

Selenium Enrichment in the Ediacaran Doushantuo Formation from Yichang Region, South China and Its Geology Implications

ZHANG Geng^{1,2}, JIANG Xi¹, FAN Haifeng^{3*}, WEN Hanjie³

(1. *Collage of resource and environmental engineering, Guizhou University, Guiyang 550025, China;*
2. *Graduate School, Guizhou University, Guiyang 550025, China;* 3. *State Key Laboratory of Ore Deposit Geochemistry, Institute of Geochemistry, Chinese Academy of Sciences, Guiyang 550002, China*)

Abstract: The second Great Oxidation Event (GOE2) had occurred during Neoproterozoic-Early Cambrian transition period, where the redox-sensitive elements of sedimentary rocks had been gradually enriched during this period. Selenium is a typical redox-sensitive element, and selenium-enriched sedimentary rocks may indicate changes in ocean redox environment. In order to discuss the relationship between redox conditions and Se enrichment of this period, Se and other redox-sensitive elements in the black shales of Member IV, the upper Doushantuo Formation in Yichang, South China, were systematically investigated. Results show that average Se value of most samples is 14.49×10^{-6} , which is much higher than the Se crustal abundance (0.05×10^{-6}). Se enrichment presents different degrees of relevance with other elements of Co, Ag, V, etc. The Mo-U conversation indicates the fluctuating anoxic environment of the Ediacaran Doushantuo Formation in Yichang Area. Selenium enrichment of the Ediacaran Doushantuo Formation in Yichang was controlled by biological activity, sulfidic water floating and instability anoxic marine environment. The local factors also contribute to the different degrees of Se enrichment of individual sections. Compared with Precambrian black shale, Se enrichment is significant, indicating strong input by continental weathering.

Keywords: Ediacaran; Se-enrichment; redox environment; Mo-U conversation