

The Impossible Task of Replicating Numerical Models in Multiphase Flow Experiments

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Objective

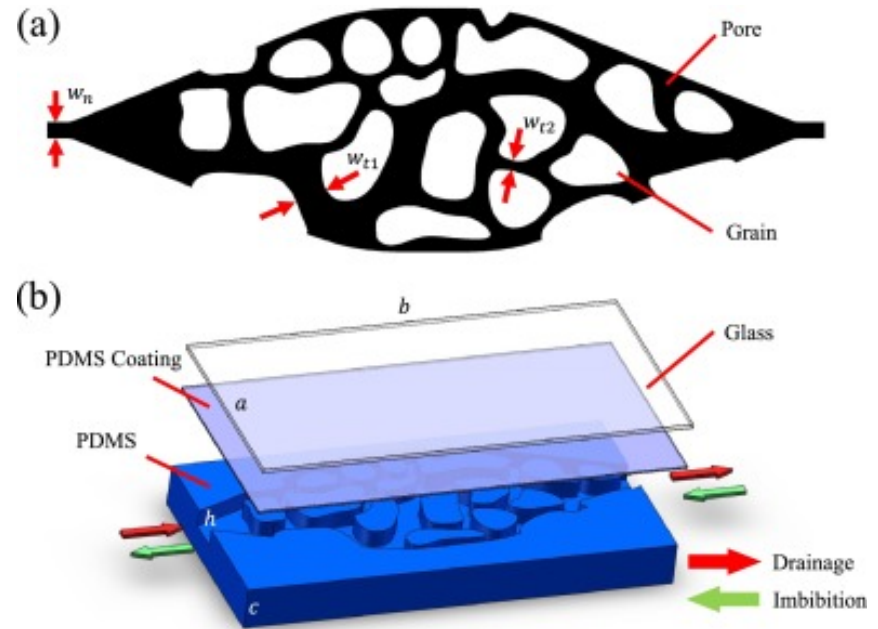
- To study the reproducibility of numerical models of multiphase flow experiments using microfluidic cells.

New Science

- Researchers performed a set of drainage and imbibition experiments using six identical microfluidic cells to study the reproducibility of numerical models of multiphase flow experiments.
- The result: a variability (upwards of 30%) across the cells, confirming that multiphase flow experiments should be considered a stochastic model—one that accounts for random variations, such as those observed in the study

Significance

- Deterministic models of multiphase flow offer the research community more accurate results that could save time and money on future validation processes.



(a) Pore structure. Pore spaces are shown in black, and the solid phase is in white; (b) Three-dimensional configuration.