ARCHEAN KOLMOZERO-VORONJA GREENSTONE BELT OF THE BALTIC SHIELD: U-PB AND PB-PB ISOTOPE DATA (RUSSIA)

KUDRYASHOV, N.M.

Greenstone belt Kolmozero-Voronja is one of the most ancient geological structures of Kola Peninsula having kept basic features and pecularities of Archean endogenic processes. The Kolmozero-Voronja greenstone belt is located between Murmansk, Central Kola and Keivy terrains of Upper Archean. U-Pb zircon dating of quartz porphyries, granodiorites and gabbro-anorthosites, U-Pb titanite dating of ovoid plagioamphibolites and Pb-Pb dating of tourmaline from tourmaline granites were carried out.Quartz porphyries are found in NW part of the complex. They are considered to be intrusive vein analogs of acid volcanites. Eight fractions of these zircons yield a discordant U-Pb age of 2828+/-8 Ma, that we interpret as an age of intrusive emplacement of quartz porphyry that at the final stage of the belt development. Small bodies of ovoid plagioamphibolites are present among shistosed plagioamphibolites. Titanite in the ovoid plagioamphibolites consists of pale-yellow crystals of irregular crystallographic forms. Dating of three fractions of sphene yielded a U-Pb age of 2595+/-20 Ma that probably is connected with the closure of the U-Pb isotopic system during the regional metamorphism.Porosozero granodioritic complex is located in the SE part of the belt between granites of Murmansk terrain, migmatites and gneisses of Central Kola terrain and Keivy alkaline granites. It is intruded into rhythmically layered plagioamfibolites and biotite gneisses forming intersecting veins in them. U-Pb age obtained for the zircon 2733+/-6 Ma is interpreted as an age of emplacement of the complex. Differentiated gabbro-anorthosite massif Patchemvarak is located between granites of Murmansk terrain and biotitic gneises with layers amfibolites. Dating of zircon from leucogabbro yielded a U-Pb age of 2925+/-6 Ma. This age is the oldest for gabbro-anorthosites of the Kola Peninsula. It is considered to reflect the time of crystallization of the rocks of the massif.Tourmaline granites are found all over Kolmozero-Voronya belt occurring among volcanogenic-sedimentary rocks. The granites differ distinctly from other granitoids of the region. Pb-Pb dating of tourmaline extracted from tourmaline-muscovite granites was carried out using the differential dissolving method. It yielded good linear correlation of 2520+/-70 Ma. This age appears to denote the time when Pb-Pb system had been closed due to tourmaline crystallisation at post-magmatic stage of the complex formation.