

Geology and petrology of Horeki seamount in the Izu arc: preliminary results of KR04-04 and NT04-10 cruises

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Geological and geophysical researches were carried out in the northern part of the Izu-Bonin arc using R/Vs KAIREI and NATSUSHIMA. Horeki seamount and adjacent areas were one of the targets of these cruises. Horeki seamount is located in the back arc side of the ENE-WSW seamount chain following from Torishima volcano in the front of the Izu arc. Horeki seamount has many satellite cones or knolls. Many cones are distributed radially from the center of the main body. On the other hand, the northern knolls form ridges trending from NNE to SSW. The main body of Horeki seamount is composed of brecciated lava ranging from olivine-bearing basalts to differentiated orthopyroxene-bearing basalts. The surrounding cones consist of basaltic pillow lavas, which change upward into piles of auto-brecciated lava and remnant blocky lavas. The northern knoll is composed of olivine-bearing basaltic lavas ranging from coherent smooth flow to auto-brecciated lavas. On the SiO₂ variation diagrams, the Horeki volcanic rocks do not indicate coherent chemical trends, which are relatively scattered in MgO, CaO and K₂O. Moreover, the chemical trends inflect around 51 wt % SiO₂. Petrographical differences are recognized in the Horeki volcanic rocks in terms of the SiO₂ contents. Olivine is a main phenocrystic phase in the rocks having SiO₂ content less than 51 wt %, whereas the rocks having SiO₂ content more than 51 wt % has plagioclase phenocrysts as a main phenocrystic phase and contain orthopyroxene phenocrysts. The chemical variations in the SiO₂-poor rocks would be likely controlled by accumulation or fractionation of olivine and clinopyroxene. However, other processes need to explain total chemical variations and petrographies of the Horeki volcanic rocks. More particular magma processes for the Horeki volcano will be discussed in future.