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哈萨克斯坦北东天山浅成低温热液型金矿床成矿时代及构造背景

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摘要:

哈萨克斯坦北东天山地区是中亚造山带重要的浅成低温热液型金矿床产出地区,但其成矿年代学研究非常薄弱。为确定成矿时代,作者运用高精度激光 $^{40}\text{Ar}/^{39}\text{Ar}$ 定年法对阿尔哈尔雷金矿床和乌仁科布拉克金矿床的赋矿围岩进行了年龄测定。获得阿尔哈尔雷金矿床安山岩样品20个点 $^{40}\text{Ar}/^{39}\text{Ar}$ 等时线年龄为 $304 \pm 7\text{Ma}$ (MSWD=6),乌仁科布拉克金矿床安山玄武岩样品21个点 $^{40}\text{Ar}/^{39}\text{Ar}$ 等时线年龄为 $280 \pm 6\text{Ma}$ (MSWD=2.4),表明哈萨克斯坦北东天山地区浅成低温热液型金矿床主要形成于晚石炭世末期-早二叠世。初步的岩石学、地球化学研究表明,哈萨克斯坦北东天山地区晚石炭世末期-二叠纪火山岩主要为流纹岩、粗安岩、玄武粗安岩、玄武安山岩、粗面玄武岩和玄武岩,具双峰式特征,主体属于高钾钙碱性和橄辉玄粗岩系列。哈萨克斯坦北东天山地区晚石炭世末期浅成低温热液型金矿床形成于碰撞晚期向裂谷的转换阶段,而二叠纪浅成低温热液型金矿床产出于陆内裂谷环境。

英文摘要:

A lot of epithermal gold deposits and occurrences, such as Arharlei and Wurenkebulake deposits, have been found in the northeastern Kazakhstan Tianshan, which is one of the important epithermal gold metallogenic belts in the Central Asian Orogenic Belt. Whereas, the metallogenetic chronology study of the gold deposits is poor. To time the mineralization, the authors dated andesite and andesitic basalt from the host rocks of the Arharlei and Wurenkebulake deposits, respectively, using high-resolution laser-ablation $^{40}\text{Ar}/^{39}\text{Ar}$ method. Twenty analyses of andesites from the Arharlei deposit yielded a $^{40}\text{Ar}/^{39}\text{Ar}$ isochron age of $304 \pm 7\text{Ma}$ (MSWD=6), and 21 of andesitic basalts from the Wurenkebulake deposit yielded a $^{40}\text{Ar}/^{39}\text{Ar}$ isochron age of $280 \pm 6\text{Ma}$ (MSWD=2.4). This shows that the gold deposits in the northeastern Kazakhstan Tianshan have been formed between end Late Carboniferous and Early Permian. Petrology and geochemistry primarily studied by the authors show that the volcanic rocks related to these epithermal gold deposits in this region are mainly of high-K calc-alkaline and shoshonite series, and comprise mainly rhyolite, trachyandesite, basaltic trachyandesite, basaltic andesite, trachybasalt and basalt, with bimodal features. The epithermal gold deposits of the end Late Carboniferous might be formed in a transitional period from continent-continent collision to rift environments, whilst the Permian epithermal gold deposits were formed in an intracontinental rift setting.

关键词: [阿尔哈尔雷金矿床](#) [乌仁科布拉克金矿床](#) [浅成低温热液型金矿床](#) [\$^{40}\text{Ar}/^{39}\text{Ar}\$ 定年](#) [构造背景](#) [哈萨克斯坦北东天山](#)

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