

## SUPPLEMENTARY MATERIAL

### Hybrid Photoactive Materials from Municipal Sewage Sludge for the Photocatalytic Degradation of Methylene Blue

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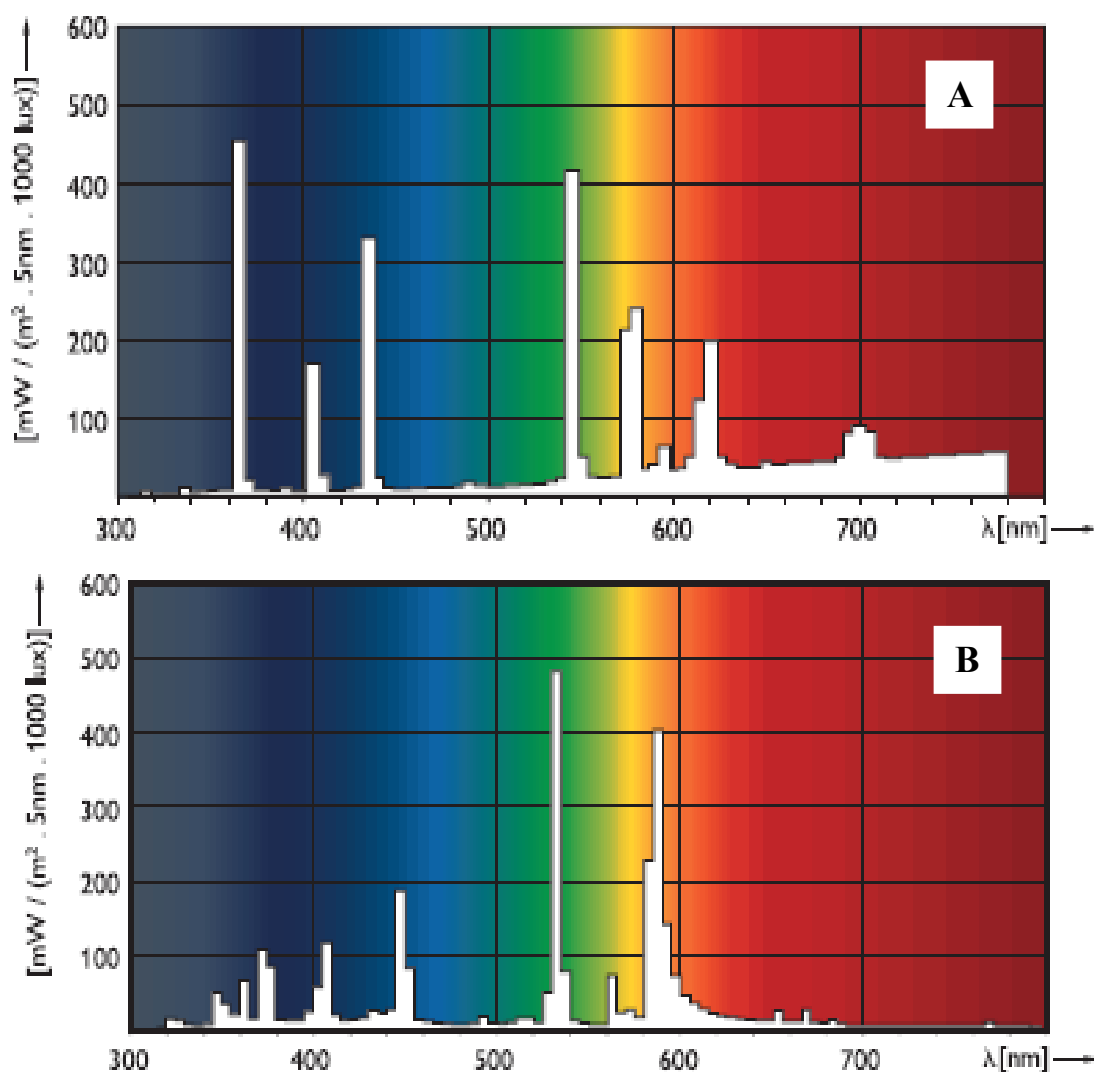


Fig. S1. Emission spectra of lamps. A) Mercury ( $L_{Hg}$ ). B) Metal halide ( $L_{MH}$ ).

Table S1. Properties of Hg lamp ( $L_{Hg}$ ) UV and metal halide lamp ( $L_{MH}$ )

Lamp	Total radiation ( $W.m^{-2}$ )	UV radiation ( $W.m^{-2}$ )	Visible radiation ( $W.m^{-2}$ )	Total flux ( $photons.cm^{-2}.s^{-1}$ )
$L_{Hg}$	445.5	82,9	362.6	$1.23 \times 10^{17}$
$L_{MH}$	522.7	70.2	452.5	$1.44 \times 10^{17}$

Table S2. Inorganic composition of carbon-based material from sewage sludge

Element	Wavelength (nm)	R <sup>2</sup>	Concentration (g/Kg of dry weight)	
			Sample <sup>a</sup>	Ashes <sup>b</sup>
Ag	328.068	0.999	0.013	0.072
Al	396.152	0.999	24.91	21.78
B	249.678	0.999	0.900	0.661
Ba	493.408	0.999	0.406	0.318
Ca	422.67	0.999	79.13	65.04
Cr	267.716	0.999	0.304	0.274
Cu	327.395	0.999	0.593	0.189
Fe	248.33	0.999	83.34	89.55
K	766.49	0.997	19.94	8.89
Ga	417.204	0.999	0.040	ND <sup>c</sup>
La	333.749	0.999	0.105	0.090
Li	610.365	0.999	0.205	0.027
Mg	280.270	0.999	5.37	4.95
Mn	259.372	0.999	0.469	0.386
Mo	202.032	0.999	0.072	0.060
Na	589.592	0.999	33.39	0.471
Ni	231.604	0.999	0.044	ND <sup>c</sup>
P	213.618	0.999	28.34	31.14
Pb	182.143	0.999	0.054	ND <sup>c</sup>
Sc	361.383	0.999	0.021	0.037
Si	288.158	0.998	45.86	ND <sup>c</sup>
Sr	421.552	0.999	0.189	ND <sup>c</sup>
Zn	213.857	0.999	0.538	1.18

<sup>a</sup>Concentration in dry sample. <sup>b</sup>Concentration in ashes. <sup>c</sup>ND: not detected

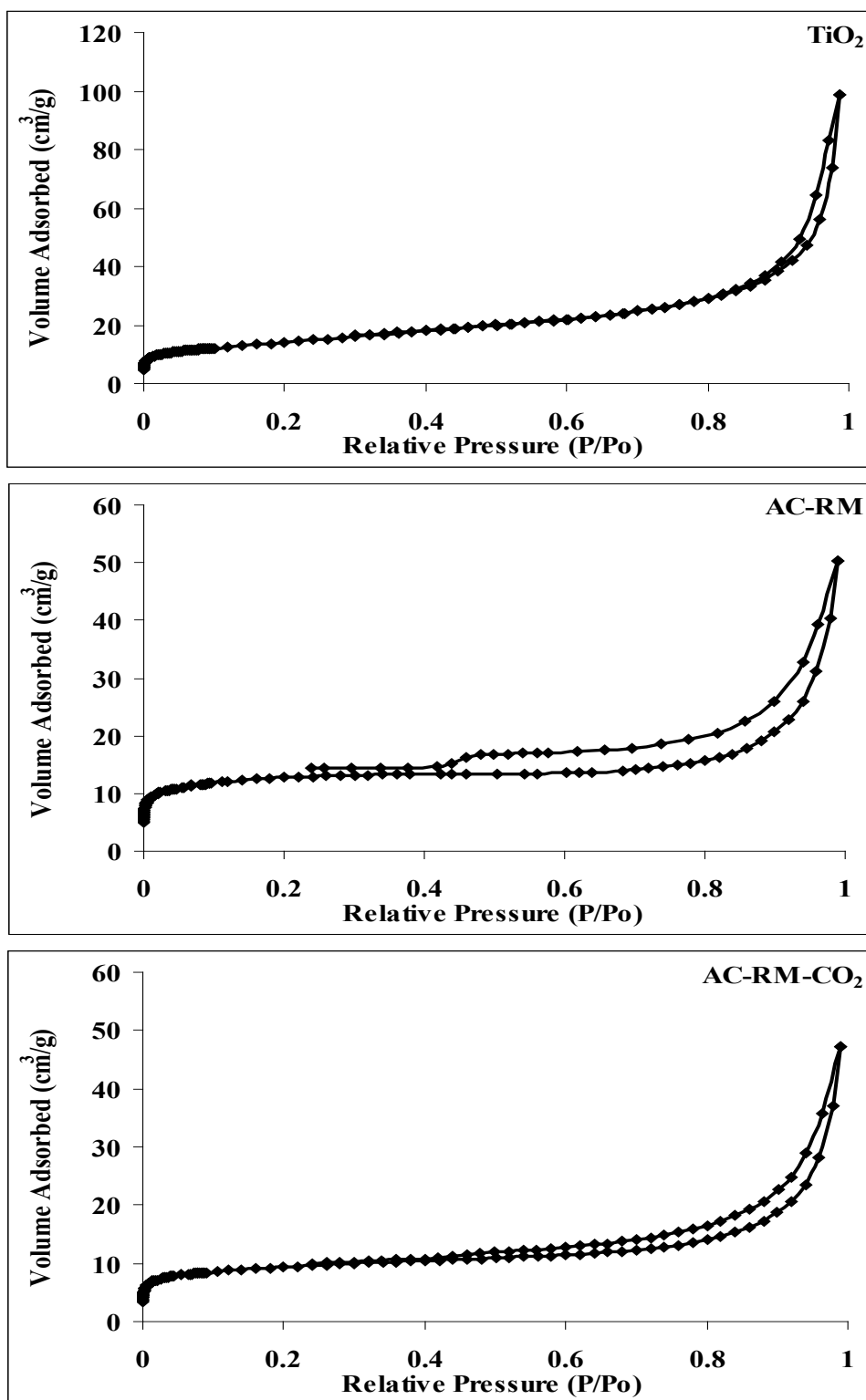


Fig. S2. Adsorption isotherm of TiO<sub>2</sub> P25, AC-RM and AC-RM-CO<sub>2</sub>

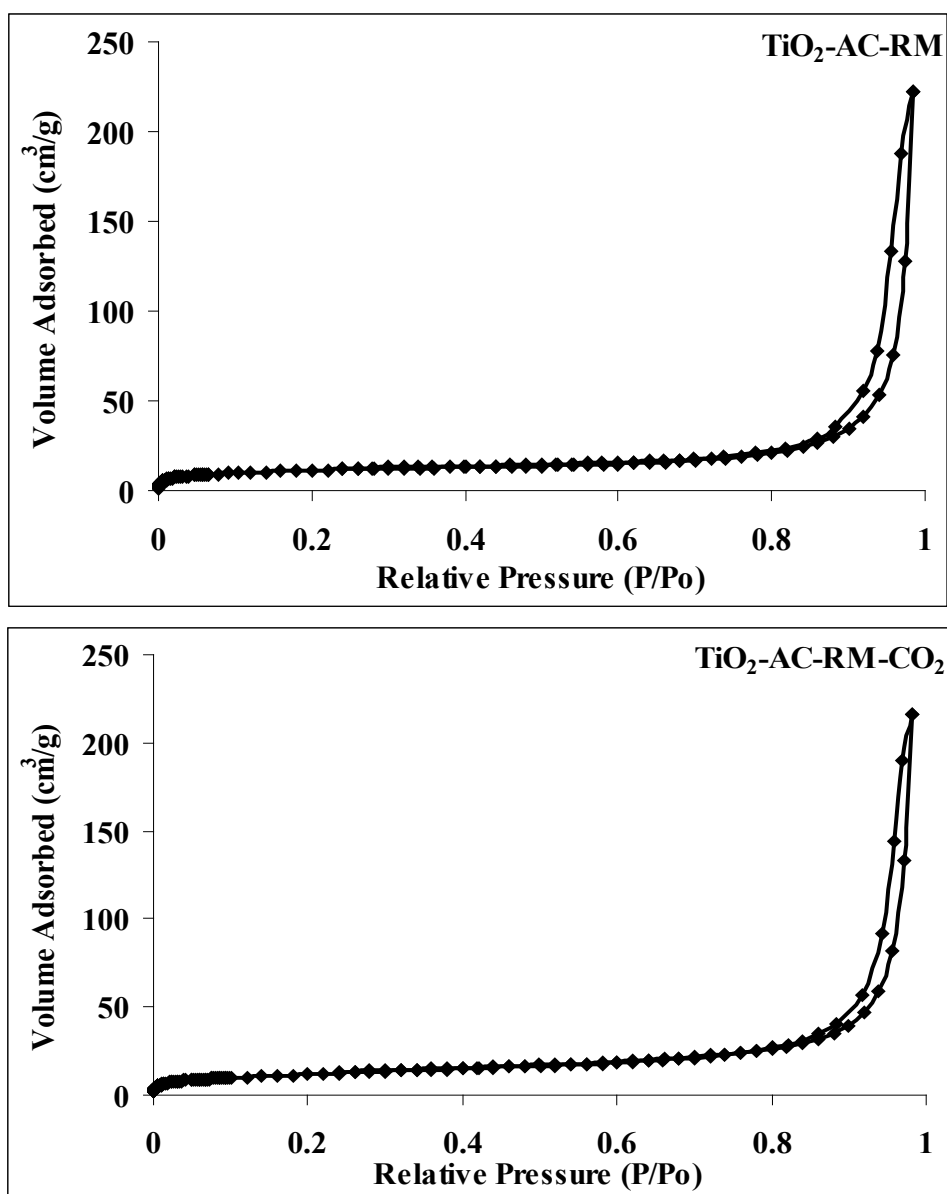


Fig. S3. Adsorption isotherm of TiO<sub>2</sub>-AC-RM and TiO<sub>2</sub>-AC-RM-CO<sub>2</sub>

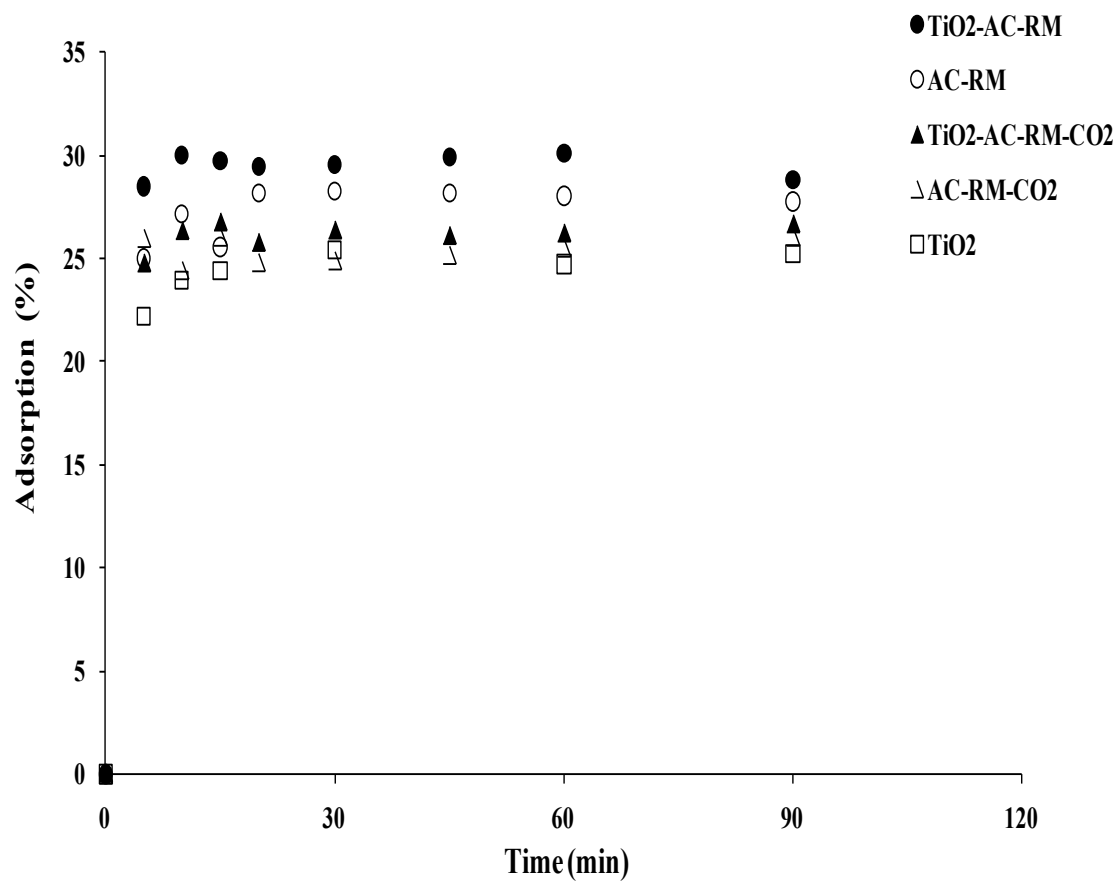


Fig. S4. Kinetics of MB adsorption in the dark.

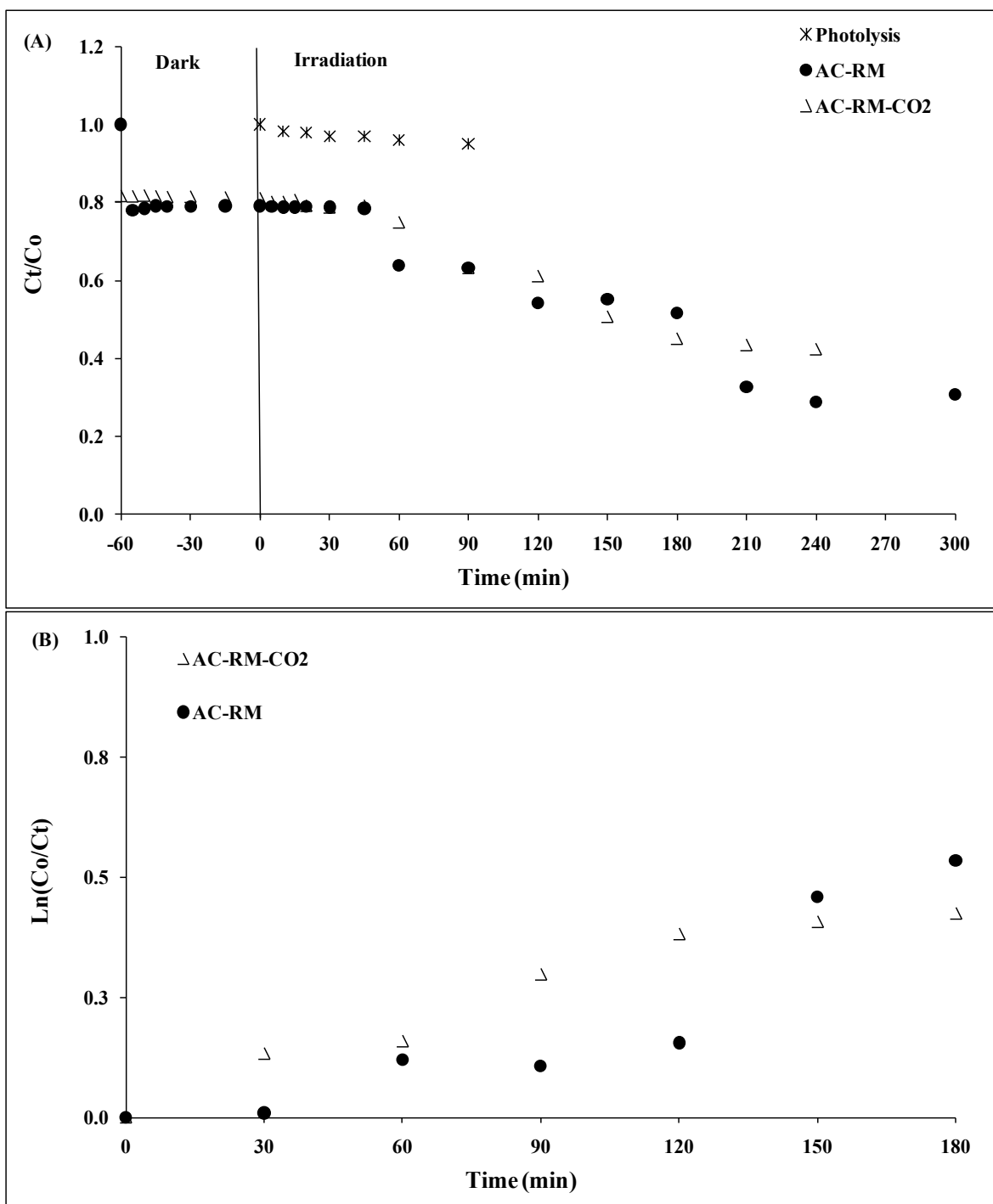


Fig. S5. Kinetic of disappearance of MB in absence of TiO<sub>2</sub> under Hg lamp (A). Linear regression estimated after 60min adsorption in the dark and 60min irradiation (B).

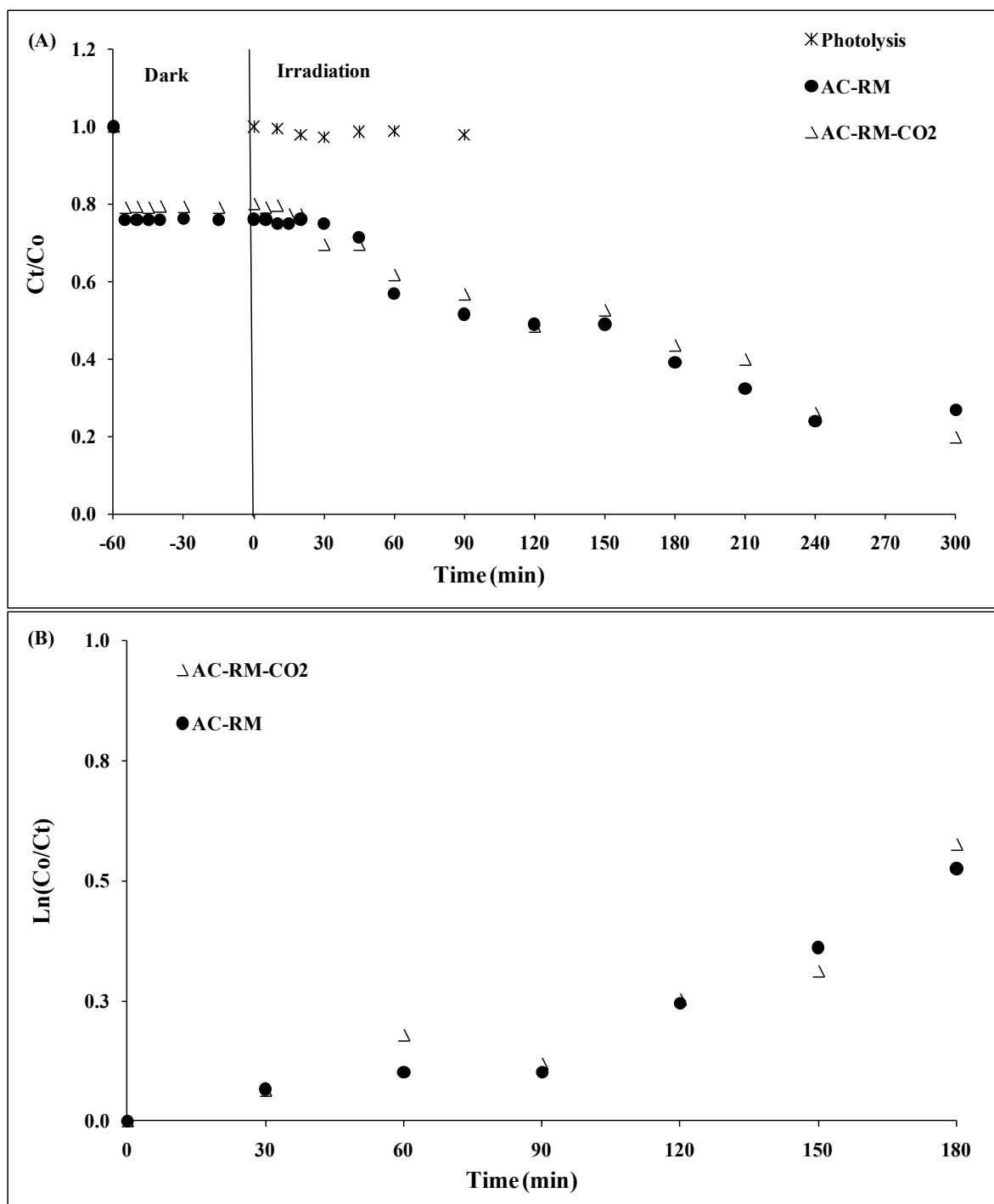


Fig. S6. Kinetic of disappearance of MB in absence of TiO<sub>2</sub> under MH lamp (A). Linear regression estimated after 60min adsorption in the dark and 60min irradiation (B).