

Origin of the Nagasaki high Magnesium andesites from NW Kyushu, SW Japan

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High magnesium andesites from Nagasaki, NW Kyushu were analyzed to examine their petrogenesis. Analyzed samples are dense lavas without significant vesiculated textures at outcrops. Modal proportion of phenocrysts in them is less than 13 vol. %. These features suggest that analyzed samples were anhydrous. High Fo contents (=92 – 85) of olivine phenocrysts and low bulk rock FeO^*/MgO (= 0.8 – 1.2) indicate that these samples are primitive or near primitive melts not meaningfully fractionated in magma chambers in the crust. Previous melting experiments suggest that anhydrous andesitic melts analogous to analyzed samples can equilibrate with mantle materials at 0.5 GPa. Thus, lines of evidence strongly suggest that the Nagasaki high magnesium andesites were formed by decompressional partial melting of anhydrous source materials at low pressures.