Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supporting Information

9-Fluorenone and 9,10-Anthraquinone Potential Fused Aromatic Building Blocks to Synthesize Electron Acceptors for Organic Solar Cells

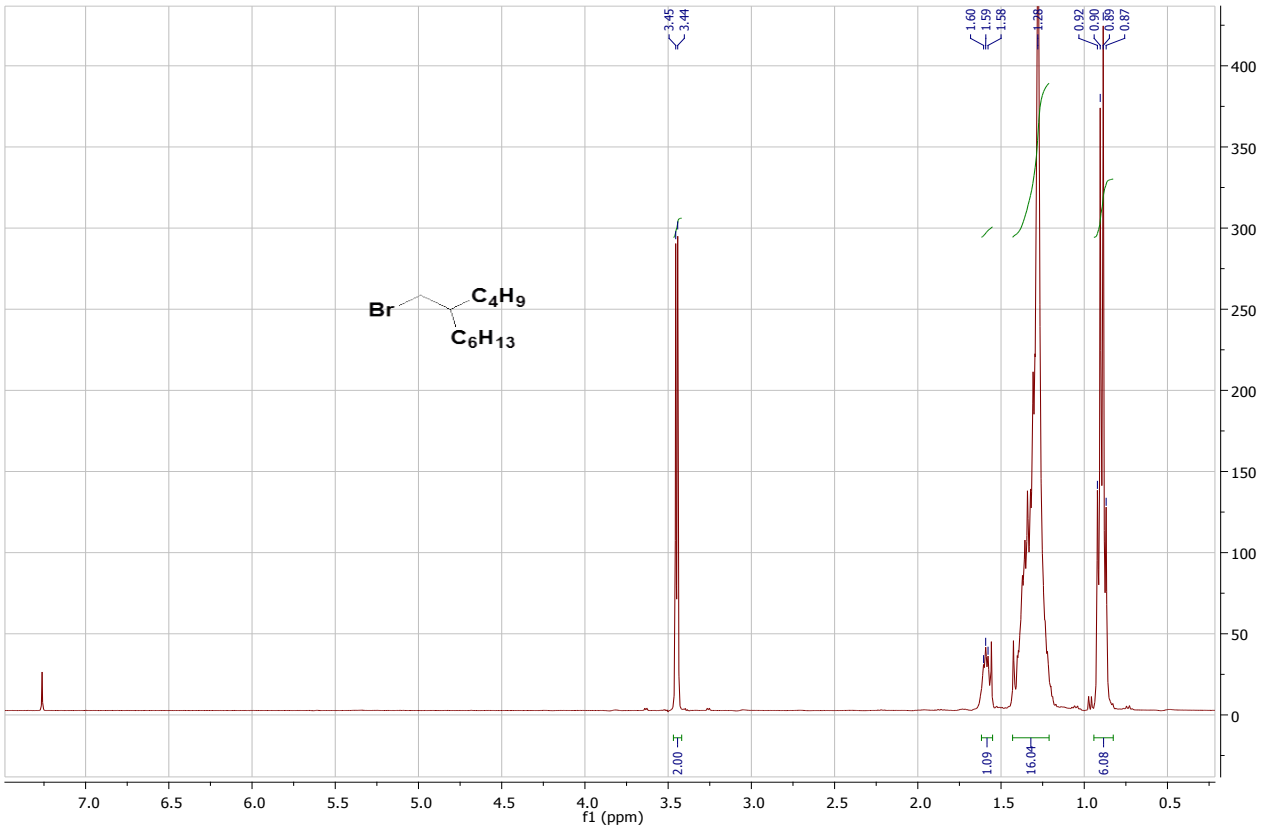

Figure S1. ^{1}H NMR (400 MHz, $CDCl_3$) spectrum of **1**

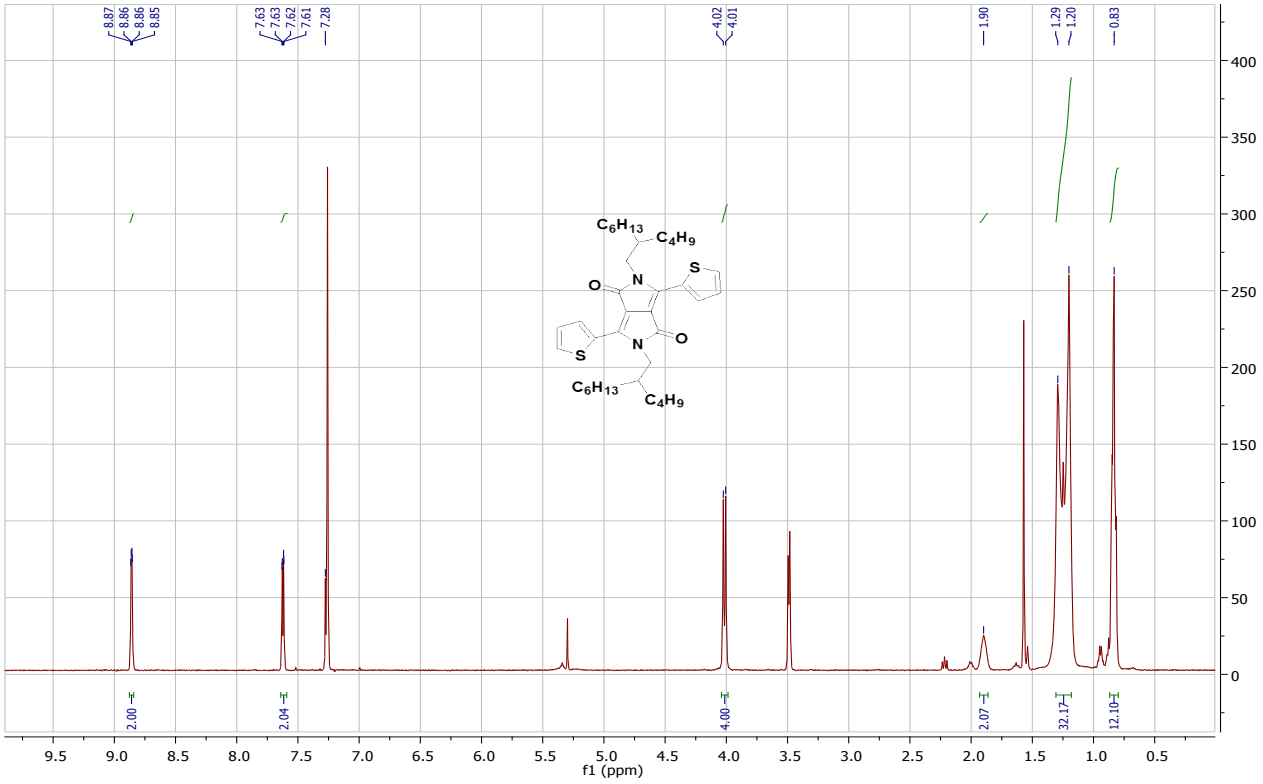

Figure S2. ^{1}H NMR (400 MHz, $CDCl_3$) spectrum of **2**

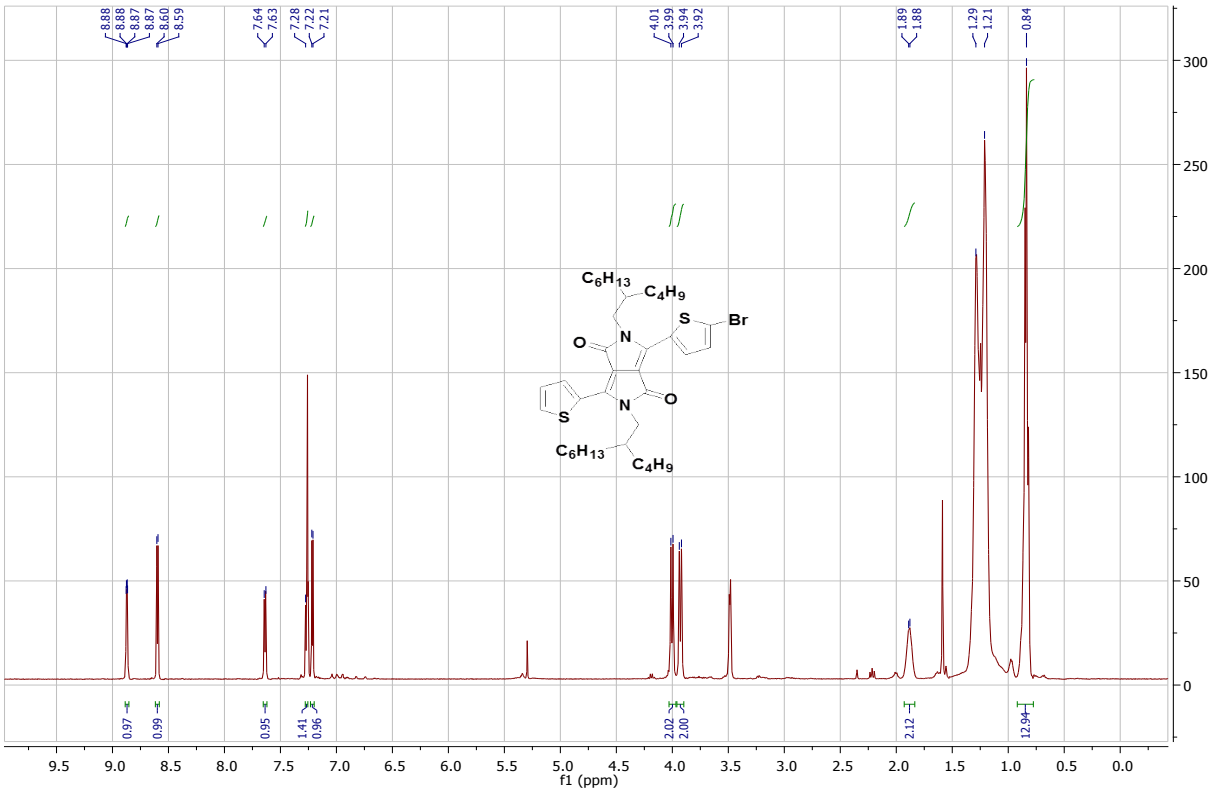

Figure S3. ^{1}H NMR (400 MHz, $CDCl_3$) spectrum of **3**

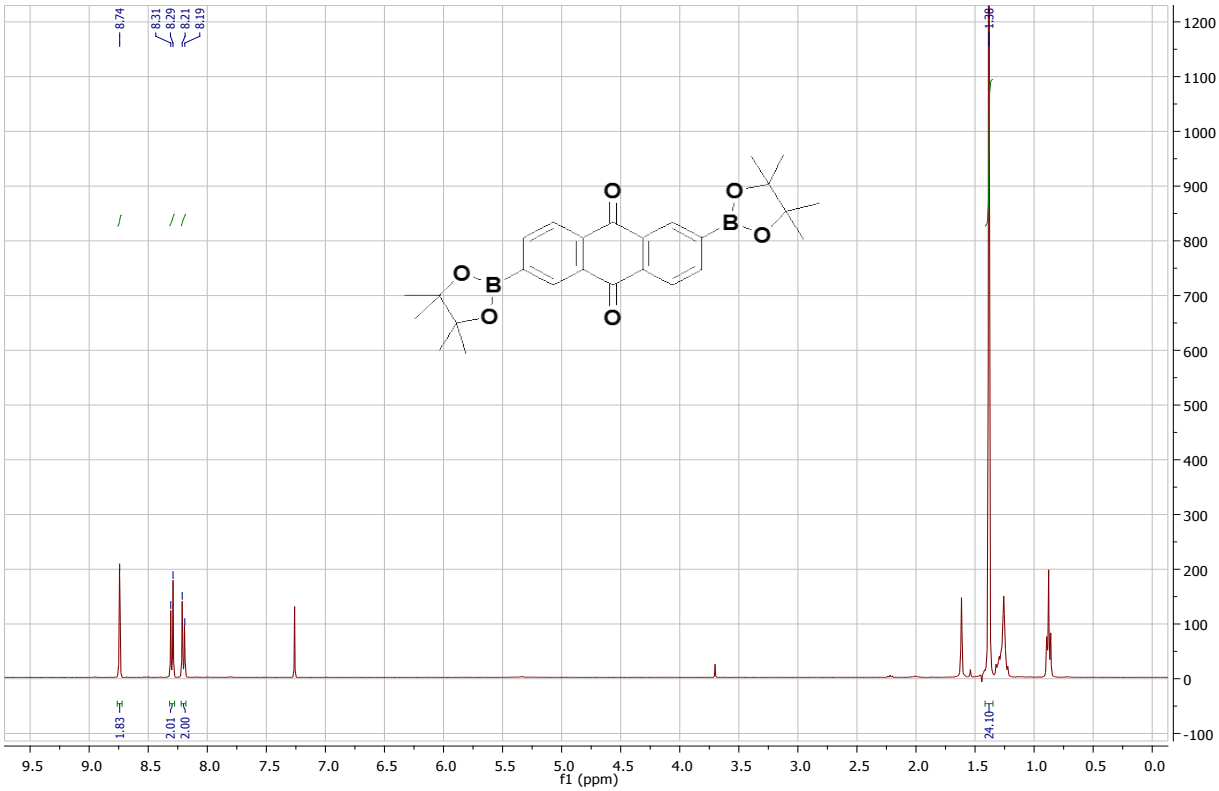

Figure S4. ^{1}H NMR (400 MHz, $CDCl_3$) spectrum of **5**

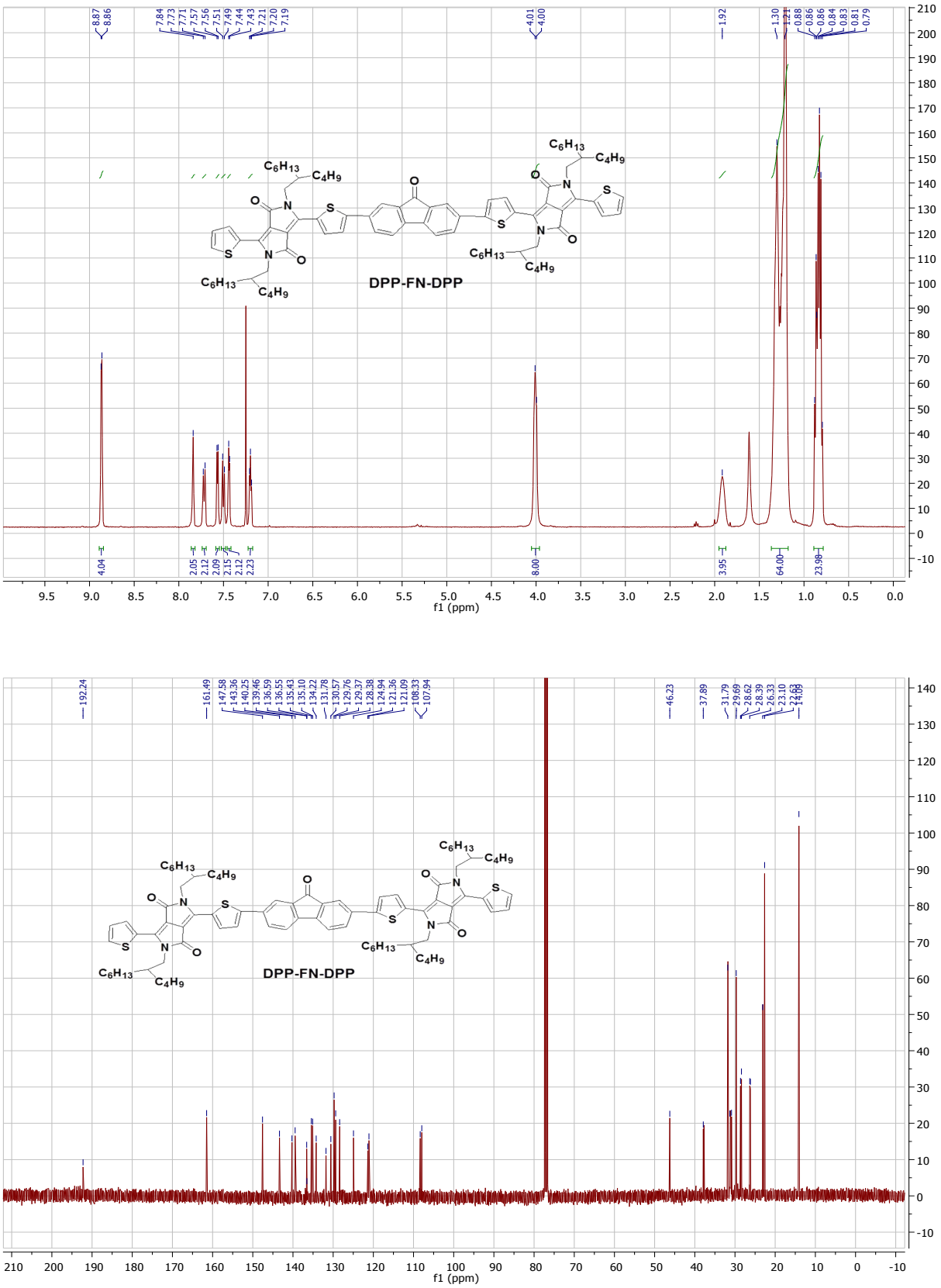

Figure S5. ^{1}H (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) spectra of **DPP-FN-DPP**

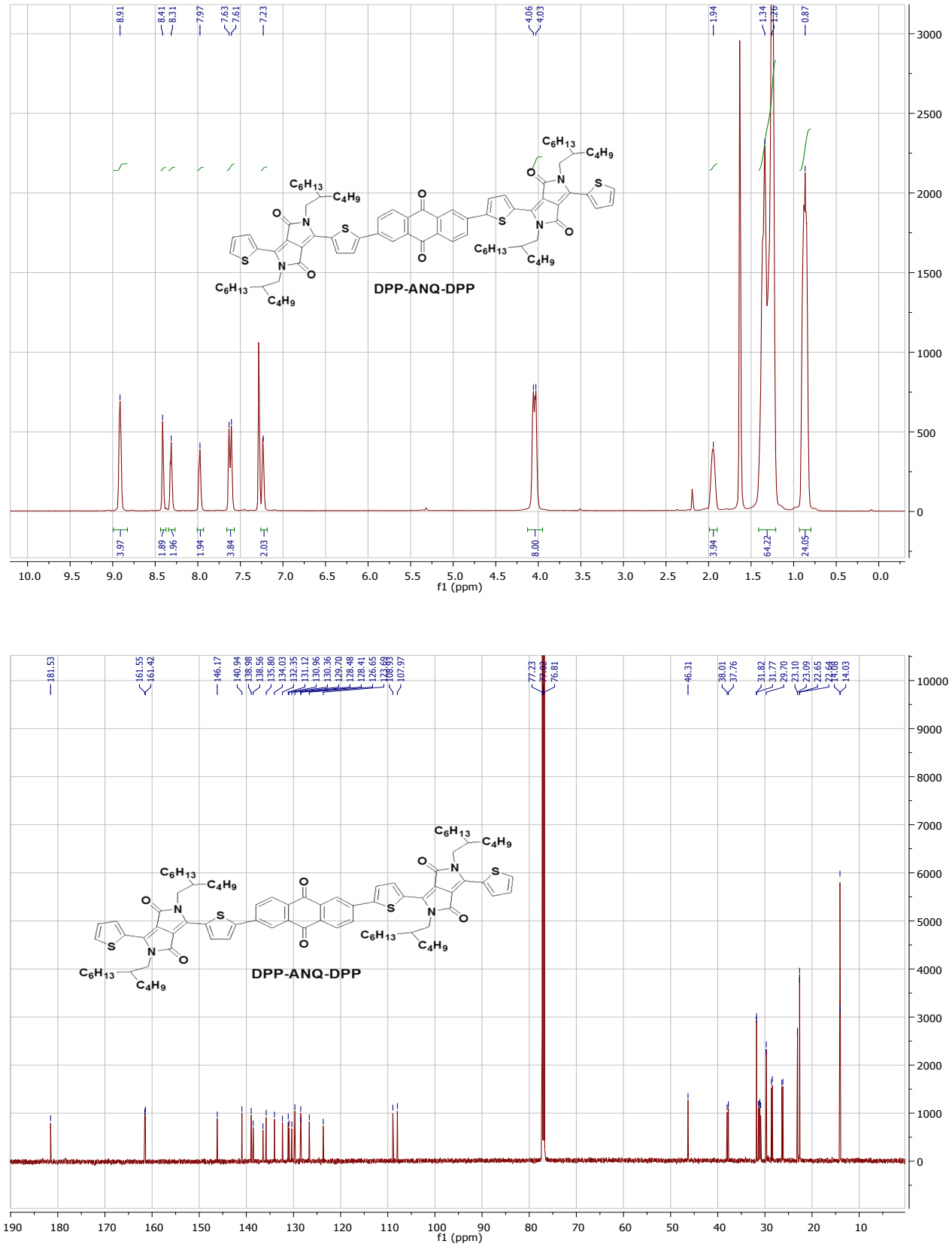

Figure S6. ^{1}H (400 MHz, $CDCl_3$) and ^{13}C NMR (100 MHz, $CDCl_3$) spectra of **DPP-ANQ-DPP**

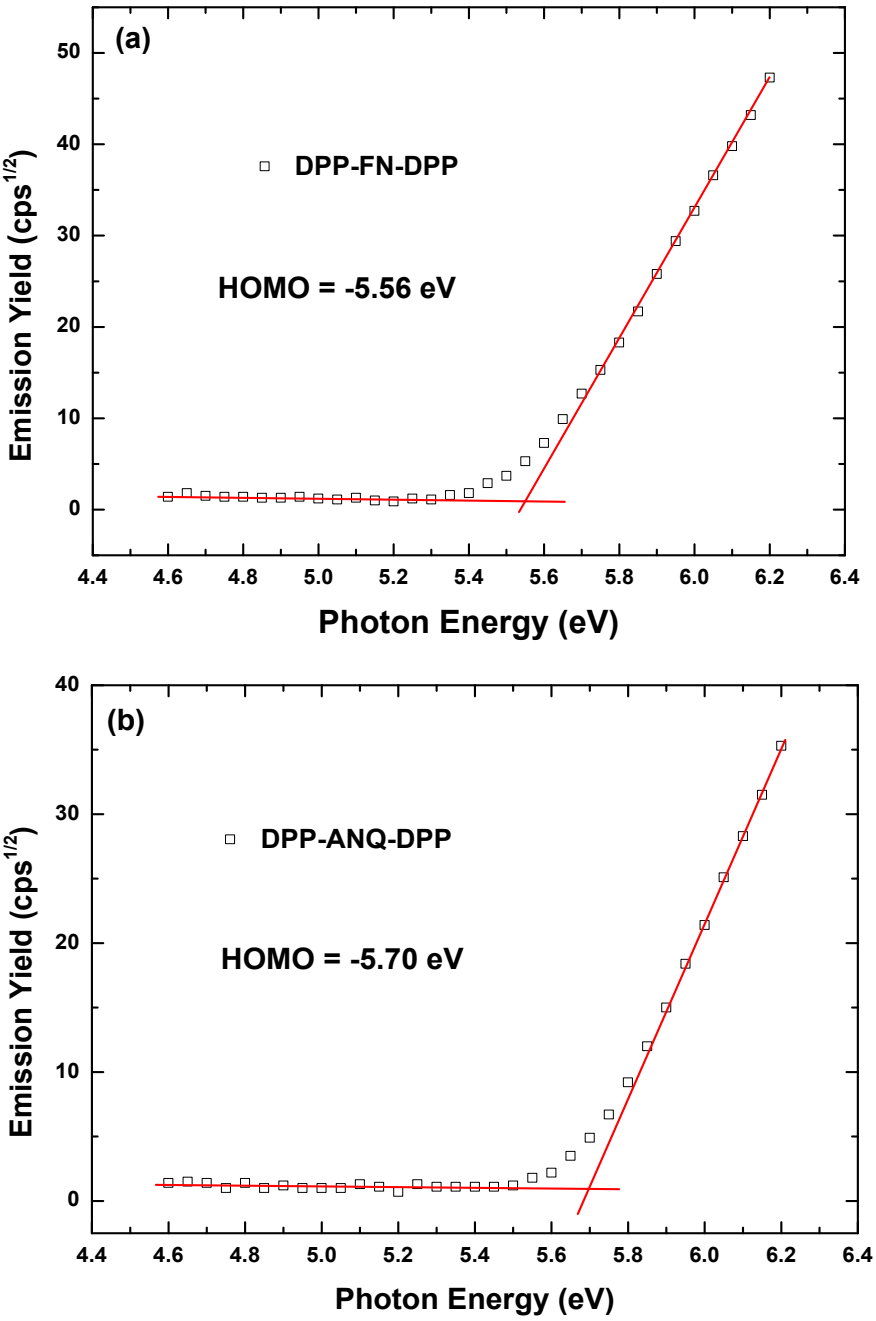

Figure S7. Photo-electron spectra (PESA) of (a) **DPP-FN-DPP** and (b) **DPP-ANQ-DPP**.

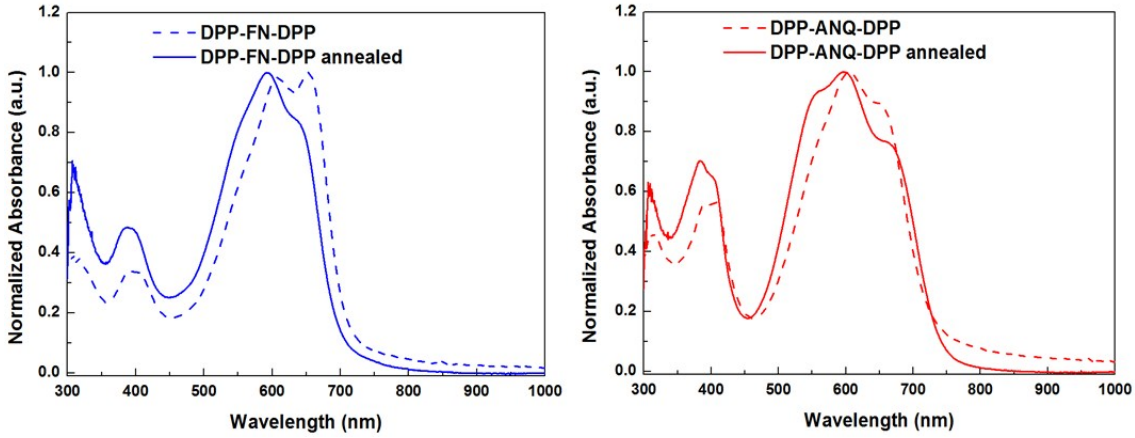

Figure S8. UV-Vis spectra of DPP-FN-DPP and DPP-ANQ-DPP thin films as-cast and after thermal annealing at 120 °C for 5 min.

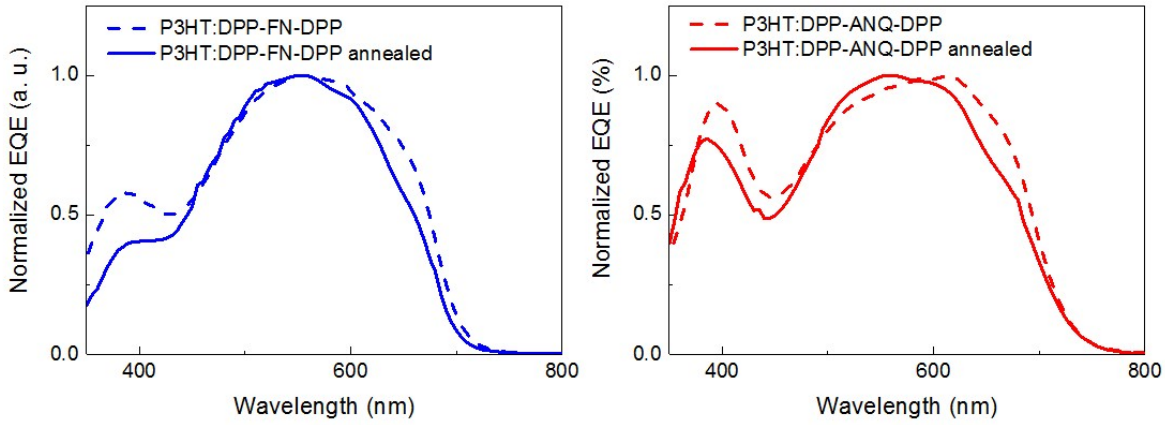

Figure S9. Normalized EQE spectra.

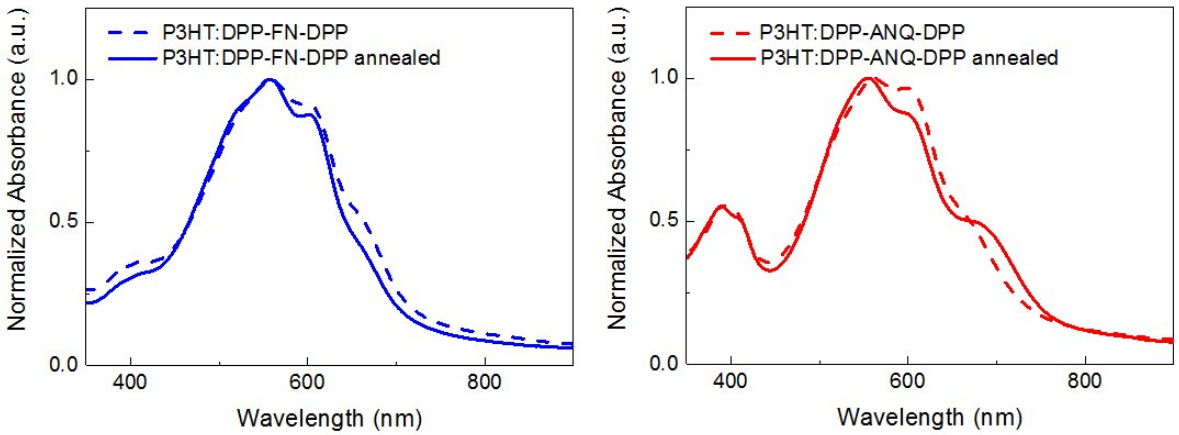

Figure S10. UV-Vis spectra of as-cast and annealed blends.

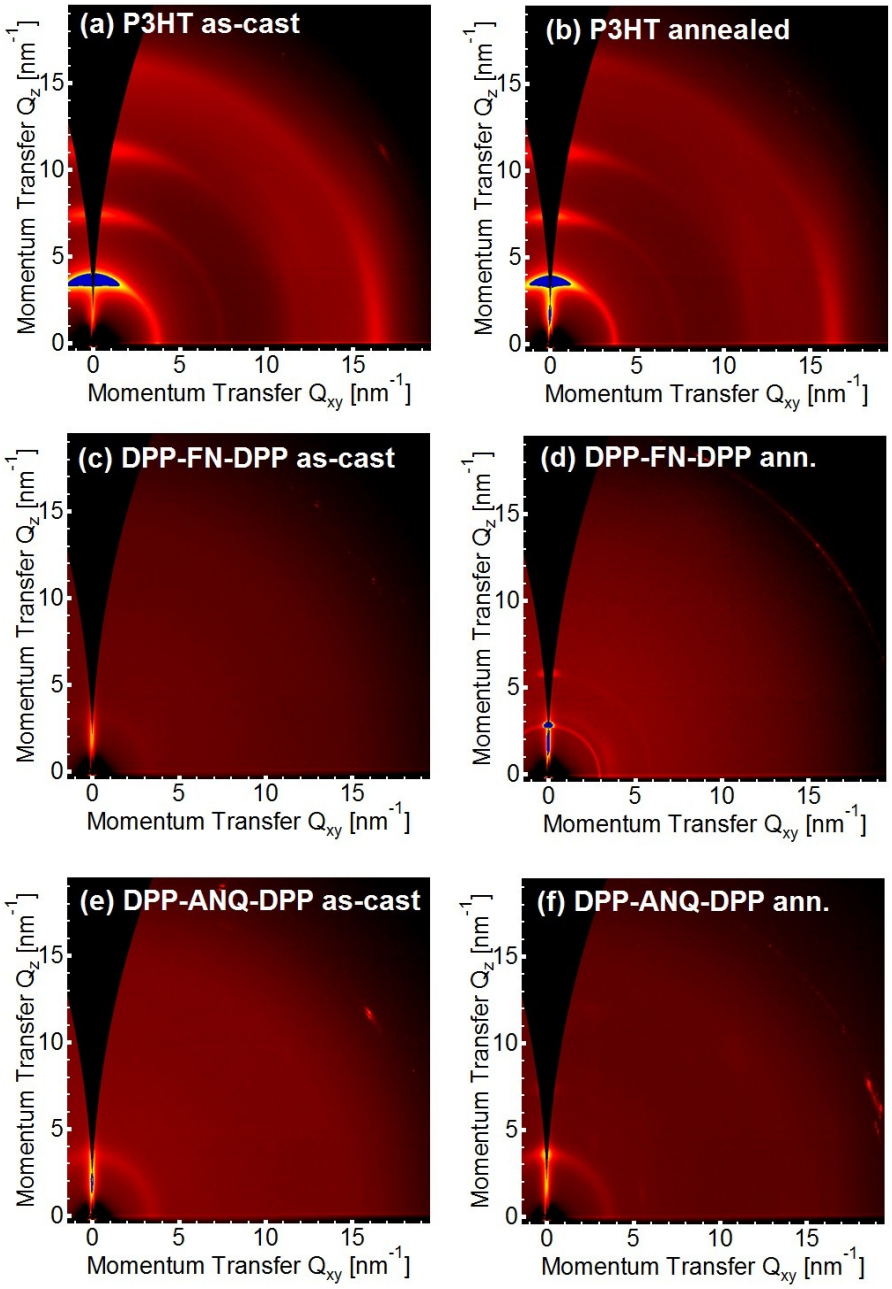

Figure S11. GIWAXS scattering patterns of as-cast and annealed neat films.

Table S1. Properties of the out-of-plane P3HT (100) peak in as-cast and annealed **films.**

	d-spacing (Å)	Coherence length (Å)	Area (a.u.)
P3HT:DPP-FN-DPP as-cast	16.9 ± 0.1	177 ± 4	1370 ± 30
P3HT:DPP-FN-DPP ann.	17.0 ± 0.1	182 ± 2	1400 ± 15
P3HT:DPP-ANQ-DPP as-cast	17.1 ± 0.1	94 ± 1	156 ± 2
P3HT:DPP-ANQ-DPP ann.	16.0 ± 0.1	154 ± 2	715 ± 10

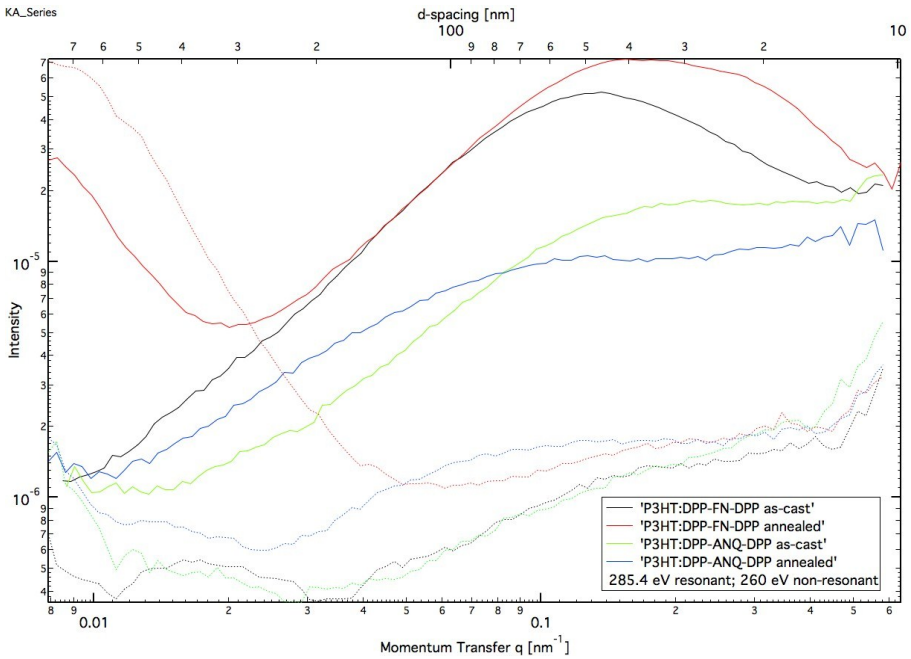

Fig. S12. Resonant soft X-ray scattering profiles of as-cast and annealed P3HT:**DPP-FN-DPP** and P3HT:**DPP-ANQ-DPP** blends. Resonant scattering traces (taken at 285.4 eV) are shown as solid lines while non-resonant scattering traces (taken at 260 eV) are shown as dashed lines.

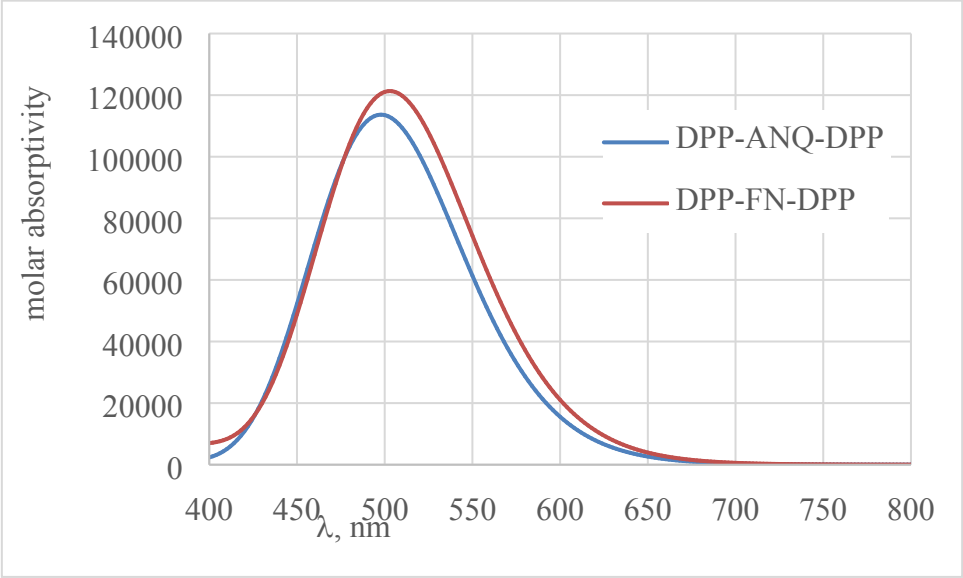

Fig. S13. Computed UV-VIS spectra of **DPP-FN-DPP** and **DPP-ANQ-DPP** in chloroform. The excitations are predominantly HOMO-to-LUMO.