



## **Ingozero TTG geochemical characteristic and geological processes timescale (Baltic Shield)**

Elena Nitkina (1), Bayanova Tamara (2), and Serov Pavel (3)

(1) Geological institute, KSC RAS, Russian Federation (nitkina@rambler.ru), (2) Geological institute, KSC RAS, Russian Federation (bayanova@geoksc.apatity.ru), (3) Geological institute, KSC RAS, Russian Federation (serov@geoksc.apatity.ru)

Archaean TTG are widely known in the World and have multiresearch continuous history of study [Bleeker W., 2003; Martin et al., 2014].

Ingozero block located in the Tersky Terrane of the Kola Peninsula is composed of Archean gneisses and granitoids [Mitrofanov, 2001]. The Archean basement complexes on the Baltic Shield regional geological maps have called tonalite-trondemite-gneisses (TTG) complexes [Mitrofanov, 2001].

The purposes of these studies are finding Ingozero TTG geochemical characteristics and geological processes time scale.

High concentrations of Na, Ca, and low of K characterize the gneisses of the Ingozero massif and the samples points lie on the tonalite and trondjemite fields on the Ab-An-Or diagram [O'Connor, 1965]. As well as the distributions of rare-earth elements are similar to those of the TTG complexes known in the World [Martin et al., 2014]. The rocks of the Ingozerskogo block are characterized by high contents of light rare earth elements La, Ce, Pr, then the REE curve has a steep drop from Nd to Tb followed by a flattening from Dy to Lu, characterized by low contents of heavy rare earth elements.

Single zircon U-Pb age (ID-TIMS) defined for the Ingozero biotite gneisses is  $3149 \pm 49$  Ma; SHRIMP data show that metamorphic alterations were in  $2725.5 \pm 2$  Ma and reflect the origin of Amf-Bt and  $2733.6 \pm 6.6$  Ma for Bt-Ampf gneisses [Bayanova et al., 2016].

Model Sm-Nd ages are 3613 Ma – biotite gneisses, 3493 Ma – biotite-amphibole gneisses and 2596 Ma – amphibole-biotite gneisses.

U-Pb (ID-TIMS) ages of the metamorphism processes in the TTG complex are obtained:  $2697 \pm 9$  Ma – for the biotite gneiss,  $2725 \pm 2$  and  $2667 \pm 7$  Ma – for the amphibole-biotite gneisses, and  $2727 \pm 5$  Ma for the biotite-amphibole gneisses.

Preliminary U-Pb isotopic dating were held for granites -  $2615 \pm 8$  Ma, migmatites -  $2549 \pm 30$  Ma and veined granites -  $1644 \pm 7$  Ma.

As a result of the isotope U-Pb dating of the different Ingozerskogo TTG complex rocks, the following age-formation stages are determined: protolith of the biotite gneisses -  $3149 \pm 46$  Ma; metamorphism, deformation of rocks, foliation –  $2733.6 \pm 6.6$  -  $2727 \pm 5$  –  $2725 \pm 2$  -  $2697 \pm 9$  -  $2667 \pm 7$  Ma, granite bodies formation -  $2615 \pm 8$  Ma and biotite gneisses migmatization -  $2549 \pm 30$  Ma, formation of different pegmatite and granite veins -  $1644 \pm 7$  Ma.

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