Geophysical Research Abstracts
Vol. 14, EGU2012-5003, 2012
EGU General Assembly 2012
© Author(s) 2012

Crystallization conditions in the lherzolite-gabbronorite Suoi Cun intrusion (Northeastern Vietnam)

A.E. Izokh (1,2), T.V. Svetlitskaya (1,2), N.D. Tolstykh (1), and N.T. Phuong (3)

(1) Institute of Geology and Mineralogy, Novosibirsk, Russia (izokh@igm.nsc.ru), (2) Novosibirsk State University, Novosibirsk, Russia , (3) Institute of Geological Sciences VAST, Hanoi, Vietnam

Crystallization conditions in the lherzolite-gabbronorite Suoi Cun intrusion (Northeastern Vietnam)
Suoi Cun intrusion refers to the Late Permian Cu-Ni-PGE ultramafic-mafic complex (Cao Bang complex) of the Song Hiem rift zone of the northeastern Vietnam. The lower part of the intrusion is composed of plagiolherzolite, and the upper part consists of olivine gabbronorite and gabbronorite. The most magnesian olivines are in ultramafic rocks (Mg # = 86), less magnesian olivines are in gabbronorites (Mg # = 70). Clinopyroxene are represented by magnesium diopside-augite. Plagioclase composition varies from anorthite (An90) in plagiolherzolite to labradorite (An55) in gabbronorites. Interstitial sulphide inclusions (pyrrhotite + chalcopyrite + pentlandite) occur in plagiolherzolite. Richest sulfide zone is located near contact zone of inversion.The presence of sulphide droplets in liquidus olivine and in Cr-spinel inclusions in olivine indicates the saturation of the sulfur of the parent picrobasalt melt in the intermediate chamber.The presence of an early liquidus orthopyroxene in plagiolherzolite not consistent with the theoretical calculations by the program «Comagmat», but may be explained by early sulfurization of the melt. Data of zircons from plagiolherzolite and gabbronorites show considerable degree of crustal contamination. Geochemical features of sulfides, including the distribution of platinum group elements (PGE), suggest that the sulfide liquid was segregated from the primary PGE-enriched picrobasalt melt. Based on the calculated concentrations of ore-forming elements (Ni, Cu, PGE) in the parental melts, the ratio of the mass of sulfide liquid to the total mass of the equilibrium silicate melt (N factor) for the Suoi Cun intrusion is 500-2000. Thus, geochemical features of sulfide of the Suoi Cun intrusion indicate that sulfurization of picrobasalt melt occurred in the deep intermediate chamber.