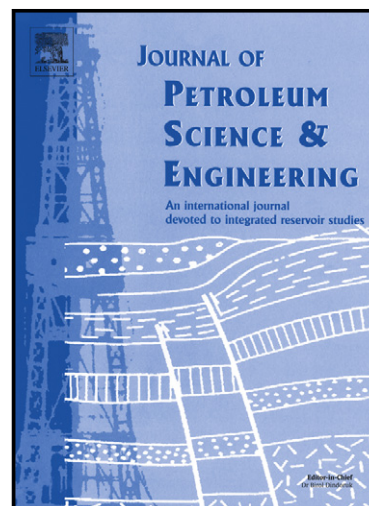


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Research Article

Effect of Silica Sand Size on the Formation Kinetics of CO₂ Hydrate in Porous Media in the Presence of Pure Water and Seawater Relevant for CO₂ Sequestration

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Abstract

Understanding the kinetics of carbon dioxide (CO₂) hydrate formation in pure water, seawater and porous media aids in developing technologies for CO₂ gas storage, carbon capture and sequestration (CCS) and potentially for methane production from methane hydrates. The present work is focused on understanding the kinetics of CO₂ hydrate formation in pure water and seawater at an initial formation pressure of 6 MPa (providing a driving force of about 4.0 MPa) and a formation temperature of 276.15 K with 75% water saturation in three silica sand particle sizes (0.16 mm, 0.46 mm, 0.92 mm). The seawater (3.3 wt% salinity) used in the present study is obtained from sea coast of Chennai (India). It is observed that the gas consumption of

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