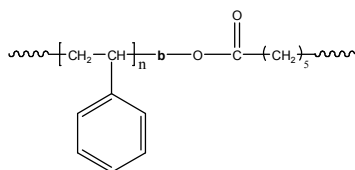


**Sample Name:** Poly(styrene-b-ε-caprolactone)

**P2056-SCL**

**Sample #:** P2056-SCL

**Structure:**



**Composition:**

$M_n \times 10^3$ S-b-CL	$M_w/M_n$ (PDI)
32.0-b-35.0	1.16

**Synthesis Procedure:**

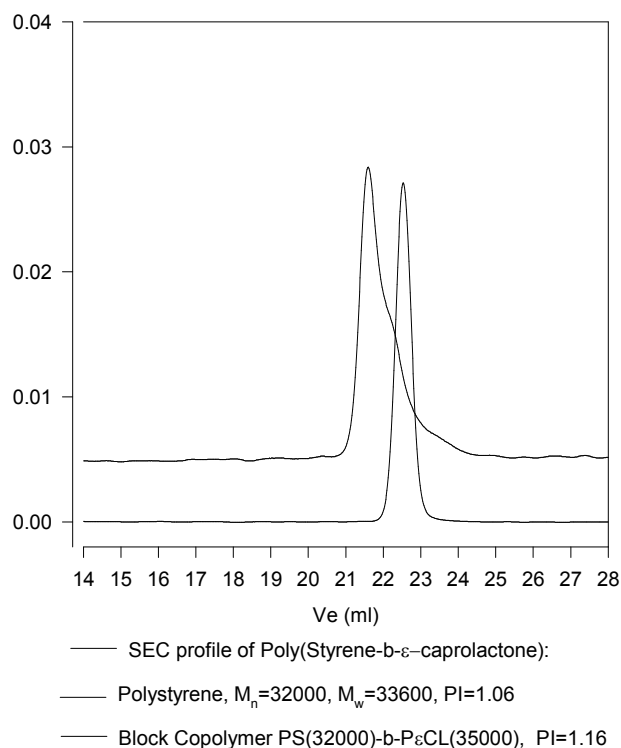
Poly(styrene-b-ε-caprolactone) is prepared by anionic polymerization with sequence addition of styrene followed by n-butyl methacrylate.

**Characterization:**

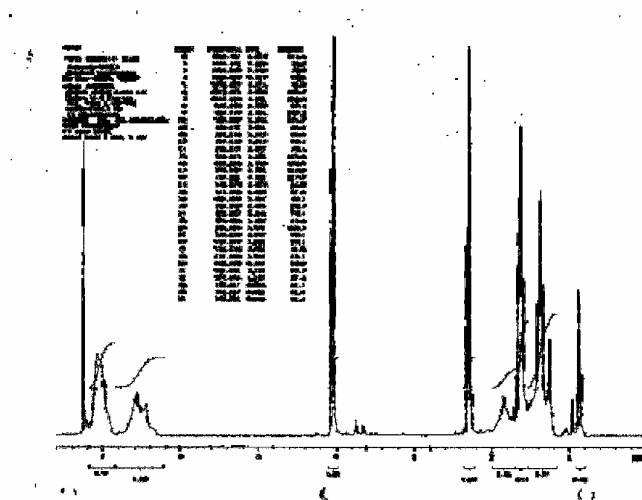
An aliquot of the polystyrene block was terminated before addition of -ε-caprolactone and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from  $^1\text{H-NMR}$  spectroscopy by comparing 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.



**NMR of the block polymer:**



Contd. in next page

## Thermal analysis of the sample# P2056-SCL

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 ( $T_g$ ).

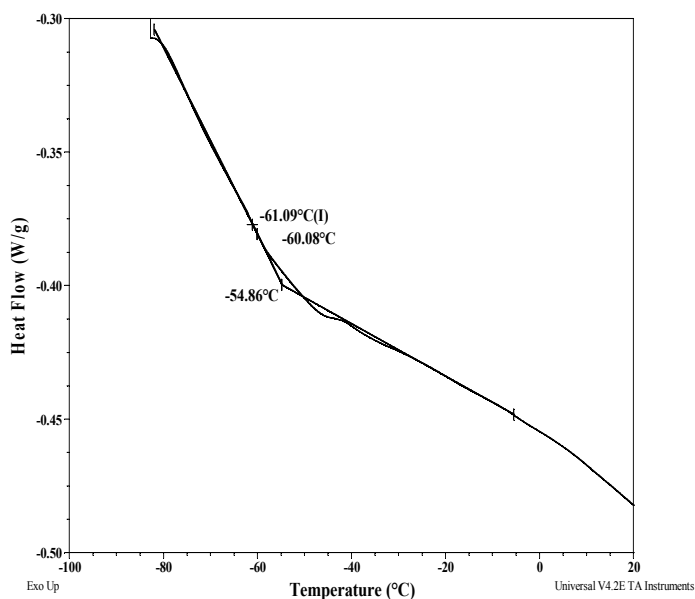
### Melting and crystallization curve for the sample

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.

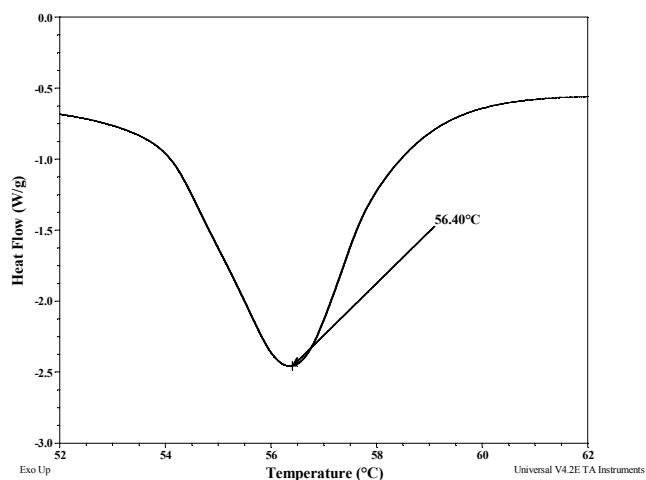
### Thermal analysis results at a glance

Sample	$T_m$ (°C)	$T_c$ (°C)	$T_g$ (°C)
ε-CL	56	22 & 33	-61
PS	-	-	Not distinct

### Thermogram for ε-caprolactone block:



### Melting curve for ε-caprolactone block:



### Crystallization curve for CL block:

