SUPPLEMENTARY INFORMATION

Photocatalytic-Fenton Process under Simulated Solar Radiation Promoted by a Suitable Catalyst Selection

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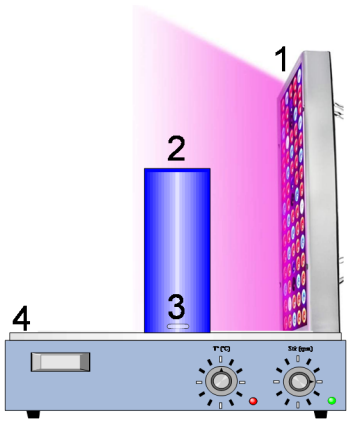

Fig. S1. Set-up schema. 1: Simulated visible lamp, 2: Cylindrical glass reactor, 3: Stirring bar, 4: Magnetic stirrer.

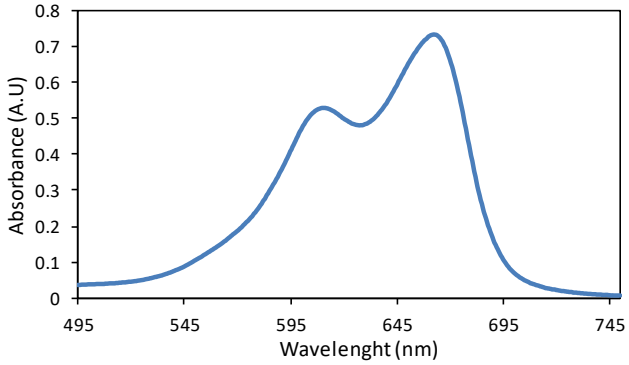

Fig. S2. Initial MB spectra attained by UV-Vis spectrophotometry.

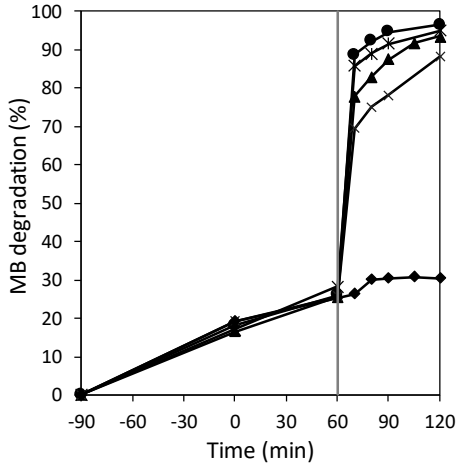

Fig. S3: MB degradation at different H_2O_2 dosages: 6g/L (circles), 3g/L (asterisk), 1.5 g/L (triangles), 0.6 g/L (crosses), 0 g/L (rhombus). The vertical grey line represents the moment of the H_2O_2 addition

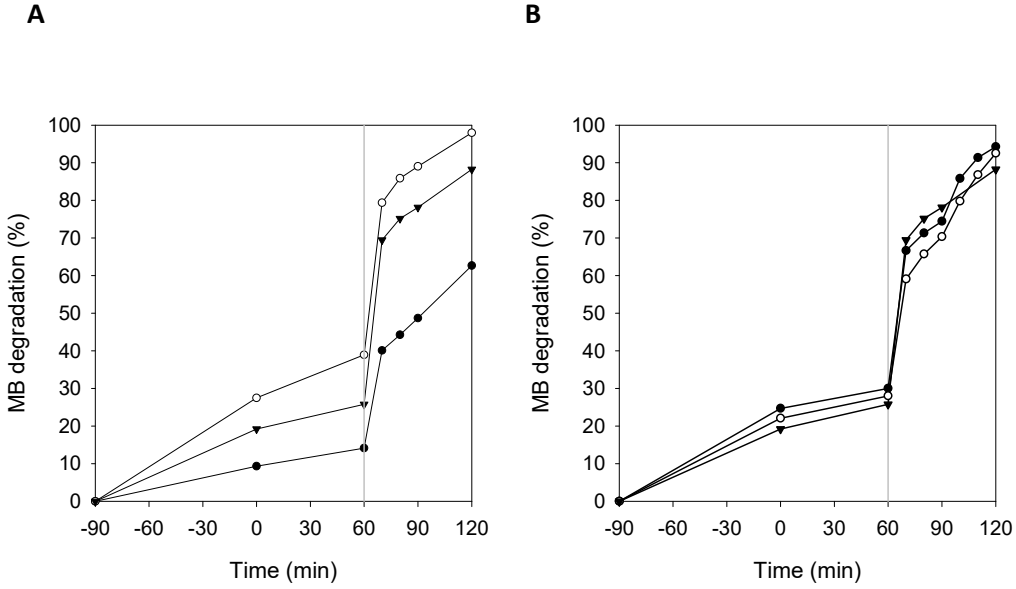

Fig. S4. A: MB degradation at MB dosage of 10 ppm (white cycles), 20 ppm (triangles) and 40 ppm (black circles) with H_2O_2 0.6 g/L and 0.8 g/L catalyst dosage B: MB degradation at same concentrations when keeping the ratio MB/H_2O_2 and MB/catalyst dosage at 0.025 and 33.33, respectively. The vertical grey line represents the moment of the H_2O_2 addition.

Table. 1-S. Textural and structural properties of Fe_3O_4-SiO_2-TiO_2.

Surface area (m^2/g)	30.992
External surface area (m^2/g)	29.127
Pore Volume (cm^3/g)	0.240
Pore Diameter (nm)	3.715
Micropore volume (cm^3/g)	0.001
Micropore area (m^2/g)	1.865

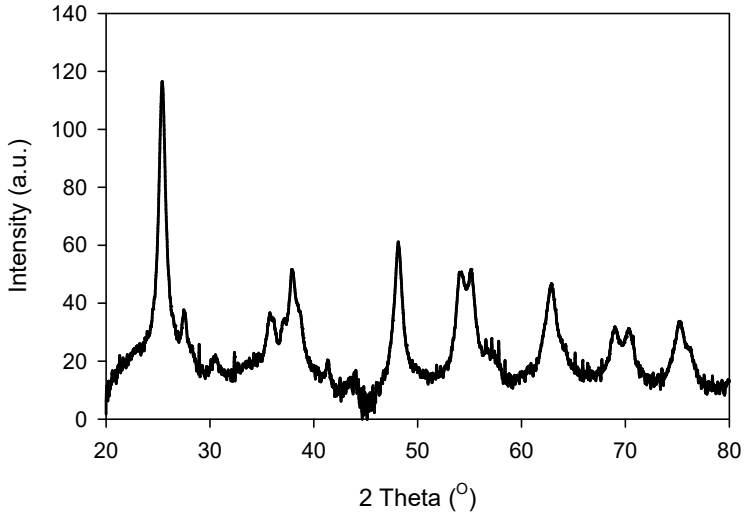

Fig. S5. XRD pattern of the synthesised Fe_3O_4-SiO_2-TiO_2 catalyst.

Fig. S5 shows XRD patterns of the Fe_3O_4-SiO_2-TiO_2 catalyst and the results revealed a set of different sharp peaks related to the conforming compounds, typical of a high crystalline structure. Indeed, peaks at 38.0°,48.2°, 54.6°,55.2°, 63.0°,68.8°,70.5° and 75.5 ° are related to the tretagonal structure of anastase TiO_2 (Bekena & Kuo, 2020). Moreover, the small peaks at 30.6° and 57.0 ° as well as the peak at 35.8 correspond to pure Fe_3O_4 (Lei et al., 2020). Moreover, the broad peak at 63.0 ° can be related not only to TiO_2 but also to Fe_3O_4 (Bekena & Kuo, 2020; Lei et al., 2020). SiO_2 has an amorphous structure although some small peaks found at 22-23° have been related to its presence (Mohamed & Harraz, 2020).

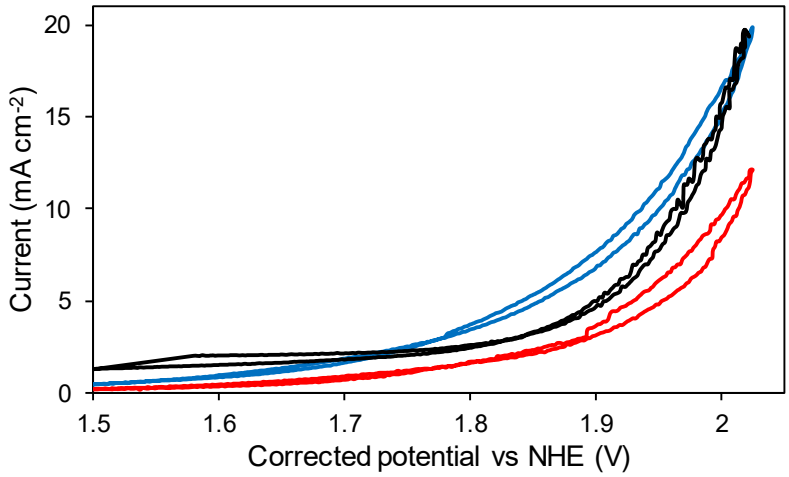

Fig. S6. Cyclic voltammetry of TiO_2 (red), Fe_3O_4-SiO_2-TiO_2 (blue) and Fe_3O_4 (black) catalysts.