

## **Ore-forming fluids evolution on the Weilasituo Tin Deposit, Inner Mongolia, China**

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The Weilasituo tin polymetallic deposit is located in southern part of the Da Hinggan Mountains non-ferrous metallogenetic belt. On this belt, there are many large scale deposits discovered, such as Pb-Zn-Ag deposit of Bairendaba, Cu-Zn deposit of Weilasituo and Fe-Sn deposit of Huanggangliang etc. In recent years, a large tin deposit has been found at 2 kilometers away west of Weilasituo Cu-Zn deposit. From east to west, they are hydrothermal fill vein type copper zinc ore, cryptoexplosive breccia type tin polymetallic deposit and porphyry tin deposit. The various types of deposits coexist and concentrate, showing a different type of ore deposits formed by geological activities in different metallogenetic spaces. It may be a well preserved metallogenetic system. From the evolution of the ore-forming fluid, we had studied the migration and mineralization of the ore-forming fluid in a unified magmatic fluid system, which is composed of multiple trap factors. From the analysis of spatial structure of mineralization structure, composition structure and time structure, reveal the copper and zinc mineral for high strain with S-C ductile shear zone and tin mineral for brittle fracture; comparative analysis of cassiterite, wolframite and quartz inclusions in the body, reveal the evolution of fluids; using the zinc isotope method to determine the direction of fluid migration, and relationship between the three determination of ore deposit. To carry out the research on the metallogenetic system of the Weilasituo ore deposit area in Chifeng, Inner Mongolia, to find the relationship between tin deposits and copper and zinc deposits, and to establish the complete evolution process of Weilasituo's ore-forming fluid, has important theoretical significance and guides the practical significance of mineral exploration in this area. Both S and Pb isotopes indicate that the ore-forming materials of the Weilasituo Ti deposit chiefly originated from the granitic magma, and activated metamorphic rocks basement also provided partly ore-forming materials. The Weilasituo Sn-polymetallic deposit belongs to a magmatic medium-to-high temperature hydrothermal deposit, and its mineralization was closely related to the Early Cretaceous porphyritic fine-grained alkali-feldspar granite in the Weilasituo ore district.