Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information

Proton donor modulating ESIPT-based fluorescent probes for highly sensitive and selective detection of Cu^{2+}

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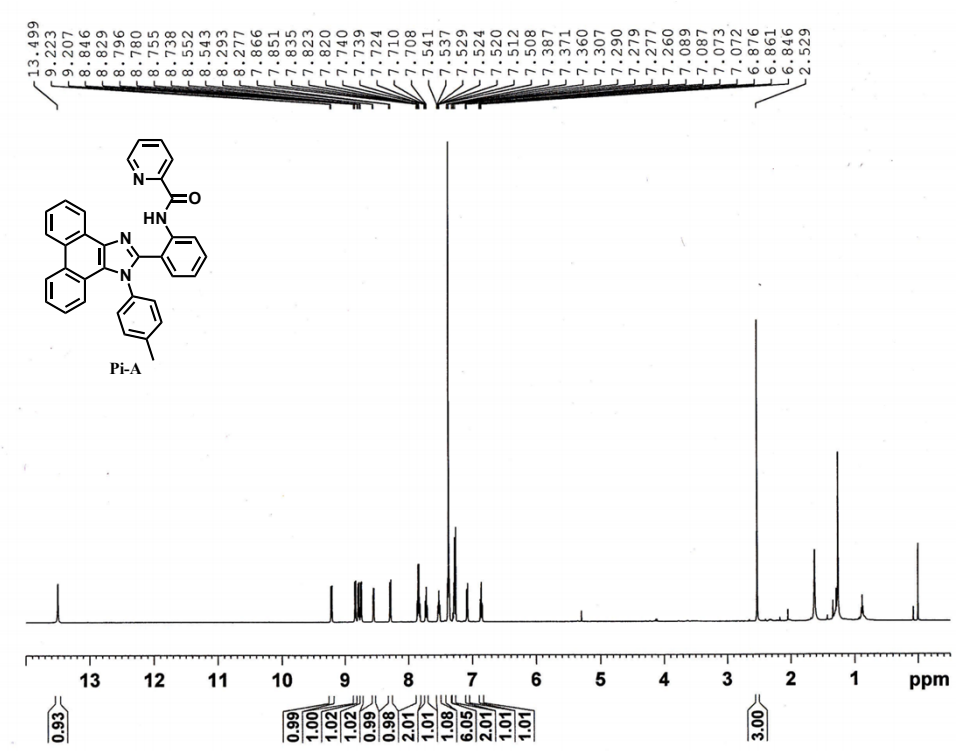


Fig. S1. ^{1}H NMR spectrum of **Pi**-**A** (500 MHz, $CDCl_3$).

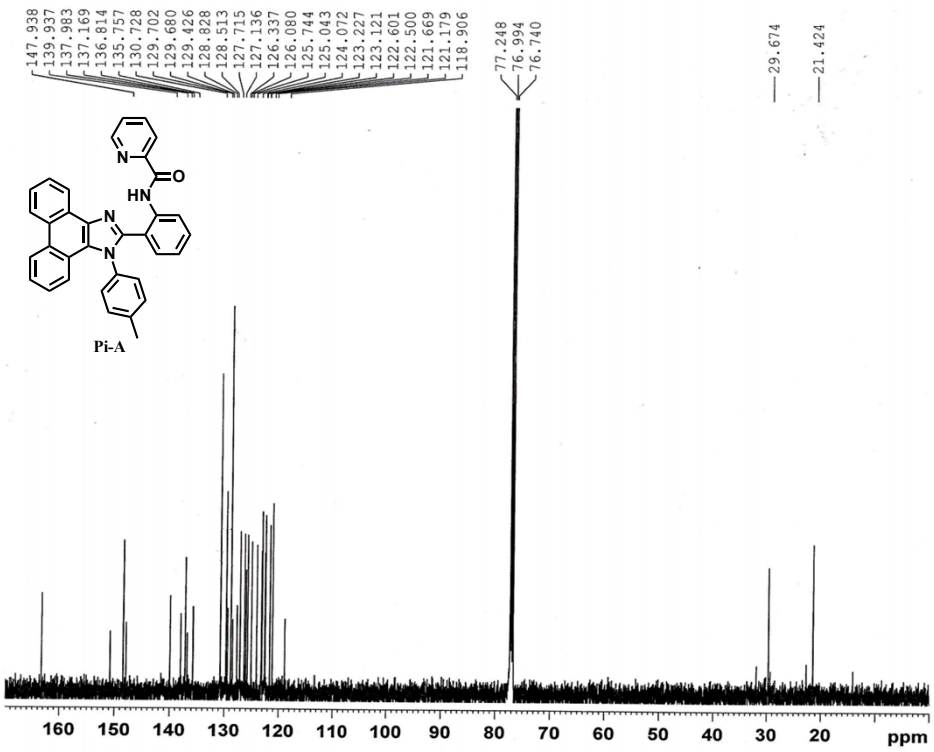


Fig. S2. ^{13}C NMR spectrum of **Pi**-**A** (126 MHz, $CDCl_3$).

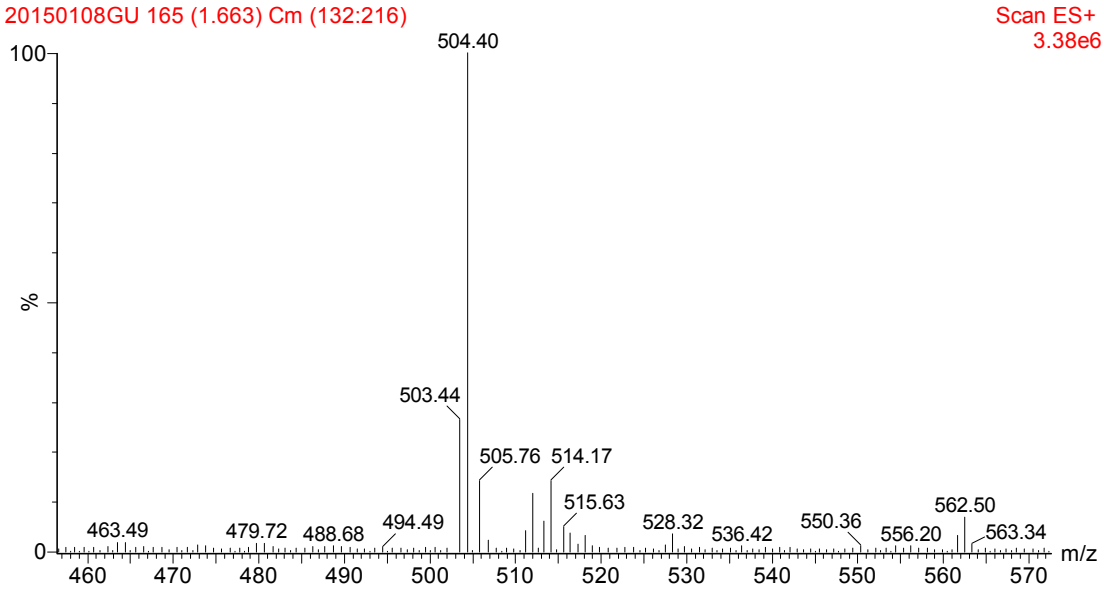


Fig. S3. ESI-MS spectrum of **Pi-A**.

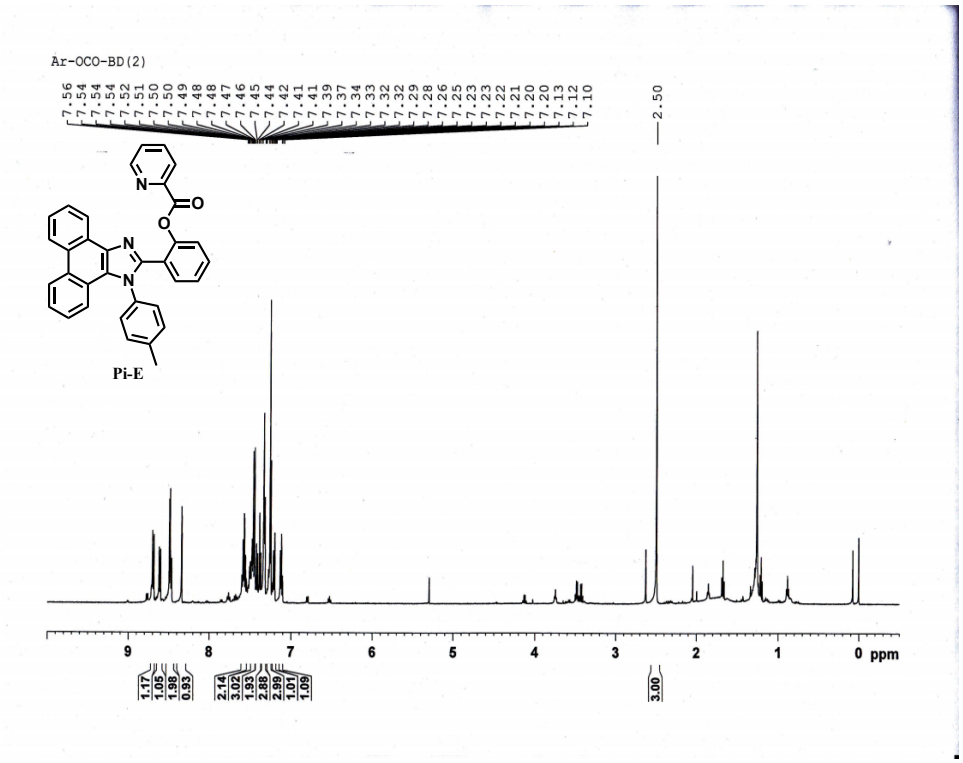


Fig. S4. ^{1}H NMR spectrum of **Pi-E** (500 MHz, $CDCl_3$).

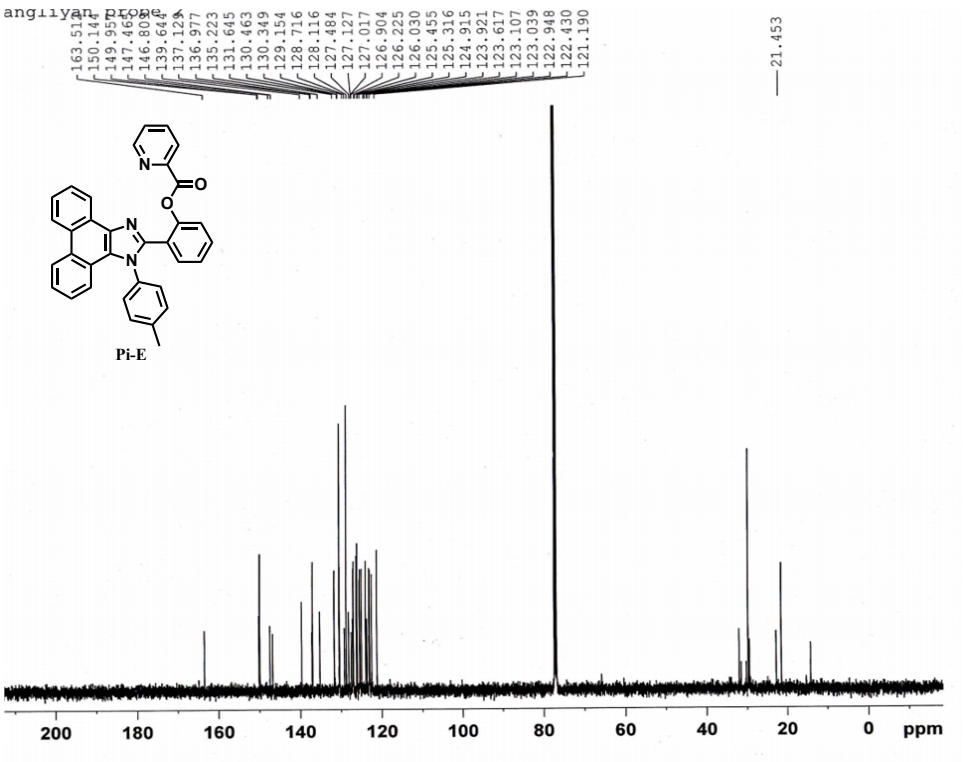


Fig. S5. ^{13}C NMR spectrum of **Pi-E** (126 MHz, $CDCl_3$).

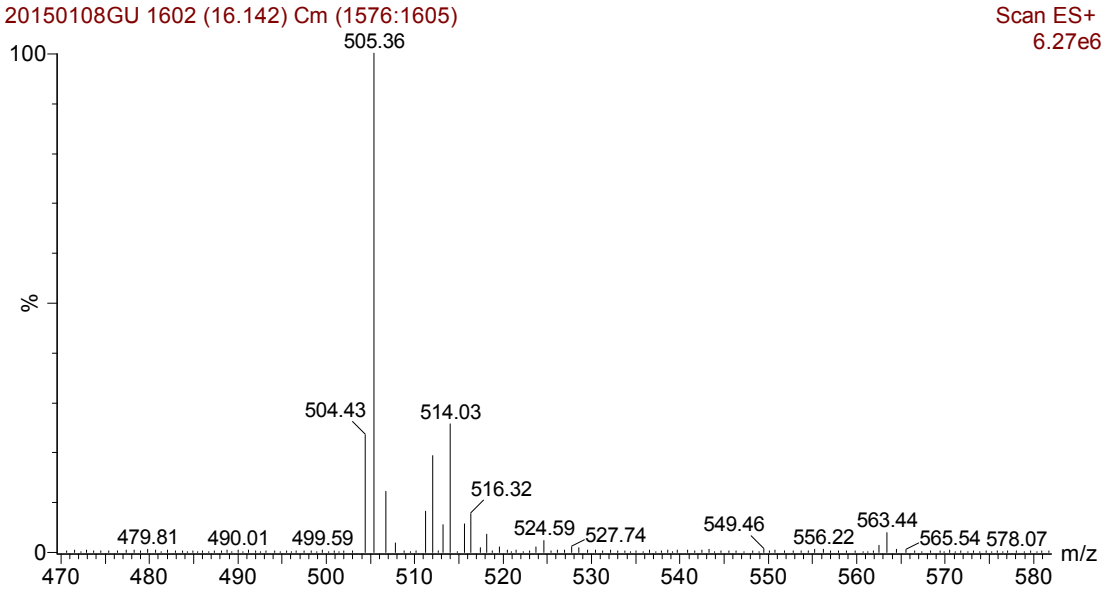


Fig. S6. ESI-MS spectrum of **Pi-E**.

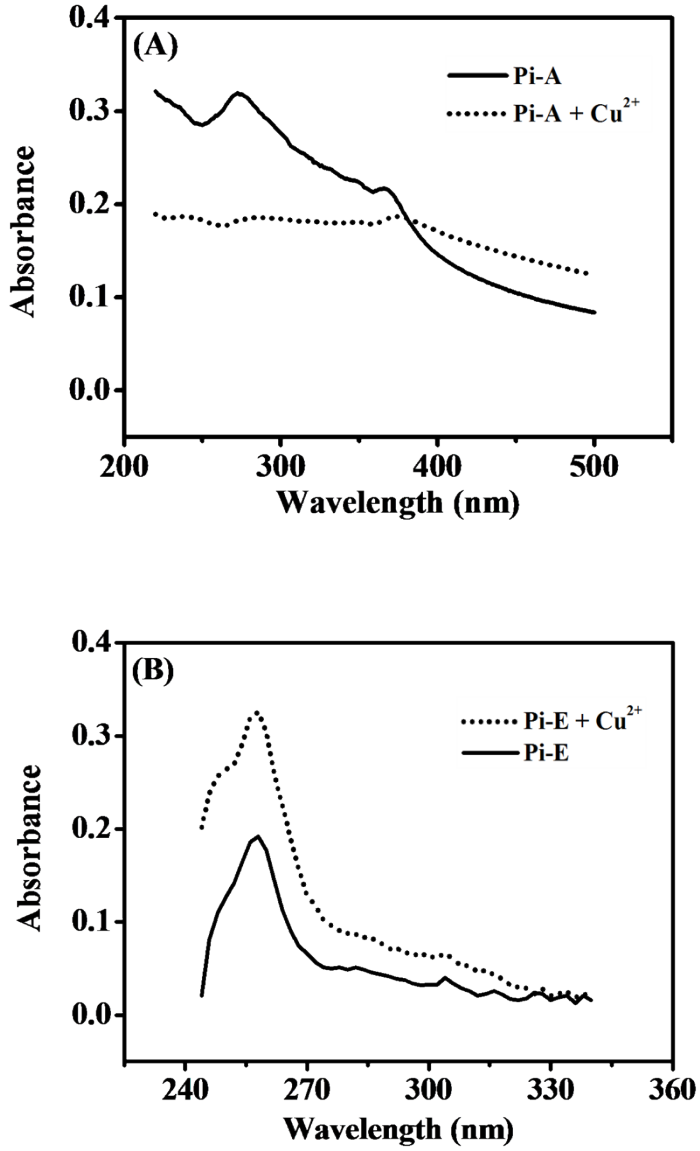


Fig. S7. Absorption spectra of 10 μM **Pi**-**A** (A) and **Pi**-**E** (B) in the absence and presence of 10 μM Cu^{2+}. Buffer: Tris-HCl (10 mM, pH 7.4), 2% (v/v) DMSO/water.

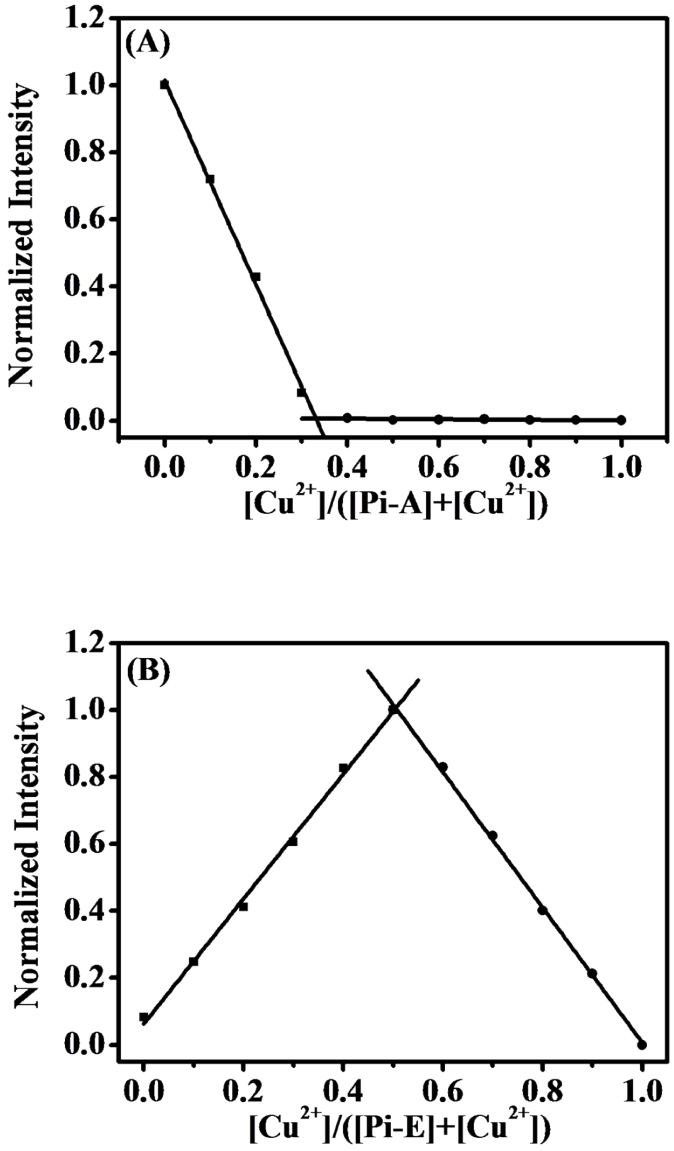


Fig. S8. (A) Job's plot of **Pi**-**A** and Cu^{2+} ([**Pi**-**A**] + [Cu^{2+}] = 10 μM) and (B) Job's plot of **Pi**-**E** and Cu^{2+} ([**Pi**-**E**] + [Cu^{2+}] = 10 μM). Buffer: Tris-HCl (10 mM, pH 7.4), 2% (v/v) DMSO/water.

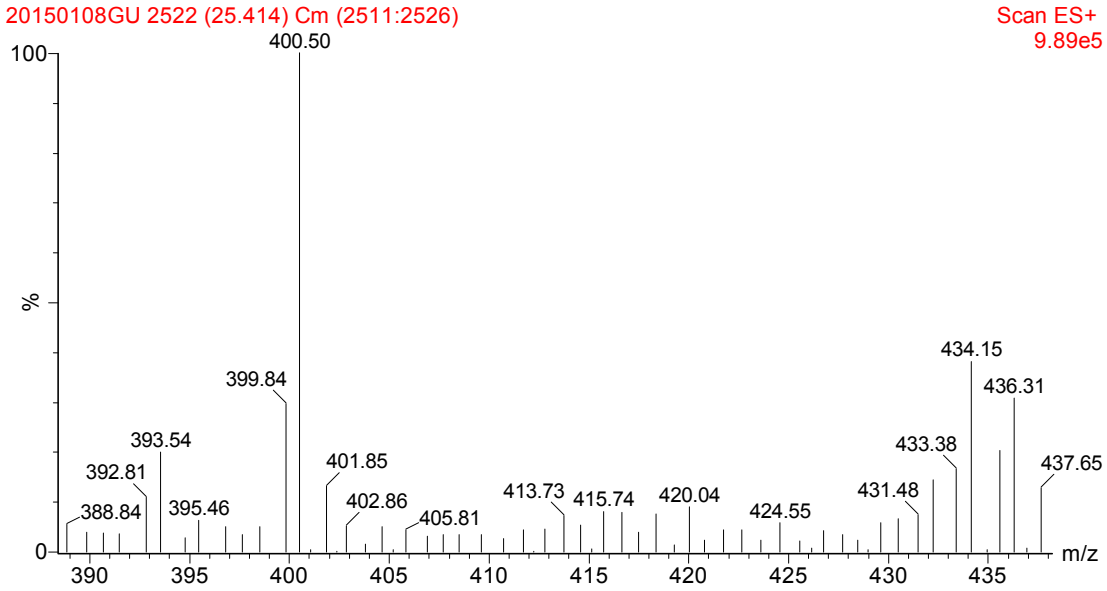


Fig. S9. ESI-MS spectrum of the reaction products of **Pi**-**E** with Cu^{2+}.

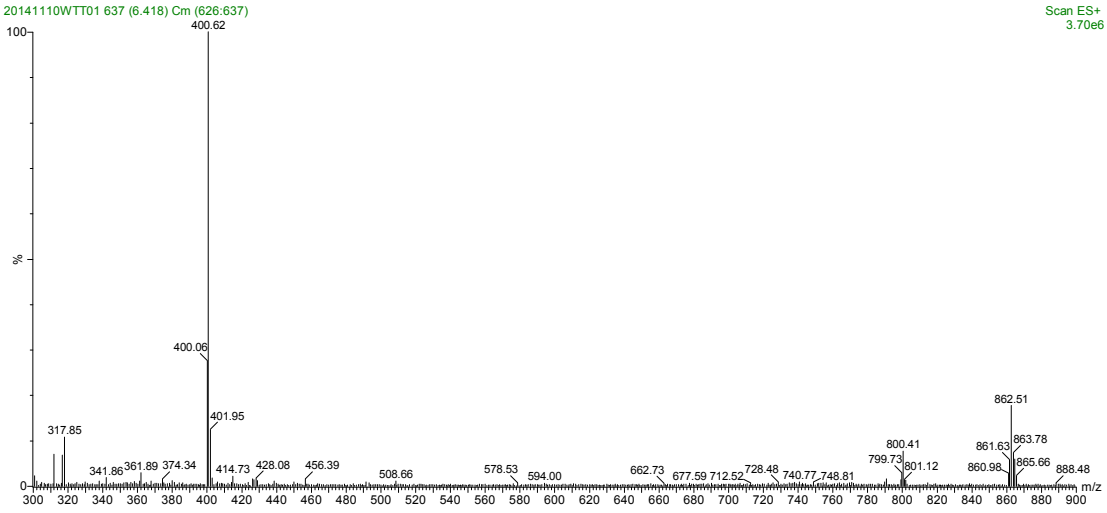


Fig. S10. ESI-MS spectrum of compound **2**.

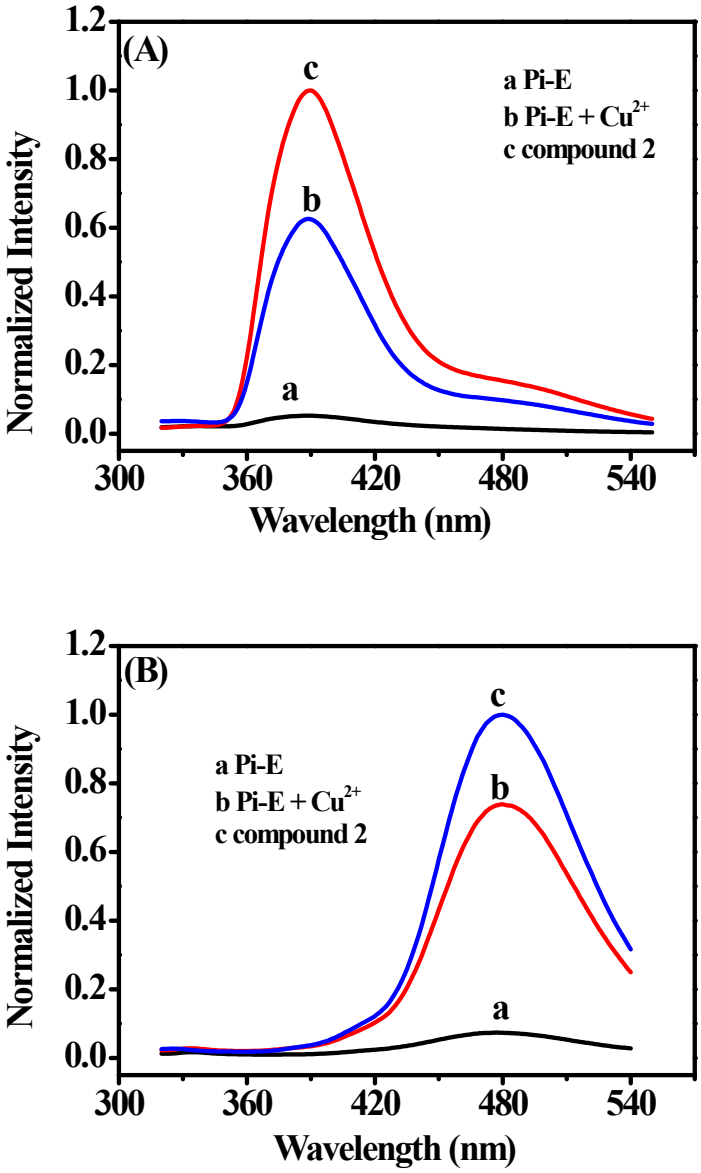
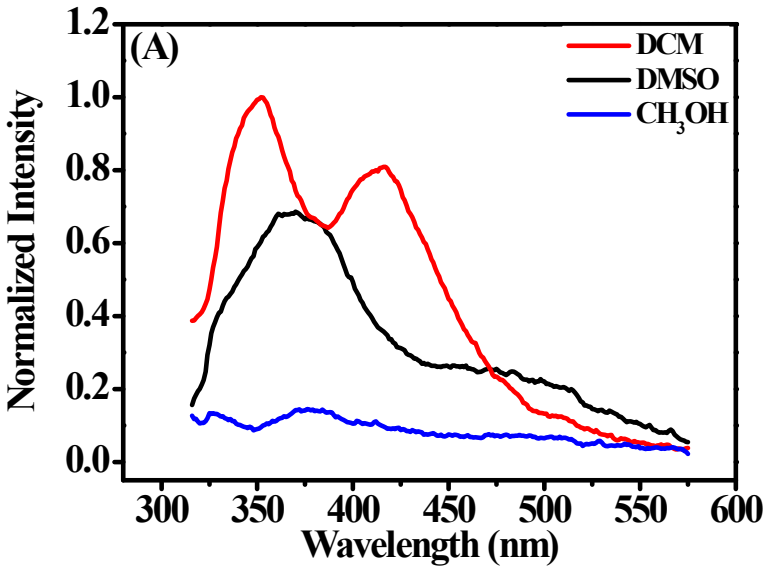
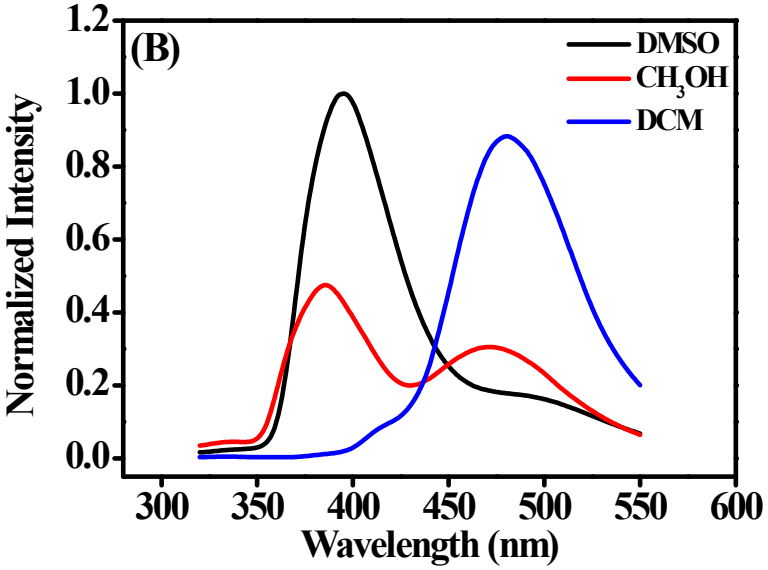


Fig. S11. Fluorescence spectra of 10 μM **Pi-E** (a), 10 μM **Pi-E** with 10 μM Cu^{2+} (b) and 10 μM compound **2** (c). Conditions: (A) in DMSO/Tris-HCl (v/v = 9:1) solution, λex/λem = 296/389 nm; (B) in DMSO/Tris-HCl (v/v = 1:49) solution at pH 7.4. λex/λem = 296/481 nm.


(A)
DCM
DMSO
CH3OH
Normalized Intensity
Wavelength (nm)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
300
350
400
450
500
550
600


(B)
DMSO
CH3OH
DCM
Normalized Intensity
Wavelength (nm)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
300
350
400
450
500
550
600

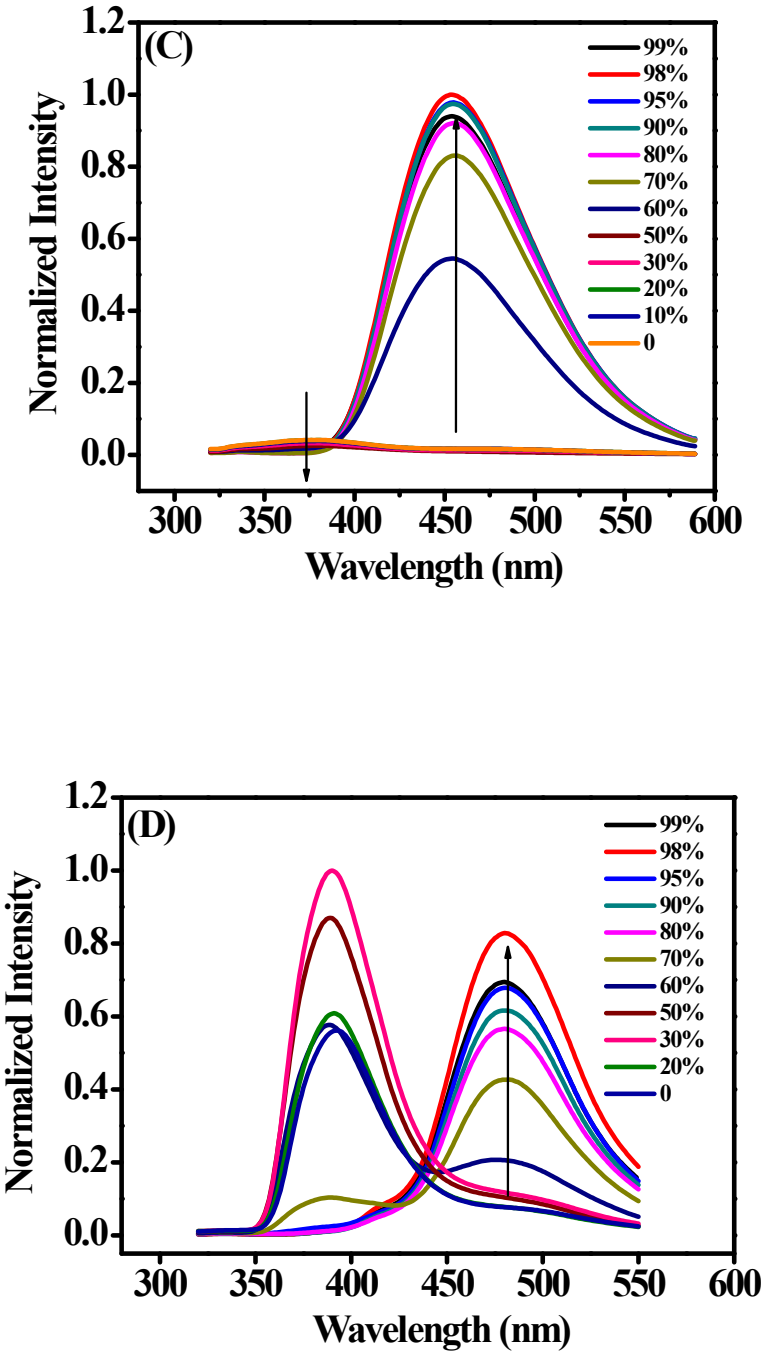


Fig. S12. Fluorescence spectra of 10 μM **Pi-A** (A) or compound **2** (B) in different solvents. Fluorescence spectra of 10 μM **Pi-A** (C) or compound **2** (D) in DMSO/water mixture of varying water proportions from 0 to 99%. λex = 296 nm.

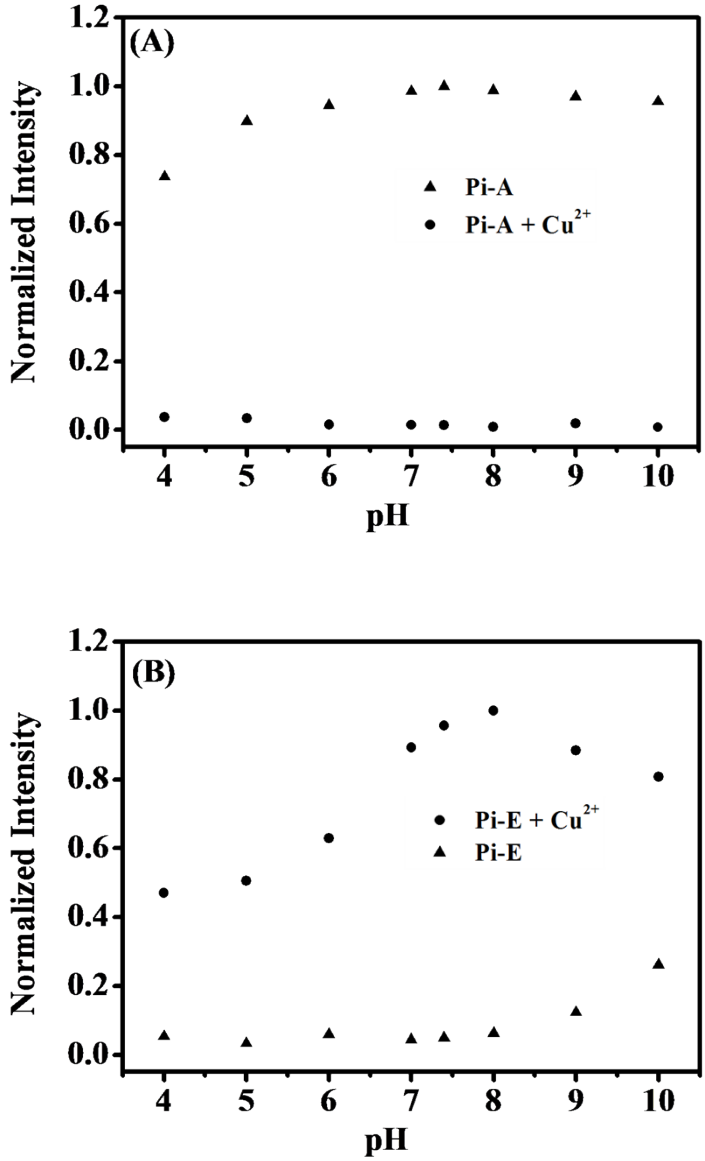


Fig. S13. Effect of pH on the fluorescence intensity of 10 μM **Pi-A** (A) and **Pi-E** (B) in the absence and presence of 10 μM Cu^{2+}. Buffer: 10 mM NaAc-HAc for pH 4.0-6.0 and 10 mM Tris–HCl buffer for pH 7.0-10.0. Conditions: for **Pi-A**, $\lambda_{ex}/\lambda_{em}$ = 296/455 nm; for **Pi-E**, $\lambda_{ex}/\lambda_{em}$ = 296/481 nm.

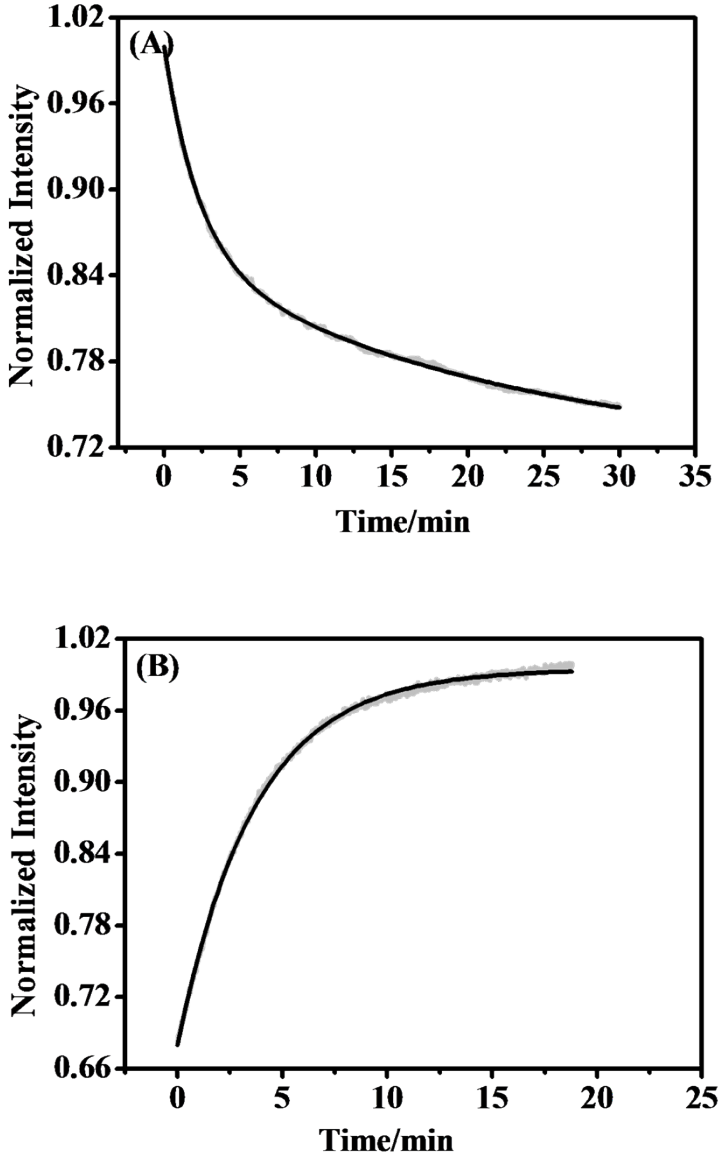


Fig. S14. Time–dependent fluorescence intensity of 10 μM **Pi**-**A** (A) and **Pi**-**E** (B) in the presence of 10 μM Cu^{2+}. Conditions: for **Pi**-**A**, $\lambda_{ex}/\lambda_{em}$ = 296/455 nm; for **Pi**-**E**, $\lambda_{ex}/\lambda_{em}$ = 296/481 nm. Buffer: Tris-HCl (10 mM, pH 7.4), 2% (v/v) DMSO/water. T= 25 °C.

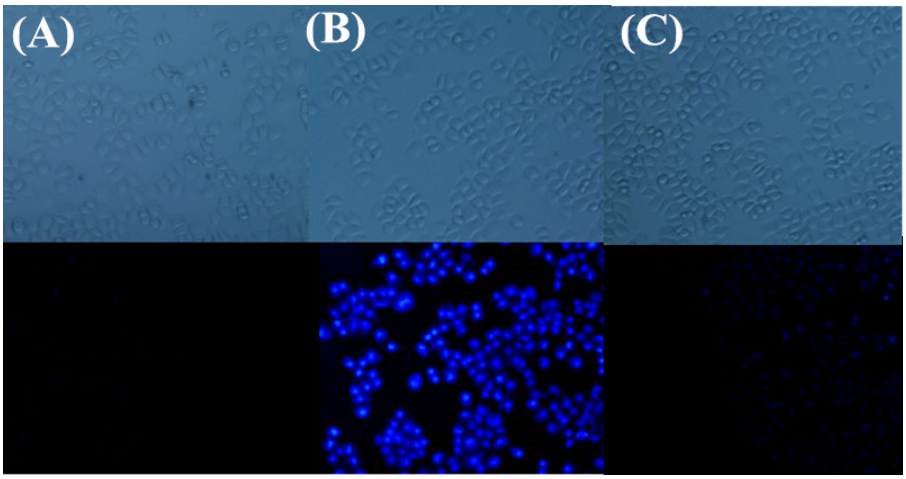


Fig. S15. Fluorescence microscope images of living HeLa cells. Cells incubated with PBS (A); 10 µM **Pi**-**A** (B); 10 µM **Pi**-**E** (C) for 30 min at 37 °C. Top: bright field image, Bottom: fluorescence image.