REE geochemistry of wolframite: Implications for crustal-scale metallogenetic processes of south China

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There are three most important distinct metallogenic provinces in South China (Low-High hydrothermal province): (1) the North Jiangxi W-Cu-Au formation just the southen part of the Yangtze River Valley metallogenic belt(Fig. 1); (2) the broadly contemporaneous W–Sn province in the Nanling area; and (3) the Au-Sb-W formation of west Hunan province.

Fig. 1. Schematic geological map of the Three metallogenic provinces

Until 2015, the newly explored DHT tungsten ore field, which resource extent has the WO_3 resource reach up to 1.25 Mt, North Jiangxi W-Cu-Au formation (Fig. 1) , situated along the northern margin of the Yangtze Craton, and the Jiangnan Massif(JNM).

We studied REE of wolframite from the three province(Fig. 2), contemporary Neoproterozoic granodiorite and slates from JNM in order to understanding the hydrothermal and partial melting processes of the Neoproterozoic crystalline basement(NCB), like the JNM, integrating with a crustal-scale metallogenetic evolution about south China. We show that REE of wolframite from DHT, that the Ty1 analogous to Nanling and Ty2 alike to Woxi. We infer that wolfram have experienced two processes, a process of hydrothermal leaching from NCB to form Ty2 and Woxi, another one is partial melting of NCB, then crystallization differentiation to produce postmagmatic hydrothermal to from Ty1 and Nanling deposit. A contribution to understand of their geology, tectonic environment of great scientific and practical importance, south china.

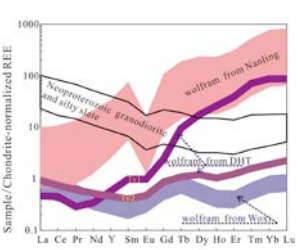

Fig. 2. Chondrite-normalized REE patterns of wolframite from the Three metallogenic provinces (The data of Woxi from Zhu *et al*. [1], and data of Nanling from Hei. [2] and Zhang [3])

[1] Zhu *et al*.(2014) Geochemica(China).43(3): 287–300. [2]Hei (2012) Chang'an University master Thesis(China). [3] Zhang (2012) China University of Geosciences master Thesis(China).60p