

Electronic Supplementary Material (ESI)

Poly(3-hexylthiophene)-*block*-Poly(5,8-di-p-tolylquinoxaline-2,3-diyl) Conjugated Rod-Rod Copolymers: One Pot Synthesis, Self-Assembly and Highly Selective Sensing for Cobalt

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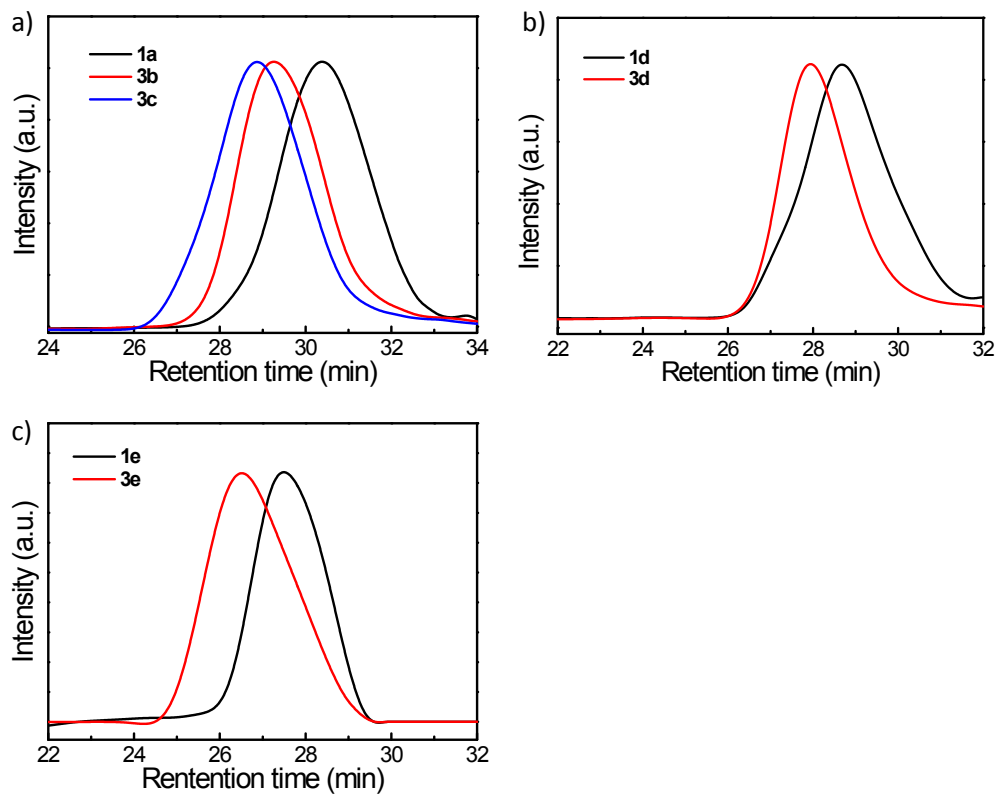


Fig. S1. Size exclusion chromatograms of P3HTmacroinitiators (**1**) and their respective P3HT-*b*-PDQ block copolymers (**3**). SEC conditions: eluent = THF; temperature = 40 °C.

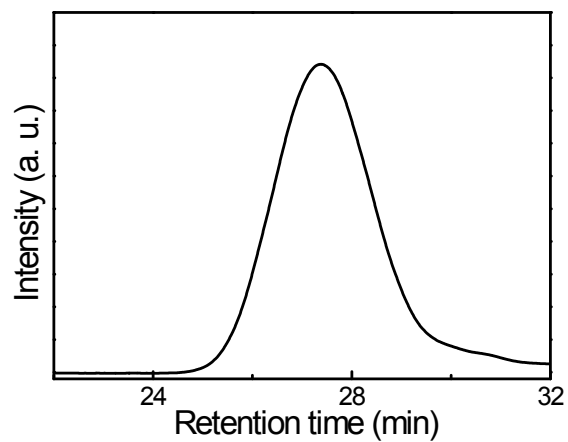


Fig. S2. Size exclusion chromatogram of PDQ homopolymer. SEC conditions: eluent = THF; temperature = 40 °C.

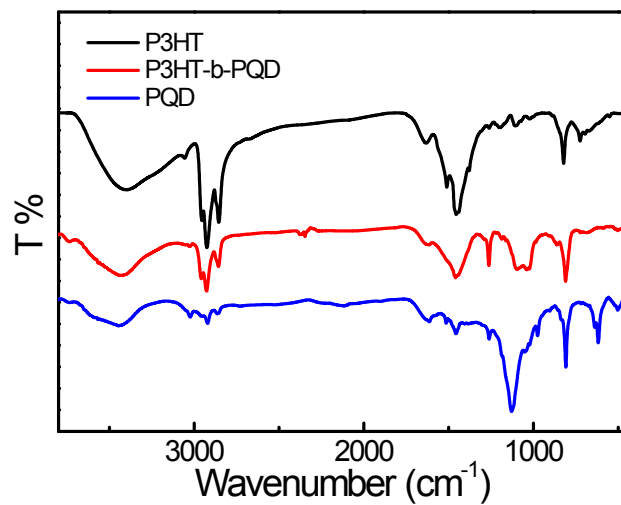


Fig. S3. FT-IR spectra of P3HT (**1a**), PDQ, and P3HT-*b*-PDQ block copolymer (**3a**) at 25 °C using KBr pellets.

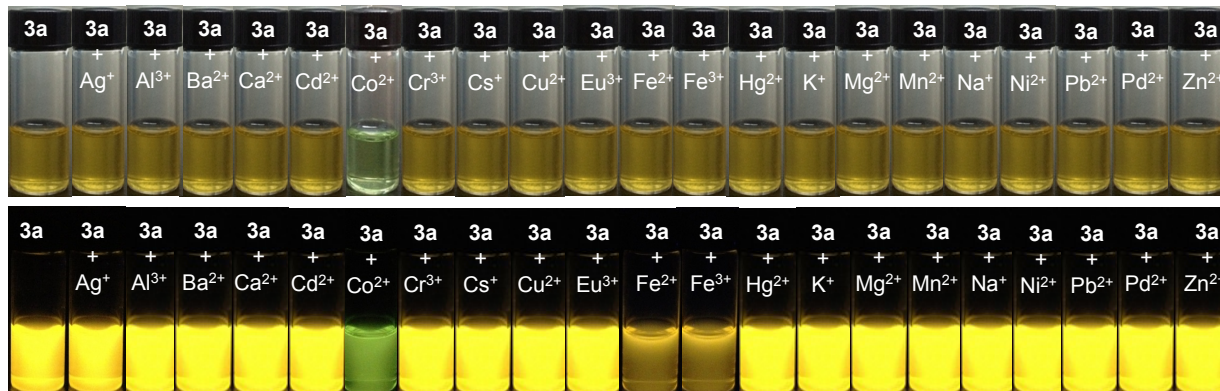


Fig. S4. Photographs of P3HT-*b*-PDQ block copolymer **3a** in THF (0.025 mg/mL) upon addition of aqueous solutions various metals ions (2.0×10^{-6} M) under room light (top) and irradiation at 365 nm (bottom) at 25 °C.

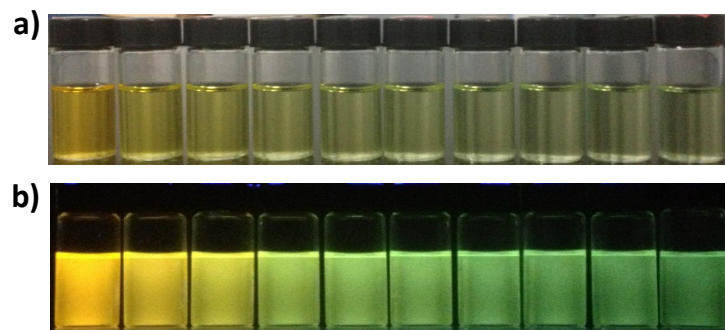


Fig. S5. Color (a) and emission (b) changes of P3HT-*b*-PDQ block copolymer **3a** in THF (0.025 mg/mL) upon addition of various amount of Co^{2+} in H_2O at 25 °C (concentration of Co^{2+} : from 0 to 2.0×10^{-6} M, $\lambda_{\text{ex}} = 365$ nm).

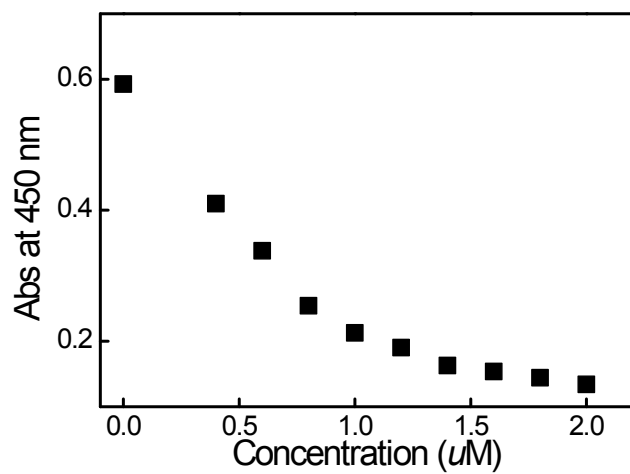


Fig. S6. Absorption changes (450 nm) of P3HT-*b*-PDQ block copolymer **3a** in THF (0.025 mg/mL) upon addition of various amount of Co²⁺ in H₂O at 25 °C (concentration of Co²⁺: from 0 to 2.0 × 10⁻⁶ M).

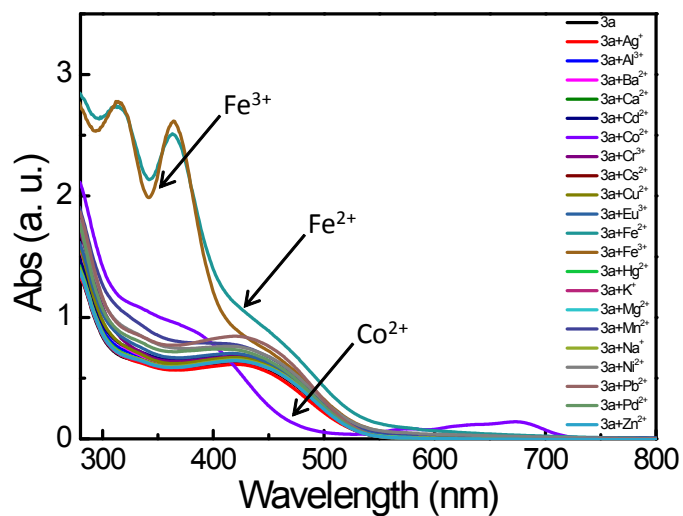


Fig. S7. UV-vis absorption spectra of P3HT-*b*-PDQ block copolymer **3a** (0.025 mg/mL) in THF upon addition of various metal ions in H₂O (2.0×10^{-6} M) at 25 °C.

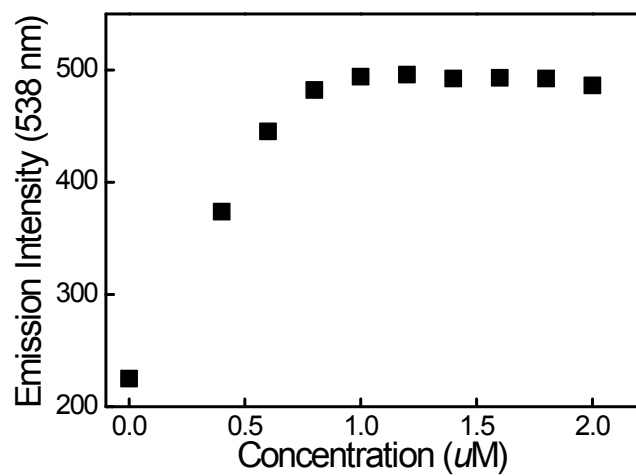


Fig. S8. Changes of fluorescent intensity (538 nm) of P3HT-*b*-PDQ block copolymer **3a** in THF (0.025 mg/mL) upon addition of various amount of Co²⁺ in H₂O at 25°C (concentration of Co²⁺: from 0 to 2.0 × 10⁻⁶ M).

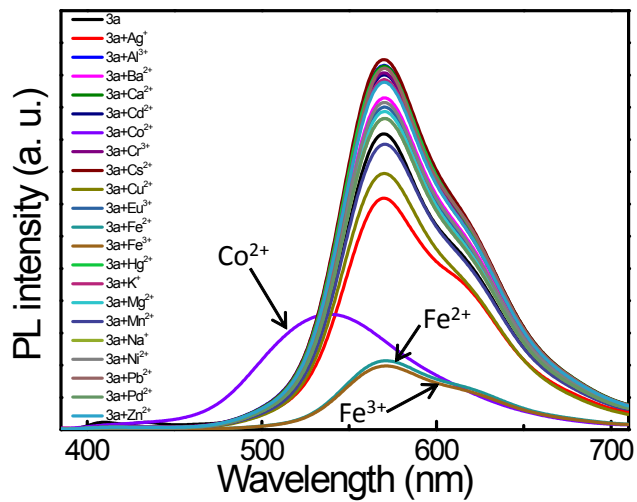


Fig. S9. Fluorescent spectra of P3HT-*b*-PDQ block copolymer **3a** (0.025 mg/mL) in THF upon addition of various metal ions in H₂O (2.0×10^{-6} M) at 25 °C.

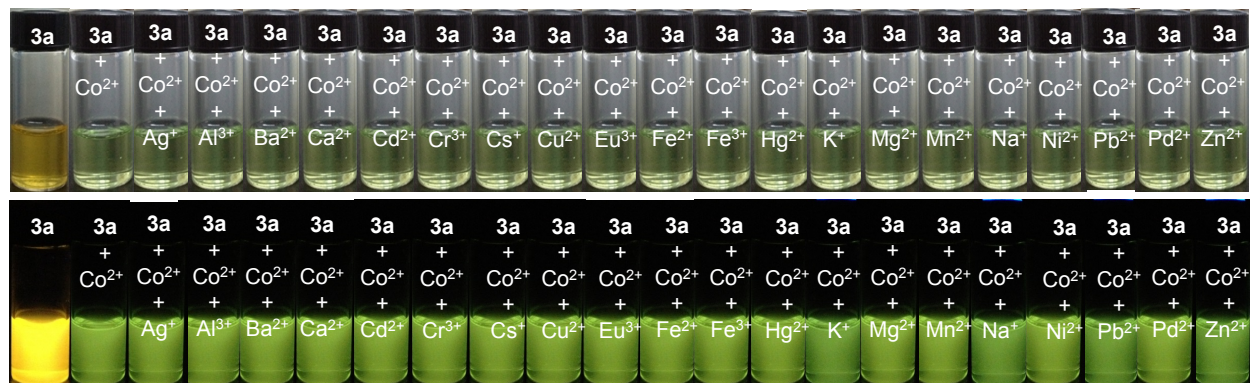


Fig. S10. Photographs of P3HT-*b*-PDQ block copolymer **3a** (0.025 mg/mL) and **3a** (0.025 mg/mL) containing Co^{2+} (1.6×10^{-6} M) in THF and in presence of aqueous solutions of various metal ions (6.0×10^{-6} M) under room light (top) and irradiation at 365 nm (bottom) at 25 °C.

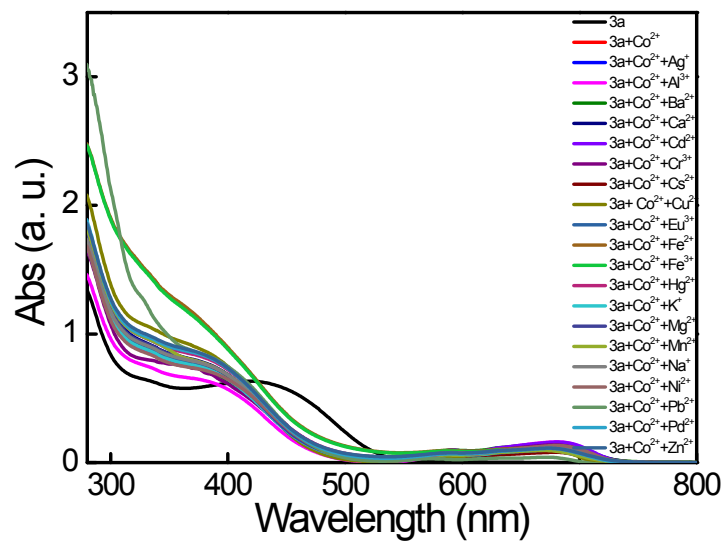


Fig. S11. Absorption spectra of P3HT-*b*-PDQ block copolymer **3a** (0.025 mg/mL) containing Co^{2+} (1.6×10^{-6} M) in THF upon addition of various metal ions in H_2O (6.0×10^{-6} M) at 25 °C.

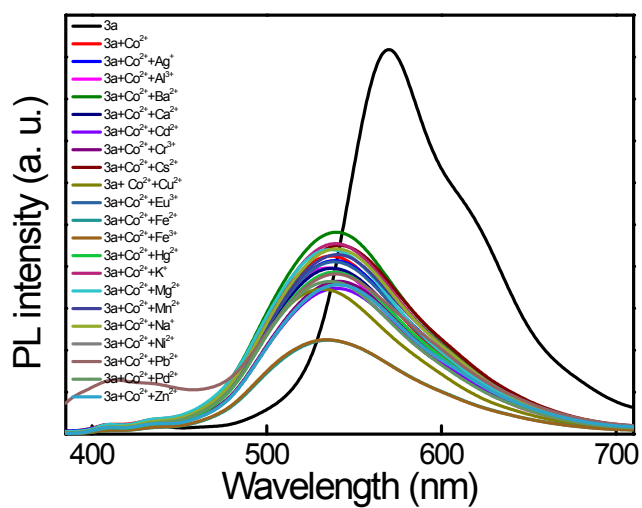


Fig. S12. Fluorescent spectra of P3HT-*b*-PDQ block copolymer **3a** (0.025 mg/mL) containing Co²⁺ (1.6×10^{-6} M) in THF upon addition of aqueous solutions of various metal ions (6.0×10^{-6} M) at 25 °C.

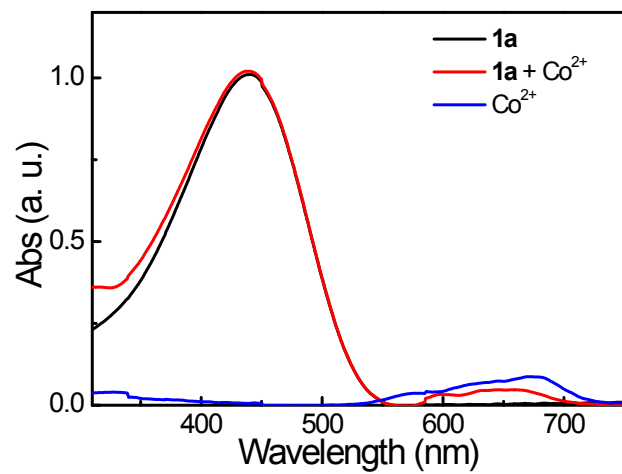


Fig. S13. Normalized absorption spectra of P3HT (**1a** in THF), Co²⁺ (in H₂O), and the mixture of **1a** (in THF) and Co²⁺ (in H₂O) measured at 25 °C.

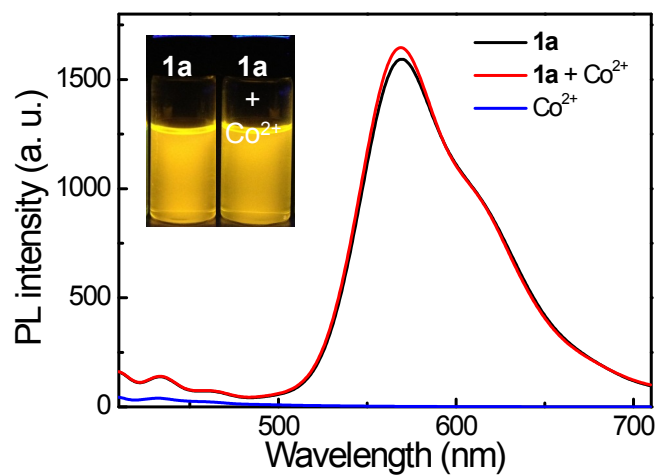


Fig. S14. Fluorescent spectra of homopolymer P3HT (**1a**, in THF), Co²⁺ (in H₂O) and the mixture of **1a** (in THF) and Co²⁺ (in H₂O) measured in THF at 25 °C.

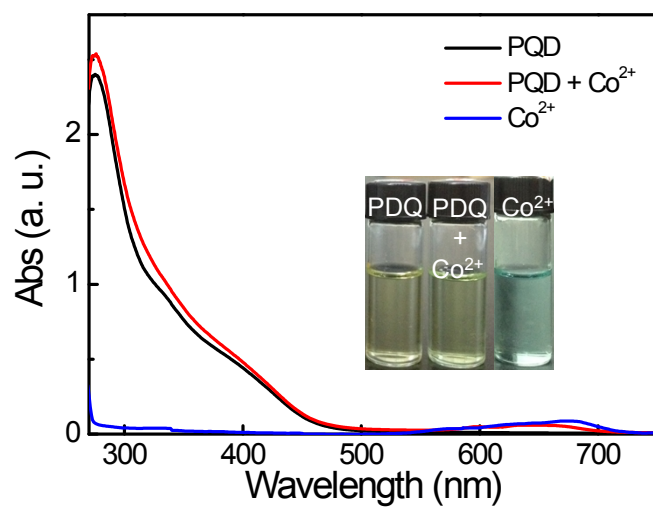


Fig. S15. Normalized absorption spectra of PDQ, Co^{2+} and the mixture of PDQ (in THF) and Co^{2+} (in H_2O) measured at 25 °C.

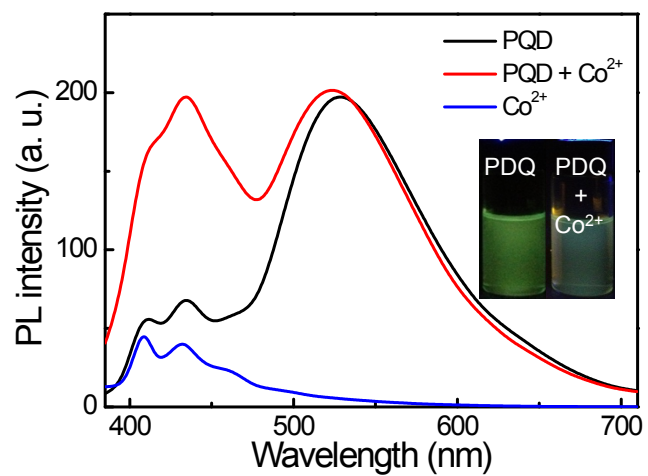


Fig. S16. Fluorescent spectra of homopolymer PDQ in THF, Co²⁺ in H₂O, and the mixture of PDQ (in THF) with Co²⁺ (in H₂O) measured at 25 °C.

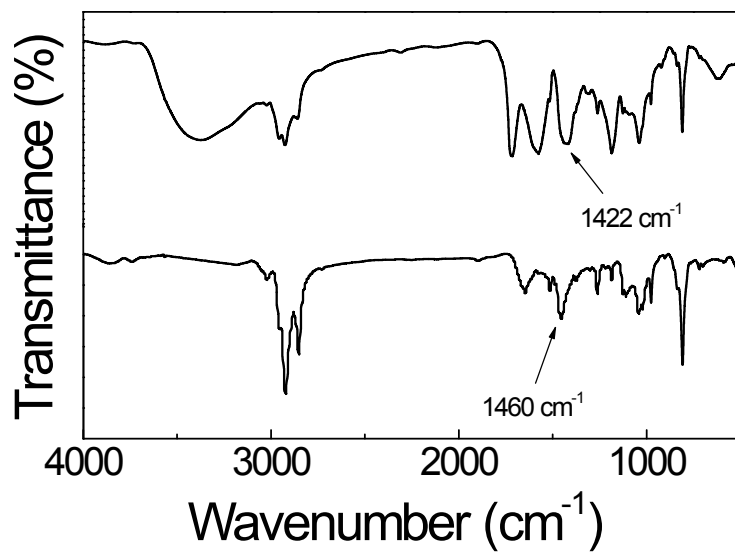


Fig. S17. IR spectra obtained for P3HT-*b*-PDQ block copolymer **3a** (down) before and (top) after addition of Co²⁺.

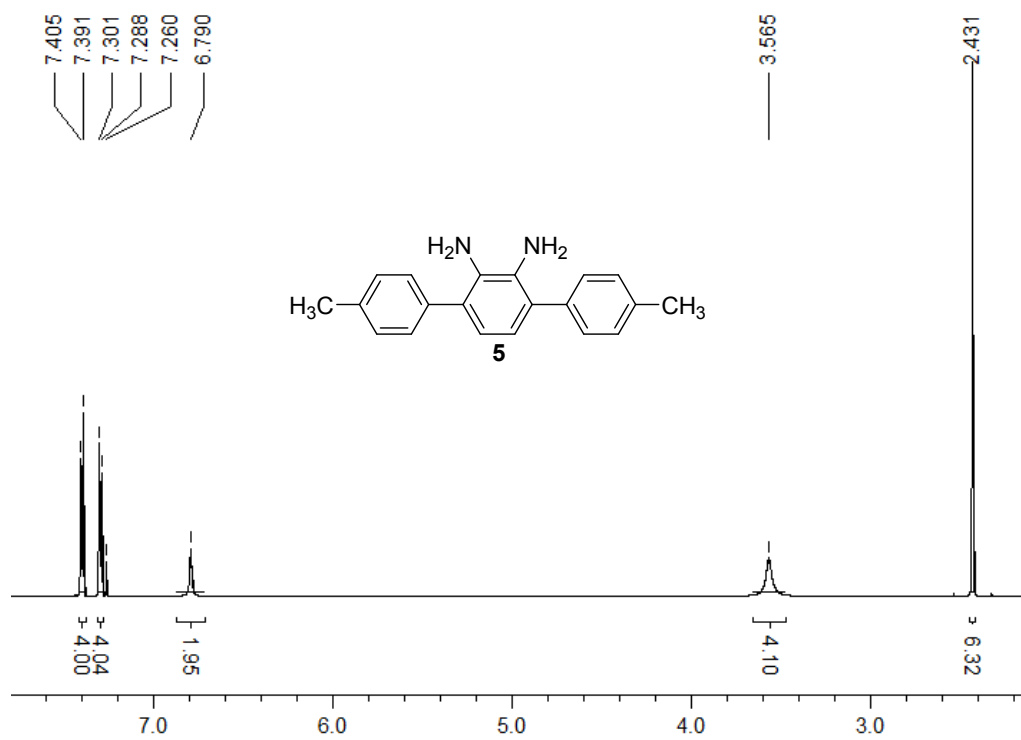


Fig. S18. ¹H NMR (600 MHz) spectrum of compound **5** measured in CDCl₃ at 25 °C.

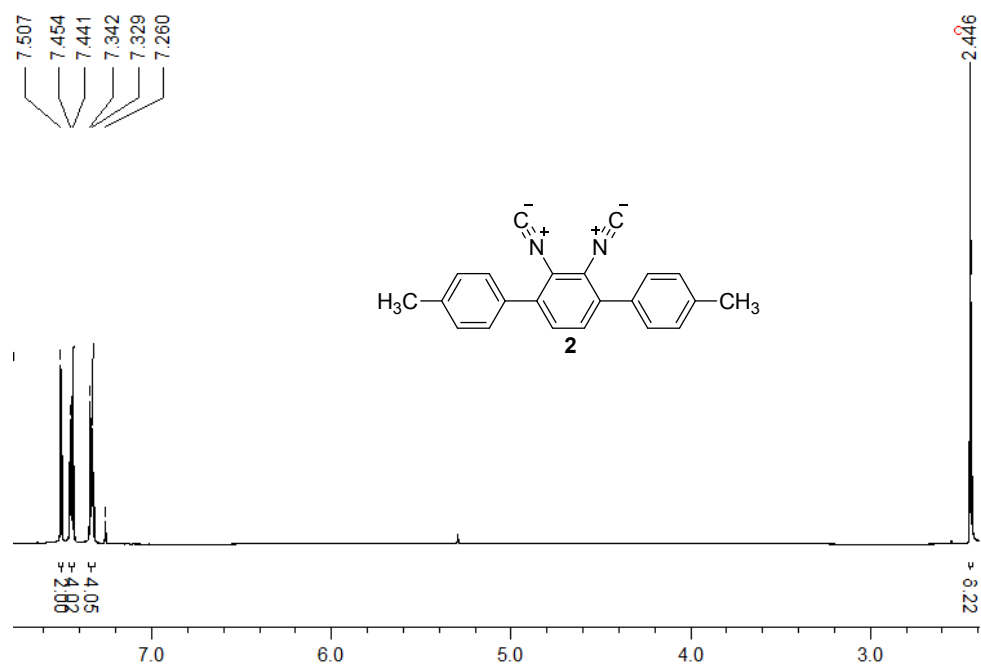


Fig. S19. ¹H NMR (600 MHz) spectrum of monomer **2** measured in CDCl₃ at 25 °C.

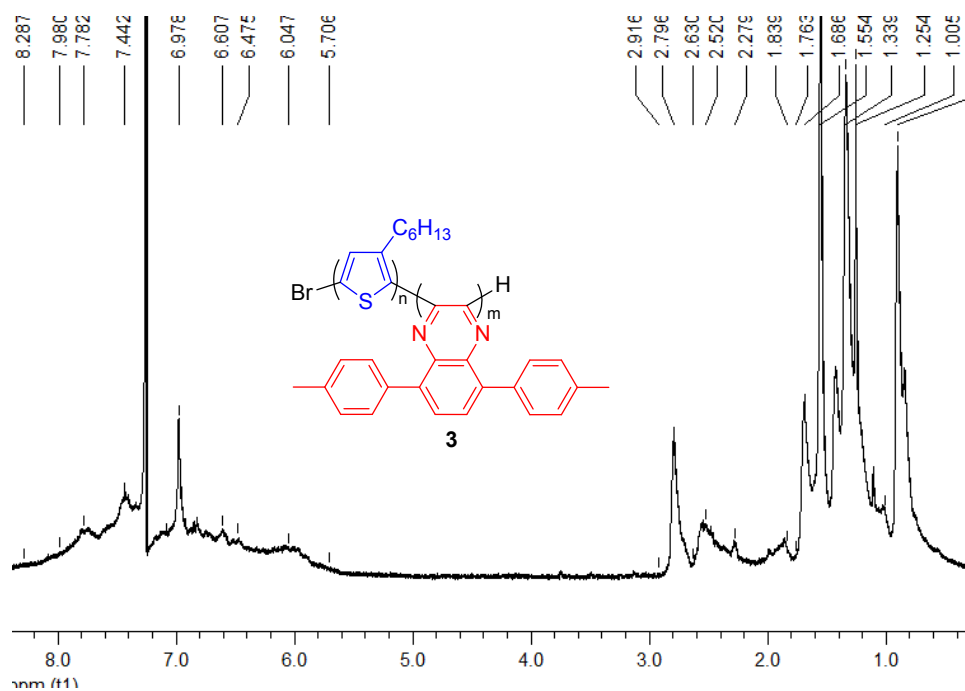


Fig. S20. ^1H NMR (400 MHz) spectrum of P3HT-*b*-PDQ block copolymer (**3a**) measured in CDCl_3 at 25 °C.

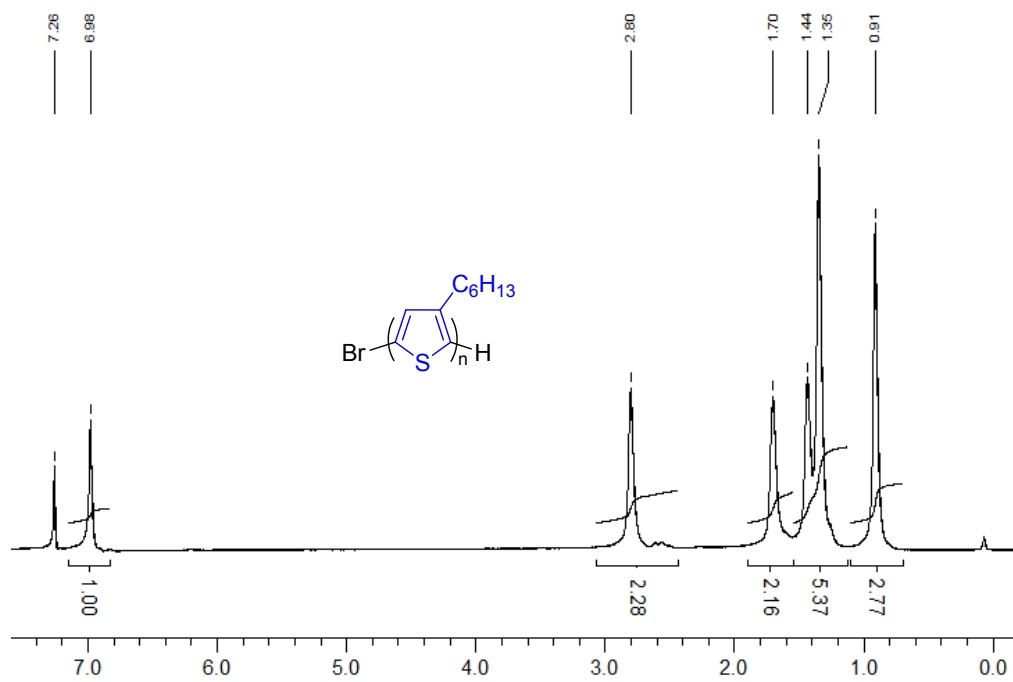


Fig. S21. ¹H NMR (600 MHz) spectrum of P3HT (**3a**) measured in CDCl₃ at 25 °C.

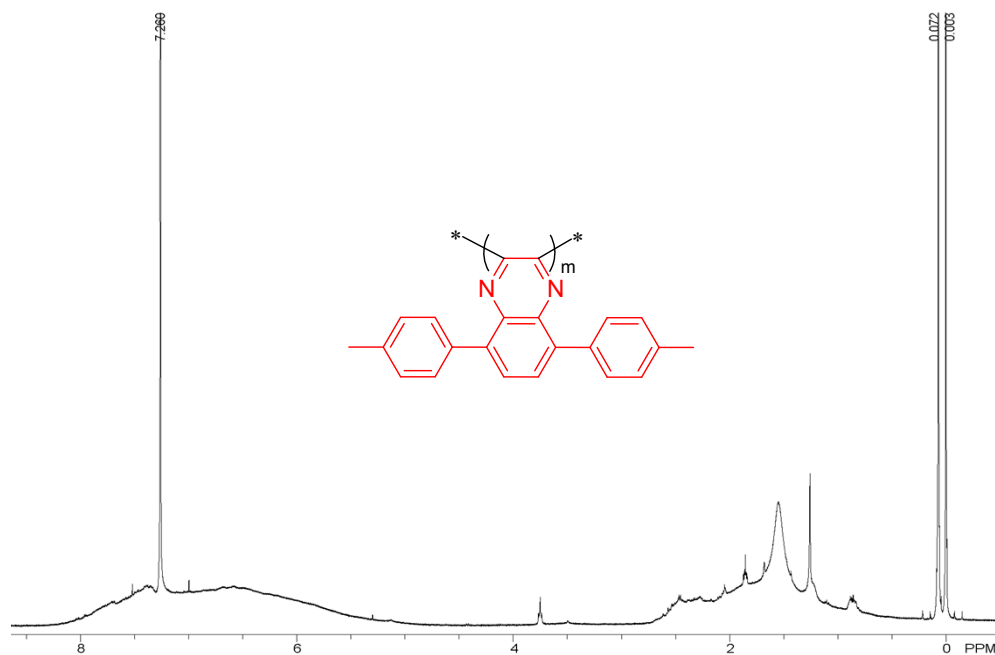


Fig. S22. ^1H NMR (400 MHz) spectrum of homopolymer PDQ measured in CDCl_3 at 25 $^\circ\text{C}$.