

Petrophysical characteristics of peridotites in Hayama-Mineoka belt of Cirmum-Izu serpentinite zone and their similarities to IBM fore arc peridotites

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We present petrophysical characteristics of serpentinized peridotites obtained from Hayama belt in Miura peninsula and Mineoka belt in Boso peninsula. The peridotites are dominantly harzburgites with minor lherzolite. Olivine grain sizes within the peridotites are ranged from coarser grains (>3mm) to medium grains (~1mm) and show undulose extinctions as well as kink bands. Orthopyroxene grains have exsolution lamellae. The chemical compositions of both olivine and spinel are in the range of the olivine-spinel mantle array of Arai (1994). Spinel Cr# can be divided into two groups: high Cr# (0.5-0.6) and low Cr# (0.3-0.4). Olivine crystal-fabrics in these peridotites were also divided into two groups: D type (Fabric Index Angle (FIA): 71°-84°) and A (AG) type (FIA: 34°-59°). Moreover, the two groups of olivine crystal-fabrics are directly related to chemical compositions of spinel: D type with the high Cr# and A type with the low Cr#. The peridotites of D type with high Cr# are similar to those in Izu-Bonin forearc peridotites. The peridotites of A type with low Cr# have similar physico-chemical properties to abyssal peridotites or those in Oman ophiolite. With the other geological evidences such as older basalt occurrences, we argue that the peridotites of A type with low Cr# might be possibly derived from the oceanic crust before subduction initiation.

Keywords: Cirmum-Izu serpentinite zone, Hayama-Mineoka belt, peridotite