

NUMERICAL MODELING OF DEFORMATION, FLUID FLOW IN THE GENESIS OF INDIUM DEPOSITS IN THE DACHANG MINING DISTRICT, CHINA

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ABSTRACT

In-polymetallogenic and faults activities in the Dachang ore district of South China were significant from Devonian to Triassic, mainly controlled by a NW-trending syn-sedimentary fault system, Seafloor sedimentary-exhalative hydrothermal ore deposition occurred from Nandan to Hechi(Fig.1). To better understand the genesis of Indium deposits in the Dachang district, a conceptual model is developed based on geologic, tectonic and geophysical constraint from the study area. Computational simulation and sensitivity analysis are carried out to investigate the ore-forming fluid transport and fault deformation during hydrothermal ore genesis. Our numerical modeling results reveal that the formation of the Indium deposits is strongly controlled by the interaction between fault deformation and fluid flow, and influenced by chemistry, temperature and pressure conditions. In addition, as an important structural condition for mineral deposition in the fault-related mineralized region like the Dachang, faults and fracture zones not only create proper pathway for fluid transport but also provides suitable conditions for mineral deposition at special structural regions.

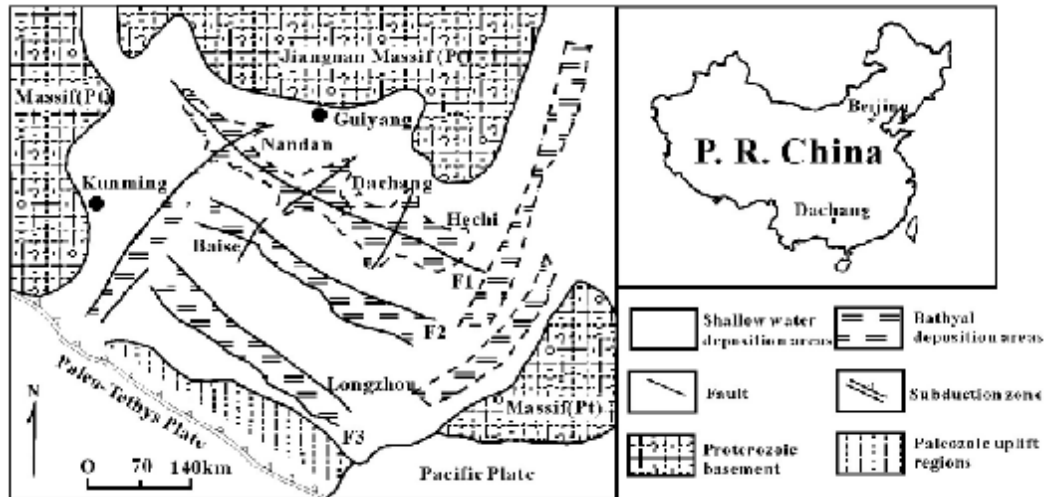


Fig.1. Palinspastic and paleotectonic sketch map for the Middle to Late Devonian in South China (after Zhao and Jiang, 2007)

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