

Supplementary materials

A novel AIE-active camphor-based fluorescent probe for simultaneous detection of Al³⁺ and Zn²⁺ at dual channels in living cells and zebrafish

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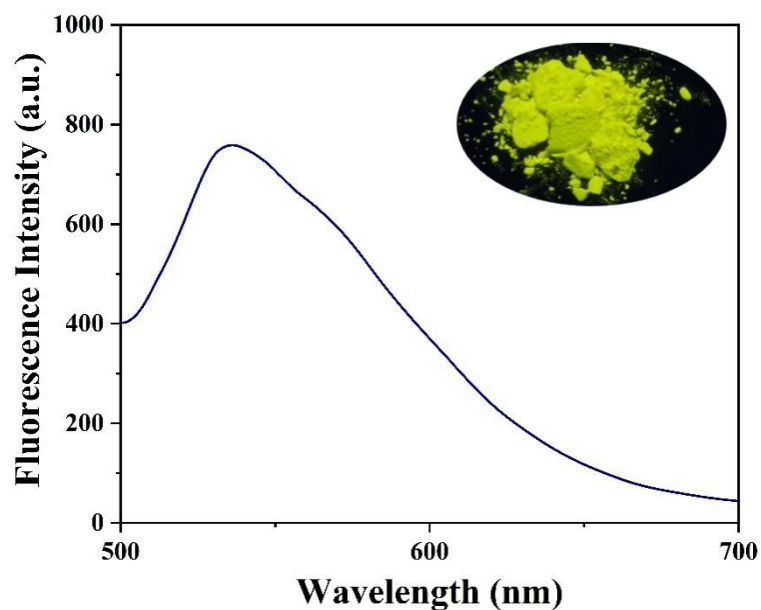


Fig. S1. Emission spectra of **PSH** in the solid state. Inset: The corresponding photograph of **PSH** in solid-state under 365 nm UV light.

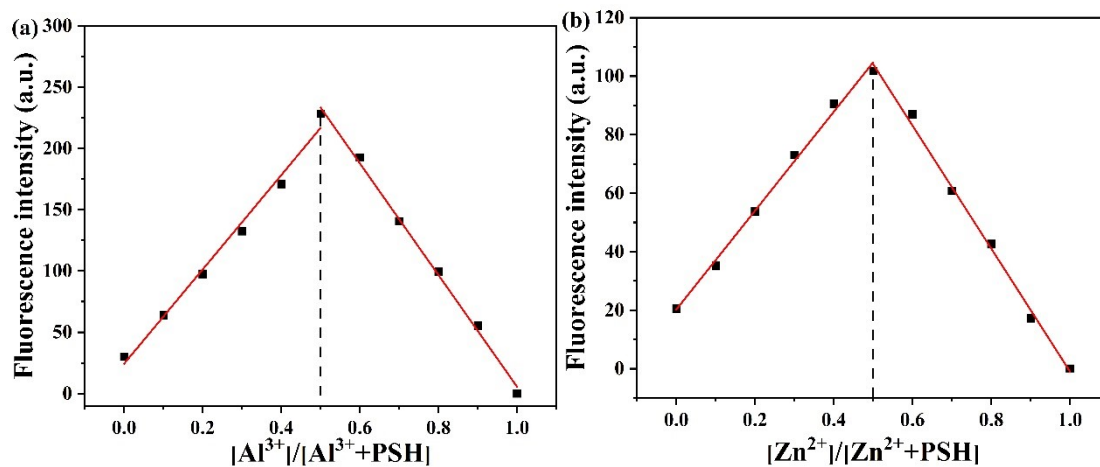


Fig. S2. Job's plot was obtained for **PSH** towards (a) Al^{3+} and (b) Zn^{2+} ions. The total concentration of **PSH** and $\text{Al}^{3+}/\text{Zn}^{2+}$ was fixed at $10 \mu\text{M}$.

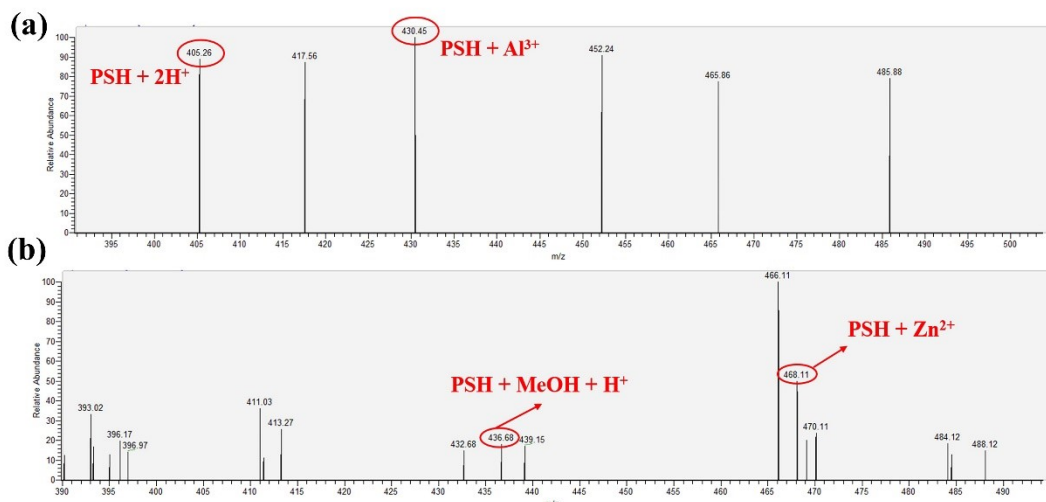


Fig. S3. (a) HRMS analysis of PSH-Al³⁺ complex; (b) HRMS analysis of PSH-Zn²⁺ complex.

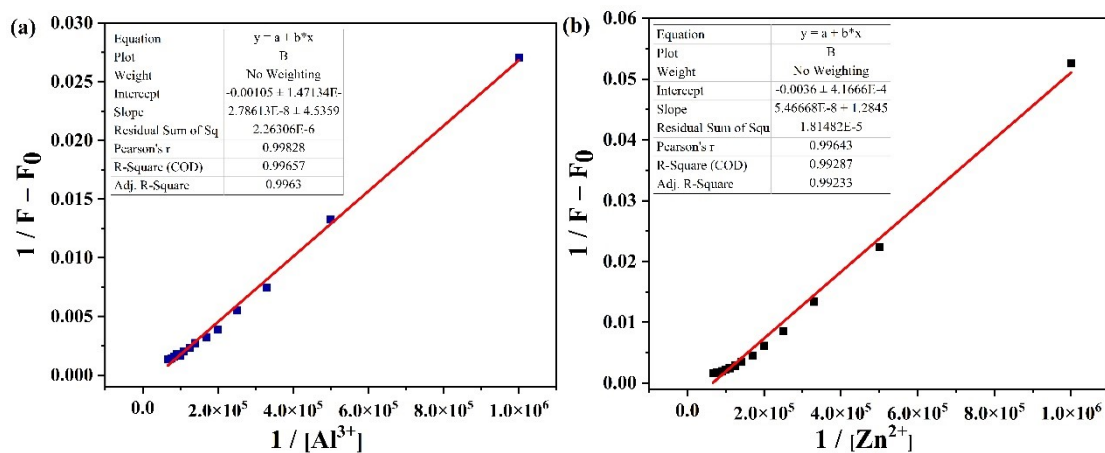
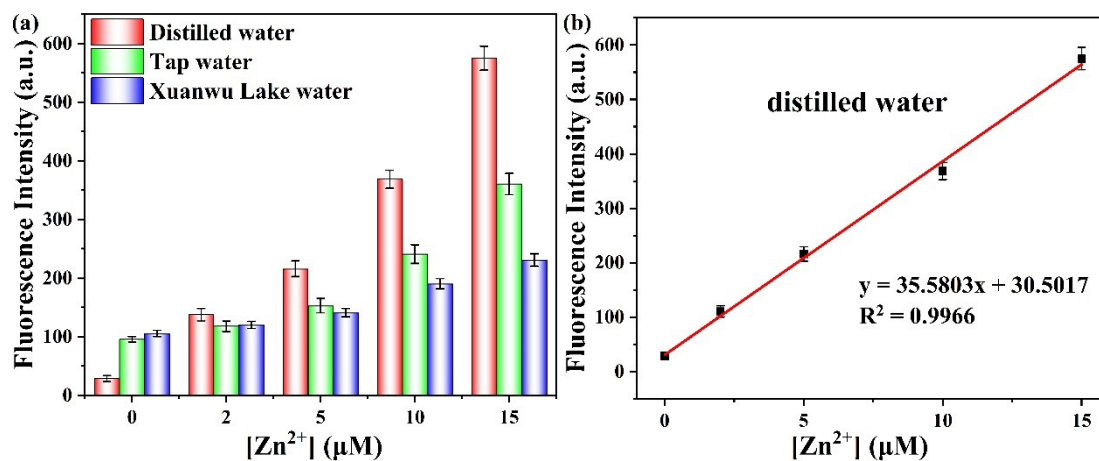


Fig. S4. Determination of the association constant of PSH at 500 nm or 555 nm depending on the Al³⁺ or Zn²⁺.



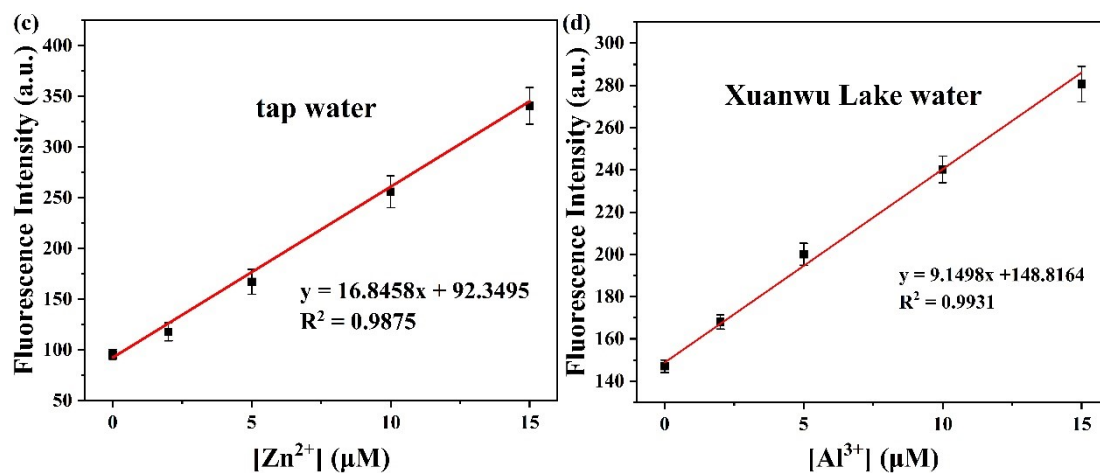


Fig. S5. (a) The fluorescence emission intensity of PSH towards different concentrations of Zn^{3+} in different water samples; The Linear plots between the PSH– Zn^{2+} fluorescence intensity and different concentrations of Zn^{2+} in (b) distilled water, (c) tap water, and (d) Xuanwu Lake water.

Table S1. Determination results of PSH towards Zn^{2+} in three kinds of water samples.

Water sample	Added Zn^{2+} (μM)	Found Zn^{2+} (μM)	Recovery (%)
Distilled water	0	Not detected	–
	2	2.24 ± 0.26	112.0
	5	5.21 ± 0.33	104.2
	10	9.49 ± 0.41	94.9
	15	15.30 ± 0.56	102.0
Tap water	0	0.28 ± 0.08	0.0
	2	1.81 ± 0.42	90.5
	5	3.60 ± 0.70	72.0
	10	8.81 ± 0.83	88.1
	15	15.92 ± 0.80	106.1
Xuanwu Lake water	0	0.51 ± 0.12	0.0
	2	1.94 ± 0.39	97.0
	5	4.43 ± 0.50	88.6
	10	10.31 ± 0.68	103.1
	15	15.13 ± 0.87	100.8

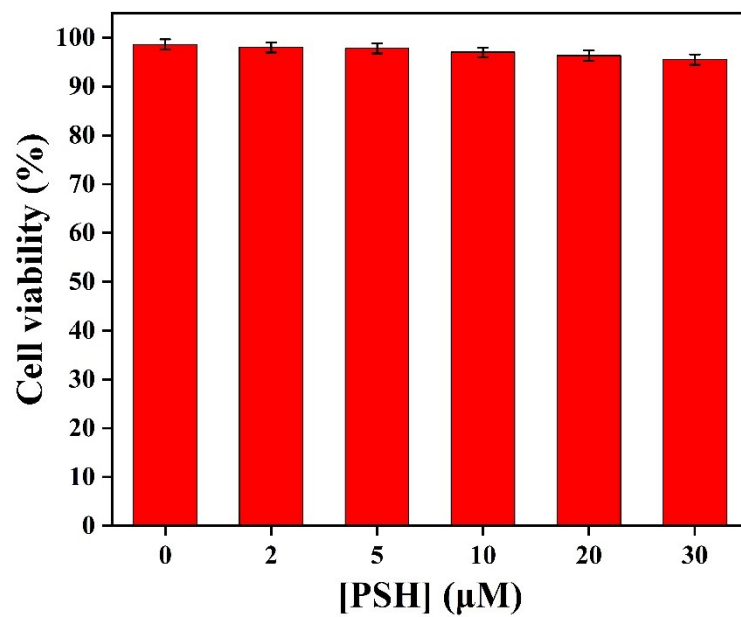


Fig. S6. Cytotoxicity assays of PSH in living HeLa cells.

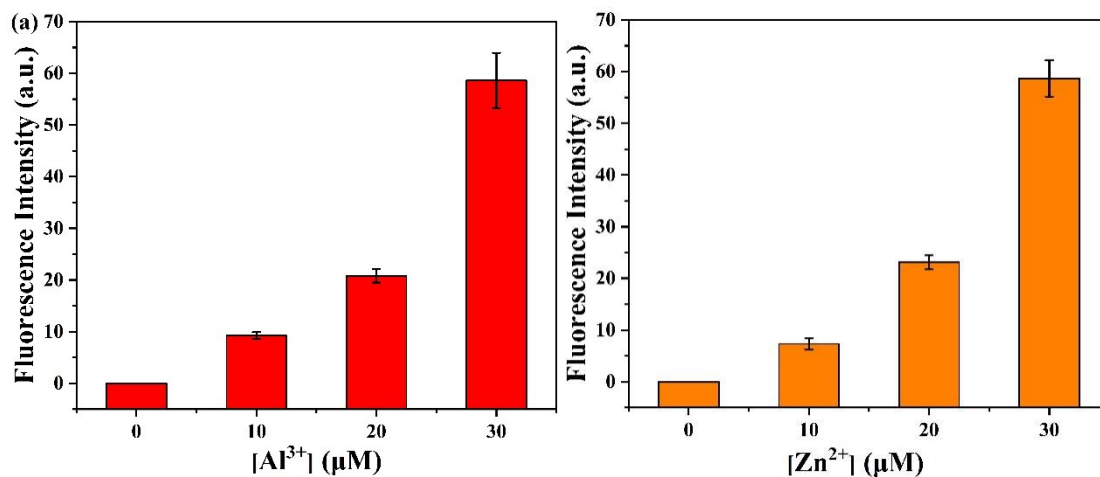


Fig. S7. Quantified fluorescence intensity in confocal fluorescence images (a), (d), (g), (j).

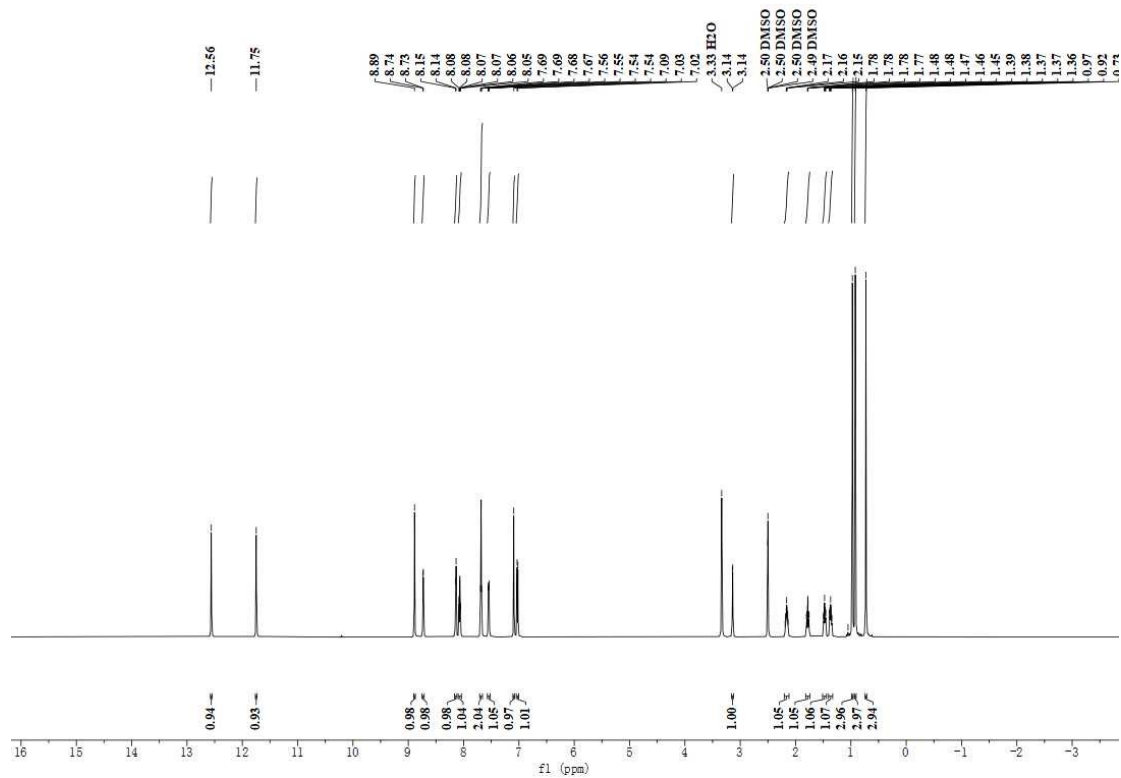


Fig. S8. ^1H NMR spectra of compound PSH was tested in $\text{DMSO}-d_6$ solutions with a Bruker AV 500 Spectrometer.

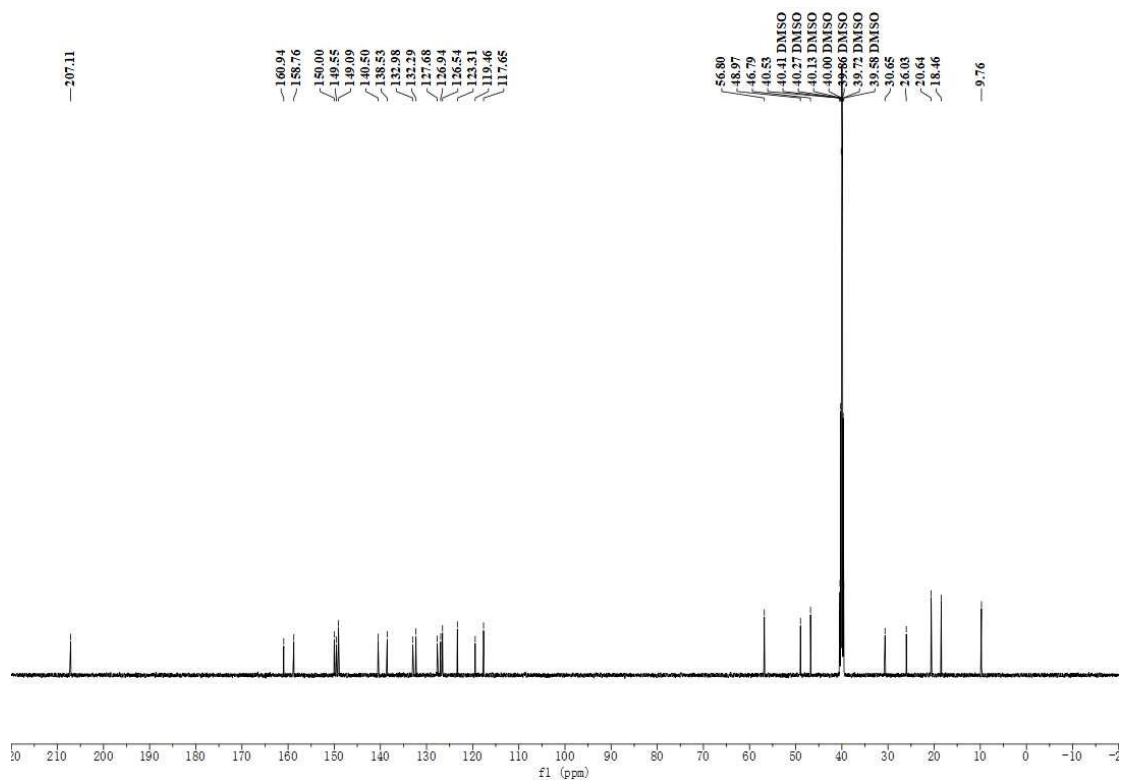


Fig. S9. ^{13}C NMR spectra of compound PSH was tested in $\text{DMSO}-d_6$ solutions with a Bruker AV 500 Spectrometer.

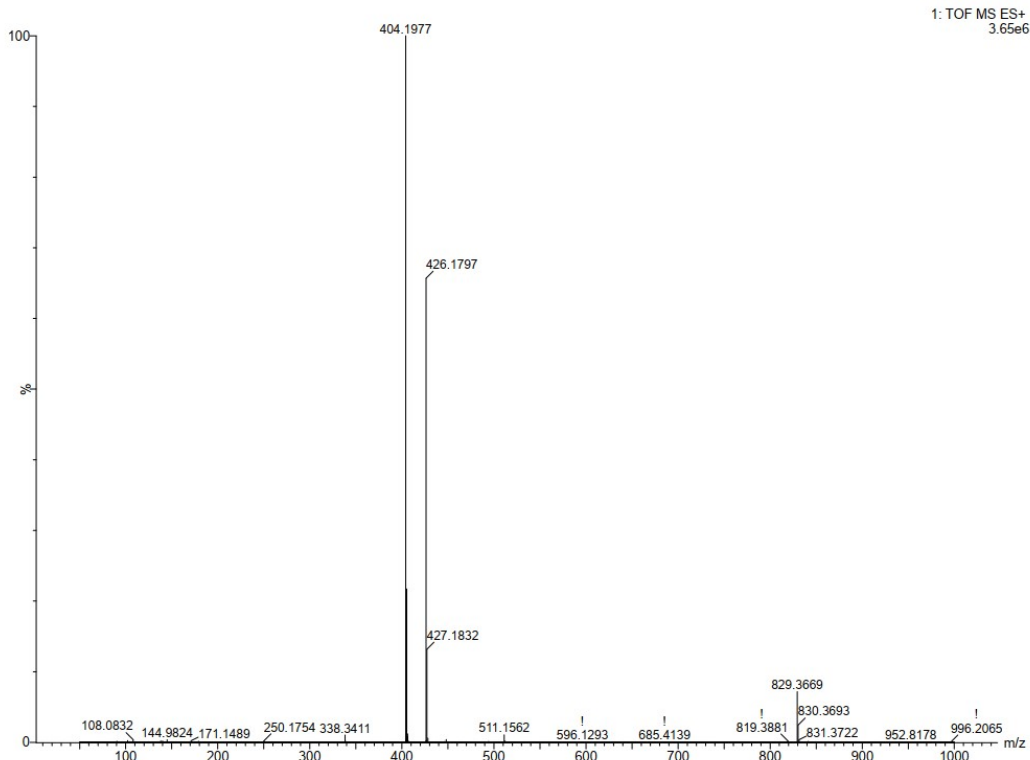


Fig. S10. HRMS spectra of compound PSH.

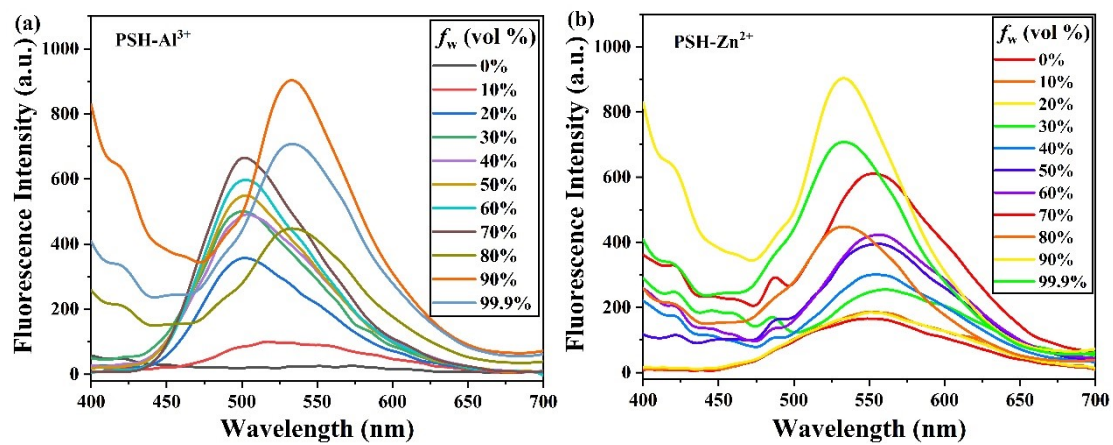


Fig. S11. (a) The fluorescence spectra PSH-Al³⁺ (10 μ M, λ_{ex} = 365 nm) in ACN/ HEPES buffer solutions with the changed HEPES

buffer volume fractions. λ_{ex} = 365 nm. (b) The fluorescence spectra PSH-Zn²⁺ (10 μ M, λ_{ex} = 365 nm) in ACN/ HEPES buffer

solutions with the changed HEPES buffer volume fractions. λ_{ex} = 365 nm.