Technical Report on the

SURFACE CHEMICAL CHARACTERIZATION OF SPHALERITE GRAINS FROM VANGORDA AND FARO

for

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SSW/PMS/90/21

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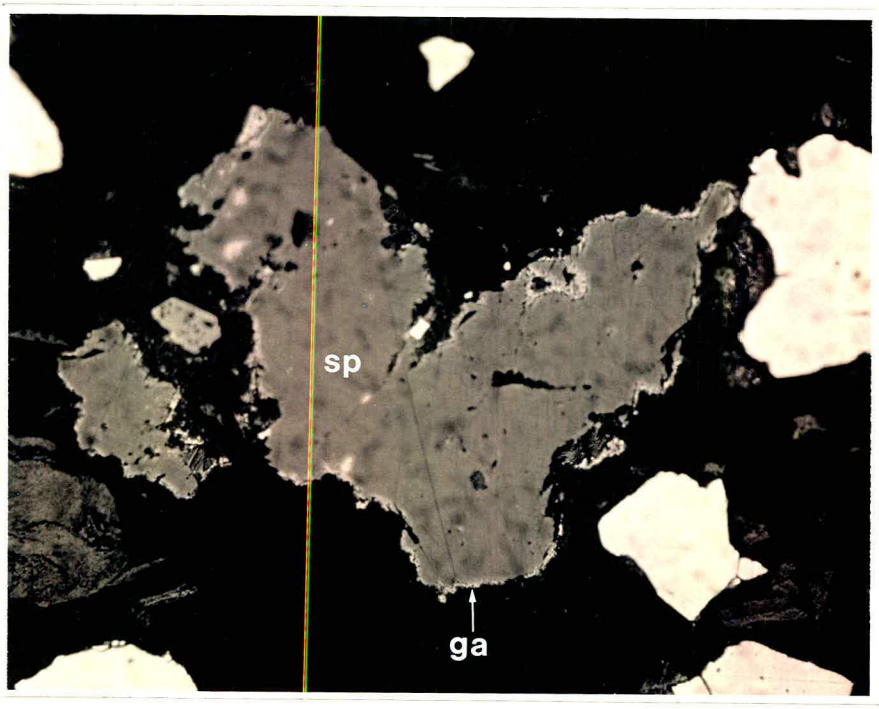
SUMMARY

The presence of Cu, Pb, Fe, As, Sb and Ba on the surface of liberated sphalerite grains from the Vangorda 'cap' rock was determined by laser probe microanalysis. On the surface of the sphalerite from Faro Pb, Fe, Mn, Sb and Ba were detected.

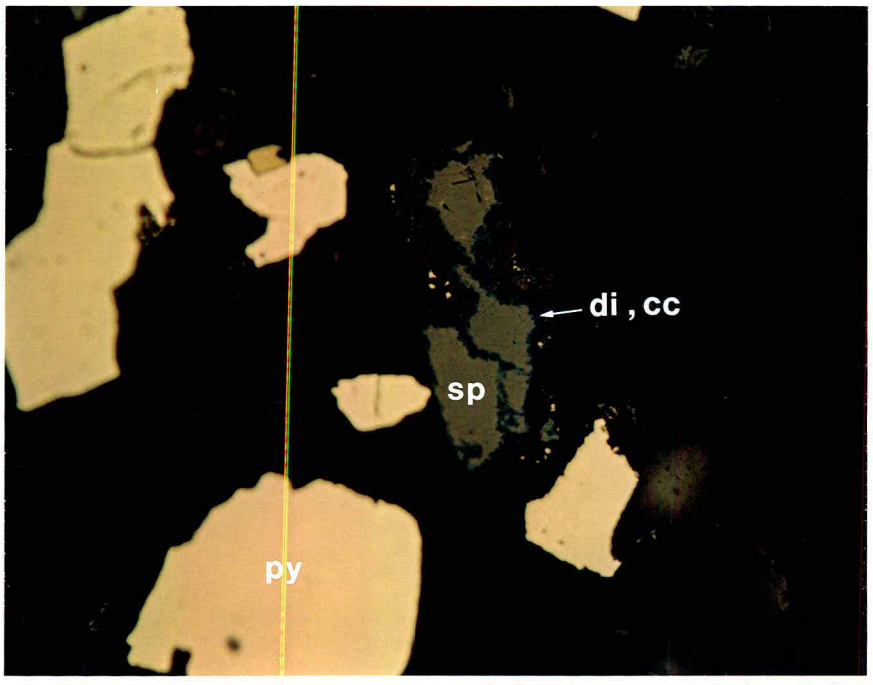
After grinding, the Cu, Pb and Fe surface concentrations on the sphalerite from the Vangorda 'cap' rock increased considerably.

The partial oxidation of the Vangorda 'cap' rock caused to some degree preactivation of sphalerite by Cu and Pb. Extreme cases are shown in Plate 1. The oxidation also produced the following mineral phases chalcocite, digenite, covellite, anglesite and most probably p-type galena, Plate 2. These phases during grinding release additional Cu and Pb leading to further preactivation. Of these minerals chalcocite and digenite are soluble in cyanide.

The presence of a surface layer enriched in Fe and Mn on Faro sphalerite grains from the zinc tailings is shown in the series of three LIMA spectra representing progressively deeper layers.

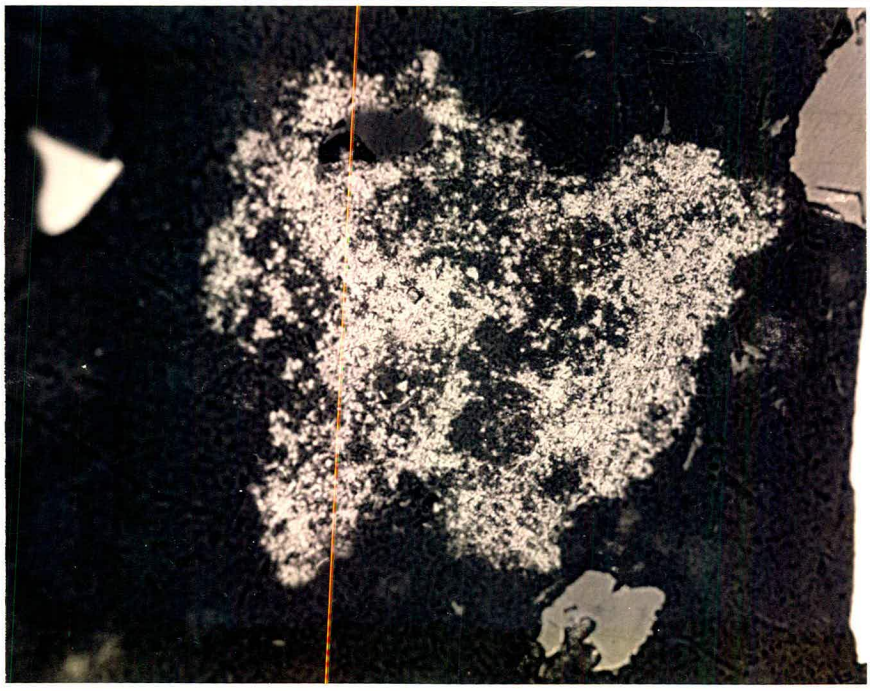


Sphalerite grain with galena coating (white). This is an extreme case of preactivation with Pb.

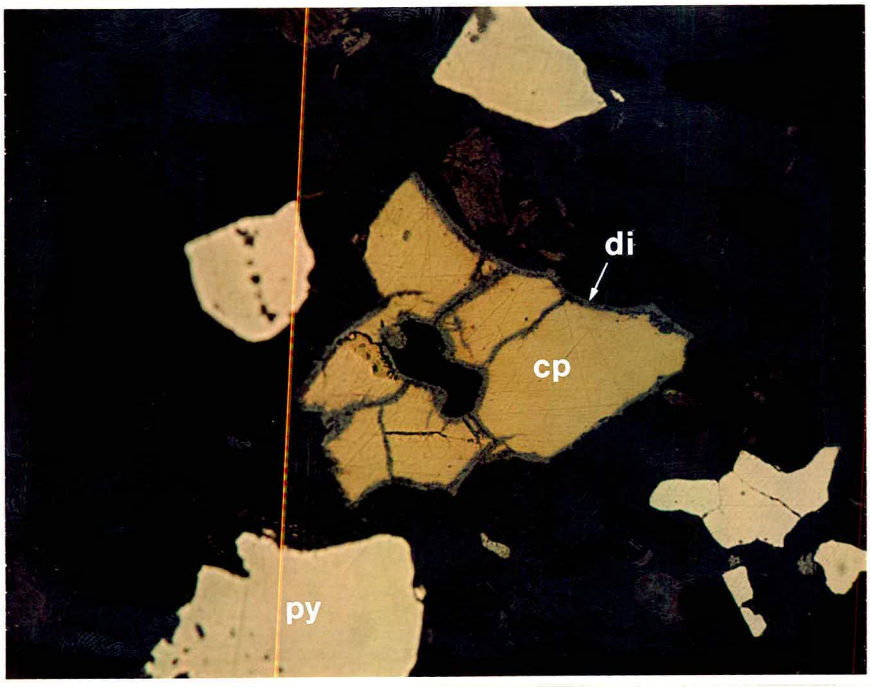


Sphalerite grain with covellite/digenite coating (blue). This is an extreme case of preactivation with Cu.

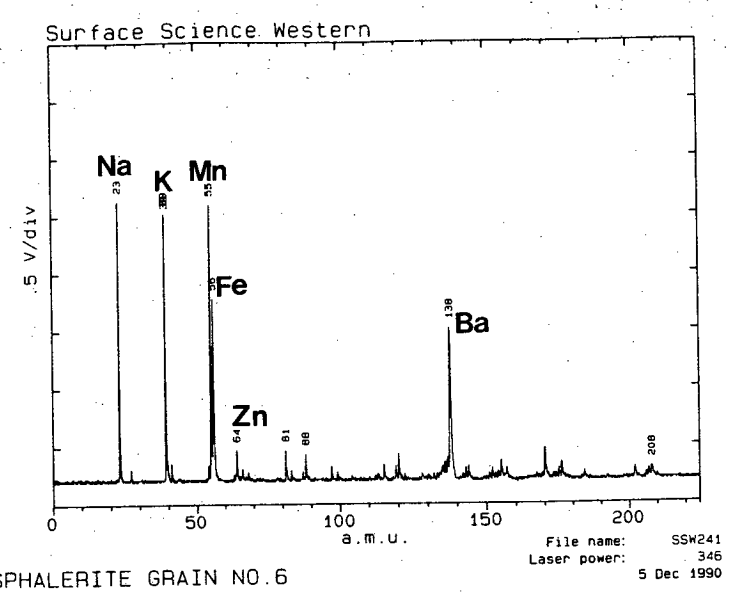
Vangorda 'cap' rock PLATE 1



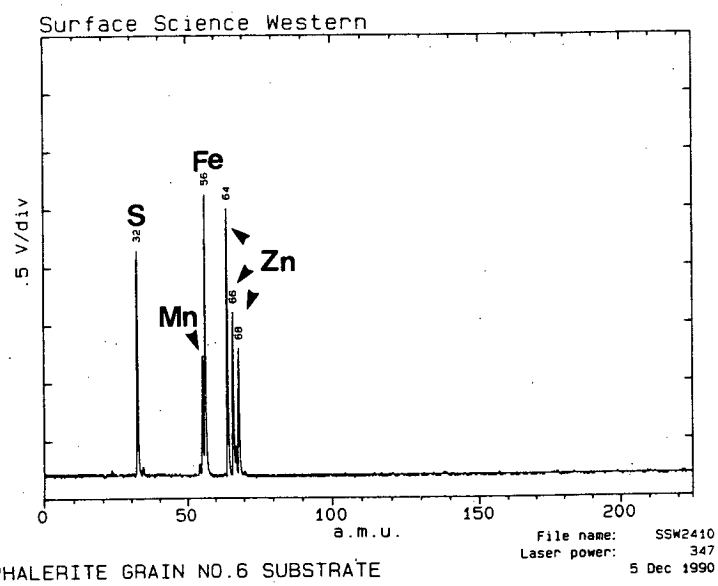
Partially oxidized galena grain. Numerous such grains are an abundant source of soluble Pb for preactivation during grinding.



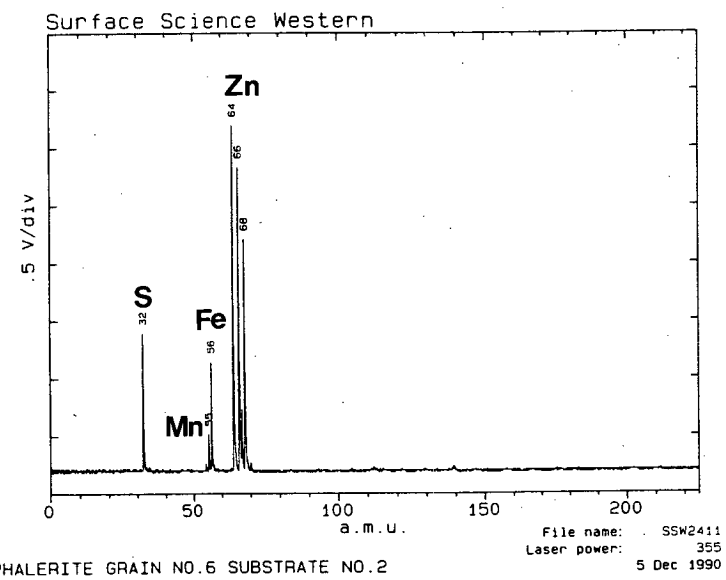
Chalcopyrite grain (yellow) with a replacement rim of digenite. Digenite and the other secondary Cu sulphides are a good source of soluble Cu for preactivation during grinding.



7 SPHALERITE GRAIN NO.6



7 SPHALERITE GRAIN NO.6 SUBSTRATE



7 SPHALERITE GRAIN NO.6 SUBSTRATE NO.2

LIMA spectra of successively deeper layers from the surface of a sphalerite grain from the Faro zinc tailings. In the topmost layer there is abundant Mn and Fe. Zn is present in only trace amounts. In the second layer sampled the ratio of Mn/Fe has decreased dramatically and Zn and S are more abundant. The third layer sampled represents the 'clean' Faro sphalerite with the right ratio of Fe/Zn and a trace of Mn.

1. ***BACKGROUND AND OBJECTIVE***

Curragh Resources Inc. requested the characterization of the surface chemistry of sphalerite grains from seven samples. An intriguing flotation problem was discovered in the beneficiation of the 'cap' rock on the Vangorda orebody. The ore in the 'cap' did not respond to the standard reagent scheme resulting in the production of a bulk lead/zinc concentrate. Several hypotheses were put forward to explain the observed loss in selectivity. The objective of this work was outlined in a letter by Mr. G. McDonald which was received together with the samples on November 5, 1990 and is summarized as follows:

(a) Determine the surface chemistry of sphalerite grains from the seven samples

(b) Based on the data acquired, determine the cause for the observed non-selective flotation, the place(s) and relative timing when the sphalerite surface modification(s) happened.

Seven samples were gathered from the test program and are the following:

(a) Lead-Zinc Bulk Flotation Response ore

Sample no. 1 - Mill feed sample
Sample no. 2 - Bulk (Pb-Zn) concentrate
Sample no. 3 - Bulk tailings

(b) Lead-Zinc Selective Flotation Response Ore

Sample no. 4 - Mill feed sample
Sample no. 5 - Lead concentrate
Sample no. 6 - Zinc concentrate
Sample no. 7 - Zinc tailings

The laboratory work included grinding of mill feed samples, dry screening, selection of liberated sphalerite grains under the stereoscope and laser probe microanalysis. Few coarse fragments from the mill feed samples were crushed in an agate mortar to obtain sphalerite grains with relatively fresh surfaces, as opposed to sphalerite from mill fines.

Dry screening was used to remove the fines and thus facilitate selection and picking of liberated sphalerite grains for analysis. Laser probe microanalysis using one and two laser systems were used to obtain chemical information from the topmost surface layers of individual sphalerite grains.

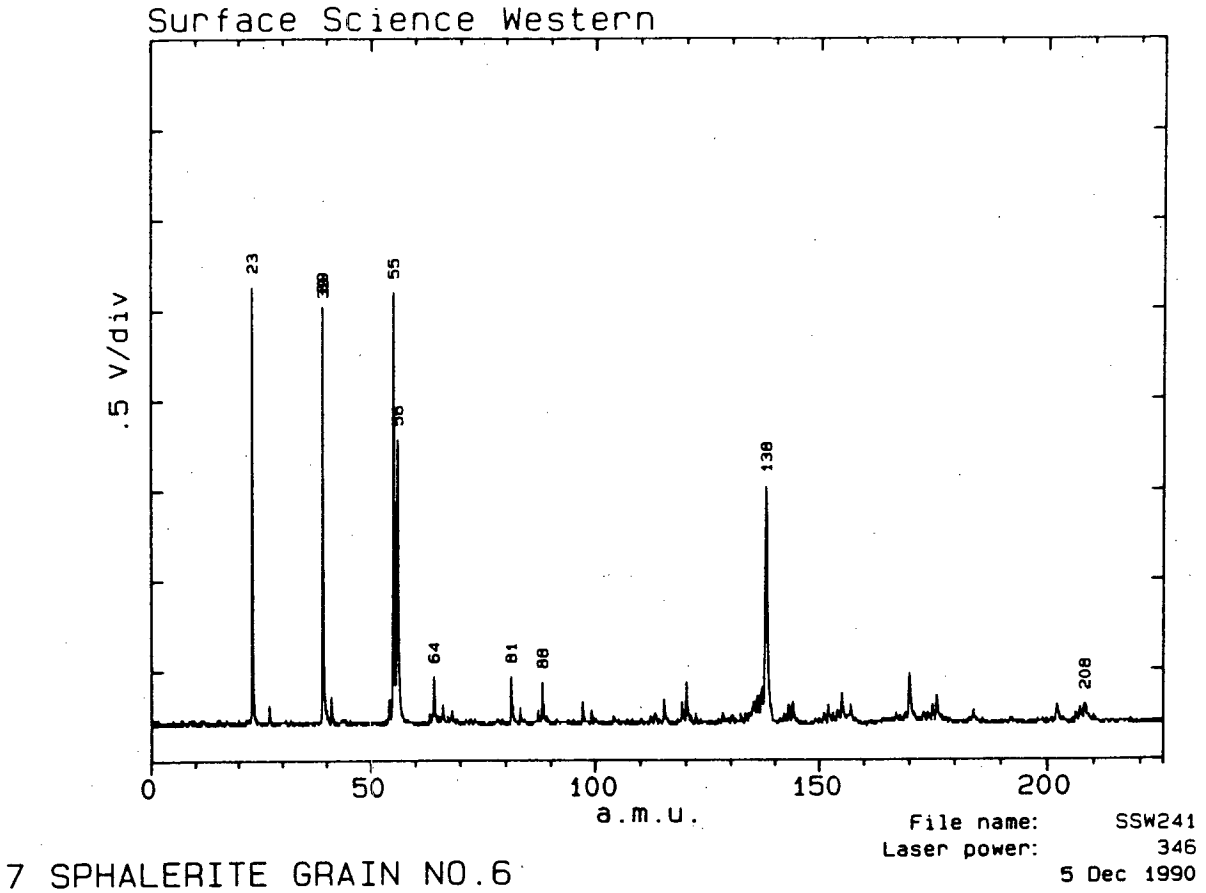
In simple terms laser probe microanalysis involves local heating of a small area - 5 - 20 μm in diameter - which results in the sublimation of material from the surface. By using low laser power or a defocussed beam only surface material is ablated to a depth less than 0.1 μm. The ablated material includes ions and neutrals which can be post-ionized using a second laser running parallel to the sample surface. Relative ionization yields vary significantly from element to element. Therefore, standards are required for inter-element comparisons. Nevertheless, comparisons are possible between the same element or elemental ratios for different samples.

2. ***RESULTS***

In total, 107 liberated sphalerite grains were analyzed, of which 54 were from the Vangorda samples. Results are tabulated in Appendix A1.

Spectra from the surface and sub-surface regions of a sphalerite grain from the Faro zinc tailings are given in Figure 1. In the surface spectrum - of positive ions - the following elements were detected Na(23), K(39), Mn(55), Fe(56), Zn(64, 66, 68), Ba(138) and Pb(208). A very small peak at 63 a.m.u. (atomic mass units) indicates the presence of traces of Cu. The peak at 88 is FeS and at 81 is from an organic molecule. In the spectrum from the sub-surface region only S(32), Mn(55), Fe(56) and Zn(64, 66, 68) were detected. The surface is significantly enriched in iron and manganese compared to the sub-surface.

Average spectra were computed from the single surface spectra of sphalerite grains from each of the samples studied, except for samples 5 and 6. In Figure 2 the average surface spectra for 24 liberated randomly selected sphalerite grains from the Vangorda mill feed sample and for 26 sphalerite grains of the Faro mill feed sample are shown.



7 SPHALERITE GRAIN NO.6

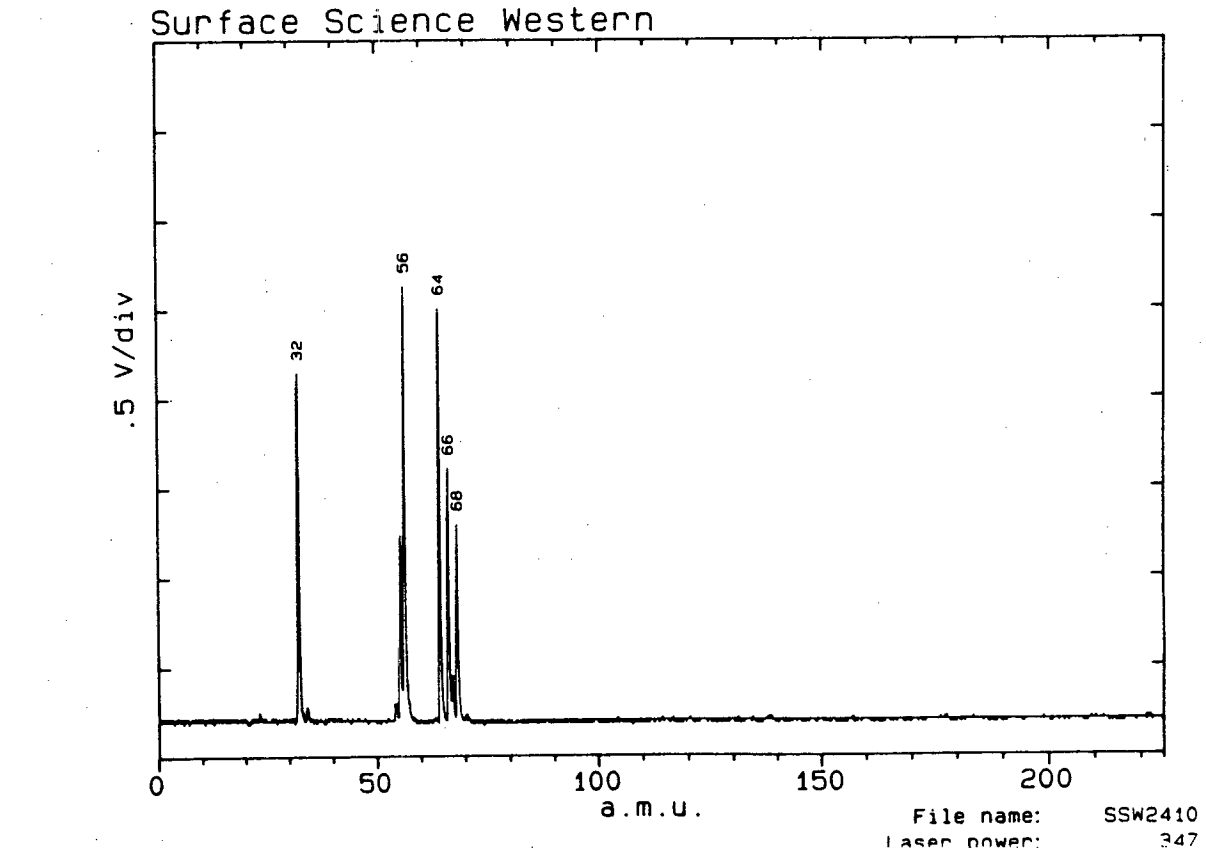


***FIGURE 1** - LIMA spectra from the surface and sub-surface regions of a sphalerite grain from the Faro zinc tailings.*

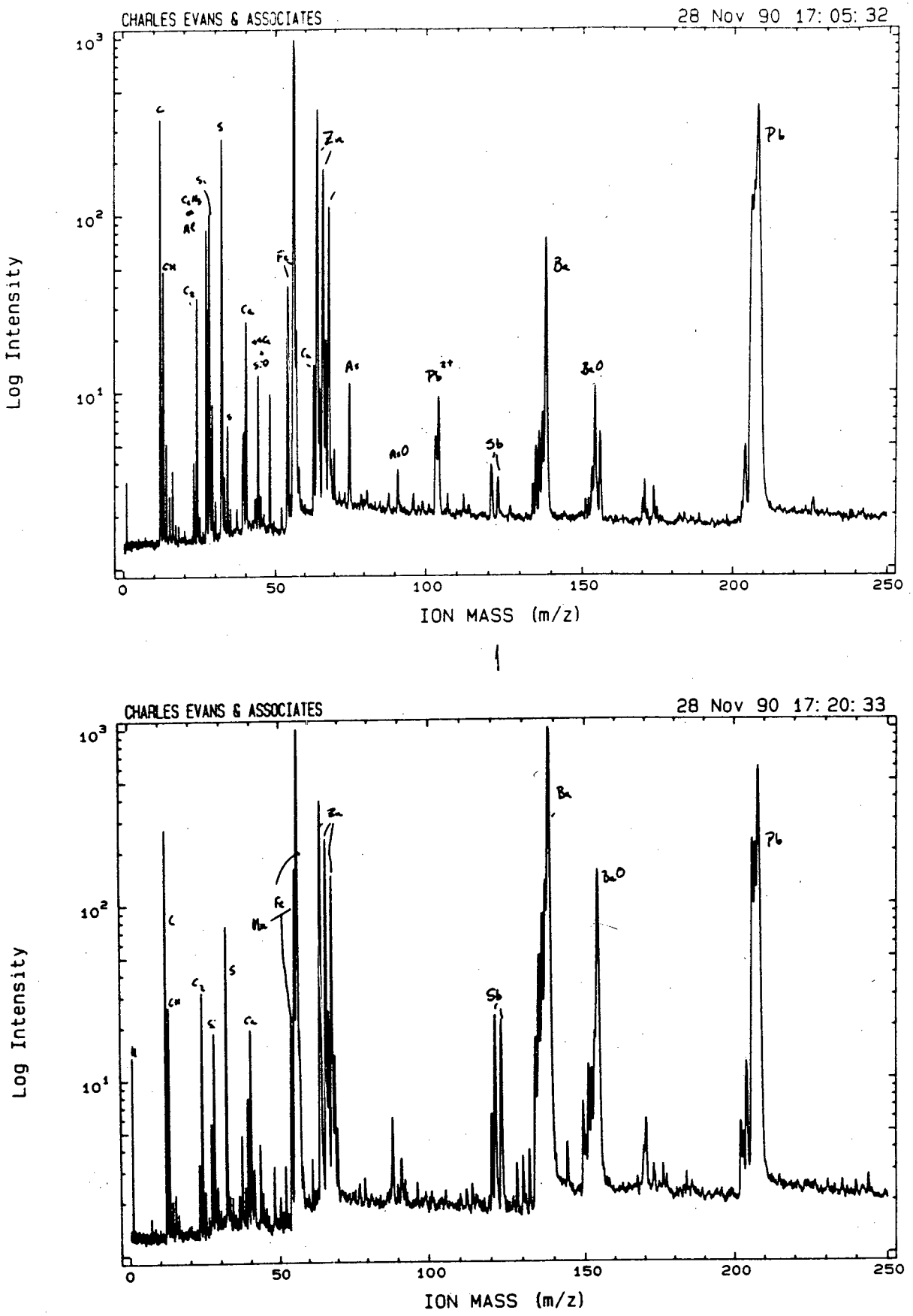


***FIGURE 2** - Average spectra of sphalerite grain surfaces from the Vangorda 'cap' mill feed (sample no. 1) and the Faro mill feed (sample no. 4).*

Of the sphalerite activators - Cu, Ag and Pb - Cu is present only on the sphalerite grains of sample no. 1, while Pb is present on the sphalerite grains from both samples. Silver was not detected on sphalerite grains of either sample.

Other elements detected on the surface of sphalerite grains in both samples are Ca, Ba and Sb. Manganese is present only on Faro sphalerite grains and As on the Vangorda sphalerite.

In Figure 3 the average surface spectra of sphalerite grains from samples no. 1 and no. 6 are shown for comparison. The amount of Cu present on the sphalerite from the mill feed sample (no. 1) is comparable to that on the $CuSO_4$ activated sphalerite of the Faro zinc concentrate (no. 6). Lead is present in significantly higher amounts on the sample no. 1 sphalerite grains. Barium levels are comparable while Ca is more abundant on the sphalerite grains of sample no. 6, due to the addition of lime prior to the Zn flotation.

In Figure 4 the average spectra of sphalerite grain surfaces from samples no. 3 and 2 are shown. Copper is present in both spectra in significant amounts, as well as Pb and Ba. There is considerably more iron on the sphalerite grains from the tailings sample.

In order to compare on a more quantitative basis the surface composition of sphalerite grains from the samples studied and relate this to the observed flotation behaviour the following approach was used. The following known or suspected inorganic surface modifiers were selected from the elements detected on the Vangorda and Faro samples: Cu, Pb, Fe and Ca. Zinc was also considered because during activation it is replaced by Cu or Pb and represents the subsurface region of surface-contaminated sphalerite grains. For every spectrum acquired the peak areas of the elements of interest were determined and expressed in terms of counts. For each sample the peak-area-counts were summed and the sums of the five elements normalized to 100 (Table 1). The average surface composition thus determined is good for comparative studies. However, for the concentrations to be absolute they have to be corrected for differences in the ionization yield.

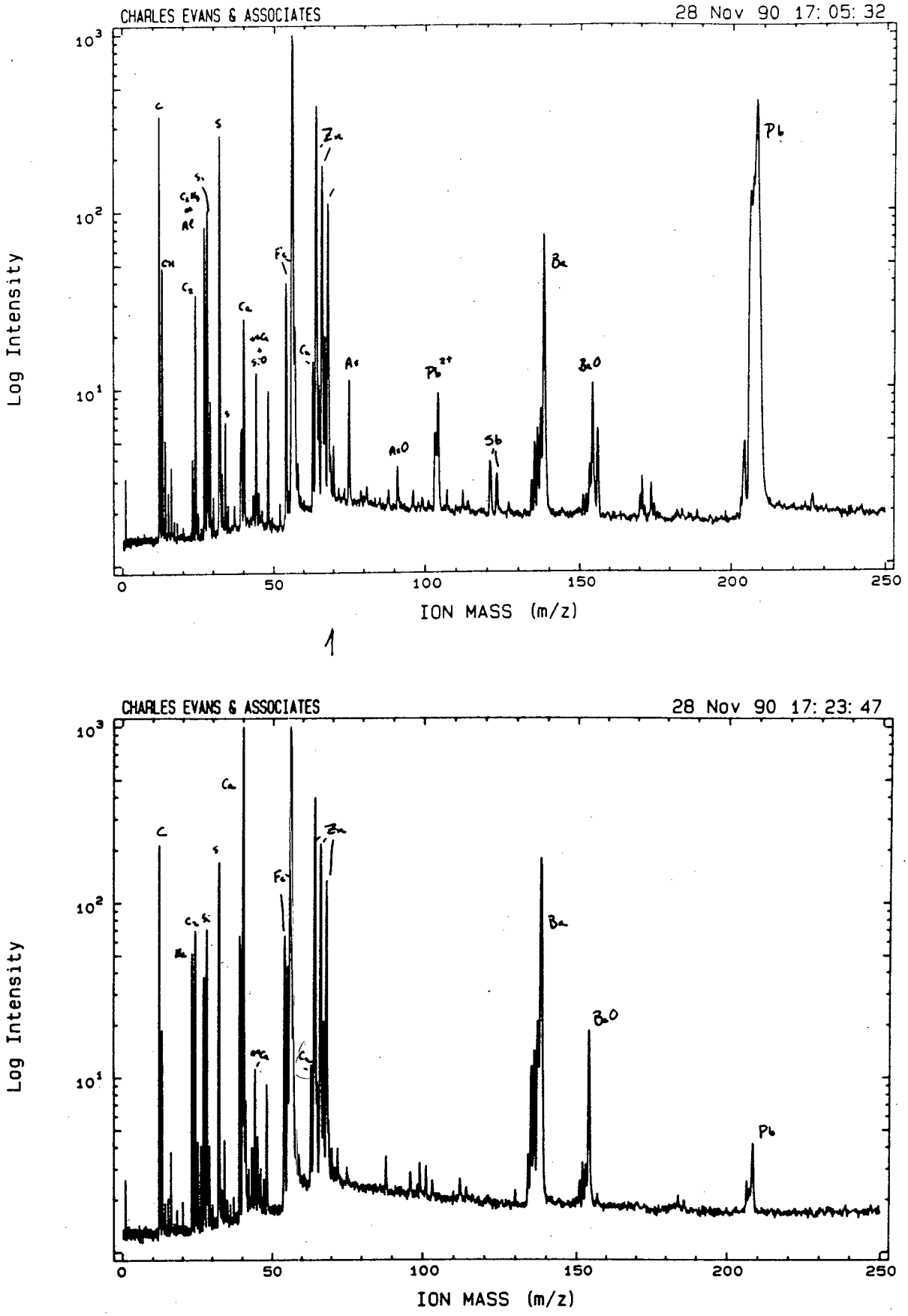


FIGURE 3 *- Average spectra of sphalerite grain surfaces from the Vangorda 'cap' mill feed (sample no. 1) and the Faro zinc concentrate (sample no. 6).*

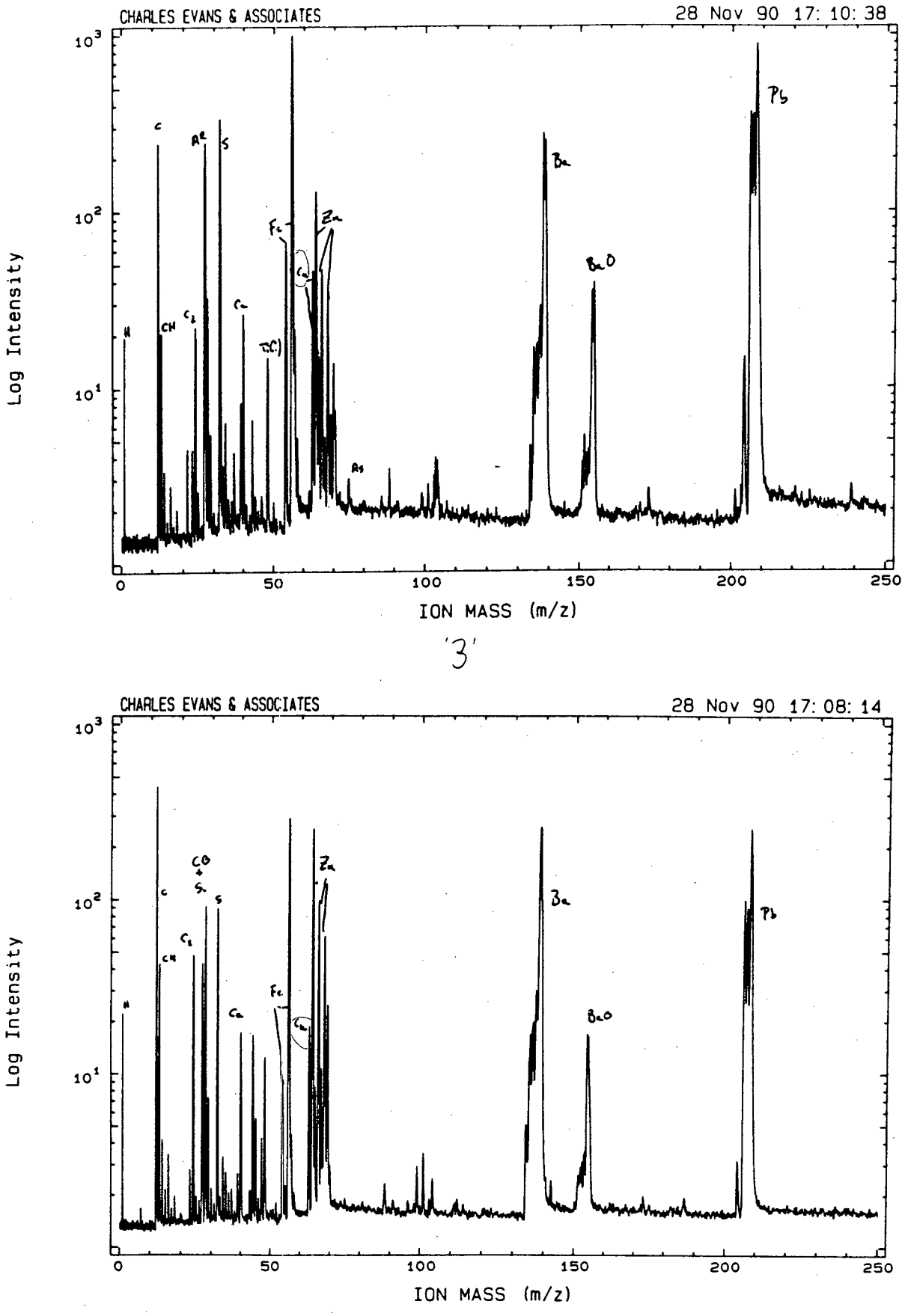


***FIGURE 4** - Average spectra of sphalerite grain surfaces from the Vangorda 'cap' bulk tailings (sample no. 3) and the bulk (Pb-Zn) concentrate (sample no.2).*

TABLE 1 - SURFACE COMPOSITION OF LIBERATED SPHALERITE GRAINS

VANGORDA ORE

	No	Cu	Pb	Fe	Ca	Zn
Mill feed	24	0.7	33.8	37.6	0.7	27.2
Bulk (Pb-Zn) conc.	15	8.4	40.0	26.6	1.3	23.7
Bulk tailings	15	2.1	40.1	41.3	2.9	13.6

FARO ORE

	No	Cu	Pb	Fe	Ca	Zn
Mill feed	26	0.0	19.9	56.9	0.7	22.5
Lead concentrate	-	-	-	-	-	-
Zinc concentrate	19	0.2	4.2	59.3	7.4	28.9
Zinc tailings	6	0.4	2.6	84.7	1.1	11.2

3. *DISCUSSION OF RESULTS*

The discussion is based on the average data given in Table 1.

The sphalerite grains from the Vangorda 'cap' ore enter the mill circuit with two to three times as much copper on their surface compared to the $CuSO_4$ - activated sphalerite in the Faro zinc concentrate.

Since the Vangorda sphalerite grains examined were produced by crushing larger fragments in the laboratory - using an agate mortar and dry sieving - the observed surface Cu is attributed to preactivation (I) in the orebody by percolating ground water sometime after the ore was formed.

The sphalerite grains recovered in the bulk (Pb-Zn) concentrate produced from Vangorda 'cap' ore have thirteen times more copper on their surface compared to the sphalerite grains in the mill feed.

The dramatic increase in the surface concentration of copper is attributed to preactivation (II) which took place during grinding. Secondary copper minerals are the source of the soluble copper that preactivates the sphalerite. The extent of preactivation (III) during mining is not known since sphalerite from the mine 'fines' was not analyzed.

The sphalerite grains lost to the Vangorda bulk tailings have four times less copper on their surface compared to the sphalerite recovered in the bulk concentrate.

The loss of Cu-preactivated liberated sphalerite grains to the Vangorda tailings is attributed to the significant amount of oxidized Pb present on the surface of the grains. This lead was deposited initially as PbS in the orebody. Additional lead precipitated during grinding of the Vangorda ore. Some of this lead - on the sphalerite grain surfaces - inevitably oxidized either in the orebody, or during mining or even in the flotation circuits.

The sphalerite grains from the Vangorda 'cap' ore are not only preactivated with copper but also with lead. The absolute surface concentration of lead on sphalerite from the mill feed is twice that of copper. In the bulk (Pb-Zn) concentrate the amount of lead on the surface of the sphalerite is 20% of that of copper. In the bulk tailings the absolute surface concentrations of copper and lead are roughly equal.

In the orebody lead precipitated on sphalerite grains as PbS from the circulating ground water containing dissolved lead salts. This lead may have partially oxidized to $PbSO_4$ or even $PbCO_3$ - siderite is the second in abundance gangue mineral - thus carbonate ions should be readily available. During grinding galena - especially p-type - oxidized producing soluble lead that coated the sulphide minerals. This lead

coating will also oxidize in the presence of oxygen. Therefore, preactivation with lead will cause the sphalerite to float in the bulk Pb-Zn concentrate if the surface lead is not oxidized, or may cause depression of sphalerite if the surface lead has been oxidized. Sulphidizing agents - Na_2S or NaHS - will re-condition oxidized lead surfaces especially when lead is in the form of $PbSO_4$. Sulphidation of $PbCO_3$ is not as easy. The presence of an oxidized lead coating on sphalerite will also impede activation with copper.

Iron is also enriched on the surface - relative to the subsurface region - of sphalerite grains from Vangorda. The highest surface iron concentration was observed on the sphalerite from the bulk tailings and the lowest on the sphalerite recovered to the bulk (Pb-Zn) concentrate.

The observed differences in the surface concentration of iron are not large enough to postulate on their effect to the sphalerite floatability. More over the oxidation state of iron has to be known.

Calcium, a suspected agent - in the form of gypsum - for loss in selectivity during the differential flotation of sulphides is present only in minor amounts on the surface of the Vangorda sphalerite.

The sphalerite grains from the Faro mill feed have no detectable copper on their surface. Significant amounts of lead - three times the average - are present on the surface of 15 percent of the grains analyzed.

Copper preactivation is not important in the Faro ore. However, preactivation with lead of approximately 15% of liberated sphalerite grains having three times above average surface lead concentration could cause flotation into the lead concentrate. Two liberated sphalerite grains from the concentrate had significant lead on their surface with traces of copper.

The copper on the $CuSO_4$ - activated sphalerite grains from the Faro zinc concentrate is only one third of that present on the Vangorda sphalerite grains entering the mill. The surface concentration of lead is the lowest amongst the samples studied. On the contrary, the calcium concentration is the highest.

Iron is a more important constituent of the surface layer on sphalerite grains from Faro compared to Vangorda. This is especially true for the sphalerite grains lost to the zinc tailings.

Based on the available data it is believed that liberated sphalerite grains from the Vangorda 'cap' ore are lost to the bulk tailings because of the presence of an oxidized lead layer on their surface. On the contrary liberated sphalerite grains from the Faro ore are lost to the zinc tailings due to entrainment. More data are required to determine the effect of the iron-rich surface layer. If the iron oxidizes from ferrous to ferric state then the sphalerite is depressed. The Faro sphalerite grains have also manganese on their surface.

APPENDIX A1

. SUMMARY TABLES

. SELECTED SPECTRA

. PEAK COUNT MEASUREMENTS

SUMMARY TABLE A1.1 - SURFACE COMPOSITION OF LIBERATED SPHALERITE GRAINS

VANGORDA 'CAP' ORE

MILL FEED (No. 1)

No.	Cu	Pb	Fe	Ca	Ba	Zn
7	10	1,800	385	70	0	215
10	57	18,972	**55,291**	477	6,738	4,082
11	95	1,385	14,173	0	0	8,390
12	10	0	2,499	0	0	305
13	13	210	6,509	0	0	587
14	437	2,735	6,635	190	12	2,840
15	7	1,592	3,121	26	0	1,797
16	49	6,866	17,395	691	364	2,199
17	4	1,317	3,762	737	745	1,128
18	5	2,731	3,652	0	0	974
19	238	9,213	12,862	0	160	4,732
20	691	14,673	15,791	2	0	8,000
21	1	6,385	51	0	0	6,755
22	38	20,092	3,537	2	114	2,014
23	83	834	13,312	50	2	15,216
24	0	3,226	599	0	0	4,170
25	11	8,700	541	0	0	1,757
TOTALS	1,749	100,731	111,375	2,243	8,135	65,161
%	0.6	35.8	39.6	0.8		23.2

Numbers in bold were considered as 'outliers'. Instead the average value was used in the summation.

SUMMARY TABLE A1.2 - SURFACE COMPOSITION OF LIBERATED SPHALERITE GRAINS

VANGORDA 'CAP' ORE

BULK (Pb-Zn) CONCENTRATE (No. 2)

No.	Cu	Pb	Fe	Ca	Ba	Zn
26	281	5,474	170	61	4,799	65
27	529	23,031	4,842	0	59	1,588
28	6,022	1,928	985	353	209	243
29	15	141	70	0	0	2,174
30	30	206	321	2	0	625
31	6	0	10	0	0	714
32	0	389	957	0	125	2,856
33	64	436	1,988	161	1,137	366
34	13	0	101	0	0	191
35	35	1,871	673	5	0	633
36	483	1,686	12,941	612	**36,269**	6,795
37	14	107	109	0	0	2,031
38	0	48	4	6	6	1,148
39	0	0	138	0	0	681
40	16	400	469	0	0	948
TOTALS	7,508	35,717	23,778	1,200	6,335	21,058
%	8.4	40.0	26.6	1.3		23.7

Numbers in bold were considered as 'outliers'. Instead the average value was used in the summation.

SUMMARY TABLE A1.3 - SURFACE COMPOSITION OF LIBERATED SPHALERITE GRAINS

VANGORDA 'CAP' ORE

BULK TAILINGS (No. 3)

No.	Cu	Pb	Fe	Ca	Ba	Zn
43	48	12,823	2,145	20	8,238	1,022
44	3	9,029	806	434	6,949	1,218
45	18	324	5,478	120	375	492
46	0	46	130	0	177	660
47	202	11,429	11,327	170	1,735	4,572
48	1,563	29,601	40,234	40	824	951
50	183	4,769	1,045	1,355	2,223	613
52	137	695	6,507	710	19,491	881
54	150	633	2,474	221	11,509	489
55	233	100	11,087	1,593	43,377	6,245
57	1,861	7,484	1,572	2,682	34,393	11,992
58	247	0	20,856	259	2,418	3,316
59	25	2,197	6,202	4	3,737	680
60	740	18,584	4,153	197	11,594	3,363
61	409	13,530	436	255	29,802	1,361
TOTALS	5,819	111,244	114,452	8,060	176,842	37,855
%	2.1	40.1	41.3	2.9		13.6

SUMMARY TABLE A1.4 - SURFACE COMPOSITION OF LIBERATED SPHALERITE GRAINS

FARO ORE

MILL FEED (No. 4)

No.	Cu	Pb	Fe	Ca	Ba	Zn
79	0	352	10,156	7	37,490	4,894
80	0	8,791	530	0	0	125
81	0	1,515	15,134	0	268	424
83	0	15,969	428	0	17,613	129
84	0	6,510	9,657	729	9,942	500
86	0	1,003	4,037	0	225	92
87	12	3,794	13,712	96	3,904	1,861
88	0	0	11,623	39	15,964	4,375
89	0	**27,270**	4,980	7	2,979	1,421
90	2	1,422	9,215	7	11,555	18,310
91	0	4,315	858	4	2,988	248
TOTALS A1.4	14	48,038	80,330	889	102,928	32,379
TOTALS A1.5	10	7,931	43,022	308	12,467	17,000
TOTALS	24	55,969	123,352	1,197		49,379
%	0.0	24.3	53.7	0.5		21.5

Numbers in bold were considered as 'outliers'. Instead the average value was used in the summation.

SUMMARY TABLE A1.5 - SURFACE COMPOSITION OF LIBERATED SPHALERITE GRAINS

FARO ORE

MILL FEED (No. 5)

No.	Cu	Pb	Fe	Ca	Ba	Zn
62	1	968	**35,143**	47	5,546	990
63	0	3,800	1,382	0	182	4,795
64	0	132	364	42	111	3,402
65	9	149	9,247	176	538	1,899
67	0	515	5,023	40	3,635	649
68	0	1,524	12,480	3	324	2,984
69	0	0	7,610	0	2,131	514
70	0	30	1,005	0	0	909
71	0	813	1,131	0	0	858
TOTALS	10	7,931	43,022	308	12,467	17,000
%	0.0	9.8	53.3	0.4	15.4	21.1

Numbers in bold were considered as 'outliers'. Instead the average value was used in the summation.

SUMMARY TABLE A1.6 - SURFACE COMPOSITION OF LIBERATED SPHALERITE GRAINS

FARO ORE

Zn CONCENTRATE (No. 6)

No.	Cu	Pb	Fe	Ca	Ba	Zn
94	2	68	16,066	1,573	335	7,949
95	9	40	5,725	1,091	879	7,707
96	80	8	19,950	-	4,421	13,389
97	76	0	2,976	6,155	46	1,602
98	3	0	8,070	6,987	6,368	398
99	0	0	1,284	5	0	1,199
100	0	0	7,134	914	58	2,412
101	0	0	3,182	514	1,213	2,431
102	0	0	2,445	0	4	1,784
103	0	0	3,786	220	0	4,172
TOTALS	170	116	70,618	17,459	14,697	43,043
%	0.1	0.1	53.8	13.3		32.7

Table A1.7

	Ca	Pb	Zn	Fe	Cu	K	Na
	1	2	3	4	5	6	7
Filename	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Vangorda Mill Feed (1')	39.80 to 40.60	205.00 to 210.00	63.20 to 69.50	55.00 to 57.50	62.00 to 63.50	38.50 to 39.50	26.50 to 27.50
SSW146	1.51E+01	2.17E+03	6.25E+02	1.81E+03	7.43E+01	1.29E+03	2.90E+0
2							
SSW147	1.74E+02	6.08E+03	1.57E+04	4.41E+03	1.21E+02	4.78E+02	2.48E+0
3							
SSW148	2.77E+01	2.93E+03	1.92E+03	2.04E+02	2.54E+02	1.17E+03	7.38E+0
2							
SSW149	4.53E+01	1.09E+03	3.93E+02	2.78E+03	9.44E+01	9.87E+02	2.18E+0
3							
SSW150	1.51E+01	2.58E+03	1.05E+03	5.76E+03	1.89E+01	4.03E+01	2.52E+0
1							
SSW151	5.03E+01	5.14E+03	8.62E+03	5.78E+03	5.03E+00	3.35E+02	1.02E+0
3							
SSW152	0.00E+00	2.34E+03	2.47E+02	4.28E+03	2.14E+01	2.27E+02	4.29E+0
3							
Mean	4.68E+01	3.19E+03	4.08E+03	3.57E+03	8.42E+01	6.48E+02	1.57E+0
3							
St. Dev.	5.87E+01	1.77E+03	5.91E+03	2.08E+03	8.66E+01	4.97E+02	1.51E+0
3							
Σ	327	22,330	28555	25,024	588		
%	0.4	29.0	37.2	32.6	0.8		

TABLE A1.8

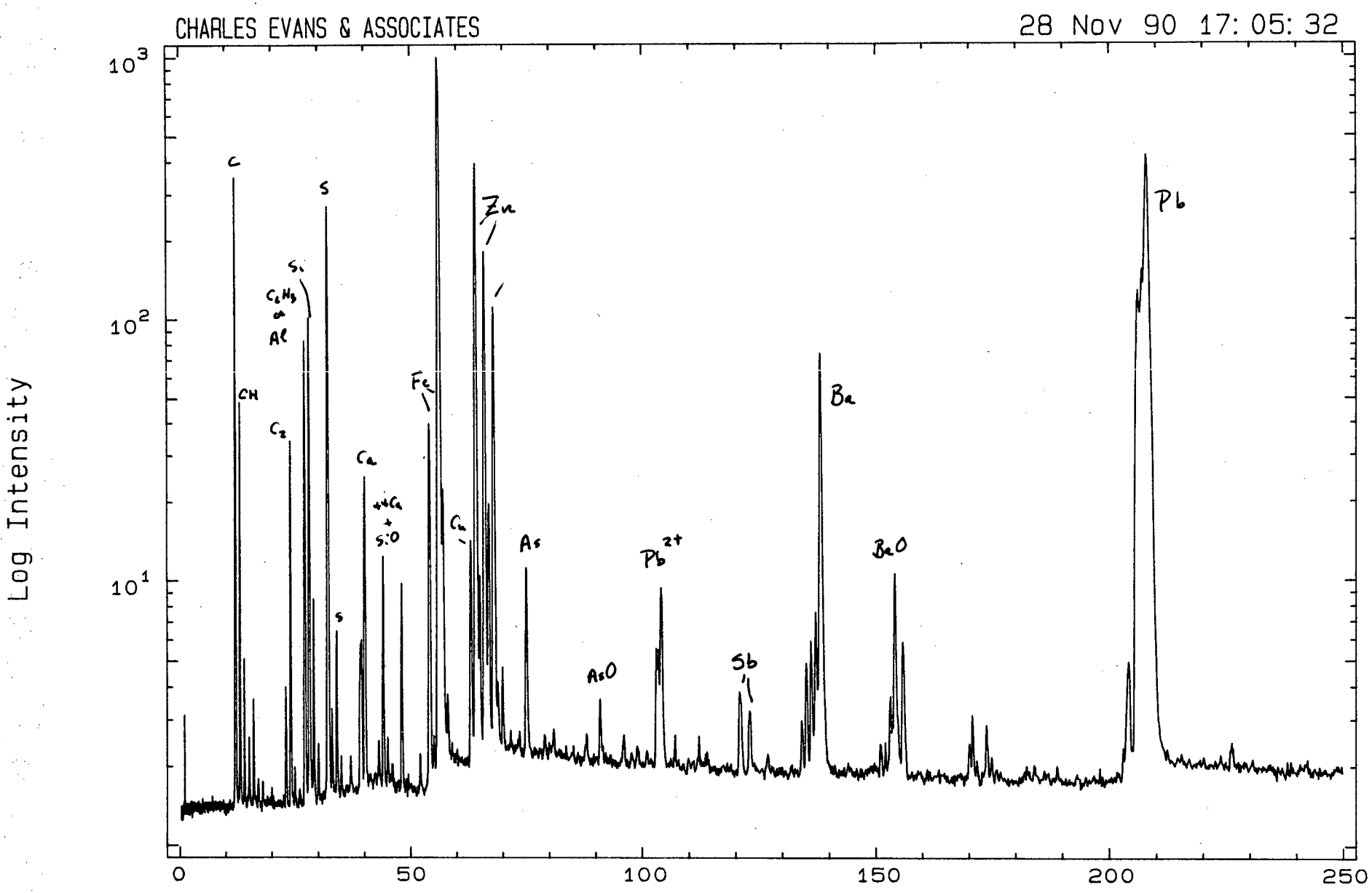
	1	2	3	4	5	6	7
Filename	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Faro Mill Feed (4')	39.80 to 40.60	205.00 to 210.00	63.20 to 69.50	55.00 to 57.50	62.00 to 63.50	38.50 to 39.50	26.50 to 27.50
SSW153	3.78E+01	2.14E+02	1.03E+03	3.75E+03	2.01E+01	1.38E+02	1.03E+0
2							
SSW154	1.64E+02	1.74E+02	1.73E+03	4.46E+03	5.03E+00	9.06E+01	1.38E+0
2							
SSW155	4.78E+01	5.44E+02	2.71E+03	6.34E+03	2.90E+01	6.55E+01	2.52E+0
0							
SSW156	1.49E+02	1.06E+02	1.23E+03	1.66E+03	1.01E+01	6.67E+01	3.27E+0
1							
SSW157	5.03E+01	7.03E+02	1.79E+03	2.96E+03	8.81E+00	2.39E+01	2.77E+0
1							
SSW159	7.55E+00	2.52E+00	3.22E+02	2.88E+03	2.52E+00	5.59E+02	1.23E+0
2							
Σ	457	1,744	8,812	22,050	76		
%	1.4	5.3	26.6	66.5	0.2		
Mean	7.59E+01	2.90E+02	1.47E+03	3.67E+03	1.26E+01	1.57E+02	7.13E+0
1							
St. Dev.	6.41E+01	2.72E+02	8.09E+02	1.61E+03	1.00E+01	2.00E+02	5.72E+0
1							

TABLE A1.9

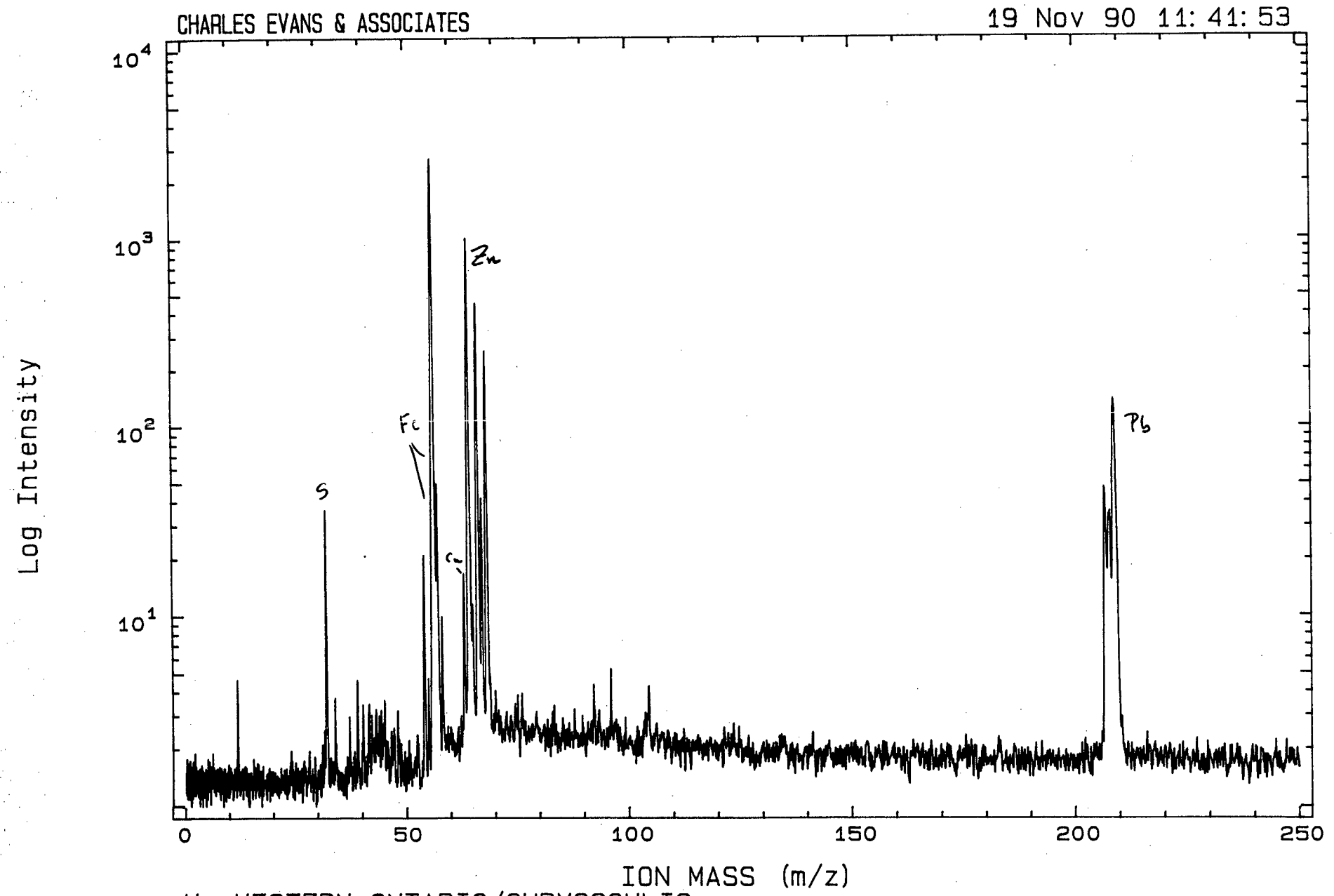
	Ca 1	Pb 2	Zn 3	Fe 4	Cu 5	K 6	Na 7	
Filename	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	
Faro Zn conc. (6')	39.80 to 40.60	205.00 to 210.00	63.20 to 69.50	55.00 to 57.50	62.00 to 63.50	38.50 to 39.50	26.50 to 27.50	
SSW244	7.80E+01	1.23E+03	3.98E+03	8.68E+03	5.54E+01	8.09E+02	2.62E+0	2
SSW245	1.51E+01	6.85E+02	2.08E+03	3.40E+03	~~6.80E+02~~	2.59E+02	1.76E+0	2
SSW246	~~6.04E+01~~	1.80E+02	3.50E+02	7.58E+02	6.80E+01	1.15E+03	1.81E+0	2
SSW247	~~6.04E+01~~	1.01E+03	1.56E+02	3.19E+03	2.90E+01	2.22E+03	5.01E+0	2
SSW248	1.64E+01	1.30E+03	1.43E+02	7.27E+03	7.05E+01	1.71E+03	4.43E+0	2
SSW249	~~9.82E+01~~	1.71E+02	2.02E+03	5.61E+03	2.52E+00	8.34E+02	7.53E+0	2
SSW250	8.31E+01	3.71E+02	1.12E+03	5.37E+03	1.13E+01	1.06E+03	1.06E+0	3
SSW251	2.22E+02	2.22E+02	6.30E+03	3.62E+03	1.14E+03	9.00E+02	1.43E+0	1
SSW252	1.26E+02	7.85E+02	3.84E+02	5.87E+03	2.52E+01	8.29E+02	1.99E+0	2
Mean	8.43E+01	6.62E+02	1.84E+03	4.86E+03	2.31E+02	1.09E+03	1.99E+0	3
St. Dev.	6.26E+01	4.50E+02	2.09E+03	2.39E+03	4.01E+02	5.70E+02	4.63E+0	3
Σ	540	5,954	16,533	43,768	262			
%	0.8	8.8	24.7	65.3	0.4			

TABLE A1.10

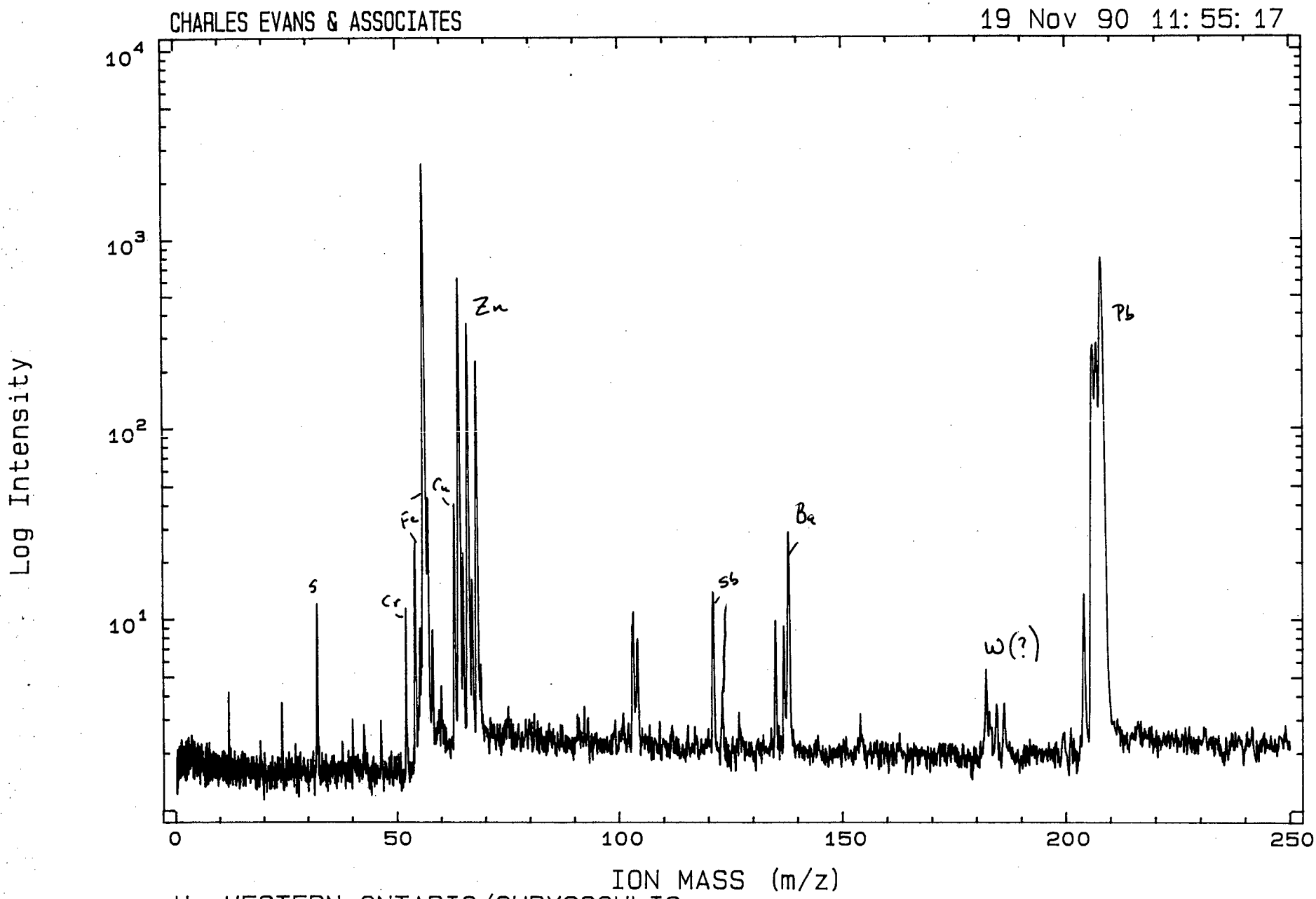
	Ca 1	Pb 2	Zn 3	Fe 4	Cu 5	K 6	Na 7
Filename	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Faro Zn conc. (7')	39.80 to 40.60	205.00 to 210.00	63.20 to 69.50	55.00 to 57.50	62.00 to 63.50	38.50 to 39.50	26.50 to 27.50
SSW236	5.03E+00	1.33E+02	6.75E+02	4.35E+03	1.26E+00	6.40E+02	1.54E+0
SSW237	1.76E+01	4.53E+01	1.03E+03	5.79E+03	1.76E+01	3.47E+02	9.31E+0
SSW238	5.03E+01	2.27E+01	2.42E+02	3.88E+03	4.66E+01	2.94E+03	1.16E+0
SSW239	1.71E+02	2.04E+02	5.29E+02	5.43E+03	1.26E+01	2.52E+03	1.03E+0
SSW240	5.03E+01	1.76E+02	6.67E+02	7.09E+03	5.03E+01	3.28E+03	1.81E+0
SSW241	6.04E+01 354	2.62E+02 843	4.99E+02 carbonate 364	1.04E+03 27,580	5.03E+00 134	2.09E+03	1.23E+0
SSW242	3.26E+02	1.16E+03	1.55E+03	5.08E+03	5.66E+01	7.55E+00	1.36E+0
SSW243	2.79E+03	7.92E+02	3.36E+02	7.17E+03	3.06E+02	3.75E+03	2.02E+0
Mean	4.33E+02	3.50E+02	6.90E+02	4.98E+03	6.20E+01	1.94E+03	5.19E+0
St. Dev.	9.56E+02	4.08E+02	4.21E+02	1.97E+03	1.01E+02	1.43E+03	7.45E+0
Σ	1.1%	0.8	11.4	86.7	0.4		
%	1.1	2.6	11.2	84.7	0.4		



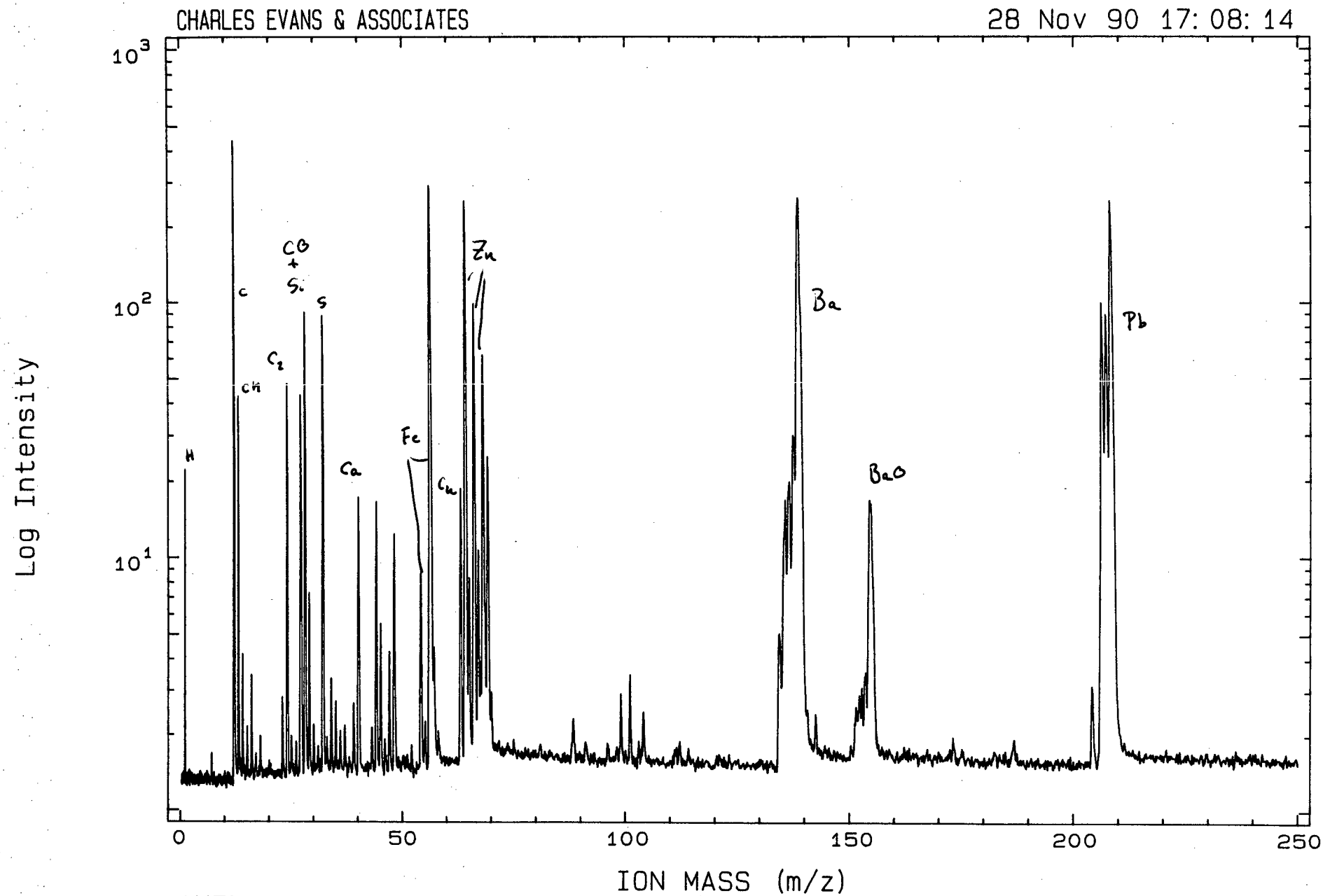
AVERAGE OF 18 SPECTRA; PAI; DELTA T = 750 ns; + IONS
U.WESTERN ONTARIO/CHRYSSOULIS SAMPLE 1
UWOAV01 FIGURE 1



U. WESTERN ONTARIO/CHRYSSOULIS
SAMPLE 1; PAI; DELTA T = 750ns; + IONS
UW0010 FIGURE 2

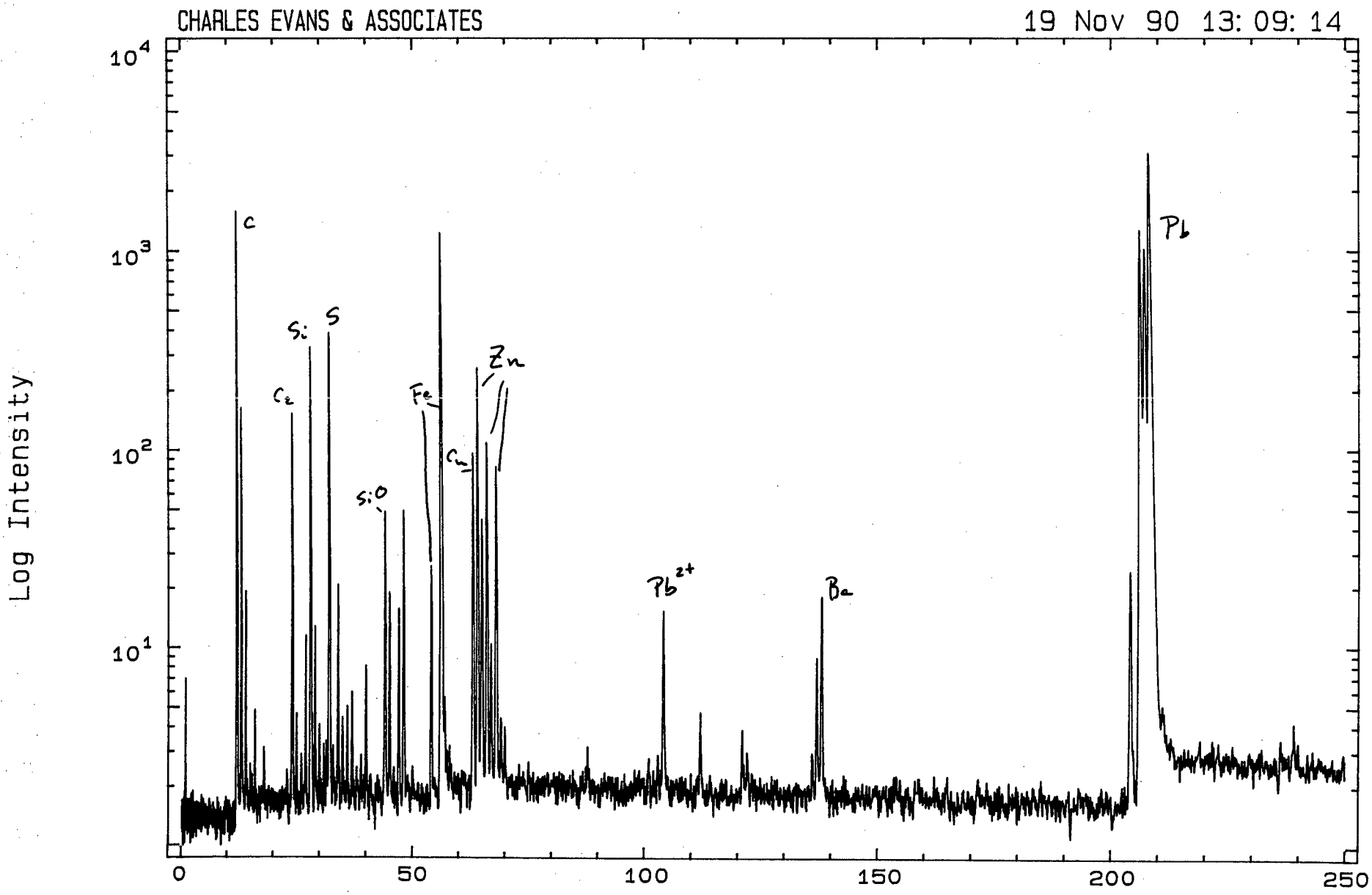


U. WESTERN ONTARIO/CHRYSSOULIS
SAMPLE 1; PAI; DELTA T = 750ns; + IONS
UW0019 FIGURE 3



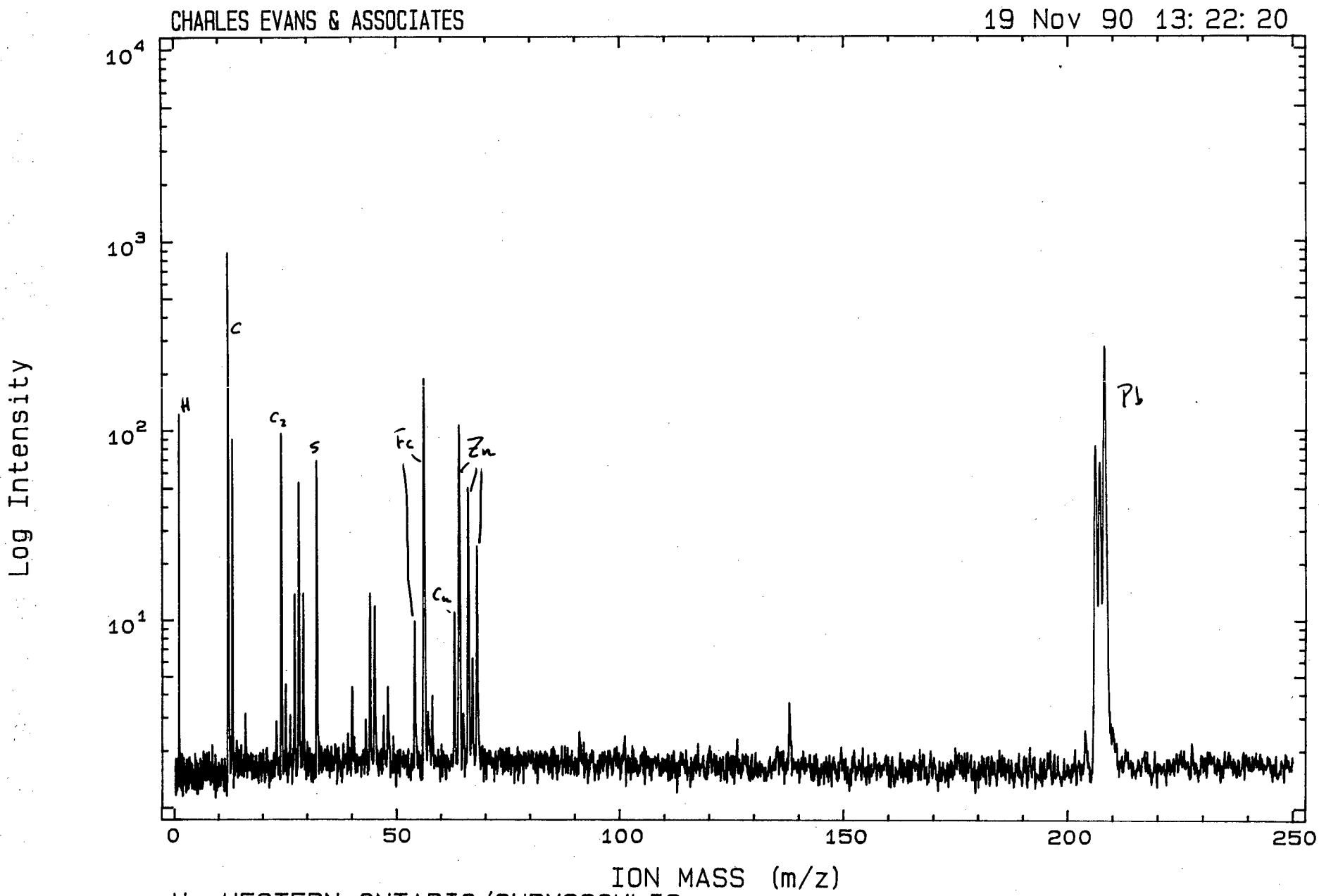
AVERAGE OF 15 SPECTRA; PAI; DELTA T = 750 ns; + IONS
U. WESTERN ONTARIO/CHRYSSOULIS, SAMPLE 2
UWOAV02

FIGURE 4



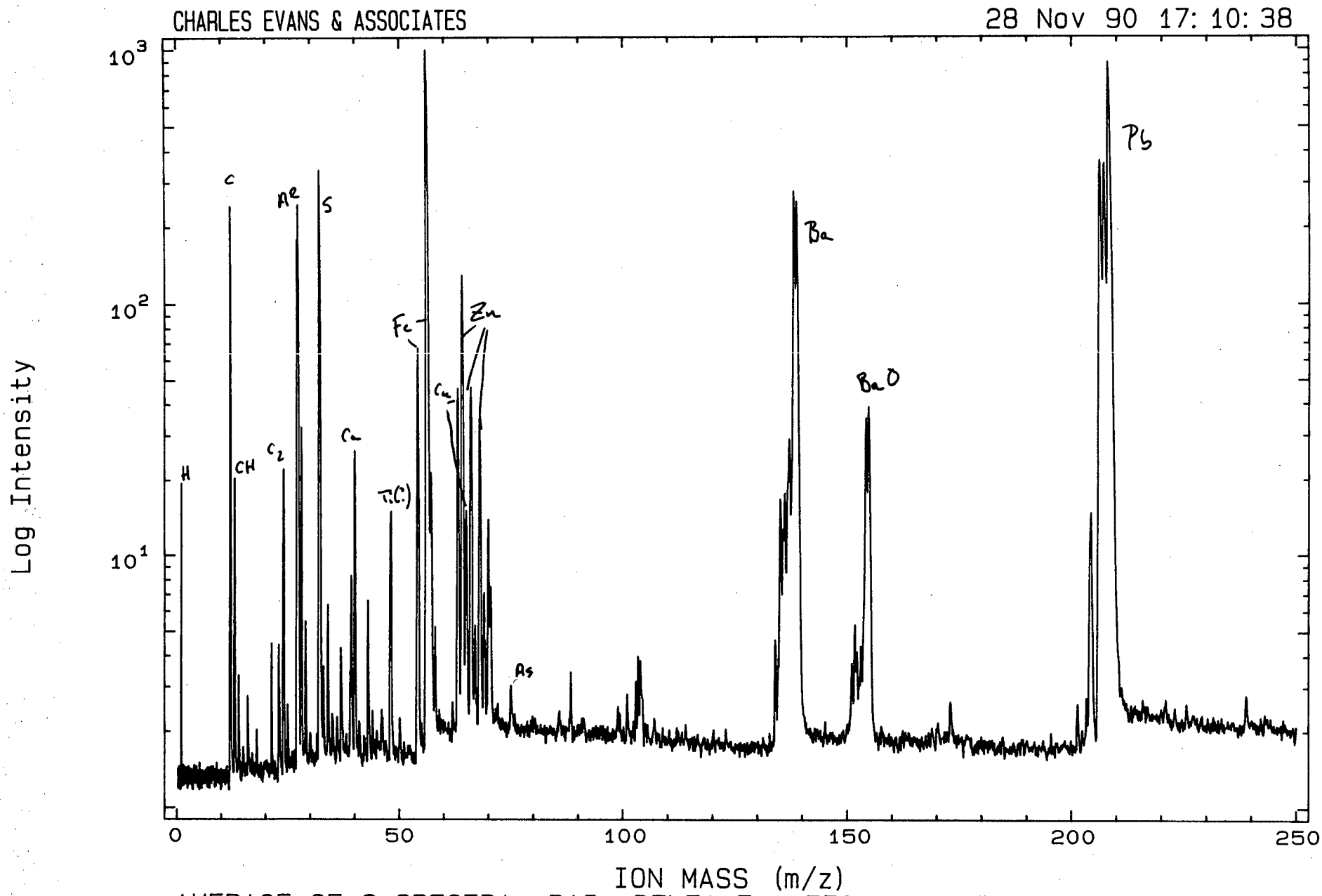
U. WESTERN ONTARIO/CHRYSSOULIS
SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
UW0027

FIGURE 5



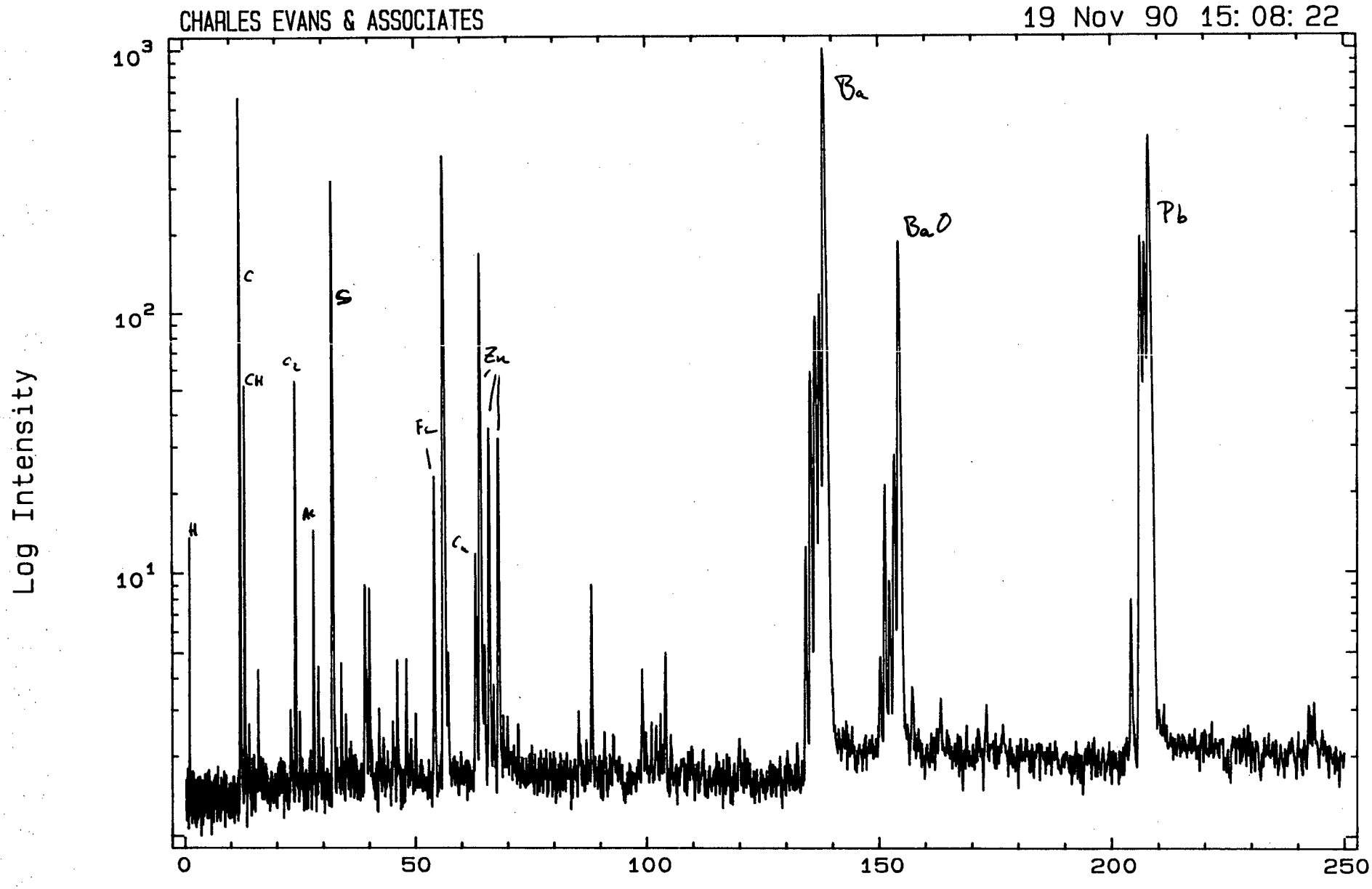
U. WESTERN ONTARIO/CHRYSSOULIS
SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
UW0035

FIGURE 6



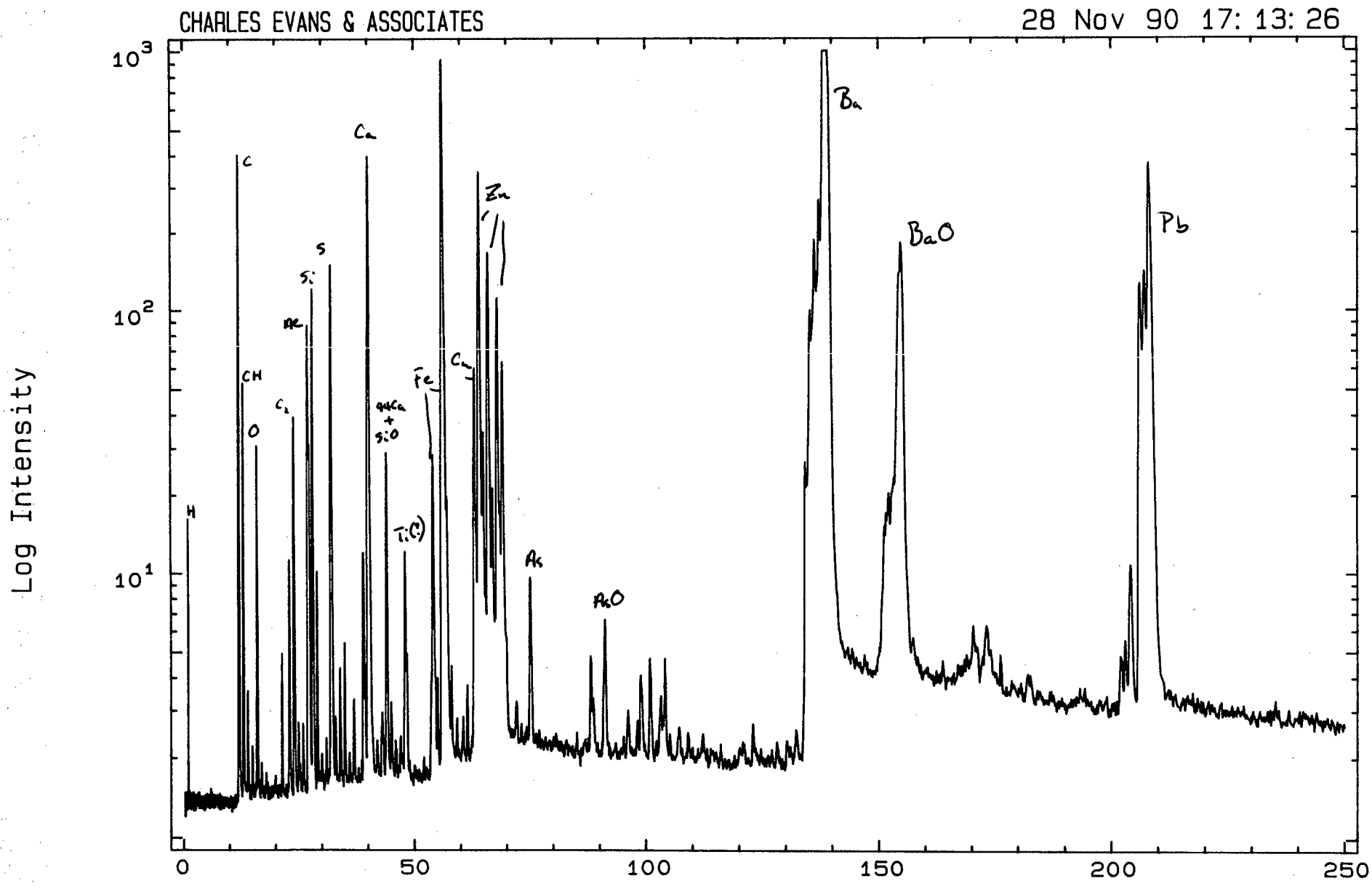
AVERAGE OF 6 SPECTRA; PAI; DELTA T = 750 ns; + IONS
U. WESTERN ONTARIO/CHRYSSOULIS, SAMPLE 3
UWOAV03

FIGURE 7



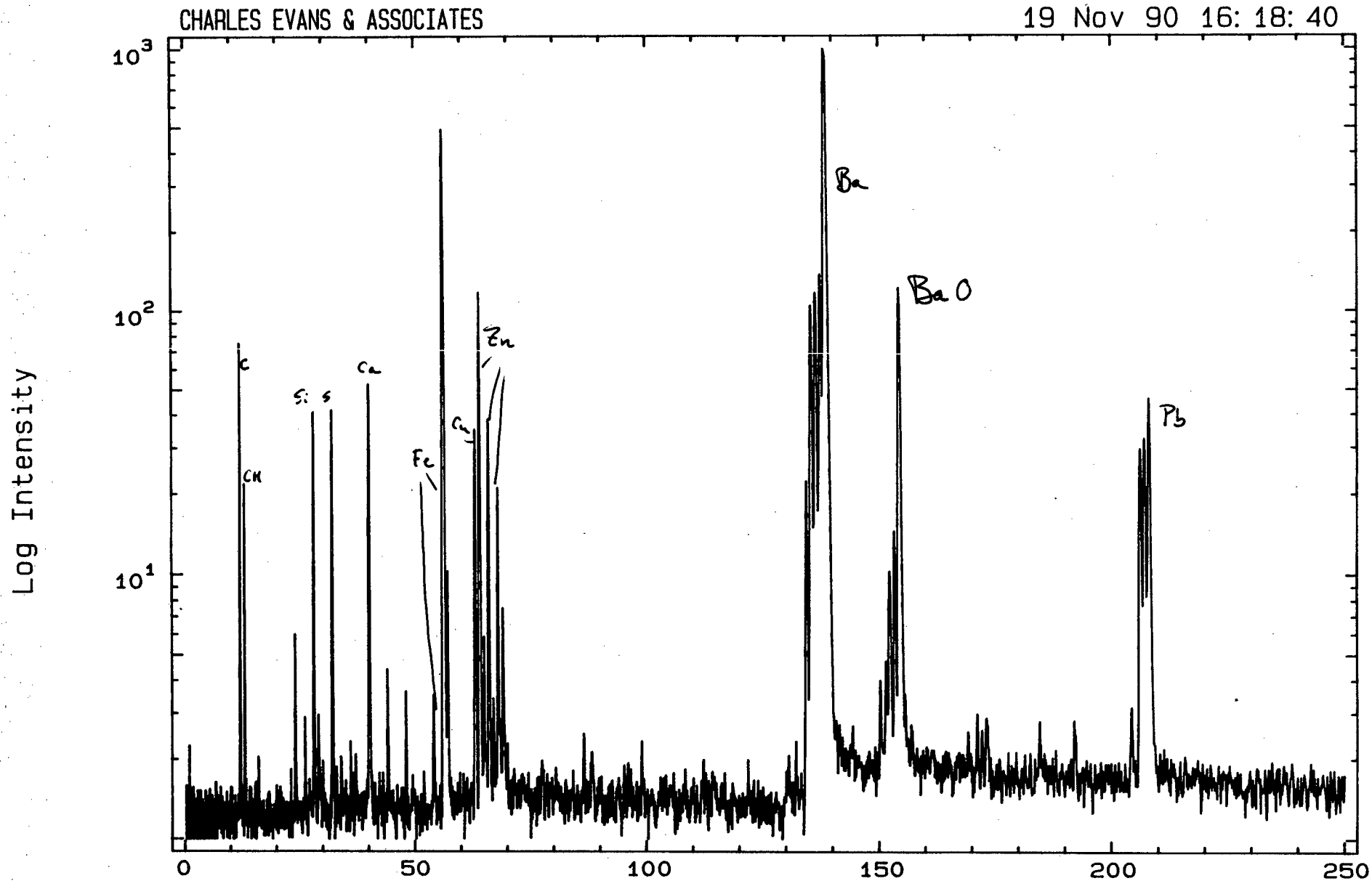
U. WESTERN ONTARIO/CHRYSSOULIS
SAMPLE 3; PAI; DELTA T = 750 ns; + IONS
UW0043

FIGURE 8



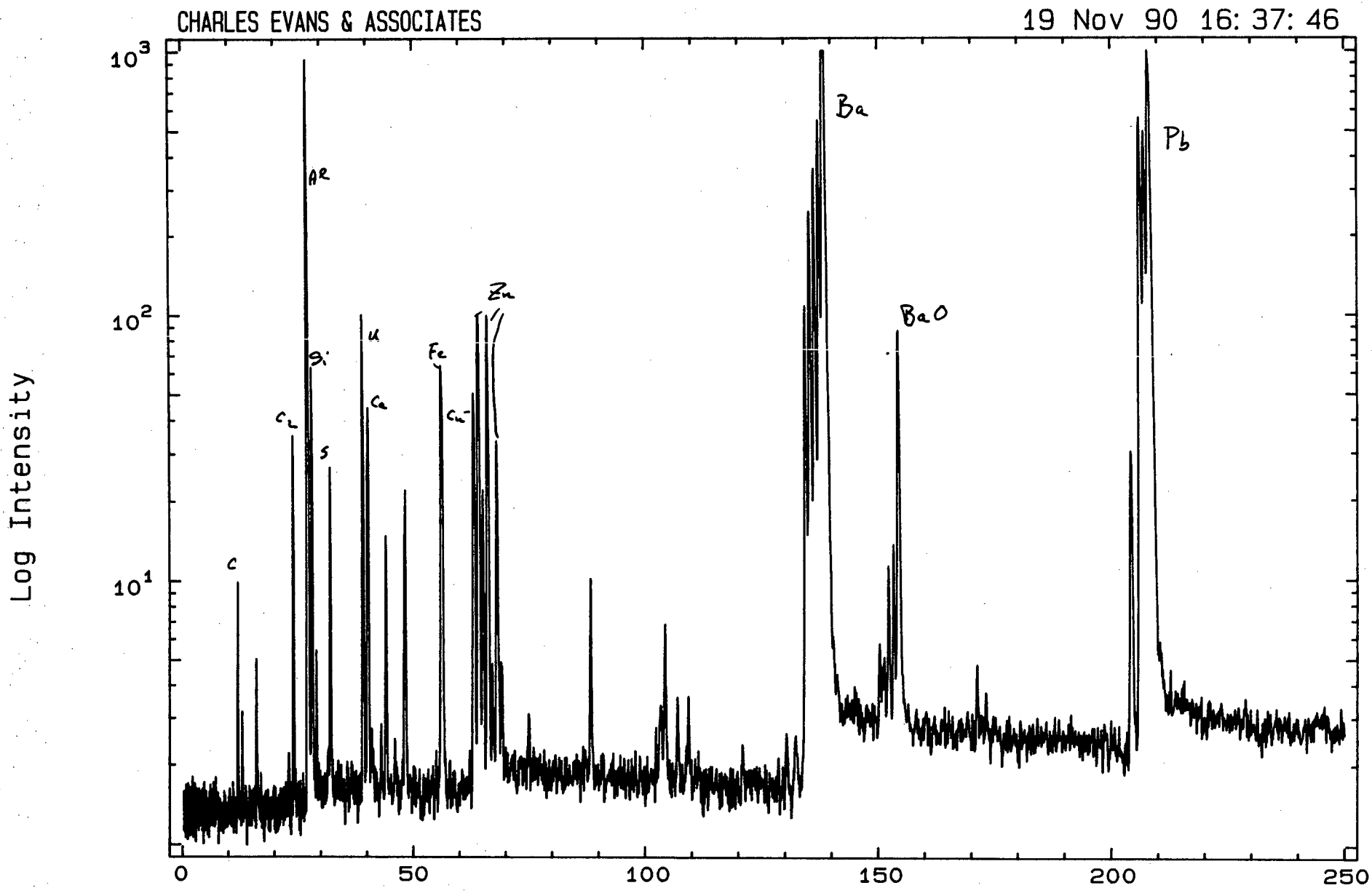
AVERAGE OF 11 SPECTRA; PAI; DELTA T = 750 ns; + IONS
U. WESTERN ONTARIO/CHRYSSOULIS, SAMPLE 3A
UWOAV04

FIGURE 9

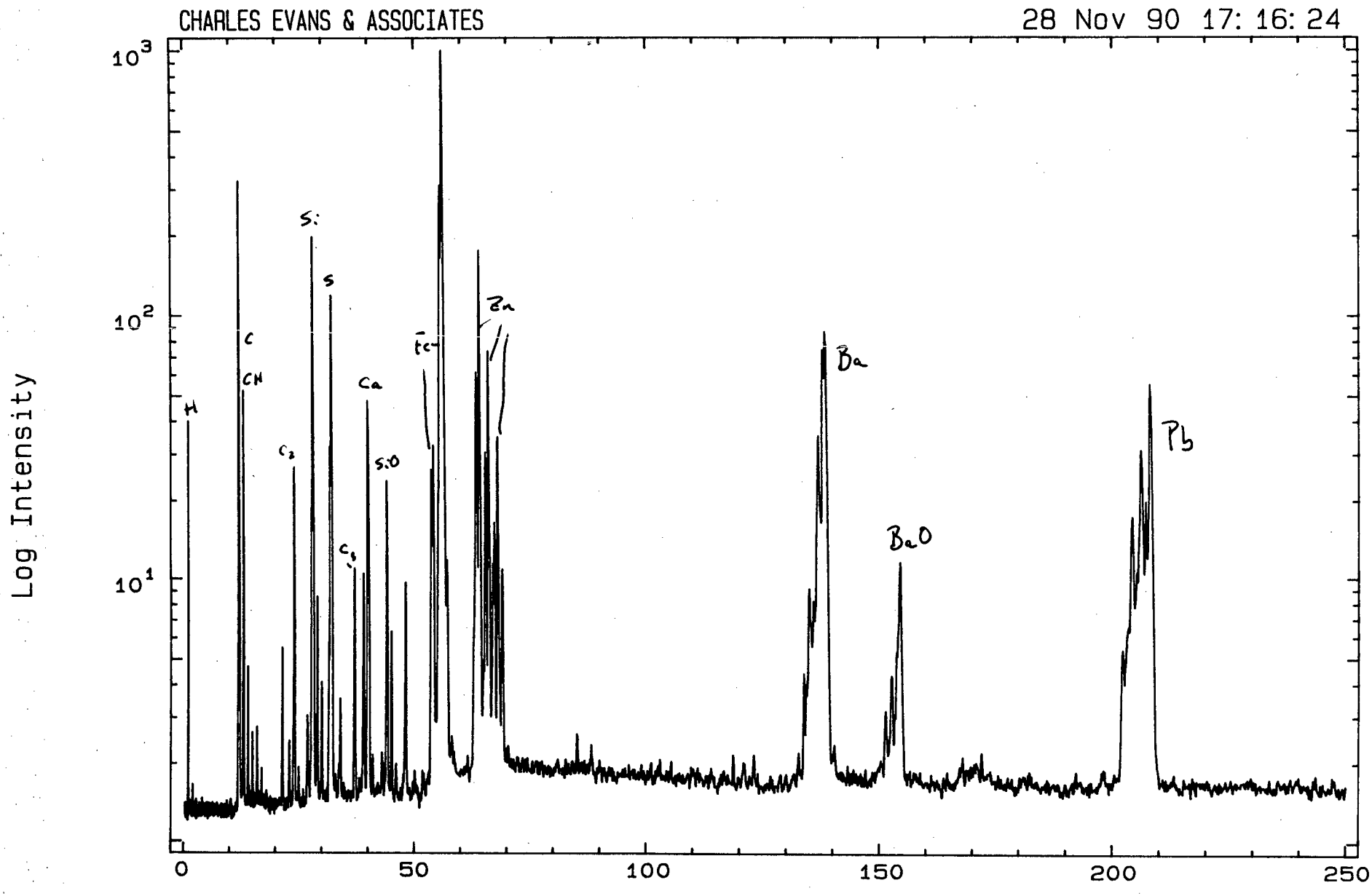


U. WESTERN ONTARIO/CHRYSSOULIS
SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
UW0054

FIGURE 10

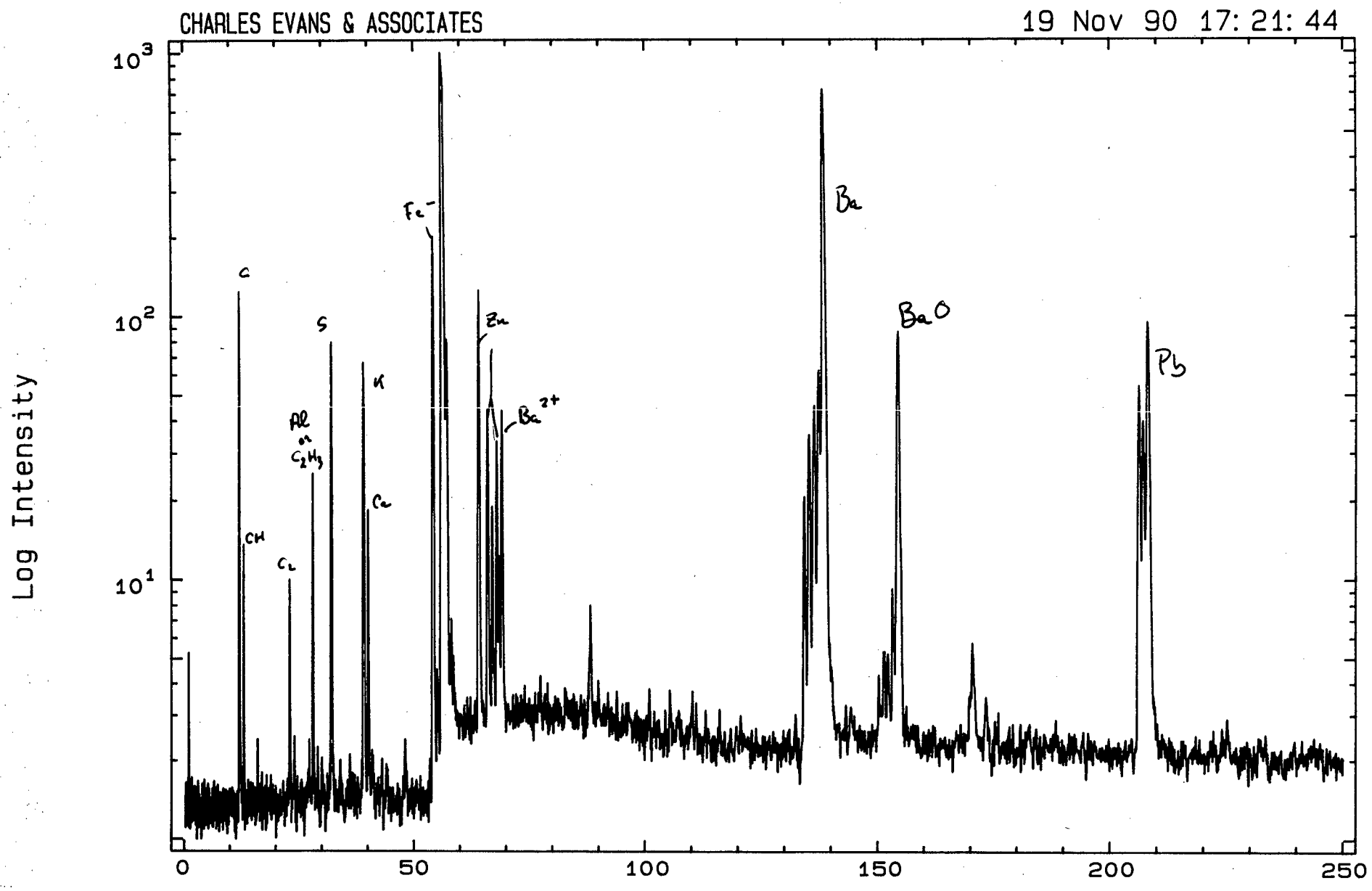


U. WESTERN ONTARIO/CHRYSSOULIS
SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
UW0061 FIGURE 11



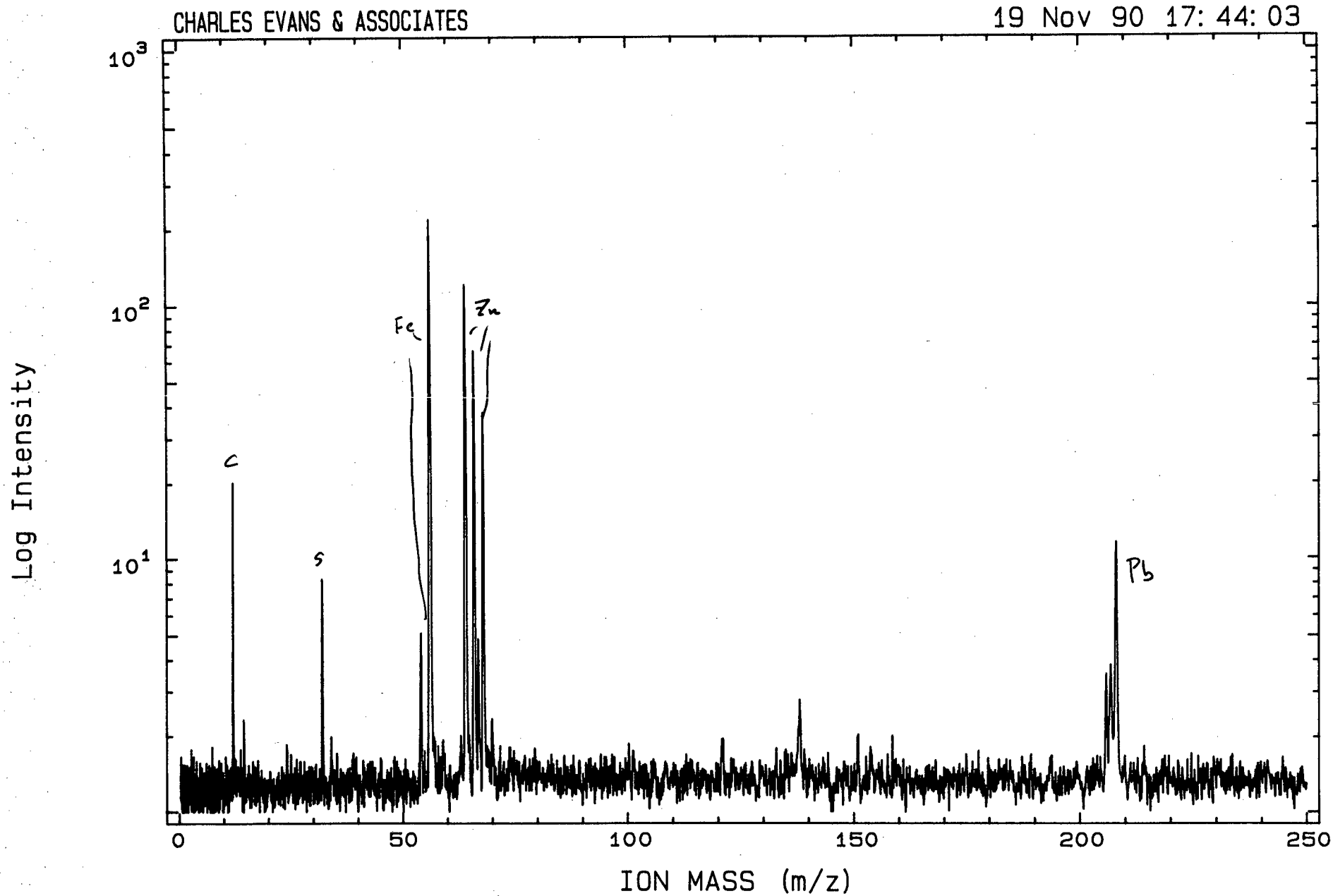
AVERAGE OF 10 SPECTRA; PAI; DELTA T = 750 ns; + IONS
U. WESTERN ONTARIO/CHRYSSOULIS, SAMPLE 4
UWOAV05

FIGURE 12



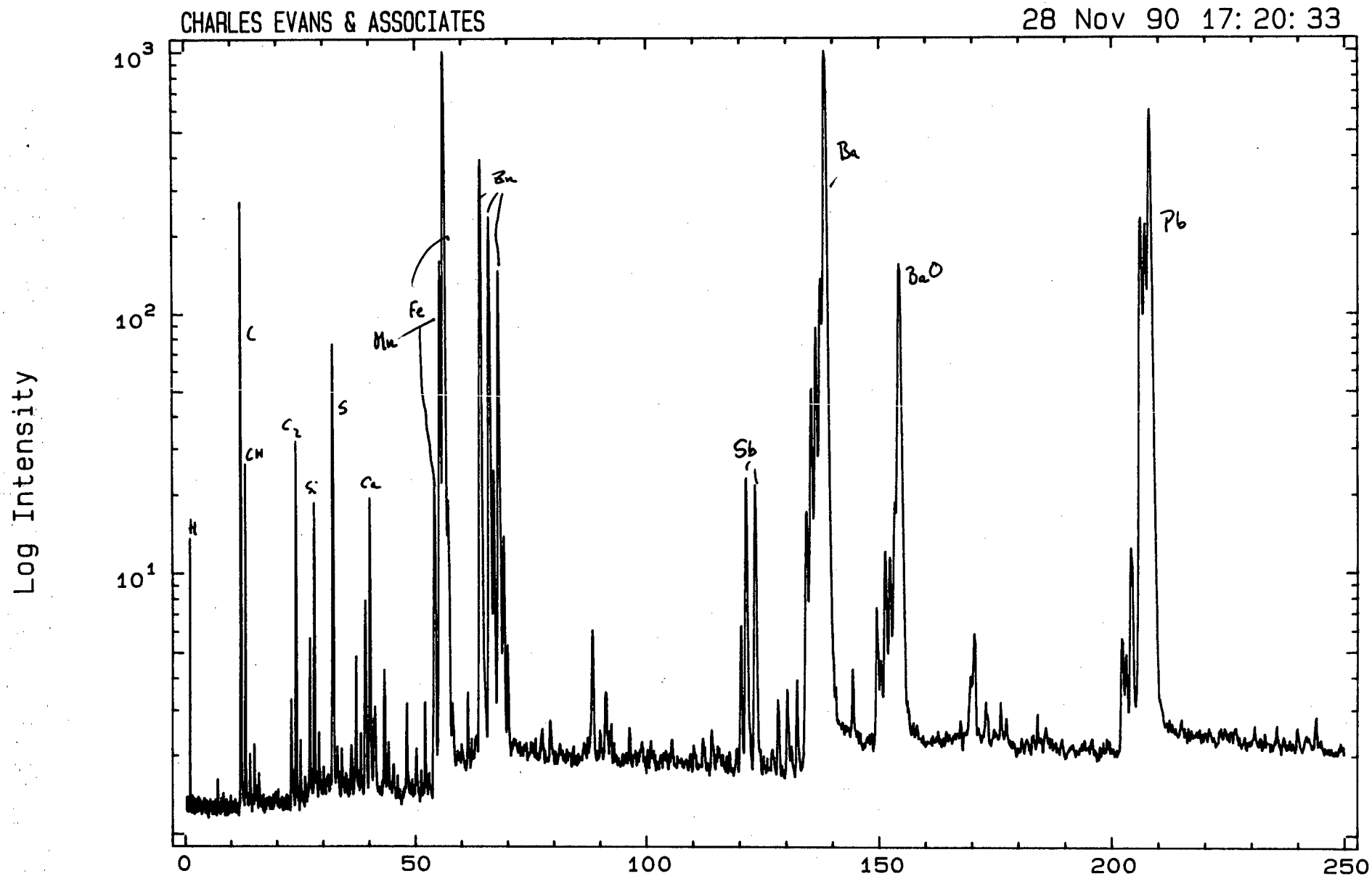
U. WESTERN ONTARIO/CHRYSSOULIS
SAMPLE 4; PAI; DELTA T = 750 ns; + IONS
UW0062

FIGURE 13

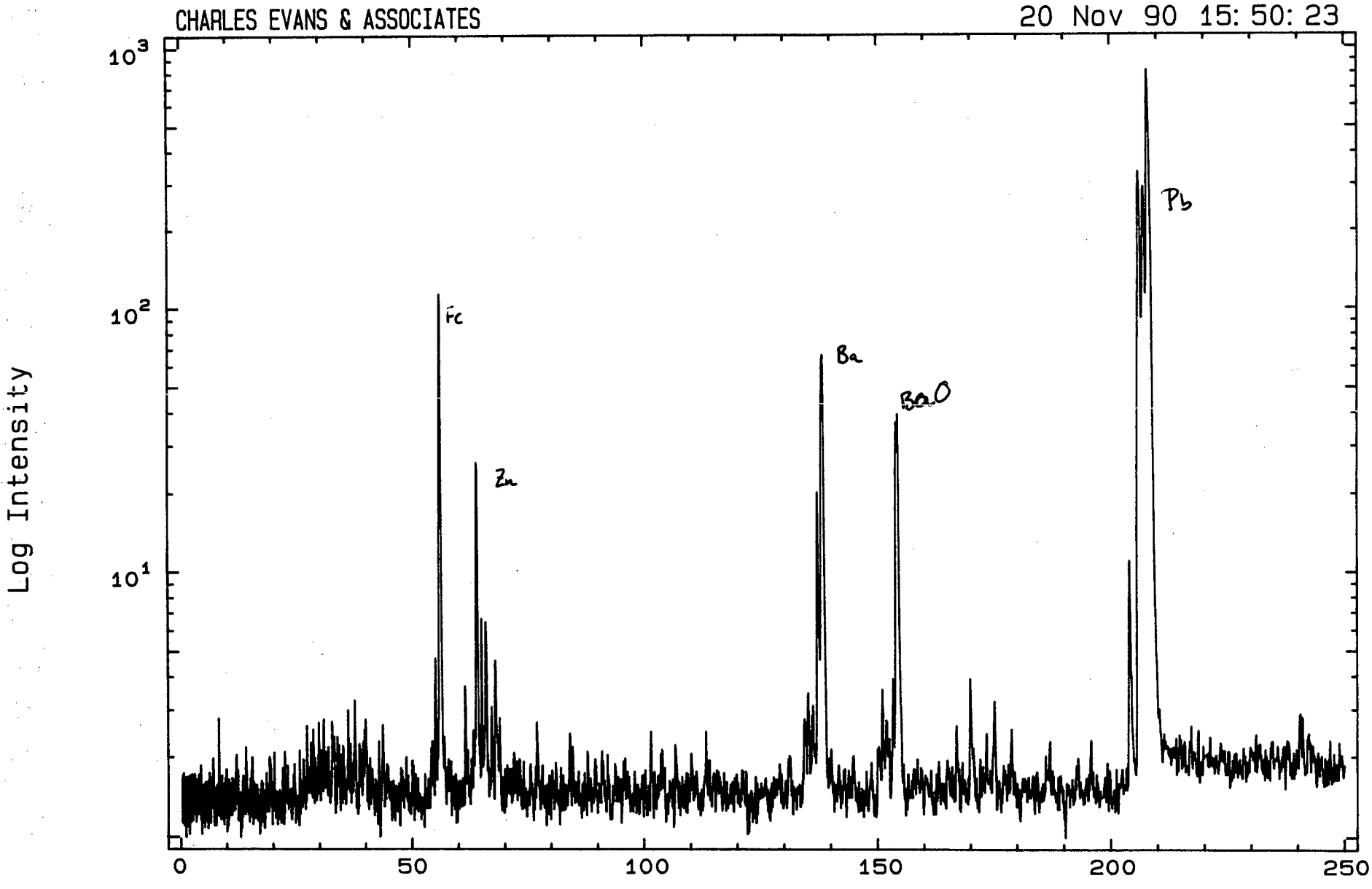


U. WESTERN ONTARIO/CHRYSSOULIS
SAMPLE 4; PAI; DELTA T = 750 ns; + IONS
UW0070

FIGURE 14

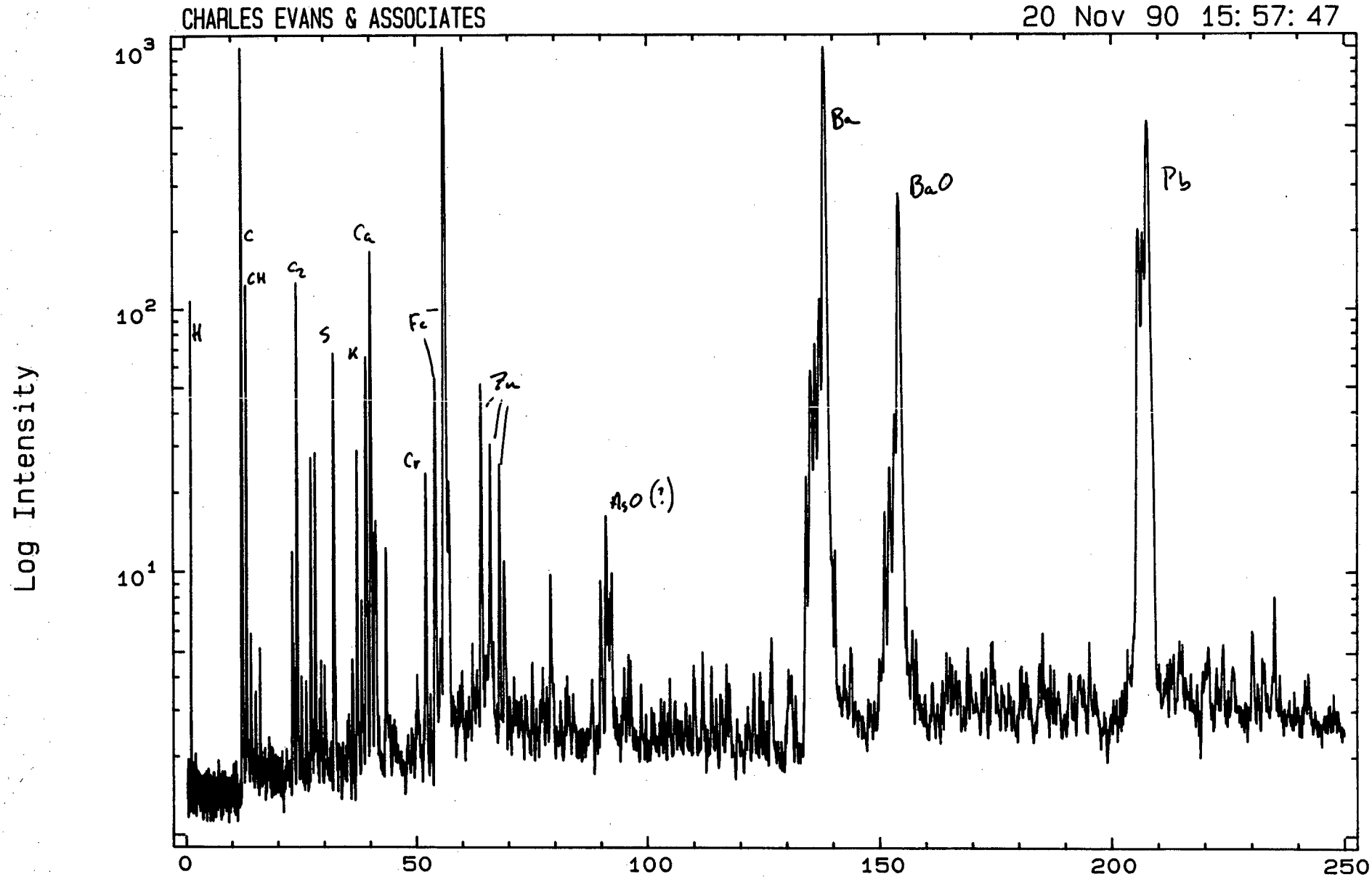


AVERAGE OF 12 SPECTRA; PAI; DELTA T = 750 ns; + IONS
U. WESTERN ONTARIO/CHRYSSOULIS, SAMPLE 4 (2ND ANALYSIS)
UWOAV06 FIGURE 15



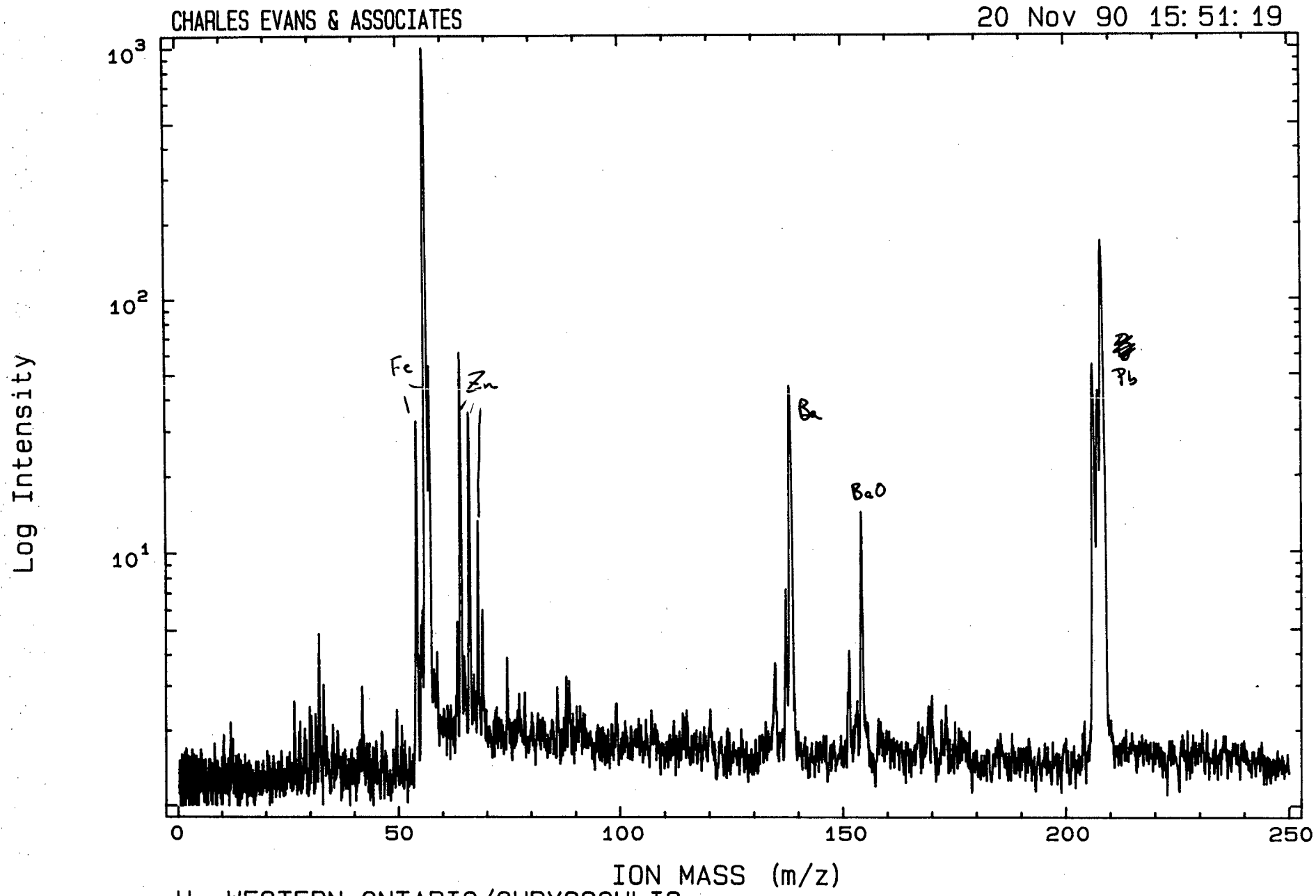
U. WESTERN ONTARIO/CHRYSSOULIS
SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
UW0080

FIGURE 16



U. WESTERN ONTARIO/CHRYSSOULIS
SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
UW0084

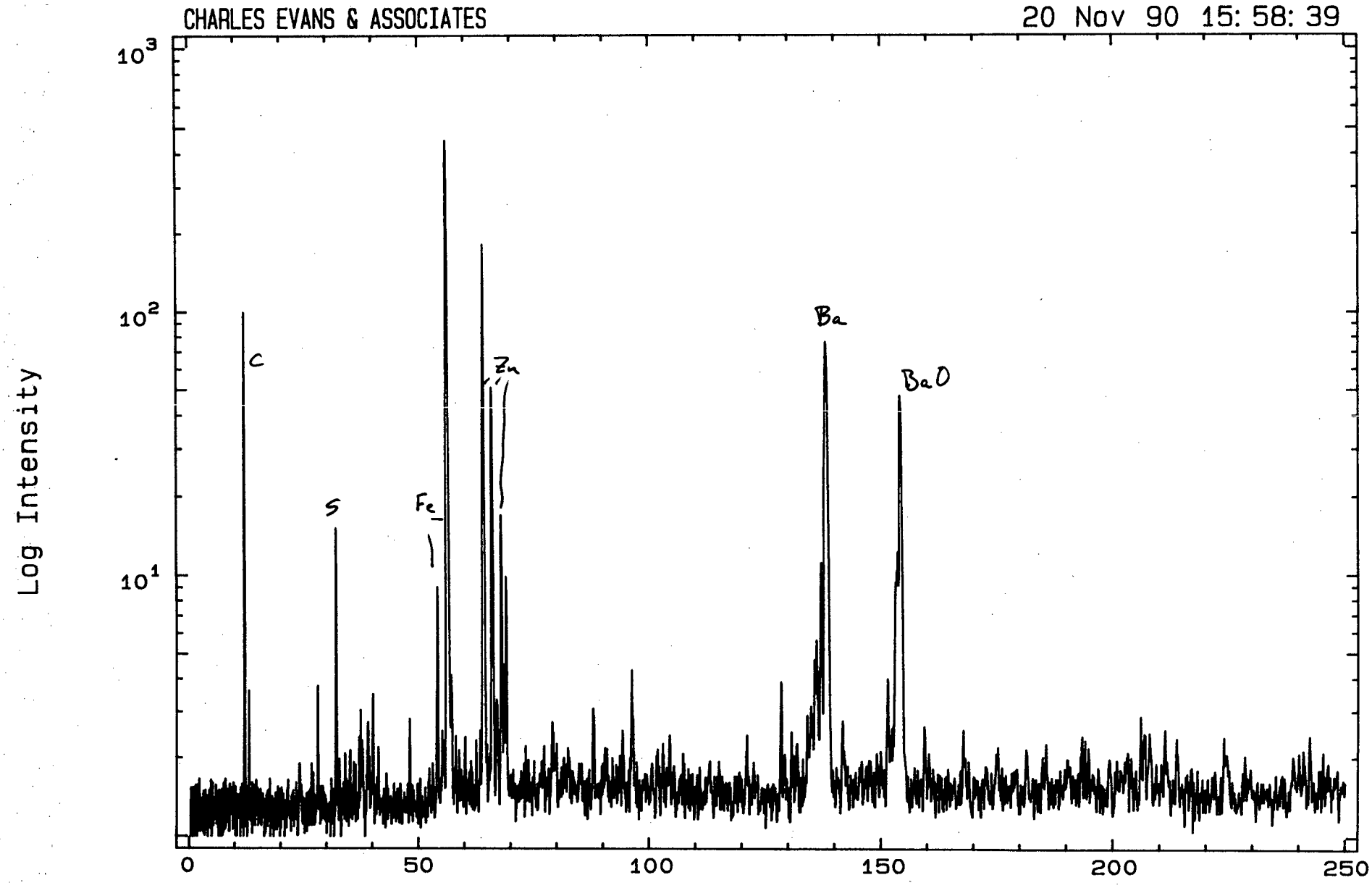
FIGURE 17



U. WESTERN ONTARIO/CHRYSSOULIS
SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
UW0081

FIGURE 18

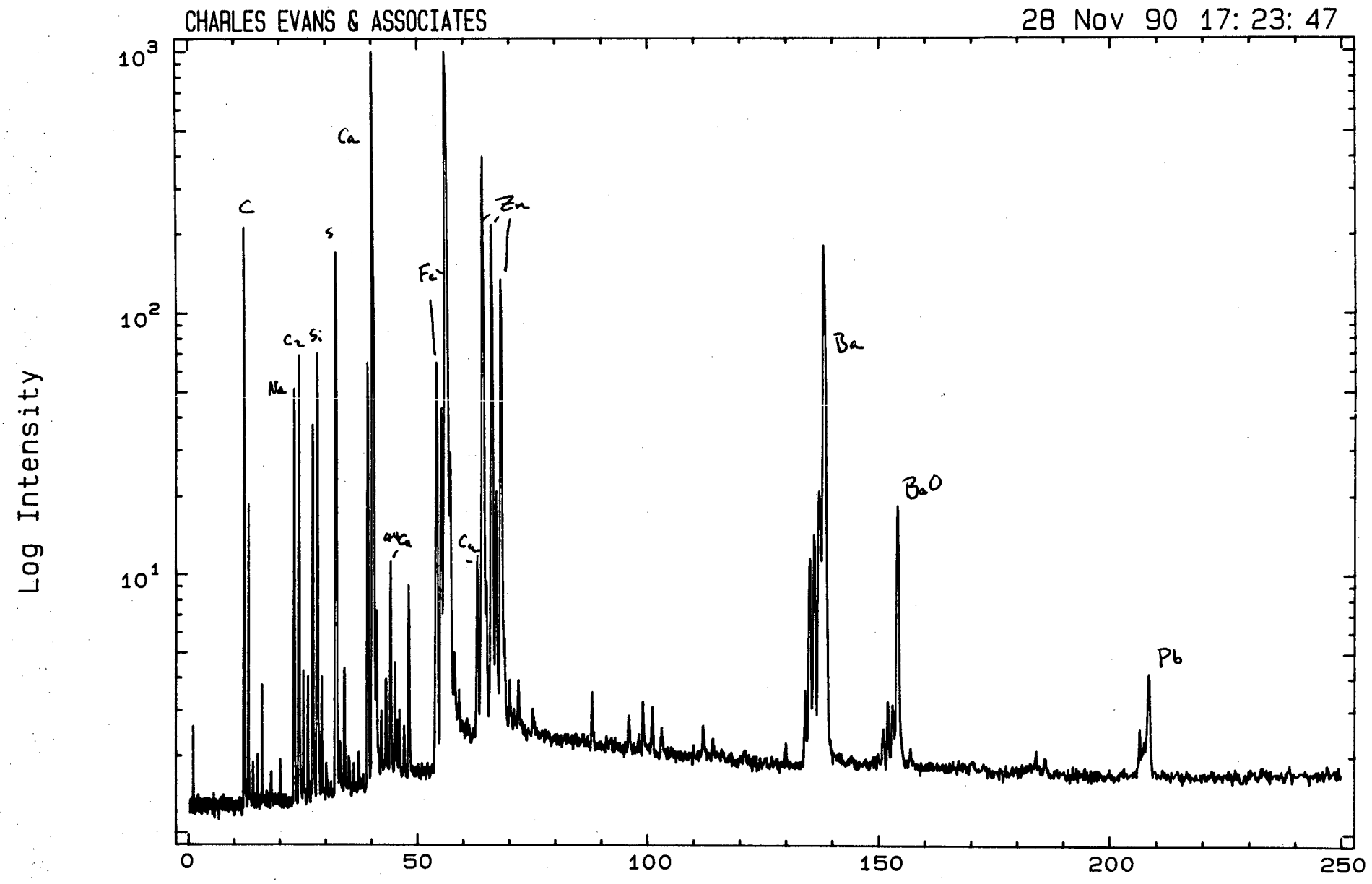
Substrate



U. WESTERN ONTARIO/CHRYSSOULIS
SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
UW0085

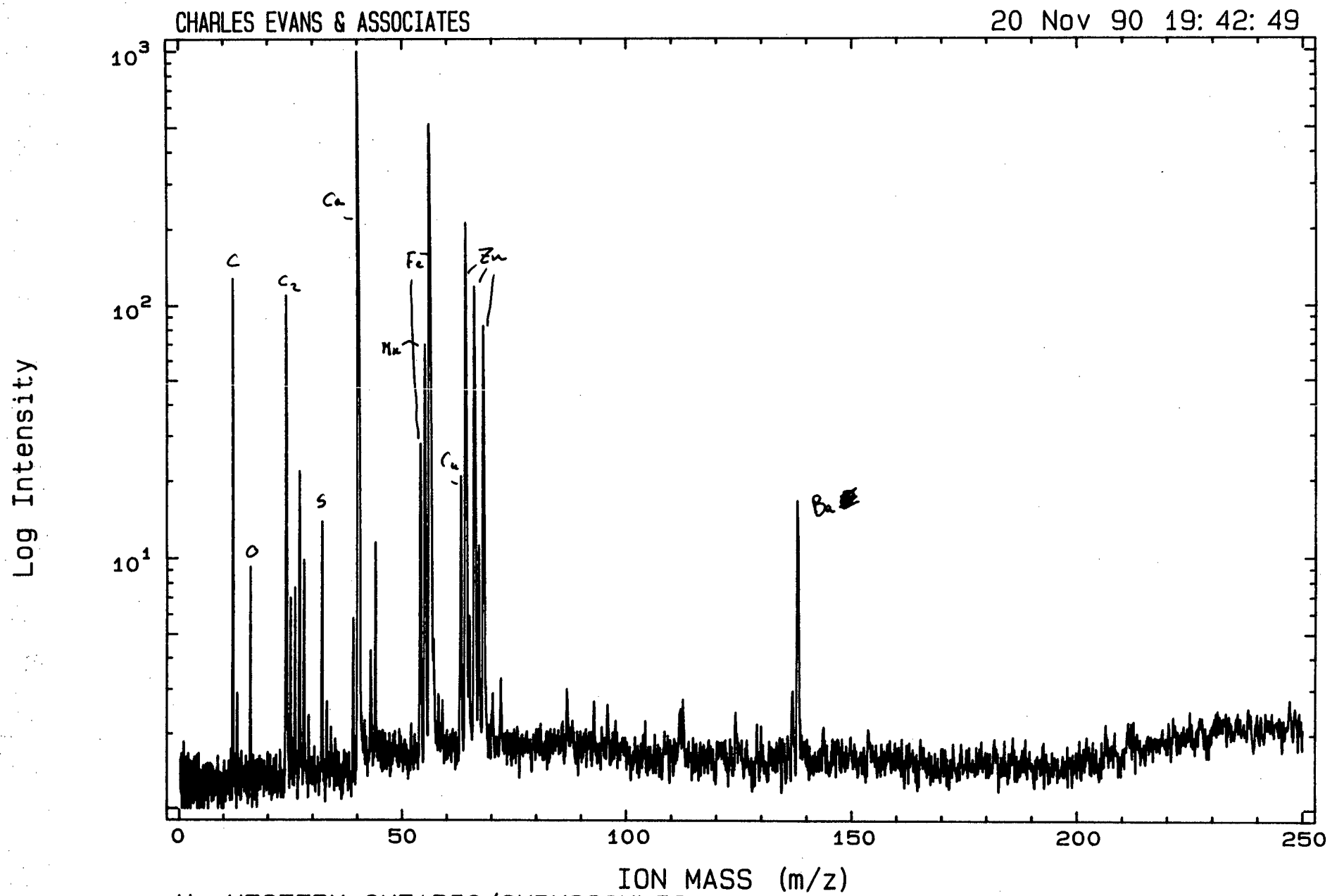
FIGURE 19

substrate



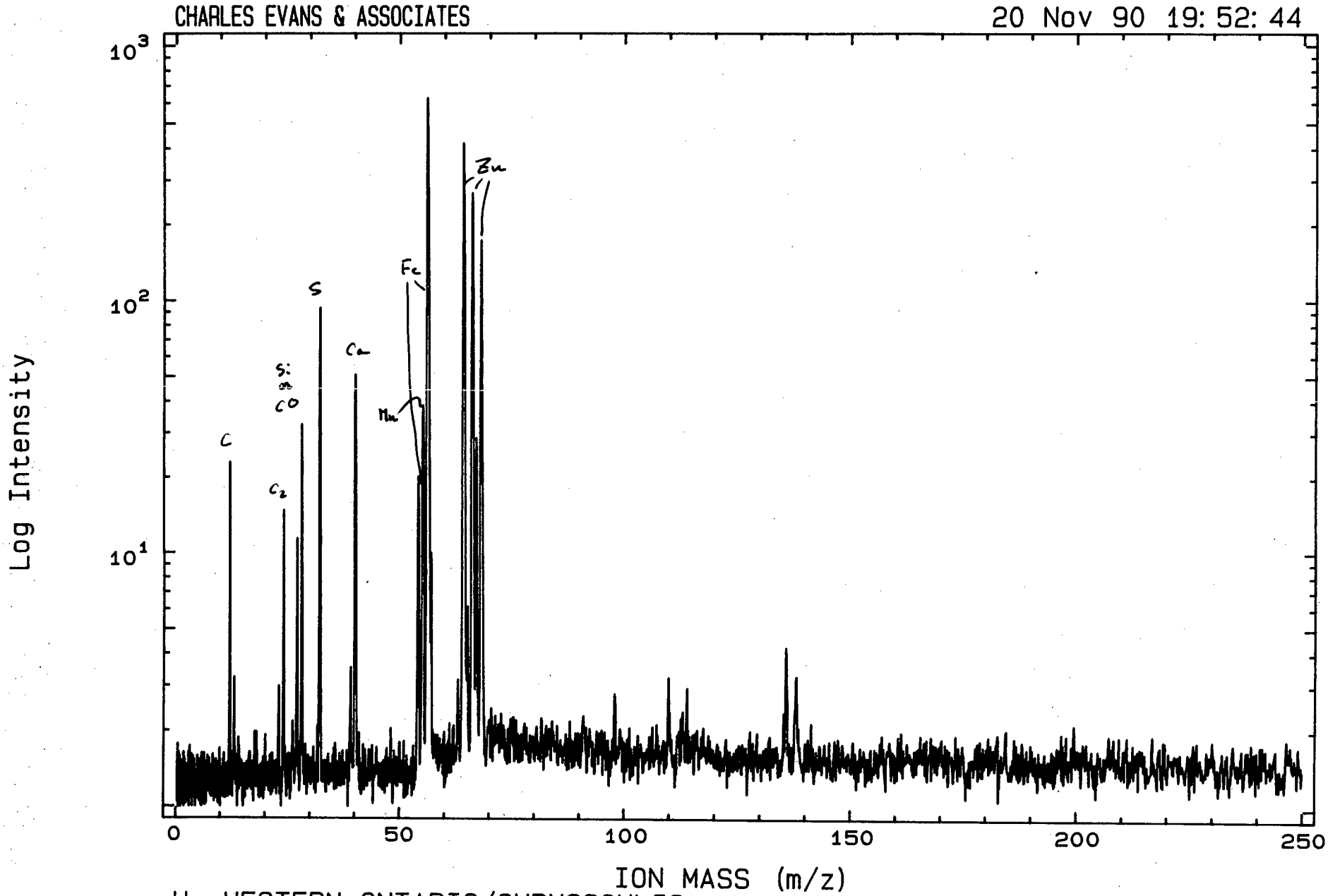
AVERAGE OF 11 SPECTRA; PAI; DELTA T = 750ns; + IONS
U. WESTERN ONTARIO/ CHRYSSOULIS, SAMPLE 6
UWOAV07

FIGURE 20



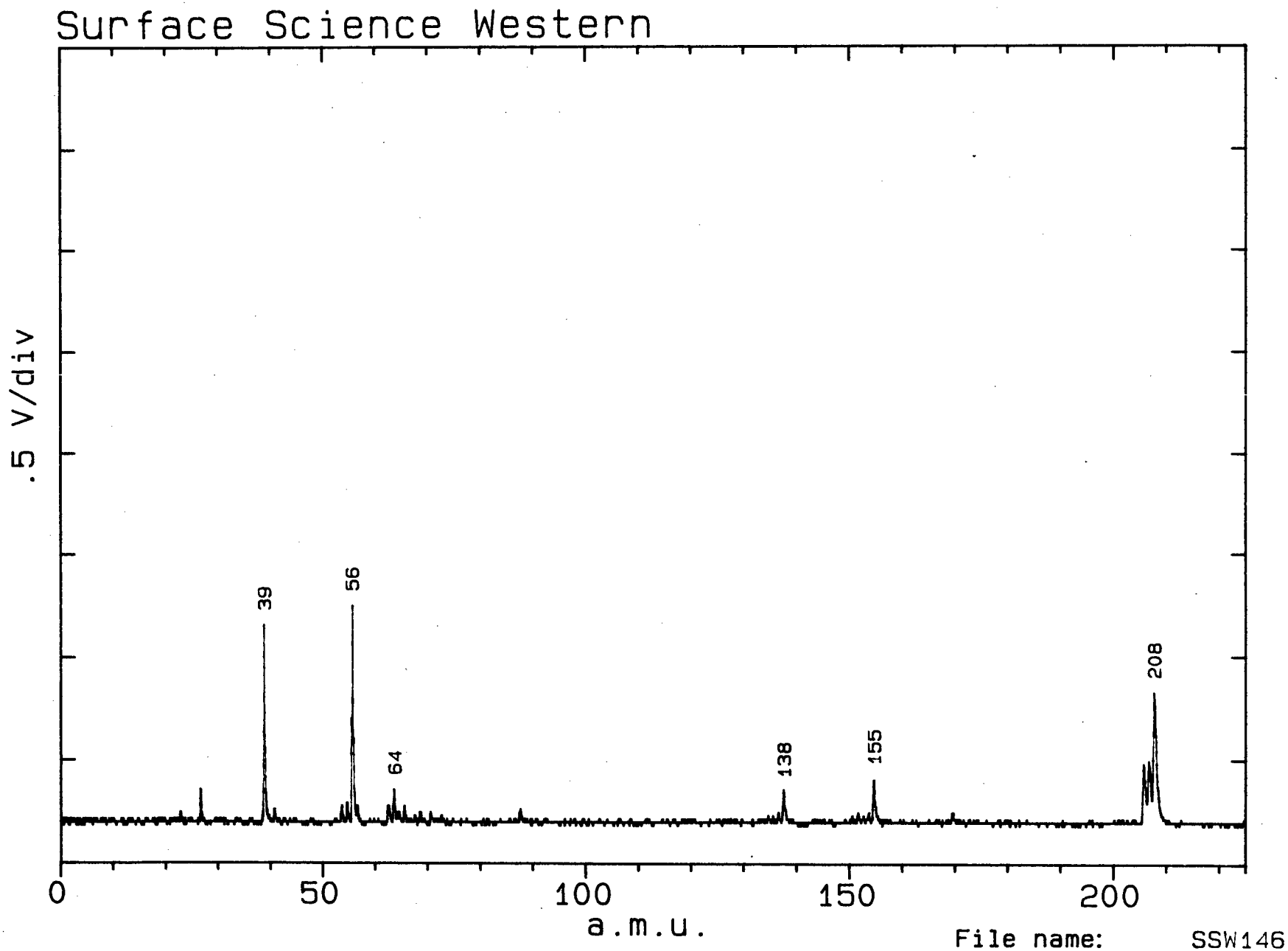
U. WESTERN ONTARIO/CHRYSSOULIS
SAMPLE 6; PAI; DELTA T = 750 ns; + IONS
UW0097

FIGURE 21

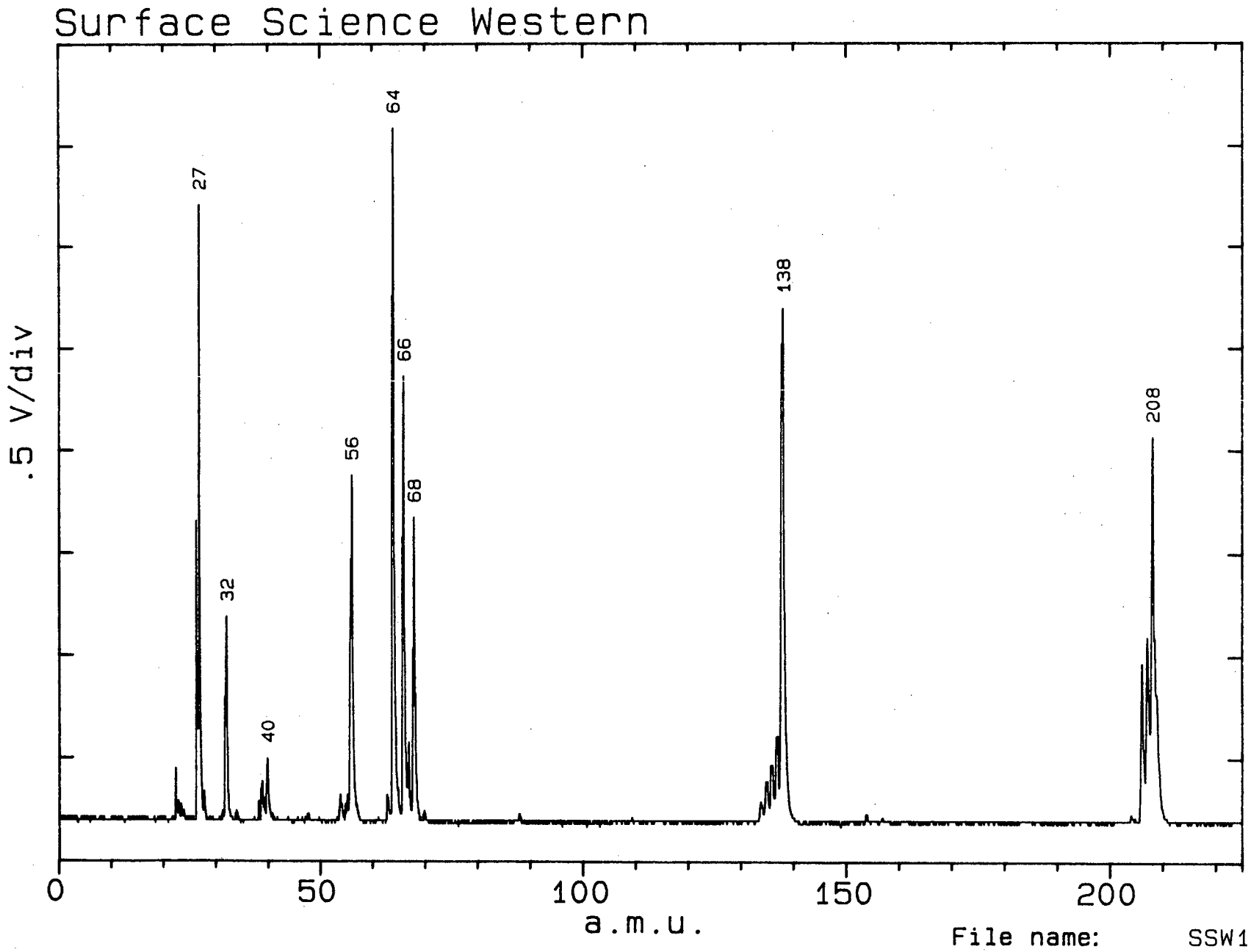


U. WESTERN ONTARIO/CHRYSSOULIS
SAMPLE 6; PAI; DELTA T = 750 ns; + IONS
UW0103

FIGURE 22

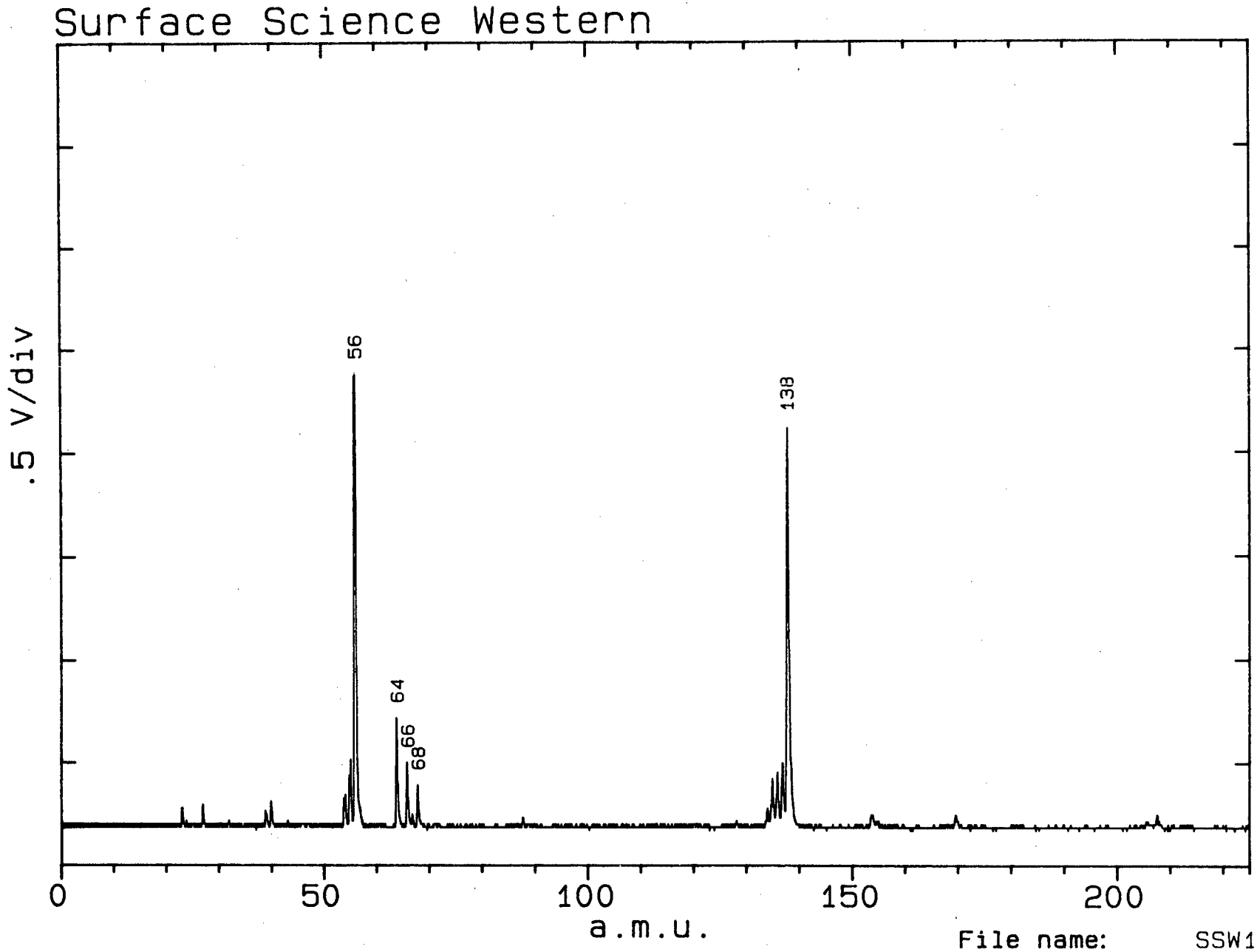


1 SPHALERITE GRAIN NO.1

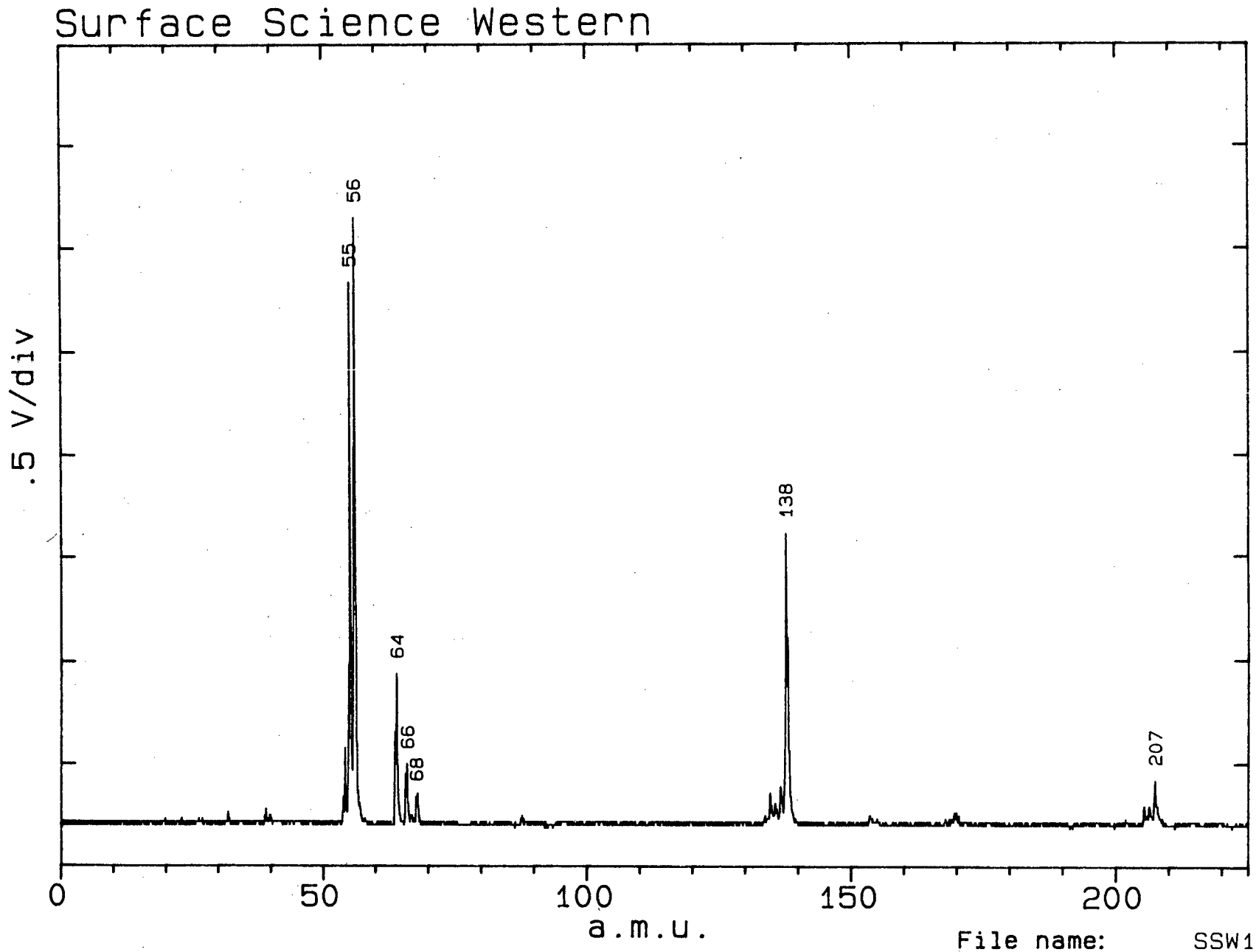


File name: SSW147
Laser power: 270
4 Dec 1990

1 SPHALERITE GRAIN NO.1



4 SPHALERITE GRAIN NO.2



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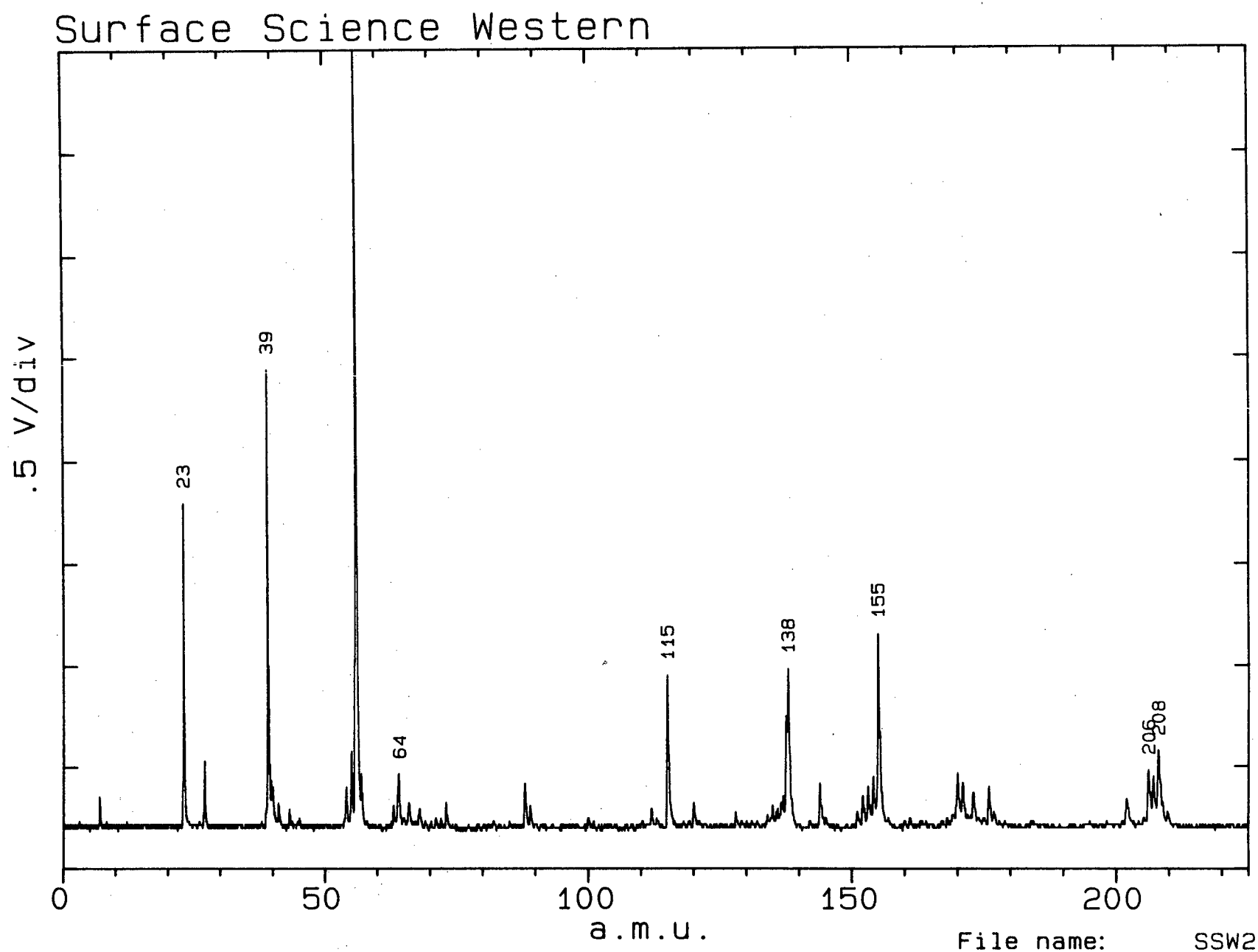
4 Dec 1990

4 SPHALERITE GRAIN NO.3



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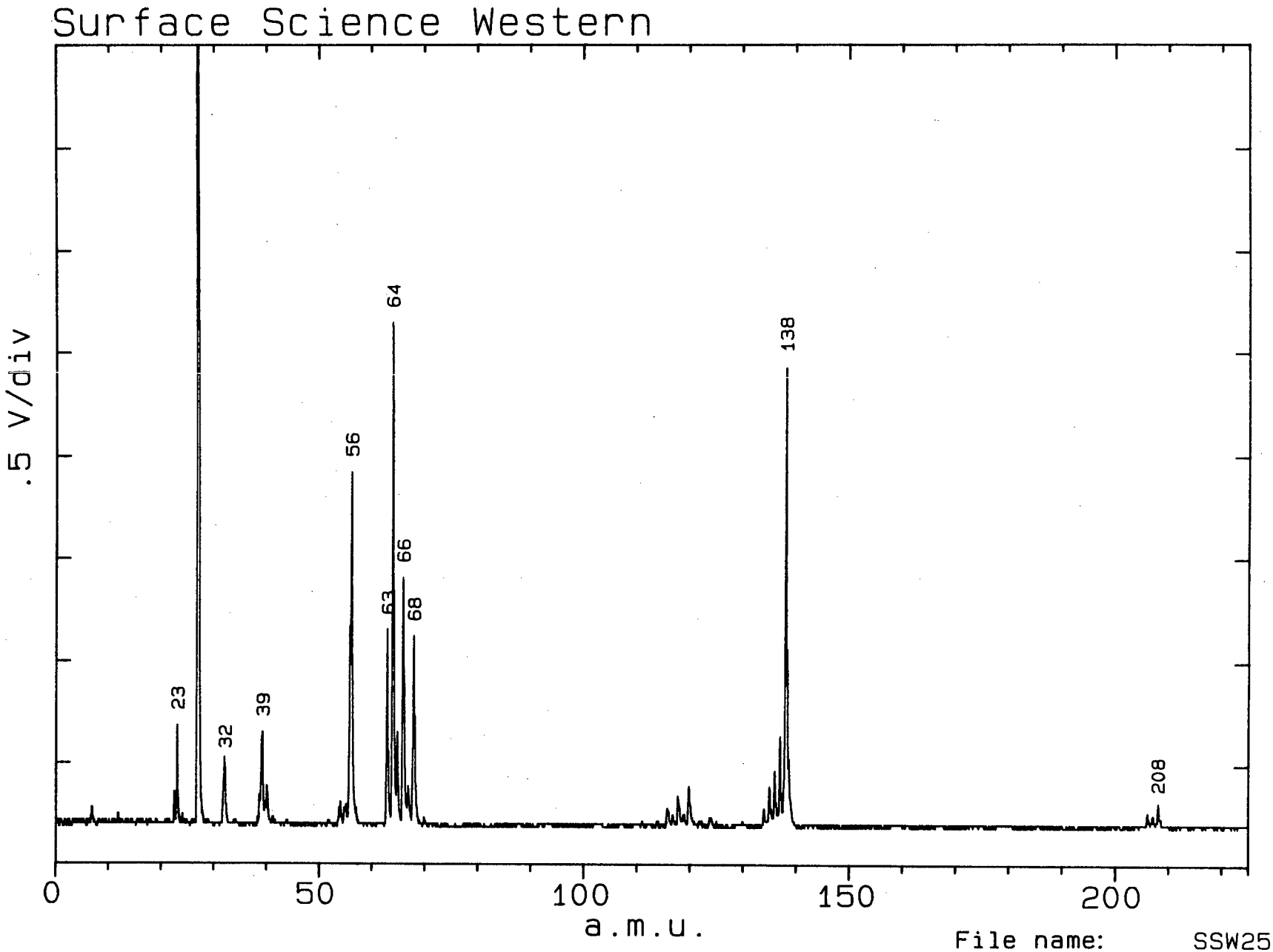
5 Dec 1990

6 SPHALERITE GRAIN NO.4



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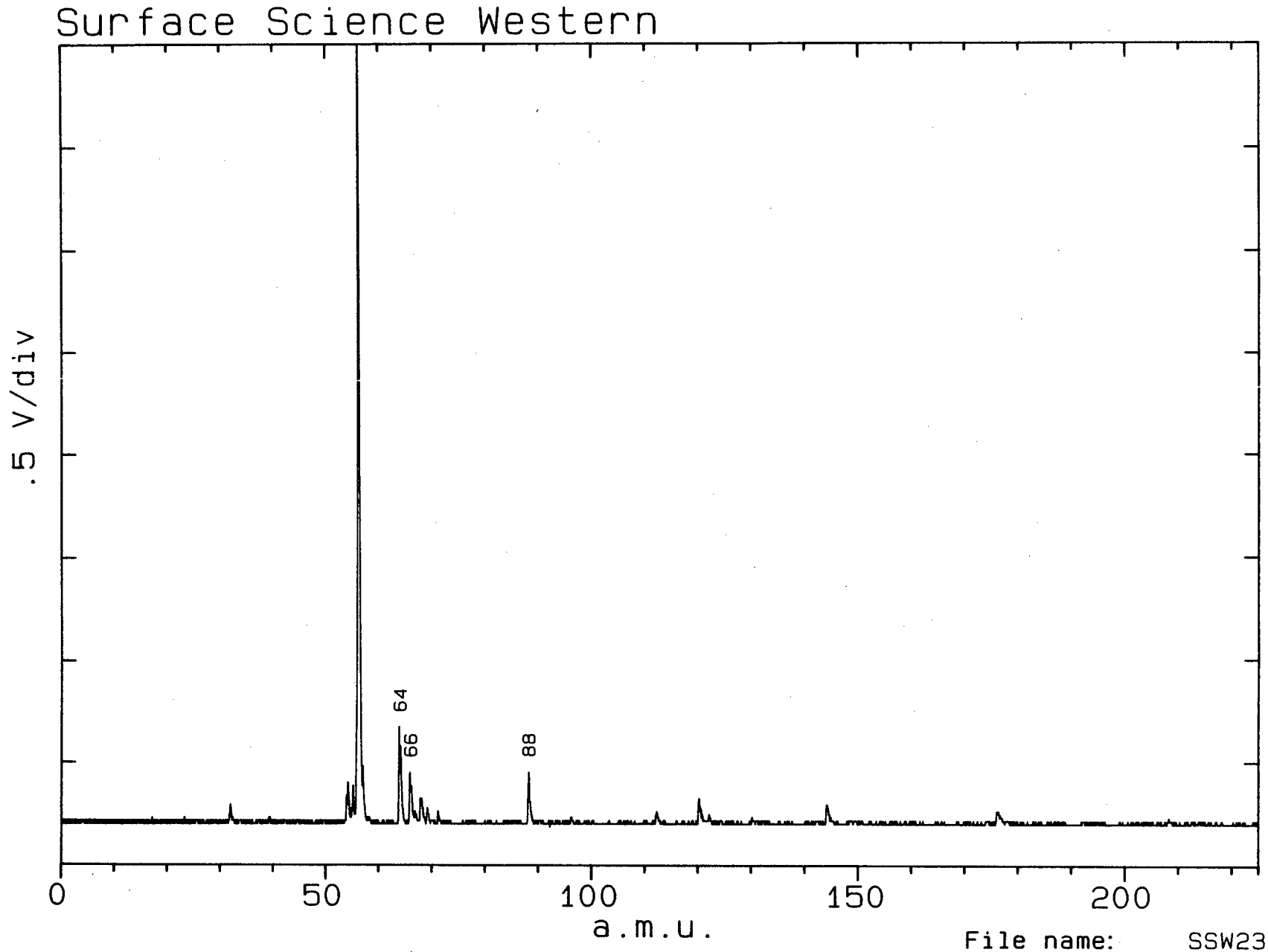
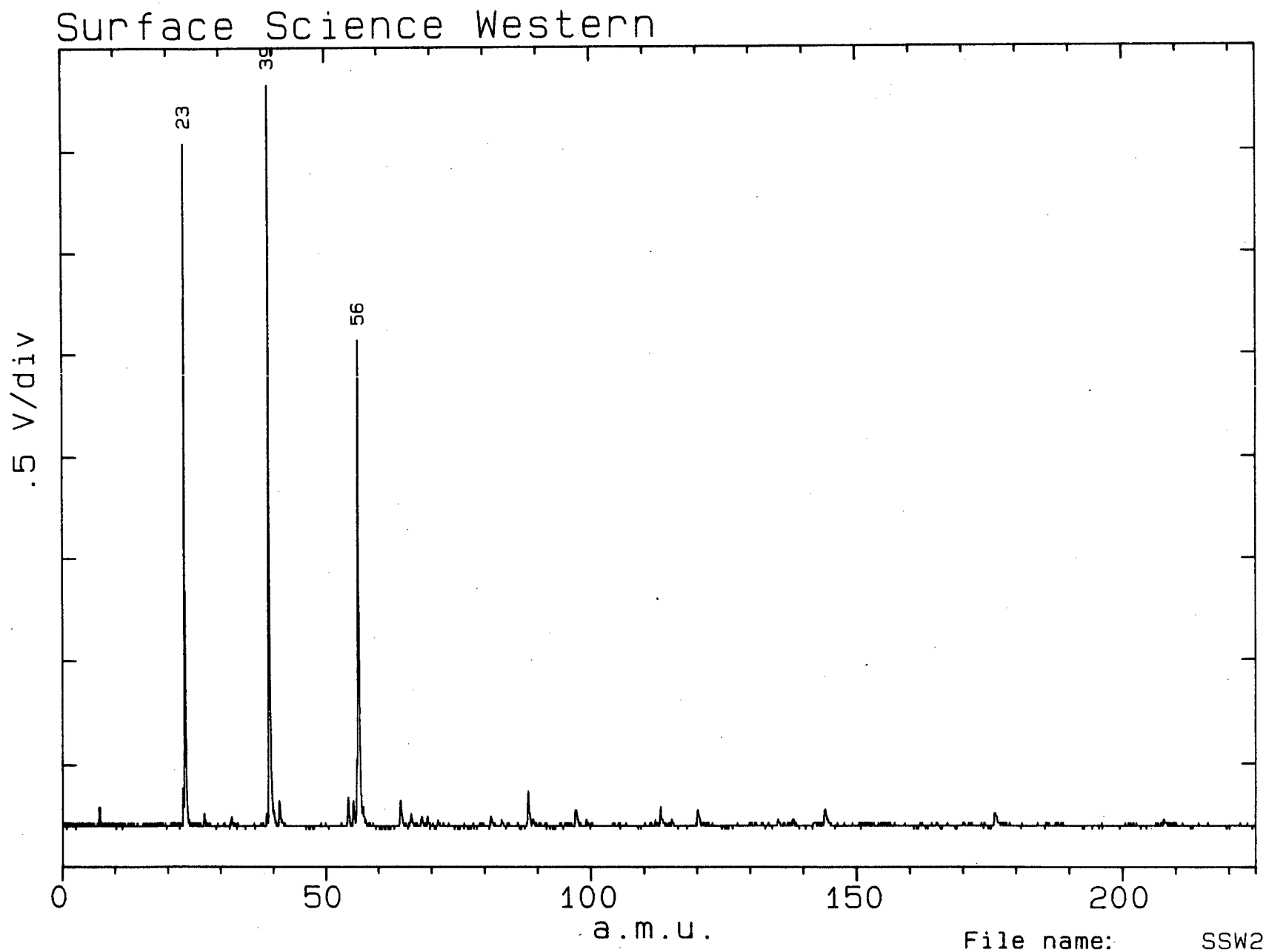
5 Dec 1990

6 SPHALERITE GRAIN NO.6



7 SPHALERITE GRAIN NO.3 SUBSTRATE



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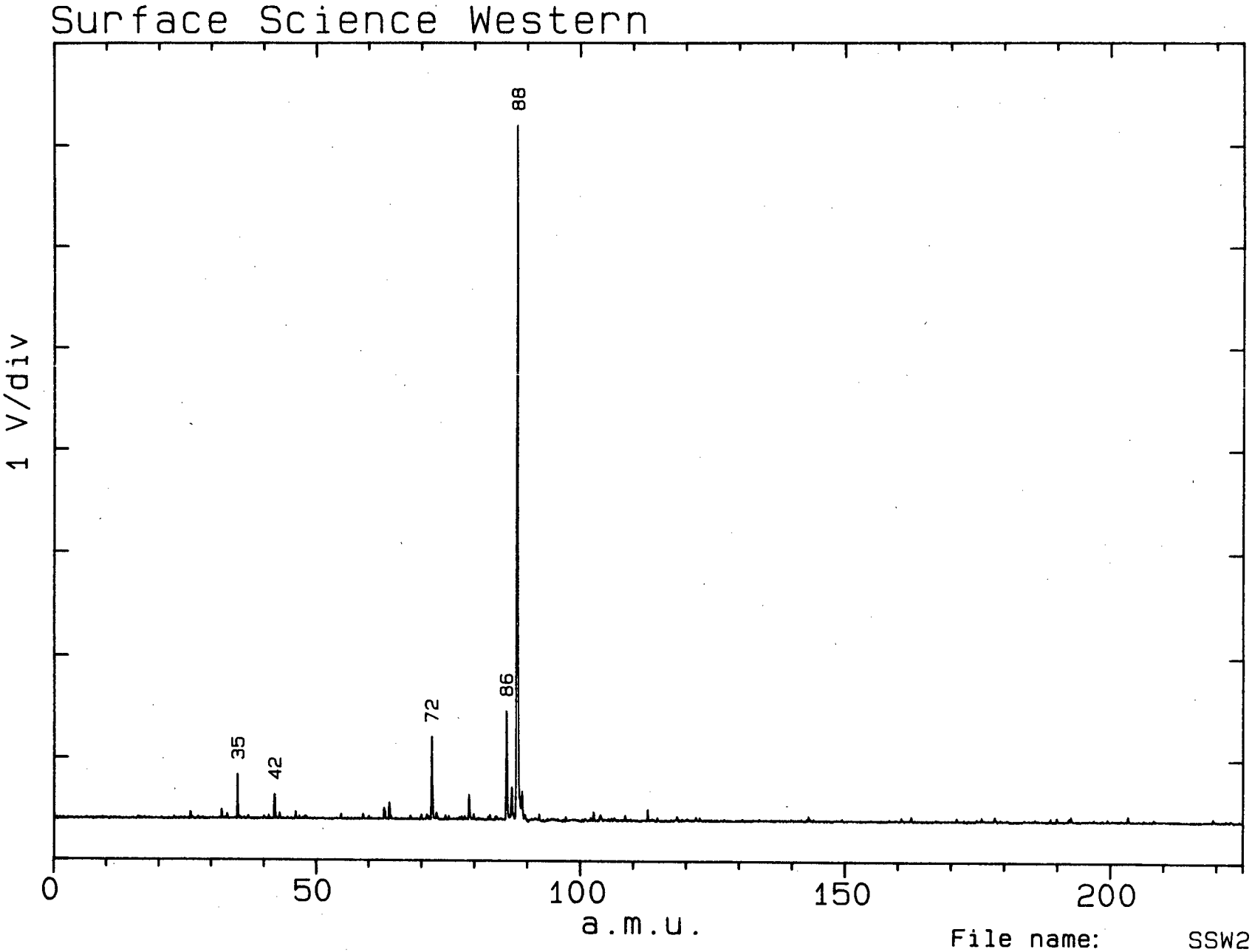
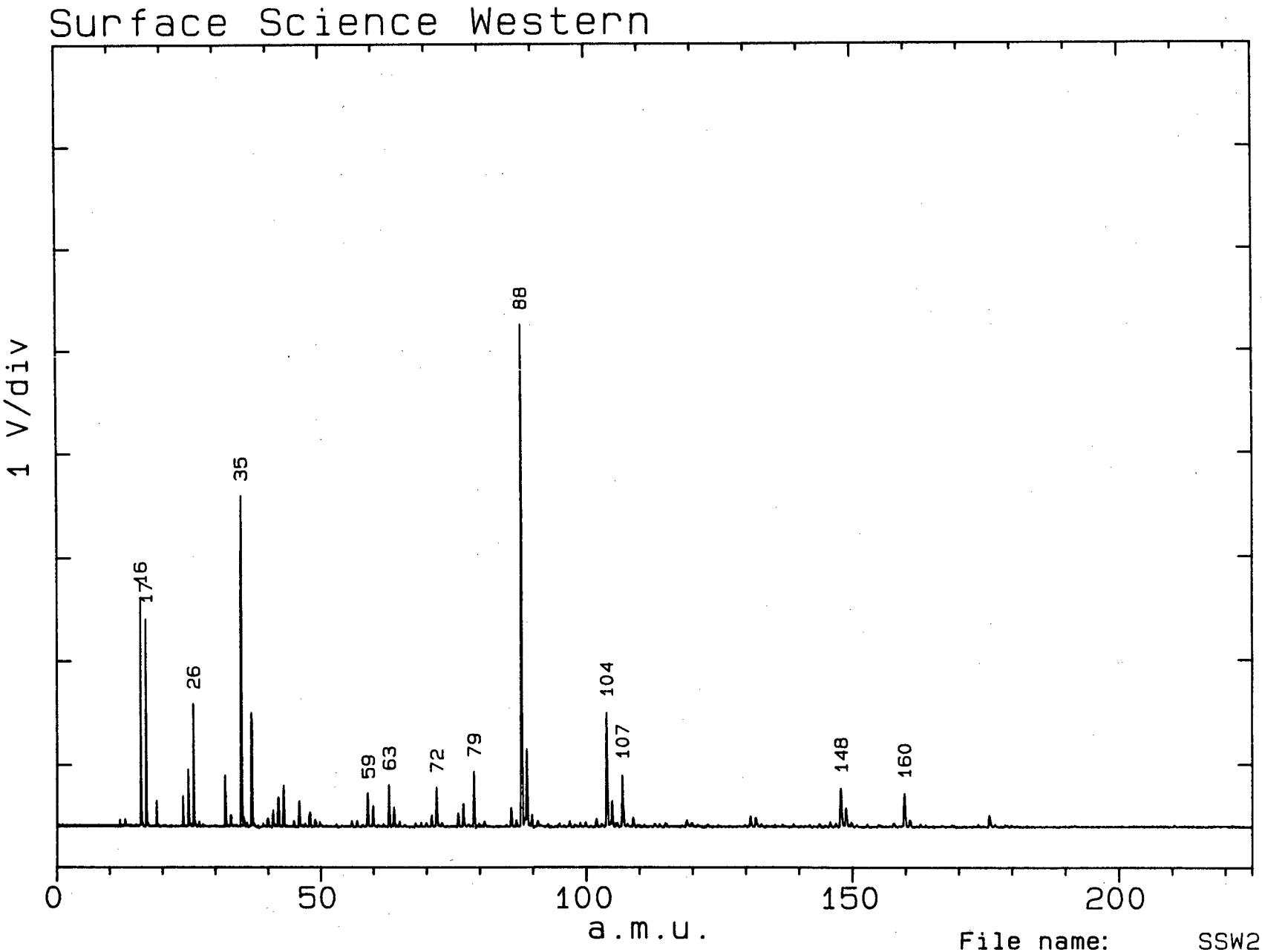
5 Dec 1990

7 SPHALERITE GRAIN NO.5



7 SPHALERITE GRAIN NO.1 NEG SIMS



File name: SSW254
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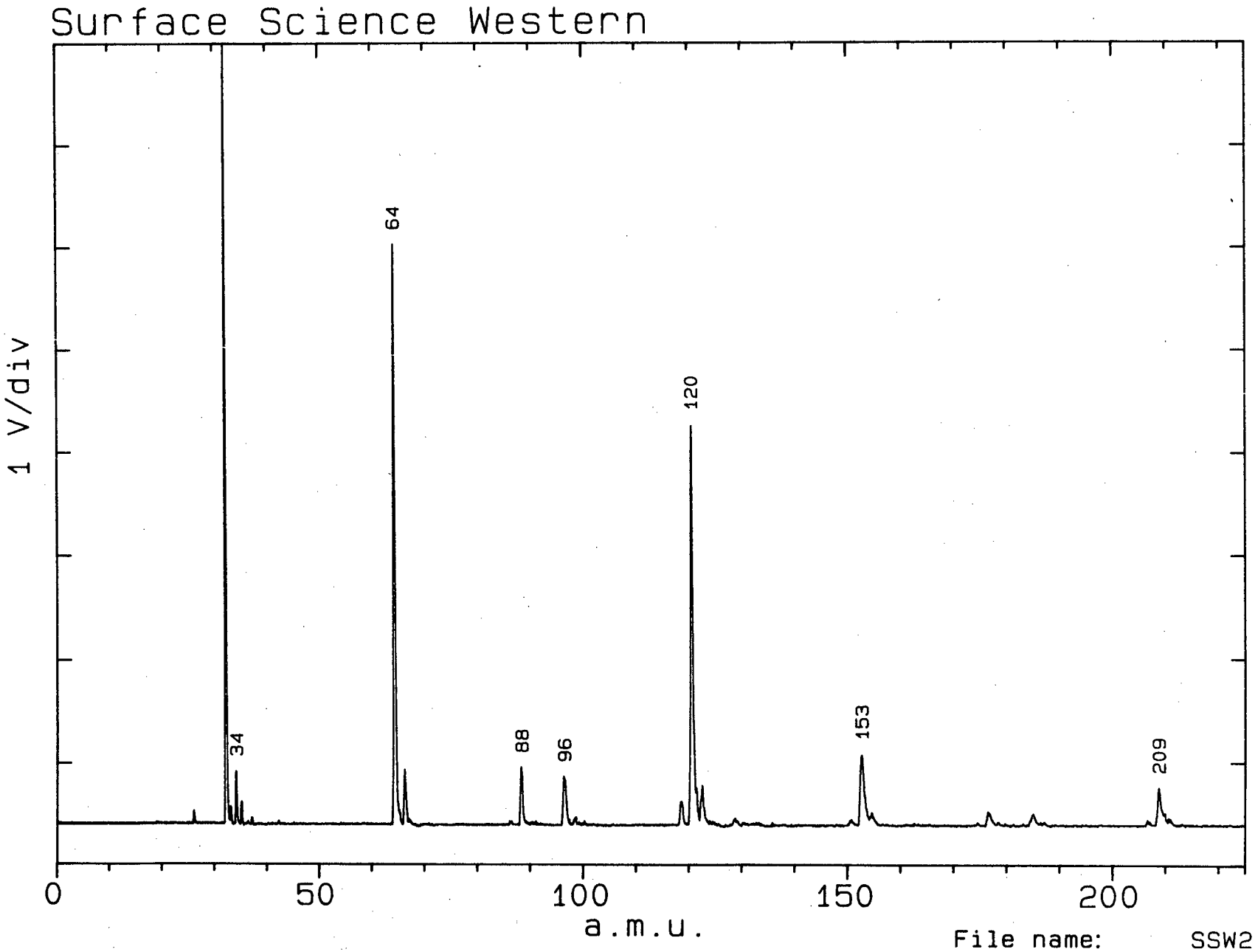
5 Dec 1990

7 SPHALERITE GRAIN NO.8 NEG SIMS



File name: SSW253
Laser power: 320
5 Dec 1990

6 SPHALERITE GRAIN NO.1 NEG SIMS

File : UW0007 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 11:32:15 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
17 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 4225.9. Pg 1

Mass	Area	PkWd
12.05	997.69	13
13.05	70.74	7
24.06	89.76	8
28.03	20.04	5
32.06	565.24	12
40.07	62.39	8
44.09	7.16	5
48.04	2.36	3
56.08	384.86	12
63.00	8.07	4
64.02	166.92	10
65.00	2.80	4
65.97	40.34	5
67.96	7.82	4
206.12	274.98	9
207.04	450.20	9
208.04	1074.58	15

File : UW0008 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 11:35:41 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
22 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 29583.2. Pg 1

Mass	Area	PkWd
12.07	924.77	12
13.07	73.48	7
14.07	7.43	3
24.09	57.86	8
28.10	438.42	11
32.10	1595.17	14
33.06	1.98	3
39.09	10.35	5
48.11	22.59	4
54.12	644.56	12
56.08	20281.11	20
57.09	184.00	22
64.02	2810.91	22
66.00	1074.60	17
66.99	133.61	11
67.99	848.59	19
70.04	7.32	8
103.48	12.08	5
104.01	11.52	4
206.01	140.99	8
206.93	90.51	9
208.00	211.38	12

File : UW0009 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 11:37:43 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
104 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 108983.1. Pg 1

Mass	Area	PkWd
1.02	49.53	6
12.06	10497.75	20

14.06	85.78	8
15.08	2.49	3
16.06	62.08	9
20.05	3.37	4
23.12	156.07	11
24.09	1223.32	13
25.07	17.49	5
27.15	166.47	12
28.07	1744.13	18
29.09	143.47	9
32.08	3843.91	21
33.05	47.90	8
34.05	71.61	10
35.07	7.59	5
37.08	17.09	6
39.18	408.81	18
40.18	362.91	17
41.25	7.53	4
44.12	114.10	9
48.12	248.32	11
52.19	1.15	3
54.19	1495.44	20
56.13	53291.48	20
57.65	933.79	100
63.12	40.94	17
64.05	2361.51	19
65.13	75.55	15
66.06	781.97	18
67.12	126.45	15
68.08	813.31	32
71.22	121.76	59
75.87	192.36	99
82.20	78.63	84
87.67	52.74	39
91.45	106.06	84
95.10	4.01	8
96.09	10.74	17
97.61	14.48	22
100.87	40.75	56
103.12	100.38	8
104.24	295.07	57
111.02	84.46	66
114.10	45.80	35
120.53	188.60	79
123.53	107.89	51
127.36	31.33	24
130.01	14.51	29

File : UWO009 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 11:37:43 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
104 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 108983.1. Pg 2

Mass	Area	PkWd
132.09	7.95	16
133.10	4.01	10
134.38	98.23	14
135.34	264.80	13
136.36	340.98	10
137.34	483.04	11
138.36	5553.11	38
143.55	50.20	51
150.38	101.50	67
152.29	39.58	8
153.35	136.96	12
154.44	795.55	34
159.02	10.01	27
160.86	2.22	6
162.16	5.41	13
163.53	4.62	10
164.74	3.04	8
165.63	0.91	3
167.82	4.18	10
170.33	69.74	32
171.91	1.45	4
173.01	1.73	4
175.02	1.53	3
176.36	2.25	5
177.44	2.70	11
179.82	0.90	6
182.18	1.45	4
182.94	3.75	8
184.26	3.90	5
185.29	2.24	6
193.22	3.52	6
204.03	119.06	12
205.95	3649.53	12
206.91	3824.79	9
208.00	11378.66	150
224.66	5.12	10
225.51	3.11	4
227.10	16.45	23
229.24	8.05	14
231.49	11.54	23
234.60	14.54	34
237.28	1.75	4
237.99	2.88	7
239.52	0.93	4
240.23	1.33	4
241.35	2.59	9
242.08	1.49	4
242.61	2.02	3
244.48	1.18	7
246.92	1.36	3

File : UW0009 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 11:37:43 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
104 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 108983.1. Pg 3

Mass	Area	PkWd
247.88	1.63	10
249.74	0.83	3
250.36	1.79	6
251.54	1.81	6

File : UW0010 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 11:41:53 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
19 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 24423.8. Pg 1

Mass	Area	PkWd
32.12	133.03	11
39.09	3.46	4
54.14	62.72	8
55.08	3.00	3
56.15	14110.17	23
57.15	242.27	15
58.17	20.86	8
63.17	63.34	11
64.17	4744.50	35
66.16	2254.85	18
67.13	182.55	15
68.16	1208.42	21
70.13	1.51	3
74.54	0.97	4
96.01	3.99	3
104.43	3.04	4
206.49	232.83	9
207.42	225.41	9
208.56	926.88	17

File : UW0011 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 11:43:02 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
6 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 2733.3. Pg 1

Mass	Area	PkWd
56.18	2419.11	19
57.24	2.83	5
63.15	6.44	5
64.23	224.16	11
66.22	60.38	8
68.17	20.35	7

File : UW0012 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 11:43:42 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
13 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 7365.8. Pg 1

Mass	Area	PkWd
12.05	15.26	5
32.07	29.86	6
54.12	50.92	7
56.11	6415.66	21
57.11	34.51	8
58.08	6.49	5

64.14	431.90	13
65.10	8.15	4
66.12	85.39	10
68.10	69.72	9
206.28	6.35	8
208.14	203.19	21

File : UW0013 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 11:45:40 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
25 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 13230.7. Pg 1

Mass	Area	PkWd
12.03	65.54	6
13.03	4.51	3
27.99	1.77	3
32.06	275.23	10
40.02	190.51	9
54.03	43.18	8
56.03	6535.61	23
57.07	56.75	9
57.61	3.00	4
63.12	297.21	17
64.10	1626.22	18
65.06	139.71	15
66.07	771.00	17
67.09	95.14	11
68.09	347.77	13
69.07	6.73	12
70.14	2.32	4
79.02	3.23	4
91.09	1.10	4
103.10	8.42	9
123.12	8.06	5
138.05	12.10	6
206.42	364.86	10
207.33	504.50	9
208.38	1866.22	21

File : UW0014 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 11:46:35 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
19 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 7464.1. Pg 1

Mass	Area	PkWd
12.08	400.34	11
13.09	82.63	7
24.10	2.88	3
28.09	270.02	11
29.18	1.49	3
32.10	146.73	9
40.08	26.13	5
44.18	17.70	7
54.08	47.00	8
56.11	3066.34	20
57.06	8.48	6
63.14	4.49	4
64.19	863.76	18
66.18	560.29	13
67.19	72.42	9
68.16	301.01	12
206.47	207.79	12
207.39	186.90	8
208.52	1197.72	20

File : UW0016 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 11:49:43 SAMPLE 1; PAI; DELTA T = 750ns; + IONS

Mass	Area	PkWd
1.03	2.37	3
12.08	3134.46	15
13.08	639.77	12
14.08	23.32	6
15.09	20.11	6
16.09	12.03	6
23.09	7.26	4
24.13	257.02	11
28.10	1428.63	15
29.11	86.20	9
30.12	34.79	7
32.11	4655.15	21
33.10	11.04	7
34.10	69.12	11
39.49	367.53	21
40.15	691.31	25
41.45	12.48	10
42.10	3.87	7
43.43	11.47	13
44.12	144.90	10
45.22	6.15	8
46.22	4.13	5
48.18	82.39	13
50.28	2.33	4
54.16	526.44	14
56.12	16679.52	25
57.25	189.56	24
58.87	2.48	10
59.62	4.66	8
60.46	1.06	5
61.30	6.80	9
63.18	34.36	18
64.11	1526.40	32
66.10	438.84	17
67.16	79.20	14
68.05	154.97	20
69.43	2.98	15
71.01	3.51	5
71.83	14.14	14
73.77	29.75	28
75.34	26.21	20
77.11	13.31	14
81.02	1.99	6
81.58	2.73	6
82.08	3.98	7
83.33	3.15	4
83.76	7.35	6
84.94	6.48	8
88.28	20.11	15
91.01	6.70	9

File : UW0016 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 11:49:43 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
112 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 43374.8. Pg 2

Mass	Area	PkWd
96.24	32.30	12
96.92	3.36	4
97.86	1.58	4
103.15	5.69	9
104.22	2.66	4
107.93	1.48	3
110.05	3.42	5
111.84	3.60	5
112.27	2.23	5
113.19	0.96	4
113.94	4.52	8
117.44	4.46	10
120.76	2.69	4
121.26	0.96	3
132.83	1.40	3
135.25	2.45	6
138.25	357.94	43
145.95	1.05	5
148.03	3.24	3
149.20	5.44	6
153.94	134.04	22
155.04	40.14	10
156.11	399.61	20
157.99	3.25	4
164.40	4.51	8
168.17	2.90	7
171.12	90.97	18
174.00	94.51	19
175.09	11.02	7
176.06	8.60	6
177.00	1.83	3
184.11	3.27	6
189.18	10.15	6
193.37	2.15	3
195.34	1.26	5
196.93	5.14	5
198.28	3.21	4
202.15	3.49	6
203.31	37.32	9
204.87	41.44	16
206.22	794.52	9
207.22	2401.19	10
208.21	3628.55	10
209.36	3578.96	41
215.31	4.46	13
218.37	3.73	6
219.25	1.51	4
220.30	4.51	9
224.55	21.90	18
226.41	50.49	13

File : UW0016 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 11:49:43 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
112 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 43374.8. Pg 3

Mass	Area	PkWd
228.38	6.32	9
230.24	1.00	5
232.27	2.48	5
233.19	2.83	8
234.66	4.55	10
236.39	1.24	3
239.17	4.38	5
241.14	10.43	12
242.44	7.33	11
244.23	2.17	7
247.30	1.70	6
249.32	5.83	10

File : UW0017 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 11:50:32 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
39 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 19029.6. Pg 1

Mass	Area	PkWd
12.05	2613.41	14
13.06	268.44	10
14.04	2.70	3
16.03	5.24	4
23.06	2.99	3
24.08	318.77	10
27.13	5858.57	18
28.07	1358.83	14
29.09	90.11	8
32.07	534.41	13
34.02	4.17	3
35.05	1.84	3
37.06	1.10	3
39.07	2.02	5
40.10	737.20	14
43.11	6.67	5
44.08	174.64	10
45.05	7.43	4
46.02	3.76	4
48.04	4.29	4
54.09	81.75	11
55.09	20.96	7
56.09	3679.68	27
62.99	3.03	5
64.04	618.35	13
65.02	6.58	5
66.02	351.99	12
66.98	23.04	6
68.00	136.10	9
68.57	1.25	3
69.03	36.08	7
99.05	7.14	4
136.22	9.05	6
137.23	40.81	8
138.23	695.62	19

206.18	219.05	10
207.17	246.03	8
208.22	851.49	17

File : UW0018 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 11:52:29 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
20 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 8123.3. Pg 1

Mass	Area	PkWd
32.08	31.92	6
34.11	2.50	3
54.17	8.55	6
56.14	3644.46	25
57.10	26.70	8
58.14	2.26	3
63.12	3.95	4
64.15	751.40	13
65.04	1.24	3
66.12	208.13	10
68.07	15.19	5
75.16	658.52	13
91.14	8.58	6
104.04	18.53	12
121.24	9.51	7
123.26	1.17	4
204.73	1.86	3
206.53	479.27	11
207.43	581.29	9
208.48	1668.23	17

File : UW0019 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 11:55:17 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
29 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 28464.3. Pg 1

Mass	Area	PkWd
12.05	2.30	3
32.16	33.33	7
52.15	17.75	4
54.21	97.57	10
55.28	17.86	9
56.15	12492.50	26
57.15	248.09	15
58.17	23.68	10
60.12	4.31	4
63.17	158.01	13
64.18	2986.44	20
65.17	79.80	11
66.19	1676.87	17
67.20	68.86	13
68.18	1018.19	24
103.37	42.51	10
104.32	25.11	13
121.33	48.25	9
123.38	2.68	3
135.33	19.73	6
137.23	20.19	9
138.27	121.82	12
182.59	6.34	6
184.96	1.36	3
186.58	1.13	3
204.58	37.02	9
206.52	1723.60	11
207.39	1613.29	8
208.49	5875.67	26

19 Nov 90 12:01:54 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
49 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 42821.8. Pg 1

Mass	Area	PkWd
12.08	291.30	10
13.08	45.08	6
24.09	6.56	4
27.09	4.03	4
28.10	1014.21	12
32.11	1662.76	14
34.13	12.37	6
39.04	1.78	7
40.09	1.49	4
42.43	4.55	6
49.59	1.95	3
54.12	284.88	13
56.10	15231.69	22
57.09	276.42	15
57.99	2.75	5
58.40	2.34	6
63.13	421.73	16
64.12	4427.68	18
65.10	269.87	15
66.11	1996.90	18
67.09	161.16	12
68.12	1414.47	23
69.23	2.33	5
70.09	47.31	12
73.53	1.16	3
75.00	15.44	7
75.72	2.66	10
79.12	16.86	9
80.10	11.70	7
81.04	1.56	4
82.22	1.65	4
85.35	6.14	8
87.97	0.95	3
91.08	12.86	5
95.50	1.31	5
97.78	1.83	4
103.23	44.87	7
104.17	373.46	21
107.20	21.52	9
127.08	1.46	3
161.09	1.98	3
204.40	36.10	10
206.38	2532.96	11
207.29	2361.21	8
208.34	9780.13	33
211.70	1.93	5
212.60	4.39	4
215.58	1.21	4
216.41	0.84	4

File : UW0021 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 12:02:32 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
19 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 14584.6. Pg 1

Mass	Area	PkWd
12.07	820.28	12
13.07	25.97	5
24.09	59.34	7
28.08	193.72	11
32.11	247.13	11
44.15	27.61	7

56.09	51.12	8
63.09	0.90	4
64.13	3300.79	19
66.13	2116.78	17
67.12	205.21	11
68.11	1133.63	17
70.02	4.58	5
204.46	7.69	6
206.42	987.04	11
207.27	1081.43	8
208.34	4317.38	27
214.84	1.63	3

File : UW0022 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 12:03:38 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
37 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 30799.7. Pg 1

Mass	Area	PkWd
12.06	1623.62	14
13.07	194.85	8
14.05	20.18	6
16.06	13.60	5
24.08	153.67	9
27.07	141.24	9
28.09	313.28	10
29.10	38.09	6
32.09	1957.43	17
33.11	11.30	5
34.09	30.97	7
39.55	0.81	3
40.02	1.97	3
44.11	70.17	7
48.17	58.88	8
54.10	121.49	11
56.10	3415.47	26
63.16	29.64	8
64.13	1365.43	16
65.06	7.22	6
66.13	327.28	14
67.08	67.12	8
68.14	254.31	14
70.06	2.33	3
103.47	169.67	12
104.27	183.11	12
106.95	1.77	4
121.35	2.51	4
123.28	9.91	5
136.97	3.19	5
138.12	111.17	11
204.31	92.49	10
206.20	3323.79	11
207.11	3691.38	8
208.16	12986.47	33
211.41	1.70	5
230.71	2.20	5

File : UW0023 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 12:04:56 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
43 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 36142.0. Pg 1

Mass	Area	PkWd
12.04	533.49	16
13.05	100.01	8
28.07	357.17	12
29.06	31.31	5

34.05	65.56	7
40.09	49.95	9
42.87	8.15	6
44.06	33.11	8
48.11	35.86	9
54.08	168.34	10
56.05	12854.33	21
57.04	276.93	14
58.07	13.79	7
59.02	0.98	3
63.15	57.13	14
64.07	8123.08	33
66.05	4458.13	18
67.03	401.23	14
68.03	2234.39	20
69.12	59.35	11
70.39	135.14	42
74.64	77.78	74
80.14	107.76	91
84.48	34.31	38
86.57	19.04	19
88.05	18.47	21
89.77	11.24	22
91.34	26.10	18
92.41	10.22	11
93.44	0.99	4
95.52	1.36	5
96.51	2.44	6
97.89	12.63	12
99.26	9.63	12
103.33	16.24	12
104.19	6.51	7
106.55	2.07	8
123.40	13.49	6
124.23	3.24	4
138.76	1.47	3
206.71	293.72	18
208.32	541.29	17

File : UWD024 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 12:06:25 SAMPLE 1; PAI; DELTA T = 750ns; + IONS
19 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 9187.0. Pg 1

Mass	Area	PkWd
12.09	343.59	13
13.10	14.96	7
23.07	7.85	4
24.11	34.48	5
28.15	545.43	14
29.14	32.54	6
32.14	116.74	9
44.18	80.25	9
45.13	12.33	6
56.20	598.58	15
64.20	1852.75	18
66.19	1196.18	17
67.18	137.11	10
68.21	984.85	16
99.19	1.87	3
101.28	2.16	3
206.54	419.45	11
207.45	438.05	7
208.52	2367.86	23

File : UWD025 U. WESTERN ONTARIO/CHRYSSOULIS

30 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 16417.9. Pg 1

Mass	Area	PkWd
12.08	2173.78	15
13.09	302.13	11
14.07	8.60	4
15.11	1.30	3
24.13	72.40	9
27.16	4.50	5
28.12	406.01	15
29.13	15.28	6
32.13	2115.65	18
33.08	4.02	4
34.12	34.86	6
43.16	20.94	6
44.17	63.62	12
46.16	2.65	4
48.16	110.05	11
56.14	540.72	13
57.07	1.33	3
63.11	7.78	6
64.18	1112.81	16
65.14	5.89	6
66.18	398.29	14
67.18	45.95	9
68.16	200.67	10
75.17	3.20	3
104.19	49.89	14
121.17	7.48	6
204.49	13.63	7
206.38	1491.65	11
207.30	1541.09	8
208.35	5661.75	28

File : UW0026 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 13:06:42 SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
27 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 12245.8. Pg 1

Mass	Area	PkWd
1.02	17.32	5
12.02	654.57	12
13.01	18.07	5
24.01	70.85	6
27.96	2.67	4
31.97	94.27	7
40.02	60.95	7
47.90	1.83	3
55.94	169.46	9
62.88	17.95	4
63.87	230.40	9
64.89	5.39	4
65.84	51.21	7
67.81	8.65	4
133.94	53.28	7
134.91	147.60	8
135.97	140.70	9
136.95	354.03	11
137.95	4303.90	20
140.93	1.45	3
150.83	2.80	3
152.97	14.00	7
153.92	345.96	12
203.69	3.97	4
205.58	932.21	9
206.54	1231.05	9

File : UW0027 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 13:09:14 SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
41 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 39434.4. Pg 1

Mass	Area	PkWd
1.02	7.80	3
12.02	5123.04	17
13.02	536.18	12
14.01	42.00	6
16.01	3.13	3
24.01	556.82	11
24.98	2.78	3
26.97	16.97	4
27.97	1113.15	16
28.97	27.59	7
29.95	2.91	4
31.96	1431.03	15
33.94	47.58	7
34.92	3.20	4
35.96	5.26	4
36.97	8.05	6
39.92	14.70	6
43.94	155.88	10
44.94	52.33	7
46.91	31.47	6
47.91	152.23	10
53.89	82.14	8
55.88	4759.44	24
62.87	375.91	13
63.86	868.69	14
64.84	153.38	12
65.85	384.32	12
66.81	22.07	8
67.85	313.91	13
68.95	3.63	5
69.80	1.64	3
103.80	40.07	8
111.69	2.59	3
136.58	12.44	5
137.61	46.60	7
203.57	69.73	8
205.55	4834.63	9
206.52	4359.68	9
207.55	13765.46	45
212.39	1.69	7
238.39	2.31	5

File : UW0028 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 13:11:11 SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
50 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 26813.1. Pg 1

Mass	Area	PkWd
1.02	238.95	10
12.02	8577.97	20
13.03	894.63	13
14.03	52.67	7
15.03	14.59	7
16.00	21.41	5
23.01	12.45	6
24.01	925.47	14
27.02	36.94	8
28.00	2734.36	18
29.00	237.86	11
29.99	11.13	7

31.99	946.84	16
33.98	3.31	5
34.98	33.12	8
36.00	4.28	5
37.00	3.07	4
39.00	4.28	4
39.99	251.68	11
42.99	5.12	5
43.98	654.16	14
44.98	101.86	9
45.93	9.29	6
46.95	49.49	7
47.98	80.93	8
53.96	37.21	8
54.85	2.66	4
55.95	947.73	15
62.92	189.38	10
63.92	4372.84	19
64.94	81.21	10
65.92	1648.63	18
66.92	153.48	11
67.92	1221.84	26
69.88	8.73	6
74.87	1.47	3
95.73	2.11	3
98.83	32.99	8
100.81	8.55	5
102.80	3.51	5
113.78	2.22	4
135.89	1.27	4
136.94	4.55	6
137.93	204.18	12
153.94	48.05	8
203.70	3.43	4
205.81	340.99	9
206.79	354.22	9
207.80	1232.89	17

File : UW0029 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 13:12:12 SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
15 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 3861.0. Pg 1

Mass	Area	PkWd
1.02	20.50	5
12.03	1112.76	12
13.03	41.32	6
24.03	50.74	6
32.00	237.44	10
33.93	2.56	3
55.93	70.11	7
62.89	11.52	4
63.94	1424.78	14
65.94	512.31	13
66.93	8.13	4
67.95	227.88	10
205.87	56.92	8
206.75	4.42	5
207.83	79.59	7

File : UW0030 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 13:13:19 SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
17 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 2207.3. Pg 1

Mass	Area	PkWd
12.01	495.75	10

23.98	31.19	5
27.94	4.25	3
31.97	469.17	11
39.92	1.16	3
46.90	1.94	3
55.90	321.26	11
62.86	26.04	6
63.89	418.41	11
64.85	3.59	3
65.88	153.66	9
66.85	1.30	3
67.88	51.83	6
205.76	24.85	6
206.72	14.79	5
207.75	166.33	10

File : UW0031 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 13:14:42 SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
8 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 833.6. Pg 1

Mass	Area	PkWd
12.04	85.03	7
13.03	2.32	3
32.01	17.37	4
55.96	10.05	4
62.92	5.53	3
63.99	450.87	10
65.97	167.25	9
67.96	95.16	7

File : UW0032 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 13:16:22 SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
26 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 6224.3. Pg 1

Mass	Area	PkWd
1.01	24.99	4
12.01	1143.48	12
13.01	89.74	7
22.99	9.50	5
24.00	113.85	8
27.98	138.48	9
31.98	310.34	10
38.97	19.32	5
43.94	5.32	4
47.92	2.92	3
53.88	18.60	7
55.92	935.23	13
56.84	2.55	3
63.90	1759.60	16
65.90	672.26	13
66.88	54.85	8
67.90	369.12	12
68.87	15.99	5
135.76	8.34	4
136.75	2.34	3
137.77	114.37	9
152.77	4.74	3
154.69	19.72	6
205.79	54.11	7
206.78	59.48	8
207.77	275.05	11

File : UW0033 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 13:17:01 SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
25 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 6702.2. Pg 1

Mass	Area	PkWd
1.02	251.06	10
12.02	1688.97	13
13.02	80.98	8
24.00	118.92	8
27.98	106.81	8
31.98	153.74	8
40.00	158.96	9
43.98	6.28	3
44.94	2.23	3
53.93	4.76	4
55.95	1979.56	15
56.91	3.12	4
62.92	51.93	6
63.91	242.00	11
64.92	11.66	5
65.91	114.88	9
67.90	8.52	5
134.92	6.55	4
135.90	20.07	6
136.95	84.03	8
137.94	1032.87	15
153.90	138.79	11
205.77	89.89	8
206.73	82.97	9
207.74	262.60	11

File : UWD034 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 13:19:39 SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
15 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 3604.1. Pg 1

Mass	Area	PkWd
1.02	21.76	4
12.04	2574.17	15
13.05	153.21	9
14.04	8.04	4
24.04	259.32	11
27.03	1.26	3
28.02	233.89	10
29.01	2.03	3
32.01	45.15	6
43.96	3.25	3
55.96	100.83	8
62.95	9.95	4
63.96	121.05	8
65.95	57.36	7
67.93	12.87	5

File : UWD035 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 13:22:20 SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
24 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 7866.7. Pg 1

Mass	Area	PkWd
1.03	372.79	10
12.06	3091.47	16
13.07	306.70	11
24.07	349.91	11
25.06	2.73	3
27.10	35.41	7
28.05	190.44	9
29.05	27.06	6
32.06	222.49	10
40.04	4.80	5
44.02	30.45	6
45.06	25.76	7

54.02	17.70	5
56.03	655.37	12
57.99	1.26	3
62.98	24.66	6
64.04	384.81	12
66.02	177.79	9
67.00	7.43	4
68.01	63.30	8
206.06	370.14	10
207.01	292.84	8
208.03	1207.80	17

File : UW0036 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 13:25:04 SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
76 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 71727.0. Pg 1

Mass	Area	PkWd
1.02	12.97	4
12.04	1364.55	13
13.04	189.27	8
16.02	35.80	5
18.01	1.75	3
24.02	255.68	9
27.05	3180.91	19
28.02	1035.59	17
29.02	16.69	6
30.00	5.47	5
32.02	770.18	13
33.03	1.91	3
33.98	7.97	5
40.04	585.97	14
43.08	8.71	5
44.01	18.15	7
44.97	18.30	7
46.98	19.99	8
48.03	412.22	15
51.94	7.41	5
54.01	335.64	13
55.01	31.73	10
56.00	12409.92	20
57.11	195.74	29
62.34	1.13	3
62.98	329.99	17
63.97	3638.46	17
64.97	153.24	16
65.97	1582.54	17
67.00	228.79	10
67.50	127.92	6
67.97	1314.26	10
68.48	272.91	7
69.12	1907.41	80
74.31	2.33	8
74.92	5.14	6
75.98	2.24	11
77.49	2.11	6
80.83	13.52	15
82.93	2.11	5
85.97	7.09	11
88.15	59.28	16
91.00	7.21	6
92.85	1.12	3
95.81	0.95	3
97.97	4.99	4
98.86	7.82	6
99.84	1.10	3

132.28	1.06	3

File : UW0036 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 13:25:04 SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
76 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 71727.0. Pg 2

Mass	Area	PkWd
134.08	314.74	11
135.12	1431.91	12
136.03	2064.68	11
137.00	2833.51	10
138.20	29935.65	48
144.21	169.15	84
151.60	302.65	38
153.13	152.17	8
154.66	1962.12	120
166.44	27.97	32
171.34	64.38	54
175.35	17.98	43
178.24	1.85	5
179.63	5.48	11
182.52	41.67	43
186.22	32.00	18
187.72	4.63	7
189.31	1.22	5
190.41	1.77	9
191.47	1.99	9
195.85	2.76	8
197.07	1.50	6
203.84	3.55	9
205.88	337.03	14
206.87	400.11	9
207.88	949.17	27

File : UW0037 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 13:26:27 SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
15 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 2688.4. Pg 1

Mass	Area	PkWd
1.01	4.38	4
12.02	312.38	10
13.02	12.56	4
27.99	7.75	4
31.99	93.11	7
55.95	108.77	9
62.89	10.17	4
63.95	1326.76	13
64.91	2.05	3
65.96	476.18	12
66.92	51.71	7
67.95	175.64	9
205.90	16.46	5
206.82	5.17	4
207.91	85.31	9

File : UW0038 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 13:28:32 SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
16 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 1822.2. Pg 1

Mass	Area	PkWd

13.01	6.07	3
22.99	8.18	4
24.00	23.52	6
27.98	5.04	3
31.99	226.74	10
39.97	6.35	5
47.95	20.96	5
55.92	3.76	3
63.94	766.08	12
65.93	247.06	10
66.91	3.86	3
67.94	131.74	8
137.85	6.27	4
205.96	8.24	5
207.84	39.57	7

File : UW0039 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 13:31:00 SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
7 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 1025.4. Pg 1

Mass	Area	PkWd
1.02	6.46	5
12.05	172.01	9
32.02	27.76	5
55.98	137.91	9
64.01	463.98	11
65.99	149.12	9
67.98	68.18	7

File : UW0040 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 13:32:23 SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
17 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 3239.4. Pg 1

Mass	Area	PkWd
1.01	140.12	8
12.02	962.69	12
13.02	43.72	7
24.01	45.64	7
27.97	78.39	7
31.97	131.24	9
43.93	2.51	3
55.94	468.90	11
56.89	3.25	3
62.89	9.22	5
63.93	651.47	13
64.89	6.87	5
65.92	172.65	9
67.91	123.36	9
205.85	112.13	9
206.82	57.78	9
207.83	229.51	10

File : UW0042 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 13:33:42 SAMPLE 2; PAI; DELTA T = 750 ns; + IONS
5 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 364.4. Pg 1

Mass	Area	PkWd
12.04	98.60	7
32.00	30.48	5
63.98	132.56	8
65.97	69.12	6
67.95	33.67	6

File : UW0043 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 15:08:22 SAMPLE 3; PAI; DELTA T = 750 ns; + IONS
40 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 21639.4. Pg 1

Mass	Area	PkWd
1.00	26.30	5
12.00	2656.01	15
13.00	163.62	8
15.98	2.00	3
24.04	191.82	9
27.98	24.77	5
29.02	2.18	4
32.03	1251.13	15
33.97	2.70	4
39.07	19.32	7
39.44	2.18	3
40.04	19.64	6
46.08	2.46	3
48.04	3.07	3
54.09	58.40	7
56.09	2081.74	19
57.08	4.99	5
63.13	41.94	9
64.04	762.67	16
65.05	5.81	5
66.00	130.13	10
68.02	128.63	12
88.13	12.92	5
99.10	2.04	5
104.06	5.03	4
134.23	31.07	7
135.29	269.65	10
136.32	538.75	12
137.26	590.45	10
138.28	6838.29	27
150.28	5.81	5
151.24	63.23	10
152.32	25.93	8
153.31	126.77	10
154.33	961.44	18
157.21	1.76	4
204.18	11.87	5
206.23	951.37	11
207.15	929.29	8
208.14	2692.19	19

File : UW0044 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 15:15:31 SAMPLE 3; PAI; DELTA T = 750 ns; + IONS
36 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 20515.3. Pg 1

Mass	Area	PkWd
11.91	1031.87	13
12.90	28.65	6
21.31	46.83	6
23.85	13.69	4
27.82	48.80	7
28.85	1.15	3
31.83	619.50	13

39.81	433.51	11
47.74	8.97	5
53.70	14.20	5
55.78	792.13	14
62.68	2.30	3
63.72	317.97	11
65.69	59.52	7
67.70	34.18	7
68.66	3.87	3
102.60	12.89	4
103.10	26.31	6
103.62	22.31	7
133.60	52.84	8
134.70	337.80	12
135.69	348.98	11
136.70	445.90	11
137.68	5815.66	22
149.84	1.02	3
150.64	36.74	8
151.72	29.08	8
152.73	31.79	9
153.70	796.16	16
200.79	10.52	5
202.81	13.32	5
203.47	109.79	9
205.49	1921.11	10
206.44	1686.17	8
207.49	5311.49	27

File : UW0045 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 15:19:22 SAMPLE 3; PAI; DELTA T = 750 ns; + IONS
25 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 14416.8. Pg 1

Mass	Area	PkWd
11.95	438.40	10
12.95	23.38	5
23.07	11.95	4
23.91	9.65	4
27.11	6442.60	21
27.89	198.93	10
31.90	224.19	10
39.13	119.69	9
47.83	9.77	5
53.92	154.88	12
55.91	5262.31	19
56.92	60.91	9
62.91	13.46	9
63.88	313.78	14
65.84	103.23	9
66.81	1.22	3
67.85	52.08	7
69.07	22.37	5
70.26	169.32	14
71.16	0.82	3
138.16	374.71	20
154.33	84.77	12
205.94	46.23	8
206.88	42.04	7
207.97	236.07	15

File : UW0046 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 15:20:21 SAMPLE 3; PAI; DELTA T = 750 ns; + IONS
16 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 1468.3. Pg 1

Mass	Area	PkWd

12.95	8.95	4
23.93	22.86	5
31.92	177.68	8
47.87	4.02	3
55.88	130.14	9
63.87	355.19	10
65.89	235.04	11
66.80	3.19	3
67.85	67.21	6
136.42	1.41	3
138.23	175.27	14
154.25	32.53	10
205.97	6.23	5
206.86	9.52	5
207.92	30.21	8

File : UW0047 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 15:23:52 SAMPLE 3; PAI; DELTA T = 750 ns; + IONS
56 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 44209.9. Pg 1

Mass	Area	PkWd
0.99	374.22	10
11.93	2297.74	15
12.92	229.76	9
13.92	21.78	6
15.90	11.10	4
22.88	37.03	7
23.88	284.21	10
24.88	7.69	4
26.88	4290.65	23
27.88	255.25	11
28.87	72.39	8
31.85	2830.26	19
32.83	3.13	3
33.85	58.50	9
38.87	19.80	7
39.83	163.47	11
40.83	0.95	3
42.84	98.56	11
43.80	6.18	5
45.81	8.48	5
47.80	234.84	10
53.80	298.08	13
55.77	10921.70	19
56.78	92.65	13
57.84	11.23	11
58.75	2.71	8
61.74	8.57	6
62.77	156.18	14
63.78	2414.55	17
64.76	45.52	15
65.77	887.14	17
66.80	53.89	14
67.76	748.55	18
68.76	94.80	12
69.76	319.94	20
71.74	1.34	5
75.62	1.25	3
90.59	1.75	3
98.62	3.67	4
103.75	5.46	5
133.68	0.97	3
134.68	82.94	11
135.66	25.94	9
136.66	140.26	12

151.73	4.54	5
153.72	122.18	13
172.51	4.17	3
203.78	100.86	8
205.67	3433.61	10

File : UW0047 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 15:23:52 SAMPLE 3; PAI; DELTA T = 750 ns; + IONS
56 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 44209.9. Pg 2

Mass	Area	PkWd
206.64	3081.96	9
207.67	8347.01	30
211.21	1.90	10
212.63	0.96	3
215.48	1.52	7
218.80	0.84	3

File : UW0048 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 15:26:56 SAMPLE 3; PAI; DELTA T = 750 ns; + IONS
72 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 81804.0. Pg 1

Mass	Area	PkWd
11.95	1247.08	13
12.95	117.65	8
23.94	201.90	9
26.94	12.26	5
27.93	304.93	10
31.92	6132.24	21
32.89	23.18	6
33.90	40.19	7
34.89	1.96	3
36.91	6.79	4
38.87	2.28	4
39.87	48.00	8
45.92	2.16	3
47.96	180.11	10
53.90	1440.51	16
55.85	38144.48	19
56.90	574.20	17
57.98	74.29	30
59.53	1.36	4
60.29	9.08	21
62.00	4.52	12
62.86	1182.82	17
63.87	678.92	16
64.85	380.88	18
65.90	144.27	14
66.92	21.20	19
67.89	62.47	13
68.97	45.17	21
70.11	4.67	12
70.87	1.47	6
71.81	11.96	17
72.75	1.41	4
73.32	1.45	7
74.29	1.48	4
74.89	30.84	18
79.63	1.55	4
81.73	0.97	4
98.69	1.36	4
100.71	13.96	8
103.68	3.53	9
104.72	2.46	4

122.65	0.92	3
133.60	2.56	3
134.56	2.83	3
135.57	18.16	6
136.66	90.26	9
137.69	813.53	18
151.59	1.16	3
152.59	10.83	5

File : UW0048 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 15:26:56 SAMPLE 3; PAI; DELTA T = 750 ns; + IONS
72 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 81804.0. Pg 2

Mass	Area	PkWd
153.56	35.35	7
172.54	4.02	4
203.71	177.20	12
205.60	6340.14	10
206.53	6265.99	9
207.62	16818.74	124
221.00	1.10	4
222.57	8.56	11
224.19	1.81	8
225.09	9.50	8
226.47	4.18	12
228.31	2.79	7
229.72	0.92	3
231.40	1.35	4
232.09	1.56	7
234.23	0.84	4
236.10	1.05	4
238.23	15.93	9
239.65	1.68	7
241.00	2.68	10
242.96	0.92	7
244.32	0.82	5

File : UW0050 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:12:32 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
31 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 11425.0. Pg 1

Mass	Area	PkWd
0.99	145.86	9
11.98	160.04	9
12.99	72.55	7
28.98	5.71	4
31.97	44.85	7
40.00	1340.13	17
40.95	4.59	4
42.96	9.47	9
43.99	23.67	7
54.00	23.41	6
55.99	993.45	16
57.06	28.92	8
63.01	101.73	10
64.07	343.97	15
65.00	81.65	12
66.04	173.15	12
68.05	80.95	10
69.01	15.44	7
134.16	4.63	4
135.11	61.55	12
136.10	64.49	12
137.28	181.22	11
138.22	1917.94	20
151.21	12.57	8
152.20	7.44	6

204.25	3.03	4
206.37	883.19	12
207.28	879.48	8
208.33	3003.37	21
250.94	1.17	4

File : UW0051 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:13:20 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
37 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 14802.1. Pg 1

Mass	Area	PkWd
0.99	110.59	8
11.98	2282.14	16
12.99	251.00	11
15.96	6.55	4
23.99	49.00	6
27.98	1178.58	17
28.94	1.94	4
29.95	13.57	4
31.98	280.55	11
36.95	1.37	3
38.93	4.16	3
39.95	152.46	10
42.94	5.70	6
44.02	259.48	11
44.98	9.60	6
54.01	15.70	7
55.98	1445.41	17
56.94	0.84	3
62.95	7.79	4
64.02	1885.51	20
66.01	611.52	14
66.99	22.59	11
68.03	380.56	14
68.97	19.27	8
87.87	1.64	4
134.26	6.35	6
135.31	127.06	10
136.27	238.85	11
137.31	466.83	11
138.30	3519.83	23
151.37	18.69	10
152.39	9.07	6
154.27	938.08	26
169.85	2.87	3
206.25	123.09	10
207.29	102.66	9
208.26	251.16	12

File : UW0052 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:16:22 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
36 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 113769.1. Pg 1

Mass	Area	PkWd
12.00	14.49	5
23.01	20.34	6
40.05	615.23	11
40.52	94.59	10
54.04	111.62	9
54.57	40.04	8
56.04	3974.25	11
56.63	2380.93	27
63.07	79.93	9
63.73	54.52	14
64.63	536.22	21

66.08	4.91	5
66.67	177.78	14
67.63	9.05	7
68.64	160.89	12
69.65	5.64	5
88.76	8.31	6
134.18	13.38	7
135.08	933.38	11
136.03	3878.00	12
137.02	4754.42	11
138.01	9924.55	11
139.00	76359.08	93
151.02	801.11	63
153.06	439.36	11
154.09	1062.41	10
155.33	4432.47	76
163.81	194.26	46
169.01	299.97	55
172.67	178.15	22
174.22	108.25	15
184.47	610.17	221
205.11	415.12	92
208.09	279.72	9
213.09	794.54	235

File : UWD053 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:17:21 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
86 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 162420.1. Pg 1

Mass	Area	PkWd
0.99	2.49	3
12.00	1529.27	13
13.00	234.78	10
23.00	135.31	12
24.04	293.35	14
27.29	1845.11	24
28.04	139.39	10
29.03	14.93	7
31.02	7.65	5
32.05	1532.65	18
33.01	23.85	7
34.01	3.03	5
35.01	21.93	6
37.02	9.90	4
39.30	151.61	19
40.00	815.45	10
40.42	359.08	16
43.31	10.35	8
44.04	14.20	8
46.50	1.25	3
47.00	6.53	5
47.41	5.78	6
48.36	159.34	17
54.39	51.80	10
56.00	802.45	12
56.46	1743.75	20
57.47	29.35	8
59.10	1.97	3
62.51	7.46	5
63.04	881.71	9
63.47	645.61	8
64.13	7129.63	17
65.01	735.44	9
65.51	341.22	8
66.03	2618.28	8

67.15	394.98	15
68.11	2427.27	20
69.68	277.38	38
72.05	30.78	21
73.45	7.22	19
74.34	2.45	7
75.13	442.08	37
77.82	0.81	8
79.32	2.58	12
80.42	1.44	9
81.51	1.01	4
82.53	0.92	4
83.47	3.18	9
85.04	1.21	3

File : UW0053 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:17:21 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
86 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 162420.1. Pg 2

Mass	Area	PkWd
88.49	61.04	21
90.48	4.84	5
91.14	202.67	16
92.57	1.12	5
95.12	7.44	7
96.23	10.77	10
98.20	23.49	14
99.23	19.22	16
101.06	26.16	15
101.98	1.60	4
103.34	15.35	17
104.98	1.57	4
107.07	16.44	14
108.95	1.48	3
109.61	1.70	8
112.50	1.35	5
120.20	3.54	7
120.64	0.88	4
125.99	1.53	3
126.75	1.30	3
130.69	2.63	7
132.35	15.93	15
134.67	1250.47	16
135.67	4810.34	12
136.64	5997.62	11
137.66	11370.54	11
138.69	91619.78	116
150.21	595.61	29
151.67	658.83	11
152.67	742.82	10
153.60	1242.58	8
155.09	11368.71	109
179.12	3230.12	361
205.25	653.19	61
207.70	239.35	8
214.45	1472.87	206

File : UW0054 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:18:40 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
29 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 16848.3. Pg 1

Mass	Area	PkWd
11.97	241.01	9
12.97	50.23	6
23.98	6.72	4
27.97	142.90	8
31.98	138.98	9
39.98	221.54	9
43.96	2.69	3
55.99	2455.29	17
57.00	19.30	7
62.99	141.56	10
63.92	436.13	12

65.91	129.06	9
67.92	55.09	6
68.99	13.06	6
134.43	72.36	10
135.40	533.81	11
136.38	692.42	12
137.39	764.66	10
138.39	9447.36	26
150.24	2.32	3
151.49	3.87	5
152.31	38.02	11
153.35	49.74	9
154.35	693.32	15
155.56	0.99	3
206.25	127.72	9
207.12	149.99	8
208.12	210.85	12

File : UW0055 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:21:33 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
70 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 70234.0. Pg 1

Mass	Area	PkWd
0.99	4.95	3
11.99	627.74	14
12.99	13.72	4
16.07	58.38	9
23.01	164.84	11
24.08	50.08	7
27.03	23.90	6
28.00	544.44	13
28.98	2.89	4
32.06	762.82	15
34.09	9.33	6
39.05	193.25	12
40.05	1508.56	21
41.90	2.08	3
44.01	84.98	8
48.09	3.07	4
54.05	289.52	12
55.02	80.63	8
56.02	10620.05	22
57.01	153.52	13
58.01	25.84	11
63.07	139.23	14
64.03	2919.13	18
64.98	93.52	10
66.04	1808.77	21
67.02	246.68	10
68.00	1271.16	16
68.59	358.75	7
69.15	2640.28	33
71.33	2.65	9
72.06	19.94	14
73.07	3.09	7
88.04	66.60	12
96.03	14.74	11
99.04	15.06	9
100.97	5.14	6
104.01	0.82	3
127.96	2.77	3
130.08	4.53	6
132.04	8.60	7
134.17	447.82	11
135.16	1376.94	12

137.10	3152.97	10
138.12	36024.52	98
149.87	165.83	58
152.03	133.24	9
152.94	141.54	10
154.49	1113.96	89
171.38	242.46	217

File : UW0055 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:21:33 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
70 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 70234.0. Pg 2

Mass	Area	PkWd
184.51	15.43	28
186.87	8.97	16
192.20	47.37	70
196.21	3.57	10
197.21	2.33	6
198.14	4.74	11
200.42	2.93	9
201.95	7.71	14
203.03	2.08	5
204.38	8.47	16
208.17	88.62	49
211.67	1.78	7
212.79	2.08	7
213.45	1.97	4
215.62	6.98	12
216.95	1.24	5
219.17	0.90	4
225.97	2.10	4
229.98	0.99	3
239.57	1.67	7

File : UW0056 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:22:54 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
39 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 34035.7. Pg 1

Mass	Area	PkWd
1.00	68.13	6
12.02	92.55	8
24.05	74.45	8
27.08	45.53	6
40.08	15468.57	28
42.03	6.56	7
43.15	1.23	3
44.07	174.93	12
48.01	3.39	4
54.08	186.44	13
56.07	6976.26	20
57.09	149.41	13
59.16	25.46	9
63.03	18.27	9
64.03	223.11	14
65.10	8.57	12
66.02	58.51	8
67.00	2.69	4
68.06	18.99	8
68.53	1.43	3
69.03	1.49	5
72.10	8.38	9
75.15	3.03	5
87.90	2.02	3
96.02	10.63	7
112.19	3.90	4
134.23	101.17	10

136.28	328.27	11
137.25	732.00	10
138.22	6776.35	25
151.71	273.63	25
153.29	107.75	8
154.30	1102.86	29
170.24	4.61	8
173.14	4.44	4
206.33	113.76	8
207.17	116.96	10
208.32	340.13	14

File : UWO057 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:27:09 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
107 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 81589.9. Pg 1

Mass	Area	PkWd
0.99	87.07	7
11.96	4563.88	17
12.97	503.40	10
13.94	15.03	5
14.96	9.31	4
15.99	1242.04	16
21.42	137.18	8
22.96	135.14	10
23.96	539.74	13
24.94	23.88	6
25.25	3.63	3
25.92	26.50	6
26.96	50.50	9
27.96	1260.73	15
28.94	166.56	9
31.95	1485.86	16
33.95	12.67	8
34.89	43.01	7
35.91	1.43	3
36.92	49.56	8
38.88	22.00	7
39.91	2661.61	18
41.88	2.00	4
42.88	2.92	3
43.92	221.03	13
44.94	20.89	8
45.90	4.34	4
46.87	6.47	5
47.94	220.93	11
53.55	18.93	6
53.90	22.17	7
54.55	8.70	6
55.94	1550.73	18
60.38	6.72	5
61.39	68.75	10
62.94	1307.21	16
63.90	8290.13	18
64.92	554.13	15
65.89	3603.54	17
66.96	598.76	16
67.90	2567.73	18
69.02	1191.51	15
69.97	99.41	28
71.64	1.32	3
72.17	5.01	5
74.39	73.72	49
76.07	1.11	8
76.90	1.11	7

80.08	2.83	8

File : UWO057 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:27:09 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
107 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 81589.9. Pg 2

Mass	Area	PkWd
81.78	5.09	8
82.84	1.64	6
84.96	3.54	6
87.90	23.96	15
90.82	70.63	13
97.94	9.37	6
98.77	90.90	12
99.64	2.61	5
100.78	119.44	12
103.32	51.27	24
105.03	5.89	8
106.81	6.77	8
107.62	1.46	3
108.82	2.93	7
113.82	1.60	3
120.69	1.93	3
122.88	20.73	12
134.02	250.31	12
134.98	1084.20	12
135.98	1655.51	11
136.93	2755.51	10
137.98	28898.92	113
150.75	464.19	46
151.97	176.74	7
152.81	324.01	10
154.17	3825.11	106
167.90	152.75	87
176.40	220.30	167
188.75	1.20	3
190.37	13.22	23
192.71	16.68	22
194.12	1.40	3
194.83	4.80	8
196.38	5.26	12
200.89	108.12	49
202.69	108.52	9
203.75	291.41	18
205.70	1488.65	10
206.67	1653.16	9
207.85	4051.78	94
221.49	70.73	91
228.53	4.48	13
230.00	5.17	11
231.58	6.25	15
233.54	2.03	5
234.77	6.54	16
236.50	1.51	7
237.89	3.85	9
238.89	0.89	3
240.04	6.74	15

File : UW0057 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:27:09 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
107 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 81589.9. Pg 3

Mass	Area	PkWd
241.95	6.90	17
244.38	2.13	7
245.25	1.58	6
246.20	0.92	3
246.76	1.15	5
250.37	1.51	7
251.24	0.85	5

File : UW0058 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:28:31 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
53 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 36129.2. Pg 1

Mass	Area	PkWd
1.00	72.76	7
12.01	5013.91	17
13.02	642.59	14
14.02	8.49	5
15.01	2.54	3
16.00	3.01	4
24.04	64.95	9
26.98	1.48	3
28.03	517.70	12
29.02	2.92	4
30.98	6.11	5
32.03	685.80	14
33.01	1.80	3
38.56	2.91	3
39.02	25.89	7
40.02	259.01	12
41.01	2.30	4
43.12	15.92	8
44.05	189.37	9
45.04	4.14	5
47.20	0.95	4
48.04	69.06	9
54.07	504.28	17
56.01	19900.68	22
57.06	382.75	16
58.00	70.29	16
60.37	0.86	3
63.00	173.53	18
63.98	1960.71	17
64.97	104.08	14
65.96	765.67	18
66.99	69.18	15
67.94	590.49	18
69.10	2.96	9
70.01	10.61	17
76.94	2.19	6
80.49	2.89	4
88.09	4.74	6
90.91	17.11	10
93.32	3.97	4

109.92	1.61	3
120.92	2.35	5
135.28	87.37	18
136.37	85.62	11
137.40	281.26	11
138.37	1964.99	22
151.38	3.86	4
152.56	3.16	5
154.35	374.34	26

File : UW0058 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:28:31 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
53 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 36129.2. Pg 2

Mass	Area	PkWd
206.20	266.89	10
207.14	291.96	8
208.09	603.98	16

File : UW0059 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:29:19 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
35 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 17781.4. Pg 1

Mass	Area	PkWd
0.99	25.46	5
11.99	1563.37	14
12.99	219.90	9
13.98	8.89	4
23.99	83.34	7
27.99	1395.22	15
28.97	14.47	5
31.99	872.95	14
33.94	22.24	5
39.89	4.20	5
44.02	184.60	11
45.05	4.41	4
47.97	10.60	5
53.98	205.33	11
55.95	5930.89	20
56.90	66.23	10
62.92	21.08	7
63.96	463.87	14
64.79	3.83	4
65.92	125.37	11
66.94	8.18	4
67.93	83.96	10
134.32	3.98	4
135.43	60.48	10
136.45	142.05	12
137.51	276.15	10
138.44	3258.22	20
150.62	2.86	4
151.40	52.20	10
152.52	48.81	11
153.52	30.42	10
154.46	389.67	15
206.17	474.26	10
207.07	446.53	8
208.05	1277.39	17

File : UW0060 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:30:38 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
67 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 50924.7. Pg 1

Mass	Area	PkWd
0.99	21.58	5
11.98	4357.16	16
12.99	594.45	11

16.97	1.24	3
24.00	688.48	12
24.95	3.29	4
26.97	9.90	5
27.99	1734.70	17
28.99	131.55	9
31.98	2847.47	18
33.93	21.39	5
34.97	72.47	8
36.98	3.96	4
40.04	196.55	11
43.01	4.21	4
44.00	372.96	12
44.97	8.19	4
47.96	129.47	9
53.84	220.30	16
55.97	3895.68	19
56.95	36.88	8
60.50	12.86	5
62.93	597.55	14
63.93	1784.88	17
64.95	143.97	14
65.91	1000.83	15
66.92	42.00	10
67.91	578.12	15
68.96	78.83	11
74.94	11.26	6
90.93	2.60	3
98.98	14.65	6
101.00	0.89	3
103.03	16.24	6
103.98	85.58	14
115.93	7.00	4
122.93	6.68	5
134.12	102.13	10
135.13	500.17	14
136.13	682.21	11
137.13	1137.46	11
138.11	9172.33	28
140.53	0.92	3
143.44	1.31	3
145.72	0.97	4
147.39	5.00	5
149.99	2.23	4
151.16	54.05	16
152.10	37.24	10

File : UW0060 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:30:38 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
67 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 50924.7. Pg 2

Mass	Area	PkWd
153.13	144.14	10
154.14	672.92	17
157.08	3.73	8
167.30	2.76	6
168.38	1.19	5
169.24	1.37	3
173.00	5.80	7
202.35	49.88	18
204.00	128.60	13
205.83	3209.13	13
206.77	3450.94	8
207.83	11796.28	59
214.58	3.14	16
216.46	3.02	10
219.25	5.04	9
220.15	1.18	5
227.05	0.88	5

File : UW0061 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 16:37:46 SAMPLE 3A; PAI; DELTA T = 750 ns; + IONS
46 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 51935.3. Pg 1

Mass	Area	PkWd
11.98	17.77	6
16.00	4.82	3
23.96	112.57	9
26.98	4472.17	18
27.97	302.80	13
28.97	3.88	4
31.95	83.98	10
38.96	424.82	12
40.04	254.56	13
43.95	50.68	9
48.06	93.99	11
55.97	433.60	16
62.97	320.34	13
63.98	687.23	16
64.96	89.22	10
65.97	518.59	15
66.99	6.06	6
67.97	156.28	15
68.97	7.69	7
88.09	21.90	7
103.17	1.02	4
104.07	10.38	6
134.15	427.04	11
135.13	1094.18	12
136.12	1525.40	11
137.11	2412.40	10
138.08	24343.44	44
141.85	0.95	5
143.08	3.38	13
144.05	1.77	5

151.40	58.34	31
153.07	39.56	9
154.10	402.84	24
170.96	4.84	6
172.87	1.85	4
203.93	116.23	11
205.88	2726.83	10
206.82	2422.78	8
207.87	8265.14	85
217.34	2.70	10
218.76	1.84	7
220.83	1.62	6
223.22	1.76	7
226.93	0.86	3
228.35	1.75	6

File : UWD062 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 17:21:44 SAMPLE 4; PAI; DELTA T = 750 ns; + IONS
64 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 44815.2. Pg 1

Mass	Area	PkWd
0.98	4.21	3
11.97	454.51	11
12.96	25.62	5
22.95	18.87	5
27.96	77.39	8
31.97	334.83	11
38.98	293.64	12
39.98	46.79	8
54.00	904.45	15
54.99	4.71	5
55.95	33732.63	21
57.06	506.73	39
62.07	0.91	3
63.14	0.85	5
63.96	591.64	23
65.97	192.61	18
67.00	76.31	15
67.94	129.26	10
68.45	40.97	8
69.02	192.55	17
71.69	0.84	5
72.06	1.84	4
72.36	0.97	3
73.17	1.44	4
73.88	2.49	9
74.50	0.83	3
74.94	1.68	7
76.17	1.26	4
77.15	6.84	15
78.27	2.62	7
78.84	1.15	3
80.24	0.89	3
80.60	1.76	4
81.39	0.86	3
82.83	5.45	12
83.70	0.80	3
84.06	1.73	5
86.08	2.13	7
88.10	26.76	18
89.03	0.93	4
89.89	3.60	8
91.18	0.96	4
91.92	1.55	6
93.81	1.39	3

100.89	1.76	4
105.32	1.91	5
110.17	1.24	4
134.25	79.01	10
135.25	184.61	12

File : UWD062 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 17:21:44 SAMPLE 4; PAI; DELTA T = 750 ns; + IONS
64 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 44815.2. Pg 2

Mass	Area	PkWd
136.32	274.63	12
137.27	363.55	9
138.28	4643.53	34
150.21	2.42	3
150.64	0.92	4
151.38	11.18	8
152.23	10.62	9
153.27	26.63	9
154.36	526.77	18
170.42	15.99	15
173.36	1.37	5
206.24	234.12	9
207.14	193.89	8
208.16	539.69	19

File : UWD063 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 17:24:22 SAMPLE 4; PAI; DELTA T = 750 ns; + IONS
33 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 12678.7. Pg 1

Mass	Area	PkWd
0.99	82.51	6
2.00	1.80	4
11.98	924.11	12
12.98	124.88	7
23.97	61.49	6
27.96	409.18	11
28.96	16.73	5
31.95	680.56	13
37.09	6.82	6
43.95	22.04	6
44.95	6.72	4
47.96	62.17	7
52.02	3.72	4
53.72	110.74	15
55.95	1270.80	18
63.92	2668.41	16
65.90	1386.06	16
66.87	55.51	9
67.91	686.74	15
85.12	0.86	3
120.90	3.90	5
123.00	6.86	6
134.84	2.88	4
137.14	9.99	9
138.02	169.87	12
151.14	41.23	8
153.16	2.64	3
154.09	48.32	8
201.99	11.32	10
203.97	63.92	19
205.99	708.11	10
206.95	644.94	8
207.95	2382.87	20

File : UW0064 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 17:26:09 SAMPLE 4; PAI; DELTA T = 750 ns; + IONS
34 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 20193.5. Pg 1

Mass	Area	PkWd
1.00	764.50	11
11.98	6412.92	21
12.99	998.60	15
13.98	48.23	7
14.98	19.42	5
15.96	8.24	4
23.97	665.83	11
24.95	4.73	3
27.96	5268.18	20
28.97	154.30	11
29.95	76.40	8
31.95	687.16	14
36.99	11.40	6
39.15	2.39	5
39.93	42.17	7
43.07	11.95	8
43.96	806.13	14
44.95	163.76	9
45.93	5.52	5
47.93	8.00	5
53.96	0.84	3
54.90	21.18	6
55.94	362.61	11
58.08	2.46	3
63.92	2132.59	18
65.89	786.82	14
66.85	107.10	11
67.89	376.45	14
69.84	2.09	3
134.77	4.38	4
137.84	106.83	9
205.88	28.17	7
206.77	8.91	5
207.87	93.30	8

File : UW0065 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 17:27:17 SAMPLE 4; PAI; DELTA T = 750 ns; + IONS
52 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 23969.6. Pg 1

Mass	Area	PkWd
0.99	243.86	10
11.98	3223.68	16
13.00	476.06	11
13.99	40.05	6
16.00	15.75	6
17.00	3.92	3
21.46	154.93	9
24.01	165.43	9
26.99	23.83	8
28.00	2552.94	18
29.02	86.40	8
29.99	2.15	3
32.00	3132.30	17
33.00	4.91	4
33.99	52.68	8
37.01	398.96	13
38.01	1.62	3
38.95	35.84	8
40.01	176.08	11
40.97	4.35	5

44.04	90.01	8
45.00	1.93	3
48.04	234.32	11
50.02	2.61	4
51.67	4.25	4
52.67	2.09	4
53.59	485.56	8
54.05	402.67	24
55.98	8760.17	19
57.01	83.58	11
57.94	1.98	4
63.34	7.14	7
63.96	1191.10	17
65.94	522.46	16
66.91	20.43	8
68.00	165.91	24
70.27	4.27	4
85.08	21.50	8
86.07	1.12	3
118.60	8.98	4
134.76	102.40	17
135.93	29.01	7
136.91	25.83	7
137.95	483.17	13
140.23	4.98	4
153.91	77.77	9
171.87	8.67	5
201.98	75.50	9
202.98	74.61	8

File : UW0065 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 17:27:17 SAMPLE 4; PAI; DELTA T = 750 ns; + IONS
52 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 23969.6. Pg 2

Mass	Area	PkWd
203.97	268.93	14
207.89	7.43	6

File : UW0066 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 17:33:19 SAMPLE 4; PAI; DELTA T = 750 ns; + IONS
16 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 3381.8. Pg 1

Mass	Area	PkWd
11.89	528.73	11
12.87	46.96	6
23.81	19.46	7
27.73	153.85	9
29.69	1.23	3
31.70	518.83	12
43.59	1.55	3
53.45	21.18	6
55.41	984.37	16
63.26	671.23	14
65.23	219.56	11
66.17	19.93	5
67.21	159.74	13
102.83	2.61	3
136.51	1.48	3
205.22	31.07	18

File : UW0067 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 17:39:26 SAMPLE 4; PAI; DELTA T = 750 ns; + IONS
31 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 12539.7. Pg 1

Mass	Area	PkWd
0.99	152.86	8
11.94	1124.35	12
12.94	81.41	7
22.89	3.21	3
23.91	78.27	8
26.87	23.96	5
27.88	253.53	10
28.89	9.10	4
31.87	389.60	11
38.87	53.42	7
39.83	40.21	6
43.82	12.74	6
47.83	5.95	3
53.80	179.14	9
55.80	4810.22	18
56.76	33.77	8
63.82	411.04	12
65.82	124.55	9
67.80	91.15	16
68.31	21.76	5
68.84	324.32	12
133.66	36.56	6
134.75	175.80	11

136.72	267.19	11
137.70	3070.63	18
151.68	1.32	5
153.60	127.46	11
205.57	175.71	10
206.50	74.77	8
207.55	264.00	12

File : UW0068 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 17:41:03 SAMPLE 4; PAI; DELTA T = 750 ns; + IONS
19 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 18702.5. Pg 1

Mass	Area	PkWd
11.89	113.74	8
12.88	15.22	4
27.75	532.12	12
31.72	658.46	13
33.64	2.47	4
39.65	2.55	3
47.55	1.15	3
53.52	281.67	12
54.51	49.34	7
55.44	12198.64	34
63.30	1763.56	19
65.27	839.18	15
66.28	52.18	9
67.22	329.37	13
134.54	15.59	7
136.59	307.68	15
152.57	14.78	13
204.06	323.48	12
205.60	1201.34	23

File : UW0069 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 17:42:06 SAMPLE 4; PAI; DELTA T = 750 ns; + IONS
18 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 12911.9. Pg 1

Mass	Area	PkWd
11.88	3.15	3
27.80	22.75	6
31.78	71.14	8
39.87	2425.89	20
43.88	1.16	3
53.59	310.03	12
54.64	11.55	7
55.60	7300.22	31
63.45	370.34	13
65.40	103.80	9
67.32	39.26	7
132.61	8.26	7
133.69	38.33	10
135.44	192.29	21
136.89	1899.75	28
152.58	101.30	20
154.09	7.43	8
167.73	5.23	5

File : UW0070 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 17:44:03 SAMPLE 4; PAI; DELTA T = 750 ns; + IONS
10 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 1999.8. Pg 1

Mass	Area	PkWd
11.86	39.84	6
31.63	14.72	5
53.44	4.57	3

63.34	514.85	12
65.28	254.00	11
66.20	4.58	4
67.26	136.27	10
205.07	1.35	3
206.28	28.75	7

File : UW0071 U. WESTERN ONTARIO/CHRYSSOULIS
19 Nov 90 17:46:41 SAMPLE 4; PAI; DELTA T = 750 ns; + IONS
11 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 3058.4. Pg 1

Mass	Area	PkWd
11.80	77.78	8
27.53	6.65	5
31.49	168.31	9
53.00	3.00	4
55.07	1127.90	17
62.94	567.73	16
64.88	137.32	15
65.90	2.81	7
66.81	154.48	13
202.86	458.58	22
204.29	353.82	16

File : UW0072 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 14:14:23 STD.1; PAI; DELTA T = 750 ns; + IONS
69 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 80324.9. Pg 1

Mass	Area	PkWd
27.13	13.54	6
31.91	965.74	27
33.94	9.54	8
39.13	36.85	10
40.08	19.42	8
40.67	5.54	8
41.49	7.04	6
43.36	2.96	3
44.99	7.70	8
54.01	233.26	16
55.12	249.35	13
56.04	7418.83	40
57.98	4.39	9
63.80	35543.51	35
65.78	15599.12	29
67.65	10574.88	44
75.34	1242.73	235
85.97	161.78	34
88.24	595.95	38
91.54	211.92	57
95.96	193.84	45
99.75	178.95	81
106.82	417.09	64
109.24	380.15	27
111.57	172.66	25
113.21	230.67	24
115.16	2338.36	40
122.24	360.11	142
132.70	210.42	114
144.12	302.77	112
152.53	112.87	79
157.35	9.01	11
162.28	86.47	79
166.87	7.86	20
168.56	1.43	8
171.10	11.61	23
173.05	5.03	13
176.00	552.56	53
180.56	10.97	22
182.32	9.13	13
184.13	31.56	18
185.26	0.91	3
186.62	2.37	7
188.08	4.09	10
188.89	0.93	5
189.83	11.62	11
191.22	4.84	9
193.44	1.52	4
193.81	0.91	4
194.91	3.96	12

File : UW0072 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 14:14:23 STD.1; PAI; DELTA T = 750 ns; + IONS
69 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 80324.9. Pg 2

Mass	Area	PkWd
196.45	3.77	6
197.85	3.69	12
200.08	0.83	3
203.81	3.51	5
206.12	361.69	14
208.02	1118.84	51
213.59	4.49	10
216.18	22.48	16
218.48	2.67	9
219.23	1.03	4
220.24	3.95	9
221.23	6.49	7
224.38	26.09	16
226.21	5.37	10
230.67	103.58	59
238.02	3.20	7
240.36	51.52	38
243.88	6.09	6
246.29	36.89	16

File : UW0073 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 14:16:25 STD.1; PAI; DELTA T = 750 ns; + IONS
64 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 283663.6. Pg 1

Mass	Area	PkWd
26.40	25.75	12
27.61	0.98	3
28.37	20.73	11
29.50	3.72	8
29.85	1.12	3
31.28	3.79	4
32.06	3388.70	35
33.31	22.64	13
34.02	60.36	22
37.32	3.33	3
38.43	6.17	4
39.58	30.96	9
41.66	21.58	7
44.37	2.20	3
45.39	22.45	11
50.01	1.90	4
50.68	1.51	3
51.46	1.61	4
54.41	986.51	23
55.21	786.14	9
55.80	4114.39	8
56.17	31811.67	10
56.80	15302.89	55
59.96	85.39	15
61.44	99.49	30
64.00	89503.08	36
64.68	28260.27	19
65.98	32958.14	14

66.90	10382.14	15
67.97	20594.25	15
68.75	5719.82	20
76.40	5977.45	234
89.97	3127.91	146
100.71	2606.38	151
108.18	674.86	32
110.05	483.42	15
110.96	229.76	9
112.44	649.97	26
113.99	376.04	15
116.32	2154.63	60
122.55	1432.85	90
133.04	1825.15	155
142.19	385.46	35
145.88	1652.75	76
157.97	1890.69	201
171.66	264.98	39
174.77	440.60	23
177.08	2969.79	29
179.66	404.75	29

File : UWD073 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 14:16:25 STD.1; PAI; DELTA T = 750 ns; + IONS
64 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 283663.6. Pg 2

Mass	Area	PkWd
186.35	904.49	104
193.92	226.82	34
198.52	359.33	61
205.33	477.29	40
207.06	542.03	9
208.03	778.95	10
209.53	1900.91	43
216.49	351.57	51
221.69	330.43	59
227.17	160.71	31
231.00	308.17	28
233.94	756.82	54
240.87	371.83	39
244.14	151.11	24

File : UWD074 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 14:18:16 STD.1; PAI; DELTA T = 750 ns; + IONS
79 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 36484.5. Pg 1

Mass	Area	PkWd
10.21	4.27	3
26.65	4.90	6
27.66	68.27	13
28.01	30.78	10
29.70	14.46	6
29.97	1.40	3
30.22	6.10	4
30.60	18.74	10
31.11	1.94	4
31.93	317.57	22
32.65	544.43	34
33.97	4.52	5
34.32	16.25	10
34.83	5.56	7
35.55	30.95	13
36.15	0.92	3
37.39	2.68	7
38.53	0.91	3
39.73	22.09	13
40.25	3.24	4
40.81	6.57	7
41.17	3.70	5
41.85	62.16	11
42.33	6.96	5
42.72	4.91	5
43.27	0.86	3
44.13	15.31	16
45.25	4.50	5
45.82	10.31	6
48.43	0.97	4
54.21	2.69	3
54.95	39.60	16
55.93	42.28	9

58.09	23.54	10
64.56	20183.55	43
65.95	1790.47	11
66.73	6126.69	19
68.46	5356.89	40
72.70	349.54	154
82.27	54.29	79
86.25	12.81	17
87.12	1.09	4
88.88	19.31	25
90.13	1.15	5
92.16	7.57	8
94.56	2.04	3
95.22	2.17	6
96.32	3.55	9
97.07	4.19	10

File : UWD074 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 14:18:16 STD.1; PAI; DELTA T = 750 ns; + IONS
79 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 36484.5. Pg 2

Mass	Area	PkWd
98.27	15.52	14
99.88	2.13	6
100.74	1.21	5
103.48	2.08	4
104.96	1.45	4
105.87	1.12	5
107.03	6.53	8
107.95	15.94	12
109.33	4.83	14
110.38	23.12	18
113.26	2.94	4
114.09	7.64	12
114.89	1.79	5
116.20	366.83	21
123.33	1.38	5
146.54	17.00	6
153.55	8.51	6
161.64	1.92	3
181.43	0.88	3
193.18	4.74	8
208.25	14.44	16
209.65	5.33	7
211.53	1.92	6
216.94	3.70	7
219.06	1.31	3
219.74	2.36	7
220.85	1.29	7
226.78	2.19	4
247.69	4.48	7

File : UWD075 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 14:19:34 STD.1; PAI; DELTA T = 750 ns; + IONS
76 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 31880.3. Pg 1

Mass	Area	PkWd
20.68	6.75	4
22.54	3.32	4
22.82	18.87	11
24.40	2.53	3
27.07	20.28	8
28.50	4.99	5
28.82	8.27	8
29.21	13.75	11
29.68	20.77	5
30.22	140.79	25
31.73	690.61	33
32.48	112.14	18
33.15	22.12	11
33.76	31.22	16
34.48	4.69	6
35.11	25.09	13
36.16	33.16	16
37.25	40.11	23

38.92	59.97	18
39.79	29.07	15
40.61	1.43	4
40.96	21.07	8
43.05	21.01	10
46.04	2.89	4
48.53	1.74	5
52.21	5.40	7
53.26	0.84	3
53.77	37.71	10
54.17	12.68	5
55.75	2076.99	40
56.89	86.66	13
57.49	0.85	3
61.16	5.77	3
63.51	16395.30	34
65.55	6939.67	35
67.45	3898.59	32
69.12	76.23	12
70.57	113.84	58
74.38	35.82	34
77.63	71.64	53
80.13	6.57	8
81.28	10.17	12
82.65	24.33	20
83.76	4.66	9
84.78	11.93	11
85.77	8.17	11
87.77	90.35	36
89.84	1.47	6
91.08	18.00	18

File : UW0075 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 14:19:34 STD.1; PAI; DELTA T = 750 ns; + IONS
76 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 31880.3. Pg 2

Mass	Area	PkWd
94.06	1.30	3
96.10	0.87	5
96.89	5.35	7
102.17	1.37	3
102.66	3.63	6
106.75	96.14	17
108.96	30.85	20
111.32	6.90	10
113.22	2.06	6
114.70	305.08	27
117.71	1.91	4
118.61	1.03	6
119.94	12.84	16
121.04	4.30	4
125.35	2.33	4
127.56	1.48	4
131.26	9.67	6
134.09	3.28	6
138.31	0.90	4
141.29	2.27	4
143.19	1.32	6
151.22	1.66	3
173.33	2.65	6
175.56	8.34	9
176.25	1.22	3
207.33	87.03	29

File : UW0076 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 14:21:41 STD.1; PAI; DELTA T = 750 ns; + IONS
63 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 51648.9. Pg 1

Mass	Area	PkWd
28.48	5.22	5
29.13	5.08	5
30.49	23.79	18
31.34	84.29	23
32.47	719.06	34
33.80	48.74	12
34.42	2.31	3
34.74	1.92	3
39.87	3.27	6
40.43	2.95	5
40.77	4.07	4
41.88	7.72	5
45.24	4.56	4
54.26	3.83	3
55.49	9.96	4
56.83	590.33	31
64.66	26754.13	44
66.68	12592.47	34
68.61	8083.83	41
71.27	267.32	54
75.60	146.02	66

89.63	50.83	65
92.29	4.43	9
93.25	24.94	16
94.11	1.88	7
96.66	65.77	67
100.23	5.14	11
101.22	3.98	11
101.87	1.40	4
102.28	1.59	5
102.72	0.90	3
103.26	1.52	4
104.21	2.21	7
105.10	4.01	10
105.88	7.89	11
106.84	5.63	12
108.72	31.45	23
110.83	29.68	25
114.21	90.30	39
116.49	1463.45	54
121.22	21.94	32
123.32	6.68	10
124.10	1.99	7
124.99	11.13	11
128.02	2.57	6
129.11	7.29	8
129.96	7.57	6
131.63	1.39	4
132.50	7.38	11

File : UW0076 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 14:21:41 STD.1; PAI; DELTA T = 750 ns; + IONS
63 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 51648.9. Pg 2

Mass	Area	PkWd
133.37	7.14	7
136.90	4.86	9
143.52	2.18	6
147.96	1.25	3
151.26	3.65	10
205.62	2.36	4
206.15	0.92	3
207.68	37.44	10
209.43	125.92	26
212.40	3.49	6
214.00	2.31	9
226.85	5.06	8
247.68	2.12	4

File : UW0079 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 15:48:52 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
48 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 56591.0. Pg 1

Mass	Area	PkWd
11.23	68.58	6
22.91	16.12	5
36.72	5.27	4
38.57	1.38	3
48.57	6.84	4
51.25	1.53	4
52.43	68.42	9
53.46	700.60	15
54.43	10087.42	32
62.31	2538.92	17
63.35	8.11	10
64.27	1630.77	16
65.27	139.51	15
66.28	583.68	17
67.32	160.89	12
68.23	10.86	8
85.97	3.13	5
131.90	372.83	11
132.87	1209.71	12
133.85	1942.92	11
134.80	3133.20	10
135.84	30831.88	95
148.46	250.58	70
150.54	198.42	11
151.67	2040.03	64
158.31	12.27	26
159.86	1.83	8
160.83	1.83	5
162.05	8.24	16
163.73	4.41	16
167.06	102.20	53
170.35	4.96	11
172.29	0.86	3
173.00	1.12	3

174.64	0.92	4
175.75	1.72	4
178.03	1.53	4
179.96	18.76	19
181.36	30.46	12
183.28	24.97	19
185.04	0.94	5
188.95	2.83	6
203.28	96.50	12
204.25	46.12	7
205.27	208.52	18
206.94	1.15	3
220.29	5.31	7

File : UW0080 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 15:50:23 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
14 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 10176.5. Pg 1

Mass	Area	PkWd
53.43	4.11	5
54.40	530.40	14
62.31	109.07	9
63.29	8.08	4
64.25	11.56	6
66.22	5.20	4
134.88	60.42	9
135.85	387.97	14
150.89	1.47	3
151.75	241.58	14
201.31	25.17	6
203.31	1869.09	10
204.27	1619.39	8
205.31	5303.05	24

File : UW0081 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 15:51:19 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
19 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 17423.3. Pg 1

Mass	Area	PkWd
30.72	5.26	5
52.45	125.66	13
53.65	17.50	11
54.39	14733.20	20
55.36	275.33	14
57.00	2.31	5
61.60	5.11	4
62.30	258.83	13
63.20	3.35	7
64.26	136.01	11
66.21	29.40	6
67.18	9.27	5
132.31	1.79	4
134.71	10.49	7
135.75	254.90	14
151.58	38.64	9
203.28	261.31	9
204.30	220.11	8
205.27	1034.84	16

File : UW0082 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 15:54:31 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
21 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 9360.3. Pg 1

Mass	Area	PkWd
29.80	1.38	4

34.53	2.14	3
35.52	2.10	4
38.45	12.39	5
52.27	73.76	12
54.21	5300.69	30
62.09	745.93	13
64.06	575.36	15
65.02	83.98	10
66.06	541.49	15
85.72	3.39	6
88.89	6.23	4
132.59	40.73	18
135.18	929.89	23
135.96	698.66	14
148.15	5.24	5
148.97	7.42	7
149.99	10.86	8
151.54	314.36	22
204.71	1.82	3

File : UWO083 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 15:56:34 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
54 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 39979.9. Pg 1

Mass	Area	PkWd
53.79	25.87	6
54.38	125.98	6
54.75	402.17	16
62.16	2.25	3
62.66	73.11	9
64.64	41.54	6
65.53	5.67	3
66.59	7.75	5
67.53	8.92	6
69.68	1.67	3
84.47	3.98	3
86.44	42.82	7
89.25	1.31	3
110.19	1.32	3
118.15	18.46	8
131.90	113.95	9
132.91	547.13	12
133.90	676.74	11
134.85	1690.42	10
135.83	14584.75	36
139.24	1.30	3
141.97	19.93	11
147.41	129.26	18
148.73	266.53	11
149.68	223.23	10
150.67	283.22	10
151.72	4219.78	29
161.86	2.55	4
166.75	4.44	6
167.77	6.97	9
170.45	20.57	13
174.46	8.63	15
191.30	1.01	3
196.23	6.79	7
197.49	1.82	4
198.16	0.83	3
199.38	235.43	10
200.25	153.88	8
201.34	567.54	15
203.23	3058.20	13

205.26	9262.55	68
212.76	3.42	9
213.51	2.73	5
214.18	1.29	5
216.25	10.97	21
217.83	0.99	3
219.05	3.39	10
221.69	13.19	25
223.55	1.61	6

File : UW0083 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 15:56:34 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
54 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 39979.9. Pg 2

Mass	Area	PkWd
225.63	1.78	5
229.56	1.09	3
232.55	0.88	5
235.49	7.57	11

File : UW0084 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 15:57:47 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
118 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 38507.0. Pg 1

Mass	Area	PkWd
0.79	320.46	9
11.23	5473.81	19
12.21	479.19	12
13.19	7.96	5
14.18	1.26	3
15.10	3.48	3
21.97	24.68	6
22.27	6.06	5
22.94	505.62	12
24.91	1.45	3
25.91	79.33	8
26.84	88.57	9
28.13	3.28	3
28.80	2.19	3
30.77	252.30	10
31.14	2.63	3
34.80	5.98	6
35.75	83.46	9
36.71	15.14	8
37.68	363.44	15
38.64	729.55	15
39.64	95.80	16
41.93	36.16	7
48.61	2.55	5
50.45	79.12	9
52.44	250.24	17
54.38	9300.81	36
55.39	105.96	13
56.25	1.30	4
57.39	1.09	3
58.21	3.37	7
60.56	8.36	11
61.45	5.78	12
62.34	234.38	18
64.23	135.58	33
66.26	88.45	9
67.36	41.96	13
69.35	2.29	4
73.29	4.13	4
75.02	0.86	4
75.53	2.97	6
76.39	1.49	4
77.27	32.04	14

86.08	2.02	4
87.99	27.98	12
89.23	82.67	15
90.18	37.29	12
92.99	2.19	4
93.85	4.25	6

File : UWO084 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 15:57:47 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
118 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 38507.0. Pg 2

Mass	Area	PkWd
94.36	3.63	4
96.62	1.77	3
107.98	5.07	6
109.81	4.86	5
111.70	2.81	4
113.62	0.99	3
114.92	2.55	3
115.54	1.90	3
120.77	3.42	4
122.10	2.80	5
124.51	11.44	9
128.53	7.16	13
131.95	87.86	10
132.95	417.10	13
133.87	421.80	10
134.83	729.54	11
135.93	8285.69	30
138.25	34.11	18
140.20	7.39	13
141.56	10.23	9
148.66	76.39	23
149.86	152.88	12
150.89	238.28	9
151.91	2146.51	42
155.64	9.50	10
157.43	0.85	4
159.03	3.15	7
161.14	2.47	5
162.34	13.00	15
163.62	10.07	14
164.77	4.64	7
166.62	7.34	7
167.37	3.11	6
168.58	1.32	7
169.69	3.21	5
170.47	5.19	7
171.99	16.94	12
172.98	1.14	5
174.10	3.13	9
175.53	2.49	5
178.04	5.66	7
179.15	7.48	11
182.54	18.19	20
184.40	3.26	6
185.17	2.46	4
186.10	1.87	6
188.55	6.26	9
190.92	9.79	19
192.83	8.14	10
193.81	1.78	4

File : UW0084 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 15:57:47 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
118 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 38507.0. Pg 3

Mass	Area	PkWd
194.23	1.22	3
203.21	1317.42	28
204.19	1155.27	8
205.26	4037.77	47
210.43	14.87	12
212.84	29.40	36
215.87	1.86	5
217.89	20.13	18
220.91	15.77	19
222.54	0.99	3
223.56	8.94	12
227.73	12.98	8
228.89	2.92	5
230.14	10.70	14
232.34	18.91	16
233.56	2.38	4
239.01	1.84	6
239.72	3.04	5

File : UW0085 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 15:58:39 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
16 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 4559.8. Pg 1

Mass	Area	PkWd
11.21	363.26	10
30.68	32.59	5
52.36	12.94	5
54.35	2195.16	17
55.34	3.14	4
62.19	770.73	15
64.11	208.21	11
66.06	50.02	8
66.67	2.75	4
67.13	21.66	6
94.05	1.87	4
126.08	1.68	3
133.57	12.31	11
134.63	31.25	8
135.71	534.97	16
151.50	317.27	22

File : UW0086 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 16:03:34 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
11 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 5436.5. Pg 1

Mass	Area	PkWd
30.80	1.87	3
52.40	21.73	8
53.41	43.74	7
54.35	4016.76	26
62.32	75.51	10
64.30	16.69	5
135.53	224.96	17

203.35	226.18	9
204.31	218.78	9
205.34	557.87	14

File : UW0087 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 16:07:06 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
50 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 46595.5. Pg 1

Mass	Area	PkWd
0.77	26.88	5
11.21	1120.83	12
12.18	30.48	6
22.91	230.26	9
23.95	1.81	4
26.81	389.78	11
30.74	601.26	11
37.55	2.43	4
38.63	95.66	9
52.37	246.81	5
52.67	342.02	14
53.65	7170.90	15
54.28	11506.40	6
54.59	13370.89	14
55.53	476.87	51
59.99	1.60	6
61.32	11.94	12
62.21	982.05	7
62.59	627.29	25
64.37	614.50	31
66.29	239.21	20
67.24	25.16	15
70.56	2.07	6
70.97	1.39	4
71.60	1.45	5
72.08	1.89	3
73.05	4.93	5
74.07	10.36	7
85.31	1.23	6
86.31	40.00	18
102.01	1.89	3
113.02	3.23	3
117.99	25.22	8
132.67	68.93	19
134.00	364.88	14
134.89	234.26	7
135.87	3237.08	29
147.93	3.61	5
148.69	8.04	9
149.62	8.95	10
151.67	480.20	31
165.78	5.08	6
166.67	3.24	4
167.86	161.16	13
199.49	9.63	6
201.11	3.40	7
203.03	636.11	11
203.93	675.23	8
204.97	2482.26	21
222.65	4.73	7

File : UW0088 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 16:08:09 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
38 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 36621.8. Pg 1

Mass	Area	PkWd

11.22	840.44	12
12.18	9.27	3
14.14	4.13	3
22.91	42.72	6
26.81	7.68	4
30.75	1535.36	14
32.68	4.27	3
37.64	19.80	6
38.62	39.01	10
46.50	32.44	6
52.41	230.06	10
53.37	70.15	8
54.35	11242.43	19
55.31	151.21	13
56.37	9.05	6
62.19	2906.31	22
64.13	944.46	16
65.10	101.89	11
66.10	424.84	17
67.06	23.55	8
68.00	1.11	3
86.21	5.99	4
127.90	4.08	5
131.91	112.11	12
132.97	400.75	14
133.96	914.00	11
134.96	1902.71	11
135.89	12748.33	39
139.61	2.30	8
148.86	116.72	20
151.59	1734.87	40
154.32	5.18	12
158.48	1.10	4
167.60	0.91	4
199.08	1.90	4
201.09	2.16	4
203.64	2.73	5

File : UW0089 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 16:11:59 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
66 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 42274.0. Pg 1

Mass	Area	PkWd
22.02	37.84	8
37.80	21.40	6
39.77	7.34	4
41.74	117.71	8
43.69	5.27	4
52.52	190.51	9
53.54	1399.51	16
54.50	4790.33	20
55.62	214.18	13
56.57	2.03	4
59.56	49.58	7
62.45	1089.02	15
64.45	224.47	11
65.48	13.78	6
66.41	106.85	10
67.46	31.80	7
75.40	13.84	7
77.32	2.01	3
85.20	2.18	3
86.23	125.32	10
89.24	5.46	4
90.80	1.69	3

96.10	1.47	4
98.04	3.83	3
103.21	12.58	5
116.97	8.64	4
117.93	196.03	11
119.05	1422.51	21
120.98	1360.58	21
125.90	69.36	9
127.84	67.33	11
128.73	3.04	3
129.89	61.15	10
131.88	47.74	9
133.00	54.51	8
133.87	73.37	8
134.95	128.24	10
135.94	1784.55	21
141.78	55.87	7
146.95	225.62	18
148.69	25.40	9
149.68	104.00	9
150.71	107.70	13
151.87	491.72	19
153.72	5.45	4
159.67	1.31	3
167.70	2.04	5
173.47	33.38	8
174.61	12.28	7

File : UW0089 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 16:11:59 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
66 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 42274.0. Pg 2

Mass	Area	PkWd
200.33	3.76	5
201.30	95.27	11
203.25	5602.20	16
204.19	5509.86	9
205.24	16159.72	51
210.76	1.89	6
211.92	9.06	13
213.63	1.31	5
214.26	1.23	3
216.45	2.64	6
218.70	1.18	4
226.34	0.90	4
228.50	0.83	3
236.88	17.45	12
238.70	4.68	4
240.80	30.23	9

File : UW0090 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 16:13:44 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
40 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 43775.4. Pg 1

Mass	Area	PkWd
11.21	285.96	9
26.78	26.93	5
30.77	43.45	7
37.96	7.37	5
52.39	23.69	6
53.39	161.22	6
53.78	539.76	10
54.40	8839.90	19
55.37	214.32	16
56.27	6.90	6
61.15	2.16	4
62.27	8651.19	29
64.20	5448.64	19
65.23	537.12	13
66.18	4211.67	19
67.21	400.36	16
68.17	96.44	17
79.85	2.16	4
85.85	0.98	4
86.39	2.19	8
96.36	1.55	3
96.92	6.05	4
109.92	6.98	6
111.79	9.18	7
131.72	152.56	12
132.73	381.07	12
133.73	506.06	11
134.59	640.07	8
135.70	9875.72	38
147.34	5.37	9
151.51	1192.94	58

167.04	80.36	11
170.11	6.19	7
172.04	2.53	4
191.92	1.20	3
200.97	0.99	3
203.22	372.10	10
204.09	262.91	7
205.14	766.70	18

File : UW0091 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 16:17:07 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
33 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 13459.7. Pg 1

Mass	Area	PkWd
0.78	42.45	6
11.25	3224.17	16
12.22	464.81	12
13.21	5.87	4
22.97	543.10	13
23.93	7.12	3
25.94	55.71	7
26.86	134.25	8
27.85	10.62	5
30.80	369.03	11
35.76	20.18	6
38.60	4.13	5
39.72	2.74	5
42.62	7.86	4
46.58	20.10	6
54.45	857.86	15
62.34	142.61	9
64.30	78.65	8
66.23	28.06	6
66.68	4.00	4
67.29	119.75	9
131.76	1.10	3
132.90	98.66	10
134.01	132.25	12
134.91	128.03	10
135.93	2629.43	18
137.29	2.53	4
149.85	7.95	5
151.00	0.93	3
151.90	401.75	14
203.36	670.73	10
204.30	767.13	8
205.29	2476.08	21

File : UW0092 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 16:19:03 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
61 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 68400.5. Pg 1

Mass	Area	PkWd
11.21	1121.05	12
12.18	110.37	7
22.92	129.98	8
23.86	2.89	3
25.85	24.66	6
26.82	215.81	10
30.73	1096.59	13
31.66	2.69	3
34.69	2.24	4
52.37	36.63	7
53.38	32.77	10
54.35	11641.64	25

56.29	2.57	4
62.24	9251.09	30
64.18	5941.39	17
65.17	573.86	16
66.17	3420.79	31
68.12	67.56	13
71.12	1.05	3
71.52	1.43	4
73.48	1.87	5
86.09	17.48	12
98.73	5.70	5
107.77	1.49	3
111.78	6.29	6
118.70	2.65	3
129.88	1.57	3
131.91	181.17	11
132.89	535.85	11
133.88	1155.68	12
134.90	1646.01	10
135.84	17521.57	52
140.34	4.92	8
141.25	3.91	11
142.56	7.13	13
143.46	1.26	6
144.31	2.63	6
145.45	7.24	18
146.60	2.07	5
148.72	168.21	32
150.78	162.13	10
151.83	1740.65	35
155.37	1.58	6
164.57	4.63	10
167.30	11.32	13
168.59	0.97	3
170.31	1.65	5
174.16	0.86	4
186.50	2.59	3

File : UW0092 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 16:19:03 SAMPLE 7; PAI; DELTA T = 750 ns; + IONS
61 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 68400.5. Pg 2

Mass	Area	PkWd
201.33	39.02	13
203.19	2426.28	12
204.04	2155.90	8
205.12	6731.16	42
209.90	3.99	11
212.10	4.01	11
214.17	0.98	4
214.90	1.82	8
217.48	1.33	4
218.05	2.24	5
223.63	4.75	9

File : UW0093 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 19:38:44 SAMPLE 6; PAI; DELTA T = 750 ns; + IONS
65 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 79469.0. Pg 1

Mass	Area	PkWd
0.77	19.51	5
11.20	2246.78	16
12.17	167.42	9
15.06	9.88	5
21.85	3.09	3
22.88	1068.01	14
23.84	35.81	7
24.83	69.26	7
25.79	43.80	7
26.78	1182.56	16
27.77	39.84	6
30.71	1439.89	15
31.66	7.26	5
32.65	3.55	3
37.60	12.19	8
38.54	4658.19	22
40.51	6.05	4
41.54	7.39	5
42.51	31.25	7
46.49	114.03	9
52.30	1001.65	17
53.28	1927.25	17
54.21	40147.54	20
55.23	712.03	17
56.92	134.91	59
60.72	69.99	41
62.10	3255.64	21
63.19	77.50	15
64.07	1213.96	16
65.06	189.85	14
66.05	729.89	19
68.72	152.04	93
76.57	114.61	153
85.80	149.02	94
89.79	7.68	11
90.29	1.24	3

91.53	0.89	3
93.71	15.48	25
96.40	7.03	17
98.02	2.09	6
100.06	1.94	6
101.49	91.93	33
103.49	1.42	4
111.50	1.50	5
118.47	51.49	13
120.57	44.56	17
131.12	3.15	4
132.69	22.61	20
135.24	549.96	30

File : UW0093 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 19:38:44 SAMPLE 6; PAI; DELTA T = 750 ns; + IONS
65 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 79469.0. Pg 2

Mass	Area	PkWd
149.85	5.63	8
151.04	7.64	9
151.92	1.95	4
200.90	28.11	13
202.87	3044.54	18
203.74	3247.25	8
204.85	11260.73	51
210.65	8.11	17
212.62	0.87	3
213.65	2.80	10
215.82	2.35	7
216.65	1.78	5
219.73	0.81	5
222.97	1.91	6
235.77	2.57	11

File : UW0094 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 19:40:24 SAMPLE 6; PAI; DELTA T = 750 ns; + IONS
43 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 29891.1. Pg 1

Mass	Area	PkWd
0.78	4.12	4
11.22	1350.99	14
12.18	43.55	6
21.89	52.37	8
22.90	208.16	10
24.82	3.76	4
25.79	50.04	8
26.80	682.19	14
30.72	1353.45	15
32.67	13.74	5
37.58	18.29	7
38.49	1572.50	16
46.45	40.93	7
52.30	492.12	15
53.11	1.49	3
54.25	15573.79	36
56.24	7.39	10
60.43	1.50	3
62.17	4260.73	29
64.13	2214.72	18
65.10	226.82	14
66.11	1246.98	30
68.06	15.31	15
68.85	2.47	6
69.46	1.07	6
69.97	7.48	13
72.89	5.85	9
77.71	2.48	6
85.63	1.93	3
93.57	8.15	10
96.60	4.98	5
98.54	6.39	9

102.92	0.99	3
109.34	2.56	5
113.42	2.10	4
127.00	5.28	5
132.06	3.32	6
133.12	10.16	7
135.13	321.69	26
151.02	7.33	6
203.73	2.18	4
204.81	58.61	9

File : UW0095 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 19:40:47 SAMPLE 6; PAI; DELTA T = 750 ns; + IONS
38 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 17929.8. Pg 1

Mass	Area	PkWd
0.78	6.29	4
11.22	1083.46	12
12.19	27.96	5
13.17	2.49	3
21.87	5.84	4
22.90	77.47	7
25.82	3.17	4
26.80	187.76	9
27.78	3.72	3
30.73	914.42	12
31.71	2.04	3
32.67	2.58	4
37.58	3.28	5
38.52	1091.00	14
46.45	15.01	4
52.34	88.39	11
53.18	2.79	3
54.28	5637.45	26
61.22	8.66	5
62.22	4283.33	21
64.17	1952.73	17
65.16	182.63	11
66.12	1290.29	15
68.04	4.21	4
69.85	2.48	3
83.79	1.90	3
96.53	2.10	5
98.63	1.48	3
100.53	3.36	6
132.32	9.87	5
133.42	25.86	6
134.31	129.61	12
135.32	714.12	16
150.06	2.26	5
151.02	119.63	9
202.91	12.11	7
203.99	3.92	7
204.81	24.10	8

File : UW0096 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 19:41:58 SAMPLE 6; PAI; DELTA T = 750 ns; + IONS
73 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 75600.8. Pg 1

Mass	Area	PkWd
0.78	5.43	4
11.22	1581.58	14
12.19	142.25	8
15.08	3.16	4
18.96	4.92	3

22.90	1068.50	14
23.88	57.14	7
24.85	43.22	6
25.83	813.06	13
26.80	549.80	12
27.25	1.29	3
27.79	6.88	3
30.73	1402.25	14
32.69	9.86	4
37.58	57.76	9
38.53	30041.76	39
40.49	38.18	12
40.96	1.18	4
41.54	34.30	9
42.47	228.96	14
43.67	0.96	3
45.38	7.84	6
46.38	27.79	8
50.54	3.97	8
52.33	530.86	18
53.28	773.28	15
54.23	18944.01	20
55.42	476.26	53
58.63	17.82	26
59.67	1.53	3
61.08	56.39	34
62.09	7042.25	18
63.09	146.07	15
64.05	3961.45	17
65.07	335.30	16
66.05	2051.36	31
68.09	52.51	17
73.79	215.73	210
82.74	4.47	8
84.07	15.87	25
84.94	1.12	3
86.08	21.86	29
87.71	3.72	11
88.69	5.44	13
89.41	2.04	5
89.78	2.20	5
90.98	7.12	23
93.18	24.69	34
95.10	1.29	7

File : UW0096 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 19:41:58 SAMPLE 6; PAI; DELTA T = 750 ns; + IONS
73 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 75600.8. Pg 2

Mass	Area	PkWd
96.78	19.78	30
98.55	12.14	9
99.20	1.21	4
100.61	7.16	12
102.79	1.02	3
105.49	1.35	4
108.39	3.43	7
111.33	4.09	7
131.28	42.26	11
132.23	186.65	12
133.23	187.68	11
134.22	370.15	10
135.17	3677.74	23
137.00	2.51	8
145.59	0.95	3
146.77	2.96	4
147.95	17.74	11
148.96	5.28	10
150.87	205.61	26
178.82	1.26	4
179.50	2.58	4
182.62	2.17	4
204.48	3.81	5

File : UW0097 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 19:42:49 SAMPLE 6; PAI; DELTA T = 750 ns; + IONS
22 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 12152.4. Pg 1

Mass	Area	PkWd
11.21	429.54	11
15.06	15.40	5
22.86	410.86	11
23.80	9.79	4
24.79	13.06	4
25.77	59.45	7
26.74	21.24	7
30.69	29.23	5
37.52	4.33	3
38.49	6154.81	18
41.35	2.91	3
42.37	16.79	5
52.26	95.16	9
53.24	269.31	12
54.23	2881.55	25
61.19	58.24	8
62.20	809.02	14
63.09	8.04	5
64.15	481.17	15
65.11	24.03	8
66.10	312.39	14
135.05	46.05	7

File : UW0098 U. WESTERN ONTARIO/CHRYSSOULIS

40 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 29848.0. Pg 1

Mass	Area	PkWd
11.20	1016.06	13
12.16	32.65	6
21.87	2336.94	15
22.84	239.56	10
25.76	340.00	10
26.73	61.60	6
30.67	151.19	10
37.48	2756.89	16
38.47	6987.17	21
39.43	213.95	11
40.44	4.80	5
42.38	71.08	8
43.35	102.81	10
43.80	26.24	5
44.34	27.86	8
45.32	11.56	5
52.18	255.66	11
53.16	151.32	10
54.14	7813.86	18
55.13	138.86	12
56.21	4.13	8
57.10	1.95	3
61.03	2.57	4
62.05	218.87	12
64.01	63.13	9
65.54	2.90	4
66.02	85.46	14
66.92	31.78	8
69.84	5.81	5
85.57	10.64	6
94.59	1.85	4
131.15	18.55	7
132.09	217.02	12
133.08	412.31	11
134.08	564.92	11
135.06	5175.67	25
147.80	2.11	4
148.82	13.71	6
149.81	21.37	8
150.83	253.21	15

File : UWD099 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 19:47:17 SAMPLE 6; PAI; DELTA T = 750 ns; + IONS
19 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 3826.4. Pg 1

Mass	Area	PkWd
11.22	757.87	12
12.18	70.83	6
14.12	2.81	3
21.88	8.24	5
22.88	120.21	7
25.90	1.36	3
26.78	4.76	4
27.77	21.13	5
30.70	170.29	9
37.51	123.19	10
38.43	4.81	5
52.31	9.42	5
53.25	41.47	7
54.24	1274.36	17
62.16	732.03	13
64.11	372.98	12

66.07	93.96	9
96.54	2.02	3

File : UW0100 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 19:47:50 SAMPLE 6; PAI; DELTA T = 750 ns; + IONS
19 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 11527.0. Pg 1

Mass	Area	PkWd
11.20	99.78	8
12.16	7.53	3
22.86	9.09	4
23.82	4.38	3
25.79	4.62	4
26.78	226.11	9
30.69	298.72	11
38.49	914.00	15
52.27	174.85	11
53.26	226.20	12
54.21	6959.37	18
55.16	120.32	12
62.10	1347.36	23
64.05	651.75	14
65.01	33.48	7
66.03	380.92	12
69.93	8.52	6
131.97	1.84	3
135.01	58.15	9

File : UW0101 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 19:48:43 SAMPLE 6; PAI; DELTA T = 750 ns; + IONS
23 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 8583.5. Pg 1

Mass	Area	PkWd
11.21	116.90	7
22.87	24.29	5
26.77	39.93	5
30.70	249.47	10
38.49	514.23	12
52.22	63.01	8
53.29	489.41	12
54.25	3119.14	26
62.18	1195.52	14
63.22	3.93	4
64.12	602.59	12
65.09	59.17	8
66.08	574.34	16
67.99	0.99	3
96.56	1.28	3
109.41	4.38	3
131.16	1.51	3
132.25	43.82	7
133.14	27.06	8
134.16	80.52	8
135.17	1063.74	15
148.93	4.26	4
151.00	304.04	11

File : UW0102 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 19:50:29 SAMPLE 6; PAI; DELTA T = 750 ns; + IONS
15 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 4836.6. Pg 1

Mass	Area	PkWd
11.19	239.01	9
12.16	22.01	5
22.84	45.42	6

27.74	1.10	3
30.67	256.86	11
52.24	47.56	9
53.27	28.41	6
54.22	2396.60	17
55.05	3.21	4
62.16	942.48	14
64.12	502.20	13
65.08	9.68	5
66.08	331.21	12
135.05	3.74	4

File : UWO103 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 19:52:44 SAMPLE 6; PAI; DELTA T = 750 ns; + IONS
14 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 8989.7. Pg 1

Mass	Area	PkWd
11.19	57.26	7
22.87	33.67	6
25.79	23.10	6
26.78	101.14	8
30.70	362.69	10
38.49	220.78	11
52.28	72.09	8
53.28	213.18	12
54.24	3714.75	19
55.08	18.02	6
62.15	2126.75	25
64.10	1215.14	16
65.05	105.61	9
66.04	725.51	14

File : UWO104 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 19:57:55 SAMPLE 6; PAI; DELTA T = 750 ns; + IONS
76 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 94779.2. Pg 1

Mass	Area	PkWd
11.18	3239.84	16
12.15	312.08	10
15.05	35.07	6
17.00	5.74	4
21.85	91.75	7
22.83	973.94	13
23.79	11.64	4
25.76	507.16	11
26.72	1761.51	20
27.71	12.80	6
28.69	2.35	4
30.63	5585.13	22
31.60	20.46	7
32.59	103.16	13
33.55	10.66	6
34.55	5.03	5
35.61	3.78	6
36.53	1.88	5
37.50	141.94	14
38.47	3482.40	23
39.48	24.10	17
40.51	4.22	5
41.46	76.53	15
42.37	132.52	13
42.95	0.86	4
44.38	12.94	10
45.33	9.52	10
46.31	318.28	20

49.24	3.24	7
52.19	2271.19	26
53.15	196.64	10
54.10	68019.67	26
55.19	989.81	17
57.51	594.01	81
61.06	525.88	18
62.00	1427.43	17
62.97	247.62	16
64.02	481.44	21
65.07	91.94	11
65.93	274.75	15
72.81	805.18	271
91.57	322.61	244
103.36	27.86	47
107.28	26.43	54
109.92	3.03	7
111.79	11.92	27
112.87	3.02	5
113.33	0.84	3
114.45	14.89	30

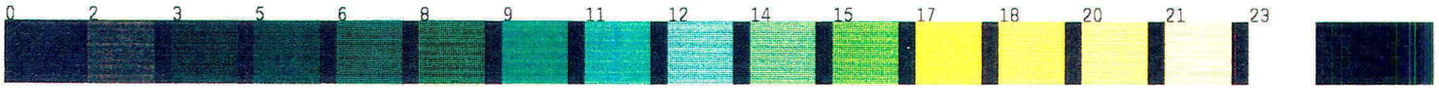
File : UWD104 U. WESTERN ONTARIO/CHRYSSOULIS
20 Nov 90 19:57:55 SAMPLE 6; PAI; DELTA T = 750 ns; + IONS
76 Peaks. Mass 0.0 to 300.0, thresh 3.0, bgnd 3.0, totint 94779.2. Pg 2

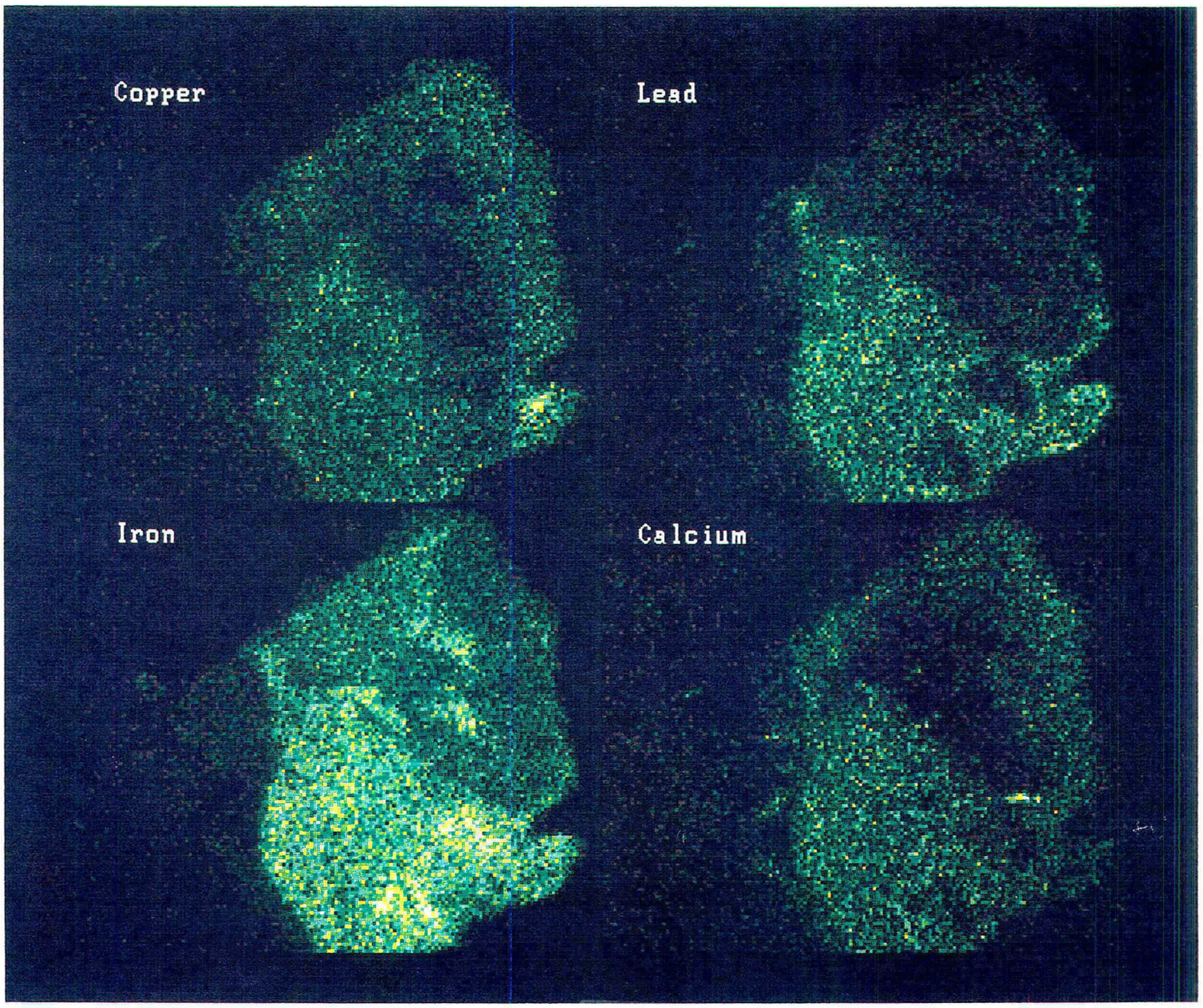
Mass	Area	PkWd
116.21	2.40	4
118.15	22.07	42
120.35	3.06	11
121.70	2.63	9
122.83	4.86	11
123.95	1.39	4
125.20	3.98	14
127.66	1.35	4
129.16	0.87	3
129.86	1.50	5
131.99	92.88	20
132.93	67.60	11
134.83	1217.74	41
137.73	5.33	10
138.46	1.23	3
139.59	1.23	3
140.73	0.99	4
147.85	2.27	7
148.90	18.16	9
150.54	70.03	32
152.70	2.55	6
153.81	1.23	4
177.76	1.13	3
202.75	1.42	4
203.42	1.18	4
204.51	22.67	9

Multiple ion maps

120 cycles per pixel
Zn RoConc. SINGLE GRAIN POS SIMS
at resolution: 2 (304 X 256)
Approximate magnification x 900
Date :- 5 Dec 1990 Filename :- SSW269

Counts per pixel





Distribution of copper, lead, iron and calcium on the surface of a sphalerite grain from the zinc rougher concentrate. The depth of analysis is only a few atomic layers thick. Note the similarities in distribution of copper and calcium ($CuSO_4$ and lime added in the zinc feed), also in the distribution of lead and iron. The latter is believed to have precipitated on the sphalerite surface while in the grinding and classification circuit. In the iron-rich regions there is much less Cu and Pb. The next challenge will be to image the distribution of the collector molecule for example xanthate etc.

Surface Science Western

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December 18, 1990

Mr. G. McDonald
Vice-President Metallurgy
Curragh Resources Inc.
95 Wellington Street West
Suite 1900
Toronto, Ontario
M5J 2N7

Dear Mr. McDonald:

I am glad that the decision on the Vangorda 'cap' rock did not have to wait for the results of the enclosed report. A study that should have taken one week maximum, ended up taking six weeks!

Well, the results on the surface composition of sphalerite grains from the seven samples submitted are very interesting. First, they indicate that preactivation took place in the 'cap' rock. This preactivation is in the form of Cu and Pd activation. The partial oxidation of the Vangorda 'cap' rock not only solubilized Cu and Pb but also produced sparingly soluble Cu and Pb minerals that cause further preactivation during grinding and possibly mining (sphalerite from the mine fines was not analyzed). The Pb after precipitating as PbS on the sphalerite, on some of the grains oxidized to $PbSO_4$ and $PbCO_3$. These grains are found in the bulk tailings. Apparently, there was not enough Cu on their surface to drive them into the bulk concentrate. Sphalerite grains with $PbSO_4$ will float if a sulphidizing agent is used. However, this is more difficult with grains coated with $PbCO_3$ - which is more insoluble than $PbSO_4$. The sulphidizing agent may complicate the depression of pyrite. More analyses would be required to determine the relative ratio of $PbSO_4$ to $PbCO_3$ on sphalerite grains from the cap rock.

The sphalerite grains from the Faro mill feed did not have detectable amounts of Cu on their surface. The amount of surface Pb is also less. Liberated sphalerite grains in the Faro zinc tails have a thick iron coating, which may have a depressing effect on sphalerite. The alternative would be mechanical entrainment. Another form in which Zn is lost to the tailings is in the form of $FeCO_3$ (siderite). This mineral is second in

importance after quartz and has minor amounts of Zn in its crystal structure. Interestingly there is Mn on the Faro sphalerite which is absent on the Vangorda sphalerite.

On the effect of depressants - other than $PbSO_4$ or $PbCO_3$, gypsum is present only in trace amounts, however baryte ($BaSO_4$) is ubiquitous. First, it is necessary to establish whether the $BaSO_4$ is a thin chemical coating or not. Then using the available data look for systematic differences between the concentrate and tailings samples. Nothing to my knowledge is known about the depression of sphalerite by $BaSO_4$ but if there is a lot of the latter activation will be more difficult.

Please examine the enclosed report. If you want any clarifications or changes do not hesitate to call anytime. If it meets your approval it will be the final report.

With best wishes for the holiday season.

Yours sincerely,

Stephen Chryssoulis
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SC/sb