Characteristics of the main ore minerals in Tiegelongnan porphyry-high sulfidation deposit, Tibet, China

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Abstract: Tieglonan deposit, located in Duolong ore-bearing area of the western Bangonghu-Nujiang metallogenic belt, is the first urltra-large Cu(Au) deposit with characteristics of typical high-sulfidation epithermal mineralition in Qinghai-Tibet Plateau. In this paper, combined with a large number of boreholes core geological records, mineralogy and electron probe analysis indicate that the ore minerals of Tiegelongnan deposit are mainly primary sulfide, including Cu-Fe-S system minerals (such as bornite and chalcopyrite), Cu-As-S system minerals (respectively enargite-luzonite and tennatite) and Cu-S system minerals (to covellite and digenite as the respresentative), with a small amount of colusite, molybdenite, galena, sphalerite and so on. According to characteristics of the mineral assemblages, it can be seen that Tiegelongnan deposit is a typical example of telescoped porphyry-high sulfidation epithermal deposit. In the deeper part it still has the potential to prospect large porphyry copper deposit, which is the key exploration direction for obtaining more resources in the next step.

Keywords: Cu-S system mineral; ore mineral; high-sulfidation epithermal fluid; Bangonghu-Nujiang metallogenic belt; Tibet