

Permeability Modeling with Better Accuracy and Less Parameters

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Petroleum reservoirs require modelling

Technology Summary

The inventors have disclosed an equation-of-state (EoS) to continuously model relative permeability as a function of phase saturation and distributions, fluid compositions, rock surface properties, and rock structure. Unlike commercial compositional simulators, phases are not labelled; instead, the phases in each grid block are ordered based on their compositional similarity.

Application & Market Utility

The model is tuned to measure two-phase relative permeability curves with few tuning parameters and then it is used to predict relative permeability away from the measured experimental data. The model is applicable to all flow in porous media processes, specifically low salinity polymer, surfactant, miscible gas and water-alternating-gas flooding. This technology will make for easy reservoir simulation, which means improved estimates of recovery and economic predictions by oil companies.

Next Steps

Improve model based on experimental data. Develop test case of fully implicit scheme.

TECHNOLOGY READINESS LEVEL

4-7

Seeking

Investment | Licensing |

Keywords

- petroleum reservoir
- fluid flow modeling
- permeability modeling
- simulation
- phase identification

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