



Relationship between Sedimentary Environment and Organic Matter Accumulation of Niutitang Black Shale in Zhenyuan, Northern Guizhou

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Abstracts: The Niutitang black shale in northern Guizhou is characterized by high total organic carbon (TOC) content, high maturity and thickness, and has enormous shale gas potential. However, the lack of understanding on organic matter accumulation mechanism restricts the shale gas exploration and development. Here, the mineral compositions, major elements, trace elements and carbon and oxygen isotopes were used to analyzing the lithofacies types, sedimentary environments of different lithofacies and its relationship with organic matter accumulation, of Niutitang black shale at well ZY-1 in Zhenyuan county, northern Guizhou. The results show that, the lower

member of Niutitang formation is mainly composed of siliceous shale with TOC of 4.96%-10.1%, and the upper member is mainly composed of mud-rich siliceous shale with TOC of 1.43%-9.04% (Fig. 1). Geochemical data including V/(V+Ni), V/Cr, Ni/Co and U/Th synthetically reflect that, even though both siliceous shale and mud-rich siliceous shale deposited in reducing environment, the sedimentary environment of siliceous shale was more reductive and more retained than that of mud-rich siliceous shale. Oxygen-deficient reducing environment has much more important effects on organic matter enrichment than hydrothermal action and terrigenous detrital, in this study area.

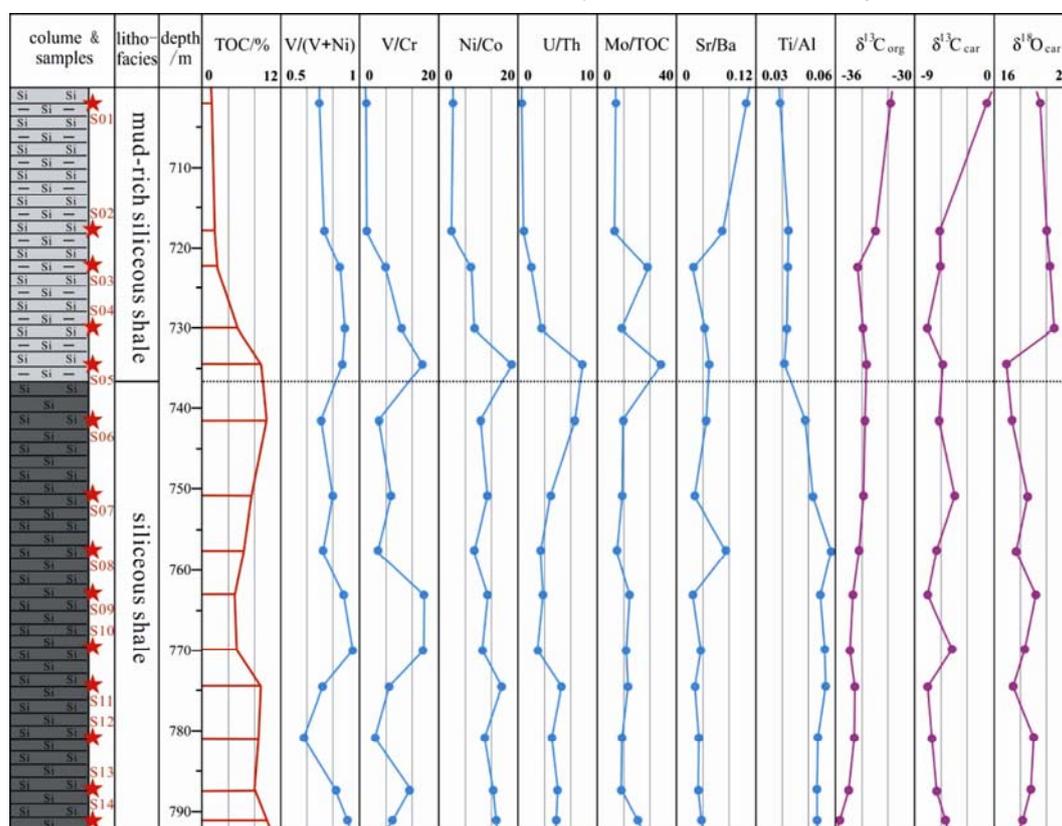


Fig. 1. Stratigraphic variation of geochemical parameters of Niutitang shale at well ZY-1.

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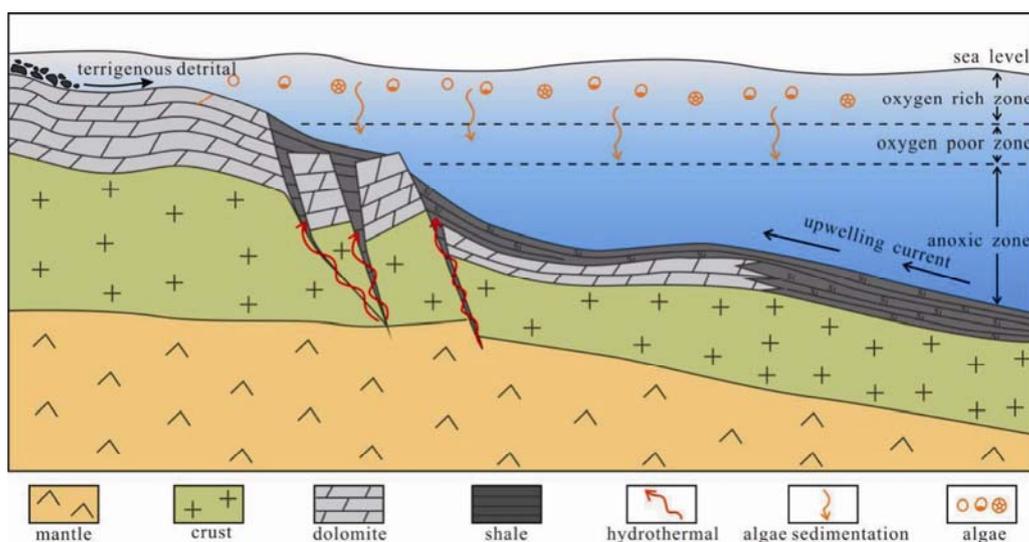


Fig. 2. Accumulation pattern of organic matter in Niutitang shales in Zhenyan, north Guizhou.

The accumulation pattern of organic matter in Niutitang shales in Zhenyan, north Guizhou, can be seen in Fig. 2.

Keywords: Guizhou, Niutitang formation, black shale, sedimentary environment, organic matter

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