Tungsten concentration and isotope ratios from Samoa Island and St.Helena

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Geochemical researches to detect core-mantle interaction in volcanic products of mantle plumes are ongoing.

Our group has been searching for chemical evidence of core-mantle interaction from OIBs using tungsten isotope tracer, which is a useful tracer. Hafnium is a lithophile element while tungsten is moderately siderophile and an incompatible element. The isotope of 182W is produced by decay of 182Hf with the time (T = 9 My). In the mantle, 182W was produced after the segregation of the core. Hence, tungsten isotopic ratio (182W/183W or 182W/184W) of mantle is higher than the core. If core material mixes with mantle material, a mantle plume could contain W with a negative isotopic anomaly of 182W/183W or 182W/184W.

However, as yet we have detected no W negative isotope anomaly, as suggested core-mantle interaction, from HIMU samples in South Polynesia Island, EM1 samples in the South Polynesia and Hawaii Island (Kilauea) and Ontong Java Plateau samples.

We will present tungsten concentration and tungsten isotope ratio of the Samoa Island and St. Helena. The seismic velocity anomaly in the lower mantle can be linked to the upwelling of mantle material in the Samoa Island and St. Helena. St. Helena. We will discuss core-mantle interaction using our data.