

吴祥珂, 孟繁聪, 许虹, 崔美慧. 2011. 青海祁漫塔格玛兴大坂晚三叠世花岗岩年代学、地球化学及Nd-Hf同位素组成. 岩石学报, 27(11): 3380-3394

青海祁漫塔格玛兴大坂晚三叠世花岗岩年代学、地球化学及Nd-Hf同位素组成

作者	单位	E-mail
吴祥珂	中国地质大学,北京 100083 ; 中国地质科学院地质研究所,大陆构造与动力学国家重点实验室,北京 100037	
孟繁聪	中国地质科学院地质研究所,大陆构造与动力学国家重点实验室,北京 100037	mengfancong@yeah.net
许虹	中国地质大学,北京 100083	
崔美慧	中国地质科学院地质研究所,大陆构造与动力学国家重点实验室,北京 100037	

基金项目: 本文受中国地质调查局项目 (1212010918003) 和创新研究群体科学基金项目(40921001)联合资助。

摘要:

青海东昆仑祁漫塔格玛兴大坂岩体岩石类型为二长花岗岩,主要矿物组合为斜长石(30%~35%)+钾长石(25%~33%)+石英(23%~25%)+黑云母(3%~5%),全岩地球化学总体显示SiO₂为68.61%~69.37%,K₂O为3.95%~4.08%,P₂O₅为0.11%~0.12%,FeO^T/MgO为4.02~4.21,A/CNK(0.96~0.99)<1,为高钾钙碱性系列准铝质花岗岩,具有I型花岗岩的特征。其稀土元素配分图和蛛网图显示具有大陆弧花岗岩特点,富集Rb、Th等大离子亲石元素,而相对亏损Sr、P、Ti、Nb和Ta等元素。玛兴大坂二长花岗岩的¹⁴³Nd/¹⁴⁴Nd比值为0.512326~0.512340、 $\epsilon_{Nd}(t)=-2.5\sim-3.2$,指示该花岗岩具有壳幔混合I型花岗岩的特征;锆石LA-MC-ICP-MS U-Pb年龄数据显示玛兴大坂二长花岗岩体的侵位时代为 218 ± 2 Ma;锆石¹⁷⁶Hf/¹⁷⁷Hf比值较低(0.28251~0.282623), $\epsilon_{Hf}(t)$ 值为-4.43~-0.62,可能为幔源物质(大的正 $\epsilon_{Hf}(t)$ 值)与古老地壳物质(大的负 $\epsilon_{Hf}(t)$ 值)混合后的结果。Nd同位素 t_{DM2} (1.20~1.25Ga)与Hf同位素 t_{DM2} (1.08~1.28Ga)基本一致,推测中元古代末期祁漫塔格地区存在壳幔分异作用,而玛兴大坂二长花岗岩的部分源岩为中元古代以前的物质。认为玛兴大坂二长花岗岩与祁漫塔格晚三叠世火山岩形成时代相近,响应于三叠纪末古特提斯洋的关闭。

英文摘要:

The main rock type of Mxingdaban granitic pluton from Qimantag of Qinghai in the eastern Kunlun is monzogranite. It consists of plagioclase (30%~35%)+K-feldspar (25%~33%)+quartz (23%~25%)+biotite (3%~5%). Whole-rock analysis shows SiO₂ 68.61%~69.37%, K₂O 3.95%~4.08%, P₂O₅ 0.11%~0.12%, FeO^T/MgO 4.02~4.21, A/CNK (0.96~0.99)<1, which must be high-K calc-alkaline series metaluminous granite. It represents the features of I-type granite. According to REE partition diagram and spider diagram, the granite shows a marked chemical resemblance to continental arc granite, exhibiting enrichment in LILEs such as Rb and Th, but depletion in HFSEs such as Sr, P, Ti, Nb and Ta. ¹⁴³Nd/¹⁴⁴Nd (0.512326~0.512340) and $\epsilon_{Nd}(t)$ (-2.5~-3.2) imply the monzogranite shares the characters of crust-mantle mixed I-type granite. Based on LA-MC-ICP-MS zircon U-Pb dating, the emplacement of Mxingdaban monzogranitic pluton occurred at 218 ± 2 Ma. Zircon ¹⁷⁶Hf/¹⁷⁷Hf ratio is low (0.282517~0.282623), $\epsilon_{Hf}(t)$ is -4.43~-0.62, which may indicate a mixture with mantle source (large positive $\epsilon_{Hf}(t)$) and ancient crust (large negative $\epsilon_{Hf}(t)$). The accordance of t_{DM2} (1.20~1.25Ga) of Nd and t_{DM2} (1.08~1.28Ga) of Hf leads to the conclusion that the crust-mantle differentiation occurred at Mesoproterozoic in Qimantag and indicates the source of the granite may be partly from the pre-Mesoproterozoic materials. It is suggested that the Mxingdaban monzogranitic pluton emplaced at the same time with the Qimantag Late Triassic volcanic rock, when the Paleo-Tethys Ocean closed.

关键词: [U-Pb年龄](#) [地球化学](#) [Nd-Hf同位素](#) [二长花岗岩](#) [玛兴大坂](#) [祁漫塔格](#)

投稿时间: 2011-05-10 最后修改时间: 2011-09-18

[HTML](#) [查看全文](#) [查看/发表评论](#) [下载PDF阅读器](#)

黔ICP备07002071号-2

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