

## Supporting Information

*for*

**Redox-stable and visible/near-infrared electrochromic aramids with main-chain triphenylamine and pendent 3,6-di-*tert*-butylcarbazole units**

*by*

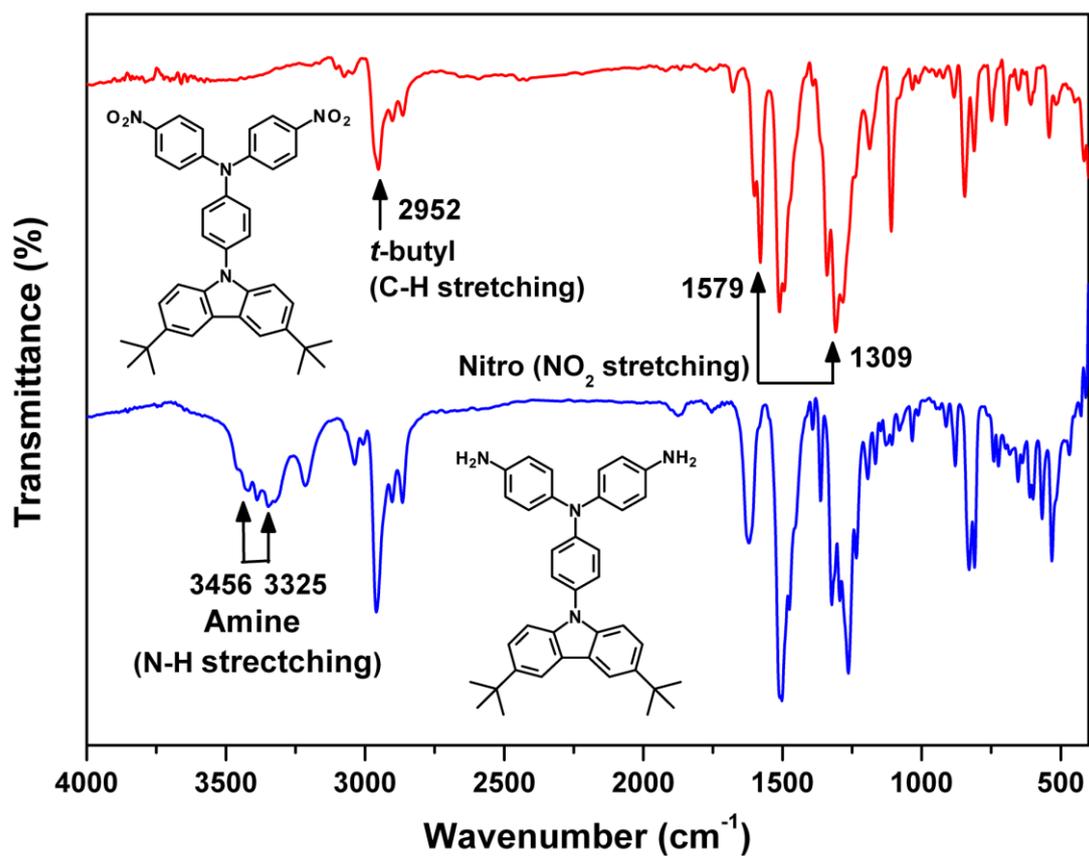
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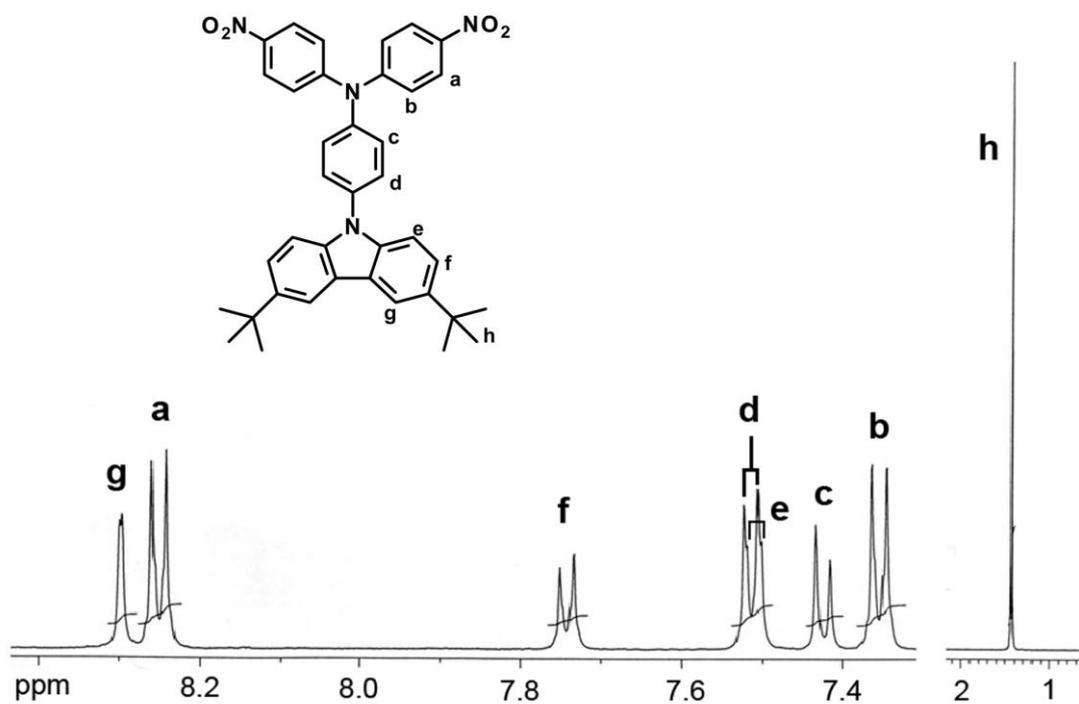
### List of Contents for Supplementary Material:

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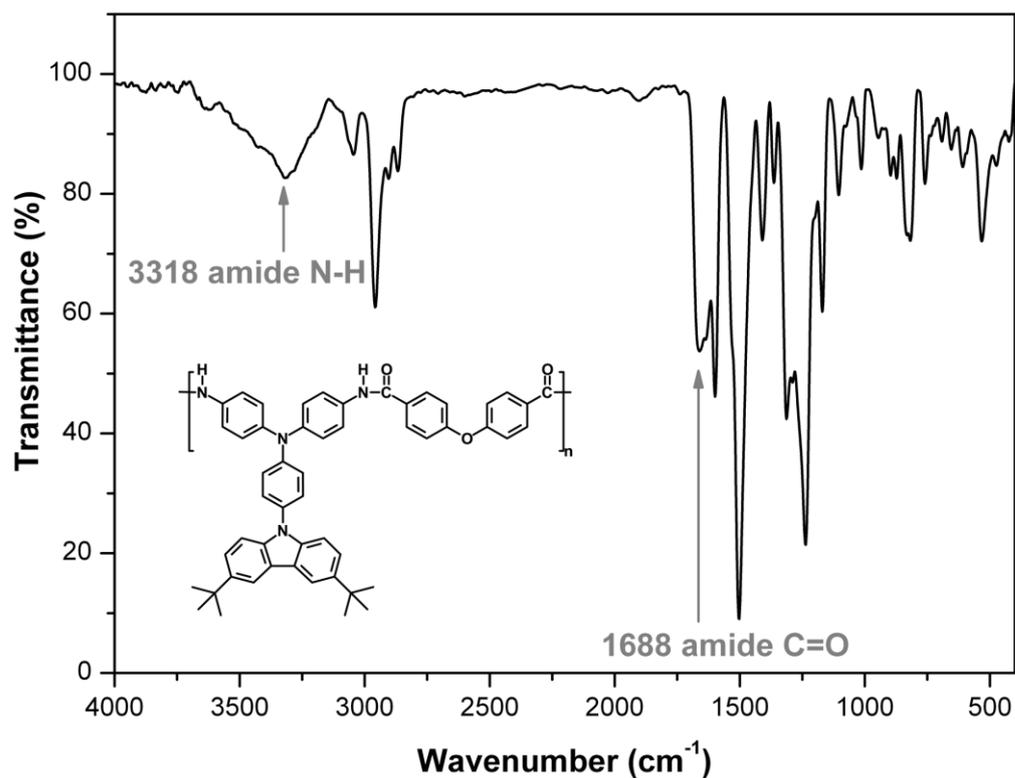
- Fig. S1** IR spectra of dinitro compound **1** and target diamine monomer **2**.  
**Fig. S2** (a) <sup>1</sup>H NMR spectrum of dinitro compound **1** in DMSO-*d*<sub>6</sub>.  
**Fig. S3**. Typical IR spectrum of polyamide **4b**.  
**Fig. S4** (a) <sup>1</sup>H NMR spectrum and (b) aromatic portion of the <sup>1</sup>H-<sup>1</sup>H COSY spectrum of polyamide **5b** in DMSO-*d*<sub>6</sub>.  
**Fig. S5** WAXD patterns of the polyamide films.  
**Fig. S6** TGA curves of polyamide **4d** with a heating rate of 20 °C/min.  
**Fig. S7** TMA of polyamide **4b** with a heating rate of 10 °C/min.  
**Fig. S8** UV-Vis absorption and PL spectra of the dilute solutions of compounds **1** and **2** and polyamide **4a** in NMP (10<sup>-5</sup> M). Photographs show the PL images of their solutions on exposure to a standard laboratory UV lamp (Excited at 365 nm).  
**Fig. S9** CV diagrams of the cast films of polyamides **4b** and **4'b** on the ITO-coated glass slide in 0.1 M TBAP/CH<sub>3</sub>CN at a scan rate of 50 mV/s.  
**Fig. S10** UV-Vis-NIR absorption spectra of the cast films of polyamides **4b** and **4'b** on the ITO-coated glass substrate in 0.1 M TBAP/CH<sub>3</sub>CN at their neutral, cation, and dication forms.



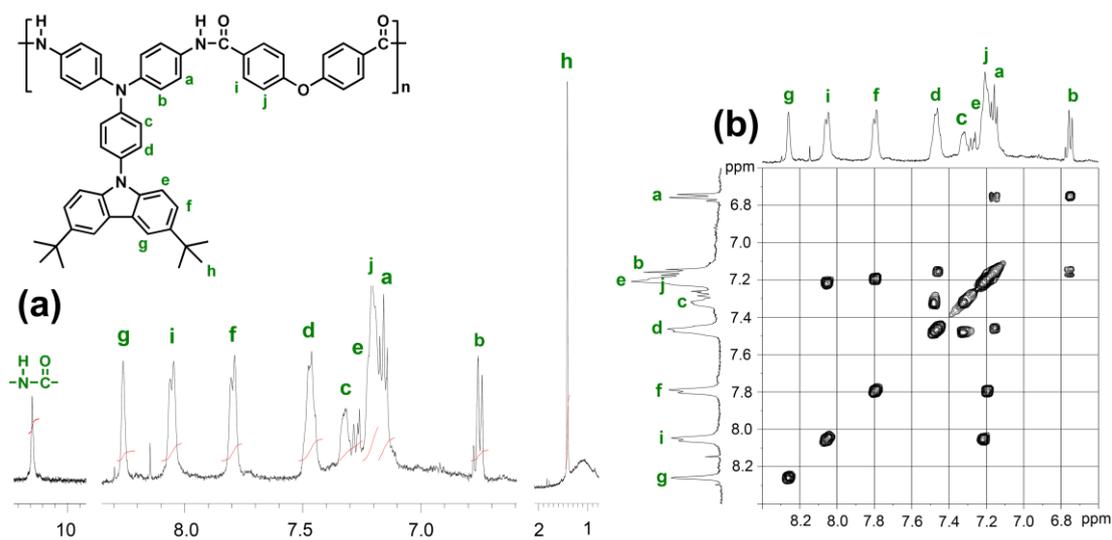
**Fig. S1.** IR spectra of dinitro compound **1** and target diamine monomer **2**.



**Fig. S2** (a)  $^1\text{H}$  NMR spectrum of dinitro compound **1** in  $\text{DMSO-}d_6$ .



**Fig. S3.** Typical IR spectrum of polyamide **4b**.



**Fig. S4** (a) <sup>1</sup>H NMR spectrum and (b) aromatic portion of the <sup>1</sup>H-<sup>1</sup>H COSY spectrum of polyamide **5b** in DMSO-*d*<sub>6</sub>.

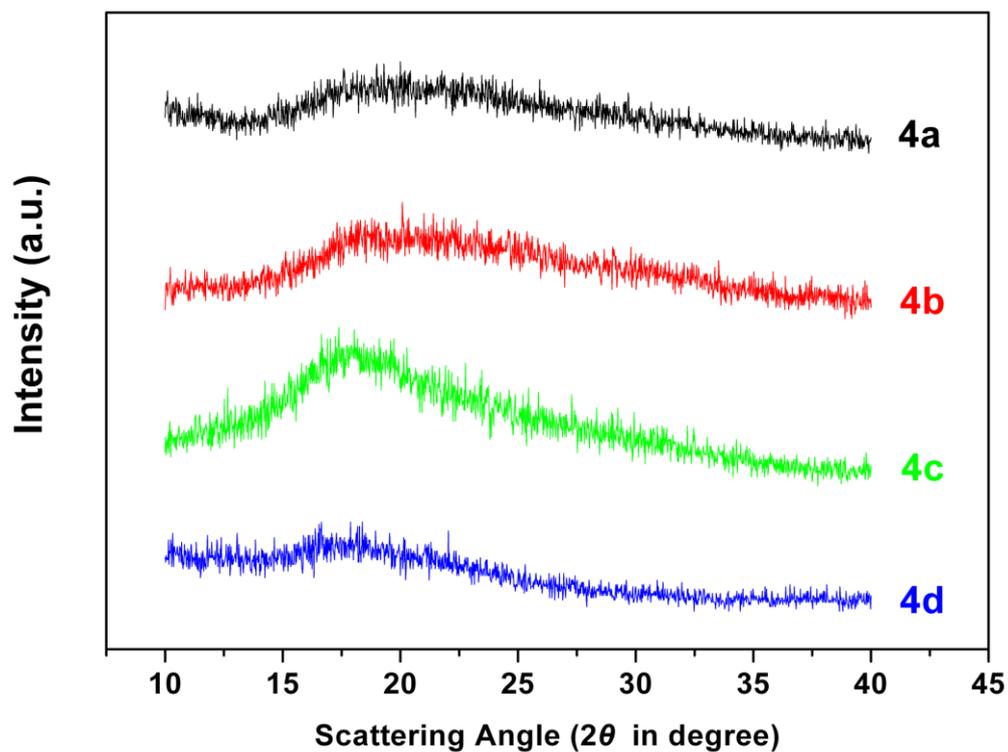


Fig. S5 WAXD patterns of the polyamide films.

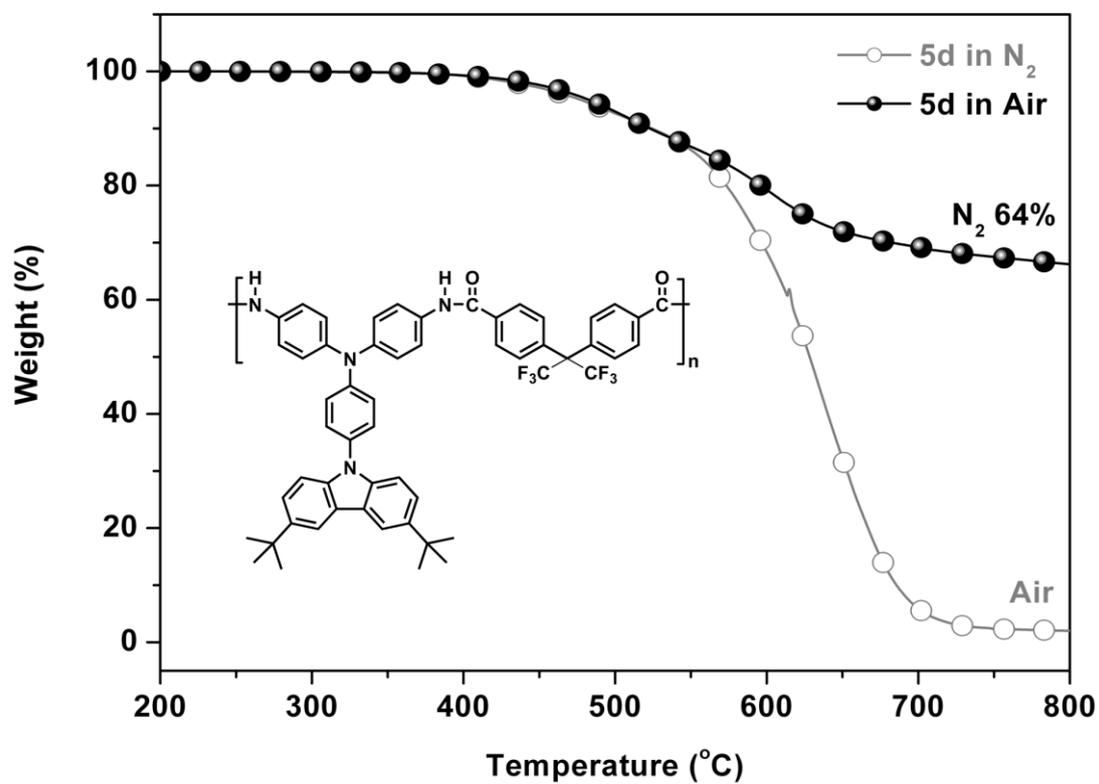
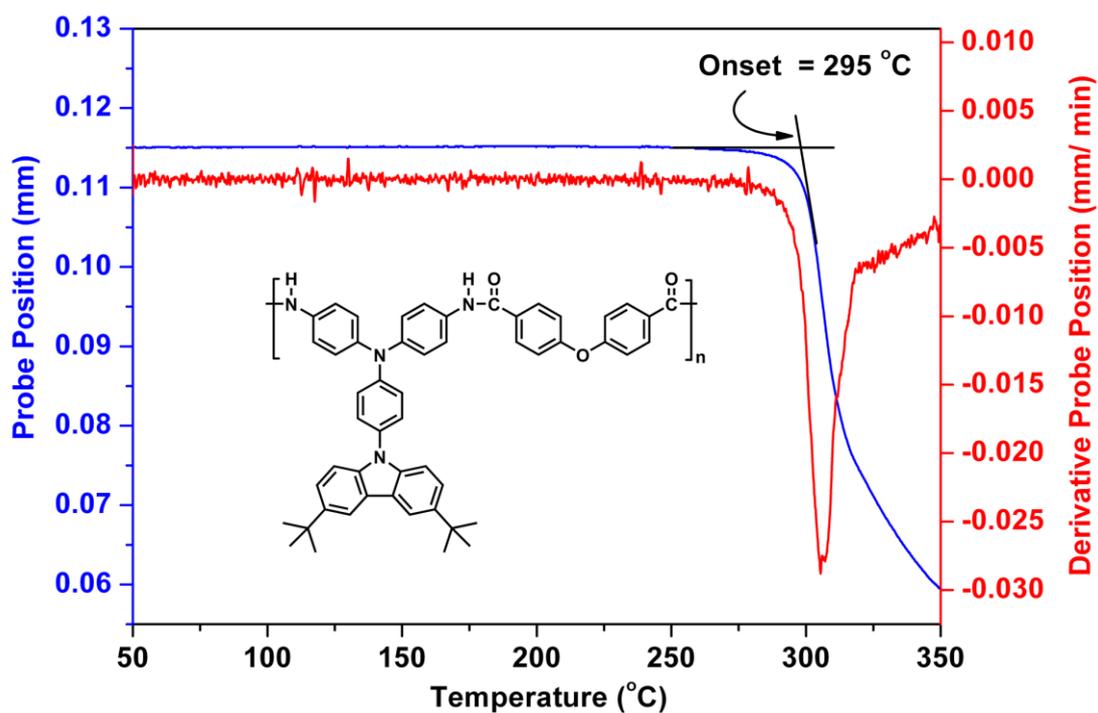
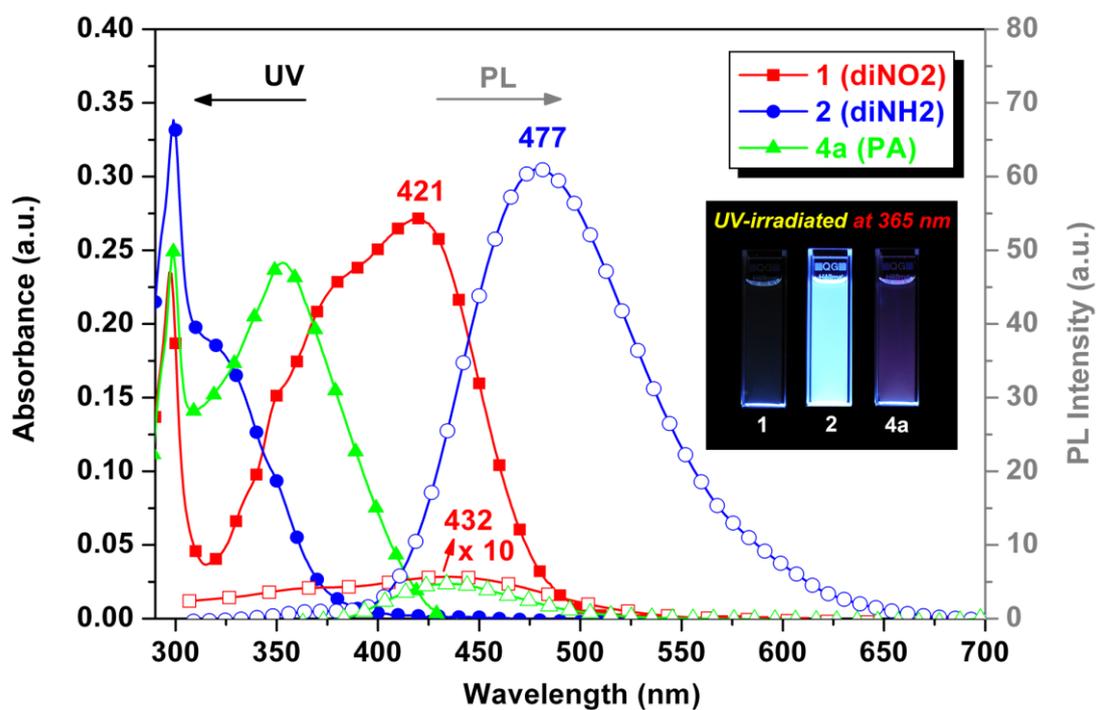


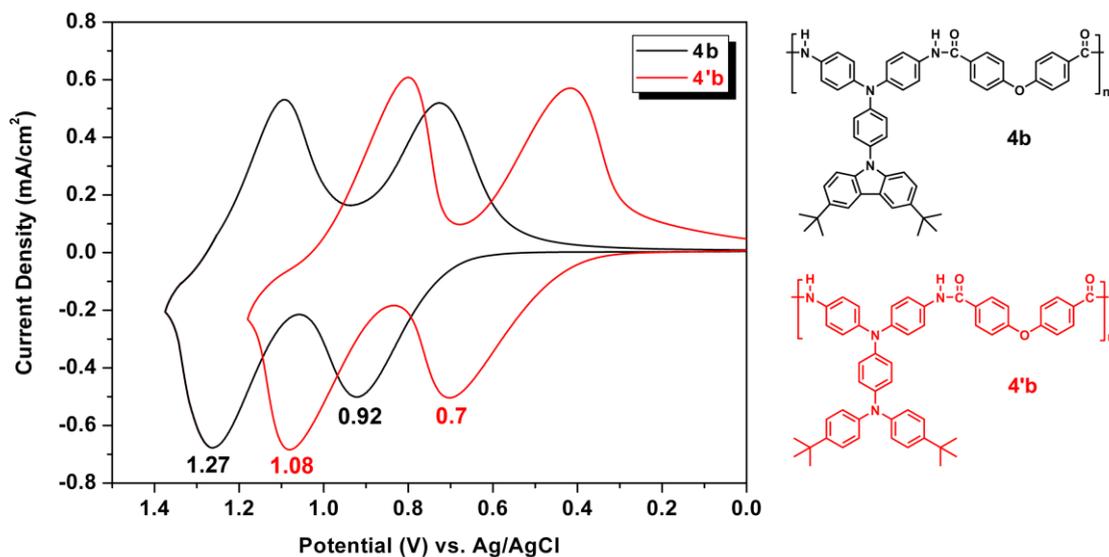
Fig. S6 TGA curves of polyamide 4d with a heating rate of 20 °C/min.



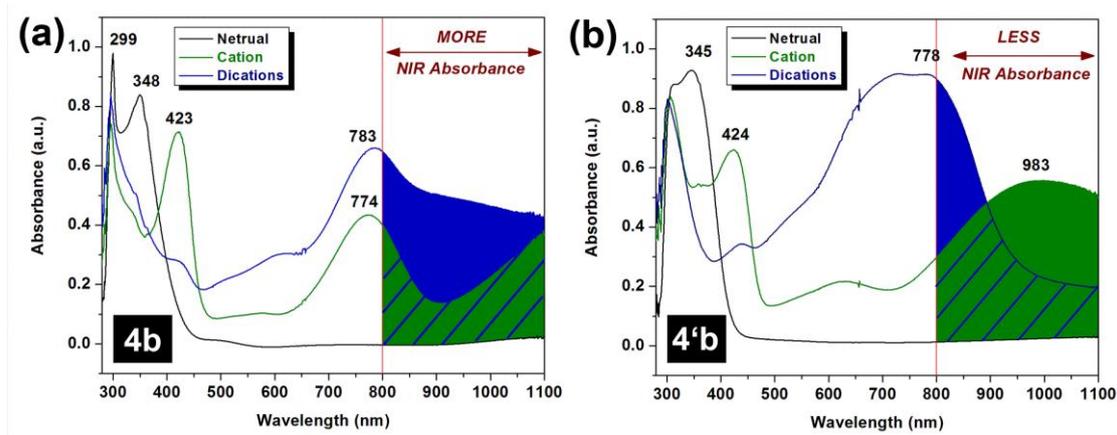
**Fig. S7** TMA of polyamide **4b** with a heating rate of 10 °C/min.



**Fig. S8** UV-Vis absorption and PL spectra of the dilute solutions of compounds **1** and **2** and polyamide **4a** in NMP (10<sup>-5</sup> M). Photographs show the PL images of their solutions on exposure to a standard laboratory UV lamp (Excited at 365 nm).



**Fig. S9** CV diagrams of the cast films of polyamides **4b** and **4'b** on the ITO-coated glass slide in 0.1 M TBAP/CH<sub>3</sub>CN at a scan rate of 50 mV/s.



**Fig. S10** UV-Vis-NIR absorption spectra of the cast films of polyamides **4b** and **4'b** on the ITO-coated glass substrate in 0.1 M TBAP/CH<sub>3</sub>CN at their neutral, cation, and dication forms.