

Cenozoic kamafugite in west Qinling, China: Age and geochemistry

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The Lixian area in southern Gansu province (West Qinling in terms of tectonic unit), is the only locality in China where the special rock kamafugite was found. This place is situated in central China, just in the tectonic transition region between the main tectonic units of the Tibetan Plateau, North China craton and the Yangtze craton. So, the rock will provide very important clues for the Cenozoic continental geodynamics of China. The rocks have been studied in a series of papers of Prof. Xuehui Yu [for example, 1 and 2]. We present here new dating and element and isotope geochemistry results of the kamafugite collected in Lixian area. Ar-Ar dating of 4 phlogopite samples yields the age of 18-23 Ma. These rocks (SiO₂=38-43 %, K₂O=0.8-3.8 %, MgO=8.3-18 %, TiO₂=2.7-4.4 %, CaO=9.5-13 %) are homogenous in trace element composition, with enriched LREE, Rb, Ba, Th, U, Nb, and Ta, and depleted Pb. \mathcal{E}_{Nd} range from 3.4 to 5.8, ⁸⁷Sr/⁸⁶Sr range from 0.703 to 0.706. ²⁰⁶Pb/²⁰⁴Pb range from 18.7 to 19.1, ²⁰⁷Pb/²⁰⁴Pb vary from 15.5 to 15.6, ²⁰⁸Pb/²⁰⁴Pb range from 39.1 to 39.4. A garnet-bearing mantle xenolith hosted in the rock show an extreme enriched Nd isotopes ($\mathcal{E}_{Nd} = -20$). It is possible that the rocks originated from an enriched upper mantle.

References

- [1] Yu X, Mo X, Flower M J, et al. (2001). *Acta petrologica Sinica*, **17**, 366-377
- [2] Yu X, Zhao Z, Mo X, et al. (2004). *Acta petrologica Sinica*, **20**, 483-494