Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supporting Information of

Microwave assisted synthesis of green fluorescent copper nanoclusters: A novel approach for sensing of hydroxyl radical and pyrophosphate ion via "turn-off-on" mechanism

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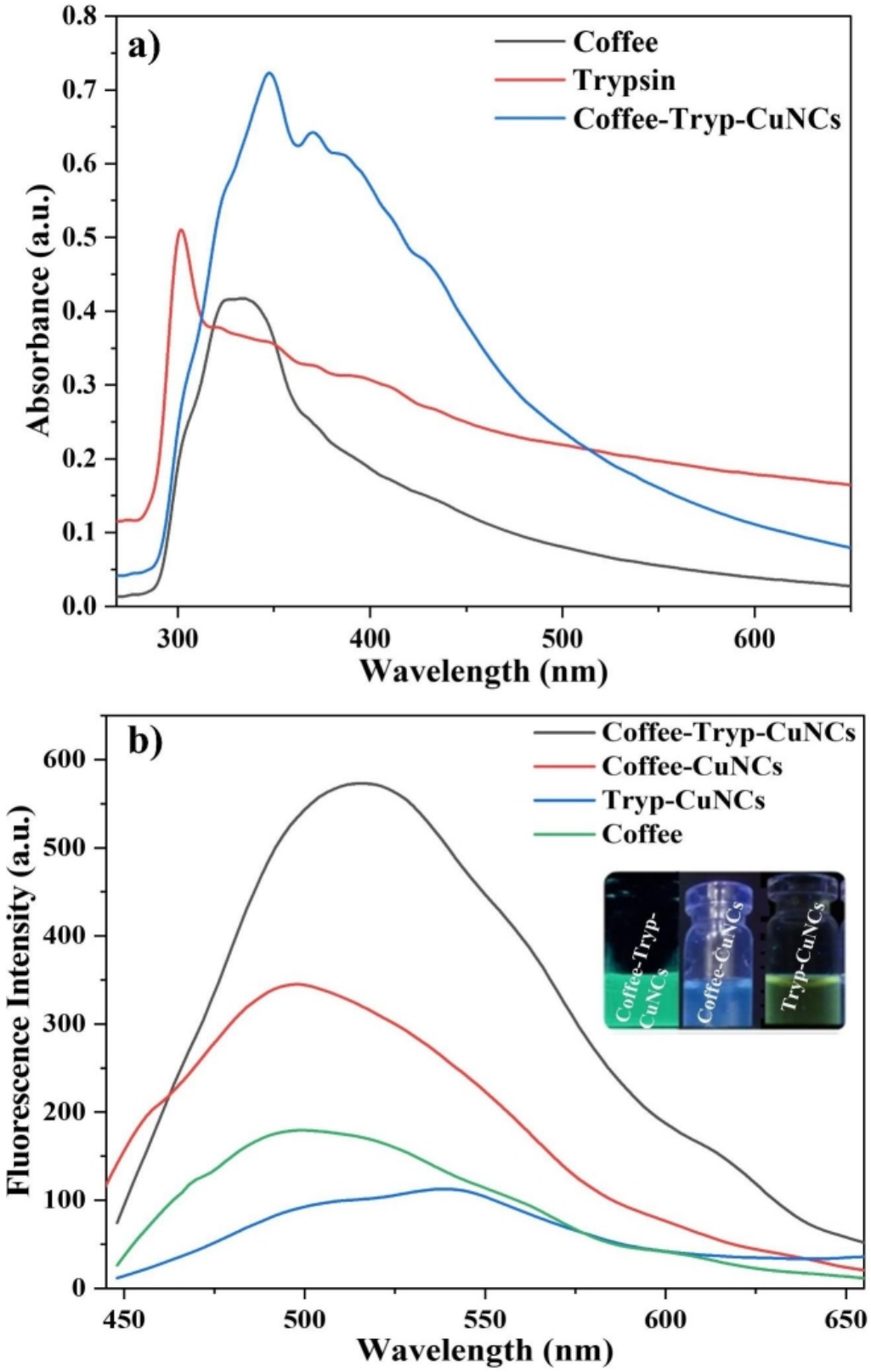

Figure S1 (a) Absorption spectra of coffee, trypsin, Coffee-Tryp-CuNCs, (b) Fluorescence emission spectra of Coffee-Tryp-CuNCs, Coffee-CuNCs, Tryp-CuNCs, coffee.

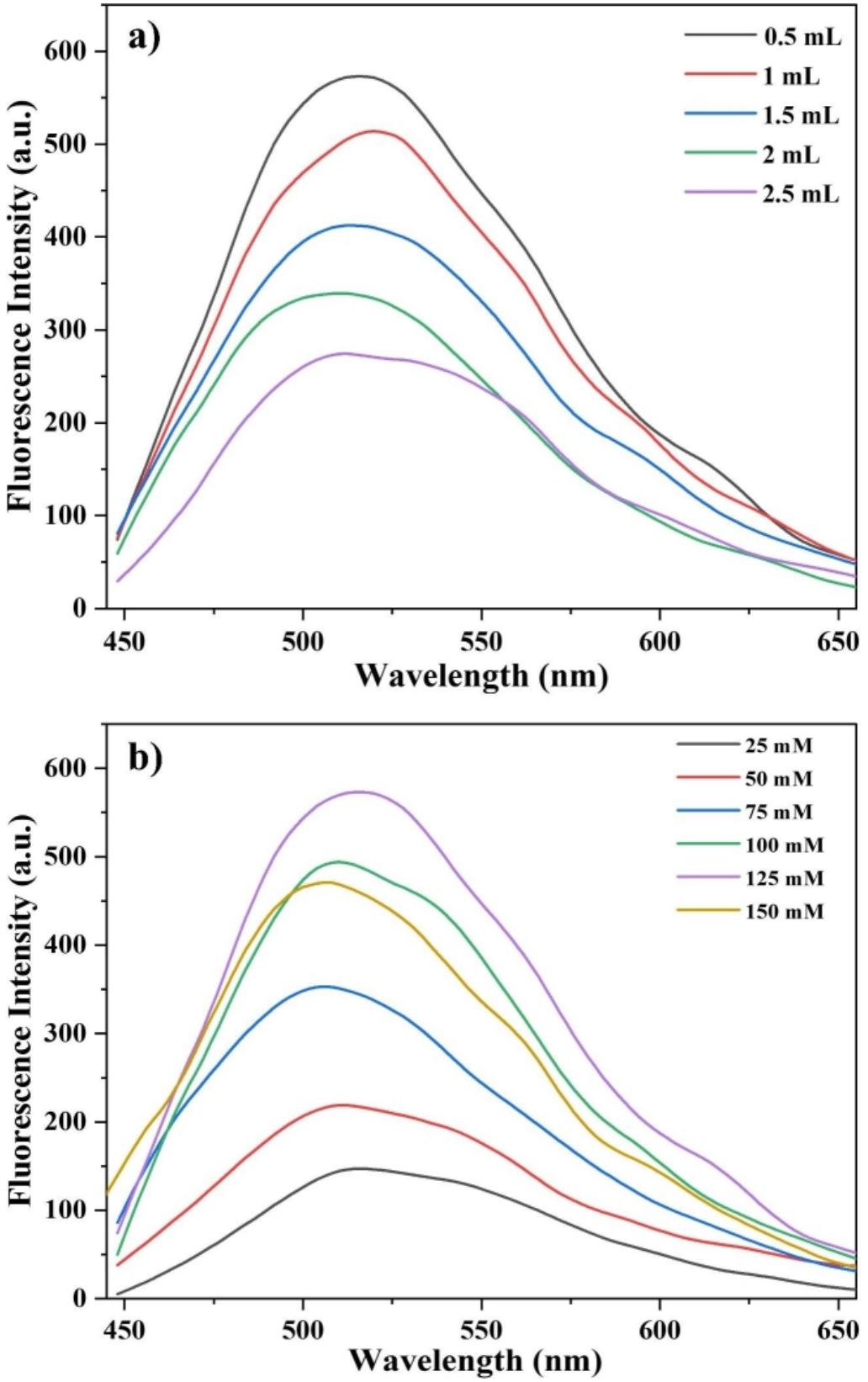

Figure S2 Emission spectra of Coffee-Tryp-CuNCs at different (a) volumes of coffee bean extract (0.5 mL-2.5mL), (b) concentrations of trypsin (25 mM-150 mM).

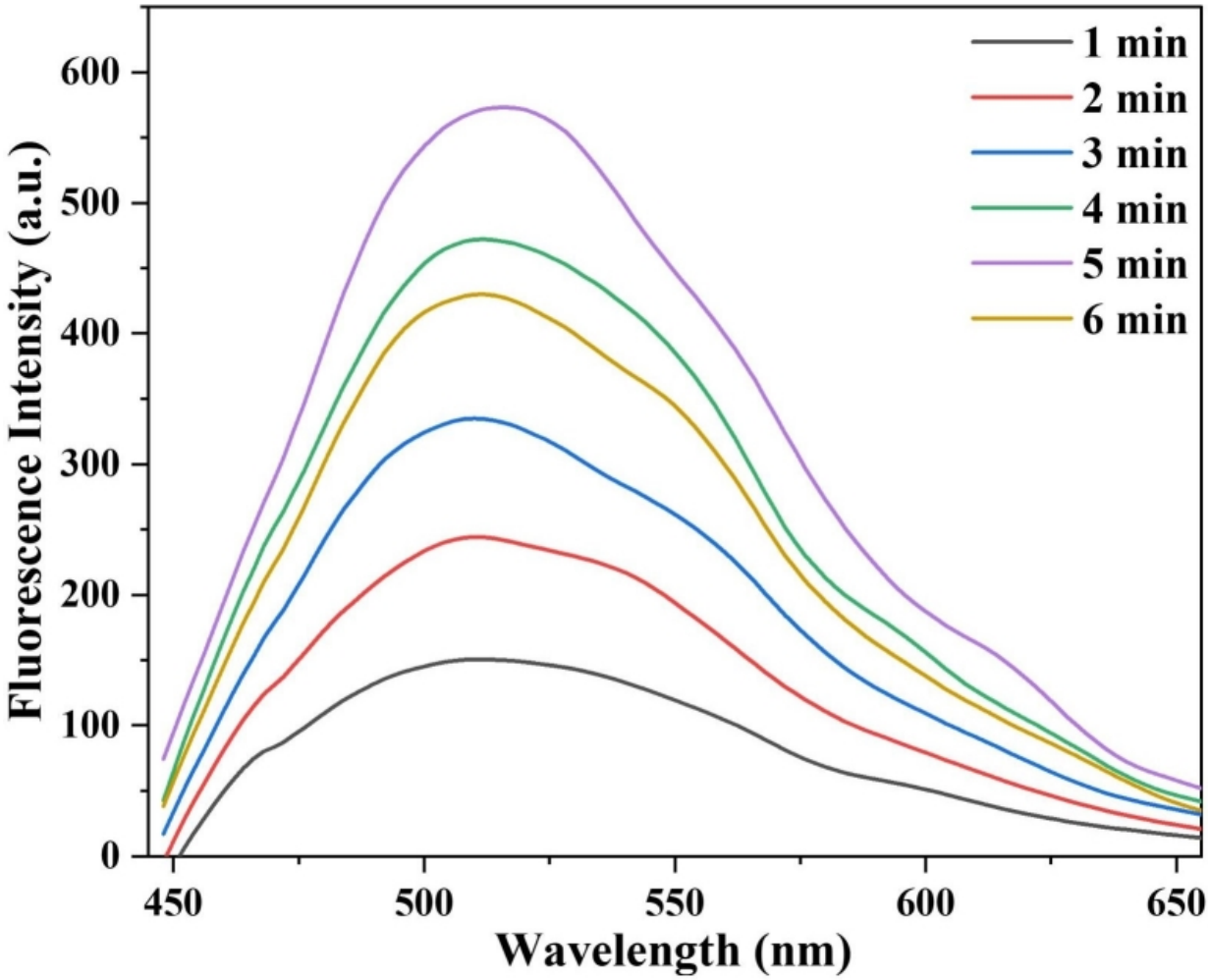

Figure S3 Fluorescence spectra of Coffee-Tryp-CuNCs at various reaction times (1 min-6 min).

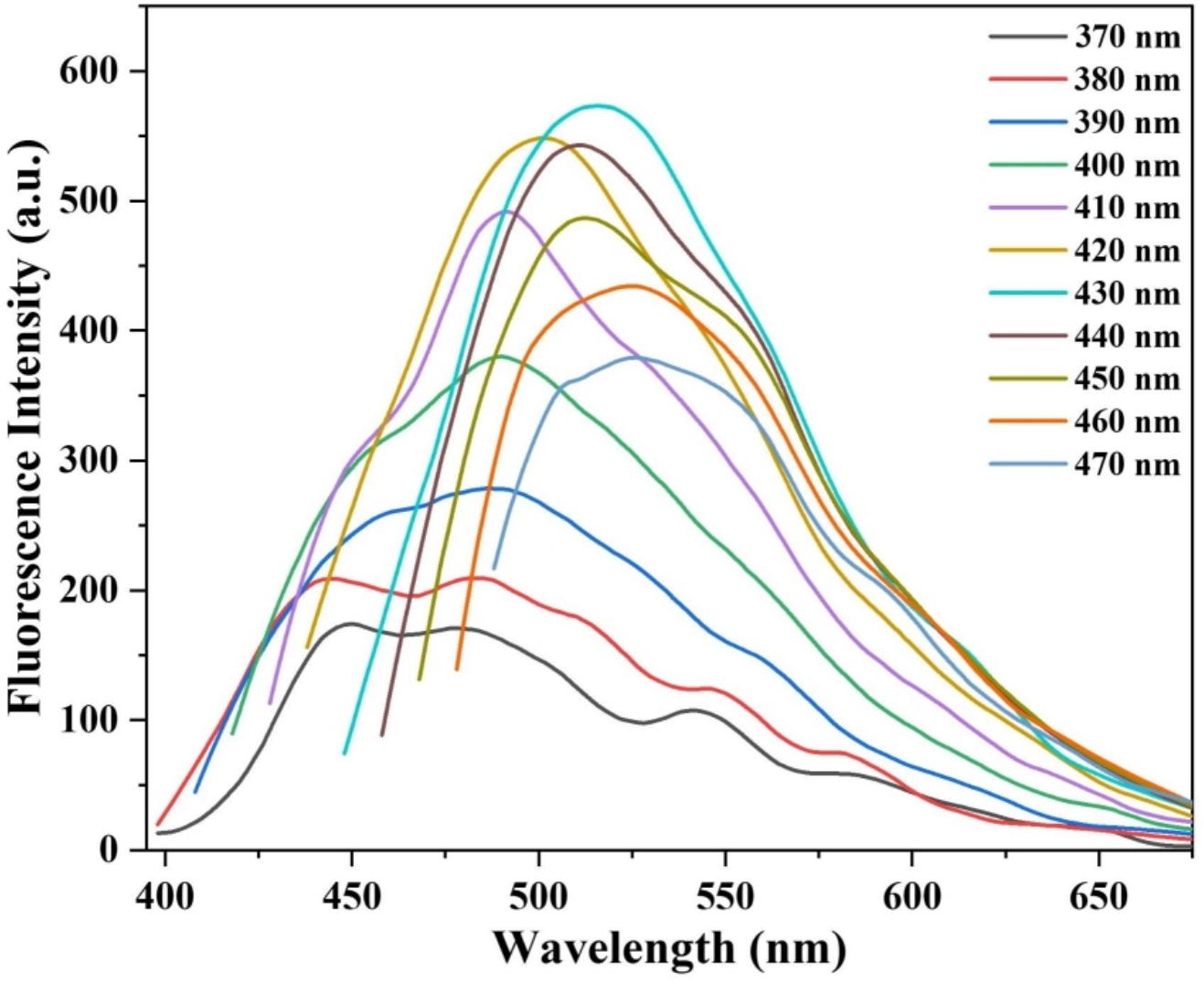

Figure S4 Excitation dependent emission spectra of Coffee-Tryp-CuNCs at different excitation wavelengths from 370-470 nm.

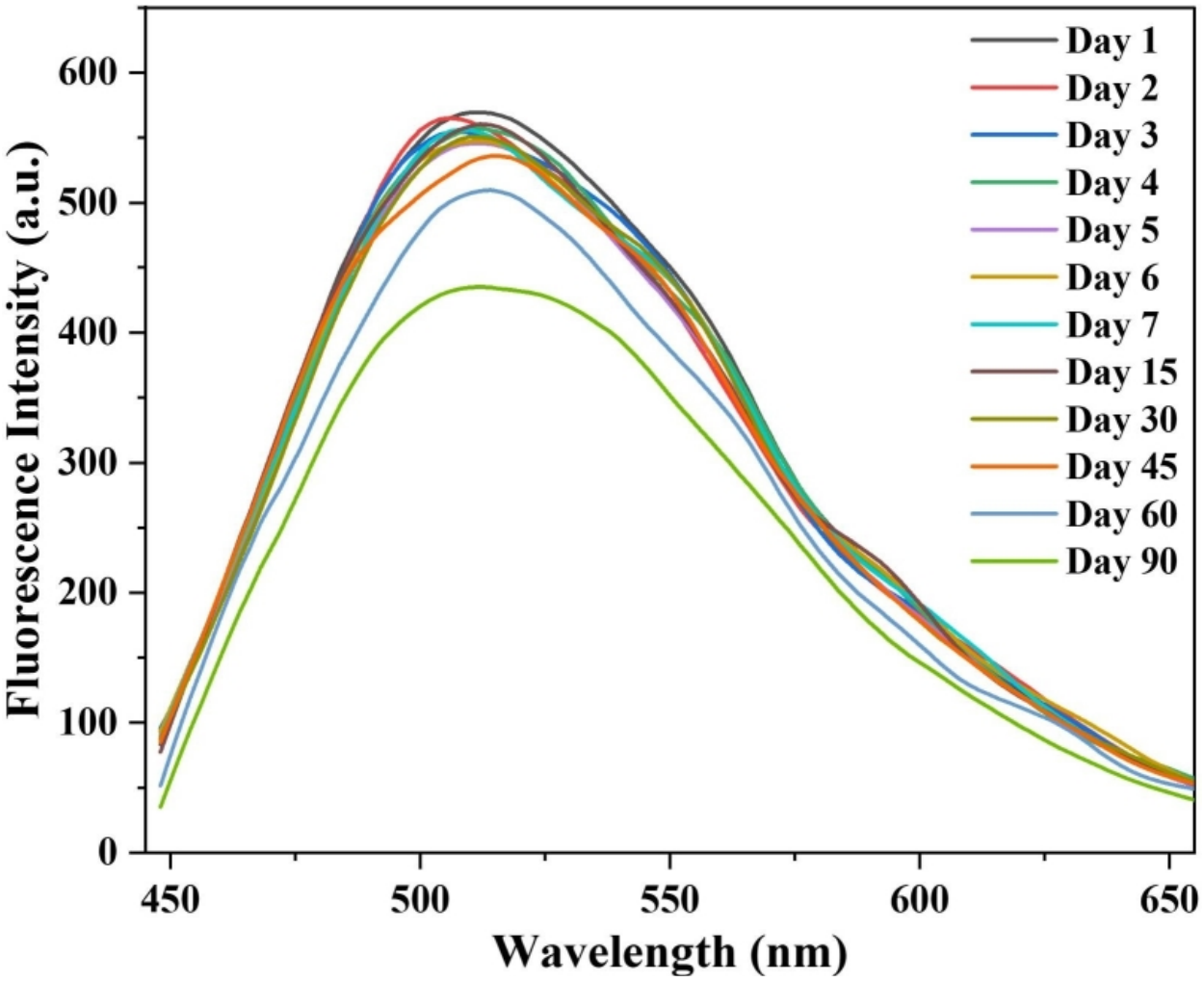

Figure S5 Evaluation of Coffee-Tryp-CuNCs stability from day 1 to day 90.

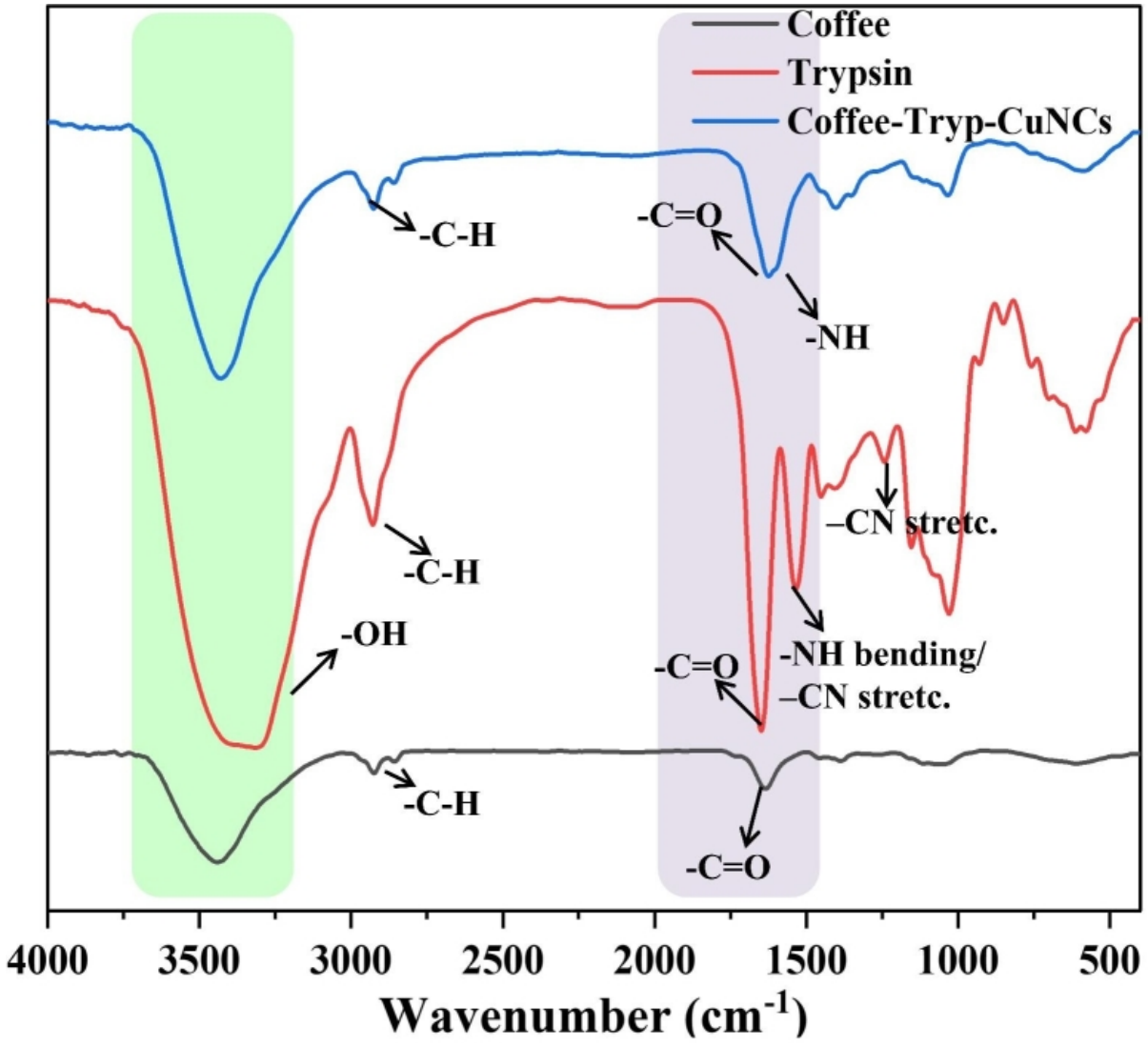

Figure S6 FT-IR analysis of coffee, trypsin and Coffee-Tryp-CuNCs.

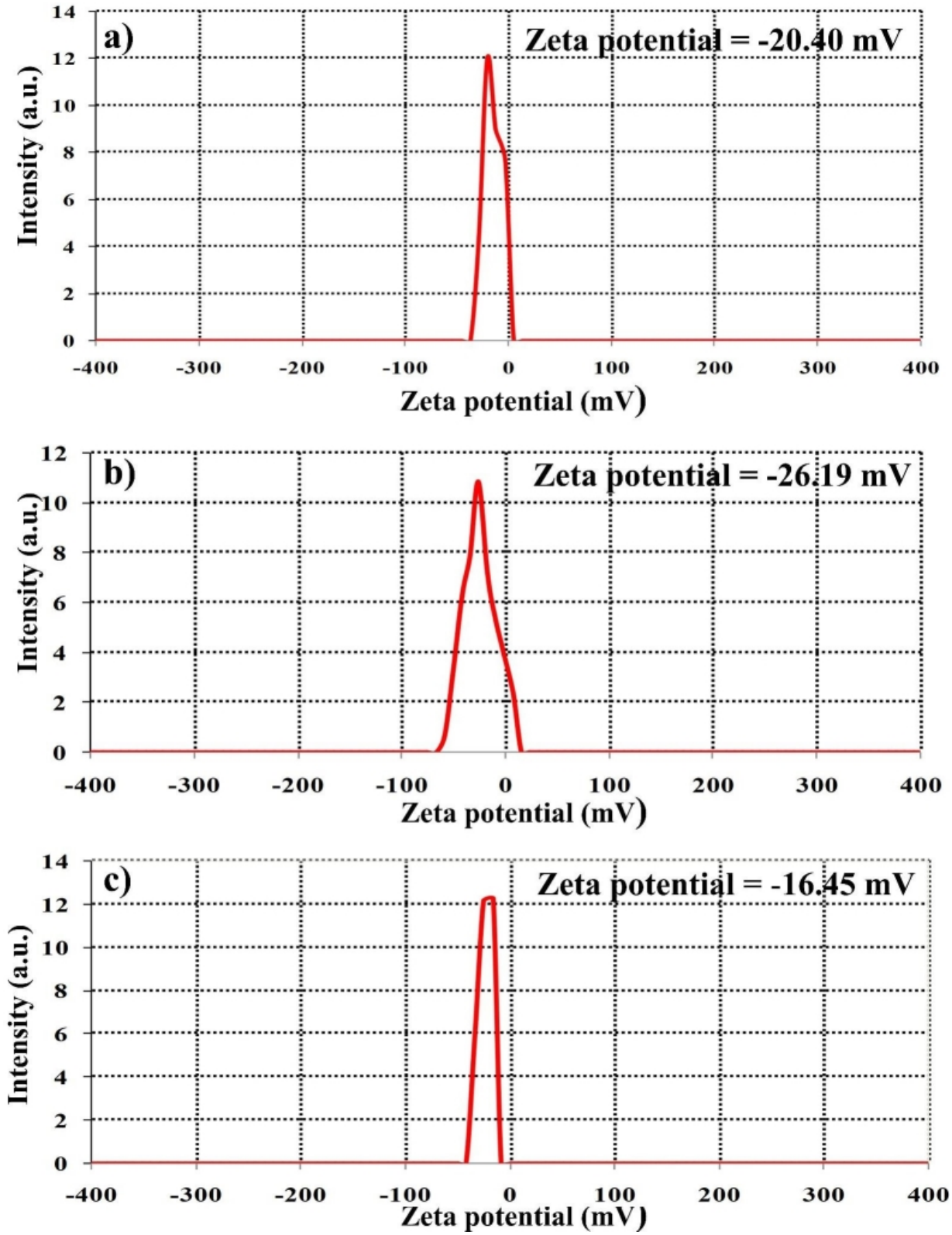

Figure S7 Zeta potential of a) Coffee-Tryp-CuNCs b*)* Coffee-Tryp-CuNCs-˙OH and c) Coffee-Tryp-CuNCs-˙OH with PPi.

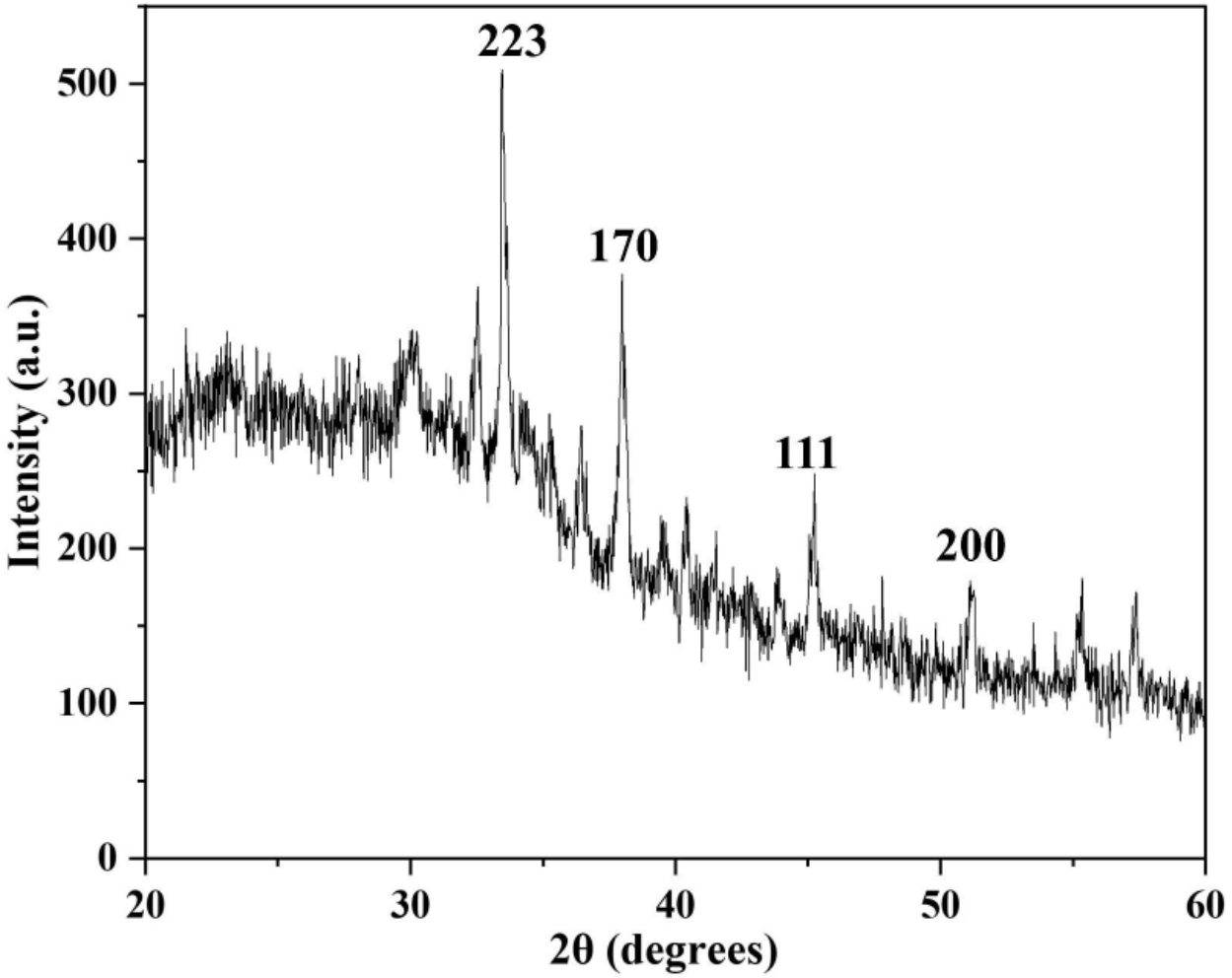

Figure S8 XRD pattern of Coffee-Tryp-CuNCs.

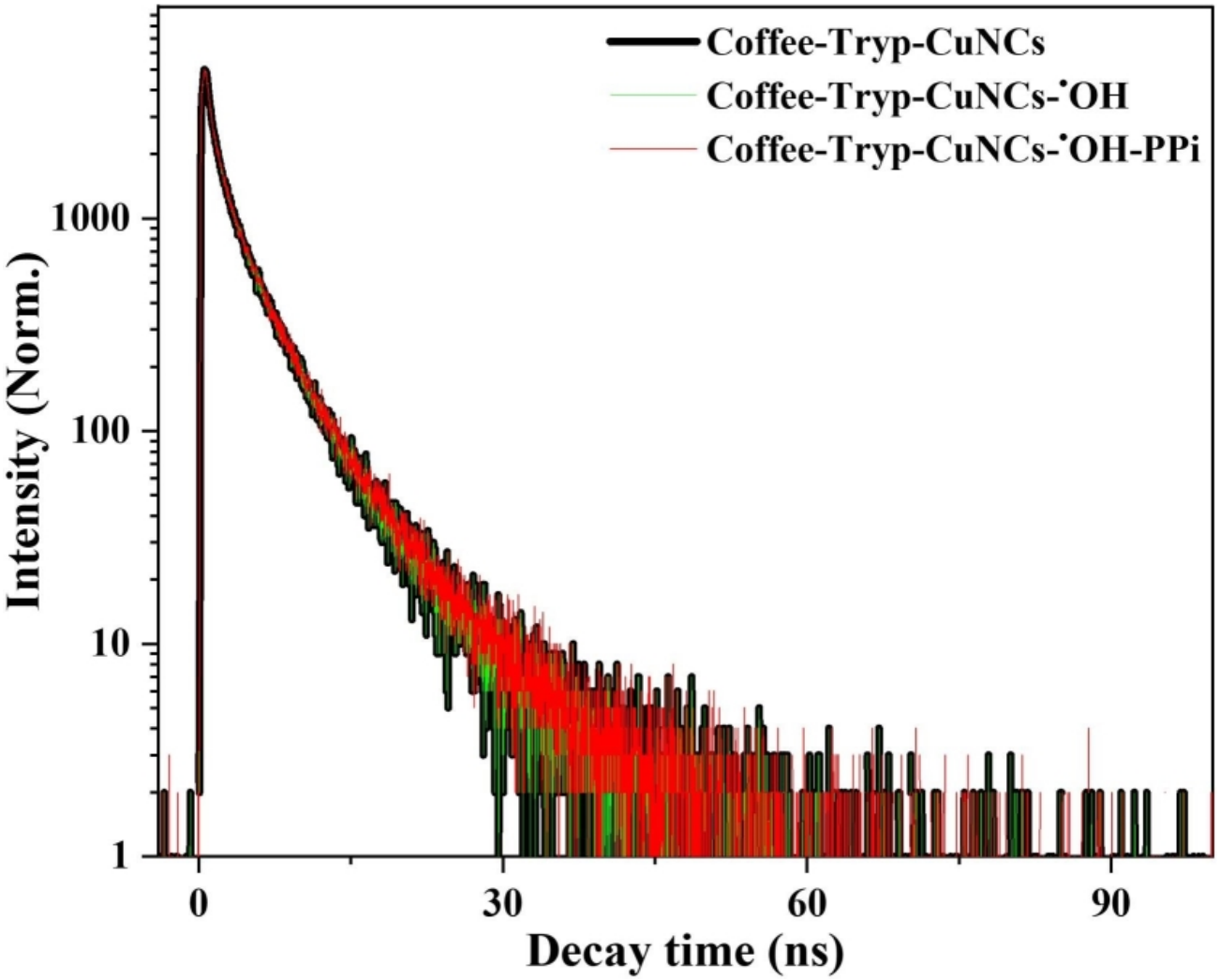

Figure S9 Fluorescence lifetime analysis of Coffee-Tryp-CuNCs, Coffee-Tryp-CuNCs-·OH and Coffee-Tryp-CuNCs-˙OH with PPi.

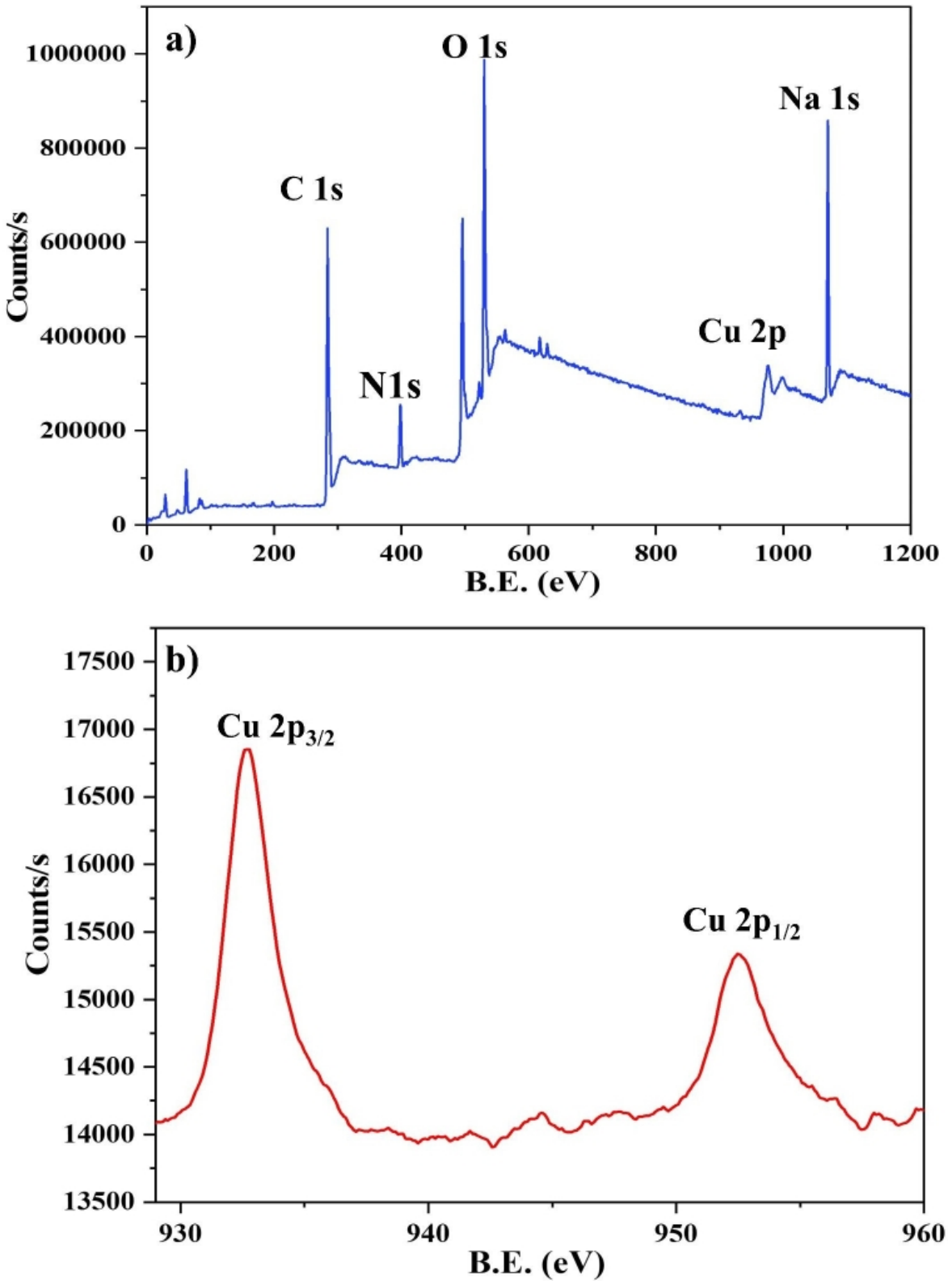

Figure S10 (a) XPS survey spectra of Coffee-Tryp-CuNCs and (b) XPS fitting spectra of Cu 2p showing two oxidation states of Cu in Coffee-Tryp-CuNCs.

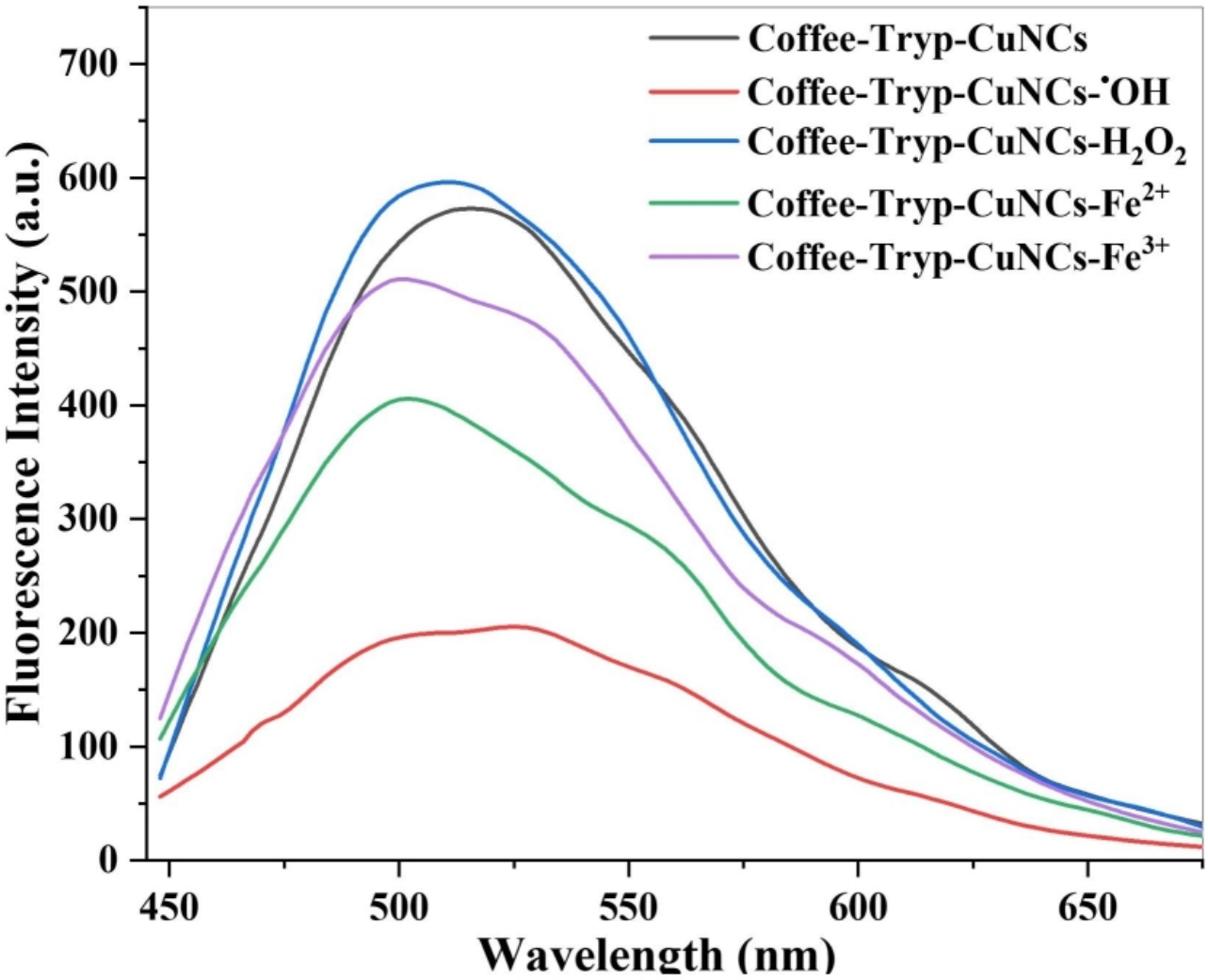

Figure S11 Investigating the emission spectra of Coffee-Tryp-CuNCs with ·OH, H_2O_2, Fe^{2+}, and Fe^{3+}.

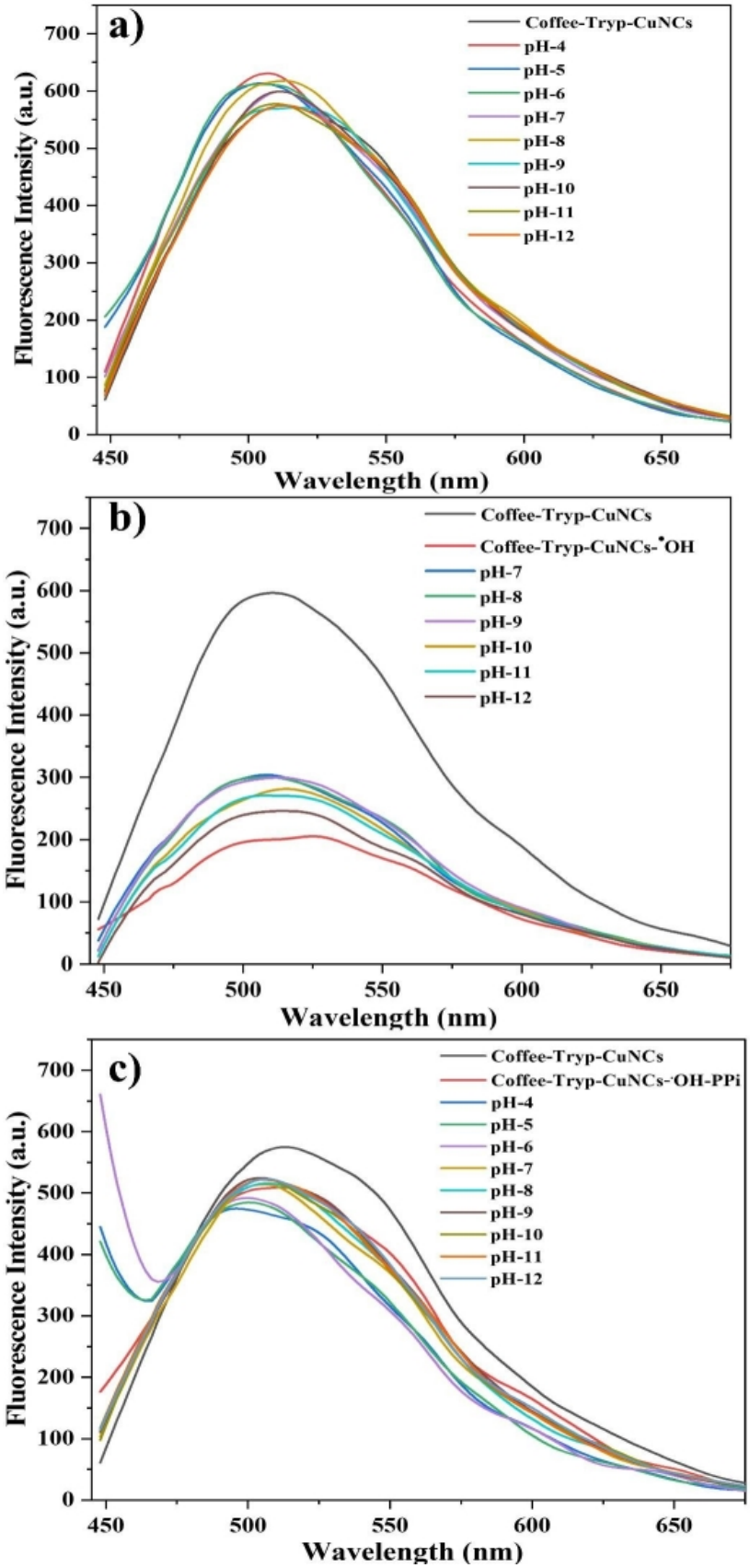

Figure S12 (a) PBS pH (4.0 to 12.0) effect on fluorescence spectra of Coffee-Tryp-CuNCs b*)* Coffee-Tryp-CuNCs-•OH and c) Coffee-Tryp-CuNCs-•OH with PPi.

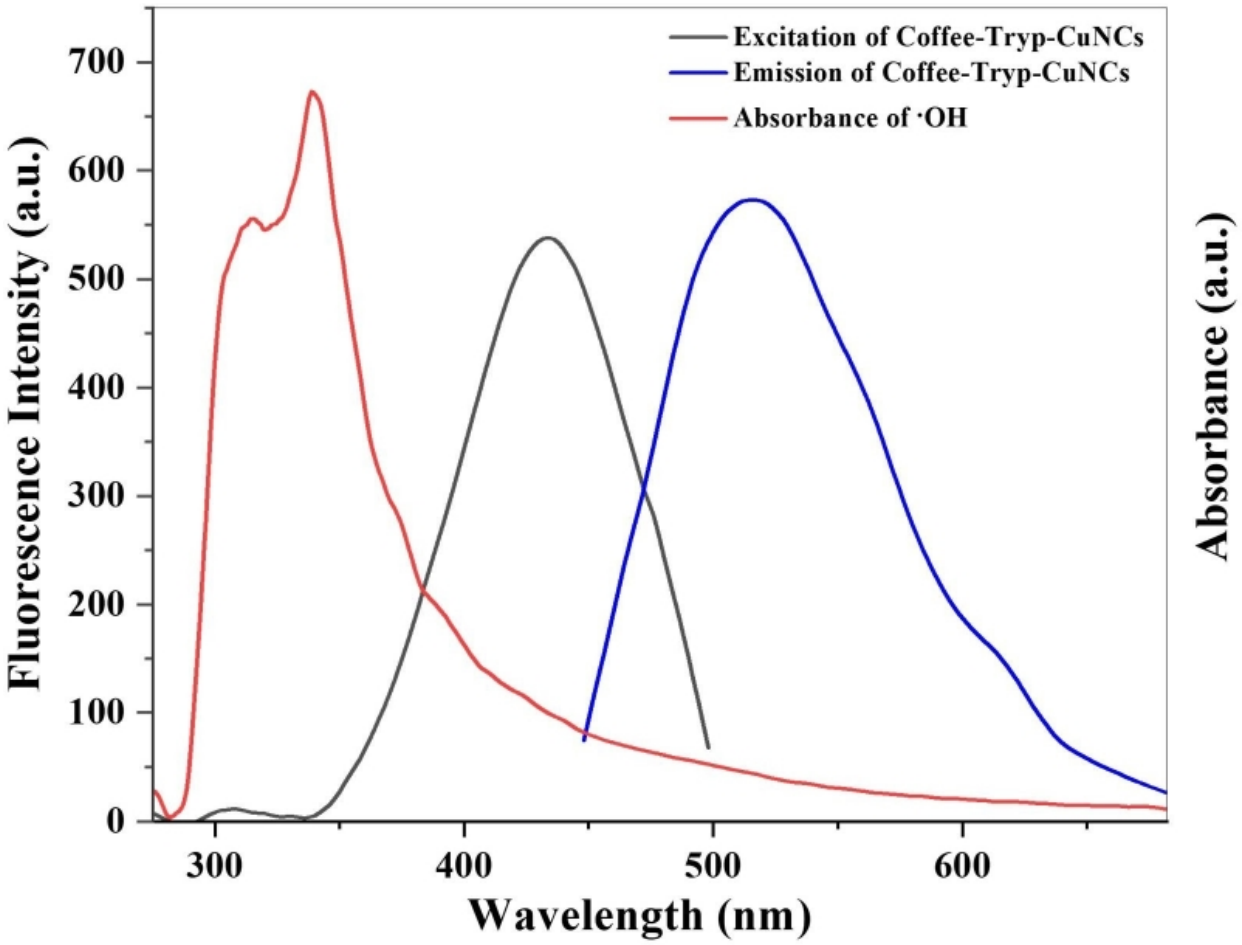

Figure S13 Fluorescence excitation and emission spectra of Coffee-Tryp-CuNCs and absorbance spectra of ·OH.

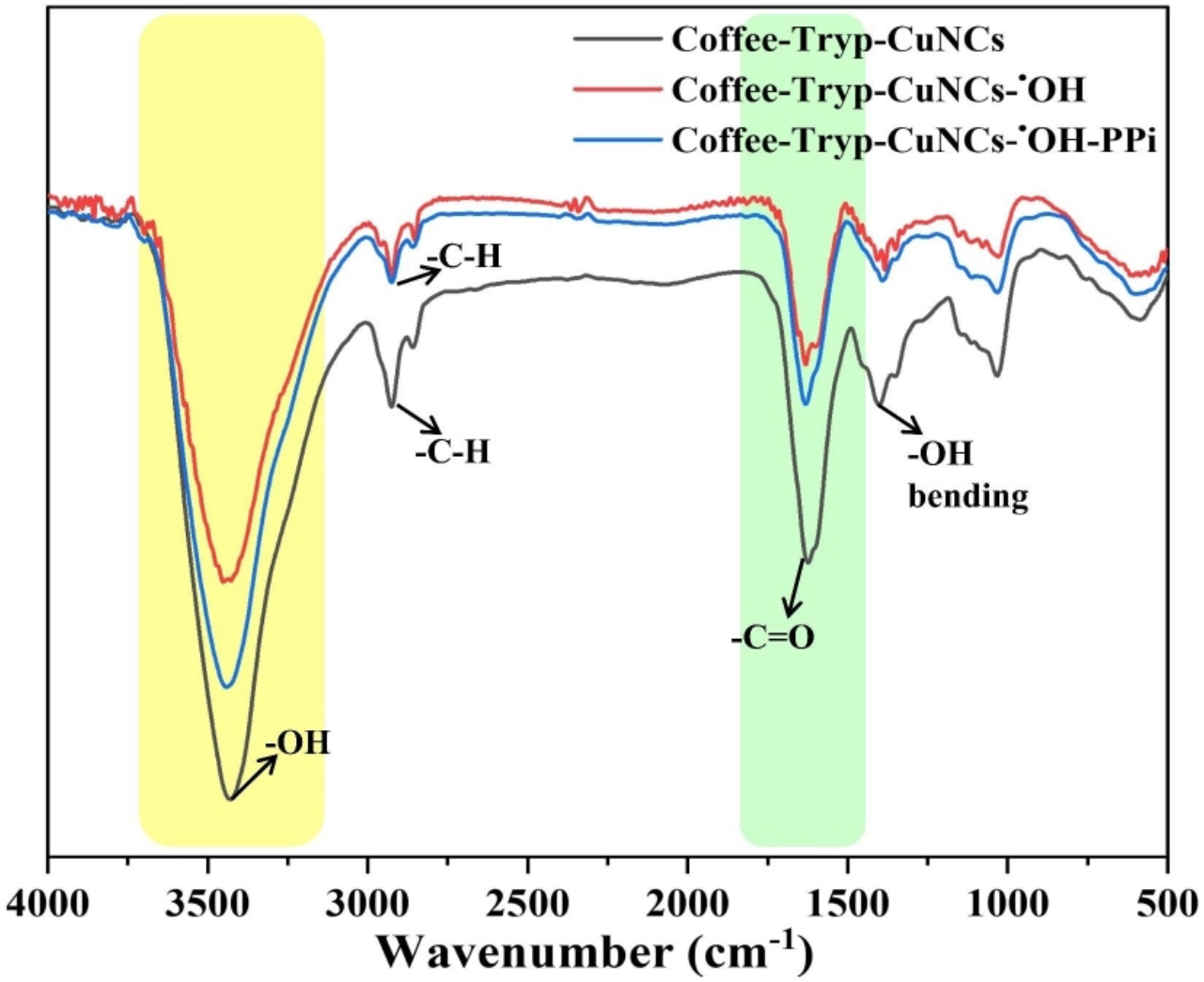

Figure S14 FT-IR characterization of Coffee-Tryp-CuNCs, Coffee-Tryp-CuNCs-˙OH and Coffee-Tryp-CuNCs-˙OH with PPi.

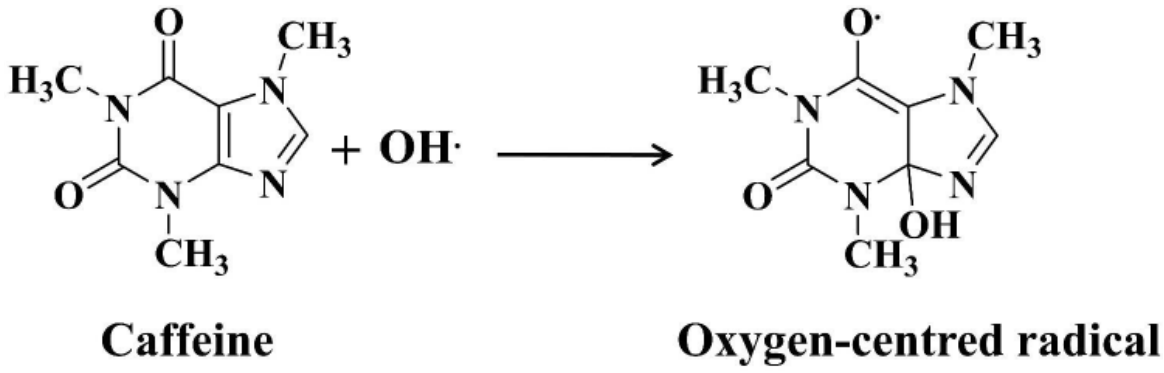

Figure S15 Structural changes occuring to Coffee-Tryp-CuNCs surface after adding ·OH.

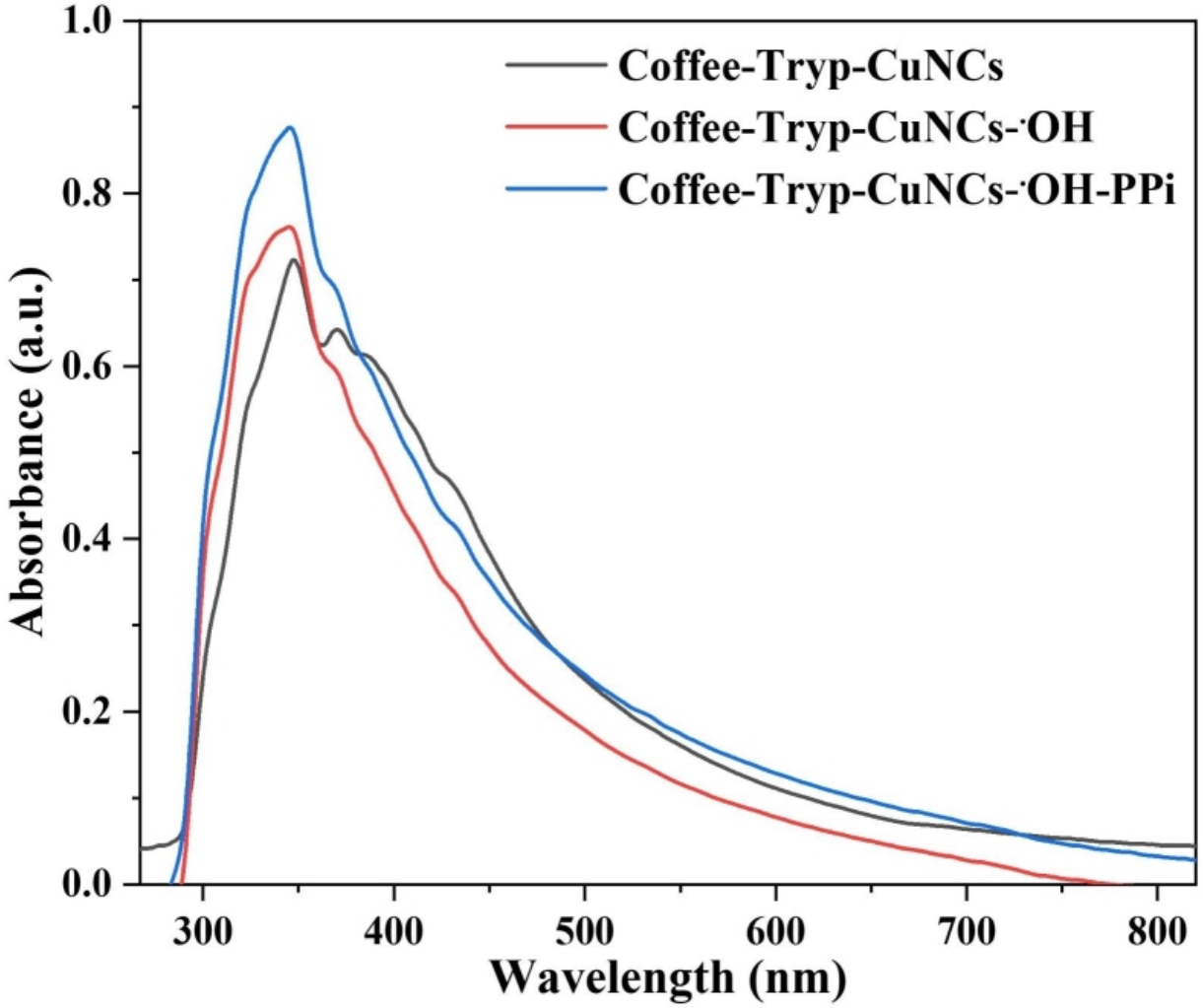

Figure S16 Absorbance spectrum of Coffee-Tryp-CuNCs, Coffee-Tryp-CuNCs-·OH and Coffee-Tryp-CuNCs-·OH with PPi.

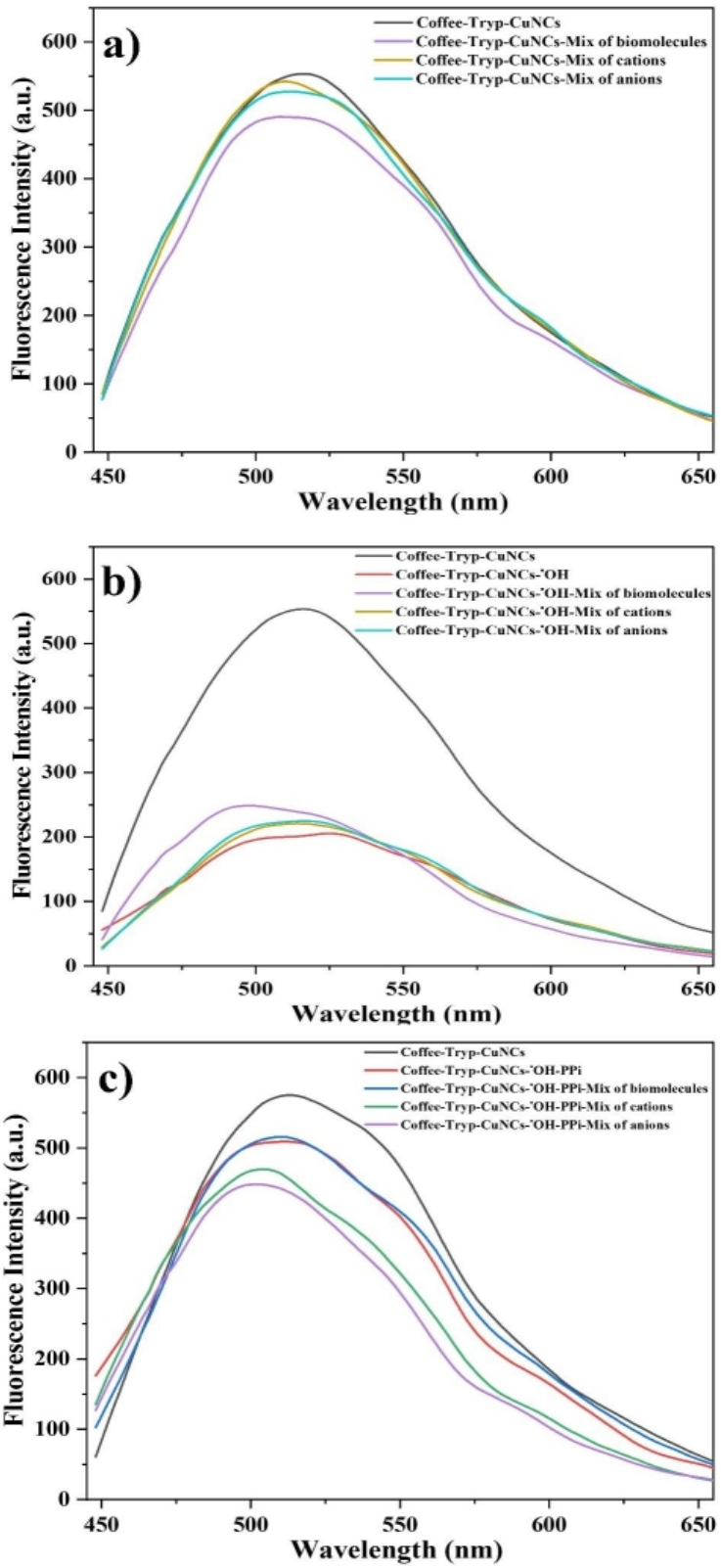

Figure S17 (a) Interference study of Coffee-Tryp-CuNCs with various biomolecules (cysteine, arginine, ALP, ATP, tryptophan and alanine), cations and anions and in presence of (b) •OH (c) PPi.

Table S1. Analysis of ·OH in spiked tap and industrial waste water by using Coffee-Tryp-CuNCs as a probe (n=3)

Analyte	**Sample**	**Added Concentration (µM)**	**Found Concentration (µM)**	**Recovery (%)**	**RSD (%) (n=3)**
·OH	Tap water	10	9.84	98.43	1.16
		25	24.77	99.08	1.35
		50	49.00	98.01	0.38
	Industrial waste water	10	9.77	97.78	1.28
		25	24.73	98.94	1.74
		50	49.30	98.61	1.17