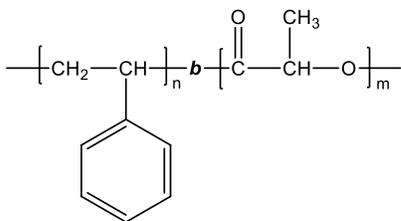


Sample Name: Poly(styrene-b-lactide)

Sample #: P43740-SLA (LA is L form)

Structure:

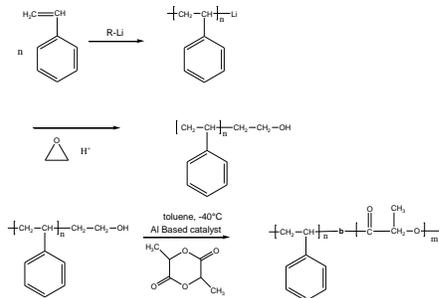


Composition:

Mn x 10 ³ S-b-LA	Mw/Mn (PDI)
10.0-b-9.0	1.05

Synthesis Procedure:

Poly(styrene-b-lactide) was synthesized by living anionic polymerization in sequential addition of styrene followed by lactide monomer or by taking the OH end functionalized polystyrene and using coordination polymerization process. The scheme of the reaction is illustrated below:



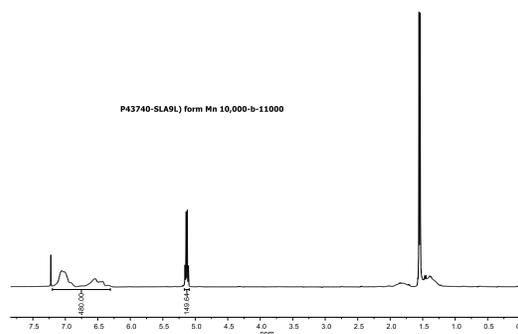
Characterization:

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.

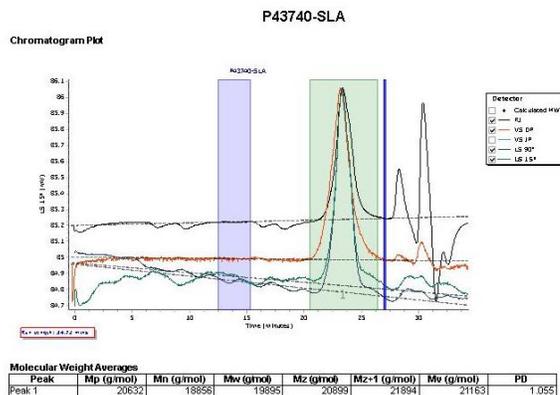
Solubility:

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

¹H-NMR Spectrum of the block copolymer:



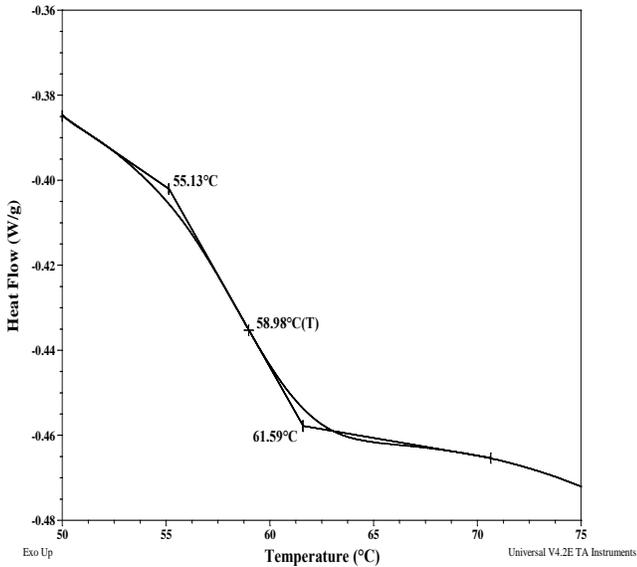
SEC elugram of the block copolymer:



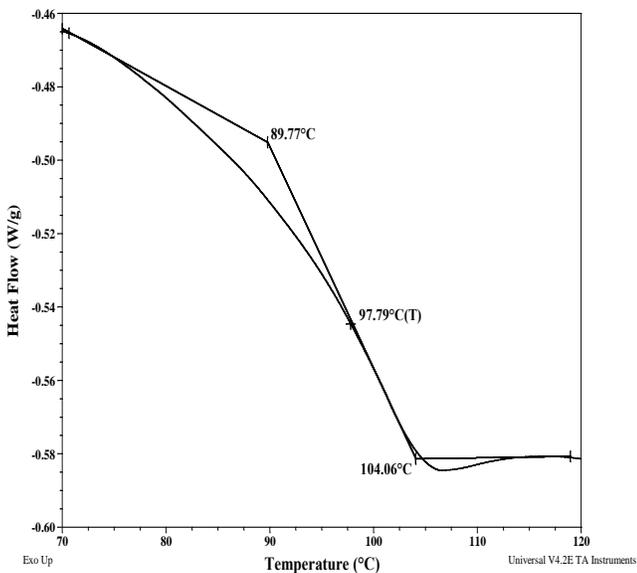
Thermal analysis of the sample# P43740-SLA

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:

For PLA block		
T_g : 59°C	T_m : 159°C	T_c : Not observed
For PS block		
T_g : 98°C		

Melting curve for the LA block:

The melting temperature (T_m) was taken as the maximum of the endothermic peak during heating of the sample from 20°C to 200°C at heating rate of 10°C/min.

