Electronic Supplementary Information (ESI)

Multi-stimuli responsive fluorescent behaviors of donor-π-acceptor phenothiazine modified benzothiazole derivative

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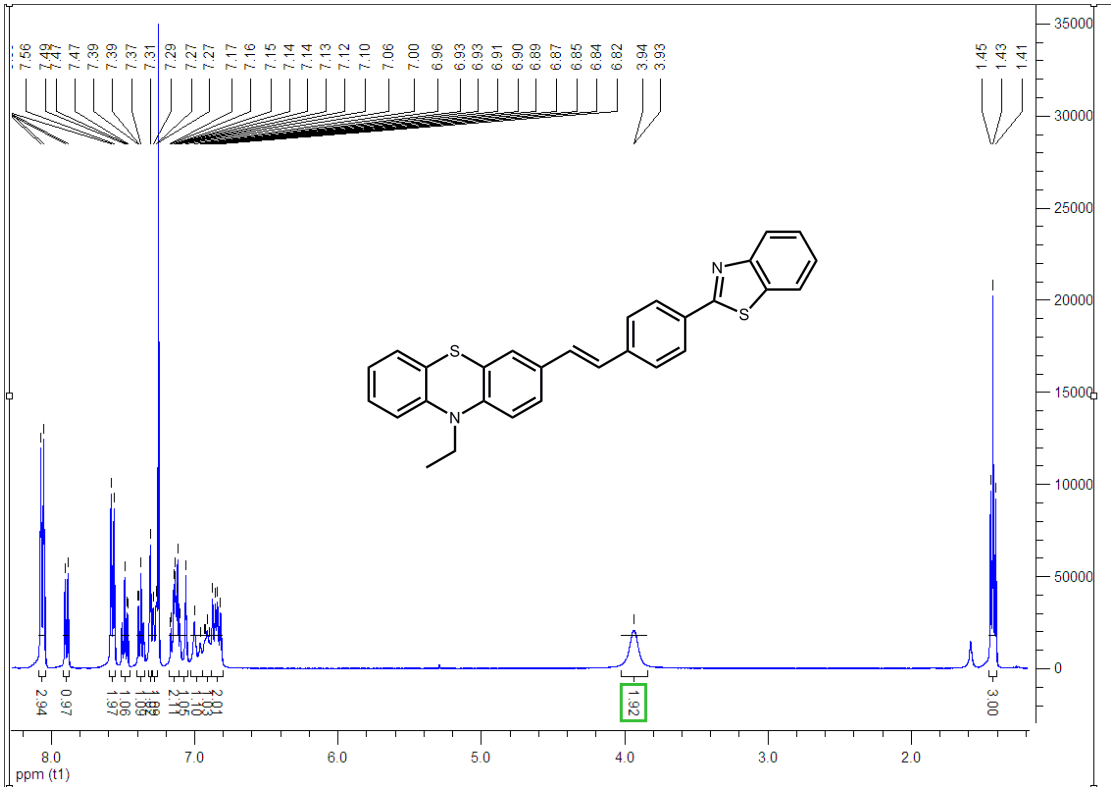
Table S1. Photophysical data of **PVBT**.

solvent	λ_{abs} (nm) (ε)[a]	λ_{em} (nm)	Stokes shift (cm^{-1})	Φ_F[b]
n-hexane	330 (0.84)	483, 511	9599	0.56
	387 (0.60)			
cyclohexane	331 (2.68)	486, 515	9635	0.76
	390 (1.90)			
toluene	340 (3.11)	524	10327	0.45
	401 (2.86)			
$CHCl_3$	340 (3.19)	554	11361	0.36
	401 (2.96)			
THF	342 (3.57)	559	11350	0.23
	401 (3.45)			
CH_2Cl_2	341 (3.46)	563	11564	0.18
	402 (3.29)			
DMF	343 (3.41)	580	11913	0.02
	404 (3.49)			

[a] $\times 10^4$ $M^{-1}cm^{-1}$; [b] The fluorescence quantum yield (Φ_F) of **PVBT** was measured using 9,10-diphenylanthracene in benzene (Φ_F = 0.85) as standard.



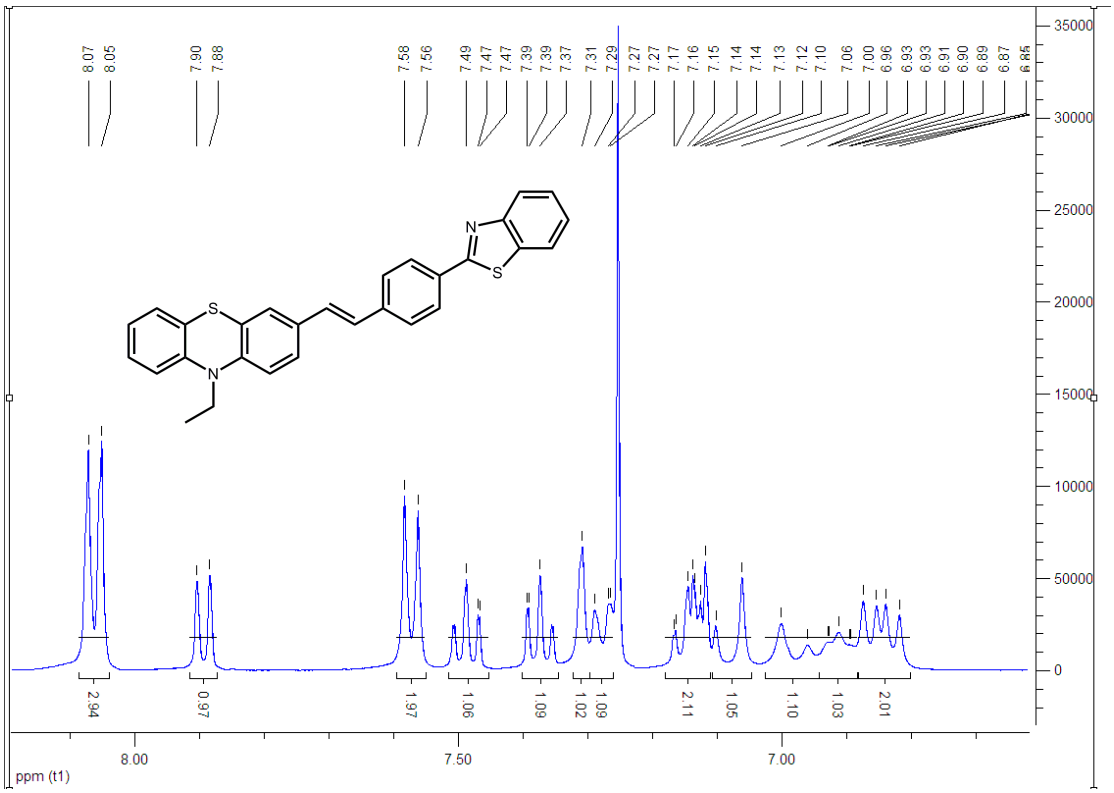


Fig. S1 ^{1}H-NMR (400 MHz, $CDCl_3$) spectra of compound **PVBT**.

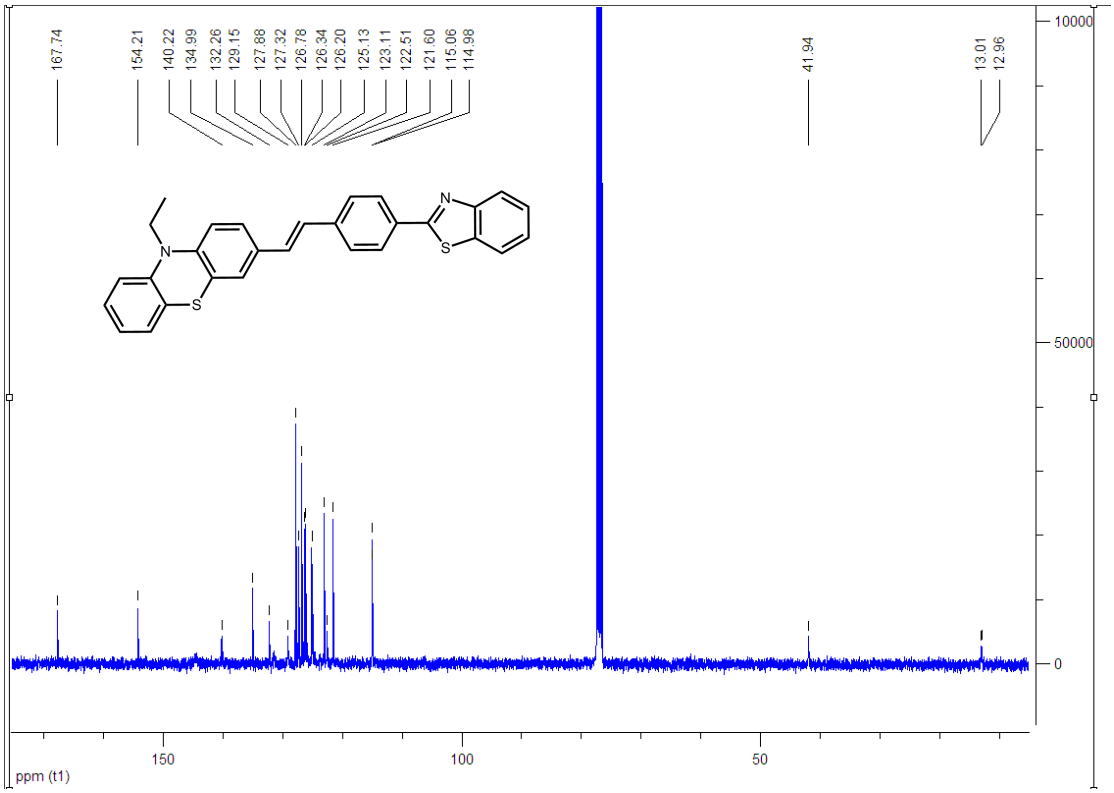


Fig. S2 ^{13}C-NMR (100 MHz, $CDCl_3$) spectrum of compound **PVBT**.

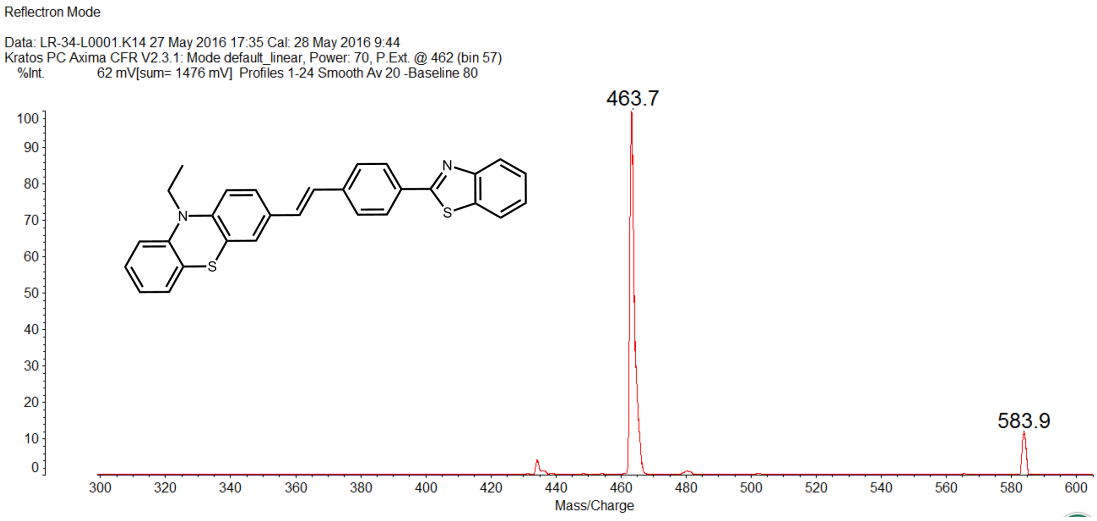


Fig. S3 The MALDI/TOF MS spectrum of compound **PVBT**.

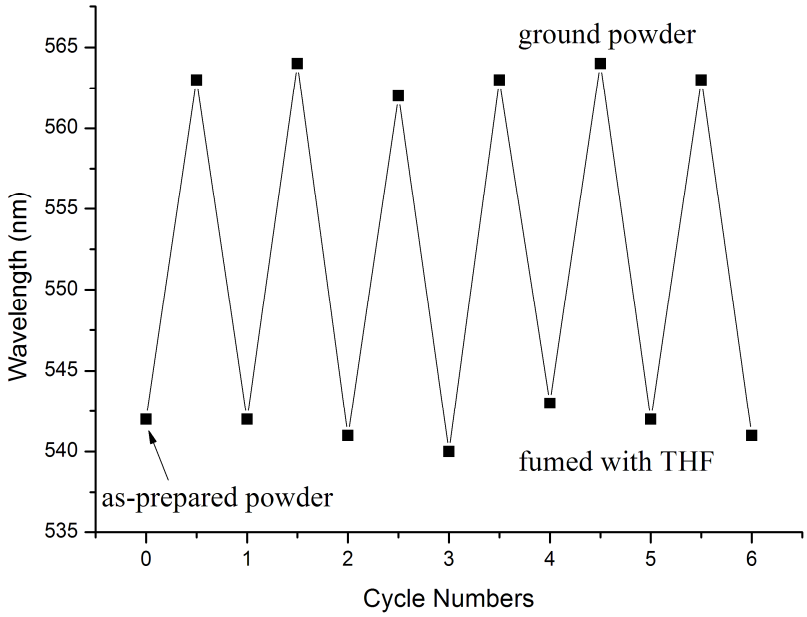


Fig. S4 Maximum fluorescence emission in different solid states of **PVBT** upon repeating treatment of grinding and fuming with THF vapor.

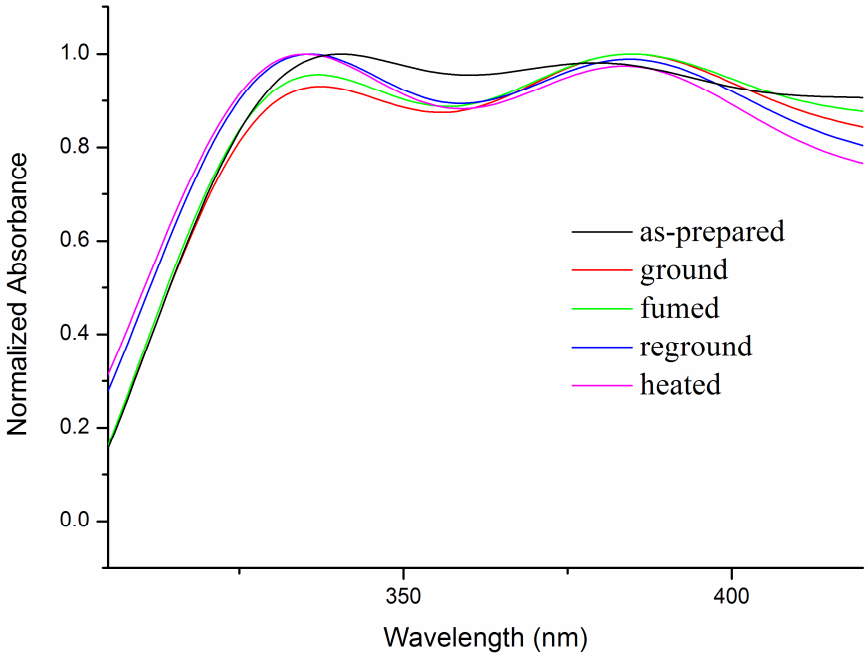


Fig. S5 Normalized UV-vis absorption spectra of **PVBT** in different solid states.

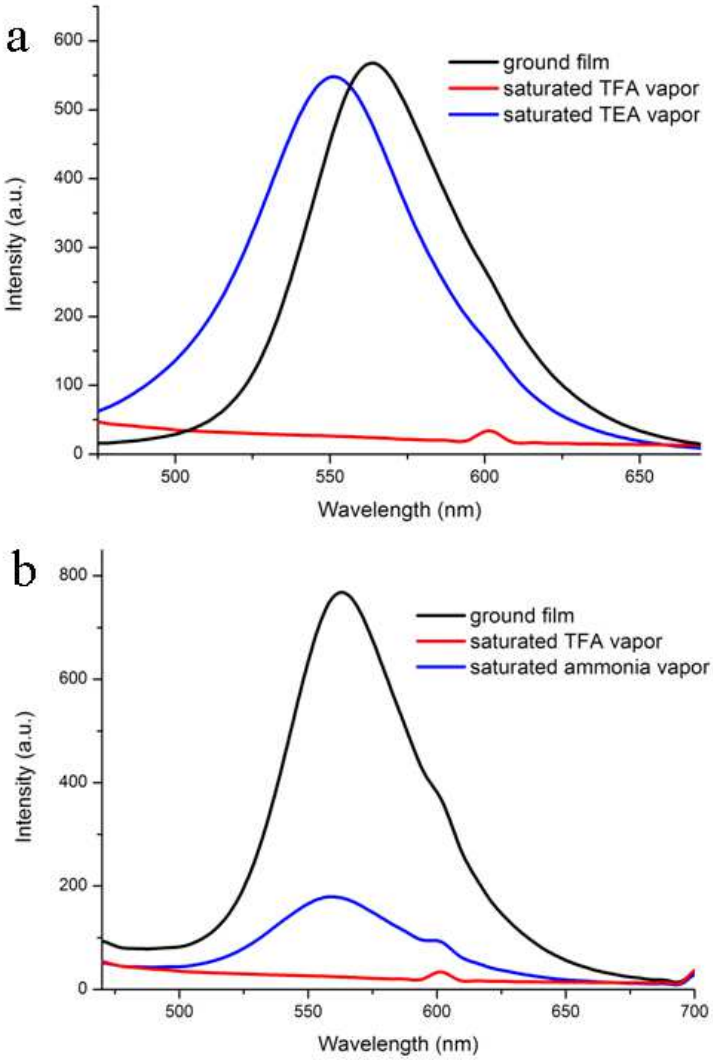


Fig. S6 (a) Fluorescence spectral change of the ground film of **PVBT** upon exposure to saturated TFA and TEA vapors; (b) Fluorescence spectral change of the ground film of **PVBT** upon exposure to saturated TFA and ammonia vapors.

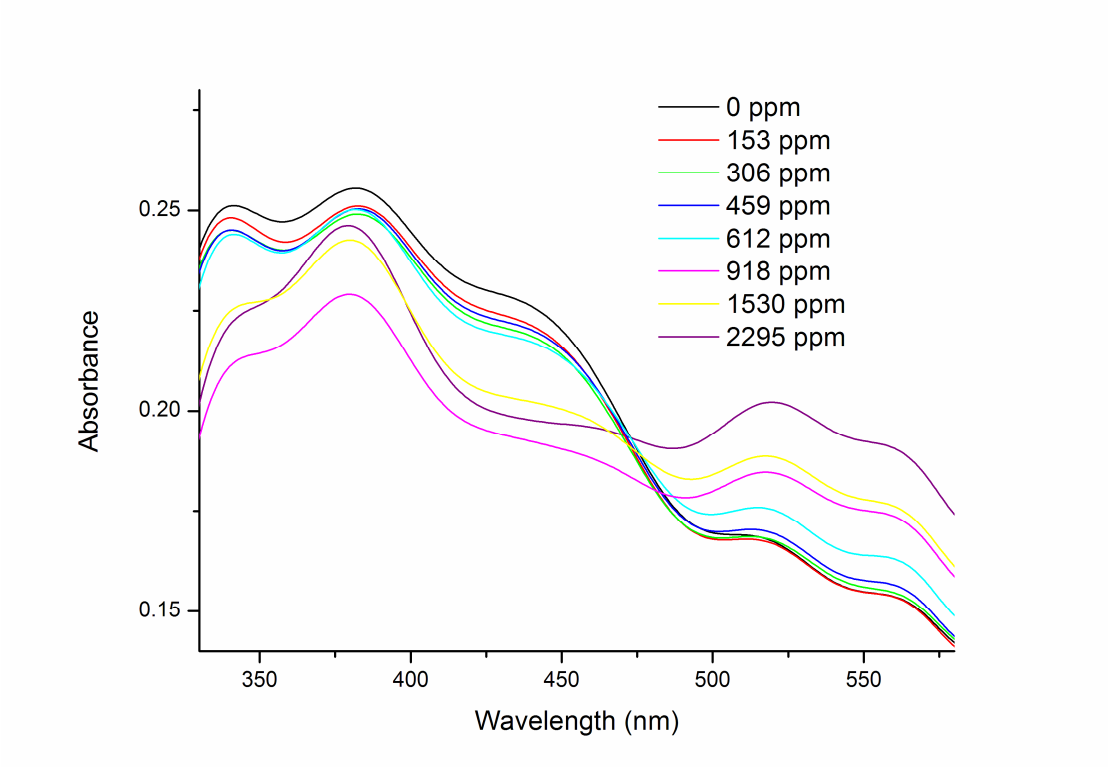


Fig. S7 Absorption spectra of the ground film of **PVBT** upon exposure to different amounts of TFA vapor.

Fig. S8 Photographs of filter papers coated with the ground film of **PVBT** under different conditions.

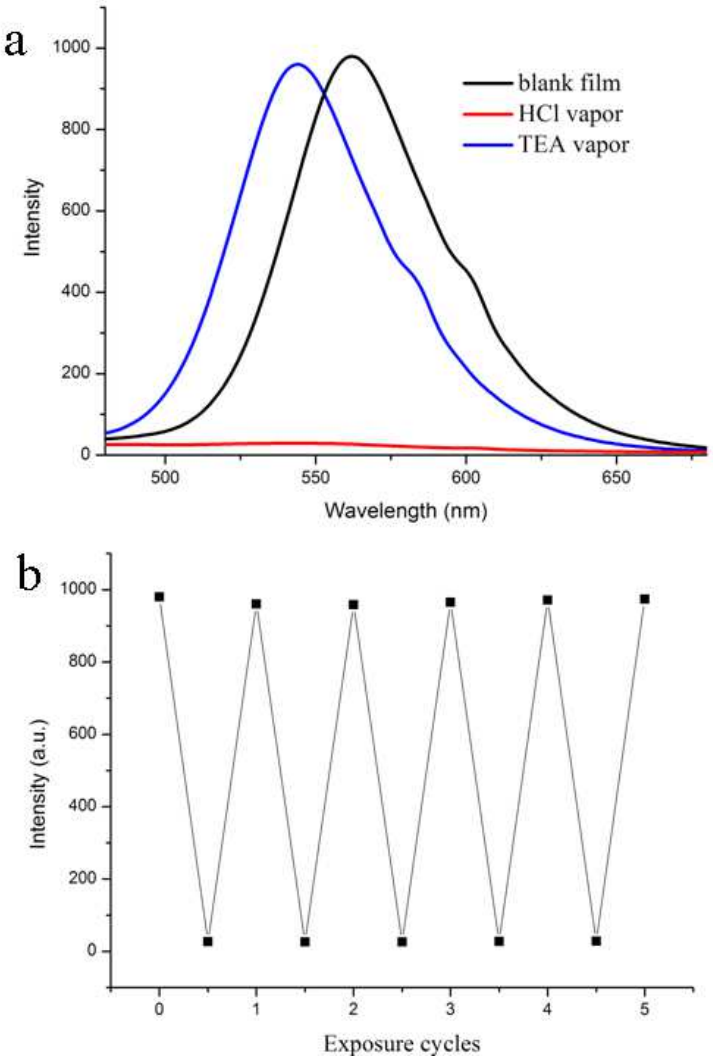


Fig. S9 (a) Fluorescence spectral change of the ground film of **PVBT** upon exposure to saturated HCl and TEA vapors; (b) Reversible fluorescence emission intensity at 562 nm for **PVBT** solid upon exposure to saturated vapors of HCl and TEA.

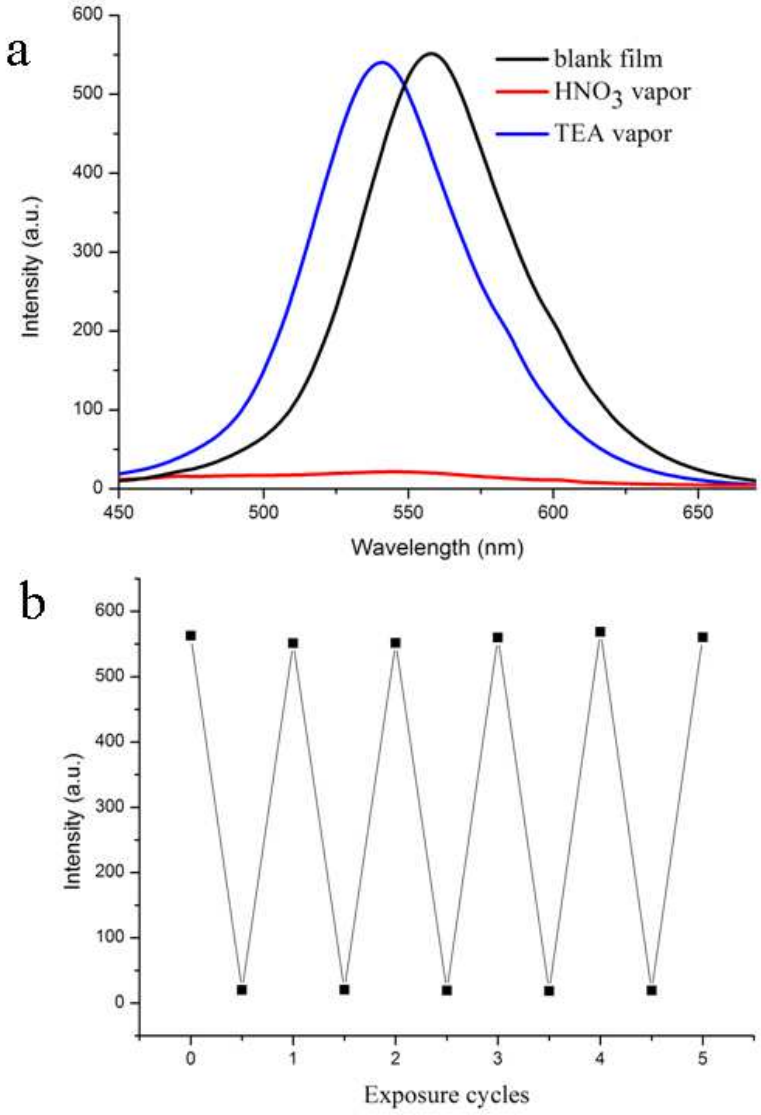


Fig. S10 (a) Fluorescence spectral change of the ground film of **PVBT** upon exposure to saturated HNO_3 and TEA vapors; (b) Reversible fluorescence emission intensity at 558 nm for **PVBT** solid upon exposure to saturated vapors of HNO_3 and TEA.

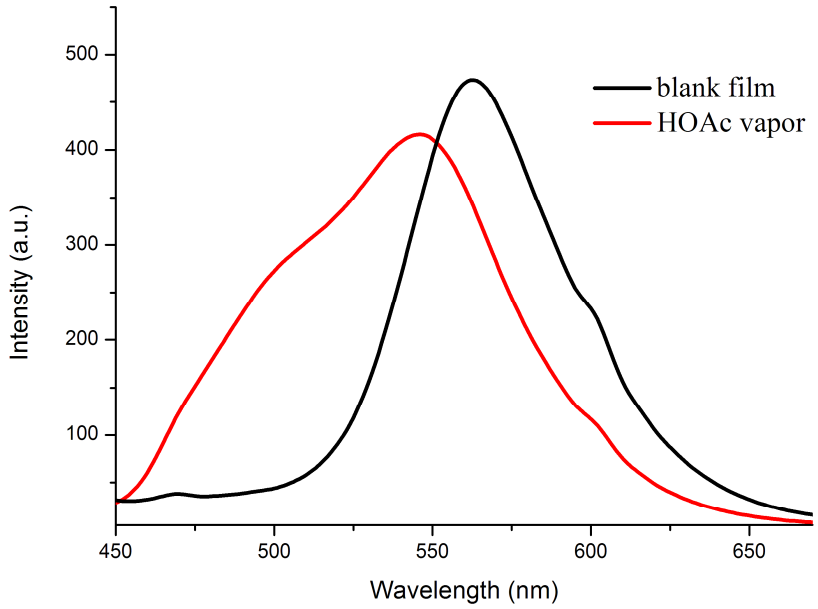


Fig. S11 Fluorescence spectral change of the ground film of **PVBT** upon exposure to saturated HOAc.