Supplementary Materials of the Manuscript

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

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SI Fig. 1 $^1$H NMR spectrum of thiophene-3-ethanol, TI and PTI polymer in CDCl$_3$
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 $^{13}$C NMR spectra of TI in CDCl$_3$ along with their peak assignments.
SI Fig. 3b $^{13}$C NMR spectra of PTI in CDCl$_3$ 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) 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