

Geochemistry of basites from ophiolite suit of the Kuznetsk Alatau, SW Siberia

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The Kuznetsk Alatau ridge represents a NW segment of the Altai-Sayan folded belt. Fragments of suboceanic crust comprising the petrologic types, which are typical for the ophiolitic section, are mostly localized in the axial part of the ridge and form an apparent belt. Recent isotopic geochemical data indicate that ophiolites were formed in the Riphean ($T(\text{Sm-Nd}) = 955 \pm 52$ and 947 ± 51 Ma) [1]. One of typical ophiolite fragments of this region is the association of ultrabasic and basic rocks of the Barkhatnaya, Zayachiya, Severnaya, and Zelenaya mountain apexes. It is an arc-like structure, where ultrabasites are in the rims and basites are in the core.

Based on geochemical parameters basites can be conditionally divided into: I group – the character of REE distribution close to the N-MOR basalts, $\text{La}/\text{Sm}_n = 0.55-0.86$, $\text{La}/\text{Yb}_n = 0.52-0.77$; II group - the fractionation of lanthanides is practically absent ($\text{La}/\text{Sm}_n = 0.84-1.09$, $\text{La}/\text{Yb}_n = 1.04-1.72$) and group is characterized by higher contents of light REE and low heavy REE; III group – samples from the Barkhatny massif are approximated to the E-MORB products, but from the Zelenaya and Severnaya mountains opposite lean toward the formation of island-arc systems ($\text{La}/\text{Sm}_n = 1.68-2.78$ and $\text{La}/\text{Yb}_n = 3.15-7.10$); IV group - sharp differentiation of the REE as in the III group, $\text{La}/\text{Sm}_n = 0.93-5.09$ and $\text{La}/\text{Yb}_n = 1.76-12.64$, but there is a deficit in the concentrations of heavy lanthanides. The studied rocks are enriched in LIL (Cs, Rb, Ba, Sr) and light REE with respect to the elements of HFSE (Th, Zr, Hf, Nb, Ta) and heavy REE.

However, while most of the basites have a tholeiitic composition some have a calc-alkaline character which would be indicative of island arc systems, back-arc spreading areas and/or suprasubduction settings. These heterogeneities indicate that the Kuznetsk Alatau represents the tectonic assembly of different type fragments of oceanic crust.

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[1] Gertner *et al* (2013) *Mineralogical Magazine* **77**, 1159.