AUTOMATED DATA REDUCTION USING CUSTOMIZABLE SCRIPTS IN NUQUANT FOR LA-ICP-MS TRANSIENT SIGNALS.

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Abstract

The high resolution ICP-MS AttoM uses ion optical deflectors to allow mass changes (around 40% of a mass set by magnet) with a settling time of 50 μs and a minimal dwell time of 200 μs. This reduces the temporal skew in LA-ICP-MS for isotope ratios that might be seen in the data if measured with millisecond dwell and delay times. The post-acquisition software NuQuant can be used to automate transient signal data treatment thanks to modifiable scripts. This work will present two sets of data that can easily be handled with NuQuant using novel data processing methods tailored to the specific analysis being undertaken.

The first set of data comes from the measurement of major and minor uranium isotopes in micrometric size objects. Signals produced for each isotope from the single shot ablation of a particle are transient and short (less than one second) and generate more accurate data when integrated to calculate isotope ratios (1). The developed script allows the automated detection of peaks using trigger parameters and the calculation of minor and major isotope ratios by integration of peak signals.

The second set of data that will be presented is a method to enable the calculation of sample concentrations when the signal from the internal standard is too high to be detected using the pulse counting or attenuated signal pulse counting. When analysing trace elements in solid samples the use of faraday to detect constituent element of the matrix (for internal standard) is not recommended due to its longer response time compare to discrete dynode detector (used for trace elements). Using the ablation signals from different sizes of spots , NuQuant can provide automated concentration calculations based on a double standardization with two internal standard.
1: Cottle et al. *J. Anal. At. Spectrom.*, 2009,24, 1355-1363

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