Supporting Information

Silver Nanoparticles Embedded Copper Oxide as Efficient Core-Shell for Catalytic Reduction of 4-nitrophenol and Antibacterial Activity improvements

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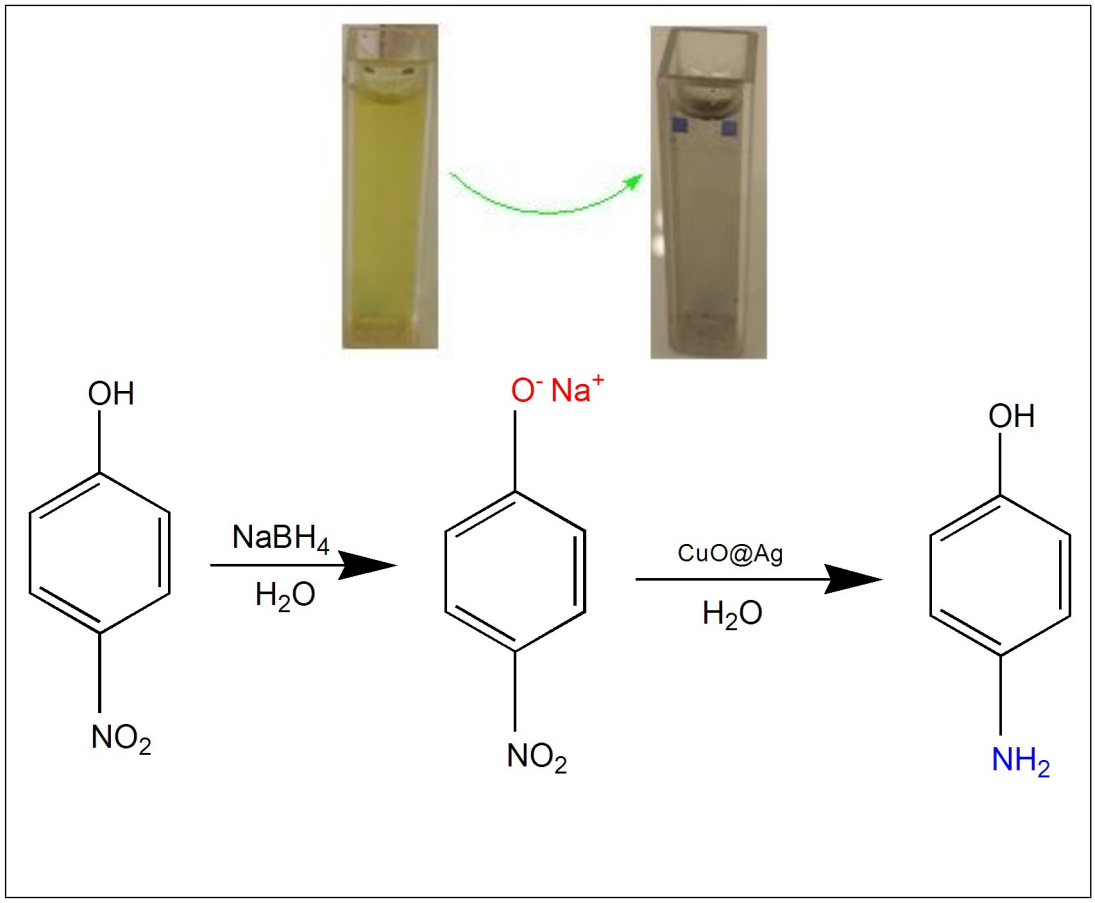


Scheme S1. Reduction reaction of 4-NP to 4-AP.

1-AFM analysis

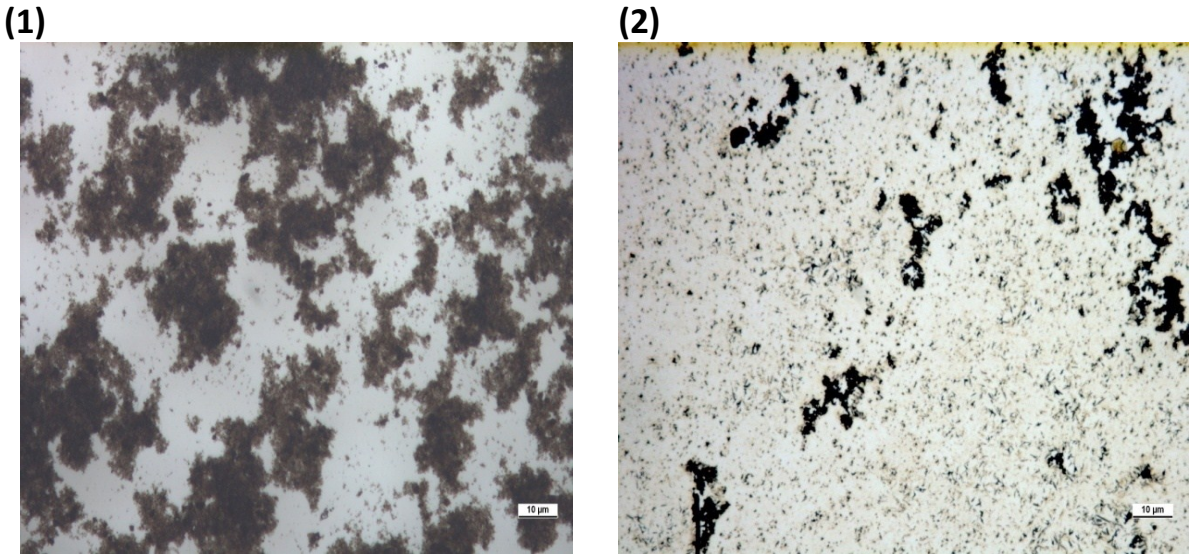


Fig. S1. Optic microscope images of CuO (**1**) and CuO@Ag (**2).**

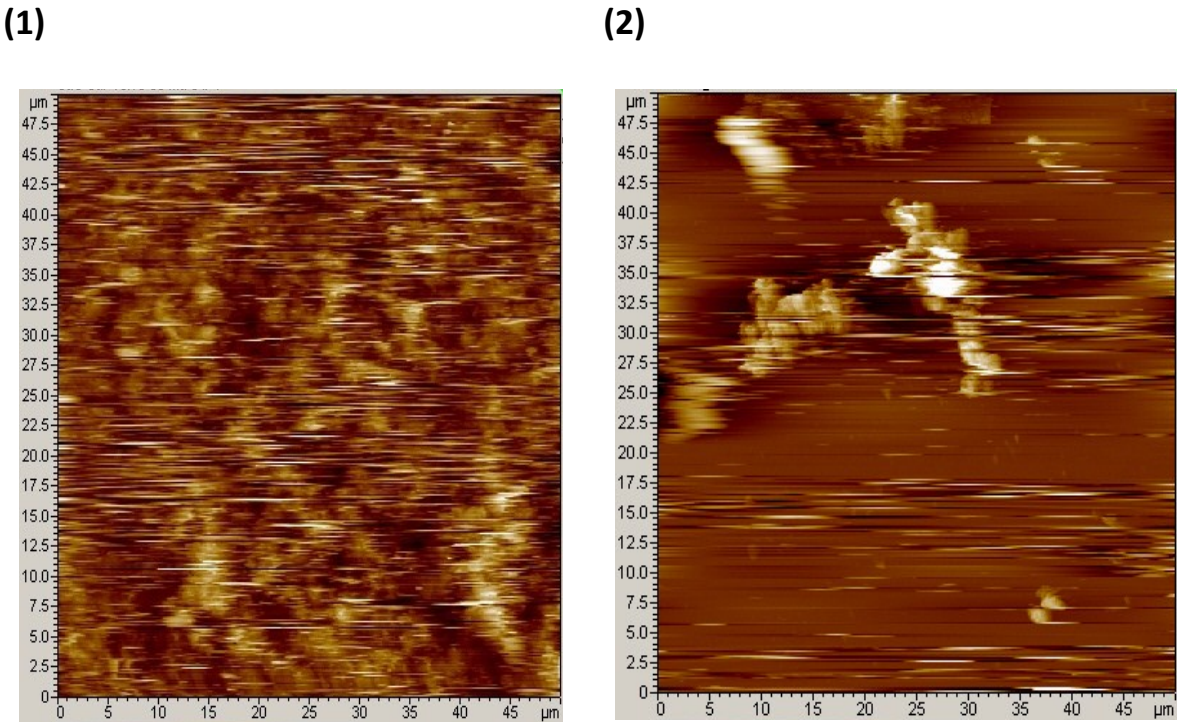


Fig. S2. AFM images of Cu0 (1) and Cu0@Ag (2)

2-SEM analysis

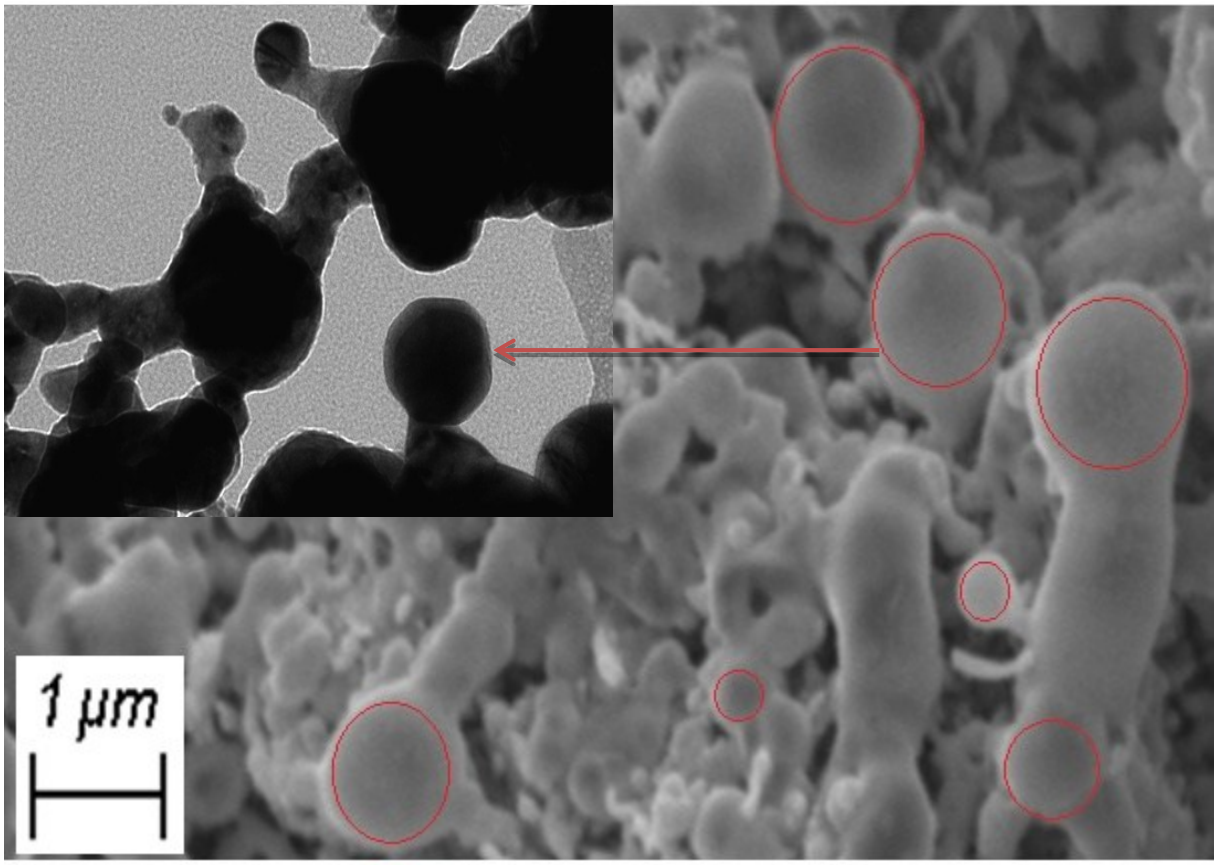
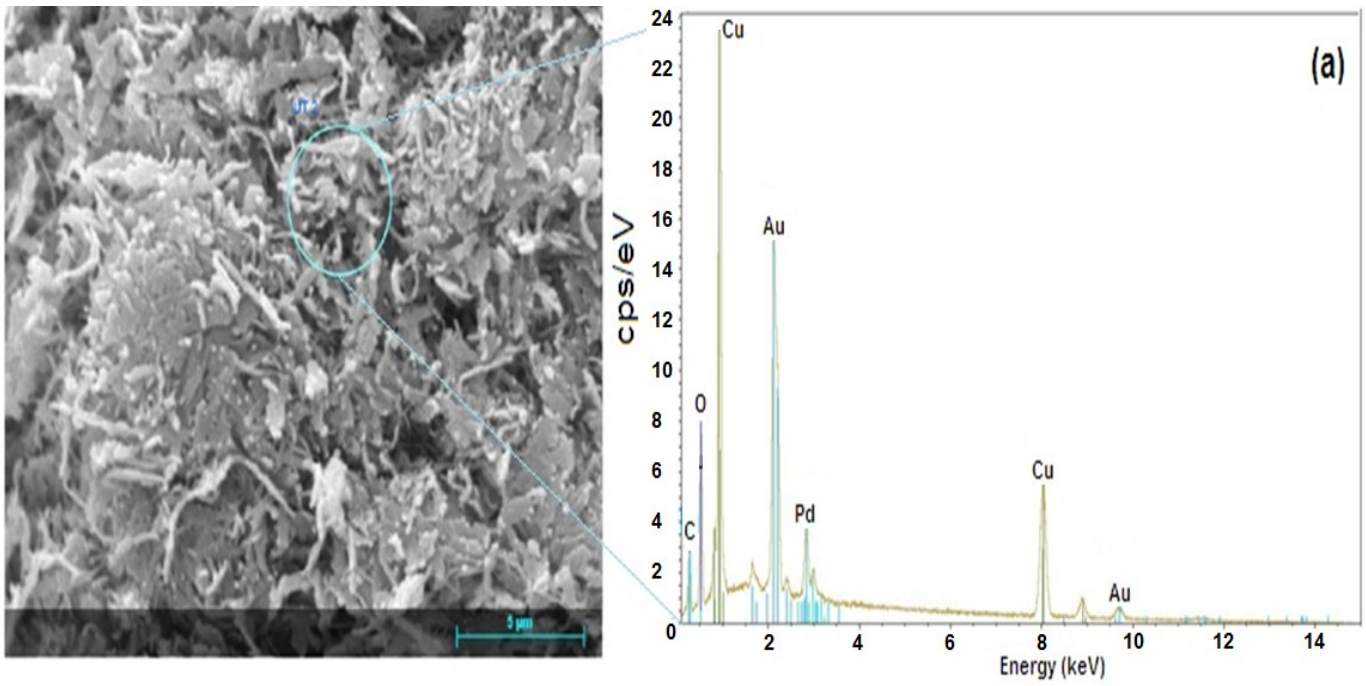


Fig. S3: The size distribution and corresponding shape of the CuO@Ag^0 sample.

3-EDX analysis



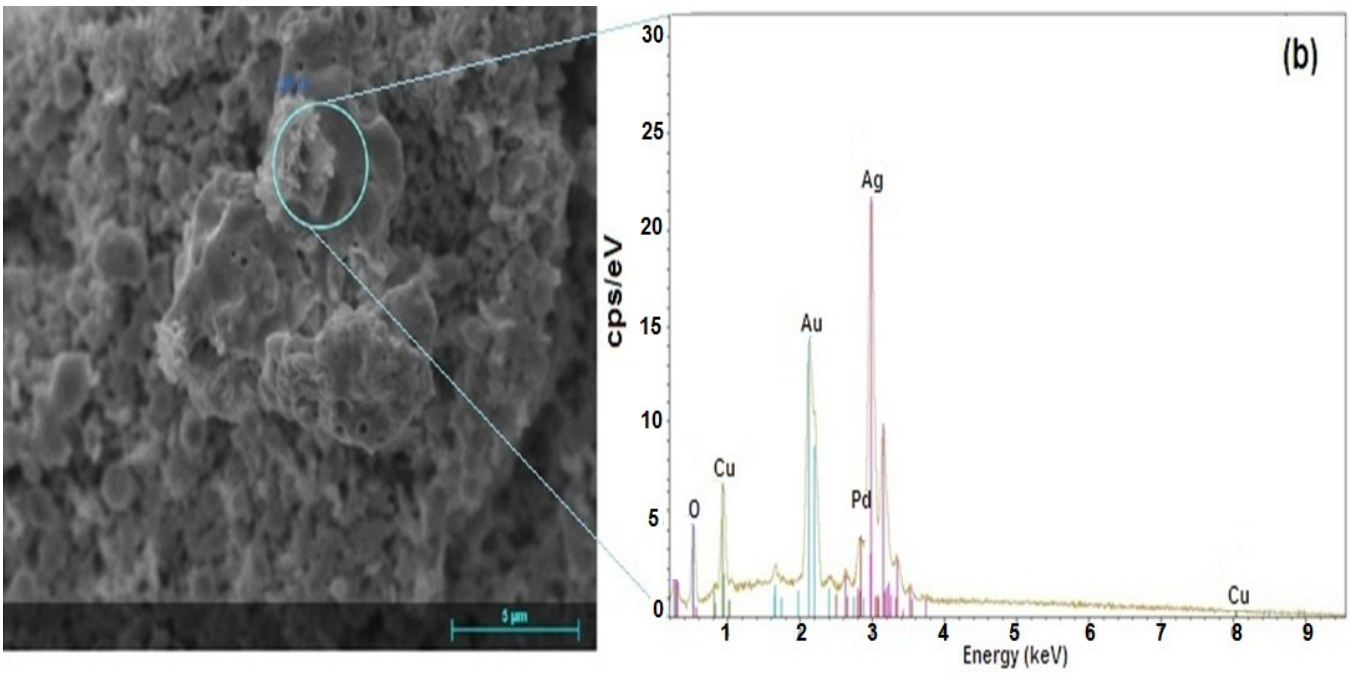


Fig. S4. SEM/EDX analysis of CuO (a) and CuO@Ag^0 (b).

4.XRD analysis

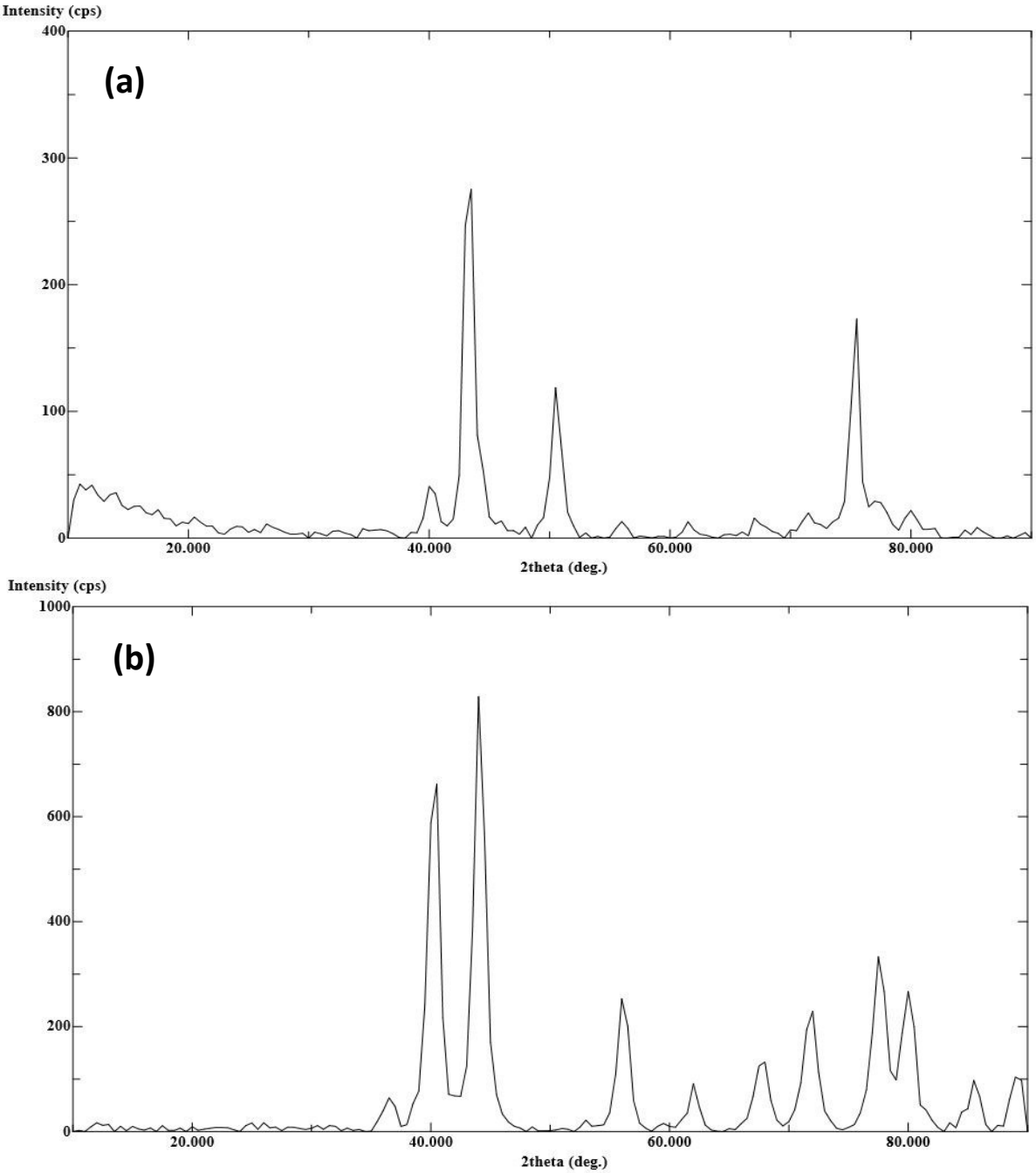


Fig. S5. XRD patterns of CuO (a) and CuO@Ag^0 (b).

5.Catalytic activity

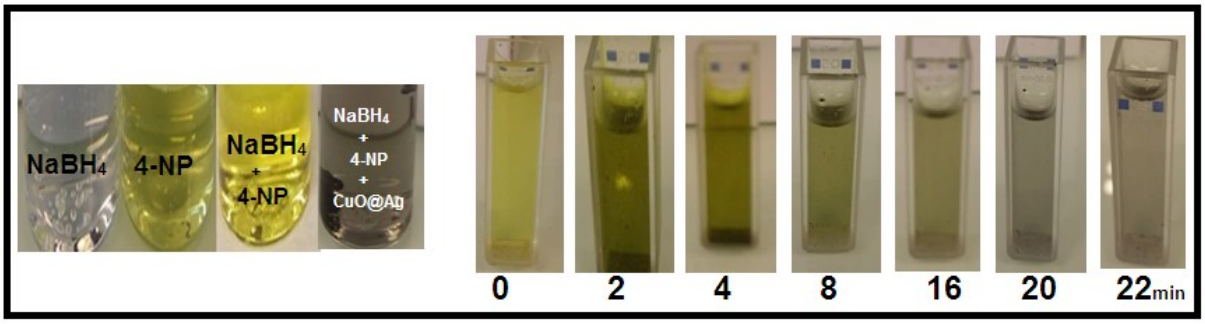
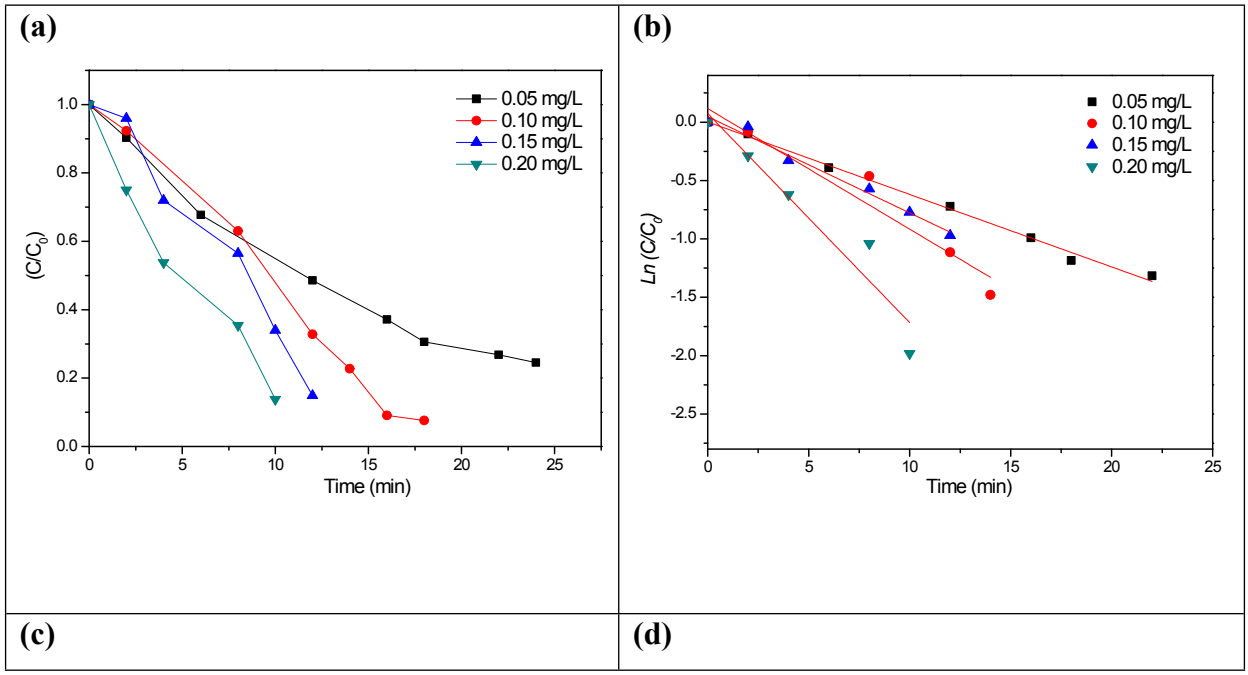


Fig. S6. Evolution in time of the UV-Vis spectrum of the reaction mixture.

6-Kinetic studies

Table S1: Pseudo-first-order rate constants for the reduction of 4-NP to 4-AP by $NaBH_4$.

	K (min^{-1})	*R^2*
$NaBH_4$	2.986 10^{-5}	0.758



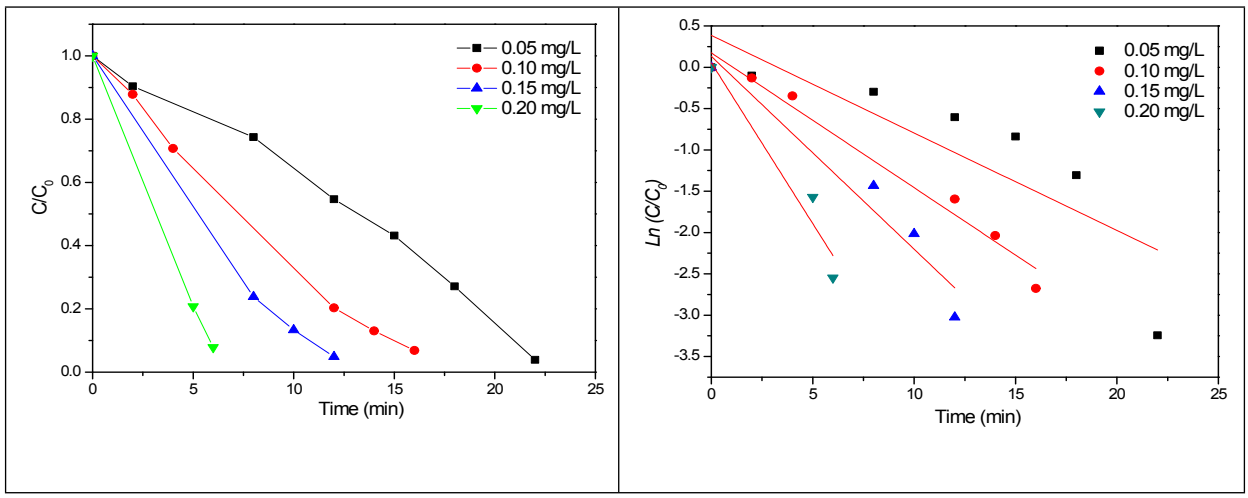
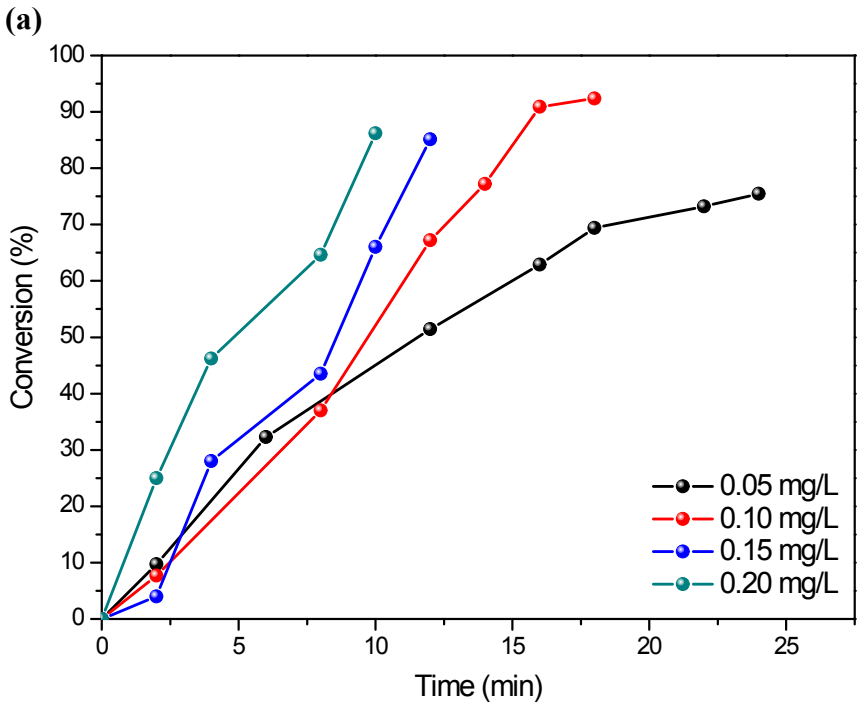


Figure. S7. Influence of concentration of (a) CuO and (b) CuO@Ag, during the reduction of 4- NP. Reaction conditions: 4-NP = 2.5mM, $NaBH_4$ = 0.2 M, T = RT.



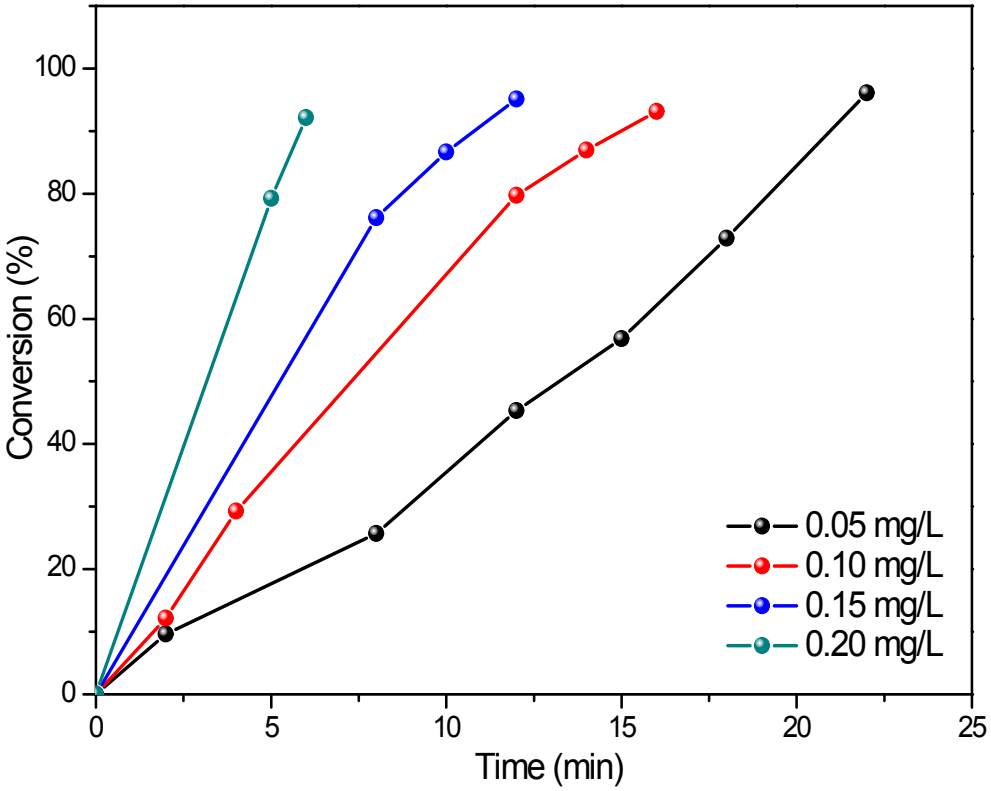


Fig. S8. Conversion yields in 4-NP reduction at toom temperature for various concentrations of CuO (a) and CuO@Ag^0 (b). Reaction conditions. 4-NP = 2.5mM; $NaBH_4$ = 0.2 M.

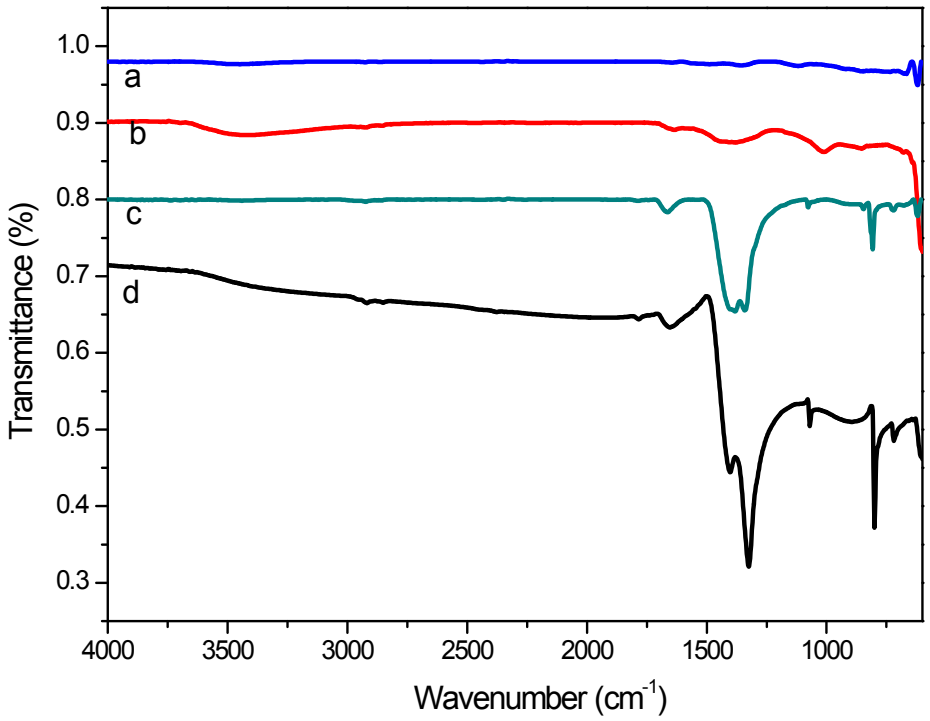


Figure. S9: FT-IR spectra of CuO (a and b) and CuO@Ag (c and d) before and after catalytic reduction of 4-NP.