



Petrology and age boundaries of the Yllymakh complex (Yakutia, Russia)

Elena Vasyukova (1,2) and Anton Ponomarchuk (2)

(1) Novosibirsk State University, Novosibirsk, Russian Federation (lenav@inbox.ru), (2) Institute of Geology and Mineralogy SB RAS, Novosibirsk, Russian Federation

The Aldan Shield is an ancient lithospheric plate, with a clearly manifested block structure, repeatedly interacting with neighboring mobile regions. The influence of orogeny in the Verkhoyansk-Chukotka and Mongolo-Okhotsk folded regions, which are in the Mesozoic by the southern and southeastern margins of the paleocontinent, caused tectonic and magmatic activation of the Aldan shield with characteristic in-plate magmatism and formed the Aldan alkaline province.

The Yllymakh massif concerns to the ring intrusions, typical for the Central Aldan. Alkaline rocks, with which the Yllymakh massif is complex, are distinguished by a great variety in their material characteristics. Geological and petrological-geochemical data support the complex history of the formation of a given rock complex. As a result of geochronological studies of the Ar-Ar method, three stages of the array formation were determined: 140 ± 1.9 Ma, $130 \pm 1.9 - 131 \pm 2.4$ Ma and 125 ± 1.9 Ma. Petrologic-geochemical studies showed a consistent increase in the average SiO_2 content between groups of rocks of different ages. Within the groups there is a negative correlation between the content of silica and rock forming oxides: MgO, CaO, Fe_2O_3 , MnO, P_2O_5 . And the geochemical spectra of all studied rocks are similar in form and in absolute value. All this indicates a consistent fractionation in the source.

On the other hand, at close values of ϵ_{Nd} (-13 to -14), the primary ratio $(^{87}\text{Sr} / ^{86}\text{Sr})_0$ increases from the more basic rocks (0.70482) to acidic (0.71005). This may indicate the crust material assimilation in the formation of a range of rocks.

This work was supported by the grants 16-05-00860 and 5.2324.2017/4.6.