

Stable iron isotope measurement with high resolution multiple collector inductively coupled plasma mass spectrometry (HR-MC-ICP-MS) at Geological Survey of Japan.

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Iron isotope ratios for standard solutions (IRMM-014 and NMIJ Fe) were measured with a Neptune Plus double-focusing ICP-MS equipped with 9 Faraday collectors (ThermoFinnigan, Bremen, Germany) at Geological Survey of Japan, National Institute of Advanced Industrial Science and Technology. The standard solutions were introduced to the plasma ion source as dilute (2%) nitric acid solutions via an Apex Omega desolvating nebulizer system (Elemental Scientific Inc., Omaha, USA) using only argon as a sweep gas. The desolvating nebulizer system can enhance iron signal for about 20 times compared to normal spray chamber, but cannot decrease interfering signals effectively ($40\text{Ar}16\text{O} > 50\text{V}$). Thus, iron and interfering signals were separated by medium resolution setting of NEPTUNE Plus of which resolving power is about 4000. To reduce pulsing which may reflect droplets of solution in the desolvating chamber, uptake rate was decreased from 100-160 ul/min to 40-60 ul/min. Although this reduction reduced sensitively, a ^{56}Fe ion signal of ca. 300 V/ppm was still routinely obtained. In this presentation, we will exhibit details of iron isotope measurement, including sample preparation, ^{54}Fe - ^{57}Fe double spike, data reduction and mass spectrometry.

Keywords: Iron isotope, Stable isotope, MC-ICP-MS