H2O contents of Ca-rich plagioclase phenocrysts from basaltic magmas erupted at volcanic front

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Ca-rich plagioclase is commonly found in island arc basalt at volcanic front. Experimental studies (Sisson and Grove 1993 *Contrib. Mineral. Petrol.*; Takagi et al. 2005 *Contrib. Mineral. Petrol.*; Hamada and Fujii 2007 *Geochemical J.*) have shown that composition of plagioclase become enriched in Ca with increasing H_2O content in melt. Therefore, composition of plagioclase can be an indicator of H_2O content at the time of its crystallization.

However, in Izu volcanic arc, H_2O-rich nature in basaltic magma has not proved yet. Analyses of melt inclusions hosted by Ca-rich plagioclase yields lower H_2O content (less than 2 wt.%, e.g. Saito et al. 2005 *Bull. Vol.*; Hamada and Fujii 2007 *Geochem J.*). Hamada and Fujii (2007 *Geochem J.*) speculated that volatiles might leak from melt inclusions after entrapment in plagioclase.

In order to solve contradictions on estimated H_2O content in basaltic magmas at volcanic front, we analyzed trace quantities of H_2O in Ca-rich plagioclase obtained from the 1986 eruption of Izu-Oshima volcano, using polarized infrared spectra by the procedures of Johnson and Rossman (2003 *Am. Mineral.*). Analytical results of plagioclase phenocrysts clearly demonstrate that H_2O content in plagioclase becomes higher with increasing An content. Assuming partition coefficient of H_2O between plagioclase and melt = 0.004 (Johnson 2005 *Goldschmidt Conf.*), H_2O content in melt changes widely from 3 to more than 6 wt.%. The analytical results suggest higher H_2O content in island arc basaltic magmas than analyzed H_2O content in melt inclusions.