

Trace elements partitioning at partial melting of diamond-forming peridotite-carbonatite system in experiment at 8.5 GPa

A. V. Kuzyura¹, Yu. A. Litvin¹, P. G. Vasiliev², T. Jeffries³, F. Wall⁴

¹Institute of Experimental Mineralogy RAS, Chernogolovka

²M. V. Lomonosov Moscow State University, Department of Geology, Moscow

³Natural History Museum, UK

⁴Cornwall Campus of University of Exeter, UK

shushkanova@iem.ac.ru

The experimental researches at 8.5 GPa and upto 1510°C are directed on studying of geochemical behavior of trace elements in model peridotite-carbonatite system with the composition [(Ol₃₆₋₆₀OPx₁₆CPx₁₂₋₂₄Grt₁₂₋₂₄)₃₀Carb₇₀]₉₉RE₁. The system was dopped with a mixture of trace elements Li, Rb, Cs, Ba, Th, U, Ta, Nb, La, Ce, Pb, Pr, Sr, Nd, Zr, Hf, Sm, Eu, Gd, Tb, Dy, Y, Ho, Er, Tm, Yb, Lu, Sc, and Zn. Coefficients of interphase participation of trace elements were counted on the base of LA-ICP-MS-analyzes. The main feature of participation picture is that light trace elements (La, Ce, Pr) are distributed mainly into melt phase and olivine, when medium and heavy elements (Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu) go to garnet. Zr, Hf, Y, and Sc are accumulated also in garnet, the rest elements are concentrated in carbonate-silicate melt. An intensive accumulation of light trace elements Li, Rb, Cs, Ba, as well as Th, U, Pb, and Zn is characterized for olivine. It should be noted that clinopyroxene practically doesn't participate in distribution of trace elements. The obtained experimental results testify to participation of trace elements between phases of peridotite-carbonatite system at its partial melting at 8.5 GPa practically doesn't depend on melt composition.

Key words: trace elements, interphase participation, peridotite-carbonatite system, experiment, high pressure, diamond-forming

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