

刘飞,杨经绥,陈松永,梁风华,牛晓露,李兆丽,连东洋. 2013. 雅鲁藏布江缝合带西段东波蛇绿岩OIB型玄武岩的厘定及其形成环境. 岩石学报, 29(6): 1909-1932

雅鲁藏布江缝合带西段东波蛇绿岩OIB型玄武岩的厘定及其形成环境

| 作者                  | 单位  | E-mail   |
|---------------------|---|--|
| <a href="#">刘飞</a>  | <a href="#">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</a> ; <a href="#">核资源与环境省部共建国家重点实验室培育基地,东华理工大学,南昌 330013</a> | <a href="mailto:lfhy112@126.com">lfhy112@126.com</a> |
| <a href="#">杨经绥</a> | <a href="#">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</a>  |  |
| <a href="#">陈松永</a> | <a href="#">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</a>  |  |
| <a href="#">梁风华</a> | <a href="#">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</a>  |  |
| <a href="#">牛晓露</a> | <a href="#">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</a>  |  |
| <a href="#">李兆丽</a> | <a href="#">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</a>  |  |
| <a href="#">连东洋</a> | <a href="#">中国地质大学地球科学学院,武汉 430074</a>  |  |

基金项目: 本文受国家行业专项(SinoProbe-05-02)、国家自然科学基金重点项目(40930313)、国家自然科学基金创新群体项目(40921001)、中国地质调查局工作项目(1212011121263、1212011121272)和核资源与环境省部共建国家重点实验室培育基地项目(NRE1204)联合资助。

摘要:

雅鲁藏布江缝合带(YZSZ)西段分为两支,南带蛇绿岩的成因对整个缝合带的性质和构造背景的探讨起到十分关键作用,但由于地区偏远、交通不便,研究程度一直十分薄弱。本文报道了南带的东波蛇绿岩中洋岛型玄武岩及有关沉积岩的发现和成因探讨。东波蛇绿岩主要由地幔橄榄岩(方辉橄榄岩、含单辉方辉橄榄岩和透镜状纯橄岩)和上覆火山-沉积岩组成,未见堆晶岩和枕状熔岩等典型洋壳端元。火山-沉积岩盖层为一套稳定的海相层序,主要由硅质灰岩、红色硅质岩等沉积岩和玄武岩和玄武火山碎屑岩组成。OIB型玄武岩的特征表现为低 $\text{SiO}_2$ 和 $\text{MgO}$ ,高 $\text{TiO}_2$ 、 $\text{P}_2\text{O}_5$ 和 $(\text{K}_2\text{O}+\text{Na}_2\text{O})$ ,富集Nb、Ta,亏损Th、K、Pb、Sr。微量元素和Sr、Nd、Pb同位素数据显示,该玄武质源区来自石榴石尖晶石二辉橄榄岩2%~5%的部分熔融。成分研究显示,硅质岩形成于大陆边缘环境,为洋岛或海山和大陆边缘物质在生物作用下形成的。以上证据表明,东波火山-沉积岩层序具有典型海山特征,与世界上典型的地幔柱型蛇绿岩可对比,属于地幔柱热点活动的产物。因此,可以认为,地幔柱热点在与冈瓦纳大陆北缘岩石圈地幔相互作用过程中,不但促使YZSZ西段南带(达巴-休古嘎布)特提斯洋盆打开,还可能与YZSZ蛇绿岩中普遍包含金刚石等异常地幔矿物群有直接的动力学关系。

英文摘要:

The western part of the Yarlung Zangbo Suture Zone (YZSZ) is divided into two sub-belts; the genesis of the south plays a crucial role in the interpretation of the geological setting, magmatic and tectonic processes of the Neo-Tethyan Ocean. Previous research about the Dongbo ophiolite was poor, due to harsh natural environment and traffic inconvenience. This paper reports the data on petrography and geochemistry of OIB-type basalts and associated sedimentary rocks in the Dongbo ophiolite and discusses their source characteristics and geological significance. Dongbo ophiolite consists of peridotite (including harzburgite, minor Cpx enriched harzburgite and dunite), mafic dikes and submarine volcanic-sedimentary rock sequences, no typical cumulates and pillow lavas. The stable marine volcanic-sedimentary sequences mainly composed of siliceous limestone, red chert, shale interbedded sandstone, basalt and basaltic volcaniclastic rocks. OIB-type basalts are characterized by low  $\text{SiO}_2$  and  $\text{MgO}$ , high  $\text{TiO}_2$ ,  $\text{P}_2\text{O}_5$  and  $(\text{K}_2\text{O}+\text{Na}_2\text{O})$  content, enrichment of Nb, Ta and REE, depletion of Th, K, Pb, Sr. Trace elements and Sr, Nd, Pb isotope data show that these basaltic lavas were derived from 2% to 5% partial melting of garnet spinel lherzolite. Siliceous rocks are of biogenic origin, and show a close relation to terrigenous component and seamount or island arc basalts. Above evidences indicate that the Dongbo volcano-sedimentary sequences have the typical seamount features, and the Dongbo ophiolite probably is related to a plume hotspot. Therefore, it can be considered, the plume hotspot underplating and interacting with the subcontinental lithospheric mantle of the Gondwana northern margin not only promoted opening the Daba-Xiugugabu Tethyan oceanic basin, but also prompted diamonds and other abnormal mantle minerals to be migrated upper mantle and wrapped in peridotite and chromite.

关键词: [OIB型玄武岩](#) [硅质岩](#) [地幔柱热点](#) [蛇绿岩](#) [雅鲁藏布江缝合带](#) [西藏](#)

投稿时间: 2013-02-01 最后修改时间: 2013-05-06

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

[linezing.com](#)