

## **Electronic Supporting Information for**

# **One-pot hydrothermal synthesis of octahedral CoFe/CoFe<sub>2</sub>O<sub>4</sub> submicron composite as heterogeneous catalysts with enhanced peroxymonosulfate activity**

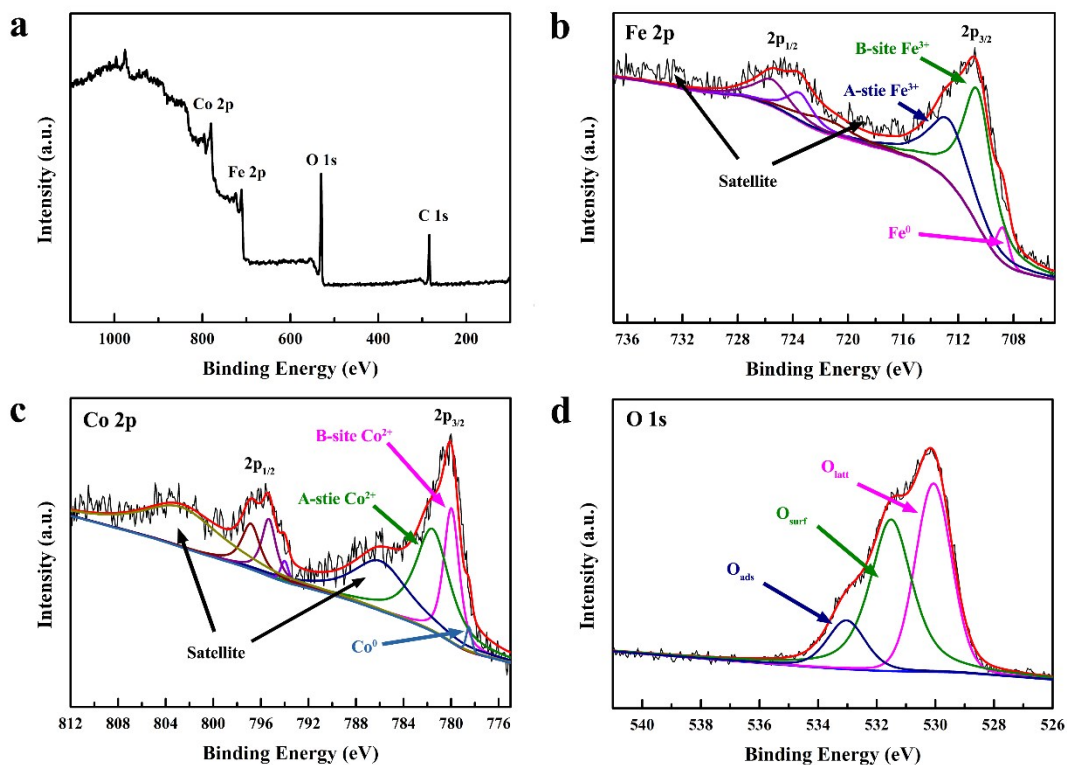
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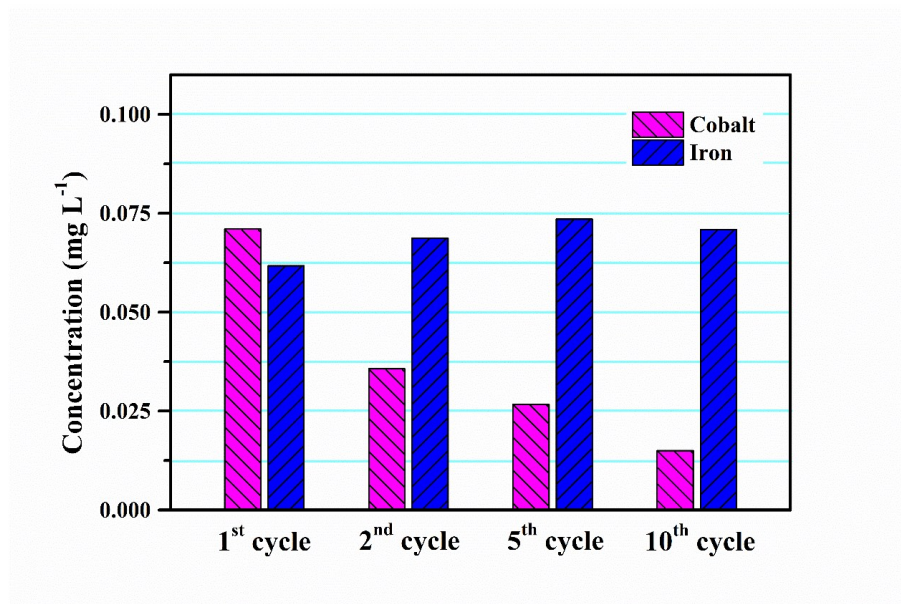
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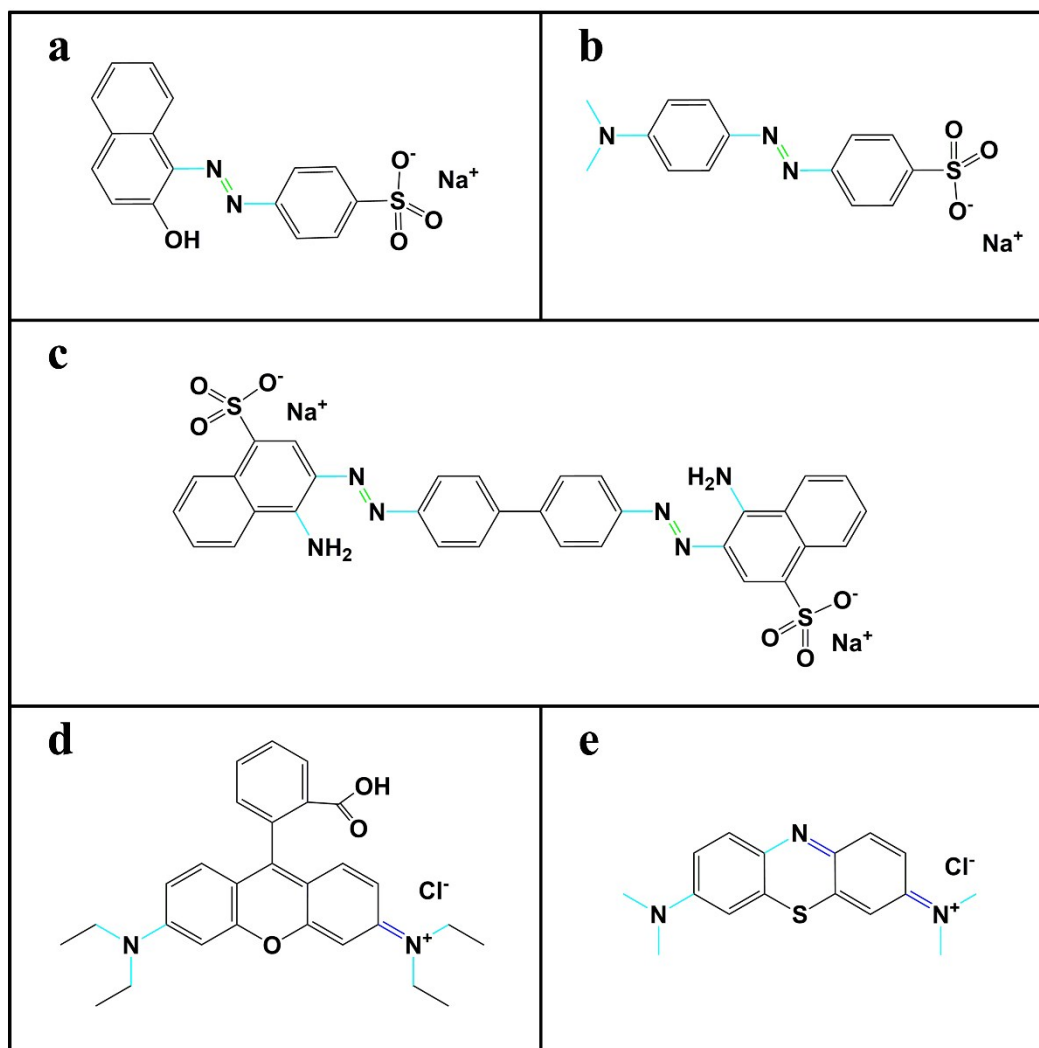
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**Fig. S1** X-ray photoelectron spectroscopy of CoFe/CoFe<sub>2</sub>O<sub>4</sub> composite after ten cycles of PMS activation for the degradation of Orange II: a) a survey spectrum, b) Fe 2p peaks, c) Co 2p peaks, d) O 1s peaks.



**Fig. S2** Concentrations of dissolved Cobalt and Iron leached from CoFe/CoFe<sub>2</sub>O<sub>4</sub> composite at 5 min in the 1<sup>st</sup>, 2<sup>nd</sup>, 5<sup>th</sup> and 10<sup>th</sup> cycles. (Degradation reaction conditions: [Orange II]=60 mg L<sup>-1</sup>, [PMS]=1.5 g L<sup>-1</sup>, [catalyst]=0.05 g L<sup>-1</sup>, pH=7.0 and T=20 °C.)



**Fig. S3** Molecular structures: a) Orange II, b) Methyl Orange, c) Congo Red, d) Rhodamine B and e) Methylene Blue.

**Table S1** Numbers of C=N double bond, N=N double bond and C-N bond in the five dyes.

Bond (Bonding energy)	C=N (615 kJ mol <sup>-1</sup> )	N=N (418 kJ mol <sup>-1</sup> )	C-N (293 kJ mol <sup>-1</sup> )
Orange II	0	1	2
Methyl Orange	0	1	5
Congo Red	0	2	6
Rhodamine B	1	0	5
Methylene Blue	2	0	6