

Adsorption/Desorption, Flow, and Fracking in Shale Media

Abbas Firoozabdi, Reservoir Engineering Research Institute and Peking University

Hydrocarbon production from shale formations has changed the energy landscape in recent years. The industry has moved to quickly exploit shale resources with little knowledge of basic knowledge. Unlike conventional resources where working equations are known to a high accuracy, in shale formations the bulk phase expressions may not be valid. There are two main complexities: 1-duality of shale chemistry materials, and 2-nm pore sizes. Even simple measurement may require molecular modeling for proper interpretations.

This presentation will cover two major issues in production from shale media. The first part of the presentation covers adsorption and desorption in shale media in relation to phase behavior. The second part covers basics of flow in shale pore space. The presentation will conclude with a brief presentation in CO₂ fracking where there have been very little basic research efforts. Both measurements and molecular simulations are the focus.