Design and Synthesis of Network-Forming Triblock Copolymers Using Tapered Block Interfaces

Wei-Fan Kuan, † Raghunath Roy, † Lixia Rong, $^{\sharp}$ Benjamin S. Hsiao, ‡ and Thomas H. Epps, $\mathrm{III}^{*,\dagger}$

-Supporting Information-

[†]Department of Chemical and Biomolecular Engineering, University of Delaware, Newark, DE 19716, USA

[‡]Department of Chemistry, Stony Brook University, Stony Brook, NY 11974, USA

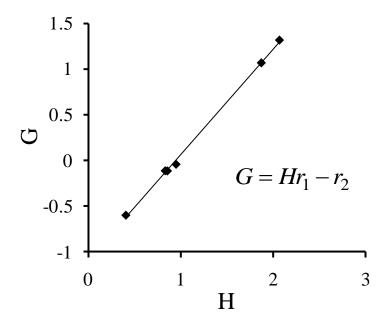


Figure S1: Fineman-Ross plot for the ATRP of polystyrene (M_1) and poly(methyl methacrylate) (M_2) copolymers (monomer ratio=1), where $G = (f_1/f_2)(2F_{1}-1)/F_1$ and $H = (f_1/f_2)^2(F_1/F_2)$. f_1 and f_2 are the mole fractions of monomers $(M_1$ and $M_2)$ in the feed; F_1 and F_2 are the mole fractions of M_1 and M_2 in the copolymers. The values of reactivity ratio can be obtained from the slope $(r_1 = k_{11}/k_{12} = 1.16)$ and the intercept $(r_2 = k_{22}/k_{21} = 1.09)$, where k_{11} , k_{12} , k_{22} , and k_{21} are reaction rate coefficients.

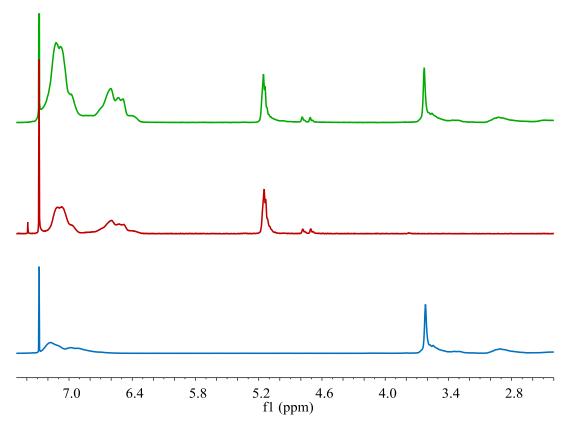


Figure S2: Representative ¹H-NMR of the P(SM-M) tapered copolymer (blue), P(L-IS-S) tapered diblock copolymer (red), and P(L-IS-S-SM-M) tapered triblock copolymer (green) in CDCl₃ (7.26 ppm). The composition of the polymers was calculated based on the polystyrene (6.2-7.2 ppm), polyisoprene (4.6-5.2 ppm), and poly(methyl methacrylate) (2.6-3.7 ppm) peak integrations. Spectra are shifted vertically for clarity.