



New data about geological relationships of rocks and single-crystal U-Pb zircon ages of formation rocks of the paleoproterozoic PGE-bearing Monchetundra massif (Kola Peninsula)

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Monchetundra massif is the south-eastern part of the large mafic Main Ridge complex, which is located in the central part of the Kola Peninsula.

Because the prominent intrusive contacts between different types of rocks within the Monchetundra massif are identified only for bodies of gabbro-pegmatites, dykes of dolerites and bodies of melanocratic troctolites, this massif was believed to compose of syngenetic series of mafic rocks. However according to the petrographic and U-Pb isotope-geochronological data it can identify at least four groups of rocks distinguishing by formation ages: 1) metagabbro (2521±8 Ma and 2516±12 Ma, (Bayanova et al., 2010)), 2) mesocratic gabbro of trachytoid texture (2505±6 Ma and 2501±8 Ma, (Layered intrusion... , 2004)), 3) leucocratic gabbro and gabbro of massive texture (2471±9 Ma and 2476±17 Ma, (Bayanova et al., 2010)); 4) pegmatoid leucocratic gabbro and gabbro-pegmatites (2453±4 Ma, (Mitrofanov et al., 1993)).

During field work (2011-2012) it was found probable contact between massive leucocratic gabbro (the third group) and trachytoid gabbro (the second group). The latter hosts lenticular and bedded bodies of massive leucogabbro. The dimensional orientation of this bodies and total strike direction of trachytoid texture in gabbro is similar. Cutting contact between these types of rocks is observed only locally. Thin apophyses are noticed rarely. These relationships are formed probably as a result the emplacement of later rocks complex.

To solve the problem of the rocks formation age it was studied the samples of leucocratic gabbro lense and their country rocks (gabbro of trachytoid texture) by the U-Pb-isotope methods of dating.

The new isotopic U-Pb ages on single zircon grains for gabbro of trachytoid texture (the second group) are 2507.5 ± 7.7 and 2504.4 ± 2.7 Ma. These values are corresponded with the previously published ages for this type of rocks (2505 ± 6 and 2501 ± 8 Ma, (Layered intrusion... , 2004)).

The formation U-Pb age of zircons from lense made up massive leucocratic gabbro is 2471 ± 2 Ma that is correlated with the age previously determined (2476 ± 17 and 2471 ± 9 Ma, (Bayanova et al. 2010)) for the third group of rocks.

Thus petrographic, U-Pb isotope-geochronological data and found intrusive contact between rocks of the second and third groups confirm the concept of multistage formation the Monchetundra massif during long period of time. The research is conducted with the financial support of RFBR 11-05-00570, 14-05-93965, OFI-M 13-05-12055.