

Supporting Information:

Hydrothermal in situ synthesis of Rb and S co-doped Ti- based TiO₂ sheet with thin film showing high photocatalytic activities

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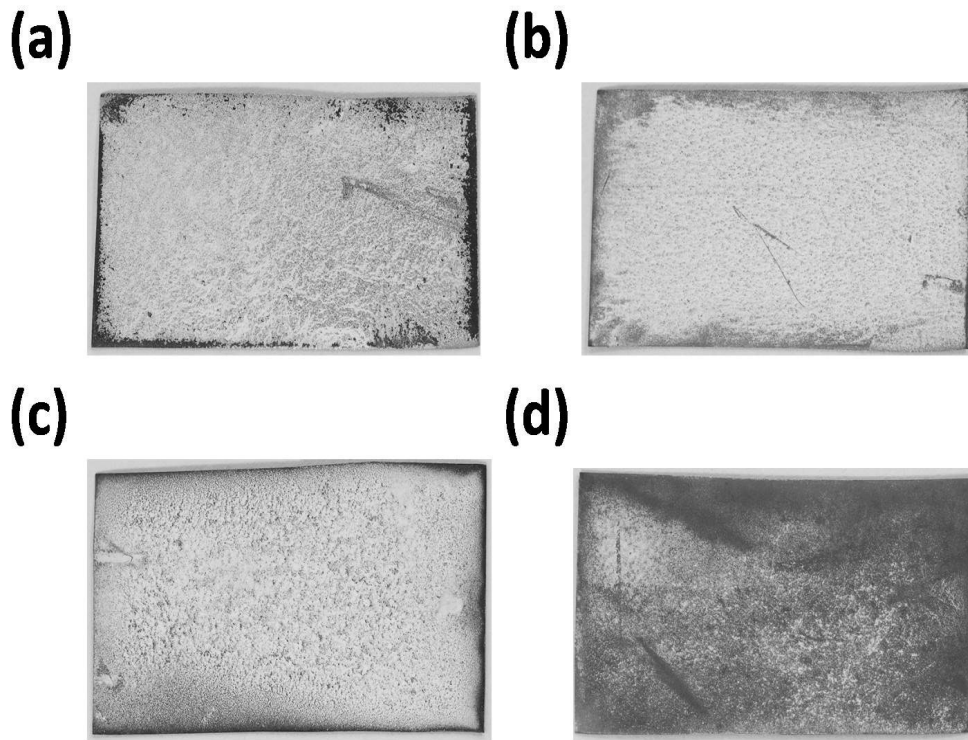


Fig. S1 Images of the Rb_2SO_4 modified film: (a) Rb/S/TiO_2 -24, (b) Rb/S/TiO_2 -30, (c) Rb/S/TiO_2 -48, (d) Rb/S/TiO_2 -72

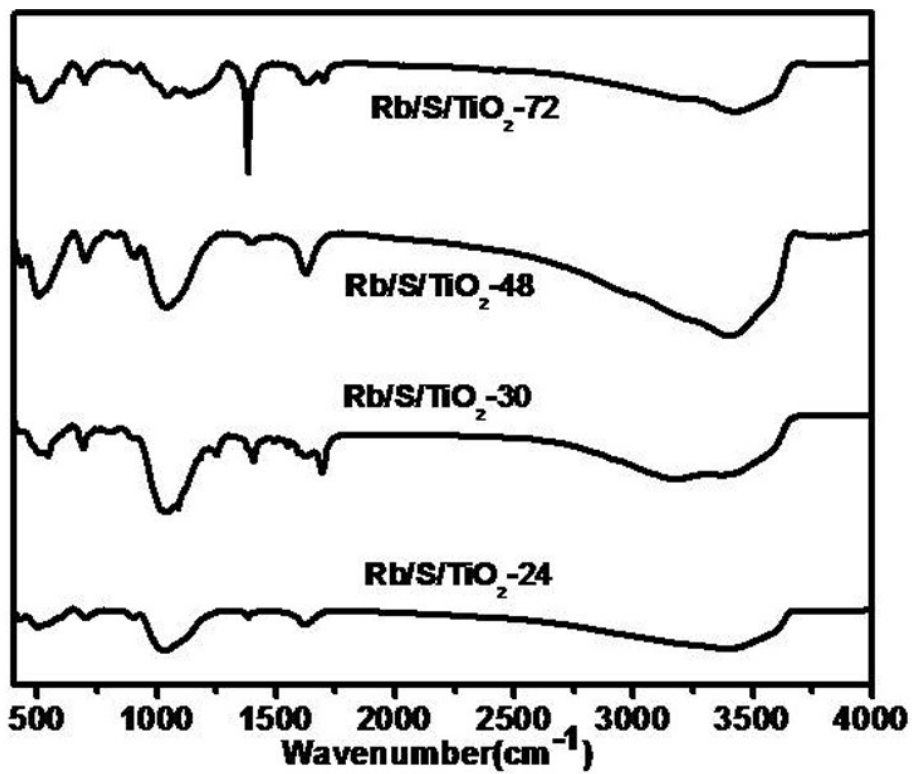


Fig. S2 FT-IR spectra of Rb_2SO_4 modified film.

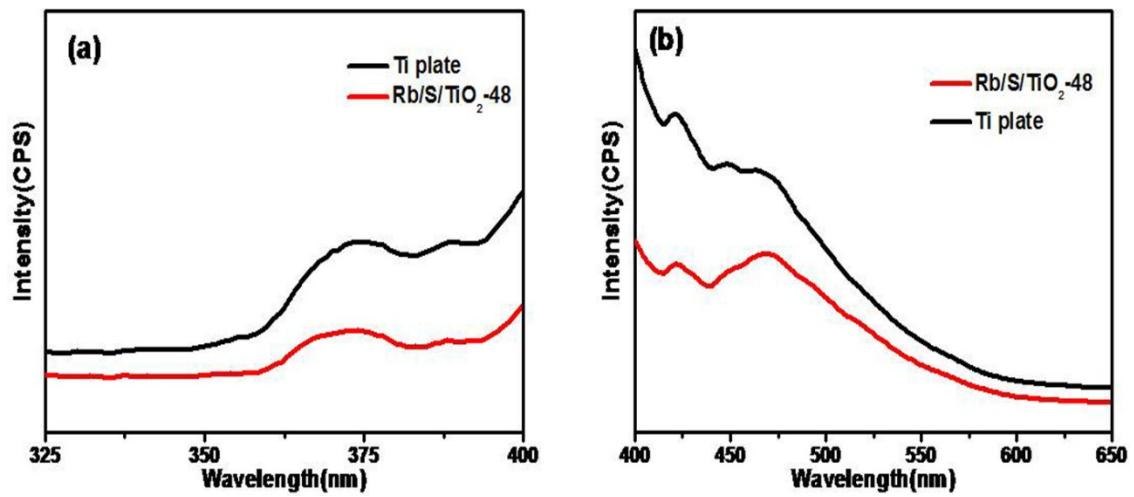


Fig. S3 PL spectra of the samples: (a) Excitation Spectra and (b) Emission Spectra.

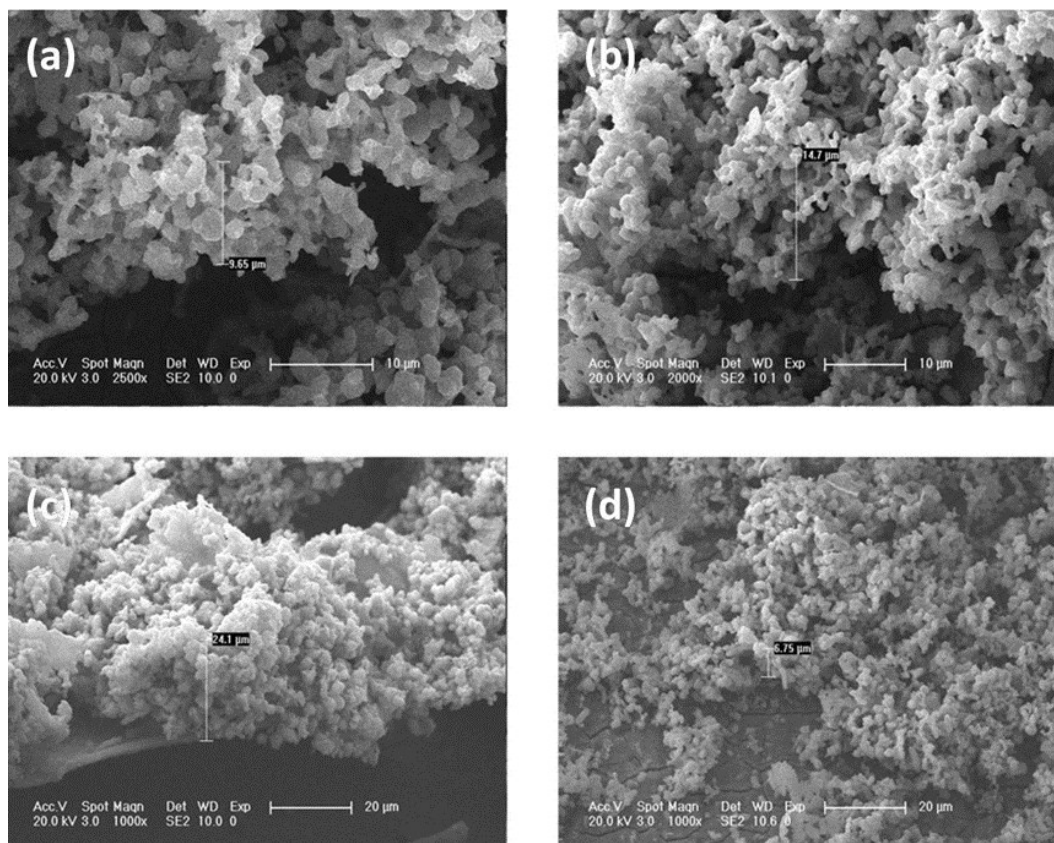


Fig. S4 SEM images of cross section of the film: (a) Rb/S/TiO₂-24, (b) Rb/S/TiO₂-30, (c) Rb/S/TiO₂-48, (d) Rb/S/TiO₂-72.

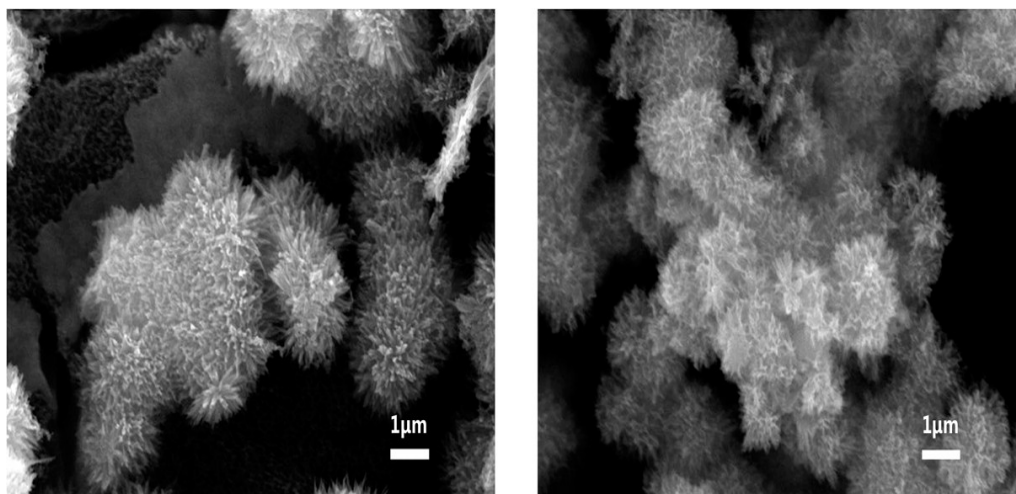


Fig. S5 SEM images of (a) Rb/S/TiO₂-24, (b) Rb/S/TiO₂-30

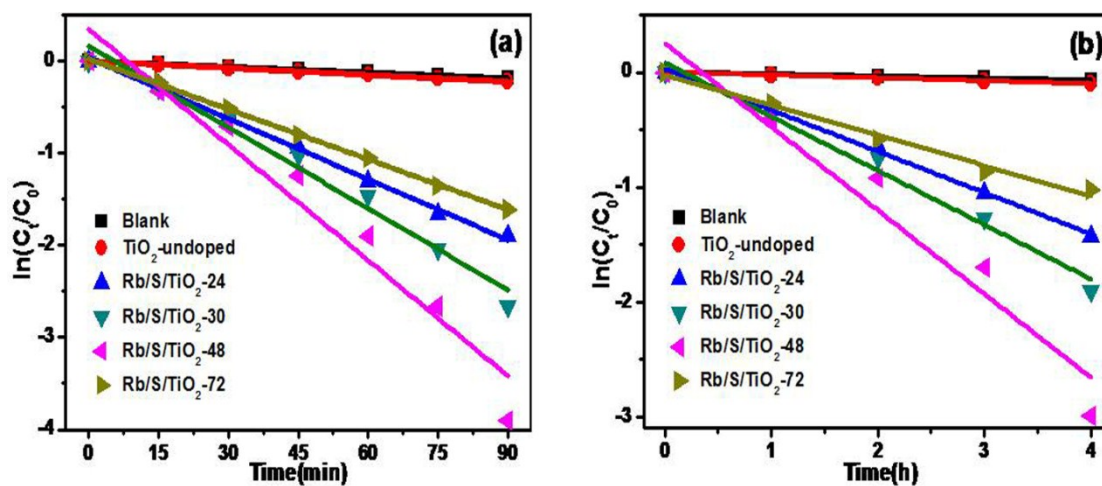


Fig. S6 Kinetic linear simulation curves of samples for the removal of MO: (a) under UV light, (b) under simulated sunlight.

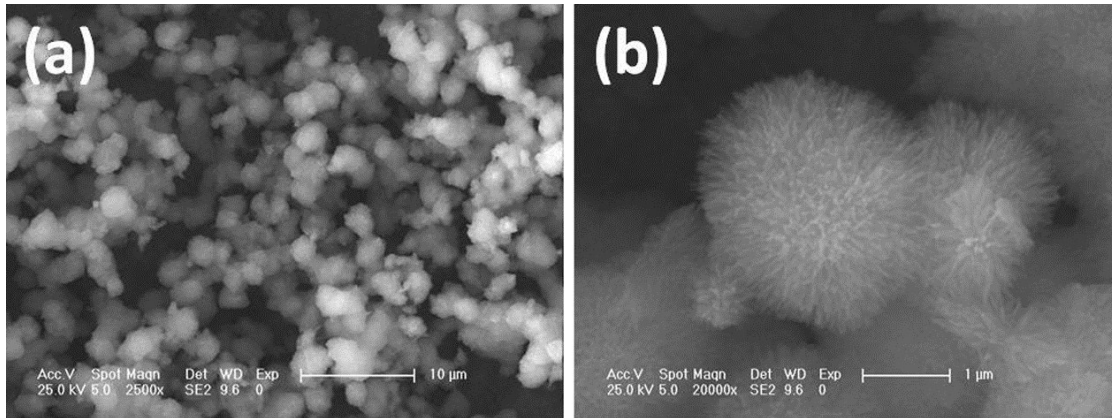


Fig. S7 SEM images of Rb/S/TiO₂-48 after being used for 3 times.

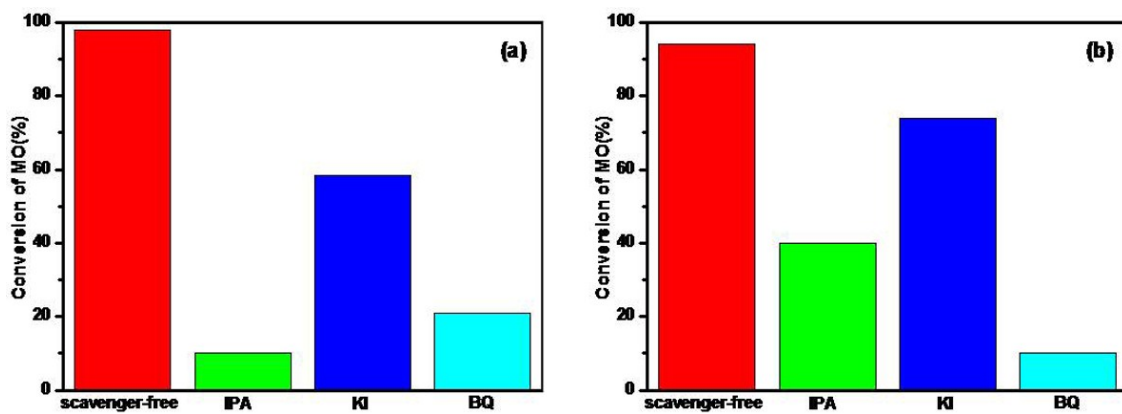


Fig. S8 Photocatalytic degradation by Rb/S/TiO₂-48 in the presence of IPA, KI and BQ under UV light: (a) MO for 90min, (b) MO with the presence of H₂O₂ for 30min.

Table S1 Detailed surface elemental composition of Rb/S/TiO₂-24.

Element	State	Relative Content (%)
Ti	Ti 2p	16.7
S	S 2p	3.25
Rb	Rb 3d	3.78
O	O 1s	75.72
N	N 1s	0.15
C	C 1s	0.4

Table S2 Detailed surface elemental composition of Rb/S/TiO₂-30.

Element	State	Relative Content (%)
Ti	Ti 2p	16.46
S	S 2p	3.26
Rb	Rb 3d	3.76
O	O 1s	75.92
N	N 1s	0.2
C	C 1s	0.4

Table S3 Detailed surface elemental composition of Rb/S/TiO₂-48.

Element	State	Relative Content (%)
Ti	Ti 2p	16.63
S	S 2p	3.2
Rb	Rb 3d	3.78
O	O 1s	75.8
N	N 1s	0.2
C	C 1s	0.39

Table S4 Detailed surface elemental composition of Rb/S/TiO₂-72.

Element	State	Relative Content (%)
Ti	Ti 2p	16.65
S	S 2p	3.3
Rb	Rb 3d	3.72
O	O 1s	75.72
N	N 1s	0.2
C	C 1s	0.41

Table S5 Scavengers studies for different reactive species in MO and 4-CP photodegradation.

Target species	Scavenger	Scavenger concentration (mM)
$\bullet\text{OH}$	IPA	1
h^+	KI	1
$\bullet\text{O}_2^-$	BQ	1