Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Cloud Point Depression in Dilute Solutions of HEMA/DMAEMA Copolymers with Prescribed Composition Profiles and Gradient Strengths KEITH GALLOW, Princeton University, YOUNG JHON, JAN GENZER, North Carolina State University, YUEH-LIN LOO, Princeton University — We have synthesized a random copolymer and gradient copolymers of hydroxyethyl methacrylate and dimethylaminoethyl methacrylate whose instantaneous compositions vary linearly and according to hyperbolic tangent (Tanh) functions along the backbones, all having similar molecular weights and overall compositions. The cloud point of the dilute solution of the random copolymer is 20.0°C; the transparent-to-turbid transition occurs over 1.0°C. Dilute solutions of linear gradient copolymers exhibit cloud point depressions of up to 3.5°C and transition breadths of 1-3°C compared to that of the random copolymer. The cloud points of dilute solutions of gradient copolymers with Tanh composition profiles are further suppressed by as much as 9.0°C compared to that of the random copolymer. Our observations demonstrate the importance of monomer sequence distribution in altering the macroscopic solution properties of copolymers.

Keith Gallow
Princeton University

Date submitted: 30 Dec 2010 Electronic form version 1.4