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滇西北铜厂沟Mo-Cu矿床岩体年代学、地球化学及其地质意义

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摘要:

铜厂沟大型斑岩型Mo-Cu多金属矿床位于扬子西缘义敦岛弧带南端,钼矿化与花岗闪长斑岩紧密相关。花岗闪长斑岩LA-ICP-MS锆石U-Pb年龄为 84.57 ± 0.29 Ma(MSWD=0.73),侵位于晚白垩世。岩石的 SiO_2 为63.03%~69.60%, $\text{Na}_2\text{O} + \text{K}_2\text{O}$ 为6.97%~9.11%,具高钾钙碱性和准铝质-弱过铝质($A/\text{CNK}=0.88 \sim 1.05$)特征。岩石富集轻稀土元素和大离子亲石元素(Rb、Ba、Pb等),相对亏损重稀土元素和高场强元素(Ti、Nb、P等),并且具有较高的Sr/Y和La/Yb比值,及较低的Y、Yb及MgO含量。这些地球化学特征表明铜厂沟花岗闪长斑岩具有埃达克质岩石的特征,可能起源于加厚下地壳岩石的部分重熔。地球化学投图显示,铜厂沟岩体呈现出晚碰撞-碰撞后花岗岩特征,指示着岩体可能形成于陆内碰撞造山后由挤压转换为伸展构造环境,岩浆上侵过程中含矿热液沿构造发育部位运移,在酸性岩体内形成细脉浸染状钼(铜钨)矿化,在构造破碎带、层间滑动带和玄武岩与碳酸盐岩接触带交代形成矽卡岩型Cu、Pb、Zn多金属矿体和热液脉型Pb、Zn、Ag多金属矿体,构成钼(铜钨)→铜钼→铁铜金→铅锌的成矿元素分带和斑岩成矿系统。

英文摘要:

The Tongchanggou porphyry molybdenum deposit is located in the middle of the Nujiang-Lancangjiang-Jinshajiang area in the southwestern China. Mo mineralization is closely associated with the Tongchanggou granodiorite-porphyry, which yield LA-(MC)-ICP-MS zircon U-Pb ages 84.57 ± 0.29 Ma (MSWD=0.73), respectively. The rocks have $\text{SiO}_2=63.03\% \sim 69.60\%$, $(\text{Na}_2\text{O} + \text{K}_2\text{O})=6.97\% \sim 9.11\%$, and are metaluminous-peraluminous ($A/\text{CNK}=0.88 \sim 1.05$) and high-K calc-alkaline. They are enriched in large ion lithosphere elements (Rb, Ba, Pb, etc.) and LREEs, but depleted in high field strength elements (Ti, Nb, P, etc.) and HREEs. In addition, the rocks having high Sr/Y and La/Yb ratios, and low Y, Yb and MgO contents, those geochemical characters indicate that the Tongchanggou granodiorite-porphyry was mainly derived from the partial melting of thickened lower crust. The geochemical diagrams show that the Tongchanggou intrusions are late-to post-collisional granite indicating that they were formed under inter-plate extensional environment transformed from convergent environment. Accompany with the upwelling of the Tongchanggou magmas, the ore-forming fluids migrated into the upper crust through the ore-forming faults and formed the veinlet disseminated mineralization in the porphyry. The ore-forming fluids also developed skarn-type Cu, Pb, Zn and hydrothermal vein type Pb, Zn, Ag polymetallic ore bodies in the structure fractured zone, interlayer sliding belt, and contact zone between the basalts and limestone. Generally, the Tongchanggou Mo-Cu deposit is a porphyry system with Mo-(Cu-W), Cu-Mo, Fe-Cu-Au, and Pb-Zn metallic elements zoning.

关键词: [花岗闪长斑岩](#) [锆石U-Pb年龄](#) [燕山期](#) [铜厂沟](#) [滇西北](#)

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