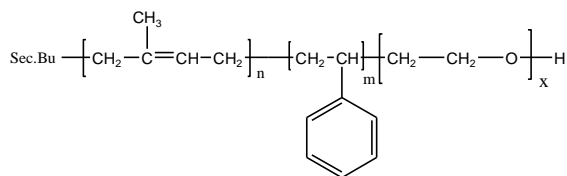
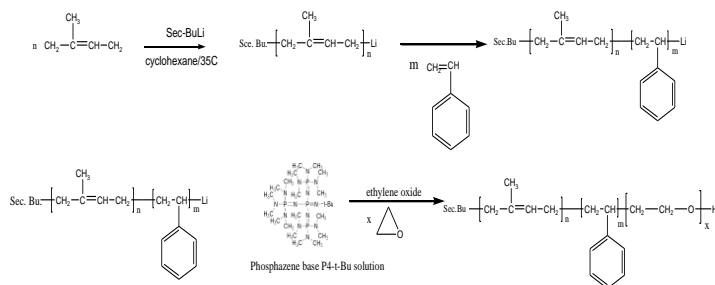


Sample Name:**Poly(Isoprene-b-styrene-b-ethylene oxide)****Sample #: P8393-IPSEO****Structure:****Composition:**

Mn x 10 ³ IP-b-S-b-EO	PDI
26.0-b-10.0-b-6.0	1.06

Synthesis Procedure:

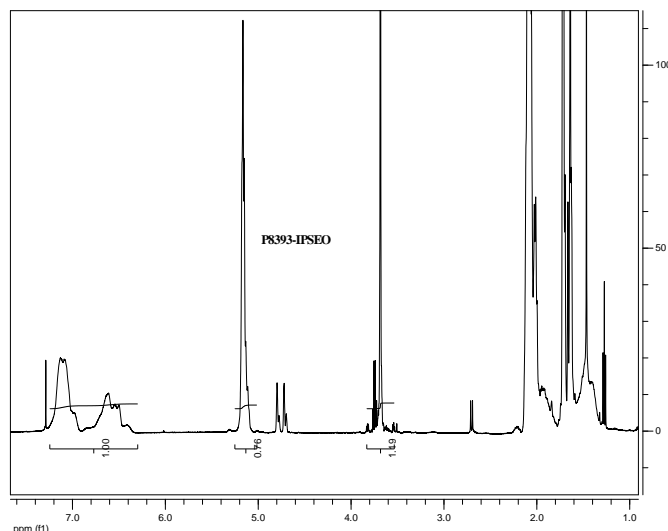
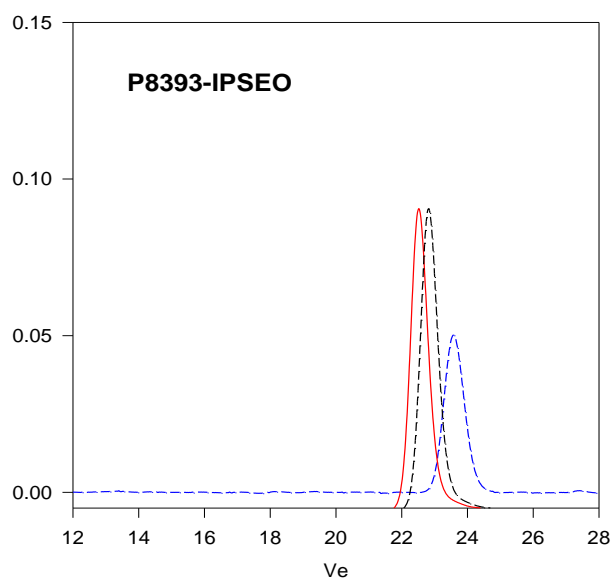
Poly(Isoprene-b-styrene-b-ethylene oxide) triblock copolymer is prepared by living anionic polymerization. The triblock is synthesized in 3 steps by successive addition of monomer in cyclohexane using lithium counter ion initiator and in the presence of Phosphazene base P₄-t-Bu as an additive for the ethylene oxide monomer polymerization. The scheme of the reaction is shown below:

**Characterization:**

An aliquot of the anionic polyisoprene block was terminated before addition of styrene monomer and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The Block copolymer composition was further calculated from ¹H-NMR spectroscopy by comparing the peak area of the styrene : isoprene : ethylene oxide.

Solubility:

Polymer is soluble in THF, toluene, and CHCl₃. The polymer readily precipitates from methanol, ether and water.

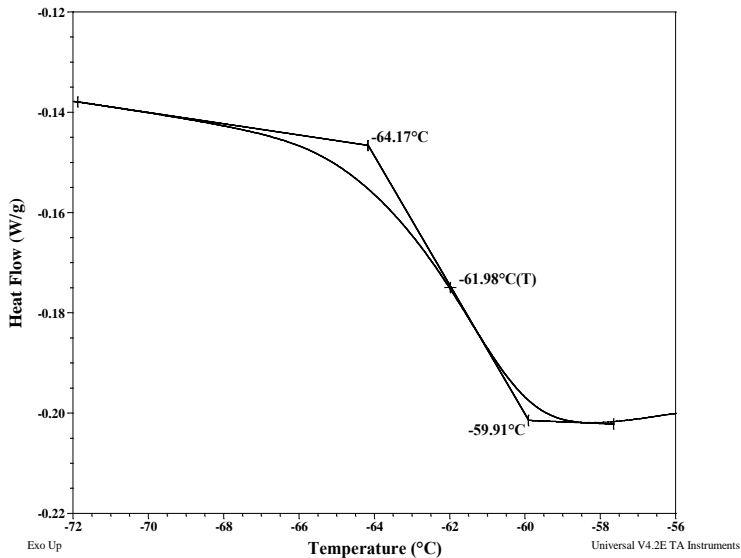
¹H-NMR Spectrum of the polymer:**SEC of the polymer:****Size Exclusion Chromatography :**

- First PIP block, M_n=26000, M_w/M_n=1.07
- PIP-bS, the diblock PIP(26000)-b-PS(10000), M_w/M_n=1.06
- PIPSEO, the triblock PIP(26000)-b-PS(10000)-b-PEO(6000) M_w/M_n=1.06 (composition from H NMR)

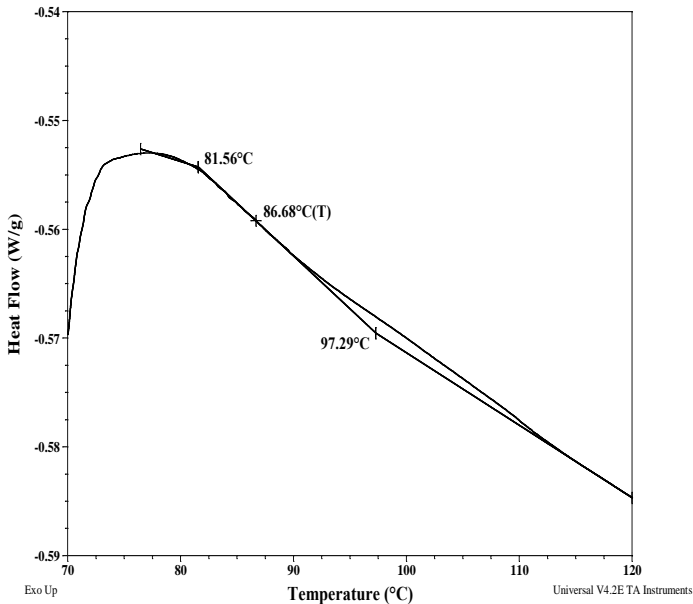
Thermal Analysis of sample #: P8393-IPSEO

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).

Thermogram for PIp block:



Thermogram for PS block:



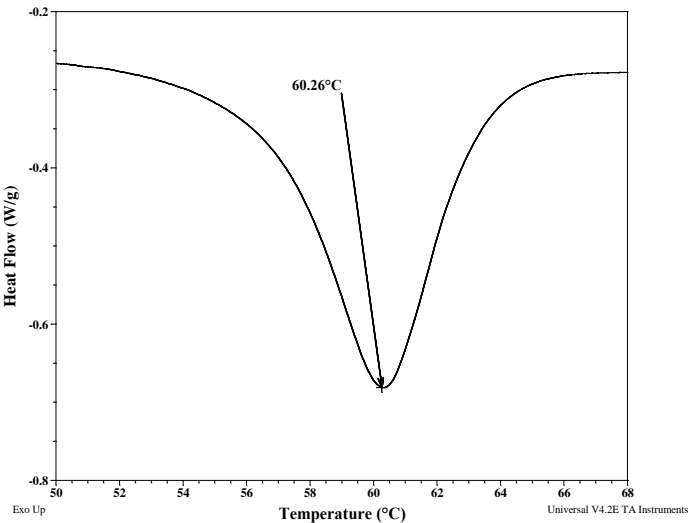
Thermal analysis results at a glance

T_g for PIp block: -62°C		T_g for PS block: 87°C
For PEO block		
T_g : Not distinct	T_m : 60°C	T_c : 47 & -9°C

Melting and crystallization curve for the sample

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.

Melting curve for PEO block:



Crystallization curve For PEO block:

