



岩矿测试

ROCK AND MINERAL ANALYSIS

中文核心期刊

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文章摘要

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新疆富蕴县库额尔齐斯铁矿成因机制探讨研究

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A Discussion on Genetic Mechanism of the Kuerqis Iron Deposit in Fuyun County, Xinjiang

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中文摘要:

目前针对阿尔泰山南缘一带的小型富铁矿床研究明显不足。本文研究了库额尔齐斯富铁矿的成矿时代及成矿机制, 为区域铁成矿规律和成矿预测提供基础资料。野外地质调查表明, 该矿床地质特征具有火山沉积成因, 但主要与花岗斑岩侵入的热液活动有关, 二长花岗岩对铁矿有破坏作用。利用激光剥蚀-多接收器电感耦合等离子体质谱法测定了矿区两个花岗岩体的年龄, 利用同位素质谱计测定了矿床中黄铁矿的硫同位素组成, 分析表明花岗斑岩锆石18个测点在谐和线上成群分布, $^{206}\text{Pb}/^{238}\text{U}$ 年龄值集中在273~282.6 Ma, 加权平均年龄为(278.7±0.94) Ma (MSDW=1.6); 二长花岗岩12个测点集中成群分布, $^{206}\text{Pb}/^{238}\text{U}$ 年龄值集中在271.8~276.8 Ma, 加权平均年龄为(274.1±1.1) Ma (MSDW=0.47)。黄铁矿的 $\delta^{34}\text{S}$ 值变化于-7.2‰~0.7‰, 多为负值, 但大多数集中在0值附近, 表明深源岩浆在向上运移过程中可能与围岩或早期沉积铁矿发生了明显的硫同位素交换, 暗示铁的富集成矿主要发生在花岗斑岩侵入的热液期。综合区域研究认为, 矿区花岗岩均属于阿尔泰山南缘广泛发育的早二叠世时期岩浆事件, 形成于板内伸展拉张环境。该期岩浆活动也伴随了铁等广泛的金属成矿作用。

英文摘要:

The large iron deposits in the southern margin of Altay had been studied systematically, but researches on some small Fe-rich type such as Kuerqis iron deposit are still obviously insufficient. In this paper, a study of the chronology and genetic mechanism to supply basic information for regional metallogeny and mineral assessment is documented. The Kuerqis iron deposit is located in the Erqis tectonic belt in the southern margin of Altay. The field investigation suggests that the deposit is dominantly related to hydrothermal activity of granitic porphyry besides the volcanic sedimentary genesis, meanwhile the iron deposit was destroyed by monzonitic granite. The ages of two granite intrusions in the deposit area and S isotope composition of pyrites in ore were determined by Laser Ablation-Multicollector Inductively Coupled Plasma-Mass Spectrometry (LA-MC-ICP-MS) and MAT 251 EM Mass Spectrograph. The $^{206}\text{Pb}/^{238}\text{U}$ ages of 18 data points of zircons in granitic porphyry

concentrated on the concordia line range from 273 Ma to 282.6 Ma and the weighted average age is (278.7 ± 0.94) Ma with MSDW=1.6. The $^{206}\text{Pb}/^{238}\text{U}$ ages of 12 data points of zircons in monzonitic granite concentrated on the concordia line range from 271.8 Ma to 276.8 Ma and the weighted average age is (274.1 ± 1.1) Ma with MSDW=0.47. $\delta^{34}\text{S}$ in pyrites varies from -7.2‰ to 0.7‰ and most are negative and near 0. The characteristic of $\delta^{34}\text{S}$ perhaps reflects the significant exchange of S isotope between magma from deep source and wall-rocks or the earlier sedimentary iron deposit during ascending magma. The mineralization prominently occurred in the hydrothermal period of granitic porphyry. Combined with former studies, it suggested that two granite intrusions in the deposit area intruded in a plate extension environment during the early-Permian when granite intrusions developed widely in the southern margin of Altay. Moreover, the extensive mineralization of iron and other elements perhaps occurred in this granitic event.

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