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河南省新县姚冲钼矿床流体包裹体研究

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摘要:

河南省新县姚冲钼矿床产于大别造山带,属于陆-陆碰撞体制的斑岩型矿床,其流体成矿过程可以分为早、中、晚三个阶段,分别以石英+钾长石±黄铁矿±磁铁矿、石英±钾长石+辉钼矿±其他硫化物和石英±碳酸盐±萤石组合为标志。热液石英和萤石中发育纯CO<sub>2</sub>包裹体(PC型)、CO<sub>2</sub>-H<sub>2</sub>O型包裹体(C型)、水溶液包裹体(W型)和含子晶多相包裹体(S型)。早阶段石英中发育纯CO<sub>2</sub>包裹体、CO<sub>2</sub>-H<sub>2</sub>O型包裹体和含子晶多相包裹体,中阶段的石英则发育CO<sub>2</sub>-H<sub>2</sub>O型包裹体、水溶液包裹体和含子晶多相包裹体,在晚阶段的无矿石英脉中发育水溶液包裹体和少量的CO<sub>2</sub>-H<sub>2</sub>O型包裹体,石英-碳酸盐-(萤石)脉石英与萤石中只发育水溶液包裹体。早阶段流体包裹体的均一温度为277~380℃,集中于300~360℃,盐度变化于3.0%~10.3% NaCleqv之间。中阶段包裹体均一温度介于185~351℃之间,集中在260~320℃,盐度介于2.4%~9.3% NaCleqv;晚阶段包裹体均一温度为139~245℃,盐度介于0.7%~6.3% NaCleqv之间。中阶段多相包裹体中常见黄铜矿和其他透明子矿物,表明流体具有还原性、过饱和的特征,是矿石矿物沉淀的主要阶段。估算早、中阶段流体捕获压力分别集中于47~131MPa和26~118MPa,所对应的成矿深度分别约为4.7km和2.6~4.2km。上述流体包裹体的研究表明姚冲钼矿床的初始成矿流体具有高温、高盐度、富CO<sub>2</sub>的特征,同时预测了深部找矿潜能。

英文摘要:

The Yaochong porphyry Mo deposit in Xinxian County, Henan Province, China, is located in the Dabie orogenic belt. Mo mineralization formed in continental collision settings. The hydrothermal ore-forming process can be divided into the early, middle and late stages, characterized by mineral assemblages of quartz+potassic feldspar±pyrite±magnetite, quartz±potassic feldspar+molybdenum±other sulfides and quartz±calcite±fluorite, respectively. There are four fluid compositional types determined in hydrothermal quartz and fluorite from early to late: pure CO<sub>2</sub>, CO<sub>2</sub>-H<sub>2</sub>O, aqueous and solid-bearing fluid inclusions (FIs). The early-stage quartz contains three of the four types FIs other than the aqueous type. The middle-stage quartz has CO<sub>2</sub>-H<sub>2</sub>O, aqueous and solid-bearing FIs, without pure CO<sub>2</sub> FIs. In the late stage, a small amount of CO<sub>2</sub>-H<sub>2</sub>O FIs can be observed in quartz of barren quartz veins, while in quartz-carbonate-(fluorite) veins, only the aqueous FIs are present. Fluid inclusions in the early-stage quartz are homogenized at temperatures of 277~380℃, clustering at 300~360℃, with salinities mainly ranging from 3.0% to 10.3% NaCleqv. Fluid inclusions in the middle stage quartz yield homogenization temperatures of 185℃ to 351℃, with most between 260℃ and 320℃, and salinities of 2.4% to 9.3% NaCleqv. Fluid inclusions in the late stage are totally homogenized at temperatures of 139~245℃, yielding salinities of 0.7%~6.3% NaCleqv. The estimated pressures decrease from a span of 47~131MPa in the early stage, to a range of 26~118MPa in the middle stage, corresponding to a change in depths from 4.7km to 2.6~4.2km. We conclude that the initial fluids forming the Yaochong deposit is high temperature, high salinity and CO<sub>2</sub>-rich, and predict that the deeper exploration is potential for ore prospecting.

关键词: [流体包裹体](#) [富CO<sub>2</sub>流体](#) [斑岩型钼矿床](#) [大陆碰撞](#) [大别造山带](#)

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