

Title:

Oil Shale Metallogenic Conditions of Cenozoic Fault Basins in Eastern Northeast of China

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Oil shale is rich in eastern northeast of China. By analyzing Cenozoic typical oil-bearing shale fault basins (Hudian Basin, Fushun Basin and Yilan Basin) in above area, the paper revealed the main controlling factor of the oil shale formation. Based on outcrop, drilling, geochemistry, mineralogy and paleophyte analysis, this paper made the comparative analysis among three basins in the paleolake, paleoclimate, paleotectonics and paleosedimentary environment.

The outcomes indicate that paleoclimate and paleotectonics are the most important controlling factors that cause the differences on the Metallogenic characteristics.

The paleoclimate of the brackish lake controls the oil yield and thickness according affecting the lake chemical nature and lake level. A brackish lake forms in the semiarid, subhumid, and low precipitation climate and the climate fluctuation directly controls the lake level goes up and down. The flood times controls the oil shale layers, and the flood scale controls the oil yield and the thickness. From the first to the last flood, oil yield and the thickness begins ever higher and thicker separately. The oil yield and the thickness change little in early high system tract, and begin decrease in the late high system tract. The paleoclimate of the fresh lake controls the oil yield and thickness according affecting the productivity of lake and organic preservation. In the warm and humid climate, nutritive substance come from the land by the abundant precipitation accelerate the lake productivity greatly. The organic matter is well preserved in the stable stratification deep lake. So the oil shale formed in the fresh lake often has big thickness and middle oil yield. While there is an abnormal occurrence in Yilan Basin with low oil yield for the frequent gravity flow.

About the paleotectonics condition, along the side of the basin-controlling faults, the thickness and oil yield oil shale increase gradually. Sedimentary faults control the latitudinal throughgoing and the distributions of the thicker block.

Those rules of mineral-formation conditions will provide theory references for the later resource evaluation and oil shale mineralization prediction.

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