

High detection efficiency isotope ratio analysis using a single focusing ICP magnetic sector mass spectrometer

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The IsoProbe is a single focusing magnetic sector ICP source multicollector mass spectrometer. A hexapole collision cell between the ICP source and the magnetic sector analyser reduces the energy spread of ions from the source from 15eV to <1eV. The result is accurate mass focusing and flat topped peaks from the multicollector. The sensitivity of the system is very high. With a Meinhard-type nebuliser ion currents of 1E9 cps/ppm are attained, which increases to 1E10 cps/ppm with a CETAC micro-

concentric desolvating nebuliser. This leads to a total ions per atom detection efficiency of 1% for Pb. The same efficiency is also apparent with laser ablation of NIST glasses and zircons. This high efficiency is equivalent to that reported for the SHRIMP ion microprobe, where *in situ* Pb isotope ratio measurements have normally been made. We will present the results of the direct, *in situ*, measurement of lead and hafnium isotope ratios in zircons, and in NIST glasses by laser ablation using a Nd:YAG laser.