

stable-isotope geochemical map of metallic elements with rapid chemical purification technique

Masaharu Tanimizu^{1*}

¹JAMSTEC

Isotope ratios of light elements (O, C, N, H, and S) have been applied to various geochemical and ecological samples to understand their cycles in the geosphere. Samples are usually prepared in gaseous form to determine their precise isotope ratios by gas source MS. In contrast, precise determination of isotope ratios of other poly-isotopic elements, so called as metallic elements, had been difficult by conventional solid source MS, especially for the detection of their mass-dependent isotopic fractionation.

However, rapid and precise determination of isotope ratios is nowadays possible for metallic elements with ICP mass spectrometry (ICP-MS) with a multiple collector array. The most important advantage of this MS against conventional MS is its robustness to remaining matrix elements, and large sample throughput can be achieved with rapid chemical purification techniques for analytes. This new approach can be applied to understand the origin of metallic elements in the geosphere as isotope geochemical map. Potential applications of their isotope ratios will be outlined in this presentation as well as their purification techniques.

Keywords: ICP-MS, isotope ratio, heavy elements, geochemical map