

A Study on Banded Pyrite in Tiegelongnan Copper(Gold-Silver) Deposit, Tibet, China

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Tiegelongnan copper (gold-silver) deposit in Duolong ore-concentrated area is the first discovered epithermal deposits in Tibet, China. Pyrites in this deposit develop extensively with obvious characteristics. For example, pyrites which are located in shallower parts of drillings develop band structure and they are relative rarity in other deposits.

Field drilling geological record, microscopic identification and electron microprobe analysis have been done to study the mineralogical characteristics, trace elements and unique band structure of pyrites in the ore area. The experimental results show that banded pyrites in Tiegelongnan ore area are the result of discontinuous growth. The Co/Ni and element contents of Au, Cu and Se show rhythm changes from core to edge of banded pyrite. Temperature of fluid during formation of the external band is higher than that of the internal band. Contents of Au, Cu and Se in the liquid during formation of the external band are higher than those of the internal band. Au in the banded pyrite gets into pyrite crystal lattice via Au^+ replacing Fe^{2+} . While part of Cu get into pyrite crystal lattice via Cu^{2+} replacing Fe^{2+} to form CuS_2 and part of Cu get into pyrite via copper sulfide inclusions. The banded pyrites developed in the shallow of ore-body, which approach to the strong copper mineralization and Au, Ag and Cu grades in the position where banded pyrite developed are high. Therefore, the banded pyrite is the indication for concentrating Au, Ag and Cu elements in Tiegelongnan deposit.