



The stages and duration of the Kieveiskoe and Fedorovskoe Pt-Pd deposits formation: U-Pb zircon data (Kola Peninsula)

Elena Nitkina

Geological Institute KSC RAS, Apatity, Russian Federation (nitkina@rambler.ru)

The Kola Peninsula is one of the unique geological provinces both in Russia and in the world, where Pt-Pd Kieveiskoe and Fedorovskoe deposits have been discovered (Mitrofanov, 2005). Several deposits within the Northern and Southern belts contain first hundreds of tons of estimated platinum metal resources, allowing us to ascribe the intrusions of the belts to the class of large igneous province (Schissel et al., 2002; Mitrofanov, 2005). The Kieveiskoe and Fedorovskoe deposits belong to the Pt-bearing Fedorovo-Pansky layered intrusion which is situated in the central part of the Kola Peninsula and is one of 14 major Early Proterozoic layered massifs of the Northern belt occurring at the border between Early Proterozoic volcano-sedimentary rift sequences and Archaean basement gneisses (Zagorodny, Radchenko, 1983; Bayanova, 2004).

The aim of this report is to summarize all U-Pb data for Kieveiskoe and Fedorovskoe deposits including single grain dating with Pb205 tracer.

At present, the following ages have been defined for the different stages of the massif evolution: 2526 – 2516 Ma – pyroxenite and gabbro of the Fedorovskoe deposit magma chamber (Nitkina, 2006), 2515 – 2518 Ma – Pt-bearing gabbro of Fedorovskoe stratiforme deposit; 2505 – 2496– 2485 Ma (Bayanova, 2004; Nitkina, 2006) – gabbro-norite and gabbro of the main phase of the Kieveiskoe deposit magma chamber and disseminated platinum-metal mineralization and relatively rich Cu-Ni sulphide mineralization in the basal part of the Kieveiskoe and Fedorovskoe non-stratiforme deposits; ca. 2470 Ma (Bayanova, 2004) – pegmatoid gabbro-anorthosite and, probably, fluid-associated rich platinum-metal ores of the Lower Layered Horizon (Kieveiskoe deposit); ca. 2447±12 Ma (U-Pb zircon and baddeleyite (Bayanova, 2004)) – anorthositic injections and, probably, local lens-like rich Pt-Pd accumulations of the Upper layered Horizon (Kieveiskoe deposit).

The U-Pb zircon ages of the massif evolution stages corroborate the geological-petrological conclusions made on the basis of prospecting works on the long-time and polyphase history of the Fedorov-Pana massif.

The research is performed under the support of grants RFBR № 08-05-003241, Interreg-Tacis K-0193, OFI-M 09-05-12028/

Bayanova T. // S.-Peterburg.: Nauka. 2004. P. 174

Mitrofanov F. // Smirnovskiy sbornik – 2005. Moscow. 2005. . 39-54.

Nitkina E. // Reports of RAS. - 2006. – V. 40. № 1 . pp. 87-91.

Schissel D., Tsvetkov A. A., Mitrofanov F. P., Korchagin A. U. // Economic geology. Vol. 97. 2002. P. 1657-1677.

Zagorodny V., Radchenko A. // L.: Nauka. 1988. P. 110