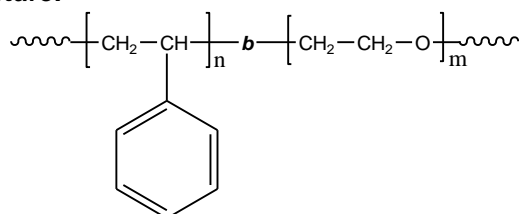


Sample Name: Poly(styrene-b-ethylene oxide)

Sample #: P18610-SEO

Structure:



Composition:

Mn x 10 ³ S-b-EO	PDI
10.0-b-35.5	1.10

Synthesis:

Poly(styrene-b-ethylene oxide) diblock copolymer was prepared by living anionic polymerization.

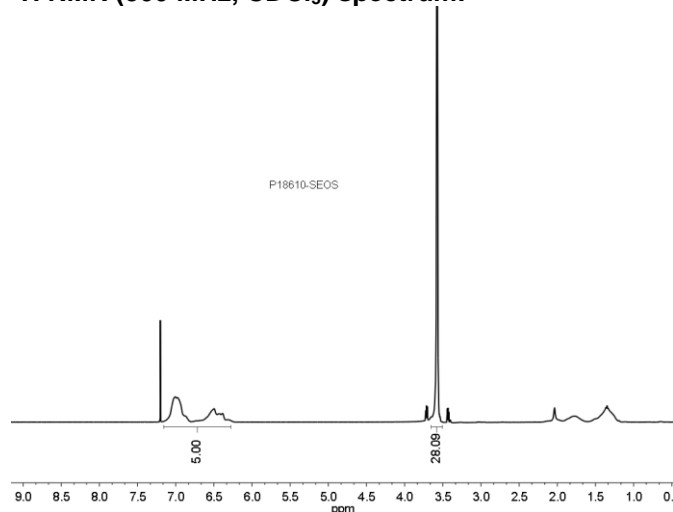
Characterization:

The molecular weight and polydispersity index (PDI) of the block copolymer were determined by size exclusion chromatography (SEC). The composition of the block copolymer was calculated from ¹H-NMR by comparing the peak area of the phenyl polystyrene protons between 6.4 to 7.2 ppm and the ethylene oxide protons at 3.65 ppm.

Solubility:

The polymer is soluble in THF (at 35 °C), CHCl₃, benzene, toluene, dioxane. Low molecular weight SEO with high contents of the polyethylene oxide block can also be solubilized in methanol and water.

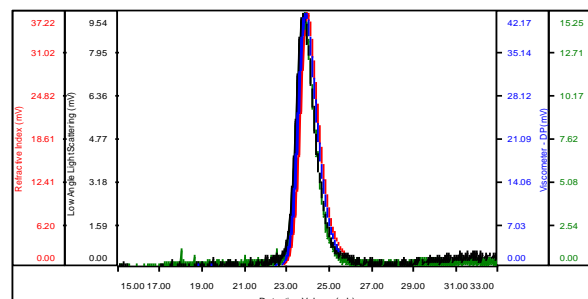
¹H NMR (500 MHz, CDCl₃) spectrum:



SEC profile of the block copolymer

Sample ID: P18610-SEO diblock copolymer

Concentration (mg/mL)	0.9797
Sample dn/dc (mL/g)	0.1000
Method File	PS80K-March13-2014-0000.vcm
Column Set	3x PL 1113-6300
System	System 1



Sample	Mn	Mw	Mp	Mw/Mn	IV
P18610-SEO_01.vdt	44,368	48,903	48,396	1.102	0.9538

Thermal analysis of the sample# P18610-SEO

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°C/min.

The melting temperature (T_m) was taken as the maximum of the endothermic peak where as the crystallization temperature (T_c) was considered as the minimum of the exothermic peak.

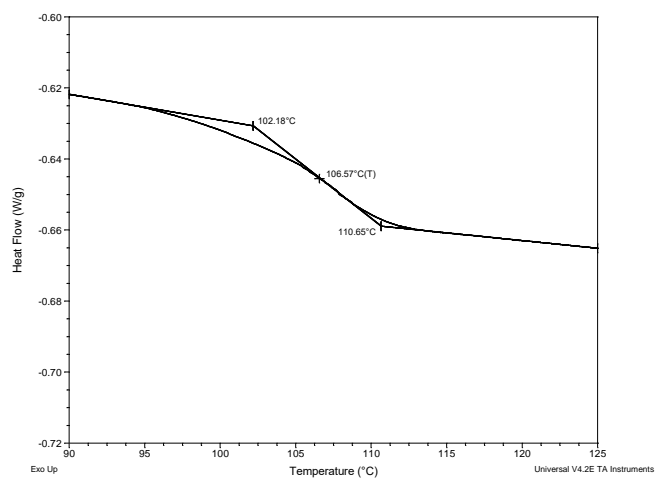
The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Thermal analysis results at a glance

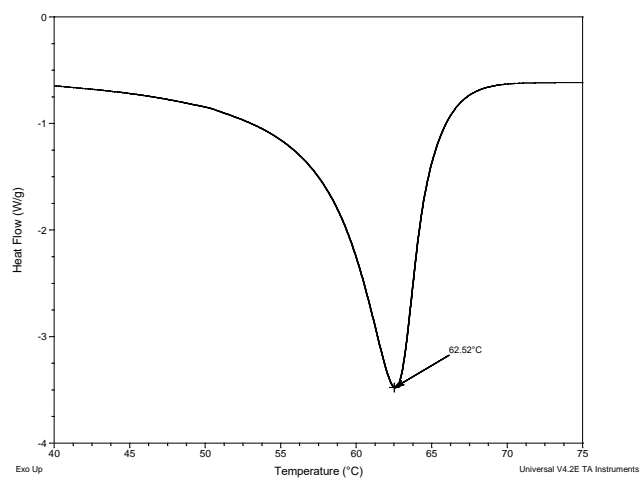
PS block	PEO block		
$T_g = 107^\circ\text{C}$	$T_g = -65^\circ\text{C}$	$T_m = 63^\circ\text{C}$	$T_c = 43^\circ\text{C}$

(DSC thermograms are presented on the next page).

DSC thermogram of PS block showing T_g :



DSC curves of PEO block showing T_m and T_c :



DSC thermogram of PEO block showing T_g :

