

## **Reconstruction of the parental melt composition for moderate-potassium magnesian basalts of the Shiveluch volcano (Kamchatka peninsula, Russia)**

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Shiveluch is one of the most active island-arc volcanoes with the prevalence of hornblende-bearing andesites among volcanic products ( $\text{SiO}_2$  52-63 wt.%). Only few basaltic eruptions were recorded for Shiveluch during Holocene. New data about melt inclusions in high-Mg olivine of magnesian basalts (Shiveluch eruption BC7600) will be presented. Melt compositions and crystallization conditions for these basalts were reconstructed also. These melts could be parental for volcanic series of Shiveluch volcano.

Basaltic scoria with phenocrysts of olivine and clinopyroxene was collected for this study. Sample was crushed to the 0.5-1 mm fraction and then olivine grains were picked up manually. Partially crystallized primary melt inclusions with a diameter more than 30 microns only were used in order to minimize the distorting effects of the real composition. Preliminary experiments with visual control on the Linkam TS1500 stage have carried out to determine the optimal quenching temperature. The last crystal homogenization temperature is 1180°C. Olivine grains with melt inclusions were heated in a muffle furnace (oxygen buffer CCO) to this temperature and quenched.

Melt compositions were calculated from analyses of experimentally quenched glassy melt inclusions with considering of Fe-loss effect. The initial content of iron (9 wt.%) in melts was taken as its maximum value measured in the scoria of this eruption. Reconstructed melts in high-Mg olivine (Fo89-90) have basaltic composition:  $\text{SiO}_2$  47.9-49.7 wt.%, FeO 9 wt.%, MgO 10.3-11.1 wt.%,  $\text{Al}_2\text{O}_3$  16.3-17.7 wt.%, CaO 8.6-10.3 wt.%,  $\text{Na}_2\text{O}$  2.9-3.7 wt.%,  $\text{K}_2\text{O}$  0.8-1.0 wt.%. Calculated temperature of the equilibrium of reconstructed melts with host olivine is  $1320 \pm 5^\circ\text{C}$  for anhydrous conditions. Water content (up to 4-5 wt. % according data for basaltic melt inclusions in olivine for other volcanoes of Klyuchevskaya group) should reduce the calculated temperature to  $1200 \pm 5^\circ\text{C}$ . Compositions of reconstructed melts form trends for all major components with other erupted products of Shiveluch volcano. Bulk rock compositions show increasing of  $\text{SiO}_2$  from 48 to 63 wt.%,  $\text{K}_2\text{O}$  from 1 to 1.5 wt.%,  $\text{Na}_2\text{O}$  from 3 to 5 wt.%, and reducing FeO from 9 to 4 wt.%, MgO from 10 to 2 wt.%. Melt composition of BC7600 eruption lies in the most magnesian part of the trend. All of the above allows us to assume that the reconstructed melt of BC7600 eruption could be parental for all medium-K series of Shiveluch volcano.