First observation of the base metal mineralization in the Cikidang gold mining area, Western Java, Indonesia

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The Cikidang gold deposit is the hydrothermal low sulfidation type of quartz-adularia sericite vein of 2.4Ma age. The ore minerals are represented by electrum, argentite aguilarite, and pyrite. The gangue minerals are dominated by quartz, with variable amount of adularia, calcite, sericite, clay minerals, manganese oxide and limonite. The deposit is situated in the vicinity of the Bayah dome, a metallogenic province in the Western Java.

Base metal mineralization was observed in the mode of occurrence of dissemination at the Cisungsang area, about + 2 km east of from the Cikidang vein. The size of mineralized zone is estimated about 300mx100m in the volcanoclastic, claystone & limestone of the Cimapag Formation of Miocene age, the same host rock as in Cikidang gold deposit. Direct contact between the orebody and the host rock is not yet defined due to the thick vegetations and soil cover. Silicification can be recognized in the host rock. Detailed geological mapping or drilling to determine the mineralized zone and the shape of ore body has not yet been done in the area.

The gold and silver contents in the Cisungsang ore are 1.88 and 303 ppm, respectively. The major ore minerals are galena, followed by pyrite, marcasite, sphalerite, arsenopyrite, pyrrhotite, argentite, pyrargyrite, canfieldite, chalcopyrite, and electrum. Limonite is also recognized as a secondary mineral after pyrite. Gangue minerals are dominated by quartz and small amount of calcite.

Preliminary XRD study reflects no clay minerals in the mineralized and host rocks.
Based on the preliminary EDS and EPMA analysis, sphalerite have high content of iron and it compositions increased from core toward rim.

The preliminary fluid inclusion studies were conducted for those in quartz minerals, but they were too tiny to measure in sphalerite. Homogenization temperature are ranging from 184 to 242℃, while the salinities are from 2.2 to 3.5 wt. % NaCl eqv..
The formation temperatures predicted by arsenopyrite geothermometry are about 180℃ higher then temperatures by fluid inclusions.

According to present study, some problems can be noted:
1. The Cisungsang mineralized rocks are different from that of the Cikidang quartz vein.
2. The Cisungsang ore has some similarities with the Cikotok and Cirotan deposits.
3. Considering the mode of occurrence of ore and host rocks and the formation temperatures and depth, The Cisungsang mineralized rock might be formed in the mesothermal and/or porphyry copper-gold environments.

In order to answer the problems mentioned above, further analysis are needed such:
1. Detailed geological survey and sampling in the area;
2. Further investigation of wallrocks alteration;
3. Stable isotope (S, H, O, C);
4. Estimation of physico-chemical conditions of ore formation;
5. Age determination.

Those should be done with special attention from the viewpoint of island arc geologic and tectonic settings to clarify the time-spatial relationships of the base metal and gold mineralizations and formation environment of entire gold deposits in the Bayah area.