

## The Petrology and Geochemistry of High-Mg Andesites at the Western Tip of the Setouchi volcanic belt, SW Japan

# Yoshiyuki Tatsumi[1], Hiroshi Shukuno[1], Keiko Sato[2], Tomoyuki Shibata[3], Masako Yoshikawa[3]

[1] IFREE, JAMSTEC, [2] JAMSTEC, IFREE, [3] BGRL, Kyoto Univ

K-Ar ages, petrographical and geochemical characteristics of high-Mg andesites and plagioclase-phyric andesites in the NE Kyushu region are presented. K-Ar ages obtained for those rocks range from  $10.7 \pm 0.3$  to  $14.4 \pm 0.4$  Ma, overlapping those reported for lavas of the Setouchi volcanic belt in other regions (11-16 Ma). This, together with major, incompatible trace element, and Sr-Nd-Pb isotopic characteristics, confirms that the Setouchi volcanic belt, which is characterized by the occurrence of high-Mg andesites, extends for ~600 km along the SW Japan arc. It may be thus suggested that unusual tectonic settings required for high-Mg andesite magma generation were attained for such limited regions, possibly in association with subduction of a young hence hot lithosphere of the Shikoku Basin beneath the region. Two types of high-Mg andesites, both possessing identical bulk rock compositions, are recognized: one contains olivine phenocrysts and chromian spinel inclusions showing compositional characteristics consistent with their crystallization as liquids phases, whereas the other contains nickeliferous and Fe-rich olivine and Fe<sup>3+</sup>-rich spinels. One of the possible causes for such unusual mineral compositions would be effective elemental diffusion within and through olivine crystals associated with the long residence time and the slow rate of cooling of such a magma. The compositions of liquidus chromite and olivine, as well as major element compositions, may suggest that NE Kyushu high-Mg andesite magmas was produced by higher degrees of partial melting than those in other regions of the Setouchi volcanic belt.