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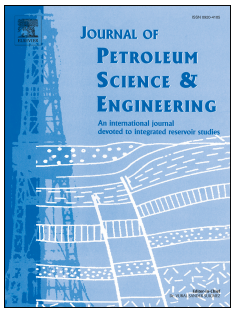

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Adsorption kinetics and thermodynamics properties of Supercritical CO2 on Activated Clay

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Abstract

A modified clay was used as a retention for gas adsorptions. The structural modification caused by activation clay was investigated by XRD, SEM and BET. As results, this modification indicated that the activated clay showed the highest BET surface area (16.29-24.68 m^2/g) and pore volume (0.056–0.064 cm^3/g). The capacity of CO_2 was measured at different temperatures 298, 323 and 353 K using a batch reactor. Langmuir and Freundlich isotherm models were applied to describe the experimental results for CO_2 adsorption. Thermodynamic parameters suggested the heterogeneous surface, exothermic and physical nature. Adsorption kinetics data on clay samples presented a slightly slower diffusion compared to the activated clay.

Keywords: Adsorption; CO_2; Clay; Langmuir; Freundlich, Diffusion.