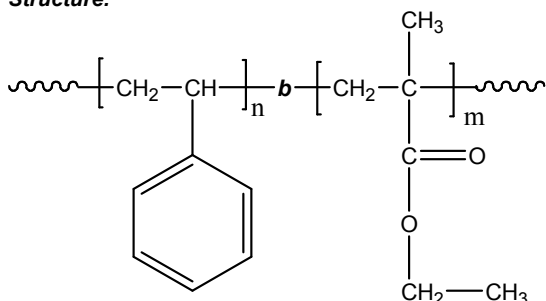


Sample Name: Poly(styrene-b-ethyl methacrylate)
 (poly ethylmethacrylate rich in syndiotactic contents > 78%)

Sample #: P8483-SEtMA

Structure:

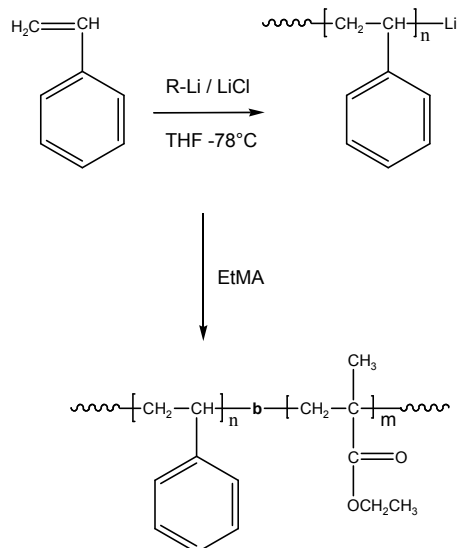


Composition:

Mn x 10 ³ S-b-EtMA	PDI
50.5-b-69.0	1.14

Synthesis Procedure:

Poly(styrene-b-ethyl methacrylate) is prepared by living anionic polymerization in THF at -78 °C using sec.BuLi initiator in the presence of LiCl. Polystyrene macroanions were end capped with a unit of diphenyl ethylene (DPE) before adding ethylmethacrylate (EtMA) monomer. For further details please see our published articles.¹⁻⁵ The scheme of the reaction is illustrated below:



Characterization:

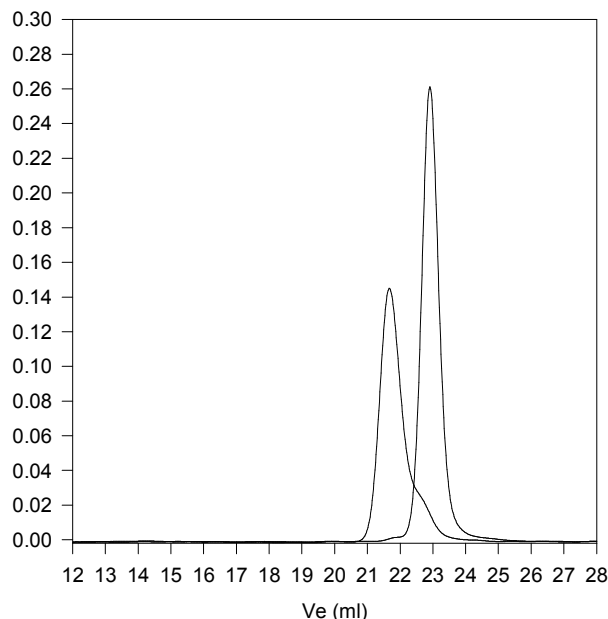
An aliquot of the anionic polystyrene block was terminated before addition of MMA and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area of the poly(methyl methacrylate) protons (eg. -OCH₃ at 3.6ppm) with the of aromatic protons of polystyrene at 6.3-7.2 ppm. Copolymer PDI is determined by SEC.

Solubility:

Poly(styrene-b-ethyl methacrylate) is soluble in THF, toluene, dioxane and CHCl₃. This polymer readily precipitates from methanol, ethanol, hexanes and water.

SEC of Sample :

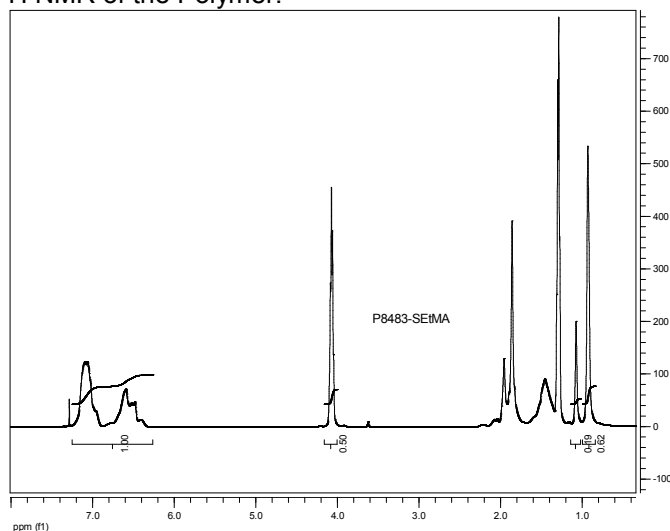
P8483-SEtMA



Size Exclusion chromatography of poly (styrene-b-ethyl methacrylate):

- Polystyrene, M_n=50500, M_w=54300, PI=1.05
- Block Copolymer PS(50500)-b-PEtMA,(69,000), PI=1.14
Composition from ¹H NMR

¹H NMR of the Polymer:



References for further information:

- S. K. Varshney, R. Fayt, Ph. Teyssie, and J.P. Hautekeer US Patent 5,264,527 (1993)
- Ph. Teyssie, Ph. Bayard, R. Jerome, S. K. Varshney, and J. S. Wang, 35th IUPAC International Union of Pure & Applied Chemistry International Symposium on Macromolecules" 1994, 67.
- Ph. Teyssie, R. Fayt, J. P. Hautekeer, C. Jacobs, R. Jerome, L. Leemans and S. K. Varshney Makromolekular Chemie, Macromol. Symp., 1990, 32,61-73.
- S. K. Varshney, J. P. Hautekeer, R. Fayt, R. Jerome, and Ph.Teyssie Macromolecules, 1990, 23, 2618-2622.
- R. Jerome, R. Forte, S. K. Varshney, R. Fayt, and Ph. Teyssie "The Anionic Polymerization of Alkylacrylates:A Challenge" in the Recent Advances in Mechanistic and Synthetic Aspects of Polymerization: M. Fontanille and A. Guyot Ed., NATO ASI Series C 215,101 (1987), CA Vol. 108, 12, 094992.