Supplementary Materials

Intrinsically Microporous Polyimide-Based Metal-Free Catalyst for Round-the-Clock Photodegradation of Organic Pollutants

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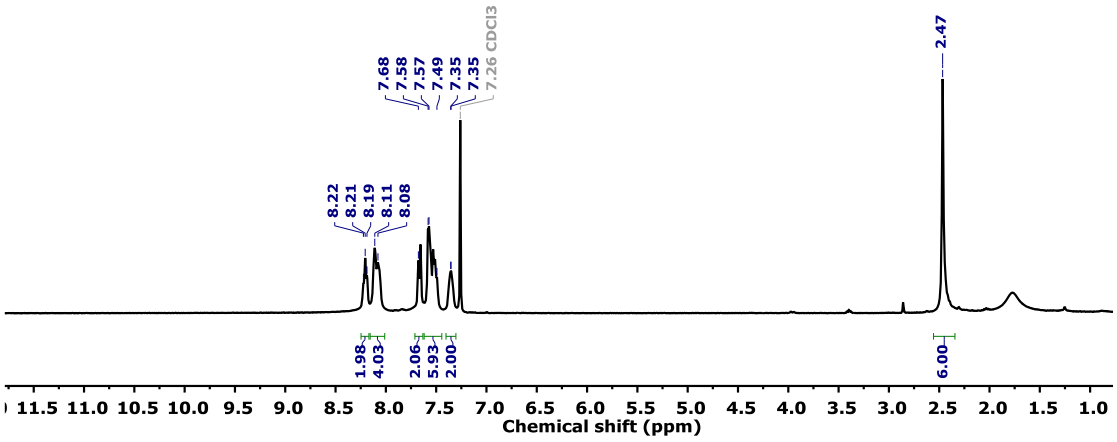
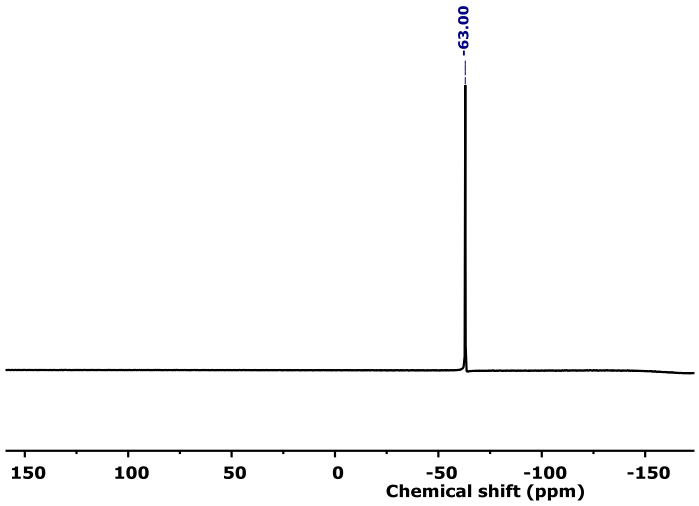


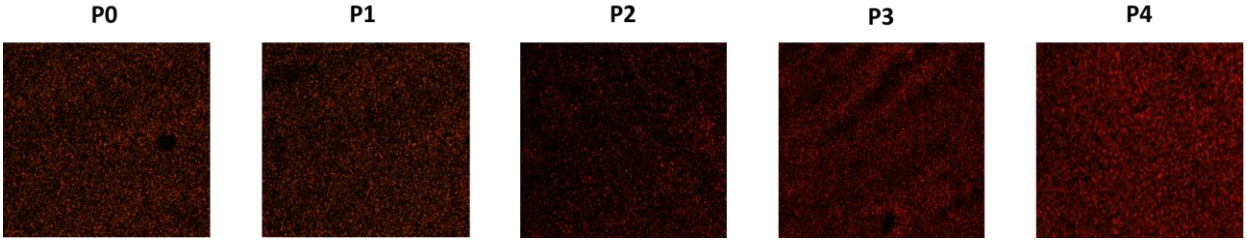
Supplementary Figure 1. ^{1}H NMR spectrum of 6FDA-DMN (**P0**) in $CDCl_3$.



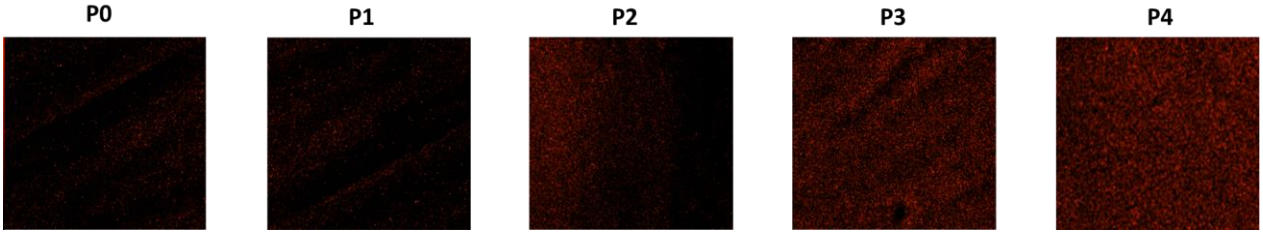
Supplementary Figure 2. ^{19}F NMR spectrum of 6FDA-DMN (**P0**) in $CDCl_3$.

Supplementary Table 1. 6FDA-DMN solubility in organic solvents. √ =soluble.

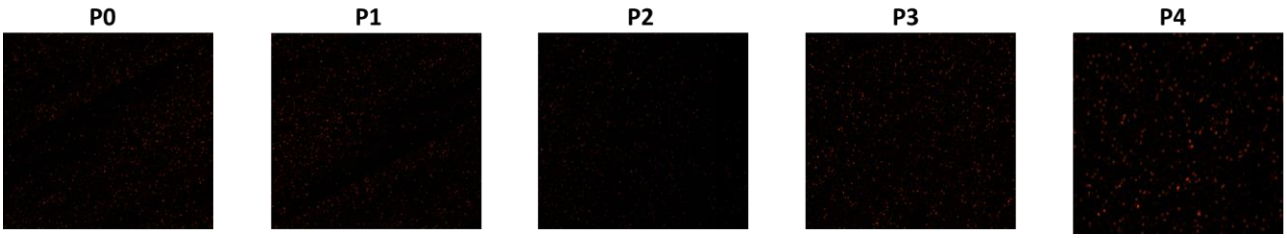
Polymer	THF	DMF	DMSO	DMAc	NMP	Acetone	*m*-cresol	DCM	Chloroform
6FDA-DMN	√	√	√	√	√	√	√	√	√



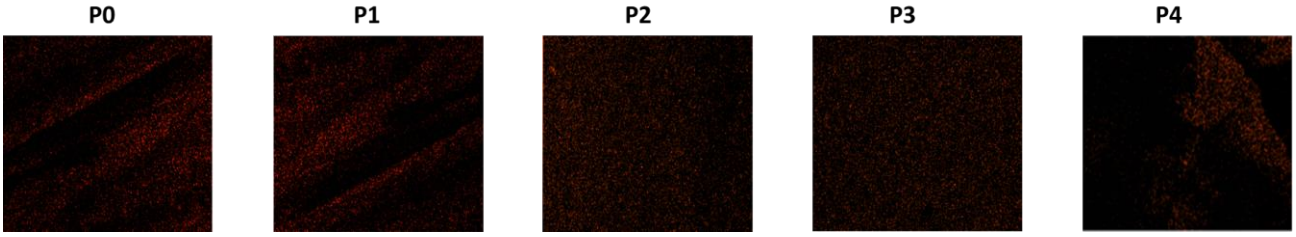
Supplementary Figure 3. EDX mapping of carbon atom for all 6FDA-DMN-based catalysts.



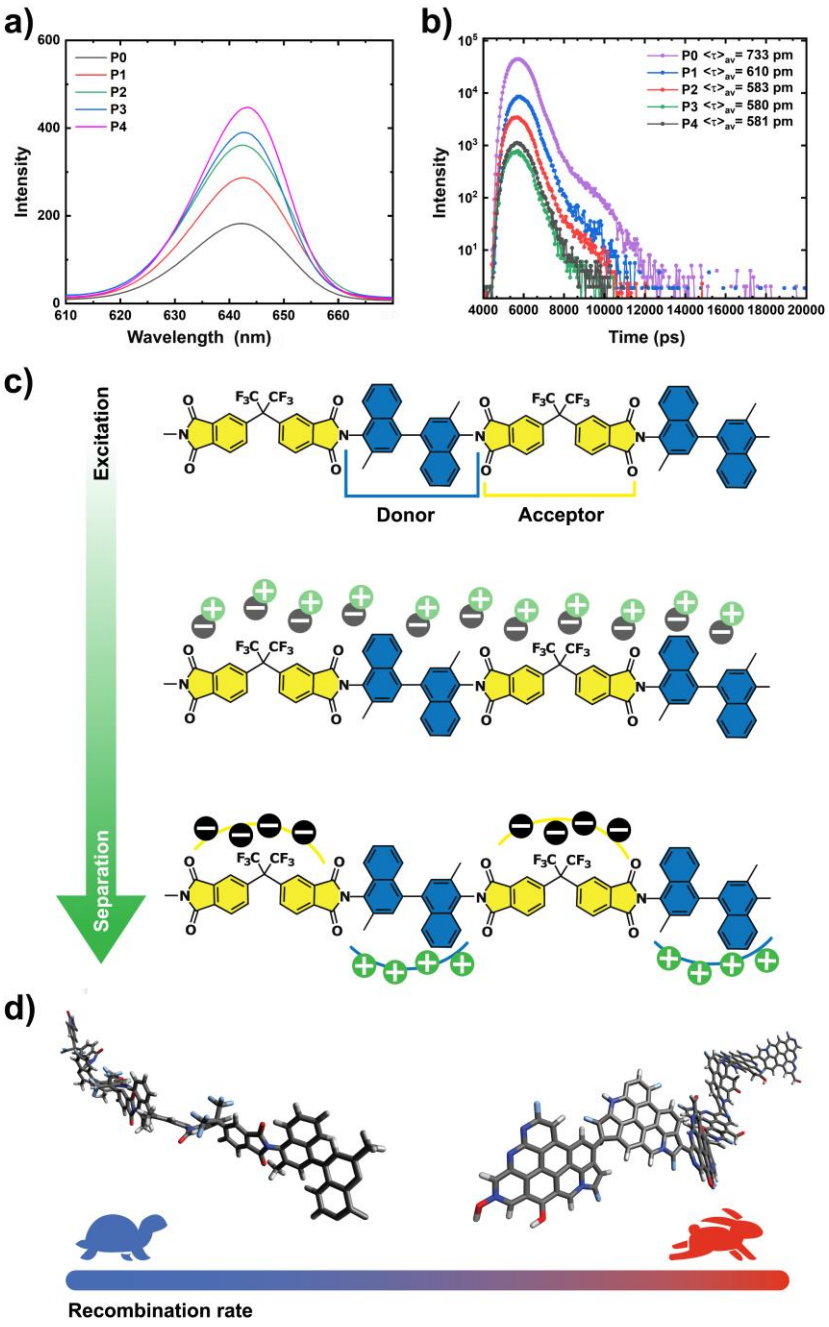
Supplementary Figure 4. EDX mapping of nitrogen atom for all 6FDA-DMN-based catalysts.



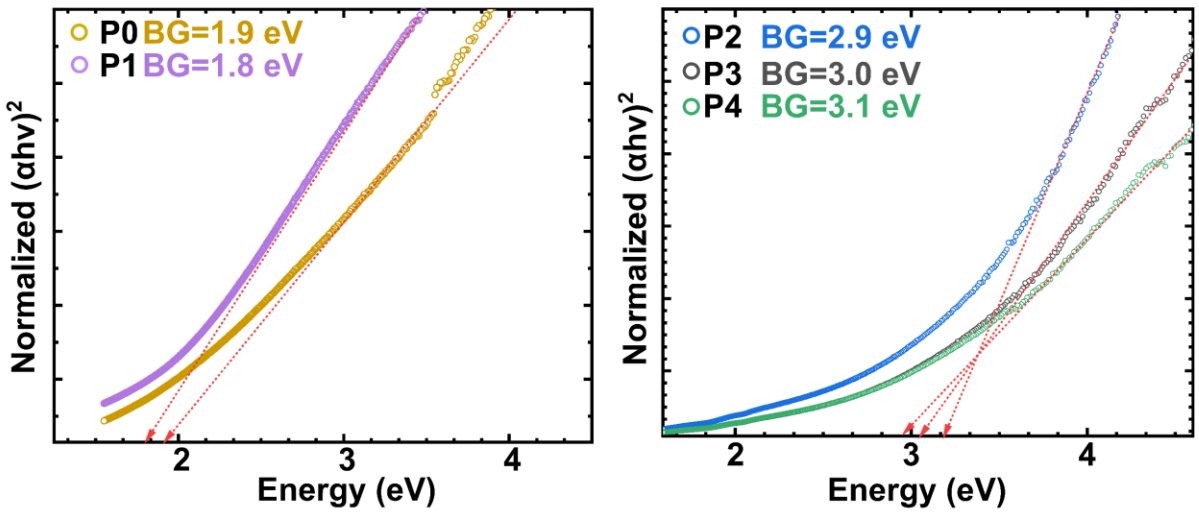
Supplementary Figure 5. EDX mapping of oxygen atom for all 6FDA-DMN-based catalysts.



Supplementary Figure 6. EDX mapping of fluorine atom for all 6FDA-DMN-based catalysts.



Supplementary Figure 7. a) the PL spectra of the prepared materials, **b)** decay spectra of P0-P4, **c)** Schematic representation of the excitation and separation state of the P0 showing the effect of the Acceptor-Donor structure in the polymer backbone and **d)** recombination rate illustration going from pristine material to carbonized structures.



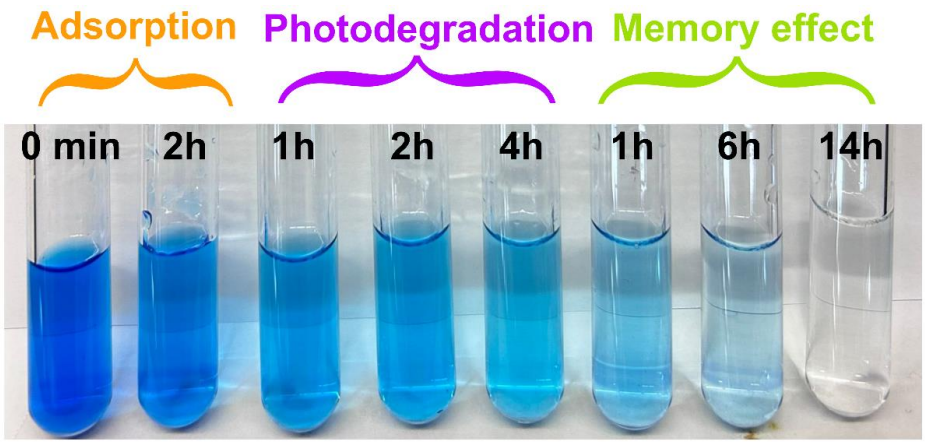
Supplementary Figure 8. The energy band gap of the prepared materials.

Supplementary Table 2. MB photodegradation kinetic parameters.

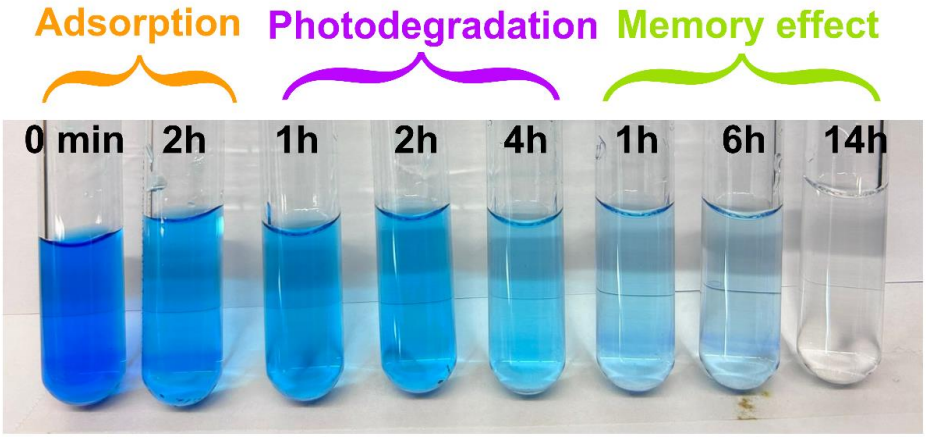
Sample	K_1 (min^{-1}) 10^{-2}	Half-time (min)	R^2
P0	0.62	85	0.95
P1	0.55	61	0.99
P2	0.43	161	0.92
P3	1.14	126	0.95
P4	0.82	112	0.95

Supplementary Table 3. MB adsorption and photodegradation over prepared polymers.

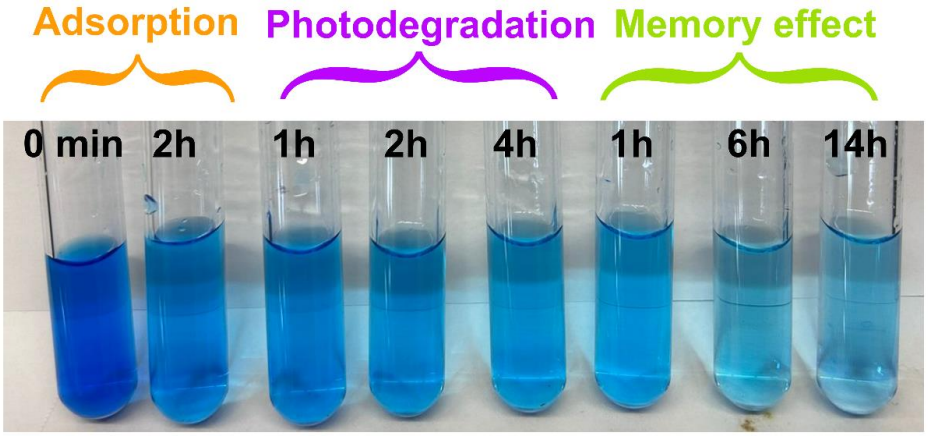
Sample	Adsorption (Dark)(%)	Photodegradation (light)(%)	Light Off (Dark) (%)
P0	56	82	88
P1	63	89	92
P2	42	61	~2
P3	54	86	~0
P4	34	73	~0
6FDA-TrMPD	23	54	~0
6FDA-*m*PDA	22	43	~28



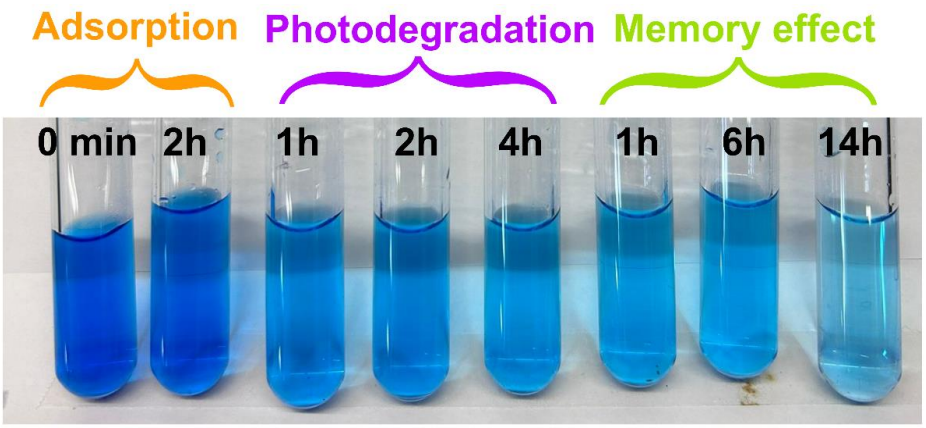
Supplementary Figure 9. Color change of MB solution during: adsorption, degradation and light off photodegradation using **P0**.



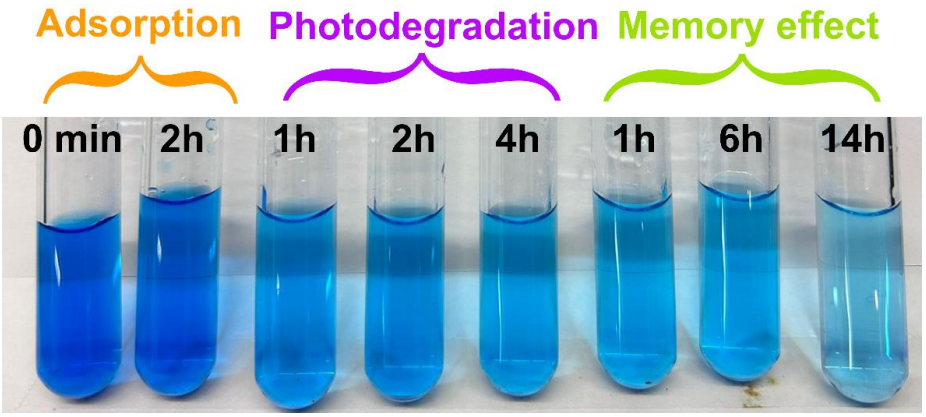
Supplementary Figure 10. Color change of MB solution during: adsorption, degradation and light off photodegradation using **P1**.



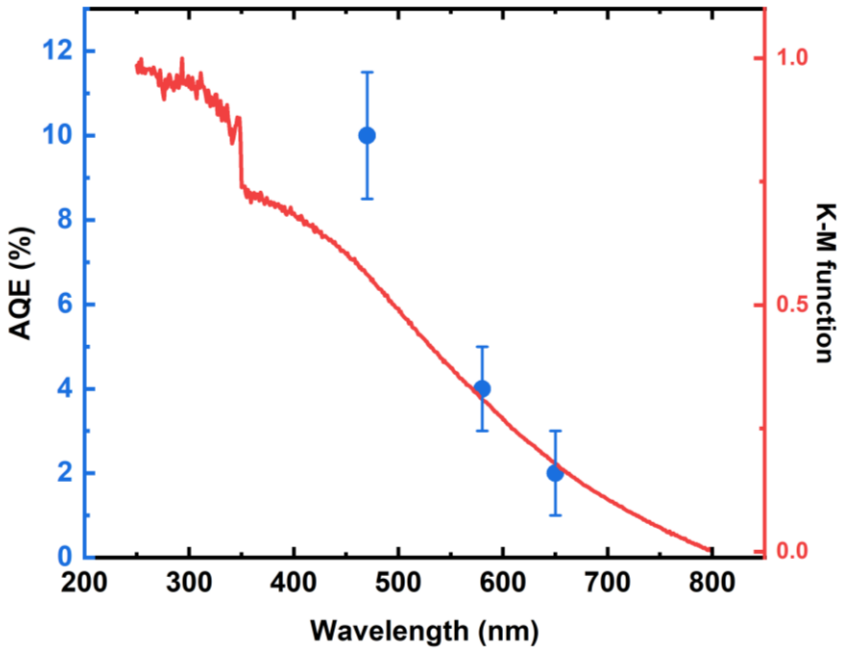
Supplementary Figure 11. Color change of MB solution during: adsorption, degradation and light off photodegradation using **P2**.



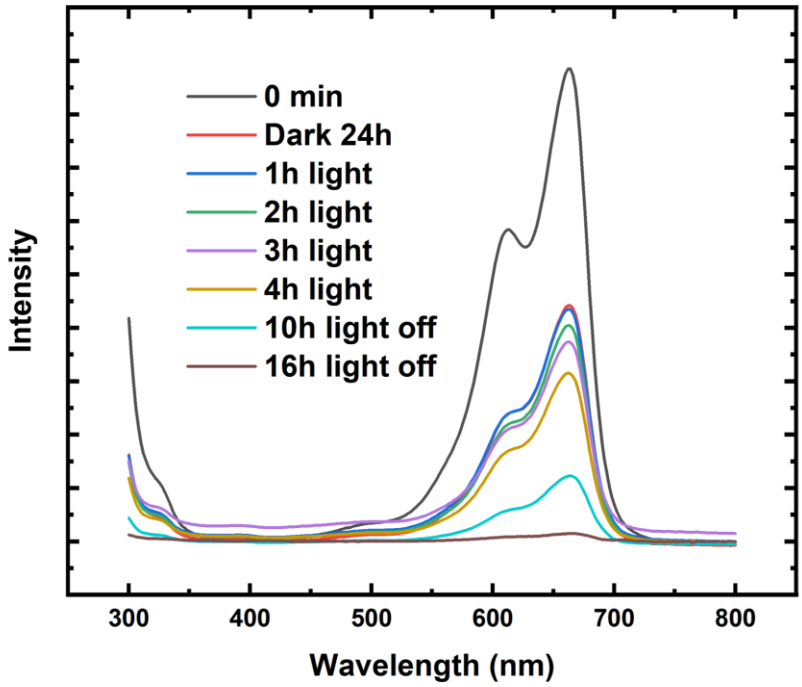
Supplementary Figure 12. Color change of MB solution during: adsorption, degradation and light off photodegradation using **P3**.



Supplementary Figure 13. Color change of MB solution during: adsorption, degradation and light off photodegradation using **P4**.



Supplementary Figure 14. Apparent quantum yield as a function of the incident light wavelength during MB degradation over **P1.** Error bar generated from three sets of experiments.



Supplementary Figure 15. UV spectra for the degradation of MB in the presence and absence of light.