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Flow of emulsion droplets in 3D porous media CHAO HUANG, LIN SHI, Department of Thermal Engineering, Tsinghua University, SHIMA PARSA, DAVID WEITZ, School of Engineering and Applied Sciences, Harvard University — We study the pore-level behavior of large emulsion droplets in 3D micromodel of porous media using confocal microscopy. We match the index of refraction of the emulsion droplets and the ambient fluid to the porous media. The emulsion droplets are uniform in size and generated using microfluidics. We measure the changes in the fluid velocity as the emulsion droplets flow in the medium using particle image velocimetry. We find that due to the trapping and flow of emulsion the velocities change locally. These changes are particularly beneficial in enhanced oil recovery.

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