

## **New U-Pb and Sm-Nd isotope data of the age of formation and metamorphic alteration of the Kandalaksha-Kolvitsa gabbro-anorthosite complex (Baltic Shield)**

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The aim of this research was to study the isotope U-Pb age of zircon and rutile and Sm-Nd (rock forming and sulphide minerals) in Kandalaksha-Kolvitsa gabbro-anorthosite complex.

Kandalaksha-Kolvitsa gabbro-anorthosite complex is located in the N-E part of Baltic shield and consists of three parts. Marginal zone (mesocratic metanorite) lies at the base of the massif. Main zone is composed of leucocratic metagabbro. The upper zone is alteration of mataanorthosite and leucocratic metagabbro. All rocks were subjected to granulite metamorphism.

New U-Pb and Sm-Nd isotopic and geochronological data for the rocks of the Kandalaksha-Kolvitsa Paleoproterozoic gabbro-anorthosite complex is presented. For the first time single zircon grains from metagabbros of Kolvitsa massif were dated  $2448 \pm 5$  Ma, using U-Pb method with an artificial  $^{205}\text{Pb}$  tracer. Sm-Nd isotopic age of the metamorphic minerals apatite, garnet and sulphide WR Kolvitsa array is  $1985 \pm 17$  Ma, which is interpreted granulite metamorphism. Two fractions of single zircons from anorthosite of the Kandalaksha massif gave U-Pb age  $2450 \pm 3$  Ma. Leucocratic gabbro-norite (Kandalaksha massif) were dated by U-Pb on single zircon, with age up to  $2230 \pm 10$  Ma. This age reflects the time of granulite metamorphism according to data of [1]. Two fractions of rutile from anorthosite of the Kandalaksha massif have been analyzed by U-Pb method and reflect age of  $1700 \pm 10$  Ma. It is known that the closure temperature of U-Pb system rutile  $400-450$  ° C [2], thus cooling of the massif to these temperatures was about 1.7 Ga. These data suggested two stages of metamorphic transformations of the massif. Sm-Nd research Kandalaksha massif reflected the age of the high-temperature metasomatic transformations  $-1887 \pm 37$  Ma. Time of regional fluid processing -  $1692 \pm 71$  Ma. A model Sm-Nd age metagabbros Kolvitsa massif is 3.3 Ga with a negative value  $\epsilon_{\text{Nd}} = -4.6$ , which corresponds to the most likely primary enriched mantle reservoir of source magma like PGE layered intrusions of Paleoproterozoic (Fedorovo-Pansky massif, Imandra lopolith, Mt. Generalskaya, Monchegorskiy pluton, Monchetundra).

All investigations are devoted to memory of academician PAS F. MItrofanov.

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[1] Mitrofanov, Nerovich (2003) Petrology. 11. 4. 381-390. [2] Mezger et.al. (1989) EPSL. 96. 106-118.