

Platinum group minerals (PGM) in ophiolitic chromitite of the Islahiye (Gaziantep, SE Turkey)

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One chromitite sample from the Islahiye ophiolite (Gaziantep, SE Turkey), characterized by high platinum group elements (PGE) concentrations (up to 13 ppm total PGE), have been studied for the mineralogy of PGE. About 200 platinum group minerals (PGM) were found in heavy concentrates obtained using the electric pulse disintegration (EPD) and hydro-separation (HS) techniques. Subsequently the PGM have been investigated by electron microprobe. Two different types of PGM have been found with the same proportion: 1) PGM included in chromite crystal, less than 10 μm in size and 2) free grains with a size variable from 20 up to more than 100 μm . Laurite, with few irarsite, is the most abundant PGM found included in chromite. It occurs as single phase or associated with Ni-sulphides, chalcopyrite and silicates. Single phase laurite is also the most common free PGM, accompanied by abundant Ru-Os-Ir oxides. Laurite rimmed by Ru-Os-Ir oxides, associated with sulpharsenides (irarsite, hollingworthite and platariste) and with Ru-Ni arsenides, has been also recognized as free grains. Free awaruite crystals contain small PGM (less than 5 μm) composed of ruthenium and Pd-Pt-Rh-Cu-Sb. The composition of the two types of laurite, included in chromite or free grains, have the same concentration of Ru-Os-Ir. The Ru-Os-Ir oxides composition, in terms of Ru-Os-Ir, overlaps the field of the analyzed laurite. This observation supports the conclusion that the oxidized PGE compounds derived from desulphurization of magmatic laurite at low temperature, with substitution of the removed S by O. The data presented in this work suggest that the EPD and HS techniques are very efficient to concentrate PGM. However, PGM with a size less than 10 μm and occurring included in fresh chromite are not liberated from their host mineral.