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ピトケアン島の Os 同位体比と PGE 存在度－ EM-1 成分の起源についての考察
Highly siderophile elements and Os isotope systematics of EM-1 basalts from Pitcairn Island

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It is well known that recycled materials are involved in producing the chemical and isotopic heterogeneities observed in oceanic island basalts (OIB). The type of recycled material present in the Enriched Mantle 1 (EM-1) source has been widely debated. Oceanic crust with pelagic sediment, delaminated subcontinental lithospheric mantle (SCLM), subducted oceanic plateaus, continental lower crust, and just single melting process involving pristine mantle have all been invoked as contributing to EM-1 flavor source (e.g., Chauvel et al., 1992; Hauri and Hart, 1993; Gasperini et al., 2000; Ishikawa et al., 2007; Collerson et al., 2010). The chemical composition of EM-1 is characterized by, for example, radiogenic Sr, unradiogenic Nd, unradiogenic Pb and radiogenic Os isotope compositions compared to the depleted mantle.

We have measured Os isotope ratios and PGE abundances in basalts from Pitcairn Island, south Pacific, which represent strong EM-1 flavor to identify the possible source components of these magmas. The range of the Os isotope ratios (0.138-0.161) have a similar to or slightly higher than those measured in previous studies on EM-1-type basalts (-0.150). The highly siderophile elements (HSE) patterns are characterized by fractionation between IPGE (Os, Ir, Ru) and PPGE (Pt, Pd). Among IPGE, Ir abundances of some basalts show depleted pattern compared to Os and Ru. The HSE patterns of the basalts from Pitcairn Island are clearly different from the HSE pattern of MORB (Rehkamper et al., 1999; Bezos et al., 2005). We will discuss the components of the source mantle of EM-1 and the magma genesis of Pitcairn Island basalts combining our data with previous studies.

キーワード: Os 同位体組成, EM-1, 海洋島玄武岩, 白金族元素存在度
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