Contribution ID: **1017** Type: **Oral Presentation**

Using fractal theory to study the influence of movable oil on the pore structure of different types of shale: A case study of the Fengcheng Formation shale in Well X of Mahu Sag, Junggar Basin, China

Tuesday, 14 May 2024 12:30 (15 minutes)

In order to investigate the influence of movable oil on the pore structure of various shale types, this study systematically selected 19 shale samples from Well X in the Mahu Sag of the Junggar Basin. Initially, X-ray diffraction (XRD) analysis was conducted to classify the shale samples. Subsequently, the geochemical properties and pore structures of the samples, both pre and post oil extraction, were comparatively analyzed through Total Organic Carbon (TOC) content measurement, rock pyrolysis, and nitrogen adsorption experiments. Additionally, fractal theory was employed to quantitatively describe the impact of movable oil on the pore structure of different shale types.

The findings reveal that siliceous shale exhibits a higher content of movable oil compared to calcareous shale. Following oil extraction, there was a notable increase in both specific surface area and pore volume across all shale samples, with a more pronounced variation observed in the pore structure of siliceous shale as opposed to calcareous shale. Calcareous shale predominantly displays H2-H3 type hysteresis loops, indicative of ink-bottle-shaped pores, suggesting a relatively uniform pore structure. Conversely, siliceous shale exhibits a diverse range of hysteresis loops, reflecting its complex pore structure. The fractal dimension of calcareous shale samples appears primarily influenced by pore structure, exhibiting no significant correlation with TOC content before or after oil extraction. Conversely, the change in fractal dimension of siliceous shale samples demonstrates no clear correlation with either TOC content or pore structure, suggesting that variations in fractal dimension may arise from the combined effects of TOC and pore structure.

Acceptance of the Terms & Conditions

Click here to agree

Student Awards

I would like to submit this presentation into both awards

Country

中国北京

Porous Media & Biology Focused Abstracts

This abstract is related to Porous Media & Biology

References

Conference Proceedings

I am not interested in having my paper published in the proceedings

Primary author: Ms ZHANG, Hong (Peking University)

Co-author: Prof. LIU, Kouqi (Peking University)

Presenter: Ms ZHANG, Hong (Peking University)

Session Classification: MS13

Track Classification: (MS13) Fluids in Nanoporous Media