

## **Geochemistry of Early Mesozoic calc-alkaline lamprophyres from the interior South China Block: Implication for partial melting of subducted sediments**

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Sediments can be subducted down to the deep mantle and contribute as a source for various mantle-derived intrusive rocks. However, whether this subducted sediment plays a major role or it only contributes a part via fluid or melt metasomatism to the primary melt is still unconstrained. Several Early Mesozoic lamprophyre dykes have been recently identified in the southeastern Yangtze Block in South China. In this study, we investigated two lamprophyres from the northern Guangxi Province of South China. Both of them show similar SiO<sub>2</sub> contents of 53.80 to 56.92 wt.%, TFeO contents of 4.60 to 5.16 wt.% and MgO contents of 6.03 to 7.22 wt.% with high Mg<sup>#</sup> values (>70). The multi-element pattern shows a typical crustal-like signature with enrichments of large-ion lithophile elements and light rare earth elements and troughs in Nb-Ta, Ti and Eu and peaks in Th-U and Pb. The lamprophyres have marked low Nb/U and Ce/Pb ratios, different from the typical MORB-OIB values, but similar to the values of subducted sediments. These rocks also show extremely radiogenic <sup>87</sup>Sr/<sup>86</sup>Sr (0.71499-0.71919), unradiogenic <sup>143</sup>Nd/<sup>144</sup>Nd (0.51188-0.51195) and radiogenic <sup>207</sup>Pb/<sup>204</sup>Pb (15.7014-15.7179) isotopic compositions. All these geochemical and isotopic characteristics suggest a single source/melt rather than a mixture of more than one source/melt and this single source shares a recycled terrigenous sediment nature. Hence, subducted sediments due to the subduction of paleo-Pacific Plate may have already present in the deep mantle of the interior South China Block as early as the early Mesozoic and supplied continental-derived sediment components for the studied lamprophyres.