Geology and U-Pb isotopic age (LA ICP-MS) of Kalba-Narym granite batholith (Eastern Kazakhstan)

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Kalba-Narym granitoid batholith located on the territory of Eastern Kazakhstan. Batholith is composed of rocks of five intrusive complexes, which differ in composition and formation time [1].

Results of new U-Pb (LA ICP-MS, Ulan-Ude) granitoid complexes isotopic dating are: 1) Kalguta complex of Bt-Grt-granodiorites and Hbl-granite (I phase - 308±1 Ma (n=47); II phase - 304±1 Ma (n=46)); 2) Kunush plagiogranite complex (SHRIMP-II, Zrc - 306±9, 299±2 Ma [2]); 3) Kalba granodiorite-granite complex (I phase - 296±1 Ma (n=45), 293±2 Ma (n=49); II phase - 286±3 Ma (n=9), 286±1 Ma (n=27)); 4) Monastyr leucogranite complex (SHRIMP-II 284±4 Ma [2], 283±2 Ma (n=20)); 5) Kainda granite complex (288±1 Ma (n=37)).

Obtained results allow us to determine the maximum duration of Kalba-Narym batholith formation at ~ 30 million years (310-280 Ma). There are three stages of formation: 1) 310-300 Ma – granodiorites and plagiogranites of kalguta and kunush complexes; 2) 297-290 Ma – I phase of kalba granite complex and rare-metal pegmatites [2]; 3) 288-281 Ma – II phase of kalba complex, granites and leucogranites of kainda and monastyr complexes.

Obtained geochronological data are synchronize with data of granitoid, gabbro magmatism in Nort-Western China and trapp of Tarim large igneous province (320-270 Ma) [3].

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