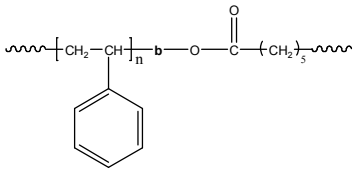
Sample Name: Poly(styrene-b-ε-caprolactone)

Sample #: P2037CL

Structure:



Composition:

Mn × 10^3 S-b-CL	Mw/Mn (PDI)
9.50-25.0	1.80

Synthesis Procedure:

Poly(styrene-b-ε-caprolactone) is prepared by anionic polymerization with sequence addition of styrene followed by n-butyl methacrylate.

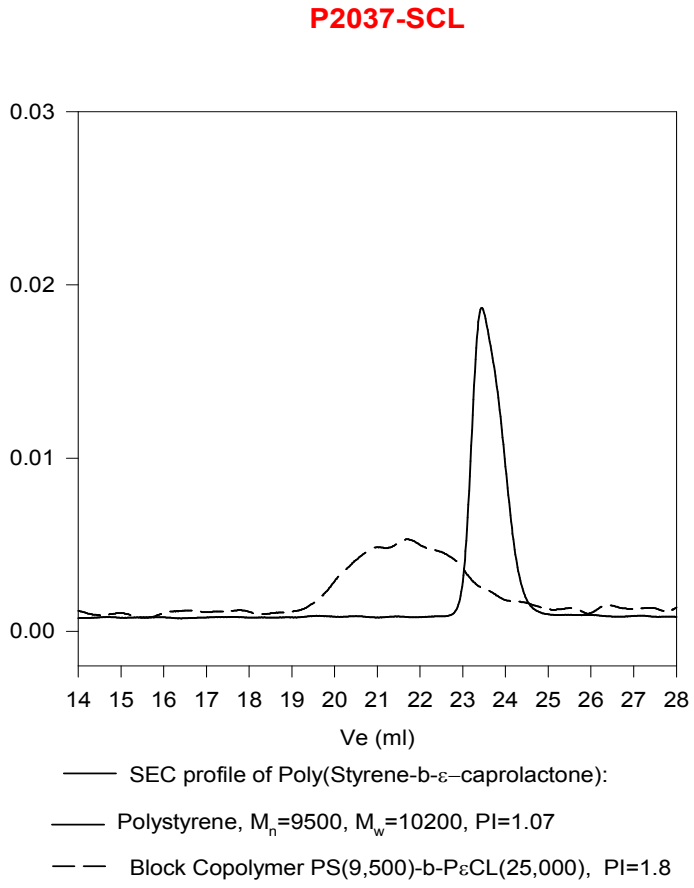
Characterization:

An aliquot of the polystyrene block was terminated before addition of -ε-caprolactone and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ^{1}H-NMR spectroscopy by comparing the peak area of the styrene protons at 6.3-7.2 ppm with the peak area of -ε-caprolactone protons at 4.1 ppm. Block copolymer PDI is determined by SEC.

Solubility:

Poly(styrene-b-ε-caprolactone) is soluble in THF, Chloroform, DMF, and precipitated in methanol and hexanes.

SEC profile of the block copolymer:



Thermal analysis of the sample# P2037SCL

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10^{o}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).

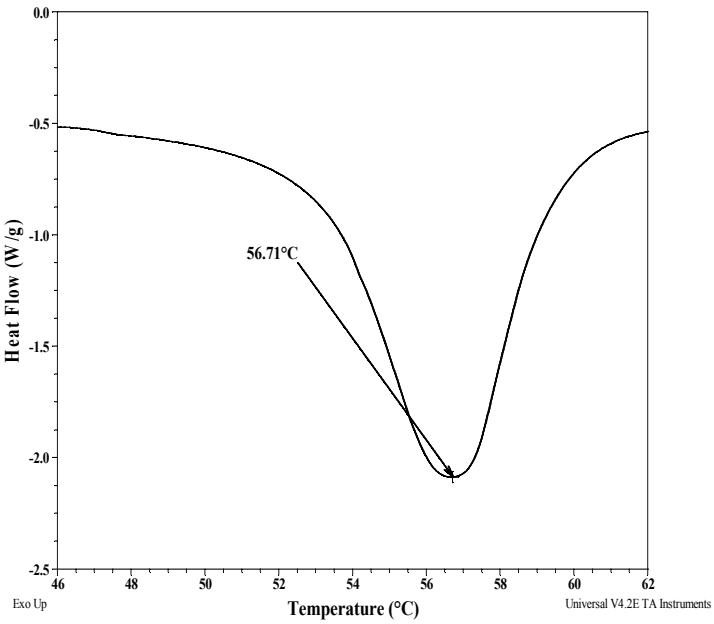
Melting and crystallization curve for the sample

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.

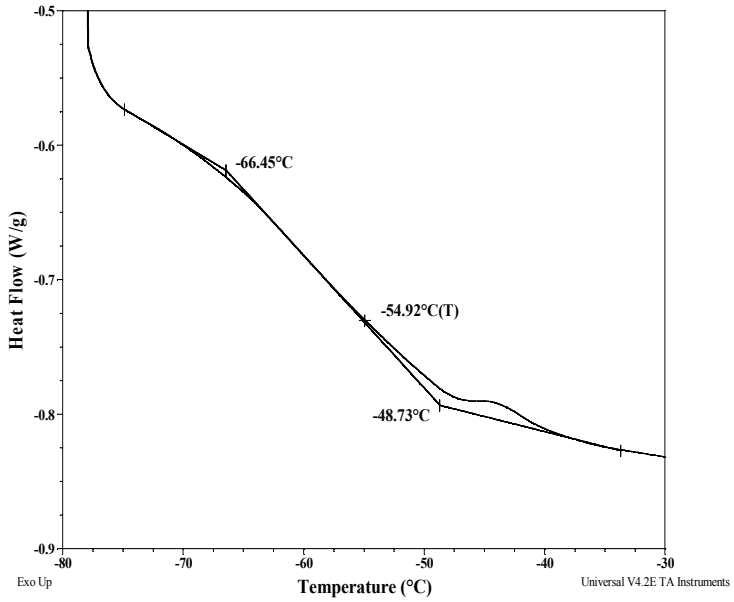
Thermal analysis results at a glance

Sample	T_m (^{o}C)	T_c (^{o}C)	T_g (^{o}C)
ε-CL	57	19	-55
PS	-	-	Not distinct

Melting curve for ε-caprolactone block:



Thermogram for ε-caprolactone block:



Crystallization curve for CL block: