

## Three pyroxene andesite (pigeonite-augite-hypersthen andesite) from Hakone volcano

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Pigeonite phenocryst bearing volcanic rock is very rare in the world. Pigeonite-augite-hypersthen andesite (= three pyroxene andesite or pigeonite andesite ) from Hakone volcano is very famous according to the detailed studies on the pyroxenes using microscope by the late professor Kuno (Kuno 1935, Kuno 1936). On the bases of the detailed EPMA analyses of the pyroxene crystallization sequences as well as estimated magmatic temperatures using pyroxene geothermometer, for the pigeonite andesite, the author suggests the following working hypothesis, i.e. the pigeonite andesite was induced by magma mixing between three pyroxenes andesite magma (about 1070 degree C) originated from the primitive high temperature hydrous tholeiite magma within secondary magma reservoir opened for water, and the high temperature magma (about 1110 degree C) in the secondary magma reservoir. The key concept is that cocrystallization of three pyroxene phenocrysts under open system for water in the secondary magma reservoir.

Keywords: Hakone volcano, pyroxene geothermometer, pigeonite, magma mixing, three pyroxene andesite, magmatic temperature