

# **GEOCHEMISTRY AND GEOCHRONOLOGY OF BAYANGOL GRANITOID COMPLEX IN THE KHULJ-YERO REGION, NORTHERN MONGOLIA**

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This study focuses on the geochemistry and zircon U-Pb age of the Bayangol granitoid complex in the the Khulj-Yero region. The Khulj-Eruu belt is situated in the northern part of Central Mongolia and is characterized by widespread Phanerozoic granitoid intrusions. It was previously thought that the granitoid intrusions of different ages is distinguished, such as Cambrian Bayangol, Middle-Late Ordovician Boroo, Ordovician-Silurian, Silurian-Devonian and Permian-Early Triassic the Selenge complexes.

Our study on Bayangol granitoid complex is situated along a northeast-trending deep fault and is observed low mountains and hills. The complex is divided into two phases, phase-I consists of melanocratic gabbro and schistose gabbro-diorite with pyroxenite, while phase-II consists of diorite, quartz-diorite, granodiorite and granite. The gabbroic rocks are mainly composed of plagioclase, amphibole, pyroxene with minor amounts of quartz, ilmenite, magnetite and granitic rocks are mainly composed of plagioclase, alkali-feldspar and quartz with minor amounts of biotite, muscovite and other accessory minerals.

The Bayangol granitoids exhibit a wide compositional gap between the rocks and belong to the calc-alkaline and high-K calc-alkaline series and show metaluminous characteristics. Granitoid complexes display moderate to high contents of total alkalis and all fall into the subalkaline series. All of the rocks are metaluminous with A/CNK values [ = molar  $Al_2O_3 / (CaO + K_2O + Na_2O)$ ] of 0.68–1.16. These rocks are enriched in light rare earth elements (REE) and large ion lithophile elements (LILE) such as Cs, Rb, and Th as well as are depleted in high field strength elements (HFSE) such as Nb, Ta, and Ti, with variable negative anomalies of Ba, Sr, Eu, P, and Ti anomalies, consistent with continental affinity.

Geochronology, gabbroic rocks obtained zircon U-Pb age of  $460.5 \pm 1.8$  Ma indicates emplacement of the metaluminous I-type granitoid rocks in the Middle Ordovician (Darriwilian period).

In addition, the negative Nb and Ta anomalies on the REE and trace element distribution patterns argue for the subduction-modified mantle source in the petrogenesis of the rocks. On the tectonic discrimination diagrams of Rb - (Y + Nb), Ta-Yb, the Bayangol granitoid rocks plot in the fields of volcanic arc granites.