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Structure and dynamics of a coarsening emulsion[1] KLEBERT FEITOSA, Dept. of Chemical and Biomolecular Engineering, University of Pennsylvania, JOHN CROCKER, Dept. of Chemical and Biomolecular Engineering. University of Pennsylvania — We investigate the structure and dynamics of a non-aqueous coarsening emulsion. The experiment is performed on an index and density matched emulsion prepared by homogenization with droplets occupying approximately 80% of the volume fraction. Three dimensional visualizations of the droplets are obtained by fluorescent confocal microscopy at different time intervals as the emulsion coarsens. We find that the droplet size distribution matches a Weibull distribution. The pair coordination function as a function of droplet core size shows a peculiar liquid structure where small droplets fill the interstices between big ones. While we observe self similar behavior in droplet growth, the evolution of the droplet size distribution departs from that predicted by mean field theory.

[1]NSF-DMR

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