

Abstract Submitted  
for the MAR08 Meeting of  
The American Physical Society

**Amphiphilic copolymer assemblies formed by interfacial instabilities of oil-in-water emulsions** JINTAO ZHU, RYAN C. HAYWARD, Department of Polymer Science and Engineering, University of Massachusetts at Amherst — Self-assembly of amphiphiles into discrete nano-objects is of fundamental interest and is important for applications including encapsulation and drug delivery. We will describe a new method by which amphiphilic block copolymers can be controllably assembled into hierarchically-structured microparticles and various micellar morphologies. We first form oil-in-water emulsion droplets, where the dispersed phase consists of a volatile organic solvent containing a dilute concentration of amphiphilic polystyrene-block-poly(ethylene oxide) diblock copolymer. Upon extraction of the organic solvent, the droplets undergo interfacial instabilities which lead to formation of microparticles with budding vesicle, foam-like, or dendritic structures, or micelles with spherical, cylindrical, or more complicated morphologies. We will discuss how the structures of these assemblies can be tuned, and the opportunities that they present for encapsulation of hydrophobic species.

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Date submitted: 23 Nov 2007

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