

# SIMULATION OF LAB-SCALE HOMOGENOUS FRACTURED BLOCKS

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## ABSTRACT

In this paper, we simulate dynamic imbibition on a small scale homogenous fractured block. The purpose is to seek optimum conditions under which the oil recovery is maximal. In order to do this, we consider a base case simulation and then we do sensitivity analyses on several parameters. The injections are all continuous. Various chemical solutions are injected. These include: water, polymer, surfactant, alkali, and different combinations of them. For convenience of simulation, although this is not physically correct, alkali represents the wettability modifying agent, while the surfactant is the agent that lowers the IFT to ultra-low values. Therefore, a simulation labeled AS indicates that the injected chemical solution lowers the IFT to ultra low values as well as alters the wettability from mixed-wet to water-wet. On the other hand, a simulation labeled ASP does the above task as well as making the chemical solution viscous (polymer). The recovery curves are compared for each sensitivity analysis and appropriate profiles are demonstrated in order to understand the results.

**KEYWORDS:** Chemical-enhanced , ASP flood, Surfactant, Static ,Dynamic .Imbibition Test.

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