

SUPPLEMENTARY MATERIALS

for article

Evaluation and modeling of PLA photodegradation under UV irradiation: Bio-based polyester photolysis mechanism

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The procedure of GPC (Gel Permeation Chromatography) peaks' deconvolution was carried out by means of NETZSCH Peak Separation 2006.01 program employing the nonlinear regression method for asymmetric M_w peaks (Fraser-Suzuki algorithm) [36]. In calculation, the least squares (SLS) reduction was achieved using a hybrid procedure in which the LEVENBERG/MARQUARDT method was combined with step length optimization [J [38].

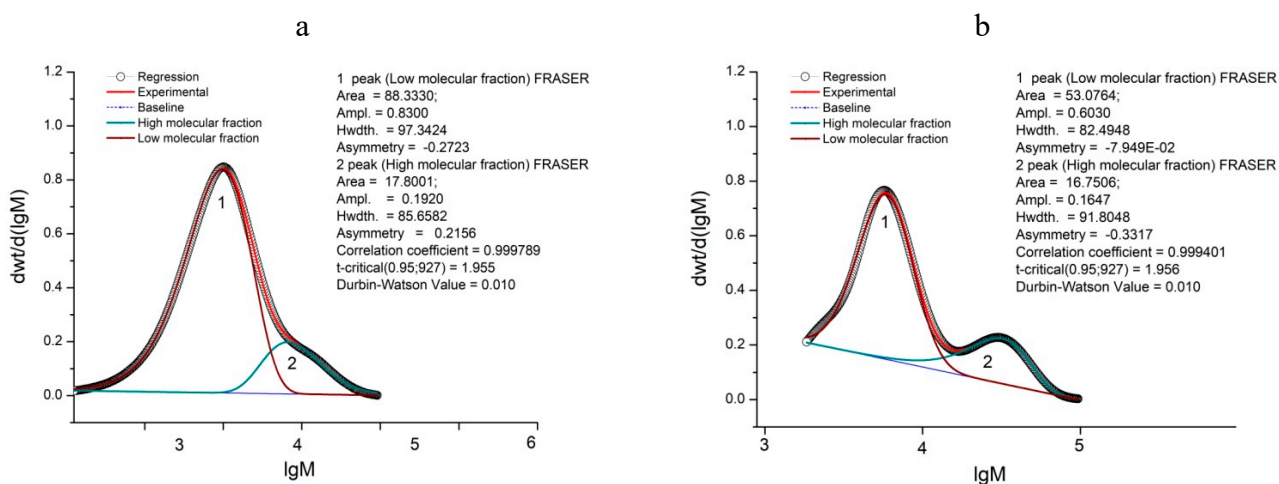


Figure S1. Deconvolution results of the $\ln(M_w)$ curves for PLA-24 (a) and PLA-144 (b).

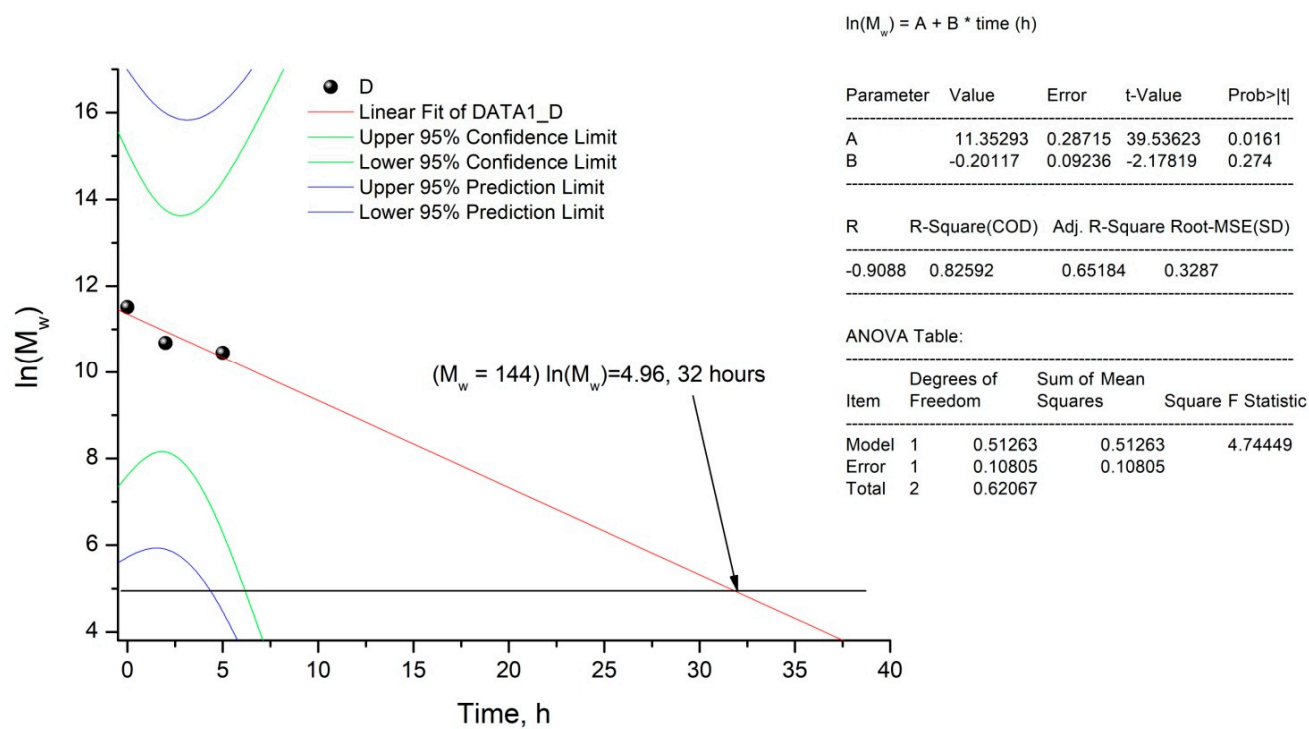


Figure S2. Kinetic analysis of PLA photodegradation.

NMR spectra of initial PLA and PLA after 144 hours of UV irradiation

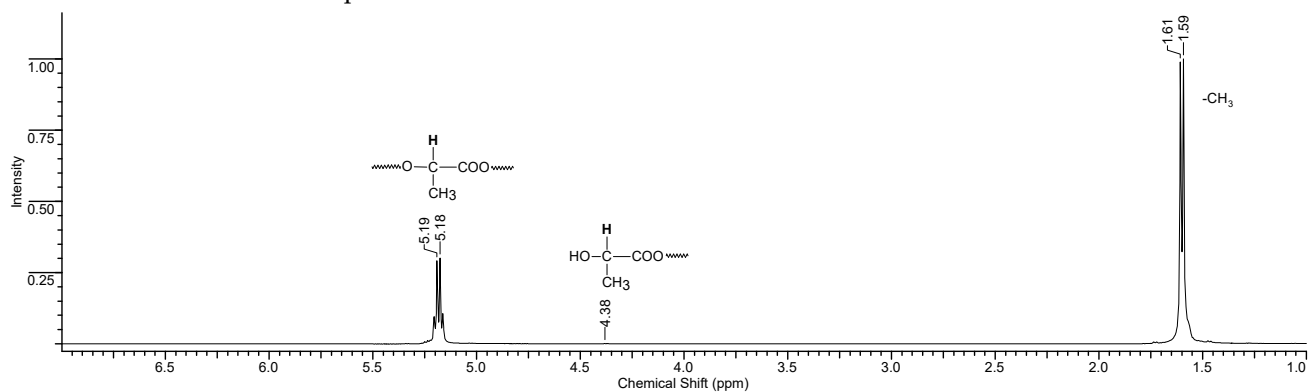


Figure S3. ^1H NMR spectrum of neat PLA (500.18 MHz, CDCl_3). δ , ppm: 1.60 (3H, CH_3); 5.19 (1H, CH); 4.38 (1H, CH).

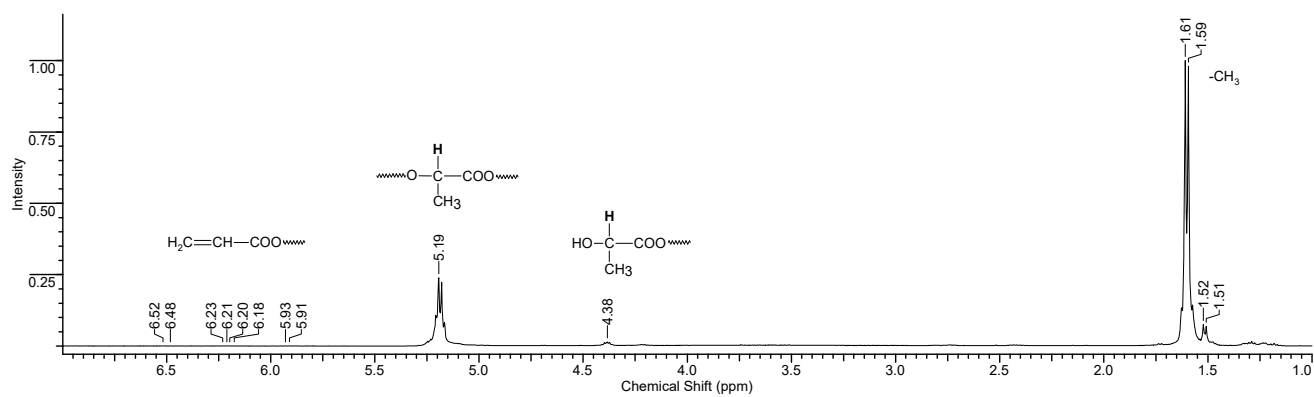


Figure S4. ^1H NMR spectrum of PLA after 144 hours of UV irradiation (500.18 MHz, CDCl_3).
 δ , ppm: 1.60 (3H, CH_3); 5.19 (1H, CH); 4.38 (1H, CH); 5.91, 6.21, 6.52 ($\text{CH}_2=\text{CH}-$).

500 MHz (H, H) COZY Spectrum of PLA after 144 hours of UV irradiation

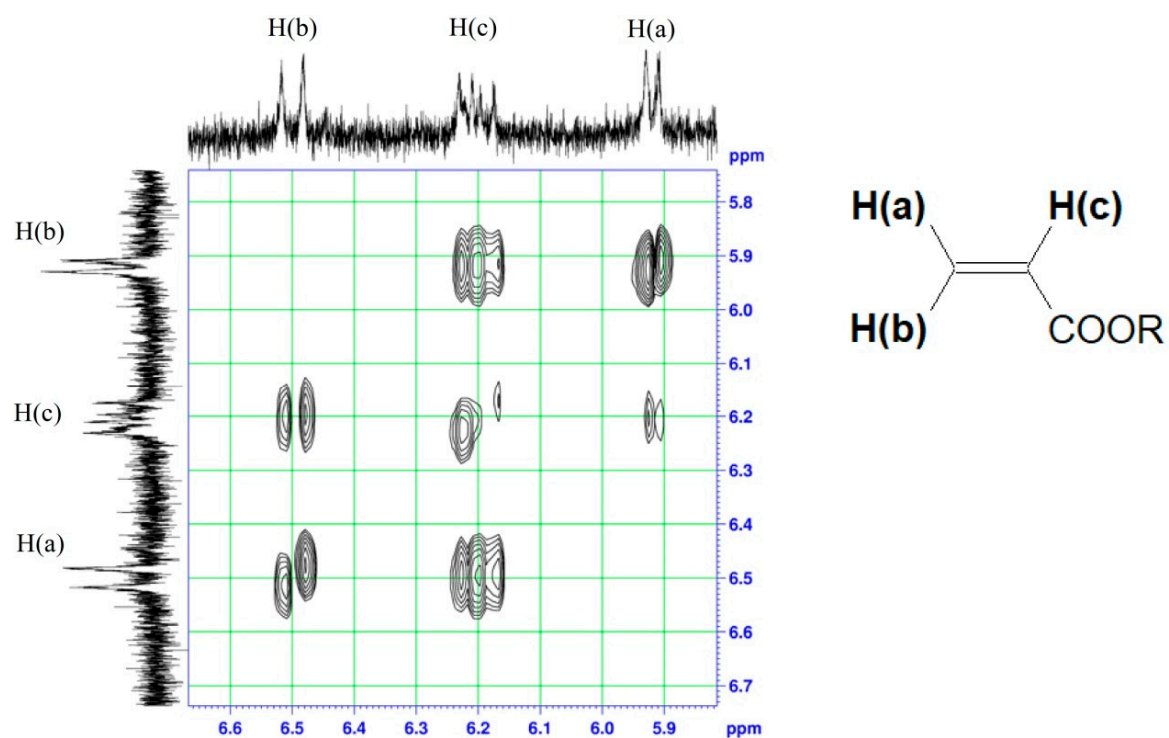


Figure S5. COZY (H, H) spectrum of PLA after 144 hours of UV irradiation. $^2J_{H(a)H(b)}=1.5$ Hz, $^3J_{H(b)H(c)}=17.0$ Hz and $^3J_{H(a)H(c)}=10.0$ Hz.