

## Supporting Information

### *In vitro* Sensing of Cu<sup>+</sup> through a Green Fluorescence Rise of Pyranine

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#### I. Solution preparations:

**For pyranine 6:** 2 mM stock solution of pyranine **6** was prepared in deionised water.

**For CuCl:** 2 mM stock solution of Cuprous Chloride was prepared in DMSO. Final concentration of CuCl during each assay was fixed 50 μM with 5% DMSO (maximum).

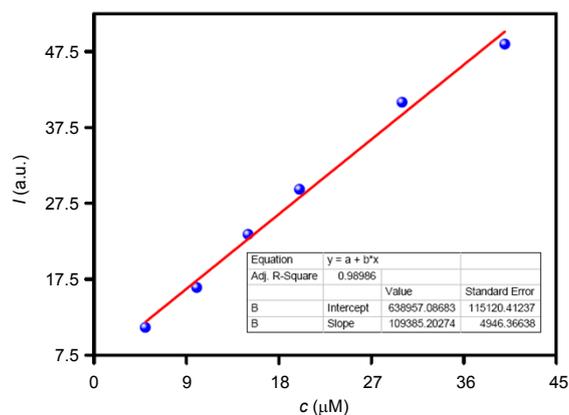
**Solutions of different pH:** pH was adjusted by adding appropriate amount of either NaOH or HCl in water.

**For different salts:** 2 mM stock solution of each salt (except CuCl) was prepared in deionised water.

**For [Cu(MeCN)<sub>4</sub>]PF<sub>6</sub>:** 2 mM stock solution of [Cu(MeCN)<sub>4</sub>]PF<sub>6</sub> was prepared in acetonitrile solvent.

## II. Photophysical Studies:

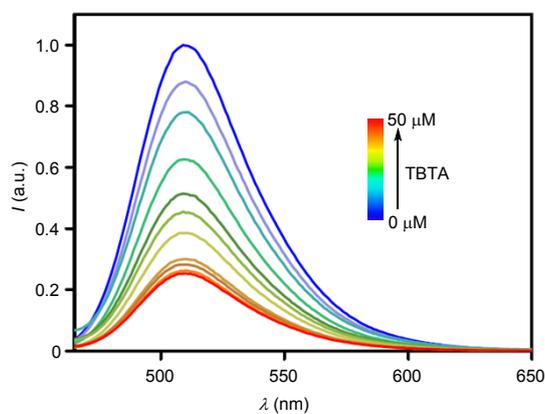
### Determination of detection limit of $\text{Cu}^+$ sensing by **6**:



**Fig. S1** Increment in fluorescence intensity of pyranine ( $5 \mu\text{M}$ ) recorded at  $510 \text{ nm}$  ( $\lambda_{\text{ex}} = 450 \text{ nm}$ ) with increasing concentration of  $\text{CuCl}$  in water.

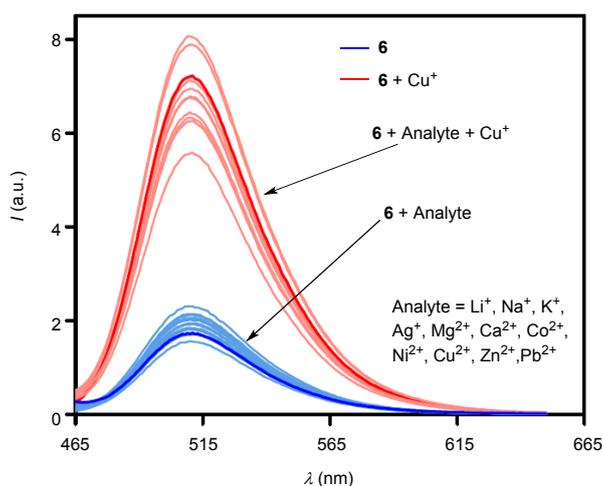
### Fluorescence titration studies:

TBTA ( $0$ - $50 \mu\text{M}$ ) was added to the solution containing pyranine **6** ( $5 \mu\text{M}$ ) and  $[\text{Cu}(\text{MeCN})_4]\text{PF}_6$  ( $50 \mu\text{M}$ ). Fluorescence spectra ( $\lambda_{\text{ex}} = 450 \text{ nm}$ ) were recorded after 10 minutes of each addition (Fig. S2).



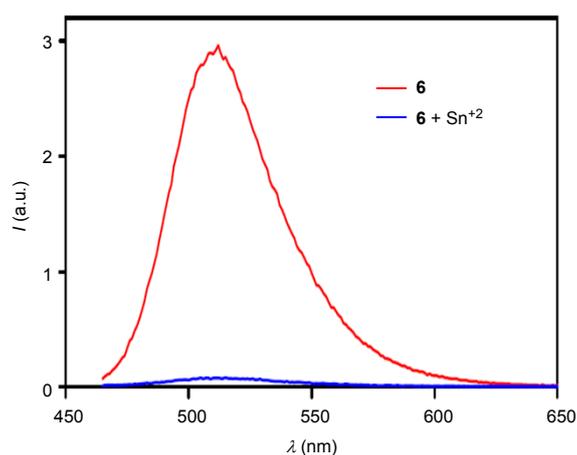
**Fig. S2:** Fluorescence spectra of **6**+ $[\text{Cu}(\text{MeCN})_4]\text{PF}_6$  ( $5 \mu\text{M}$  of **6** and  $50 \mu\text{M}$  of  $[\text{Cu}(\text{MeCN})_4]\text{PF}_6$ ) with increasing concentration of TBTA ( $0$ - $50 \mu\text{M}$ ) in water.

### Ion selectivity studies by fluorescence spectroscopy:



**Fig. S3** Fluorescence spectra ( $\lambda_{\text{ex}} = 450 \text{ nm}$ ) of **6** ( $5 \mu\text{M}$ ) in absence and in presence of different analytes ( $50 \mu\text{M}$ ). Dark blue and dark red lines indicate the spectra of **6** ( $5 \mu\text{M}$ ) in absence and in presence of CuCl ( $50 \mu\text{M}$ ), respectively. Faint blue lines indicate the spectra of **6** ( $5 \mu\text{M}$ ) in presence of each analyte ( $50 \mu\text{M}$ ) and faint red lines indicate the subsequent addition of CuCl ( $50 \mu\text{M}$ ) in presence of other metal analytes. Each spectrum was taken after 10 minutes of addition of analyte.

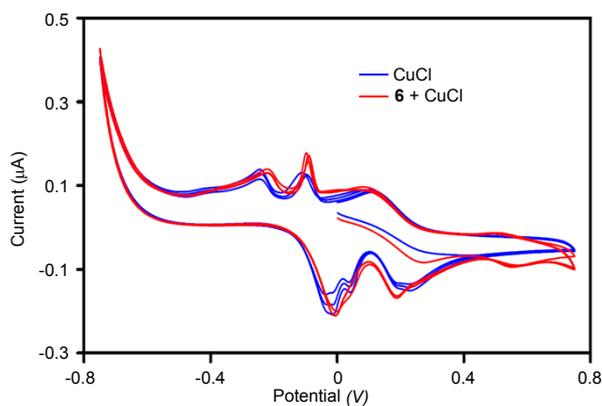
Emission spectrum of **6** ( $5 \mu\text{M}$ ) was collected in water with  $\lambda_{\text{ex}} = 450 \text{ nm}$ . SnCl<sub>2</sub> ( $50 \mu\text{M}$ ) was added to the solution of **6** ( $5 \mu\text{M}$ ) and fluorescence spectrum was recorded after 10 minutes of addition (Fig. S4).



**Fig. S4** Fluorescence spectra ( $\lambda_{\text{ex}} = 450 \text{ nm}$ ) of **6** ( $5 \mu\text{M}$ ) in absence (red line) and in presence (blue line) of SnCl<sub>2</sub> ( $50 \mu\text{M}$ ).

### III. Cyclic voltammetric studies:

For the cyclic voltammetric studies, Ag/AgCl, 3 M NaCl electrode and Pt disk (2.01 mm<sup>2</sup>) electrodes were used as reference and working electrode respectively. A platinum wire was used as auxiliary electrode. Cyclic voltammograms of CuCl (5  $\mu$ M) in absence and in presence of **6** (1  $\mu$ M) were recorded in 0.1 M KNO<sub>3</sub> electrolyte solution (Fig. S5).



**Fig. S5** Cyclic voltammograms of CuCl (5  $\mu$ M) in absence and in presence of **6** (1  $\mu$ M) in 0.1 M KNO<sub>3</sub> electrolyte solution. Each plot was recorded within the scanning range 750 mV to -750 mV at 50 mV/S scan rate.