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Distributed Polymeric Stickers and their Role in Colloidal Interactions and Selective Adhesion Dynamics. MARIA SANTORE, NATALIA KOZLOVA, Department of Polymer Science and Engineering University of Massachusetts Amherst, BING MEI, Department of Chemical Engineering University of Massachusetts Amherst — Polyelectrolytes are frequently added to colloidal dispersions as flocculants. When they are high in molecular weight and low in backbone charge, as they adsorb to particles they extend (at least temporarily) into solution from the surface of a first particle to trap a second. This is the basis for bridging flocculation, which is often reversible to the extent that backbone relaxation ultimately causes the chain to release the second particle and more completely coat and stabilize the first. By contrast, addition of small amounts of densely-charged low molecular weight chains produces irreversible flocculation via a patchwise mechanism: A localized region on a first particle is charge-overcompensated by an adsorbing chain, and adheres to a bare spot on an approaching particle. We show here, with a model system, how the dynamics of patchwise flocculation depend on fluctuations in the distribution of adsorbing chains, and gives rise to a curvature-based selectivity for particle destabilization.

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