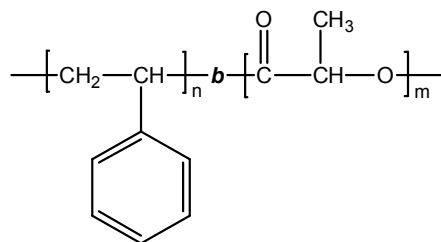


**Sample Name:** Poly(styrene-b-lactide)

**Sample #:** P9028-SLA (LA is DL form)

**Structure:**

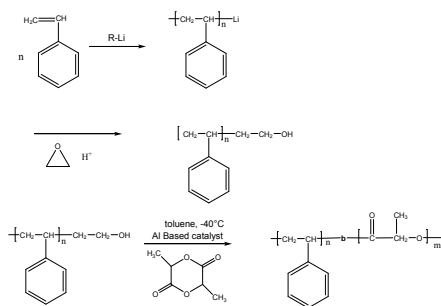


**Composition:**

Mn x 10 <sup>3</sup> S-b-LA	Mw/Mn (PDI)
21.0-b-60.0	1.2

**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:



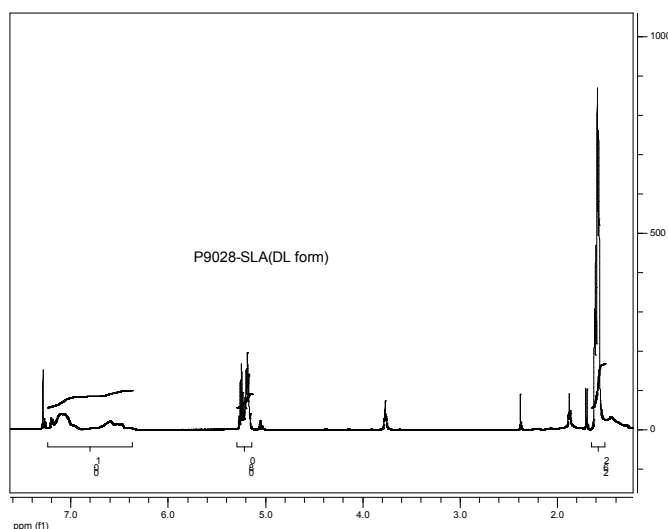
**Characterization:**

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 <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 was determined by SEC.

**Solubility:**

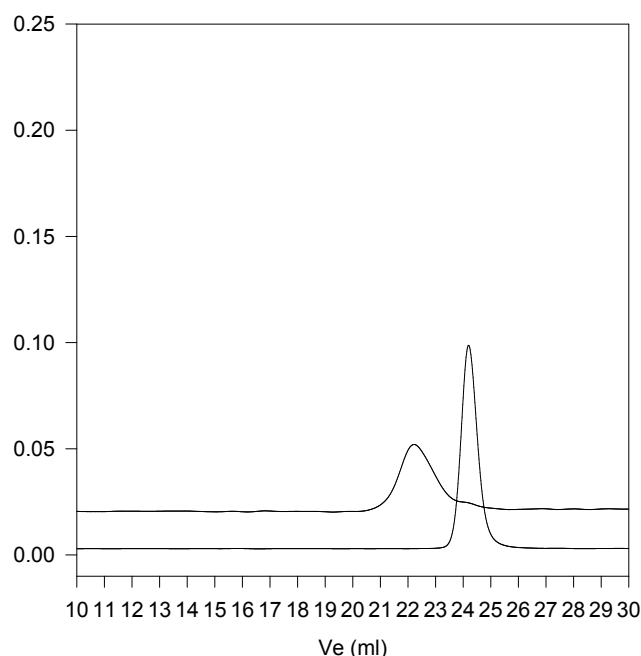
Poly(styrene-b-lactide) is soluble in chloroform, THF, and toluene.

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



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

**P9028-SLA (DL-form)**



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

- Polystyrene, M<sub>n</sub>=21,000, M<sub>w</sub>=22,200, PI=1.06
- Block Copolymer from Light scattering  
PS(21,000)-b-LA(60000), PI=1.2 Composition from H NMR

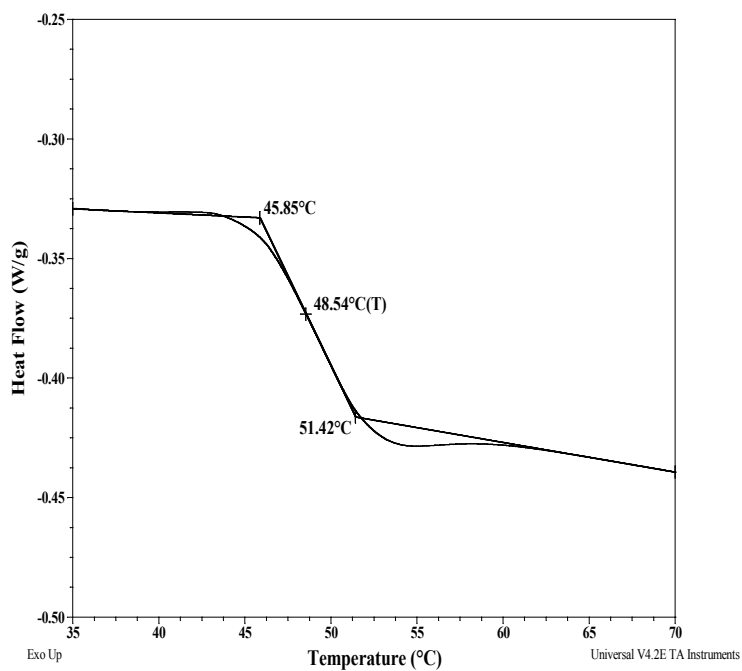
## Thermal analysis of the sample# P9028-SLA

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
49°C	98°C

### Thermogram for PLA block:



### For PS block

