

Supporting Information

Table S1 Comparison of previously reported fluorescence water probe with our probe

PTS

Entry	Solvent	LOD (v/v %)	Sensing strategy	Ref.
1	THF	0.059	ICT	12
	DMF	0.210		
	ethanol	0.081		
	acetonitrile	0.092		
	acetone	0.400		
2	DMF	0.011	Chemical reaction	13
	MeOH	0.007		
	acetonitrile	0.007		
	DMSO	0.008		
3	THF	0.13	ICT	14
	DMF	0.088		
	1,4-dioxane	0.025		
	acetone	0.019		
	acetonitrile	0.024		
	DMSO	0.095		
4	THF	0.058 ^a	FRET	15
	DMF	0.026 ^a		
	acetone	0.076 ^a		
	acetonitrile	0.063 ^a		
5	THF	0.28	Chemical reaction	16
	acetonitrile	0.20		
6	THF	0.1 ^a	PET	17
	1,4-dioxane	0.1 ^a		
	acetonitrile	0.001 ^a		
	ethanol	0.001 ^a		
7	THF	0.020	ICT	18
	DMF	0.054		
	1,4-dioxane	0.049		
	acetone	0.016		
	acetonitrile	0.021		
	methanol	0.291		
8	THF	0.0464	Chemical reaction	19
	acetonitrile	0.0298		
	methanol	0.0017		
9	THF	0.98	Hydrogen-bond interactions	20
	acetonitrile	0.038		
	acetone	0.74		
	DMSO	1.1		
	methanol	1.3		
10	DMF	0.008 ^a	Water induced interpolymer π -stacking aggregation	21
	ethanol	0.1 ^a		
	acetonitrile	0.02 ^a		
	NMP	0.009 ^a		
11	THF	0.034	Water induced interpolymer π -stacking aggregation	This work
	DMF	0.013		
	DMAc	0.014		

^a Results expressed using weight/weight percent (wt%).

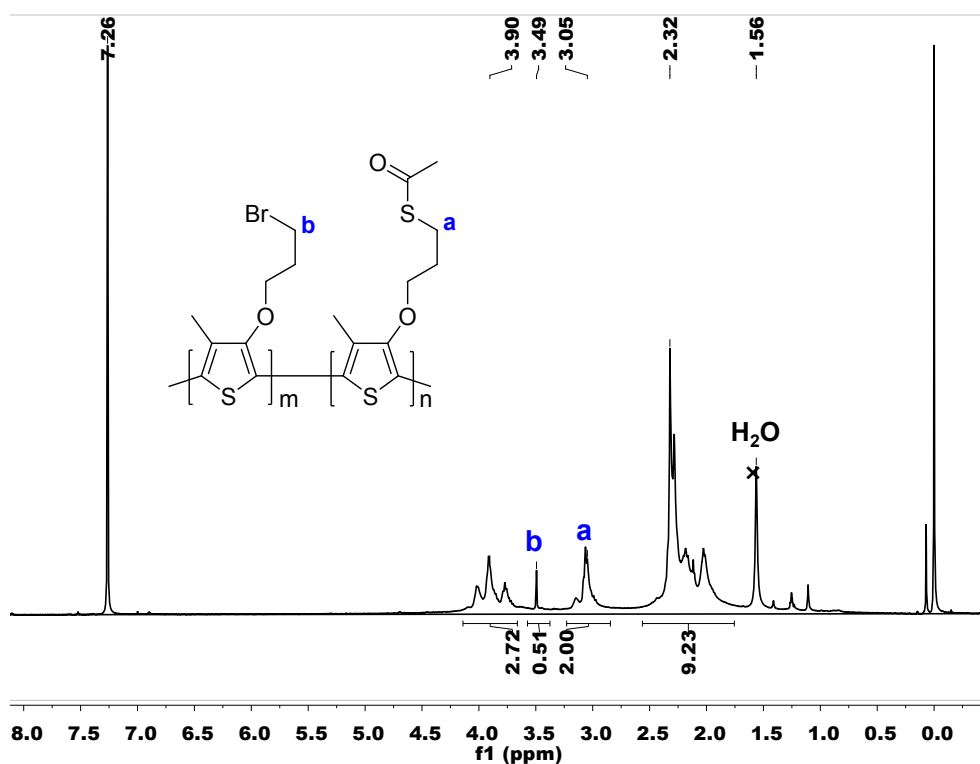


Fig. S1 ^1H NMR spectrum of polymer probe **PTS**. The ethanethioated graft yield was determined by the integral ratio of the proton signal at 3.05 ppm (a) to that at 3.49 ppm (b).

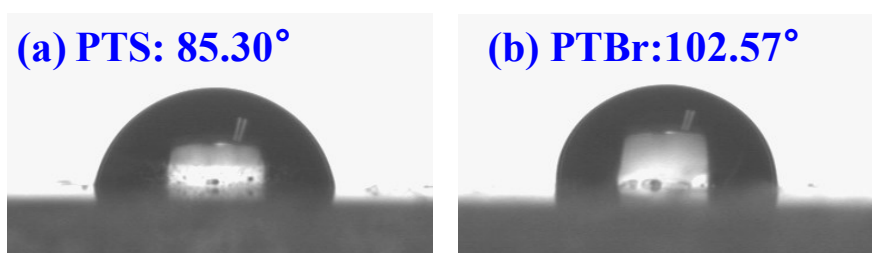


Fig. S2 Contact angles for (a) **PTS** and (b) **PTBr**.

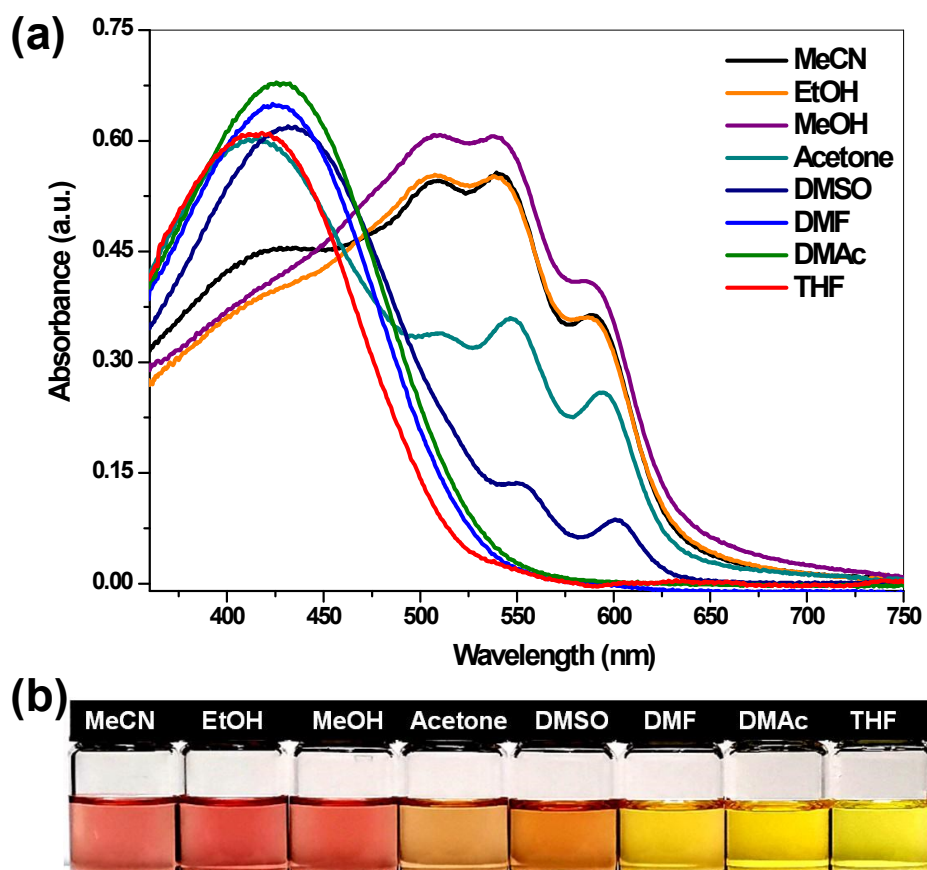


Fig. S3 (a) UV-Vis absorption spectra of **PTS** in different organic solvents, $[\text{PTS}] = 100 \mu\text{M}$. (b) Photographs of **PTS** in various organic solvents.

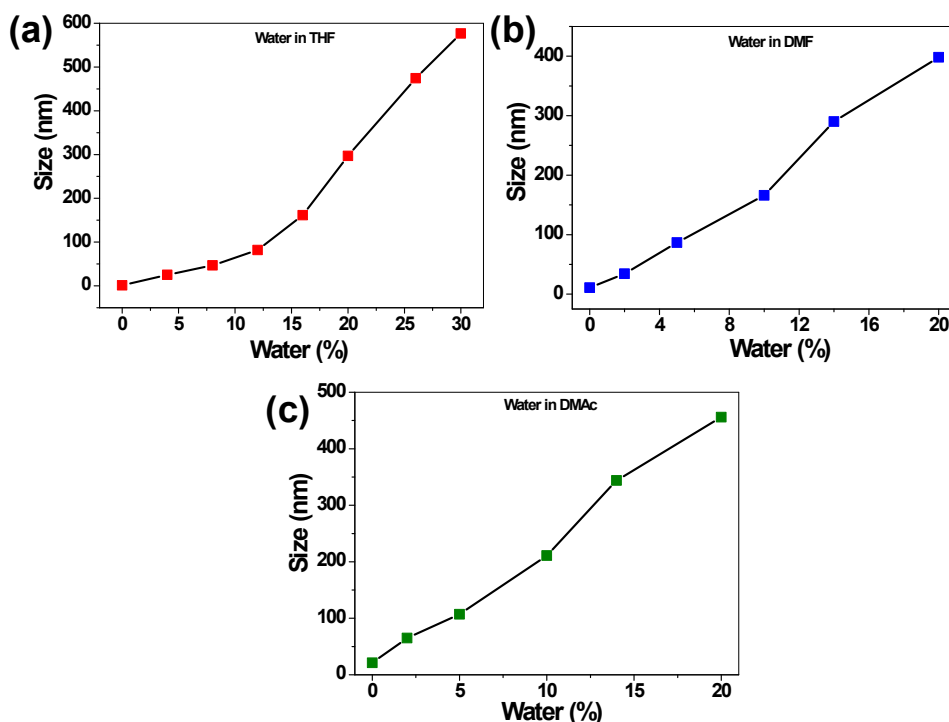


Fig. S4 Changes in the average hydrodynamic diameter of PTS aggregates as water content in various solvents: (a) THF, (b) DMF and (c) DMAc obtained by DLS analysis.

Table S2 Calculation equations, detection range and limit of detection (LOD) of the probe PTS for determination of water content in organic solvents

Solvents	Calculation equations ^a	Correlation coefficient (R^2)	Detection range (v/v)	Limit of detection (LOD)
THF	$F/F_0 = 1.0027 - 0.0339C$	0.9985	0-30 %	0.034 %
DMF	$F/F_0 = 1.01094 - 0.08556C$	0.9985	0-10 %	0.013 %
DMAc	$F/F_0 = 1.01544 - 0.08182C$	0.9970	0-10 %	0.014 %

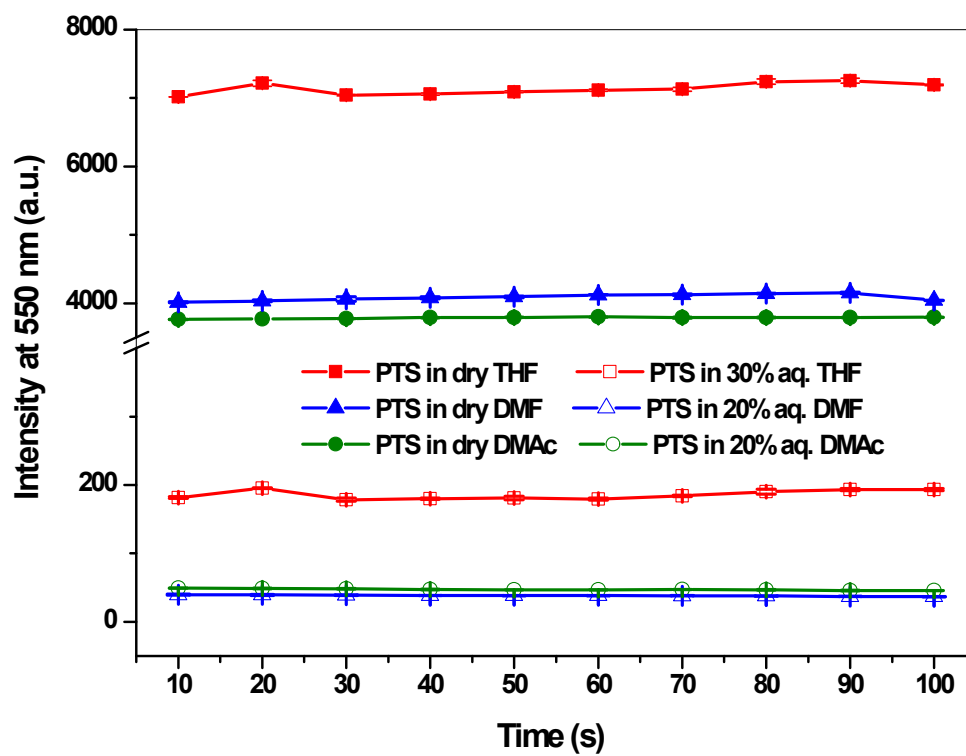


Fig. S5 Photostability of PTS (100 μ M) in dry THF, DMF, DMAc and their corresponding aqueous solutions. Error bars represent the standard deviations of three independent experiments.

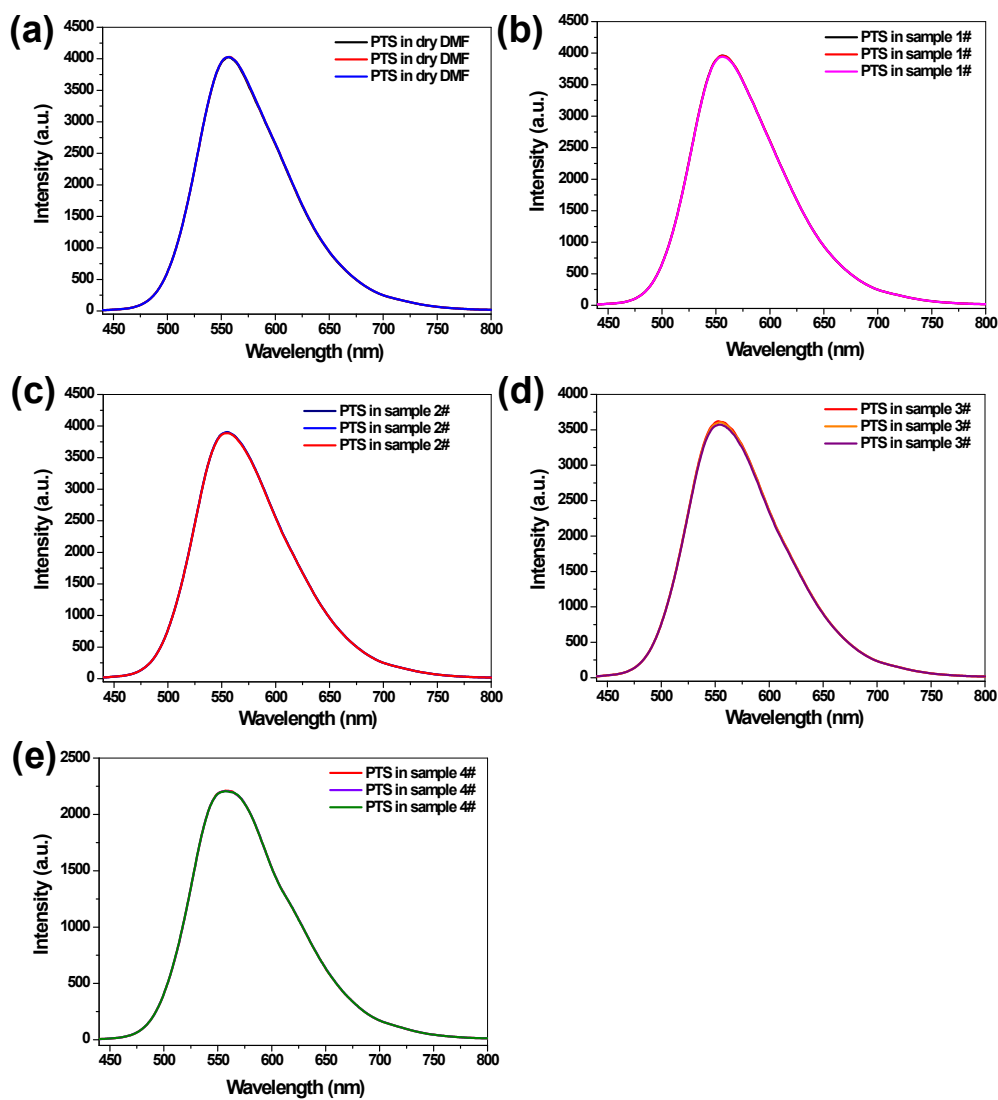


Fig. S6 Photoluminescence spectra of PTS in (a) dry DMF, and (b-e) aqueous DMF. The water contents given of b-e are 0.3% (v/v), 0.4% (v/v), 1.3% (v/v) and 5.3% (v/v), respectively. [PTS] = 100 μ M, excitation at 420 nm.

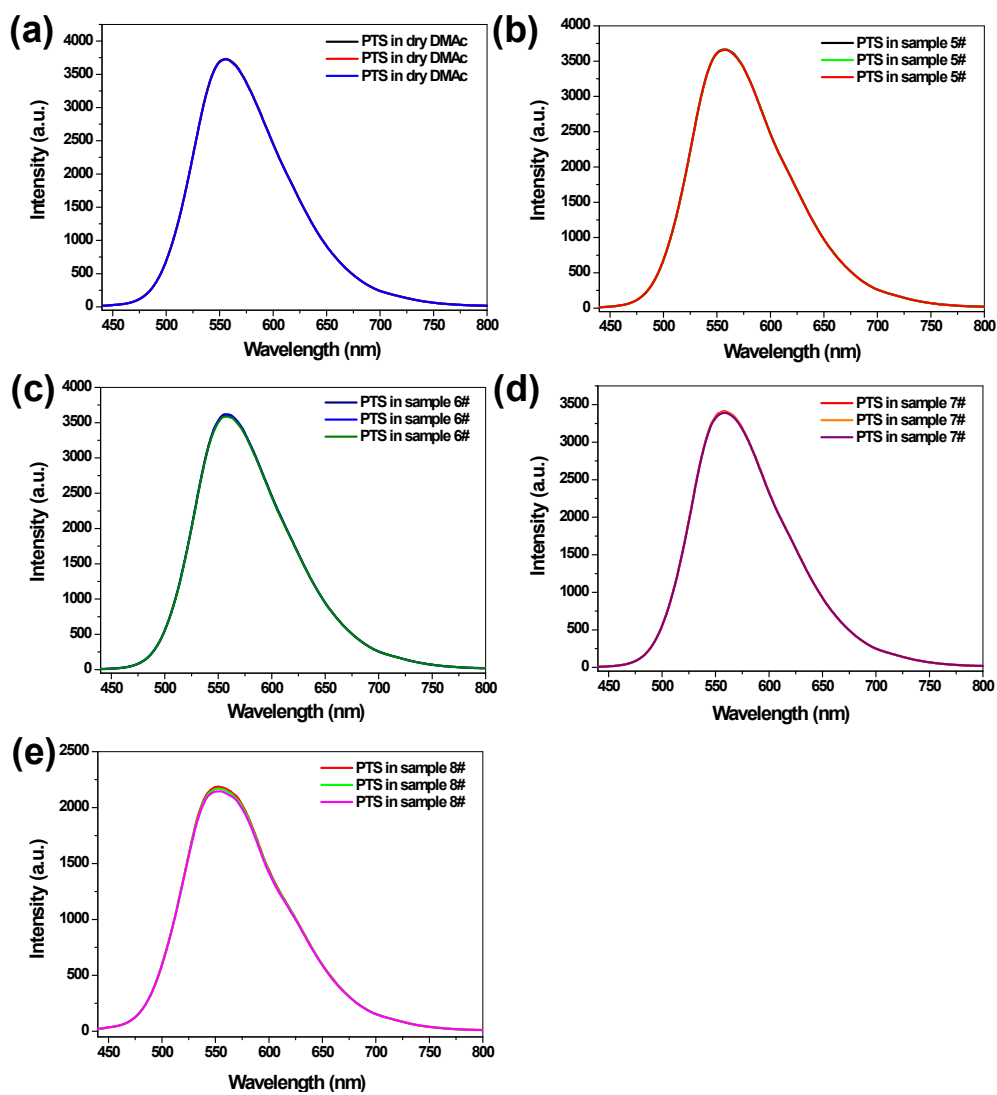


Fig. S7 Photoluminescence spectra of **PTS** in (a) dry DMAc, and (b-e) aqueous DMAc. The water contents given of b-e are 0.2% (v/v), 0.3% (v/v), 1.2% (v/v) and 5.2% (v/v), respectively. [PTS] = 100 μ M, excitation at 420 nm.