

Geochemical features and isotopic age of charnockite-type rocks of Upper Pobuzhya of the Ukrainian Shield (Lityn dome structure)

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Rare earth elements (REE) are considered to be one of the best indicator components, distribution character reflects to the processes of rock formation. Based on the analysis of REE in rocks of Litynskyi and Malynivskyi quarries using ICP MS methods, using also the already published data of Lesnaya (1988), the following basic types of REE distribution were found in the studied rocks: 1) low (<50 ppm) content of REE with distinct positive Eu-anomalies, 2) moderate (100-150 ppm) REE content with positive or mild negative Eu-anomalies. 3) increased content of REE (up to 230 ppm) with small positive Eu-anomalies or without them. The first type is typical for two-pyroxene oldest Paleoarchean enderbites of the Gayvoronskyi Complex (3.6 Ga) and hypersthen enderbites of the Litynskyi Complex, which confirms the theory of formation the latter by transformation of rocks of the Gayvoronskyi Complex. The second distribution type of REE spectra is observed in vinnicites (biotite-garnet feldspar-plagioclase rocks with hypersthen). The third type of REE distribution is typical for enderbites with increased content of potassium (charno-enderbites).

The degree of REE differentiation, expressed in ratio $(La/Yb)_N$ changes for hypersthen-containing enderbites within 5.4-79.2, at $Yb_N = 10.7-0.87$, at $\sum REE = 47.5-125$ ppm. For the studied rocks weak and well manifested positive europium anomaly $Eu/Eu^* = 1.6-4.5$ is typical.

REE in vinnicites are poorly differentiated. $(La/Yb)_N = 2.4-4$ at $Yb_N = 11.8-18.7$, $\sum REE = 125.2-144$. Mild positive and negative Eu-anomalies are also allocated $Eu/Eu^* = 0.84-1.2$.

For geochronological studies monazite was used. According to U-Pb data the isotopic age of monazite from vinnicites by isotopic ratio $^{207}Pb/^{206}Pb$ ranges from 2013 to 1990 million years. Vinnicites are intermediate rocks between garnet-biotite (Berdychiv) granites and enderbites, where monazite age is of 2036 million years. So, perhaps, this variation of the obtained data for monazite from vinnicites is related to a small admixture of monazite from the enderbites.

Lesnaya I.M. (1988). Geochronologiya charnokitoidov Pobuzhya: pp. 134.