

## Geochemical variation of backarc basin basalts and magma genesis in the Shikoku Basin

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The Shikoku Basin is a back arc basin located Westside of the Izu-Ogasawara (Bonin) arc, spreading was from 25Ma to 15Ma (Okino et al., 1994, 1999). The drilling of the Deep Sea Drilling Project (DSDP), Ocean Drilling Program (ODP) and Integrated Ocean Drilling Program (IODP) recovered the backarc basin basalt (BABB) of the Shikoku Basin. Sites 442, 443 and 444, located at the central Shikoku Basin, was operated during the DSDP Leg58 and recovered BABB and post-spreading volcanism basalts. Site 808, southeast of the Kyushu Island, was operated during the ODP Legs 131 and 196. Site C0012, south of the Kii Peninsula, was operated during the IODP Leg ex-333. Sites 808 and C0012 is located near the Nankai Trough, and BABB was recovered from under thick sediment. In this study, we compare Petrographical and geochemical characteristics of these BABBs, arc volcanics of the Kyushu-Palau Ridge and those of Izu-Ogasawara active arc, and consider the origin of difference of these characteristics and environment of BABB volcanism.

The example of the Shikoku Basin BABB, the Site C0012 BABB was recovered under the more than 500m thickness of sediment and drilled 100m thickness of basement. These BABB are aphyric pillow (upper) and massive flow (lower part), and show variable degree of alteration, gel-paragonite, fibro-paragonite to zeolite deposition. SiO<sub>2</sub> and MgO contents of these basalts are 47-55 and 5-8 wt%. The many basalts have 1.5-1.8 wt% of TiO<sub>2</sub>, higher than island arc volcanics from the recent Izu arc and the Kyushu-Palau Ridge. These basalts show enrichment of alkali elements. The Alkali basalts are recovered from the Site 444 and the Kinan Seamount chain near the spreading axis of the Shikoku Basin. However, the element ratios associated with enrichment of parent material of these basalts are different from these alkali basalts, similar to BABB from the Sites 442-444. We considered that the enrichment of alkali element in these basalts is the effect of albitization and paragonitization. The enrichments of Na and K are different strata, assumed to different alteration temperature; Na and K were enriched under higher and lower temperature.

Ishizuka et al. (2011) and Haraguchi et al. (2012) pointed out that the across-arc variation of bulk chemical characteristics of arc volcanics in the Izu arc is described by replacement of mantle under the Izu arc from depleted to enriched composition at the beginning of spreading of the Shikoku Basin. The BABB in the Shikoku Basin is assumed to produce from this enriched mantle. However, the element ratios associated with mantle enrichment show regional differences. Therefore, we consider that the mantle enrichment in the Shikoku Basin show regional differences.

Keywords: Backarc basin basalts, Incompatible element ratio, Parent material of magma