

## The Exploration Targets of the Nanpu Sag: Insight from Organic Geochemical Characteristics of Source Rocks and Oils

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**Abstract :** Organic geochemistry of source rocks and oils in the Nanpu Sag, Bohai Bay basin was studied on the basis of the results of Rock-Eval and biomarker. The possible source rocks consist of the third member (Es<sub>3</sub>) and the first member (Es<sub>1</sub>) of Shahejie formation and the third member of Dongying Formation (Ed<sub>3</sub>) in the Nanpu Sag. The Es<sub>3</sub>, Es<sub>1</sub>, and Ed<sub>3</sub> source rock intervals in the Nanpu Sag all have high organic-matter richness and are at hydrocarbon generating stage, which are regarded as effective source rocks. The three possible source rock intervals have different biomarker associations and can be differentiated by gammacerane/ $\alpha\beta$  C<sub>30</sub> hopane, ETR ( $[\text{C}_{28}+\text{C}_{29}]/[\text{C}_{28}+\text{C}_{29}+\text{Ts}]$ ), C<sub>27</sub> diasterane/sterane and C<sub>27</sub>/C<sub>29</sub> steranes, which suggests they deposited in different environments. Based on the oil-source rock correlation, the shallow oils mainly originated from the Es<sub>3</sub> and Es<sub>1</sub> source rocks in the Nanpu Sag. Through hydrocarbon generation and expulsion history of the source rocks, trap development history and accumulation history, the shallow oils mainly originated from paleo-reservoirs in the Es<sub>3</sub> and Es<sub>1</sub> during the period of Neotectonism, and the residual paleo-reservoirs in the Es<sub>3</sub> and Es<sub>1</sub> would be the focus targets in the Nanpu Sag; Bohai Bay Basin.

**Keywords :** source rock, biomarker association, Nanpu Sag, Bohai Bay Basin

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