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Type: Oral Presentation

Dynamic Behaviours of Foam Flooding assisted by Newtonian and non-Newtonian Viscosifying Agents in Porous Media

Wednesday, 1 June 2022 14:35 (15 minutes)

One of the main reasons for Enhanced Oil Recovery (EOR) are that to mobilize oil left in the reservoir after primary recovery (depletion by pressure difference solely) and water flooding. However, it might be necessary to expand the infrastructure for certain EOR projects as more wells are required or a different well pattern is necessary. The objective of this study is to investigate the generation and stability of foam generated by Newtonian and non-Newtonian viscosifying agents. The shear rate inside the core was calculated based on literature, which was combined with viscometric measurements in order to form four pairs of equal apparent viscosity. These four pairs then were the subject of core flood experiments. The differences and overlap within the core flooding experiments with foam generated by Newtonian and non-Newtonian fluids were observed, by examining the mobility reduction factor in transient and steady-state conditions as well as by calculation of the gas fraction present in the core. The main conclusion is that glycerol can be used in core flood experiments and reach the same mobility reduction factor as polymer solutions with the same apparent viscosity, as long as the viscosity of the injected solution is reasonably low. Furthermore, it even showed to reach the maximum mobility reduction factor faster than the foam generated by polymer solution. However, for more viscous solutions with higher glycerol concentrations strong foam could not be generated in these series of experiments which shows an advantage of polymer over glycerol.

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References

Time Block Preference

Time Block B (14:00-17:00 CET)

Participation

In person

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