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Distribution and PGE mineralization in the formation of chromitite in ophiolite complexes (Ospina-Kitoi Kharanur and ultrabasic massifs of Eastern Sayan, Sousern Siberia)

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New study of PGE in restitic ultrabasic (Kharanur and Ospin-Kitoi) massifs from North and South branches (Dobretsov et al., 1985) of the ophiolite complexes in south-eastern part of the Eastern Sayan show their presence in chromitites of both branches belonging to the different geodynamic settings. Modern concepts model includes several mechanisms of podiform chromitite origin reflected in the chemistry of Cr-spinels (Arai, Yurimoto, 1994; Ballhaus, 1998; Uysal et al., 2009 et al.): 1) partial melting of upper mantle rocks, 2) mixing of primitive melts with melts enriched in SiO_2, 3) melt-rock interaction.

We estimated the types of interaction of mafic melts with mantle peridotites, with the formation of chromite bodies. For ore chrome spinelides from northern branch ($Al2O_3$) melt = 8 - 14 wt%, (TiO_2) melt = 0 - 0,4 wt%, (Fe/Mg) melt = 0,5 - 2,4; Southern branch ($Al2O_3$) melt = 10 - 13 wt%, (TiO_2) melt = 0,1 wt%, (Fe/Mg) melt = 0,3 - 1 (Kiseleva, 2014).

There are two types of PGE distribution Os-Ir-Ru (I) and Pt-Pd (II). Type I chromitites (mid-Al#Cr-spinels) revealed only Os-Ir-Ru distributions; type II (low-Al#Cr spinelides) show both Os-Ir-Ru and (Pt-Pd) distributions (Kiseleva et al., 2012, 2014).

PGE distribution in ultramafic peridotites and chromitites reflects PGE fractionation during partial melting (Barnes et al., 1985; Rehkämper et al., 1997). Processes bringing to extreme fractionation of PGE, may be associated with fluid-saturated supra subduction environment where melting degree near 20% and above is sufficient for the release of PGE from the mantle source (Dick, Bullen, 1984; Naldrett, 2010). Enrichment in PPGE together with a high content of IPGE in same chromite bodies is attributed to the second step of melting, and formation of S-enriched and saturated in PGE melts (Hamlyn, Keays, 1986; Prichard et al., 1996).

For type I chromitites platinum group minerals (PGM) are presented by Os-Ir-Ru system. In type II chromitites PGM are represented by Os-Ir-Ru-Rh-Pt system. Solid solutions Os-Ir-Ru and formed in the upper mantle RuS2 conditions together with chromite.

The (Os-Ir-Ru)AsS minerals are forming on postmagmatic stage under the influence of S, As-containing fluids Under the influence of mantle reduced fluids the remobilization of PGE during desulfurization and deserpentinization early of "primary" PGM takes place. Changes of the redox environment from reducing to oxidizing condition is followed by creation of PGE together with As, Sb, Sn, and nickel arsenides, ferrichromie, chrommagnetite. The latter association reflects the redistribution of chromite and platinum group metals and formation of new mineral associations within the ultramafic substrate in crustal conditions (Kiseleva, 2014).

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