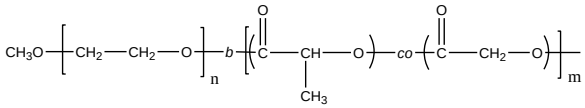
Sample Name: **Poly(ethylene oxide)-b-poly(DL-lactide–co–glycolide)**

Sample #: **P44545-EO-b-LAGAran**

(DL form LA)

Structure:

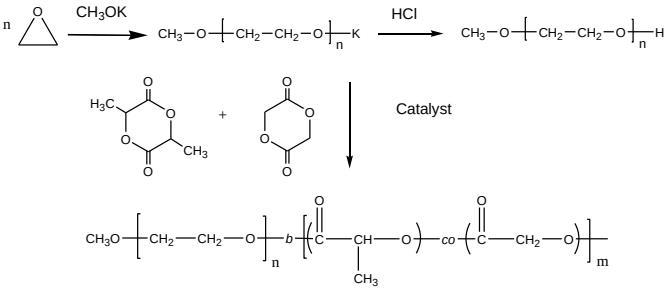


Composition:

$M_n \times 10^3$ (g/mol) [PEO–*b*–PLA-*co*-GA]	M_w/M_n
1.0–*b*–1.9	1.09
LA:GL ratio= 83:17	
Glass transition temperature, Tg:-14.3 ºC	

Synthesis procedure:

The synthesis of poly(ethylene oxide)–*b*–poly[(D,L-lactide)-*co*-glycolide]*ran* is shown as follows:



Characterization:

The molecular weight of the first block PEO was determined by ^{1}H NMR and size exclusion chromatography (SEC). The final block copolymer composition was calculated from ^{1}H-NMR spectroscopy by comparing the peak area of the methoxy-protons of poly(ethylene oxide) at around 3.6 ppm and the poly(lactide) protons at around 5.1 and 1.55 ppm and the poly(glycolide) protons at around 4.7 ppm . The polydispersity index (M_w/M_n) of the block copolymer was obtained by SEC.

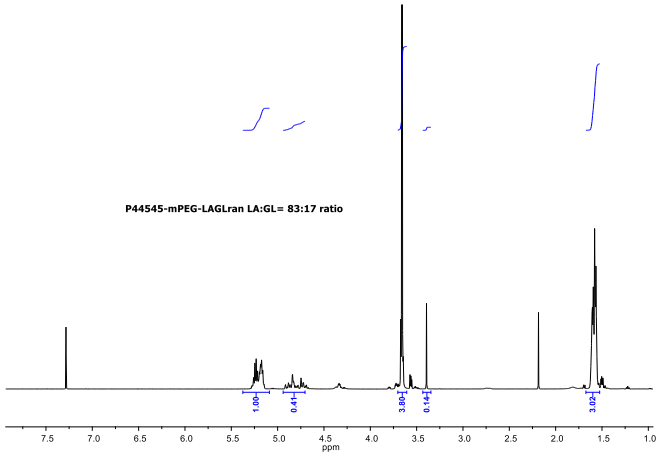
Thermal analysis:

Thermal analysis was performed on TA Instruments Q100 differential scanning calorimeter (DSC) under a nitrogen atmosphere. The glass transition temperature (Tg) of the polymer was measured at a scan rate of 10°C/min shortly after creating thermal history of the sample.

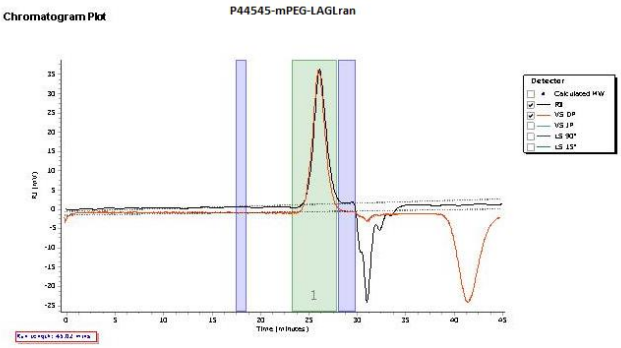
Solubility:

The polymer is soluble in chloroform, THF, DMF, toluene; and it precipitates from ethanol, ether, and hexanes.

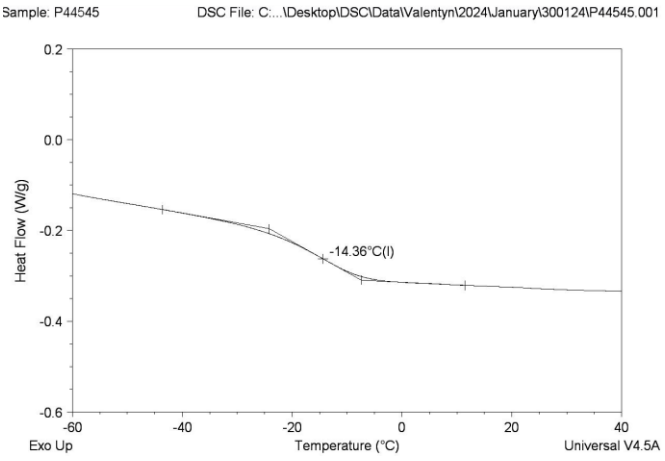
^{1}H-NMR (500 Mhz, $CDCl_3$) spectrum of product:



SEC elugram of the PEO-PLAGA*ran* block copolymer:



Molecular Weight Averages

Peak	Mp (g/mol)	Mn (g/mol)	Mw (g/mol)	Mz (g/mol)	Mz+1 (g/mol)	Mv (g/mol)	PD
Peak 1	3168	2922	3181	3453	3733	3397	1.089

DSC thermograms of the polymer (10°C/min):