

## Comparison of the growth processes of isolated bubbles in hydrated basaltic glass and obsidian.

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Explosive eruption of volcano takes place when fragmentation of the magma is generated by rapid vesiculation during drastic pressure reduction. In contrast, when the vesiculation is not violent, the eruption becomes non-explosive and often only lava flow occurs. Andesitic to rhyolitic magmas are generally explosive and basaltic ones are generally non-explosive. To compare vesiculation and degassing process of rhyolitic and basaltic silicate melts, heating experiments of both silicate melts were conducted. Until now, basaltic sample has not been used for vesiculation experiments, while obsidian, which is hydrated rhyolitic glass, has often been used. One of the reasons would be high opacity of basaltic glasses or melts, which leads difficulty in the observation with optical microscope. Heating experiments of synthetic hydrated basaltic glasses and obsidians were carried out. The samples under cyclic heating were observed by X-ray computed tomography to gain three-dimensional structures and time developments of growing bubbles in silicate melts. The experimental temperatures were 675 and 750 °C for obsidians and 850 and 900 °C for hydrated basalts. In-situ observations of vesiculation of obsidian were also carried out. Processed images suggest that overall textures of vesicles are much different (Tsuchiyama et al., this session), while growth rates of isolated bubbles are similar. According to rough estimation based on Hui & Zhang (2006), the viscosity of hydrated basaltic glass (700 °C) and obsidian (850 °C) are estimated to be  $8 \times 10^6$  Pa s and  $4 \times 10^7$  Pa s. The similarity of both growth processes of isolated bubbles indicates that some other mechanism than conventional bubble growth model for isolated bubbles causes the difference of both overall textures of vesicles.