Magmatic Platinum Group Minerals (PGM) in the Loma Peguera Chromitites (Dominican Republic): Further Finding

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INTRODUCTION.

In the mid-90’s, during mining activity in the Falcondo Ni-laterite deposits located in Loma Caribe peridotite of the Cordillera Central (Dominican Republic), relatively small bodies of chromitite were discovered in the Loma Peguera area. The chromitites are randomly distributed, forming discontinuous pods or lenses within small masses of serpentinitized dunite that are in turn hosted by a serpentinitized harzburgite, considered the mantle sequence of an ophiolite (Lewis et al., 2006). Previous study on selected samples of Loma Peguera chromitite, indicate that primary chromite composition is Cr-rich (0.74 < Cr# < 0.78) and exhibits high Ti (average value: 0.84 wt% TiO$_2$) and Fe$^{3+}$ (0.74 < Cr# < 0.78) and exhibits high Ti (average value: 7.82 wt% Fe$_2$O$_3$). They have also high total PGE (up to more than 3 ppm) contents (Proenza et al., 2007). Several PGM, less than 10 microns in size, and characterized by a polygonal shape, have been found included in fresh chromite. Therefore they have been classified as magmatic. Based on their chemical composition, the following PGM have been recognized: laurite, erlichmanite, malanite, cuproidisite, Ru-pentlandite, iridium, irarsite, hollingworthite, platinum, Pt-Fe alloys and several unnamed PGM. The PGM form single phase crystals (Fig. 1) or they are part of polyphase grains (Fig. 2) composed of different PGM, pyrrhotite, pentlandite, amphibole and rutile. Selected composition of the PGE sulfides has been plotted, as at%, in the ternary diagrams of Fig. 3.

DISCUSSION AND PRELIMINARY CONCLUSIONS.

The mineral assemblage of PGM associated with chromitite hosted in the mantle section of ophiolites, generally consists of Ru-Os-Ir phases such as laurite, accompanied by minor Os-Ir alloys, erlichmanite and irarsite, suggesting that they crystallized under low sulfur fugacity. The chromite composition of this type of chromitite is Cr-rich with low contents of TiO$_2$ and Fe$_2$O$_3$. Abundant minerals belonging to the cuproidisite-cuprophodsite-malanite series are common in chromitites associated with sub-continental mantle (Garuti et al., 1995) and Uralian-Alaskan concentrically zoned complexes (Garuti et al., 2002).
REFERENCES.


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