Platinum-Bearing Ophiolites of Albania

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From many years of study on platinium-bearing in ophiolites of Albania it is determined the content of platinium group minerals have the following characteristics:

1. In the deep chromite deposits, the platinium group minerals have typical chromite-associated characteristics. The predominant platinum-group elements (PGE) are Ru, Os and less Ir. These chromite deposits are concentrated in peridotite-dunite sequence.
2. In schliere chromite, minerals with a content more than 1 ppm PGE are localized in the upper most portion of peridotite-dunite mantle sequence (Bregu i Bibes deposit), with a predominance of Pt and less Pd.
3. In chromite concentrations and sulfur-bearing chromite-bearing dunites with high content of PGE (more than 1 ppm) with predominance of Pt, localized in ultramafic cumulate sequence.
4. In Ni-Cu palladium-platinum-bearing sulfur concentrations in ultrabasic-basic transition zone (Krasta etc.).
5. In Ni-Cu platinium-bearing sulfur concentrations in intensively weathered ultramaphic rocks.

The mantle-crust transition zone (tectonite-cumulate) is well-developed in ophiolites of Albania, especially in eastern belt, where it has complex character. The Pt concentrations are especially rich when associated with chromite-bearing parts of the transition zone.

The highest concentrations of Pt (up to 27 ppm) in the Bregu I Bibes deposit in Tropoja are found in coarse-grained chromite ore occurring with orthopyroxenite, in chromite-dunite, chromite-pyroxenite pegmatite contacts and coarse-grained pyroxenites with chromite concentrations. High contents of Pt are common in coarse-grained chromites with orthopyroxene. The ratio (Pt+Pd+Rh) : (Os+Ir+Ru) = 06:078 (average of 41 samples).

High concentrations of the PGE are restricted to orthopyroxenite with significant chromite concentrations.

The distribution of platinum-group minerals in chromites, in order of abundance, is as following: a) Inclusions in chromite ores (mainly Pt3, Fe1 alloy , with less Pt, Os and Ru sulphides) b) Grains localized in chromite walls (junctions of Pt, Pd, Rh with Fe and Cu, of PGE and Pt arsenates). c) Fillings of fissures in chromite (junctions Pt and Pd with Fe and Cu, Pt arsenates). d) Inclusions in silicates (junctions of Pt and Pd with Fe and Cu, Pt arsenates).

The distribution of PGE, normalized to chondrite content, show strong enrichment of Pt and strong depleation of the Os-Ir group, and are considerably different from that of "nomal" ophiolites.

The metallogeny of the mantle transition zone is the result of intensive secondary alteration processses. It is assumed that the hydrothermal solution is of oceanic origin.