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The breakthrough is in what you don't see: Thermo Scientific™ Neoma MS/MS™ MC-ICP-MS

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Multicollector inductively coupled mass spectrometry (MC-ICP-MS) has become the workhorse of isotope ratio mass spectrometry since its introduction 25 years ago. The full application of MC-ICP-MS has been limited however by some problematic, mainly isobaric, interferences. Collision/reaction cell (CRC) technology can be advantageous in MC-ICP-MS as it enables reactions of specific elements with the reacting gas, thereby creating a mass difference between the element of interest and the isobaric interference.

Both single-quadrupole and triple-quadrupole ICP-MS are now commonly equipped with CRC technology, but triple-quadrupole instruments have an additional quadrupole that functions as a pre-mass filter, providing MS/MS capabilities that allow user-specified mass windows to be targeted for analysis. This dramatically improves the performance and capabilities of MS/MS-equipped instruments over simple CRC-equipped single-quadrupole ICP-MS instruments, and makes a variety of new applications possible [1].

Many of these ICP-MS/MS applications would benefit from the excellent isotope ratio precision available from MC-ICP-MS. Additionally, adding MS/MS capability to a MC-ICP-MS would significantly enhance its use and open up various new applications that cannot be explored with classical MC-ICP-MS technology.

Here we report on the new MS/MS capability of the Neoma MC-ICP-MS and its benefits for a variety of new applications within geosciences. The Neoma MC-ICP-MS is a modular platform that can be upgraded with full MS/MS capabilities by adding a novel pre-cell mass filter and hexapole collision/reaction cell [2]. The resulting MC-ICP-MS/MS requires no compromises in either sensitivity, accuracy or precision. With the ability to select a discrete range of masses to enter the collision/reaction cell, reactive gases such as O_2, SF_6 and NH_3 can be used alongside H_2 and He.

References:

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