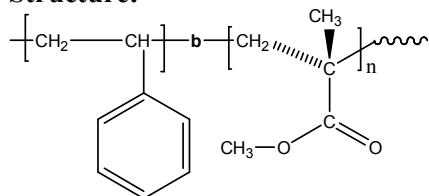


**Sample Name: Poly(styrene-b-methyl methacrylate)  
(PMMA iso rich)**

**Sample #: P40519-SMMAiso**

**Structure:**

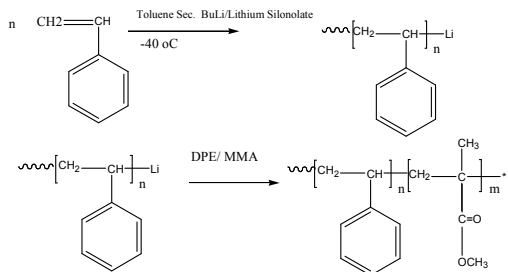


**Composition:**

Mn x 10 <sup>3</sup> S-b-MMA	PDI
22.5-b-62.0	1.19
T <sub>g</sub> for PS block: 81 °C	T <sub>g</sub> for PMMA block: 53 °C
Iso contents of PMMA	>90%

**Synthesis Procedure:**

Poly(styrene-b-methyl methacrylate) is prepared by living anionic polymerization with sequence addition of styrene followed by methyl methacrylate (MMA) in presence of dimethyl siloxy lithium salt as an additive. The scheme of the reaction is illustrated below:



**Characterization:**

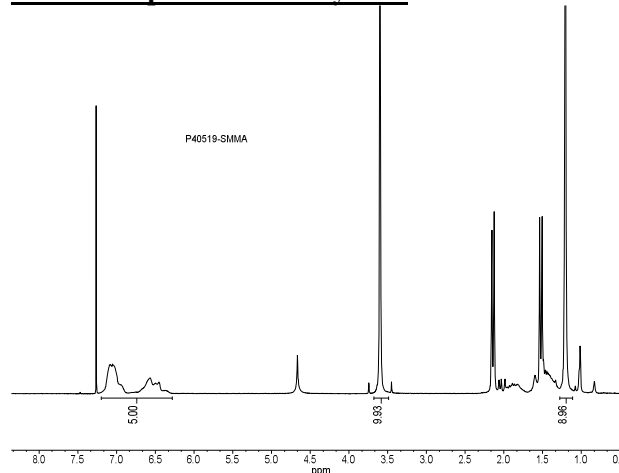
An aliquot of the anionic polystyrene block was terminated before addition of MMA and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from <sup>1</sup>H-NMR spectroscopy by comparing the peak area of the poly(methyl methacrylate) protons (eg. –OCH<sub>3</sub> at 3.6ppm) with the 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(styrene-b-methyl methacrylate) is soluble in THF, toluene, dioxane and CHCl<sub>3</sub>. This polymer readily precipitates from methanol, ethanol, hexanes and water.

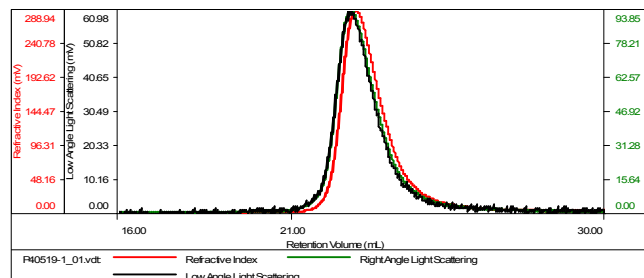
**<sup>1</sup>H-NMR Spectrum of Polymer:**



**SEC elugram of the Styrene block:**

**P40519-1-S**

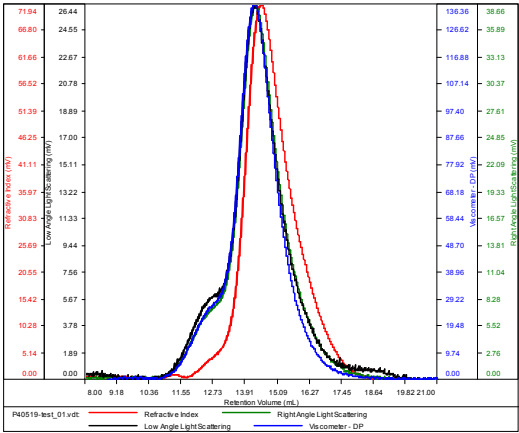
Concentration (mg/mL)	3.8644
Sample dn/dc (mL/g)	0.1850
Method File	PS80K-Feb2017-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF



Sample	Mn (Da)	Mw (Da)	Mw/Mn	IV (dL/g)	IVp (Da)
P40519-1_01.vdt	22,571	23,308	1.033	0.4027	22,556

**SEC elugram of the Sample:**  
**P40519-SMMAIso**

Conc	8.5011
dn/dc	0.1050
Solvent	DMF w 0.023M LiBr
Flow Rate	0.7000
Method	PS80k-March2017-0002.vcm



Sample	Mn	Mw	Mp	Mw/Mn	IV
P40519-test_01.vdt	84,520	100,751	93,575	1.192	0.3407

**Thermograms for the sample:**

