

THE EFFECT OF SALINITY ON IMMISCIBLE DISPLACEMENT RECOVERY

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Resumo/Abstract:

Mutually soluble solvents such as carbonated water, ether saturated water, or alcohol saturated water can be used to enhance water drive recovery of oil as the residual oil is diluted by the solvent. Here we consider the brine/ ether/ hexadecane system as an example. The procedure to find the solution of the model equations was developed by joined work of the TU-Delft and IMPA. The model equations can be straightforwardly solved numerically thanks to relevant thermodynamic data that were recently found. The solution can be interpreted with an analytic method, e.g. the method of characteristics. The analytical solution and the numerical solutions show good agreement. In the presence of salt, the solubility of the solvent in the aqueous phase can be quantified using the Setchénov coefficients, which show that the solubility in the aqueous phase decreases with increasing salt concentration. By injection of low salinity water with dissolved ether it is possible to enhance the soluble solvent process.

References

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