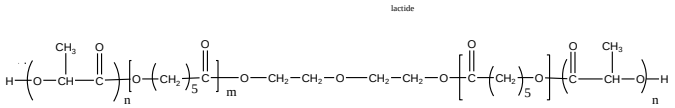
Sample Name:

Poly(lactide-b-ε-caprolactone-b- lactide) triblock copolymer

Sample #: **P8650- LACLLA (L form lactide)**

Structure:

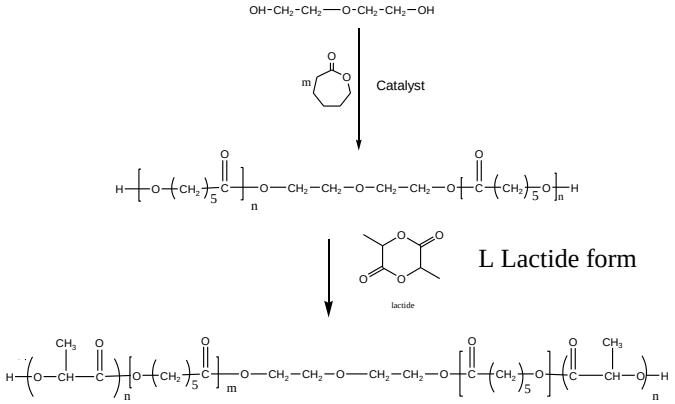


Composition:

Mn x 10^3 PLA-bCL-b-LA	PDI
2.8-b-2.3-b-2.8	1.10

Synthesis Procedure:

The scheme of the reaction is illustrated below:



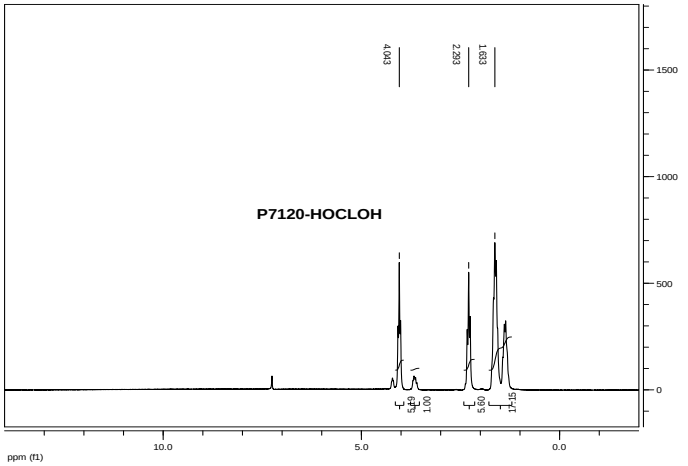
Characterization:

An aliquot of the anionic poly(ethylene oxide) block was terminated before addition of 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 ethylene glycol protons at about 3.6 ppm with the **ε**-caprolactone protons at about 4.1 ppm.

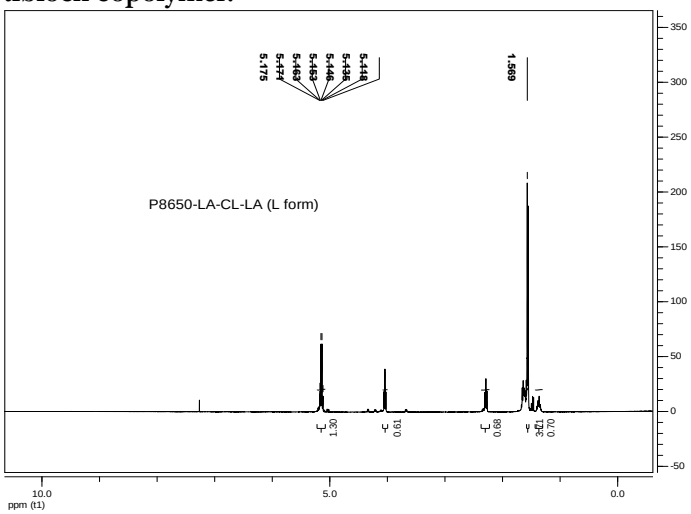
Solubility:

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

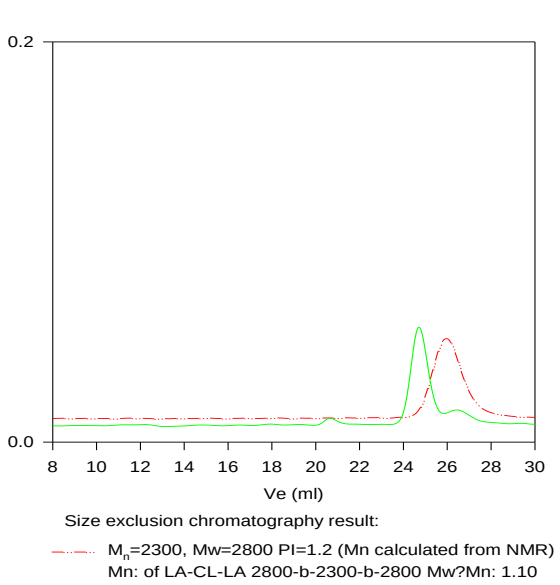
^{1}H-NMR of the poly caprolactone diol: Lot# P7120-CL2OH



^{1}H-NMR of the Lactide-b-caprolactone-b-lactide tiblock copolymer:



SEC of the block copolymer:



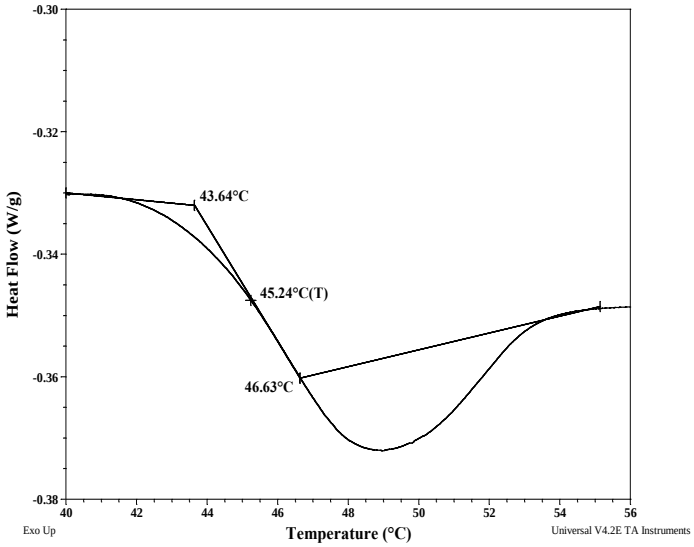
Thermal analysis of the P8650 LACLLA sample

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).

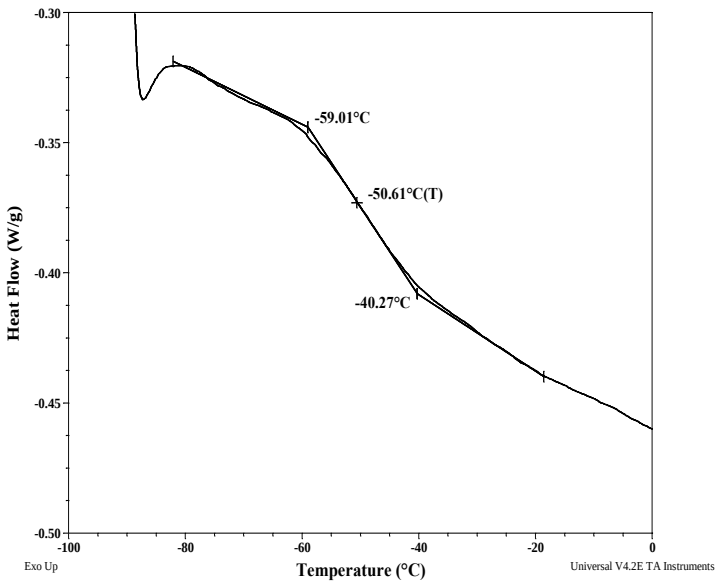
Melting and crystallization curve for the sample

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.

Thermogram for the PLA block in the triblock:



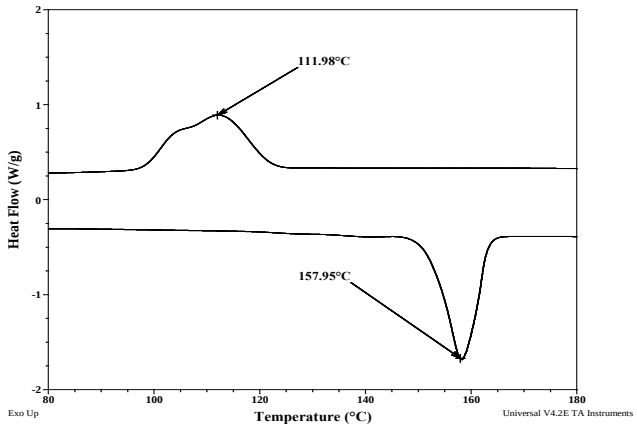
Thermogram for the ε-CL block in the triblock:



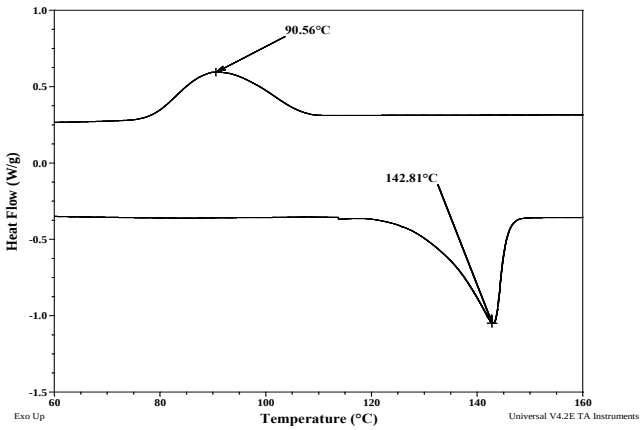
Typical thermal analysis results at a glance

Sample	T_m (°C)	T_c (°C)	T_g (°C)
PLA (L-form) (Mn=4700)	158	112	46
PLA in triblock	143	91	45
ε-CL (Mn=900)	28 & 35	15	-64
CL in triblock	Not found	Not found	-51

Typical thermogram of PLLA (Mn≈4700)



Thermogram for PLLA block in triblock:



Thermogram of ε-caprolactone (Mn≈900)