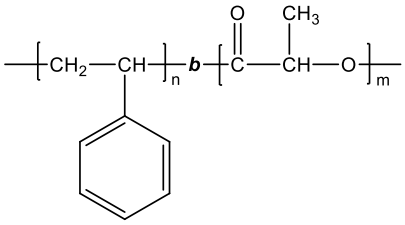
Sample Name: **Poly(styrene-b-lactide)**

Sample #: **P43746-SLA (LA is L form)**

Structure:

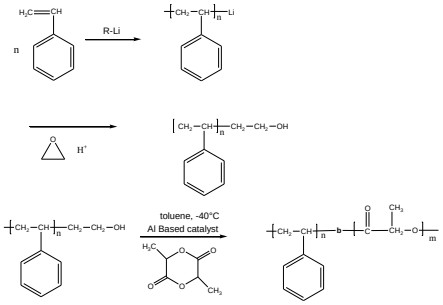


Composition:

Mn x 10^3 S-b-LA	Mw/Mn (PDI)
5.0-b-7.0	1.15

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 co-ordination polymerization process. The scheme of the reaction is illustrated below:



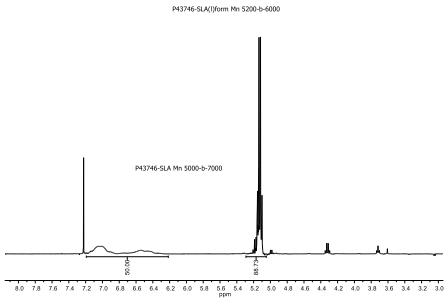
Characterization:

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.

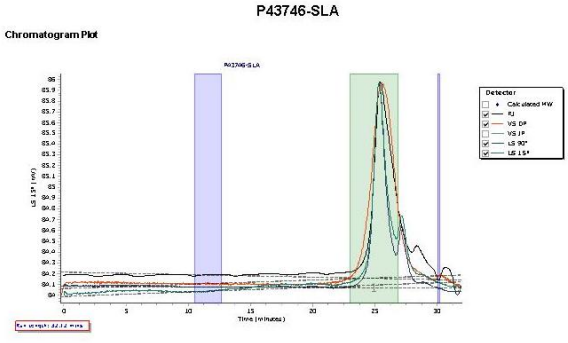
Solubility:

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

^{1}HNMR Spectrum of the block copolymer:



SEC elugram of the block copolymer:



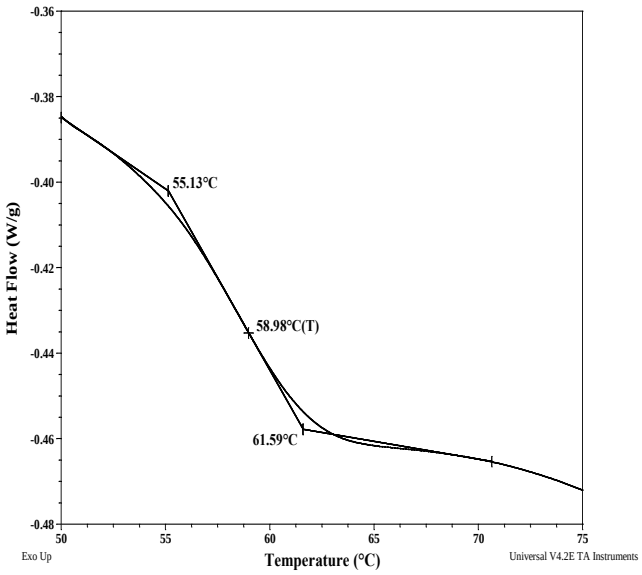
Molecular Weight Averages

Peak	Mp (g/mol)	Mn (g/mol)	Mw (g/mol)	Mz (g/mol)	Mz+1 (g/mol)	Mv (g/mol)	PD
Peak 1	15074	12924	14997	18023	22485	0	1.16

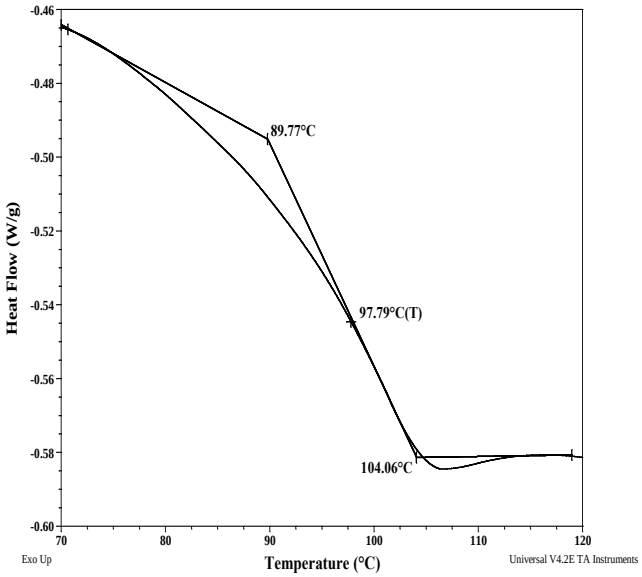
Thermal analysis of the sample# P43746-SLA

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.