

## Magma Mingling Observed in the Miyataki Dike, Central Kii Peninsula: Reappraisal for the Pyroclastic Dike

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In this presentation, we report the results of the detailed macroscopic and microscopic reappraisements of the Miyataki dike, exposed in the central Kii peninsula. Although it has been regarded that the dike was of pyroclastic origin by Yamato Omine Research Group (1994) and Fujita and Wada (2004a; b), newly discovered structures and textures indicate that the dike consists of mixed and mingled volcanic rocks derived from andesite and rhyolite magmas.

The dike is exposed ca.150m long, and is divided into two facies I and II. The Facies I consists of irregularly elongated rhyolite (40m long and 2m wide), which is vesiculated but partly massive and flow-banded. This rhyolite includes many amoeboidal andesite enclaves up to a few centimeters in diameter, and few host rock fragments. The andesite enclaves are often cored by granite with wavy margin. It is observed under the microscope that marginal minerals of the granite are disintegrated into the surrounding andesite. And also the granite enclaves show microgranitic and micrographic textures. On the other hand, the Facies II is mainly composed of glassy andesite, and includes amoeboidal rhyolite enclaves (1m in maximum diameter), granite enclaves with wavy margin and abundant host rock fragments. Microscopically there are phenocrysts such as plagioclase and clinopyroxene, amoeboidal rhyolite and many accidental fragments, and granite enclaves with microgranitic and micrographic textures.

As mentioned above, the Facies II of the dike is andesitic. We cannot observe any pyroclastic structures and textures such as fiamme or eutaxitic texture and broken phenocryst (Best and Christiansen, 1997). Although some phenocrysts split, these are probably deformed and broken during magma flow. Thus, the Miyataki dike consists not of pyroclastic rock but of rhyolite (Facies I) and andesite (Facies II).

The facies and textures of the Miyataki dike can be explained as a product by magma mingling between rhyolite and andesite magmas in the conduit. Irregularly or wavy deformed margins of the andesite enclaves in the Facies I rhyolite, and those of the rhyolite enclaves enclosed in the Facies II andesite needs to be occurred under hot condition. In addition, both granite enclaves in the each facies also show irregular margin and their constituent minerals are disintegrated from the margin, indicating that the source granite was hot and weakly solidified. Therefore, it can be explained that the Miyataki dike was the emplacement of andesite magma mingled with fluidal rhyolite magma and weakly solidified granite, following the injection of andesite into partly solidified felsic magma body.