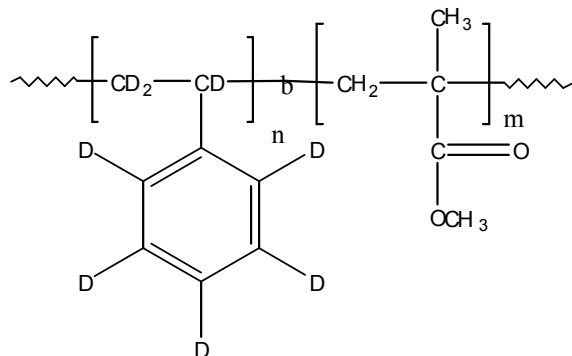


**Sample Name:**  
**Deuterated Polystyrene (d<sub>8</sub>)-**  
**Methylmethacrylate (protonated)**

**Sample #: P10594-dPSMMA**

**Structure:**



**Composition:**

Mn x 10 <sup>3</sup> (dPS-b-MMA)	PDI
112.0-b-110.0	1.10
T <sub>g</sub> for PS block	106°C
T <sub>g</sub> for MMA block	130°C

**Synthesis Procedure:**

Deuterated poly[styrene (D<sub>8</sub>)-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 methyl methacrylate (MMA) monomer. For further details please consult our publications.<sup>1-5</sup>

**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 10°C/min. The inflection glass transition temperature (T<sub>g</sub>) of the sample has been considered.

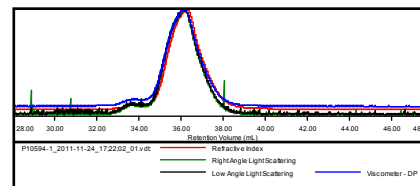
**Solubility:**

Deuterated polystyrene-d<sub>8</sub>MMA is soluble in DMF, THF, toluene and CHCl<sub>3</sub>. It precipitates from methanol, ethanol, water and hexanes.

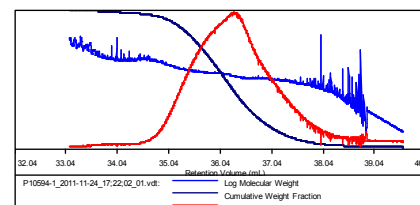
**SEC of the polymer:**

Sample ID: P10594-d8PS

Concentration (mg/mL)	8.6145
Sample dn/dc (mL/g)	0.1700
Method File	PS80K-Oct-0000.vcm
Column Set	3x PL 1113-6300
System	System 1

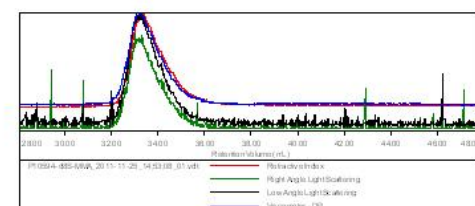


Sample	Mn (Da)	Mw (Da)	Mp (Da)	Mw/Mn	IV (dL/g)
P10594-1_2011-11-24_17:22:02_01.vdt	112,006	119,405	115,710	1.066	0.7543

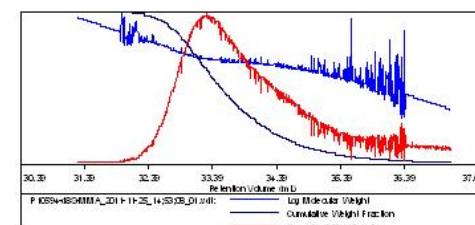


Sample ID: P10594-d8S-MMA

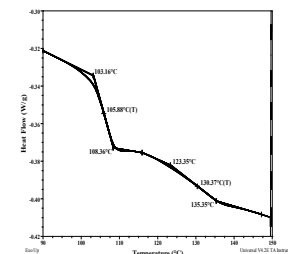
Concentration (mg/mL)	2.2700
Sample dn/dc (mL/g)	0.1255
Method File	PS80K-Oct-0000.vcm
Column Set	3x PL 1113-6300
System	System 1



Sample	Mn (Da)	Mw (Da)	Mp (Da)	Mw/Mn	IV (dL/g)
P10594-d8S-MMA_2011-11-25_14:53:08_01	222,966	246,596	251,926	1.106	1.0743



**DSC thermogram for the block polymer:**



**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.