

Metamorphism of basites from ophiolite suite of the Kuznetsk Alatau, SW Siberia

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Ophiolites from the northern slope of the Kuznetsk Alatau Ridge are the most typical fragments of suboceanic crust, which was formed in the Riphean (T (Sm-Nd) = 950 ± 59 and 937 ± 50 Ma) [1]. They are characterized by a belt development along the main lineament of the ridge, and are represented by semi-circle zones. Their external zone is composed by metamorphic ultramafic rocks, whereas center zone consists of magmatic complexes of different depth facies (starting with cumulative one to volcanogenic). Nowadays the most preserved and studied ophiolite paragenesis is the association of the Barkhatnaya, Zayachia, Severnaya and Zelenaya mountain apices. In Kundustuyul-Semenovskaya mafic-ultramafic association in the close structural and spatial combination with peridotites and serpentinites bodies of gabbroids, diorites, diorite-diabases, pyroxenites, albitites, listvenites and syenites are located.

Studied basites from these two associations have signs of superimposed metamorphic changes. Data obtained from studying phase relationships and changes in chemical composition of the mineral pair "plagioclase - amphibole" suggest several stages of transformations. The results suppose two stages of metamorphism. Progressive peak of metamorphism is set at $T = 500-700$ °C and $P = 2-6$ kbar (epidote-amphibolite facies) and is associated with obduction of oceanic lithosphere fragments from the Late Riphean to the Middle Cambrian. These parameters are determined for a dyke of gabbro-amphibolites going through western contact of the Barkhatny ultramafic massif. Sm-Nd isotope analyses yield the age of 679 ± 34 Ma for this rock [2], which is very close to the border of amphibolite metamorphism of ophiolites in the Tomsk Salient (694 ± 43 Ma) [3]. Parameters of the regressive step is characterized $T = 350-510$ °C and $P = 2-9$ kbar and is corresponded to the stage of Altai-Sayan superterrane's collisional accretion in the Late Cambrian - Ordovician.

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- [1] Gertner *et al* (2013) *Mineralogical Magazine* **77**, 1159.
[2] Gertner *et al* (2014) *Mineralogical Magazine* **78**, 793. [3] Plotnikov *et al* (2000) *DAN* **372**(1), 80–85 (in Russian).