Supporting Information

for

Intermixing of MoS$_2$ and WS$_2$ photocatalysts toward methylene blue photodegradation

Maryam Al Qaydi, Nitul S. Rajput, Michael Lejeune, Abdellatif Bouchalkha, Mimoun El Marssi, Steevy Cordette, Chaouki Kasmi and Mustapha Jouiad

Additional figures
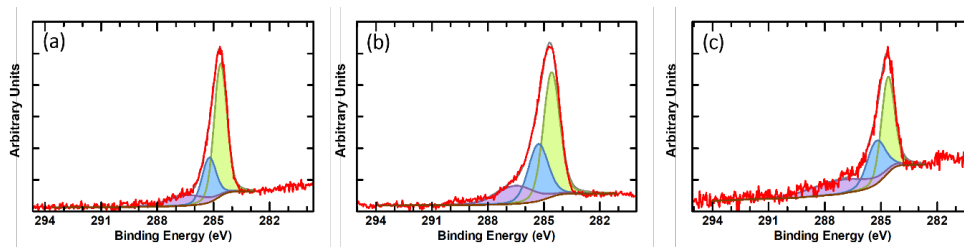
Figure S1: C 1s peaks for XPS calibration for a) MoS_2, b) WS_2, and c) $(MoS_2)_x(WS_2)_{1-x}$ ($0 \leq x \leq 1$) samples.
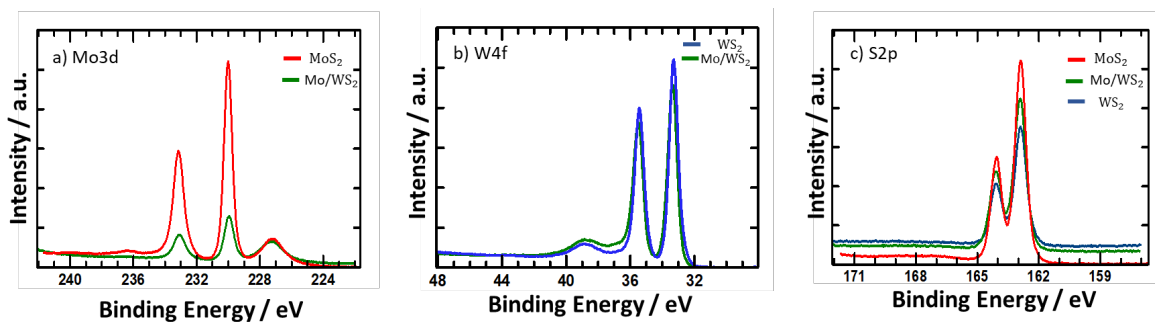
Figure S2: XPS analysis for a) $MoS_{2/Mo3d}$, b) $WS_{2/W4f}$, and c) S2P.
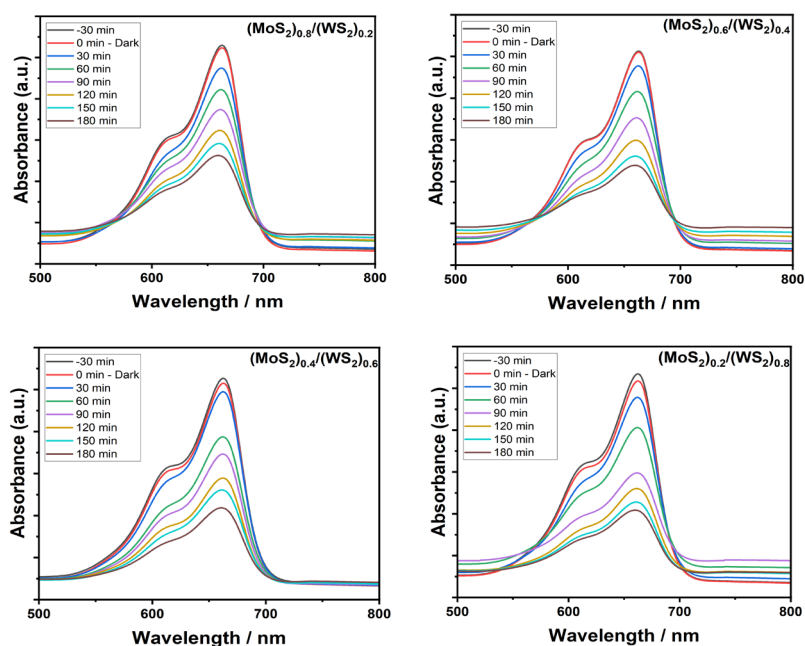

Figure S3: Photocatalysts $(MoS_2)_x/(WS_2)_{1-x}$ ($0 \leq x \leq 1$); MB absorbance variation as a function of time obtained after solar simulator excitation.
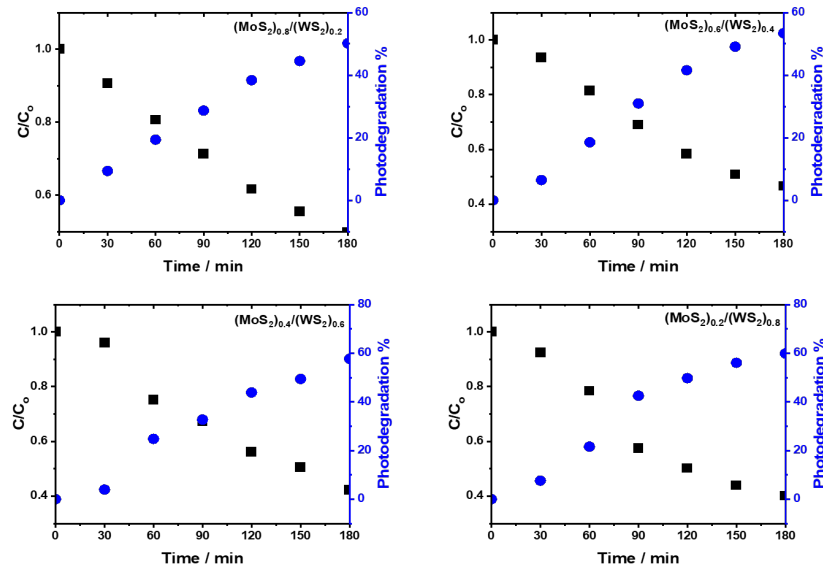
Figure S4: PD of MB by $(MoS_2)_x/(WS_2)_{1-x}$ under solar simulator excitation, relative MB concentration change (black) and corresponding PD efficiency (blue).
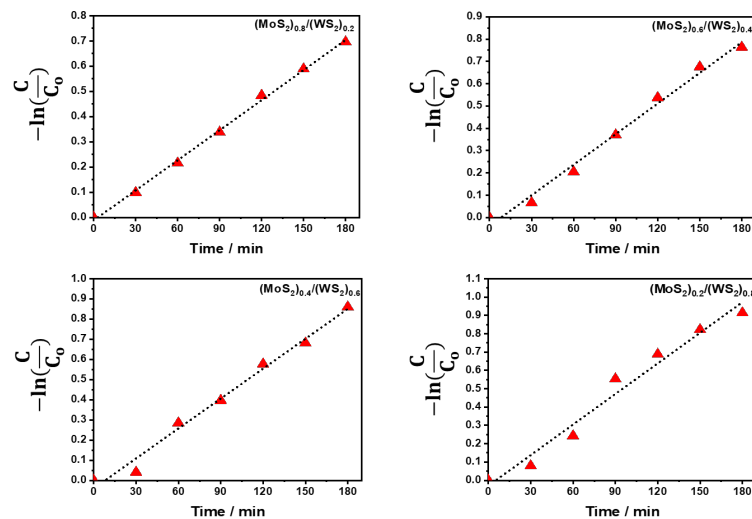

Figure S5: PD rate constant for $(MoS_2)_{0.2}/(WS_2)_{0.8}$. PD experiments carried out under direct sunlight excitation (sunny day in Amiens city, France, 25th of June 2023). Ambient temperature was about 27 °C.
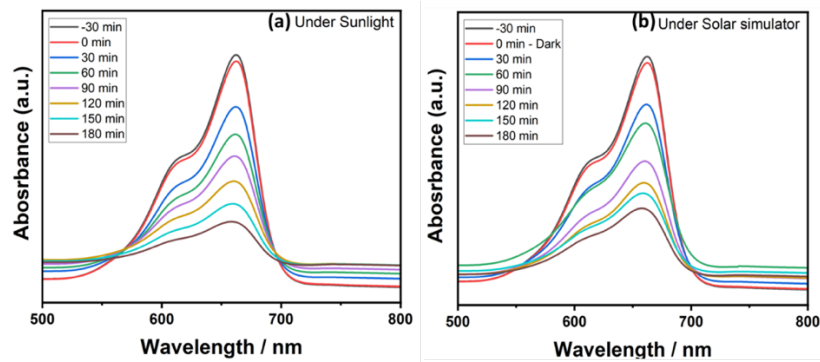

Figure S6: MB absorbance evolution as a function of time for photocatalysts $(MoS_2)_{0.2}/(WS_2)_{0.8}$ after a) sunlight and b) solar simulator excitation.

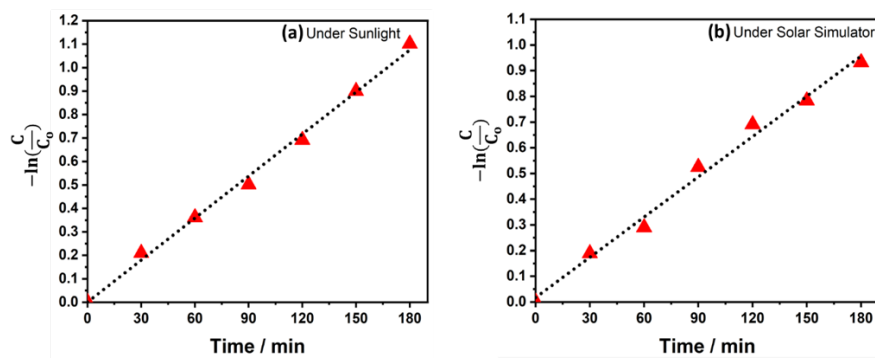**Figure S7:** PD rate constant for $(MoS_2)_{0.2}/(WS_2)_{0.8}$ obtained under a) sunlight and b) solar simulator.