

Supplementary Data for

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Structure Engineering of Naphthalenediimides for improved Charge Carrier
Mobility: Self-assembly by Hydrogen Bonding, Good or Bad?

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Table S1 Thermal characterization for naphthalenediimides.

Sample	Temperature	Enthalpy/ Jg ⁻¹	Phase	10 wt% loss Temperature (°C)
NDI -E	161 ⁰ C (104 ⁰ C)	89.29 (63.24)	Cr	382 ⁰ C
NDI-A	259 ⁰ C (229 ⁰ C)	91.85 (90.78)	Cr	431 ⁰ C
NDI-E3	-23 ⁰ C, 29 ⁰ C, 92 ⁰ C (-32 ⁰ C, 24 ⁰ C, 70 ⁰ C)	3.90, 5.82, 56.38 (2.87, 5.59, 3.30)	Spherulitic crystal	389 ⁰ C
NDI-A3	41 ⁰ C, 140 ⁰ C (31 ⁰ C, 118 ⁰ C)	3.35, 37.46 (4.68, 37.84)	Spherulitic crystal	400 ⁰ C

Cr = Crystalline, I = Isotropic, Bracket indicate values during cooling

Figure S1 a) ¹H NMR spectra of ester NDI-E3, NDI-E

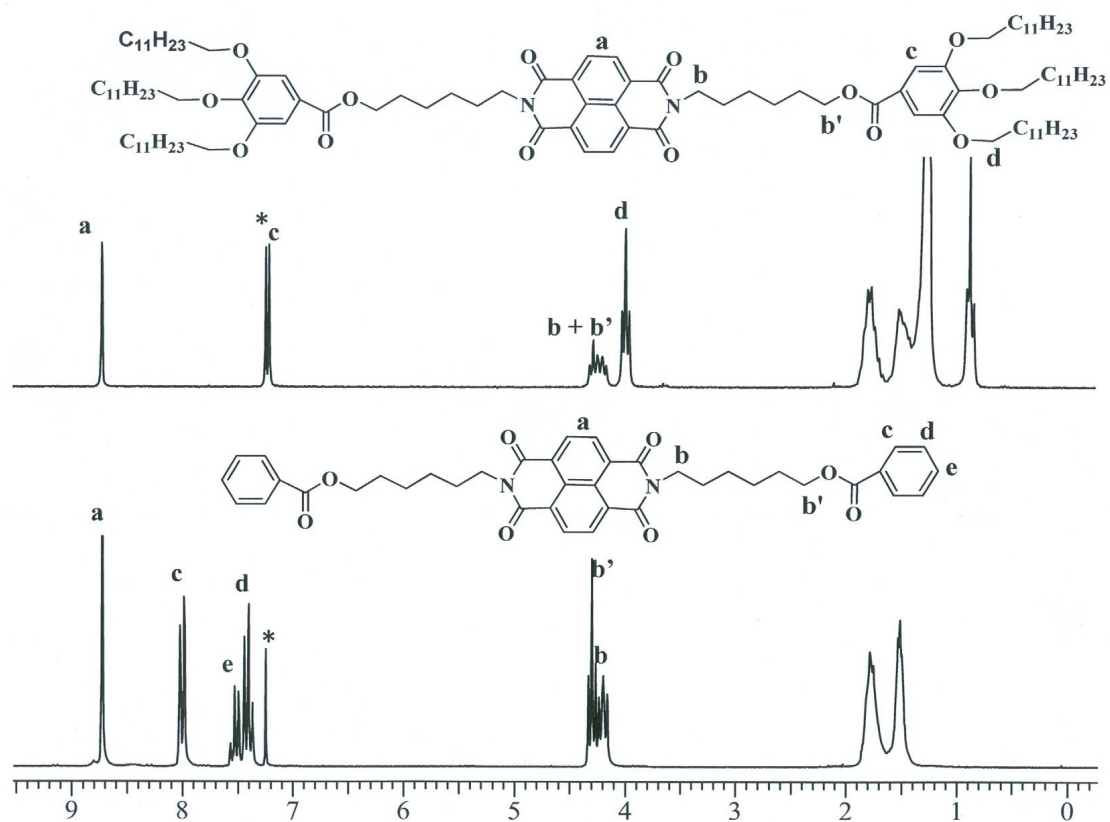


Figure S1 b) ^1H NMR spectra amide NDI-A3, NDI-A

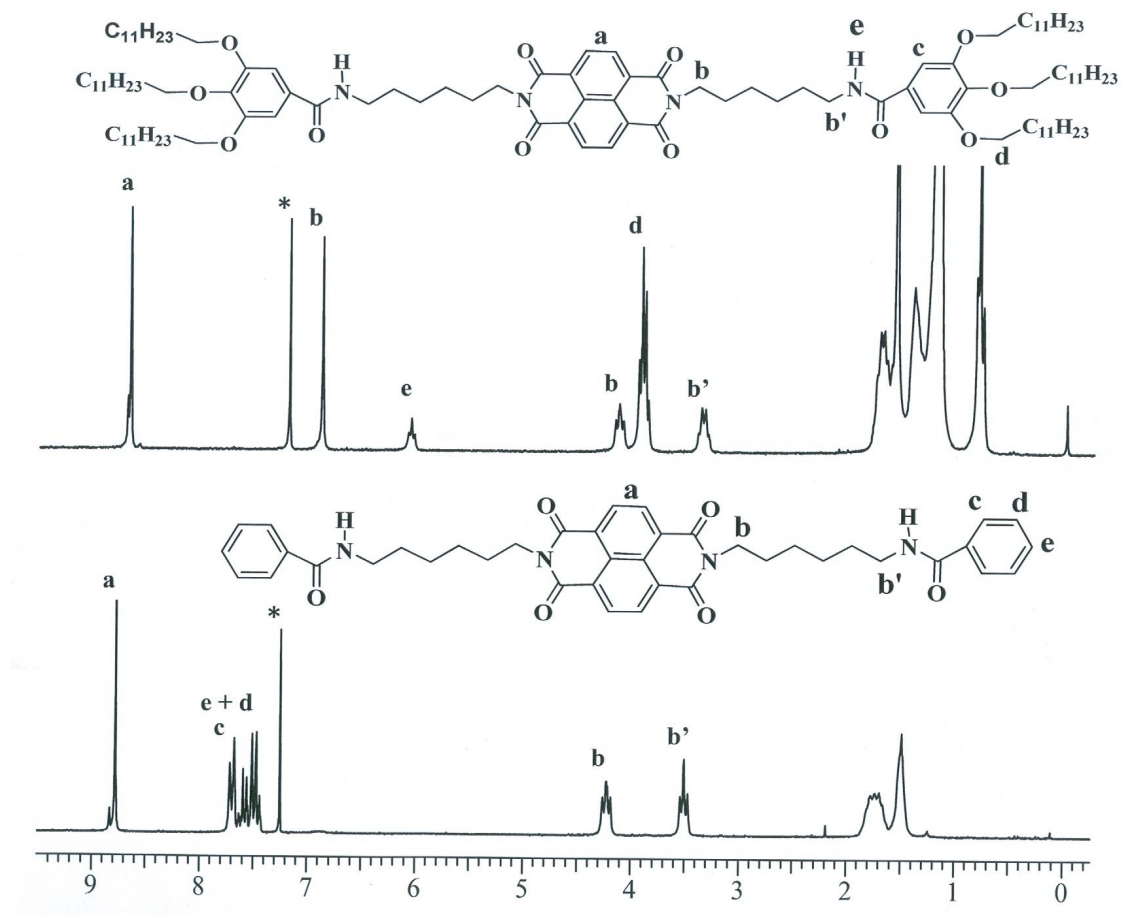


Figure S2 A) SEC (size exclusion chromatograph) for NDI-E and NDI-E3 B) SEC (size exclusion chromatograph) for NDI-A and NDI-A3 (has to convert Tiff image)

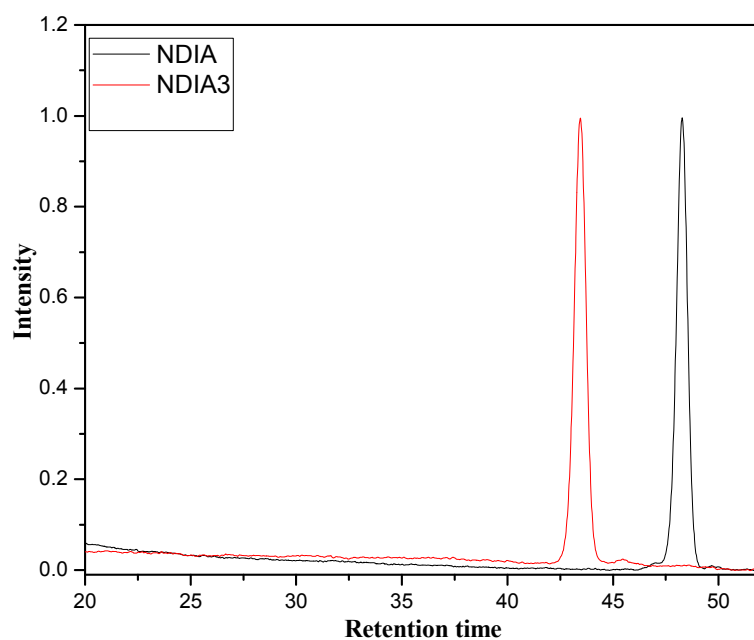
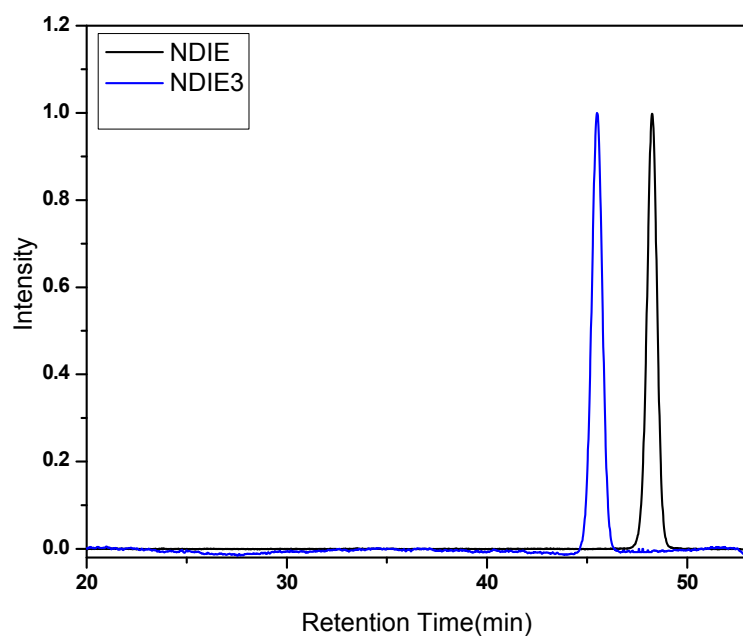
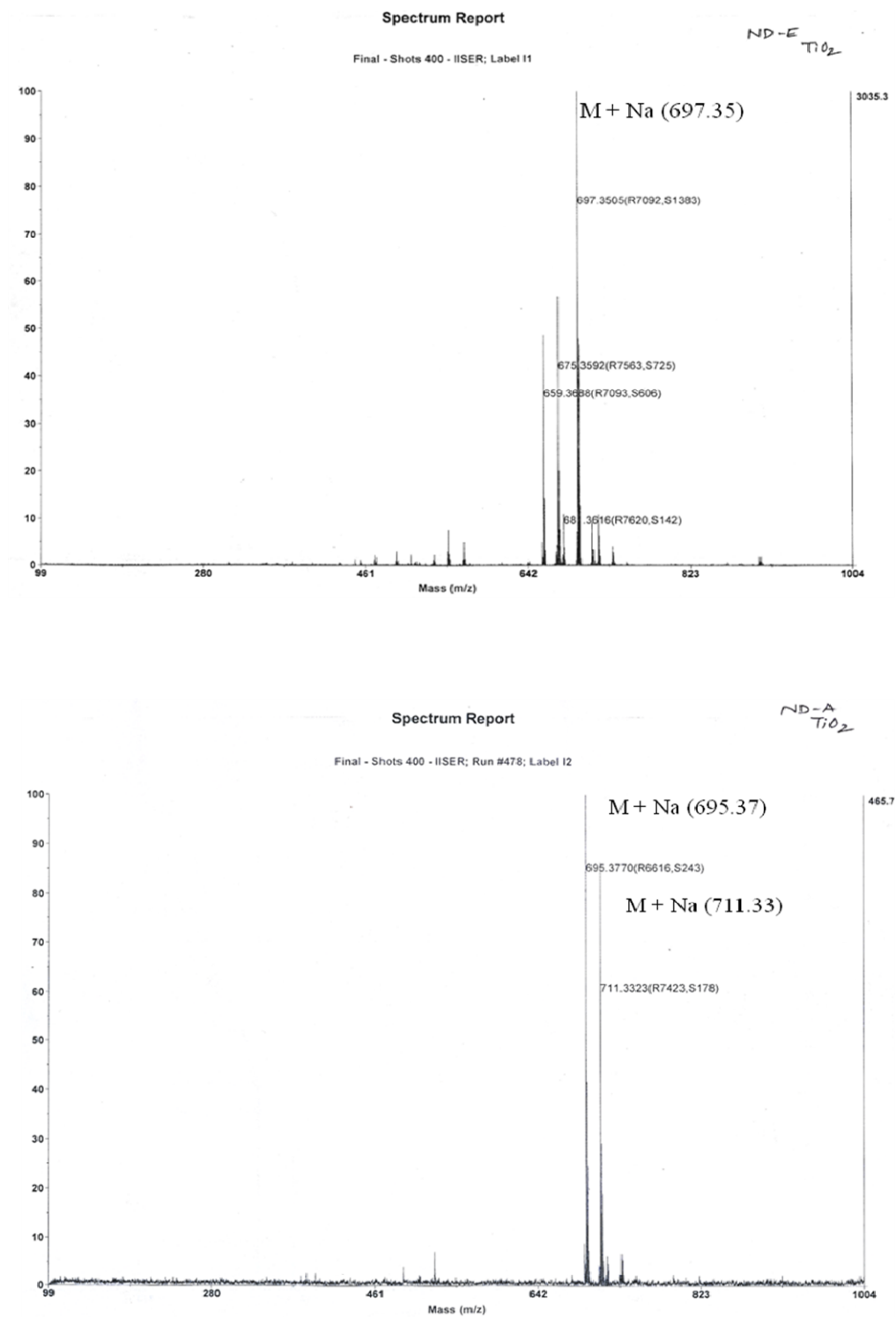


Figure S2 MALDI-TOF mass data for all naphthalenebiimides.



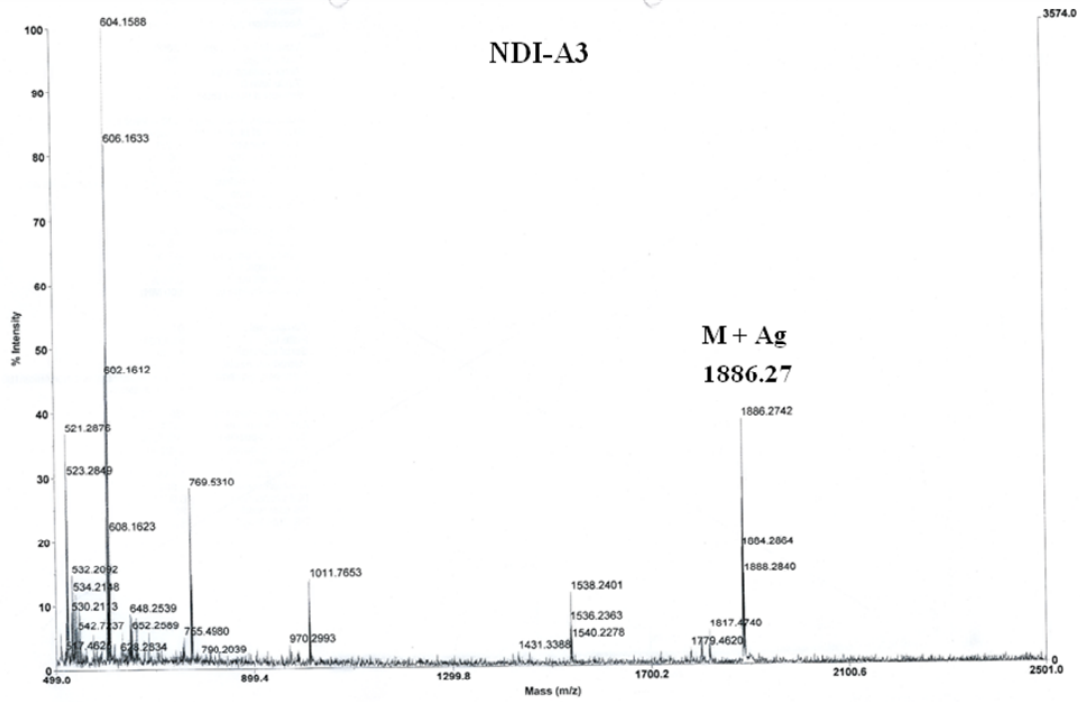
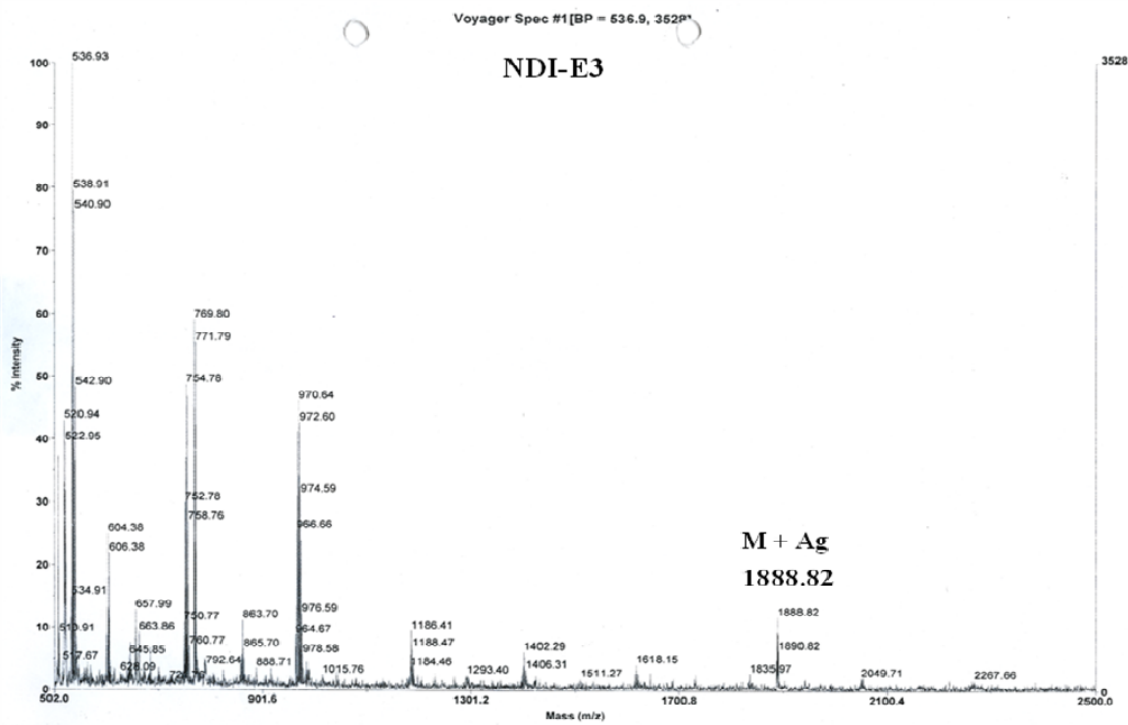


Figure S4 UV-Vis absorption and emission spectrum of naphthalenediimides in *o*-DCB.

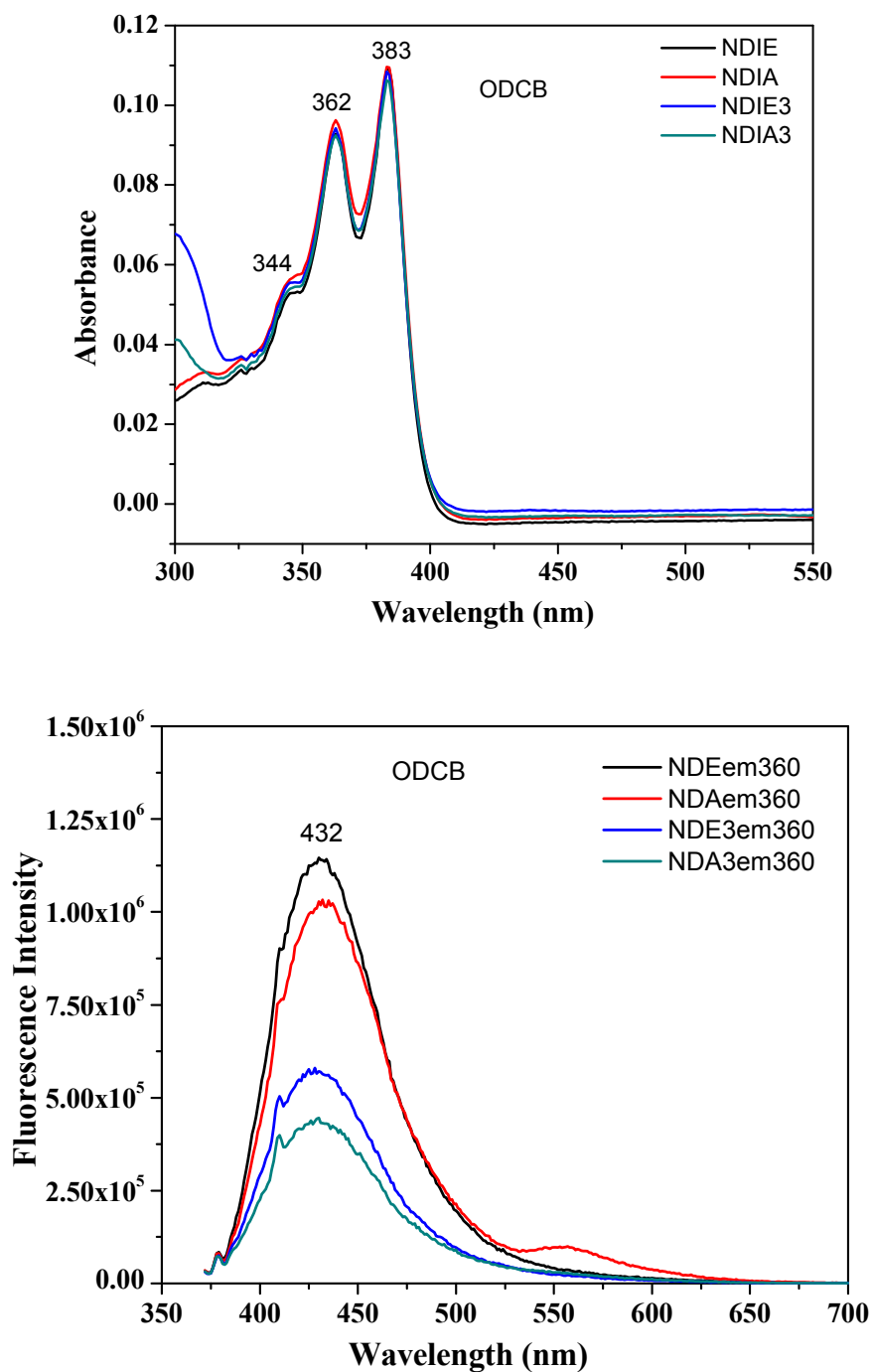


Figure S5 Normalized absorption spectrum of spin-coated films naphthalene diimides.

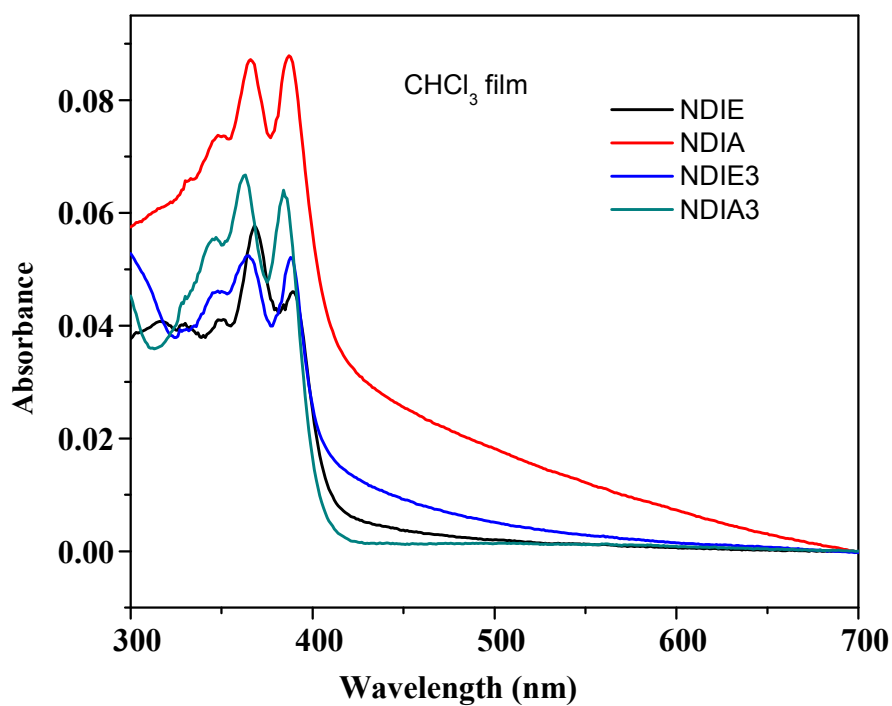


Figure S 6 Cyclic Voltamogram of NDI-E2 and NDI-A3

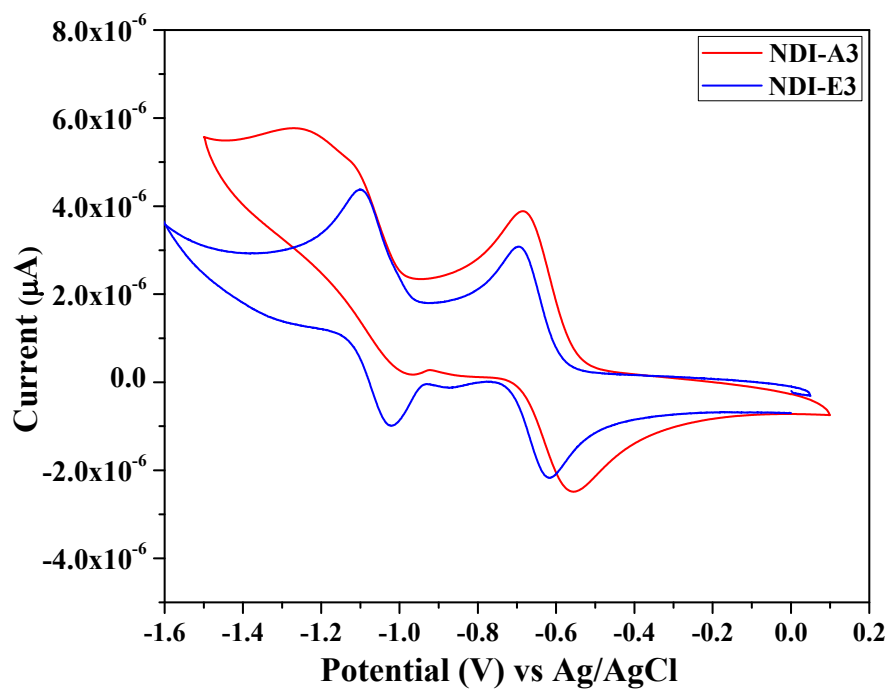


Figure S7 TGA curves for naphthalene diimides.

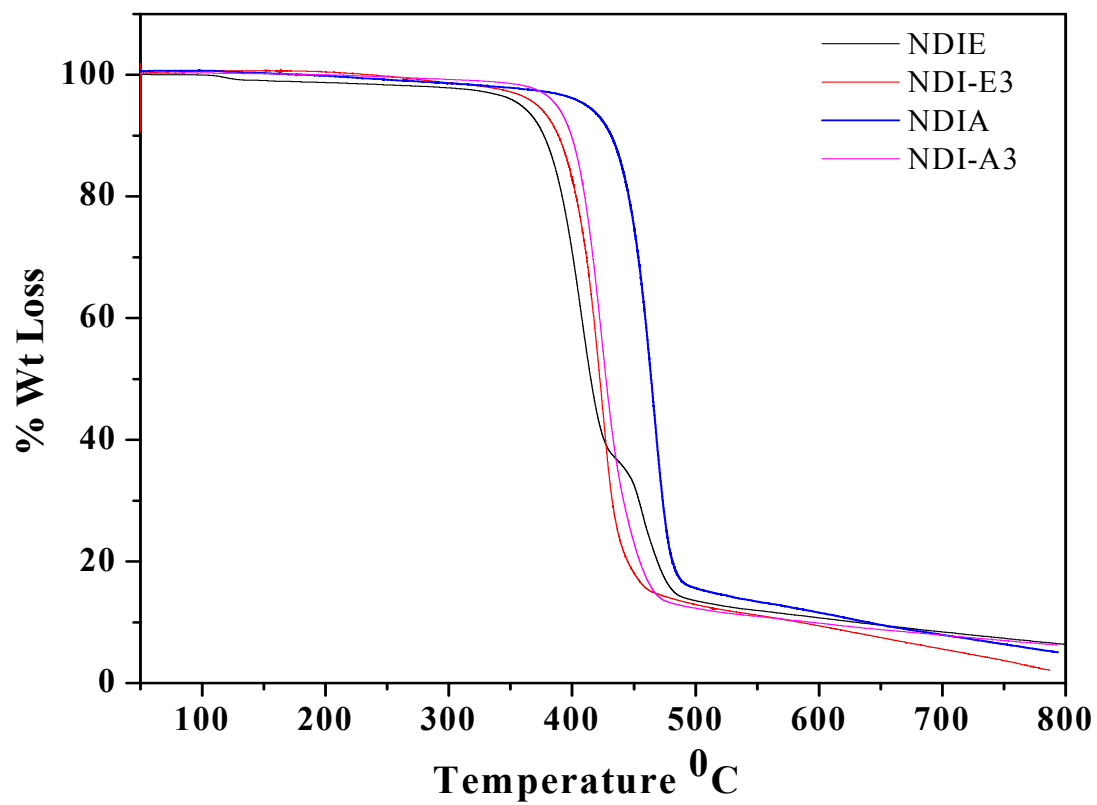


Figure S8 DSC curves for NDI-E (a) and NDI-A (b).

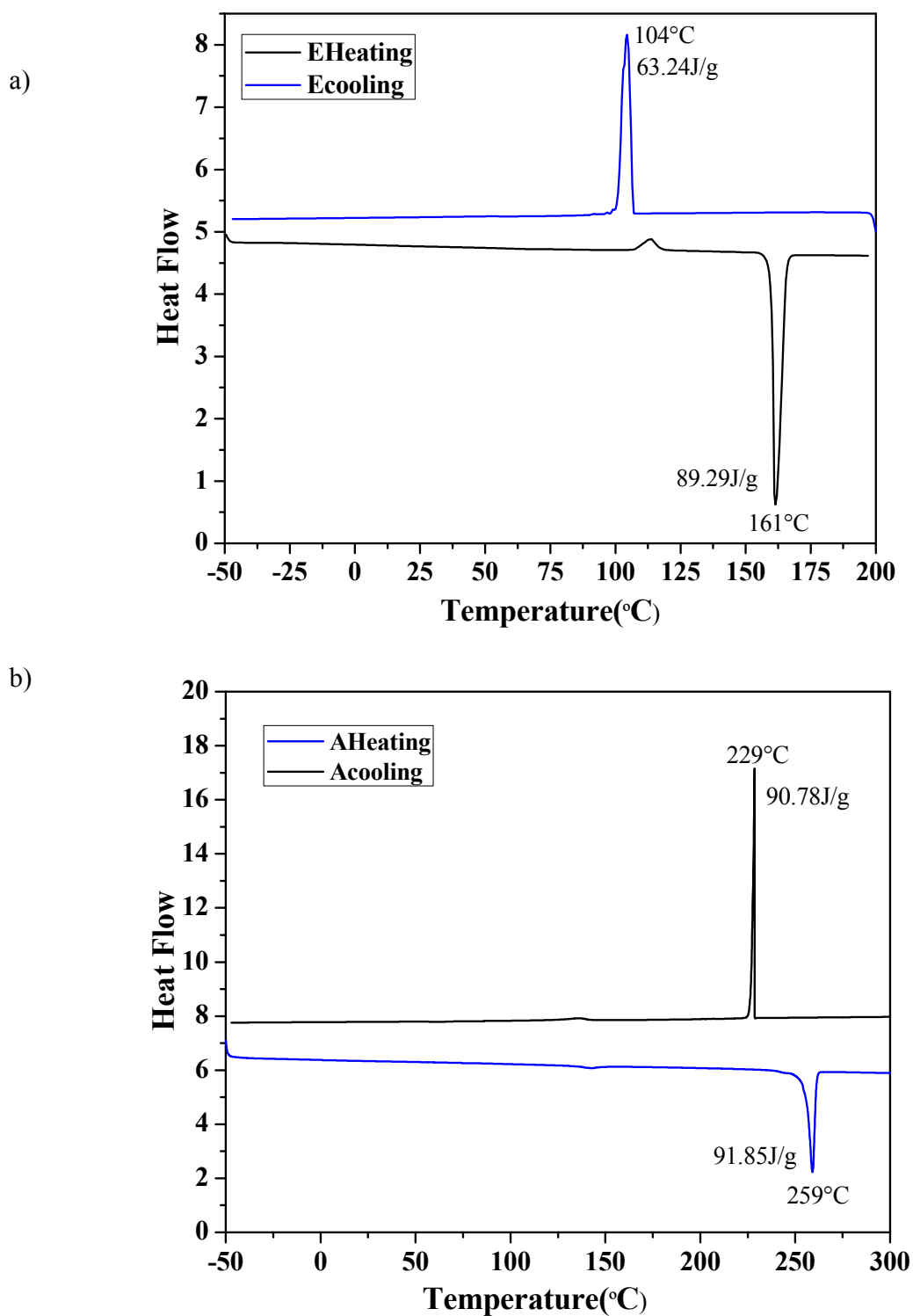


Figure S9 X- ray diffraction pattern of NDI-A3 at room temperature (black) at RT after cooling from isotropic melt.

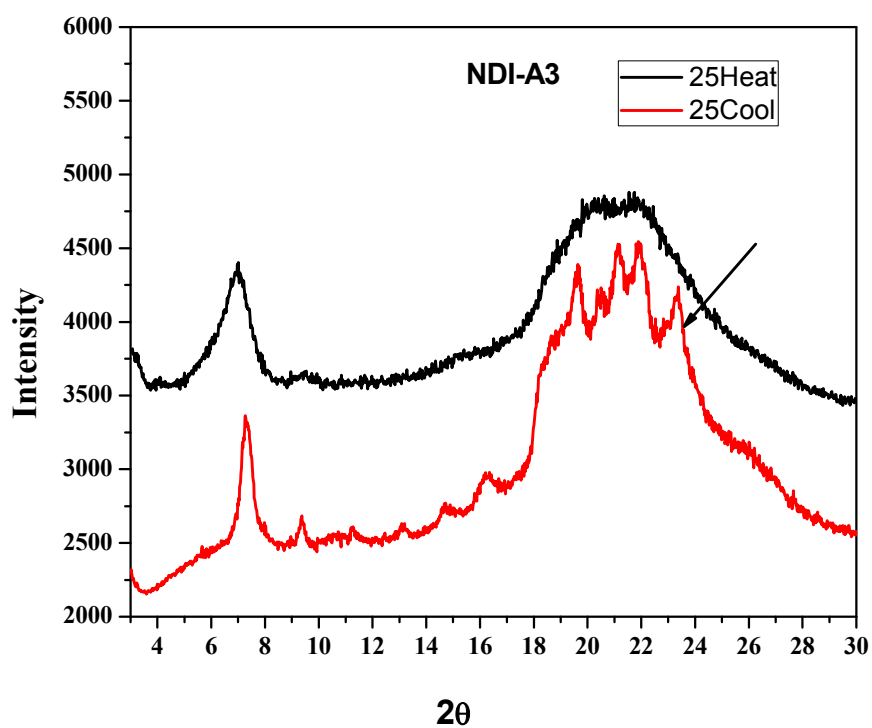
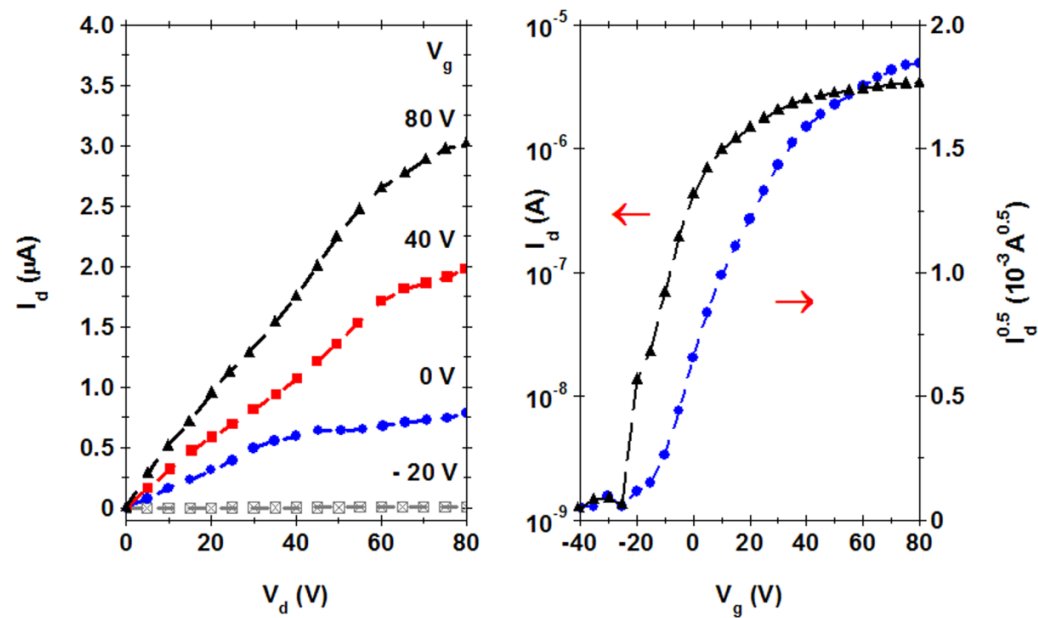


Figure S 10 Transistor curves of a) NDI-E3 and b) NDI-A3

a)



b)

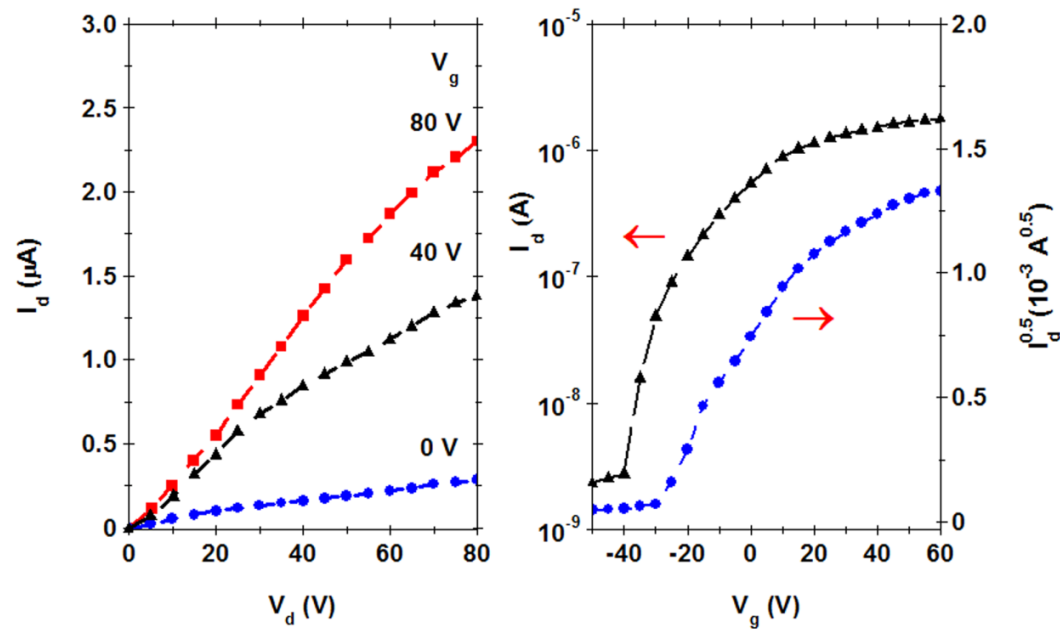


Figure S11 Powder a) and thin film b) WXRd data for NDI-E and NDI-A

