Gold distribution in Arseniures Ore from Bou Azzer El Graara – Inlier Central Anti-Atlas, Morocco

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The cobalt ores of Bou Azzer are associated with the Precambrian green stone belt along the southern Moroccan Atlasic fault. It is was mined from 1930 and has yielded approximately 70000 t of Co and about 5 t of gold. Currently, the Managem Group has an annual production capacity of 2500 t metal cobalt 10000 t arsenic, 300 t metal nickel and 250 kg of gold. The cobaltiferous mineralization occurs in the form of lodes and pockets at the contact of serpentinite and quartz-diorite, mainly consists of arsenides, sulfarsenides of [Co-Ni-Fe] and sulphides. Gangue minerals are quartz, calcite, dolomite, chlorite and rutile. Whole rock analyses of ore samples from different mines of the Bou Azzer district show that gold is irregularly distributed in the ores (0.5-49 g/t Au). Maximum contents of Ag, Pt and Pd are 338 g/t Ag, 43 mg/t Pt and 45.2 mg/t Pd, gold contents are between 0.5–50 g/t. In ores of the western part of the district, native gold inclusions (5–50μm) are found in skutterudite, chalcopyrite, cobaltite, gersdorffite, rammelsbergite, and molybdenite associated with brannerite-uraninite. In ores of the eastern part (F51-F53), two type of gold are observed: (**i**) Primary gold (2–15 μm) associated to niccolite and rammelsbergite (**ii**) abundant free grains of gold (5–50μm) occurs with (oxides-chlorite) disseminated in listwaenite rock; this gold is probably related to a late remobilisation phase along fracture zones. Gold analyses in electron-probe micro-analysis show a wide range of compositions [7-83.78 wt.%Ag] and up to 8.03 wt.% Hg.