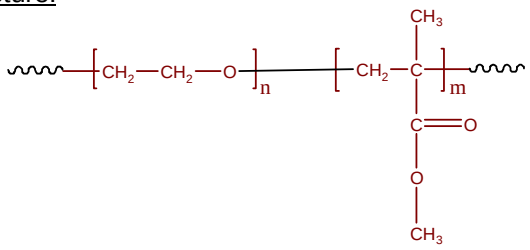
Sample Name:
Poly(ethylene oxide-bmethylmethacrylate)

Sample #: **P4997A-EOMMA**

Structure:

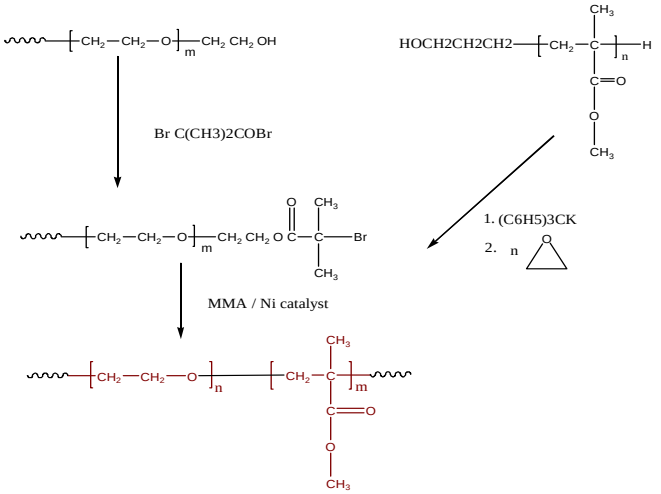


Composition:

Mn x 10^3 PEO-b-MMA	PDI
11.5-b-1.5	1.10

Synthesis procedure:

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



Purification of the polymer:

From the obtained polymer the un- reacted PEG can be removed by stirring the polymer in hot water. The obtained polymer dissolved in CHCl3/Toluene and pass through the column packed with silica. The Diblock copolymer obtained by second route where the macroinitiator of PEG bearing Br terminal group was used to initiate polymerization of MMA. The obtained polymer dissolved in toluene/CHCl3 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 macroinitiator. The polymer was recovered by precipitation in cold ether/hexane mixture.

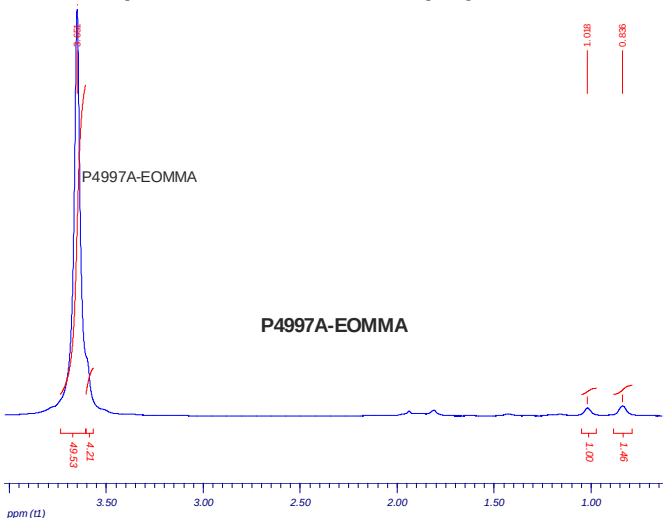
Characterization:

Polymer composition was determined by H NMR taking the integration of PEG block at 3.6 ppm and methyl ester of PMMA block at 3.5 pmm.
Molecular weights of the first block and the Mw/Mn of the final and the first block was determined by SEC in THF at 30 oC.

Solubility:

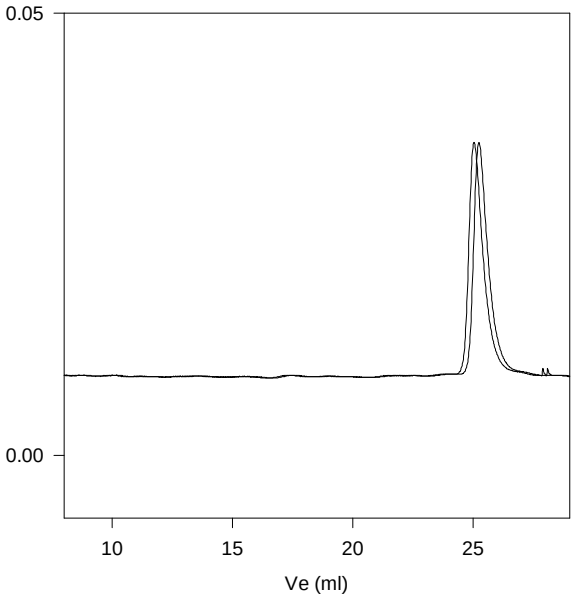
Poly(ethylene oxide -b- MMA) is soluble in CHCl3, THF, toluene. The polymer precipitated out from hexane.

^{1}H-NMR spectrum of the block copolymer:



SEC of the block copolymer:

P4997A-EOMMA



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

—— Poly(ethylene oxide), M_n=11500, M_w=12000, PI=1.05

—— Block Copolymer PEO(11500)-b-MMA(1500), PI=1.10
Composition from ^{H} NMR