

On the occurrence of volatile elements in the Earth's deep interior as revealed from isotope systematics

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It is significant to reveal the occurrence of volatile elements in the Earth's deep interior, since it affects the conditions of material properties and related to the evolution of the Earth. By using isotope ratios which include radiogenic isotopes, it is possible to estimate the conditions of the place from which magma is derived. Based on noble gas isotopic ratios including He, the magma source of OIB is inferred to be enriched in primordial components of noble gases at least by several to several tens of times compared to that of MORB. Based on Nd-Sr systematics, the kimberlite magma source of Group I is inferred to have properties of "Bulk Earth", suggesting the primitive nature of H₂O and CO₂ in such kimberlites.