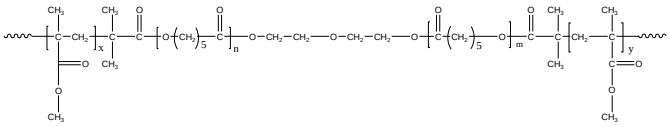
Sample Name:

Poly(methyl metharylate –b - ε-caprolactone –b- methyl methacrylate)

Sample #: **P7123- MMACLMMA**

Structure:



Composition:

Mn x 10^3 PMMA-b-PCL-b-PMMA	PDI
2-0.9-2	1.18
T_g for MMA block	50°C
T_g for CL block	Not distinct

Synthesis Procedure:

Poly(methyl metharylate –b - ε-caprolactone) –b- methyl methacrylate) is prepared by ring opening polymerization of ε-caprolactone and coordination ATRP polymerization of methyl methacrylate.

Characterization:

The Mn of poly(ε-caprolactone) and poly(methyl metharylate –b -ε-caprolactone) –b- methyl methacrylate) is calculated from ^{1}H-NMR spectroscopy by comparing the peak area of the ethylene oxide protons at about about 3.6 ppm, the ε-caprolactone protons at about 4.1 ppm and the methyl methacrylate protons at 1.9 ppm. The polydispersity index (PDI) is analyzed by size exclusion chromatography (SEC).

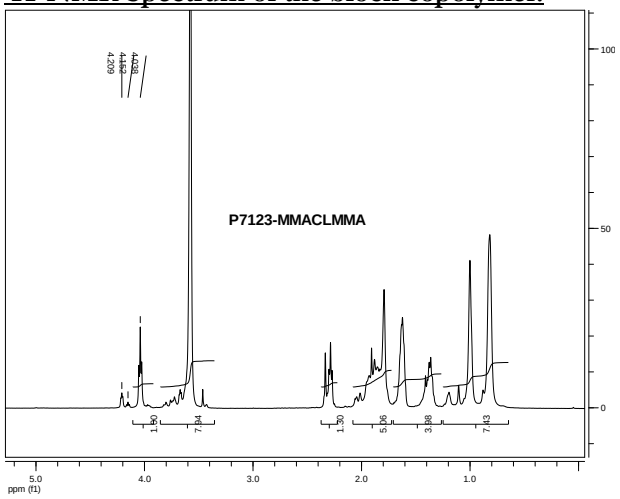
Thermal analysis:

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).

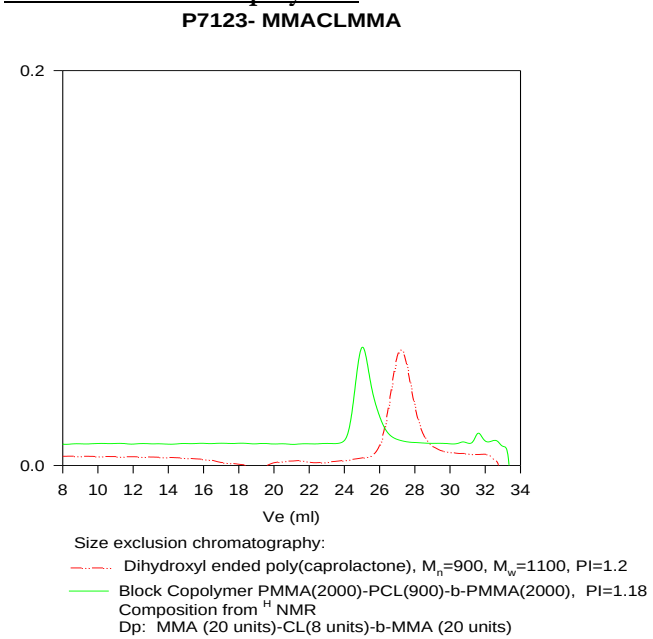
Solubility:

poly(methyl metharylate –b - ε-caprolactone) –b- methyl methacrylate) is soluble in CHCl3, THF, DMF, toluene and precipitated out from cold ethanol, diethyl ether.

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



SEC of the block copolymer:



DSC thermogram for MMA block: