



Platinum belt of the Urals: U-Pb ID-TIMS and SHRIMP dating of zircons from Kytlym massif

Y. Ronkin (1), A. Efimov (1), S. Sindern (2), O. Lepikhina (1) and O. Popova (1)

(1) Institute of Geology and Geochemistry of the Urals branch Russian Academy Sciences, Russia, (2) Institut für Mineralogie und Lagerstättenlehre, RWTH-Aachen, Germany
(ronkin@r66.ru / Fax: +7 3432 3715252)

The Cis-Polar, Northern and Middle Urals are characterized by a chain of 14 mafic to ultramafic massifs extending over a distance of more than 1000 km (South to North: Revda, Tagil; Barancha; Arbat; Kachkanar; Pavda; Kytlym; Knyaspa; Kumba; Denezhkin Kamen; Pomur; Chistop; Yalpig Nyor; Khorasyur). These occurrences which show complicated tectonic structures are formed mainly by the association of ultrabasites (dunites, clinopyroxenites), olivine and bipyroxene gabbro. Some of them are known to contain economic amounts of Pt (Platinum Belt of the Urals, PBU). Despite of various studies performed so far, the nature of the PBU itself, age and geodynamical position, the place and role in geological history and the Urals structure are not entirely known up to now.

So far, previous studies present contradictory isotope data: 415-432 Ma (K-Ar) for minerals from the Kachkanar massif; 419 ± 12 Ma (Sm-Nd) for gabbro-norite and their minerals from Chistop massif; 428 ± 7 Ma (U-Pb) for zircon from the Kumba massif. A range of 315-2838 Ma was obtained by $^{207}\text{Pb}/^{206}\text{Pb}$ step-wise evaporation and SIMS U-Pb dating of single zircon from Kytlym dunite samples, and Rb-Sr dating of whole rocks from the same occurrence yields 340 ± 22 Ma.

The U-Pb data obtained for Kytlym plagiogranite zircon in the work presented here plot close to the Concordia in a $^{207}\text{Pb}/^{235}\text{U} - ^{206}\text{Pb}/^{238}\text{U}$ diagram. "In situ" SHRIMP data are: 411.3 ± 4.6 Ma and 419.1 ± 3.4 Ma, ID TIMS data are: 415 ± 10 Ma and 416.6 ± 1.6 Ma accordingly. Within the range of errors the U-Pb zircon ages are almost identical. The new U-Pb data in combination with the published ones indicate that: 1) the age of 411 – 419 Ma definitely reflects the time of crystallization of pla-

giogranite magma and consequently the time of one of the latest magmatic events in the history of the PBU; 2) it confirms other dates pointing to a temporal proximity of metamorphism and plagiogranite intrusion; 3) such data help to constrain the time of activity of the subduction zone responsible for magma formation in the Platinum Belt.

[1] Ivanov O.K., Kaleganov B.A. (1993): A new the data about K-Ar age of ultramafic Platinum belt of the Urals. DAN, v. 328, N 6, p. 720-724; [2] Ronkin Y.L., Marks V.A., Ivanov K.S., et al. (1997): Isotopic and petrochemical peculiarities of distribution of the Platinum-bearing Belt of the Urals. Russia. 4th Biennial SGA Meeting, Finland, p. 495-498; [3] Bea F., Fershtater G.B., Montero P., et al. (2001): Recycling of continental crust into the mantle as revealed by Kytlym dunite zircons, Ural Mts, Russia. Terra Nova, v. 13, p. 1-7. [4] Bosch D., Krasnobayev A.A., Efimov A.A. et al. (1997): Early Silurian ages for the gabbroic section of the mafic-ultramafic zone from the Urals Platinum Belt. EUG9. v.9, N 1, p. 122; [5] Pushkarev E.V., Fershtater G.B., ÁÁÁ F., et al. (2003): Isotope Rb-Sr age of pseudoleucitic tylays of Platinum Belt of the Urals. DAN, v. 388, N 3, p. 1-5.