



GPC Application Note #7

Advanced GPC Analysis of Polylactide

Poly(lactide) or Poly(lactic Acid) is a bio-polyester derived from renewable sources such as corn and sugar cane. It is used in a wide range of commercial and bio-medical applications. PLA is typically dissolved in HFIPA, Chloroform, or THF depending on the degree of crystallinity. The samples described in this report are “low d” materials and can be dissolved in Chloroform. The purpose of the analysis is to determine the loss of Molecular Weight and Intrinsic Viscosity due to processing. The samples were analyzed using a Malvern Triple Detector system. The analysis conditions below involve the use of Solvent Enhancement Techniques where the samples are dissolved and chromatographed in 2 different solvents.

Dissolution Solvent/Mobile Phase	Chloroform/THF	Sample Conc	2 mg/mL
Columns	2 X Shodex KF-806M	Dissolution Temp	25C
Flow Rate	1 mL/min	Dissolution Time	60 Minutes
Column Temp	30C	Sample Filtration	0.2 um Teflon

Figure: Triple Chromatogram of a typical PLA sample in THF to avoid column adsorption problems

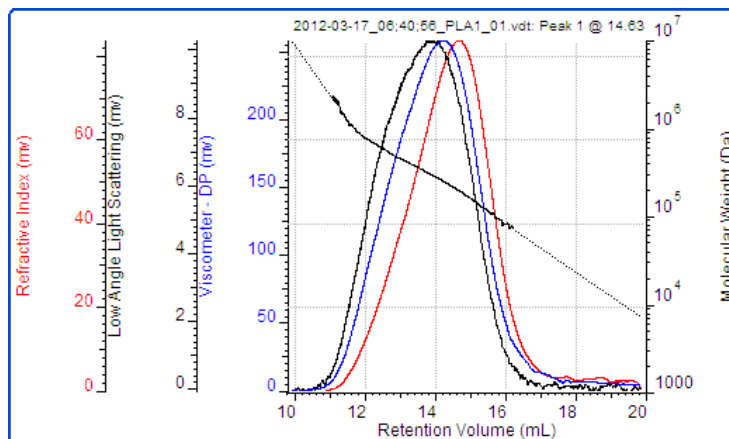


Table: Summary of Analysis of PLA (Virgin vs Processed) Samples

Sample	Mw	Mn	IV	Sample	Mw	Mn	IV
PLA-1A (Virgin)	270,905	174,196	2.96	PLA-2A (Processed)	239,584	140,168	2.76
PLA1B (Virgin)	264,973	197,832	2.84	PLA-2B (Processed)	223,052	112,800	2.51
Average	267,939	186,014	2.90	Average	231,318	126,484	2.64

The results show consistent MWD and IV data for the PLA samples.