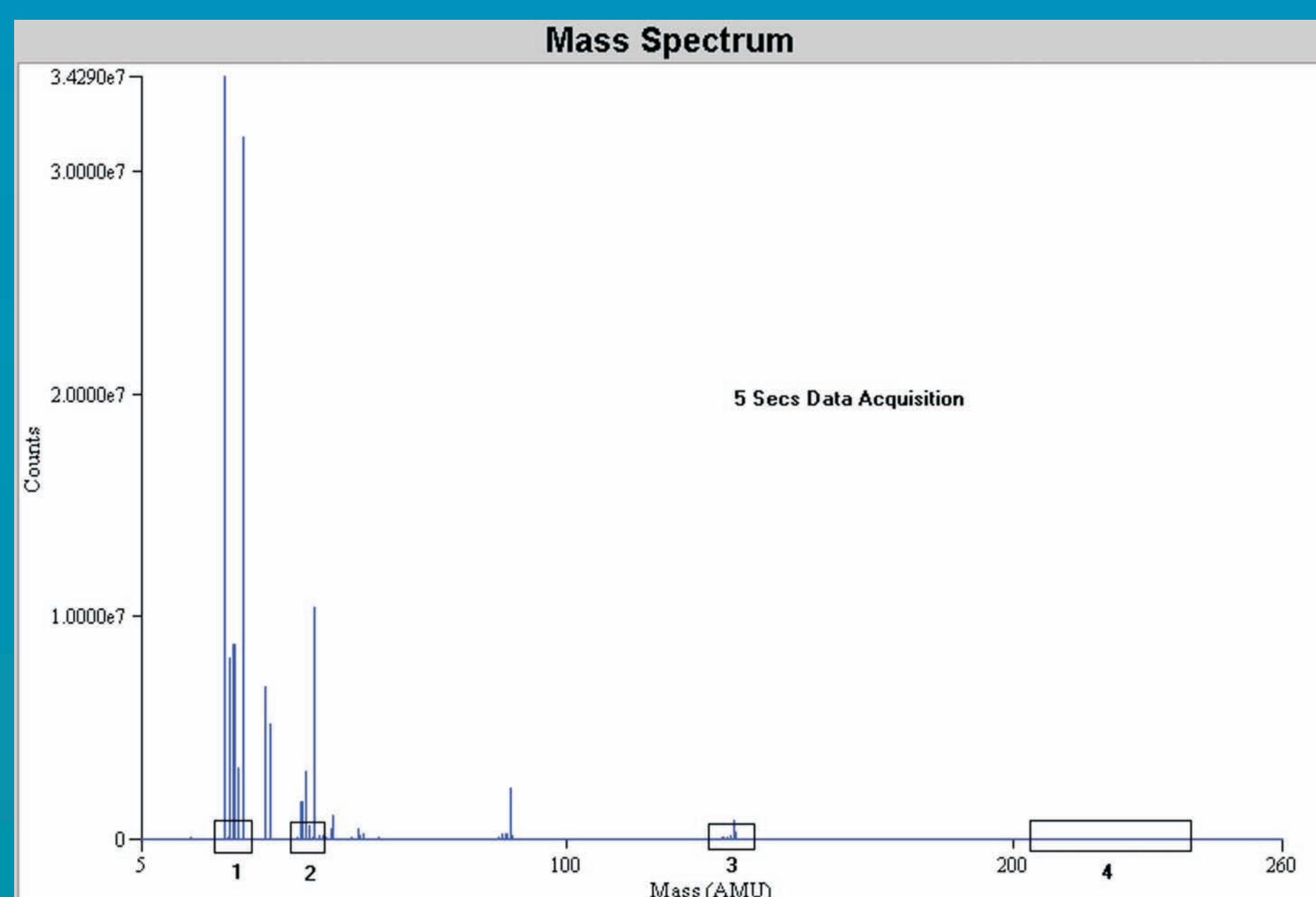


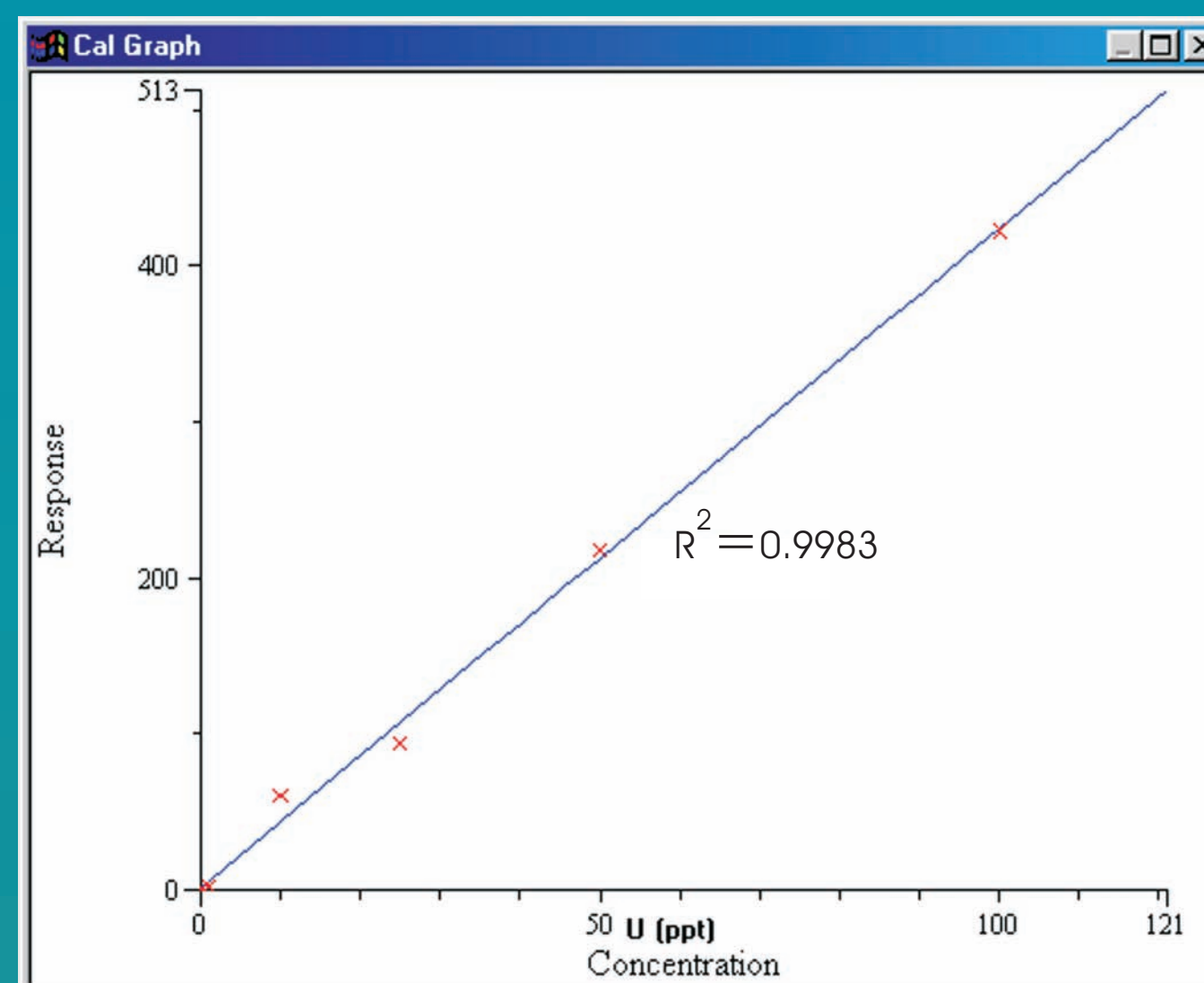
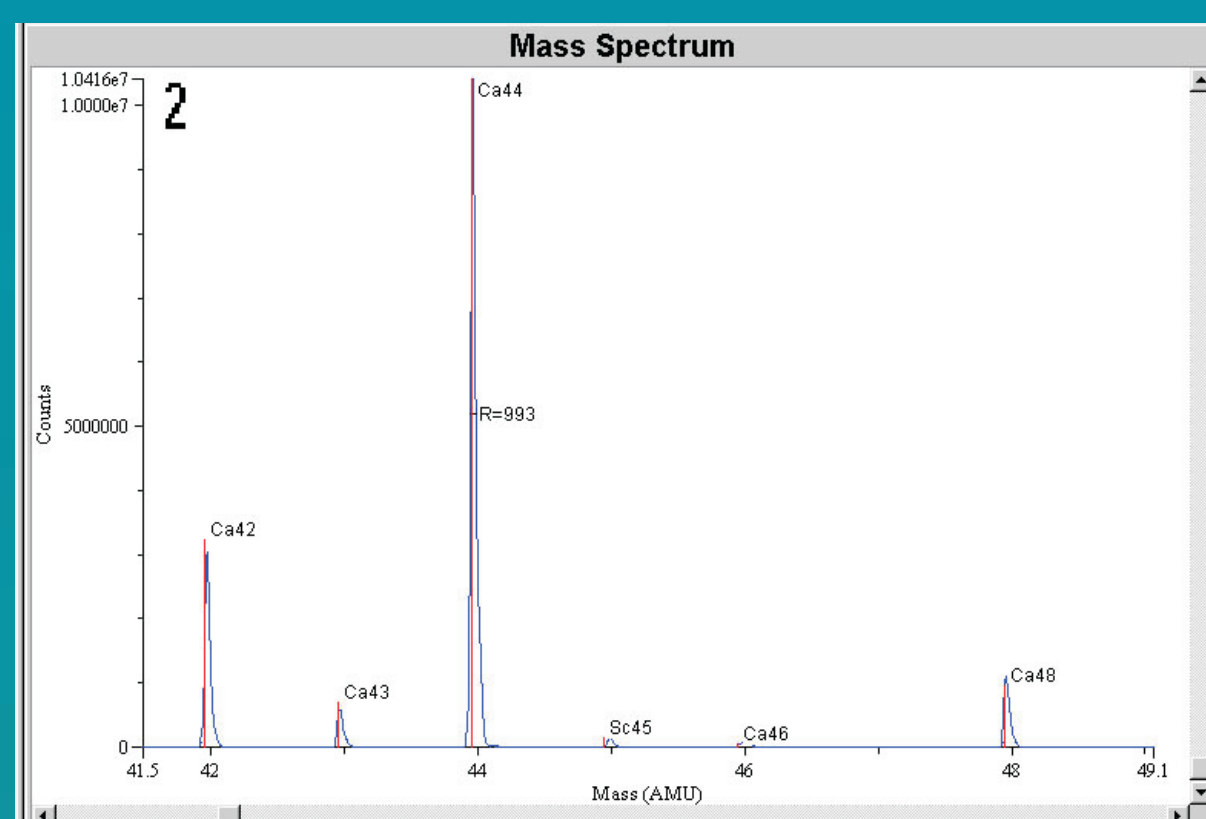
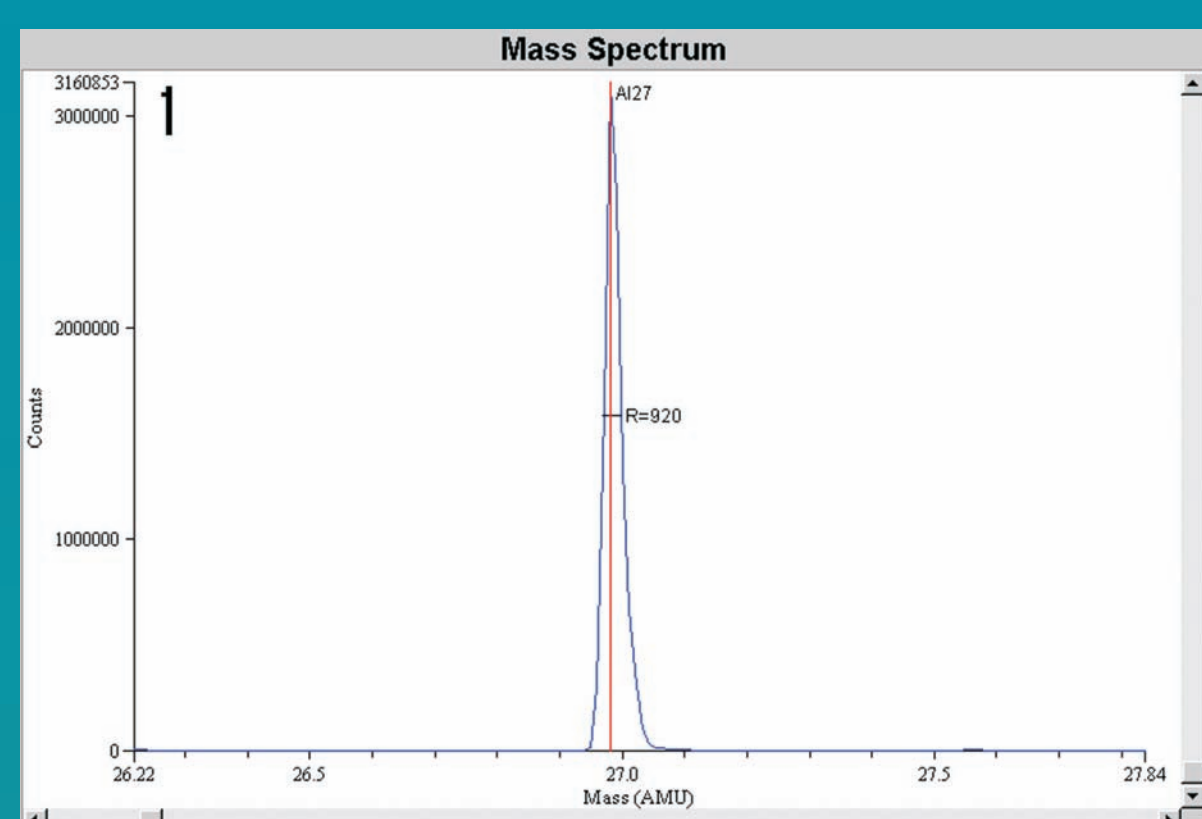
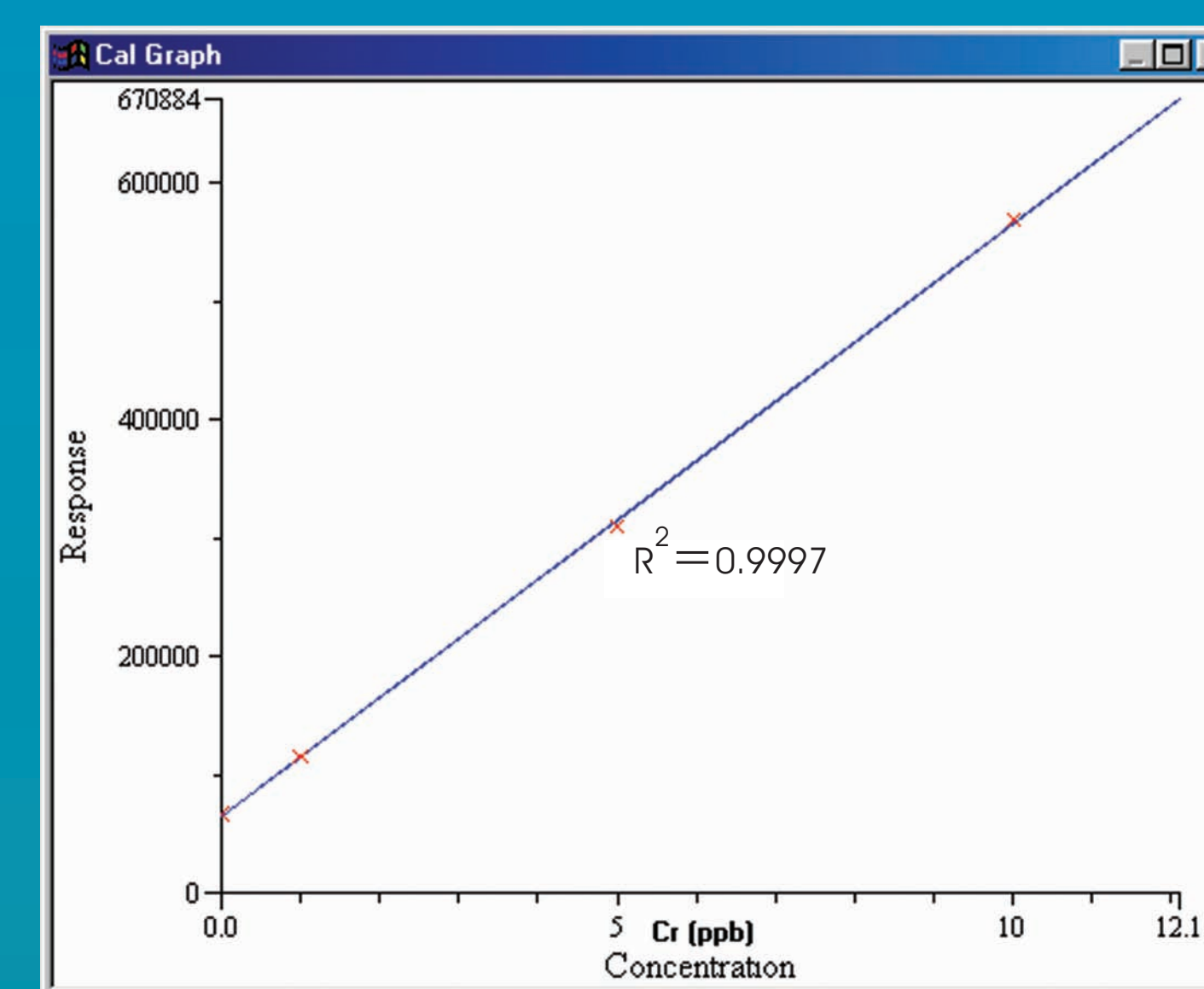
Simultaneous determination of trace elements in River Water using OptiMass 9500 and USEPA Method 200.8

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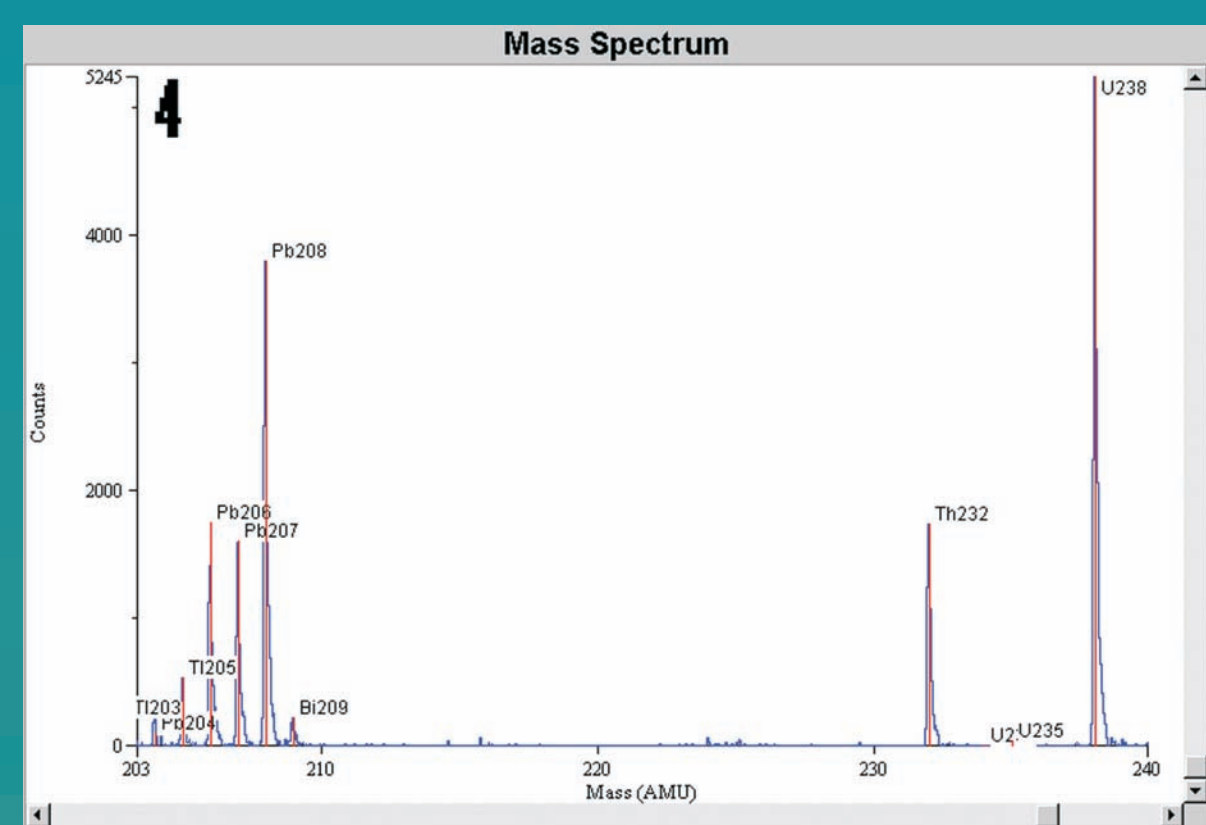
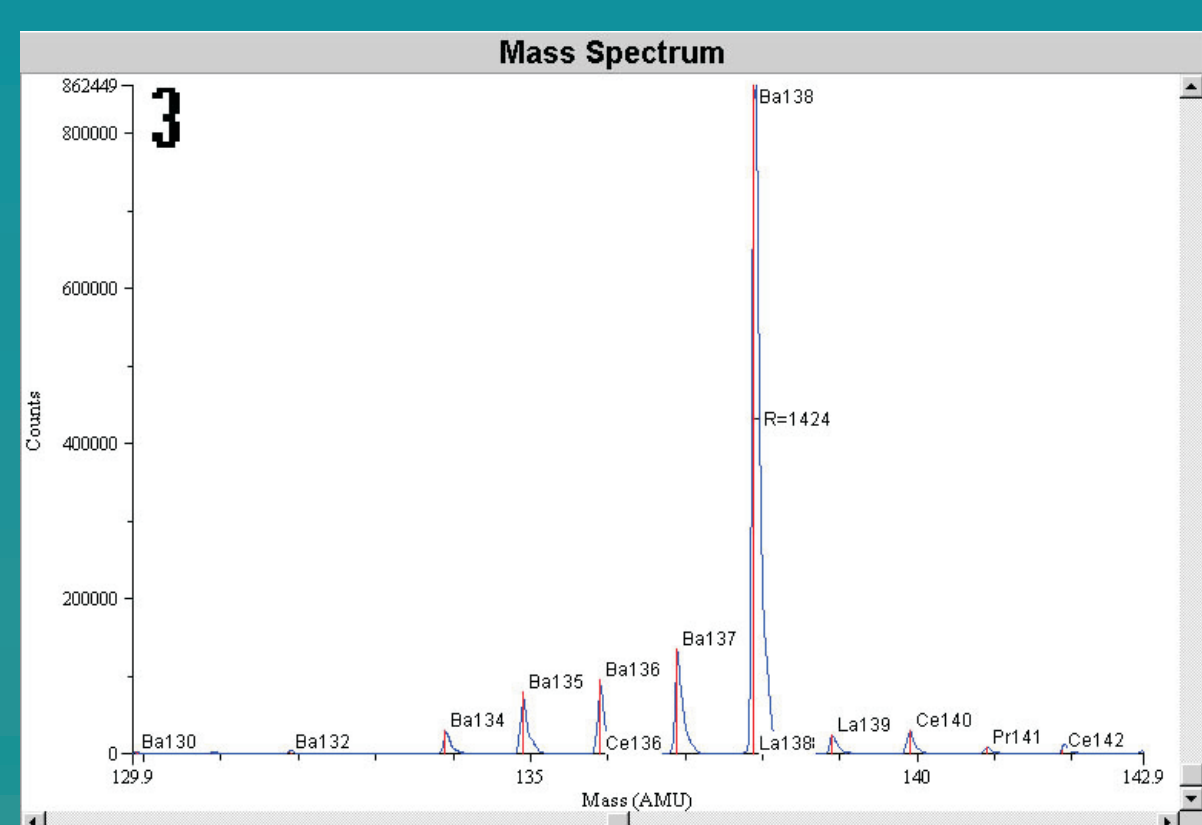


The OptiMass 9500 is an ICP-oTOF-MS, offering extremely high data acquisition speed, high ion transmission and simultaneous measurement of all masses for each ion packet extracted from the ion source. The simultaneous complete element analysis capability of the OptiMass 9500 allows the use of multiple internal standards with no sacrifice in data collection time, making it the fastest ICP-MS on the market.



The instrument successfully analysed 22 elements in a Certified River Water sample with 5 x 5 secs data acquisition for USEPA Method 200.8. All of these elements were analysed in each of the 5 second data acquisitions. This includes a calculation of LOD for each element, for result cross checking.

The data obtained shows excellent correlation with certified values and R² values.



This instrument is well suited for obtaining the 22 elements of interest from water or waste water by USEPA Method 200.8, the standard method of ICP-MS for the determination of water and waste waters.

In this application SLRS-4 a Certified River Water Reference Material for Trace Metals was used to determine the certified value concentration of Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Fe¹, Pb, Mn, Mo, Ni, Se², Sr¹, Ag², Tl², Th², U, V, and Zn.

Note: ¹ Certified value but not required for USEPA Method 200.8
² Not certified value by National Research Council Canada

The patented SMARTGATE ion blanker eliminates unwanted masses such as Ar and high abundance matrix elements.

References:

Long, S.E. Martin T.D., USEPA Method 200.8, April 1991, Rev 4.4, 83-122
 Sturgeon, R.E., National Research Council of Canada, June 1998, SLRS-4
 Balcerzak, M., Analytical Sciences, July 2003, Vol. 19, 979-989

Measured Concentrations for SLRS-4

Elements	Certified Result (ppb)	Result (ppb)	Calibration R ²
AL	54 ± 4	52.0	0.9918
Sb	0.23 ± 0.04	0.24	0.9949
As	0.68 ± 0.06	0.690	0.9959
Ba	12.2 ± 0.6	12.60	0.9988
Be	0.007 ± 0.002	0.006	0.9993
Cd	0.012 ± 0.002	0.012	0.9587
Cr	0.33 ± 0.02	0.343	0.9997
Co	0.033 ± 0.006	0.029	0.9999
Cu	1.81 ± 0.08	1.730	0.9992
Fe *	103 ± 5	104.22	0.8904
Pb	0.086 ± 0.007	0.093	0.9971
Mn	3.37 ± 0.18	3.440	0.9985
Mo	0.21 ± 0.02	0.190	0.9988
Ni	0.67 ± 0.08	0.69	0.9144
Se	n/a	0.23	0.9995
Sr *	26.3 ± 3.2	26.34	0.9989
Ag	n/a	0.13	1.0000
Tl	n/a	0.14	0.9996
Th	n/a	0.19	0.9999
U	0.05 ± 0.003	0.049	0.9983
V	0.32 ± 0.03	0.330	0.9991
Zn	0.93 ± 0.10	0.98	0.9997

n/a - no certified values available
 *Non USEPA required elements