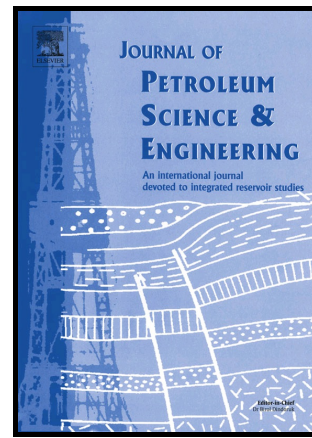# Author's Accepted Manuscript

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Performance of nature inspired optimization algorithms for polymer Enhanced Oil Recovery process

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Abstract

The application of Enhanced Oil Recovery (EOR) techniques are encouraged by the current oil price and the growing global demand for oil. Optimizing oil production from current resources becomes a main strategic target for many oil producing companies around the world. Among EOR processes, polymer flooding is an attractive option in many reservoirs. The objective of polymer flooding is to control water mobility inside oil reservoirs to ensure high oil recovery factors. Several designing parameters are critical for the success of polymer flooding applications. Chemical concentration depends on geological features of reservoir and well pattern are crucial to make decisions for the reservoir management. In addition, identifying the time of polymer injection is also important in a project as well as slug size. The goal of this article is to evaluate the efficient polymer injection strategy based on global optimization algorithms. Authors investigated the design of polymer flooding process in terms of optimal concentration, slug size and initiation time employ nature inspired algorithms coupling with reservoir simulation. Numerical testing and comparative study show that proposed natural-inspired algorithms outperform widely reported in literature optimization methods in that it provides a higher quality solution.

Keywords: Optimization, Polymer flooding, Enhanced Oil Recovery, Nature inspired algorithms

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