Supporting Information for

The Diversity of The Coordination Bond Generated A POSS-based Fluorescent Probe for The Reversibly Detection of Cu(II), Fe(III) and Amino Acids

Kun Zhang, Xiaoni Wang, Minggang Tian, Zhiming Gou, Yujing Zuo*

School of Chemistry and Chemical Engineering, School of Materials Science and Engineering, University of Jinan, Shandong 250022, P.R. China.

*Corresponding Author.

E-mail address: zuoyujing0888@163.com

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Table. S1 The comparison of **PSI-A** with some other sensor probes for ions.

Sensor	Detection limit	Fluorescence photostability	Cell imaging photostability	Imaging application
RhQA	Cu^{2+}(1.8 × 10^{-8} mol/L) Fe^{3+}(3.3 × 10^{-8} mol/L)	Not mentioned	Not mentioned	Zebrafish
Py	Fe^{3+}(1.18 × 10^{-8} mol/L)	Not mentioned	Not mentioned	Cell
L	Zn^{2+}(1.34 × 10^{-7} mol/L) Fe^{3+}(1.39 × 10^{-7} mol/L)	Not mentioned	Not mentioned	Test strips
1	Fe^{3+}(4.2 × 10^{-8} mol/L)	Not mentioned	Not mentioned	Cell Zebrafish
This work	Fe^{3+}(3.2 × 10^{-9} mol/L) Cu^{2+}(1.9 × 10^{-9} mol/L)	2 h	14 min	Test strips Cell Zebrafish

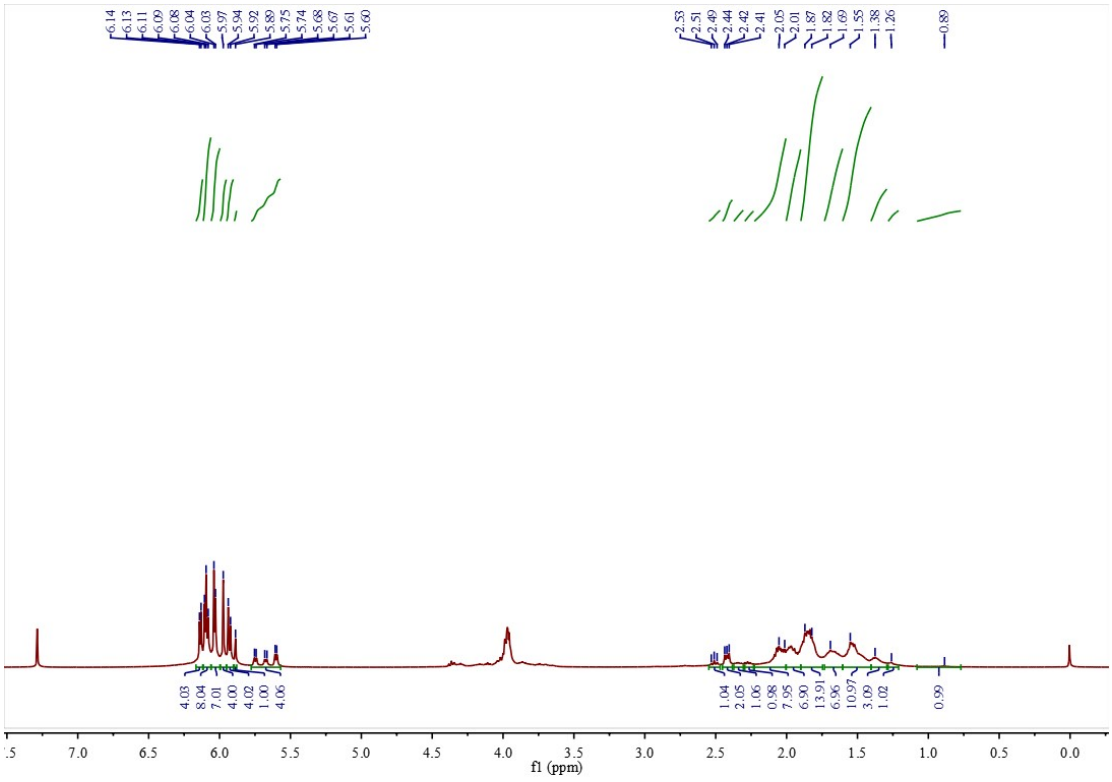

Fig. S1. ^{1}H NMR spectrums of **PSI-A** in $CDCl_3$.

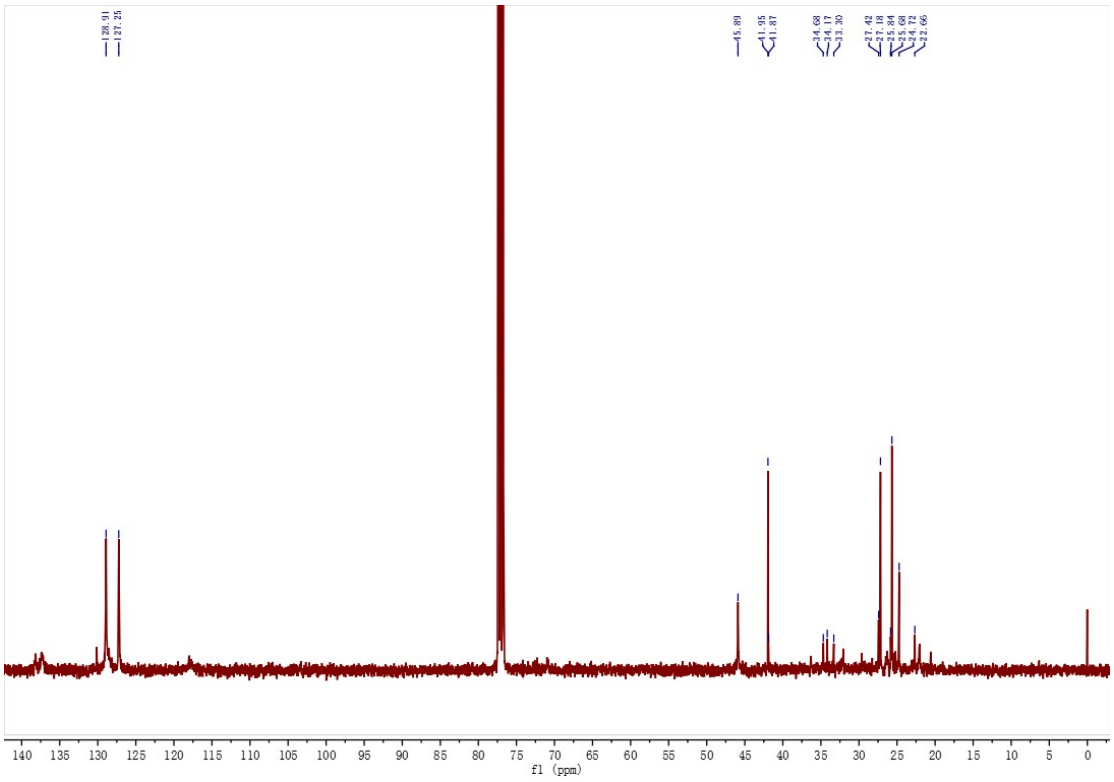

Fig. S2. ^{13}C NMR spectrum of **PSI-A** in $CDCl_3$.

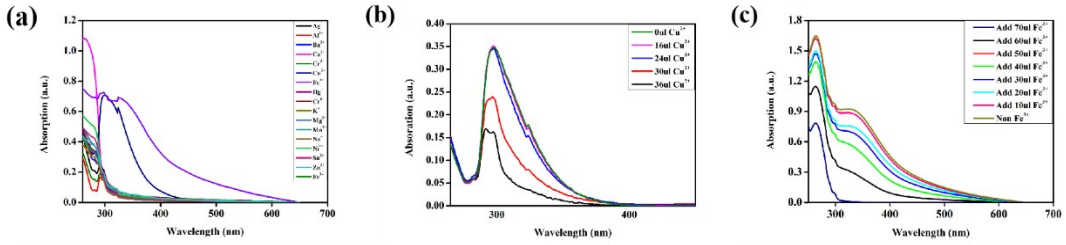

Fig. S3. The UV fluorescence spectrum of **PSI-A.**

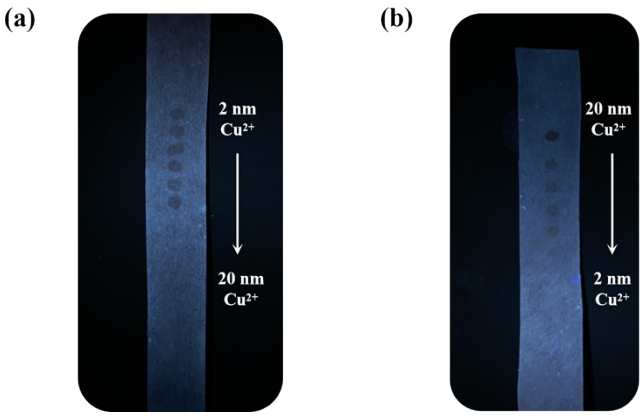

Fig. S4. PSI-A was used to prepare a strip for detecting Cu^{2+} and Fe^{3+}

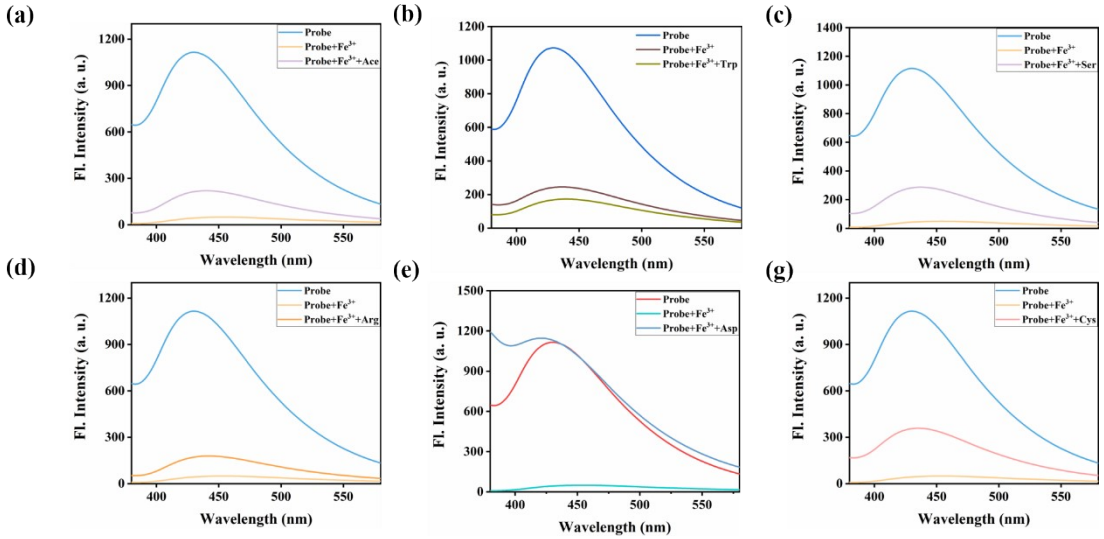

Fig. S5. Add Asp, Trp, Ser, Ace, Arg, Cys amino acid solution to the fluorescent probe solution of **PSI-A** quenched by Fe^{3+}.

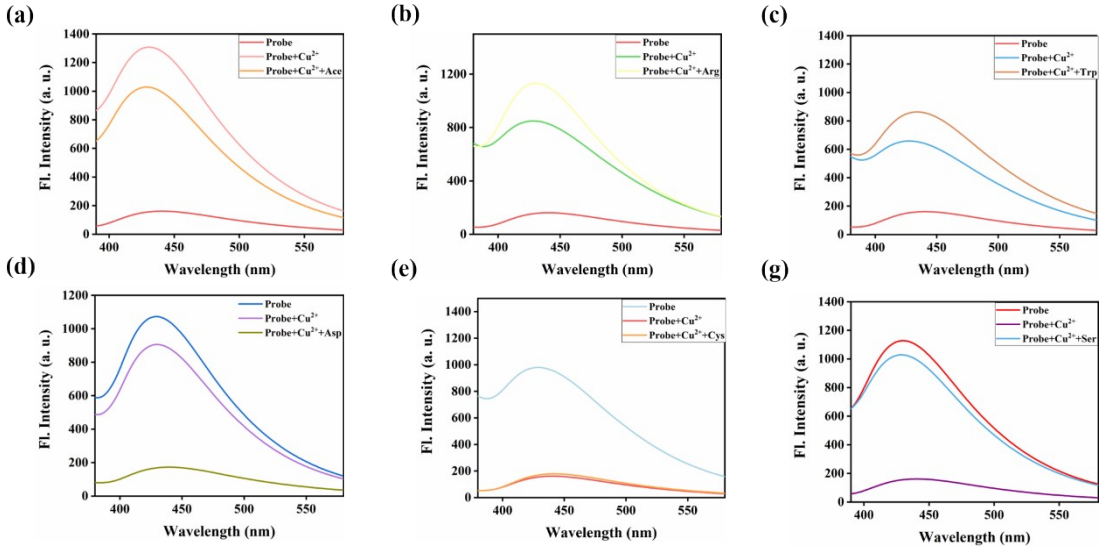

Fig. S6. (a)-(f) Add Asp, Ace, Arg, Trp, Ser, Cys amino acid solution to the fluorescent probe solution of **PSI-A** quenched by Cu^{2+}.

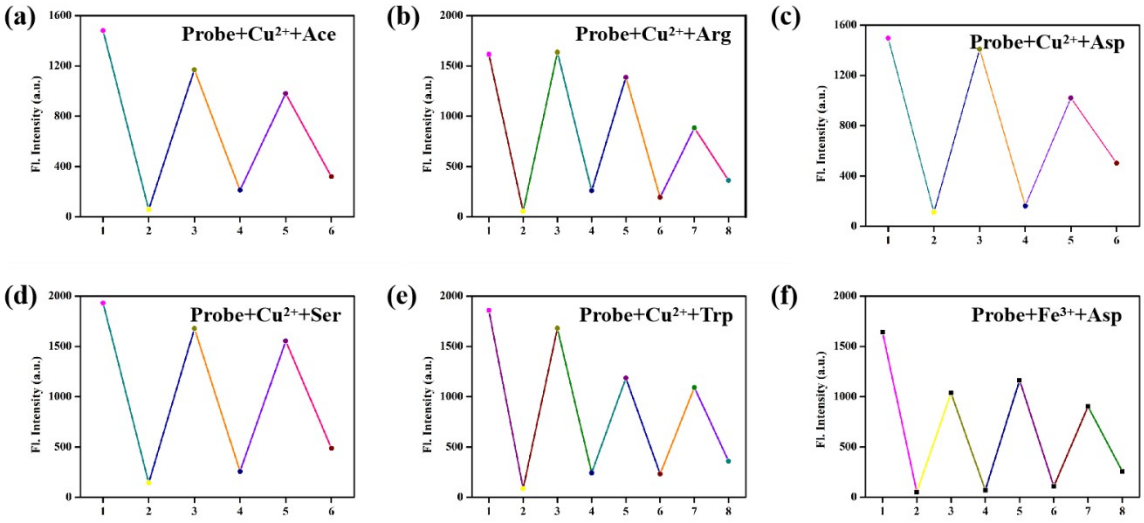

Fig. S7. PSI-A was used to dynamically detect cycles of Cu^{2+}, Ace, Arg, Asp, Ser, Trp, and Fe^{3+}, Asp.

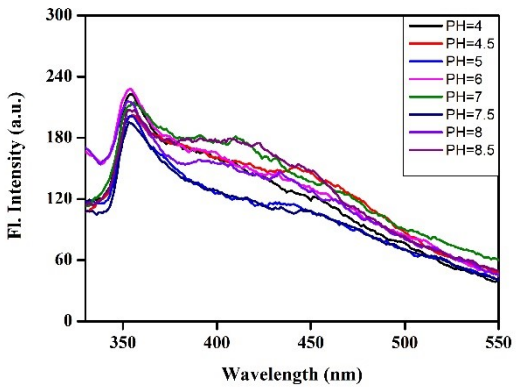

Fig. S8. The fluorescence spectra of the probe **PSI-A** at different pH values.

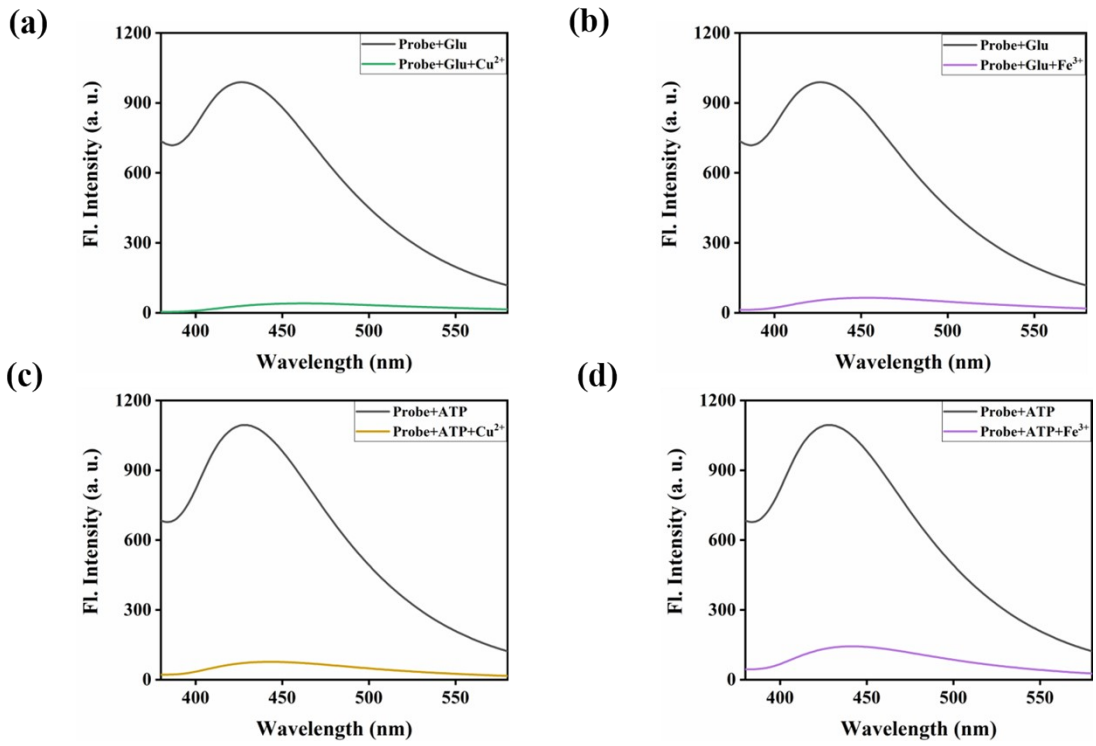

Fig. S9. The fluorescence spectra of the probe **PSI-A** at ATP and Glu.

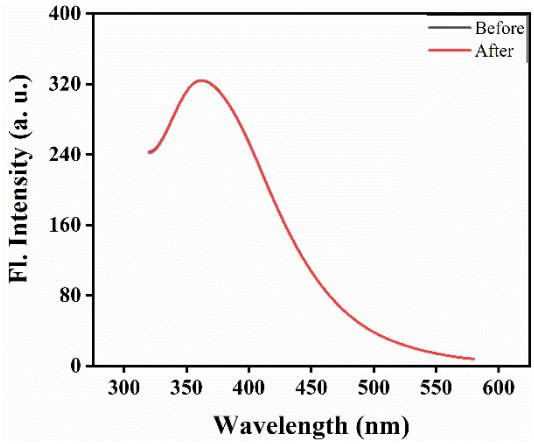

Fig. S10. PSI-A fluorescence in culture media.

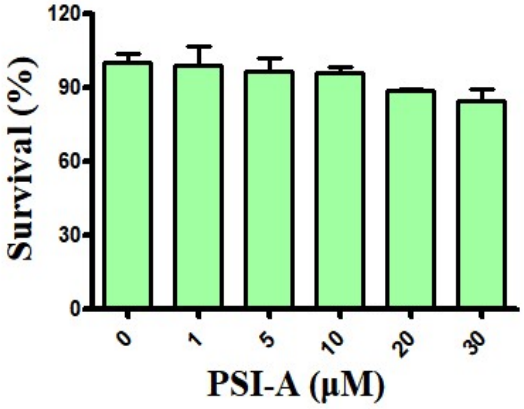

Fig. S11. Cytotoxicity of **PSI-A** on HepG2 cells determined by MTT.