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小兴安岭霍吉河钼矿区含矿花岗岩类特征及成矿年龄

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摘要:

黑龙江霍吉河钼区内含矿花岗岩类岩石组合为黑云母二长花岗岩、二长花岗岩和花岗细晶岩,属高钾钙碱性岩-钾玄岩系列准铝质-过铝质岩石,具有轻稀土富集、重稀土亏损分馏模式,富集不相容元素(Cs、Th)并表现为Ta和Nb负异常以及Pb、Sr正异常,显示俯冲带地球化学特征。含矿岩浆岩明显富集Mo、Cu、Pb、Zn、W、Cr等金属元素。岩石全岩铅同位素来源比较复杂,具有混合成因铅特征。辉钼矿Re-Os模式年龄为 180.7 ± 2.5 Ma和 181.3 ± 2.6 Ma,钼矿成矿时代为早侏罗世。霍吉河钼矿是在蒙古-鄂霍茨克洋和古太平洋相向联合俯冲作用下,导致霍吉河地区发生地壳增生和壳幔相互作用以及后来的拆沉作用,形成了该区花岗质岩石和钼矿床。高度演化的花岗岩体(脉)可以作为今后本区钼矿床的找矿方向。

英文摘要:

Ore-bearing granitoid assemblage of the Huojihe molybdenum deposit in Heilongjiang Province consists of biotite monzogranites, monzogranites and aplite granite. The major elements analyses indicate that the ore-bearing granite rocks belong to K-rich calc alkaline-shoshonitic series, with the feature of metaluminous-peraluminous rocks. Harker diagrams show that their magmatic evolution have been subjected to magma mixing, and deeply influenced by hydrothermal fluids, with weak Eu negative or none anomalies, inferring that they aren't suffered a remarkable plagioclase fractional crystallization. Rare-earth elements analyses show that they are all enriched in LREE but depleted in HREE. In addition, the total rare earth elements of monzogranites and aplite granite are significantly lower than those of biotite monzogranites, but their HREE's depletion are lighter than the latter. Their MORB-normalized trace elements diagrams show enrichment of incompatible elements (Cs, Rb, Th) and Pb and Sr, but depletion in Ta and Nb, indicating that the phosphorite and the minerals which are rich in titanium have been fractional crystallized in magma evolution, with characteristics of the island arc magmatic rocks and thickened continental crust. Ore-bearing granites show higher concentration of Mo, Cu, Pb, Zn, W and Cr. Highly evolved granites characteristics in monzogranites and aplite granite and much higher content of molybdenum linked them very close to the molybdenum mineralization. Their whole-rock Pb isotope analyses show that the source of Pb is very complicated, with mixture feature. The model ages of the molybdenite are determined to be 180.7 ± 2.5 Ma~ 181.3 ± 2.6 Ma, indicating that the ore-formation might have occurred in Early Jurassic period, later than or nearly simultaneously with the formation of host rock, biotite monzogranites. We presume that the monzogranites and aplite granite with a little younger age might be metallogenic rocks. It is believed that the crustal accretion, crust-mantle interaction and delamination in the Huojihe area caused by the subduction of the Mongol-Okhotsk oceanic plate and Paleo-Pacific oceanic plate in opposite directions in the Early Jurassic period may have attributed to the formation of these granitoid rocks and Mo deposit in this region. The highly evolved granitoid dykes can serve as guidelines for future ore-exploration in this region.

关键词: [霍吉河钼矿区](#) [花岗岩类](#) [Pb同位素](#) [Re-Os模式年龄](#) [小兴安岭](#)

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