Performance characteristics of single collector and multi-collector ICP-MS for single shot laser ablation isotope ratios.

PHIL SHAW[1], BENOIT DISCH[1], YE ZHAO[1], ROB HUTCHINSON[2] AND CIARAN O'CONNOR[3]

[1]Nu Instruments, Unit 74 Clywedog Road South, Wrexham Industrial Estate, Wrexham, LL13 9XS, UK

[2]Electro Scientific Industries, 8 Avro Court, Ermine Business Park, Huntingdon, PE29 6XS, UK

[3]Electro Scientific Industries, 685 Old Buffalo Trail, Bozeman, MT 59715, United States

High spatial resolution measurement by laser ablation ICP-MS has continuously improved in recent years addressing challenges in depth and lateral resolution, especially for samples that require precise isotope ratio measurements. Such applications would include lead uranium/lead isotope ratios of zircon rims and single particle analysis for uranium ratios where the isotope ratios of a single laser shot need to be measured to the best possible precision. This work will describe the latest performance improvements obtained following the technique outlined by Cottle, Horstwood and Parrish [1] in 2009, highlighting the signal compression and fast washout of the latest ESI laser ablation cells, fast peak jumping capability of the Nu AttoM single collector ICP-MS and the benefits of wide linear range ion counters on the Nu Plasma II multi-collector ICP-MS. It will also describe a new automated data processing method to improve ease of use when obtaining isotope ratios from integrated transient peaks compared to the manual processing of data through spreadsheets.

[1] John M Cottle, **Matthew S A Horstwood** & Randall R Parrish A new approach to single shot laser ablation analysis and its application to *in situ* Pb/U geochronology *J. Anal. At. Spectrom*. 2009. DOI: 10.1039/b821899d