+ #0018

+

+

An Experimental Study of Liquid Lines of Descent in Low-Si Boninites

Simon, A.F.L., Almeev, R.R., Holtz, F. Institute of Mineralogy, Leibniz University Hannover Callinstr. 3, 30167 Hannover, Germany a.simon@mineralogie.uni-hannover.de

Boninites are strongly depleted volcanic rocks commonly found in nascent subduction zones. They form, when a previously depleted mantle is fluxed with fluids during beginning subduction and remelts under low pressure conditions [1]. We have conducted crystallisation experiments in the IHPV at 200 MPa, different T (1060°C-1120°C) and H₂O, using a starting glass derived from primitive low-Si boninites (LSB) cored during IODP Expedition 352. Most of the water contents in our experiments were lower than reported for natural boninites [2] and in higher T runs, fO2 were extremely reducing and did not reach the planned $\Delta QFM+2.05$. Experiments at T from 1080°C to 1120°C with relatively high water contents and higher oxygen fugacities lead to glass and mineral compositions, as well as phase relations (cpx+opx±ol), closest to natural low-Si boninites. However, fO2 was only achieved at 1060°C and low H₂O, where the experimental samples do not resemble natural LSB well.

[1] Crawford, A.J. et al. (1989) in Boninites and related rocks, 1-49. [2] Coulthard, D.A. et al. (2020) Geochem. Geophys. Geosyst. 22

Cite abstract as:

Simon, A.F.L., Almeev, R.R., Holtz, F. (2021) An Experimental Study of Liquid Lines of Descent in Low-Si Boninites. DMG Sektionstreffen Petrologie und Geochemie, Online (Germany), abstract URL: http://paneth.eu/PanethKolloquium/DMG2021/0018.pdf (abstract #0018).