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攀西裂谷南段鸡街碱性超基性岩微量元素和Sr-Nd 同位素地球化学及其成因探讨

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摘要：

鸡街碱性超基性杂岩体产出于攀西古裂谷南段,地处云南省境内的罗茨地区,空间上与峨嵋山玄武岩紧密伴生。岩体的主体由霞霓钠辉岩、霓霞岩和磷霞岩组成,三类岩石具有相似的微量元素和稀土元素(REE)配分,富集大离子亲石元素K、Rb、Sr、Ba,过渡族元素Sc、Cr和Ni相对亏损,Nb/Ta、Zr/Hf比值在幔源岩的范围内,Sr-Nd同位素沿"幔源趋势"线分布。鸡街碱性超基性岩中不相容元素总体亏损,含量与EMORB相当,稀土总量ΣREE=32.86~70.07偏低,$(La/Yb)_N$=3.03~4.47,HREE亏损,指示源区的适度亏损。微量元素和同位素信息共同指示鸡街碱性超基性岩为地幔岩高压条件下低程度部分熔融的产物(<10%),岩浆演化过程中经历了橄榄石、辉石和少量磁铁矿的结晶分异。霞霓钠辉岩、霓霞岩与磷霞岩来自同一地幔源区,岩浆源区的相对亏损,可能与中-晚二叠纪大量的玄武质岩浆从深部地幔抽取有关。攀西古裂谷的多期次活动为峨嵋地幔柱提供了岩浆通道,地幔柱活动的早期阶段或晚期阶段岩石圈地幔(或混合地幔)低程度部分熔融的碱性岩浆沿此构造薄弱带上侵,形成了攀西古裂谷内呈带状分布的各碱性杂岩体。

英文摘要：

The Jijie alkaline complex is located in the southern part of Panxi rift, Yunnan Province. Jijie alkaline-ultramafic rocks complex body mainly is composed of melteigites, ijolites and urtites. They all have similar primitive mantle-normalized trace element spider diagram and REE (Rare Earth Element) patterns. The complex show relative enrichment of large-ion lithophile, such as K, Rb, Sr, Ba and relatively low contents of Sc, Cr and Ni. The Nb/Ta and Zr/Hf ratios are spread within the range of mantle-droved rocks. Sr and Nd isotope distribute along the "mantle array". Whereas, the contents of all the incompatible elements are relatively lower than OIB (Ocean Island Basalts) and other alkaline rocks, and comparable with E-MORB (Enriched-Mid Ocean Ridge Basalts). The low contents of ΣREE=32.86~70.07, (La/Yb)N=3.03~4.47 and strongly negative HREE, suggest that the peridotite mantle source have garnet residual and depleted incompatible elements. The primitive magma of Jijie alkaline-ultramafic rocks was underwent low-degree (<10%) partial melt at high pressure, mainly experienced olivine, clinopyroxene and a slight magnetite crystal fractionation during the magma evolution. Melteigite, ijolite and urtite were derived from the same mantle source. The depleted mantle source of Jijie alkaline-ultramafic rocks may be related to the large volumes of Emeishan basalt magmas droved from mantle during Middle-Late Permian in this area. As the multi-stage activities of Paxnxi rift has provide a channel for Emeishan mantle plume, the alkaline magma originated from the lithosphere mantle or mixed mantle low degree partial melting during the early or late stages of Emeishan mantle plume activity invaded along Panxi rift.

关键词：碱性超基性岩 幔源趋势 结晶分异 部分熔融 鸡街 攀西裂谷南段

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