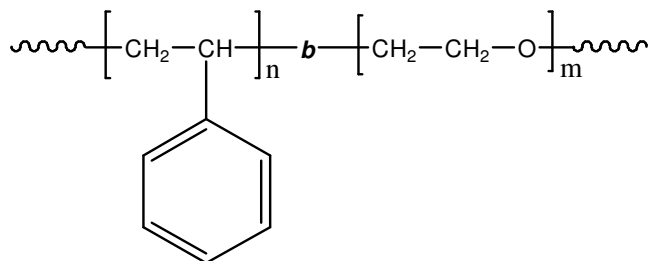


Sample Name: Poly(styrene-b-ethylene oxide)

Sample # P9082-SEO

Structure:



Composition:

$M_n \times 10^3$ S-b-EO	PDI
1.6-b-1.8	1.12

Synthesis Procedure:

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 characterized by size exclusion chromatography (SEC). The composition of the block copolymer was calculated from ^1H -NMR by integration the peak area of phenyl polystyrene protons at 6.4–7.2 ppm and ethylene oxide protons at 3.65 ppm.

Thermal analysis:

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter (DSC) at a heating rate of 20°C/min. The midpoint of slope change on heat flow plot of the second heating scan corresponds to the glass transition temperature (T_g). The maximum of endothermic peak corresponds to the melting temperature (T_m).

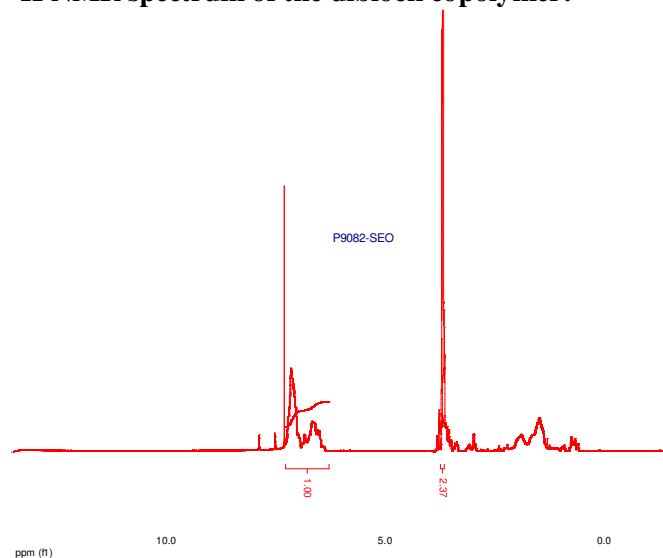
Summary of DSC thermal analysis results:

PS block	PEO block	
$T_g = 51^\circ\text{C}$	$T_g = -56^\circ\text{C}$	$T_m = 43^\circ\text{C}$

Solubility:

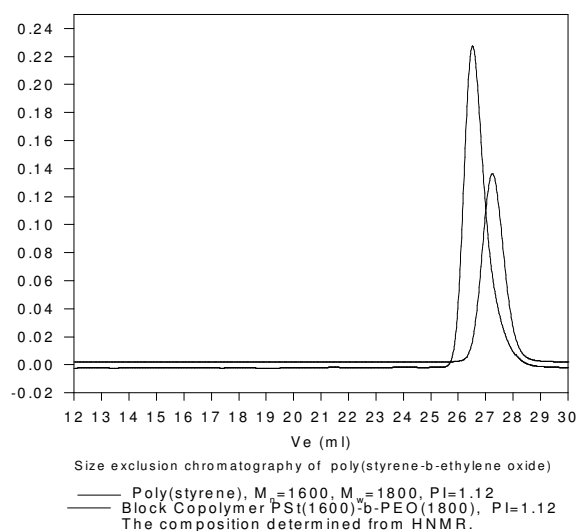
The polymer is soluble in THF (at 35°C), CHCl_3 , benzene, toluene, dioxane. Low molecular weight SEO with high contents of the polyethylene oxide block can also be solubilized in methanol and water.

^1H NMR spectrum of the diblock copolymer:



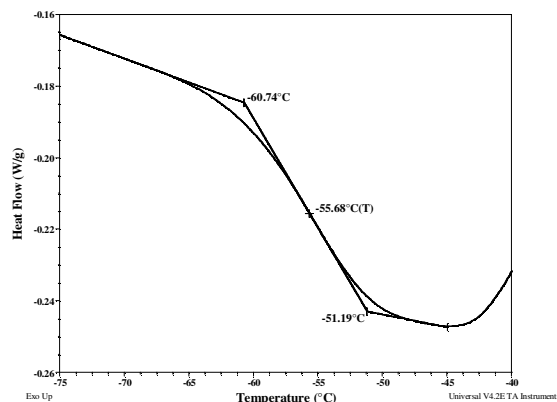
SEC elugram of the diblock copolymer:

P9082-SEO

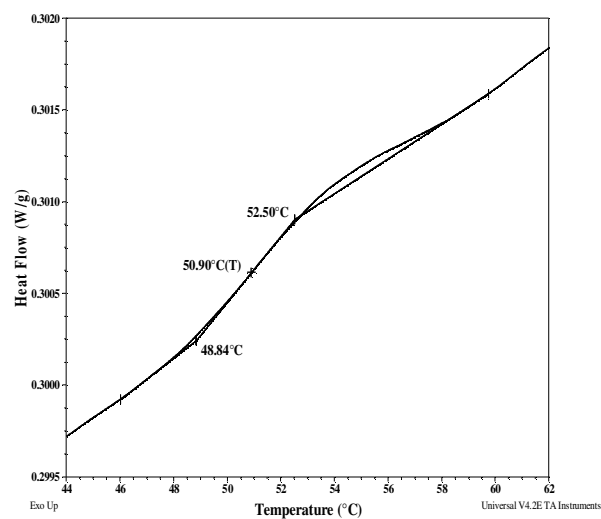


DSC thermograms of P9082-SEO polymer:

Glass transition curve (PEO block):



Glass transition curve (PS block):



Melting peak (PEO block):

