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Structure and Rheology of Stimuli-Responsive Pickering Emulsions DAN HO, PRASAD SARANGAPANI, YINGXI ELAINE ZHU, University of Notre Dame, Department of Chemical and Biomolecular Engineering, Notre Dame, IN 46556 — Self-assembly of micro-and nano-spheres and their stability at liquid-liquid interfaces are important due to their broad range of applications from emulsion polymerization to heavy oil transportation. In this work, we employ temperature-responsive poly(N-isopropyl acrylamide) (PNIPAM) microspheres to form Pickering emulsions and directly visualize the dynamics and rheology at the droplet interfaces in response to varied temperature using confocal laser scanning microscopy. Destabilization of the interface is observed as increasing temperature across the lower critical solution temperature (LCST) around 42-44 degree C for this system, where the coarsening at the oil-water interface occurs due to the shrinkage of PNIPAM particle size and results in the onset of coalescence of droplets.

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