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Micro-nano pore structure and connectivity investigation in continental shale, Zhanhua Sag, China

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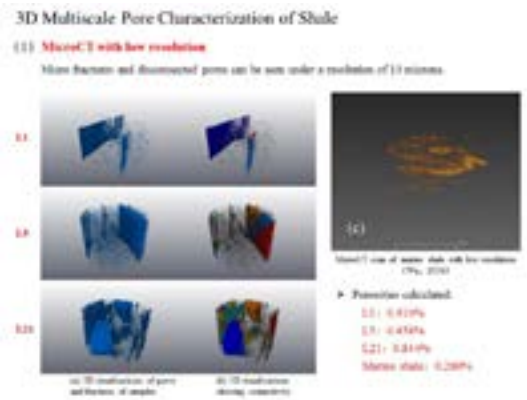
Pore structure and connectivity controls the fluid flow in the porous media. Shale micro-nano pore structure and connectivity in the continental Es31 Formation in the Zhanhua Sag is evaluated with FIB-SEM, High resolution CT, CO2 adsorption, N2 adsorption, and merury-injection porosimetry methods. The present study shows that micropores, mesopores ,macropores and micro-cracks are developed in the shale. The structure of the pore are mainly parallel plate, groove, slit, and ink-bottle type pore. Macropores have a greater capacity of providing pore volume rather than micropores and mesopores. Micropores are dominant in surface area. There is a positive correlation between Micropores volume and TOC, Clay mineral content. There is a positive correlation between Mesopores and clay mineral content. Pore connectivity of the continental shale nano pores are mainly organic pore, which are developed better with higher maturity.



Recent Publications

1. Lei Wang, Zhenzhen Dong, Xiang Li , Zunyi Xia. A multi-scale flow model for production performance analysis in shale gas reservoirs with fractal geometry. Scientific Reports, revised submitted (2018). SCI IF=4.259.
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Biography

Zunyi Xia is currently a research associate in College of Engineering, Peking University. China. She earned her second MS degree from the University of Oklahoma, Oklahoma, US. She earned her PhD from Peking University, Beijing, China. She has worked on shale reservoir characteristic since 2006. Her research interests include rock physics, unconventional reservoirs and reservoir characterization.

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