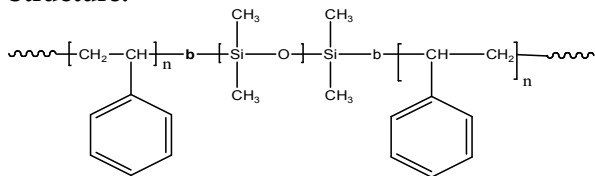


Sample Name:**Poly(styrene-b-dimethyl siloxane-b-styrene)****Sample #:** P10751-SDMSS**Structure:****Composition:**

Mn $\times 10^3$ S-b-DMS-b-S	Mw/Mn (PDI)
32.0-b-140.0-32.0	
Mn total by Light scattering: 159.0	1.3
Coupling %	80%

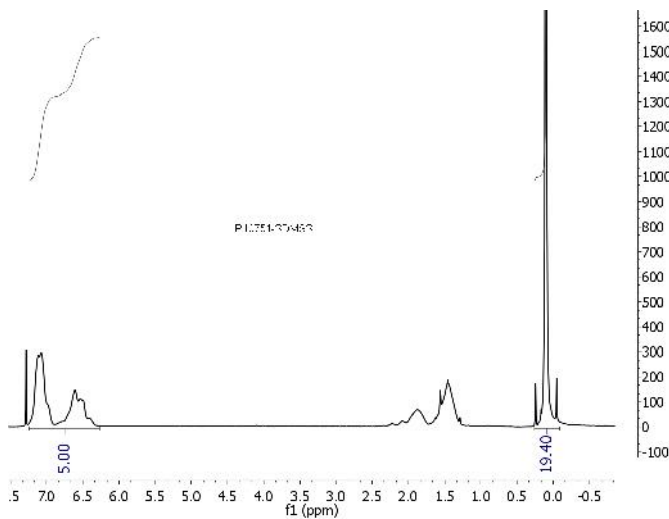
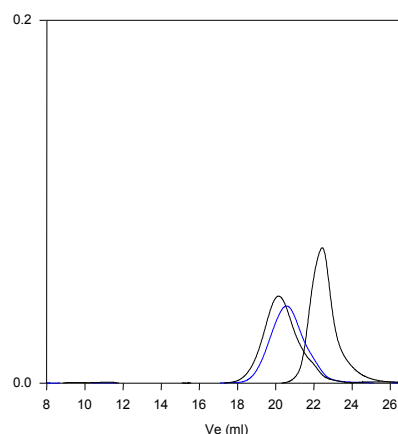
Synthesis Procedure:

Poly(styrene-b-dimethyl siloxane-styrene) is prepared by living anionic polymerization with sequence addition of styrene followed by hexamethyl cyclotrisiloxane and linking reaction using dimethyl dichlorosilane. For the details please see the references.

Characterization: By size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from $^1\text{H-NMR}$ 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 $10^\circ\text{C}/\text{min}$. 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).

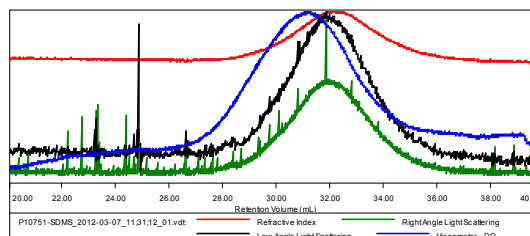
 ^1H NMR spectrum of the sample:**SEC profile of the block copolymer****P10751-SDMSS**

Size exclusion chromatography of poly(styrene-b-dimethylsiloxane)

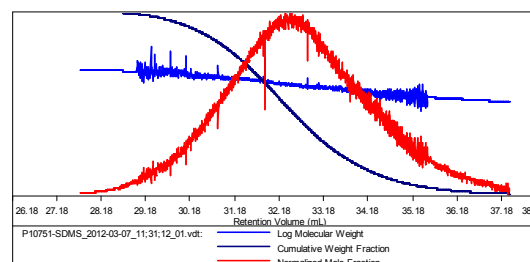
— Polystyrene, $M_n=32000$ $M_w/M_n=1.15$
 — Poly(styrene-b-dimethylsiloxane)
 M_n : PS(32,000)-b-PDMS(70,000)=1.28
 After linking reaction:
 PS-b-DMS-b-PS Mn 32,000-b-140,000-b-32000 Mw/Mn = 1.3

Sample ID: P10751-SDMS

Concentration (mg/mL)	2.3843
Sample dn/dc (mL/g)	0.0674
Method File	PS80K-Jan52012-2-0000.vcm
Column Set	3x PL 1113-6300
System	System 1

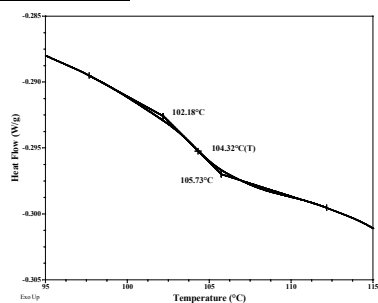


Sample	Mn (Da)	Mw (Da)	Mp (Da)	Mw/Mn	IV (dL/g)
P10751-SDMS_2012-03-07_11:31:12_0	158,725	164,134	164,961	1.034	1.1059

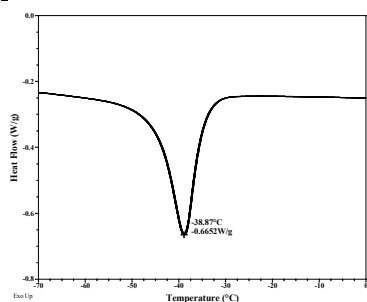


DSC thermogram for PS block:

T_g of Polystyrene block:



T_g of Polydimethylsiloxane:



References:

- S. K. Varshney, D. N. Khanna "Hexamethylcyclotrisiloxane-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.
- S. K. Varshney, C. L. Beatty "Synthesis and Characterization of Polymethylmethacrylate and Polydimethylsiloxane Block Copolymers Polymerizes with an Organometallic Initiator" *Org. Coat. Appl. Polym. Sci.*, 1981, 45, 151-157.
- S. K. Varshney, C. L. Beatty, and P. Bajaj "Morphology and Properties of Styrene and Dimethylsiloxane Triblock and Multiblock Copolymers" *CA Vol. 098*, 139, 017855, *Am. Chem. Soc. Polym. Prepr.*, 1981, 22, 321-323.