

SUPPORTING INFORMATION

Enabling Quantitative Analysis of Complex Polymer Blends by Infrared Nanospectroscopy and Isotopic Deuteration

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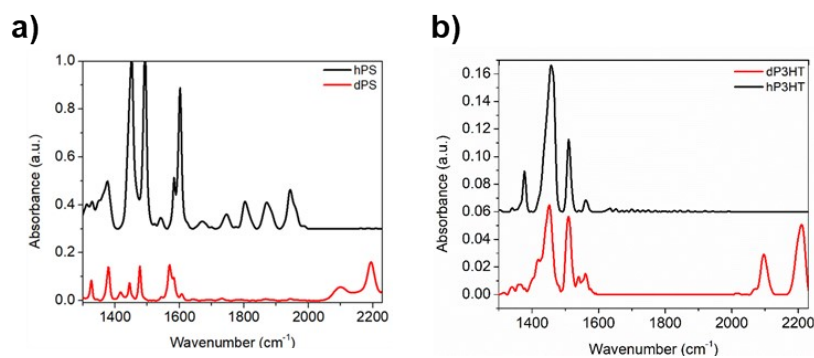


Figure S1. Bulk FTIR spectra of individual blend components. Deuterated and non-deuterated (a) Polystyrene and (b) P3HT. The data corresponding to hPS and hP3HT have been shifted virtually for clarity.

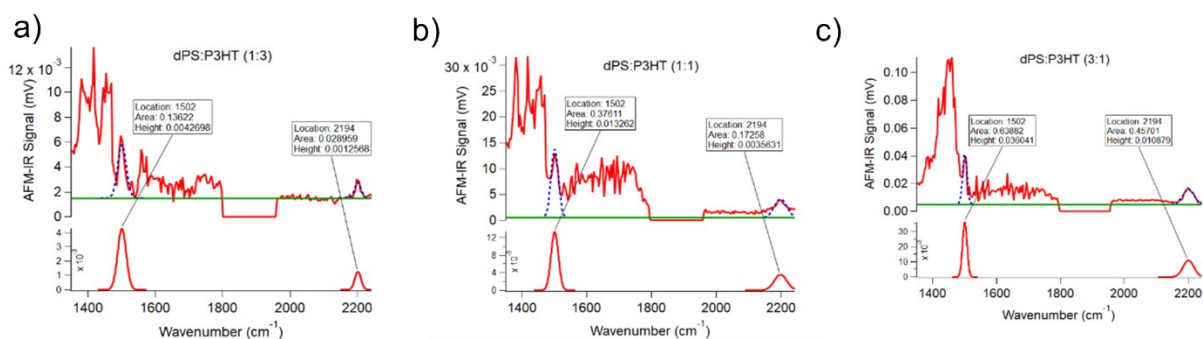


Figure S2. AFM-IR spectra and curve fitting for samples composed of dPS:P3HT prepared at a (a) 1:3, (b) 1:1, and (c) 3:1 ratio.

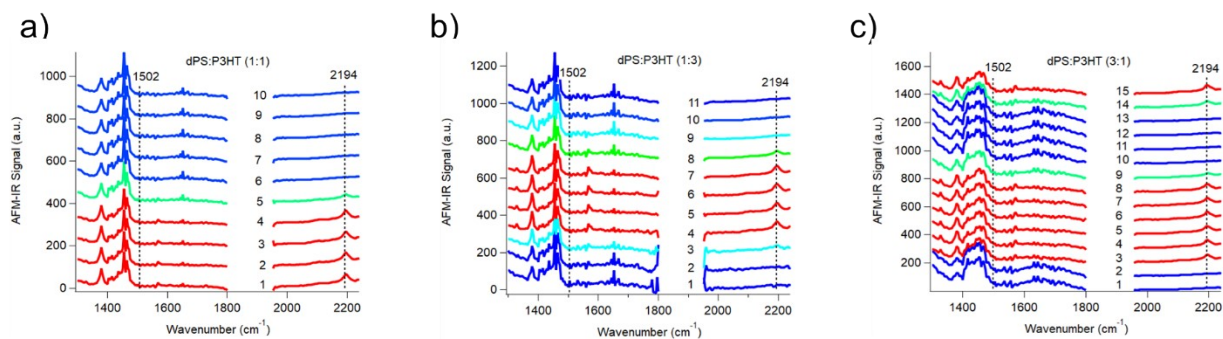


Figure S3. AFM-IR spectra line scans of dPS:P3HT blends prepared with a) 1:3, b) 1:1, and c) 3:1 Ratio.

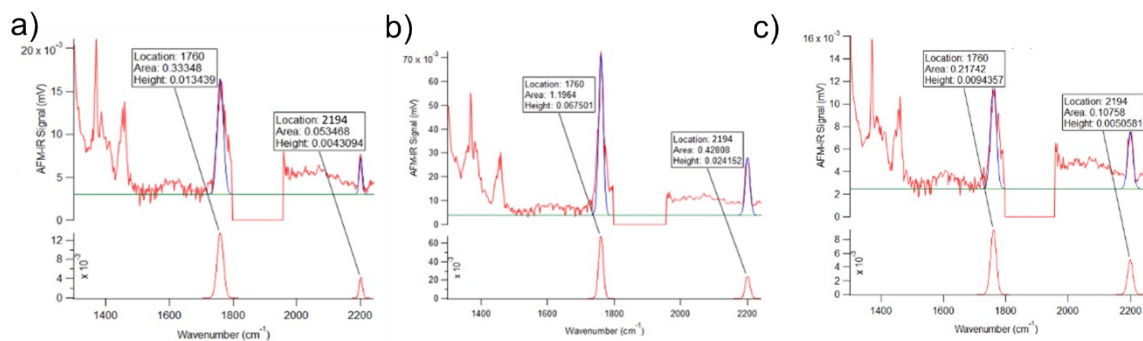
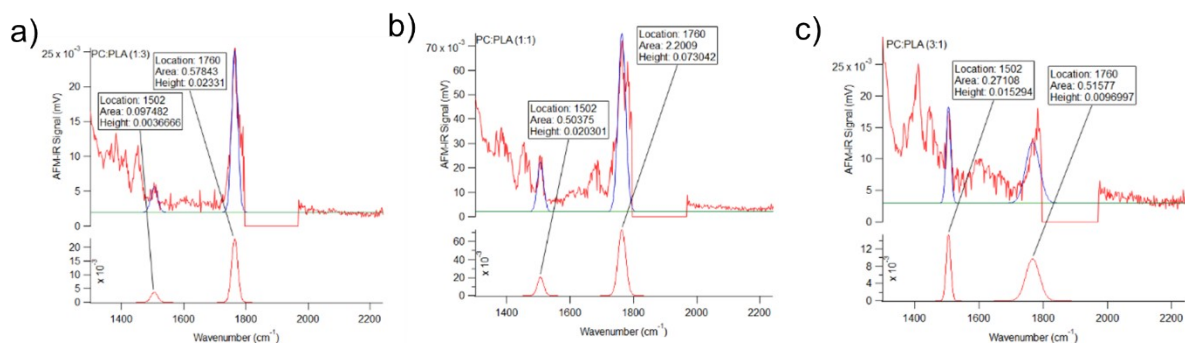


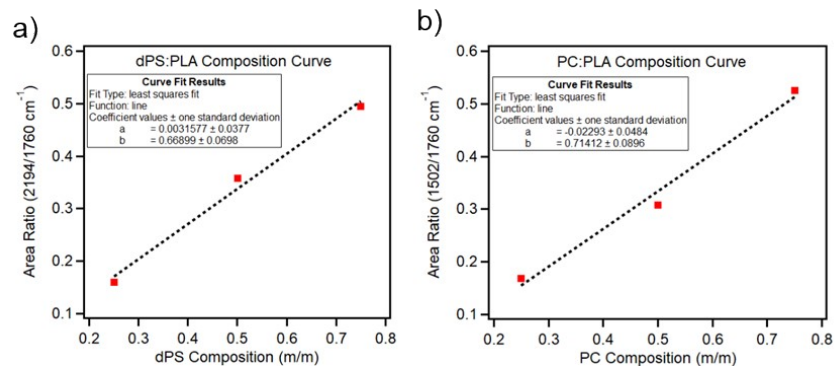
Figure S4. AFM-IR spectra and curve fitting for samples composed of dPS:PLA prepared at a



(a) 1:3, (b) 1:1, and (c) 3:1 ratio.

Figure S5. AFM-IR spectra and curve fitting for samples composed of PC:PLA prepared at a (a) 1:3, (b) 1:1, and (c) 3:1 ratio.

Figure S6. Calibration curves generated from Figures S4 and S5 for (a) dPS:PLA and (b) PC:PLA blends prepared at a 1:3, 1:1, and 3:1 ratio.



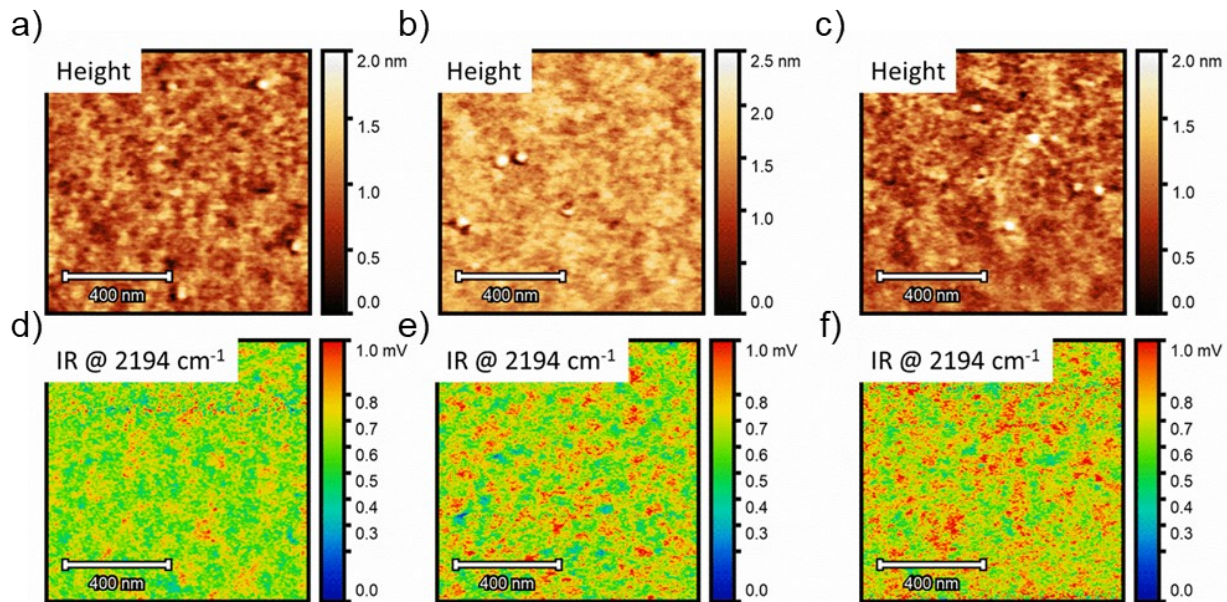


Figure S7. Height images of dPS:hPS blends prepared at (a) 1:3 ratio, (b) 1:1 ratio, and (c) 3:1 ratio. Single-band AFM-IR images obtained at a resonance wavelength of dPS, corresponding to dPS:hPS blends prepared at (d) 1:3 ratio, (e) 1:1 ratio, and (f) 3:1 ratio.

Table T1. Peak area ratio and composition values for blend of dPS:PLA:PC

Point	PC/PLA Area Ratio	dPS/PLA Area Ratio	% PC	% dPS	% PLA
1	0.391	0.447	0	100	0
2	0.179	0.0209	28.2	2.65	69.1
3	0.258	0.153	39.4	22.4	38.3

**Table
RMS**

Sample	RMS Roughness (nm)
dPS:P3HT (1:1)	6.023
dPS:PLA:PC (1:1:1)	15.95
dPS:hPS (1:1)	0.281

T2.

Roughness values for films measured in this study