Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

High Throughput investigation of Tunable Thermoresponsive Polymers JODI MECCA, ANURIMA SINGH, SARA OUELLETTE, JEFF MITCHELL, The Dow Chemical Company, CORE RD - FORMULATION SCIENCE TEAM — Thermoresponsive polymers that display a low critical solution temperature (LCST) in water at temperatures between the freezing and boiling point of water are of interest in the development of smart materials. The most popular of these polymers in poly(N-Isopropylacrylamide); however it has been shown that polymers based on polyethylene glycol methacrylate (PEGMA) also display an LCST within this temperature range. The current work demonstrates that copolymers based on PEGMA and benzyl methacrylate (BzMA) show a highly tunable transition temperature. The presentation will describe the high throughput techniques used to synthesize and characterize the copolymers and the resulting understanding of the compositional dependence of the phase behavior of PEGMA/BzMA copolymers.

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Date submitted: 08 Nov 2016 Electronic form version 1.4