Electronic Supplementary Material (ESI) for Polymer Chemistry.

Electronic Supplementary Information

Benzo[5]helicene-based conjugated polymers: synthesis, photophysical properties, and application for the detection of nitroaromatic explosives

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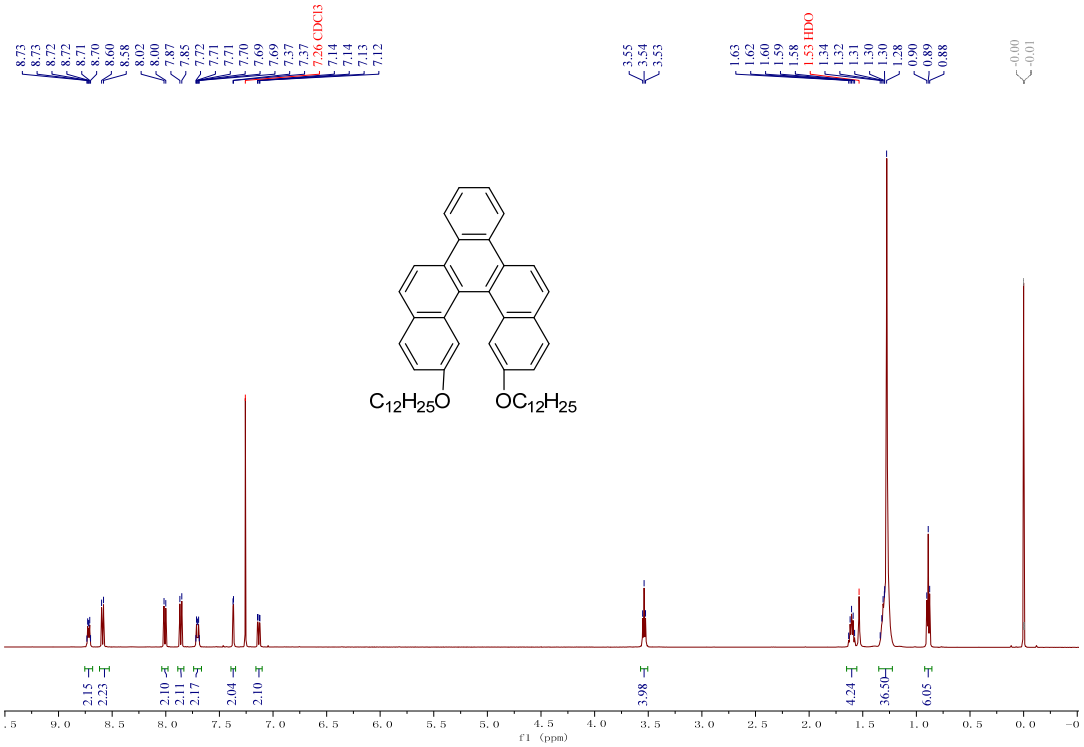


Fig. S1 ^{1}H NMR spectrum (500 MHz, $CDCl_3$) of **2**.

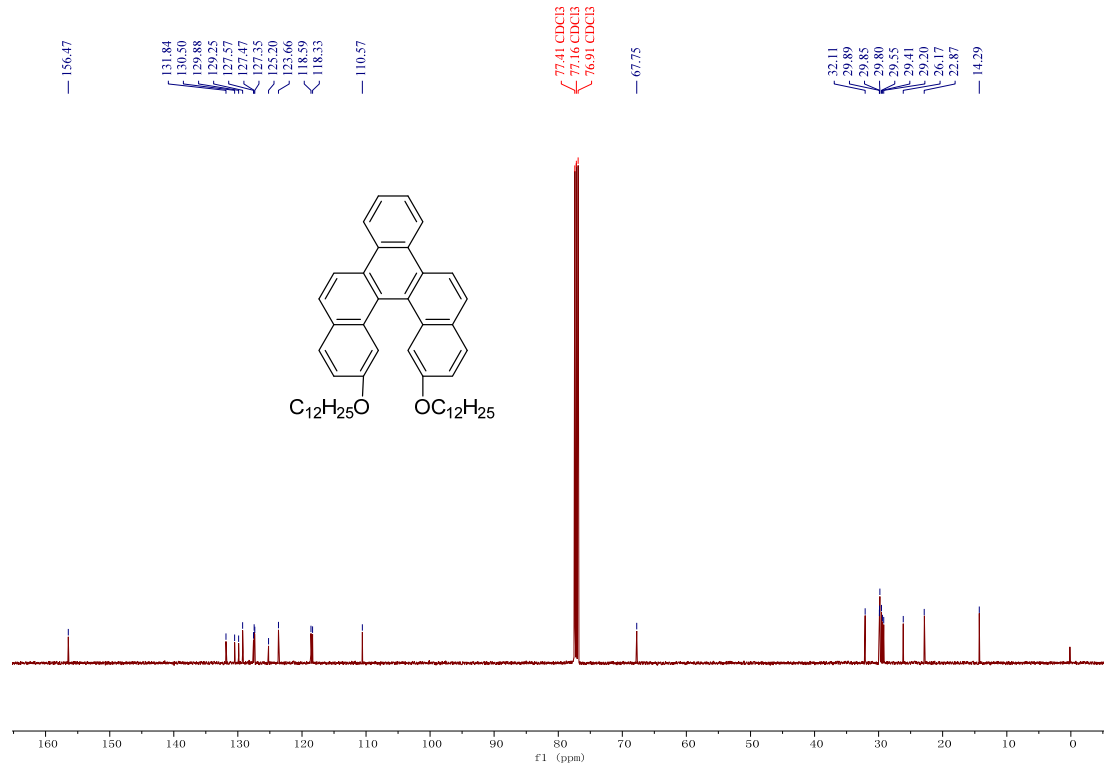


Fig. S2 ^{13}C NMR spectrum (125 MHz, $CDCl_3$) of **2**.

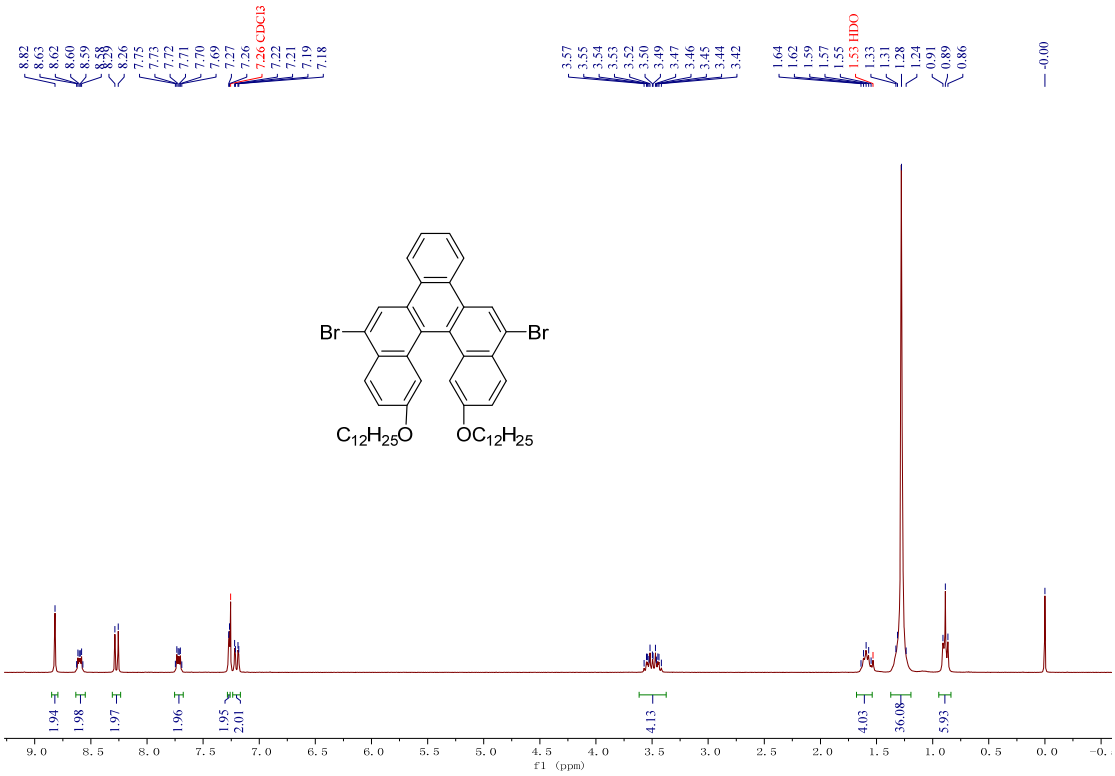


Fig. S3 ^{1}H NMR spectrum (300 MHz, $CDCl_3$) of **3**.

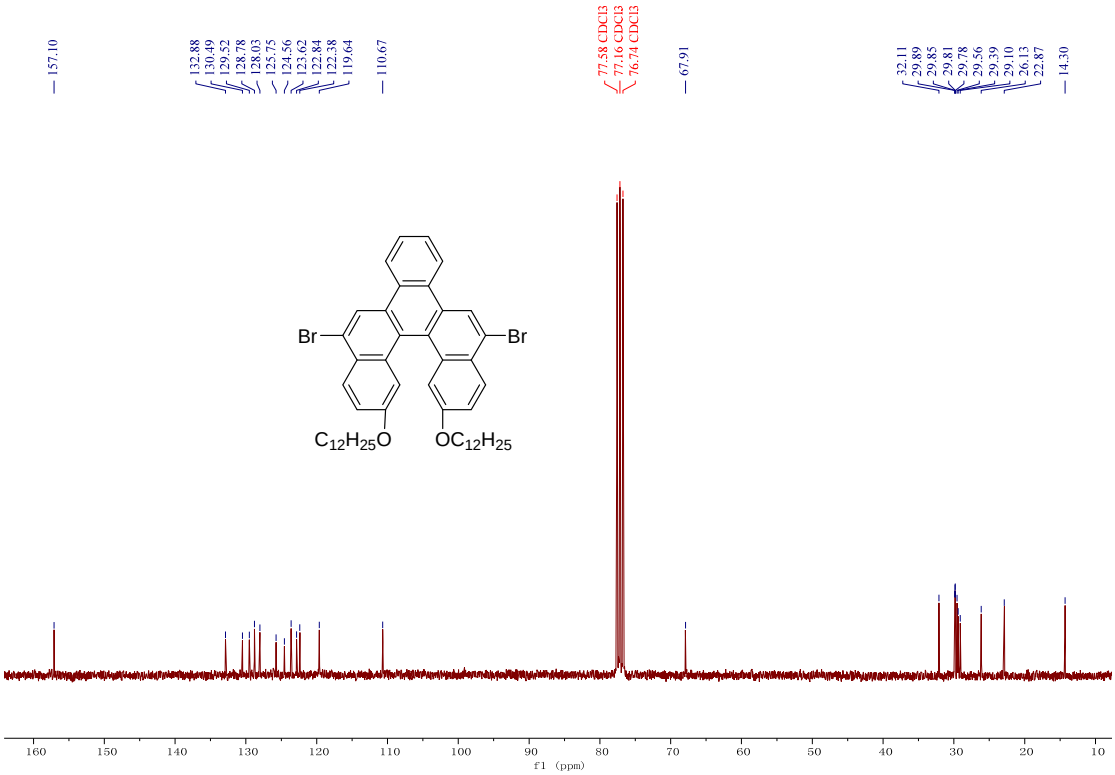
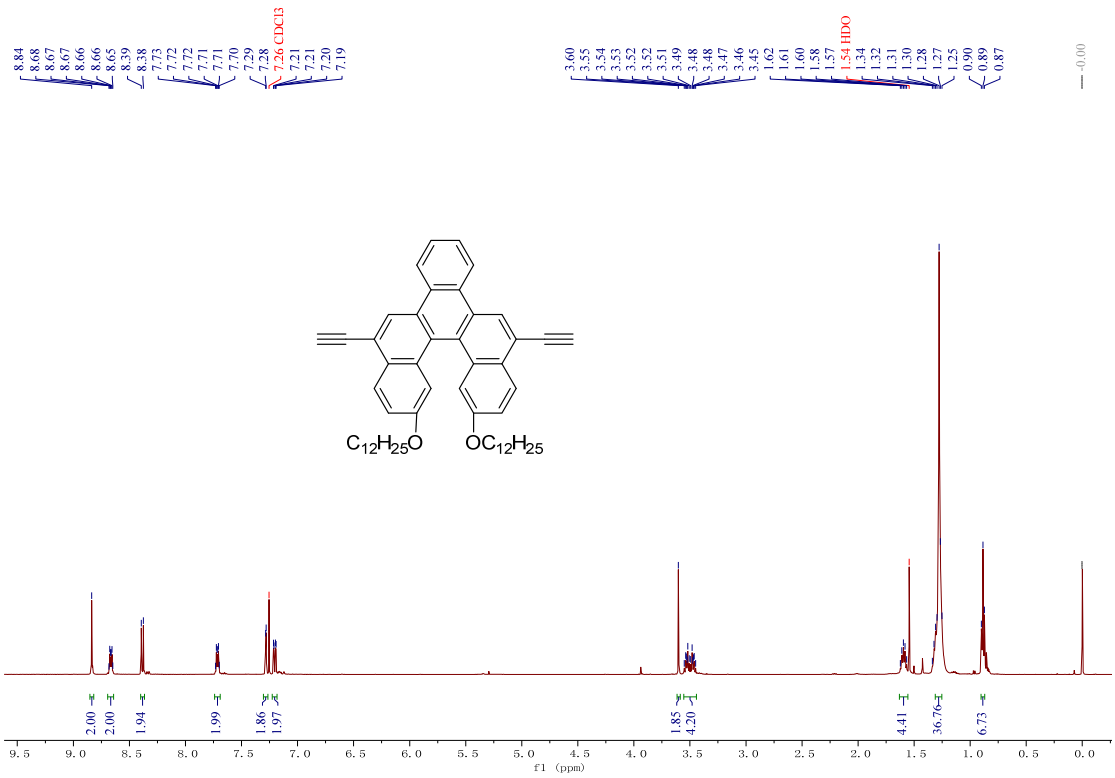


Fig. S4 ^{13}C NMR spectrum (75 MHz, $CDCl_3$) of **3**.



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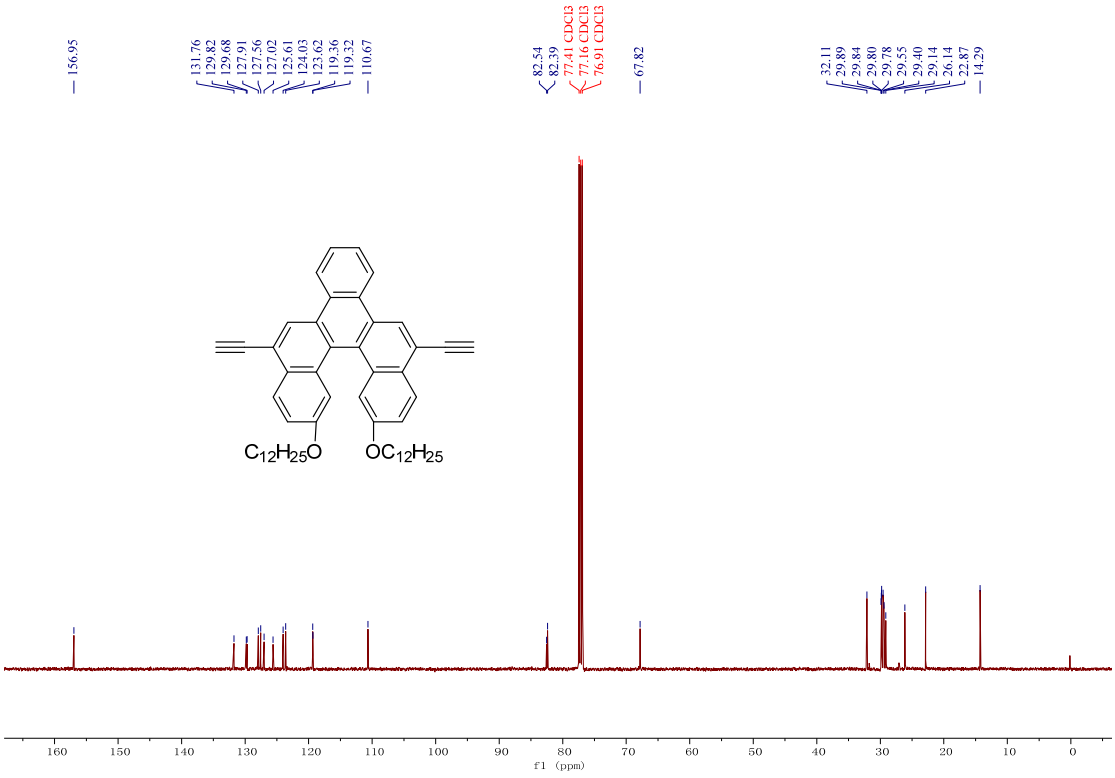

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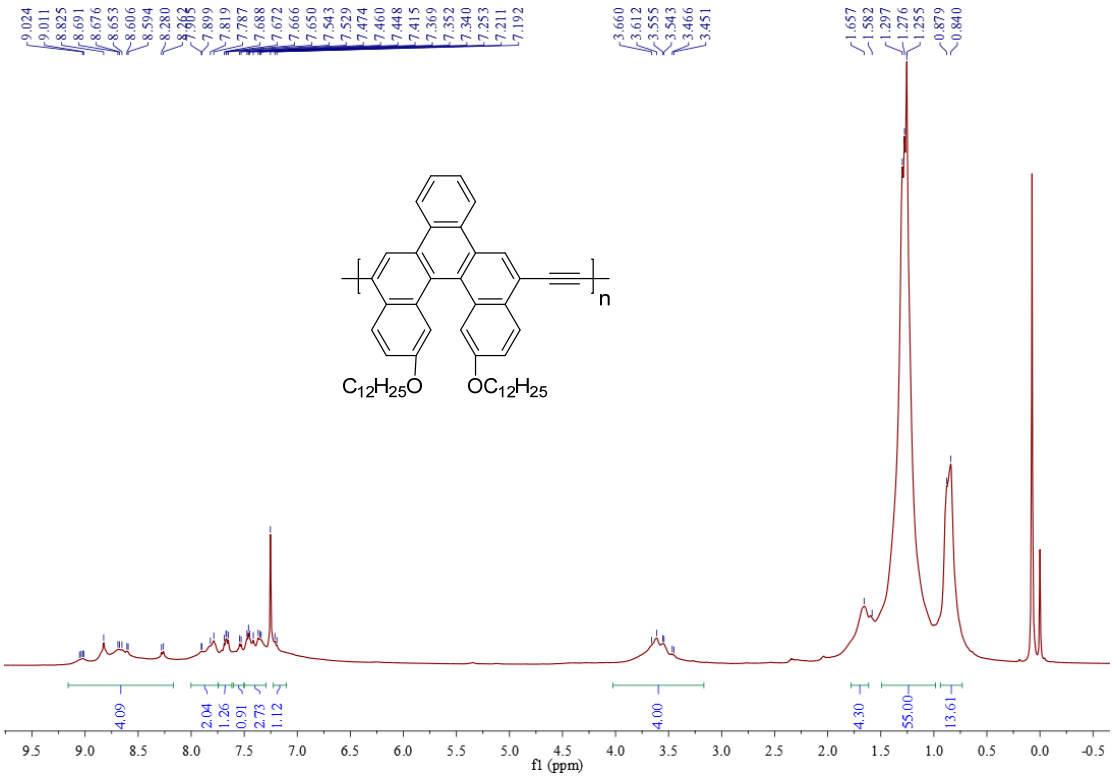
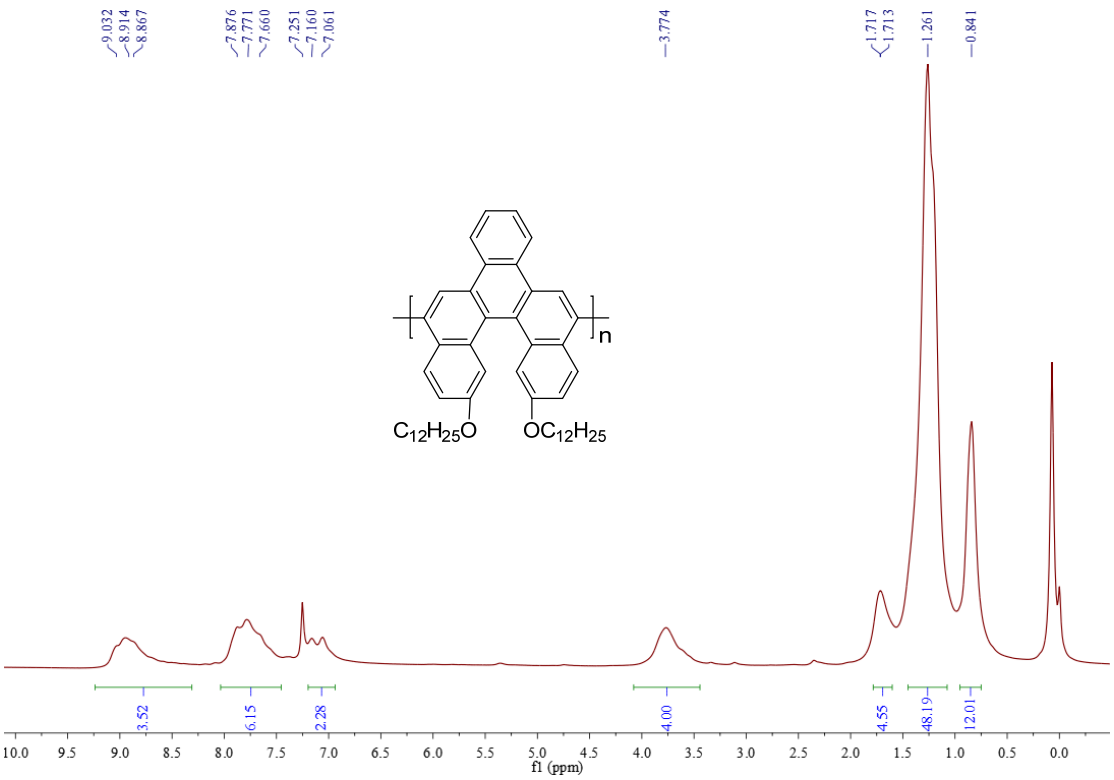


Fig. S7 ^{1}H NMR spectrum (500 MHz, $CDCl_3$) of **P1**.



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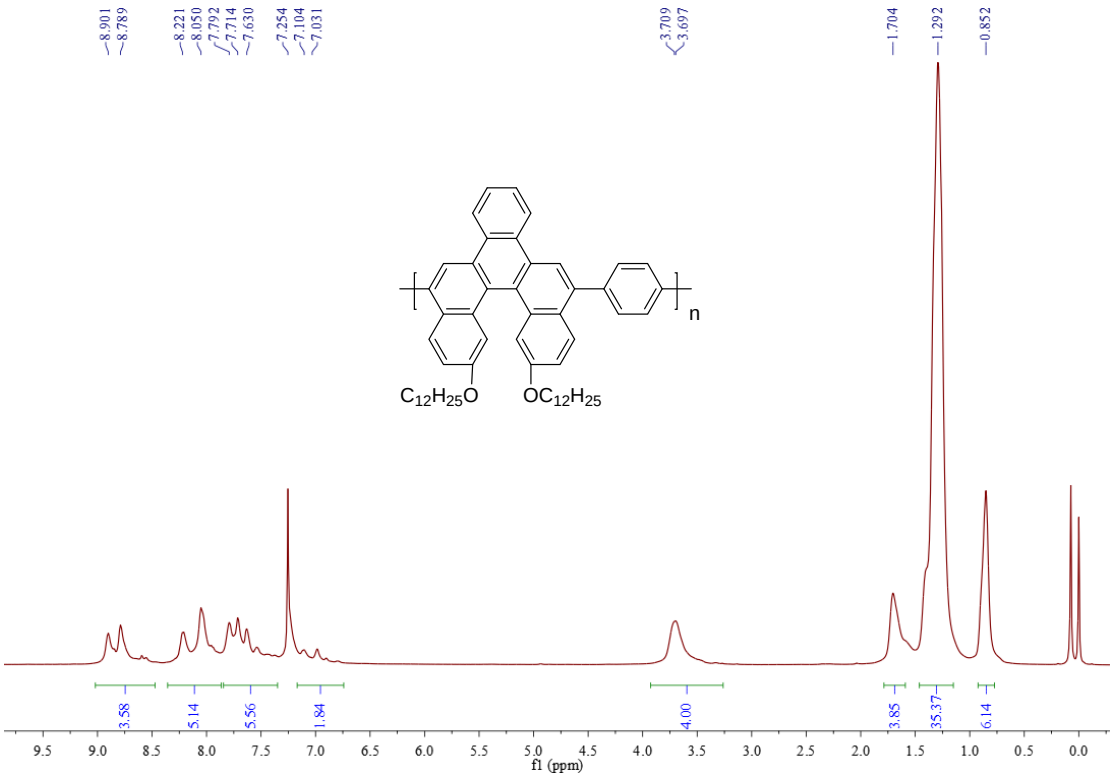

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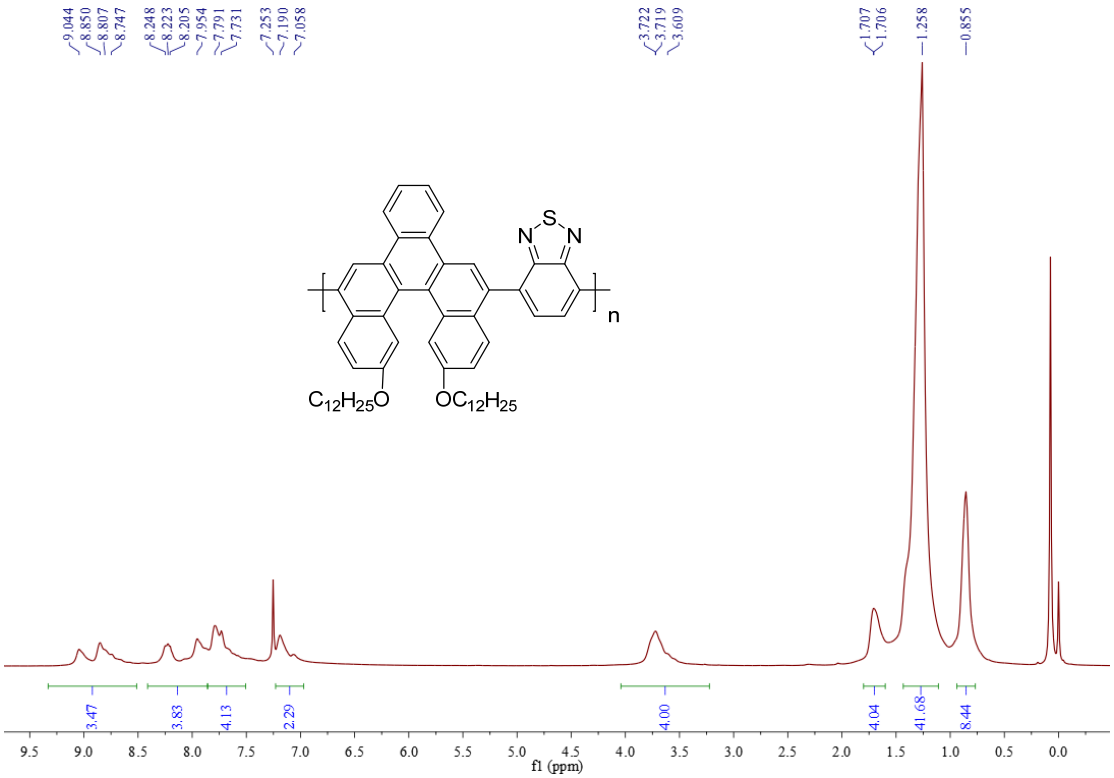


Fig. S10 ^{1}H NMR spectrum (500 MHz, $CDCl_3$) of **P4**.

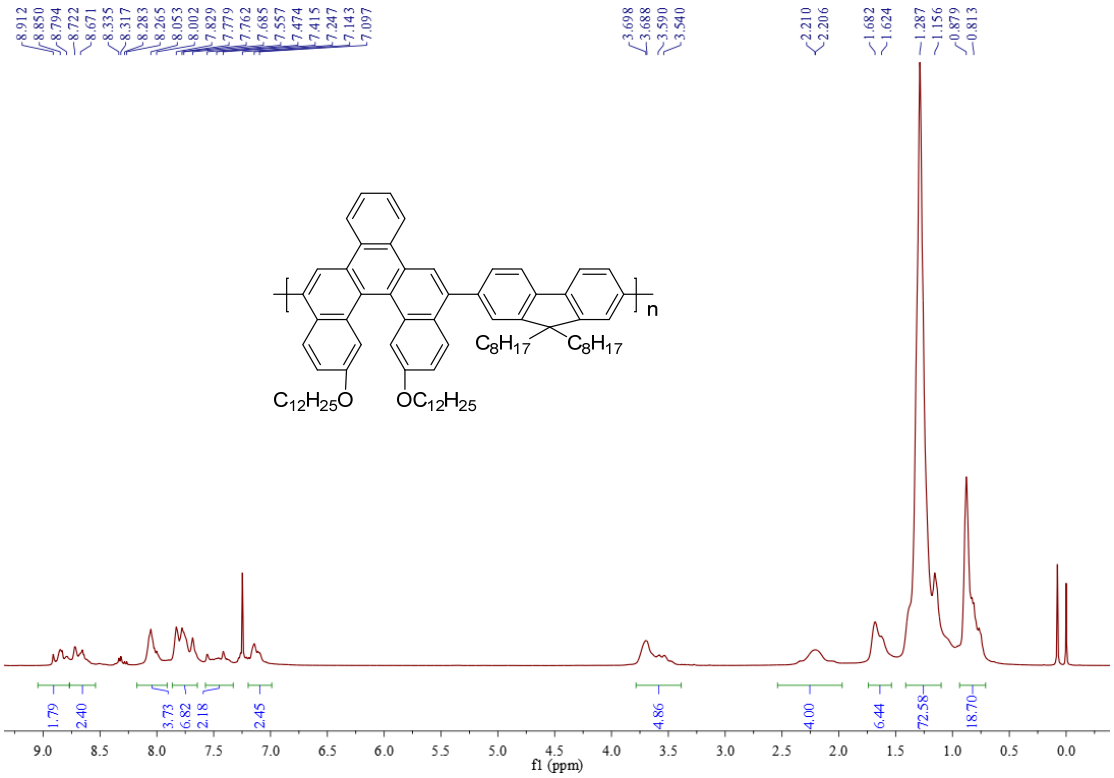


Fig. S11 ^{1}H NMR spectrum (500 MHz, $CDCl_3$) of **P5**.

S2. TGA thermogram of the polymers

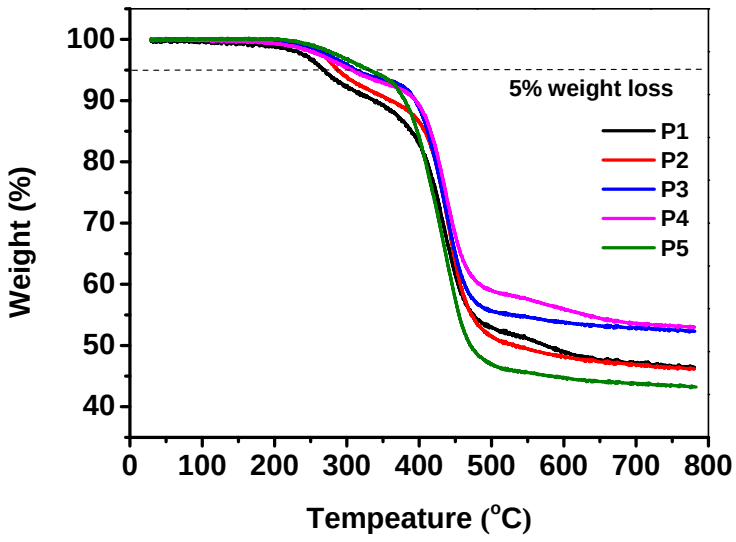
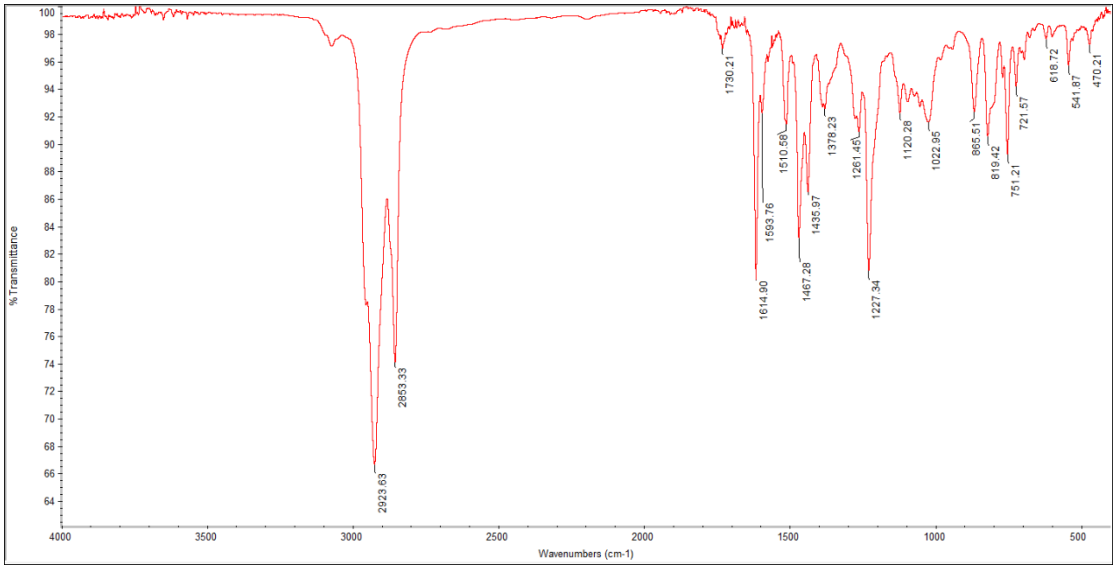


Fig. S12 TGA plots of the polymers with a heating rate of 10°C/min under nitrogen.

S3. IR spectra of the polymers



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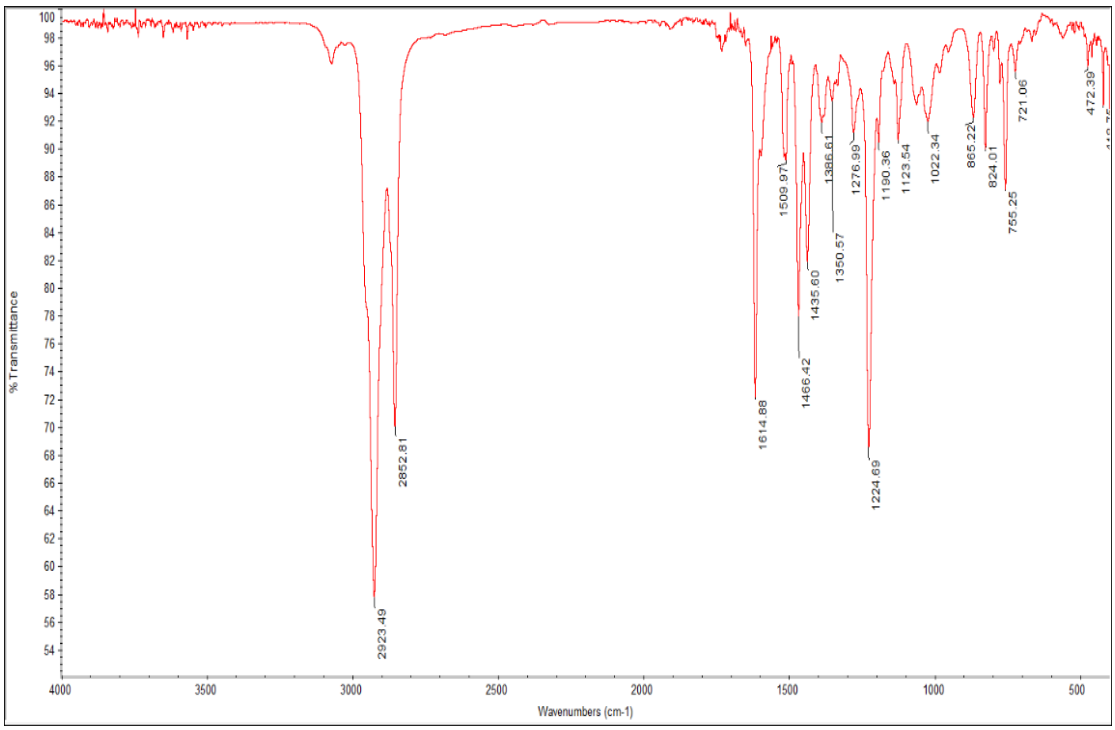
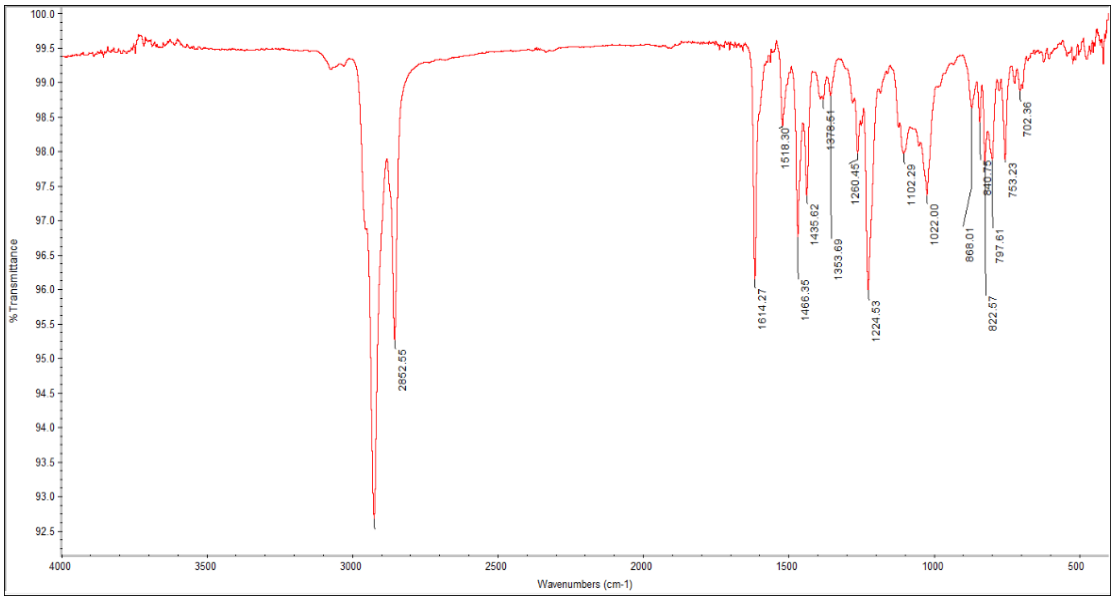


Fig. S14 IR spectrum of **P2**.



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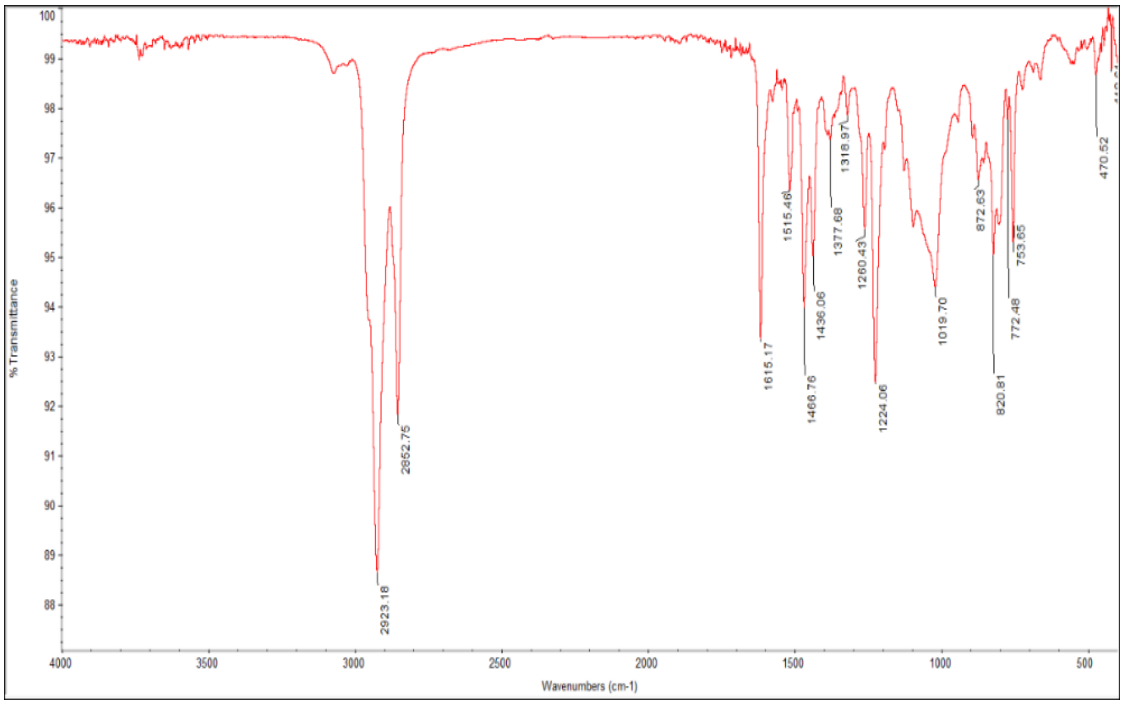

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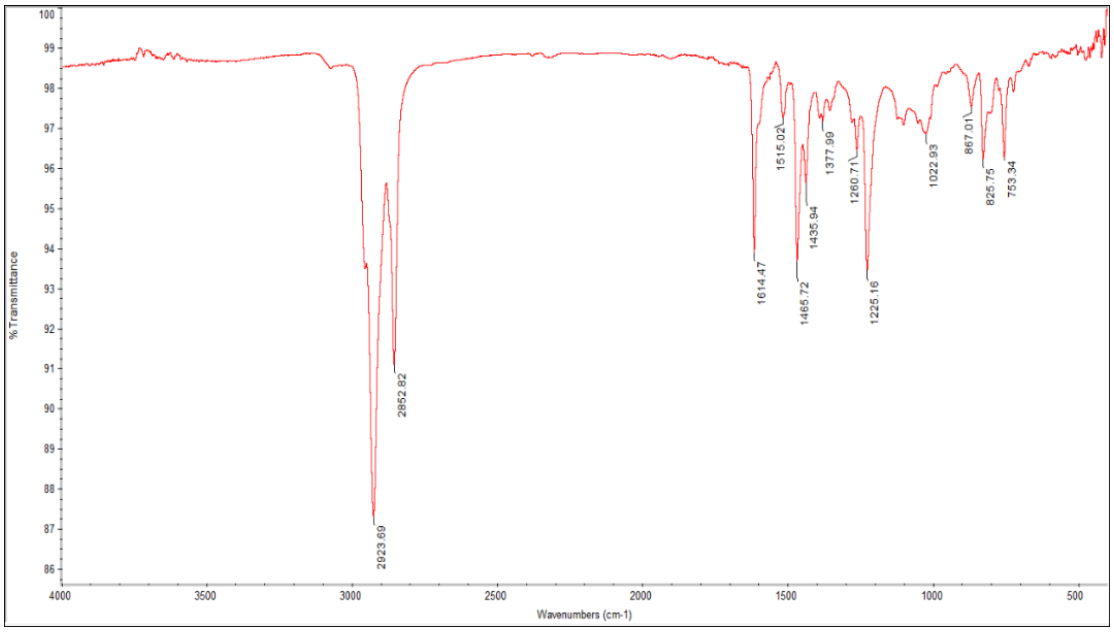

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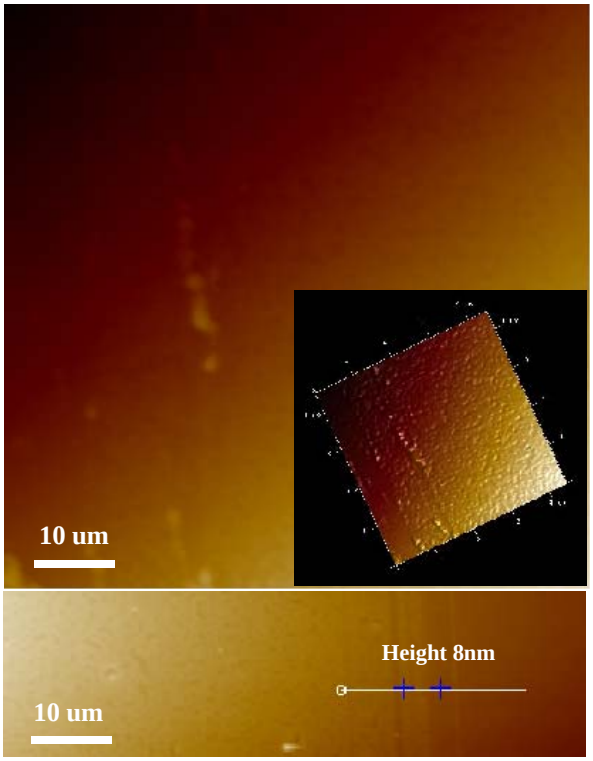
S4. AFM topography image of the spin-coated film of P2



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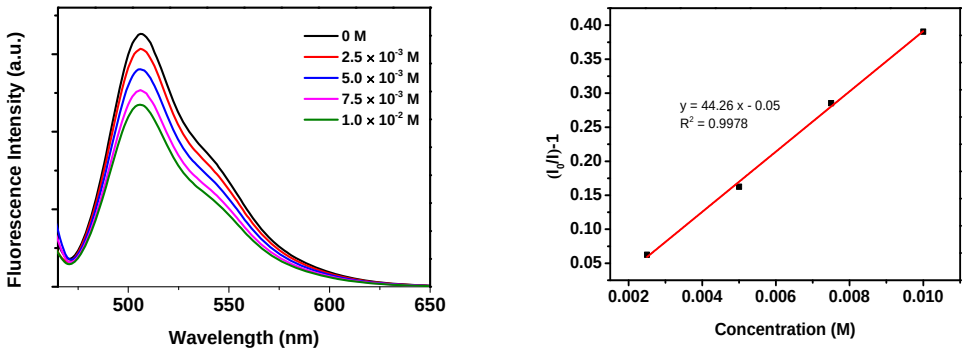

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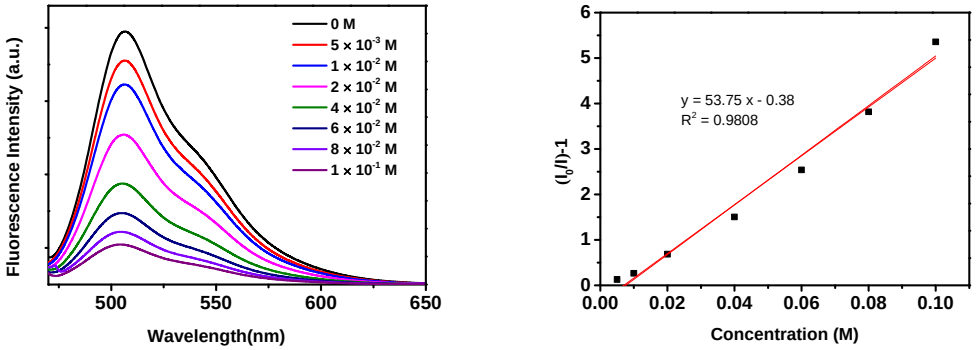
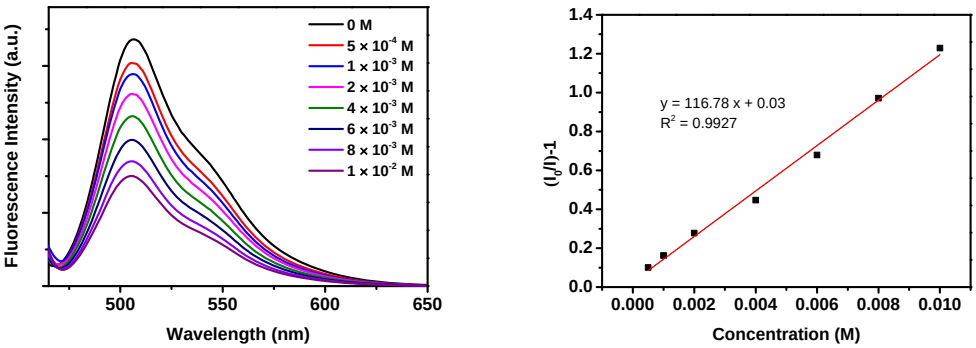


Fig. S20 Fluorescence spectra of **P1** in presence of different concentrations of DNT in $CDCl_3$ (left) and its corresponding Stern-Volmer plot (right).



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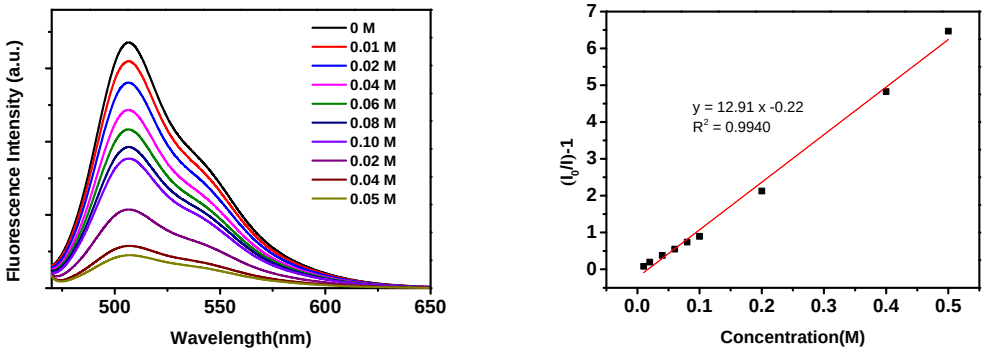

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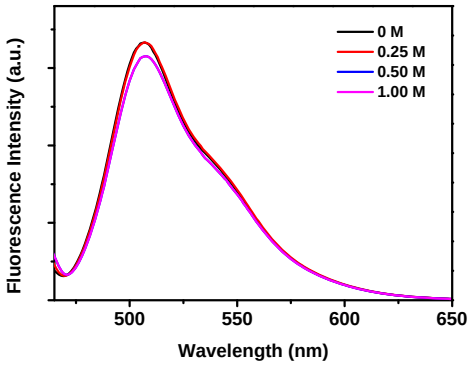
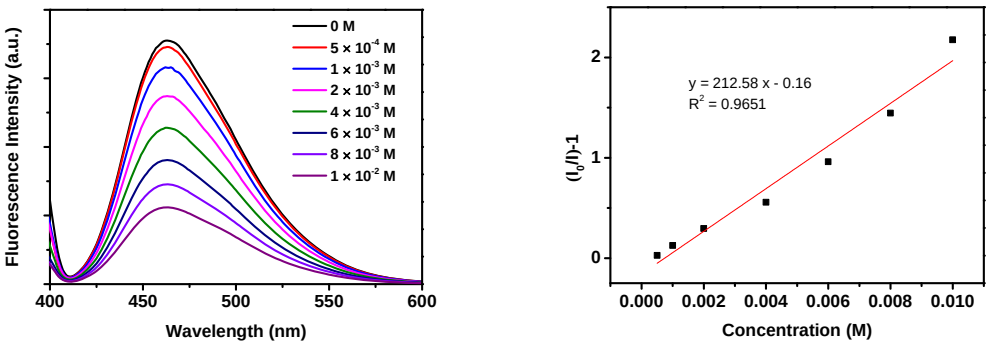


Fig. S23 Fluorescence spectra of **P1** in presence of different concentrations of BP in $CDCl_3$.



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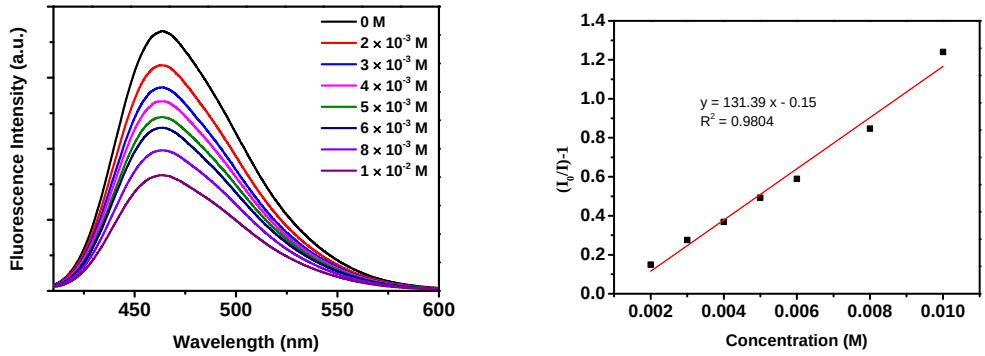

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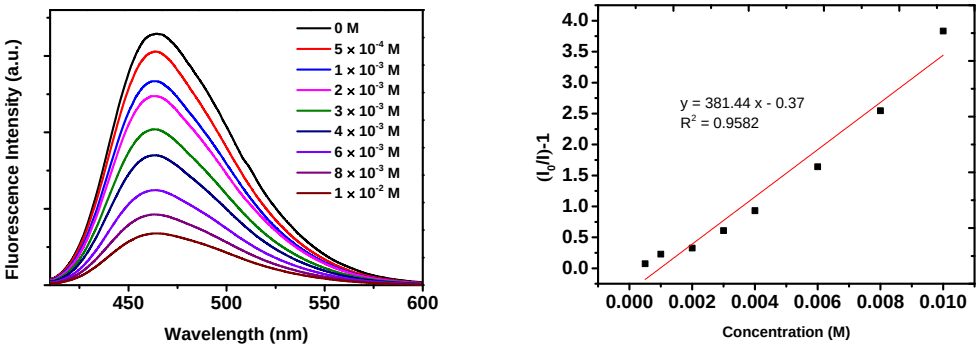

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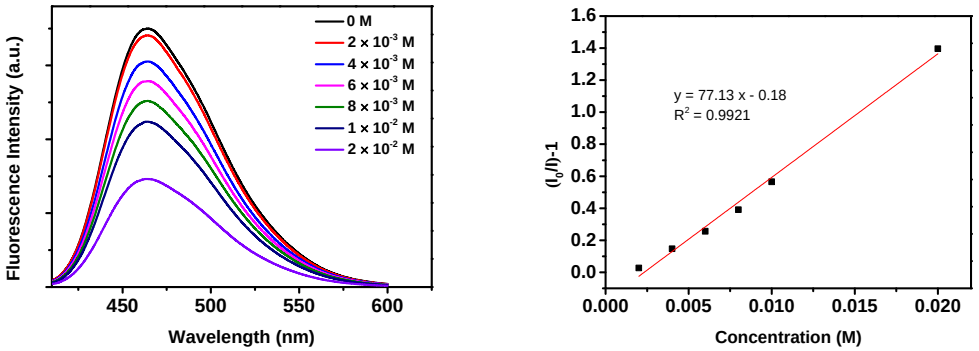


Fig. S27 Fluorescence spectra of **P2** in presence of different concentrations of NT in $CDCl_3$ (left) and its corresponding Stern-Volmer plot (right).

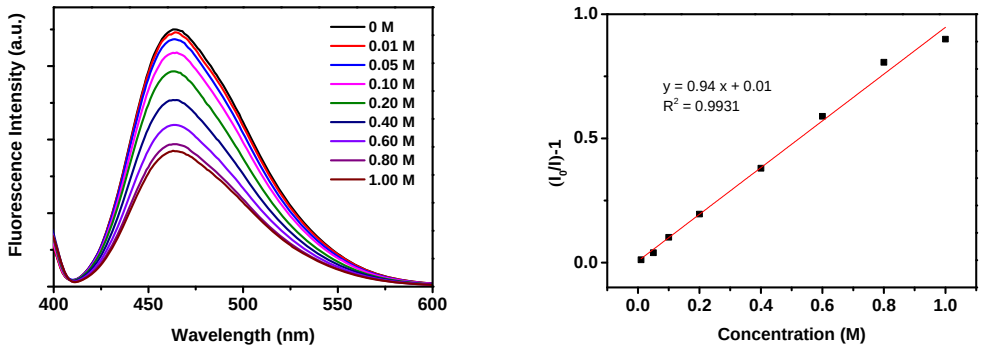


Fig. S28 Fluorescence spectra of **P2** in presence of different concentrations of BP in $CDCl_3$ (left) and its corresponding Stern-Volmer plot (right).

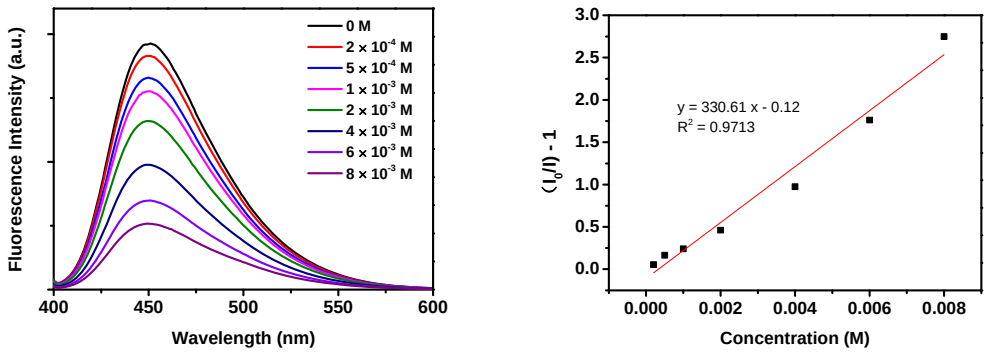


Fig. S29 Fluorescence spectra of **P3** in presence of different concentrations of TNT in $CDCl_3$ (left) and its corresponding Stern-Volmer plot (right).

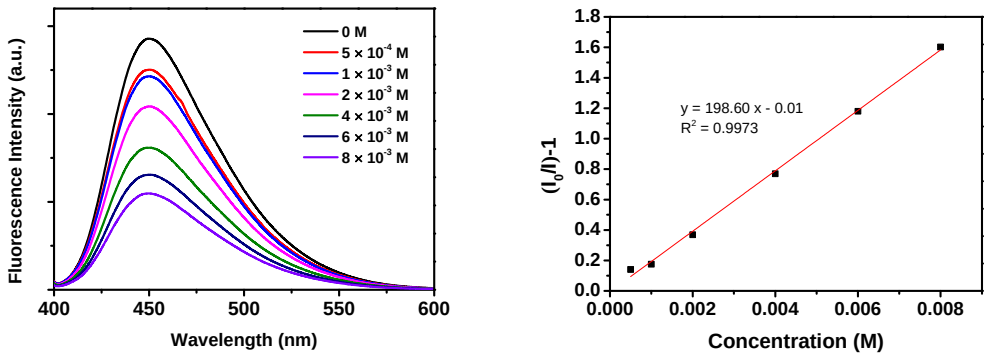


Fig. S30 Fluorescence spectra of **P3** in presence of different concentrations of DNT in $CDCl_3$ (left) and its corresponding Stern-Volmer plot (right).

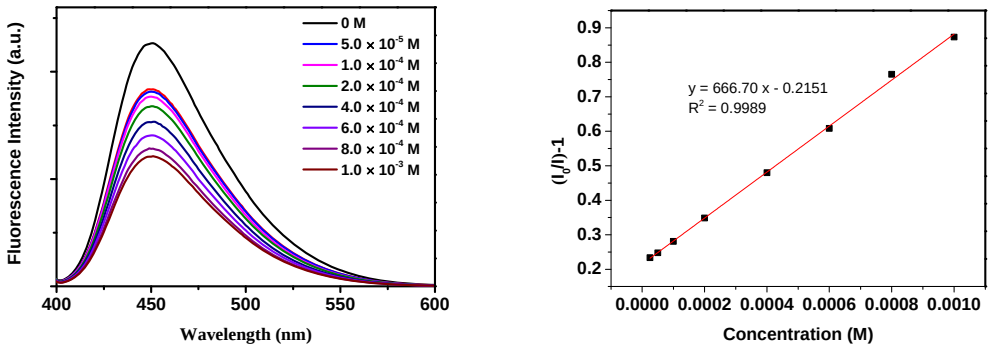


Fig. S31 Fluorescence spectra of **P3** in presence of different concentrations of PA in $CDCl_3$ (left) and its corresponding Stern-Volmer plot (right).

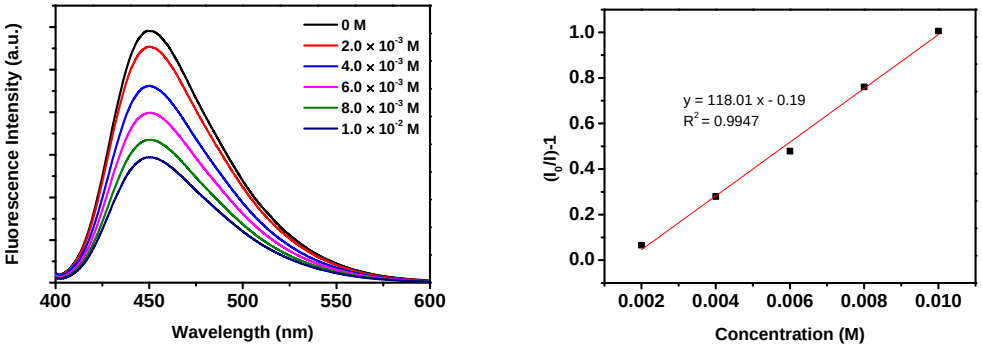
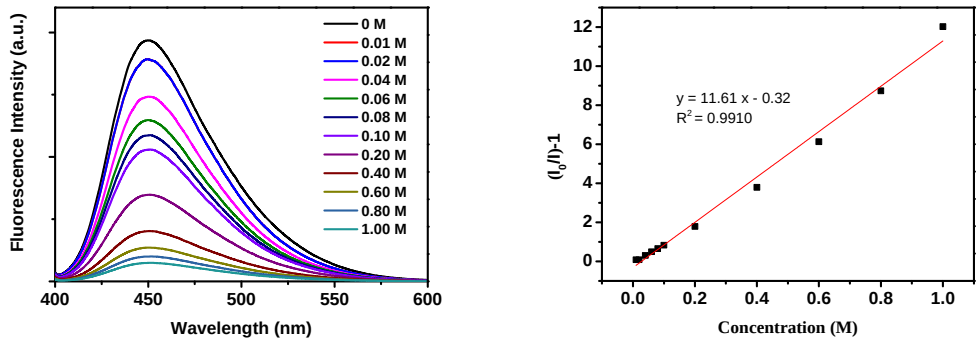


Fig. S32 Fluorescence spectra of **P3** in presence of different concentrations of NT in $CDCl_3$ (left) and its corresponding Stern-Volmer plot (right).



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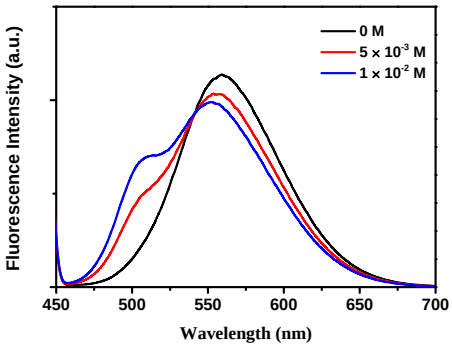


Fig. S34 Fluorescence spectra of **P4** in presence of different concentrations of TNT in $CDCl_3$.

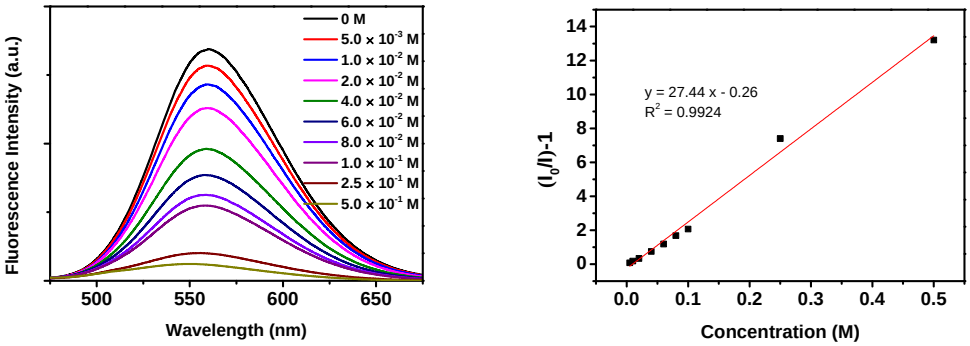
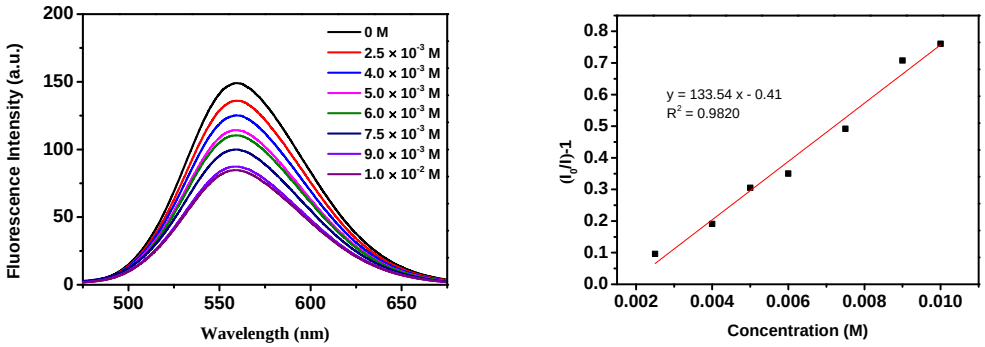


Fig. S35 Fluorescence spectra of **P4** in presence of different concentrations of DNT in $CDCl_3$ (left) and its corresponding Stern-Volmer plot (right).



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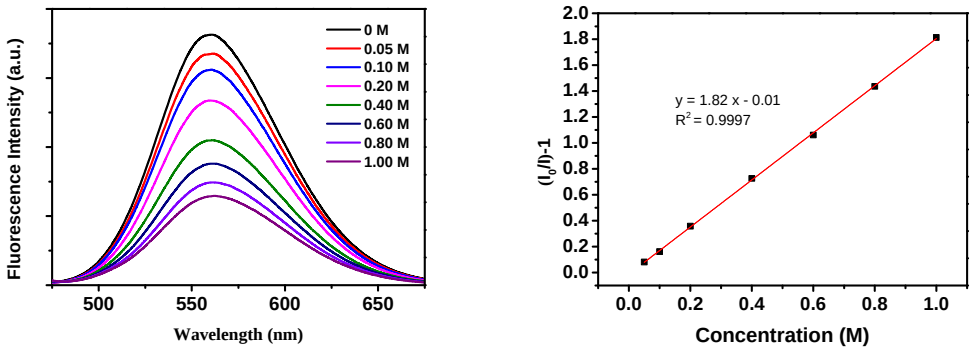

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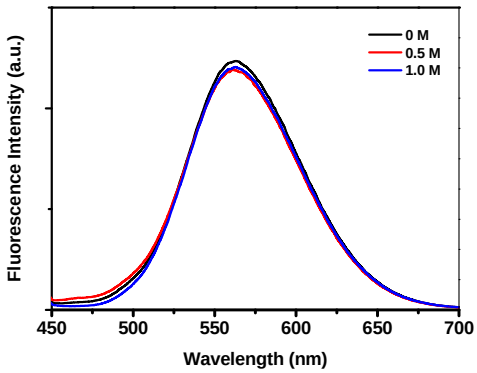
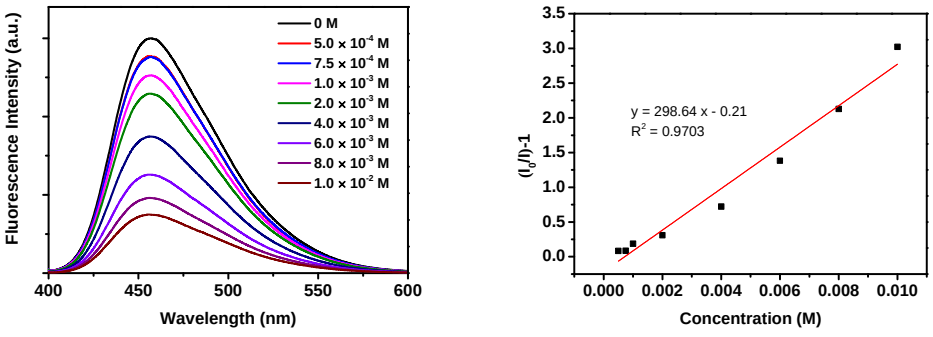


Fig. S38 Fluorescence spectra of **P4** in presence of different concentrations of BP in $CDCl_3$.



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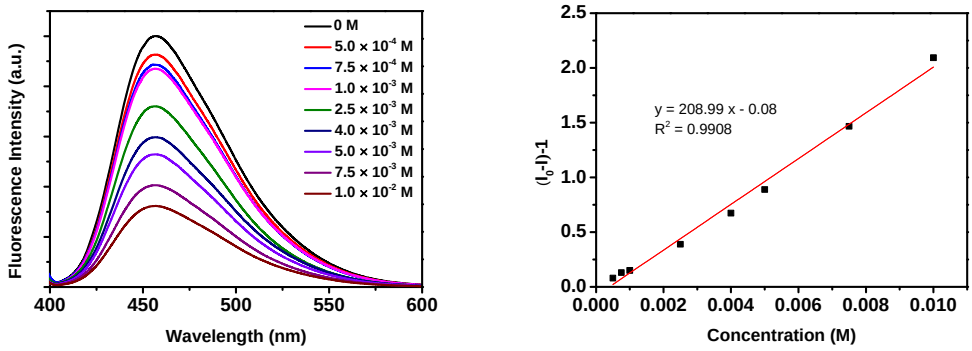

Fig. S40 Fluorescence spectra of **P5** in presence of different concentrations of DNT in $CDCl_3$ (left) and its corresponding Stern-Volmer plot (right).

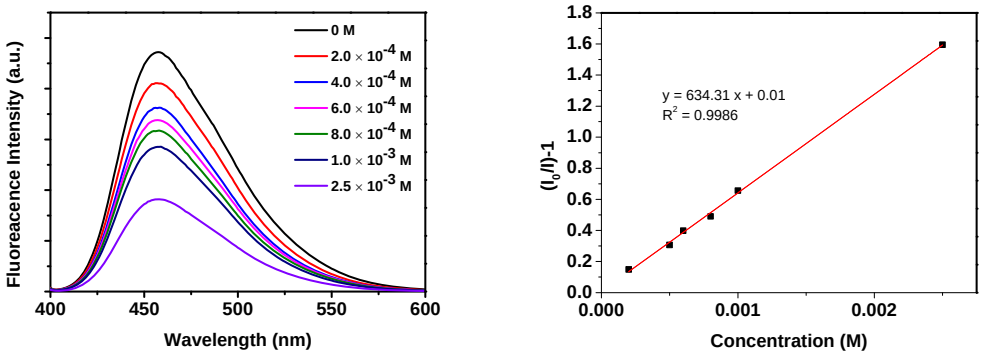

Fig. S41 Fluorescence spectra of **P5** in presence of different concentrations of PA in $CDCl_3$ (left) and its corresponding Stern-Volmer plot (right).

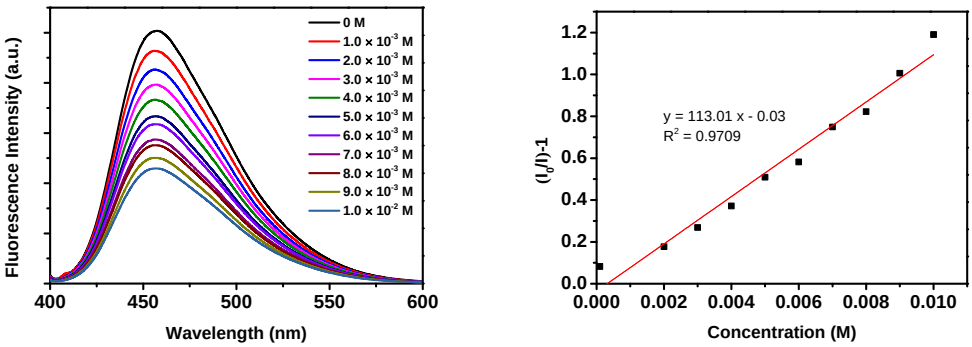

Fig. S42 Fluorescence spectra of **P5** in presence of different concentrations of NT in $CDCl_3$ (left) and its corresponding Stern-Volmer plot (right).

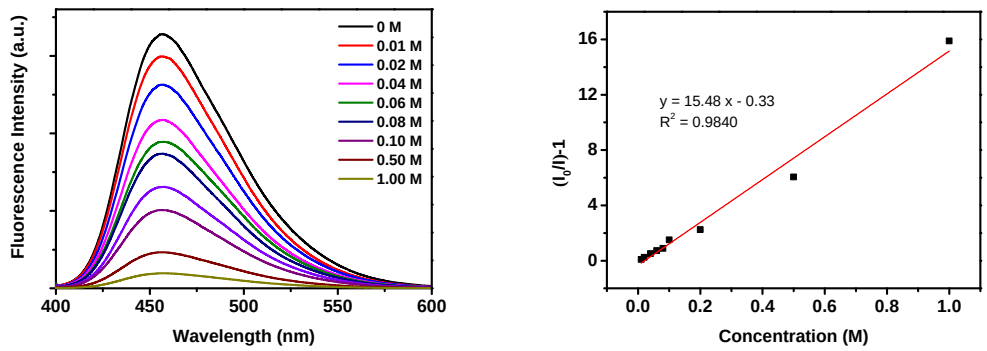

Fig. S43 Fluorescence spectra of **P5** in presence of different concentrations of BP in $CDCl_3$ (left) and its corresponding Stern-Volmer plot (right).

S6. Fluorescence spectra of the film of P2 upon exposure to the saturated vapor of the analytes at diffident time interval and their corresponding quenching efficiency against time

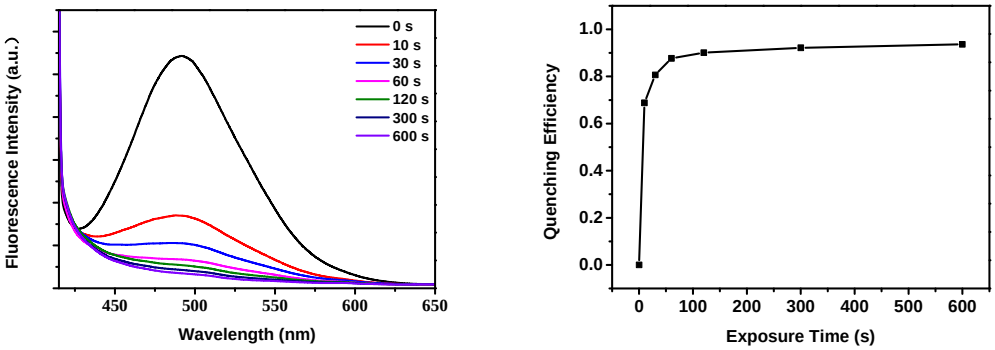

Fig. S44 Fluorescence spectra of the film of **P2** upon exposure to the saturated vapor of TNT at diffident time interval (left) and quenching efficiency against time (right).

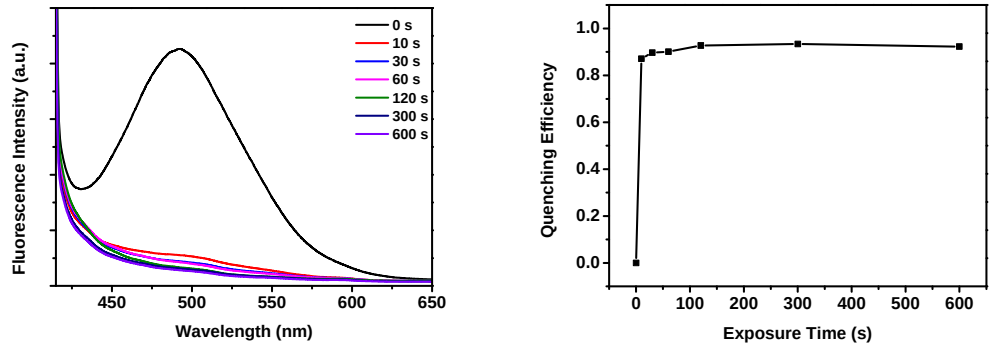

Fig. S45 Fluorescence spectra of the film of **P2** upon exposure to the saturated vapor of DNT at diffident time interval (left) and quenching efficiency against time (right).

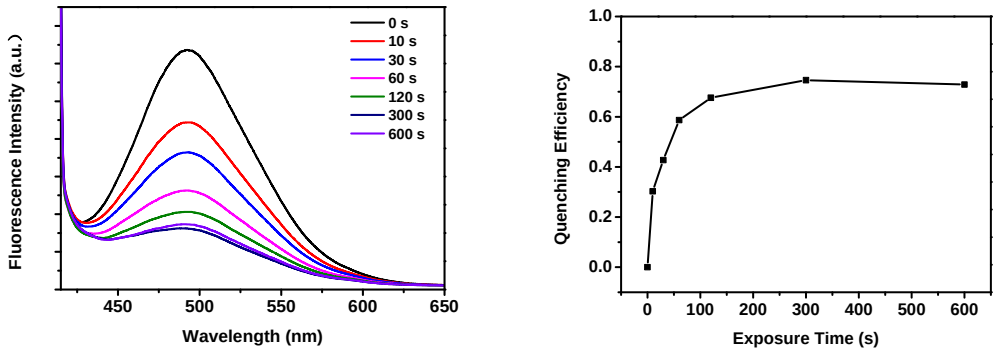

Fig. S46 Fluorescence spectra of the film of **P2** upon exposure to the saturated vapor of PA at diffident time interval (left) and quenching efficiency against time (right).

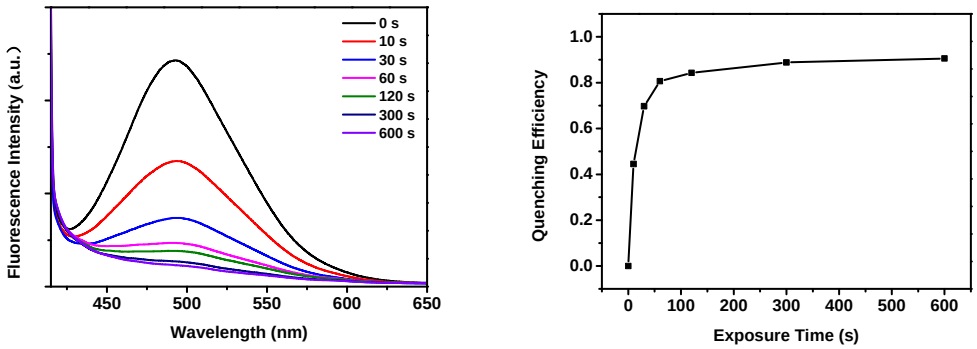

Fig. S47 Fluorescence spectra of the film of **P2** upon exposure to the saturated vapor of NT at diffident time interval (left) and quenching efficiency against time (right).

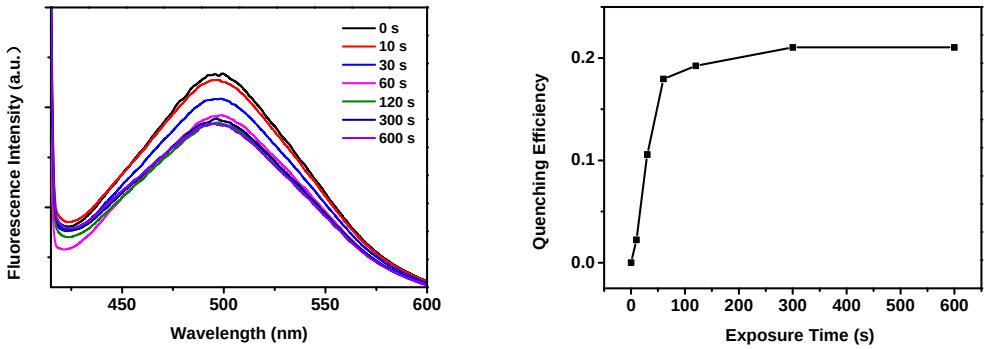

Fig. S48 Fluorescence spectra of the film of **P2** upon exposure to the saturated vapor of BP at diffident time interval (left) and quenching efficiency against time (right).

S7. Absorption spectra of compound 2 and the polymers

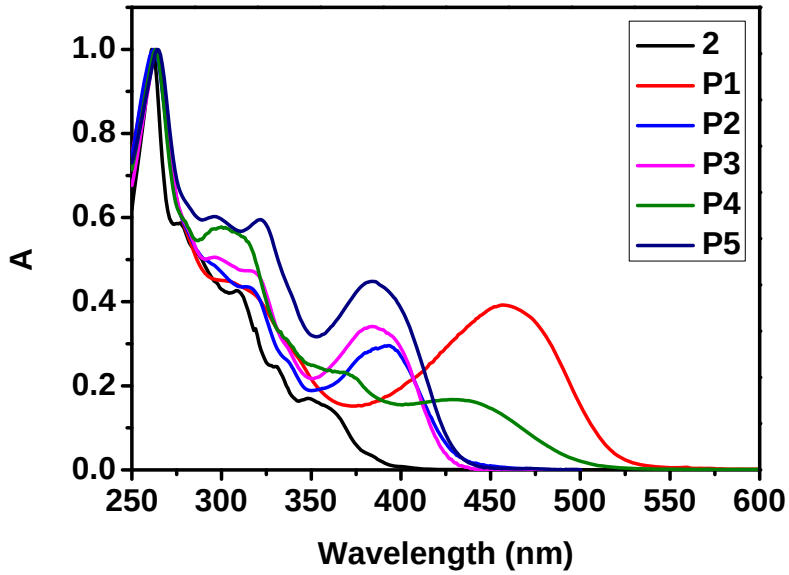

Fig. S49 The absorption spectra of compound **2** and the polymers in $CHCl_3$ at 1.0×10^{-6} M.