

Electronic Supplementary Information

Tuning of Metal Enhanced Fluorescence for Sensing Applications

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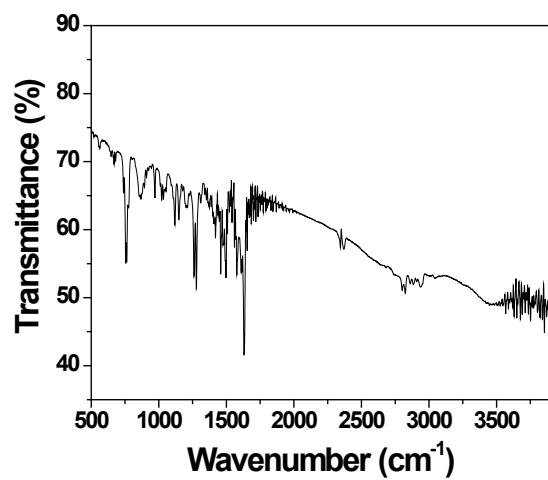


Figure S1: IR spectrum of CP (cm^{-1} , KBr disk).
1645 (vs, $\nu\text{C}=\text{N}$), 1613, 1583, 1494, 1485, 1465, 1420 (vs or s, $\nu\text{C}=\text{C}$).

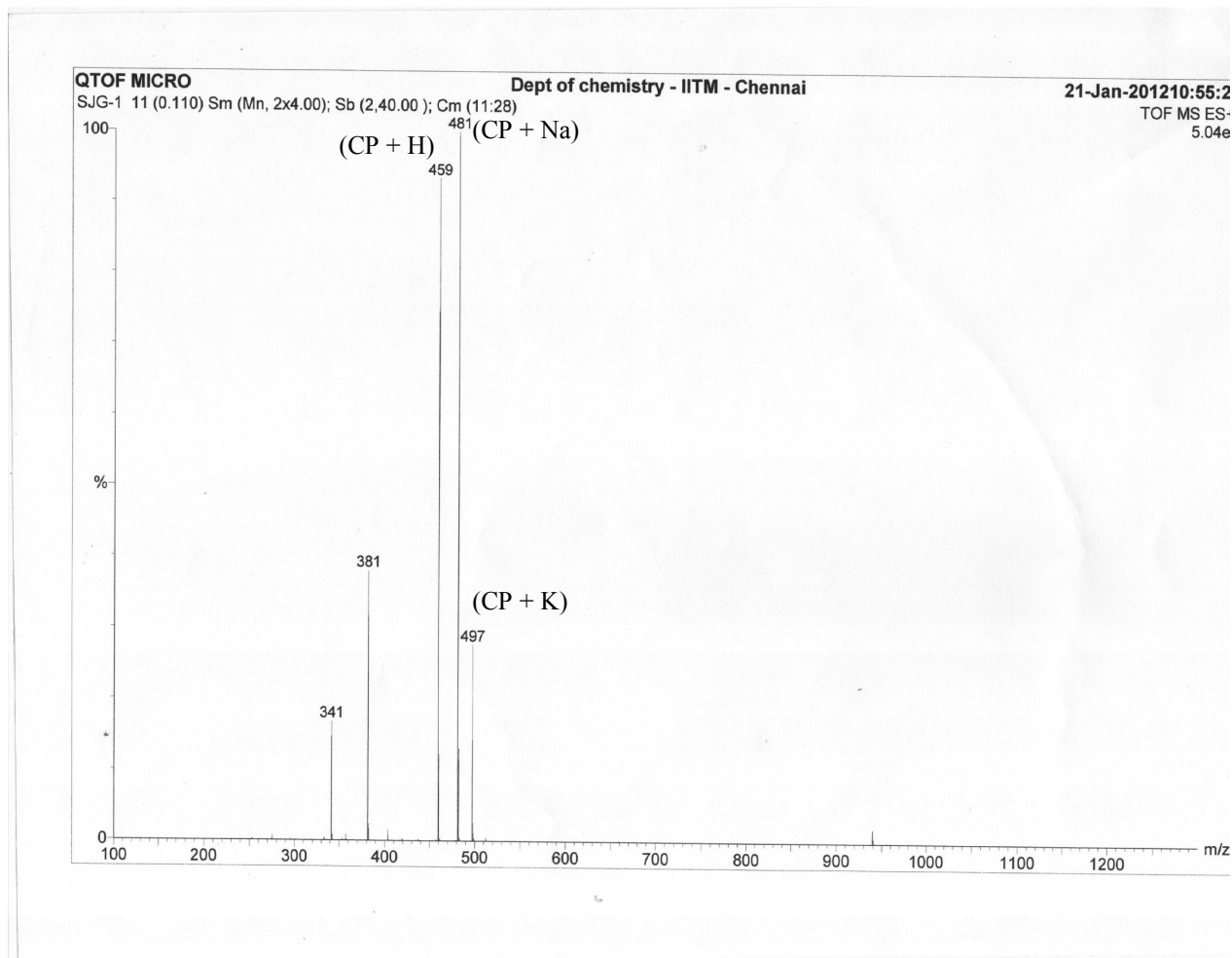


Figure 2: Mass spectra of CP.

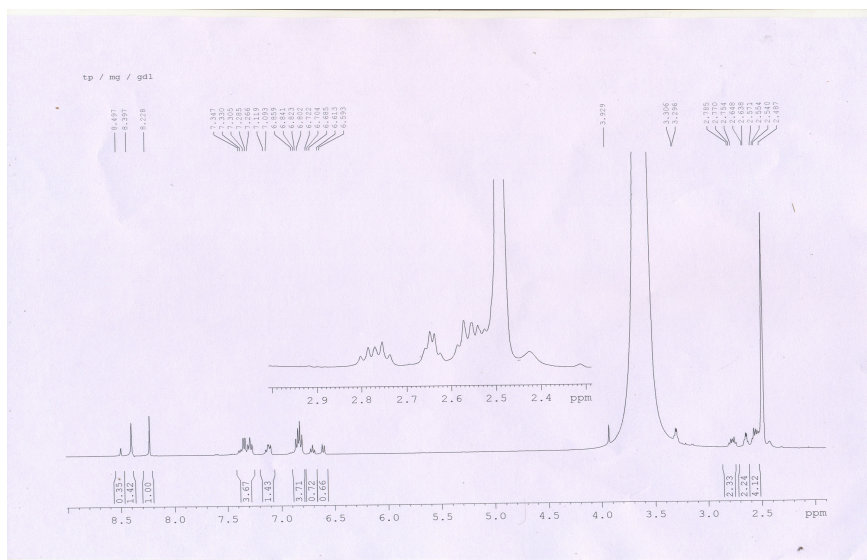


Figure S3: $^1\text{H-NMR}$ spectrum of CP in $d^6\text{-DMSO}$. δ_{ppm} : 8.39 (3H, s, OH), 8.23 (2H, s, N=C-H), 6.6-7.4 (12H, m, Ar-H), 2.4-2.8 (12H, m, CH_2).

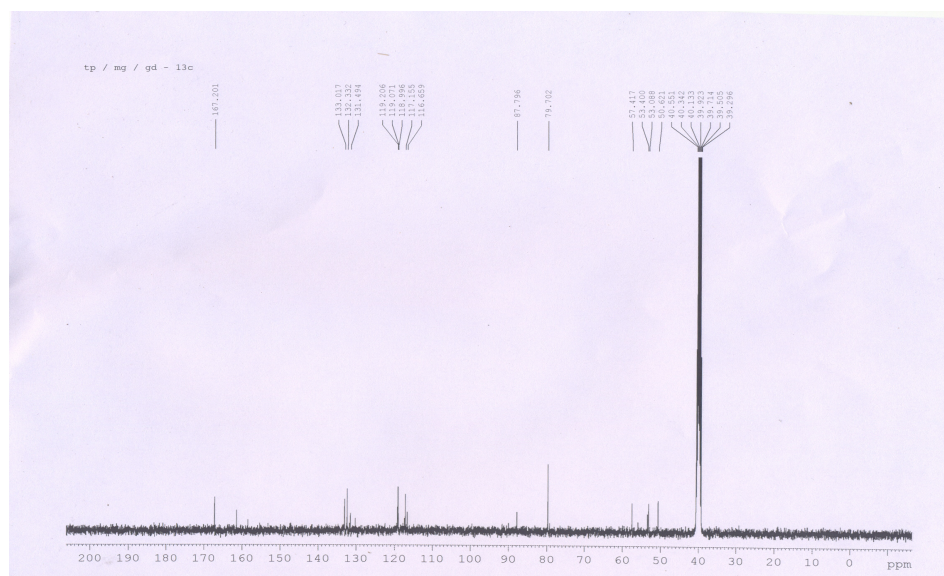


Figure S4: ^{13}C -NMR of CP in DMSO. δ_{ppm} : 50.6-57.4 (N-CH₂-CH₂-N), 79.7 (Ar-CN₂), 167.2 (-HC=N), 119 and 133 (C in aromatic ring).

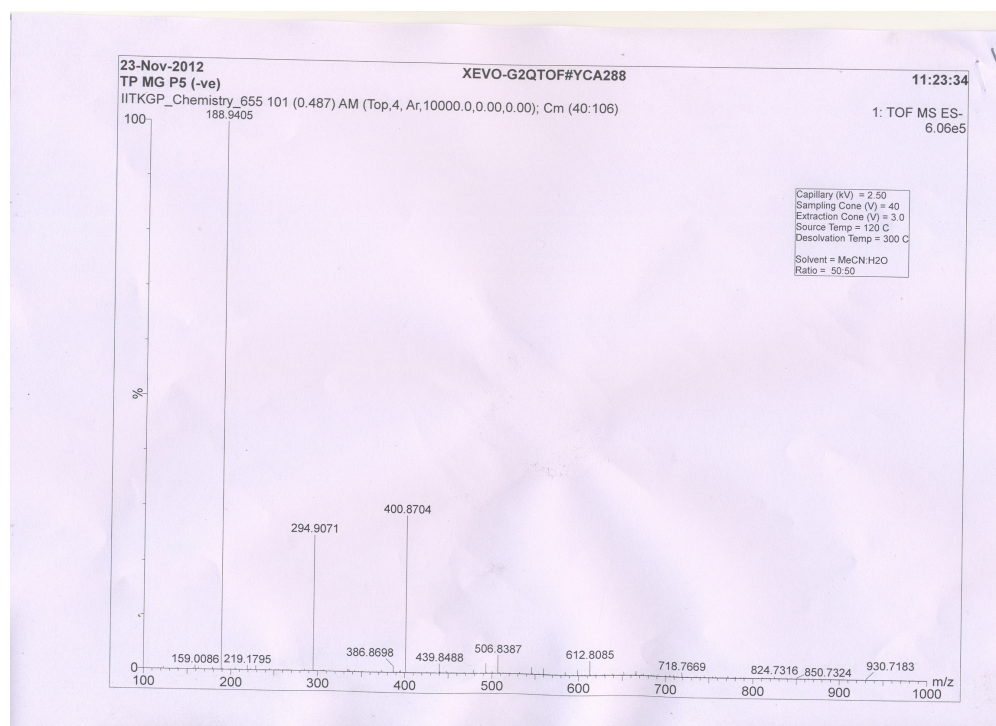


Figure S5: ESI-mass spectrum of CP capped AgNPs. Peak : 506 (OCP + 2Na + 2H), 612 (OCP + 2Na + Ag), 718 (OCP + 2Na + 2Ag), 824 (OCP + 2Na + 2Ag).

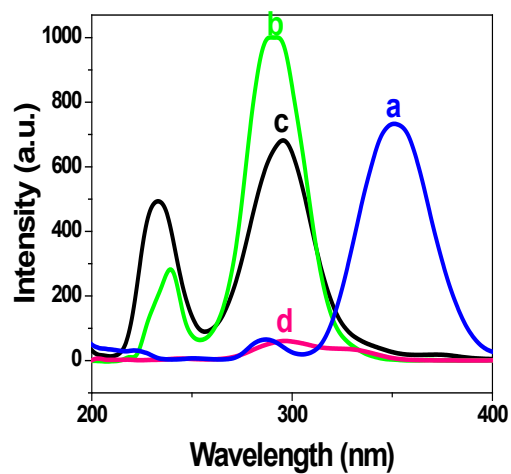


Figure S6: Excitation spectra of (a) unexposed CP, (b) CP-Ag(I) after one hour exposure and (c) CP-Cu(II) after 14 hours exposure and (d) CP-Au(III) after 11 hours exposure. Condition: [CP] = 1.4×10^{-4} M, [Ag(I)] = 4.2×10^{-4} M, [Cu(II)] = 0.70×10^{-4} M, [Au(III)] = 4.2×10^{-4} M.

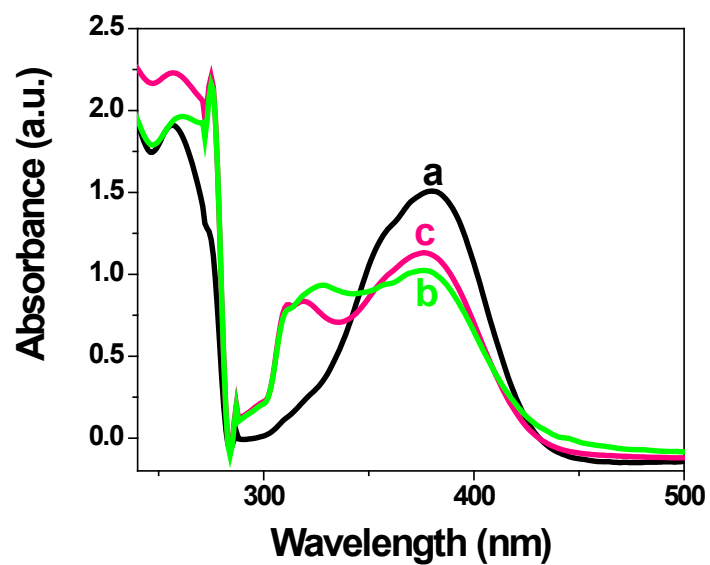


Figure S7: Absorption spectra of (a) unexposed CP, (b) CP-Ag(I) after one hour exposure and (c) CP-Cu(III) after 14 hours exposure.
Condition: [CP] = 1.4×10^{-4} M, [Ag(I)] = 4.2×10^{-4} M, [Cu(II)] = 0.70×10^{-4} M.

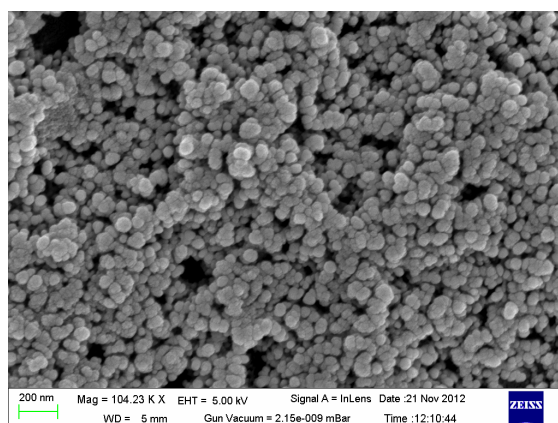


Figure S8: FESEM image of AuNPs obtained as precipitate by adding Ag(I) to the gold hydrosol.
Condition: [CP] = 1.4×10^{-4} M, [Au(III)] = 4.2×10^{-4} M, [Ag(I)] = 4.2×10^{-4} M.

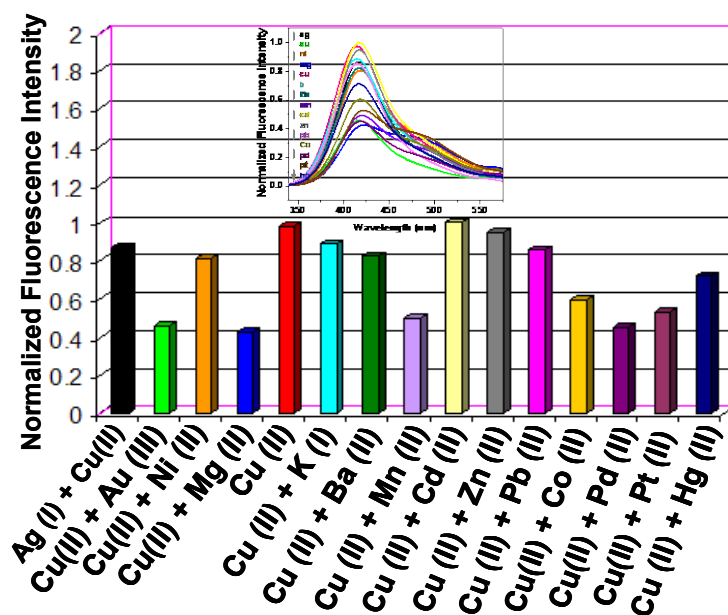


Figure S9: Bar diagram and normalized fluorescence spectra (inset) indicating copper enhanced fluorescence in presence of different interfering metal ions.

Conditions: $[CP] = 1.4 \times 10^{-5} \text{ M}$, $[Cu(II)] = 0.70 \times 10^{-5} \text{ M}$, $[other M^{n+}] = 0.70 \times 10^{-5} \text{ M}$, $\lambda_{ex} = 290 \text{ nm}$, exposure time = 14 hours.

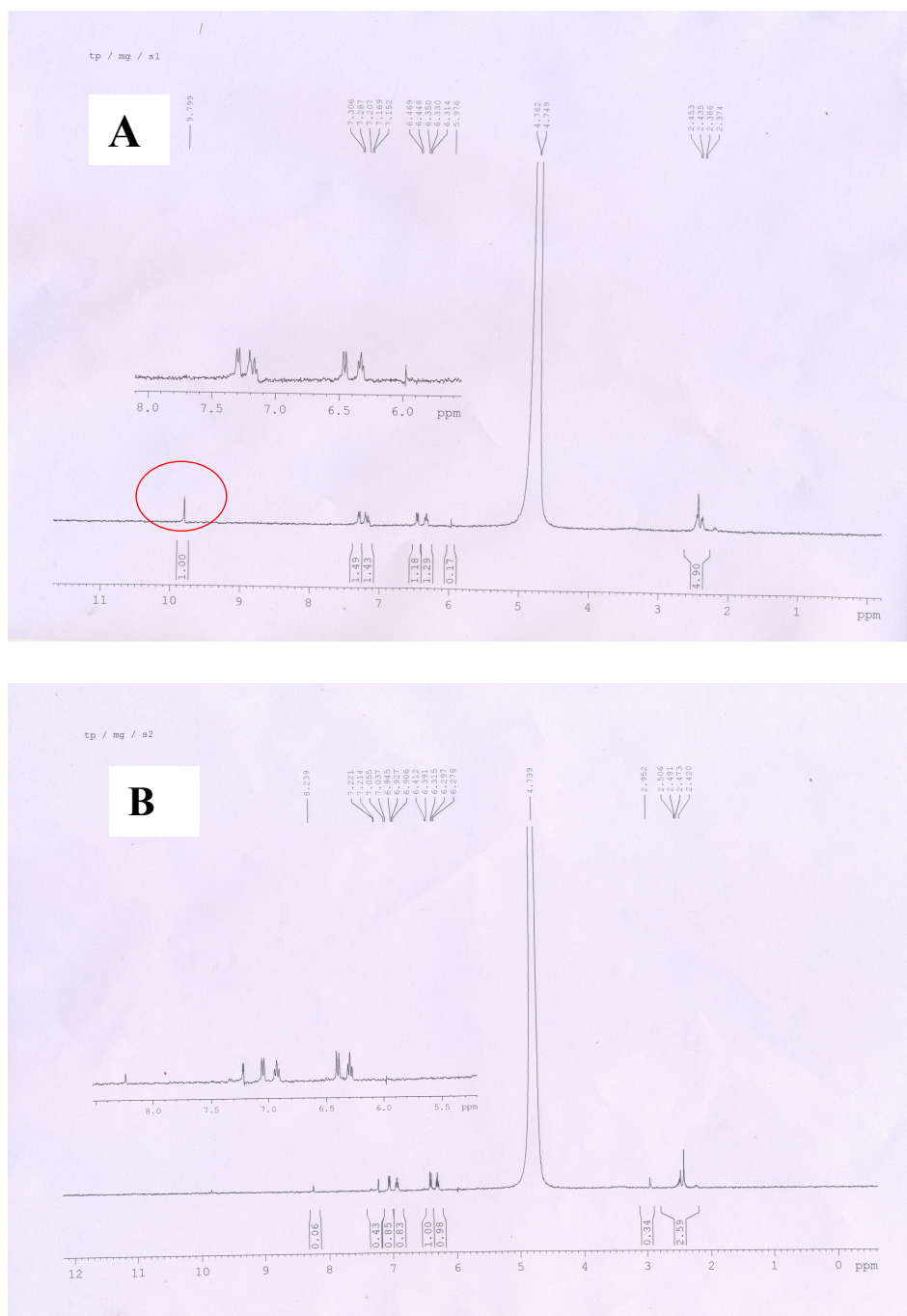


Figure S10: ^1H NMR of (A) CP and (B) CP-Ag(I) after ~7 hours ageing in alkaline D_2O .

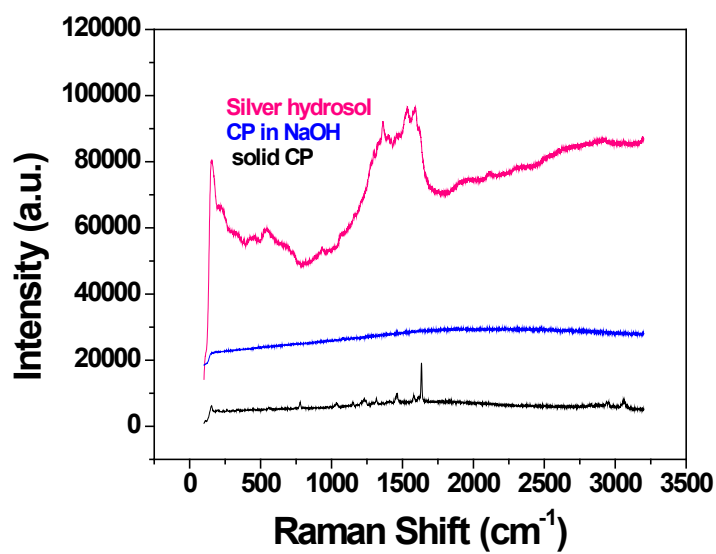
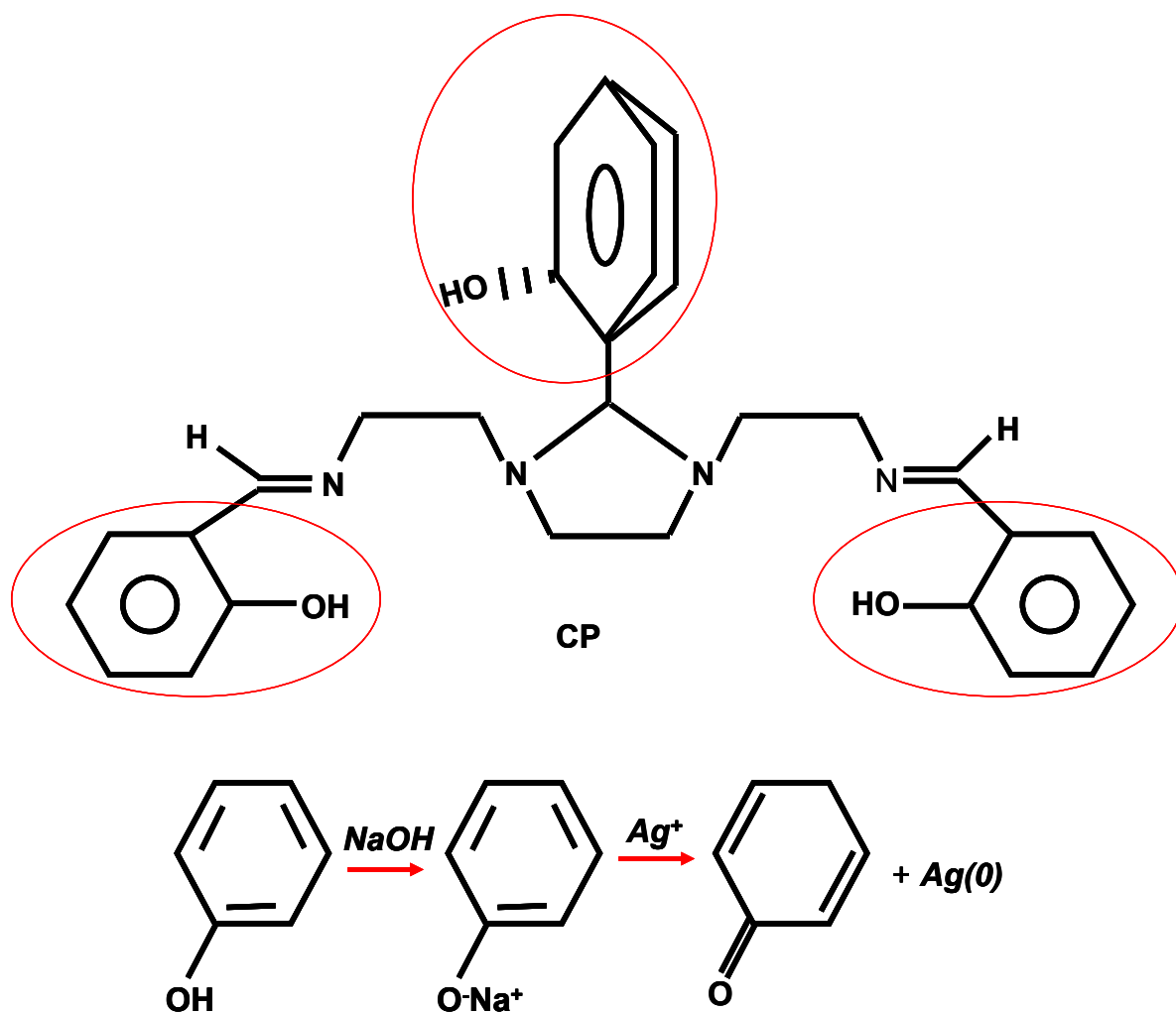


Figure S11: Raman spectra of solid CP, exposed CP in NaOH and exposed CP-Ag(I) in NaOH. Condition: [CP] = 1.4×10^{-4} M, [Au(III)] = 4.2×10^{-4} M, Exposure time = one hour.



Scheme S1: Mechanism for evolution of coinage metal nanoparticles with the oxidation of CP to its quinone form in aqueous alkaline medium.

Table S1: Elemental analysis for the compound CP.

Element	Calculated (%)	Experimental (%)
C	70.72	70.80
N	12.22	12.11
H	06.59	06.50