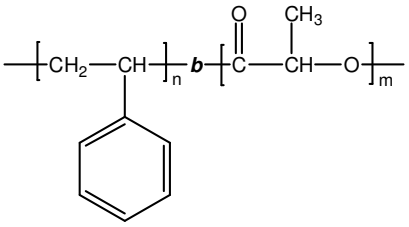
Sample Name: Poly(styrene-b-lactide)

Sample #: P8854A-SLA (LA is DL form)

Structure:

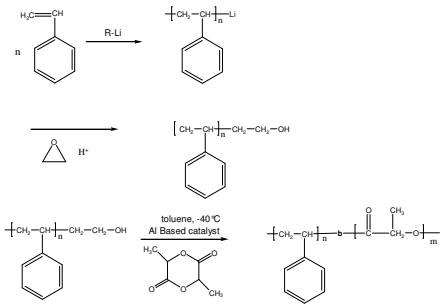


Composition:

Mn x 10^3 S-b-LA	Mw/Mn (PDI)
27.0-b-15.0	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:



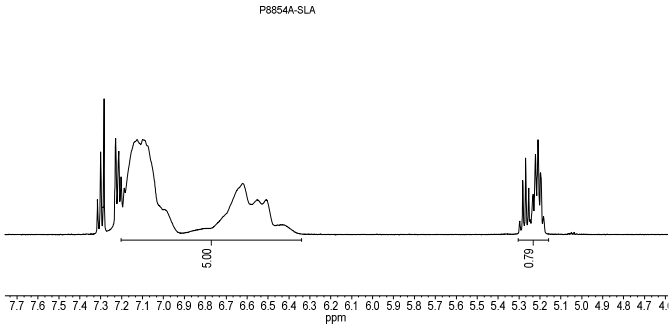
Characterization:

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 ^{1}H-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:

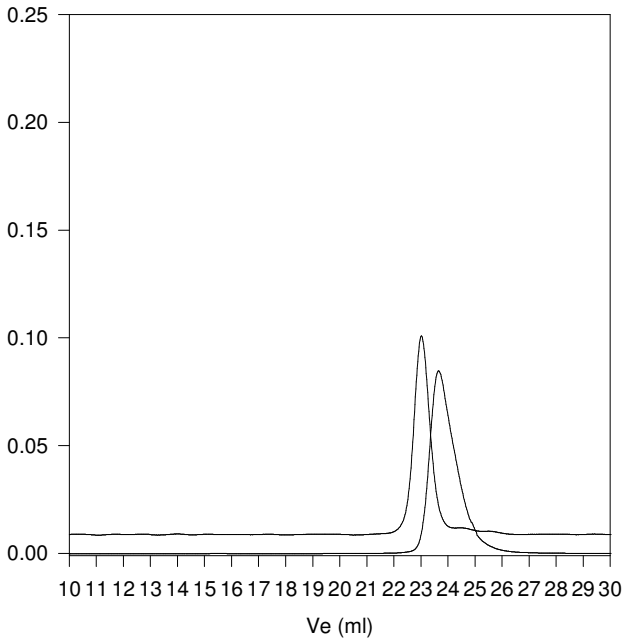
Poly(styrene-b-lactide) is soluble in chloroform, THF, and toluene.

^{1}H-NMR Spectrum of the block copolymer:



SEC elugram of the block copolymer:

P8854A-SLA (DL -form)



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

—— Polystyrene, M_n=27000, M_w=28,500, PI=1.06

—— Block Copolymer from Light scattering
PS(27000)-b-LA(15,000), PI=1.10 Composition from H NMR

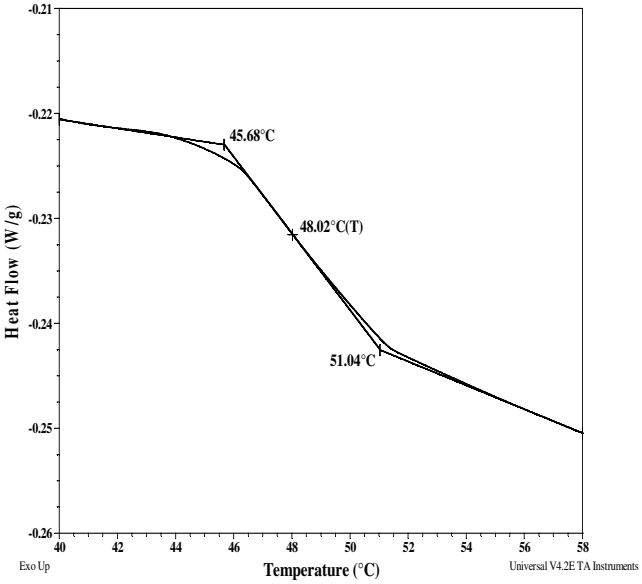
Thermal analysis of the sample# P8854A-SLA

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).

Thermal analysis results at a glance

T_g for PLA block	T_g for PS block
48°C	91°C

Thermogram for PLA block:



Thermogram for PS block: