

## Discussion on the characteristics and influence factors of specific surfaces in argillaceous source rocks

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Samples of argillaceous source rocks were taken at different depth in well S of Dongying Sag (Bohai Basin), and also separated the clay fractions (<2 $\mu$ m) to measure the specific surface areas (SSAs) by using nitrogen adsorption method (BET) and ethylene glycol monoethyl ether method (EGME), as well as performing the X-ray diffraction for mineral compositions determination, for discussing the characteristics and influence factors of specific surfaces in argillaceous source rocks. The analysis results show that a) the specific surfaces of argillaceous source rock consist of inner surface and external surface, and clay minerals (smectite in particular) have great contributions to the inner and external surface area in source rocks, however non-clay minerals basically only have external surface, b) the influences of diagenesis to minerals etc. make the evolution of SSAs in burial depth have episodic characteristics, which is much more obviously in the inner surface area in particular, meanwhile there is a strong inhibition for SSAs (especially the inner surface) when the content of carbonate minerals is more than 40%, and it exists a threshold of carbonate minerals content (20~40%) that makes the external surface area stable, c) the inner and external surface in source rocks are more abundant in argillaceous siltstone whose external surface area is large, and the SSAs of mudstone (mainly inner surface) is bigger than the sandstone (chiefly external surface).

According to the difference between inner surface and external surface in argillaceous source rocks, the analyses give the results that the specific surfaces of argillaceous source rocks are influenced by the factors of rock types, mineral compositions and diagenesis, etc., and it is of great significance for the research of organic matter and hydrocarbon occurrence and petroleum exploration and exploitation in argillaceous source rocks, especially should be concerned in the research of unconventional petroleum.

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## Mineralogy and elemental geochemistry of coal in Southeast Chongqing, Southwest China

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The coal-bearing stratum in the southeast Chongqing coalfield is the Wujiaping Formation (P<sub>3w</sub>, Late Permian age). Mineralogy and elemental geochemistry of coal in this area were investigated by using inductively coupled plasma mass spectrometry (ICP-MS) and X-ray diffraction (XRD) techniques. The results showed that minerals in the coal are characterized by dominant clay minerals and pyrite, with the minor calcite, quartz and anatase. Compared with the average concentration of the China coal, the element Zr and rare Earth element (REE) in Southeast Chongqing coal is enriched, with the average content of 678.15 $\mu$ g/g and 413.95 $\mu$ g/g, respectively, approaching the industrial grade of the weathering deposit of Zr and REE. Besides these two elements, concentrations of Li, Sc, Ga are also higher than that in the China and the world coal. However, the element Nb, Ta is depleted, which may be attributed to the lack of tonstein in the coal seam. The model of REE in southeast Chongqing is enriched in LREE, with the LREE/HREE ratio between 1.9 and 7.91. Otherwise, the REE model also showed the negative Eu anomaly, the slightly negative Ce anomaly, similar with that of the Emeishan basalt. Valuable elements Zr, REE are concentrated in southeast Chongqing coal, which would have the potential economic value, and be deserved to research in future.