

新疆小热泉子铜(锌)矿床硫化物显微结构及稀土、微量元素研究

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中文摘要:新疆小热泉子铜(锌)矿床位于大南湖晚古生代岛弧带内,矿体主要赋存于一套凝灰质火山碎屑沉积岩中,矿石类型主要为块状黄铜矿矿石、闪锌矿矿石和脉状硫化物矿石。物的显微结构研究表明,黄铁矿主要发生脆型变形,形成碎裂结构、细粒化结构、充填交代结构、“布丁”结构以及变斑晶结构,黄铜矿和闪锌矿发生塑性变形,黄铜矿表现为“S型”理结构以及在闪锌矿中呈团斑状结构,电子探针结果表明黄铜矿发生明显的活化迁移富集作用。硫化物的稀土微量元素研究表明,闪锌矿中Mn、Ga、As等元素含量很低, $Ga/In < 1$, n 多数小于1, $174 < Zn/Cd < 482$, In/Cd 为0.1~0.35,不同成矿期黄铁矿的Co/Ni、S/Se、S/Fe比值不同,其稀土元素分配特征与花岗岩、流纹斑岩的分配图差别大。通过对硫化物结构和稀土、微量元素分布特征的对比研究发现黄铜矿的塑性流动能力比闪锌矿强,在强烈构造作用下使黄铜矿发生活化迁移富集,可能是重要的成矿机制;成矿流体为几种不同性质相互作用后的混合物,小热泉子铜(锌)矿床为早期火山沉积成因,后期为热液叠加改造成因。

中文关键词: [铜\(锌\)矿床](#) [硫化物](#) [显微结构](#) [微量元素](#) [稀土元素](#) [小热泉子](#)

A Study of Rare Earth and Trace Elements and Microstructure of Sulfide Minerals from the Xiaorequanzi Copper (Zinc) Deposit of Xinjiang

Abstract:The Xiaorequanzi Cu(Zn)deposit of Xinjiang is located in the late Paleozoic island-arc of Danan Lake area, its ore bodies are hosted in a sedimentary rock suite of tuffaceous detritus, and its ore types are mainly massive chalcopyrite, sphalerite and other lodes. Researches on the microstructure of these sulfides suggest that pyrite has undergone brittle deformation, and formed such structures as clastic structure, fining structure, infilling and metasomatic structure, “pudding” structure and porphyroblast structure, while chalcopyrite and sphalerite have undergone flexible deformation and resulted in the “S”-shaped foliation of chalcopyrite and the porphyritic structure of sphalerite. Electron microprobe analysis indicates that chalcopyrite has experienced the processes of activation, removal and concentration. The concentrations of REE and trace elements demonstrate that Mn, Ga and As in sphalerite have a low REE concentration and the Ga/In ratios are much lower than 1, most Ge/In ratios are also lower than Zn/Cd ratios range from 174 to 482, In/Cd ratios range from 0.1 to 0.35, and pyrites formed in different metallogenic periods have different Co/Ni ratios, S/Se ratios and S/Fe ratios. There is a remarkable difference in the REE distribution pattern between this pyrite and pyrite in granite-porphry and rhyolite-porphry. Based on a comparison of microstructures as well as distribution patterns of REE and trace elements between these sulfides, the authors hold that chalcopyrite has a better flowability than sphalerite, the chalcopyrite tended to become active and move more easily than sphalerite under tense shear strain, and large-scale movement would lead to the concentration of chalcopyrite and finally the formation of the Xinjiang Xiaorequanzi Cu(Zn)deposit. It is thus concluded that the metallogenic fluid was the mixture of several different fluids, an