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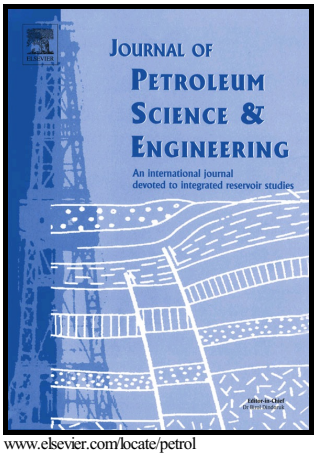

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Silica Nanofluids in Polyacrylamide with and without Surfactant: Viscosity, Surface Tension, and Interfacial Tension with Liquid Paraffin

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Abstract

The reduction in interfacial tension (IFT) of paraffin crude oil is of key importance, particularly for oilfield applications such as enhanced oil recovery (EOR). Nanoparticle laden suspension such as nanofluid is gaining widespread interest and their use to achieve moderate IFT reduction in paraffin crude oil. In this work, stable nanofluids of an oilfield polymer (polyacrylamide, PAM) with and without surfactant (sodium dodecyl sulfate, SDS) have been formulated and examined for IFT reduction of paraffin oils such as n-decane, n-hexane, n-pentane, and n-heptane. Nanofluids were also investigated for various studies such as dispersion stability, viscosity, rate of sedimentation (ROS), and DLS based measurements (size and zeta-potential). Other studies involving investigations on surface tension (SFT), IFT reduction, effect of SDS and varying SiO_2 concentration on IFT reduction, and their efficacy for IFT reduction