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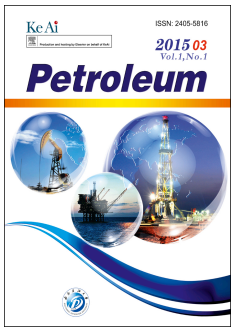

Optimized polymer flooding projects via combination of experimental design and reservoir simulation

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Optimized polymer flooding projects via combination of experimental design and reservoir simulation

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Abstract

The conventional approach for an EOR processisto comparethe reservoir propertieswiththose of successful worldwide projects. However, some proper cases may be neglected due to the lack of reliable data. A combination of experimental design and reservoir simulation is an alternative approach.In this work, the fractional factorial design suggests some numerical experimentswhich their results are analyzed by statistical inference. After determination of the main effects and interactions,the most important parameters of polymer flooding are studied byANOVA method and Pareto and Tornado charts.Analysis of main effects shows thatthe oil viscosity,connate water saturation and the horizontal permeability are the 3 deciding factors in oil production. The proposed methodology can help to select the good candidate reservoirs for polymer flooding.

Keywords

Polymer flooding, Fractional factorial design, Reservoir simulation, P-value, ANOVA

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