

Occurrence of Gold from Beiya Gold-Polymetallic Deposit in Northwestern Yunnan Province, China

ZHOU Yun-Man, GAO Qi-Fang, LIU Zhi-Bin, HE Zhong-Hua

(*Yunnan Gold & Mining Group Co. Ltd., Kunming 650224, China*)

Abstract: Beiya gold-polymetallic deposit in northwestern Yunnan Province, China is the first world-class super large porphyry-skarn type gold-polymetallic deposit discovered in Yunnan Province. Microscope and scanning electron microscope were used to study the modes of occurrence of gold. 169 grains of native gold were recognized, including fissure-filling, intergranular and inclusion gold, and a small number of interlocking gold as well. The gold-hosting minerals are mainly magnetite and siderite, accounting for 84.23% of the total gold-hosting minerals, moreover, minor pyrite, chalcopyrite, galena, argentite, bornite, pyrrhotite, sphalerite, cosalite, biotite and quartz are also identified as gold-hosting minerals. On the basis of statistics, the gold granularity is mainly characterized by micro extra particulate (0.2~5 μm), micro particulate (5~10 μm), micro fine particulate (10~20 μm), and microscopic medium (20~50 μm) grained gold, accounting for 17.87%, 28.16%, 28.19% and 25.78%, respectively. In grain number, the micro extra particulate (0.2~5 μm) observed in the sample is more numerous than micro particulate (5~10 μm) and microscopic medium (20~50 μm) grained gold, but smaller in total distribution area. Micro particulate (5~10 μm) and microscopic medium (20~50 μm) grained gold play an important role in the ore grade and total resource. Electron microprobe analysis and phase analysis show that gold occurs mainly as independent gold minerals. The gold minerals are mainly native gold and secondarily electrum. The average fineness of gold is 890, which indicates that gold formed under the conditions of medium-low temperature and medium-shallow depth. The ore-forming fluids mainly came from magmatic hydrothermal fluids which were differentiated from the central porphyries.

Keywords: Beiya; gold-polymetallic ore deposit; modes of occurrence; fineness; Yunnan