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U-PB DATING OF ZONAL ZIRCONS FROM THE CRYSTALLINE ROCKS OF THE GONDARAI COMPLEX OF THE GREATER CAUCASIAN MAIN RANGE ZONE (GREATER CAUCASIAN TERRANE)

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The Greater Caucasian terrane in present-day structure corresponds to the Main Range zone of the Greater Caucasus. It is divided into two sub-zones: the Pass sub-zone and the Elbrus sub-zone that by their constituent rocks composition, character of metamorphism and genetic types of magmatites quite differ from each other.

The Elbrus sub-zone can be divided into two units: infrastructure (autochthone Gondarai complex) and suprastructure (allochthone Macera nappe) [1].Unstratified infrastructure (Gondarai complex) is represented by the rocks of a high degree of metamorphism. Here, Pre-Variscan ortho- and paragneisses and migmatites and porphyroblastic and varigrained granitoids occur. Considerable role in the structure of the infrastructure play massifs of biotite granodiorite gneisses (in the interpretation of some researchers - orthogneisses). Host rocks of granodiorite gneisses are crystal schists, amphibolites, gneisses and migmatites, regionally metamorphosed in high temperature amphibolites and subgranulite facies conditions [1]. It should be specially emphasized that the granodiorite gneisses contain xenoliths, most likely of deformed plagiomigmatites, biotitized amphibolites and crystal schists of Cadomian age. Orthogneisses belong to I type granites. In their formation besides the upper crustal formations, the rocks of the simatic crust also pa-

rtially participated [1]. The latest stage of development reflects formation of Late Variscan porphyroblastic and equigranular potassium granites and connected with them regional metamorphism. The regional metamorphism has retrograde character. On the basis of geological data two stages of regional metamorphism - the Pre-Variscan high grade amphibolite and subgranulite facies (T-650-750 °C, P-3 kbar) and the Variscan – epidote-amphibolite and greenschistfacies (T <430 C, P <1.5 kbar) are established [1].

U-Pb zircon ages determination at the National Chung-Cheng University of Taiwan were conducted. In the Gondarai metamorphic complex bothxenocrysts of detrital zircons, introduced from outside, and zircons formed within the Greater Caucasus are established. Judging from the fact that south of the Greater Caucasus in Neoproterozoic and Paleozoic time large oceanic of the Prototethys was located, detrital zircon could have come only from the north – from the Eurasian continent. All zircons older than 650Ma (beginning of the Cadomian orogeny) we referred to detrital zircons as according to geological data traces of endogenic processes older than those associated with the Cadomian orogeny within the Greater Caucasus are not found. The age of detrital zircons varies in the range of 2981- 724 Ma. It is noteworthy that rather often detrital zircons evidently being already located in the Greater Caucasus, with younger rims, including rims of Cadomian age are overgrown. Among in situ zircons in different zones of zonal crystals three age groups are recorded. Their generation by endogenic processes (regional metamorphism and granitoid magmatism) is conditioned. The first age group (653-513 Ma) indicates a manifestation of presumable high temperature Cadomian regional metamorphism, indicator of which is probably the paragenesises established in the Gondarai complex [3, 4] and granitoid magmatism. In the group 22 figures were obtained from metamorphic and 14 from magmatic rocks. Earlier by

D. Shengelia et al. [2] from zircon grains of Dariali granitoid massif by U-Pb LA-ICP-MS dating also Cadomian age group was revealed. The second age group (505-367 Ma) corresponds to the Caledonian prograde regional metamorphism (T=650-700°C, P≈3Kbar) and formation of orthogneisses. Caledonian ages were obtained also in both metamorphic (37 figures) and magmatic (81 figures) rocks. The last - third age group (362-297 Ma) reflects the formation of Variscan equigranular and porphiroblastic potassium granites and connected with them retrograde regional metamorphism (T<430°C, P<1,5Kbar). From metamorphic rocks 4 figures and from magmatic rocks 64 figures were obtained. As noted above the existence of several stages of regional metamorphism in the Elbrus subzone is corroborated by geological data as well. The manifestation of Cadomian metamorphism processes within the Gondarai complex of the Greater Caucasus confirms the opinion about Neoproterozoic age of parent rocks of the complex as a whole. Cadomian metamorphic zircons in magmatic rocks are evidently incorporated by granitoid magma during the Caledonian and Variscan orogenies.

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