

论文

西藏冈底斯东部然乌地区早白垩世岩浆混合作用: 锆石SHRIMP U-Pb年龄和Hf同位素证据

- 1 中国地质大学 地质过程与矿产资源国家重点实验室, 地球科学与资源学院, 北京 100083
- 2 中国地质调查局 成都地质矿产研究所, 四川 成都 610082

摘要:

目前对西藏冈底斯带早白垩世大规模岩浆作用的岩石成因以及冈底斯带不同构造单元的东延仍存在不同看法。为探讨这些问题,文中对冈底斯带东部地区然乌岩体中的闪长岩脉进行了锆石SHRIMP U-Pb定年和锆石Hf同位素分析。结果表明:然乌岩体中闪长岩脉的锆石SHRIMP U-Pb年龄为(114.2±0.9) Ma,与二长花岗岩为同期侵位。然乌闪长岩脉具有不均一的锆石Hf同位素组成,其 $\epsilon_{\text{Hf}}(t)$ 值介于-4.2~+4.9,对应的Hf同位素地壳模式年龄为0.85~1.44 Ga。闪长岩脉的全岩 $\epsilon_{\text{Nd}}(t)$ 值为-4.7,Nd同位素两阶段模式年龄(TDM2)为1.29 Ga,与锆石Hf同位素模式年龄一致。然乌地区同期发生的闪长质岩浆和花岗质岩浆侵位以及不均一的锆石Hf同位素组成,很可能表明然乌地区大约在115 Ma发生了重要的岩浆混合作用。结合锆石Hf同位素地壳模式年龄的区域性对比,我们认为,与北冈底斯带相比,然乌地区同中冈底斯带之间具有更好的可对比性。

关键词: 锆石U-Pb年龄; 锆石Hf同位素; 岩浆混合作用; 然乌岩体; 冈底斯东部; 西藏

Early Cretaceous magma mixing in Ranwu Area of Eastern Gangdese, Tibet: Evidence from zircon SHRIMP U-Pb age and Hf isotopic composition

- 1 State Key Laboratory of Geological Processes and Mineral Resources; School of Earth Sciences and Resources, China University of Geosciences, Beijing 100083, China
- 2 Chengdu Institute of Geology and Mineral Resources, China Geological Survey, Chengdu 610082, China

Abstract:

The petrogenesis of the extensive Early Cretaceous magmatism in Gangdese Belt and how the tectonic units correlate to the east have long been subjects of debate. To explore these issues, we performed zircon SHRIMP U-Pb dating and zircon Hf isotopic determination on a dioritic dike from the Ranwu Pluton in Eastern Gangdese, Tibet. Zircons from a diorite sample yield a crystallization age of (114.2±0.9) Ma, identical to the monzogranite of the Ranwu Pluton. Zircon Hf isotopic compositions of the diorite sample are heterogeneous with $\epsilon_{\text{Hf}}(t)$ values ranging from -4.2 to +4.9, corresponding to the Hf isotopic crustal model ages (TCDM) of 0.851-1.44 Ga. The dioritic sample has $\epsilon_{\text{Nd}}(t)$ value of -4.7 with two-stage model age (TDM2) of 1.29 Ga, within the range of the zircon Hf isotope model age. The contemporaneous dioritic dike (and enclave) and the host monzogranite, along with the heterogeneous Hf isotopic compositions indicate the presence of an important magma mixing in Ranwu Area at ~115 Ma. This finding, in combination with the Hf isotopic crustal model ages recently reported in other places in the Gangdese Belt, suggest that the Ranwu Area could be correlated with the Middle Gangdese Belt rather than the Northern Gangdese Belt as previously thought.

Keywords:

zircon U-Pb age; zircon Hf isotope; magma mixing; Ranwu Pluton; Eastern Gangdese; Tibet

收稿日期 2008-12-15 修回日期 2008-12-21 网络版发布日期 null

DOI:

基金项目:

国家自然科学基金项目(40572051, 40830317, 40503005, 40873023);中国地质调查局综合研究项目

通讯作者: 朱弟成。E-mail: dchengzhu@163.com

作者简介: 刘敏(1984—),女,硕士研究生,岩石学专业。E-mail: amy-liumin@163.com

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(1463KB\)](#)
- ▶ [\[HTML全文\]\(1KB\)](#)
- ▶ [参考文献\[PDF\]](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [引用本文](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

本文关键词相关文章

- ▶ [锆石U-Pb年龄; 锆石Hf同位素; 岩浆混合作用; 然乌岩体; 冈底斯东部; 西藏](#)

本文作者相关文章

- ▶ [刘敏](#)
- ▶ [朱弟成](#)
- ▶ [赵志丹](#)
- ▶ [王立全](#)
- ▶ [莫宣学](#)
- ▶ [周长勇](#)

PubMed

- ▶ [Article by Liu, M.](#)
- ▶ [Article by Shu, D. C.](#)
- ▶ [Article by Diao, Z. D.](#)
- ▶ [Article by Wang, L. Q.](#)
- ▶ [Article by Mo, X. H.](#)
- ▶ [Article by Zhou, C. Y.](#)

