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长江中下游池州地区矽卡岩-斑岩型W-Mo矿床流体包裹体与H、O、S同位素研究

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摘要：

长江中下游池州地区区域构造上处于下扬子坳陷与江南古陆之间的过渡带上,近年来该区域内以钨钼为主的多金属矿床勘探方面取得了很大突破,鸡头山矽卡岩-斑岩型W-Mo矿、马头斑岩型Mo矿和百丈岩矽卡岩-斑岩型W-Mo矿是其中的三个代表性矿床。 在鸡头山矿区和百丈岩矿区钨钼主要赋存于矽卡岩体中,已有工程探明二者的深部都有斑岩型矿体存在;在马头矿区钼主要以含钼石英脉和辉钼矿细脉的形式赋存于近接触带岩体与围岩中。流体包裹体研究表明,池州地区与钨钼矿有关的流体包裹体以水溶液包裹体(L+V)为主,同时发育含子矿物包裹体(L+V+S)和CO_2包裹体(L+L_{CO_2}+V_{CO_2})。成矿流体演化分为三个阶段:早阶段温度在350~500℃之间,深度约为1.5~2.5km,初始流体盐度为17%~25%NaCleqv,流体富H_2O-CO_2-CH_4等气体,流体发生沸腾作用分离出高盐度流体和富气相低盐度流体;中阶段温度在170~360℃之间,深度约为0.5~1.7km,盐度为2%~24%NaCleqv,富H_2O-CO_2-CH_4-H_2S等气体,流体混合作用使得大量钨、钼、铅、锌等金属沉淀成矿;晚阶段温度在100~160℃之间,深度在约0.6km以下,盐度范围为1%~10%NaCleqv,与成矿作用无关。含矿石英脉H-O同位素和硫化物S同位素共同指示,池州地区与钨钼矿有关的成矿流体来自岩浆水、大气水和建造水的混合,流体混合是区域钨-钼-铅-锌成矿的主要机制。

英文摘要：

Chizhou area of Anhui Province is located in the transition zone between the Lower Yangtze depression and the Jiangnan Ancient Continent in the Middle-Lower Yangtze Valley. There are great breakthroughs in ore prospecting and exploration about tungsten-molybdenum polymetallic deposits in Chizhou area recently. The Jitoushan skarn-porphyry type W-Mo deposit, the Baizhangyan skarn-porphyry type W-Mo deposit and the Matou porphyry-type Mo deposit are three typical ore deposits among them. The Mo and W are mainly occurred in the skarn ore bodies, and porphyry orebodies have been found in the deep by geological exploration in the Jitoushan and Baizhangyan ore districts. The Mo is mainly occurred in the contact zone between granodiorite porphyry and the surrounding wall rocks in Matou ore district. In the present study of fluid inclusions, aqueous-rich (L+V), daughter mineral-bearing (L+V+S), and a few CO_2-bearing (L+L_{CO_2}+V_{CO_2}) three phase fluid inclusions have been found in the ore-forming fluids of W-Mo deposits in Chizhou area, aqueous-rich (L+V) fluid inclusions are the most. The evolution of ore-forming fluid can be divided into three stages: The early-stage fluid has the homogenization temperature range of 350~500℃ and the depth range of 1.5~2.5km. The initial fluid has the salinity range of 17%~25%NaCleqv and is rich in the gas such as H_2O, CO_2 and CH_4, then the initial fluid was divided into high salinity fluid and low salinity fluid rich in gas. The middle-stage fluid has the homogenization temperature range of 170~360℃, the salinity range of 2%~24%NaCleqv and the depth range of 0.5~1.7km, with riching in CO_2, H_2O, CH_4 and H_2S in fluid inclusions. rich in fluid inclusions. The fluid-mixing function caused the metals such as W, Mo, Pb and Zn to precipitate and mineralize. The late-stage fluid has the homogenization temperature range of 100~160℃, the salinity range of 1%~10%NaCleqv and the depth range under 0.6km, this stage is irrelevant with mineralization. The ore-forming fluid was formed by mixing of magma water, meteoric water and formation water; this was implied by the isotope compositions of H-O isotopes from ore bearing quartz veins and S isotopes from sulfide. Fluid mixing is the main ore-forming mechanism of W, Mo, Pb and Zn in the W-Mo polymetallic deposits in Chizhou area.

关键词：鸡头山W-Mo矿 百丈岩W-Mo矿 马头Mo矿 流体包裹体 成矿流体 池州地区

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