Supporting Information

Steric Hindrance Dependence on the Spin and Morphology Properties of Highly Oriented Self-Doped Organic Small Molecule Thin Films

Daniel Powell, Eric V. Campbell, Laura Flannery, Jonathan Ogle, Sarah E. Soss, Luisa Whittaker-Brooks

a. Department of Chemistry, University of Utah, Salt Lake City, UT, 84112

*Corresponding email: luisa.whittaker@utah.edu
Figure S1. MALDI mass spectrum for self-doped PDI (compound #1). Exact mass and structure provided as an inset. The expected m/z is 532.21 and the observed peak at 533.3 is likely due to protonated species.
**Figure S2.** MALDI mass spectrum for self-doped PDI (compound #2). Exact mass and structure provided as an inset.
Figure S3. MALDI mass spectrum for self-doped PDI (compound #3). Exact mass and structure provided as an inset.
Figure S4. HNMR spectrum of compound #1.
Figure S5. HNMR spectrum of compound #2.
Figure S6. HNMR spectrum of compound #3.
Figure S7. Solid-state absorption spectra for compounds #1-3. The peaks centered at ≈ 750 nm, ≈ 900 nm, and ≈ 1000 nm are consistent with the absorption of the PDI radical anion [PDI]−.
Figure S8. TGA spectra for self-doped PDI (compound #1).

Figure S9. TGA spectra for self-doped PDI (compound #2).
Figure S10. TGA spectra for self-doped PDI (compound #3). The small mass loss at ≈110 °C is attributed to the loss of water from the purification process, which is further supported by SSNMR studies.
Figure S11. AFM images of (A) compound #1 (B) compound #2, and (C) compound #3.
Figure S12. Spin concentration via EPR measurements of powder, ultrasonic spray coated, and physical vapor deposited thin films for a self-doped PDI. Structure provided as an inset.

Figure S13. SSNMR spectra of compound #1 under different storing and annealing conditions.
**Figure S14.** SSNMR spectra of compound #2 under different storing and annealing conditions. Spectral enlargement of the aromatic region from 120-140 ppm is shown on the right for clarity.
Figure S15. SSNMR spectra of compound #3 under different storing and annealing conditions.
Figure S16. Spin concentration via EPR of compounds #1-3 measured under a nitrogen atmosphere and after 3 days of air exposure.