

New Multi-collector Mass Spectrometry Data for Noble Gases Analysis

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On the Earth, noble gases are present as rare elements and in most of the cases their concentration within samples is extremely low. Therefore their analysis requires a high detection efficiency which implies ultra high vacuum extraction and purification systems and mass spectrometers able to operate in static mode (i.e. with closed vacuum pumps). For several decades the evolution of noble gas mass spectrometry technology has been in stagnation and was dominated by single collector homemade mass spectrometers and few commercial available products.

A breakthrough in the noble gases analysis arrived in 2005 with the introduction of a new generation of mass spectrometers capable of higher sensitivity and simultaneous analysis of more than one isotope by multi-collectors systems. The potential of this new technology has already been highlighted in several works [1,2,3], but further studies are necessary to increase the performance of multi-collectors systems coupled with ultra vacuum mass spectrometers. Here we present new data from the Thermo Scientific™ Helix™ MC Plus, the ultimate high resolution multi-collector mass spectrometer capable of measuring up to five isotopes of neon, argon, krypton or xenon simultaneously.

[1] Mark *et al* (2009) *Geochem. Geophys. Geosyst.*, **10** (2), 1-9. [2] Mark *et al* (2011) *Geochim. Cosmochim.* **75** (23), 7494-7501. [3] Phillips and Matchan (2013) *Geochim. Cosmochim. Acta*, **121** (15), 229-239