Presence of In, Ga and Ge in the Epithermal High Sulfidation Deposit of La Mejicana Mine, Famamtina District, NW Argentina

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The La Mejicana high sulfidation Cu-Au epithermal veins are located in the Famatina mining district, northwestern Argentina.The district contains high sulfidation Cu-Au-(As-Sb-Te) epithermal veins and small Cu-Mo-Au-(As-Sb-Te) mineralized porphyries of the early Pliocene age (Losada-Calderón et al.1994). The district has been known since the mid 19th century and was one of the most important copper, gold and silver producers until 1926. The mining activity has yielded more than 1 Mt of ore, average 3 percent Cu, 80 g/t Ag, and 11 g/t Au from more than 50 veins. The ore is composed of famatinite, enargite, pyrite, quartz, and minor tennantite, tetrahedrite, sphalerite, gold, tellurides, covellite and chalcopyrite.

Sahlström et al. (2017) analyzed samples of enargite (ICP-MS-LS) and obtained average Ge concentrations of 717 ppm, and low anomalies for In and Ga. In this abstract we present new ICP analysis of ore samples that shows indium anomalies up to 419 ppm and gallium and anomalies up to 109 ppm. High correlation between In-Ga and Zn is present, this could be related with the presence of sphalerite in the ore. This preliminary data indicates that the enargite could be the main hosting mineral for Ge while In and Ga could be present in the sphalerites. Actually, more detail study is ongoing in order to determine the distribution and presence of these critical elements.

Losada-Calderón, A.J., McBride, S.L., and Bloom, M.S., 1994. The geology and 40Ar-39Ar geochronology of magmatic activity and related mineralization in the Nevados del Famatina mining district, La Rioja Province, Argentina: Journal of South American Earth Sciences, v. 7, p. 9–24.

Sahlström, F., Arribas, A., Dirks, P., Corral, I., & Chang, Z., 2017. Mineralogical distribution of germanium, gallium and indium at the Mt Carlton high-sulfidation epithermal deposit, NE Australia, and comparison with similar deposits worldwide. Minerals, 7(11), 213.