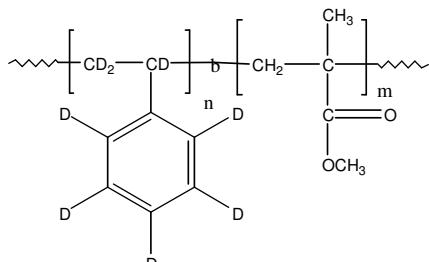


Sample Name: Deuterated Polystyrene (d_8)-Methylmethacrylate (protonated)

Sample #: P19151-dPSMMA

Structure:



Composition:

Mn x 10 ³ (dPS-b-MMA)	PDI
37.0-b-48.0	1.07
T _g for PS block	104°C
T _g for MMA block	134°C

Synthesis Procedure:

Deuterated poly(styrene(D8)-b-methyl methacrylate) is prepared by living anionic polymerization in THF at -78°C using sec.BuLi initiator in the presence of LiCl. Deuterated Polystyrene macroanions were end capped with a unit of diphenyl ethylene (DPE) before adding methylmethacrylate (MMA) monomer. For further details please consult our publications.¹⁻⁵

Characterization:

The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors from Viscotek Co. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used.

Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of 15°C/min. The inflection glass transition temperature (T_g) of the sample has been considered.

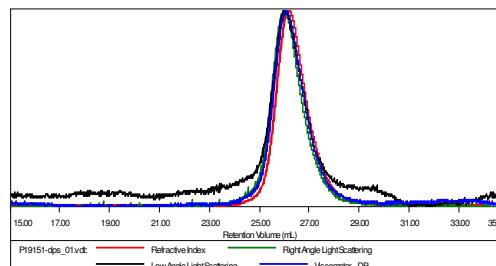
Solubility:

Deuterated polystyrene-d₈MMA is soluble in DMF, THF, toluene and CHCl₃. It precipitates from methanol, ethanol, water and hexanes.

SEC of the product:

Sample ID: P19151-dPS

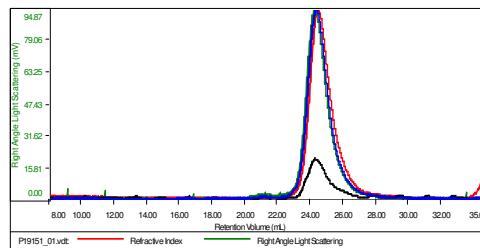
Concentration (mg/mL)	4.8721
Sample dH/dc (mL/g)	0.1850
Method File	PS80K-March6-2015-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF



Sample	MW Number Average (Da)	MW Weight Average (Da)	MW at Peak (Da)	Polydispersity	Intrinsic Viscosity (dL/g)
P19151-dps_01.vdt	35,329	40,398	35,107	1.144	0.1759

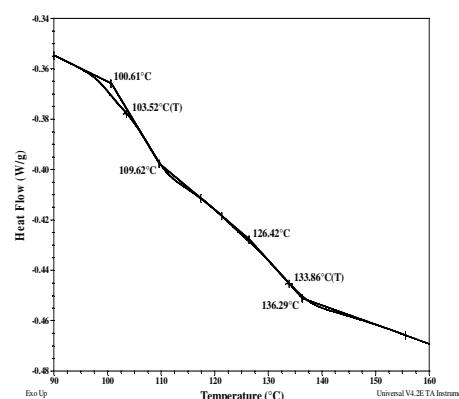
Sample ID: P19151-dPSMMA

Concentration (mg/mL)	7.0511
Sample dH/dc (mL/g)	0.1350
Method File	PS80K-March6-2015-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF



Sample	MW Number Average (Da)	MW Weight Average (Da)	MW at Peak (Da)	Polydispersity	Intrinsic Viscosity (dL/g)
P19151_01.vdt	85,055	90,946	91,078	1.069	0.3081

Thermogram for the diblock polymer:



References for further information:

- S. K. Varshney, R. Fayt, Ph. Teyssie, and J.P. Hautekeer US Patent 5,264,527 (1993)
1. 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.
 2. 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.
 3. S. K. Varshney, J. P. Hautekeer, R. Fayt, R. Jerome, and Ph.Teyssie *Macromolecules*, 1990, 23, 2618-2622.
 4. 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. Fontanaille and A. Guyot Ed., NATO ASI Series C 215,101 (1987), CA Vol. 108, 12, 094992.