PLA 100L-M Standard Data Sheet

Product Name: Poly D,L Lactide Medium Molecular Weight (ester endcap)
(Lot #180306FAJ-A)

GPC-Quadruple Detector Analysis

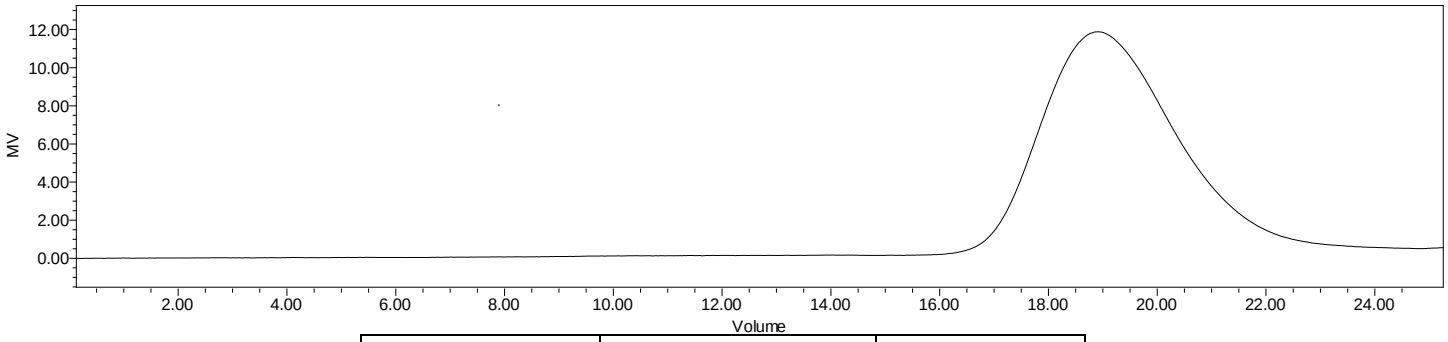
Instrument: Agilent 1260 Infinity II system connected to Dawn Heleos II (MALLS) coupled to Dynapro Nanostar DLS by optical cable, Optilab T-rEX (RI detector) and Viscostar III viscometer operated by Astra 7 software used for GPC analysis.
Method: 100 µl of 2.0 mg/ml solution. Mobile phase consisted of Acetone at 0.6 ml/min flow across a linear gradient column (cat# TSKgel GMHhr-L, Tosoh Bioscience LLC).

GPC-Quadruple Detector Results Table

Value	Description	Average	Uncertainty
Mn (Da)	Number average Molecular weight	24,900	±0.843%
Mp (Da)	Peak molecular weight	40,700	±0.087%
Mv (Da)	Viscosity average molecular weight	31,950	±0.018%
Mw (Da)	Weight average molecular weight	33,900	±0.239%
Mz (Da)	Z-average molecular weight	40,400	±0.462%
Polydispersity (Mw/Mn)	Distribution of molecular mass	1.361	±0.877%
rn (nm)	Number-average mean square radius	n/a	
rw (nm)	Weight-average mean square radius	n/a	
r(avg) (nm)	Average mean square radius	8.5	±3.7%
rh(v)n (nm)	Number-average hydrodynamic radius	4.631	±0.194%
rh(v)w (nm)	Weight-avg mean hydrodynamic radius	5.550	±0.100%
rh(v)z (nm)	Z-average hydrodynamic radius	6.143	±0.072%
rh(v)(avg)	Average hydrodynamic radius	6.223	±0.004%
[η]n (mL/g)	Number-average intrinsic viscosity	27.819	±0.108%
[η]w (mL/g)	Weight-average intrinsic viscosity	33.69	±0.05%
[η]z (mL/g)	Z-average intrinsic viscosity	37.381	±0.042%
dn/dc	Refractive index increment	0.0917	
MHS Intercept (K)	Mark-Houwink constant “K”	2.253×10^{-1} mL/g	±0.075%
MHS slope(a)	Mark-Houwink constant alpha	0.483	±0.015%

GPC-External Standard

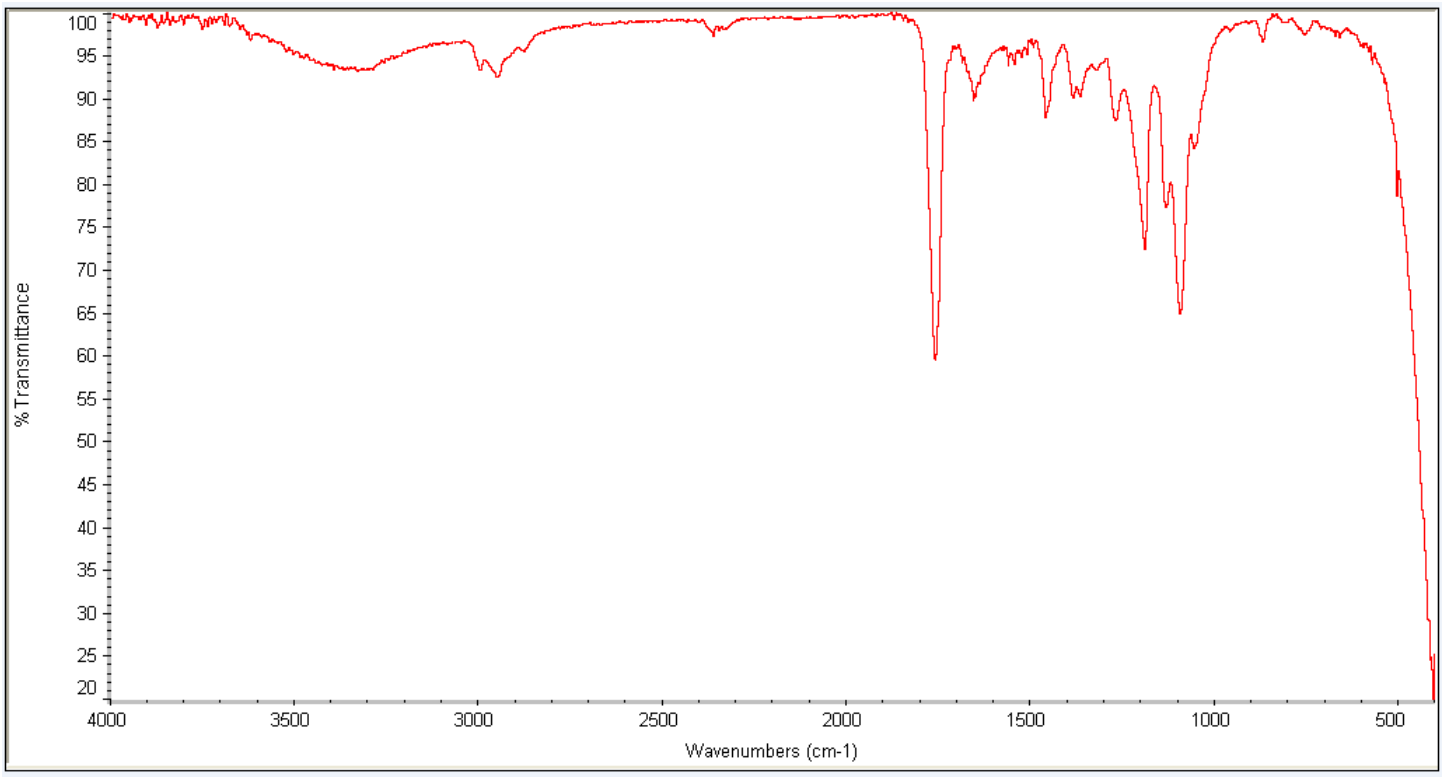
GPC Analysis Method: Waters Breeze 2 system with 1 ml/min THF flow across three GPC columns. Detection via refractive index, calibrated against polystyrene standards (Agilent Polystyrene, PS2).



M_n (from GPC)	M_w (from GPC)	PDI
34,998	53,429	1.53

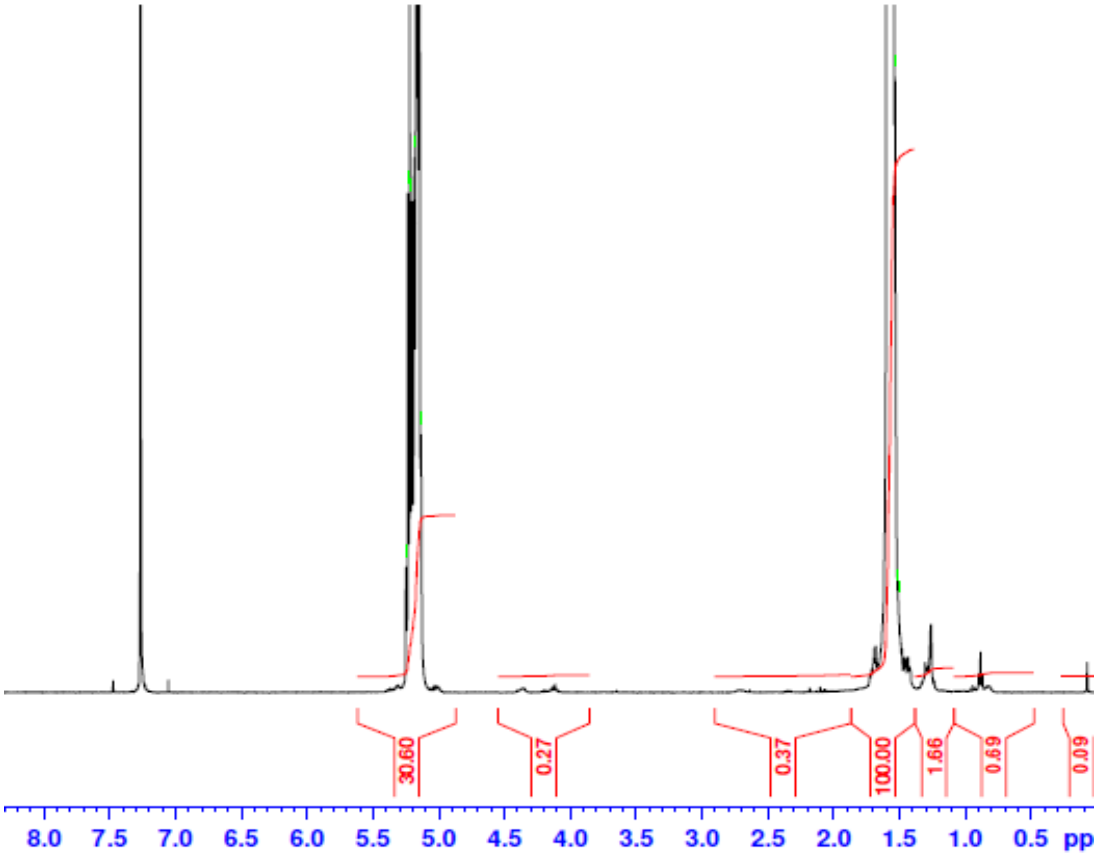
FTIR Analysis

FTIR Analysis: Collected from cast-film on KBr salt-plate placed in Nicollet Avatar 320 spectrometer and analyzed in transmission mode.



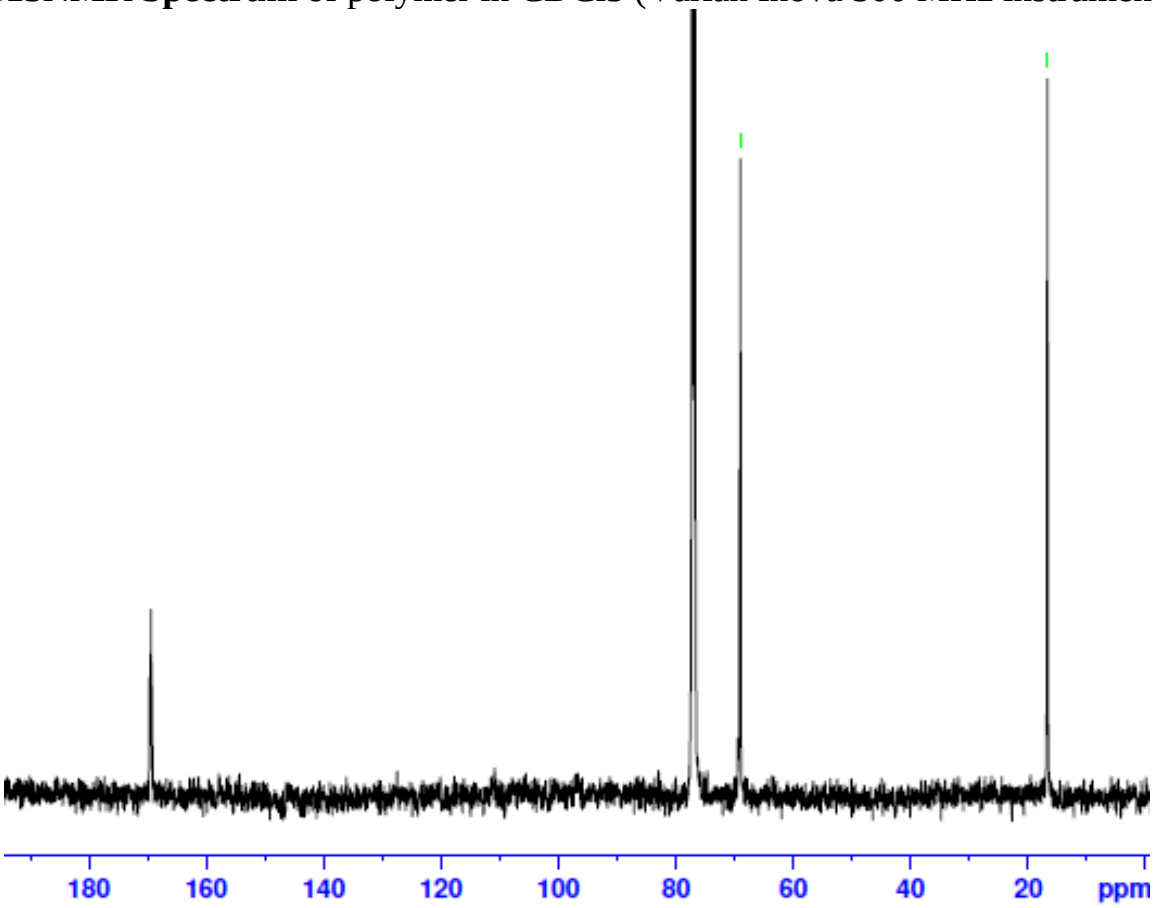
NMR Analysis

H-NMR Spectrum of polymer in CDCl3 (Varian Inova 500 MHz instrument) NMR of PLA polymer.



LA:GA molar ratio by HNMR: 100:0 molar (LA:GA weight ratio by HNMR 100:0 w:w)

C13NMR Spectrum of polymer in CDCl3 (Varian Inova 500 MHz instrument)



C13NMR Rcms = Not Applicable