

## **Pore Type, Sizes and Genetic Analysis of Continental Shale Gas in Ordos Basin**

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### **Abstract**

Based on numbers of scanning electron microscope, porosity testing, clay mineral composition and content testing, we counted the pore size types, studied the pore characteristics and analyzed the genesis of typical continental shale reservoir of the Yanchang Formation in the Ordos Basin. The results show that, the organic matter evolution degree of this continental shale oil/gas formation is medium, and the value of  $R_o$  is between 0.6% and 1.3%. One of the main pore types is the matrix pore, including intra-crystal, intra-particle, the inter-crystal primary pores and the inter-crystal dissolution secondary pores. Most of the matrix pores are the micropores which are formed in the dehydration process of montmorillonite translated into I/O mixed layer or illite, and some inter-crystal dissolution are produced in the organic acid corrosion process. The other type is organic pore, which mainly is the oil/gas outlet pore formed in the organic hydrocarbon expulsion of different evolution stages, and the “gas pore” in the large-scale gas generation stage. By adding up the pore sizes, the results show the average scale of the matrix pores is relatively large and the scales mainly range from 20nm to 100 $\mu$ m, among the matrix pores, micropores accounted for about 80% and the nanopores accounted for approximately 20%. While the most of the organic pores is nanopores, and the scale of organic pores is between 20nm and 750nm. Through the comprehensive analysis, we studied that the formation of micropores concerned with the (mud) shales diagenetic evolution and the organic matter’s thermal maturity, that is the micropore types are different in different evolution stages.