Chronology and geochemistry of Zhuqing Fe–Ti–V Oxide Deposits, Sichuan Province, SW China

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The Zhuqing V-Ti magnetite deposit is located in the cross between the Hongmenchang fault and Huangchangwan fault, which belongs to the Anding River- Yuanmou fault belt. This ore bodies are stratiform-like, lenticular and veined, mainly occurred in the gabbro [1]. Zircon ICP-MS U-Pb dating results for the gabbro indicate that this pluton was emplaced in the Meso- Proterozoic (ca. 1464±83 Ma; MSWD =1.9). This new age is distinguished from those of the Late Permian (ca. 260 Ma) large scale deposits such as the Panzhihua, Baima, Taihe and Hongge deposits. According to the Fe2O3 and TiO₂ contents, the ores are divided into two types, i.e., Fe-Ti rich and Fe-Ti poor types. The Fe-Ti rich type shows ~43 wt.% Fe₂O₃ and ~9 wt.% TiO₂, whereas the Fe-Ti poor type has ~27 wt.% Fe₂O₃ and ~6 wt.% TiO2. In addition, TiO2 and MgO show positive correlation with Fe₂O₃.

The ore- rich samples contain low Rb (\sim 7.55 ppm), Sr (\sim 21.0 ppm) and total REE (\sim 84.73 ppm) with pronouncedly negative Eu anomalies (δ Eu \sim 0.78), whereas the ore- barren samples have relatively high Rb (\sim 126.2 ppm), Sr (\sim 38.9 ppm), and REE (\sim 161.28 ppm) with obviously positive Eu anomalies (δ Eu \sim 1.16).

The age of Zhuqing Fe–Ti–V Oxide Deposits in western margin Yangtze Block was documented as Mesoproterozoic, its genesis may be related to development of the Panxi rift. The distinguished geochemical compositions in the ore- rich and ore-barren samples, suggest they were possibly generated by two different magmatic events.

[1] Chen C J. *et al.* (2012). Acta Geologica Sichuan□32□Supplement□□73~77