

*Electronic Supplementary Information for:*

**Tuning the assembly of amphiphilic block copolymers through instabilities of solvent/water interfaces in the presence of aqueous surfactants**

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**Supporting Movies.** Real-time movies of shrinking emulsion droplets recorded using bright-field optical microscopy with a 100x oil-immersion objective. Each movie shows the behavior of chloroform droplets (sizes  $\sim 2 - 10 \mu\text{m}$ ) containing PS<sub>37k</sub>-PEO<sub>6.5k</sub>, with differing concentrations of SDS in the aqueous phase:

**Movie 1:** 0.1 mg.cm<sup>-3</sup> SDS. No instability is observed, though crumpling of the droplets is seen in the last stages of solvent removal.

**Movie 2:** 0.7 mg.cm<sup>-3</sup> SDS. Vesicles can be seen to bud from the droplet surface.

**Movie 3:** 1 mg.cm<sup>-3</sup> SDS. Cylindrical micelles are formed.

**Movie 4:** 5 mg.cm<sup>-3</sup> SDS. Droplets repeatedly split, generating spherical micelles.