Supporting Information

for

Hydrothermal direct synthesis of amine-functionalized cubic hematite (C-Fe_2O_3) and sonochemical deposition of nanosized Au for its application to a visible-light photocatalyst

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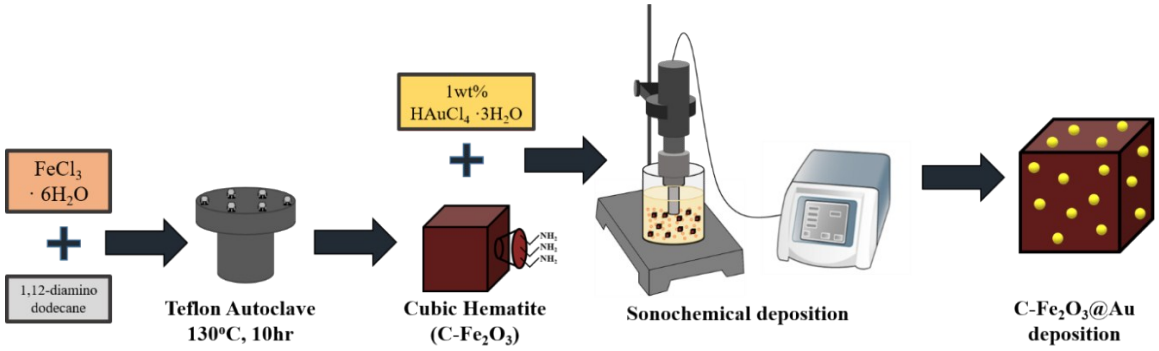

Fig. S1. Synthetic procedures of Au-deposited C-Fe_2O_3 (C-Fe_2O_3@Au) through the consecutive hydrothermal and ultrasonic deposition methods.

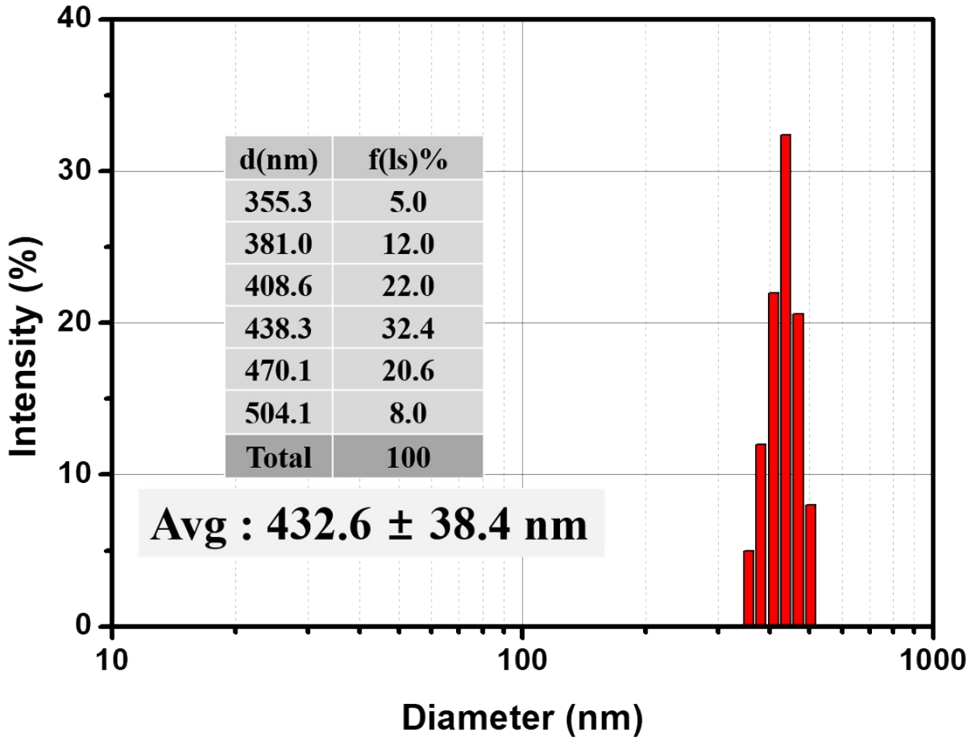

Fig. S2. Particle size distribution of C-Fe_2O_3 by dynamic light scattering (DLS) method.

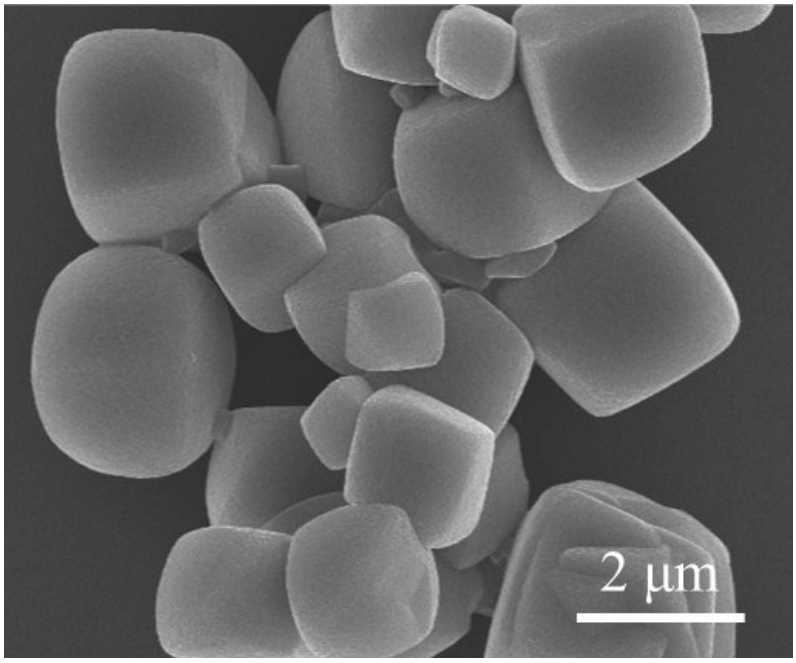

Fig. S3. SEM image of bare Fe_2O_3 prepared without D-12 diamine.

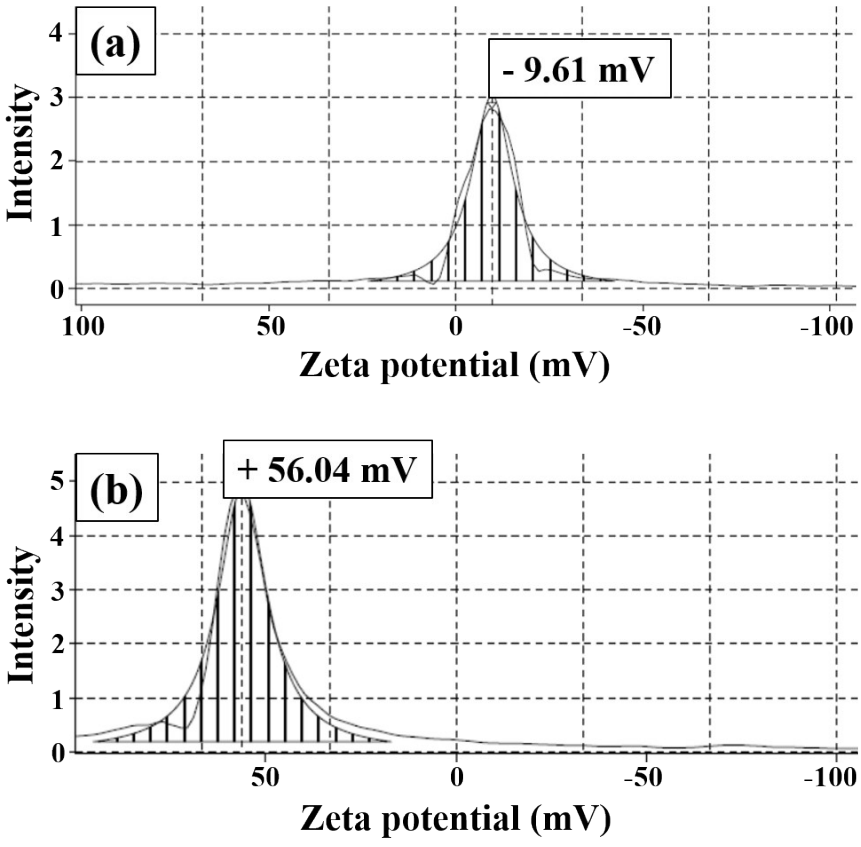

Fig. S4. Zeta-potential values of (a) bare Fe_2O_3, (b) C-Fe_2O_3.

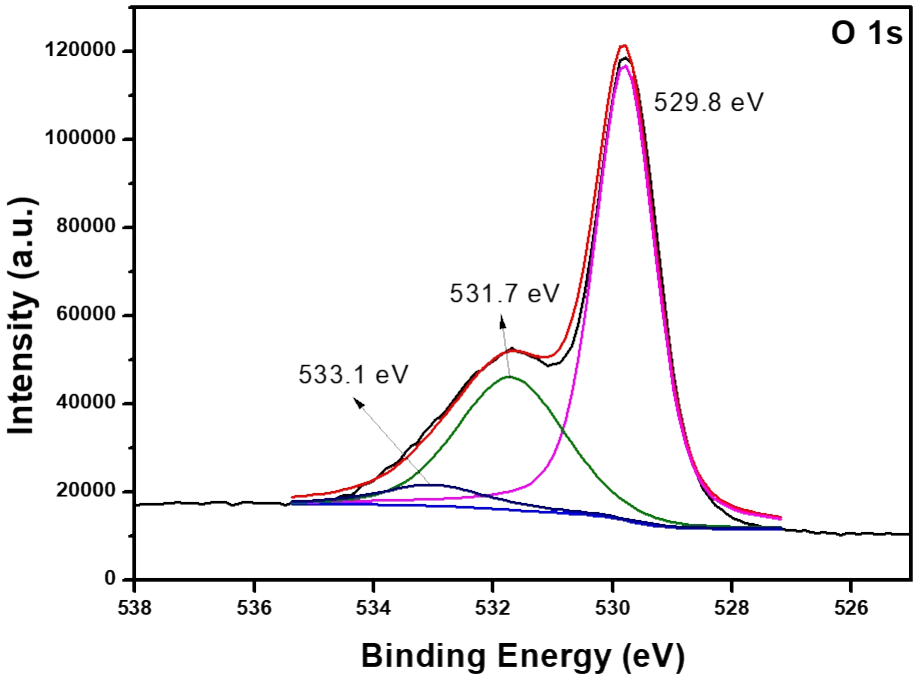

Fig. S5. X-Ray photoelectron spectroscopy (XPS) spectra of O 1s in C-Fe_2O_3@Au.

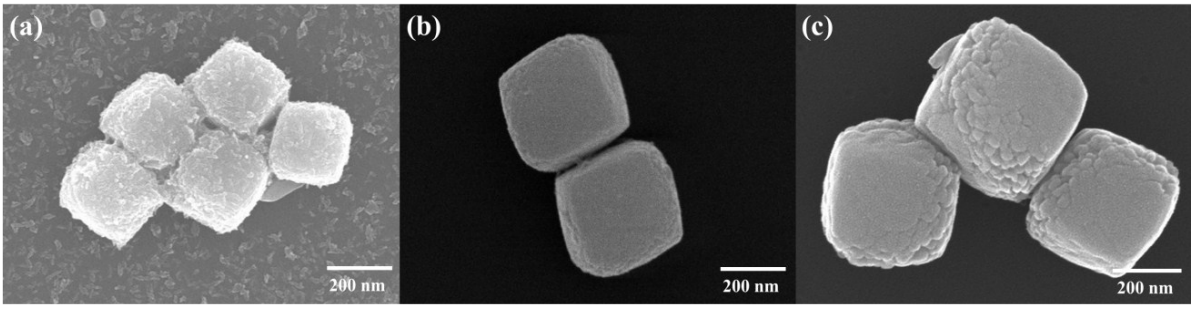

Fig. S6. SEM images of C-Fe_2O_3 prepared at different reaction times: (a) 5 h, (b) 10 h, (c) 15 h.

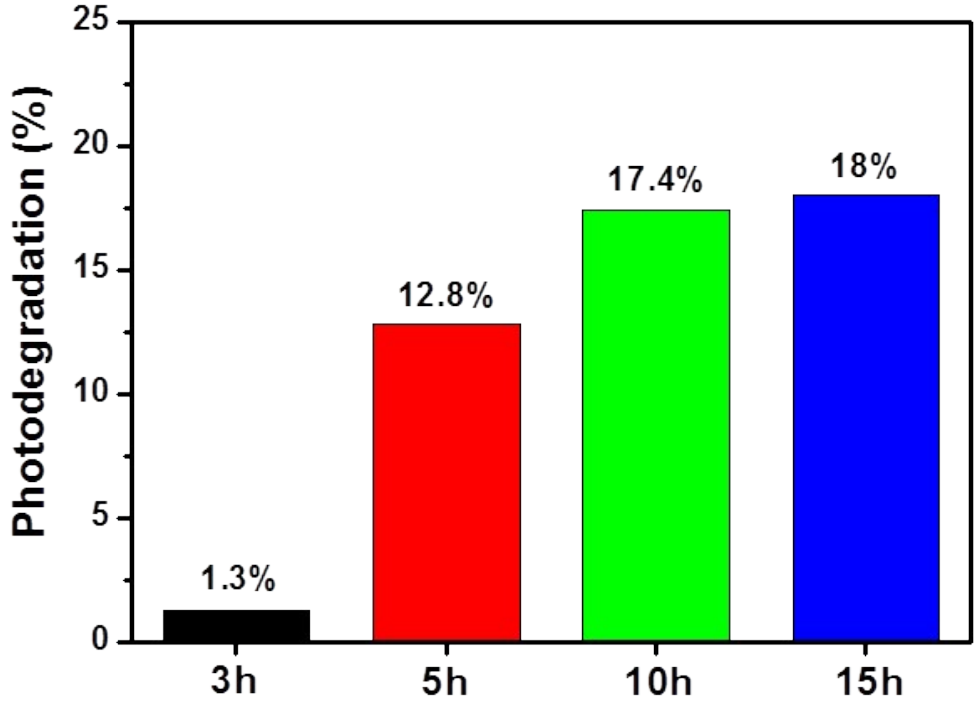

Fig. S7. Photodegradation efficiency of methylene blue (MB) over the Fe_2O_3 particles prepared at different reaction times (3, 5, 10, and 15 h).

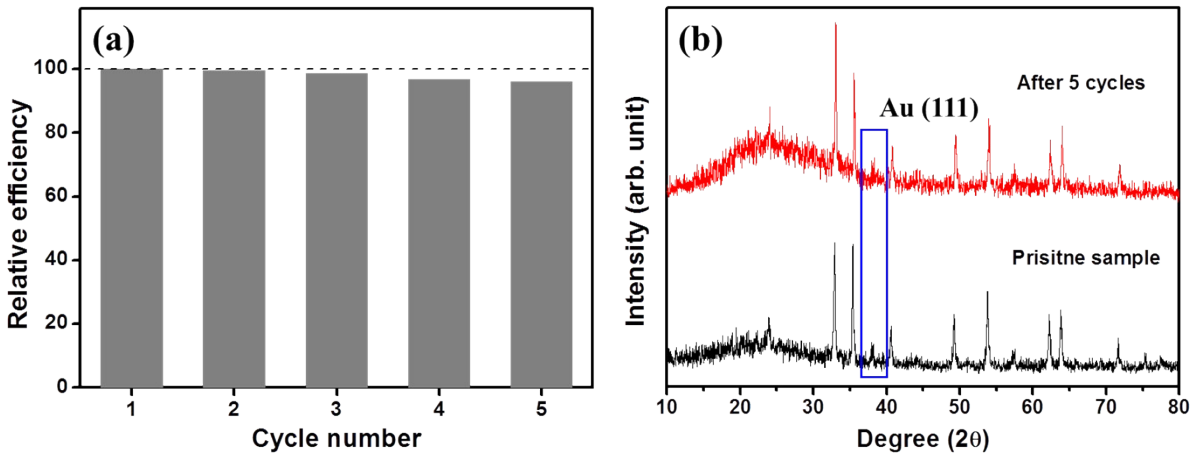

Fig. S8. (a) Reusability of C-Fe_2O_3@Au (0.1 ml) in the photocatalytic degradation of MB, (b) XRD patterns of C-Fe_2O_3@Au (0.1 ml) before and after the photocatalytic reaction.

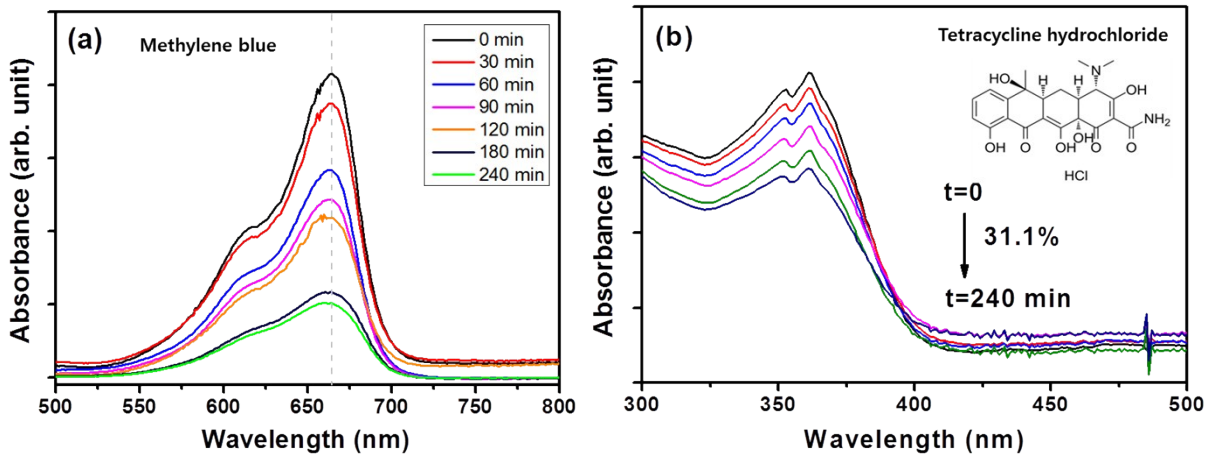

Fig. S9. Absorbance changes of organic pollutants over C-Fe_2O_3@Au (0.1 ml) during the photodegradation process: a) Methylene blue (10 ppm), b) Tetracycline hydrochloride (5 ppm).

Table S1. The rate constant of k_{app} obtained by the first-order rate law and the corresponding R^2 values.

As-prepared samples	k_{app}	R^2
Blank	8.88×10^{-5}	0.9881
Bare Fe_2O_3	2.43×10^{-4}	0.9643
Cubic Fe_2O_3	7.69×10^{-4}	0.9507
Cubic Fe_2O_3@Au (0.1 mL)	6.58×10^{-3}	0.9707
Cubic Fe_2O_3@Au (0.4 mL)	5.43×10^{-3}	0.9911
Cubic Fe_2O_3@Au (0.8 mL)	2.63×10^{-3}	0.9433