Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Interaction Chromatography of Random Copolymers with Tunable Monomer Sequence Distributions[1] CHANG Y. RYU, JUNWON HAN, BYUNG HO JEON, Rensselaer Polytechnic Institute, JAMES J. SEMLER, YOUNG K. JHON, JAN GENZER, North Carolina State University — We demonstrate that high performance liquid chromatography (HPLC) in the interaction chromatography (IC) mode is capable of distinguishing among various comonomer sequences in random copolymers (RCPs). A series of poly(styrene-co-4-bromostyrene) (PBr_xS), where x is the mole fraction of 4-BrS, RCPs have been prepared by brominating parent monodisperse polystyrene (PS). The distribution of S and 4-BrS segments in PBr_xS was adjusted by varying the solvent quality for PS before the bromination reaction. We utilize both normal and reversed phase IC techniques to demonstrate that the adsorption-based retention of PBr_xS RCPs is affected not only by their chemical composition, but also by the comonomer distribution in the RCP. Both IC techniques are mutually complementary; they provide information on the interplay between the macromolecular collapse and segment blockiness affected by the adsorption-based retention times in HPLC.

[1]NSF PIRE and MOCIE (RTI04-01-04)

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Date submitted: 27 Nov 2007 Electronic form version 1.4