Electronic Supplementary Material (ESI) for RSC Advances.

Support information for

Two AIEE-active α-cyanostilbene derivatives containing BF_2 unit for detecting explosive picric acid in aqueous medium

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Contents:

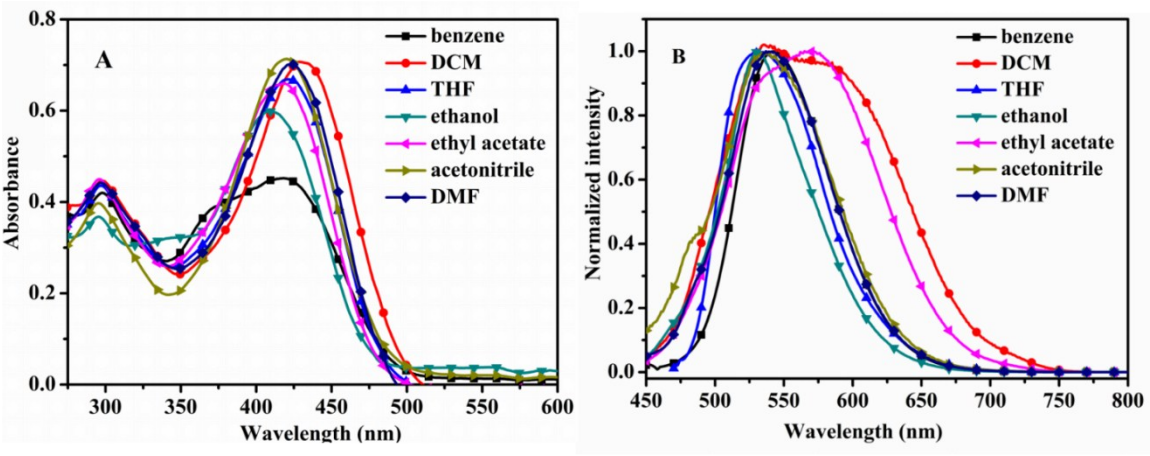


Fig. **S1.** UV-Vis spectra (A) and fluorescence spectra (B) of the compound **TPA-B** in different solvents.

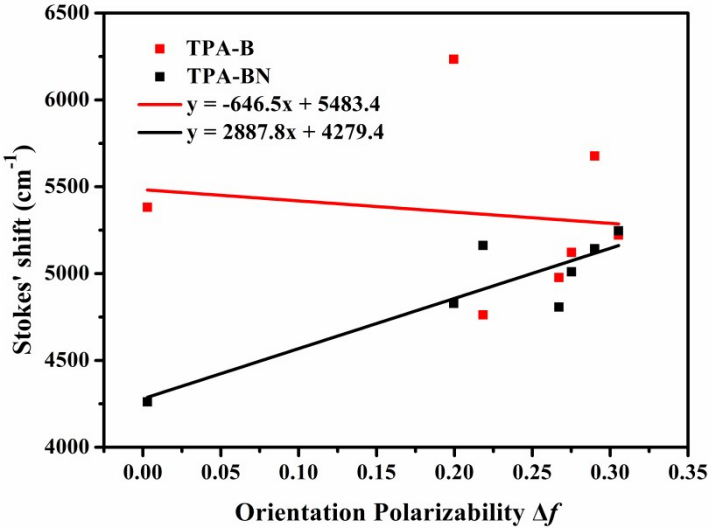


Fig. **S2.** Lippert-Mataga diagram of compounds **TPA-B** and **TPA-BN.**

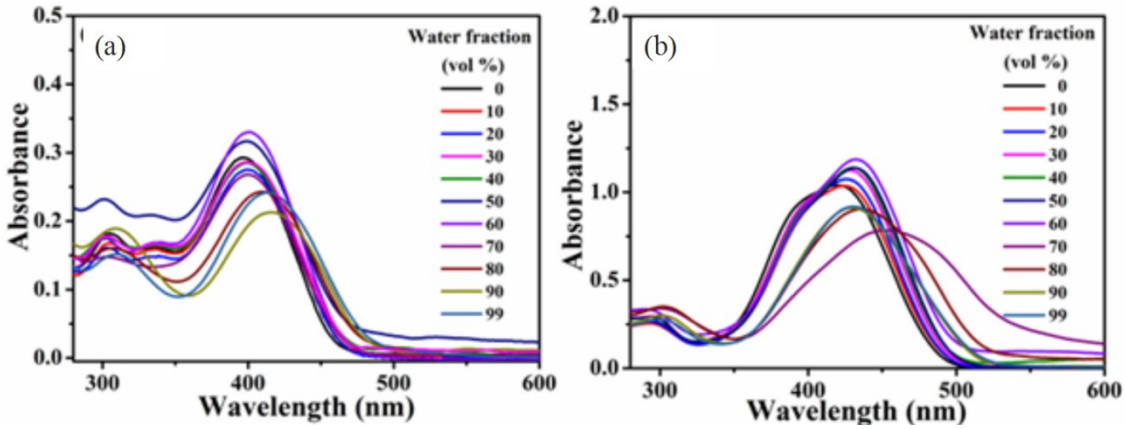


Fig. **S3** UV-Vis spectra of **TPA-B** (a) and **TPA-BN** (b) in THF/water mixtures with different water volume fractions.

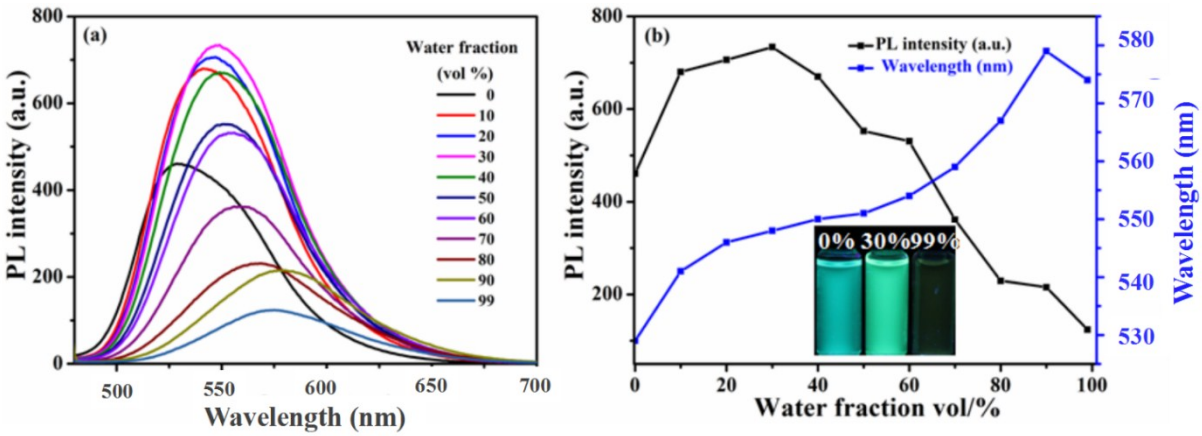


Fig. **S4.** PL emission (a) spectra changes of **TPA-B** (5.0×10^{-5} M) in THF/ H_2O mixtures with different water volume fractions; Plots of fluorescence intensity determined in THF-H_2O solutions versus water fractions (b). Insets: photos of **TPA-B** in THF-H_2O mixtures (f_w = 0%, 30% and 99%) taken under 365 nm UV lamp.

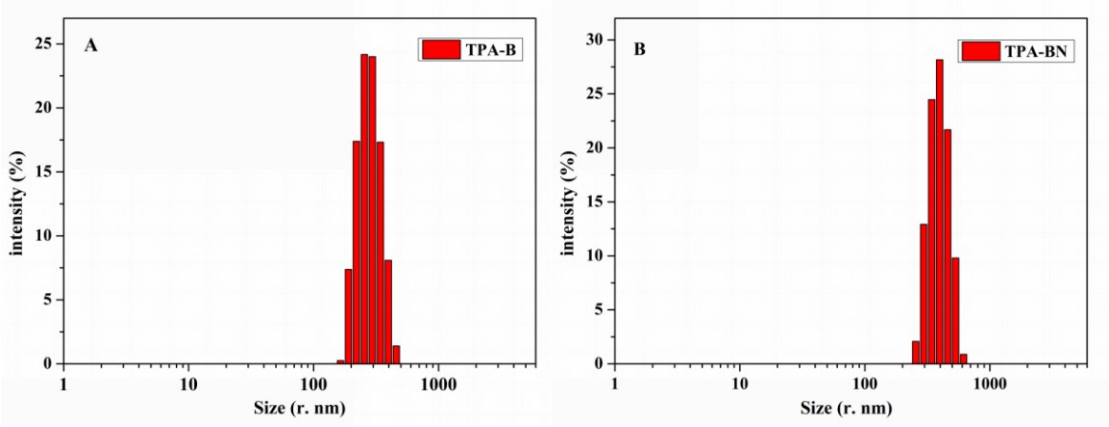


Fig. **S5** The partcle size analysis of **TPA-B** (A) in THF- H_2O mixtures (f_w = 30%) and **TPA-BN** (B) in THF- H_2O mixtures (f_w = 80%).

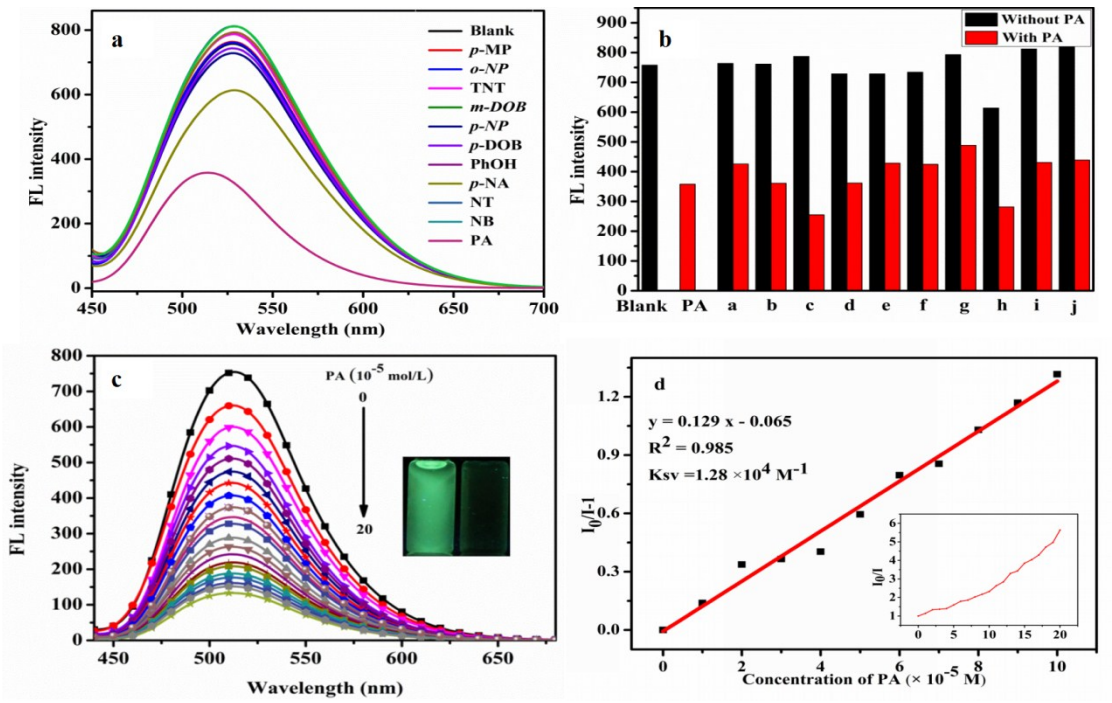


Fig. **S6** (a) FL emission spectra obtained for different analytes (100 pm); (b) quenching percentages of compound **TPA-B** (10 mM) with different analytes (100 ppm) in THF/water (v/v=2:8) mixtures before (black) and after (red) the addition of 100 ppm. a: *p*-MP, b: *o*-NP, c: TNT, d: *m*-DOB, e: *p*-NP, f: *p*-DOB, g: PhOH, h: *p*-NA, i: NT, j: NB; (c) FL spectra of **TPA-B** in THF/water (v/v = 7 : 3) containing different amounts of PA; (d) corresponding Stern-Volmer plot for PA detection. Inset: Stern-Volmer plot obtained at a lower concentration of PA.

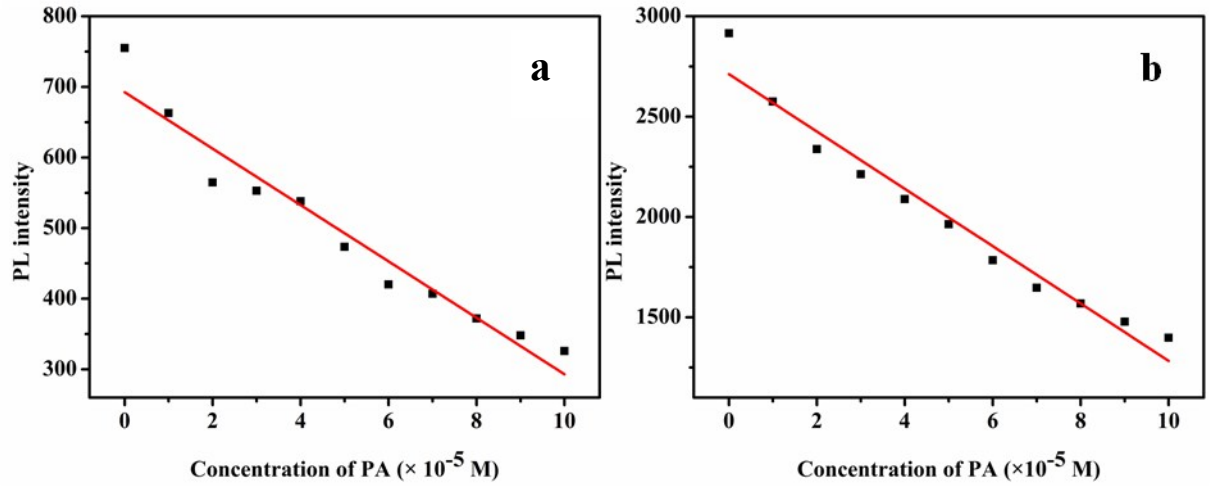
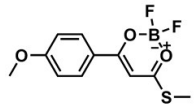
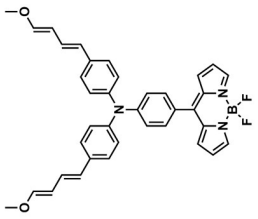
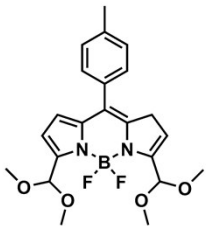
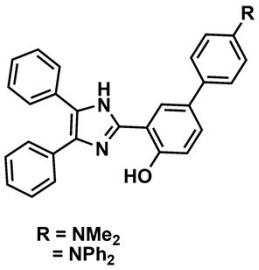


Fig. **S7** The linear relationship of **TPA-B** (a) and **TPA-BN** (b) between the fluorescence intensity and the PA concentration

Table **S1** Performance comparison of organoboron chemosensors reported for PA

Compounds	Detecting system	K_{sv}/M^{-1}	Limit of detection (LOD)	Ref.
	Pure DCM solution	0.5×10^4	21.5×10^{-6}	[58]
	test paper (toluene solution)	2.1×10^6	49.8×10^{-9}	[56]
	In CH_3CN/H_2O solution	9.2×10^6	35.8×10^{-8}	[59]
	Pure THF solution	0.7×10^4 / 1.0×10^4	/	[57]
TPA-BN/TPA-B	THF/H_2O mixtures	1.28×10^4 / 1.07×10^4	1.26×10^{-6} / 1.51×10^{-6}	This work

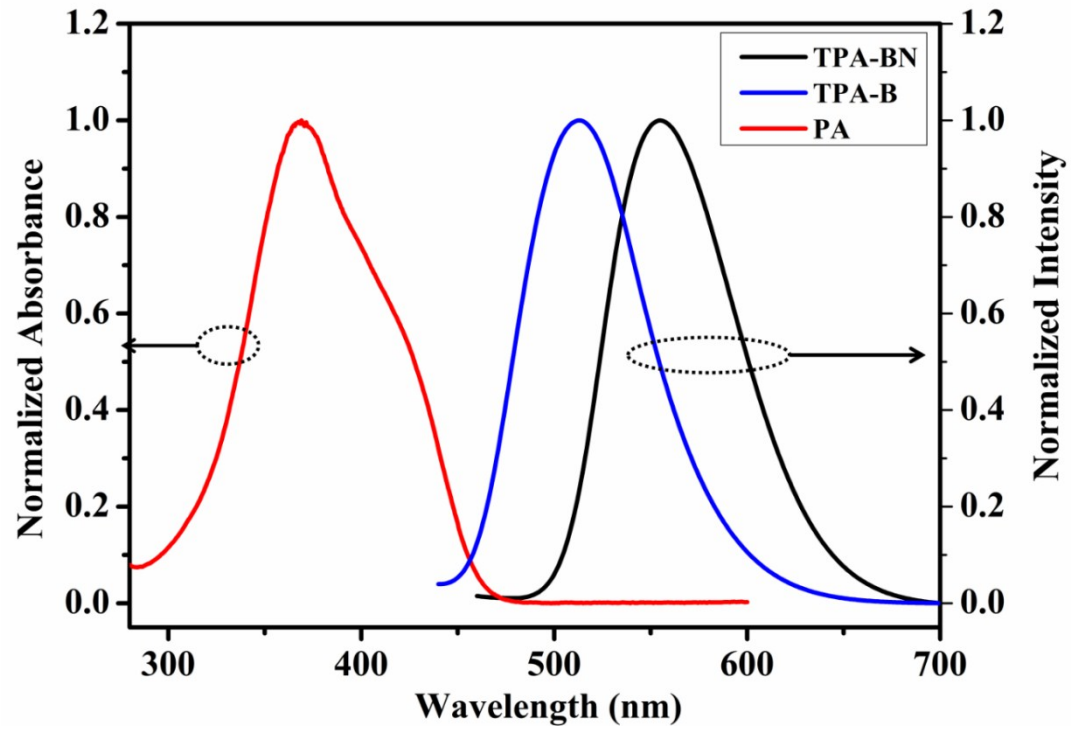


Fig. S8. UV-vis absorption spectra of PA; Normalized Fluorescence of **TPA-B** and **TPA-BN**.