Late Palaeozoic-Early Mesozoic Tectonic-Magmatic Evolution and Mineralization in the Eastern Section of East Kunlun Orogenic Belt

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Abstracts: The East Kunlun Orogenic Belt (EKOB) is located at the west of the Central Orogenic System of China (Fig. 1), reserved complex and multiple tectono-magma events occurred in the past hundreds of million years as a compound continental orogenic belt (Meng et al., 2015; Yu et al., 2017; Chen et al., 2018; Li et al., 2018; Dong et al., 2018; Pei et al., 2018). Thus the magma carried abundant ore-bearing fluid from deep of the Earth to form large-scale polymetallic deposits. For instance, deposits of Cu, Au, Pb, Zn, Ag and Ni, and provides an ideal place for studying the relationship between magmatism and metallogenesis. Overall, the tectonic evolution of the EKOB from Late Paleozoic to Early Mesozoic can be divided into three stages, i.e. oceanic crust subduction stage (277-240 Ma), syn-collision stage (240-230 Ma) and post-collision stage (230-200 Ma). Crust-mantle magma mixing and mingling occurred during the whole evolution process of the paleo-Tethys Ocean. The mafic plutons are most likely derived from partial melting of metasomatic mantle wedge with subduction fluid. Most of the granites magmatites are partial-melting products of lower crust. The crust-mantle magmatic mixing in the subduction stage of the eastern part of the East Kunlun orogen not only brings mineralization materials and result in the enrichment of some elements, but also brings heat source. After the change of the physical and chemical conditions of the ore-forming flow, a large

Fig. 1. The distribution map for deposits of Late Palaeozoic-Early Mesozoic in eastern segment of East Kunlun orogenic belt. (Modified from Dong et al., 2018)
number of mineral deposits. The main metallogenic combination is Cu, Mo, and Au, generating small deposits in size. In the syn-collision stage, due to the compressive stress, the magmatic rock developed rarely, and the ore deposits distributed along the faults of the EKOB, and the main ore metal were Cu, Mo, and Au. In the post-collision stage, as a result of delamination of the lithospheric mantle in the extensional environment, which provides a channel for mantle materials to participate in mineralization. Especially, the conversion stage from the collision to the post-collision stage is the peak period of Late Paleozoic to Early Mesozoic metallogenesis in the area, such as Cu, Pb, Zn and Fe.

Key words: East Kunlun Orogenic Belt, magma evolution, magma mixing and mingling, mineralization

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References


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