

Supplementary Information

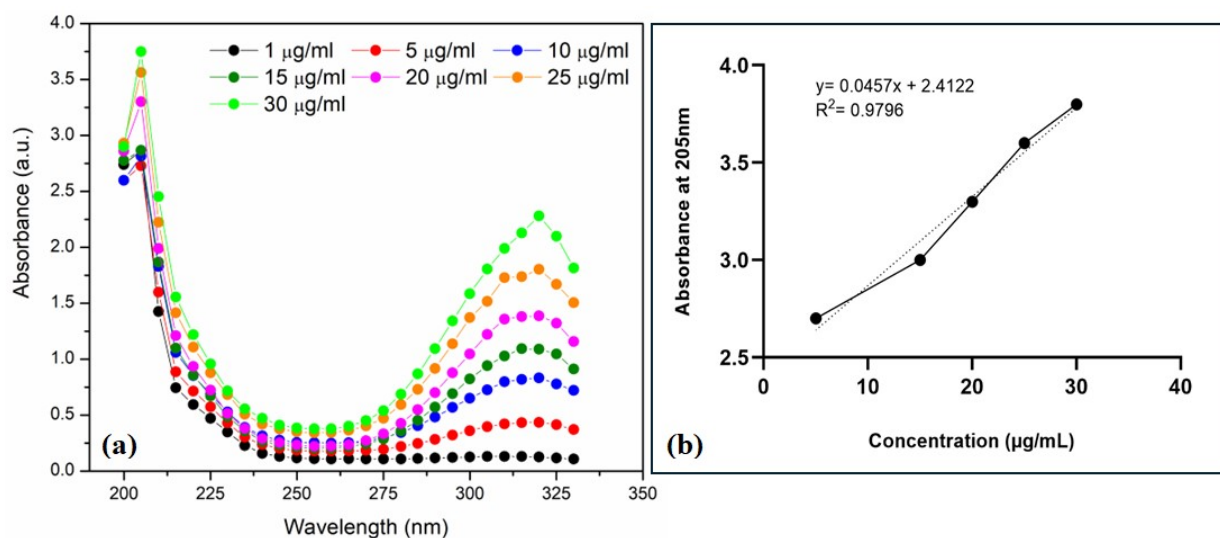


Figure S1. (a) UV-Visible spectra of Safranal as a function of [Safranal], (b) Calibration curve of Safranal in 1X PBS at a pH of 7.4 by following up the changes in the intensity of the UV-Vis peak at 205nm.

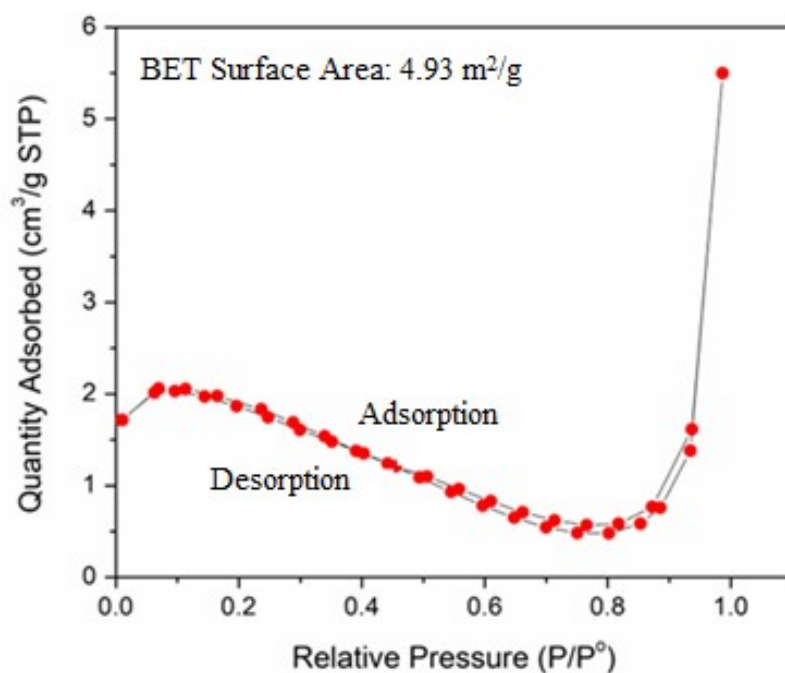


Figure S2. N₂ adsorption-desorption Hysteresis of the as-prepared MIL-88B(Fe)

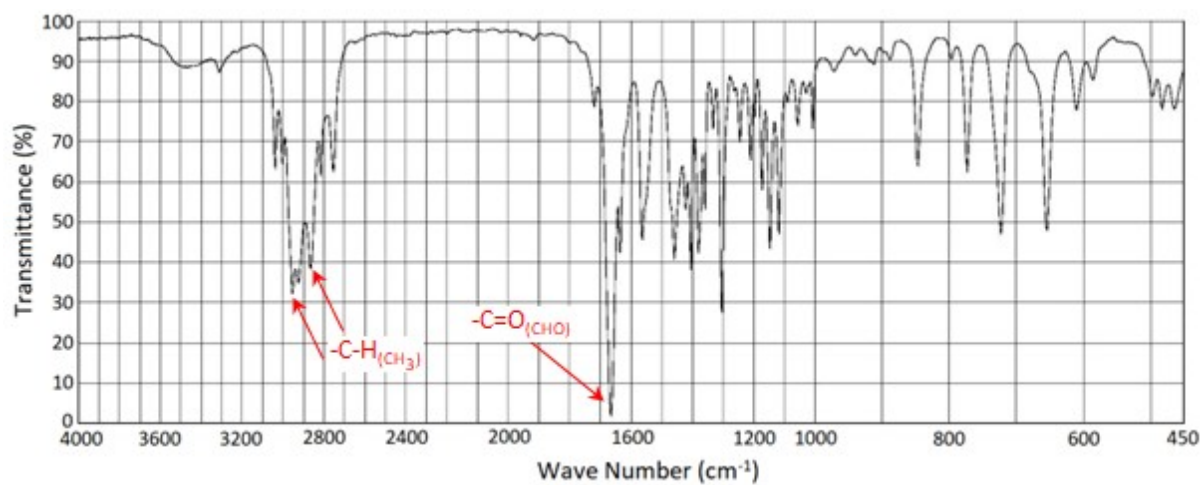


Figure S3. FTIR spectrum of the as-received safranal oil (Source: Sigma-Aldrich, USA)

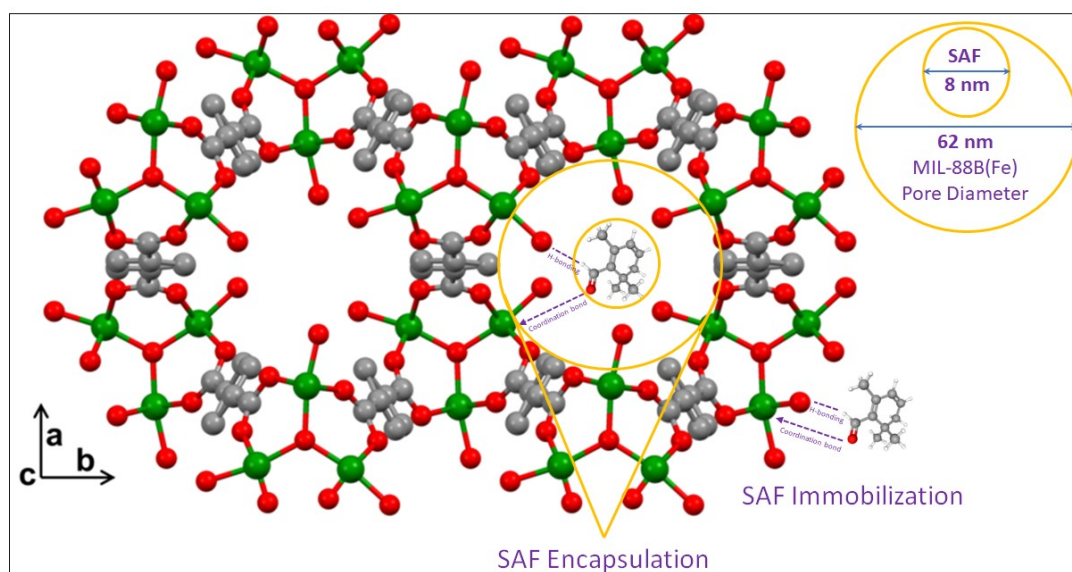


Figure S4. Schematic representation showing the potential encapsulation and immobilization of SAF molecules within the MIL-88B(Fe) pore and on its surfaces, respectively

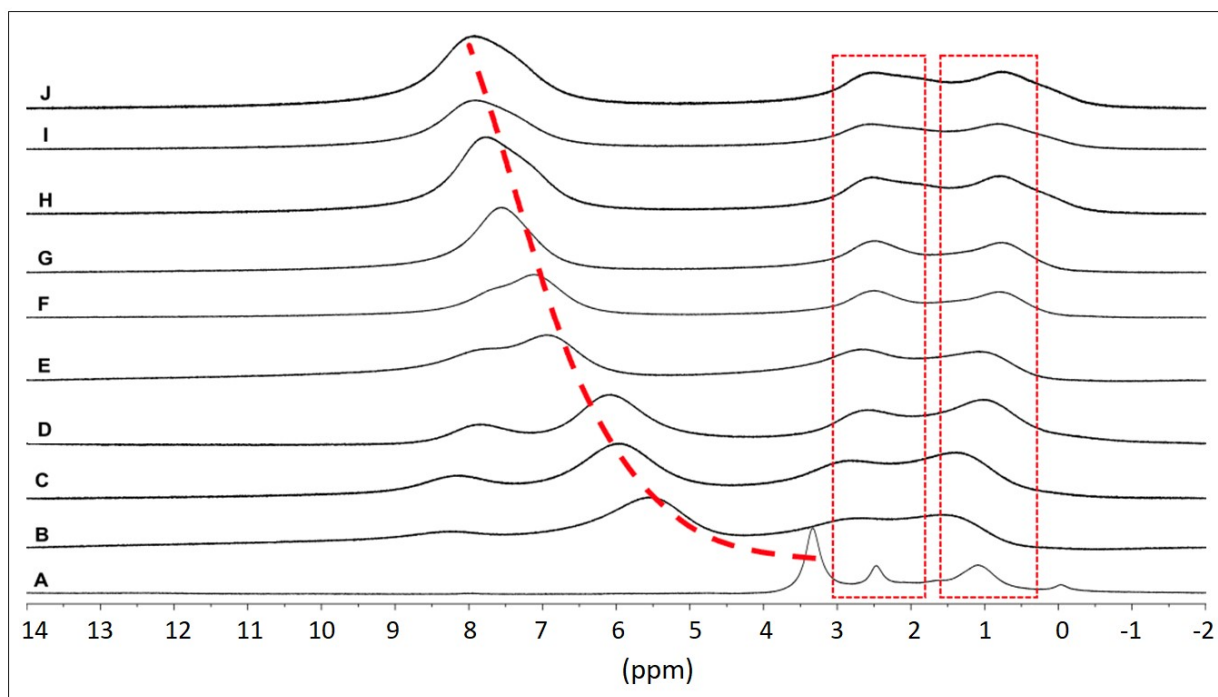


Figure S5. $^1\text{H-NMR}$ spectra (400 MHz, DMSO-d_6) MIL-88B loaded with 10% drug (SAF) in 0.7 ml of DMSO A) without DCl, B) with 10ml of DCl C) with 20ml of DCl, D) with 30ml of DCl, E) with 50ml of DCl F) with 70ml of DCl, G) with 100ml of DCl, H) with 130ml of DCl, I) with 170ml of DCl, and J) with 200ml of DCl.

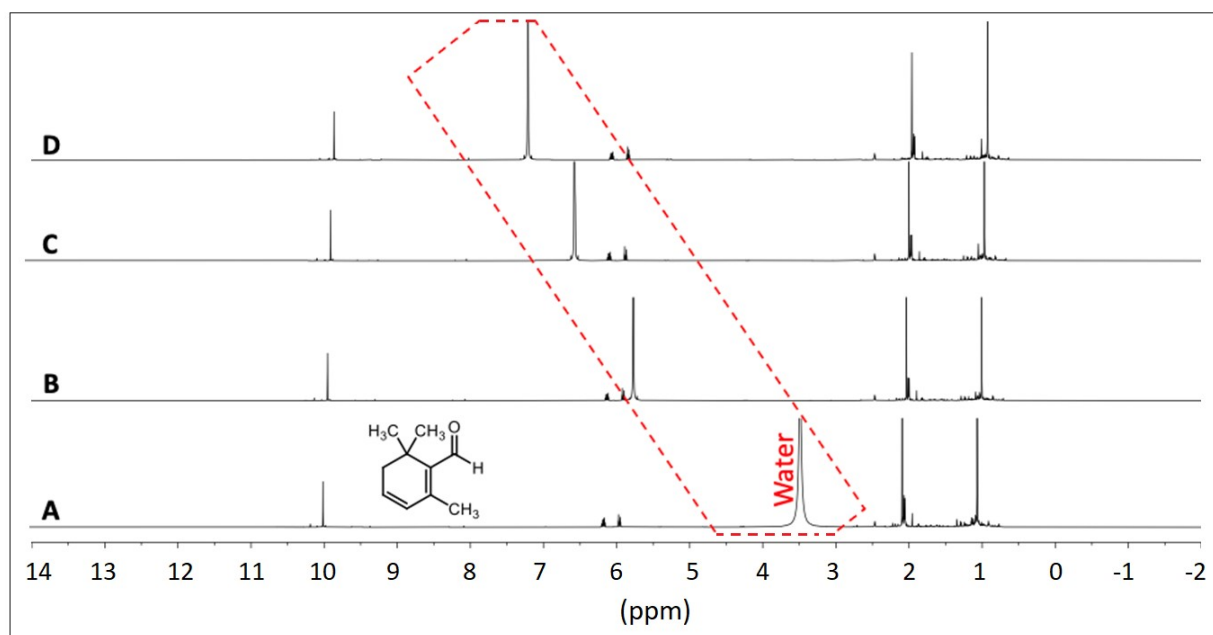


Figure S6. $^1\text{H-NMR}$ spectra (400 MHz, DMSO-d_6) Safranal (SAF) in 0.7 ml of DMSO A) without DCl, B) with 50 ml of DCl C) with 100 ml of DCl, D) with 1500 ml of DCl.

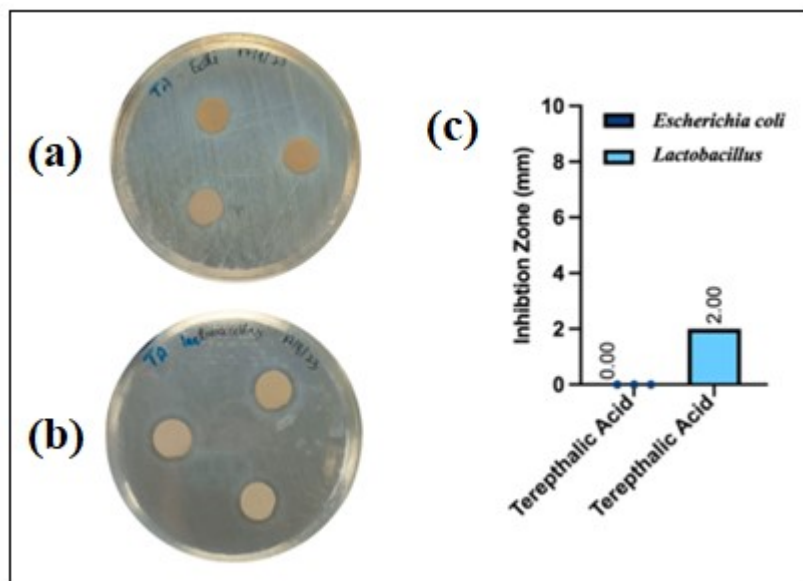


Figure S7. Antibacterial activity of the pure terephthalic linker against *E.coli* (a) and *Lactobacillus* (b) and their respective zone of inhibition (c).

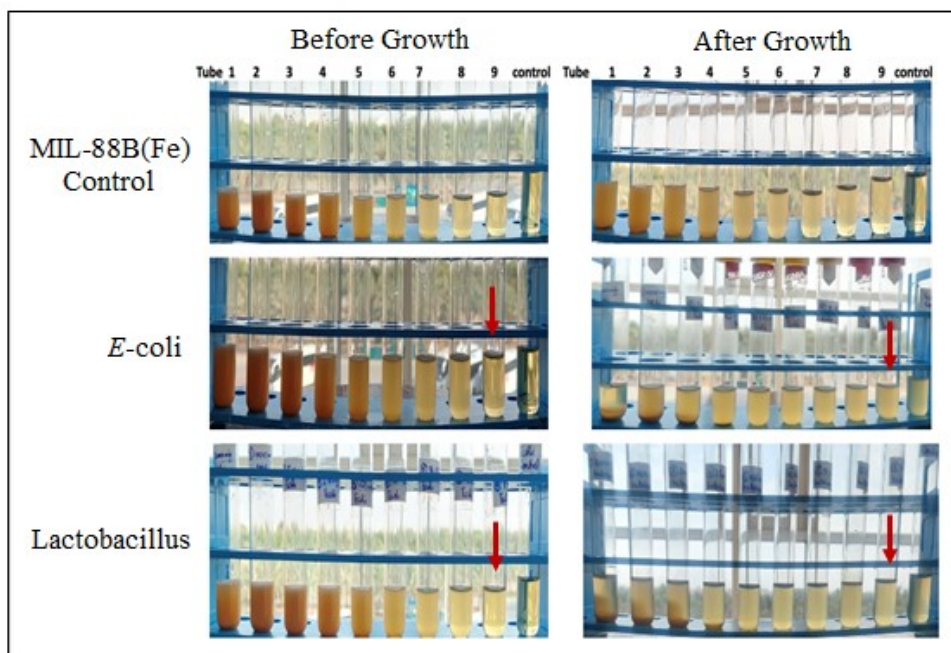


Figure S8. MIC of MIL-88B against *E.coli* (a) and *Lactobacillus* after 16 hours of incubation. 1: 2000 mg, 2:1000 mg, 3: 500 mg, 4: 250 mg, 6: 62.5 mg, 7: 31.25 mg, 8:15.625 mg, 9: 7.812 mg, 10: positive control of the strain without MOF treatment)

Table 2. MIC results of MIL-88B against *E. coli* and *Lactobacillus* bacterial strains.

	Conc. μg/200μl	2000	1000	500	250	125	62.5	31.25	15.625	7.812
Sample	Control	Tube 1	Tube 2	Tube 3	Tube 4	Tube 5	Tube 6	Tube 7	Tube 8	Tube 9
<i>E.coli</i>	+++	---	++	3	4	5	6	+++	+++	+++
<i>Lactobacillus</i>	+++	---	++	+++	+++	+++	+++	+++	+++	+++

--- no growth, + significant growth inhibition, ++ partial growth inhibition, and +++ strong growth

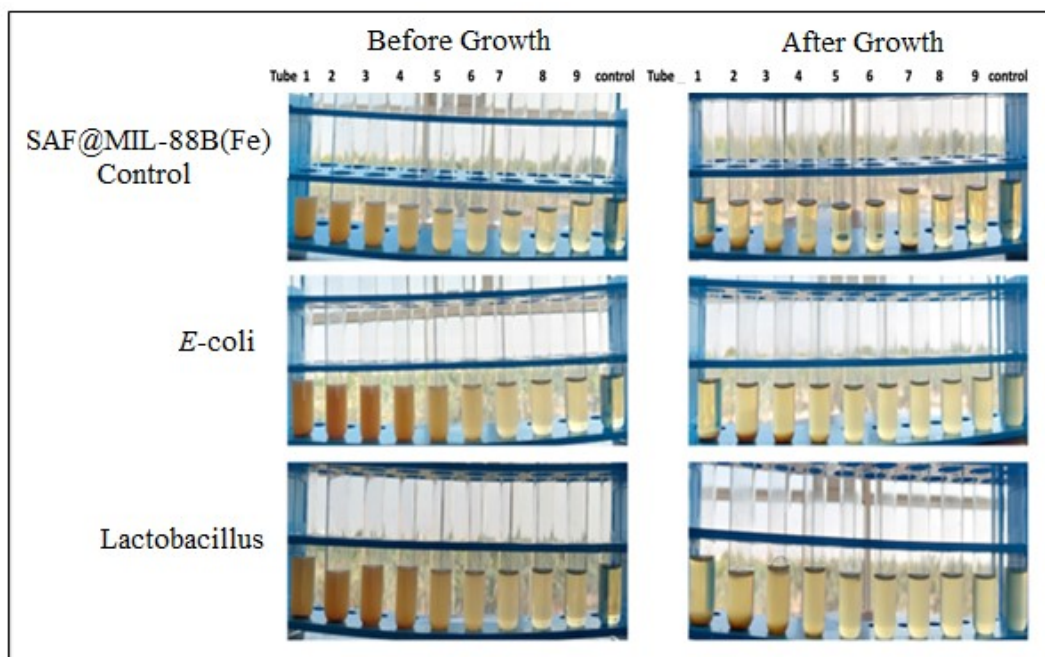


Figure S9. MIC of SAF7@MIL-88B against *E.coli* (a) and *Lactobacillus* after 16 hours of incubation. 1: 2000 mg, 2:1000 mg, 3: 500 mg, 4: 250 mg, 6: 62.5 mg, 7: 31.25 mg, 8:15.625 mg, 9: 7.812 mg, 10: positive control of the strain without MOF treatment)

Table 3. MIC results of SAF@MIL-88B against *E. coli* and *Lactobacillus* bacterial strains

	Conc. μg/200μl	2000	1000	500	250	125	62.5	31.25	15.625	7.812
Sample	Control	Tube 1	Tube 2	Tube 3	Tube 4	Tube 5	Tube 6	Tube 7	Tube 8	Tube 9
<i>E.coli</i>	+++	---	++	3	4	5	6	+++	+++	+++
<i>Lactobacillus</i>	+++	---	++	+++	+++	+++	+++	+++	+++	+++

--- no growth, + significant growth inhibition, ++ partial growth inhibition, and +++ strong growth

Table 4. DNA quantification using Nanodrop 2000 of treated *E. coli* with **MIL-88B**

MIL-88B(Fe) x MIC	DNA Concentration ng/μL
Control	256.1
0.125 x MIC	91.7
0.25 x MIC	115.2
0.5 x MIC	34.6
1 x MIC	15.9
1.5 x MIC	4.4

Table 5. DNA quantification using Nanodrop 2000 of treated *E. coli* with **SAF@ MIL-88B**

MIL-88B@SAF x MIC	DNA Concentration ng/μL
Control	256.1
0.125 x MIC	219.8
0.25 x MIC	182.8
0.5 x MIC	112.5
1 x MIC	18.9
1.5 x MIC	15.3

Table 6. DNA quantification using Nanodrop 2000 of treated *Lactobacillus* with **MIL-88B**

MIL-88B(Fe) x MIC	DNA Concentration ng/μL
Control	472
0.125 x MIC	12.4
0.25 x MIC	1.1
0.5 x MIC	0.5
1 x MIC	0.3
1.5 x MIC	0.6

Table 7. DNA quantification using Nanodrop 2000 of treated *Lactobacillus* with **SAF@
MIL-88B**

MIL-88B@SAF x MIC	DNA Concentration ng/μL
Control	472
0.125 x MIC	26
0.25 x MIC	14
0.5 x MIC	0.7
1 x MIC	0.2
1.5 x MIC	0.1