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Role of surfactants on the assembly of amphiphilic copolymers through instabilities of organic/water interfaces JINTAO ZHU, RYAN C. HAYWARD, Department of Polymer Science & Engineering, University of Massachusetts Amherst — We have studied the influence of aqueous surfactants on the assembly of amphiphilic copolymers through hydrodynamic instabilities of organic/water interfaces. Micropipette aspiration measurements on evaporating chloroform droplets containing polystyrene-poly(ethylene oxide) (PS-PEO) diblock copolymers revealed that the onset of interfacial instability and subsequent growth in surface area corresponded to a near vanishing of the interfacial tension. By adding another surfactant, such as sodium dodecyl sulfate (SDS), to the aqueous phase, the chloroform/water interfacial tension was reduced and the onset of instability shifted to lower concentration of PS-PEO. Varying amounts of SDS also led to qualitatively different mechanisms of growth in interfacial area and correspondingly different morphologies of the resulting copolymer assemblies.

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