

Geochronology and geochemistry of the Modot granitic pluton, Central Mongolia

N.TUNGALAG^{1*}, D. SANCHIR¹, B. GANBAT¹,
O.ODBAYAR¹, D.ODGEREL¹, C. BAASANSUREN¹

¹Institute of Paleontology and Geology, Mongolian Academy of Sciences, *Chingeltei district-15160, Danzan street 3/1, Ulaanbaatar*, (*correspondence:naidantungalag@gmail.com)

The Modot granitic pluton located in the Khentii Uplift, northeastern Mongolia. The granitic pluton is situated in the North Gobi-Rift belt of the Central Asia Orogenic Belt. Here, we report a new LA-ICPMS zircon U-Pb ages, and geochemical data for the Modot granitic pluton (MGP). The study aimed to clarify the geological significance and petrogenesis of granitoid to constrain their tectonic setting as well as their importance for the Early Mesozoic tectonic evolution of Central Mongolia.

The granitic pluton is composed leucocratic granite and alkali-feldspar granite these rocks mainly consist of alkali-feldspar, plagioclase, and quartz with minor amounts of biotite, amphibole and muscovite accessory minerals include zircon, apatite, monazite, fluorite and magnetite. The pluton crosscut by zones of wolframite-bearing greisen, which occurs mainly by veins it related to tungsten-tin mineralization.

Geochemistry of granitic rocks are characterized by high SiO₂ contents (67.60–82.2 wt%) and alkalis K₂O (3.8-5.4 wt.%); moderate Al₂O₃ (9.94-12.7 wt.%) and low MgO (0.1-0.9 wt.%), MnO (0.01-0.3 wt.%) and CaO (0.4-2.4 wt.%) with the A/CNK ranging between 1.0 and 1.15. The granitic rocks show regular variations in trace element concentrations. They characterized by enrichment of large ion lithophile elements (LILE: Rb, Th, K and Pb) relative to high field strength elements (HFSE: Nb, Ta, Sr, Ce and Ti) and enrichment light rare earth elements (LREE) and significant negative Eu anomalies. U-Pb zircon geochronology indicates that the Modot granitic pluton was emplaced in Late Triassic 220±3.0 Ma.

Our study of geochemical characteristics and emplacement ages of the Modot granitic pluton suggests that the plutons correspond to the peraluminous, highly fractionation associated with magmatic differentiation and emplaced in post-collisional in intracontinental during 220 Ma, which is interpreted as close to the time Mongol–Okhotsk ocean.