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Assessing uncertainties and identifiability of foam displacement models employing different objective functions for parameter estimation

Monday, 30 May 2022 17:05 (15 minutes)

Foam injection in porous media is often used to control the gas fingering in multi-phase flow. Mathematical models of foam dynamics involve non-newtonian formulations. To numerically simulate these complex phenomena, experimental data is gathered and used to estimate the parameter values of models via optimization techniques. The present work improves this procedure by introducing a new objective function based on the mobility reduction factor and does not require further experimental observations other than those usually obtained in core-flooding experiments. We show that the new objective function generates better calibrated models with high fidelity, low uncertainties and alleviates parameter non-identifiability issues.

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Participation

Unsure

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