Detecting composition and monomer sequence distribution in random copolymers with interaction chromatography JUNWON HAN, CHANG Y. RYU, Rensselaer Polytechnic Institute, JAMES J. SEMLER, JAN GENZER, North Carolina State University — We demonstrate that interaction chromatography (IC) is capable of discriminating among both the chemical composition and monomer sequence distribution in random copolymers. By fine-tuning the separation conditions in the IC (solvent type and stationary phase type), we were able to delineate the effect of both their chemical composition and the monomer sequence distribution of partially brominated polystyrenes on chromatographic retention. The degree of bromination and the 4-BrS sequencing was controlled by varying the bromine concentration in the reaction vessel, bromination reaction time, and solvent temperature. Our experiments suggest that 1) the blockiness of 4-BrS adsorption segments can further enhance the surface affinity of the copolymer chains at a fixed copolymer chemical composition, and 2) the adsorption-based molecular recognition of copolymer chains occurs by cooperative and synergistic adsorption of segments on surfaces along with neighboring adsorptive segments.

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Date submitted: 30 Nov 2005   Electronic form version 1.4