

任军虎,柳益群,冯乔,韩文中,高辉,周鼎武. 2009. 东昆仑清水泉辉绿岩脉地球化学及LA-ICP-MS锆石U-Pb定年. 岩石学报, 25(5): 1135-1145

东昆仑清水泉辉绿岩脉地球化学及LA-ICP-MS锆石U-Pb定年

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基金项目: 中石化重大项目《中国西北地区构造-岩相古地理研究与编图》

摘要:

结合地质、地球化学及LA-ICP-MS锆石U-Pb定年研究表明, 东昆仑清水泉地区辉绿岩脉的主元素以低 TiO_2 (0.68%~1.24%)和较低的MgO(4.96%~7.25%)及 K_2O (0.51%~1.03%), 贫 P_2O_5 (0.09%~0.16%), $Na_2O > K_2O$ 为特征, ΣREE 总量较高, LREE明显富集。与原始地幔相比, 明显富集Rb、Ba、Th、U和Sr, 高场强元素分异明显, 出现Nb、Ta亏损和Th富集特征, 结合Nb/La、Hf/Ta、La/Ta、Tl/Y、Zr/Y和Th/Nb等比值综合分析认为岩浆来源于富集地幔, 源区曾受不同程度的俯冲带流体交代作用的影响, 应形成于活动大陆边缘环境; 岩脉的LA-ICP-MS锆石U-Pb定年结果为 $436.4 \pm 1.2 Ma$ (MSWD=0.37), 代表清水泉辉绿岩脉的结晶年龄, 为早古生代晚期东昆仑洋消减俯冲的弧后拉张裂解的形成时限提供了约束。

英文摘要:

The geochemistry and the age of the diabase-dykes from the Qingshuiquan area are keys to understanding the formation and evolutionary history of the eastern Kunlun orogenic belt. Based on the studies of the geology, the geochemistry and the U-Pb zircon dating, the magma source and tectonic setting of the diabase-dykes are discussed in this paper. The geochemistry of the major is characterized by low contents of TiO_2 (0.68%~1.24%), MgO (4.96%~7.25%), K_2O (0.51%~1.03%) and P_2O_5 (0.09%~0.16%), and $Na_2O > K_2O$, mean while, it is showing that the diabase-dykes are enrichment in light rare earth elements with abundance rare earth elements. Comparing with the primitive mantle, they are distinctly enriched in the large-iron-lithophile elements (such as Rb, Ba, Th, U and Sr) and depletion of high-field-strength element (such as Nb and Ta) and Th. All these characteristics indicate that the magma was derived from an enriched mantle source, and the magma source was influenced by input of the subduction components, which is related to a active continental margin setting. Using LA-ICP-MS method of U-Pb age dating, it is the $436.4 \pm 1.2 Ma$ (MSWD=0.37) that represents the crystallized age of the diabase-dykes. With the constraint offering by the age, the diabase-dykes formed in island arc extension environment after subduction of the East Kunlun ocean during the late Early Paleozoic.

关键词: [地球化学](#) [LA-ICP-MS锆石U-Pb定年](#) [辉绿岩脉](#) [构造环境](#) [清水泉](#) [东昆仑造山带](#)

投稿时间: 2008-06-27 最后修改时间: 2008-10-08

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黔ICP备07002071号-2

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