



Trace elements of apatite from alkaline lamprophyres from the rocks SE Altay-NE Mongolia

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TRE spectra for the about 50 apatite composition from alkaline rocks as illustrated by Chuya complex (SE Altay-NE Mongolia) were made by the LAM ICP MS using Element II mass-spectrometer in Analytic Centre of IGMSB RAS.

Apatite is common in alkaline rocks and lamprophyres and it is one of the major TRE concentrator. Apatite could be the tracer of the evolution process because it shows the ranges of the compositions during crystallization in rocks characterize the rocks in the matter of fluid regime, distribution of the REE and ore potential. The later varieties are essentially TRE rich. Apatite accumulate whole-rock phosphorus, some halogens and some REE.

Lamprophyre dikes formed 250-235 Ma occur on the vast territory from SE Altay to the NW Mongolia. Dikes from 2 areas differ from each other suggesting different protolith and melting processes. They differ also due to the differentiation and silicate-carbonatite melt liquation processes also.

The trace elements patterns of rocks at the same locality are similar in shape. Negative anomalies in HFSE- (Nb, Ta, Hf, Zr, Ti) and Sr are common but their depth differ due to different oxidation stage.

REE in apatites normalized on the contents in the host rock give partition coefficient for TRE. The result is that La, Ce, Nd, Sm, Eu, Tb, Y is near 10. The U and Th give KD near 1 and Cs, Rb, Ba, Nb, Zr < 1. KD for Sr, variable but also ~ 10. We will discuss the variations of KD and apatite compositions and their dependence on the PTX parameters of the rock crystallization.

In addition, apatites from dikes associated with ore occurrences (Ag-Sb, Asgat) contained ore components (Ag) in fluid inclusions. This may indicate the potential for fluid transfer of ore elements. Thus, the study of the composition of apatites and inclusions in them is necessary for the prediction of ore occurrences. Grant RFBR 19-05-00788