Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary information

A novel $CoFe_2O_4$@Cr-MIL-101/Y zeolite ternary nanocomposite as a magnetically separable sonocatalyst for efficient sonodegradation of organic dye contaminants from water

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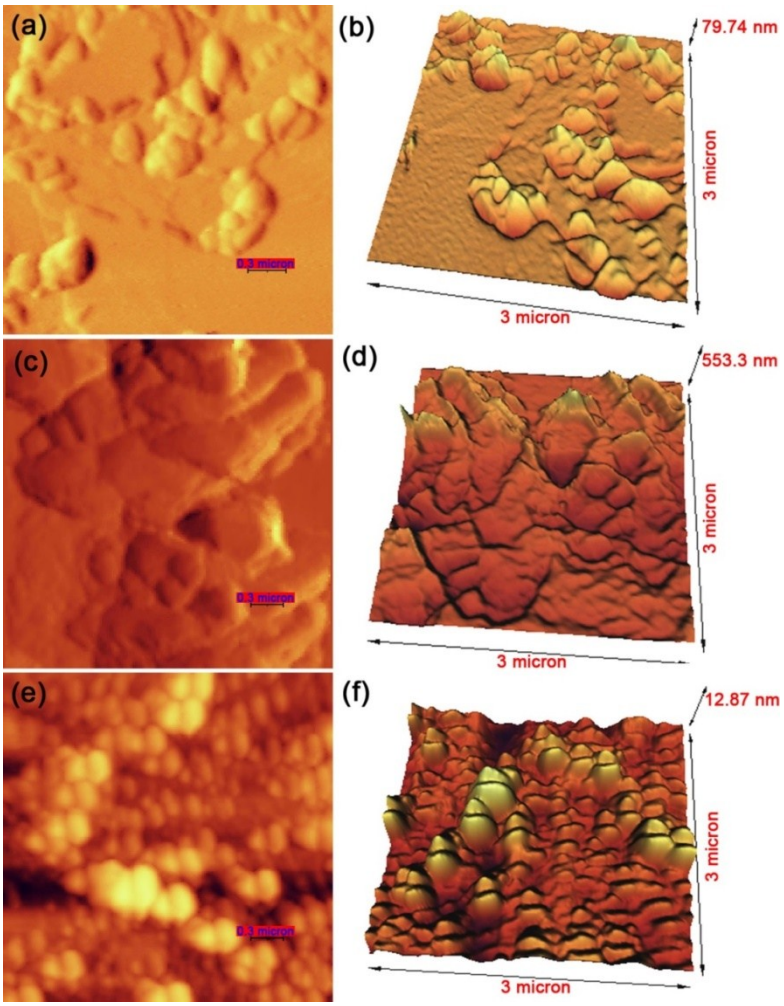

Fig. S1. AFM 2-dimensional (2D) and 3-dimensional (3D) images of the as-synthesized (a) and (b) raw Y zeolite, (c) and (d) Cr-MIL-101/Y, (e) and (f) $CoFe_2O_4$@Cr-MIL-101/Y.

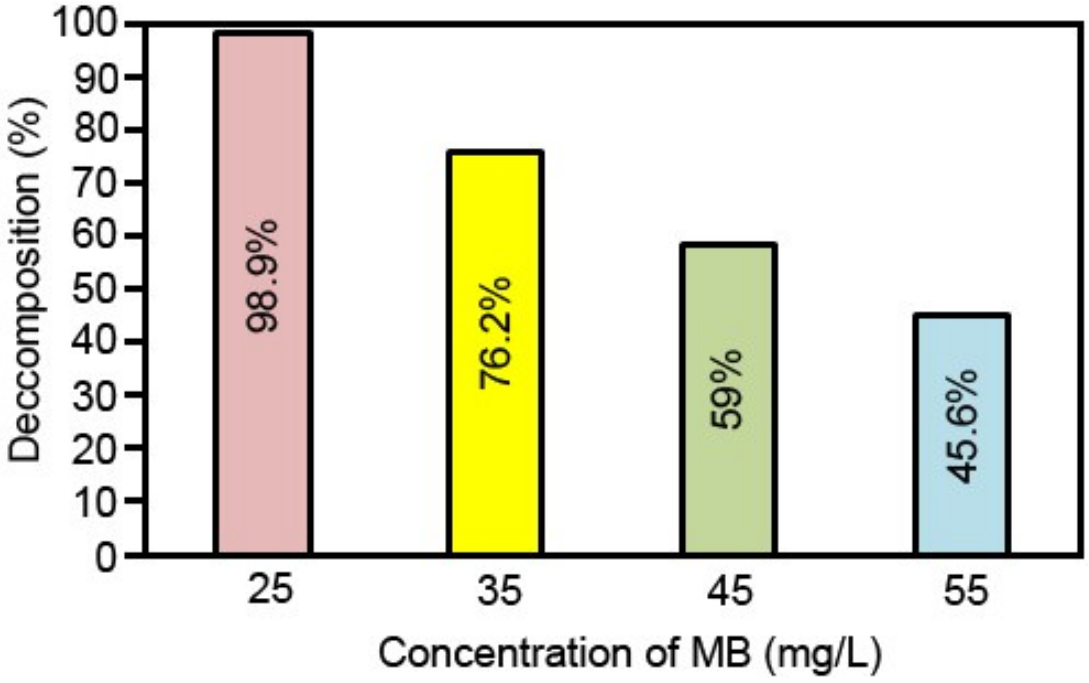

Fig. S2. Sonodecomposition process efficiency% (C_t/C_0) of the MB dye over the $CoFe_2O_4$@Cr-MIL-101/Y catalyst nanocomposite as a function of the initial MB concentration (optimized experimental conditions; irradiation time: 60 min, [H_2O_2]: 40 mmol/L (2 mL), [catalyst dosage]: 0.5 g/L, pH: 7 and temperature: 25±1°C).

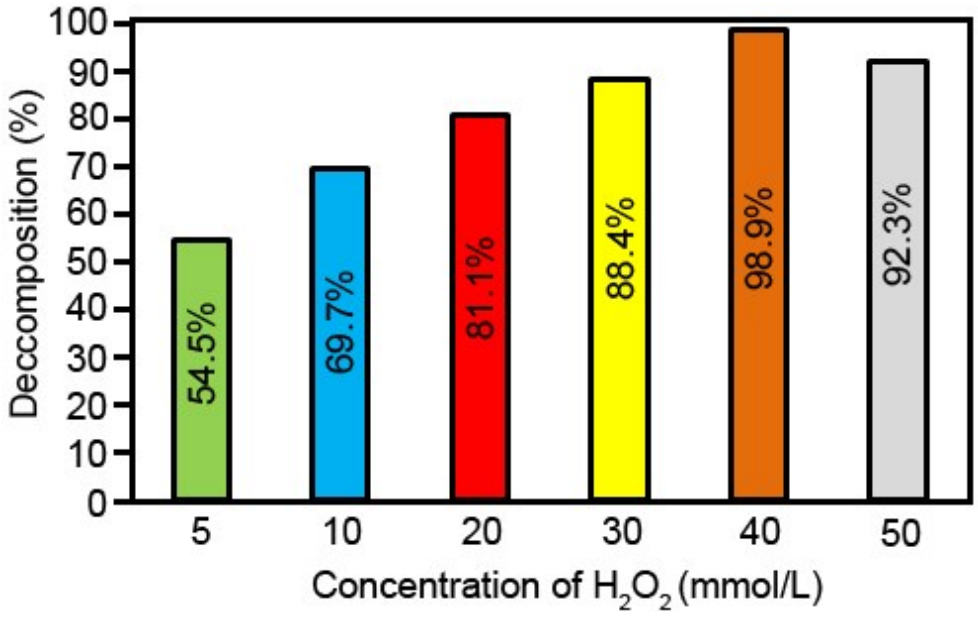

Fig. S3. The influence of the H_2O_2 concentration on the sonodecomposition process of MB over the $CoFe_2O_4$@Cr-MIL-101/Y catalyst nanocomposite (optimized experimental conditions; irradiation time: 60 min, $[MB]_o$: 25 mg/L (50 mL), [catalyst dosage]: 0.5 g/L, pH: 7 and temperature: 25±1°C).

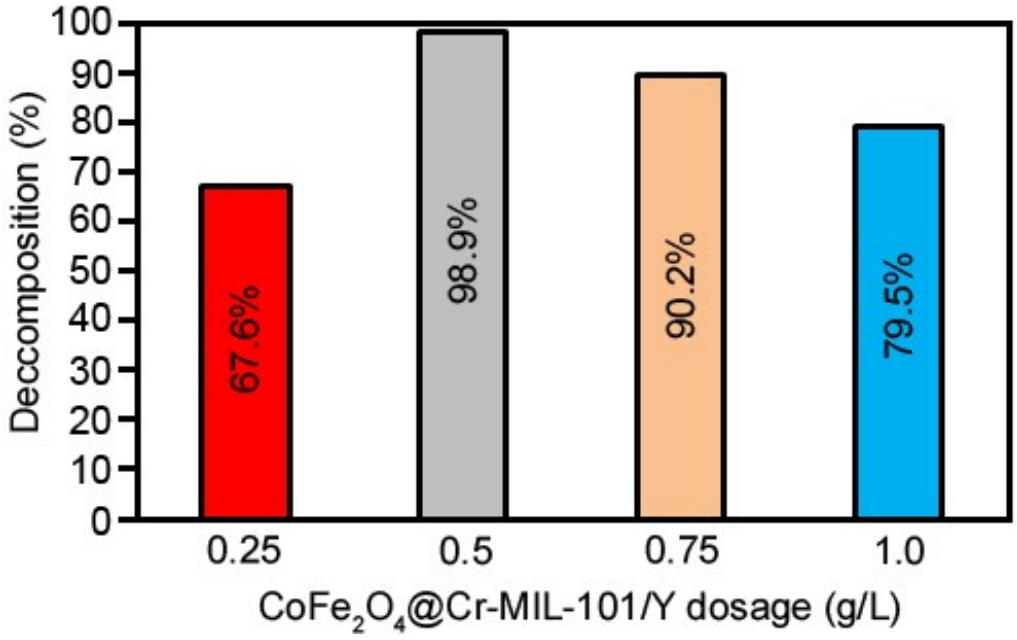

Fig. S4. The influence of the $CoFe_2O_4$@Cr-MIL-101/Y dosage on the sonodecomposition process of MB (optimized experimental conditions; irradiation time: 60 min, $[MB]_o$: 25 mg/L (50 mL), $[H_2O_2]$: 40 mmol/L (2 mL), pH: 7 and temperature: 25±1°C).

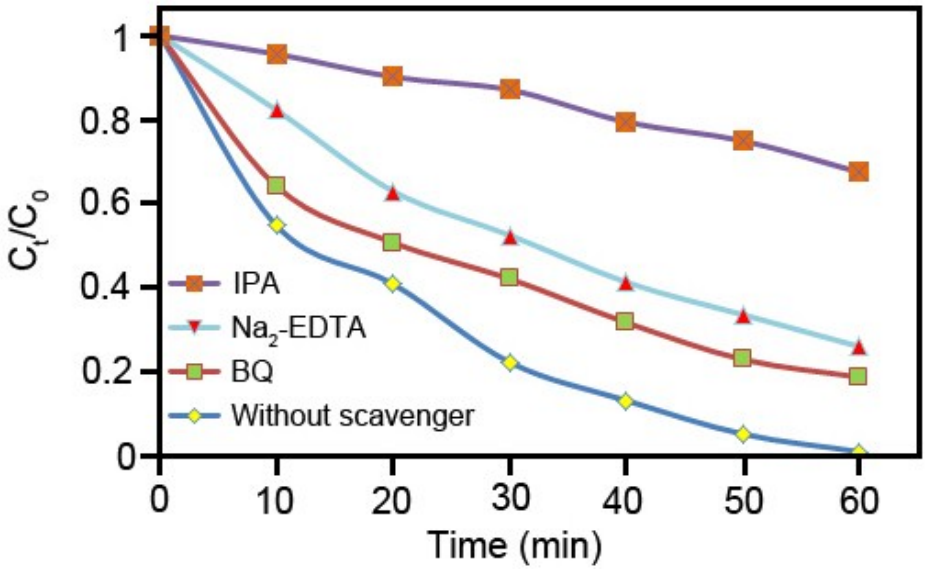

Fig.S5. The influence of the scavenger type on the sonodecomposition process of MB over the $CoFe_2O_4$@Cr-MIL-101/Y catalyst nanocomposite at different time intervals (optimized experimental conditions; $[MB]_o$: 25 mg/L (50 mL), $[H_2O_2]$: 40 mmol/L (2 mL), [catalyst dosage]: 0.5 g/L, pH: 7 and temperature: 25±1°C).