

## Macroscopic and microscopic evidence for magma mixing observed in the Saga-Futagoyama volcanic rocks

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The Saga-Futagoyama volcanic rocks in northwest Kyushu, southwest Japan are composite lava domes composed of basalt-andesite with black color and rhyolite with gray color. Boundaries of the basalt-andesite and the rhyolite are variably curved. Along the contact, fragments of basalt-andesite and rhyolite swarms in the other. The basalt-andesite fragments in the rhyolite have rounded or elongated and disturbed shapes. Some of them are zoned with crystallinity. The rhyolite fragments have thin lens shapes. Quartz phenocrysts in the rhyolite have rounded shape. These lines of macroscopic and microscopic evidence indicate that the basalt-andesite and the rhyolite mechanically and thermally interacted as magma.

The Saga-Futagoyama volcanic rocks in northwest Kyushu, southwest Japan are composite lava domes compositionally ranging from basalt to rhyolite. At the outcrops, the Saga-Futagoyama volcanic rocks are composed of basalt-andesite with black color and rhyolite with gray color. Boundary of the basalt-andesite block and the rhyolite block are variably curved suggesting that both basalt-andesite and rhyolite behaved plastically. Along the contact, fragments of basalt-andesite and rhyolite swarms in the other. The basalt-andesite fragments in the rhyolite matrix ranging from some millimeters to meter in size has elongated and disturbed shapes. The interface between the fragments and the rhyolite matrix are variably curved. Some of them are zoned with crystallinity suggesting that they crystallized after their shapes were formed. The rhyolite fragments ranging from some millimeters to meters in size have thin lens shapes. Quartz phenocrysts in the rhyolite have rounded shape, which cannot be explained by simply cooling of the rhyolite magma and suggests the rhyolite magma was heated up. These lines of macroscopic and microscopic evidence indicate that the basalt-andesite and the rhyolite mechanically and thermally interacted as magma.