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大雪火山御蔵沢溶岩の不均質組織にみられるマグマ混合
Magma mixing indicated by heterogeneous texture in the Mikurasawa lava, the Taisetsu volcano, central Hokkaido, Japan

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The eruption products of the Taisetsu volcano in central Hokkaido show the heterogeneous structure such as mafic inclusions and banded lavas, caused by magma mixing. The Mikurasawa lava erupted from a vent of outside the Ohachidaira caldera (about 30 Ka) at younger stage (<10-20 Ka) of the Taisetsu volcano. This andesitic host lava has various types of mafic inclusions and both dacitic and mafic elongated parts as banded structure. These heterogeneous structures in the Mikurasawa lava are the most case of characterizing the Taisetsu volcano particularly. The key to elucidate magma mixing processes with petrological technique is to understand the factors of forming heterogeneous structures in the Mikurasawa lava.

The host lava is characterized by coexisting phenocrysts which crystallized from different end-member magmas. The plagioclase phenocryst is classified into three types by An content of the core. Type-A plagioclase phenocryst (An>82) indicates no zoning in the core, but indicates strong normal zoning in the rim. Type-B plagioclase phenocryst (60<An<82) indicates heterogeneous zoning in the core; the compositional range is from An=47 to An=82. The core composition partially overlaps with that of type-C plagioclase phenocryst. Type-C plagioclase phenocryst (An<60) indicates continuous zoning overall phenocryst; this characters are good agreement with those of the dacitic part. Type-C phenocryst in the host lava indicates reverse zoning in the rim. The augite and orthopyroxene phenocrysts are classified into two types based on Mg# versus Ti and Al content respectively. Using two pyroxene thermometer(Wells, 1977), temperatures of mafic and felsic end-member magmas were estimated 1000 ^{o}C and 900 ^{o}C.

Mafic inclusions in the host lava are classified into two types by color of interstitial glass; clear glass and brown glass. These inclusions were originated from two kinds of mafic end-member magmas. Each type of mafic inclusions is classified into two sub-types by granularity of groundmass minerals; fine-type and coarse-type.

Heterogeneous structures at the outcrop, phenocrysts compositional variety in the host lava, and diversity of mafic inclusions suggest that three mixed (andesitic, dacitic and mafic) magmas were minglingly erupted and those magmas were precedingly formed at different stage of mixing events in the zoned magma chamber with mush layers injected by two kinds of mafic end-member magmas.

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