

Fina Exploration Norway Inc.



May 1994

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**GEOCHEMICAL CHARACTERISATION**

**OF CRUDE OIL FROM**

**WELL 2/1-4 (DST No. 2)**

# Fina Exploration Norway Inc.



The geochemical characterisation of the crude oil sample was performed by :

- 1) Geomark Research Inc., Houston, USA and
- 2) The Geochem Group Ltd., Chester, England.

The sample identification was :

Well	DST No.	Sample Identification		
		Fina	Geochem	Geomark
2/1-4	2	HA 584	8237-019	GNS 024

**GEOCHEMICAL CHARACTERIZATION OF  
CRUDE OILS FROM THE NORTH SEA  
FINAL REPORT**

**PREPARED FOR  
FINA EXPLORATION & PRODUCTION COMPANY  
BRUSSELS, BELGIUM**

**PREPARED BY  
GEOMARK RESEARCH, INC  
HOUSTON, TEXAS**

**12 July 1993**

# APPENDIX A

## Geochemical Summary Sheets



# GEOMARK RESEARCH, INC.

## Oil Information Library System

9748 Whithorn Drive    Tel: (713) 856-9333  
Houston, Texas 77095    Fax: (713) 856-2987

### GEOCHEMICAL SUMMARY SHEET

Country: Norway  
Basin: North Sea  
Field:  
Well:

Depth:  
Age:  
Formation:

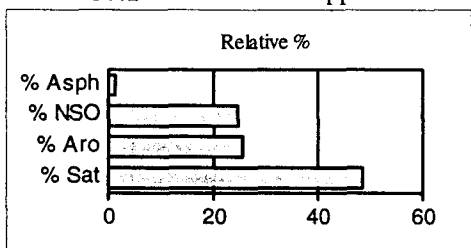
12-Jul-93  
Sample ID: HA584  
LAT:  
LONG:

#### BULK PROPERTIES:

API Gravity:            % S:            ppm V:  
% < C15: 37.1            ppm Ni:

#### C15 + Composition

% Sat: 48.6  
% Aro: 25.5  
% NSO: 24.6  
% Asph: 1.3  
Sat/Aro= 1.91  
n-Paraffin/Naphthene= 0.28



#### Stable Carbon Isotope Composition

δ per mil PDB

C15+ Saturate:  
C15+ Aromatic:  
Whole Crude:

Deuterium Composition  
(S.M.O.W.) Whole Crude:

#### GAS CHROMATOGRAPHY:

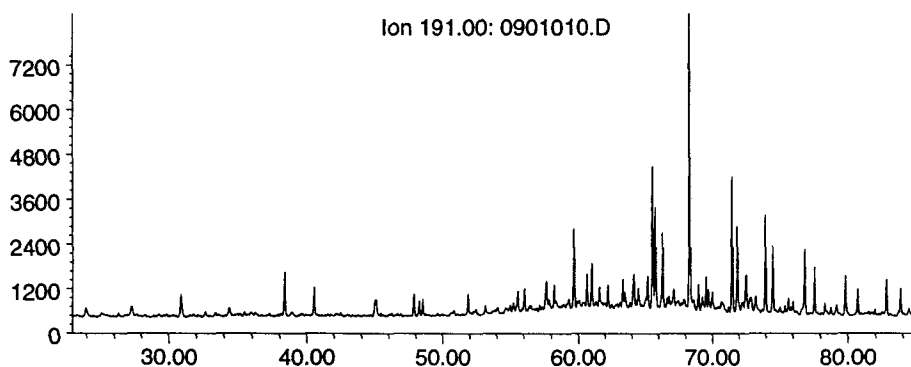
#### n-Paraffin Distribution

Pr/Ph:            Pr/n-C17:  
CPI:            Ph/n-C18:  
n-C27/n-C17:

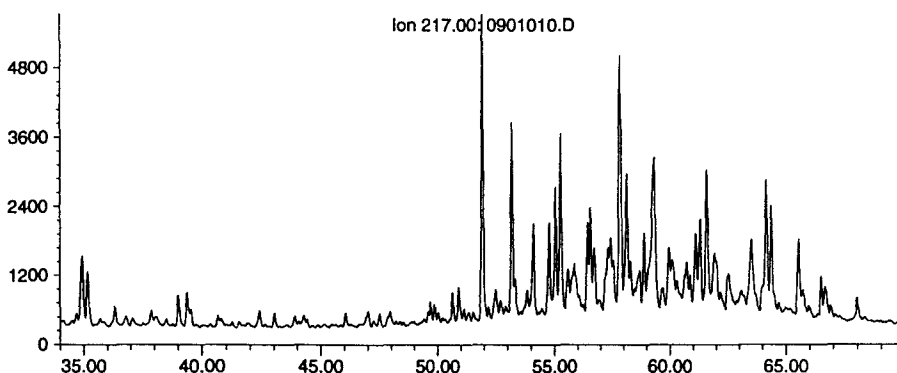
#### BIOMARKERS:

ppm C30 Hopane: 152

#### Terpanes



#### Steranes



#### Key Ratios

C19/C23= 0.20  
C22/C24= 0.31  
C26/C25= 0.98  
Tet/C23= 0.52  
  
Ts/Tm= 1.81  
C29D/H= 0.70  
C27T/C27= 0.07  
DM/H= 0.02  
C28/H= 0.11  
C30X/H= 0.26  
C29/H= 0.82  
OL/H= 0.03  
GA/H= 0.03  
C31S/H= 0.46  
C35/C34= 0.92  
  
Rear/Reg= 4.38  
Ster/Hop= 1.16  
C29 20S/R= 0.95  
%C27= 32.2  
%C28= 33.6  
%C29= 34.2  
(m/z = 218)

#### COMMENTS:

## Sterane and Terpane Peak Identifications

Peak	Formula	MW	Sterane ID*
S1	C27H48	372	13 $\beta$ , 17 $\alpha$ diacholestane (20S)
S2	C27H48	372	13 $\beta$ , 17 $\alpha$ diacholestane (20R)
S3	C27H48	372	5 $\alpha$ cholestane (20S) + 5 $\beta$ cholestane (20R)
S4	C27H48	372	5 $\alpha$ , 14 $\beta$ , 17 $\beta$ cholestane (20R) +
	C29H52	400	13 $\beta$ , 17 $\alpha$ diastigmastane (20S)
S5 + S5B**	C27H48	372	5 $\alpha$ , 14 $\beta$ , 17 $\beta$ cholestane (20S)
S6	C27H48	372	5 $\alpha$ cholestane (20R)
S7	C29H52	400	diastigmastane
S8	C28H50	386	5 $\alpha$ ergostane (20S)
S9	C28H50	386	5 $\alpha$ , 14 $\beta$ , 17 $\beta$ ergostane (20R) + 5 $\beta$ ergostane (20R)
S10 + S10B	C28H50	386	5 $\alpha$ , 14 $\beta$ , 17 $\beta$ ergostane (20S)
S11	C28H50	386	5 $\alpha$ ergostane (20R)
S12	C29H52	400	5 $\alpha$ stigmastane (20S)
S13	C29H52	400	5 $\alpha$ , 14 $\beta$ , 17 $\beta$ stigmastane (20R)
S14 + S14B	C29H52	400	5 $\alpha$ , 14 $\beta$ , 17 $\beta$ stigmastane (20S) + 5 $\beta$ stigmastane (20R)
S15	C29H52	400	5 $\alpha$ stigmastane (20R)

\*assumes 8 $\beta$ ,9 $\alpha$ ,14 $\alpha$ ,17 $\alpha$  unless otherwise stated. dia=rearranged

\*\*based on the 217 and 218 m/z mass chromatograms, respectively

Peak	Formula	MW	Terpane ID
C19	C19H34	262	tricyclic diterpane
C20	C20H36	276	tricyclic diterpane
C21	C21H38	290	tricyclic diterpane
C22	C22H40	304	tricyclic terpane
C23	C23H42	318	tricyclic terpane
C24	C24H44	332	tricyclic terpane
C25	C25H46	346	tricyclic terpane
TET	C24H42	330	teteracyclic terpane
C26	C26H48	360	tricyclic terpane
C28	C28H52	388	extended tricyclic terpane
C29	C29H54	402	extended tricyclic terpane
C30	C30H56	416	extended tricyclic terpane
Ts	C27H46	370	18 $\alpha$ , 21 $\beta$ -22,29,30-trisnorhopane
C27T	C27H46	370	17 $\alpha$ ,18 $\alpha$ ,21 $\beta$ -25,28,30-trisnorhopane
Tm	C27H46	370	17 $\alpha$ , 21 $\beta$ -22,29,30-trisnorhopane
C28H	C28H48	384	17 $\alpha$ , 18 $\alpha$ , 21 $\beta$ -28,30-bisnorhopane
C29H	C29H50	398	17 $\alpha$ , 21 $\beta$ -30-norhopane
C29D	C29H50	398	18 $\alpha$ , 17 $\alpha$ methyl-28,30-dinorhopane
C30X	C30H52	412	17 $\alpha$ , 15 $\alpha$ -methyl-27-norhopane (diahopane)
C29M	C29H50	398	17 $\beta$ , 21 $\alpha$ -30-normortane
OL	C30H52	412	oleanane
C30H	C30H52	412	17 $\alpha$ , 21 $\beta$ hopane
C30M	C30H52	412	17 $\beta$ , 21 $\alpha$ moretane
C31H	C31H54	426	17 $\alpha$ , 21 $\beta$ -30-homohopane (22S + 22R)
GA	C30H52	412	gammacerane
C32H	C32H56	440	17 $\alpha$ , 21 $\beta$ -bishomohopane (22S + 22R)
C33H	C33H58	454	17 $\alpha$ , 21 $\beta$ -trishomohopane (22S + 22R)
C34H	C34H60	468	17 $\alpha$ , 21 $\beta$ extended hopane (22S + 22R)
C35H	C35H62	482	17 $\alpha$ , 21 $\beta$ extended hopane (22S + 22R)

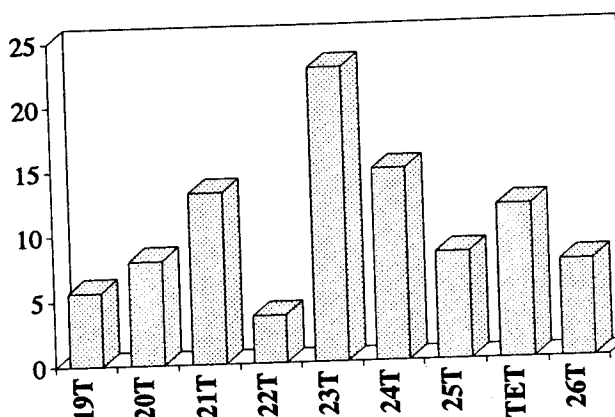
**APPENDIX B**

**SATURATE BIOMARKER MASS FRAGMENTOGRAMS**

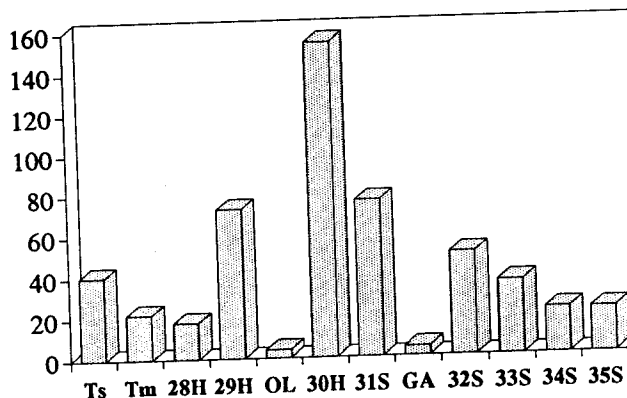
# Biomarker Quantitation Report

Data File: 6901018.D  
 Date File Acquired: 24 Jul 93 5:56 am  
 Acquisition Method: GMJULY22.M  
 Sample Name: HA584  
 Miscellaneous Info: 2.49 mg branched/cyclic hydrocarbon fraction

Peak#	m/z	Cpd.	RTmin.	Amount (ppm)	area	height
<b>Tricyclic Terpanes</b>						
1	191	C19T	44.87		4	6
2	191	C20T	48.80		7	8
3	191	C21T	52.92		13	13
4	191	C22T	56.69		2	4
5	191	C23T	60.99		21	23
6	191	C24T	63.27		13	15
7	191	C25R	67.86		7	8
8	191	C25S	67.95		7	8
9	191	TET	70.76		11	12
10	191	C26S	71.18		6	7
11	191	C26R	71.46		5	8
				TRICYCLICS	96	111



<b>Pentacyclic Terpanes</b>						
21	191	Ts	82.69		38	40
22	177	C27T	83.10		5	4
24	191	Tm	84.03		23	22
29	177	C28DM	84.87		21	5
34	191	C28H	87.20		23	18
37	177	C29DM	87.65		4	3
40	191	C29H	88.60		74	73
41	191	C29D	88.82		55	53
42	191	C30X	89.34		40	37
43	191	OL	90.96		6	4
44	191	C30H	91.35		159	154
45	191	C30M	92.59		16	17
46	191	C31S	94.54		79	76
47	191	C31R	94.93		51	47
48	191	GA	95.30		4	4
49	191	C32S	97.03		52	50
50	191	C32R	97.58		36	36
51	191	C33S	99.91		41	36
52	191	C33R	100.63		23	25
53	191	C34S	102.89		23	22
54	191	C34R	103.79		15	14
55	191	C35S	105.83		23	22
56	191	C35R	106.88		15	14
				PENTACYCLICS	827	776

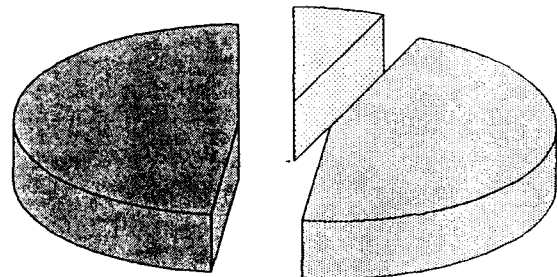
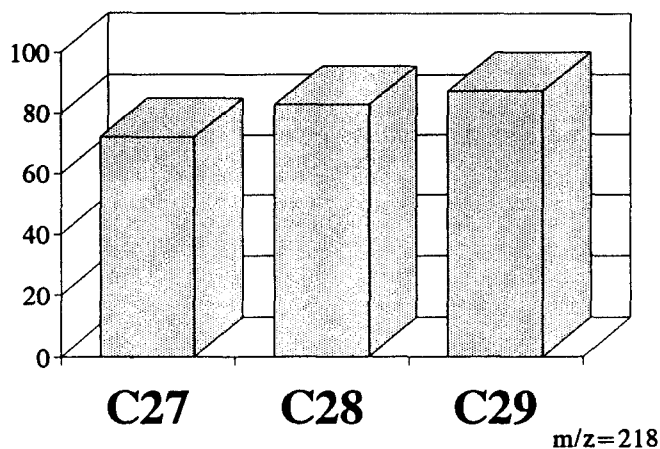




**Biomarker Quantitation Report (cont.)**

**HA584**

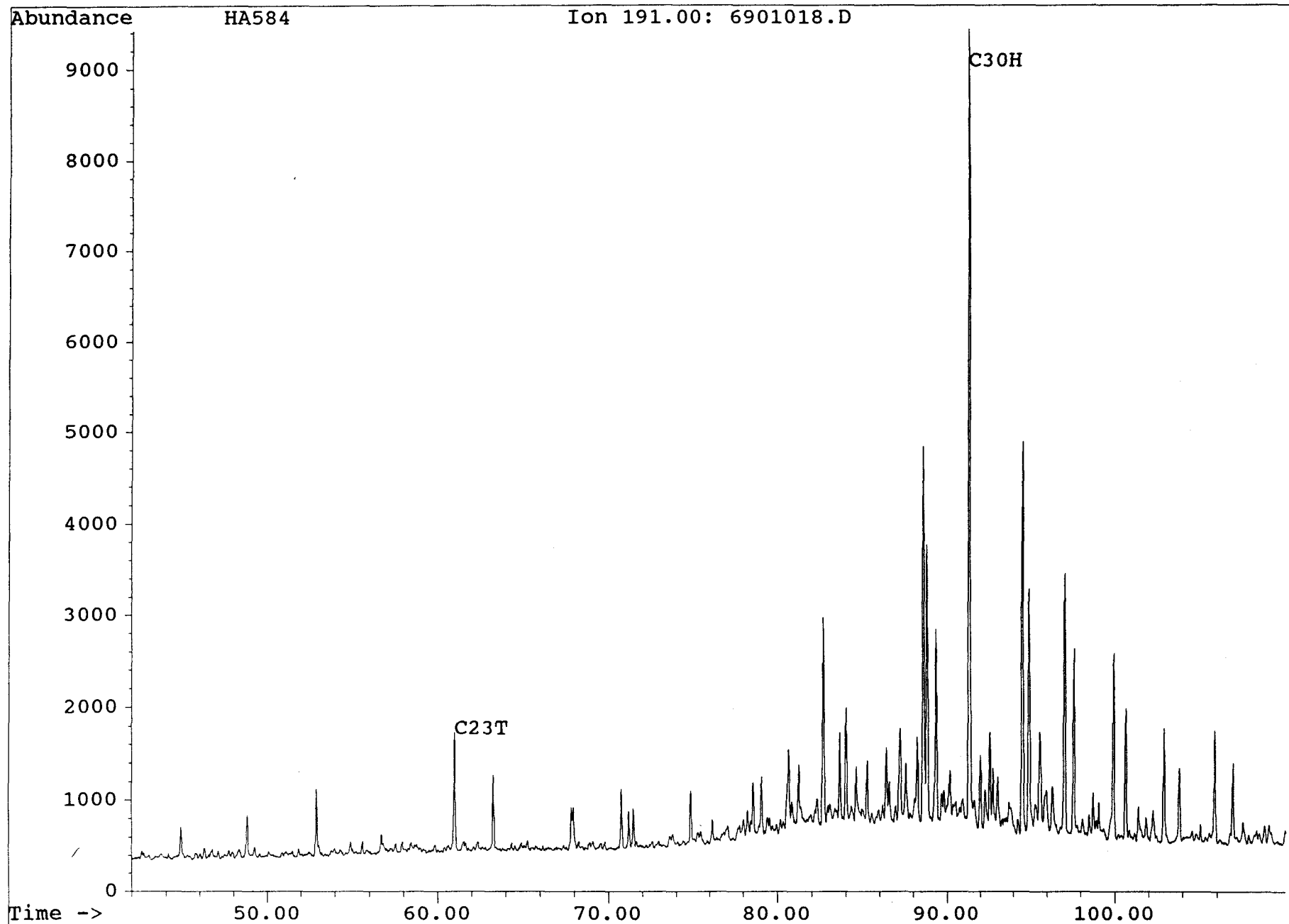
Peak#	m/z	Cpd.	RTmin.	Amount (ppm)	area	height
		<i>Steranes</i>				
12	217	S1	74.90	135	130	
13	217	S2	76.17	99	85	
14	217	S3	80.33	48	29	
15	217	S4	80.86	140	109	
16	218	S4B	80.84	113	103	
17	217	S5	81.17	62	48	
18	218	S5B	81.15	75	72	
19	217	S6	81.91	26	31	
20	217	S7	82.32	156	70	
23	217	S8	83.89	10	12	
25	217	S9	84.32	39	39	
26	218	S9B	84.34	75	68	
27	217	S10	84.61	69	61	
28	218	S10B	84.61	91	83	
30	217	S11	85.61	36	16	
31	217	S12	86.52	66	32	
32	217	S13	87.18	85	63	
33	218	S13B	87.18	92	89	
35	217	S14	87.40	51	50	
36	218	S14B	87.40	94	87	
38	221	ISTD	88.47	40	40	
39	217	S15	88.56	46	37	
<b>STERANES</b>				<b>1070</b>	<b>813</b>	

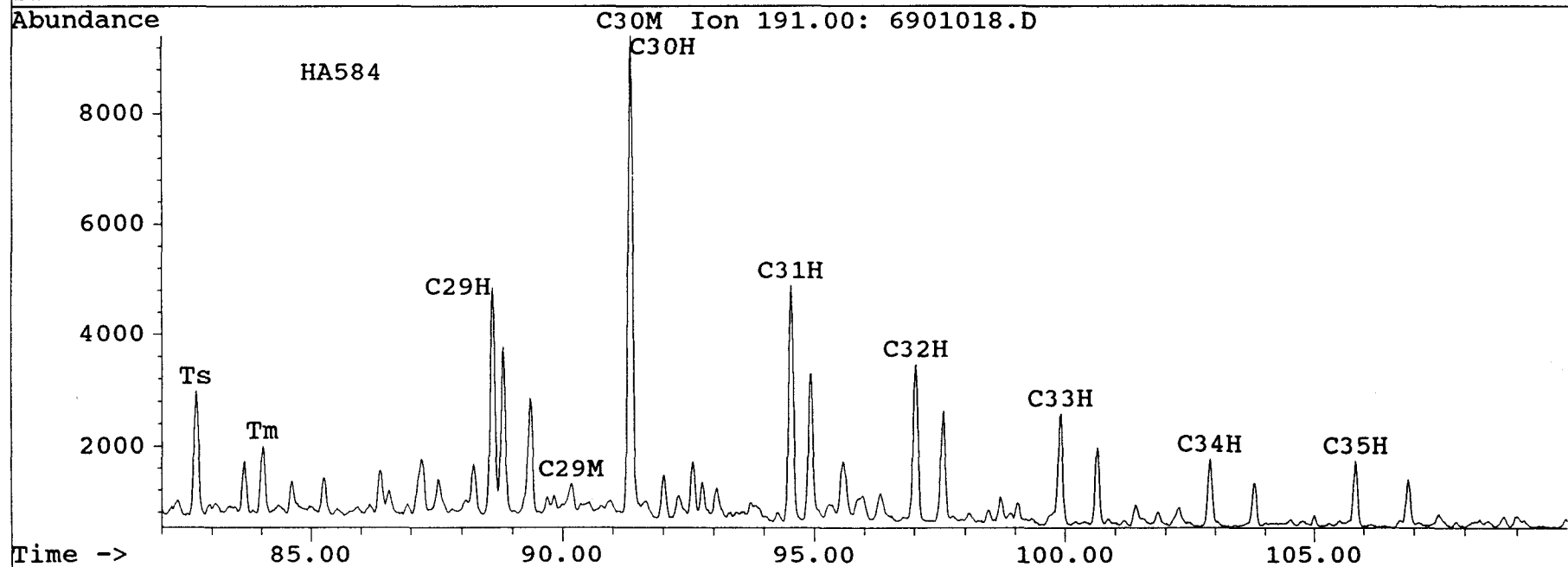
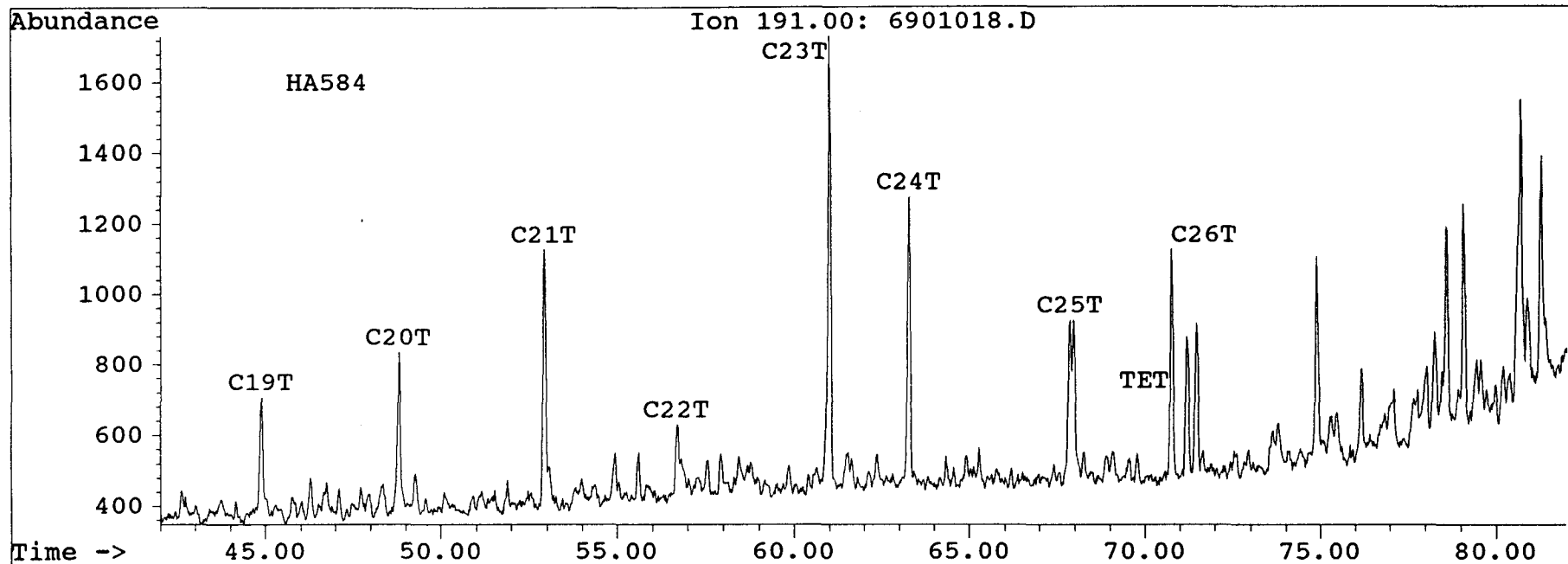


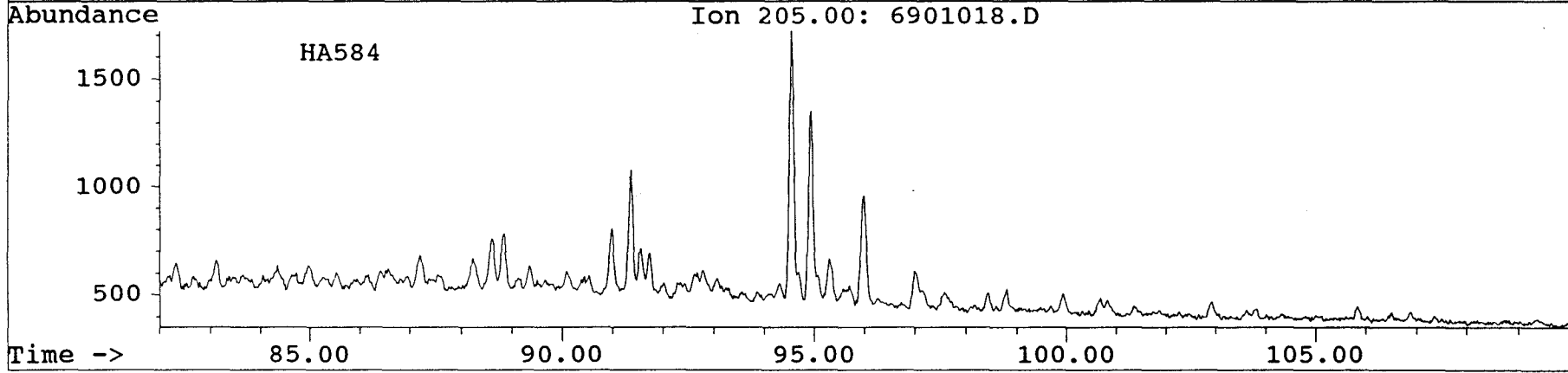
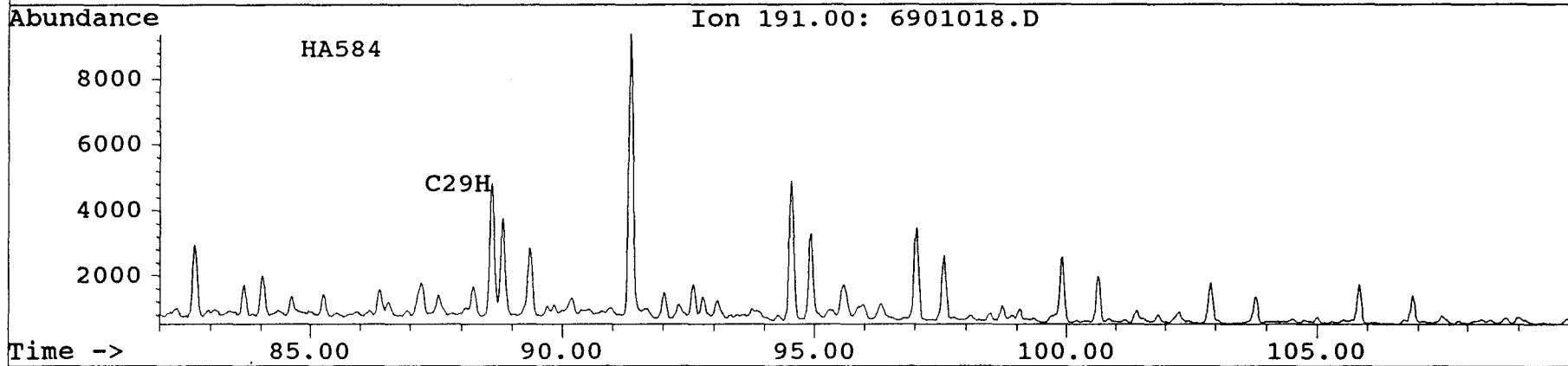
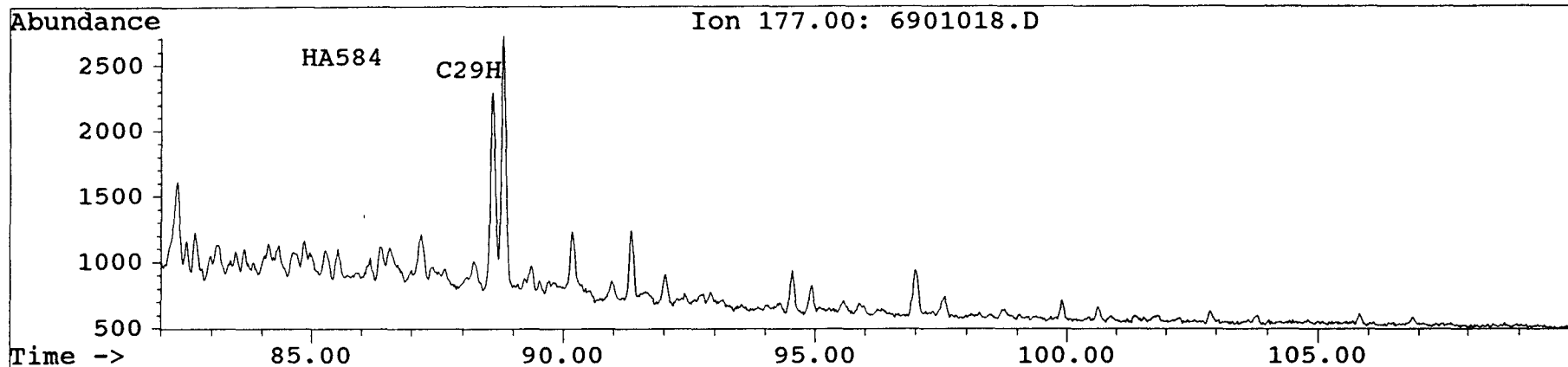
TRICYCLICS   
  PENTACYCLICS   
  STERANES

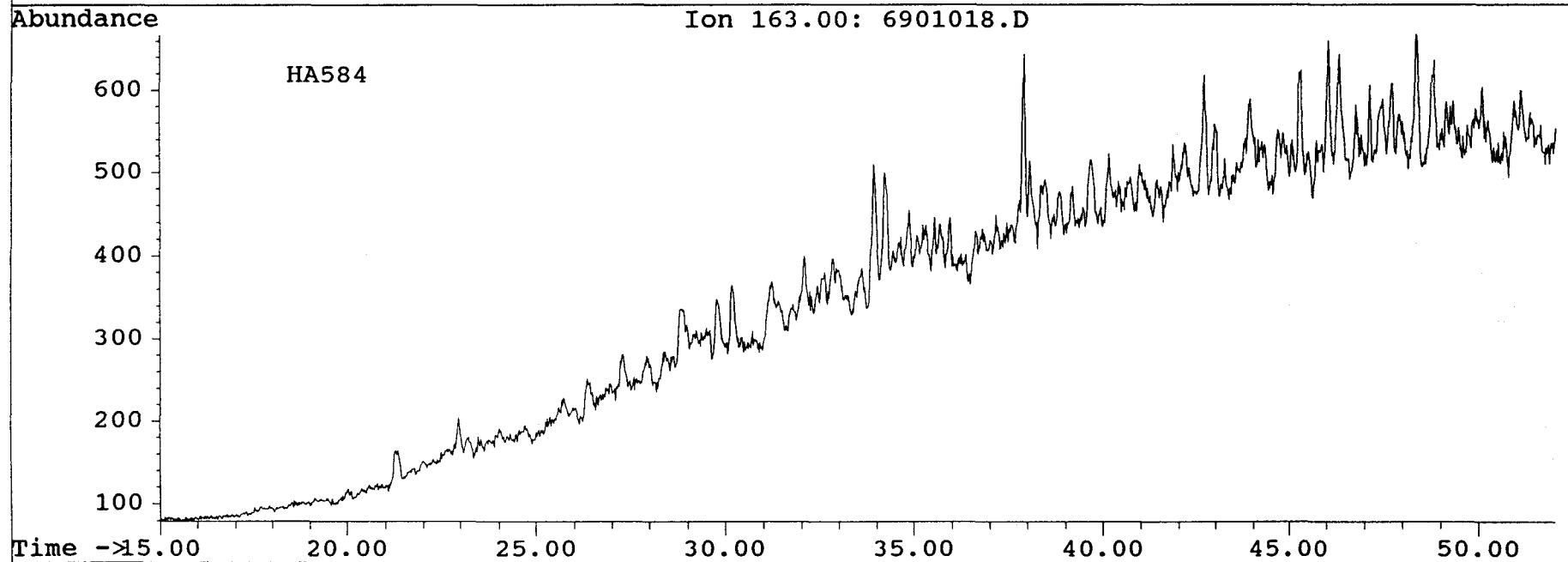
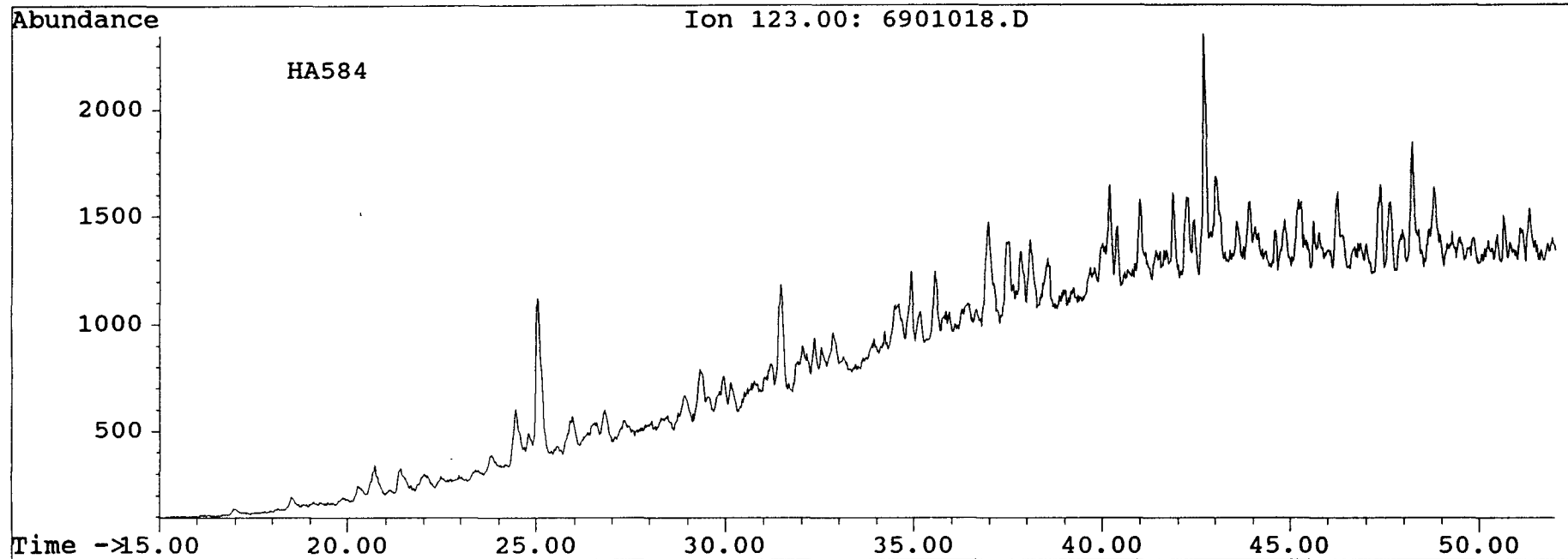
**Key Ratios**

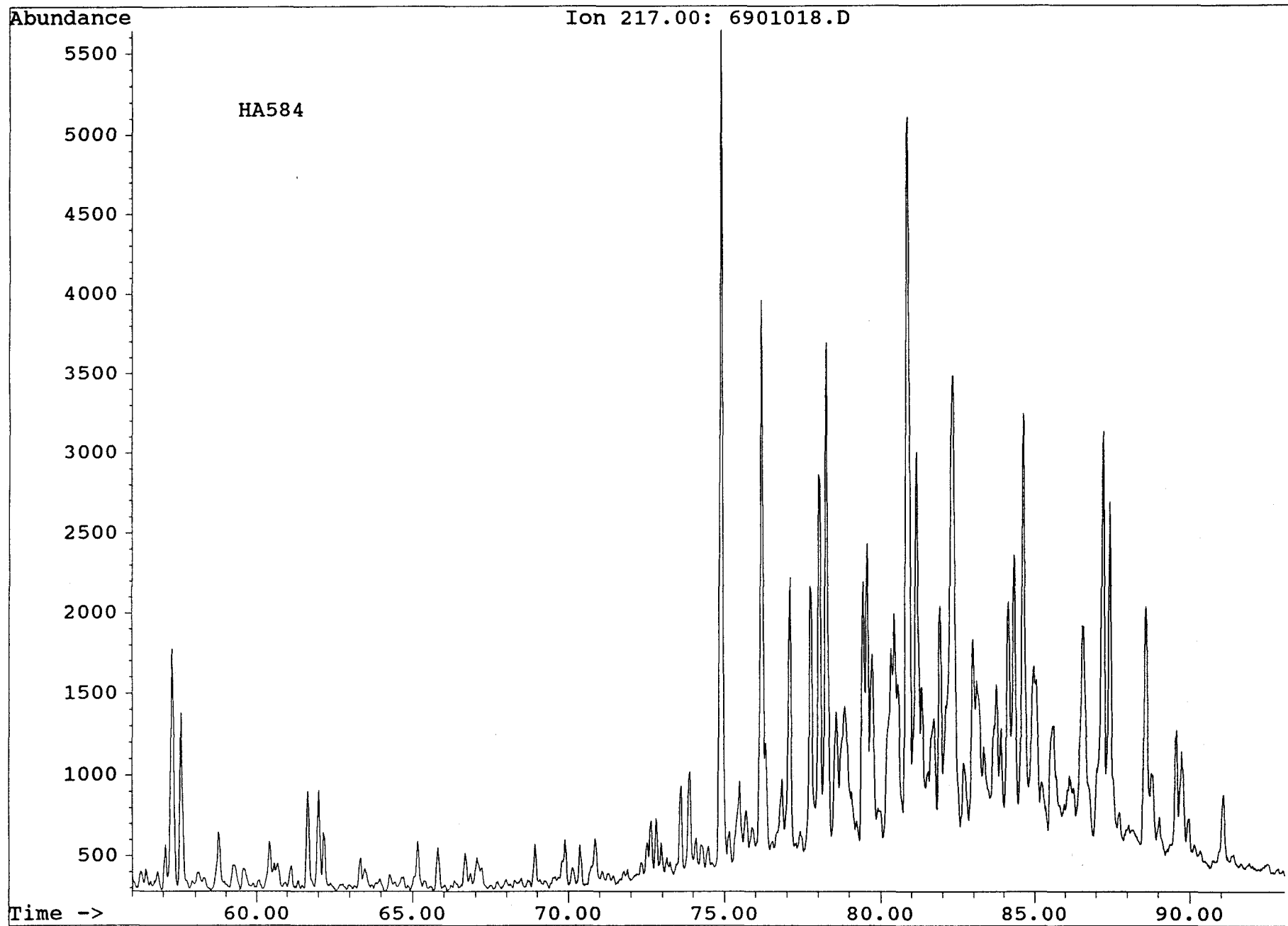
	area	ht.		area	ht.
C19/C23	0.19	0.25	Ts/Tm	1.62	1.84
C21/C23	0.60	0.58	29D/29	0.74	0.73
C22/C23	0.10	0.16	C27T/27	0.09	0.06
C24/C23	0.63	0.65	DM/H	0.02	0.02
C26/C25	0.81	0.91	C27/H	0.39	0.40
Tet/C23	0.50	0.52	C28/H	0.15	0.11
			X/H	0.25	0.24
S1/S6	5.21	4.16	C29/H	0.82	0.82
%C27	29	30	M/H	0.10	0.11
%C28	35	34	OL/H	0.04	0.03
%C29	36	36	GA/H	0.03	0.03
20S/20R	1.43	0.88	C31/H	0.50	0.50
S/T	1.29	1.05	C35/C34	0.99	0.98
			C23/H	0.13	0.15

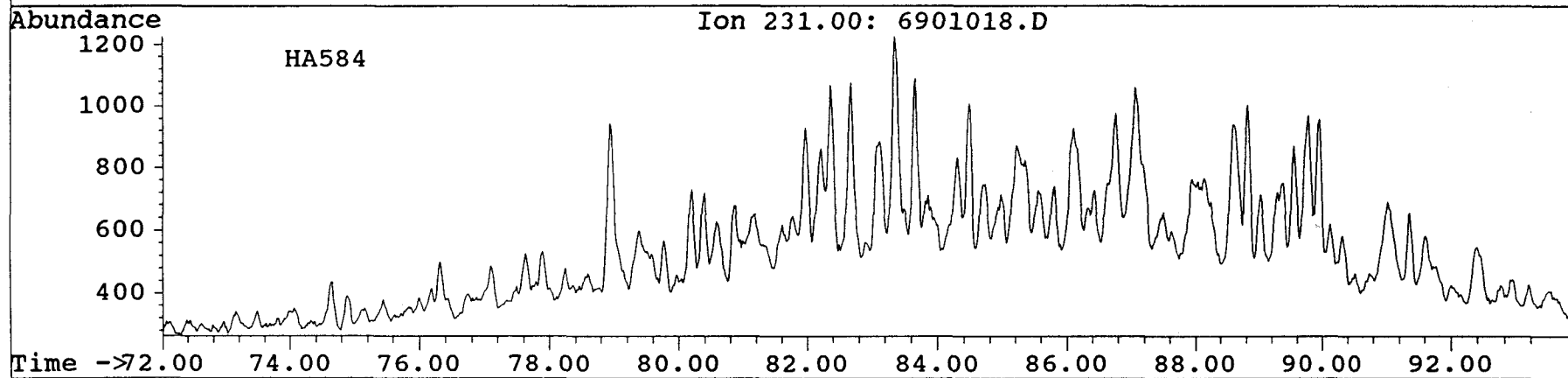
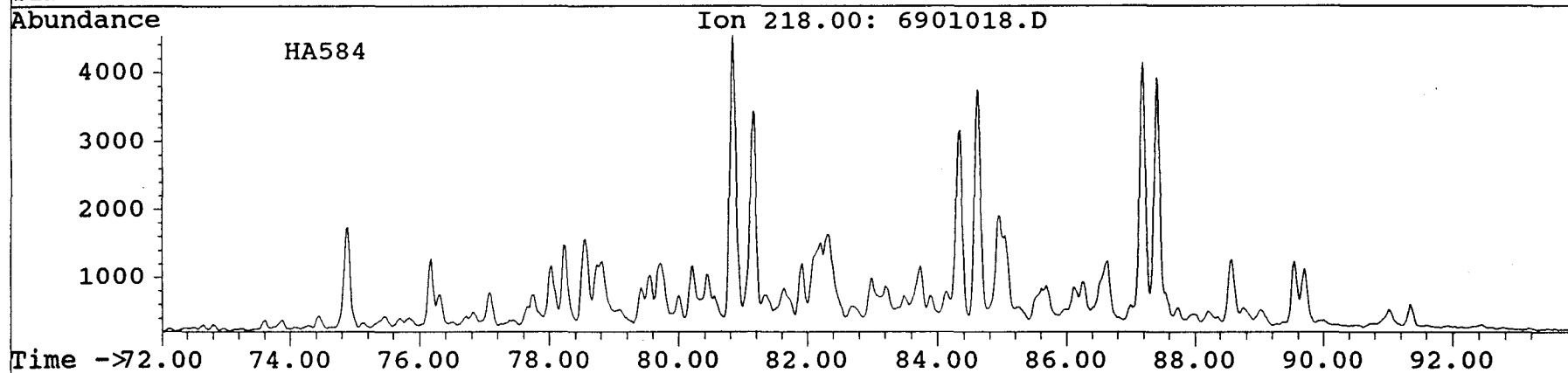
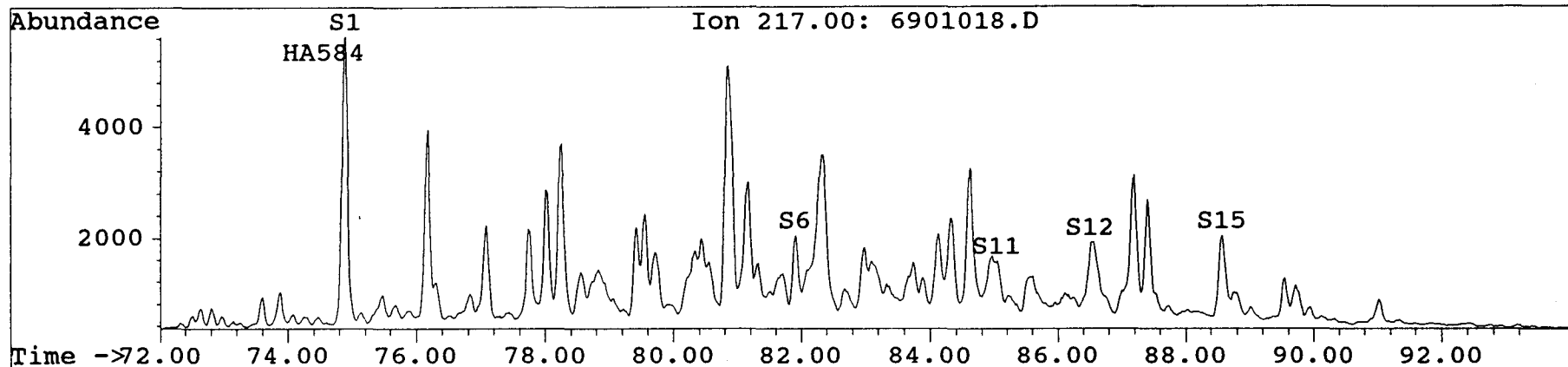








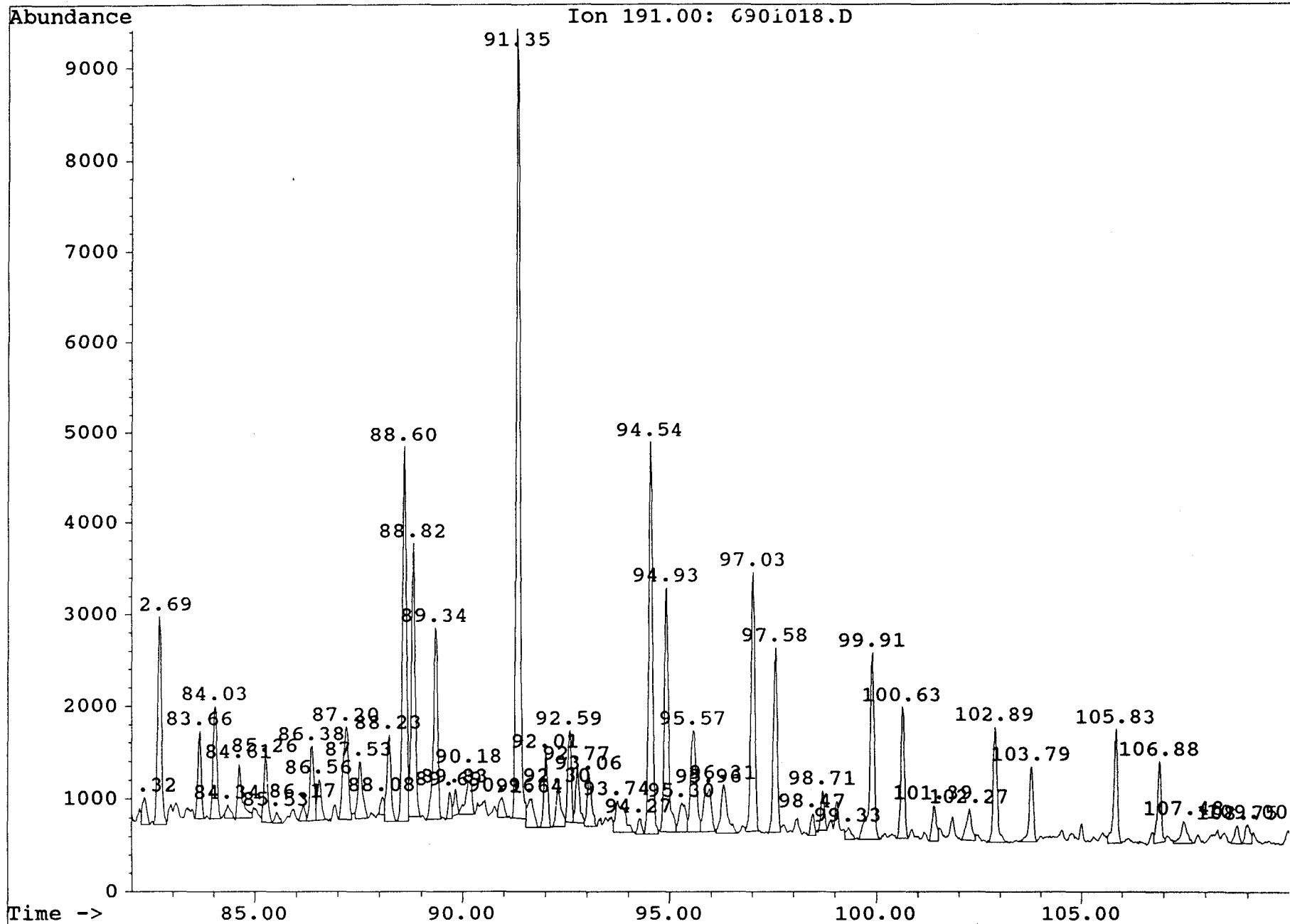




Peak#	Ret Time	Type	Width	Area	Start Time	End Time
1	82.317	RTE!	0.234	1190	82.239	82.472
2	82.687	RTE!	0.311	13662	82.550	82.862
3	83.660	RTE!	0.273	4268	83.524	83.796
4	84.030	RTE!	0.273	6937	83.913	84.185
5	84.341	RTE!	0.234	1059	84.263	84.497
6	84.614	RTE!	0.428	3482	84.497	84.925
7	85.256	RTE!	0.273	3445	85.159	85.431
8	85.528	RTE!	0.234	829.00	85.431	85.665
9	86.171	RTE!	0.195	1118	86.054	86.249
10	86.385	RTE!	0.234	5461	86.249	86.482
11	86.560	RTE!	0.273	1895	86.482	86.755
12	87.202	RTE!	0.311	7925	87.027	87.338
13	87.533	RTE!	0.311	4762	87.416	87.728
14	88.078	RTE!	0.156	1107	87.961	88.117
15	88.234	RTE!	0.311	6274	88.117	88.428
16	88.604	RTE!	0.273	26440	88.428	88.701
17	88.818	RTE!	0.273	18428	88.701	88.973
18	89.343	RTE!	0.350	14365	89.129	89.480
19	89.694	RTE!	0.156	1575	89.596	89.752
20	89.830	RTE!	0.156	1444	89.752	89.908
21	90.180	RTE!	0.389	3325	89.908	90.297
22	90.959	RTE!	0.234	1738	90.842	91.076
23	91.348	RTE!	0.350	54263	91.192	91.543
24	91.640	RTE!	0.350	2322	91.543	91.893
25	92.010	RTE!	0.234	5028	91.893	92.127
26	92.302	RTE!	0.311	2425	92.166	92.477
27	92.594	RTE!	0.195	5722	92.477	92.672
28	92.769	RTE!	0.273	2976	92.672	92.944
29	93.061	RTE!	0.311	3189	92.944	93.256
30	93.742	RTE!	0.467	4921	93.645	94.112
31	94.268	RTE!	0.195	1048	94.190	94.384
32	94.540	RTE!	0.350	27209	94.384	94.735
33	94.929	RTE!	0.389	18623	94.774	95.163
34	95.299	RTE!	0.273	2580	95.163	95.436
35	95.572	RTE!	0.311	10245	95.436	95.747
36	95.961	RTE!	0.389	5909	95.747	96.136
37	96.311	RTE!	0.506	5557	96.136	96.642
38	97.032	RTE!	0.350	17920	96.837	97.187
39	97.577	RTE!	0.311	12706	97.382	97.693
40	98.472	RTE!	0.195	1383	98.355	98.550
41	98.705	RTE!	0.234	2394	98.589	98.822
42	99.328	RTE!	0.234	1000.00	99.250	99.484

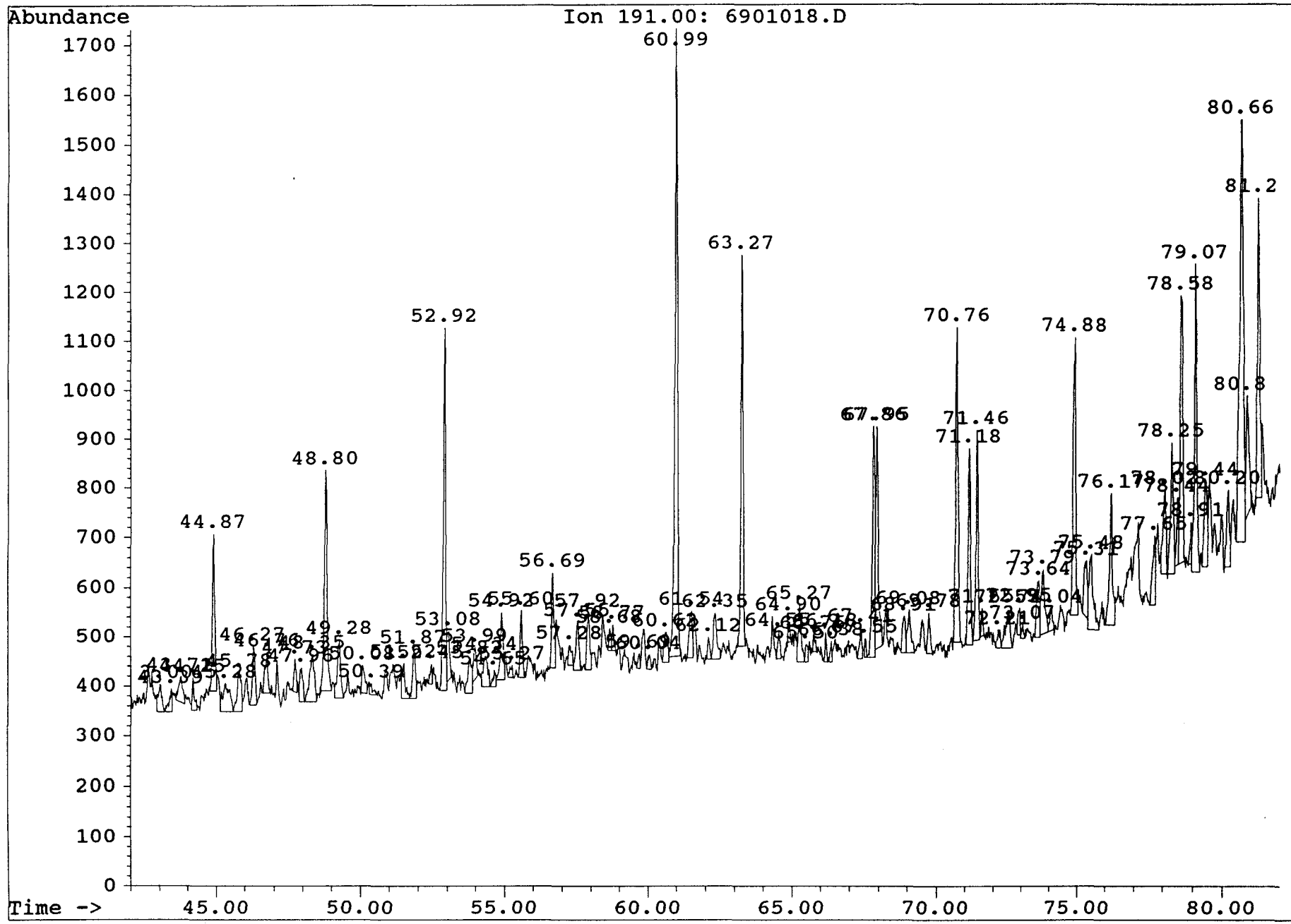


44	106.632	RTE!	0.273	7727	100.496	100.769
45	101.392	RTE!	0.234	2855	101.275	101.508
46	102.267	RTE!	0.350	3045	102.053	102.404
47	102.890	RTE!	0.545	7932	102.676	103.221
48	103.786	RTE!	0.467	5016	103.455	103.922
49	105.829	RTE!	0.350	7880	105.635	105.985
50	106.880	RTE!	0.273	4957	106.764	107.036
51	107.484	RTE!	0.467	2513	107.231	107.698
52	108.749	RTE!	0.273	1455	108.593	108.866
53	109.002	RTE!	0.234	943.00	108.866	109.099



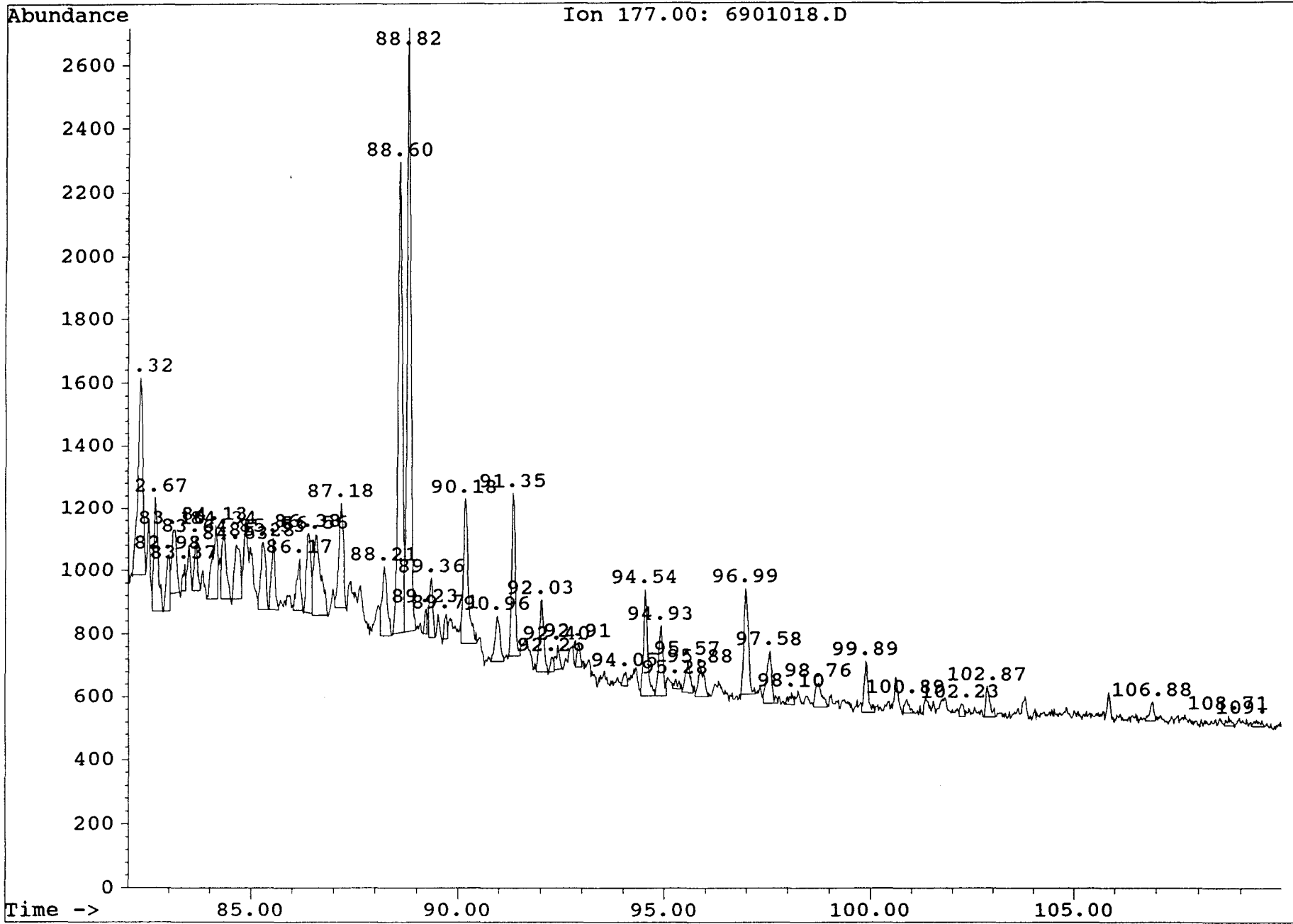
Peak#	Ret Time	Type	Width	Area	Start Time	End Time
1	43.002	RTE!	0.311	502.00	42.885	43.196
2	43.391	RTE!	0.233	325.00	43.196	43.430
3	43.721	RTE!	0.311	540.00	43.546	43.857
4	44.149	RTE!	0.194	348.00	44.091	44.285
5	44.869	RTE!	0.233	1411	44.752	44.985
6	45.277	RTE!	0.467	954.00	45.102	45.569
7	45.783	RTE!	0.311	778.00	45.569	45.880
8	46.269	RTE!	0.233	861.00	46.152	46.386
9	46.755	RTE!	0.272	148.00	46.580	46.853
10	47.728	RTE!	0.156	309.00	47.630	47.786
11	47.961	RTE!	0.194	494.00	47.864	48.058
12	48.350	RTE!	0.428	1096	48.058	48.486
13	48.797	RTE!	0.350	2555	48.642	48.992
14	49.284	RTE!	0.311	491.00	49.109	49.420
15	50.081	RTE!	0.233	393.00	50.003	50.237
16	50.392	RTE!	0.233	151.00	50.314	50.548
17	51.520	RTE!	0.272	452.00	51.443	51.715
18	51.870	RTE!	0.233	648.00	51.715	51.948
19	52.454	RTE!	0.117	154.00	52.376	52.493
20	52.921	RTE!	0.233	4399	52.765	52.998
21	53.076	RTE!	0.156	607.00	52.998	53.154
22	53.815	RTE!	0.272	672.00	53.621	53.893
23	53.990	RTE!	0.195	430.00	53.893	54.088
24	54.341	RTE!	0.311	686.00	54.204	54.515
25	54.652	RTE!	0.194	200.00	54.515	54.710
26	54.924	RTE!	0.311	455.00	54.710	55.021
27	55.274	RTE!	0.194	148.00	55.138	55.332
28	55.605	RTE!	0.272	266.00	55.488	55.760
29	56.694	RTE!	0.194	586.00	56.577	56.772
30	57.277	RTE!	0.194	315.00	57.199	57.394
31	57.550	RTE!	0.311	228.00	57.394	57.705
32	57.919	RTE!	0.194	787.00	57.822	58.016
33	58.678	RTE!	0.117	201.00	58.600	58.716
34	58.775	RTE!	0.156	218.00	58.716	58.872
35	59.689	RTE!	0.117	127.00	59.611	59.728
36	60.039	RTE!	0.156	179.00	59.961	60.117
37	60.622	RTE!	0.233	550.00	60.506	60.739
38	60.992	RTE!	0.389	7300	60.739	61.128
39	61.537	RTE!	0.233	229.00	61.362	61.595
40	62.120	RTE!	0.156	236.00	62.062	62.217
41	62.354	RTE!	0.311	814.00	62.217	62.528
42	63.268	RTE!	0.233	4387	63.151	63.384

44	€ 301	RTE!	0.156	231.00	.823	64.979
45	65.271	RTE!	0.272	260.00	65.174	65.446
46	65.504	RTE!	0.117	198.00	65.446	65.563
47	65.757	RTE!	0.156	183.00	65.718	65.874
48	66.185	RTE!	0.156	233.00	66.107	66.263
49	66.379	RTE!	0.156	176.00	66.263	66.418
50	67.410	RTE!	0.195	394.00	67.274	67.469
51	67.546	RTE!	0.117	162.00	67.507	67.624
52	67.858	RTE!	0.272	3010	67.624	67.896
53	67.955	RTE!	0.272	2238	67.896	68.169
54	68.908	RTE!	0.195	595.00	68.791	68.986
55	69.083	RTE!	0.272	725.00	68.986	69.258
56	69.783	RTE!	0.195	473.00	69.686	69.880
57	70.756	RTE!	0.272	3128	70.619	70.892
58	71.183	RTE!	0.233	2323	71.086	71.320
59	71.456	RTE!	0.233	2468	71.320	71.553
60	71.650	RTE!	0.156	240.00	71.553	71.709
61	72.215	RTE!	0.195	252.00	72.137	72.331
62	72.546	RTE!	0.389	307.00	72.331	72.721
63	72.954	RTE!	0.117	253.00	72.877	72.993
64	73.071	RTE!	0.156	119.00	72.993	73.149
65	73.636	RTE!	0.195	988.00	73.499	73.694
66	73.791	RTE!	0.273	1126	73.694	73.967
67	74.044	RTE!	0.234	302.00	73.967	74.200
68	74.881	RTE!	0.273	2719	74.745	75.018
69	75.310	RTE!	0.195	893.00	75.173	75.368
70	75.485	RTE!	0.389	929.00	75.368	75.757
71	76.166	RTE!	0.311	1967	75.991	76.302
72	77.645	RTE!	0.195	998.00	77.509	77.704
73	78.015	RTE!	0.234	384.00	77.898	78.132
74	78.249	RTE!	0.234	1771	78.132	78.365
75	78.443	RTE!	0.117	612.00	78.365	78.482
76	78.580	RTE!	0.234	2360	78.482	78.716
77	78.910	RTE!	0.117	370.00	78.833	78.949
78	79.066	RTE!	0.273	3129	78.949	79.222
79	79.436	RTE!	0.195	401.00	79.300	79.494
80	80.195	RTE!	0.195	231.00	80.078	80.273
81	80.662	RTE!	0.311	7803	80.468	80.779
82	80.876	RTE!	0.195	1724	80.779	80.974
83	81.266	RTE!	0.234	2742	81.129	81.363



Peak#	Ret Time	Type	Width	Area	Start Time	End Time
1	82.317	RTE!	0.350	5328	82.083	82.434
2	82.667	RTE!	0.273	1432	82.589	82.862
3	82.979	RTE!	0.156	1073	82.862	83.017
4	83.095	RTE!	0.234	1653	83.017	83.251
5	83.368	RTE!	0.117	352.00	83.290	83.407
6	83.640	RTE!	0.195	913.00	83.562	83.757
7	84.127	RTE!	0.273	2004	83.913	84.185
8	84.341	RTE!	0.234	1542	84.263	84.497
9	84.633	RTE!	0.272	544.00	84.497	84.769
10	85.275	RTE!	0.273	731.00	85.159	85.431
11	85.528	RTE!	0.234	339.00	85.431	85.665
12	86.171	RTE!	0.234	1025	86.015	86.249
13	86.385	RTE!	0.234	819.00	86.249	86.482
14	86.560	RTE!	0.389	1961	86.482	86.871
15	87.183	RTE!	0.273	2583	87.027	87.300
16	88.214	RTE!	0.273	1876	88.117	88.390
17	88.604	RTE!	0.273	10461	88.428	88.701
18	88.818	RTE!	0.273	11008	88.701	88.973
19	89.226	RTE!	0.117	302.00	89.129	89.246
20	89.363	RTE!	0.156	1014	89.285	89.441
21	89.713	RTE!	0.117	388.00	89.635	89.752
22	90.180	RTE!	0.389	2754	90.063	90.453
23	90.959	RTE!	0.311	330.00	90.803	91.114
24	91.348	RTE!	0.273	2227	91.231	91.504
25	92.029	RTE!	0.273	854.00	91.893	92.166
26	92.263	RTE!	0.156	283.00	92.166	92.321
27	92.399	RTE!	0.195	427.00	92.321	92.516
28	92.905	RTE!	0.156	421.00	92.827	92.983
29	94.053	RTE!	0.156	276.00	93.956	94.112
30	94.540	RTE!	0.350	1589	94.423	94.774
31	94.929	RTE!	0.273	943.00	94.774	95.046
32	95.280	RTE!	0.195	198.00	95.202	95.397
33	95.572	RTE!	0.273	787.00	95.436	95.708
34	95.883	RTE!	0.350	938.00	95.747	96.097
35	96.993	RTE!	0.350	2537	96.876	97.226
36	97.577	RTE!	0.350	696.00	97.421	97.771
37	98.102	RTE!	0.234	268.00	97.927	98.160
38	98.764	RTE!	0.350	183.00	98.628	98.978
39	99.893	RTE!	0.311	386.00	99.795	100.107
40	100.885	RTE!	0.311	348.00	100.769	101.080
41	102.228	RTE!	0.156	262.00	102.170	102.326
42	102.871	RTE!	0.273	684.00	102.793	103.065

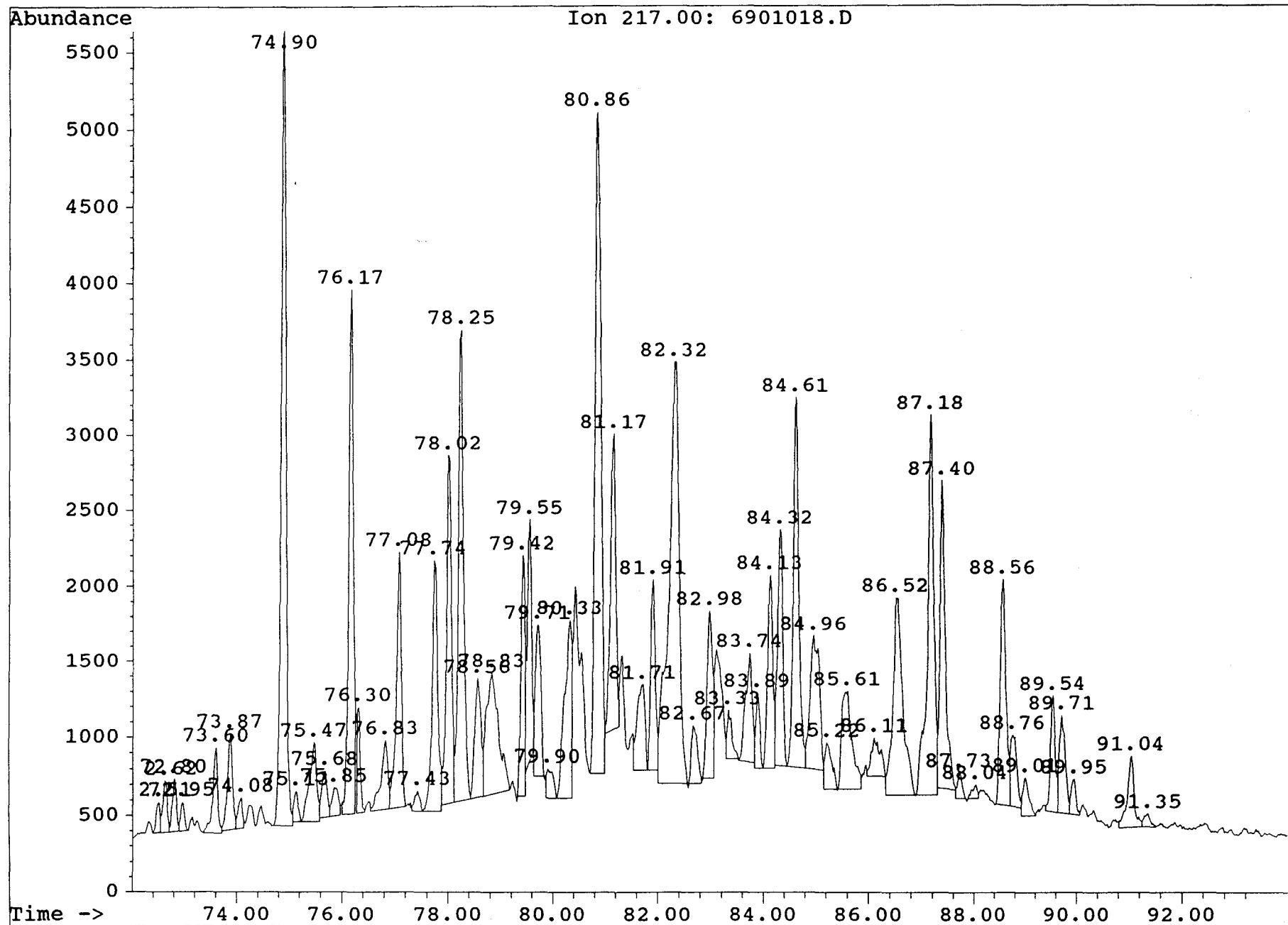
43	10.1000	RTE!	0.273	196.00	109.255	108.866
44	1 710	RTE!	0.273	196.00	109.255	108.866
45	109.372	RTE!	0.311	209.00	109.255	109.566





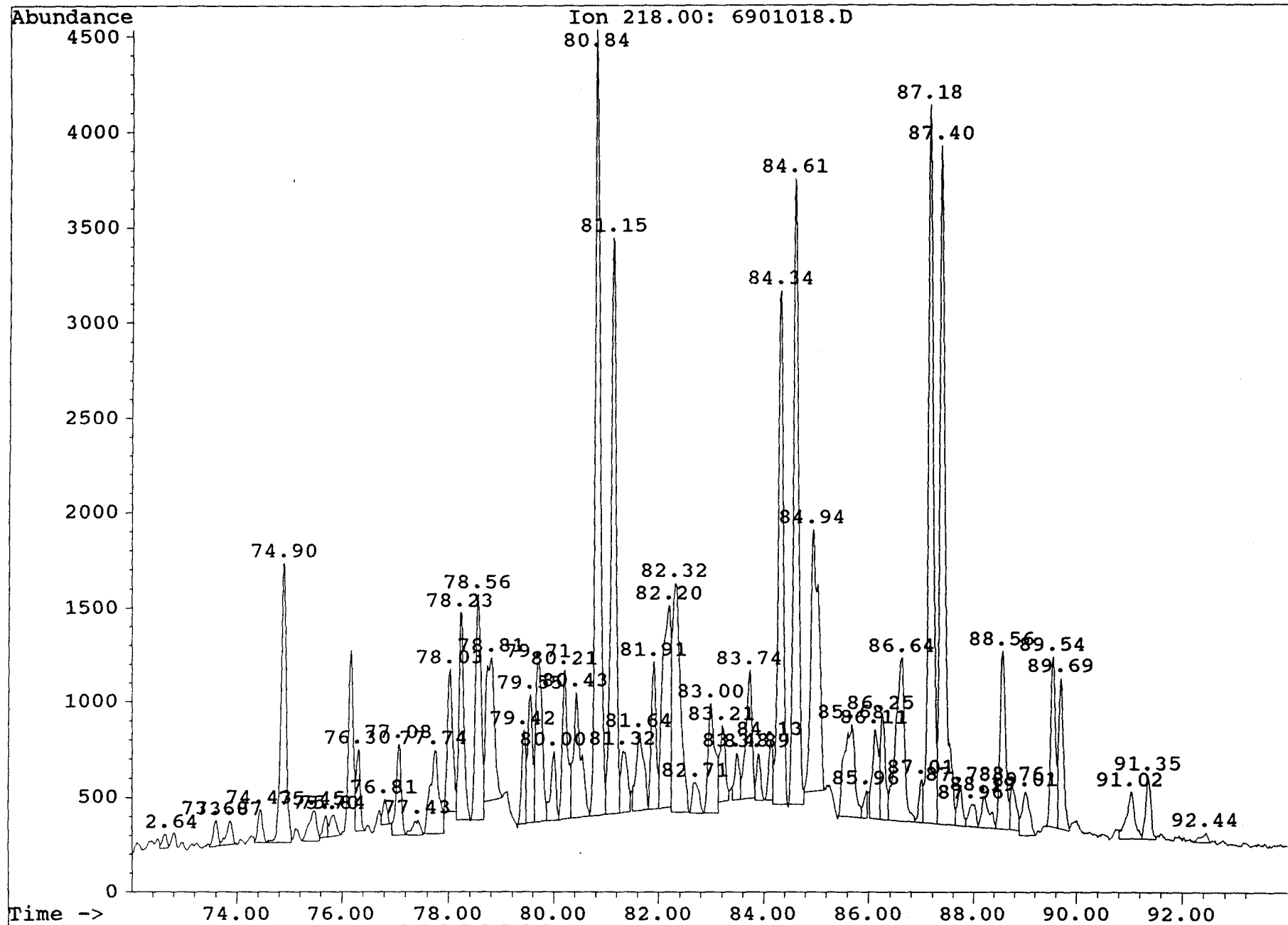
Peak#	Ret Time	Type	Width	Area	Start Time	End Time
1	72.507	RTE!	0.156	1044	72.390	72.546
2	72.624	RTE!	0.156	1831	72.546	72.701
3	72.799	RTE!	0.195	1365	72.701	72.896
4	72.954	RTE!	0.156	891.00	72.896	73.052
5	73.597	RTE!	0.350	3086	73.363	73.714
6	73.869	RTE!	0.273	3623	73.714	73.986
7	74.083	RTE!	0.156	1150	73.986	74.142
8	74.901	RTE!	0.389	33117	74.687	75.076
9	75.134	RTE!	0.156	1046	75.076	75.232
10	75.465	RTE!	0.350	4343	75.232	75.582
11	75.679	RTE!	0.195	1524	75.582	75.777
12	75.855	RTE!	0.195	1509	75.777	75.971
13	76.166	RTE!	0.234	20960	76.010	76.244
14	76.302	RTE!	0.156	1874	76.283	76.439
15	76.828	RTE!	0.350	3979	76.555	76.906
16	77.081	RTE!	0.311	11351	76.906	77.217
17	77.431	RTE!	0.195	857.00	77.334	77.529
18	77.743	RTE!	0.350	11974	77.529	77.879
19	78.015	RTE!	0.234	14787	77.879	78.113
20	78.249	RTE!	0.311	20113	78.113	78.424
21	78.560	RTE!	0.234	5208	78.424	78.658
22	78.833	RTE!	0.506	12666	78.658	79.164
23	79.417	RTE!	0.156	9187	79.319	79.475
24	79.553	RTE!	0.156	9060	79.475	79.631
25	79.709	RTE!	0.234	6198	79.631	79.864
26	79.903	RTE!	0.195	1557	79.864	80.059
27	80.331	RTE!	0.311	11706	80.059	80.370
28	80.857	RTE!	0.273	35403	80.721	80.993
29	81.168	RTE!	0.272	12306	80.993	81.266
30	81.713	RTE!	0.273	4658	81.538	81.811
31	81.908	RTE!	0.195	6352	81.811	82.005
32	82.317	RTE!	0.545	36873	82.005	82.550
33	82.667	RTE!	0.272	2931	82.550	82.823
34	82.979	RTE!	0.234	6498	82.823	83.056
35	83.329	RTE!	0.234	1912	83.290	83.524
36	83.738	RTE!	0.311	5069	83.524	83.835
37	83.893	RTE!	0.156	2433	83.835	83.991
38	84.127	RTE!	0.234	7731	83.991	84.224
39	84.321	RTE!	0.234	9571	84.224	84.458
40	84.614	RTE!	0.350	16670	84.458	84.808
41	84.964	RTE!	0.350	10991	84.808	85.159
42	85.217	RTE!	0.273	1802	85.159	85.431

44	112	RTE!	0.350	2853	5.976	86.326
45	86.521	RTE!	0.545	16874	86.326	86.871
46	87.183	RTE!	0.428	21429	86.871	87.300
47	87.397	RTE!	0.350	13139	87.300	87.650
48	87.728	RTE!	0.195	964.00	87.650	87.845
49	88.039	RTE!	0.195	600.00	87.883	88.078
50	88.565	RTE!	0.273	10550	88.428	88.701
51	88.759	RTE!	0.234	3077	88.701	88.935
52	89.012	RTE!	0.273	1318	88.935	89.207
53	89.538	RTE!	0.234	4092	89.402	89.635
54	89.713	RTE!	0.234	4338	89.635	89.869
55	89.947	RTE!	0.195	767.00	89.869	90.063
56	91.037	RTE!	0.428	3527	90.803	91.231
57	91.348	RTE!	0.273	722.00	91.231	91.504



Peak#	Ret Time	Type	Width	Area	Start Time	End Time
1	72.643	RTE!	0.156	457.00	72.546	72.701
2	73.597	RTE!	0.195	802.00	73.480	73.675
3	73.869	RTE!	0.273	972.00	73.675	73.947
4	74.434	RTE!	0.234	1058	74.336	74.570
5	74.901	RTE!	0.467	10382	74.570	75.037
6	75.446	RTE!	0.350	1726	75.232	75.582
7	75.699	RTE!	0.156	657.00	75.582	75.738
8	75.835	RTE!	0.234	536.00	75.738	75.971
9	76.302	RTE!	0.195	2016	76.244	76.439
10	76.808	RTE!	0.156	712.00	76.750	76.906
11	77.081	RTE!	0.273	2918	76.945	77.217
12	77.431	RTE!	0.311	799.00	77.217	77.529
13	77.743	RTE!	0.389	4496	77.529	77.918
14	78.035	RTE!	0.234	4403	77.918	78.151
15	78.229	RTE!	0.273	6330	78.151	78.424
16	78.560	RTE!	0.234	9042	78.424	78.658
17	78.813	RTE!	0.350	7576	78.658	79.008
18	79.417	RTE!	0.195	2053	79.280	79.475
19	79.553	RTE!	0.156	3716	79.475	79.631
20	79.709	RTE!	0.234	7240	79.631	79.864
21	80.000	RTE!	0.234	1884	79.864	80.098
22	80.215	RTE!	0.234	5881	80.098	80.331
23	80.429	RTE!	0.350	6391	80.331	80.682
24	80.838	RTE!	0.311	27329	80.682	80.993
25	81.149	RTE!	0.272	21042	80.993	81.266
26	81.324	RTE!	0.195	2727	81.266	81.460
27	81.635	RTE!	0.311	3630	81.499	81.811
28	81.908	RTE!	0.195	4152	81.811	82.005
29	82.200	RTE!	0.234	11654	82.005	82.239
30	82.317	RTE!	0.350	11762	82.239	82.589
31	82.706	RTE!	0.273	927.00	82.589	82.862
32	82.998	RTE!	0.273	4523	82.862	83.134
33	83.212	RTE!	0.195	2763	83.134	83.329
34	83.485	RTE!	0.156	1481	83.407	83.562
35	83.738	RTE!	0.273	4747	83.562	83.835
36	83.893	RTE!	0.195	692.00	83.835	84.030
37	84.127	RTE!	0.156	1797	84.030	84.185
38	84.341	RTE!	0.272	18247	84.185	84.458
39	84.614	RTE!	0.311	21431	84.458	84.769
40	84.944	RTE!	0.428	14638	84.769	85.197
41	85.684	RTE!	0.428	6800	85.431	85.859
42	85.956	RTE!	0.117	717.00	85.859	85.976

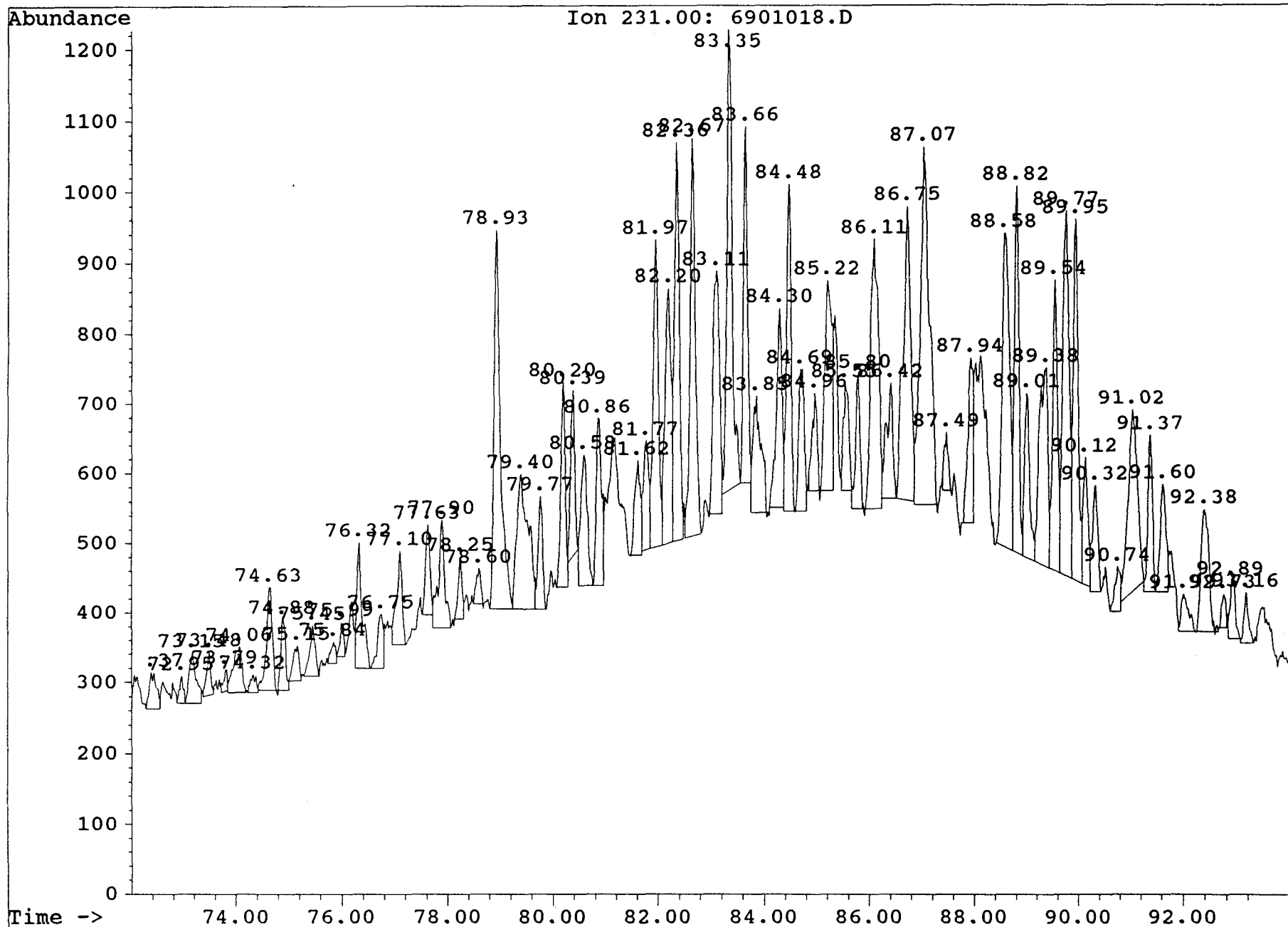
44	249	RTE!	0.156	2702	86.210	86.365
45	86.638	RTE!	0.506	10150	86.365	86.871
46	87.008	RTE!	0.156	1183	86.871	87.027
47	87.183	RTE!	0.273	24582	87.027	87.300
48	87.397	RTE!	0.350	25064	87.300	87.650
49	87.728	RTE!	0.195	913.00	87.650	87.845
50	87.961	RTE!	0.234	1138	87.845	88.078
51	88.195	RTE!	0.350	1293	88.078	88.428
52	88.565	RTE!	0.273	6501	88.428	88.701
53	88.759	RTE!	0.195	1319	88.701	88.896
54	89.012	RTE!	0.311	1970	88.896	89.207
55	89.538	RTE!	0.234	5280	89.402	89.635
56	89.694	RTE!	0.234	4941	89.635	89.869
57	91.017	RTE!	0.428	2308	90.803	91.231
58	91.348	RTE!	0.273	1853	91.231	91.504
59	92.438	RTE!	0.311	440.00	92.204	92.516



Peak#	Ret Time	Type	Width	Area	Start Time	End Time
1	72.370	RTE!	0.273	191.00	72.273	72.546
2	72.954	RTE!	0.156	176.00	72.857	73.013
3	73.149	RTE!	0.311	693.00	73.013	73.324
4	73.480	RTE!	0.195	329.00	73.363	73.558
5	73.791	RTE!	0.117	127.00	73.714	73.830
6	74.064	RTE!	0.350	773.00	73.830	74.181
7	74.317	RTE!	0.234	184.00	74.181	74.414
8	74.628	RTE!	0.350	1130	74.414	74.765
9	74.881	RTE!	0.234	303.00	74.765	74.998
10	75.154	RTE!	0.234	383.00	74.998	75.232
11	75.446	RTE!	0.311	163.00	75.271	75.582
12	75.835	RTE!	0.156	193.00	75.738	75.894
13	75.991	RTE!	0.156	232.00	75.894	76.049
14	76.322	RTE!	0.311	989.00	76.244	76.555
15	76.750	RTE!	0.234	608.00	76.555	76.789
16	77.100	RTE!	0.273	1041	76.945	77.217
17	77.626	RTE!	0.195	769.00	77.529	77.723
18	77.898	RTE!	0.350	1387	77.723	78.074
19	78.249	RTE!	0.156	429.00	78.151	78.307
20	78.599	RTE!	0.195	298.00	78.502	78.696
21	78.930	RTE!	0.428	4162	78.813	79.241
22	79.397	RTE!	0.428	2985	79.241	79.670
23	79.767	RTE!	0.195	935.00	79.670	79.864
24	80.195	RTE!	0.234	1242	80.059	80.293
25	80.390	RTE!	0.195	728.00	80.293	80.487
26	80.584	RTE!	0.273	1053	80.487	80.760
27	80.857	RTE!	0.195	1069	80.760	80.954
28	81.616	RTE!	0.234	411.00	81.460	81.694
29	81.772	RTE!	0.156	1128	81.694	81.850
30	81.966	RTE!	0.234	2543	81.850	82.083
31	82.200	RTE!	0.195	2141	82.083	82.278
32	82.356	RTE!	0.195	3548	82.278	82.472
33	82.667	RTE!	0.311	3921	82.511	82.823
34	83.115	RTE!	0.234	2961	82.979	83.212
35	83.348	RTE!	0.350	3909	83.212	83.562
36	83.660	RTE!	0.195	2726	83.562	83.757
37	83.854	RTE!	0.311	1695	83.757	84.069
38	84.302	RTE!	0.273	2195	84.107	84.380
39	84.477	RTE!	0.195	2712	84.380	84.575
40	84.691	RTE!	0.234	1520	84.575	84.808
41	84.964	RTE!	0.234	290.00	84.847	85.081
42	85.217	RTE!	0.234	1950	85.081	85.314

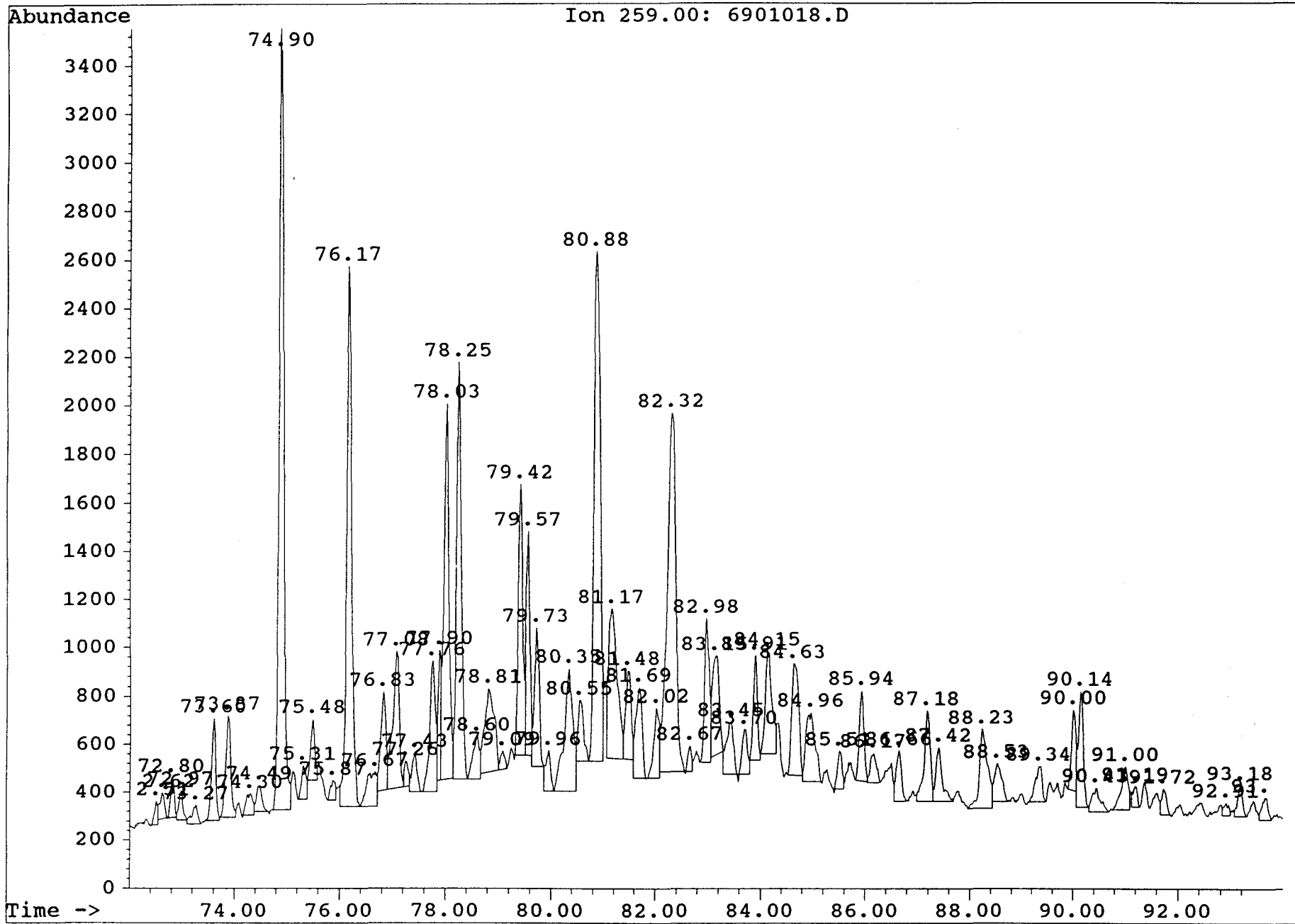
44	801	RTE!	0.273	537.00	85.665	85.937
45	86.112	RTE!	0.311	3994	85.937	86.249
46	86.424	RTE!	0.273	685.00	86.249	86.521
47	86.755	RTE!	0.350	4242	86.521	86.871
48	87.066	RTE!	0.428	6181	86.871	87.300
49	87.494	RTE!	0.156	425.00	87.416	87.572
50	87.942	RTE!	0.195	854.00	87.806	88.000
51	88.584	RTE!	0.311	3686	88.428	88.740
52	88.818	RTE!	0.195	2412	88.740	88.935
53	89.012	RTE!	0.234	1033	88.935	89.168
54	89.382	RTE!	0.273	3153	89.168	89.441
55	89.538	RTE!	0.195	2026	89.441	89.635
56	89.771	RTE!	0.234	3880	89.635	89.869
57	89.947	RTE!	0.195	2705	89.869	90.063
58	90.122	RTE!	0.156	1116	90.063	90.219
59	90.316	RTE!	0.195	1011	90.219	90.414
60	90.745	RTE!	0.195	461.00	90.608	90.803
61	91.017	RTE!	0.428	3162	90.803	91.231
62	91.367	RTE!	0.234	1317	91.231	91.465
63	91.601	RTE!	0.234	1184	91.465	91.698
64	91.990	RTE!	0.350	99.00	91.893	92.243
65	92.380	RTE!	0.389	1800	92.243	92.633
66	92.730	RTE!	0.156	254.00	92.633	92.788
67	92.886	RTE!	0.234	574.00	92.827	93.061
68	93.158	RTE!	0.234	426.00	93.061	93.294



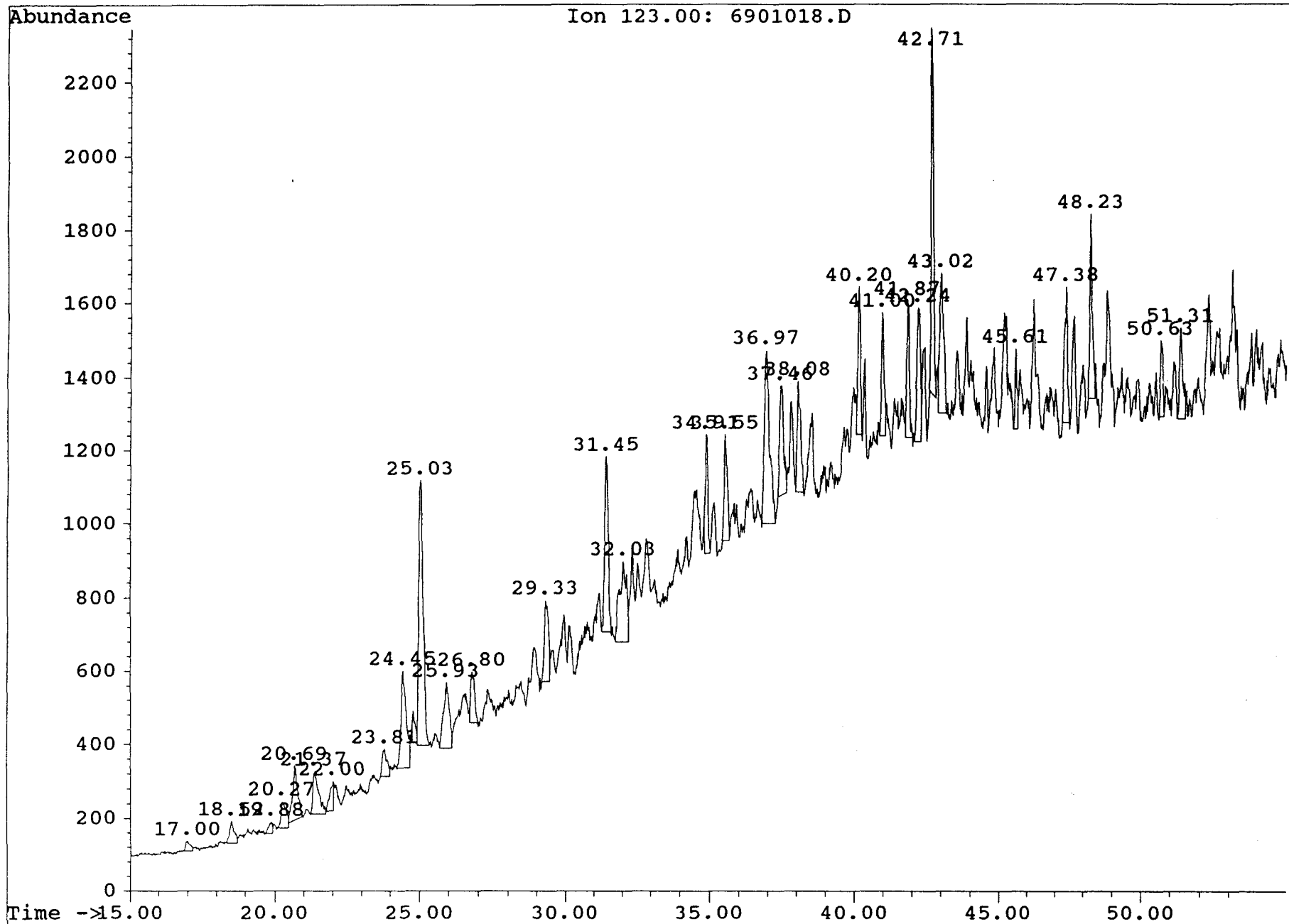


Peak#	Ret Time	Type	Width	Area	Start Time	End Time
1	72.507	RTE!	0.117	455.00	72.429	72.546
2	72.624	RTE!	0.156	617.00	72.546	72.701
3	72.799	RTE!	0.195	815.00	72.701	72.896
4	72.974	RTE!	0.195	302.00	72.896	73.091
5	73.266	RTE!	0.273	624.00	73.091	73.363
6	73.597	RTE!	0.273	2364	73.441	73.714
7	73.869	RTE!	0.311	2481	73.714	74.025
8	74.298	RTE!	0.234	805.00	74.142	74.375
9	74.492	RTE!	0.273	806.00	74.375	74.648
10	74.901	RTE!	0.350	19690	74.726	75.076
11	75.310	RTE!	0.156	344.00	75.232	75.388
12	75.485	RTE!	0.195	888.00	75.388	75.582
13	75.874	RTE!	0.156	527.00	75.777	75.933
14	76.166	RTE!	0.389	14320	76.010	76.400
15	76.672	RTE!	0.311	1331	76.400	76.711
16	76.828	RTE!	0.195	2864	76.711	76.906
17	77.081	RTE!	0.311	4624	76.906	77.217
18	77.256	RTE!	0.117	546.00	77.217	77.334
19	77.431	RTE!	0.234	583.00	77.334	77.568
20	77.762	RTE!	0.273	3354	77.568	77.840
21	77.898	RTE!	0.078	2217	77.840	77.918
22	78.035	RTE!	0.234	9601	77.918	78.151
23	78.249	RTE!	0.273	10285	78.151	78.424
24	78.599	RTE!	0.234	1564	78.424	78.658
25	78.813	RTE!	0.350	4503	78.658	79.008
26	79.086	RTE!	0.156	426.00	79.008	79.164
27	79.417	RTE!	0.195	6180	79.319	79.514
28	79.572	RTE!	0.117	4242	79.514	79.631
29	79.728	RTE!	0.234	2954	79.631	79.864
30	79.962	RTE!	0.195	1097	79.864	80.059
31	80.351	RTE!	0.428	5378	80.059	80.487
32	80.545	RTE!	0.234	1841	80.487	80.721
33	80.876	RTE!	0.273	17610	80.721	80.993
34	81.168	RTE!	0.311	6288	81.071	81.382
35	81.480	RTE!	0.195	2690	81.382	81.577
36	81.694	RTE!	0.273	2625	81.577	81.850
37	82.025	RTE!	0.234	2083	81.850	82.083
38	82.317	RTE!	0.467	16674	82.083	82.550
39	82.667	RTE!	0.156	518.00	82.550	82.706
40	82.979	RTE!	0.195	3820	82.862	83.056
41	83.154	RTE!	0.234	3641	83.056	83.290
42	83.446	RTE!	0.272	2125	83.290	83.562

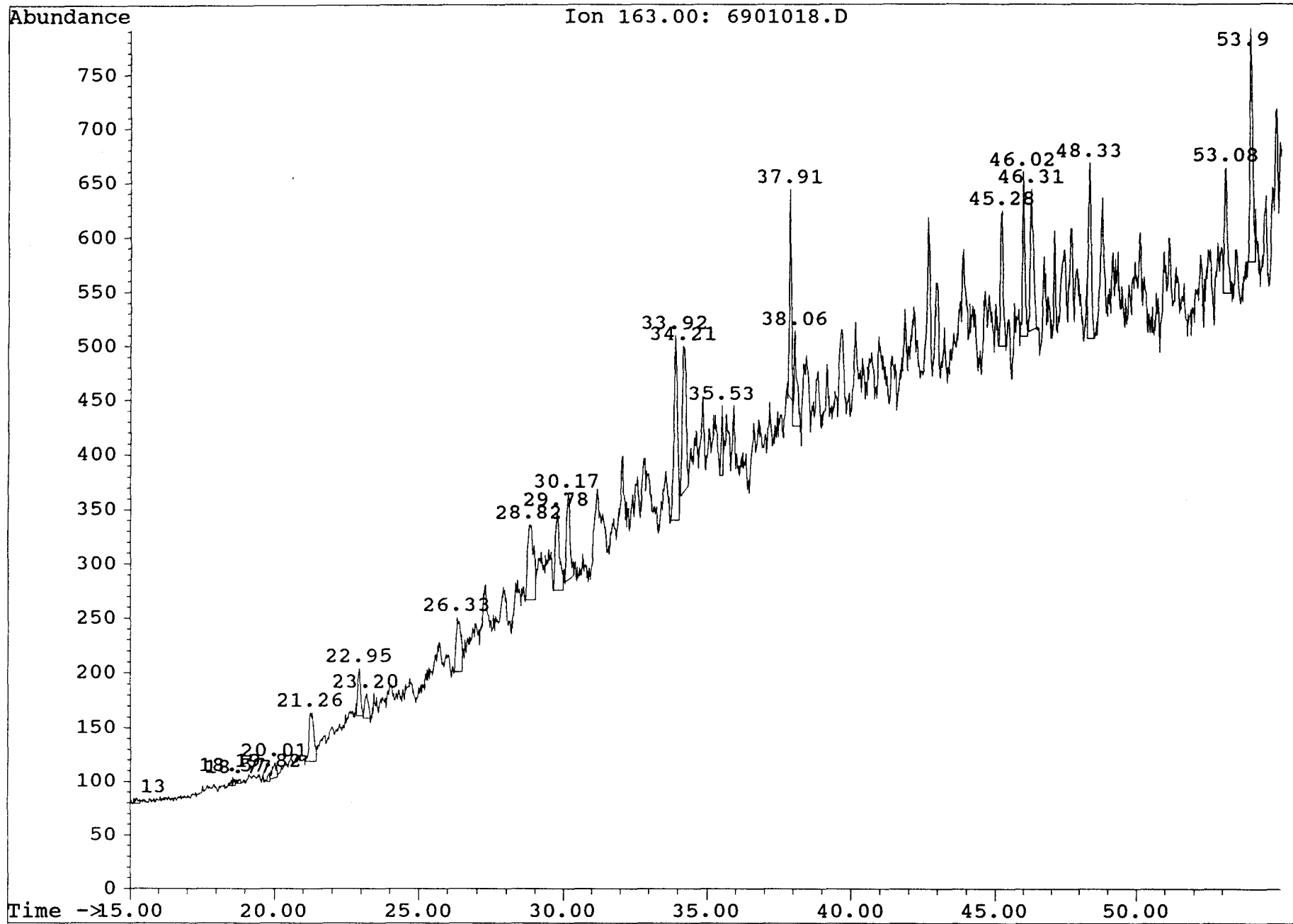
44	{ 913	RTE!	0.195	2311	.796	83.991
45	84.146	RTE!	0.311	3147	83.991	84.302
46	84.633	RTE!	0.273	3730	84.536	84.808
47	84.964	RTE!	0.350	3593	84.808	85.159
48	85.509	RTE!	0.195	961.00	85.392	85.587
49	85.937	RTE!	0.234	2345	85.820	86.054
50	86.171	RTE!	0.234	974.00	86.054	86.287
51	86.657	RTE!	0.234	1478	86.560	86.793
52	87.183	RTE!	0.311	3076	86.988	87.300
53	87.416	RTE!	0.389	1446	87.300	87.689
54	88.234	RTE!	0.467	3113	87.961	88.428
55	88.526	RTE!	0.311	1578	88.428	88.740
56	89.343	RTE!	0.311	878.00	89.168	89.480
57	90.005	RTE!	0.156	1929	89.908	90.063
58	90.141	RTE!	0.234	2701	90.063	90.297
59	90.433	RTE!	0.389	725.00	90.297	90.686
60	90.998	RTE!	0.311	1630	90.764	91.076
61	91.192	RTE!	0.156	475.00	91.114	91.270
62	91.718	RTE!	0.195	302.00	91.659	91.854
63	92.905	RTE!	0.156	338.00	92.827	92.983
64	93.178	RTE!	0.234	447.00	93.061	93.294
65	93.645	RTE!	0.234	778.00	93.528	93.762



Peak#	Ret Time	Type	Width	Area	Start Time	End Time
1	16.998	RTE!	0.350	325.00	16.823	17.173
2	18.515	RTE!	0.389	700.00	18.340	18.729
3	19.877	RTE!	0.233	294.00	19.702	19.935
4	20.266	RTE!	0.350	680.00	20.130	20.480
5	20.694	RTE!	0.506	1748	20.480	20.985
6	21.374	RTE!	0.545	1584	21.219	21.763
7	21.997	RTE!	0.272	368.00	21.763	22.036
8	23.805	RTE!	0.311	467.00	23.669	23.980
9	24.447	RTE!	0.428	2833	24.253	24.681
10	25.031	RTE!	0.428	6822	24.914	25.342
11	25.925	RTE!	0.428	2038	25.692	26.120
12	26.801	RTE!	0.350	706.00	26.703	27.053
13	29.329	RTE!	0.272	2220	29.193	29.465
14	31.449	RTE!	0.311	4090	31.293	31.604
15	32.032	RTE!	0.467	3801	31.760	32.227
16	34.911	RTE!	0.194	824.00	34.833	35.027
17	35.553	RTE!	0.233	2086	35.455	35.689
18	36.972	RTE!	0.467	5844	36.817	37.284
19	37.459	RTE!	0.311	3030	37.361	37.673
20	38.081	RTE!	0.311	1362	37.984	38.295
21	40.201	RTE!	0.195	2498	40.084	40.279
22	40.998	RTE!	0.195	601.00	40.901	41.096
23	41.874	RTE!	0.233	626.00	41.796	42.029
24	42.243	RTE!	0.233	3108	42.107	42.340
25	42.710	RTE!	0.233	4326	42.613	42.846
26	43.021	RTE!	0.311	2047	42.924	43.235
27	45.608	RTE!	0.156	1120	45.530	45.686
28	47.378	RTE!	0.272	1213	47.242	47.514
29	48.234	RTE!	0.233	1563	48.136	48.370
30	50.626	RTE!	0.194	1121	50.548	50.742
31	51.306	RTE!	0.272	2144	51.209	51.481

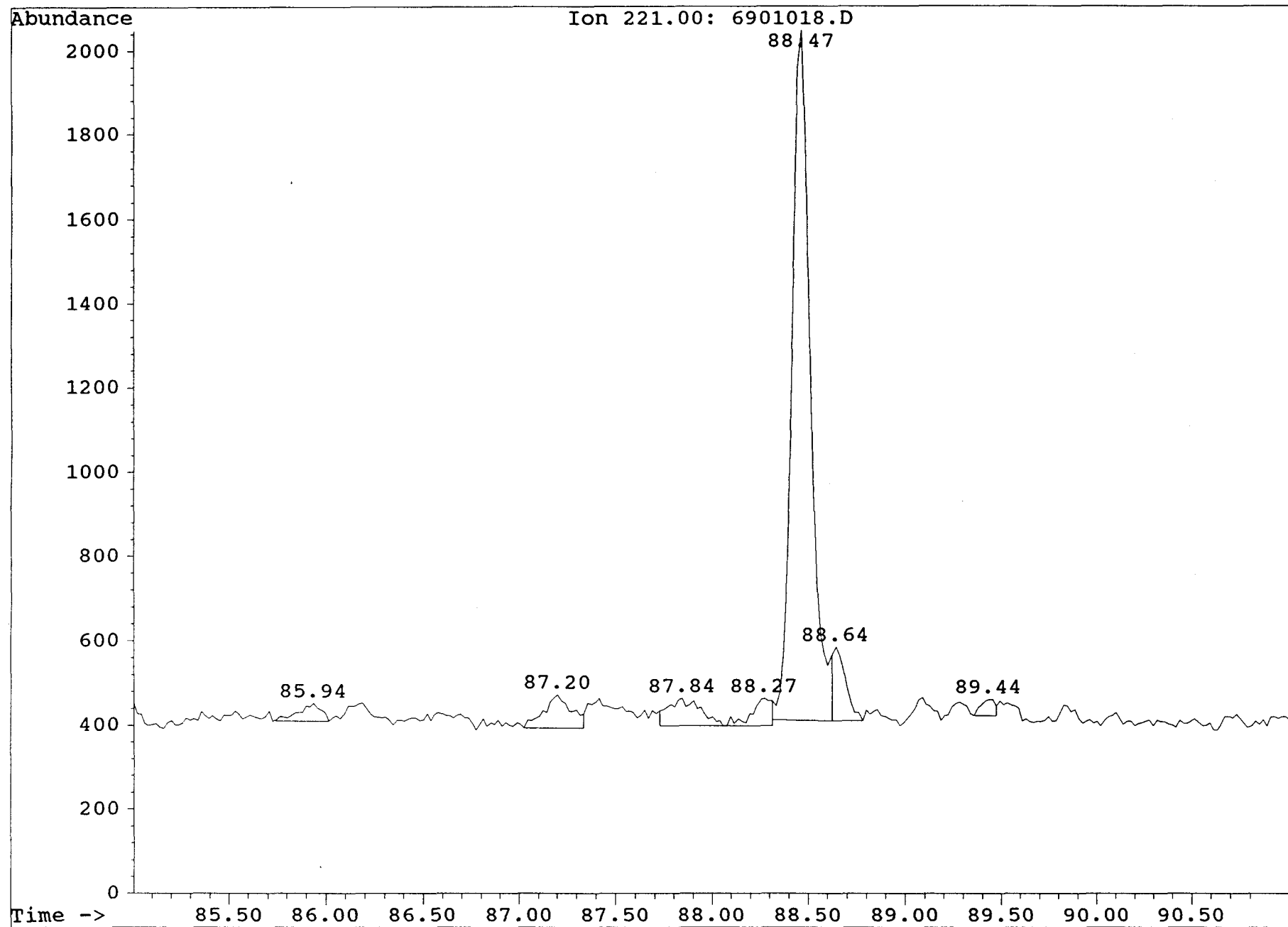


Peak#	Ret Time	Type	Width	Area	Start Time	End Time
1	15.131	RTE!	0.272	51.00	15.073	15.345
2	18.574	RTE!	0.233	47.00	18.418	18.651
3	18.768	RTE!	0.156	25.00	18.690	18.846
4	19.818	RTE!	0.117	37.00	19.741	19.857
5	20.013	RTE!	0.272	137.00	19.857	20.130
6	21.258	RTE!	0.350	541.00	21.102	21.452
7	22.950	RTE!	0.233	82.00	22.852	23.086
8	23.202	RTE!	0.233	191.00	23.086	23.319
9	26.334	RTE!	0.272	551.00	26.237	26.509
10	28.823	RTE!	0.350	991.00	28.687	29.037
11	29.776	RTE!	0.350	416.00	29.660	30.010
12	30.165	RTE!	0.311	312.00	30.049	30.360
13	33.919	RTE!	0.272	1465	33.783	34.055
14	34.211	RTE!	0.272	697.00	34.094	34.366
15	35.533	RTE!	0.117	264.00	35.455	35.572
16	37.906	RTE!	0.195	903.00	37.789	37.984
17	38.062	RTE!	0.272	102.00	37.984	38.256
18	45.277	RTE!	0.233	826.00	45.141	45.374
19	46.016	RTE!	0.233	278.00	45.919	46.152
20	46.308	RTE!	0.311	418.00	46.191	46.502
21	48.331	RTE!	0.233	1070	48.253	48.486
22	53.076	RTE!	0.272	851.00	52.960	53.232
23	53.952	RTE!	0.233	651.00	53.854	54.088



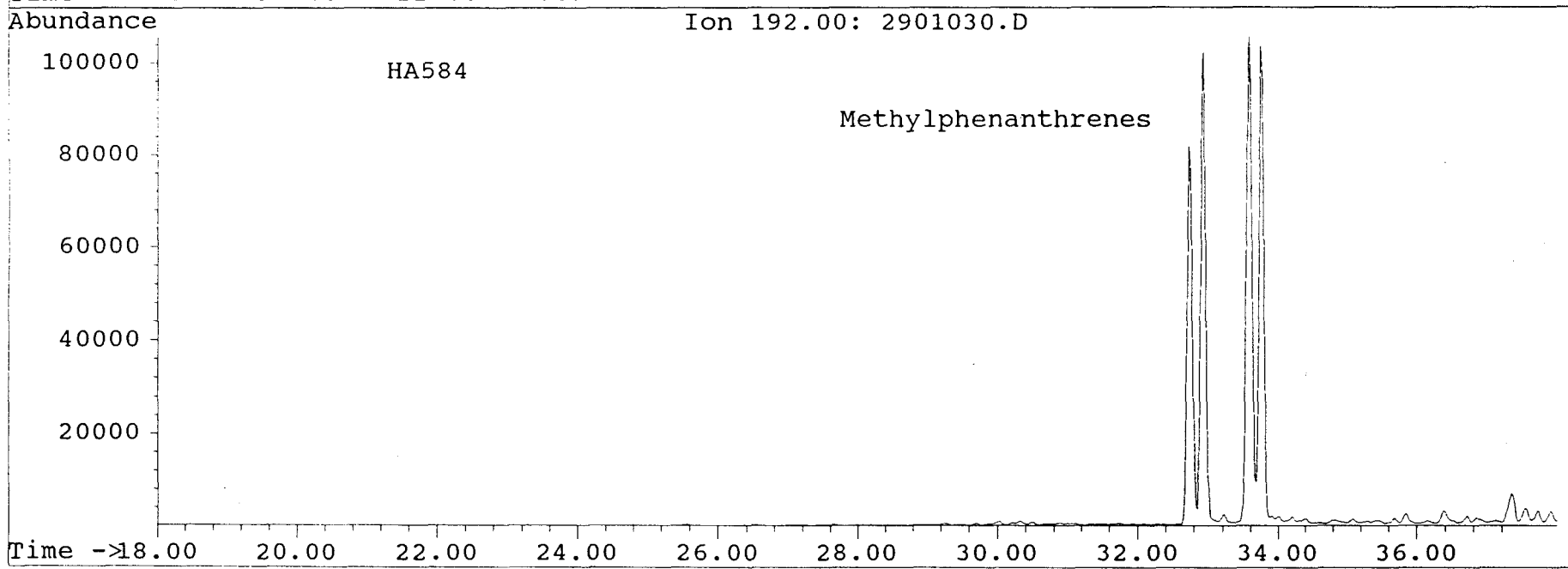
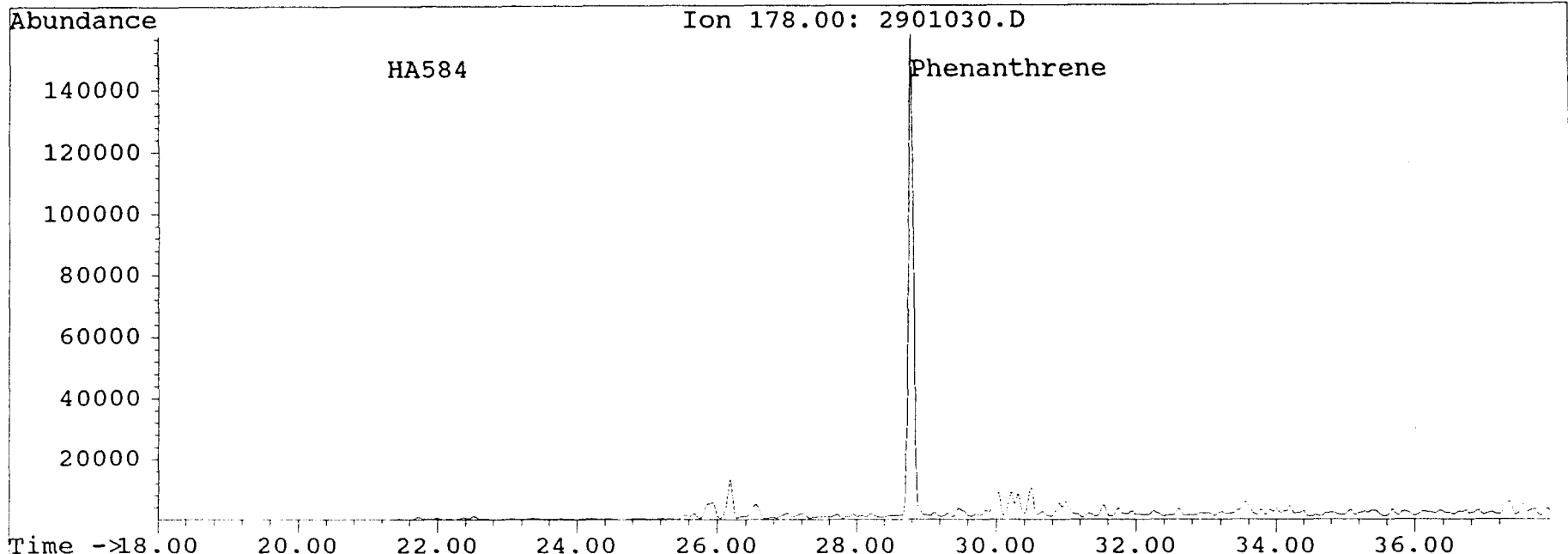


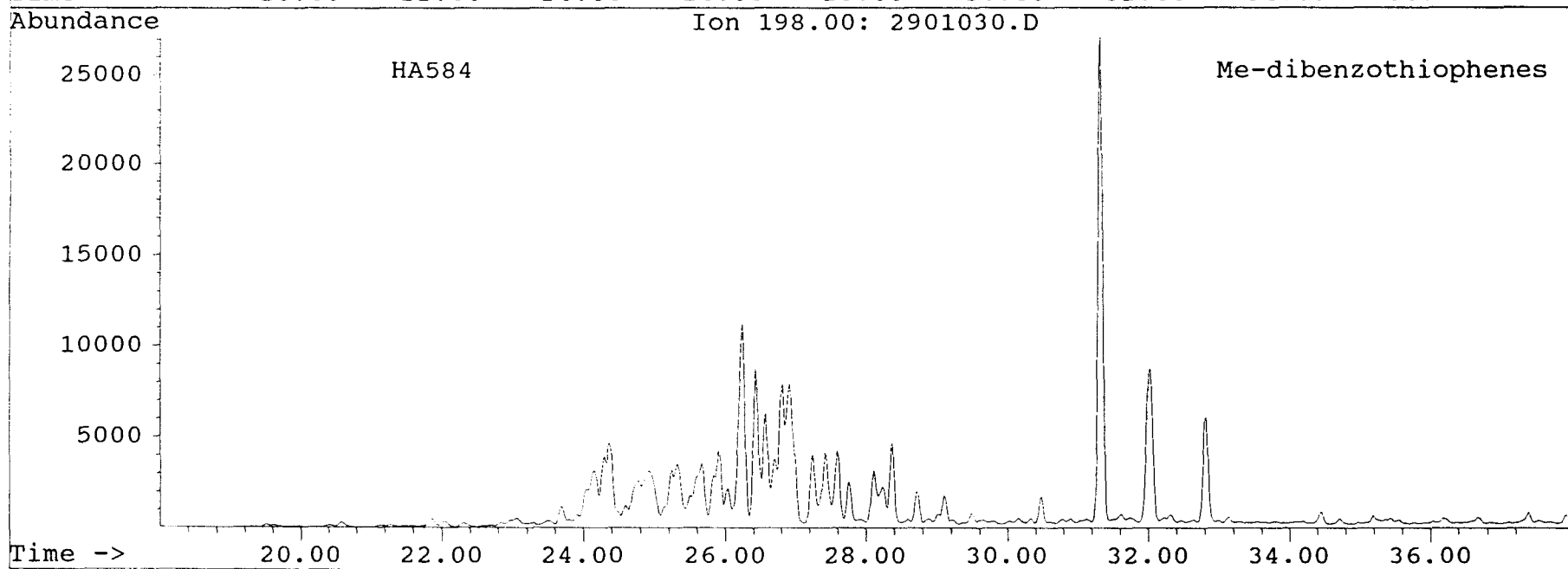
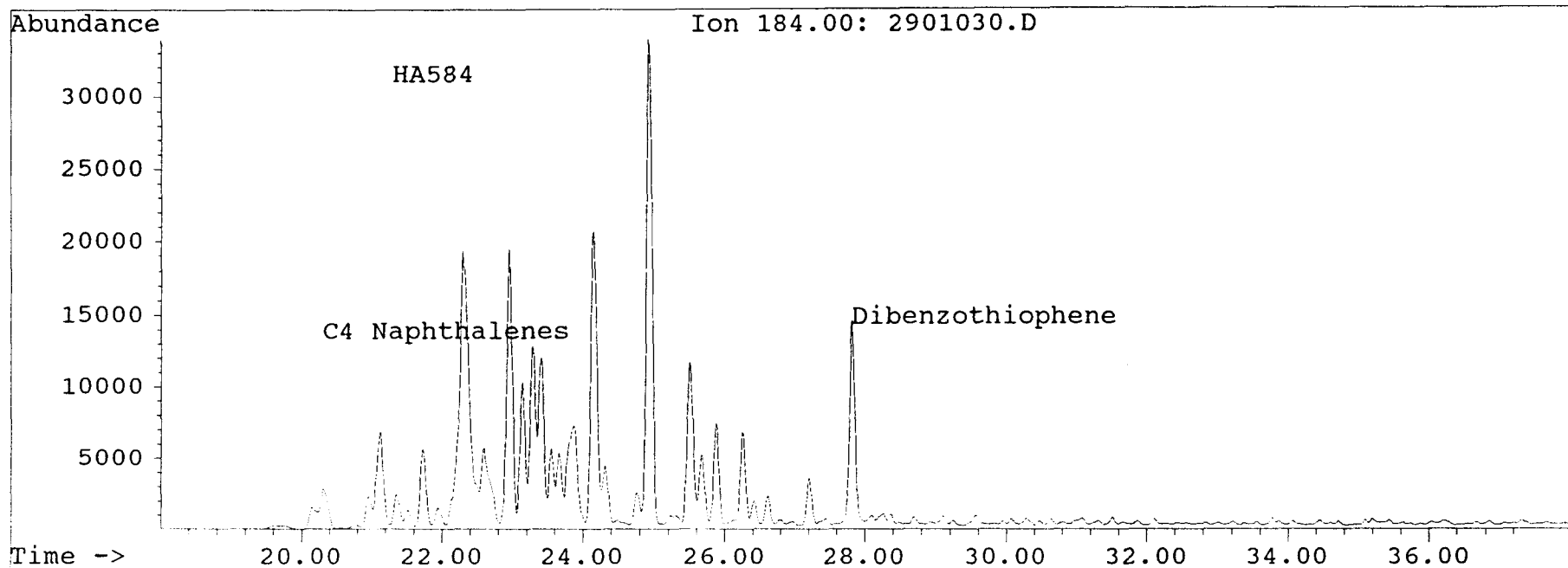
Peak#	Ret Time	Type	Width	Area	Start Time	End Time
1	85.937	RTE!	0.273	344.00	85.742	86.015
2	87.202	RTE!	0.311	302.00	87.027	87.338
3	87.845	RTE!	0.350	741.00	87.728	88.078
4	88.273	RTE!	0.234	486.00	88.078	88.312
5	88.467	RTE!	0.311	10501	88.312	88.623
6	88.643	RTE!	0.156	214.00	88.623	88.779
7	89.441	RTE!	0.117	206.00	89.363	89.480

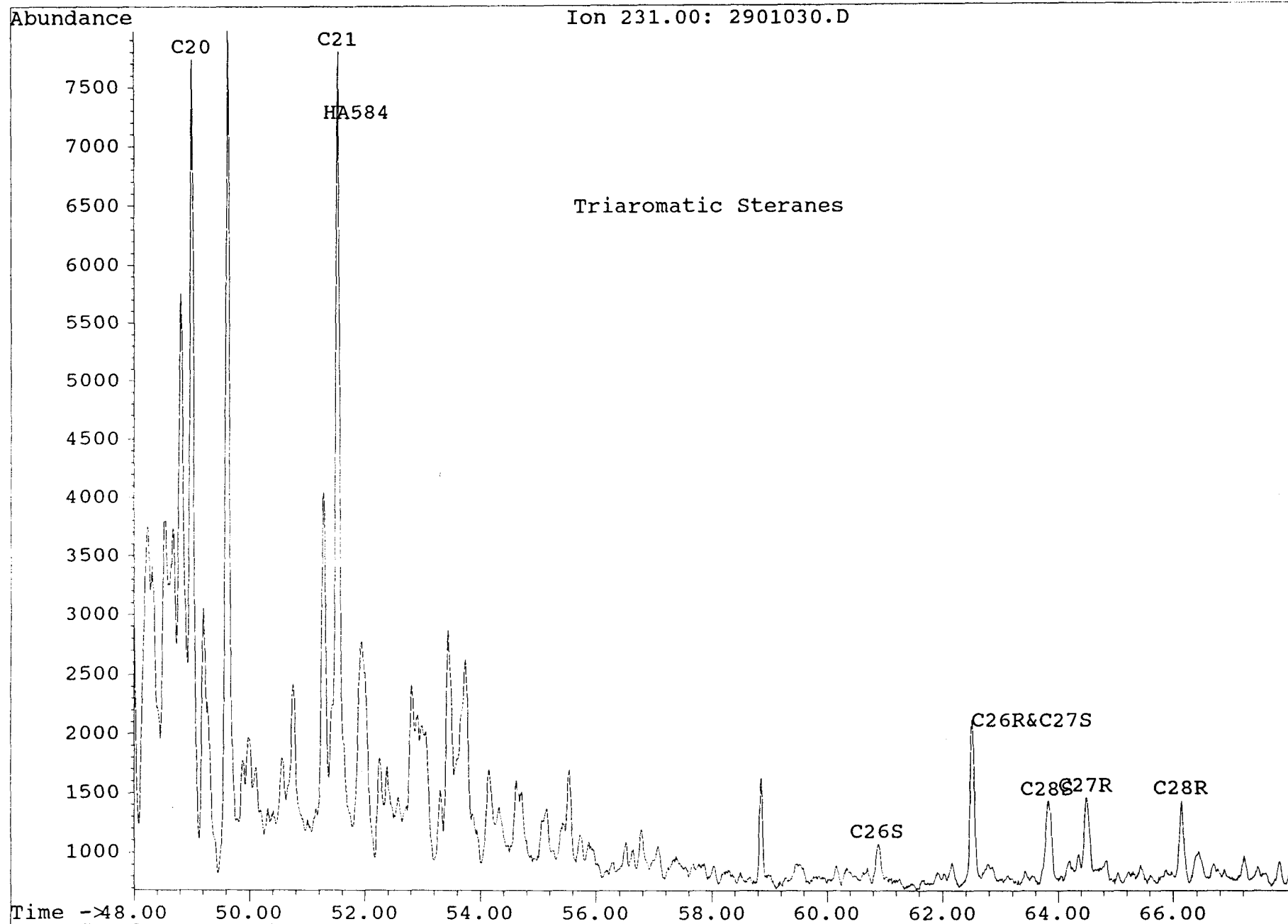


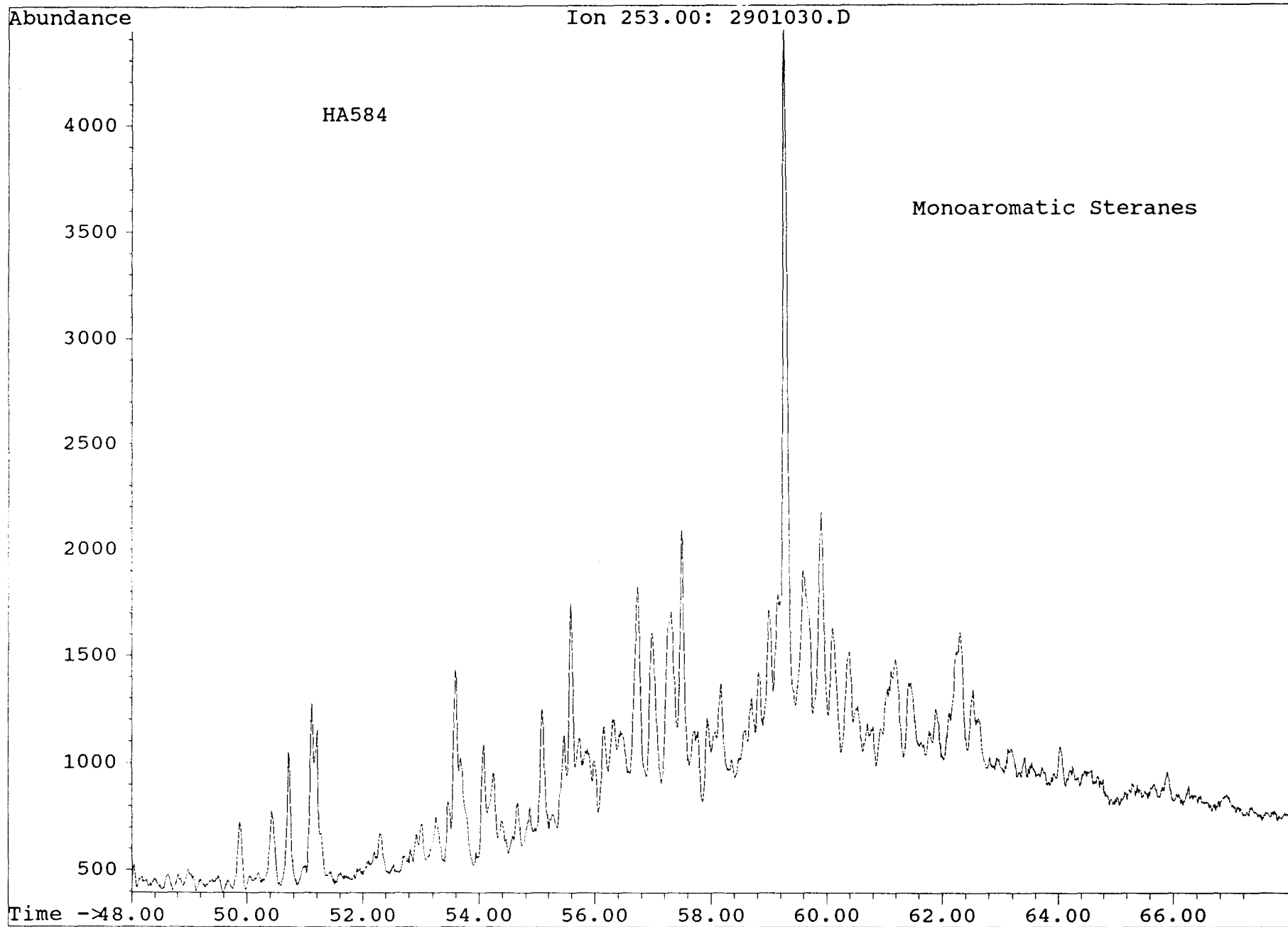
## **APPENDIX C**

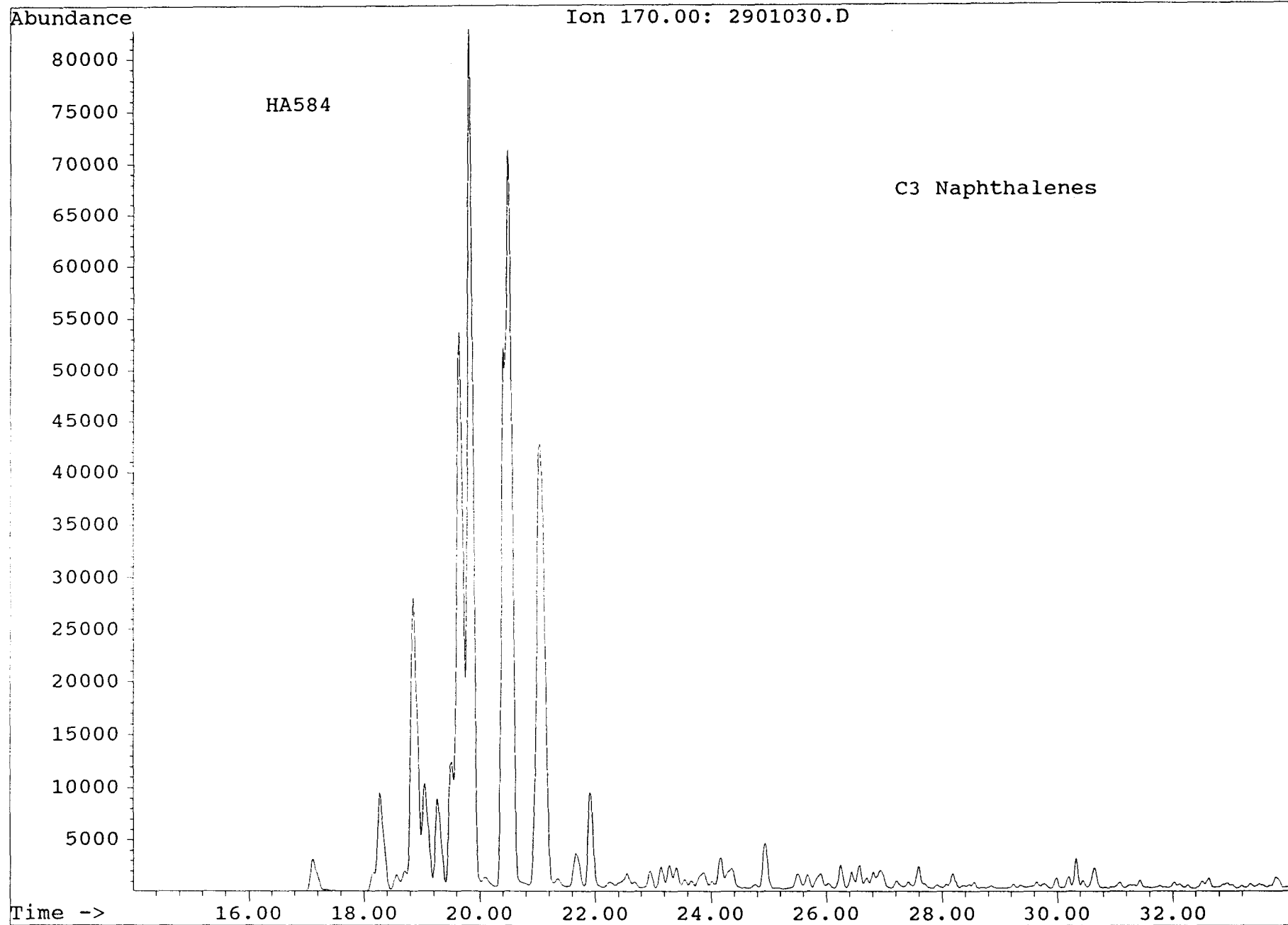
**C15+ Aromatic Biomarker Mass Fragmentograms and Peak Areas**





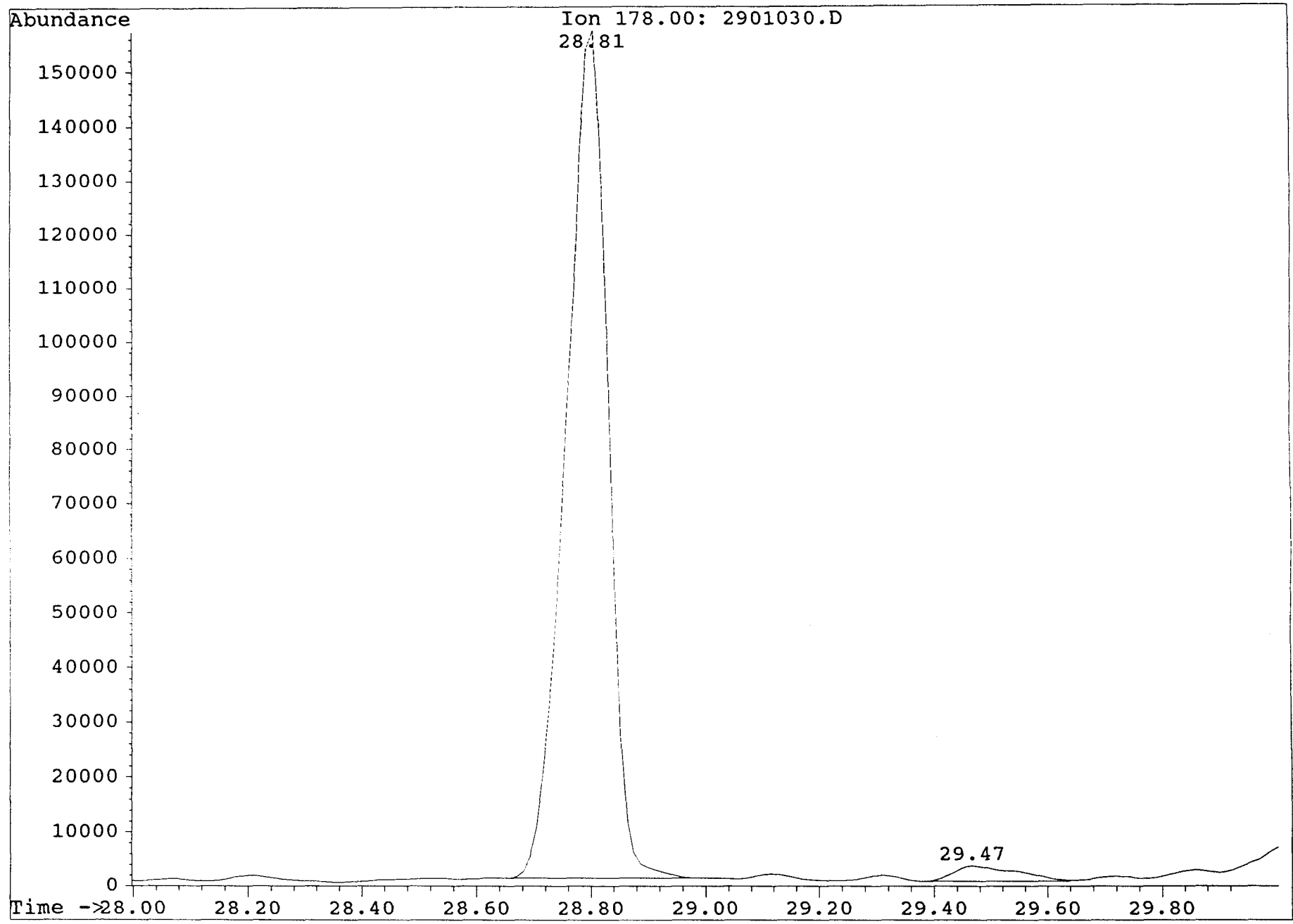




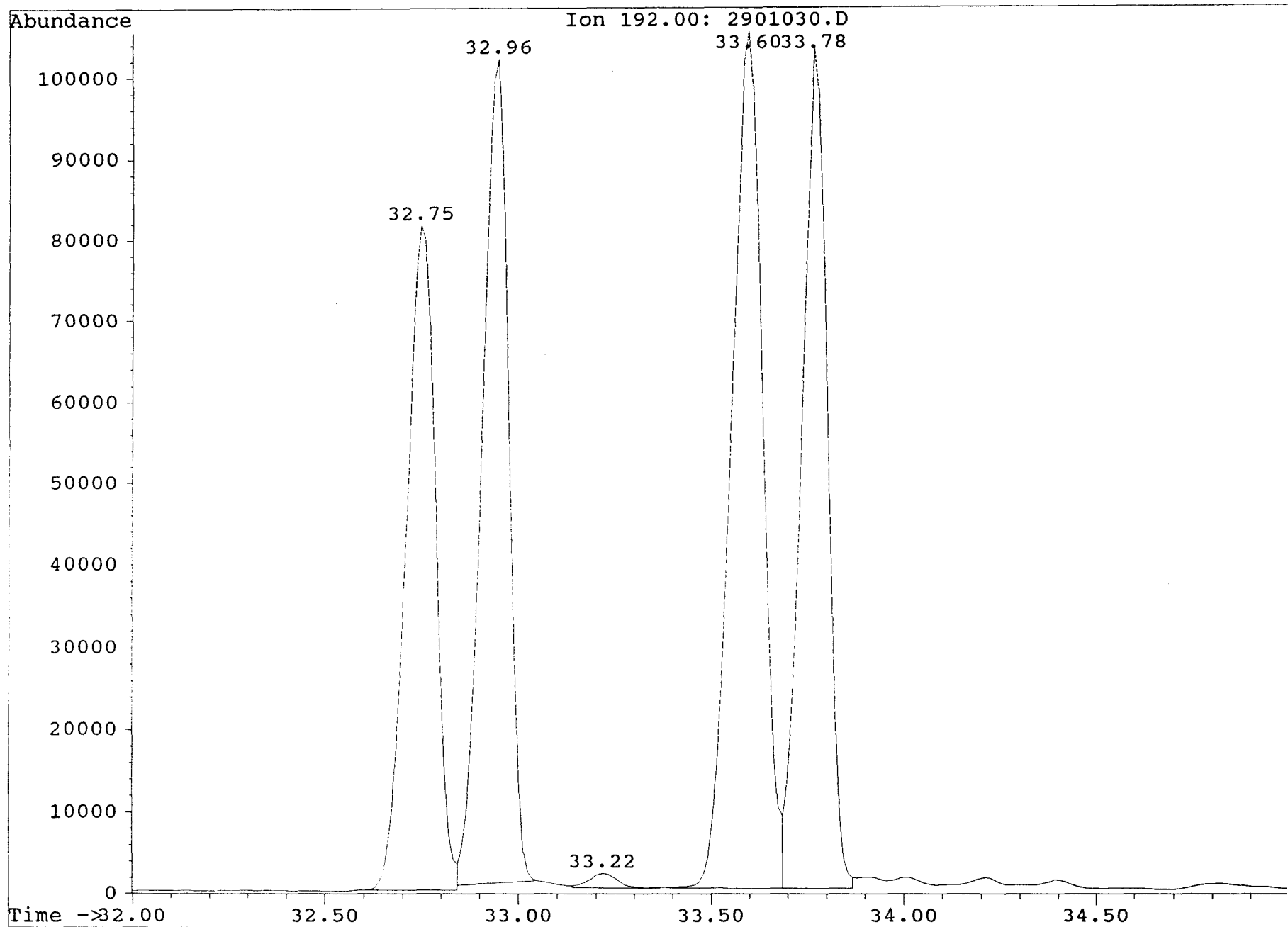




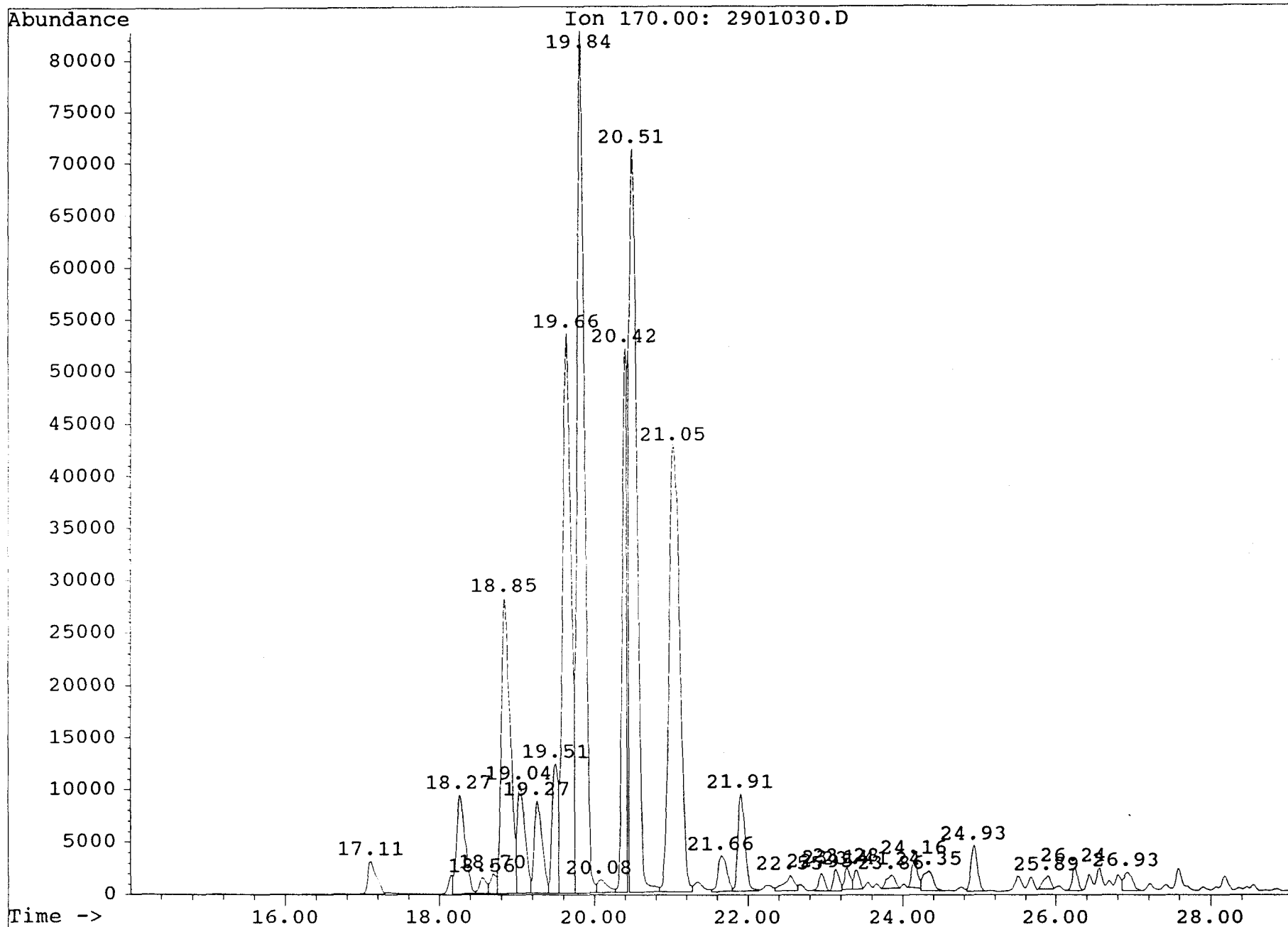
Peak#	Ret Time	Type	Width	Area	Start Time	End Time
1	28.807	RTE!	0.342	793198	28.659	29.001
2	29.468	RTE!	0.251	22154	29.388	29.639



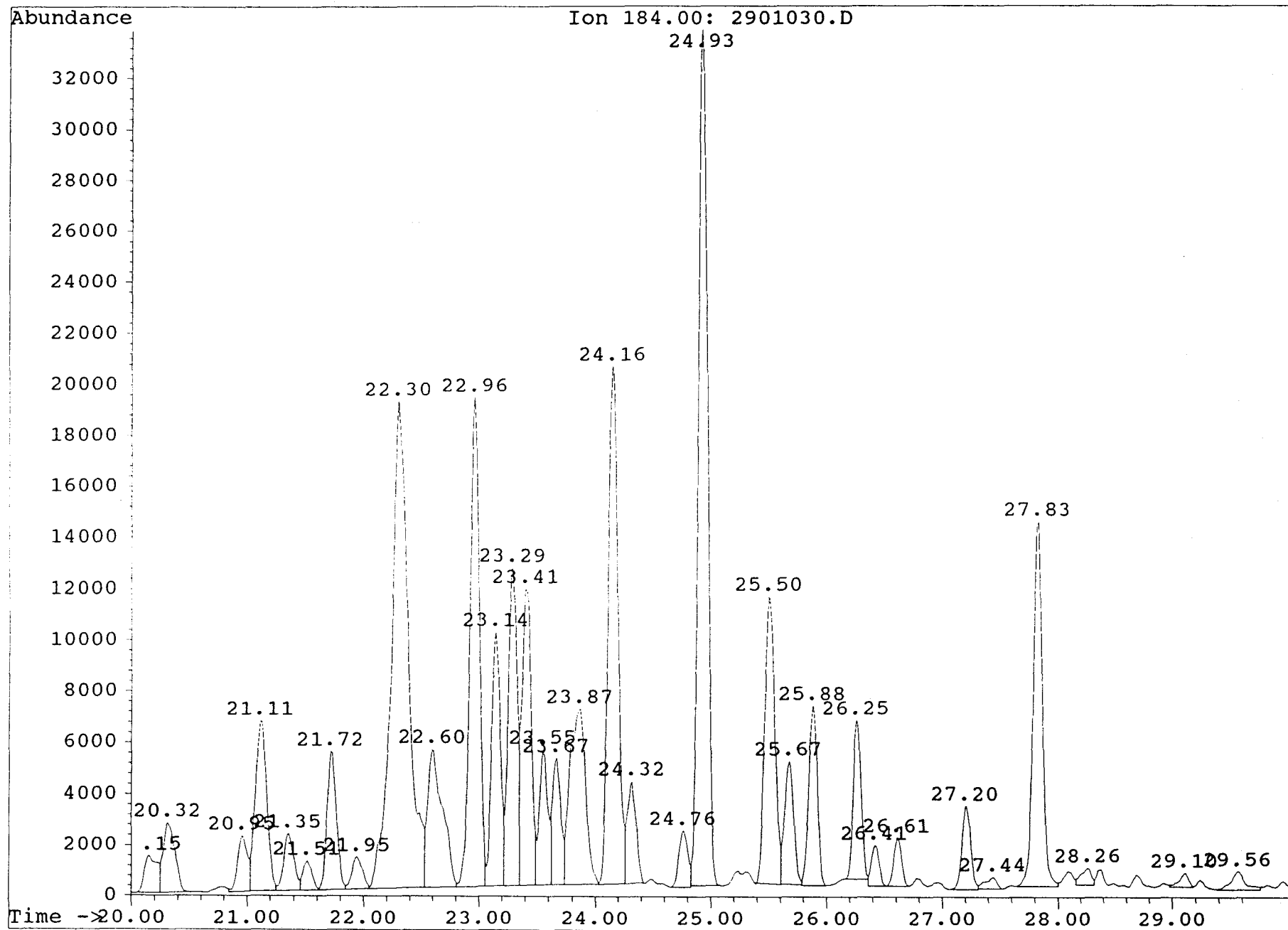
Peak#	Ret Time	Type	Width	Area	Start Time	End Time
1	32.750	RTE!	0.251	431115	32.590	32.841
2	32.955	RTE!	0.205	480920	32.841	33.046
3	33.217	RTE!	0.228	9536	33.137	33.365
4	33.605	RTE!	0.296	586451	33.388	33.684
5	33.776	RTE!	0.182	476685	33.684	33.867



Peak#	Ret Time	Type	Width	Area	Start Time	End Time
1	17.114	RTE!	0.296	24119	16.989	17.285
2	18.265	RTE!	0.296	71861	18.174	18.470
3	18.561	RTE!	0.160	9107	18.470	18.630
4	18.698	RTE!	0.114	9162	18.630	18.744
5	18.846	RTE!	0.251	220629	18.744	18.995
6	19.040	RTE!	0.182	69618	18.995	19.177
7	19.268	RTE!	0.228	63267	19.177	19.405
8	19.507	RTE!	0.137	68625	19.405	19.542
9	19.656	RTE!	0.205	398429	19.542	19.747
10	19.838	RTE!	0.274	553753	19.747	20.020
11	20.077	RTE!	0.251	11231	20.020	20.271
12	20.419	RTE!	0.160	215990	20.271	20.431
13	20.510	RTE!	0.387	478034	20.453	20.841
14	21.046	RTE!	0.433	416795	20.841	21.274
15	21.661	RTE!	0.274	27244	21.525	21.798
16	21.912	RTE!	0.342	58669	21.798	22.140
17	22.550	RTE!	0.296	12796	22.345	22.641
18	22.949	RTE!	0.205	8391	22.847	23.052
19	23.143	RTE!	0.160	10586	23.052	23.211
20	23.280	RTE!	0.137	9655	23.211	23.348
21	23.405	RTE!	0.137	8732	23.348	23.485
22	23.861	RTE!	0.251	9082	23.713	23.963
23	24.157	RTE!	0.182	13556	24.055	24.237
24	24.351	RTE!	0.296	16668	24.237	24.533
25	24.932	RTE!	0.251	25783	24.830	25.080
26	25.889	RTE!	0.205	8957	25.764	25.969
27	26.243	RTE!	0.205	10645	26.129	26.334
28	26.926	RTE!	0.251	12781	26.858	27.109

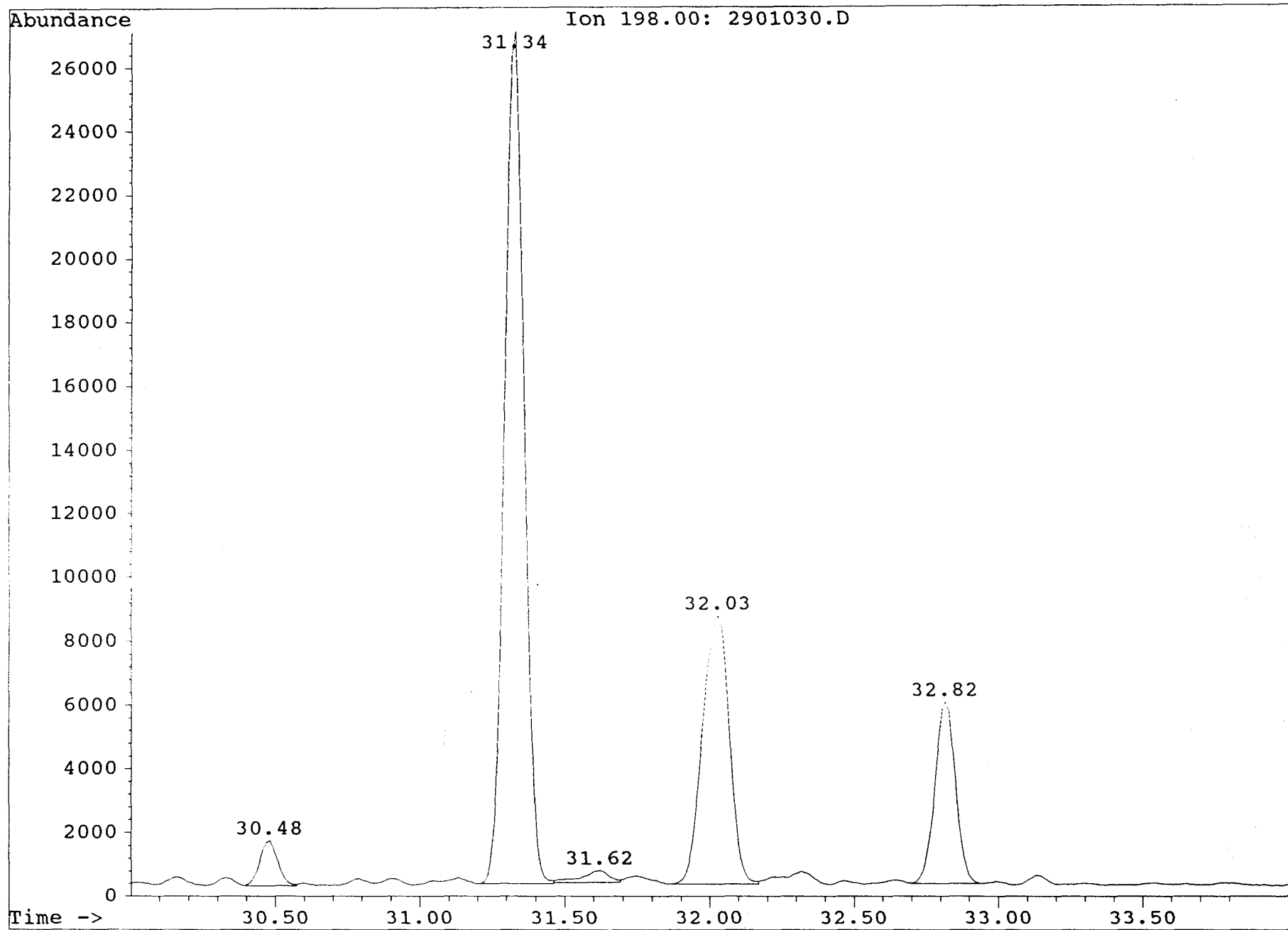


Peak#	Ret Time	Type	Width	Area	Start Time	End Time
1	20.146	RTE!	0.205	10905	20.043	20.248
2	20.317	RTE!	0.274	18775	20.248	20.522
3	20.955	RTE!	0.182	12426	20.841	21.023
4	21.114	RTE!	0.228	46014	21.023	21.251
5	21.354	RTE!	0.205	13552	21.251	21.456
6	21.513	RTE!	0.160	6013	21.456	21.616
7	21.718	RTE!	0.228	30937	21.616	21.844
8	21.946	RTE!	0.205	8127	21.844	22.049
9	22.300	RTE!	0.479	193563	22.049	22.527
10	22.596	RTE!	0.274	47748	22.527	22.801
11	22.961	RTE!	0.251	110324	22.801	23.052
12	23.143	RTE!	0.160	53122	23.052	23.211
13	23.291	RTE!	0.137	67490	23.211	23.348
14	23.405	RTE!	0.137	63079	23.348	23.485
15	23.553	RTE!	0.137	26811	23.485	23.621
16	23.667	RTE!	0.114	22510	23.621	23.735
17	23.872	RTE!	0.296	64450	23.735	24.032
18	24.157	RTE!	0.228	118516	24.032	24.260
19	24.317	RTE!	0.160	20471	24.260	24.419
20	24.761	RTE!	0.182	11415	24.647	24.830
21	24.932	RTE!	0.251	184148	24.830	25.080
22	25.502	RTE!	0.228	68391	25.377	25.604
23	25.673	RTE!	0.182	25624	25.604	25.787
24	25.878	RTE!	0.205	36184	25.787	25.992
25	26.254	RTE!	0.205	29565	26.151	26.357
26	26.414	RTE!	0.160	7441	26.357	26.516
27	26.607	RTE!	0.205	8853	26.516	26.721
28	27.200	RTE!	0.251	16995	27.063	27.314
29	27.439	RTE!	0.205	3053	27.314	27.519
30	27.827	RTE!	0.365	76013	27.633	27.998
31	28.260	RTE!	0.160	3498	28.157	28.317
32	29.103	RTE!	0.205	3085	28.978	29.183
33	29.559	RTE!	0.365	6100	29.388	29.753



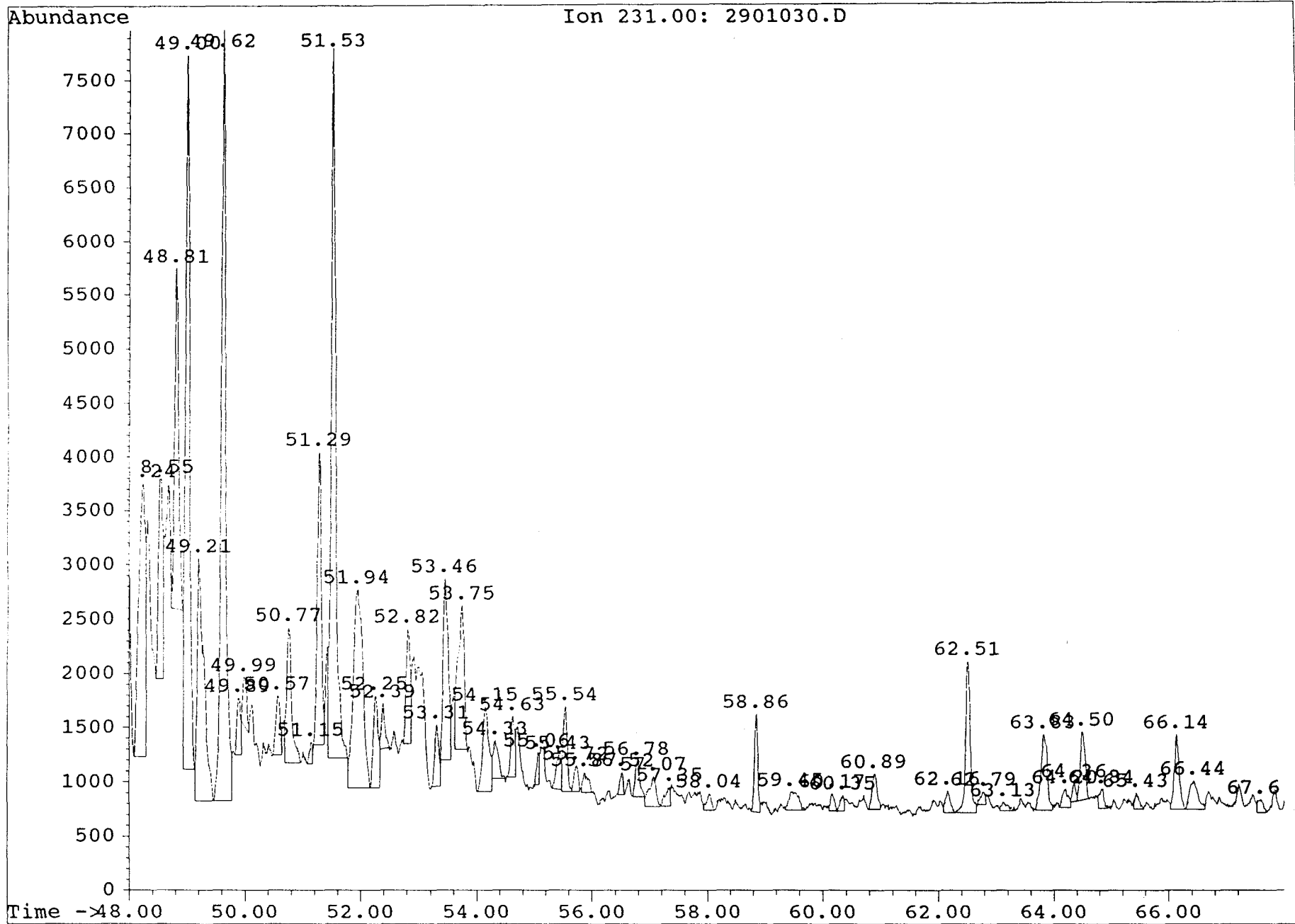


Peak#	Ret Time	Type	Width	Area	Start Time	End Time
1	30.482	RTE!	0.182	5814	30.391	30.573
2	31.337	RTE!	0.251	126080	31.212	31.462
3	31.622	RTE!	0.228	2202	31.462	31.690
4	32.032	RTE!	0.296	53837	31.873	32.169
5	32.818	RTE!	0.251	27843	32.693	32.944



Peak#	Ret Time	Type	Width	Area	Start Time	End Time
1	48.238	RTE!	0.205	18606	48.089	48.294
2	48.545	RTE!	0.137	10243	48.454	48.591
3	48.807	RTE!	0.205	13596	48.727	48.933
4	49.001	RTE!	0.205	32231	48.933	49.138
5	49.206	RTE!	0.319	18303	49.138	49.457
6	49.616	RTE!	0.319	38550	49.457	49.776
7	49.890	RTE!	0.114	1154	49.822	49.935
8	49.993	RTE!	0.137	1214	49.935	50.072
9	50.574	RTE!	0.160	1963	50.483	50.642
10	50.767	RTE!	0.274	7559	50.688	50.961
11	51.155	RTE!	0.091	644.00	51.075	51.166
12	51.292	RTE!	0.182	12400	51.189	51.371
13	51.531	RTE!	0.342	34710	51.440	51.782
14	51.941	RTE!	0.387	20912	51.782	52.169
15	52.249	RTE!	0.160	4056	52.169	52.329
16	52.386	RTE!	0.182	940.00	52.329	52.511
17	52.819	RTE!	0.137	3990	52.739	52.876
18	53.309	RTE!	0.160	1991	53.217	53.377
19	53.457	RTE!	0.182	10635	53.377	53.559
20	53.753	RTE!	0.228	8965	53.628	53.856
21	54.152	RTE!	0.251	5327	54.015	54.266
22	54.334	RTE!	0.251	1579	54.266	54.517
23	54.631	RTE!	0.137	2752	54.539	54.676
24	55.064	RTE!	0.091	935.00	54.995	55.086
25	55.428	RTE!	0.160	1160	55.314	55.474
26	55.542	RTE!	0.182	3240	55.474	55.656
27	55.725	RTE!	0.137	1178	55.656	55.793
28	55.873	RTE!	0.182	1294	55.816	55.998
29	56.522	RTE!	0.114	751.00	56.454	56.568
30	56.785	RTE!	0.205	1740	56.705	56.910
31	57.069	RTE!	0.274	1820	56.910	57.183
32	57.354	RTE!	0.182	1186	57.183	57.366
33	58.038	RTE!	0.182	869.00	57.935	58.118
34	58.859	RTE!	0.160	3627	58.756	58.916
35	59.451	RTE!	0.342	1430	59.349	59.690
36	60.169	RTE!	0.137	730.00	60.101	60.237
37	60.351	RTE!	0.137	653.00	60.237	60.374
38	60.887	RTE!	0.205	2010	60.785	60.990
39	62.163	RTE!	0.182	1167	62.084	62.266
40	62.505	RTE!	0.387	8060	62.266	62.653
41	62.790	RTE!	0.160	633.00	62.653	62.813
42	63.132	RTE!	0.274	648.00	63.064	63.337

43	6 827	RTE!	0.296	5420	67.679	63.975
44	6 203	RTE!	0.205	650.00	64.089	64.294
45	64.363	RTE!	0.114	678.00	64.294	64.408
46	64.499	RTE!	0.205	3748	64.408	64.613
47	64.841	RTE!	0.182	931.00	64.773	64.955
48	65.434	RTE!	0.160	728.00	65.388	65.548
49	66.141	RTE!	0.251	4021	66.027	66.277
50	66.437	RTE!	0.342	2728	66.277	66.619
51	67.599	RTE!	0.160	717.00	67.531	67.690



Peak#	Ret Time	Type	Width	Area	Start Time	End Time
1	48.614	RTE!	0.182	427.00	48.522	48.705
2	48.978	RTE!	0.228	830.00	48.887	49.115
3	49.867	RTE!	0.228	1483	49.753	49.981
4	50.425	RTE!	0.274	1913	50.300	50.574
5	50.710	RTE!	0.296	3062	50.574	50.870
6	51.109	RTE!	0.114	3258	51.030	51.143
7	52.294	RTE!	0.205	1072	52.238	52.443
8	53.001	RTE!	0.114	628.00	52.967	53.081
9	53.263	RTE!	0.251	1124	53.149	53.400
10	53.468	RTE!	0.114	1224	53.400	53.514
11	53.594	RTE!	0.137	3252	53.514	53.651
12	54.084	RTE!	0.160	2344	53.992	54.152
13	54.255	RTE!	0.160	1985	54.175	54.334
14	54.380	RTE!	0.182	542.00	54.334	54.517
15	54.665	RTE!	0.137	773.00	54.608	54.745
16	54.881	RTE!	0.182	456.00	54.745	54.927
17	55.086	RTE!	0.205	2795	54.995	55.200
18	55.257	RTE!	0.137	369.00	55.200	55.337
19	55.463	RTE!	0.182	1833	55.337	55.519
20	55.588	RTE!	0.137	3266	55.519	55.656
21	55.987	RTE!	0.114	389.00	55.953	56.066
22	56.158	RTE!	0.160	2289	56.066	56.226
23	56.317	RTE!	0.137	448.00	56.249	56.386
24	56.739	RTE!	0.274	5792	56.614	56.887
25	56.990	RTE!	0.251	4675	56.887	57.138
26	57.320	RTE!	0.251	7200	57.161	57.411
27	57.502	RTE!	0.228	5091	57.411	57.639
28	57.947	RTE!	0.137	1897	57.867	58.004
29	58.163	RTE!	0.160	1990	58.118	58.277
30	58.596	RTE!	0.114	635.00	58.505	58.619
31	58.699	RTE!	0.137	1170	58.619	58.756
32	58.824	RTE!	0.137	680.00	58.756	58.893
33	58.995	RTE!	0.160	2314	58.916	59.075
34	59.155	RTE!	0.114	3284	59.075	59.189
35	59.292	RTE!	0.274	17599	59.189	59.463
36	59.599	RTE!	0.228	5872	59.531	59.759
37	59.907	RTE!	0.228	5026	59.804	60.032
38	60.101	RTE!	0.228	3432	60.032	60.260
39	60.397	RTE!	0.205	3340	60.260	60.465
40	60.933	RTE!	0.091	582.00	60.876	60.967
41	61.457	RTE!	0.251	1834	61.354	61.605
42	62.300	RTE!	0.251	4897	62.175	62.426

43 . 6 528 RTE! 0.137 1259 .448 62.585

