Supplementary information

In-situ fabrication of N-doped iron-based Fenton-like catalyst (α-Fe_2O_3/N-C_{HCP}) with superior activity toward methylene blue degradation

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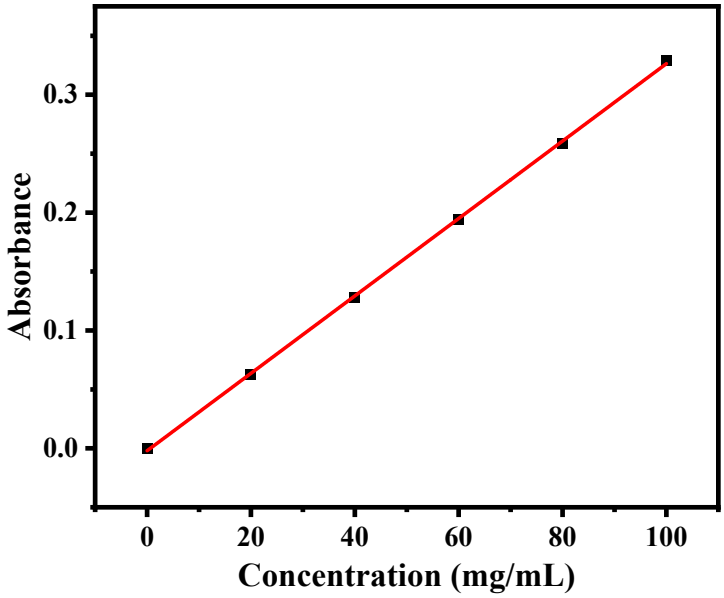

Figure S1. Calibration curve of methylene blue (MB) at 664 nm over a concentration range of 0-100 mg L^{-1}.

Table S1. Performance comparison of various Fenton-type catalysts for MB degradation.

Catalyst	Reaction Condition	TOC removal (%)	Stability	Reaction time (min)	Removal rate (%)	Ref.
α-Fe_2O_3/N-C_{HCP}-2	$[MB]_0$ = 100 mg L^{-1}, [catalyst] = 0.40 g L^{-1}, $[H_2O_2]$ = 50 mM, pH = 7.3.	51.2	4 runs	15	100	This work
mFe-MPB	$[MB]_0$ = 20 mg L^{-1}, [catalyst] = 0.1 g L^{-1}, $[H_2O_2]$ = 12 mM, pH = 7.	-	5 runs	30	100	[1]
Fe/C-700	$[MB]_0$ = 10 mg L^{-1}, [catalyst] = 1.00 g L^{-1}, $[H_2O_2]$ = 7 mM, pH = 7.	58	5 runs	120	100	[2]
Fe_3O_4@NC-20	$[MB]_0$ = 50 mg L^{-1}, [catalyst] = 0.75g L^{-1}, $[H_2O_2]$ = 239 mM, pH = 7.3.	59	--	50	100	[3]
Fe_3O_4/usGO	$[MB]_0$ = 5 mg L^{-1}, [catalyst] = 2.92 g L^{-1}, $[H_2O_2]$ = 10 mM, pH = 3.	--	5 runs	120	100	[4]
Solid iron wastes (SIW)	$[MB]_0$ = 10 mg L^{-1}, [catalyst] = 1.00 g L^{-1}, [PS] = 4 mM, pH = 7	72	5 runs	60	100	[5]
NC-CuFe-2	$[MB]_0$ = 100 mg L^{-1}, [catalyst] = 0.50g L^{-1}, $[H_2O_2]$ = 0.3 M, pH = 7.		5 runs	180	98	[6]
C-Fe_2O_3-2	$[MB]_0$ = 50 mg L^{-1}, [catalyst] = 100 mg, $[H_2O_2]$ = 0.3 M, pH = 7.3.	-	5 runs	420	96	[7]
MnO_2/Fe_3O_4/diatomite	$[MB]_0$ = 10 mg L^{-1}, [catalyst] = 0.10g L^{-1}, [PMS] = 0.30 g/L, pH = 6.	57.2	5 runs	45	100	[8]

SUST/Fe-BTC	$[MB]_0$ = 1.6 mmol/L, [catalyst] = 0.6 g L^{-1}, $[H_2O_2]$ = 7.4 mM, pH = 4.	55	3	60	100	[9]
Fe, N-CDs	$[MB]_0$ = 20 mg L^{-1}, [catalyst] = 0.5 mg mL^{-1}, $[H_2O_2]$ = 147 mM, pH = 8.	-	-	60	97	[10]
Fe_3O_4@C	$[MB]_0$ = 10 mg L^{-1}, [catalyst] = 0.5g L^{-1}, pH = 4.	67.5	-	80	97	[11]
Fe-GMCA	$[MB]_0$ = 10 mg L^{-1}, [catalyst] = 0.02g L^{-1}, pH = 3, applied current, 15 Ma.	-	10 runs	60	99	[12]
Yolk-shell Fe_3O_4@MOF-5	$[MB]_0$ = 50 mg L^{-1}, [catalyst] = 1.0 g L^{-1}, $[H_2O_2]$ = 30 mM, pH = 4.	60	5 runs	60	100	[13]
NH_2-MIL-88B(Fe)	$[MB]_0$ = 20 mg L^{-1}, [catalyst] = 0.2 g L^{-1}, $[H_2O_2]$ = 200 mM, pH = 5.6.	54.6	5 runs	45	100	[14]

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