

## Age and tectonic setting of the Huoqiu BIF in southeastern margin of the North China Craton

LEI LIU AND XIAO-YONG YANG

CAS Key Laboratory of Crust-Mantle Materials and Environments, School of Earth and Space Sciences, University of Science and Technology of China, Hefei 230026, China

\*Corresponding authors,

E-mail address: xyyang555@163.com (Yang XY)

The Huoqiu BIF deposit is located in the southeastern margin of the North China Craton (NCC), is hosted in Neoproterozoic high-grade metamorphic rock series. The iron ores are interlayered with amphibolite and granitic gneiss, indicating that they are spatially closely associated. LA-MC-ICP-MS U-Pb dating of magmatic zircons from amphibolite and gneiss yield U-Pb ages of  $2873 \pm 5$  Ma and  $2765 \pm 11$  Ma, respectively, providing the constraint of protolith age. Zircons from two iron ore samples yielded similar ages of  $2769 \pm 16$  Ma and  $2756 \pm 18$  Ma, respectively. Therefore, formation age of the Huoqiu BIF deposit were constraint at 2.75-2.77 Ga. The gneiss from three deposits displays high SiO<sub>2</sub>, low MgO, high K<sub>2</sub>O/Na<sub>2</sub>O ratio, pronounce HREE depletion, negative anomalies of Ti-Nb-Ta and high Sr/Y with high Sr contents and low Y contents, which is the characteristics of late Archean low-Mg tonalite, trondhjemite and granodiorite (TTG). The amphibolites have the high Fe<sub>2</sub>O<sub>3</sub>, Al<sub>2</sub>O<sub>3</sub> and CaO contents with dispersed Mg# and TiO<sub>2</sub>. Geochemically, they are alkali-rich, with high K<sub>2</sub>O contents and high K<sub>2</sub>O/Na<sub>2</sub>O ratios, revealing their calc-alkaline nature. They are enriched in LILE and LREE with flat HREE pattern and depleted in high field strong elements HFSE with weak Eu anomalies, these features are comparable with IAB-type amphibolite. Their original rocks were formed in an island arc-related setting and an active continental margin. Thus we infer that the Huoqiu BIF was formed in a subduction-related back-arc basin setting, close to an active continental margin during early Neoproterozoic.

**Keywords:** Huoqiu Neoproterozoic BIF; Zircon U-Pb dating; Tectonic setting; North China Craton (NCC)