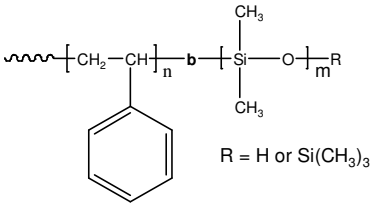
Sample Name:
Poly(styrene-b-dimethyl siloxane)

Sample #: **P193-SDMS (R=H)**

Structure:



Composition:

$Mn \times 10^3$ S-b-DMS	Mw/Mn (PDI)
445.0-b-0.3	1.03

T_g for PS block: 106°C	DMS block: Tm:-44°C; T_g -121°C (Lit.)

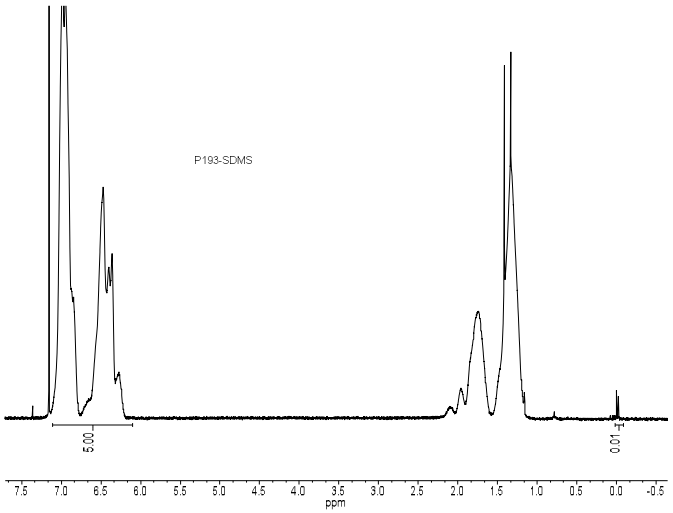
Synthesis Procedure:
Poly(styrene-b-dimethyl siloxane) is prepared by living anionic polymerization with sequence addition of styrene followed by hexamethyl cyclotrisiloxane. For the details please consult the references.

Characterization:
An aliquot of the polystyrene block was terminated before addition of hexamethyl cyclotrisiloxane and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ^{1}H-NMR spectroscopy by comparing the peak area of the styrene protons at 6.3-7.2 ppm with the peak area of siloxane protons near 0.13 ppm. Block copolymer PDI is determined by SEC.

Thermal analysis
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°C/min.The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Solubility:
Poly(styrene-b-dimethyl siloxane) is soluble in CHCl3, toluene, THF.

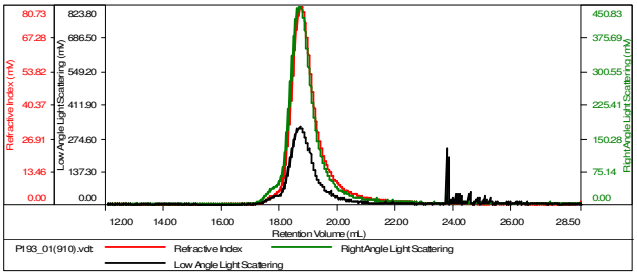
^{1}H NMR of the diblock polymer:



SEC profile of the block copolymer:

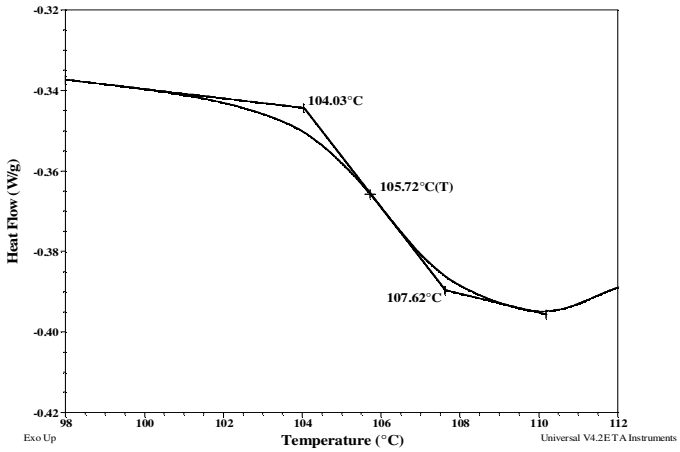
Sample ID-P193-SDMS

Concentration (mg/mL)	0.4264
Sample dn/dc (mL/g)	0.1850
Method File	PS80K-June30-2015-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF

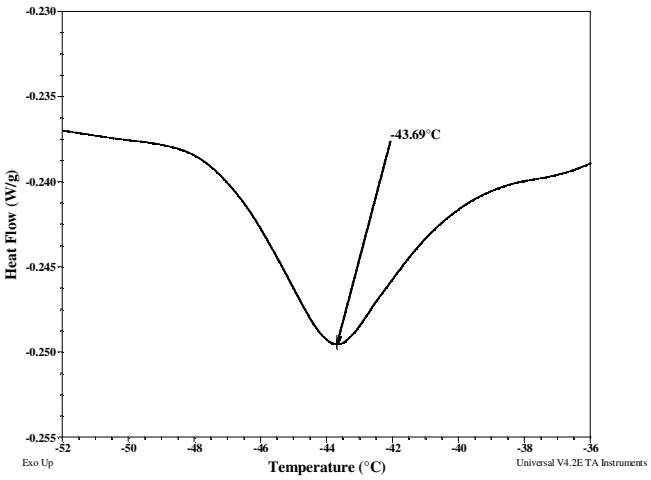


Sample	MW Number Average (Da)	MW Weight Average (Da)	MW at Peak (Da)	Polydispersit	Intrinsic Viscosity (dL/g)
P193_01(910).vdt	445,747	458,095	455,966	1.028	5.2123

Thermogram for PS block:



Melting curve for DMS block:



References:

S. K. Varshney, D. N. Khanna Hexamethyl-cyclotrisiloxane-Styrene Block Copolymers and their Chemical Composition" *CA Vol. 093, 26, 240325,. J. Appl. Polym. Sci.,1980, 25, 2501-2511.*

P. Bajaj, S. K. Varshney, Morphology and Properties of Poly(Dimethylsiloxane-b-Styrene-b-Dimethylsiloxane) Polymers *CA Vol. 093, 02, 008652, Polymer, 1980, 21, 201-206.*