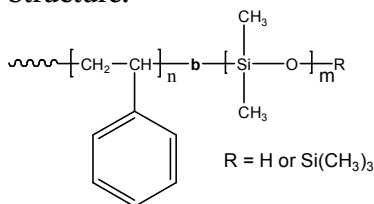


Sample Name:

Poly(styrene-b-dimethyl siloxane)

Sample #: P8238-SDMS (R=(Si(CH₃)₃))

Structure:



Composition:

M _n x 10 ³ S-b-DMS	M _w /M _n (PDI)
31.0-b-11.0	1.12
T _g for PS block: 99°C	DMS block: T _m -44°C; T _g -127°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 see 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 ¹H-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.

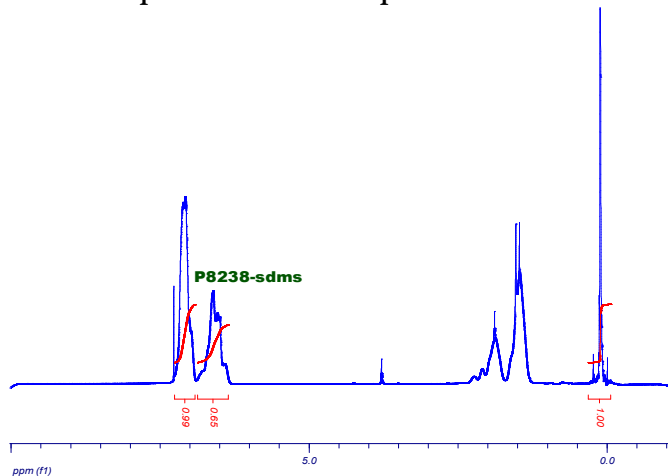
Thermal analysis

Thermal analysis of the samples was carried out on a TA Q100 DSC at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow was considered as the glass transition temperature (T_g). The melting temperature (T_m) was taken as the maximum of the endothermic peak.

Solubility:

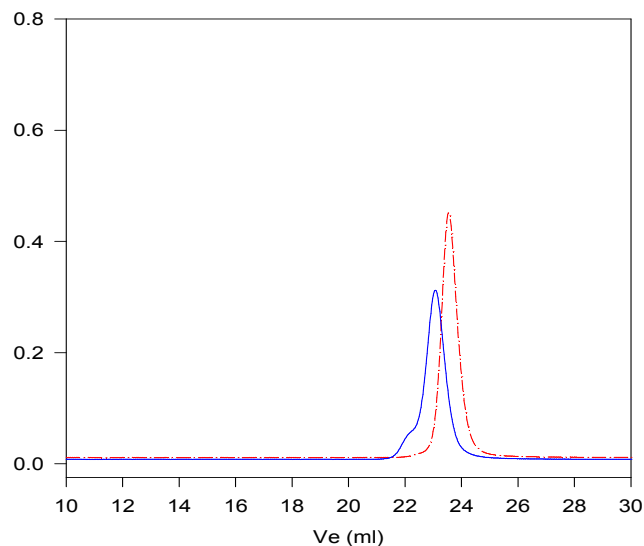
Poly(styrene-b-dimethyl siloxane) is soluble in CHCl₃, toluene, and THF.

¹H NMR spectrum of the sample



SEC profile of the block copolymer

P8238-SDMS



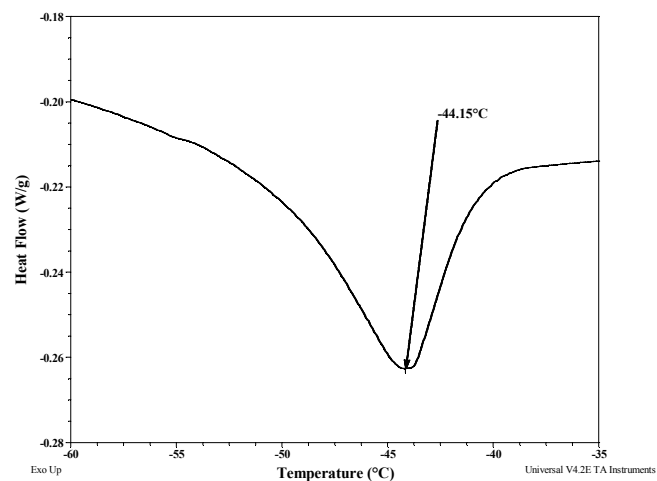
Size exclusion chromatography of poly(styrene-b-dimethylsiloxane)

--- Polystyrene, M_n=31000, M_w=33000, M_w/M_n=1.06

— Poly(styrene-b-dimethylsiloxane)

M_n: PS(31000)-b-PDMS(11000) M_w/M_n=1.12

DMS melting curve:



DSC thermogram for PS block:

