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RHEOLOGICAL RESPONSE OF FOAM FLOODING MODELS CONSIDERING EXPERIMENTAL UNCERTAINTIES

Thursday, 3 June 2021 14:40 (1 hour)

In this work, we study uncertainties originating from foam flood models' responses concerning non-Newtonian behavior. This work presents how uncertainty affects foam rheology and analysis of Newtonian and non-Newtonian foam formulations. To this end, the Markov Chain Monte Carlo (MCMC) technique was used to estimate parameters for the different foam models. In addition, a global sensitivity analysis based on Sobol indices was also performed to determine which input parameter is more relevant to variations in the quantities of interest. The quantities of interest are apparent viscosity, mobility reduction factor, and total relative mobility, among others. Experimental data were obtained from the literature for the Bayesian parameter estimation of the STARS models. In particular, to focus on Newtonian and non-Newtonian behavior, we adopted the STARS model with its dry-out component and shear thinning function. The results indicate how much the choice of a specific model for foam flow (Newtonian or non-Newtonian) can be affected by uncertainties from estimated parameters.

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Time Block Preference

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

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