

## Experiments in heating and oxidizing iron-titanium oxides - examination of deuteric oxidation in lava dome -

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The Ikeshiro pyroclastic-flow deposit at Yufu volcano, Kyushu Island, is a typical block-and-ash flow generated by collapses of Ikeshiro lava dome erupted at ca. 2,000 years ago (Kobayashi, 1984). Saito et al. (2000) found that juvenile blocks from the Ikeshiro pyroclastic-flow deposit are of two types with different iron-titanium oxides assemblages: type A includes homogeneous titanomagnetite (TM,  $\text{Fe}_{3-x}\text{Ti}_x\text{O}_4$ ) with  $x = 0.3$  and titanohematite (TH,  $\text{Fe}_{2-y}\text{Ti}_y\text{O}_3$ ) with  $y = 0.7$ , while oxides in type B show complex lamellae textures and include rutile, pseudobrookite, TM, TH. Oxidation indices (Haggerty, 1976) of type A and type B are C1, R1 stage and more than C4, R5 stage, respectively. They suggest that the classification of two types reflected redox conditions in Ikeshiro lava dome: lava blocks exposed on the dome surface (type B) were strongly oxidized and variable lamellae textures were formed, while lava blocks at the dome core (type A) were hardly oxidized. We carried out experiments in heating and oxidizing iron-titanium oxides in order to examine their interpretations. As a result of our study, type A samples heated during 24 hours showed C3 stage. In addition, rock magnetic experiments imply the existence of hematite.