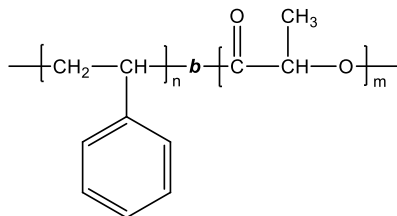


Sample Name: Poly(styrene-b-lactide)

Sample #: P8980C-SLA (LA is D form)

Structure:

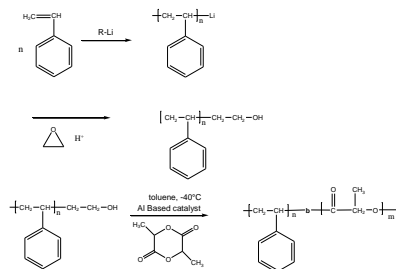


Composition:

Mn x 10 ³ S-b-LA	Mw/Mn (PDI)
21.0-b-17.0	1.14

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:



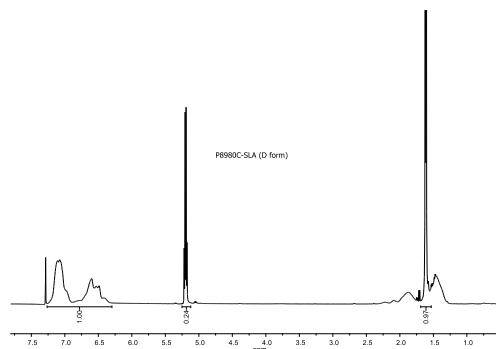
Characterization:

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.

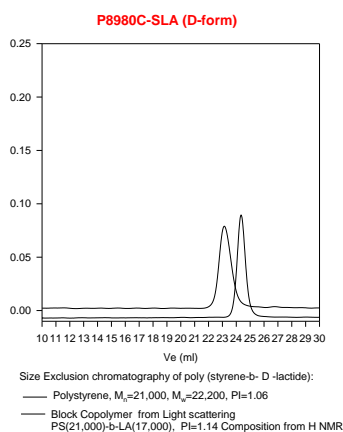
Solubility:

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

¹H-NMR Spectrum of the block copolymer:



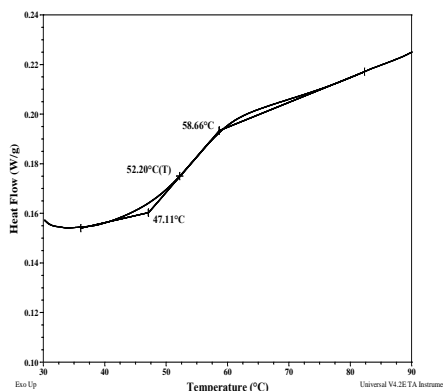
SEC elugram of the block copolymer:



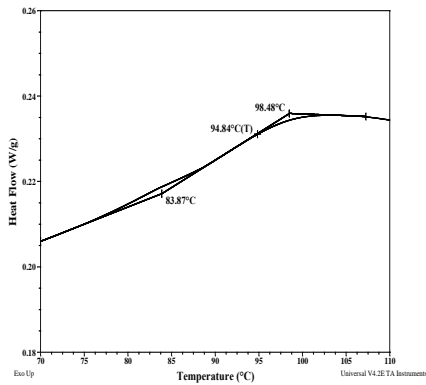
Thermal analysis of the sample# P8980C-SLA:

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:



Thermogram for PS block:



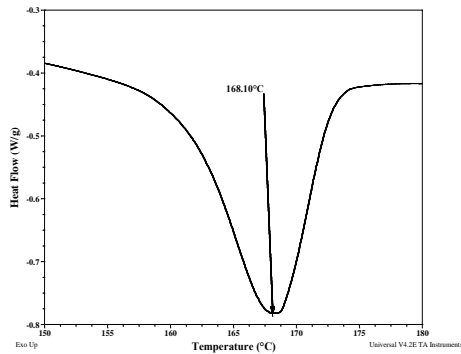
Thermal analysis results at a glance:

For PLA block		
T _g : 52°C	T _m : 168°C	T _c : 23°C
For PS block		
	T _g : 95°C	

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:



Crystallization curve:

