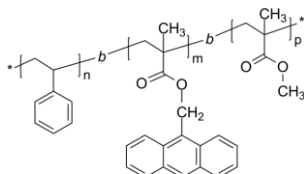


Sample Name: Poly(styrene)-b-poly (9-anthracenyl methyl methacrylate)-b-poly (methyl methacrylate), triblock copolymer

Sample # : P4205-SAnMMAMMA

Structure :

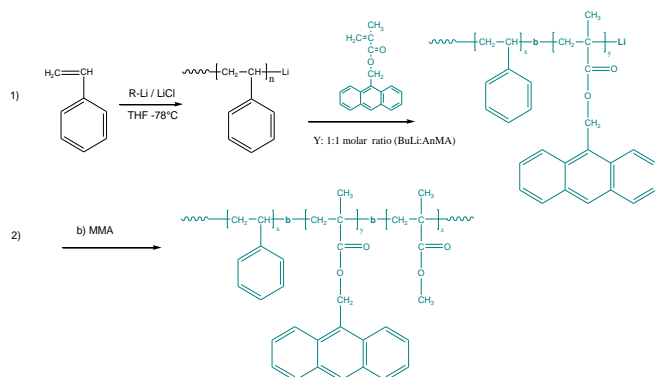


Composition :

Mn x 10 ³ S-b-AnMMA-b-MMA	PDI
43-b-1.5-b-105.0	1.15

Synthesis Procedure:

Poly(styrene)-b-poly (9-anthracenyl methyl methacrylate) -b-poly (methyl methacrylate), triblock copolymer 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 9-anthrylmethyl methacrylate before adding methylmethacrylate (MMA) monomer. 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 (e.g. -OCH₃ at 3.6ppm) with the aromatic protons of polystyrene at 6.3-7.2 ppm. Copolymer PDI is determined by SEC.

SEC also performed using UV detector at 370 nm to detect the presence of 9-anthryl methyl methacrylate

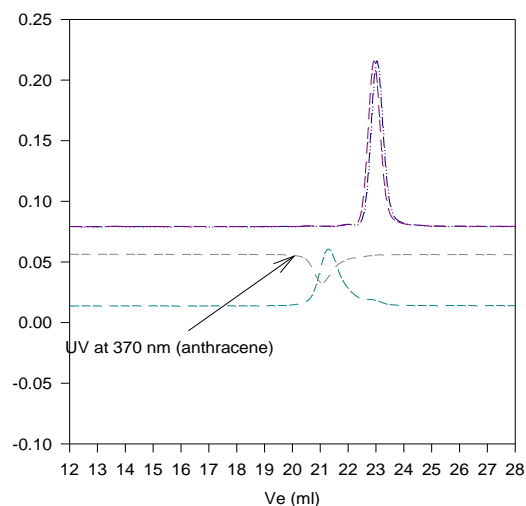
units in the block copolymer. Poly St-b-MMA at 370 nm did not give any response however the presence of 9-anthryl methyl methacrylate unit gives sharp absorbance indicating the presence of 9-anthryl methyl methacrylate units at the junction of the block copolymer.

Solubility:

Polymer is soluble in THF, toluene, dioxane and CHCl₃. This polymer readily precipitates from methanol, ethanol, hexanes and water.

SEC elugram of the Sample:

P4205-S(AnMA)MMA



— Polystyrene, M_n=43000, M_w=45000 PI=1.05
 - - Polystyrene-b-Anthracenylmethacrylate, M_n=44500, M_w=45000 PI=1.05
 - - Block Copolymer: Pst-b-Anthracenylmethacrylate
 Mn: 44000-b-1200
 Final: PS(43000)-b-AnMA(1500)-b-PMMA(105000) Mw/Mn : 1.15

References for further information:

1. S. K. Varshney, R. Fayt, Ph. Teyssie, and J.P. Hautekeer US Patent 5,264,527 (1993)
2. 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.
3. 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.
4. S. K. Varshney, J. P. Hautekeer, R. Fayt, R. Jerome, and Ph.Teyssie *Macromolecules*, 1990, 23, 2618-2622.
5. 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.