



## Petrogenesis of Dahongliutan Granite in West Kunlun: Evidence from Zircon U-Pb age and Li-Sr-Nd-Hf Isotope

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**Abstract:** The Dahongliutan medium-sized lithium deposit in Xinjiang is one of the largest rare-metal pegmatite deposits in the West Kunlun orogenic belt, mainly composed of biotite monzonitic granite, biotite soda granitic granite and two mica granite with a mass of widely developed dark microgranular enclaves. LA-ICP-MS zircon U-Pb dating shows that the embedding ages of biotite monzonitic granite and biotite soda granite are (213±2.1) Ma (MSWD=1.3) and (214±1.8) Ma (MSWD = 0.56), respectively, the two ages are identical, indicating that the Dahongliutan pluton was formed in the Late Triassic. The Dahongliutan pluton has higher value of  $\delta^7\text{Li}$  (0.76‰~8.75‰) and lower content of lithium (5.04~52.22)ppm, which is close to the  $\delta^7\text{Li}$  value (mean value of 3.13‰) of the ore-bearing pegmatite, and the whole has a small range of variation, proving that there may be a genetic relationship between the Dahongliutan rare metal pegmatite and the rock mass. The initial ratio of ( $^{87}\text{Sr}/^{86}\text{Sr}$ )<sub>i</sub> is 0.7087~0.71574, and  $\epsilon_{\text{Nd}}(t)$  is -8.71~0.02, two-stage mode age ranged between 990 and 1700 Ma. The majority zircon  $\epsilon_{\text{Nd}}(t)$  value ranged from 0.12 and 4.3, except a small number of < 0, and the two-stage mode age ranged between 974 and 1307 Ma. The comprehensive research shows that the Dahongliutan pluton has derived from magma mixing between Mesoproterozoic crust and mantle.

**Key words:** zircon U-Pb age, Li-Sr-Nd-Hf isotope composition, rock genesis, Dahongliutan pluton, West Kunlun orogen

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