

## **Intermediately low CaO olivine phenocrysts and skeletal macrocrystals in picritic dolerite, formed in a middle Miocene back-arc basin**

N. FUJIBAYASHI<sup>1\*</sup>, M. TAKAOKA<sup>1</sup>, AND Y. SASAKI<sup>1</sup>

<sup>1</sup>Niigata University, 8050, Igarashi ni-no-cho, Niigata, 950-2181, Japan (\*correspondence: fujib@ed.niigata-u.ac.jp)

We found intermediately low-CaO core (0.11-0.17 wt.%) in olivine phenocrysts (<6.5 mm) and high-CaO skeletal macrocrystals (2-3 cm) from a picritic dolerite formed in a back-arc basin, whose whole rock MgO content are explained by olivine-addition to the Sawasaki basalt units (MgO around 10 wt.%) [1]. Compositions of the phenocryst core are similar to those of slightly differentiated high-CaO boninite. The core commonly shows reverse-zoning in which Fo and NiO contents increase toward the rim, with increase in CaO (>0.2 wt.%). At the rim, Fo and NiO contents decrease, while the CaO content still increases. Such zoning patterns are common in coarse crystals (>3 mm), in spite of having dislocation lamellae or not. The rim is similar in composition to the finer phenocrysts (<3 mm) in picritic dolerite and to the phenocrysts in the Sawasaki basalt. The skeletal macrocrystals are included in this compositional group. MORB-normalized incompatible element patterns of analysed picritic samples are almost parallel to those of the Sawasaki basalt, which has E-type MORB characters. Involvement of E-type MORB magma and high-CaO boninitic magma which made olivine cumulates earlier might be a plausible interpretation for the origin of picritic dolerite from the Ogi Basalt. In the southern part of the Japan Sea which has thin continental crust, production of boninitic magmas may suggest high degree of partial melting of the source mantle, possibly an E-type MORB source, at shallow level.

[1] Fujibayashi et al., 2014, *Island Arc* **23**, 334-364.