

Characterization of the Banded Iron-Formations by using SR-XRF

Masaya Matsunaga [1], Chiya Numako [2], Yasuhiro Kato [3], Izumi Nakai [4]

[1] Science, Science Univ. of Tokyo, [2] Integrated Arts and Sci., Tokushima Univ., [3] Earth Sci., Yamaguchi Univ, [4] Dept. of Appl. Chem., Sci. Univ. of Tokyo

<http://www.ch.kagu.sut.ac.jp/OK/nakai/indexj.html>

Distributions of elements and chemical forms of Fe and trace Mn in the Banded Iron-Formations (BIFs) were investigated by SR-XRF technique and its formation environment was estimated from the equilibrium conditions of Fe and Mn in aqueous solutions. XRF mappings showed that trace elements (Mn, Sr, Ca and Zr) distribute locally at intermediate layers between iron-rich layers and chert (SiO₂)-rich layers. It is observed that the oxidation state of Fe changes periodically in the layer sequence of the BIFs. Similarly, the chemical forms of Mn also changed periodically. This periodic change may suggest that activity of organism, mainly algae, changed regularly in terms of the time span.