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攀西茨达复式岩体年代学和地球化学:对峨眉山地幔柱活动时间的约束

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摘要:

茨达复式岩体位于中国西南扬子地台西缘的攀西裂谷内,其岩性从基性到酸性连续变化, SiO_2 含量为40.06%~68.54%,但以基性和酸性岩石为主,中性岩石较少,而且非常不均匀,通常具有斑杂构造特征。从基性岩到酸性岩,各岩石样品由轻稀土弱富集型变为较强富集型。微量元素表现为酸性岩中Rb、Th、K、La、Ce、Pb、Nd、Zr、Hf、Sm呈正异常和Ba、Nb、Ta、Sr、P、Ti的负异常;基性岩除Ti负异常和Pb正异常外,其它异常不明显;中性岩具有Ti、Sr负异常和Pb正异常,其它特征介于基性岩和酸性岩石之间。野外和岩相学特征明显指示出中性岩石具有混合特征。酸性端元岩浆准铝质的特征以及相对低的 SiO_2 含量指示其起源于玄武质下地壳的部分熔融,而基性端元岩浆的地球化学特征以及高温特征暗示着其起源于地幔柱源区。锆石U-Pb年龄数据表明,该复式岩体中基性端元LA-MC-ICP-MS U-Pb锆石年龄为 $243.76 \pm 0.77\text{Ma}$,酸性端元年龄为 $240.5 \pm 0.76\text{Ma}$,可能代表了峨眉山大火成岩省岩浆活动的尾声阶段。

英文摘要:

The Cida complex is located in the Panxi rift, the western margin of Yangtze craton, SW China. The SiO_2 contents of mafic rocks to felsic rocks range from 40.06% to 68.54% smoothly. The mafic rocks and felsic rocks are the dominant rock types, whilst the intermediate rocks are rare, mineralogically heterogeneous, and usually have mottled structure. The chondrite normalized REE patterns display a trend from slightly enriched to significantly enriched LREE relative to HREE for mafic rocks to felsic rocks. The primitive mantle normalized trace element diagrams of felsic rocks are characterized by positive anomalies of Rb, Th, K, La, Ce, Pb, Nd, Zr, Hf, Sm, and negative anomalies of Ba, Nb, Ta, Sr, P, Ti. All incompatible element anomalies except Ti and Pb are absent in mafic rocks. Except for negative Ti, Sr anomalies and positive Pb anomalies, the intermediate rocks are between the mafic rocks and felsic rocks for other incompatible elements. The field and petrographic observations suggest that intermediate rocks were likely formed by magma mixing. The felsic rocks characterized by metaluminous affinities and low SiO_2 contents, imply that they are possibly resulted from partial melting of basaltic lower crust. In contrast, the mafic rocks with OIB geochemistry and high temperature signature indicate that the mafic magma was derived from a mantle plume source. The LA-MC-ICP-MS U-Pb zircon dating yields an average of age is $243 \pm 0.77\text{Ma}$ for the mafic rocks, and $240.5 \pm 0.76\text{Ma}$ for the felsic rocks, possibly representing the end age of the Emeishan large igneous province magmatism.

关键词: [茨达复式岩体](#) [早三叠世](#) [岩浆混合](#) [岩浆底侵](#) [攀西地区](#)

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