

Genetical relationship of tholeiitic and calc-alkaline rocks from Hahajima, Bonin archipelago

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Primitive tholeiites and calc-alkaline rocks from Hahajima, Bonin archipelago, are quantitatively smaller than their differentiates, but are important to investigate the genetical relationship with each differentiation series. Results from various analyses of the rocks imply that these rocks have originated from nearly the same source and, the chemical differences were produced by different H₂O concentration during partial melting of peridotite. A magma generated in rich H₂O during partial melting seems to be enriched in SiO₂ and show a large degree of SiO₂ enrichment through differentiation ; that is calc-alkaline series. H₂O concentration of a magma expands the stability field of olivine and clinopyroxene, and therefore these minerals could be effectively fractionated from the magma.