

**AUDIO-MAGNETOTELLURIC SURVEYING AND ITS APPLICATION FOR THE
CONCEALED OREBODIES PROSPECTING IN YUELE LEAD-ZINC DEPOSIT AREA,
DAGUAN DISTRICT, NORTHEASTERN YUNNAN PROVINCE, CHINA**

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ABSTRACT

The results of recent mineral exploration in the Yuele lead-zinc mining area of Daguan County, northeastern Yunnan province, showed that there are many areas with anticline outcrops of early Paleozoic strata under thick late Paleozoic strata in northeastern Yunnan province, where developed some hiddensalt structures (SSs), often led to lead-zinc polymetallic mineralization with varying degrees along the tension torsional fault (belts) or fracture (joint). These ore-bodies belong to the epigenetic hydrothermal filling vein-type deposit, often formed the industrial ore bodies, and the prospecting potential is great. In many places, the superficial mineralization information displayed clear, but the deep mineralization information is unknown, so the concealed ore-bodies prospecting is little. It is an advantage method for the audio-magnetotelluric (AMT) surveying to characterize the size, resistivity and skin depth of the polarizable mineral deposit concealed beneath thick overburden. To obtain more reliable results, we have measured electrical resistivity and polarization of the geological samples and the drilling samples for the subsequent data analysing. Based on the controlled known ore-bodies measurement testing, further studies will attempt to determine if induced polarization parameters extracted from the AMT surveying data can also be used to determine the size and resistivity of the mineralized area. This paper presents the surveying results using AMT method to evaluate the concealed lead-zinc mineralization in Yuele lead-zinc ore field, Daguan county, northeastern Yunnan province, China. After comparing the interpretation result of AMT surveying data with the geological data and the drilling data, it is found that there is some distinct difference in resistivity and polarizable between ore-bodies hosted stratum, upper stratum and gypsum stratum. The result shows that AMT method is helpful to identify lead-zinc mineralization under this geological condition.

KEYWORDS: Audio, Magnetotelluric Method (AMT), Physical Property Parameters, Concealed Ore, Bodies Predicting, Salt TECTONICS (SSs), Yuele Lead-Zinc Ore Field, Northeastern Yunnan Province