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Isotope Sm-Nd age of the paleoproterozoic PGE-bearing Monchetundra massif trachytoid gabbronorites (Fennoscandian shield)

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Monchetundra massif is located in the central part of the Kola Peninsula (Russia) and it is the south-eastern part of the Main Ridge Intrusion. Monchetundra massif together with well-known layered mafic-ultramafic PGE-bearing intrusions in the Fennoscandian shield such as the Fedorovo-Pansky complex, the mt. Generalskaya, the Monchepluton is of interest as a target for the PGE prospecting (Mitrofanov et al. 2006; Nerovich et al., 2009; Grokhovskaya et al., 2003).

According to some previously researchers (Nazimova, Rayan, 2008, Nerovich et al., 2009, Layered intrusions…p.1, 2004) rocks of the Monchetundra massif is subdivided into two to five syngenetic zones. Hence the last isotope-geochronological and isotope-geochemical data revealed that the massif includes at least four groups of mafic rocks distinguished by formation ages (Bayanova et al., 2010). The aim of this work is to present Sm-Nd dating results of trachytoid gabbronorites, which are the second mafic rocks group in the Monchetundra massif. The Sm-Nd investigations for these rocks were carried out for the first time.

The second group of mafic rocks comprises of medium-grained and coarse-grained mesocratic gabbronorites of trachytoid texture, with they characterized by well-preserved primary magmatic minerals and gabbro-ophitic texture. The U-Pb ages on single zircon-baddeleyite for these rocks recently obtained (2505 $\pm$ 6 Ma, 2501 $\pm$ 8 Ma, 2504.4$\pm$2.7 Ma and 2507.5$\pm$7.7 Ma (Layered intrusions…p.1., 2004, Borisenko et al., 2013)).

Two samples of trachytoid gabbronorites were selected to study these rocks by Sm-Nd isotopic method. Mineral isochrons plotted from plagioclase, ortho- and clinopyroxene and whole-rock minerals gave ages of 2496$\pm$27 (MSWD = 0.9; εNd = -1.6$\pm$0.5) and 2492$\pm$55 Ma (MSWD = 0.5; εNd = -1.7$\pm$0.5). The new Sm-Nd ages obtained are close to the U-Pb data on zircons and baddeleyites for this rocks group and consider as oridin of second mafic rocks group.

All investigations are devoted to memory of academician RAS, professor F. Mitrofanov (Russia), he was a leader of scientific school for geology, geochemistry and metallogeny of ore deposits.

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