

Temporal changes of Cenozoic volcanic rock petrochemistry in Oki-Dogo, SW Japan

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Introduction

Oligocene-Pleistocene volcanic rocks and sedimentary rocks are distributed in Oki-Dogo island, SW Japan, overlying on Paleo-Mesozoic Oki metamorphic rocks and Paleocene-Eocene Dogo Minamidani Granites. Alkaline basalts after Pliocene frequently include peridotite xenoliths brought from upper mantle. These peridotites are considered the residue of abundant basaltic magma, which was produced during Japan Sea back-arc basin opening (e.g., Abe et al., 2003).

Cenozoic volcanism changed from sub-alkalic magma activity with some alkalic rocks at pre- to syn-opening of Japan Sea back-arc basin to completely alkalic magma activity at post-opening back-arc basin (Suzuki et al., 2009). However, petrochemical features of Cenozoic volcanic rocks are still not well reported. In this study, we discuss about petrochemical temporal changes of Cenozoic volcanic rocks in Oki-Dogo island, associating with Japan Sea back-arc basin opening.

Geology and petrography

We study about Oligocene-Pleistocene volcanic rocks from Oki-Dogo island in this study. Tokibariyama Formation (Oligocene-Early Miocene) is composed of moderately altered andesitic pyroclastic rocks, sometimes accompanying the accretionary lapilli. Phenocryst assemblages are altered plagioclase, clinopyroxene, orthopyroxene and hornblende. Kori Formation (Early Miocene) is mainly composed of basaltic lava and pyroclasts. Phenocryst assemblages are plagioclase, clinopyroxene, olivine and orthopyroxene. Olivines are absolutely altered.

Keywords: Mantle Xenolith, Japan Sea Back-Arc Basin Opening, Oki island, Cenozoic Volcanic Rocks