SUPPLEMENTARY MATERIALS

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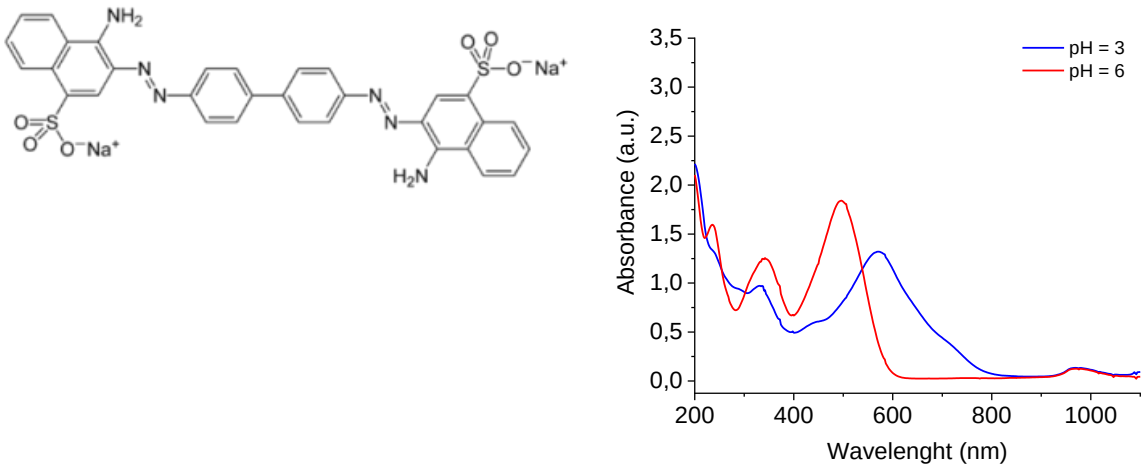
Magnetically Separable Fe_3O_4/γ-Fe_2O_3@MIL-88b(Fe) and Fe_3O_4/γ-Fe_2O_3@NH_2-MIL-88b(Fe) Composites for the Photocatalytic Degradation of Congo Red Dye

List of Content



a) b)

Figure S1. Congo Red structure (a) and UV-Vis spectra at pH of 3 and 6 (b)

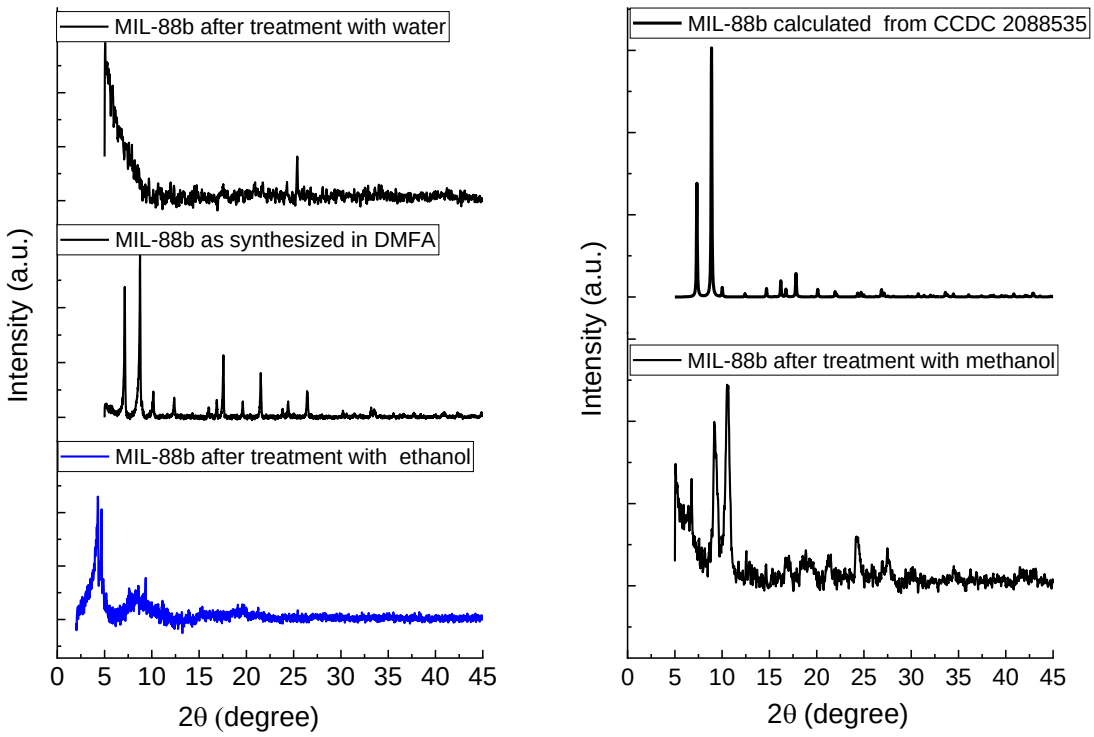


Figure S2. XRD patterns for MIL-88 as synthesized with different guest molecules and the calculated CCDC 2088535 (Cu-Kα radiation, λ = 1.5406 Å)

T a b l e S 1

Removal of organic pollutants using different catalysts

Catalyst	Irradiation source	Reaction conditions	Results	k, min^{-1}	Ref.
MIL-88A	300 W Xenon lamp	Catalyst=0.25 g/L; [Tetracycline hydrochloride, TC] =100 mg/L; $[S_2O_8^{2-}]$=4 mM.	100 % TC was moved after 90 min	0,0396	1
MIL-88A	9W UVA lamp	Catalyst=0.5 g/L; [Rhodamine B, RhB]= 10 mg/L; $[S_2O_8^{2-}]$=1 mM.	after 2 hours, the decolorization efficiency reached ~80 %	0,461	2
MIL-88A@ polyacrylate composite	500 W Xe lamp	Catalyst=0.25 g/L; [Rhodamine B, RhB]= 10 mg/L; 20 mM H_2O_2	45 % RhB at 80 min, 97 % after 5 cycles	0,0726	3
MIL-88A@GO	500 W Xe lamp	Catalyst=0.25 g/L, [Rhodamine B, RhB]= 10 mg/L 20 mM H_2O_2	-	0,0645	3
MIL-88A(Fe)	natural sunlight	Catalyst=0,2 g/L; [Rhodamine B. RhB] = 10 mg/L; 20 mM H_2O_2	98 % degradation of RhB in 50 min	0,0793	4
$MgFe_2O_4$	150 w Xenon lamp	Catalyst=0,8 g/L; [Congo red, CR] = 10 mg/L; pH = 6, $[H_2O_2]$ = 2.5 mM.	removal efficiency of 84.58 %	0.0167	5
FeSO4.7H2O/ H2O2	UV lamp	$[Fe^{2+}]$ = 0,4 g/L; [CR] = 30 mg/L, $[H_2O_2]$ = 0,350 g/L; pH=3;	removal efficiency of 79.33 % after 330 min	0.0122	6
TiO_2	125 W mercury lamp	Catalyst=0,5 g/L [CR] = 60 mg/L, pH=3.5;	removal efficiency of 86 % after 120 min	0.0267	7
Co_3O_4/TiO_2/GO	300W Xenon lamp	Catalyst=0,5 g/L; [CR] = 10 mg/L,	removal efficiency of 91 % after 90 min	0.0262	8
SnO_2–Fe_3O_4	14 W UV lamp	Catalyst=1 g/L; [CR] = 18 mg/L; $[H_2O_2]$ = 150 mM.	removal efficiency of 51 % after 90 min	0.024	9
Bentonite-Fe_3O_4 (1:1)	visible irradiation	Catalyst=0.05 g/L; [CR] = 25 mg/L; pH=5; $[H_2O_2]$ = 530 mM	removal efficiency of 98 % after 90 min	0.0348	10
Fe_3O_4/MIL-88b (Fe)	26W UV lamp	Catalyst=2 g/L; [CR] = 60 mg/L; pH=3.5; $[H_2O_2]$ = 176 mM	removal efficiency of 89 %	0.013±0.001	this work
Fe_3O_4/ NH_2-MIL-88b(Fe)	26W UV lamp	Catalyst=2 g/L; [CR] = 60 mg/L; pH=3.5; $[H_2O_2]$ = 176 mM	removal efficiency of 95 %	0.023±0.002	this work

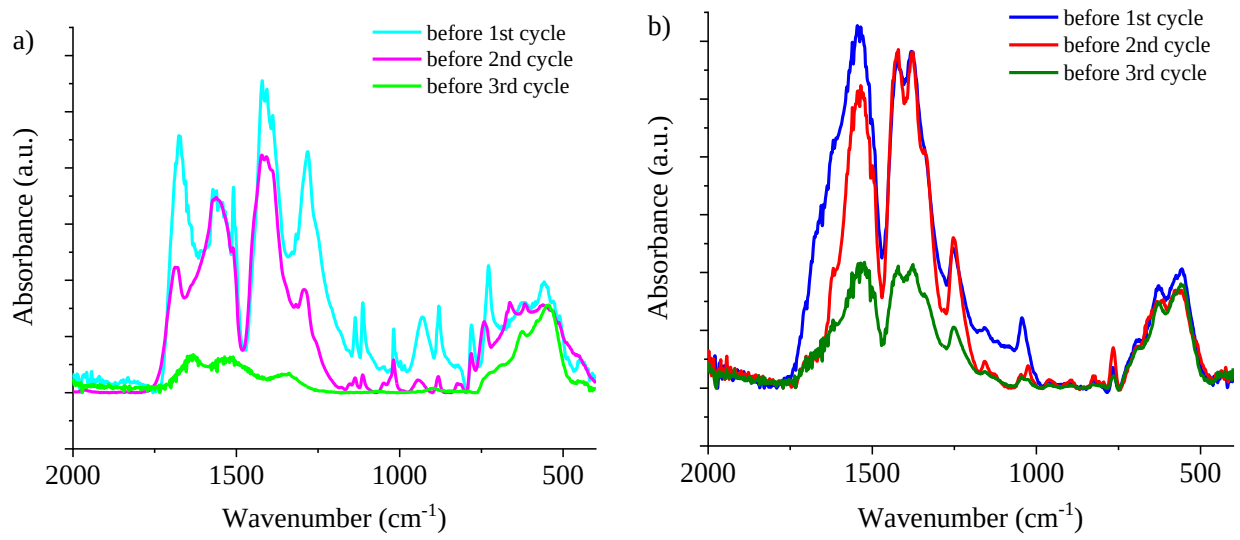


Figure S3. FTIR spectra of Fe_3O_4/γ-Fe_2O_3@MIL-88b(Fe) (a) и Fe_3O_4/γ-Fe_2O_3@NH_2-MIL-88b(Fe) (b) before each cycle

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