

Supplementary Materials of the Manuscript

**Thermo and pH Responsive Water Soluble Polythiophene Graft
Copolymer Showing Logic Operation and Nitroaromatic Sensing**

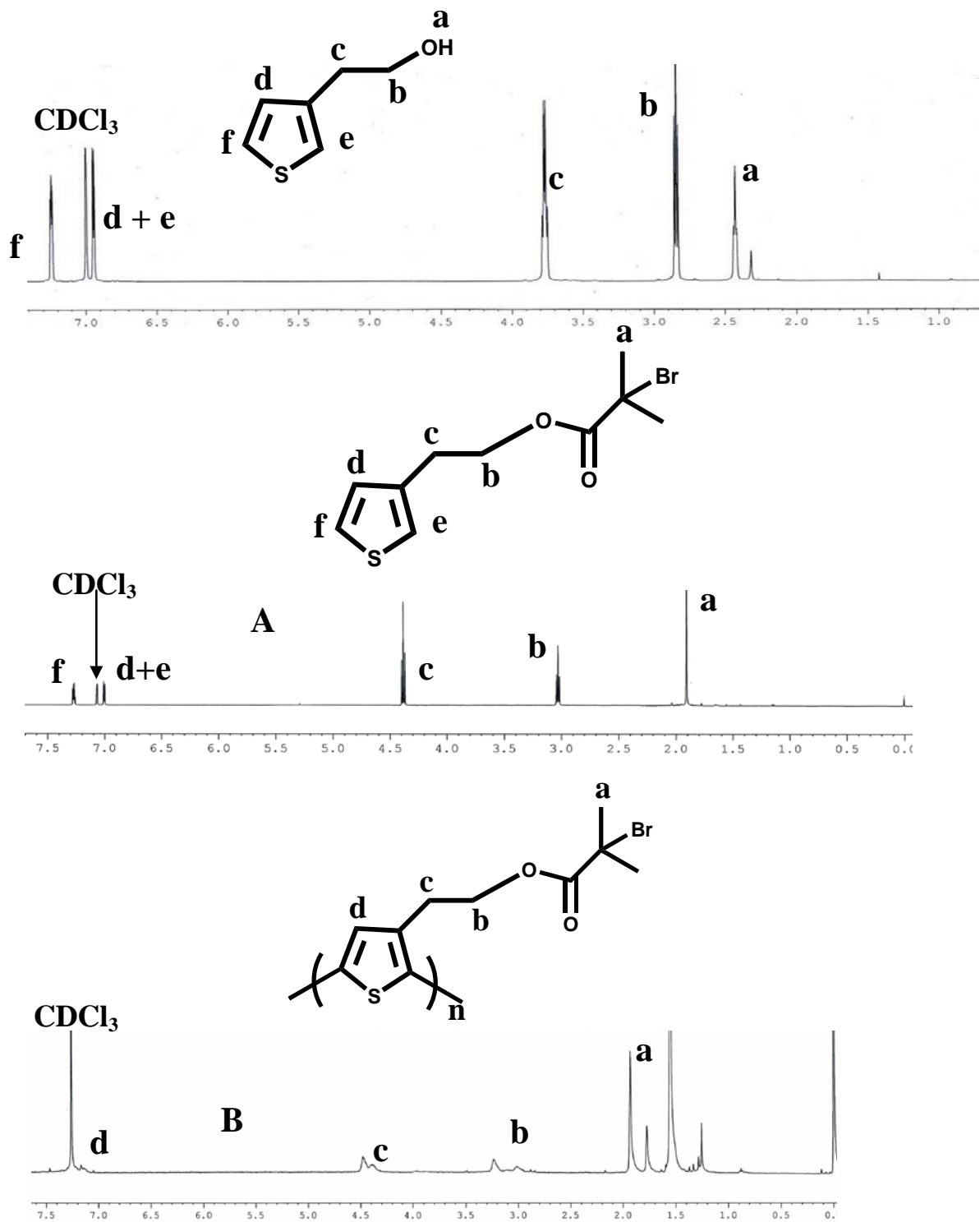
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Polymer Science Unit, Indian Association for the Cultivation of Science,

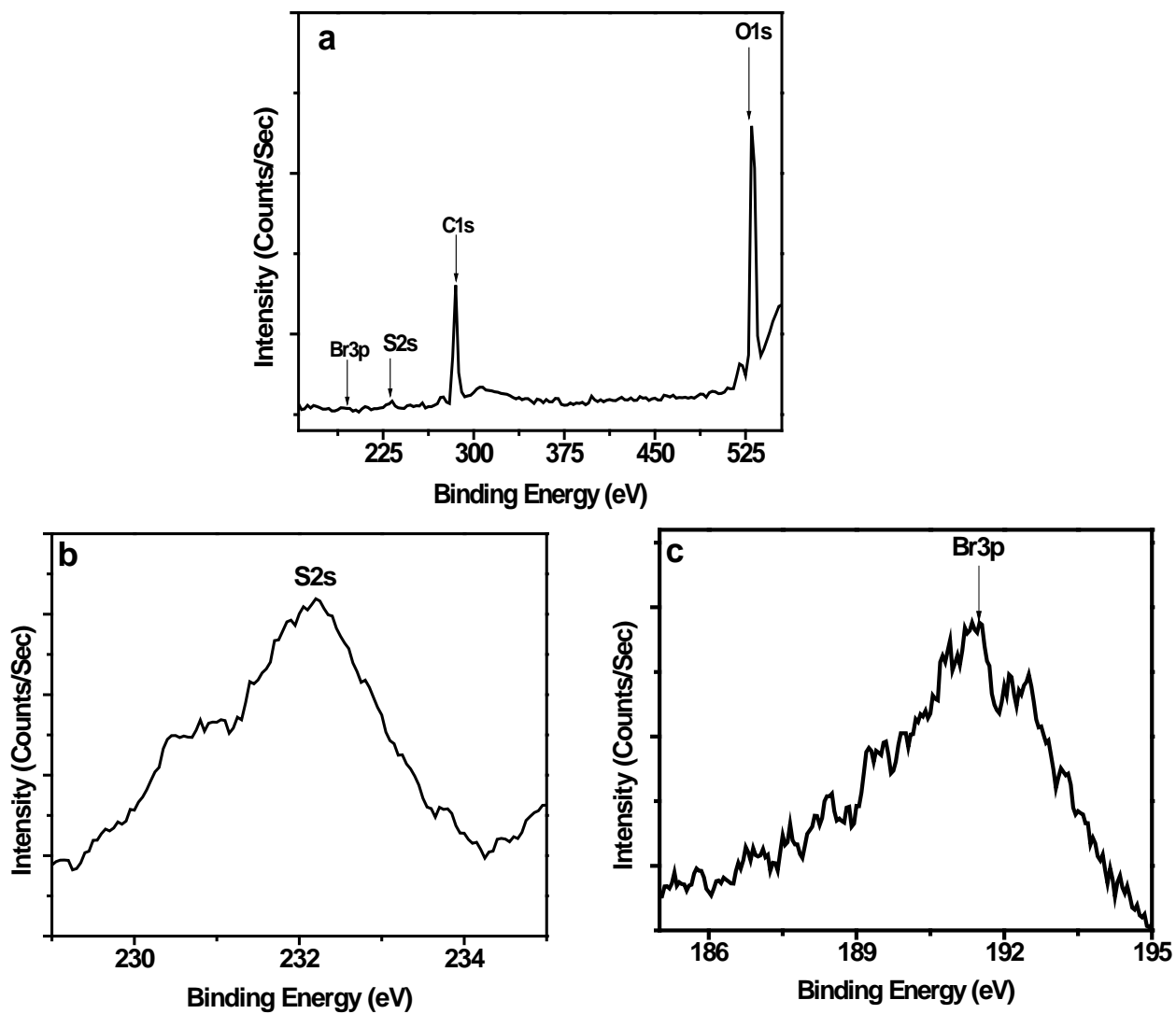
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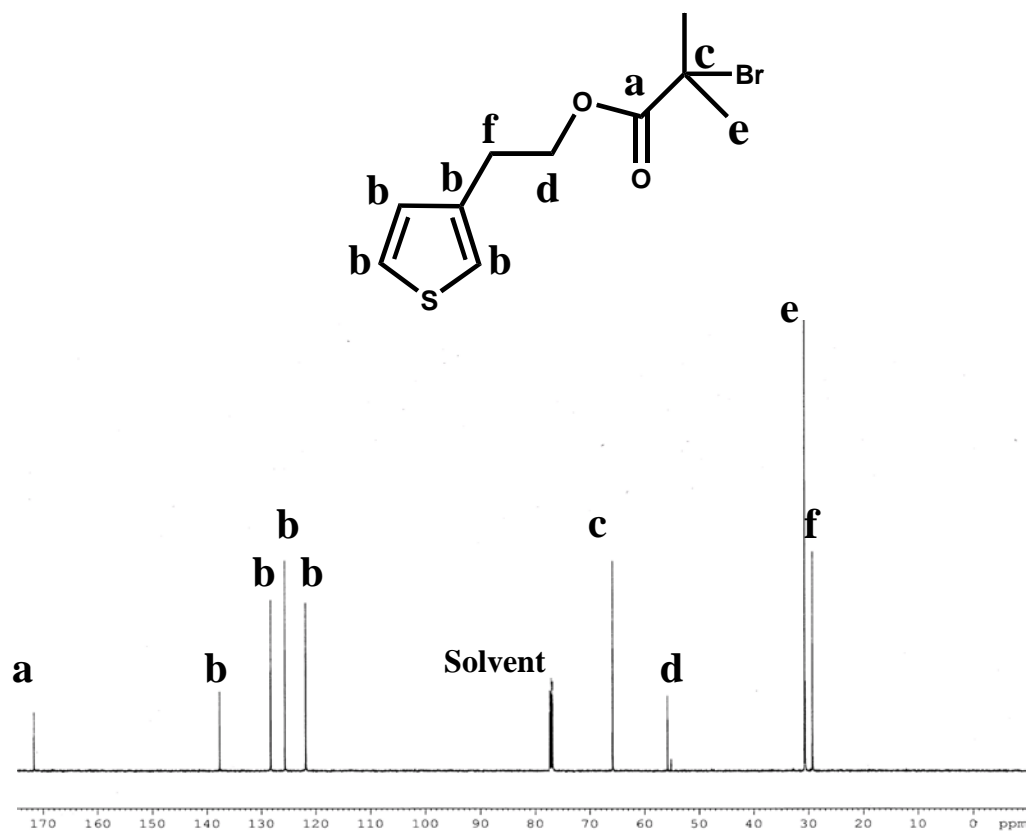
* For Correspondence: Prof. Arun K. Nandi, E-mail: psuakn@iacs.res.in



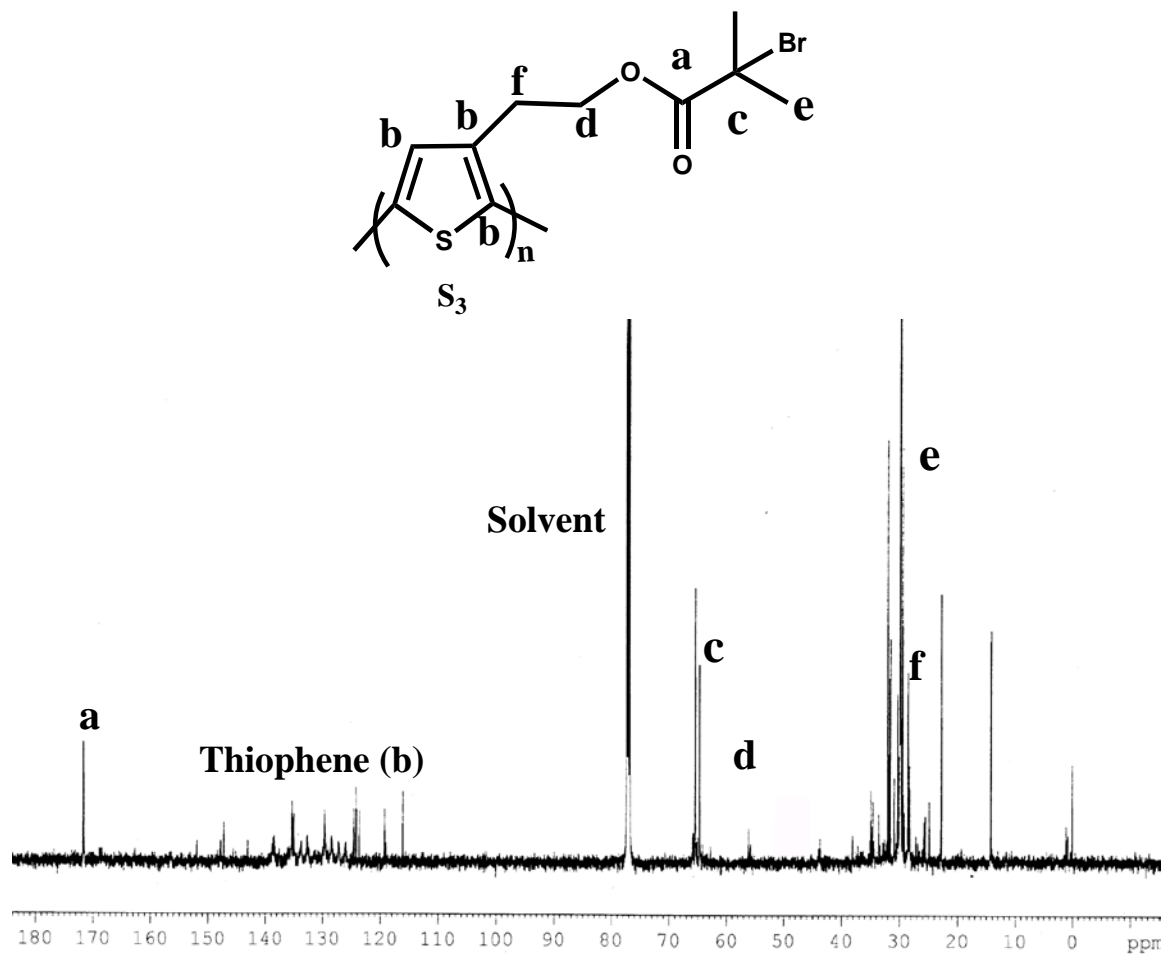
SI Fig. 1 ¹H NMR spectrum of thiophene-3-ethanol, TI and PTI polymer in CDCl₃



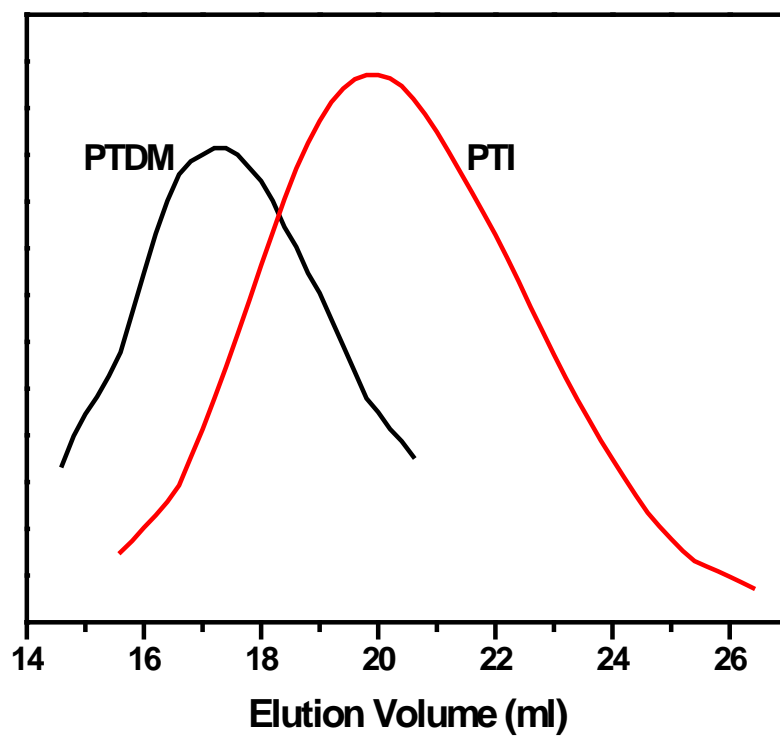
SI Fig. 2 XPS spectrum of (a) PTI, (b) peak at 232eV corresponds to binding energy of S 2s, (c) peak at 191eV correspond to binding energy of Br 3p.



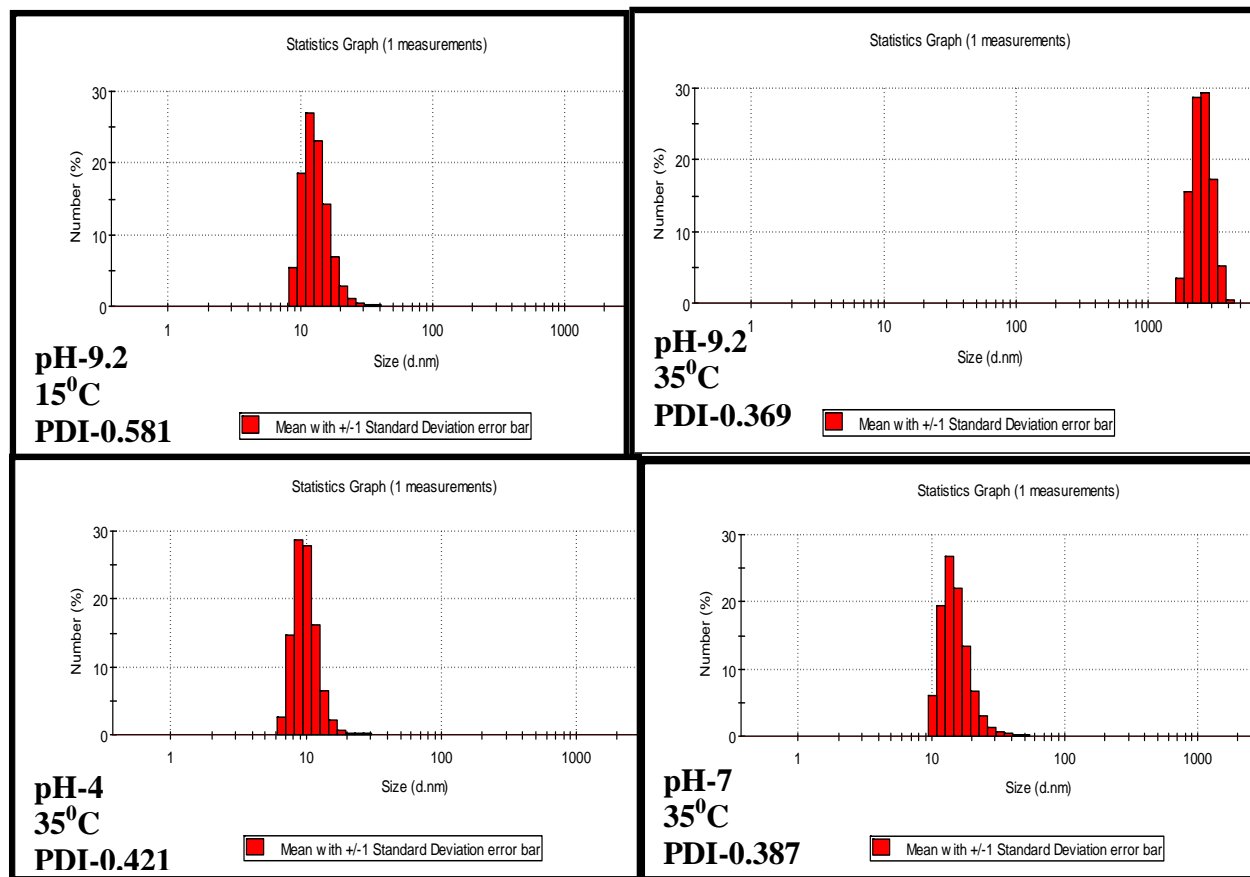
SI Fig. 3a ¹³C NMR spectra of TI in CDCl₃ along with their peak assignments.



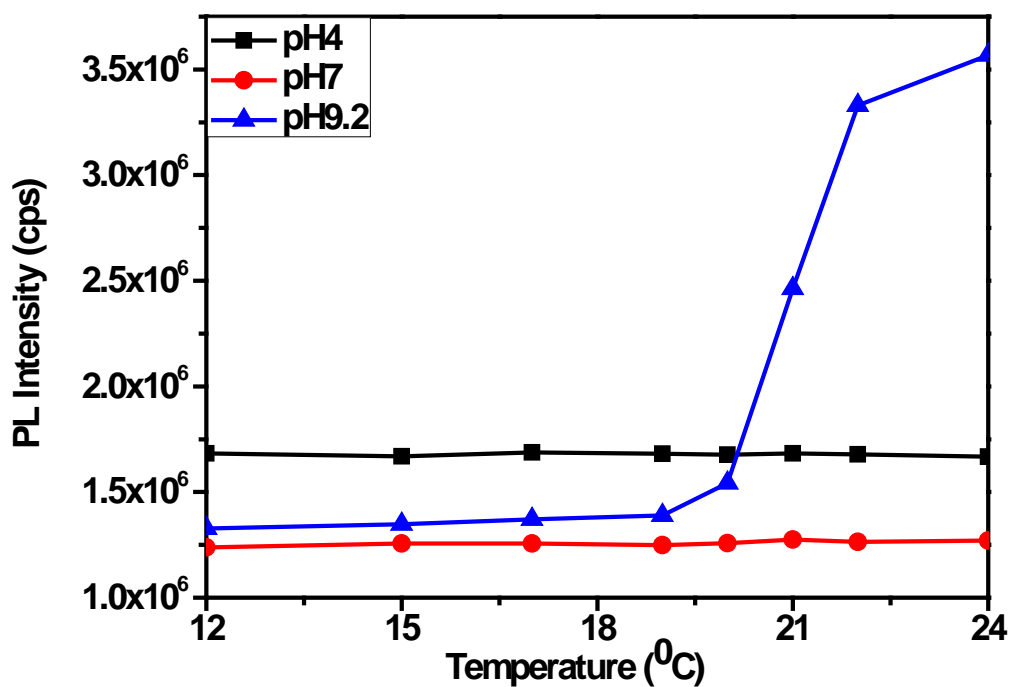
SI Fig. 3b ¹³C NMR spectra of PTI in CDCl₃ along with their peak assignments.



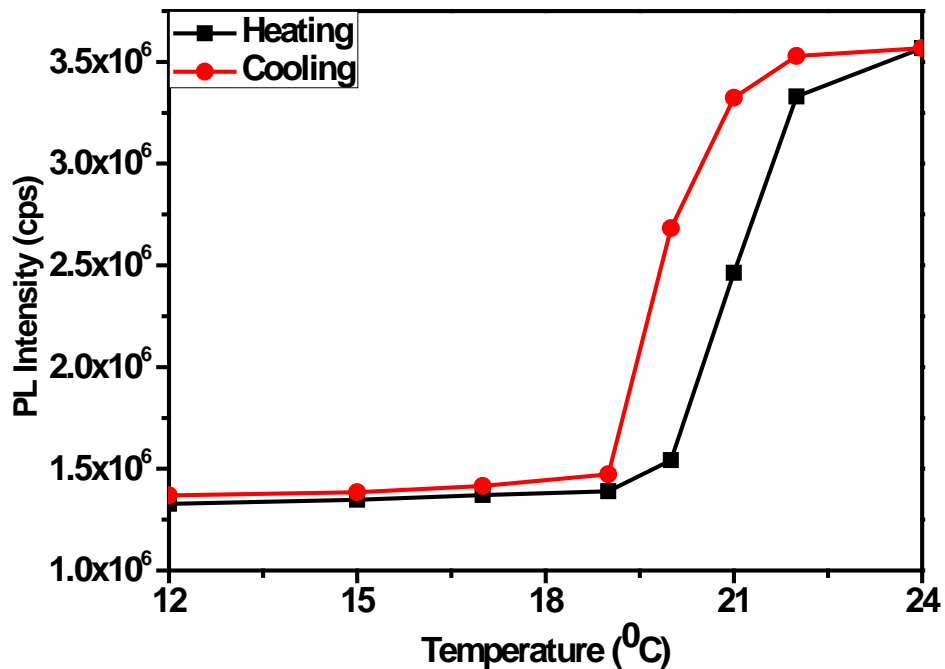
SI Fig. 4 GPC traces of PTI and PTDM polymer



SI Fig. 5 Histogram of particle size distribution at different pH and temperature, the PDI values at each diagram indicates polymolecularity of the samples.



SI Fig. 6(a). PL Intensity vs. temperature plot of PTDM1 solution (0.3 % w/v) with increasing temperature at different pH.



SI Fig. 6(b). PL Intensity vs. temperature plot of PTDM1 solution (0.3 % w/v) of with increasing temperature at pH-9.2

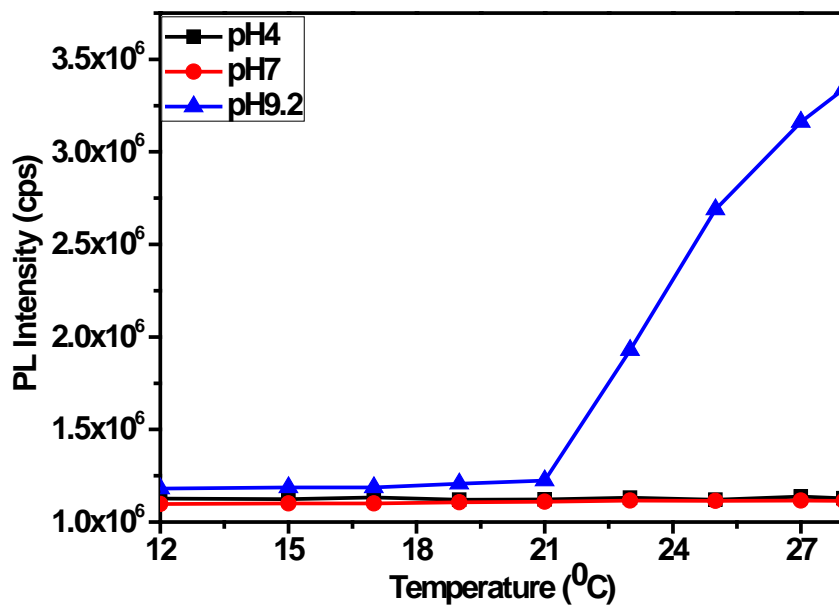


Fig. 6(c). PL Intensity vs. temperature plot of PTDM2 solution (0.3 % w/v) with increasing temperature at different pH.

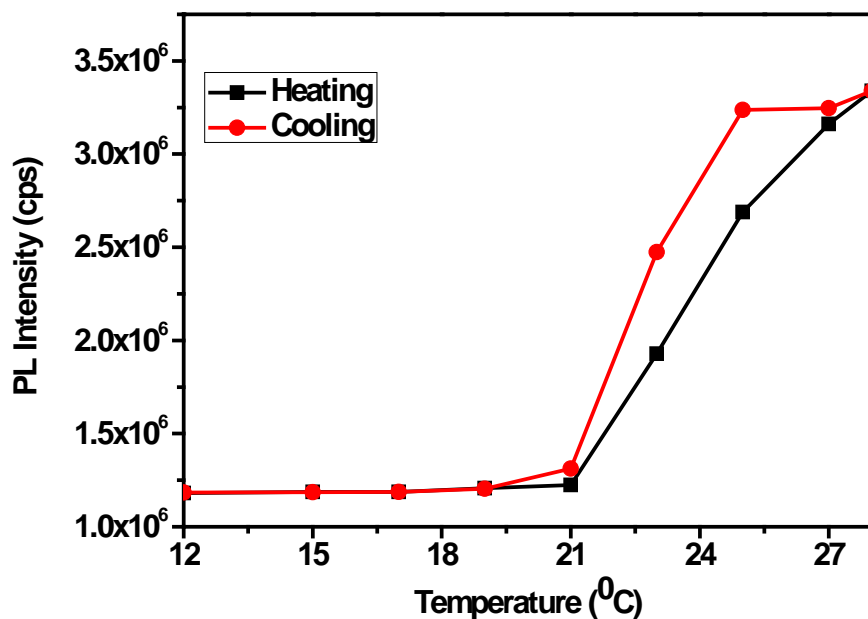
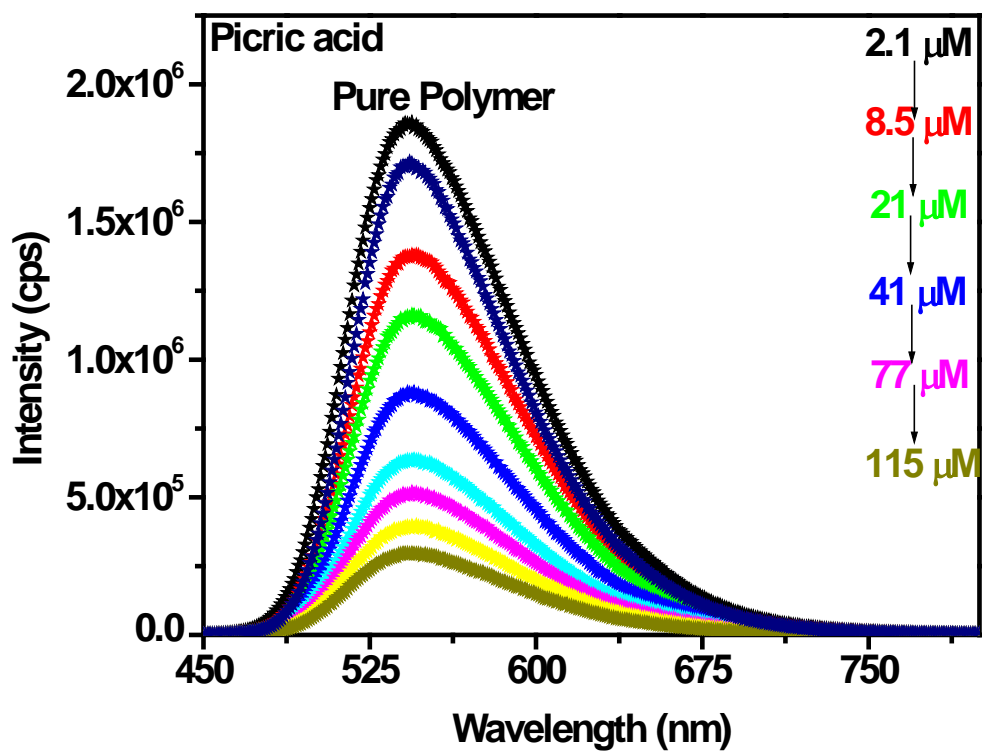
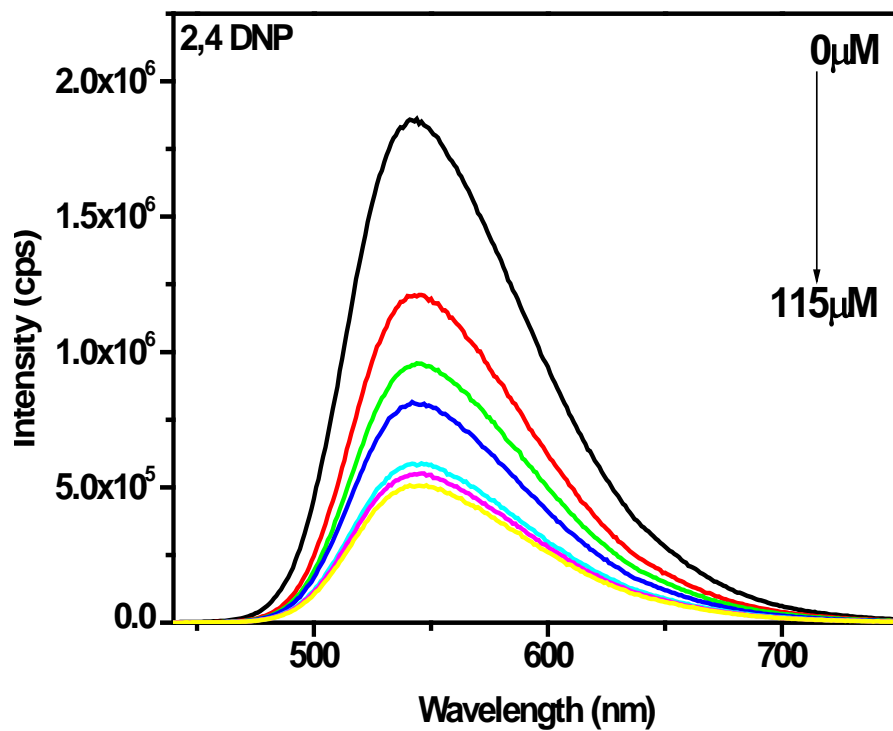


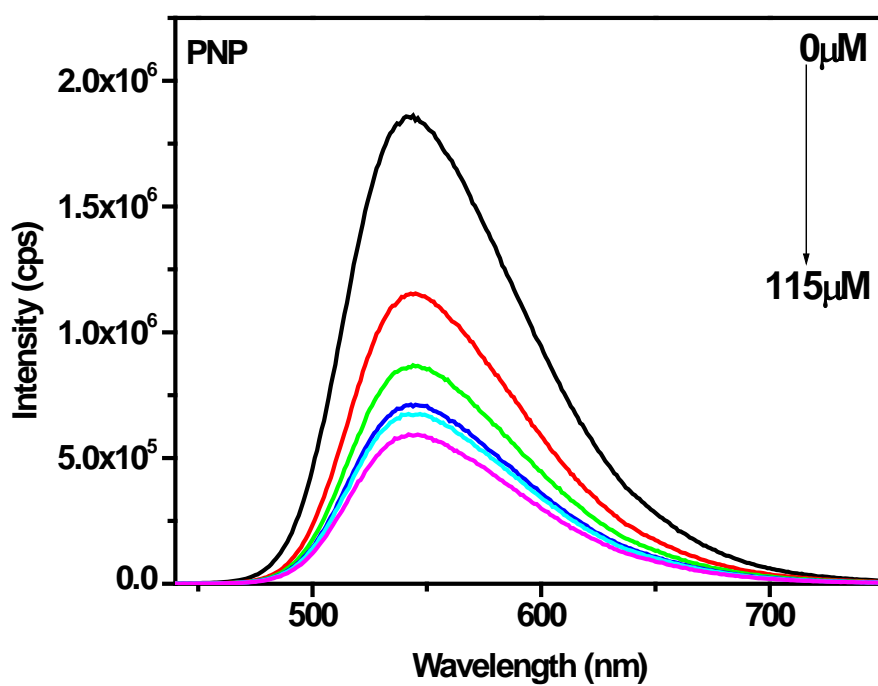
Fig. 6(d). PL Intensity vs. temperature plot of PTDM2 solution (0.3 % w/v) with increasing temperature at pH-9.2.



SI Fig. 7(a) Normalized PL spectra of PTDM solution (0.2 % w/v) with increasing picric acid concentration



SI Fig.7(b) Normalized PL spectra of PTDM solution (0.2 % w/v) with increasing 2,4 DNP concentration



SI Fig. 7(c) Normalized PL spectra of PTDM solution (0.2% w/v) with increasing PNP concentration