Abstract: The Galonggema Cu-polymetallic deposit, situated at the joint part of the Xijinwulan-Jinshajiang River and Ganzi-Litang suture zones, is located in the Batang volcanic-magmatic arc zone. Strata exposed in this area are Batang Group intermediate felsic volcanic association of Lower Triassic. Magmatic activities characterized by multiple stages and circles were widely developed. Major structures can be broadly divided into two groups: NW-SE trending and NNE trending structures. The former group controls the distribution of the volcanic rock belt while the latter crosscuts the volcanic rock belt. Orebodies are mainly hosted in dacitic tuff and tuffaceous siltstone in the second lithologic member of the second lithologic formation of Batang Group, and steeply dip to the northeast direction, consistent with the occurrence of the schistosity. It has been revealed that there are two primary ore-forming periods via petrographic analysis. The earlier period (A) is related to volcanic-sedimentary hydrothermal fluids while the later period (B) is relevant to moderate temperature hydrothermal fluids which have caused extensive sulfide precipitation. A period consists of three stages, namely hydrothermal sedimentary banded massive pyrite stage (A1), quartz-pyrite stage (A2) and carbonate stage (A3). In addition, B period can be subdivided into two stages, namely Cu-Pb-Zn sulfide stage (B1) and sphalerite carbonate stage (B2). In terms of deposit characteristics, typomorphic peculiarities of pyrite and its implication to the ore-forming process, the Galonggema deposit is distinguishable from typical volcanogenic massive sulfide (VMS) deposits. The tectonic evolution of the Galonggema deposit can be divided into three stages. The early stage was represented by marine volcanic eruption that caused the early-stage volcanic-sedimentary (hydrothermal) mineralization. Then the Galonggema area experienced compression in NE-SW direction so that the strata were strongly folded to form an anticline with the volcanic vent as the center and a large range of volcanic hydrothermal replacement. Latterly, represented moderate-temperature magmatic-hydrothermal mineralization related to emplacement of a late intermediate to felsic magma. The magmatic fluids that migrated up along the faulted belt superimposed the early-formed orebodies to form new mineralization.

Key words: typomorphic peculiarities of pyrite, Galonggema, deposit genesis, Qinghai

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