

Study on Combined Prospecting Methods and Discussion on Prospecting Effects for Covered Area – Taking Dong’an Gold Deposit as Example

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Developing the prospecting work at the covered area is what we focus on and is also a difficulty in mineral exploration. For Heilongjiang, a typical covered area in China, it is difficult to get good prospecting effects by a single prospecting method. In this study, we select typical epithermal gold deposit – Dong’an gold deposit in Heilongjiang as a target. After fully studying and analyzing the geologic features, we combine the high precision magnetic measurement, the controlled source audio frequency magnetotelluric method (CSAMT), the metal active status, and the prospecting method of heat-release mercury with the known ore body (V) of Dong’an gold deposit to develop study on combined prospecting methods. The study of prospecting effects indicates: 1, the 3-D inversion result of high precision magnetic measurement data based on conjugate gradient well corresponds to the inversion result of CSAMT on structure and material characters; 2, The organic combination phase contains the most gold among four phases; the organic combination phase and the iron and manganese oxide phase have continuous double-peak shape or multi-peak shape abnormalities above and around the ore body, which have an indicative significance in prospecting. 3, Obvious heat-release mercury abnormalities are found above the ore body and at the places where the tertiary sandy conglomerate coverage is thick, and the abnormalities on the covering layer well correspond to the tectonic position calculated through high precision magnetic measurement data. The application of combined prospecting methods not only well reflects the three dimensional structure of the geologic body of the covered area, but also provides reliable proof for developing the prospecting work in the covered area.