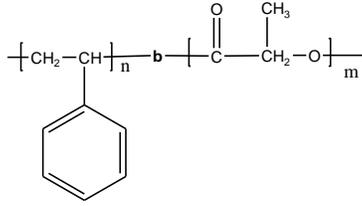


**Sample Name: Poly(styrene-b-lactide)**  
**Lactide in L form**

**Sample #: P2642-SLA (LA is L form)**

**Structure:**

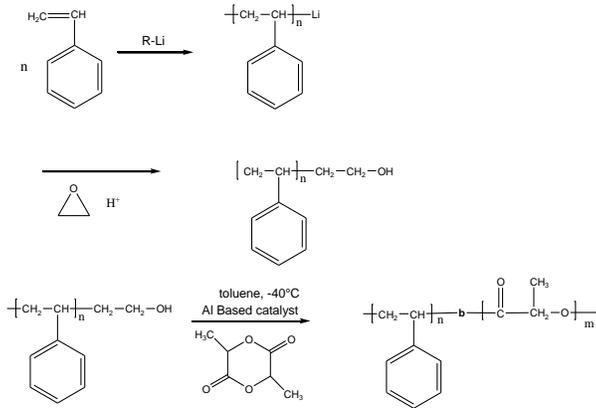


**Composition:**

Mn x 10 <sup>3</sup> S-b-LA	Mw/Mn (PDI)
21.0-b-19.5	1.11

**Synthesis Procedure:**

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



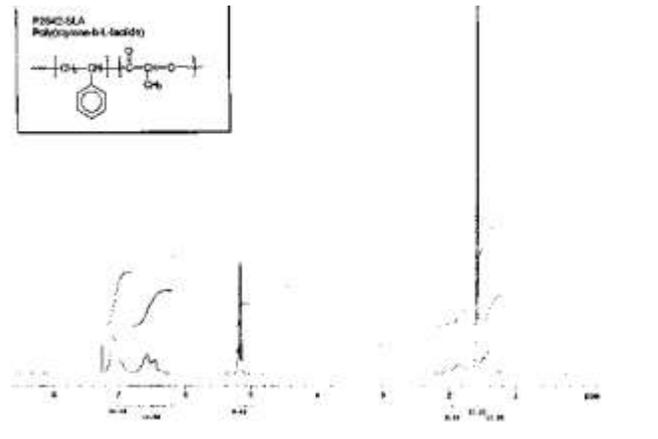
**Characterization:**

Polymer analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The block copolymer composition was then calculated from <sup>1</sup>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 is determined by SEC.

**Solubility:**

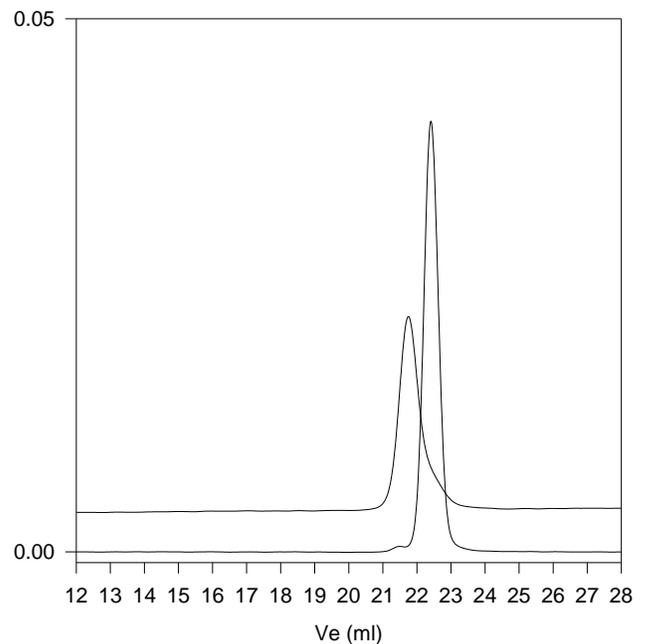
Poly(styrene-b-lactide) is soluble in chloroform, THF, toluene.

**<sup>1</sup>H-NMR Spectrum of the block copolymer:**



**SEC of Sample of the block copolymer:**

**P2642-St-LA (L -form)**



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

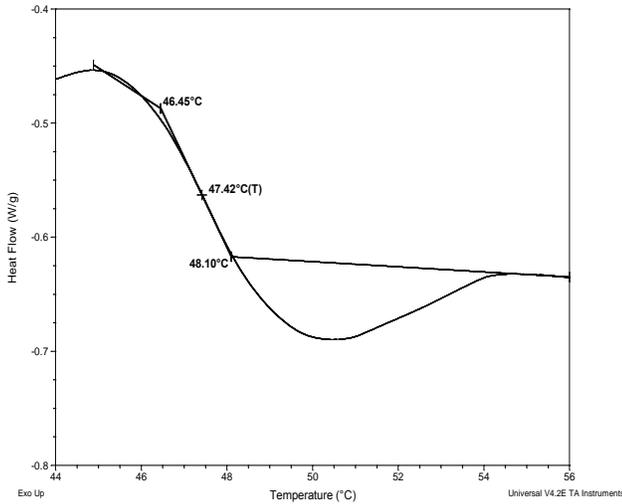
— Polystyrene, M<sub>n</sub>=21000, M<sub>w</sub>=22000, PI=1.04

— Block Copolymer from Light scattering  
 PS(21000)-b-LA(19500), PI=1.11 Composition from H NMR

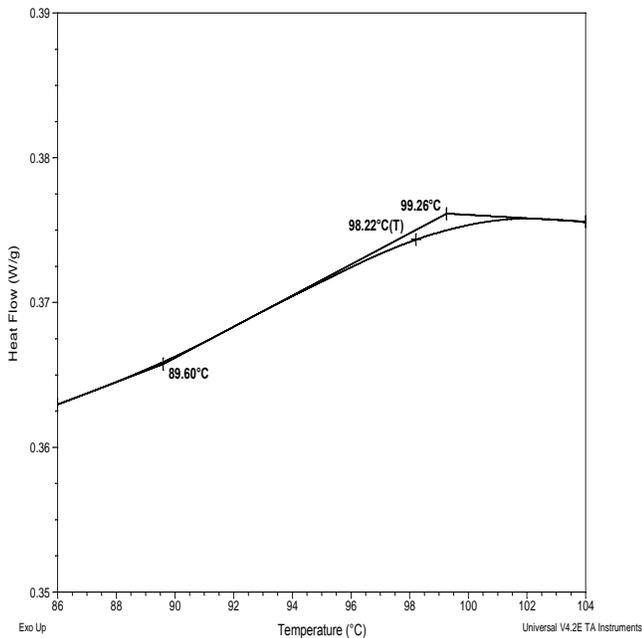
## Thermal analysis of the sample# P2642-SLA

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°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:



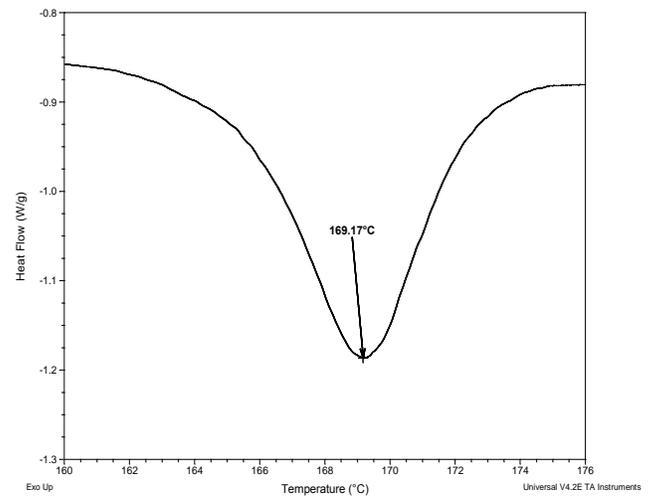
## Thermal analysis results at a glance

For PLA block		
$T_g$ : 47°C	$T_m$ : 169°C	$T_c$ : 34°C
For PS block		
$T_g$ : 98°C	$T_m$ : Not found	$T_c$ : Not found

### 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 For PLA block

