

Supporting Information

Layered Ti₃C₂ MXene modified two-dimensional Bi₂WO₆
composite with enhanced visible light photocatalytic
performance

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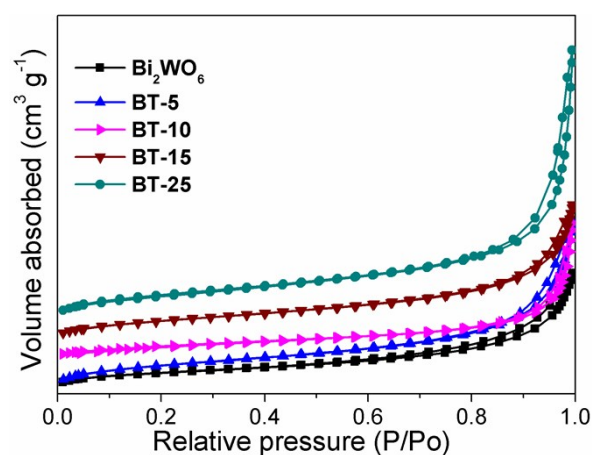


Fig. S1. N₂ adsorption–desorption isotherms of as-prepared samples.

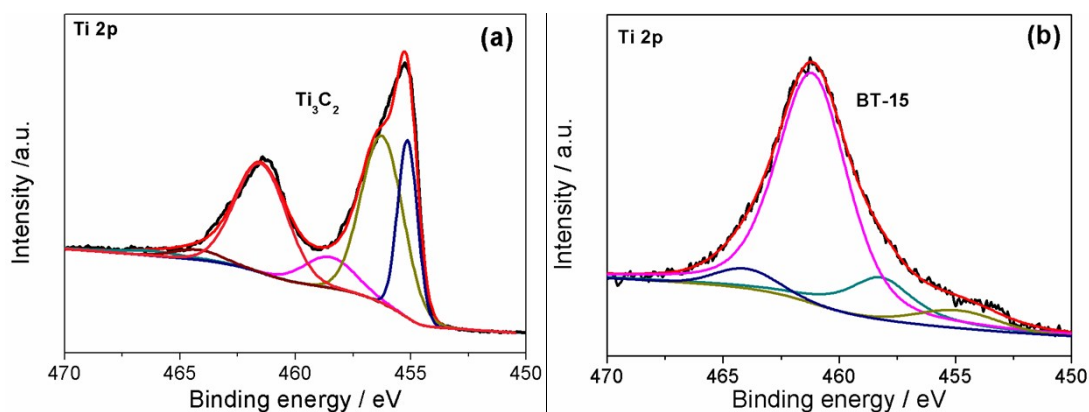


Fig. S2. High-resolution XPS spectra of Ti 2p for (a) Ti₃C₂ and (b) BT-15.

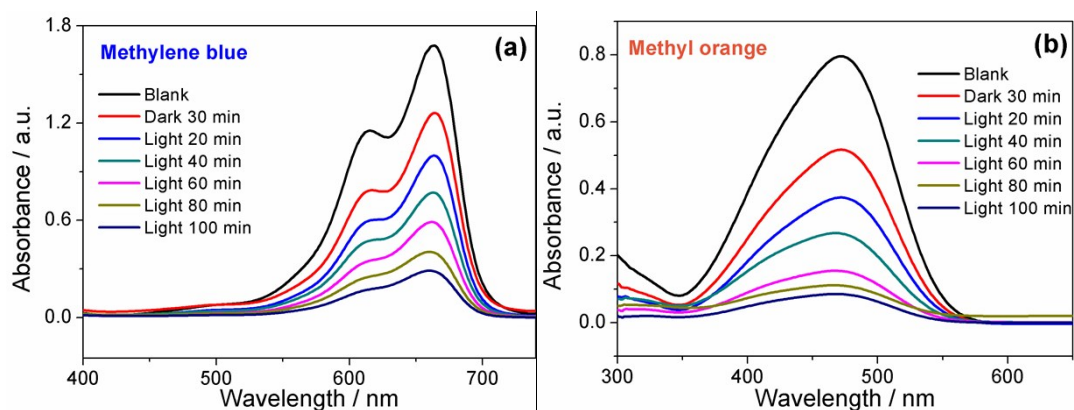


Fig. S3. The changes in absorption spectra of (a) MB, (b) MO over BT-15.

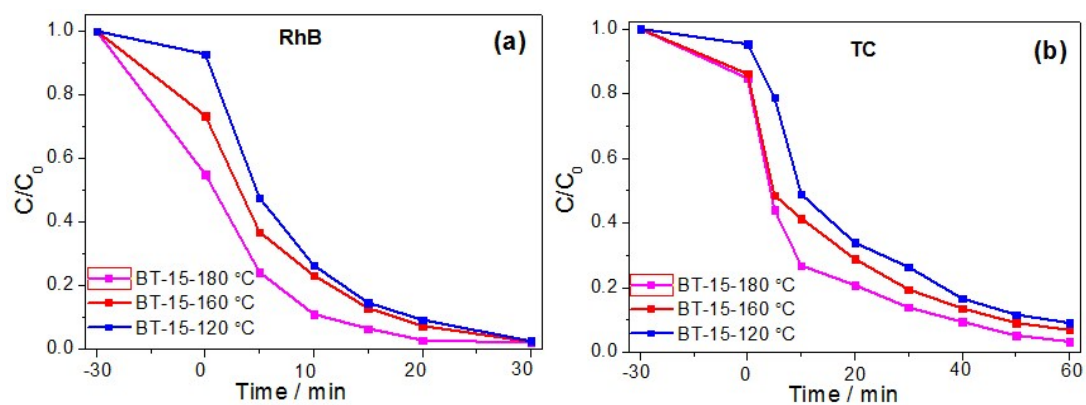


Fig. S4. Photocatalytic degradation and concentration changes of (a) RhB, (b) TC over BT-15 synthesized at different temperature.

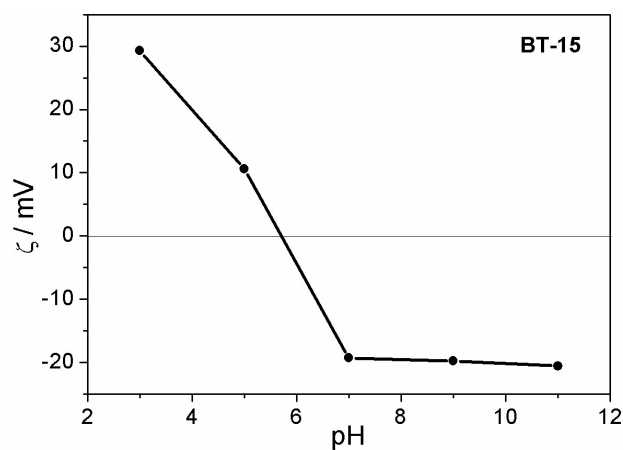


Fig. S5. Zeta potential of BT-15 at different pH.

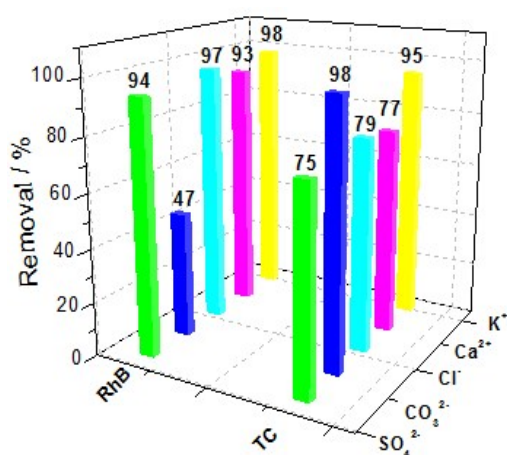


Fig. S6. Effect of inorganic salts for RhB (c) and TC (d) degradation by BT-15 composite under LED illumination.

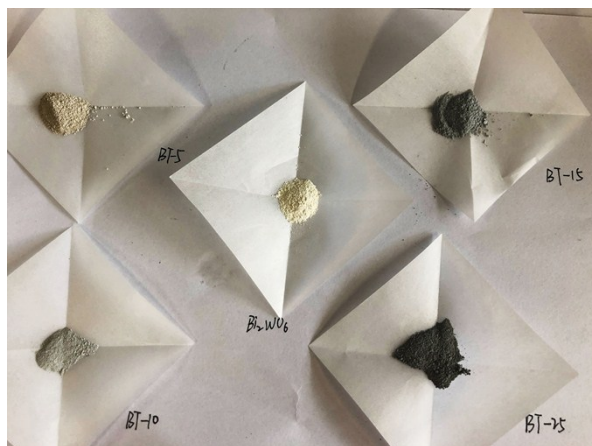


Fig. S7. The as-prepared samples.

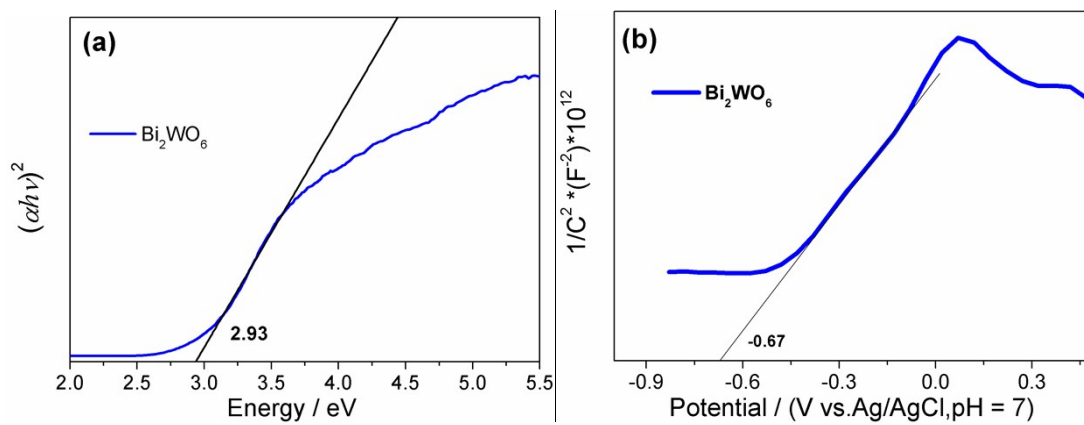


Fig. S8. (a) The band gap energies of Bi_2WO_6 ; (b) The Mott-Schottky plot of Bi_2WO_6 .

Table S1. Binding energies of Ti 2p in Ti_3C_2 and BT-15.

BE (eV) of Ti ₃ C ₂	BE (eV) of TB-15	Assigned to	Reference
455.1	454.9	Ti-C	[1, 2]
455.8 (461.3)	461.17	Ti-C	[1]
458.5 (464.2)	464.0 (458.2)	Ti-O	[2]
466.2	-	Ti-F	[3]

Table S2. Adsorption rate of as-prepared samples in the dark.

Samples	Adsorption rate (%)	
	RhB	TC
Bi ₂ WO ₆	29	5
BT-5	40	10
BT-10	43	12
BT-15	45	15
BT-25	48	18

Table S3.

Photocatalytic activity of BT-15 composite as photocatalyst for degrading four organic pollutants under LED irradiation

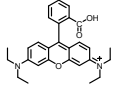
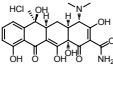
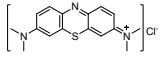
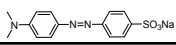
Model pollutant	Structure formula	Concentration (mg/L)	Irradiation time (min)	Degradation efficiency (%)	K ₁ (min ⁻¹)
RhB		10	20	99.9	0.12
TC		10	60	97	0.05
MB		10	100	80	0.016
MO		10	100	86	0.020

Table S4. Degradation of RhB and TC at different pH over BT-15.

pH	RhB removal (%)	TC removal (%)
1	48	23
3	64	44
5	95	84
6	98	95
7	100	97
8	96	98
9	45	95
11	16	80

References

- [1] V. Schier, H.J. Michel, J. Halbritter, *Fresenius' J. Anal. Chem.* 346 (1993) 227-232.
- [2] F. Santerre, M.A. El Khakani, M. Chaker, J.P. Dodelet, *Appl. Surf. Sci.* 148 (1999) 24-33.
- [3] T. Sultana, G.L. Georgiev, G. Auner, G. Newaz, H.J. Herfurth, R. Patwa, *Appl. Surf. Sci.* 255 (2008) 2569-2573.