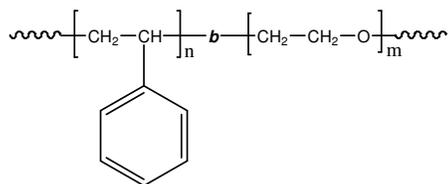


Sample Name: Poly(styrene-b-ethylene oxide)

Sample #: P11438A-SEO

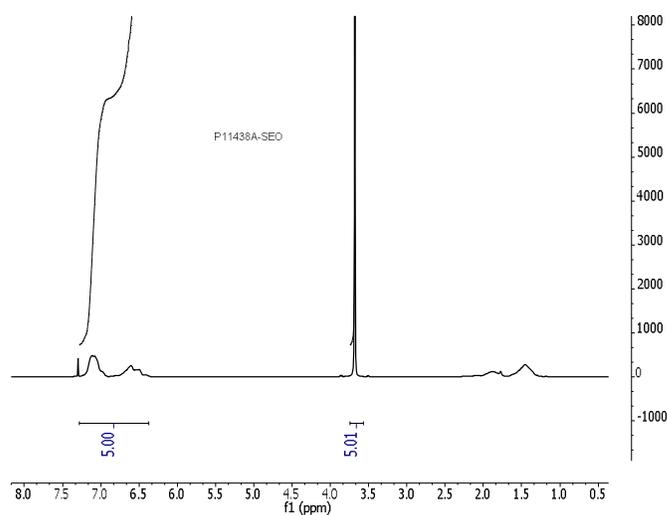
Structure:



Composition:

$M_n \times 10^3$ S-b-EO	PDI
167.0-b-90.0	1.10

1H NMR spectrum of the sample



P11438A-SEO

Synthesis Procedure:

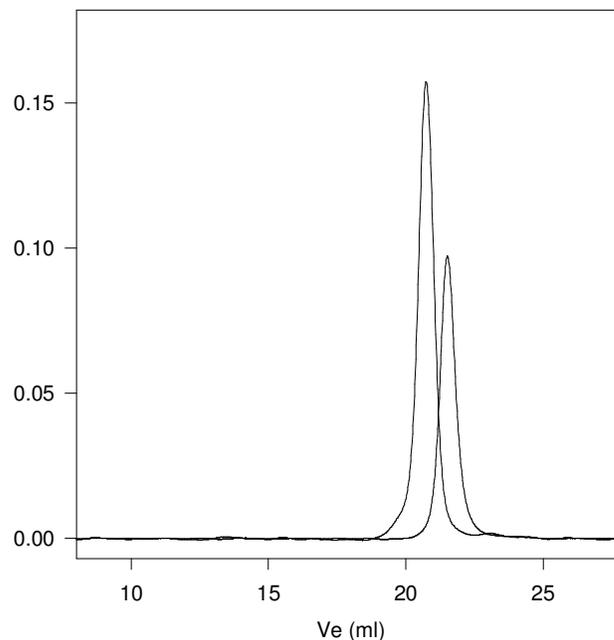
Poly(styrene-b-ethylene oxide) diblock copolymer is prepared by living anionic polymerization.

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.



Size exclusion chromatography of Poly(styrene-b-ethylene oxide)

- Poly(styrene), $M_n=167,000$, $M_w=177,000$, $PI=1.06$
- Block Copolymer PSt(160,000)-b-PEO(90,000), $PI=1.10$
Composition from 1H NMR

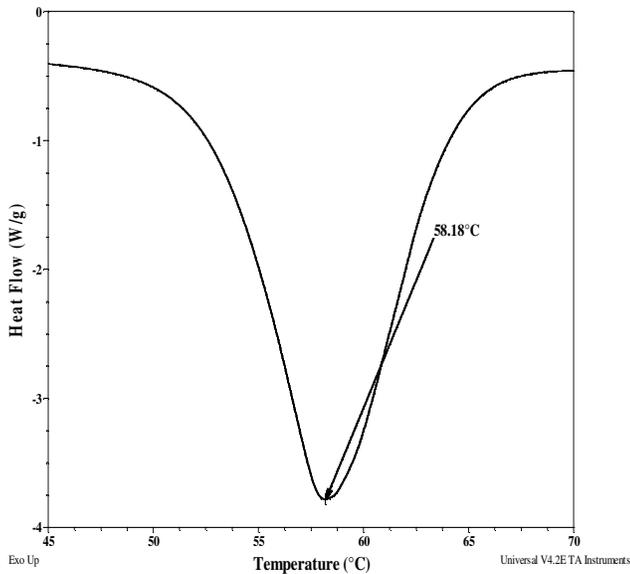
Thermal analysis of the sample# P11438A-SEO

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°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).

Melting and crystallization curve for the PEO block

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

Melting curve for PEO block:



Thermal analysis results at a glance

For PS block T_g : Not distinct		
For PEO block		
T_g : Not distinct	T_m : 58 °C	T_c : 19 °C

Crystallization curve for PEO block:

