

Abstract Submitted
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Flow diversion and permeability modification due to polymer flow in porous media SHIMA PARSA, ARIEL AMIR, DAVID A WEITZ, John A Paulson School of Engineering and Applied Sciences, Harvard University — Polymer flow through porous media is of particular interest in applications such as enhanced oil recovery and ground water remediation. We use confocal microscopy and bulk permeability measurements to probe the effects of polymer flow on the permeability and local velocity distribution of a single phase flow in 3D micromodel of porous media. Our measurements show considerable reduction in permeability and increased velocity fluctuations with fluid velocities being diverted in some pores after polymer flow. We also find that the average velocity in the medium at constant imposed flow rate scales with the inverse square root of permeability. Using a simple model of porous medium we verify this scaling from physical length scales of the medium.

Shima Parsa
John A Paulson School of Engineering and Applied Sciences, Harvard University

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