

Geological characteristics and ore genesis of Erdaohe Zn-Pb polymetallic deposit in Inner Mongolia

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The Erdaohe Pb-Zn deposit is located in eastern Inner Mongolia of the Central Asian Orogenic Belt. Ore genesis is discussed through metallogenic age, ore-forming materials and metallogenic fluid based on investigation of geological characteristics of the deposit. Zircon U-Pb and Rb-Sr geochronology yield ages of 133 Ma and 130Ma for granite porphyry and sphalerite, respectively, which reveal the mineralization of Erdaohe Pb-Zn deposit is affiliated with the Yanshanian metallogenic system of the northern section in the Greater Hinggan mountains. Metallogenic fluid originates from hydrothermal system of deep magmatic evolution, closely associated with granite porphyry in ore district. The interfusion of atmospheric precipitation and surrounding rock formation water exists in the metallogenic fluid evolution, and it gradually evolved into a fluid system dominated by atmospheric precipitation in the late stage. Metallogenic material has multiple components, mainly from deep magmatic system, may be participated by a small amount of mantle-derived materials. Metallogenic fluid system is $H_2O-NaCl\pm CO_2\pm CH_4$ system. Metallogenic temperature concentrates between 240°C and 360°C, the salinity ranges from 2~10% NaCl eqv, and the density is 0.533~0.845 g/cm³, which is affiliated with the medium-high temperature, medium salinity and low density fluid. Above all, we can preliminary draw a conclusion that Erdaohe Pb-Zn deposit is a skarn Pb-Zn polymetallic deposit that is associated with the magmatism of deep granite porphyry.