Fig. S1. $^1$H NMR spectrum (DMSO-d$_6$) of 8MPS.

Fig. S2. Molecular packing diagram for 8MPS.
Fig. S3. Hydrogen bonding diagram for 8MPS.

Fig. S4. Changes in colour under visual inspection of 8MPS with chloride salts of different cations.

Fig. S5. Naked eye visual inspection of 8MPS (20 mM in ethanol: water (1: 5)) towards different copper salts (10 μM) in aqueous solution. 1- Copper sulphate, 2- Copper acetate and 3- Copper nitrate.
Fig. S6. Changes in the UV–vis spectrum of 8MPS (20 mM; ethanol: H₂O (1:1 v/v)) upon gradual addition of Cu²⁺ (chloride; 10 μM) in aqueous solution at pH = 7.2.

Fig. S7. Fluorescence emission spectra of 8MPS (20 mM, ethanol: H₂O (1:5)) in the presence of chloride salts of different cations (10 μM), 1- Al³⁺, 2- Ca²⁺, 3- Co³⁺, 4- Cr³⁺, 5- Fe³⁺, 6- Fe²⁺, 7- Mn²⁺, 8- Cu²⁺, 9- Ni²⁺, 10- Zn²⁺, 11- Hg²⁺, 12- Co²⁺ in aqueous solution and 13- blank (8MPS).
Fig. S8. Absorption spectra of 8MPS (20 mM in ethanol: water (1:5)) with various copper salts (10 μM). 1-8MPS, 2-Copper nitrate, 3- Copper acetate and 4- Copper sulphate.

Fig. S9. Fluorescence spectra of 8MPS (20 mM in ethanol: water (1:5)) with various copper salts (10 μM). 1-8MPS, 2-Copper nitrate, 3- Copper acetate and 4- Copper sulphate.
Fig. S10. Job’s plot of $8\text{MPS}$ and Cu$^{2+}$ ($[8\text{MPS}] + \text{[Cu}^{2+} \text{ (chloride)}]) = 40 \mu\text{M}$.

Fig. S11. Molecular packing diagram for $8\text{MPSC}$. 
Fig. S12. Hydrogen bonding diagram for 8MPSC.

Fig. S13. Absorption spectra of 8MPSC (the complex of 20 mM 8MPS in ethanol: water (1: 5) and 10 μM Cu^{2+}) in presence of various amino acids (all amino acids in 10 μM) in aqueous solution. 1- ala; 2- arginine; 3- valine; 4- asparagine; 5- aspartic acid; 6- leucine; 7- glutamic acid; 8- histidine; 9- phenylanine; 10- proline; 11- threonine.
Fig. S14. Absorption titration spectra of **8MPSC** (10 μM) upon gradual addition of aqueous solution of in 10 μM concentration.

Fig. S15. Fluorescence spectra of **8MPSC** (the complex of 20 mM **8MPS** and 10 μM Cu²⁺), various amino acids (10 μM) and Aspartic acid (Asp) (10 μM). 1- 8MPSC + alanine + Asp; 2- 8MPSC + arginine + Asp; 3- 8MPSC + valine + Asp; 4- 8MPSC + asparagine + Asp; 5- 8MPSC + leucine + Asp; 6- 8MPSC + glutamic acid + Asp; 7- 8MPSC + histidine + Asp; 8- 8MPSC + phenylalanine + Asp; 9- 8MPSC + proline + Asp; 10- 8MPSC + threonine + Asp and 11- 8MPSC + Asp.
Fig. S16. Cyclic voltammogram study for 10 μM concentration of 8MPS in DMF solvent using platinum wire counter electrode, platinum disc working electrode and non-aqueous Ag/AgCl reference electrode and tetrabutylammonium perchlorate as a supporting electrolyte.

Fig. S17. Cyclic voltammogram study for 10 μM concentration of 8MPSC in DMF solvent using platinum wire counter electrode, platinum disc working electrode and non-aqueous Ag/AgCl reference electrode and tetrabutylammonium perchlorate as a supporting electrolyte.
Fig. S18. Cyclic voltammogram study for 10 μM concentration of 8MPSCA in DMF solvent using platinum wire counter electrode, platinum disc working electrode and non-aqueous Ag/AgCl reference electrode and tetrabutylammonium perchlorate as a supporting electrolyte.

Fig. S19. Mass spectrum of 8MPSCA.
Fig. S20. FT-IR spectrum of 8MPS.

Fig. S21. FT-IR spectrum of 8MPSC.
Fig. S22. FT-IR spectrum of 8MPSCA.