Geophysical Research Abstracts
Vol. 18, EGU2016-5440, 2016
EGU General Assembly 2016

Paleoproterozoic pge-bearing Monchetundra massif (Fennoscandian shield): isotope-geochemical Nd-Sr features of the mafic rocks

Evgeniy Kunakkuzin, Elena Borisenko, Tamara Bayanova, Lydmila Nerovich, Pavel Serov, and Dmitry Elizarov
Geological Institute of Kola Science Center RAS, Russian Federation (kunakkuzin@geoksc.apatity.ru)

The Monchetundra massif (MM) is situated in the central part of the Kola Peninsula (northwest of Russia) and belongs to the Paleoproterozoic East-Scandinavian Large Igneous province (ESCLIP) enclosing Cr, Ni, Cu, Co, Ti, V and PGM-bearing deposits (Mitrofanov, 2009). There are two belts of Paleoproterozoic layered intrusions in the Baltic (Fennoscandian) Shield: the Northern (Kola) Belt and the Southern (Fenno-Karelian) Belt. The last includes mafic-ultramafic intrusions of Finland (the Tornio-Näränkävaara Belt), Sweden (Tornio intrusion) and Russia (Olanga complex). The Northern Belt includes intrusions of the Kola Peninsula, the most famous of them are Mt Generalskaya, Monchegorsk Layered Complex, Fedorovo-Pansky. The MM is traditionally attributed to the Main Range Complex and together with Monchegorsk Layered Complex occurs in the central part of the Kola Belt.
According to the new isotopic Nd-Sr data, the MM mafic rock groups of different ages are characterized by various isotopic and geochemical characteristics.
These new Sm-Nd isotopic data obtained for the main types of the MM mafic rocks indicate that most of the rocks with negative εNd values have older TDM values from 3.4 to 3.1 Ga, and most of the rocks with positive εNd values have younger TDM values from 3.0 to 2.7 Ga.
A special type of gabbronorites with high positive εNd values and TDM of ca. 2.7 Ga were found among the MM mafic rocks. According to isotopic Nd data, these rocks were formed from a depleted mantle source, but at present there are no enough geological and geochemical data to determine a mantle source for them.
Thus, the isotope-geochemical Nd-Sr data indicate that the MM mafic rocks were formed from a mantle source enriched in lithophile elements. The variations of isotopic values in different groups of rocks are likely to cause by the evolution of the long life mantle reservoir during the plume-lithospheric interaction.

The studies were supported by the Russian Foundation of Basic Researches (RFBR), project no. 13-05-00493, 15-35-20501, OFI-M 13-05-12055, 16-05-00305 .