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山东七宝山隐爆角砾岩型金铜矿床含矿蚀变斑岩石英颗粒中高温高盐度沸腾包裹体的发现及其意义

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摘要:

山东七宝山隐爆角砾岩型金铜矿床一直以来被认为是浅成低温、低盐度热液型矿床。本研究通过对该矿床含矿蚀变斑岩石英颗粒中流体包裹体的研究,发现存在大量多相包裹体与气体包裹体、气液两相包裹体共生。显微测温显示这些包裹体具有相似的均一温度(374~404℃),盐度高达48% NaCleqv。激光拉曼光谱和扫描电镜能谱分析显示,多相包裹体中的子矿物除了石盐外,还有赤铁矿、重晶石、黄铜矿与黄铁矿等。这些捕获有高温高盐度沸腾包裹体的石英颗粒可能是早期成矿流体在硅化交代蚀变的过程中重结晶形成的,而不是斑岩体的斑晶。这一结果表明该矿床深部存在高温、高盐度的沸腾包裹体。这种高温高盐度的沸腾流体包裹体及多相包裹体中黄铜矿、黄铁矿等子矿物是斑岩型矿床的典型特征,因此该发现表明山东七宝山隐爆角砾岩型金铜矿在深部可能转变为斑岩型矿床。

英文摘要:

The Au-Cu-bearing cryptoexplosion breccia pipe at Qibaoshan, Shandong Province was previously considered to be an epithermal hydrothermal deposit with low salinity. This study carried out the investigations on fluid inclusions of the quartz grains in altered porphyry from the Au-Cu-bearing cryptoexplosion breccia pipe. Our results show that the quartz from the ore bearing altered porphyry contains abundant boiling fluid inclusions, including various daughter minerals bearing multiphase inclusions. The microtemperature measurement on these inclusions suggests that these inclusions homogenized at similar temperatures in a narrow range: 374~404℃, and their salinity can be as high as 48% NaCleqv. The laser Raman spectrum and scanning electron microscopy-energy dispersive spectrum analysis of the daughter minerals in the multiphase fluid inclusions demonstrates that besides halite, hematite, barites, chalcopyrite and pyrite are also ubiquitous. The quartz grains bearing boiling fluid inclusions with high temperature and salinity are more likely to form during recrystallization in the process of early ore fluid activity than to be the phenocryst of the porphyry. These indicate that in the deep there exist boiling fluid inclusions with high temperature and salinity, and the Qibaoshan Au-Cu deposit probably transform to a porphyry type deposit in the depth since these are typical characteristics of porphyry deposits.

关键词: [金铜矿](#) [沸腾包裹体](#) [斑岩矿床](#) [石英颗粒](#) [斑岩](#) [山东七宝山](#)

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