Reversible Shear-Flow-Induced Polymer and Colloid Aggregates HSIEH CHEN, ALFREDO ALEXANDER-KATZ, MIT — Using hydrodynamic simulations and a coarse-grained interaction model, we show that self-associating polymer and colloid mixtures can form reversible flow-induced aggregates in shear flow. We find that when increasing shear rates, the mixtures go through four distinct conformations from no aggregation to dense aggregates. The different conformations are verified by analyzing their radial distribution functions, g(r), as well as by visual inspection. Furthermore, we find that the formation of the aggregates is reversible. That is, the shear-induced aggregates disappear when we decrease the shear rates, and reappear when we increase the shear rates again.

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