Supplementary information

A novel CoFe$_2$O$_4$@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$_2$O$_4$@Cr-MIL-101/Y.
Fig. S2. Sonodecomposition process efficiency\% \((C_t/C_0)\) of the MB dye over the CoFe\(_2\)O\(_4\)@Cr-MIL-101/Y catalyst nanocomposite as a function of the initial MB concentration (optimized experimental conditions; irradiation time: 60 min, [H\(_2\)O\(_2\)]: 40 mmol/L (2 mL), [catalyst dosage]: 0.5 g/L, pH: 7 and temperature: 25±1°C).
Fig. S3. The influence of the $\text{H}_2\text{O}_2$ concentration on the sonodecomposition process of MB over the CoFe$_2$O$_4$@Cr-MIL-101/Y catalyst nanocomposite (optimized experimental conditions; irradiation time: 60 min, $[\text{MB}]_0$: 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$_2$O$_4$@Cr-MIL-101/Y dosage on the sonodecomposition process of MB (optimized experimental conditions; irradiation time: 60 min, [MB]: 25 mg/L (50 mL), [H$_2$O$_2$]: 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$_2$O$_4$@Cr-MIL-101/Y catalyst nanocomposite at different time intervals (optimized experimental conditions; [MB]: 25 mg/L (50 mL), [H$_2$O$_2$]: 40 mmol/L (2 mL), [catalyst dosage]: 0.5 g/L, pH: 7 and temperature: 25±1°C).