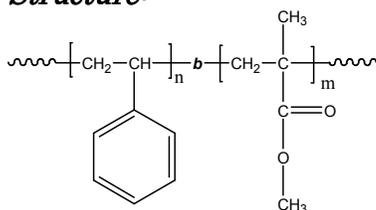


Sample Name: Poly(styrene-*b*-methyl methacrylate)
(polymethylmethacrylate rich in Heterotactic contents)

Sample #: P9600-SMMA

Structure:



Composition:

Mn x 10 ³ S- <i>b</i> -MMA	PDI
1500.0- <i>b</i> -1100.0	1.25
T _g for PS block: 107°C	T _g for PMMA block: 123°C
Microstructure of MMA bloc	Syndio:hetero:iso 36:56:8

Synthesis Procedure:

Poly(styrene-*b*-methyl methacrylate) is prepared by living anionic polymerization in THF at -78 °C using monofunctional initiator in the presence of LiCl. Polystyrene macroanions were end capped with a unit of diphenyl ethylene (DPE) before adding methylmethacrylate (MMA) monomer. For further details please see our published articles.¹⁻⁵

Characterization:

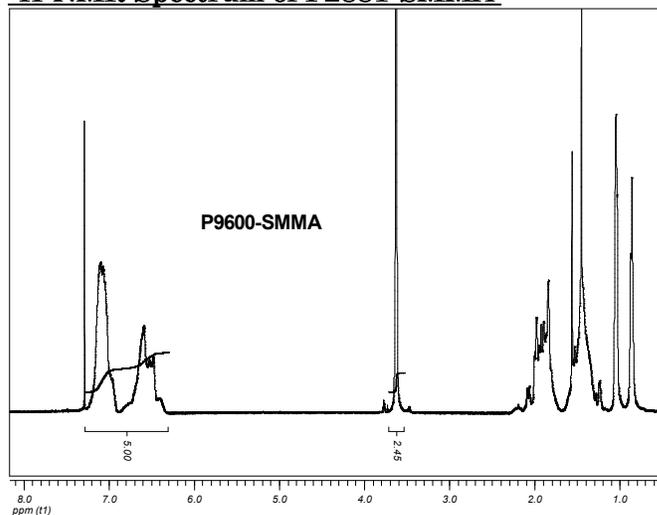
An aliquot of the anionic polystyrene block was terminated before addition of MMA and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area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

Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of 10°C/min. The inflection glass transition temperature (T_g) of the sample has been considered.

Solubility:

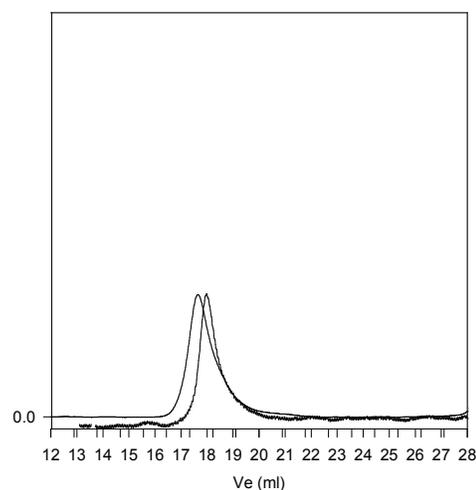
Poly(methyl methacrylate) is soluble in THF, CHCl₃, toluene and dioxane. The polymer precipitates from hexanes, methanol and ethanol.

¹H-NMR Spectrum of P2881-SMMA:



SEC of Sample P2881-SMMA:

P9600-SMMA



Polystyrene, M_n=1600,000, M_w=1872,000 PI=1.17

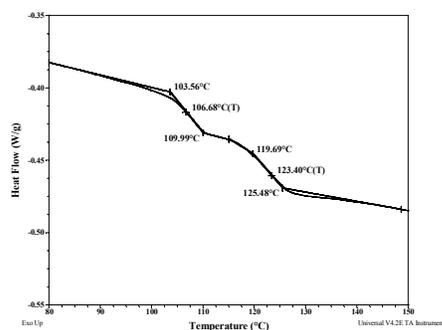
Block Copolymer:

From composition from H NMR PS(1600,000)-*b*-PMMA(1300,000) Mw/Mn : 1.20

Solution viscosity in THf at 35 oC: 3.821dl/g

dn/dc in THf at 35 oC: 0.105dl/g radius of Gyration in THf at 35 oc: 74.14nm

Thermogram for the sample



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.