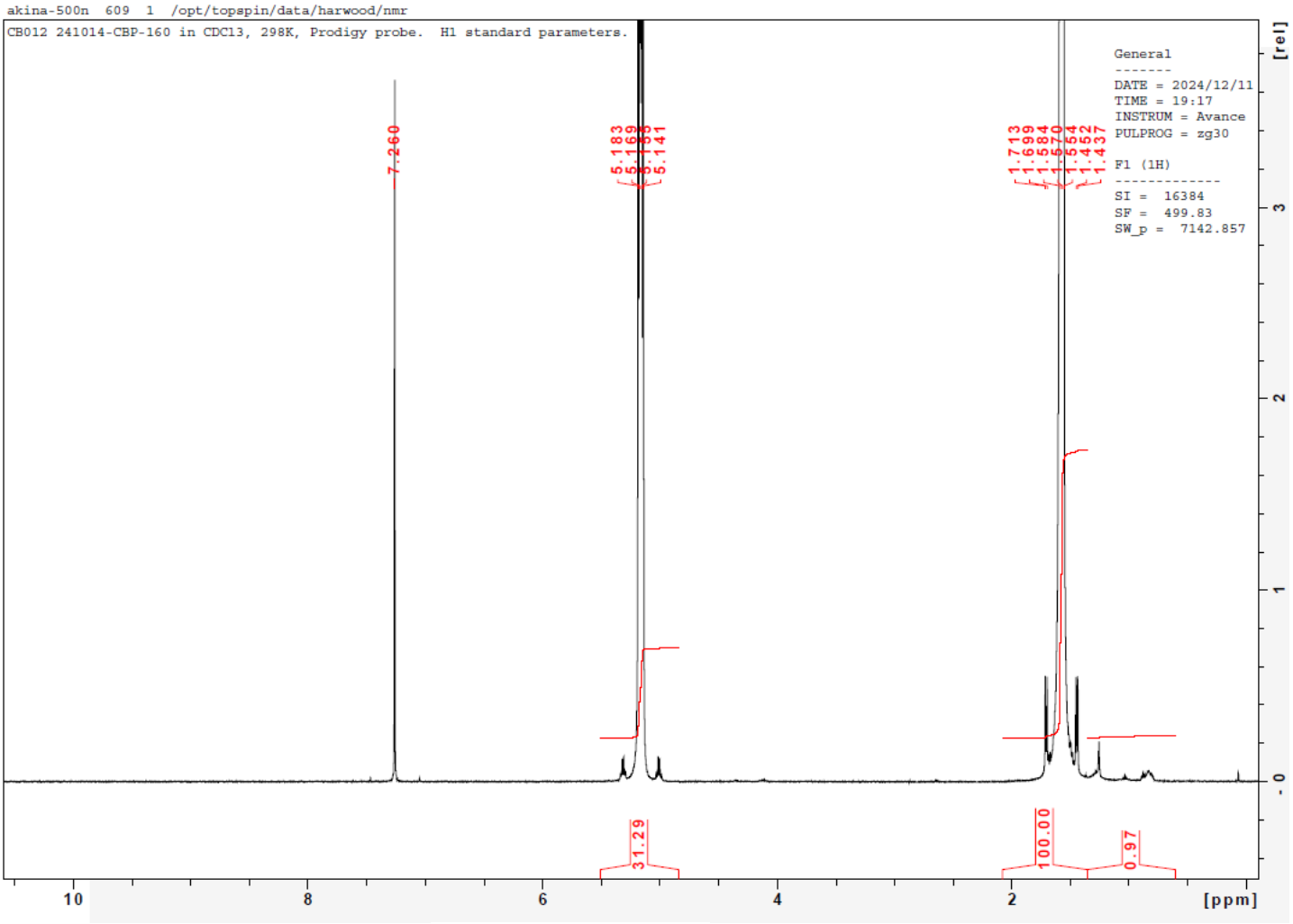
No. CB012 Certificate of Analysis

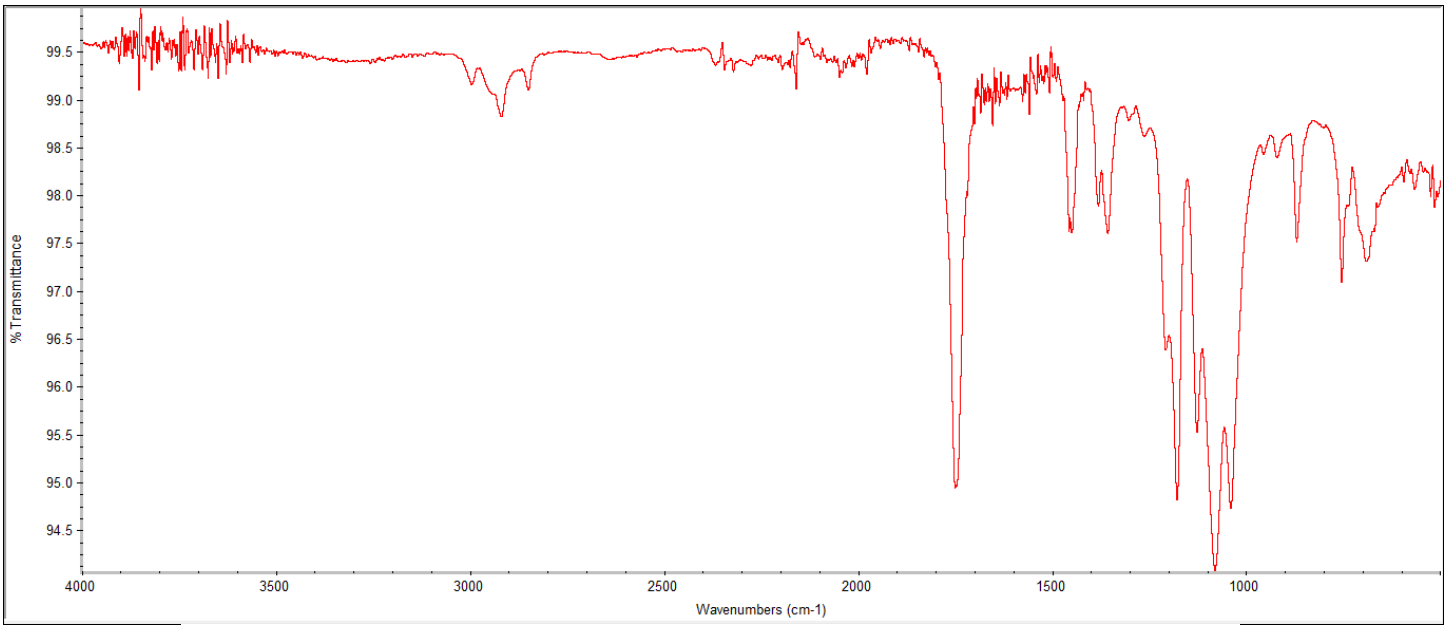
Product Name: Poly(L-Lactide) I.V. 3.20 – 4.30 dl/g, ester endcap (PL 38)
(Lot#: 241014CPB-160)

H-NMR



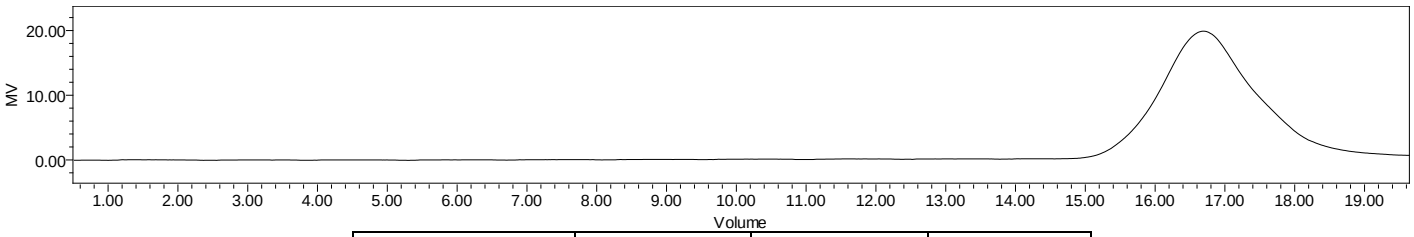
H-NMR Spectrum of copolymers in CDCl3 (Bruker ≥300 MHz, PINMRF) NMR of PLLA copolymer

FTIR



FTIR Analysis: Collected from IS5 ID7-ATR spectrometer (Thermo Scientific) and analyzed in transmission mode**.**

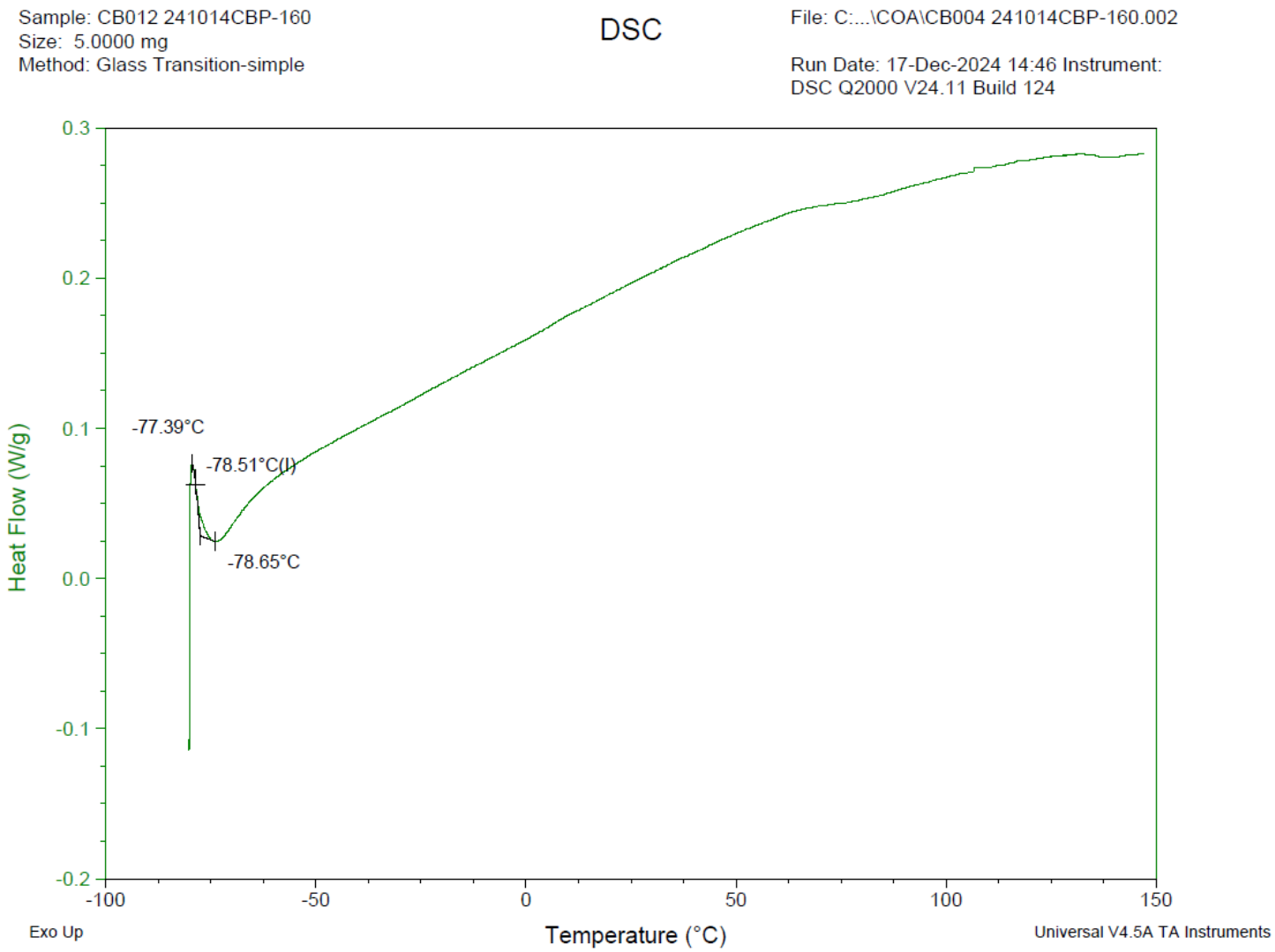
GPC-ES



Polymer	M_n (from GPC)	M_w (from GPC)	PDI
PLLA	195,734	304,889	1.56

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

DSC



DSC Testing: 1-5 mg sample tested in crimped aluminum pan on a TA Instruments Model Q2000 with procedure equilibraion 100 °C, isothermal 5 minutes, equilibrate -80 °C, data on, ramp 10 °C/min to 150 °C. Tg = -78.51 °C

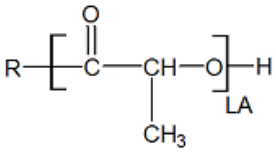
Manufacturer Provided Data

Assay	Specification	Result
Tin content	<50ppm	7 ppm
Water content	<0.50%	.07%
Residual monomer, L Lactide	<0.10%	0%
Inherent Viscosity[2]	3.20-4.30 dL/g	3.73 dL/g
Melting temp, 10 °C/min, onset	170 ºC	178.8 ºC
Melting temp, 10 °C/min, peak	<200 °C	192.8 °C
Specidfic rotation	-160.0 to -155.0°	-157.1
Residual solvent	<0.01%	0.001%
Elemental impurities	10 ppm	<10 ppm

1 – Measured by titration

2 – Measured at 25 ºC in Chloroform c=0.1 g/dL

Structure of copolymers



R – 1-decanol ester endcap

Approved By:
Amie Tyler
Quality Manager