



A record of Late Paleozoic regional metamorphism in the gneiss-migmatite core of the Great Caucasus

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Petrological investigations and zircon and monazite dating are carried out on medium-grade metamorphic rocks (micaschist, gneiss and amphibolite) of the Great Caucasus (Russia). The rock textures and preserved mineral chemistry point to a single metamorphic event during peak assemblage growth reaching amphibolite facies conditions of 610-620°C and 4.0 kbar. Three fractions of zircon separated from differently migmatized paragneisses and one monofraction from orthoamphibolite have been dated using SHRIMP II in CII VSEGEI, Russia. In the cores of zircons from gneisses inherited age lie in the interval from 2347 to 381 Ma. In one sample from gneiss in wide zone parts of crystals or grains, without visible cores (checked by CL), in 12 points was determined an age in the interval of 322-288 Ma. The majority of zircons from amphibolites have concordant age with averaged value of 425±9 Ma. Geochemistry and physical attributes of zircons as well as the high reproducibility of SHRIMP dating allow assuming that the given rocks had gabbroids protolith and the zircons have a magmatic origin. In thin-sections of gneisses, both in fine-grained biotite-fibrolite matrix, and in domains composed by coarse-grained biotite, garnet and sillimanite, abundant monazite and xenotime were found. Their chemical compositions do not depend on texture peculiarities of rock in a limit of thin-section. The apparent chemical Th-U-total Pb age in limits of an error corresponds to U-Pb isotopic age in rims of zircons (320 Ma). It allows to assume that the high-temperature regional metamorphism took place in the beginning of late Paleozoic near 310-320 Ma. This conclusion is in concordance with results of U-Pb dating of zircons, sampled directly from migmatite leucosome [Somin et al., 2006].