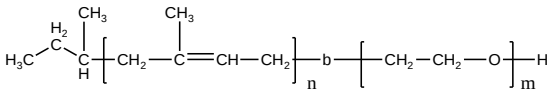
Sample Name:
Poly(1,4-isoprene)-b-poly(ethylene oxide)

Sample #: **P18856C-IPEO**

Structure:



Composition:

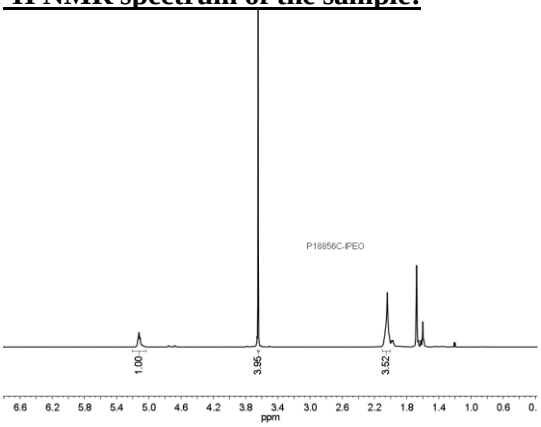
Mn x 10^3 PIP-b-EO	Mw/Mn (PDI)
26.0-b-14.0	1.05

Synthesis Procedure:
Poly(Isoprene 1,4 addition or 1,2 addition)-b-ethylene oxide) can be prepared by the different routes as reported in the literature (Ref: Macromolecules 1996, 29, 6994). The direct synthesis of diblock copolymer using lithium counter ion in the presence of Phosphazene Base *t*-BuP_4 is interesting as reported in *Macromolecules*, **32** (8), 2783 -2785, 1999. These polymers can also be successfully synthesized using different end functionalized polymers as investigated in our laboratory which are proprietary.

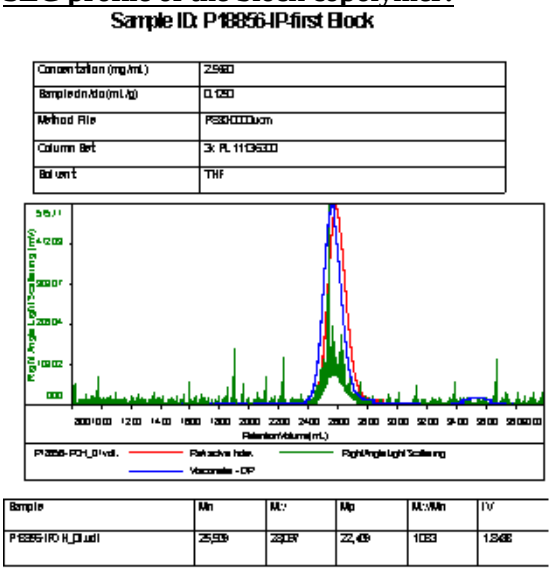
Characterization:
OH terminated isoprene was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ^{1}HNMR spectroscopy by comparing the peak area of the vinylic butadiene protons at about 5.4 ppm with the ethylene oxide protons at 3.6 ppm. Block copolymer PDI is determined by SEC.

Solubility:
Poly(isoprene-b-ethylene oxide) is soluble in THF, $CHCl_3$, and toluene. The polymer has variable solubility in hexane, methanol, ethanol and water depending on its composition.

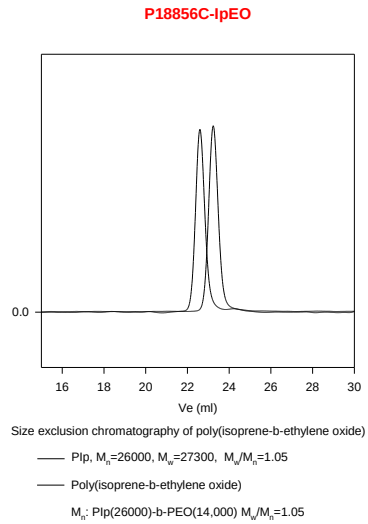
^{1}H NMR spectrum of the sample:



SEC profile of the block copolymer:



Sample	Mn	Mw	Mp	Mw/Mn	PV
P18856-IPO H_01.sdf	25,519	28,067	22,409	1.083	1.2468



Thermal analysis of the sample# P18856C-IPEO

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).

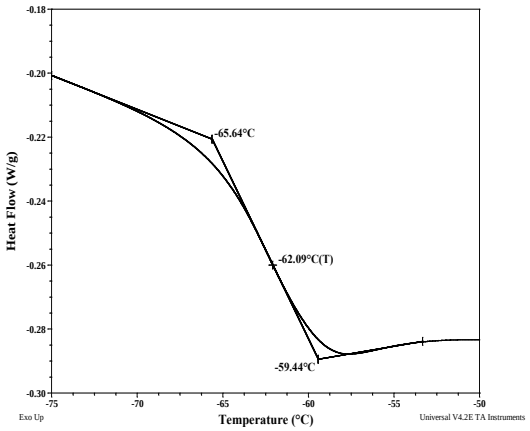
Melting and crystallization curve for the sample

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.

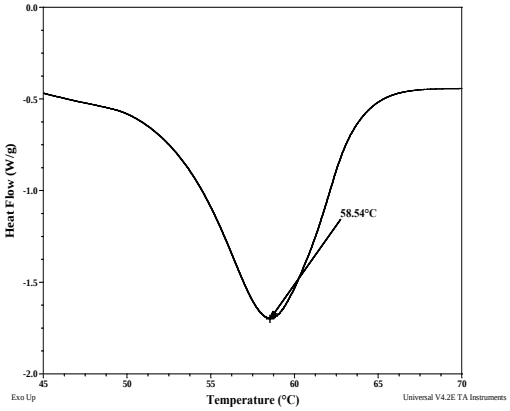
Thermal analysis results at a glance

Sample	T_m (°C)	T_c (°C)	T_g (°C)
EO	59	38	-
Ip	-	-	-62

Thermogram for the sample



Melting curve for PEO block:



Crystallization curve for PEO block: