

$^{40}\text{Ar}/^{39}\text{Ar}$ ages of rocks and ores from the Muluozhai REE deposit in Mianning County, Sichuan Province and their geological significances

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The Muluozhai REE deposit (28°22' N Lat. and 101°50' E Long.), located about 60 km to the southwest of the Mianning County, Sichuan Province, is the third largest light REE deposit in Sichuan. Along with other REE deposits in the Mianning-Dechang area, it forms one of the three major REE deposit producing regions in China. Although known since the 1960s, it has not attracted nearly as much interest as the Maoniuping and the Daluchao REE-deposits in the Mianning-Dechang ore belt, and, therefore, it has no isotopic data reported on rocks and ores and only a little research has been performed concerning its geological characteristics, geochemistry, isotopic geochemistry, mineralogy, and fluid inclusions.

The orebodies were situated in the structural fracture zones and ore veins between the nordmarkite and metamorphic diabase or marble. The nordmarkite was previously considered to be formed during the Yenshan.

Using the ^{40}Ar - ^{39}Ar isotopic chronological method to analyze the microcline in nordmarkite and phlogopite in ores, the authors obtained a plateau age of 31.2 ± 0.56 Ma, isochronal age of 30.6 ± 1.3 Ma and reverse isochronal age of 30.6 ± 2.6 Ma for microcline in nordmarkite, and a plateau age of 35.5 ± 0.5 Ma, isochronal age of 34.7 ± 1.2 Ma and reverse isochronal age of 35 ± 1 Ma phlogopite in ores, respectively. The results indicate that the ores and nordmarkite have consistent formation ages, belonging to the Himalayan. Confirmation of the diagenetic and metallogenic ages of the Muluozhai REE deposit is of great significance about understanding the formation ages of the regional igneous rocks and searching for REE mineral resources of the same kind.

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