

**Mesozoic felsic magmatic activities
in North Wuyi Area, South China:
melting of metamorphosed
sedimentary rocks under a tectonic
regime transformation**

Y.Q. QI^{1*,2}, R.Z. HU¹, J.F. GAO¹, C.B. LENG¹

¹State Key Laboratory of Ore Deposit Geochemistry,
Institute of Geochemistry, Chinese Academy of
Sciences, Guiyang, Guizhou 550081, China
(correspondence: qiyouqiang@vip.gyig.ac.cn)

²EGRU, College of Science, Technology and
Engineering, James Cook University, Townsville,
Queensland 4811, Australia

The study is focused on the genesis and tectonic setting of the granites associated with the Lengshuikeng Ore Deposit (LSKOD), in North Wuyi Area, South China. Major rock types are granite porphyry, quartz syenite porphyry, K-feldspar granite porphyry, and rhyolite porphyry. Zircon U–Pb dating results reveal two episodes of magma emplacement: 156 Ma for granite porphyry and 134 - 139 Ma for the rest. Zircon crystals are all characterized by high $\delta^{18}\text{O}$ (7.5-10.0 ‰) and negative $\varepsilon_{\text{Hf}}(t)$ (-14.8 to -1.5), with $T_{\text{DM2}}(\text{zircon Hf})$ from 1600 to 1900 Ma. The both groups rocks are all peraluminous, being similar to typical S-type granites. Except rhyolite porphyry, all other rock samples show light REE enrichments and negative Eu anomalies. The rhyolite porphyry samples show variable depletion in light REE and more pronounced negative Eu anomalies overall. The calculated $\varepsilon_{\text{Nd}}(t)$ values and initial $^{87}\text{Sr}/^{86}\text{Sr}$ ratios for all of the samples range from -10.0 to -7.5 and from 0.70026 to 0.71350, respectively. Our new data indicate that both groups of granites were derived from the lower crust composed of Paleoproterozoic metamorphosed greywackes and pelites. Minor amount of mantle component is present in the younger granites. We suggest that partial melting of the crust was induced by basaltic underplating under extension. Temporally, we consider that the geological regime of Late Jurassic may be more related with transformation from the Tethyan to Pacific regime, whereas the Early Cretaceous is in an extension under lithosphere mantle upwelling, both geological regime were under a significant influence of deep fault.