

New geochronological U–Pb isotopic data of granitoids from the Kuznetsk Alatau Ridge, SW Siberia

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The Kuznetsk Alatau is a part of the Central-Asian mobile belt (CAMB) and represents the ensemble of the Caledonian fold-thrust structures. The Early Paleozoic large granitoid intrusives are extensively distributed on its south-east slope. The recent U-Pb isotope-geochronological data (SHRIMP-II) obtained by us from sparse grains of the accessory zircon enable three time borders to be established for the manifestation of the granitoid magmatism.

We have studied two massifs of the derivatives of the earliest Martaiga complex of the Middle Cambrian which are composed by quartz diorites, tonalites, granodiorites and plagiogranites. By the quartz diorites from these massifs, the concordant age of their intrusion has been established corresponding to the time interval $T = 510 \pm 7$ and 506 ± 4 Ma. Subsequently, at the Cambrian-Ordovician transition, the formation of the Tigertysh granite complex has been in progress. The dating of granitoids in its three satellites has demonstrated the similar concordant age of their formation – $T = 495 \pm 8$; 495 ± 5 ; 493 ± 8 Ma. In the closing stage of the development of the Early Paleozoic granitoid magmatism, the numerous small intrusions of the mixed composition has been going on in the region: from quartz-monzonites and diorite-porphyrites to granites and granite-porphyrines. The isotopic dates $T = 432 \pm 4$; 431 ± 6 ; 429 ± 6 ; 425 ± 4 Ma have been obtained from four rock varieties. This suggests the comparatively narrow time interval (Llandovery – Wenlock) for the final magmatic events in the Early Paleozoic. We assume that granitoids from the SE slope of the Kuznetsk Alatau aged 510–493 Ma, along with ultrabasic-basite massifs, granite batholiths, alkali basaltoids, complexes of alkali rocks and carbonatites of the Caledonian stage of development CAMB (~ 510–470 Ma) seem to form the Early Paleozoic Large Igneous Province in its limits [1–3].

This study was funded by the Ministry of Education and Science of Russian Federation (project 2.1.1/208, Federal program of ‘Scientific and Scientific-Educational Personnel of Innovative Russia 2009-2013).

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Fluid equilibria in water–salt (sodium fluoride, sulfate, carbonate) – silicate systems

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Heterogeneous fluid equilibria in the P–Q type H₂O–salt (Na₂CO₃, NaF, Na₂SO₄) systems in the presence of SiO₂ or SiO₂ + NaAlSi₃O₈ were studied experimentally at 700–800°C and P=1–3 kb. The method of synthetic fluid inclusions used. The microthermometric study of the synthesized inclusions showed that under experimental conditions the fluid did not remain inert with respect to quartz and albite and was heterogeneous. Some inclusions contained a glasslike phase, and liquid released from this phase by heating. Having been heated, some inclusions entrapped in the upper heterogeneous region, revealed liquid immiscibility in the presence of vapor within a temperature range of 200 to 400°C. The solutions of various concentrations, including oversaturated solutions in the presence of solid phase, underwent recurrent heterogenization. Near 400°C, vapor is either dissolved in one of immiscible liquids or absorbs this liquid.

Re-immiscibility of the liquid, entrapped in higher heterogeneous area is the significant peculiarity of studied system. Then heterogenization may take place in two (or more for multicomponent systems) stages at large scale of *TP*-parameters. The immiscibility is very sufficient mode of the matter re-distribution between immiscible phases. Owing to the multistage of that is important at the enrich or deplete of the fluid phase by specific components.