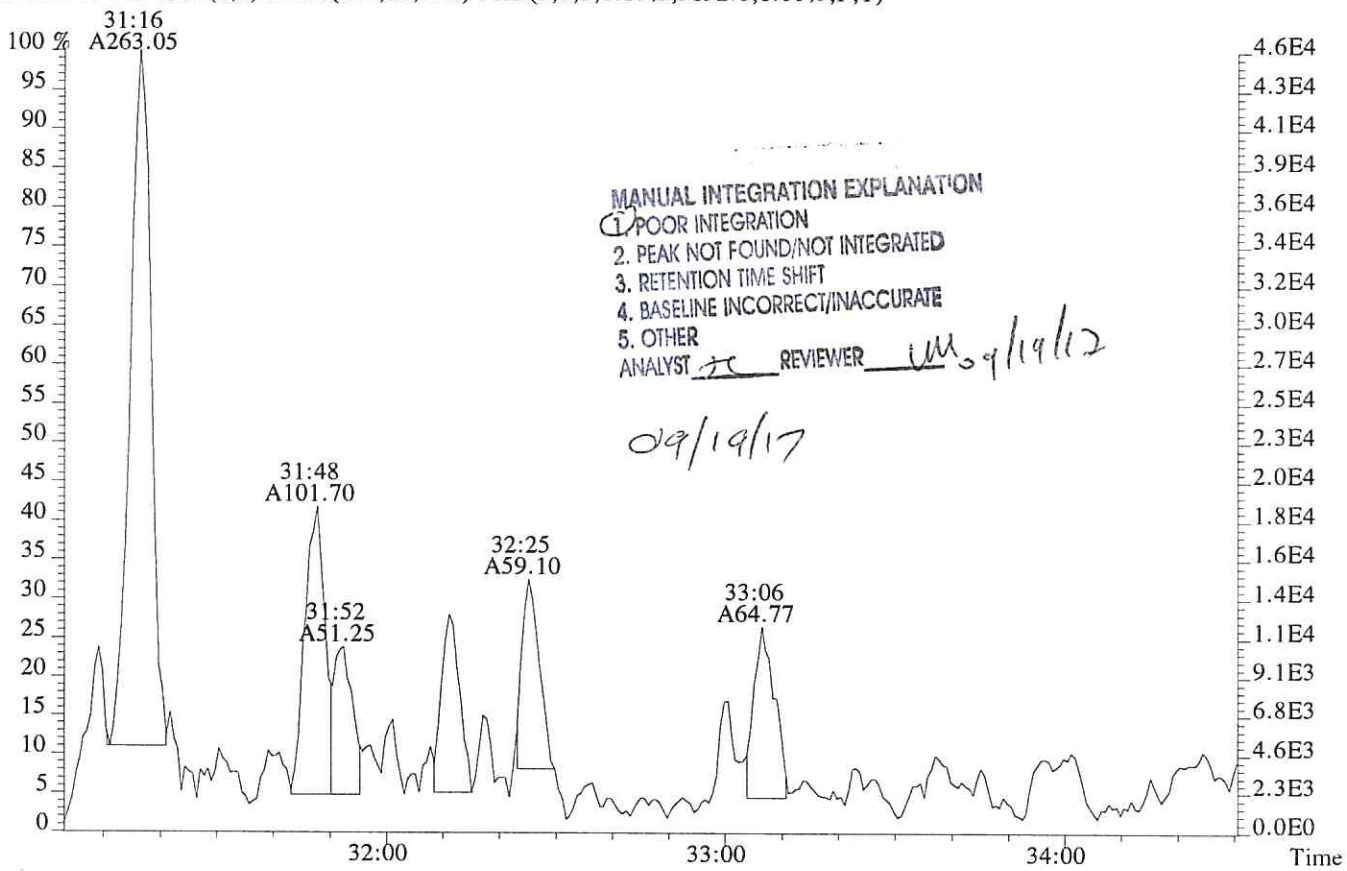
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



File:P407967 #1-312 Acq:19-SEP-2017 10:41:33 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1700950-001
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6628.0,1.00%,F,T)



341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5192.0,1.00%,F,T)

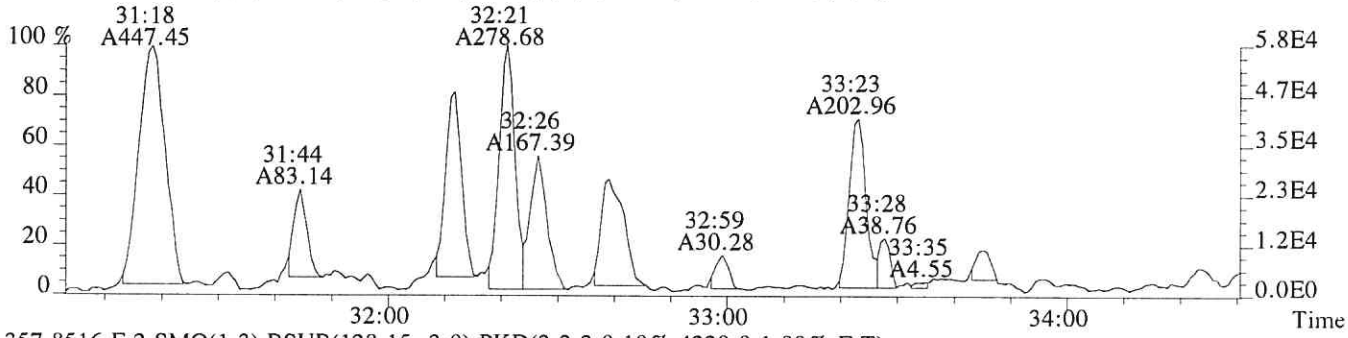


MANUAL INTEGRATION EXPLANATION
1. POOR INTEGRATION
2. PEAK NOT FOUND/NOT INTEGRATED
3. RETENTION TIME SHIFT
4. BASELINE INCORRECT/INACCURATE
5. OTHER
ANALYST ___ REVIEWER ___ 09/19/17

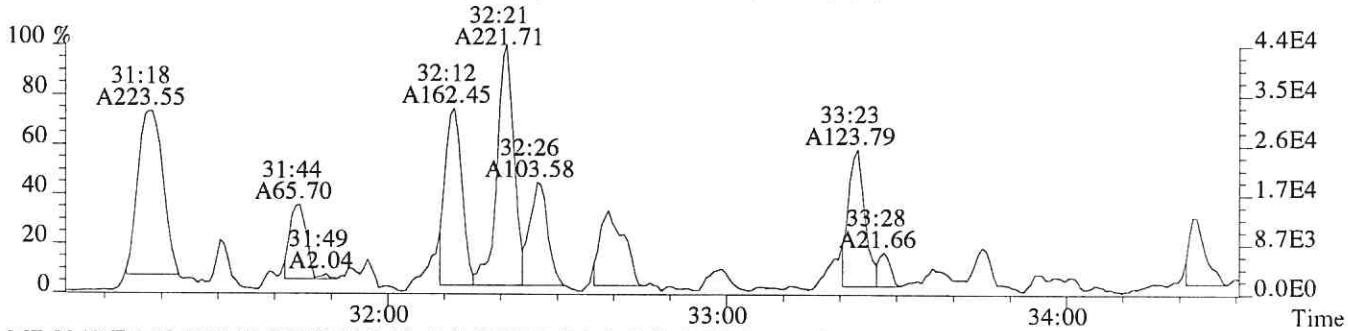
09/19/17

File:P407967 #1-312 Acq:19-SEP-2017 10:41:33 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1700950-001

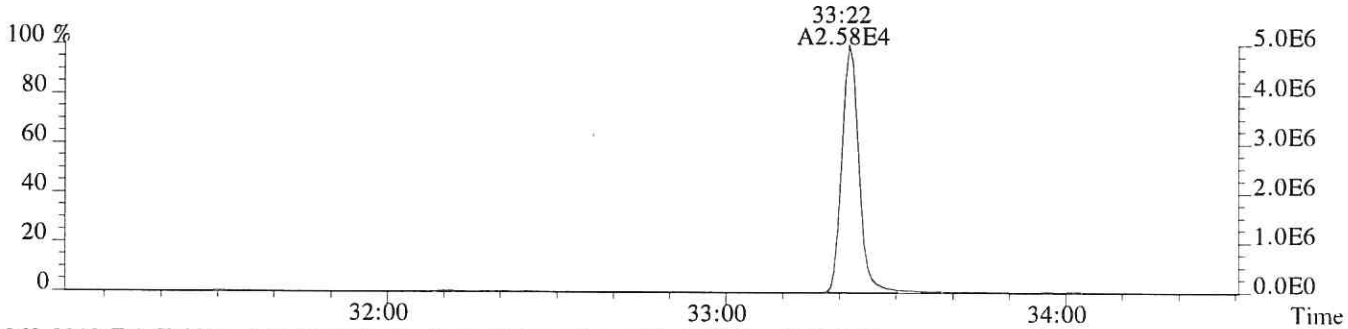
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4148.0,1.00%,F,T)



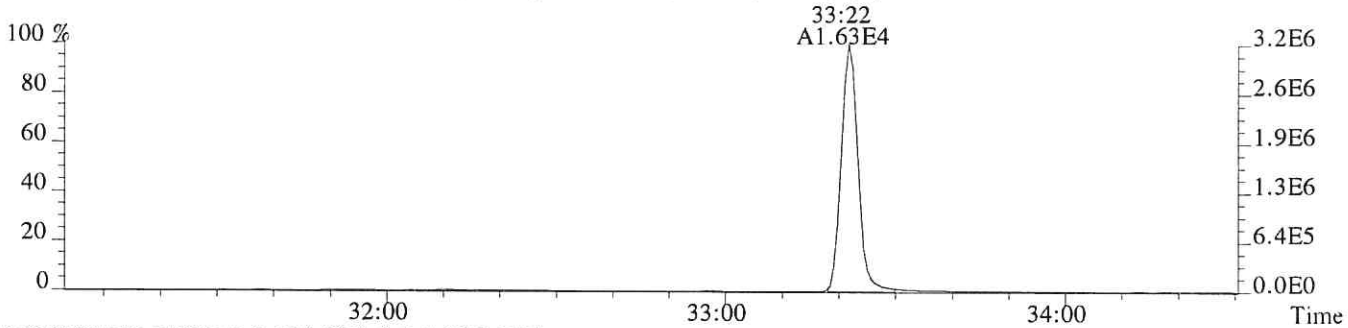
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4220.0,1.00%,F,T)



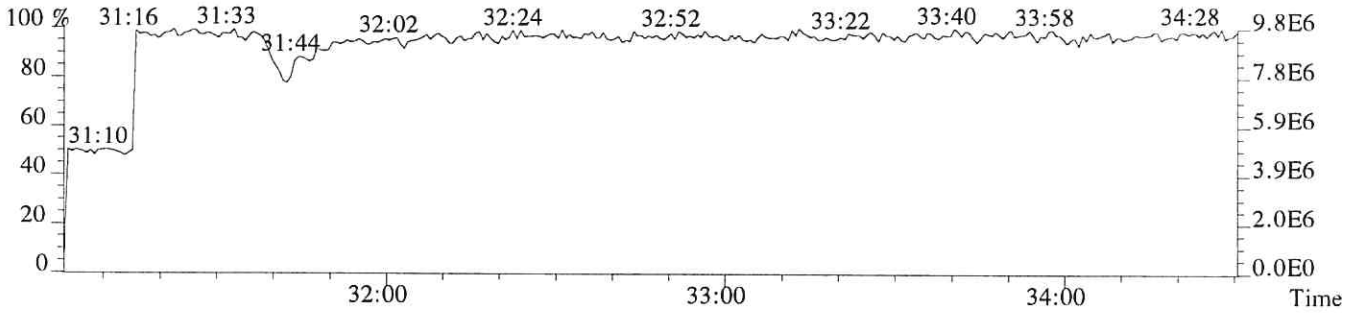
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6256.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6632.0,1.00%,F,T)

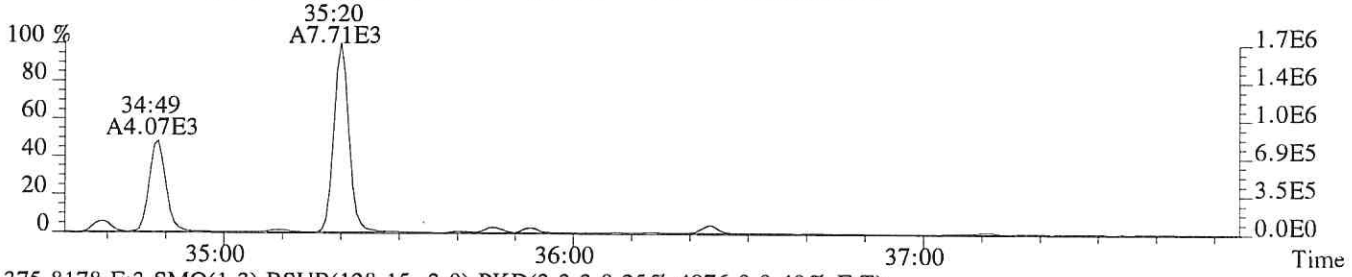


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

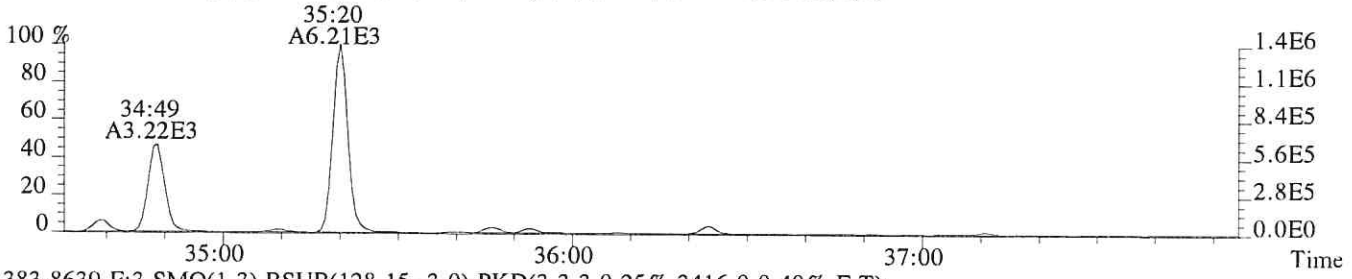


File:P407967 #1-303 Acq:19-SEP-2017 10:41:33 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1700950-001

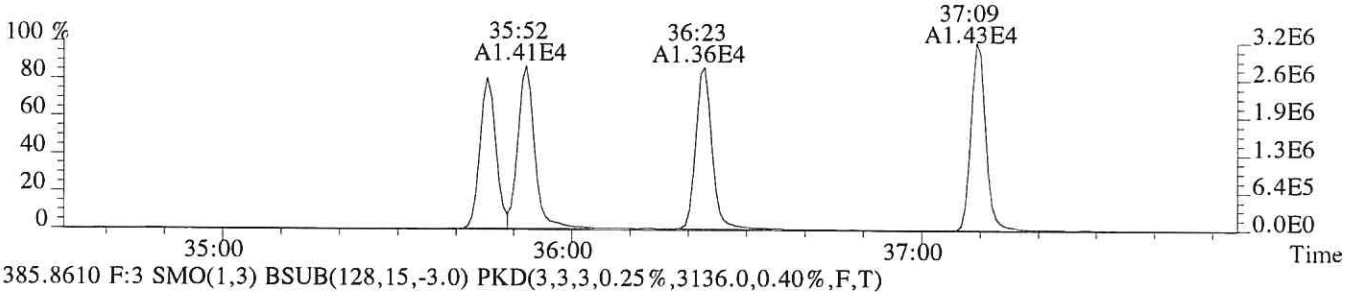
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,7176.0,0.40%,F,T)



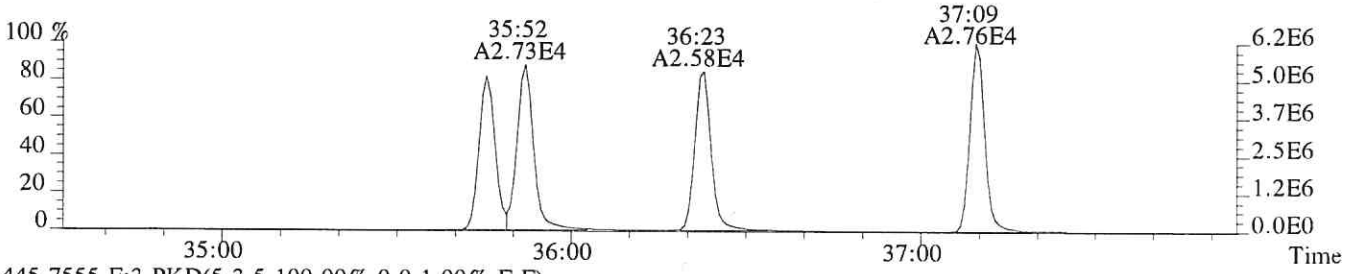
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4976.0,0.40%,F,T)



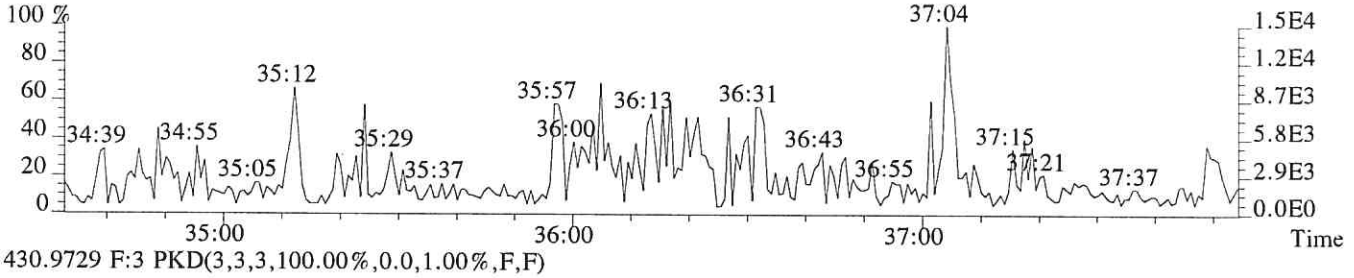
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3416.0,0.40%,F,T)



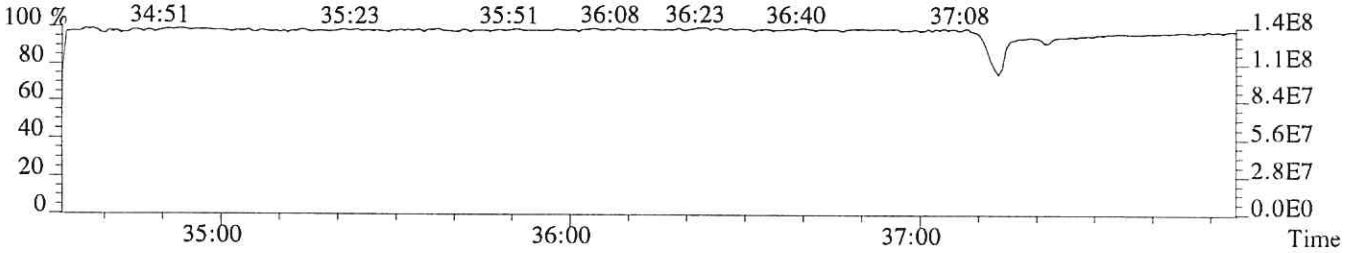
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3136.0,0.40%,F,T)



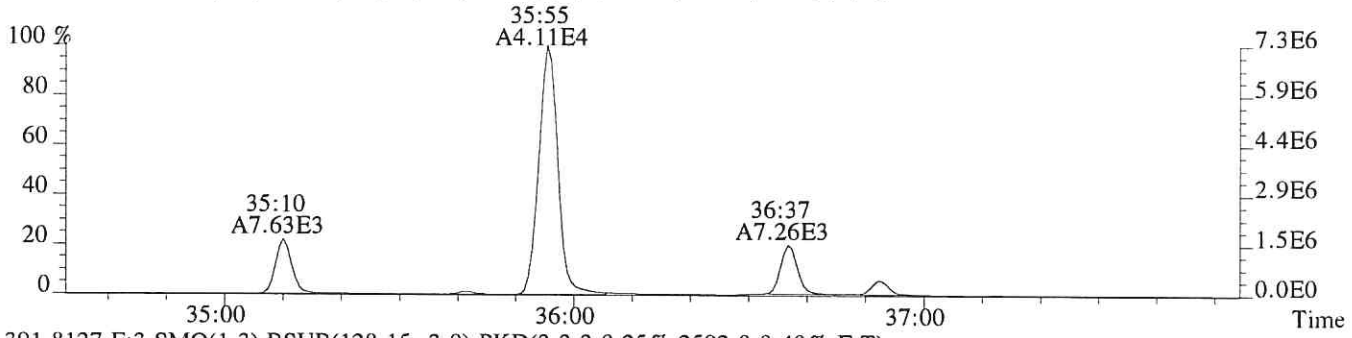
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



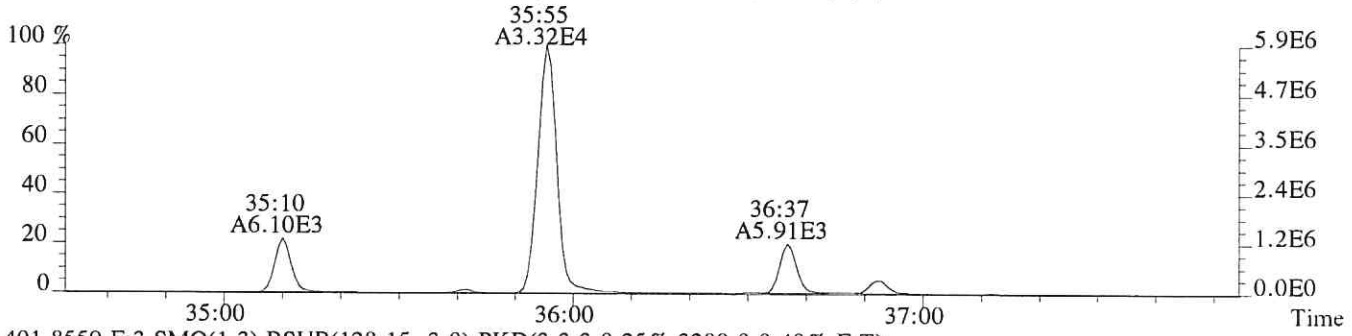
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



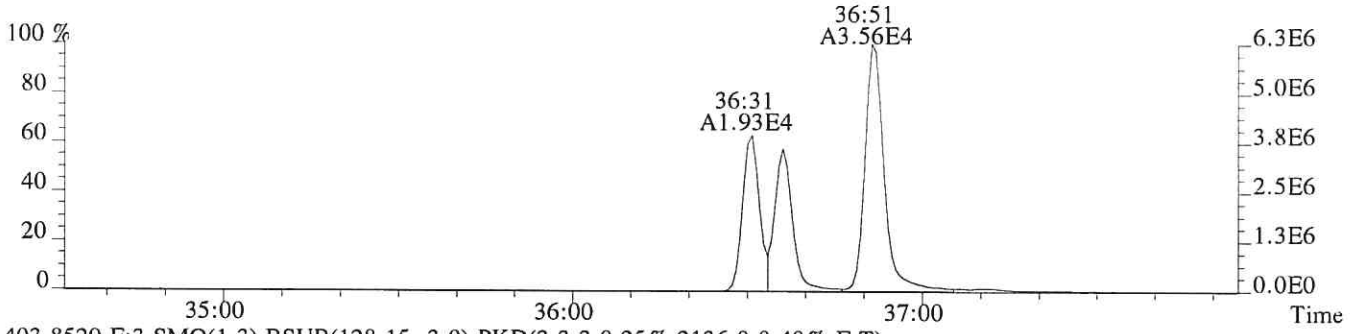
File:P407967 #1-303 Acq:19-SEP-2017 10:41:33 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1700950-001
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2916.0,0.40%,F,T)



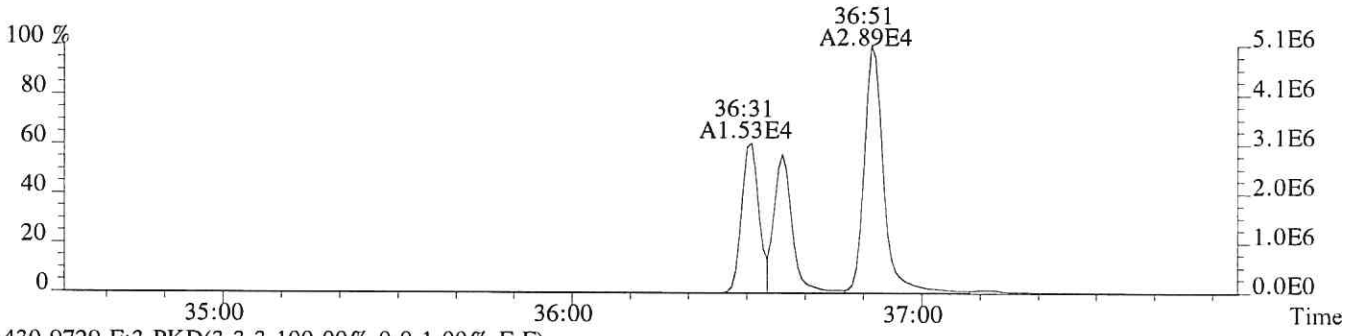
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2592.0,0.40%,F,T)



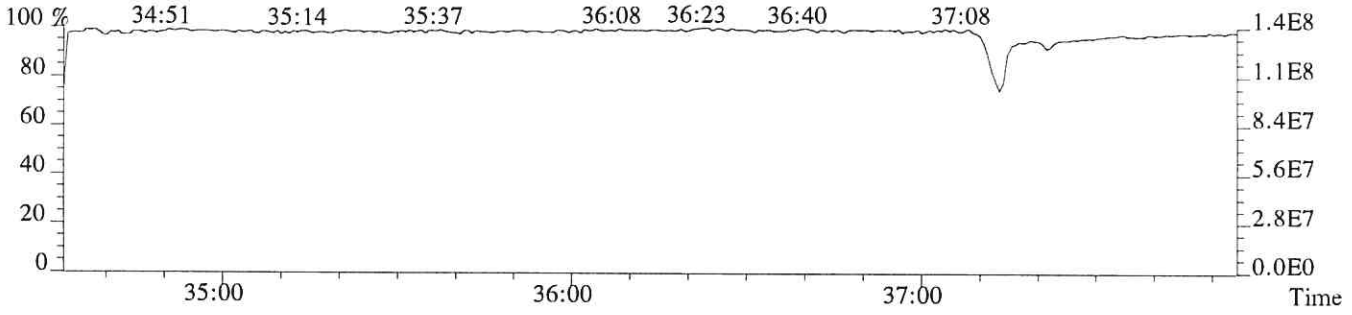
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3288.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2136.0,0.40%,F,T)

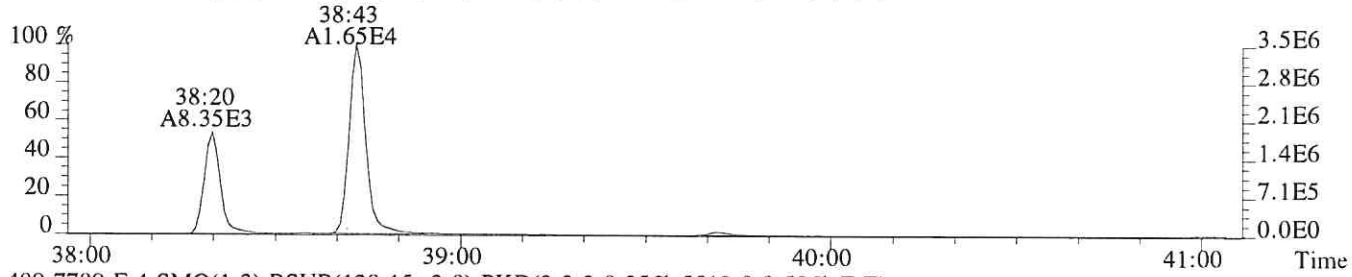


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

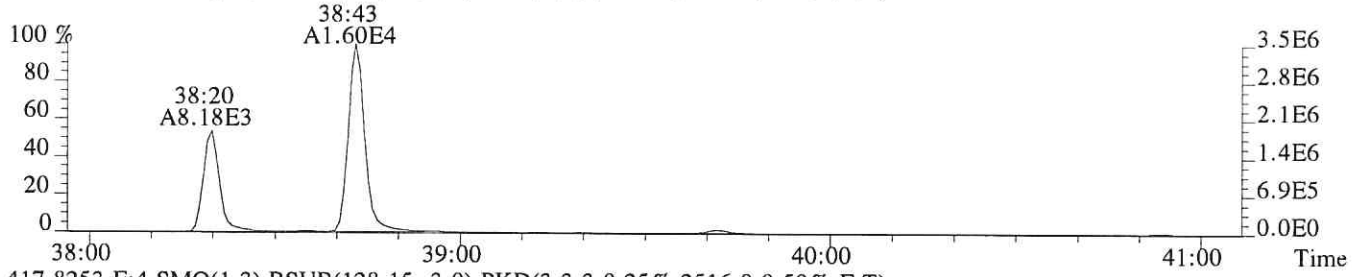


File:P407967 #1-286 Acq:19-SEP-2017 10:41:33 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1700950-001

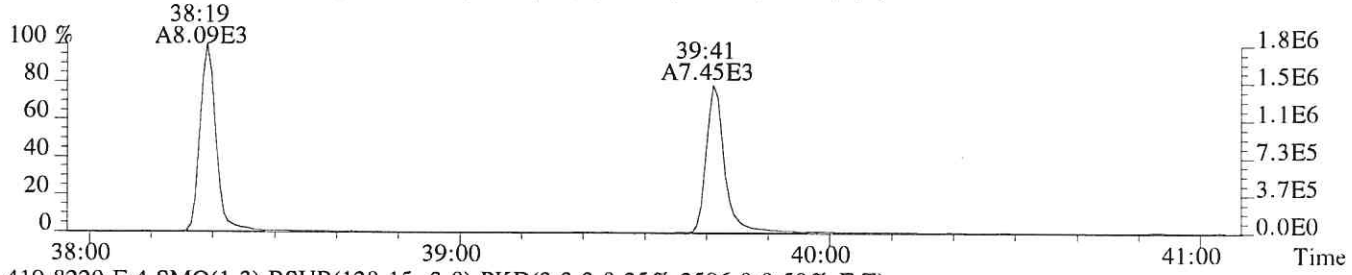
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,6456.0,0.50%,F,T)



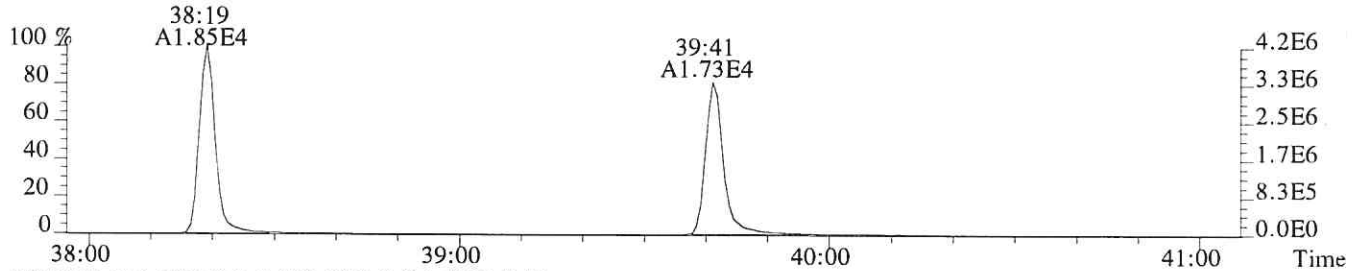
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5512.0,0.50%,F,T)



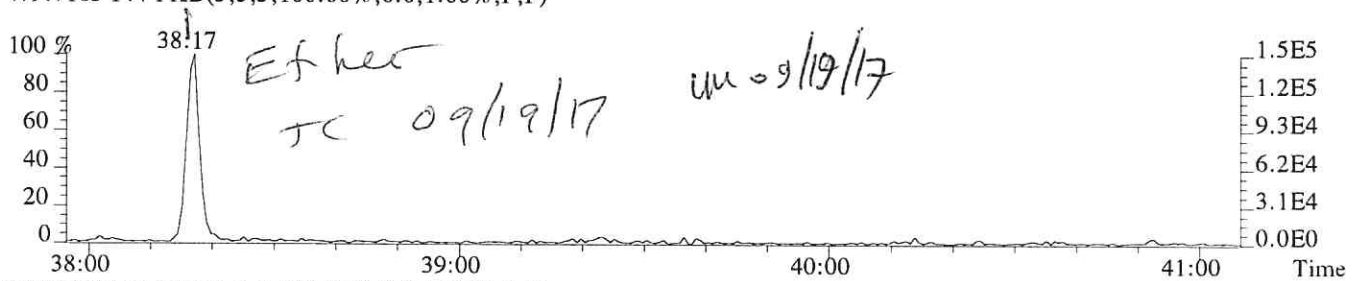
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2516.0,0.50%,F,T)



419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2596.0,0.50%,F,T)

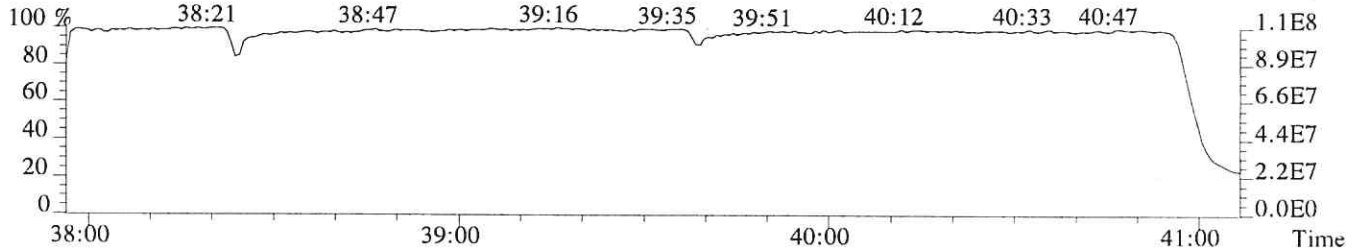


479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

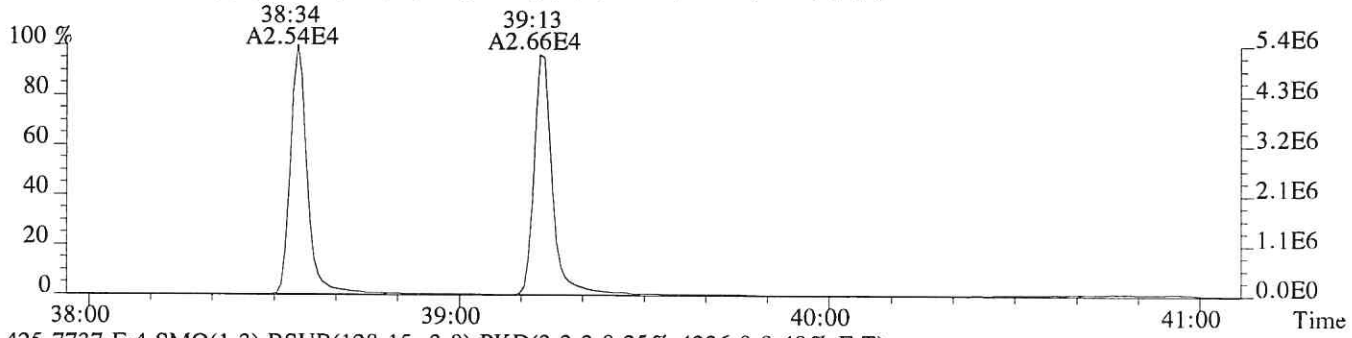


Ether
JC 09/19/17
UM 09/19/17

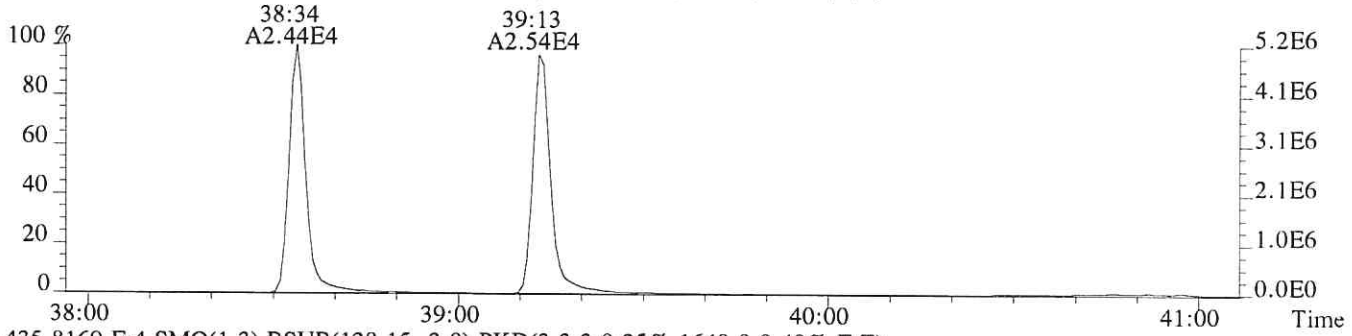
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



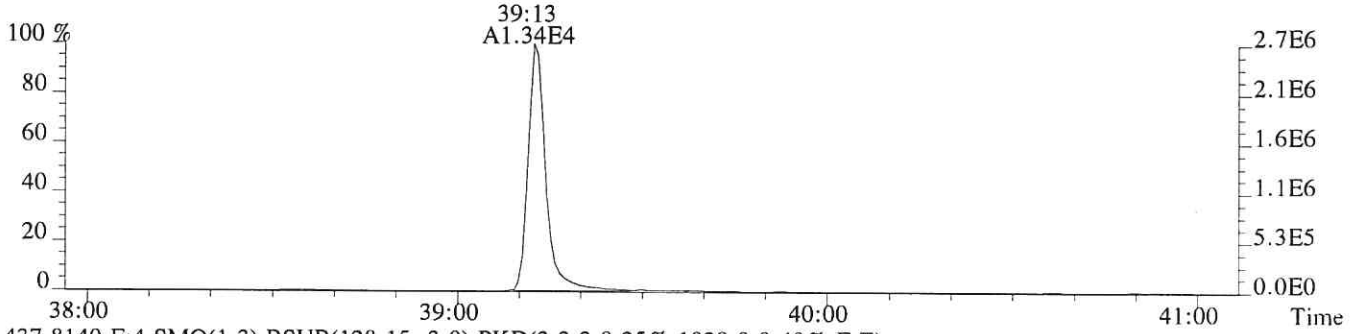
File:P407967 #1-286 Acq:19-SEP-2017 10:41:33 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1700950-001
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4540.0,0.40%,F,T)



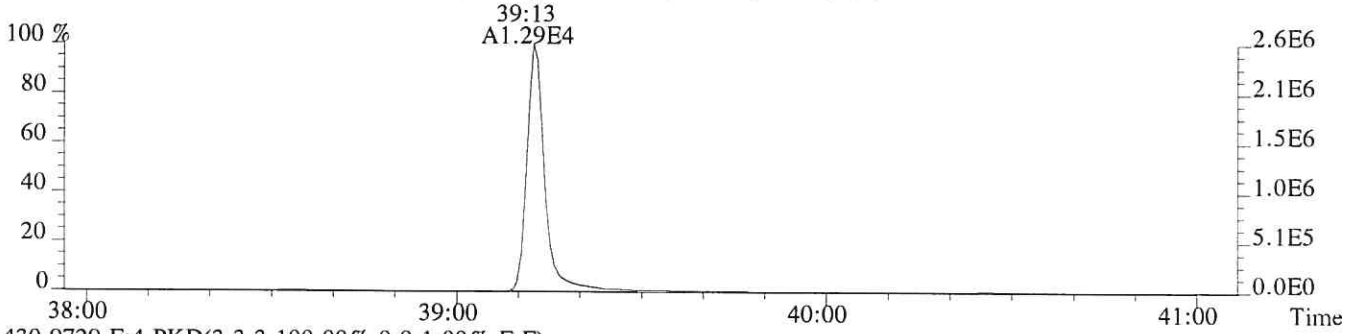
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4236.0,0.40%,F,T)



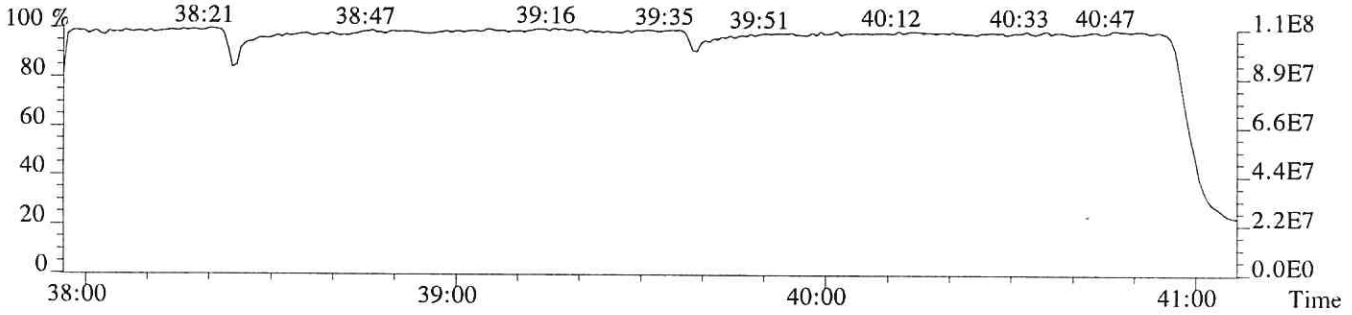
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1648.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1028.0,0.40%,F,T)

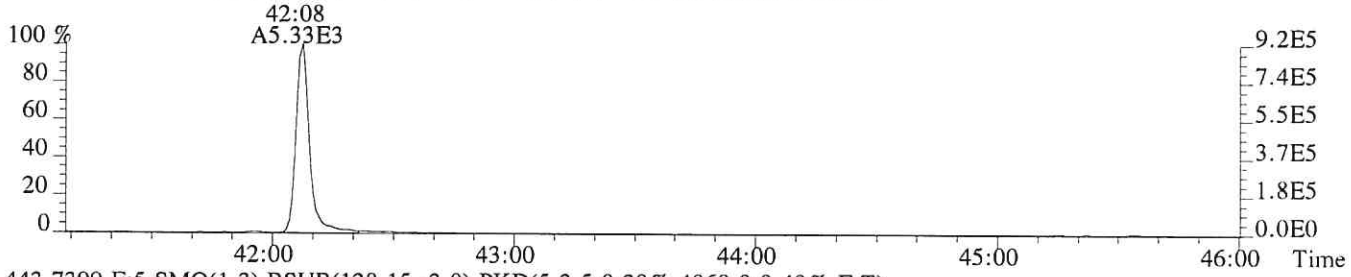


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

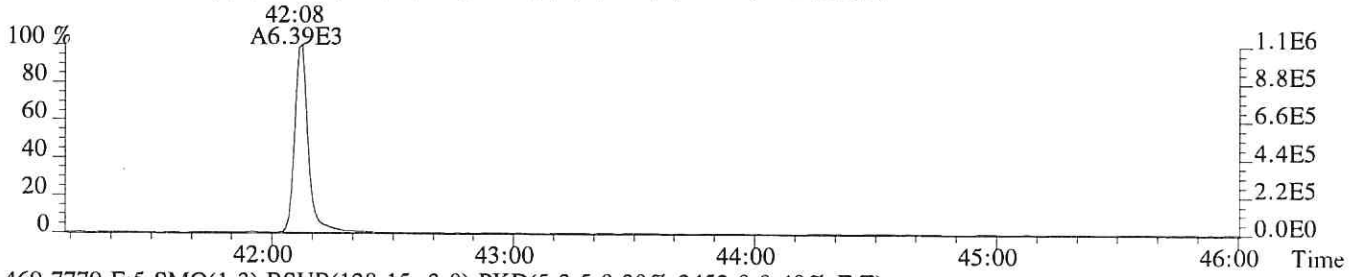


File:P407967 #1-438 Acq:19-SEP-2017 10:41:33 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1700950-001

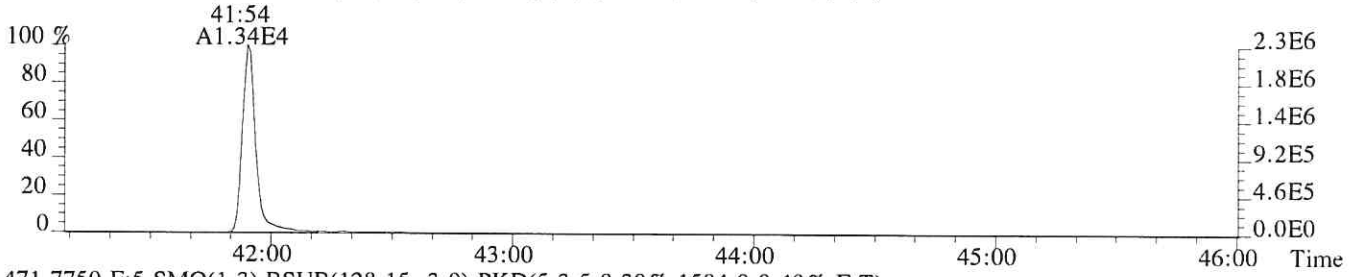
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1344.0,0.40%,F,T)



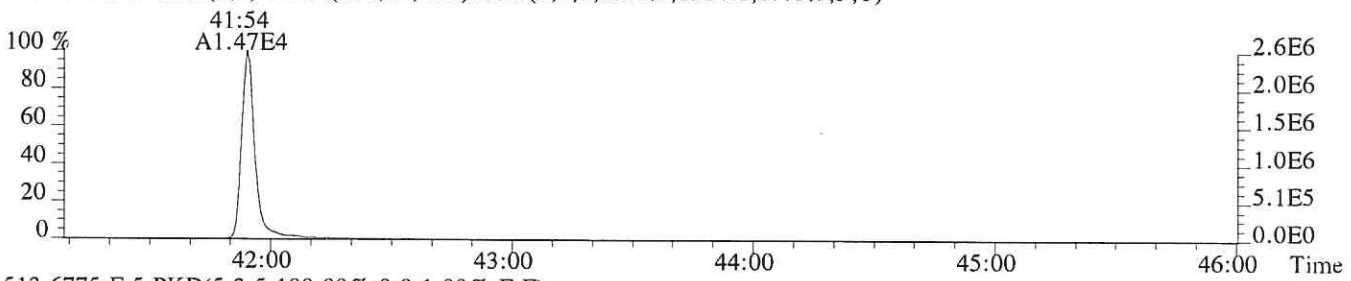
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4068.0,0.40%,F,T)



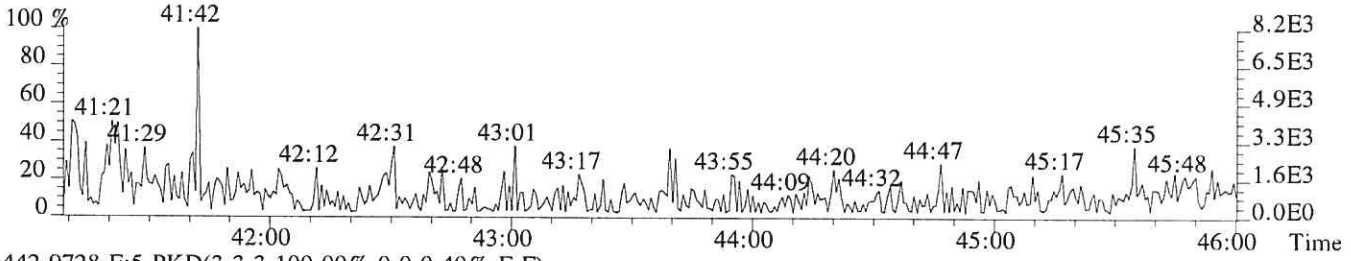
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2452.0,0.40%,F,T)



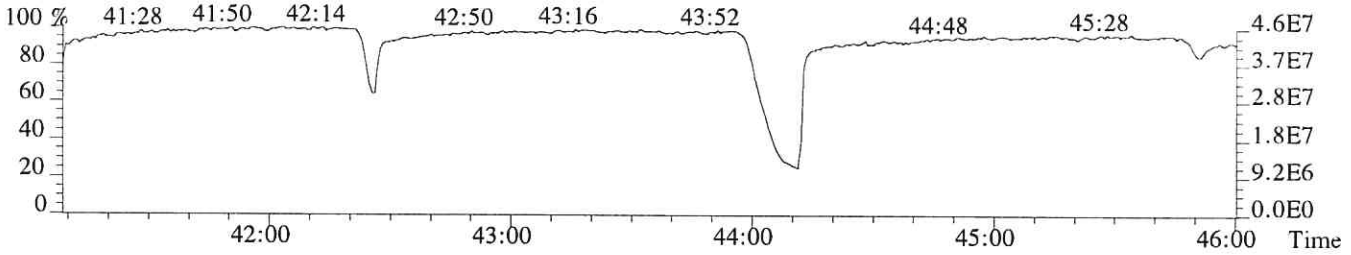
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1584.0,0.40%,F,T)



513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

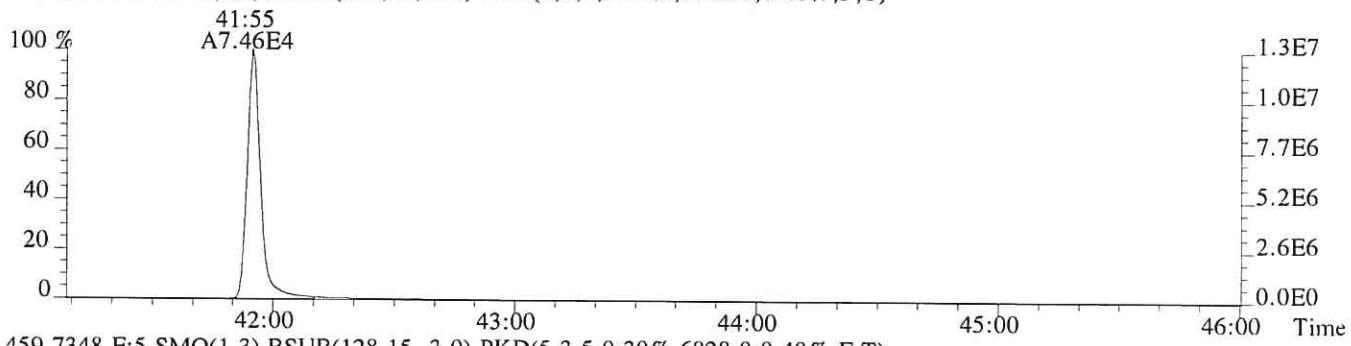


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

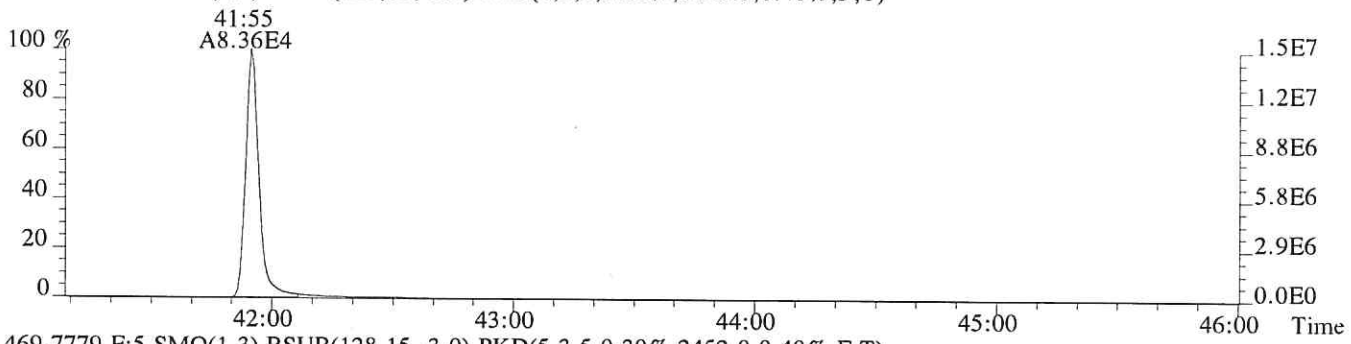


File:P407967 #1-438 Acq:19-SEP-2017 10:41:33 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:E1700950-001

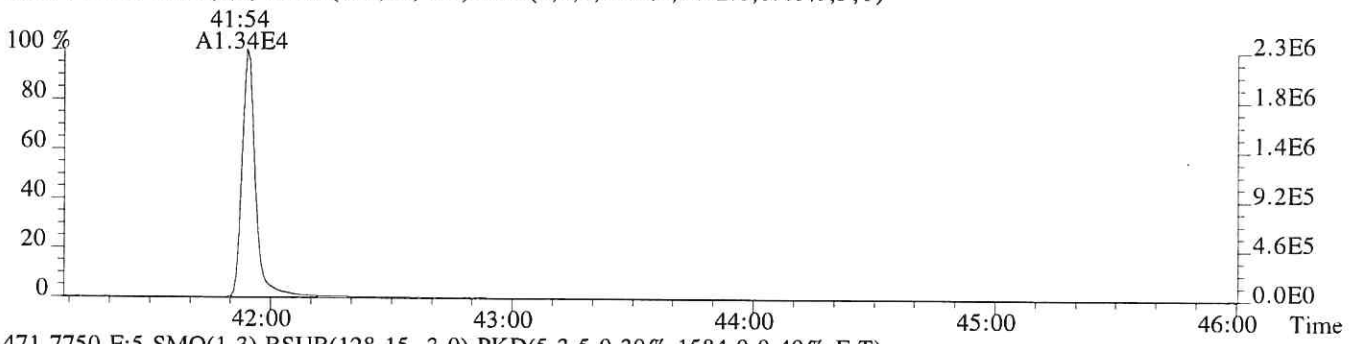
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,7088.0,0.40%,F,T)



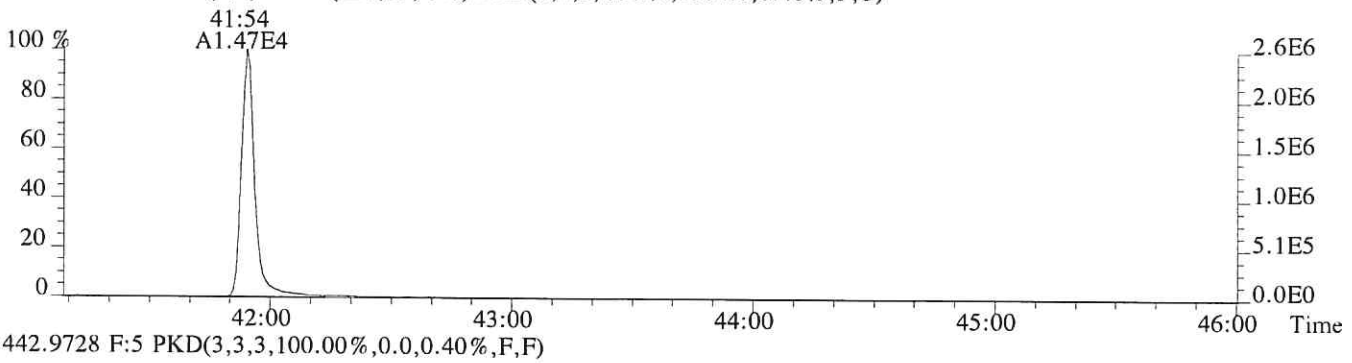
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6828.0,0.40%,F,T)



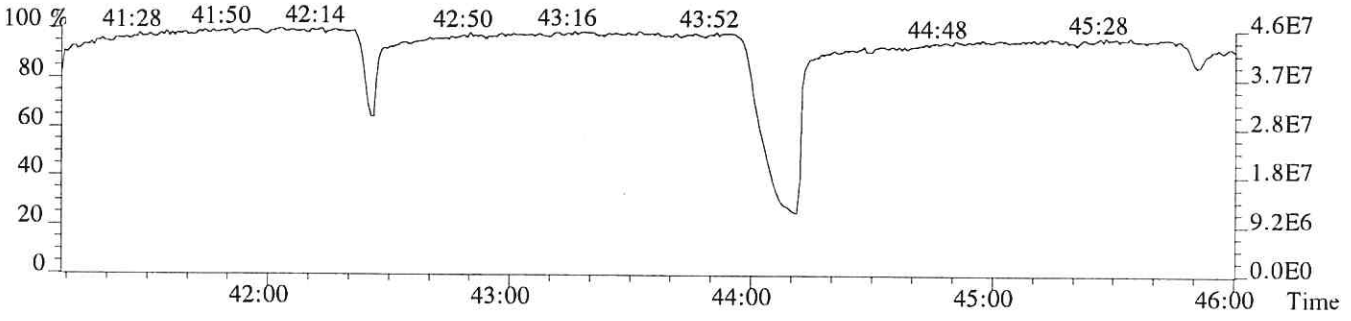
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2452.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1584.0,0.40%,F,T)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
METHOD BLANK

Run #11 Filename p407966 Samp: 1 Inj: 1 Acquired: 19-SEP-17 09:53:13
Processed: 19-SEP-17 14:49:40 Sample ID: EQ1700406-01

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	NotFnd	*	*	*	no	no	0.885
2	Unk	1,2,3,7,8-PeCDF	NotFnd	*	*	*	no	no	0.984
3	Unk	2,3,4,7,8-PeCDF	NotFnd	*	*	*	no	no	0.943
4	Unk	1,2,3,4,7,8-HxCDF	NotFnd	*	*	*	no	no	1.230
5	Unk	1,2,3,6,7,8-HxCDF	NotFnd	*	*	*	no	no	1.148
6	Unk	2,3,4,6,7,8-HxCDF	NotFnd	*	*	*	no	no	1.133
7	Unk	1,2,3,7,8,9-HxCDF	NotFnd	*	*	*	no	no	1.172
8	Unk	1,2,3,4,6,7,8-HpCDF	38:21	6.834e+00	1.033e+01	0.66	no	no	1.377
9	Unk	1,2,3,4,7,8,9-HpCDF	NotFnd	*	*	*	no	no	1.301
10	Unk	OCDF	NotFnd	*	*	*	no	yes	1.114
11	Unk	2,3,7,8-TCDD	NotFnd	*	*	*	no	no	0.966
12	Unk	1,2,3,7,8-PeCDD	NotFnd	*	*	*	no	no	0.851
13	Unk	1,2,3,4,7,8-HxCDD	NotFnd	*	*	*	no	yes	0.966
14	Unk	1,2,3,6,7,8-HxCDD	NotFnd	*	*	*	no	no	0.938
15	Unk	1,2,3,7,8,9-HxCDD	NotFnd	*	*	*	no	no	0.980
16	Unk	1,2,3,4,6,7,8-HpCDD	39:13	2.692e+01	4.630e+01	0.58	no	no	0.975
17	Unk	OCDD	41:54	2.131e+02	2.485e+02	0.86	yes	no	1.033
18	IS	13C-2,3,7,8-TCDF	27:57	1.030e+04	1.352e+04	0.76	yes	no	1.176
19	IS	13C-1,2,3,7,8-PeCDF	32:10	2.196e+04	1.394e+04	1.58	yes	no	1.185
20	IS	13C-2,3,4,7,8-PeCDF	33:05	2.232e+04	1.429e+04	1.56	yes	no	1.149
21	IS	13C-1,2,3,4,7,8-HxCDF	35:45	1.051e+04	2.084e+04	0.50	yes	no	1.068
22	IS	13C-1,2,3,6,7,8-HxCDF	35:51	1.273e+04	2.515e+04	0.51	yes	no	1.171
23	IS	13C-2,3,4,6,7,8-HxCDF	36:21	1.258e+04	2.458e+04	0.51	yes	no	1.079
24	IS	13C-1,2,3,7,8,9-HxCDF	37:06	1.177e+04	2.301e+04	0.51	yes	no	0.919
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:19	8.333e+03	1.909e+04	0.44	yes	no	0.877
26	IS	13C-1,2,3,4,7,8,9-HpCDF	39:41	7.543e+03	1.750e+04	0.43	yes	no	0.723
27	IS	13C-2,3,7,8-TCDD	28:45	9.985e+03	1.300e+04	0.77	yes	no	0.958
28	IS	13C-1,2,3,7,8-PeCDD	33:22	1.981e+04	1.275e+04	1.55	yes	no	0.973
29	IS	13C-1,2,3,4,7,8-HxCDD	36:29	1.853e+04	1.468e+04	1.26	yes	no	0.966
30	IS	13C-1,2,3,6,7,8-HxCDD	36:34	1.927e+04	1.494e+04	1.29	yes	no	0.968
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:13	1.460e+04	1.396e+04	1.05	yes	no	0.854
32	IS	13C-OCDD	41:54	1.717e+04	1.927e+04	0.89	yes	no	0.668
33	RS/RT	13C-1,2,3,4-TCDD	28:09	3.139e+04	3.954e+04	0.79	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	36:48	4.030e+04	3.117e+04	1.29	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	28:45	9.715e+03				no	0.992

$$\text{OCDD} = \frac{(2.131e{+}02 + 2.485e{+}02\ )\ \times\ 4000\ \ pg\ \times\ 1}{(1.717e{+}04 + 1.927e{+}04)\ \times\ \ g\ \ \times\ \ /\ 100\ \times\ 1.033} =$$

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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
METHOD BLANK

Run #11 Filename p407966 Samp: 1 Inj: 1 Acquired: 19-SEP-17 09:53:13
Processed: 19-SEP-17 14:49:40 LAB. ID: EQ1700406-01

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	*	5.52e+02	*	*	1.98e+03	*
2	1,2,3,7,8-PeCDF	*	3.56e+02	*	*	1.07e+03	*
3	2,3,4,7,8-PeCDF	*	3.56e+02	*	*	1.07e+03	*
4	1,2,3,4,7,8-HxCDF	*	5.96e+02	*	*	6.64e+02	*
5	1,2,3,6,7,8-HxCDF	*	5.96e+02	*	*	6.64e+02	*
6	2,3,4,6,7,8-HxCDF	*	5.96e+02	*	*	6.64e+02	*
7	1,2,3,7,8,9-HxCDF	*	5.96e+02	*	*	6.64e+02	*
8	1,2,3,4,6,7,8-HpCDF	1.75e+03	3.60e+02	4.9e+00	2.06e+03	3.88e+02	5.3e+00
9	1,2,3,4,7,8,9-HpCDF	*	3.60e+02	*	*	3.88e+02	*
10	OCDF	*	4.08e+02	*	*	1.54e+03	*
11	2,3,7,8-TCDD	*	2.36e+03	*	*	5.32e+02	*
12	1,2,3,7,8-PeCDD	*	1.17e+03	*	*	1.64e+02	*
13	1,2,3,4,7,8-HxCDD	*	4.12e+02	*	*	8.80e+02	*
14	1,2,3,6,7,8-HxCDD	*	4.12e+02	*	*	8.80e+02	*
15	1,2,3,7,8,9-HxCDD	*	4.12e+02	*	*	8.80e+02	*
16	1,2,3,4,6,7,8-HpCDD	6.06e+03	6.20e+02	9.8e+00	8.02e+03	4.96e+02	1.6e+01
17	OCDD	3.52e+04	4.40e+02	8.0e+01	4.31e+04	9.68e+02	4.4e+01
18	13C-2,3,7,8-TCDF	1.96e+06	1.33e+04	1.5e+02	2.56e+06	4.80e+03	5.3e+02
19	13C-1,2,3,7,8-PeCDF	4.08e+06	2.60e+03	1.6e+03	2.62e+06	3.40e+03	7.7e+02
20	13C-2,3,4,7,8-PeCDF	4.41e+06	2.60e+03	1.7e+03	2.81e+06	3.40e+03	8.2e+02
21	13C-1,2,3,4,7,8-HxCDF	2.28e+06	9.32e+02	2.4e+03	4.48e+06	1.12e+03	4.0e+03
22	13C-1,2,3,6,7,8-HxCDF	2.53e+06	9.32e+02	2.7e+03	5.02e+06	1.12e+03	4.5e+03
23	13C-2,3,4,6,7,8-HxCDF	2.62e+06	9.32e+02	2.8e+03	5.23e+06	1.12e+03	4.7e+03
24	13C-1,2,3,7,8,9-HxCDF	2.42e+06	9.32e+02	2.6e+03	4.70e+06	1.12e+03	4.2e+03
25	13C-1,2,3,4,6,7,8-HpCDF	1.77e+06	2.33e+03	7.6e+02	4.14e+06	2.06e+03	2.0e+03
26	13C-1,2,3,4,7,8,9-HpCDF	1.50e+06	2.33e+03	6.4e+02	3.43e+06	2.06e+03	1.7e+03
27	13C-2,3,7,8-TCDD	1.91e+06	5.96e+03	3.2e+02	2.48e+06	2.60e+03	9.5e+02
28	13C-1,2,3,7,8-PeCDD	3.96e+06	1.46e+03	2.7e+03	2.54e+06	1.32e+03	1.9e+03
29	13C-1,2,3,4,7,8-HxCDD	4.14e+06	1.47e+03	2.8e+03	3.26e+06	8.64e+02	3.8e+03
30	13C-1,2,3,6,7,8-HxCDD	3.94e+06	1.47e+03	2.7e+03	3.08e+06	8.64e+02	3.6e+03
31	13C-1,2,3,4,6,7,8-HpCDD	2.94e+06	9.48e+02	3.1e+03	2.80e+06	7.44e+02	3.8e+03
32	13C-OCDD	2.94e+06	3.43e+03	8.6e+02	3.40e+06	3.05e+03	1.1e+03
33	13C-1,2,3,4-TCDD	5.91e+06	5.96e+03	9.9e+02	7.43e+06	2.60e+03	2.9e+03
34	13C-1,2,3,7,8,9-HxCDD	8.11e+06	1.47e+03	5.5e+03	6.40e+06	8.64e+02	7.4e+03
35	37Cl-2,3,7,8-TCDD	1.90e+06	1.65e+03	1.2e+03			

---Sample Calculation---

$$\text{D/L TCDD} = \frac{2.5 \times (2.356e{+}03 + 5.320e{+}02\ ) \times 2000}{(1.911e{+}06 + 2.478e{+}06\ ) \times (\qquad\qquad) \times 0.966} =$$

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Peak List Summary

CLIENT ID.

METHOD BLANK

Entry: 43 Totals Name: Total Hepta-Furans

Run: 11 File: p407966 Sample:1 Injection:1 Function:4

Acquired: 19-SEP-17 09:53:13 Processed: 19-SEP-17 14:49:40

Mass: 407.7820 409.7790 Tot Response: 2.71e+01 RRF: 1.343

#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	38:44	1.48e+01	1.24e+01	1.20	yes	2.71e+01	n	n

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ALS ENVIRONMENTAL
Peak List Summary

CLIENT ID.

METHOD BLANK

Entry: 44 Totals Name: Total Hepta-Dioxins

Run: 11 File: p407966 Sample:1 Injection:1 Function:4

Acquired: 19-SEP-17 09:53:13 Processed: 19-SEP-17 14:49:40

Mass: 423.7770 425.7740 Tot Response: 8.66e+01 RRF: 0.9755

#	RT	Resp	Resp Ratio	Meet	Tot Resp	Name	Mod1?	Mod2
1	38:34	4.43e+01	4.23e+01	1.05	yes	8.66e+01	n	n

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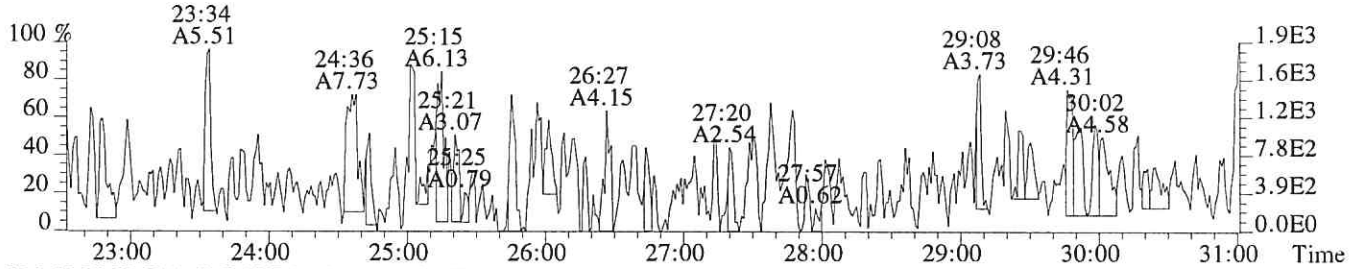
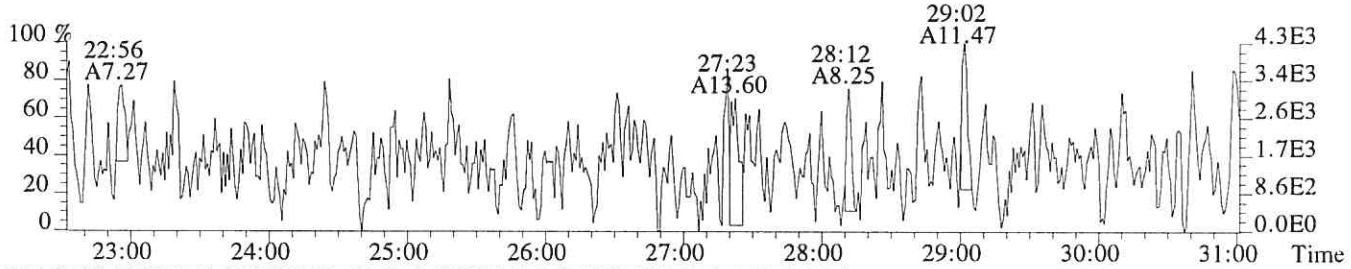
File:P407966 #1-602 Acq:19-SEP-2017 09:53:13 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:MB

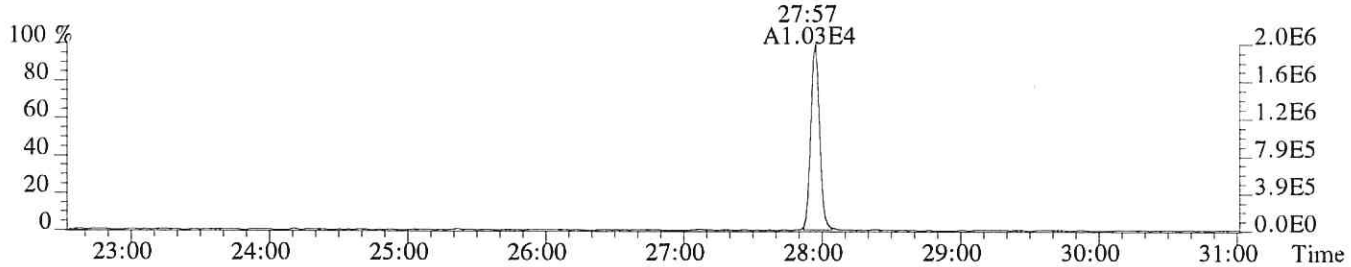
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,552.0,1.00%,F,T)



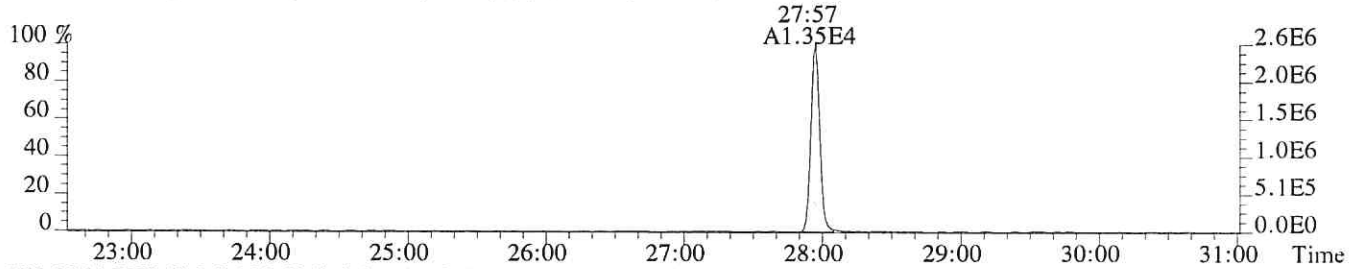
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1984.0,1.00%,F,T)



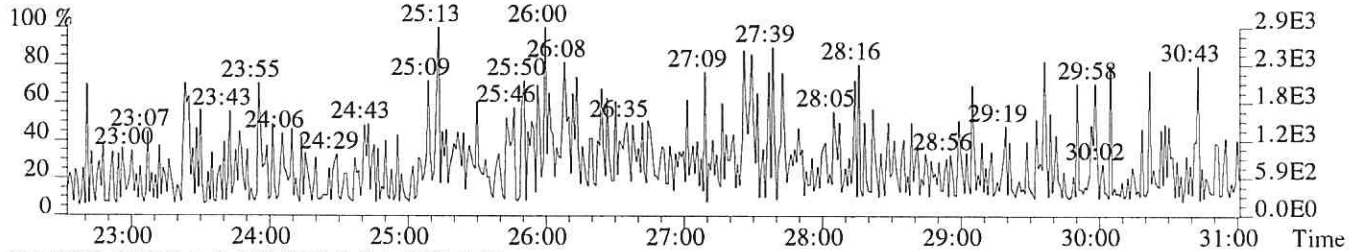
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,13344.0,1.00%,F,T)



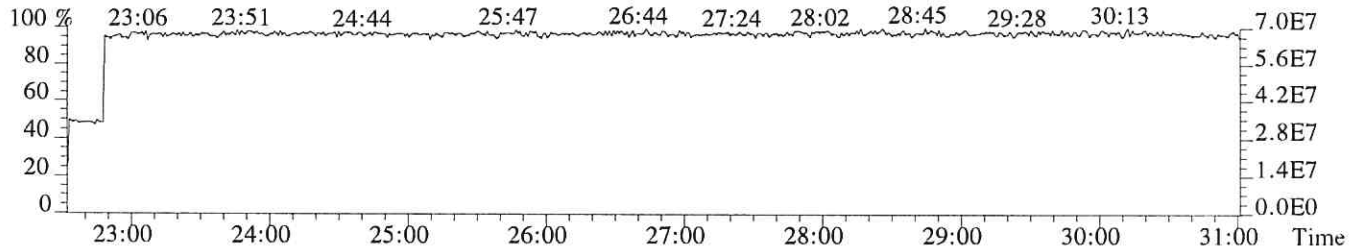
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4796.0,1.00%,F,T)



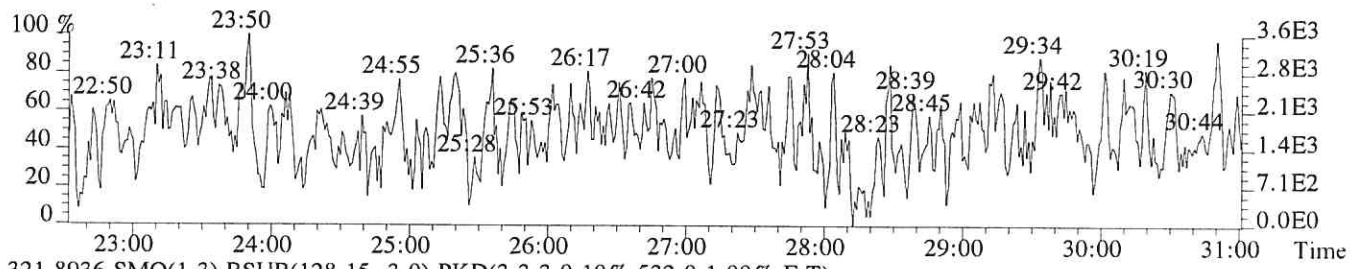
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



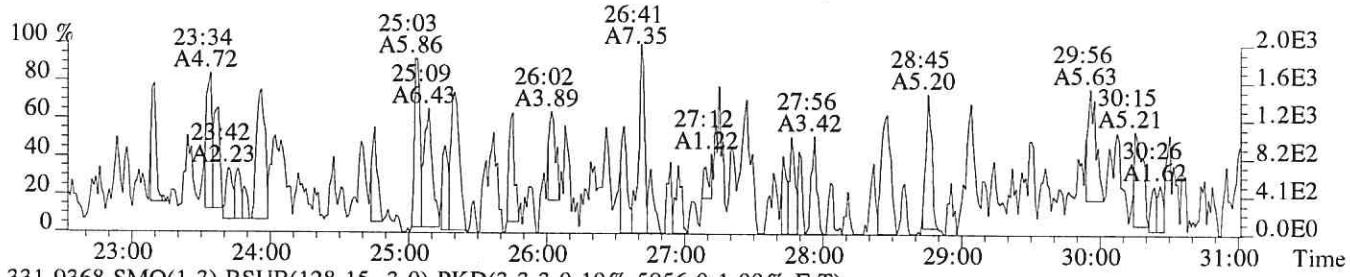
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



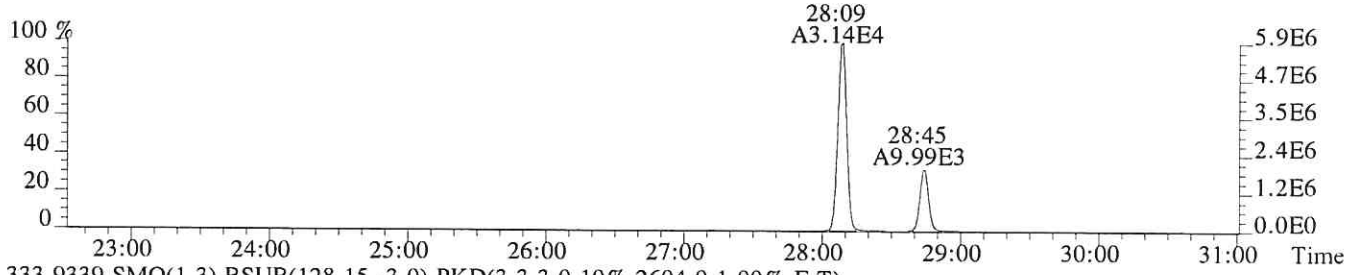
File:P407966 #1-602 Acq:19-SEP-2017 09:53:13 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:MB
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2356.0,1.00%,F,T)



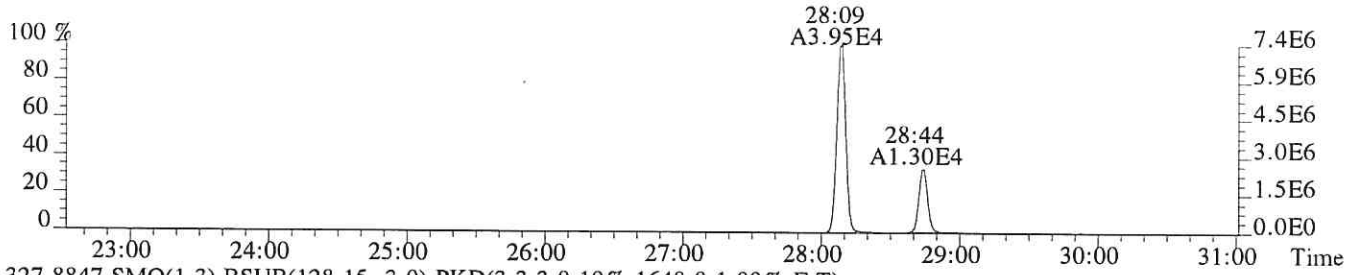
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,532.0,1.00%,F,T)



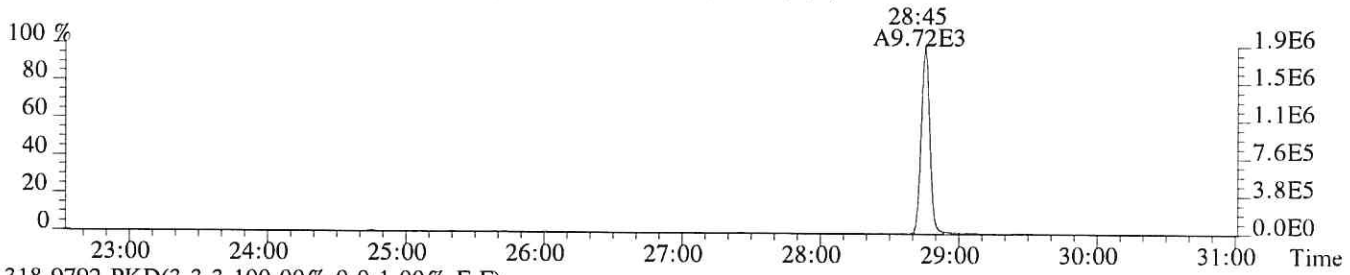
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5956.0,1.00%,F,T)



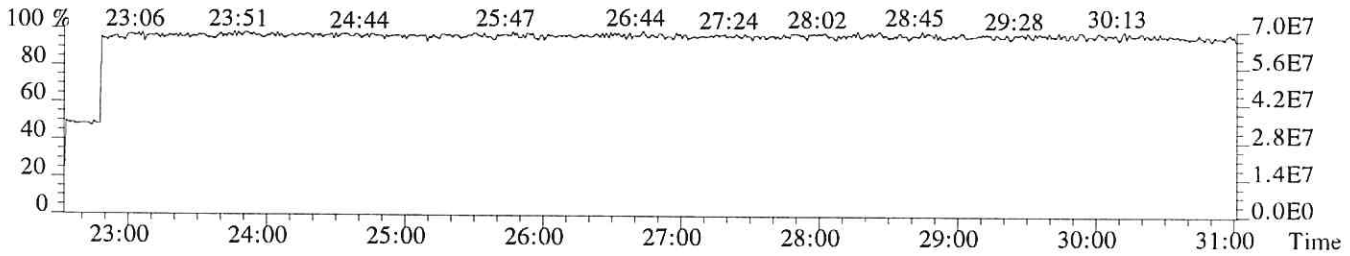
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2604.0,1.00%,F,T)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1648.0,1.00%,F,T)

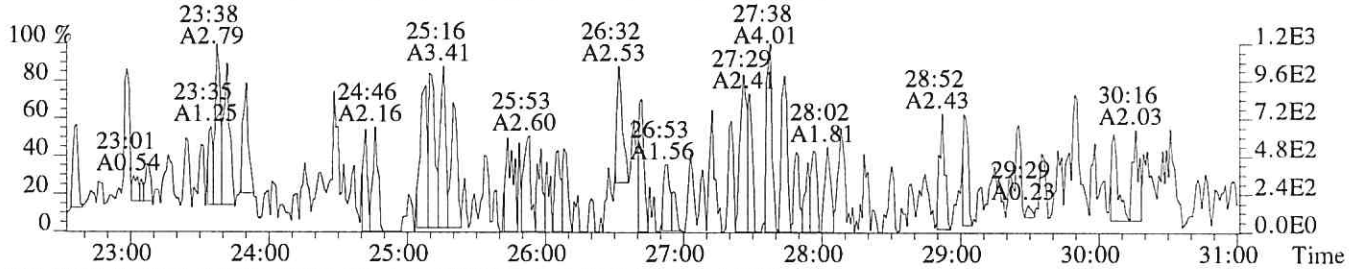


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

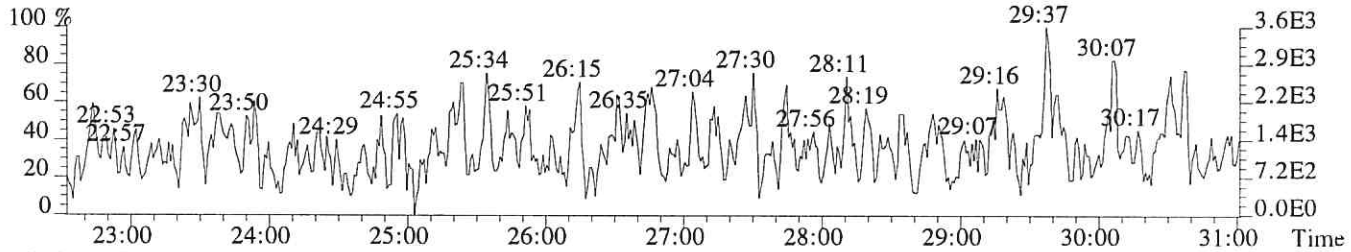


File:P407966 #1-602 Acq:19-SEP-2017 09:53:13 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:MB

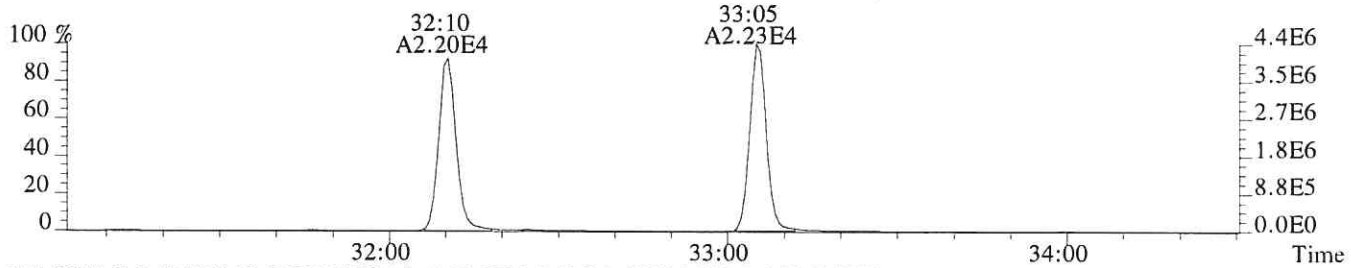
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,316.0,1.00%,F,T)



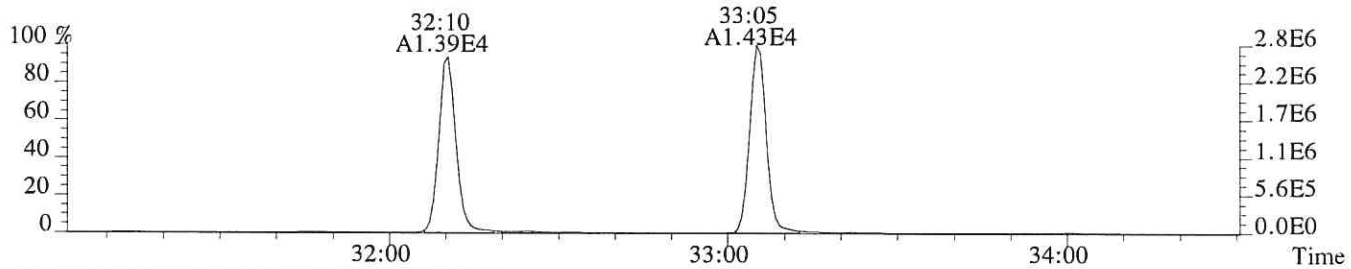
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1556.0,1.00%,F,T)



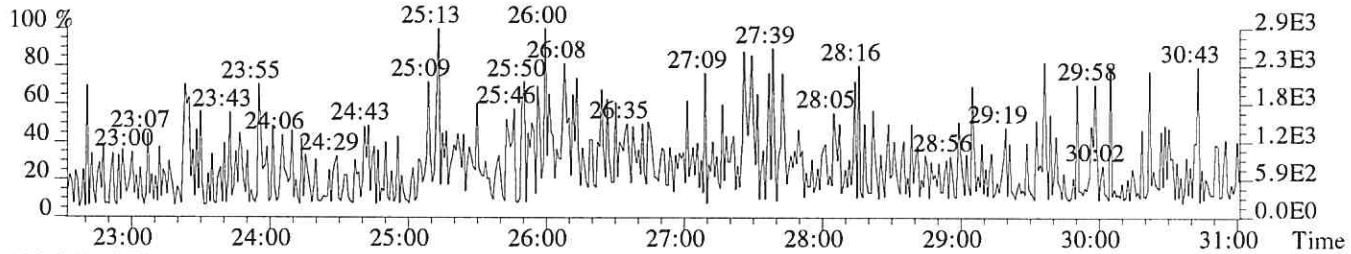
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2604.0,1.00%,F,T)



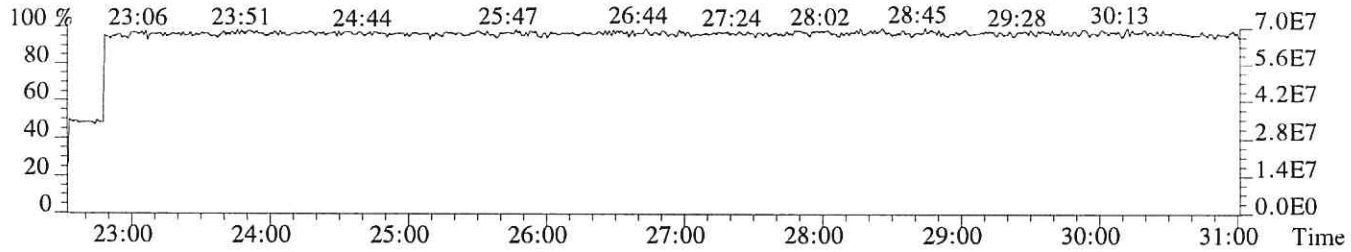
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3404.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

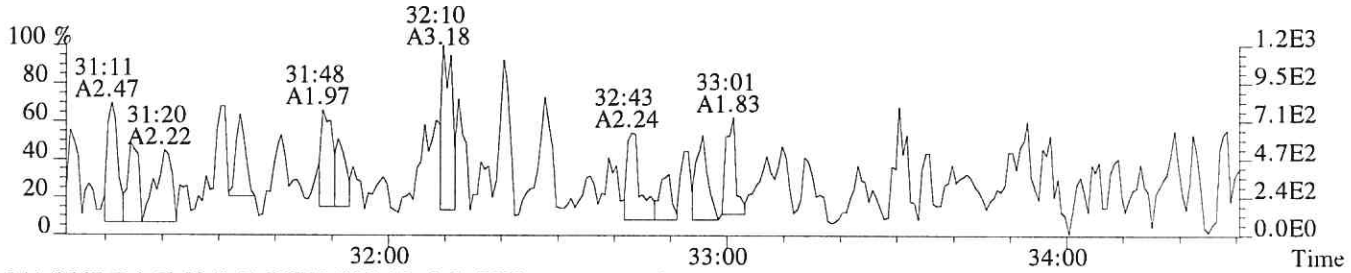


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

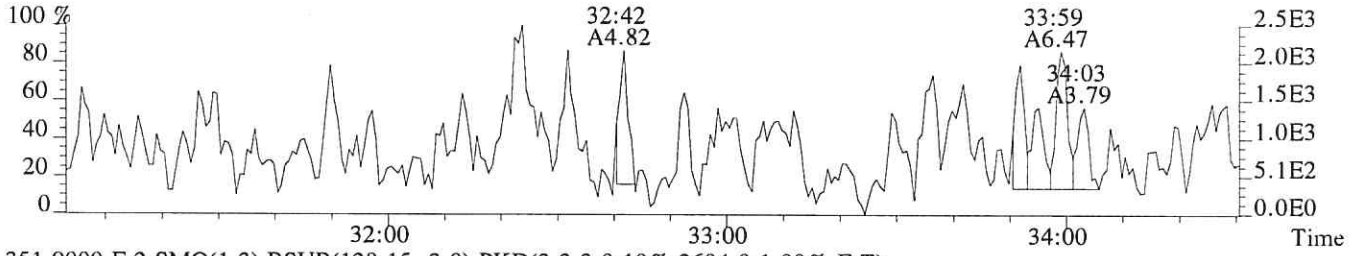


File:P407966 #1-312 Acq:19-SEP-2017 09:53:13 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:MB

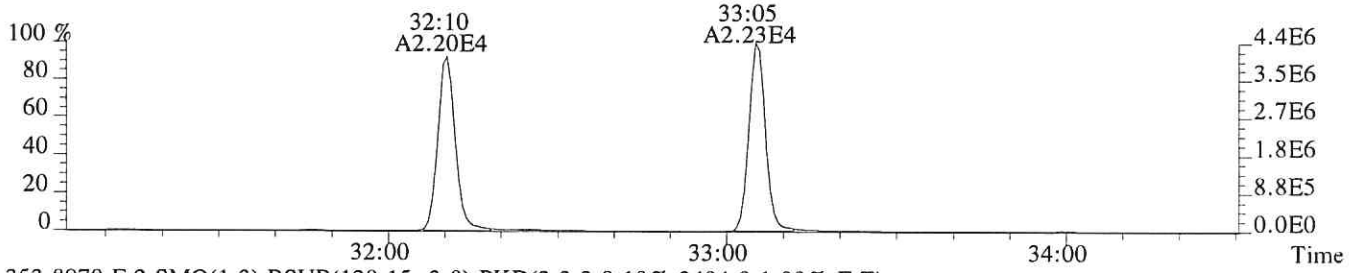
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,356.0,1.00%,F,T)



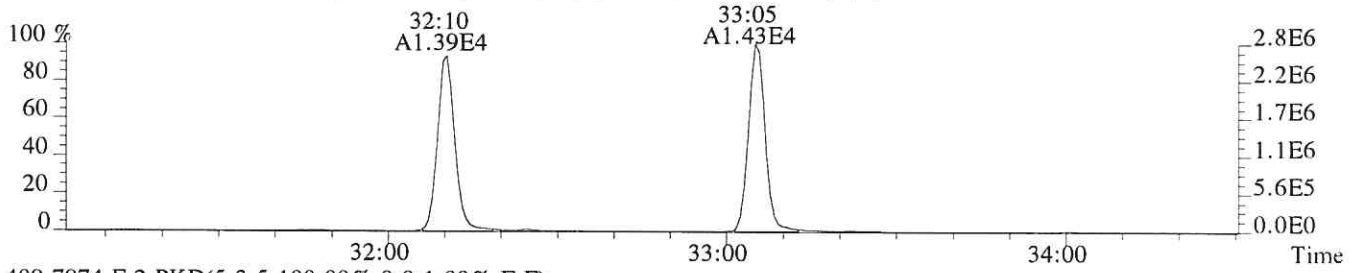
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1068.0,1.00%,F,T)



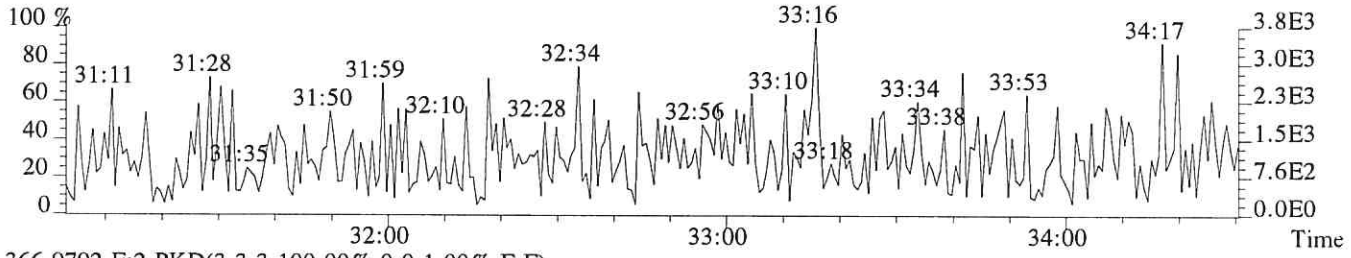
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2604.0,1.00%,F,T)



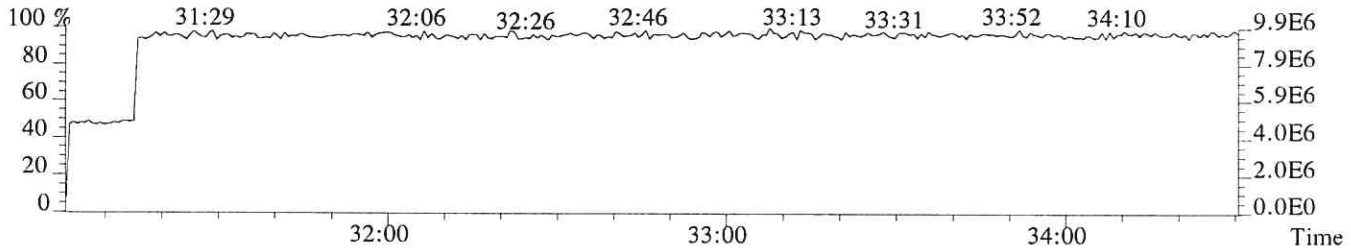
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3404.0,1.00%,F,T)



409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

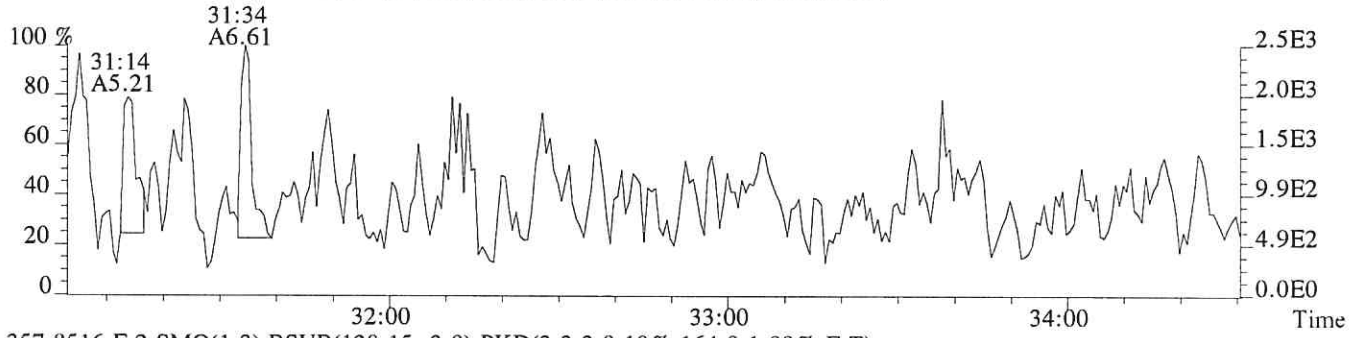


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

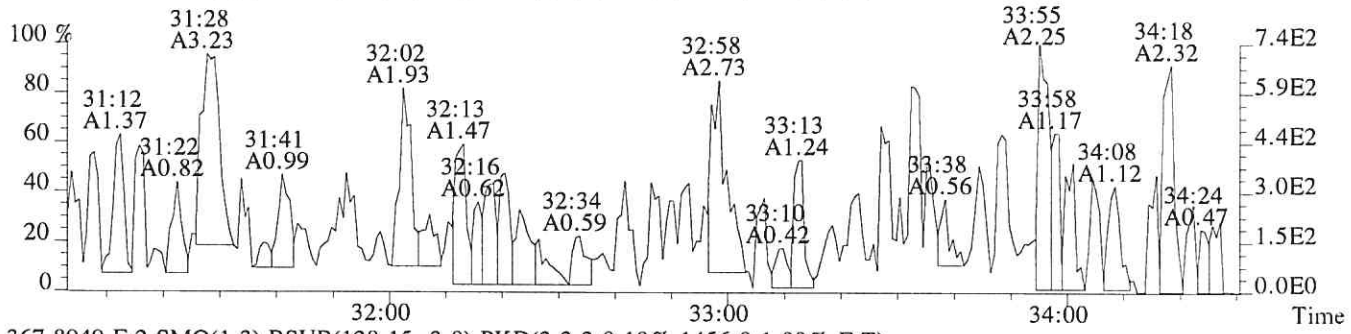


File:P407966 #1-312 Acq:19-SEP-2017 09:53:13 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:MB

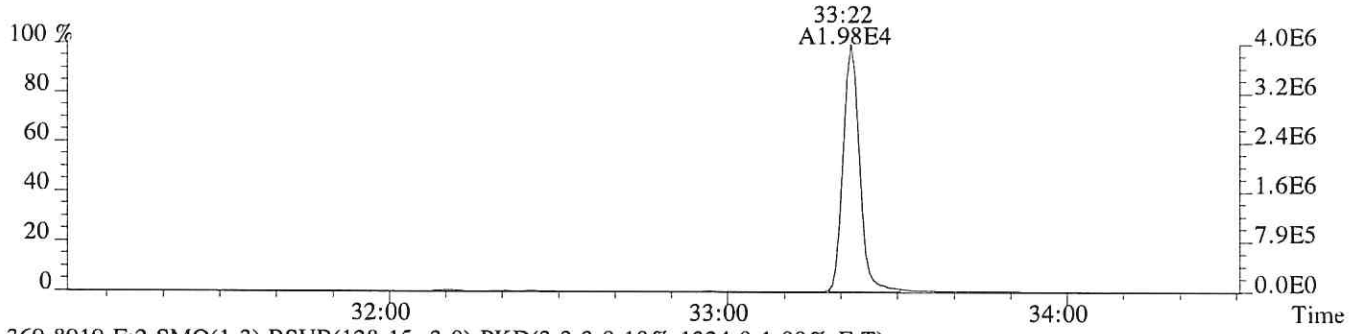
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1172.0,1.00%,F,T)



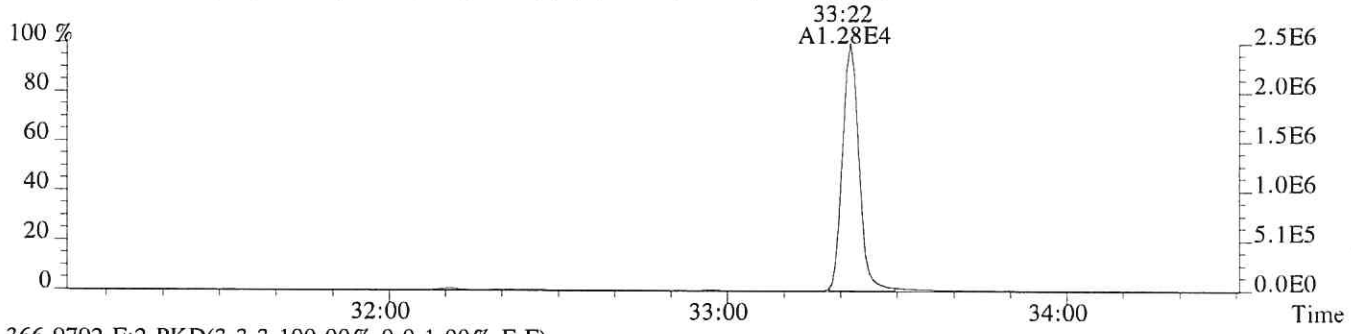
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,164.0,1.00%,F,T)



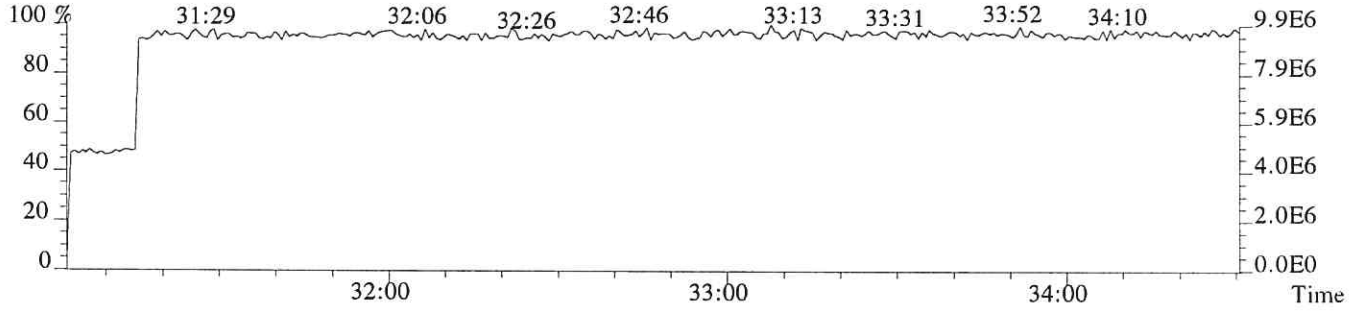
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1456.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1324.0,1.00%,F,T)

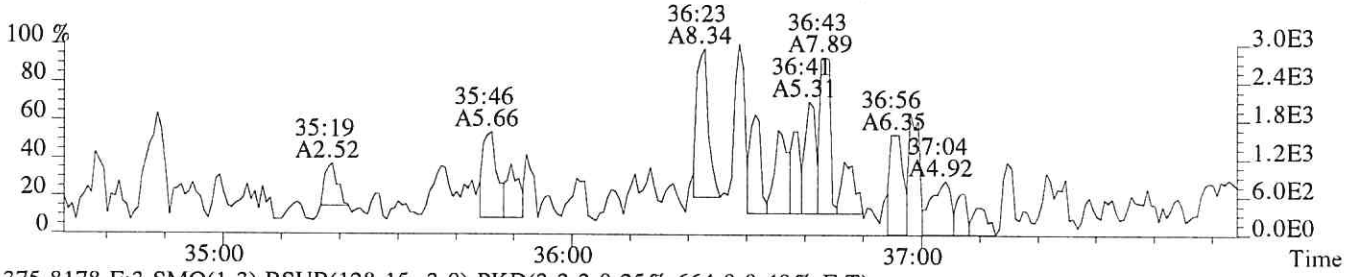


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

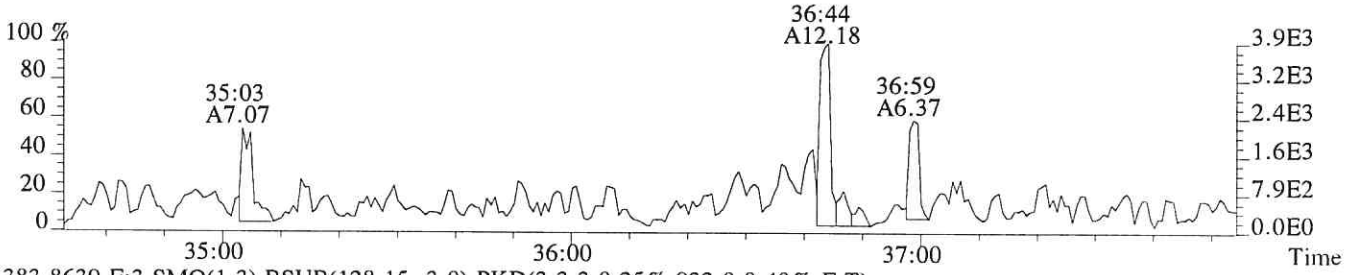


File:P407966 #1-303 Acq:19-SEP-2017 09:53:13 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:MB

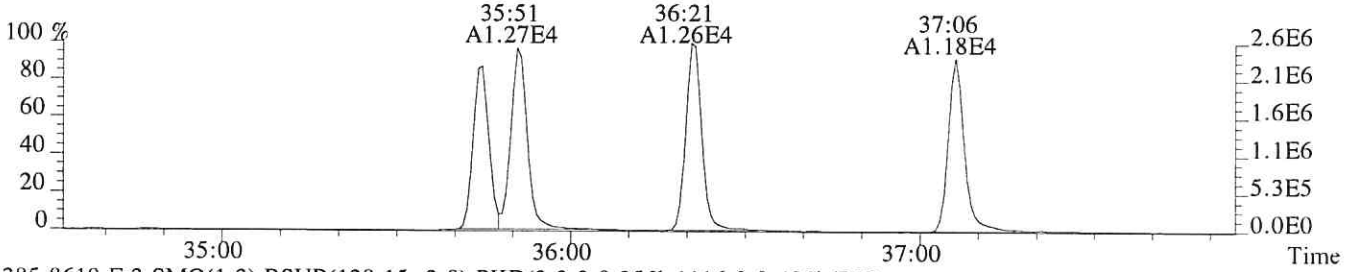
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,596.0,0.40%,F,T)



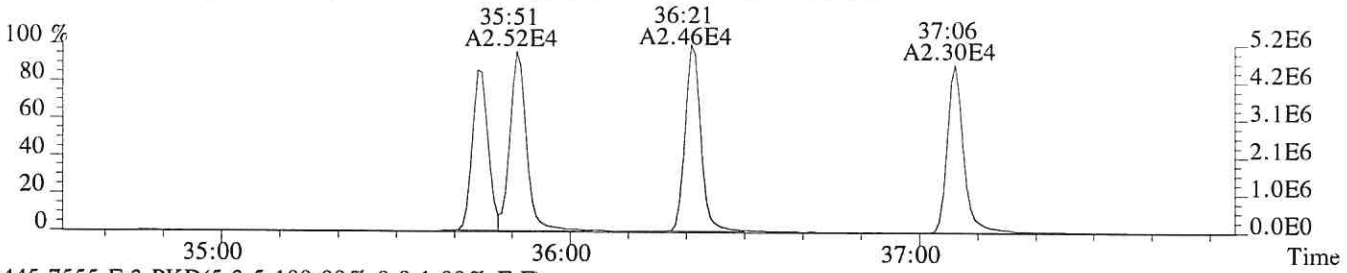
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,664.0,0.40%,F,T)



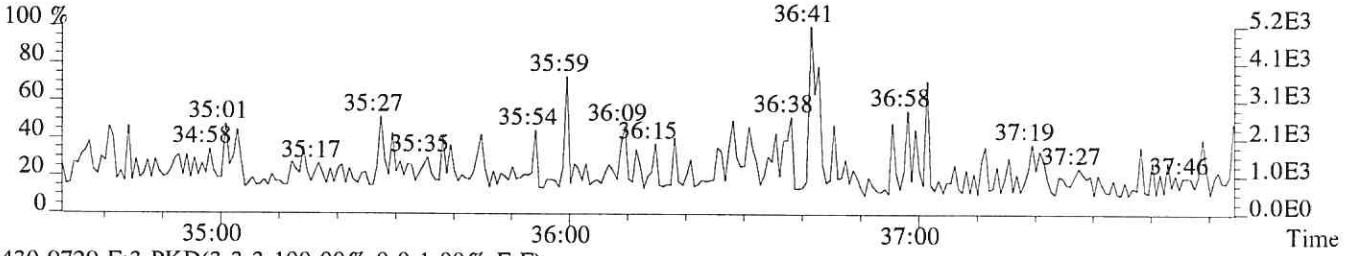
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,932.0,0.40%,F,T)



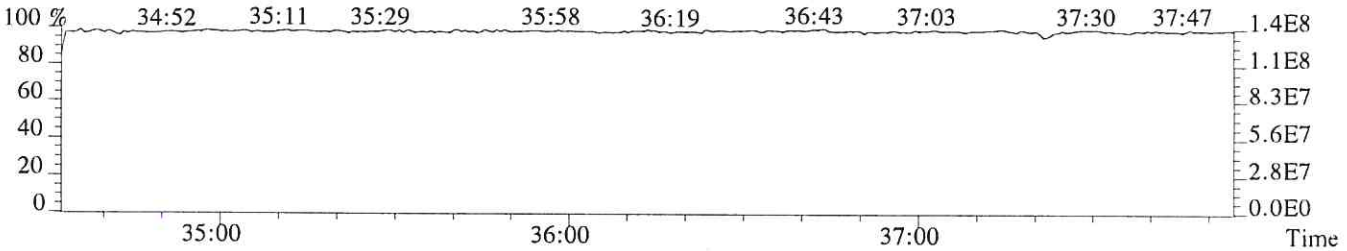
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1116.0,0.40%,F,T)



445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

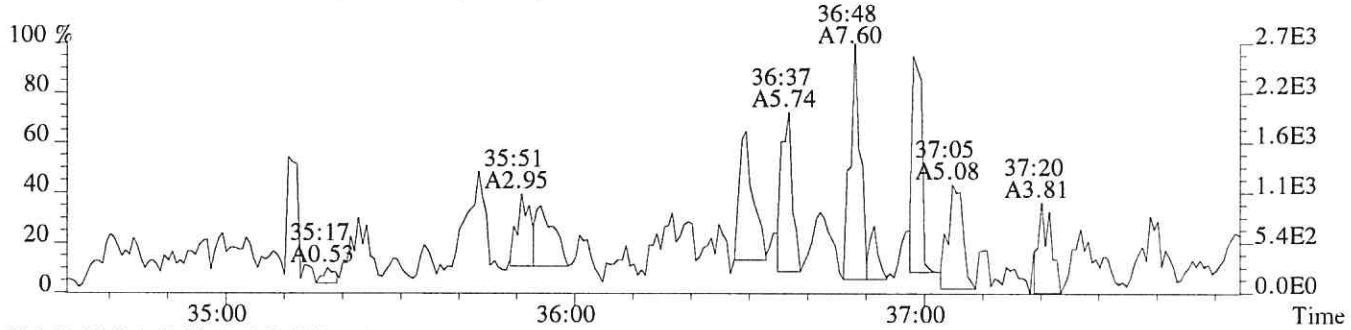


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

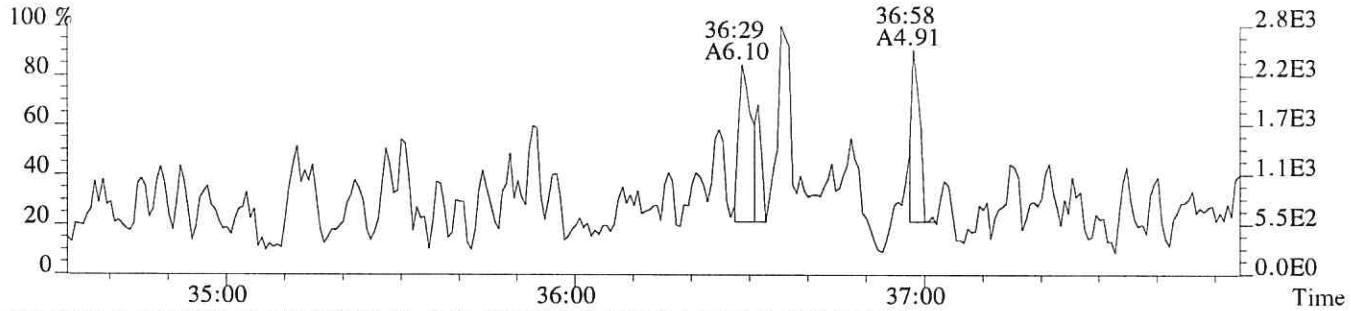


File:P407966 #1-303 Acq:19-SEP-2017 09:53:13 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:MB

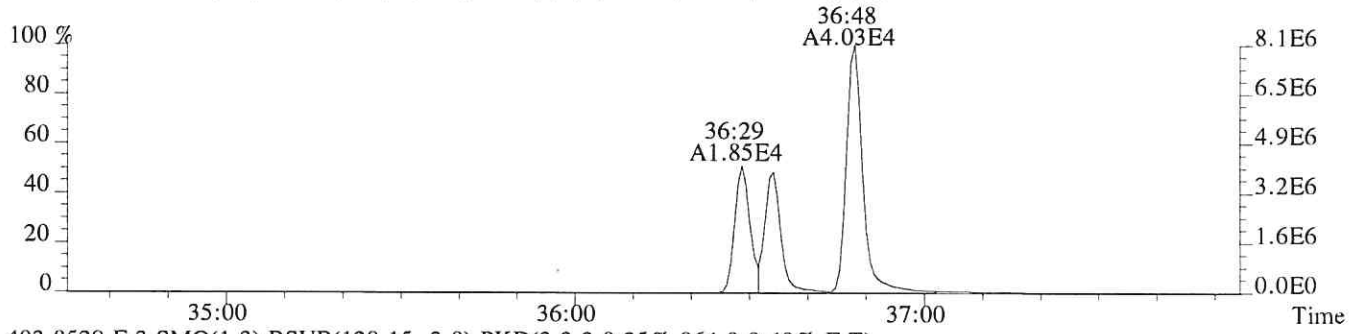
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,412.0,0.40%,F,T)



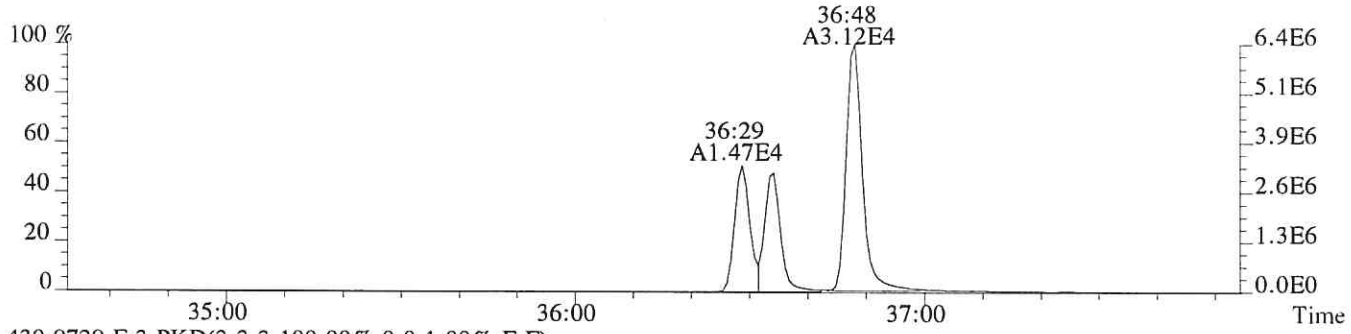
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,880.0,0.40%,F,T)



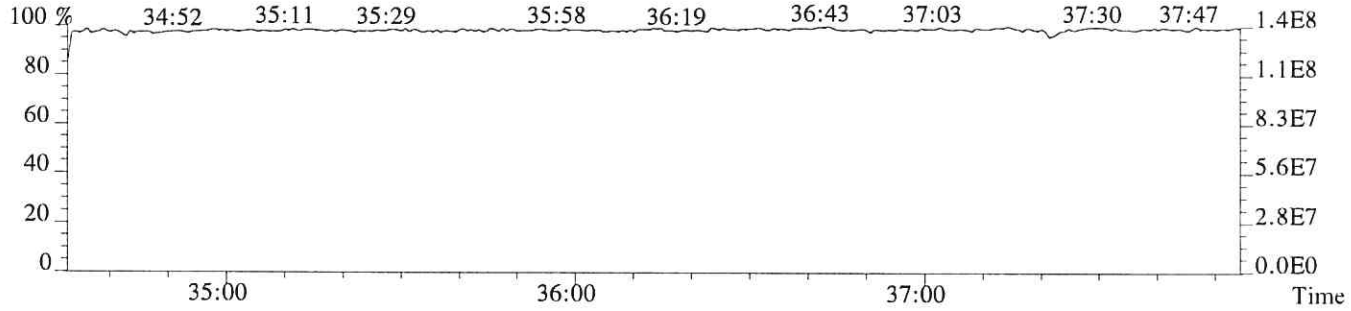
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1468.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,864.0,0.40%,F,T)

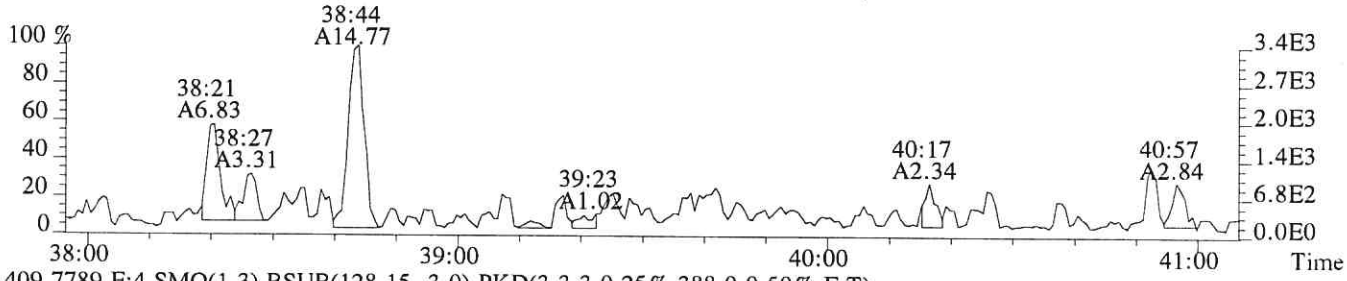


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

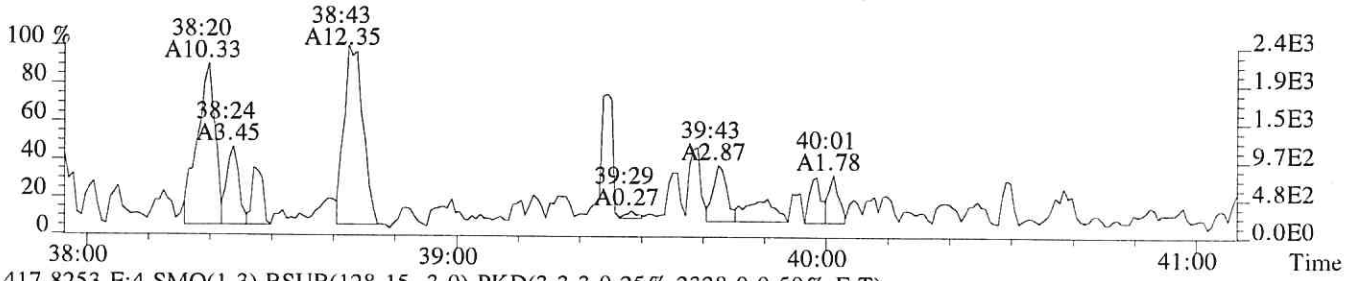


File:P407966 #1-286 Acq:19-SEP-2017 09:53:13 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:MB

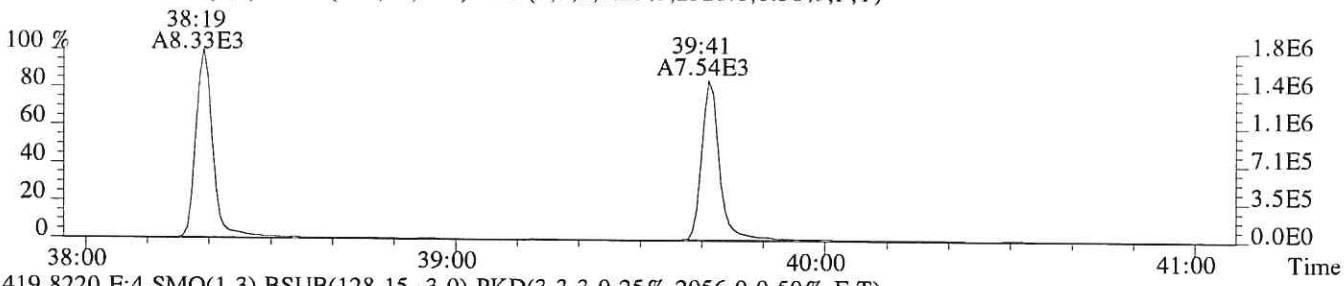
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,360.0,0.50%,F,T)



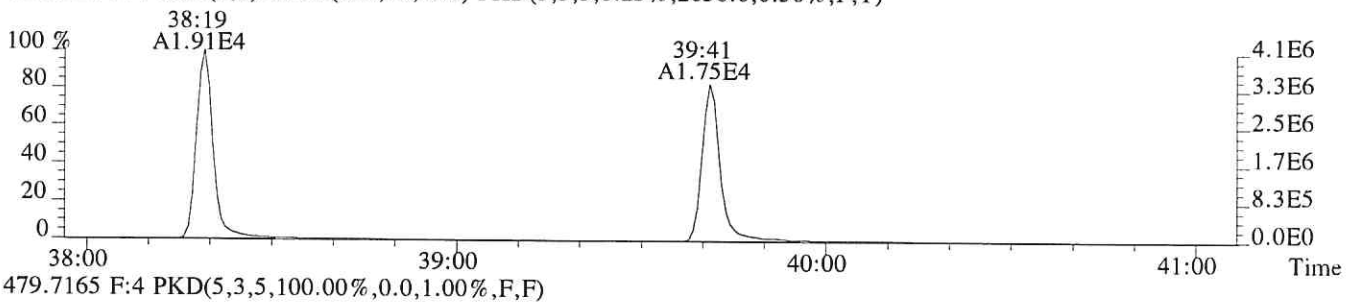
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,388.0,0.50%,F,T)



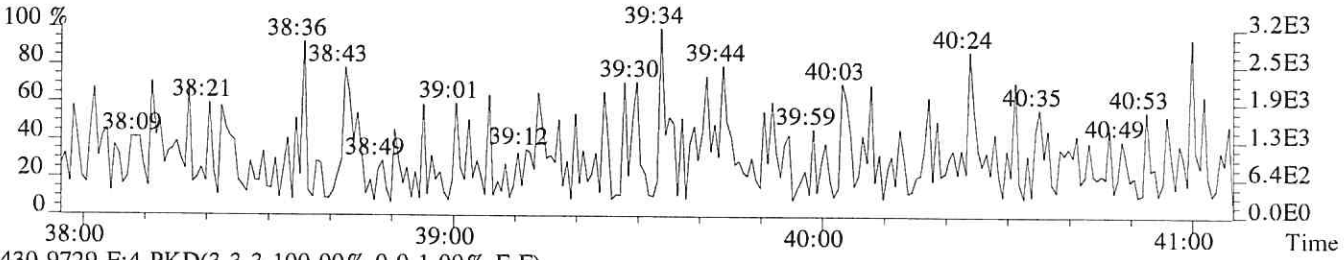
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2328.0,0.50%,F,T)



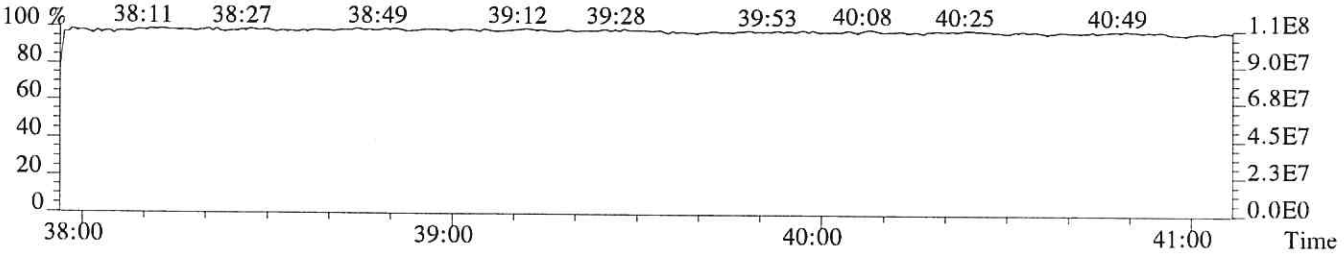
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2056.0,0.50%,F,T)



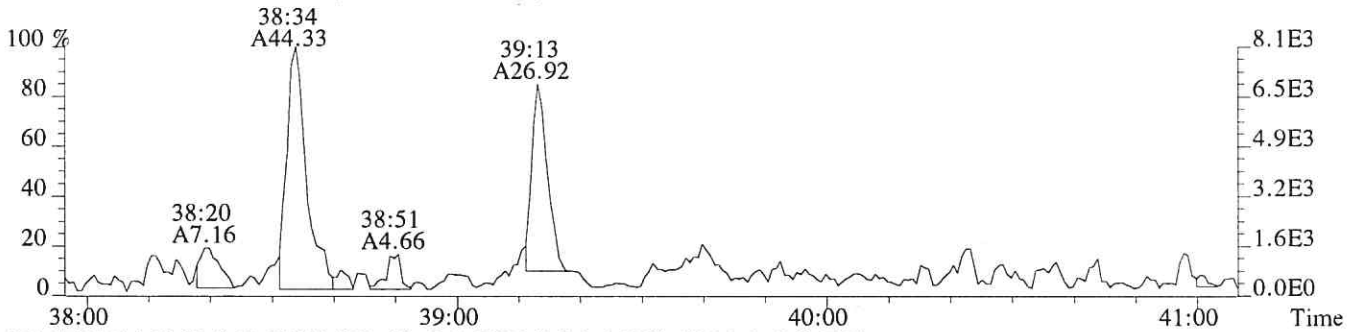
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



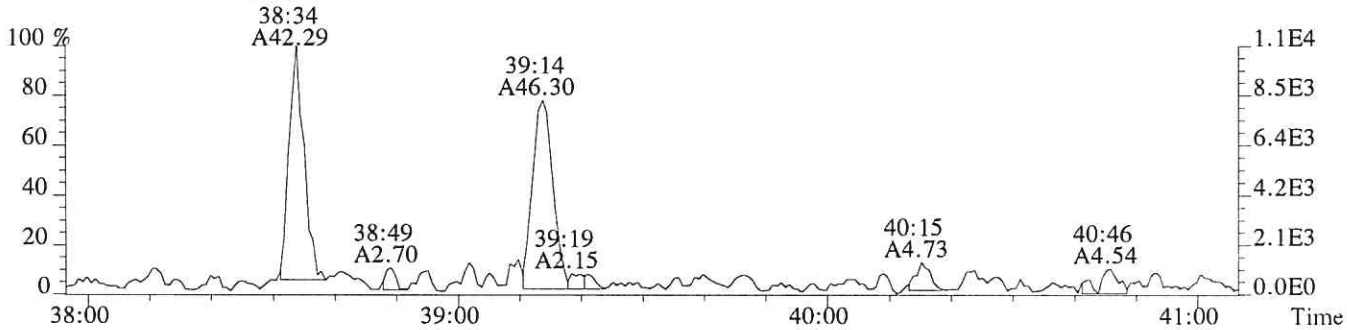
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



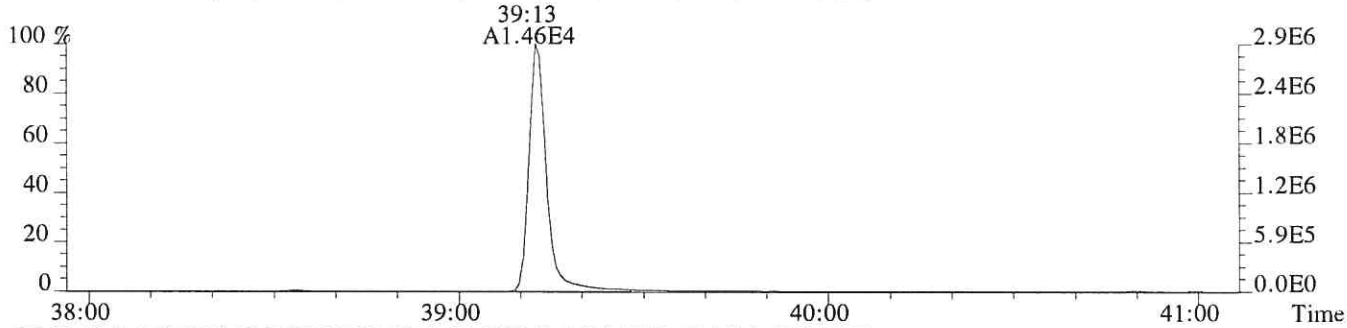
File:P407966 #1-286 Acq:19-SEP-2017 09:53:13 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:MB
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,620.0,0.40%,F,T)



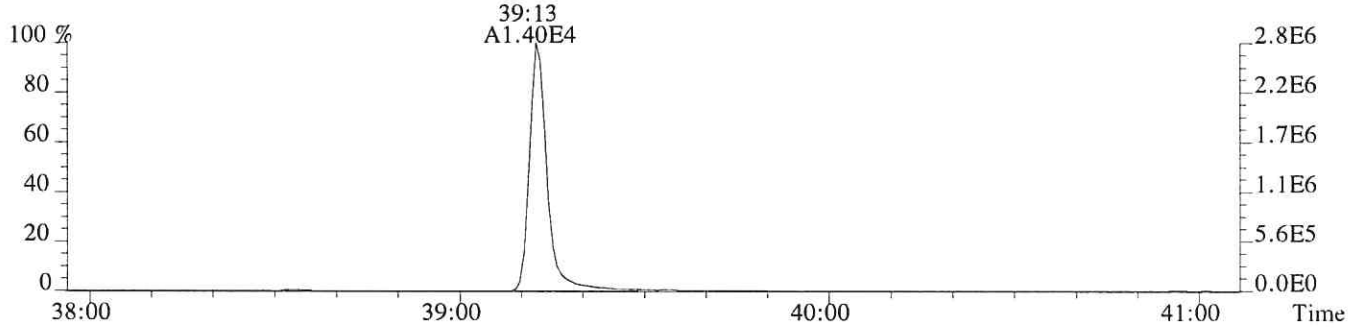
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,496.0,0.40%,F,T)



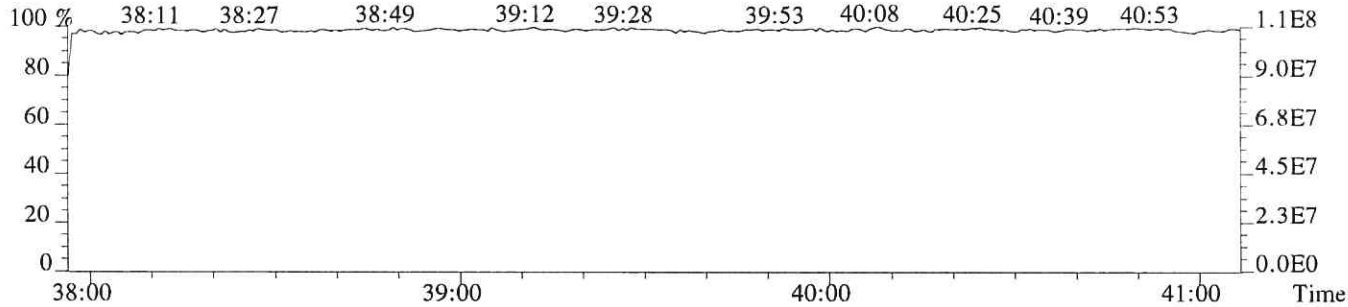
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,948.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,744.0,0.40%,F,T)

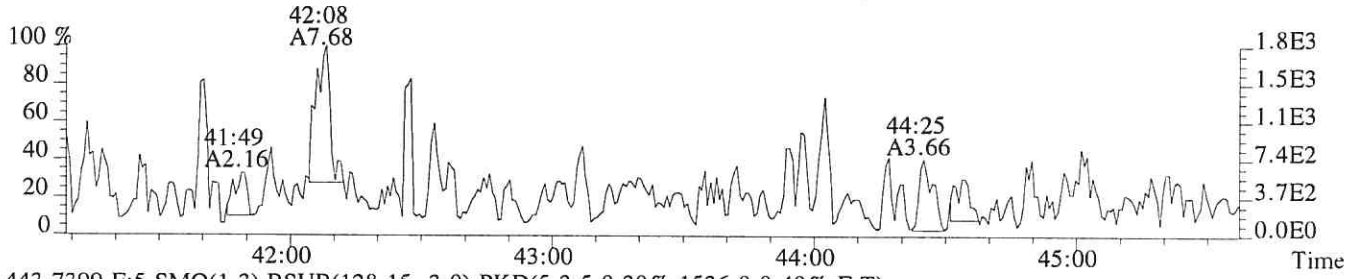


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

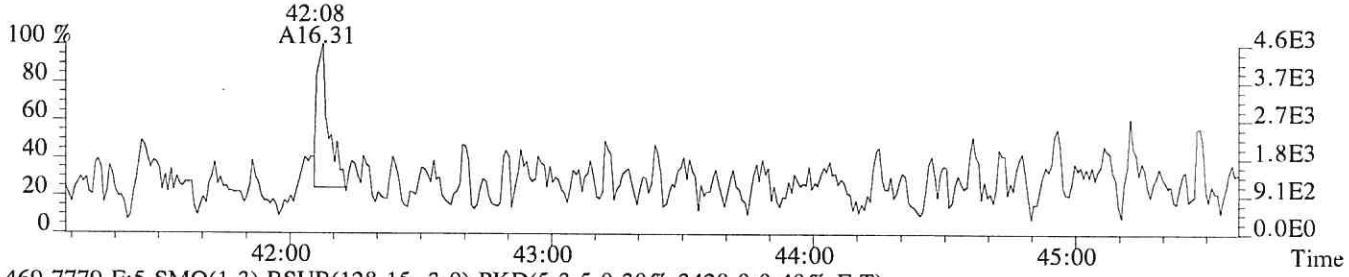


File:P407966 #1-403 Acq:19-SEP-2017 09:53:13 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:MB

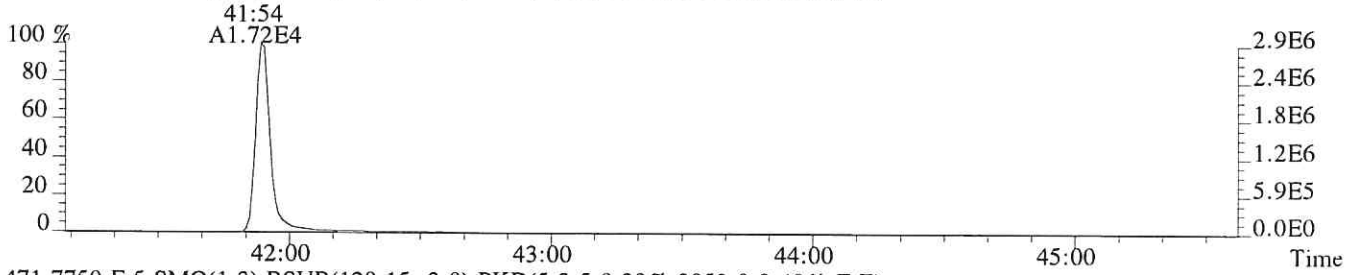
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,408.0,0.40%,F,T)



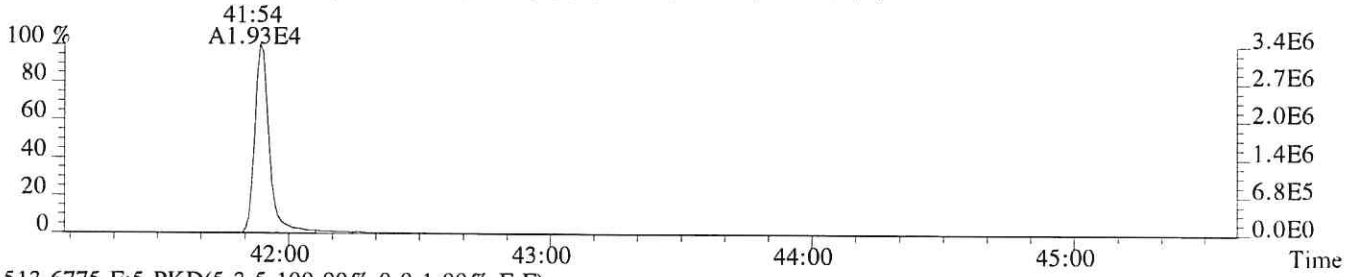
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1536.0,0.40%,F,T)



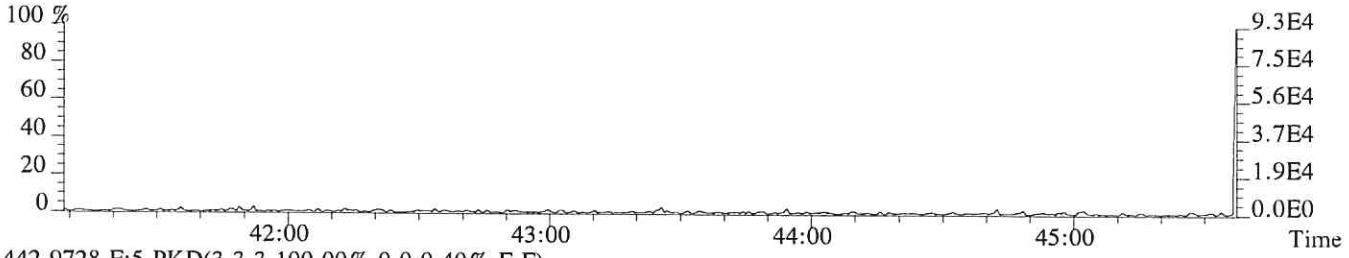
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3428.0,0.40%,F,T)



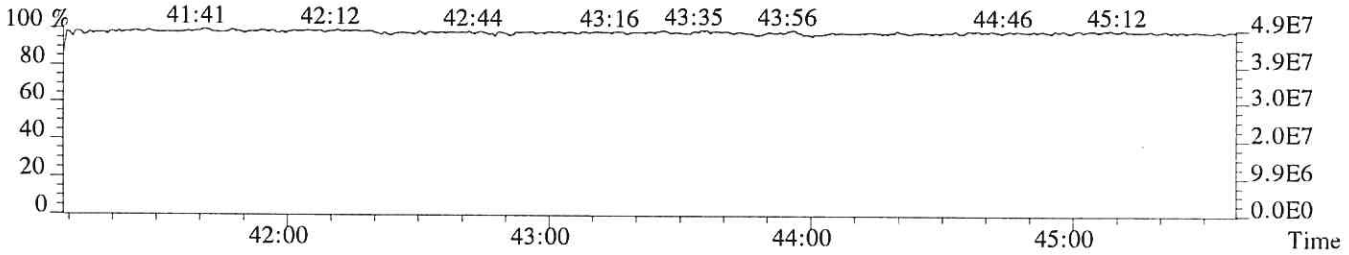
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3052.0,0.40%,F,T)



513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

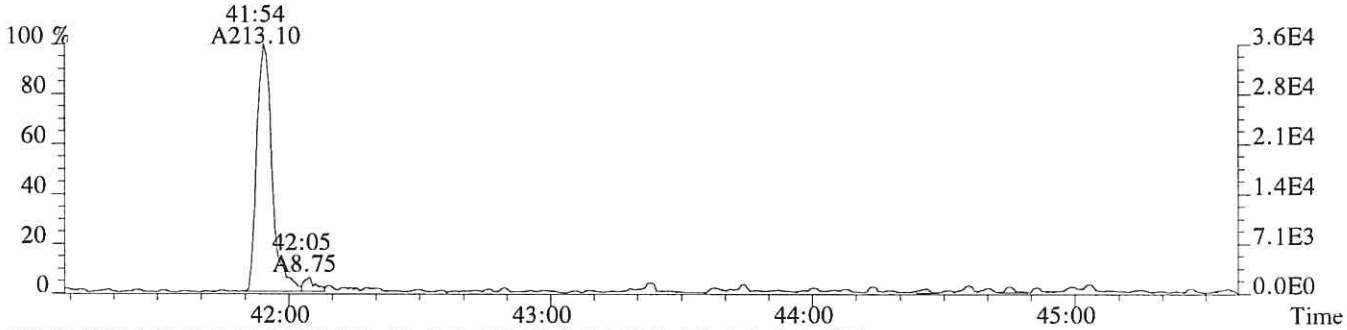


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

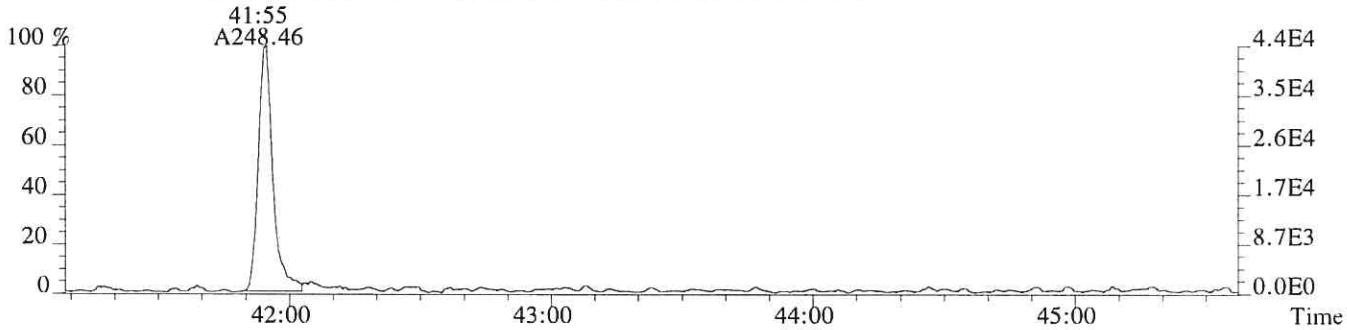


File:P407966 #1-403 Acq:19-SEP-2017 09:53:13 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:MB

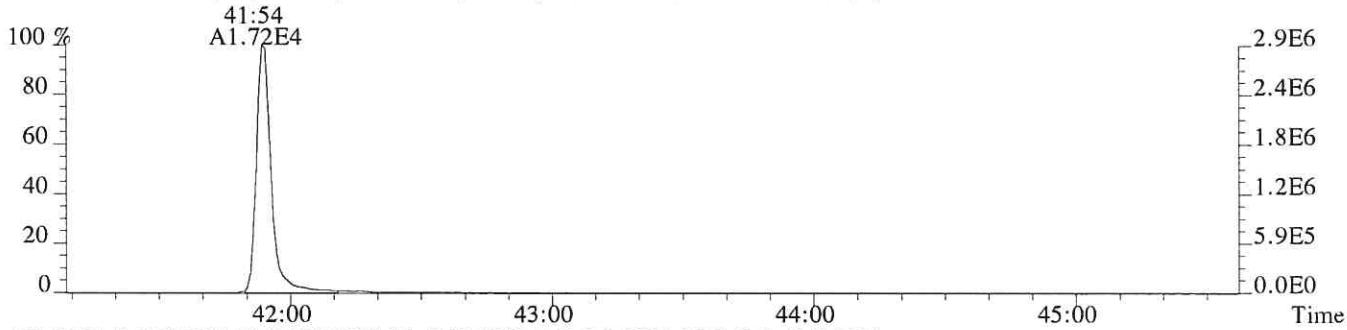
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,440.0,0.40%,F,T)



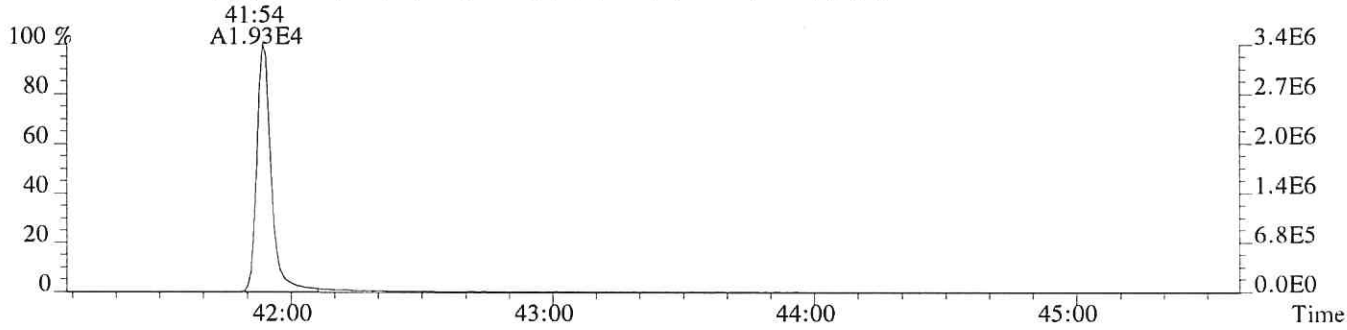
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,968.0,0.40%,F,T)



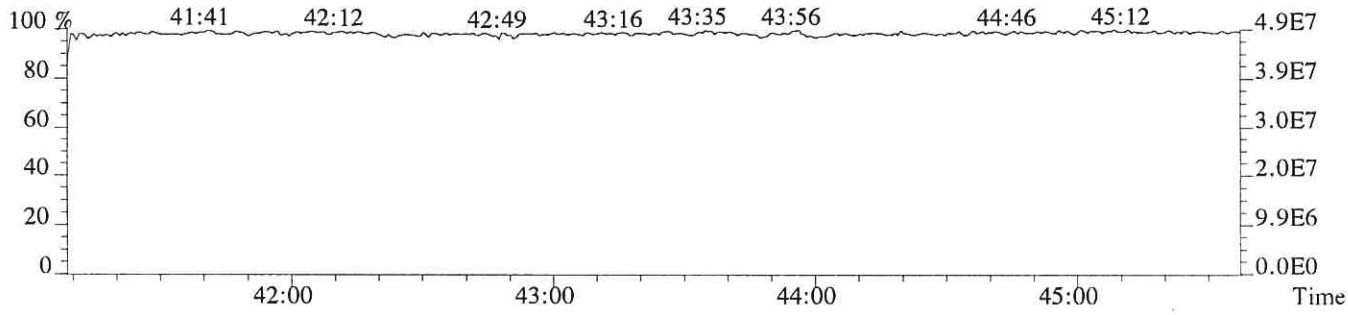
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3428.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3052.0,0.40%,F,T)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
LCS

Run #16 Filename P407981 Samp: 1 Inj: 1 Acquired: 19-SEP-17 23:06:04
Processed: 20-SEP-17 15:43:16 Sample ID: EQ1700406-02

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	27:56	9.489e+02	1.225e+03	0.77	yes	no	0.885
2	Unk	1,2,3,7,8-PeCDF	32:10	1.005e+04	6.361e+03	1.58	yes	no	0.984
3	Unk	2,3,4,7,8-PeCDF	33:05	1.033e+04	6.518e+03	1.58	yes	no	0.943
4	Unk	1,2,3,4,7,8-HxCDF	35:44	9.732e+03	7.855e+03	1.24	yes	no	1.230
5	Unk	1,2,3,6,7,8-HxCDF	35:51	1.100e+04	9.002e+03	1.22	yes	no	1.148
6	Unk	2,3,4,6,7,8-HxCDF	36:21	9.752e+03	7.954e+03	1.23	yes	no	1.133
7	Unk	1,2,3,7,8,9-HxCDF	37:05	8.767e+03	6.867e+03	1.28	yes	no	1.172
8	Unk	1,2,3,4,6,7,8-HpCDF	38:19	8.109e+03	7.892e+03	1.03	yes	no	1.377
9	Unk	1,2,3,4,7,8,9-HpCDF	39:41	6.913e+03	6.841e+03	1.01	yes	no	1.301
10	Unk	OCDF	42:06	8.868e+03	9.900e+03	0.90	yes	no	1.114
11	Unk	2,3,7,8-TCDD	28:44	9.187e+02	1.152e+03	0.80	yes	no	0.966
12	Unk	1,2,3,7,8-PeCDD	33:22	8.381e+03	5.517e+03	1.52	yes	no	0.851
13	Unk	1,2,3,4,7,8-HxCDD	36:28	7.476e+03	6.108e+03	1.22	yes	no	0.966
14	Unk	1,2,3,6,7,8-HxCDD	36:33	8.747e+03	6.830e+03	1.28	yes	no	0.938
15	Unk	1,2,3,7,8,9-HxCDD	36:47	8.673e+03	6.644e+03	1.31	yes	no	0.980
16	Unk	1,2,3,4,6,7,8-HpCDD	39:13	5.994e+03	5.814e+03	1.03	yes	no	0.975
17	Unk	OCDD	41:54	7.500e+03	8.412e+03	0.89	yes	no	1.033
18	IS	13C-2,3,7,8-TCDF	27:56	1.006e+04	1.292e+04	0.78	yes	no	1.176
19	IS	13C-1,2,3,7,8-PeCDF	32:09	2.097e+04	1.302e+04	1.61	yes	no	1.185
20	IS	13C-2,3,4,7,8-PeCDF	33:04	2.135e+04	1.366e+04	1.56	yes	no	1.149
21	IS	13C-1,2,3,4,7,8-HxCDF	35:43	9.809e+03	1.891e+04	0.52	yes	no	1.068
22	IS	13C-1,2,3,6,7,8-HxCDF	35:50	1.188e+04	2.281e+04	0.52	yes	no	1.171
23	IS	13C-2,3,4,6,7,8-HxCDF	36:20	1.082e+04	2.038e+04	0.53	yes	no	1.079
24	IS	13C-1,2,3,7,8,9-HxCDF	37:05	9.928e+03	1.964e+04	0.51	yes	no	0.919
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:19	7.144e+03	1.612e+04	0.44	yes	no	0.877
26	IS	13C-1,2,3,4,7,8,9-HpCDF	39:41	6.462e+03	1.470e+04	0.44	yes	no	0.723
27	IS	13C-2,3,7,8-TCDD	28:43	9.531e+03	1.225e+04	0.78	yes	no	0.958
28	IS	13C-1,2,3,7,8-PeCDD	33:20	1.855e+04	1.197e+04	1.55	yes	no	0.973
29	IS	13C-1,2,3,4,7,8-HxCDD	36:27	1.580e+04	1.269e+04	1.24	yes	no	0.966
30	IS	13C-1,2,3,6,7,8-HxCDD	36:33	1.659e+04	1.354e+04	1.23	yes	no	0.968
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:12	1.182e+04	1.150e+04	1.03	yes	no	0.854
32	IS	13C-OCDD	41:53	1.398e+04	1.555e+04	0.90	yes	no	0.668
33	RS/RT	13C-1,2,3,4-TCDD	28:07	2.525e+04	3.204e+04	0.79	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	36:47	2.965e+04	2.521e+04	1.18	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	28:44	8.588e+03				no	0.992

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Signal/Noise Height Ratio Summary

CLIENT ID.
LCS

Run #16 Filename P407981 Samp: 1 Inj: 1 Acquired: 19-SEP-17 23:06:04
Processed: 20-SEP-17 15:43:16 LAB. ID: EQ1700406-02

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.69e+05	7.36e+02	2.3e+02	2.18e+05	2.28e+03	9.6e+01
2	1,2,3,7,8-PeCDF	1.87e+06	2.63e+03	7.1e+02	1.19e+06	2.46e+03	4.9e+02
3	2,3,4,7,8-PeCDF	2.03e+06	2.63e+03	7.7e+02	1.26e+06	2.46e+03	5.1e+02
4	1,2,3,4,7,8-HxCDF	2.14e+06	8.32e+02	2.6e+03	1.73e+06	6.84e+02	2.5e+03
5	1,2,3,6,7,8-HxCDF	2.20e+06	8.32e+02	2.6e+03	1.79e+06	6.84e+02	2.6e+03
6	2,3,4,6,7,8-HxCDF	2.07e+06	8.32e+02	2.5e+03	1.69e+06	6.84e+02	2.5e+03
7	1,2,3,7,8,9-HxCDF	1.74e+06	8.32e+02	2.1e+03	1.37e+06	6.84e+02	2.0e+03
8	1,2,3,4,6,7,8-HpCDF	1.71e+06	2.03e+03	8.4e+02	1.68e+06	2.14e+03	7.9e+02
9	1,2,3,4,7,8,9-HpCDF	1.31e+06	2.03e+03	6.5e+02	1.29e+06	2.14e+03	6.0e+02
10	OCDF	1.50e+06	2.42e+03	6.2e+02	1.70e+06	4.12e+02	4.1e+03
11	2,3,7,8-TCDD	1.71e+05	1.90e+03	9.0e+01	2.18e+05	8.32e+02	2.6e+02
12	1,2,3,7,8-PeCDD	1.60e+06	9.04e+02	1.8e+03	1.06e+06	4.16e+02	2.5e+03
13	1,2,3,4,7,8-HxCDD	1.68e+06	3.12e+02	5.4e+03	1.38e+06	5.88e+02	2.3e+03
14	1,2,3,6,7,8-HxCDD	1.74e+06	3.12e+02	5.6e+03	1.35e+06	5.88e+02	2.3e+03
15	1,2,3,7,8,9-HxCDD	1.69e+06	3.12e+02	5.4e+03	1.31e+06	5.88e+02	2.2e+03
16	1,2,3,4,6,7,8-HpCDD	1.20e+06	4.84e+02	2.5e+03	1.17e+06	7.56e+02	1.5e+03
17	OCDD	1.26e+06	1.59e+03	7.9e+02	1.41e+06	1.82e+03	7.8e+02
18	13C-2,3,7,8-TCDF	1.82e+06	1.00e+04	1.8e+02	2.34e+06	3.99e+03	5.9e+02
19	13C-1,2,3,7,8-PeCDF	3.90e+06	3.38e+03	1.2e+03	2.41e+06	3.24e+02	7.4e+03
20	13C-2,3,4,7,8-PeCDF	4.13e+06	3.38e+03	1.2e+03	2.67e+06	3.24e+02	8.2e+03
21	13C-1,2,3,4,7,8-HxCDF	2.13e+06	5.56e+02	3.8e+03	4.16e+06	1.38e+03	3.0e+03
22	13C-1,2,3,6,7,8-HxCDF	2.42e+06	5.56e+02	4.3e+03	4.53e+06	1.38e+03	3.3e+03
23	13C-2,3,4,6,7,8-HxCDF	2.27e+06	5.56e+02	4.1e+03	4.36e+06	1.38e+03	3.2e+03
24	13C-1,2,3,7,8,9-HxCDF	1.97e+06	5.56e+02	3.5e+03	3.87e+06	1.38e+03	2.8e+03
25	13C-1,2,3,4,6,7,8-HpCDF	1.47e+06	2.82e+03	5.2e+02	3.34e+06	3.78e+03	8.8e+02
26	13C-1,2,3,4,7,8,9-HpCDF	1.22e+06	2.82e+03	4.3e+02	2.76e+06	3.78e+03	7.3e+02
27	13C-2,3,7,8-TCDD	1.84e+06	3.18e+03	5.8e+02	2.33e+06	2.35e+03	9.9e+02
28	13C-1,2,3,7,8-PeCDD	3.57e+06	1.06e+03	3.4e+03	2.34e+06	1.13e+03	2.1e+03
29	13C-1,2,3,4,7,8-HxCDD	3.57e+06	1.36e+03	2.6e+03	2.89e+06	1.02e+03	2.8e+03
30	13C-1,2,3,6,7,8-HxCDD	3.31e+06	1.36e+03	2.4e+03	2.69e+06	1.02e+03	2.6e+03
31	13C-1,2,3,4,6,7,8-HpCDD	2.35e+06	7.76e+02	3.0e+03	2.26e+06	8.64e+02	2.6e+03
32	13C-OCDD	2.35e+06	1.88e+03	1.2e+03	2.64e+06	4.38e+03	6.0e+02
33	13C-1,2,3,4-TCDD	4.72e+06	3.18e+03	1.5e+03	5.97e+06	2.35e+03	2.5e+03
34	13C-1,2,3,7,8,9-HxCDD	6.03e+06	1.36e+03	4.4e+03	4.99e+06	1.02e+03	4.9e+03
35	37Cl-2,3,7,8-TCDD	1.67e+06	1.39e+03	1.2e+03			

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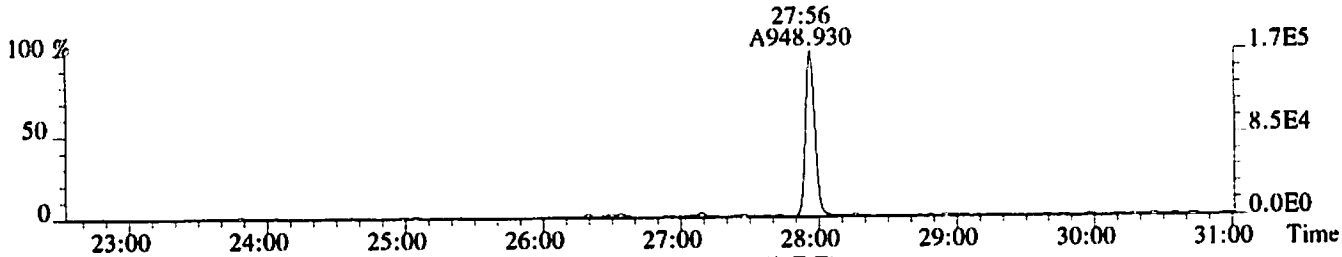
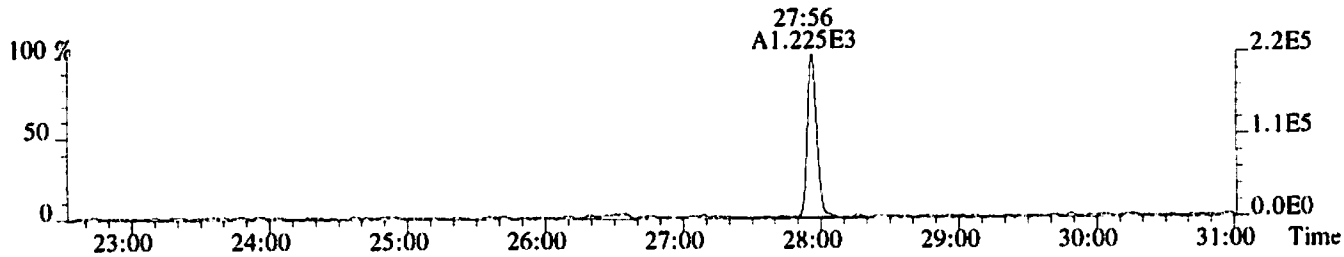
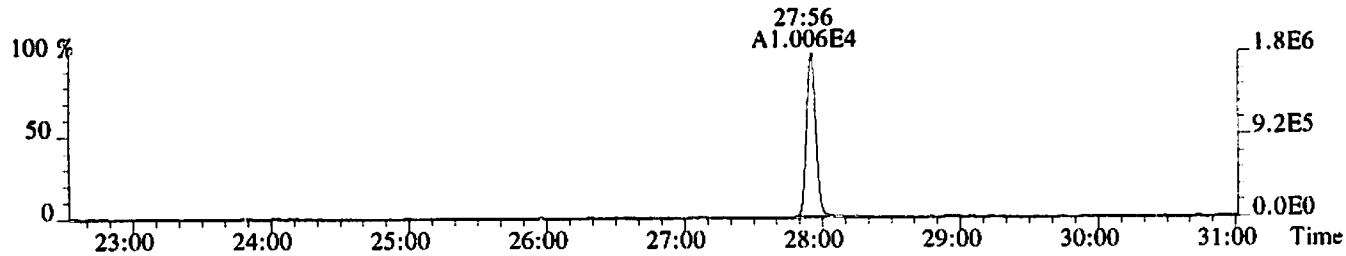
File:P407981 #1-602 Acq:19-SEP-2017 23:06:04 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:LCS
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,736.0,1.00%,F,T)



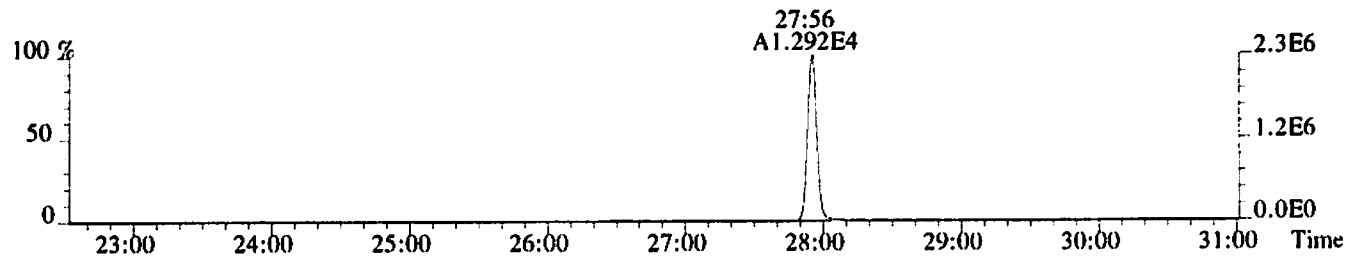
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2276.0,1.00%,F,T)



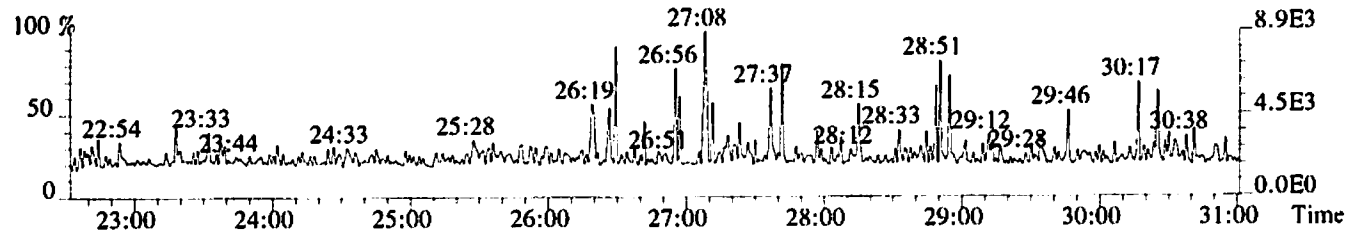
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,10000.0,1.00%,F,T)



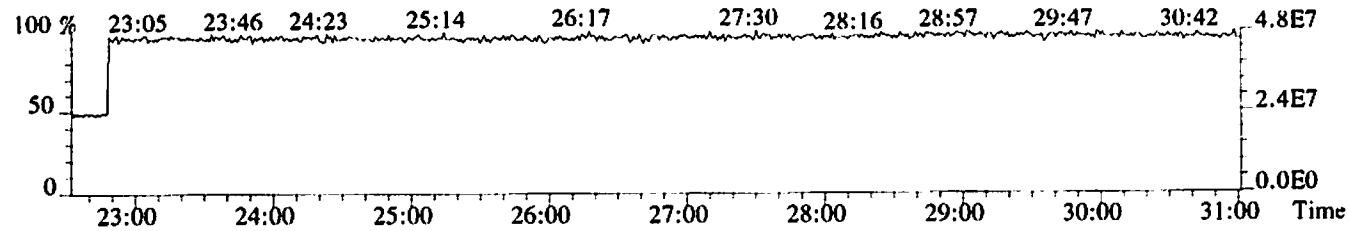
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3988.0,1.00%,F,T)



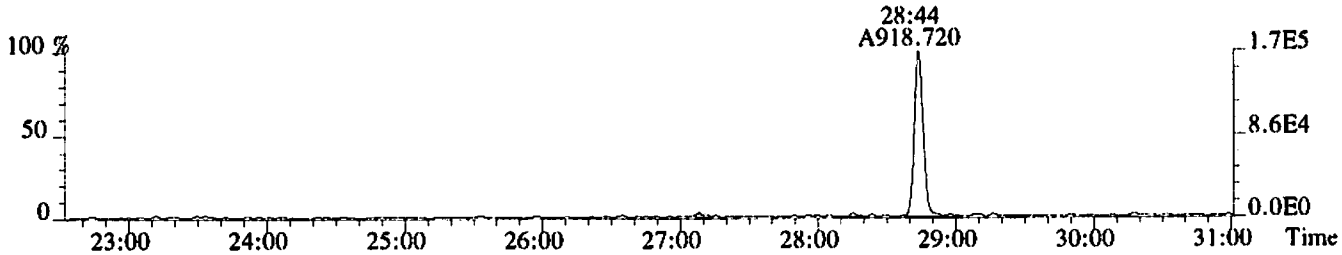
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



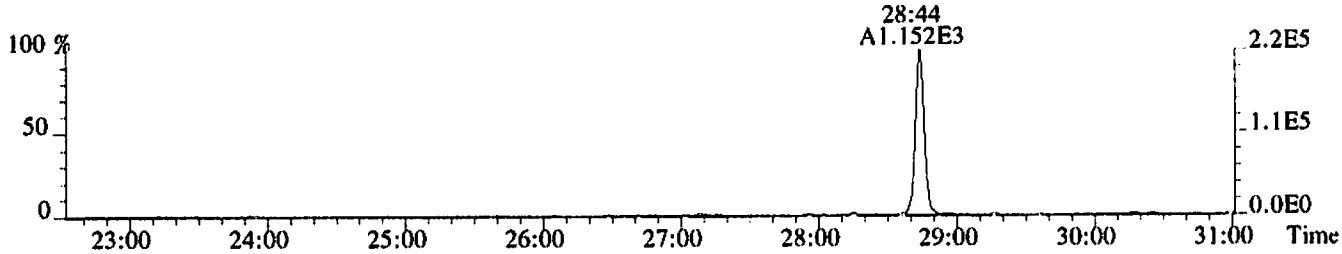
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



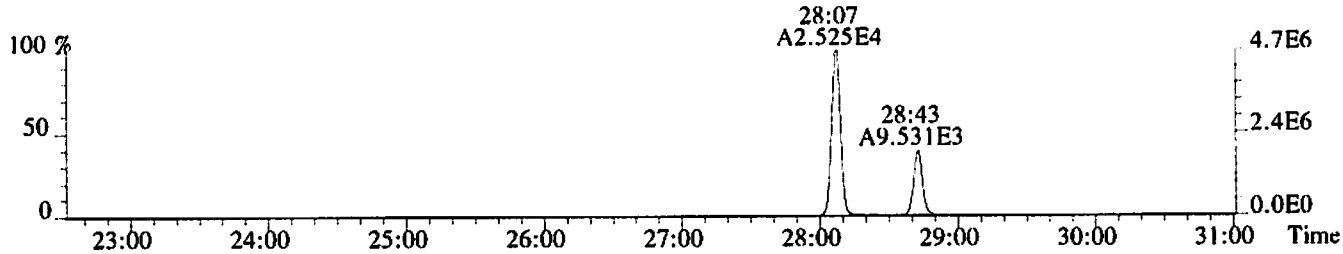
File:P407981 #1-602 Acq:19-SEP-2017 23:06:04 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:LCS
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1904.0,1.00%,F,T)



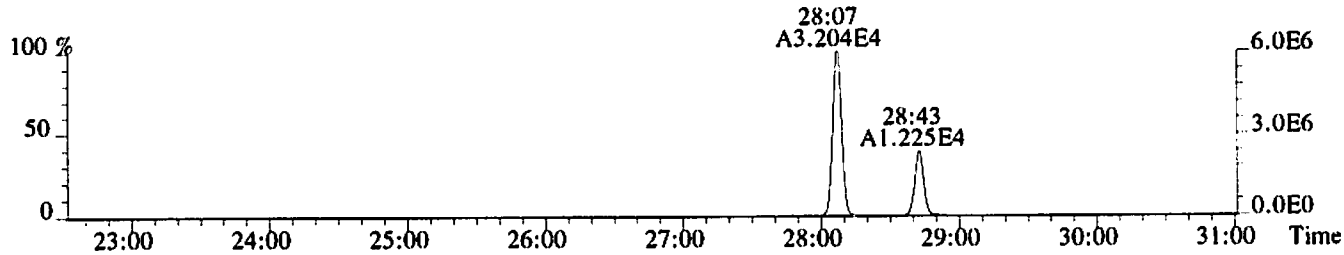
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,832.0,1.00%,F,T)



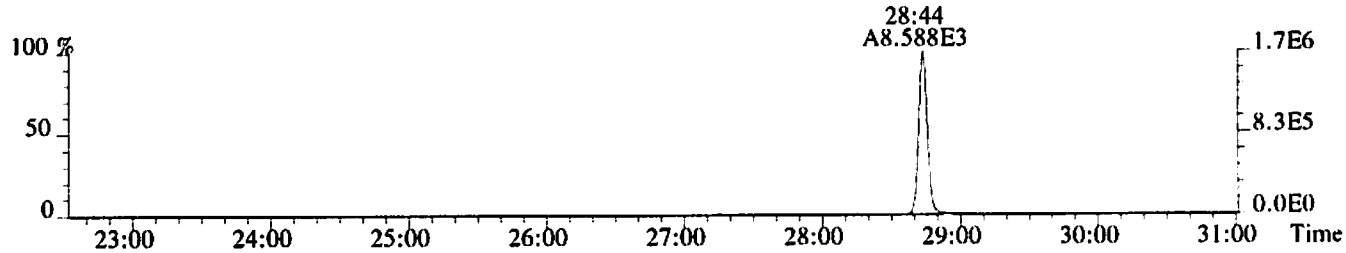
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3180.0,1.00%,F,T)



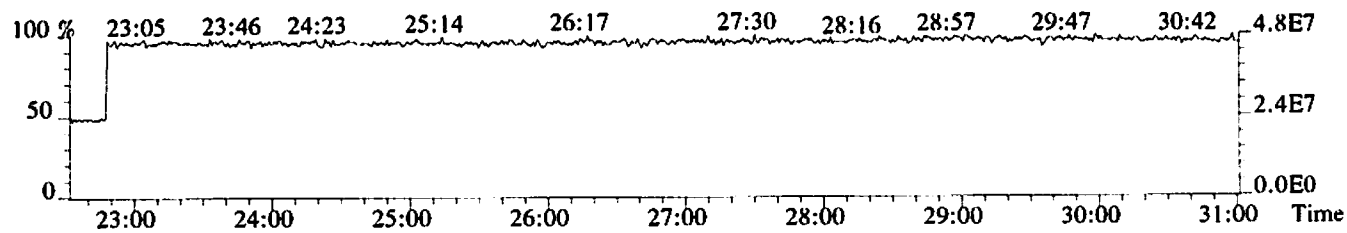
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2352.0,1.00%,F,T)



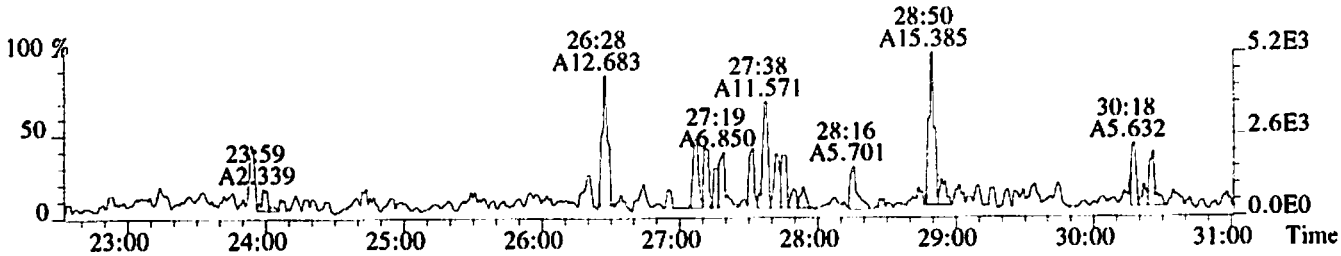
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1392.0,1.00%,F,T)



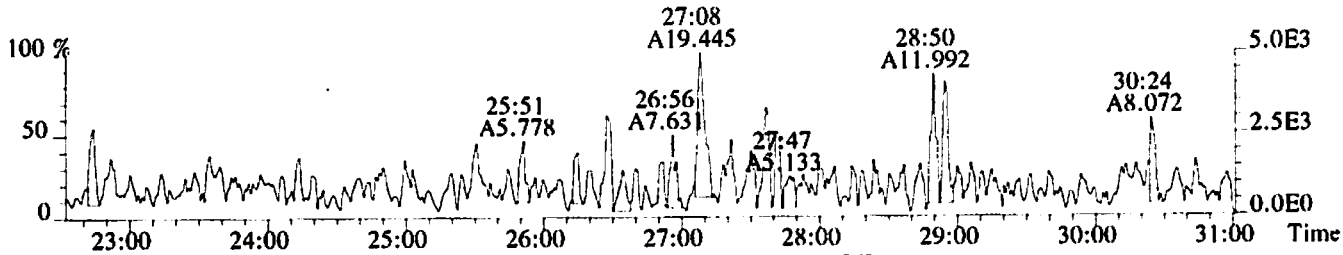
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



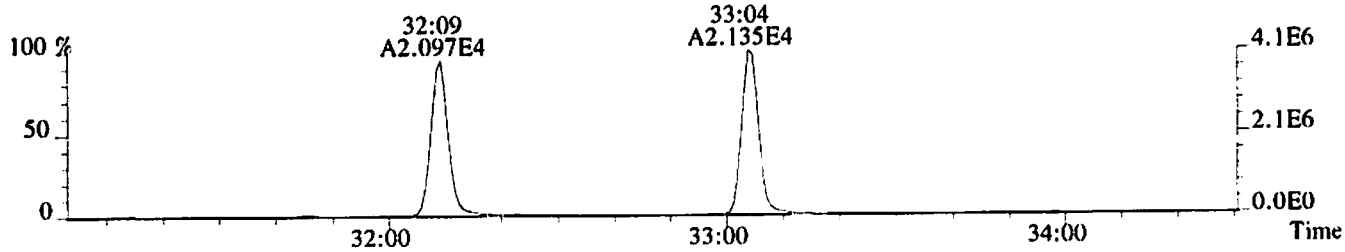
File:P407981 #1-602 Acq:19-SEP-2017 23:06:04 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:LCS
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,624.0,1.00%,F,T)



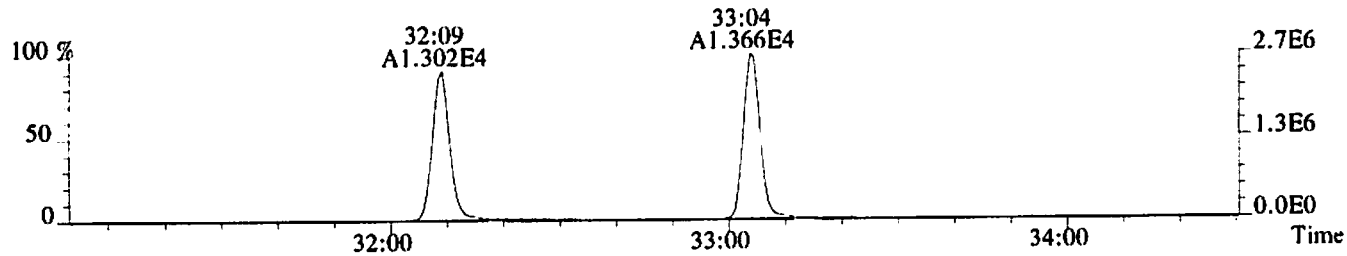
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1076.0,1.00%,F,T)



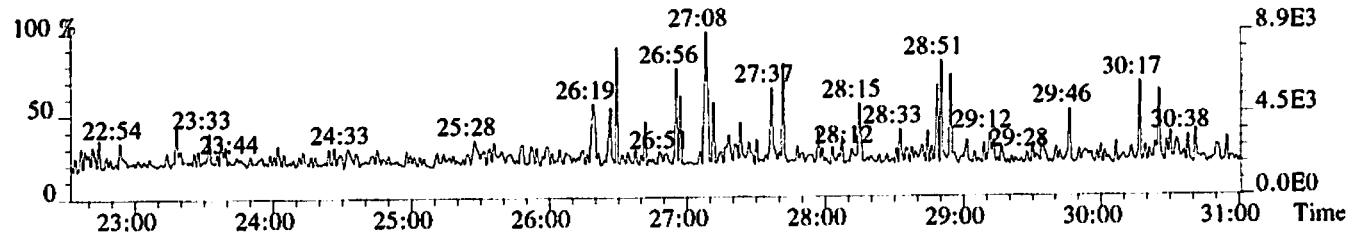
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3376.0,1.00%,F,T)



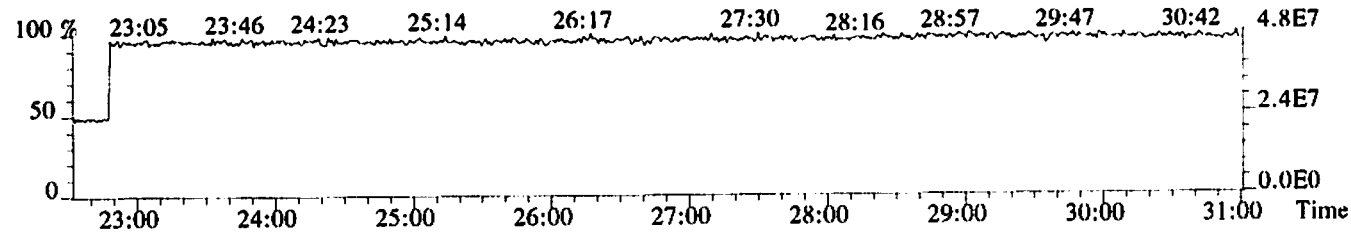
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,324.0,1.00%,F,T)



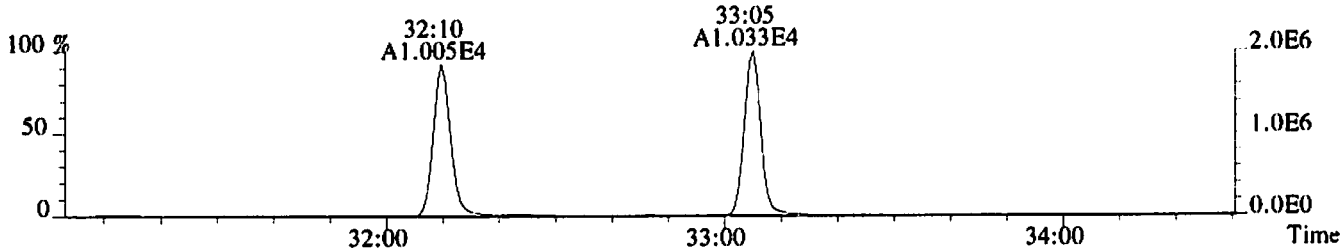
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



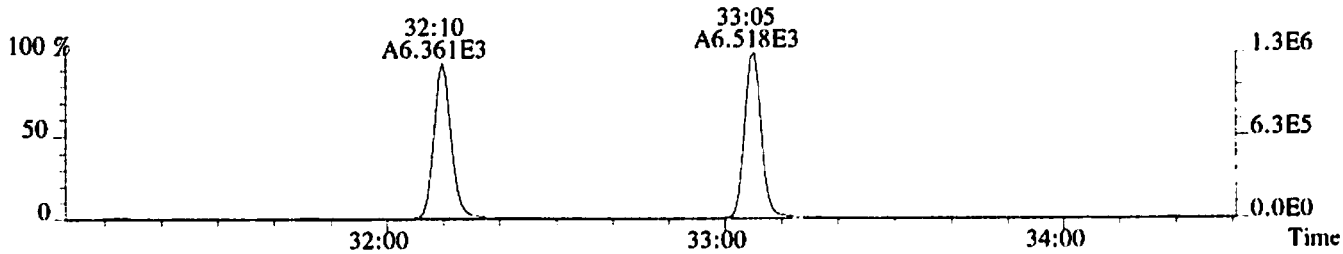
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



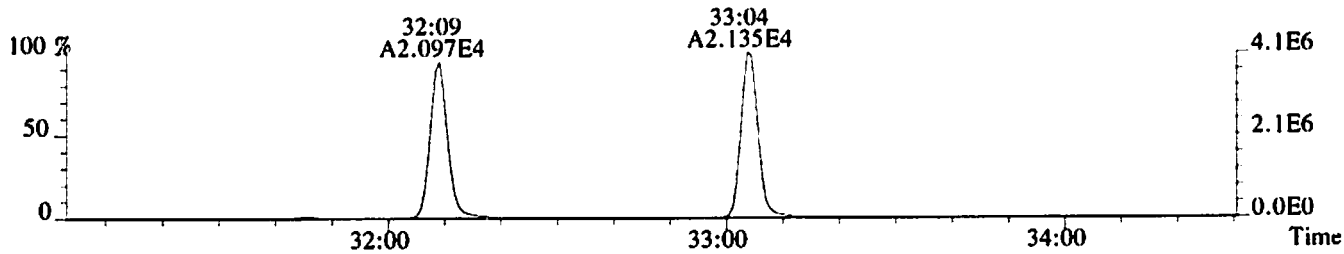
File:P407981 #1-312 Acq:19-SEP-2017 23:06:04 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:LCS
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2632.0,1.00%,F,T)



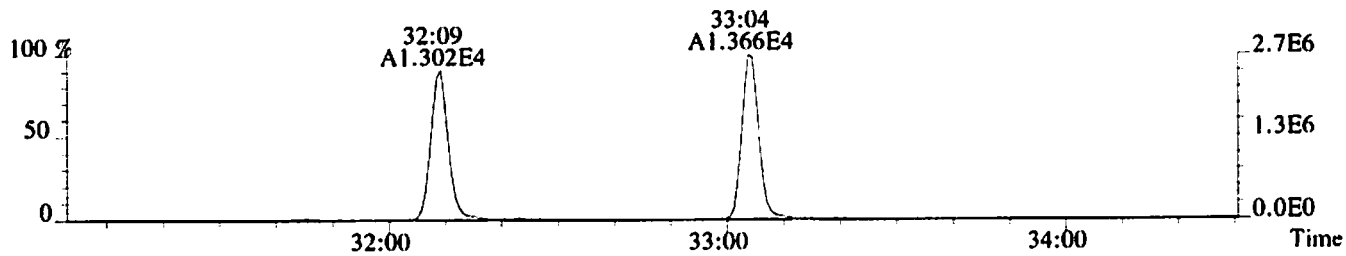
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2456.0,1.00%,F,T)



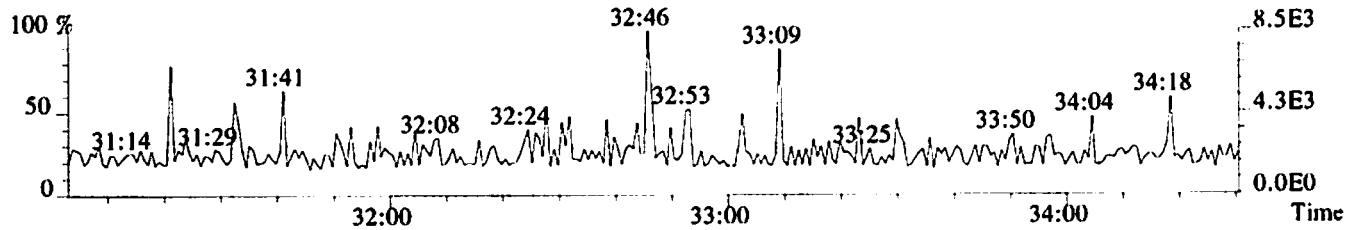
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3376.0,1.00%,F,T)



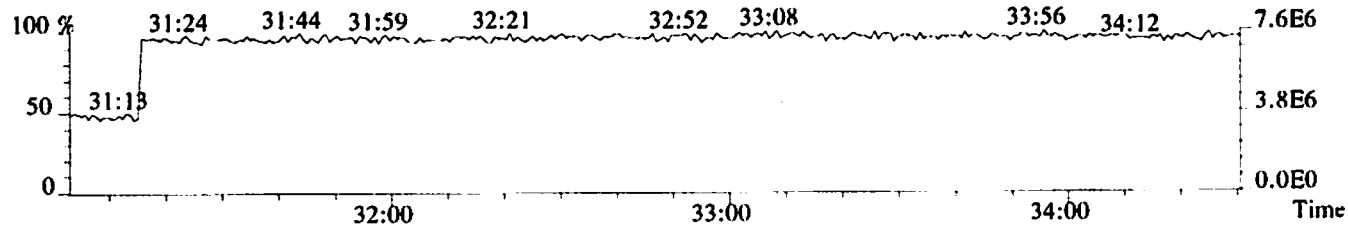
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,324.0,1.00%,F,T)



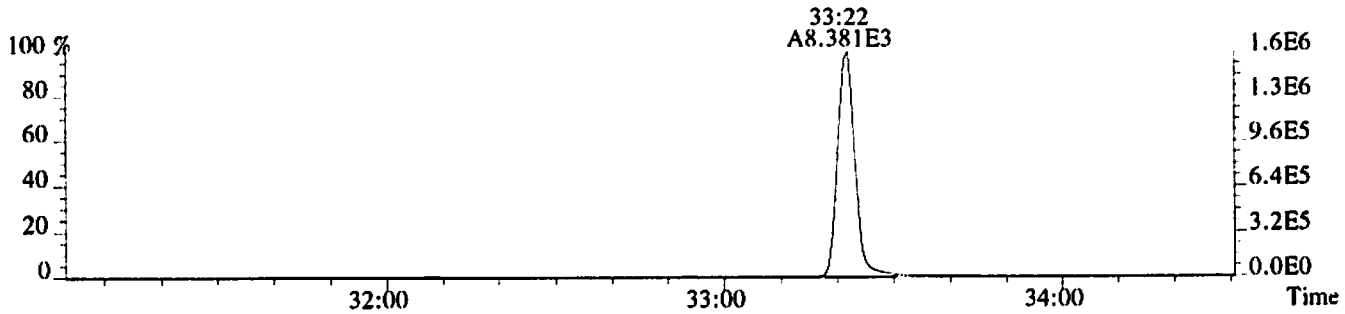
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



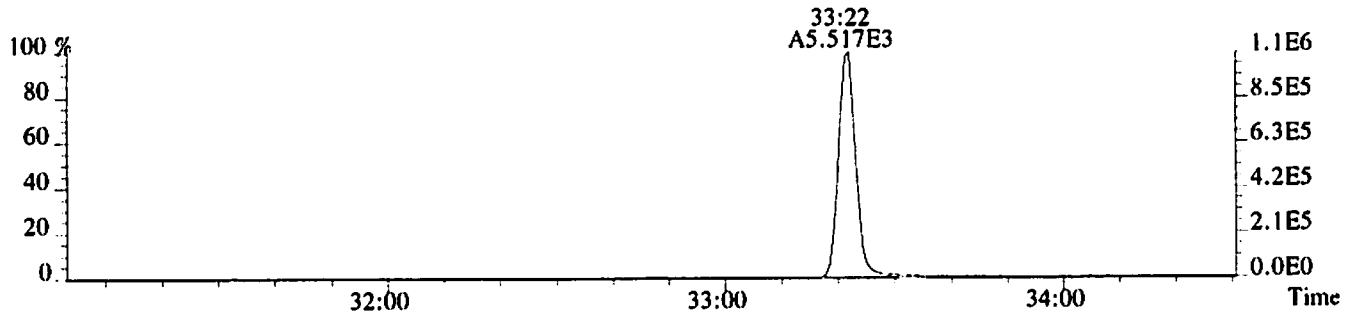
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



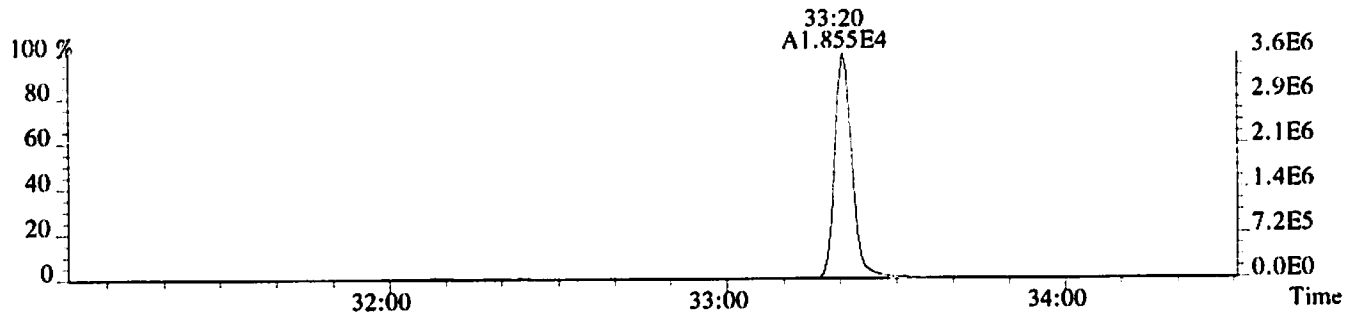
File:P407981 #1-312 Acq:19-SEP-2017 23:06:04 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:LCS
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,904.0,1.00%,F,T)



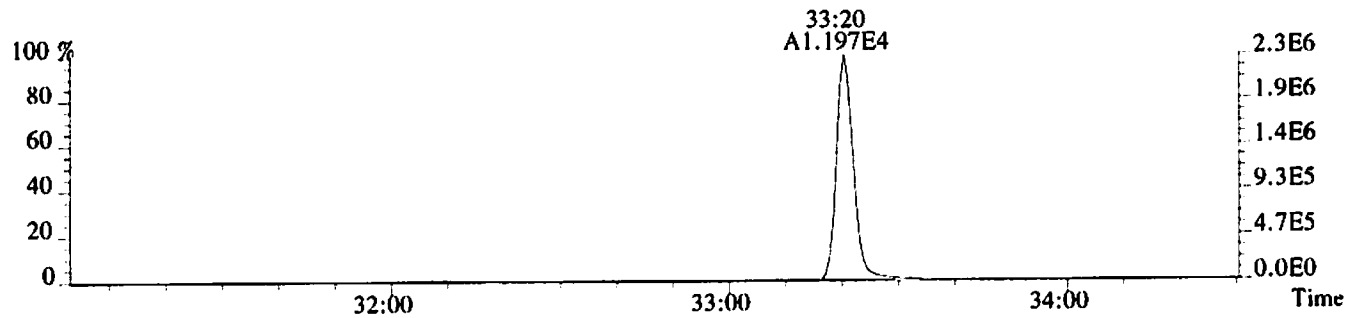
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,416.0,1.00%,F,T)



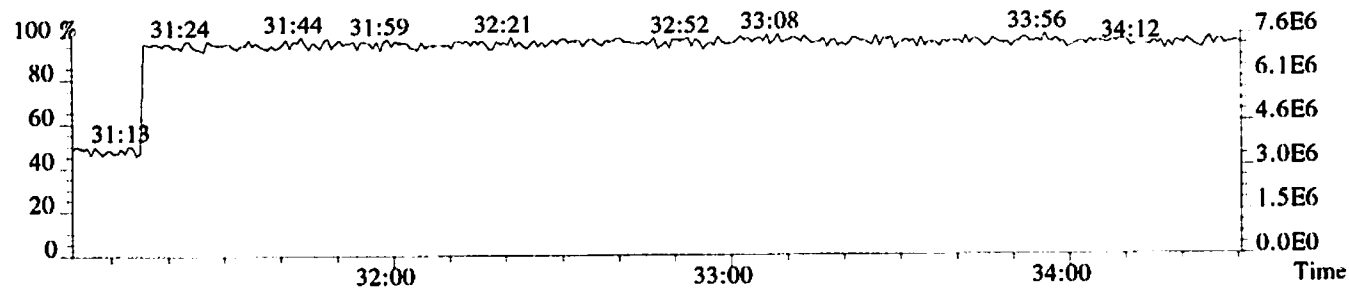
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1056.0,1.00%,F,T)



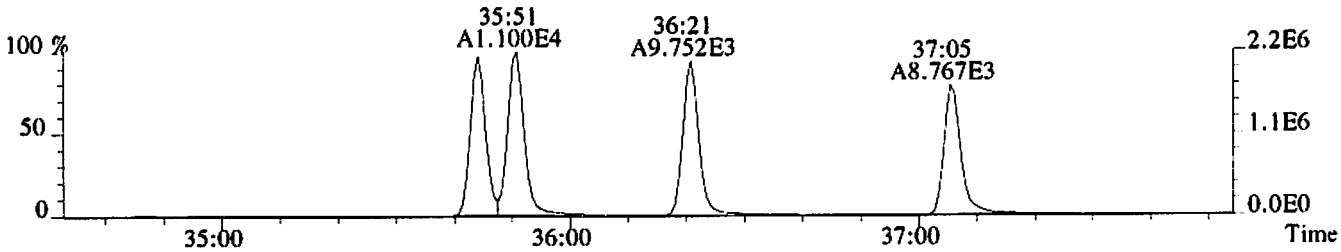
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1128.0,1.00%,F,T)



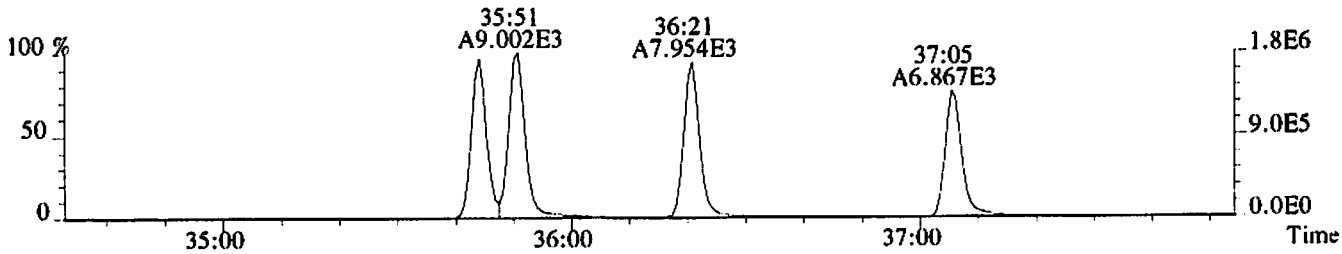
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



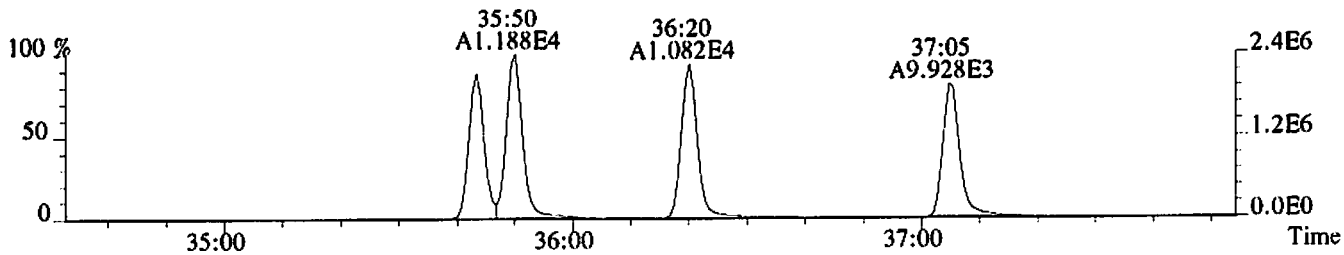
File:P407981 #1-303 Acq:19-SEP-2017 23:06:04 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:LCS
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,832.0,0.40%,F,T)



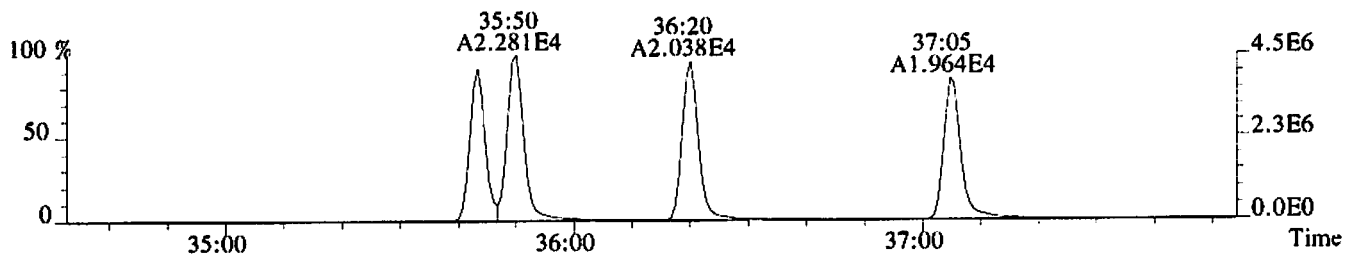
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,684.0,0.40%,F,T)



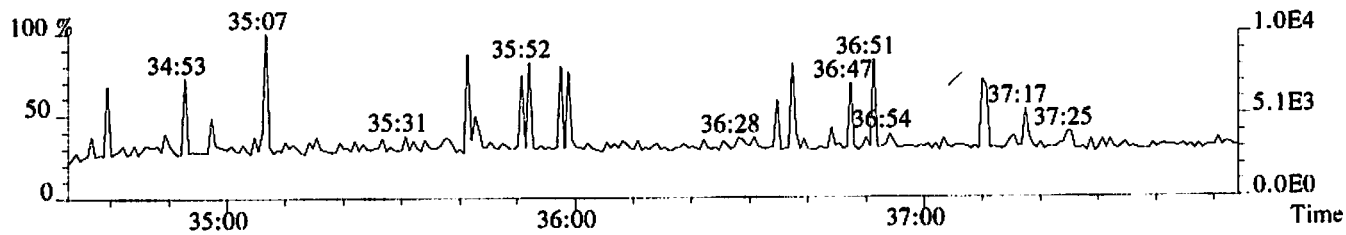
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,556.0,0.40%,F,T)



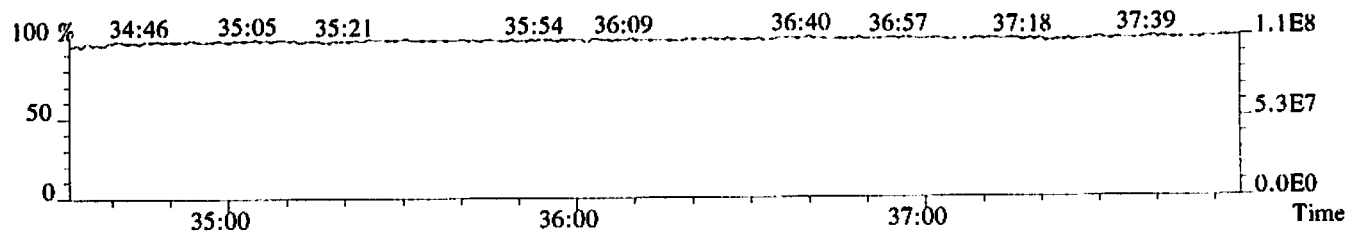
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1380.0,0.40%,F,T)



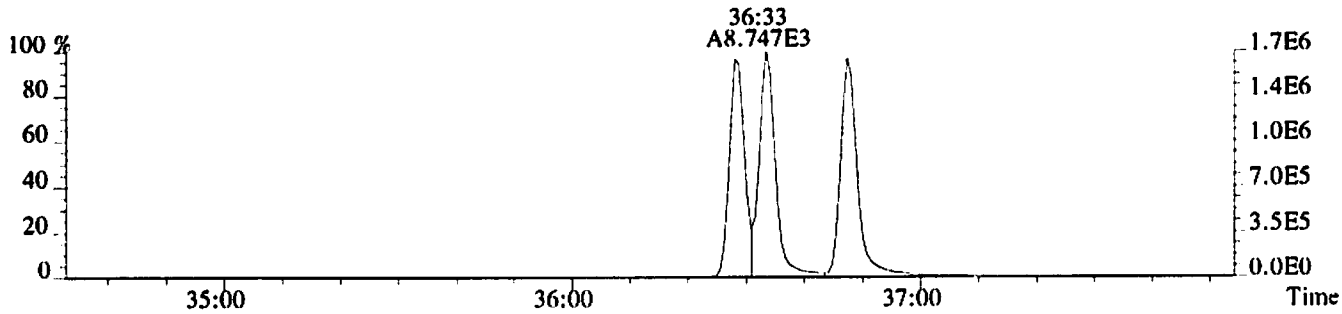
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



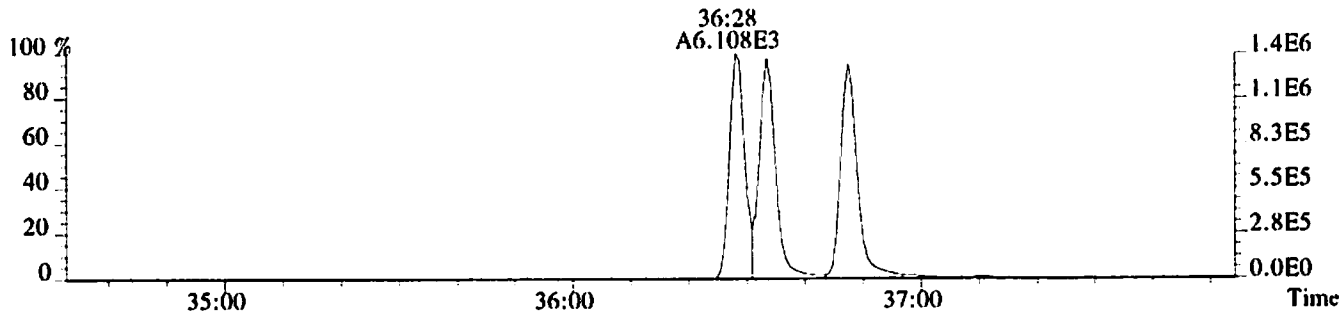
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



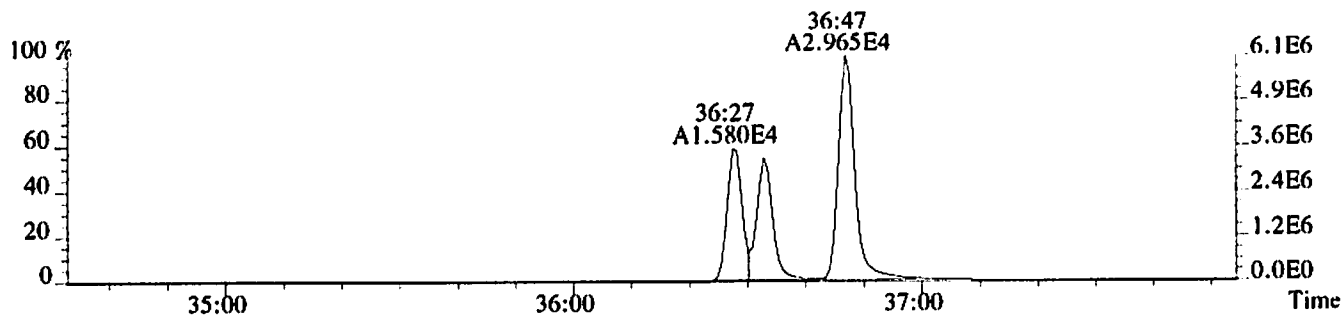
File:P407981 #1-303 Acq:19-SEP-2017 23:06:04 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:LCS
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,312.0,0.40%,F,T)



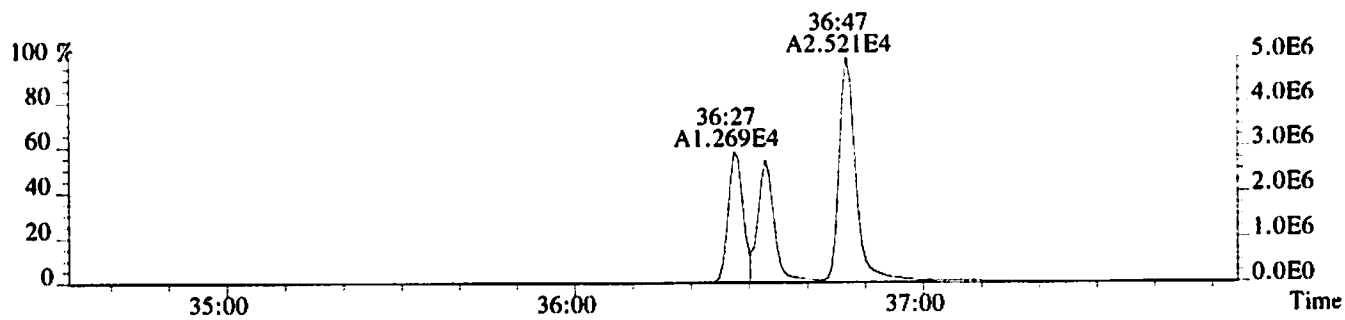
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,588.0,0.40%,F,T)



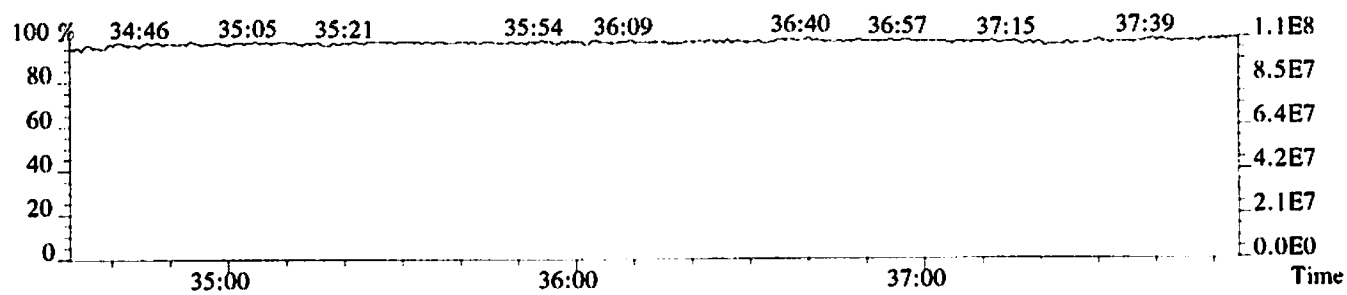
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1356.0,0.40%,F,T)



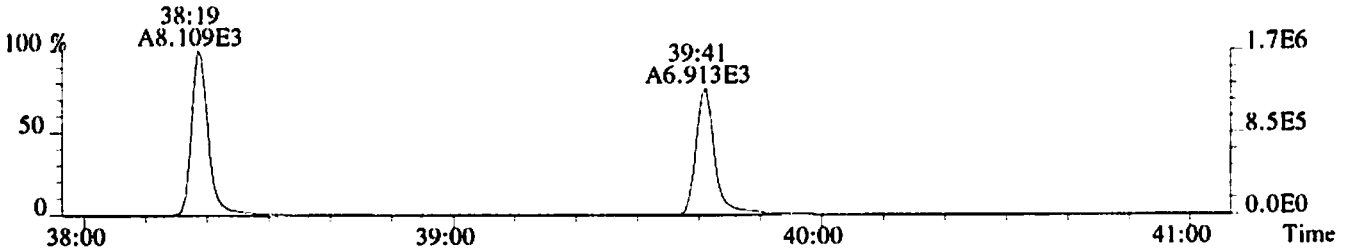
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1024.0,0.40%,F,T)



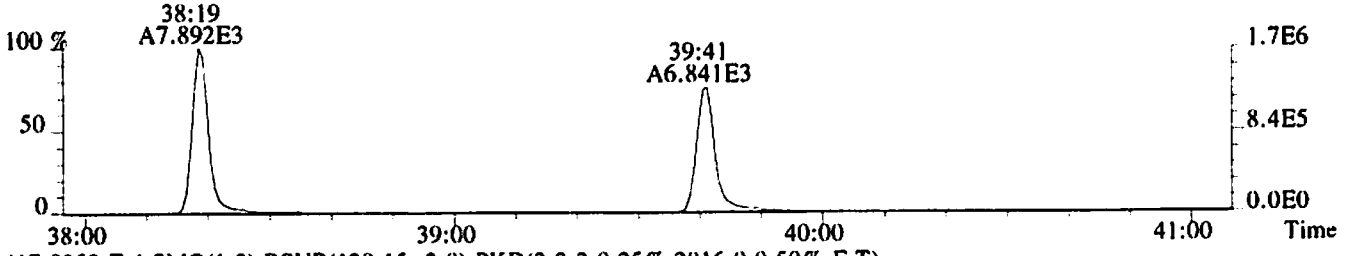
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



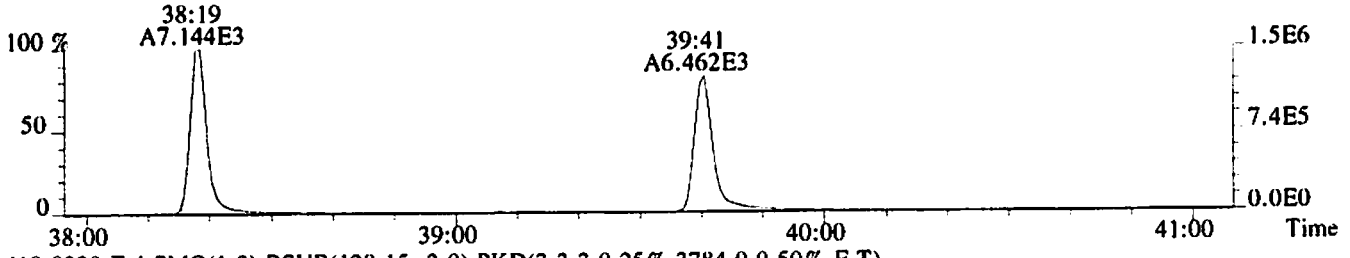
File:P407981 #1-286 Acq:19-SEP-2017 23:06:04 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:LCS
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2028.0,0.50%,F,T)



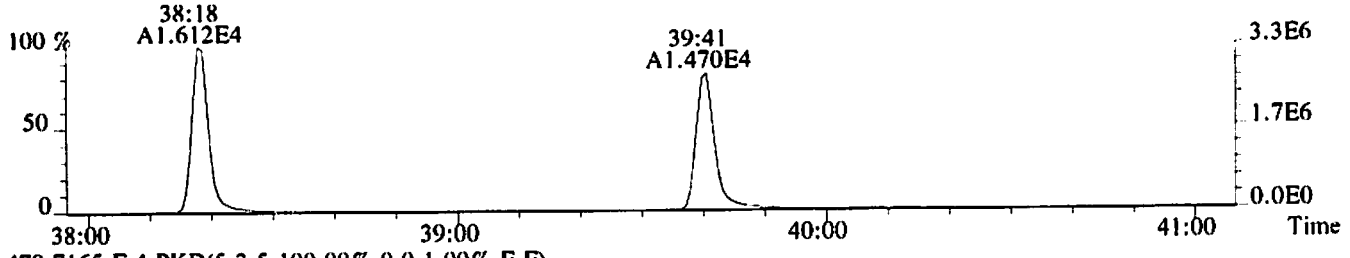
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2136.0,0.50%,F,T)



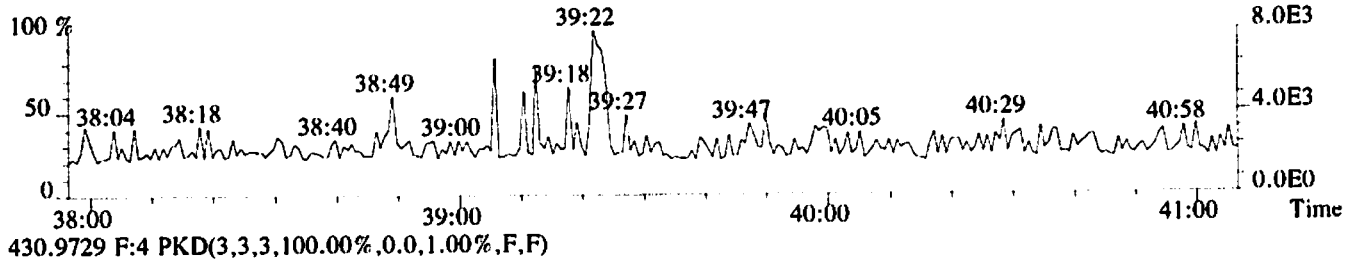
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2816.0,0.50%,F,T)



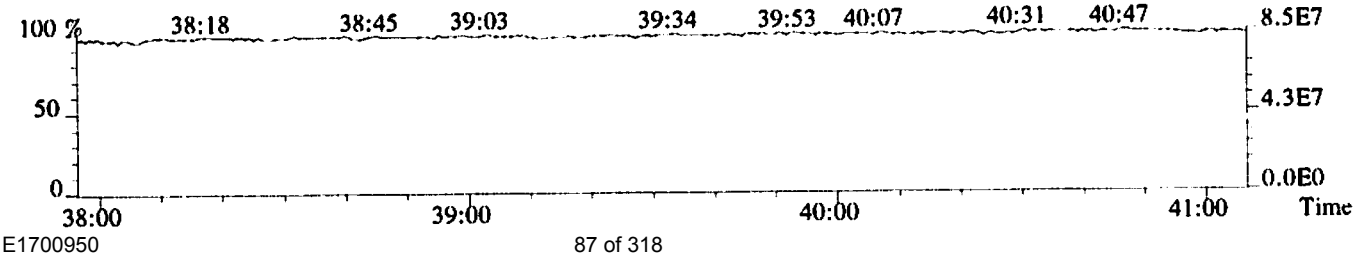
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3784.0,0.50%,F,T)



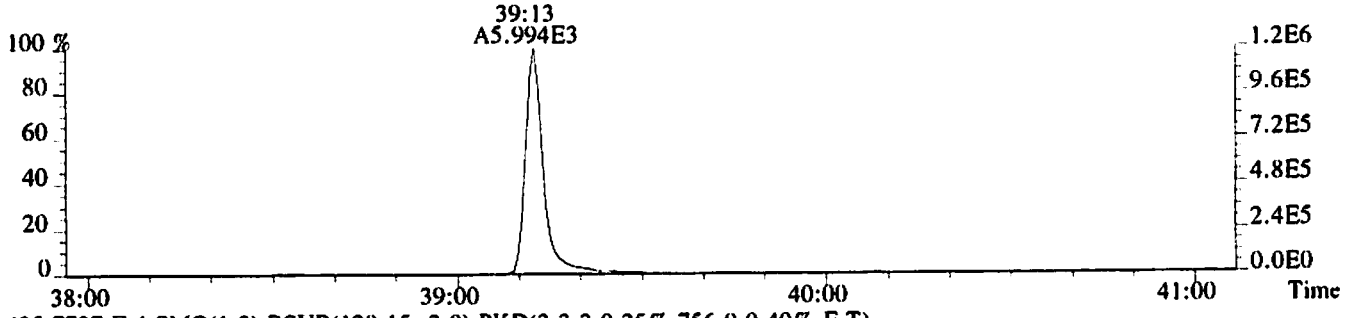
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



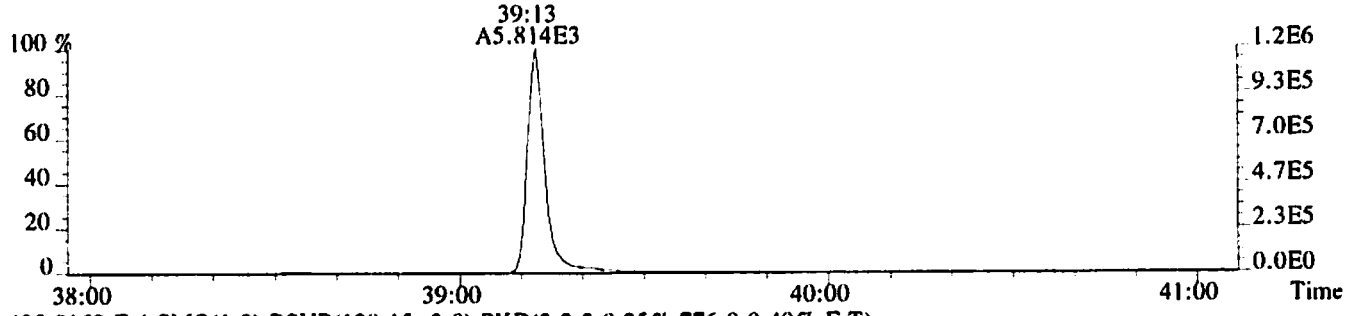
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



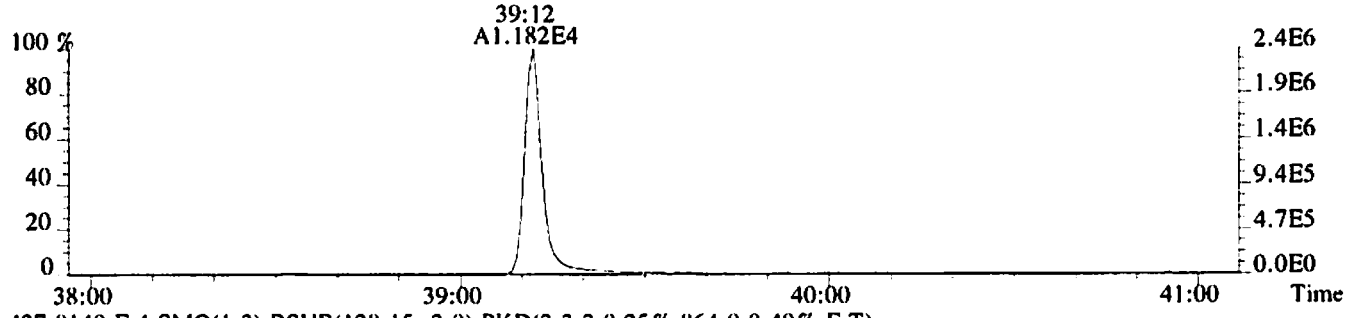
File:P407981 #1-286 Acq:19-SEP-2017 23:06:04 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:LCS
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,484.0,0.40%,F,T)



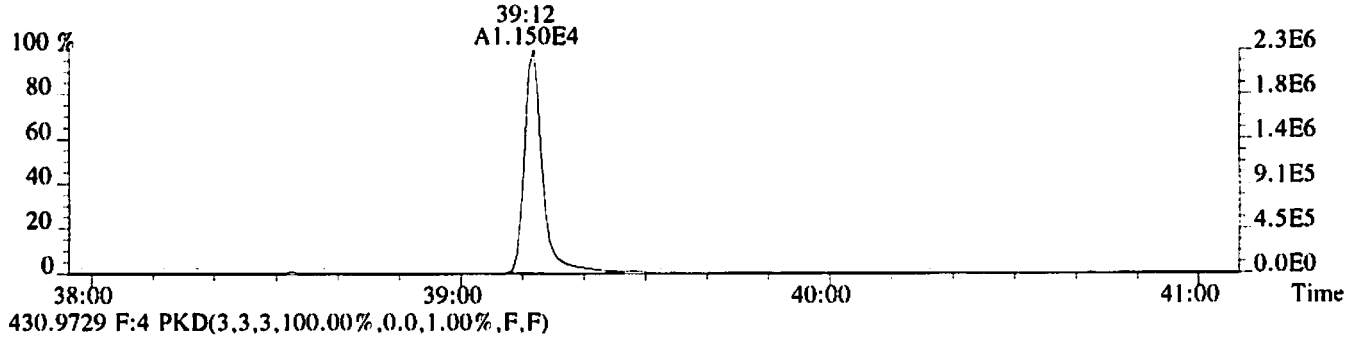
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,756.0,0.40%,F,T)



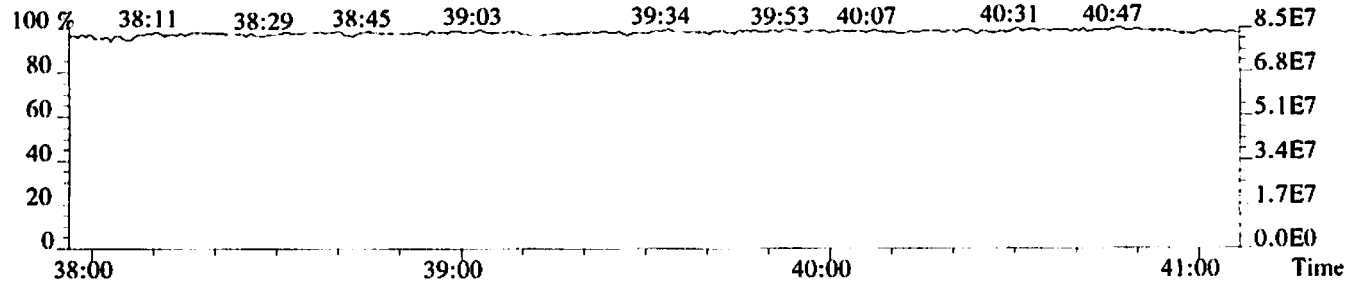
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,776.0,0.40%,F,T)



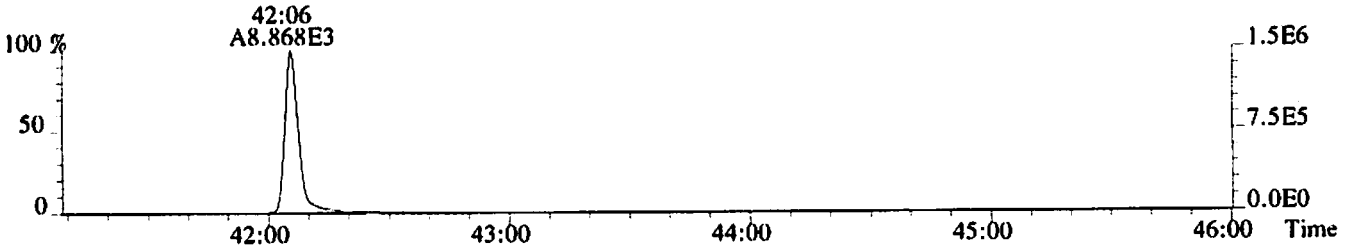
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,864.0,0.40%,F,T)



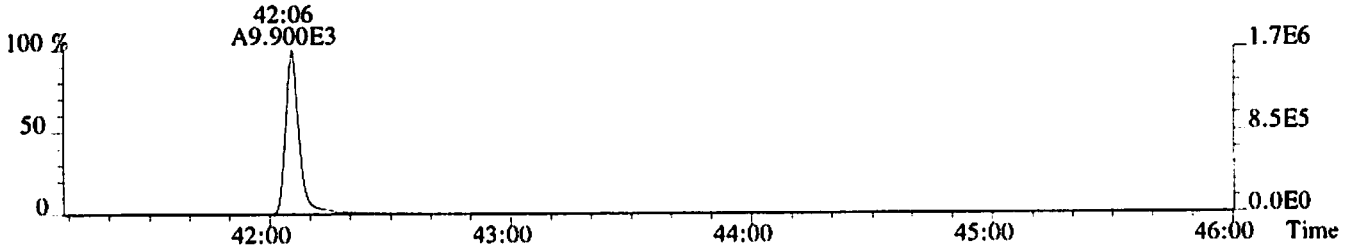
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



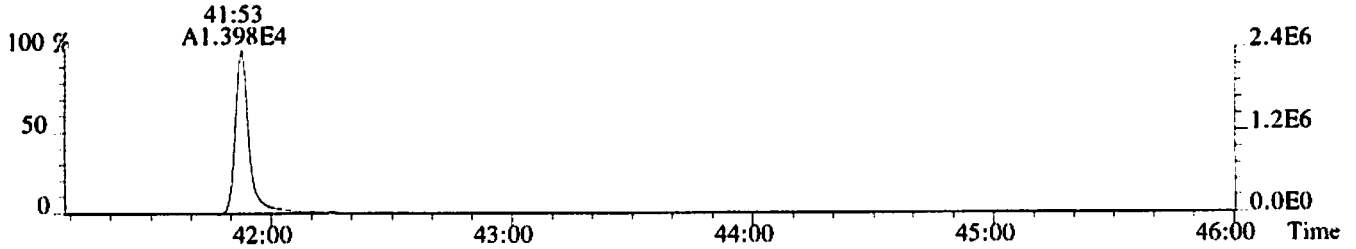
File:P407981 #1-438 Acq:19-SEP-2017 23:06:04 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:LCS
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2416.0,0.40%,F,T)



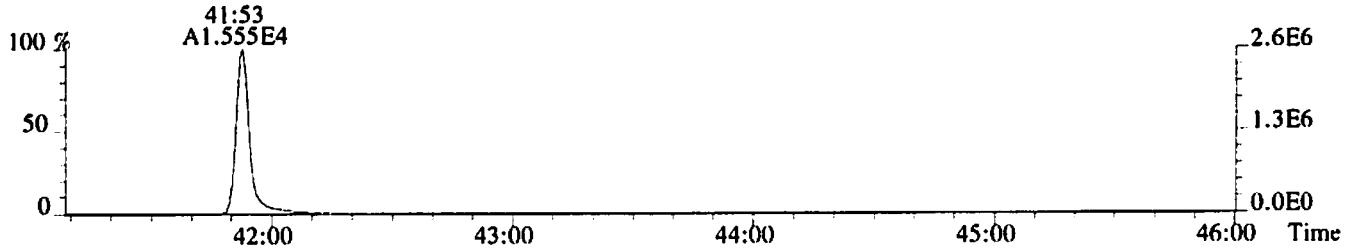
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,412.0,0.40%,F,T)



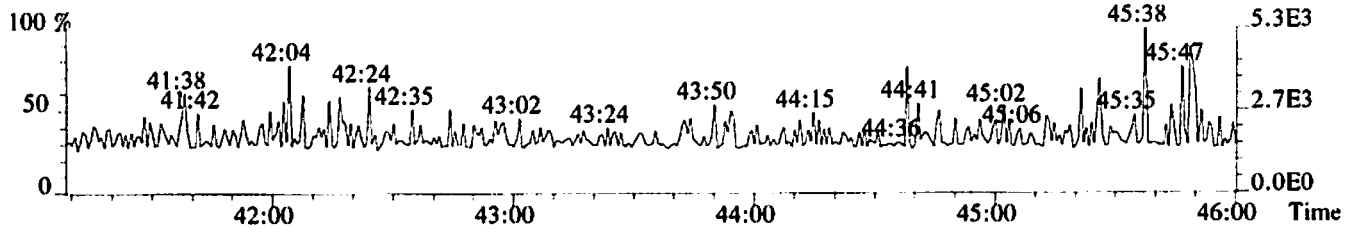
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1884.0,0.40%,F,T)



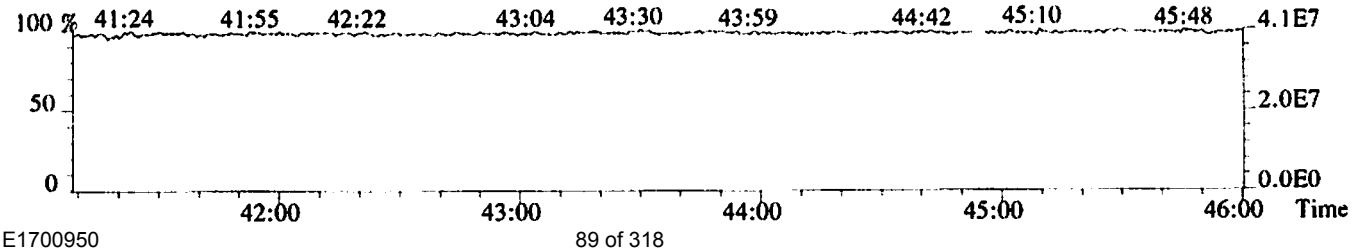
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4376.0,0.40%,F,T)



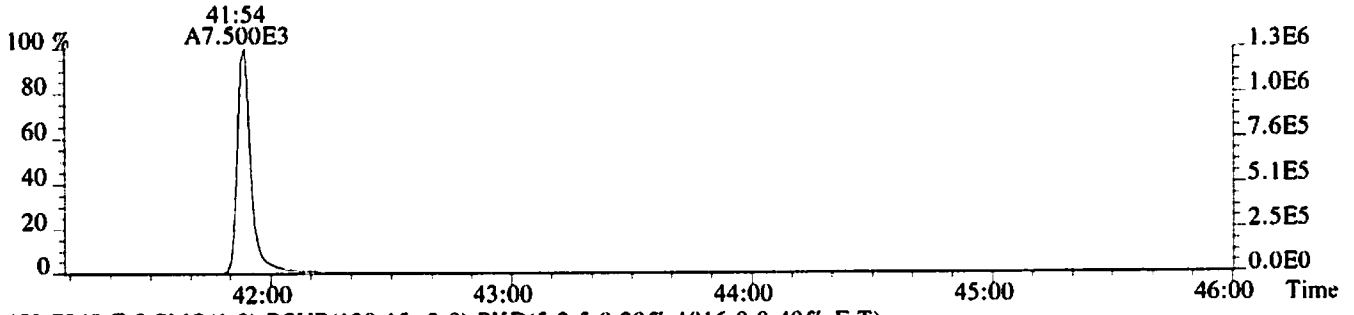
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



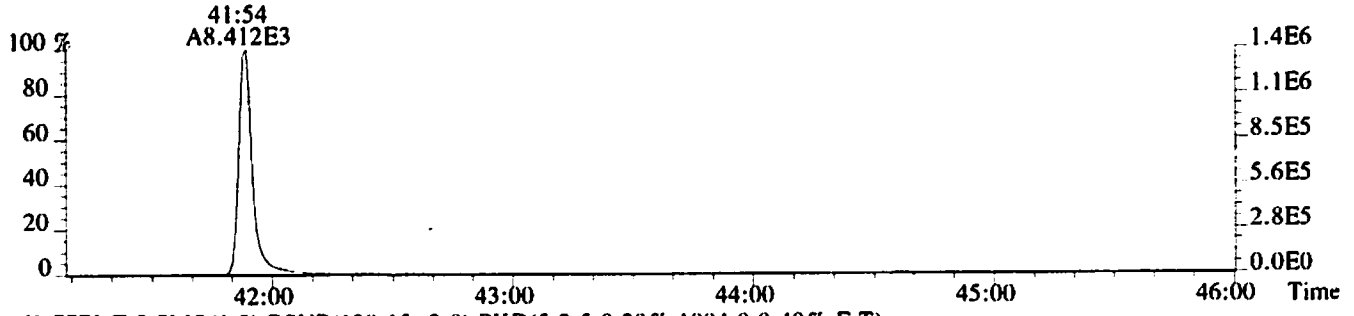
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



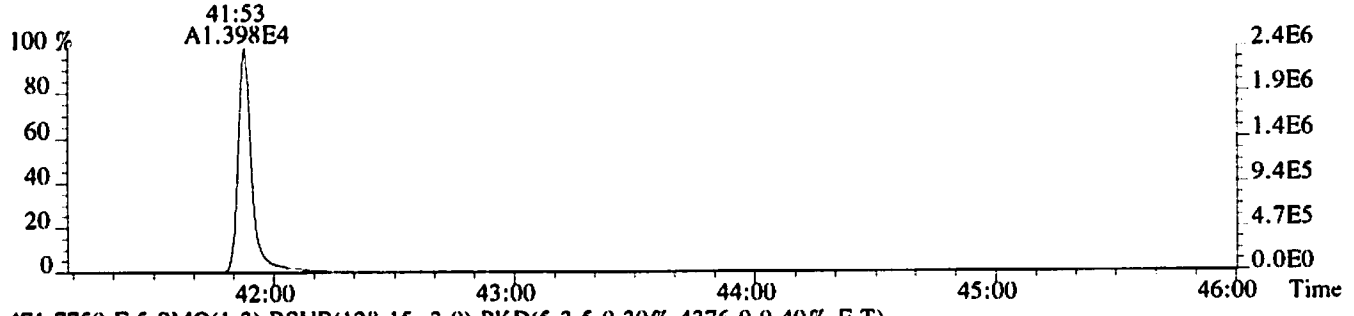
File:P407981 #1-438 Acq:19-SEP-2017 23:06:04 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:LCS
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1592.0,0.40%,F,T)



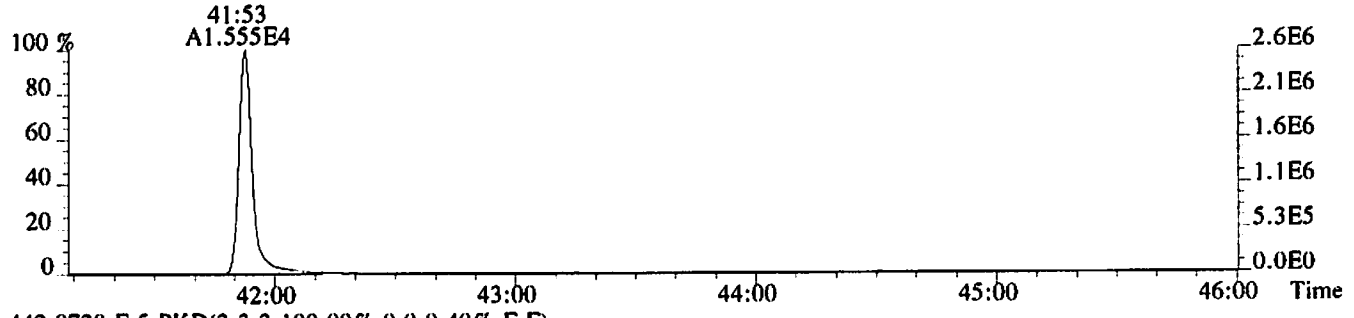
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1816.0,0.40%,F,T)



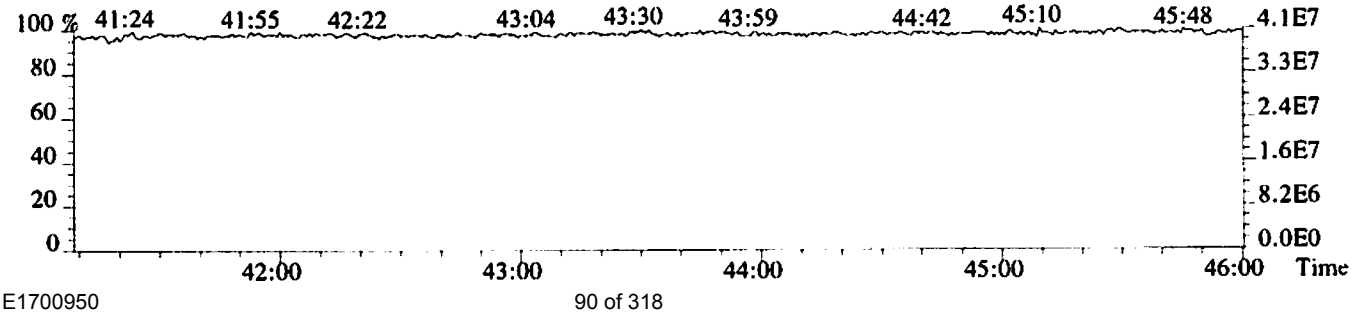
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1884.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4376.0,0.40%,F,T)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
DLCS

Run #17 Filename P407982 Samp: 1 Inj: 1 Acquired: 19-SEP-17 23:55:09
Processed: 20-SEP-17 15:43:17 Sample ID: EQ1700406-03

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	27:57	7.457e+02	1.041e+03	0.72	yes	no	0.885
2	Unk	1,2,3,7,8-PeCDF	32:10	8.125e+03	5.315e+03	1.53	yes	no	0.984
3	Unk	2,3,4,7,8-PeCDF	33:05	8.790e+03	5.669e+03	1.55	yes	no	0.943
4	Unk	1,2,3,4,7,8-HxCDF	35:45	8.217e+03	6.455e+03	1.27	yes	no	1.230
5	Unk	1,2,3,6,7,8-HxCDF	35:51	9.020e+03	7.336e+03	1.23	yes	no	1.148
6	Unk	2,3,4,6,7,8-HxCDF	36:21	7.982e+03	6.544e+03	1.22	yes	no	1.133
7	Unk	1,2,3,7,8,9-HxCDF	37:06	7.473e+03	5.915e+03	1.26	yes	no	1.172
8	Unk	1,2,3,4,6,7,8-HpCDF	38:19	6.636e+03	6.617e+03	1.00	yes	no	1.377
9	Unk	1,2,3,4,7,8,9-HpCDF	39:41	5.988e+03	5.831e+03	1.03	yes	no	1.301
10	Unk	OCDF	42:06	7.791e+03	8.711e+03	0.89	yes	no	1.114
11	Unk	2,3,7,8-TCDD	28:45	7.112e+02	9.326e+02	0.76	yes	no	0.966
12	Unk	1,2,3,7,8-PeCDD	33:22	6.963e+03	4.595e+03	1.52	yes	no	0.851
13	Unk	1,2,3,4,7,8-HxCDD	36:29	6.280e+03	5.084e+03	1.24	yes	no	0.966
14	Unk	1,2,3,6,7,8-HxCDD	36:34	7.016e+03	5.512e+03	1.27	yes	no	0.938
15	Unk	1,2,3,7,8,9-HxCDD	36:48	7.129e+03	5.783e+03	1.23	yes	no	0.980
16	Unk	1,2,3,4,6,7,8-HpCDD	39:13	5.238e+03	5.021e+03	1.04	yes	no	0.975
17	Unk	OCDD	41:54	6.410e+03	7.271e+03	0.88	yes	no	1.033
18	IS	13C-2,3,7,8-TCDF	27:56	8.688e+03	1.109e+04	0.78	yes	no	1.176
19	IS	13C-1,2,3,7,8-PeCDF	32:09	1.727e+04	1.108e+04	1.56	yes	no	1.185
20	IS	13C-2,3,4,7,8-PeCDF	33:04	1.837e+04	1.163e+04	1.58	yes	no	1.149
21	IS	13C-1,2,3,4,7,8-HxCDF	35:44	7.904e+03	1.553e+04	0.51	yes	no	1.068
22	IS	13C-1,2,3,6,7,8-HxCDF	35:50	1.021e+04	1.930e+04	0.53	yes	no	1.171
23	IS	13C-2,3,4,6,7,8-HxCDF	36:21	8.909e+03	1.765e+04	0.50	yes	no	1.079
24	IS	13C-1,2,3,7,8,9-HxCDF	37:05	8.500e+03	1.638e+04	0.52	yes	no	0.919
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:19	5.959e+03	1.415e+04	0.42	yes	no	0.877
26	IS	13C-1,2,3,4,7,8,9-HpCDF	39:41	5.449e+03	1.306e+04	0.42	yes	no	0.723
27	IS	13C-2,3,7,8-TCDD	28:43	7.955e+03	1.047e+04	0.76	yes	no	0.958
28	IS	13C-1,2,3,7,8-PeCDD	33:21	1.580e+04	9.982e+03	1.58	yes	no	0.973
29	IS	13C-1,2,3,4,7,8-HxCDD	36:28	1.357e+04	1.072e+04	1.27	yes	no	0.966
30	IS	13C-1,2,3,6,7,8-HxCDD	36:33	1.378e+04	1.111e+04	1.24	yes	no	0.968
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:12	1.025e+04	9.892e+03	1.04	yes	no	0.854
32	IS	13C-OCDD	41:53	1.193e+04	1.364e+04	0.87	yes	no	0.668
33	RS/RT	13C-1,2,3,4-TCDD	28:07	2.328e+04	2.951e+04	0.79	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	36:47	2.854e+04	2.202e+04	1.30	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	28:45	8.261e+03				no	0.992

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Signal/Noise Height Ratio Summary

CLIENT ID.
DLCS

Run #17 Filename P407982 Samp: 1 Inj: 1 Acquired: 19-SEP-17 23:55:09
Processed: 20-SEP-17 15:43:17 LAB. ID: EQ1700406-03

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.40e+05	4.64e+03	3.0e+01	1.87e+05	5.74e+03	3.3e+01
2	1,2,3,7,8-PeCDF	1.51e+06	3.27e+03	4.6e+02	9.64e+05	1.45e+03	6.6e+02
3	2,3,4,7,8-PeCDF	1.73e+06	3.27e+03	5.3e+02	1.11e+06	1.45e+03	7.7e+02
4	1,2,3,4,7,8-HxCDF	1.72e+06	8.12e+02	2.1e+03	1.39e+06	1.16e+03	1.2e+03
5	1,2,3,6,7,8-HxCDF	1.78e+06	8.12e+02	2.2e+03	1.44e+06	1.16e+03	1.2e+03
6	2,3,4,6,7,8-HxCDF	1.65e+06	8.12e+02	2.0e+03	1.36e+06	1.16e+03	1.2e+03
7	1,2,3,7,8,9-HxCDF	1.49e+06	8.12e+02	1.8e+03	1.17e+06	1.16e+03	1.0e+03
8	1,2,3,4,6,7,8-HpCDF	1.41e+06	1.39e+03	1.0e+03	1.38e+06	1.45e+03	9.5e+02
9	1,2,3,4,7,8,9-HpCDF	1.12e+06	1.39e+03	8.1e+02	1.09e+06	1.45e+03	7.5e+02
10	OCDF	1.28e+06	3.68e+02	3.5e+03	1.45e+06	3.02e+03	4.8e+02
11	2,3,7,8-TCDD	1.39e+05	4.74e+03	2.9e+01	1.86e+05	4.15e+03	4.5e+01
12	1,2,3,7,8-PeCDD	1.37e+06	9.84e+02	1.4e+03	9.06e+05	4.60e+02	2.0e+03
13	1,2,3,4,7,8-HxCDD	1.44e+06	5.08e+02	2.8e+03	1.14e+06	4.60e+02	2.5e+03
14	1,2,3,6,7,8-HxCDD	1.43e+06	5.08e+02	2.8e+03	1.10e+06	4.60e+02	2.4e+03
15	1,2,3,7,8,9-HxCDD	1.38e+06	5.08e+02	2.7e+03	1.14e+06	4.60e+02	2.5e+03
16	1,2,3,4,6,7,8-HpCDD	1.02e+06	7.72e+02	1.3e+03	9.58e+05	8.24e+02	1.2e+03
17	OCDD	1.05e+06	1.57e+03	6.7e+02	1.19e+06	1.76e+03	6.8e+02
18	13C-2,3,7,8-TCDF	1.57e+06	1.08e+04	1.5e+02	2.03e+06	6.24e+03	3.3e+02
19	13C-1,2,3,7,8-PeCDF	3.18e+06	9.20e+02	3.5e+03	2.05e+06	8.16e+02	2.5e+03
20	13C-2,3,4,7,8-PeCDF	3.68e+06	9.20e+02	4.0e+03	2.33e+06	8.16e+02	2.9e+03
21	13C-1,2,3,4,7,8-HxCDF	1.67e+06	1.17e+03	1.4e+03	3.29e+06	1.35e+03	2.4e+03
22	13C-1,2,3,6,7,8-HxCDF	1.98e+06	1.17e+03	1.7e+03	3.79e+06	1.35e+03	2.8e+03
23	13C-2,3,4,6,7,8-HxCDF	1.82e+06	1.17e+03	1.6e+03	3.61e+06	1.35e+03	2.7e+03
24	13C-1,2,3,7,8,9-HxCDF	1.65e+06	1.17e+03	1.4e+03	3.24e+06	1.35e+03	2.4e+03
25	13C-1,2,3,4,6,7,8-HpCDF	1.26e+06	1.70e+03	7.4e+02	2.99e+06	1.97e+03	1.5e+03
26	13C-1,2,3,4,7,8,9-HpCDF	1.03e+06	1.70e+03	6.0e+02	2.41e+06	1.97e+03	1.2e+03
27	13C-2,3,7,8-TCDD	1.53e+06	7.66e+03	2.0e+02	2.02e+06	4.14e+03	4.9e+02
28	13C-1,2,3,7,8-PeCDD	3.08e+06	1.12e+03	2.8e+03	1.95e+06	9.88e+02	2.0e+03
29	13C-1,2,3,4,7,8-HxCDD	3.04e+06	1.29e+03	2.4e+03	2.39e+06	7.56e+02	3.2e+03
30	13C-1,2,3,6,7,8-HxCDD	2.75e+06	1.29e+03	2.1e+03	2.23e+06	7.56e+02	2.9e+03
31	13C-1,2,3,4,6,7,8-HpCDD	1.99e+06	9.92e+02	2.0e+03	1.90e+06	6.44e+02	3.0e+03
32	13C-OCDD	1.98e+06	3.86e+03	5.1e+02	2.26e+06	2.48e+03	9.1e+02
33	13C-1,2,3,4-TCDD	4.43e+06	7.66e+03	5.8e+02	5.56e+06	4.14e+03	1.3e+03
34	13C-1,2,3,7,8,9-HxCDD	5.61e+06	1.29e+03	4.4e+03	4.49e+06	7.56e+02	5.9e+03
35	37Cl-2,3,7,8-TCDD	1.57e+06	3.56e+03	4.4e+02			

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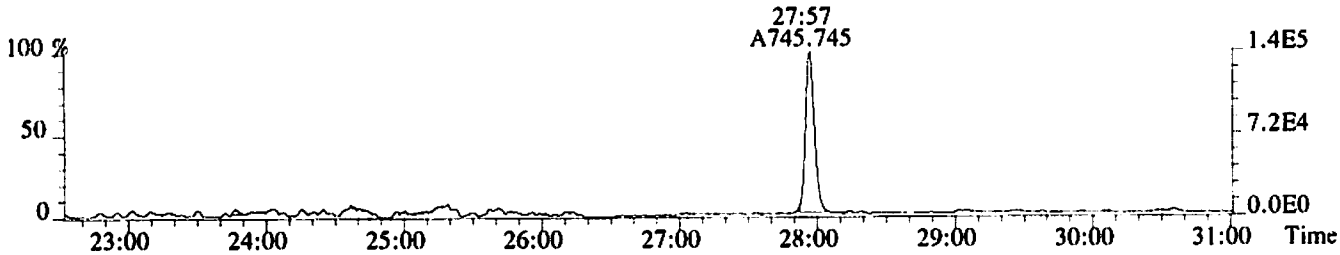
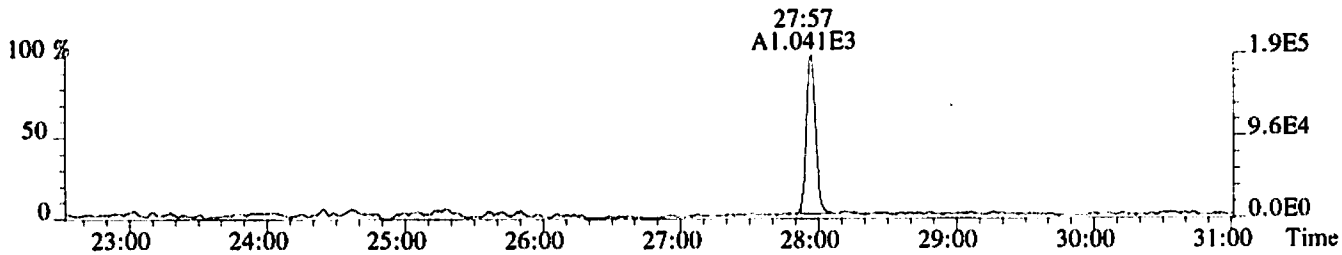
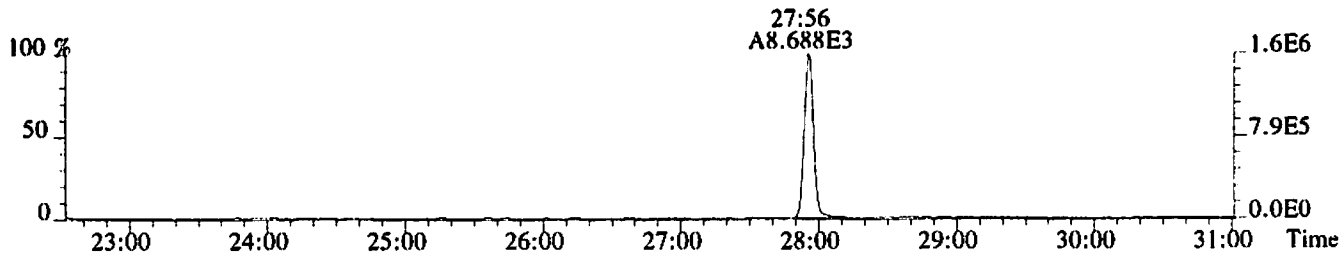
File:P407982 #1-602 Acq:19-SEP-2017 23:55:09 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:DLCS
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4636.0,1.00%,F,T)



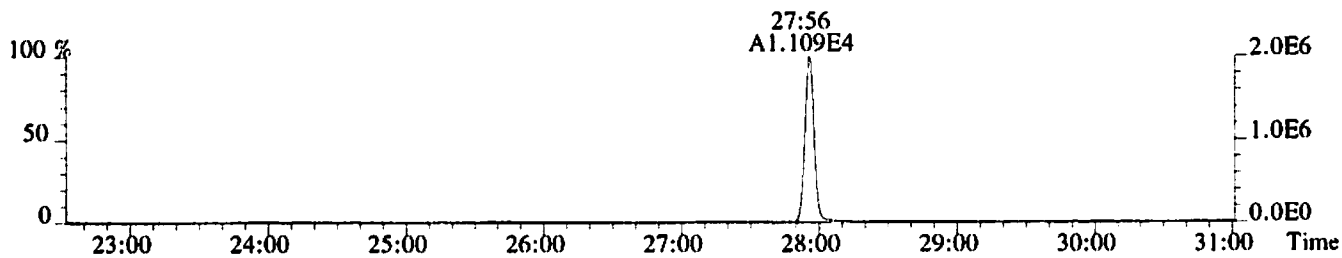
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5736.0,1.00%,F,T)



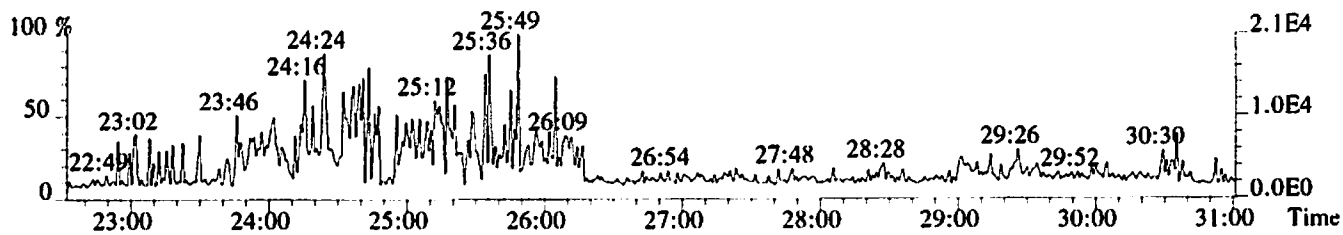
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,10824.0,1.00%,F,T)



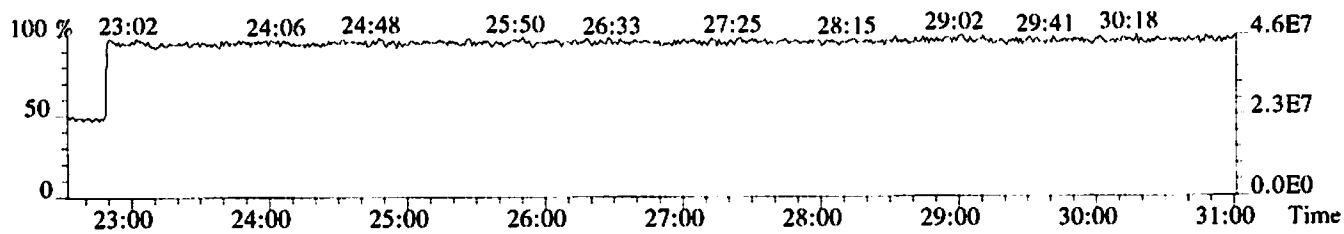
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6244.0,1.00%,F,T)



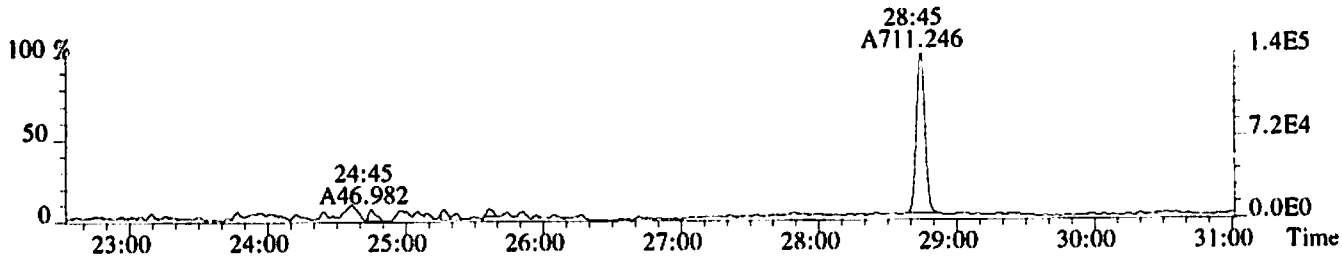
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



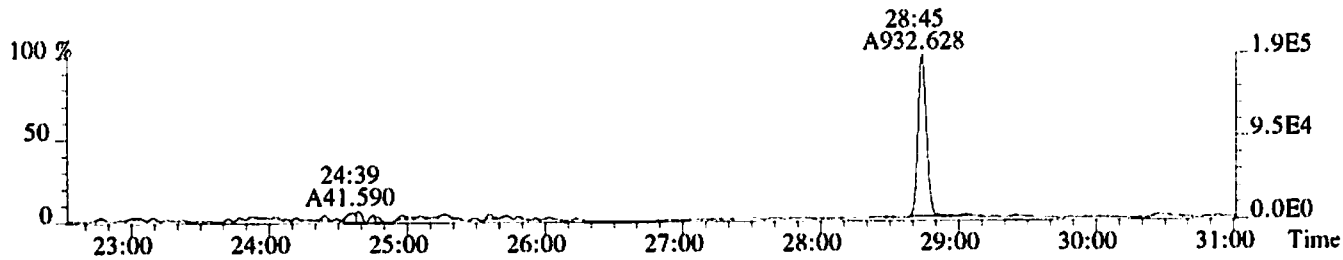
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



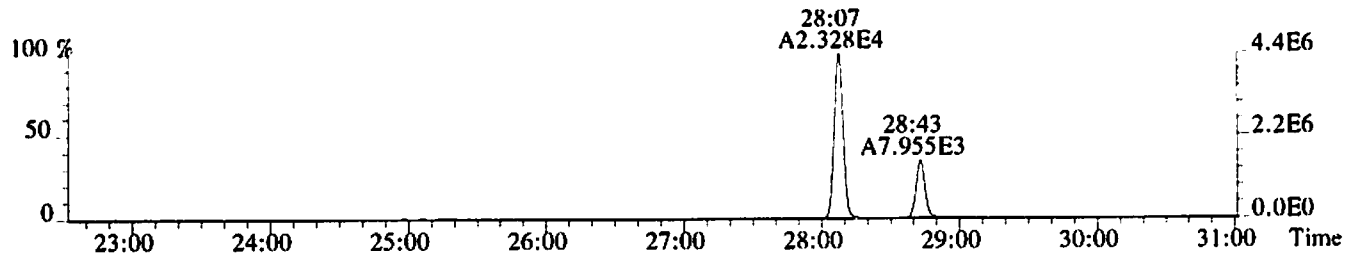
File:P407982 #1-602 Acq:19-SEP-2017 23:55:09 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:DLCS
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4744.0,1.00%,F,T)



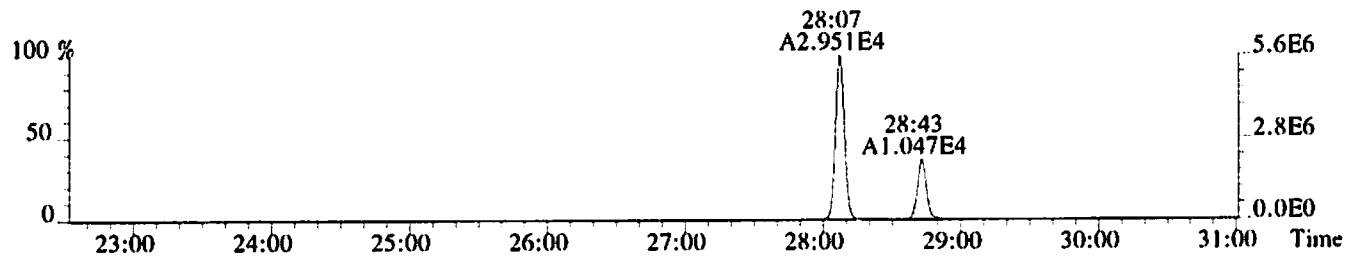
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4152.0,1.00%,F,T)



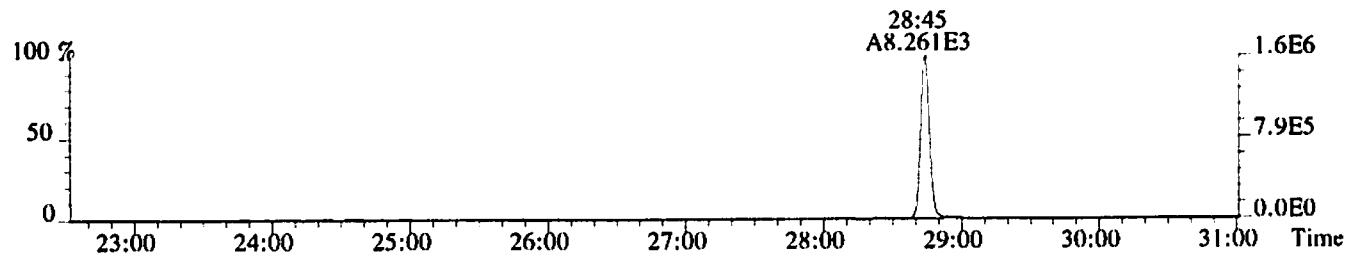
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,7656.0,1.00%,F,T)



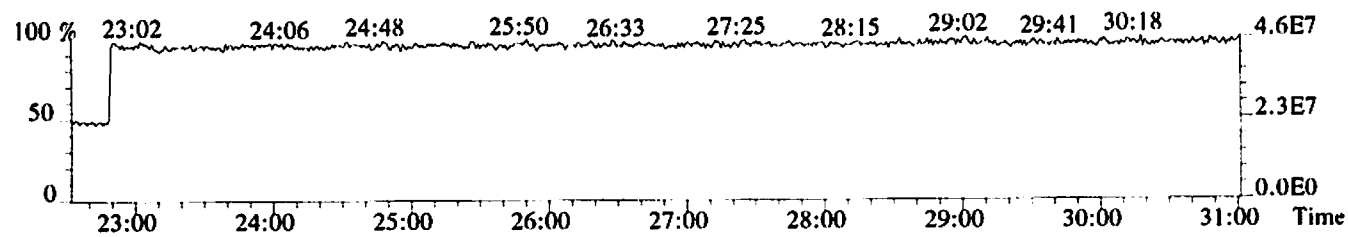
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4140.0,1.00%,F,T)



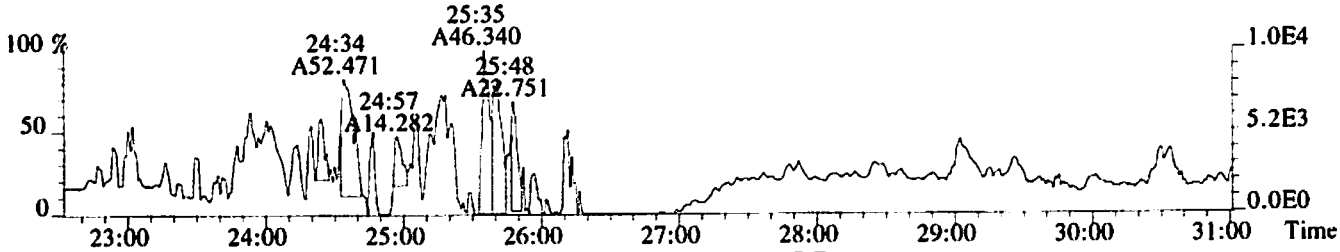
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3564.0,1.00%,F,T)



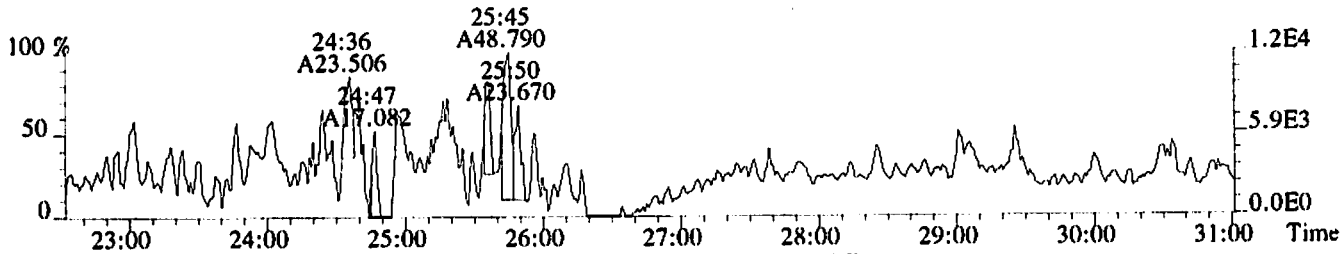
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



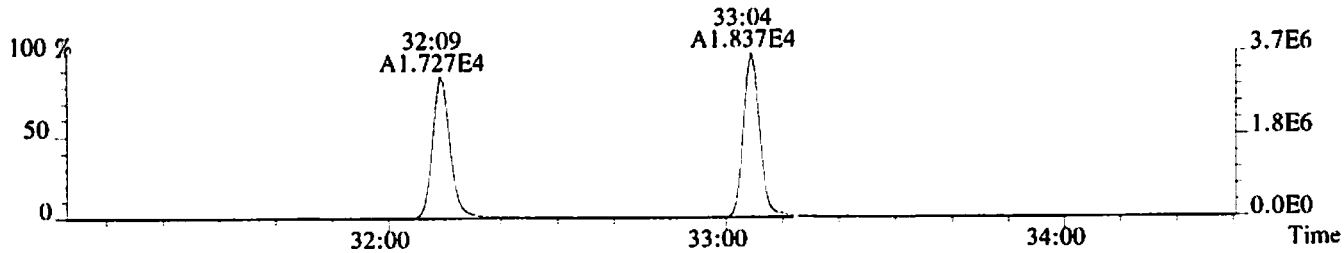
File:P407982 #1-602 Acq:19-SEP-2017 23:55:09 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:DLCS
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2884.0,1.00%,F,T)



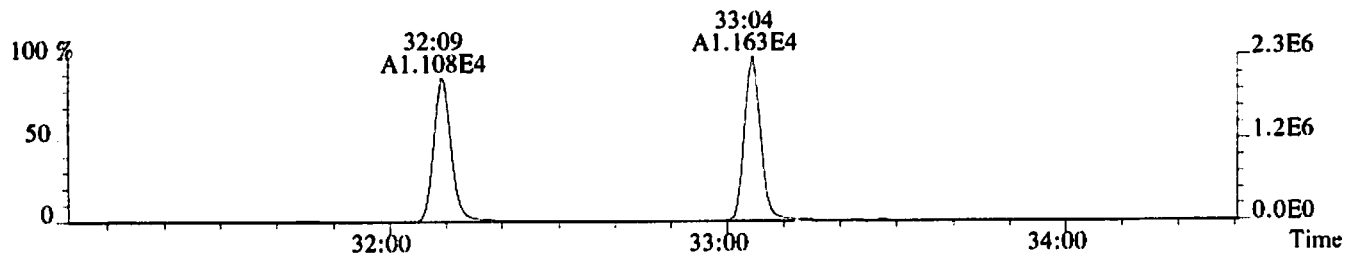
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4388.0,1.00%,F,T)



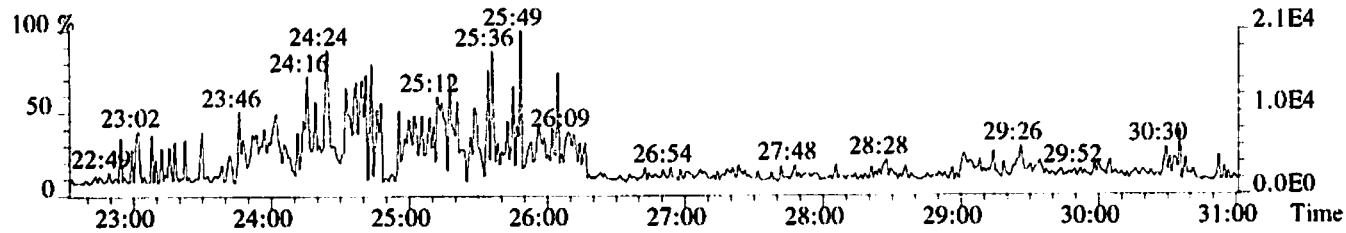
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,920.0,1.00%,F,T)



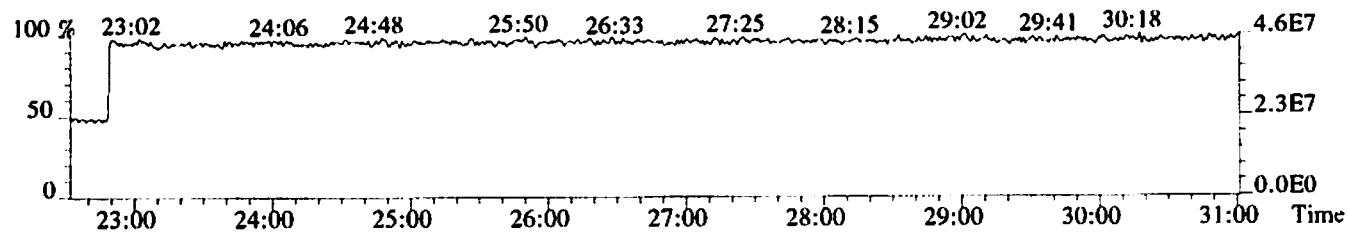
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,816.0,1.00%,F,T)



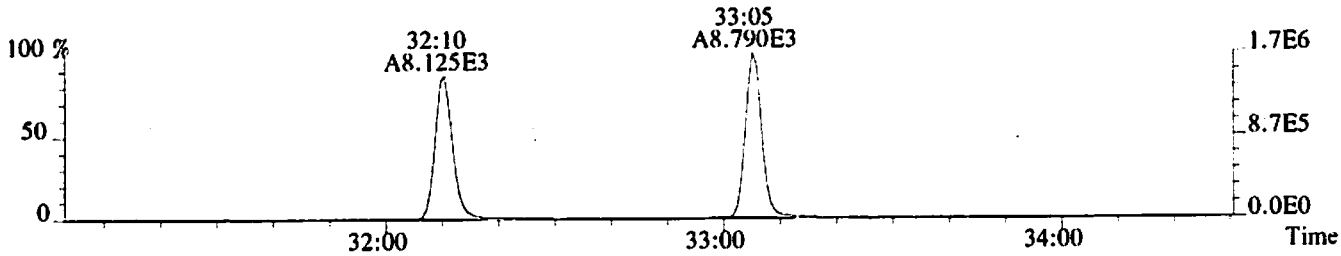
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



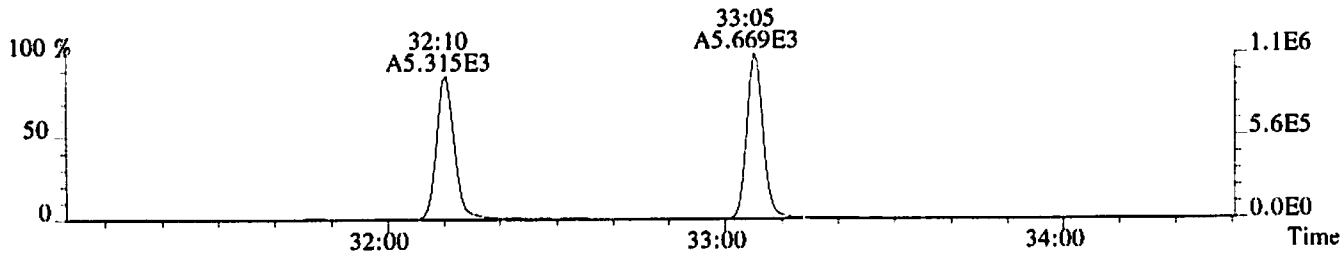
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



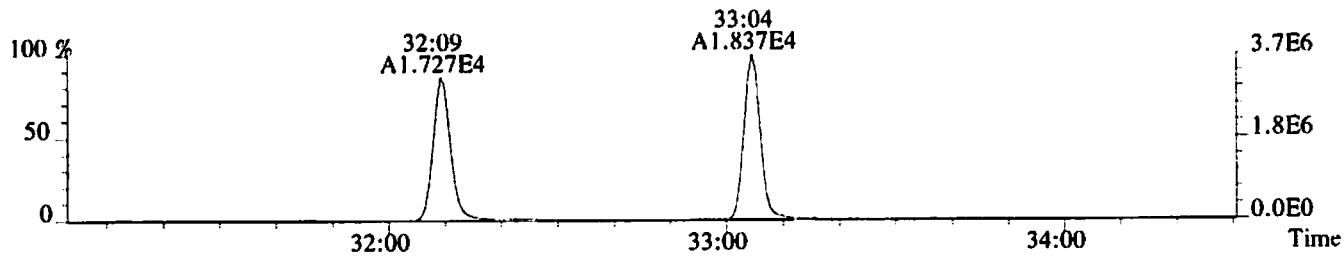
File:P407982 #1-312 Acq:19-SEP-2017 23:55:09 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:DLCS
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3268.0,1.00%,F,T)



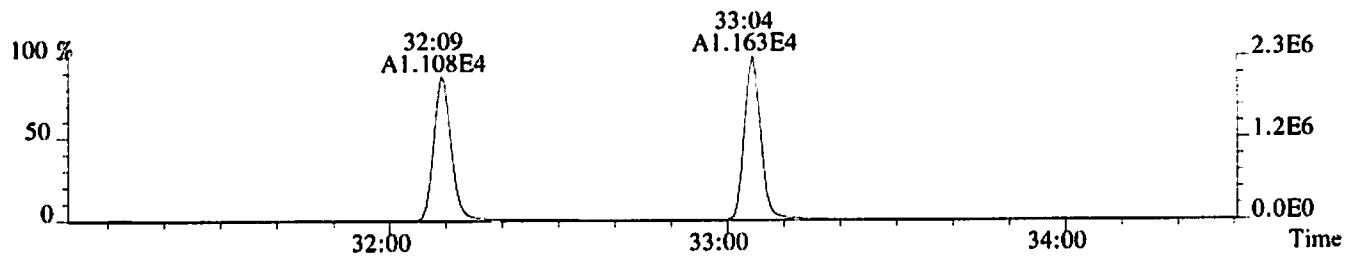
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1452.0,1.00%,F,T)



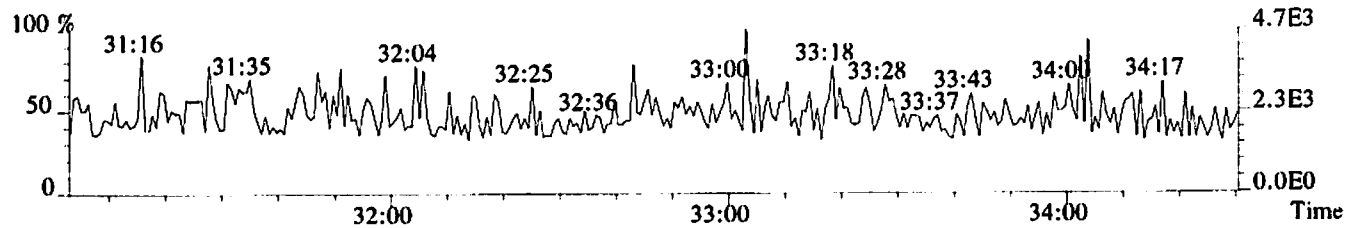
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,920.0,1.00%,F,T)



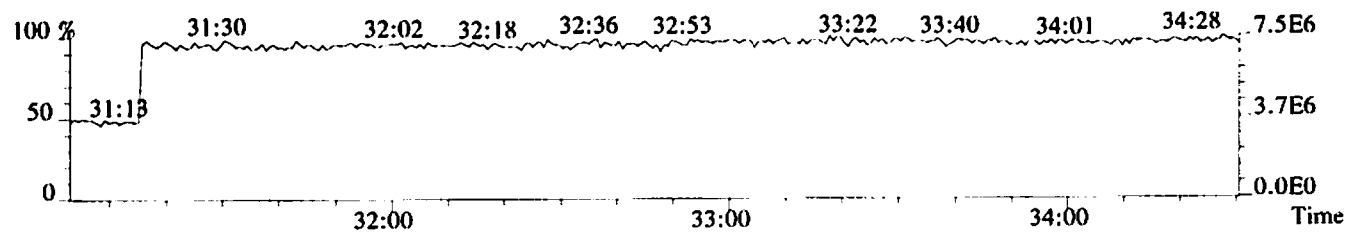
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,816.0,1.00%,F,T)



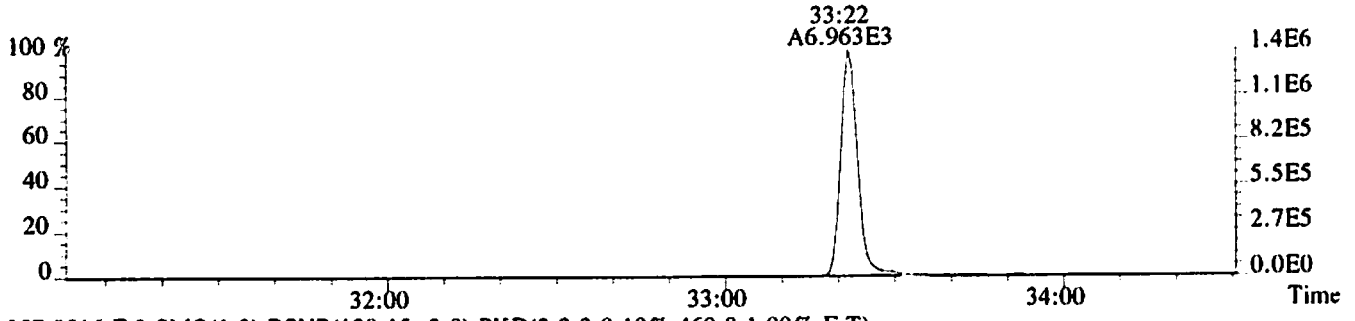
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



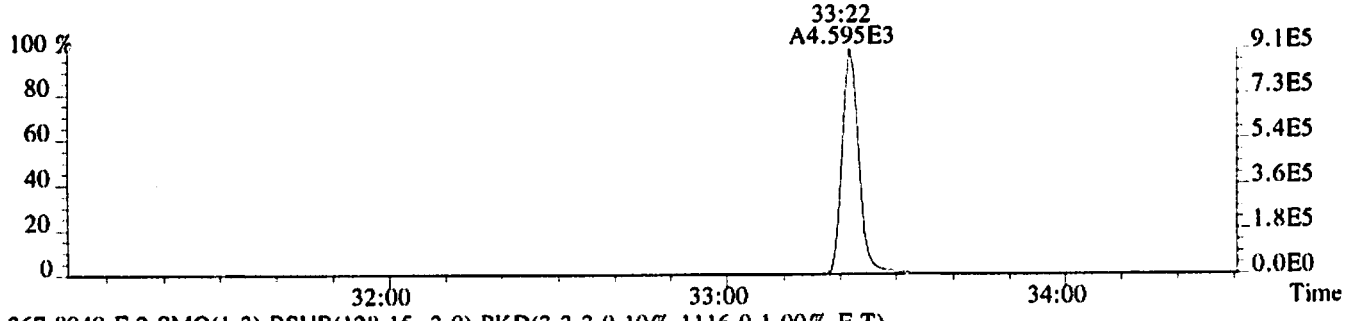
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



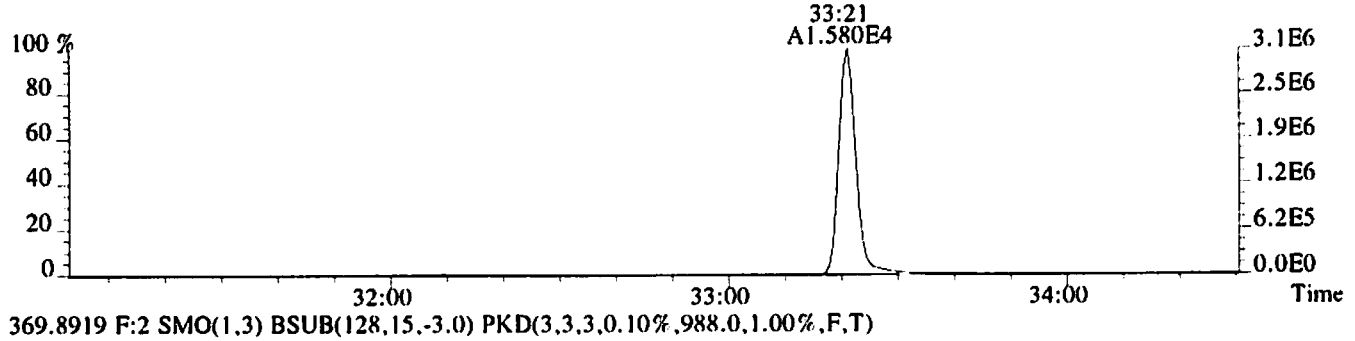
File:P407982 #1-312 Acq:19-SEP-2017 23:55:09 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:DLCS
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,984.0,1.00%,F,T)



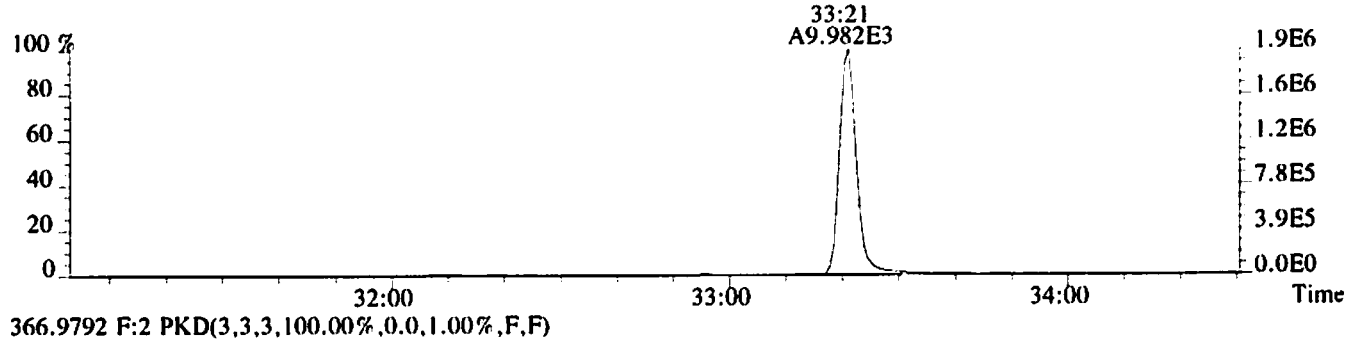
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,460.0,1.00%,F,T)



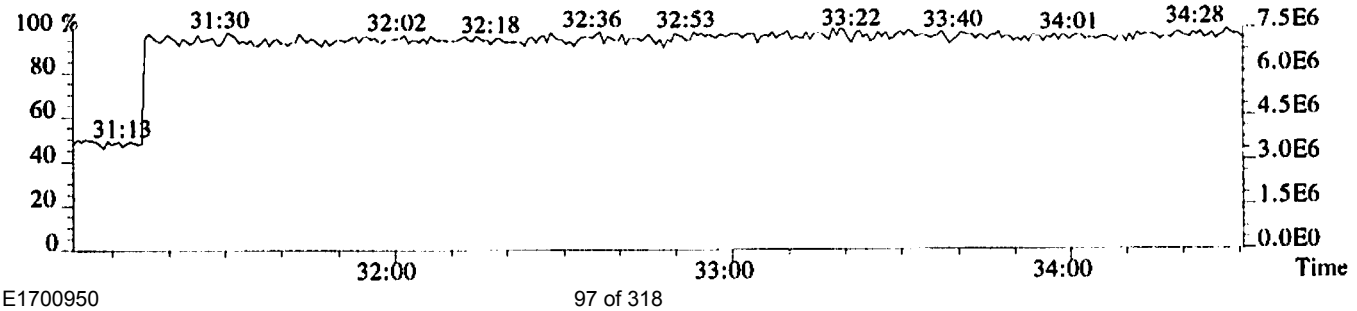
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1116.0,1.00%,F,T)



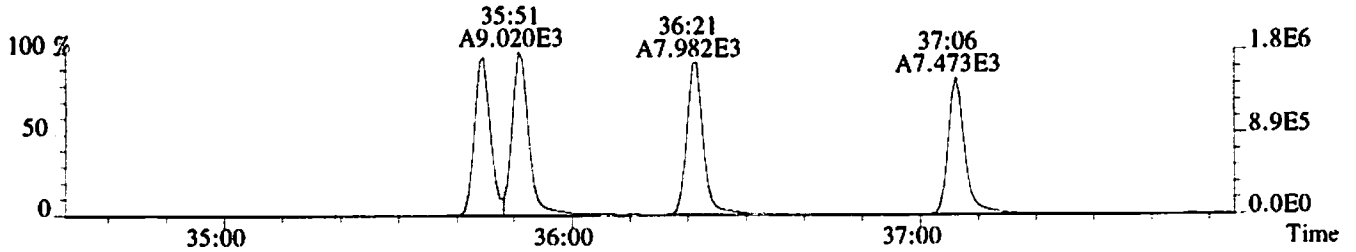
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,988.0,1.00%,F,T)



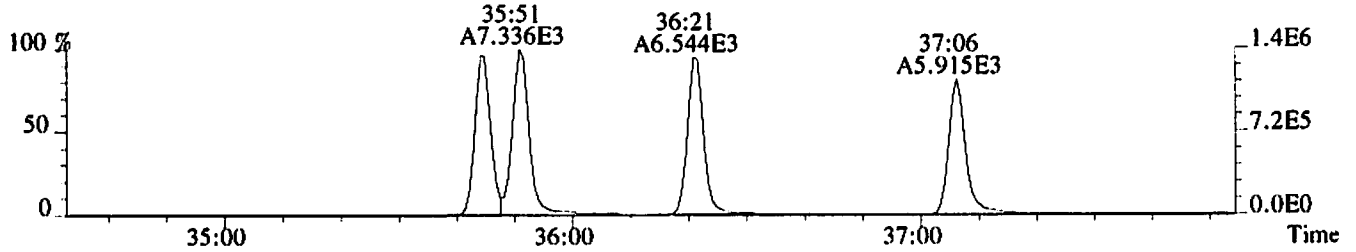
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



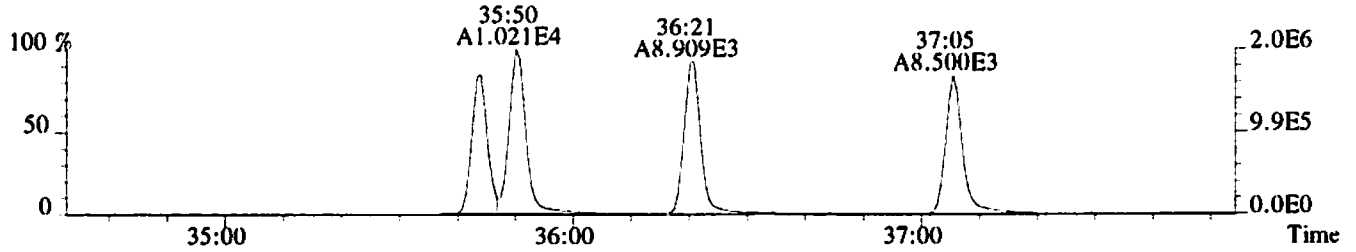
File:P407982 #1-303 Acq:19-SEP-2017 23:55:09 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:DLCS
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,812.0,0.40%,F,T)



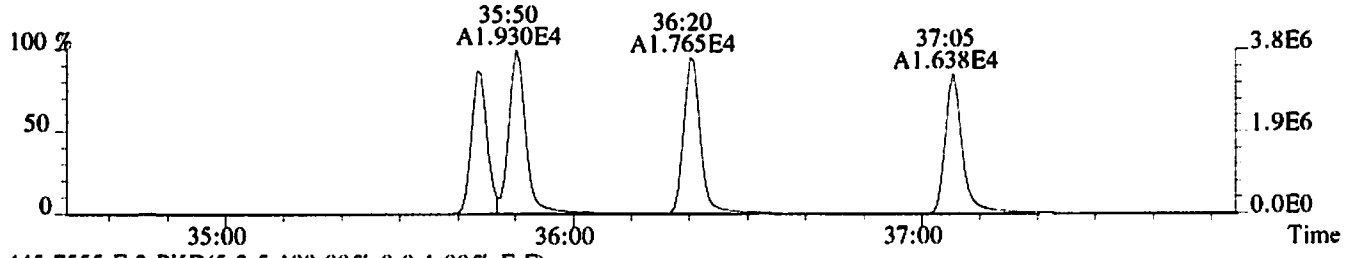
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1164.0,0.40%,F,T)



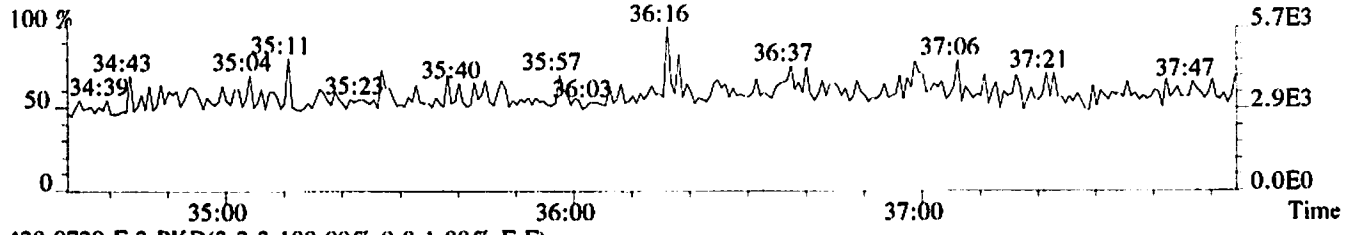
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1172.0,0.40%,F,T)



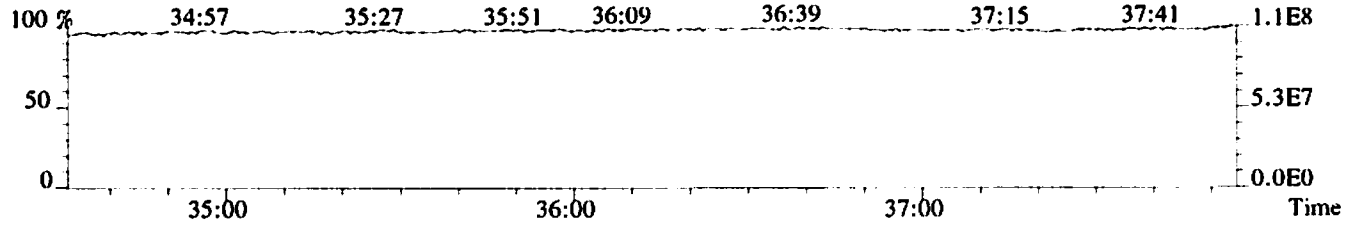
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1352.0,0.40%,F,T)



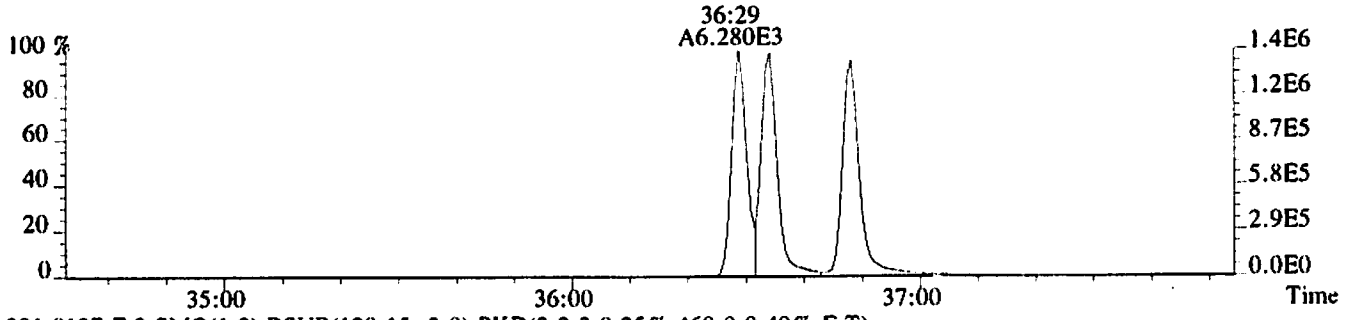
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



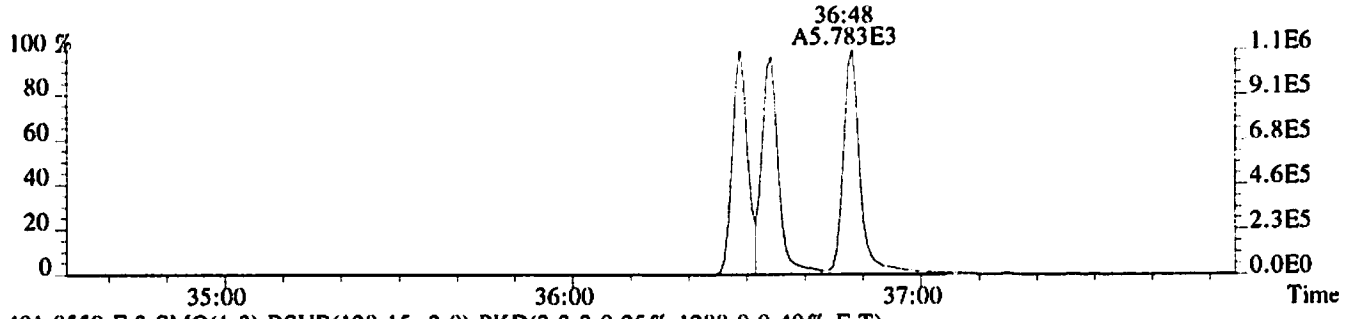
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



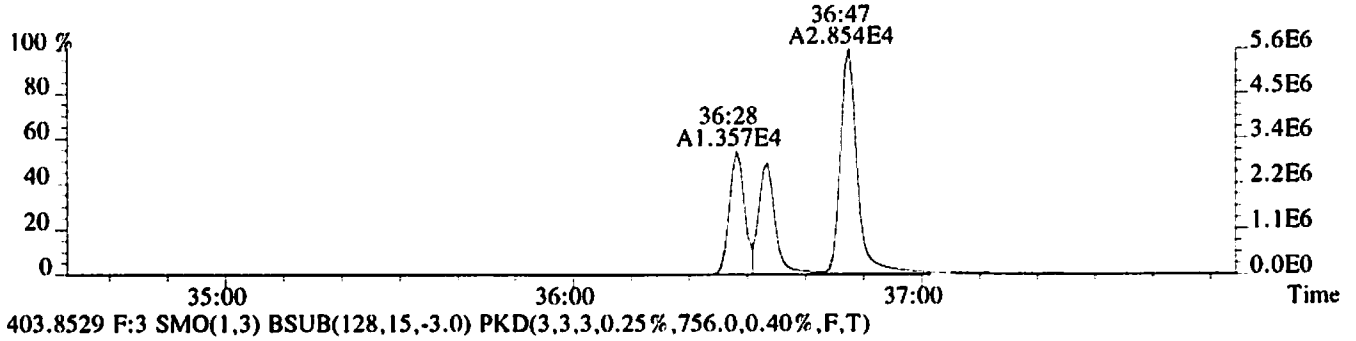
File:P407982 #1-303 Acq:19-SEP-2017 23:55:09 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:DLCS
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,508.0,0.40%,F,T)



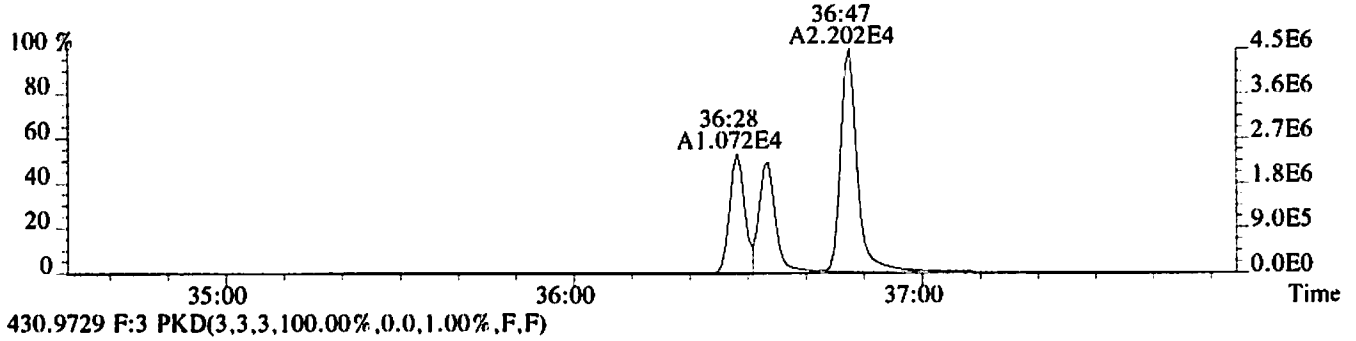
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,460.0,0.40%,F,T)



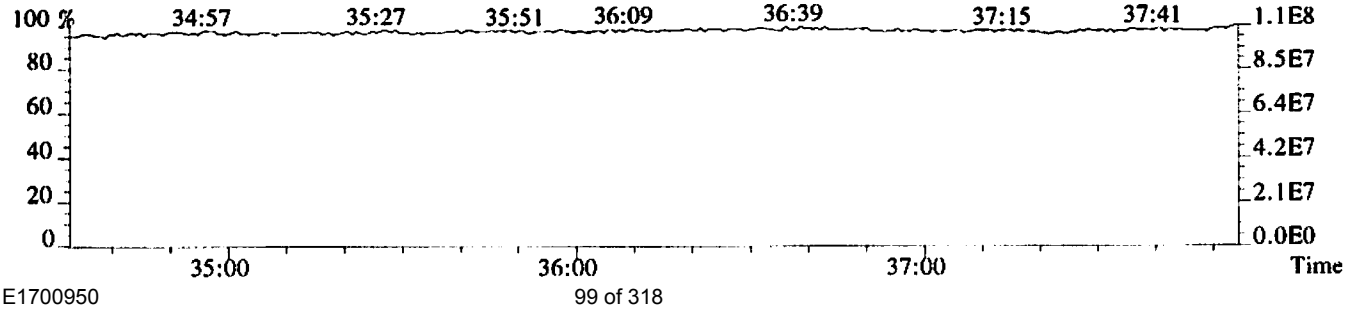
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1288.0,0.40%,F,T)



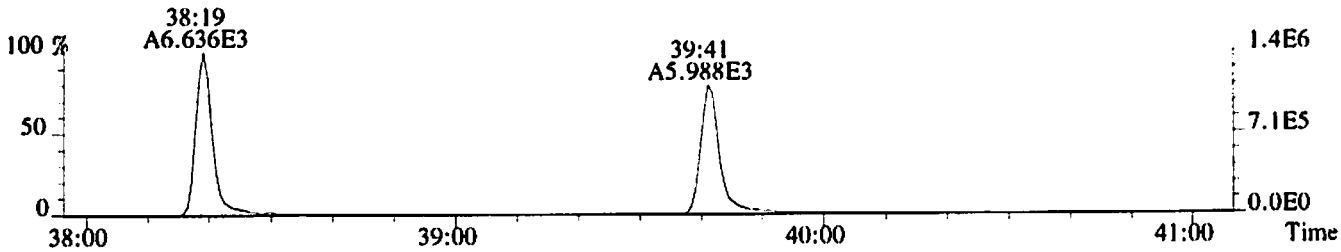
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,756.0,0.40%,F,T)



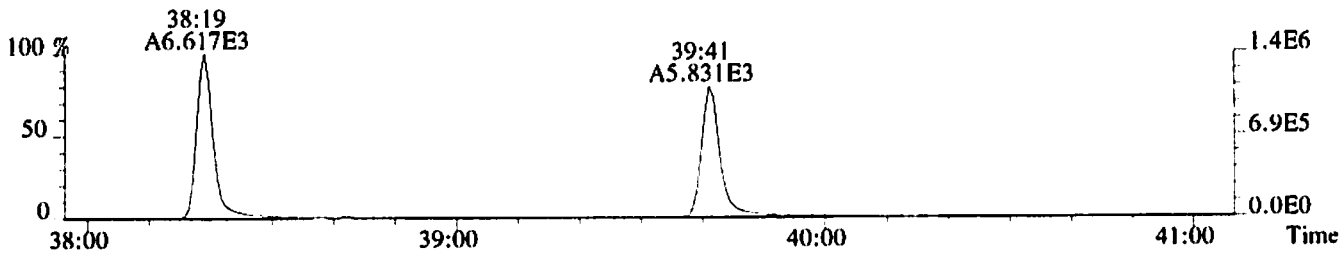
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



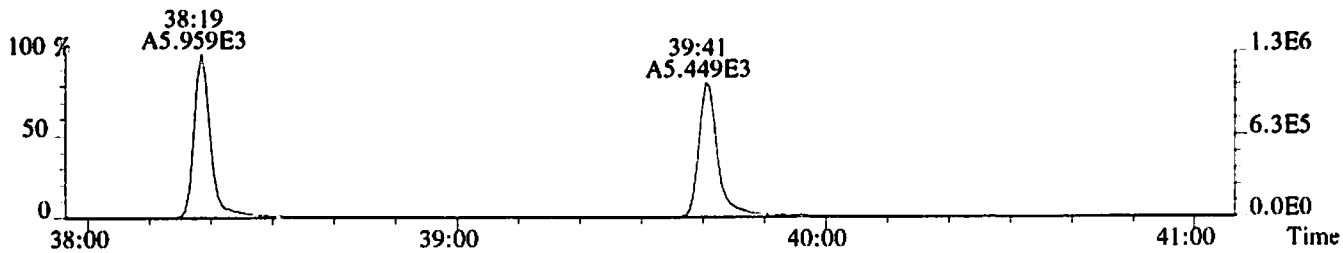
File:P407982 #1-286 Acq:19-SEP-2017 23:55:09 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:DLCS
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1388.0,0.50%,F,T)



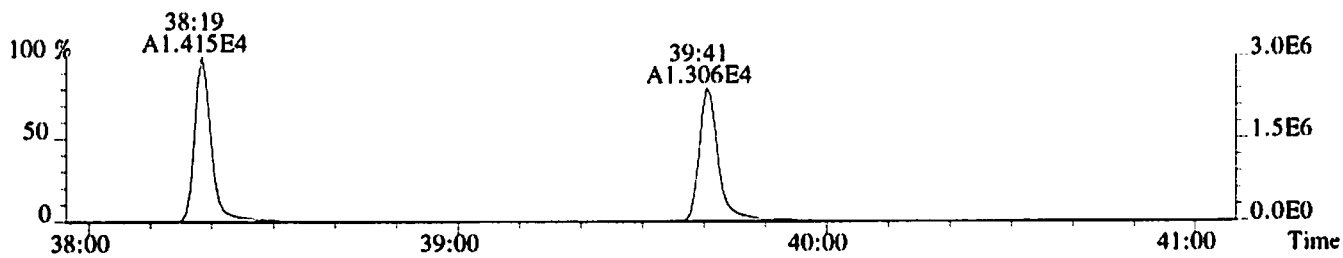
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1452.0,0.50%,F,T)



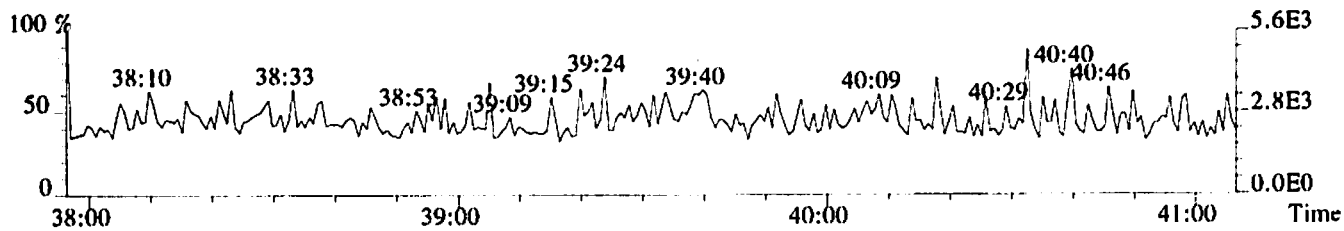
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1704.0,0.50%,F,T)



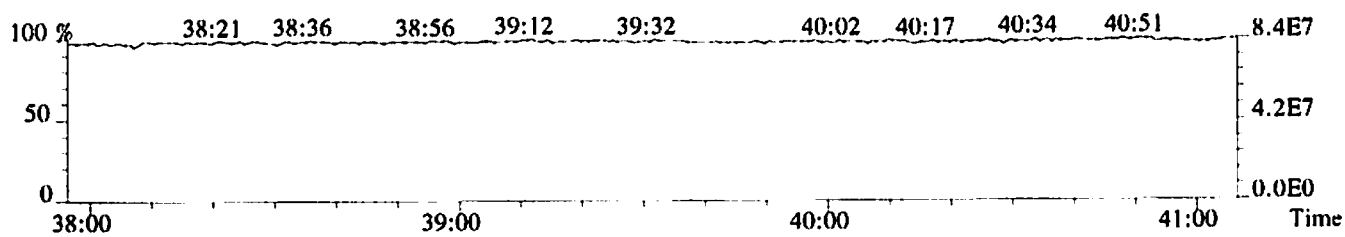
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1968.0,0.50%,F,T)



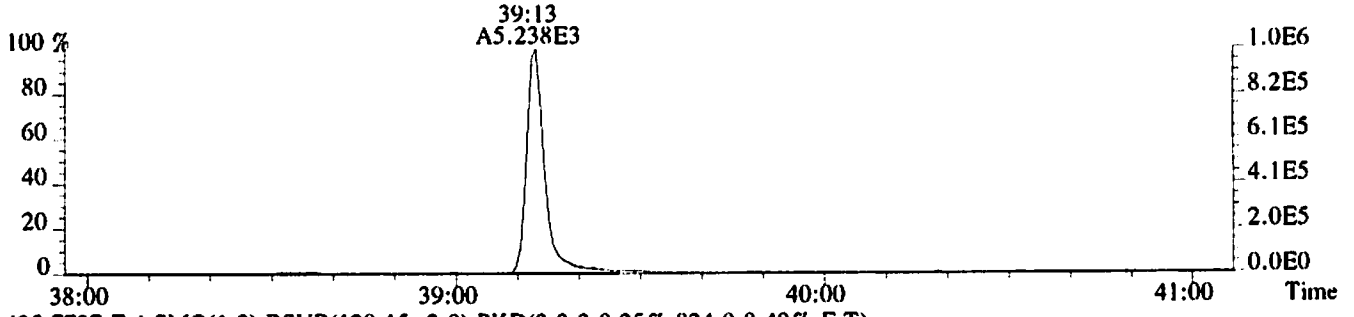
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



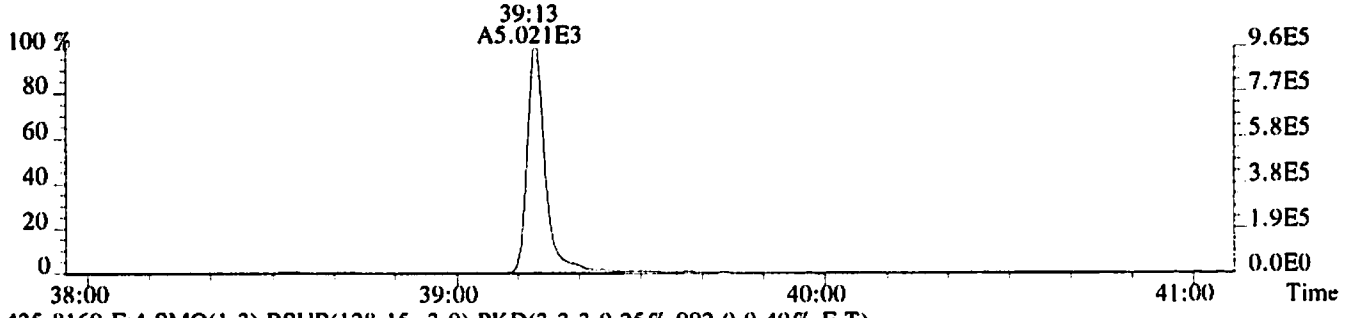
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



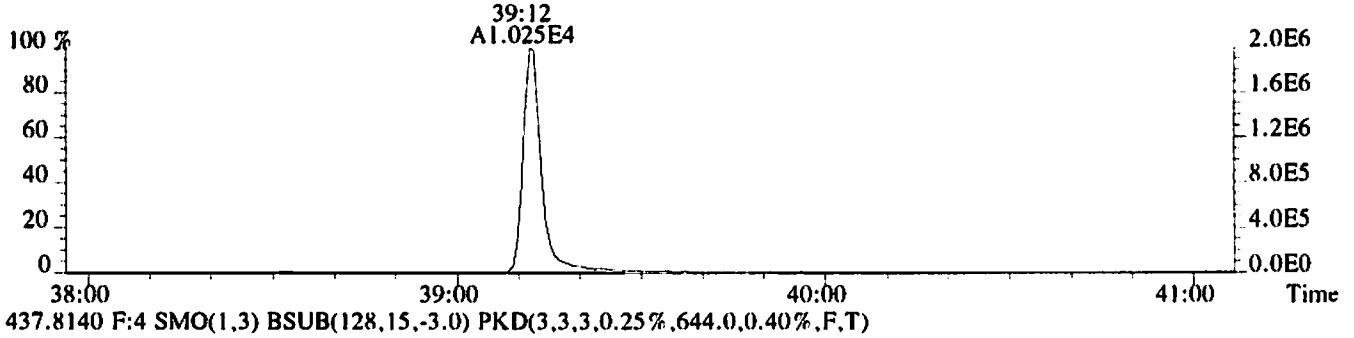
File:P407982 #1-286 Acq:19-SEP-2017 23:55:09 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:DLCS
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,772.0,0.40%,F,T)



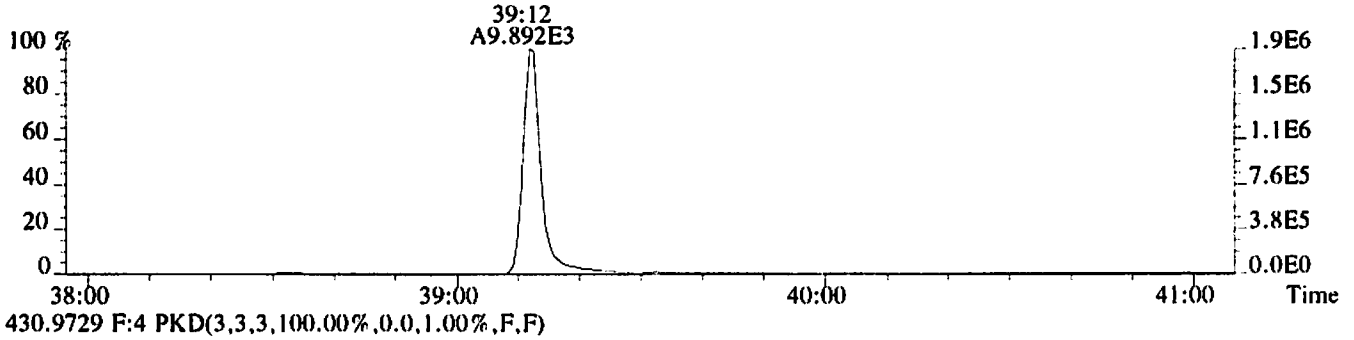
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,824.0,0.40%,F,T)



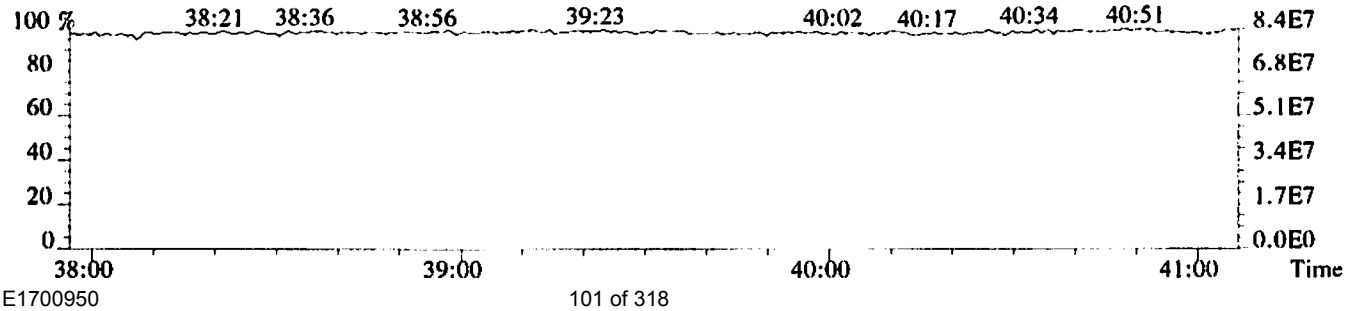
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,992.0,0.40%,F,T)



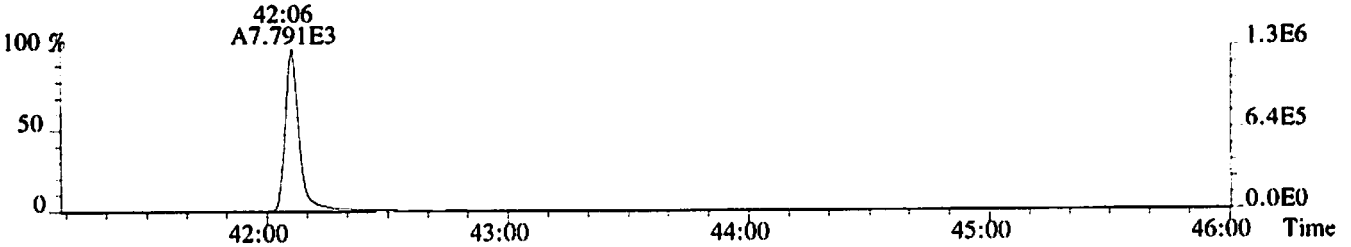
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,644.0,0.40%,F,T)



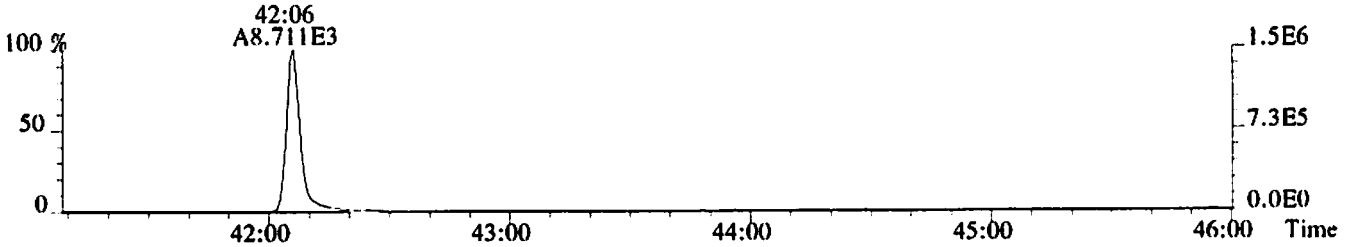
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



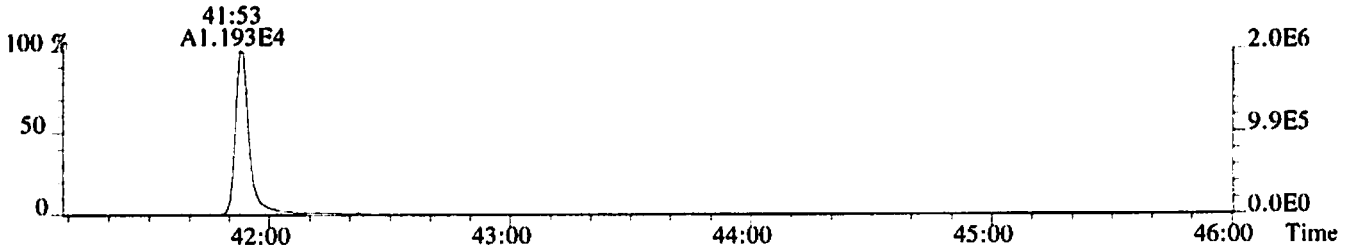
File:P407982 #1-438 Acq:19-SEP-2017 23:55:09 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:DLCS
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,368.0,0.40%,F,T)



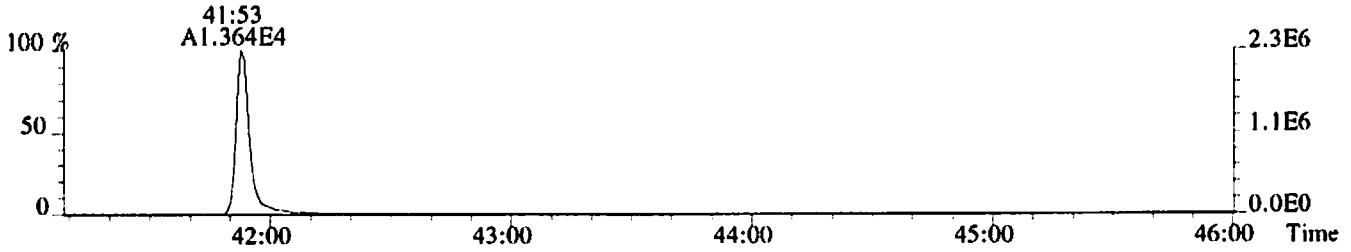
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3024.0,0.40%,F,T)



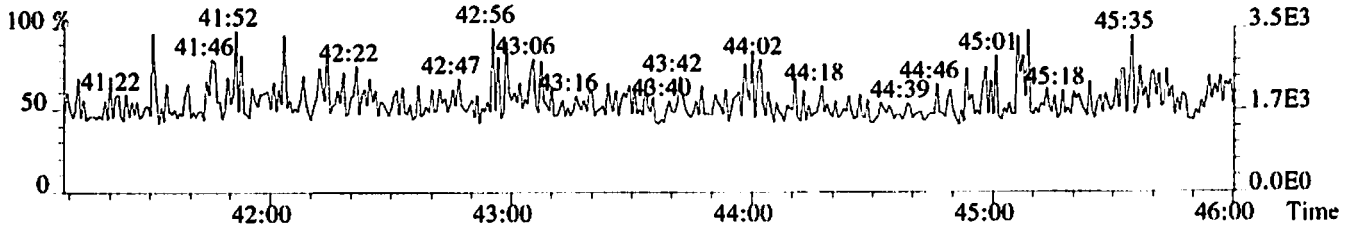
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3856.0,0.40%,F,T)



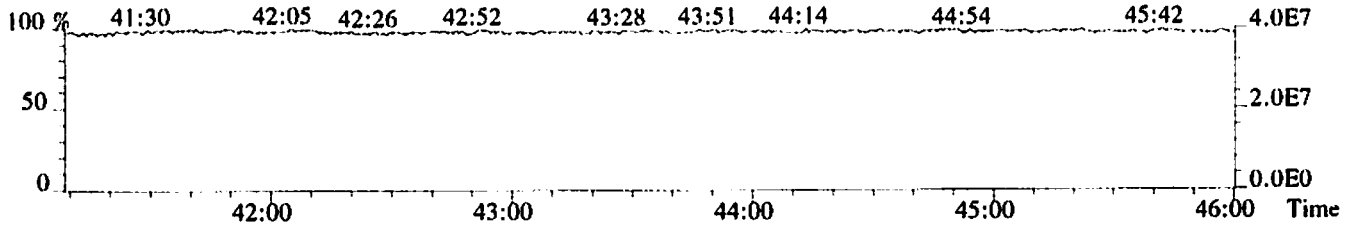
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2476.0,0.40%,F,T)



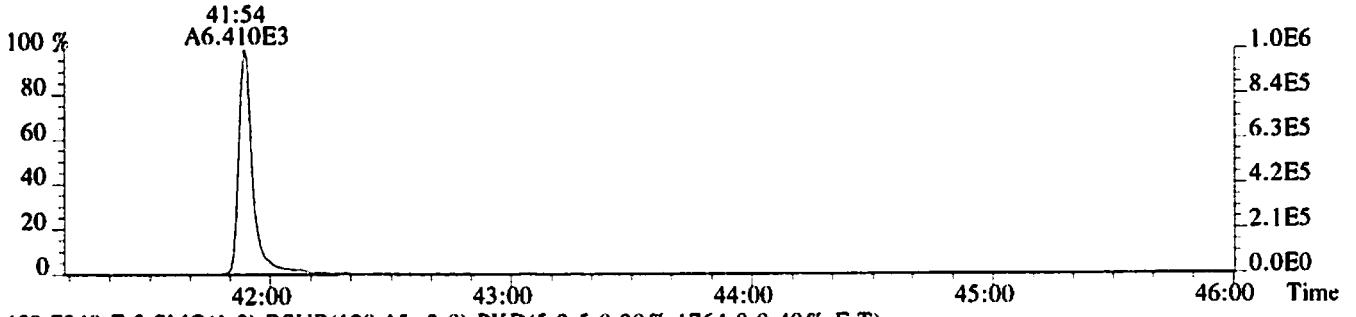
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



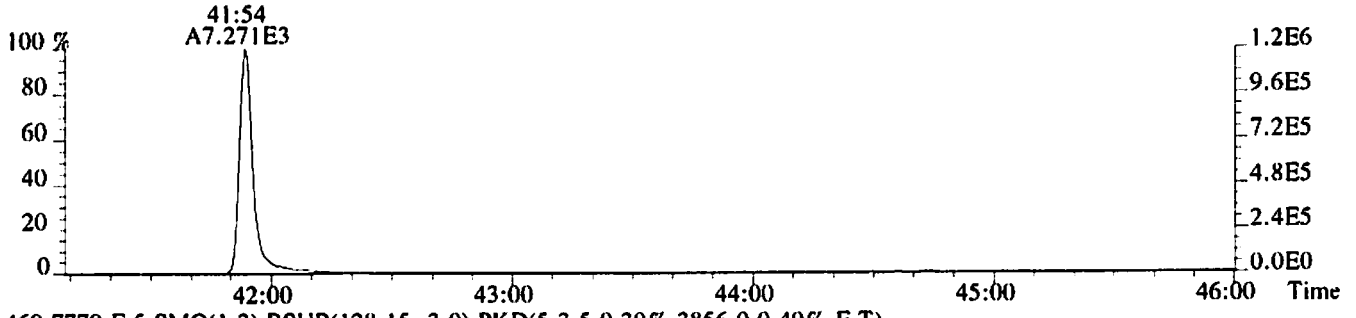
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



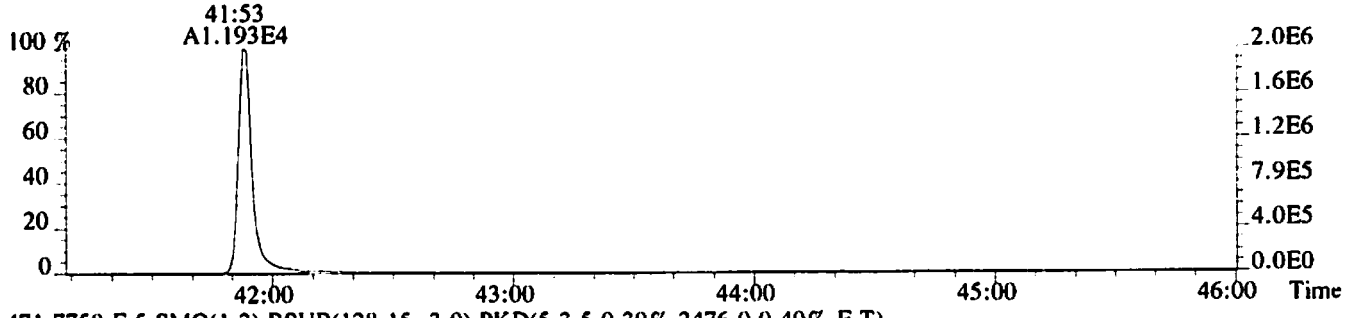
File:P407982 #1-438 Acq:19-SEP-2017 23:55:09 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:DLCS
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1568.0,0.40%,F,T)



459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1764.0,0.40%,F,T)



469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3856.0,0.40%,F,T)



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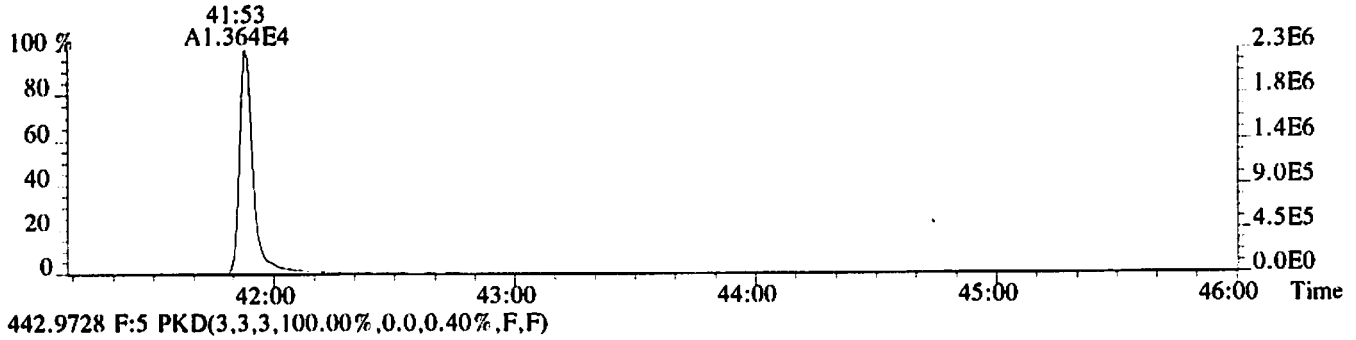

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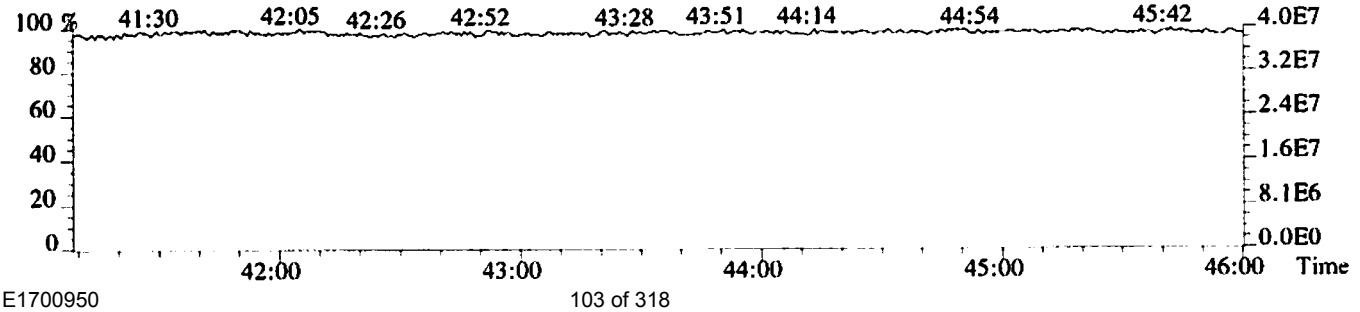

Continuing Calibration

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

CCAL HRCC3/CS3 Daily Calibration QC Checklist

Calibration File Name: P407962 - P407971 Circle one: Beginning / Ending

Date: 09/19/17

Method: 1613 / 1613E / 8290 / Tetra / TCDD Only / 8280 / M23 / TO-9A

Retention Window/Column Performance Check:	Analyst	Second Check
Windows in and first and last eluters labeled	✓	✓
Column Performance shows less than or equal to 25% valley between column specific 2378 isomer and its closest eluters	✓	✓
No QC ion deflections affect column specific 2378 isomer or its closest eluters (HRMS Only)	✓	✓

CS3 Continuing Calibration	Analyst	Second Check
Percent RSD within method criteria	✓	✓
All relative abundance ratios meet method criteria	✓	✓
No QC ion deflections of greater than 20% (HRMS Only)	✓	✓
Mass spectrometer resolution greater than or equal to 10,000 and documented (HRMS Only)	✓	✓
2378-TCDD elutes at 25 minutes or later on the DB-5 column / DB-5MSUI column	✓	✓
Signal-to-noise of all target analytes and their labeled standards at least 10:1	✓	✓
Valley between labeled 123478 and 123678 HxCDD peaks less than or equal to 50% (LRMS Only)	N/A	N/A
Ending Calibration injected prior to end of 12 hour clock	✓	✓

Analyst: TC Second QC: LKL

ccalqc.xls 07/17/12

5DBC
PCDD/PCDF/PCB ANALYTICAL SEQUENCE SUMMARY

Lab Name: ALS Environmental Contract:

Lab Code: ALS-TX Case No.: SDG No.:

GC Column: DB-5MSUI ID: 0.25 (mm) Instrument ID:E-HRMS-06

Init. Calib. Date: 09/01/2017

Init. Calib.Times: 14:07:08

THE ANALYTICAL SEQUENCE OF STANDARDS, SAMPLES, BLANKS, AND LABORATORY CONTROL SAMPLES (LCSs) IS AS FOLLOWS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
178397	WINDOW DEFINE	p407961	19-SEP-17	05:00:22
178398	CS3	p407962	19-SEP-17	05:48:18
METHOD BLANK	EQ1700390-01	p407963	19-SEP-17	07:26:07
METHOD BLANK	EQ1700402-01	p407964	19-SEP-17	08:15:03
M1.-TROZOS DE ATUN	E1700917-001	p407965	19-SEP-17	09:03:56
METHOD BLANK	EQ1700406-01	p407966	19-SEP-17	09:53:13
HALL SO-1	E1700950-001	p407967	19-SEP-17	10:41:33
PSRM0080	EQ1700393-04	p407968	19-SEP-17	11:30:01
Q10-P46-50	E1700903-010	p407969	19-SEP-17	12:18:55
178398	CS3	p407971	19-SEP-17	14:23:48

Sample List Report MassLynx 4.1 SCN815 SCN795

Sample List: C:\MassLynx\ehrms06.PRO\SampleDB\20170918.SPL
Last Modified: Tuesday, September 19, 2017 15:48:18 Central Daylight Time
Printed: Tuesday, September 19, 2017 15:48:20 Central Daylight Time

1613/8290 Page Position (1, 1)

OPUS-5: P407962RES

	Date	Time	File Name	Lab Sample ID	Client File Text	Bottle	MS File	Inlet File	Analyst	Comments
1	9/19/17	05:00	P407961	178397	WINDOW DEFINE	Tray1:1	epa1613_als	Dioxin_ALS	DJ	HRMS check 05:00
2		05:48	P407962	178398	CS3	Tray1:2	epa1613_als	Dioxin_ALS		
3		07:26	P407963	EQ1700390-01	MB	Tray1:3	epa1613_als	Dioxin_ALS		
4		08:15	P407964	EQ1700402-01	MB	Tray1:4	epa1613_als	Dioxin_ALS		
5		09:03	P407965	E1700917-001	E1700917-001	Tray1:5	epa1613_als	Dioxin_ALS		
6		09:52	P407966	EQ1700406-01	MB	Tray1:6	epa1613_als	Dioxin_ALS		
7		10:41	P407967	E1700950-001	E1700950-001	Tray1:7	epa1613_als	Dioxin_ALS		
8		11:30	P407968	EQ1700393-04	DUP	Tray1:8	epa1613_als	Dioxin_ALS		
9		12:18	P407969	E1700903-010	E1700903-010	Tray1:9	epa1613_als	Dioxin_ALS		
10			P407970	178398	CS3	Tray1:10	epa1613_als	Dioxin_ALS		DO NOT USE
11		14:23	P407971	178398	CS3	Tray1:11	epa1613_als	Dioxin_ALS		HRMS check 15:29
12	—	—	—	—	—	Tray1:12	epa1613_als	Dioxin_ALS	—	—
13	—	—	—	—	—	Tray1:13	epa1613_als	Dioxin_ALS	—	—
14	—	—	—	—	—	Tray1:14	epa1613_als	Dioxin_ALS	—	—
15	—	—	—	—	—	Tray1:15	epa1613_als	Dioxin_ALS	—	—
16	—	—	—	—	—	Tray1:1	epa1613_als	Dioxin_ALS	—	—
17	—	—	—	—	—	Tray1:2	epa1613_als	Dioxin_ALS	—	—
18	—	—	—	—	—	Tray1:3	epa1613_als	Dioxin_ALS	—	—
19	—	—	—	—	—	Tray1:19	epa1613_als	Dioxin_ALS	—	—
20	—	—	—	—	—	Tray1:20	epa1613_als	Dioxin_ALS	—	—
21	—	—	—	—	—	Tray1:21	epa1613_als	Dioxin_ALS	—	—
22	—	—	—	—	—	Tray1:22	epa1613_als	Dioxin_ALS	—	—
23	—	—	—	—	—	Tray1:23	epa1613_als	Dioxin_ALS	—	—
24	—	—	—	—	—	Tray1:24	epa1613_als	Dioxin_ALS	—	—
25	—	—	—	—	—	Tray1:2	epa1613_als	Dioxin_ALS	—	—
26	—	—	—	—	—	Tray1:2	epa1613_als	Dioxin_ALS	—	—
27	—	—	—	—	—	Tray1:27	epa1613_als	Dioxin_ALS	—	—
28	—	—	—	—	—	Tray1:28	epa1613_als	Dioxin_ALS	—	—
29	—	—	—	09/19/17	—	Tray1:29	epa1613_als	Dioxin_ALS	—	—
30	—	—	IC	—	—	Tray1:30	epa1613_als	Dioxin_ALS	—	—
31	—	—	—	—	—	Tray1:31	epa1613_als	Dioxin_ALS	—	—
32	—	—	—	—	—	Tray1:32	epa1613_als	Dioxin_ALS	—	—
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34	—	—	—	—	—	Tray1:34	epa1613_als	Dioxin_ALS	—	—
35	—	—	—	—	—	Tray1:35	epa1613_als	Dioxin_ALS	—	—
36	—	—	—	—	—	Tray1:36	epa1613_als	Dioxin_ALS	—	—
37	—	—	—	—	—	Tray1:37	epa1613_als	Dioxin_ALS	—	—
38	—	—	—	—	—	Tray1:38	epa1613_als	Dioxin_ALS	—	—
39	—	—	—	—	—	Tray1:39	epa1613_als	Dioxin_ALS	—	—

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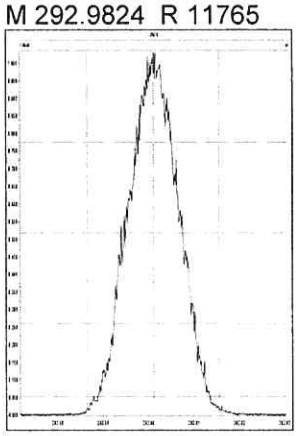

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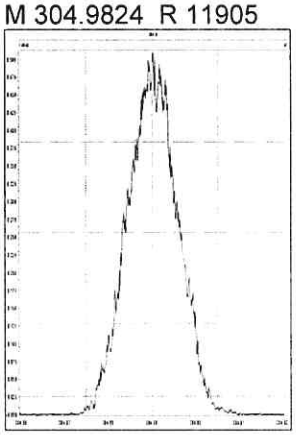

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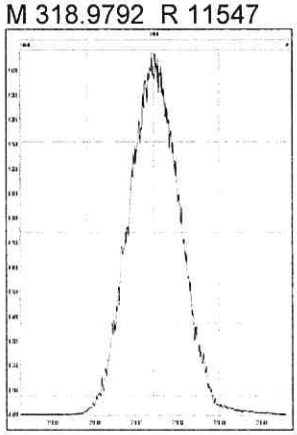

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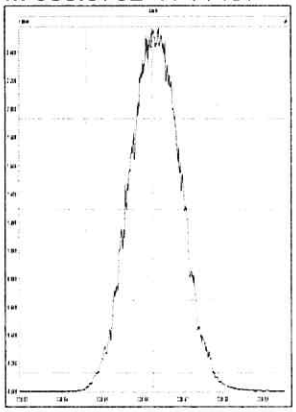

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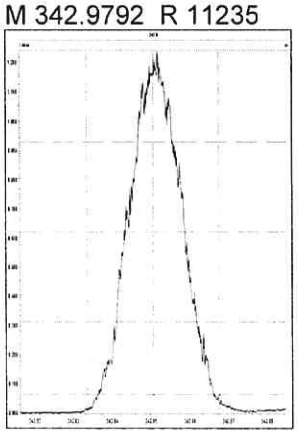

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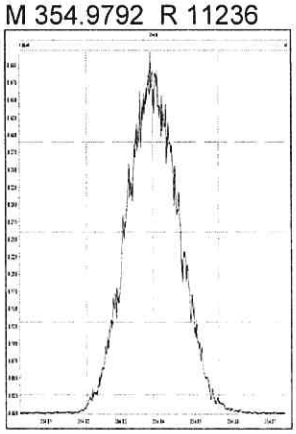

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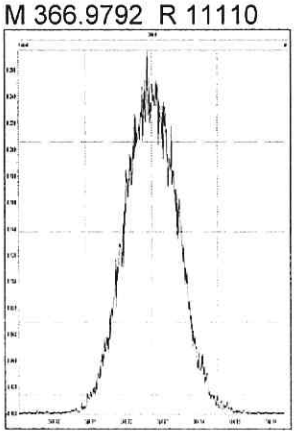

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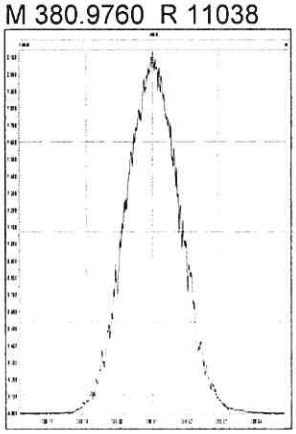

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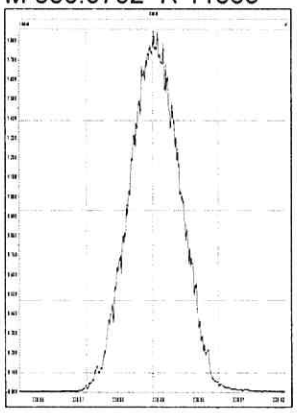

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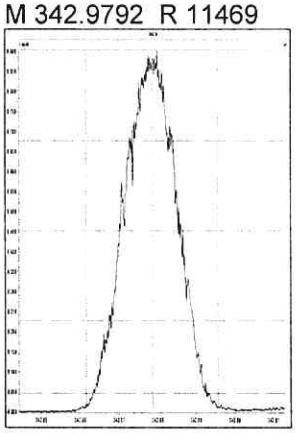

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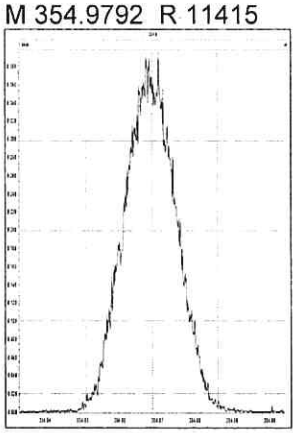

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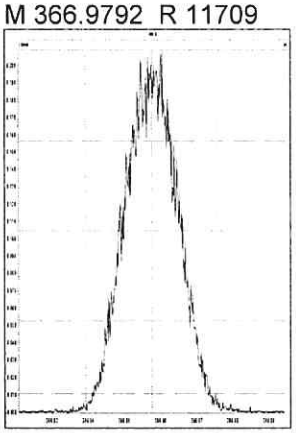

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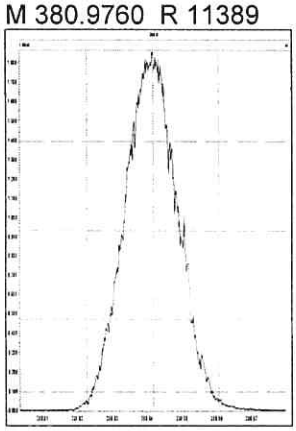

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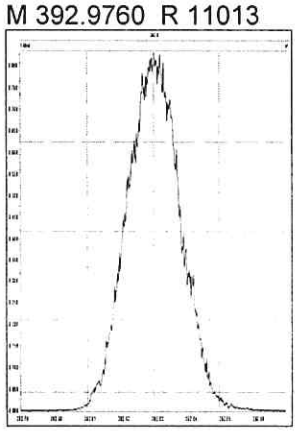

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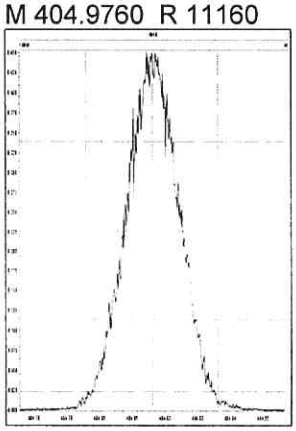

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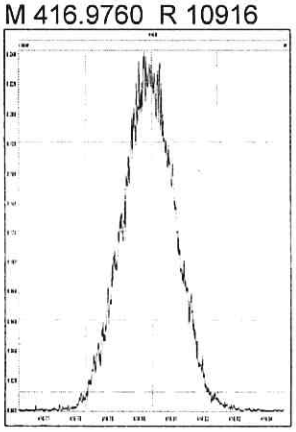

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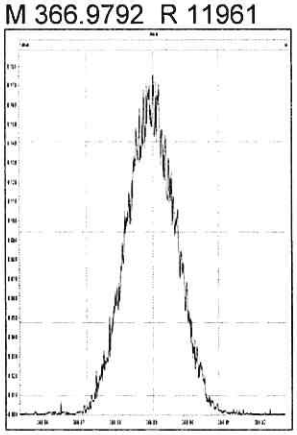
M 366.9792 R 11961



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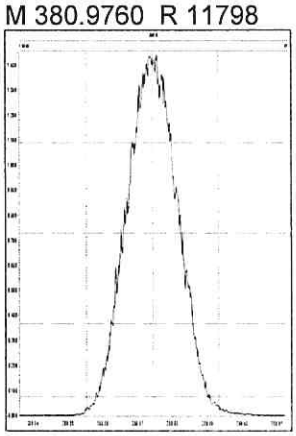

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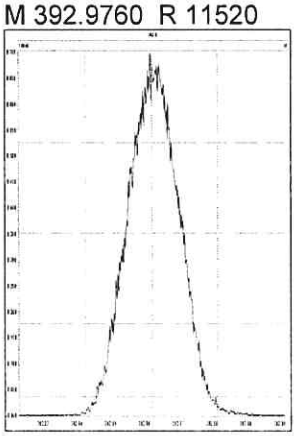

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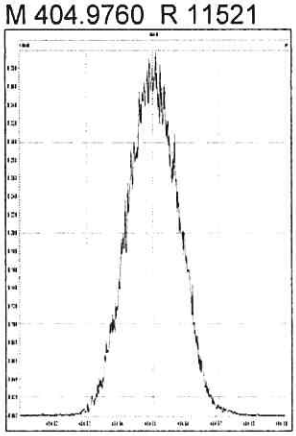

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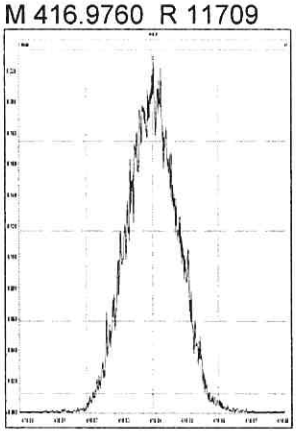

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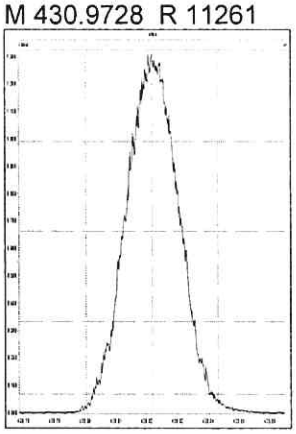
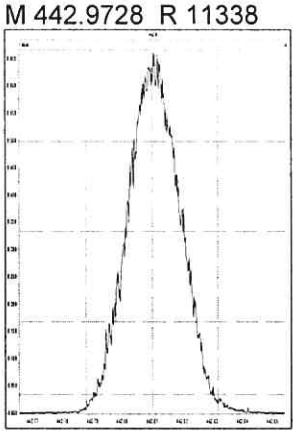


M 442.9728 R 11338



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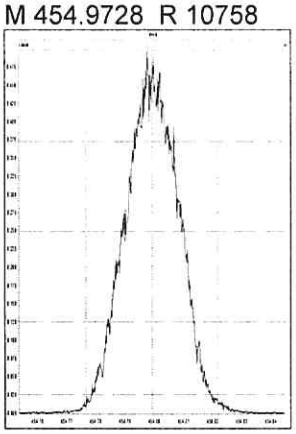

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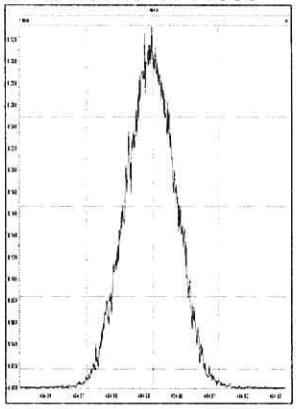

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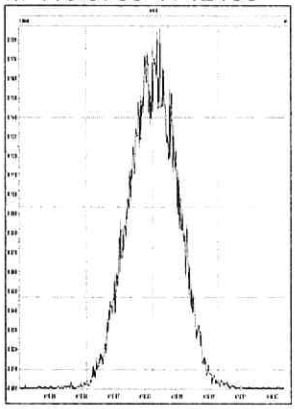

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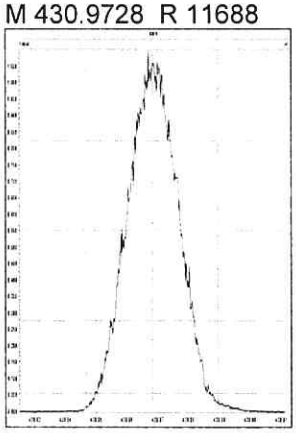

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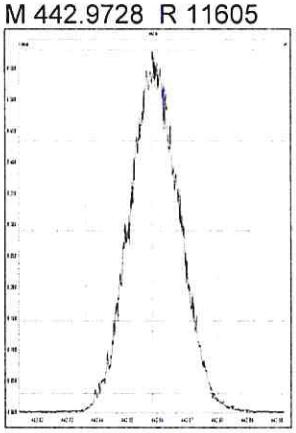

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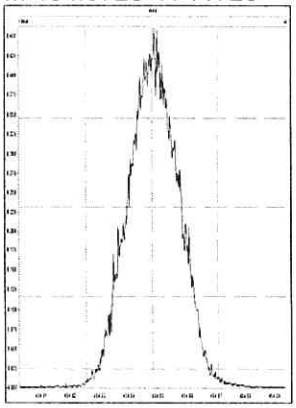

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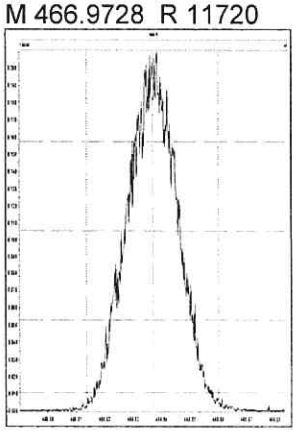

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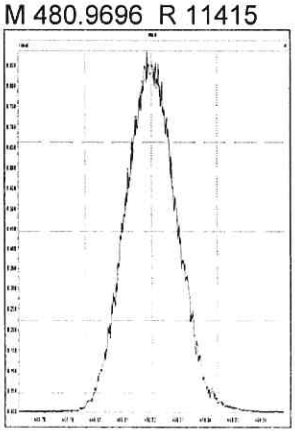

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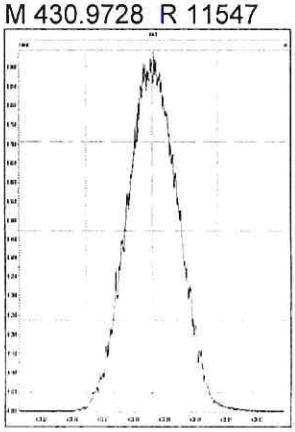

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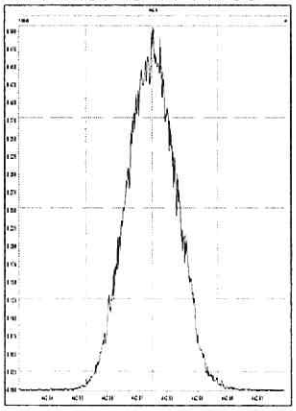

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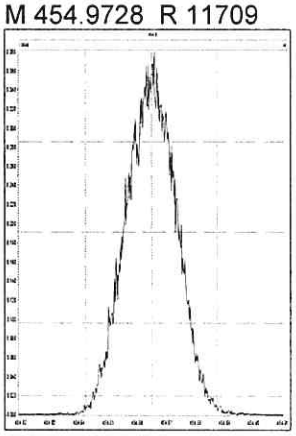

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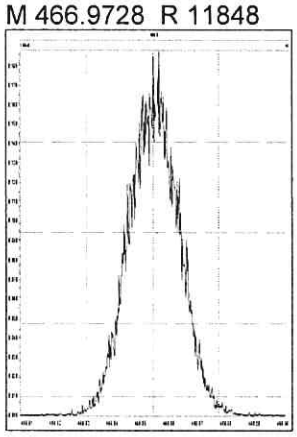
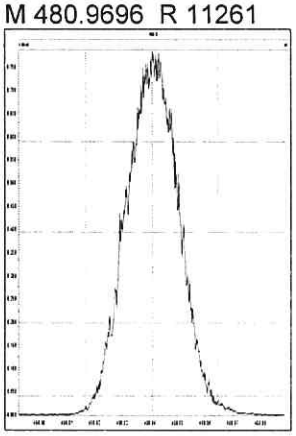
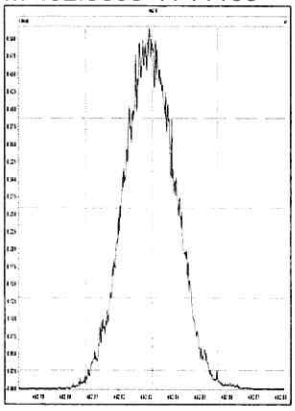


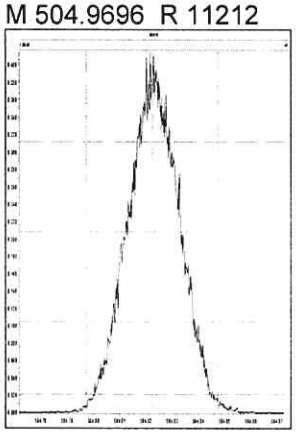
M 480.9696 R 11261



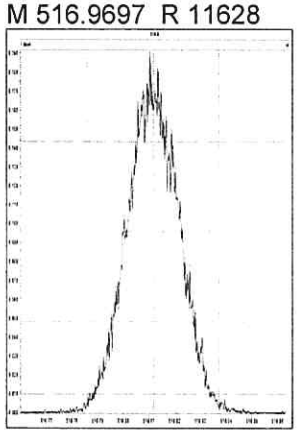
M 492.9696 R 11135



M 504.9696 R 11212



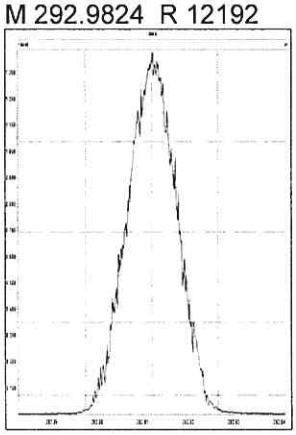
M 516.9697 R 11628



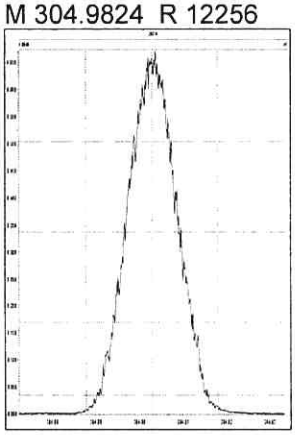
File: Experiment: EPA1613_ALS.exp Reference: Pfk.ref Function: 1 @ 200 (ppm)

Printed: Tuesday, September 19, 2017 15:29:18 Central Daylight Time

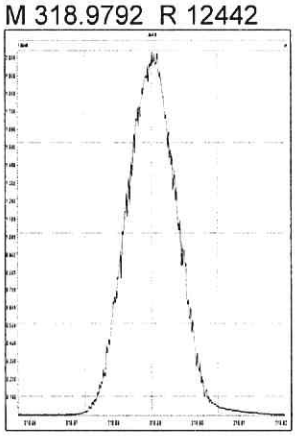
M 292.9824 R 12192



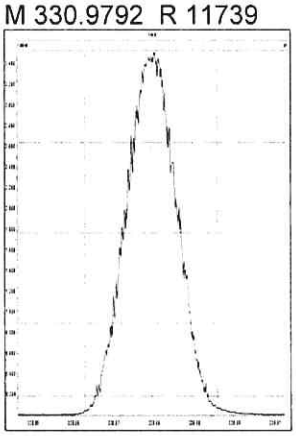
M 304.9824 R 12256



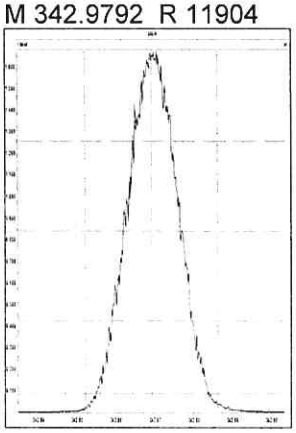
M 318.9792 R 12442



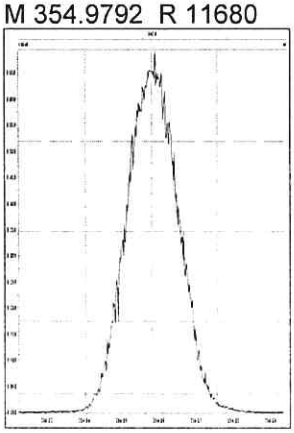
M 330.9792 R 11739



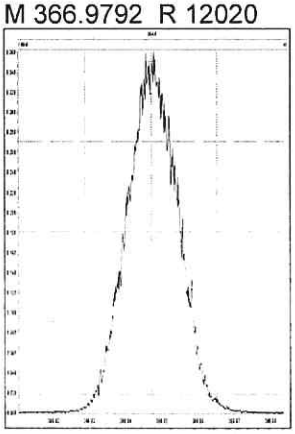
M 342.9792 R 11904



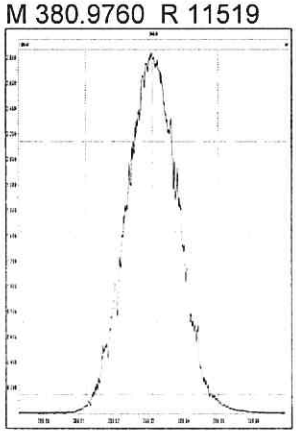
M 354.9792 R 11680



M 366.9792 R 12020



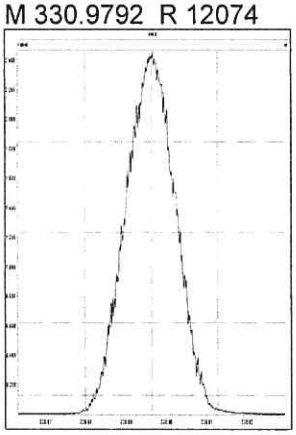
M 380.9760 R 11519



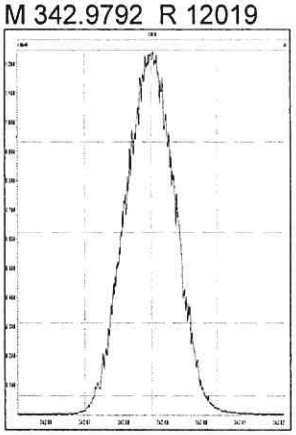
File: Experiment: EPA1613_ALS.exp Reference: Pfk.ref Function: 2 @ 200 (ppm)

Printed: Tuesday, September 19, 2017 15:30:52 Central Daylight Time

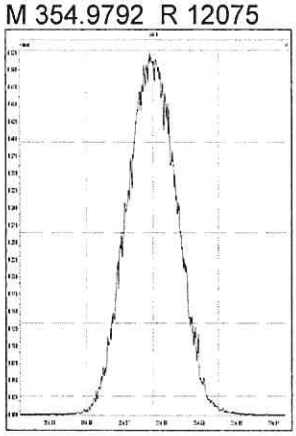
M 330.9792 R 12074



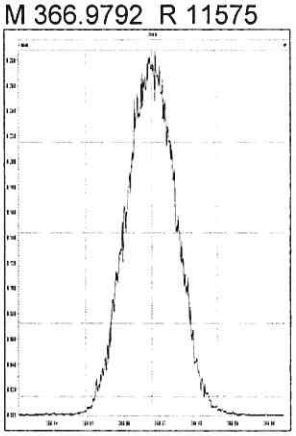
M 342.9792 R 12019



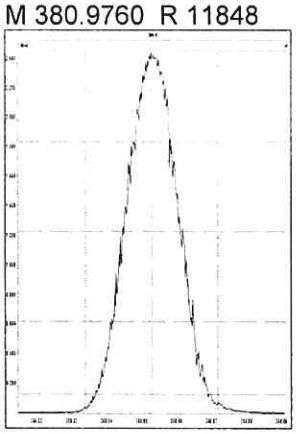
M 354.9792 R 12075



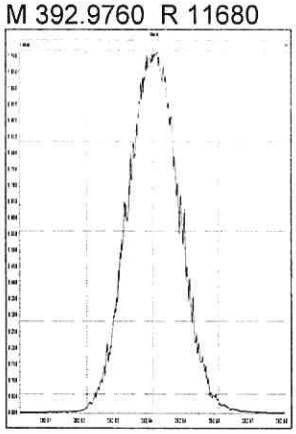
M 366.9792 R 11575



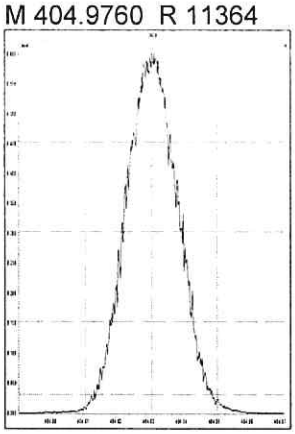
M 380.9760 R 11848



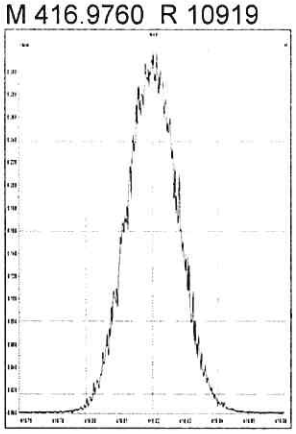
M 392.9760 R 11680



M 404.9760 R 11364



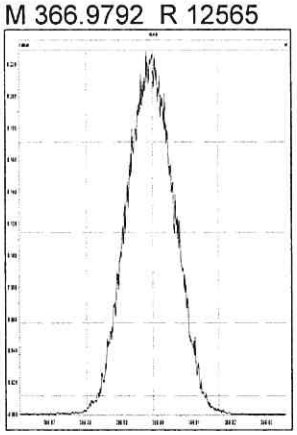
M 416.9760 R 10919



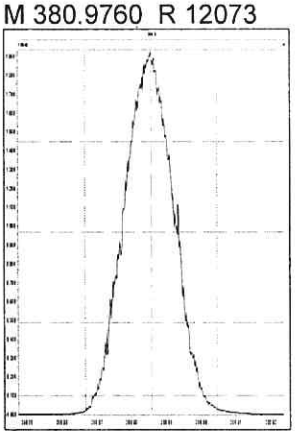
File: Experiment: EPA1613_ALS.exp Reference: Pfk.ref Function: 3 @ 200 (ppm)

Printed: Tuesday, September 19, 2017 15:32:13 Central Daylight Time

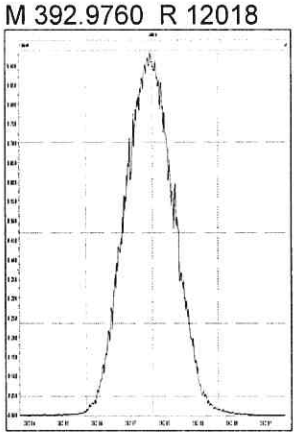
M 366.9792 R 12565



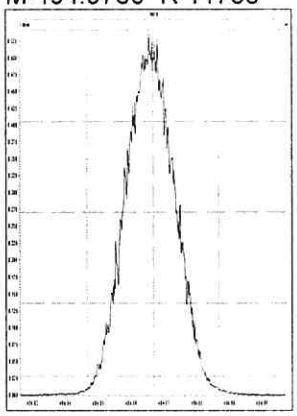
M 380.9760 R 12073



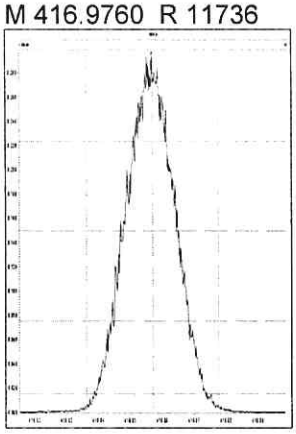
M 392.9760 R 12018



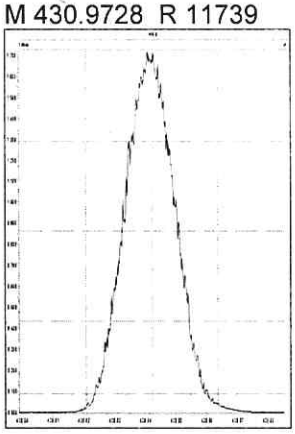
M 404.9760 R 11738



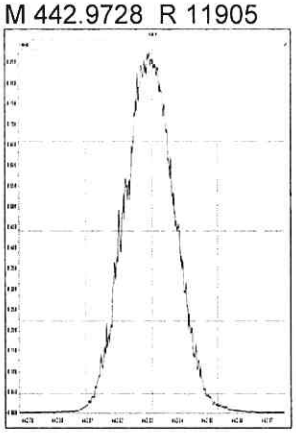
M 416.9760 R 11736



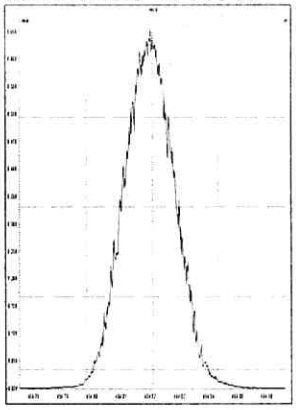
M 430.9728 R 11739



M 442.9728 R 11905



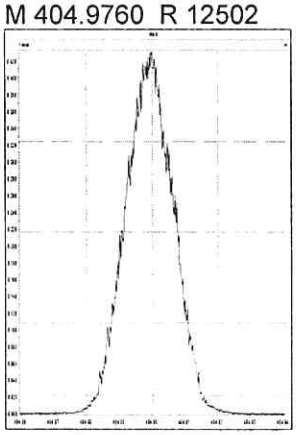
M 454.9728 R 11519



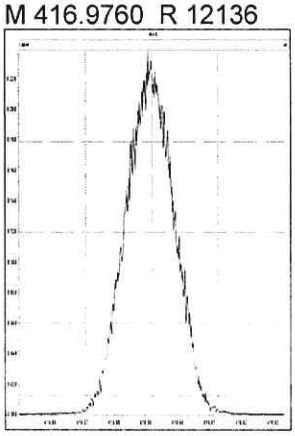
File: Experiment: EPA1613_ALS.exp Reference: Pfk.ref Function: 4 @ 200 (ppm)

Printed: Tuesday, September 19, 2017 15:33:10 Central Daylight Time

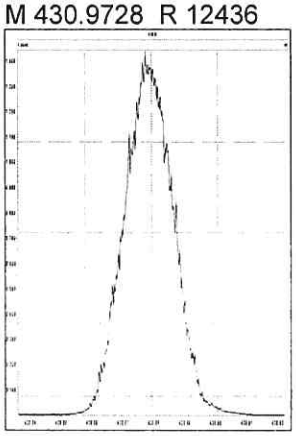
M 404.9760 R 12502



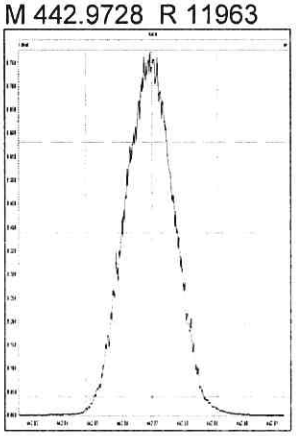
M 416.9760 R 12136



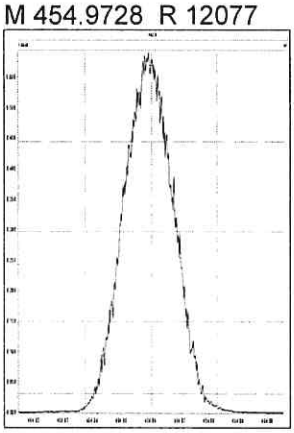
M 430.9728 R 12436



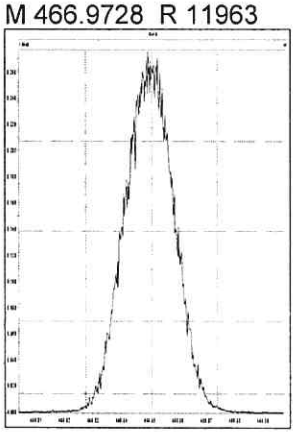
M 442.9728 R 11963



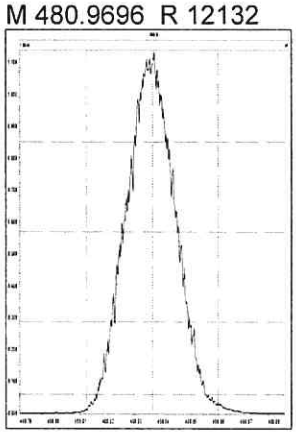
M 454.9728 R 12077



M 466.9728 R 11963



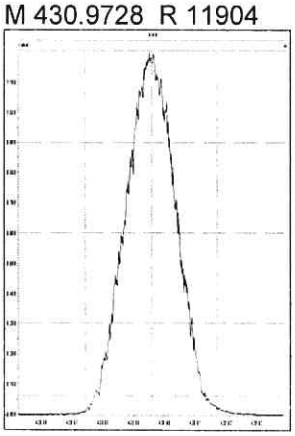
M 480.9696 R 12132



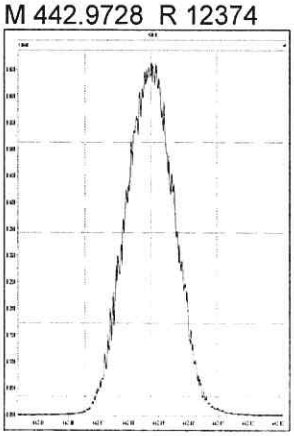
File: Experiment: EPA1613_ALS.exp Reference: Pfk.ref Function: 5 @ 200 (ppm)

Printed: Tuesday, September 19, 2017 15:34:08 Central Daylight Time

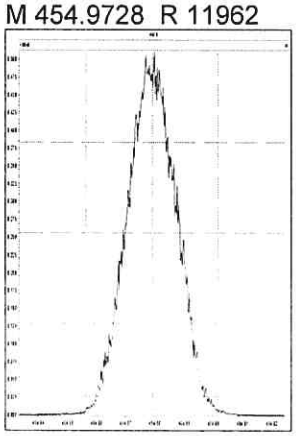
M 430.9728 R 11904



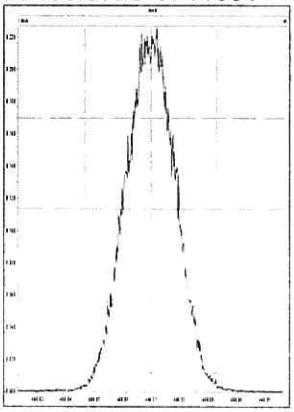
M 442.9728 R 12374



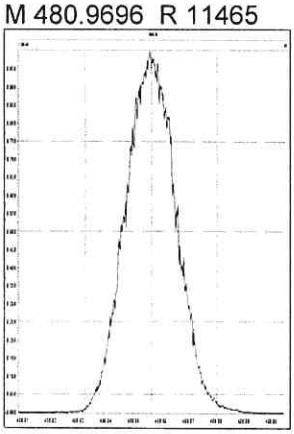
M 454.9728 R 11962



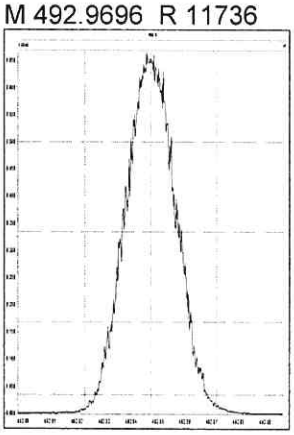
M 466.9728 R 11681



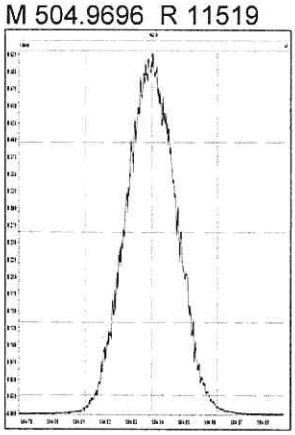
M 480.9696 R 11465



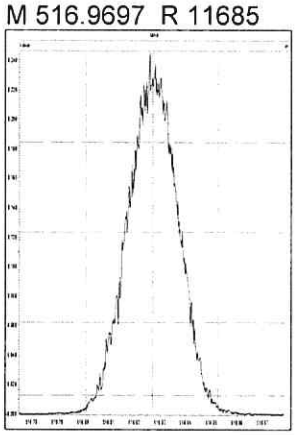
M 492.9696 R 11736



M 504.9696 R 11519



M 516.9697 R 11685



WINDOW DEFINING MIX SUMMARY

CLIENT ID:

WDM

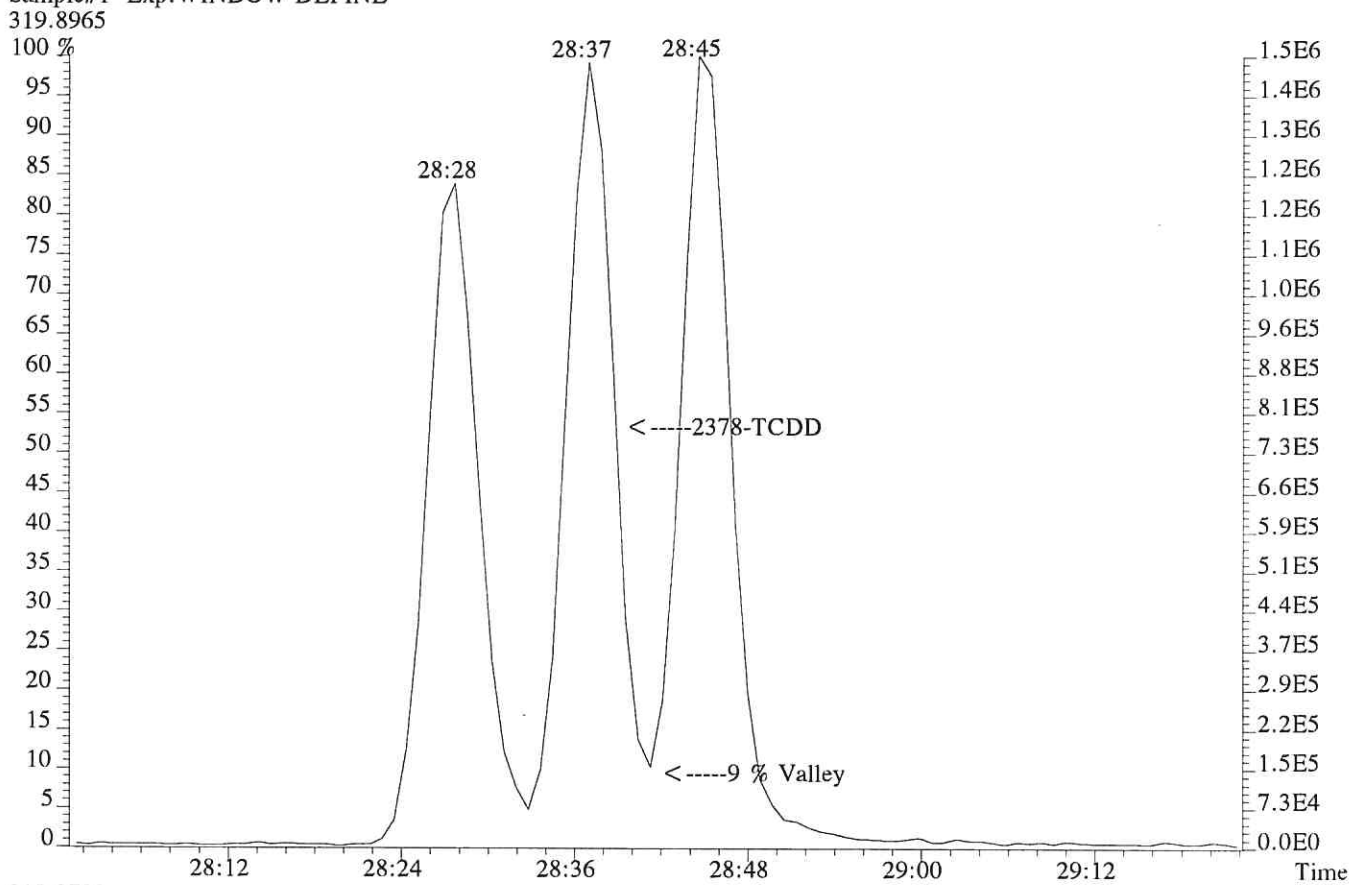
Lab Name: ALS Environmental
Lab Code: ALSTX
GC Column: DB-5MSUI

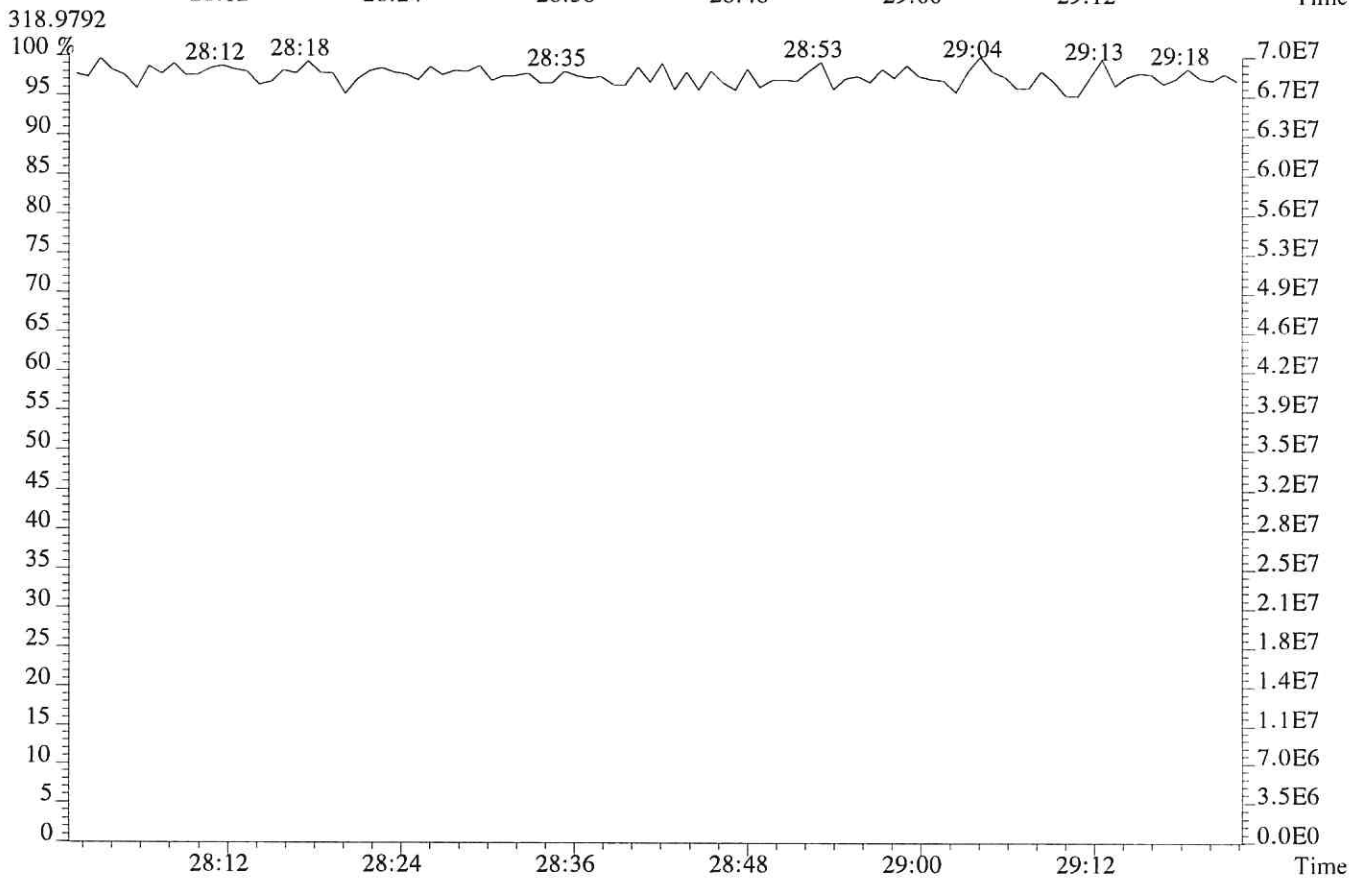
Case No.: _____ SDG No.:
ID: 0.25 (mm)
Lab File ID: P407961
Date Analyzed: 19-SEP-17
Time Analyzed: 05:00:22

Congener	Retention Time First Eluting	Retention Time Last Eluting
TCDF	23:23	29:48
TCDD	25:13	29:38
PeCDF	29:43	34:00
PeCDD	31:16	33:44
HxCDF	34:38	37:07
HxCDD	35:09	36:43
HpCDF	38:19	39:41
HpCDD	38:33	39:13

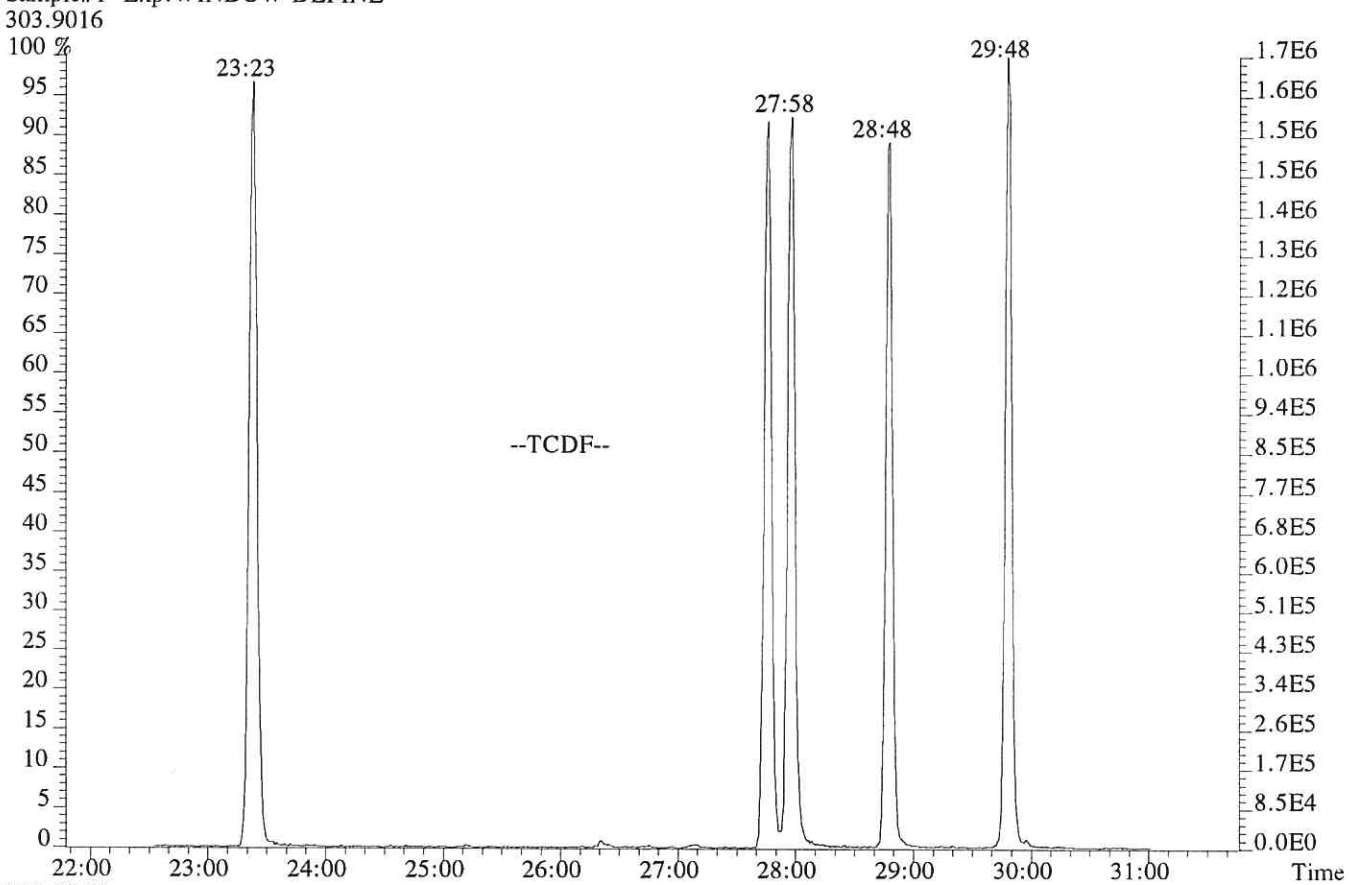
% Valley 2378-TCDD: 9 %

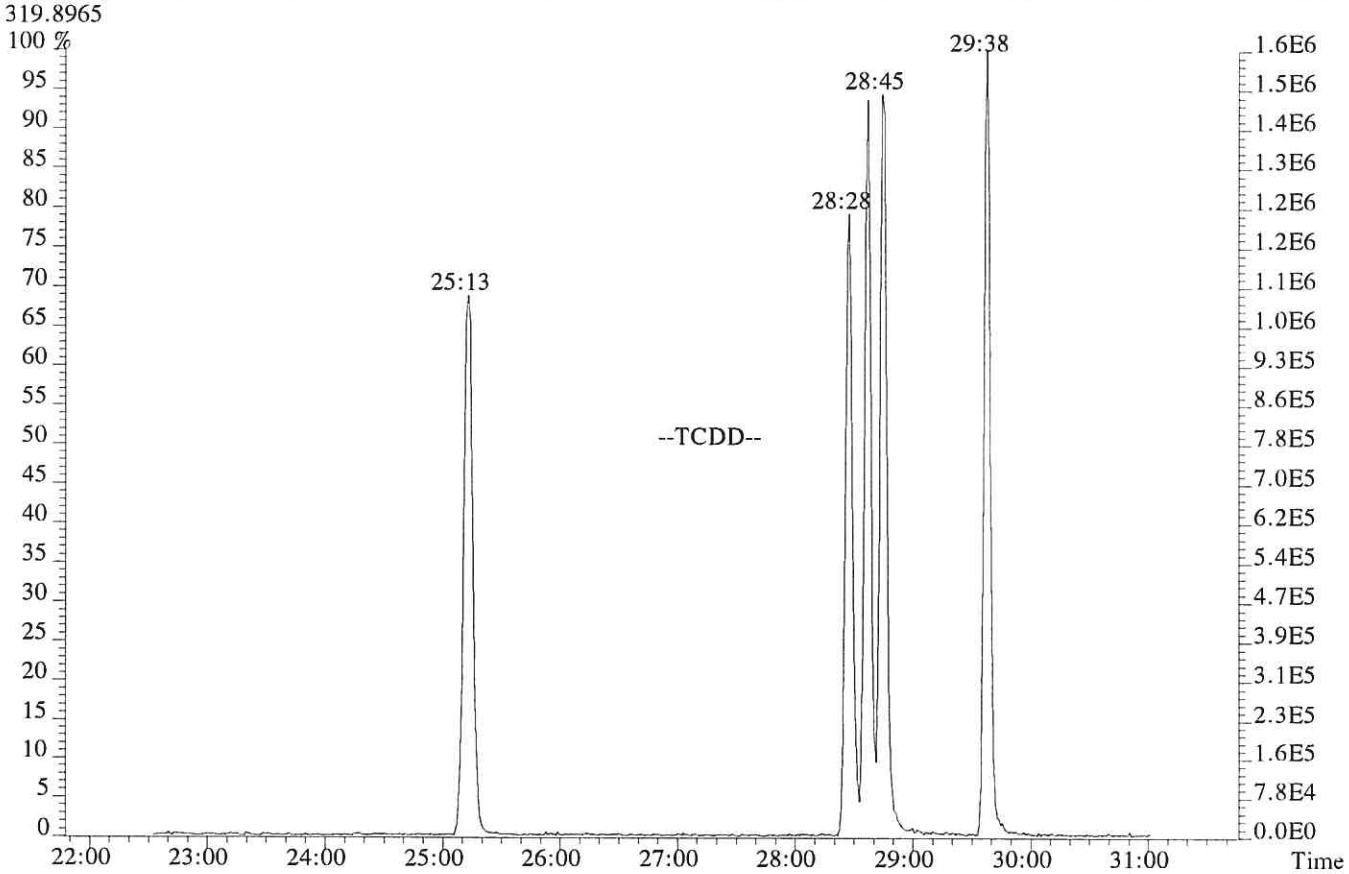
File:P407961 #1-602 Acq:19-SEP-2017 05:00:22 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE



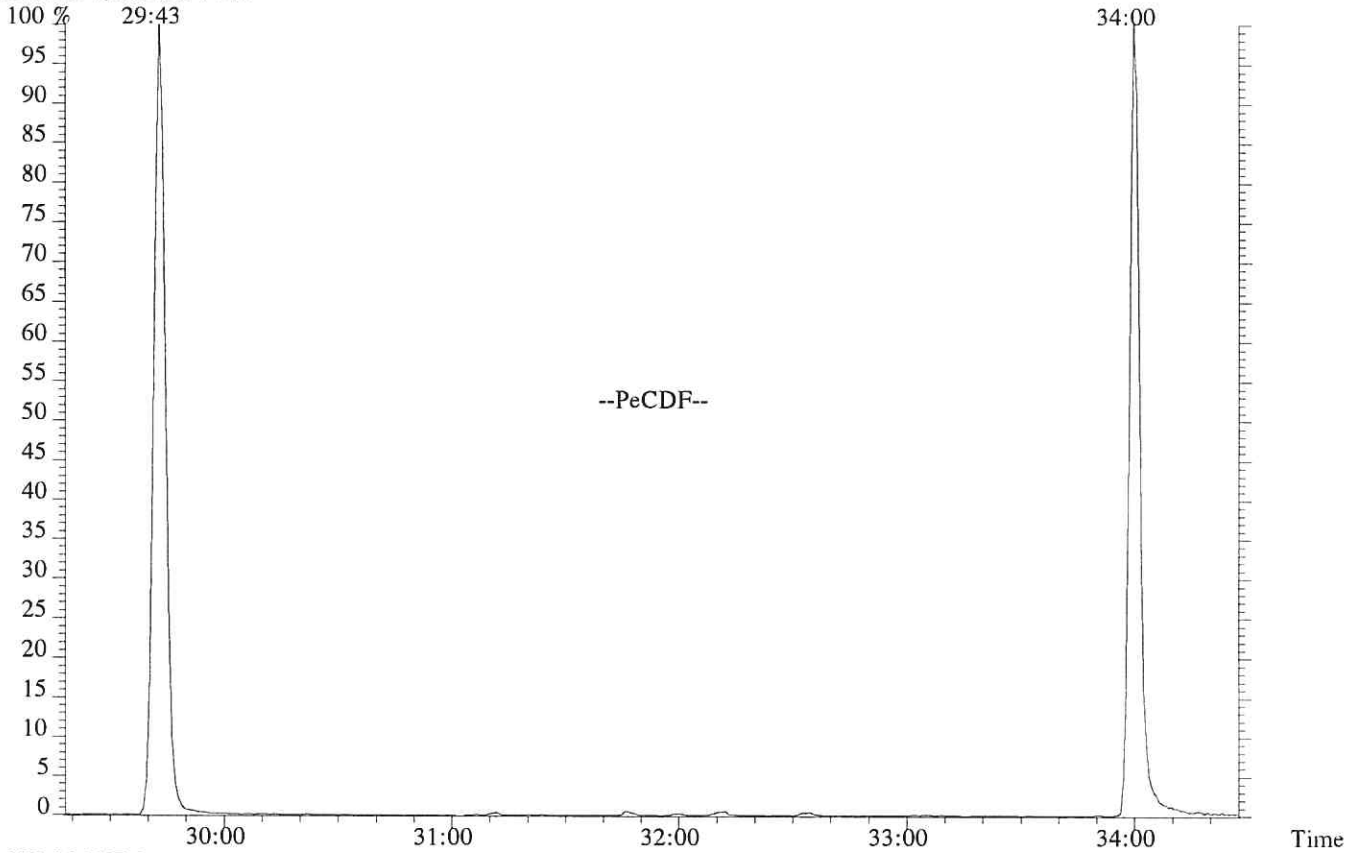


File:P407961 #1-602 Acq:19-SEP-2017 05:00:22 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE

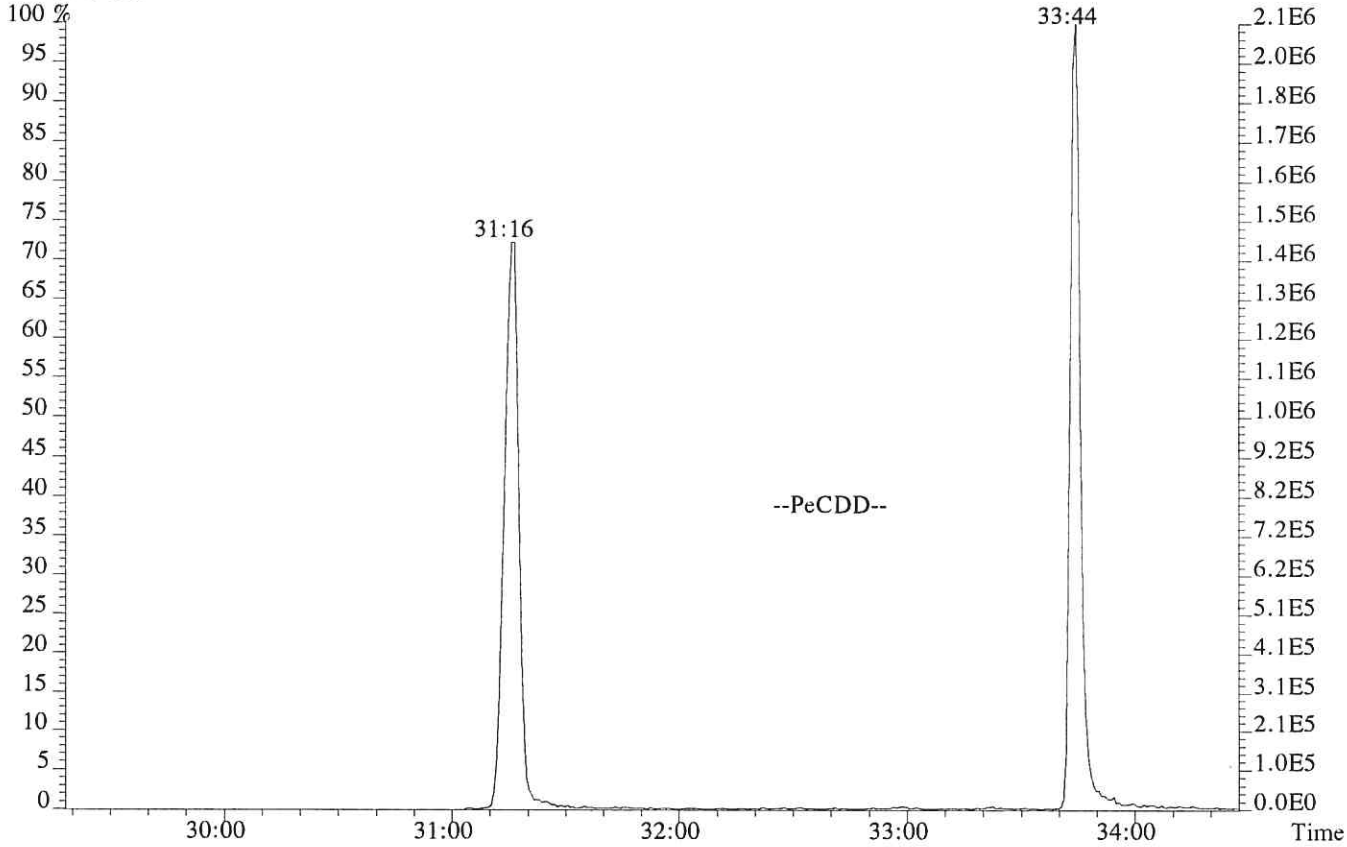




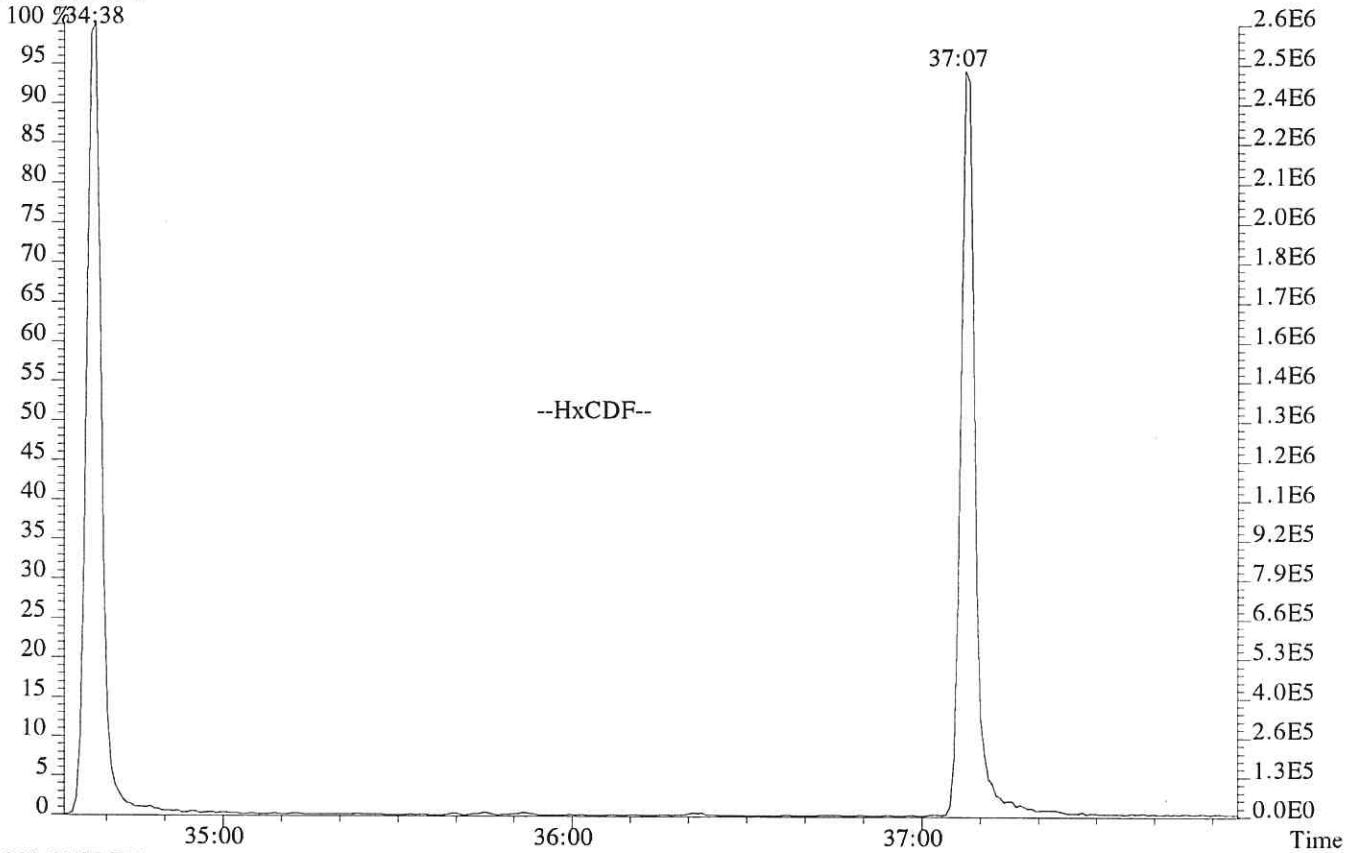
File:P407961 #1-602 Acq:19-SEP-2017 05:00:22 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE
339.8597,339.8597 F:2



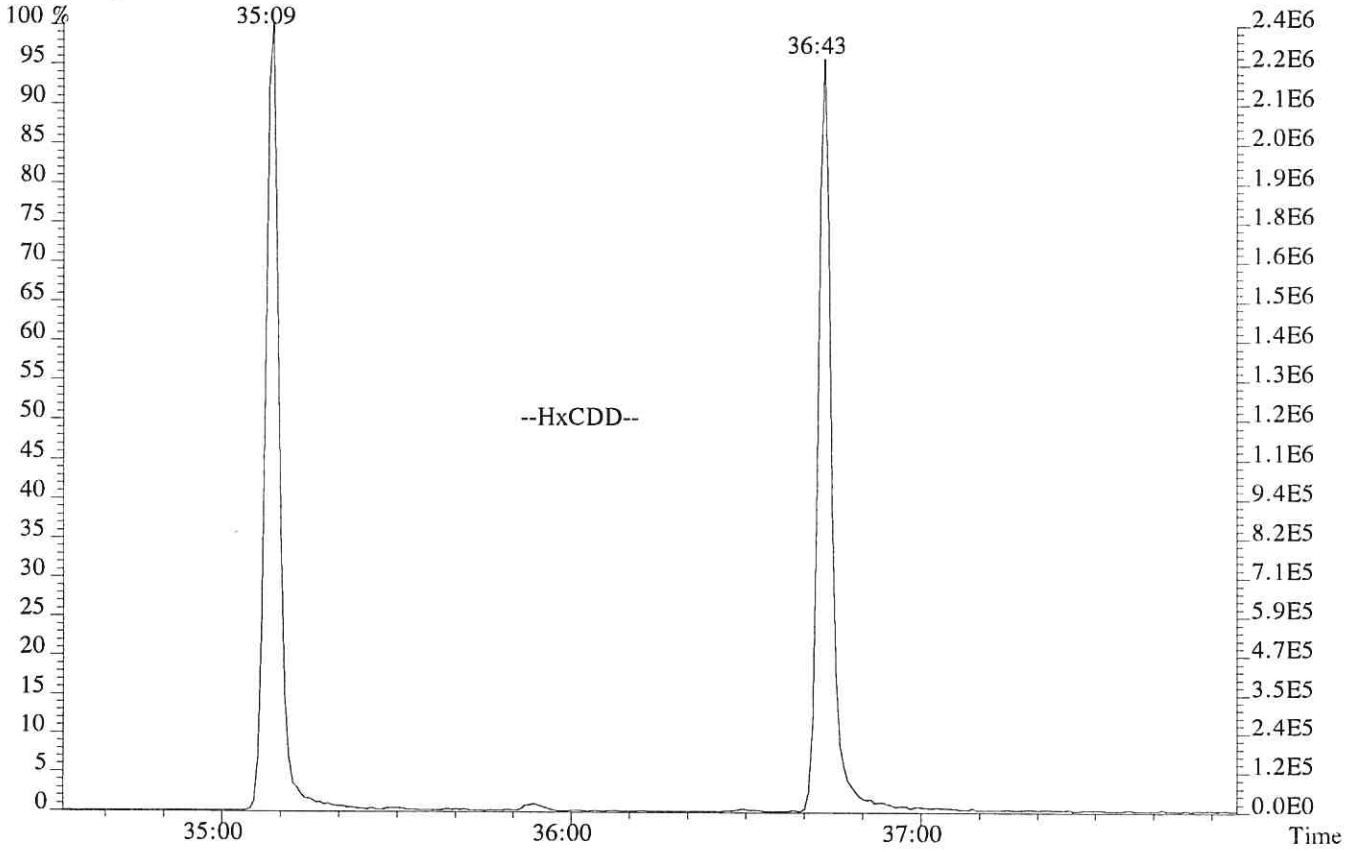
355.8546 F:2



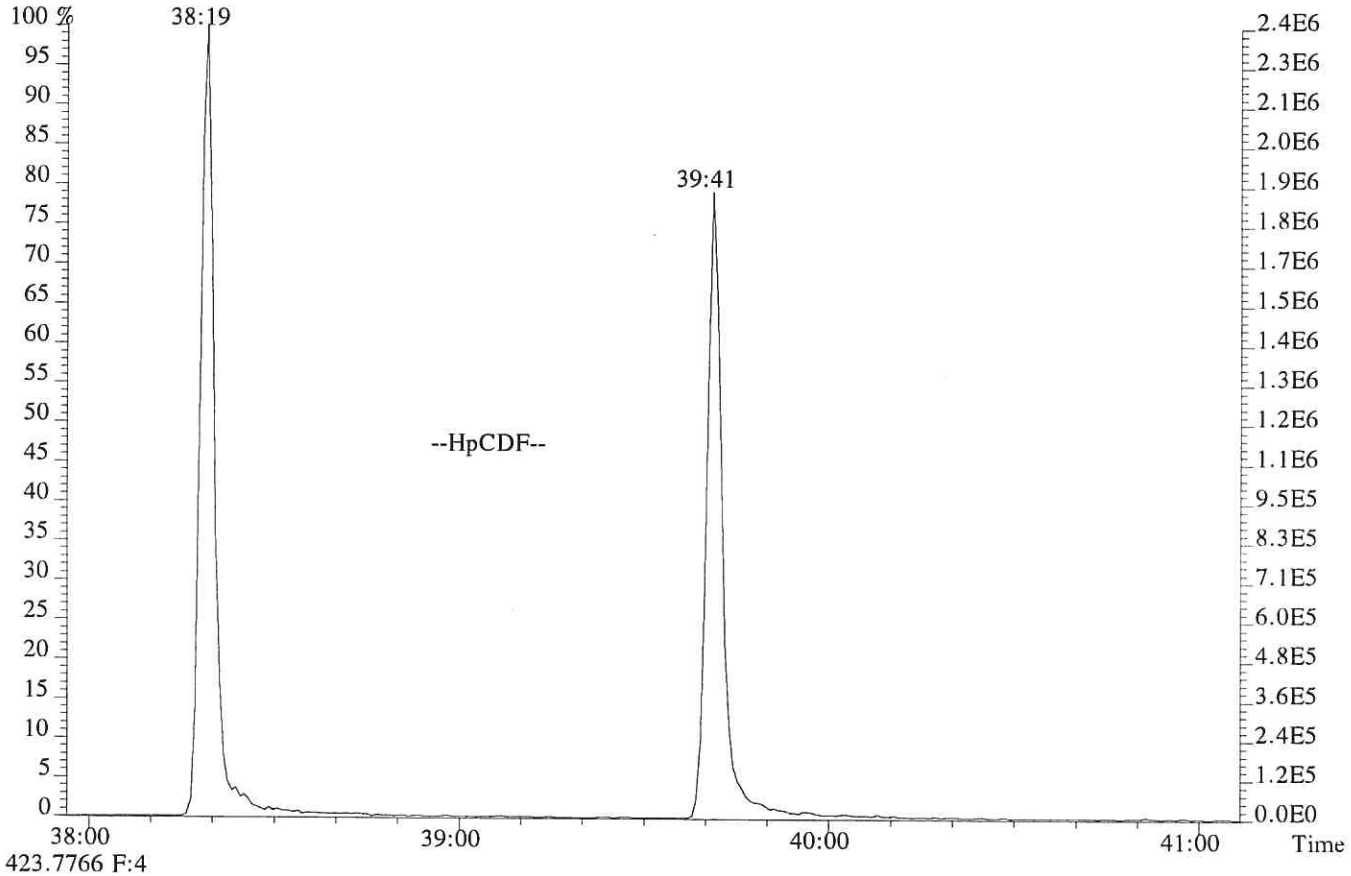
File:P407961 #1-303 Acq:19-SEP-2017 05:00:22 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE
373.8208 F:3



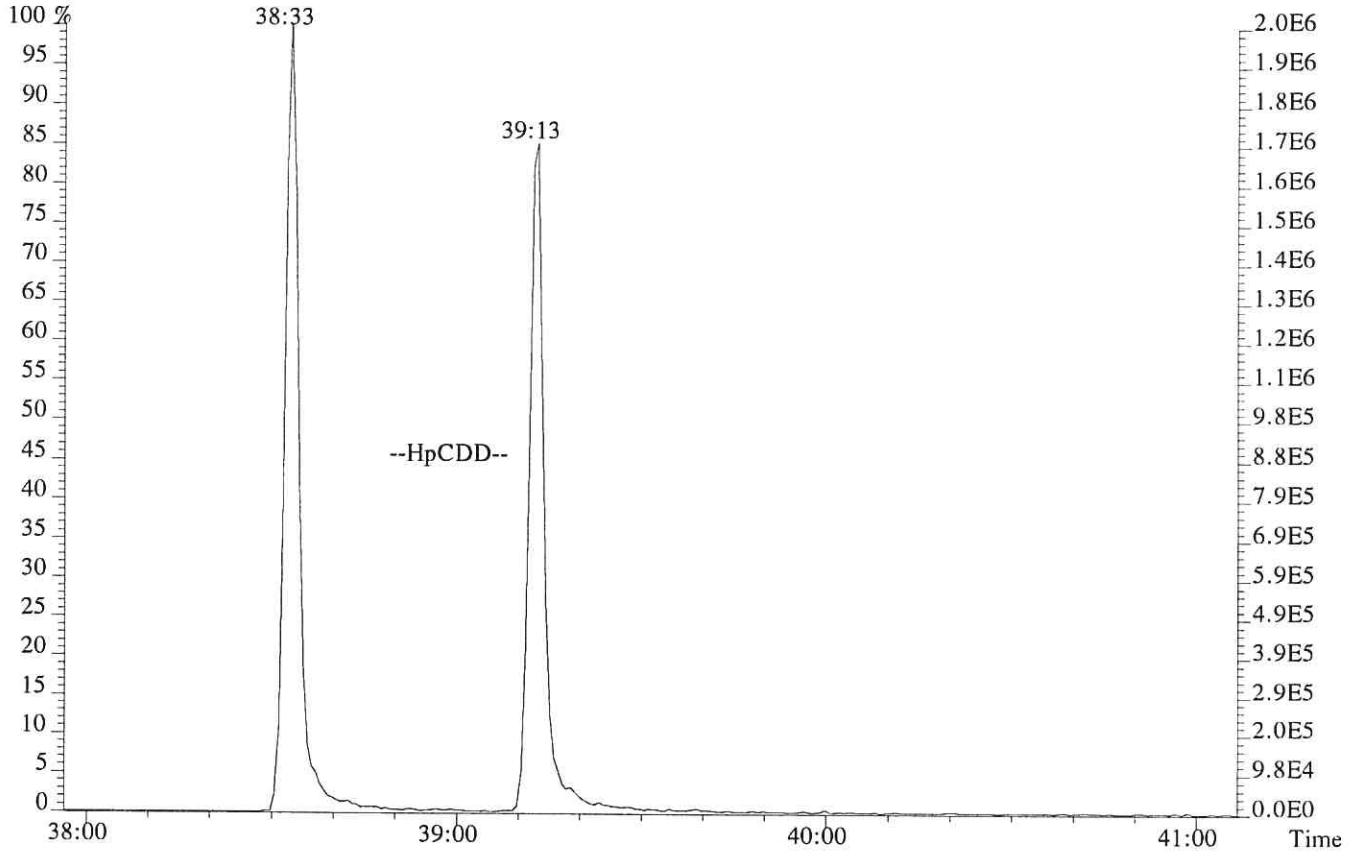
389.8157 F:3



File:P407961 #1-286 Acq:19-SEP-2017 05:00:22 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE
407.7818 F:4



423.7766 F:4



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 09/01/17

Instrument ID: E-HRMS-06 GC Column ID : DB-5MSUI

VER Data Filename: p407962 Analysis Date: 19-SEP-17 Time: 05:48:18

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (4)
2,3,7,8-TCDD	M/M+2	0.76	0.65-0.89	9.1	7.8 - 12.9	-8.8
1,2,3,7,8-PeCDD	M+2/M+4	1.56	1.32-1.78	49	39 - 65	-1.3
1,2,3,4,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	50	39 - 64	0.3
1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	51	39 - 64	1.7
1,2,3,7,8,9-HxCDD	M+2/M+4	1.17	1.05-1.43	51	41 - 61	2.2
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.03	0.88-1.20	50	43 - 58	0.4
OCDD	M+2/M+4	0.89	0.76-1.02	103	79 - 126	2.6
2,3,7,8-TCDF	M/M+2	0.81	0.65-0.89	9.5	8.4 - 12.0	-4.7
1,2,3,7,8-PeCDF	M+2/M+4	1.56	1.32-1.78	49	41 - 60	-1.2
2,3,4,7,8-PeCDF	M+2/M+4	1.54	1.32-1.78	49	41 - 61	-2.3
1,2,3,4,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	48	45 - 56	-3.8
1,2,3,6,7,8-HxCDF	M+2/M+4	1.24	1.05-1.43	47	44 - 57	-6.6
1,2,3,7,8,9-HxCDF	M+2/M+4	1.26	1.05-1.43	48	45 - 56	-4.5
2,3,4,6,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	49	44 - 57	-2.7
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.02	0.88-1.20	48	45 - 55	-4.1
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.03	0.88-1.20	47	43 - 58	-5.4
OCDF	M+2/M+4	0.88	0.76-1.02	106	63 - 159	5.7

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range as specified in Table 6, Method 1613B, under VER.

(4) The beginning CCAL %RSD for the 17 unlabeled standard must not exceed +/- 20%, Section 7.7.4.1. The ending CCAL must not exceed +/-25%, Section 8.3.2.4, Method 8290

12/2012
1613F4A.FRM

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 09/01/17

Instrument ID: E-HRMS-06 GC Column ID : DB-5MSUI

VER Data Filename: p407962 Analysis Date: 19-SEP-17 Time: 05:48:18

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (5)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	102	82 - 121	2.0
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.55	1.32-1.78	104	62 - 160	4.5
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	90	85 - 117	-10.2
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	96	85 - 118	-3.7
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88-1.20	98	72 - 138	-1.8
13C-OCDD	M+2/M+4	0.91	0.76-1.02	196	96 - 415	-2.0
13C-2,3,7,8-TCDF	M/M+2	0.78	0.65-0.89	97	71 - 140	-2.7
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	102	76 - 130	1.5
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.56	1.32-1.78	104	77 - 130	4.4
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.51	0.43-0.59	87	76 - 131	-12.7
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.51	0.43-0.59	99	70 - 143	-1.5
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.52	0.43-0.59	98	74 - 135	-2.0
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.53	0.43-0.59	95	73 - 137	-5.3
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.44	0.37-0.51	93	78 - 129	-6.6
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.44	0.37-0.51	99	77 - 129	-0.6
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	M+2/M+4			9.8	7.8 - 12.7	-2.0

(1) See Table 8, Method 1613B, for m/z specifications.
(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.
(3) Contract-required concentration range, as specified in Table 6, Method 1613B, under VER.
(4) No ion abundance ratio; report concentration found.
(5) The beginnning CCAL %RSD for the labeled standard must not exceed +/- 30% Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Sec 8.3.2.4 (8290)

12/2012
1613F4B.FRM

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
178398

Run #7 Filename p407962 Samp: 1 Inj: 1 Acquired: 19-SEP-17 05:48:18
Processed: 19-SEP-17 14:26:33 Sample ID: CS3

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	27:58	2.398e+03	2.945e+03	0.81	yes	no	0.885
2	Unk	1,2,3,7,8-PeCDF	32:11	1.973e+04	1.265e+04	1.56	yes	no	0.984
3	Unk	2,3,4,7,8-PeCDF	33:06	1.856e+04	1.202e+04	1.54	yes	no	0.943
4	Unk	1,2,3,4,7,8-HxCDF	35:45	1.668e+04	1.361e+04	1.23	yes	no	1.230
5	Unk	1,2,3,6,7,8-HxCDF	35:51	1.882e+04	1.516e+04	1.24	yes	no	1.148
6	Unk	2,3,4,6,7,8-HxCDF	36:21	1.702e+04	1.394e+04	1.22	yes	no	1.133
7	Unk	1,2,3,7,8,9-HxCDF	37:07	1.542e+04	1.228e+04	1.26	yes	no	1.172
8	Unk	1,2,3,4,6,7,8-HpCDF	38:20	1.504e+04	1.468e+04	1.02	yes	no	1.377
9	Unk	1,2,3,4,7,8,9-HpCDF	39:42	1.234e+04	1.200e+04	1.03	yes	no	1.301
10	Unk	OCDF	42:07	1.976e+04	2.256e+04	0.88	yes	no	1.114
11	Unk	2,3,7,8-TCDD	28:45	2.057e+03	2.708e+03	0.76	yes	no	0.966
12	Unk	1,2,3,7,8-PeCDD	33:22	1.440e+04	9.212e+03	1.56	yes	no	0.851
13	Unk	1,2,3,4,7,8-HxCDD	36:29	1.277e+04	1.031e+04	1.24	yes	no	0.966
14	Unk	1,2,3,6,7,8-HxCDD	36:35	1.363e+04	1.082e+04	1.26	yes	no	0.938
15	Unk	1,2,3,7,8,9-HxCDD	36:49	1.337e+04	1.140e+04	1.17	yes	no	0.980
16	Unk	1,2,3,4,6,7,8-HpCDD	39:13	1.144e+04	1.112e+04	1.03	yes	no	0.975
17	Unk	OCDD	41:54	1.794e+04	2.020e+04	0.89	yes	no	1.033
18	IS	13C-2,3,7,8-TCDF	27:57	2.768e+04	3.567e+04	0.78	yes	no	1.176
19	IS	13C-1,2,3,7,8-PeCDF	32:10	4.077e+04	2.583e+04	1.58	yes	no	1.185
20	IS	13C-2,3,4,7,8-PeCDF	33:05	4.045e+04	2.593e+04	1.56	yes	no	1.149
21	IS	13C-1,2,3,4,7,8-HxCDF	35:44	1.726e+04	3.395e+04	0.51	yes	no	1.068
22	IS	13C-1,2,3,6,7,8-HxCDF	35:51	2.151e+04	4.186e+04	0.51	yes	no	1.171
23	IS	13C-2,3,4,6,7,8-HxCDF	36:21	1.936e+04	3.679e+04	0.53	yes	no	1.079
24	IS	13C-1,2,3,7,8,9-HxCDF	37:06	1.696e+04	3.252e+04	0.52	yes	no	0.919
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:19	1.381e+04	3.122e+04	0.44	yes	no	0.877
26	IS	13C-1,2,3,4,7,8,9-HpCDF	39:41	1.198e+04	2.754e+04	0.44	yes	no	0.723
27	IS	13C-2,3,7,8-TCDD	28:44	2.363e+04	3.043e+04	0.78	yes	no	0.958
28	IS	13C-1,2,3,7,8-PeCDD	33:22	3.417e+04	2.206e+04	1.55	yes	no	0.973
29	IS	13C-1,2,3,4,7,8-HxCDD	36:29	2.659e+04	2.107e+04	1.26	yes	no	0.966
30	IS	13C-1,2,3,6,7,8-HxCDD	36:34	2.841e+04	2.285e+04	1.24	yes	no	0.968
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:13	2.358e+04	2.250e+04	1.05	yes	no	0.854
32	IS	13C-OCDD	41:54	3.433e+04	3.758e+04	0.91	yes	no	0.668
33	RS/RT	13C-1,2,3,4-TCDD	28:08	2.444e+04	3.089e+04	0.79	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	36:48	3.026e+04	2.469e+04	1.23	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	28:45	5.377e+03				no	0.992

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Houston, TX 77099
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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
178398

Run #7 Filename p407962 Samp: 1 Inj: 1 Acquired: 19-SEP-17 05:48:18
Processed: 19-SEP-17 14:26:33 LAB. ID: CS3

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	4.39e+05	7.36e+02	6.0e+02	5.54e+05	2.63e+03	2.1e+02
2	1,2,3,7,8-PeCDF	3.67e+06	6.68e+02	5.5e+03	2.33e+06	1.82e+03	1.3e+03
3	2,3,4,7,8-PeCDF	3.55e+06	6.68e+02	5.3e+03	2.28e+06	1.82e+03	1.3e+03
4	1,2,3,4,7,8-HxCDF	3.49e+06	1.22e+03	2.9e+03	2.85e+06	1.20e+03	2.4e+03
5	1,2,3,6,7,8-HxCDF	3.72e+06	1.22e+03	3.1e+03	3.04e+06	1.20e+03	2.5e+03
6	2,3,4,6,7,8-HxCDF	3.46e+06	1.22e+03	2.8e+03	2.89e+06	1.20e+03	2.4e+03
7	1,2,3,7,8,9-HxCDF	3.13e+06	1.22e+03	2.6e+03	2.50e+06	1.20e+03	2.1e+03
8	1,2,3,4,6,7,8-HpCDF	3.29e+06	2.05e+03	1.6e+03	3.15e+06	2.37e+03	1.3e+03
9	1,2,3,4,7,8,9-HpCDF	2.44e+06	2.05e+03	1.2e+03	2.35e+06	2.37e+03	9.9e+02
10	OCDF	3.43e+06	3.24e+02	1.1e+04	3.84e+06	9.76e+02	3.9e+03
11	2,3,7,8-TCDD	3.78e+05	2.36e+03	1.6e+02	5.16e+05	5.20e+02	9.9e+02
12	1,2,3,7,8-PeCDD	2.78e+06	1.12e+03	2.5e+03	1.79e+06	2.36e+02	7.6e+03
13	1,2,3,4,7,8-HxCDD	2.87e+06	2.80e+02	1.0e+04	2.31e+06	8.76e+02	2.6e+03
14	1,2,3,6,7,8-HxCDD	2.78e+06	2.80e+02	9.9e+03	2.20e+06	8.76e+02	2.5e+03
15	1,2,3,7,8,9-HxCDD	2.78e+06	2.80e+02	9.9e+03	2.27e+06	8.76e+02	2.6e+03
16	1,2,3,4,6,7,8-HpCDD	2.27e+06	5.92e+02	3.8e+03	2.24e+06	8.96e+02	2.5e+03
17	OCDD	3.11e+06	1.66e+03	1.9e+03	3.53e+06	6.52e+02	5.4e+03
18	13C-2,3,7,8-TCDF	5.02e+06	1.41e+04	3.6e+02	6.44e+06	6.11e+03	1.1e+03
19	13C-1,2,3,7,8-PeCDF	7.36e+06	8.40e+02	8.8e+03	4.65e+06	5.88e+02	7.9e+03
20	13C-2,3,4,7,8-PeCDF	7.86e+06	8.40e+02	9.4e+03	5.02e+06	5.88e+02	8.5e+03
21	13C-1,2,3,4,7,8-HxCDF	3.65e+06	8.24e+02	4.4e+03	7.29e+06	1.60e+03	4.5e+03
22	13C-1,2,3,6,7,8-HxCDF	4.21e+06	8.24e+02	5.1e+03	8.21e+06	1.60e+03	5.1e+03
23	13C-2,3,4,6,7,8-HxCDF	4.03e+06	8.24e+02	4.9e+03	7.70e+06	1.60e+03	4.8e+03
24	13C-1,2,3,7,8,9-HxCDF	3.41e+06	8.24e+02	4.1e+03	6.53e+06	1.60e+03	4.1e+03
25	13C-1,2,3,4,6,7,8-HpCDF	3.02e+06	2.19e+03	1.4e+03	6.83e+06	8.08e+02	8.5e+03
26	13C-1,2,3,4,7,8,9-HpCDF	2.36e+06	2.19e+03	1.1e+03	5.40e+06	8.08e+02	6.7e+03
27	13C-2,3,7,8-TCDD	4.45e+06	5.35e+03	8.3e+02	5.78e+06	3.46e+03	1.7e+03
28	13C-1,2,3,7,8-PeCDD	6.69e+06	8.36e+02	8.0e+03	4.30e+06	1.40e+03	3.1e+03
29	13C-1,2,3,4,7,8-HxCDD	5.96e+06	2.06e+03	2.9e+03	4.69e+06	9.88e+02	4.7e+03
30	13C-1,2,3,6,7,8-HxCDD	5.75e+06	2.06e+03	2.8e+03	4.64e+06	9.88e+02	4.7e+03
31	13C-1,2,3,4,6,7,8-HpCDD	4.71e+06	9.20e+02	5.1e+03	4.52e+06	4.68e+02	9.7e+03
32	13C-OCDD	5.87e+06	4.06e+03	1.4e+03	6.53e+06	6.84e+03	9.5e+02
33	13C-1,2,3,4-TCDD	4.61e+06	5.35e+03	8.6e+02	5.80e+06	3.46e+03	1.7e+03
34	13C-1,2,3,7,8,9-HxCDD	5.98e+06	2.06e+03	2.9e+03	4.90e+06	9.88e+02	5.0e+03
35	37Cl-2,3,7,8-TCDD	1.02e+06	2.35e+03	4.3e+02			

---Sample Calculation---

$$\text{D/L TCDD} = \frac{2.5 \times (2.364e{+}03 + 5.200e{+}02\ ) \times 100}{(4.450e{+}06 + 5.778e{+}06\ ) \times (\qquad\qquad\qquad\qquad) \times 0.966} =$$

ALS ENVIRONMENTAL
10450 Stancliff Rd., Suite 115
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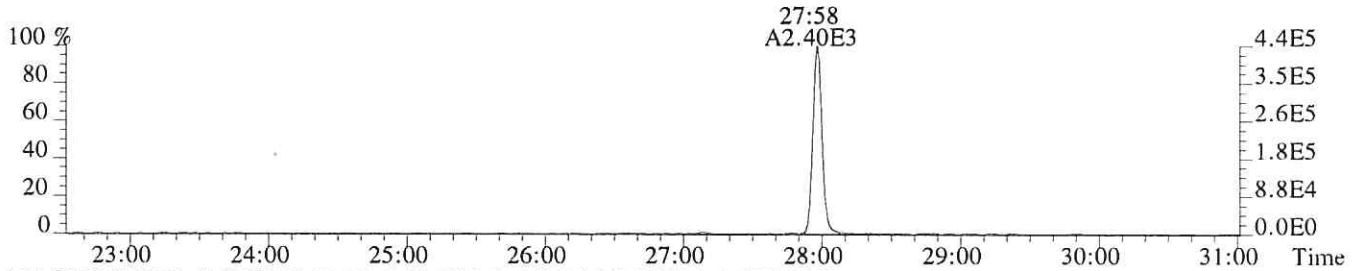
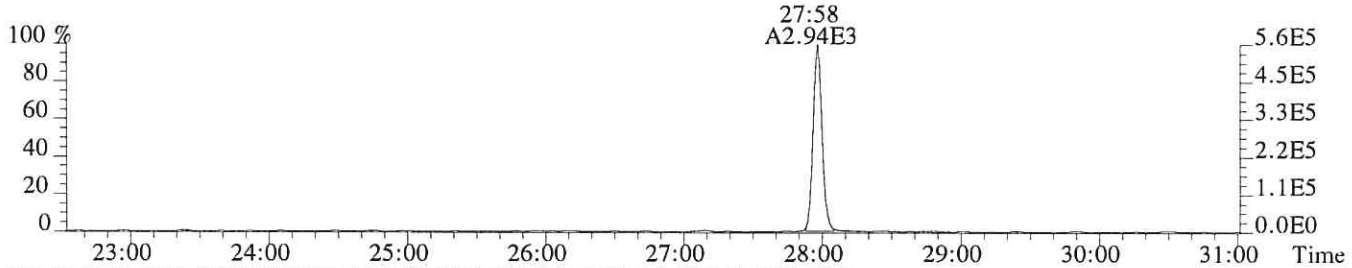
File:P407962 #1-602 Acq:19-SEP-2017 05:48:18 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

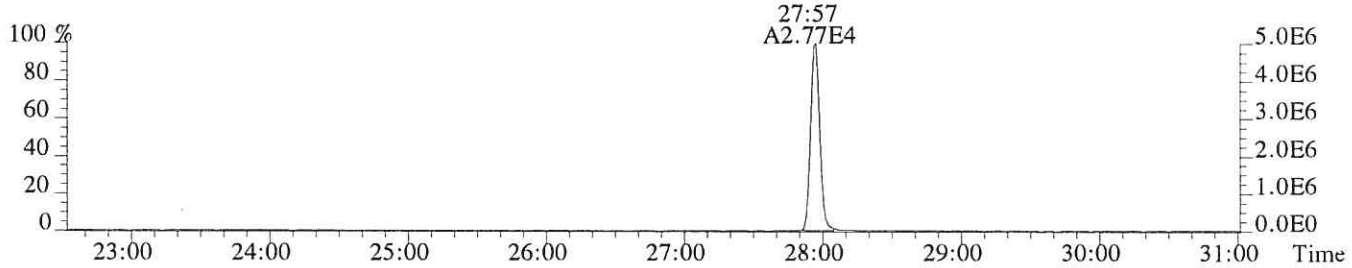
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,736.0,1.00%,F,T)



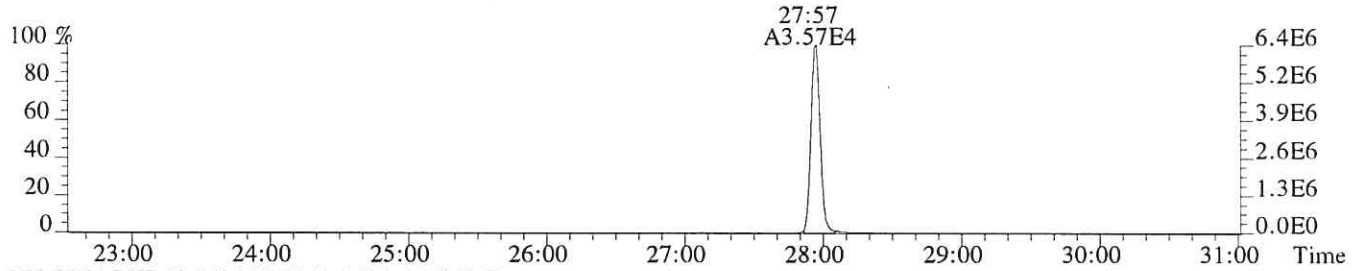
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2628.0,1.00%,F,T)



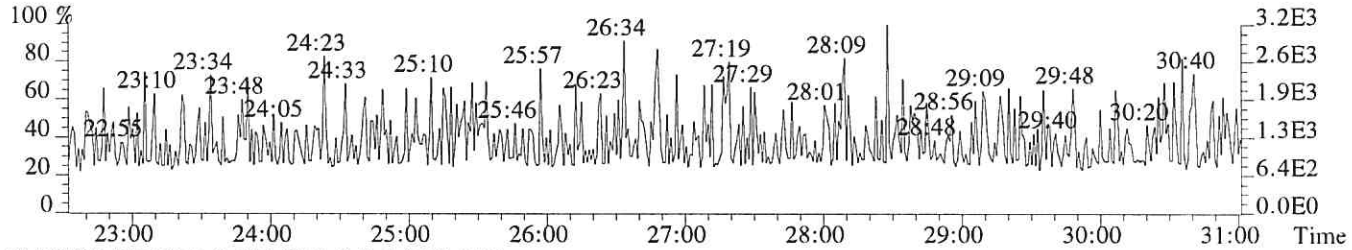
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,14076.0,1.00%,F,T)



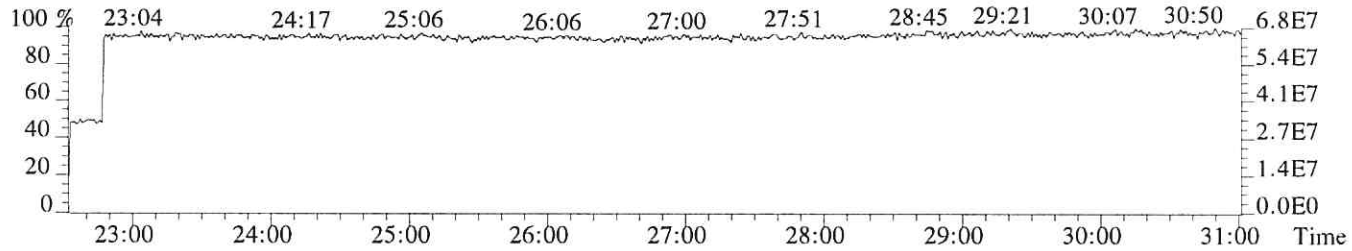
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6112.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

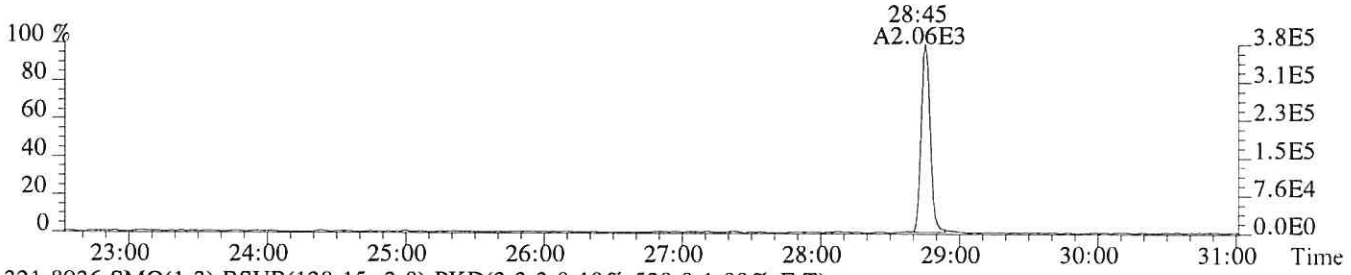


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

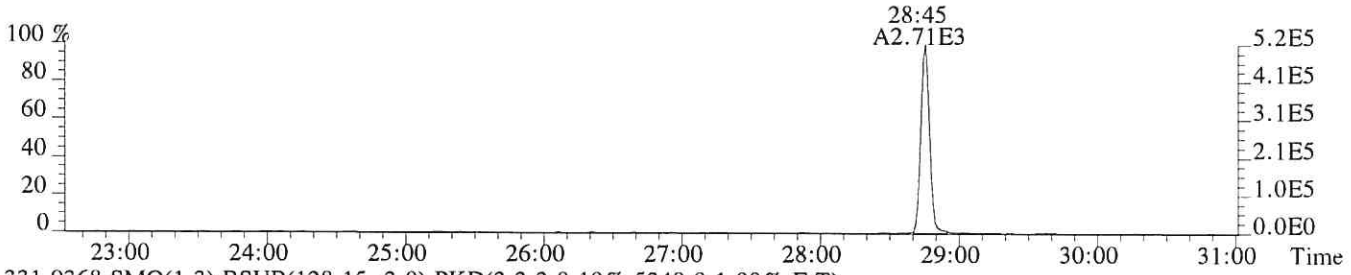


File:P407962 #1-602 Acq:19-SEP-2017 05:48:18 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

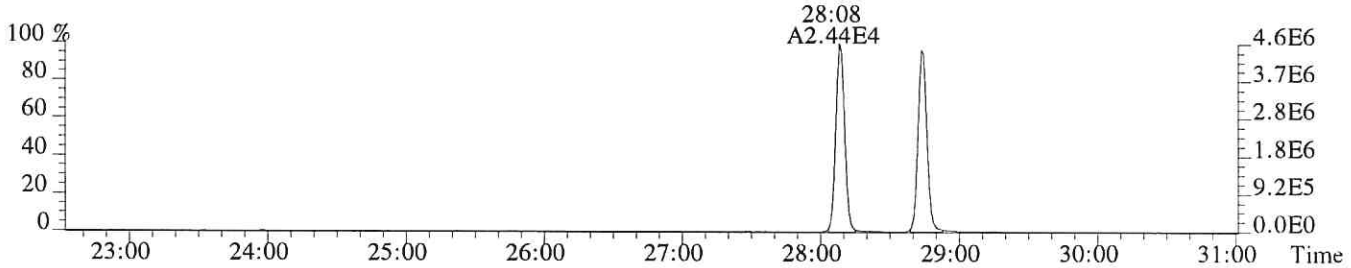
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2364.0,1.00%,F,T)



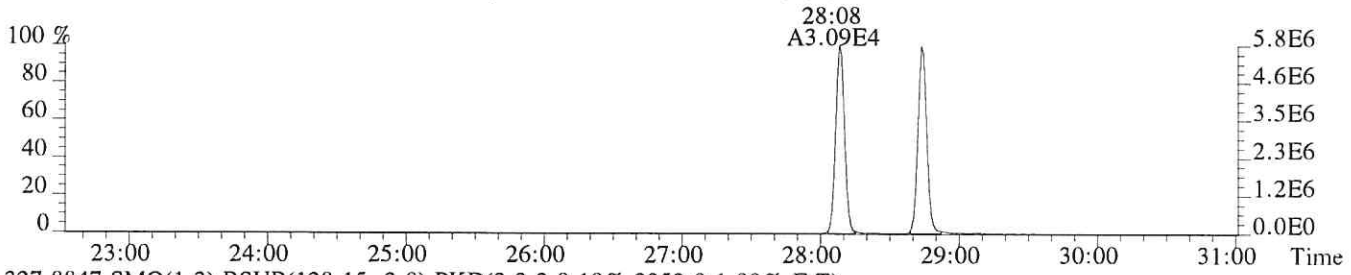
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,520.0,1.00%,F,T)



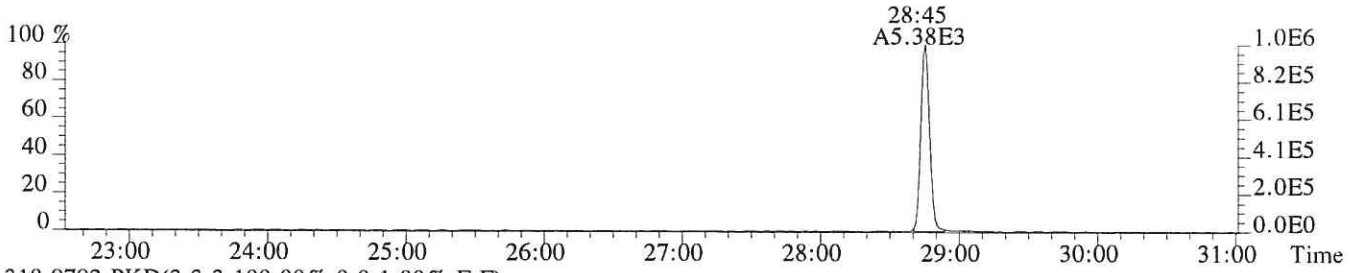
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5348.0,1.00%,F,T)



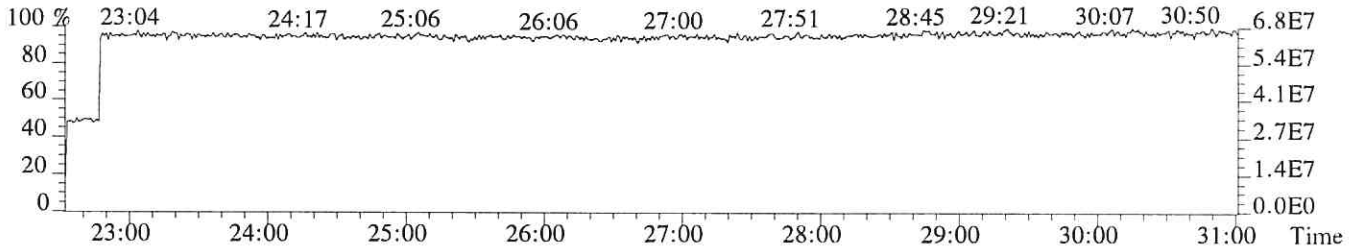
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3456.0,1.00%,F,T)



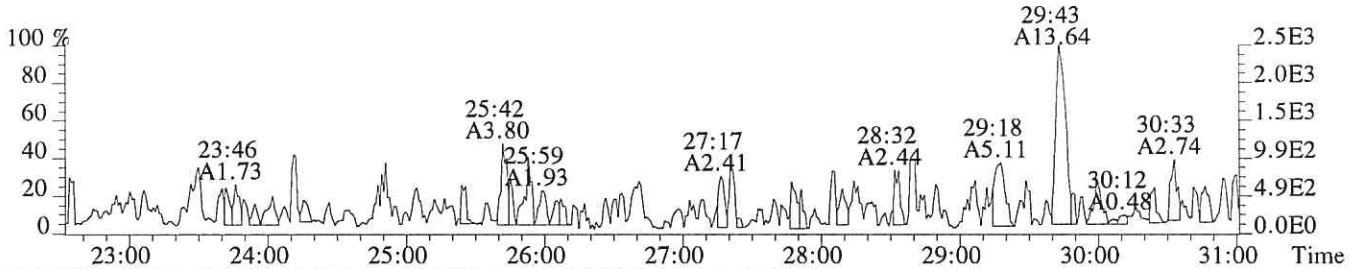
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2352.0,1.00%,F,T)



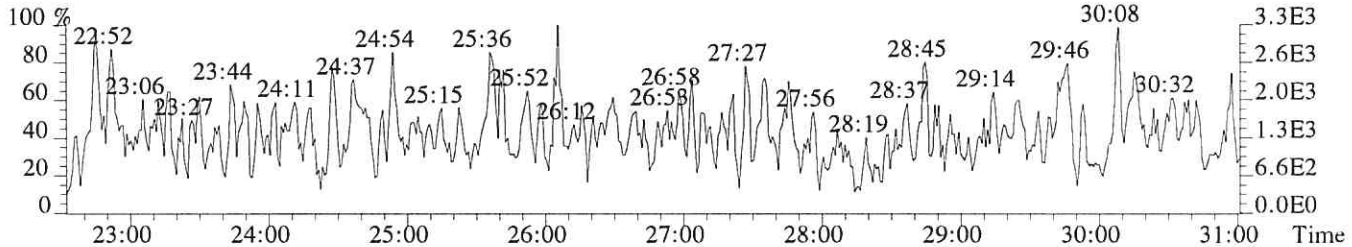
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



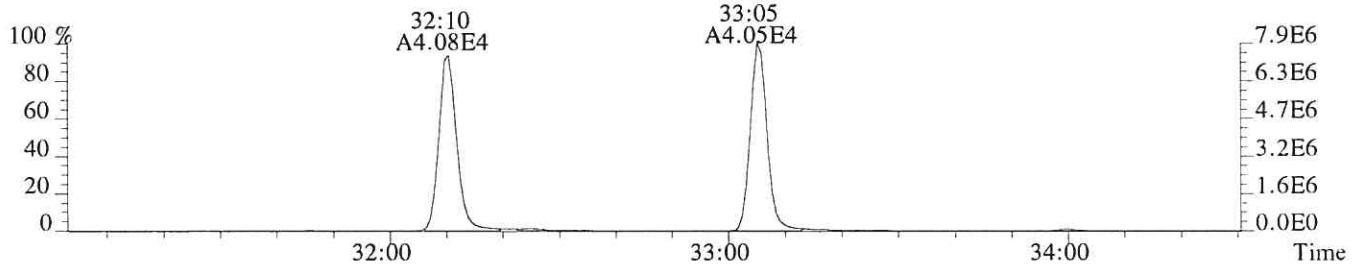
File:P407962 #1-602 Acq:19-SEP-2017 05:48:18 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,308.0,1.00%,F,T)



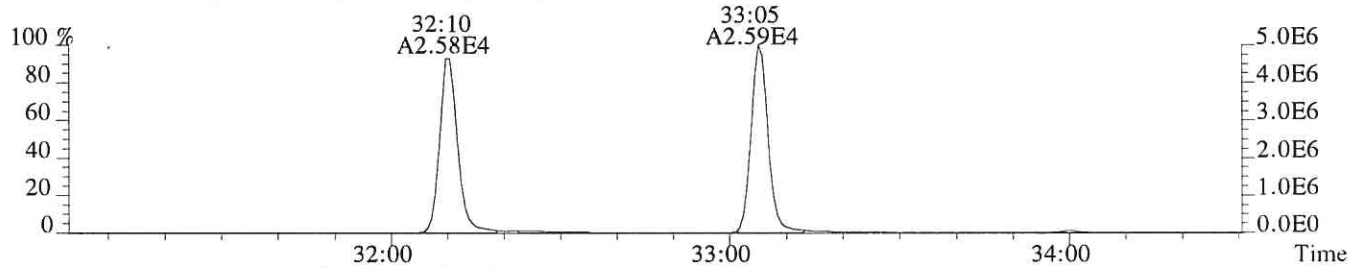
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1792.0,1.00%,F,T)



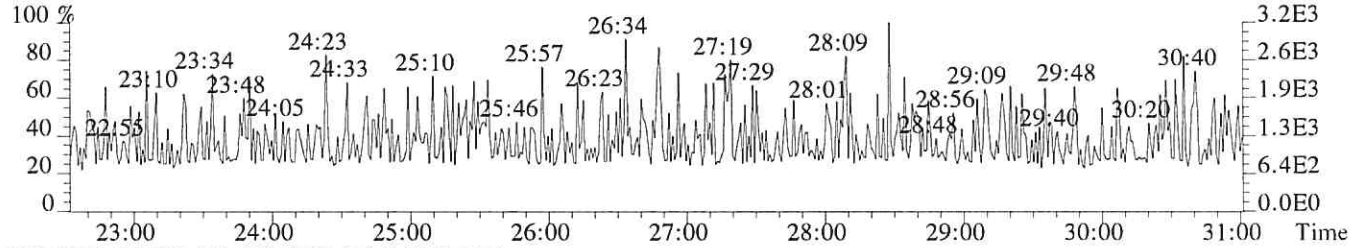
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,840.0,1.00%,F,T)



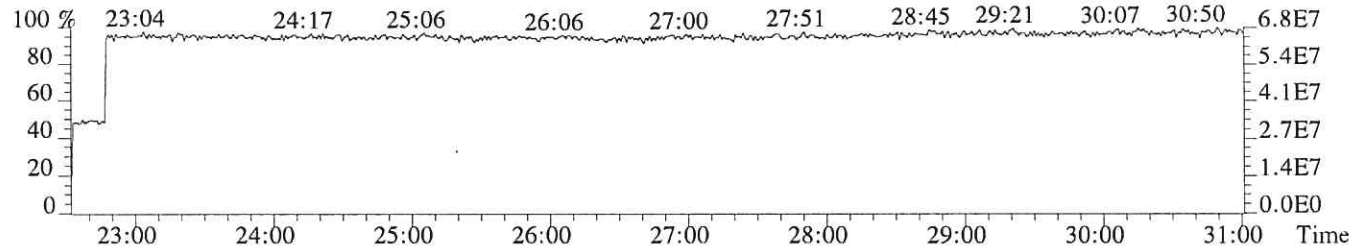
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,588.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

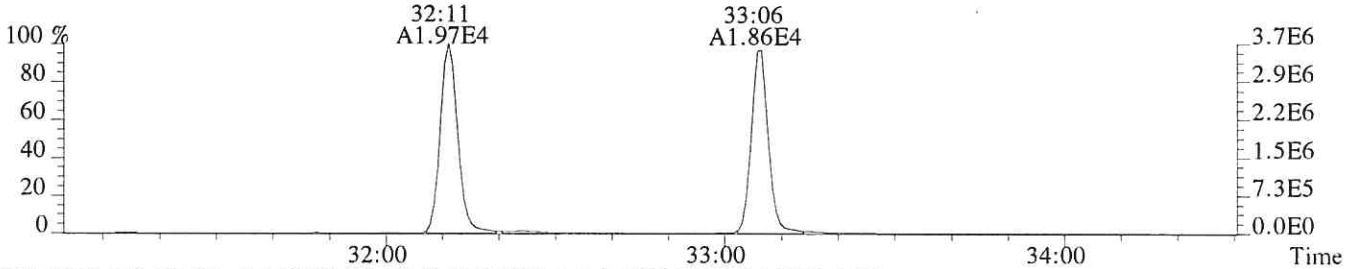


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

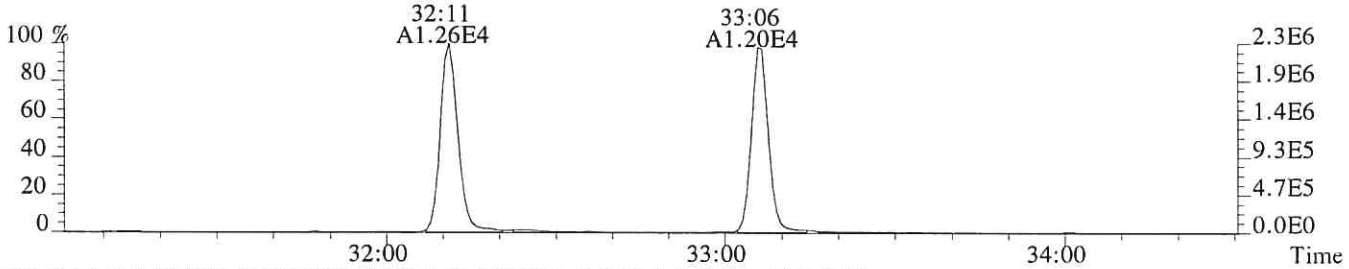


File:P407962 #1-312 Acq:19-SEP-2017 05:48:18 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

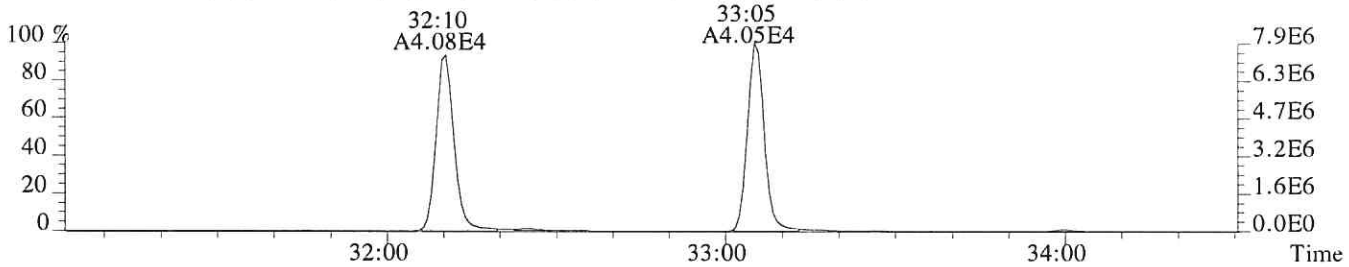
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,668.0,1.00%,F,T)



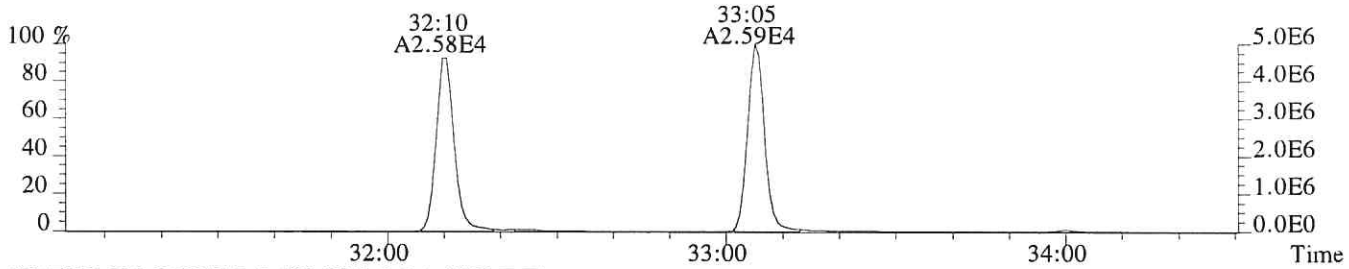
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1816.0,1.00%,F,T)



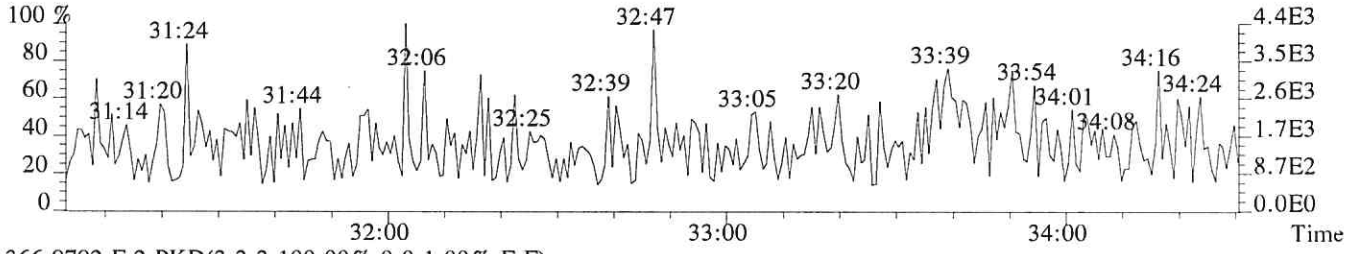
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,840.0,1.00%,F,T)



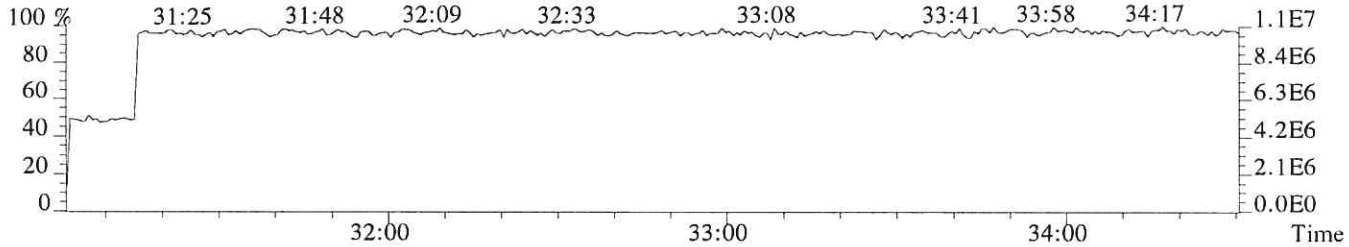
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,588.0,1.00%,F,T)



409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

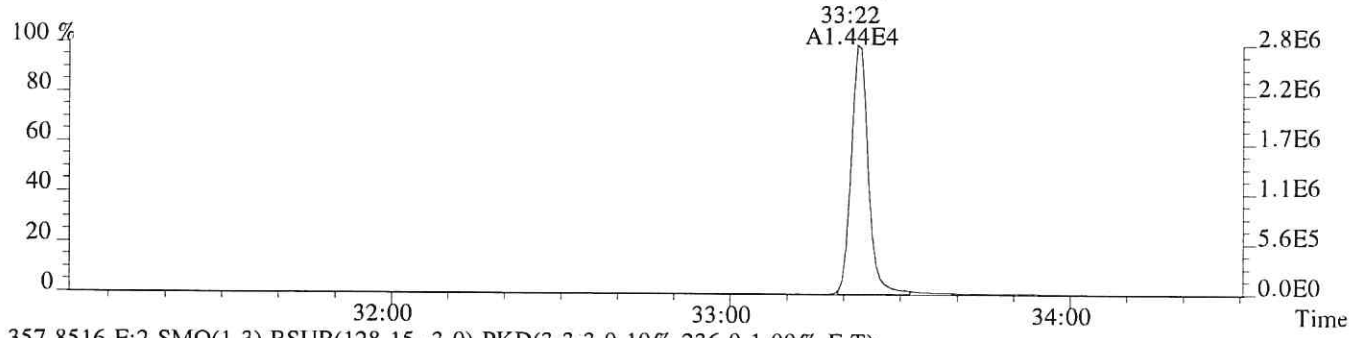


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

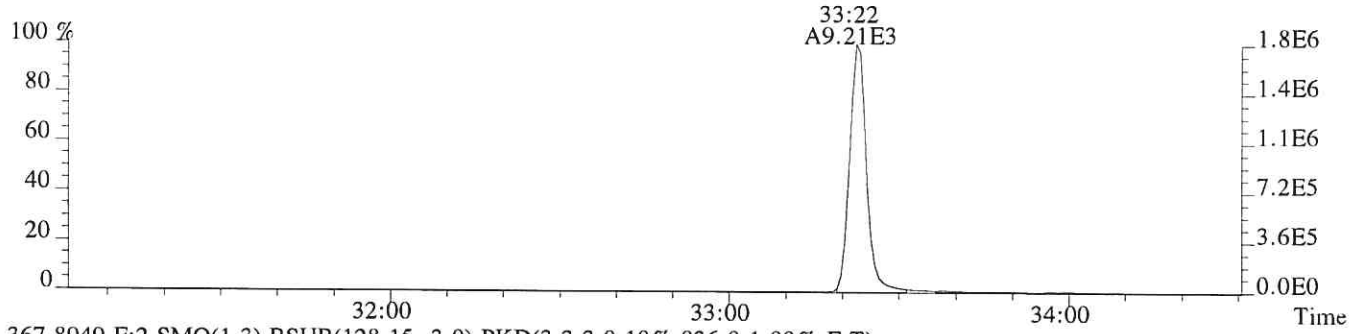


File:P407962 #1-312 Acq:19-SEP-2017 05:48:18 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

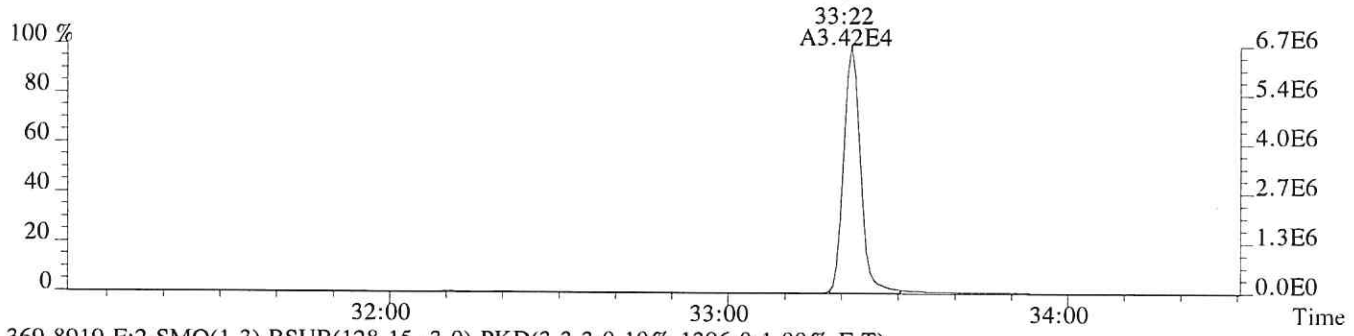
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1124.0,1.00%,F,T)



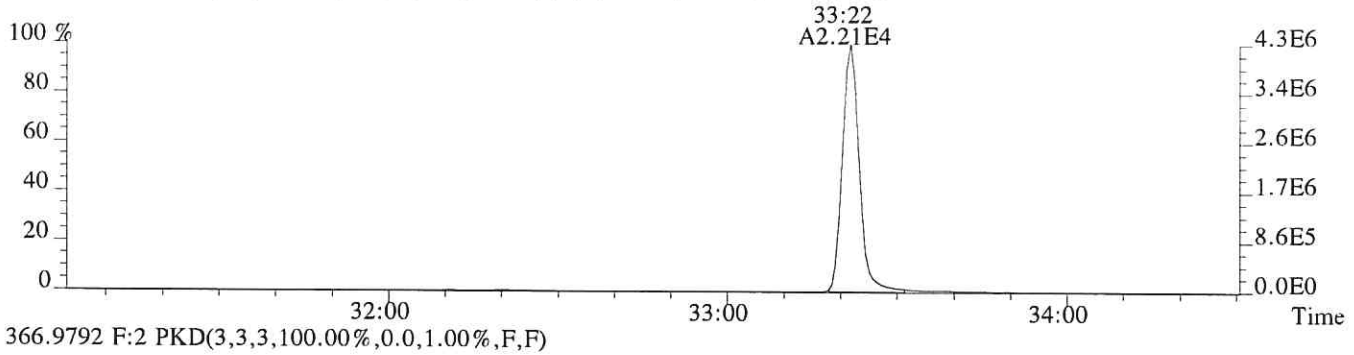
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,236.0,1.00%,F,T)



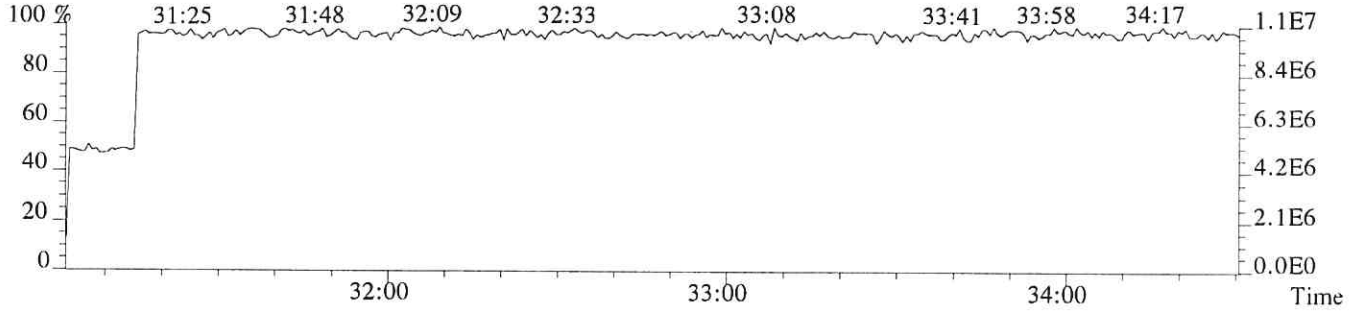
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,836.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1396.0,1.00%,F,T)

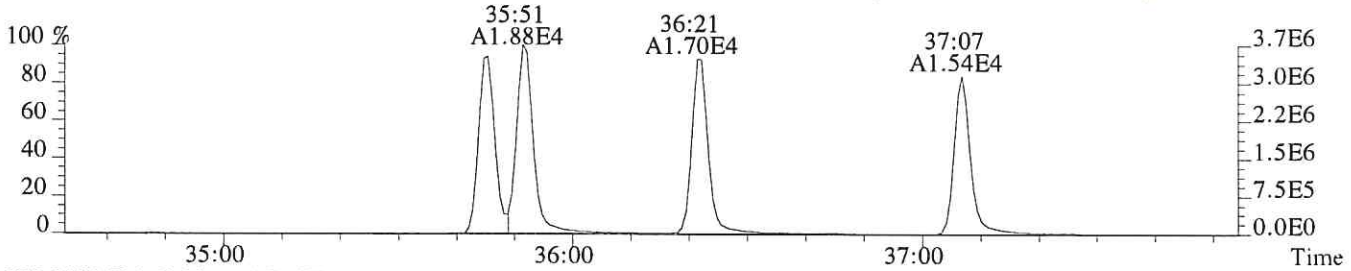


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

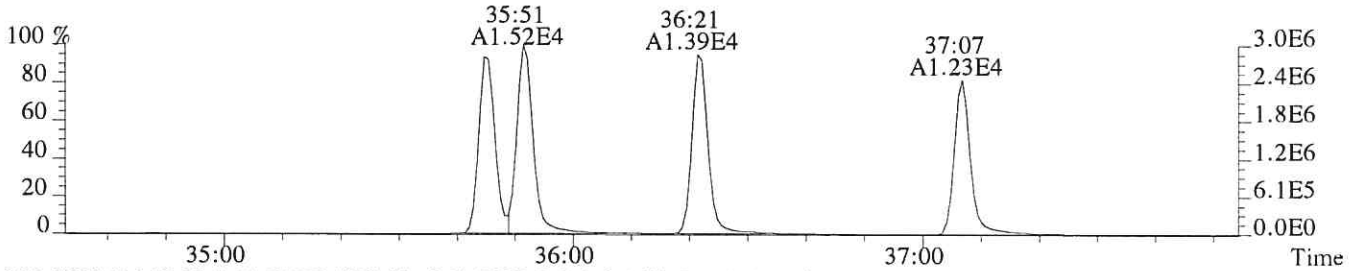


File:P407962 #1-303 Acq:19-SEP-2017 05:48:18 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

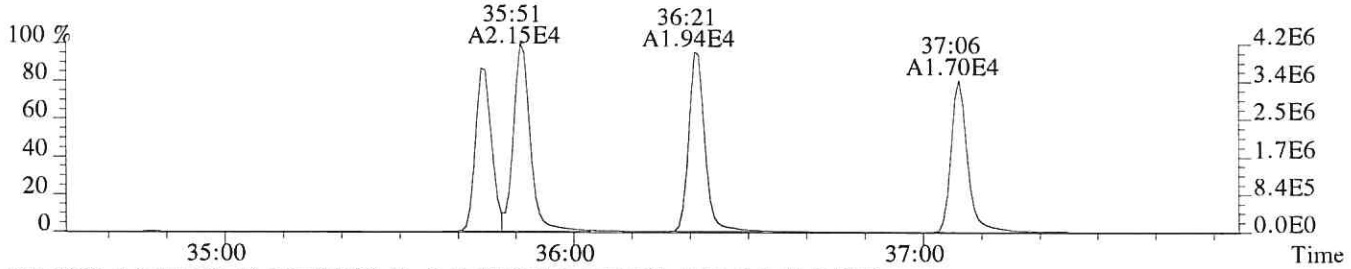
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1220.0,0.40%,F,T)



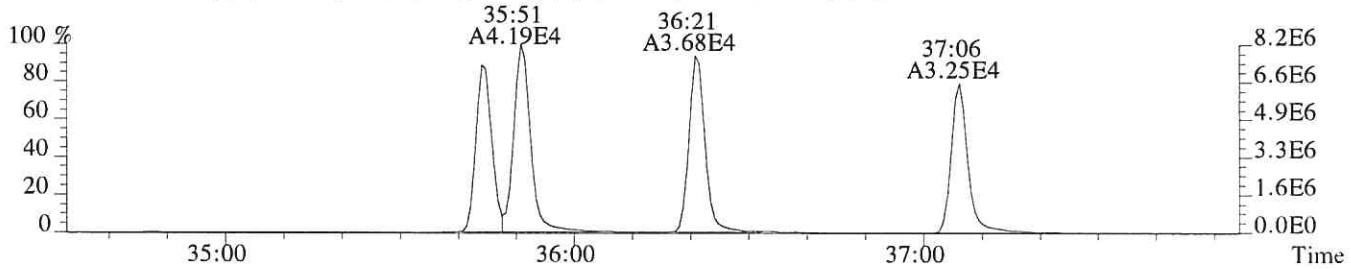
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1204.0,0.40%,F,T)



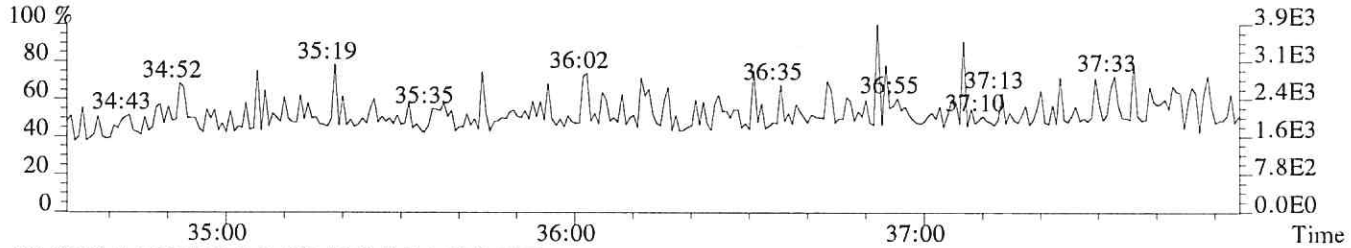
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,824.0,0.40%,F,T)



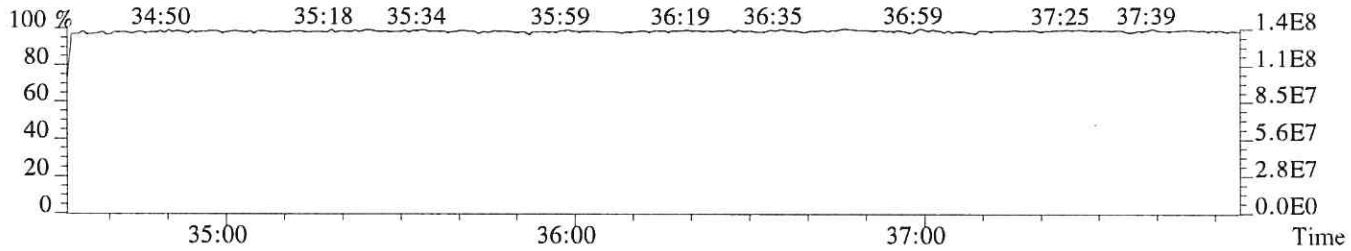
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1604.0,0.40%,F,T)



445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

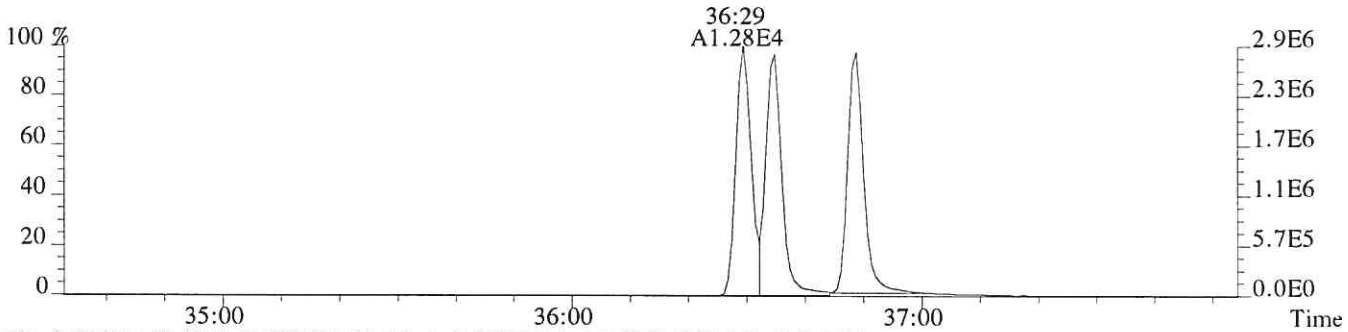


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

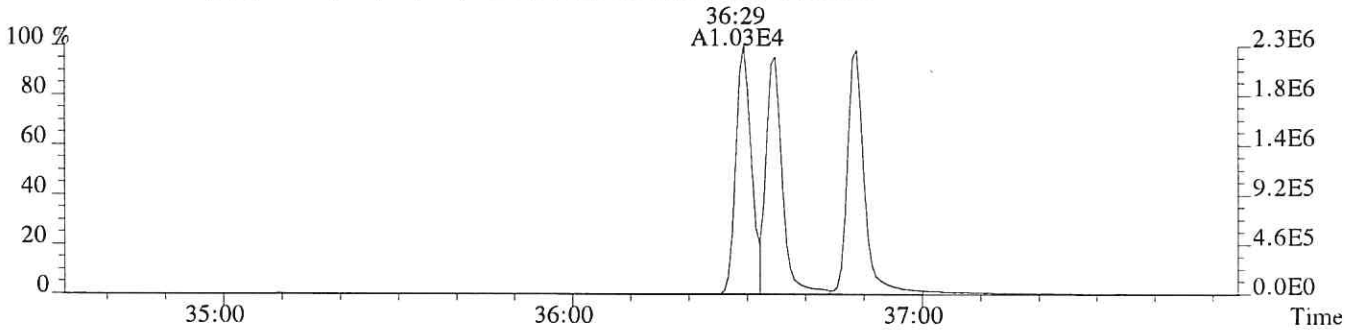


File:P407962 #1-303 Acq:19-SEP-2017 05:48:18 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

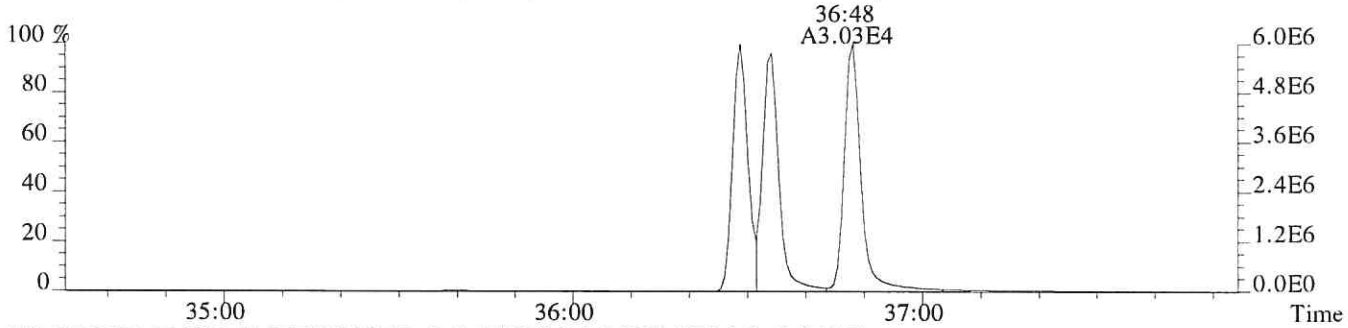
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,280.0,0.40%,F,T)



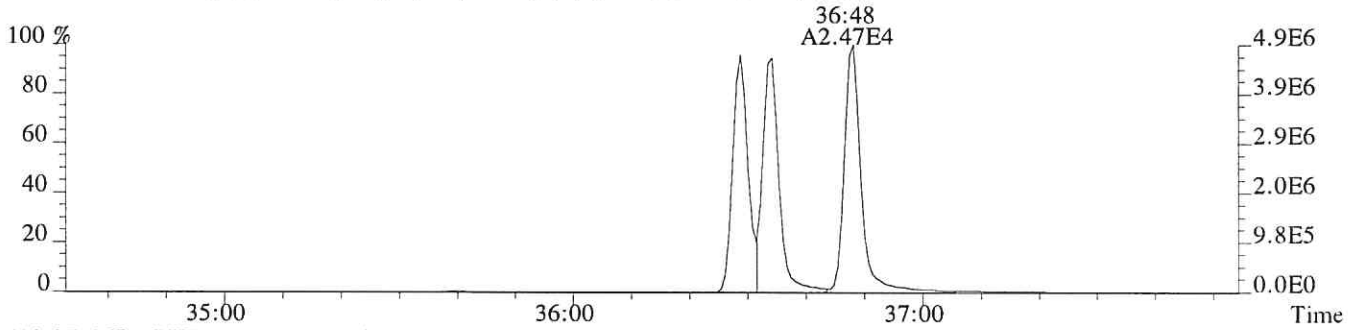
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,876.0,0.40%,F,T)



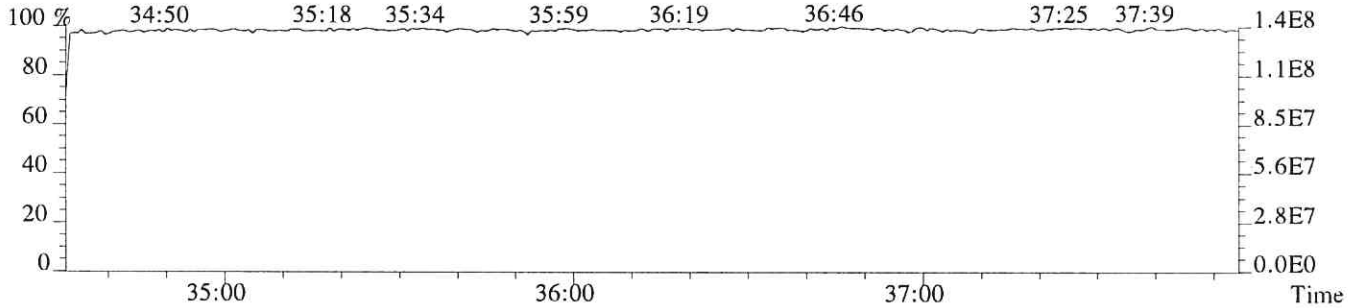
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2060.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,988.0,0.40%,F,T)

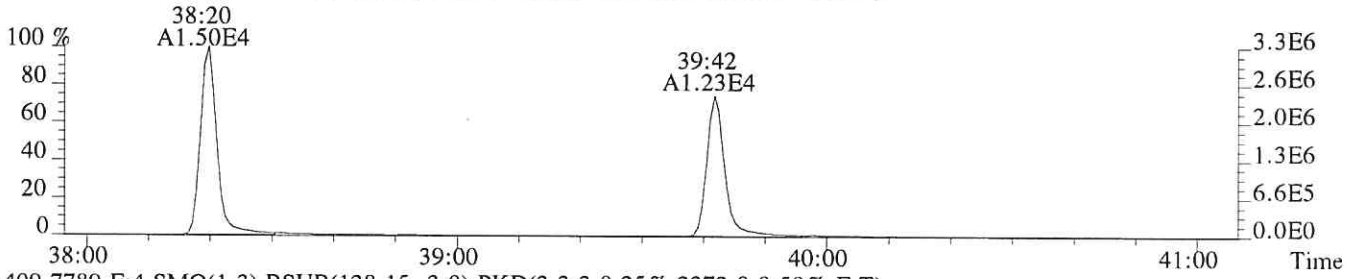


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

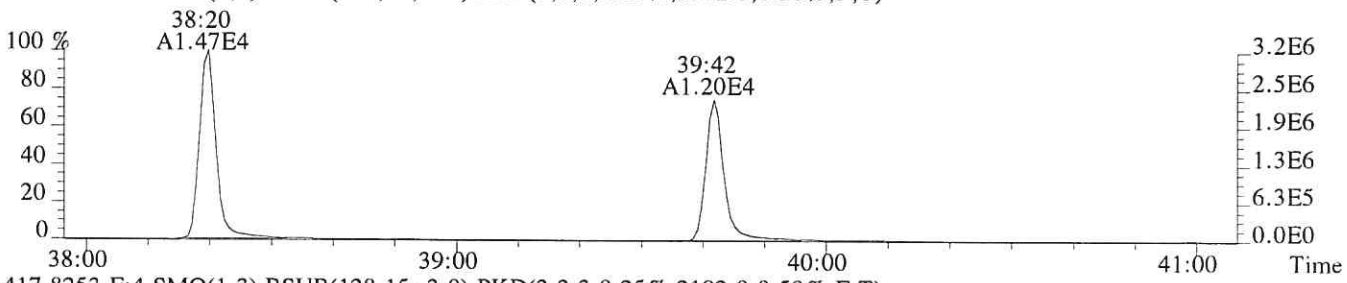


File:P407962 #1-286 Acq:19-SEP-2017 05:48:18 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

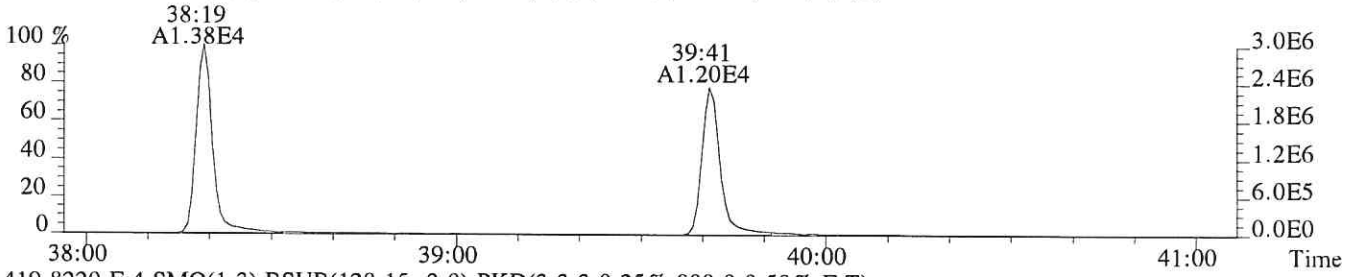
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2048.0,0.50%,F,T)



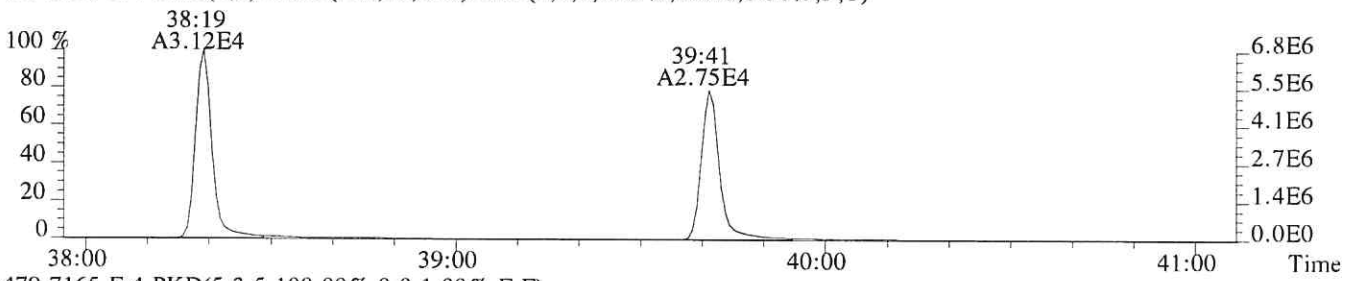
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2372.0,0.50%,F,T)



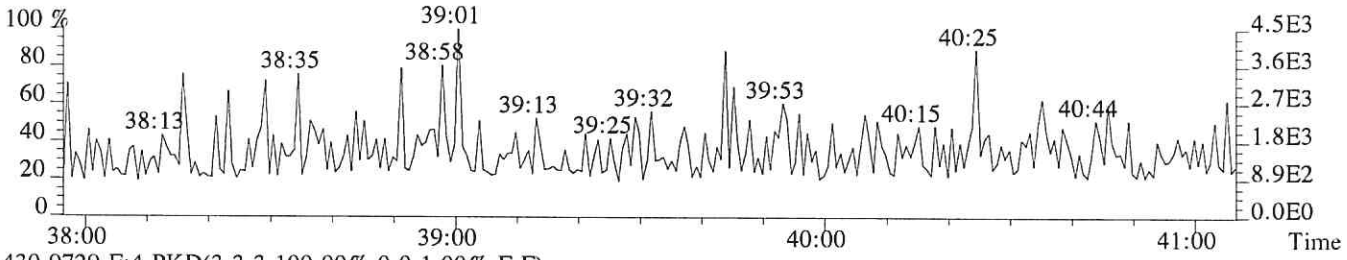
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2192.0,0.50%,F,T)



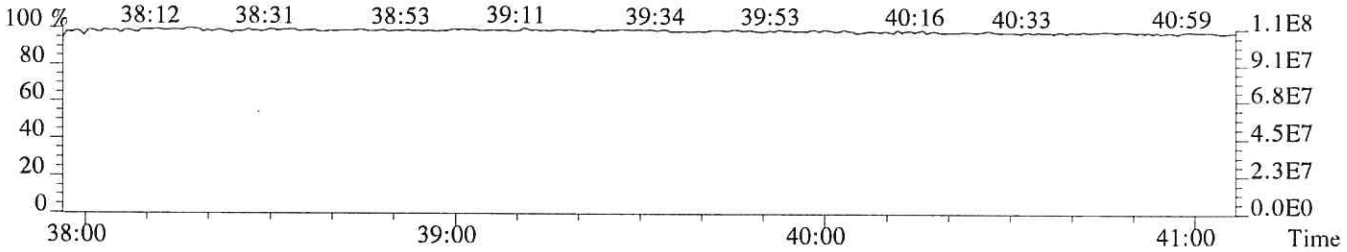
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,808.0,0.50%,F,T)



479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

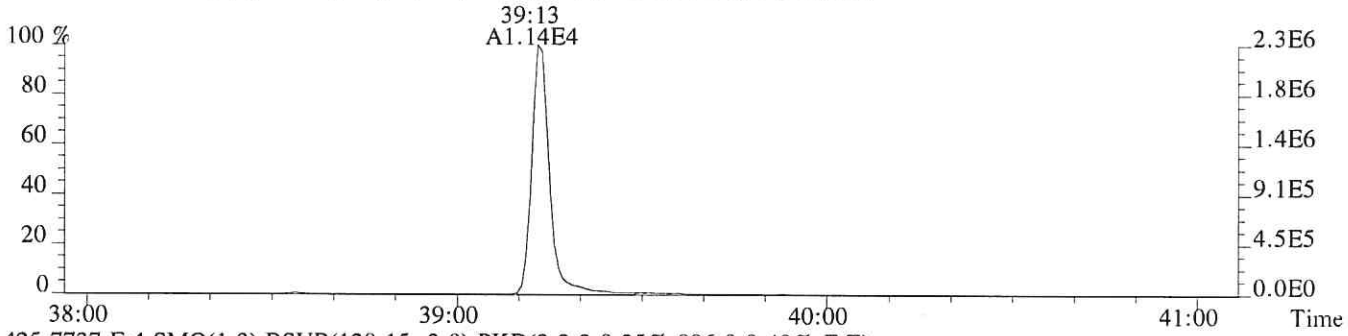


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

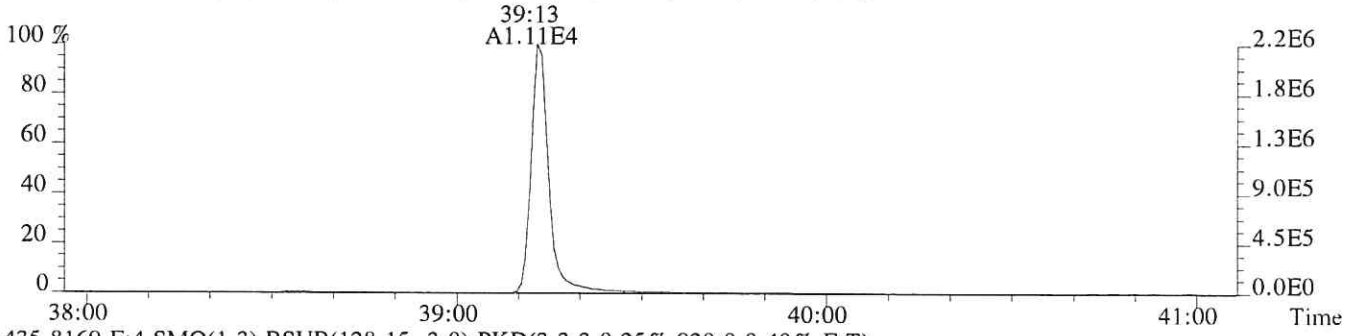


File:P407962 #1-286 Acq:19-SEP-2017 05:48:18 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

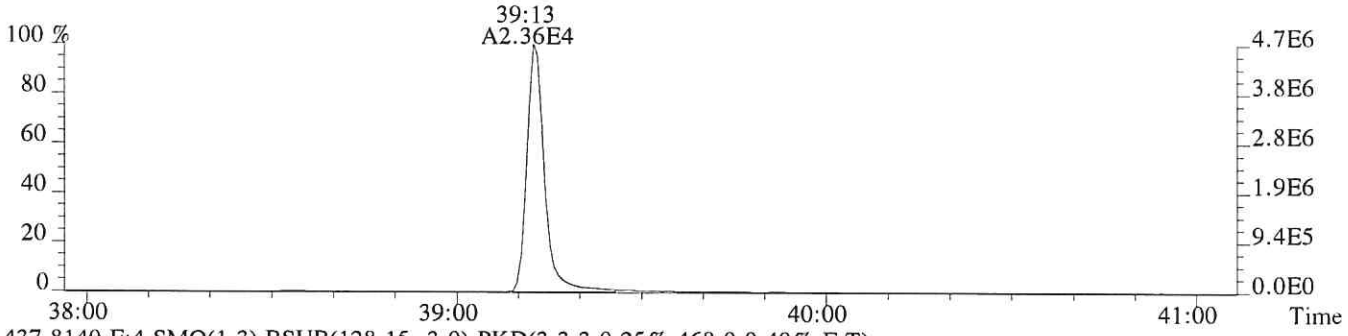
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,592.0,0.40%,F,T)



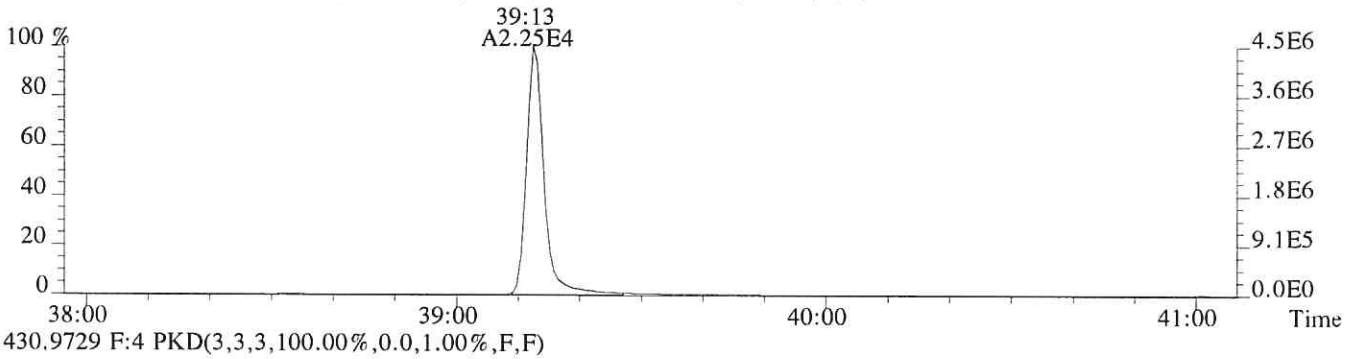
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,896.0,0.40%,F,T)



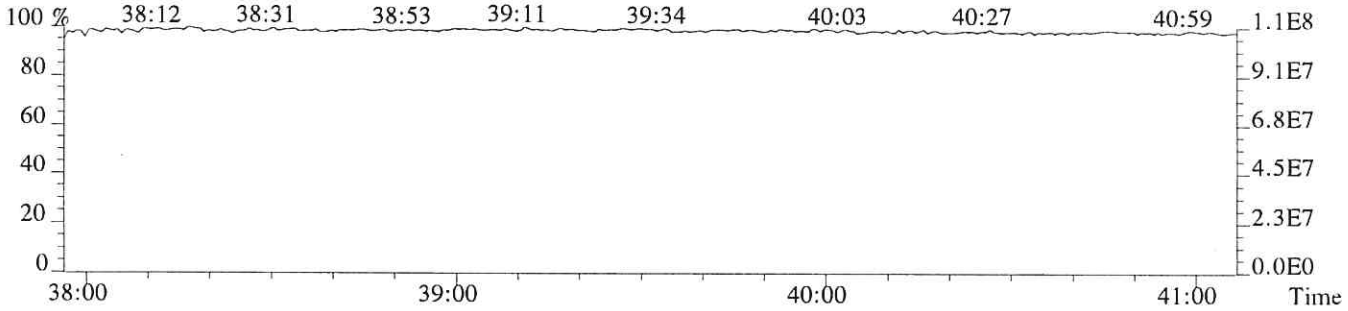
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,920.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,468.0,0.40%,F,T)

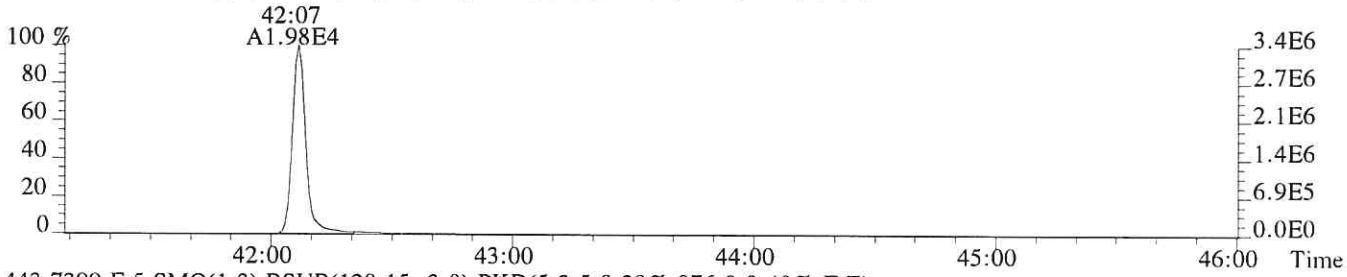


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

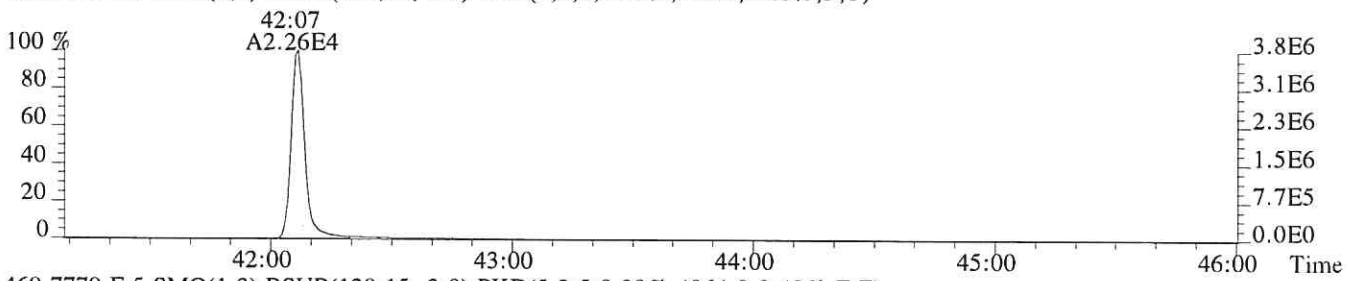


File:P407962 #1-438 Acq:19-SEP-2017 05:48:18 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

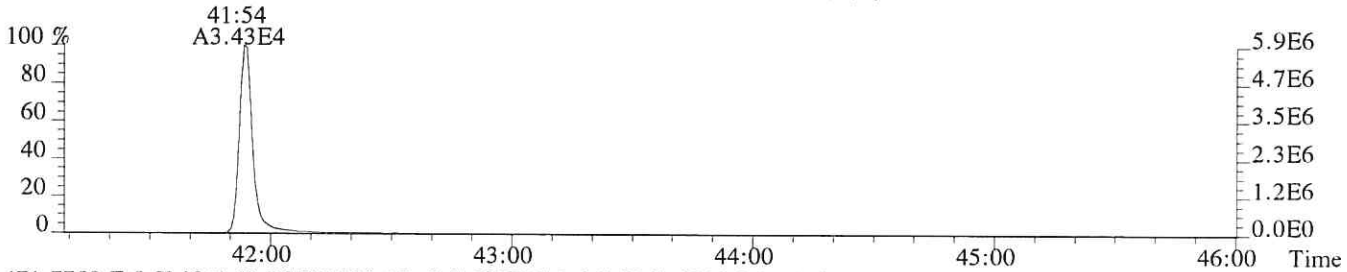
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,324.0,0.40%,F,T)



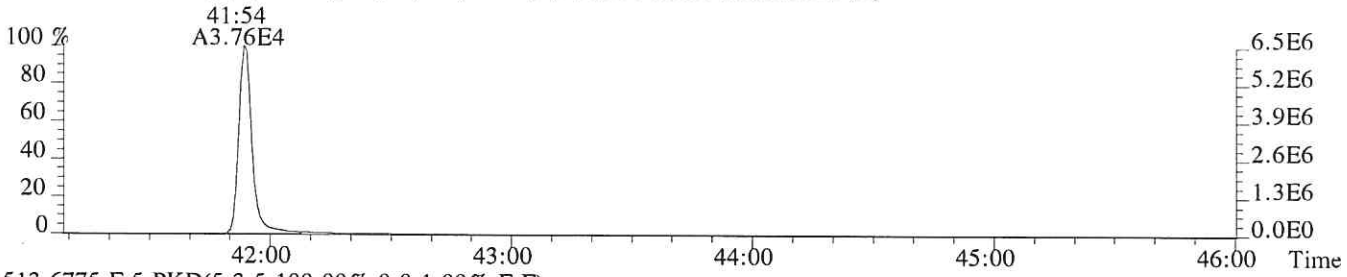
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,976.0,0.40%,F,T)



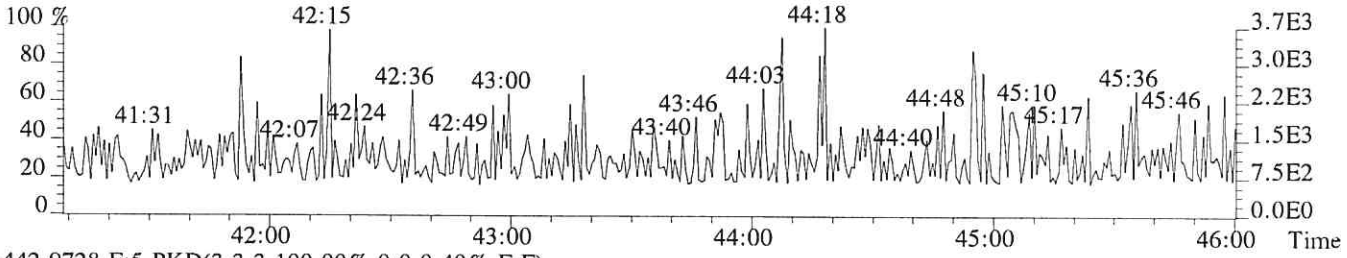
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4064.0,0.40%,F,T)



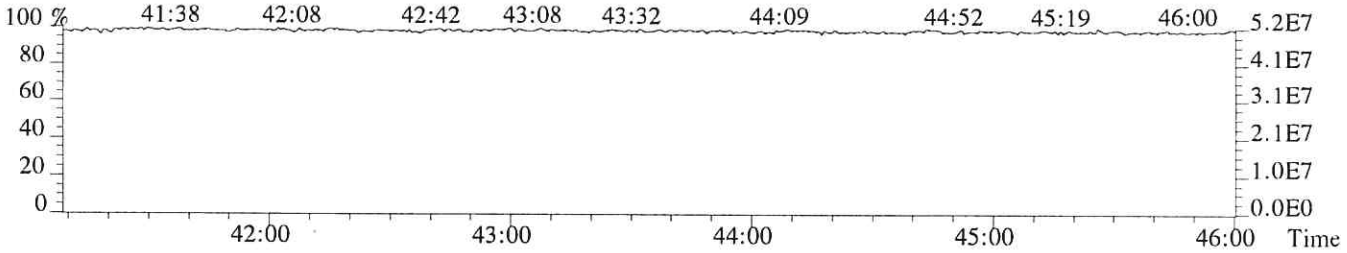
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6844.0,0.40%,F,T)



513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

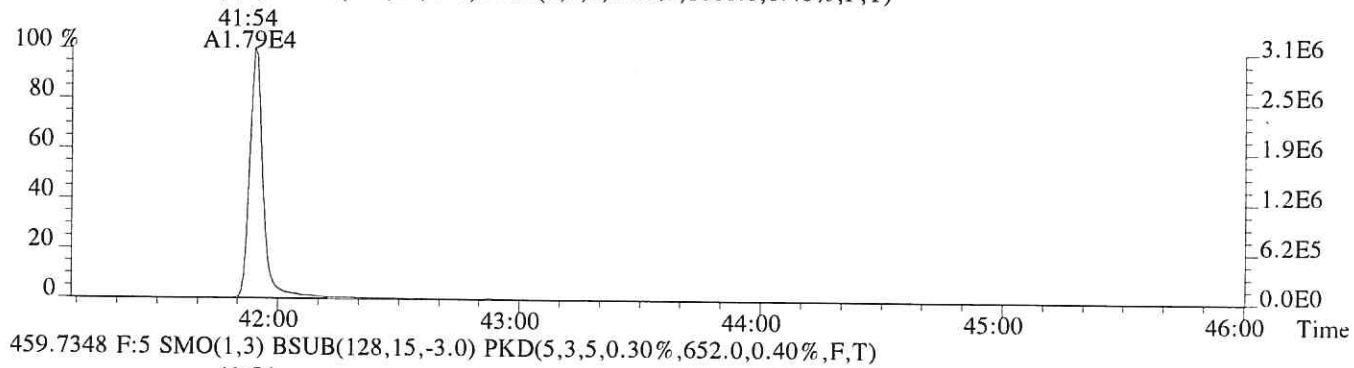


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

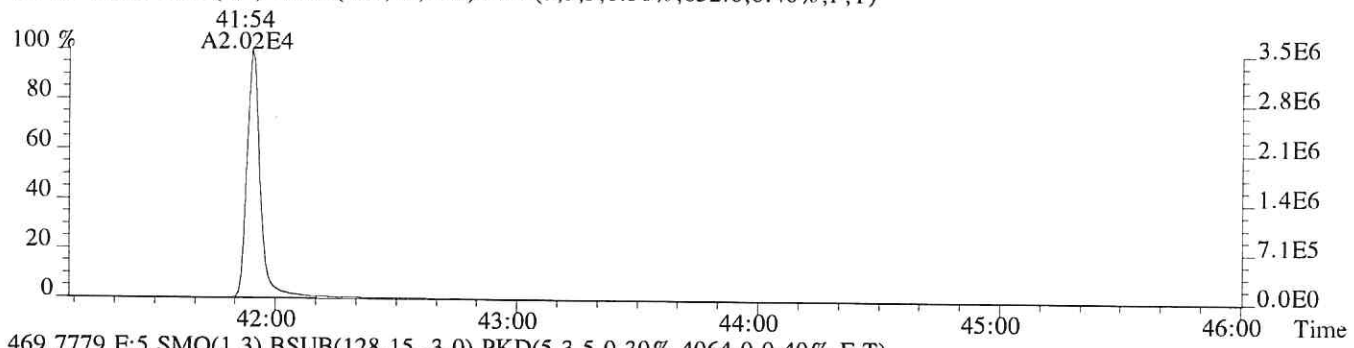


File:P407962 #1-438 Acq:19-SEP-2017 05:48:18 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

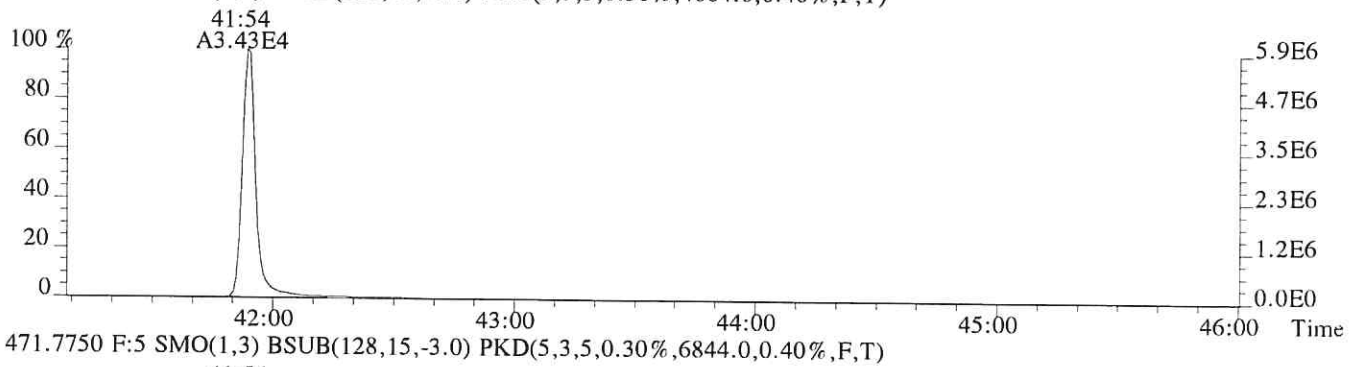
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1660.0,0.40%,F,T)



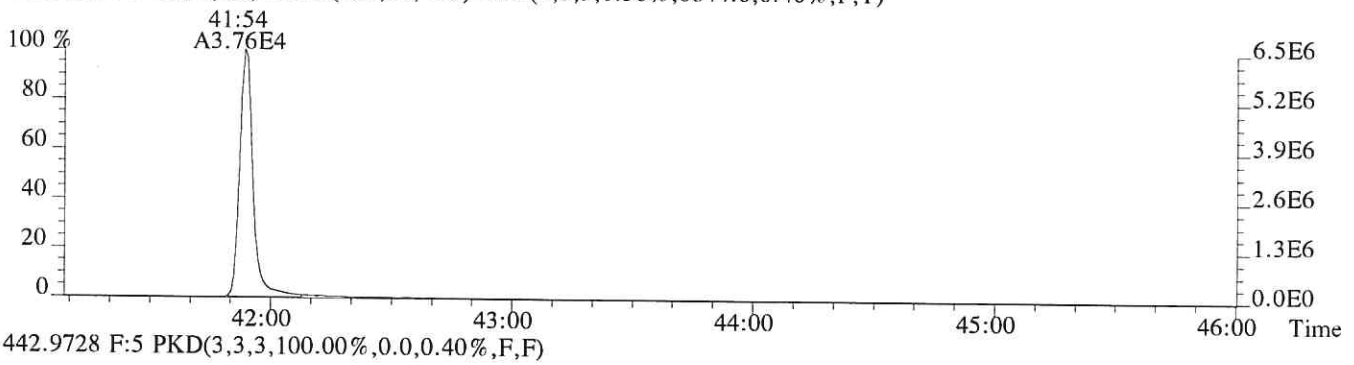
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,652.0,0.40%,F,T)



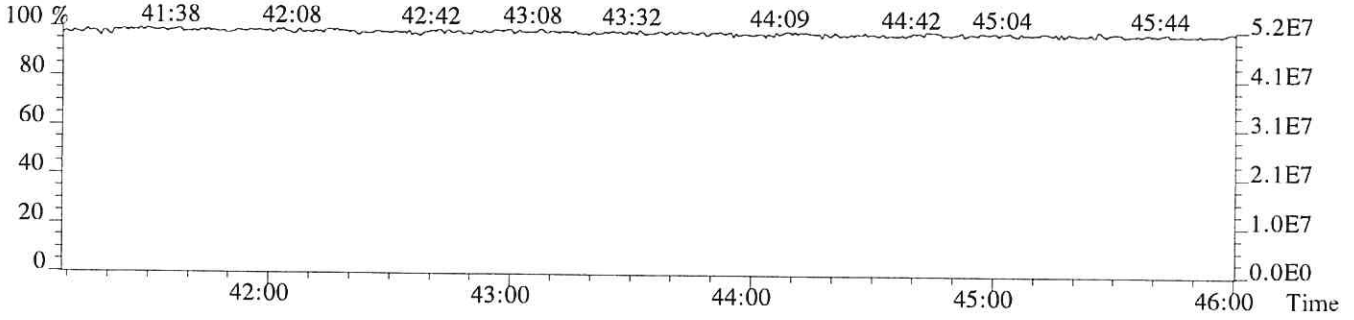
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4064.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,6844.0,0.40%,F,T)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 09/01/17

Instrument ID: E-HRMS-06 GC Column ID : DB-5MSUI

VER Data Filename: p407971 Analysis Date: 19-SEP-17 Time: 14:23:48

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (4)
2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	9.2	7.8 - 12.9	-8.3
1,2,3,7,8-PeCDD	M+2/M+4	1.56	1.32-1.78	49	39 - 65	-2.3
1,2,3,4,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	50	39 - 64	-0.1
1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	51	39 - 64	1.3
1,2,3,7,8,9-HxCDD	M+2/M+4	1.23	1.05-1.43	52	41 - 61	4.1
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.03	0.88-1.20	49	43 - 58	-2.2
OCDD	M+2/M+4	0.89	0.76-1.02	102	79 - 126	1.6
2,3,7,8-TCDF	M/M+2	0.78	0.65-0.89	9.6	8.4 - 12.0	-4.5
1,2,3,7,8-PeCDF	M+2/M+4	1.52	1.32-1.78	49	41 - 60	-1.2
2,3,4,7,8-PeCDF	M+2/M+4	1.55	1.32-1.78	49	41 - 61	-2.9
1,2,3,4,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	48	45 - 56	-3.5
1,2,3,6,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	48	44 - 57	-3.8
1,2,3,7,8,9-HxCDF	M+2/M+4	1.22	1.05-1.43	47	45 - 56	-6.3
2,3,4,6,7,8-HxCDF	M+2/M+4	1.20	1.05-1.43	47	44 - 57	-5.4
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.01	0.88-1.20	48	45 - 55	-4.2
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.04	0.88-1.20	47	43 - 58	-5.8
OCDF	M+2/M+4	0.88	0.76-1.02	103	63 - 159	3.4

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range as specified in Table 6, Method 1613B, under VER.

(4) The beginning CCAL %RSD for the 17 unlabeled standard must not exceed +/- 20%, Section 7.7.4.1. The ending CCAL must not exceed +/-25%, Section 8.3.2.4, Method 8290

12/2012
1613F4A.FRM

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 09/01/17

Instrument ID: E-HRMS-06 GC Column ID : DB-5MSUI

VER Data Filename: p407971 Analysis Date: 19-SEP-17 Time: 14:23:48

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (5)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	103	82 - 121	2.8
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	107	62 - 160	6.5
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	88	85 - 117	-11.8
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	98	85 - 118	-1.9
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	0.88-1.20	95	72 - 138	-5.1
13C-OCDD	M+2/M+4	0.90	0.76-1.02	172	96 - 415	-14.0
13C-2,3,7,8-TCDF	M/M+2	0.77	0.65-0.89	97	71 - 140	-2.5
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.57	1.32-1.78	102	76 - 130	1.7
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	106	77 - 130	6.2
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.51	0.43-0.59	86	76 - 131	-13.5
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.51	0.43-0.59	94	70 - 143	-5.5
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.51	0.43-0.59	100	74 - 135	-0.4
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	93	73 - 137	-6.6
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.44	0.37-0.51	90	78 - 129	-9.8
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.43	0.37-0.51	95	77 - 129	-5.2
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	M+2/M+4			9.9	7.8 - 12.7	-0.7

(1) See Table 8, Method 1613B, for m/z specifications.
(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.
(3) Contract-required concentration range, as specified in Table 6, Method 1613B, under VER.
(4) No ion abundance ratio; report concentration found.
(5) The beginnning CCAL %RSD for the labeled standard must not exceed +/- 30% Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Sec 8.3.2.4 (8290)

12/2012
1613F4B.FRM

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
178398

Run #15 Filename p407971 Samp: 1 Inj: 1 Acquired: 19-SEP-17 14:23:48
Processed: 19-SEP-17 15:20:31 Sample ID: CS3

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	27:58	2.621e+03	3.374e+03	0.78	yes	no	0.885
2	Unk	1,2,3,7,8-PeCDF	32:10	2.187e+04	1.434e+04	1.52	yes	no	0.984
3	Unk	2,3,4,7,8-PeCDF	33:06	2.096e+04	1.356e+04	1.55	yes	no	0.943
4	Unk	1,2,3,4,7,8-HxCDF	35:45	1.835e+04	1.502e+04	1.22	yes	no	1.230
5	Unk	1,2,3,6,7,8-HxCDF	35:51	2.053e+04	1.666e+04	1.23	yes	no	1.148
6	Unk	2,3,4,6,7,8-HxCDF	36:21	1.795e+04	1.497e+04	1.20	yes	no	1.133
7	Unk	1,2,3,7,8,9-HxCDF	37:06	1.683e+04	1.380e+04	1.22	yes	no	1.172
8	Unk	1,2,3,4,6,7,8-HpCDF	38:19	1.600e+04	1.579e+04	1.01	yes	no	1.377
9	Unk	1,2,3,4,7,8,9-HpCDF	39:41	1.305e+04	1.256e+04	1.04	yes	no	1.301
10	Unk	OCDF	42:06	1.885e+04	2.147e+04	0.88	yes	no	1.114
11	Unk	2,3,7,8-TCDD	28:45	2.401e+03	2.997e+03	0.80	yes	no	0.966
12	Unk	1,2,3,7,8-PeCDD	33:22	1.622e+04	1.042e+04	1.56	yes	no	0.851
13	Unk	1,2,3,4,7,8-HxCDD	36:29	1.395e+04	1.109e+04	1.26	yes	no	0.966
14	Unk	1,2,3,6,7,8-HxCDD	36:34	1.534e+04	1.217e+04	1.26	yes	no	0.938
15	Unk	1,2,3,7,8,9-HxCDD	36:48	1.547e+04	1.255e+04	1.23	yes	no	0.980
16	Unk	1,2,3,4,6,7,8-HpCDD	39:13	1.193e+04	1.161e+04	1.03	yes	no	0.975
17	Unk	OCDD	41:54	1.731e+04	1.946e+04	0.89	yes	no	1.033
18	IS	13C-2,3,7,8-TCDF	27:56	3.081e+04	4.007e+04	0.77	yes	no	1.176
19	IS	13C-1,2,3,7,8-PeCDF	32:10	4.558e+04	2.894e+04	1.57	yes	no	1.185
20	IS	13C-2,3,4,7,8-PeCDF	33:05	4.616e+04	2.929e+04	1.58	yes	no	1.149
21	IS	13C-1,2,3,4,7,8-HxCDF	35:44	1.912e+04	3.714e+04	0.51	yes	no	1.068
22	IS	13C-1,2,3,6,7,8-HxCDF	35:51	2.282e+04	4.454e+04	0.51	yes	no	1.171
23	IS	13C-2,3,4,6,7,8-HxCDF	36:21	2.099e+04	4.042e+04	0.52	yes	no	1.079
24	IS	13C-1,2,3,7,8,9-HxCDF	37:05	1.886e+04	3.692e+04	0.51	yes	no	0.919
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:19	1.474e+04	3.346e+04	0.44	yes	no	0.877
26	IS	13C-1,2,3,4,7,8,9-HpCDF	39:41	1.252e+04	2.925e+04	0.43	yes	no	0.723
27	IS	13C-2,3,7,8-TCDD	28:44	2.673e+04	3.418e+04	0.78	yes	no	0.958
28	IS	13C-1,2,3,7,8-PeCDD	33:21	3.912e+04	2.497e+04	1.57	yes	no	0.973
29	IS	13C-1,2,3,4,7,8-HxCDD	36:28	2.869e+04	2.319e+04	1.24	yes	no	0.966
30	IS	13C-1,2,3,6,7,8-HxCDD	36:33	3.207e+04	2.580e+04	1.24	yes	no	0.968
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:13	2.535e+04	2.401e+04	1.06	yes	no	0.854
32	IS	13C-OCDD	41:54	3.318e+04	3.683e+04	0.90	yes	no	0.668
33	RS/RT	13C-1,2,3,4-TCDD	28:08	2.730e+04	3.454e+04	0.79	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	36:47	3.390e+04	2.702e+04	1.25	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	28:45	6.092e+03				no	0.992

ALS ENVIRONMENTAL
10450 Stancliff Rd., Suite 115
Houston, TX 77099
Office(281)530-5656. Fax(281)530-5887

ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
178398

Run #15 Filename p407971 Samp: 1 Inj: 1 Acquired: 19-SEP-17 14:23:48
Processed: 19-SEP-17 15:20:31 LAB. ID: CS3

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	4.67e+05	5.52e+02	8.5e+02	5.92e+05	1.83e+03	3.2e+02
2	1,2,3,7,8-PeCDF	4.02e+06	3.56e+02	1.1e+04	2.62e+06	1.93e+03	1.4e+03
3	2,3,4,7,8-PeCDF	4.13e+06	3.56e+02	1.2e+04	2.64e+06	1.93e+03	1.4e+03
4	1,2,3,4,7,8-HxCDF	3.98e+06	5.80e+02	6.9e+03	3.23e+06	4.60e+02	7.0e+03
5	1,2,3,6,7,8-HxCDF	4.06e+06	5.80e+02	7.0e+03	3.25e+06	4.60e+02	7.1e+03
6	2,3,4,6,7,8-HxCDF	3.84e+06	5.80e+02	6.6e+03	3.16e+06	4.60e+02	6.9e+03
7	1,2,3,7,8,9-HxCDF	3.39e+06	5.80e+02	5.8e+03	2.75e+06	4.60e+02	6.0e+03
8	1,2,3,4,6,7,8-HpCDF	3.37e+06	2.84e+03	1.2e+03	3.36e+06	3.55e+03	9.5e+02
9	1,2,3,4,7,8,9-HpCDF	2.42e+06	2.84e+03	8.5e+02	2.36e+06	3.55e+03	6.6e+02
10	OCDF	3.15e+06	3.96e+02	7.9e+03	3.59e+06	1.05e+03	3.4e+03
11	2,3,7,8-TCDD	4.53e+05	1.69e+03	2.7e+02	5.65e+05	6.80e+02	8.3e+02
12	1,2,3,7,8-PeCDD	3.12e+06	7.12e+02	4.4e+03	2.02e+06	2.68e+02	7.5e+03
13	1,2,3,4,7,8-HxCDD	3.16e+06	6.40e+02	4.9e+03	2.51e+06	4.80e+02	5.2e+03
14	1,2,3,6,7,8-HxCDD	3.11e+06	6.40e+02	4.9e+03	2.48e+06	4.80e+02	5.2e+03
15	1,2,3,7,8,9-HxCDD	3.07e+06	6.40e+02	4.8e+03	2.50e+06	4.80e+02	5.2e+03
16	1,2,3,4,6,7,8-HpCDD	2.36e+06	5.48e+02	4.3e+03	2.30e+06	3.12e+02	7.4e+03
17	OCDD	2.84e+06	3.04e+03	9.4e+02	3.20e+06	2.40e+03	1.3e+03
18	13C-2,3,7,8-TCDF	5.64e+06	8.48e+03	6.6e+02	7.39e+06	3.46e+03	2.1e+03
19	13C-1,2,3,7,8-PeCDF	8.31e+06	2.88e+02	2.9e+04	5.29e+06	3.88e+02	1.4e+04
20	13C-2,3,4,7,8-PeCDF	8.97e+06	2.88e+02	3.1e+04	5.61e+06	3.88e+02	1.4e+04
21	13C-1,2,3,4,7,8-HxCDF	4.17e+06	6.84e+02	6.1e+03	7.95e+06	1.19e+03	6.7e+03
22	13C-1,2,3,6,7,8-HxCDF	4.52e+06	6.84e+02	6.6e+03	8.68e+06	1.19e+03	7.3e+03
23	13C-2,3,4,6,7,8-HxCDF	4.47e+06	6.84e+02	6.5e+03	8.41e+06	1.19e+03	7.1e+03
24	13C-1,2,3,7,8,9-HxCDF	3.69e+06	6.84e+02	5.4e+03	7.24e+06	1.19e+03	6.1e+03
25	13C-1,2,3,4,6,7,8-HpCDF	3.11e+06	2.21e+03	1.4e+03	7.03e+06	4.42e+03	1.6e+03
26	13C-1,2,3,4,7,8,9-HpCDF	2.34e+06	2.21e+03	1.1e+03	5.36e+06	4.42e+03	1.2e+03
27	13C-2,3,7,8-TCDD	5.15e+06	4.53e+03	1.1e+03	6.52e+06	2.72e+03	2.4e+03
28	13C-1,2,3,7,8-PeCDD	7.47e+06	7.16e+02	1.0e+04	4.80e+06	1.41e+03	3.4e+03
29	13C-1,2,3,4,7,8-HxCDD	6.46e+06	1.01e+03	6.4e+03	5.21e+06	1.05e+03	5.0e+03
30	13C-1,2,3,6,7,8-HxCDD	6.48e+06	1.01e+03	6.4e+03	5.23e+06	1.05e+03	5.0e+03
31	13C-1,2,3,4,6,7,8-HpCDD	4.93e+06	9.96e+02	4.9e+03	4.64e+06	2.80e+02	1.7e+04
32	13C-OCDD	5.52e+06	4.27e+03	1.3e+03	6.13e+06	5.34e+03	1.1e+03
33	13C-1,2,3,4-TCDD	5.16e+06	4.53e+03	1.1e+03	6.55e+06	2.72e+03	2.4e+03
34	13C-1,2,3,7,8,9-HxCDD	6.64e+06	1.01e+03	6.6e+03	5.33e+06	1.05e+03	5.1e+03
35	37Cl-2,3,7,8-TCDD	1.15e+06	1.84e+03	6.2e+02			

---Sample Calculation---

$$\text{D/L TCDD} = \frac{2.5 \times (1.688e{+}03 + 6.800e{+}02) \times 100}{(5.147e{+}06 + 6.520e{+}06) \times (\qquad\qquad) \times 0.966} =$$

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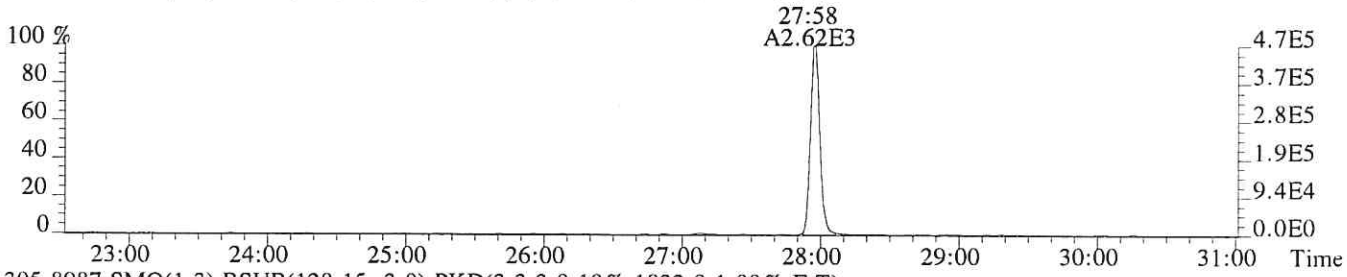
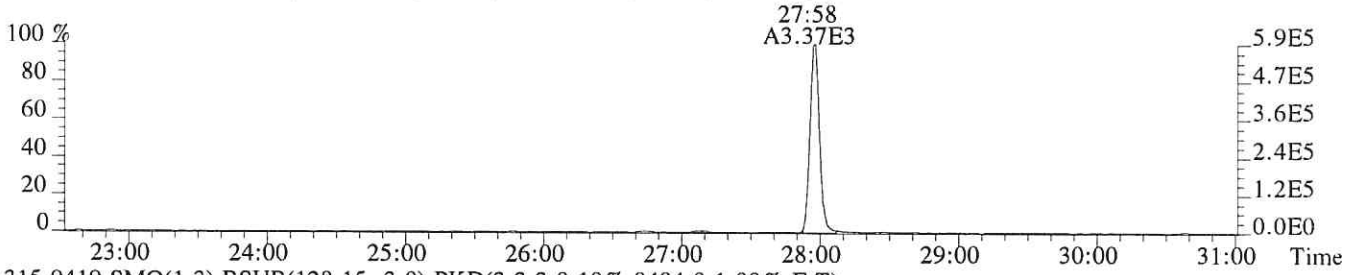
File:P407971 #1-602 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

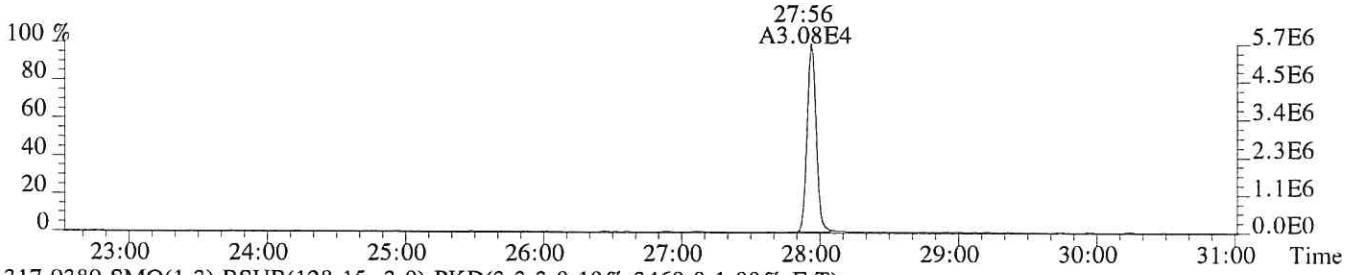
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,552.0,1.00%,F,T)



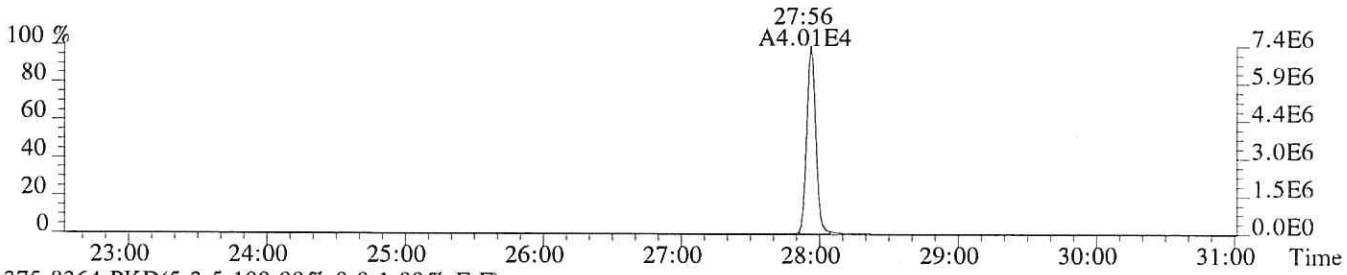
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1832.0,1.00%,F,T)



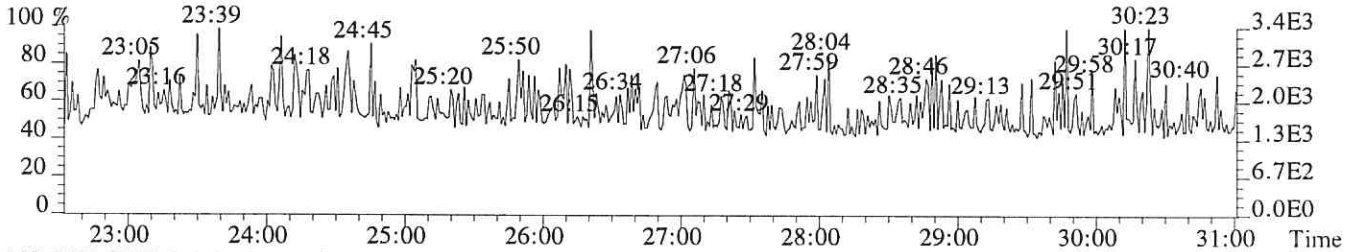
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,8484.0,1.00%,F,T)



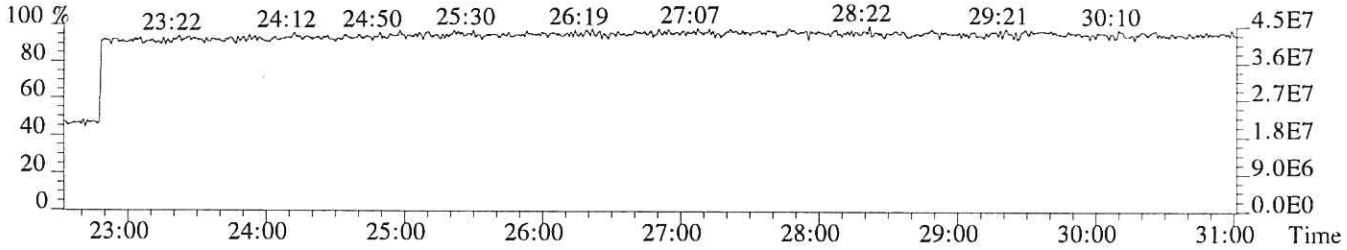
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3460.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

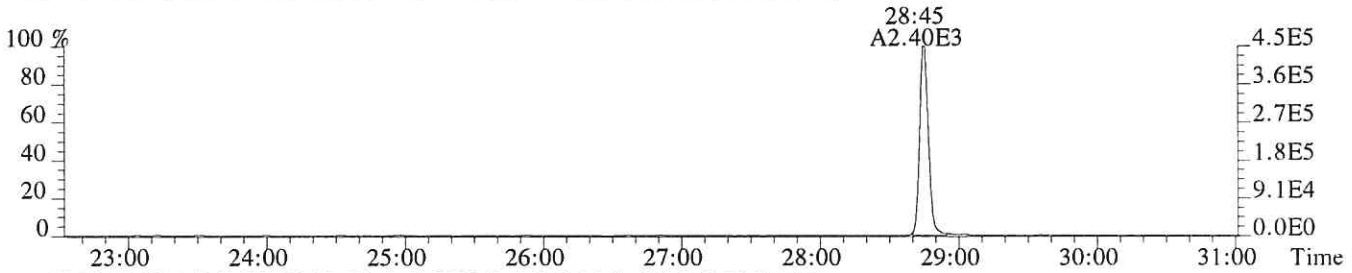


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

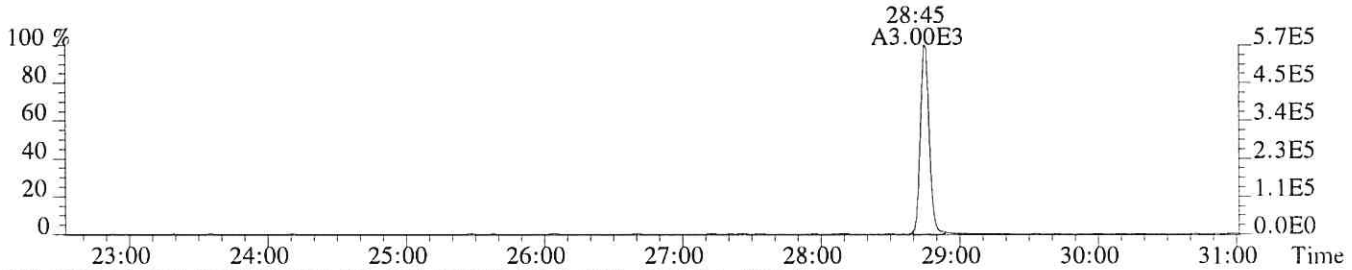


File:P407971 #1-602 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

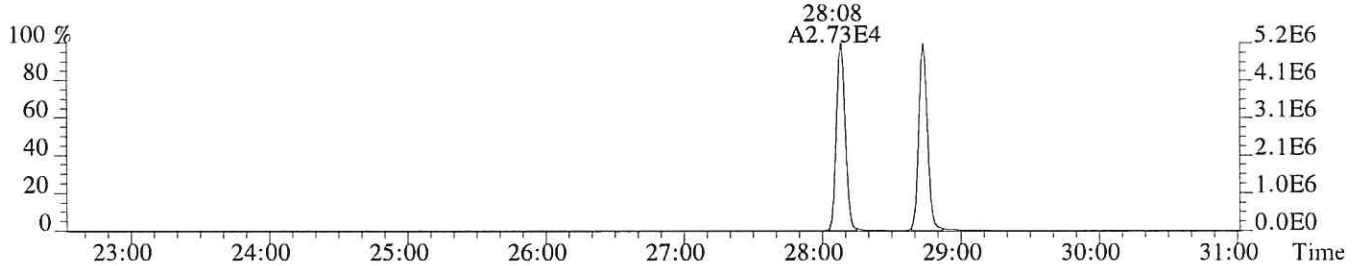
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1688.0,1.00%,F,T)



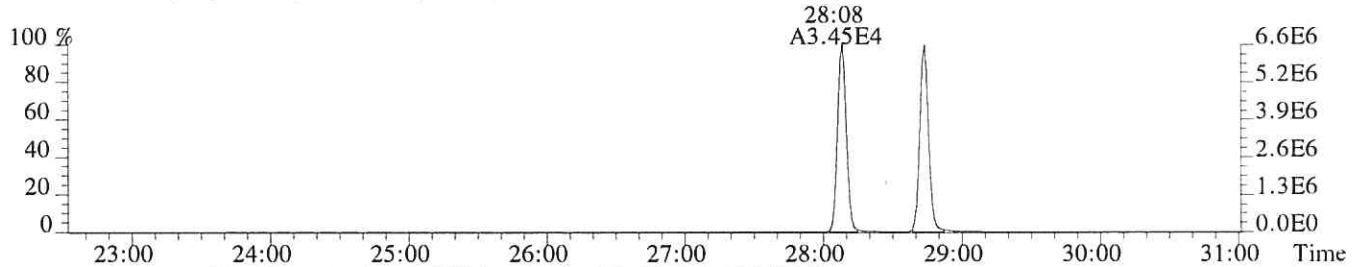
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,680.0,1.00%,F,T)



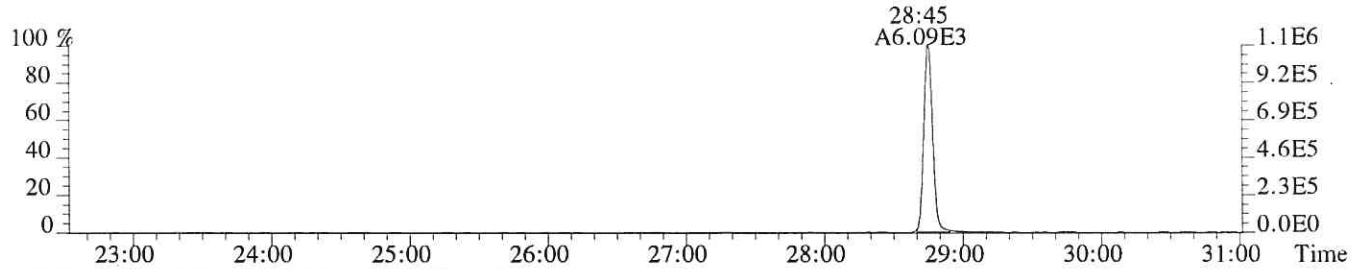
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4528.0,1.00%,F,T)



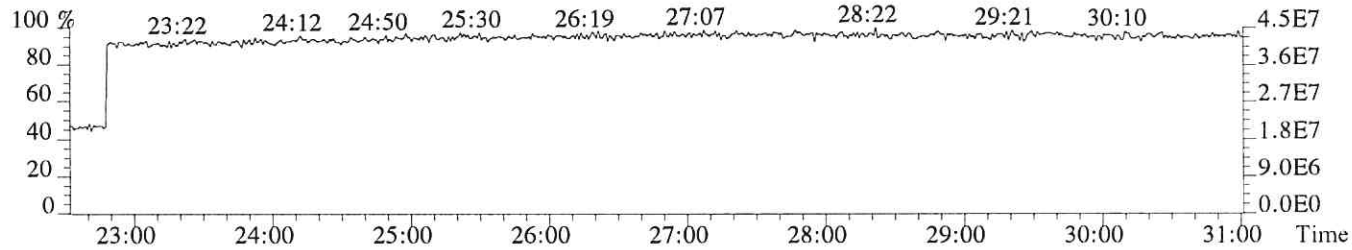
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2720.0,1.00%,F,T)



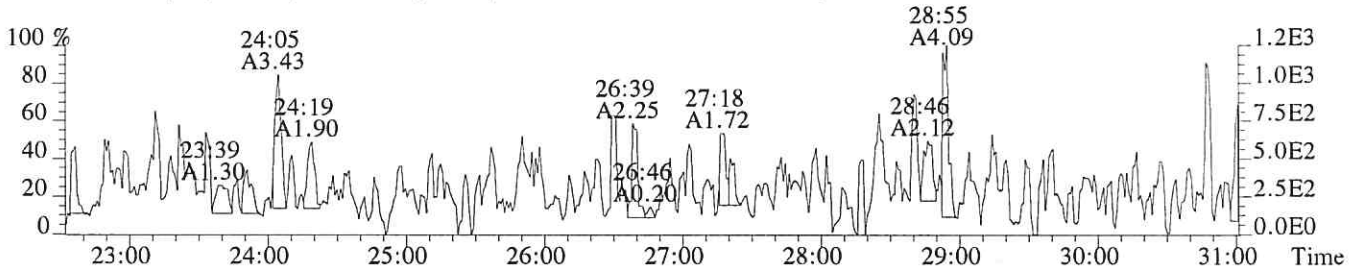
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1840.0,1.00%,F,T)



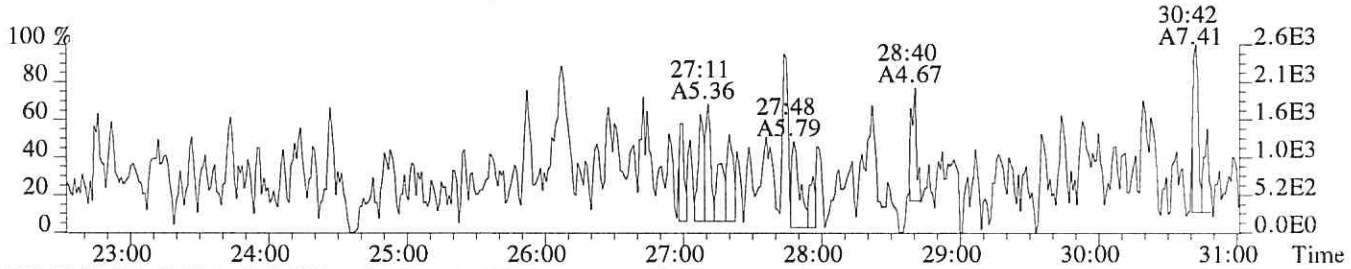
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



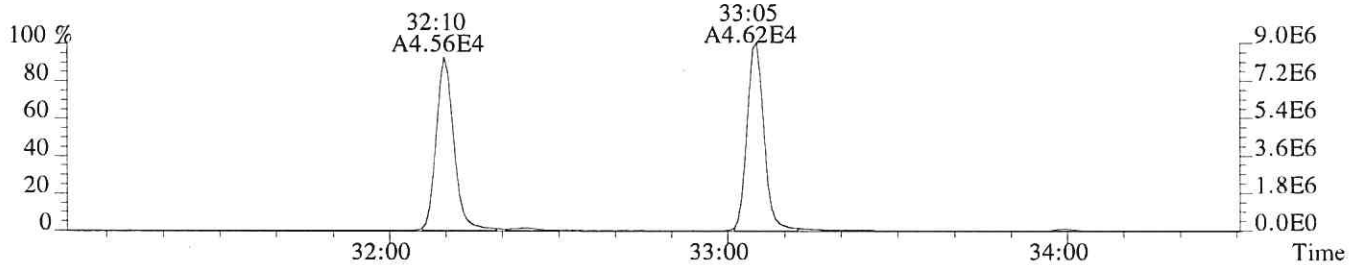
File:P407971 #1-602 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,352.0,1.00%,F,T)



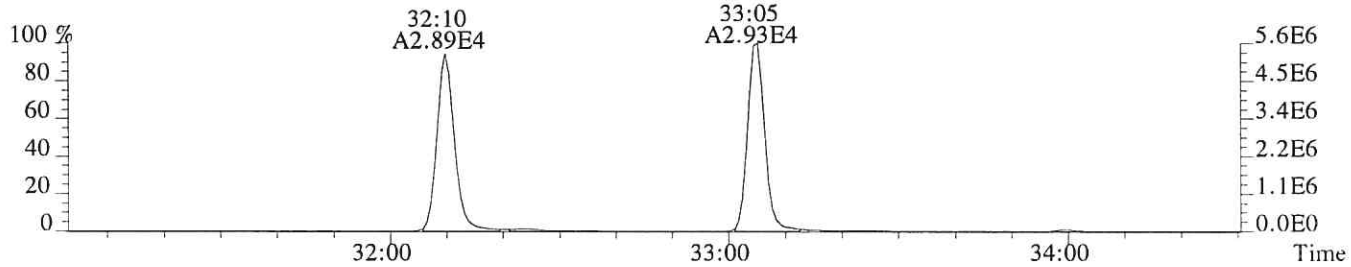
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,972.0,1.00%,F,T)



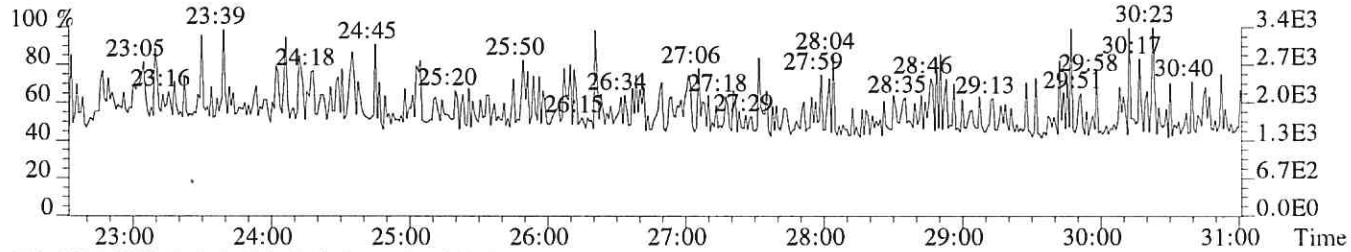
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,288.0,1.00%,F,T)



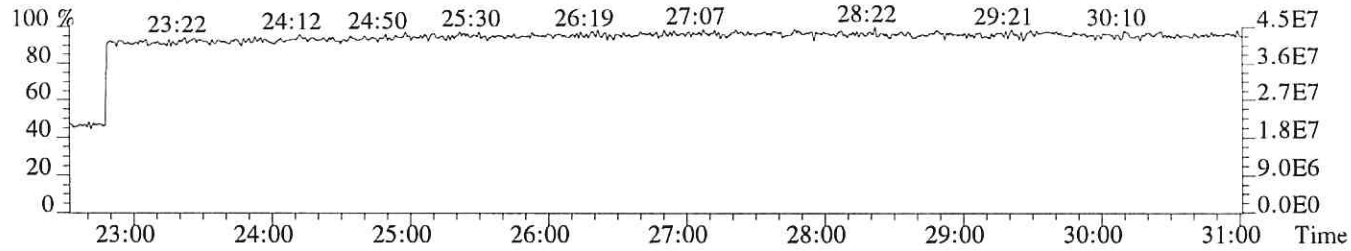
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,388.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

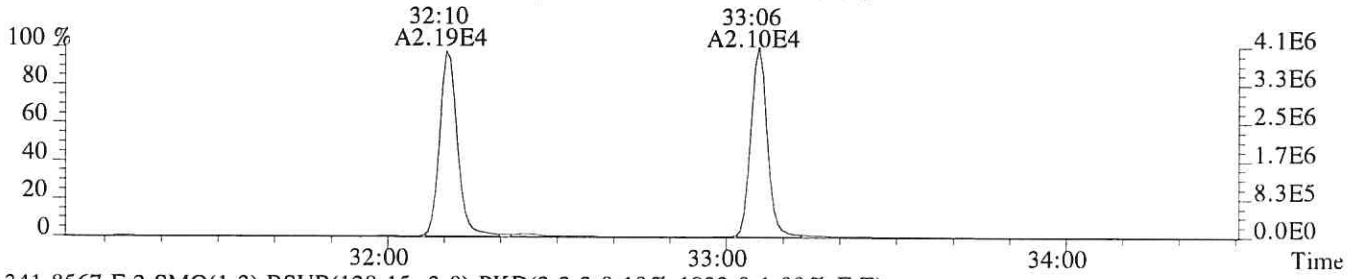


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

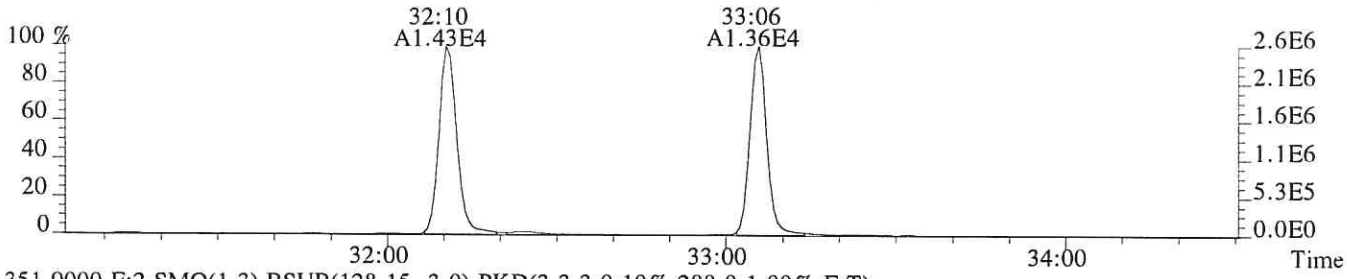


File:P407971 #1-312 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

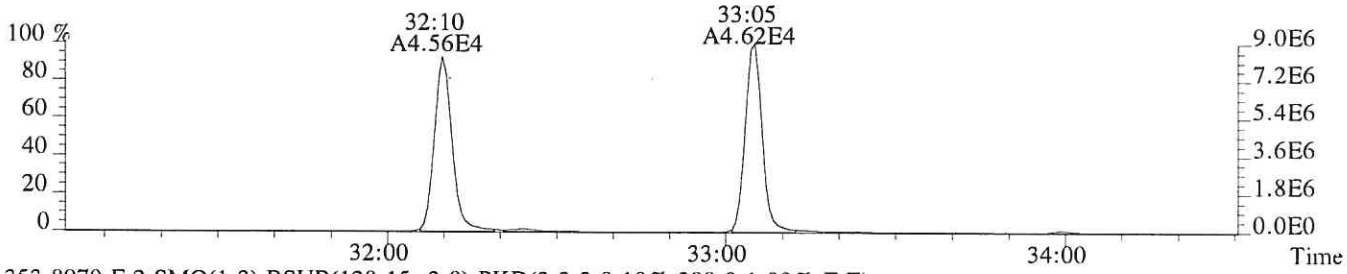
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,356.0,1.00%,F,T)



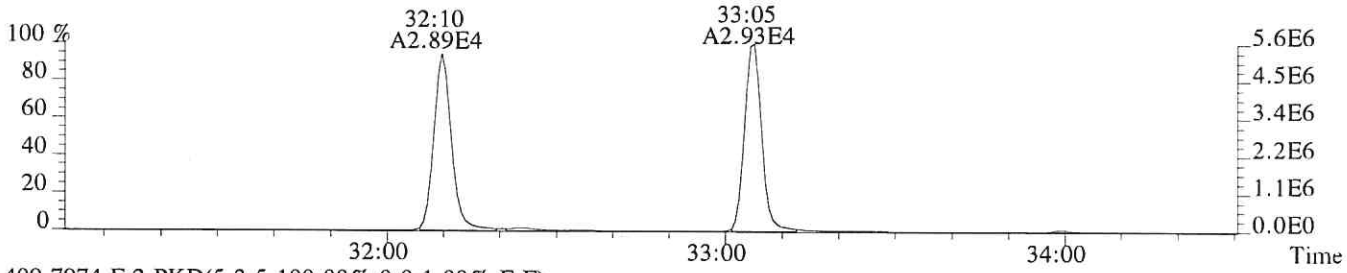
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1932.0,1.00%,F,T)



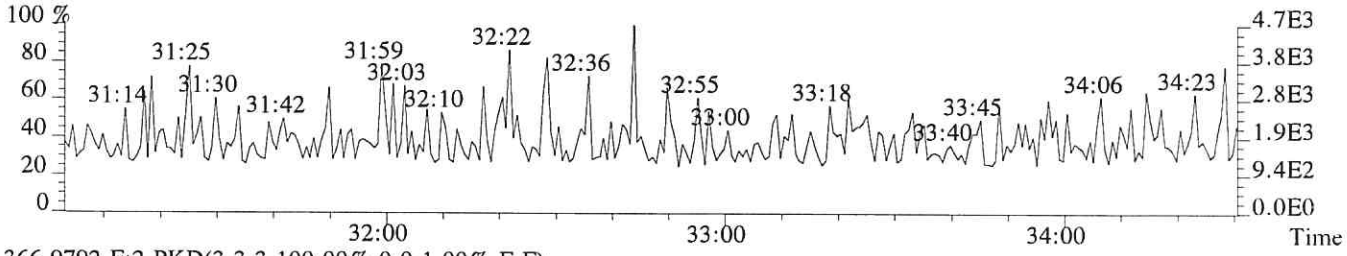
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,288.0,1.00%,F,T)



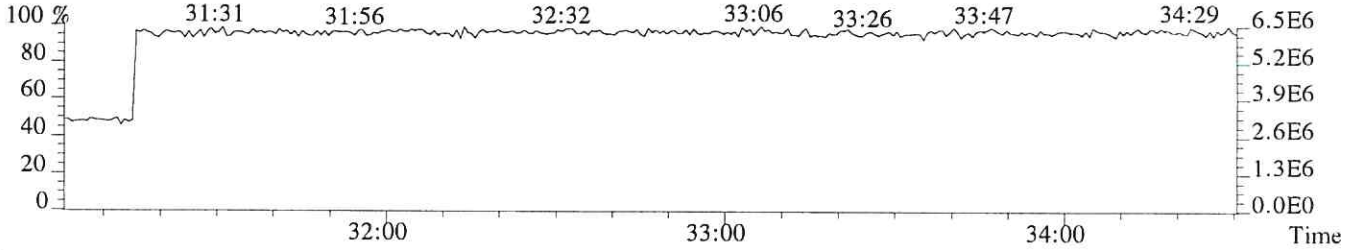
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,388.0,1.00%,F,T)



409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

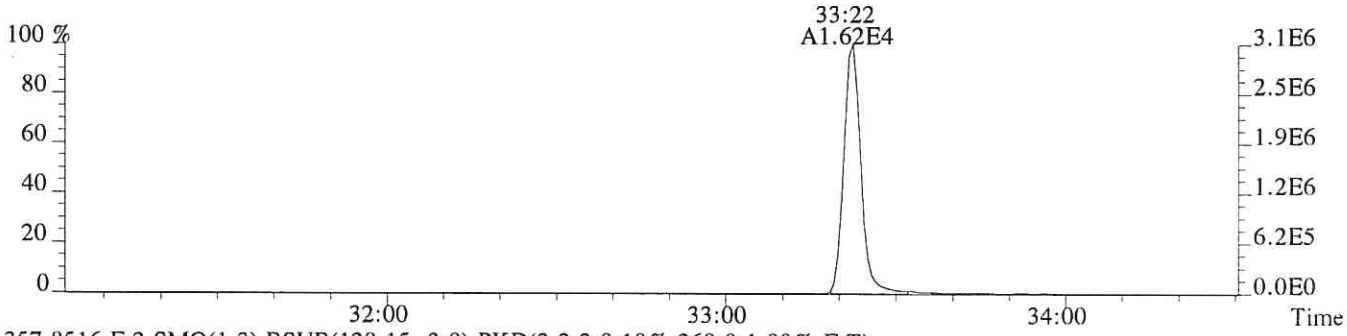


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

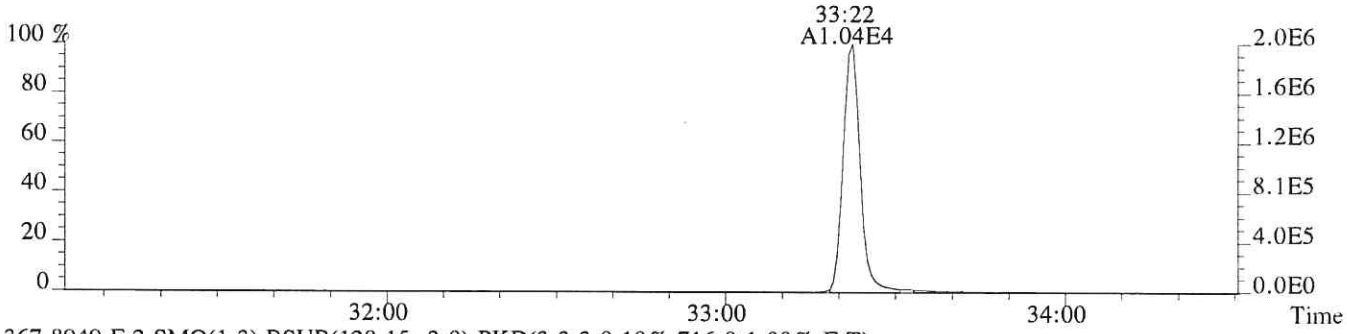


File:P407971 #1-312 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

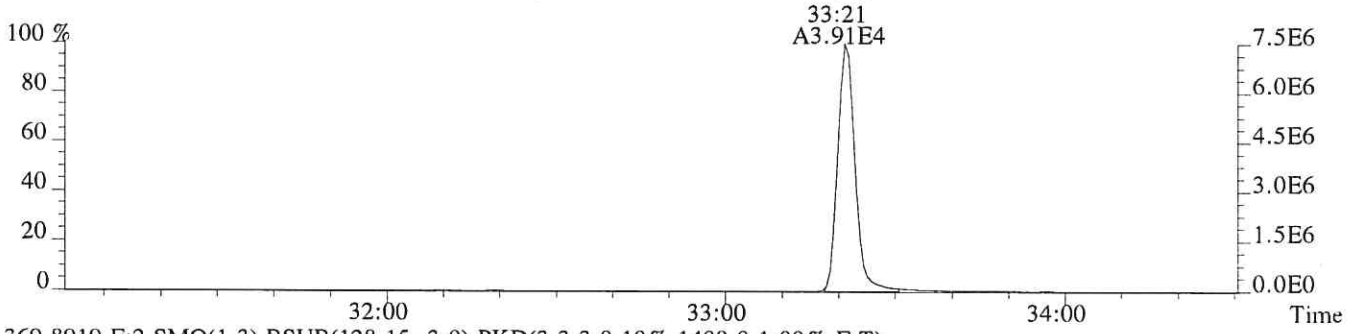
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,712.0,1.00%,F,T)



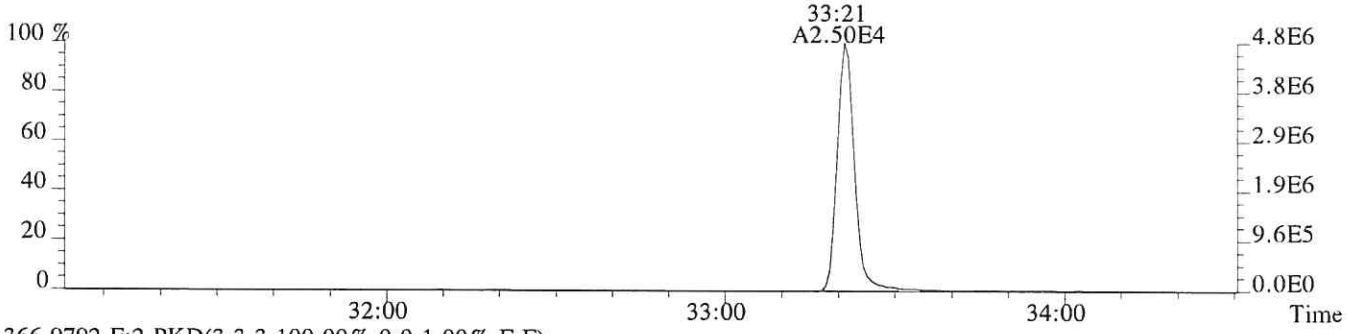
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,268.0,1.00%,F,T)



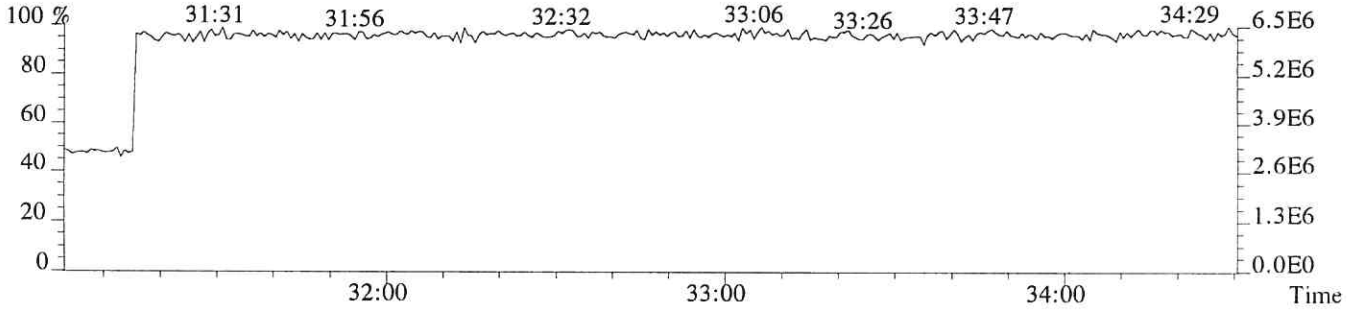
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,716.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1408.0,1.00%,F,T)

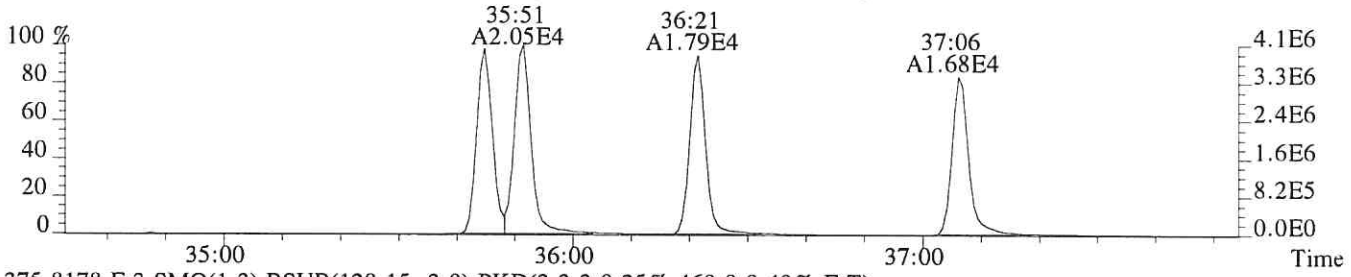


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

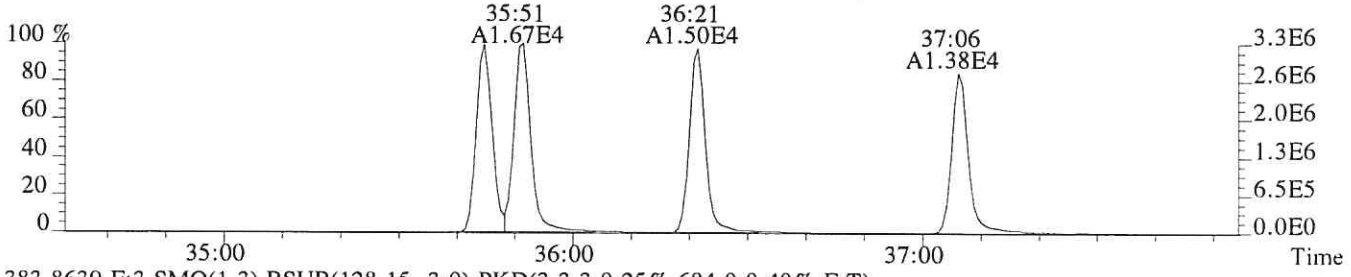


File:P407971 #1-303 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

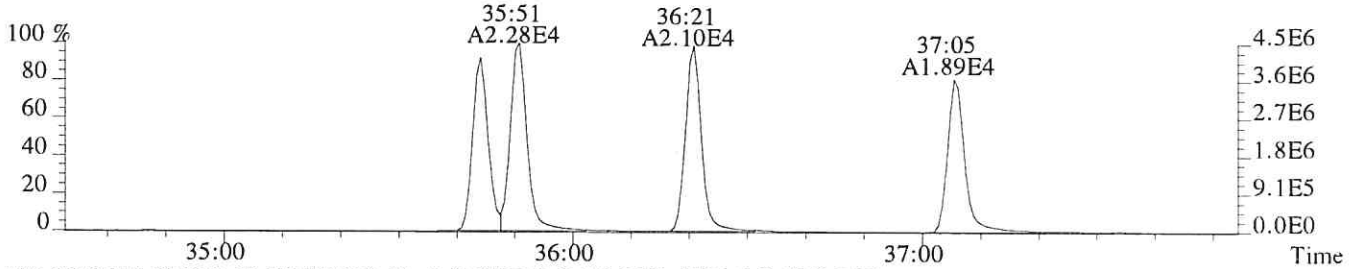
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,580.0,0.40%,F,T)



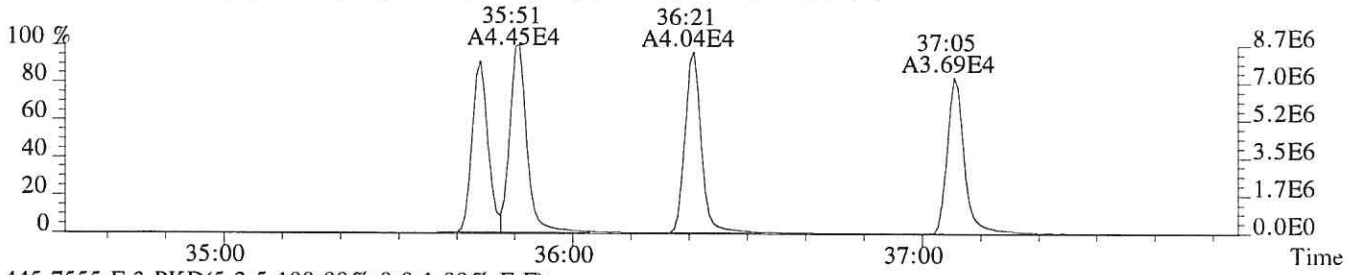
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,460.0,0.40%,F,T)



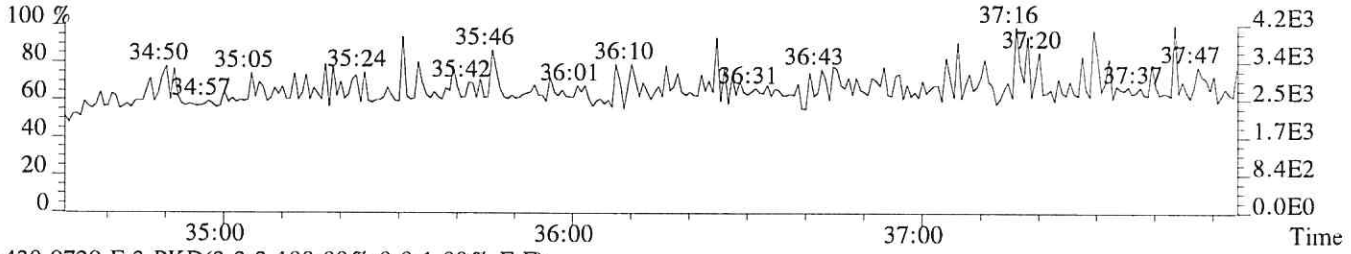
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,684.0,0.40%,F,T)



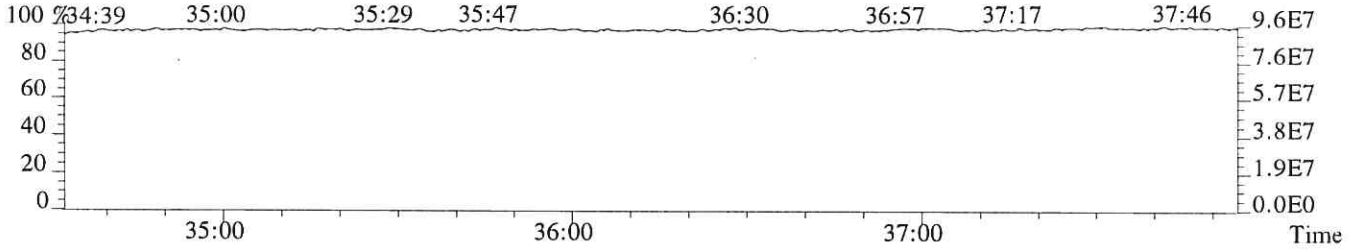
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1192.0,0.40%,F,T)



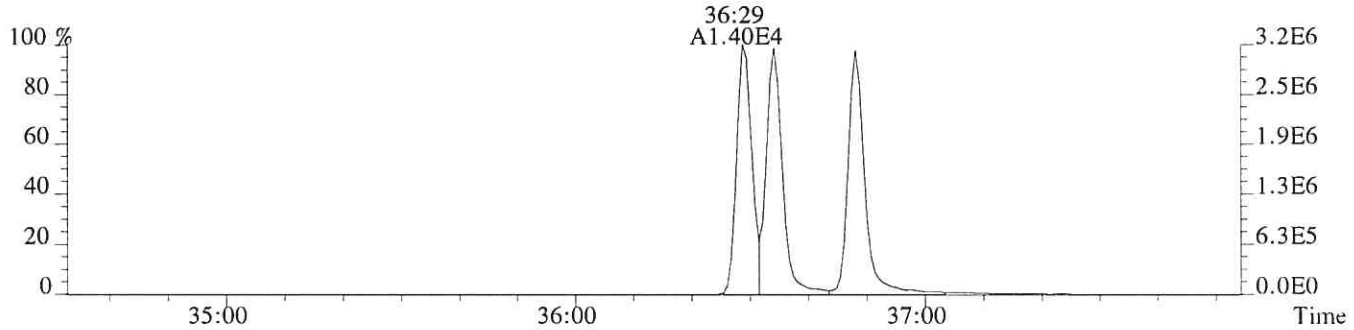
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



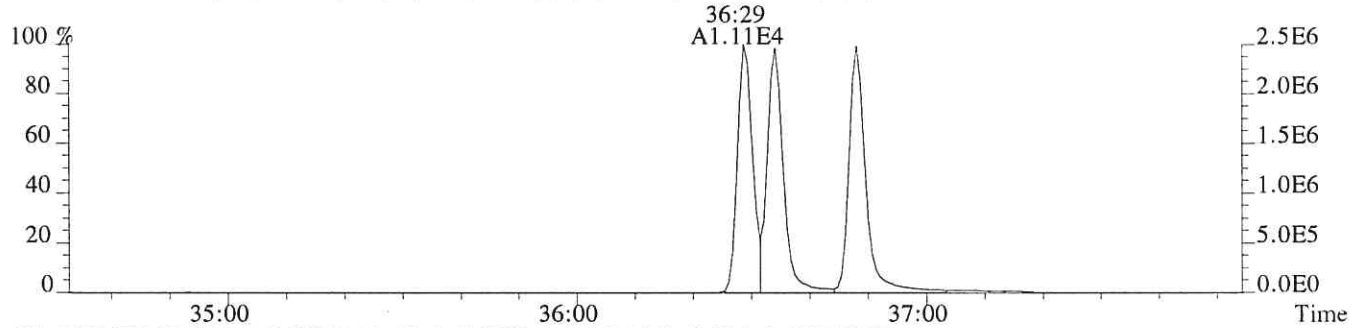
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



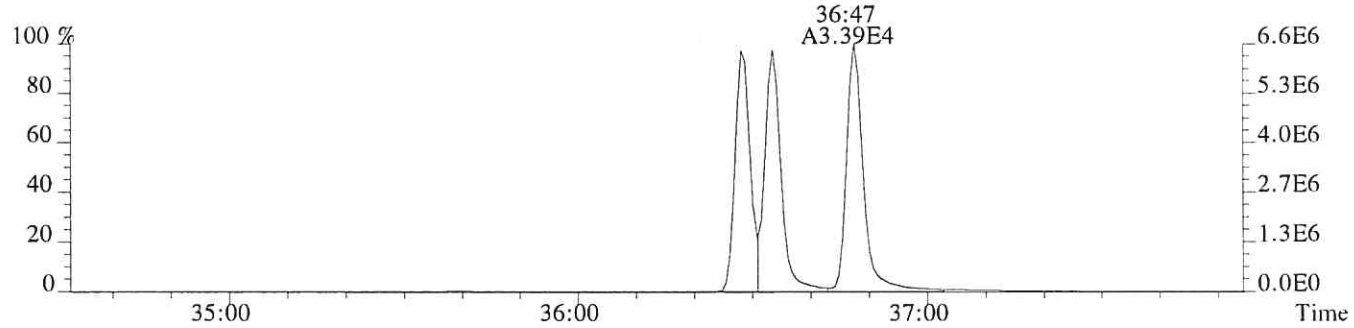
File:P407971 #1-303 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,640.0,0.40%,F,T)



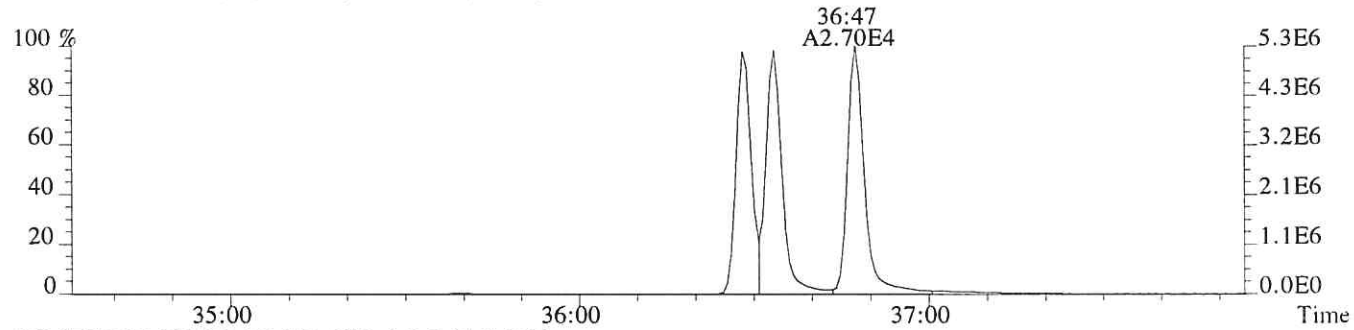
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,480.0,0.40%,F,T)



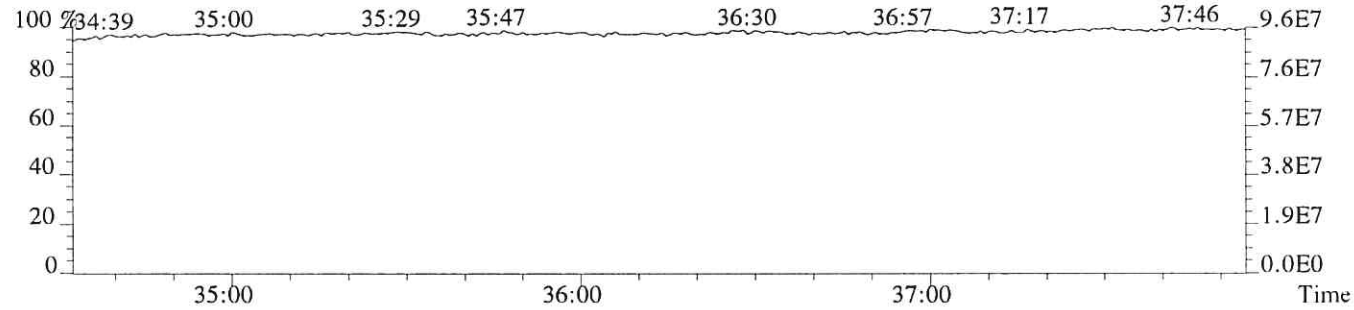
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1008.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1048.0,0.40%,F,T)

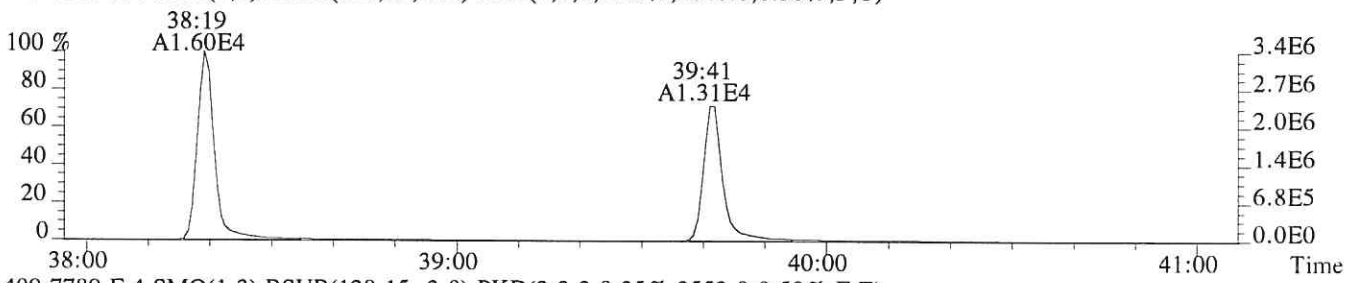


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

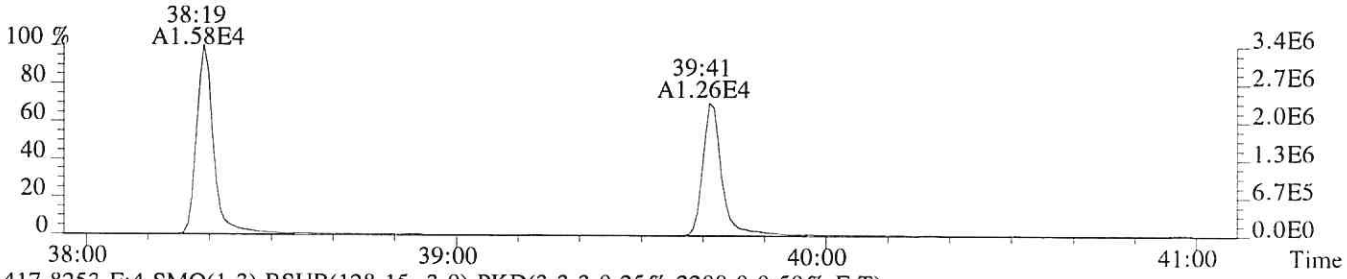


File:P407971 #1-286 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

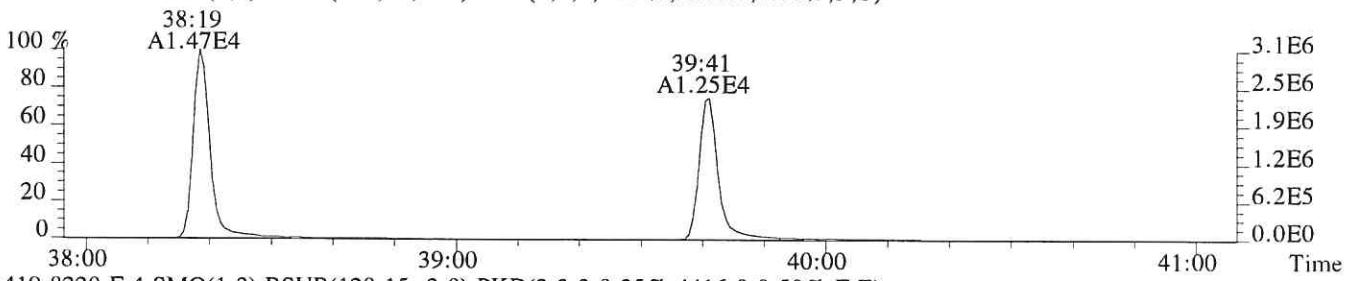
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2840.0,0.50%,F,T)



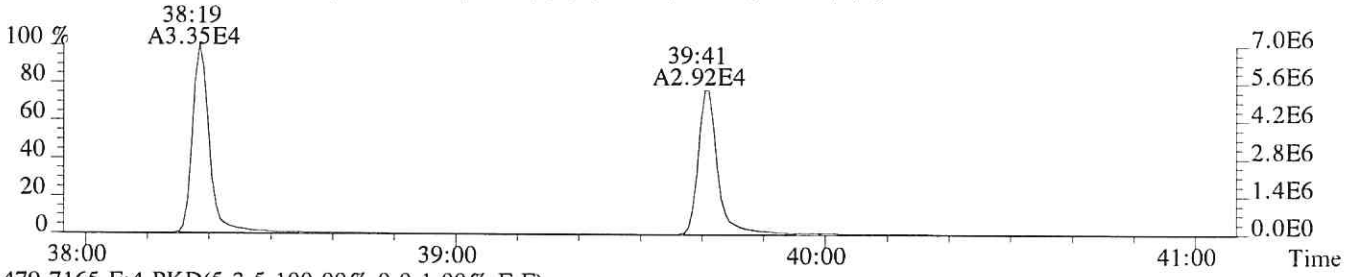
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3552.0,0.50%,F,T)



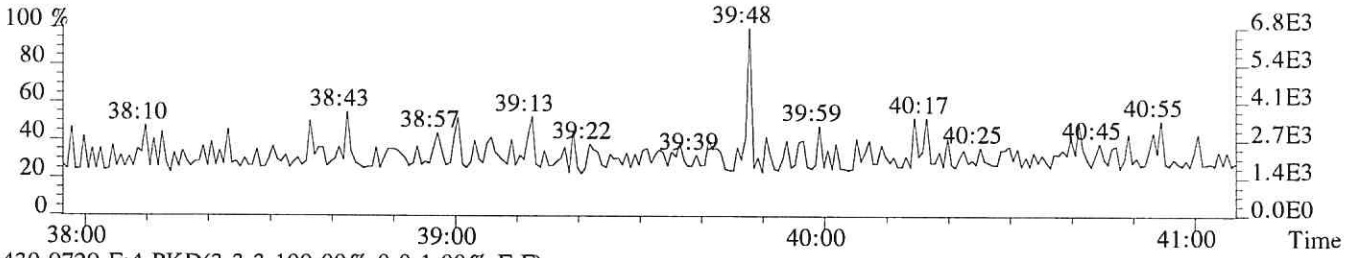
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2208.0,0.50%,F,T)



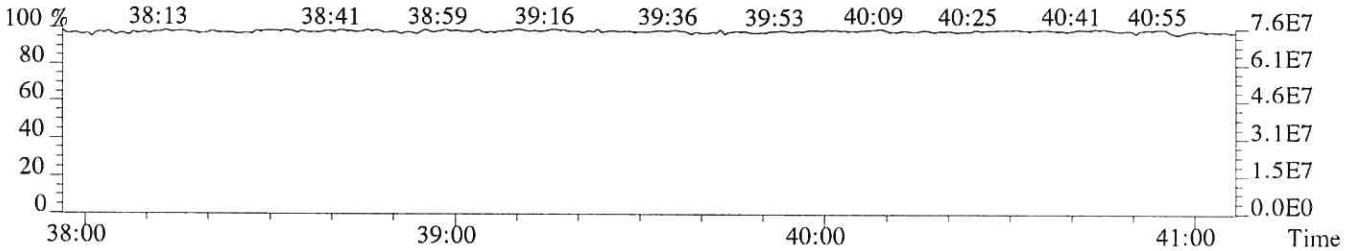
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4416.0,0.50%,F,T)



479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

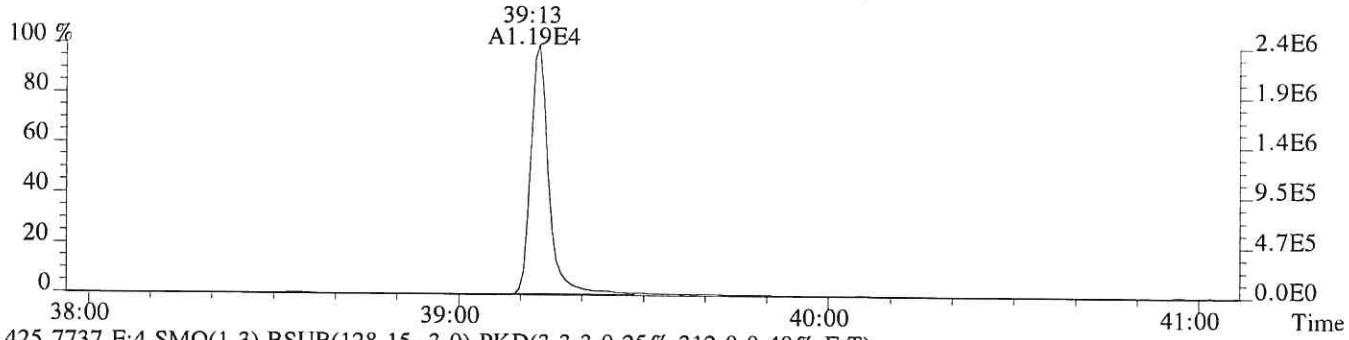


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

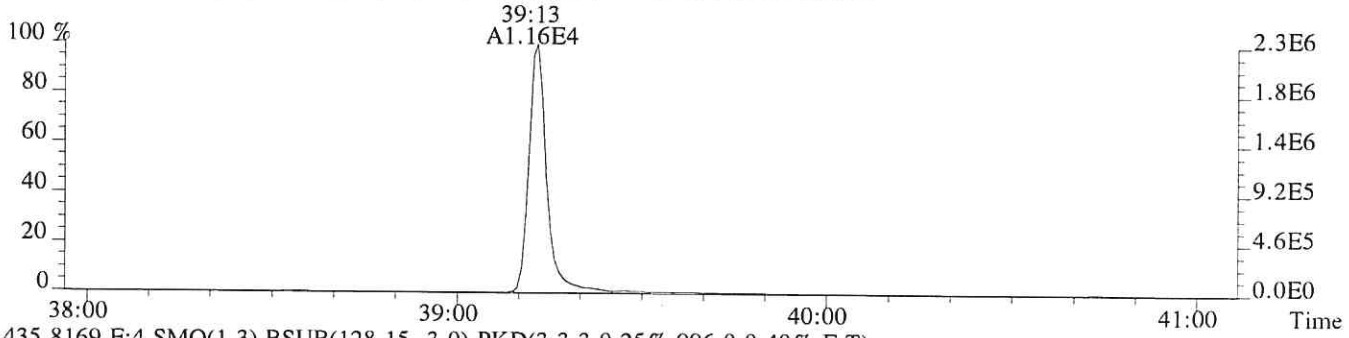


File:P407971 #1-286 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

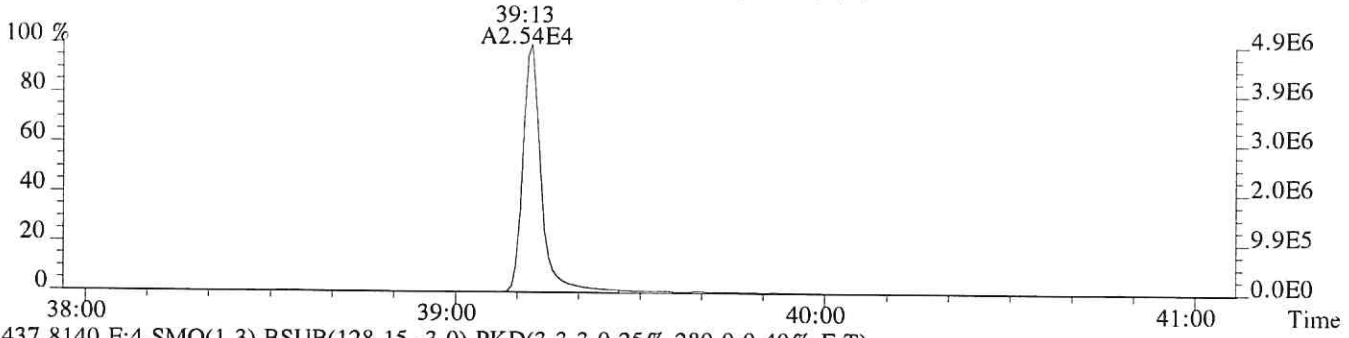
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,548.0,0.40%,F,T)



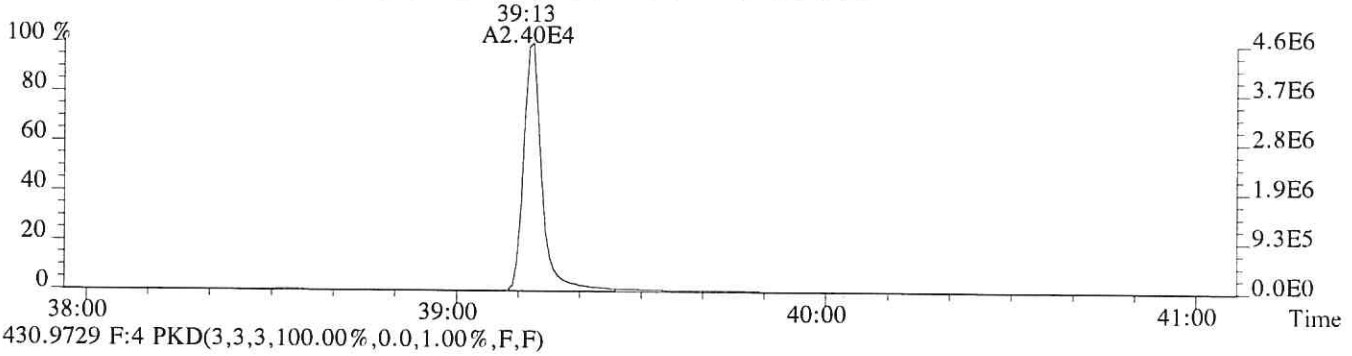
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,312.0,0.40%,F,T)



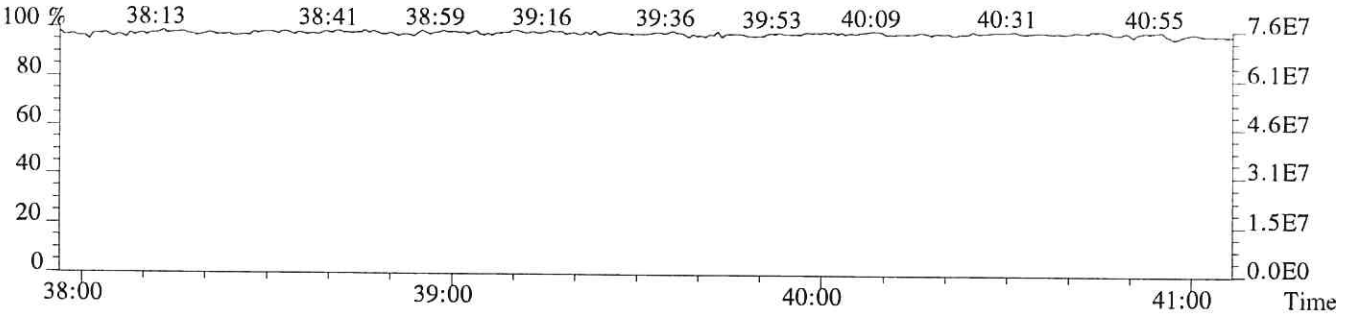
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,996.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,280.0,0.40%,F,T)

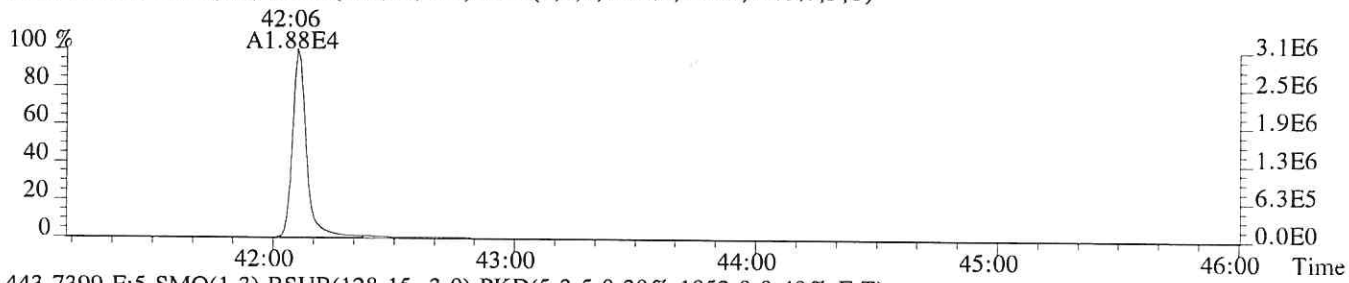


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

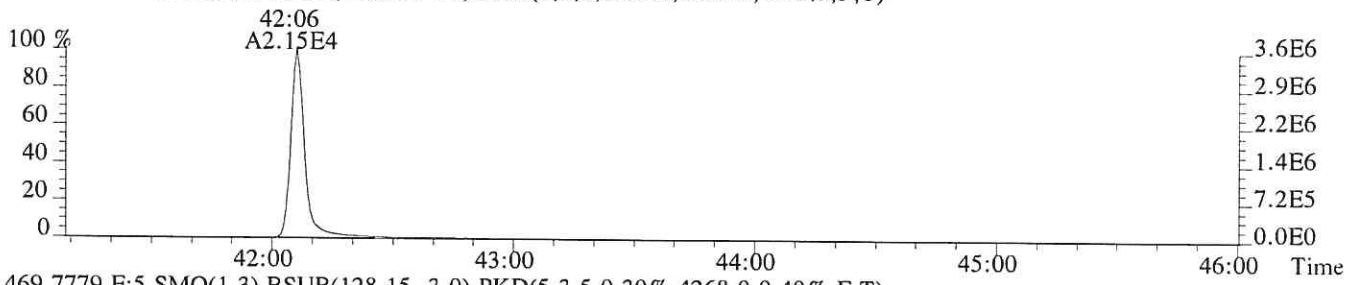


File:P407971 #1-438 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

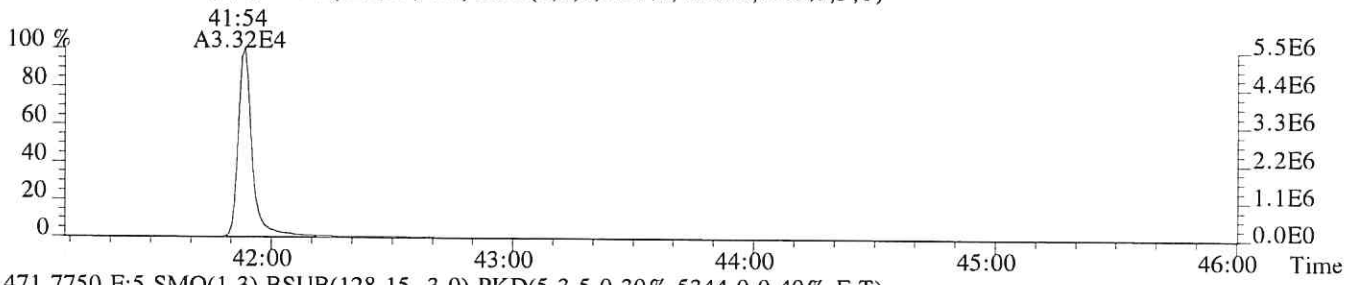
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,396.0,0.40%,F,T)



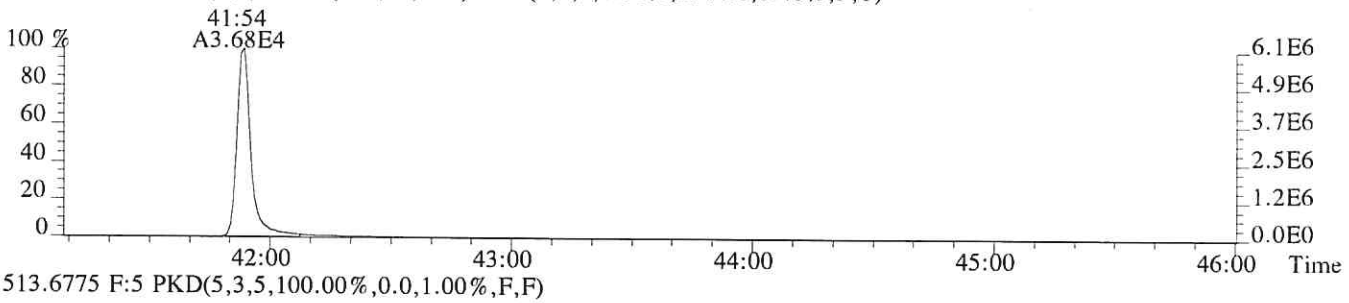
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1052.0,0.40%,F,T)



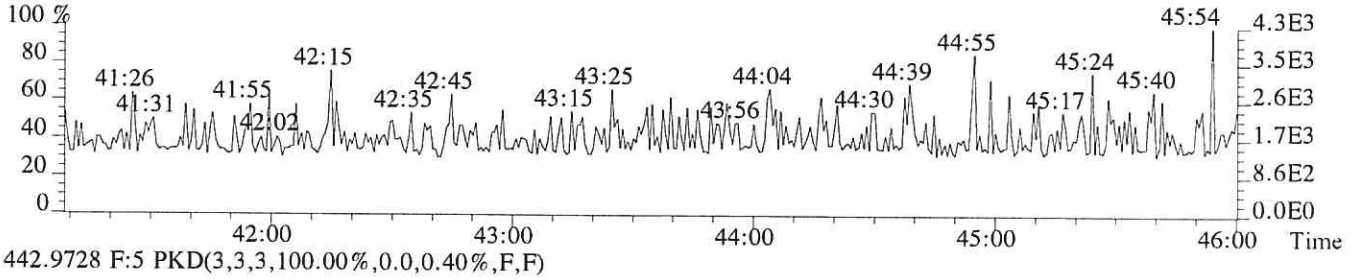
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4268.0,0.40%,F,T)



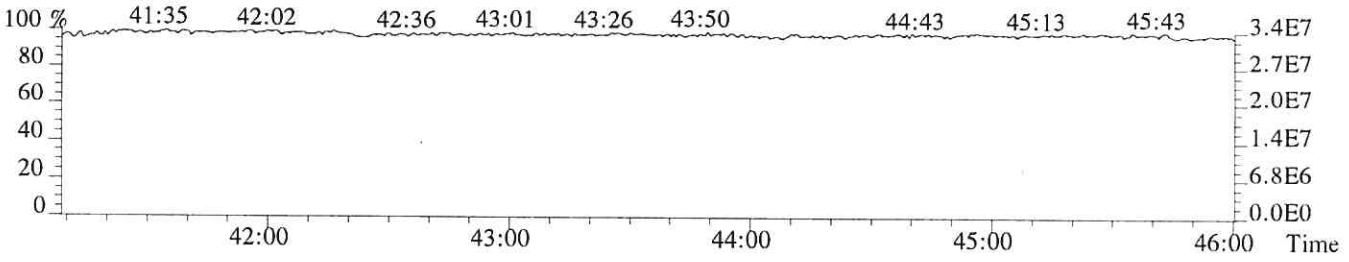
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,5344.0,0.40%,F,T)



513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

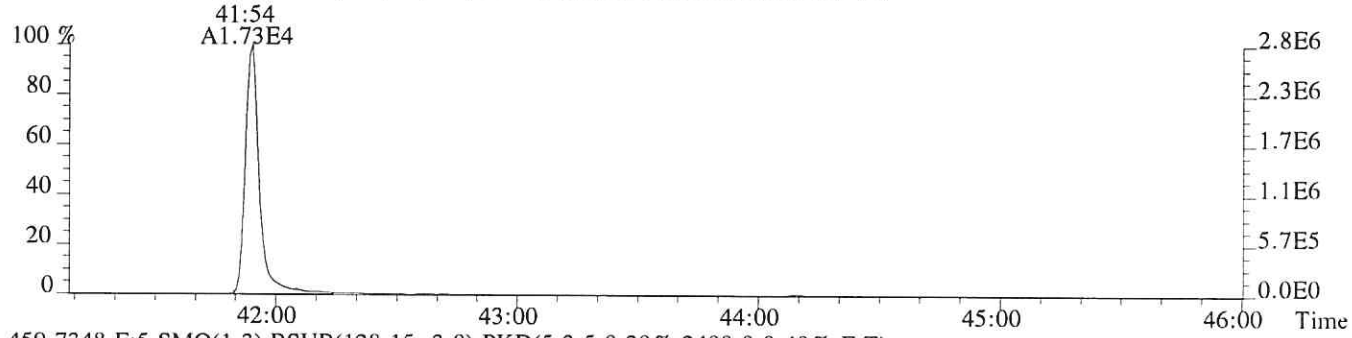


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

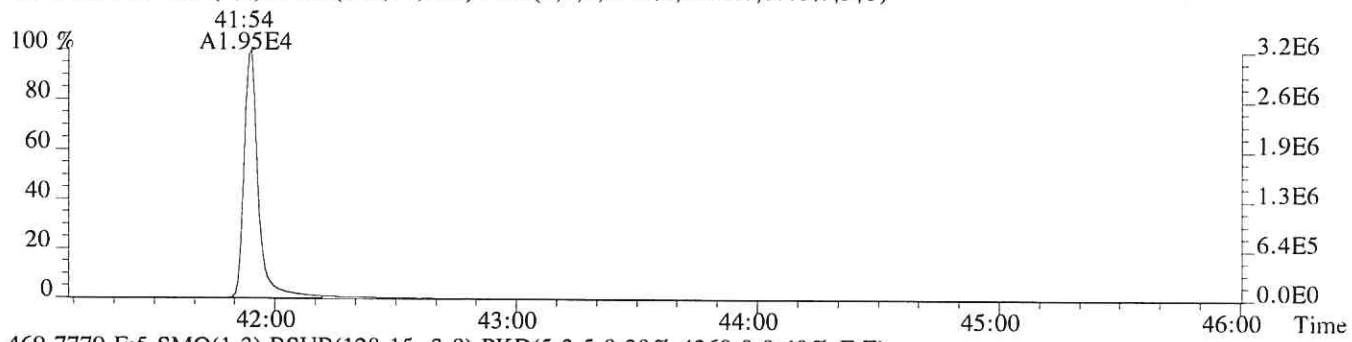


File:P407971 #1-438 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

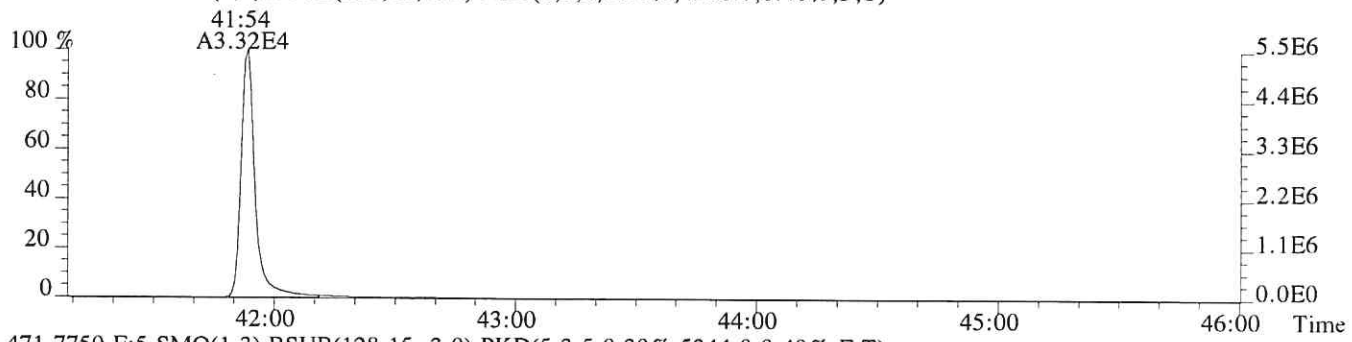
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3036.0,0.40%,F,T)



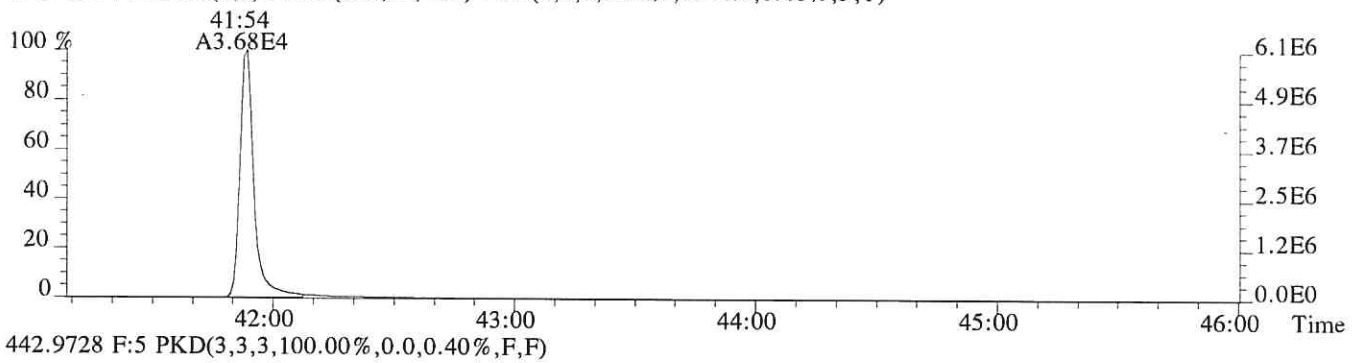
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2400.0,0.40%,F,T)



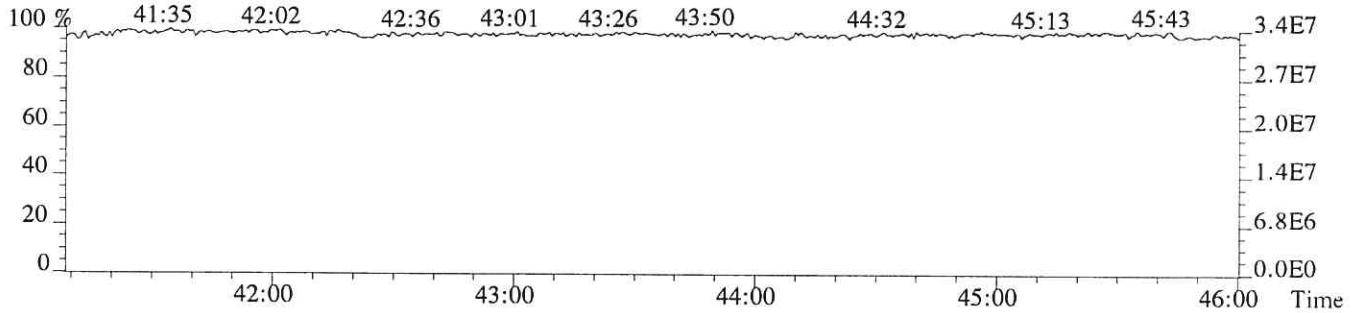
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4268.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,5344.0,0.40%,F,T)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



CCAL HRCC3/CS3 Daily Calibration QC Checklist

Calibration File Name: P407971 – P407983

Date: 09/19/17 – 09/20/17

Circle one: Beginning / Ending

Method: 1613 / 1613E / 8290 / VCP / Tetra / TCDD Only / TCDF Conf / VCP Conf / 8280 / M23 / TO-9A

Retention Window/Column Performance Check:	Analyst	Second Check
Windows in and first and last eluters labeled	✓	✓
Column Performance shows less than or equal to 25% valley between column specific 2378 isomer and its closest eluters	✓	✓
No QC ion deflections affect column specific 2378 isomer or its closest eluters (HRMS Only)	✓	✓

CS3 Continuing Calibration	Analyst	Second Check
Percent RSD within method criteria	✓	✓
All relative abundance ratios meet method criteria	✓	✓
No QC ion deflections of greater than 20% (HRMS Only)	✓	✓
Mass spectrometer resolution greater than or equal to 10,000 and documented (HRMS Only)	✓	✓
2378-TCDD elutes at 25 minutes or later on the DB-5 column / DB-5MSUI column	✓	✓
Signal-to-noise of all target analytes and their labeled standards at least 10:1	✓	✓
Valley between labeled 123478 and 123678 HxCDD peaks less than or equal to 50% (LRMS Only)	N/A	N/A
Ending Calibration injected prior to end of 12 hour clock	✓	✓

Analyst: JC

Second QC: LKL

ccalqc.xls 07/17/12

5DFC
PCDD/PCDF ANALYTICAL SEQUENCE SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract:

Lab Code: Case No.: Client No.: SDG No.:

GC Column: DB-5MSUI ID: 0.25 (mm)

Init. Calib. Date: 09/01/17

Init. Calib.Times: 14:07

THE ANALYTICAL SEQUENCE OF STANDARDS, SAMPLES, BLANKS, AND LABORATORY CONTROL SAMPLES (LCSs) IS AS FOLLOWS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
178397	WINDOW DEFINE	P407972	19-SEP-17	15:46:27
178398	CS3	P407971	19-SEP-17	14:23:48
METHOD BLANK	EQ1700309-01	P407973	19-SEP-17	16:34:26
SB-2	E1700852-001RE	P407974	19-SEP-17	17:23:17
SB-10	E1700852-010RE	P407975	19-SEP-17	18:12:11
SB-11	E1700852-011RE	P407976	19-SEP-17	19:01:04
SB-12	E1700852-012RE	P407977	19-SEP-17	19:50:05
17813-002-S1X2	E1700853-001RE	P407978	19-SEP-17	20:39:09
17813-002-S8X2	E1700853-002RE	P407979	19-SEP-17	21:28:05
17813-002-S8X12	E1700853-003RE	P407980	19-SEP-17	22:17:08
LCS	EQ1700406-02	P407981	19-SEP-17	23:06:04
DLCS	EQ1700406-03	P407982	19-SEP-17	23:55:09
178398	CS3	P407983	20-SEP-17	00:52:17

Opus 4: P407971res

	Date	Time	File Name	Lab Sample ID	Client File Text	Bottle	MS File	Inlet File	Analyst	Comments
1	9/19/17	14:23	P407971	178398	CS3	Tray1:2	epa1613_als	Dioxin_ALS	JM	HRMS check 15:29
2		15:46	P407972	178397	WINDOW DEFINE	Tray1:1	epa1613_als	Dioxin_ALS		
3		16:34	P407973	EQ1700390-01	MB	Tray1:3	epa1613_als	Dioxin_ALS		
4		17:23	P407974	E1700852-001RE	E1700852-001RE	Tray1:4	epa1613_als	Dioxin_ALS		
5		18:12	P407975	E1700852-010RE	E1700852-010RE	Tray1:5	epa1613_als	Dioxin_ALS		
6		19:01	P407976	E1700852-011RE	E1700852-011RE	Tray1:6	epa1613_als	Dioxin_ALS		
7		19:50	P407977	E1700852-012RE	E1700852-012RE	Tray1:7	epa1613_als	Dioxin_ALS		
8		20:39	P407978	E1700853-001RE	E1700853-001RE	Tray1:8	epa1613_als	Dioxin_ALS		
9		21:28	P407979	E1700853-002RE	E1700853-002RE	Tray1:9	epa1613_als	Dioxin_ALS		
10		22:17	P407980	E1700853-003RE	E1700853-003RE	Tray1:10	epa1613_als	Dioxin_ALS		
11		23:06	P407981	EQ1700406-02	LCS	Tray1:11	epa1613_als	Dioxin_ALS		
12		23:55	P407982	~~EQ1700406-03~~	DLCS	Tray1:12	epa1613_als	Dioxin_ALS		EQ1700406-03 DLCS
13	9/20/17	00:52	P407983	178398	CS3	Tray1:2	epa1613_als	Dioxin_ALS		HRMS check 00:52
14	—	—	—	—	—	Tray1:2	epa1613_als	Dioxin_ALS	—	—
15	—	—	—	—	—	Tray1:1	epa1613_als	Dioxin_ALS	—	—
16	—	—	—	—	—	Tray1:16	epa1613_als	Dioxin_ALS	—	—
17	—	—	—	—	—	Tray1:17	epa1613_als	Dioxin_ALS	—	—
18	—	—	—	—	—	Tray1:18	epa1613_als	Dioxin_ALS	—	—
19	—	—	—	—	—	Tray1:19	epa1613_als	Dioxin_ALS	—	—
20	—	—	—	—	—	Tray1:20	epa1613_als	Dioxin_ALS	—	—
21	—	—	—	—	—	Tray1:21	epa1613_als	Dioxin_ALS	—	—
22	—	—	—	—	—	Tray1:22	epa1613_als	Dioxin_ALS	—	—
23	—	—	—	—	—	Tray1:23	epa1613_als	Dioxin_ALS	—	—
24	—	—	—	—	—	Tray1:24	epa1613_als	Dioxin_ALS	—	—
25	—	—	—	—	—	Tray1:25	epa1613_als	Dioxin_ALS	—	—
26	—	—	—	—	—	Tray1:2	epa1613_als	Dioxin_ALS	—	—
27	—	—	—	—	—	Tray1:27	epa1613_als	Dioxin_ALS	—	—
28	—	—	—	—	—	Tray1:28	epa1613_als	Dioxin_ALS	—	—
29	—	—	—	—	—	Tray1:29	epa1613_als	Dioxin_ALS	—	—
30	—	—	—	—	—	Tray1:30	epa1613_als	Dioxin_ALS	—	—
31	—	—	—	—	—	Tray1:31	epa1613_als	Dioxin_ALS	—	—
32	—	—	—	—	—	Tray1:32	epa1613_als	Dioxin_ALS	—	—
33	—	—	—	—	—	Tray1:33	epa1613_als	Dioxin_ALS	—	—
34	—	—	—	—	—	Tray1:34	epa1613_als	Dioxin_ALS	—	—
35	—	—	—	—	—	Tray1:35	epa1613_als	Dioxin_ALS	—	—
36	—	—	—	—	—	Tray1:36	epa1613_als	Dioxin_ALS	—	—
37	—	—	—	—	—	Tray1:37	epa1613_als	Dioxin_ALS	—	—
38	—	—	—	—	—	Tray1:38	epa1613_als	Dioxin_ALS	—	—
39	—	—	—	—	—	Tray1:39	epa1613_als	Dioxin_ALS	—	—

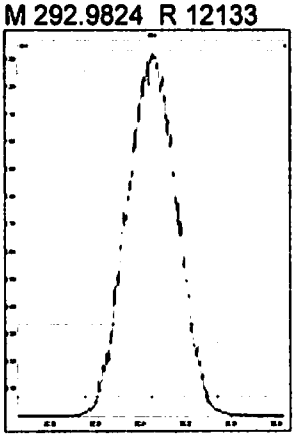
09/19/17 gc

09/20/17 gc

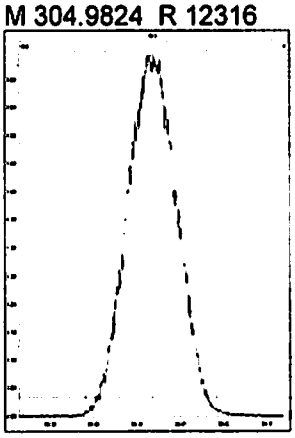
File: Experiment: EPA1613_ALS.exp Reference: Pfk.ref Function: 1 @ 200 (ppm)

Printed: Tuesday, September 19, 2017 15:29:26 Central Daylight Time

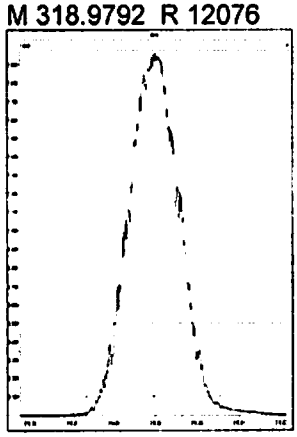
M 292.9824 R 12133



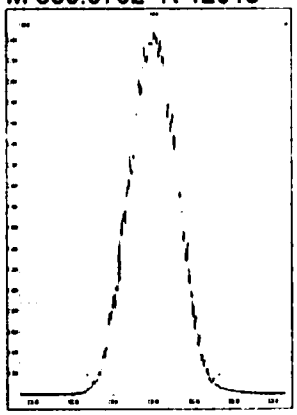
M 304.9824 R 12316



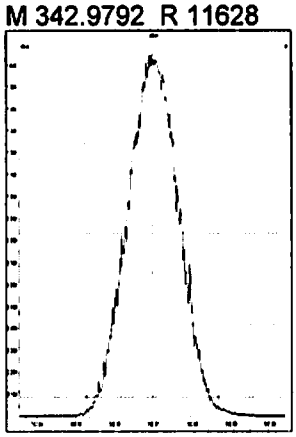
M 318.9792 R 12076



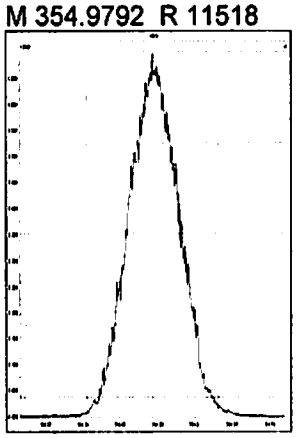
M 330.9792 R 12016



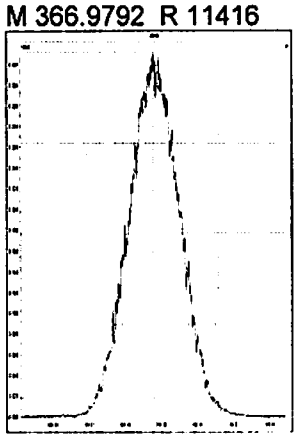
M 342.9792 R 11628



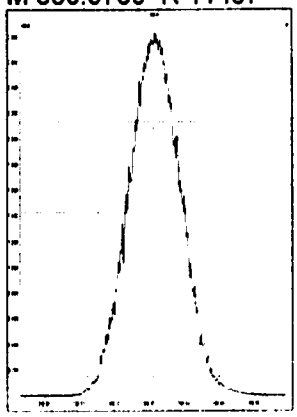
M 354.9792 R 11518



M 366.9792 R 11416



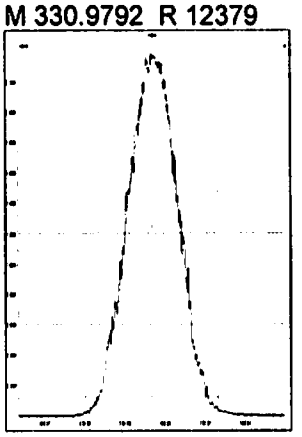
M 380.9760 R 11467



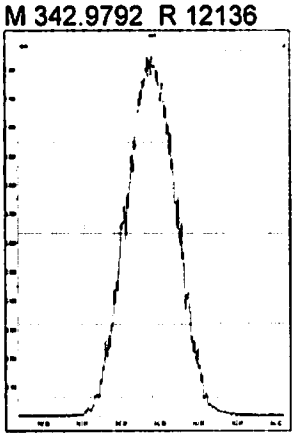
File: Experiment: EPA1613_ALS.exp Reference: Pfk.ref Function: 2 @ 200 (ppm)

Printed: Tuesday, September 19, 2017 15:31:17 Central Daylight Time

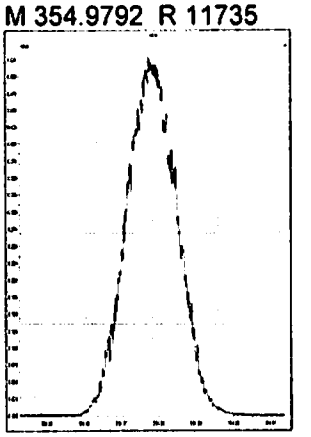
M 330.9792 R 12379



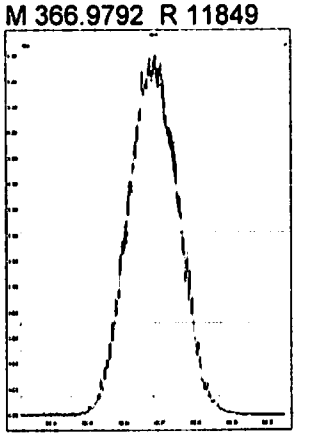
M 342.9792 R 12136



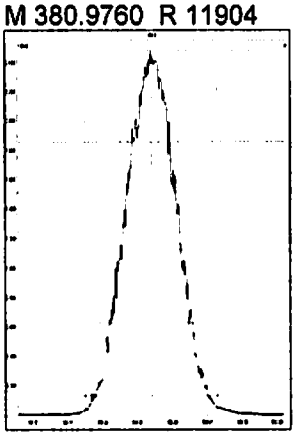
M 354.9792 R 11735



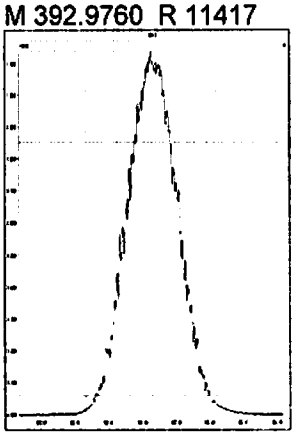
M 366.9792 R 11849



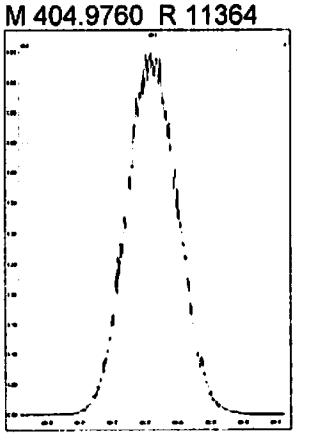
M 380.9760 R 11904



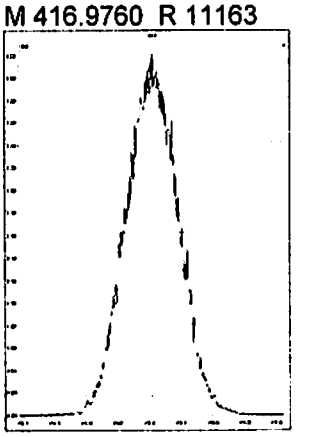
M 392.9760 R 11417



M 404.9760 R 11364



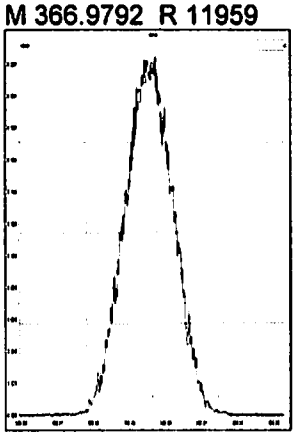
M 416.9760 R 11163



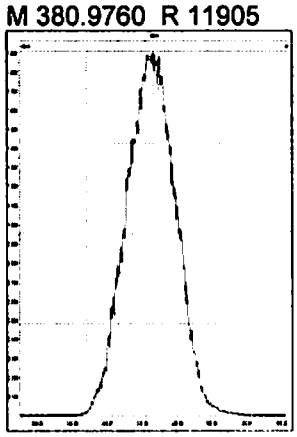
File: Experiment: EPA1613_ALS.exp Reference: Pfk.ref Function: 3 @ 200 (ppm)

Printed: Tuesday, September 19, 2017 15:32:30 Central Daylight Time

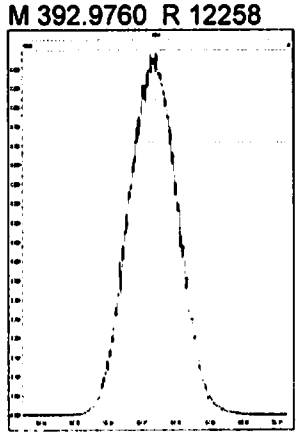
M 366.9792 R 11959



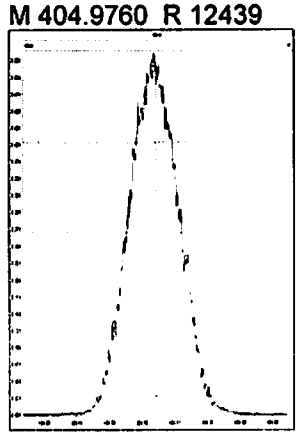
M 380.9760 R 11905



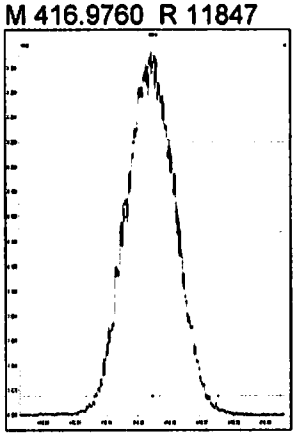
M 392.9760 R 12258



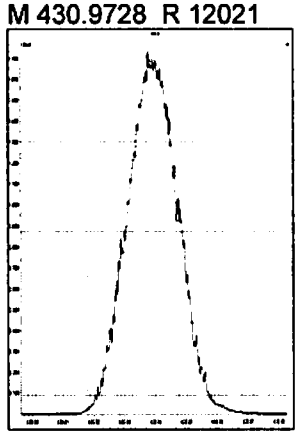
M 404.9760 R 12439



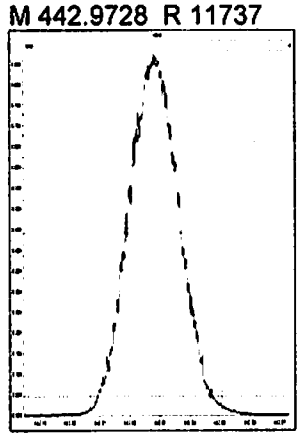
M 416.9760 R 11847



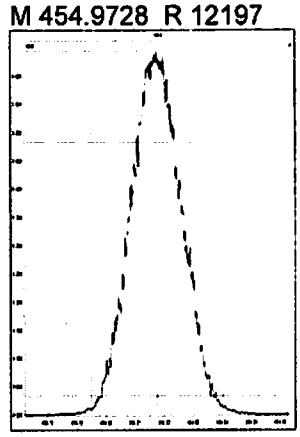
M 430.9728 R 12021



M 442.9728 R 11737



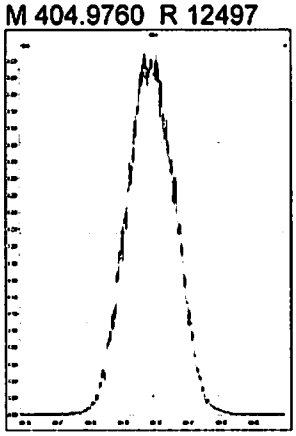
M 454.9728 R 12197



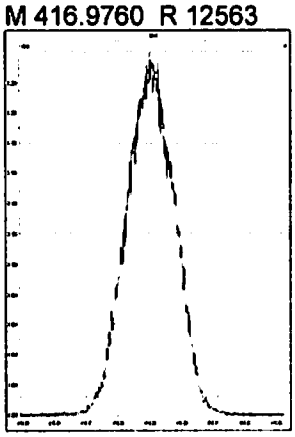
File: Experiment: EPA1613_ALS.exp Reference: Pfk.ref Function: 4 @ 200 (ppm)

Printed: Tuesday, September 19, 2017 15:33:18 Central Daylight Time

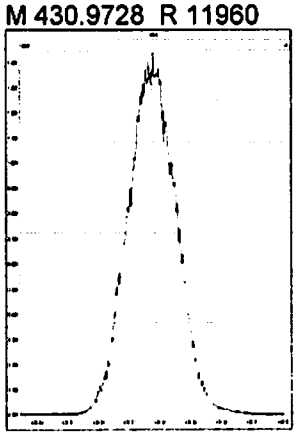
M 404.9760 R 12497



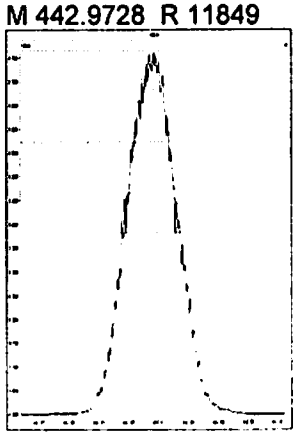
M 416.9760 R 12563



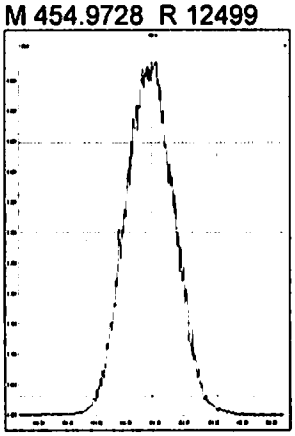
M 430.9728 R 11960



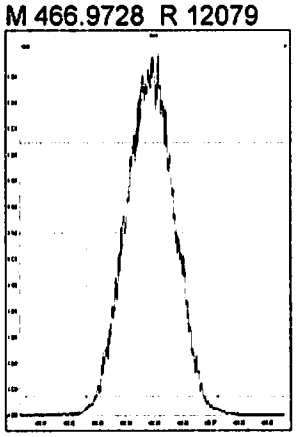
M 442.9728 R 11849



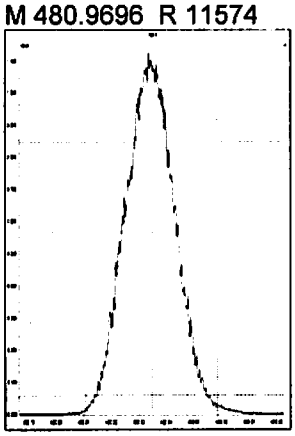
M 454.9728 R 12499



M 466.9728 R 12079



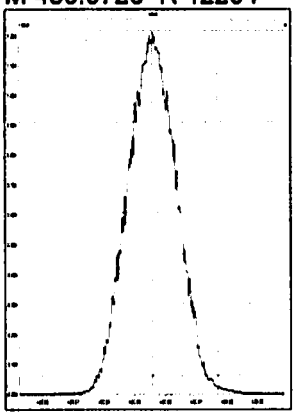
M 480.9696 R 11574



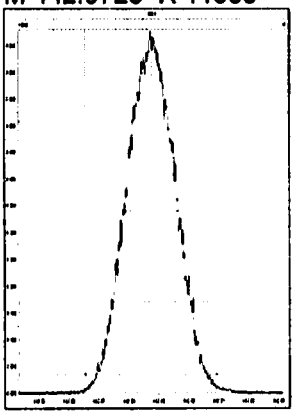
File: Experiment: EPA1613_ALS.exp Reference: Pfk.ref Function: 5 @ 200 (ppm)

Printed: Tuesday, September 19, 2017 15:34:16 Central Daylight Time

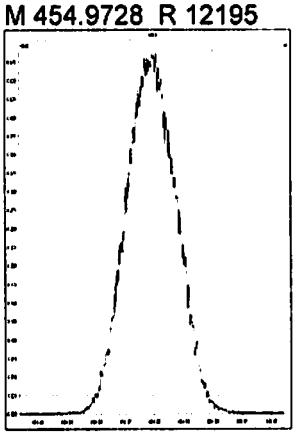
M 430.9728 R 12254



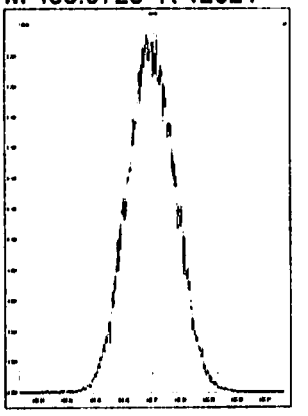
M 442.9728 R 11963



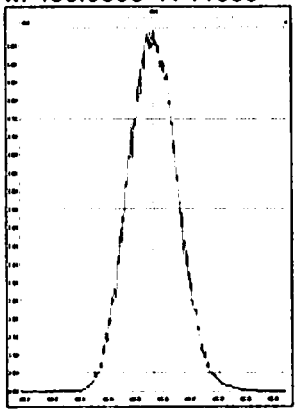
M 454.9728 R 12195



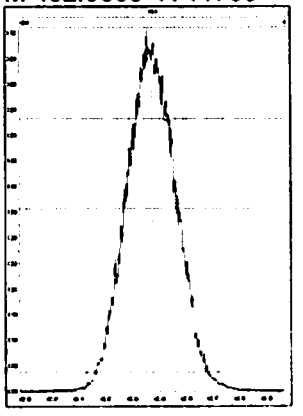
M 466.9728 R 12021



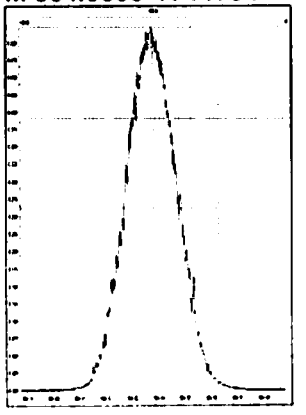
M 480.9696 R 11683



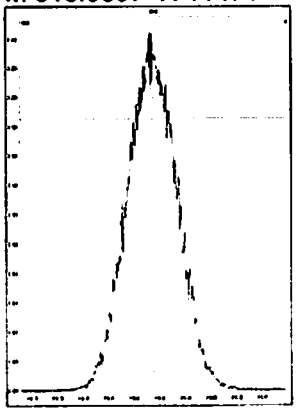
M 492.9696 R 11736



M 504.9696 R 11794



M 516.9697 R 11471



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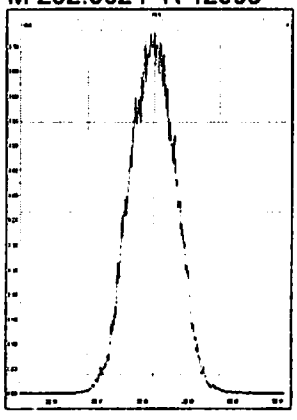
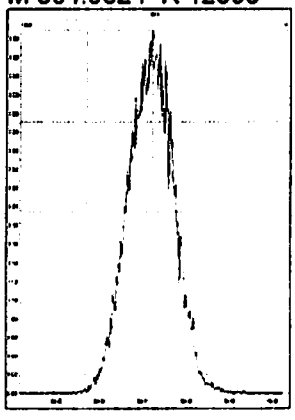
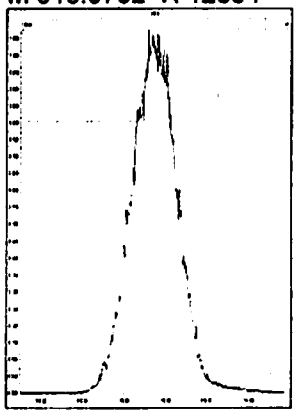
M 292.9824 R 12908



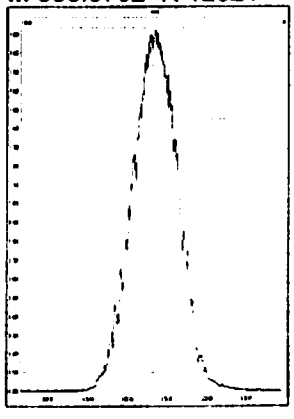
M 304.9824 R 12993



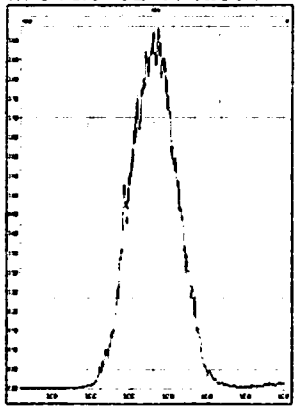
M 318.9792 R 12854



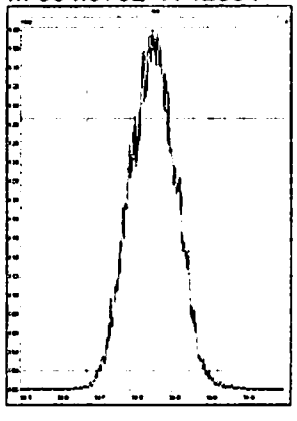
M 330.9792 R 12821



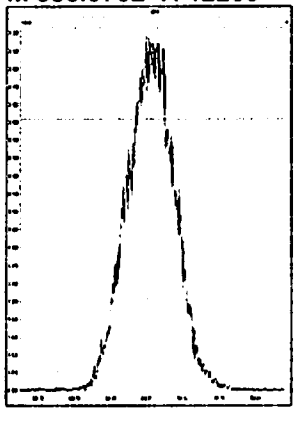
M 342.9792 R 12594



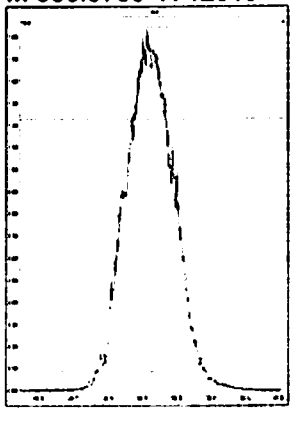
M 354.9792 R 12634



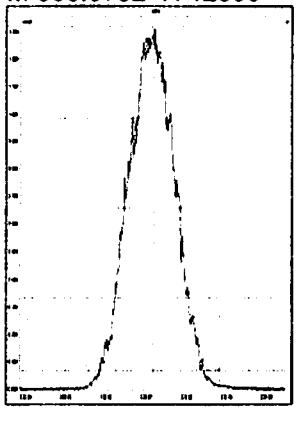
M 366.9792 R 12209



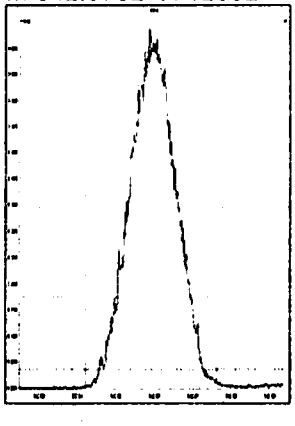
M 380.9760 R 12019



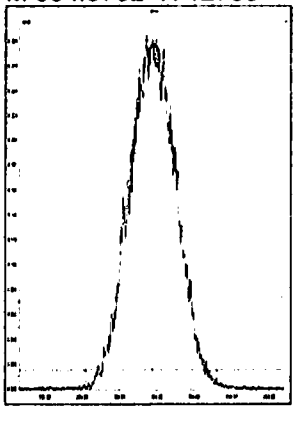
M 330.9792 R 12690



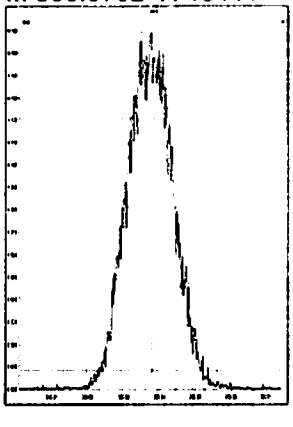
M 342.9792 R 12562



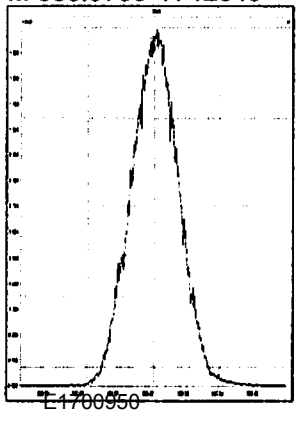
M 354.9792 R 12756



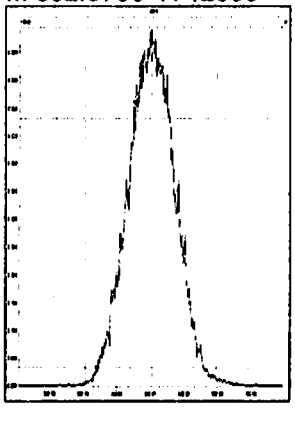
M 366.9792 R 13444



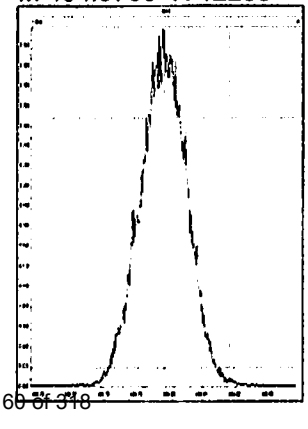
M 380.9760 R 12345



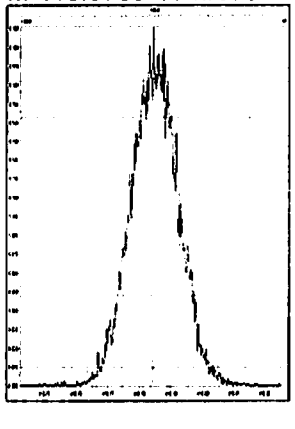
M 392.9760 R 12698



M 404.9760 R 12255



M 416.9760 R 12376



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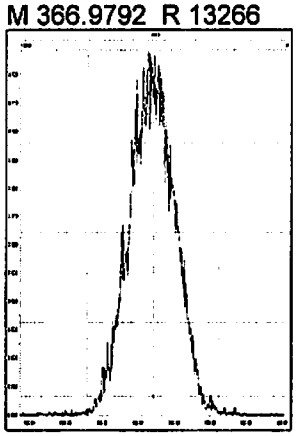
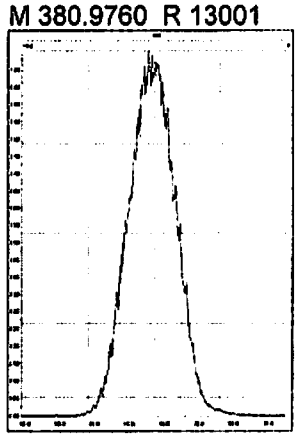
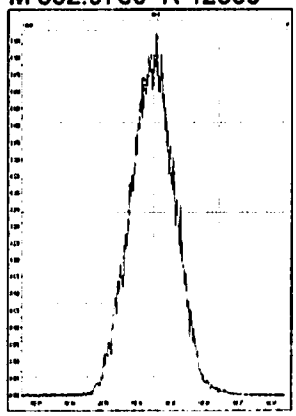
M 366.9792 R 13266



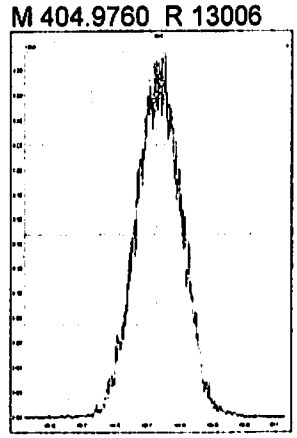
M 380.9760 R 13001



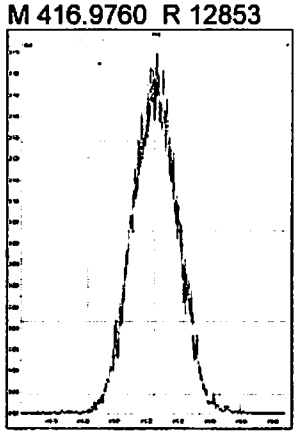
M 392.9760 R 12886



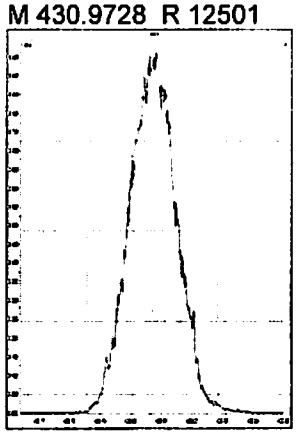
M 404.9760 R 13006



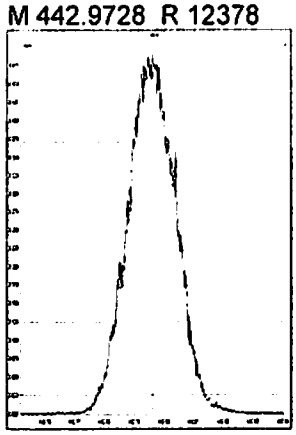
M 416.9760 R 12853



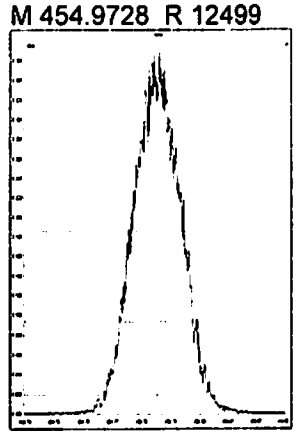
M 430.9728 R 12501



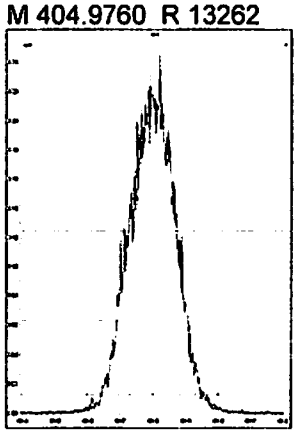
M 442.9728 R 12378



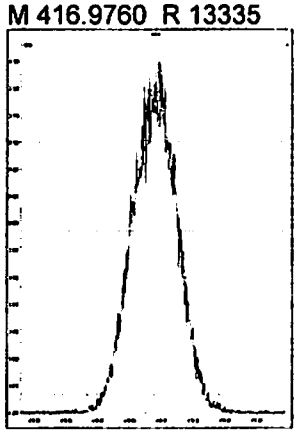
M 454.9728 R 12499



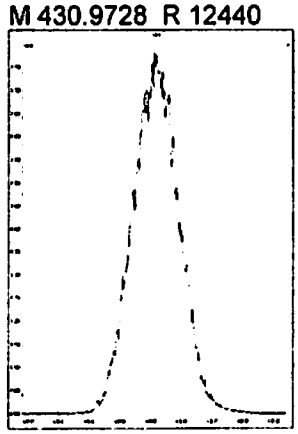
M 404.9760 R 13262



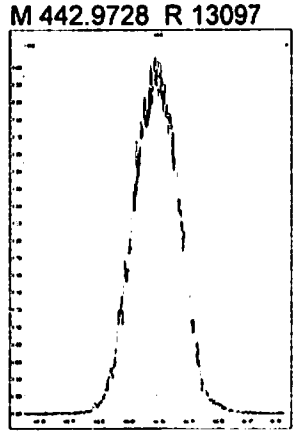
M 416.9760 R 13335



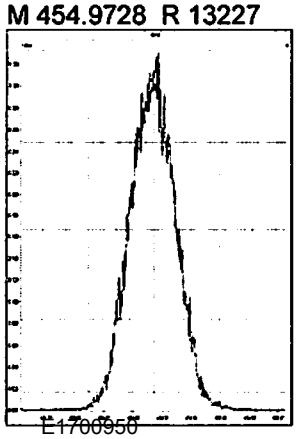
M 430.9728 R 12440



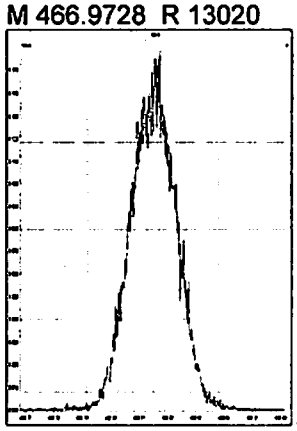
M 442.9728 R 13097



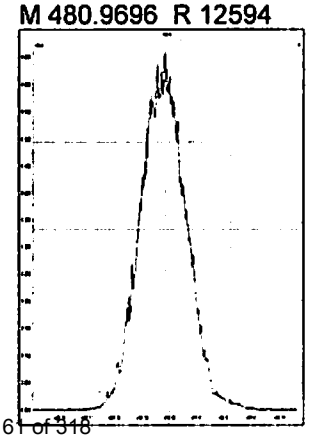
M 454.9728 R 13227



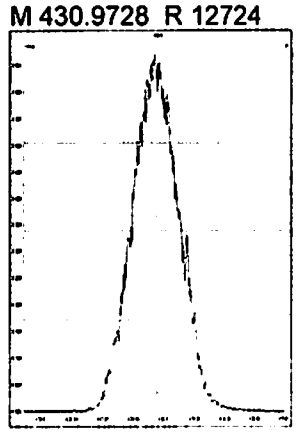
M 466.9728 R 13020



M 480.9696 R 12594

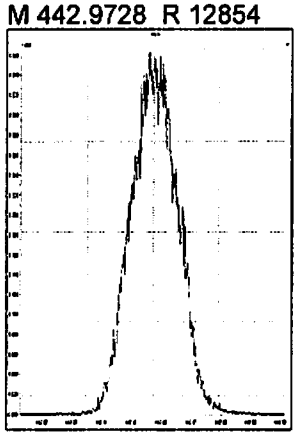


M 430.9728 R 12724

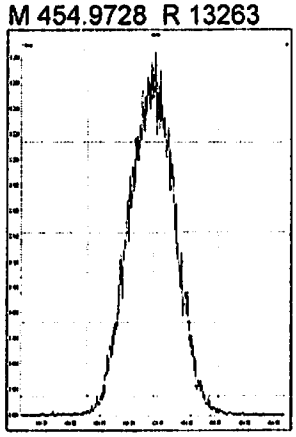


Printed: Wednesday, September 20, 2017 00:52:15 Central Daylight Time

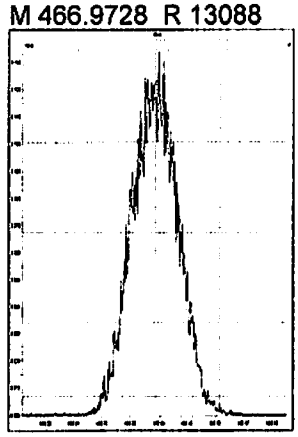
M 442.9728 R 12854



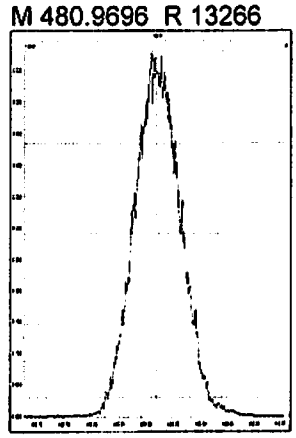
M 454.9728 R 13263



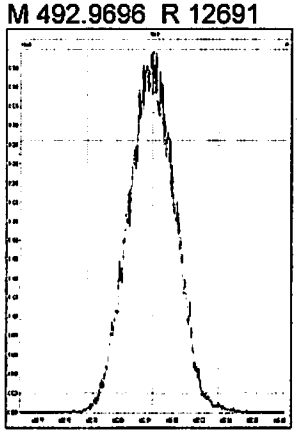
M 466.9728 R 13088



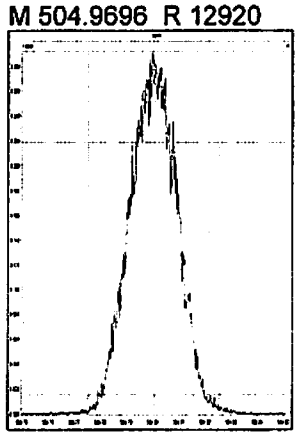
M 480.9696 R 13266



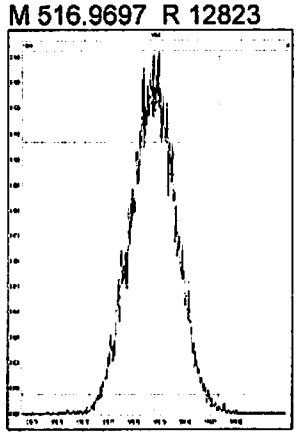
M 492.9696 R 12691



M 504.9696 R 12920



M 516.9697 R 12823



5DFA

WINDOW DEFINING MIX SUMMARY

CLIENT ID:

WDM

Lab Name: ALS Environmental
Lab Code: ALSTX
GC Column: DB-5MSUI

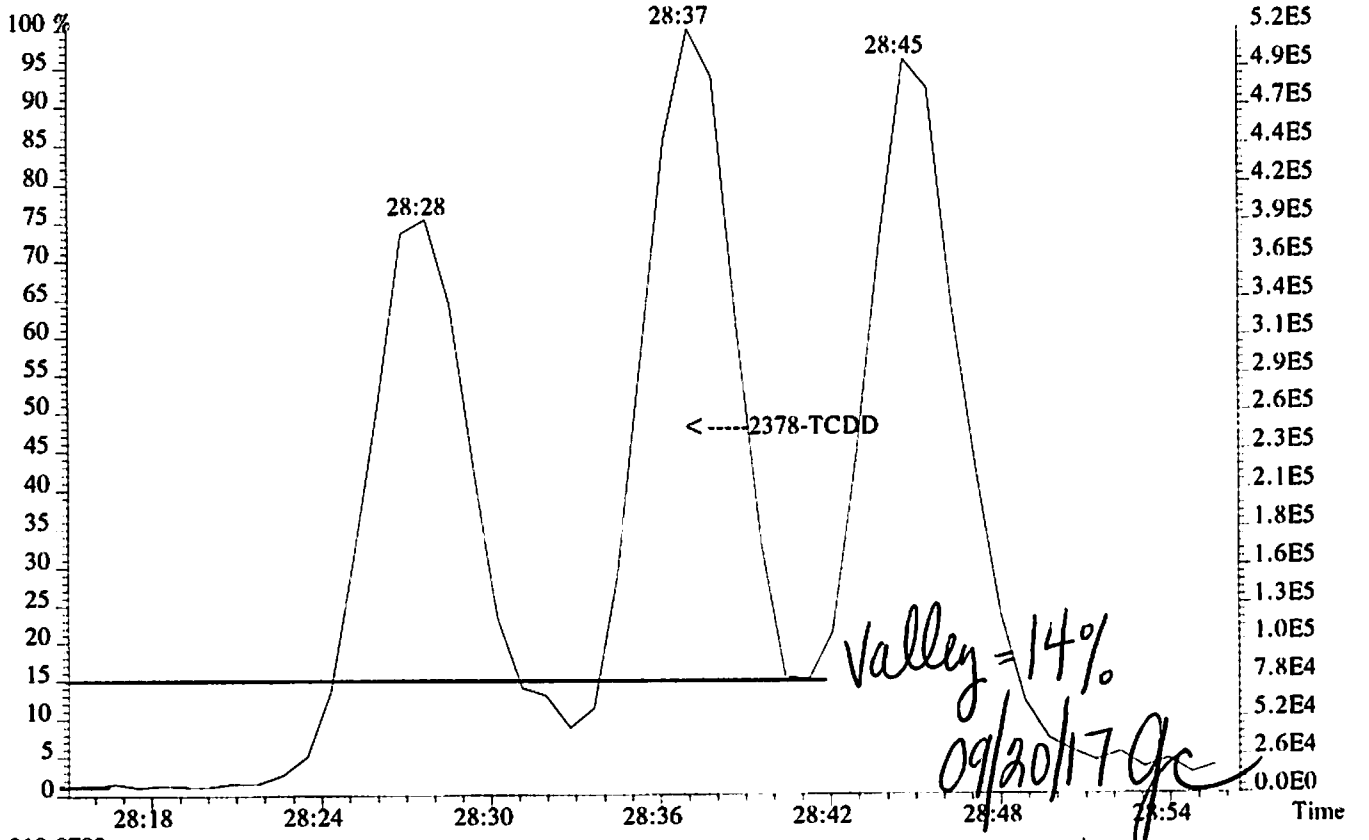
Case No.:
ID: 0.25 (mm)

SDG No.:
Lab File ID: P407972
Date Analyzed: 19-SEP-2017
Time Analyzed: 15:46:27

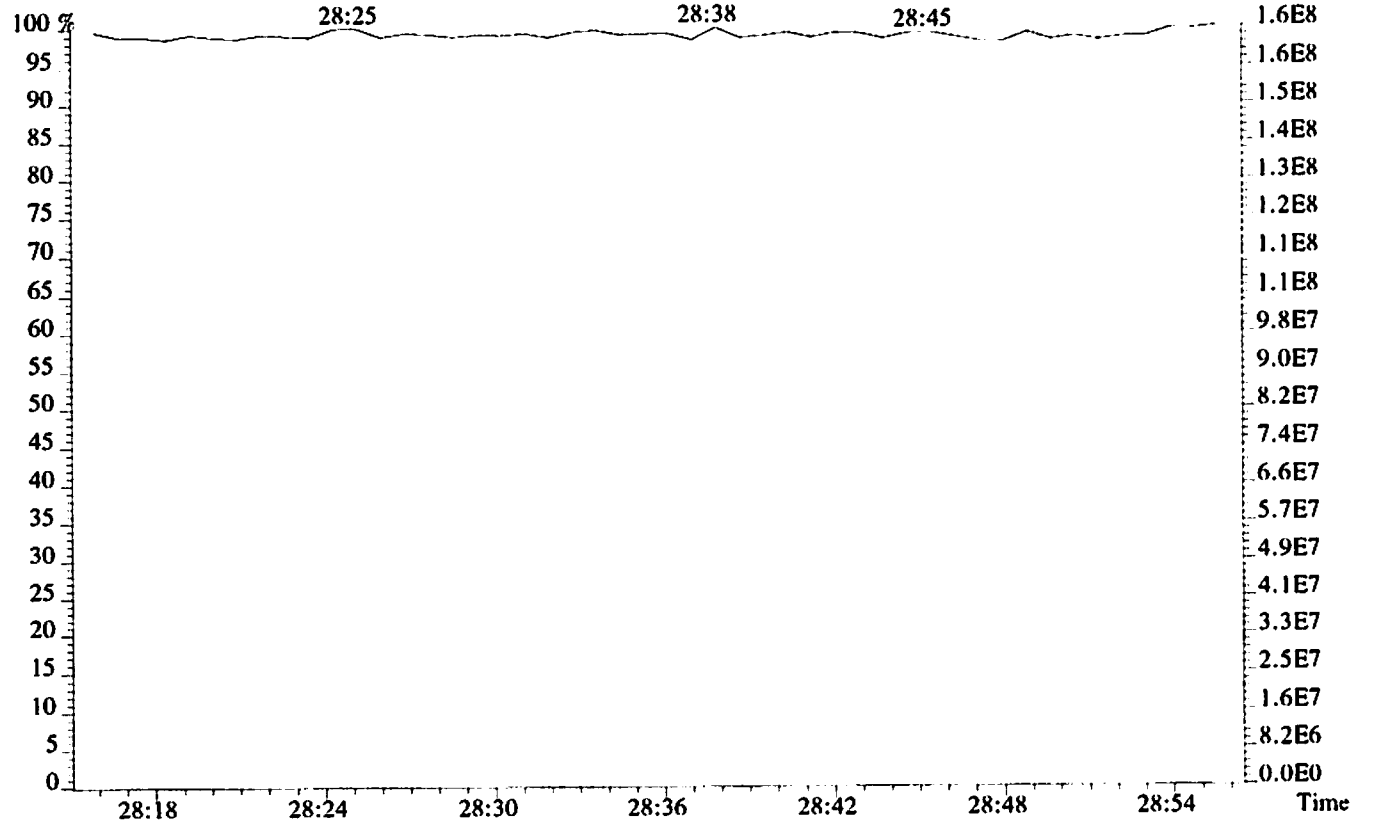
Congener	Retention Time First Eluting	Retention Time Last Eluting
TCDF	23:23	29:48
TCDD	25:13	29:38
PeCDF	29:43	34:00
PeCDD	31:16	33:44
HxCDF	34:38	37:07
HxCDD	35:09	36:43
HpCDF	38:19	39:41
HpCDD	38:33	39:13

% Valley 2378-TCDD: 14 %

File:P407972 #1-602 Acq:19-SEP-2017 15:46:27 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE
319.8965



318.9792



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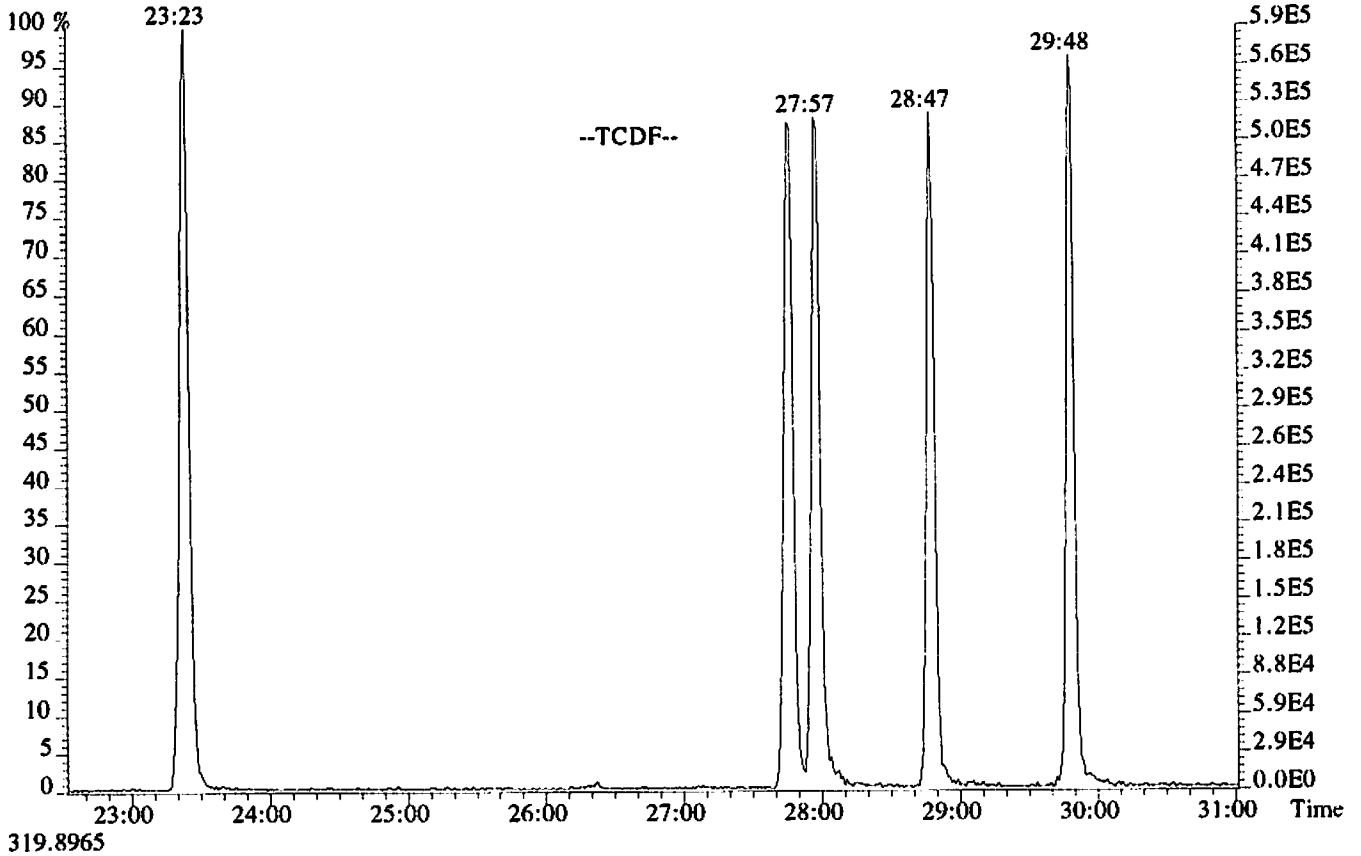
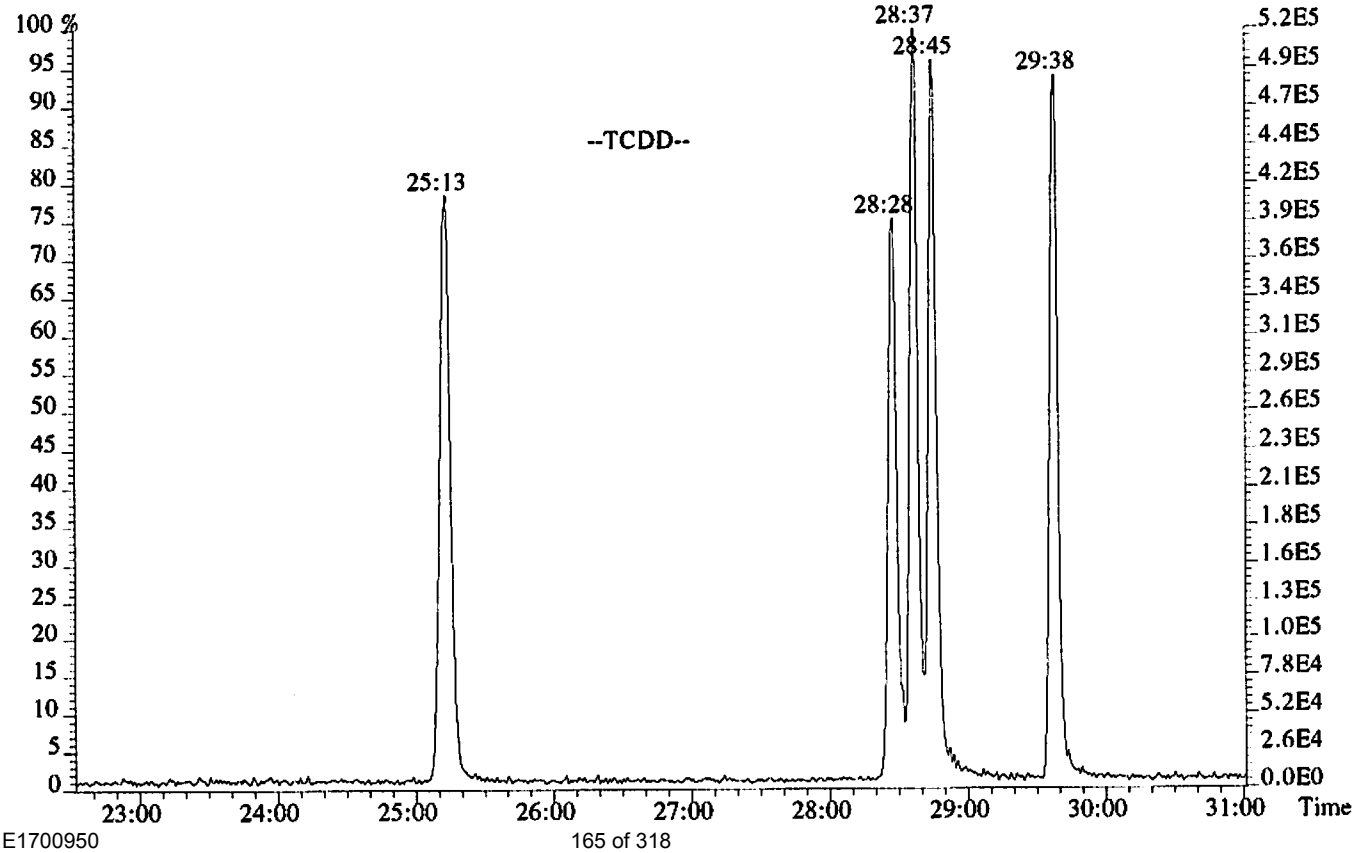
Sample#1 Exp:WINDOW DEFINE
303.9016



319.8965



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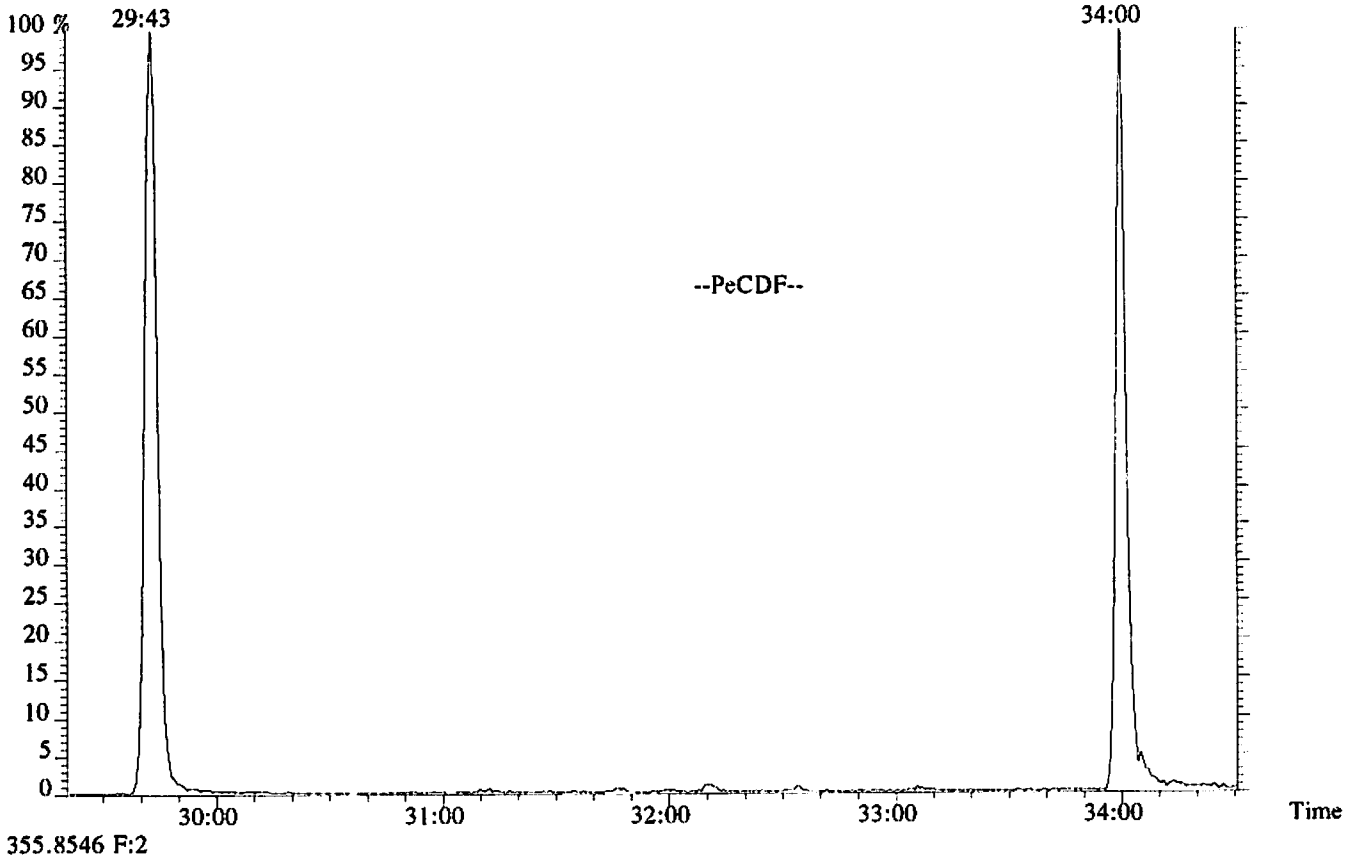
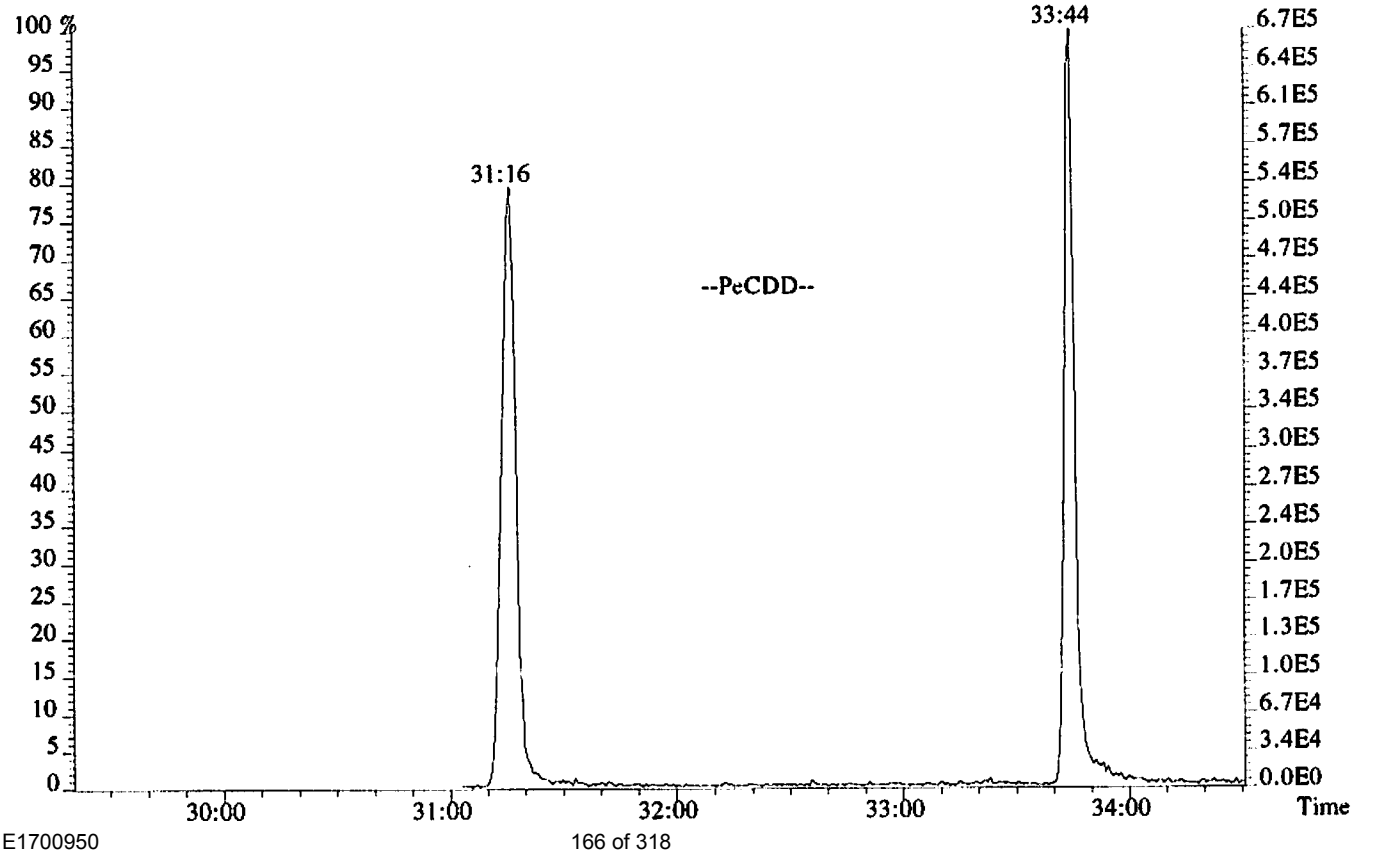
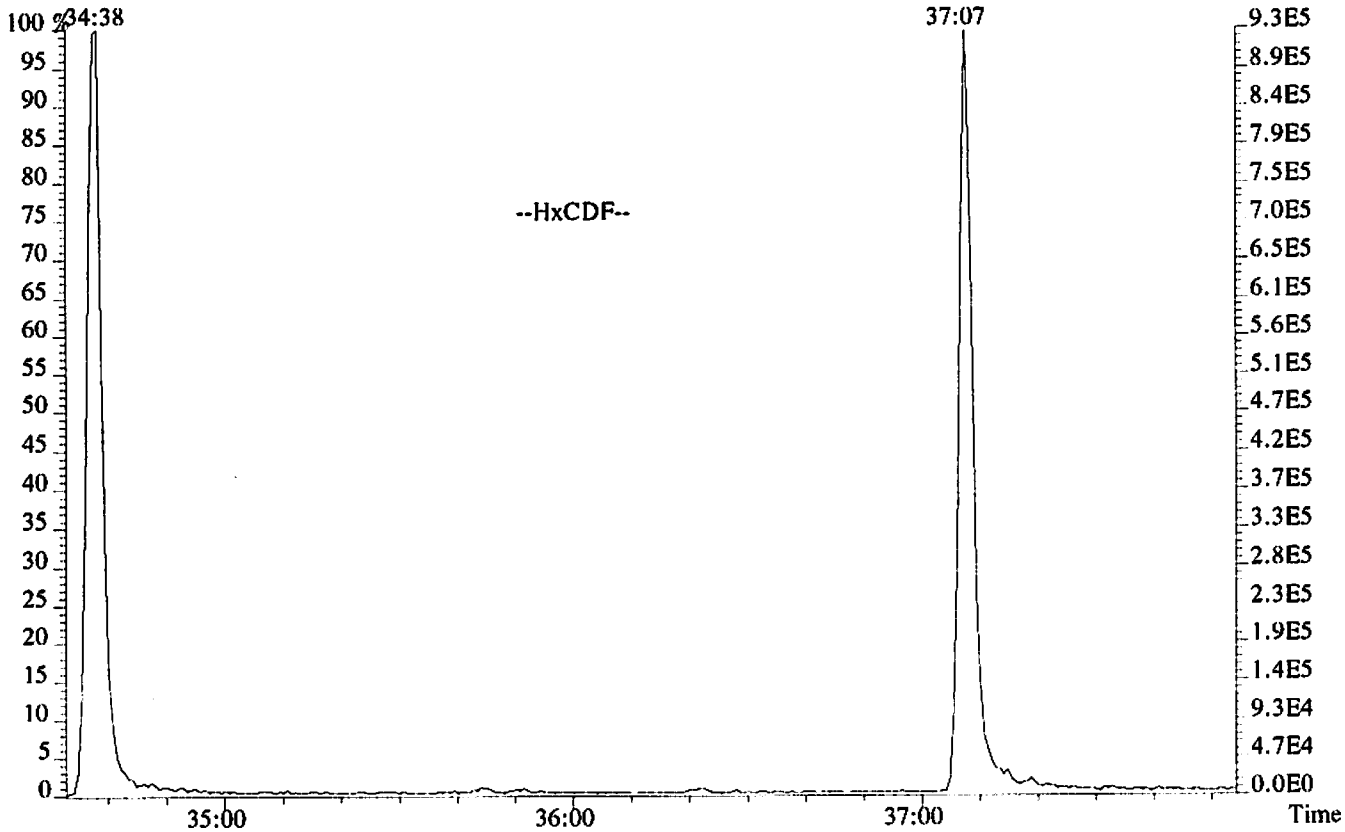
Sample#1 Exp:WINDOW DEFINE
339.8597,339.8597 F:2



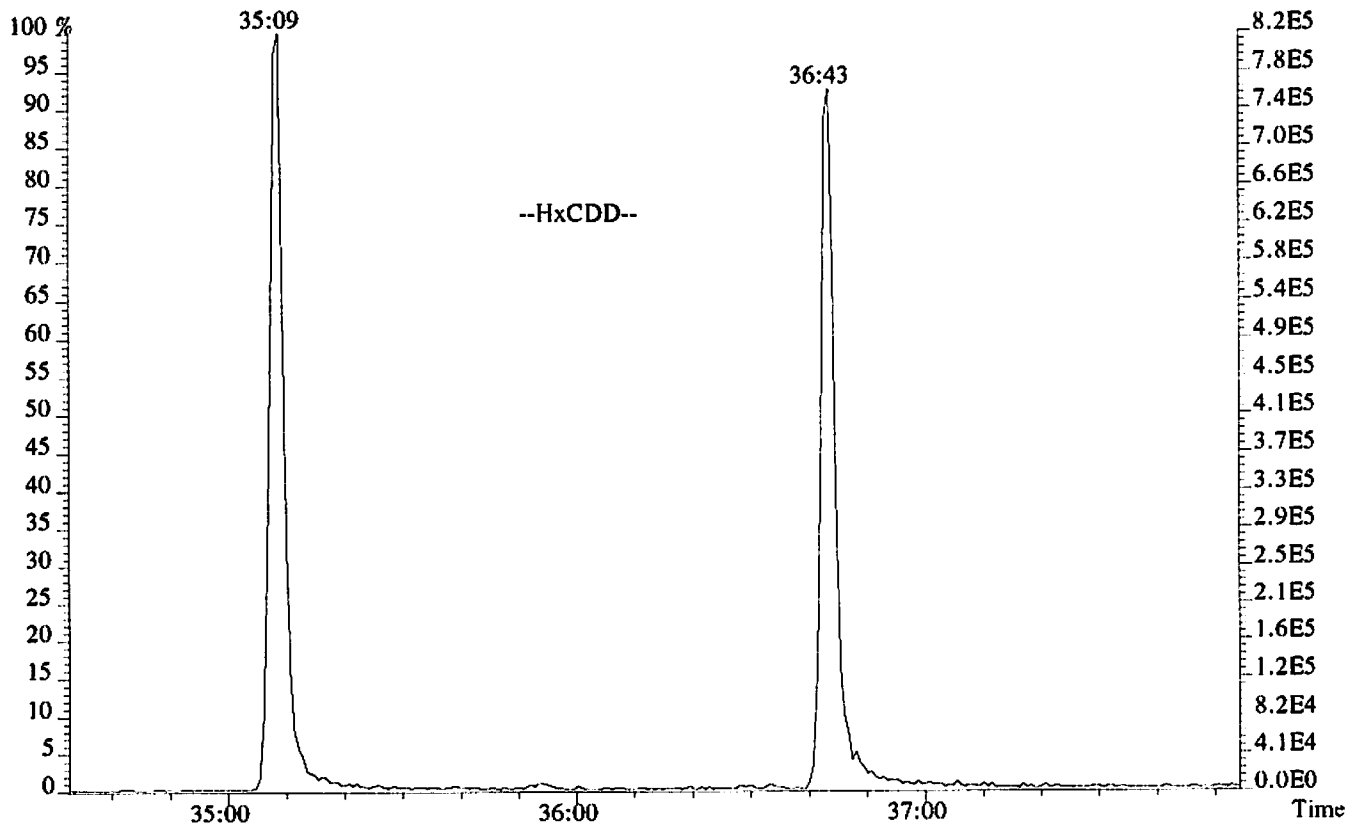
355.8546 F:2



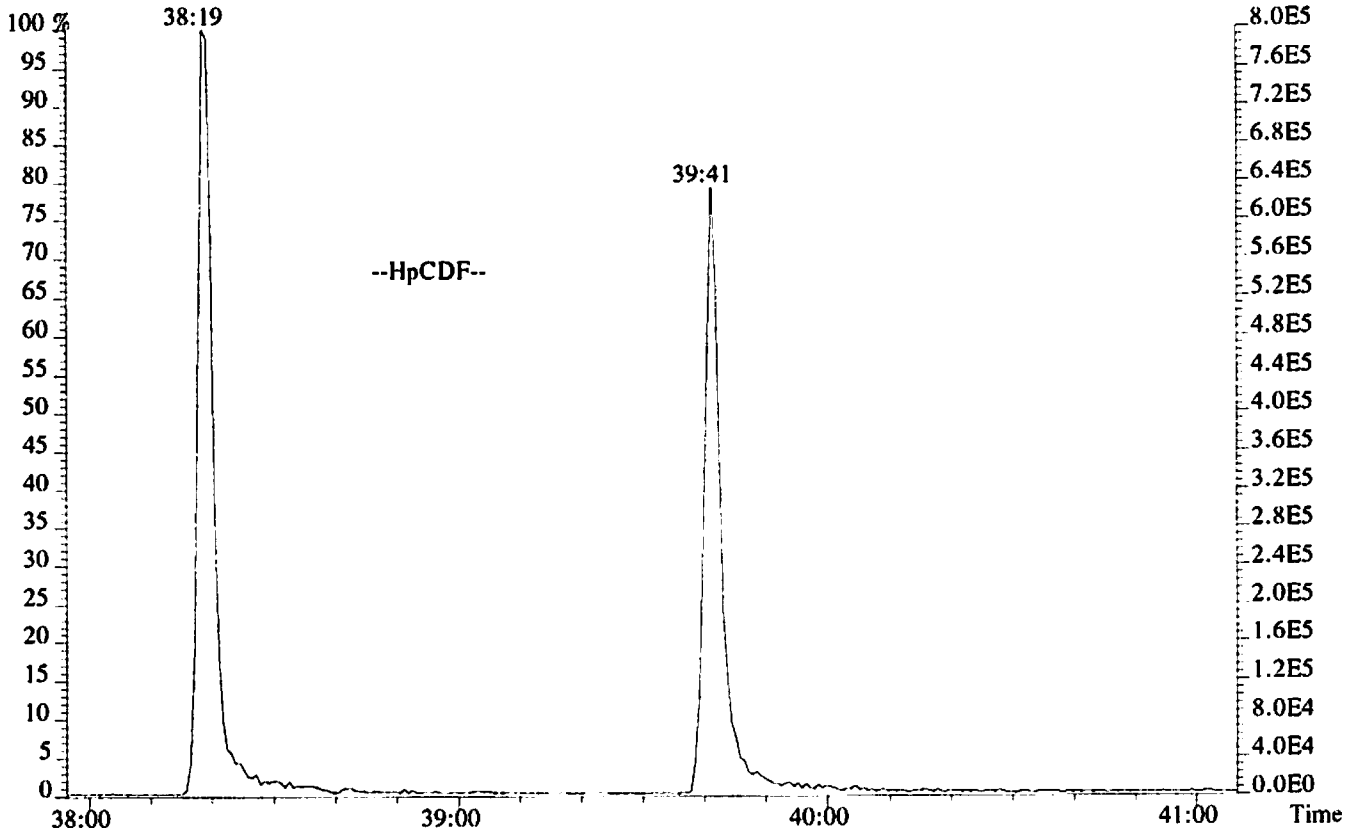
File:P407972 #1-303 Acq:19-SEP-2017 15:46:27 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE
373.8208 F:3



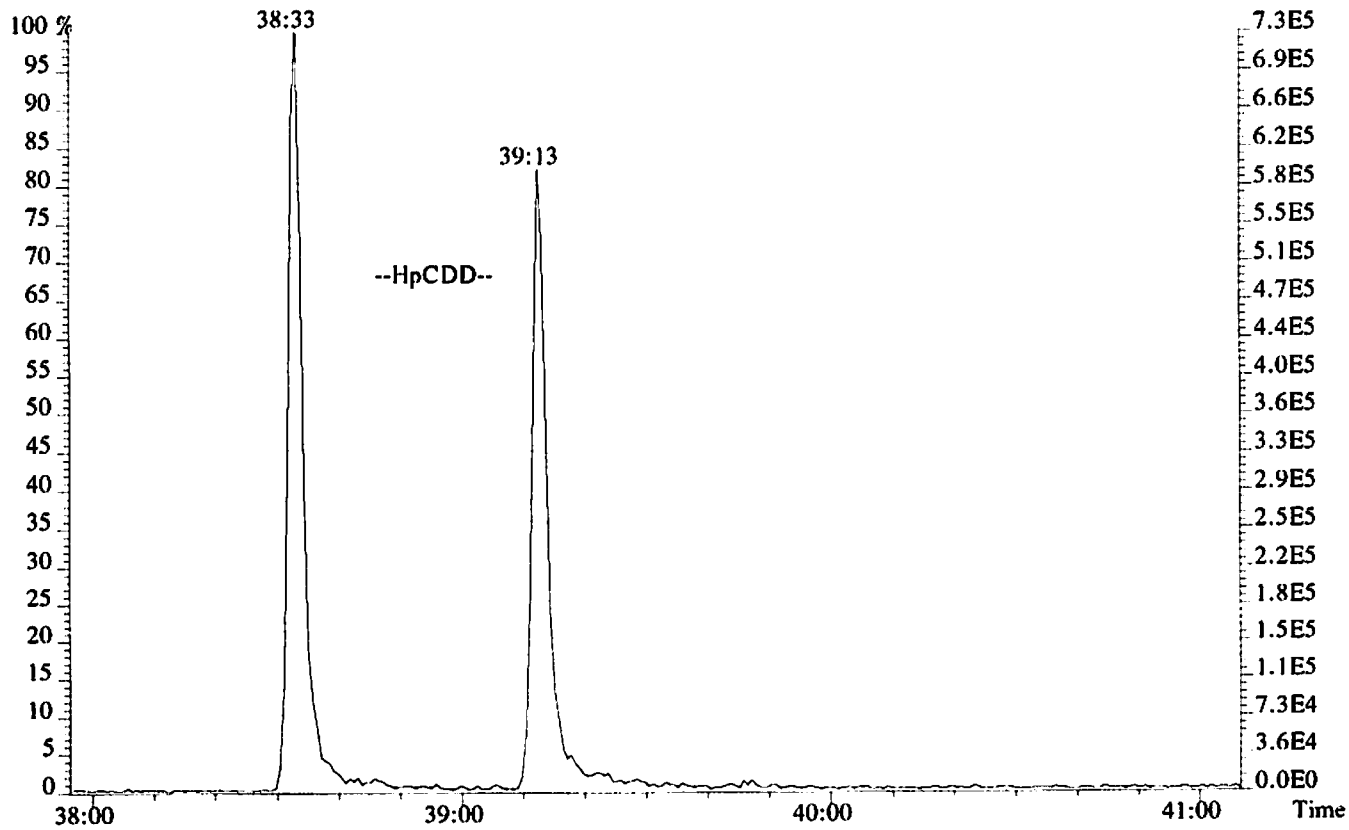
389.8157 F:3



File:P407972 #1-286 Acq:19-SEP-2017 15:46:27 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE
407.7818 F:4



423.7766 F:4



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 09/01/17

Instrument ID: E-HRMS-06 GC Column ID: DB-5MSUI

VER Data Filename: P407971 Analysis Date: 19-SEP-17 Time: 14:23:48

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (4)
2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	9.2	7.8 - 12.9	-8.3
1,2,3,7,8-PeCDD	M+2/M+4	1.56	1.32-1.78	49	39 - 65	-2.3
1,2,3,4,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	50	39 - 64	-0.1
1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	51	39 - 64	1.3
1,2,3,7,8,9-HxCDD	M+2/M+4	1.23	1.05-1.43	52	41 - 61	4.1
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.03	0.88-1.20	49	43 - 58	-2.2
OCDD	M+2/M+4	0.89	0.76-1.02	102	79 - 126	1.6
2,3,7,8-TCDF	M/M+2	0.78	0.65-0.89	9.6	8.4 - 12.0	-4.5
1,2,3,7,8-PeCDF	M+2/M+4	1.52	1.32-1.78	49	41 - 60	-1.2
2,3,4,7,8-PeCDF	M+2/M+4	1.55	1.32-1.78	49	41 - 61	-2.9
1,2,3,4,7,8-HxCDF	M+2/M+4	1.22	1.05-1.43	48	45 - 56	-3.5
1,2,3,6,7,8-HxCDF	M+2/M+4	1.23	1.05-1.43	48	44 - 57	-3.8
1,2,3,7,8,9-HxCDF	M+2/M+4	1.22	1.05-1.43	47	45 - 56	-6.3
2,3,4,6,7,8-HxCDF	M+2/M+4	1.20	1.05-1.43	47	44 - 57	-5.4
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.01	0.88-1.20	48	45 - 55	-4.2
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.04	0.88-1.20	47	43 - 58	-5.8
OCDF	M+2/M+4	0.88	0.76-1.02	103	63 - 159	3.4

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range as specified in Table 6, Method 1613B, under VER.

(4) The beginning CCAL %RSD for the 17 unlabeled standard must not exceed +/- 20%, Section 7.7.4.1. The ending CCAL must not exceed +/-25%, Section 8.3.2.4, Method 8290

12/2012
1613F4A.FRM

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 09/01/17

Instrument ID: E-HRMS-06 GC Column ID: DB-5MSUI

VER Data Filename: P407971 Analysis Date: 19-SEP-17 Time: 14:23:48

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (5)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	M/M+2	0.78	0.65-0.89	103	82 - 121	2.8
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	107	62 - 160	6.5
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	88	85 - 117	-11.8
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	98	85 - 118	-1.9
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	0.88-1.20	95	72 - 138	-5.1
13C-OCDD	M+2/M+4	0.90	0.76-1.02	172	96 - 415	-14.0
13C-2,3,7,8-TCDF	M/M+2	0.77	0.65-0.89	97	71 - 140	-2.5
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.57	1.32-1.78	102	76 - 130	1.7
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	106	77 - 130	6.2
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.51	0.43-0.59	86	76 - 131	-13.5
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.51	0.43-0.59	94	70 - 143	-5.5
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.51	0.43-0.59	100	74 - 135	-0.4
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	93	73 - 137	-6.6
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.44	0.37-0.51	90	78 - 129	-9.8
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.43	0.37-0.51	95	77 - 129	-5.2
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD				9.9	7.8 - 12.7	-0.7

(1) See Table 8, Method 1613B, for m/z specifications.
(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.
(3) Contract-required concentration range, as specified in Table 6, Method 1613B, under VER.
(4) No ion abundance ratio; report concentration found.
(5) The beginnning CCAL %RSD for the labeled standard must not exceed +/- 30% Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Sec 8.3.2.4 (8290)

12/2012
1613F4B.FRM

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
178398

Run #7 Filename P407971 Samp: 1 Inj: 1 Acquired: 19-SEP-17 14:23:48
Processed: 20-SEP-17 15:43:13 Sample ID: CS3

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	27:58	2.621e+03	3.374e+03	0.78	yes	no	0.885
2	Unk	1,2,3,7,8-PeCDF	32:10	2.187e+04	1.434e+04	1.52	yes	no	0.984
3	Unk	2,3,4,7,8-PeCDF	33:06	2.096e+04	1.356e+04	1.55	yes	no	0.943
4	Unk	1,2,3,4,7,8-HxCDF	35:45	1.835e+04	1.502e+04	1.22	yes	no	1.230
5	Unk	1,2,3,6,7,8-HxCDF	35:51	2.053e+04	1.666e+04	1.23	yes	no	1.148
6	Unk	2,3,4,6,7,8-HxCDF	36:21	1.795e+04	1.497e+04	1.20	yes	no	1.133
7	Unk	1,2,3,7,8,9-HxCDF	37:06	1.683e+04	1.380e+04	1.22	yes	no	1.172
8	Unk	1,2,3,4,6,7,8-HpCDF	38:19	1.600e+04	1.579e+04	1.01	yes	no	1.377
9	Unk	1,2,3,4,7,8,9-HpCDF	39:41	1.305e+04	1.256e+04	1.04	yes	no	1.301
10	Unk	OCDF	42:06	1.885e+04	2.147e+04	0.88	yes	no	1.114
11	Unk	2,3,7,8-TCDD	28:45	2.401e+03	2.997e+03	0.80	yes	no	0.966
12	Unk	1,2,3,7,8-PeCDD	33:22	1.622e+04	1.042e+04	1.56	yes	no	0.851
13	Unk	1,2,3,4,7,8-HxCDD	36:29	1.395e+04	1.109e+04	1.26	yes	no	0.966
14	Unk	1,2,3,6,7,8-HxCDD	36:34	1.534e+04	1.217e+04	1.26	yes	no	0.938
15	Unk	1,2,3,7,8,9-HxCDD	36:48	1.547e+04	1.255e+04	1.23	yes	no	0.980
16	Unk	1,2,3,4,6,7,8-HpCDD	39:13	1.193e+04	1.161e+04	1.03	yes	no	0.975
17	Unk	OCDD	41:54	1.731e+04	1.946e+04	0.89	yes	no	1.033
18	IS	13C-2,3,7,8-TCDF	27:56	3.081e+04	4.007e+04	0.77	yes	no	1.176
19	IS	13C-1,2,3,7,8-PeCDF	32:10	4.558e+04	2.894e+04	1.57	yes	no	1.185
20	IS	13C-2,3,4,7,8-PeCDF	33:05	4.616e+04	2.929e+04	1.58	yes	no	1.149
21	IS	13C-1,2,3,4,7,8-HxCDF	35:44	1.912e+04	3.714e+04	0.51	yes	no	1.068
22	IS	13C-1,2,3,6,7,8-HxCDF	35:51	2.282e+04	4.454e+04	0.51	yes	no	1.171
23	IS	13C-2,3,4,6,7,8-HxCDF	36:21	2.099e+04	4.042e+04	0.52	yes	no	1.079
24	IS	13C-1,2,3,7,8,9-HxCDF	37:05	1.886e+04	3.692e+04	0.51	yes	no	0.919
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:19	1.474e+04	3.346e+04	0.44	yes	no	0.877
26	IS	13C-1,2,3,4,7,8,9-HpCDF	39:41	1.252e+04	2.925e+04	0.43	yes	no	0.723
27	IS	13C-2,3,7,8-TCDD	28:44	2.673e+04	3.418e+04	0.78	yes	no	0.958
28	IS	13C-1,2,3,7,8-PeCDD	33:21	3.912e+04	2.497e+04	1.57	yes	no	0.973
29	IS	13C-1,2,3,4,7,8-HxCDD	36:28	2.869e+04	2.319e+04	1.24	yes	no	0.966
30	IS	13C-1,2,3,6,7,8-HxCDD	36:33	3.208e+04	2.580e+04	1.24	yes	no	0.968
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:13	2.535e+04	2.401e+04	1.06	yes	no	0.854
32	IS	13C-OCDD	41:54	3.318e+04	3.683e+04	0.90	yes	no	0.668
33	RS/RT	13C-1,2,3,4-TCDD	28:08	2.730e+04	3.454e+04	0.79	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	36:47	3.390e+04	2.702e+04	1.25	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	28:45	6.092e+03				no	0.992

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www.alsglobal.com

ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
178398

Run #7 Filename P407971 Samp: 1 Inj: 1 Acquired: 19-SEP-17 14:23:48
Processed: 20-SEP-17 15:43:13 LAB. ID: CS3

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	4.67e+05	5.52e+02	8.5e+02	5.92e+05	1.83e+03	3.2e+02
2	1,2,3,7,8-PeCDF	4.02e+06	3.56e+02	1.1e+04	2.62e+06	1.93e+03	1.4e+03
3	2,3,4,7,8-PeCDF	4.13e+06	3.56e+02	1.2e+04	2.64e+06	1.93e+03	1.4e+03
4	1,2,3,4,7,8-HxCDF	3.98e+06	5.80e+02	6.9e+03	3.23e+06	4.60e+02	7.0e+03
5	1,2,3,6,7,8-HxCDF	4.06e+06	5.80e+02	7.0e+03	3.25e+06	4.60e+02	7.1e+03
6	2,3,4,6,7,8-HxCDF	3.84e+06	5.80e+02	6.6e+03	3.16e+06	4.60e+02	6.9e+03
7	1,2,3,7,8,9-HxCDF	3.39e+06	5.80e+02	5.8e+03	2.75e+06	4.60e+02	6.0e+03
8	1,2,3,4,6,7,8-HpCDF	3.37e+06	2.84e+03	1.2e+03	3.36e+06	3.55e+03	9.5e+02
9	1,2,3,4,7,8,9-HpCDF	2.42e+06	2.84e+03	8.5e+02	2.36e+06	3.55e+03	6.6e+02
10	OCDF	3.15e+06	3.96e+02	7.9e+03	3.59e+06	1.05e+03	3.4e+03
11	2,3,7,8-TCDD	4.53e+05	1.69e+03	2.7e+02	5.65e+05	6.80e+02	8.3e+02
12	1,2,3,7,8-PeCDD	3.12e+06	7.12e+02	4.4e+03	2.02e+06	2.68e+02	7.5e+03
13	1,2,3,4,7,8-HxCDD	3.16e+06	6.40e+02	4.9e+03	2.51e+06	4.80e+02	5.2e+03
14	1,2,3,6,7,8-HxCDD	3.11e+06	6.40e+02	4.9e+03	2.48e+06	4.80e+02	5.2e+03
15	1,2,3,7,8,9-HxCDD	3.07e+06	6.40e+02	4.8e+03	2.50e+06	4.80e+02	5.2e+03
16	1,2,3,4,6,7,8-HpCDD	2.36e+06	5.48e+02	4.3e+03	2.30e+06	3.12e+02	7.4e+03
17	OCDD	2.84e+06	3.04e+03	9.4e+02	3.20e+06	2.40e+03	1.3e+03
18	13C-2,3,7,8-TCDF	5.64e+06	8.48e+03	6.6e+02	7.39e+06	3.46e+03	2.1e+03
19	13C-1,2,3,7,8-PeCDF	8.31e+06	2.88e+02	2.9e+04	5.29e+06	3.88e+02	1.4e+04
20	13C-2,3,4,7,8-PeCDF	8.97e+06	2.88e+02	3.1e+04	5.61e+06	3.88e+02	1.4e+04
21	13C-1,2,3,4,7,8-HxCDF	4.17e+06	6.84e+02	6.1e+03	7.95e+06	1.19e+03	6.7e+03
22	13C-1,2,3,6,7,8-HxCDF	4.52e+06	6.84e+02	6.6e+03	8.68e+06	1.19e+03	7.3e+03
23	13C-2,3,4,6,7,8-HxCDF	4.47e+06	6.84e+02	6.5e+03	8.41e+06	1.19e+03	7.1e+03
24	13C-1,2,3,7,8,9-HxCDF	3.69e+06	6.84e+02	5.4e+03	7.24e+06	1.19e+03	6.1e+03
25	13C-1,2,3,4,6,7,8-HpCDF	3.11e+06	2.21e+03	1.4e+03	7.03e+06	4.42e+03	1.6e+03
26	13C-1,2,3,4,7,8,9-HpCDF	2.34e+06	2.21e+03	1.1e+03	5.36e+06	4.42e+03	1.2e+03
27	13C-2,3,7,8-TCDD	5.15e+06	4.53e+03	1.1e+03	6.52e+06	2.72e+03	2.4e+03
28	13C-1,2,3,7,8-PeCDD	7.47e+06	7.16e+02	1.0e+04	4.80e+06	1.41e+03	3.4e+03
29	13C-1,2,3,4,7,8-HxCDD	6.46e+06	1.01e+03	6.4e+03	5.21e+06	1.05e+03	5.0e+03
30	13C-1,2,3,6,7,8-HxCDD	6.48e+06	1.01e+03	6.4e+03	5.23e+06	1.05e+03	5.0e+03
31	13C-1,2,3,4,6,7,8-HpCDD	4.93e+06	9.96e+02	4.9e+03	4.64e+06	2.80e+02	1.7e+04
32	13C-OCDD	5.52e+06	4.27e+03	1.3e+03	6.13e+06	5.34e+03	1.1e+03
33	13C-1,2,3,4-TCDD	5.16e+06	4.53e+03	1.1e+03	6.55e+06	2.72e+03	2.4e+03
34	13C-1,2,3,7,8,9-HxCDD	6.64e+06	1.01e+03	6.6e+03	5.33e+06	1.05e+03	5.1e+03
35	37Cl-2,3,7,8-TCDD	1.15e+06	1.84e+03	6.2e+02			

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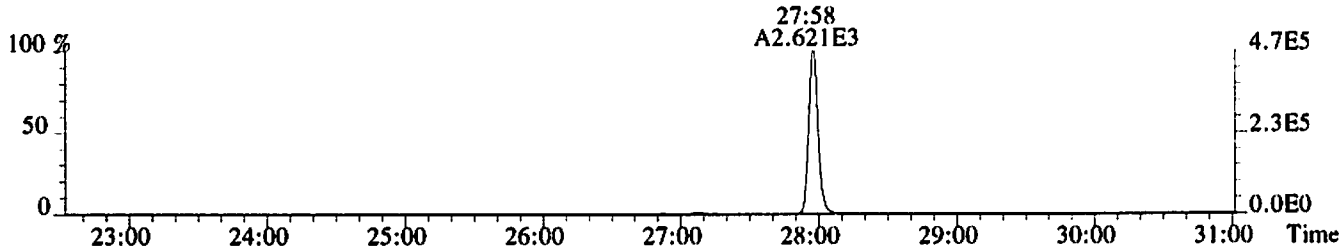
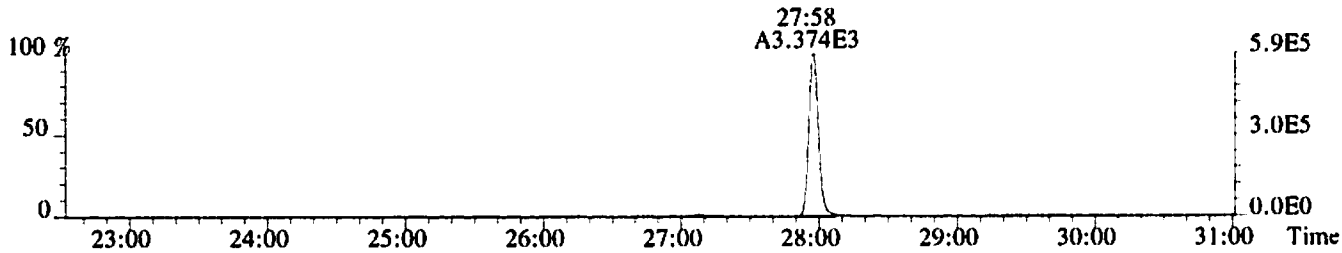
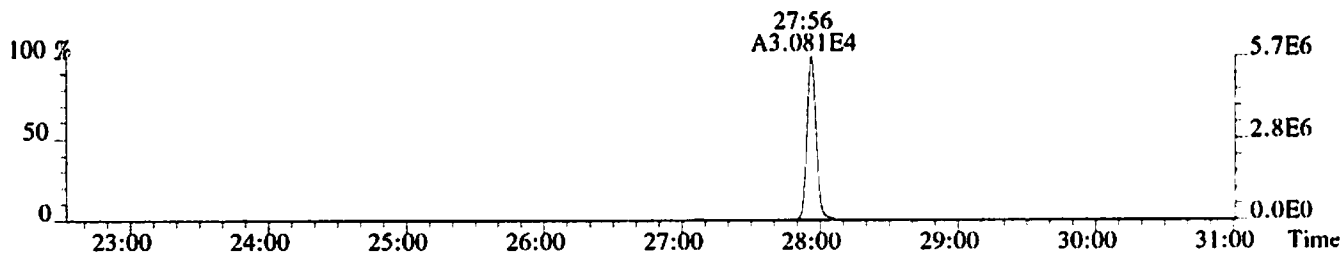
File:P407971 #1-602 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,552.0,1.00%,F,T)



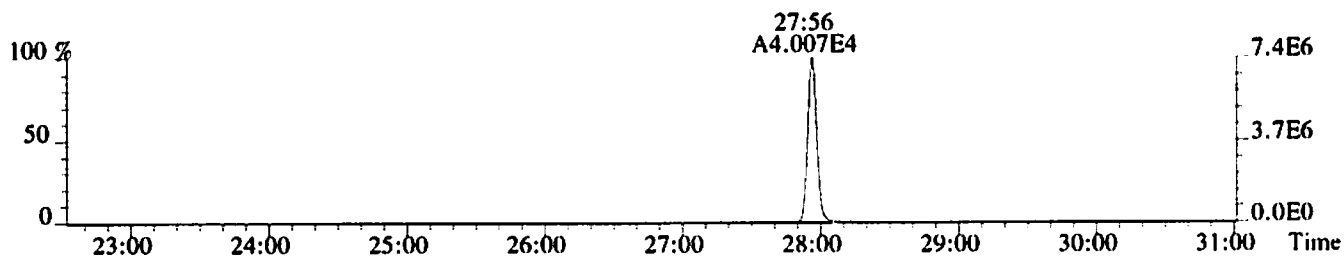
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1832.0,1.00%,F,T)



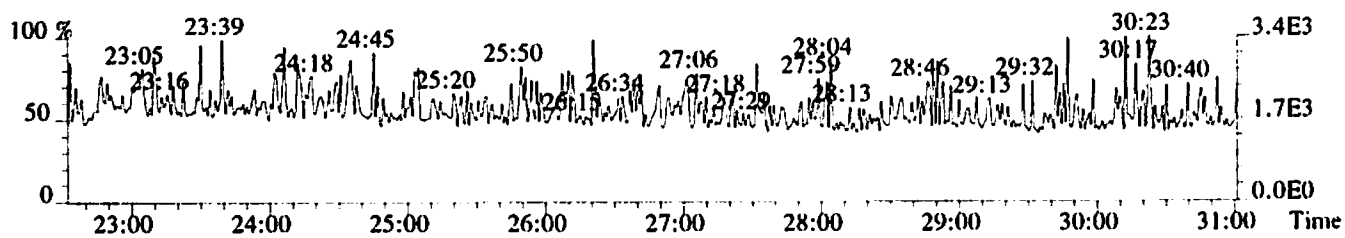
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,8484.0,1.00%,F,T)



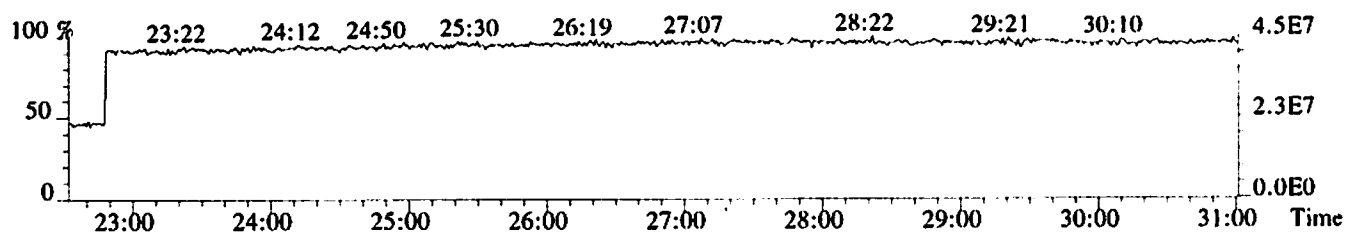
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3460.0,1.00%,F,T)



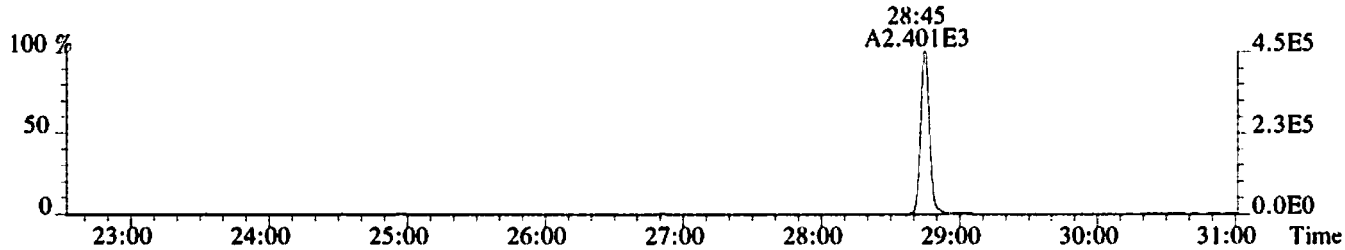
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



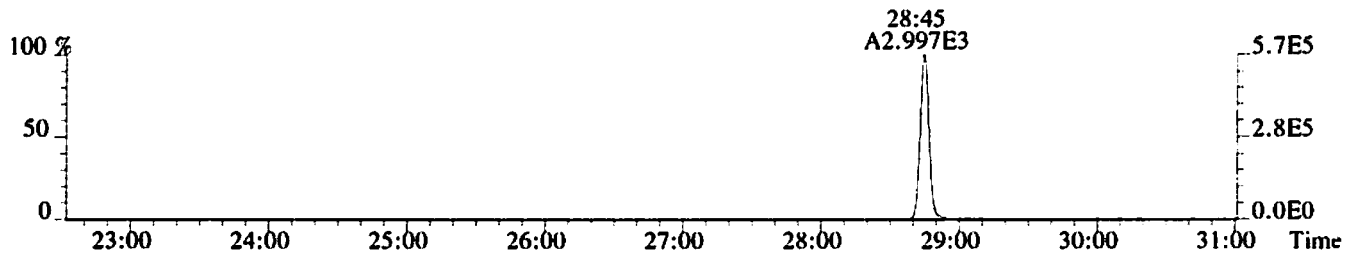
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



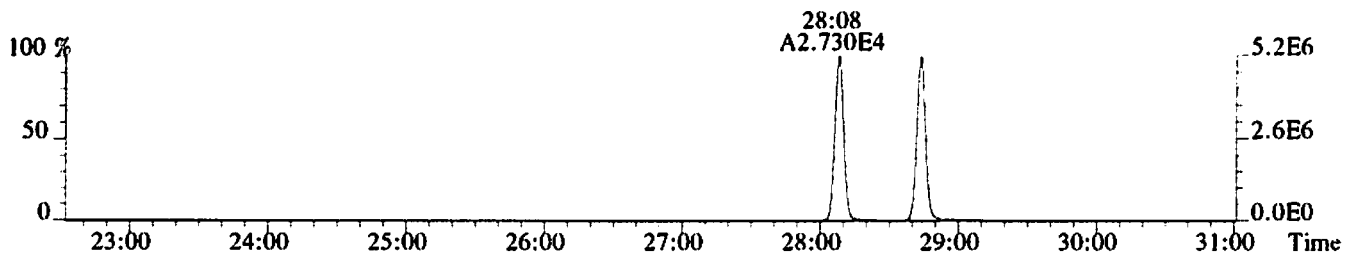
File:P407971 #1-602 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1688.0,1.00%,F,T)



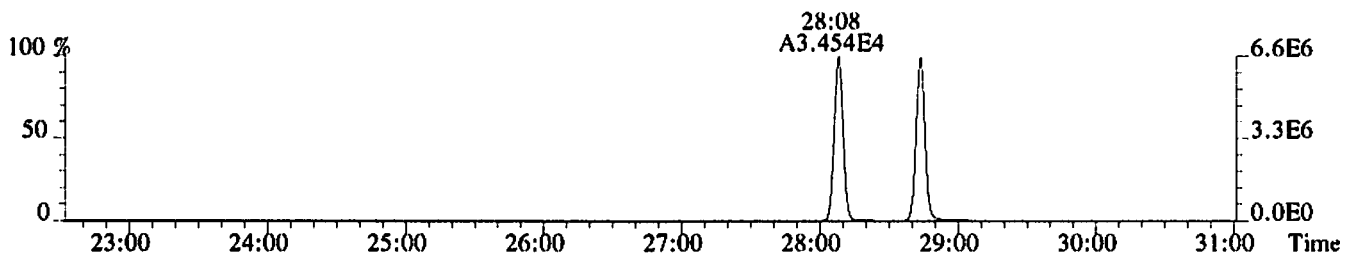
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,680.0,1.00%,F,T)



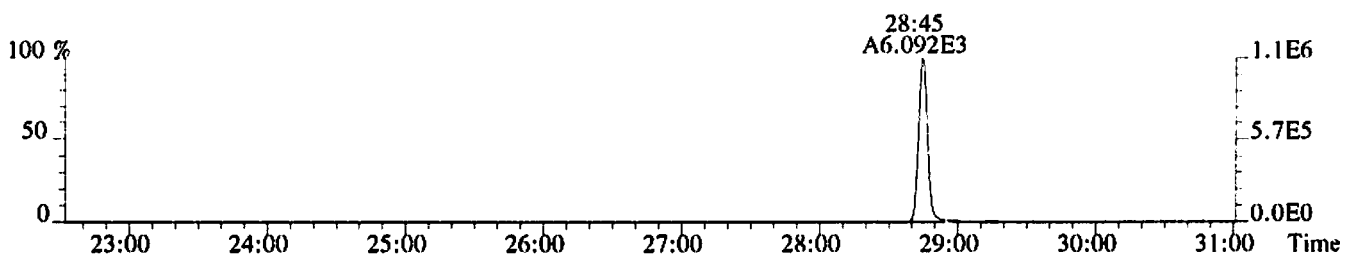
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4528.0,1.00%,F,T)



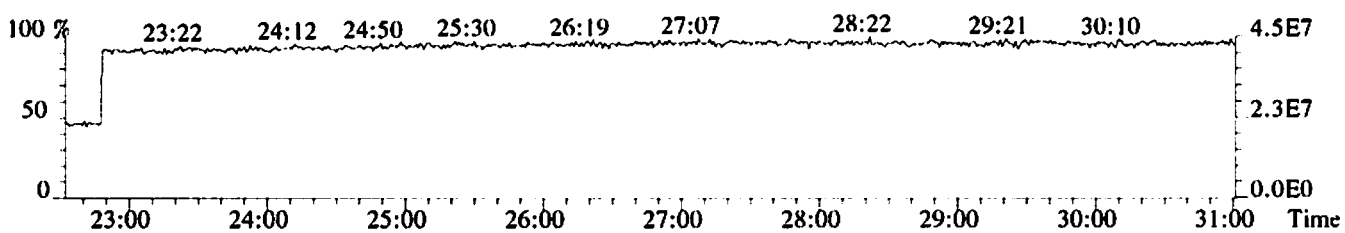
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2720.0,1.00%,F,T)



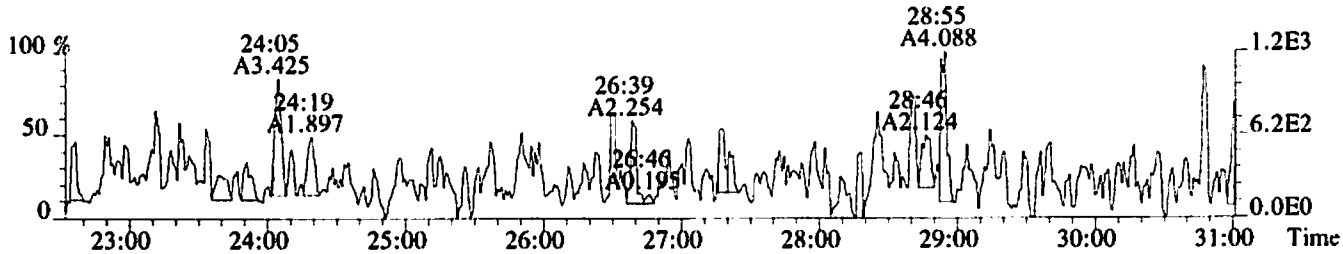
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1840.0,1.00%,F,T)



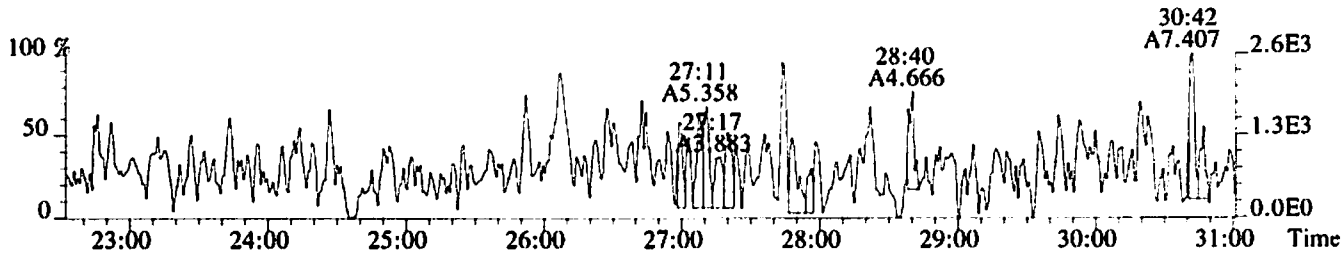
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



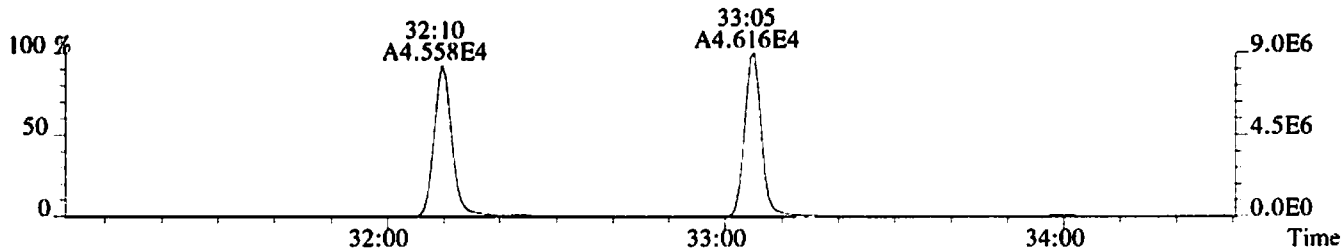
File:P407971 #1-602 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,352.0,1.00%,F,T)



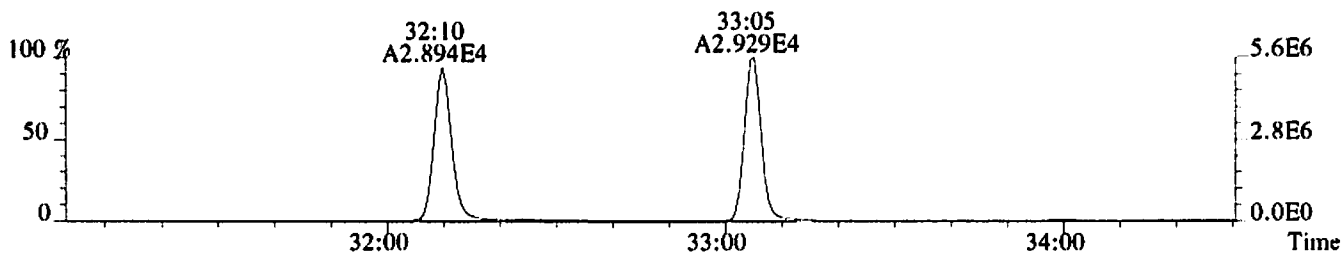
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,972.0,1.00%,F,T)



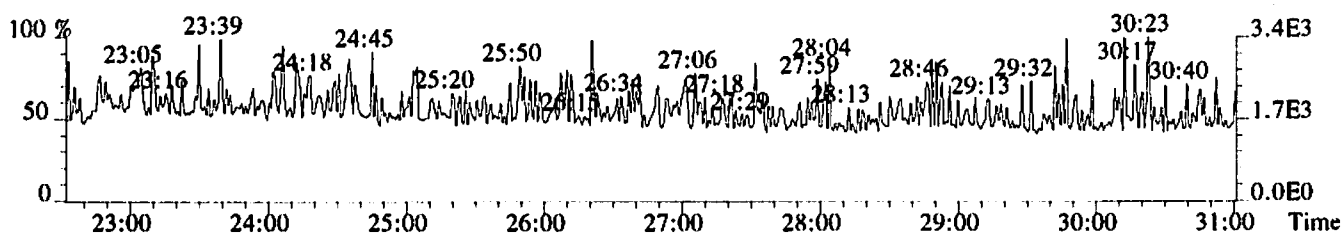
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,288.0,1.00%,F,T)



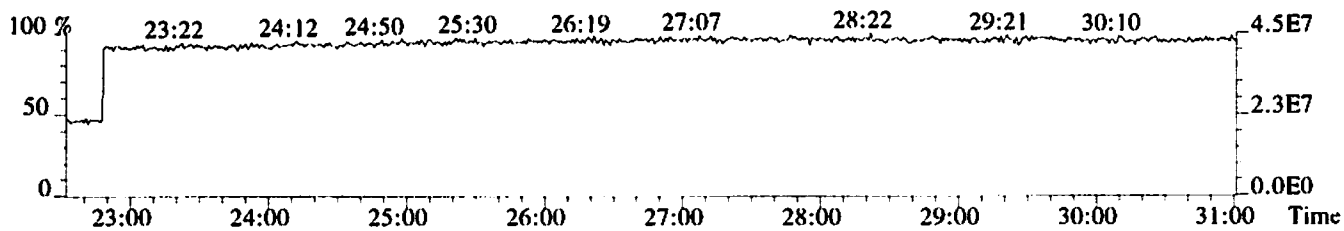
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,388.0,1.00%,F,T)



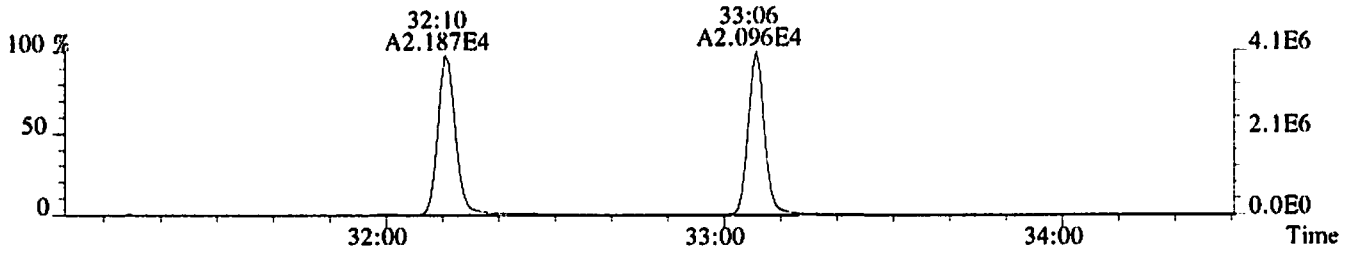
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



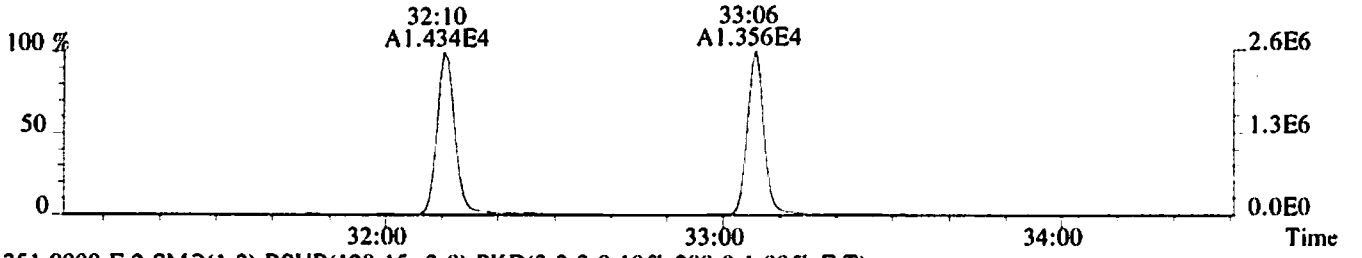
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



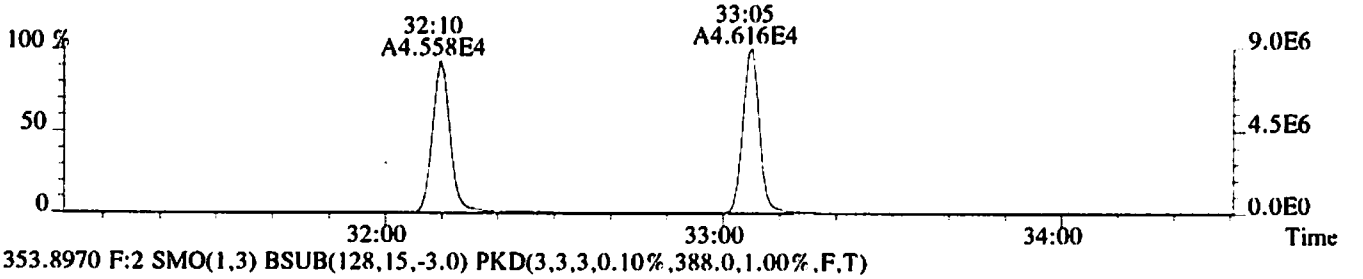
File:P407971 #1-312 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,356.0,1.00%,F,T)



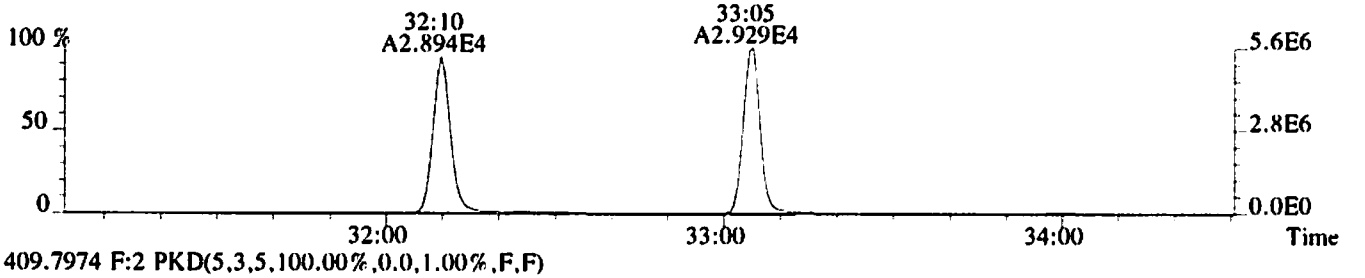
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1932.0,1.00%,F,T)



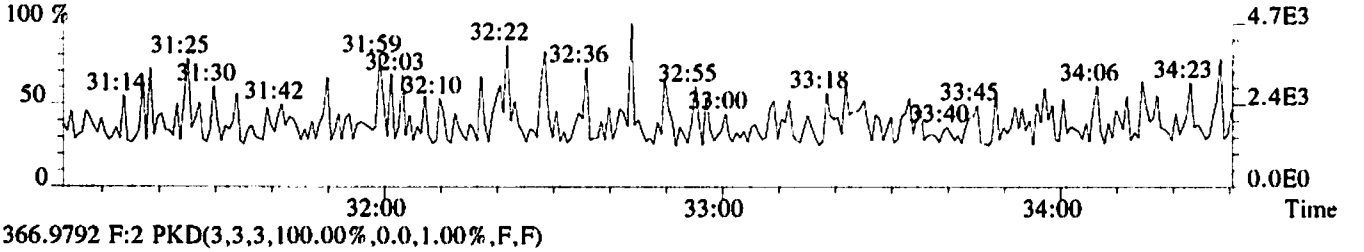
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,288.0,1.00%,F,T)



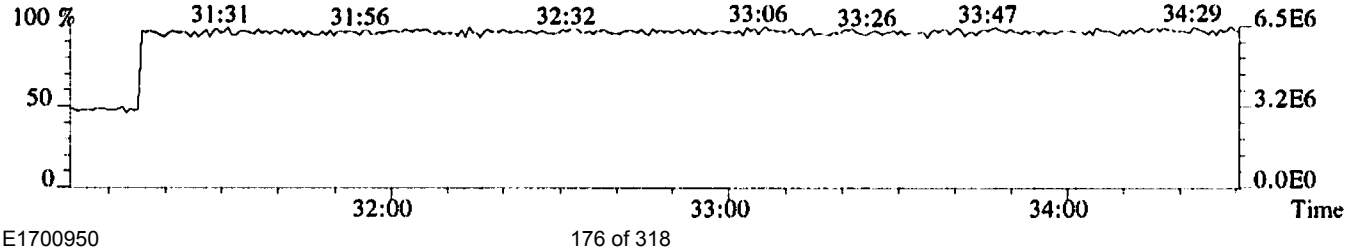
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,388.0,1.00%,F,T)



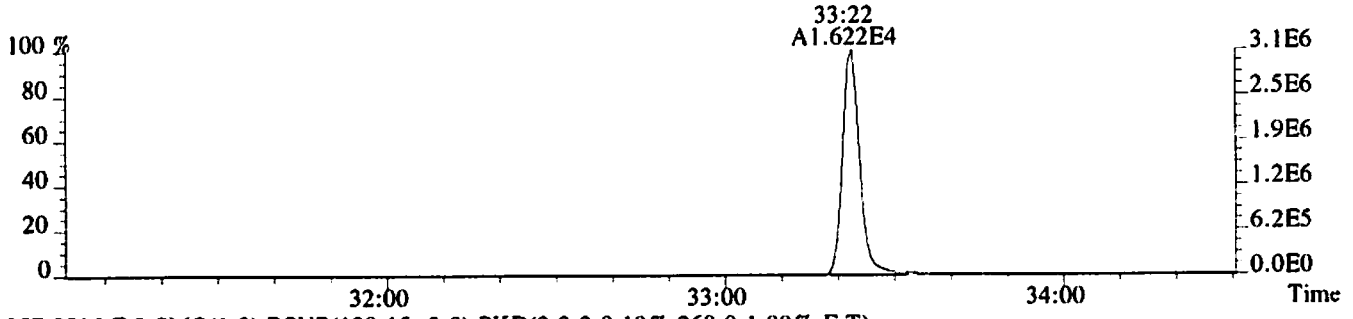
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



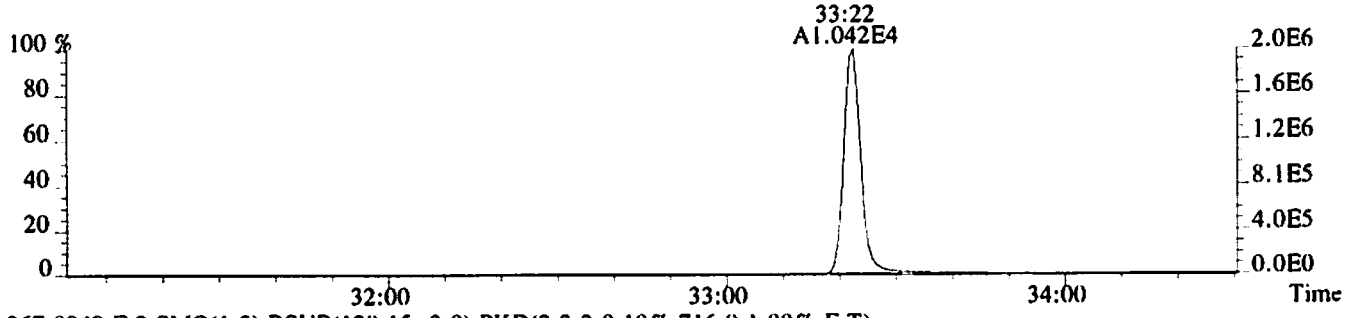
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



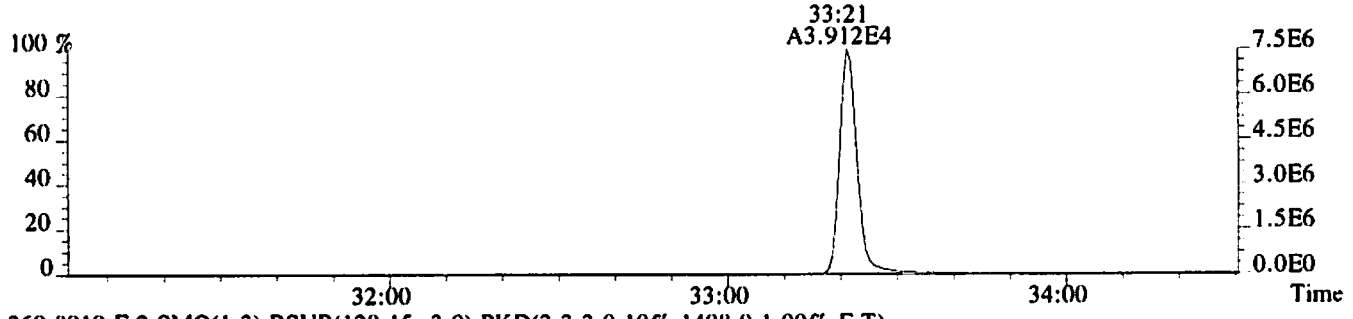
File:P407971 #1-312 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,712.0,1.00%,F,T)



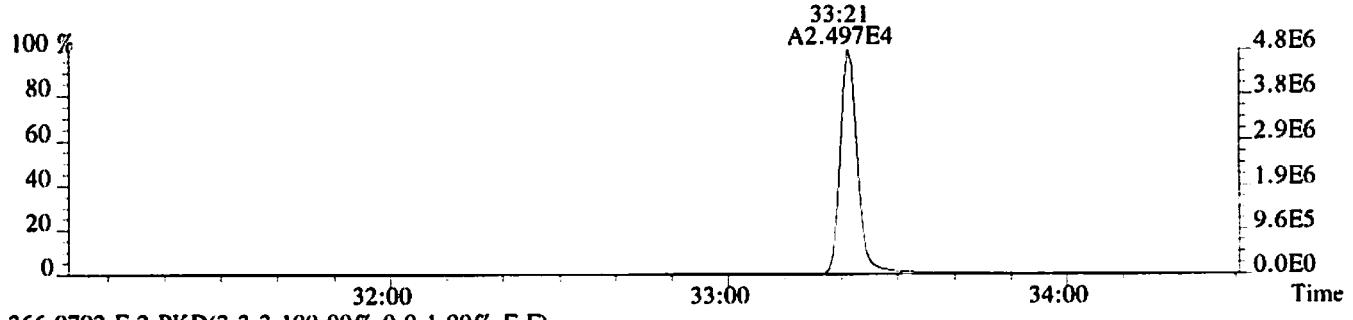
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,268.0,1.00%,F,T)



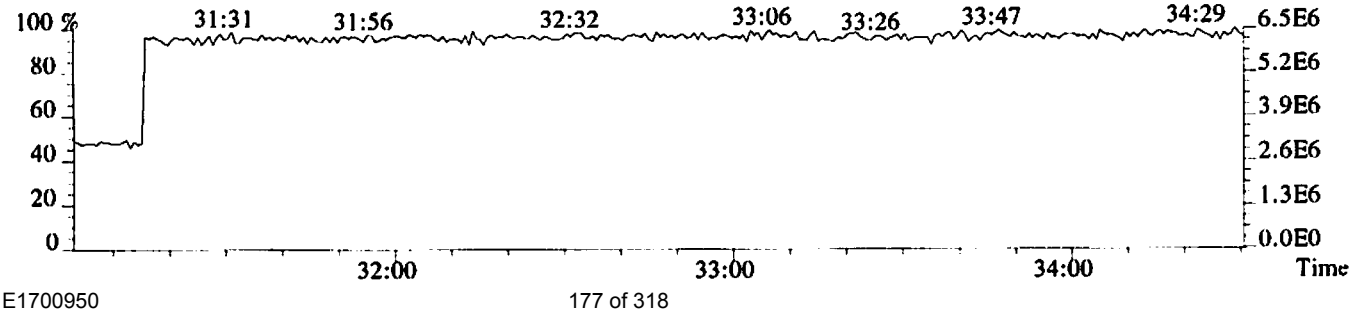
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,716.0,1.00%,F,T)



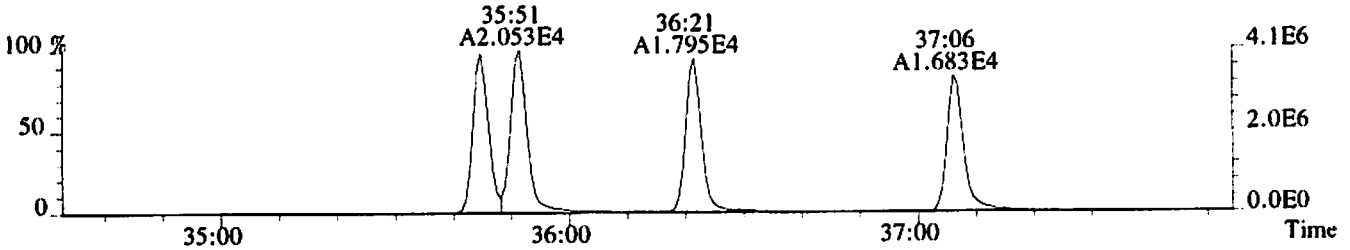
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1408.0,1.00%,F,T)



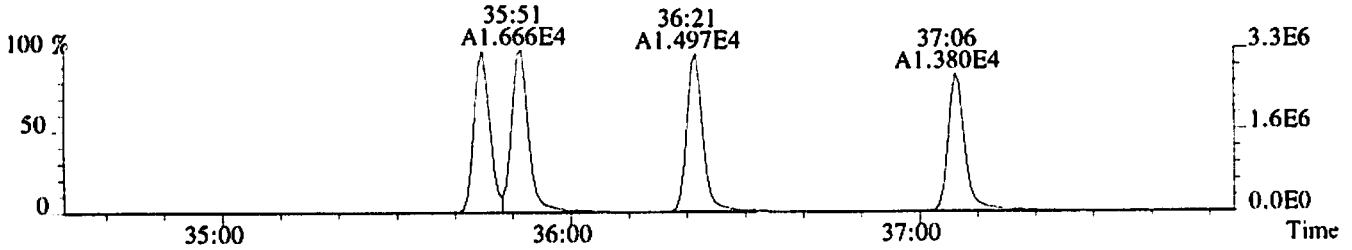
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



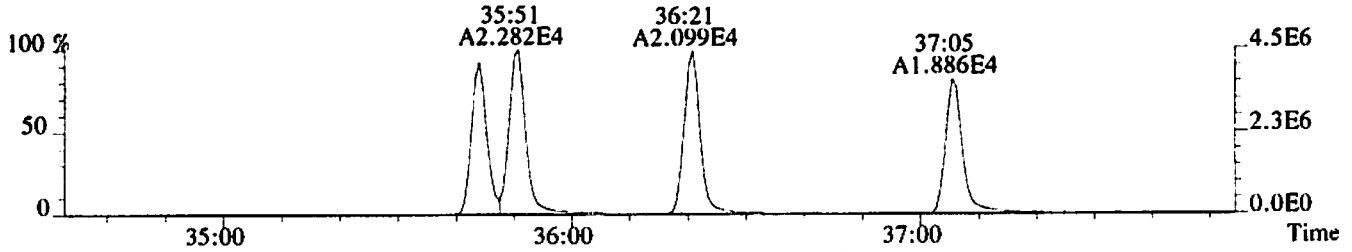
File:P407971 #1-303 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,580.0,0.40%,F,T)



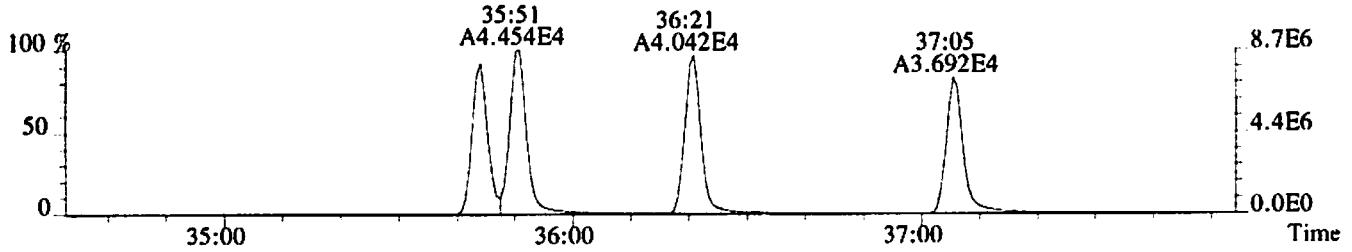
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,460.0,0.40%,F,T)



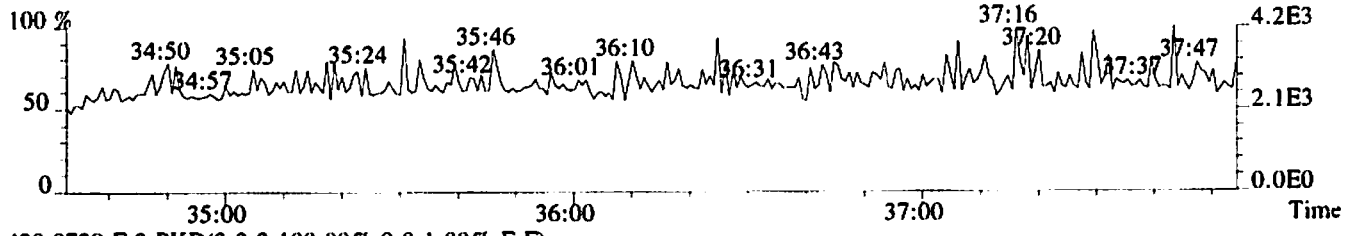
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,684.0,0.40%,F,T)



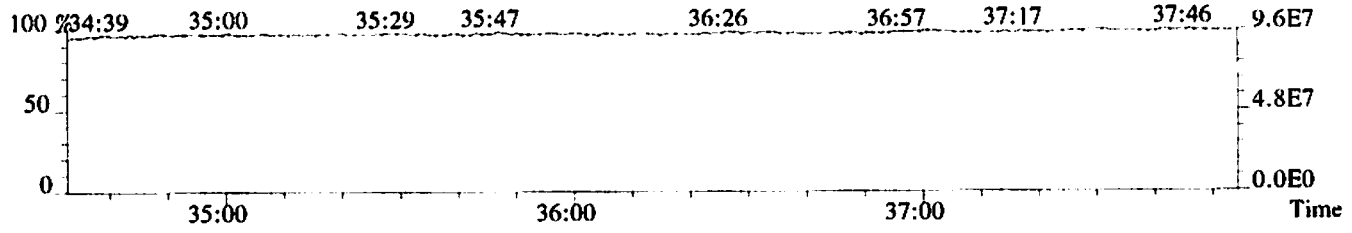
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1192.0,0.40%,F,T)



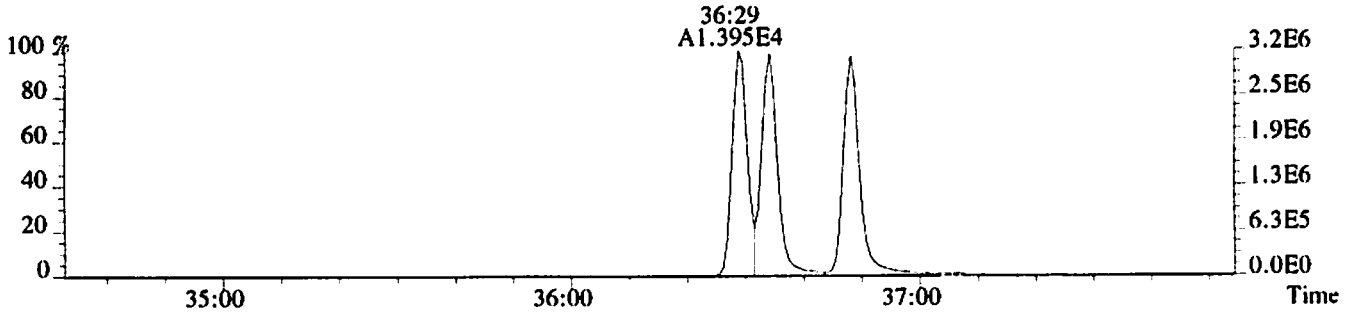
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



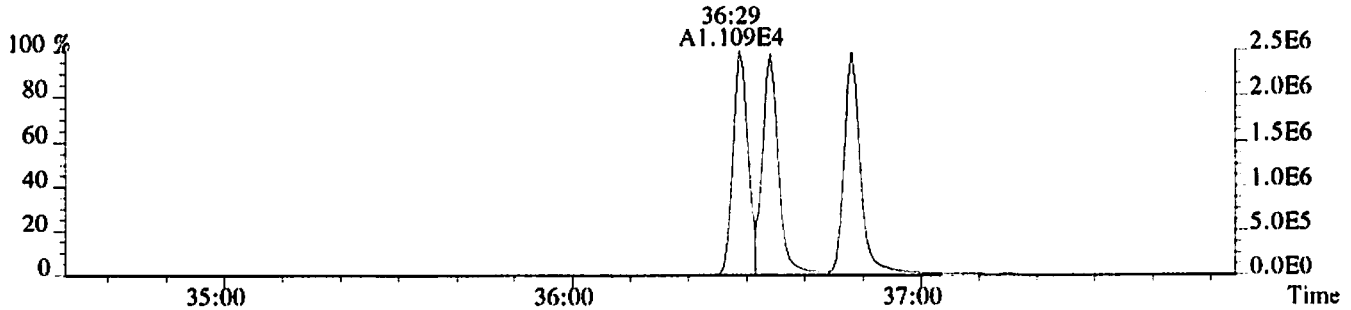
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



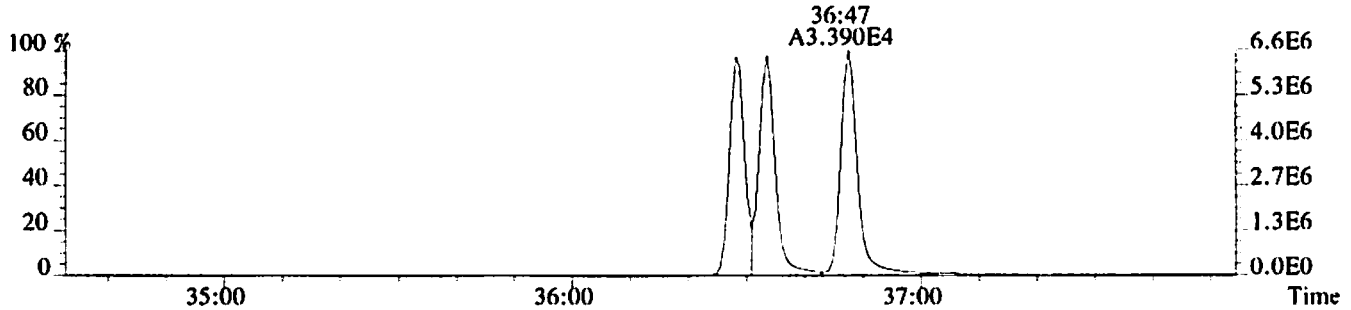
File:P407971 #1-303 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,640.0,0.40%,F,T)



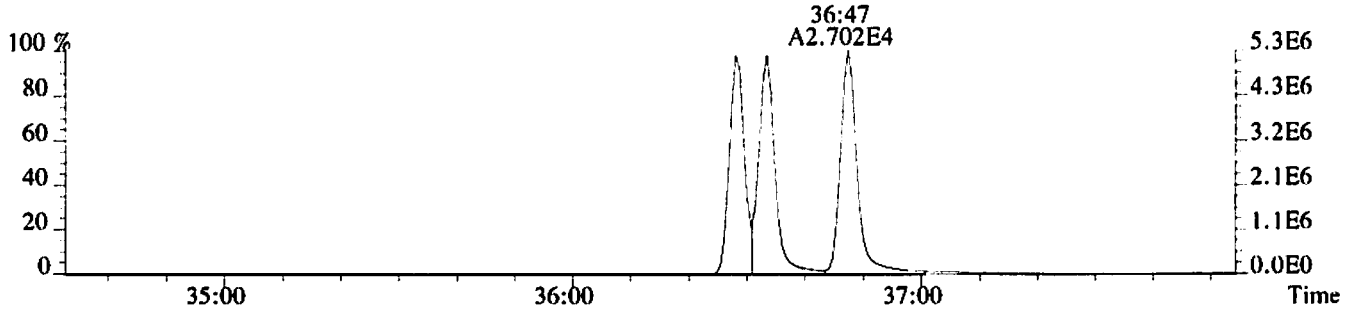
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,480.0,0.40%,F,T)



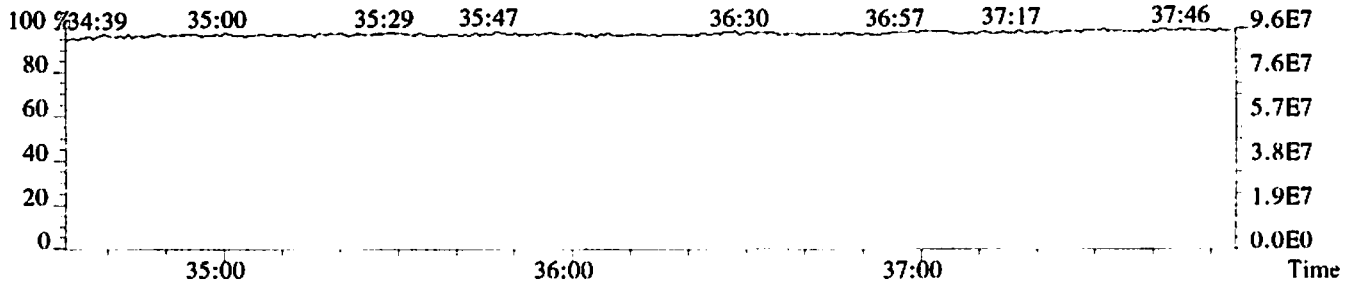
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1008.0,0.40%,F,T)



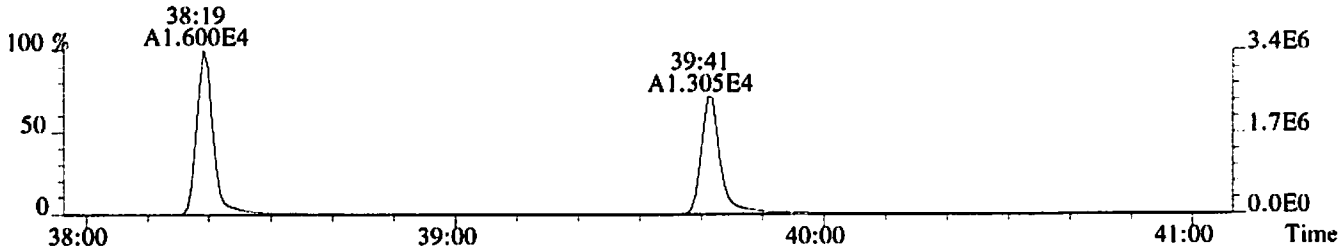
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1048.0,0.40%,F,T)



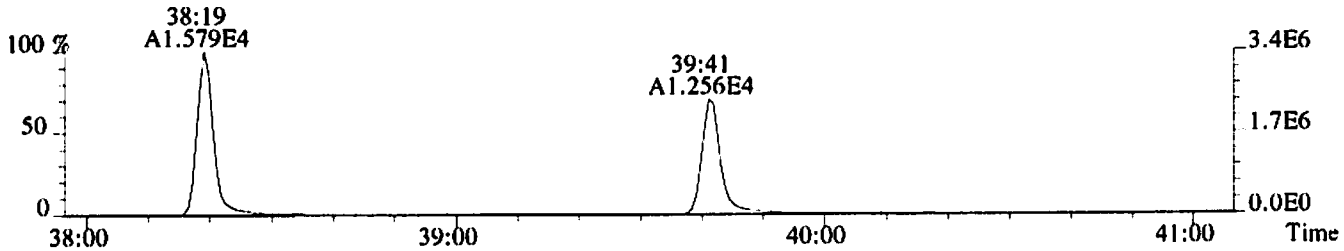
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



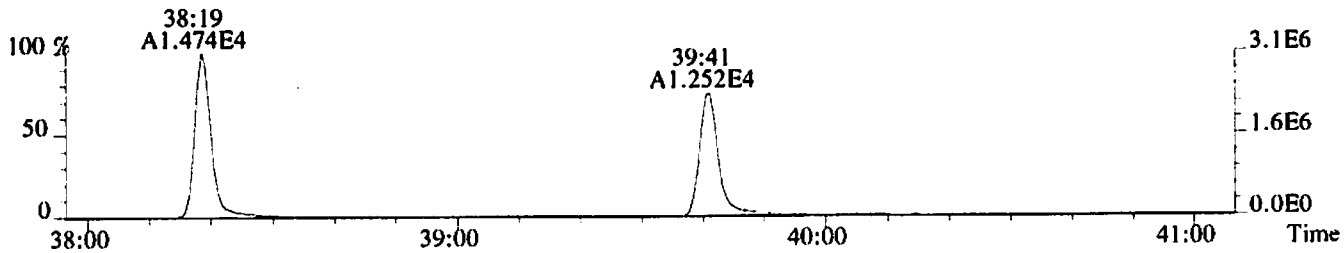
File:P407971 #1-286 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2840.0,0.50%,F,T)



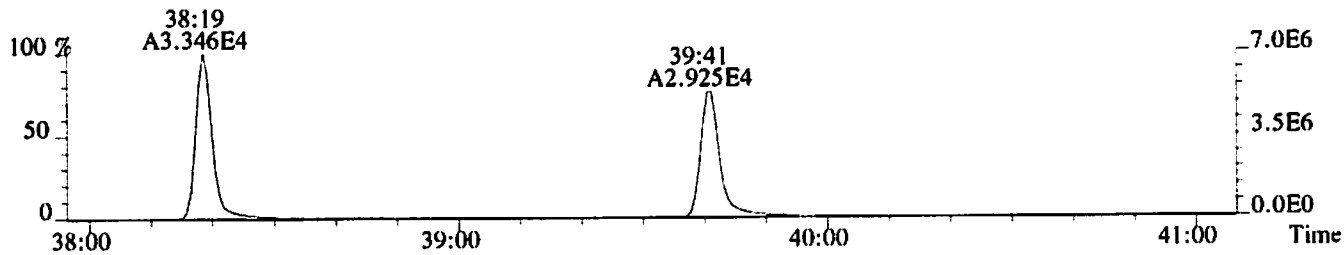
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3552.0,0.50%,F,T)



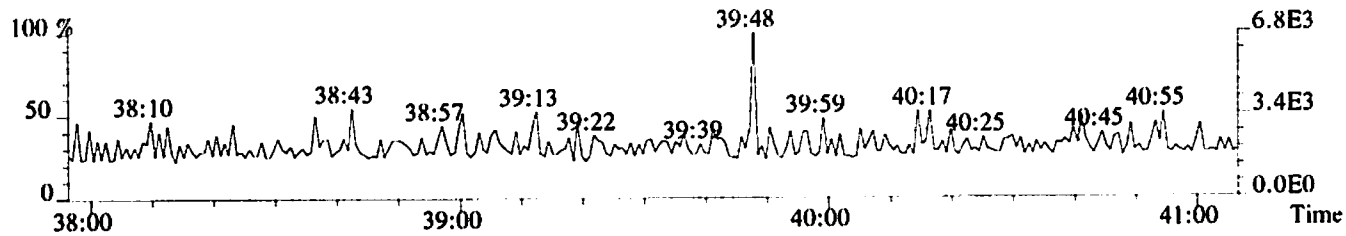
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2208.0,0.50%,F,T)



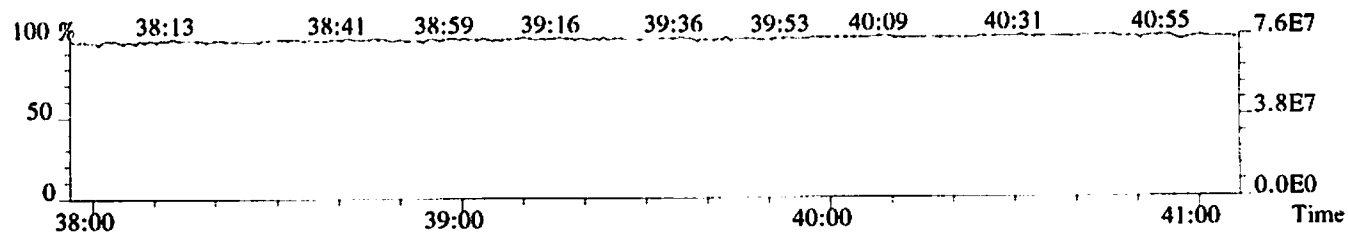
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4416.0,0.50%,F,T)



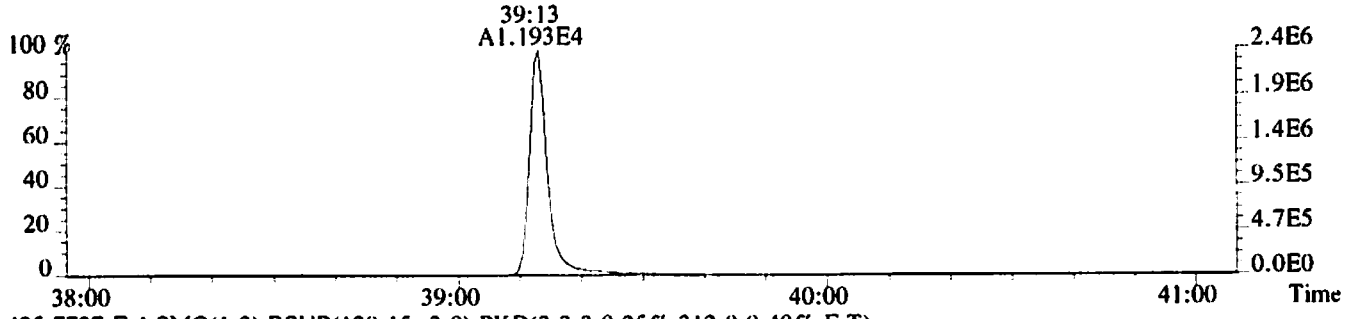
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



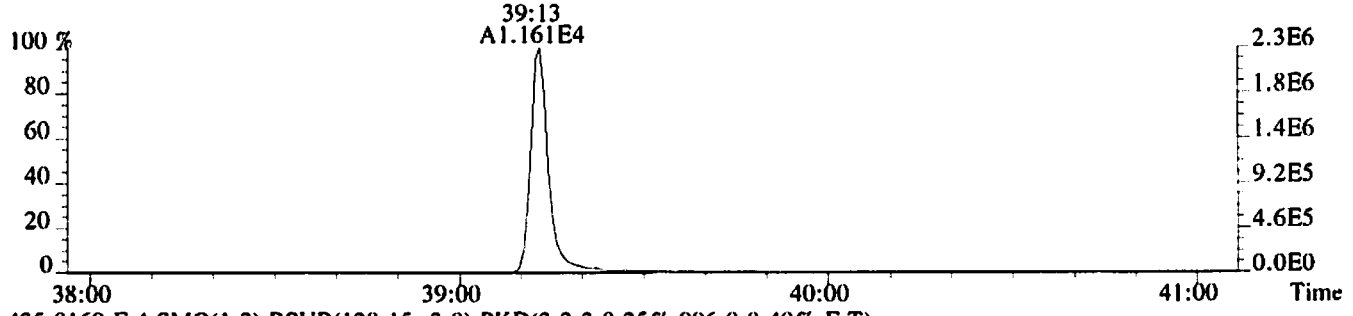
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



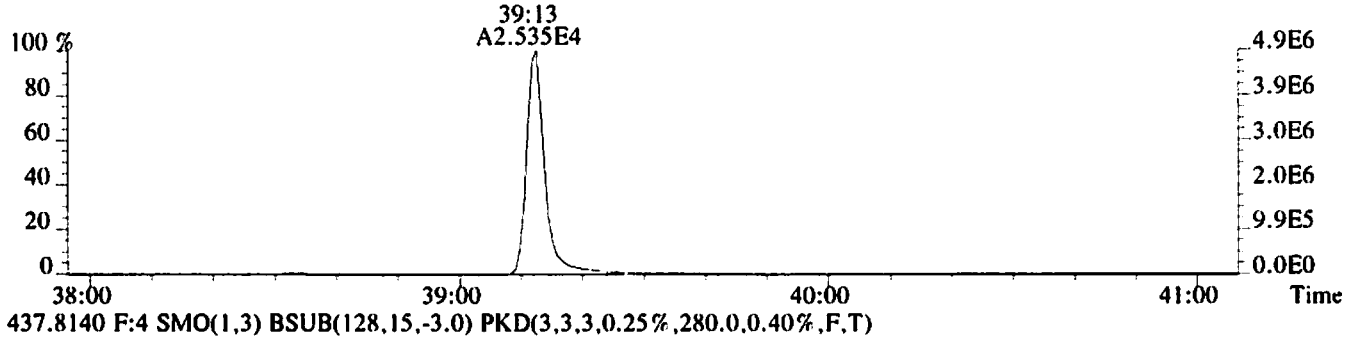
File:P407971 #1-286 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,548.0,0.40%,F,T)



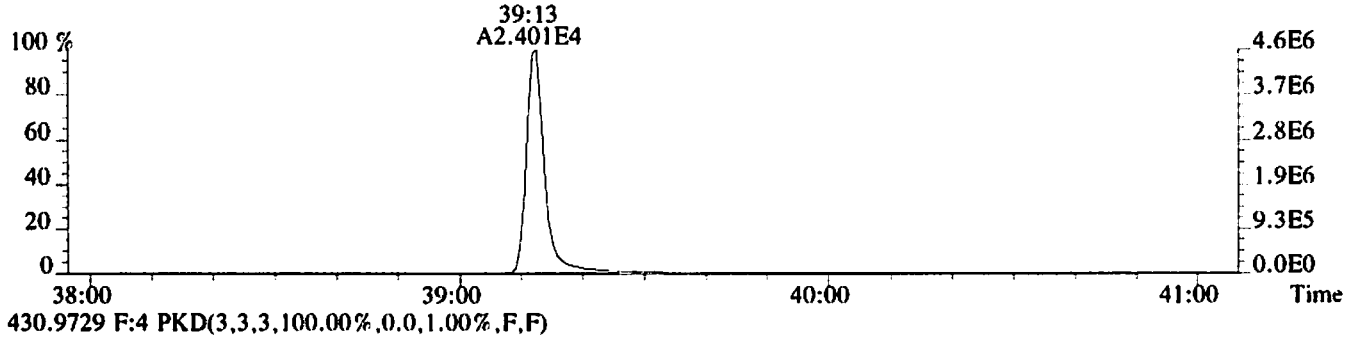
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,312.0,0.40%,F,T)



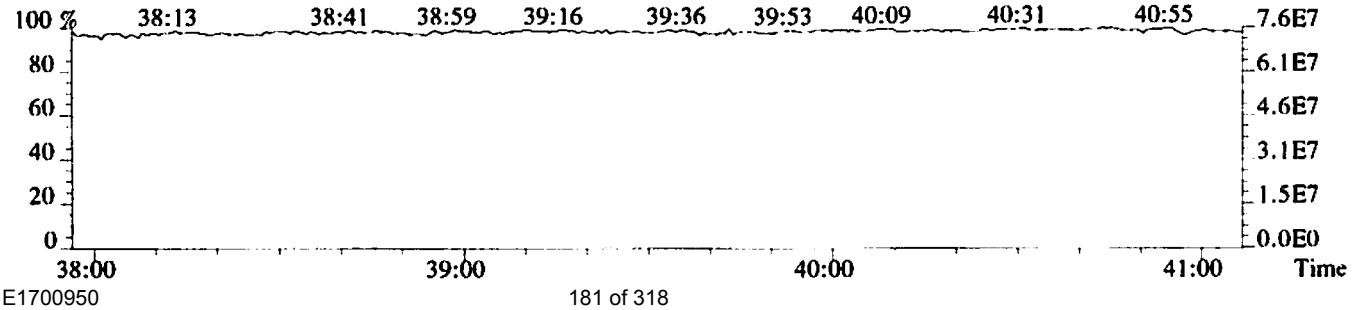
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,996.0,0.40%,F,T)



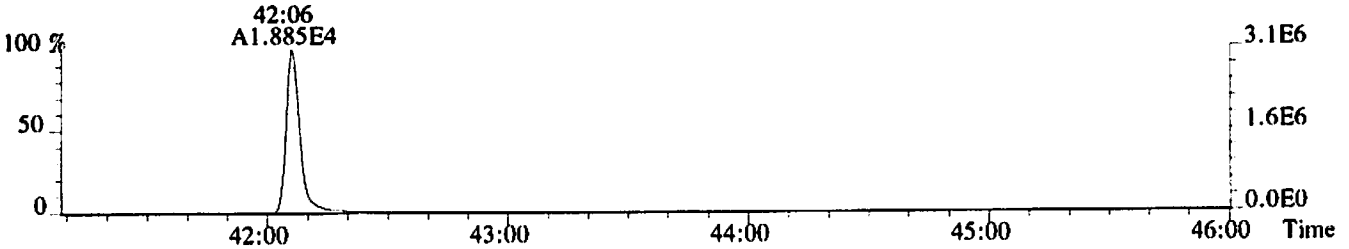
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,280.0,0.40%,F,T)



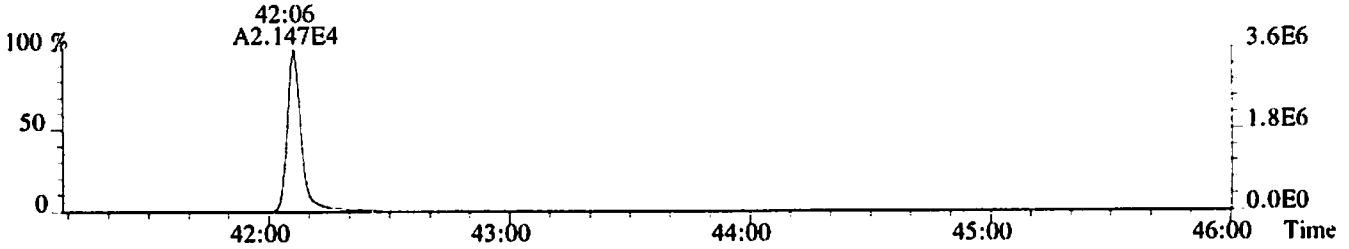
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



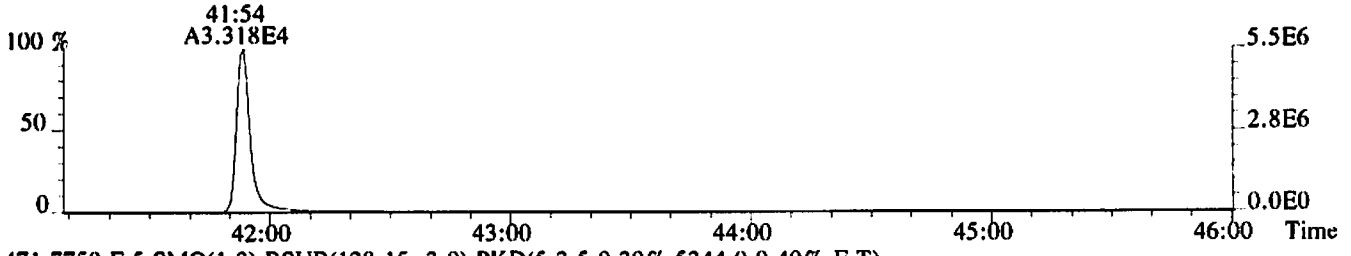
File:P407971 #1-438 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spectf
Sample#1 Exp:CS3
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,396.0,0.40%,F,T)



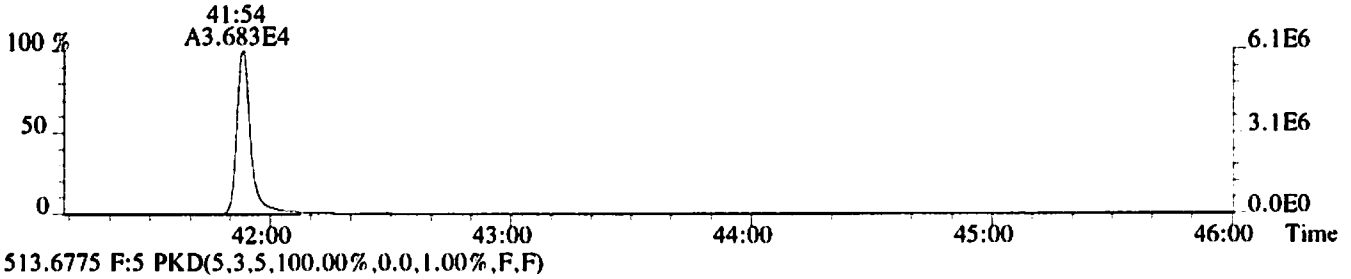
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1052.0,0.40%,F,T)



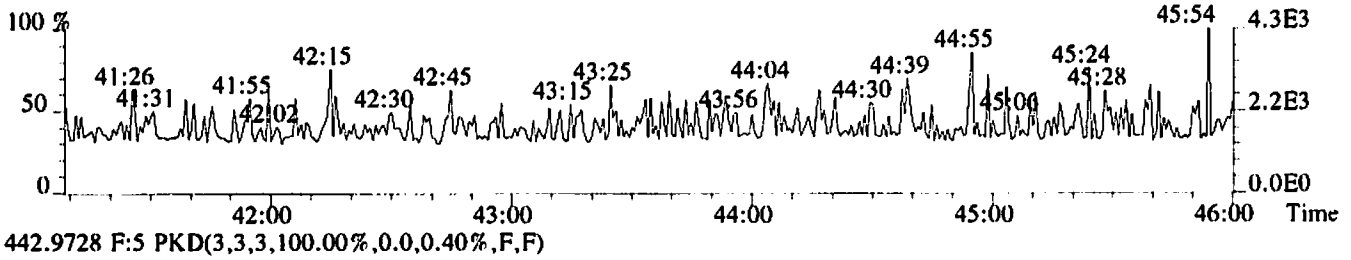
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4268.0,0.40%,F,T)



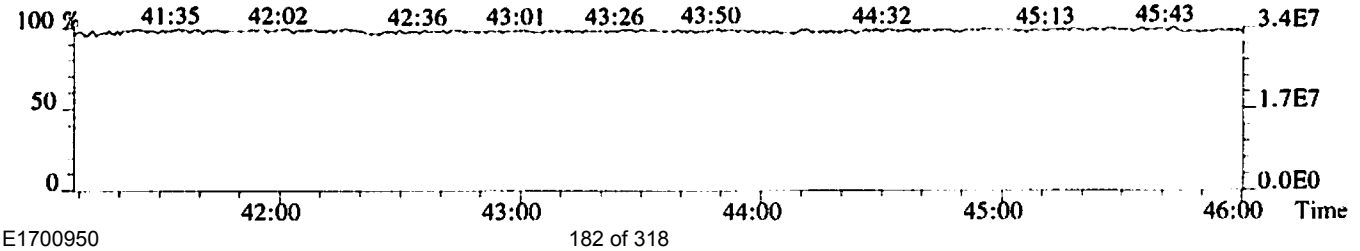
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,5344.0,0.40%,F,T)



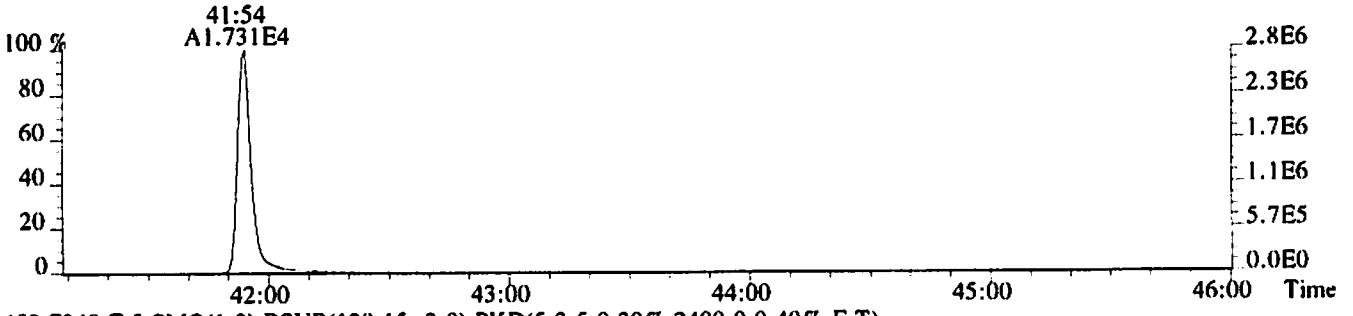
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



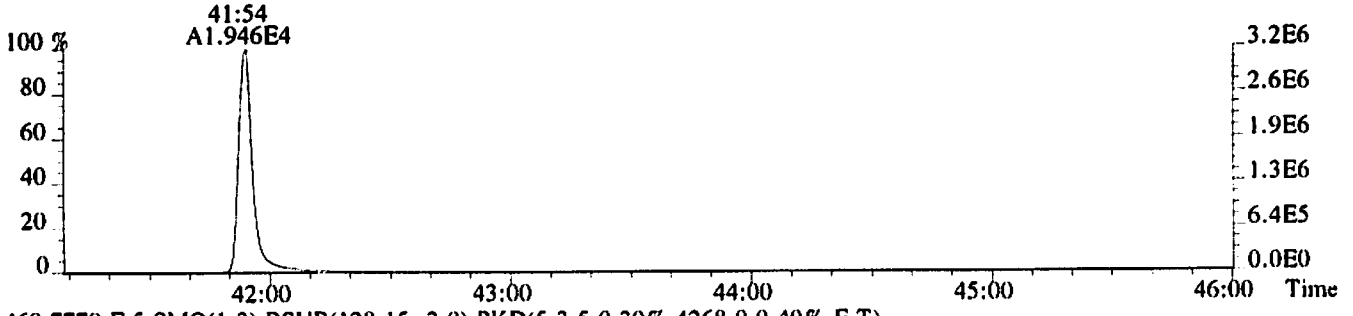
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



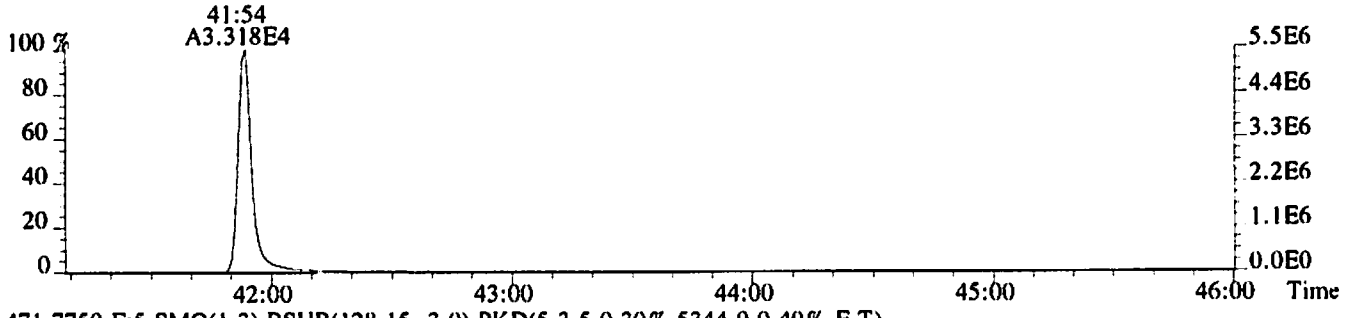
File:P407971 #1-438 Acq:19-SEP-2017 14:23:48 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3036.0,0.40%,F,T)



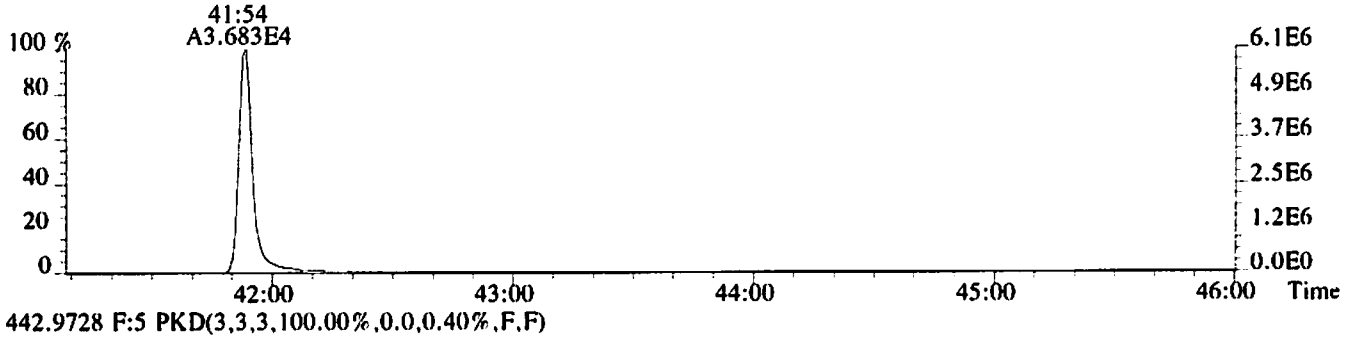
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2400.0,0.40%,F,T)



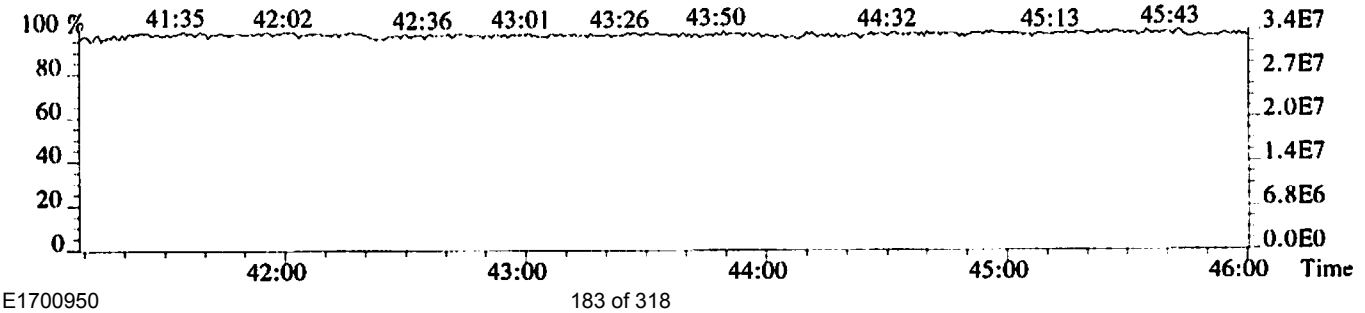
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4268.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,5344.0,0.40%,F,T)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 09/01/17

Instrument ID: E-HRMS-06 GC Column ID: DB-5MSUI

VER Data Filename: P407983 Analysis Date: 20-SEP-17 Time: 00:52:17

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (4)
2,3,7,8-TCDD	M/M+2	0.74	0.65-0.89	8.9	7.8 - 12.9	-11.2
1,2,3,7,8-PeCDD	M+2/M+4	1.56	1.32-1.78	50	39 - 65	-1.0
1,2,3,4,7,8-HxCDD	M+2/M+4	1.24	1.05-1.43	50	39 - 64	-0.6
1,2,3,6,7,8-HxCDD	M+2/M+4	1.29	1.05-1.43	51	39 - 64	1.6
1,2,3,7,8,9-HxCDD	M+2/M+4	1.17	1.05-1.43	49	41 - 61	-2.8
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.08	0.88-1.20	49	43 - 58	-1.6
OCDD	M+2/M+4	0.89	0.76-1.02	101	79 - 126	1.3
2,3,7,8-TCDF	M/M+2	0.72	0.65-0.89	9.8	8.4 - 12.0	-2.0
1,2,3,7,8-PeCDF	M+2/M+4	1.52	1.32-1.78	49	41 - 60	-1.4
2,3,4,7,8-PeCDF	M+2/M+4	1.57	1.32-1.78	49	41 - 61	-1.9
1,2,3,4,7,8-HxCDF	M+2/M+4	1.24	1.05-1.43	48	45 - 56	-3.8
1,2,3,6,7,8-HxCDF	M+2/M+4	1.20	1.05-1.43	47	44 - 57	-5.7
1,2,3,7,8,9-HxCDF	M+2/M+4	1.23	1.05-1.43	47	45 - 56	-5.1
2,3,4,6,7,8-HxCDF	M+2/M+4	1.21	1.05-1.43	48	44 - 57	-3.4
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.03	0.88-1.20	48	45 - 55	-4.3
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.03	0.88-1.20	46	43 - 58	-7.1
OCDF	M+2/M+4	0.88	0.76-1.02	103	63 - 159	3.0

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range as specified in Table 6, Method 1613B, under VER.

(4) The beginning CCAL %RSD for the 17 unlabeled standard must not exceed +/- 20%, Section 7.7.4.1. The ending CCAL must not exceed +/-25%, Section 8.3.2.4, Method 8290

12/2012
1613F4A.FRM

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 09/01/17

Instrument ID: E-HRMS-06 GC Column ID: DB-5MSUI

VER Data Filename: P407983 Analysis Date: 20-SEP-17 Time: 00:52:17

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (5)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	M/M+2	0.77	0.65-0.89	101	82 - 121	1.3
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.55	1.32-1.78	103	62 - 160	2.9
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	89	85 - 117	-10.7
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	97	85 - 118	-3.4
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.07	0.88-1.20	96	72 - 138	-3.6
13C-OCDD	M+2/M+4	0.88	0.76-1.02	179	96 - 415	-10.5
13C-2,3,7,8-TCDF	M/M+2	0.76	0.65-0.89	94	71 - 140	-5.8
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	101	76 - 130	0.6
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.59	1.32-1.78	104	77 - 130	3.6
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.51	0.43-0.59	86	76 - 131	-14.2
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.51	0.43-0.59	97	70 - 143	-2.9
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.51	0.43-0.59	97	74 - 135	-3.0
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.52	0.43-0.59	93	73 - 137	-7.1
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.44	0.37-0.51	93	78 - 129	-7.3
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.44	0.37-0.51	96	77 - 129	-3.6
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD				9.7	7.8 - 12.7	-2.9

(1) See Table 8, Method 1613B, for m/z specifications.
(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.
(3) Contract-required concentration range, as specified in Table 6, Method 1613B, under VER.
(4) No ion abundance ratio; report concentration found.
(5) The beginnning CCAL %RSD for the labeled standard must not exceed +/- 30% Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Sec 8.3.2.4 (8290)

12/2012
1613F4B.FRM

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
178398

Run #18 Filename P407983 Samp: 1 Inj: 1 Acquired: 20-SEP-17 00:52:17
Processed: 20-SEP-17 15:43:17 Sample ID: CS3

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	27:57	2.098e+03	2.894e+03	0.72	yes	no	0.885
2	Unk	1,2,3,7,8-PeCDF	32:10	1.813e+04	1.189e+04	1.52	yes	no	0.984
3	Unk	2,3,4,7,8-PeCDF	33:05	1.744e+04	1.112e+04	1.57	yes	no	0.943
4	Unk	1,2,3,4,7,8-HxCDF	35:44	1.511e+04	1.219e+04	1.24	yes	no	1.230
5	Unk	1,2,3,6,7,8-HxCDF	35:51	1.688e+04	1.412e+04	1.20	yes	no	1.148
6	Unk	2,3,4,6,7,8-HxCDF	36:21	1.512e+04	1.251e+04	1.21	yes	no	1.133
7	Unk	1,2,3,7,8,9-HxCDF	37:06	1.379e+04	1.119e+04	1.23	yes	no	1.172
8	Unk	1,2,3,4,6,7,8-HpCDF	38:19	1.372e+04	1.326e+04	1.03	yes	no	1.377
9	Unk	1,2,3,4,7,8,9-HpCDF	39:41	1.077e+04	1.048e+04	1.03	yes	no	1.301
10	Unk	OCDF	42:06	1.614e+04	1.841e+04	0.88	yes	no	1.114
11	Unk	2,3,7,8-TCDD	28:45	1.843e+03	2.476e+03	0.74	yes	no	0.966
12	Unk	1,2,3,7,8-PeCDD	33:22	1.334e+04	8.550e+03	1.56	yes	no	0.851
13	Unk	1,2,3,4,7,8-HxCDD	36:29	1.155e+04	9.304e+03	1.24	yes	no	0.966
14	Unk	1,2,3,6,7,8-HxCDD	36:34	1.263e+04	9.818e+03	1.29	yes	no	0.938
15	Unk	1,2,3,7,8,9-HxCDD	36:48	1.164e+04	9.945e+03	1.17	yes	no	0.980
16	Unk	1,2,3,4,6,7,8-HpCDD	39:13	1.031e+04	9.582e+03	1.08	yes	no	0.975
17	Unk	OCDD	41:54	1.486e+04	1.669e+04	0.89	yes	no	1.033
18	IS	13C-2,3,7,8-TCDF	27:56	2.493e+04	3.260e+04	0.76	yes	no	1.176
19	IS	13C-1,2,3,7,8-PeCDF	32:09	3.794e+04	2.395e+04	1.58	yes	no	1.185
20	IS	13C-2,3,4,7,8-PeCDF	33:04	3.791e+04	2.388e+04	1.59	yes	no	1.149
21	IS	13C-1,2,3,4,7,8-HxCDF	35:43	1.567e+04	3.049e+04	0.51	yes	no	1.068
22	IS	13C-1,2,3,6,7,8-HxCDF	35:50	1.931e+04	3.794e+04	0.51	yes	no	1.171
23	IS	13C-2,3,4,6,7,8-HxCDF	36:20	1.728e+04	3.321e+04	0.52	yes	no	1.079
24	IS	13C-1,2,3,7,8,9-HxCDF	37:05	1.518e+04	2.971e+04	0.51	yes	no	0.919
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:19	1.250e+04	2.846e+04	0.44	yes	no	0.877
26	IS	13C-1,2,3,4,7,8,9-HpCDF	39:41	1.073e+04	2.440e+04	0.44	yes	no	0.723
27	IS	13C-2,3,7,8-TCDD	28:43	2.194e+04	2.842e+04	0.77	yes	no	0.958
28	IS	13C-1,2,3,7,8-PeCDD	33:21	3.161e+04	2.035e+04	1.55	yes	no	0.973
29	IS	13C-1,2,3,4,7,8-HxCDD	36:28	2.411e+04	1.935e+04	1.25	yes	no	0.966
30	IS	13C-1,2,3,6,7,8-HxCDD	36:33	2.624e+04	2.087e+04	1.26	yes	no	0.968
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:12	2.141e+04	2.005e+04	1.07	yes	no	0.854
32	IS	13C-OCDD	41:53	2.822e+04	3.204e+04	0.88	yes	no	0.668
33	RS/RT	13C-1,2,3,4-TCDD	28:07	2.278e+04	2.914e+04	0.78	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	36:47	2.790e+04	2.248e+04	1.24	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	28:45	5.002e+03				no	0.992

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Signal/Noise Height Ratio Summary

CLIENT ID.
178398

Run #18 Filename P407983 Samp: 1 Inj: 1 Acquired: 20-SEP-17 00:52:17
Processed: 20-SEP-17 15:43:17 LAB. ID: CS3

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	3.90e+05	5.16e+02	7.6e+02	5.27e+05	2.39e+03	2.2e+02
2	1,2,3,7,8-PeCDF	3.31e+06	7.60e+02	4.4e+03	2.16e+06	1.66e+03	1.3e+03
3	2,3,4,7,8-PeCDF	3.36e+06	7.60e+02	4.4e+03	2.18e+06	1.66e+03	1.3e+03
4	1,2,3,4,7,8-HxCDF	3.09e+06	4.64e+02	6.7e+03	2.60e+06	7.76e+02	3.4e+03
5	1,2,3,6,7,8-HxCDF	3.32e+06	4.64e+02	7.1e+03	2.75e+06	7.76e+02	3.5e+03
6	2,3,4,6,7,8-HxCDF	3.11e+06	4.64e+02	6.7e+03	2.57e+06	7.76e+02	3.3e+03
7	1,2,3,7,8,9-HxCDF	2.74e+06	4.64e+02	5.9e+03	2.24e+06	7.76e+02	2.9e+03
8	1,2,3,4,6,7,8-HpCDF	2.91e+06	3.82e+03	7.6e+02	2.76e+06	2.14e+03	1.3e+03
9	1,2,3,4,7,8,9-HpCDF	2.03e+06	3.82e+03	5.3e+02	2.01e+06	2.14e+03	9.4e+02
10	OCDF	2.70e+06	5.60e+02	4.8e+03	2.97e+06	1.36e+03	2.2e+03
11	2,3,7,8-TCDD	3.55e+05	1.83e+03	1.9e+02	4.68e+05	7.88e+02	5.9e+02
12	1,2,3,7,8-PeCDD	2.55e+06	6.56e+02	3.9e+03	1.67e+06	4.12e+02	4.1e+03
13	1,2,3,4,7,8-HxCDD	2.57e+06	5.56e+02	4.6e+03	2.08e+06	7.16e+02	2.9e+03
14	1,2,3,6,7,8-HxCDD	2.50e+06	5.56e+02	4.5e+03	1.96e+06	7.16e+02	2.7e+03
15	1,2,3,7,8,9-HxCDD	2.44e+06	5.56e+02	4.4e+03	1.97e+06	7.16e+02	2.8e+03
16	1,2,3,4,6,7,8-HpCDD	1.97e+06	8.00e+02	2.5e+03	1.86e+06	7.60e+02	2.4e+03
17	OCDD	2.53e+06	3.71e+03	6.8e+02	2.82e+06	3.76e+03	7.5e+02
18	13C-2,3,7,8-TCDF	4.48e+06	6.46e+03	6.9e+02	5.85e+06	4.81e+03	1.2e+03
19	13C-1,2,3,7,8-PeCDF	6.75e+06	6.52e+02	1.0e+04	4.28e+06	6.44e+02	6.6e+03
20	13C-2,3,4,7,8-PeCDF	7.33e+06	6.52e+02	1.1e+04	4.63e+06	6.44e+02	7.2e+03
21	13C-1,2,3,4,7,8-HxCDF	3.34e+06	7.72e+02	4.3e+03	6.45e+06	9.04e+02	7.1e+03
22	13C-1,2,3,6,7,8-HxCDF	3.84e+06	7.72e+02	5.0e+03	7.40e+06	9.04e+02	8.2e+03
23	13C-2,3,4,6,7,8-HxCDF	3.55e+06	7.72e+02	4.6e+03	6.91e+06	9.04e+02	7.6e+03
24	13C-1,2,3,7,8,9-HxCDF	2.99e+06	7.72e+02	3.9e+03	5.85e+06	9.04e+02	6.5e+03
25	13C-1,2,3,4,6,7,8-HpCDF	2.67e+06	2.78e+03	9.6e+02	6.04e+06	4.93e+03	1.2e+03
26	13C-1,2,3,4,7,8,9-HpCDF	2.02e+06	2.78e+03	7.3e+02	4.56e+06	4.93e+03	9.3e+02
27	13C-2,3,7,8-TCDD	4.12e+06	5.03e+03	8.2e+02	5.35e+06	2.66e+03	2.0e+03
28	13C-1,2,3,7,8-PeCDD	6.06e+06	1.10e+03	5.5e+03	3.86e+06	1.23e+03	3.1e+03
29	13C-1,2,3,4,7,8-HxCDD	5.37e+06	1.47e+03	3.7e+03	4.26e+06	8.76e+02	4.9e+03
30	13C-1,2,3,6,7,8-HxCDD	5.23e+06	1.47e+03	3.6e+03	4.14e+06	8.76e+02	4.7e+03
31	13C-1,2,3,4,6,7,8-HpCDD	4.13e+06	9.40e+02	4.4e+03	3.92e+06	1.03e+03	3.8e+03
32	13C-OCDD	4.65e+06	3.81e+03	1.2e+03	5.31e+06	4.78e+03	1.1e+03
33	13C-1,2,3,4-TCDD	4.28e+06	5.03e+03	8.5e+02	5.50e+06	2.66e+03	2.1e+03
34	13C-1,2,3,7,8,9-HxCDD	5.43e+06	1.47e+03	3.7e+03	4.31e+06	8.76e+02	4.9e+03
35	37Cl-2,3,7,8-TCDD	9.69e+05	1.74e+03	5.6e+02			

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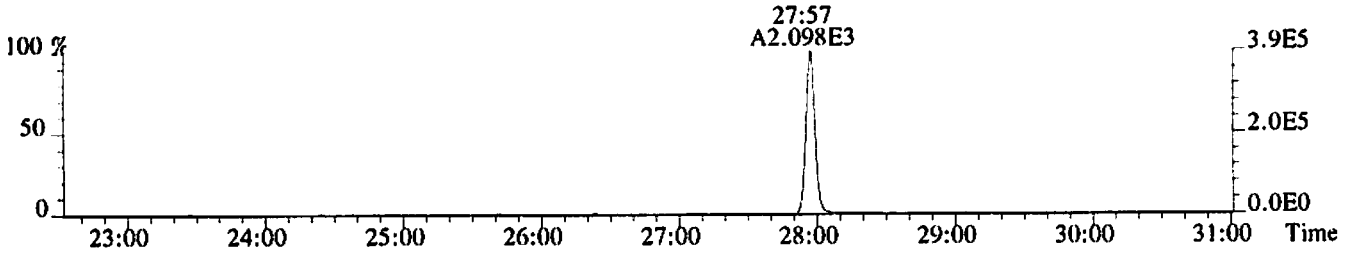
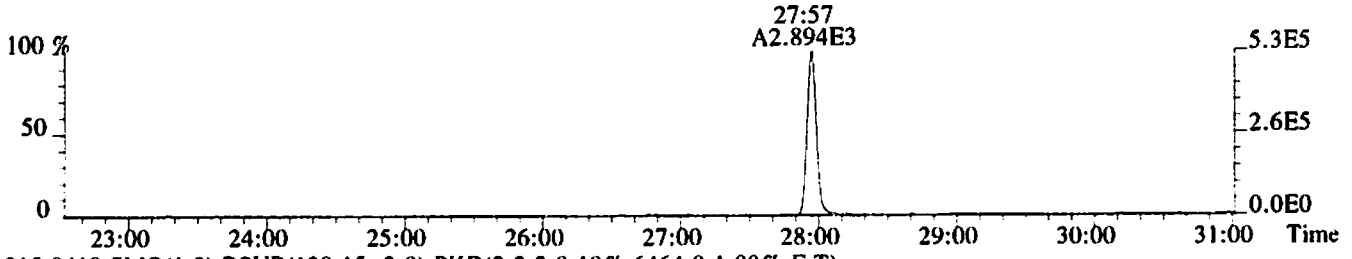
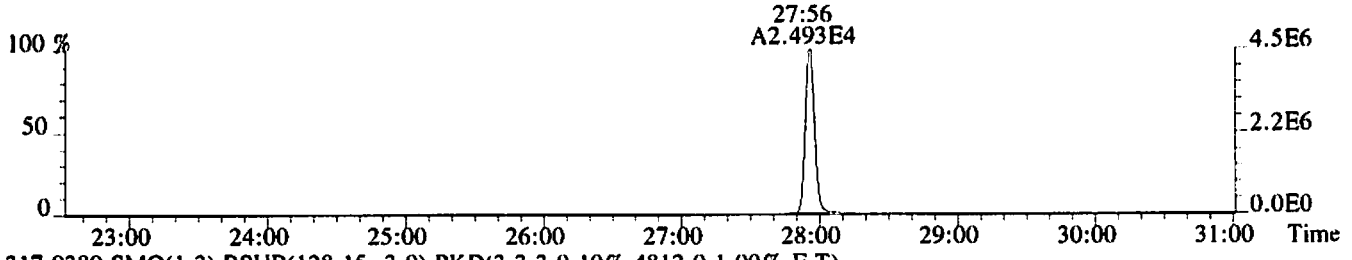
File:P407983 #1-602 Acq:20-SEP-2017 00:52:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,516.0,1.00%,F,T)



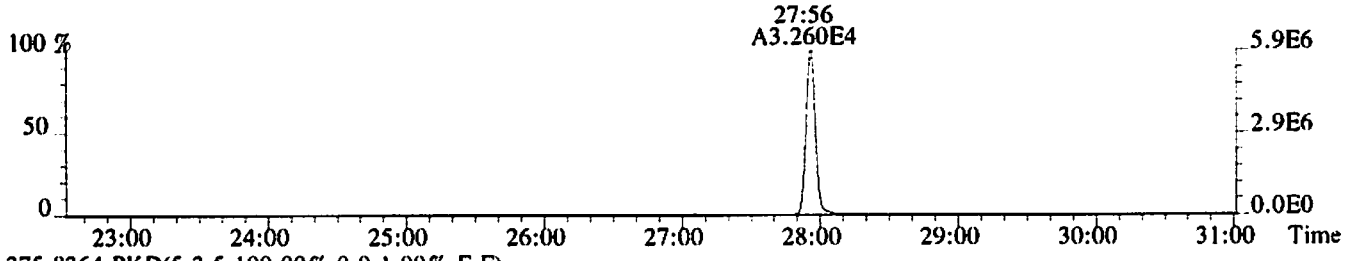
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2388.0,1.00%,F,T)



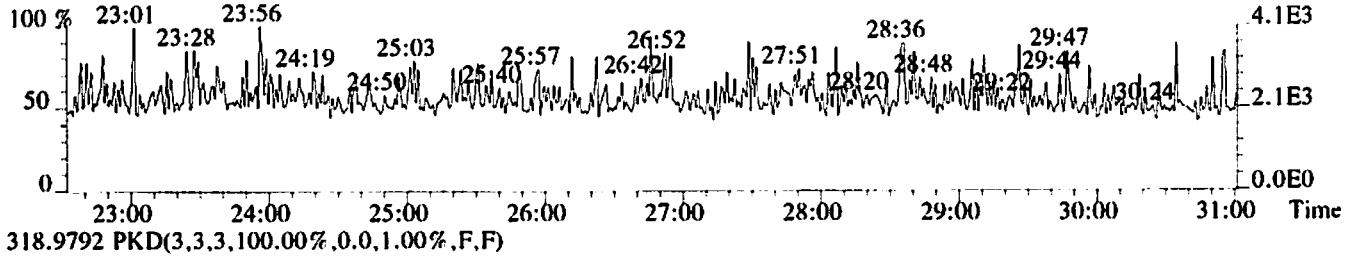
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,6464.0,1.00%,F,T)



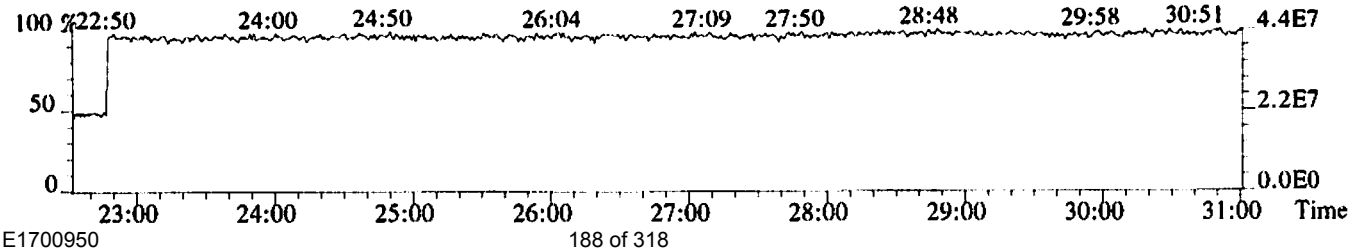
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4812.0,1.00%,F,T)



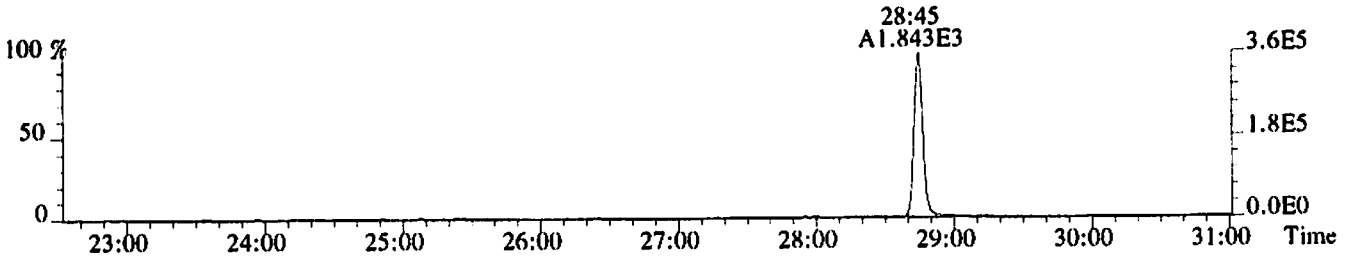
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



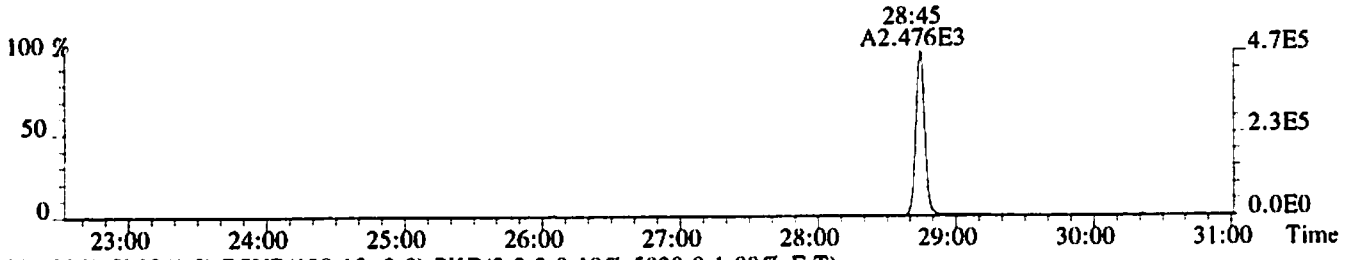
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



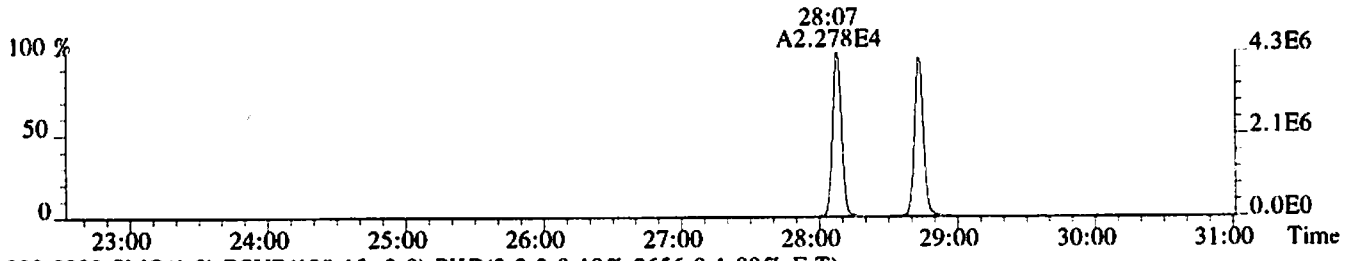
File:P407983 #1-602 Acq:20-SEP-2017 00:52:17 Probe EI+ Magnet SIR VG BioTech Mass spectÉ
Sample#1 Exp:CS3
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1832.0,1.00%,F,T)



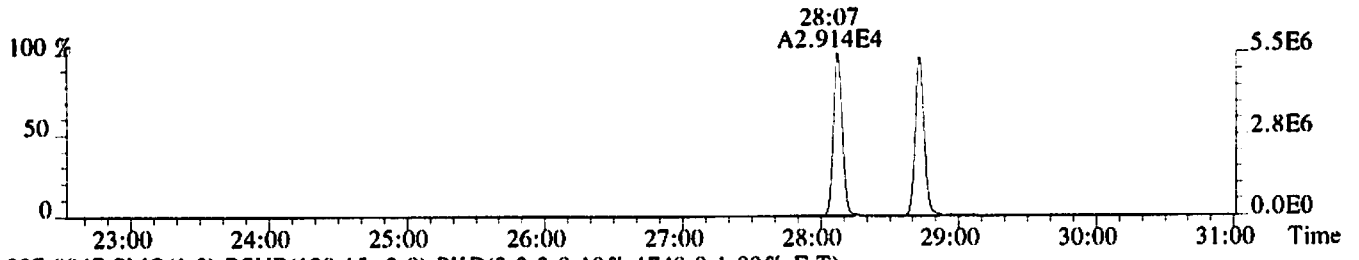
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,788.0,1.00%,F,T)



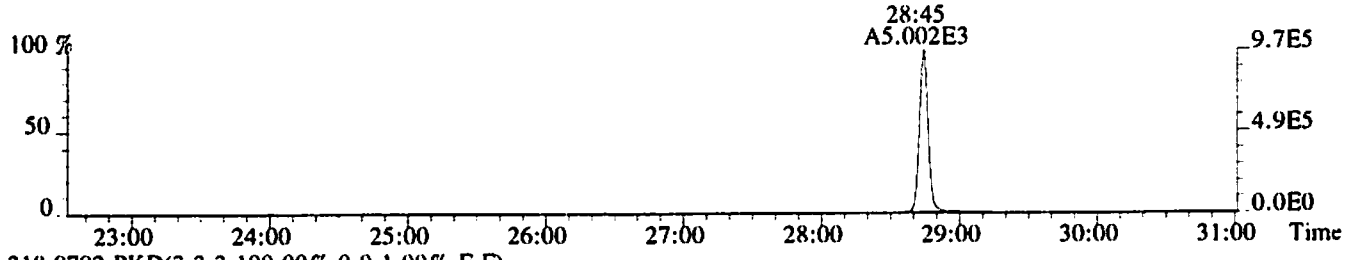
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5028.0,1.00%,F,T)



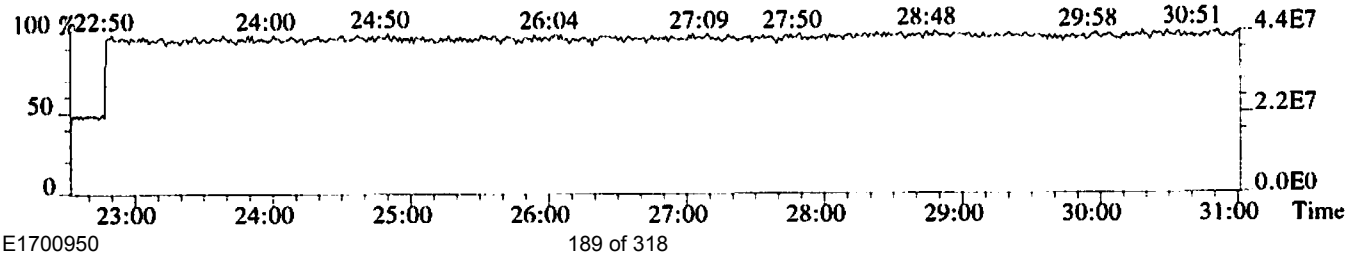
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2656.0,1.00%,F,T)



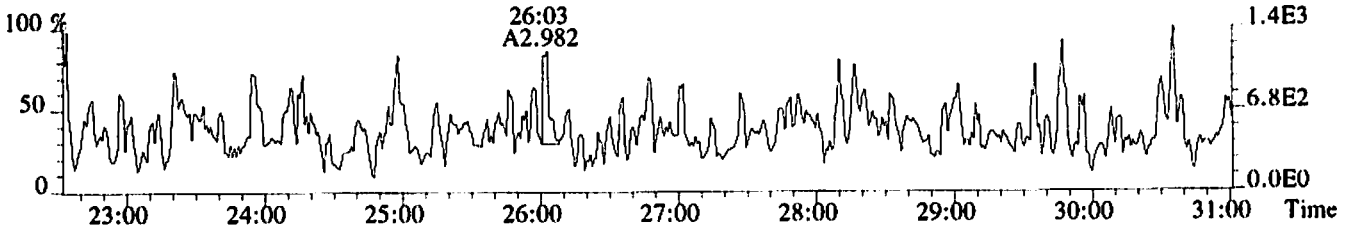
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1740.0,1.00%,F,T)



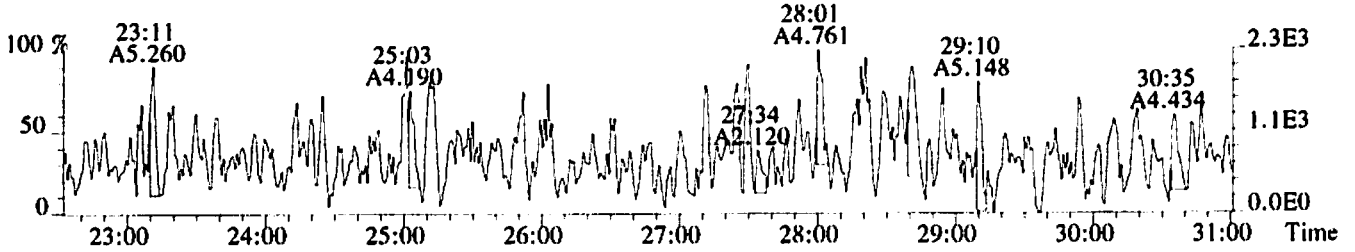
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



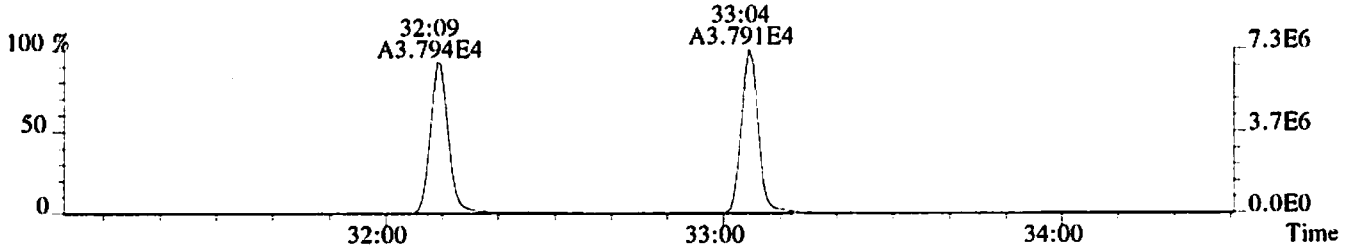
File:P407983 #1-602 Acq:20-SEP-2017 00:52:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,616.0,1.00%,F,T)



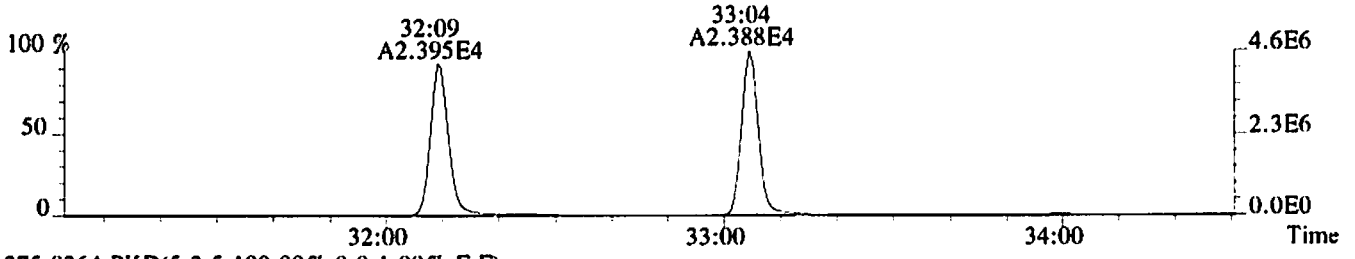
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,908.0,1.00%,F,T)



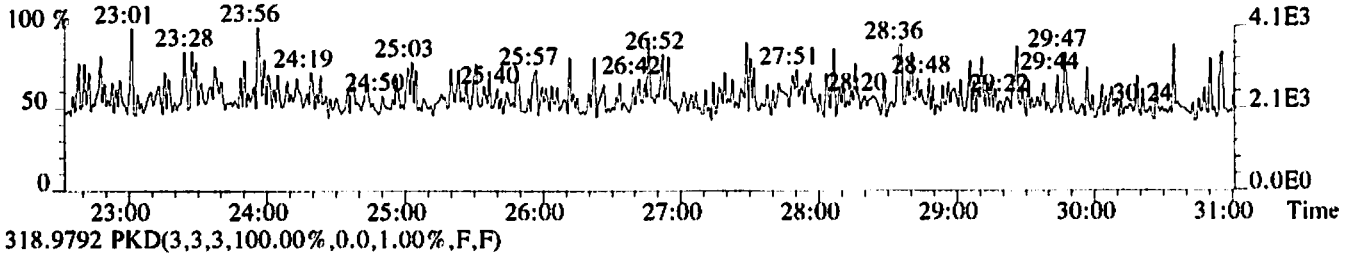
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,652.0,1.00%,F,T)



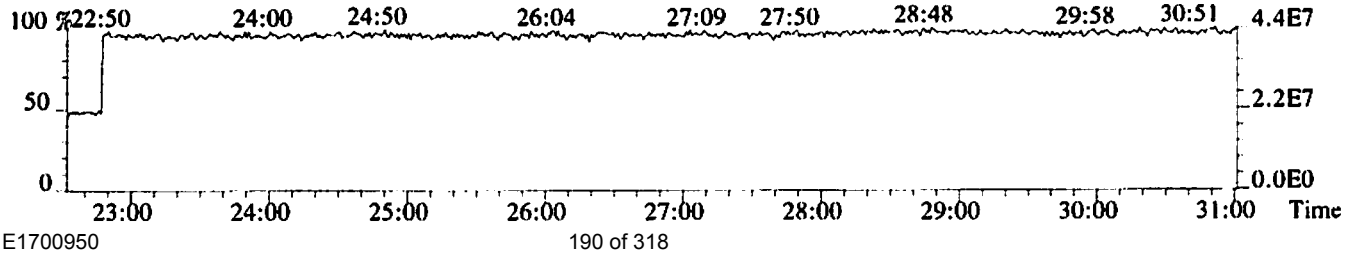
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,644.0,1.00%,F,T)



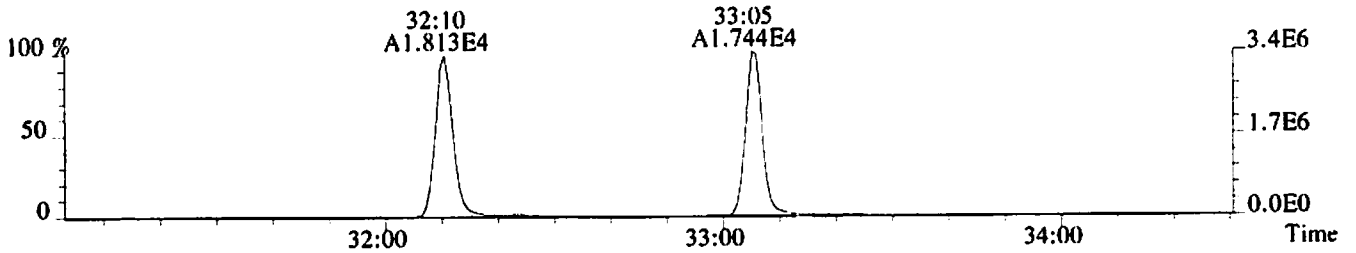
375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



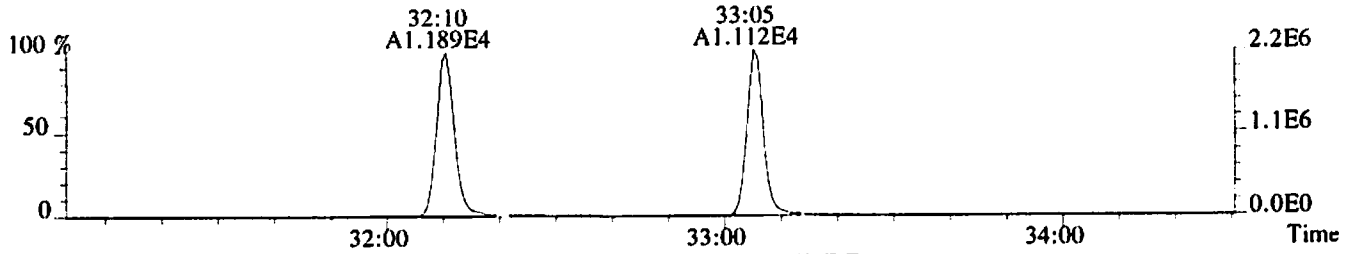
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



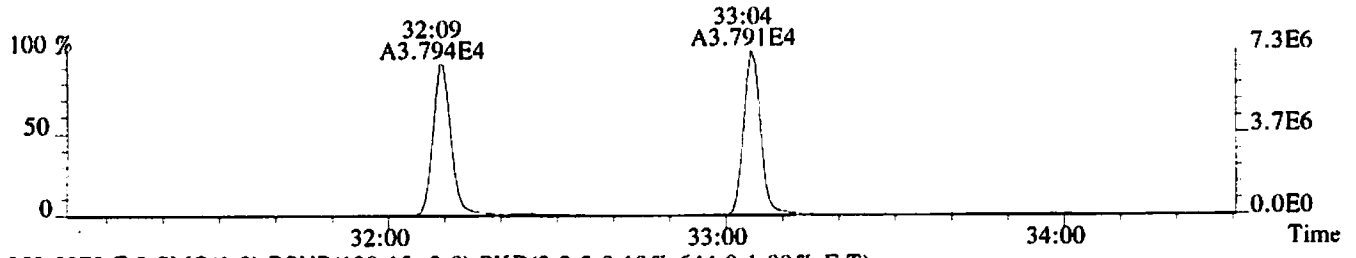
File:P407983 #1-312 Acq:20-SEP-2017 00:52:17 Probe EI+ Magnet SIR VG BioTech Mass spectr
Sample#1 Exp:CS3
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,760.0,1.00%,F,T)



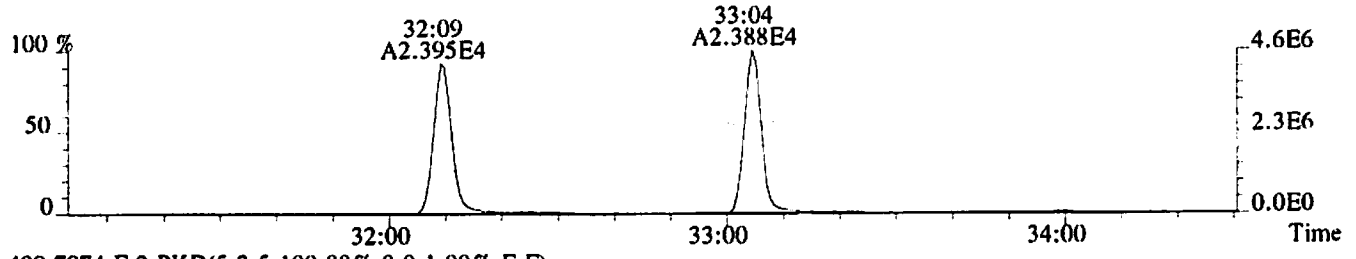
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1656.0,1.00%,F,T)



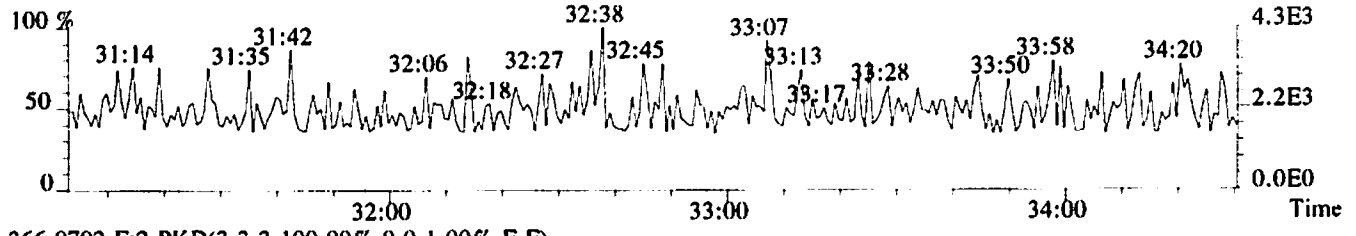
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,652.0,1.00%,F,T)



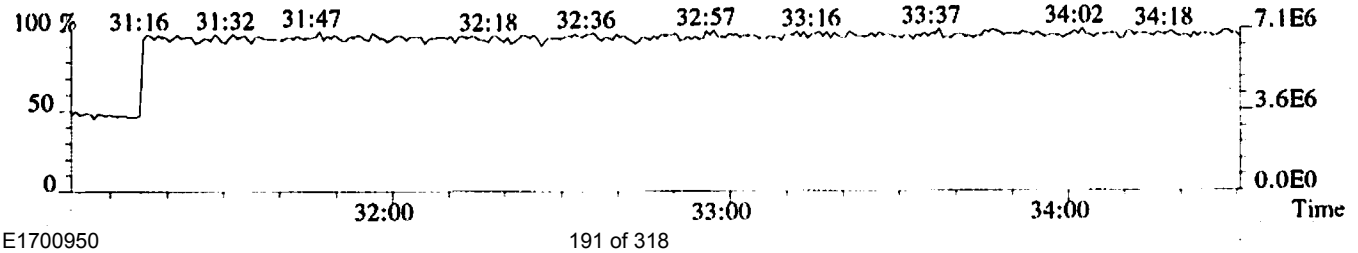
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,644.0,1.00%,F,T)



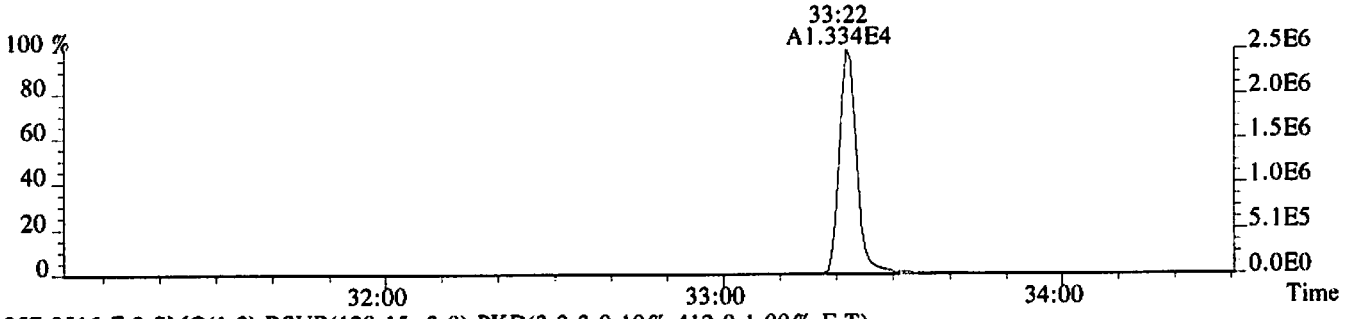
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



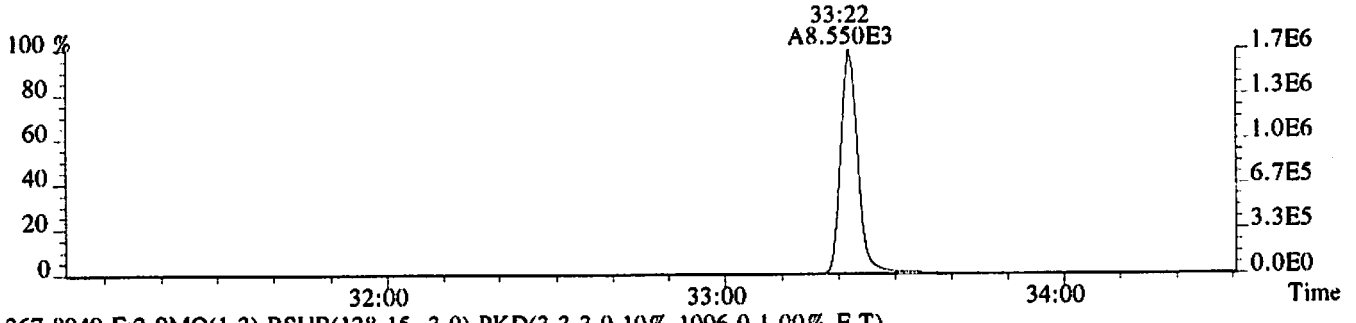
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



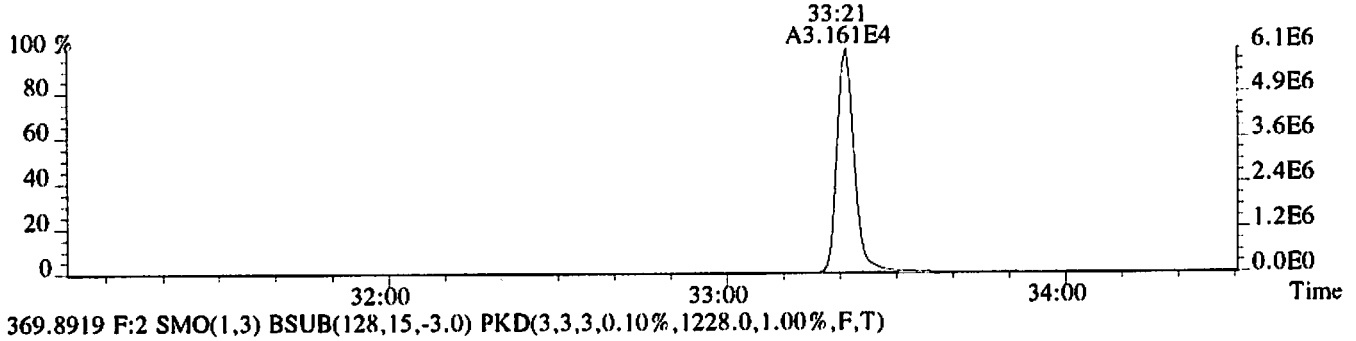
File:P407983 #1-312 Acq:20-SEP-2017 00:52:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,656.0,1.00%,F,T)



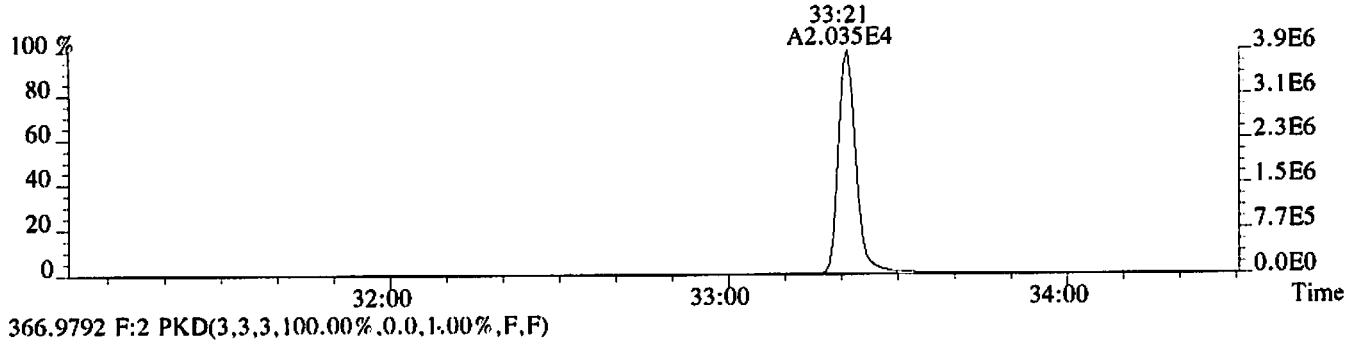
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,412.0,1.00%,F,T)



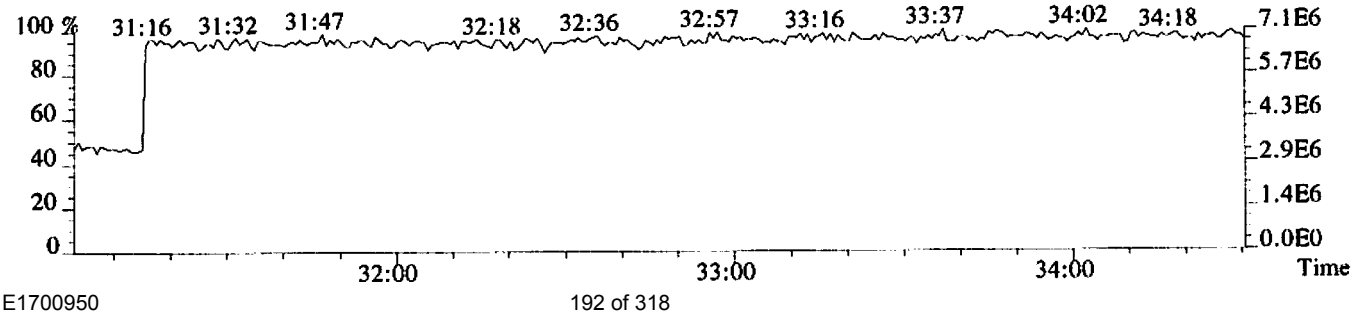
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1096.0,1.00%,F,T)



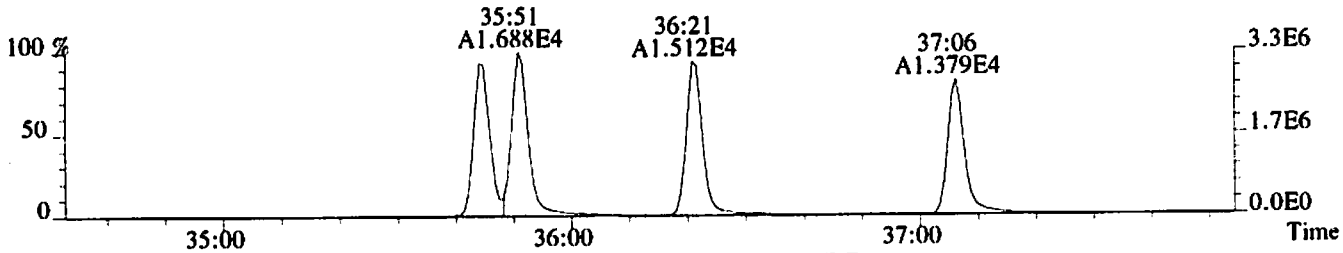
369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1228.0,1.00%,F,T)



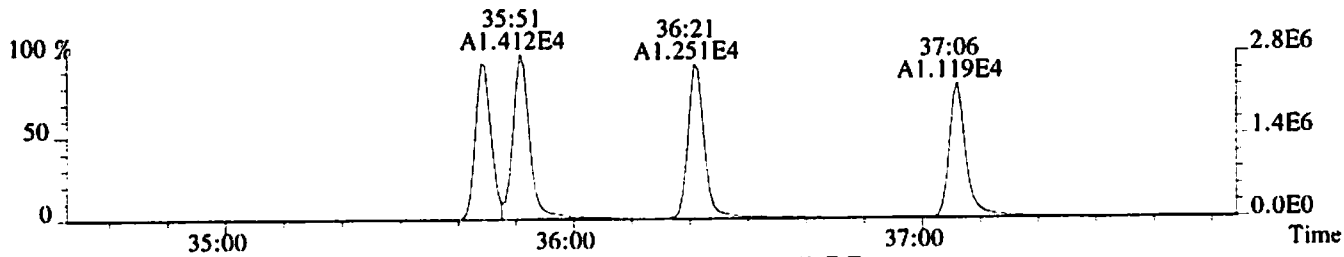
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



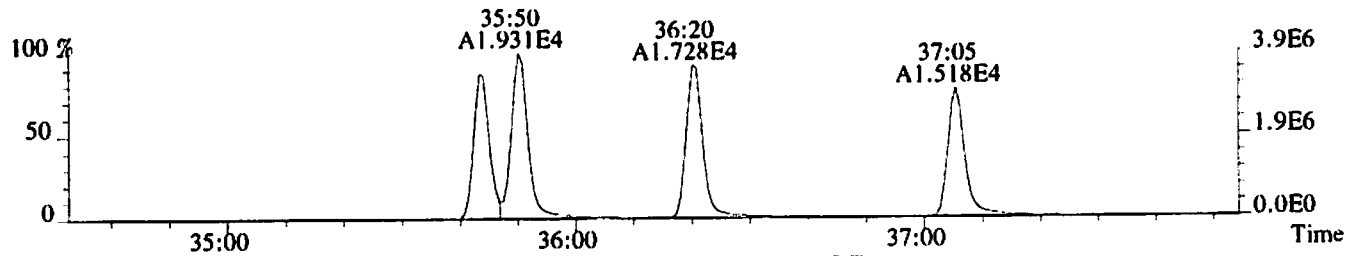
File:P407983 #1-303 Acq:20-SEP-2017 00:52:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,464.0,0.40%,F,T)



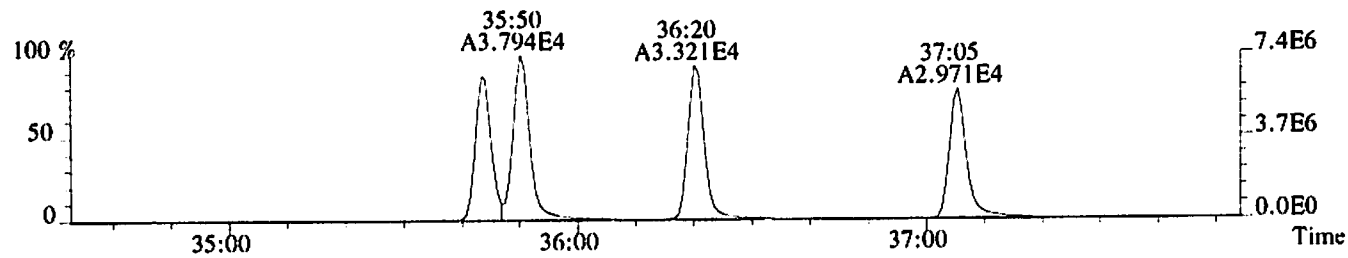
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,776.0,0.40%,F,T)



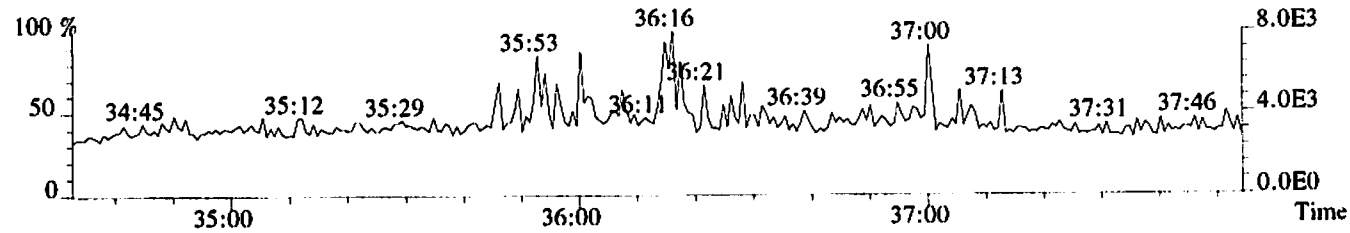
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,772.0,0.40%,F,T)



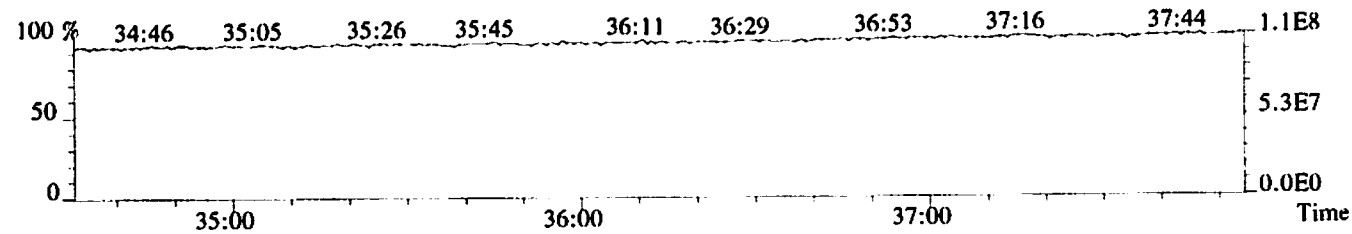
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,904.0,0.40%,F,T)



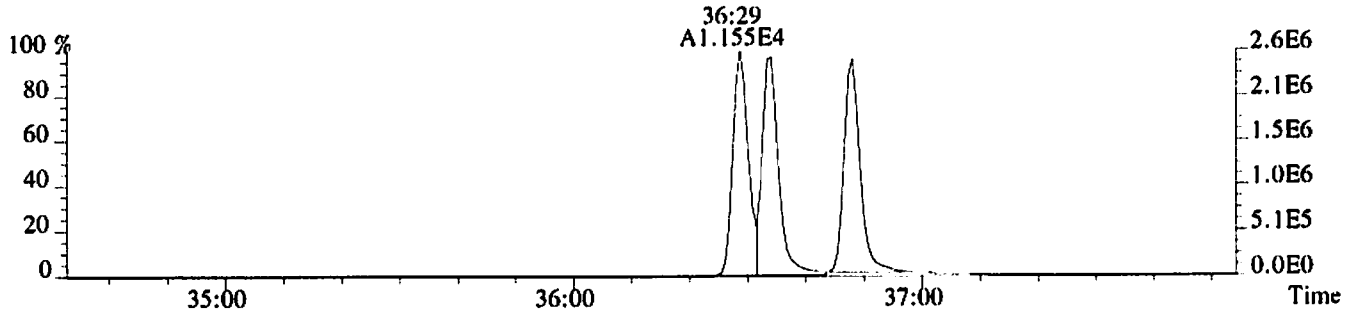
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



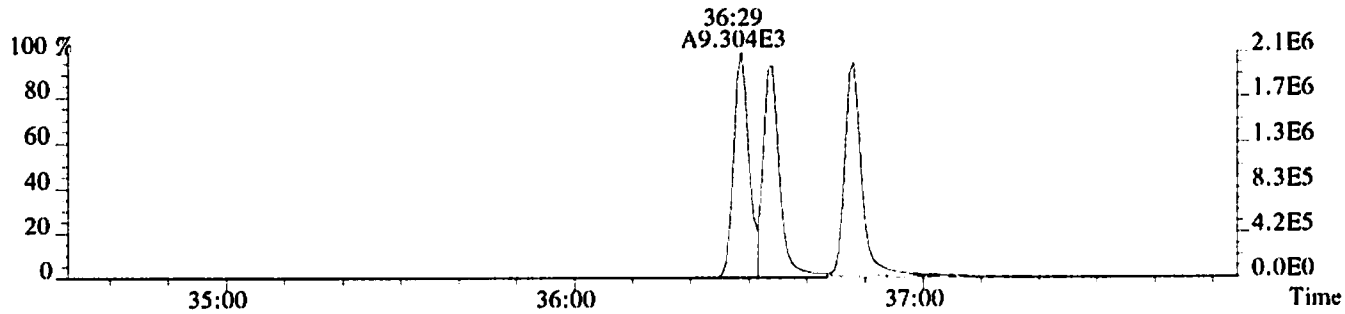
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



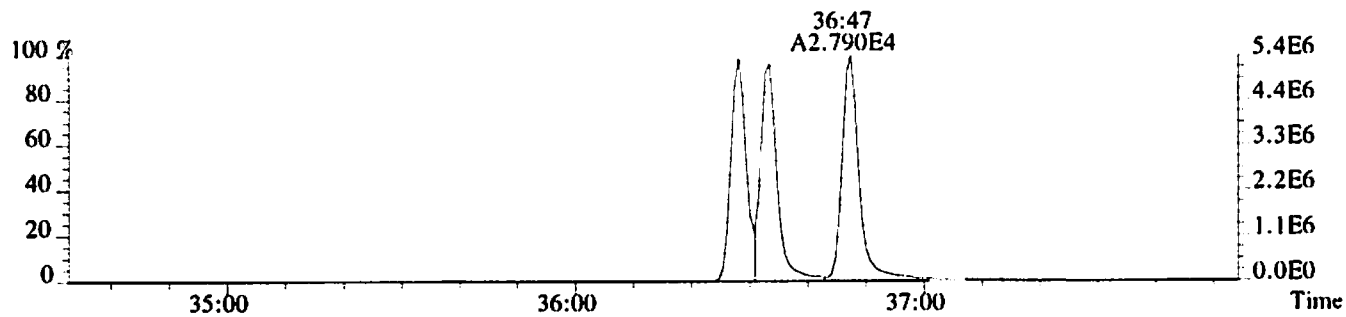
File:P407983 #1-303 Acq:20-SEP-2017 00:52:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,556.0,0.40%,F,T)



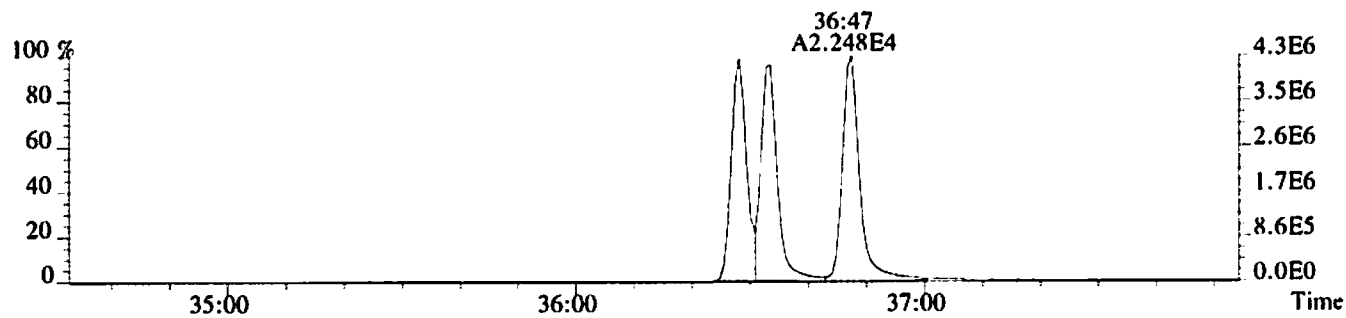
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,716.0,0.40%,F,T)



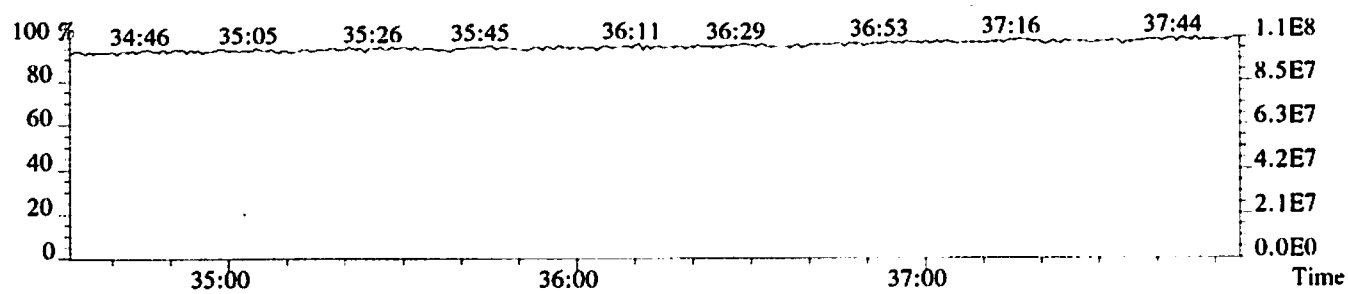
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1468.0,0.40%,F,T)



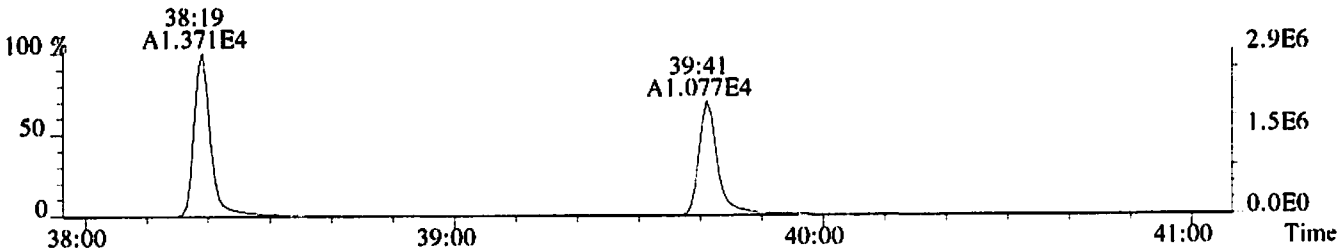
403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,876.0,0.40%,F,T)



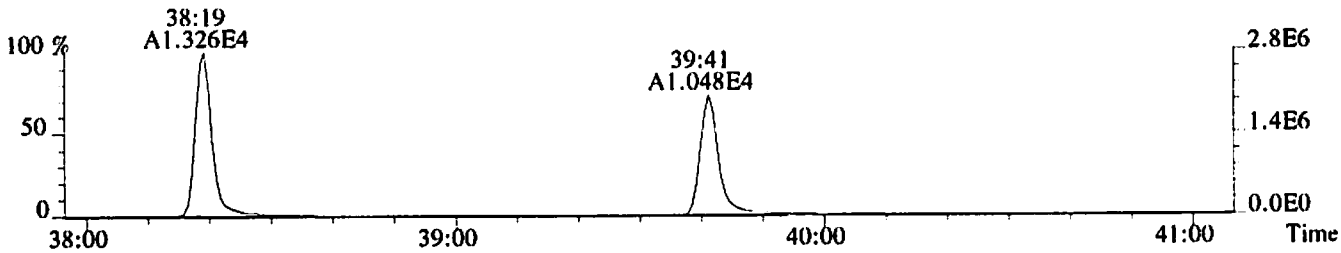
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



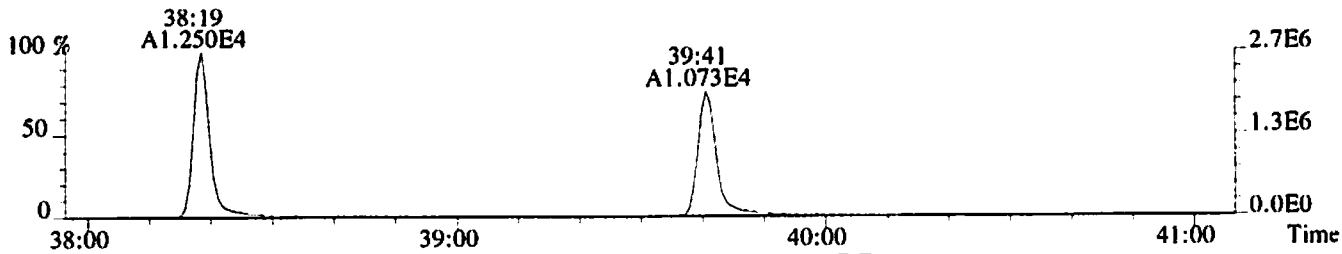
File:P407983 #1-286 Acq:20-SEP-2017 00:52:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3824.0,0.50%,F,T)



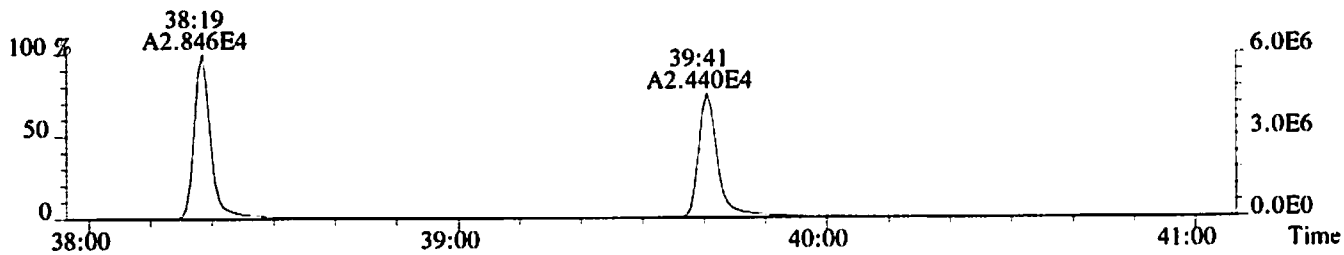
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2144.0,0.50%,F,T)



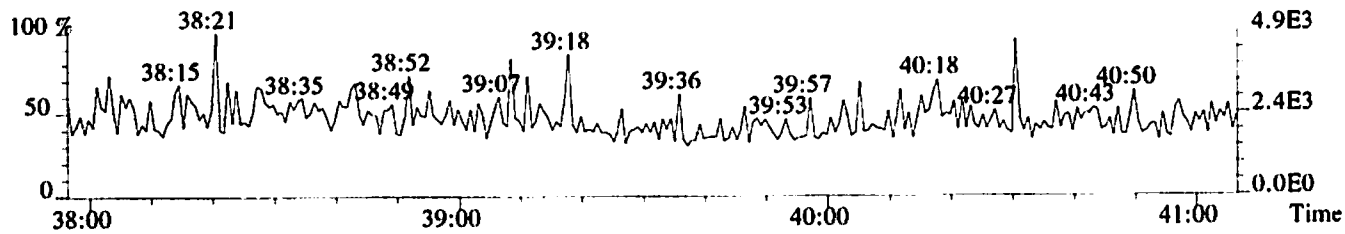
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2780.0,0.50%,F,T)



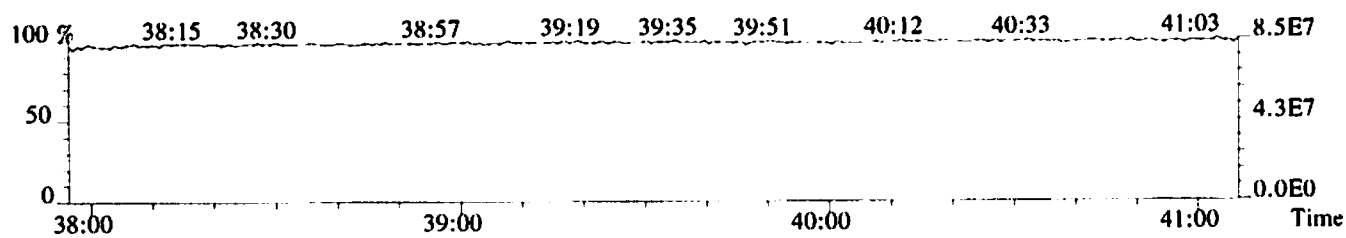
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4928.0,0.50%,F,T)



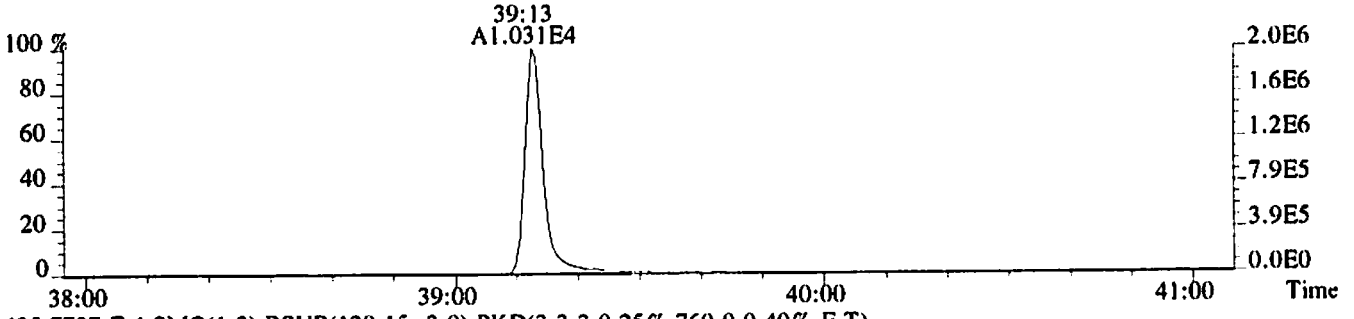
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



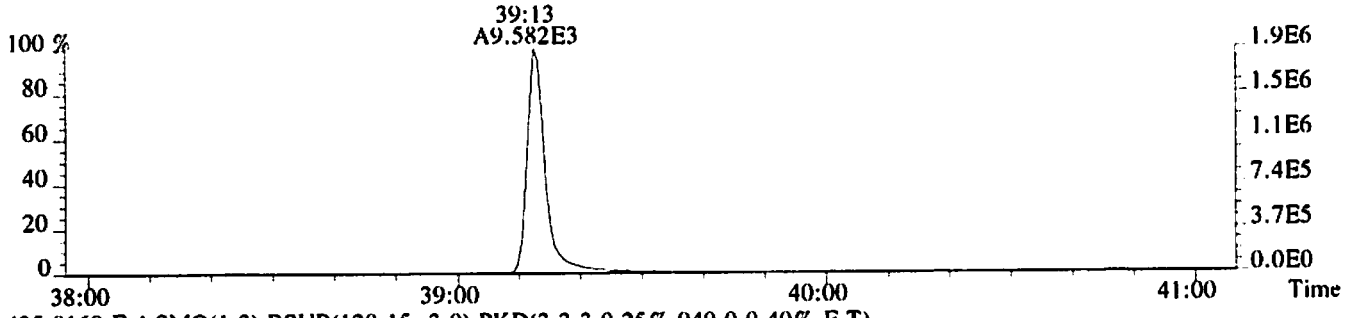
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



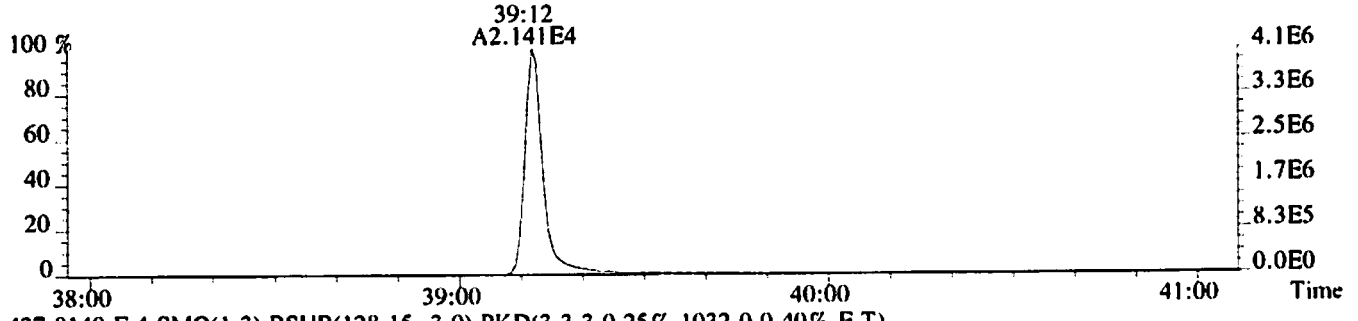
File:P407983 #1-286 Acq:20-SEP-2017 00:52:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,800.0,0.40%,F,T)



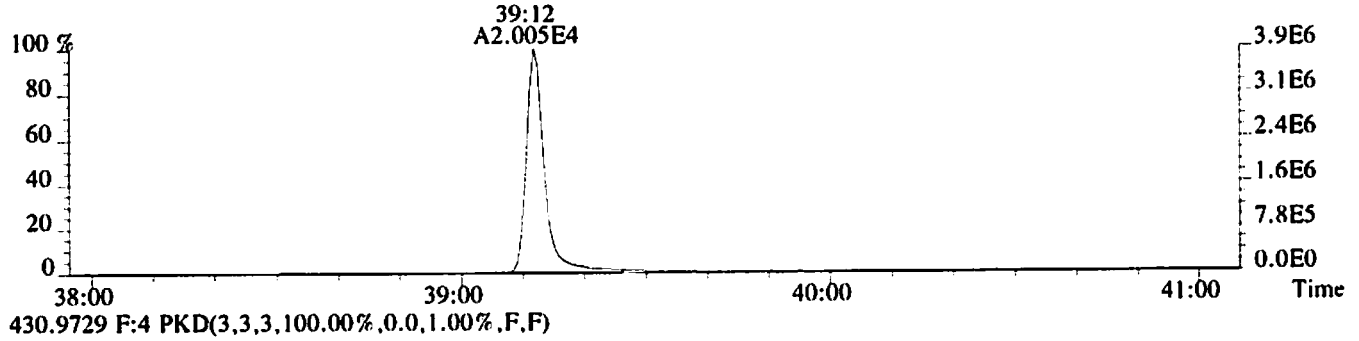
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,760.0,0.40%,F,T)



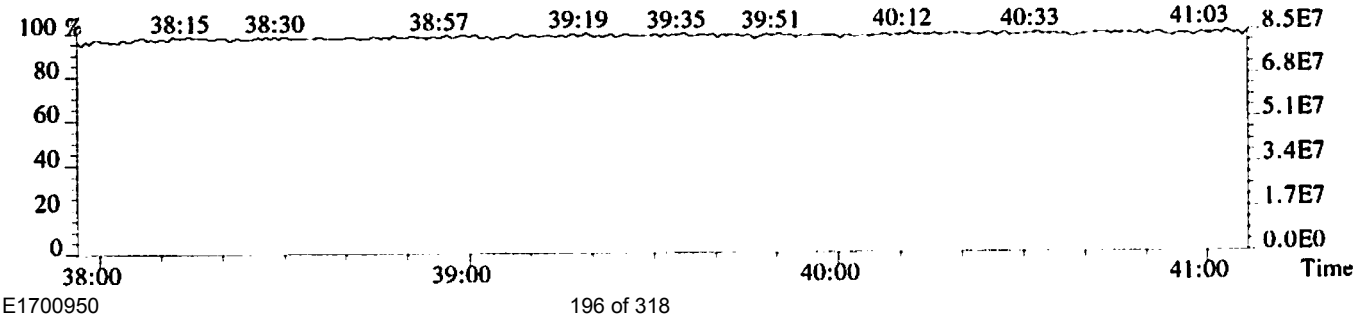
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,940.0,0.40%,F,T)



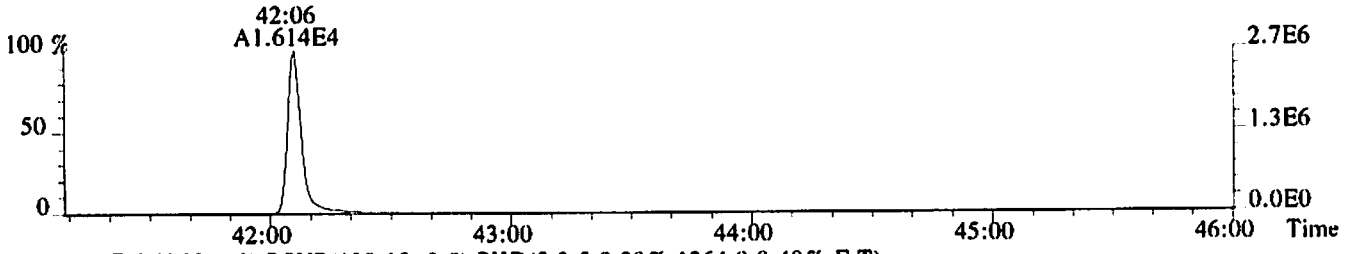
437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1032.0,0.40%,F,T)



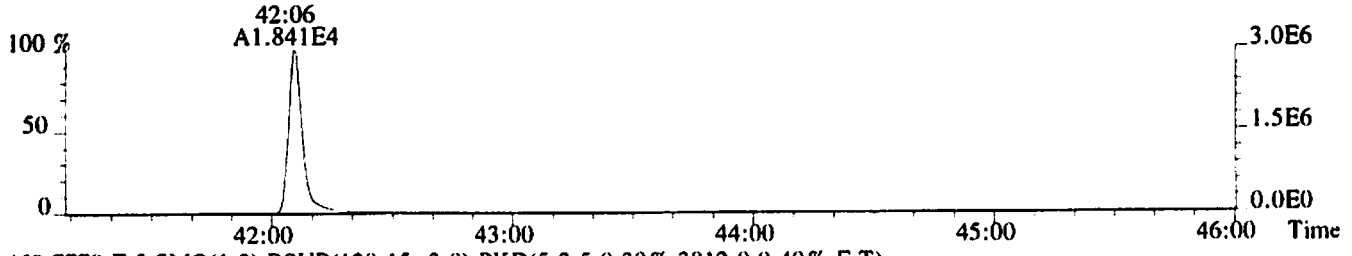
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



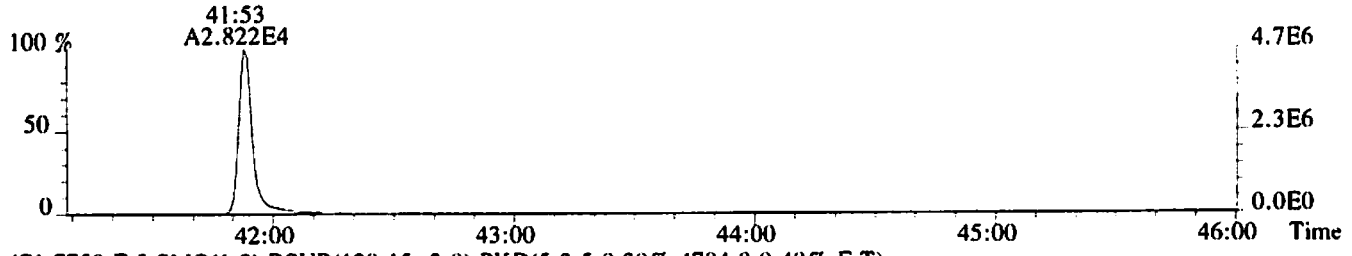
File:P407983 #1-438 Acq:20-SEP-2017 00:52:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,560.0,0.40%,F,T)



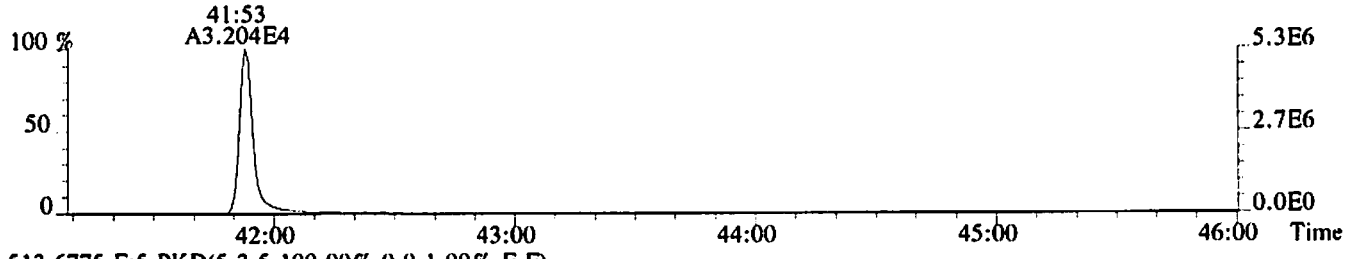
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1364.0,0.40%,F,T)



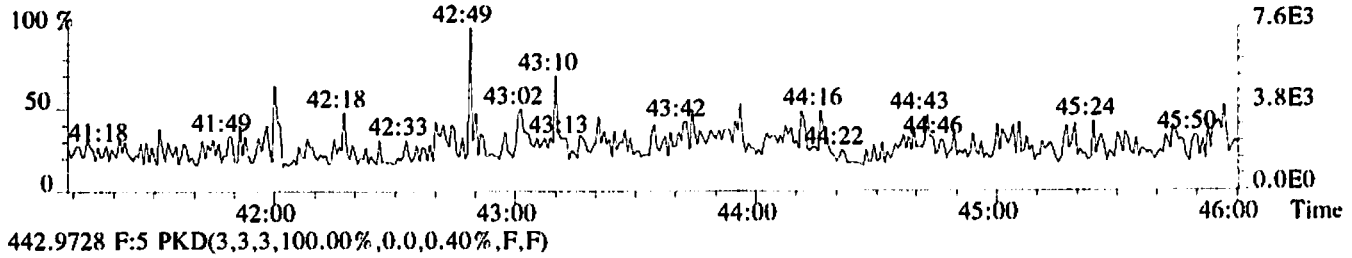
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3812.0,0.40%,F,T)



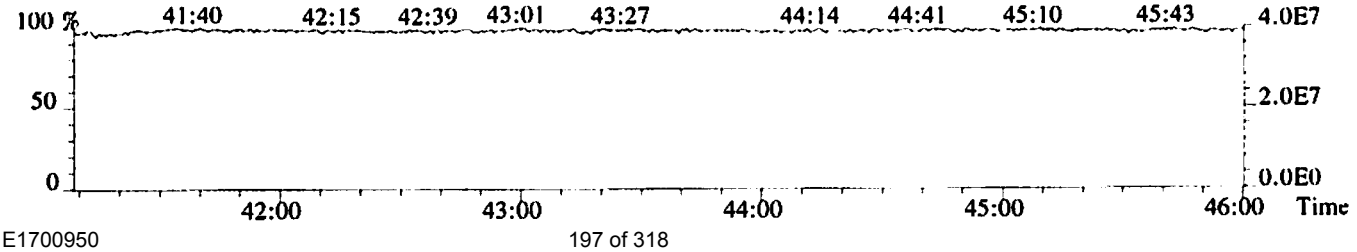
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4784.0,0.40%,F,T)



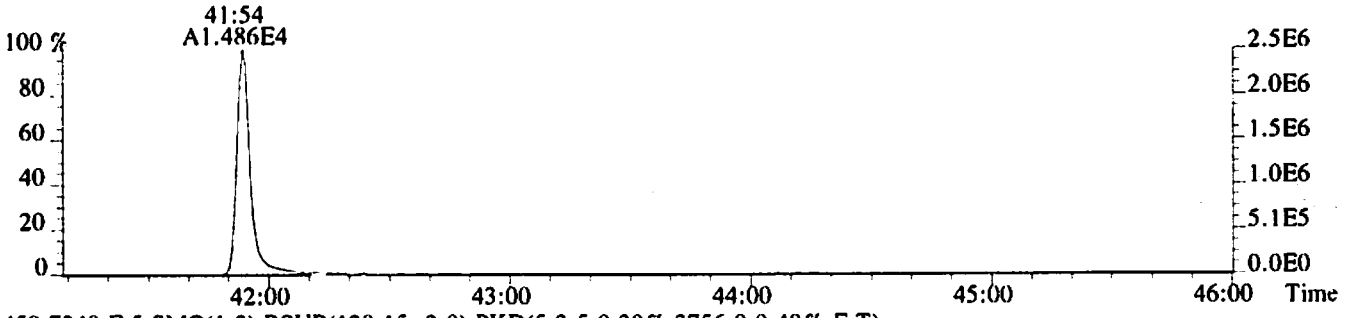
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



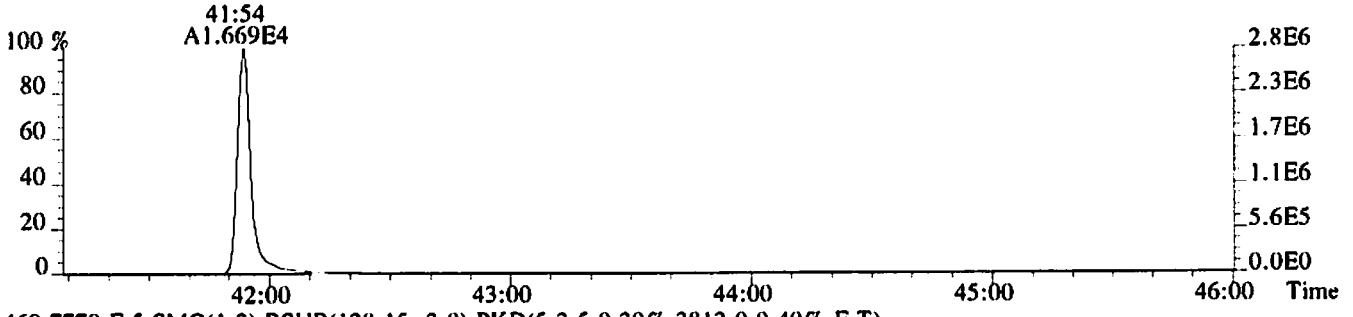
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



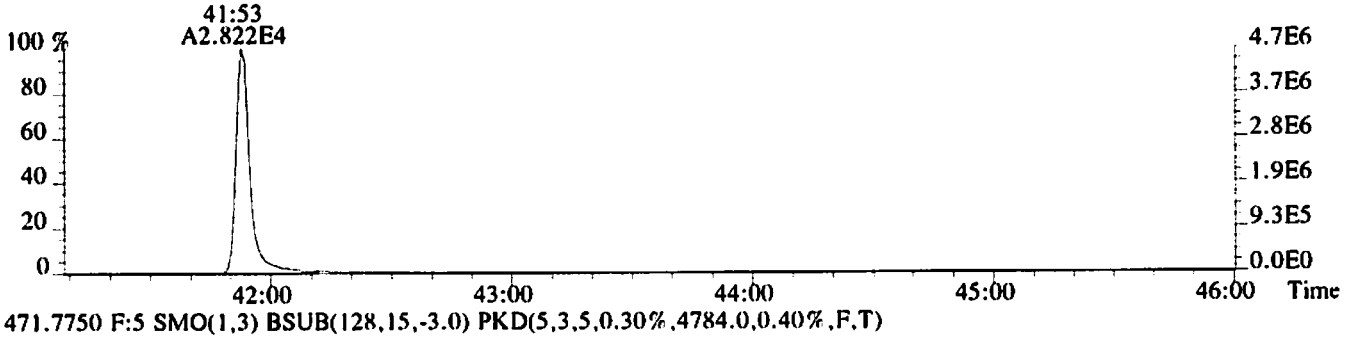
File:P407983 #1-438 Acq:20-SEP-2017 00:52:17 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3712.0,0.40%,F,T)



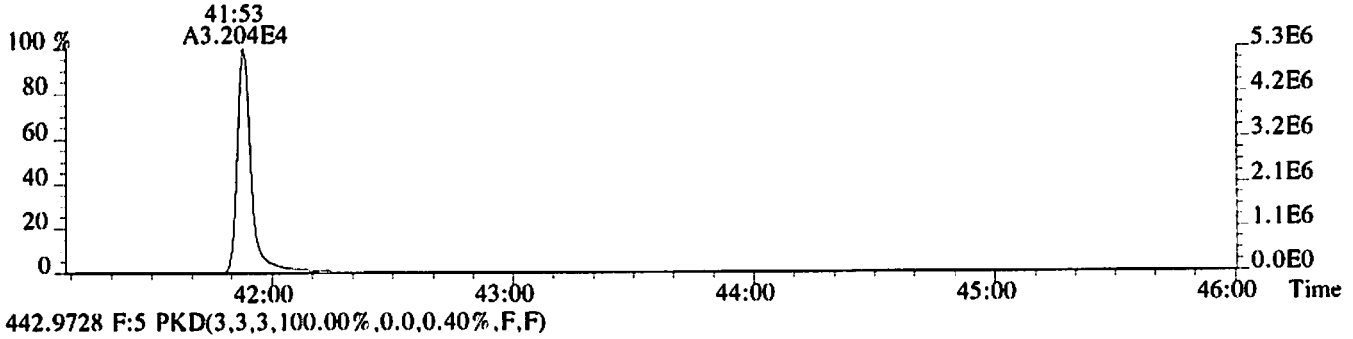
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3756.0,0.40%,F,T)



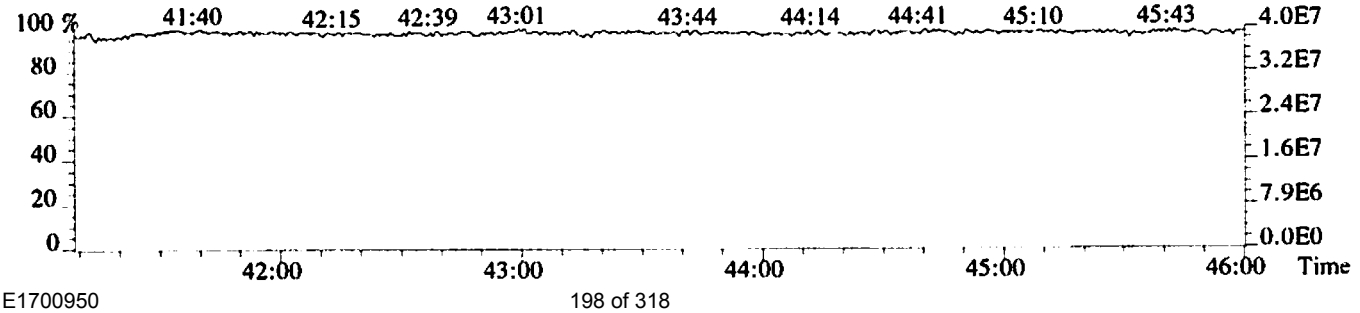
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,3812.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,4784.0,0.40%,F,T)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



Initial Calibration

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Laboratory Review Checklist: HRMS Initial Calibration

Method: 1613/8290	Process Date: 09/04/2017
Instrument Name: E-HRMS-06	Calibration File Name: P4-170901161 3I
Processor Name: JIMMY CHAU	Reviewer Name: LOAN LUONG
Supervisor Signature: Kristin Neir	

Description	Yes	No	NA	NR	ER#
Analytical Sequence					
Does the analytical sequence summary accurately reflect the instrument run log, including ICV?	√				
Was a Mass Resolution Check performed at the beginning and end of the 12-hour sequence?	√				
Were all calibration standards and the ICV analyzed within the same 12-hour sequence?					1
Were all calibration standards analyzed only once?	√				
Was the ICV analyzed after the ICAL, before analyzing samples?	√				
Mass Resolution Check					
Are beginning and ending resolution checks provided and legible?	√				
Were all target masses >10,000 resolving power at the beginning of the sequence?	√				
Were all target masses >10,000 resolving power at the end of the sequence?	√				
For PCB analysis, were masses at the low and high end of each function mass range >8,000?			√		
Where automatic printout of the mass resolution were not >10,000, was the resolution inspected by a trained analyst, including manual calculation of the resolution, if warranted?			√		
Window Define/209					
Is the window defining mix summary present, and accompanied by SICPs/Chromatograms for the WDM?	√				
Was the WDM/Column Performance/209 solution analyzed prior to the analysis of the calibration standards?	√				
Was 2,3,7,8-TCDD peak valley <25% to any other TCDD?	√				
Were all first and last eluters adequately resolved in each function?	√				
If first and last eluters were not resolved, was corrective action performed and documented, followed by a reanalysis of the WDM?			√		
Was the retention time of PCB 209 >55 min?			√		
Were the following congeners uniquely resolved (valley height <40% of the shortest peak)? PCB-34 and PCB-23 PCB-187 and PCB-182			√		
Did PCB 156/157 co-elute within 2 seconds at peak maximum?			√		
Calibration Standards					
Were there at least 5 calibration standards analyzed?	√				
If not all calibration standards were used, were the omitted standards either the lowest or highest calibration standard?			√		
Are all sample response summaries, S/N height summaries, and SICPs included (and legible) for the entire sequence?	√				

Laboratory Review Checklist: HRMS Initial Calibration

Method: 1613/8290	Process Date: 09/04/2017
Instrument Name: E-HRMS-06	Calibration File Name: P4-170901161 3I
Processor Name: JIMMY CHAU	Reviewer Name: LOAN LUONG
Supervisor Signature: Kristin Neir	

	Yes	No	NA	NR	ER#
Description					
Did each calibration point meet method criteria for Ion Abundance Ratio for all analytes and labeled standards?	√				
Did each calibration point meet method criteria for signal-to-noise ratios (S/N)?	√				
Were area counts for the highest calibration standard below levels of saturation?	√				
Were manual integrations technically justified to correct for poor software integration?			√		
Response Factors					
Is the ICAL Response Factor Summary present, including RR/RF values for each native/labeled analyte at each level of calibration?	√				
Were all calibration standards used in determining response factors?	√				
Were relative response factors (RR) for each native analyte calculated at each calibration point?	√				
Did the RSD for RRFs for each native analyte meet method criteria?	√				
Were response factors (RF) for each native analyte not having a corresponding labeled compound calculated at each calibration point?	√				
Were RFs for each labeled compound calculated for each calibration point?	√				
Did the RSD for RF for each labeled compound meet method criteria?	√				
Initial Calibration Verification					
Is the calibration verification present, including form 4A/B reflecting results for the ICV (Conc. or %D)	√				
Did all analytes meet method criteria for the ICV.	√				

Laboratory Review Checklist: Initial Calibration

Method: 1613/8290	Process Date: 09/04/2017
Instrument Name: E-HRMS-06	Calibration File Name: P4-170901161 3I
Processor Name: JIMMY CHAU	Reviewer Name: LOAN LUONG

ER#[5]	Description
1	ICV second source was analyzed the next day before analyzing samples.

NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

5DFC
PCDD/PCDF ANALYTICAL SEQUENCE SUMMARY

Lab Name: ALS ENVIRONMENTAL Contract:

Lab Code: Episode No.: SDG No.:

GC column ID : DB-5MSUI ID: 0.25 (mm) Instrument ID: E-HRMS-06

Init. Calib. Date: 09/01/2017

Init. Calib.Times: 14:07:08

THE ANALYTICAL SEQUENCE OF STANDARDS, SAMPLES, BLANKS, SPIKES AND DUPLICATES IS AS FOLLOWS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
178397	WINDOW DEFINE	p407613	1-SEP-17	14:07:08
76554	CS0.5	p407614	1-SEP-17	14:55:03
76555	CS1	p407615	1-SEP-17	15:54:29
76556	CS2	p407616	1-SEP-17	16:55:05
76557	CS3	p407617	1-SEP-17	17:42:58
76558	CS4	p407618	1-SEP-17	18:32:08
82168	CS5	p407619	1-SEP-17	19:21:19
75080	2ND SOURCE	p407621	1-SEP-17	20:59:42
75080	2ND SOURCE	p407623	2-SEP-17	08:16:56

Sample List Report MassLynx 4.1 SCN815 SCN795

Sample List: C:\MassLynx\ehrms06.PRO\SampleDB\20170901.spl
Last Modified: Saturday, September 02, 2017 08:19:04 Central Daylight Time
Printed: Saturday, September 02, 2017 08:19:07 Central Daylight Time

Page Position (1, 1)

OPUS-5: P4-1709011613I/RES OPUS-5: P4-170901M23I/RESM

	Date	Time	File Name	Lab Sample ID	Client File Text	Bottle	MS File	Inlet File	Analyst	Comments
1	9/1/17	14:07	P407613	178397	WINDOW DEFINE	Tray1:1	epa1613_als	Dioxin_ALS	LM	HRMS check 13:59
2		14:55	P407614	76554	CS0.5	Tray1:2	epa1613_als	Dioxin_ALS		
3		15:54	P407615	76555	CS1	Tray1:3	epa1613_als	Dioxin_ALS		
4		16:55	P407616	76556	CS2	Tray1:4	epa1613_als	Dioxin_ALS		
5		17:42	P407617	76557	CS3	Tray1:5	epa1613_als	Dioxin_ALS		
6		18:32	P407618	76558	CS4	Tray1:6	epa1613_als	Dioxin_ALS		
7		19:25	P407619	82168	CS5	Tray1:7	epa1613_als	Dioxin_ALS		
8		20:10	P407620	NONANE	NONANE	Tray1:8	epa1613_als	Dioxin_ALS		
9		20:59	P407621	75080	2NDSOURCE	Tray1:9	epa1613_als	Dioxin_ALS		
10		21:57	P407622	NONANE	NONANE	Tray1:10	epa1613_als	Dioxin_ALS		HRMS check 21:57
11	—	—	—	—	—	Tray1:11	epa1613_als	Dioxin_ALS	—	—
12	—	—	—	—	—	Tray1:12	epa1613_als	Dioxin_ALS	—	—
13	—	—	—	—	—	Tray1:13	epa1613_als	Dioxin_ALS	—	—
14	—	—	—	—	—	Tray1:14	epa1613_als	Dioxin_ALS	—	—
15	—	—	—	—	—	Tray1:15	epa1613_als	Dioxin_ALS	—	—
16	—	—	—	—	—	Tray1:16	epa1613_als	Dioxin_ALS	—	—
17	—	—	—	—	—	Tray1:17	epa1613_als	Dioxin_ALS	—	—
18	—	—	—	—	—	Tray1:18	epa1613_als	Dioxin_ALS	—	—
19	—	—	—	—	—	Tray1:19	epa1613_als	Dioxin_ALS	—	—
20	—	—	—	—	—	Tray1:20	epa1613_als	Dioxin_ALS	—	—
21	—	—	—	—	—	Tray1:21	epa1613_als	Dioxin_ALS	—	—
22	—	—	—	—	—	Tray1:22	epa1613_als	Dioxin_ALS	—	—
23	—	—	—	—	—	Tray1:23	epa1613_als	Dioxin_ALS	—	—
24	—	—	—	—	—	Tray1:24	epa1613_als	Dioxin_ALS	—	—
25	—	—	—	—	—	Tray1:25	epa1613_als	Dioxin_ALS	—	—
26	—	—	—	—	—	Tray1:26	epa1613_als	Dioxin_ALS	—	—
27	—	—	—	—	—	Tray1:27	epa1613_als	Dioxin_ALS	—	—
28	—	—	—	—	—	Tray1:28	epa1613_als	Dioxin_ALS	—	—
29	—	—	—	—	—	Tray1:29	epa1613_als	Dioxin_ALS	—	—
30	—	—	—	—	—	Tray1:30	epa1613_als	Dioxin_ALS	—	—
31	—	—	—	—	—	Tray1:31	epa1613_als	Dioxin_ALS	—	—
32	—	—	—	—	—	Tray1:32	epa1613_als	Dioxin_ALS	—	—
33	—	—	—	—	—	Tray1:33	epa1613_als	Dioxin_ALS	—	—
34	—	—	—	—	—	Tray1:34	epa1613_als	Dioxin_ALS	—	—
35	—	—	—	—	—	Tray1:35	epa1613_als	Dioxin_ALS	—	—
36	—	—	—	—	—	Tray1:36	epa1613_als	Dioxin_ALS	—	—
37	—	—	—	—	—	Tray1:37	epa1613_als	Dioxin_ALS	—	—
38	—	—	—	—	—	Tray1:38	epa1613_als	Dioxin_ALS	—	—
39	—	—	—	—	—	Tray1:39	epa1613_als	Dioxin_ALS	—	—

TC 09/01/17

9/2/17 084

Sample List Report MassLynx 4.1 SCN815 SCN795

Sample List: C:\MassLynx\ehrms06.PRO\SampleDB\20170902I.spl
Last Modified: Wednesday, September 13, 2017 08:47:17 Central Daylight Time
Printed: Wednesday, September 13, 2017 08:47:30 Central Daylight Time

Page Position (1, 1)

	Date	Time	File Name	Lab Sample ID	Client File Text	Bottle	MS File	Inlet File	Analyst	Comments
1	09/02/17	08:16	P407623	75080	2ND SOURCE	Tray1:2	epa1613_als	Dioxin_ALS	LG	HRMS check 08:09
2			---	---	---	Tray1:1	epa1613_als	Dioxin_ALS		
3			---	---	---	Tray1:3	epa1613_als	Dioxin_ALS		
4			---	---	---	Tray1:4	epa1613_als	Dioxin_ALS		
5			---	---	---	Tray1:5	epa1613_als	Dioxin_ALS		
6			---	---	---	Tray1:6	epa1613_als	Dioxin_ALS		
7			---	---	---	Tray1:7	epa1613_als	Dioxin_ALS		
8			---	---	---	Tray1:8	epa1613_als	Dioxin_ALS		
9			---	---	---	Tray1:9	epa1613_als	Dioxin_ALS		
10			---	---	---	Tray1:10	epa1613_als	Dioxin_ALS		
11			---	---	---	Tray1:11	epa1613_als	Dioxin_ALS		
12			---	---	---	Tray1:12	epa1613_als	Dioxin_ALS		
13	---	---	---	---	---	Tray1:2	epa1613_als	Dioxin_ALS	---	---
14	---	---	---	---	---	Tray1:2	epa1613_als	Dioxin_ALS	---	---
15	---	---	---	---	---	Tray1:1	epa1613_als	Dioxin_ALS	---	---
16	---	---	---	---	---	Tray1:16	epa1613_als	Dioxin_ALS	---	---
17	---	---	---	---	---	Tray1:17	epa1613_als	Dioxin_ALS	---	---
18	---	---	---	---	---	Tray1:18	epa1613_als	Dioxin_ALS	---	---
19	---	---	---	---	---	Tray1:19	epa1613_als	Dioxin_ALS	---	---
20	---	---	---	---	---	Tray1:20	epa1613_als	Dioxin_ALS	---	---
21	---	---	---	---	---	Tray1:21	epa1613_als	Dioxin_ALS	---	---
22	---	---	---	---	---	Tray1:22	epa1613_als	Dioxin_ALS	---	---
23	---	---	---	---	---	Tray1:23	epa1613_als	Dioxin_ALS	---	---
24	---	---	---	---	---	Tray1:24	epa1613_als	Dioxin_ALS	---	---
25	---	---	---	---	---	Tray1:25	epa1613_als	Dioxin_ALS	---	---
26	---	---	---	---	---	Tray1:2	epa1613_als	Dioxin_ALS	---	---
27	---	---	---	---	---	Tray1:2	epa1613_als	Dioxin_ALS	---	---
28	---	---	---	---	---	Tray1:1	epa1613_als	Dioxin_ALS	---	---
29	---	---	---	---	---	Tray1:29	epa1613_als	Dioxin_ALS	---	---
30	---	---	---	---	---	Tray1:30	epa1613_als	Dioxin_ALS	---	---
31	---	---	---	JC 09/02/17	---	Tray1:31	epa1613_als	Dioxin_ALS	---	---
32	---	---	---	---	---	Tray1:32	epa1613_als	Dioxin_ALS	---	---
33	---	---	---	---	---	Tray1:33	epa1613_als	Dioxin_ALS	---	---
34	---	---	---	---	---	Tray1:34	epa1613_als	Dioxin_ALS	---	---
35	---	---	---	---	---	Tray1:35	epa1613_als	Dioxin_ALS	---	---
36	---	---	---	---	---	Tray1:36	epa1613_als	Dioxin_ALS	---	---
37	---	---	---	---	---	Tray1:37	epa1613_als	Dioxin_ALS	---	---
38	---	---	---	---	---	Tray1:38	epa1613_als	Dioxin_ALS	---	---
39	---	---	---	---	---	Tray1:2	epa1613_als	Dioxin_ALS	---	---

085

Experiment Calibration Report **MassLynx 4.1 SCN815 SCN795**

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Printed: Friday, September 01, 2017 13:59:42 Central Daylight Time

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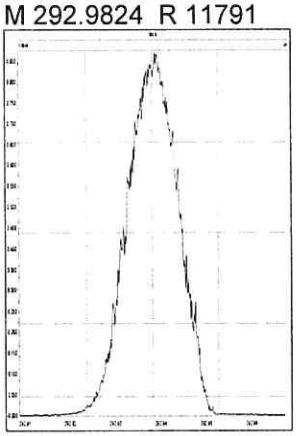

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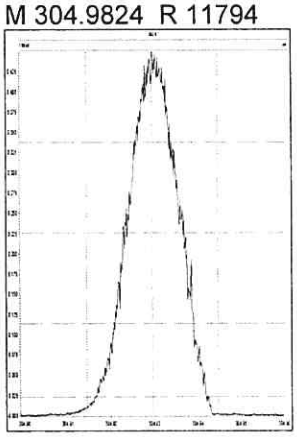
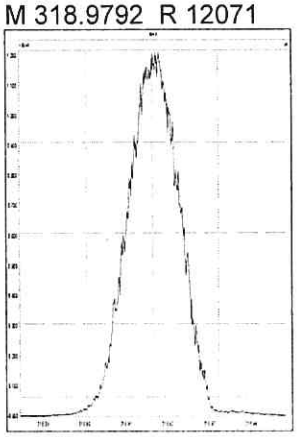
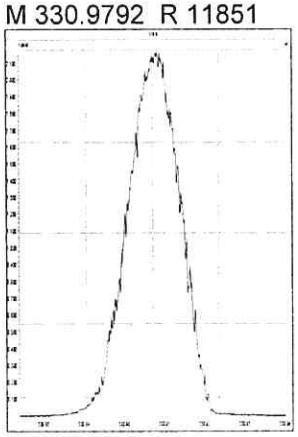


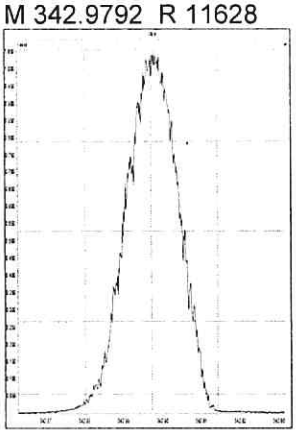
M 318.9792 R 12071



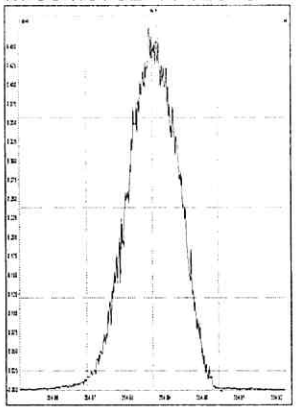
M 330.9792 R 11851



M 342.9792 R 11628



M 354.9792 R 12076



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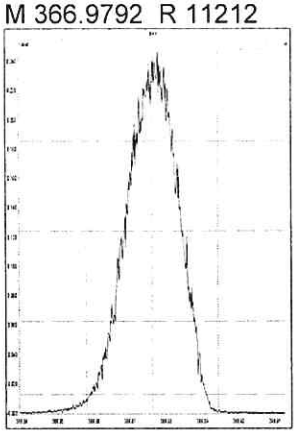
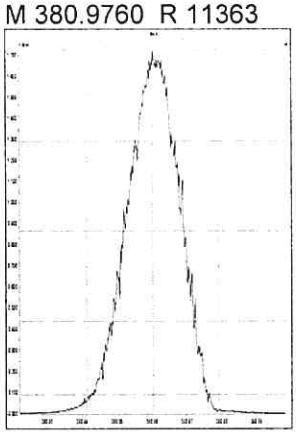


M 380.9760 R 11363

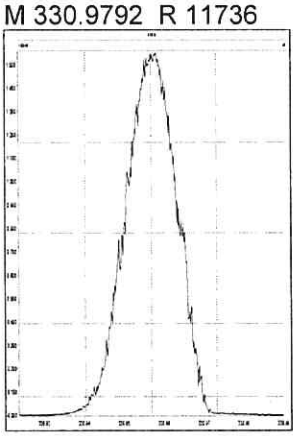


Experiment Calibration Report **MassLynx 4.1 SCN815 SCN795**

File: Experiment: EPA1613_ALS.exp Reference: Pfk.ref Function: 2 @ 200 (ppm)

Printed: Friday, September 01, 2017 14:00:55 Central Daylight Time

M 330.9792 R 11736



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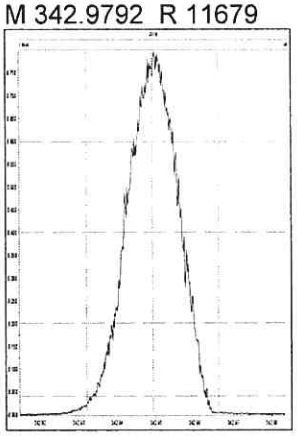
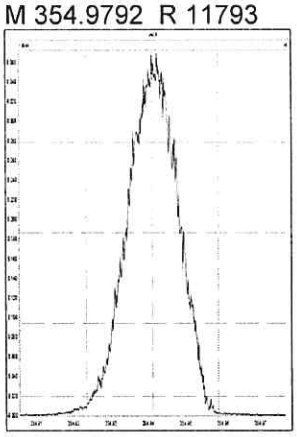


M 354.9792 R 11793



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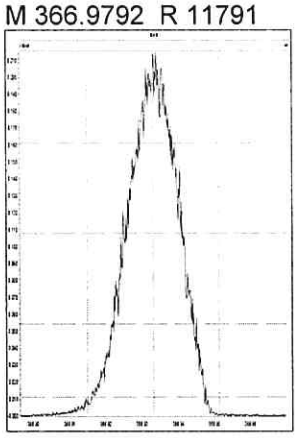

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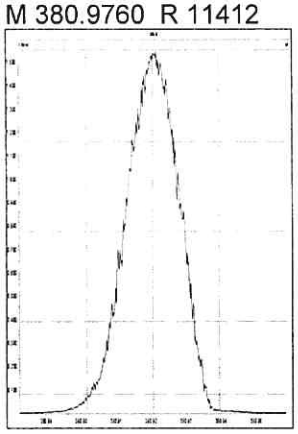

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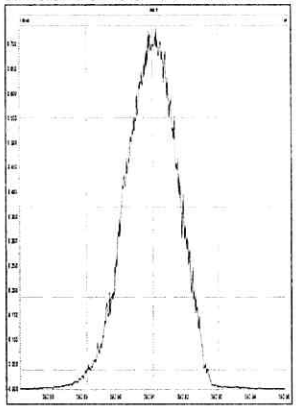

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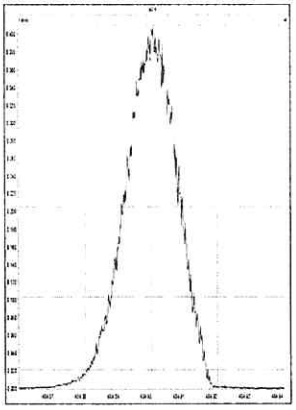

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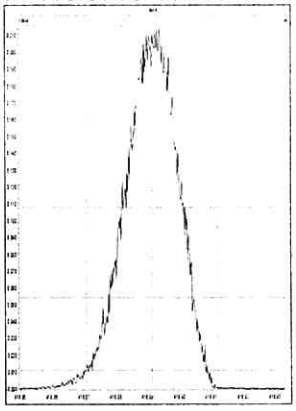

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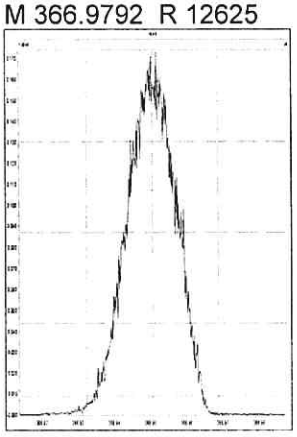
Printed: Friday, September 01, 2017 14:02:25 Central Daylight Time

M 366.9792 R 12625



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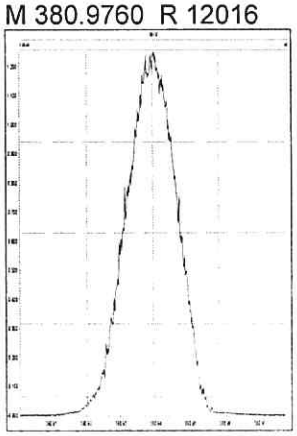

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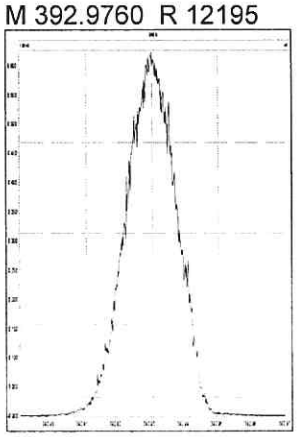

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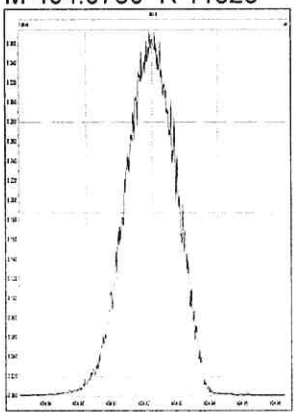

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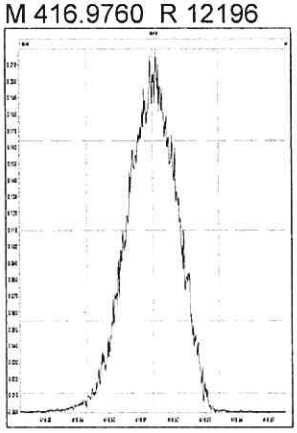

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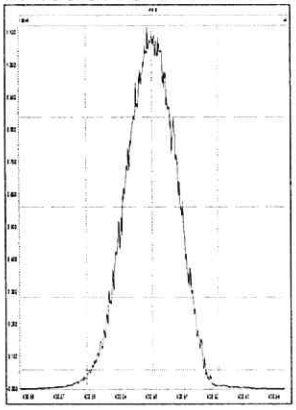

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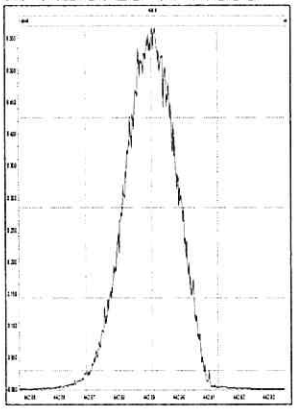
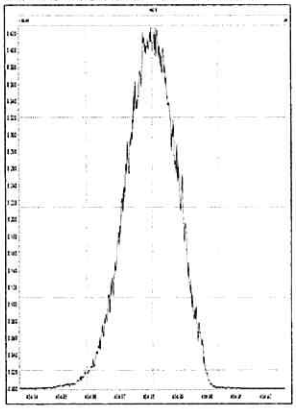


M 454.9728 R 11261



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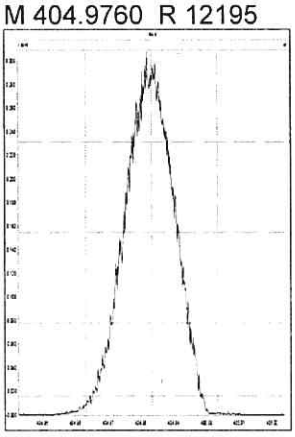
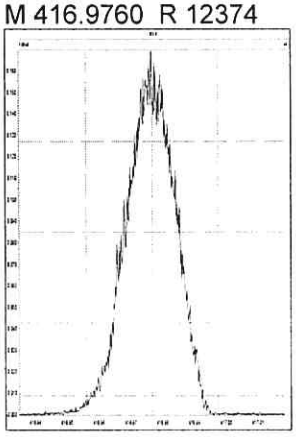
Printed: Friday, September 01, 2017 14:03:31 Central Daylight Time

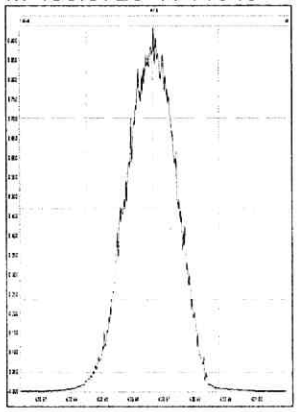
M 404.9760 R 12195



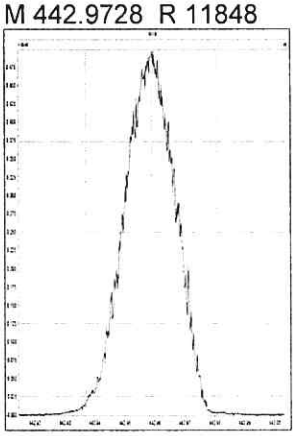
M 416.9760 R 12374



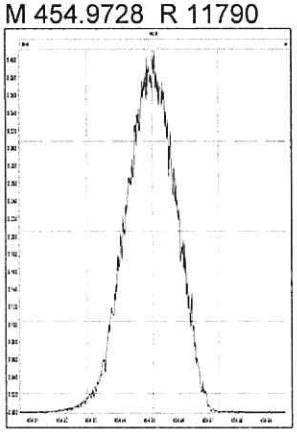
M 430.9728 R 11849



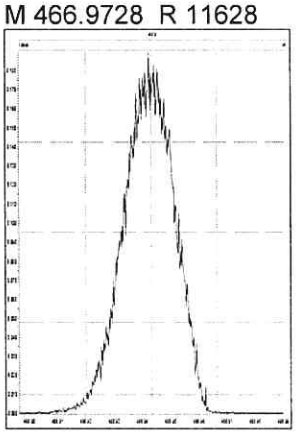
M 442.9728 R 11848



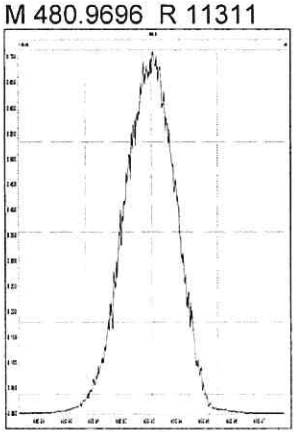
M 454.9728 R 11790



M 466.9728 R 11628



M 480.9696 R 11311

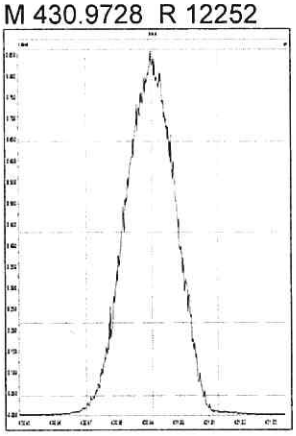


Experiment Calibration Report **MassLynx 4.1 SCN815 SCN795**

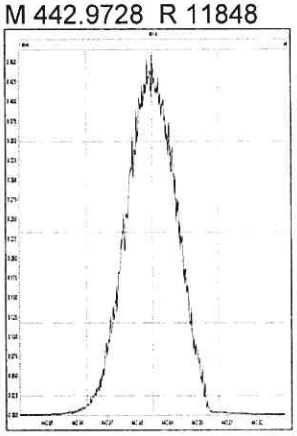
File: Experiment: EPA1613_ALS.exp Reference: Pfk.ref Function: 5 @ 200 (ppm)

Printed: Friday, September 01, 2017 14:04:38 Central Daylight Time

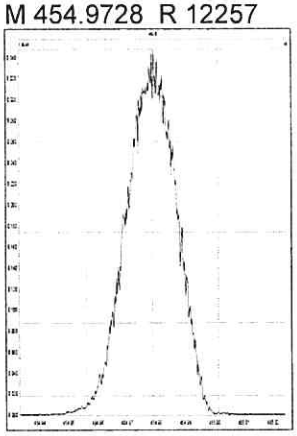
M 430.9728 R 12252



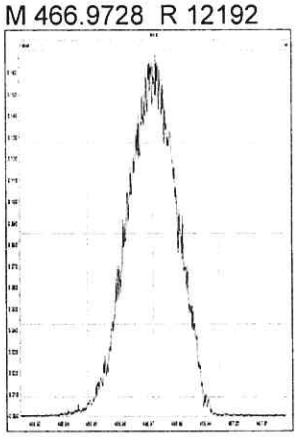
M 442.9728 R 11848



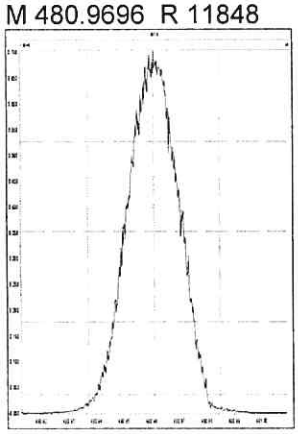
M 454.9728 R 12257



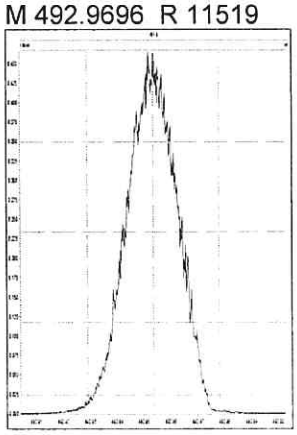
M 466.9728 R 12192



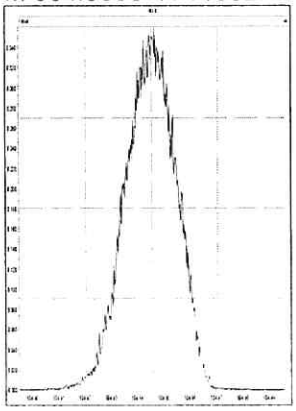
M 480.9696 R 11848



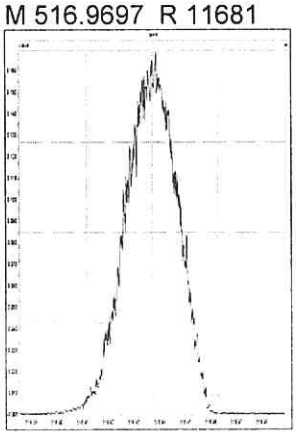
M 492.9696 R 11519



M 504.9696 R 11682



M 516.9697 R 11681



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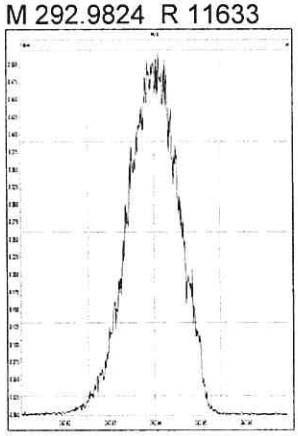
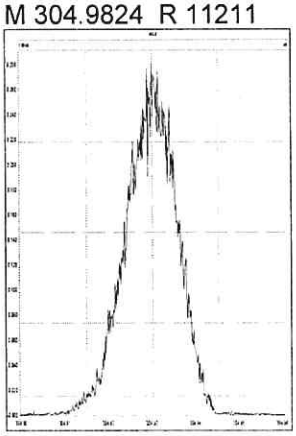
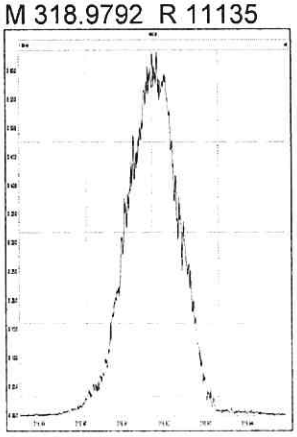
M 292.9824 R 11633



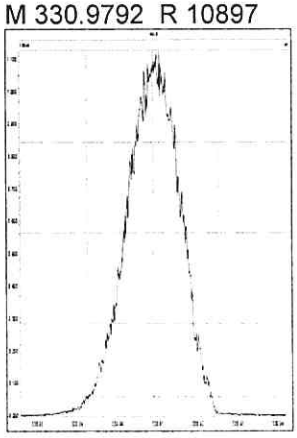
M 304.9824 R 11211



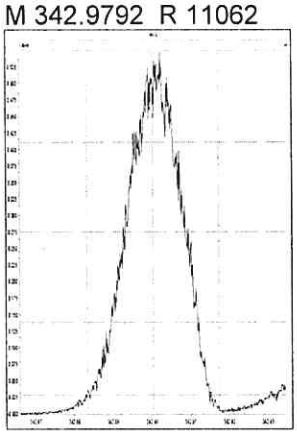
M 318.9792 R 11135



M 330.9792 R 10897



M 342.9792 R 11062



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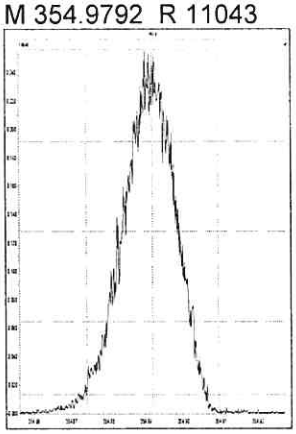
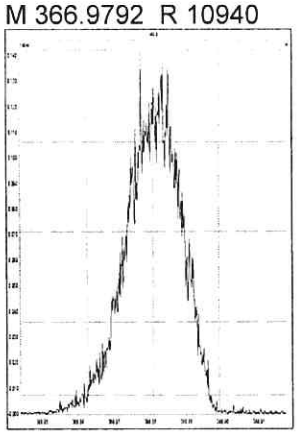
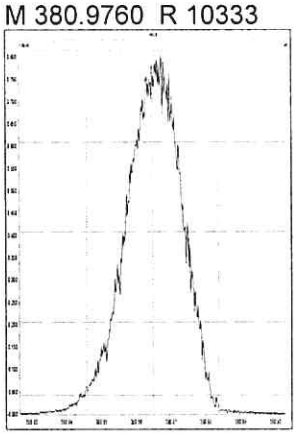


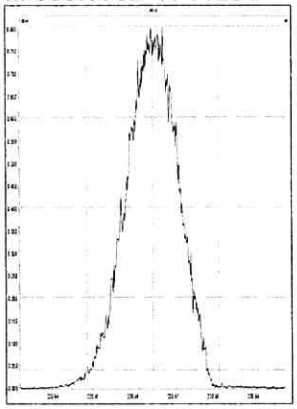
M 366.9792 R 10940



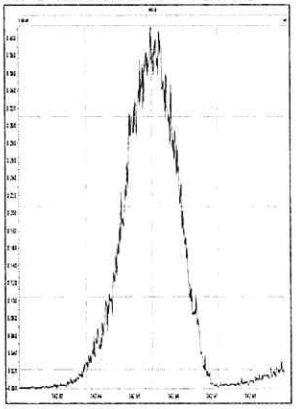
M 380.9760 R 10333



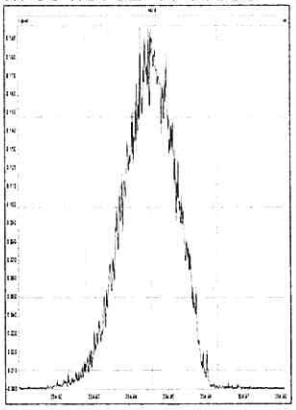
M 330.9792 R 11261



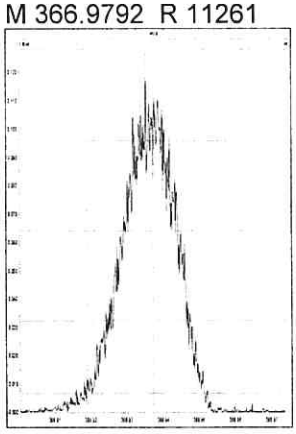
M 342.9792 R 10776



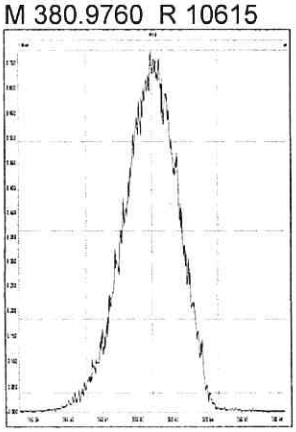
M 354.9792 R 11338



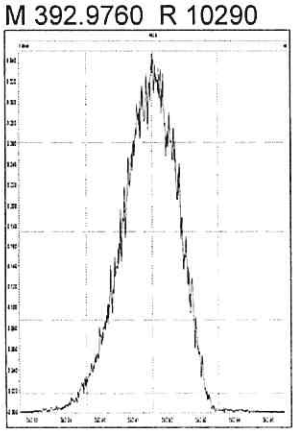
M 366.9792 R 11261



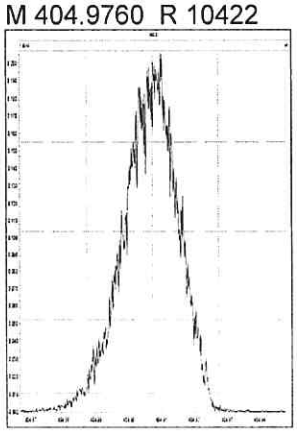
M 380.9760 R 10615



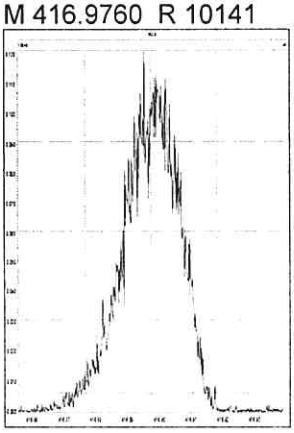
M 392.9760 R 10290



M 404.9760 R 10422



M 416.9760 R 10141



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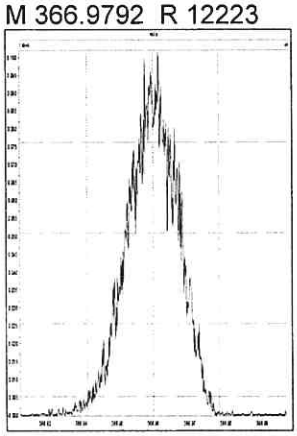
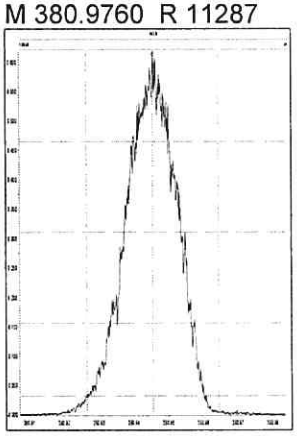
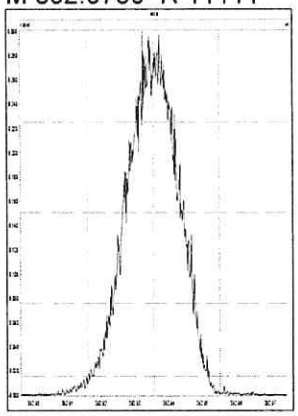
M 366.9792 R 12223



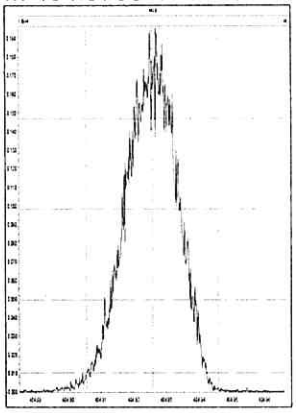
M 380.9760 R 11287



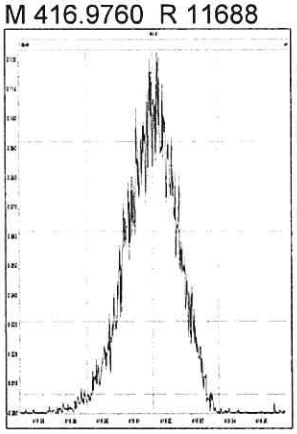
M 392.9760 R 11111



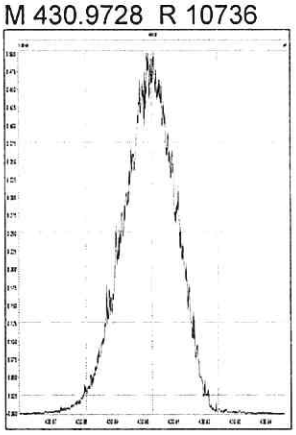
M 404.9760 R 11114



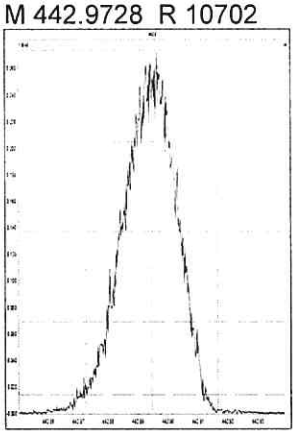
M 416.9760 R 11688



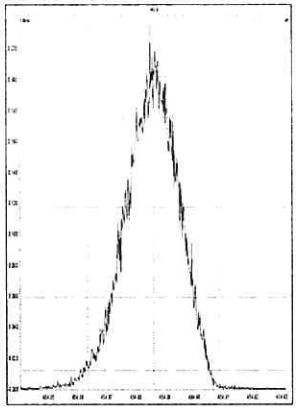
M 430.9728 R 10736



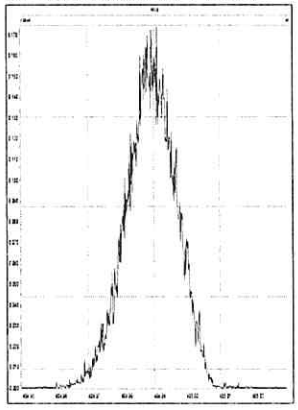
M 442.9728 R 10702



M 454.9728 R 10552



M 404.9760 R 11467



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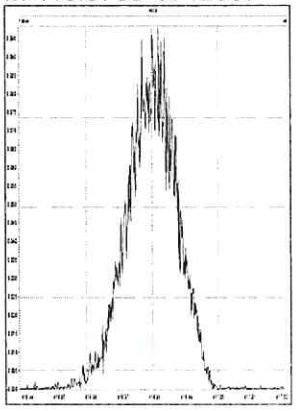
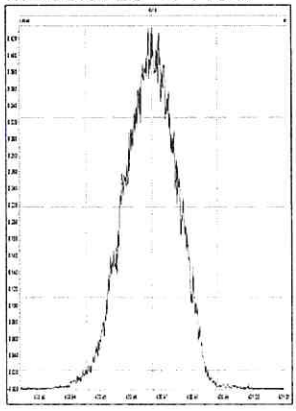
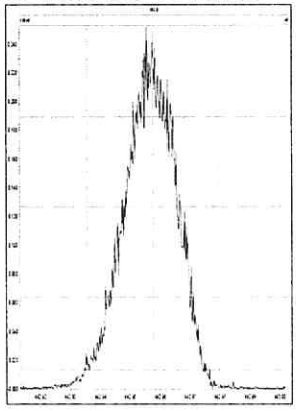


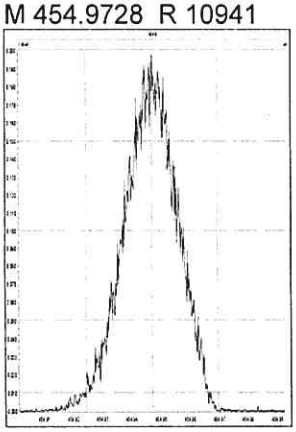
M 430.9728 R 11547



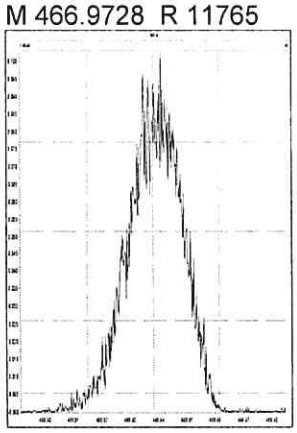
M 442.9728 R 10988



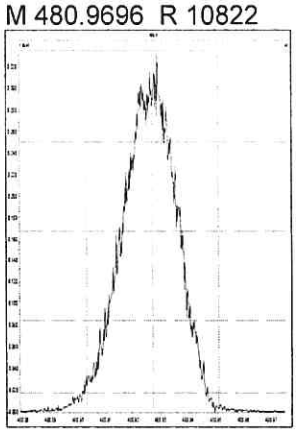
M 454.9728 R 10941



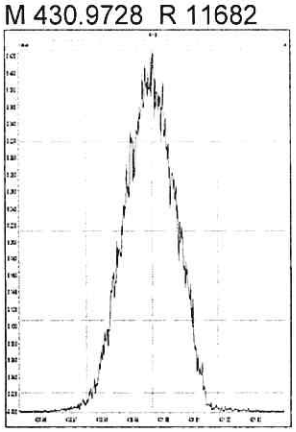
M 466.9728 R 11765



M 480.9696 R 10822



M 430.9728 R 11682



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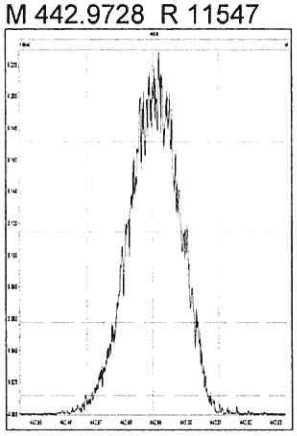
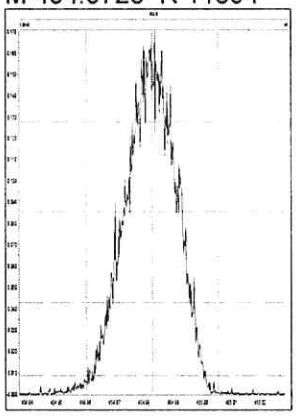
M 442.9728 R 11547



M 454.9728 R 11694



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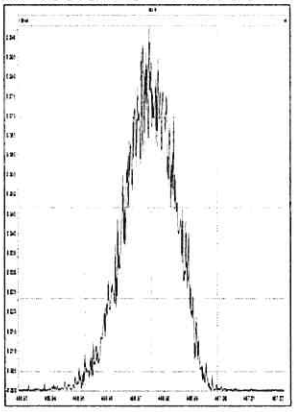
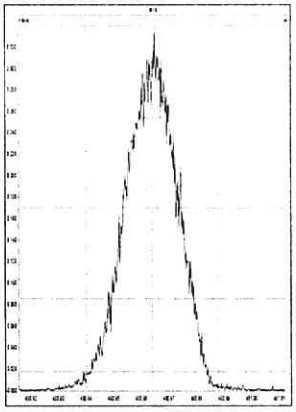
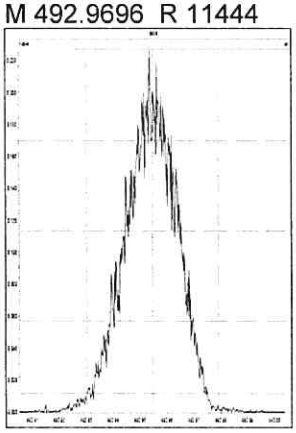


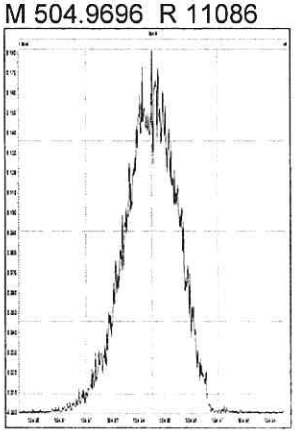
M 480.9696 R 11434



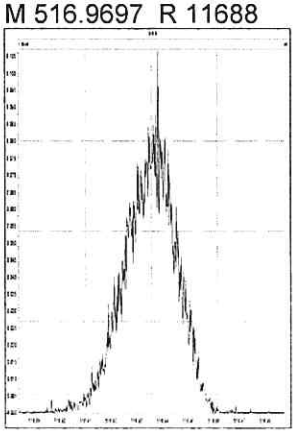
M 492.9696 R 11444



M 504.9696 R 11086



M 516.9697 R 11688



Experiment Calibration Report **MassLynx 4.1 SCN815 SCN795**

File: Experiment: EPA1613_ALS.exp Reference: Pfk.ref Function: 1 @ 200 (ppm)

Printed: Saturday, September 02, 2017 08:09:31 Central Daylight Time

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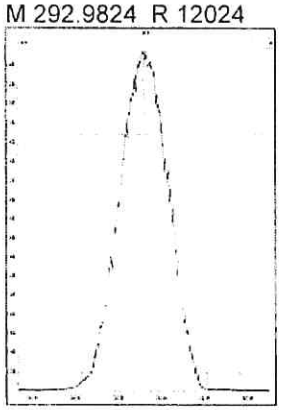
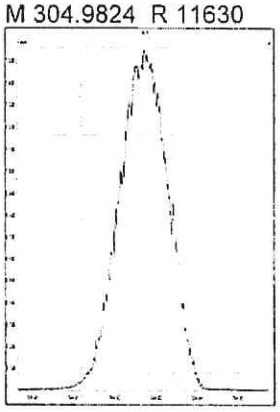
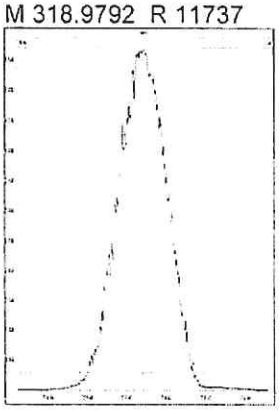


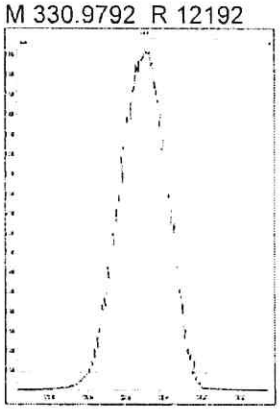
M 304.9824 R 11630



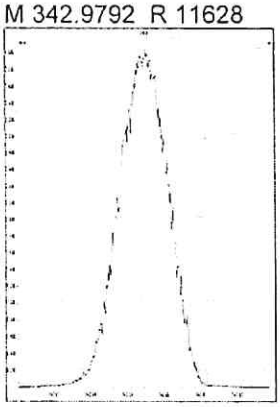
M 318.9792 R 11737



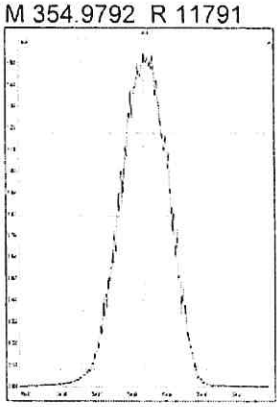
M 330.9792 R 12192



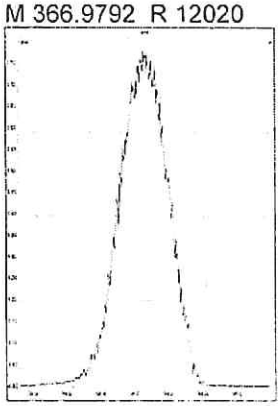
M 342.9792 R 11628



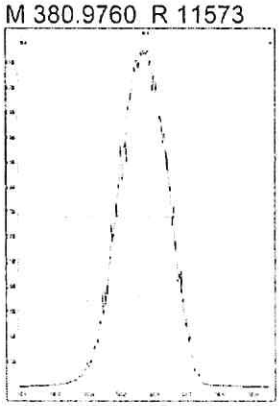
M 354.9792 R 11791



M 366.9792 R 12020



M 380.9760 R 11573

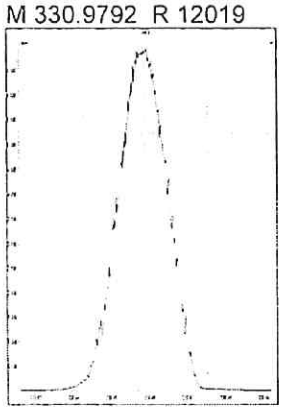


Experiment Calibration Report **MassLynx 4.1 SCN815 SCN795** Page 1 of 1

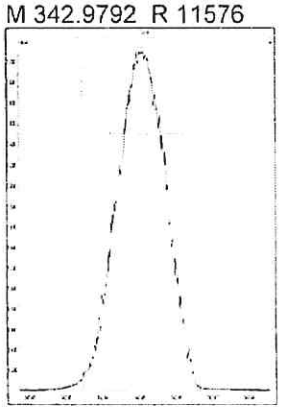
File: Experiment: EPA1613_ALS.exp Reference: Pfk.ref Function: 2 @ 200 (ppm)

Printed: Saturday, September 02, 2017 08:10:31 Central Daylight Time

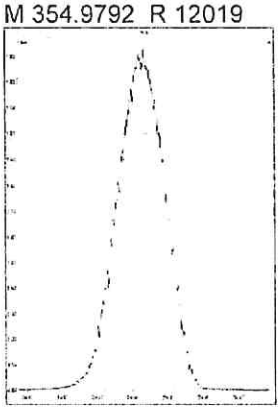
M 330.9792 R 12019



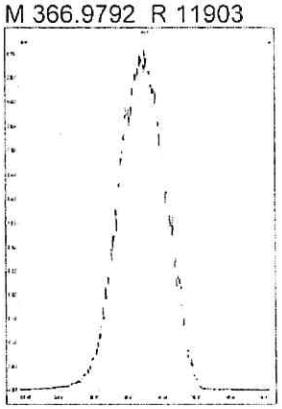
M 342.9792 R 11576



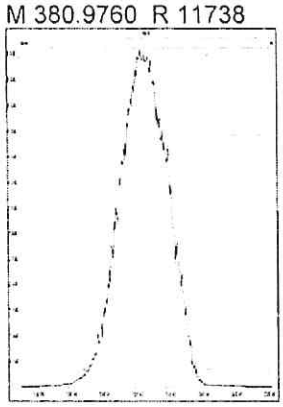
M 354.9792 R 12019



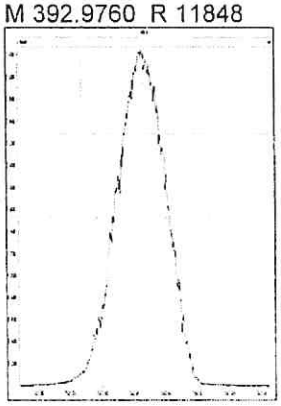
M 366.9792 R 11903



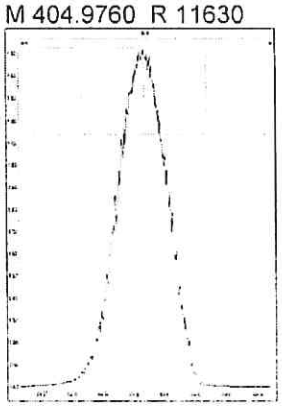
M 380.9760 R 11738



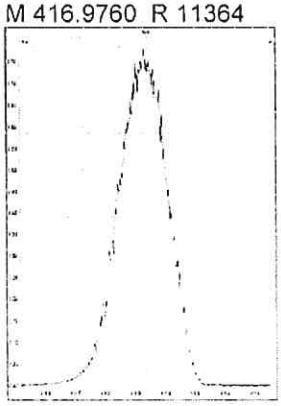
M 392.9760 R 11848



M 404.9760 R 11630



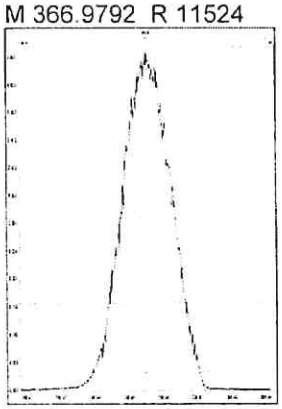
M 416.9760 R 11364



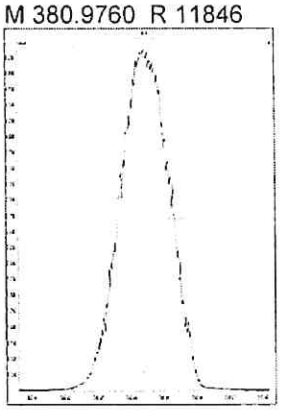
File: Experiment: EPA1613_ALS.exp Reference: Pfk.ref Function: 3 @ 200 (ppm)

Printed: Saturday, September 02, 2017 08:11:28 Central Daylight Time

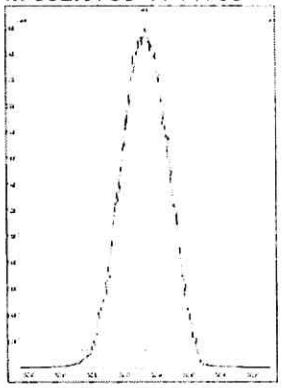
M 366.9792 R 11524



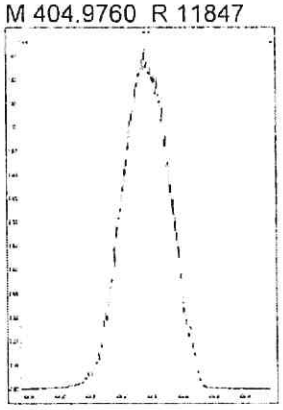
M 380.9760 R 11846



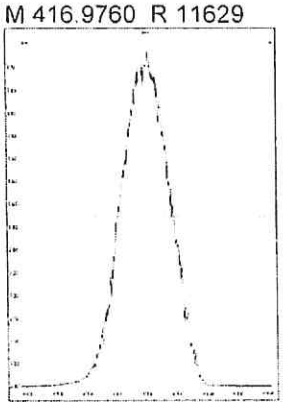
M 392.9760 R 11793



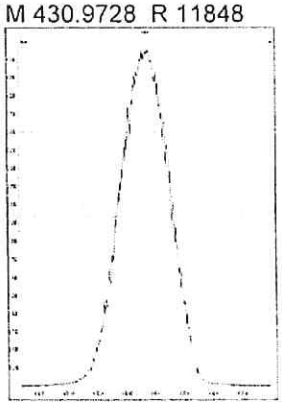
M 404.9760 R 11847



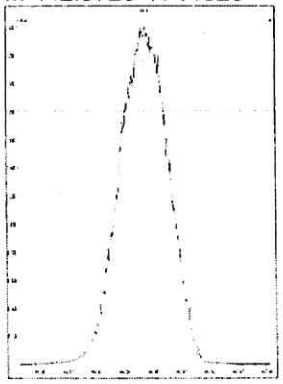
M 416.9760 R 11629



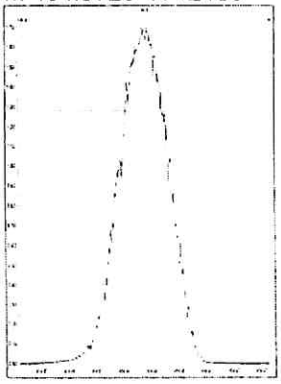
M 430.9728 R 11848



M 442.9728 R 11626



M 454.9728 R 12136

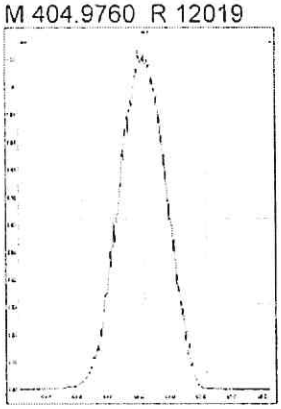


Experiment Calibration Report **MassLynx 4.1 SCN815 SCN795**

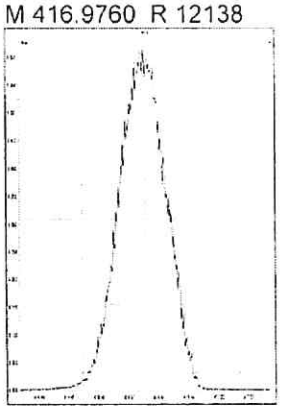
File: Experiment: EPA1613_ALS.exp Reference: Pfk.ref Function: 4 @ 200 (ppm)

Printed: Saturday, September 02, 2017 08:12:23 Central Daylight Time

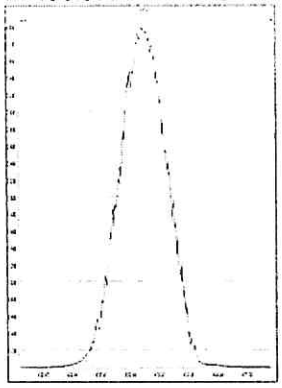
M 404.9760 R 12019



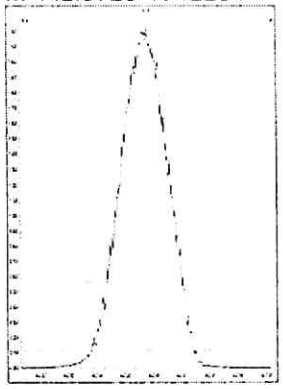
M 416.9760 R 12138



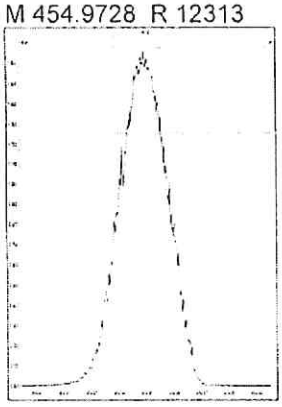
M 430.9728 R 12137



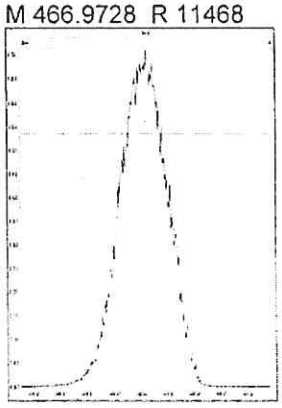
M 442.9728 R 12254



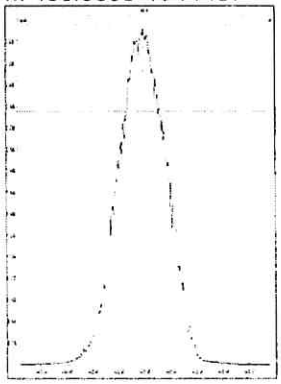
M 454.9728 R 12313



M 466.9728 R 11468



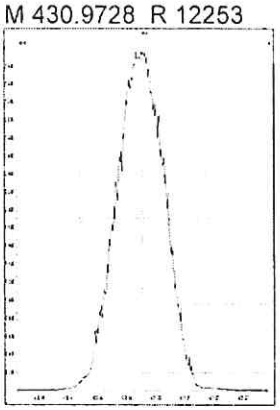
M 480.9696 R 11467



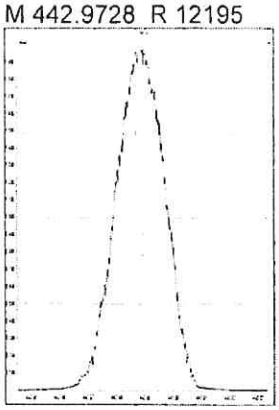
File: Experiment: EPA1613_ALS.exp Reference: Pfk.ref Function: 5 @ 200 (ppm)

Printed: Saturday, September 02, 2017 08:13:42 Central Daylight Time

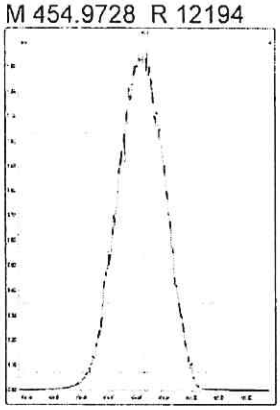
M 430.9728 R 12253



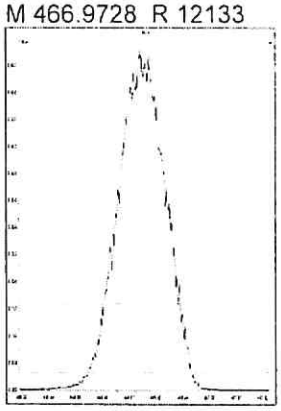
M 442.9728 R 12195



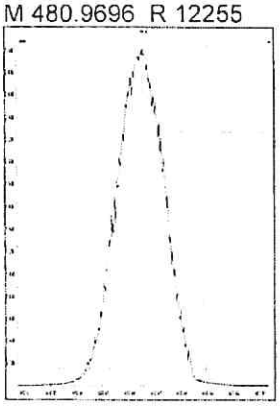
M 454.9728 R 12194



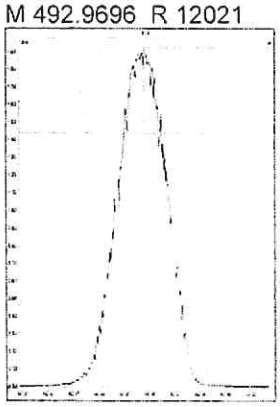
M 466.9728 R 12133



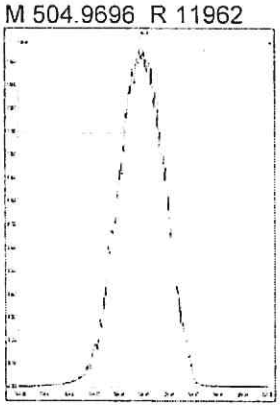
M 480.9696 R 12255



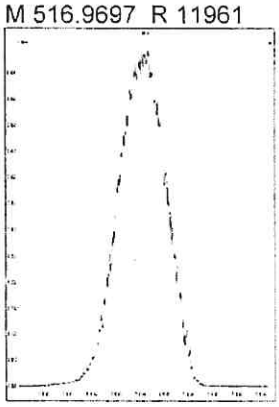
M 492.9696 R 12021



M 504.9696 R 11962



M 516.9697 R 11961



WINDOW DEFINING MIX SUMMARY

CLIENT ID:

WDM

Lab Name: ALS Environmental
Lab Code: ALSTX
GC Column: DB-5MSUI

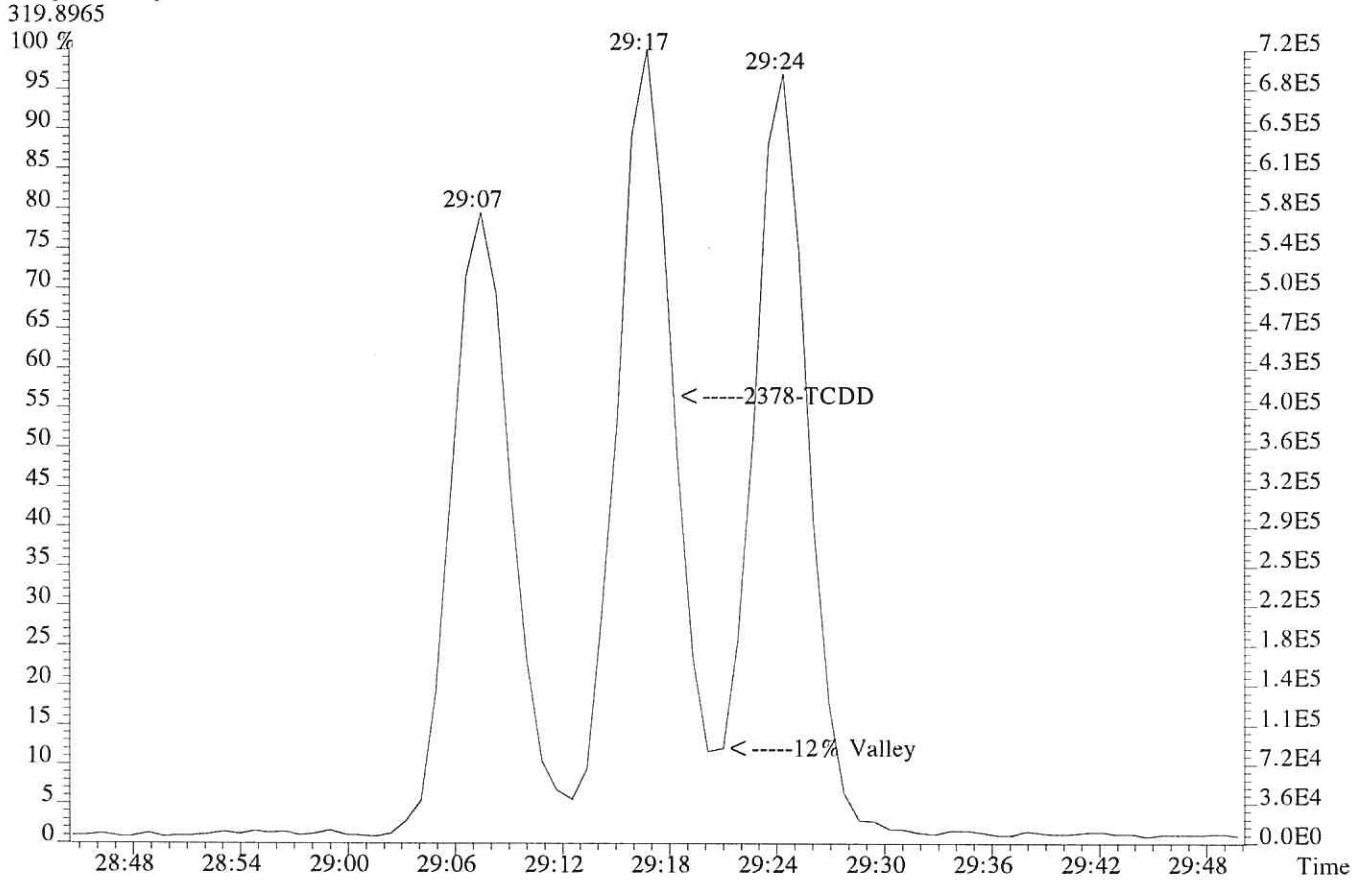
Case No.: _____ SDG No.:
ID: 0.25 (mm)

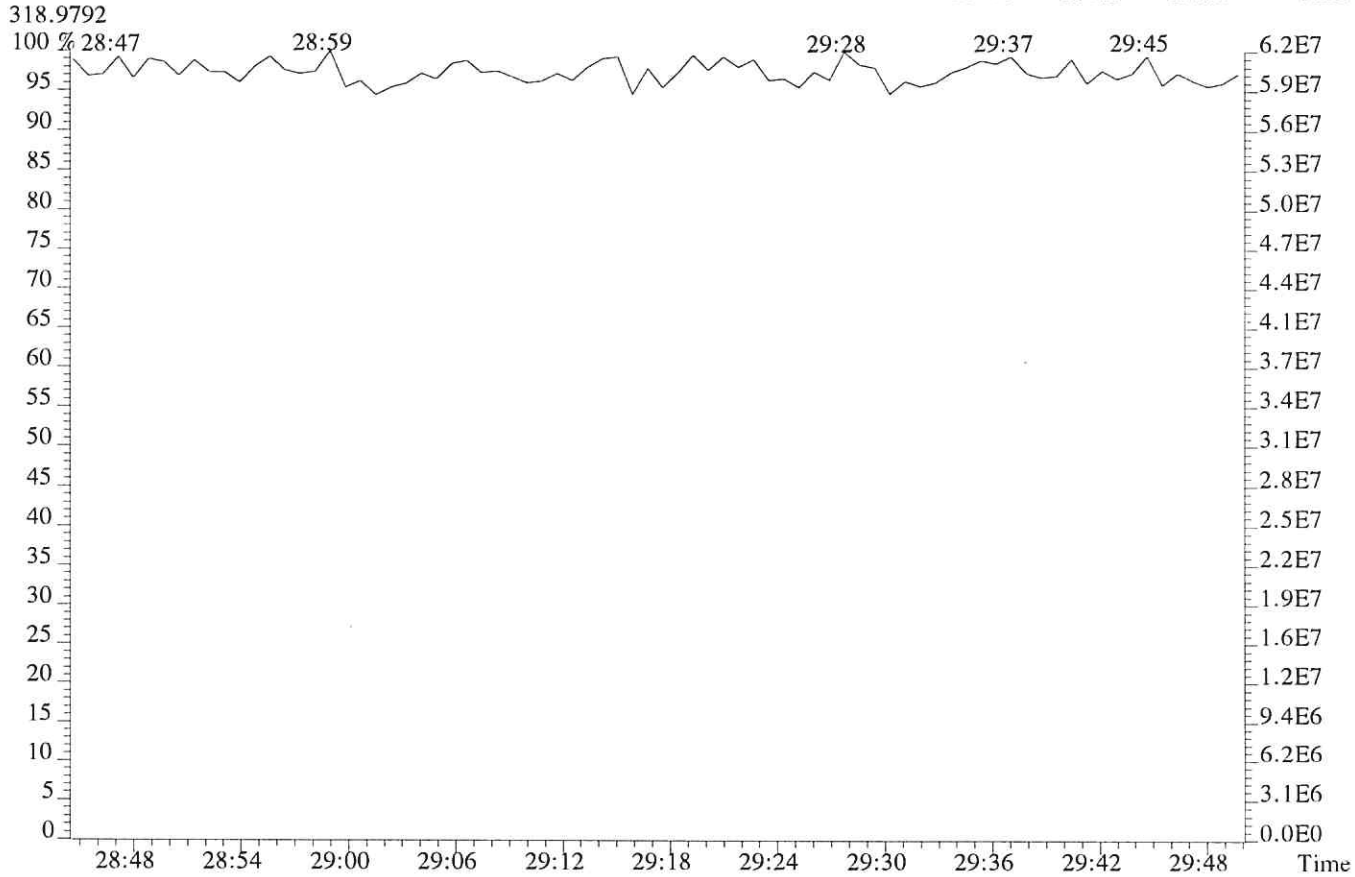
Lab File ID: P407613
Date Analyzed: 01-SEP-17
Time Analyzed: 14:07:08

Congener	Retention Time First Eluting	Retention Time Last Eluting
TCDF	24:13	30:24
TCDD	26:06	30:14
PeCDF	30:19	34:28
PeCDD	31:48	34:12
HxCDF	35:05	37:32
HxCDD	35:34	37:07
HpCDF	38:42	40:06
HpCDD	38:56	39:37

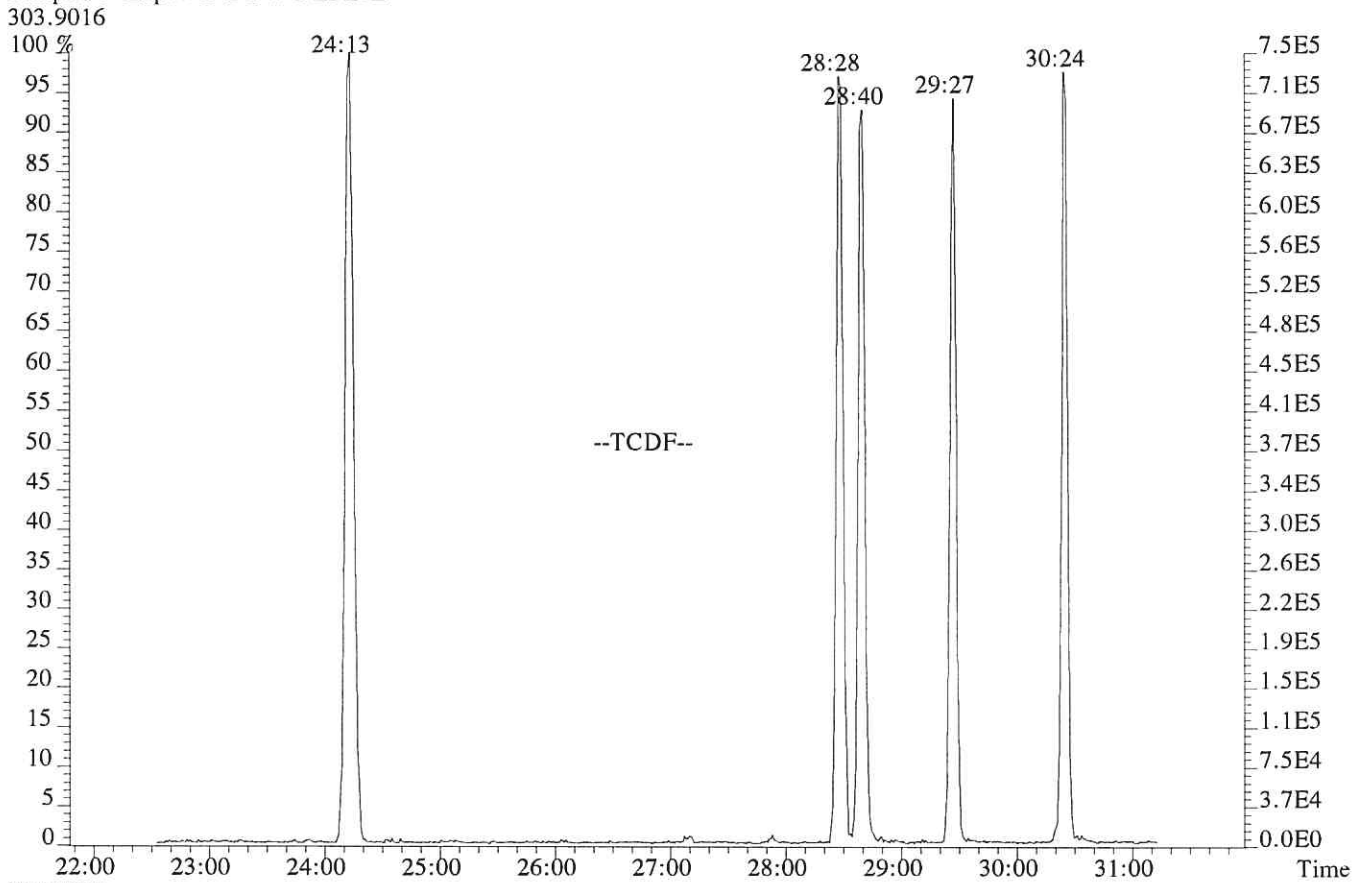
% Valley 2378-TCDD: 12 %

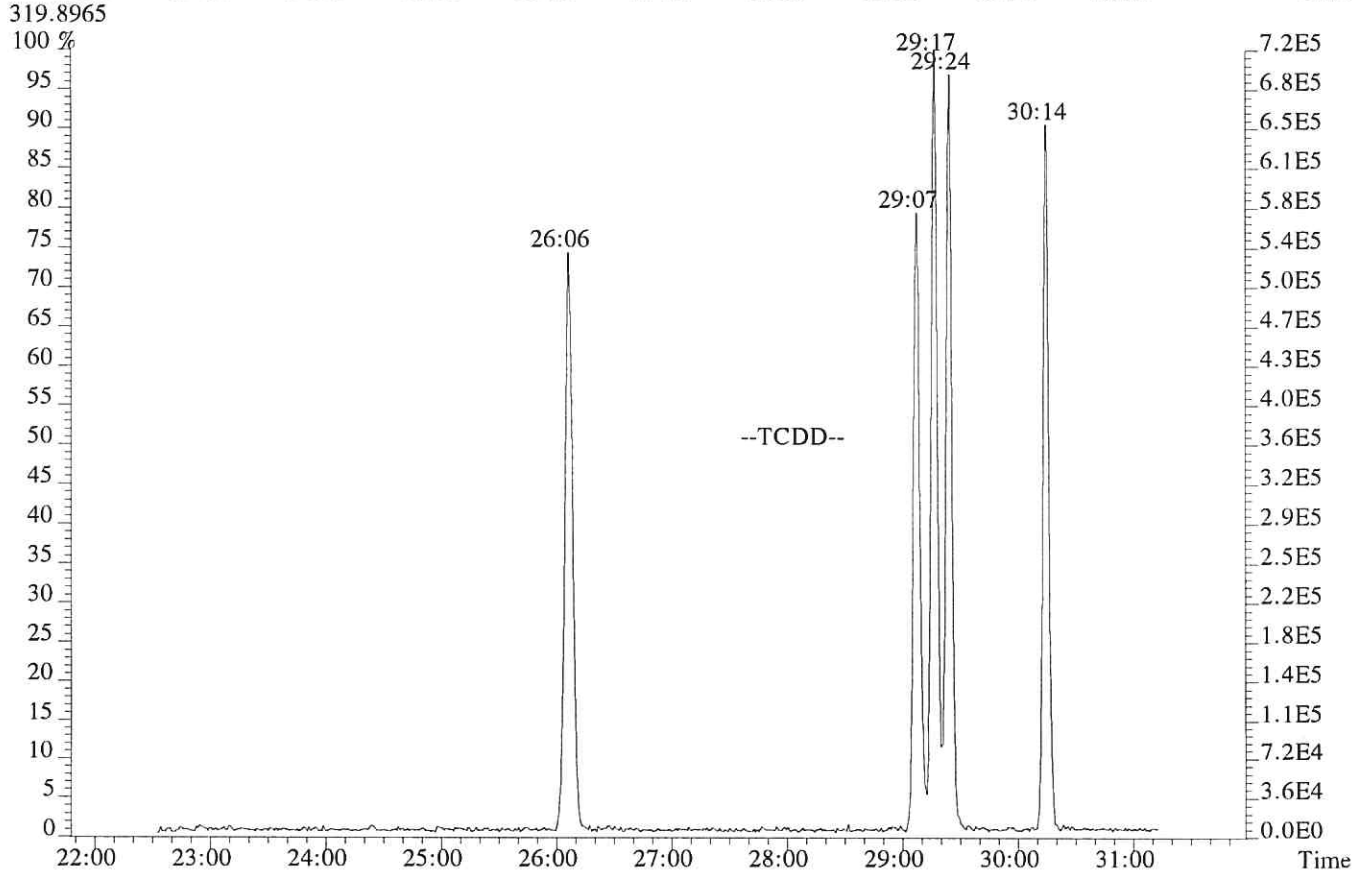
File:P407613 #1-616 Acq: 1-SEP-2017 14:07:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE



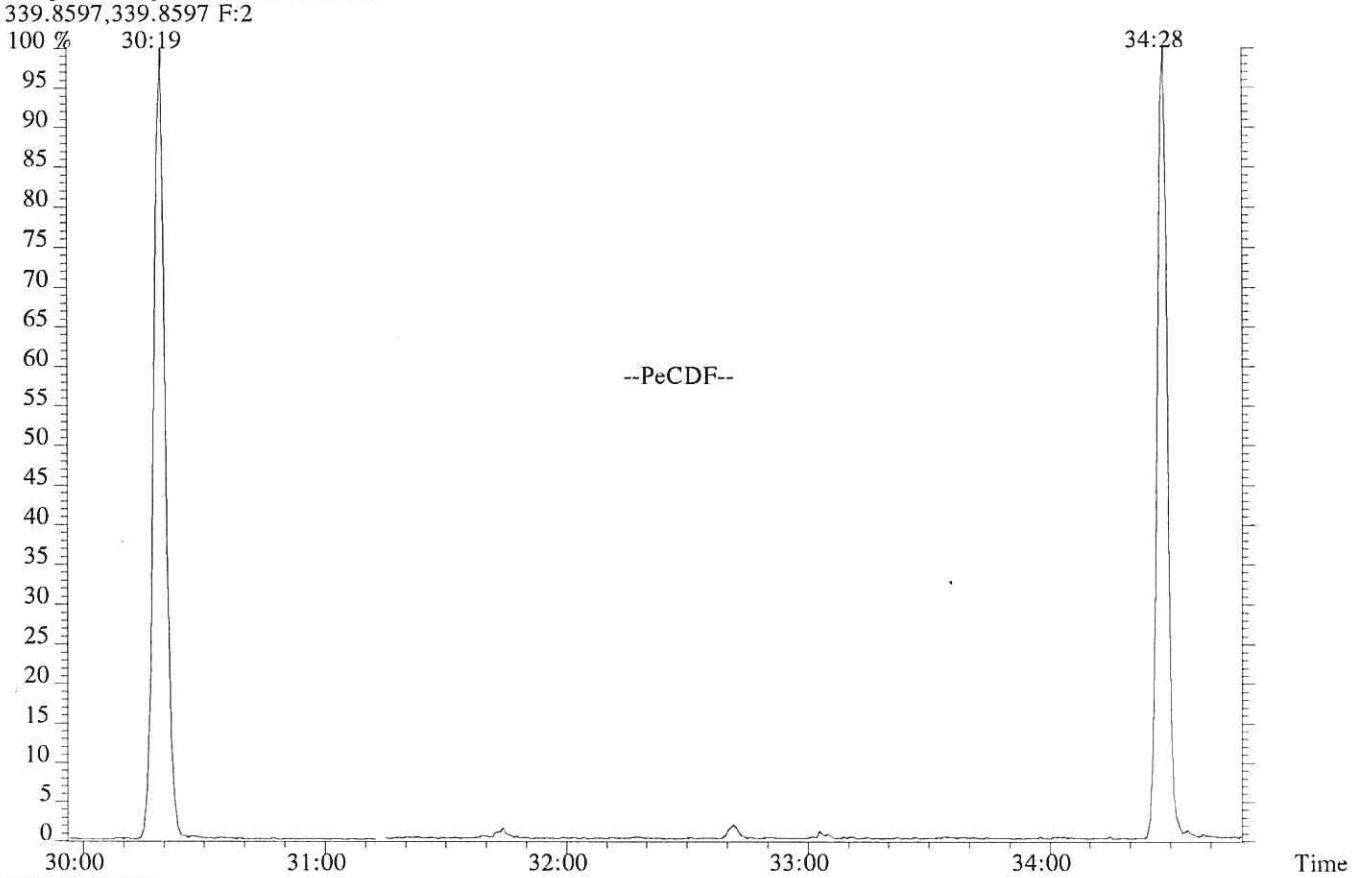


File:P407613 #1-616 Acq: 1-SEP-2017 14:07:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE

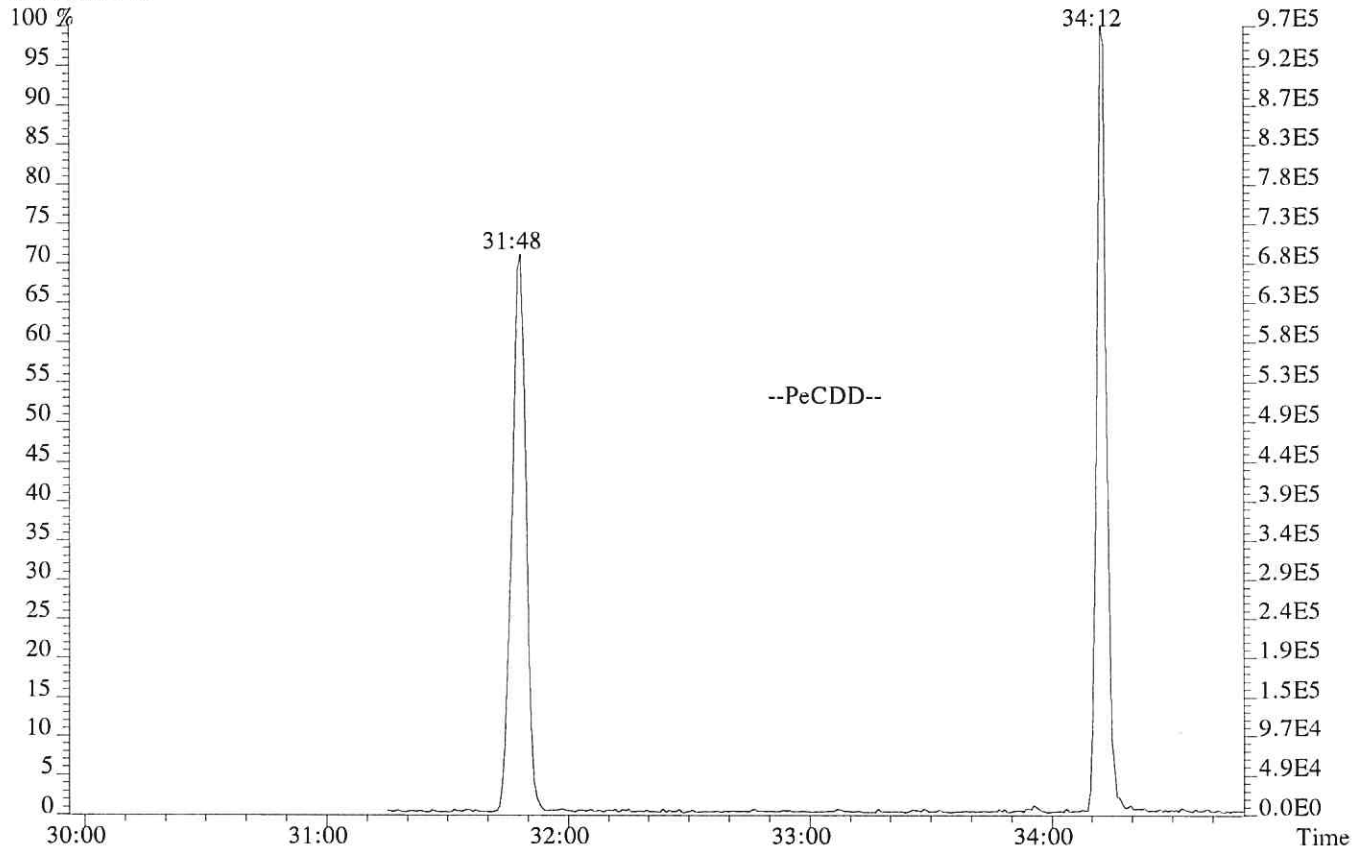




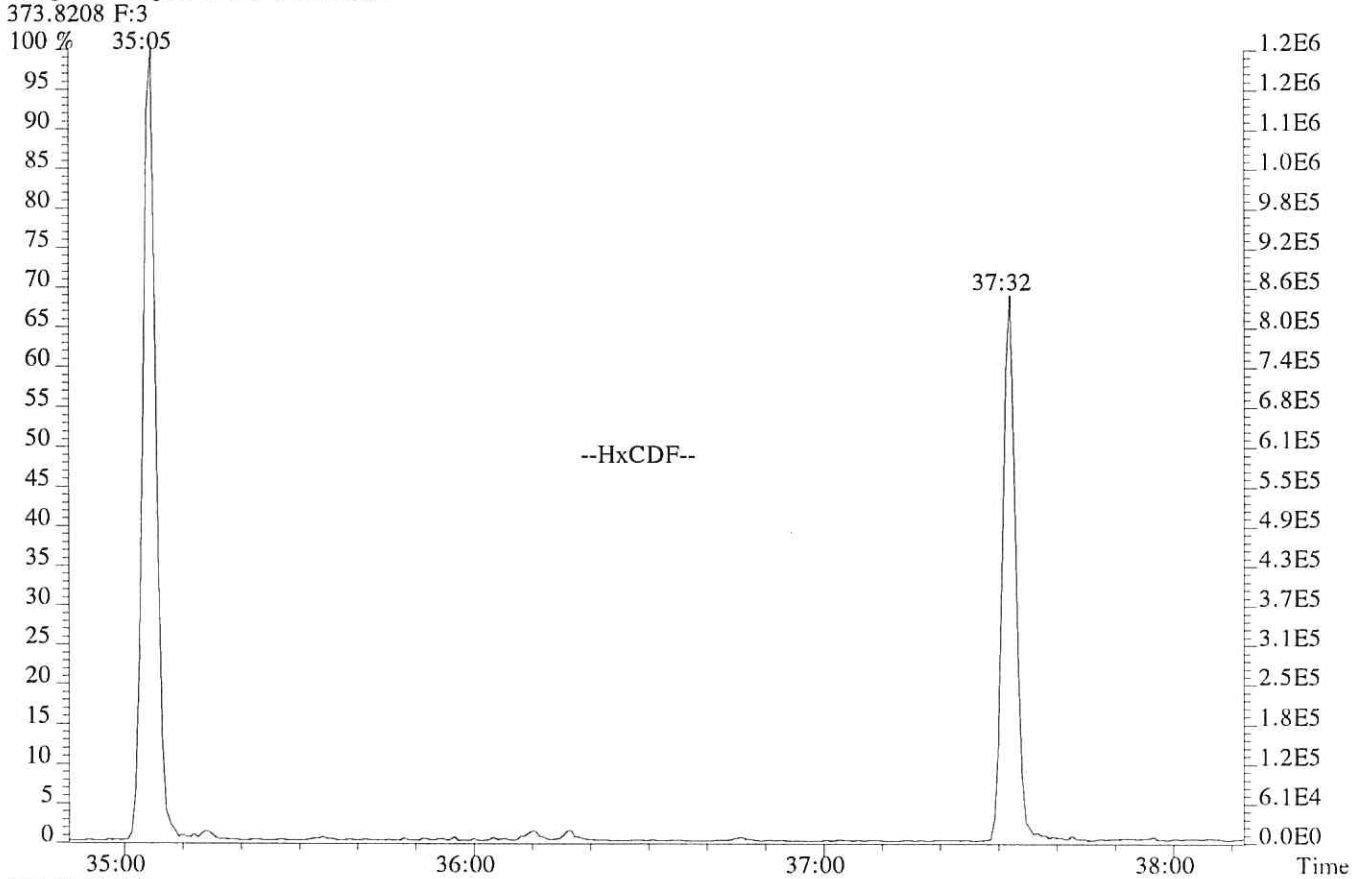
File:P407613 #1-616 Acq: 1-SEP-2017 14:07:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE
339.8597,339.8597 F:2

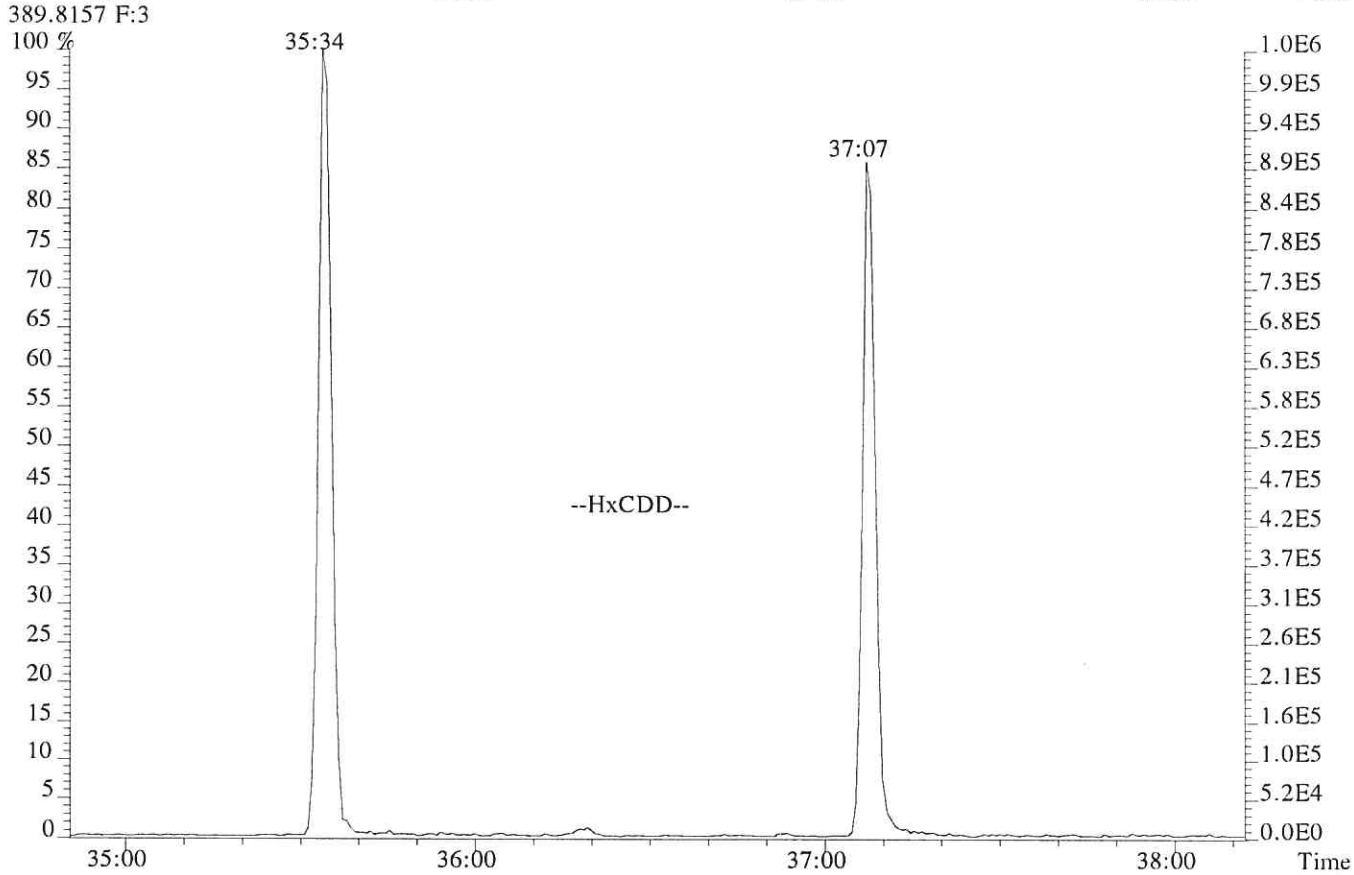


355.8546 F:2

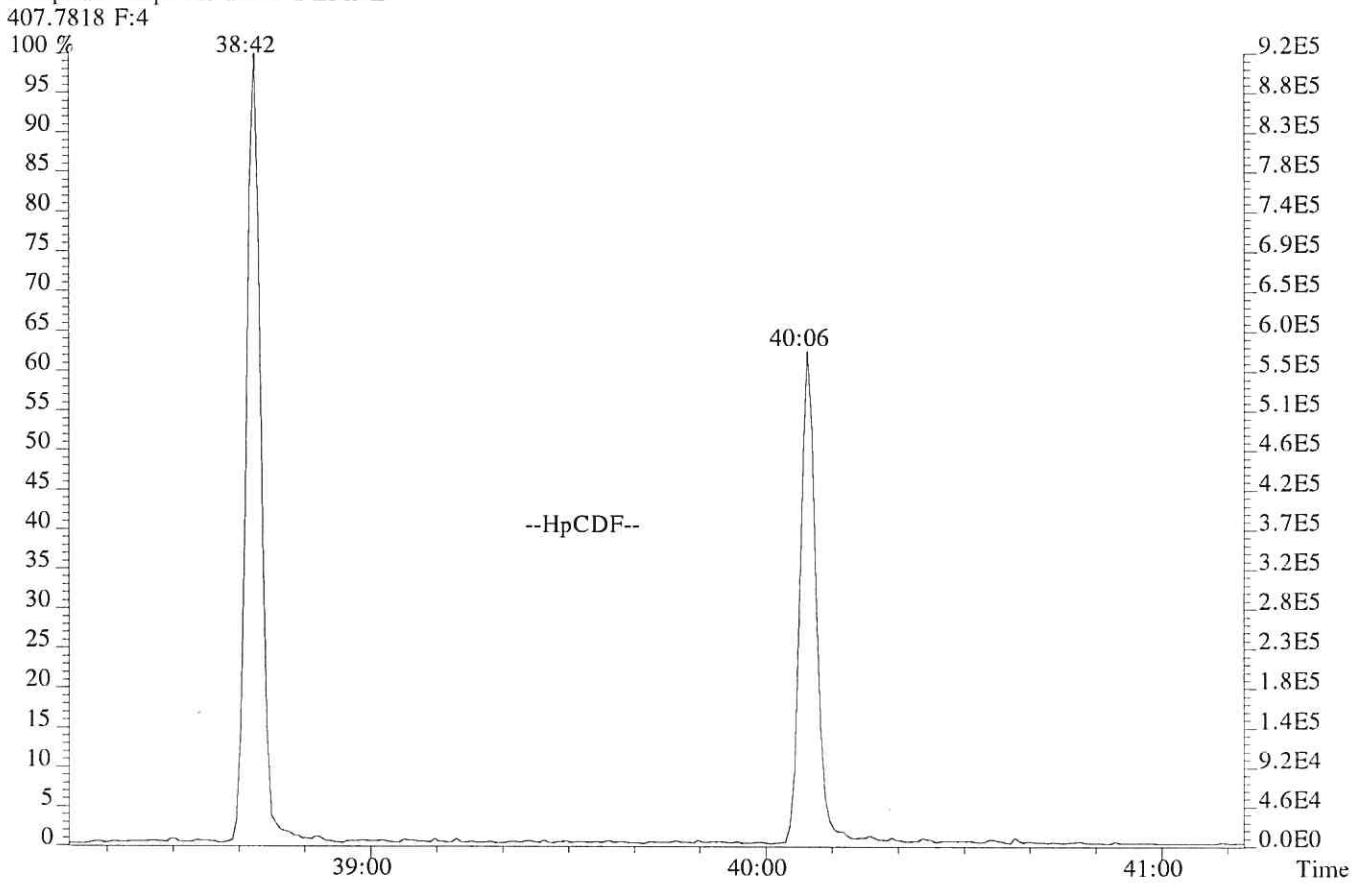


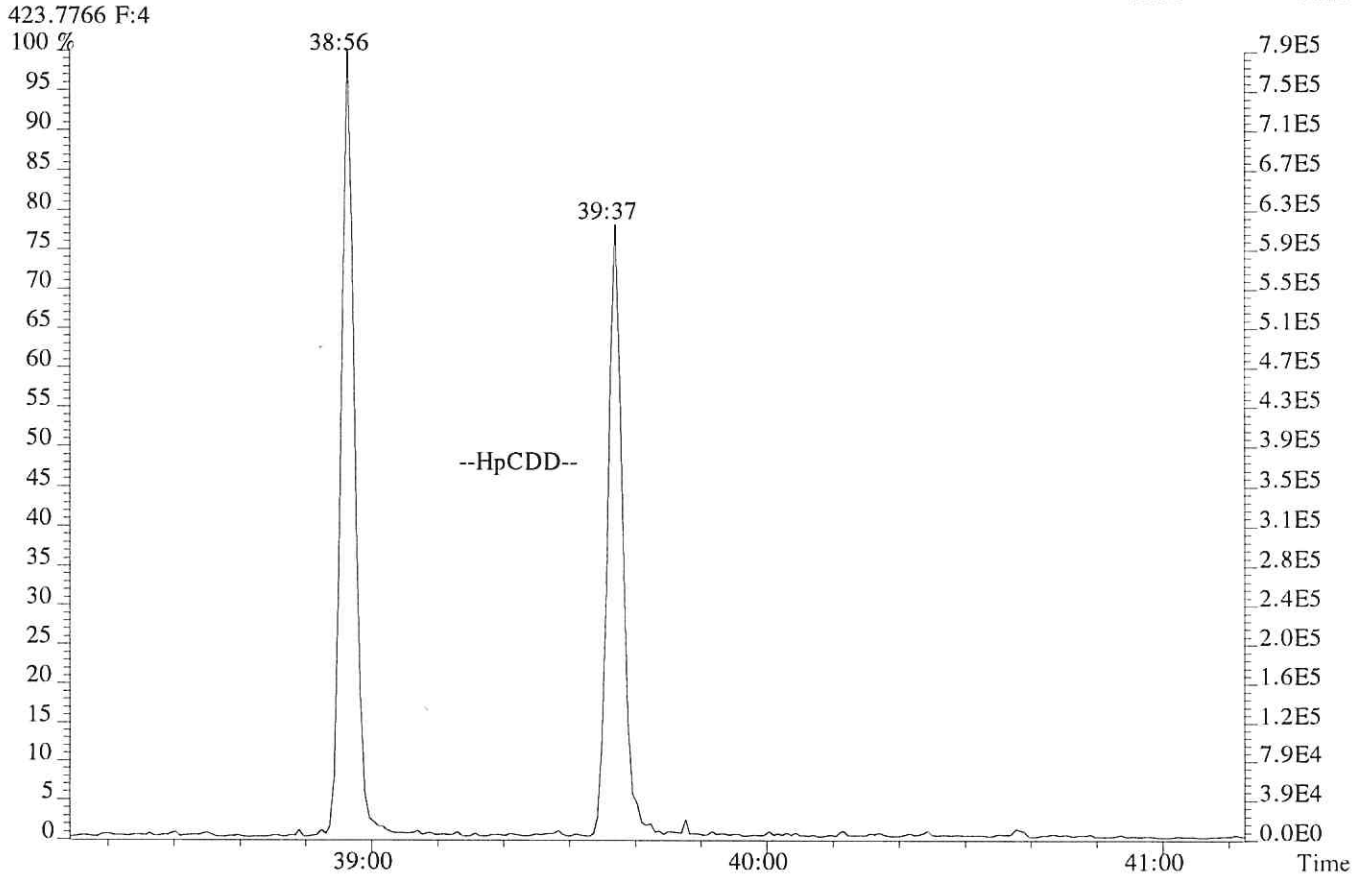
File:P407613 #1-303 Acq: 1-SEP-2017 14:07:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE





File:P407613 #1-268 Acq: 1-SEP-2017 14:07:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:WINDOW DEFINE





USEPA - CLP
6DFA6
CDD/CDF INITIAL CALIBRATION RESPONSE FACTOR SUMMARY
HIGH RESOLUTION

Lab Name: ALS Environmental Contract No.:
Lab Code: ALSTX Case No.: TO No.: SDG No.:
GC Column: DB-5MSUI ID: 0.25(mm) Instrument ID: E-HRMS-06
Init. Calib. Date(s).: 09/01/17 Method 1613/8290
Init. Calib. Time.: 14:07:08

	RR/RRF								
Target Analytes	CS0.5	CS1	CS2	CS3	CS4	CS5	RR/RRF	MEAN %RSD	QC LIMITS
2,3,7,8-TCDD	1.05	0.99	0.92	0.95	0.96	0.93	0.97	4.67	+/-20%
2,3,7,8-TCDF	0.86	0.89	0.88	0.88	0.90	0.90	0.89	1.72	+/-20%
1,2,3,7,8-PeCDF	0.95	1.00	0.99	1.00	1.02	0.95	0.98	3.00	+/-20%
1,2,3,7,8-PeCDD	0.80	0.88	0.84	0.86	0.86	0.87	0.85	3.04	+/-20%
2,3,4,7,8-PeCDF	0.86	0.94	0.94	0.95	0.96	1.00	0.94	5.15	+/-20%
1,2,3,4,7,8-HxCDF	1.25	1.23	1.23	1.22	1.25	1.20	1.23	1.73	+/-20%
1,2,3,6,7,8-HxCDF	1.09	1.16	1.16	1.14	1.16	1.18	1.15	2.77	+/-20%
1,2,3,4,7,8-HxCDD	0.91	0.97	0.97	0.95	0.96	1.04	0.97	4.34	+/-20%
1,2,3,6,7,8-HxCDD	0.93	0.95	0.97	0.96	0.97	0.85	0.94	4.86	+/-20%
1,2,3,7,8,9-HxCDD	0.97	1.00	0.99	0.98	0.98	0.96	0.98	1.53	+/-20%
2,3,4,6,7,8-HxCDF	1.12	1.12	1.14	1.15	1.15	1.12	1.13	1.31	+/-20%
1,2,3,7,8,9-HxCDF	1.16	1.19	1.17	1.18	1.19	1.15	1.17	1.30	+/-20%
1,2,3,4,6,7,8-HpCDF	1.36	1.41	1.37	1.39	1.40	1.34	1.38	2.06	+/-20%
1,2,3,4,6,7,8-HpCDD	0.95	1.00	0.96	0.98	0.99	0.96	0.98	2.01	+/-20%
1,2,3,4,7,8,9-HpCDF	1.26	1.32	1.29	1.28	1.31	1.35	1.30	2.48	+/-20%
OCDD	1.04	1.04	1.07	1.05	1.07	0.94	1.03	4.72	+/-20%
OCDF	1.01	1.13	1.14	1.16	1.19	1.06	1.11	5.91	+/-20%
Labeled Compounds									
13C-2,3,7,8-TCDD	0.97	0.95	0.95	0.95	0.95	0.98	0.96	1.24	+/-35%
13C-1,2,3,7,8-PeCDD	0.95	0.95	0.98	0.98	0.97	1.00	0.97	2.01	+/-35%
13C-1,2,3,4,7,8-HxCDD	0.97	0.98	0.97	0.97	0.95	0.95	0.97	1.37	+/-35%
13C-1,2,3,6,7,8-HxCDD	0.96	0.97	0.97	0.94	0.93	1.04	0.97	4.05	+/-35%
13C-1,2,3,4,6,7,8-HpCDD	0.85	0.85	0.84	0.86	0.84	0.89	0.85	2.35	+/-35%
13C-OCDD	0.65	0.65	0.65	0.66	0.65	0.75	0.67	5.77	+/-35%
13C-2,3,7,8-TCDF	1.17	1.18	1.16	1.23	1.17	1.15	1.18	2.36	+/-35%
13C-1,2,3,7,8-PeCDF	1.16	1.17	1.18	1.20	1.19	1.22	1.19	1.94	+/-35%
13C-2,3,4,7,8-PeCDF	1.13	1.12	1.16	1.16	1.16	1.16	1.15	1.46	+/-35%
13C-1,2,3,4,7,8-HxCDF	1.05	1.09	1.06	1.06	1.05	1.09	1.07	2.01	+/-35%
13C-1,2,3,6,7,8-HxCDF	1.17	1.20	1.18	1.17	1.17	1.14	1.17	1.60	+/-35%
13C-2,3,4,6,7,8-HxCDF	1.08	1.09	1.09	1.07	1.06	1.08	1.08	0.99	+/-35%
13C-1,2,3,7,8,9-HxCDF	0.90	0.91	0.91	0.95	0.90	0.94	0.92	2.23	+/-35%
13C-1,2,3,4,6,7,8-HpCDF	0.87	0.88	0.88	0.87	0.86	0.91	0.88	2.13	+/-35%
13C-1,2,3,4,7,8,9-HpCDF	0.71	0.69	0.72	0.75	0.72	0.74	0.72	2.72	+/-35%
37Cl-2,3,7,8-TCDD	0.97	0.98	1.00	0.98	1.00	1.02	0.99	1.93	+/-35%

1. 123789-HxCDD Relative Response (RR) is calculated based on the labeled analog of the other two HxCDDs.
2. OCDF RR is calculated based on the labeled analog of OCDD

FORM VI-HR CDD-1 DLM02.2

USEPA - CLP
6DFB6
CDD/CDF INITIAL CALIBRATION ION ABUNDANCE RATIO SUMMARY
HIGH RESOLUTION

Lab Name: ALS Environmental Contract No.:
Lab Code: ALSTX Case No.: TO No.: SDG No.:
GC Column: DB-5MSUI ID: 0.25(mm) Instrument ID: E-HRMS-06
Init. Calib. Date(s).: 09/01/17 Method 1613/8290
Init. Calib. Time.: 14:07:08

Target Analytes	SELECTED IONS	ION ABUNDANCE RATIO CS0.5	CS1	CS2	CS3	CS4	CS5	FLAG	ION RATIO QC LIMITS
2,3,7,8-TCDF	304/306	0.76	0.76	0.77	0.78	0.79	0.78		0.65-0.89
2,3,7,8-TCDD	320/322	0.88	0.68	0.78	0.75	0.76	0.76		0.65-0.89
1,2,3,7,8-PeCDF	340/342	1.52	1.55	1.54	1.55	1.55	1.56		1.32-1.78
2,3,4,7,8-PeCDF	340/342	1.58	1.51	1.56	1.55	1.55	1.55		1.32-1.78
1,2,3,7,8-PeCDD	356/358	1.60	1.56	1.54	1.54	1.54	1.54		1.32-1.78
1,2,3,4,7,8-HxCDF	374/376	1.26	1.31	1.25	1.23	1.24	1.25		1.05-1.43
1,2,3,6,7,8-HxCDF	374/376	1.25	1.22	1.24	1.24	1.25	1.24		1.05-1.43
2,3,4,6,7,8-HxCDF	374/376	1.34	1.25	1.23	1.23	1.24	1.24		1.05-1.43
1,2,3,7,8,9-HxCDF	374/376	1.27	1.24	1.23	1.25	1.25	1.23		1.05-1.43
1,2,3,4,7,8-HxCDD	390/392	1.20	1.22	1.22	1.23	1.24	1.24		1.05-1.43
1,2,3,6,7,8-HxCDD	390/392	1.23	1.33	1.26	1.25	1.25	1.25		1.05-1.43
1,2,3,7,8,9-HxCDD	390/392	1.23	1.19	1.24	1.22	1.23	1.24		1.05-1.43
1,2,3,4,6,7,8-HpCDF	408/410	1.06	1.02	1.00	1.03	1.04	1.03		0.88-1.20
1,2,3,4,7,8,9-HpCDF	408/410	0.98	1.04	1.05	1.02	1.04	1.04		0.88-1.20
1,2,3,4,6,7,8-HpCDD	424/426	1.07	1.00	1.06	1.05	1.04	1.05		0.88-1.20
OCDF	442/444	0.93	0.92	0.90	0.90	0.90	0.91		0.76-1.02
OCDD	458/460	0.87	0.90	0.91	0.88	0.88	0.88		0.76-1.02
13C-2,3,7,8-TCDD	332/334	0.79	0.79	0.79	0.79	0.79	0.80		0.65-0.89
13C-1,2,3,7,8-PeCDD	368/370	1.55	1.56	1.54	1.56	1.56	1.56		1.32-1.78
13C-1,2,3,4,7,8-HxCDD	402/404	1.24	1.25	1.26	1.24	1.25	1.25		1.05-1.43
13C-1,2,3,6,7,8-HxCDD	402/404	1.25	1.25	1.25	1.24	1.25	1.26		1.05-1.43
13C-1,2,3,4,6,7,8-HpCDD	436/438	1.05	1.05	1.05	1.05	1.04	1.04		0.88-1.20
13C-OCDD	470/472	0.88	0.89	0.89	0.89	0.89	0.89		0.76-1.02
13C-2,3,7,8-TCDF	316/318	0.77	0.78	0.78	0.77	0.78	0.78		0.65-0.89
13C-1,2,3,7,8-PeCDF	352/354	1.57	1.55	1.56	1.56	1.55	1.54		1.32-1.78
13C-2,3,4,7,8-PeCDF	352/354	1.55	1.57	1.56	1.56	1.55	1.57		1.32-1.78
13C-1,2,3,4,7,8-HxCDF	384/386	0.52	0.52	0.51	0.52	0.52	0.52		0.43-0.59
13C-1,2,3,6,7,8-HxCDF	384/386	0.53	0.52	0.52	0.53	0.52	0.53		0.43-0.59
13C-2,3,4,6,7,8-HxCDF	384/386	0.52	0.52	0.52	0.52	0.52	0.52		0.43-0.59
13C-1,2,3,7,8,9-HxCDF	384/386	0.52	0.52	0.52	0.52	0.52	0.52		0.43-0.59
13C-1,2,3,4,6,7,8-HpCDF	418/420	0.44	0.45	0.44	0.45	0.44	0.44		0.37-0.51
13C-1,2,3,4,7,8,9-HpCDF	418/420	0.45	0.44	0.45	0.44	0.44	0.45		0.37-0.51
13C-1,2,3,4-TCDD	332/334	0.80	0.80	0.80	0.80	0.79	0.80		0.65-0.89
13C-1,2,3,7,8,9-HxCDD	402/404	1.25	1.23	1.24	1.23	1.25	1.24		1.05-1.43

Quality Control (QC) limits represent +/- 15% window around the theoretical ion abundance ratio. The laboratory must flag any analyte in any calibration solution which does not meet the ion abundance ratio QC limit by placing an asterisk in the flag column.

FORM VI-HR CDD-2 DLM02.2

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
76554

Run #1 Filename p407614 #1 Samp: 1 Inj: 1 Acquired: 1-SEP-17 14:55:03
Processed: 5-SEP-17 09:15:29 LAB. ID: CS0.5

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	28:38	1.282e+02	1.692e+02	0.76	yes	no	0.885
2	Unk	1,2,3,7,8-PeCDF	32:41	9.713e+02	6.384e+02	1.52	yes	no	0.984
3	Unk	2,3,4,7,8-PeCDF	33:34	8.731e+02	5.541e+02	1.58	yes	no	0.943
4	Unk	1,2,3,4,7,8-HxCDF	36:09	9.152e+02	7.290e+02	1.26	yes	no	1.230
5	Unk	1,2,3,6,7,8-HxCDF	36:16	8.827e+02	7.058e+02	1.25	yes	no	1.148
6	Unk	2,3,4,6,7,8-HxCDF	36:45	8.624e+02	6.450e+02	1.34	yes	no	1.133
7	Unk	1,2,3,7,8,9-HxCDF	37:30	7.372e+02	5.797e+02	1.27	yes	no	1.172
8	Unk	1,2,3,4,6,7,8-HpCDF	38:42	7.586e+02	7.160e+02	1.06	yes	no	1.377
9	Unk	1,2,3,4,7,8,9-HpCDF	40:06	5.557e+02	5.691e+02	0.98	yes	no	1.301
10	Unk	OCDF	42:35	7.958e+02	8.530e+02	0.93	yes	no	1.114
11	Unk	2,3,7,8-TCDD	29:24	1.394e+02	1.582e+02	0.88	yes	no	0.966
12	Unk	1,2,3,7,8-PeCDD	33:50	6.931e+02	4.335e+02	1.60	yes	no	0.851
13	Unk	1,2,3,4,7,8-HxCDD	36:53	6.019e+02	5.018e+02	1.20	yes	no	0.966
14	Unk	1,2,3,6,7,8-HxCDD	36:58	6.167e+02	5.020e+02	1.23	yes	no	0.938
15	Unk	1,2,3,7,8,9-HxCDD	37:12	6.447e+02	5.256e+02	1.23	yes	no	0.980
16	Unk	1,2,3,4,6,7,8-HpCDD	39:36	5.242e+02	4.913e+02	1.07	yes	no	0.975
17	Unk	OCDD	42:22	7.872e+02	9.042e+02	0.87	yes	no	1.033
18	IS	13C-2,3,7,8-TCDF	28:38	6.013e+04	7.810e+04	0.77	yes	no	1.176
19	IS	13C-1,2,3,7,8-PeCDF	32:40	8.319e+04	5.285e+04	1.57	yes	no	1.185
20	IS	13C-2,3,4,7,8-PeCDF	33:34	8.108e+04	5.227e+04	1.55	yes	no	1.149
21	IS	13C-1,2,3,4,7,8-HxCDF	36:09	3.600e+04	6.893e+04	0.52	yes	no	1.068
22	IS	13C-1,2,3,6,7,8-HxCDF	36:15	4.035e+04	7.659e+04	0.53	yes	no	1.171
23	IS	13C-2,3,4,6,7,8-HxCDF	36:45	3.692e+04	7.110e+04	0.52	yes	no	1.079
24	IS	13C-1,2,3,7,8,9-HxCDF	37:29	3.094e+04	5.982e+04	0.52	yes	no	0.919
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:41	2.678e+04	6.018e+04	0.44	yes	no	0.877
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:05	2.207e+04	4.941e+04	0.45	yes	no	0.723
27	IS	13C-2,3,7,8-TCDD	29:23	5.025e+04	6.353e+04	0.79	yes	no	0.958
28	IS	13C-1,2,3,7,8-PeCDD	33:50	6.809e+04	4.397e+04	1.55	yes	no	0.973
29	IS	13C-1,2,3,4,7,8-HxCDD	36:52	5.403e+04	4.349e+04	1.24	yes	no	0.966
30	IS	13C-1,2,3,6,7,8-HxCDD	36:57	5.334e+04	4.279e+04	1.25	yes	no	0.968
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:36	4.370e+04	4.144e+04	1.05	yes	no	0.854
32	IS	13C-OCDD	42:21	6.105e+04	6.932e+04	0.88	yes	no	0.668
33	RS/RT	13C-1,2,3,4-TCDD	28:49	5.219e+04	6.546e+04	0.80	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:11	5.569e+04	4.466e+04	1.25	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:24	2.843e+02				no	0.992

ALS ENVIRONMENTAL
10450 Stancliff Road
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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
76554

Run #1 Filename p407614 Samp: 1 Inj: 1 Acquired: 1-SEP-17 14:55:03
Processed: 5-SEP-17 09:15:291 LAB. ID: CS0.5

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	2.30e+04	1.95e+03	1.2e+01	3.41e+04	2.29e+03	1.5e+01
2	1,2,3,7,8-PeCDF	1.89e+05	9.12e+02	2.1e+02	1.20e+05	1.59e+03	7.6e+01
3	2,3,4,7,8-PeCDF	1.79e+05	9.12e+02	2.0e+02	1.18e+05	1.59e+03	7.4e+01
4	1,2,3,4,7,8-HxCDF	1.94e+05	9.60e+02	2.0e+02	1.63e+05	9.40e+02	1.7e+02
5	1,2,3,6,7,8-HxCDF	1.96e+05	9.60e+02	2.0e+02	1.55e+05	9.40e+02	1.7e+02
6	2,3,4,6,7,8-HxCDF	1.87e+05	9.60e+02	1.9e+02	1.42e+05	9.40e+02	1.5e+02
7	1,2,3,7,8,9-HxCDF	1.63e+05	9.60e+02	1.7e+02	1.35e+05	9.40e+02	1.4e+02
8	1,2,3,4,6,7,8-HpCDF	1.69e+05	8.40e+02	2.0e+02	1.60e+05	8.52e+02	1.9e+02
9	1,2,3,4,7,8,9-HpCDF	1.10e+05	8.40e+02	1.3e+02	1.18e+05	8.52e+02	1.4e+02
10	OCDF	1.45e+05	1.13e+03	1.3e+02	1.53e+05	1.29e+03	1.2e+02
11	2,3,7,8-TCDD	2.73e+04	2.69e+03	1.0e+01	3.41e+04	2.08e+03	1.6e+01
12	1,2,3,7,8-PeCDD	1.48e+05	1.48e+03	1.0e+02	9.10e+04	5.00e+02	1.8e+02
13	1,2,3,4,7,8-HxCDD	1.42e+05	6.76e+02	2.1e+02	1.18e+05	8.76e+02	1.3e+02
14	1,2,3,6,7,8-HxCDD	1.33e+05	6.76e+02	2.0e+02	1.10e+05	8.76e+02	1.3e+02
15	1,2,3,7,8,9-HxCDD	1.33e+05	6.76e+02	2.0e+02	1.15e+05	8.76e+02	1.3e+02
16	1,2,3,4,6,7,8-HpCDD	1.10e+05	8.92e+02	1.2e+02	1.07e+05	1.11e+03	9.6e+01
17	OCDD	1.52e+05	9.84e+02	1.5e+02	1.62e+05	8.72e+02	1.9e+02
18	13C-2,3,7,8-TCDF	1.17e+07	1.71e+04	6.8e+02	1.51e+07	4.94e+03	3.1e+03
19	13C-1,2,3,7,8-PeCDF	1.63e+07	1.06e+03	1.5e+04	1.03e+07	9.84e+02	1.0e+04
20	13C-2,3,4,7,8-PeCDF	1.68e+07	1.06e+03	1.6e+04	1.07e+07	9.84e+02	1.1e+04
21	13C-1,2,3,4,7,8-HxCDF	8.11e+06	9.08e+02	8.9e+03	1.56e+07	1.26e+03	1.2e+04
22	13C-1,2,3,6,7,8-HxCDF	8.99e+06	9.08e+02	9.9e+03	1.70e+07	1.26e+03	1.4e+04
23	13C-2,3,4,6,7,8-HxCDF	8.30e+06	9.08e+02	9.1e+03	1.60e+07	1.26e+03	1.3e+04
24	13C-1,2,3,7,8,9-HxCDF	6.87e+06	9.08e+02	7.6e+03	1.31e+07	1.26e+03	1.0e+04
25	13C-1,2,3,4,6,7,8-HpCDF	6.08e+06	1.39e+03	4.4e+03	1.37e+07	1.08e+03	1.3e+04
26	13C-1,2,3,4,7,8,9-HpCDF	4.42e+06	1.39e+03	3.2e+03	1.01e+07	1.08e+03	9.3e+03
27	13C-2,3,7,8-TCDD	1.01e+07	3.95e+03	2.6e+03	1.29e+07	2.64e+03	4.9e+03
28	13C-1,2,3,7,8-PeCDD	1.40e+07	1.62e+03	8.6e+03	8.95e+06	1.46e+03	6.1e+03
29	13C-1,2,3,4,7,8-HxCDD	1.26e+07	1.60e+03	7.9e+03	1.01e+07	7.24e+02	1.4e+04
30	13C-1,2,3,6,7,8-HxCDD	1.16e+07	1.60e+03	7.3e+03	9.34e+06	7.24e+02	1.3e+04
31	13C-1,2,3,4,6,7,8-HpCDD	9.33e+06	1.20e+03	7.8e+03	8.84e+06	8.28e+02	1.1e+04
32	13C-OCDD	1.12e+07	1.72e+03	6.5e+03	1.27e+07	5.84e+02	2.2e+04
33	13C-1,2,3,4-TCDD	1.05e+07	3.95e+03	2.6e+03	1.31e+07	2.64e+03	5.0e+03
34	13C-1,2,3,7,8,9-HxCDD	1.20e+07	1.60e+03	7.5e+03	9.69e+06	7.24e+02	1.3e+04
35	37Cl-2,3,7,8-TCDD	5.70e+04	1.99e+03	2.9e+01			

ALS ENVIRONMENTAL
10450 Stancliff Road
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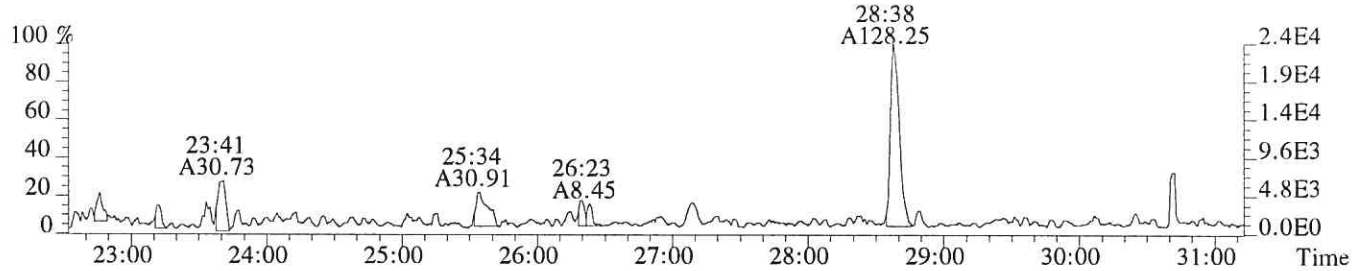
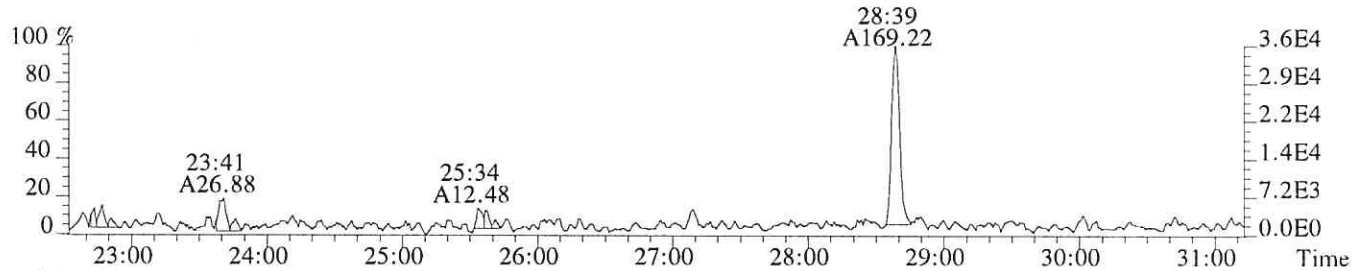
Office:(281)-530-5656. Fax:(281)530-5887

File:P407614 #1-616 Acq: 1-SEP-2017 14:55:03 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS0.5

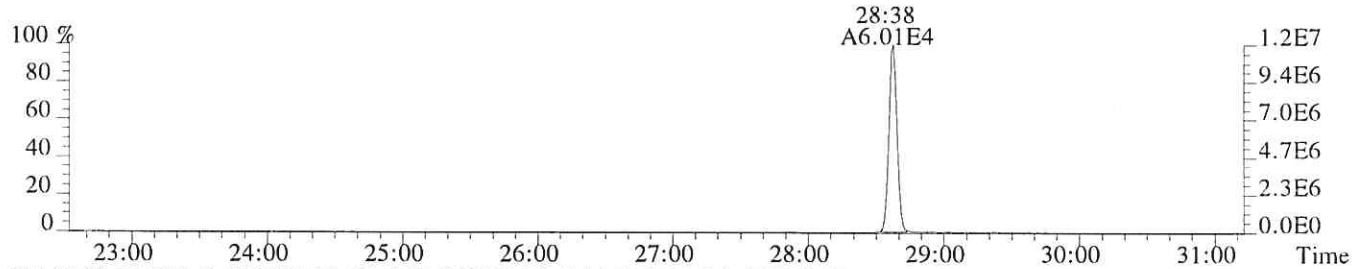
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1952.0,1.00%,F,T)



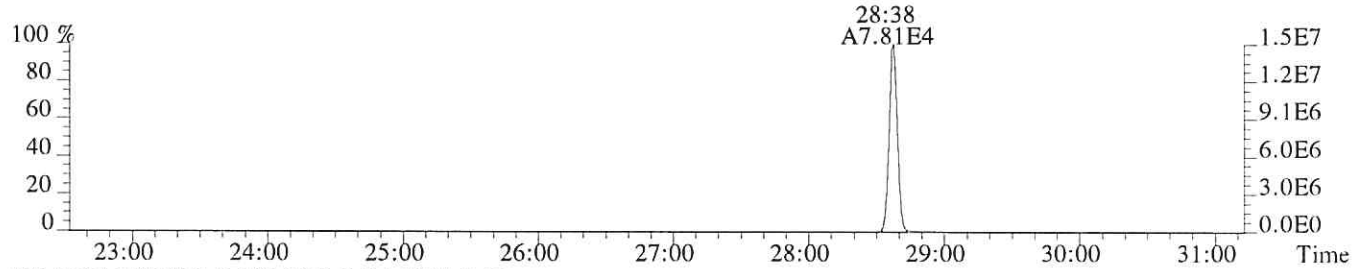
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2292.0,1.00%,F,T)



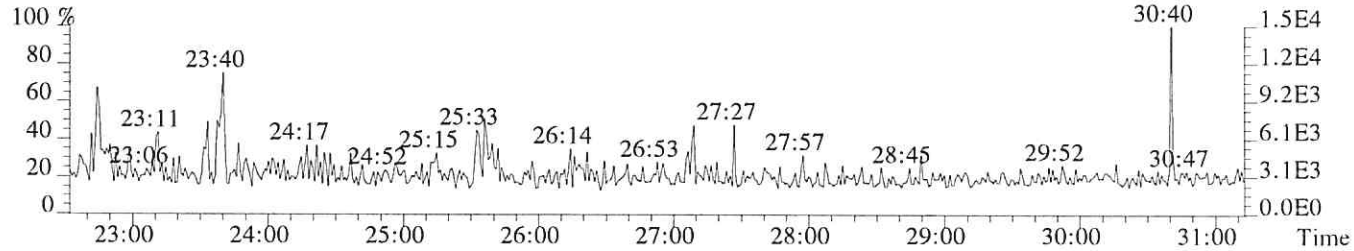
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,17128.0,1.00%,F,T)



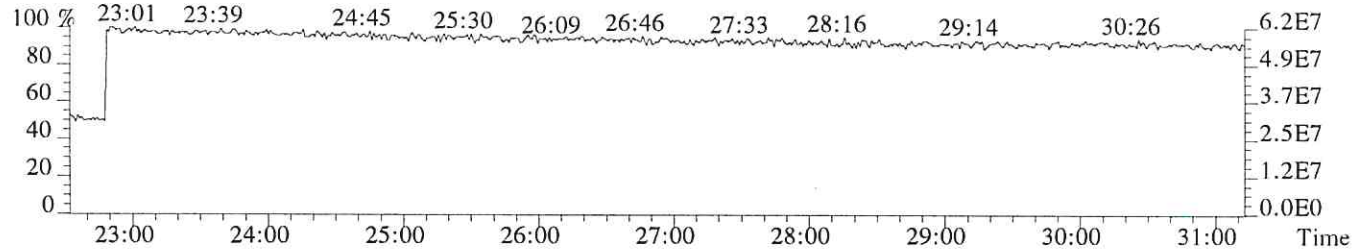
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4936.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

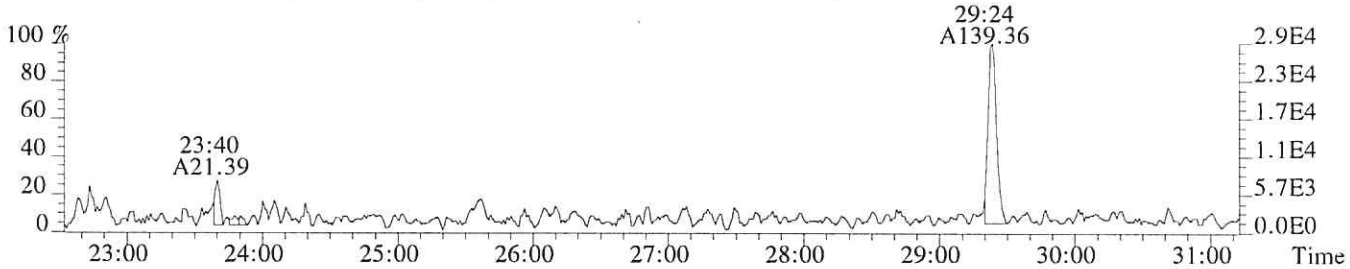


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

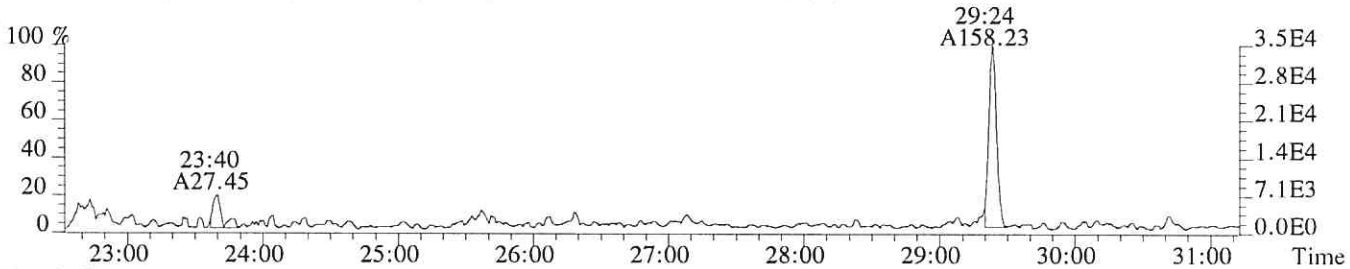


File:P407614 #1-616 Acq: 1-SEP-2017 14:55:03 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS0.5

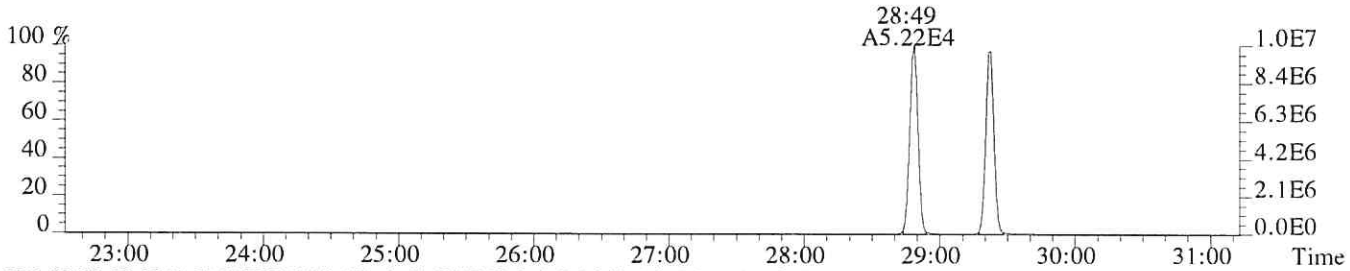
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2692.0,1.00%,F,T)



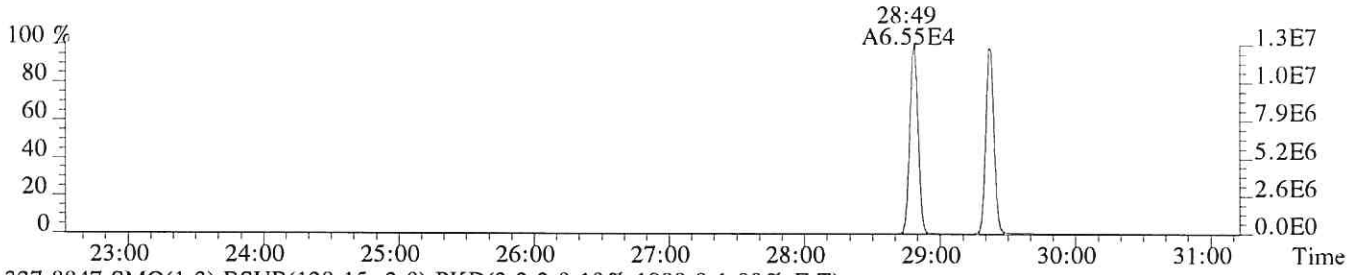
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2076.0,1.00%,F,T)



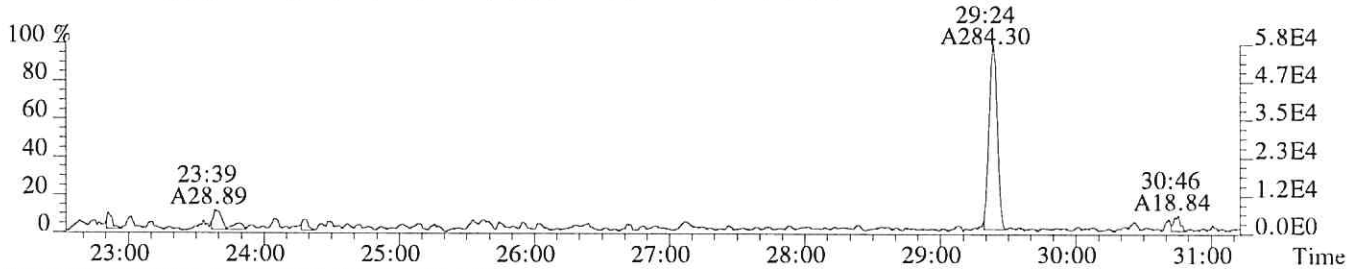
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3952.0,1.00%,F,T)



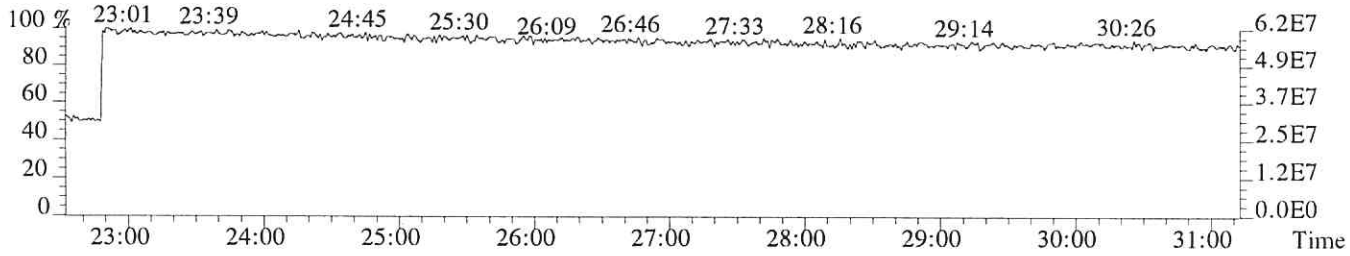
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2640.0,1.00%,F,T)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1988.0,1.00%,F,T)

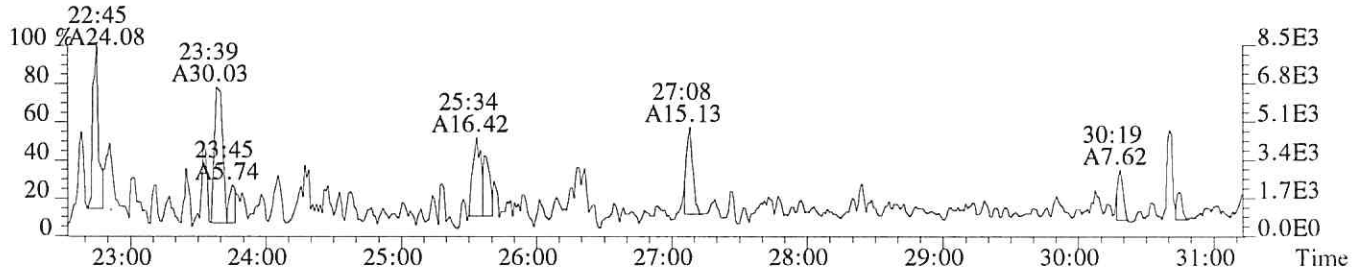


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

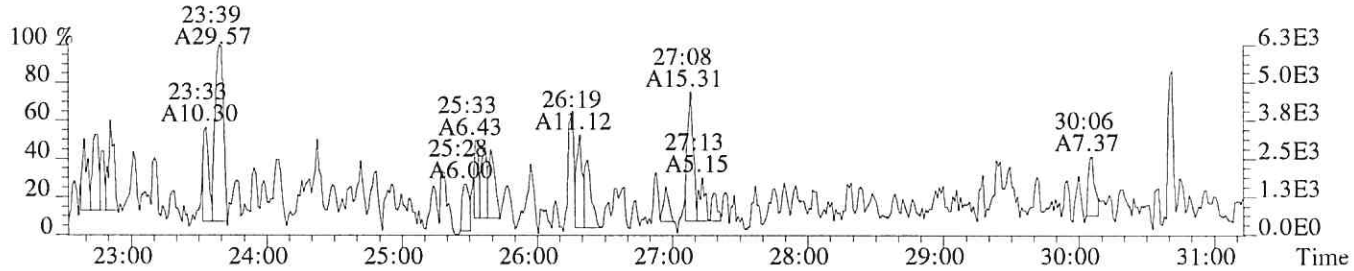


File:P407614 #1-616 Acq: 1-SEP-2017 14:55:03 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS0.5

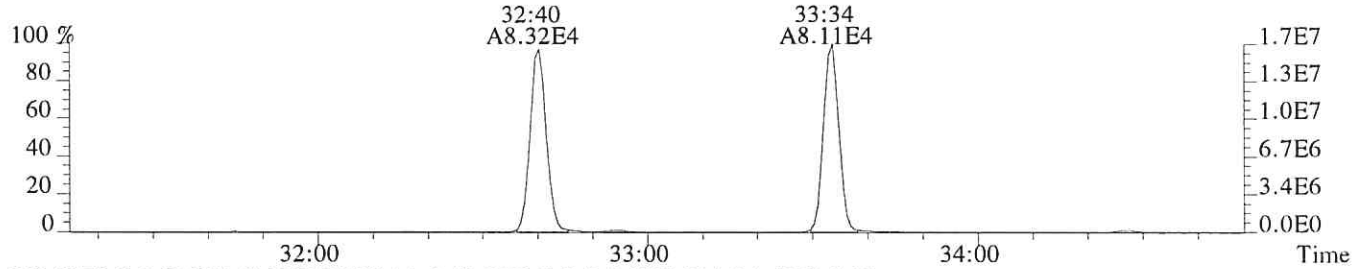
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1516.0,1.00%,F,T)



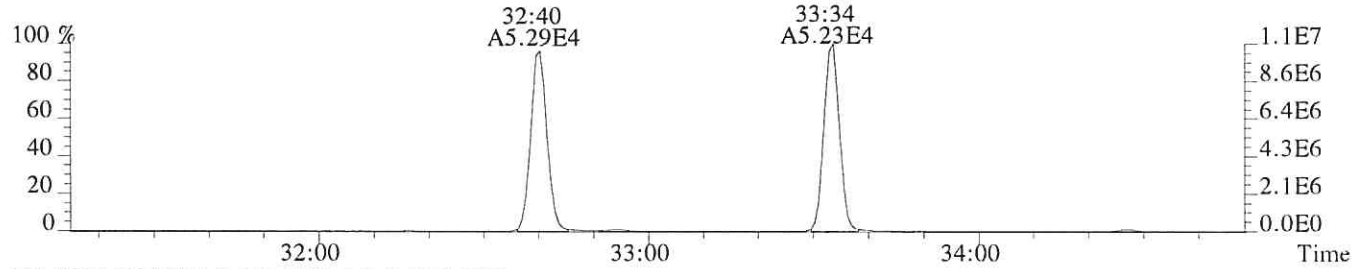
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1264.0,1.00%,F,T)



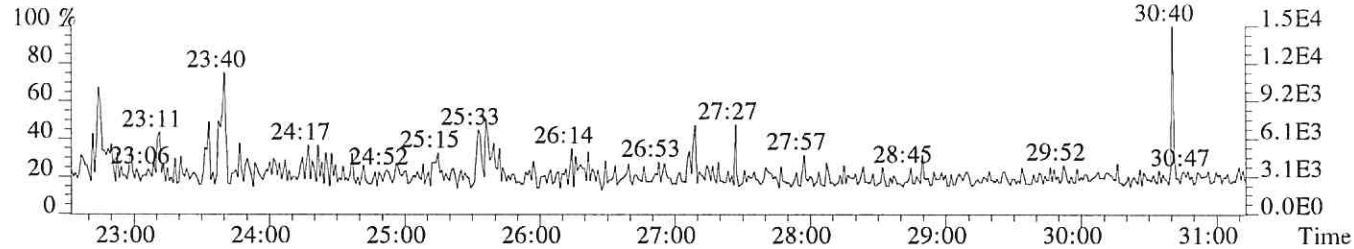
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1064.0,1.00%,F,T)



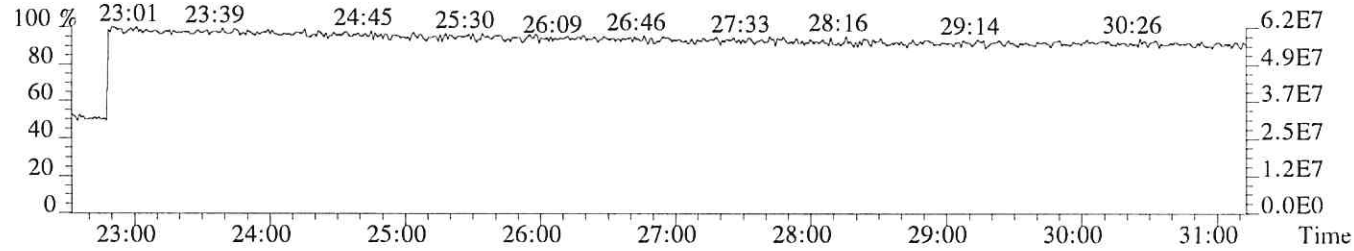
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,984.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

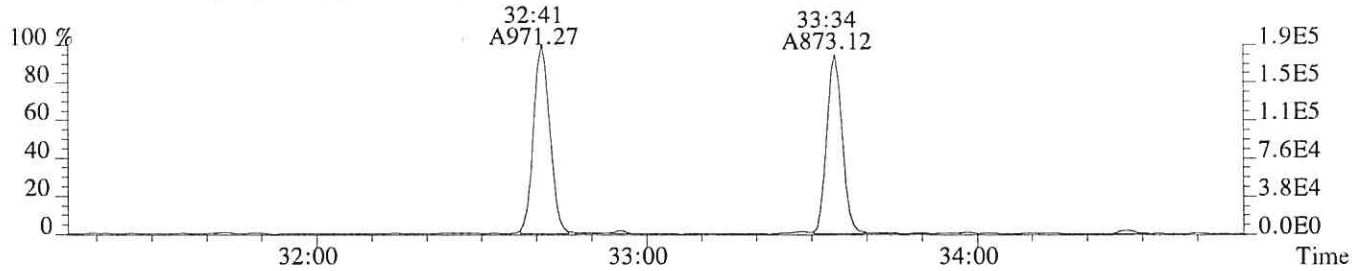


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

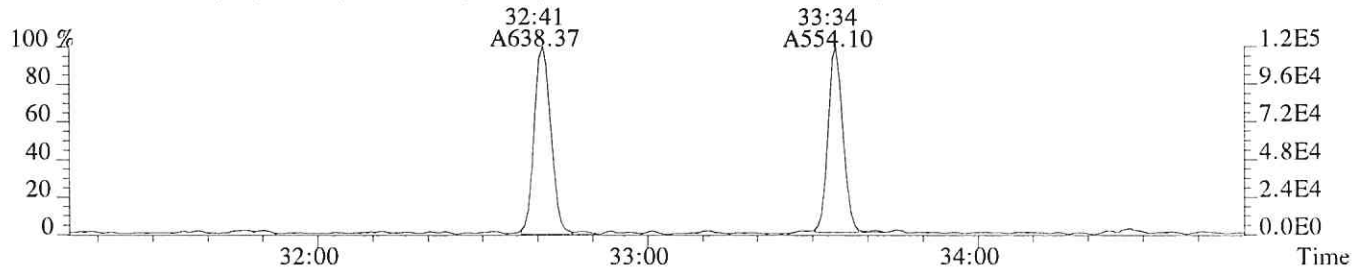


File:P407614 #1-321 Acq: 1-SEP-2017 14:55:03 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS0.5

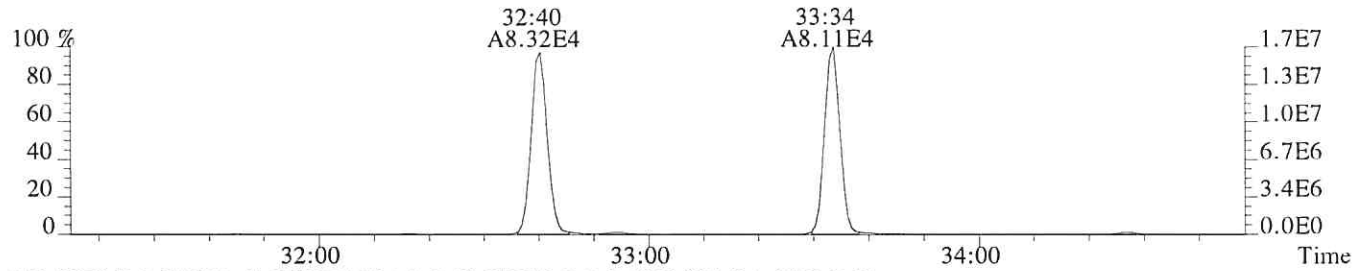
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,912.0,1.00%,F,T)



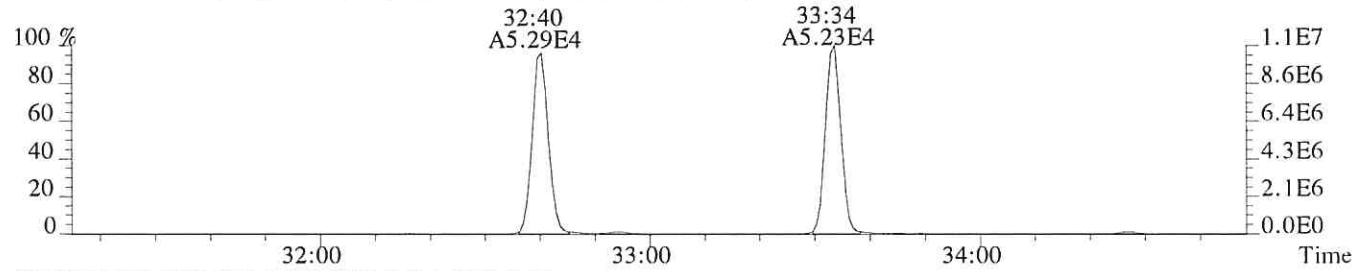
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1588.0,1.00%,F,T)



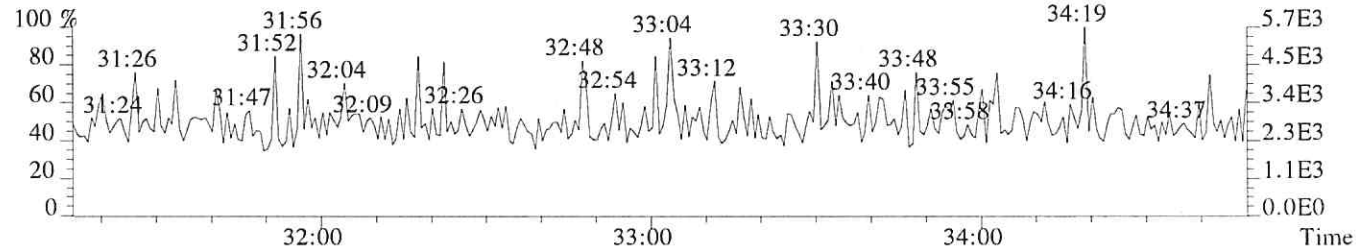
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1064.0,1.00%,F,T)



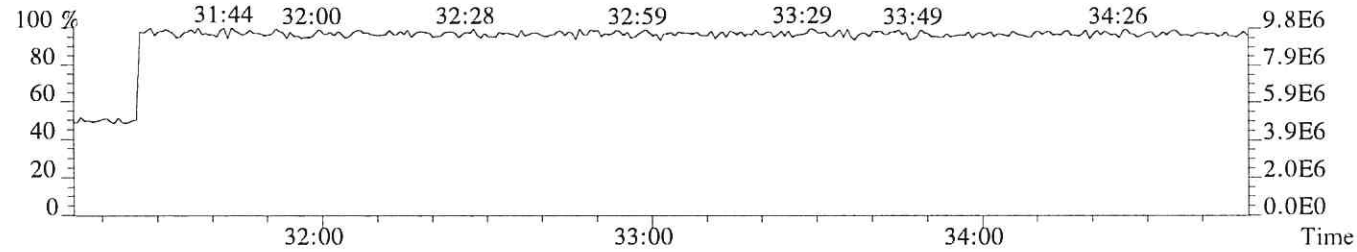
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,984.0,1.00%,F,T)



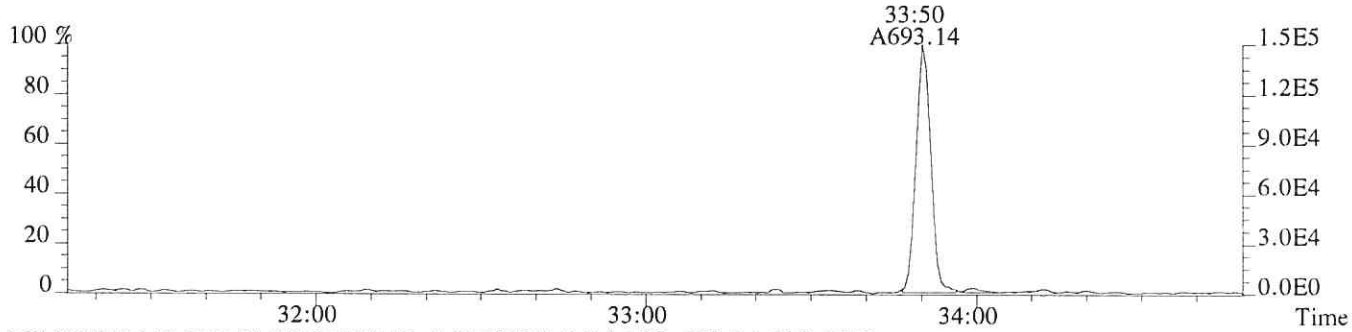
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



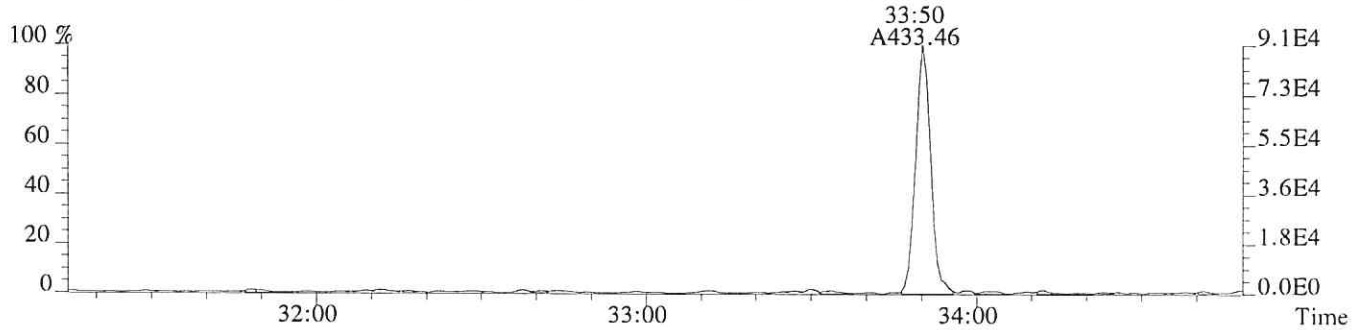
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



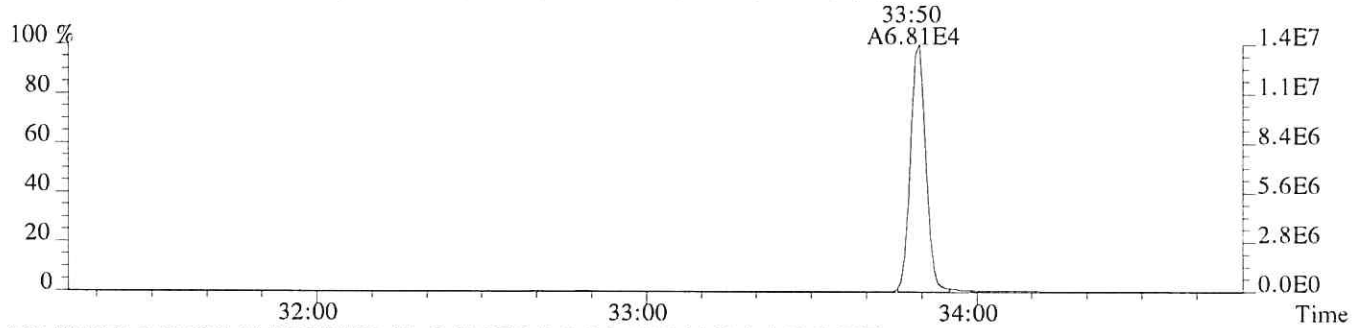
File:P407614 #1-321 Acq: 1-SEP-2017 14:55:03 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS0.5
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1476.0,1.00%,F,T)



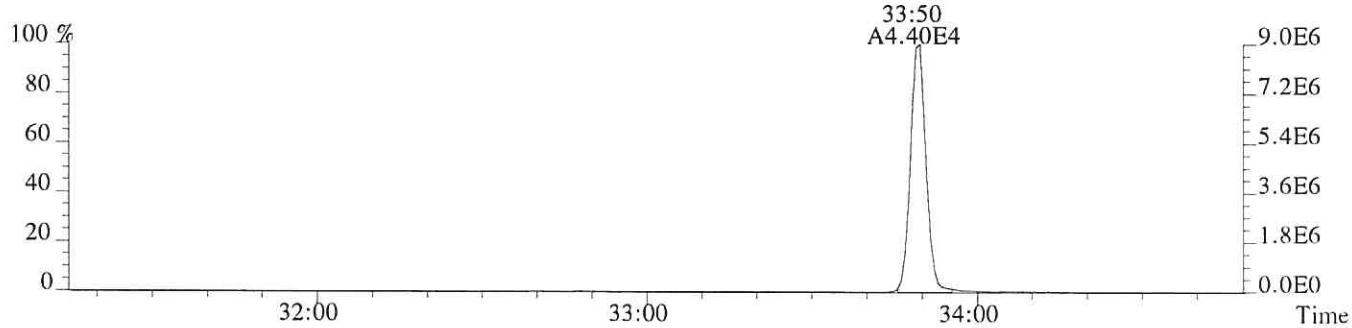
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,500.0,1.00%,F,T)



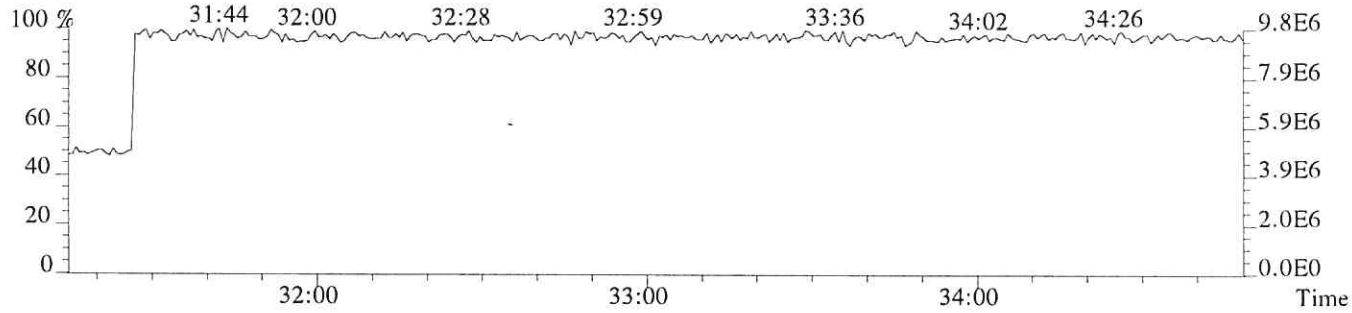
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1624.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1464.0,1.00%,F,T)

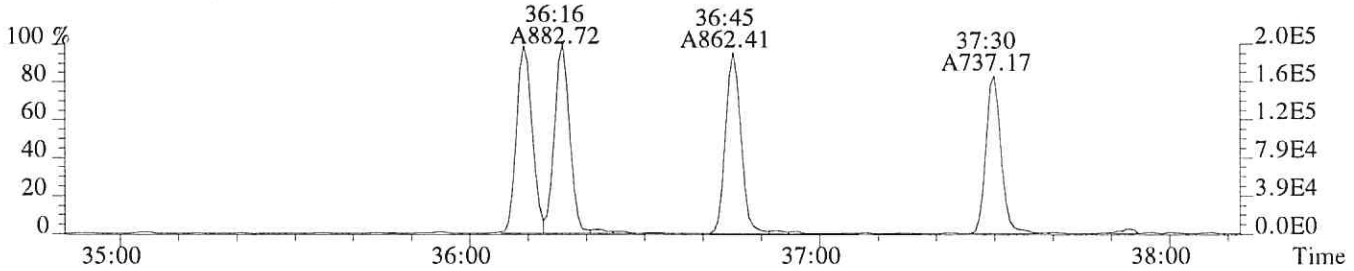


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

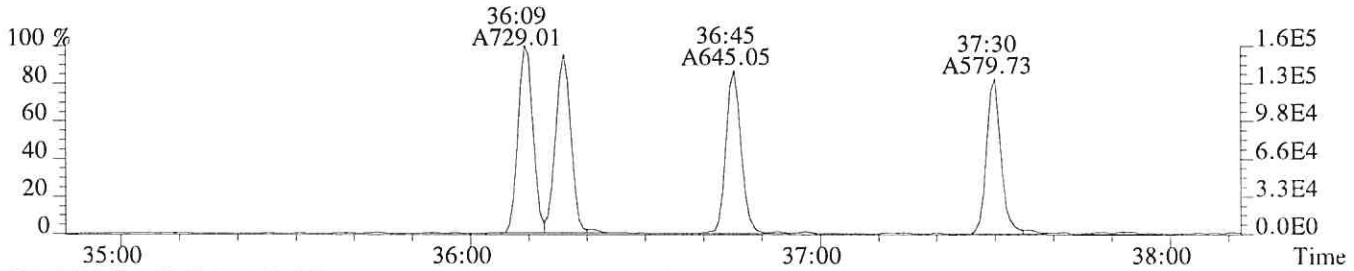


File:P407614 #1-303 Acq: 1-SEP-2017 14:55:03 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS0.5

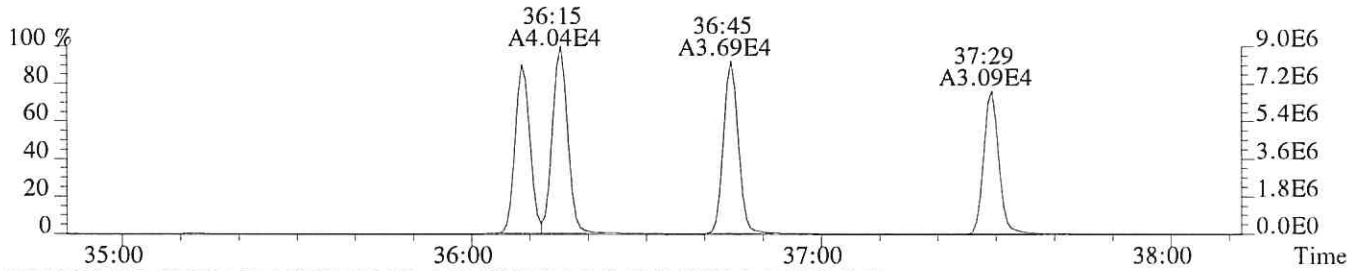
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,960.0,0.40%,F,T)



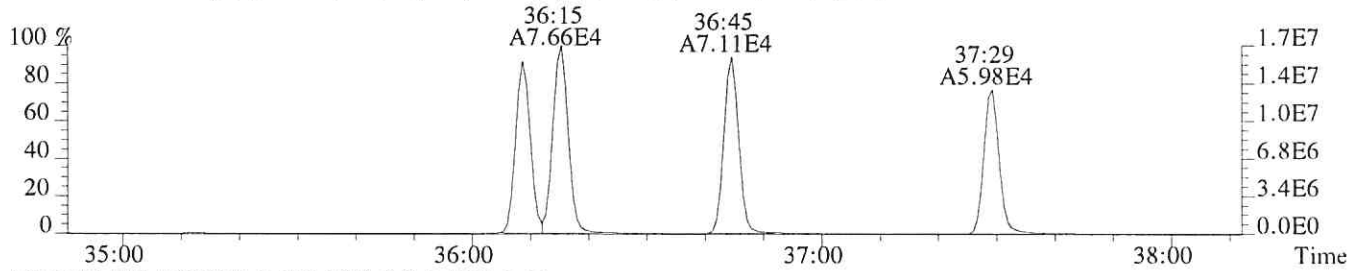
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,940.0,0.40%,F,T)



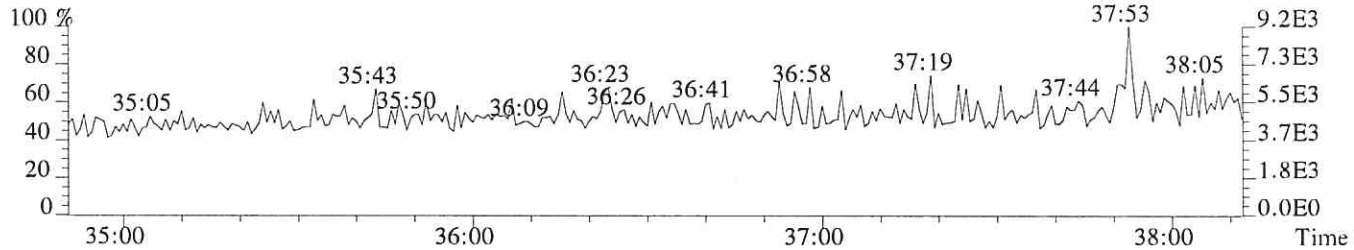
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,908.0,0.40%,F,T)



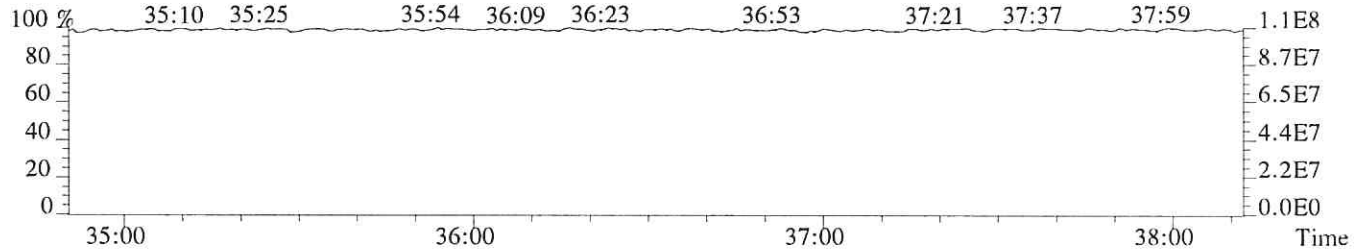
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1260.0,0.40%,F,T)



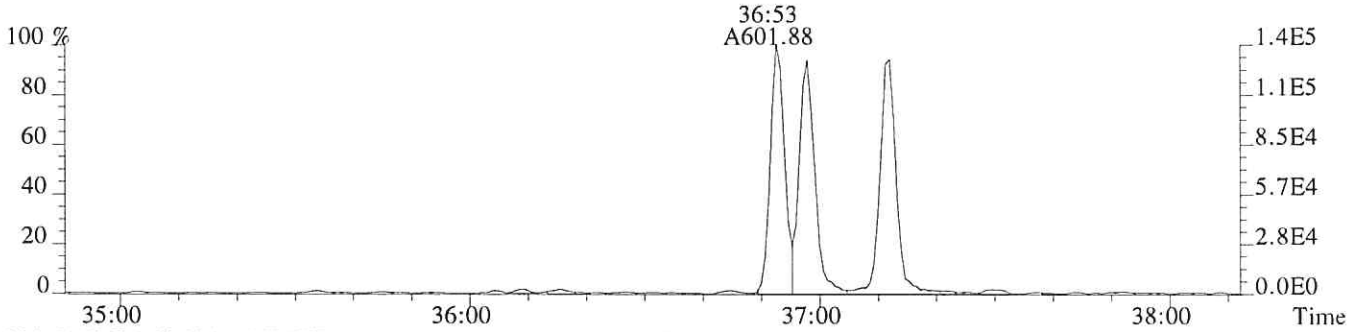
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



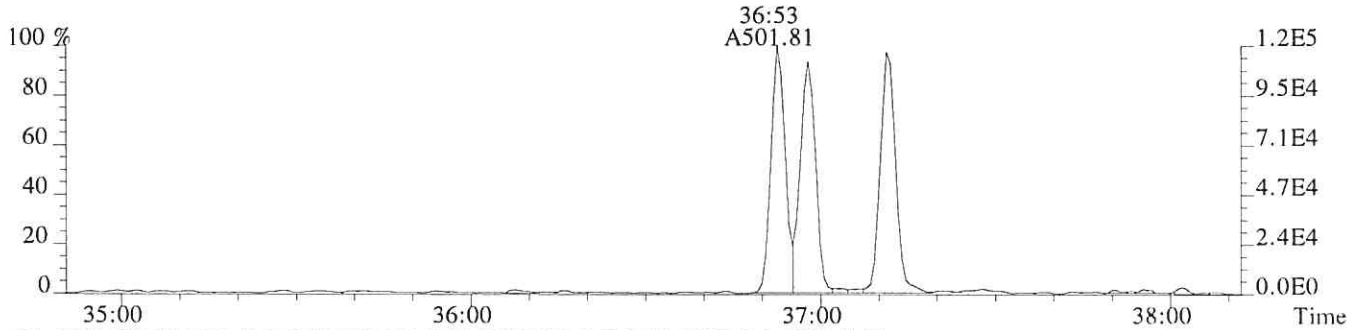
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



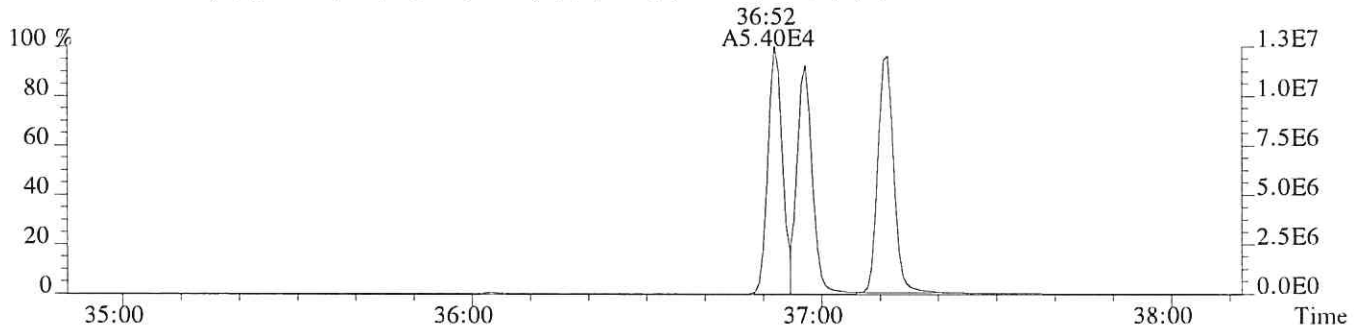
File:P407614 #1-303 Acq: 1-SEP-2017 14:55:03 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS0.5
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,676.0,0.40%,F,T)



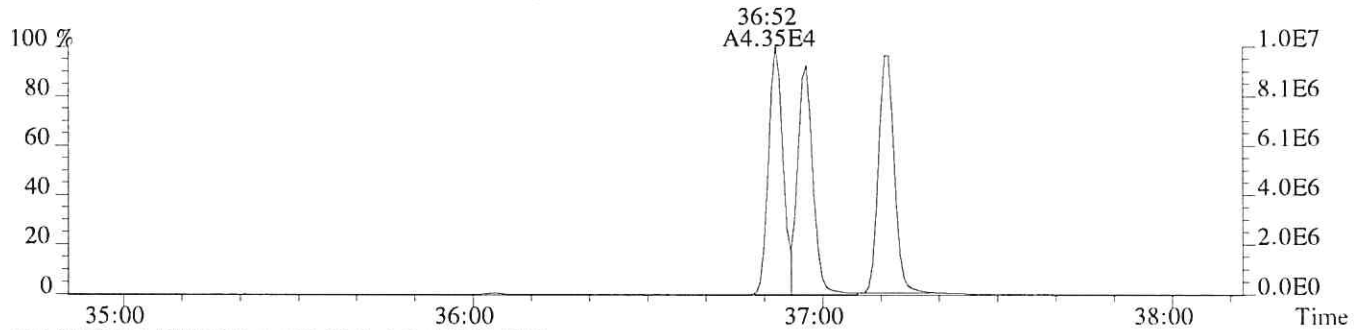
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,876.0,0.40%,F,T)



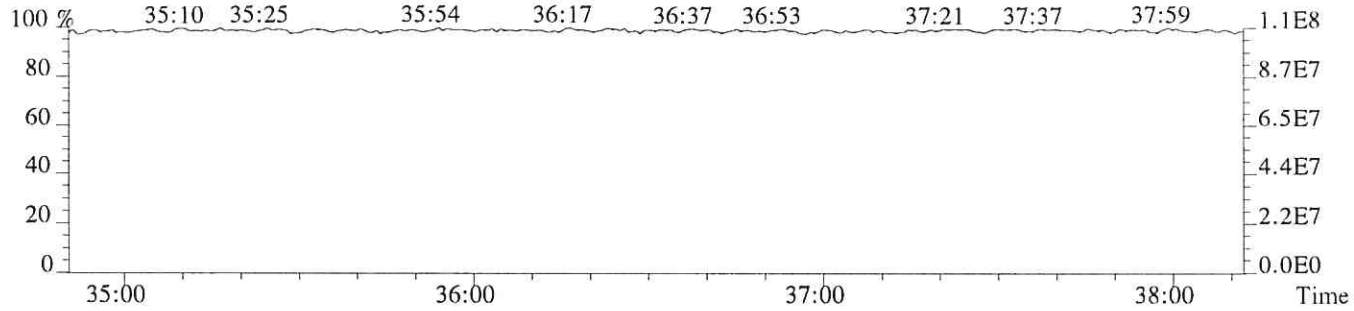
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1600.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,724.0,0.40%,F,T)

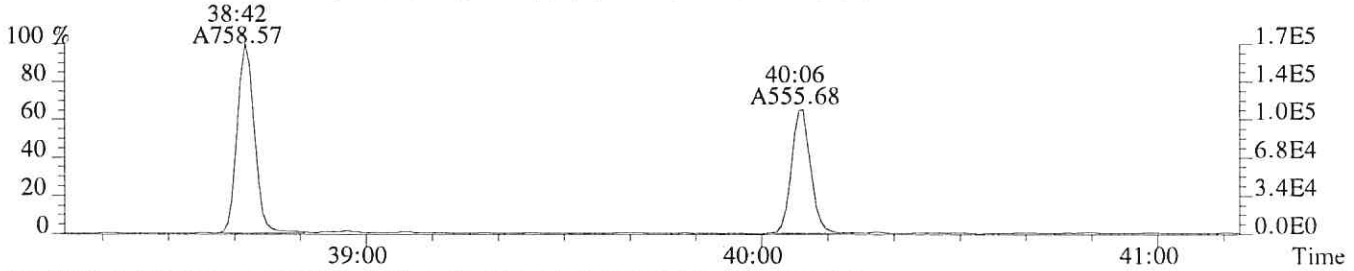


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

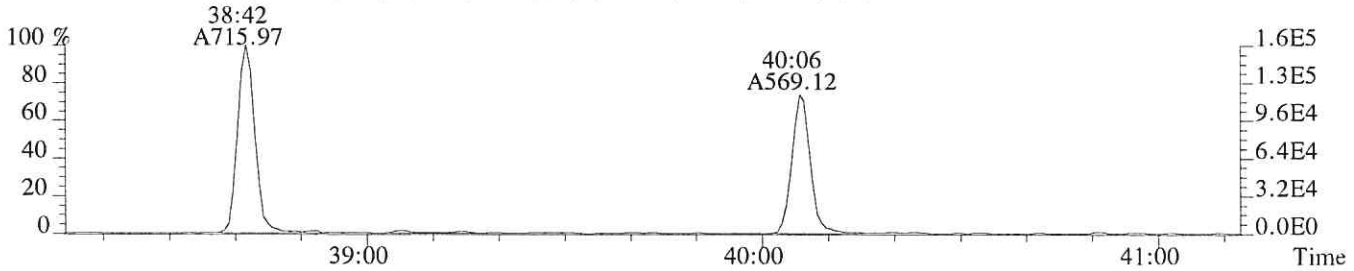


File:P407614 #1-268 Acq: 1-SEP-2017 14:55:03 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS0.5

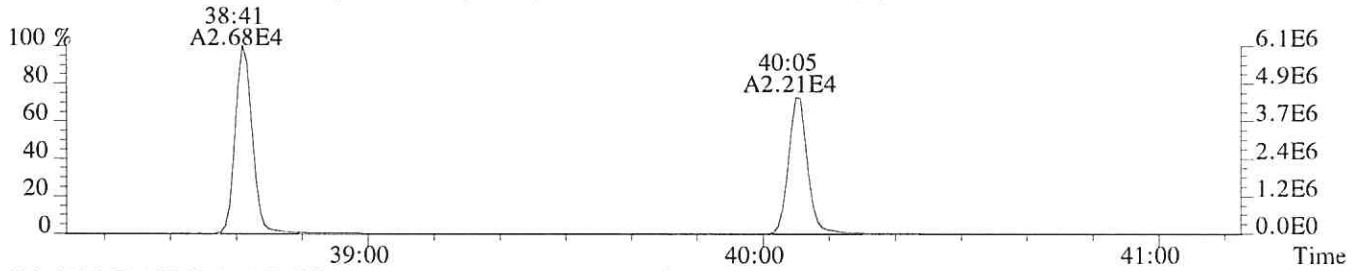
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,840.0,0.50%,F,T)



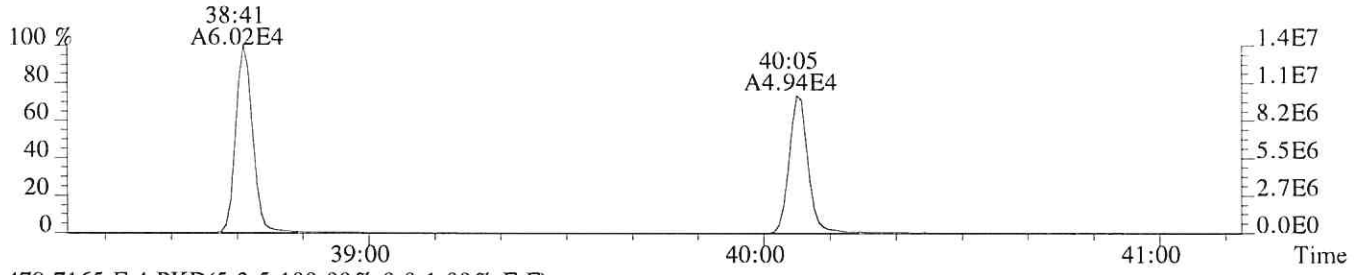
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,852.0,0.50%,F,T)



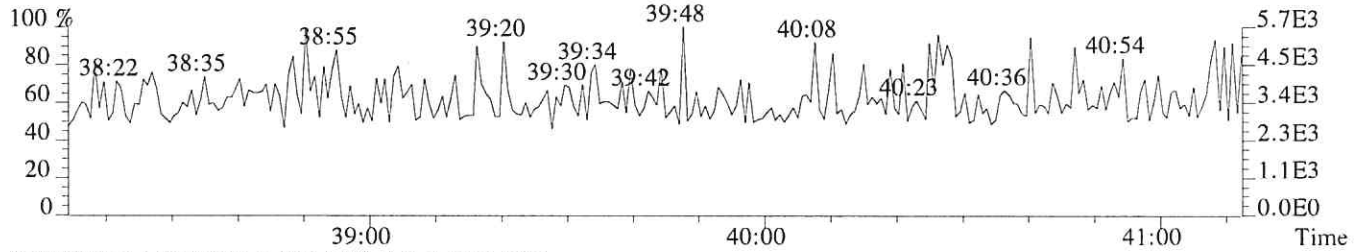
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1388.0,0.50%,F,T)



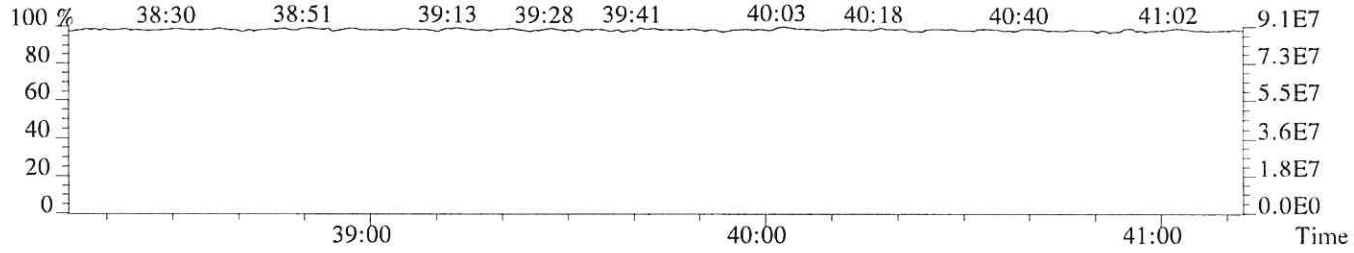
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1076.0,0.50%,F,T)



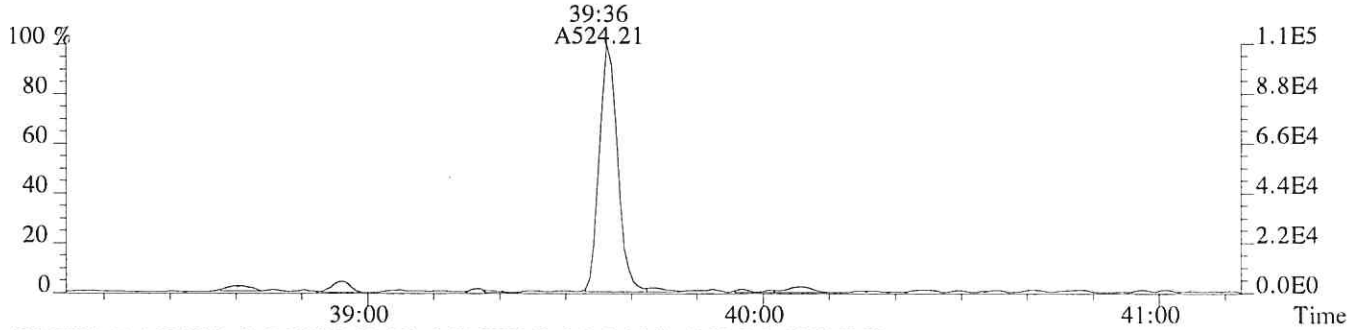
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



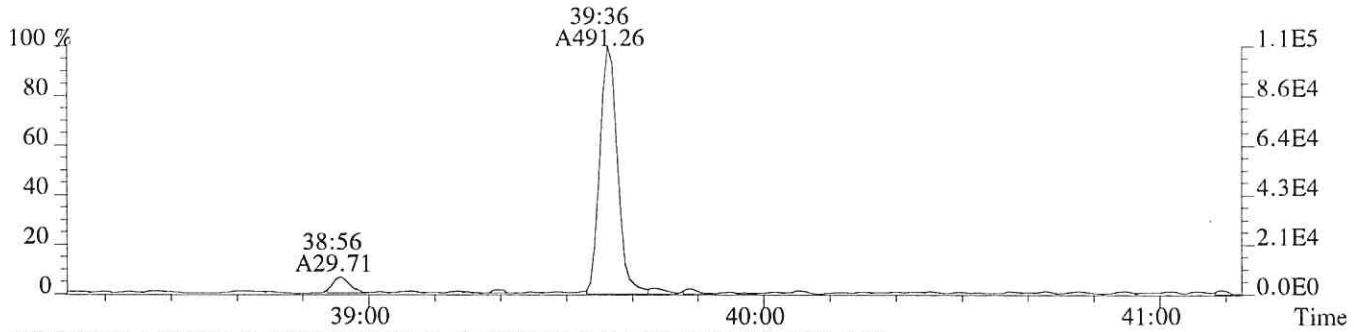
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



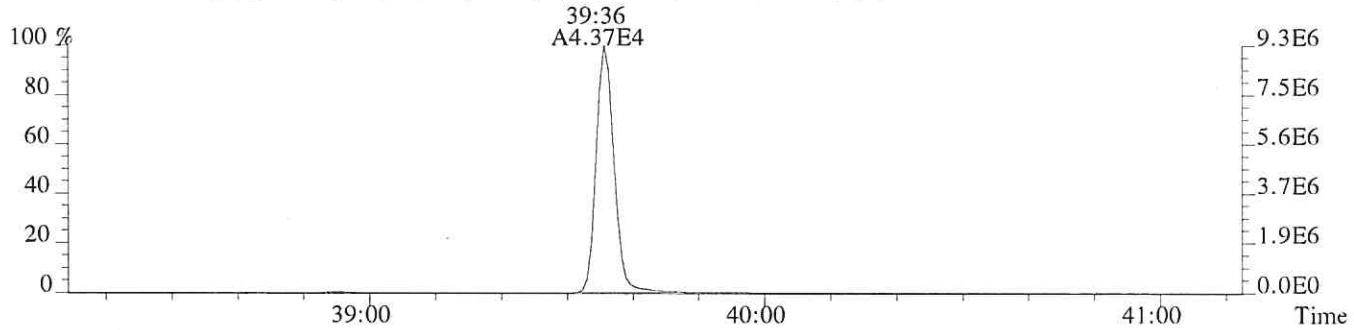
File:P407614 #1-268 Acq: 1-SEP-2017 14:55:03 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS0.5
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,892.0,0.40%,F,T)



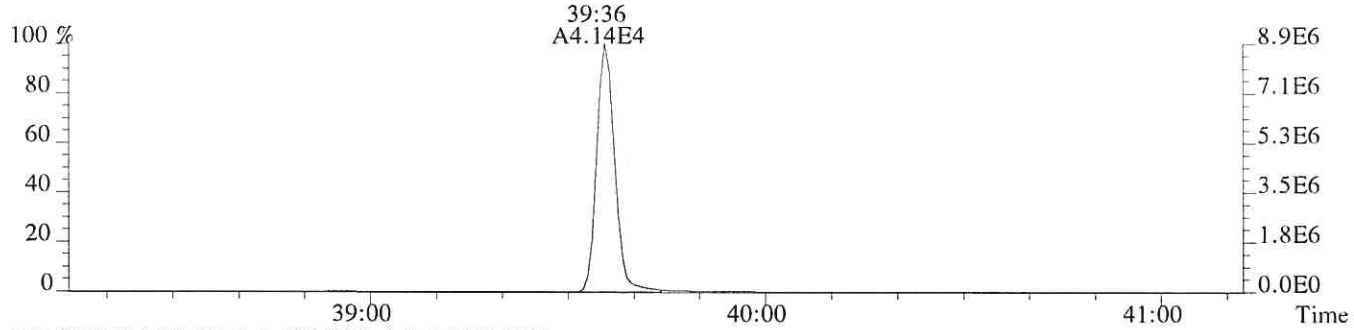
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1108.0,0.40%,F,T)



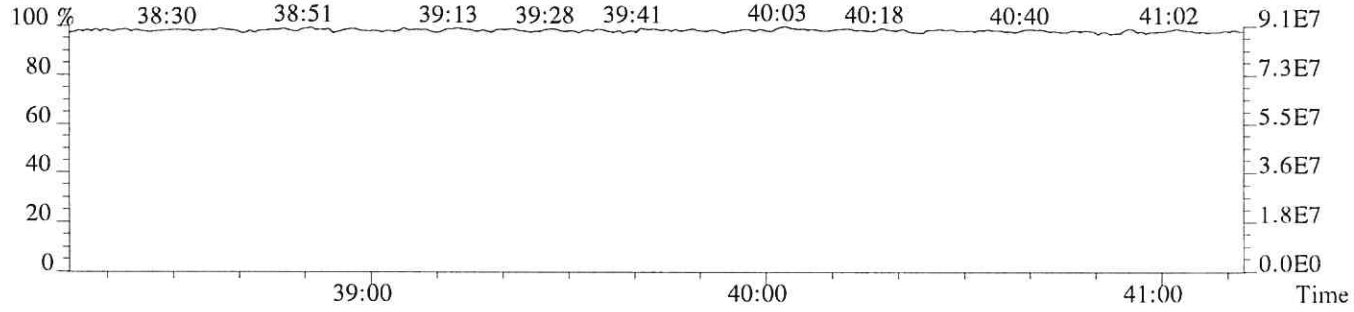
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1196.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,828.0,0.40%,F,T)

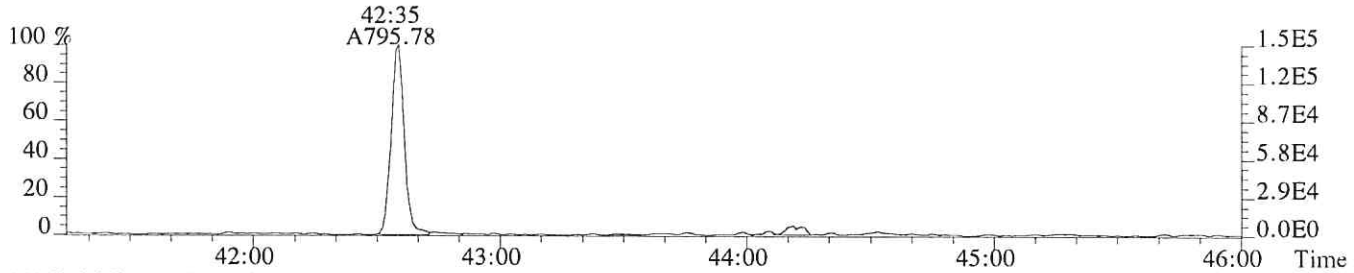


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

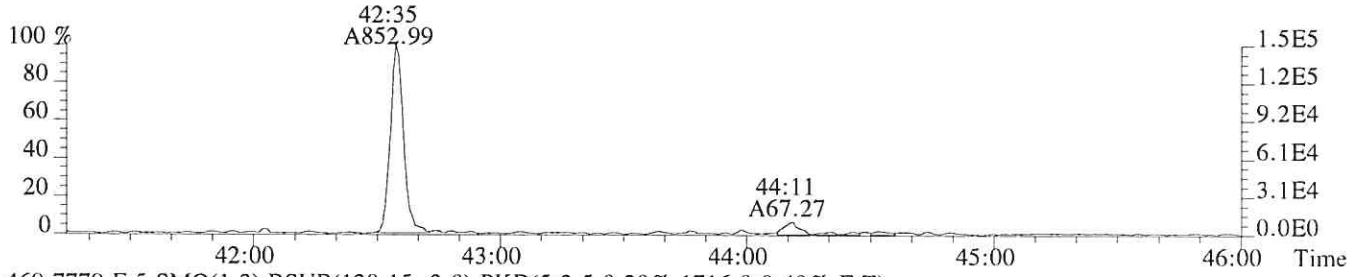


File:P407614 #1-429 Acq: 1-SEP-2017 14:55:03 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS0.5

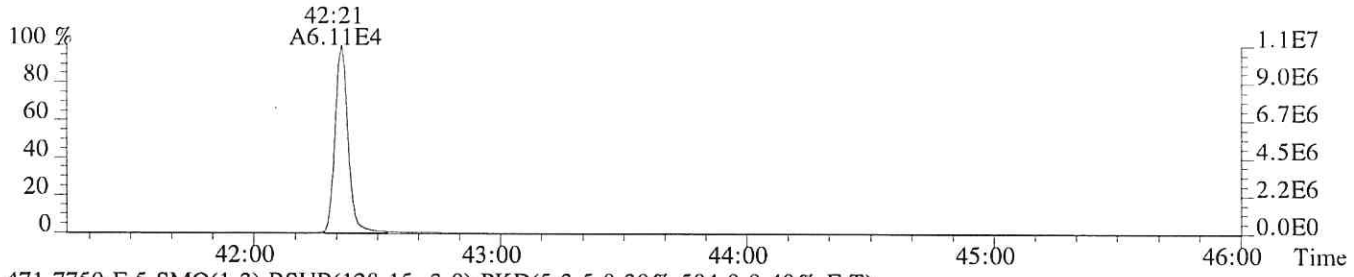
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1132.0,0.40%,F,T)



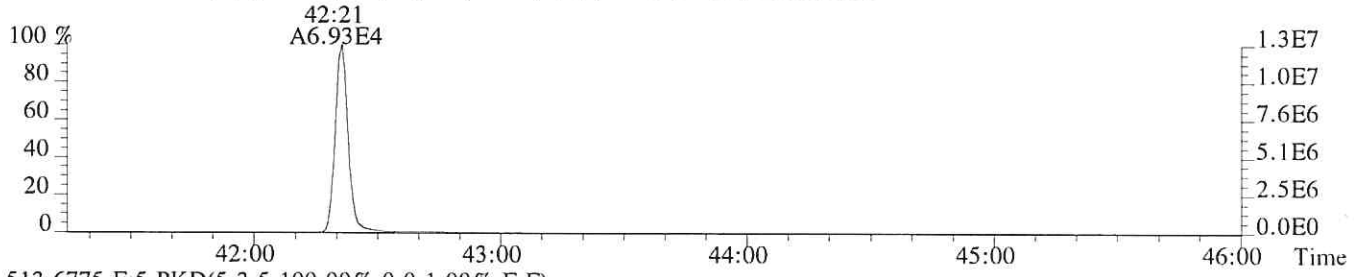
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1288.0,0.40%,F,T)



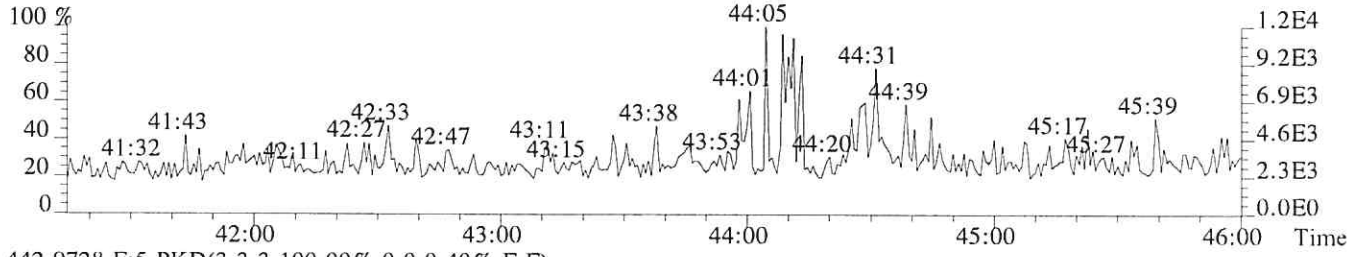
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1716.0,0.40%,F,T)



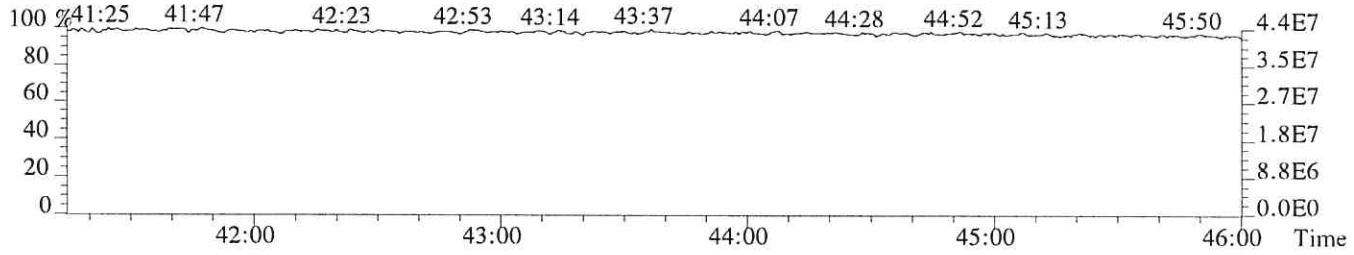
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,584.0,0.40%,F,T)



513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

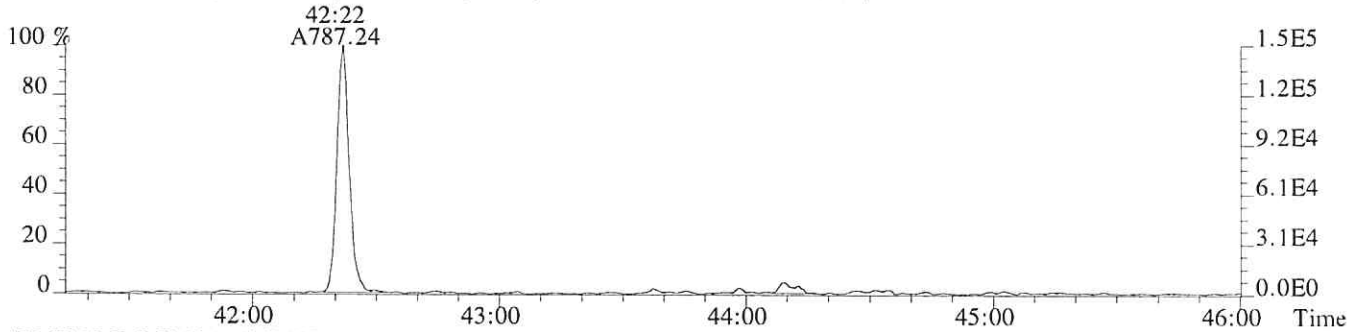


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

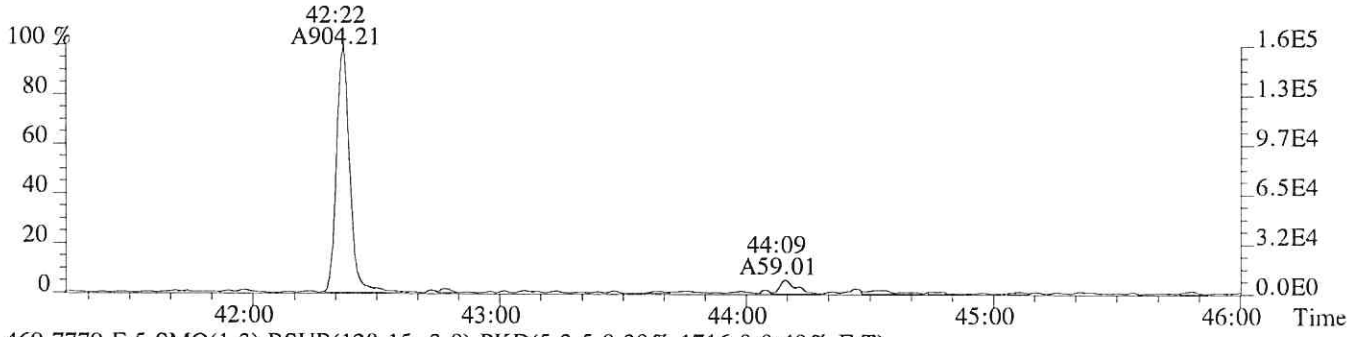


File:P407614 #1-429 Acq: 1-SEP-2017 14:55:03 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS0.5

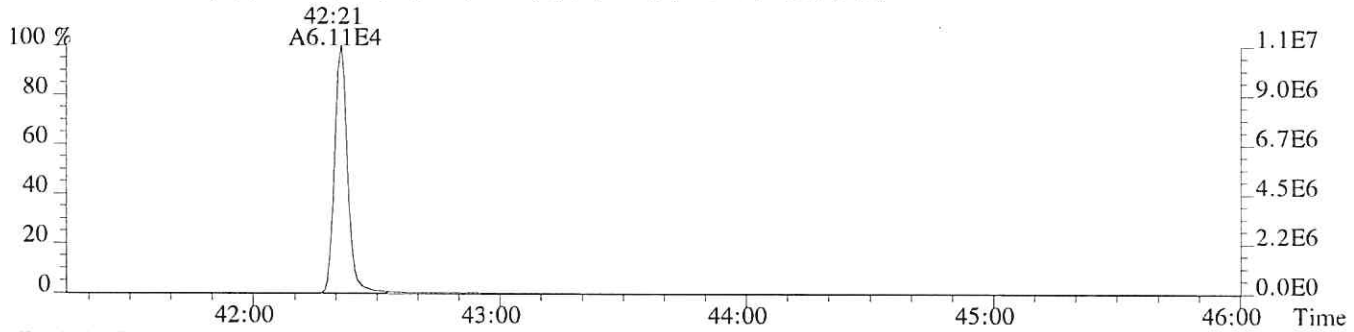
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,984.0,0.40%,F,T)



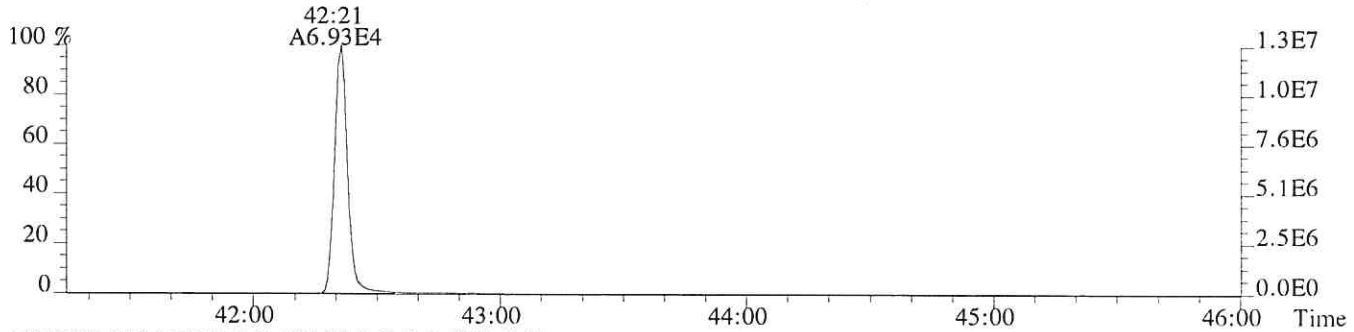
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,872.0,0.40%,F,T)



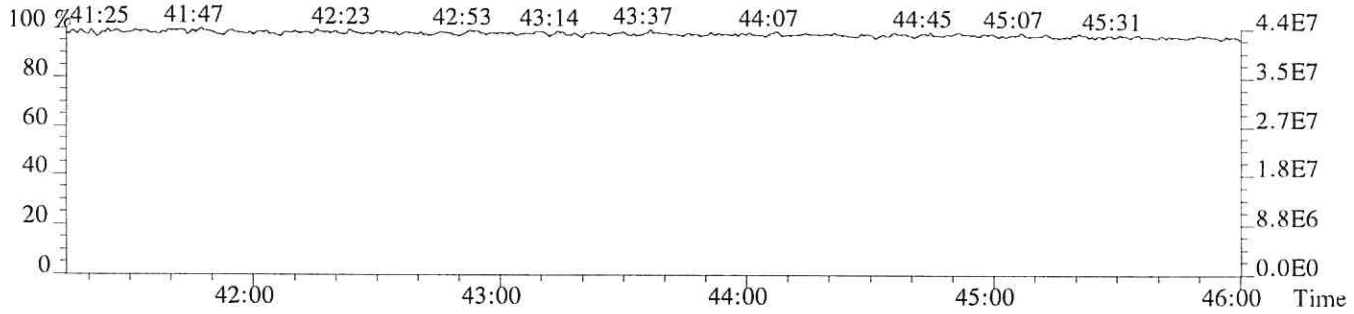
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1716.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,584.0,0.40%,F,T)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
76555

Run #2 Filename p407615 #1 Samp: 1 Inj: 1 Acquired: 1-SEP-17 15:54:29
Processed: 5-SEP-17 09:15:29 LAB. ID: CS1

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	28:39	2.970e+02	3.910e+02	0.76	yes	no	0.885
2	Unk	1,2,3,7,8-PeCDF	32:41	2.339e+03	1.508e+03	1.55	yes	no	0.984
3	Unk	2,3,4,7,8-PeCDF	33:34	2.093e+03	1.387e+03	1.51	yes	no	0.943
4	Unk	1,2,3,4,7,8-HxCDF	36:09	2.092e+03	1.592e+03	1.31	yes	no	1.230
5	Unk	1,2,3,6,7,8-HxCDF	36:16	2.078e+03	1.701e+03	1.22	yes	no	1.148
6	Unk	2,3,4,6,7,8-HxCDF	36:45	1.861e+03	1.483e+03	1.25	yes	no	1.133
7	Unk	1,2,3,7,8,9-HxCDF	37:30	1.633e+03	1.313e+03	1.24	yes	no	1.172
8	Unk	1,2,3,4,6,7,8-HpCDF	38:42	1.714e+03	1.675e+03	1.02	yes	no	1.377
9	Unk	1,2,3,4,7,8,9-HpCDF	40:06	1.275e+03	1.230e+03	1.04	yes	no	1.301
10	Unk	OCDF	42:35	1.922e+03	2.080e+03	0.92	yes	no	1.114
11	Unk	2,3,7,8-TCDD	29:24	2.507e+02	3.663e+02	0.68	yes	no	0.966
12	Unk	1,2,3,7,8-PeCDD	33:50	1.677e+03	1.078e+03	1.56	yes	no	0.851
13	Unk	1,2,3,4,7,8-HxCDD	36:53	1.431e+03	1.174e+03	1.22	yes	no	0.966
14	Unk	1,2,3,6,7,8-HxCDD	36:58	1.435e+03	1.075e+03	1.33	yes	no	0.938
15	Unk	1,2,3,7,8,9-HxCDD	37:11	1.451e+03	1.223e+03	1.19	yes	no	0.980
16	Unk	1,2,3,4,6,7,8-HpCDD	39:36	1.158e+03	1.162e+03	1.00	yes	no	0.975
17	Unk	OCDD	42:22	1.750e+03	1.940e+03	0.90	yes	no	1.033
18	IS	13C-2,3,7,8-TCDF	28:38	6.767e+04	8.731e+04	0.78	yes	no	1.176
19	IS	13C-1,2,3,7,8-PeCDF	32:40	9.349e+04	6.014e+04	1.55	yes	no	1.185
20	IS	13C-2,3,4,7,8-PeCDF	33:34	9.031e+04	5.763e+04	1.57	yes	no	1.149
21	IS	13C-1,2,3,4,7,8-HxCDF	36:09	4.065e+04	7.875e+04	0.52	yes	no	1.068
22	IS	13C-1,2,3,6,7,8-HxCDF	36:15	4.492e+04	8.574e+04	0.52	yes	no	1.171
23	IS	13C-2,3,4,6,7,8-HxCDF	36:45	4.089e+04	7.820e+04	0.52	yes	no	1.079
24	IS	13C-1,2,3,7,8,9-HxCDF	37:29	3.379e+04	6.529e+04	0.52	yes	no	0.919
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:41	2.977e+04	6.623e+04	0.45	yes	no	0.877
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:05	2.334e+04	5.250e+04	0.44	yes	no	0.723
27	IS	13C-2,3,7,8-TCDD	29:23	5.529e+04	6.970e+04	0.79	yes	no	0.958
28	IS	13C-1,2,3,7,8-PeCDD	33:50	7.643e+04	4.888e+04	1.56	yes	no	0.973
29	IS	13C-1,2,3,4,7,8-HxCDD	36:52	5.955e+04	4.783e+04	1.25	yes	no	0.966
30	IS	13C-1,2,3,6,7,8-HxCDD	36:57	5.859e+04	4.701e+04	1.25	yes	no	0.968
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:36	4.728e+04	4.520e+04	1.05	yes	no	0.854
32	IS	13C-OCDD	42:21	6.670e+04	7.510e+04	0.89	yes	no	0.668
33	RS/RT	13C-1,2,3,4-TCDD	28:49	5.855e+04	7.327e+04	0.80	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:11	6.022e+04	4.892e+04	1.23	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:24	6.491e+02				no	0.992

ALS ENVIRONMENTAL
10450 Stancliff Road
Houston, TX 77099
Office(281)530-5656. Fax(281)530-5887

ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
76555

Run #2 Filename p407615 Samp: 1 Inj: 1 Acquired: 1-SEP-17 15:54:29
Processed: 5-SEP-17 09:15:291 LAB. ID: CS1

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	5.75e+04	9.60e+02	6.0e+01	7.59e+04	1.64e+03	4.6e+01
2	1,2,3,7,8-PeCDF	4.66e+05	1.09e+03	4.3e+02	2.98e+05	1.18e+03	2.5e+02
3	2,3,4,7,8-PeCDF	4.39e+05	1.09e+03	4.0e+02	2.88e+05	1.18e+03	2.4e+02
4	1,2,3,4,7,8-HxCDF	4.69e+05	1.29e+03	3.6e+02	3.58e+05	9.64e+02	3.7e+02
5	1,2,3,6,7,8-HxCDF	4.61e+05	1.29e+03	3.6e+02	3.66e+05	9.64e+02	3.8e+02
6	2,3,4,6,7,8-HxCDF	4.10e+05	1.29e+03	3.2e+02	3.38e+05	9.64e+02	3.5e+02
7	1,2,3,7,8,9-HxCDF	3.50e+05	1.29e+03	2.7e+02	2.93e+05	9.64e+02	3.0e+02
8	1,2,3,4,6,7,8-HpCDF	3.94e+05	8.76e+02	4.5e+02	3.84e+05	9.12e+02	4.2e+02
9	1,2,3,4,7,8,9-HpCDF	2.69e+05	8.76e+02	3.1e+02	2.69e+05	9.12e+02	3.0e+02
10	OCDF	3.36e+05	1.03e+03	3.3e+02	3.89e+05	1.20e+03	3.2e+02
11	2,3,7,8-TCDD	4.99e+04	2.16e+03	2.3e+01	7.15e+04	1.11e+03	6.5e+01
12	1,2,3,7,8-PeCDD	3.51e+05	1.04e+03	3.4e+02	2.27e+05	6.48e+02	3.5e+02
13	1,2,3,4,7,8-HxCDD	3.40e+05	4.60e+02	7.4e+02	2.76e+05	1.14e+03	2.4e+02
14	1,2,3,6,7,8-HxCDD	3.16e+05	4.60e+02	6.9e+02	2.45e+05	1.14e+03	2.1e+02
15	1,2,3,7,8,9-HxCDD	3.16e+05	4.60e+02	6.9e+02	2.68e+05	1.14e+03	2.3e+02
16	1,2,3,4,6,7,8-HpCDD	2.44e+05	9.32e+02	2.6e+02	2.57e+05	1.17e+03	2.2e+02
17	OCDD	3.41e+05	5.56e+02	6.1e+02	3.64e+05	9.32e+02	3.9e+02
18	13C-2,3,7,8-TCDF	1.33e+07	1.03e+04	1.3e+03	1.71e+07	5.75e+03	3.0e+03
19	13C-1,2,3,7,8-PeCDF	1.88e+07	5.08e+02	3.7e+04	1.20e+07	8.56e+02	1.4e+04
20	13C-2,3,4,7,8-PeCDF	1.88e+07	5.08e+02	3.7e+04	1.20e+07	8.56e+02	1.4e+04
21	13C-1,2,3,4,7,8-HxCDF	9.24e+06	1.27e+03	7.3e+03	1.80e+07	1.27e+03	1.4e+04
22	13C-1,2,3,6,7,8-HxCDF	9.97e+06	1.27e+03	7.8e+03	1.90e+07	1.27e+03	1.5e+04
23	13C-2,3,4,6,7,8-HxCDF	9.36e+06	1.27e+03	7.4e+03	1.78e+07	1.27e+03	1.4e+04
24	13C-1,2,3,7,8,9-HxCDF	7.50e+06	1.27e+03	5.9e+03	1.44e+07	1.27e+03	1.1e+04
25	13C-1,2,3,4,6,7,8-HpCDF	6.74e+06	2.52e+03	2.7e+03	1.50e+07	3.15e+03	4.8e+03
26	13C-1,2,3,4,7,8,9-HpCDF	4.94e+06	2.52e+03	2.0e+03	1.11e+07	3.15e+03	3.5e+03
27	13C-2,3,7,8-TCDD	1.14e+07	4.66e+03	2.4e+03	1.43e+07	2.06e+03	6.9e+03
28	13C-1,2,3,7,8-PeCDD	1.61e+07	1.17e+03	1.4e+04	1.01e+07	1.75e+03	5.8e+03
29	13C-1,2,3,4,7,8-HxCDD	1.40e+07	1.35e+03	1.0e+04	1.12e+07	9.48e+02	1.2e+04
30	13C-1,2,3,6,7,8-HxCDD	1.30e+07	1.35e+03	9.6e+03	1.04e+07	9.48e+02	1.1e+04
31	13C-1,2,3,4,6,7,8-HpCDD	1.03e+07	7.48e+02	1.4e+04	9.78e+06	1.02e+03	9.6e+03
32	13C-OCDD	1.24e+07	8.04e+02	1.5e+04	1.39e+07	8.96e+02	1.6e+04
33	13C-1,2,3,4-TCDD	1.15e+07	4.66e+03	2.5e+03	1.45e+07	2.06e+03	7.0e+03
34	13C-1,2,3,7,8,9-HxCDD	1.32e+07	1.35e+03	9.8e+03	1.08e+07	9.48e+02	1.1e+04
35	37Cl-2,3,7,8-TCDD	1.36e+05	1.30e+03	1.0e+02			

ALS ENVIRONMENTAL
10450 Stancliff Road
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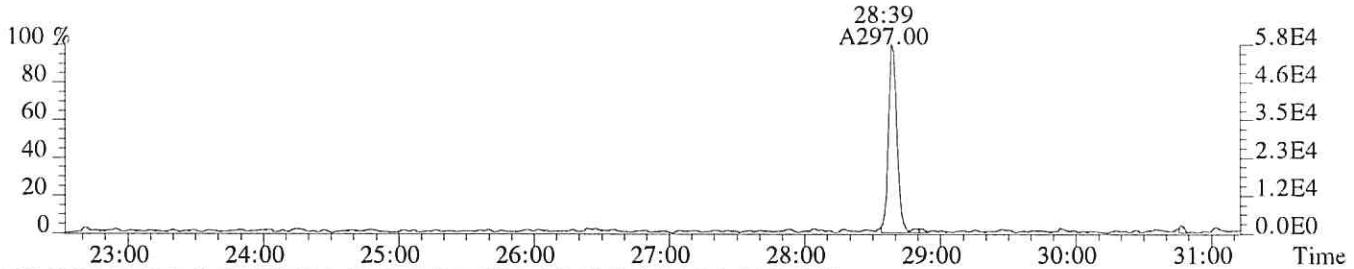
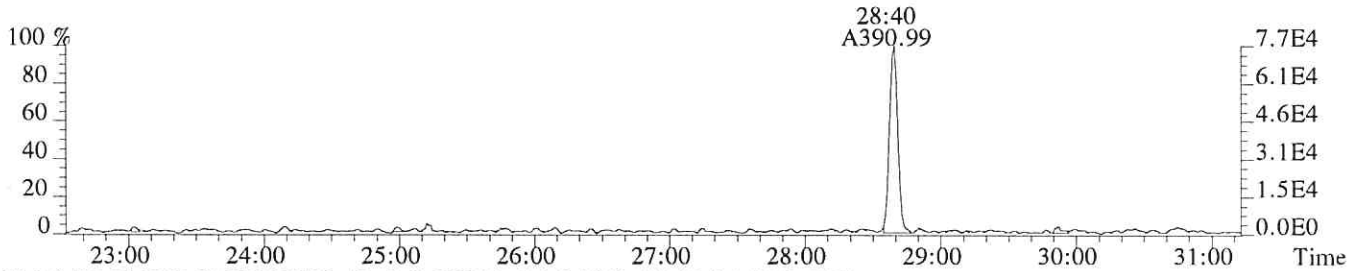
Office:(281)-530-5656. Fax:(281)530-5887

File:P407615 #1-616 Acq: 1-SEP-2017 15:54:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS1

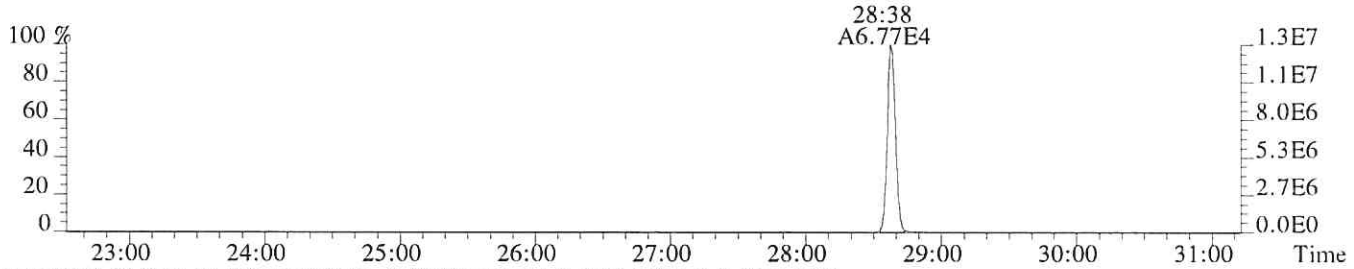
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,960.0,1.00%,F,T)



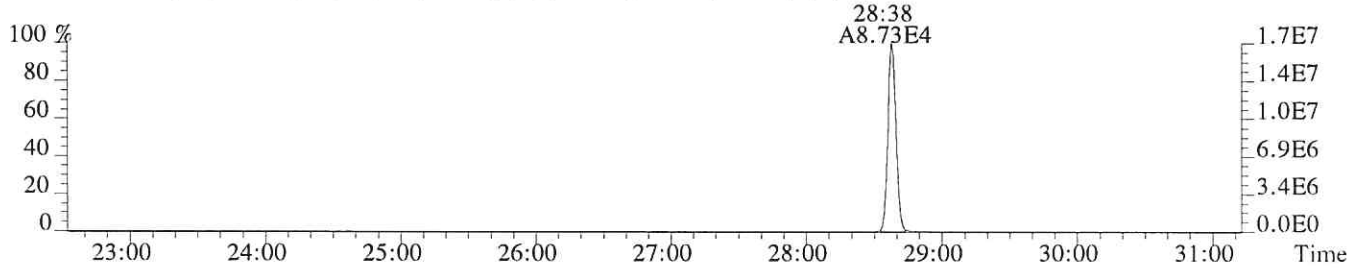
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1644.0,1.00%,F,T)



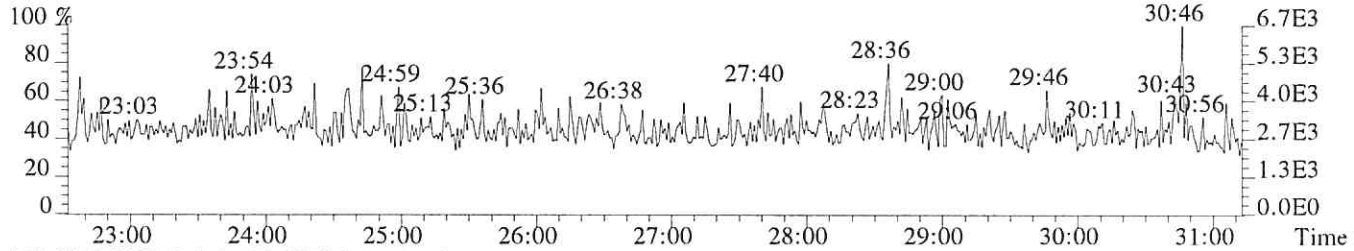
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,10312.0,1.00%,F,T)



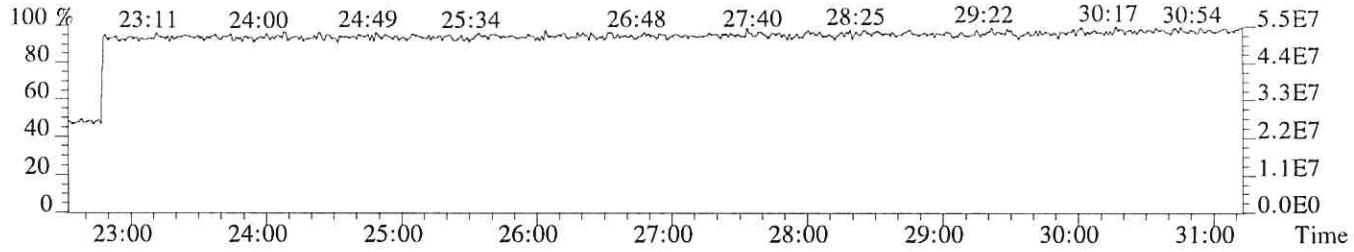
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5748.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

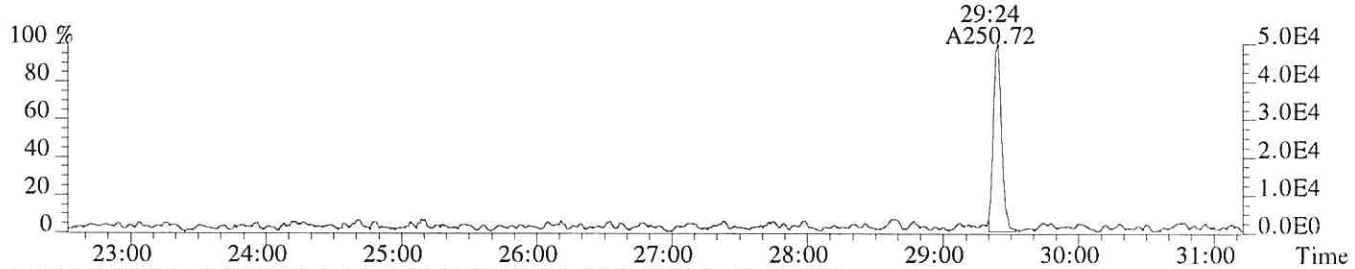


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

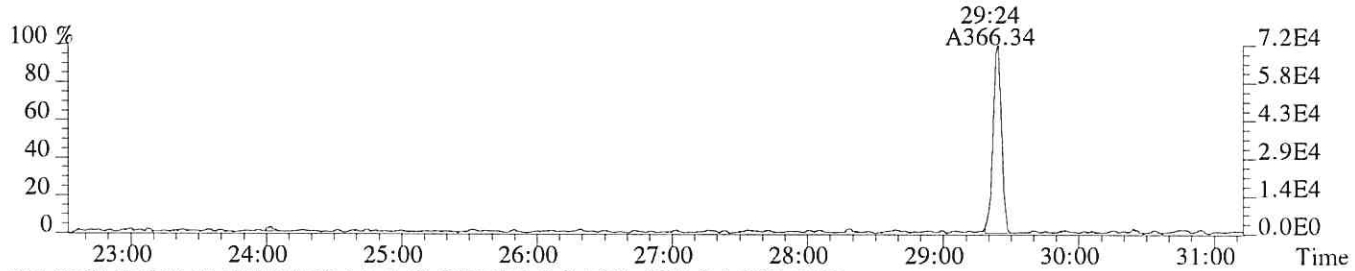


File:P407615 #1-616 Acq: 1-SEP-2017 15:54:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS1

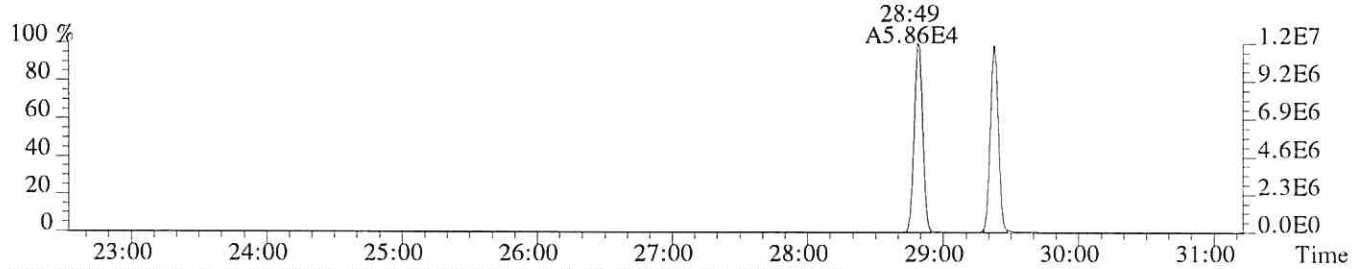
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2164.0,1.00%,F,T)



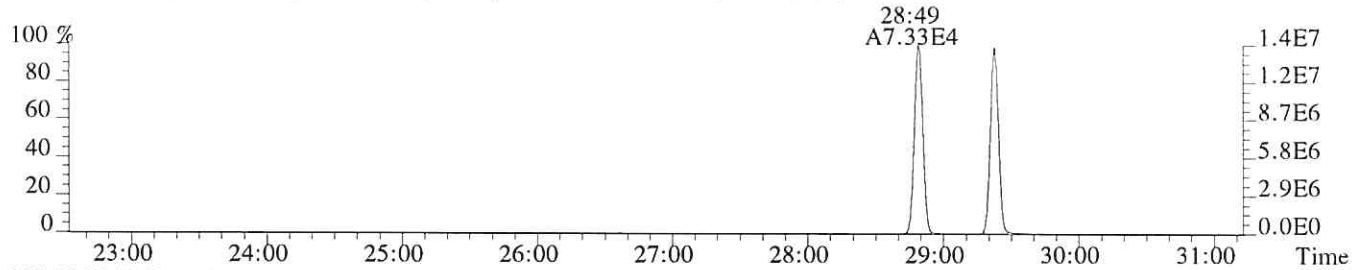
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1108.0,1.00%,F,T)



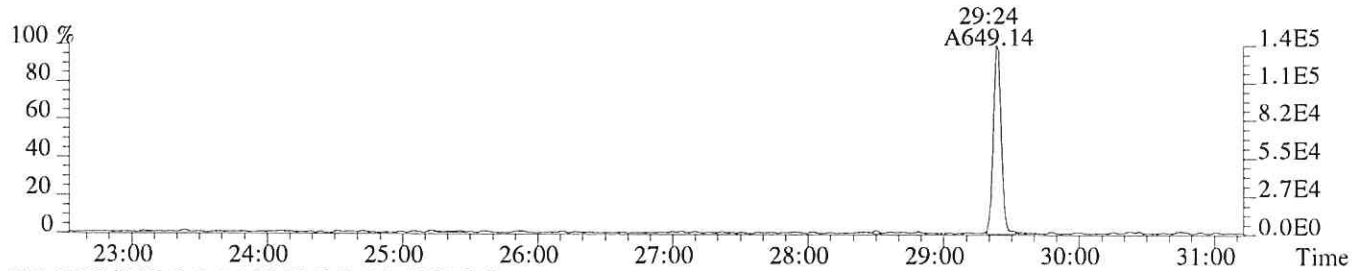
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4660.0,1.00%,F,T)



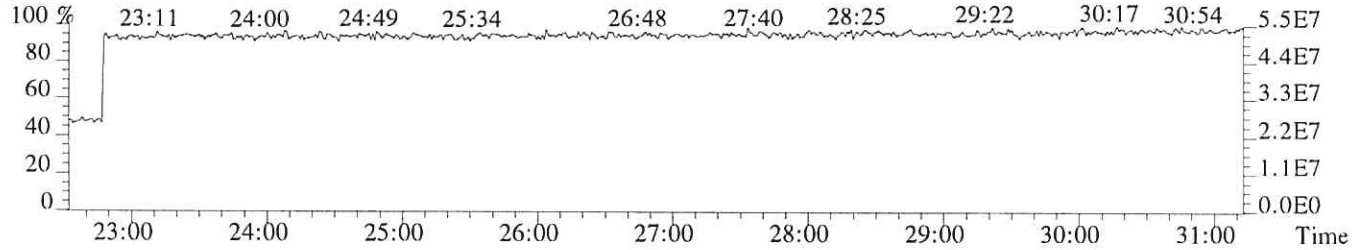
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2064.0,1.00%,F,T)



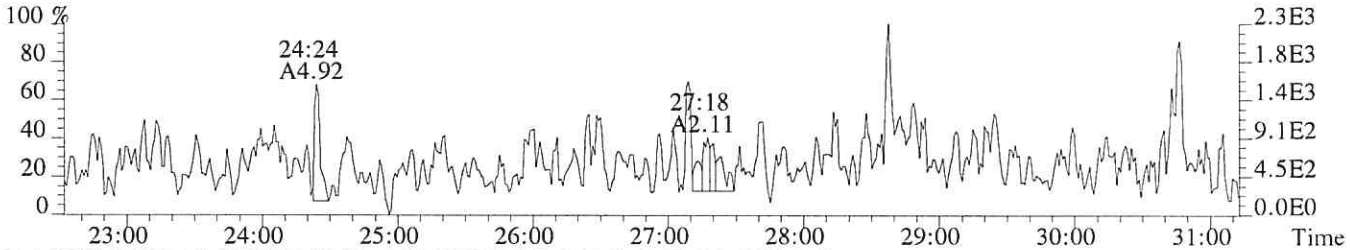
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1304.0,1.00%,F,T)



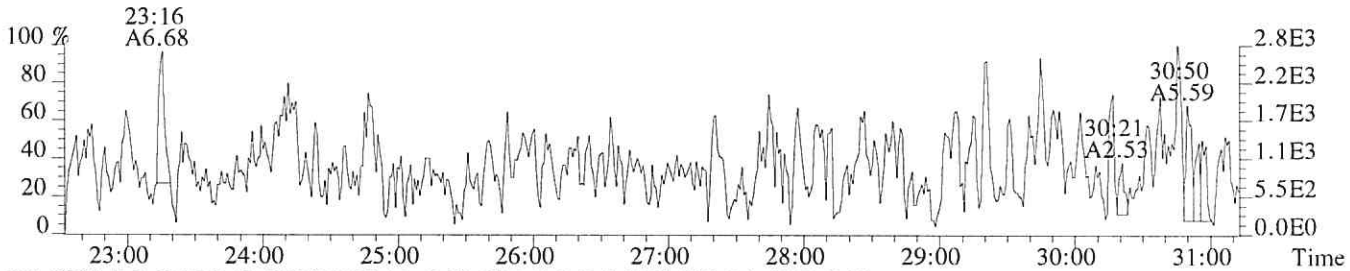
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



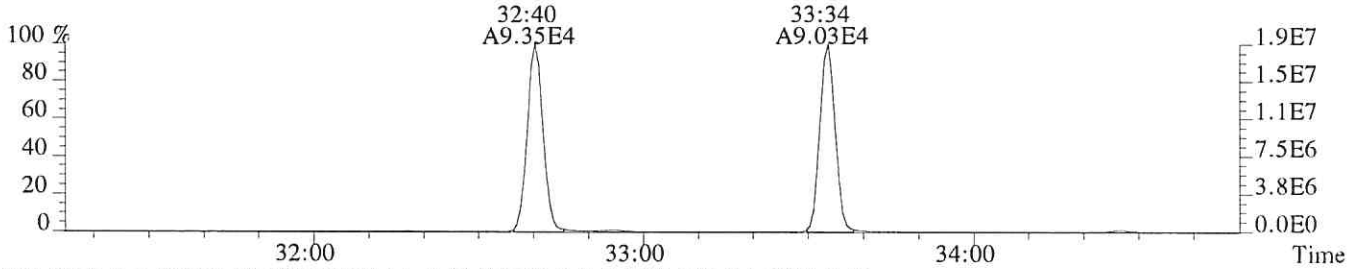
File:P407615 #1-616 Acq: 1-SEP-2017 15:54:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS1
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,732.0,1.00%,F,T)



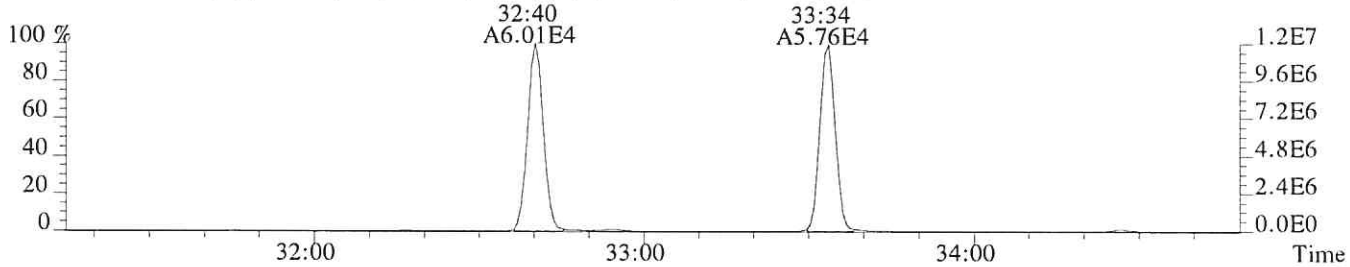
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1220.0,1.00%,F,T)



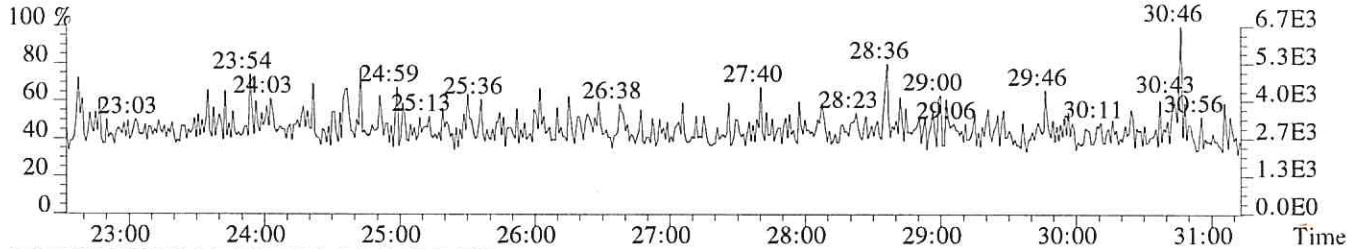
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,508.0,1.00%,F,T)



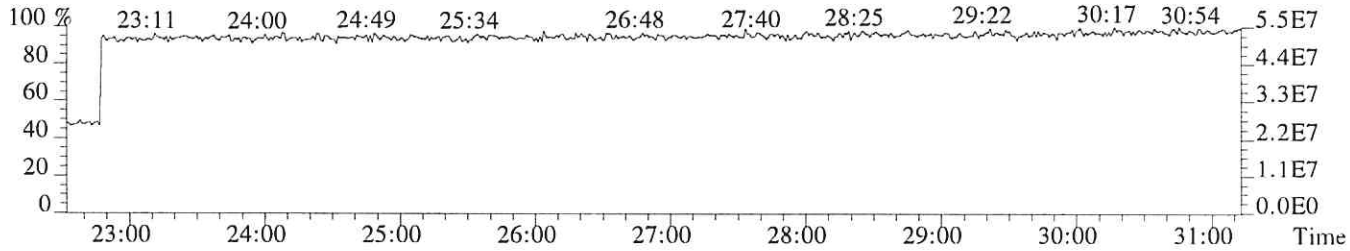
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,856.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

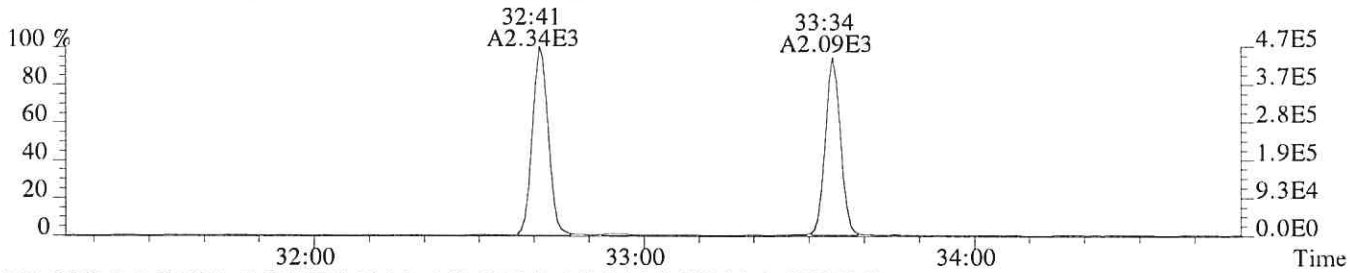


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

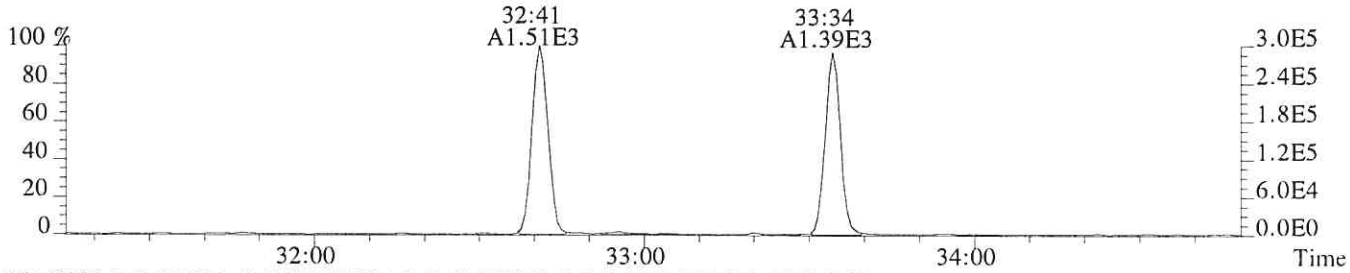


File:P407615 #1-321 Acq: 1-SEP-2017 15:54:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS1

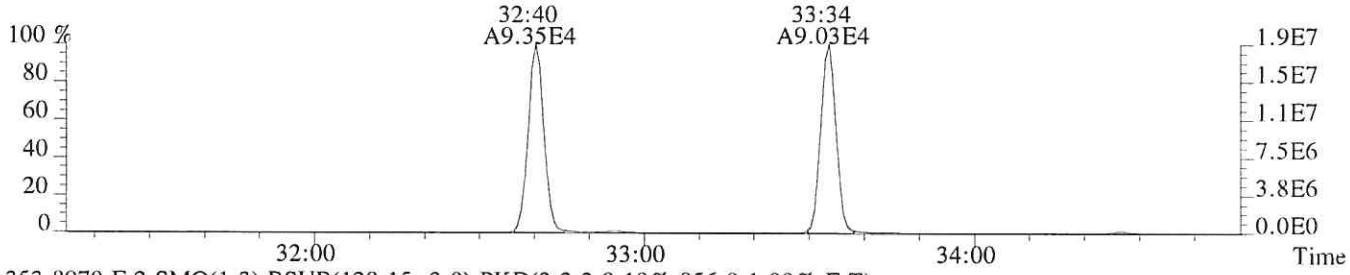
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1092.0,1.00%,F,T)



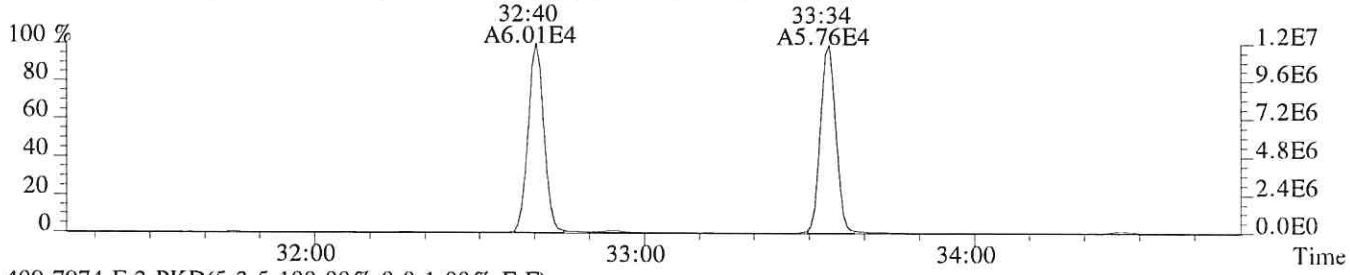
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1176.0,1.00%,F,T)



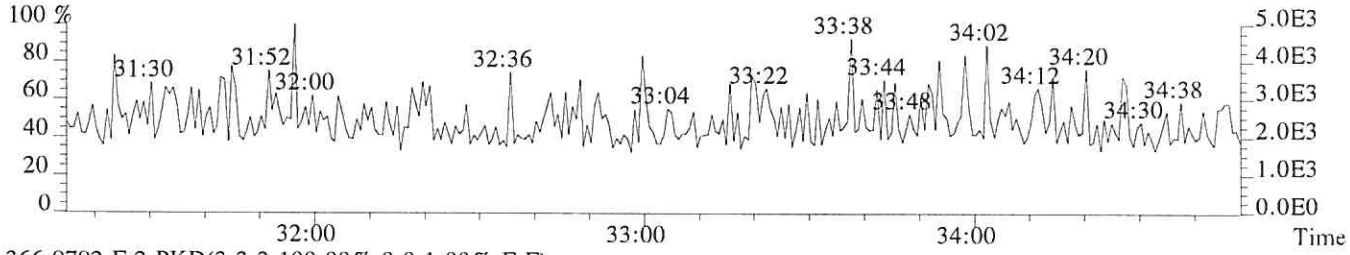
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,508.0,1.00%,F,T)



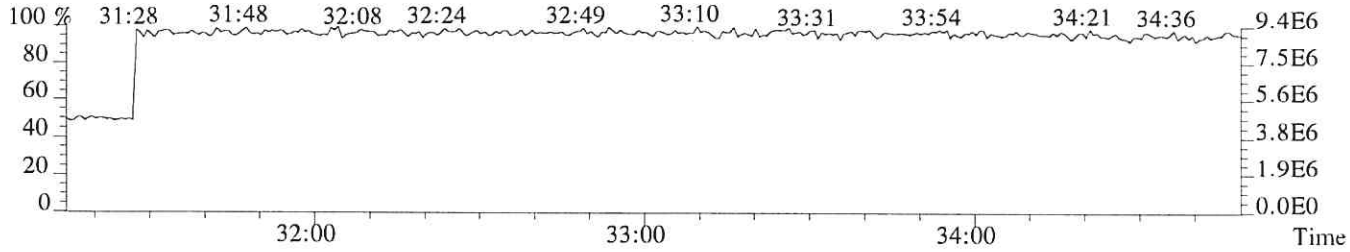
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,856.0,1.00%,F,T)



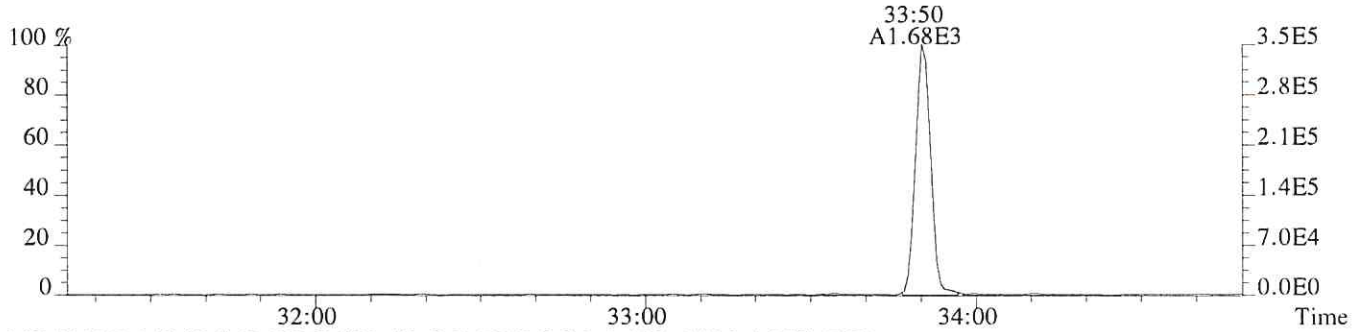
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



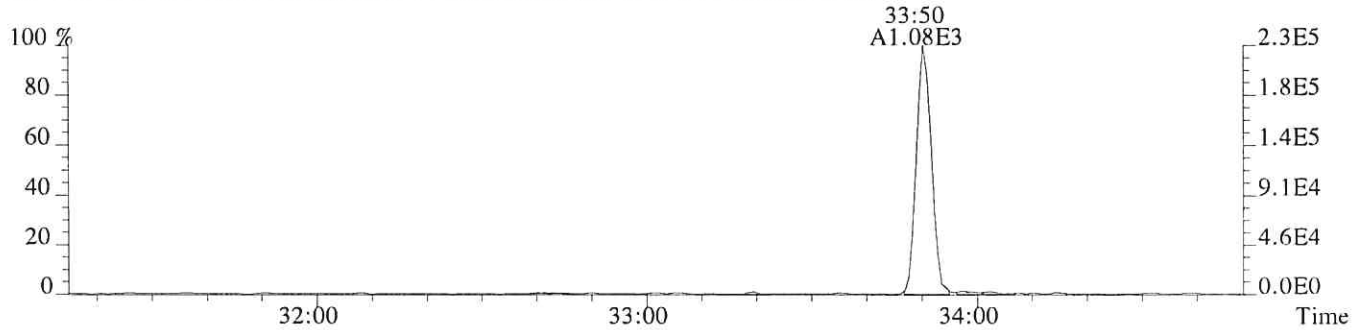
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



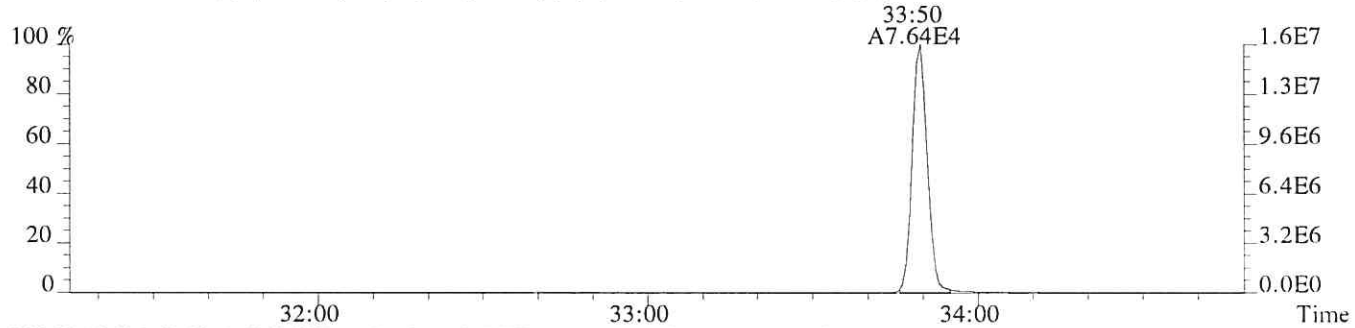
File:P407615 #1-321 Acq: 1-SEP-2017 15:54:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS1
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1044.0,1.00%,F,T)



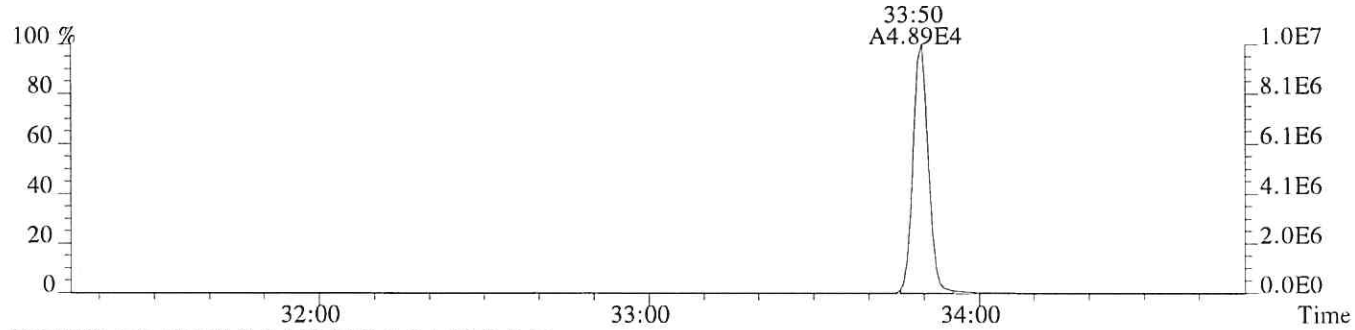
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,648.0,1.00%,F,T)



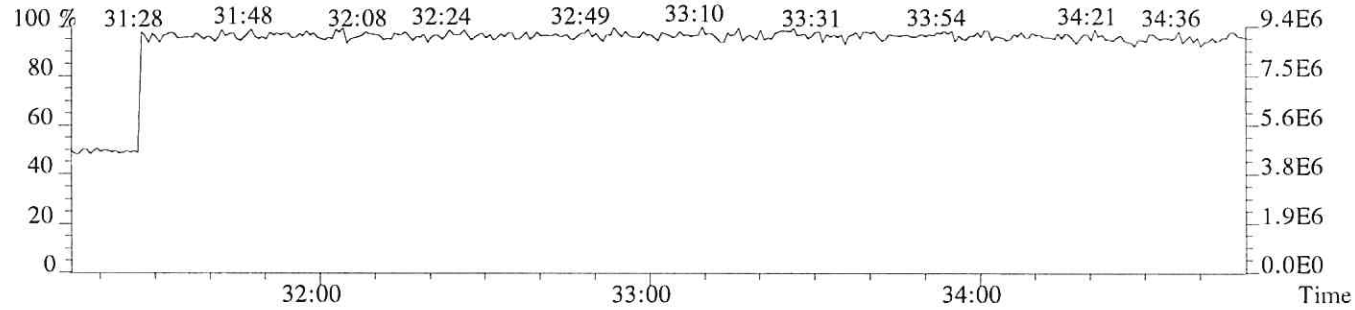
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1168.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1748.0,1.00%,F,T)

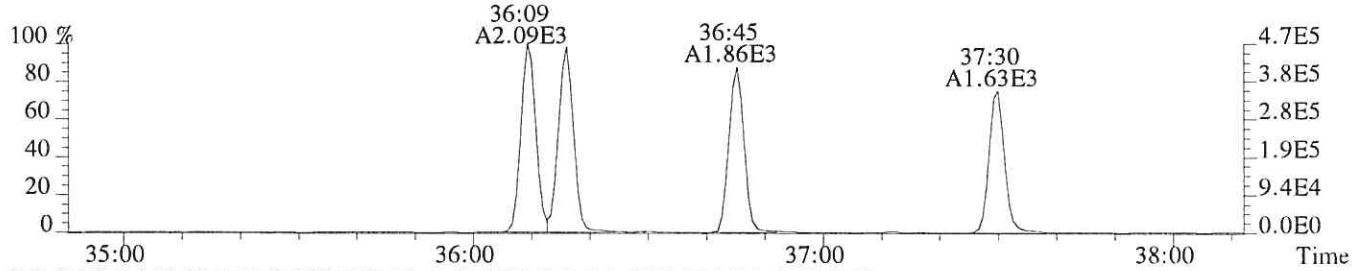


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

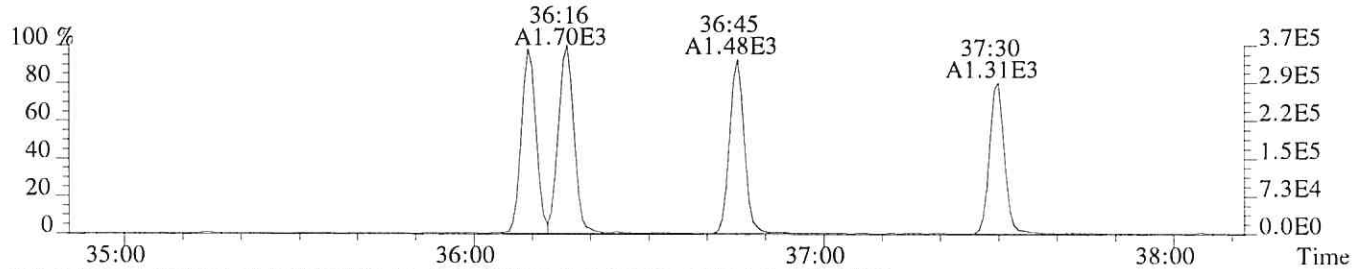


File:P407615 #1-303 Acq: 1-SEP-2017 15:54:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS1

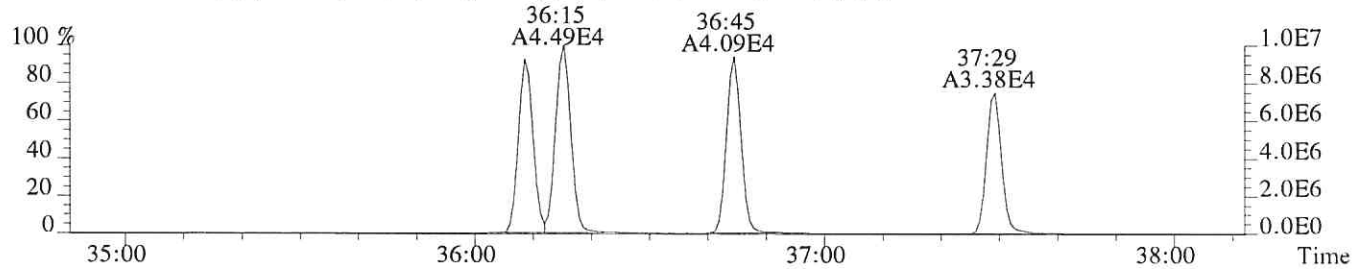
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1288.0,0.40%,F,T)



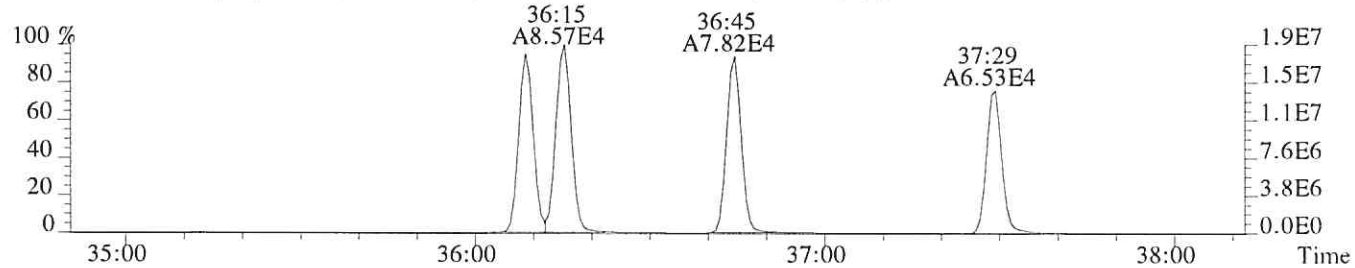
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,964.0,0.40%,F,T)



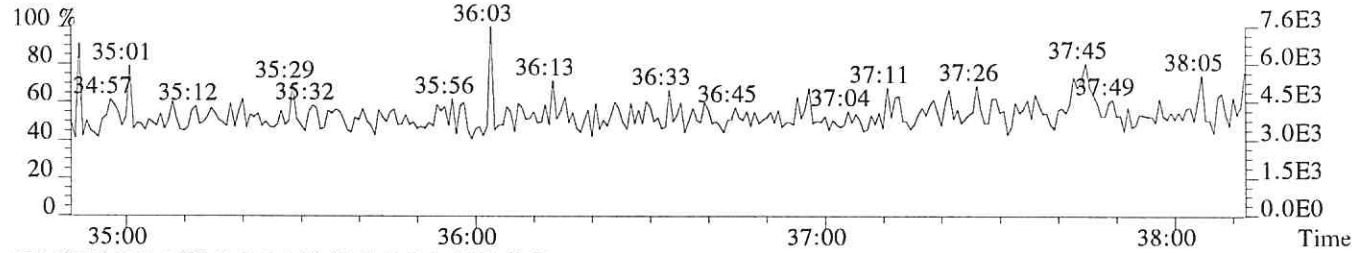
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1272.0,0.40%,F,T)



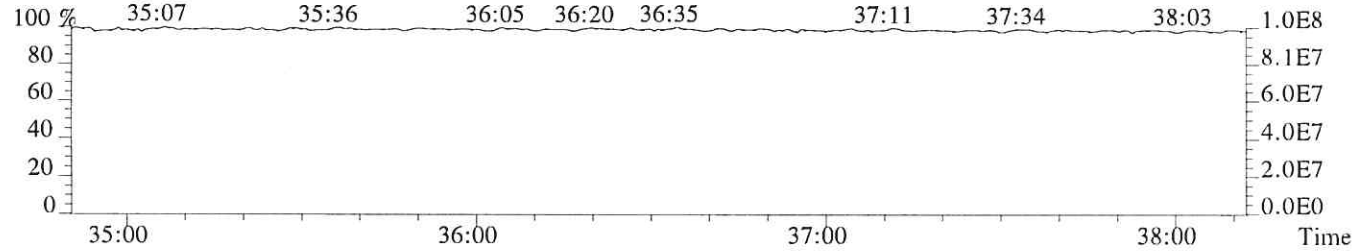
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1272.0,0.40%,F,T)



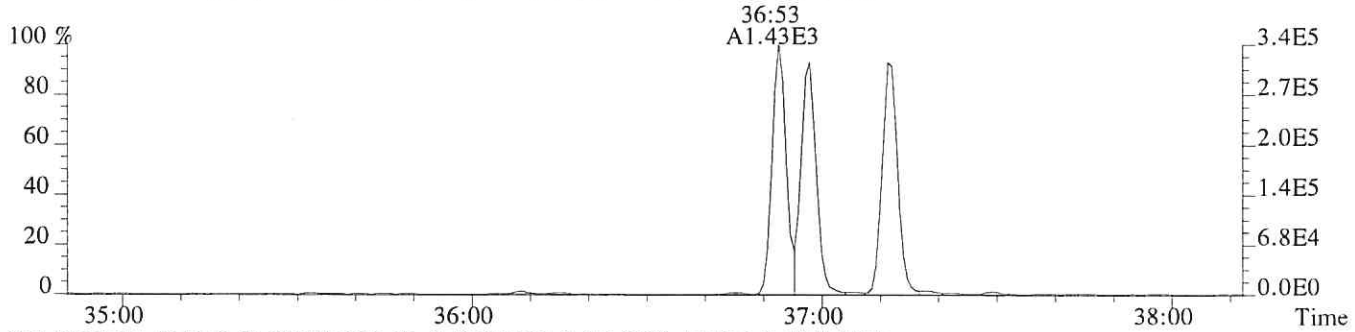
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



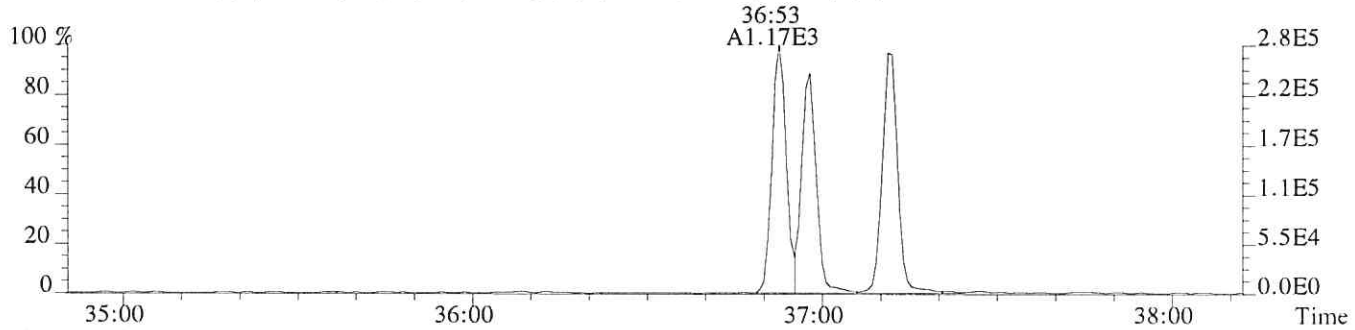
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



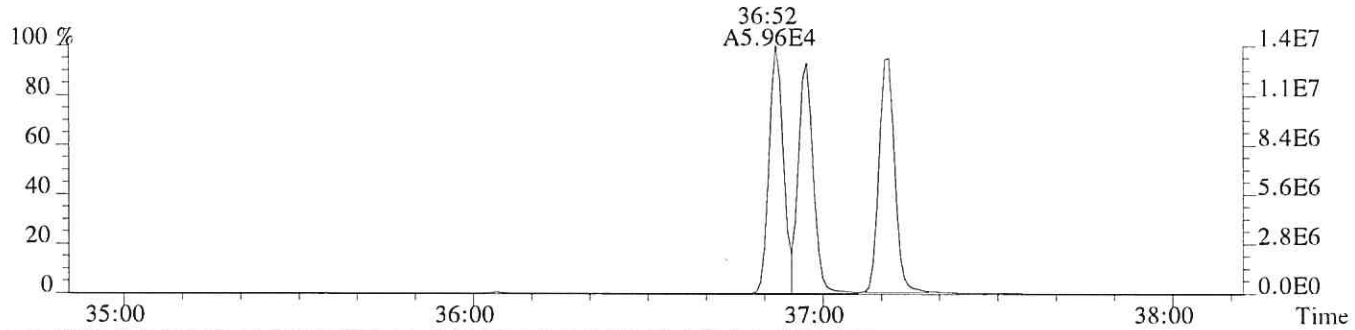
File:P407615 #1-303 Acq: 1-SEP-2017 15:54:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS1
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,460.0,0.40%,F,T)



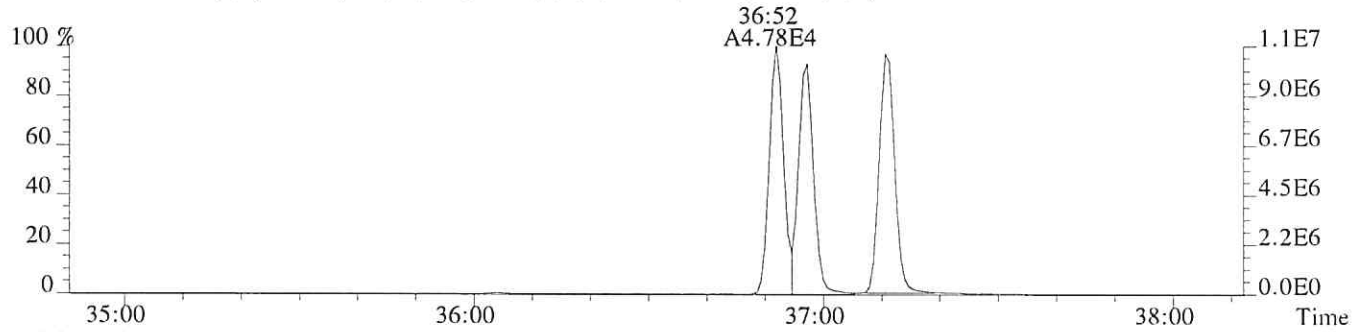
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1140.0,0.40%,F,T)



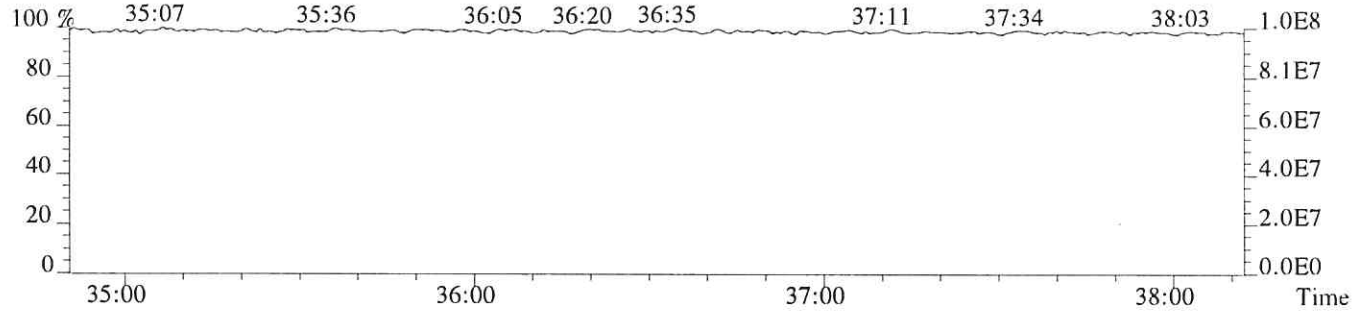
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1348.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,948.0,0.40%,F,T)

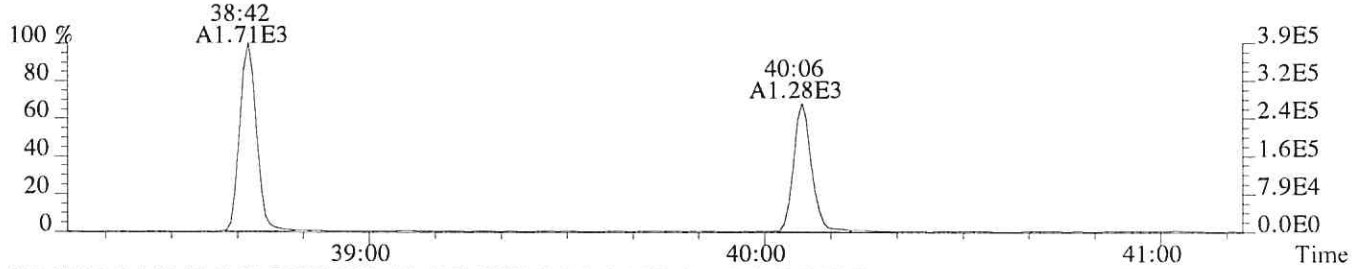


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

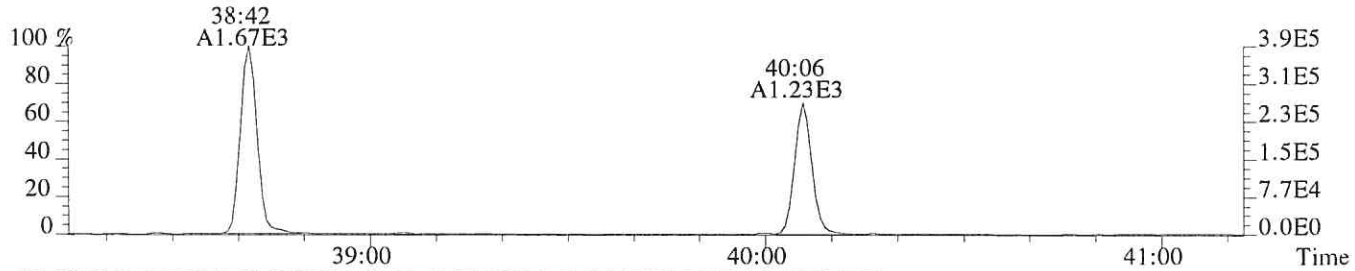


File:P407615 #1-268 Acq: 1-SEP-2017 15:54:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS1

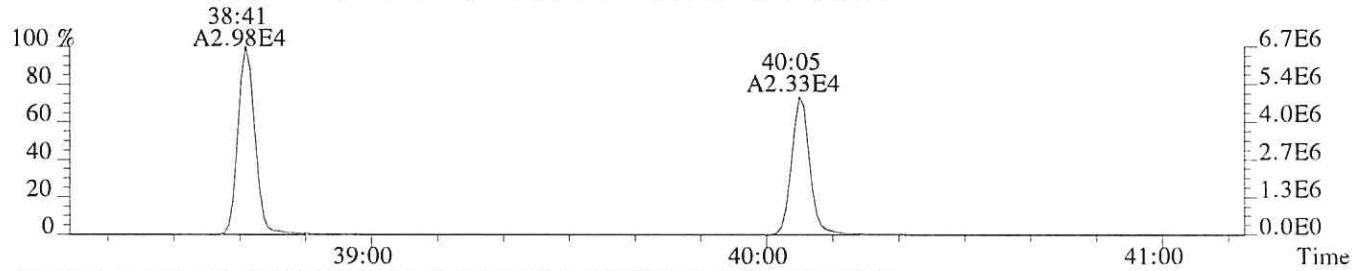
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,876.0,0.50%,F,T)



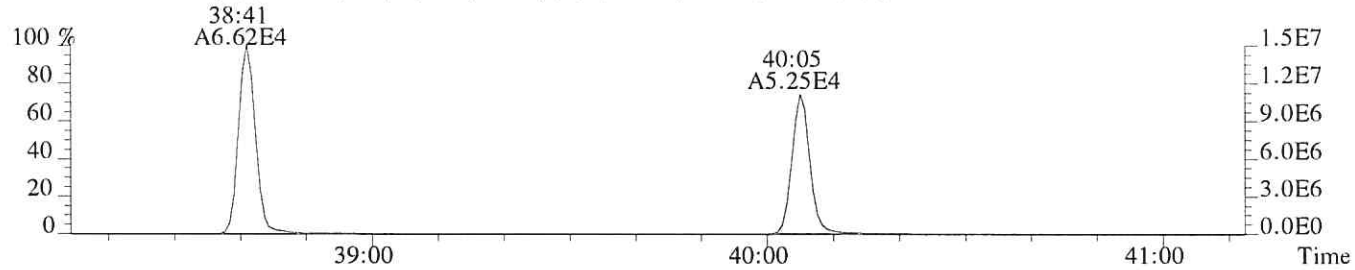
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,912.0,0.50%,F,T)



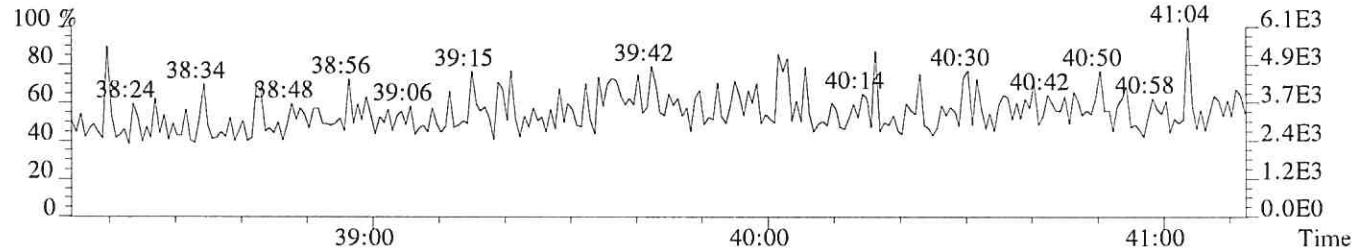
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2516.0,0.50%,F,T)



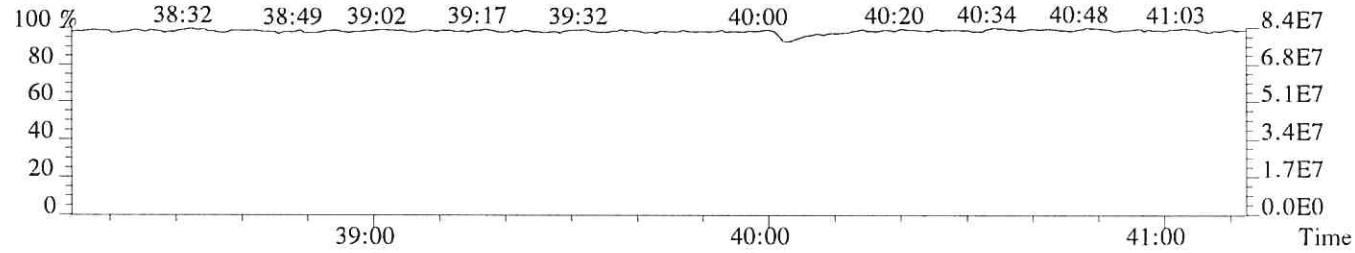
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3148.0,0.50%,F,T)



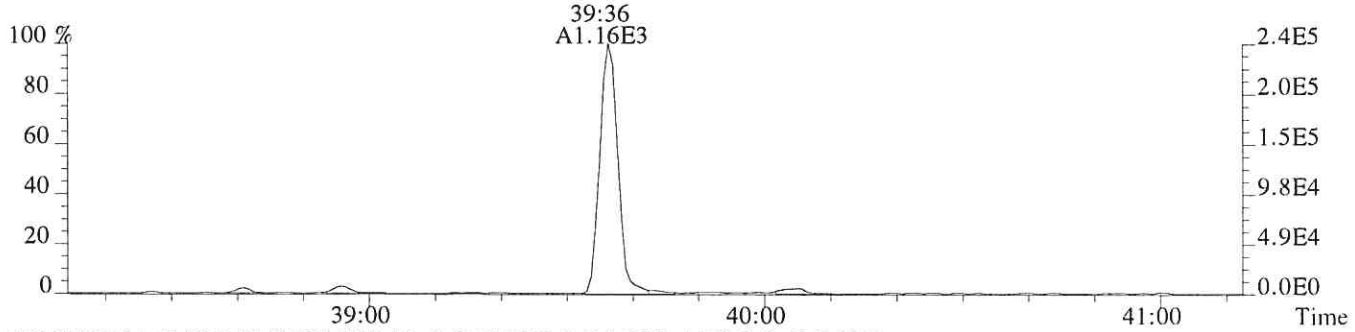
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



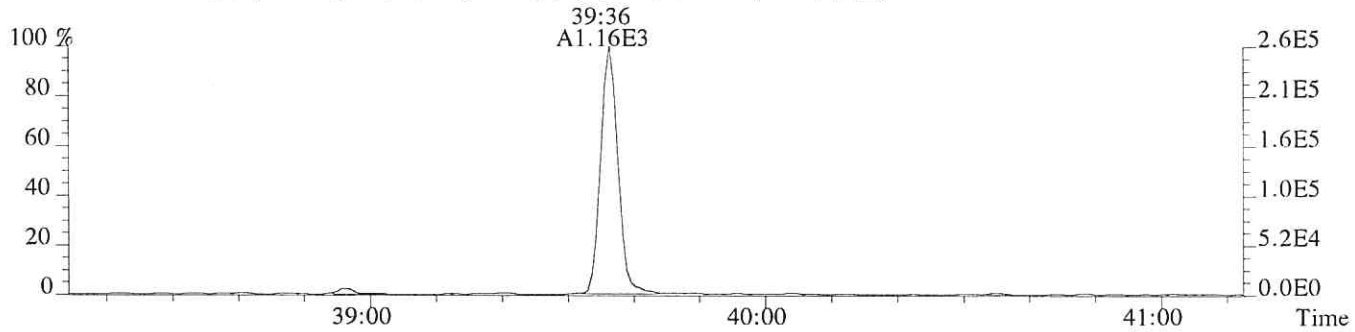
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



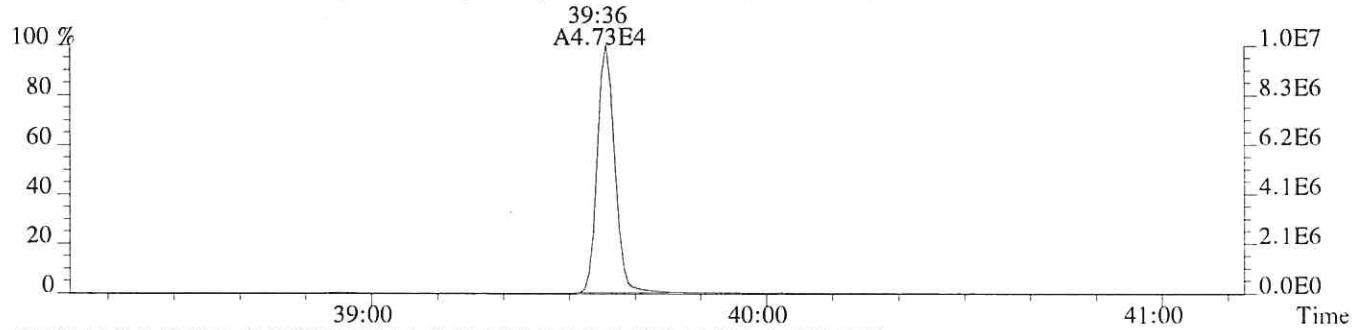
File:P407615 #1-268 Acq: 1-SEP-2017 15:54:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS1
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,932.0,0.40%,F,T)



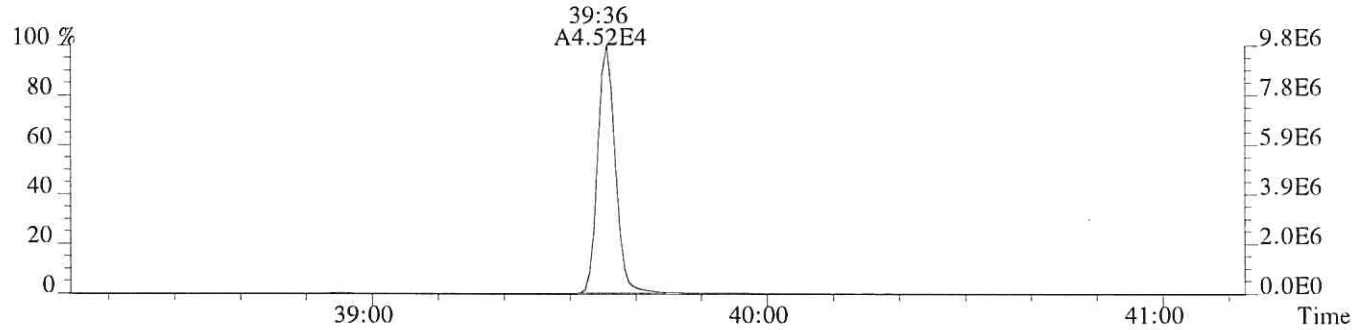
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1168.0,0.40%,F,T)



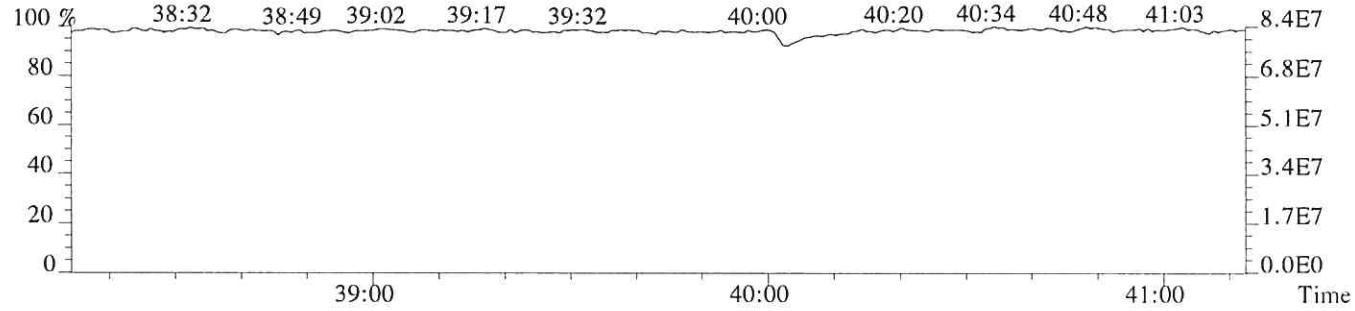
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,748.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1016.0,0.40%,F,T)

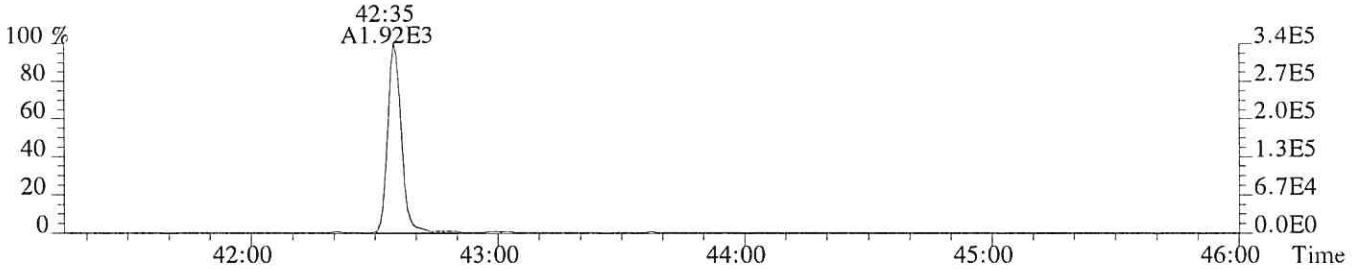


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

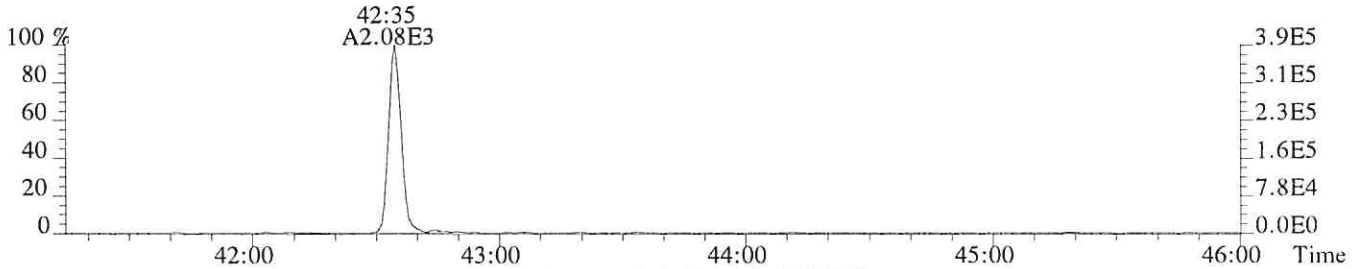


File:P407615 #1-429 Acq: 1-SEP-2017 15:54:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS1

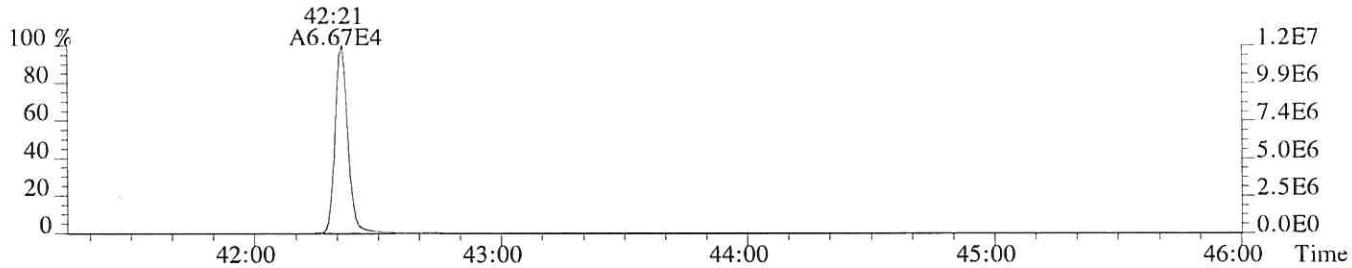
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1028.0,0.40%,F,T)



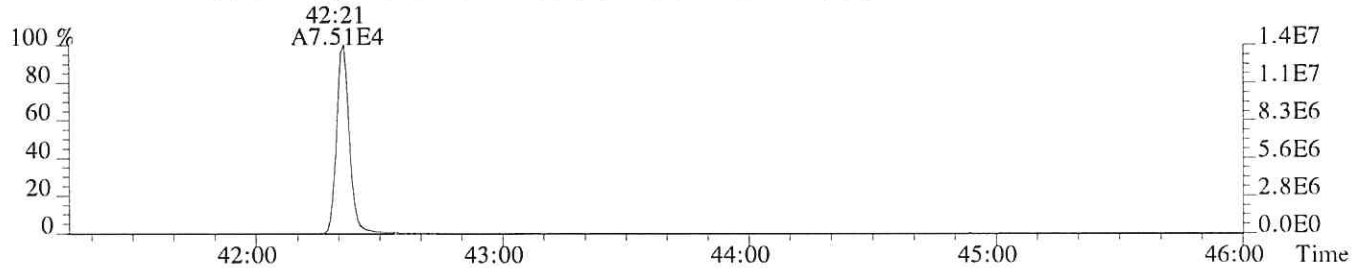
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1200.0,0.40%,F,T)



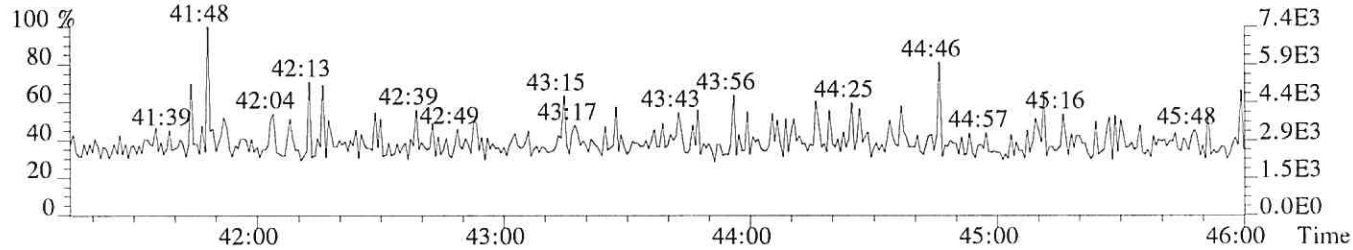
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,804.0,0.40%,F,T)



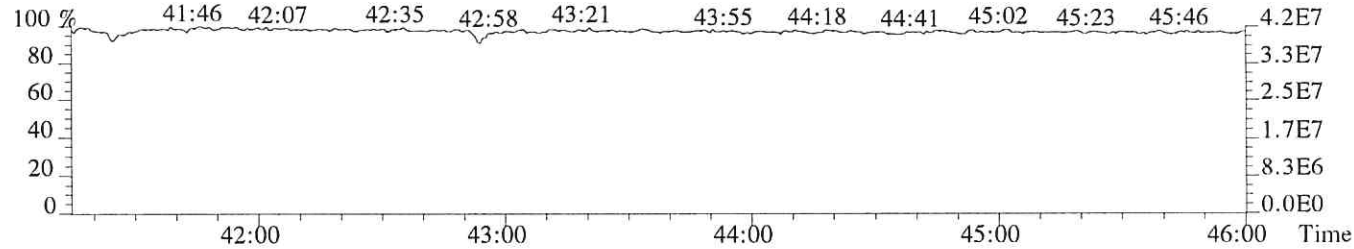
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,896.0,0.40%,F,T)



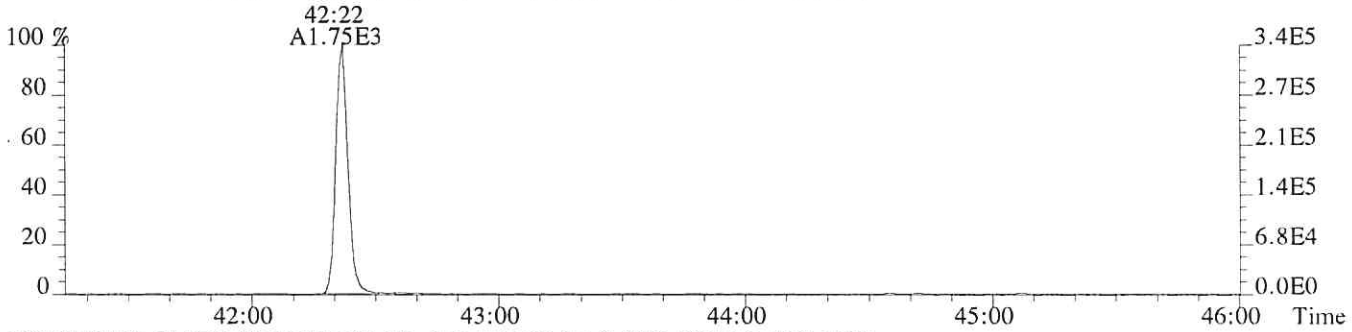
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



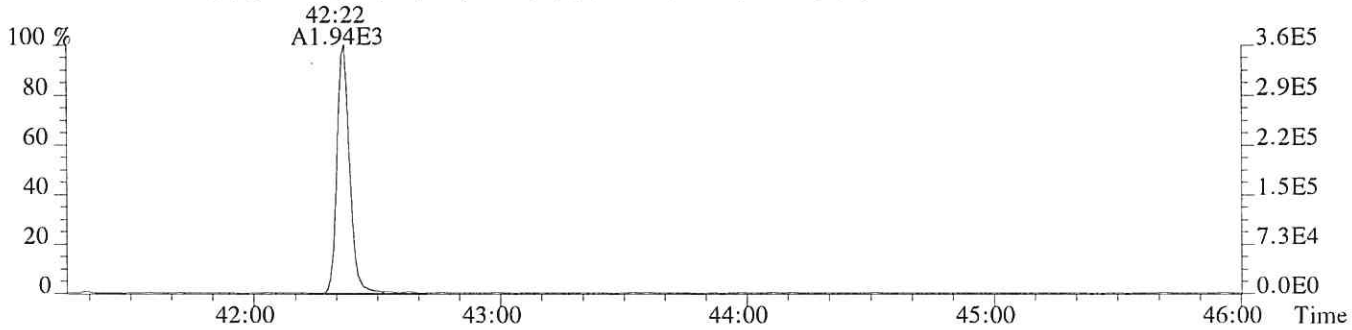
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



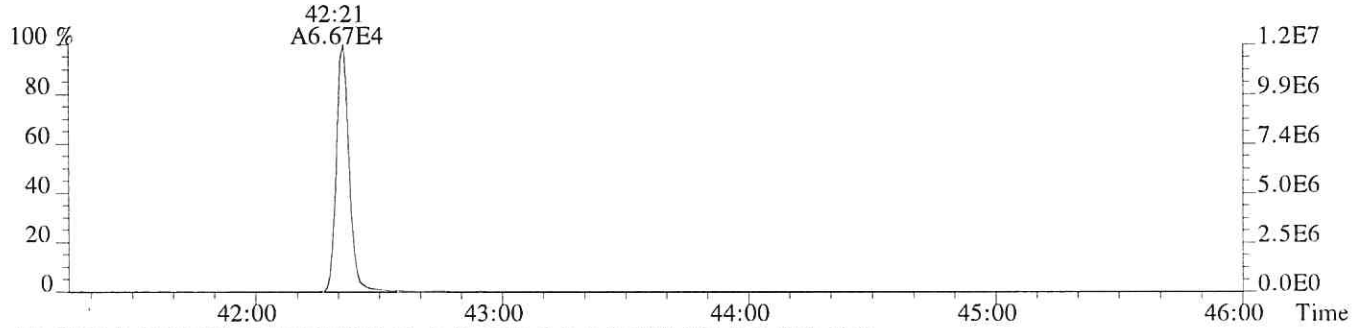
File:P407615 #1-429 Acq: 1-SEP-2017 15:54:29 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS1
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,556.0,0.40%,F,T)



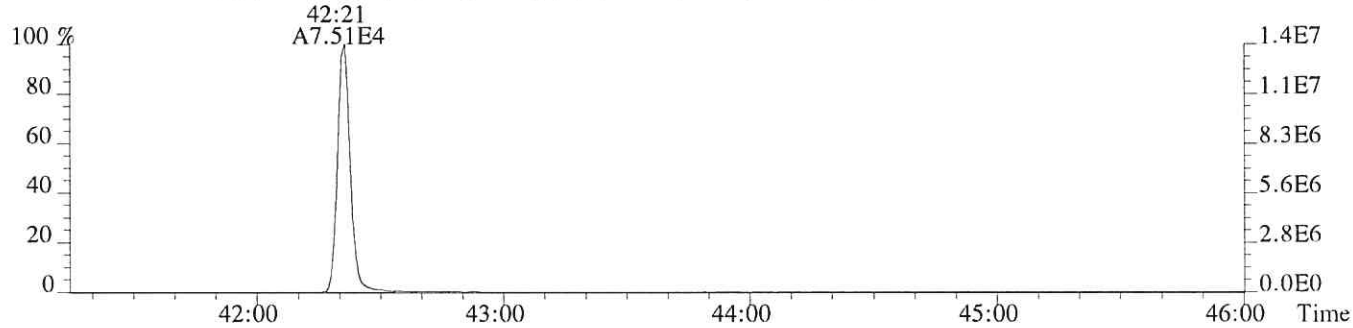
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,932.0,0.40%,F,T)



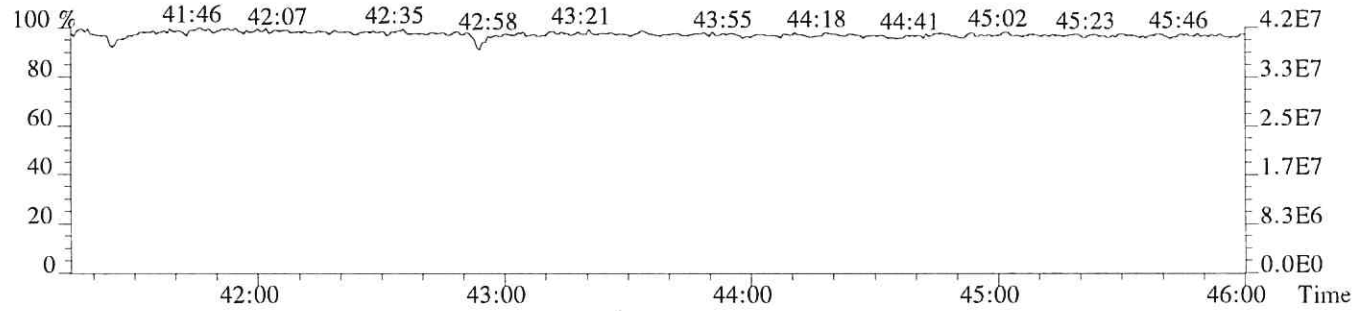
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,804.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,896.0,0.40%,F,T)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
76556

Run #3 Filename p407616 #1 Samp: 1 Inj: 1 Acquired: 1-SEP-17 16:55:05
Processed: 5-SEP-17 09:15:29 LAB. ID: CS2

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	28:40	1.019e+03	1.326e+03	0.77	yes	no	0.885
2	Unk	1,2,3,7,8-PeCDF	32:42	8.176e+03	5.303e+03	1.54	yes	no	0.984
3	Unk	2,3,4,7,8-PeCDF	33:35	7.619e+03	4.892e+03	1.56	yes	no	0.943
4	Unk	1,2,3,4,7,8-HxCDF	36:10	7.590e+03	6.074e+03	1.25	yes	no	1.230
5	Unk	1,2,3,6,7,8-HxCDF	36:17	7.975e+03	6.442e+03	1.24	yes	no	1.148
6	Unk	2,3,4,6,7,8-HxCDF	36:46	7.188e+03	5.835e+03	1.23	yes	no	1.133
7	Unk	1,2,3,7,8,9-HxCDF	37:31	6.126e+03	4.984e+03	1.23	yes	no	1.172
8	Unk	1,2,3,4,6,7,8-HpCDF	38:42	6.276e+03	6.286e+03	1.00	yes	no	1.377
9	Unk	1,2,3,4,7,8,9-HpCDF	40:06	4.986e+03	4.767e+03	1.05	yes	no	1.301
10	Unk	OCDF	42:35	7.374e+03	8.186e+03	0.90	yes	no	1.114
11	Unk	2,3,7,8-TCDD	29:24	8.813e+02	1.128e+03	0.78	yes	no	0.966
12	Unk	1,2,3,7,8-PeCDD	33:51	5.750e+03	3.744e+03	1.54	yes	no	0.851
13	Unk	1,2,3,4,7,8-HxCDD	36:53	5.367e+03	4.409e+03	1.22	yes	no	0.966
14	Unk	1,2,3,6,7,8-HxCDD	36:59	5.522e+03	4.368e+03	1.26	yes	no	0.938
15	Unk	1,2,3,7,8,9-HxCDD	37:12	5.568e+03	4.476e+03	1.24	yes	no	0.980
16	Unk	1,2,3,4,6,7,8-HpCDD	39:37	4.363e+03	4.110e+03	1.06	yes	no	0.975
17	Unk	OCDD	42:23	6.909e+03	7.601e+03	0.91	yes	no	1.033
18	IS	13C-2,3,7,8-TCDF	28:39	5.833e+04	7.510e+04	0.78	yes	no	1.176
19	IS	13C-1,2,3,7,8-PeCDF	32:41	8.263e+04	5.298e+04	1.56	yes	no	1.185
20	IS	13C-2,3,4,7,8-PeCDF	33:34	8.110e+04	5.201e+04	1.56	yes	no	1.149
21	IS	13C-1,2,3,4,7,8-HxCDF	36:09	3.774e+04	7.358e+04	0.51	yes	no	1.068
22	IS	13C-1,2,3,6,7,8-HxCDF	36:16	4.239e+04	8.156e+04	0.52	yes	no	1.171
23	IS	13C-2,3,4,6,7,8-HxCDF	36:45	3.937e+04	7.502e+04	0.52	yes	no	1.079
24	IS	13C-1,2,3,7,8,9-HxCDF	37:30	3.252e+04	6.258e+04	0.52	yes	no	0.919
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:42	2.827e+04	6.367e+04	0.44	yes	no	0.877
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:06	2.332e+04	5.214e+04	0.45	yes	no	0.723
27	IS	13C-2,3,7,8-TCDD	29:24	4.829e+04	6.080e+04	0.79	yes	no	0.958
28	IS	13C-1,2,3,7,8-PeCDD	33:50	6.829e+04	4.438e+04	1.54	yes	no	0.973
29	IS	13C-1,2,3,4,7,8-HxCDD	36:53	5.639e+04	4.487e+04	1.26	yes	no	0.966
30	IS	13C-1,2,3,6,7,8-HxCDD	36:58	5.675e+04	4.545e+04	1.25	yes	no	0.968
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:36	4.518e+04	4.286e+04	1.05	yes	no	0.854
32	IS	13C-OCDD	42:22	6.400e+04	7.211e+04	0.89	yes	no	0.668
33	RS/RT	13C-1,2,3,4-TCDD	28:50	5.092e+04	6.396e+04	0.80	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:12	5.799e+04	4.684e+04	1.24	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:24	2.293e+03				no	0.992

ALS ENVIRONMENTAL
10450 Stancliff Road
Houston, TX 77099
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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
76556

Run #3 Filename p407616 Samp: 1 Inj: 1 Acquired: 1-SEP-17 16:55:05
Processed: 5-SEP-17 09:15:291 LAB. ID: CS2

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.96e+05	8.12e+02	2.4e+02	2.63e+05	1.62e+03	1.6e+02
2	1,2,3,7,8-PeCDF	1.61e+06	8.36e+02	1.9e+03	1.06e+06	1.00e+03	1.1e+03
3	2,3,4,7,8-PeCDF	1.60e+06	8.36e+02	1.9e+03	1.02e+06	1.00e+03	1.0e+03
4	1,2,3,4,7,8-HxCDF	1.71e+06	9.16e+02	1.9e+03	1.38e+06	7.44e+02	1.8e+03
5	1,2,3,6,7,8-HxCDF	1.72e+06	9.16e+02	1.9e+03	1.40e+06	7.44e+02	1.9e+03
6	2,3,4,6,7,8-HxCDF	1.63e+06	9.16e+02	1.8e+03	1.31e+06	7.44e+02	1.8e+03
7	1,2,3,7,8,9-HxCDF	1.36e+06	9.16e+02	1.5e+03	1.07e+06	7.44e+02	1.4e+03
8	1,2,3,4,6,7,8-HpCDF	1.41e+06	1.18e+03	1.2e+03	1.42e+06	1.56e+03	9.1e+02
9	1,2,3,4,7,8,9-HpCDF	1.05e+06	1.18e+03	8.8e+02	1.00e+06	1.56e+03	6.4e+02
10	OCDF	1.32e+06	6.08e+02	2.2e+03	1.47e+06	9.28e+02	1.6e+03
11	2,3,7,8-TCDD	1.79e+05	2.05e+03	8.7e+01	2.31e+05	8.08e+02	2.9e+02
12	1,2,3,7,8-PeCDD	1.20e+06	1.16e+03	1.0e+03	7.66e+05	6.20e+02	1.2e+03
13	1,2,3,4,7,8-HxCDD	1.24e+06	1.03e+03	1.2e+03	1.01e+06	9.76e+02	1.0e+03
14	1,2,3,6,7,8-HxCDD	1.24e+06	1.03e+03	1.2e+03	9.53e+05	9.76e+02	9.8e+02
15	1,2,3,7,8,9-HxCDD	1.16e+06	1.03e+03	1.1e+03	9.60e+05	9.76e+02	9.8e+02
16	1,2,3,4,6,7,8-HpCDD	9.35e+05	7.56e+02	1.2e+03	8.80e+05	6.68e+02	1.3e+03
17	OCDD	1.29e+06	5.68e+02	2.3e+03	1.39e+06	4.88e+02	2.8e+03
18	13C-2,3,7,8-TCDF	1.15e+07	1.18e+04	9.7e+02	1.47e+07	3.89e+03	3.8e+03
19	13C-1,2,3,7,8-PeCDF	1.63e+07	5.48e+02	3.0e+04	1.04e+07	1.01e+03	1.0e+04
20	13C-2,3,4,7,8-PeCDF	1.67e+07	5.48e+02	3.0e+04	1.06e+07	1.01e+03	1.1e+04
21	13C-1,2,3,4,7,8-HxCDF	8.60e+06	1.16e+03	7.4e+03	1.67e+07	1.40e+03	1.2e+04
22	13C-1,2,3,6,7,8-HxCDF	9.38e+06	1.16e+03	8.1e+03	1.80e+07	1.40e+03	1.3e+04
23	13C-2,3,4,6,7,8-HxCDF	8.94e+06	1.16e+03	7.7e+03	1.70e+07	1.40e+03	1.2e+04
24	13C-1,2,3,7,8,9-HxCDF	7.09e+06	1.16e+03	6.1e+03	1.35e+07	1.40e+03	9.6e+03
25	13C-1,2,3,4,6,7,8-HpCDF	6.41e+06	2.58e+03	2.5e+03	1.44e+07	5.03e+03	2.9e+03
26	13C-1,2,3,4,7,8,9-HpCDF	4.79e+06	2.58e+03	1.9e+03	1.08e+07	5.03e+03	2.1e+03
27	13C-2,3,7,8-TCDD	9.77e+06	4.05e+03	2.4e+03	1.22e+07	2.26e+03	5.4e+03
28	13C-1,2,3,7,8-PeCDD	1.41e+07	1.25e+03	1.1e+04	9.16e+06	1.50e+03	6.1e+03
29	13C-1,2,3,4,7,8-HxCDD	1.31e+07	1.52e+03	8.6e+03	1.04e+07	1.50e+03	6.9e+03
30	13C-1,2,3,6,7,8-HxCDD	1.25e+07	1.52e+03	8.2e+03	9.93e+06	1.50e+03	6.6e+03
31	13C-1,2,3,4,6,7,8-HpCDD	9.62e+06	1.38e+03	6.9e+03	9.15e+06	9.16e+02	1.0e+04
32	13C-OCDD	1.17e+07	8.80e+02	1.3e+04	1.31e+07	6.56e+02	2.0e+04
33	13C-1,2,3,4-TCDD	1.01e+07	4.05e+03	2.5e+03	1.28e+07	2.26e+03	5.7e+03
34	13C-1,2,3,7,8,9-HxCDD	1.27e+07	1.52e+03	8.4e+03	1.01e+07	1.50e+03	6.7e+03
35	37Cl-2,3,7,8-TCDD	4.74e+05	1.30e+03	3.6e+02			

ALS ENVIRONMENTAL
10450 Stancliff Road
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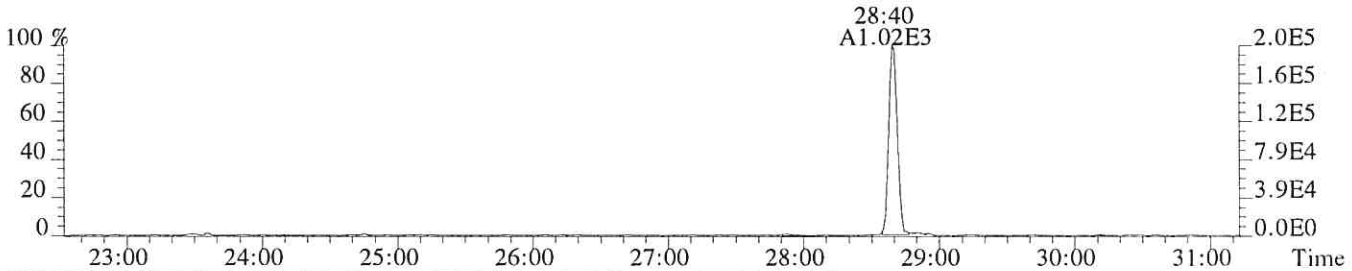
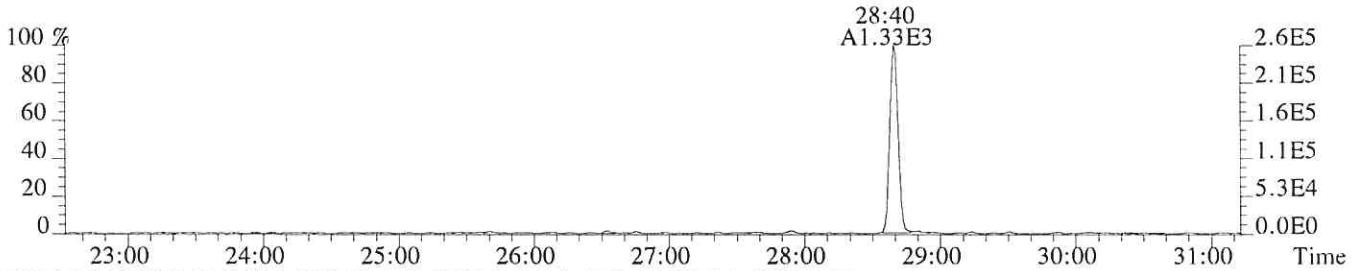
Office:(281)-530-5656. Fax:(281)530-5887

File:P407616 #1-616 Acq: 1-SEP-2017 16:55:05 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS2

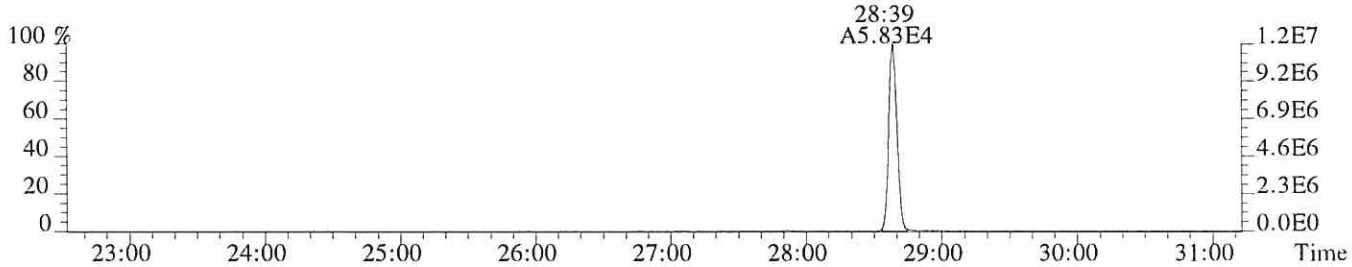
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,812.0,1.00%,F,T)



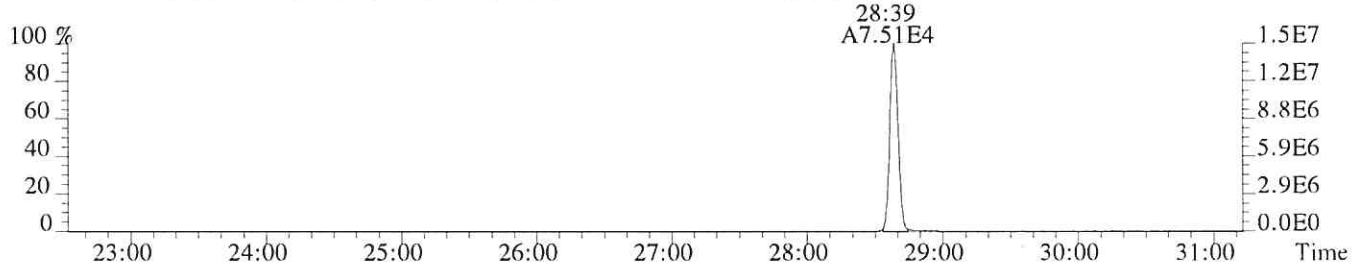
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1624.0,1.00%,F,T)



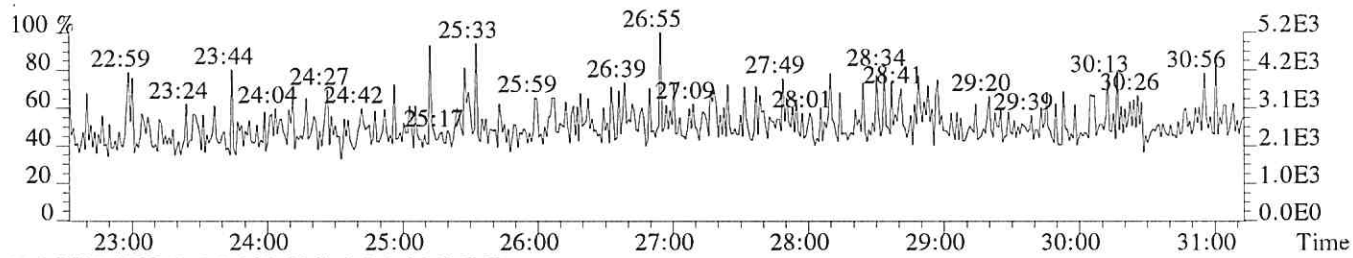
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,11828.0,1.00%,F,T)



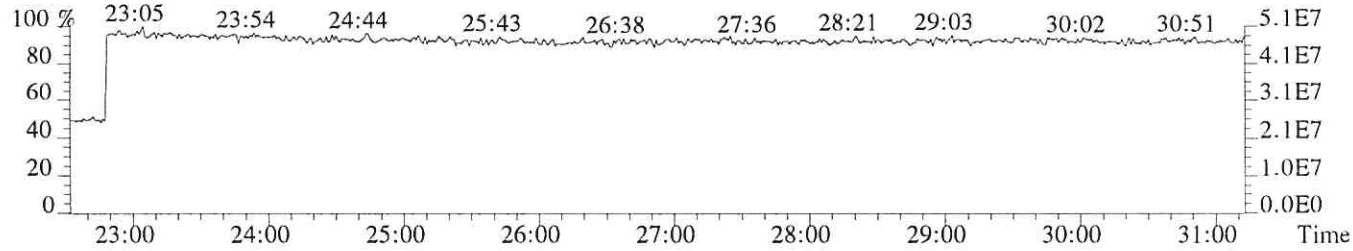
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3888.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

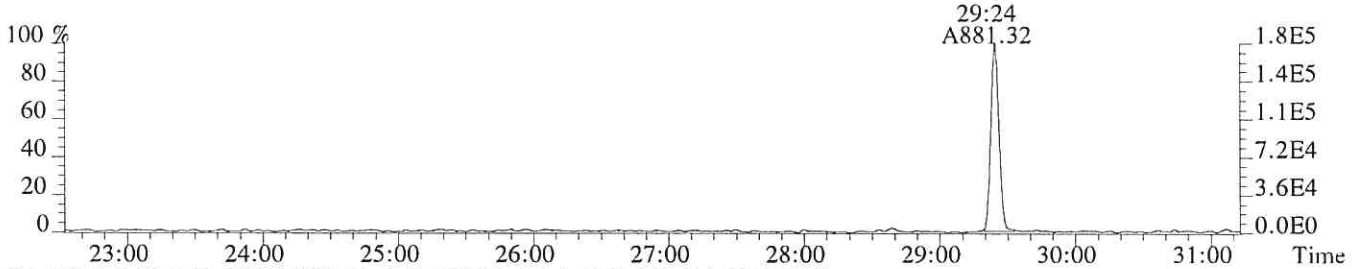


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

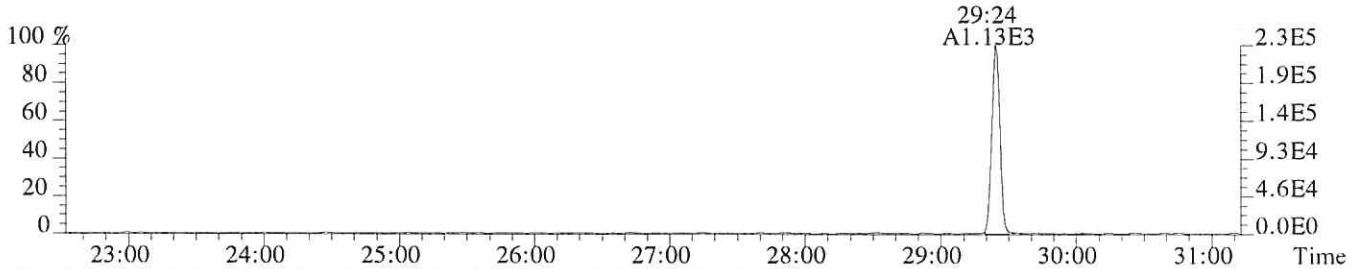


File:P407616 #1-616 Acq: 1-SEP-2017 16:55:05 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS2

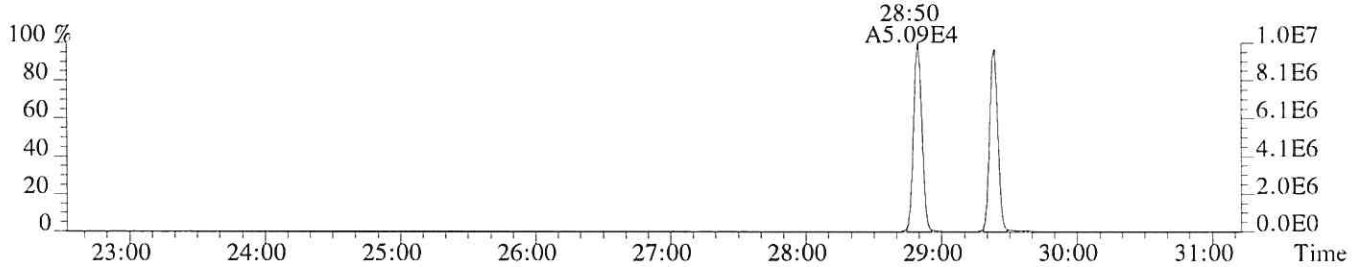
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2048.0,1.00%,F,T)



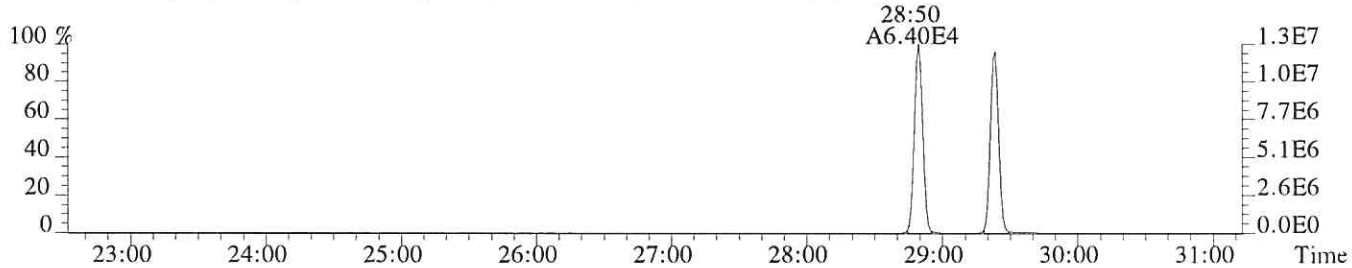
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,808.0,1.00%,F,T)



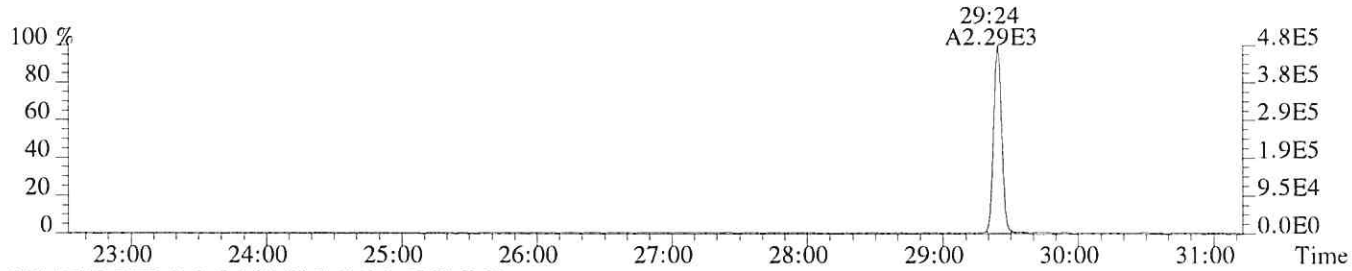
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4052.0,1.00%,F,T)



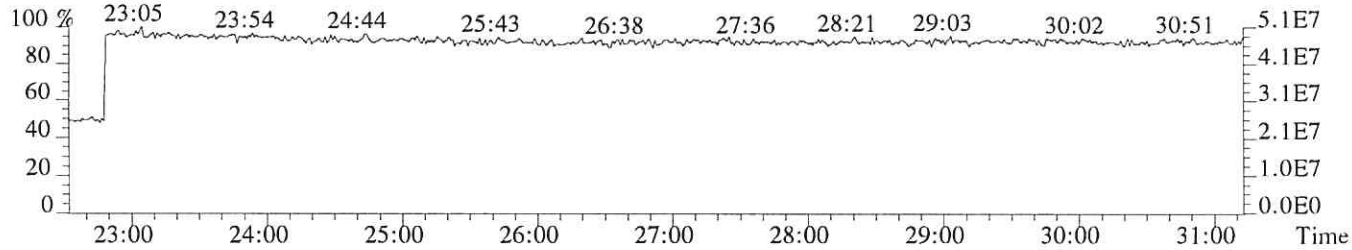
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2260.0,1.00%,F,T)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1304.0,1.00%,F,T)

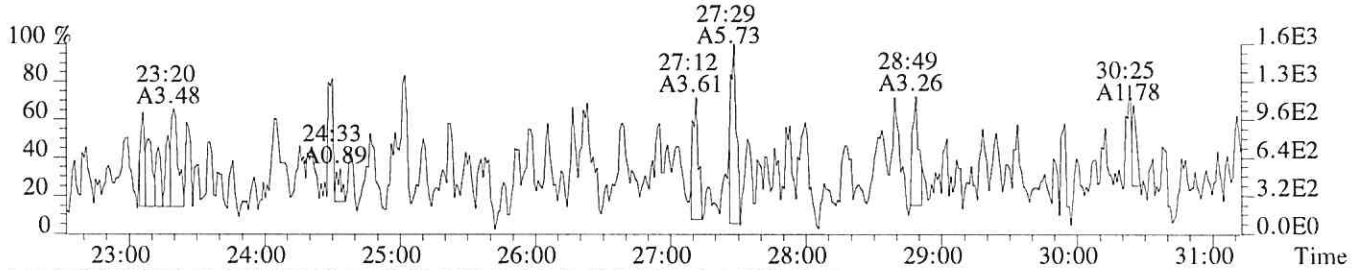


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

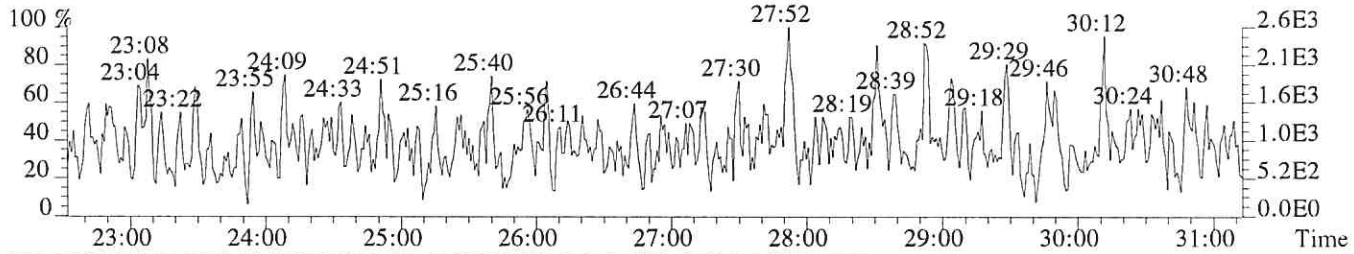


File:P407616 #1-616 Acq: 1-SEP-2017 16:55:05 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS2

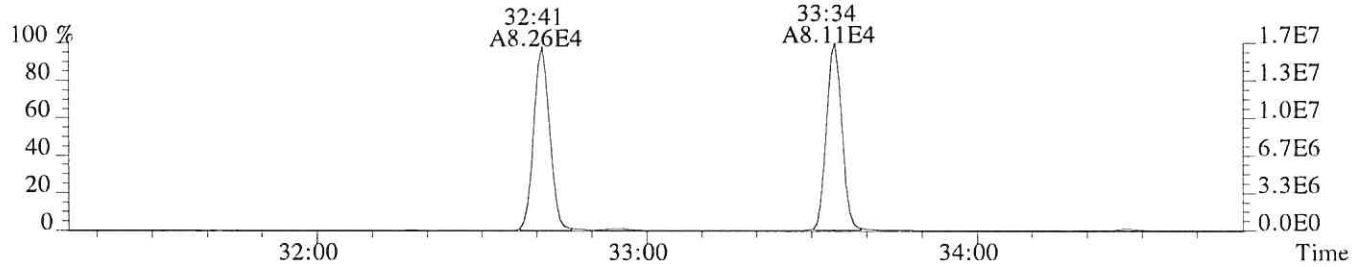
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,596.0,1.00%,F,T)



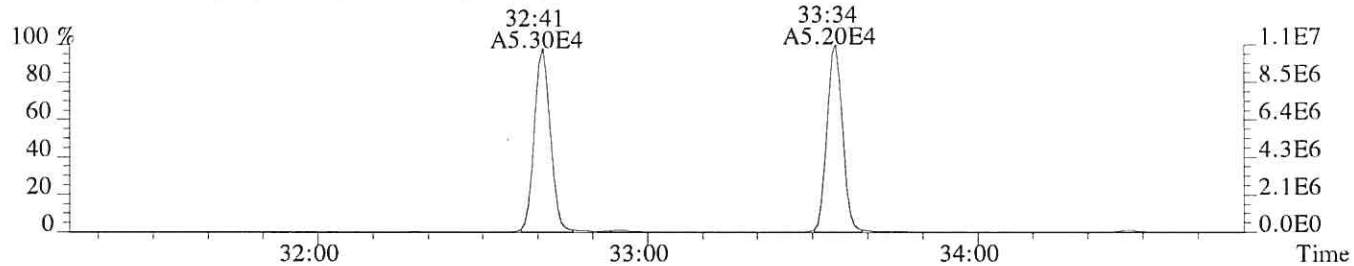
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1232.0,1.00%,F,T)



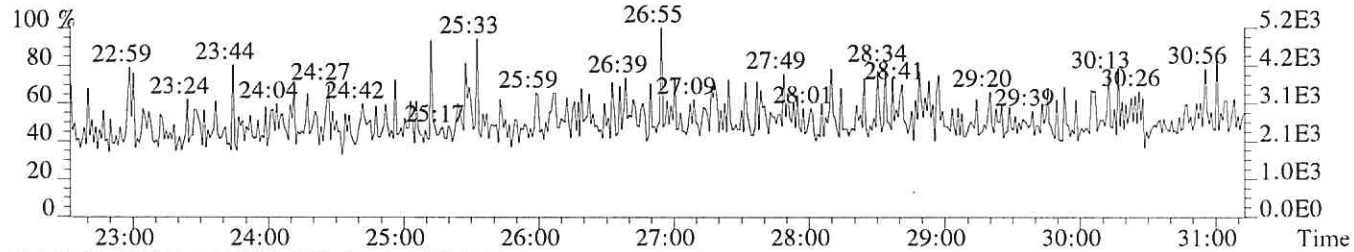
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,548.0,1.00%,F,T)



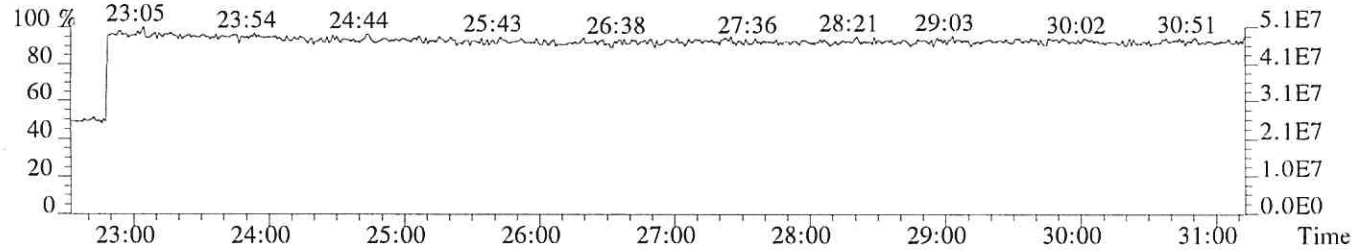
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1008.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

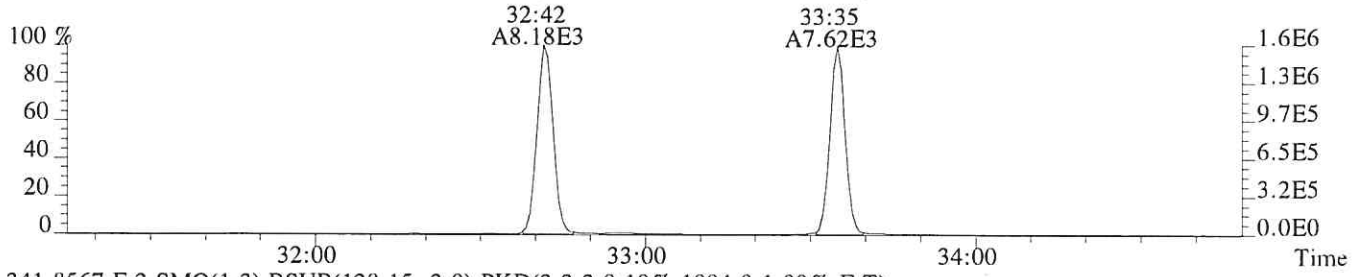


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

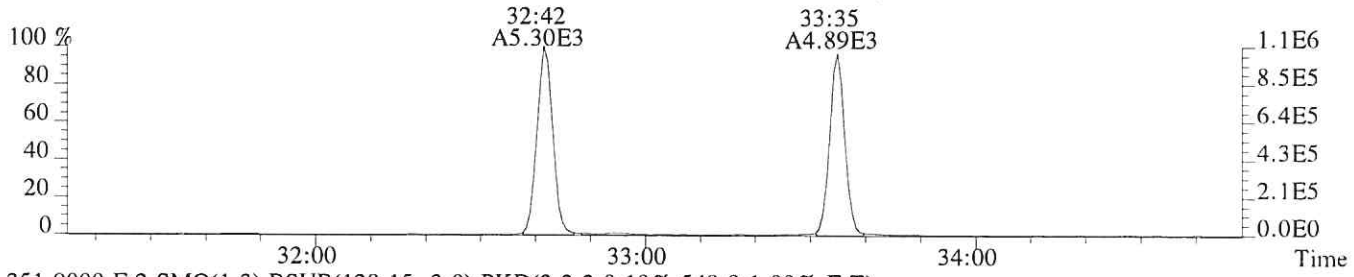


File:P407616 #1-321 Acq: 1-SEP-2017 16:55:05 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS2

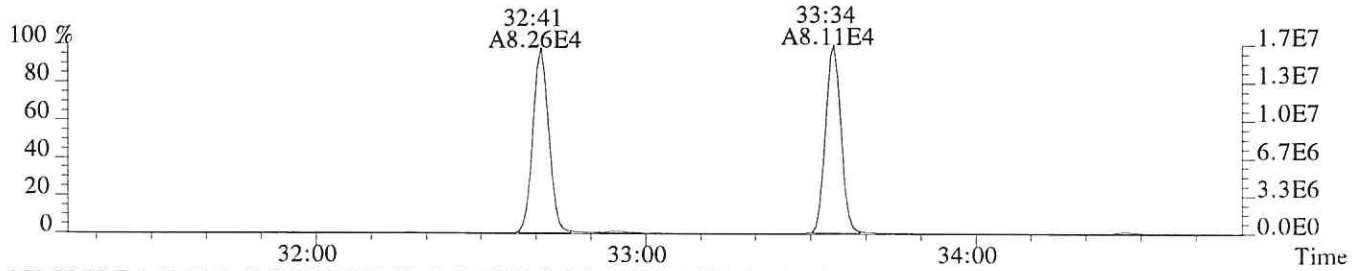
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,836.0,1.00%,F,T)



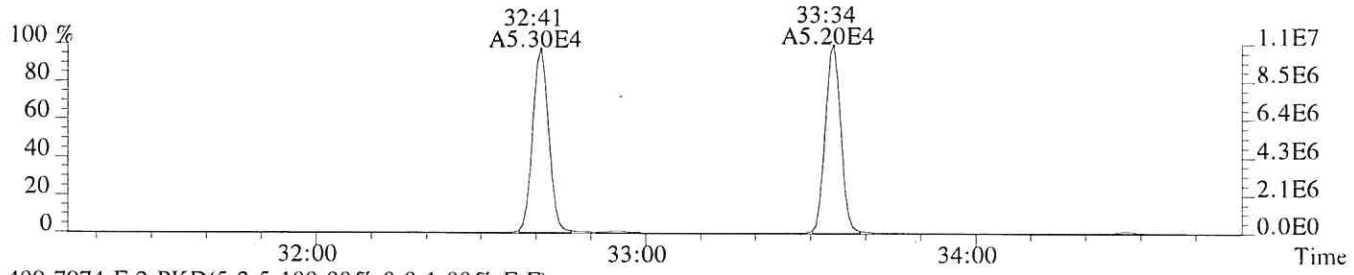
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1004.0,1.00%,F,T)



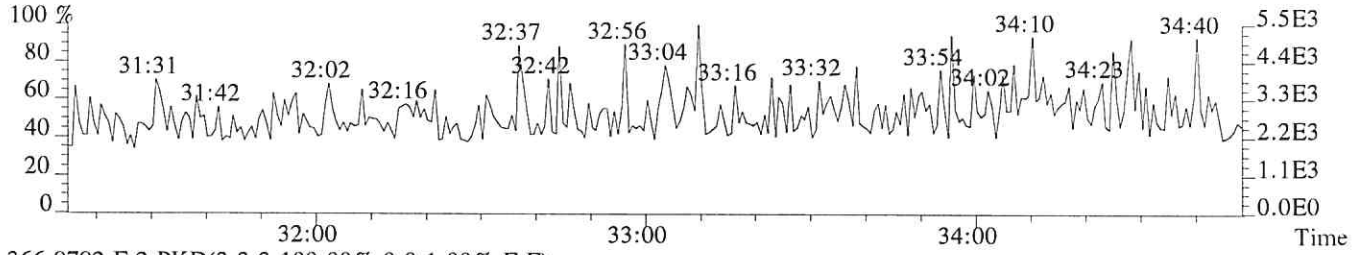
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,548.0,1.00%,F,T)



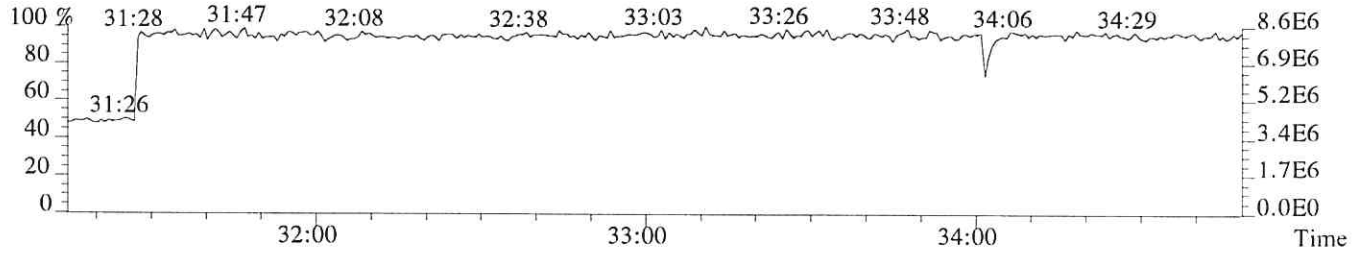
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1008.0,1.00%,F,T)



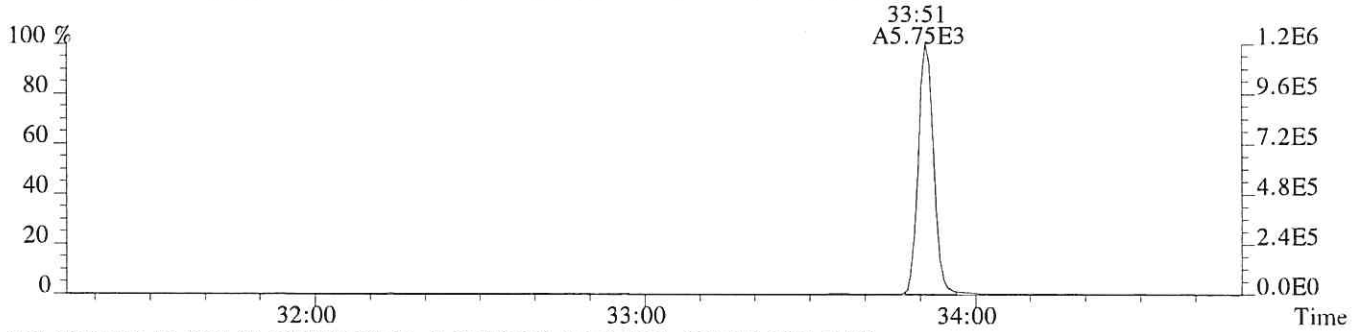
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



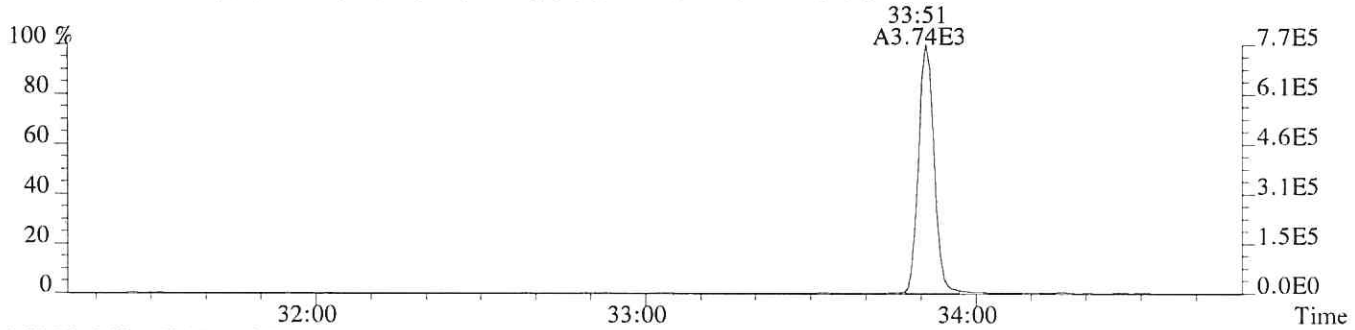
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



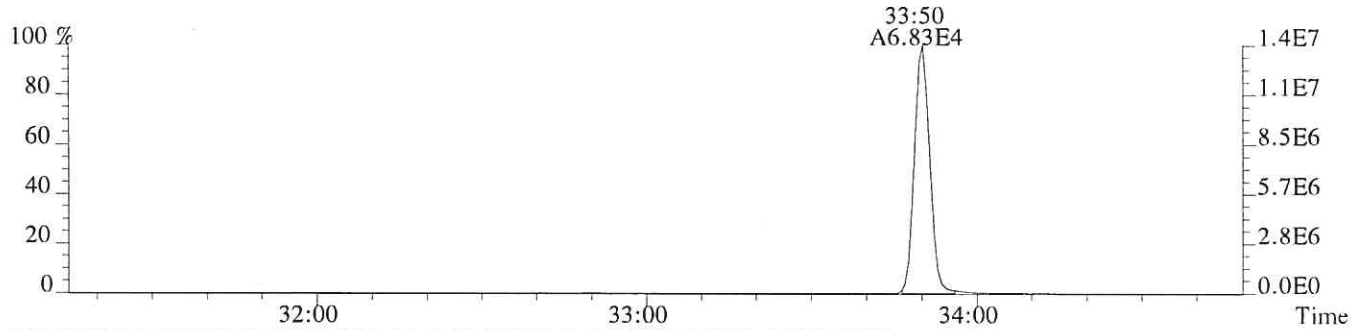
File:P407616 #1-321 Acq: 1-SEP-2017 16:55:05 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS2
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1160.0,1.00%,F,T)



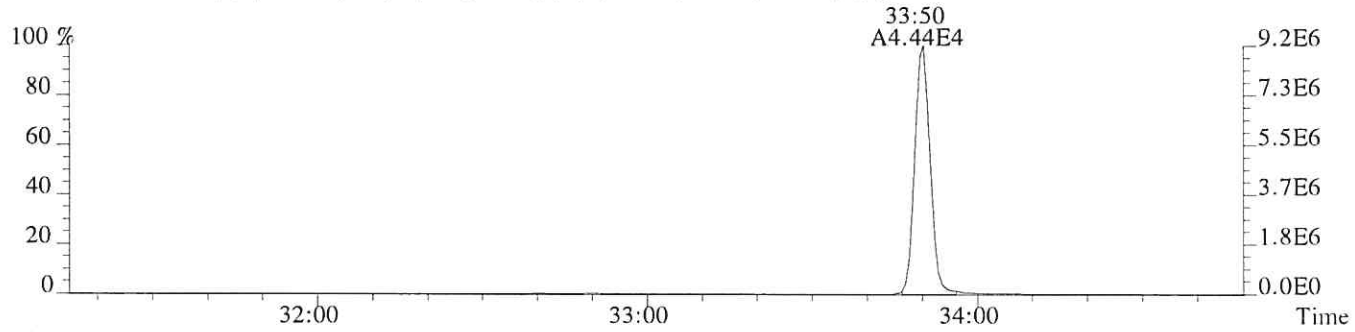
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,620.0,1.00%,F,T)



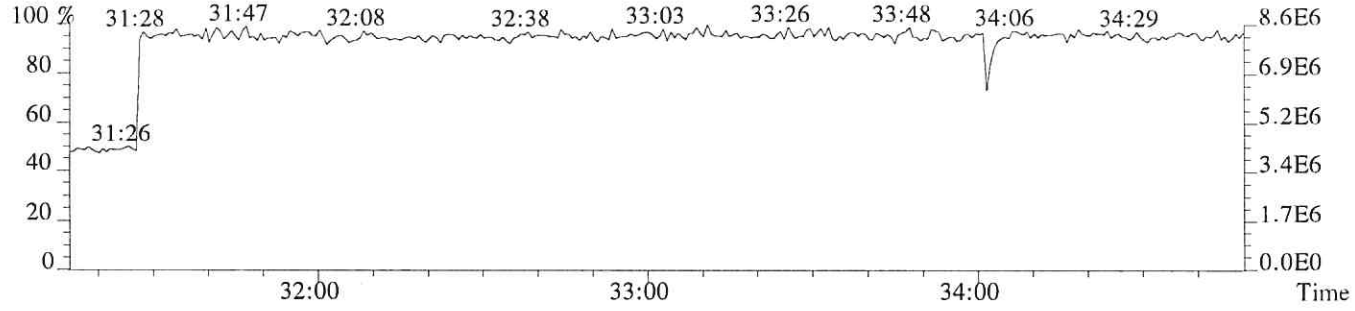
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1248.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1504.0,1.00%,F,T)

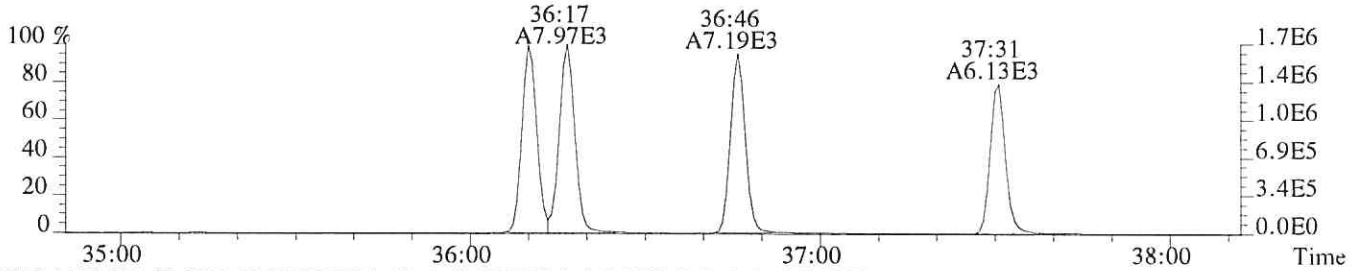


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

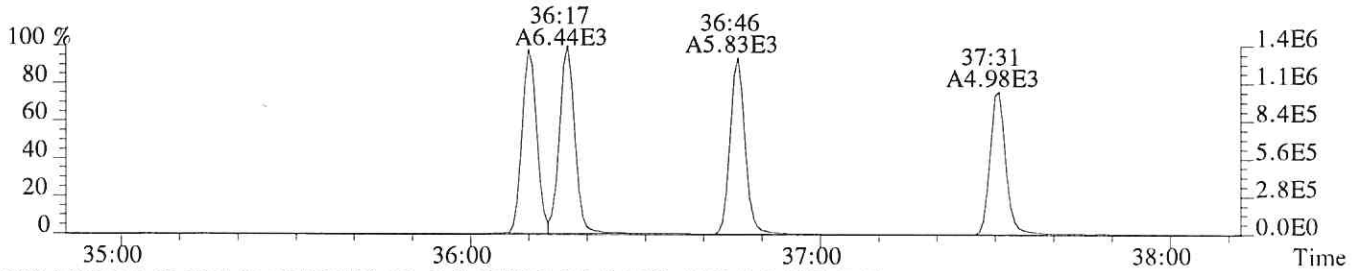


File:P407616 #1-303 Acq: 1-SEP-2017 16:55:05 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS2

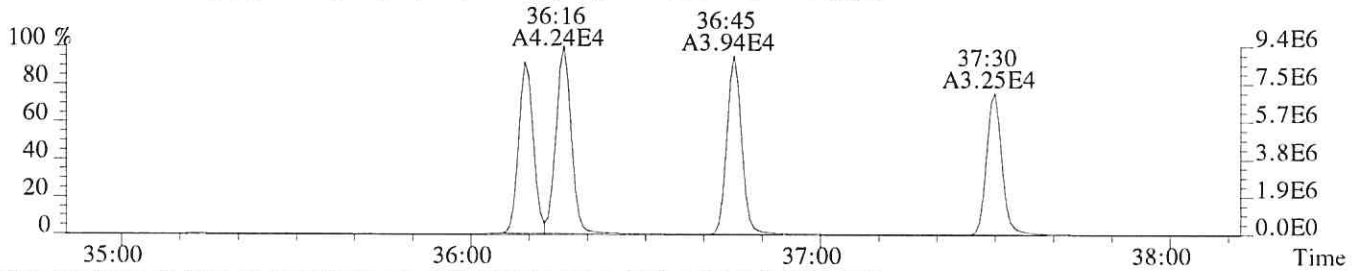
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,916.0,0.40%,F,T)



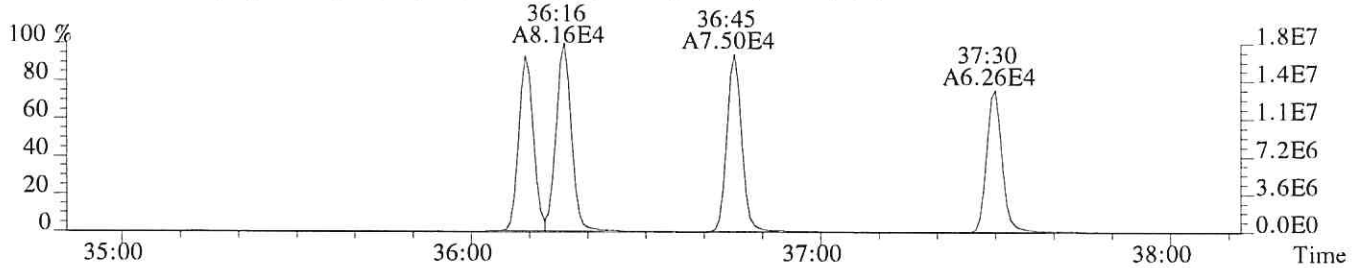
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,744.0,0.40%,F,T)



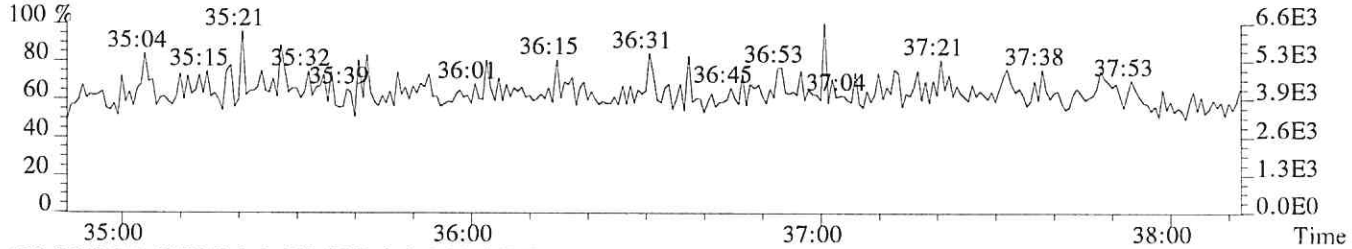
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1156.0,0.40%,F,T)



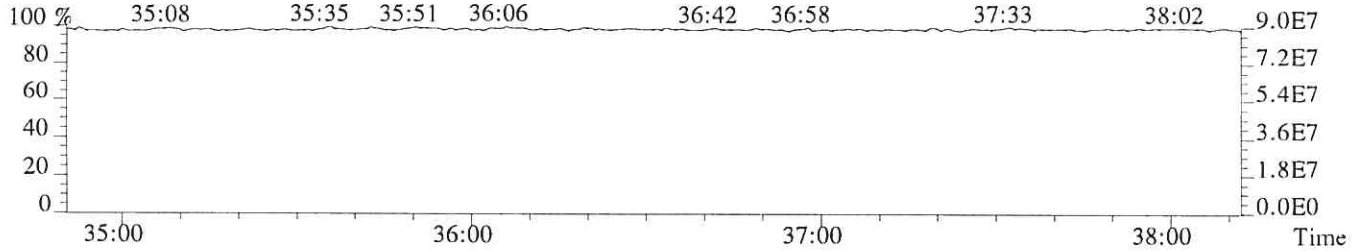
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1404.0,0.40%,F,T)



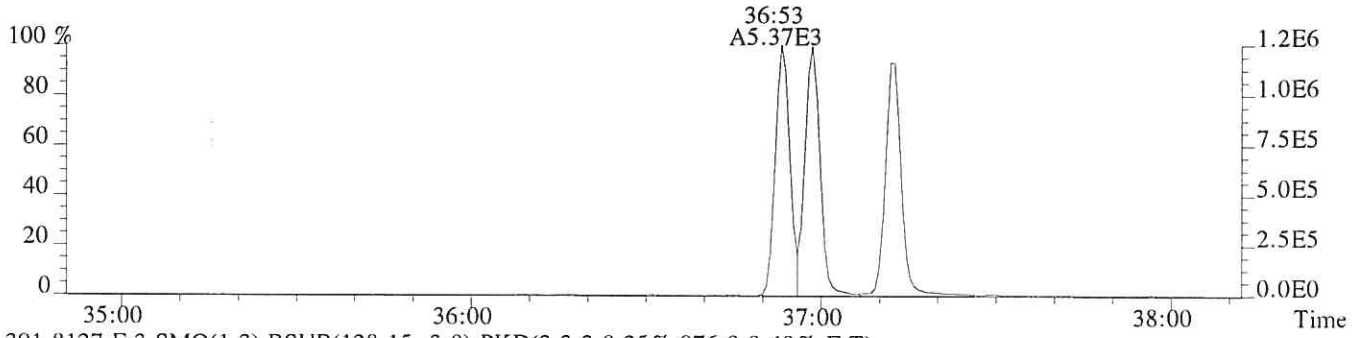
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



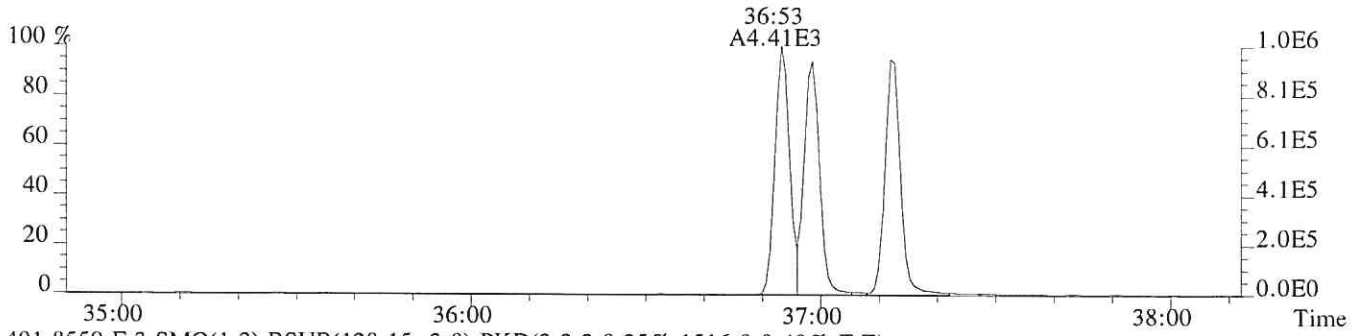
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



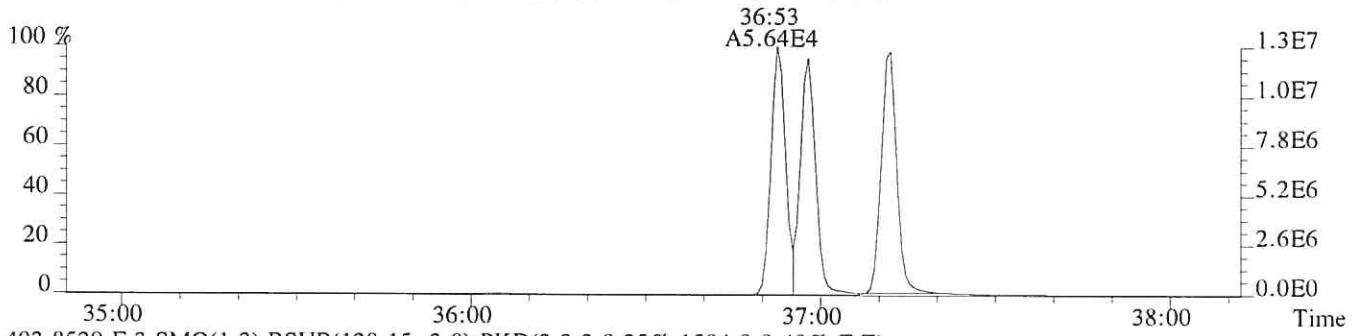
File:P407616 #1-303 Acq: 1-SEP-2017 16:55:05 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS2
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1032.0,0.40%,F,T)



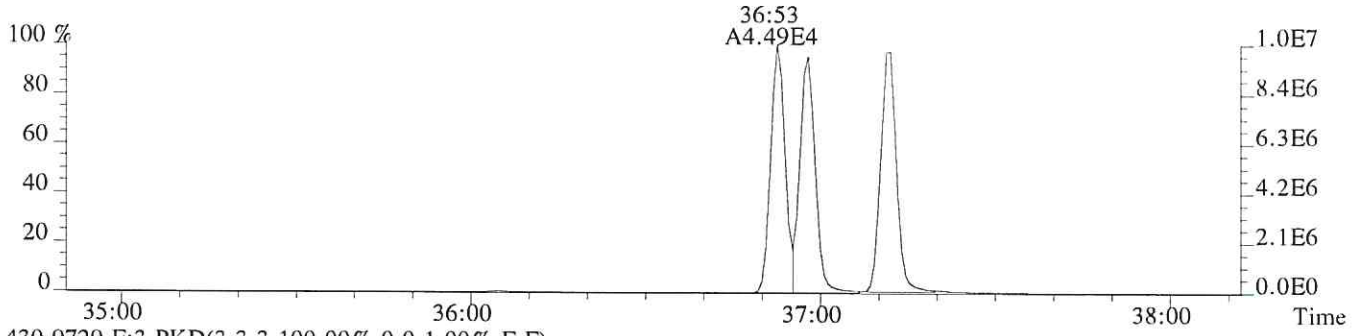
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,976.0,0.40%,F,T)



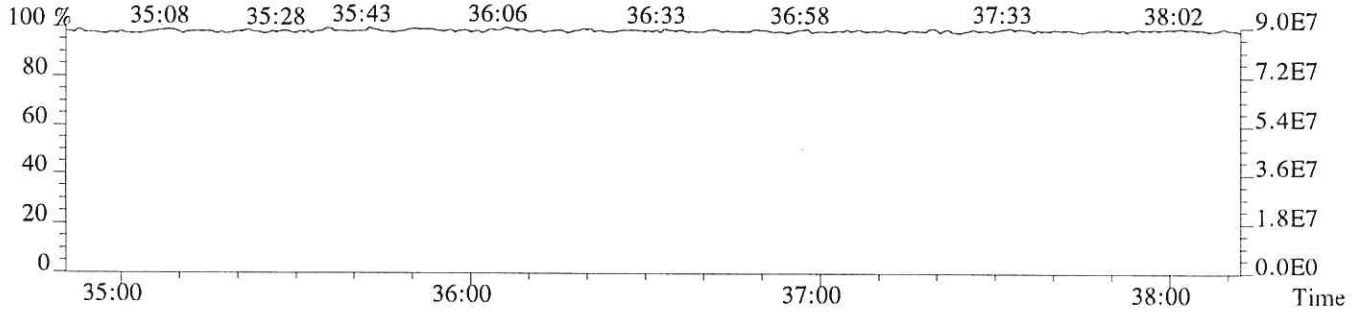
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1516.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1504.0,0.40%,F,T)

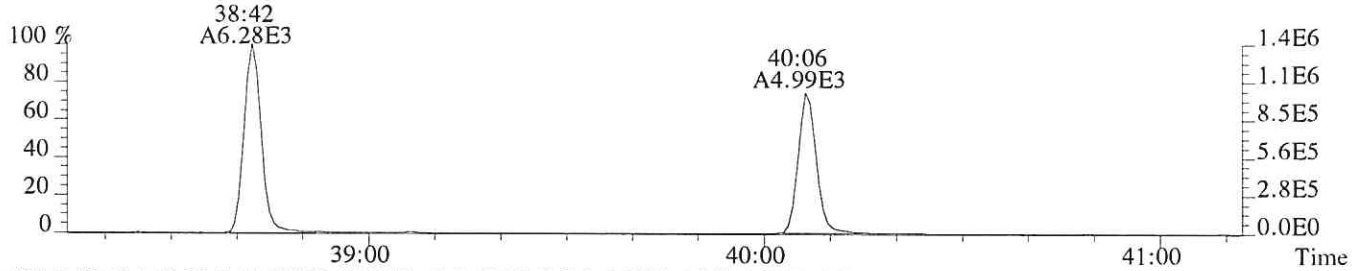


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

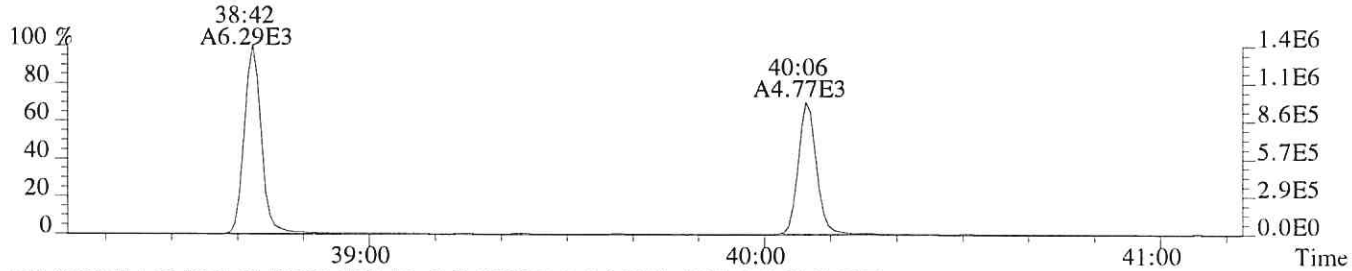


File:P407616 #1-268 Acq: 1-SEP-2017 16:55:05 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS2

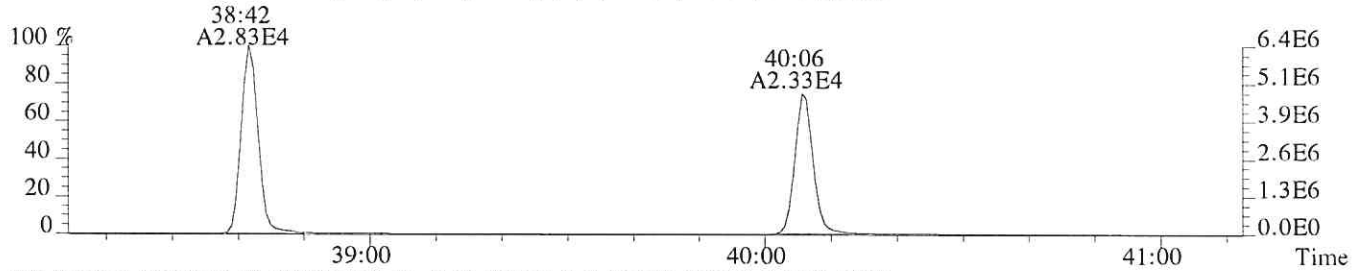
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1184.0,0.50%,F,T)



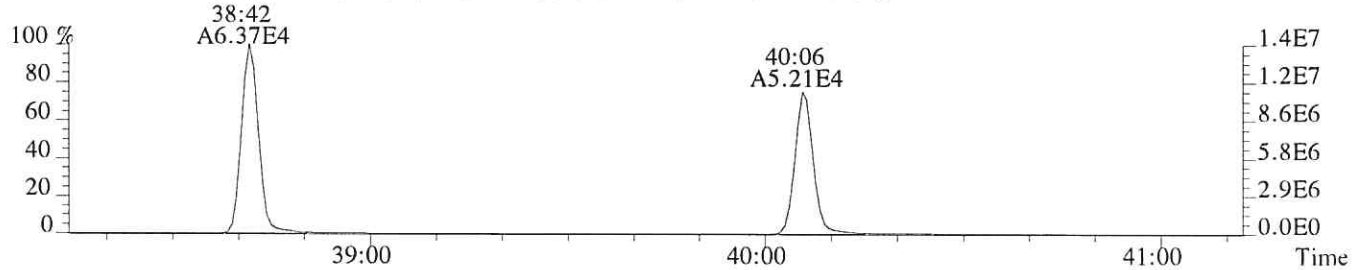
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1560.0,0.50%,F,T)



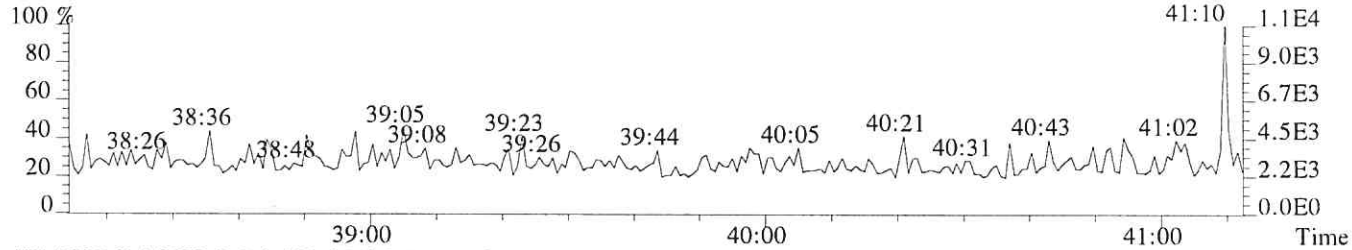
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2584.0,0.50%,F,T)



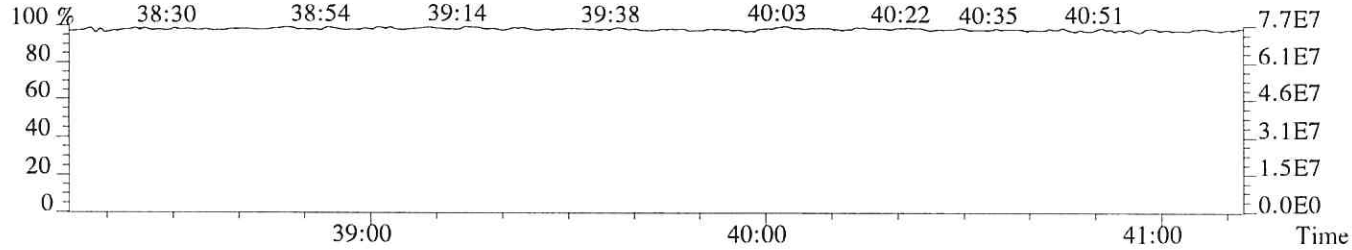
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5028.0,0.50%,F,T)



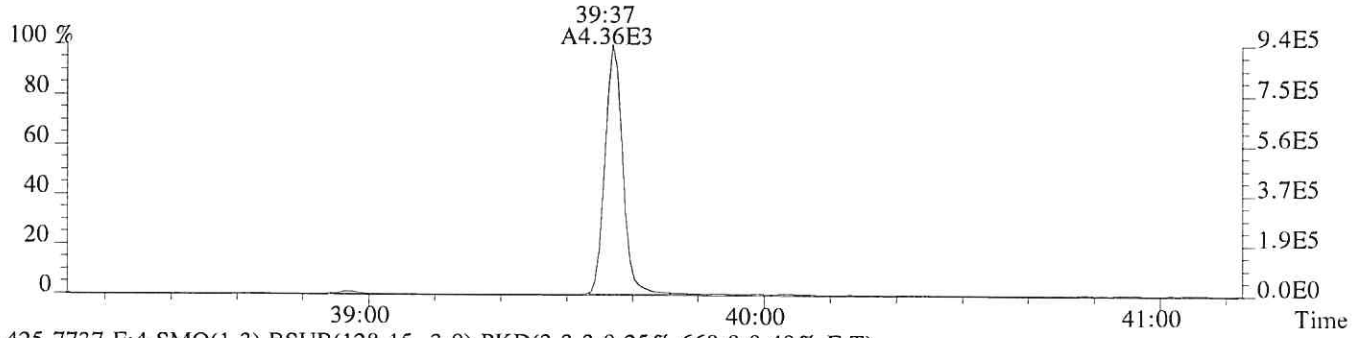
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



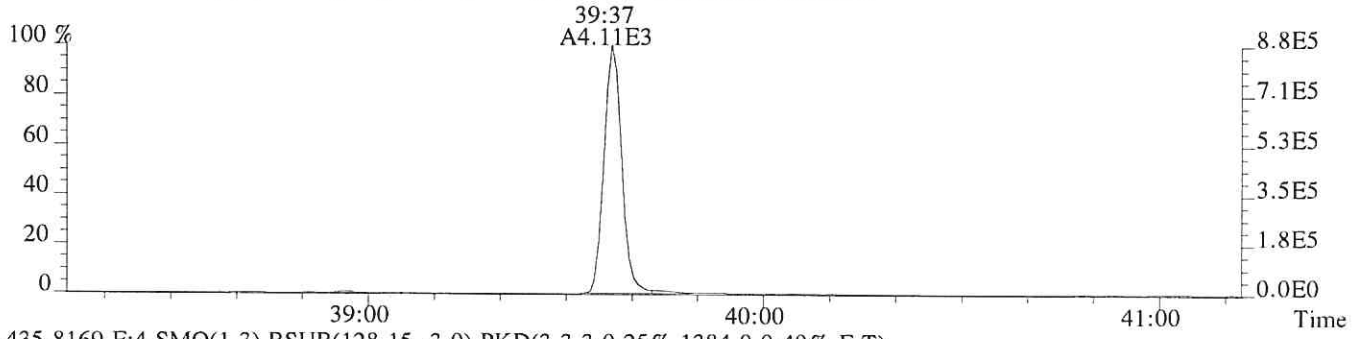
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



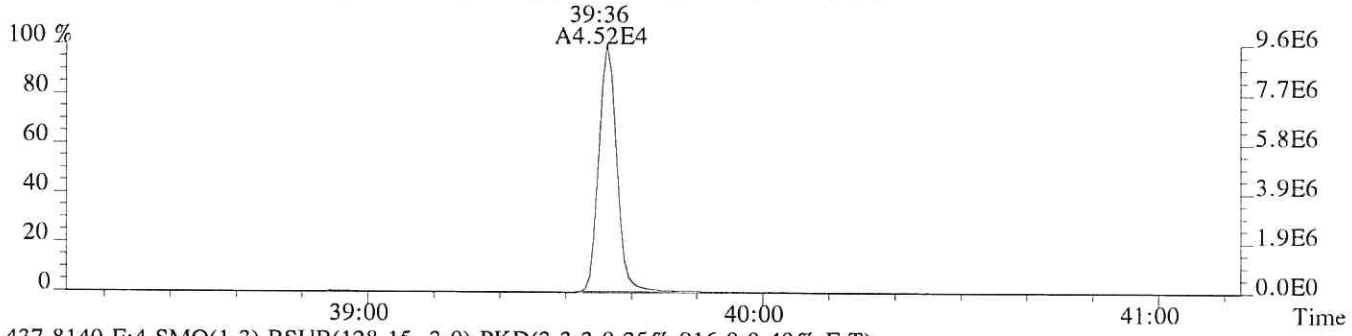
File:P407616 #1-268 Acq: 1-SEP-2017 16:55:05 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS2
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,756.0,0.40%,F,T)



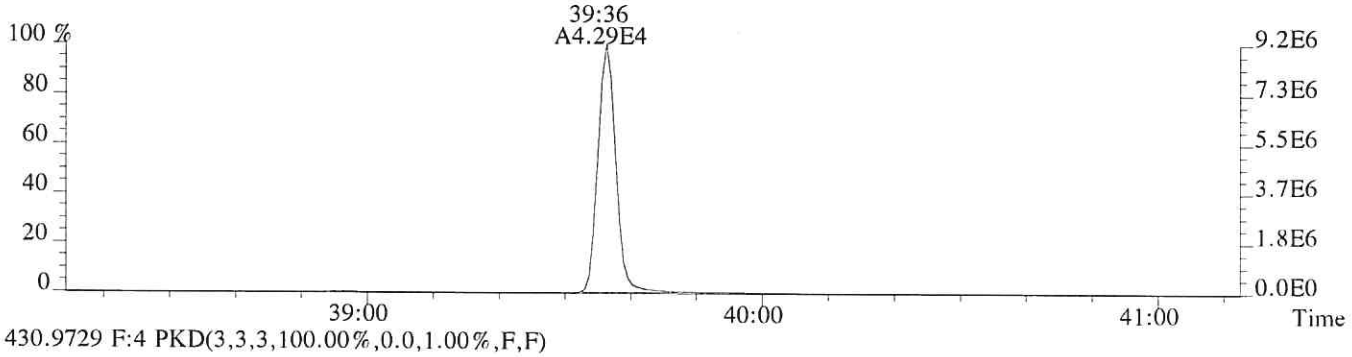
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,668.0,0.40%,F,T)



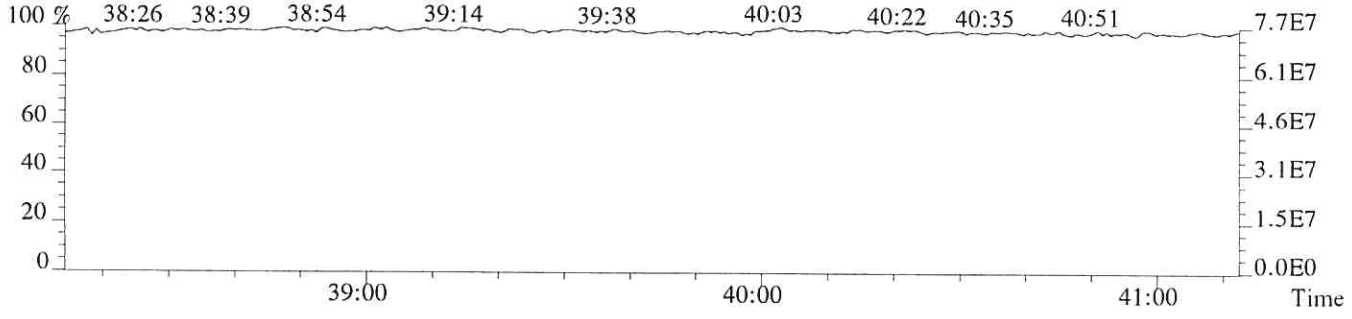
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1384.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,916.0,0.40%,F,T)

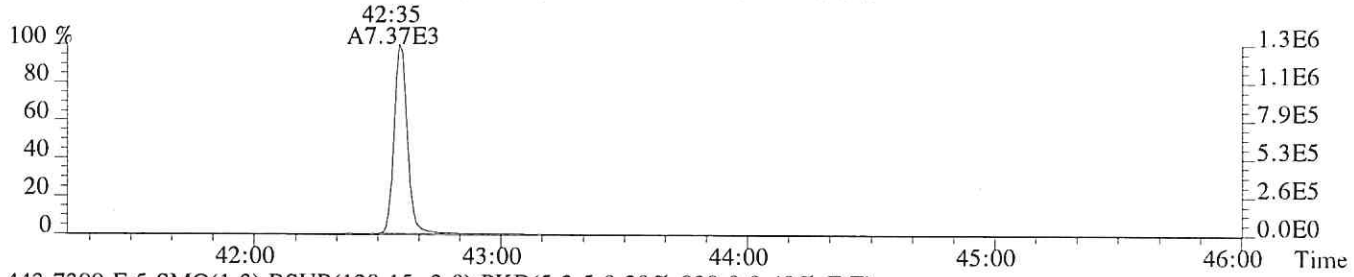


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

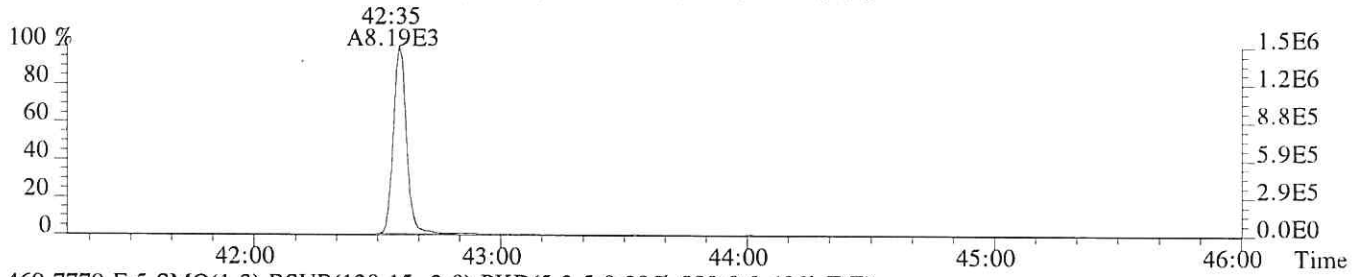


File:P407616 #1-429 Acq: 1-SEP-2017 16:55:05 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS2

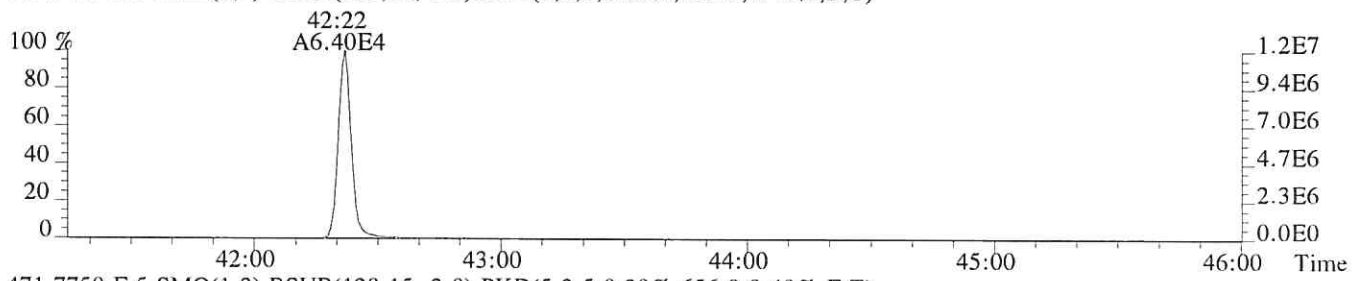
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,608.0,0.40%,F,T)



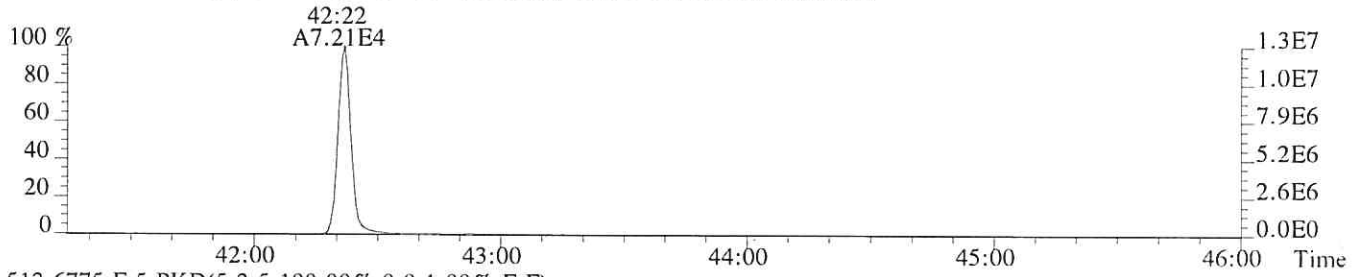
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,928.0,0.40%,F,T)



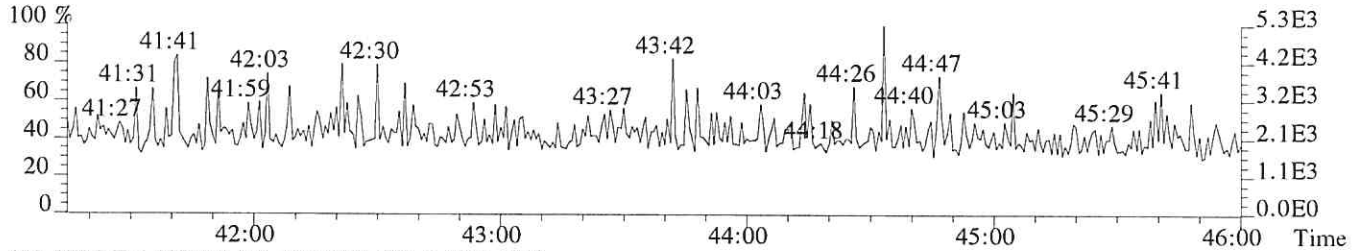
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,880.0,0.40%,F,T)



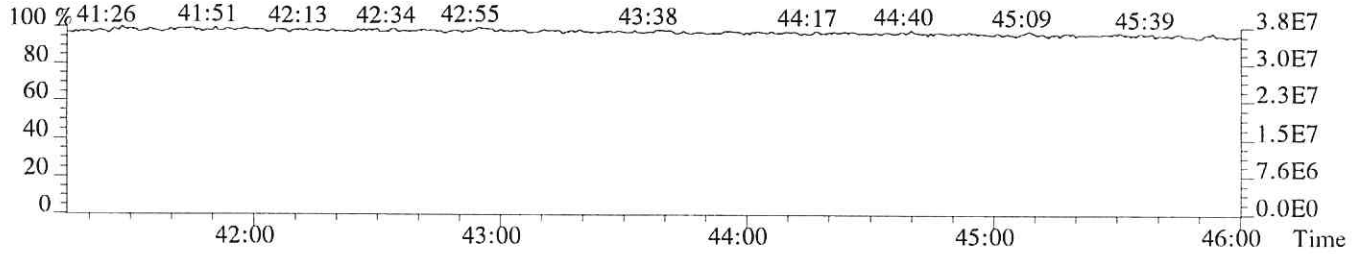
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,656.0,0.40%,F,T)



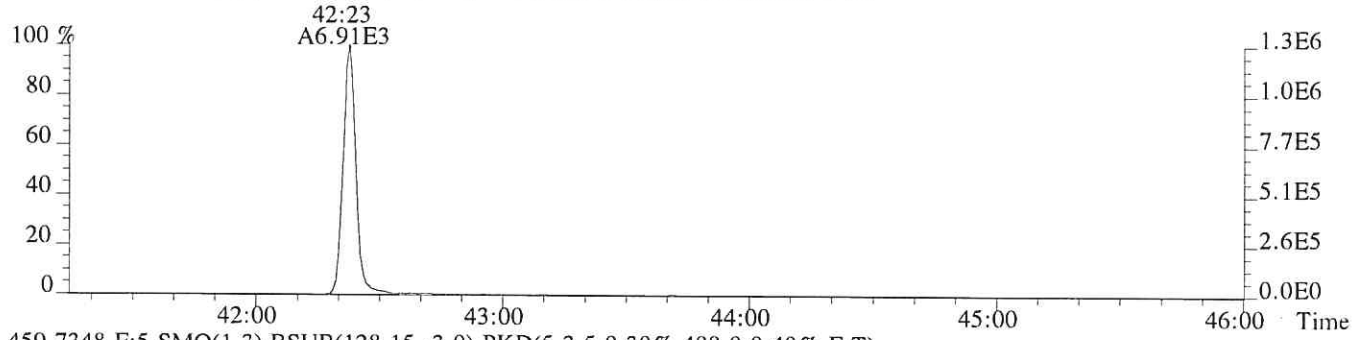
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



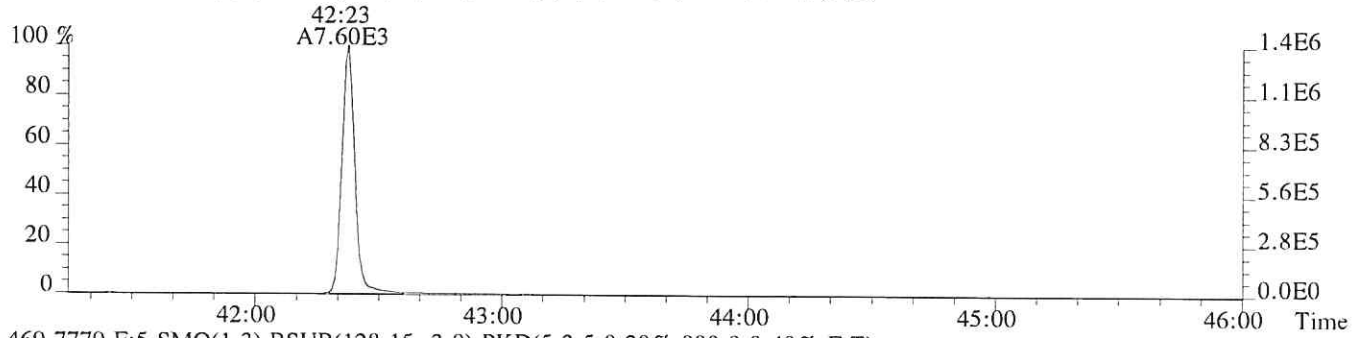
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



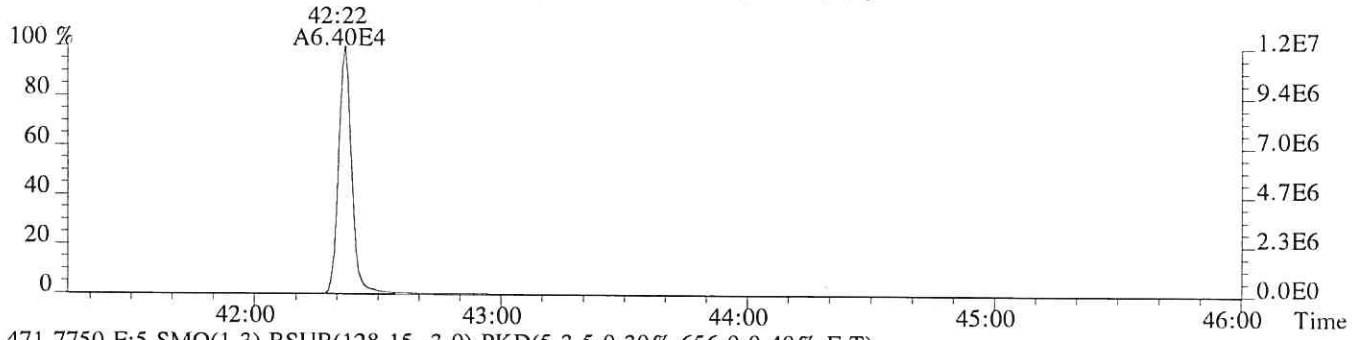
File:P407616 #1-429 Acq: 1-SEP-2017 16:55:05 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS2
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,568.0,0.40%,F,T)



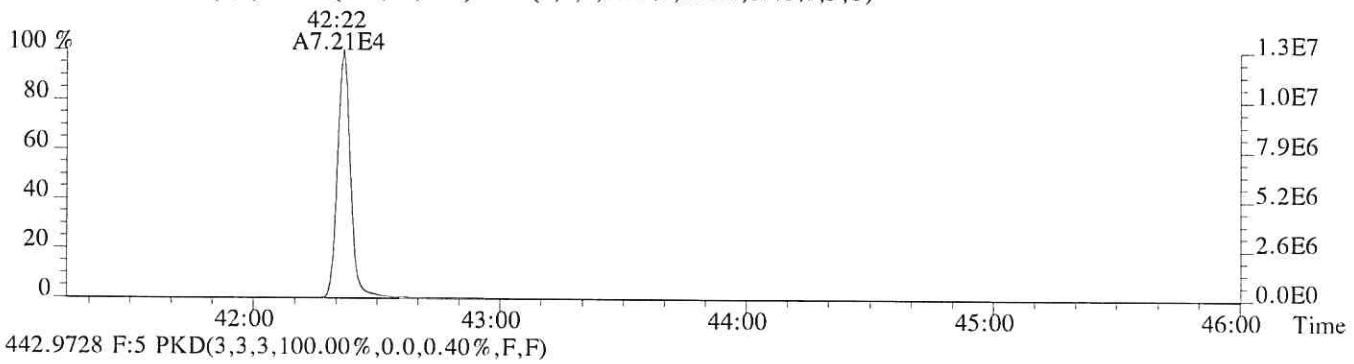
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,488.0,0.40%,F,T)



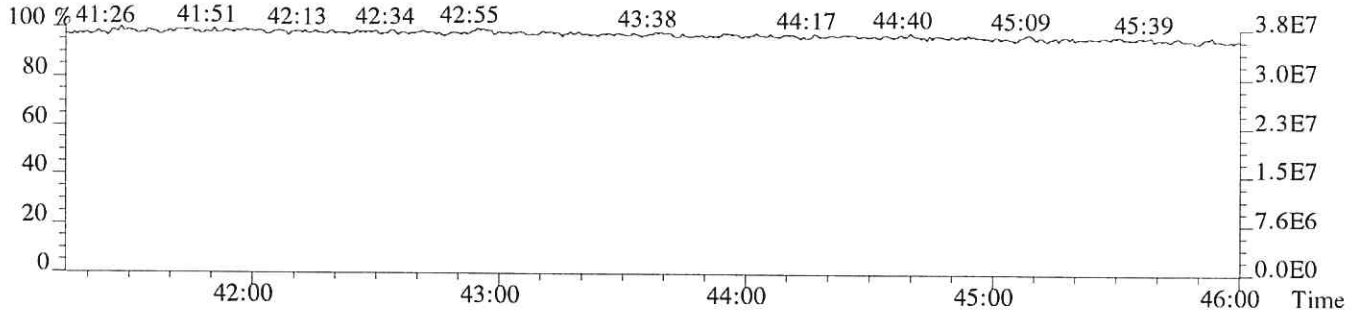
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,880.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,656.0,0.40%,F,T)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
76557

Run #4 Filename p407617 #1 Samp: 1 Inj: 1 Acquired: 1-SEP-17 17:42:58
Processed: 5-SEP-17 09:15:29 LAB. ID: CS3

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	28:39	6.589e+03	8.449e+03	0.78	yes	no	0.885
2	Unk	1,2,3,7,8-PeCDF	32:41	5.049e+04	3.250e+04	1.55	yes	no	0.984
3	Unk	2,3,4,7,8-PeCDF	33:34	4.637e+04	2.998e+04	1.55	yes	no	0.943
4	Unk	1,2,3,4,7,8-HxCDF	36:09	4.511e+04	3.661e+04	1.23	yes	no	1.230
5	Unk	1,2,3,6,7,8-HxCDF	36:16	4.670e+04	3.771e+04	1.24	yes	no	1.148
6	Unk	2,3,4,6,7,8-HxCDF	36:45	4.279e+04	3.477e+04	1.23	yes	no	1.133
7	Unk	1,2,3,7,8,9-HxCDF	37:29	3.926e+04	3.142e+04	1.25	yes	no	1.172
8	Unk	1,2,3,4,6,7,8-HpCDF	38:42	3.877e+04	3.753e+04	1.03	yes	no	1.377
9	Unk	1,2,3,4,7,8,9-HpCDF	40:06	3.058e+04	2.995e+04	1.02	yes	no	1.301
10	Unk	OCDF	42:35	4.571e+04	5.063e+04	0.90	yes	no	1.114
11	Unk	2,3,7,8-TCDD	29:24	5.390e+03	7.179e+03	0.75	yes	no	0.966
12	Unk	1,2,3,7,8-PeCDD	33:50	3.526e+04	2.291e+04	1.54	yes	no	0.851
13	Unk	1,2,3,4,7,8-HxCDD	36:53	3.228e+04	2.627e+04	1.23	yes	no	0.966
14	Unk	1,2,3,6,7,8-HxCDD	36:58	3.148e+04	2.522e+04	1.25	yes	no	0.938
15	Unk	1,2,3,7,8,9-HxCDD	37:11	3.236e+04	2.647e+04	1.22	yes	no	0.980
16	Unk	1,2,3,4,6,7,8-HpCDD	39:36	2.728e+04	2.603e+04	1.05	yes	no	0.975
17	Unk	OCDD	42:22	4.101e+04	4.686e+04	0.88	yes	no	1.033
18	IS	13C-2,3,7,8-TCDF	28:38	7.413e+04	9.636e+04	0.77	yes	no	1.176
19	IS	13C-1,2,3,7,8-PeCDF	32:40	1.014e+05	6.500e+04	1.56	yes	no	1.185
20	IS	13C-2,3,4,7,8-PeCDF	33:34	9.786e+04	6.280e+04	1.56	yes	no	1.149
21	IS	13C-1,2,3,4,7,8-HxCDF	36:09	4.605e+04	8.825e+04	0.52	yes	no	1.068
22	IS	13C-1,2,3,6,7,8-HxCDF	36:15	5.096e+04	9.679e+04	0.53	yes	no	1.171
23	IS	13C-2,3,4,6,7,8-HxCDF	36:45	4.620e+04	8.921e+04	0.52	yes	no	1.079
24	IS	13C-1,2,3,7,8,9-HxCDF	37:29	4.094e+04	7.891e+04	0.52	yes	no	0.919
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:41	3.416e+04	7.586e+04	0.45	yes	no	0.877
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:05	2.914e+04	6.568e+04	0.44	yes	no	0.723
27	IS	13C-2,3,7,8-TCDD	29:23	5.833e+04	7.386e+04	0.79	yes	no	0.958
28	IS	13C-1,2,3,7,8-PeCDD	33:50	8.280e+04	5.324e+04	1.56	yes	no	0.973
29	IS	13C-1,2,3,4,7,8-HxCDD	36:52	6.787e+04	5.477e+04	1.24	yes	no	0.966
30	IS	13C-1,2,3,6,7,8-HxCDD	36:57	6.538e+04	5.273e+04	1.24	yes	no	0.968
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:36	5.560e+04	5.303e+04	1.05	yes	no	0.854
32	IS	13C-OCDD	42:21	7.847e+04	8.828e+04	0.89	yes	no	0.668
33	RS/RT	13C-1,2,3,4-TCDD	28:49	6.176e+04	7.712e+04	0.80	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:11	6.977e+04	5.652e+04	1.23	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:24	1.364e+04				no	0.992

ALS ENVIRONMENTAL
10450 Stancliff Road
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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
76557

Run #4 Filename p407617 Samp: 1 Inj: 1 Acquired: 1-SEP-17 17:42:58
Processed: 5-SEP-17 09:15:291 LAB. ID: CS3

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.31e+06	7.20e+02	1.8e+03	1.67e+06	1.26e+03	1.3e+03
2	1,2,3,7,8-PeCDF	1.00e+07	1.02e+03	9.8e+03	6.51e+06	1.15e+03	5.7e+03
3	2,3,4,7,8-PeCDF	9.76e+06	1.02e+03	9.5e+03	6.25e+06	1.15e+03	5.4e+03
4	1,2,3,4,7,8-HxCDF	1.01e+07	1.12e+03	9.0e+03	8.26e+06	7.84e+02	1.1e+04
5	1,2,3,6,7,8-HxCDF	1.03e+07	1.12e+03	9.1e+03	8.26e+06	7.84e+02	1.1e+04
6	2,3,4,6,7,8-HxCDF	9.62e+06	1.12e+03	8.6e+03	7.71e+06	7.84e+02	9.8e+03
7	1,2,3,7,8,9-HxCDF	8.52e+06	1.12e+03	7.6e+03	6.94e+06	7.84e+02	8.9e+03
8	1,2,3,4,6,7,8-HpCDF	8.83e+06	3.14e+03	2.8e+03	8.48e+06	2.56e+03	3.3e+03
9	1,2,3,4,7,8,9-HpCDF	6.49e+06	3.14e+03	2.1e+03	6.28e+06	2.56e+03	2.5e+03
10	OCDF	8.26e+06	6.96e+02	1.2e+04	9.10e+06	1.15e+03	7.9e+03
11	2,3,7,8-TCDD	1.10e+06	1.71e+03	6.4e+02	1.48e+06	1.06e+03	1.4e+03
12	1,2,3,7,8-PeCDD	7.46e+06	1.43e+03	5.2e+03	4.86e+06	4.16e+02	1.2e+04
13	1,2,3,4,7,8-HxCDD	7.52e+06	8.44e+02	8.9e+03	6.08e+06	7.56e+02	8.0e+03
14	1,2,3,6,7,8-HxCDD	6.97e+06	8.44e+02	8.3e+03	5.61e+06	7.56e+02	7.4e+03
15	1,2,3,7,8,9-HxCDD	7.26e+06	8.44e+02	8.6e+03	5.96e+06	7.56e+02	7.9e+03
16	1,2,3,4,6,7,8-HpCDD	5.97e+06	1.05e+03	5.7e+03	5.61e+06	1.11e+03	5.0e+03
17	OCDD	7.49e+06	5.68e+02	1.3e+04	8.52e+06	8.12e+02	1.0e+04
18	13C-2,3,7,8-TCDF	1.46e+07	1.03e+04	1.4e+03	1.89e+07	5.23e+03	3.6e+03
19	13C-1,2,3,7,8-PeCDF	1.99e+07	7.00e+02	2.8e+04	1.27e+07	1.00e+03	1.3e+04
20	13C-2,3,4,7,8-PeCDF	2.03e+07	7.00e+02	2.9e+04	1.29e+07	1.00e+03	1.3e+04
21	13C-1,2,3,4,7,8-HxCDF	1.03e+07	8.76e+02	1.2e+04	1.98e+07	1.78e+03	1.1e+04
22	13C-1,2,3,6,7,8-HxCDF	1.11e+07	8.76e+02	1.3e+04	2.10e+07	1.78e+03	1.2e+04
23	13C-2,3,4,6,7,8-HxCDF	1.05e+07	8.76e+02	1.2e+04	2.00e+07	1.78e+03	1.1e+04
24	13C-1,2,3,7,8,9-HxCDF	8.66e+06	8.76e+02	9.9e+03	1.70e+07	1.78e+03	9.5e+03
25	13C-1,2,3,4,6,7,8-HpCDF	7.79e+06	3.38e+03	2.3e+03	1.73e+07	4.31e+03	4.0e+03
26	13C-1,2,3,4,7,8,9-HpCDF	6.18e+06	3.38e+03	1.8e+03	1.37e+07	4.31e+03	3.2e+03
27	13C-2,3,7,8-TCDD	1.19e+07	3.99e+03	3.0e+03	1.49e+07	2.04e+03	7.3e+03
28	13C-1,2,3,7,8-PeCDD	1.68e+07	1.13e+03	1.5e+04	1.08e+07	1.22e+03	8.9e+03
29	13C-1,2,3,4,7,8-HxCDD	1.58e+07	1.60e+03	9.9e+03	1.26e+07	1.11e+03	1.1e+04
30	13C-1,2,3,6,7,8-HxCDD	1.44e+07	1.60e+03	9.0e+03	1.17e+07	1.11e+03	1.1e+04
31	13C-1,2,3,4,6,7,8-HpCDD	1.20e+07	1.47e+03	8.2e+03	1.13e+07	8.72e+02	1.3e+04
32	13C-OCDD	1.44e+07	9.48e+02	1.5e+04	1.60e+07	9.12e+02	1.8e+04
33	13C-1,2,3,4-TCDD	1.24e+07	3.99e+03	3.1e+03	1.56e+07	2.04e+03	7.6e+03
34	13C-1,2,3,7,8,9-HxCDD	1.55e+07	1.60e+03	9.7e+03	1.27e+07	1.11e+03	1.1e+04
35	37Cl-2,3,7,8-TCDD	2.80e+06	9.92e+02	2.8e+03			

ALS ENVIRONMENTAL
10450 Stancliff Road
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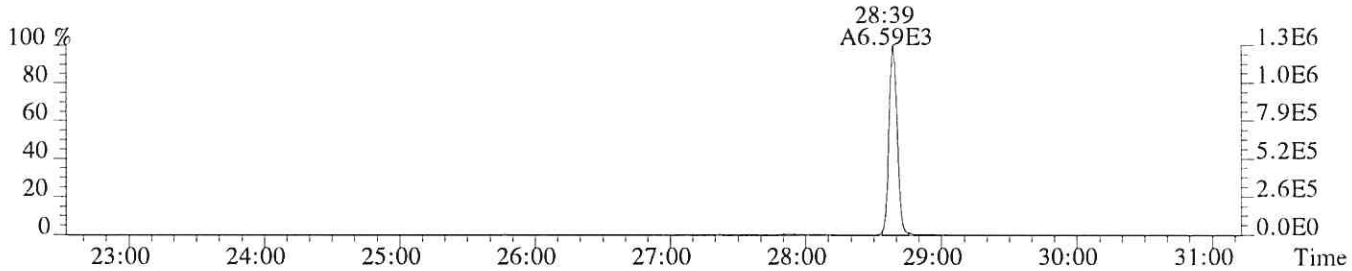
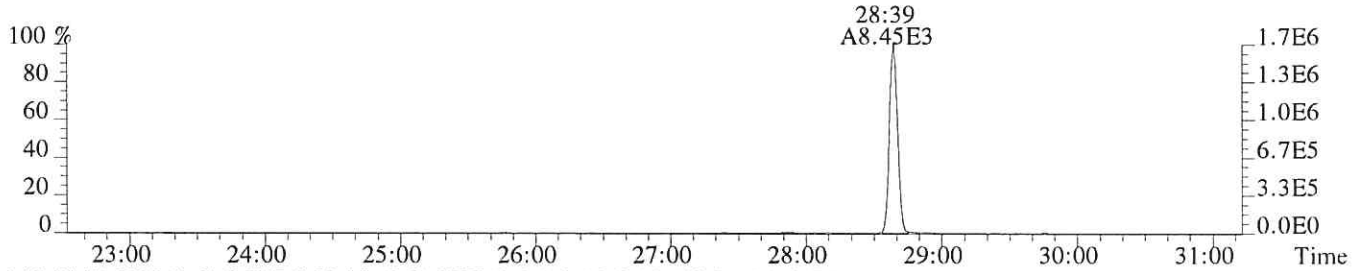
File:P407617 #1-616 Acq: 1-SEP-2017 17:42:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

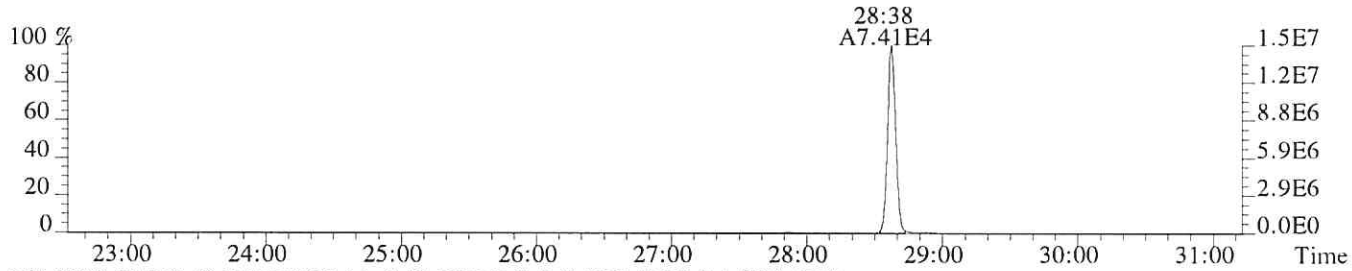
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,720.0,1.00%,F,T)



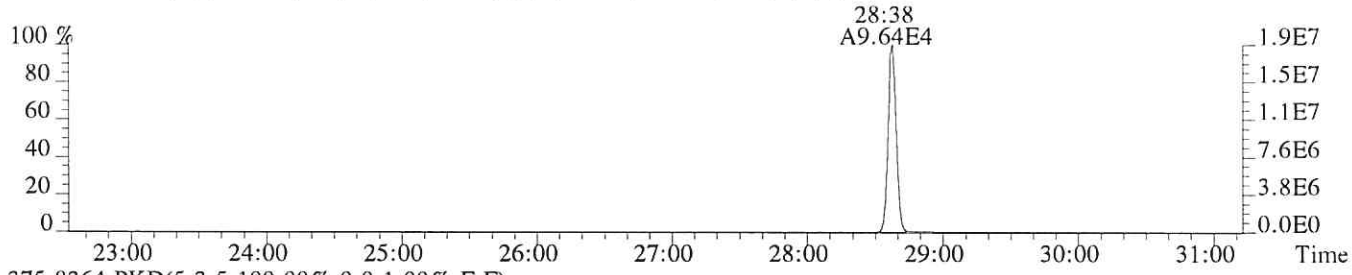
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1256.0,1.00%,F,T)



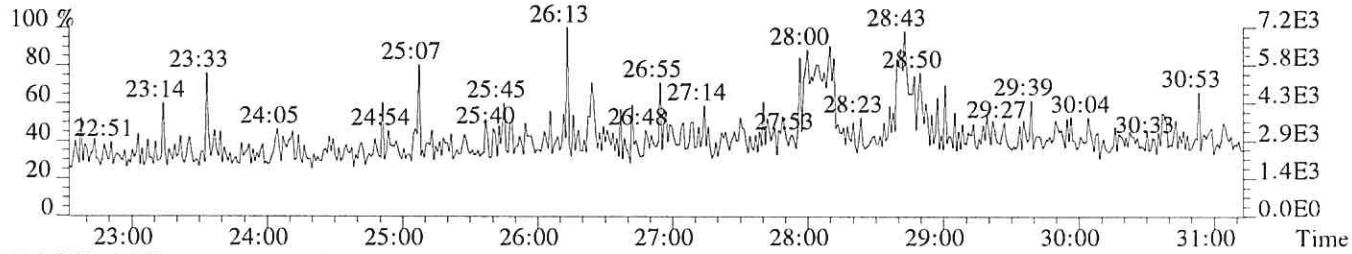
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,10276.0,1.00%,F,T)



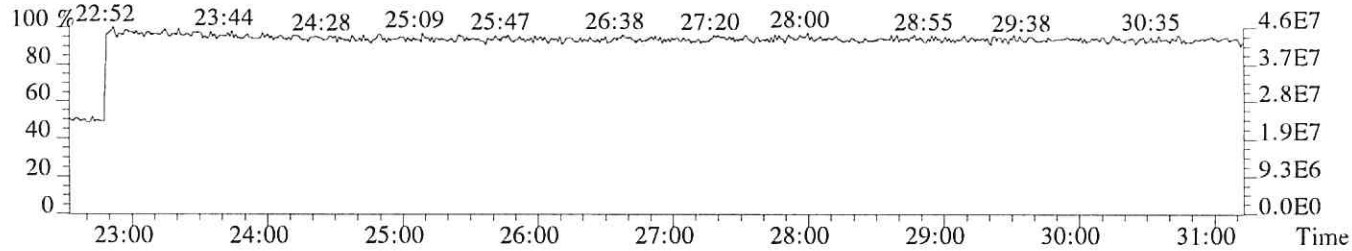
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5228.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

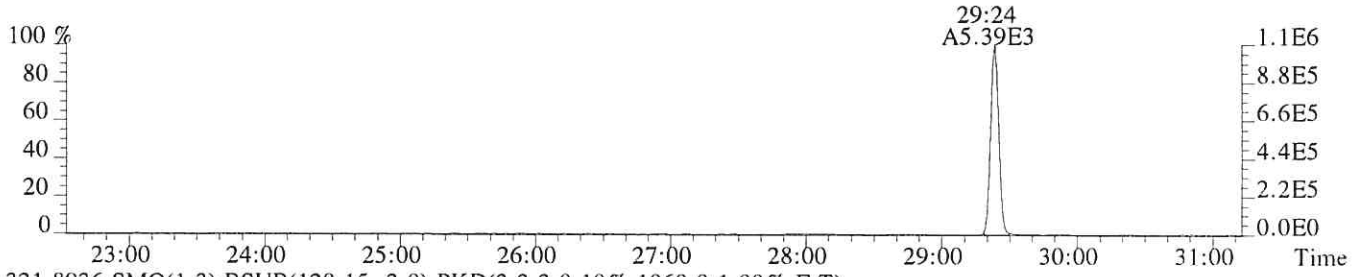


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

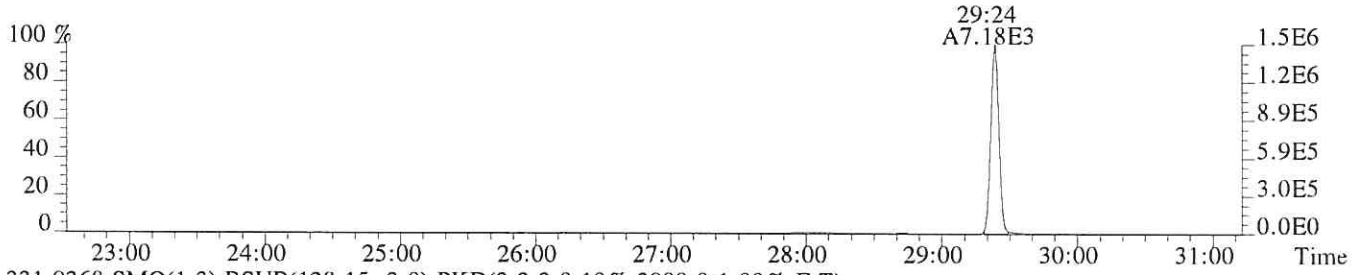


File:P407617 #1-616 Acq: 1-SEP-2017 17:42:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

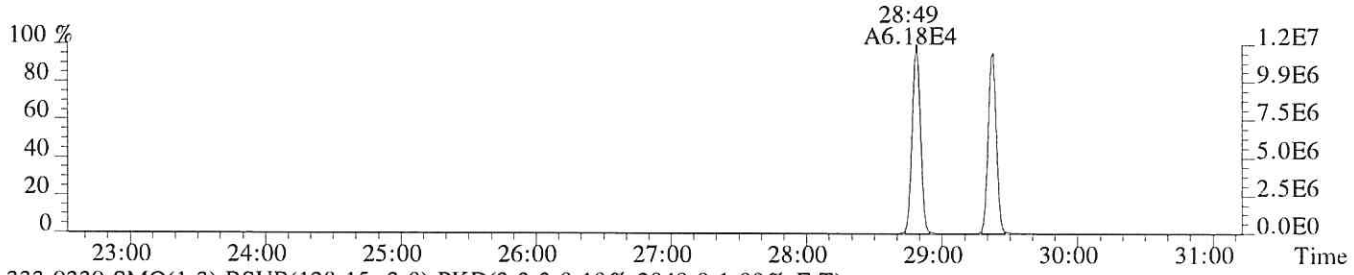
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1712.0,1.00%,F,T)



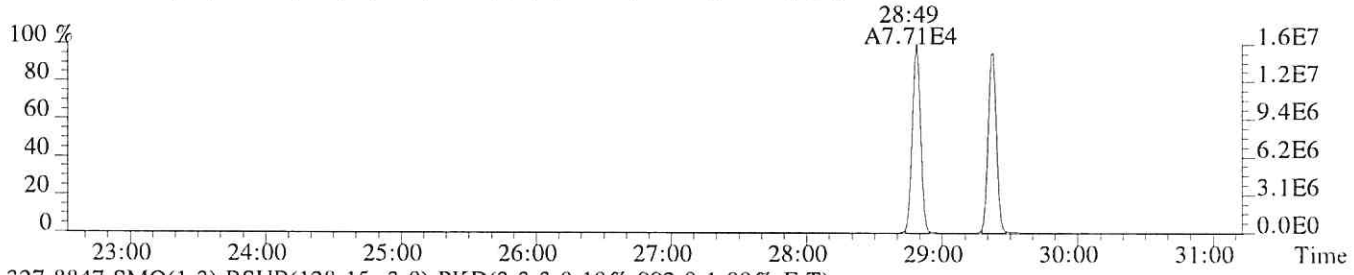
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1060.0,1.00%,F,T)



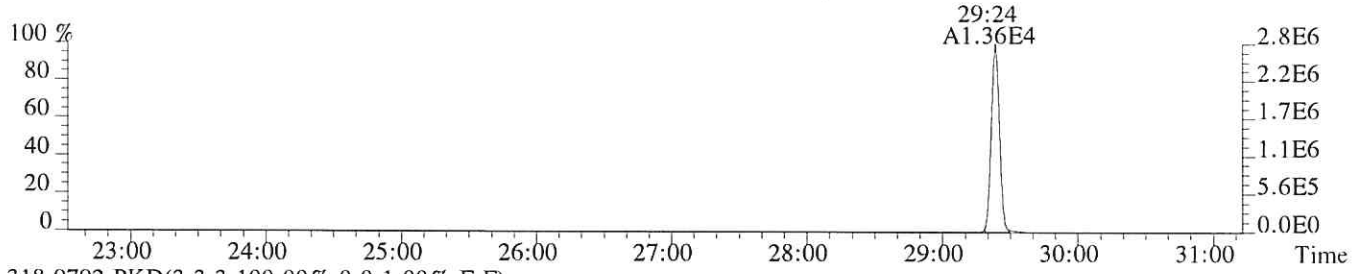
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3988.0,1.00%,F,T)



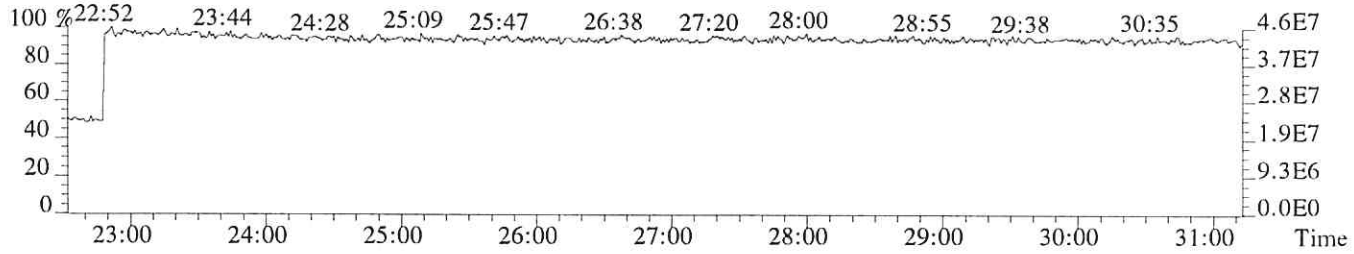
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2040.0,1.00%,F,T)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,992.0,1.00%,F,T)

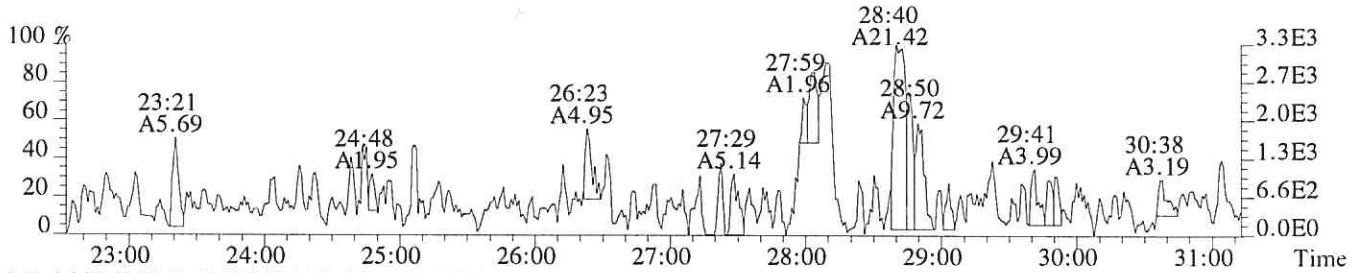


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

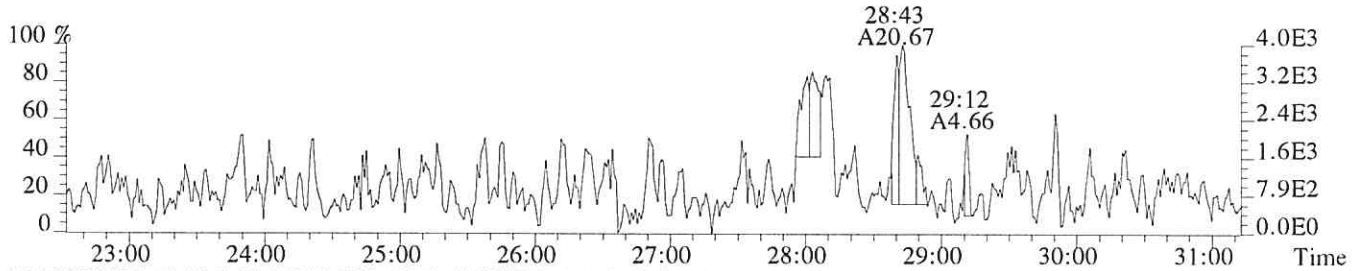


File:P407617 #1-616 Acq: 1-SEP-2017 17:42:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

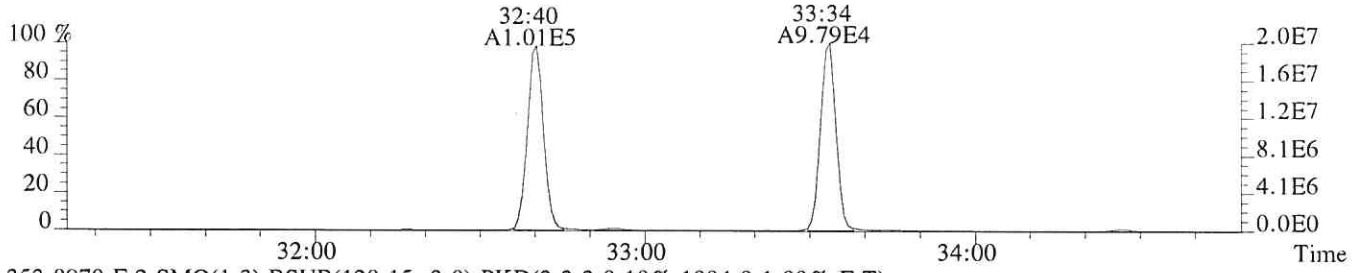
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,640.0,1.00%,F,T)



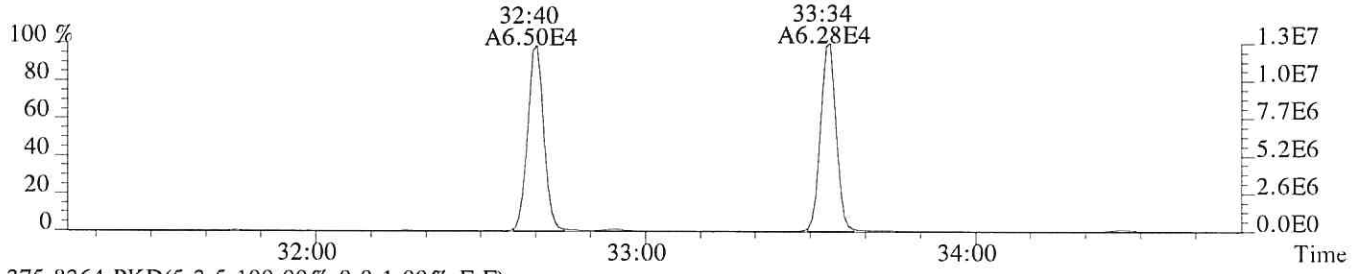
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1032.0,1.00%,F,T)



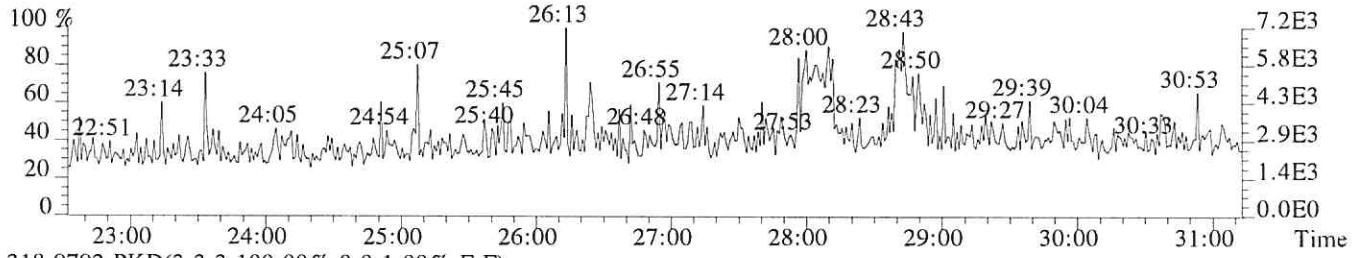
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,700.0,1.00%,F,T)



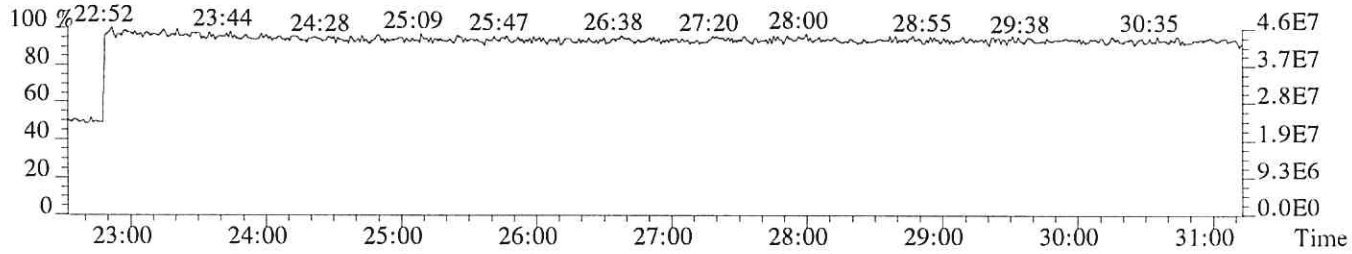
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1004.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

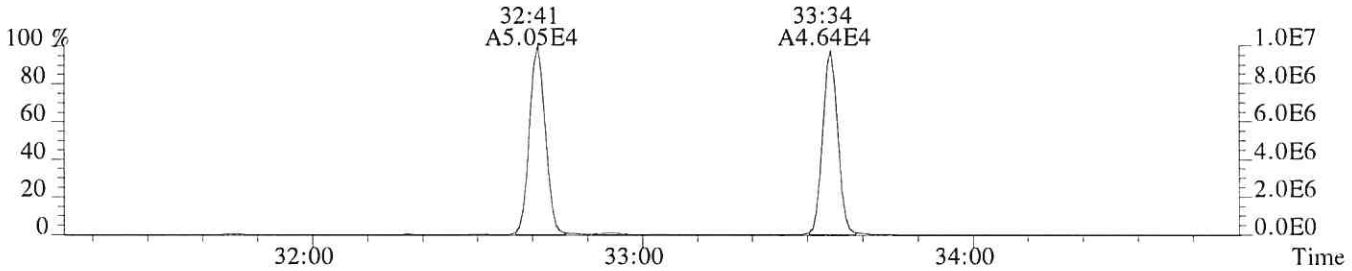


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

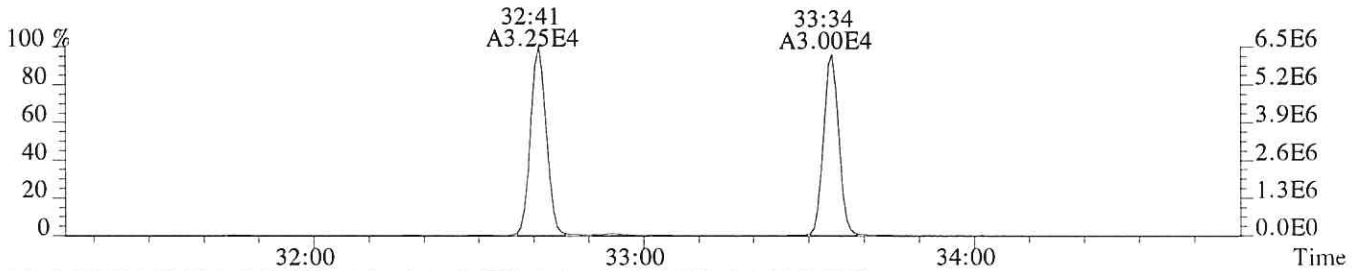


File:P407617 #1-321 Acq: 1-SEP-2017 17:42:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

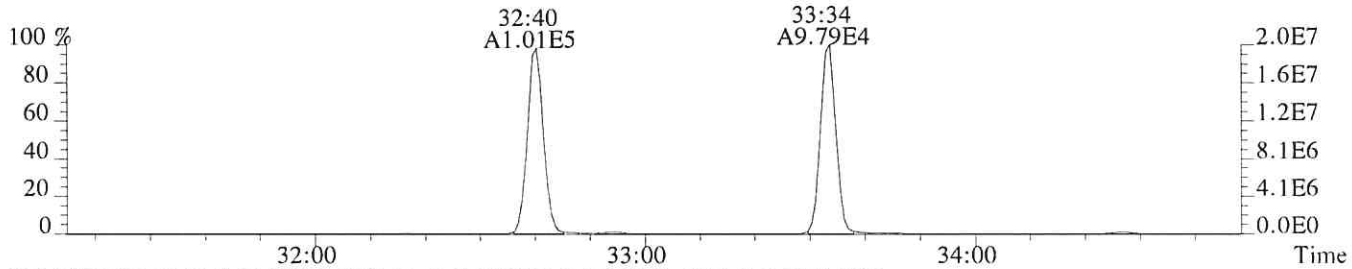
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1024.0,1.00%,F,T)



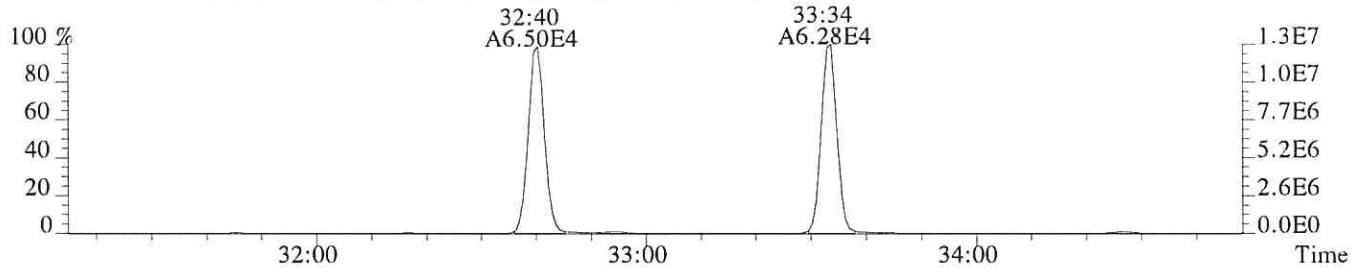
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1148.0,1.00%,F,T)



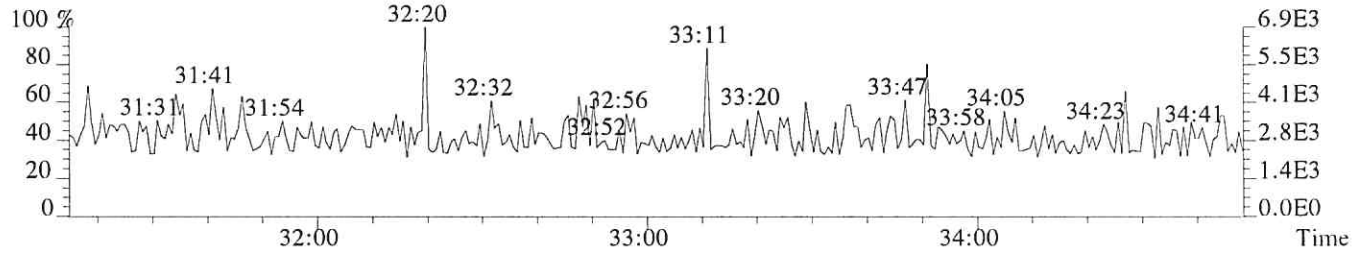
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,700.0,1.00%,F,T)



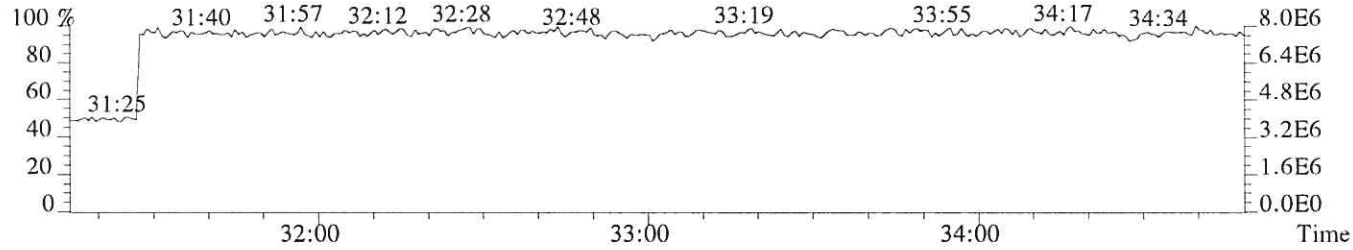
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1004.0,1.00%,F,T)



409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

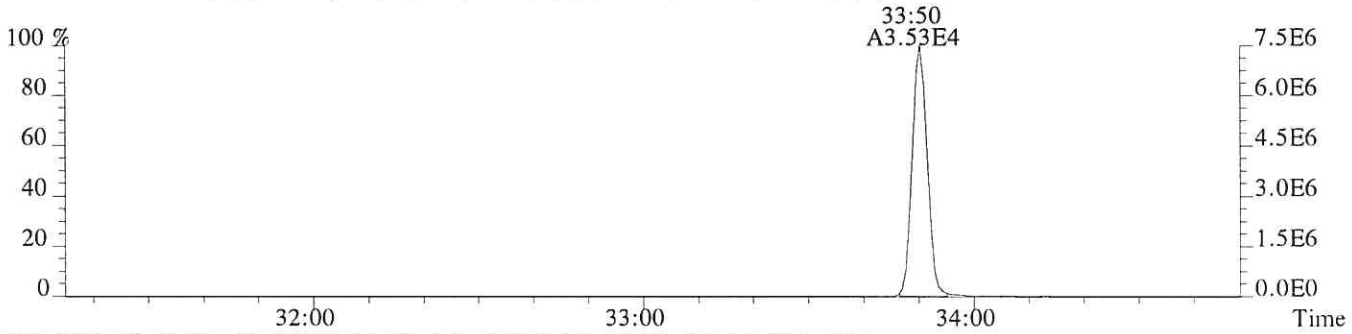


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

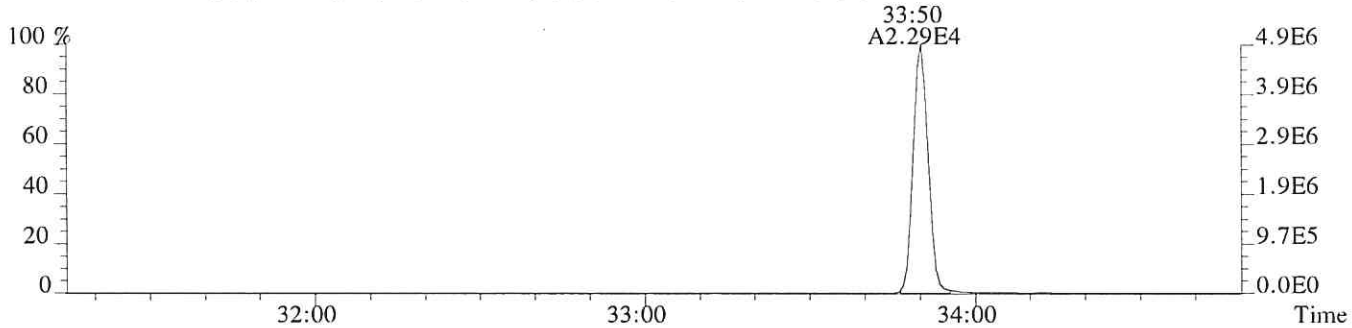


File:P407617 #1-321 Acq: 1-SEP-2017 17:42:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

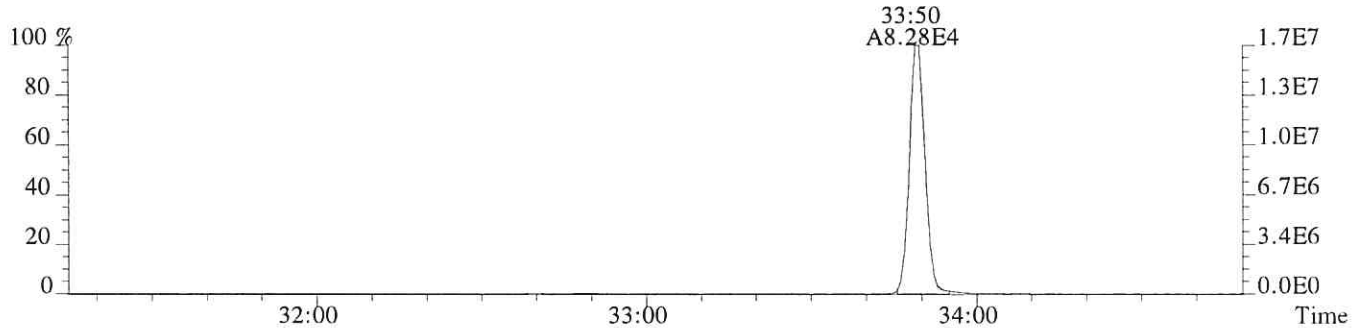
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1428.0,1.00%,F,T)



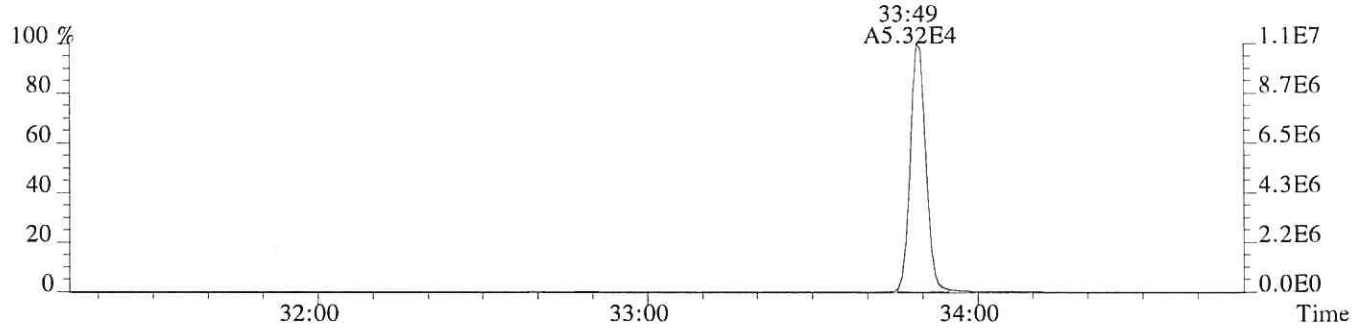
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,416.0,1.00%,F,T)



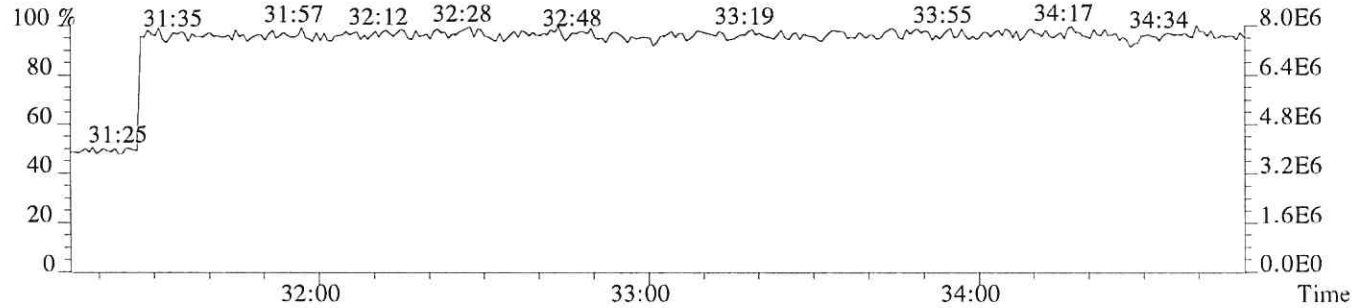
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1128.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1216.0,1.00%,F,T)

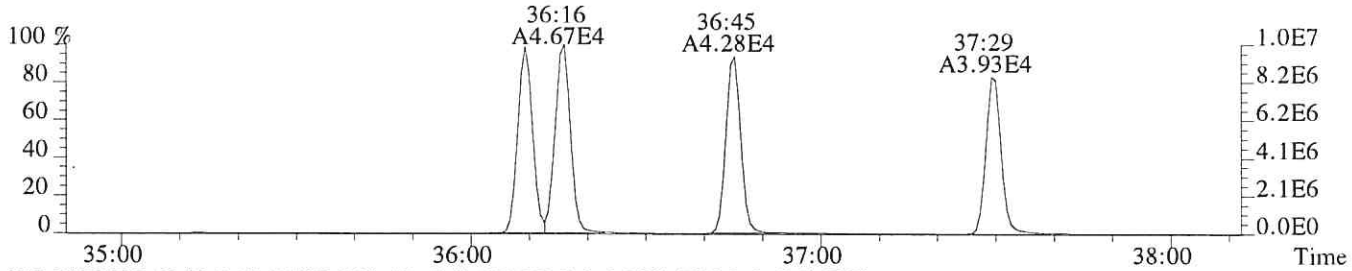


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

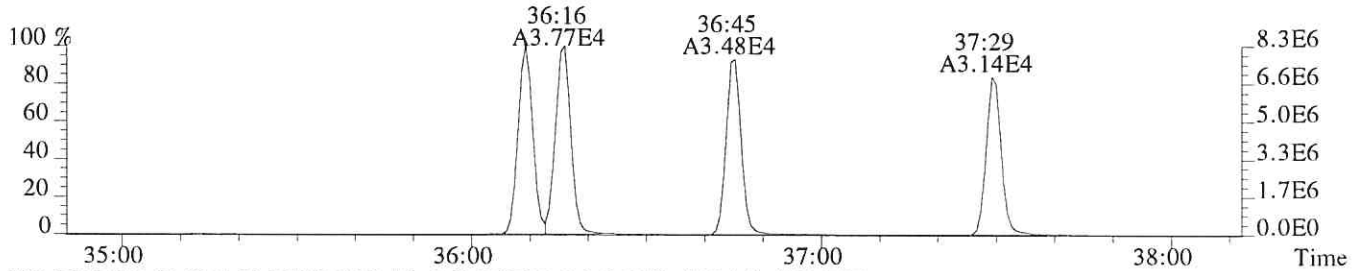


File:P407617 #1-303 Acq: 1-SEP-2017 17:42:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

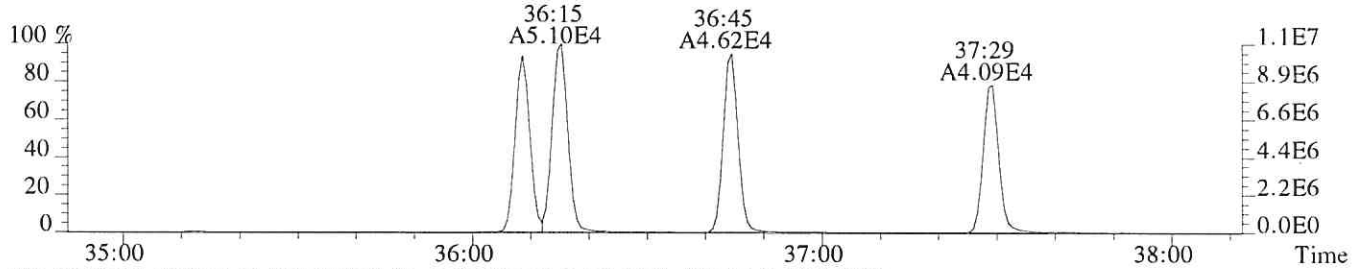
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1124.0,0.40%,F,T)



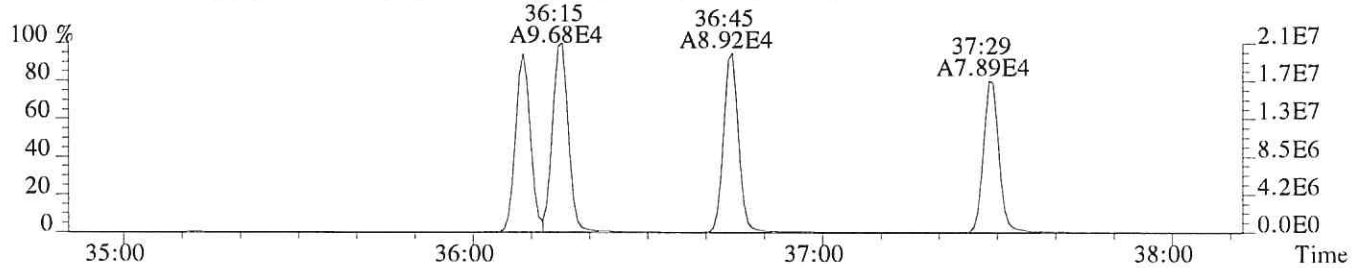
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,784.0,0.40%,F,T)



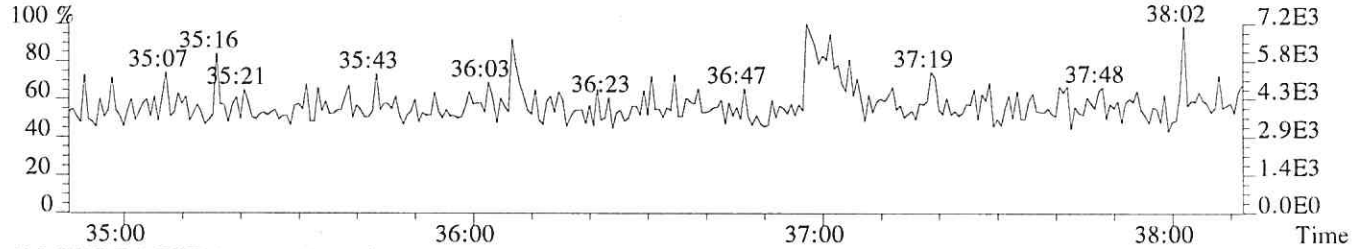
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,876.0,0.40%,F,T)



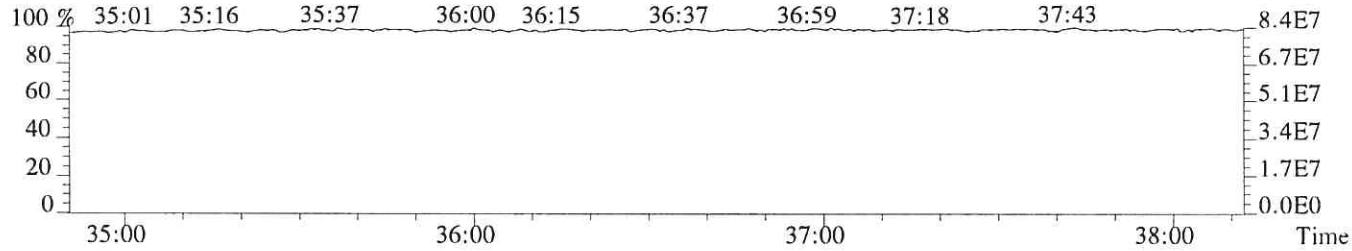
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1780.0,0.40%,F,T)



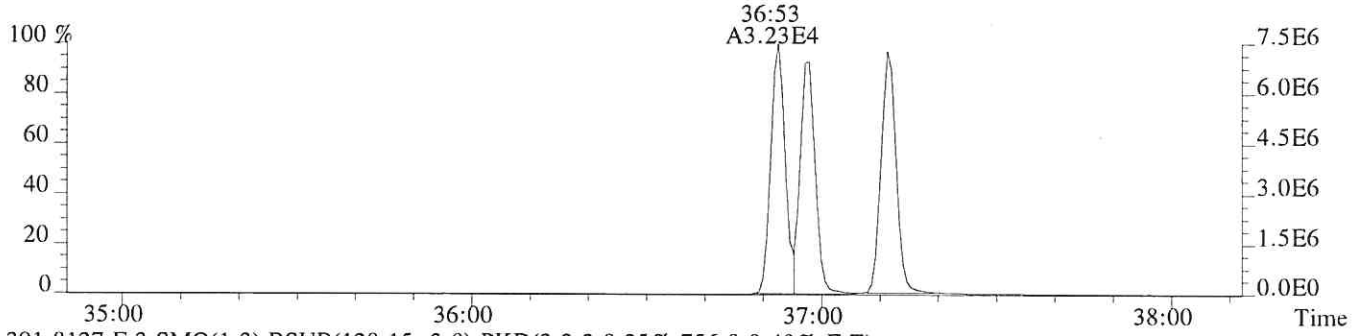
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



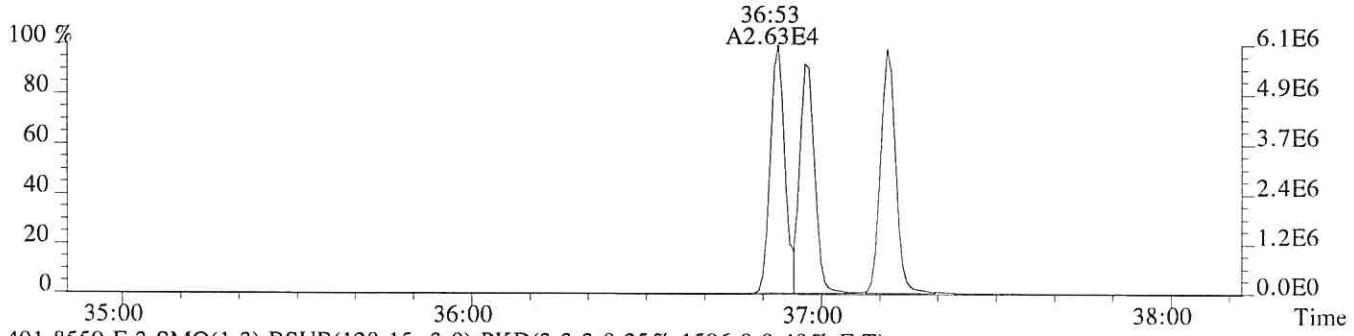
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



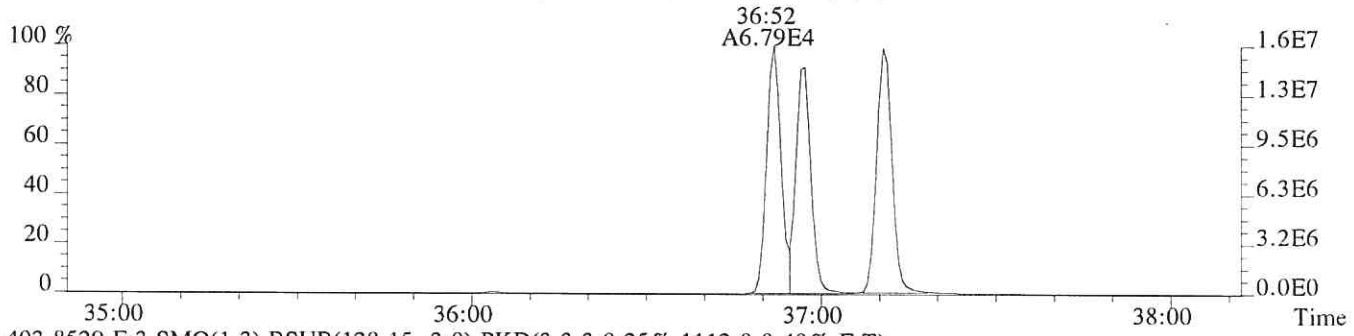
File:P407617 #1-303 Acq: 1-SEP-2017 17:42:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,844.0,0.40%,F,T)



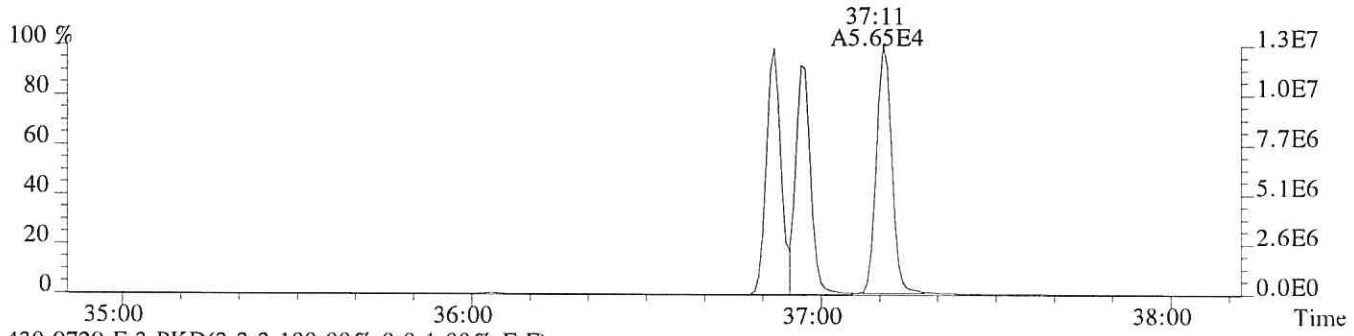
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,756.0,0.40%,F,T)



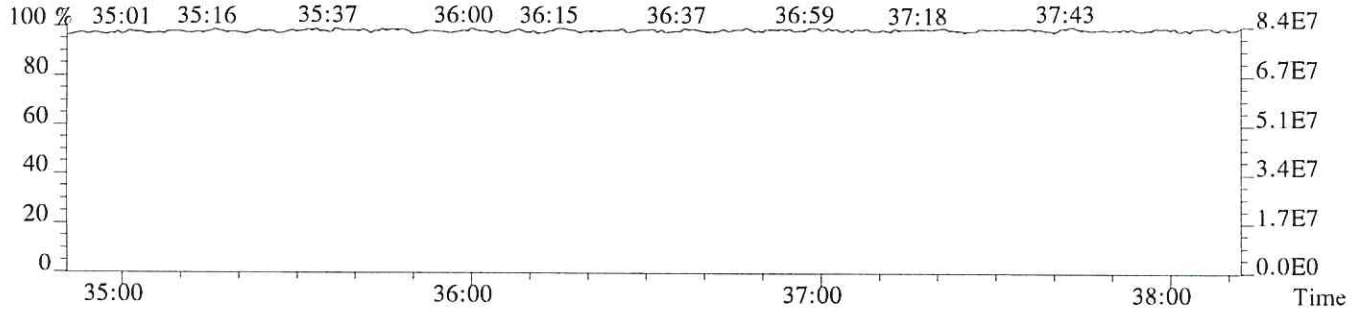
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1596.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1112.0,0.40%,F,T)

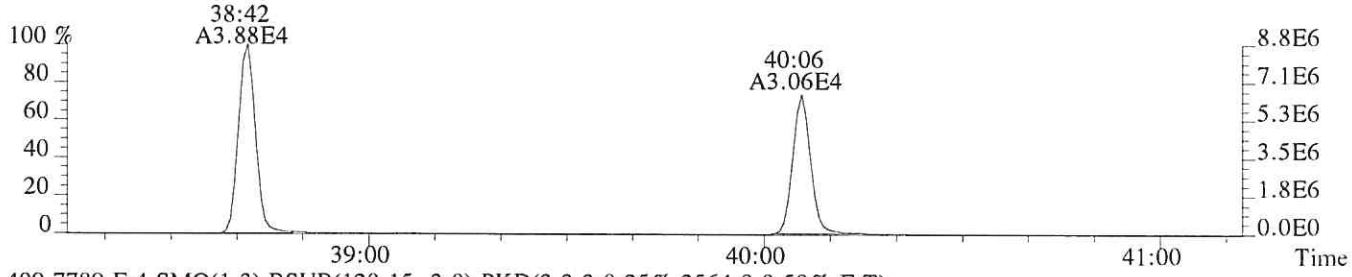


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

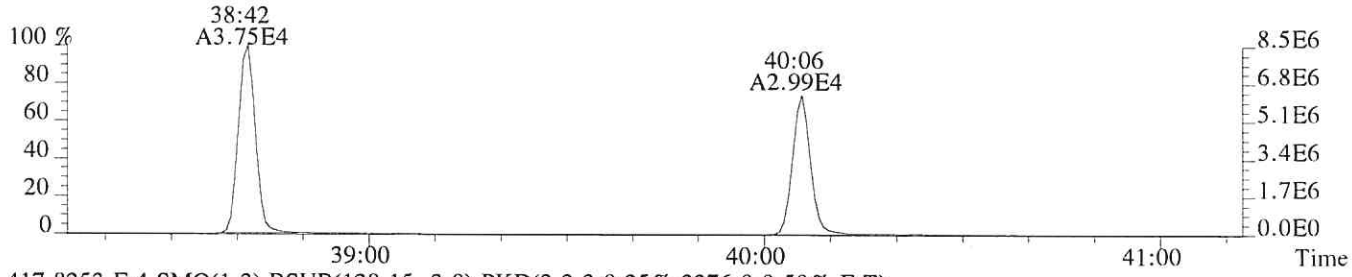


File:P407617 #1-268 Acq: 1-SEP-2017 17:42:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

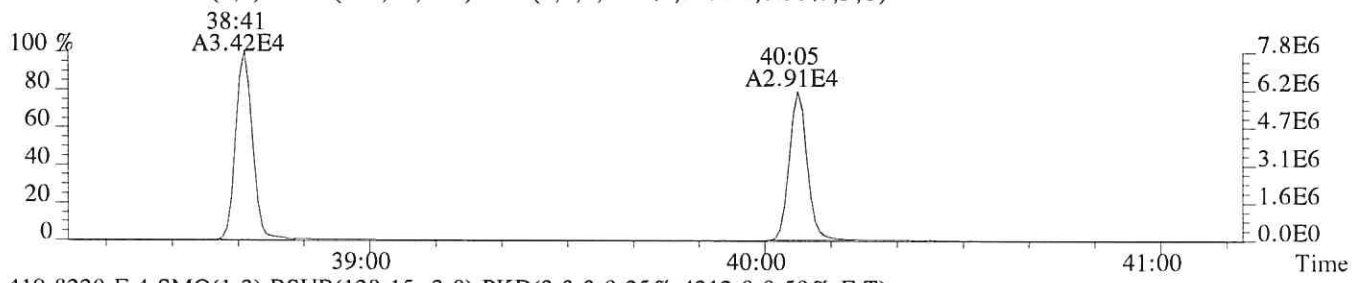
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3140.0,0.50%,F,T)



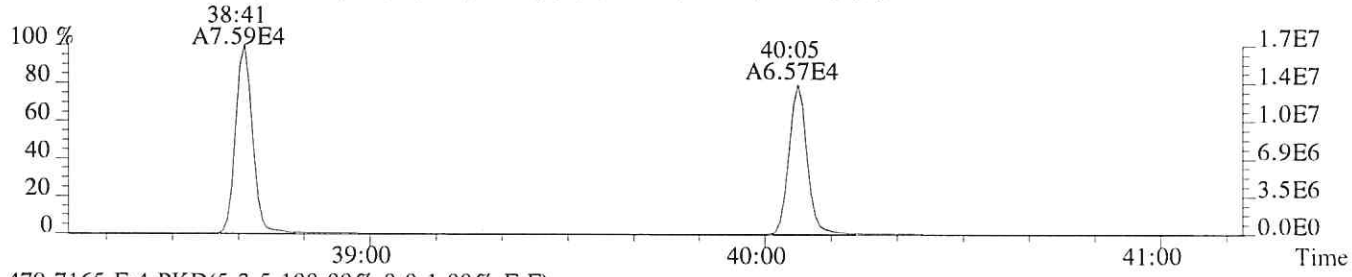
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2564.0,0.50%,F,T)



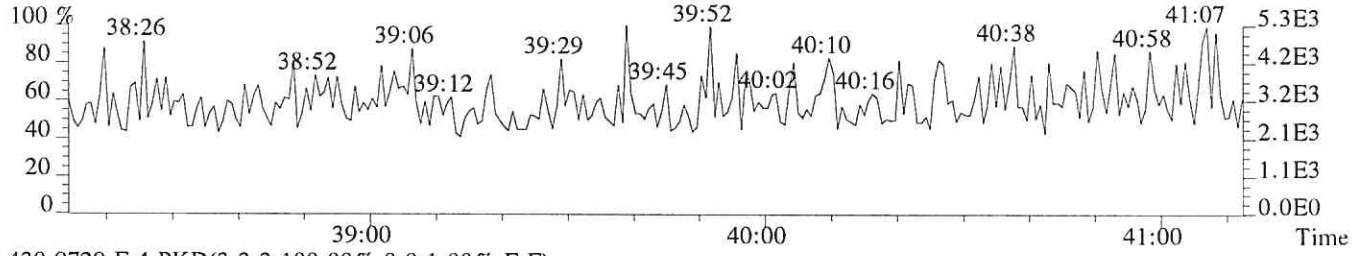
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3376.0,0.50%,F,T)



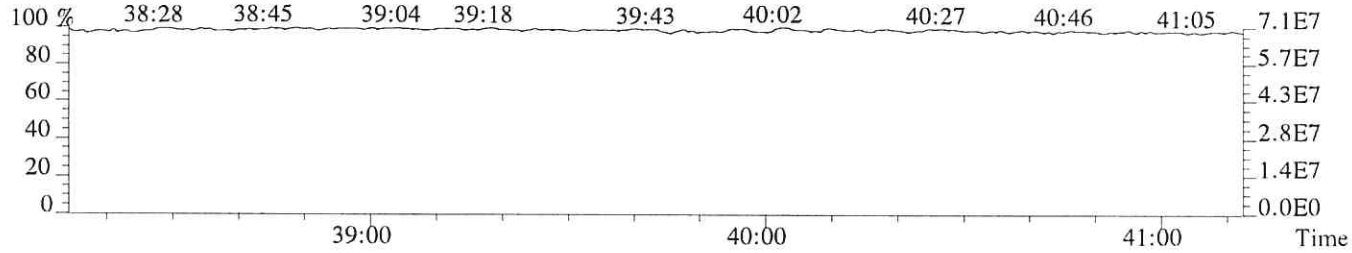
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4312.0,0.50%,F,T)



479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

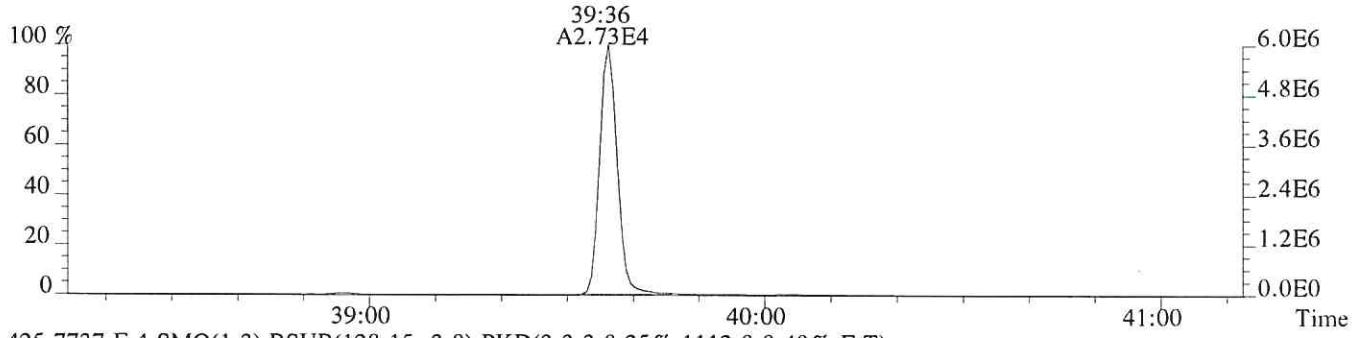


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

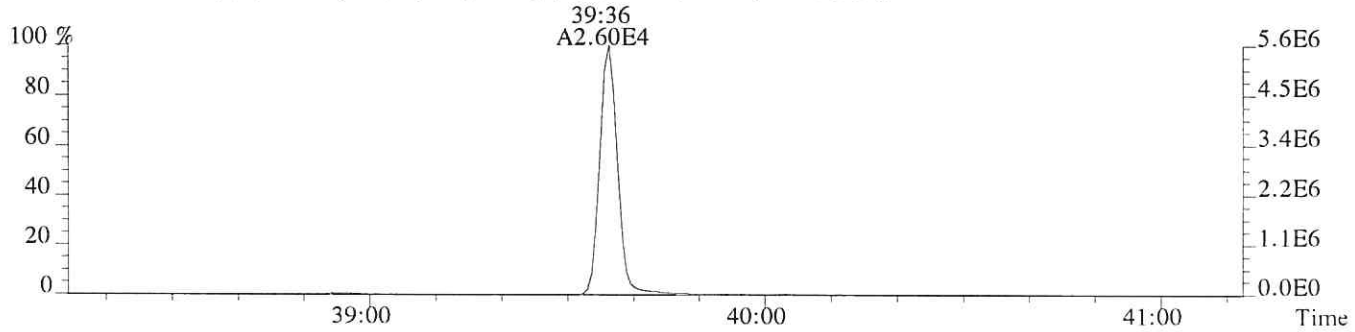


File:P407617 #1-268 Acq: 1-SEP-2017 17:42:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

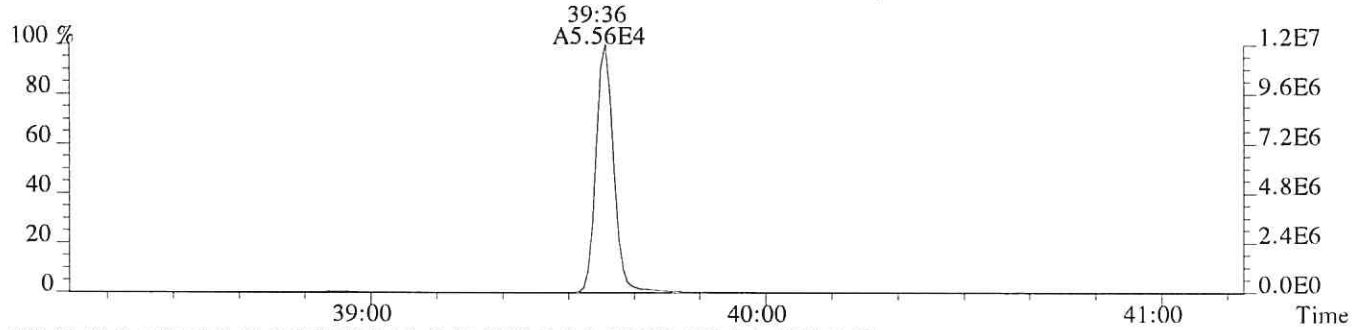
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1048.0,0.40%,F,T)



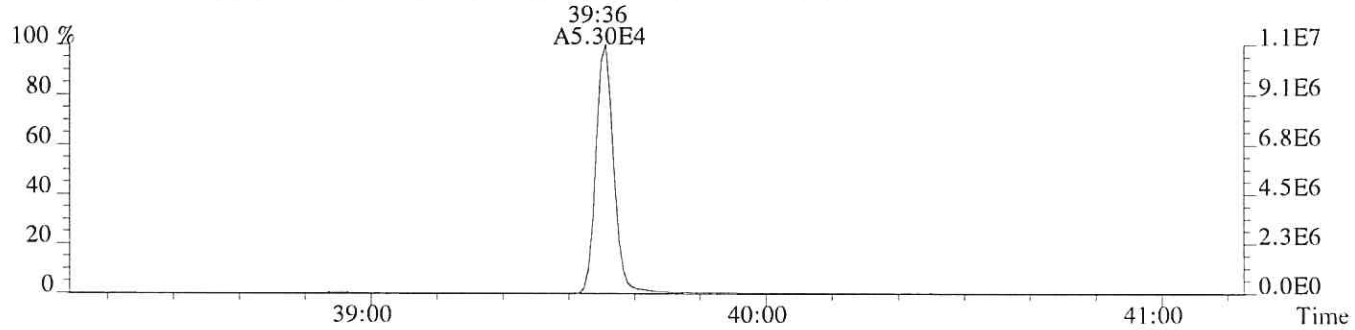
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1112.0,0.40%,F,T)



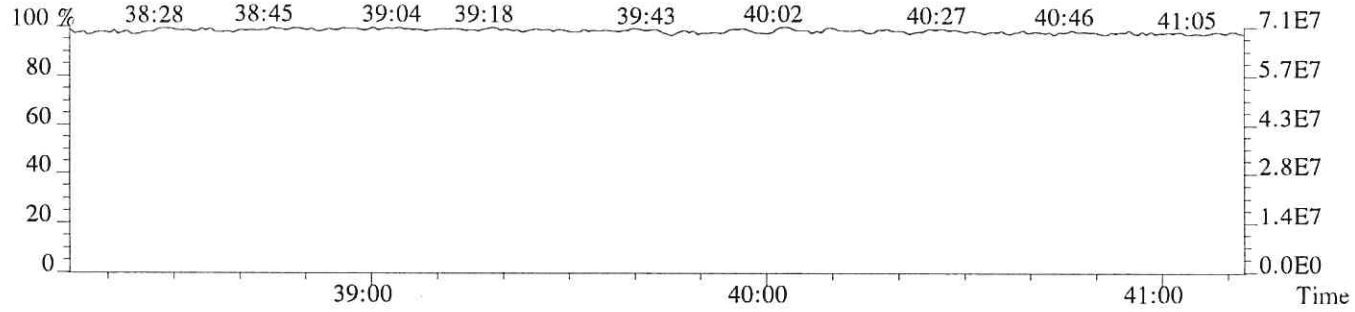
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1472.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,872.0,0.40%,F,T)

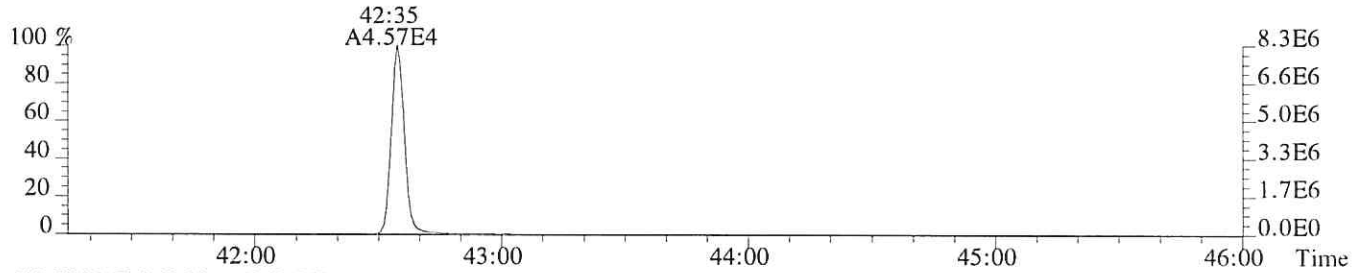


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

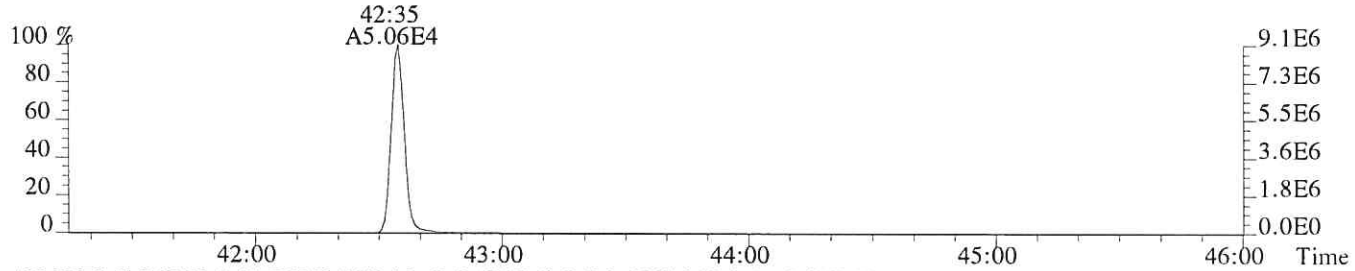


File:P407617 #1-429 Acq: 1-SEP-2017 17:42:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

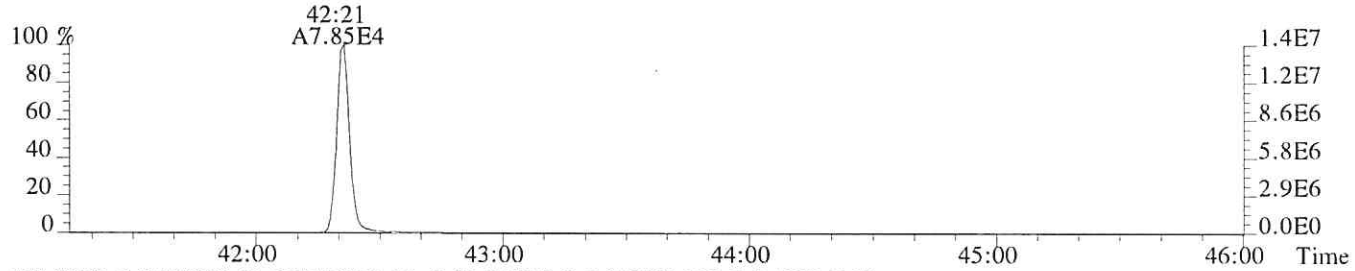
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,696.0,0.40%,F,T)



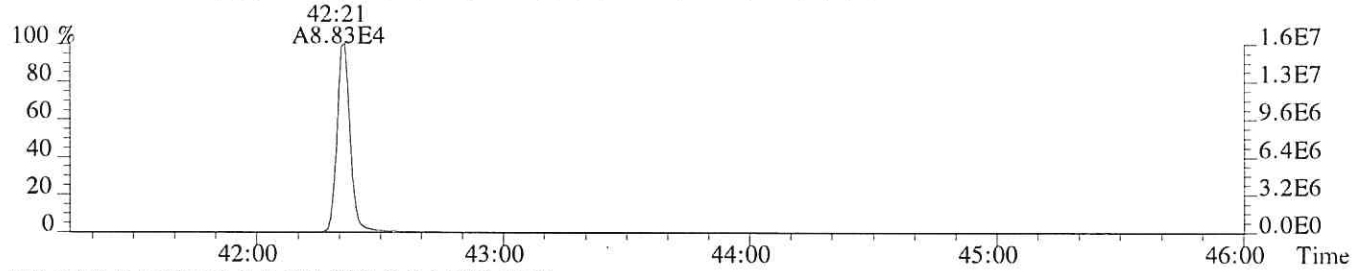
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1152.0,0.40%,F,T)



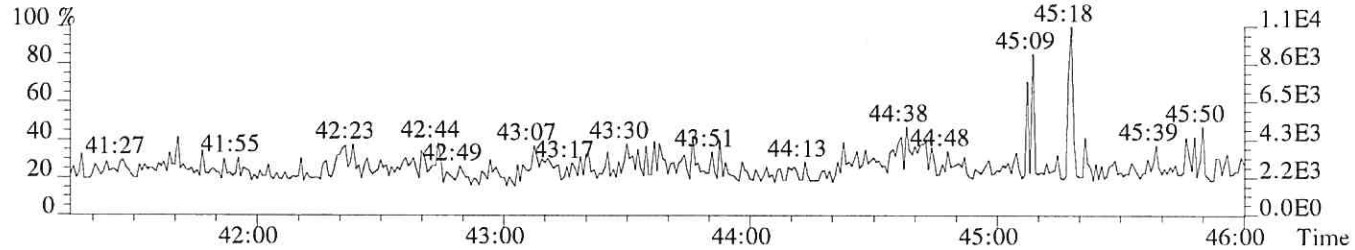
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,948.0,0.40%,F,T)



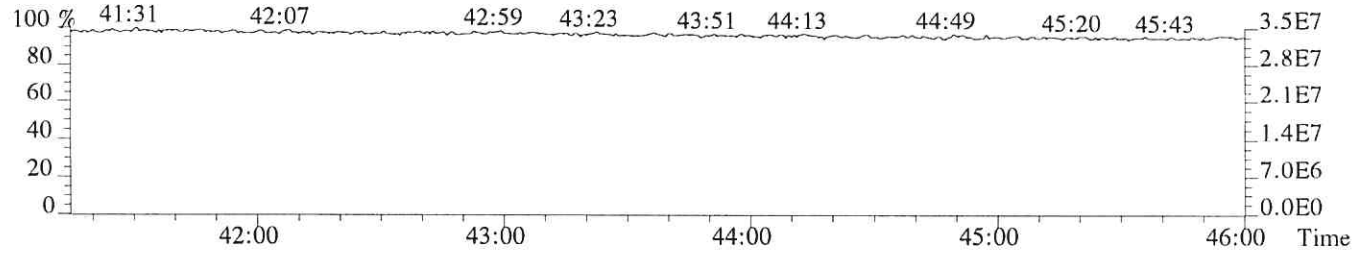
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,912.0,0.40%,F,T)



513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

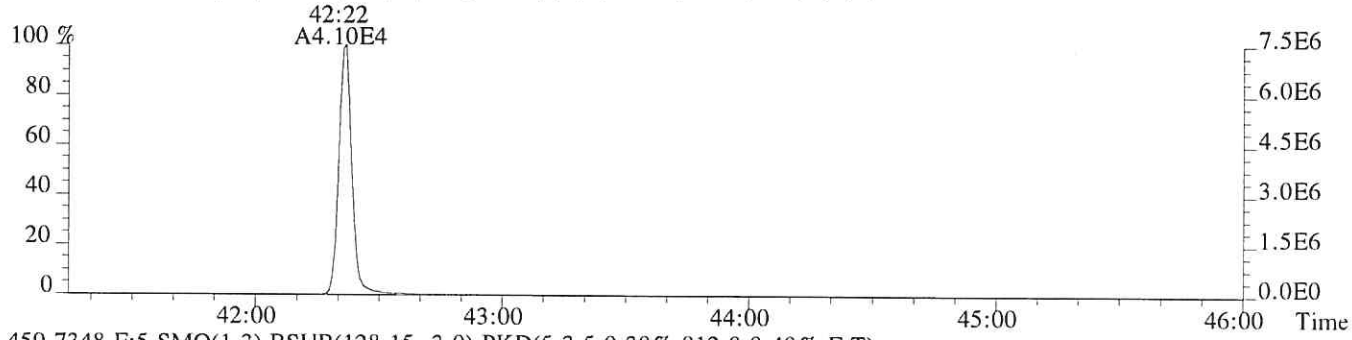


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

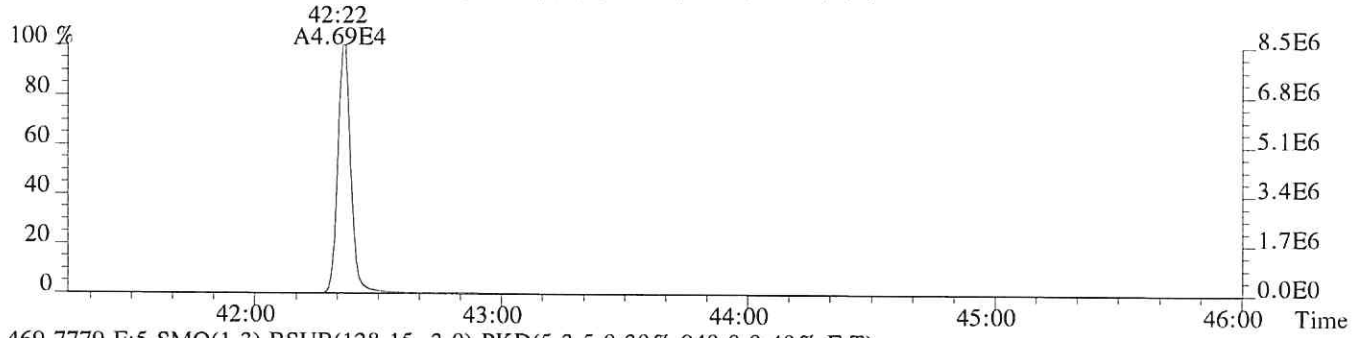


File:P407617 #1-429 Acq: 1-SEP-2017 17:42:58 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS3

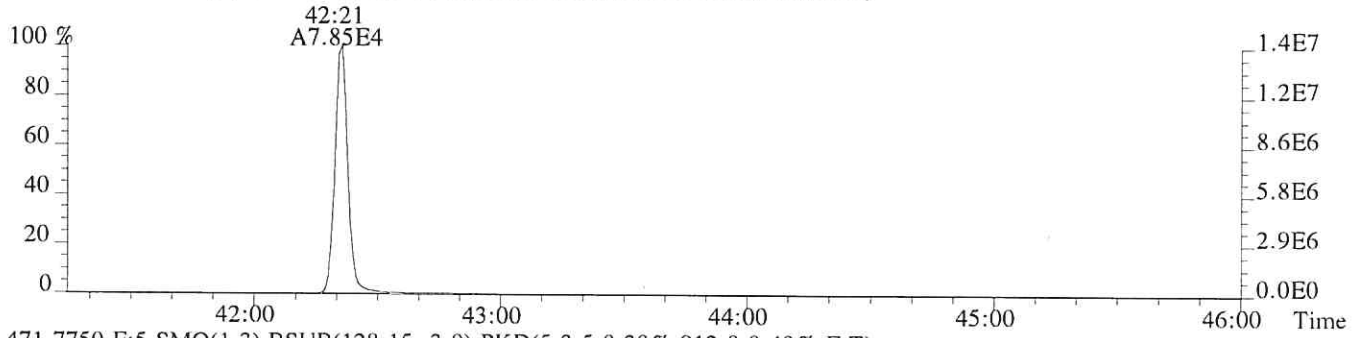
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,568.0,0.40%,F,T)



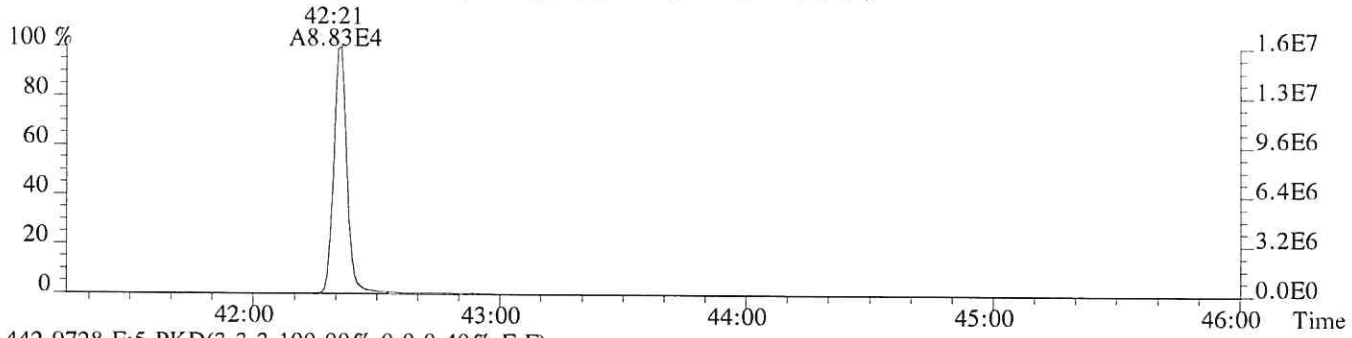
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,812.0,0.40%,F,T)



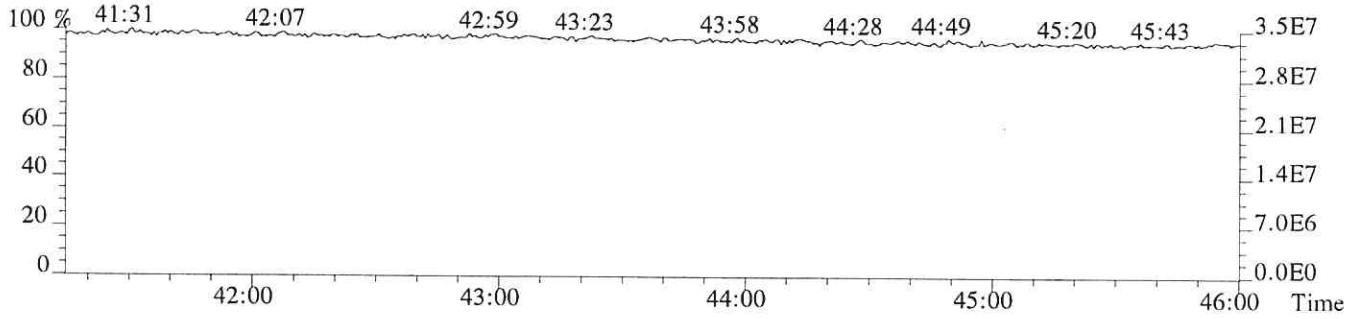
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,948.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,912.0,0.40%,F,T)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
76558

Run #5 Filename p407618 #1 Samp: 1 Inj: 1 Acquired: 1-SEP-17 18:32:08
Processed: 5-SEP-17 09:15:29 LAB. ID: CS4

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	28:39	1.786e+04	2.264e+04	0.79	yes	no	0.885
2	Unk	1,2,3,7,8-PeCDF	32:41	1.410e+05	9.068e+04	1.55	yes	no	0.984
3	Unk	2,3,4,7,8-PeCDF	33:34	1.301e+05	8.366e+04	1.55	yes	no	0.943
4	Unk	1,2,3,4,7,8-HxCDF	36:09	1.252e+05	1.007e+05	1.24	yes	no	1.230
5	Unk	1,2,3,6,7,8-HxCDF	36:16	1.301e+05	1.044e+05	1.25	yes	no	1.148
6	Unk	2,3,4,6,7,8-HxCDF	36:45	1.175e+05	9.444e+04	1.24	yes	no	1.133
7	Unk	1,2,3,7,8,9-HxCDF	37:30	1.029e+05	8.211e+04	1.25	yes	no	1.172
8	Unk	1,2,3,4,6,7,8-HpCDF	38:42	1.056e+05	1.017e+05	1.04	yes	no	1.377
9	Unk	1,2,3,4,7,8,9-HpCDF	40:06	8.364e+04	8.005e+04	1.04	yes	no	1.301
10	Unk	OCDF	42:35	1.268e+05	1.406e+05	0.90	yes	no	1.114
11	Unk	2,3,7,8-TCDD	29:24	1.501e+04	1.984e+04	0.76	yes	no	0.966
12	Unk	1,2,3,7,8-PeCDD	33:50	9.643e+04	6.282e+04	1.54	yes	no	0.851
13	Unk	1,2,3,4,7,8-HxCDD	36:53	8.754e+04	7.067e+04	1.24	yes	no	0.966
14	Unk	1,2,3,6,7,8-HxCDD	36:58	8.672e+04	6.957e+04	1.25	yes	no	0.938
15	Unk	1,2,3,7,8,9-HxCDD	37:11	8.832e+04	7.163e+04	1.23	yes	no	0.980
16	Unk	1,2,3,4,6,7,8-HpCDD	39:36	7.282e+04	7.011e+04	1.04	yes	no	0.975
17	Unk	OCDD	42:22	1.126e+05	1.275e+05	0.88	yes	no	1.033
18	IS	13C-2,3,7,8-TCDF	28:38	4.906e+04	6.297e+04	0.78	yes	no	1.176
19	IS	13C-1,2,3,7,8-PeCDF	32:40	6.931e+04	4.462e+04	1.55	yes	no	1.185
20	IS	13C-2,3,4,7,8-PeCDF	33:34	6.734e+04	4.342e+04	1.55	yes	no	1.149
21	IS	13C-1,2,3,4,7,8-HxCDF	36:09	3.105e+04	5.942e+04	0.52	yes	no	1.068
22	IS	13C-1,2,3,6,7,8-HxCDF	36:15	3.442e+04	6.642e+04	0.52	yes	no	1.171
23	IS	13C-2,3,4,6,7,8-HxCDF	36:45	3.132e+04	6.053e+04	0.52	yes	no	1.079
24	IS	13C-1,2,3,7,8,9-HxCDF	37:29	2.661e+04	5.140e+04	0.52	yes	no	0.919
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:41	2.271e+04	5.124e+04	0.44	yes	no	0.877
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:05	1.907e+04	4.339e+04	0.44	yes	no	0.723
27	IS	13C-2,3,7,8-TCDD	29:23	4.013e+04	5.082e+04	0.79	yes	no	0.958
28	IS	13C-1,2,3,7,8-PeCDD	33:50	5.655e+04	3.624e+04	1.56	yes	no	0.973
29	IS	13C-1,2,3,4,7,8-HxCDD	36:52	4.558e+04	3.656e+04	1.25	yes	no	0.966
30	IS	13C-1,2,3,6,7,8-HxCDD	36:57	4.480e+04	3.579e+04	1.25	yes	no	0.968
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:36	3.670e+04	3.539e+04	1.04	yes	no	0.854
32	IS	13C-OCDD	42:21	5.292e+04	5.977e+04	0.89	yes	no	0.668
33	RS/RT	13C-1,2,3,4-TCDD	28:49	4.231e+04	5.324e+04	0.79	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:11	4.788e+04	3.842e+04	1.25	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:24	3.810e+04				no	0.992

ALS ENVIRONMENTAL
10450 Stancliff Road
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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
76558

Run #5 Filename p407618 Samp: 1 Inj: 1 Acquired: 1-SEP-17 18:32:08
Processed: 5-SEP-17 09:15:291 LAB. ID: CS4

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	3.55e+06	7.56e+02	4.7e+03	4.47e+06	1.45e+03	3.1e+03
2	1,2,3,7,8-PeCDF	2.85e+07	7.32e+02	3.9e+04	1.83e+07	1.13e+03	1.6e+04
3	2,3,4,7,8-PeCDF	2.73e+07	7.32e+02	3.7e+04	1.75e+07	1.13e+03	1.5e+04
4	1,2,3,4,7,8-HxCDF	2.82e+07	1.10e+03	2.6e+04	2.27e+07	7.08e+02	3.2e+04
5	1,2,3,6,7,8-HxCDF	2.91e+07	1.10e+03	2.6e+04	2.32e+07	7.08e+02	3.3e+04
6	2,3,4,6,7,8-HxCDF	2.69e+07	1.10e+03	2.4e+04	2.15e+07	7.08e+02	3.0e+04
7	1,2,3,7,8,9-HxCDF	2.23e+07	1.10e+03	2.0e+04	1.77e+07	7.08e+02	2.5e+04
8	1,2,3,4,6,7,8-HpCDF	2.42e+07	3.84e+03	6.3e+03	2.32e+07	8.30e+03	2.8e+03
9	1,2,3,4,7,8,9-HpCDF	1.74e+07	3.84e+03	4.5e+03	1.68e+07	8.30e+03	2.0e+03
10	OCDF	2.31e+07	6.08e+02	3.8e+04	2.61e+07	1.03e+03	2.5e+04
11	2,3,7,8-TCDD	3.11e+06	1.88e+03	1.7e+03	4.08e+06	5.72e+02	7.1e+03
12	1,2,3,7,8-PeCDD	2.05e+07	9.32e+02	2.2e+04	1.34e+07	5.72e+02	2.3e+04
13	1,2,3,4,7,8-HxCDD	2.06e+07	4.80e+02	4.3e+04	1.66e+07	7.84e+02	2.1e+04
14	1,2,3,6,7,8-HxCDD	1.94e+07	4.80e+02	4.0e+04	1.56e+07	7.84e+02	2.0e+04
15	1,2,3,7,8,9-HxCDD	1.97e+07	4.80e+02	4.1e+04	1.61e+07	7.84e+02	2.1e+04
16	1,2,3,4,6,7,8-HpCDD	1.60e+07	6.36e+02	2.5e+04	1.55e+07	1.03e+03	1.5e+04
17	OCDD	2.07e+07	7.76e+02	2.7e+04	2.35e+07	7.00e+02	3.4e+04
18	13C-2,3,7,8-TCDF	9.59e+06	1.01e+04	9.5e+02	1.24e+07	5.11e+03	2.4e+03
19	13C-1,2,3,7,8-PeCDF	1.39e+07	4.72e+02	2.9e+04	8.92e+06	7.68e+02	1.2e+04
20	13C-2,3,4,7,8-PeCDF	1.39e+07	4.72e+02	2.9e+04	8.90e+06	7.68e+02	1.2e+04
21	13C-1,2,3,4,7,8-HxCDF	6.99e+06	6.12e+02	1.1e+04	1.34e+07	1.20e+03	1.1e+04
22	13C-1,2,3,6,7,8-HxCDF	7.68e+06	6.12e+02	1.3e+04	1.48e+07	1.20e+03	1.2e+04
23	13C-2,3,4,6,7,8-HxCDF	7.14e+06	6.12e+02	1.2e+04	1.38e+07	1.20e+03	1.2e+04
24	13C-1,2,3,7,8,9-HxCDF	5.84e+06	6.12e+02	9.5e+03	1.12e+07	1.20e+03	9.3e+03
25	13C-1,2,3,4,6,7,8-HpCDF	5.19e+06	1.29e+03	4.0e+03	1.18e+07	2.07e+03	5.7e+03
26	13C-1,2,3,4,7,8,9-HpCDF	3.95e+06	1.29e+03	3.1e+03	8.98e+06	2.07e+03	4.3e+03
27	13C-2,3,7,8-TCDD	8.11e+06	3.65e+03	2.2e+03	1.02e+07	2.34e+03	4.4e+03
28	13C-1,2,3,7,8-PeCDD	1.17e+07	1.02e+03	1.1e+04	7.50e+06	1.04e+03	7.2e+03
29	13C-1,2,3,4,7,8-HxCDD	1.06e+07	1.64e+03	6.5e+03	8.50e+06	1.19e+03	7.1e+03
30	13C-1,2,3,6,7,8-HxCDD	9.93e+06	1.64e+03	6.1e+03	7.91e+06	1.19e+03	6.6e+03
31	13C-1,2,3,4,6,7,8-HpCDD	8.00e+06	1.07e+03	7.5e+03	7.76e+06	1.06e+03	7.3e+03
32	13C-OCDD	9.74e+06	8.60e+02	1.1e+04	1.10e+07	4.12e+02	2.7e+04
33	13C-1,2,3,4-TCDD	8.37e+06	3.65e+03	2.3e+03	1.06e+07	2.34e+03	4.5e+03
34	13C-1,2,3,7,8,9-HxCDD	1.04e+07	1.64e+03	6.3e+03	8.39e+06	1.19e+03	7.0e+03
35	37Cl-2,3,7,8-TCDD	7.85e+06	1.45e+03	5.4e+03			

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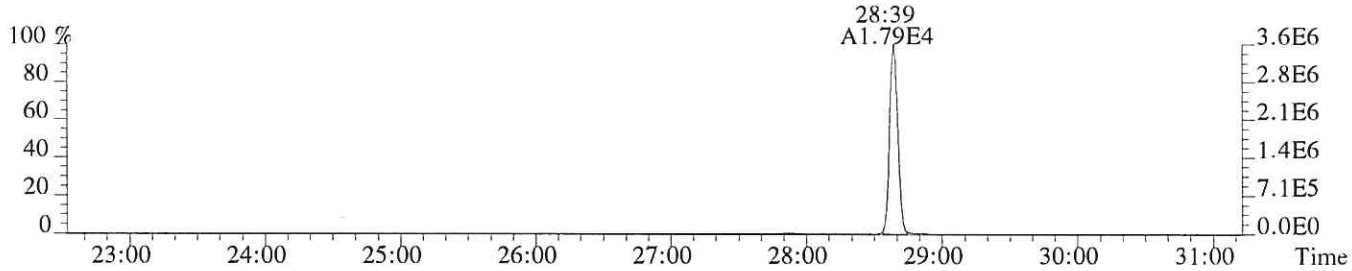
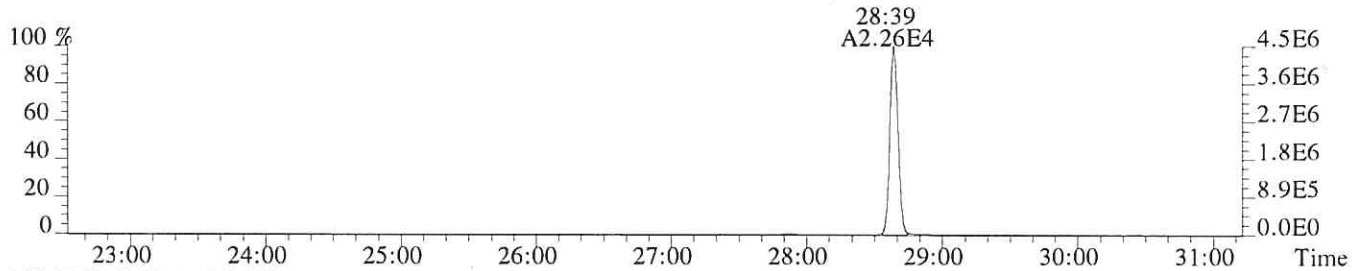
File:P407618 #1-616 Acq: 1-SEP-2017 18:32:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS4

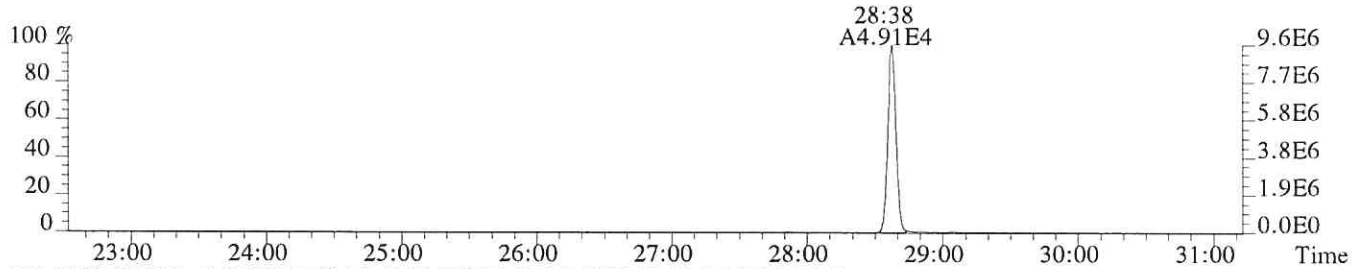
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,756.0,1.00%,F,T)



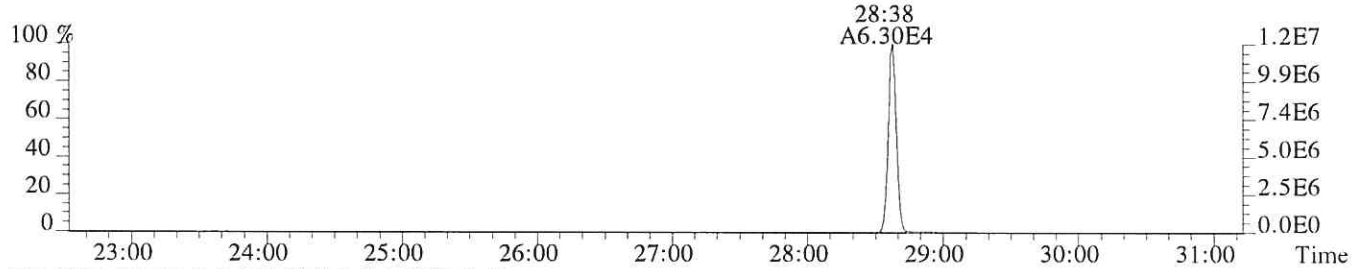
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1452.0,1.00%,F,T)



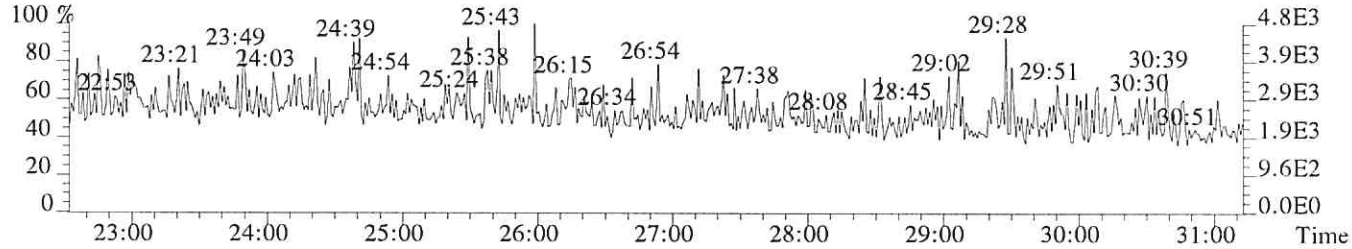
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,10084.0,1.00%,F,T)



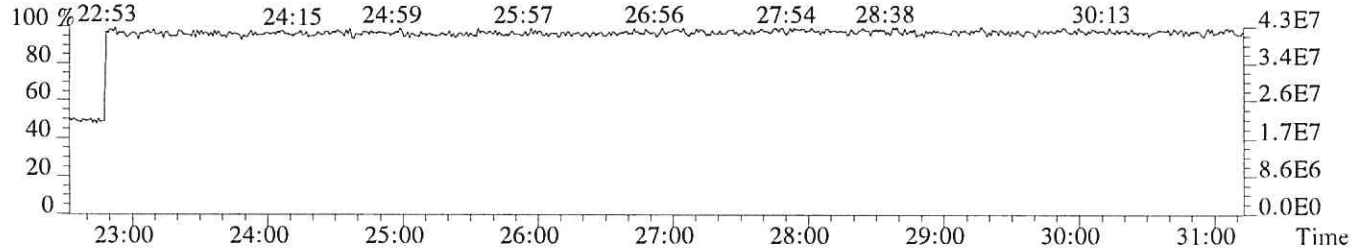
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,5112.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

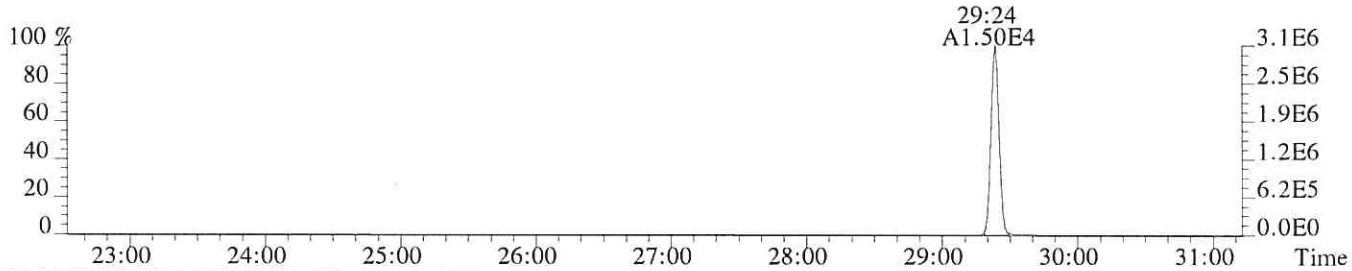


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

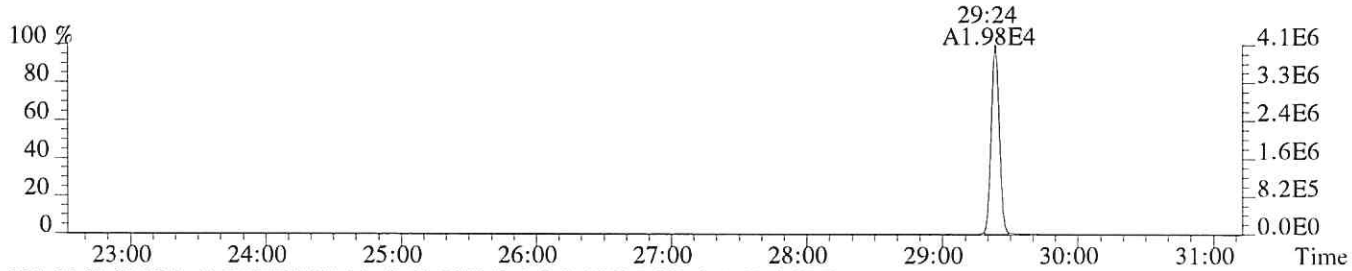


File:P407618 #1-616 Acq: 1-SEP-2017 18:32:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS4

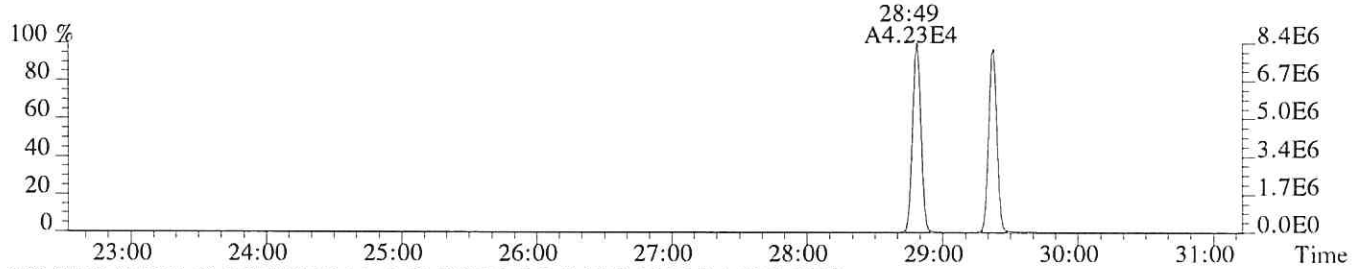
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1876.0,1.00%,F,T)



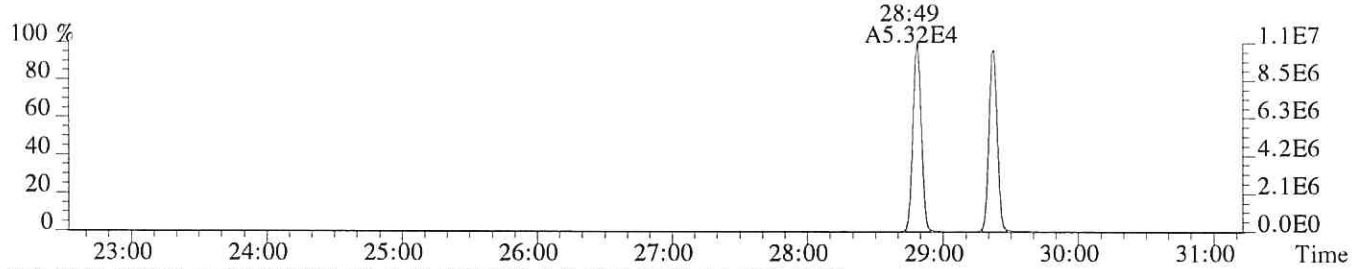
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,572.0,1.00%,F,T)



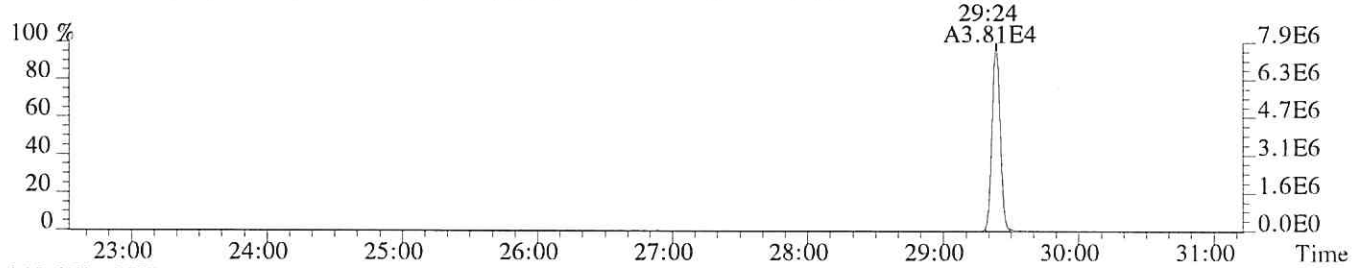
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3652.0,1.00%,F,T)



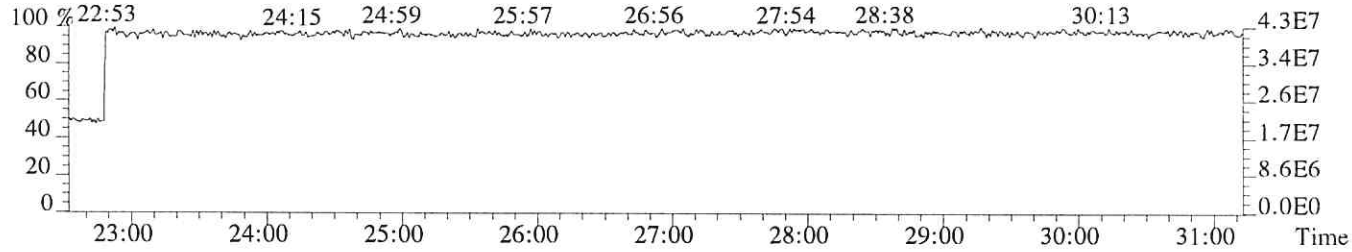
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2336.0,1.00%,F,T)



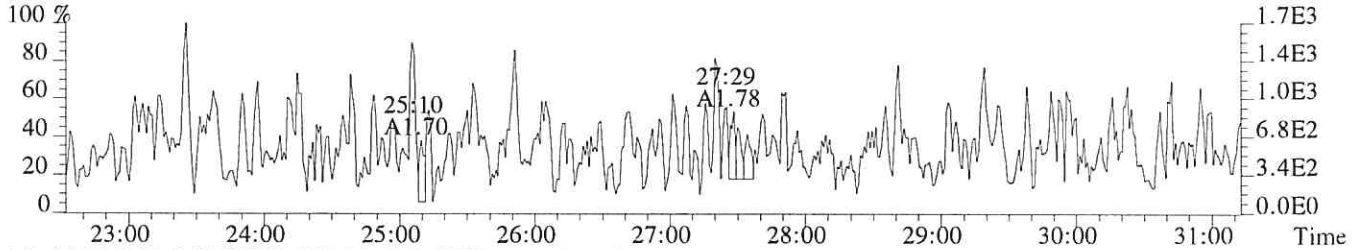
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1448.0,1.00%,F,T)



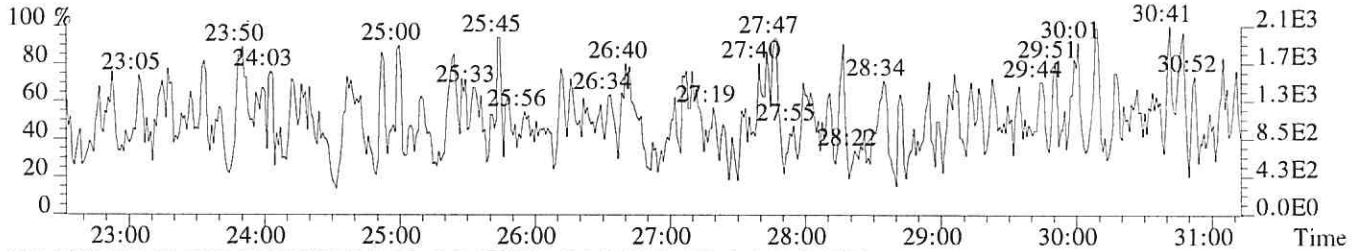
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



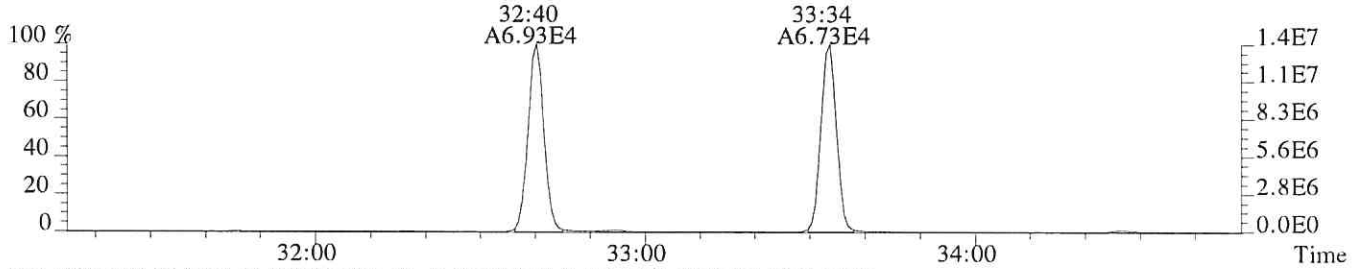
File:P407618 #1-616 Acq: 1-SEP-2017 18:32:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS4
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,708.0,1.00%,F,T)



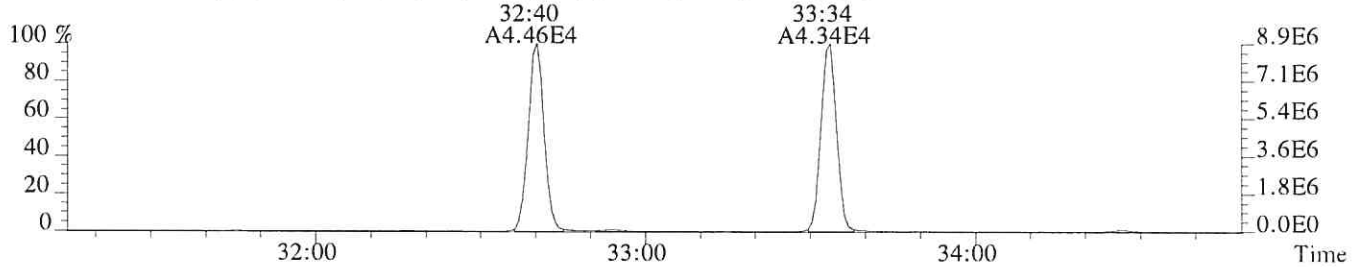
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1384.0,1.00%,F,T)



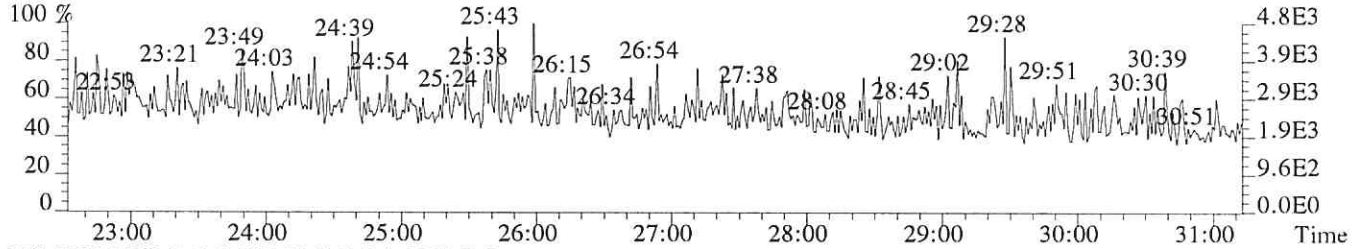
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,472.0,1.00%,F,T)



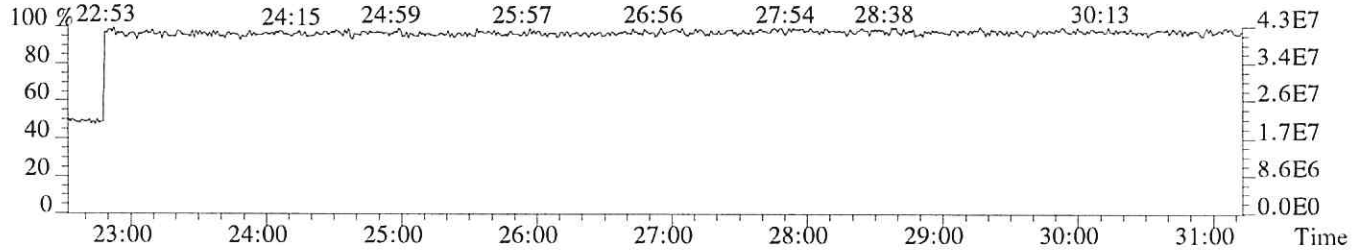
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,768.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

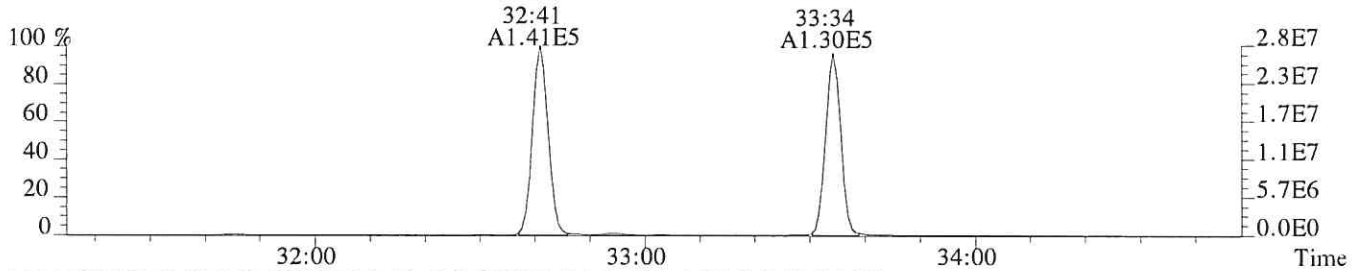


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

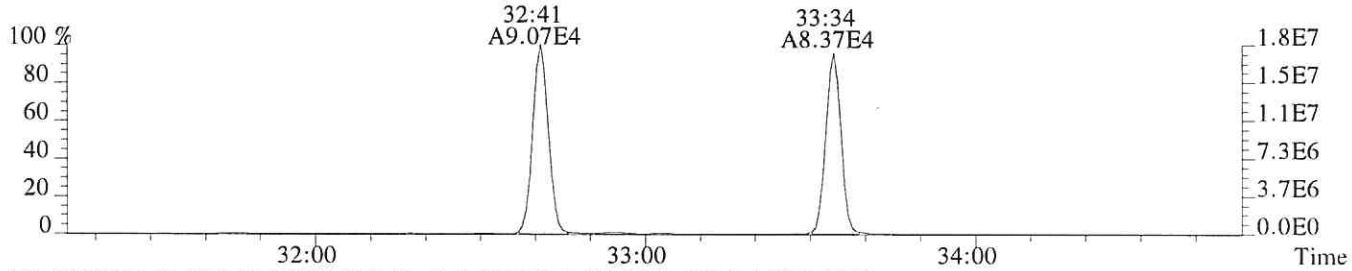


File:P407618 #1-321 Acq: 1-SEP-2017 18:32:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS4

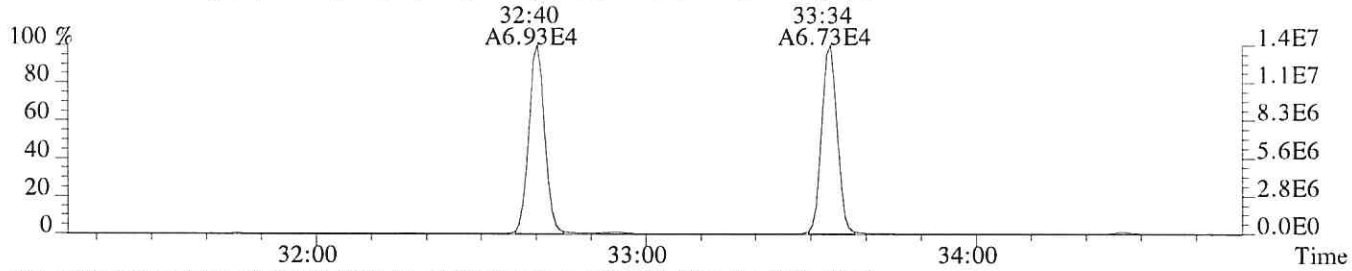
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,732.0,1.00%,F,T)



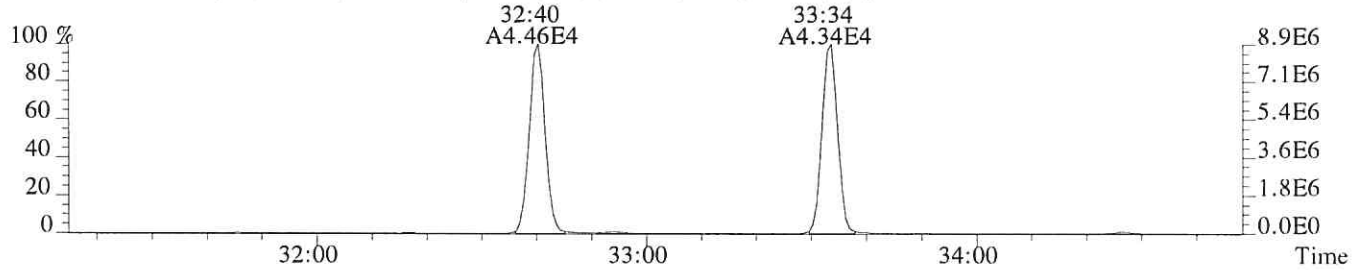
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1132.0,1.00%,F,T)



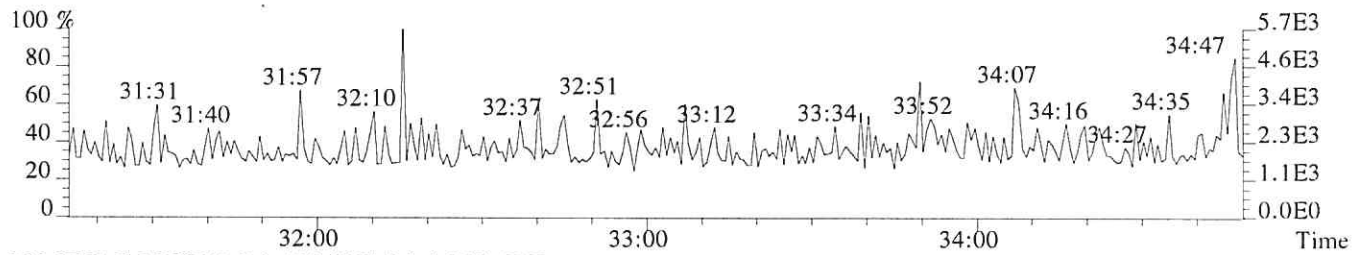
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,472.0,1.00%,F,T)



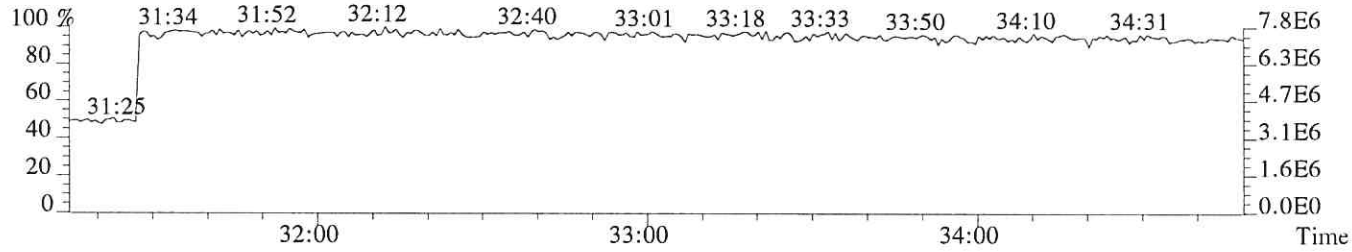
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,768.0,1.00%,F,T)



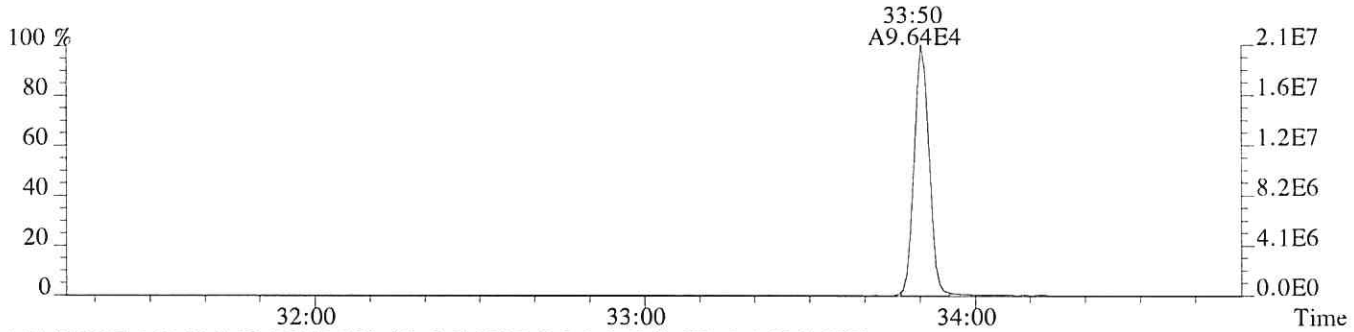
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



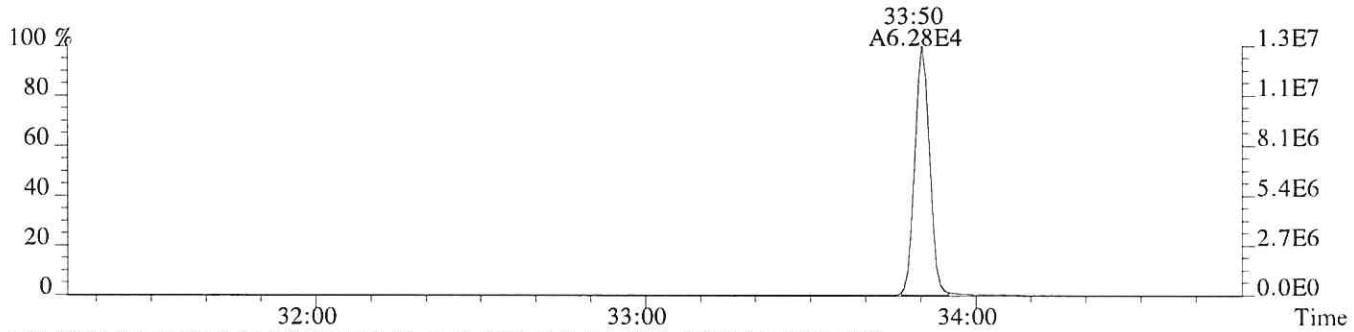
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



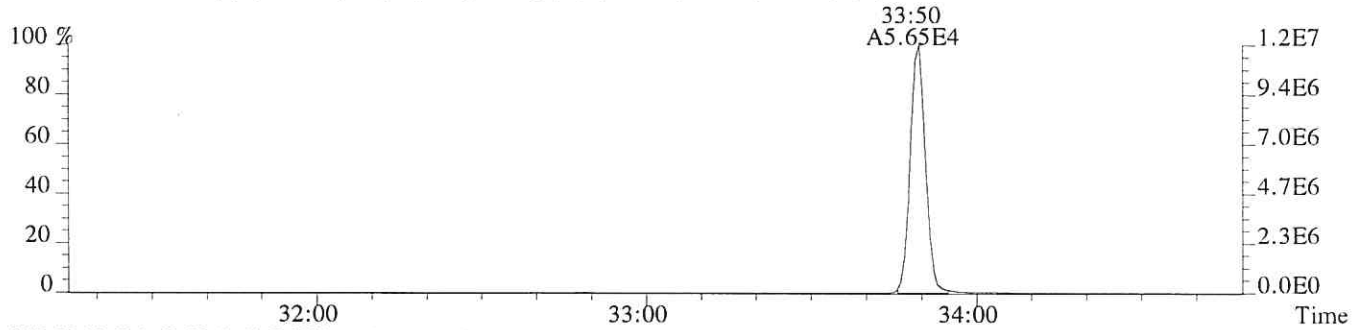
File:P407618 #1-321 Acq: 1-SEP-2017 18:32:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS4
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,932.0,1.00%,F,T)



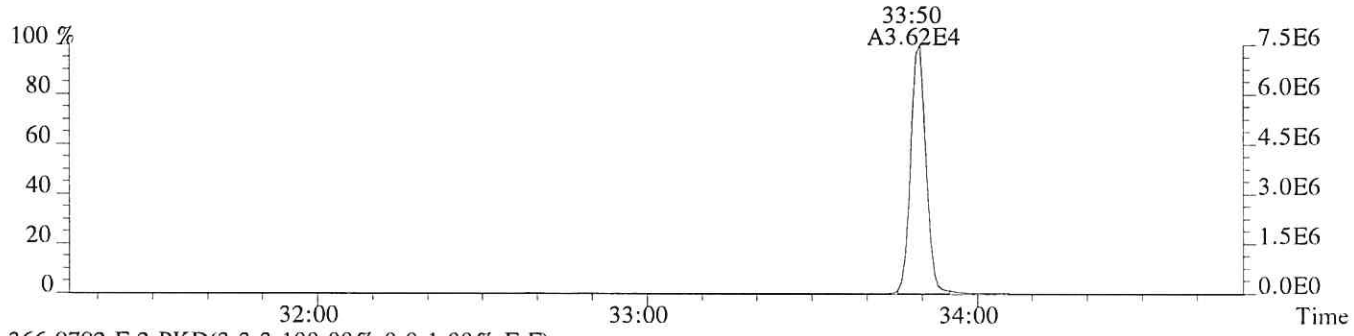
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,572.0,1.00%,F,T)



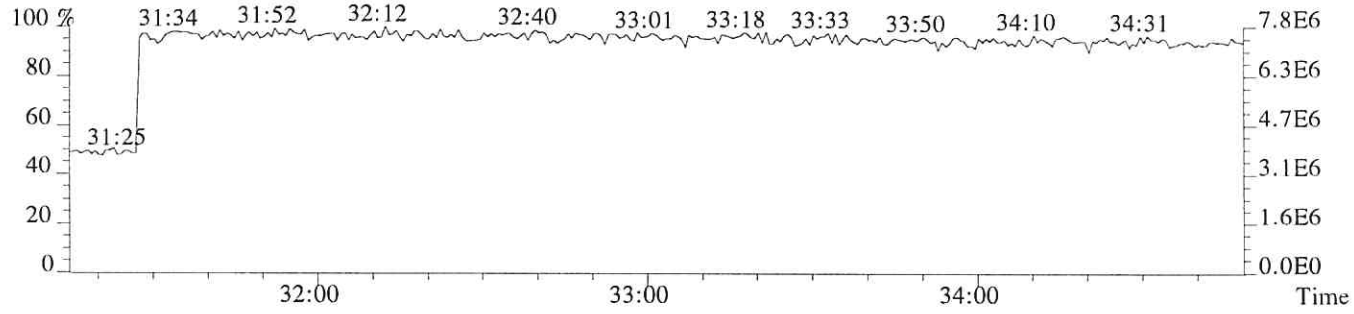
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1020.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1036.0,1.00%,F,T)

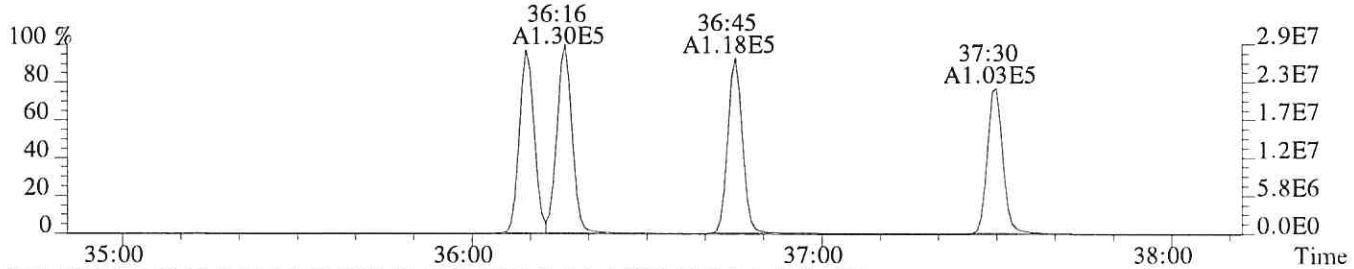


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

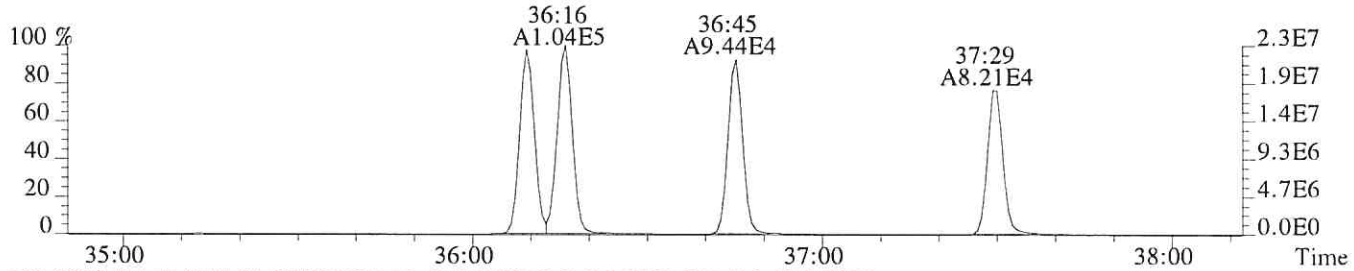


File:P407618 #1-303 Acq: 1-SEP-2017 18:32:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS4

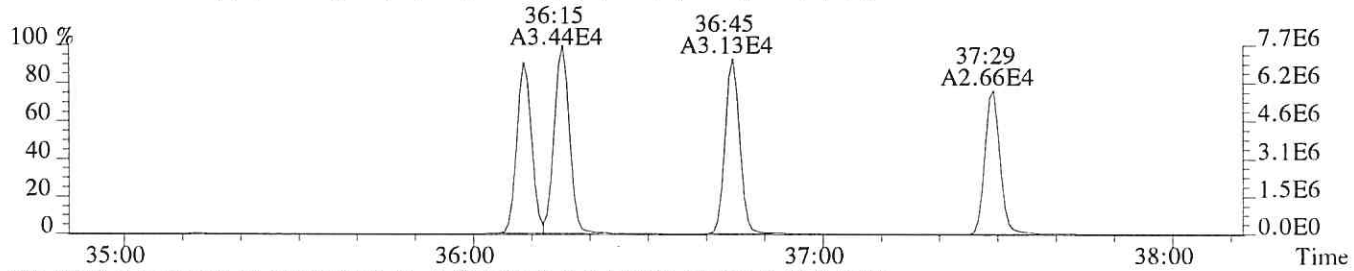
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1104.0,0.40%,F,T)



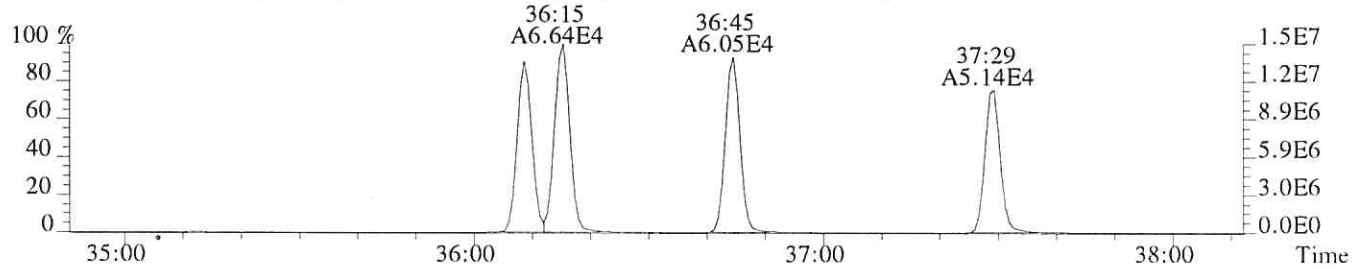
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,708.0,0.40%,F,T)



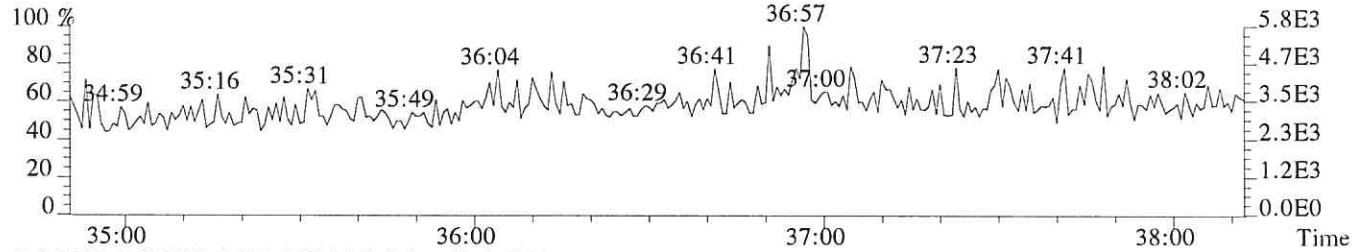
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,612.0,0.40%,F,T)



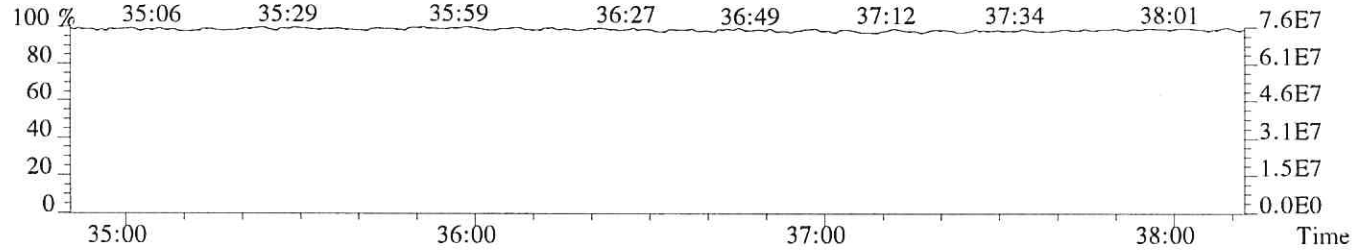
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1196.0,0.40%,F,T)



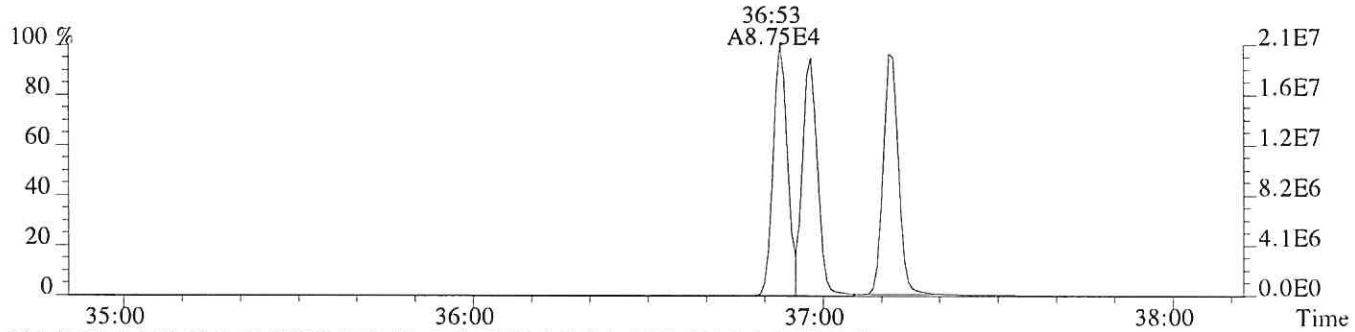
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



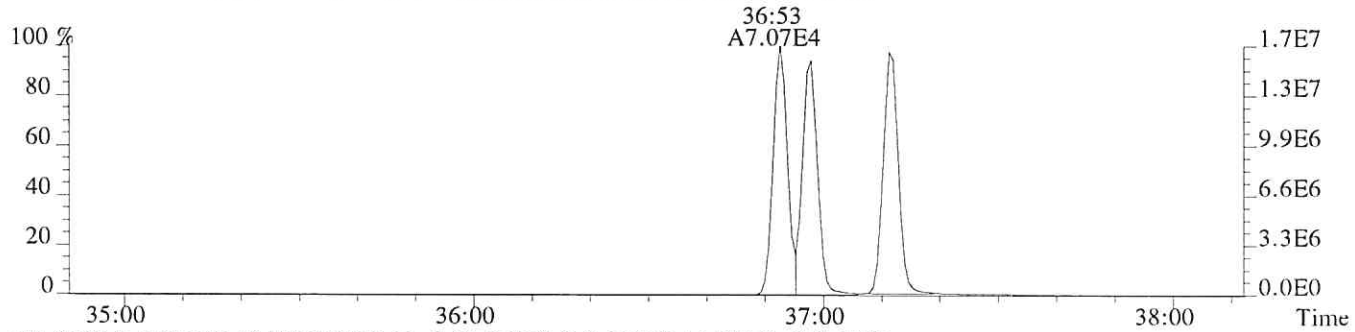
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



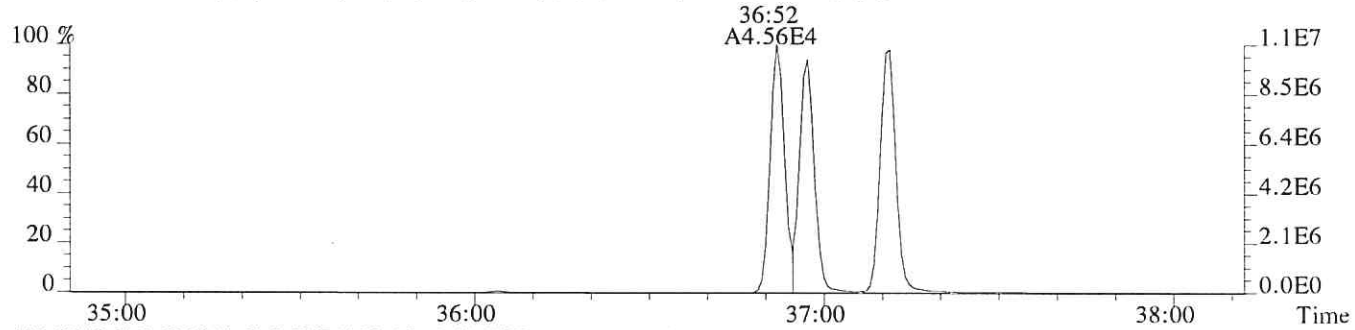
File:P407618 #1-303 Acq: 1-SEP-2017 18:32:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS4
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,480.0,0.40%,F,T)



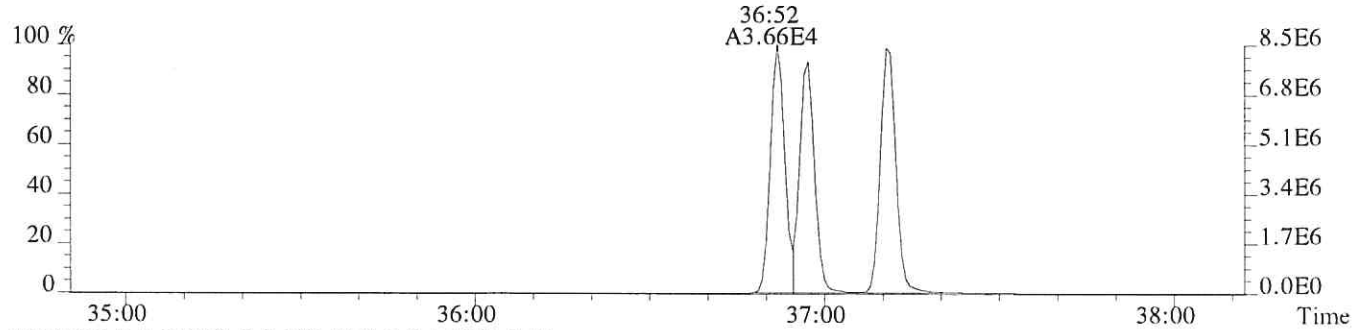
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,784.0,0.40%,F,T)



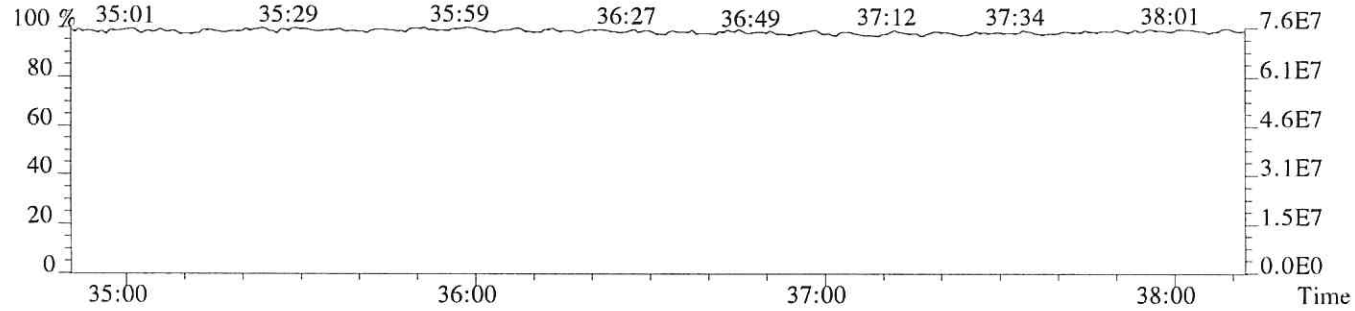
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1640.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1192.0,0.40%,F,T)

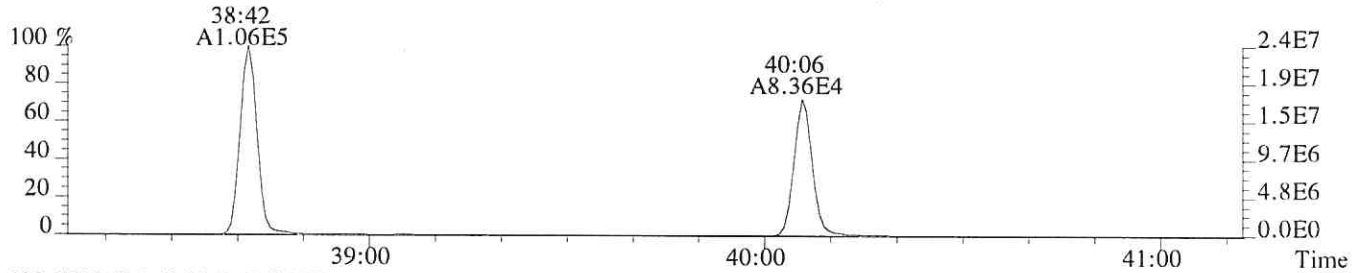


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

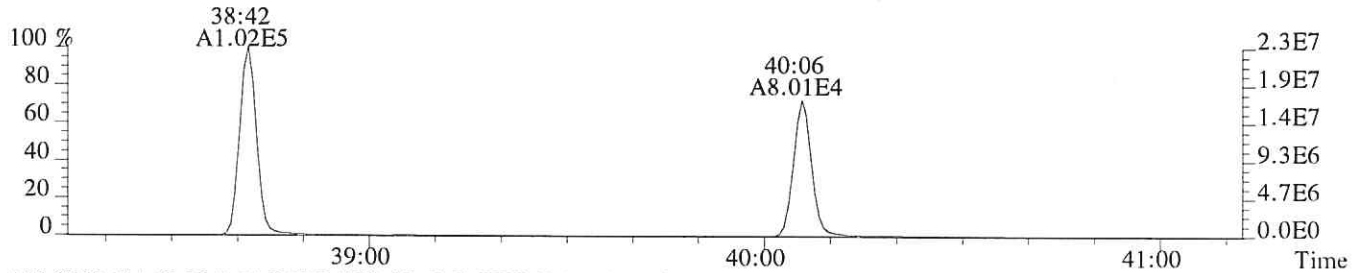


File:P407618 #1-268 Acq: 1-SEP-2017 18:32:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS4

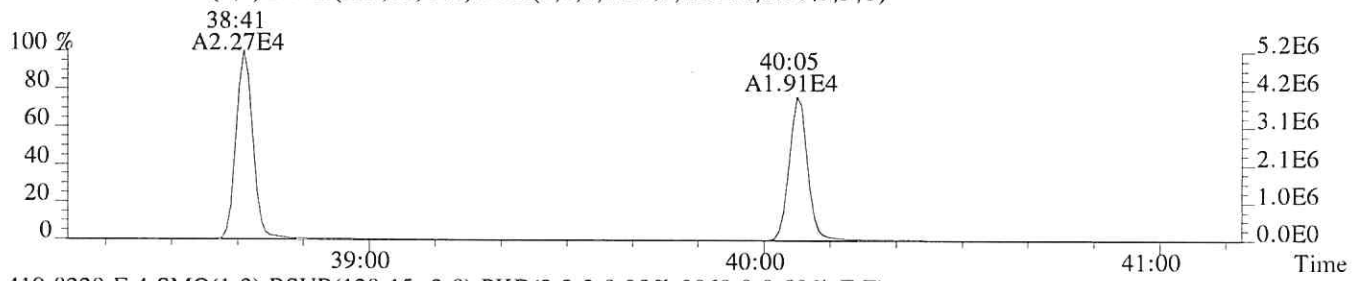
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3840.0,0.50%,F,T)



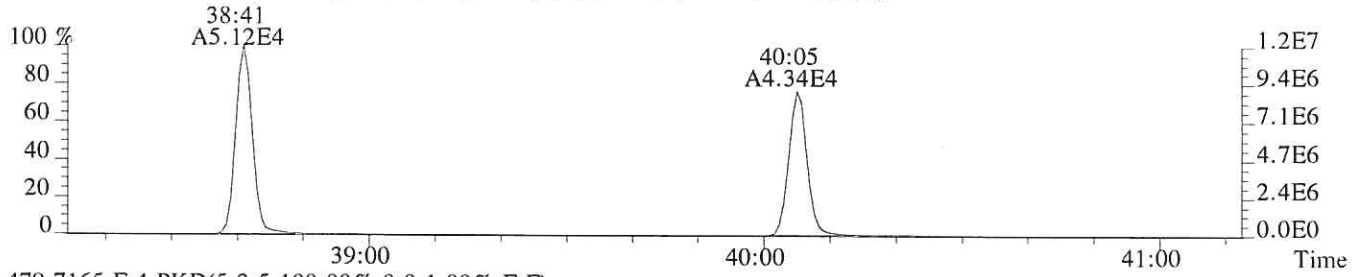
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,8300.0,0.50%,F,T)



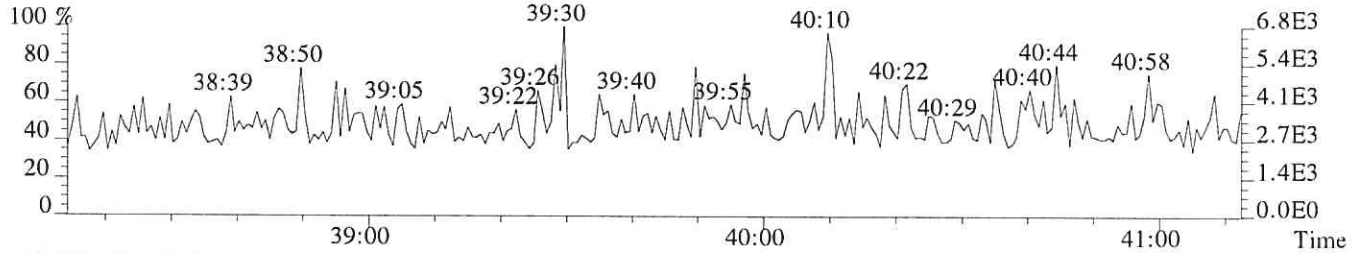
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1292.0,0.50%,F,T)



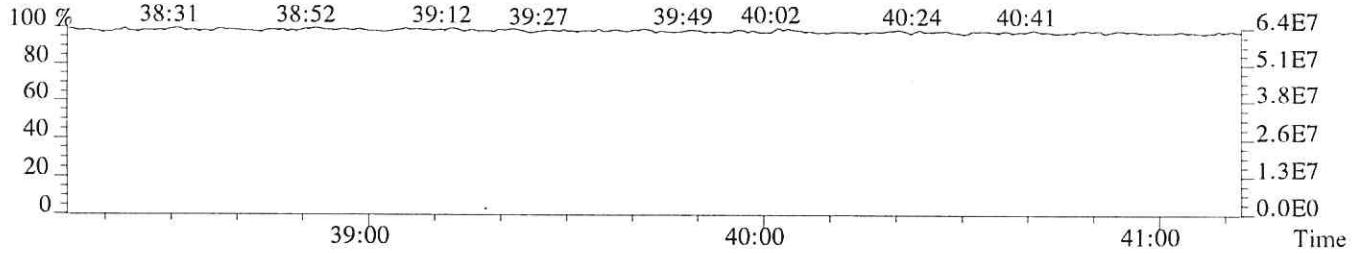
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2068.0,0.50%,F,T)



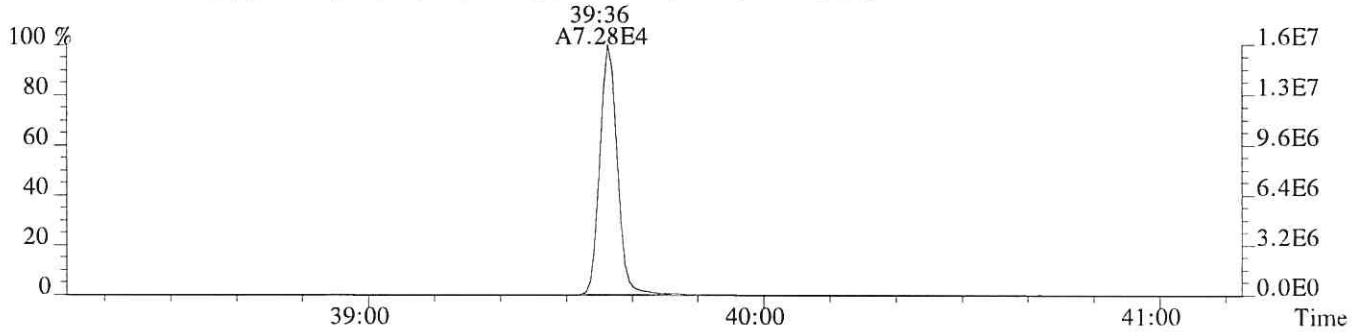
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



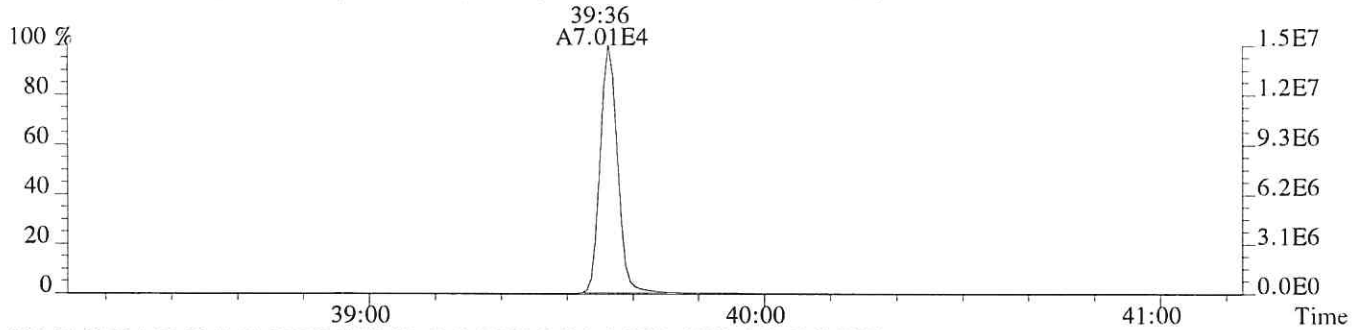
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



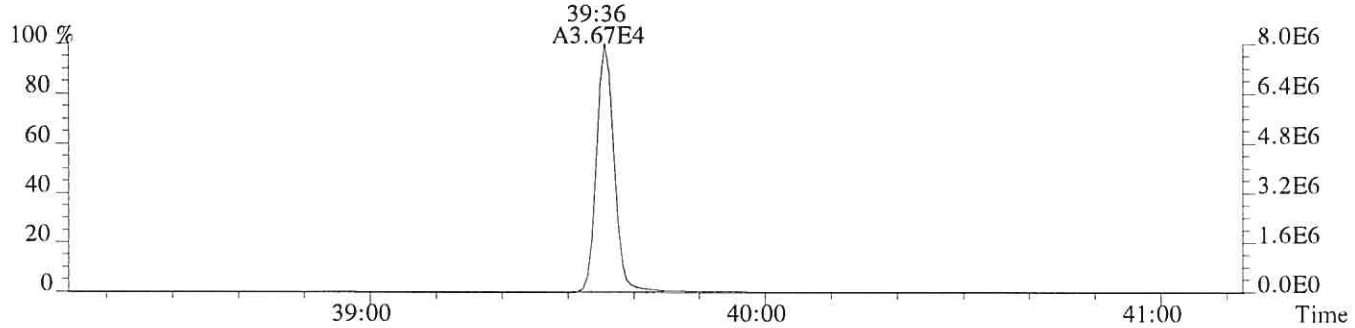
File:P407618 #1-268 Acq: 1-SEP-2017 18:32:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS4
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,636.0,0.40%,F,T)



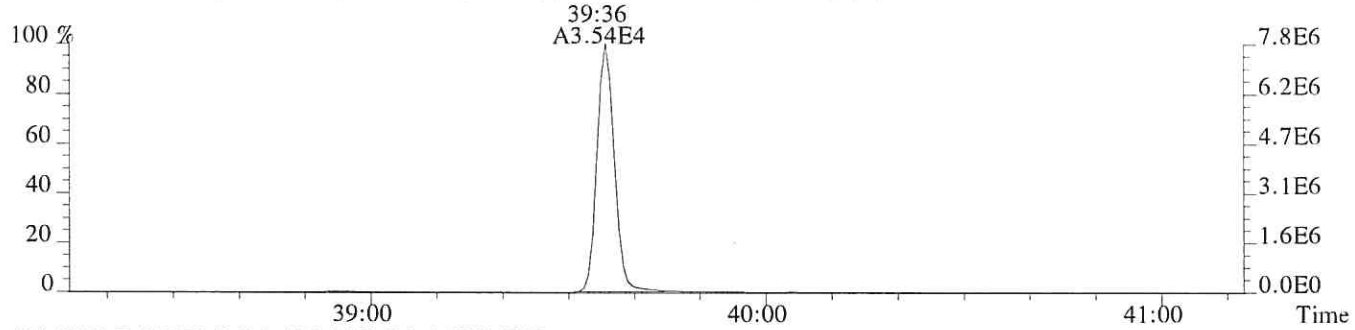
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1032.0,0.40%,F,T)



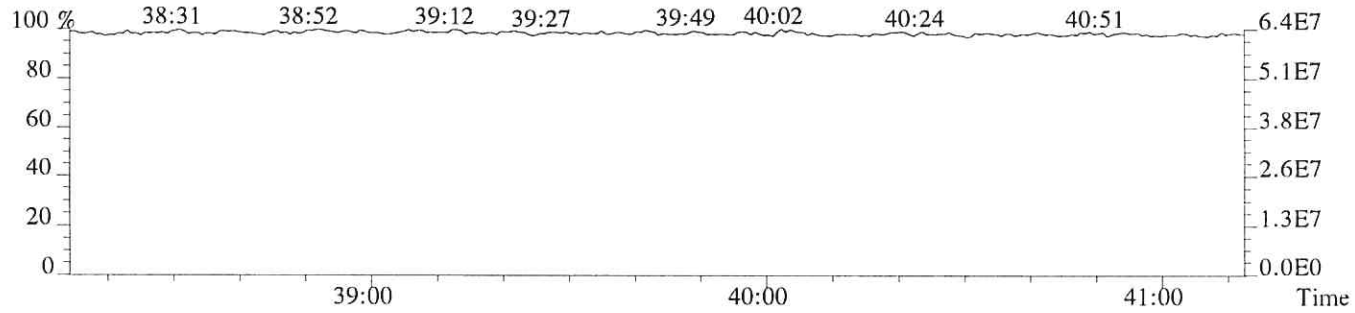
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1072.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1060.0,0.40%,F,T)

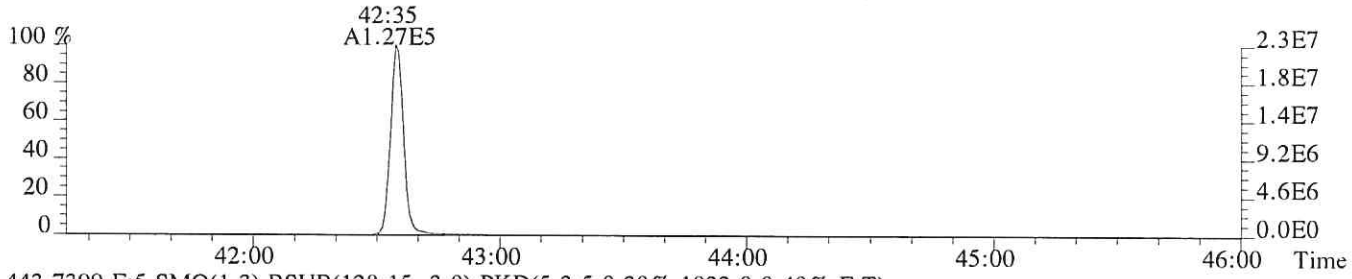


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

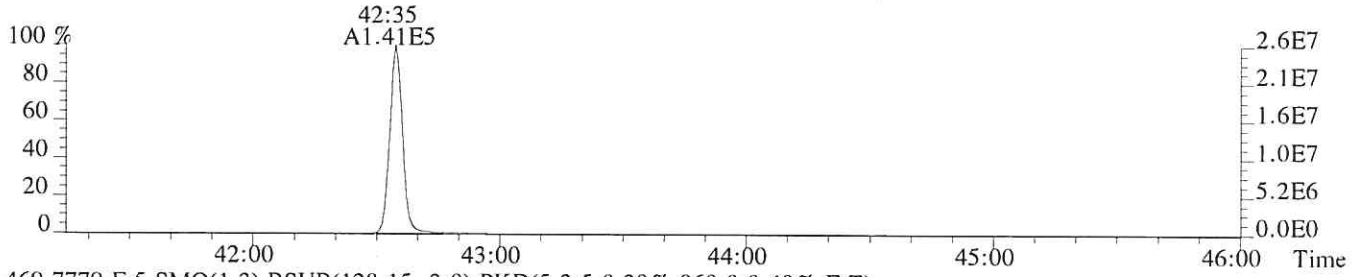


File:P407618 #1-429 Acq: 1-SEP-2017 18:32:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS4

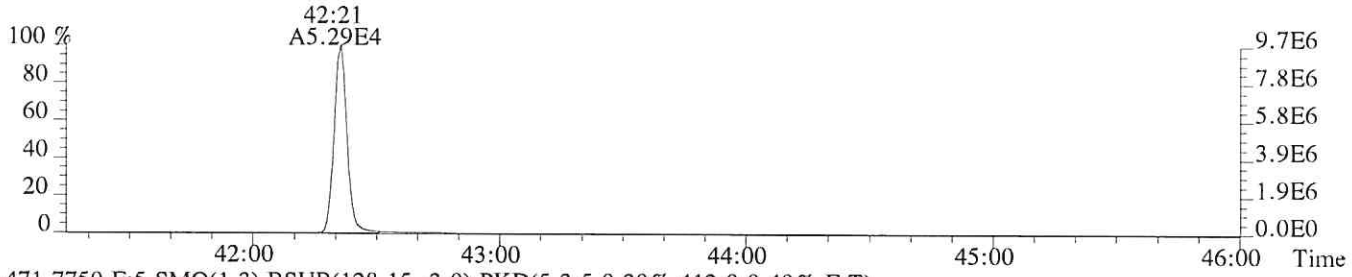
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,608.0,0.40%,F,T)



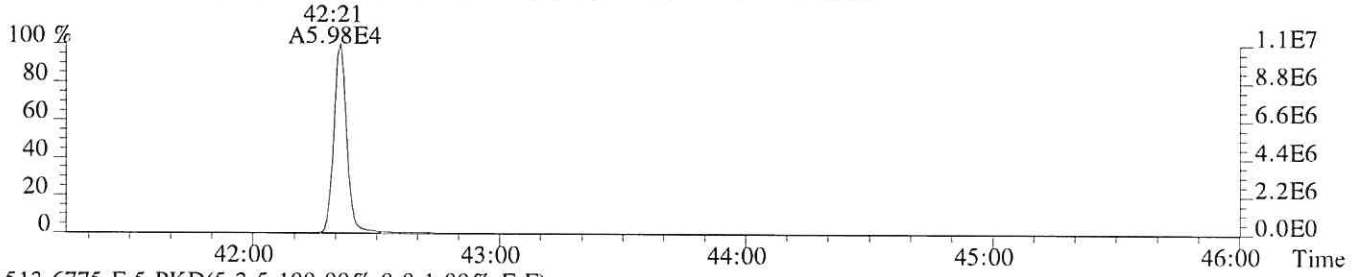
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1032.0,0.40%,F,T)



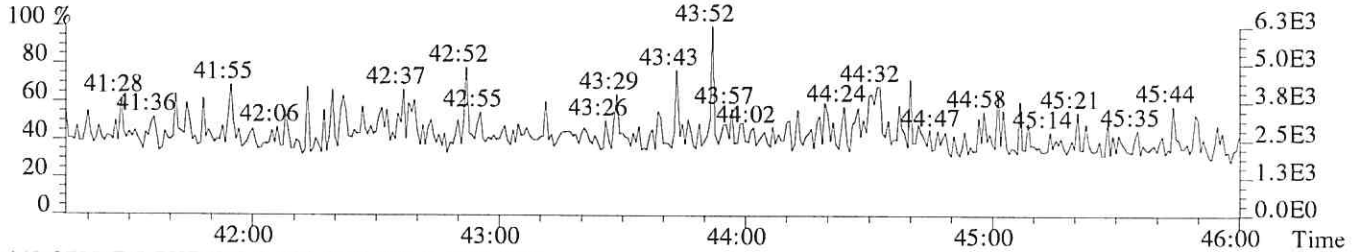
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,860.0,0.40%,F,T)



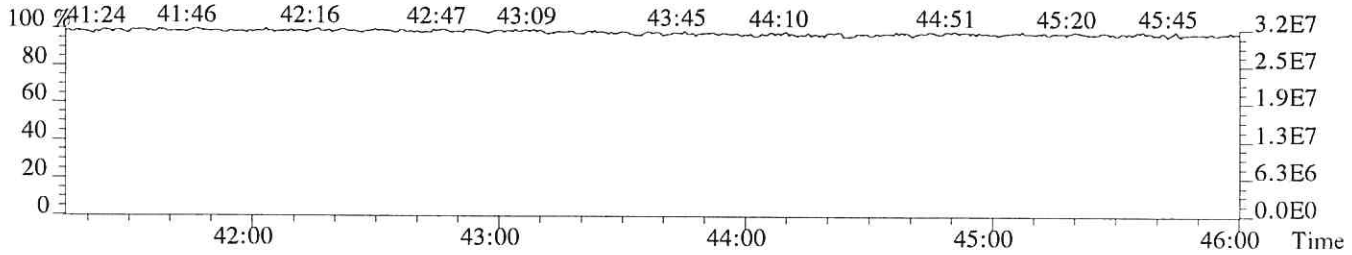
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,412.0,0.40%,F,T)



513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

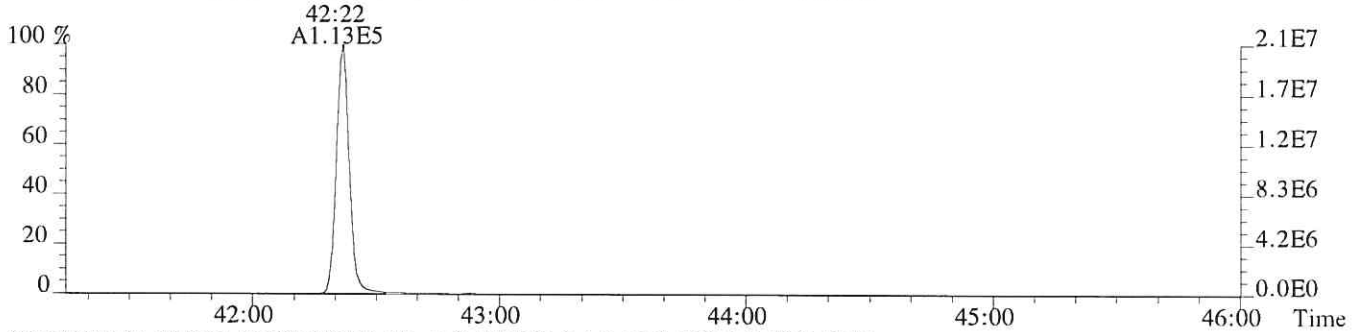


442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)

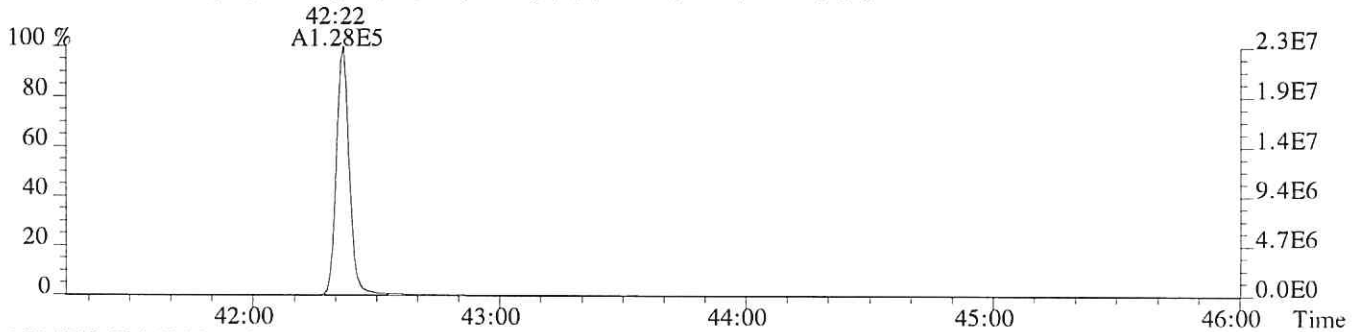


File:P407618 #1-429 Acq: 1-SEP-2017 18:32:08 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS4

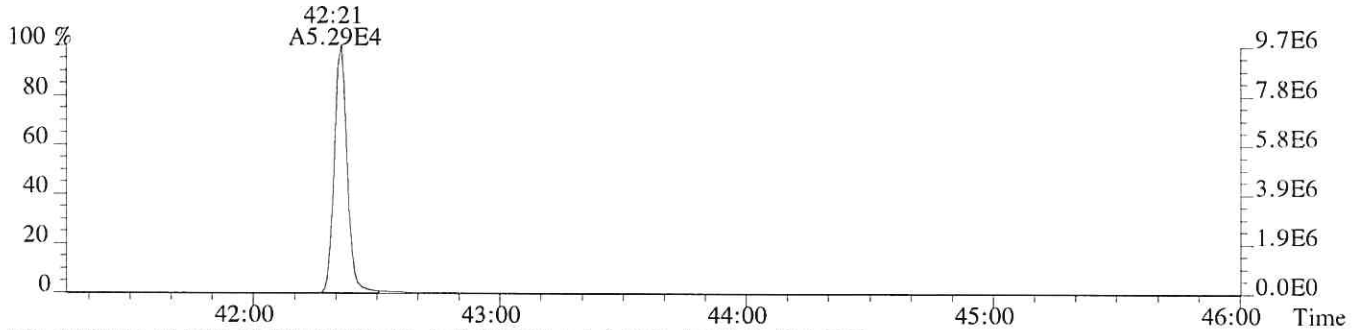
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,776.0,0.40%,F,T)



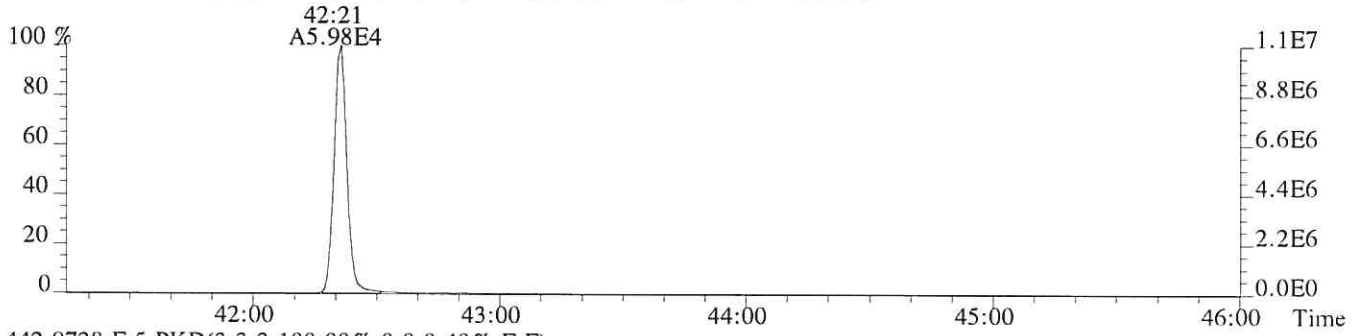
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,700.0,0.40%,F,T)



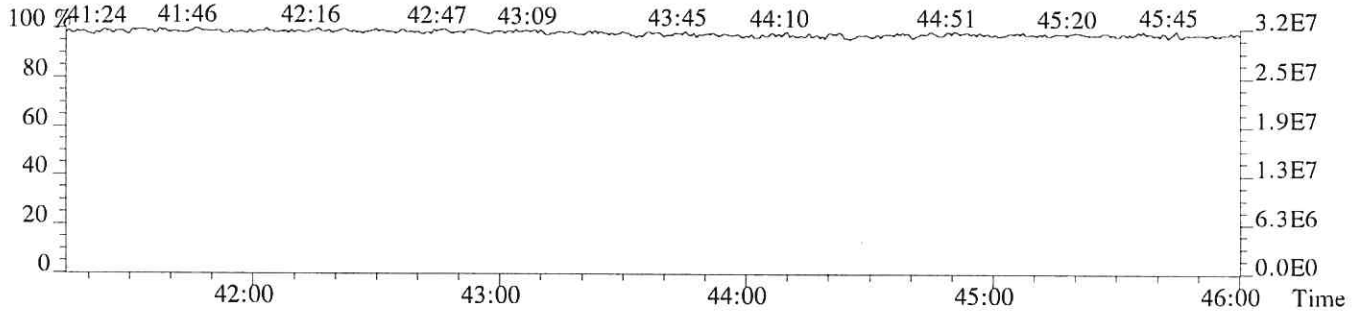
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,860.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,412.0,0.40%,F,T)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
82168

Run #6 Filename p407619 #1 Samp: 1 Inj: 1 Acquired: 1-SEP-17 19:21:19
Processed: 5-SEP-17 09:15:30 LAB. ID: CS5

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	28:39	6.486e+04	8.314e+04	0.78	yes	no	0.885
2	Unk	1,2,3,7,8-PeCDF	32:41	5.076e+05	3.251e+05	1.56	yes	no	0.984
3	Unk	2,3,4,7,8-PeCDF	33:34	5.113e+05	3.293e+05	1.55	yes	no	0.943
4	Unk	1,2,3,4,7,8-HxCDF	36:09	4.921e+05	3.949e+05	1.25	yes	no	1.230
5	Unk	1,2,3,6,7,8-HxCDF	36:16	5.037e+05	4.052e+05	1.24	yes	no	1.148
6	Unk	2,3,4,6,7,8-HxCDF	36:45	4.549e+05	3.671e+05	1.24	yes	no	1.133
7	Unk	1,2,3,7,8,9-HxCDF	37:30	4.049e+05	3.290e+05	1.23	yes	no	1.172
8	Unk	1,2,3,4,6,7,8-HpCDF	38:42	4.198e+05	4.066e+05	1.03	yes	no	1.377
9	Unk	1,2,3,4,7,8,9-HpCDF	40:06	3.439e+05	3.314e+05	1.04	yes	no	1.301
10	Unk	OCDF	42:35	5.093e+05	5.608e+05	0.91	yes	no	1.114
11	Unk	2,3,7,8-TCDD	29:24	5.680e+04	7.479e+04	0.76	yes	no	0.966
12	Unk	1,2,3,7,8-PeCDD	33:50	3.787e+05	2.460e+05	1.54	yes	no	0.851
13	Unk	1,2,3,4,7,8-HxCDD	36:53	3.686e+05	2.980e+05	1.24	yes	no	0.966
14	Unk	1,2,3,6,7,8-HxCDD	36:58	3.331e+05	2.665e+05	1.25	yes	no	0.938
15	Unk	1,2,3,7,8,9-HxCDD	37:11	3.598e+05	2.897e+05	1.24	yes	no	0.980
16	Unk	1,2,3,4,6,7,8-HpCDD	39:36	2.963e+05	2.834e+05	1.05	yes	no	0.975
17	Unk	OCDD	42:22	4.441e+05	5.039e+05	0.88	yes	no	1.033
18	IS	13C-2,3,7,8-TCDF	28:37	3.623e+04	4.622e+04	0.78	yes	no	1.176
19	IS	13C-1,2,3,7,8-PeCDF	32:40	5.330e+04	3.453e+04	1.54	yes	no	1.185
20	IS	13C-2,3,4,7,8-PeCDF	33:34	5.109e+04	3.263e+04	1.57	yes	no	1.149
21	IS	13C-1,2,3,4,7,8-HxCDF	36:09	2.534e+04	4.883e+04	0.52	yes	no	1.068
22	IS	13C-1,2,3,6,7,8-HxCDF	36:15	2.673e+04	5.061e+04	0.53	yes	no	1.171
23	IS	13C-2,3,4,6,7,8-HxCDF	36:45	2.503e+04	4.815e+04	0.52	yes	no	1.079
24	IS	13C-1,2,3,7,8,9-HxCDF	37:29	2.170e+04	4.211e+04	0.52	yes	no	0.919
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:41	1.898e+04	4.280e+04	0.44	yes	no	0.877
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:05	1.544e+04	3.463e+04	0.45	yes	no	0.723
27	IS	13C-2,3,7,8-TCDD	29:22	3.120e+04	3.918e+04	0.80	yes	no	0.958
28	IS	13C-1,2,3,7,8-PeCDD	33:49	4.396e+04	2.825e+04	1.56	yes	no	0.973
29	IS	13C-1,2,3,4,7,8-HxCDD	36:52	3.574e+04	2.858e+04	1.25	yes	no	0.966
30	IS	13C-1,2,3,6,7,8-HxCDD	36:57	3.939e+04	3.117e+04	1.26	yes	no	0.968
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:36	3.080e+04	2.959e+04	1.04	yes	no	0.854
32	IS	13C-OCDD	42:21	4.762e+04	5.356e+04	0.89	yes	no	0.668
33	RS/RT	13C-1,2,3,4-TCDD	28:49	3.191e+04	4.010e+04	0.80	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:11	3.751e+04	3.029e+04	1.24	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:24	1.474e+05				no	0.992

ALS ENVIRONMENTAL
10450 Stancliff Road
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ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
82168

Run #6 Filename p407619 Samp: 1 Inj: 1 Acquired: 1-SEP-17 19:21:19
Processed: 5-SEP-17 09:15:301 LAB. ID: CS5

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	1.26e+07	1.07e+03	1.2e+04	1.61e+07	2.24e+03	7.2e+03
2	1,2,3,7,8-PeCDF	1.03e+08	1.32e+03	7.7e+04	6.56e+07	1.20e+03	5.5e+04
3	2,3,4,7,8-PeCDF	1.07e+08	1.32e+03	8.1e+04	6.88e+07	1.20e+03	5.7e+04
4	1,2,3,4,7,8-HxCDF	1.13e+08	2.12e+03	5.3e+04	9.10e+07	1.88e+03	4.8e+04
5	1,2,3,6,7,8-HxCDF	1.14e+08	2.12e+03	5.4e+04	9.09e+07	1.88e+03	4.8e+04
6	2,3,4,6,7,8-HxCDF	1.04e+08	2.12e+03	4.9e+04	8.41e+07	1.88e+03	4.5e+04
7	1,2,3,7,8,9-HxCDF	8.99e+07	2.12e+03	4.2e+04	7.19e+07	1.88e+03	3.8e+04
8	1,2,3,4,6,7,8-HpCDF	9.75e+07	5.92e+03	1.6e+04	9.45e+07	1.84e+04	5.1e+03
9	1,2,3,4,7,8,9-HpCDF	7.42e+07	5.92e+03	1.3e+04	7.15e+07	1.84e+04	3.9e+03
10	OCDF	9.27e+07	6.92e+02	1.3e+05	1.04e+08	1.52e+03	6.8e+04
11	2,3,7,8-TCDD	1.17e+07	1.53e+03	7.7e+03	1.55e+07	1.16e+03	1.3e+04
12	1,2,3,7,8-PeCDD	8.01e+07	1.15e+03	7.0e+04	5.19e+07	6.20e+02	8.4e+04
13	1,2,3,4,7,8-HxCDD	8.66e+07	6.52e+02	1.3e+05	7.00e+07	1.43e+03	4.9e+04
14	1,2,3,6,7,8-HxCDD	7.55e+07	6.52e+02	1.2e+05	5.99e+07	1.43e+03	4.2e+04
15	1,2,3,7,8,9-HxCDD	8.08e+07	6.52e+02	1.2e+05	6.58e+07	1.43e+03	4.6e+04
16	1,2,3,4,6,7,8-HpCDD	6.56e+07	2.53e+03	2.6e+04	6.29e+07	2.16e+03	2.9e+04
17	OCDD	8.40e+07	1.14e+03	7.3e+04	9.52e+07	6.48e+02	1.5e+05
18	13C-2,3,7,8-TCDF	6.84e+06	9.59e+03	7.1e+02	8.85e+06	4.64e+03	1.9e+03
19	13C-1,2,3,7,8-PeCDF	1.07e+07	1.02e+03	1.1e+04	6.89e+06	7.88e+02	8.7e+03
20	13C-2,3,4,7,8-PeCDF	1.03e+07	1.02e+03	1.0e+04	6.61e+06	7.88e+02	8.4e+03
21	13C-1,2,3,4,7,8-HxCDF	5.77e+06	8.48e+02	6.8e+03	1.11e+07	1.74e+03	6.4e+03
22	13C-1,2,3,6,7,8-HxCDF	6.08e+06	8.48e+02	7.2e+03	1.14e+07	1.74e+03	6.5e+03
23	13C-2,3,4,6,7,8-HxCDF	5.75e+06	8.48e+02	6.8e+03	1.09e+07	1.74e+03	6.3e+03
24	13C-1,2,3,7,8,9-HxCDF	4.77e+06	8.48e+02	5.6e+03	9.14e+06	1.74e+03	5.3e+03
25	13C-1,2,3,4,6,7,8-HpCDF	4.42e+06	9.92e+02	4.5e+03	9.88e+06	3.21e+03	3.1e+03
26	13C-1,2,3,4,7,8,9-HpCDF	3.31e+06	9.92e+02	3.3e+03	7.45e+06	3.21e+03	2.3e+03
27	13C-2,3,7,8-TCDD	6.22e+06	4.20e+03	1.5e+03	7.82e+06	2.59e+03	3.0e+03
28	13C-1,2,3,7,8-PeCDD	9.02e+06	1.32e+03	6.8e+03	5.77e+06	1.70e+03	3.4e+03
29	13C-1,2,3,4,7,8-HxCDD	8.32e+06	2.50e+03	3.3e+03	6.64e+06	1.28e+03	5.2e+03
30	13C-1,2,3,6,7,8-HxCDD	8.93e+06	2.50e+03	3.6e+03	7.06e+06	1.28e+03	5.5e+03
31	13C-1,2,3,4,6,7,8-HpCDD	6.71e+06	1.62e+03	4.1e+03	6.50e+06	1.06e+03	6.1e+03
32	13C-OCDD	9.01e+06	7.32e+02	1.2e+04	1.02e+07	6.56e+02	1.5e+04
33	13C-1,2,3,4-TCDD	6.23e+06	4.20e+03	1.5e+03	7.85e+06	2.59e+03	3.0e+03
34	13C-1,2,3,7,8,9-HxCDD	8.37e+06	2.50e+03	3.3e+03	6.81e+06	1.28e+03	5.3e+03
35	37Cl-2,3,7,8-TCDD	3.04e+07	1.82e+03	1.7e+04			

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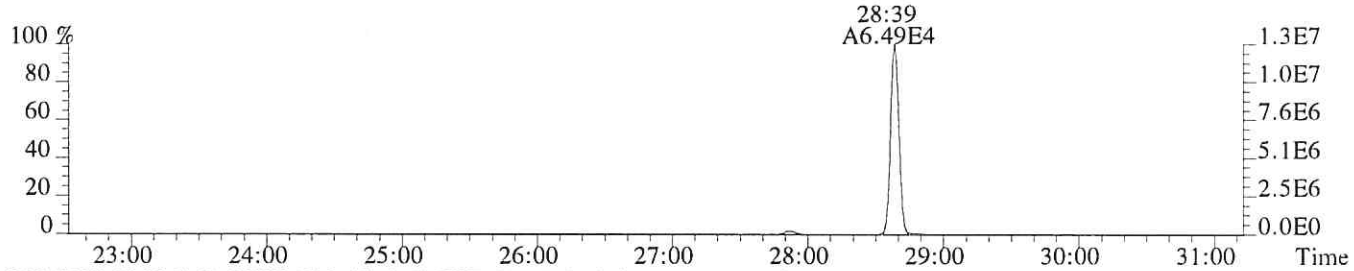
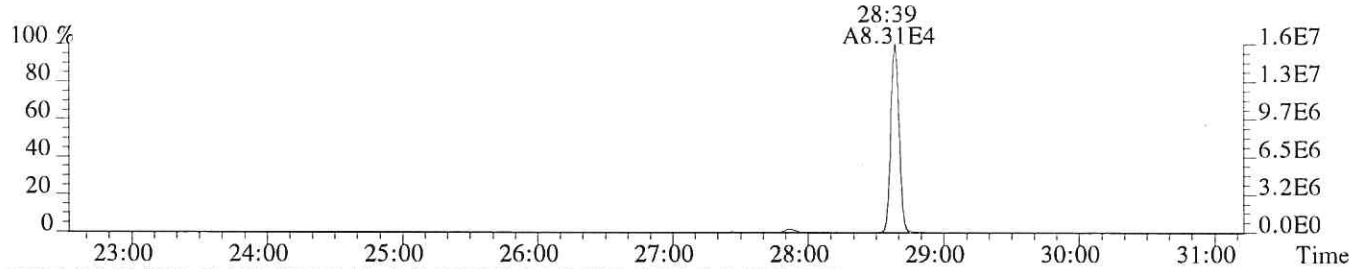
File:P407619 #1-616 Acq: 1-SEP-2017 19:21:19 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS5

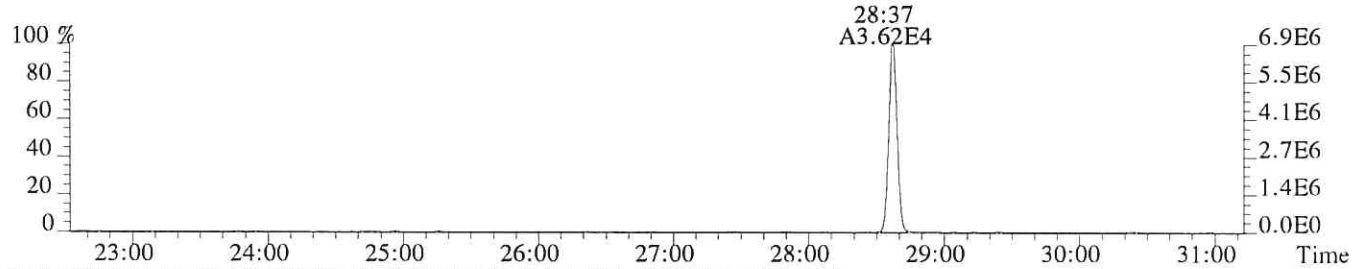
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1068.0,1.00%,F,T)



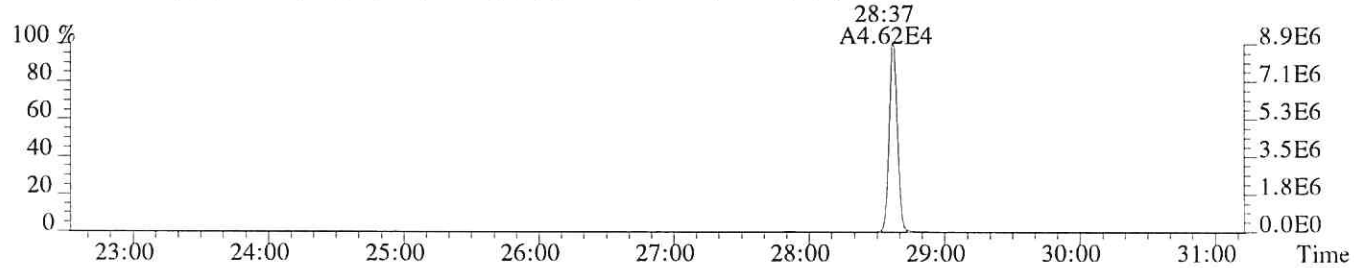
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2240.0,1.00%,F,T)



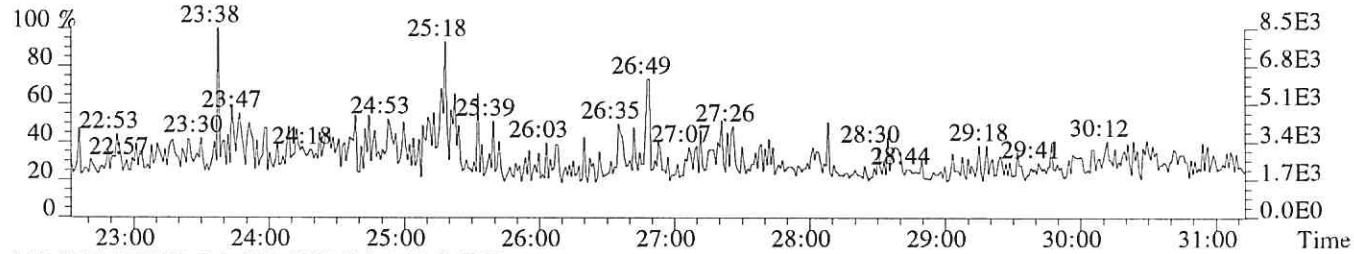
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,9588.0,1.00%,F,T)



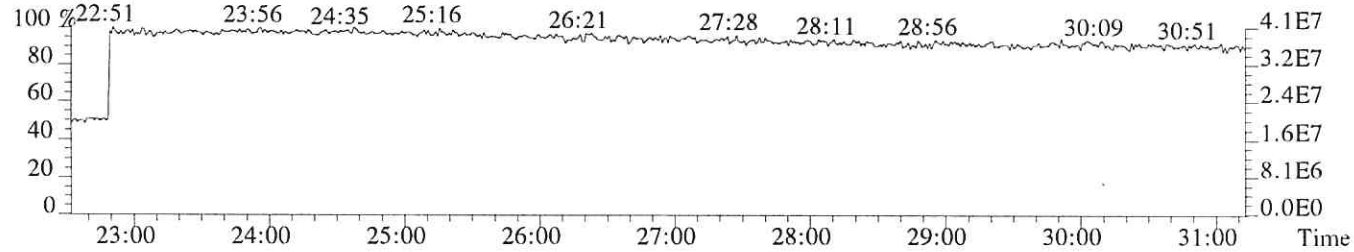
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4636.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

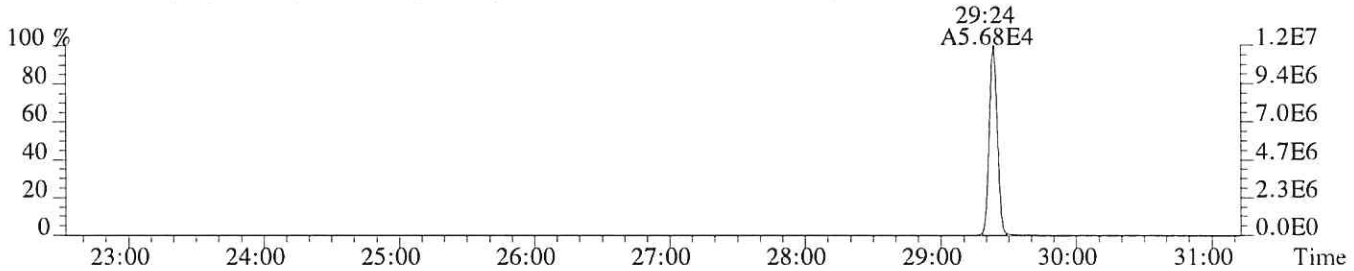


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

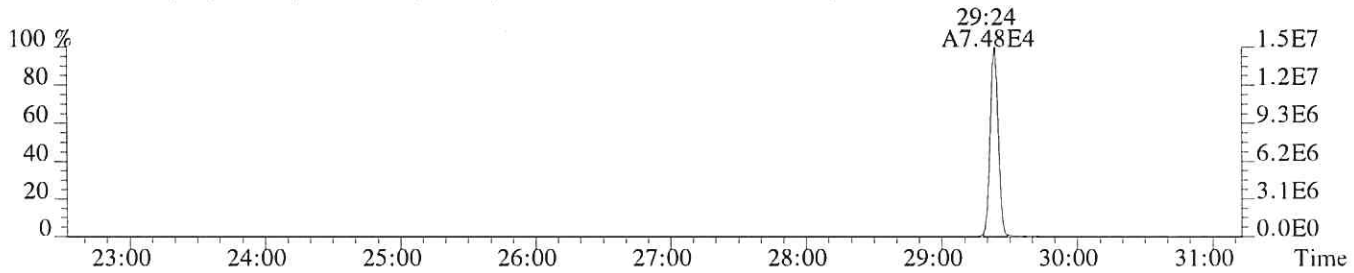


File:P407619 #1-616 Acq: 1-SEP-2017 19:21:19 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS5

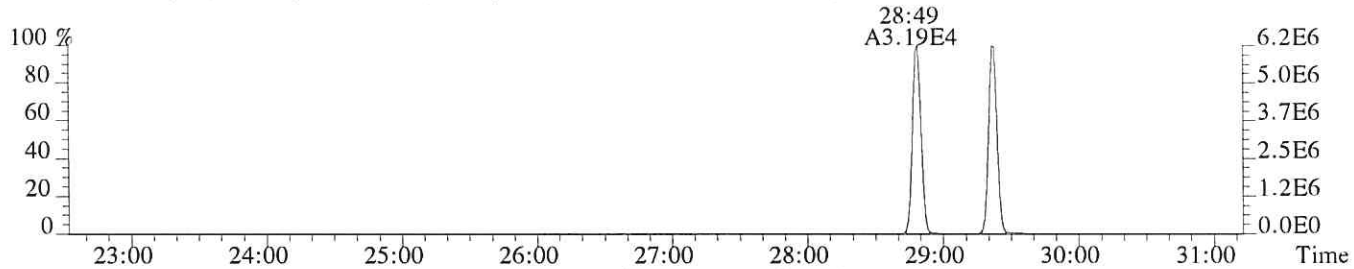
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1528.0,1.00%,F,T)



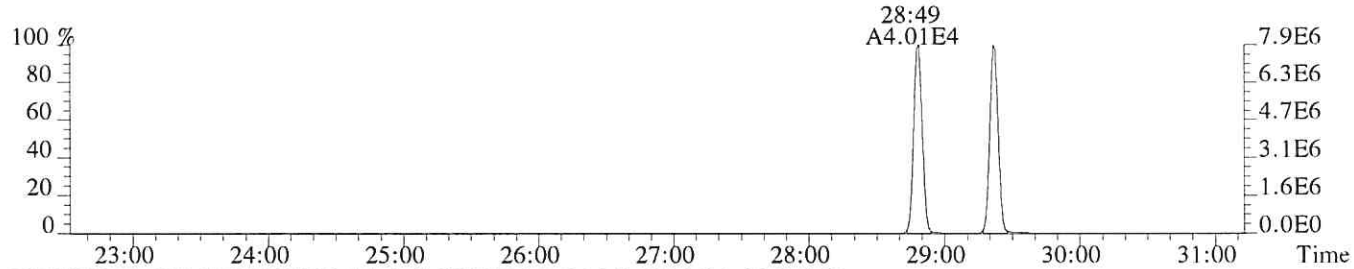
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1160.0,1.00%,F,T)



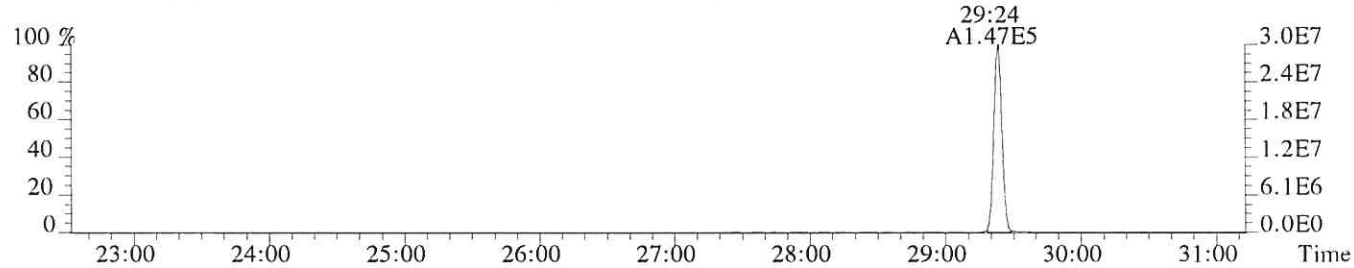
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4196.0,1.00%,F,T)



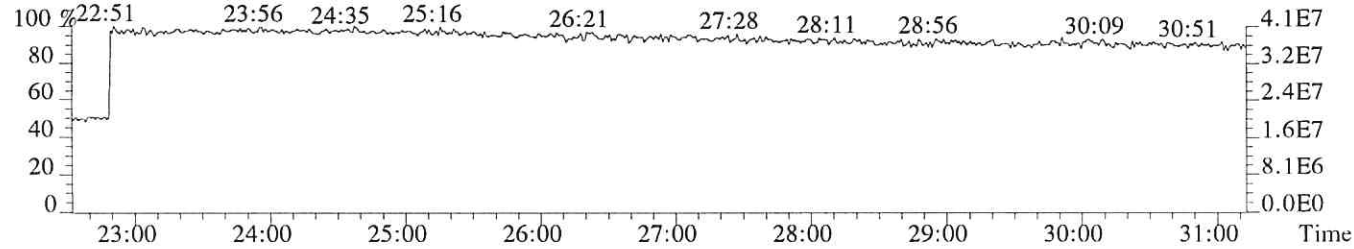
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2588.0,1.00%,F,T)



327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1816.0,1.00%,F,T)

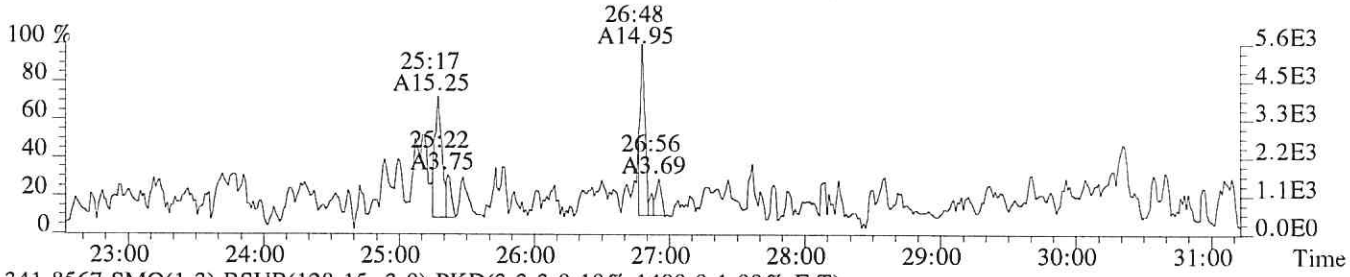


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

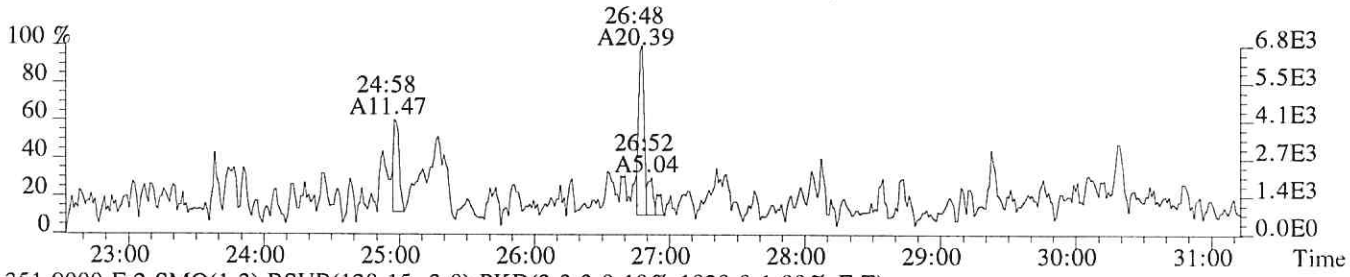


File:P407619 #1-616 Acq: 1-SEP-2017 19:21:19 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS5

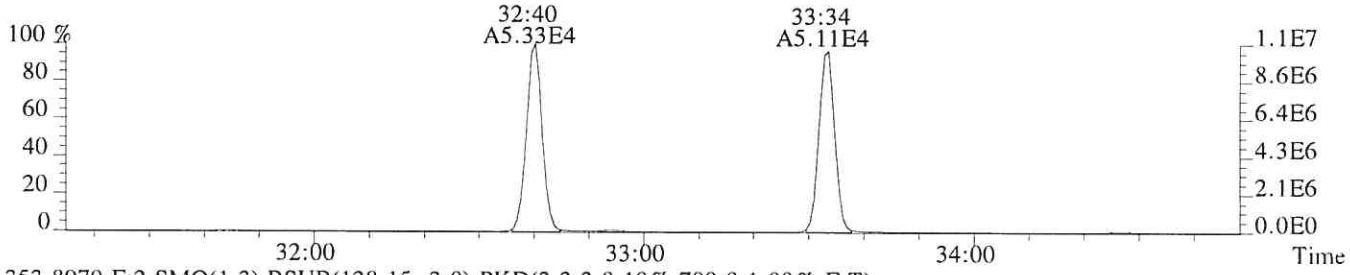
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1288.0,1.00%,F,T)



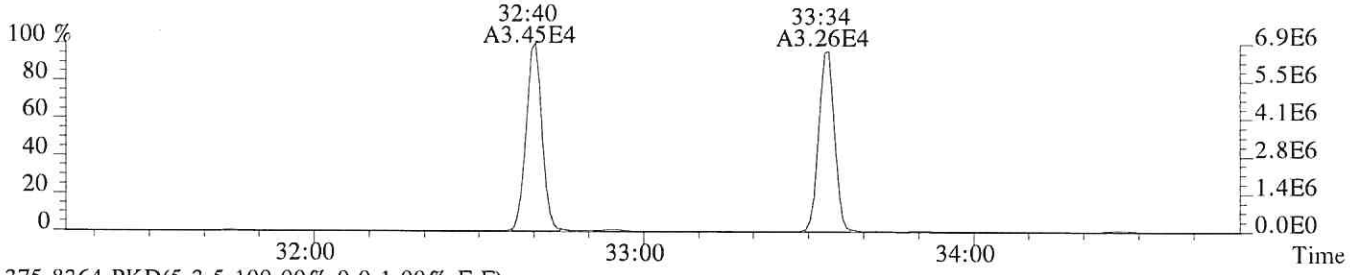
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1480.0,1.00%,F,T)



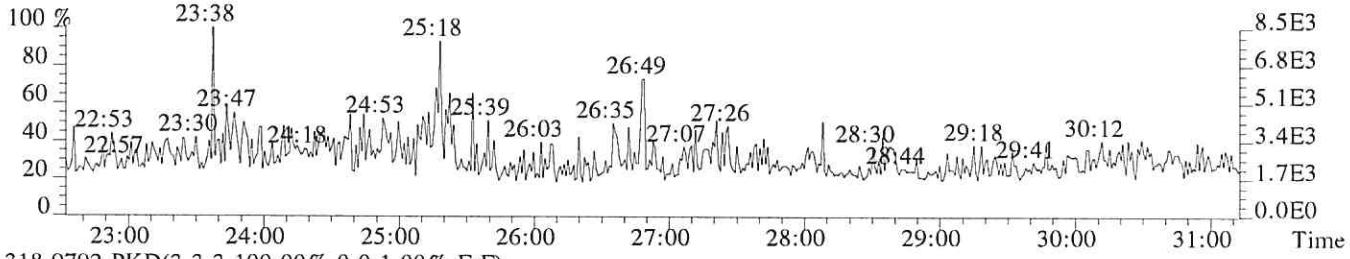
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1020.0,1.00%,F,T)



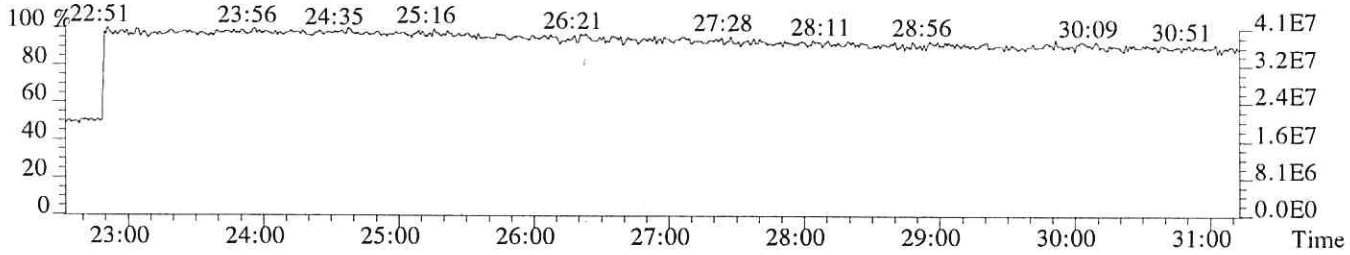
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,788.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

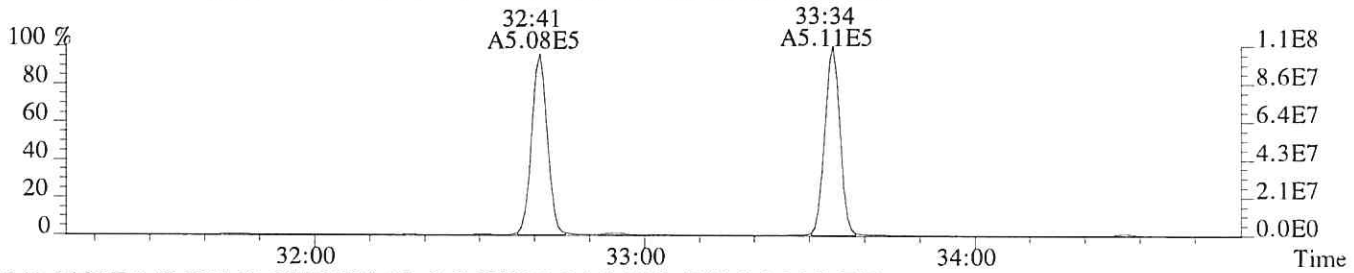


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

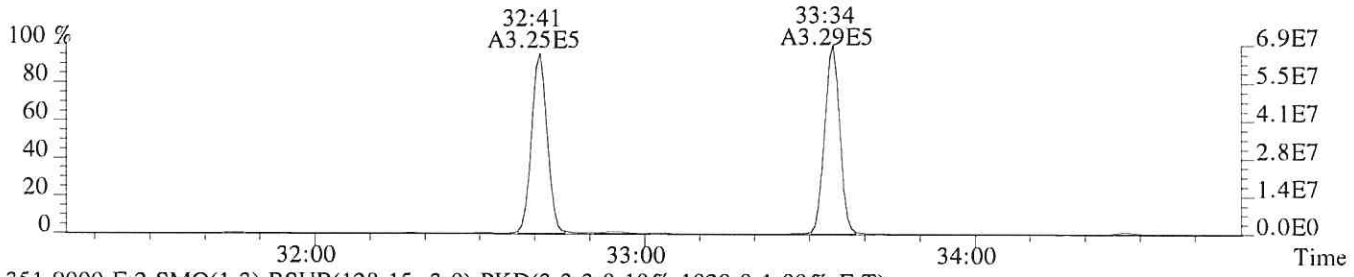


File:P407619 #1-321 Acq: 1-SEP-2017 19:21:19 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS5

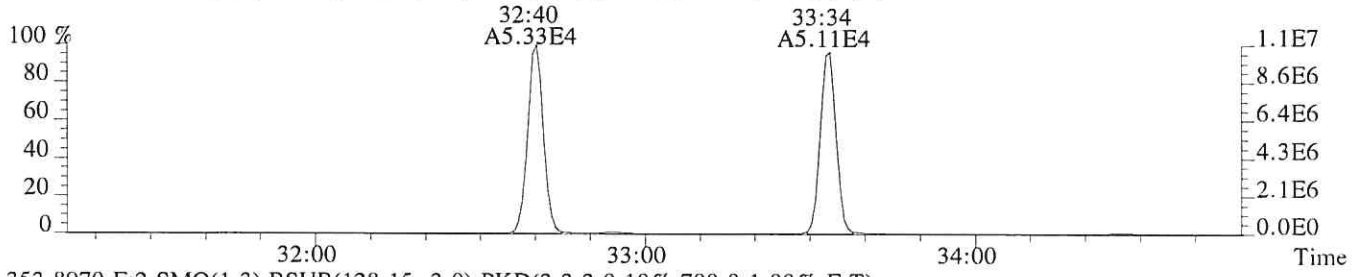
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1324.0,1.00%,F,T)



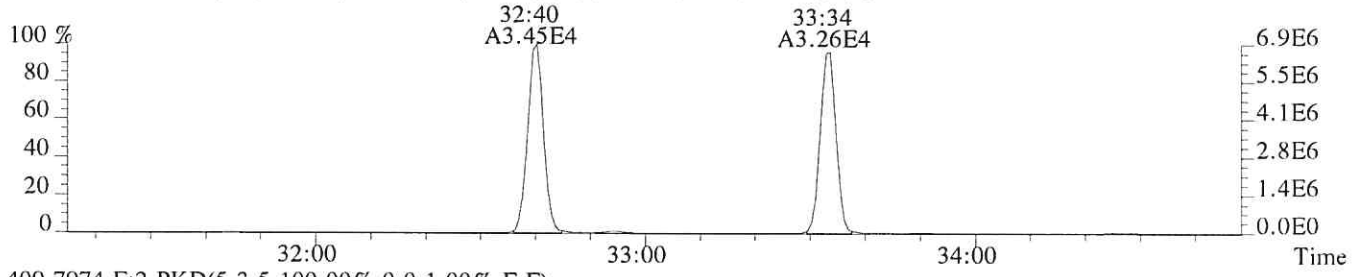
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1204.0,1.00%,F,T)



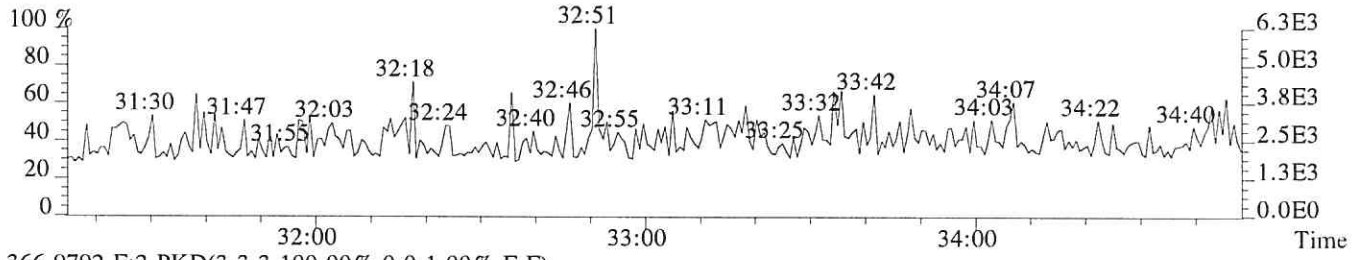
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1020.0,1.00%,F,T)



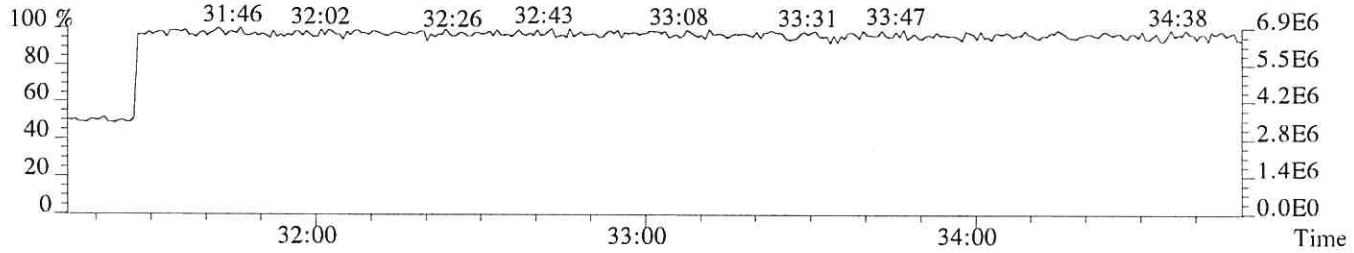
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,788.0,1.00%,F,T)



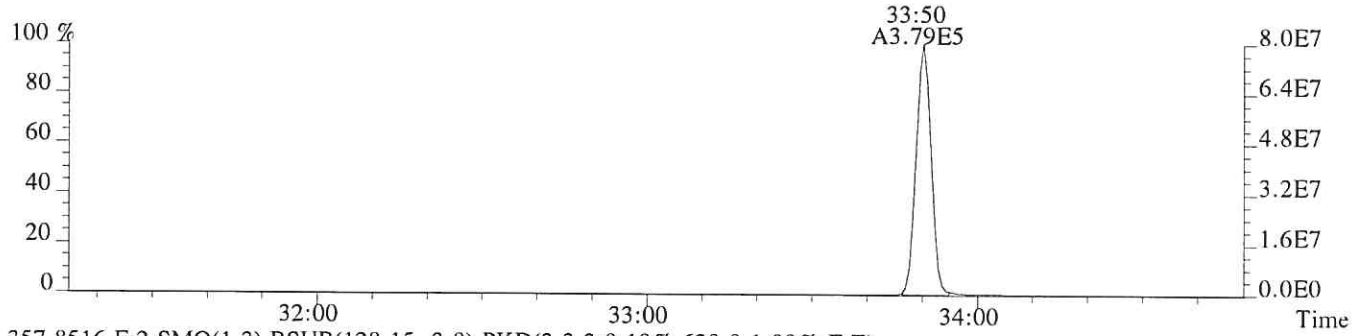
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



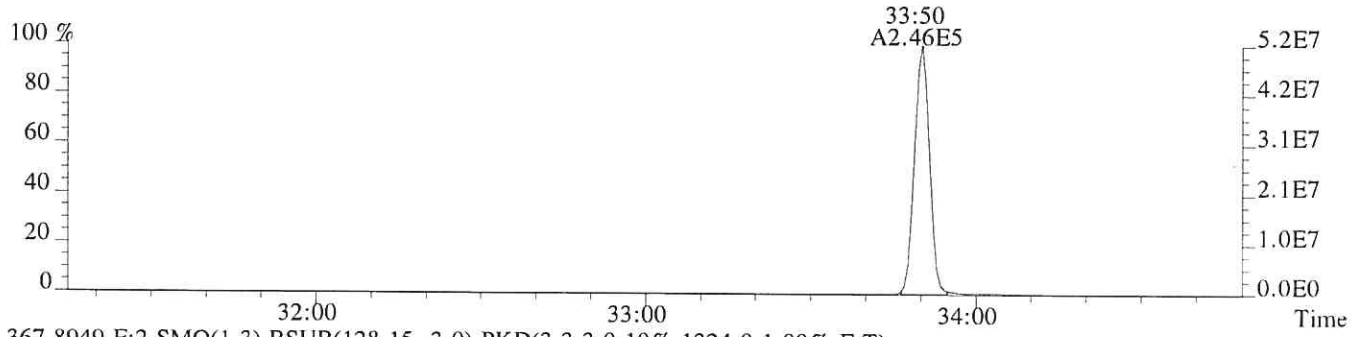
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



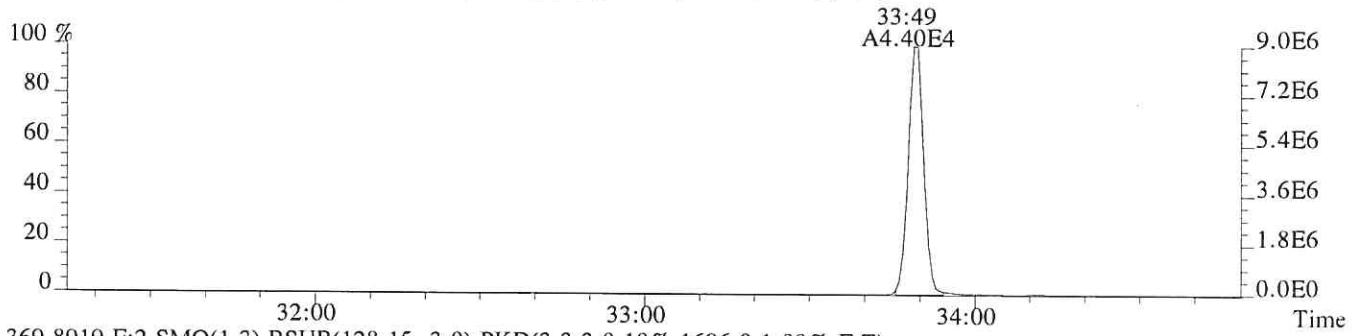
File:P407619 #1-321 Acq: 1-SEP-2017 19:21:19 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS5
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1152.0,1.00%,F,T)



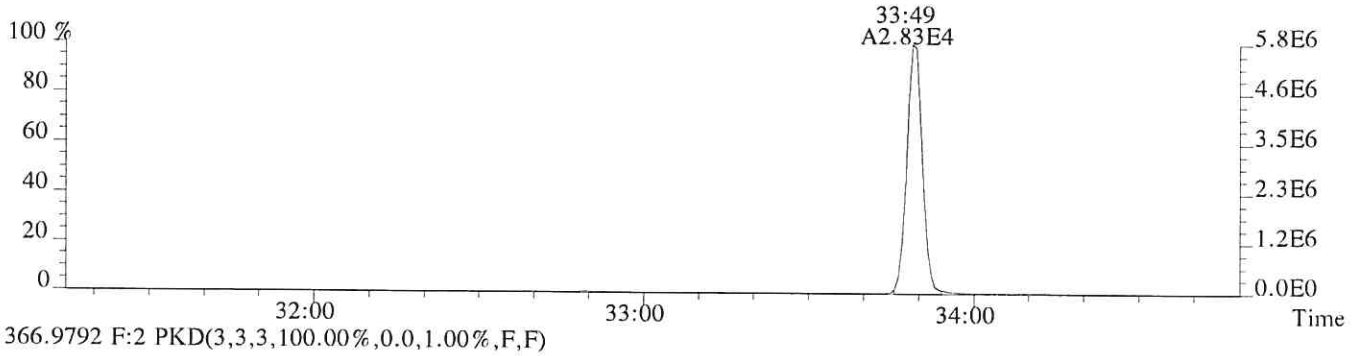
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,620.0,1.00%,F,T)



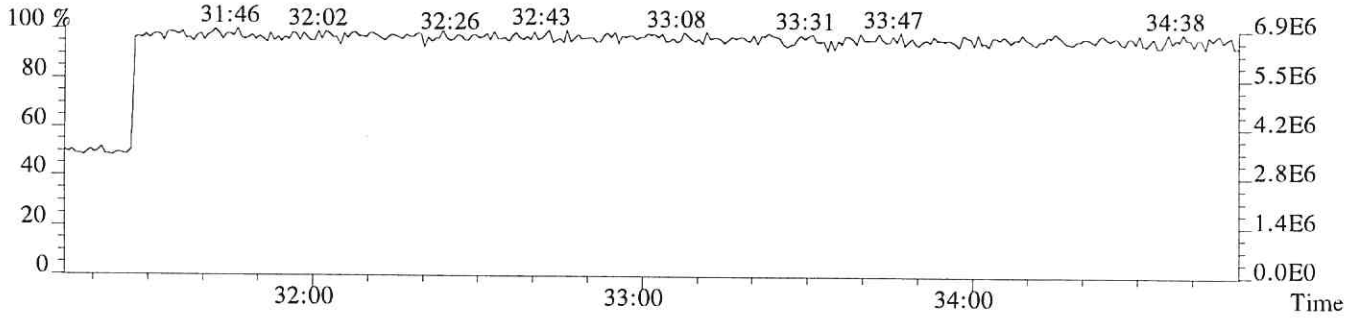
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1324.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1696.0,1.00%,F,T)

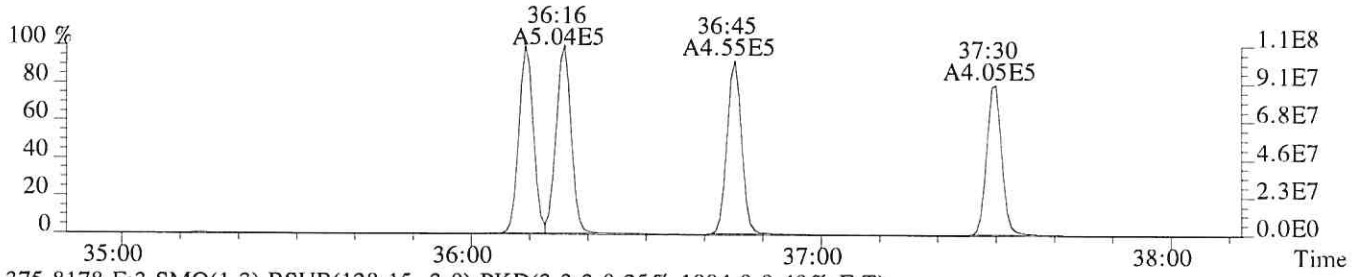


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

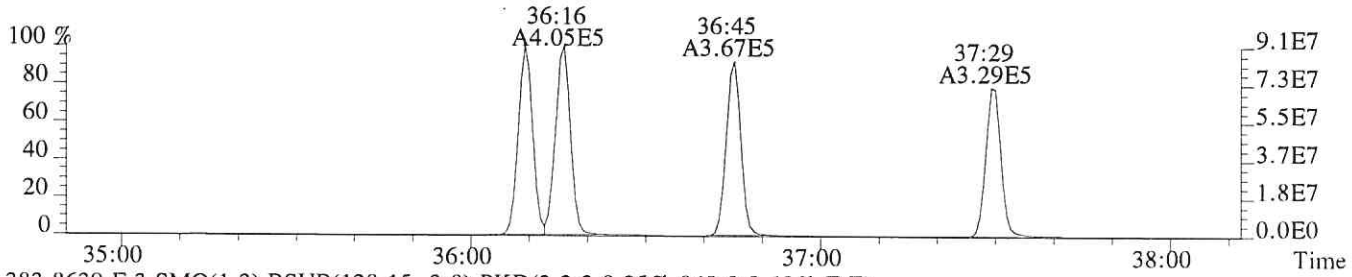


File:P407619 #1-303 Acq: 1-SEP-2017 19:21:19 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS5

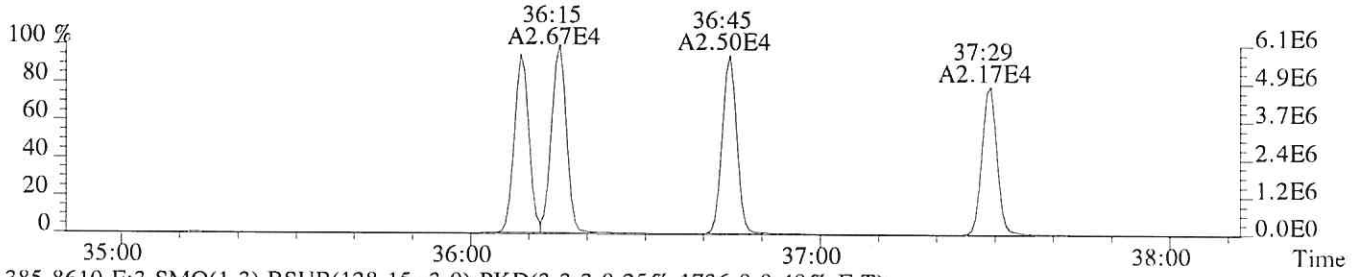
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2120.0,0.40%,F,T)



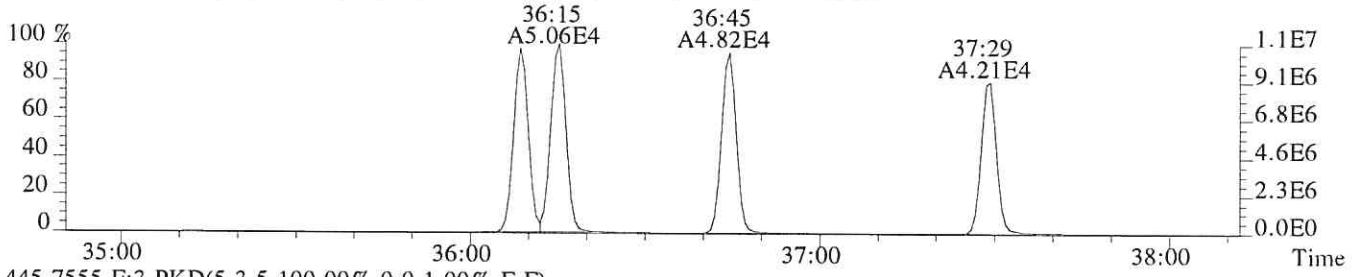
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1884.0,0.40%,F,T)



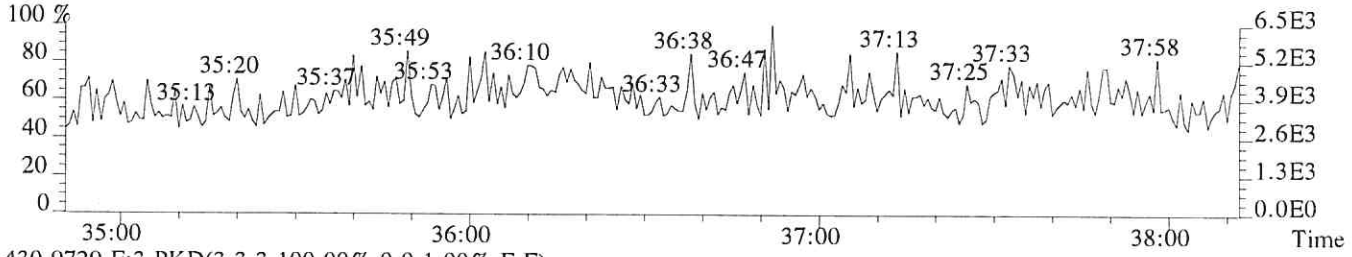
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,848.0,0.40%,F,T)



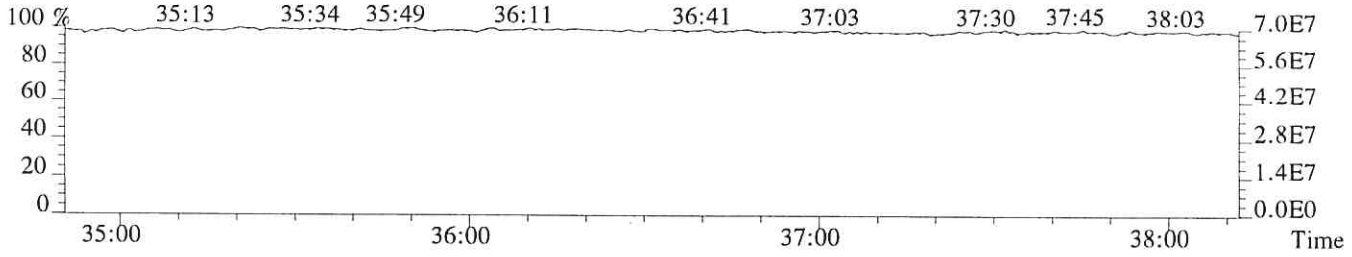
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1736.0,0.40%,F,T)



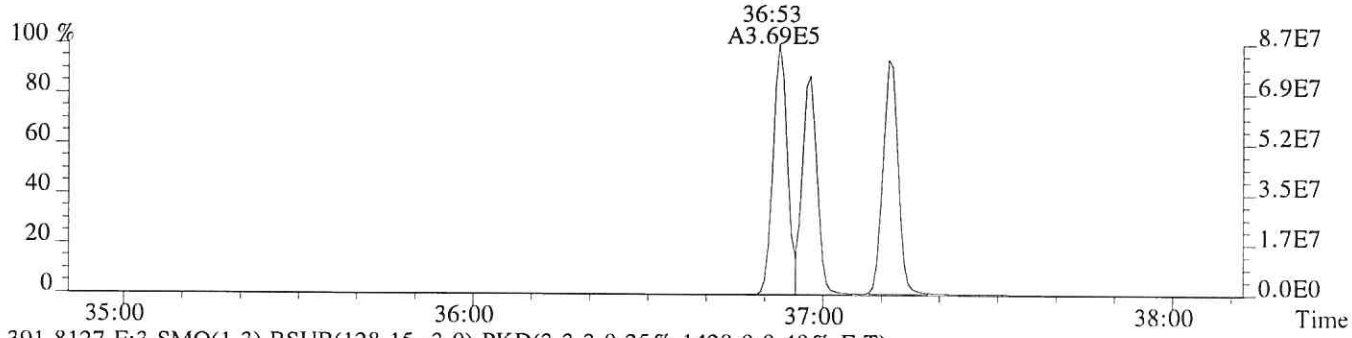
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



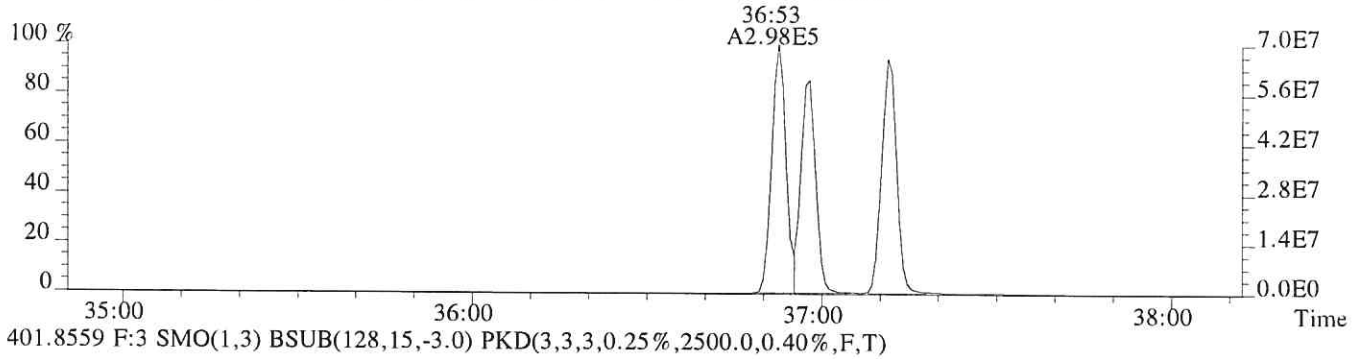
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



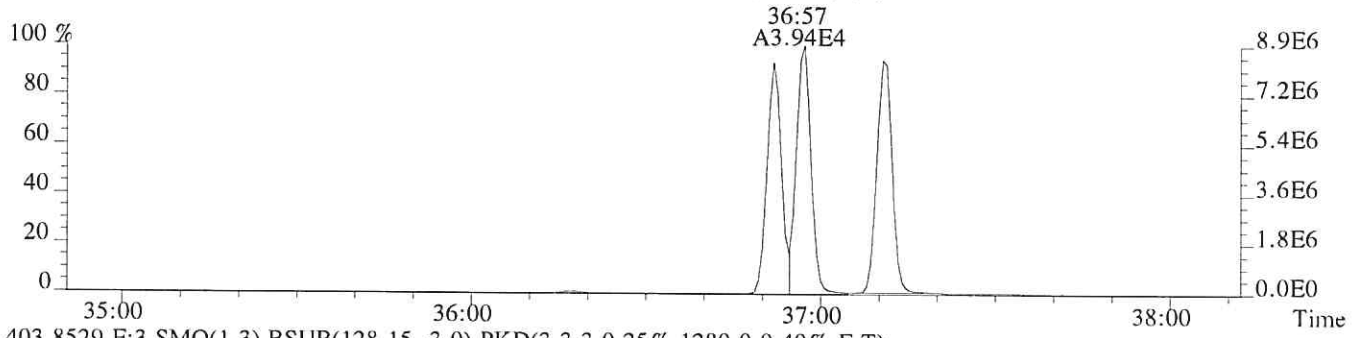
File:P407619 #1-303 Acq: 1-SEP-2017 19:21:19 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS5
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,652.0,0.40%,F,T)



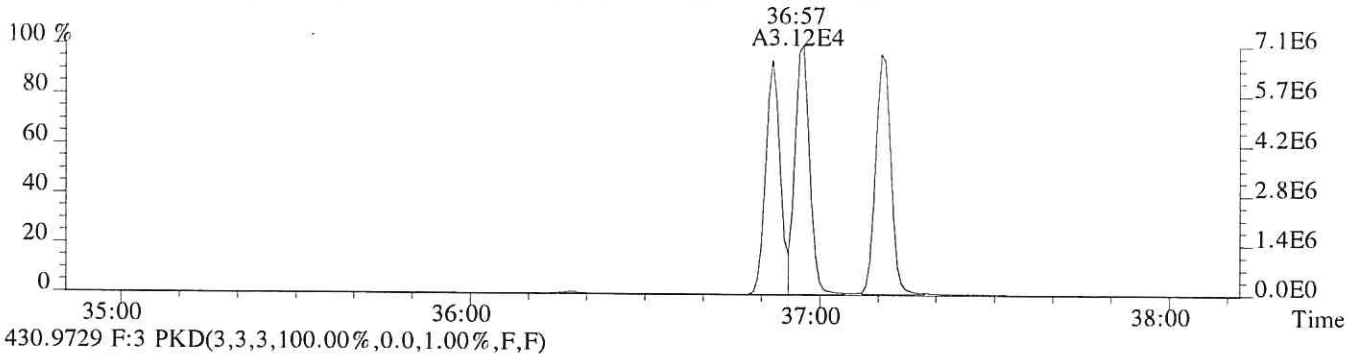
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1428.0,0.40%,F,T)



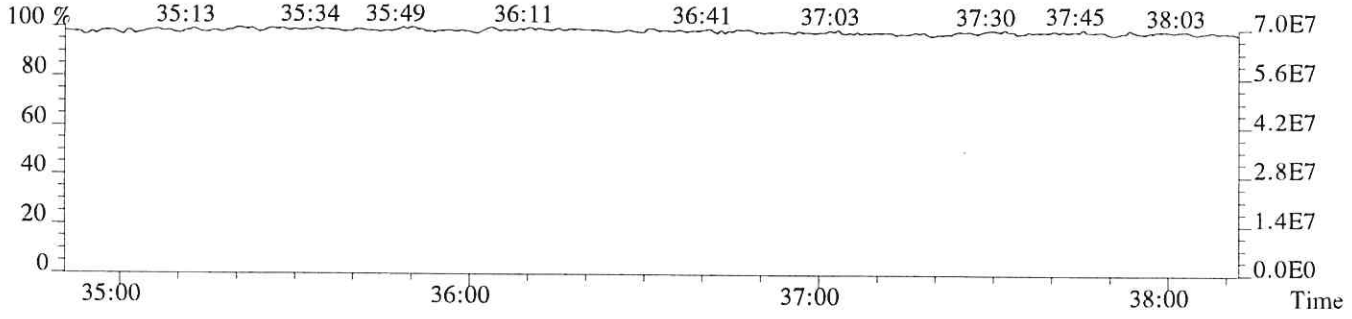
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2500.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1280.0,0.40%,F,T)

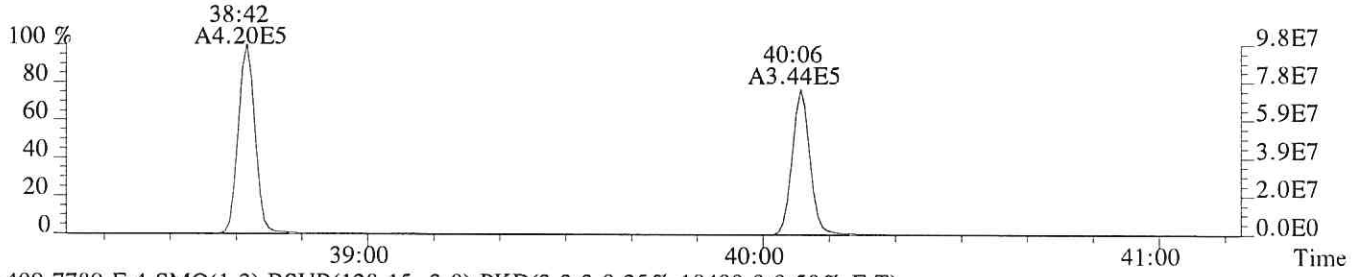


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

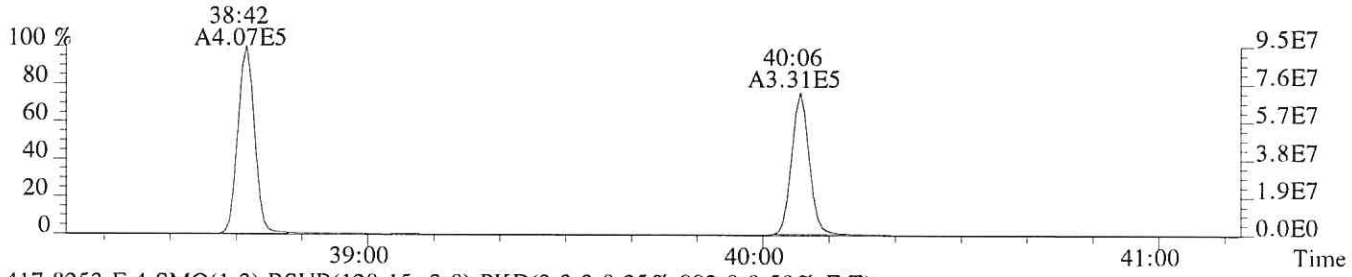


File:P407619 #1-268 Acq: 1-SEP-2017 19:21:19 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS5

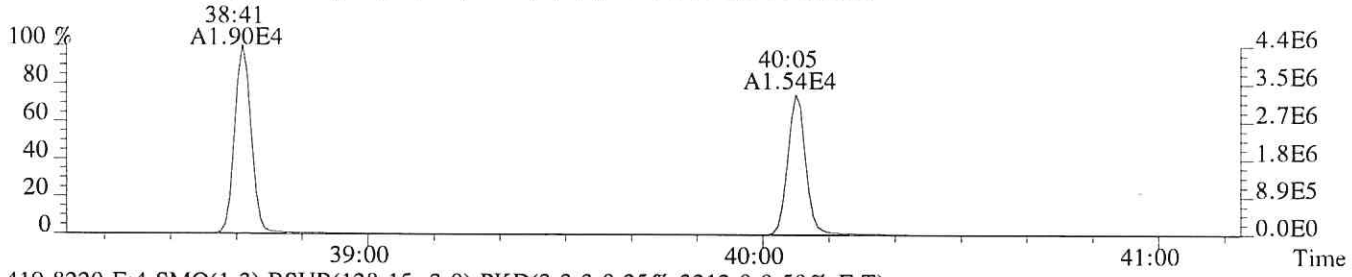
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5920.0,0.50%,F,T)



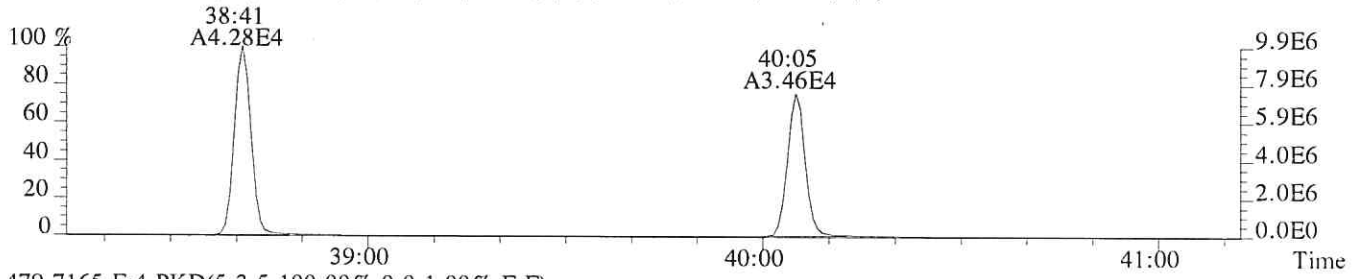
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,18400.0,0.50%,F,T)



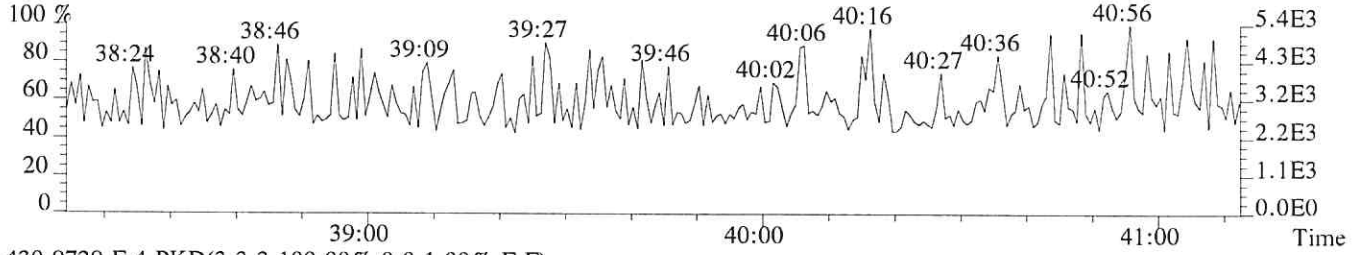
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,992.0,0.50%,F,T)



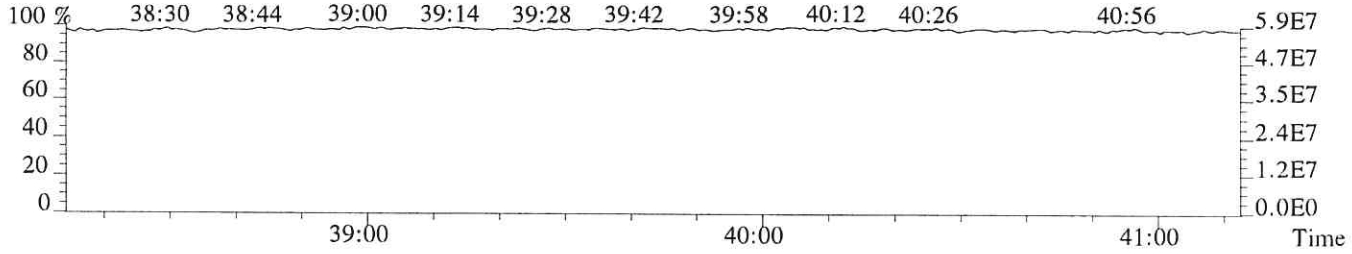
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3212.0,0.50%,F,T)



479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

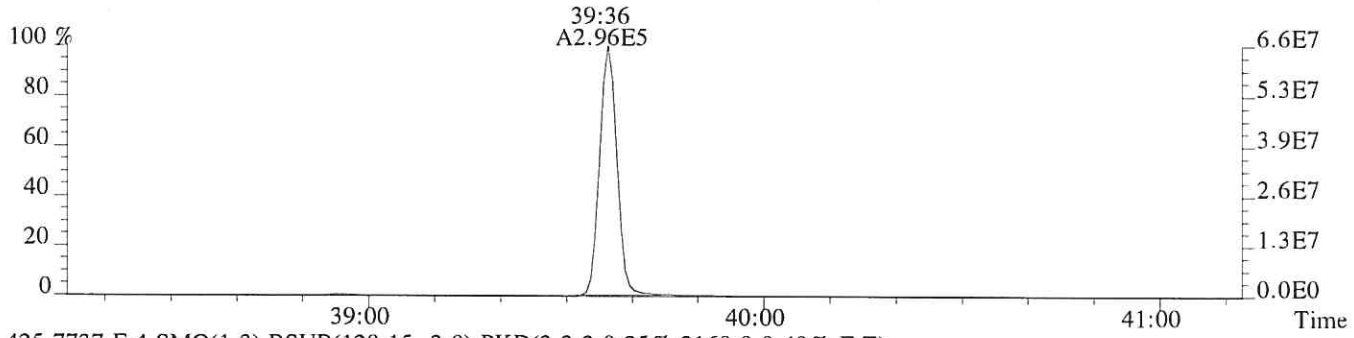


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

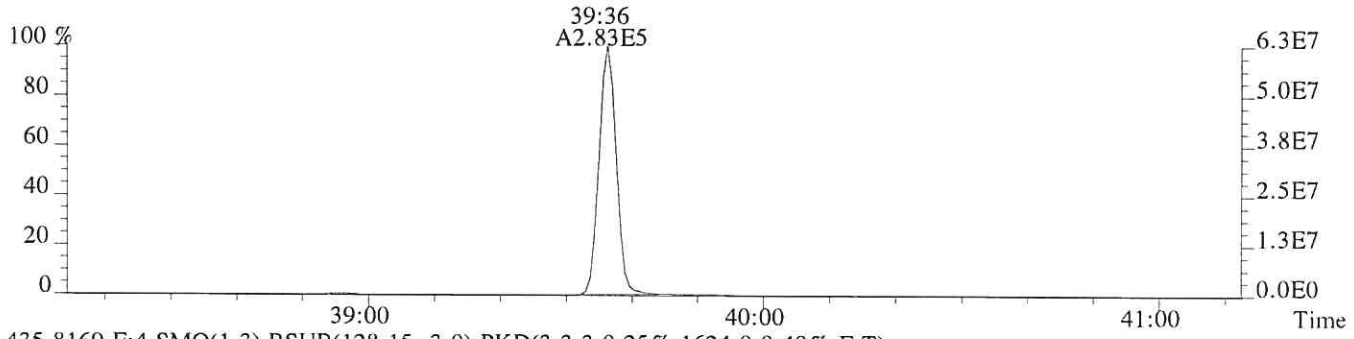


File:P407619 #1-268 Acq: 1-SEP-2017 19:21:19 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS5

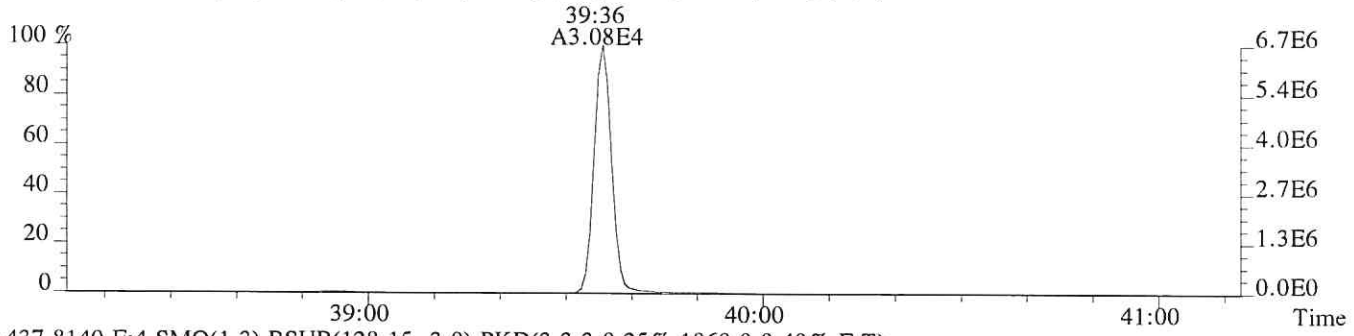
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2532.0,0.40%,F,T)



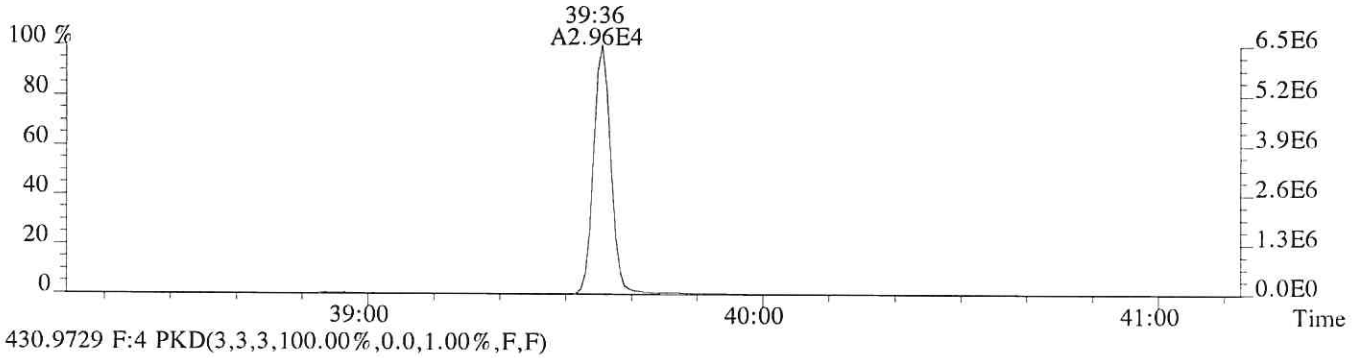
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2160.0,0.40%,F,T)



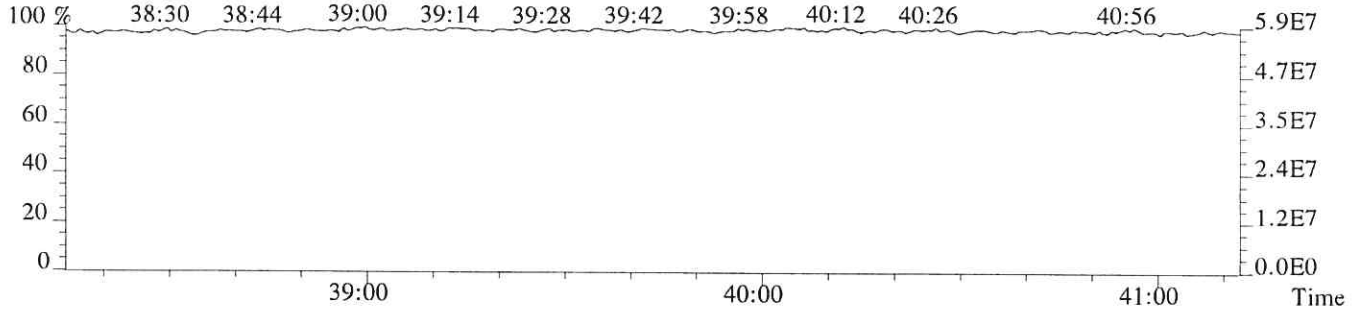
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1624.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1060.0,0.40%,F,T)

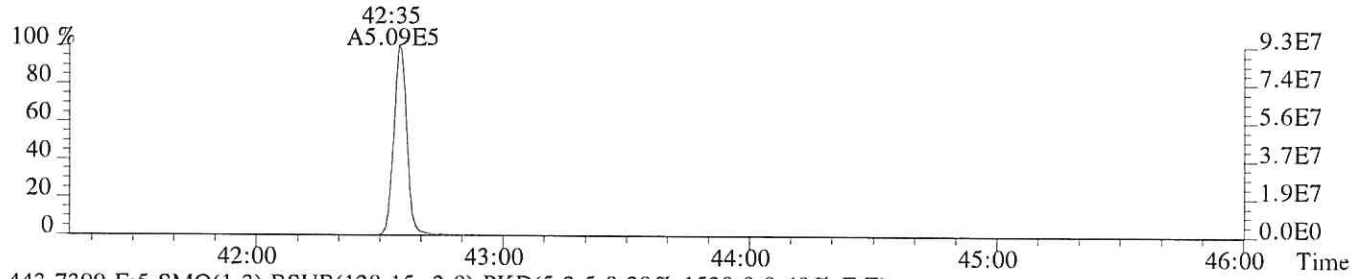


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

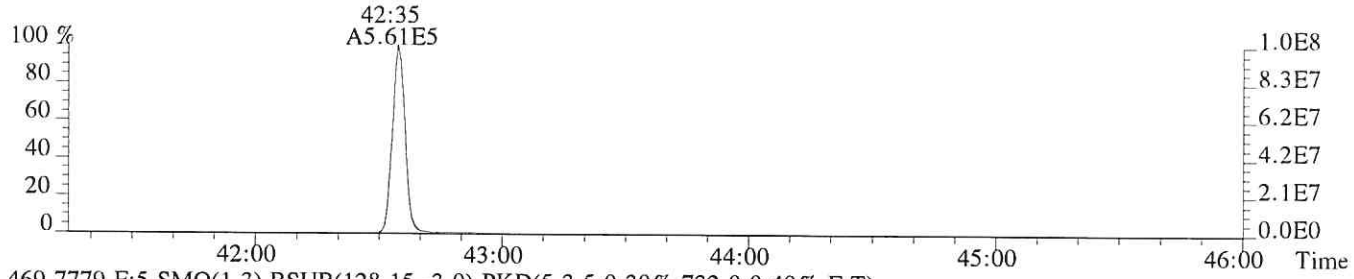


File:P407619 #1-429 Acq: 1-SEP-2017 19:21:19 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS5

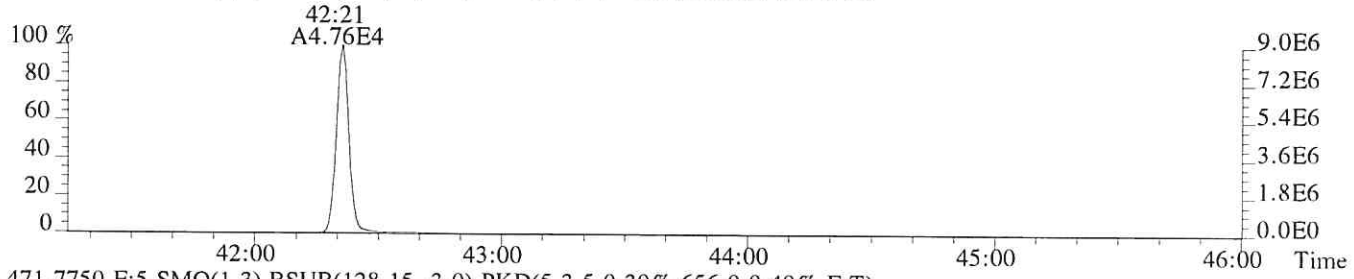
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,692.0,0.40%,F,T)



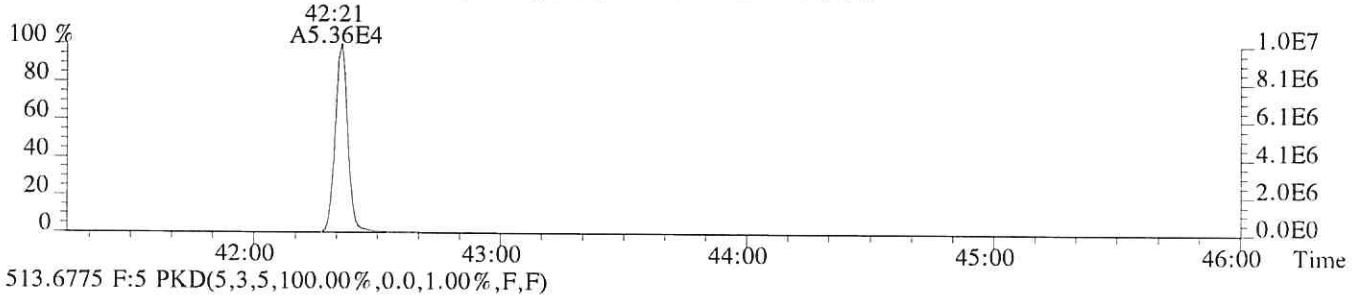
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1520.0,0.40%,F,T)



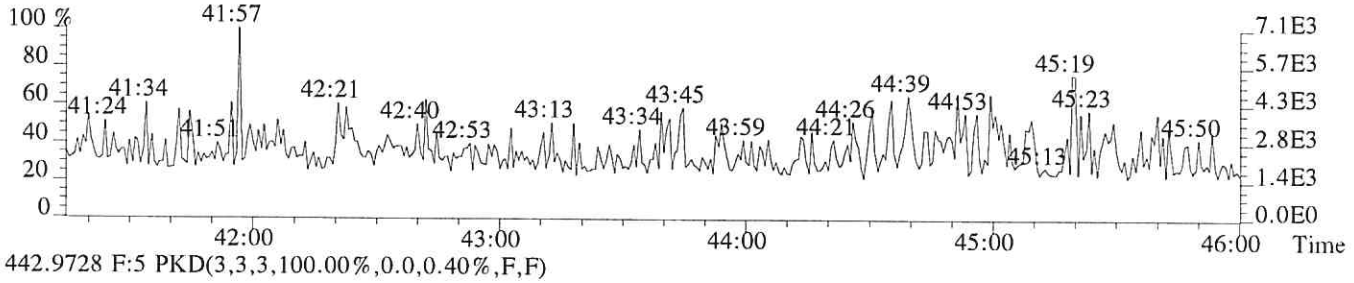
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,732.0,0.40%,F,T)



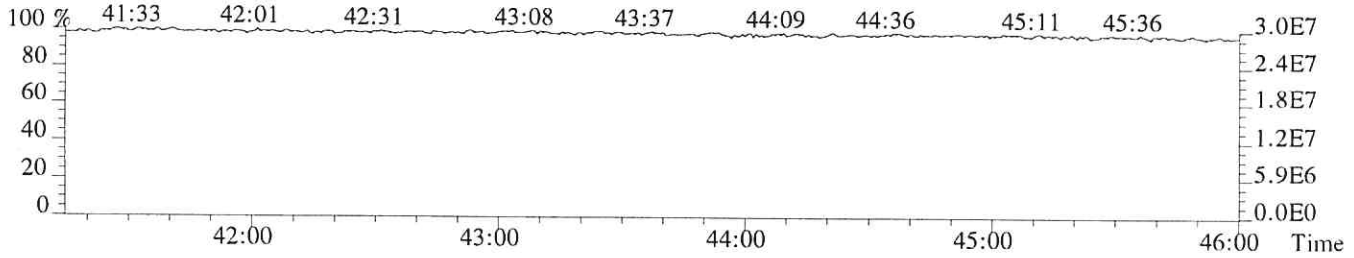
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,656.0,0.40%,F,T)



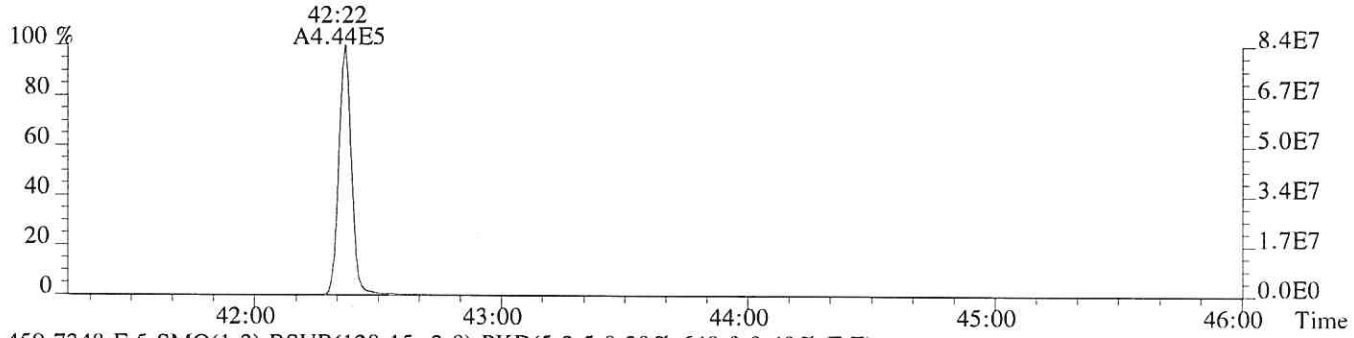
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



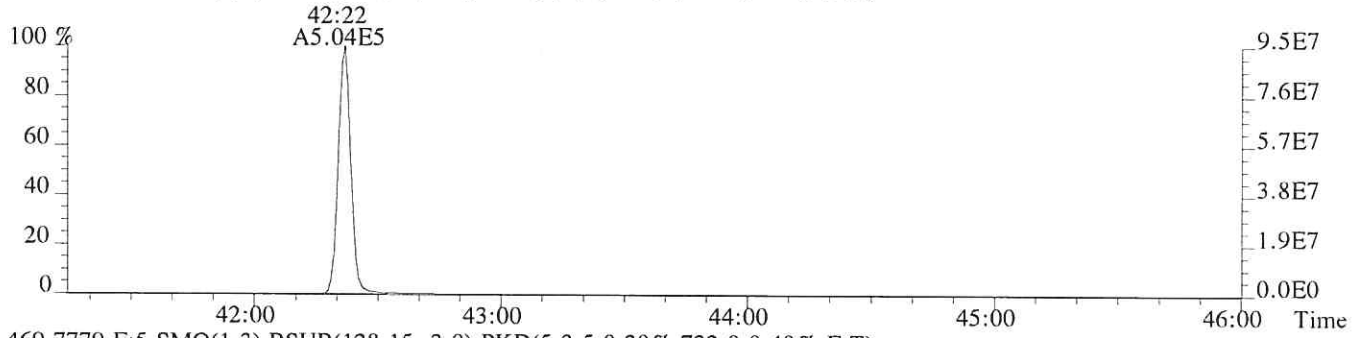
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



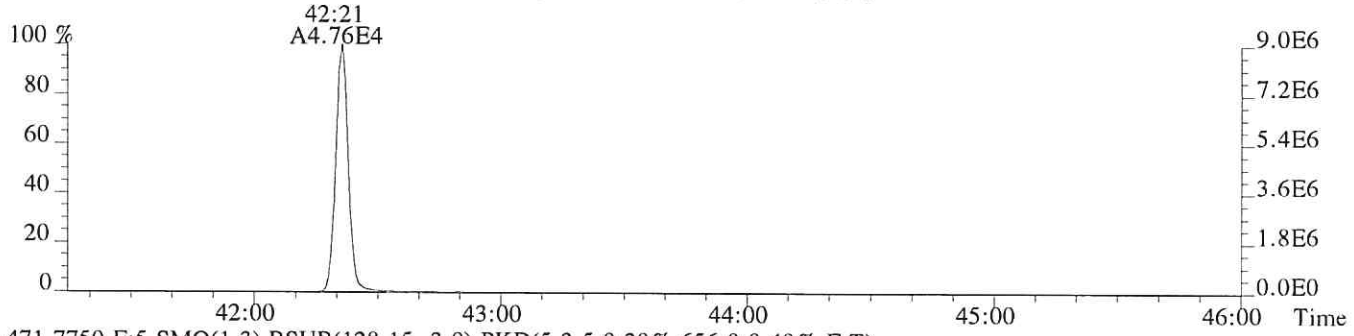
File:P407619 #1-429 Acq: 1-SEP-2017 19:21:19 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:CS5
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1144.0,0.40%,F,T)



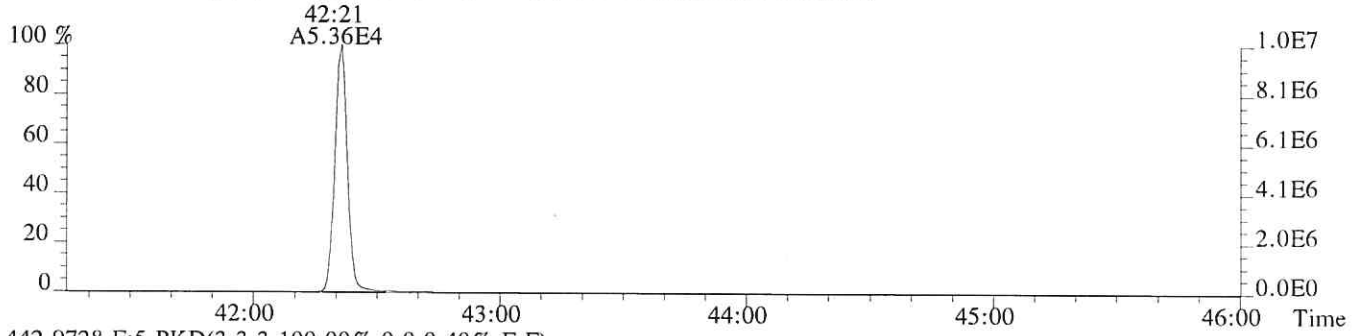
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,648.0,0.40%,F,T)



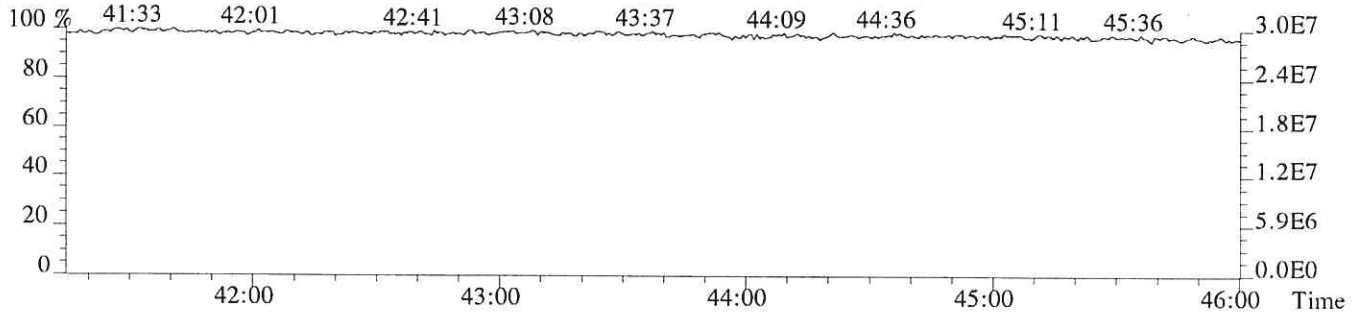
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,732.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,656.0,0.40%,F,T)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



USEPA - ITD

FORM 4A
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 09/01/2017

Instrument ID: E-HRMS-06 GC Column ID : DB-5MSUI

VER Data Filename: p407623 Analysis Date: 2-SEP-17 Time: 08:16:56

NATIVE ANALYTES	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (4)
2,3,7,8-TCDD	M/M+2	0.71	0.65-0.89	9.6	7.8 - 12.9	-3.7
1,2,3,7,8-PeCDD	M+2/M+4	1.57	1.32-1.78	50	39 - 65	0.4
1,2,3,4,7,8-HxCDD	M+2/M+4	1.26	1.05-1.43	49	39 - 64	-2.1
1,2,3,6,7,8-HxCDD	M+2/M+4	1.27	1.05-1.43	50	39 - 64	-0.9
1,2,3,7,8,9-HxCDD	M+2/M+4	1.21	1.05-1.43	51	41 - 61	1.4
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.04	0.88-1.20	50	43 - 58	-0.9
OCDD	M+2/M+4	0.90	0.76-1.02	101	79 - 126	1.1
2,3,7,8-TCDF	M/M+2	0.76	0.65-0.89	10.1	8.4 - 12.0	0.6
1,2,3,7,8-PeCDF	M+2/M+4	1.56	1.32-1.78	51	41 - 60	1.2
2,3,4,7,8-PeCDF	M+2/M+4	1.56	1.32-1.78	51	41 - 61	1.0
1,2,3,4,7,8-HxCDF	M+2/M+4	1.28	1.05-1.43	52	45 - 56	4.1
1,2,3,6,7,8-HxCDF	M+2/M+4	1.28	1.05-1.43	52	44 - 57	4.2
1,2,3,7,8,9-HxCDF	M+2/M+4	1.26	1.05-1.43	52	45 - 56	3.6
2,3,4,6,7,8-HxCDF	M+2/M+4	1.25	1.05-1.43	52	44 - 57	3.9
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.04	0.88-1.20	52	45 - 55	4.6
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.05	0.88-1.20	51	43 - 58	2.5
OCDF	M+2/M+4	0.88	0.76-1.02	107	63 - 159	7.1

(1) See Table 8, Method 1613B, for m/z specifications.

(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.

(3) Contract-required concentration range as specified in Table 6, Method 1613B, under VER.

(4) The beginning CCAL %RSD for the 17 unlabeled standard must not exceed +/- 20%, Section 7.7.4.1. The ending CCAL must not exceed +/-25%, Section 8.3.2.4, Method 8290

12/2012
1613F4A.FRM

USEPA - ITD

FORM 4B
PCDD/PCDF CALIBRATION VERIFICATION

Lab Name: ALS ENVIRONMENTAL Episode No.:

Contract No.: SAS No.:

Initial Calibration Date: 09/01/2017

Instrument ID: E-HRMS-06 GC Column ID : DB-5MSUI

VER Data Filename: p407623 Analysis Date: 2-SEP-17 Time: 08:16:56

	M/Z'S FORMING RATIO (1)	ION ABUND. RATIO	QC LIMITS (2)	CONC. FOUND	CONC. RANGE (3) (ng/mL)	%RSD (5)
LABELED COMPOUNDS						
13C-2,3,7,8-TCDD	M/M+2	0.80	0.65-0.89	101	82 - 121	0.6
13C-1,2,3,7,8-PeCDD	M+2/M+4	1.58	1.32-1.78	111	62 - 160	11.1
13C-1,2,3,4,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	86	85 - 117	-13.7
13C-1,2,3,6,7,8-HxCDD	M+2/M+4	1.25	1.05-1.43	108	85 - 118	7.8
13C-1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88-1.20	95	72 - 138	-4.7
13C-OCDD	M+2/M+4	0.91	0.76-1.02	192	96 - 415	-4.1
13C-2,3,7,8-TCDF	M/M+2	0.76	0.65-0.89	98	71 - 140	-2.1
13C-1,2,3,7,8-PeCDF	M+2/M+4	1.58	1.32-1.78	110	76 - 130	9.6
13C-2,3,4,7,8-PeCDF	M+2/M+4	1.57	1.32-1.78	112	77 - 130	11.7
13C-1,2,3,4,7,8-HxCDF	M/M+2	0.52	0.43-0.59	88	76 - 131	-12.0
13C-1,2,3,6,7,8-HxCDF	M/M+2	0.53	0.43-0.59	106	70 - 143	6.1
13C-1,2,3,7,8,9-HxCDF	M/M+2	0.54	0.43-0.59	89	74 - 135	-11.2
13C-2,3,4,6,7,8-HxCDF	M/M+2	0.51	0.43-0.59	95	73 - 137	-4.7
13C-1,2,3,4,6,7,8-HpCDF	M/M+2	0.45	0.37-0.51	103	78 - 129	3.2
13C-1,2,3,4,7,8,9-HpCDF	M/M+2	0.46	0.37-0.51	100	77 - 129	-0.2
CLEANUP STANDARD						
37Cl-2,3,7,8-TCDD	M+2/M+4			9.7	7.8 - 12.7	-3.1

(1) See Table 8, Method 1613B, for m/z specifications.
(2) Ion Abundance Ratio Control Limits as specified in Table 9, Method 1613B.
(3) Contract-required concentration range, as specified in Table 6, Method 1613B, under VER.
(4) No ion abundance ratio; report concentration found.
(5) The beginnning CCAL %RSD for the labeled standard must not exceed +/- 30% Section 7.7.4.2. The ending CCAL must not exceed +/- 35%, Sec 8.3.2.4 (8290)

12/2012
1613F4B.FRM

ALS ENVIRONMENTAL
Sample Response Summary

CLIENT ID.
75080

Run #8 Filename p407623 Samp: 1 Inj: 1 Acquired: 2-SEP-17 08:16:56
Processed: 5-SEP-17 15:56:38 Sample ID: 2ND SOURCE

	Typ	Name	RT-1	Resp 1	Resp 2	Ratio	Meet	Mod?	RRF
1	Unk	2,3,7,8-TCDF	28:39	1.595e+03	2.087e+03	0.76	yes	no	0.885
2	Unk	1,2,3,7,8-PeCDF	32:41	1.415e+04	9.082e+03	1.56	yes	no	0.984
3	Unk	2,3,4,7,8-PeCDF	33:34	1.338e+04	8.565e+03	1.56	yes	no	0.943
4	Unk	1,2,3,4,7,8-HxCDF	36:09	1.247e+04	9.773e+03	1.28	yes	no	1.230
5	Unk	1,2,3,6,7,8-HxCDF	36:16	1.542e+04	1.206e+04	1.28	yes	no	1.148
6	Unk	2,3,4,6,7,8-HxCDF	36:45	1.245e+04	9.973e+03	1.25	yes	no	1.133
7	Unk	1,2,3,7,8,9-HxCDF	37:30	1.021e+04	8.124e+03	1.26	yes	no	1.172
8	Unk	1,2,3,4,6,7,8-HpCDF	38:42	1.229e+04	1.182e+04	1.04	yes	no	1.377
9	Unk	1,2,3,4,7,8,9-HpCDF	40:06	9.133e+03	8.682e+03	1.05	yes	no	1.301
10	Unk	OCDF	42:35	1.324e+04	1.503e+04	0.88	yes	no	1.114
11	Unk	2,3,7,8-TCDD	29:24	1.336e+03	1.881e+03	0.71	yes	no	0.966
12	Unk	1,2,3,7,8-PeCDD	33:51	1.013e+04	6.452e+03	1.57	yes	no	0.851
13	Unk	1,2,3,4,7,8-HxCDD	36:53	8.127e+03	6.449e+03	1.26	yes	no	0.966
14	Unk	1,2,3,6,7,8-HxCDD	36:58	1.005e+04	7.905e+03	1.27	yes	no	0.938
15	Unk	1,2,3,7,8,9-HxCDD	37:12	9.467e+03	7.795e+03	1.21	yes	no	0.980
16	Unk	1,2,3,4,6,7,8-HpCDD	39:36	7.420e+03	7.136e+03	1.04	yes	no	0.975
17	Unk	OCDD	42:22	1.173e+04	1.303e+04	0.90	yes	no	1.033
18	IS	13C-2,3,7,8-TCDF	28:38	1.779e+04	2.355e+04	0.76	yes	no	1.176
19	IS	13C-1,2,3,7,8-PeCDF	32:40	2.854e+04	1.812e+04	1.58	yes	no	1.185
20	IS	13C-2,3,4,7,8-PeCDF	33:34	2.818e+04	1.790e+04	1.57	yes	no	1.149
21	IS	13C-1,2,3,4,7,8-HxCDF	36:09	1.190e+04	2.285e+04	0.52	yes	no	1.068
22	IS	13C-1,2,3,6,7,8-HxCDF	36:15	1.596e+04	3.001e+04	0.53	yes	no	1.171
23	IS	13C-2,3,4,6,7,8-HxCDF	36:45	1.286e+04	2.521e+04	0.51	yes	no	1.079
24	IS	13C-1,2,3,7,8,9-HxCDF	37:29	1.054e+04	1.966e+04	0.54	yes	no	0.919
25	IS	13C-1,2,3,4,6,7,8-HpCDF	38:41	1.038e+04	2.311e+04	0.45	yes	no	0.877
26	IS	13C-1,2,3,4,7,8,9-HpCDF	40:06	8.441e+03	1.826e+04	0.46	yes	no	0.723
27	IS	13C-2,3,7,8-TCDD	29:23	1.533e+04	1.927e+04	0.80	yes	no	0.958
28	IS	13C-1,2,3,7,8-PeCDD	33:50	2.380e+04	1.503e+04	1.58	yes	no	0.973
29	IS	13C-1,2,3,4,7,8-HxCDD	36:52	1.709e+04	1.373e+04	1.25	yes	no	0.966
30	IS	13C-1,2,3,6,7,8-HxCDD	36:57	2.144e+04	1.718e+04	1.25	yes	no	0.968
31	IS	13C-1,2,3,4,6,7,8-HpCDD	39:36	1.542e+04	1.469e+04	1.05	yes	no	0.854
32	IS	13C-OCDD	42:21	2.259e+04	2.480e+04	0.91	yes	no	0.668
33	RS/RT	13C-1,2,3,4-TCDD	28:49	1.588e+04	2.003e+04	0.79	yes	no	-
34	RS/RT	13C-1,2,3,7,8,9-HxCDD	37:11	2.046e+04	1.654e+04	1.24	yes	no	-
35	C/Up	37Cl-2,3,7,8-TCDD	29:24	3.451e+03				no	0.992

ALS ENVIRONMENTAL
10450 Stancliff Rd., Suite 115
Houston, TX 77099
Office(281)530-5656. Fax(281)530-5887

ALS ENVIRONMENTAL
Signal/Noise Height Ratio Summary

CLIENT ID.
75080

Run #8 Filename p407623 Samp: 1 Inj: 1 Acquired: 2-SEP-17 08:16:56
Processed: 5-SEP-17 15:56:38 LAB. ID: 2ND SOURCE

	Name	Signal 1	Noise 1	S/N Rat.1	Signal 2	Noise 2	S/N Rat.2
1	2,3,7,8-TCDF	2.80e+05	1.69e+03	1.7e+02	3.79e+05	4.91e+03	7.7e+01
2	1,2,3,7,8-PeCDF	2.47e+06	9.96e+02	2.5e+03	1.58e+06	2.66e+03	6.0e+02
3	2,3,4,7,8-PeCDF	2.45e+06	9.96e+02	2.5e+03	1.58e+06	2.66e+03	6.0e+02
4	1,2,3,4,7,8-HxCDF	2.60e+06	3.75e+03	6.9e+02	2.04e+06	2.78e+03	7.3e+02
5	1,2,3,6,7,8-HxCDF	2.76e+06	3.75e+03	7.4e+02	2.22e+06	2.78e+03	8.0e+02
6	2,3,4,6,7,8-HxCDF	2.40e+06	3.75e+03	6.4e+02	1.99e+06	2.78e+03	7.1e+02
7	1,2,3,7,8,9-HxCDF	1.86e+06	3.75e+03	5.0e+02	1.48e+06	2.78e+03	5.3e+02
8	1,2,3,4,6,7,8-HpCDF	2.26e+06	1.87e+03	1.2e+03	2.20e+06	5.69e+03	3.9e+02
9	1,2,3,4,7,8,9-HpCDF	1.54e+06	1.87e+03	8.2e+02	1.46e+06	5.69e+03	2.6e+02
10	OCDF	2.05e+06	1.40e+03	1.5e+03	2.33e+06	2.93e+03	8.0e+02
11	2,3,7,8-TCDD	2.55e+05	7.58e+03	3.4e+01	3.51e+05	3.66e+03	9.6e+01
12	1,2,3,7,8-PeCDD	1.74e+06	2.42e+03	7.2e+02	1.13e+06	6.20e+02	1.8e+03
13	1,2,3,4,7,8-HxCDD	1.76e+06	1.76e+03	1.0e+03	1.41e+06	1.92e+03	7.4e+02
14	1,2,3,6,7,8-HxCDD	1.82e+06	1.76e+03	1.0e+03	1.41e+06	1.92e+03	7.3e+02
15	1,2,3,7,8,9-HxCDD	1.61e+06	1.76e+03	9.1e+02	1.31e+06	1.92e+03	6.8e+02
16	1,2,3,4,6,7,8-HpCDD	1.30e+06	1.93e+03	6.8e+02	1.30e+06	1.08e+03	1.2e+03
17	OCDD	1.79e+06	1.35e+03	1.3e+03	1.98e+06	1.00e+03	2.0e+03
18	13C-2,3,7,8-TCDF	3.27e+06	3.12e+04	1.0e+02	4.27e+06	1.27e+04	3.4e+02
19	13C-1,2,3,7,8-PeCDF	5.00e+06	1.31e+03	3.8e+03	3.15e+06	2.18e+03	1.4e+03
20	13C-2,3,4,7,8-PeCDF	5.13e+06	1.31e+03	3.9e+03	3.22e+06	2.18e+03	1.5e+03
21	13C-1,2,3,4,7,8-HxCDF	2.46e+06	1.92e+03	1.3e+03	4.73e+06	3.95e+03	1.2e+03
22	13C-1,2,3,6,7,8-HxCDF	2.84e+06	1.92e+03	1.5e+03	5.47e+06	3.95e+03	1.4e+03
23	13C-2,3,4,6,7,8-HxCDF	2.52e+06	1.92e+03	1.3e+03	4.88e+06	3.95e+03	1.2e+03
24	13C-1,2,3,7,8,9-HxCDF	1.91e+06	1.92e+03	9.9e+02	3.59e+06	3.95e+03	9.1e+02
25	13C-1,2,3,4,6,7,8-HpCDF	1.90e+06	4.27e+03	4.4e+02	4.37e+06	5.30e+03	8.2e+02
26	13C-1,2,3,4,7,8,9-HpCDF	1.41e+06	4.27e+03	3.3e+02	3.06e+06	5.30e+03	5.8e+02
27	13C-2,3,7,8-TCDD	2.80e+06	7.33e+03	3.8e+02	3.52e+06	2.86e+03	1.2e+03
28	13C-1,2,3,7,8-PeCDD	4.13e+06	2.96e+03	1.4e+03	2.65e+06	2.89e+03	9.2e+02
29	13C-1,2,3,4,7,8-HxCDD	3.68e+06	2.27e+03	1.6e+03	2.92e+06	1.46e+03	2.0e+03
30	13C-1,2,3,6,7,8-HxCDD	3.83e+06	2.27e+03	1.7e+03	3.08e+06	1.46e+03	2.1e+03
31	13C-1,2,3,4,6,7,8-HpCDD	2.75e+06	3.75e+03	7.3e+02	2.63e+06	2.08e+03	1.3e+03
32	13C-OCDD	3.33e+06	2.13e+03	1.6e+03	3.75e+06	9.12e+02	4.1e+03
33	13C-1,2,3,4-TCDD	3.06e+06	7.33e+03	4.2e+02	3.90e+06	2.86e+03	1.4e+03
34	13C-1,2,3,7,8,9-HxCDD	3.45e+06	2.27e+03	1.5e+03	2.81e+06	1.46e+03	1.9e+03
35	37Cl-2,3,7,8-TCDD	6.25e+05	3.90e+03	1.6e+02			

---Sample Calculation---

$$\text{D/L TCDD} = \frac{2.5 \times (7.584e{+}03 + 3.656e{+}03\ ) \times 100}{(2.799e{+}06 + 3.520e{+}06\ ) \times (\qquad\qquad\qquad\qquad) \times 0.966} =$$

ALS ENVIRONMENTAL
10450 Stancliff Rd., Suite 115
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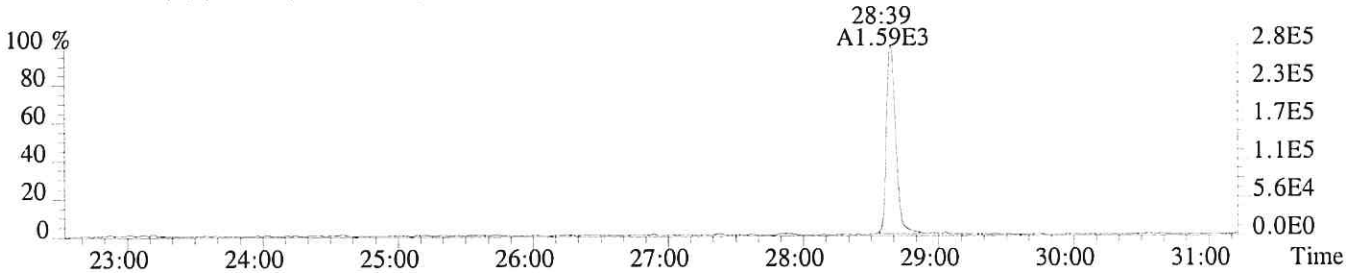
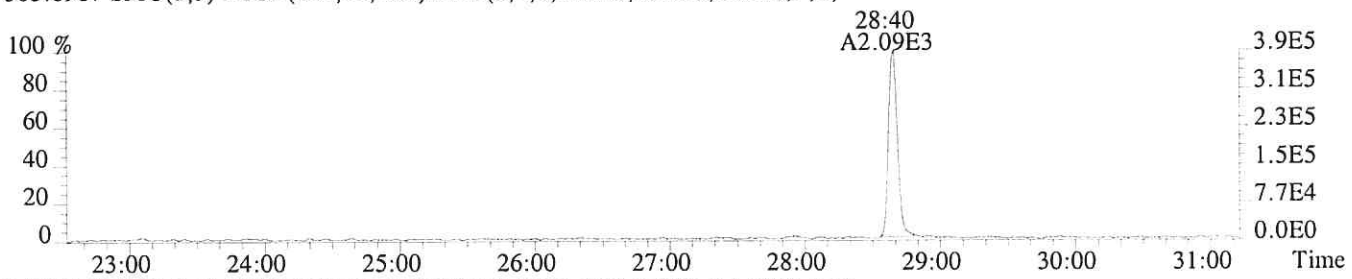
Office:(281)530-5656. Fax:(281)530-5887

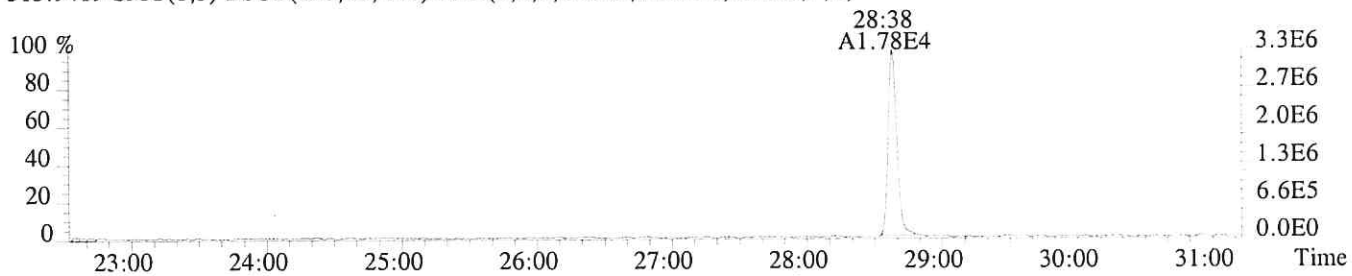
File:P407623 #1-616 Acq: 2-SEP-2017 08:16:56 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:2ND SOURCE
303.9016 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1692.0,1.00%,F,T)



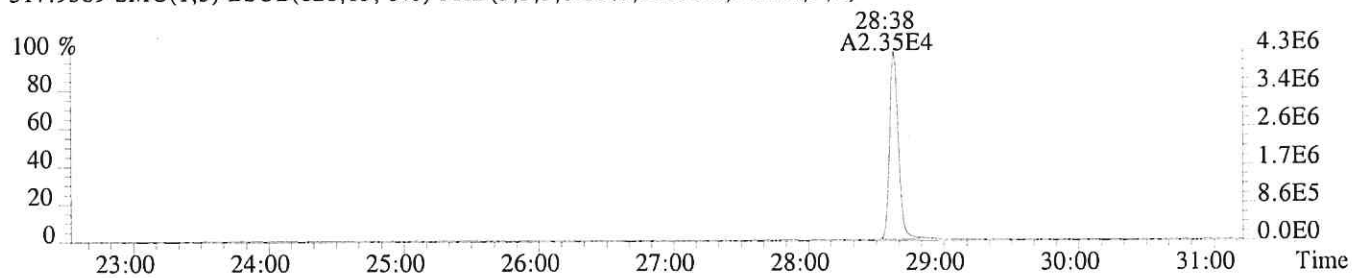
305.8987 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,4908.0,1.00%,F,T)



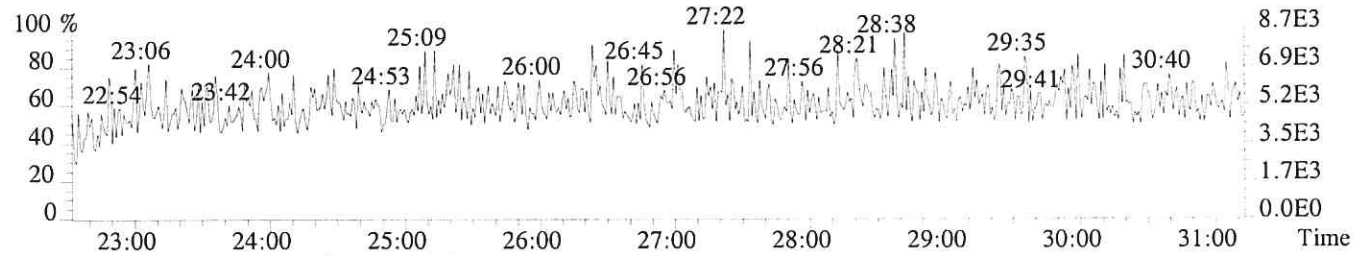
315.9419 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,31240.0,1.00%,F,T)



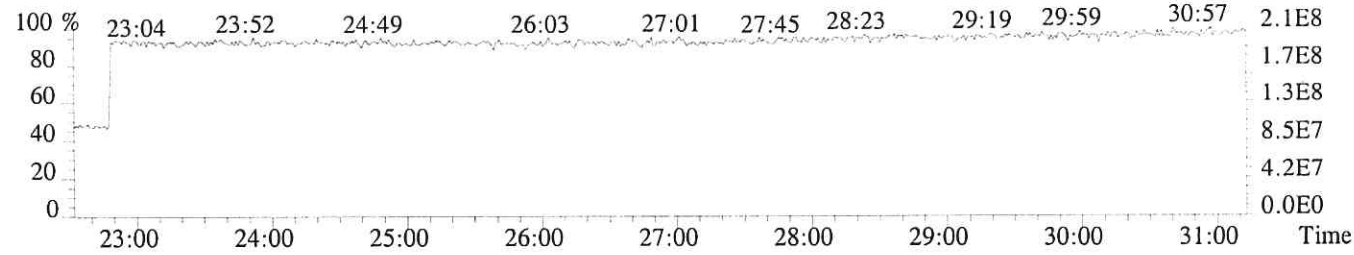
317.9389 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,12696.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

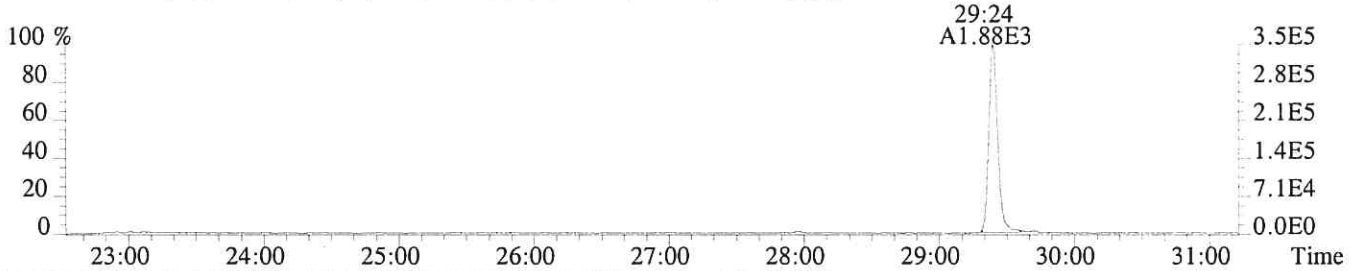


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

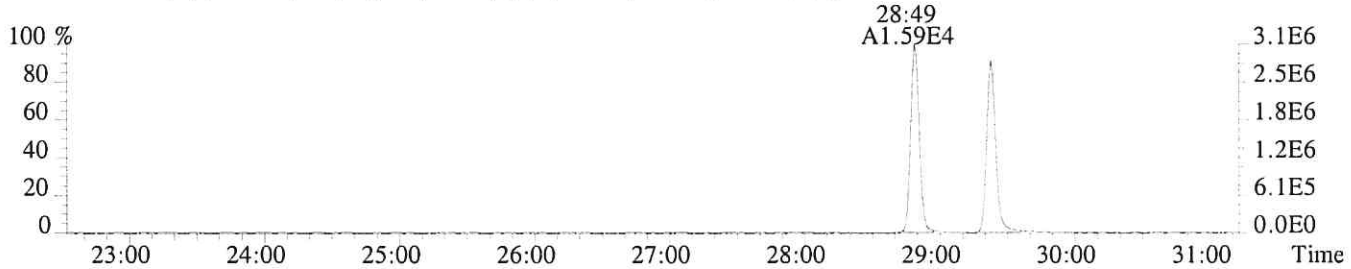


File:P407623 #1-616 Acq: 2-SEP-2017 08:16:56 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:2ND SOURCE
319.8965 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,7584.0,1.00%,F,T)

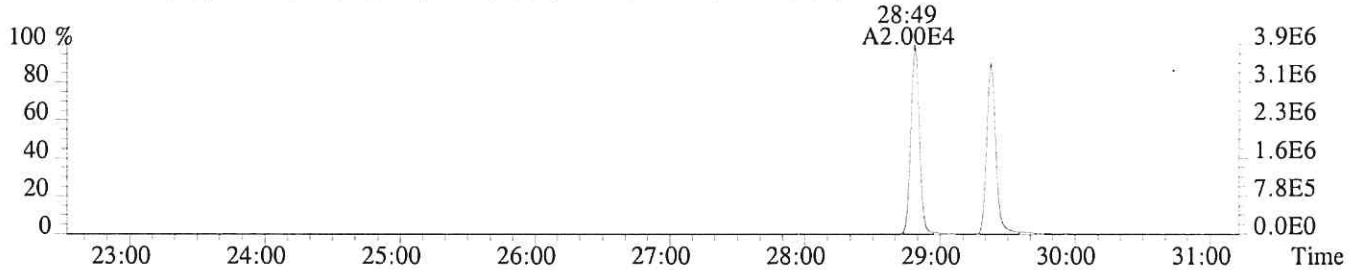
321.8936 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3656.0,1.00%,F,T)



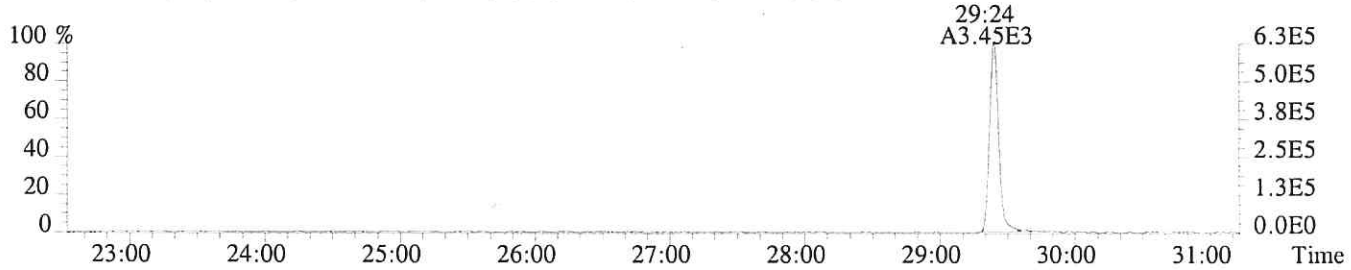
331.9368 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,7332.0,1.00%,F,T)



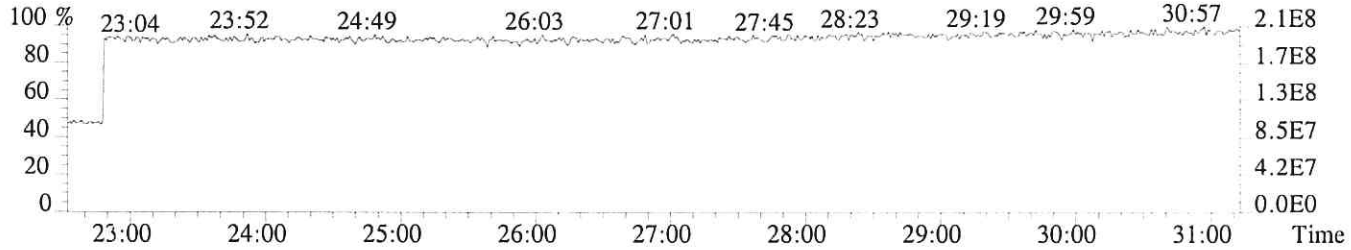
333.9339 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2864.0,1.00%,F,T)



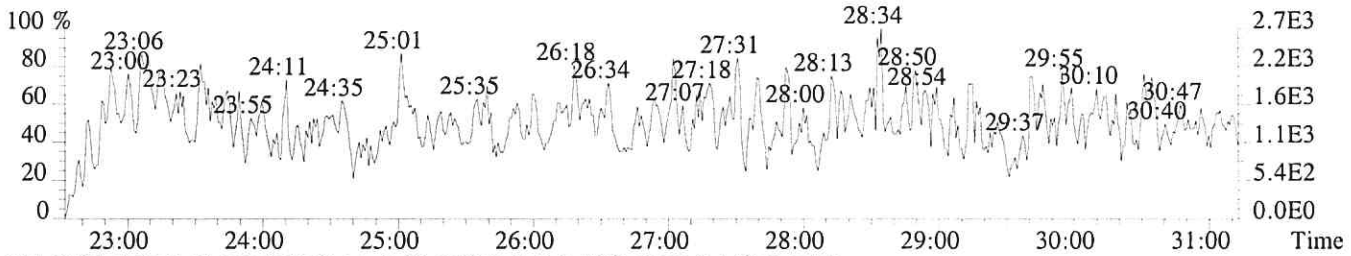
327.8847 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,3900.0,1.00%,F,T)



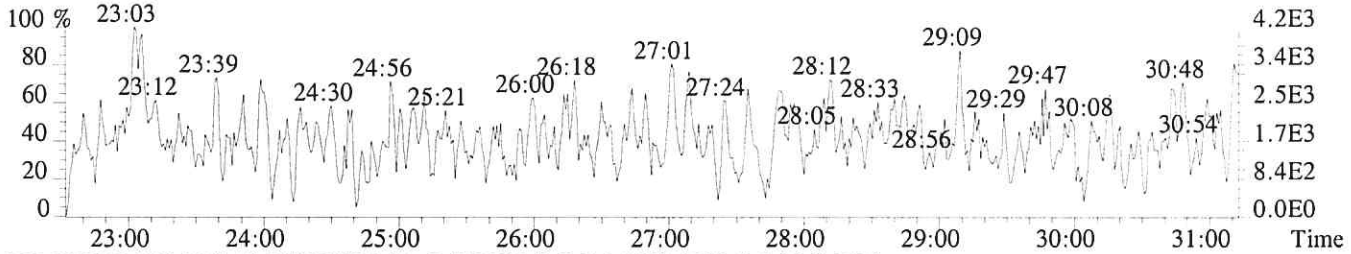
318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



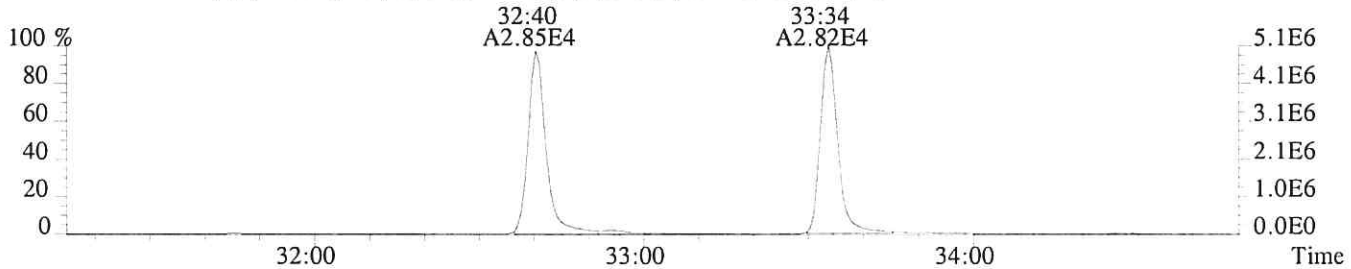
File:P407623 #1-616 Acq: 2-SEP-2017 08:16:56 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:2ND SOURCE
339.8597 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1816.0,1.00%,F,T)



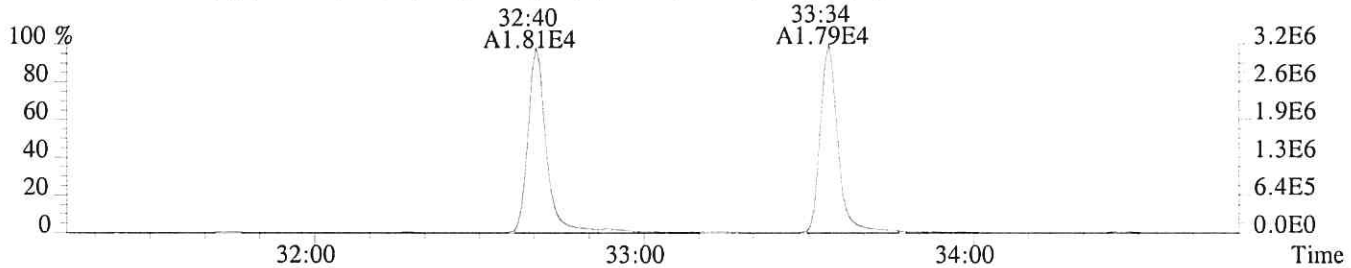
341.8567 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2272.0,1.00%,F,T)



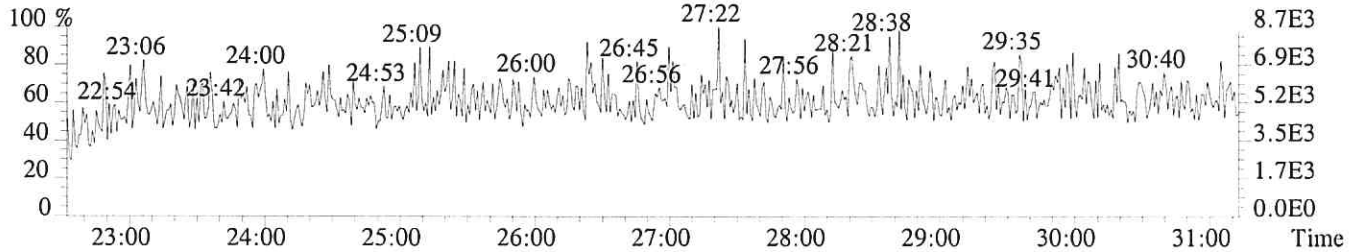
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1312.0,1.00%,F,T)



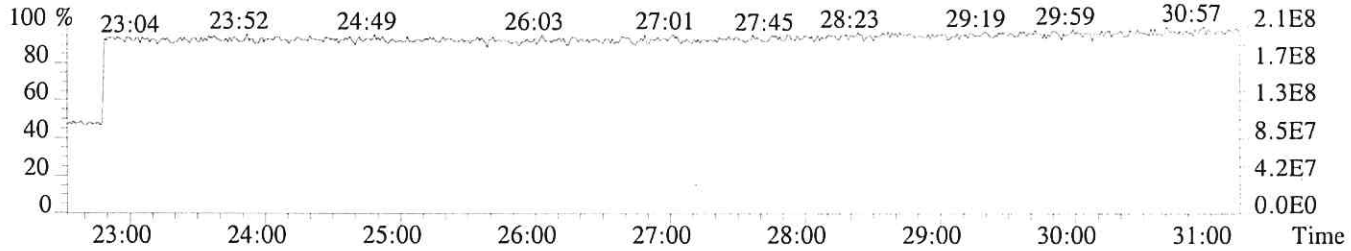
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2180.0,1.00%,F,T)



375.8364 PKD(5,3,5,100.00%,0.0,1.00%,F,F)

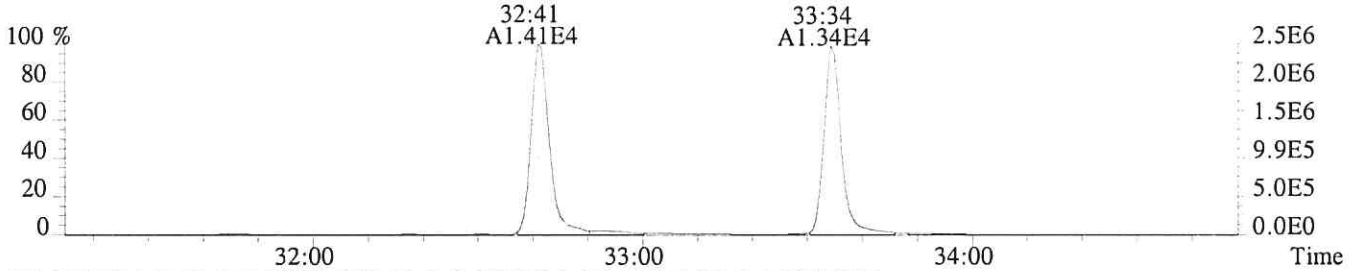


318.9792 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

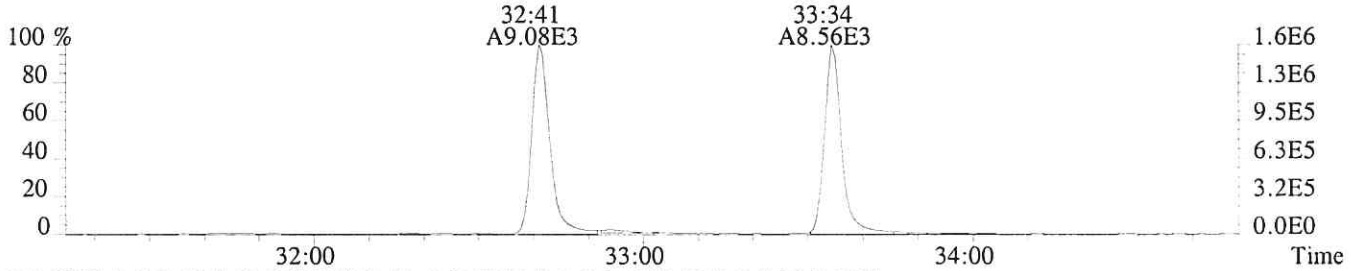


File:P407623 #1-321 Acq: 2-SEP-2017 08:16:56 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:2ND SOURCE

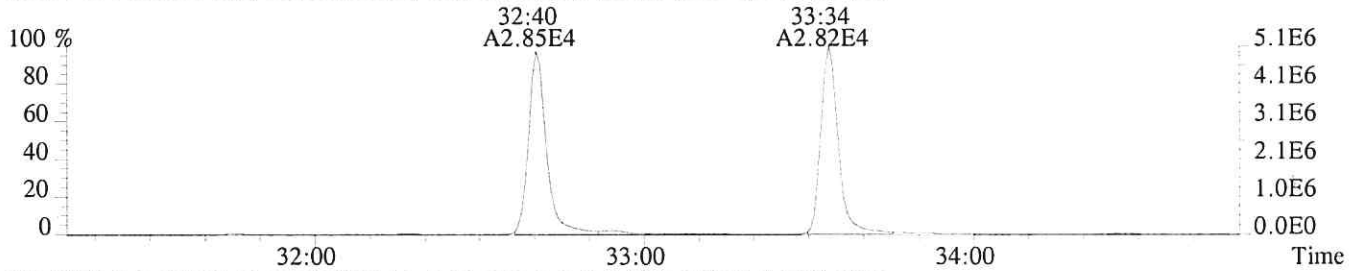
339.8597 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,996.0,1.00%,F,T)



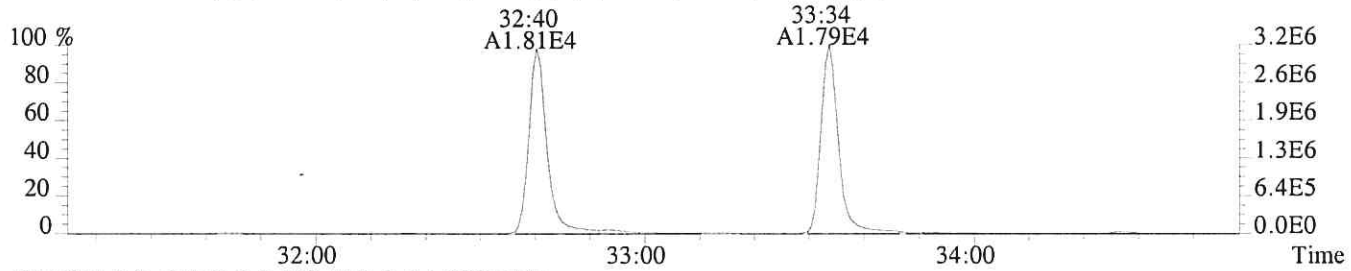
341.8567 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2660.0,1.00%,F,T)



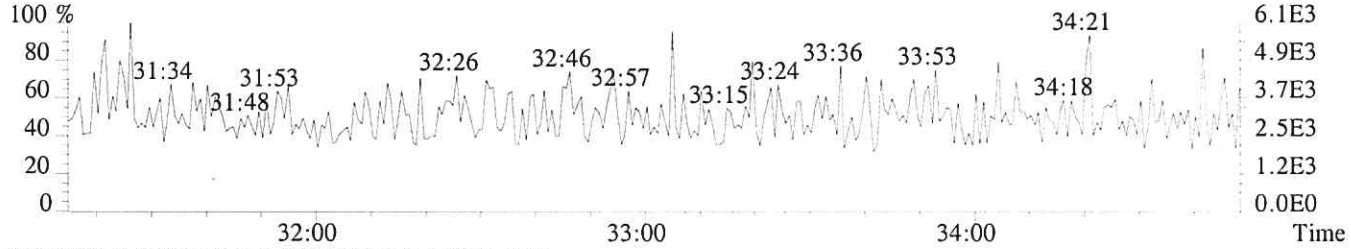
351.9000 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,1312.0,1.00%,F,T)



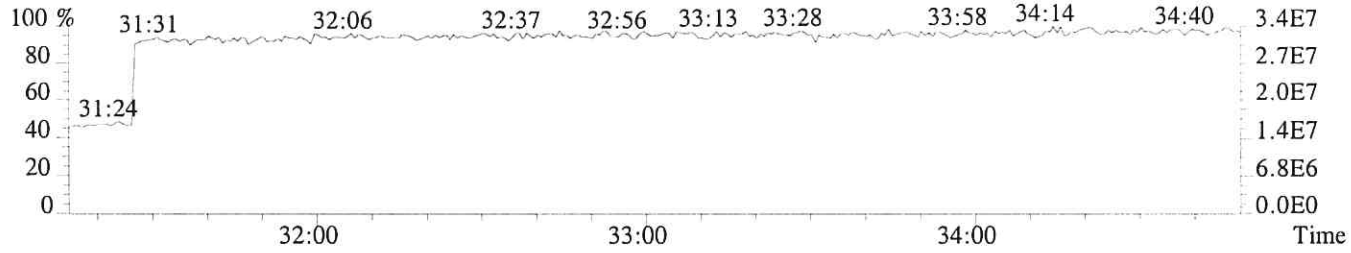
353.8970 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2180.0,1.00%,F,T)



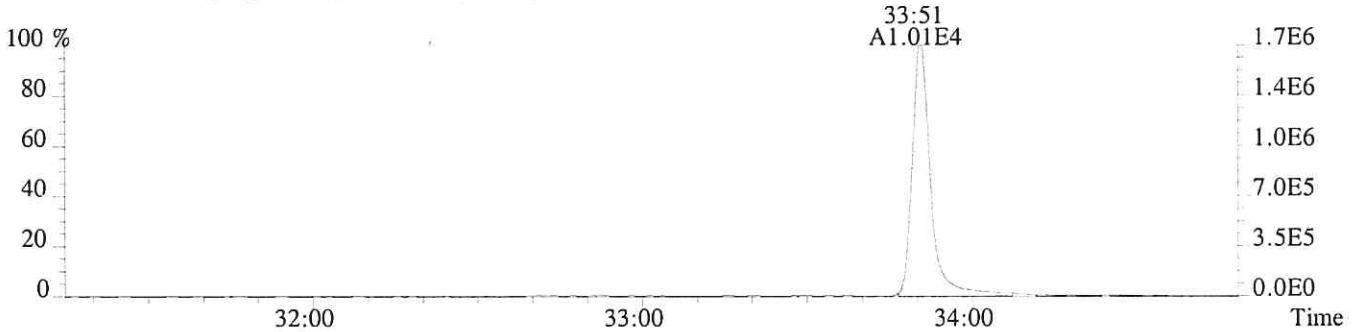
409.7974 F:2 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



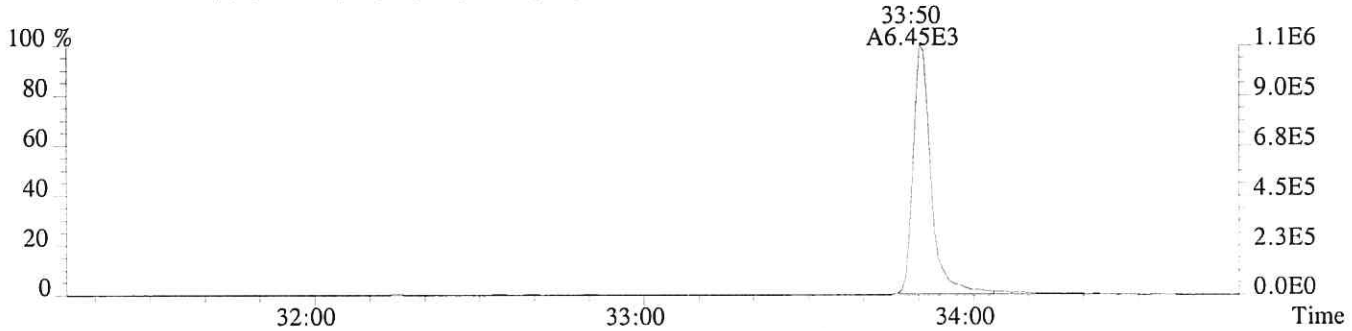
366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



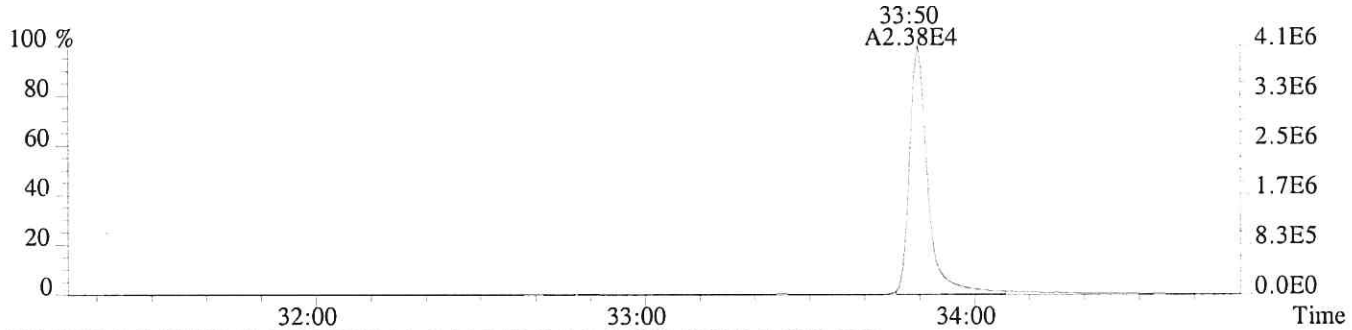
File:P407623 #1-321 Acq: 2-SEP-2017 08:16:56 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:2ND SOURCE
355.8546 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2416.0,1.00%,F,T)



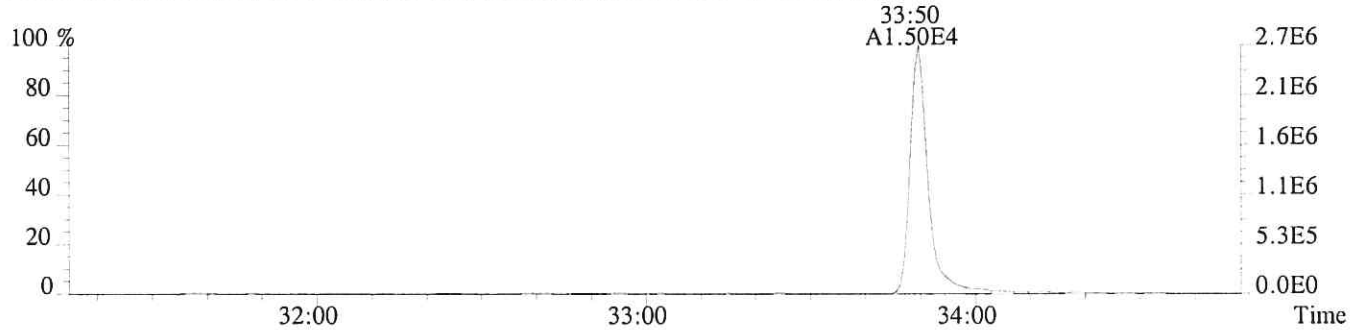
357.8516 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,620.0,1.00%,F,T)



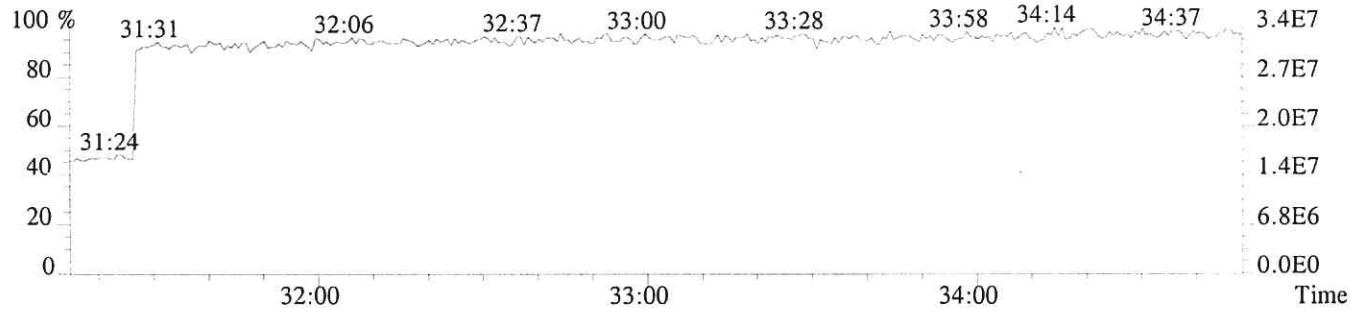
367.8949 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2964.0,1.00%,F,T)



369.8919 F:2 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.10%,2888.0,1.00%,F,T)

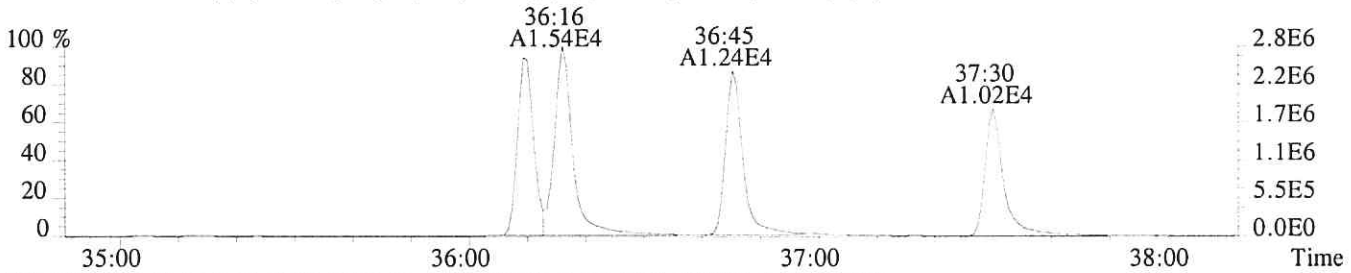


366.9792 F:2 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

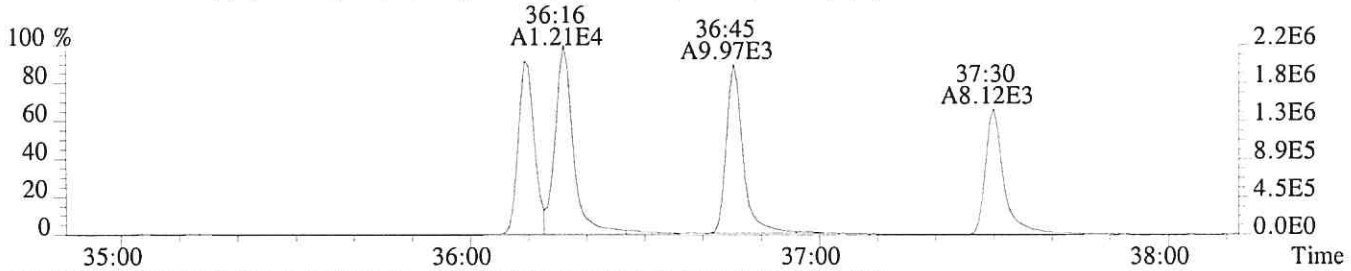


File:P407623 #1-303 Acq: 2-SEP-2017 08:16:56 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:2ND SOURCE

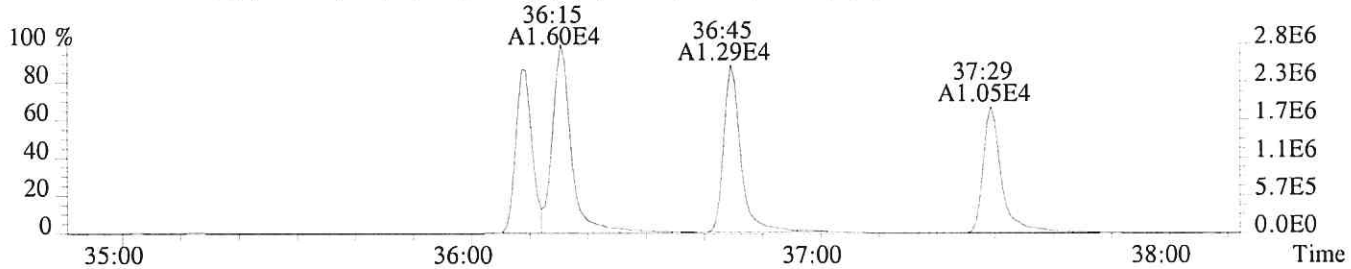
373.8208 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3748.0,0.40%,F,T)



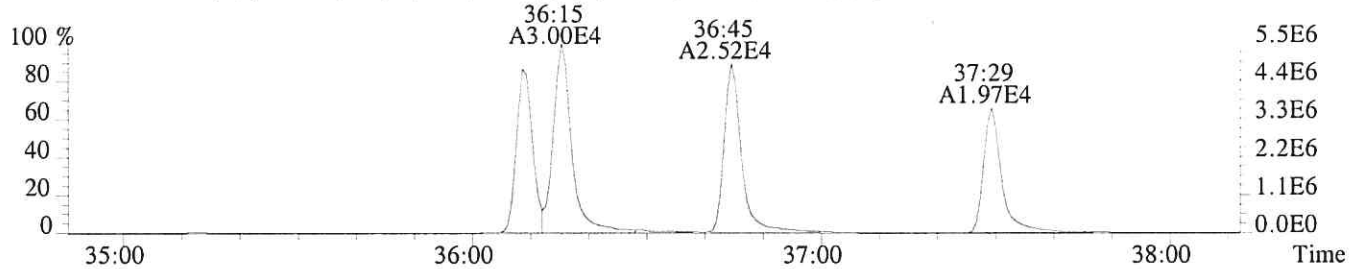
375.8178 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2780.0,0.40%,F,T)



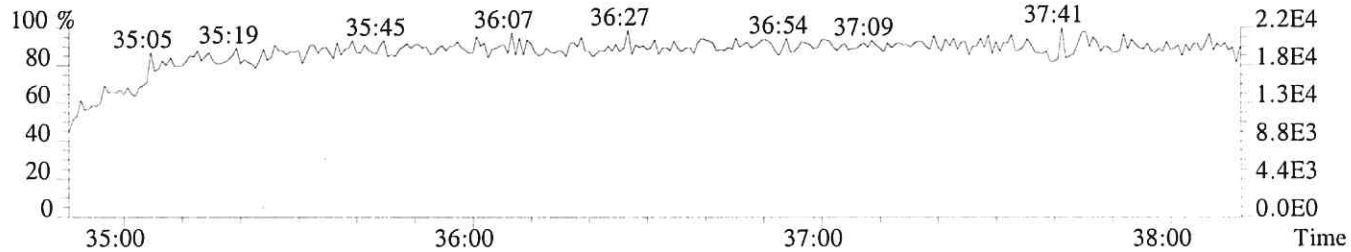
383.8639 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1924.0,0.40%,F,T)



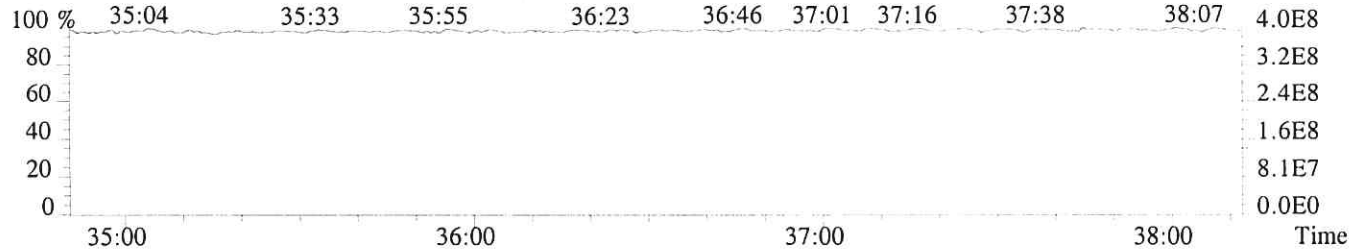
385.8610 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3952.0,0.40%,F,T)



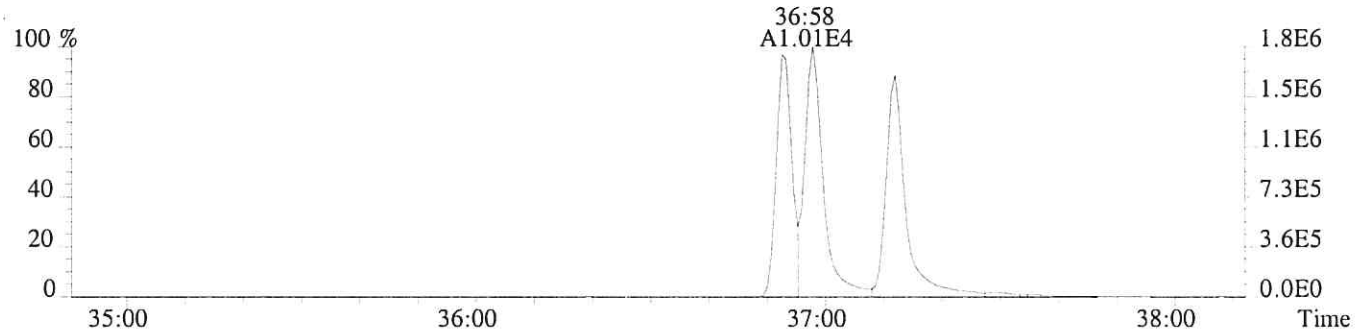
445.7555 F:3 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



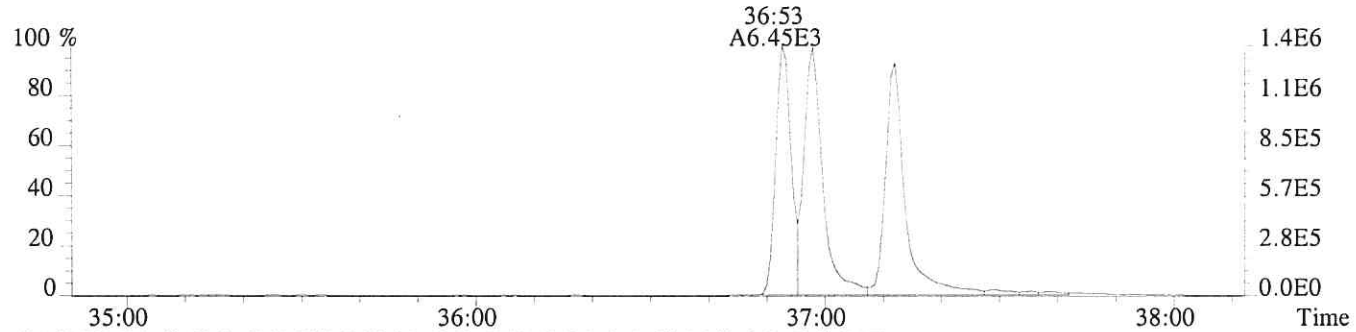
430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



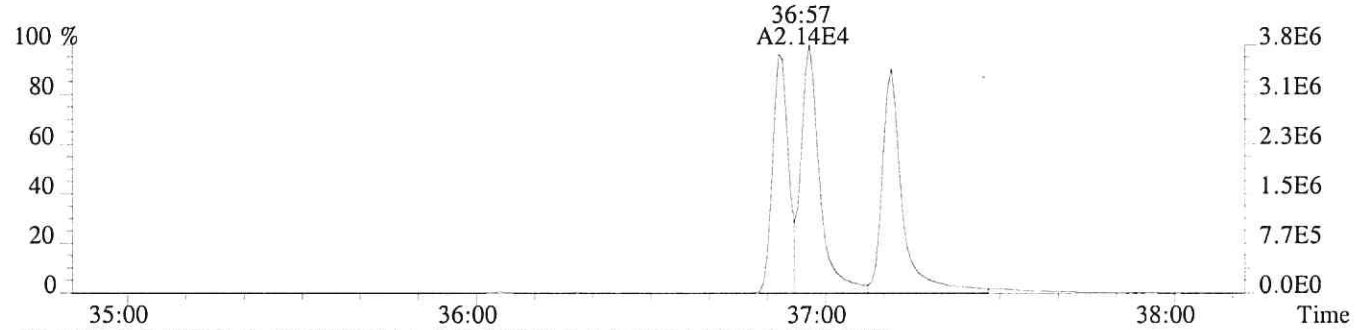
File:P407623 #1-303 Acq: 2-SEP-2017 08:16:56 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:2ND SOURCE
389.8157 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1764.0,0.40%,F,T)



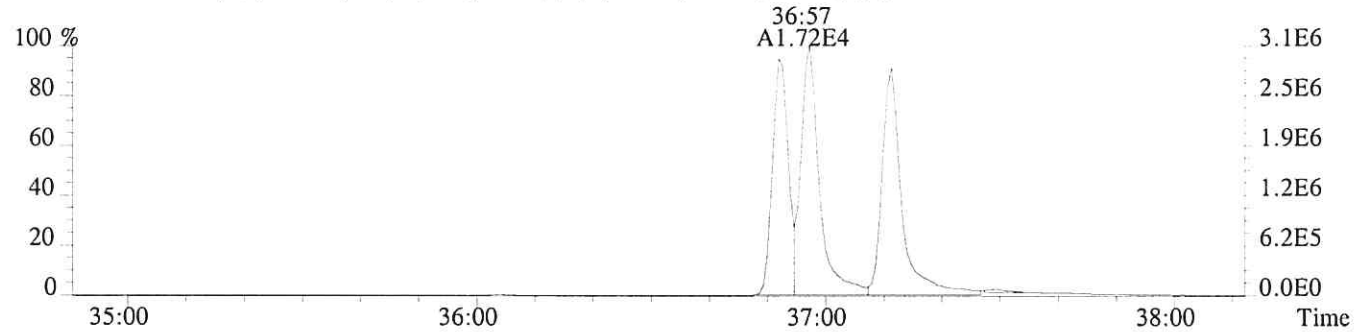
391.8127 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1920.0,0.40%,F,T)



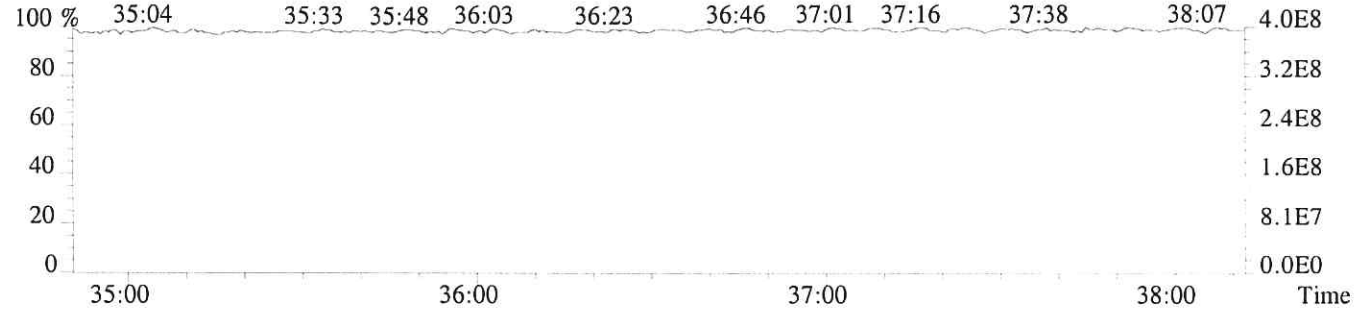
401.8559 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2268.0,0.40%,F,T)



403.8529 F:3 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1460.0,0.40%,F,T)

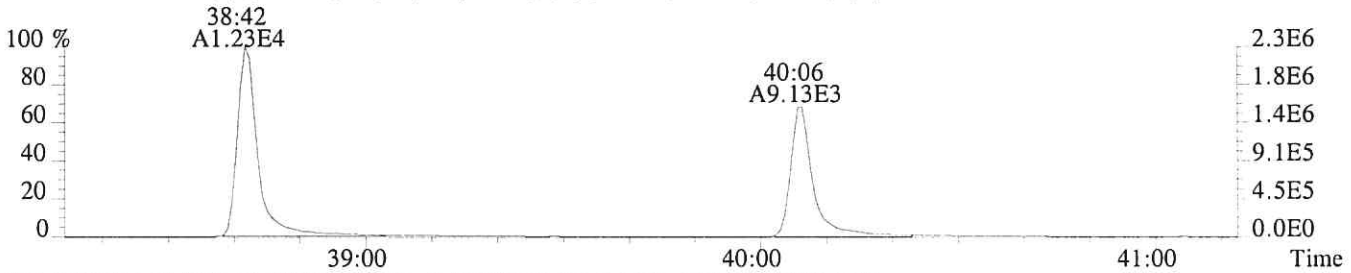


430.9729 F:3 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

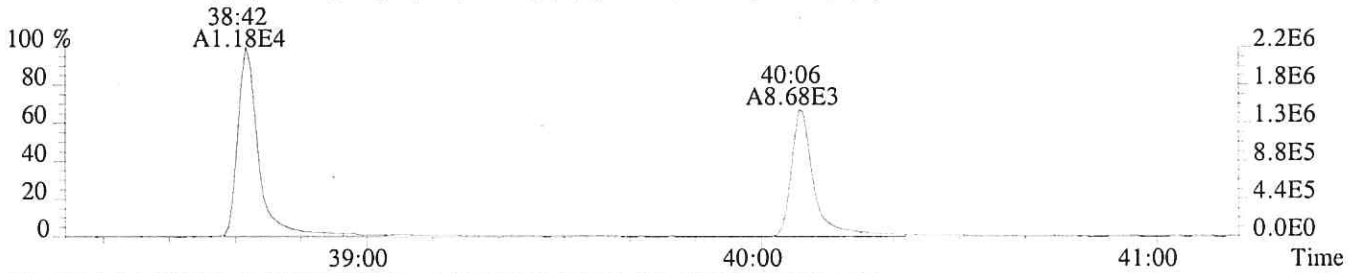


File:P407623 #1-268 Acq: 2-SEP-2017 08:16:56 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:2ND SOURCE

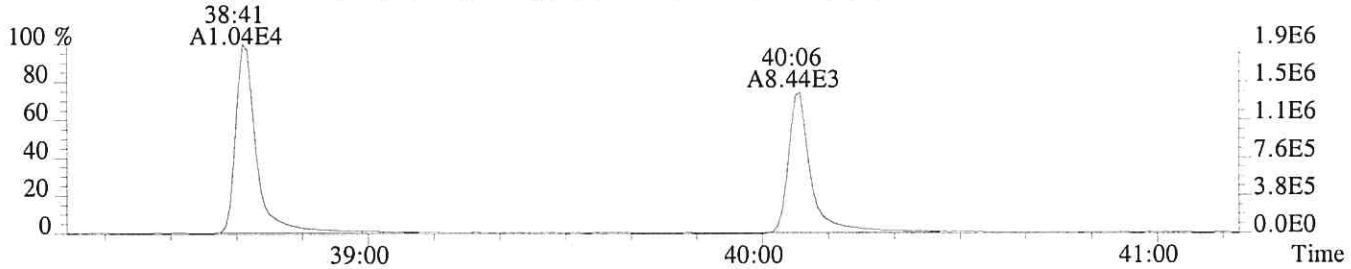
407.7818 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1868.0,0.50%,F,T)



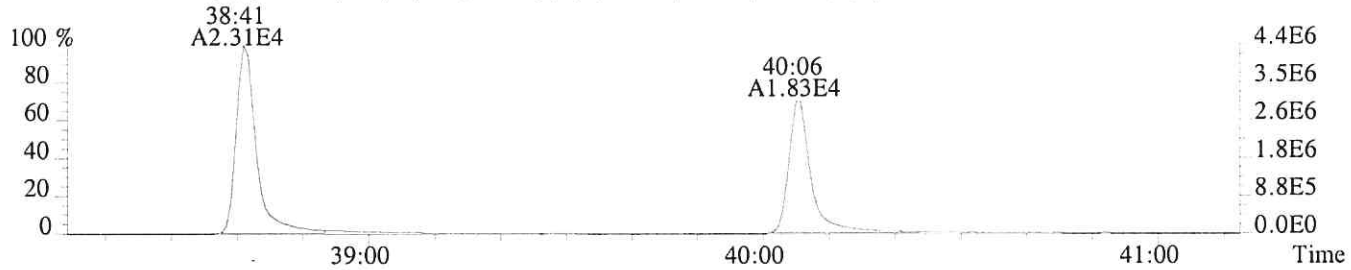
409.7789 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5692.0,0.50%,F,T)



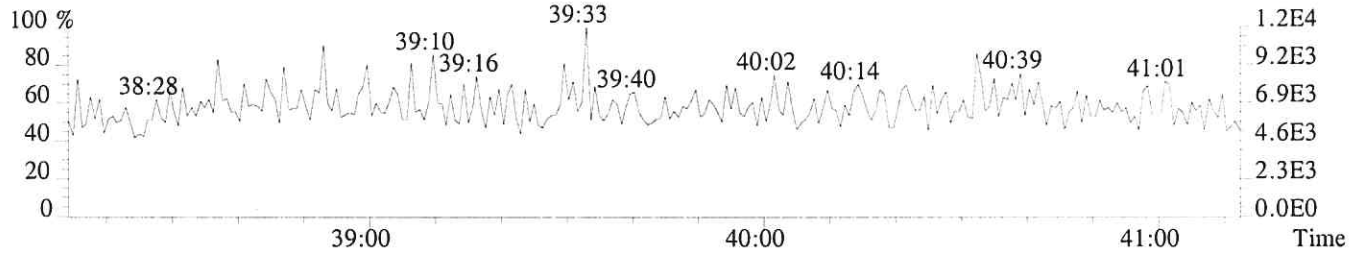
417.8253 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,4268.0,0.50%,F,T)



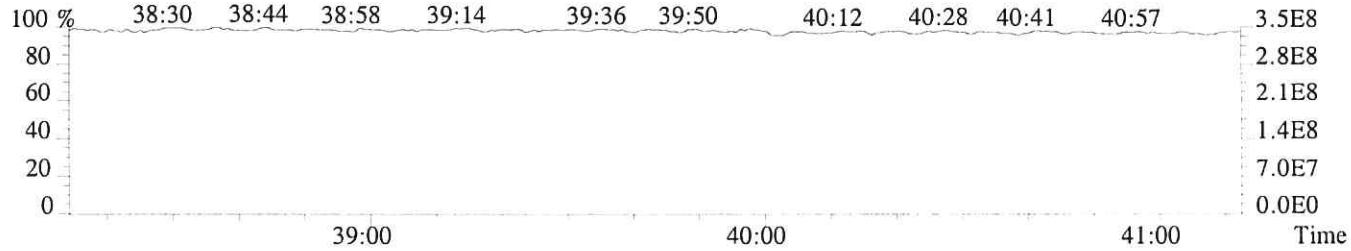
419.8220 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,5300.0,0.50%,F,T)



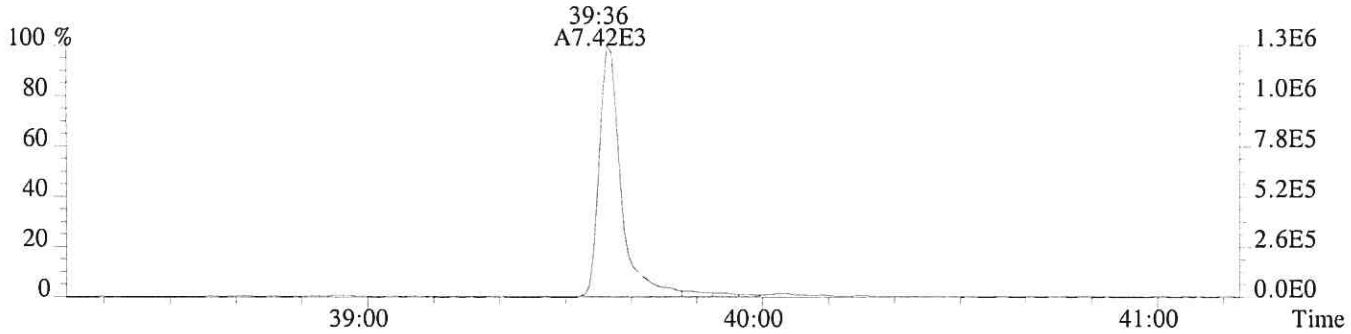
479.7165 F:4 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



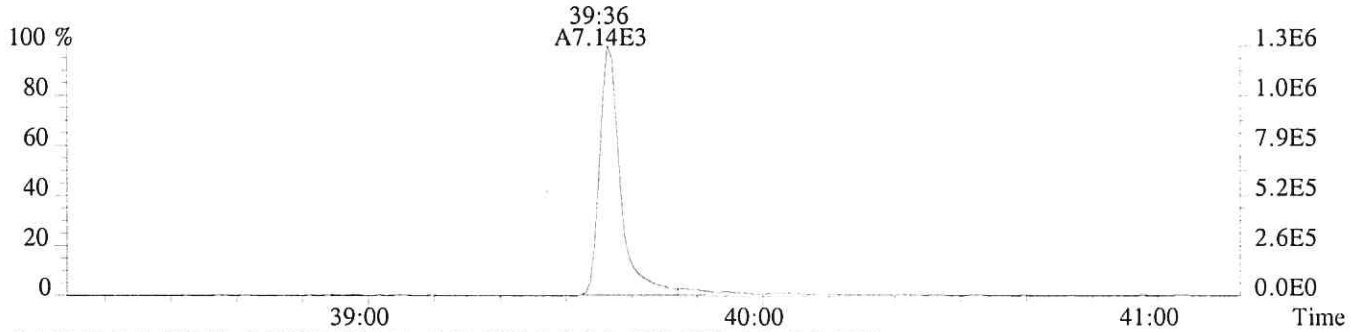
430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)



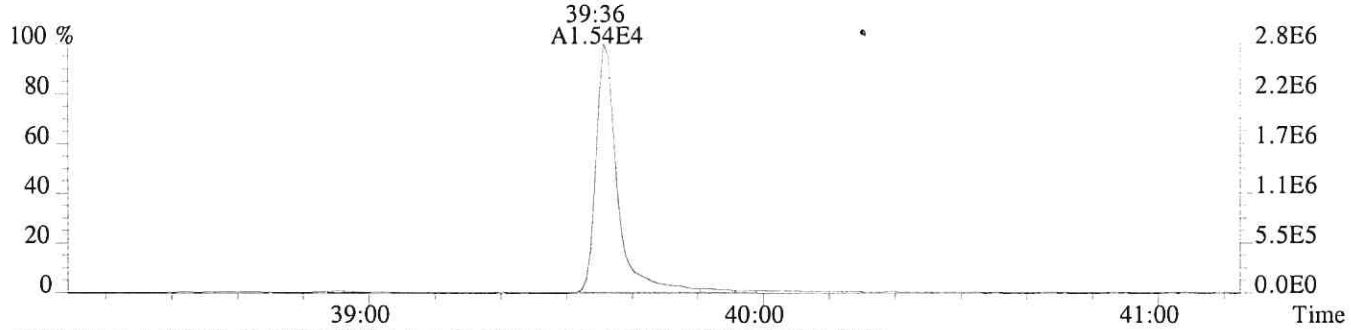
File:P407623 #1-268 Acq: 2-SEP-2017 08:16:56 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:2ND SOURCE
423.7766 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1928.0,0.40%,F,T)



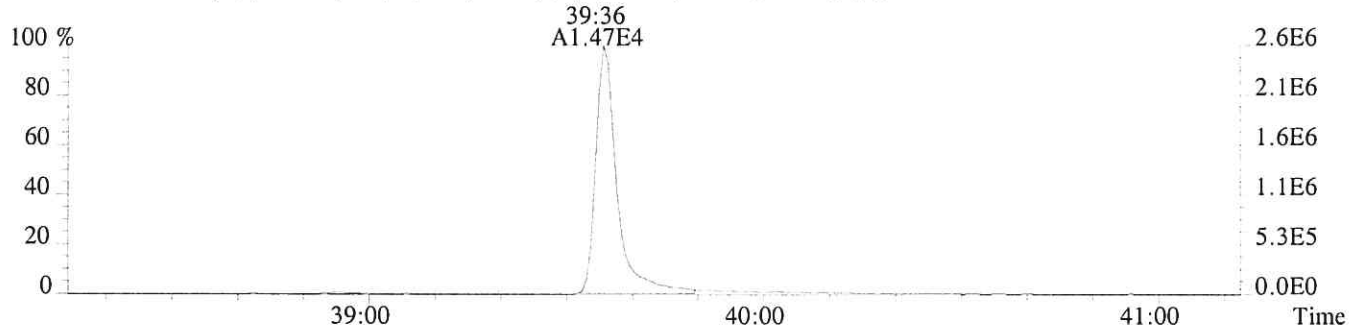
425.7737 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,1076.0,0.40%,F,T)



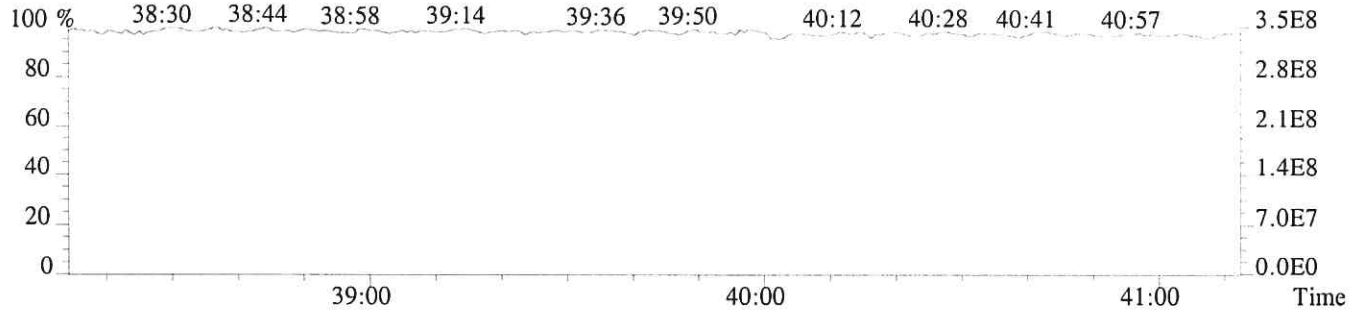
435.8169 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,3752.0,0.40%,F,T)



437.8140 F:4 SMO(1,3) BSUB(128,15,-3.0) PKD(3,3,3,0.25%,2080.0,0.40%,F,T)

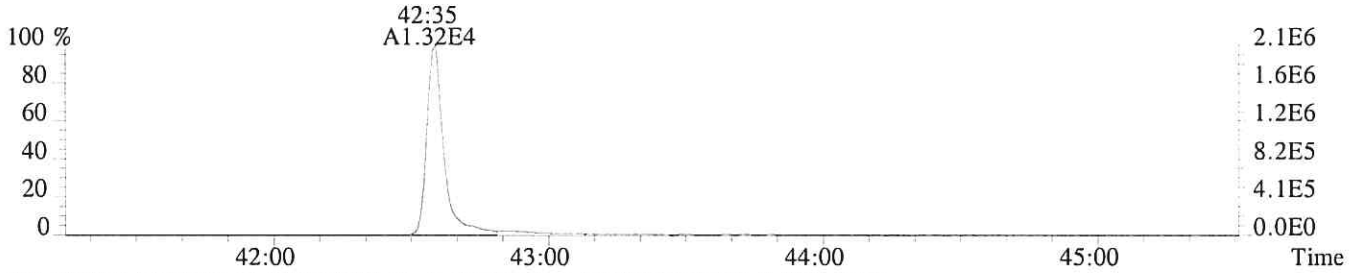


430.9729 F:4 PKD(3,3,3,100.00%,0.0,1.00%,F,F)

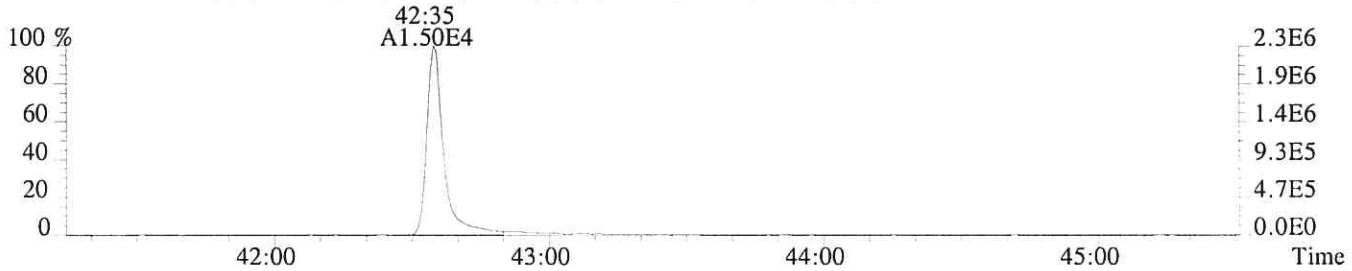


File:P407623 #1-385 Acq: 2-SEP-2017 08:16:56 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:2ND SOURCE

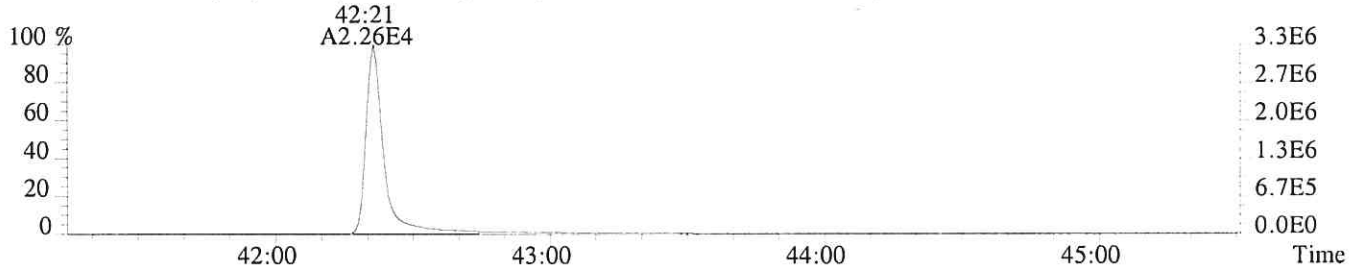
441.7428 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1396.0,0.40%,F,T)



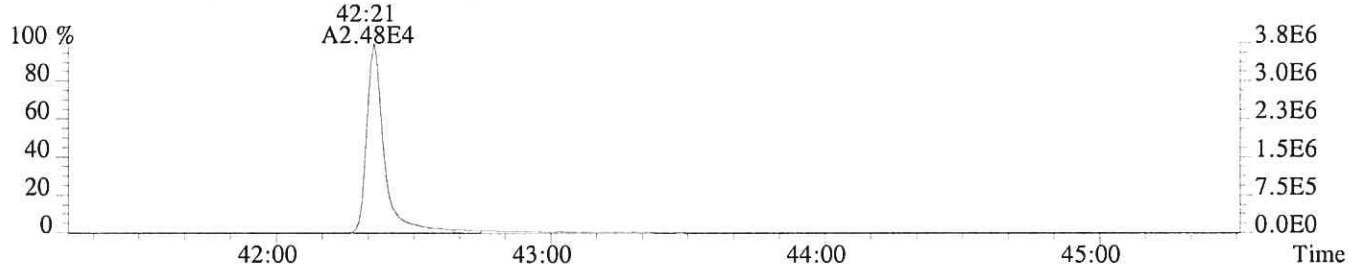
443.7399 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2928.0,0.40%,F,T)



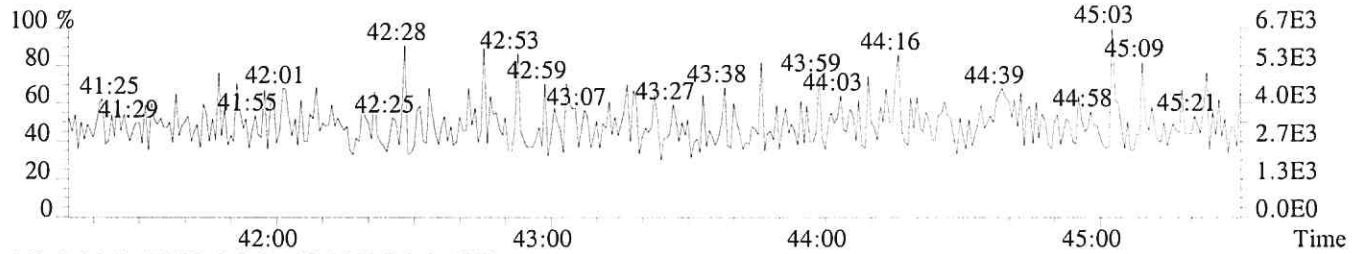
469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2132.0,0.40%,F,T)



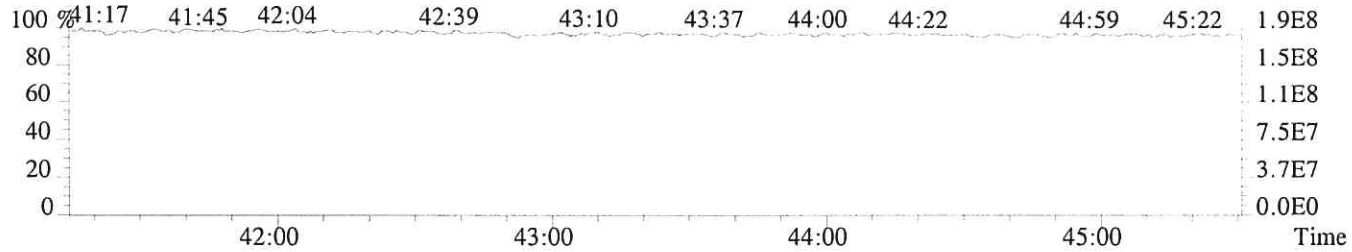
471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,912.0,0.40%,F,T)



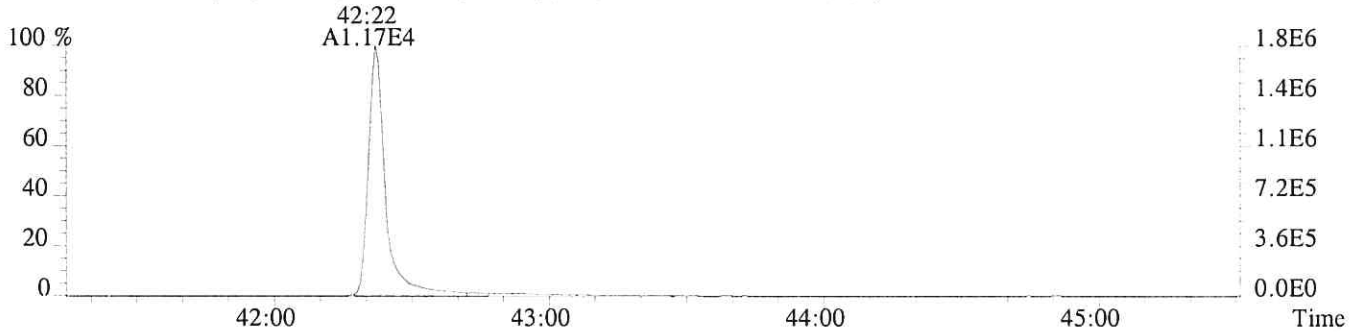
513.6775 F:5 PKD(5,3,5,100.00%,0.0,1.00%,F,F)



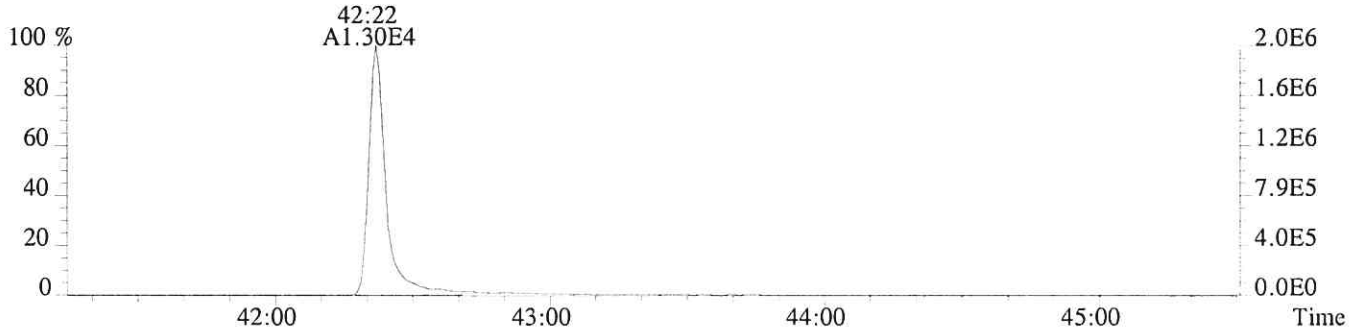
442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)



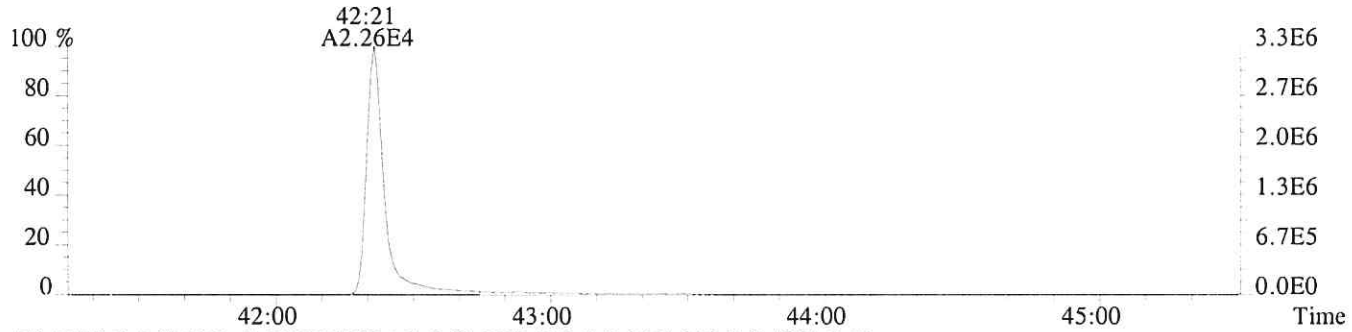
File:P407623 #1-385 Acq: 2-SEP-2017 08:16:56 Probe EI+ Magnet SIR VG BioTech Mass spect£
Sample#1 Exp:2ND SOURCE
457.7377 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1348.0,0.40%,F,T)



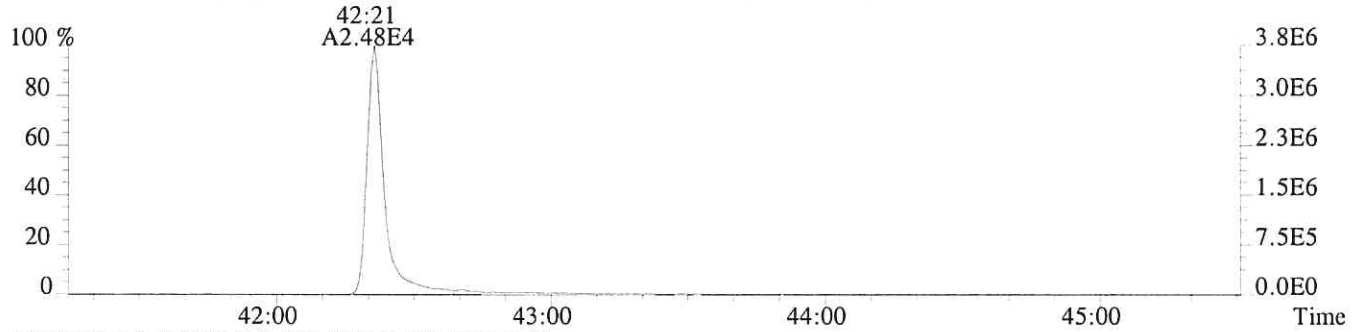
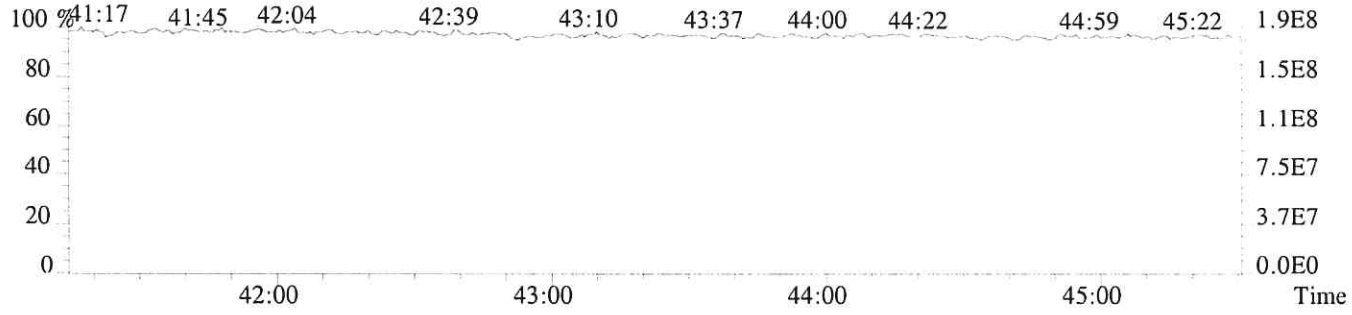
459.7348 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,1004.0,0.40%,F,T)



469.7779 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,2132.0,0.40%,F,T)



471.7750 F:5 SMO(1,3) BSUB(128,15,-3.0) PKD(5,3,5,0.30%,912.0,0.40%,F,T)



442.9728 F:5 PKD(3,3,3,100.00%,0.0,0.40%,F,F)