

EVOLUTION ON THE GENESIS OF TWO END - MEMBER EPITHERMAL PRECIOUS METAL DEPOSITS: FIRST EXAMPLE IN SOUTHEAST CHINA

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Two end - member epithermal precious metal deposits located in close space, Zijinshan acid – sulfate type deposit and Bitan adularia – sericite type deposit, were discovered as the first example in the mainland of China.

Systematic studies on alteration, mineralogy, fluid inclusion and isotope geochemistry proved that Zijinshan and Bitan deposits are consistent with the common characteristics to most of the acid – sulfate deposits and the adularia – sericite deposits in the world respectively. However, in addition to the differences in the alteration pattern and the mineral assemblage, those two end-member deposits separated by only 3 km on the present surface are sharing the similar characters in geological setting, ore - hosted rocks, trace elements in minerals and the stable isotopic compositions. Both deposits, probably originated from the same volcanic hydrothermal system, are meteoric water dominant in ore – forming solutions with partial magmatic contribution. The mechanism of ore precipitation is suggested by boiling of ore – forming solution locally followed by mixing of cold meteoric water with heated circulation fluids in Bitan deposit, whereas in Zijinshan deposit, it is dominated by mixing of fluids. Due to the spatial distance to heat source, the different capabilities to neutralize and to dilute ascent acidic volatiles and other magmatic origin components yielded in two end – member epithermal precious metal deposits occurring in proximity.