

## **Alkaline lamprophyres in Tarim LIP, XinJiang, China: implications for interaction of various mantle sources**

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The Tarim Large Igneous Province (Tarim LIP) is the product of Permian mantle plume in China. A kind of intrusive dike, the Wajilitag lamprophyre, was considered as the product in the later period of early Permian large-scale magmatism. Here we report the mineralogical and geochemical data of the Wajilitag lamprophyre to provide available information for the deep magmatism of Tarim LIP.

Wajilitag lamprophyres belong to alkalin, high-Ti lamprophyres. The samples are enriched in LILE (e.g., Rb and Ba) and HFSE (e.g., Nb and Ta) with LREE-enriched REE patterns. According to the MgO content, we distinguish between high-Mg lamprophyres (Mg<sup>#</sup> averages 69.1) and low-Mg lamprophyres (Mg<sup>#</sup> averages 54.6). The high-Mg lamprophyres have high positive  $\epsilon\text{Nd}(t)$  (+2.3 to +2.6) and low  $I_{\text{sr}}$  (0.70336 to 0.70381) compared with the low-Mg lamprophyres ( $\epsilon\text{Nd}(t)$  from -7.0 to +0.4,  $I_{\text{sr}}$  from 0.70418 to 0.70612). The above elements and isotopic characteristics are similar to Ocean Island Basalt (OIB).

The application results of the thermometer on the pyroxene indicate thermal anomaly and the pyroxene phenocryst of high-Mg lamprophyres have higher equilibrium temperatures obviously. Series evidences show the low-Mg lamprophyres were formed in the mixture of magmas from mantle plume and partial melting of enriched mantle. The source of high-Mg lamprophyres was related to the asthenosphere with carbonate metasomatism. And during intrusive process, the high-Mg lamprophyre magmas were not influenced by the addition of sub-continental lithospheric mantle (SCLM).