

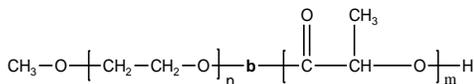
¹H-NMR Spectrum of the block copolymer:

Sample Name:

Poly(ethylene oxide -b- lactide) (D form)

Sample #: P8690-EOLA (D form)

Structure:



Composition:

Mn x 10 ³ PEO-b-PLA	PDI
2.0-b-6.0	1.3

Synthesis Procedure:

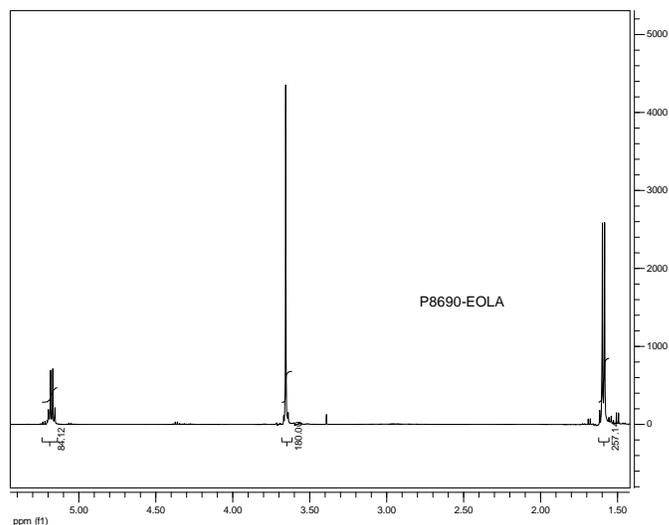
Poly(ethylene oxide -b- lactide) is prepared by living anionic polymerization of ethylene oxide and coordination polymerization of lactide.

Characterization:

An aliquot of the anionic poly(ethylene oxide) block was terminated before addition of lactide and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area of the methoxy protons of poly(ethylene oxide) at about 3.6 ppm with the lactide protons at about 5.1 and 1.55 ppm.

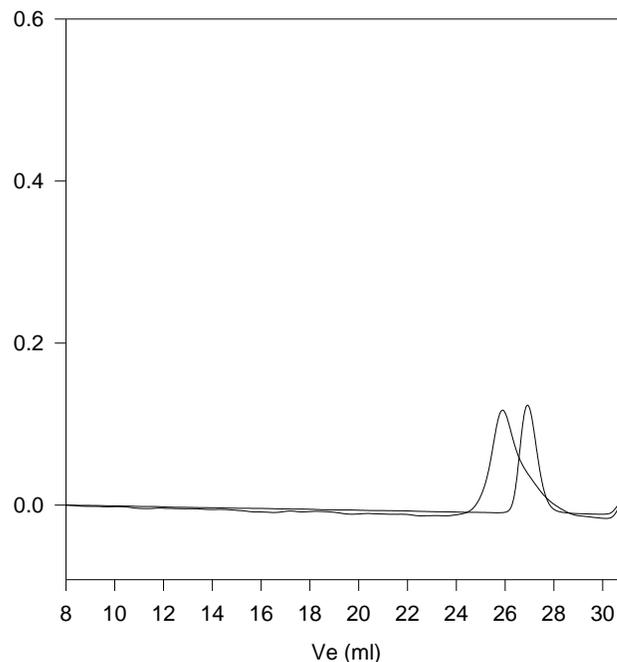
Solubility:

Poly(ethylene oxide -b- lactide) is soluble in chloroform, THF, DMF, toluene and precipitates from ethanol, ether and hexane.



SEC of the block copolymer:

P8690- EOLA (D- form)



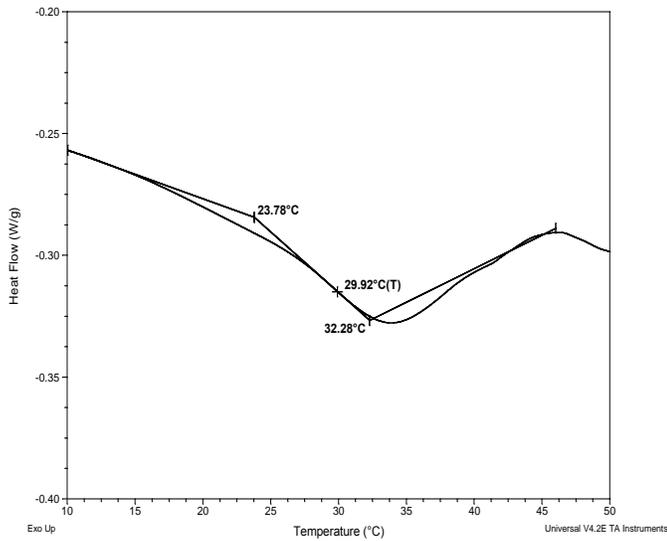
Size exclusion chromatography:

- Poly(ethylene glycol), M_n=2000, M_w=2100, PI=1.05
- Block Copolymer PEO(2000)-b-PLA(6000), PI=1.3
Composition from ¹H NMR
Dp: EO(45 units)-b-LA (83 units)

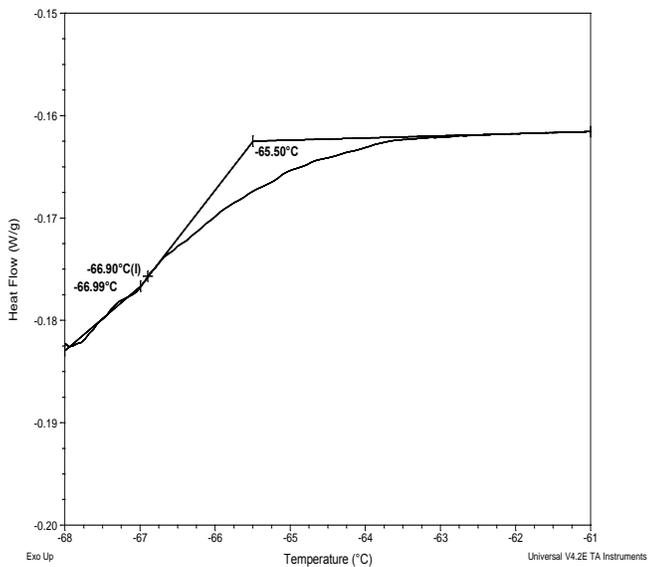
Thermal analysis of the sample# P8690-EOLA

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:



For PEO block



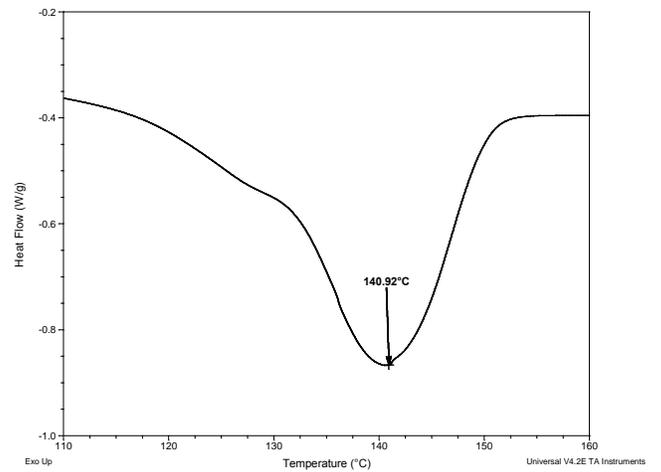
Thermal analysis results at a glance

For PLA block		
T_g : 30°C	T_m : 141°C	T_c : 97°C
For PEO block		
T_g : -66°C	T_m : Not observed	T_c : Not observed

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

