

彭惠娟,李洪英,裴荣富,张长青,周云满,田广,李建新,龙飞. 2014. 云南中甸红牛-红山矽卡岩型铜矿床矿物学特征与成矿作用. 岩石学报, 30 (1): 237-256

云南中甸红牛-红山矽卡岩型铜矿床矿物学特征与成矿作用

作者	单位
彭惠娟	中国地质科学院矿产资源研究所, 北京 100037
李洪英	中国地质科学院矿产资源研究所, 北京 100037
裴荣富	中国地质科学院矿产资源研究所, 北京 100037
张长青	中国地质科学院矿产资源研究所, 北京 100037
周云满	云南黄金矿业集团股份有限公司, 昆明 650000
田广	中国地质大学, 北京 100037
李建新	云南黄金矿业集团股份有限公司, 昆明 650000
龙飞	云南黄金矿业集团股份有限公司, 昆明 650000

基金项目: 本文受到中国地质调查项目(12120113093700)和云金集团项目联合资助。

摘要:

红牛-红山矿床位于西南三江成矿带的中甸岛弧,是形成于晚燕山期的矽卡岩型铜矿床。矿区与成矿作用密切相关的石英二长斑岩中角闪石和黑云母斑晶的出现以及较高的含F量(分别为1.49%和2.62%),表明其岩浆为富H₂O富挥发分熔体;石英斑晶具有港湾状、浑圆状的溶蚀表面和钾长石细晶外壳,并且显示了典型的骸晶状结构指示了其岩浆经历了快速上升侵位过程和岩浆热液自交代作用;钻孔中岩浆热液角砾岩和大量石英细脉的出现暗示了岩浆在快速上侵过程中发生了隐爆作用,形成并出溶了含有大量F、Cl等组分的高盐度超临界流体。矽卡岩阶段石榴子石和透辉石具有明显的三个期次:早期细粒的钙铝榴石(And₂₂₋₅₇)和角岩中的透辉石(Hd₇₋₂₇)形成于少量高温气液岩浆流体与围岩的扩散交代作用;中期粗粒的钙铁榴石(And₇₅₋₉₈)和次透辉石-钙铁辉石(Hd₁₀₋₉₉)形成于大量高温、低氧逸度的岩浆流体与围岩的渗滤交代作用;晚期的钙铝榴石脉(And₁₄₋₆₀)和钙铁辉石脉(Hd₃₁₋₅₈)形成于低温、高氧逸度的早期交代残留溶液。矽卡岩矿物的生成,使碳酸盐围岩丢失CO₂,矿物体积减少,孔隙度和渗透性增加,为成矿提供了条件。退化变质阶段的透闪石、阳起石、绿帘石、绿泥石等交代早期矽卡岩矿物,消耗了成矿流体中大量的CO₂和H₂O,生成含水矿物以及石英、方解石,使围岩裂隙愈合,孔隙流体压力增加,导致成矿流体沸腾,形成大量黄铜矿、磁黄铁矿、黄铁矿、辉钼矿化。石英-硫化物阶段,由于成矿流体超压→流体沸腾,裂隙生成→减压排泄,裂隙愈合→流体超压的循环,在此过程中围岩经历了多次破裂和裂隙的愈合,直至整个成矿体系完全开放,并与大气水发生混合,使成矿流体中剩余金属最终沉淀。

英文摘要:

The Hongniu-Hongshan deposit is a newly discovered porphyry-skarn copper deposit in Zhongdian volcanic arc, which belongs to Southwest Sanjiang metallogenic belt. The deposit occurs within the hydrothermal alteration zone of the Yanshanian felsic intrusion which emplaced into Triassic carbonate and marble. The biotite and amphibole phenocryst in the quartz monzonite porphyry related to the mineralization contain abundant fluorine, respectively reached 1.49% and 2.62%, indicating that the magma are rich in water and fluorine. The quartz phenocryst show a skeletal texture, which indicate the magma undergone rapid rising, and the growth embayments, resorption surfaces, and high-K edge indicate the quartz phenocryst undergone autometasomatic process. In addition, the magmatic hydrothermal breccias in a drill core suggest that magmatic hydrothermal breccias were generated by explosive, fluid released from crystallizing porphyry, and there probably be concealed porphyry in the deep. The prograde stage could be divided into three main substage: aluminum-riched garnets (And₂₂₋₅₇) and diopside (Hd₇₋₂₇) in the first substage formed by diffusive metasomatism, and the fluid formed from high temperature magmatic degassing; Iron-riched garnets (And₇₅₋₉₈) and pyroxenes (Hd₁₀₋₉₉) in the second substage formed by advective metasomatism, and the large scale fluid formed by magmatic fluid exsolution; The skarn mineral veins in the last substage probably formed from residual fluid of the metasomatism. The formation of skarn lead to the CO₂ lost, mineral volume decreased, and open space created, permeability and porosity increased, which well-produced for mineralization. In the retrograde stage, the mineral assemblage mainly is epidote, amphibole, chlorite and sulfides. In the early retrograde stage, porosity decreased owing to hydrous minerals, fluid pressure increased led to fluid boiling and cryptoexplosion, as the result, the fluid temperature and pressure decrease, and copper precipitation. In the last stage, owing to the repeated boiling of fluid, formed open system, acidic magmatic fluid mixed with atmospheric water, copper precipitation.

关键词: [斑岩-矽卡岩型铜矿](#) [矿物特征](#) [成矿作用](#) [红牛-红山](#) [中甸](#)

投稿时间: 2013-04-19 最后修改时间: 2013-08-08

[HTML](#) [查看全文](#) [查看/发表评论](#) [下载PDF阅读器](#)

黔ICP备07002071号-2

主办单位: 中国矿物岩石地球化学学会

单位地址: 北京9825信箱/北京朝阳区北土城西路19号

本系统由北京勤云科技发展有限公司设计

[linezing.com](#)