Supporting Information

Multifunctional Tryptophan-Based Fluorescent Polymeric Probes for Sensing, Bioimaging and Removal of Cu^{2+} and Hg^{2+} Ions

Neha Choudhury,[a,b] Bhuban Ruidas,[d] Biswajit Saha,[a,b] Kambalapalli Srikanth,[c] Chitrangada Das Mukhopadhyay[d] and Priyadarsi De[a,b,c]*

[a]Polymer Research Centre, [b]Department of Chemical Sciences, [c]Centre for Advanced Functional Materials, Indian Institute of Science Education and Research Kolkata, Mohanpur - 741246, Nadia, West Bengal, India.

[d]Centre for Healthcare Science and Technology, Indian Institute of Engineering Science and Technology, Shibpur, P.O. Botanic Garden, Howrah, West Bengal, 711103, India

* Corresponding Author: E-mail: p_de@iiserkol.ac.in
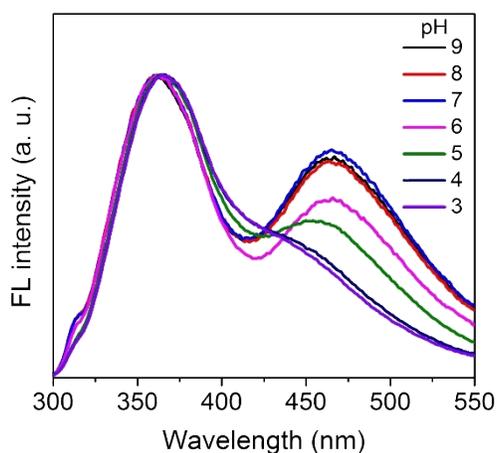
Figure S1. Change in the fluorescence intensity of **CP3** (10^{-4} M) at different pH.

Figure S2. Color of **CP3** solution upon treatment with several interfering cations: 1 (Mg^{2+}), 2 (As^{3+}), 3 (Zn^{2+}), 4 (Mn^{2+}), 5 (Na^+), 6 (Hg^{2+}), 7 (Cu^{2+}), 8 (K^+), 9 (Cd^{2+}), 10 (Ni^{2+}), 11 (Ca^{2+}), 12 (Co^{2+}), 13 (Cr^{3+}), 14 (Fe^{2+}), 15 (Fe^{3+}).
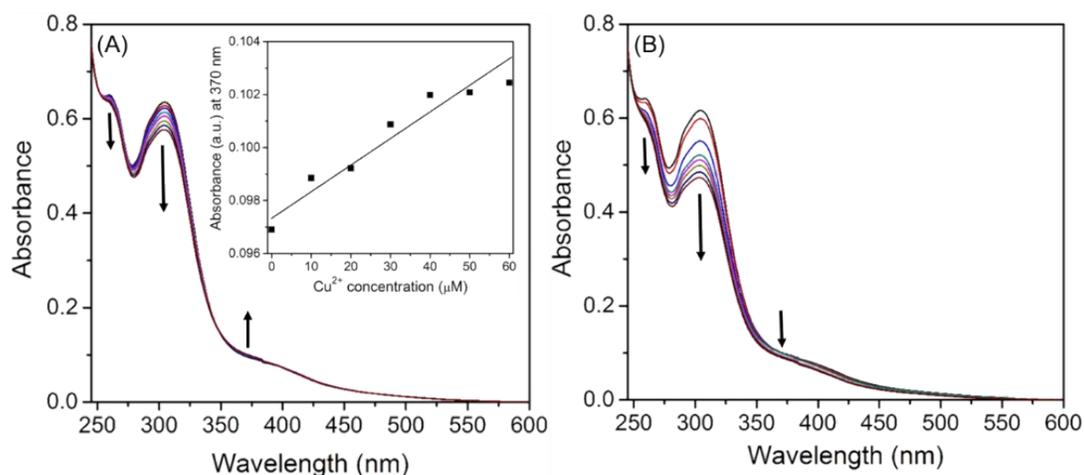
Figure S3. UV-vis titration of **CP3** with (A) Cu^{2+} (inset shows the enhancement of absorption at 370 nm upon addition of metal ion) and (B) Hg^{2+}ions in water.
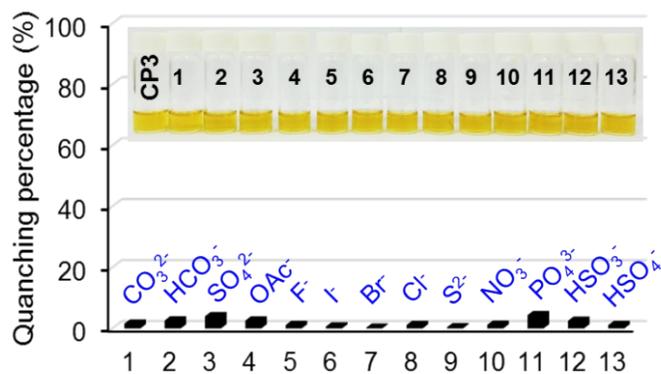
Figure S4. Bar diagram representation of fluorescence quenching of **CP3** upon treatment with several interfering anions.
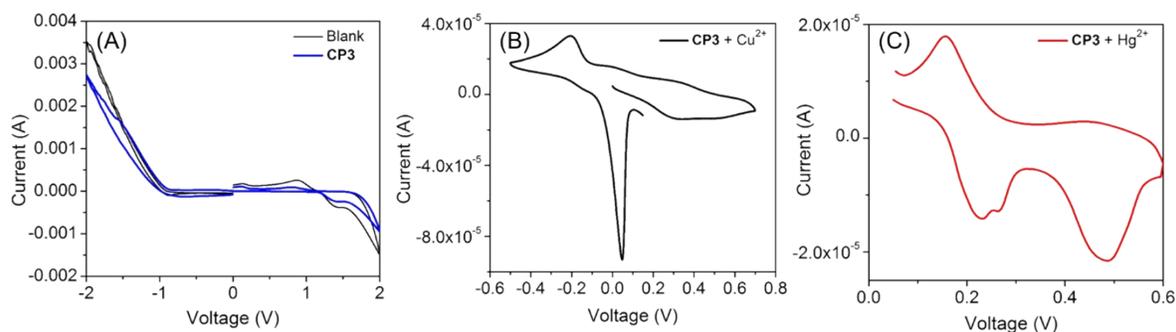
Figure S5. Cyclic voltammogram of **CP3**, **CP3**•Cu^{2+} complex, and **CP3**•Hg^{2+} complex in H_2O containing 0.1 M KCl, using Pt disk as a working electrode, Pt wire as the counter electrode and Ag/AgNO$_3$ as the reference electrode, scan rate 100 mV/s.

Table S1. Fluorescence lifetime of **CP3** with and without treatment with Cu^{2+}/ Hg^{2+}.[a]

Compound	α_1	α_2	τ_1 (ns)	τ_2 (ns)	$\langle\tau\rangle$ [b] (ns)
CP3	19.90	80.10	2.56	12.91	12.42
CP3 + Cu^{2+}	44.08	55.92	2.59	9.98	10.46
CP3 + Hg^{2+}	41.11	58.89	0.70	5.40	5.58

[a]The data were fitted with a biexponential decay equation. [b]The average lifetime was calculated using the following formula: $\langle\tau\rangle = \dfrac{\alpha_1\tau_1^2 + \alpha_2\tau_2^2}{\alpha_1\tau_1 + \alpha_2\tau_2}$
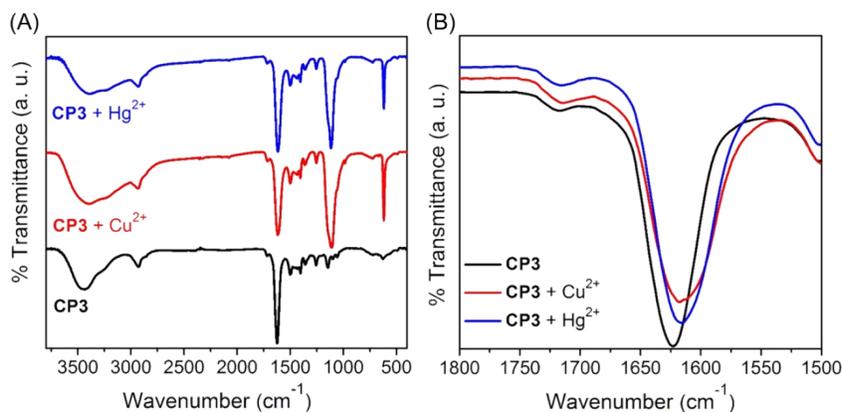
Figure S6. IR spectra of **CP3**, **CP3**•Cu^{2+} complex, and **CP3**•Hg^{2+} complex in methanol (A). Magnified view of the 1500-1800 cm^{-1} region (B).
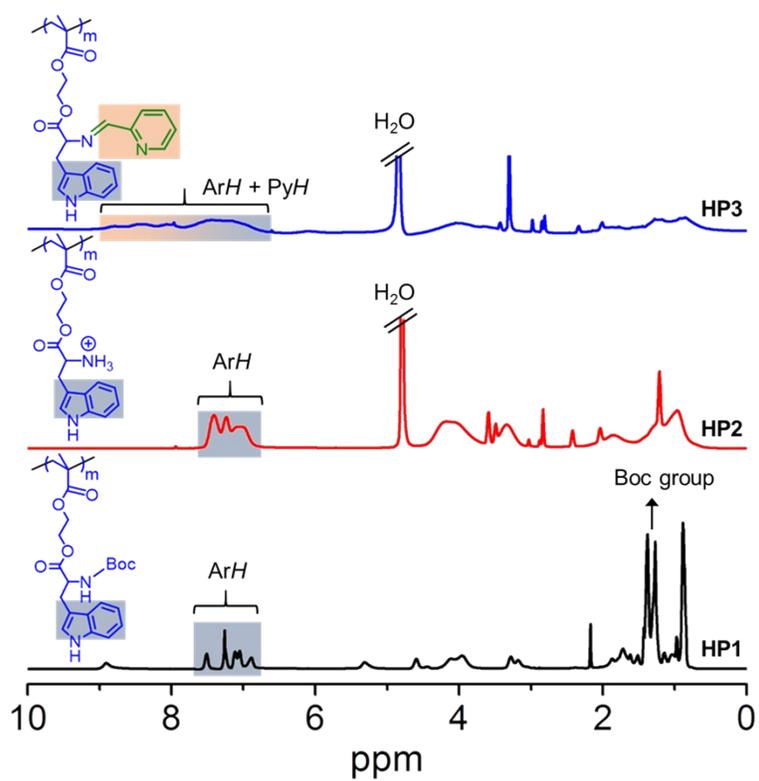
Figure S7. ^{1}H NMR spectra of **HP1** in CDCl$_3$, **HP2** and **HP3** in D$_2$O.
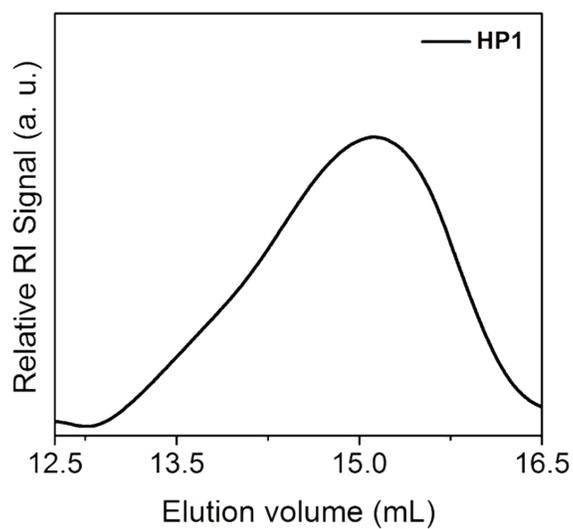
Figure S8. SEC RI trace of **HP1** in DMF as eluent.