



Diagenesis and Deep Dynamics of the Late Mesozoic Magmatic Rocks from Jiujiang-Ruichang Ore Concentration Area, Jiangxi Province: Constraints from Geochronology and Geochemistry

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Abstract: The Late Mesozoic magmatic rocks in Jiujiang-Ruichang ore concentration area are mainly composed of granodiorite porphyry, quartz diorite porphyrite, diorite, later lamprophyre and diabase. Zircon U-Pb geochronology show that the emplacement of magmatic rocks in Jiujiang-Ruichang area are in the range of 130-150Ma and can be further subdivided into three stages. The first stage is in the range of 148-140Ma and the magmatic rocks are mainly granodiorite porphyry and quartz diorite porphyrite (Jia et al., 2015a, 2015b). The second stage is in the range of 131-130Ma and the magmatic rocks are mainly granodiorite porphyry. The third stage magmatic rocks formed <130Ma and are composed of mafic dykes. The granodiorite porphyry samples in Jiujiang-Ruichang area are classified as high-K calc-alkaline and meta-aluminous series and are enriched in LREEs, LILEs and compatible elements but depleted in HREEs and HFSEs. With insignificantly negative to positive Eu anomalies, the samples have higher contents of Al₂O₃ and Sr and ratios of (La/Yb)_N and Sr/Y, showing the features of adakites. Higher (⁸⁷Sr/⁸⁶Sr)_i and lower ε_{Nd(t)} and ε_{Hf(t)} values suggest that they were likely to have been formed by partial melting of over-thickened basaltic lower crust following the delamination of eclogitic lithosphere rather than melting of young oceanic crust, assimilation and fractional crystallization of mafic magma. It is inferred that the magmatic activities were formed in the transition from EW-striking Indosinian tectonic domain to NE-striking Paleo-Pacific tectonic domain.

Key words: diagenesis, deep dynamics, adakites, geochronology, Jiujiang-Ruichang ore concentration area

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