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Experimental and numerical investigation of multiphase flow in disordered media AMIR RIAZ, HAMDI TCHELEPI, Stanford University, YILDIRAY CINAR, University of New South Wales — We present laboratory scale experiments and network simulations to investigate the influence of capillary, gravitational and viscous forces on multiphase flow in disordered microscopic media. Two-dimensional experiments, which are performed in a vertical glass bead pack to understand microscopic behavior, demonstrate the existence of small scale instability that is analyzed with the theory of invasion percolation. Numerical simulations based on pore networks are carried out to help investigate the possibility of developing effective conservation laws at the macroscopic scale.

Amir Riaz
Stanford University

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