

# SEG 2022 Conference: Minerals For Our Future

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## **The Zaozigou Orogenic Gold-Antimony Deposit, West Qinling Orogen, China: Multiple Mineralization During Multiple Tectonic Evolutions**

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The hypothesis of multiple orogenic gold events within a single deposit remains controversial. The giant Zaozigou orogenic Au-Sb deposit in the West Qinling Orogen, central China, hosts two distinct mineralization styles: (1) steeply dipping orebodies with refractory Au in arsenopyrite and pyrite and (2) shallowly dipping orebodies with visible Au associated with stibnite. The framework for three major events in the Zaozigou deposit and their linkage with the multiple tectonic evolutions of the West Qinling Orogen is built based on field investigations and absolute ages. The deposit is hosted within the earliest Triassic folded sedimentary rocks, which are intruded by the Early to Middle Triassic ENE and WNW-striking dacite dikes. These pre-mineralization events are interpreted to indicate an E-W compression related to the subduction of the Paleo-Tethys oceanic slab (D1). The Au-Sb mineralization is divided into two phases. The Late Triassic mineralization (D2) formed along ENE-striking and steeply dipping sinistral faults. The shear zones are characterized by brittle to ductile deformation features, indicating a NNE-SSW compression. Monazite U-Pb geochronology return a date of 211 Ma, which is interpreted as the mineralization age and coincides with the Late Triassic collision between South China Block and South Qinling Terrane. The Early Cretaceous mineralization (D3) formed along shallowly dipping brittle fault zones, which indicate the local stress field as NE-SW compression. Dolomite U-Pb geochronology return a date of 137 Ma, interpreting this mineralization event as related to the Late Jurassic to Early Cretaceous reactivated collision between the South China and North China blocks. Therefore, the two distinct mineralization styles represent two discrete mineralization phases, with each different style of mineralization representing a separate period of fluid infiltration. The above evidence indicates that Zaozigou is the example to be recognized of a telescoped orogenic Au-Sb system.