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黑龙江三道湾子碲金矿床黄铁矿标型特征及矿床变化保存过程分析

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中文摘要:三道湾子金矿床是近年来在中国北方地区新发现的典型碲金矿床，矿石矿物由大量碲化物及自然金和少量硫化物组成。本文主要研究产于矿床中黄铁矿的标型特征及其地质意义，重点探讨了该矿床形成后的变化与保存过程。通过研究表明矿床产出的黄铁矿主要有两期：第一期黄铁矿（Py1）呈粗粒立方体自形晶产出，为碲金成矿前黄铁矿化蚀变阶段的产物；第二期黄铁矿（Py2）主要呈细粒产出，与碲金矿化关系较为密切。黄铁矿的微量元素特征显示第二期的黄铁矿中存在微细粒的碲银矿；稀土元素研究表明黄铁矿及金矿化的形成与安山质岩浆活动关系较为紧密，而与该区花岗质岩浆活动关系不大。对三道湾子碲金矿床产出的黄铁矿进行热电分析表明，黄铁矿热电系数主要变化于-180～-90m V•℃-1之间，以N型导电型为主；且由矿体顶部至底部，N型导电型出现的频率逐渐增大（57.5%→84.2%→92%→97.4%）；与蚀变安山岩中黄铁矿的热电系数比较，产于脉状石英中的黄铁矿具有更低的热电系数值。通过黄铁矿热电系数分析以及流体包裹体的研究可以计算出该矿床的平均剥蚀速率为53.6m/Ma。最后对该矿床形成后的变化与保存过程进行了分析，提出对于该区内寻找中生代之前形成的矿床应注意砂矿的重要指示意义。

中文关键词:黄铁矿 标型特征 变化与保存 碲金矿床 三道湾子 黑龙江

Typomorphic Characteristics of Pyrite and Processes of Changes and Preservation of the Sandaowanzi telluride-gold Deposit in Heilongjiang Province

Abstract:The Sandaowanzi gold deposit, which was recently discovered in northern China, is a typical telluride-gold deposit. Metallic minerals are mainly composed of various tellurides and native gold with minor sulfides. In this paper we carried out work focusing on the typomorphic characteristics of pyrite and processes of changes and preservation of the Sandaowanzi telluride-gold deposit. Study showed that pyrite occurred mainly in two stages: the early pyrite(Py1) occurred in cubic euhedral crystals, which represented pyritized alteration; the late pyrite(Py2) showed fine anhedral crystals, which had relationship with Te-Au mineralization. Trace element study about pyrite indicated that there are fine hessite grains in pyrite and REE analysis identified that pyrite had close relationship with gold mineralization and andesite magmatism, while with no relationship with granite magmatism. Analysis about thermoelectic properties of pyrite in deposit showed that the pyroelectric coefficient mainly varied -180～-90m V•℃-1 with N type dominated; frequency(57.5%→84.2%→92%→97.4%) of N type pyrite increased from top to bottom of the deposit; pyrite occurred in quartz vein had lower pyroelectric coefficient than in altered andesite. Combined with thermoelectic properties of pyrite and fluid inclusions study we calculated the average erosion rate as 53.6m/Ma. Finally we gave a summary about changes and preservation of the Sandaowanzi telluride-gold deposit after its formation and put forward a conclusion that searching for ore deposits that formed before Mesozoic in this area should pay attention to the significance of placer.

keywords:pyrite typomorphic characteristics changes and preservation telluride-gold deposit Sandaowanzi Heilongjiang

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