Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Versatile Hierarchical Cu/Fe_3O_4 Nanocatalysts for Efficient Degradation of Organic Dyes Prepared by Facile, Controllable Hydrothermal Method

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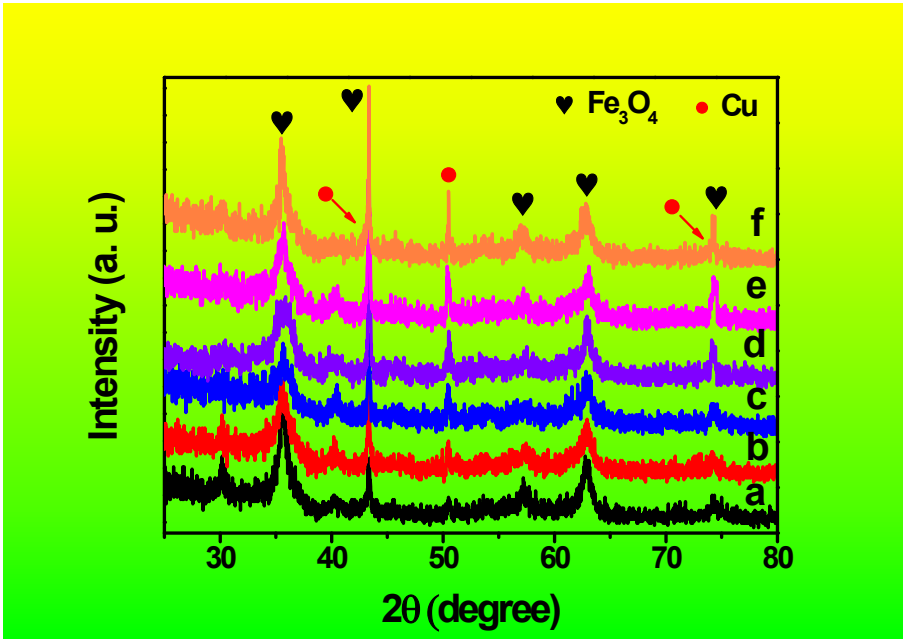
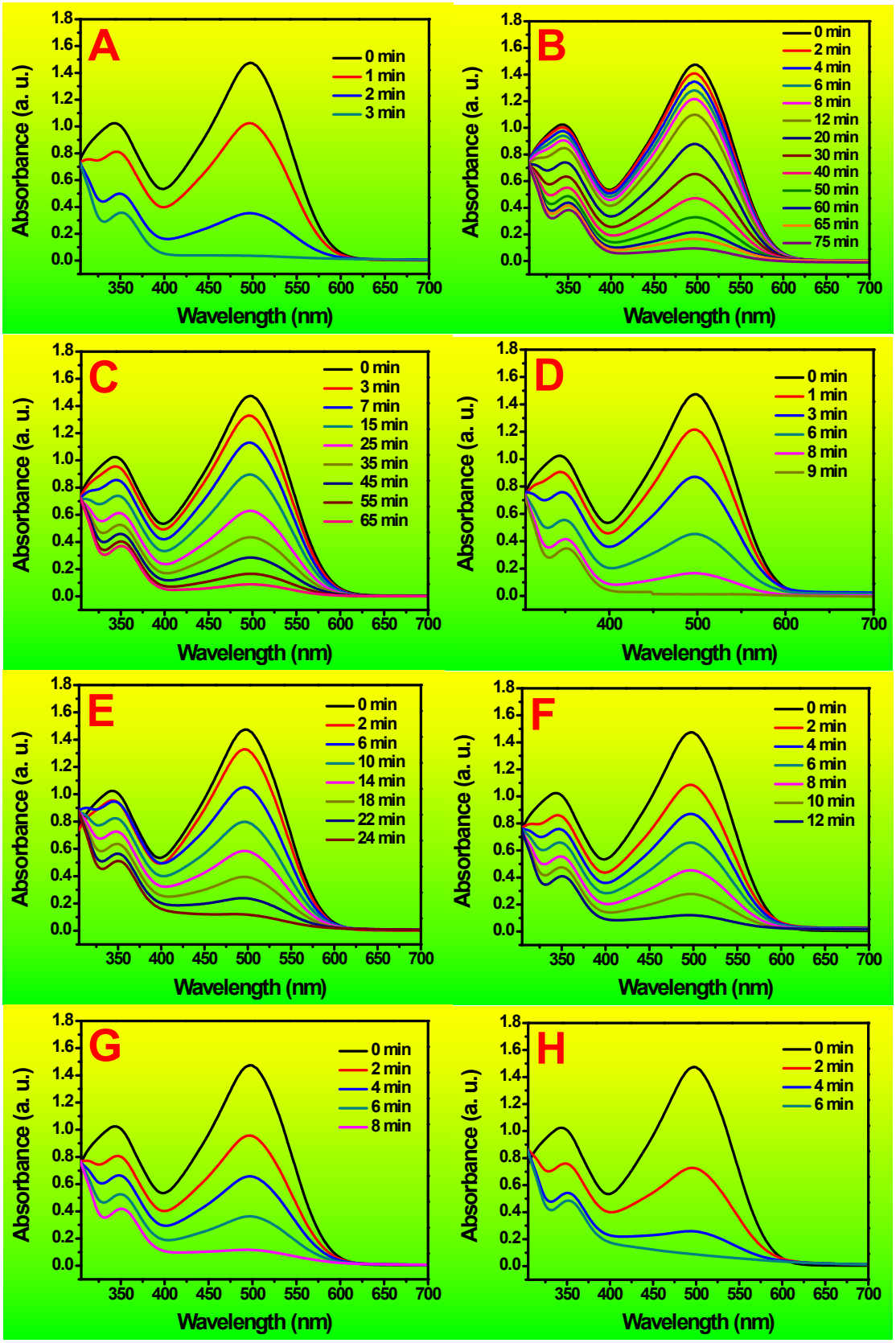


Fig. S1 XRD patterns of Cu/Fe_3O_4 with different initial addition amount of Cu precursor: (a) 0.1 mM, (b) 0.3 mM, (c) 0.5 mM, (d) 0.7 mM, (e) 1.0 mM, (f) 1.3 mM.


A
0 min
1 min
2 min
3 min
B
0 min
2 min
4 min
6 min
8 min
12 min
20 min
30 min
40 min
50 min
60 min
65 min
75 min
C
0 min
3 min
7 min
15 min
25 min
35 min
45 min
55 min
65 min
D
0 min
1 min
3 min
6 min
8 min
9 min
E
0 min
2 min
6 min
10 min
14 min
18 min
22 min
24 min
F
0 min
2 min
4 min
6 min
8 min
10 min
12 min
G
0 min
2 min
4 min
6 min
8 min
H
0 min
2 min
4 min
6 min
Absorbance (a. u.)
Wavelength (nm)

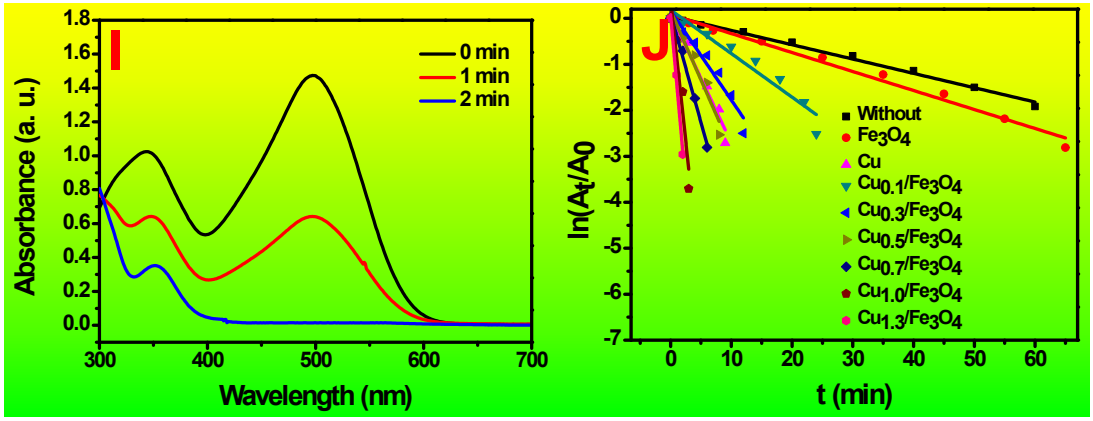
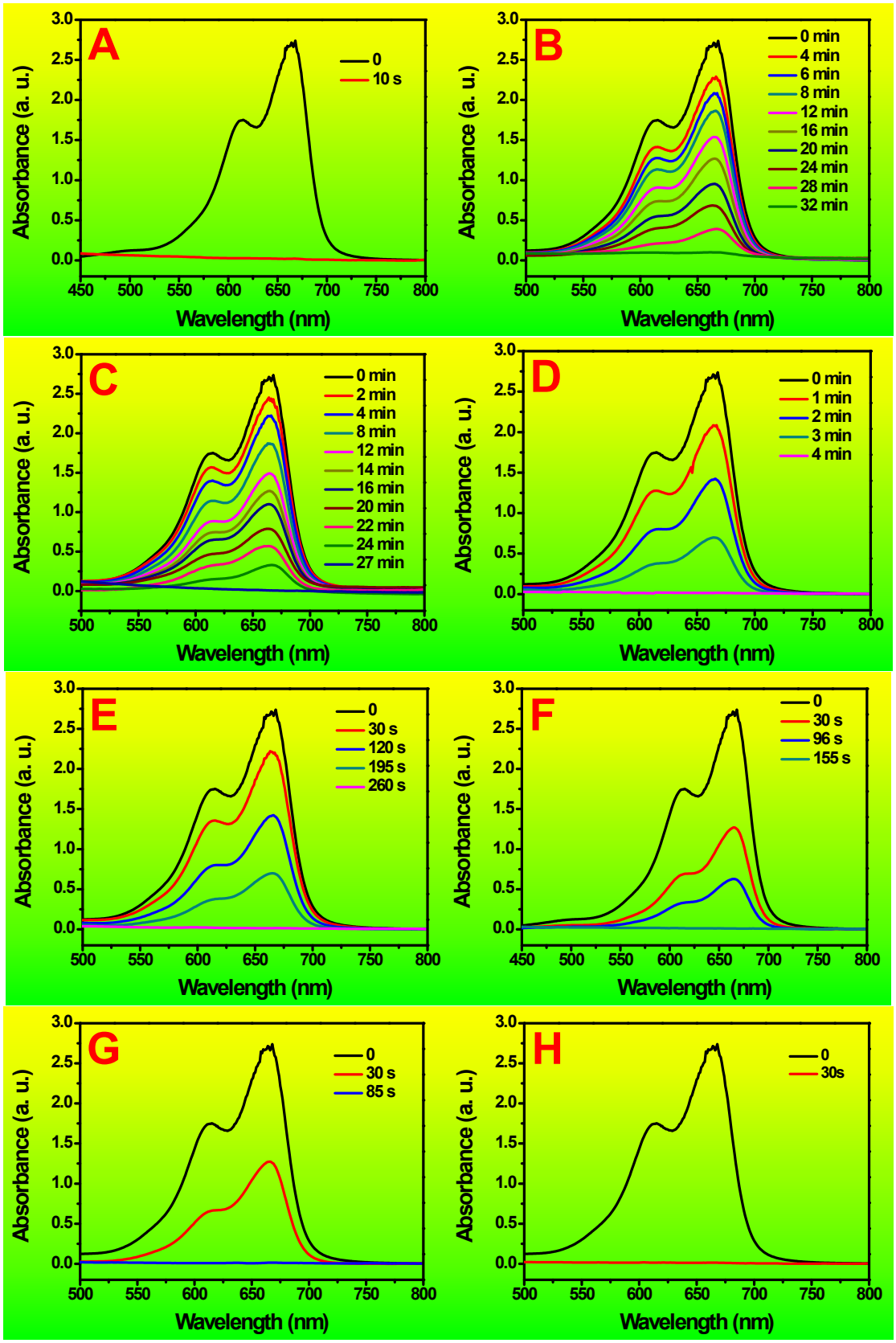


Fig. S2 Time-dependent UV-vis absorption spectra of CR in the presence of Cu/Fe_3O_4 (A), without catalyst (B); with Fe_3O_4 as catalyst (C); with Cu as catalyst (D). Time-dependent UV-vis absorption spectra over Cu/Fe_3O_4 prepared at different dosage of Cu precursor: $Cu_{0.1}/Fe_3O_4$ (E), $Cu_{0.3}/Fe_3O_4$ (F), $Cu_{0.5}/Fe_3O_4$ (G), $Cu_{0.7}/Fe_3O_4$ (H), $Cu_{1.3}/Fe_3O_4$ (I). (J) The relationship between $\ln(A_t/A_0)$ and the reaction time under different conditions.


A
Absorbance (a. u.)
Wavelength (nm)
0
10 s
B
0 min
4 min
6 min
8 min
12 min
16 min
20 min
24 min
28 min
32 min
C
0 min
2 min
4 min
8 min
12 min
14 min
16 min
20 min
22 min
24 min
27 min
D
0 min
1 min
2 min
3 min
4 min
E
0
30 s
120 s
195 s
260 s
F
0
30 s
96 s
155 s
G
0
30 s
85 s
H
0
30s

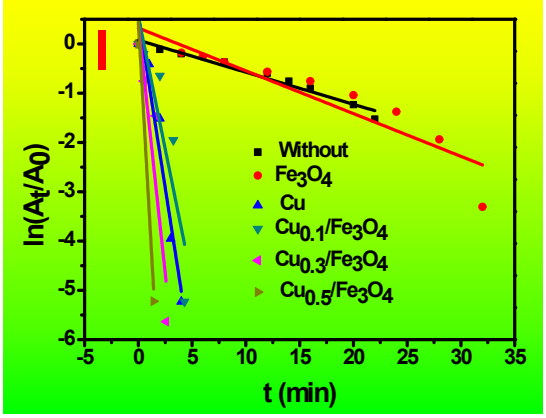


Fig. S3 Time-dependent UV-vis absorption spectra of MB in the presence of Cu/Fe_3O_4 (A); without catalyst (B); with Fe_3O_4 as catalyst (C); with Cu as catalyst (D). Time-dependent UV-vis absorption spectra over Cu/Fe_3O_4 prepared at different dosage of Cu precursor: $Cu_{0.1}/Fe_3O_4$ (E), $Cu_{0.3}/Fe_3O_4$ (F), $Cu_{0.5}/Fe_3O_4$ (G), $Cu_{0.7}/Fe_3O_4$ (H). (I) The relationship between $\ln(A_t/A_0)$ and the reaction time under different conditions.

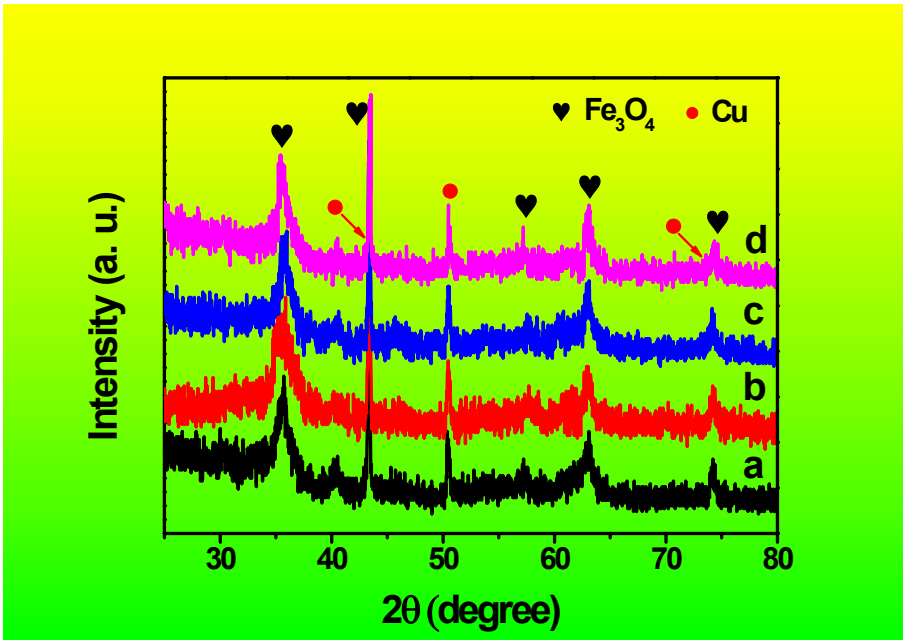


Fig. S4 XRD patterns of Cu/Fe_3O_4 before reaction (a) and after reused six times for 4-NP (b), CR (c), MB (d), respectively.