

U-Pb LA-ICP-MS geochronology of polygenetic zircons from orthogneiss of the Beshta and Kamenistaya massifs (the Greater Caucasus)

DAVID SHENGELIA¹, GIORGI CHICHINADZE¹, LEONID SHUMLYANSKY², TAMARA TSUTSUNAVA¹, GIORGI BERIDZE¹ AND IRAKLI JAVAKHISHVILI¹

¹Iv. Javakhishvili Tbilisi State University

²Curtin University

Presenting Author: irakli.javakhishvili@tsu.ge

Orthogneissic massifs of the Beshta and Kamenistaya expose in the western part of the Pass subzone of the Main Range structural zone of the Greater Caucasus. Trondhjemitic gneiss is the predominant rock variety and it has gradual transitions to less abundant diorite gneiss. These rocks underwent metamorphism of epidote-amphibolite facies. Serpentinized ultramafites, hornblende gabbros and tectonic sheets of rocks metamorphosed in the epidote-amphibolite facies at moderate pressure spatially associate with trondhjemite-diorite intrusions. It should be noted, that igneous rocks of the Beshta-Kamenistaya massifs in terms of petrological-mineralogical and geochemical composition, and associated with them rocks by character of metamorphism completely differ from the other rocks of the Main Range zone. It has been established that they represent overthrust sheets of incomplete fragments of the ophiolite association of the oceanic crust. Four age populations of zircons have been defined using U-Pb LA-ICP-MS dating of orthogneiss from the Beshta-Kamenistaya massifs: Zrn1 – 3102-3015 Ma, Zrn2 – 2865-2769, Zrn3 – 407-389 Ma and Zrn4 – 350-314 Ma. It can be assumed that Zrn1 and Zrn2 comprise zircons captured by the intrusion; Zrn3 crystallized from the melt and their age corresponds to the age of protolith of the Beshta-Kamenistaya massifs orthogneiss; and Zrn4 corresponds to the regional metamorphism. The obtained data indicate the assumed age of the overthrusting of orthogneiss of the Beshta and Kamenistaya massifs in the interval of 370-350 Ma.