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Electronic Supplementary Information for:

A turn-off fluorescent probe for the detection of Cu^{2+} based on a tetraphenylethylene-functionalized salicylaldehyde Schiff-base

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NMR spectrum

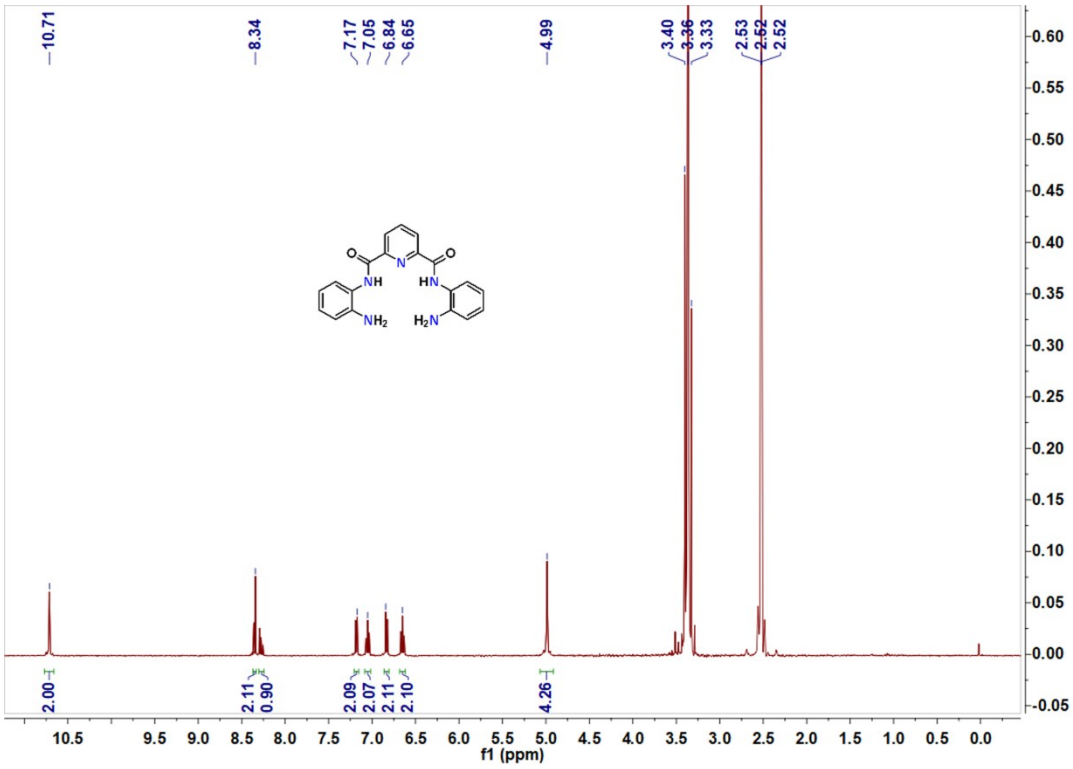

Figure S1.[1]HNMR of pyridine-2,6-dicarboxamide.

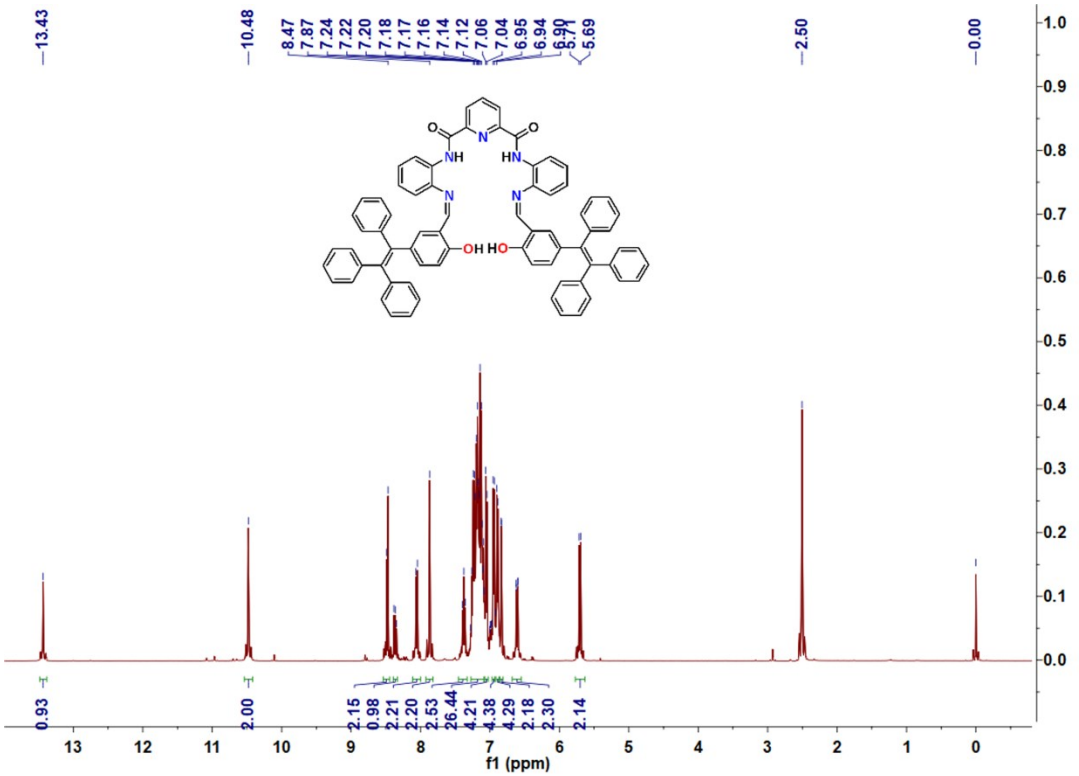

Figure S2. [1]HNMR of probe **TPE-An-Py**.

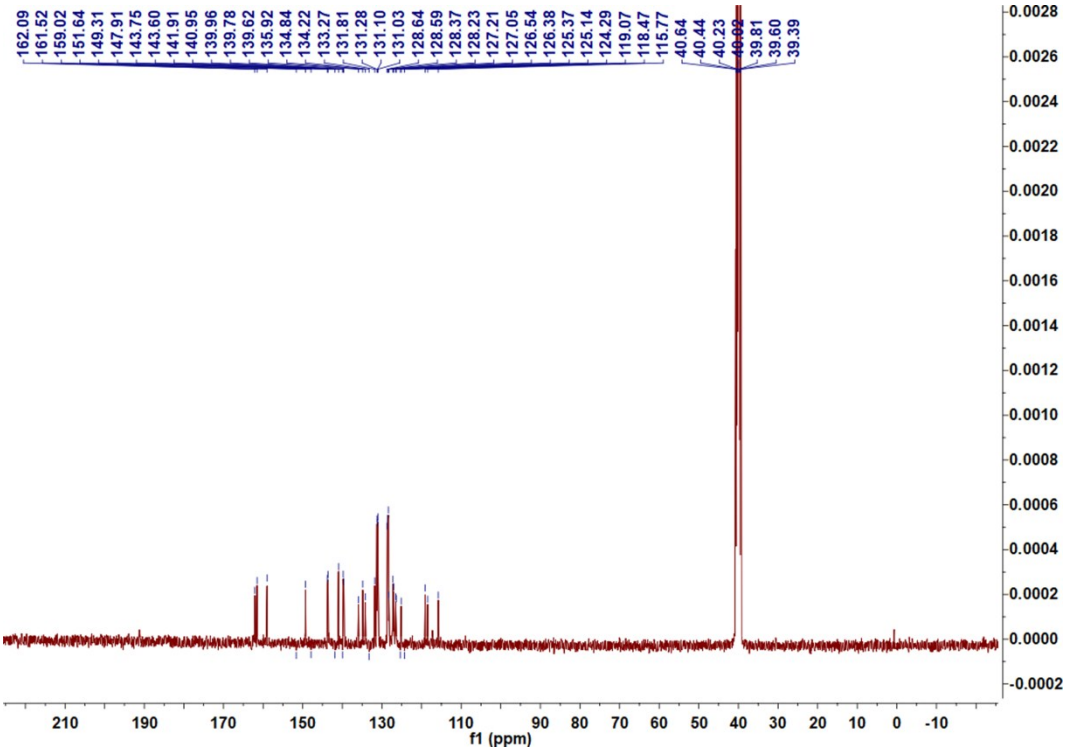

Figure S3. ^{13}CNMR of **TPE-An-Py**.

MS spectrum

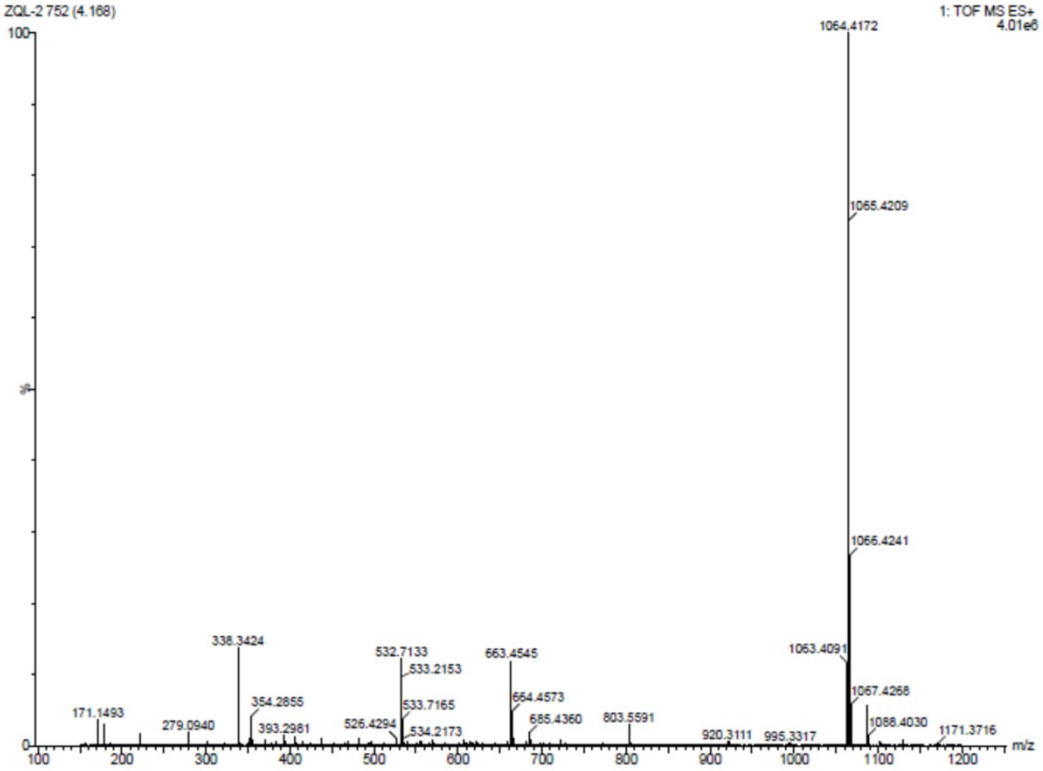

Figure S4. MS spectrum of**TPE-An-Py**.

X-ray crystallographic Analysis

Table S1. Summary of crystal data of **TPE-An-Py**

Parameter	Probe	Probe@Cu^{2+}
Empirical formula	$C_{73}H_{53}N_5O_4 \cdot 2(CHCl_3)$	$2[C_{73}H_{53}N_5O_4 \cdot Cu_2 \cdot (CH_3OH)_2]$
Formula weight [g mol^{-1}]	1302.94	2438.58
Crystal system	triclinic	triclinic
Space group	*P -1*	*P -1*
a [Å]	9.7778(9)	11.141(2)
b [Å]	15.7759(14)	12.787(3)
c [Å]	21.756(2)	21.303(4)
α [°]	91.503(3)	102.19(3)
β [°]	97.715(3)	94.10(3)
γ [°]	107.927(3)	95.61(3)
Volume [$Å^3$]	3156.0(5)	2938.9(11)
Z	2	1
Density, calcd [gm^{-3}]	1.371	1.378
Temperature [K]	223.0	223.0
Unique reflns	6712	6739
Obsdreflns	*11027*	8341
Parameters	813	783
R_{int}	0.0880	0.0800
$R[I>2\sigma(I)]^a$	0.1089	0.0987
W[all data]R^b	0.1644	0.2273
GOF on F^2	1.023	1.071

[a]Conventional R on F_{hkl}: $\Sigma||F_o|-|F_c||/\sigma|F_o|$. [b]Weighted R on $|F_{hkl}|^2$: $\Sigma[w(F_o^2-F_c^2)^2]/\Sigma[w(F_o^2)^2]^{1/2}$.

X-ray diffraction analysis

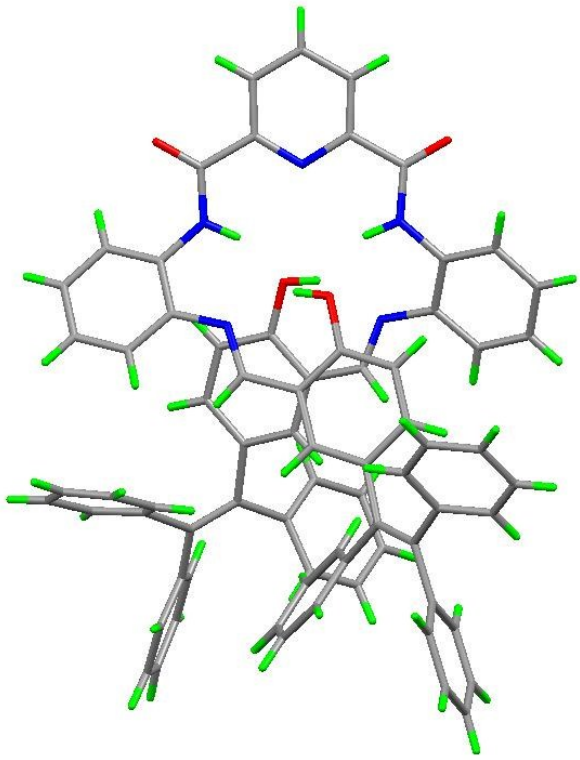

Figure S5. The X-ray structure of **TPE-An-Py**.

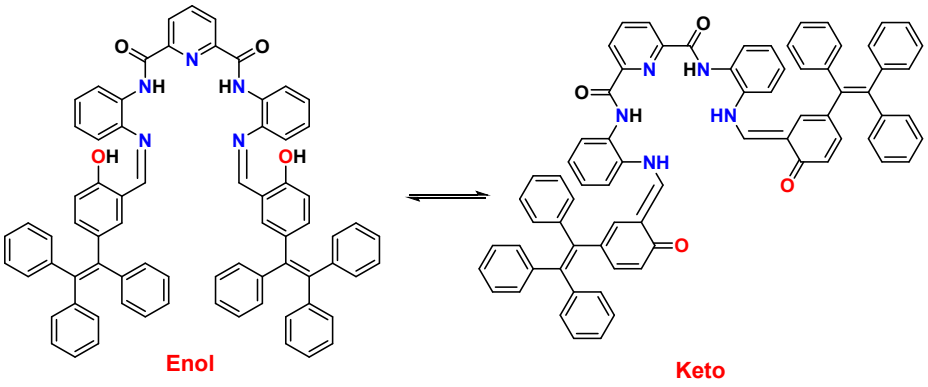

Figure S6. The enol and keto forms of TPE-An-Py.

Photophysicalproperties

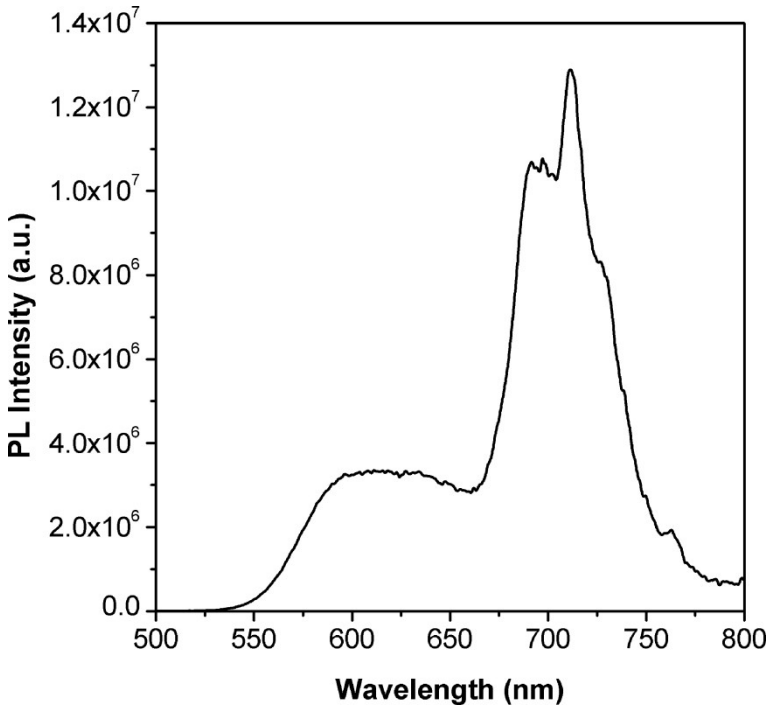

Figure S7. PL spectra of **TPE-An-Py**in the solid state (λ ex =415 nm).

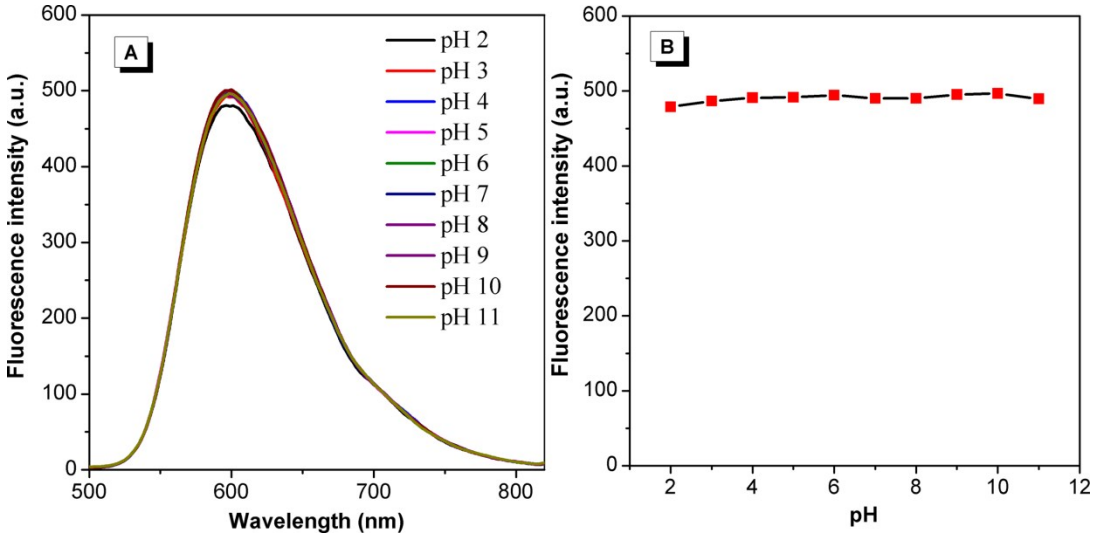

Figure S8. The stability of **TPE-An-Py** *versus* different pH values.

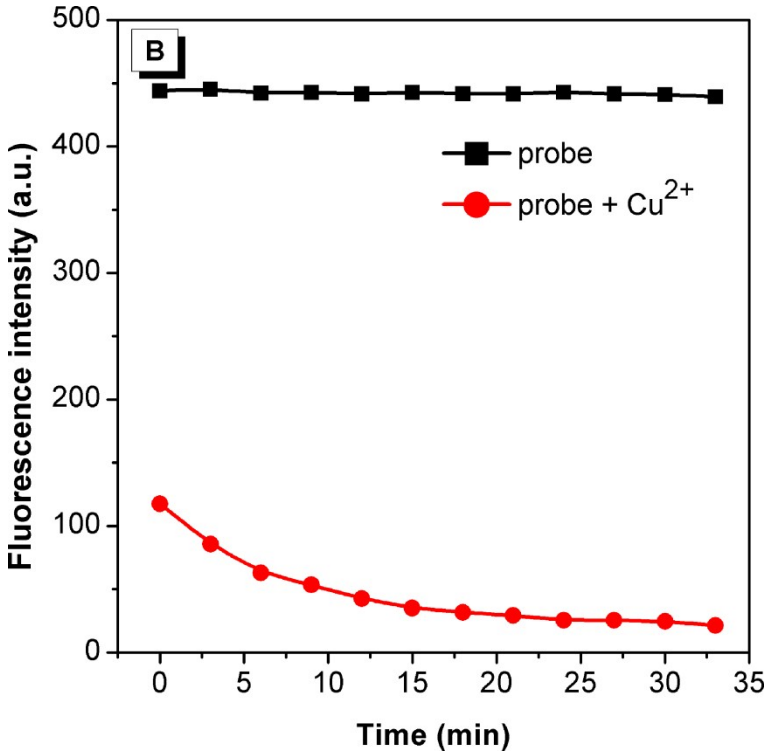

Figure S9. The stability of **TPE-An-Py** depending on the reaction time.

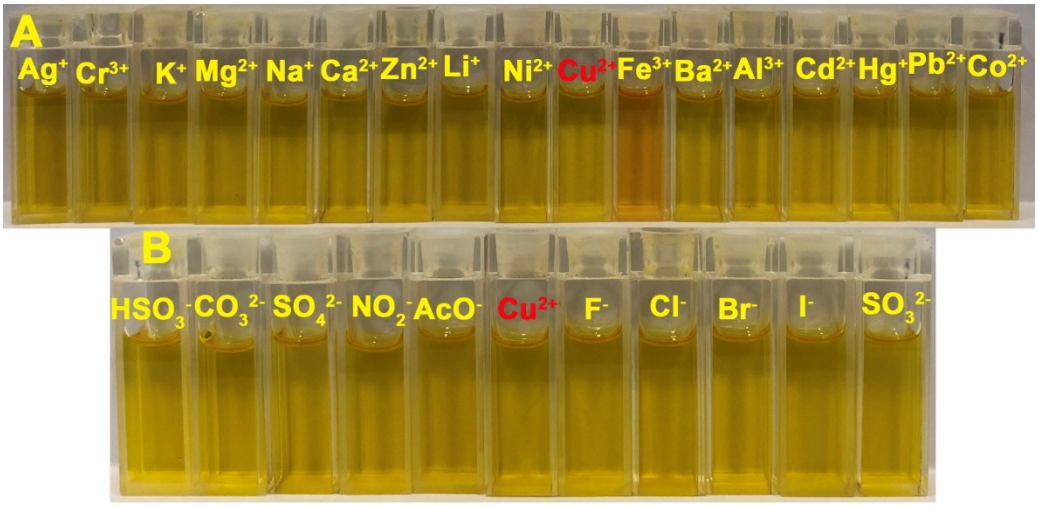

Figure S10. Photograph of probe**TPE-An-Py** / Cu^{2+} complex interacting with variousinterference coexisting ions in THF/water (V_{THF}/V_{water}=4/1, pH = 7.00) solution under natural light.

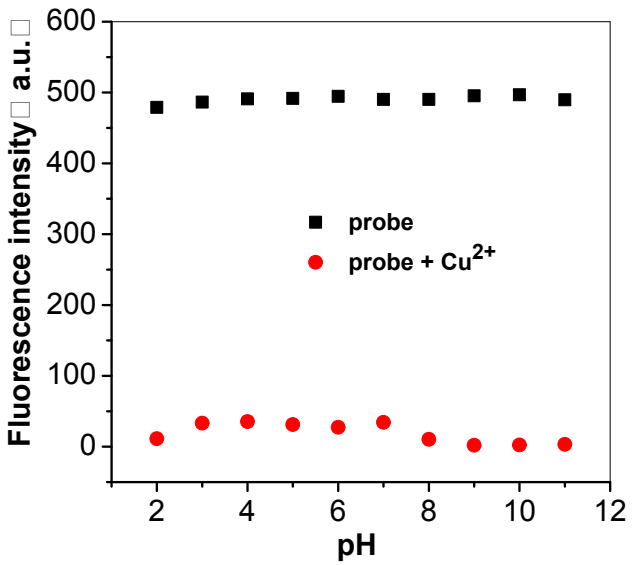

Figure S11. The fluorescence behavior of TPE-An-Py upon addition of Cu^{2+}under different pH values.

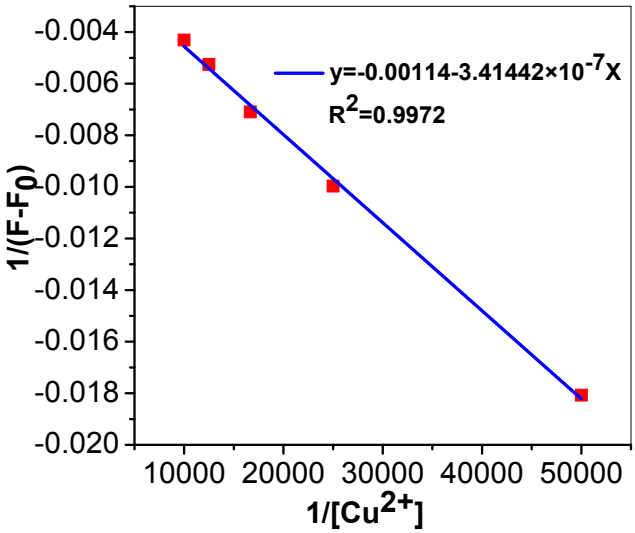

Figure S12. Curve fitting of Benesi-Hildebrand.

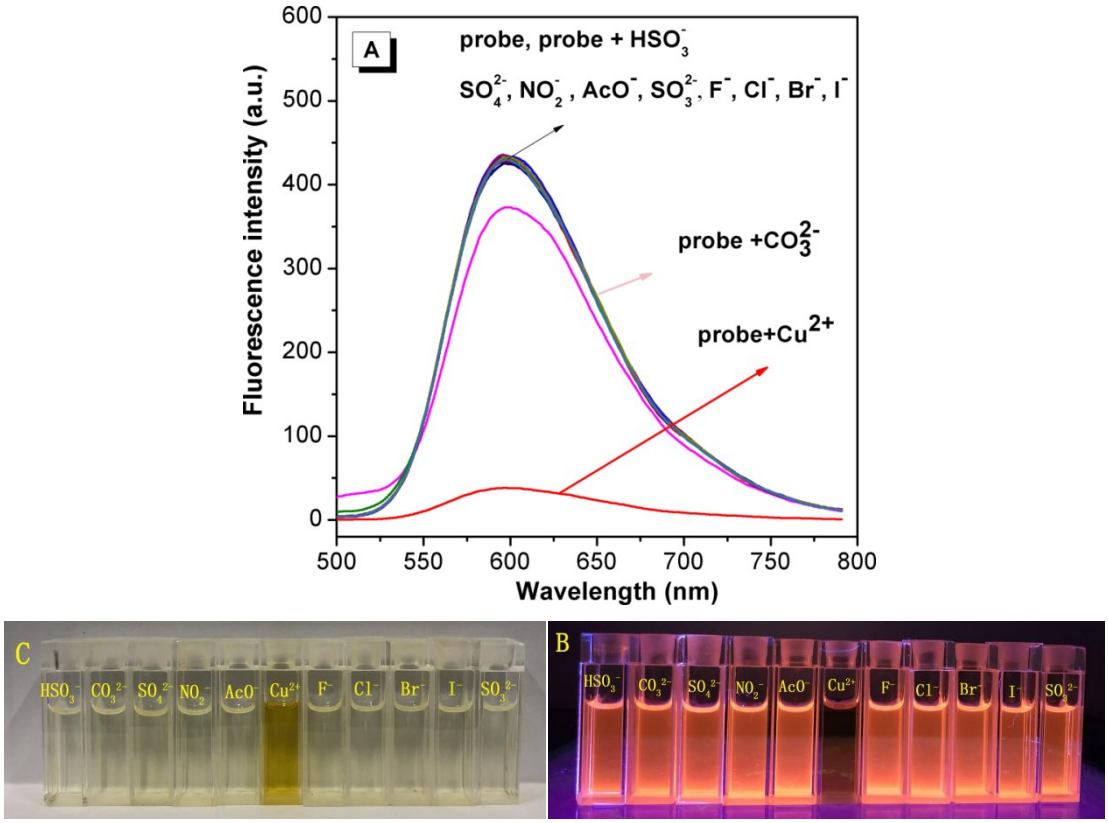

Figure S13. A) Fluorescence spectra of probe (1.00×10^{-4}mol • L^{-1},THF/H_2O,4/1,V/V Tris-Hcl buffer 2.00×10^{-3} mol L^{-1}, pH = 7.00) interacting with different anions (2.00×10^{-4} mol L^{-1})($\lambda_{ex.}/\lambda_{em.}$=415/598nm, slit: 5/5nm, voltage: 900) .B)Photograph of probe interacting with anions under natural light and C) under 365 nm UV lamp.

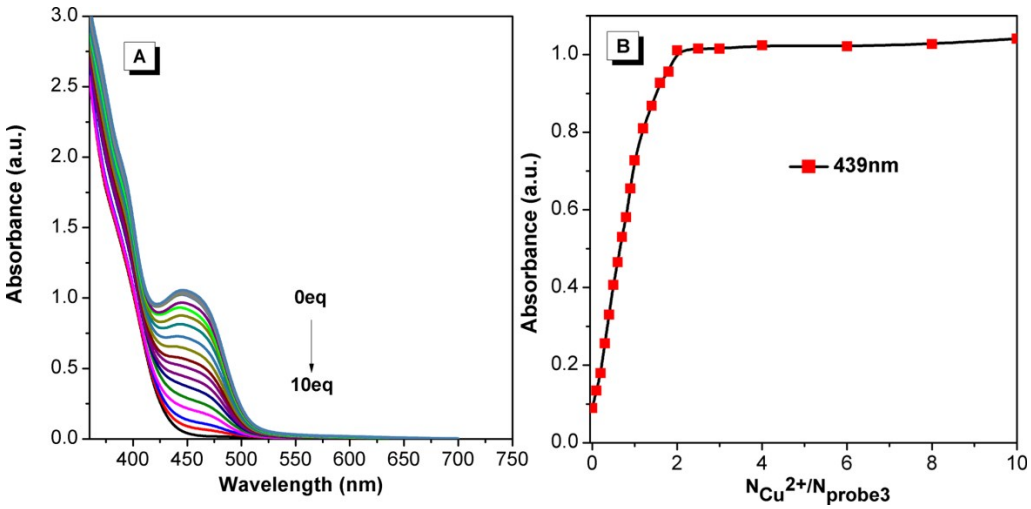

Figure S14. A) The UV spectra of probe (100.0μM) at increasing concentration of Cu^{2+} in THF/water (V_{THF}/V_{water}=4/1, pH = 7.00) solution, B) curve of Cu^{2+}*vs*. probe for the absorption peak at 439 nm.

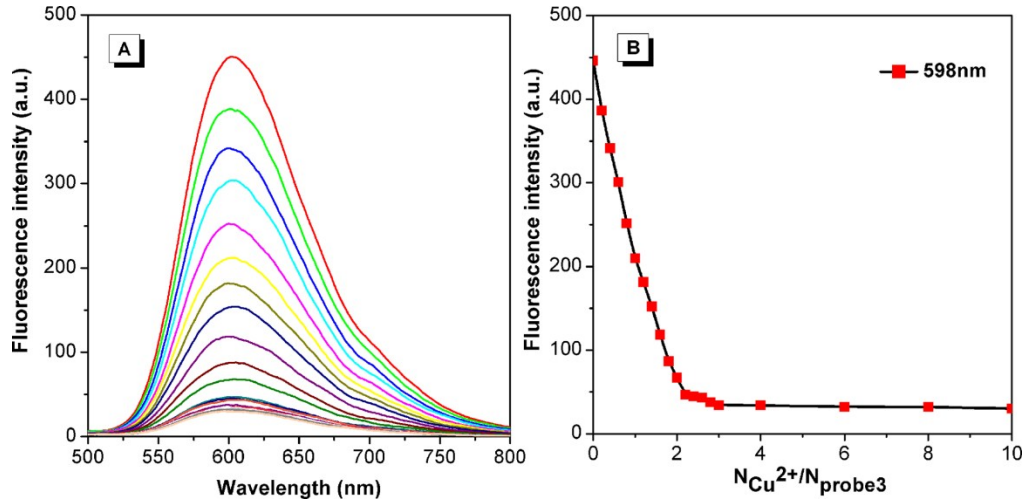

Figure S15. A) The fluorescence spectra of probe (100.0 μM) at increasing concentration of Cu^{2+} inTHF/water (V_{THF}/V_{water}=4/1, pH = 7.00) solution, B) curve of Cu^{2+}*vs*.probe for the emission peak at 598 nm.

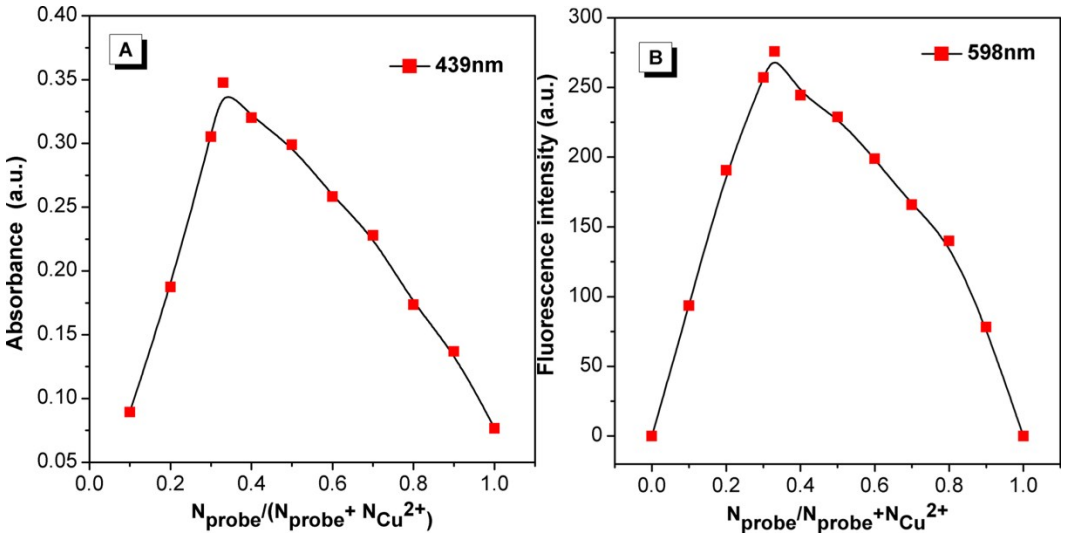

Figure S16. Job plot for1:2 complex of probe and Cu^{2+} ion, where the difference is A) inabsorbance intensity at 439 nm and B) the emission intensity at 598nm was plotted against the mole fraction of probe **TPE-An-Py** at an invariant total concentration of 100 μM in THF/water (V_{THF}/V_{water}=4/1).