

## The Omine Tuffite Dike, Central Kii Peninsula: Field Occurrence of an Inferred Conduit for Explosive Eruption

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### INTRODUCTION

Omine pyroclastic (tuffite) dikes, central Kii peninsula, intrude into Omine granitic rocks (OGR) (Tajima, 1977). Recently the dikes become considered as conduits of the Omine-Odai cauldron (Sato and Yamato Omine Research Group, 2006), although there is no detailed report on field occurrence, chronology and emplacement process about the dikes. Here we report field occurrence of the Omine dikes in the Umunokawa area, and discuss its emplacement process.

### FIELD OCCURRENCE AT UMUNOKAWA AREA

The Omine dikes in Umunokawa are composed of three segments. Strikes and inclinations of all of segments are NS to N40E, and 30W to 90, respectively. Width of segments is inferred to be greater than 20m in places. Host rocks are granitic rock and chert constituent of the OGR and the Shimanto terrain, respectively.

Based on the juvenile and accidental fragments the interior inside the dikes are subdivided into the following three zones, although all the zones cannot be observed in all segments:

(1) Zone A occupies the marginal part of dike, and is derived from tuff. Parallel flow structures are developed along the boundary between dike and host rock. Microscopically ash-sized glass is devitrified and microfelsitic and microgranitic textures are developed.

(2) Zone B occupies the most part of dike, and includes lapilli- to block-sized juvenile (granitic rock) and accidental (mudstone, sandstone, chert and basalt) fragments. The juvenile fragments show irregular- and/or blocky-shaped and their margins are wavy. No flow structure is observed in the matrix. As same as the zone A, the matrix texture is devitrified and shows microfelsitic and microgranitic under the microscope.

(3) Zone C occupies the central part of dike with 1m wide. There includes many juvenile (granitic rock and tuff breccia) and a little accidental (mudstone and sandstone) fragments below block-sized. Juvenile fragments are irregular-shaped and their margins are wavy. The tuff breccia fragment is derived from rounded granitic blocks and black tourmaline (?) matrix. In the matrix of zone C, devitrification proceeds to occur microfelsitic and microgranitic textures.

It is observed that the boundary plane between the dike and the OGR as host rock is wavy. In addition the OGR is gradually brecciated into the dike margin in some places. On the other hand, black network veins are observed in the neighboring OGR with the dike, showing the same texture with the matrix in the tuff breccia fragments in the zone C. The veins in the OGR are cut by the dike at the boundary between them.

### EMPLACEMENT PROCESS OF THE DIKES

All of observation above indicates that the OGR were inferred to be solidified but to be hot enough to make ductile deformation at the time of emplacement of the dike. Then, it is inferred that after the fragmentation on a small scale in the OGR, the emplacement of pyroclastics to form the Omine dike was occurred. These processes are similar to those observed in the Nakaoku tuffite dikes (Wada and Iwano, 2001) in the same peninsula, and strongly suggest the repetition of fragmentation in pyroclastic conduit.