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Geochemical Characteristics and its Geological Significance of Oil Shale from the Youganwo Formation, Maoming Basin, China

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Geochemical elements of oil shale in the Maoming Basin were analyzed to discuss provenance attribute and depositional environment of the Youganwo formation. Experimental date of the major elements, trace elements and rare earth elements of 24 samples from the Maoye 1 well were examined.The analyzed oil shale samples were characterized by enrichment of Th, U, Pb and LREE, depleted of Zr, Cr and Hf[U+FF0C]negative Eu and Ce anomalies, indicating that these samples were originated from continental crust. The chemical index of alteration (CIA) values and the Zr/Sc-Th/Sc diagrams indicate that source rocks had undergone intense chemical weathering and deposition recirculation. Based on the La/Th-Hf and La/Yb-$\sum$REE diagrams and the negative anomaly of Eu element, the oil shale in the Maoming Basin has diverse sources, which mainly came from felsic source region of the upper crust or the mixture of felsic volcanic rocks, granite and sedimentary rocks. Ratios of the Sr/Cu, MgO/CaO suggest that oil shale was formed in fresh water under warm and humid climate, shallow water column became deeper during the middle and late sedimentary period. The depositional environment is interpreted to be limnetic with weak reduction at the early stage and gradually turned into semi-deep to deep lacustrine.