

EGU2020-1737

<https://doi.org/10.5194/egusphere-egu2020-1737>

EGU General Assembly 2020

© Author(s) 2020. This work is distributed under the Creative Commons Attribution 4.0 License.



Podiform and stratiform chromitite with PGE in Paleoproterozoic (2.1 Ga) Pados-Tundra ultramafic (ophiolite) complex (N-E part of the Fennoscandian Shield, Arctic region)

Tamara Bayanova, Serov Pavel, Kunakkuzin Evgeniy, Steshenko Ekaterina, and Borisenko Elena
Geological Institute of KSC RAS, Apatity, Russian Federation (bayanova@geoksc.apatity.ru)

Pados-Tundra ultramafic complex belong to Serpentinite belt in the northern Fennoscandian Shield and composed of dunite-harzburgite-orthopyroxenite with 7 rhythms and 4 Cr layers. The associated massif named as Malyi Pados are considered as a satellite intrusion (Mamontov, Dokuchaeva, 2005) or dislocated block detached according by (Barkov et al., 2016). Nevertheless the complex includes of Dunite Zone with podiform and stratiform chromitite with Ir subgroup PGE (Ru, Os, Ir – IPGE) and associated with chromian spinel in ophiolite (Joban, 2006). Fiestly unusual microtextures and mineralogical features with clinochlore, laurite and native Ru was found (Barkov et al., 2017).

Isotope U-Pb data on baddeleyite in core of zircon from mafic gabbronorite rocks of the Malyi Pados gave 2083 ± 7 Ma and are coeval to ages of Cu-Ni Pechenga (1980 Ma) and PGE Bushveld deposits. Notably are measured new U-Pb ages with 2087 ± 3 Ma for baddeleyite and metamorphic rutile with 1804 ± 10 Ma from hornblendite dyke which are cutted ultramafic rocks of the Pados-Tundra complex.

New Sm-Nd mapping data for the main rocks of the complex are reflected model T_{DM} ages of primary protolith from 2.78 Ga to 2.36 Ga and 3.13 Ga for host rock with positive ϵNd values from +2.7 to +2.1. New Sm-Nd investigations to podiform chromitites of the Pados-Tundra complex are similar to Sopcheozerskoe Cr-deposit (Dunite Block) of the Monchegorsk ore region with positive ϵNd and young protolith ages about 2.7 Ga for primary magma sources instead of Paleoproterozoic Co-Cu-Ni and PGE layered intrusions of the Fennoscandian Shield with 2.4 Ga to 2.5 Ga for origin and 3.2 - 3.5 Ga of the protolith EM-1 enriched mantle plume reservoir (Bayanova et al., 2009, 2014, 2018). All new U-Pb on baddeleyite and Sm-Nd studies to whole rocks of the Pados-Tundra complex infer about ophiolite (spreading or oceanization of the crust) and presence diamond in podiform chromitites according to new highlights of (Ballhause et al., 2017).

All investigations are supported by RFBR 18-05-70082 (Arctic resources), 18-35-00152, 18-35-00246, Scientific Research Contract N0.0226-2019-0053 and Program of Presidium RAS 8.48.