Electronic Supplementary Material (ESI) for Photochemical & Photobiological Sciences

Supporting Information for:

Synthesis of Copper Nanoparticles Mediated by Photogenerated Free Radicals: catalytic role of chloride anions

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Contents

A. **Effect of chloride anions on the spectroscopy of Cu^{2+}.**

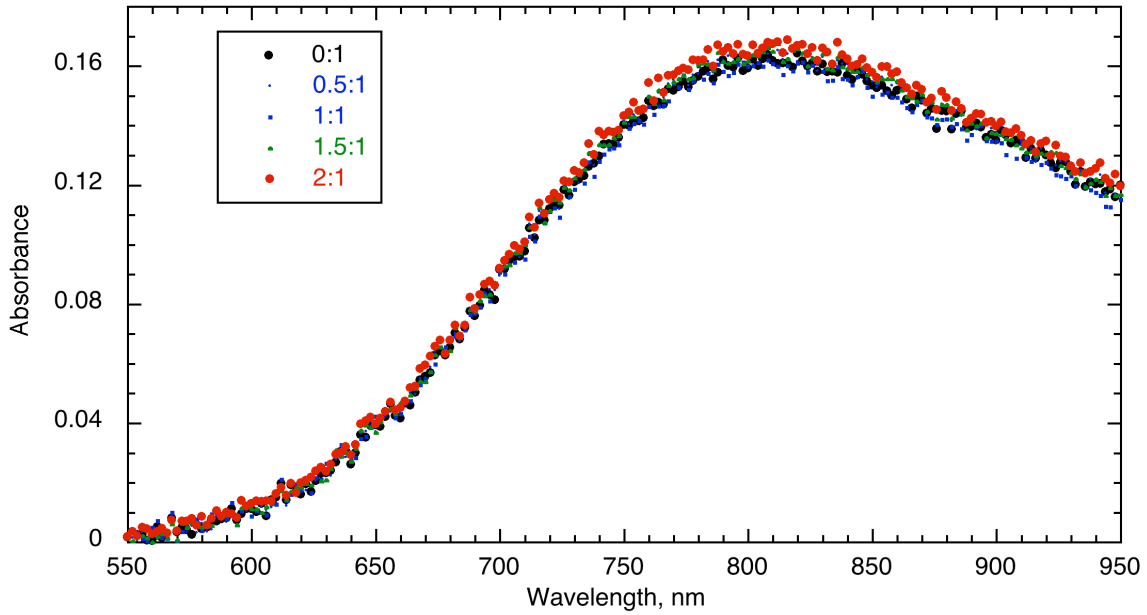


Figure S1. Effect of chloride addition (as NaCl) on the spectra of 10 mM aqueous $CuSO_4$. The numbers in the legend give the ration of Cl^- to Cu^{2+}.

B- **Dependence of final absorption of CuNP with the initial copper concentration in the presence and absence of CTAB.**

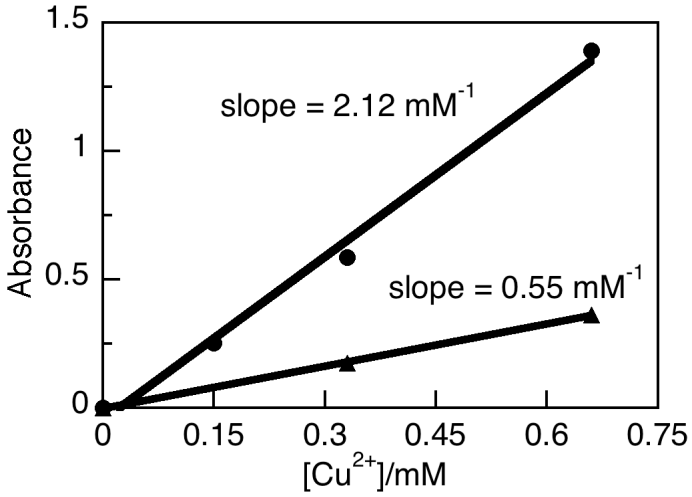
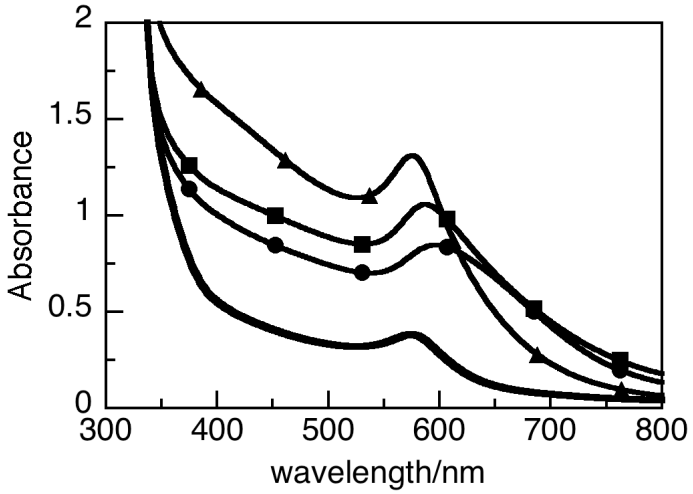


Figure S2. Dependence of the absorbance at the plasmon resonance band wavelength with the initial concentration of Cu^{2+}.(●) CTAB 0.33 mM; (▲) no stabilizer.

C- Absorbance spectra of CuNP in acetonitrile with different concentration of CTAC.



X

Figure S3. Absorbance spectra of CuNP synthesized in acetonitrile from 0.66 mM $Cu(OAc)_2$, 1.32 mM I-907 and 0.15 mM (●), 0.33 mM (■), 0.66 mM (▲) or 0.99 mM (—) CTAC.

D- SEM or TEM images of CuNP synthetized in water in the presence of stabilizers.

Given the lack of stability of CuNP to air, the samples for TEM and SEM were prepared right after the synthesis without processing to avoid oxidation of the nanoparticles. As a result some of the images may show some organic matter.

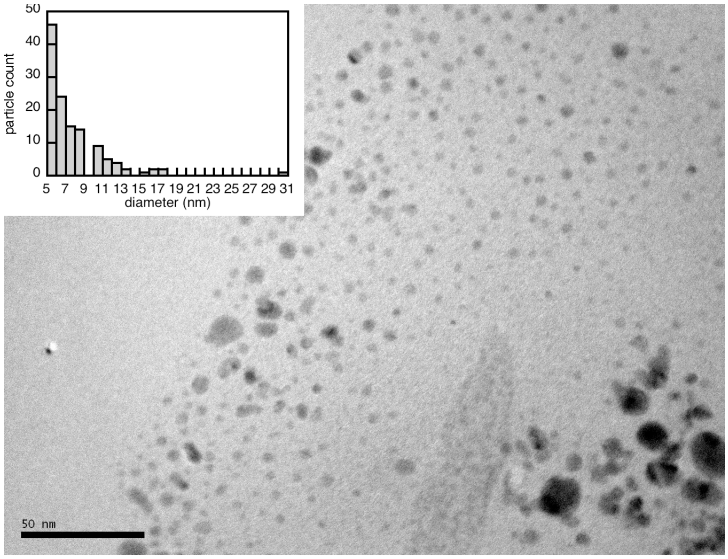


Figure S4. TEM image and histogram (inset) for CuNP synthesized in water in the presence of CTAC.

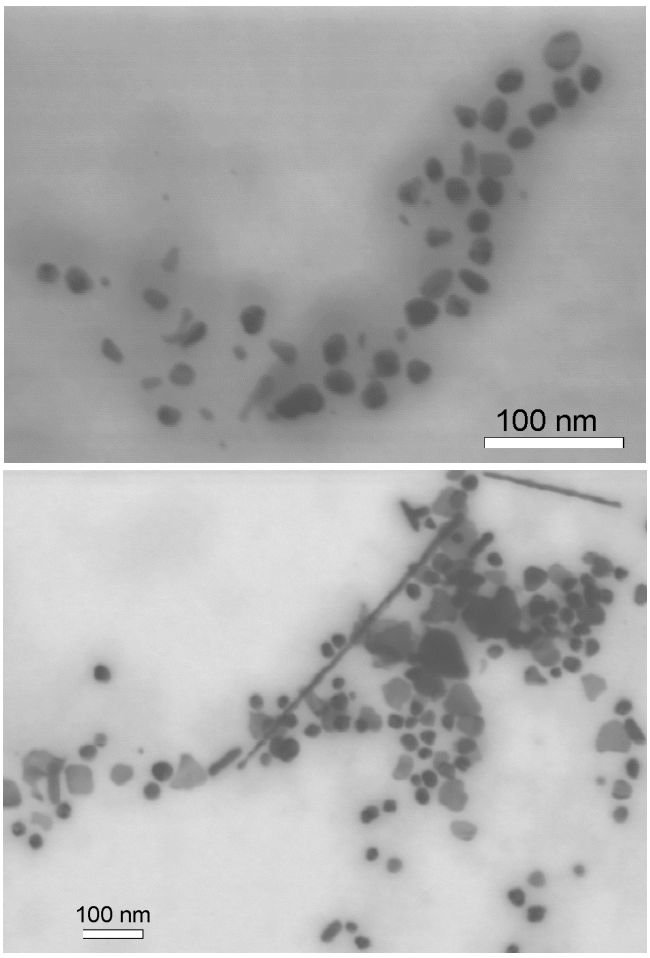


Figure S5. SEM images of CuNP synthesized in the presence of TMABr (top) and TPABr (bottom)

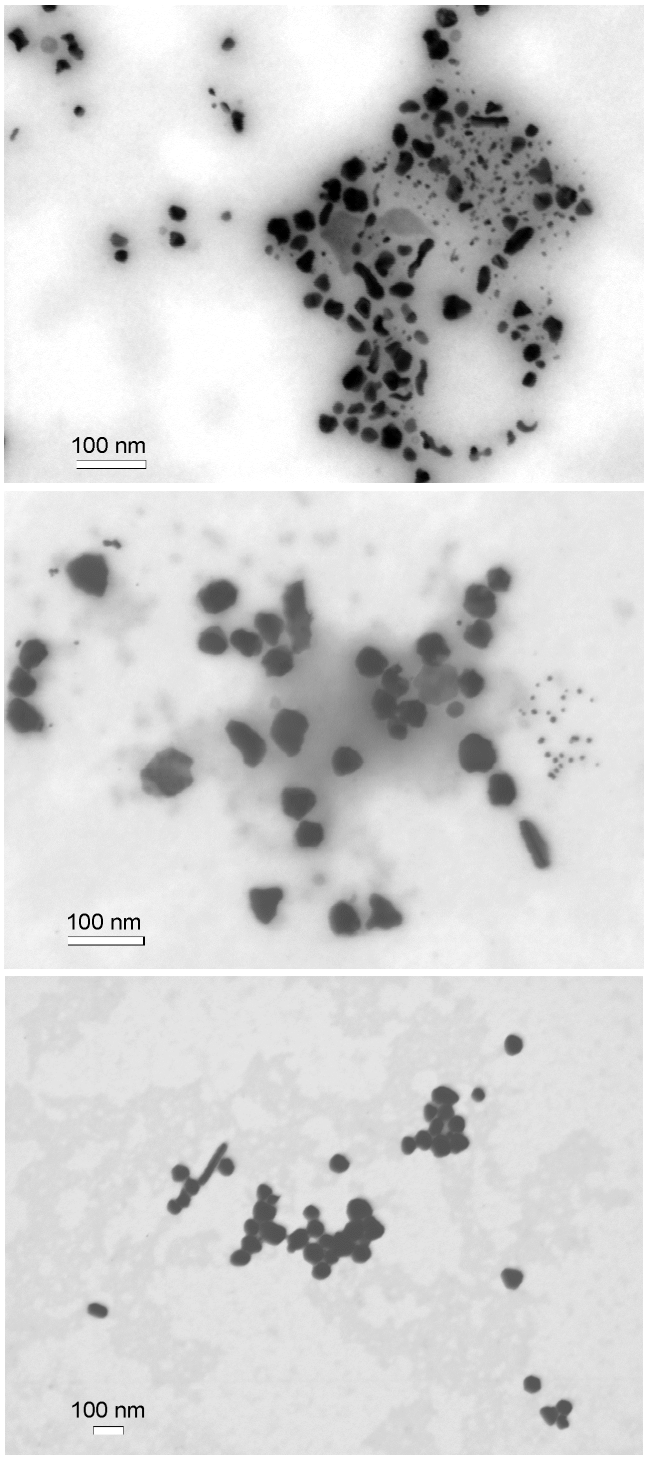


Figure S6. SEM images of CuNP synthesized in the presence of TMACl (top), TPACl (middle), TBACl (bottom).

E- SEM images of CuNP synthetized in acetonitrile with different I-907 concentration.

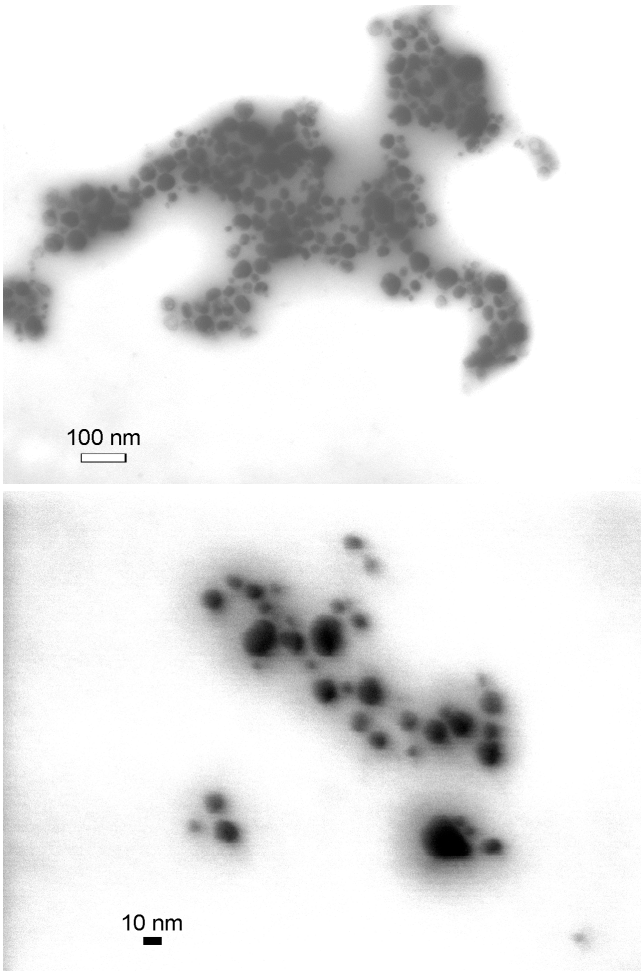


Figure S7. SEM images of CuNP synthesized in acetonitrile from 0.66 mM Cu(OAc)2, 0.66 mM CTAC and 1.32 mM (top) and 1.98 mM (bottom) I-907. Particle size: (Top) 40 nm (RSD: 17.5%); (bottom) 12 nm (RSD= 31%)