عنوان مقاله:

Study of Temperature Effect on Efficiency of Surfactant Flooding in a Glass Micromodel

محل انتشار:

دومین کنفرانس بین المللی در شیمی و مهندسی شیمی (سال: 1400)

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خلاصه مقاله:

A variety of techniques are applied to enhance heavy oil recovery and surfactant flooding is known as a common method. Since enhancing oil recovery needs to be performed at high temperatures, the current research focuses on the efficiency of cationic (C۱۲TAB) and anionic (SDS) surfactants, and brine in enhancing oil recovery at ۲۵ and ۸۰œC on the microscopic and macroscopic scales. Additionally, to better understand the enhancing oil recovery mechanisms in porous media, the viscosity, contact angle, and surface tension values were experimentally measured. The flooding results demonstrated that with an increase in temperature from ۲۵ to ۸۰œC, oil recovery was enhanced and this observation is rooted in the severe decrement in oil viscosity in comparison to water viscosity at ۸۰œC. It was also observed that the surfactants had better performance in reducing surface tension and thereby increasing oil recovery rather than brine at both temperatures. Comparing the performances of surfactants revealed that higher viscosity of SDS than C۱۲TAB made SDS the more efficient surfactant in displacing oil in the pores. According to the contact angle results, it was found that during surfactant flooding, a temperature increase to ۸۰œC caused a decreased oil-wettability of the medium. This finding was also observed in microscopic images where lower oil layer thickness in the pores was observed at ۸۰œC.

کلمات کلیدی:

Enhanced Oil Recovery, Surfactants, Temperature, Micromodel