

Characteristics and evolution of the ore fluid and hydrothermal metallogenic process in the Datuanshan copper deposit of skarn type in Tongling, Anhui*

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A detailed study with fluid inclusion analyses has been carried out on the ore fluid of different metallogenic periods in the Datuanshan skarn - type copper deposit, Tongling, Anhui, giving a clue to understanding the evolution of the ore fluid in the mining area and hydrothermal metallogenic process of the deposit. It is shown that in the formation process of the deposit, the temperature and pressure of the metallogenic system decreases gradually, and a regular variation in composition, salinity, density and mineralization degree of the ore fluid takes place with transition of the metallogenic process from post - magmatic hydrothermal period, skarn period to quartz - sulfide period. Correspondingly, there occurred enrichment, transportation and precipitation of metallogenic elements in the metallogenic system, the process of which was evidently influenced by pH, Eh and gas fugacities of the ore fluid. In addition, the ore fluid of the principle metallogenic period in the deposit is rich in heavy metal metallogenic elements such as Cu, Fe, Ag, Zn, which is consistent with the fact that the deposit is a copper one rich in Au and Ag. Evidently, the content of the heavy metal metallogenic elements in primary ore fluid may be taken as an indicator of mineralization.

Key words copper deposit fluid inclusion hydrothermal mineralization Tongling area