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Clusters of Janus Particles in Stokes Flow JONATHAN WHITMER, University of Illinois at Urbana-Champaign, ERIK LUIJTEN, Northwestern University — In recent years it has become possible to synthesize colloidal particles with anisotropic interactions, which has opened the possibility to control their self-assembly into a variety of superstructures. One of the simplest examples of such "patchy" colloids is the Janus particle, a spherical colloid with two chemically distinct hemispheres. If one of these hemispheres is hydrophobic, immersion in an aqueous solvent creates an anisotropic attractive interaction between the hydrophobic hemispheres, driving assembly of these particles into micelle-like clusters. Individual particles also interact anisotropically with the fluid, wherein the surface wetting behavior may manifest as nontrivial translation–rotation coupling. We examine both effects by simulating the formation and dynamical behavior of clusters of Janus particles under uniform Stokes flow utilizing a coarse-grained model of the solvent.

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