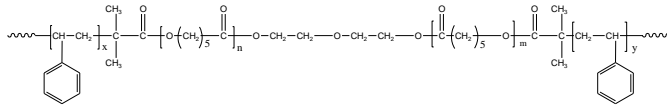
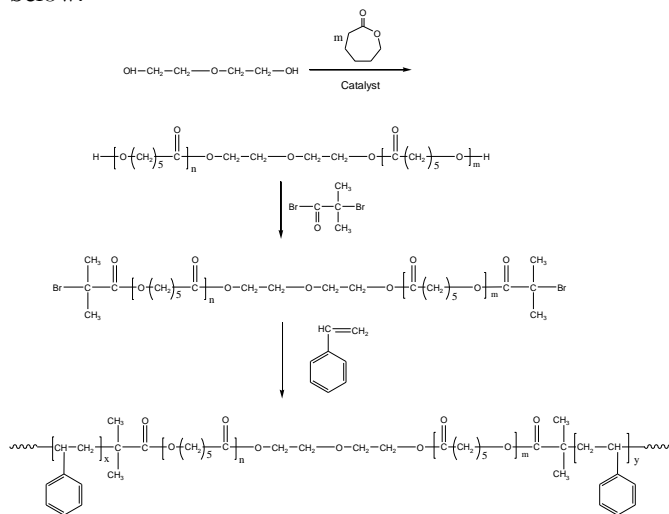


Sample Name:**Poly(styrene -b- ε-caprolactone -b- styrene)****Sample #: P7126-SCLS****Structure:****Composition:**

Mn x 10 ³	PDI
PS-b-PCL-b-PS	
0.8-0.9-0.8	1.13

Synthesis Procedure:

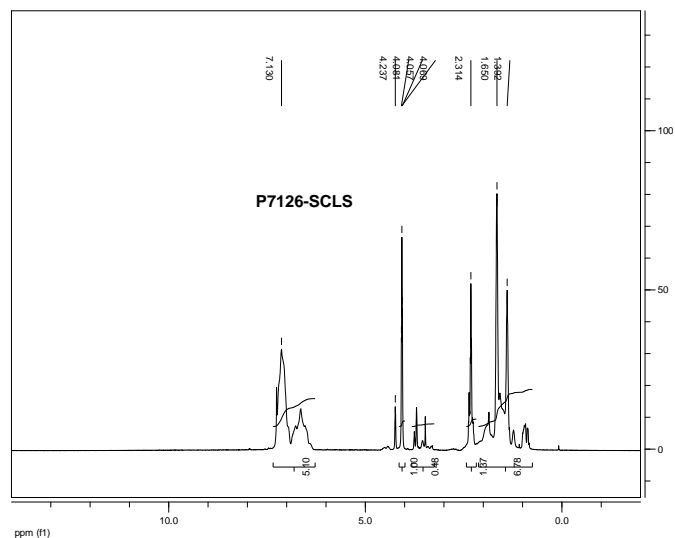
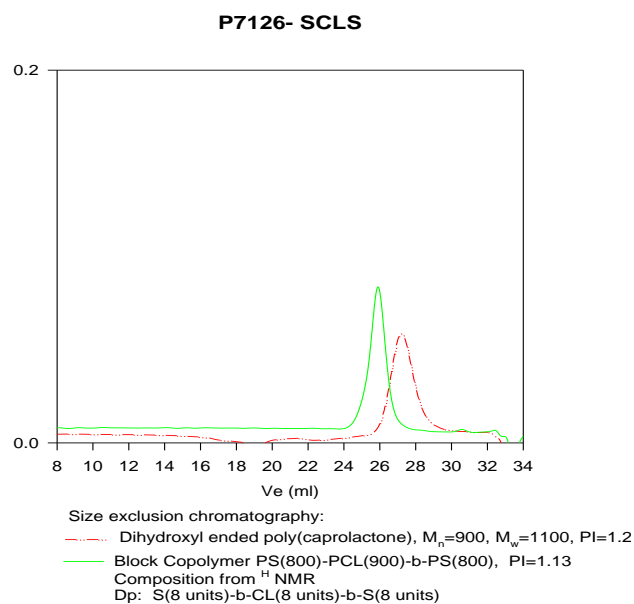
Poly(styrene -b- ε-caprolactone -b- styrene) is prepared by ring opening polymerization of ε-caprolactone and coordination ATRP polymerization of styrene. The scheme of the reaction is illustrated below:

**Characterization:**

The Mn of poly(ε-caprolactone) and Poly(styrene -b- ε-caprolactone -b- styrene) is calculated from ¹H-NMR spectroscopy by comparing the peak area of the ethylene oxide protons at about 3.6 ppm, the ε-caprolactone protons at about 4.1 ppm and the styrene protons at 6.2-7.3 ppm. The polydispersity index (PDI) is analyzed by size exclusion chromatography (SEC).

Solubility:

The polymer is soluble in CHCl₃, THF, DMF, toluene and precipitated out from cold ethanol, diethyl ether.

¹H-NMR Spectrum of the block copolymer:**SEC of the block copolymer:**

Thermal analysis of the P7126-SCLS sample

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).

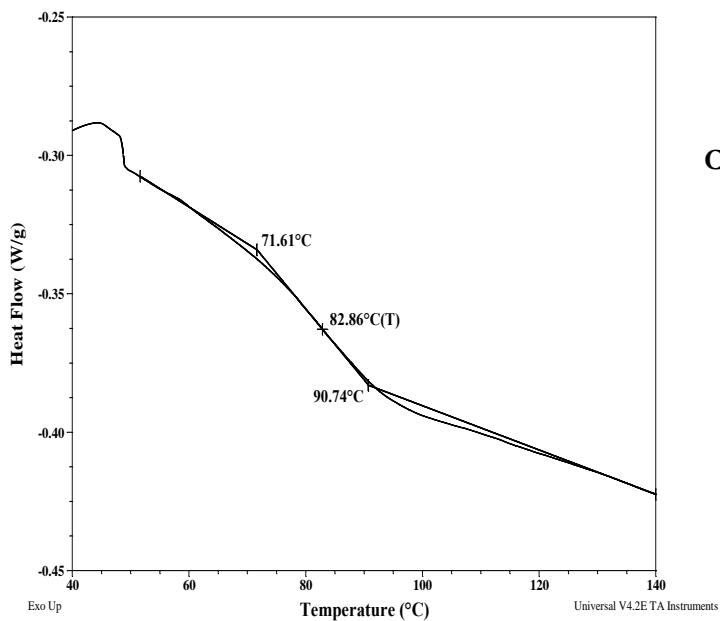
Melting and crystallization curve for the sample

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.

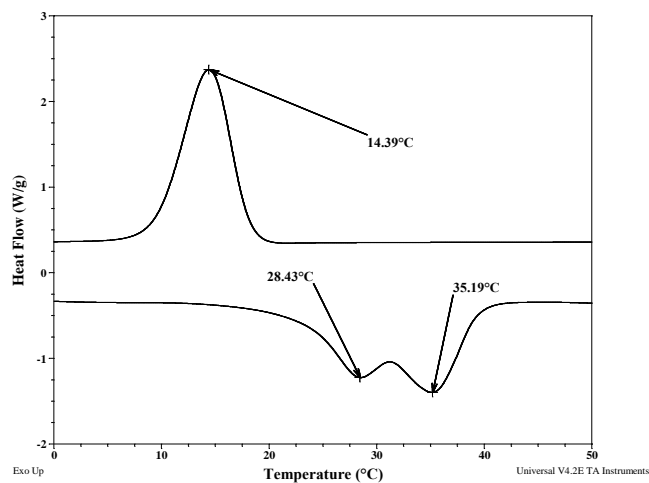
Typical thermal analysis results at a glance

Sample	T_m (°C)	T_c (°C)	T_g (°C)
MMA (Mn=9000)	-	-	107
MMA in triblock	-	-	83
ϵ -CL (Mn=900)	28 & 35	15	-64
CL in triblock	27 & 34	13	Not distinct

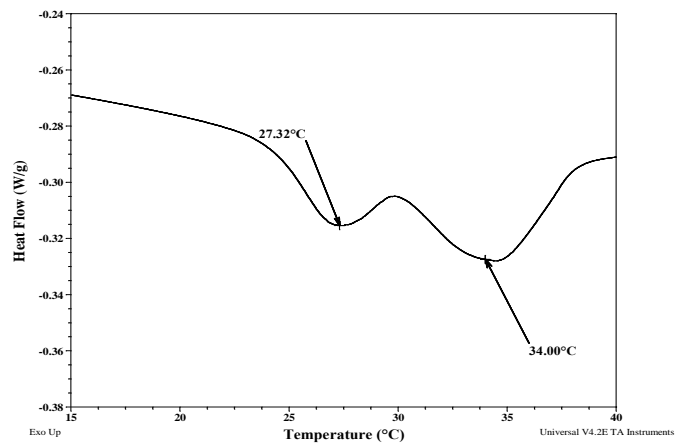
Thermogram for the MMA block in the triblock:



Thermogram of ϵ -caprolactone (Mn≈900)



Melting curve for CL block in triblock polymer:



Crystallization curve for CL block in the triblock:

