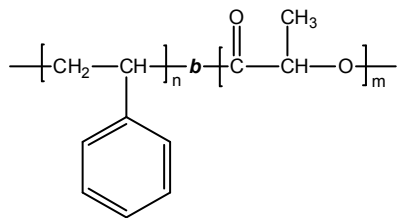


Sample Name: Poly(styrene-b-lactide)

Sample #: P2643-SLA (LA is L form)

Structure:

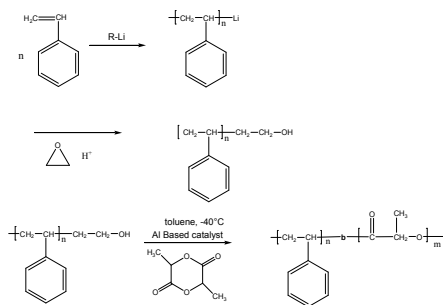


Composition:

Mn x 10 ³ S-b-LA	Mw/Mn (PDI)
21.0-b-14.0	1.10

Synthesis Procedure:

Poly(styrene-b-lactide) is prepared by living anionic polymerization in with sequence addition of styrene followed by lactide monomer or by taking the OH end functionalized polystyrene and using co-ordination polymerization process. . The scheme of the reaction is illustrated below:



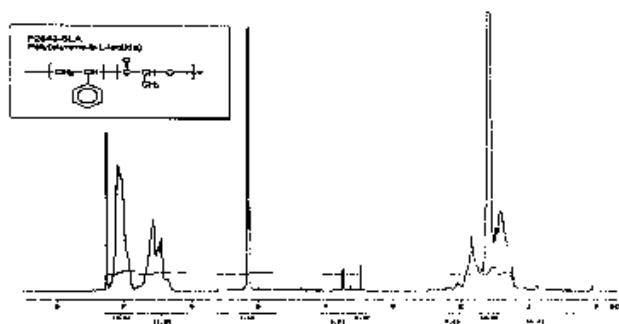
Characterization:

Polymer analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The block copolymer composition was then calculated from ¹H-NMR spectroscopy by comparing the peak area of the polystyrene protons at about 6.3-7.2 ppm with the lactide protons at 5.2 ppm. Copolymer PDI is determined by SEC.

Solubility:

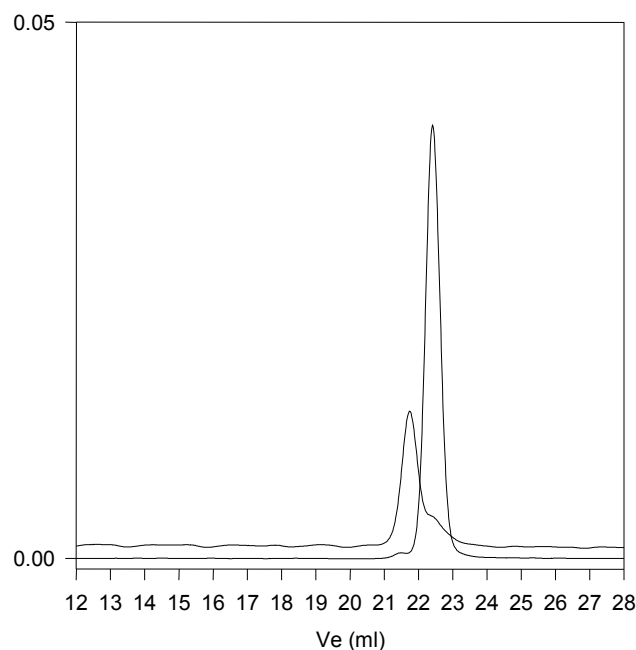
Poly(styrene-b-lactide) is soluble in chloroform, THF, toluene.

¹H-NMR Spectrum of the block copolymer:



SEC of Sample of the block copolymer:

P2643-SLA (L -form)



Size Exclusion chromatography of poly (styrene-b- L -lactide):

- Polystyrene, M_n=21000, M_w=22000, PI=1.04
- Block Copolymer from Light scattering
PS(21000)-b-LA(14000), PI=1.10 Composition from H NMR

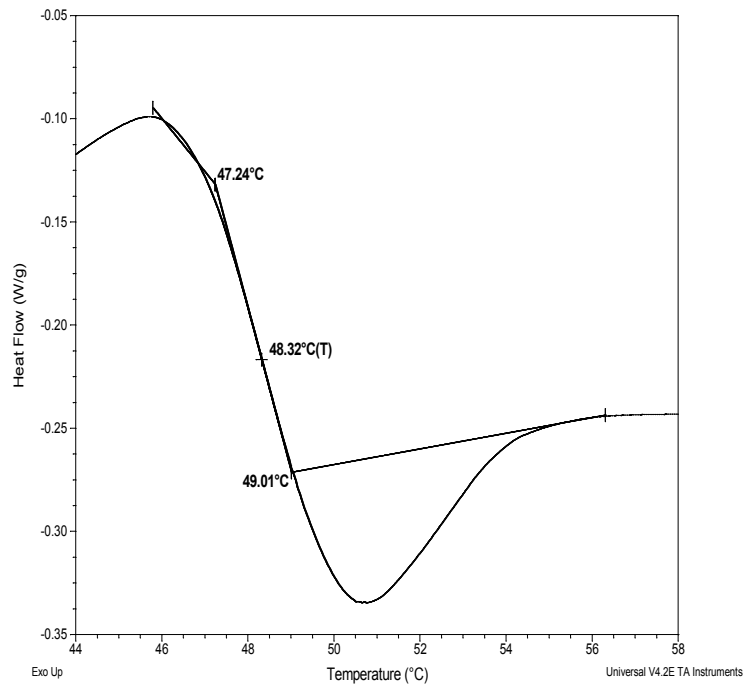
Thermal analysis of the sample# P2643-SLA

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).

Thermal analysis results at a glance

For PLA block		
T_g : 48°C	T_m : 134°C	T_c : 34°C
For PS block		
T_g : 100°C	T_m : Not found	T_c : Not found

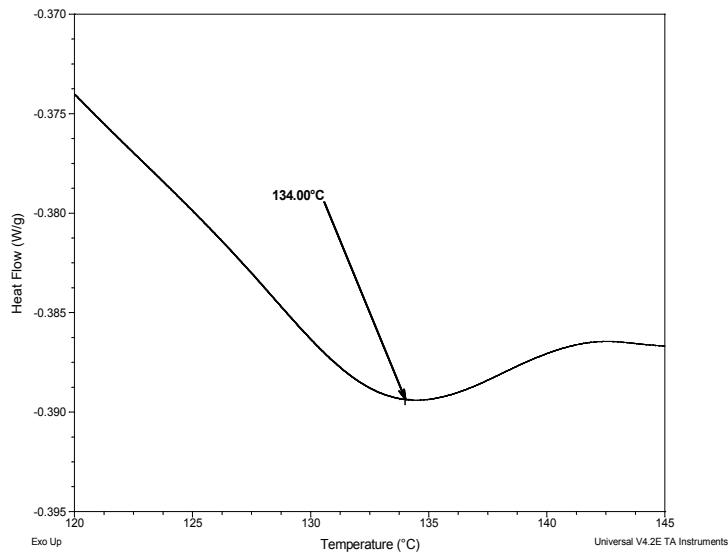
Thermogram for PLA block:



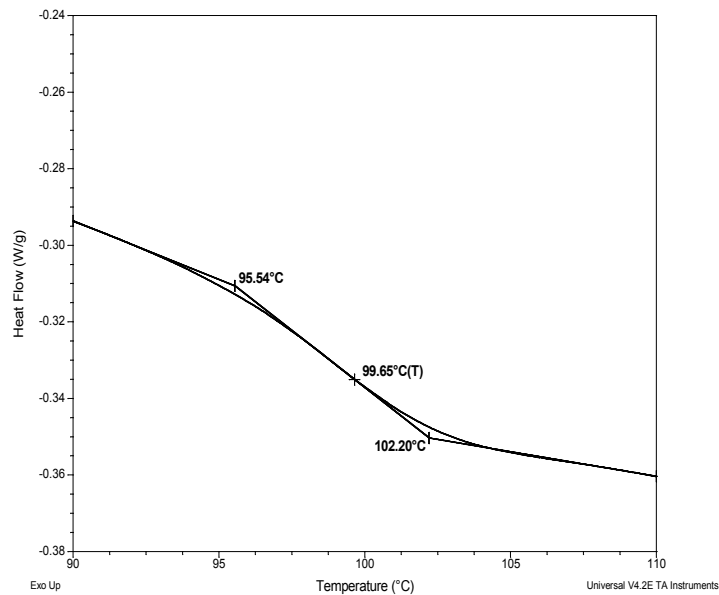
Melting and crystallization curve for the sample

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.

Melting curve for PLA block



Thermogram for PS block



Crystallization curve For PLA block

