MELTING EXPERIMENTS ON THE MANTLE MINERALS AND BASALTIC MELTS: RELATION TO THE MELT-XENOLITH REACTIONS DURING MAGMA ASCENT

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First results of melting relating experiments on the mantle minerals and basaltic melts are presented. High-temperature experiments (inert condition, and atmospheric pressure) were carried out by mini-heater apparatus in Institute of Geology, Novosibirsk, Russia. Starting materials were natural ol, opx, cpx from mantle xenoliths of the Vitim volcanic field (Mg# near 90). Alkaline basalt glass from Shavaryn-Tsaram volcano, Mongolia (Mg#=36, alk=Na2O+K2O=5.5 wt.%, SiO2=50.5 wt.%), Melaleucitite from Udokan volcanic field (Mg#=63, alk=5.0 wt.%, SiO2=45 wt.%), and MORB-glass from Mid-Atlantic ridge (Mg#=55, alk=3.0 wt.%, SiO2=50.2 wt.%) were selected as a basaltic compositions.Run products of opx-basalt (T=1300-1370oC), cpx-basalt (T=1200-1270oC) and opx-cpx (T=1320oC) experiments were represented by two type of glasses – primary and reactionary, primary minerals (mineral breakdown in some experiments) and reactionary minerals – opx, cpx, and ol. Opx-basalt experiment runs contain reactionary rim and melt pockets of olivine quenched crystals + glass, representing the assemblage is often found in mantle xenolith interstices. Quenched olivine has Mg# 94-97 and coexisting glass has Mg#=76-88. Glass contain SiO2=55-60 wt.% and has alk=4-8 wt.%. In some experiments with cpx-melt pair high alkaline glasses (alk=8-11 wt.%) were produced.Melting reaction experiments show that mineral assemblage of olivine quench crystal bearing melt pockets in mantle xenoliths, is possible formed due to low-pressure reaction of mantle minerals with basaltic melt. Si-enrichment of glasses corresponds to recent experimental data of Shaw et al., 1998 showed that Si-undersaturated melt - orthopyroxene reaction can produce Si-rich melt during magma ascent or just before xenoliths entrainment to the surface.