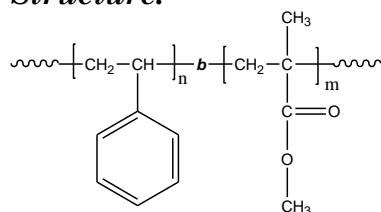


**Sample Name: Poly(styrene-*b*-methyl methacrylate)**

**(polymethylmethacrylate rich in Heterotactic contents)**

**Sample #: P9602AP-SMMA**

**Structure:**



**Composition:**

Mn x 10 <sup>3</sup> S-b-MMA	PDI
315.0-b-307.0	1.17
T <sub>g</sub> for PS block: 107°C	T <sub>g</sub> 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.<sup>1-5</sup>

**Characterization:**

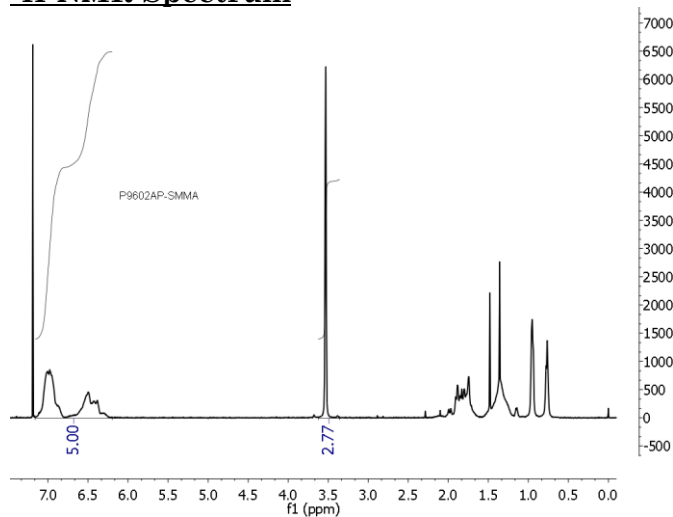
An aliquot of the anionic polystyrene block was terminated before addition of MMA and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from <sup>1</sup>H-NMR spectroscopy by comparing the peak area of the poly(methyl methacrylate) protons (eg.-OCH<sub>3</sub> 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<sub>g</sub>) of the sample has been considered.

**Solubility:**

Poly(methyl methacrylate) is soluble in THF, CHCl<sub>3</sub>, toluene and dioxane. The polymer precipitates from hexanes, methanol and ethanol.

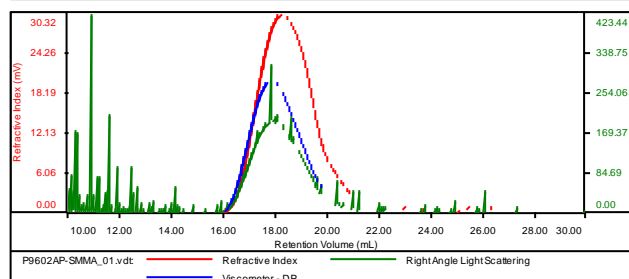
**<sup>1</sup>H-NMR Spectrum**



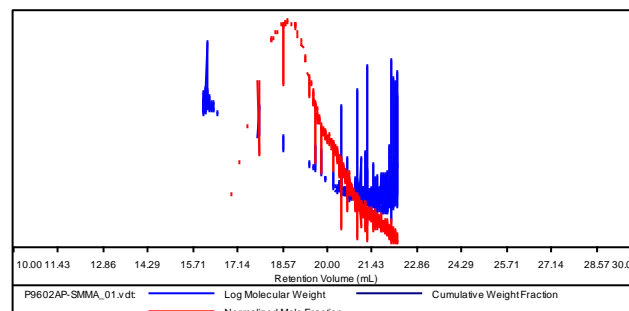
**SEC of Sample**

**Sample ID: P9602AP-SMMA**

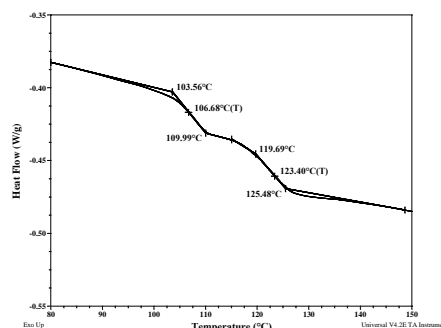
Concentration (mg/mL)	3.3713
Sample dn/dc (mL/g)	0.1270
Method File	PS80K-Jan05-2014-0001.vcm
Column Set	3x PL 1113-6300
System	System 1



Sample	Mn	Mw	Mp	Mw/Mn	IV
P9602AP-SMMA_01.vdt	622,226	722,943	753,538	1.162	1.8616



**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.