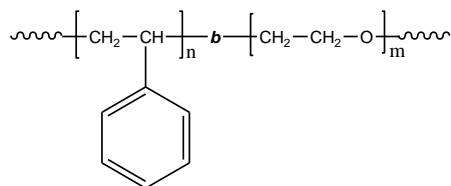


Sample Name: Poly(styrene-b-ethylene oxide)

Sample #: P18430-SEO

Structure:



Composition:

$M_n \times 10^3$ S-b-EO	PDI
25.5-b-9.5	1.02

Synthesis Procedure:

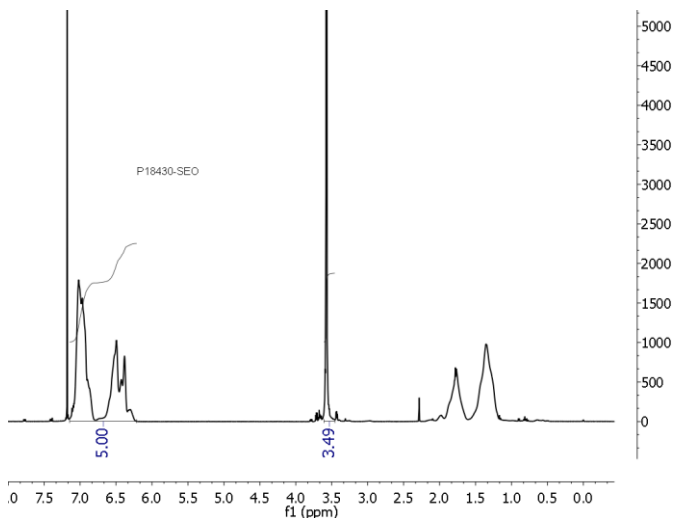
Poly(styrene-b-ethylene oxide) diblock copolymer is prepared by living anionic polymerization.

Characterization: The molecular weight and polydispersity index (PDI) of the block copolymer are characterized 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), $CHCl_3$, benzene, toluene, dioxane. Low molecular weight SEO with high contents of the polyethylene oxide block can also be solubilized in methanol and water.

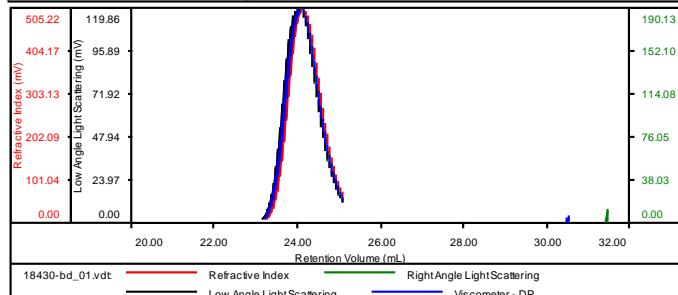
1H NMR spectrum of the sample



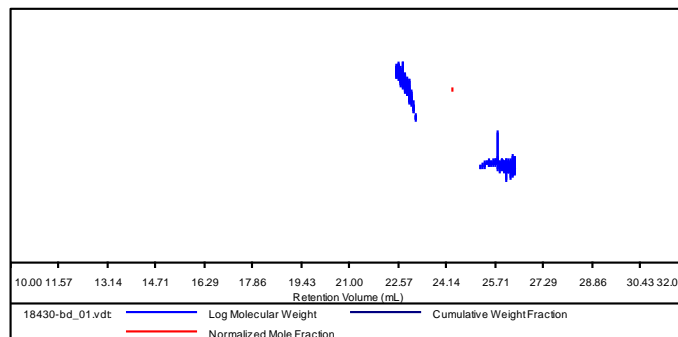
SEC profile of the block copolymer

Sample ID: P18430-S OH

Concentration (mg/mL)	15.3937
Sample dn/dc (mL/g)	0.1850
Method File	PS80K-Jan05-2014-0001.vcm
Column Set	3x PL 1113-6300
System	System 1

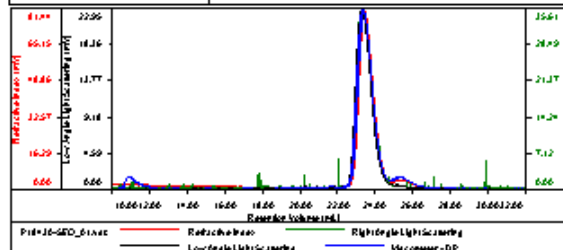


Sample	M_n	M_w	M_p	M_w/M_n	IV
18430-bd_01.vdt	25,675	25,979	25,909	1.012	0.1732

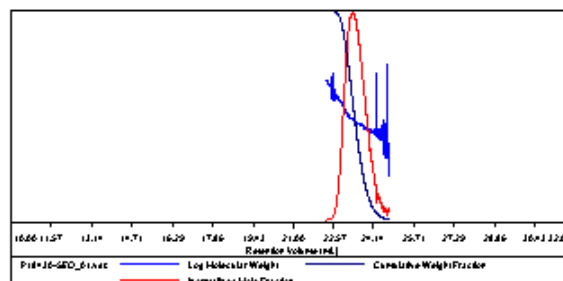


Sample ID: P18430-SEO

Concentration (mg/mL)	2.4782
Sample dn/dc (mL/g)	0.1780
Method File	PS80K-Jan05-2014-0001.vcm
Column Set	3x PL 1113-6300
System	System 1



Sample	M_n	M_w	M_p	M_w/M_n	IV
P18430-SEO_01.vdt	25,561	30,285	30,244	1.010	0.2971

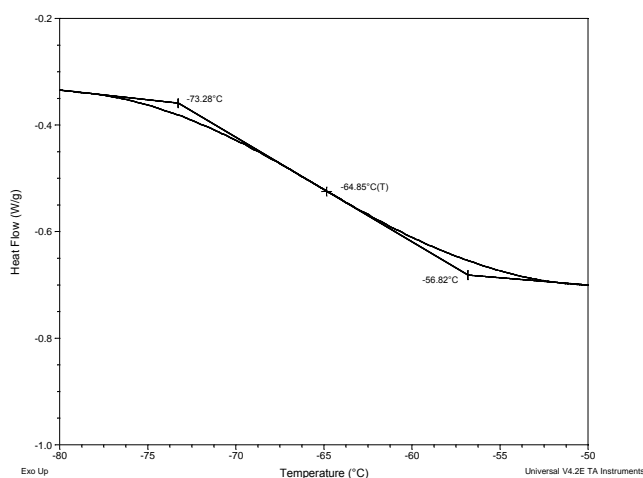


Thermal analysis of the sample# P18430-SEO

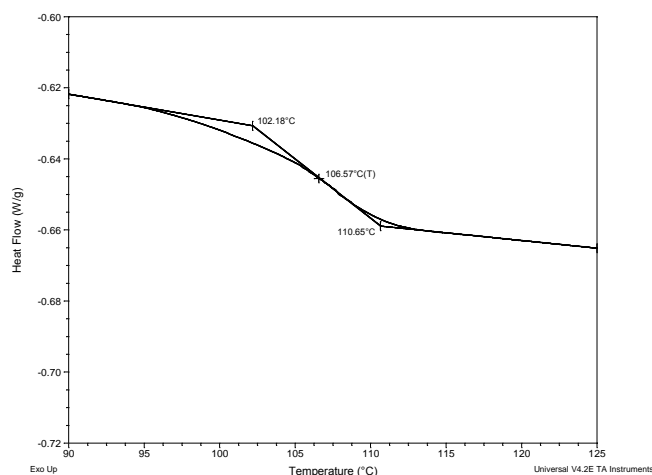
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Thermogram for the sample

For PEO block:



For PS block

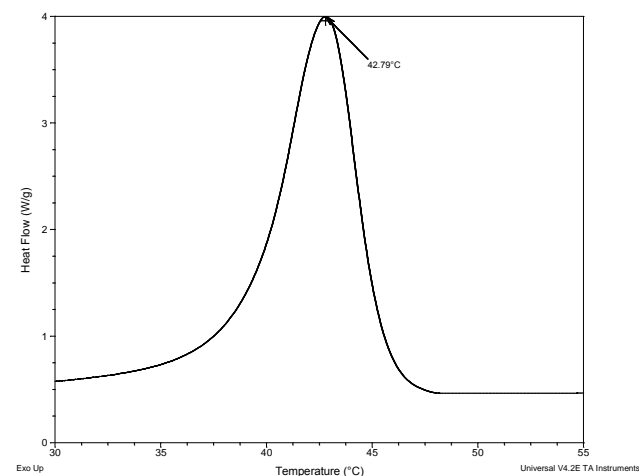
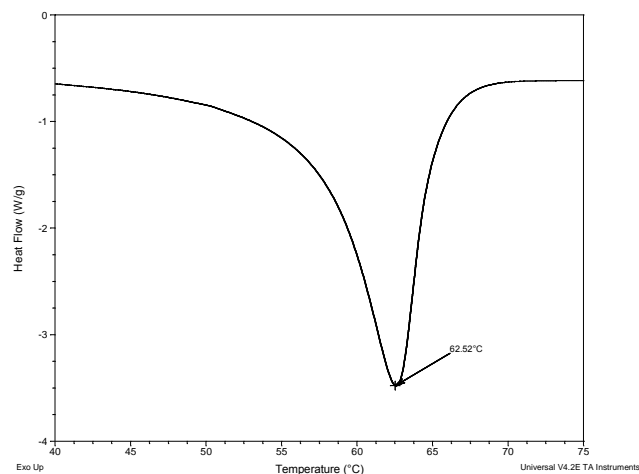


Thermal analysis results at a glance

For PEO block		
T_g : -65°C	T_m : 63°C	T_c : 43°C

Melting and crystallization curve for the PEO block

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.



For PS block T_g : 107°C