



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

XIA Peng¹, FU Yong^{1,*}, YANG Zhen², GUO Chuan¹, HUANG Jinqiang¹ and HUANG Mingyong³

¹ Guizhou University, Guiyang 550025, Guizhou, China

² Guizhou Minzu University, Guiyang 550025, Guizhou, China

³ Guizhou Bureau of Geological and Mineral Exploration and Development, Guiyang 550004, Guizhou, China

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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.

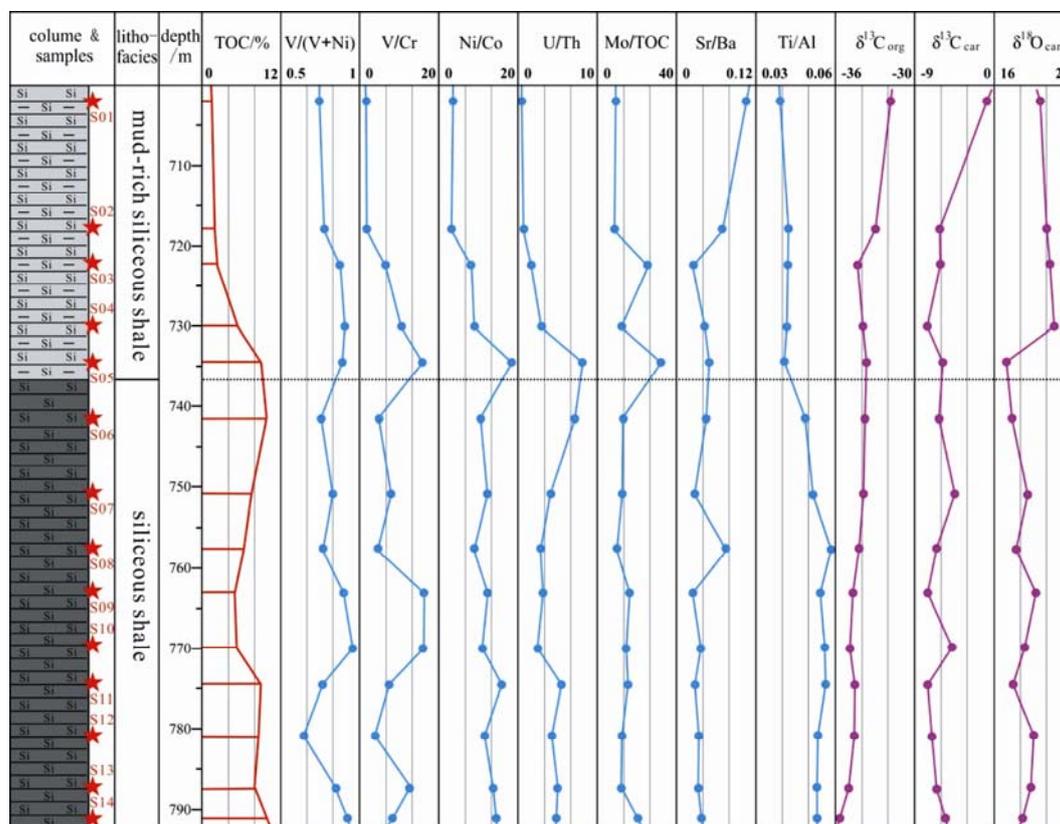


Fig. 1. Stratigraphic variation of geochemical parameters of Niutitang shale at well ZY-1.

* Corresponding author. E-mail: byez1225@126.com

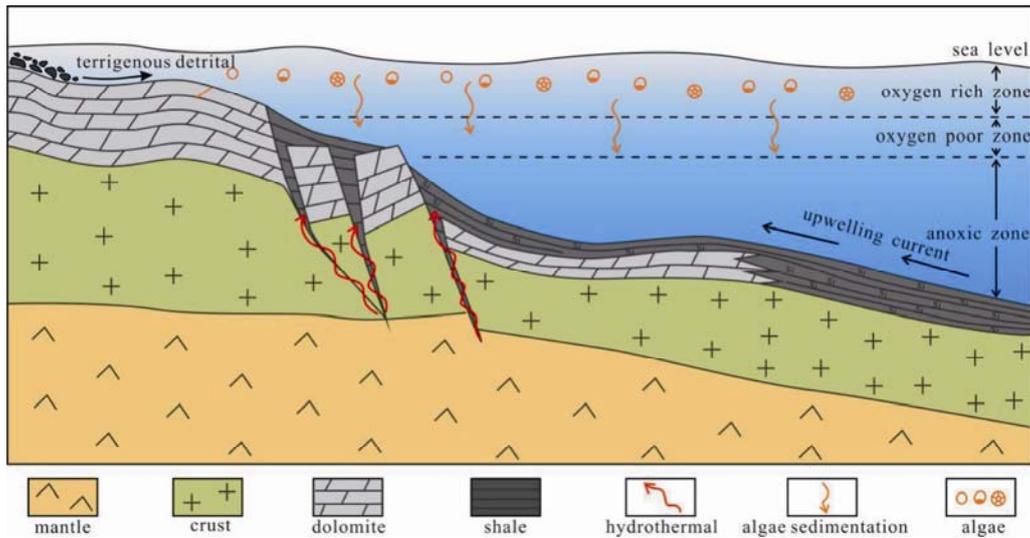


Fig. 2. Accumulation pattern of organic matter in Niutitang shales in Zhenyan, north Guizhou.

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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About the first author



XIA Peng, male, born in 1989 in Zunyi City, Guizhou Province; doctor; graduated from China University of Petroleum (East China); associate professor of Resource and Environmental Engineering College, Guizhou University. He is now interested in the study on occurrence state and enrichment mechanism of rhenium in black shale. Email: xp990691911@163.com; phone: 0851-83627126, 15735162787.

About the corresponding author



FU Yong, male, born in 1980 in Chengdu City, Sichuan Province; doctor; graduated from Peking University; associate professor of Resource and Environmental Engineering College, Guizhou University. He is now interested in the study on sedimentary mineral resource in black shale. Email: byez1225@126.com; phone: 0851-83627126, 13037881922.