Contribution ID: **493** Type: **Poster Presentation**

Flow simulation of pore-scale deep shale gas under nano-confinement conditions

Monday, 13 May 2024 09:55 (1h 30m)

Deep shale gas will become an important part of supporting the growth of China ‘s natural gas production. Compared with the middle shale and shallow shale, the properties and porous flow laws of deep shale gas are more complex. The nano-confinement effects such as adsorption and slippage cannot be ignored in the study of porous flow mechanism of deep shale gas. When the porous flow law of deep shale gas on the pore scale, the influence of nano-confinement effect on the porous flow law needs to be further clarified. In this work, a pore network model containing water-wet inorganic pore throats and gas-wet organic pore throats is established, which conforms to the pore structure characteristics of shale in actual depth. And the permeability of shale gas under different wettability, slippage, adsorption and surface diffusion is studied. Viscous flow, Knudsen diffusion, adsorption, slippage and surface diffusion are considered in organic pores, viscous flow and Knudsen diffusion are considered in inorganic pores. Different TOC contents are set to study the influence of nano-confinement effect on deep shale gas flow and the flow law of shale gas. The results show that the porous flow of deep shale gas is greatly affected by adsorption and slippage. The surface diffusion of adsorbed gas in organic pores provides more flux for the flow of deep shale gas. When the TOC content is high, the flow of shale gas is mainly controlled by organic pores.

Acceptance of the Terms & Conditions

Click here to agree

Student Awards

Country

China

Porous Media & Biology Focused Abstracts

References

Conference Proceedings

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

Primary authors: ZHAO, Chaoyang (中国石油大学（华东）); Prof. YANG, Yongfei (China University of Petroleum (East China))

Presenter: ZHAO, Chaoyang (中国石油大学（华东）)

Session Classification: Poster

Track Classification: (MS13) Fluids in Nanoporous Media