SUPPLEMENTARY MATERIALS

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A Statistical Design Approach for an Effective Catalyst in the Fenton Reaction in Case of Fe_3O_4-MOF MIL-88b (Fe) in Methylene Blue Degradation Kinetics

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Testing the Model

Synthesis Fe_3O_4-SiO_2

For this purpose, 15.12 g of $FeCl_3 \cdot 6H_2O$ crystal hydrate and 5.56 g of $FeCl_2 \cdot 4H_2O$ crystal hydrate were dissolved in 200 ml of distilled H_2O in an inert atmosphere in the presence of 12 g of SiO_2 (Aldrich). The solution was heated to 60 °C. A 10 % KOH solution was added with vigorous stirring (900 rpm, pH = 10). The resulting magnetite precipitate was separated from the solution on a Buchner funnel, pre-washing with hot (60–80 °C) distilled water. The sample was dried in vacuum (T = 50 °C, 12 h). The yield was 15.74 g.

Table S1

Data on the release of iron ions and the assessment of methylene blue degradation by the samples

	Time, min	**Fe^{2+}, %**	**Fe^{3+},%**	**Model, MB C/C_0**	**Experimental, MB C/C_0**
MOF-Fe_3O_4	60	0.015	0.63	0.26	0.29
		0.015	0.65	0.26	0.25
		0.017	0.6	0.25	0.27
			value	**0.257±0.006**	**0.272±0.020**
Fe_3O_4-MOF	60	0.017	0.49	0.26	0.23
		0.016	0.47	0.24	0.22
		0.018	0.51	0.24	0.24
			value	**0.247±0.012**	**0.231±0.010**
MOF	60	0.12	0.4	0.11	0.14
		0.14	0.45	0.08	0.11
		0.1	0.38	0.13	0.15
			value	**0.107±0.025**	**0.133±0.021**
Fe_3O_4-SiO_2	60	0.05	0.29	0.16	0.18
		0.03	0.31	0.21	0.19
		0.03	0.27	0.2	0.17
			value	**0.190±0.026**	**0.181±0.010**

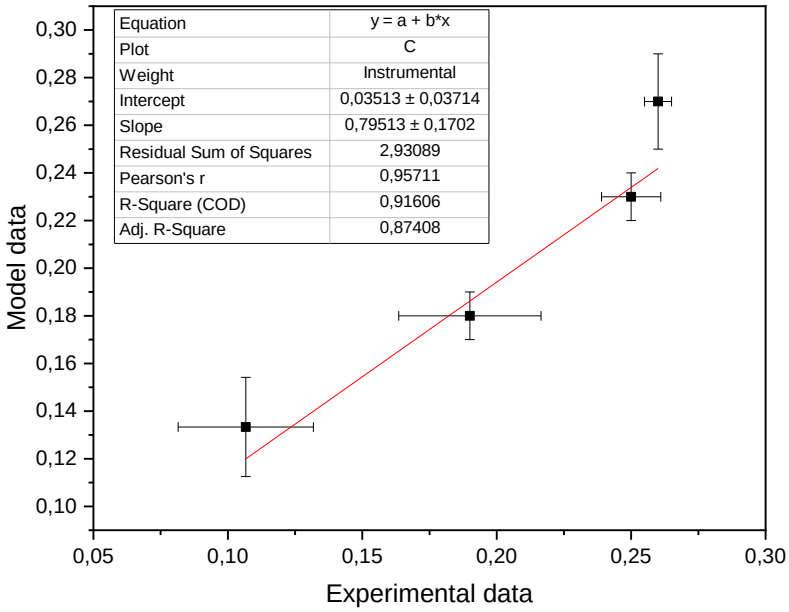

Figure S1. Dependence of the model predicted value on the actual value