

Supporting Information

•OH-initiated Heterogeneous Oxidation of Methyl Orange using the Fe-Ce/MCM-41 Catalyst

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2 Materials and methods

Materials

MCM-41 zeolite was provided by Nankai university. Cerium (III) nitrate hexahydrate $\text{Ce}(\text{NO}_3)_3 \cdot 6\text{H}_2\text{O}$, ferric (III) nitrate nonahydrate $\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$, were purchased from Qingdao, China. Methyl orange, H_2O_2 (30%, v/v), H_2SO_4 , NaOH, n-butanol and benzoquinone (BZQ) were obtained from China National Medicines Corporation Ltd. All chemicals were of analytical grade, and double distilled water was used throughout this study.

Table S1 Texture parameters of the MCM-41 and Fe-Ce/MCM-41

Samples	BET (m²/g)	Pore size (nm)	Pore volume (cm³/g)
MCM-41	1034	0.36	0.971
Fe-MCM-41	783	0.32	0.583
Fe-Ce/MCM-41	879	0.34	0.621

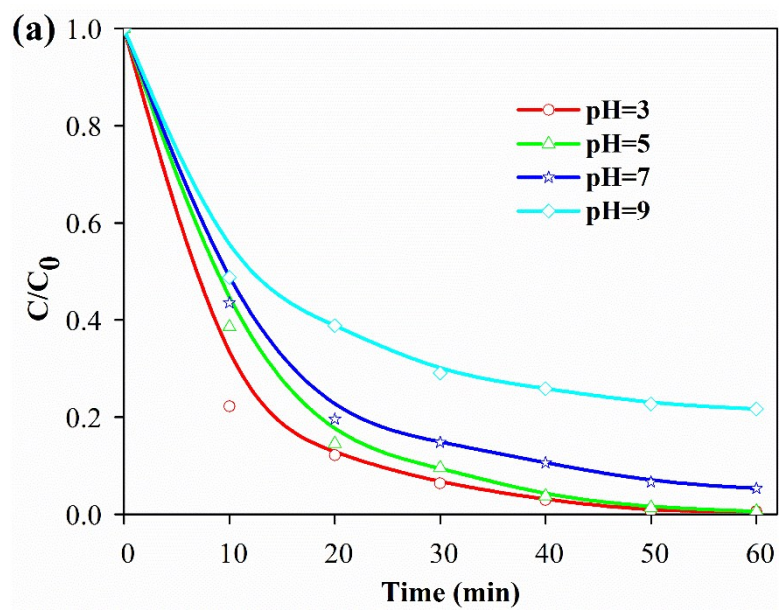


Figure S1. Effects of MO concentration on MO oxidation. Experimental conditions: pH 5.0, 2.0 g L⁻¹ Fe-Ce/MCM-41 catalyst, 20 mM H₂O₂, T =30°C.

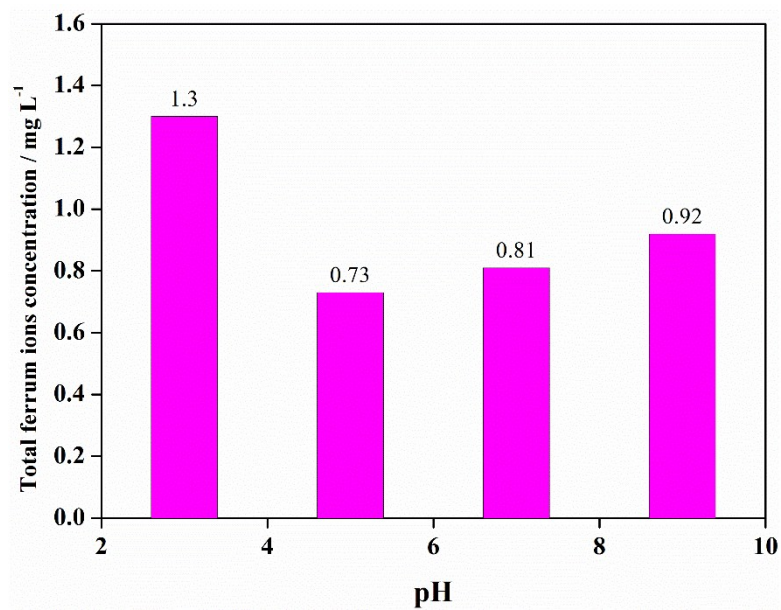


Figure S2. Effects of pH on total leached ferrum. Experimental conditions: pH 5.0, 2.0 g L⁻¹ Fe-Ce/MCM-41 catalyst, 20 mM H₂O₂, T =30°C.

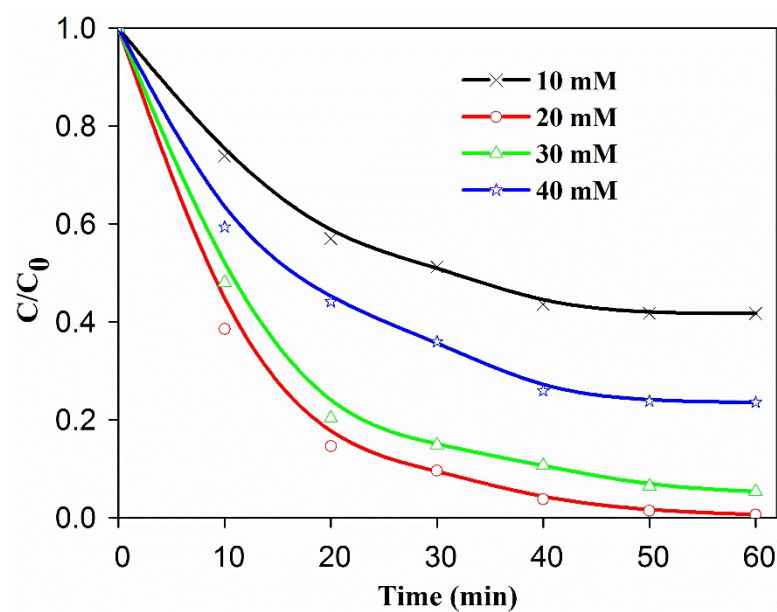


Figure S3. Effects of H_2O_2 dosage on MO oxidation. Experimental conditions: pH 5.0, 2.0 g L^{-1} Fe-Ce/MCM-41 catalyst, $T = 30^\circ\text{C}$ and 100 mg L^{-1} MO.

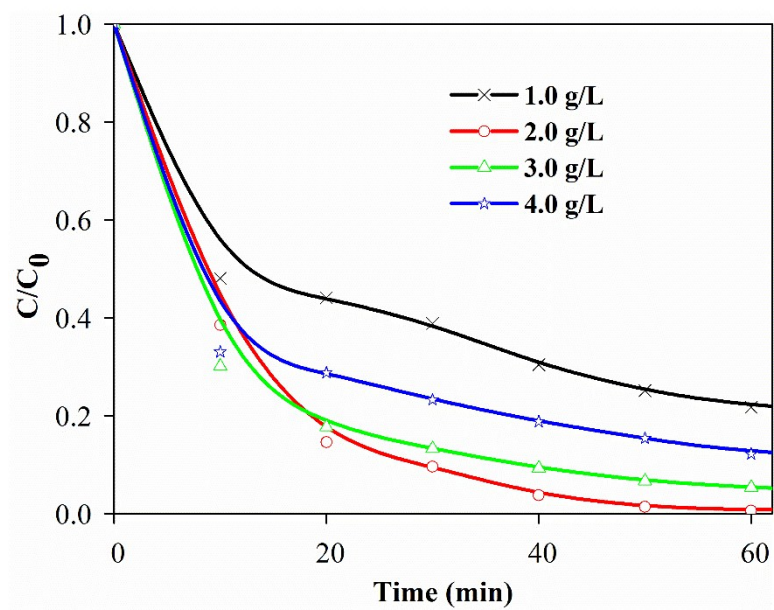


Figure S4. Effects of catalyst addition on MO oxidation. Experimental conditions: pH 5.0, 20 mM H_2O_2 , $T = 30^\circ C$ and 100 mg L^{-1} MO.

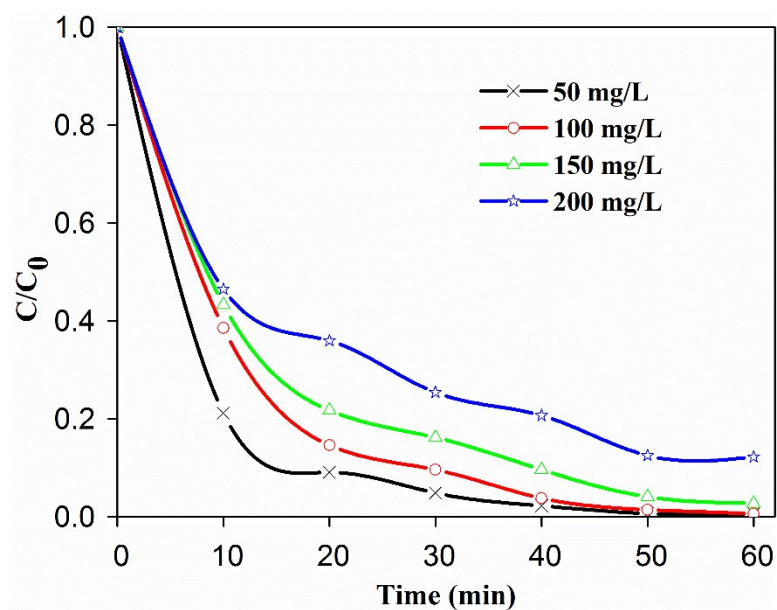


Figure S5. Effects of MO concentration on MO oxidation. Experimental conditions:

pH 5.0, 2.0 g L^{-1} Fe-Ce/MCM-41 catalyst, 20 mM H_2O_2 , $T = 30^\circ\text{C}$.