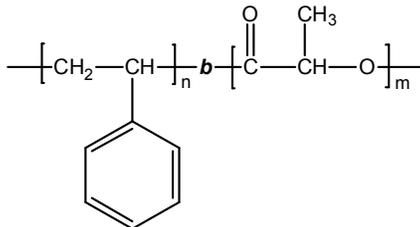


Sample Name: Poly(styrene-b-lactide)

Sample #: P8882-SLA (LA is L form)

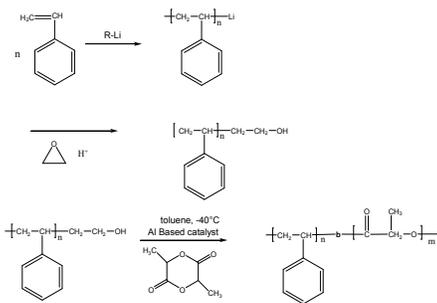
Structure:



Mn x 10 ³ S-b-LA	Mw/Mn (PDI)
19.0-b-40.0	1.10

Synthesis Procedure:

Poly(styrene-b-lactide) is prepared by living anionic polymerization in sequential 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:



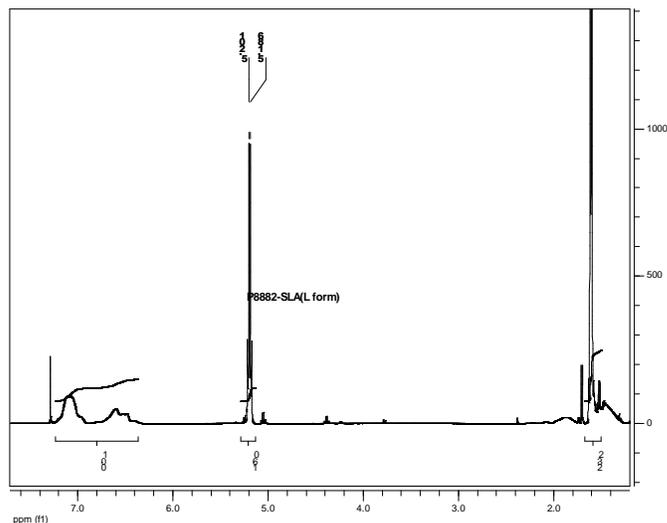
Characterization:

The block polymer was analyzed by size exclusion chromatography (SEC) to estimate the molecular weight and polydispersity index (PDI). Further, the copolymer composition was 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 was determined by SEC.

Solubility:

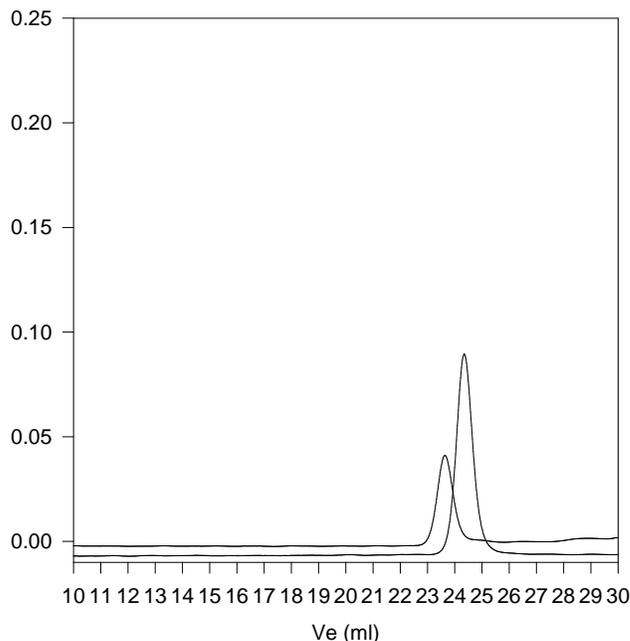
Poly(styrene-b-lactide) is soluble in chloroform, THF, and toluene.

¹H-NMR Spectrum of the block copolymer:



SEC of Sample of the block copolymer:

P8882-SLA (L-form)



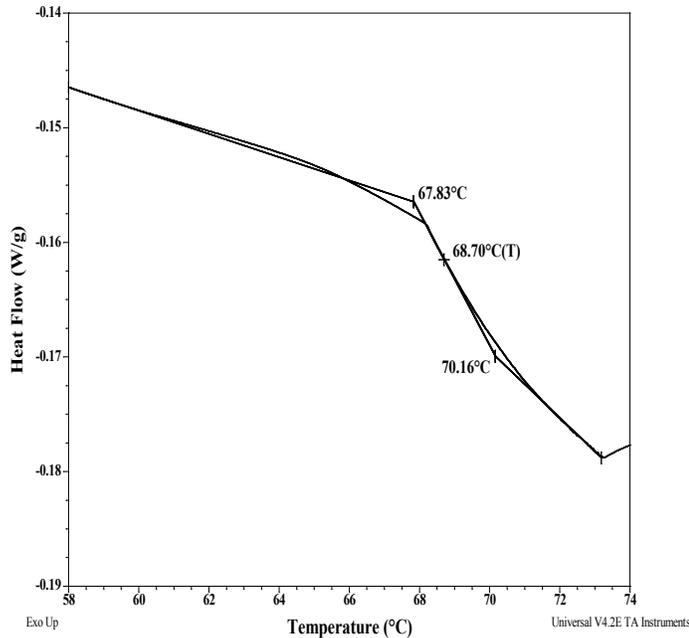
Size Exclusion chromatography of poly (styrene-b- L -lactide):

- Polystyrene, M_n=19000, M_w=20,000, PI=1.06
- Block Copolymer from Light scattering
PS(19000)-b-LA(40000), PI=1.10 Composition from H NMR

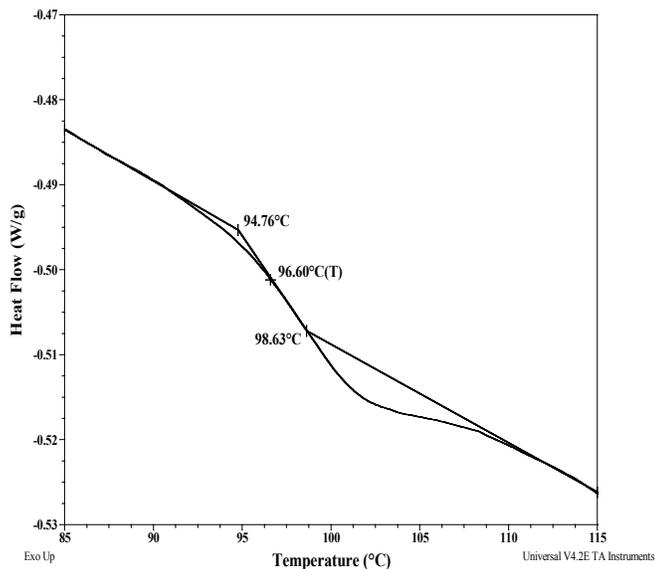
Thermal analysis of the sample# P8882-SLA

Thermal analysis of the block polymer 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).

Thermogram for PLA block:



For PS block



Thermal analysis results at a glance

For PLA block

T_g : 69°C

T_m : 161°C

T_c : 95°C

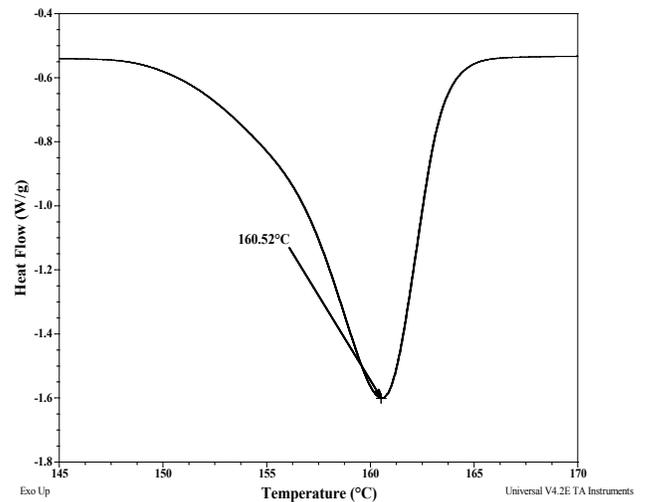
For PS block

T_g : 97°C

Melting and crystallization curve for the sample

The melting temperature (T_m) was taken as the maximum of the endothermic peak during heating of the sample at 10°C/min and the crystallization temperature (T_c) was considered as the minimum of the exothermic peak during cooling of the melt

Melting curve for PLA block



Crystallization curve for PLA block:

