

Metallogeny and osmium isotope systematics of platiniferous clinopyroxenite-dunite massifs of the Siberian Craton, Russia

¹MALITCH, K.N., ¹BADANINA, I.Yu., ²AUGE, T., and ³KOSTOYANOV, A.I. ¹VNIIOkeangeologiya, St.-Petersburg, Russia; ²BRGM, Orleans, France; ³VSEGEI, St.-Petersburg, Russia

The studied ultrabasic massifs (the Kondyor, Inagli and Guli) are mainly composed of dunites and associated chromitites, metadunites, wehrlites and clinopyroxenites. The resources of platinum-group elements (PGE) in the alluvial and glaciofluvial placer deposits of the Aldan Province situated at the southern part of the Siberian Craton (the Kondyor and Inagli massifs) are estimated to be up to hundred of tons. Placer deposits associated with mentioned above ultrabasic massifs (also known as "zoned-type" or "Aldan-type" massifs) contain platinum as a major mineral-forming element. Placers of infusible PGE (Os, Ir) have been recently discovered in connection with the world's largest Guli clinopyroxenite-dunite massif located at the the northern part of the Siberian Craton. Thus, two types of PGE-assemblages (iridium-platinum and iridium-osmium) dominate the heavy concentrates from clinopyroxenite-dunite massifs of the Siberian Craton.

The negative thermal ionization mass spectrometry was used to determine $^{187}\text{Os}/^{188}\text{Os}$ -ratio in individual platinum-group minerals (PGM) from the chromitites of the Kondyor massif and placers associated with the Kondyor, Inagli and Guli massifs. Average Os-isotope values for different Os-rich PGM (Os, (Os,Ir), (Ir,Os)) show insignificant variation within analytical uncertainty equaling to 0.1248 ± 0.003 for the Guli massif, 0.1249 ± 0.001 for the Inagli massif and 0.1250 ± 0.002 for the Kondyor massif. It was proved that investigated PGM were formed in close association with the chromitites and dunites. According to Os-isotope data the generation of ultramafites of the clinopyroxenite-dunite massifs should be attributed to one of the critical epochs for cover development of the Siberian Craton - the final stages of the Middle Paleozoic tectono-magmatic cycle (D_3-C_1).