

Making a database of stable Isotope for Environmental Reference materials

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Since the recent advances in analytical chemistry, with the practical application of MC-ICP-MS, it could be possible to obtain stable isotope of metal elements with a high-precision analysis that was difficult to obtain with high-precision. Many researchers have challenged and succeeded in reporting technical methods and their implications about the stable isotopes of heavy metals. However, these reports focused on a specific element, and no one has reported a multi-element stable isotope ratio for reference material. To promote a stable isotope study with various research fields, including environmental science, RIHN has desired to determine the isotope ratios of various environmental reference materials (ERMs) to supply a database. The ERMs of 27 samples purchased from NIST, JRC(European Commission's Joint Research Centre), and NMIJ(National Metrology Institute of Japan). These samples are not for isotopic analysis but certification of elements concentration.

In this presentation, Mg, Zn, and Sr isotope values reports using MC-ICP-MS. For each element, DSM-3 for Mg and AA-ETH for Zn were used as the primary standard. Zn isotope values are also reported for JMC Lyon Zn, which is no longer available. Since DSM-3 is almost depleted at RIHN, I tested to use RIHN-Mg and NIST SRM 980 as a laboratory standard. Sr and Pb radiogenic isotope values report here were calibrated with NIST SRM 987 and NMIJ 3681-a, respectively. Soon, I hope to report other elements including Fe, Pb, and Cu.

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