

Abstract Submitted
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**Stimuli-Responsive,
Concentrated Aqueous Solutions of DMAEMA-containing Amphiphilic
Di- and Triblock Copolymers** KYLE GUICE, Department of Chemical Engineering, University of Texas at Austin, YUEH-LIN LOO, Department of Chemical Engineering, Princeton University — Poly(dimethyoaminoethyl methacrylate), poly(DMAEMA), has generated considerable interest due to its responsiveness to changes in temperature and pH. The pendant tertiary amine groups of DMAEMA are easily protonated below its pKa, and the polymer undergoes a hydrophilic-to-hydrophobic transition when heated above its lower critical solution temperature (LCST) in water. We have investigated di- and triblock copolymers containing statistical copolymers of DMAEMA and hydroxyethyl methacrylate (HEMA), a biocompatible but nonresponsive monomer, as stimuli-responsive concentrated aqueous solutions. The swelling characteristics of these concentrated aqueous block copolymer solutions depend highly on the DMAEMA composition. Further, by selecting an appropriate hydrophobic block, we are able to design stimuli-responsive concentrated aqueous solutions that undergo reversible phase transformations over a narrow temperature window.

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