

Formation age of ore-bearing stratum of the Zankan iron deposit in Taxkorgan landmass of western Kunlun, NW China and its geological significance

GENGBIAO QIAO¹, PENG RUI LV¹, YVEZHONG WU¹,
YANHAI HAO² AND XIAOJIAN ZHAO¹

¹Key Laboratory for the Study of Focused Magmatism and Giant Ore Deposits, MLR, Xi'an Center of Geological Survey, China Geological Survey, Xi'an 710054, Shaanxi, P.R.China. e-mail: qgb408@163.com

²No. 2 Geological Brigade, Xinjiang Bureau of Geology and Mineral Resource Exploration, Kashi844002, Xinjiang, P.R.China

The Bulunkuole group complex is a main component of Taxkorgan Landmass in Western Kunlun, serving as an important ore-bearing stratum for the iron deposit in this area. At present, many large-scale iron deposits have been found within the Bulunkuole group complex, such as Zankan, Laobing, Mokaer and Yelike iron deposits. On the basis of detailed petrography feature and SHRIMP U-Pb zircon dating of metamorphic rocks from the intrusion stratum and the Bulunkuole group complex in the Zankan iron deposit, the formation age of ore-bearing stratum has been discussed, and then, the mineralization age of this deposit has been studied. The results show that, the formation age of representative magmatic zircons from plagioclase-hornblende schist in Bulunkuole group complex is (1845 ± 11) Ma, suggesting that the ore-bearing stratum were younger than (1845 ± 11) Ma. Zircon SHRIMP dating of plagiogranite porphyry intruded stratum yields a U-Pb age of (544.5 ± 4.7) Ma, suggesting that the ore-bearing stratum were older than (544.5 ± 4.7) Ma. Thus, it's speculated that the ore-bearing stratum were formed during 1845~544.5Ma. Moreover, SHRIMP dating of the zircon core from dacite yields U-Pb ages of 3048~3054Ma and 2032 Ma, indicating that an early Proterozoic or Archean basement might be existed in the surveyed area and its adjacent region, which hasan important significance for recognizing Bulunkuolegroup complex and the basement of Taxkorgan landmass. The Bulunkuolegroup complex, outcropped in Taxkorgan - Waqia uplift zone, is one of the earliest strata in Western Kunlun, which provides a basis for the existence of ancient Taxkorgan landmass. After comparing and analyzing different types of mineral deposits in this area, the results indicate that the Zankan iron deposit was mainly produced by the sedimentary mineralization process, and its iron bodies were syngenetic with iron-bearing rocks of the Bulunkuole group complex, so the mineralization age of the Zankan iron deposit is Proterozoic Eon, which is in accordance with the formation age of the Bulunkuole group complex and also is very important period for global iron metallogenic events.