

Ore-controlling structures of the Jiadi Carlin-type gold deposit and implications for fluid migration, Guizhou Province, Southwest China

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The Jiadi gold deposit is a newly discovered Carlin-type gold deposit in the southwest Guizhou Province, southwest China. And this gold deposit is structurally controlled by the shallow folds-faults superimposed system along the Lianhuashan anticline. Field geological investigation, structural analysis and mathematical research were selected to study its ore-controlling structures and hydrothermal flow process. The cross-sections evaluating, stopes and drill holes logging indicate that the ore-controlling structures are dominated by NE and WNW-trending folds and faults. Its orebodies structurally controlled by the interformational fracture zones. Trend surface analysis of the Maokou formation suggests that the general spatial trend of Lianhuashan gold orefield is obvious controlled by the NE-trending Lianhuashan anticline and the gold orebodies are mainly situated at the transitions of peaks and valleys on the southeast flank of Lianhuashan anticline. Detailed geological logging of hydrothermal veins suggest that they are of tenso-shear properties.

The development pattern of veins and trace elements distribution were also studied to highlight the hydrothermal migration. The flow process of ore-forming fluids are proposed: the deep sourced ore-forming fluids migrate vertically to shallow crust along the intrusive breccias body, and mainly horizontally flow accompanied with gold precipitation in the interformational fracture zones in early stage, then late stage fluids migrate along steep micro-fractures to the shallow part.