

Magnesium isotope analysis of environmental samples(II)

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In this presentation, I discuss an updated result of magnesium isotopes analysis for various environmental samples. In the previous discussion (JpGU 2017 HTT23-P15), I explained the effective column separation method of magnesium from the diverse environmental samples. The tested one-step separation methods using different reagent solution successfully separated magnesium with a high recovery rate at least 98% or more. But the separated solution has still several matrix elements, such as Co, Ni, Cu, Zn, Rb, Ag, Cs. During isotopic analysis of the purified solution with MC-ICP-MS, the presence of these matrix elements more than a certain amount obviously caused a change in their isotope value. Those samples containing abundant specific element is necessary to pay attention to isotopic analysis.

In the measurement by MC-ICP-MS (ThermoScientific Neptune plus, Bremen, Germany), the magnesium isotope values are determined standard-sample-standard bracketing method. All data are presented as delta value deviation from DSM3 which is a standard international material for magnesium isotope, and the average of three measurements was summarized as a result. Since the DSM3 has depleted, a new working standard solution RIHN-Mg tested. The RIHN-Mg value has close to the DSM3 value, it could be replaced after run out of DSM3. To evaluate the confidence of the analysis several reference samples are tested and show good agreement of reported values.

Keywords: magnesium isotope, environmental samples, RIHN-Mg