

High precision analysis of W isotopes for OIB and MORB samples

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^{182}W is a decay product of ^{182}Hf ($t_{1/2}=890$ million year) which is extinct at now. The amount of ^{182}W can give information on evolution of very early solar system at the timescale from several million years from the solar system initial. Hf and W is a highly refractory element and the ^{182}W isotope evolution process in the bulk Earth could be the same as in chondrites. However, W is a highly siderophile element and Hf is a lithophile element. These elements could be partitioned into metal (core) and silicate (mantle) phases, which leads to higher Hf/W ratio of mantle.

To elucidate the core-mantle evolution of the early Earth, we have developed the high precision W isotope analysis using MC-ICP-MS (Thermo co. Ltd. NEPTUNE Plus) and have applied it to some OIB and MORB samples, such as Hawaiian basalts, South Africa Kimberite, Ontong Java Plateau lavas and Indian MORB.

We will present the W isotopic composition obtained for these samples and will discuss the early core-mantle co-evolution and core-mantle interaction, based on the W isotope, Os isotopes.

Keywords: Core-Mantle co-evolution, Tungsten isotope ratio, Hf-W system