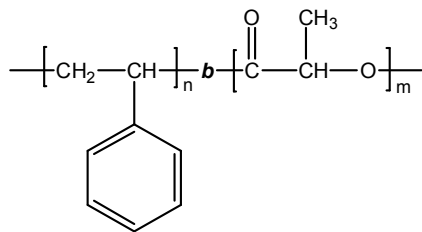


Sample Name: Poly(styrene-b-lactide)

Sample #: P9026-SLA (LA is DL form)

Structure:

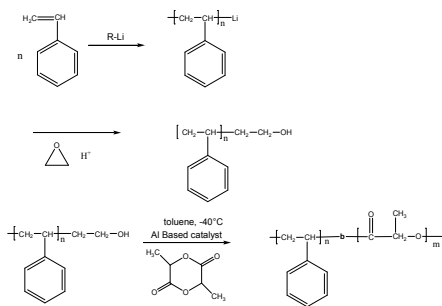


Composition:

$M_n \times 10^3$ S-b-LA	M_w/M_n (PDI)
21.0-b-19.5	1.15

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:



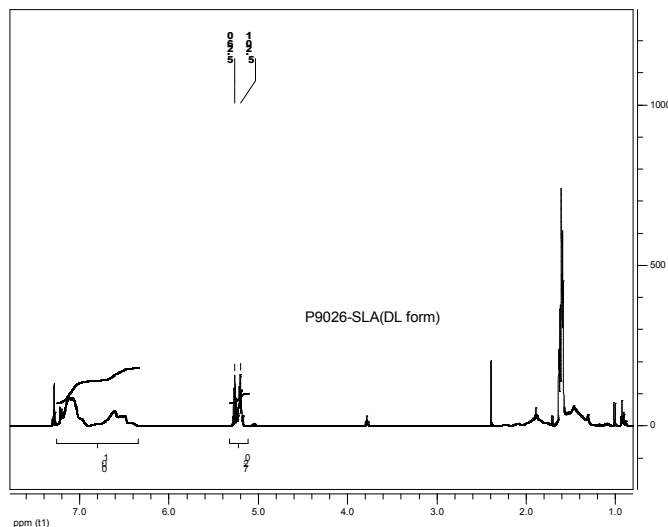
Characterization:

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 $^1\text{H-NMR}$ 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.

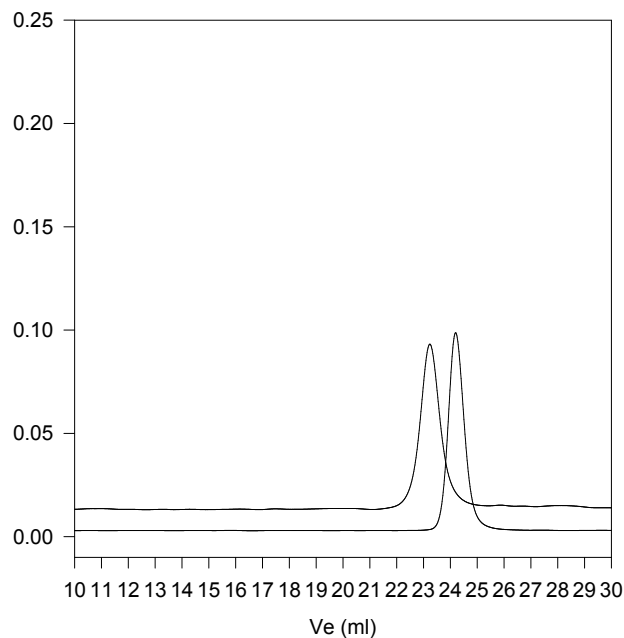
Solubility:

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

$^1\text{H-NMR}$ Spectrum of the block copolymer:



SEC of Sample of the block copolymer: **P9026-SLA (DL-form)**



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

- Polystyrene, $M_n=21,000$, $M_w=22,200$, $PI=1.06$
- Block Copolymer from Light scattering
PS(21,000)-b-LA(19,500), $PI=1.15$ Composition from H NMR

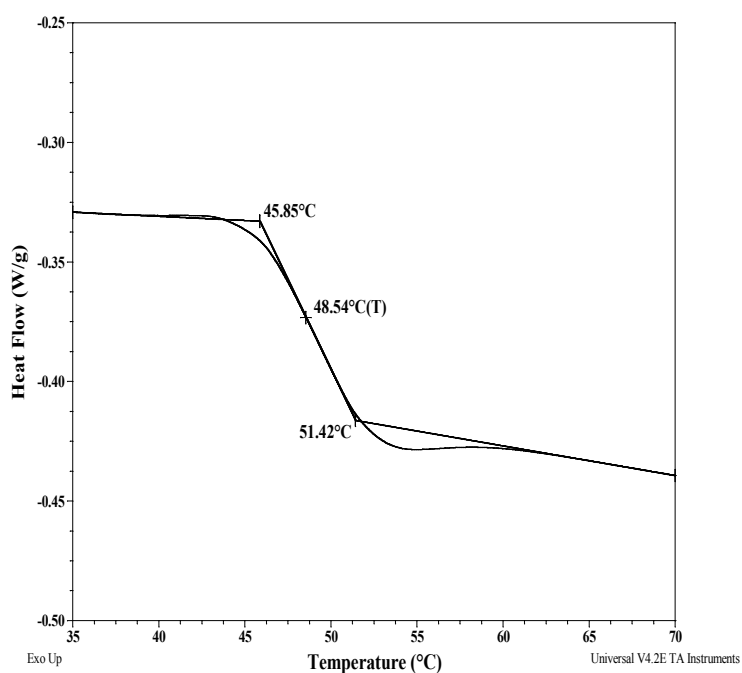
Thermal analysis of the sample# P9026-SLA

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

