Two series Mesozoic rare metal mineralization in South China

X.F. LI[123*], L. ZHANG[123], Y.T. ZHU[123], G. WANG[4]

[1] Key Laboratory of Mineral Resources, Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing, 100029, China
(*correspondence: xiaofengli@mail.iggcas.ac.cn)
[2] Institutions of Earth Science, Chinese Academy of Sciences, Beijing 100029, China
[3]College of Earth Science, University of Chinese Academy of Sciences, Beijing 100049, Chin
[4] No. 216 Geological Survey, China National Nuclear Corporation, Urumqi 830011, China

It is the characteritics of the large scale W-Sn-Nb-Ta-Li-Be rare metal mineralization occurred in South China. Five episodic mineralization were identified in Mesozoic, e.g. Ordovician, Silurian, Triassic, Jurassic, and early Cretaceous. The granites which related to rare metal mineralization are granodiorite, biotote granite, two-mica granite, muscovite granite, topza granite and albite granite, and the albite granite is dominated related to rare metal mineralization. The rare metal mineralization can be devided into two series based on the magma sources, one is shallow series that magma derived from the upper crustal, and the deep series that magma derived from the lower crustal. The shallow rare metal deposit is related to S type granite, and the deep series is related to I-type more evoloved granite. Mafic encalve usually occurred in the deep series granite.

The whole rock and REE geochemistry, as well as Nd-Hf-O isotope indicates the rare metal mineralization is controlled by the source and the degree of evolution of magma. The clear metal zonation occurred in the shallow series and the deep series deposit. Three ways for metal precipitated, one is directly crystallization from granitic melt, the second precipitated from orthomagmatic-hydrothermal fluids, and the third is leaching from the granite and the country rocks.

The Mesozoic rare metal deposits in South China formed in the syn-collision, post-collision, intra-continental transfrom extensional and intra-continental transform compression setting in the different periods.

The project was sponsored by National natural Science Foundation of China(No. 41472080).