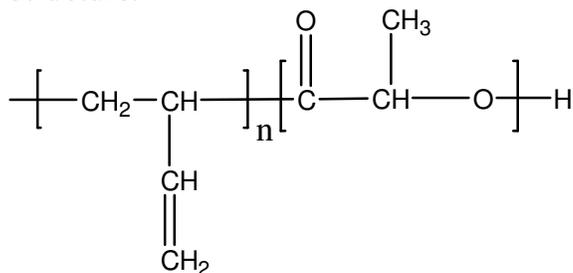


Sample Name: Poly(Butadiene_{1,2} rich addition -b-Lactide)

Sample #: P9031-BdLA (DL form)

Structure:

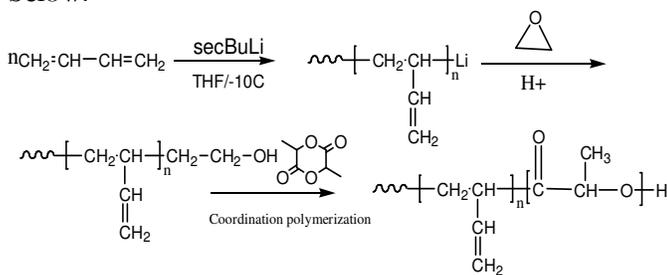


Composition:

| Mn x 10 ³ Bd-b-LA | Mw/Mn (PDI) |
|---------------------------------|-------------|
| 16.5-b-38.5 | 1.14 |

Synthesis Procedure:

Poly(1,2-butadiene-b-lactide) is prepared by living anionic polymerization addition of butadiene followed coordination polymerization of Lactide (D form in this case). The reaction scheme is shown below:



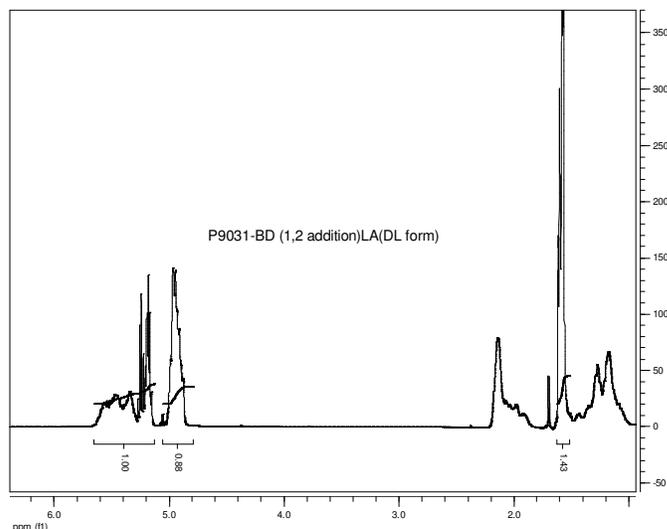
Characterization:

Block copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area of the vinylic butadiene protons at about 5.4 ppm with the lactide protons at about 5.1 ppm. Block copolymer PDI is determined by SEC.

Solubility:

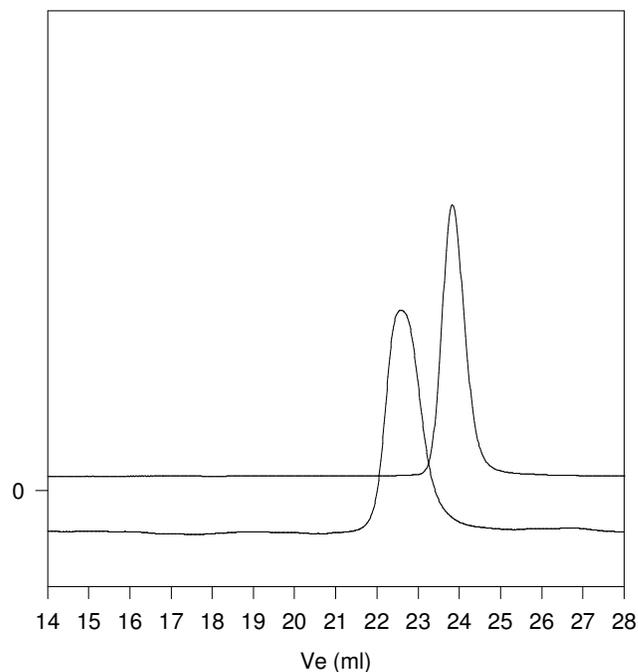
The polymer is soluble in tetrahydrofuran (THF) and chloroform (CHCl₃).

¹H NMR spectrum of the sample



SEC profile of the block copolymer

P9031-Bd(1,2 addition) LA (DL form)

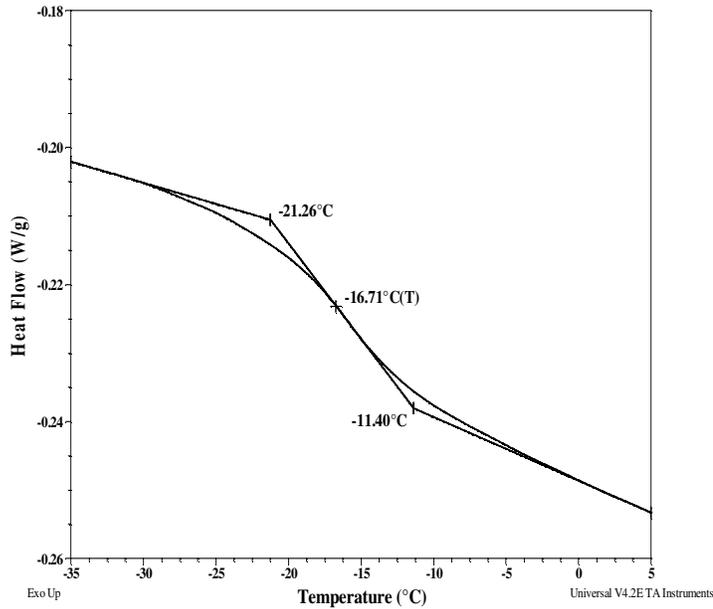


- SEC profile of Poly(Butadiene_{1,2} addition -b-Lactide):
- Polybutadiene, M_n=16500, M_w=17500, PI=1.05
- Block Copolymer PBd(16500)-b-PLA(38500), PI=1.14

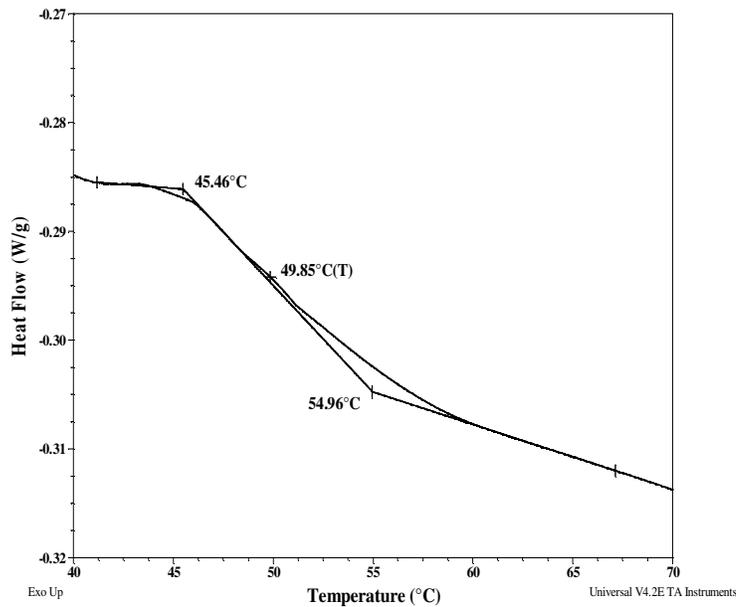
Thermal analysis of the sample P9031-BdLA

Thermal analysis of the samples 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 PBd block



Thermogram for PLA block



Thermal analysis results at a glance

| For Bd block | | |
|-----------------------|---------------|-----------|
| T_g : -17°C | T_m : - | T_c : - |
| For LA block (D-form) | | |
| T_g : 50°C | T_m : 173°C | T_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:

