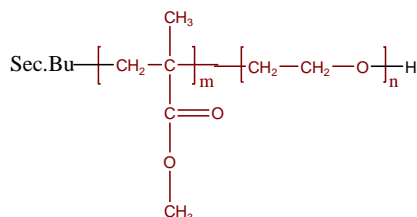


**Sample Name:**

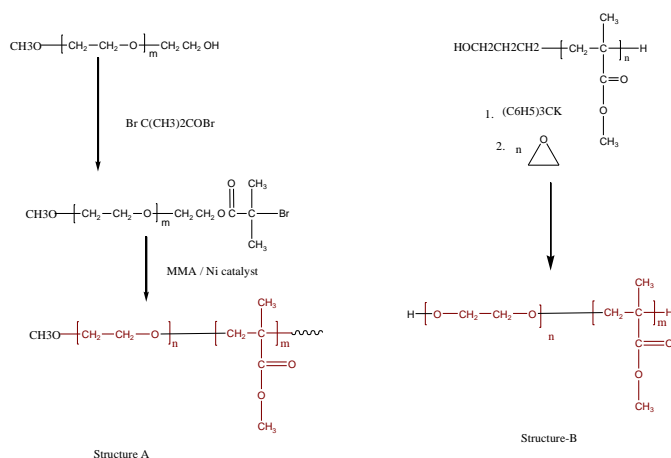
Poly(Ethylene oxide-b- methyl methacrylate)

**Sample #: P18710A-EOMMA****Structure:** This has structure A**Composition:**

Mn x 10 <sup>3</sup> PEO-b-MMA	PDI
2.0-b-5.0	1.19

**Synthesis Procedure:**

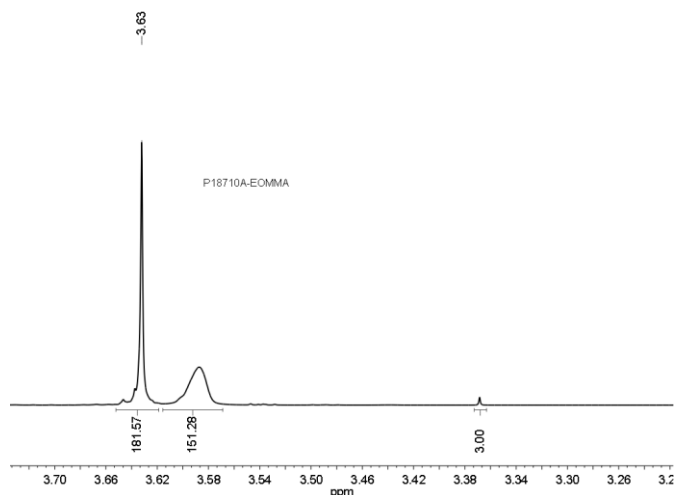
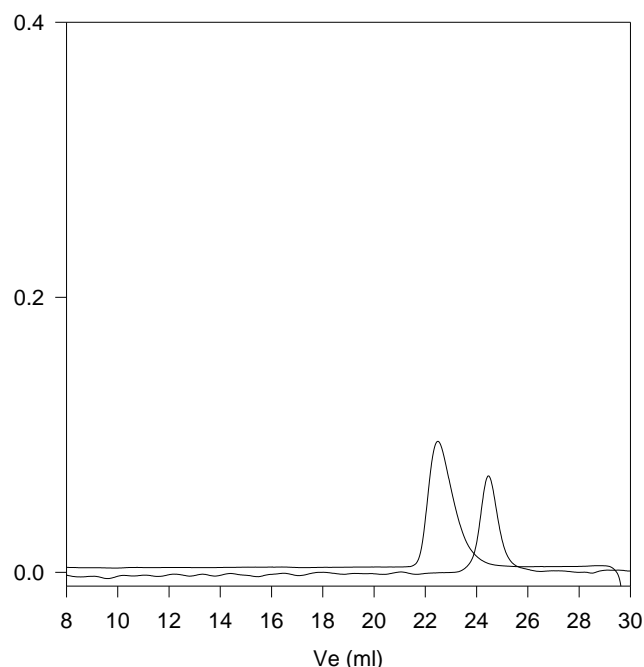
Poly(methyl methacrylate -b- ethylene oxide) is prepared by different routes. The scheme of the reactions are illustrated below:

**Purification of the polymer:**

The non-reacting PEG from the synthesized polymer can be removed by stirring the polymer in hot water. The obtained polymer dissolved in CHCl<sub>3</sub>/toluene and pass through the column packed with silica bed. The di-block copolymer obtained through second route where the macro-initiator bearing Br terminal group was used to initiate polymerization of the MMA. The obtained polymer solution in toluene/CHCl<sub>3</sub> was passed through a column packed with silica to remove the traces amount of Nickel catalyst. The polymer was further purified by stirring in hot water to remove un-reacted PEG macro-initiator and finally recovered by precipitation in cold ether/hexane mixture.

**Characterization:****Solubility:**

Poly(ethylene oxide -b- MMA) is soluble in CHCl<sub>3</sub>, THF, toluene. The polymer precipitated out from hexane.

**<sup>1</sup>H-NMR Spectrum of the block copolymer:****SEC of the block copolymer:****P18710A-EOMMA**

Size exclusion chromatography of poly(EO-b-MMA)

— PEO, M<sub>n</sub>=2000, M<sub>w</sub>=2160, M<sub>w</sub>/M<sub>n</sub>=1.08

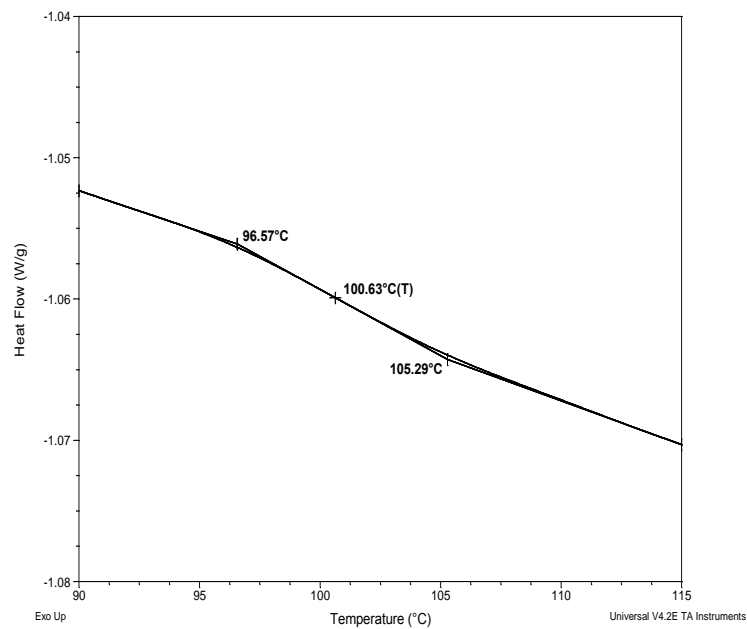
— Poly(ethylene oxide-b-methyl methacrylate)

Mn: PEO(2000)-b-MMA(5000) M<sub>w</sub>/M<sub>n</sub>=1.19

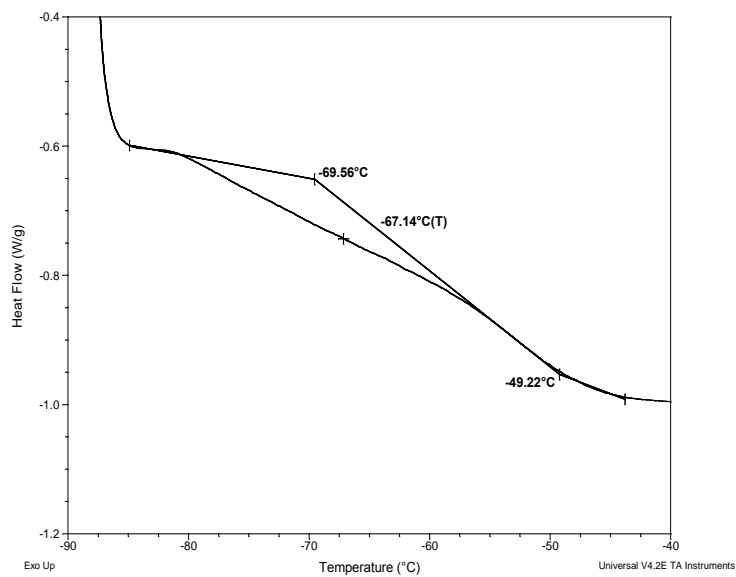
Thermal analysis of the sample# P18710A-EOMMA

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 MMA block



Thermogram for the PEO block



Thermal analysis results at a glance

For PMMA block		
$T_g$ : 101°C	$T_m$ : -	$T_c$ : -
For PEO block		
$T_g$ : -67 °C	$T_m$ : 48°C	$T_c$ : Not observed

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

