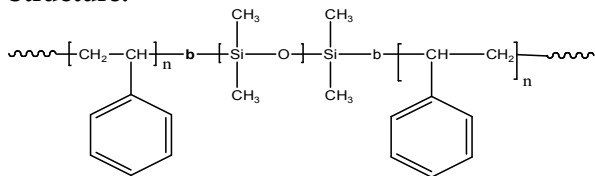


Sample Name:

Poly(styrene-b-dimethyl siloxane-b-styrene)

Sample #: P10779-SDMSS**Structure:****Composition:**

Mn $\times 10^3$ S-b-DMS-b-S	Mw/Mn (PDI)
20.0-b-70.0-20.0	1.28
Coupling %	>95%

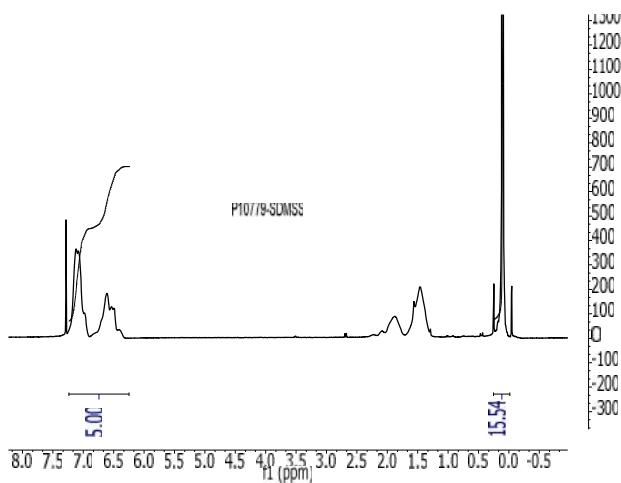
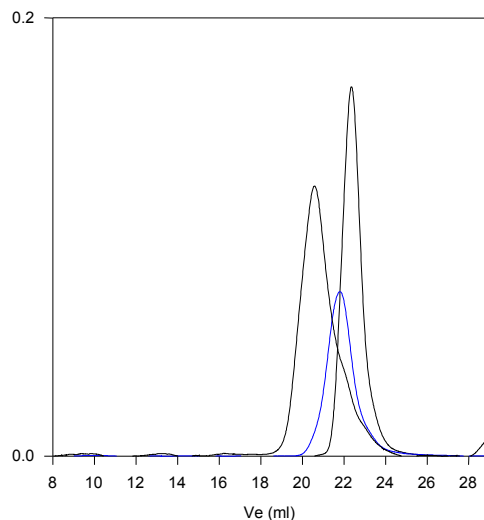
Synthesis Procedure:

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.

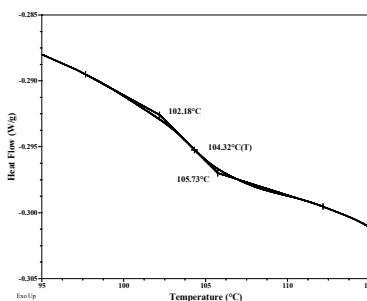
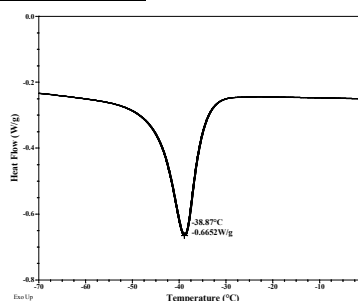
Thermal Analysis:

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****P10779-SDMSS**

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

— Polystyrene, $M_n=20000$ $M_w/M_n=1.06$
 — Poly(styrene-b-dimethylsiloxane)
 M_n : PS(20,000)-b-PDMS(35,000)=1.18
 After linking reaction:
 PS-b-DMS-b-PS M_n 20,000-b-70,000-b-20,000 $M_w/M_n = 1.28$

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.
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- 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.
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