

# Geochemical characteristics of oil and source rock in Xihu

## Depression, East China Sea basin

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**Abstract:** Abundant oil resources have been discovered in Xihu depression, East China Sea basin. However, origin of oil is still not determined. Hence, source rock and oil samples were measured using gas chromatography and Fourier transform infrared spectroscopy (FTIR), and genesis of condensate and high-wax light oil are discussed through the analysis of geochemical characteristics. The results suggest that coal measure source rocks of the Pinghu Formation are at the mature stage of thermal evolution. Carbonaceous mudstone and coal mainly came from terrestrial organism, with kerogen type III, Dark mudstone mainly came from both terrestrial organism and aquatic organism, with kerogen type II-III, Genetic potential of carbonaceous mudstone and coal is significantly higher than that of mudstone. The crude oil is mainly divided into condensate with low density and wax and high-wax light oil, and light hydrocarbon shows obvious different compositions. Most of the oil is of humic type with some oil being both humic and sapropelic. Oil is at the medium mature stage. Most oil is derived from carbonaceous mudstone and coal in the Pinghu Formation, whereas only a small amount of oil is derived from dark mudstone. Physical properties of condensate and light oil and their difference of light hydrocarbon composition are unrelated with source rocks. Condensate was produced under the evaporation fractionation effect and from the oil which had been generated from the kerogen at the mature stage. High-wax light oil is residual oil from evaporation fractionation effect, and some oil has experienced mixing.

**Key words:** Xihu depression; geochemistry; kerogen type; physical properties.

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