Electronic Supplementary Information

Difunctional Cu-doped Carbon Dots: Catalytic Activity and Fluorescence

Indication for Reduction Reaction of p-Nitrophenol

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Fig. S1. (A) UV-vis absorption spectra of the bare CDs solution. (B) Fluorescence emission spectra of the bare CDs solution at excitation wavelengths from 310 nm to 370 nm.



Fig. S2. (A) TEM image of the bare CDs. (B) Size distribution of the bare CDs analyzed from multiple images.



Fig. S3 FTIR spectrum of the bare CDs.



Fig. S4 EDS analysis of Cu-doped CDs.



Fig. S5 (A) XPS survey spectra, high-resolution XPS spectra of the bare CDs: (B) C1s, (C) O1s, (D) N1s.



Fig. S6 UV-vis spectra of p-nitrophenol before and after the addition of NaBH₄ solution.



Fig. S7 (A) Time-dependent UV-vis spectral changes in p-nitrophenol solution catalyzed by the bare CDs in the presence of $NaBH_4$ and (B) Plots of absorbance versus time.



Fig. S8 (a) Fluorescence excitation spectrum of the Cu-doped CDs solution. (b) Absorption spectrum of p-nitrophenol in the presence of NaBH₄.



Fig. S9 (A) UV-vis absorption spectra of p-nitrophenol ranging from 1.0×10^{-4} to 5.0

 \times 10⁻⁴ mol·L⁻¹ (B) Fluorescence emission spectra of the Cu-doped CDs solution in response to corresponding concentration of p-nitrophenol at excitation wavelength of 380 nm. All of measures were conducted in 0.1 mol·L⁻¹ Tris-HCl buffer solution (pH 8.0).