

高阳,叶会寿,李永峰,罗正传,李法岭,熊必康,孟芳. 2014. 大别山千鹅冲钼矿区花岗岩的SHRIMP锆石U-Pb年龄、Hf同位素组成及微量元素特征. 岩石学报, 30(1): 49-63

大别山千鹅冲钼矿区花岗岩的SHRIMP锆石U-Pb年龄、Hf同位素组成及微量元素特征

作者	单位	E-mail
高阳	中国地质科学院矿产资源研究所, 国土资源部成矿作用与资源评价重点实验室, 北京 100037	
叶会寿	中国地质科学院矿产资源研究所, 国土资源部成矿作用与资源评价重点实验室, 北京 100037	yehuishou@163.com
李永峰	河南省有色金属地质矿产局, 郑州 450016	
罗正传	河南省有色金属地质矿产局, 郑州 450016	
李法岭	河南省地矿局第三地质调查队, 信阳 464000	
熊必康	中国地质大学, 北京 100083	
孟芳	中国地质大学, 北京 100083	

基金项目: 本文受地质调查项目(1212011220869); 国家自然科学基金项目(41272104)和国家科技支撑计划项目(2011BAB04B06)联合资助。

摘要:

千鹅冲斑岩型钼矿床位于东秦岭-大别钼矿带东部的大别山地区。矿体主要赋存于千鹅冲隐伏花岗岩体上部(外接触带)的南湾组片岩中,少量产于花岗岩体内。矿体下部的隐伏岩体中主要见有二长花岗岩和花岗斑岩。SHRIMP锆石U-Pb定年表明,二长花岗岩和花岗斑岩的侵位年龄分别为 $130 \pm 2\text{Ma}$ (MSWD=1.4)和 $129 \pm 2\text{Ma}$ (MSWD=1.9),二者年龄一致,说明隐伏岩体形成于早白垩世。锆石Hf同位素分析结果表明,千鹅冲钼矿中二长花岗岩和花岗斑岩的 $\epsilon_{\text{Hf}}(t)$ 值分别变化于-24.5~-2.7和-19.8~-11.2之间,变化范围较大,说明它们主要来源于古老地壳的部分熔融,也有年轻组分的参与。两阶段模式年龄(t_{DM2})和古元古代的继承锆石指示这些花岗岩的原岩中含有古元古代-太古代的基底岩石。二长花岗岩和花岗斑岩中的锆石的 $\text{Ce}^{4+}/\text{Ce}^{3+}$ 比值平均值分别为287.4和55.9,说明形成二长花岗岩的岩浆具有更高的氧逸度,但钼成矿与形成较晚的花岗斑岩具有更紧密的成因联系。千鹅冲钼矿形成于大别造山带早白垩世的伸展构造体制下,造山带下地壳拆沉作用造成的软流圈上涌和壳幔相互作用可能为钼矿的形成提供了成矿物质。

英文摘要:

The Qian'echong porphyry Mo deposit is located in the Dabie area, the eastern part of the East Qinling-Dabie molybdenum belt. The molybdenum mineralization mainly hosted by the Devonian Nanwan Formation in the external contact zone, with minor by the Qian'echong concealed stock, which consists of monzogranite and granite porphyry. Sensitive high-resolution ion microprobe (SHRIMP) zircon U-Pb dating constrains the crystallization of the monzogranite and granite porphyry at $130 \pm 2\text{Ma}$ and $129 \pm 2\text{Ma}$, respectively. They are quite in accordance with each other within errors, indicating the Early Cretaceous magmatism. According to zircon Hf isotope analyses, the $\epsilon_{\text{Hf}}(t)$ values of monzogranite and granite porphyry are -24.5~-2.7 and -19.8~-11.2, respectively. Both the monzogranite and the granite porphyry have large ranges of $\epsilon_{\text{Hf}}(t)$ values, indicating that they mainly derived from the partial melting of ancient crust, with minor juvenile components. The calculated t_{DM2} values from Hf isotopes and Paleoproterozoic inherited zircon suggest that Paleoproterozoic-Archean basement rocks have been involved in the source rocks of these granites. The zircons from the monzogranite and granite porphyry have average $\text{Ce}^{4+}/\text{Ce}^{3+}$ ratios of 287.4 and 55.9, respectively, suggesting that the monzogranite were in higher oxygen fugacity than the granite porphyry, however, the Mo mineralization is more likely related to the later-formed granite porphyry. The Qian'echong Mo deposit formed at an Early Cretaceous lithospheric extensional setting in the Dabie orogen. The delamination caused asthenosphere upwelling and mantle-crust interaction, which probably provided ore-forming material of Qian'echong Mo deposit.

关键词: [SHRIMP锆石U-Pb年龄](#) [Hf同位素](#) [千鹅冲钼矿](#) [大别山](#)

投稿时间: 2013-09-02 最后修改时间: 2013-12-07

主办单位：中国矿物岩石地球化学学会

单位地址：北京9825信箱/北京朝阳区北土城西路19号

本系统由北京勤云科技发展有限公司设计

