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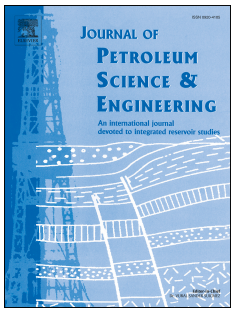


Influence of Thermal Marangoni convection on the recovery of bypassed oil during immiscible injection

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## Abstract

Several phenomena could recover the bypassed oil in matrixes and low permeable areas, among them; Marangoni is the most unfamiliar one in fluid flow model. This mechanism triggers a convective flow from low interfacial tension point to a high interfacial tension point because of variation in solvent concentration, temperature or electrical charge.

In this study, experimental and analytical tools have been utilized to investigate the effect of thermal Marangoni flux on the enhancement of oil recovery during immiscible injection in a matrix-fracture system. Results of non-isothermal experiments have been compared with isothermal (as the zero level of Marangoni) to study the presence of Marangoni flow and its direction respect to the fracture location. Results show that not only the Marangoni flux does exist and has significant impact on the recovery of bypassed oil but also, its magnitude is proportional to the absolute value of temperature gradient in phases interface.


Key words: Injection into Fracture, Marangoni Flow, Benard-Marangoni Convection, Immiscible Injection