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广西新元古代BIF的铁同位素特征及其地质意义

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摘要：

通过分析广西三江地区新元古代条带状含铁建造的Fe同位素和主量元素组成，对海水的氧化还原状态提供
冰期提供了证据。相对于标准物质IRMM-014，新元古代含铁建造不同条带全岩样品的δ 57 Fe值变化范围1.(
表明BIF样品富集铁的重同位素。条带状含铁建造主要由Fe 2O 3和SiO 2组成，但却具有较高的Al2O3含量。
纯净的化学沉积物，而是具有一定的碎屑物质输入。碎屑输入量的不同引起深色和浅色条带之间铁同位素组成有
影响，新元古代BIF从海水中沉淀的赤铁矿δ 57 Fe的平均值在2‰左右，略高于太古代条带状铁建造的Fe同
逸度可能比太古代还低。这说明在富禄期绝大部分海洋仍旧被冰盖覆盖，只在局部出现融化。因此，富禄期的地
段，而不是间冰期。

关键词：Fe同位素 条带状含铁建造 富禄组 新元古代 三江地区

Fe Isotopic Characteristics of the Neoproterozoic BIF in Guangxi Province and its Ir

Fulltext

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Fund Project:

Abstract:

The increase of atmospheric oxygen fugacity has a significant impact on the geochemical cyc
may be recorded in the Precambrian Banded Iron Formation. This paper studied Fe isotope compositi
Neoproterozoic BIF from the Sanjiang area, Guangxi Province. The Fe isotopic compositions of the
analyzed using MS ICP MC. Relative to the reference material IRMM 014, the iron isotope compos
from 1.60 to 2.20 , with an average of 1.85 . The results show BIF samples are enriched in Fe hea
value between the dark and light bands has the difference of 0.4‰, which was caused by terrestri
impact of debris, the δ 57 Fe of hematite from the seawater precipitate is 2‰, indicating th
even lower than the Archean. This shows that the ice still covers the most of ocean in Fulu perio
suggests that the ice covered most of ocean in Fulu period, only partial melting. Therefore, the
warm phase of the glacial age, rather than the interglacial stage.

Keywords:Fe isotopes Banded Iron Formation Fulu Formation Neoproterozoic Sanjiang Area