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云南羊拉铜矿区岩体边缘相岩石对矿床成因与时代的指示意义

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摘要:

云南羊拉铜矿位于德钦县羊拉乡, 构造上夹持在金沙江断裂和羊拉断裂两条南北向区域性断裂之间。矿区内自北向南由4个主要岩体组成, 对应7个主要矿段, 其中里农矿段为羊拉铜矿集中区。本文选取里农岩体边缘相岩石进行岩石学、岩石地球化学以及年代学方面的研究。地球化学特征表明, 岩体亏损高场强元素, 富集大离子亲石元素, 稀土元素配分图解上显示出具有弱的负Eu异常, 轻重稀土比值LREE/HREE为9.38~10.23, 轻重稀土明显分馏, 稀土总量较高的特点, 这些均说明源区有来自大陆地壳的贡献; 运用Maniar主量元素构造判别法判定里农岩体为大陆碰撞型花岗岩(CCG型花岗岩)。通过锆石U-Pb定年得到了 $227.73 \pm 0.99\text{Ma}$ 的年龄数据, 代表岩体的侵位时代。结合以往研究, 初步认为: 1) 里农岩体为大陆碰撞型花岗岩, 形成于碰撞造山时期, 结合锆石U-Pb年龄可推测至晚三叠世(227Ma之前), 金沙江缝合带沿该处已经闭合, 进入到了碰撞造山阶段; 2) 羊拉铜矿为构造控矿矿床。在里农岩体持续时间约12Myr左右(239~227Ma)的缓慢冷却阶段, 岩浆热液逐渐富集矿化金属元素, 在227Ma左右, 岩体及地层快速抬升冷却, 羊拉铜矿开始进入主成矿阶段。

英文摘要:

The Yangla copper deposit is located in Deqin County, Yunnan Province, which is between the N-S-striking Jinshajiang and Yangla faults. The deposit has copper reserves of about 1.2Mt and has great potential for further exploration. Yangla copper deposit consists 4 ore blocks from north to south. The Linong ore block, Lunong ore block and Jiangbian ore block are the main copper deposit areas. The Linong ore block is the largest and is related to Linong granodiorite. Many researches have been done in previous studies; however, the ore genesis of the deposit is still debated. Previous researches are mainly in ore-bearing rock-bodies, lack of systematic study on the main copper deposit areas. In this paper, the samples analyzed for petrology, geochemistry and chronology, is collected from marginal phase of Linong granodiorite. The geochemical characteristics show that the samples are enriched in large ion lithophile elements (LILE) and depleted in high field strength element (HFSE). All samples have the characteristics of negative Eu anomalies, LREE/HREE is 9.38~10.23, and LREE enrichment. All the characters above indicate that Linong granodiorite is contributed from the continental crust. Major element discriminate that Linong granodiorite is continental collision granitoids (CCG). The zircon U-Pb age of Linong granodiorite is $227.73 \pm 0.99\text{Ma}$ (MSWD=0.098), which indicates the rock mass emplacement era. Combining with previous studies, we can preliminary identified that, 1) Linong granodiorite is continental collision granitoids, based on zircon U-Pb age, in the Late Triassic (before 227Ma), Jinshajiang suture zone is closed and into the continental collision stage; 2) The Yangla copper deposit is a structure ore-control deposit. Linong granodiorite experienced a relatively slow cooling process from 239Ma to 227Ma, mineral assemblages enriched in the magmatic hydrothermal during the process. After rapid uplift and cooling event happened within the region in 227Ma, temperature and pressure changed. The proper fold and fault provide passage and room for ore fluid transportati

on and accumulation. Yangla copper deposit entered the main mineralization stage.

关键词: [矿床成因](#) [成矿时代](#) [岩体边缘相](#) [构造环境](#) [锆石U-Pb年龄](#) [云南羊拉铜矿](#)

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