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Characteristic of the Orefield structures in the Wuxu polymetallic deposit, Danchi metal district, Guangxi, China

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The NNW-SSE-trending Danchi metal district, which is one of the largest Sn-polymetallic metallogenic belt in the Guangxi Province, is situated in the joining of Pacific and Tethys structural domains [1-3]. The Wuxu polymetallic deposit is located in the south parts of the Danchi district. The Wuxu deposit hosted by the Devonian black mudstone and argillaceous limestone and are mainly epithermal filling deposits associated with concealed Cretaceous granitoids [4-5]. Ores occurs as large veins and zone of veinlets. Ores are vein, massive, banded, brecciform and disseminated. The ores contain more different minerals, the most important of which are stibnite, jamesonite, sphalerite, pyrite, quartz and calcite. Based on the textural relationships and mineral assemblage, three mineralizing stages can be recognized: stage I with lamellar pyrites which deform to crumpled secondary folds accompanying with the NW-trending fold forming. Stage II divided into two cycles. Cycle I with quartz, sphalerites, pyrites and with minor stibnite. The minerals form along the country-rocks. The orebodies of cycle I are cut by cycle II and with the shapes of large pulse or composite veins. Cycle II with calcites, stibnite, jamesonite which form in the center of ore-bearing veins. And stage III with limonite on the surface.

Tectonic stress field divide into five stages by joint statistics and tectonic stress analysis of structure deformation. NW-trending Danchi fault and NE-trending fault formed due to the Paleo-Tethys ocean open during Middle Devonian (Stage I). During Indo-Chinese periods (T_2), NW-trending folds and X-type conjugated joints, crenulation cleavage and tensile fracture along anticlinal axis associated with folds and NNW-trending thrust fault formed under NE-SW compression-tectonic stress (Stage II). To early Yanshanian period, NS-trending tensile and sinistral fractures formed under the NS compression-tectonic stress (σ_1 : $355^\circ\sim 5^\circ$) (Stage III). This stage is the major tectonic stress controlled ore formation. Hydrothermal fluids of cycle I filled into the open space which formed in Stage II and III. From the later Yanshanian period, the maximal principle stress in the local transform to NEE trending (σ_1 : 80°) (stage IV). Deformations in stage IV display that NE-trending dextral normal faults formed. Ore-bearing fluids of cycle II filled into the open space forming in Stage IV. The last stage tectonic deformation took place after ore formation (Stage V) (σ_1 : EW). This stage of stress lead to the NS-trending thrust faults cut the ore veins and ores are right-handed rotation.

References:

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