

**Petrology and Geochemistry of Banded Iron Formation(BIF) of Kuluketage Block, NW China:  
Implications for the Metallogenic Mechanism of ~1.95 Ga BIFs**

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The Kuluketage block, located in the northeast Tarim Craton, is one of the largest Precambrian blocks in Xinjiang province, NW China. Many BIF-type (Superior-type) deposits have recently been discovered in western Kuluketage block. These orebodies, occurring in the Paleoproterozoic Xingditage group, are distributed nearly E-W in the southern Xinger and Xingdi faults. Wall rocks are dominated by tremolite biotite schist and quartzite. The geochemistry characteristics of schist indicate the BIFs formed in a passive continental margin environment.

The LA-ICP-MS zircon <sup>206</sup>Pb/<sup>238</sup>U ages of magnetite quartzite and syenite are  $1945 \pm 10$  Ma (MSWD = 0.77) (weighted average age) and  $1974 \pm 27$  Ma (MSWD =1 .05) (upper intercept age) respectively, which indicates BIFs in the Palaeoproterozoic may be associated with the evolution of the Columbia supercontinent. The chemical characteristics show that magnetite and quartz are dominant components (total content = 91.65~98.22 wt %), and the TiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub>, Zr(Nb)-TiO<sub>2</sub>, Zr(Nb)-Al<sub>2</sub>O<sub>3</sub> and Zr-Y/Ho scatter diagrams display strong positive correlation, illustrating the addition of a crustal contaminant into the chemical precipitate of the original BIFs. The higher Zr, Nb, Al<sub>2</sub>O<sub>3</sub> contents and a lower Y/Ho ratio of Kuluketage BIFs indicate a higher terrigenous detrital component contaminant compared to the NCC BIFs. The slight LREE enrichment and weak Eu, Ce, and Y positive anomalies of REY (REE and Y) patterns indicate that the source of Fe and Si of Kuluketage BIFs mainly come from the low-temperature hydrothermal solutions. And the declining of Eu anomaly values along with decreasing age of BIFs reflect the increasing important of low-temperature hydrothermal solutions relative to high-temperature hydrothermal solutions. Moreover, the presence of no Ce anomaly in the studied BIFs and NCC BIFs are attributed to reducing environment when the original BIFs precipitated.