

## **Metallogenesis of the Giant Jiaodong Gold Province**

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The giant Jiaodong gold province (with >150 known deposits and the proven gold reserves of as much as 4000 t) stretches across the North China Craton (NCC) and Sulu ultra-high pressure metamorphic belt. It records the multistage geodynamic evolution history, such as the formation of ancient land mass in Archean, continent break-up and assemblage in Proterozoic, the Triassic collision between Yangtze Craton and NCC, and the subsequent subduction of the paleo-Pacific plate beneath the Asia continent during Jurassic to Cenozoic.

The Jiaodong gold deposits formed in postorogeny episodic extension setting on the edge of back-arc growing continent at 130 to 110 Ma, dominated by break-off and roll-back of the subducted Izanagi slab, and gravitational collapse and delamination of thickened NCC lithosphere. The gold mineralization corresponded to the peak stage of the decratonization of NCC and the lithospheric thinning of east China. These hydrothermal gold deposits with same genesis resulted from the interaction and coupling of the detachment faults and gold-bearing fluids. Their geological and geochemical characteristics reflect that the gold mineralization occurred continuously in different crustal depth from the ductile-brittle transition zone (about 15 km) to the brittle breccia zone (about 5 km) along the detachment fault system. The metallogenic diversity was probably controlled by the distance from the Tanlu fault and its NNE-trending second detachment faults which are the major conduits for metal and hydrothermal fluids, and result in the post-ore regional different levels of exhumation and erosion.

The Jiaodong gold deposits are distinct from typical intrusion-related, orogenic, and other known types of gold deposit around the globe, and cannot be classified into any other known metallogenic models, because of their unique geodynamic setting, ore-hosting rock features, and mineralization characteristics. Thus we put forward a new understanding of the "Jiaodong-type" gold deposits and metallogenic model, to coordinate the problematic and controversial sources, migration and deposition of the vast quantity of gold and/or fluid, and the processes and mechanism of the large scale of gold mineralization and its geodynamic setting.

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