Geochemical heterogeneity of ophiolites from the Kuznetsk Alatau, SW Siberia

N.A. DUGAROVA*, I.F. GERTNER

Tomsk State University, Russia
(*nadyadugarova@mail.ru; labspm@ggf.tsu.ru)

NW segment of the Altai-Sayan folded belt (ASFB) is represented by the Kuznetsk Alatau ridge which is one of the oldest structures in this region and is considered as a Caledonian collisional system. The ophiolites from the northern slope of this ridge are the most representative fragments of suboceanic crust which form an apparent belt. The most preserved and studied ophiolite paragenesis is the association of the Barkhatnaya, Severnaya and Zelenaya mountains. It is composed of a typical for ophiolite section of a set of petrographic varieties that were formed during the development of oceanic crust in the Riphean [1]. According to the nature of the internal structure, ophiolites are considered as a zonal-semicircular structure. 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).

Based on the whole complex petrochemical parameters, observed basite rocks can be referred to the products of sodium tholeitic petrochemical series, which are typical for the MORB magmatism. However, complication of the apparent tholeitic specialization of basites is always observed with signs of calc-alkali derivatives which show similarities with the formations of island arc systems, back-arc spreading regions, or SSZ-type ophiolites. These conclusions are also confirmed by the geochemical characteristics. In general, REE distribution of the most rocks corresponds to the MORB-type. In the other varieties, we should take into consideration the prevalence of light REE over heavy REE at the insignificant europium minimum. The shape of REE patterns for these rocks is close to patterns for island arc systems. The distribution of impurity elements in most of the described rocks normalized to N-MORB show characteristics typical for island-arc magmas: 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.

Thus all results indicate that the formation of the studied basite series in various geodynamic settings, but their spatial proximity is explained by tectonic accretion of heterogeneous fragments of the oceanic crust in the subduction zones.

This study was supported by the Government of the Russian Federation (project 14.Y26.31.0012).

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