

## Supplementary Information

### Fabrication of high-efficiency CdS@TiO<sub>2</sub>@C/Ti<sub>3</sub>C<sub>2</sub> composites photocatalyst for the degradation of TC-HCl under visible light

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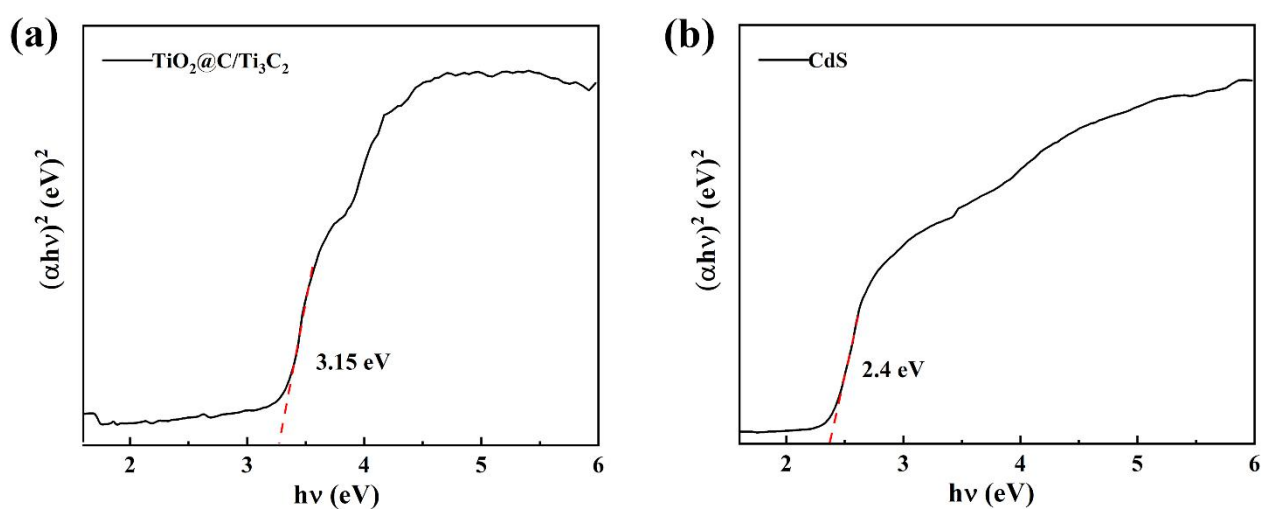


Fig. S1 Band gaps of C@T@CT-2 and CdS samples.

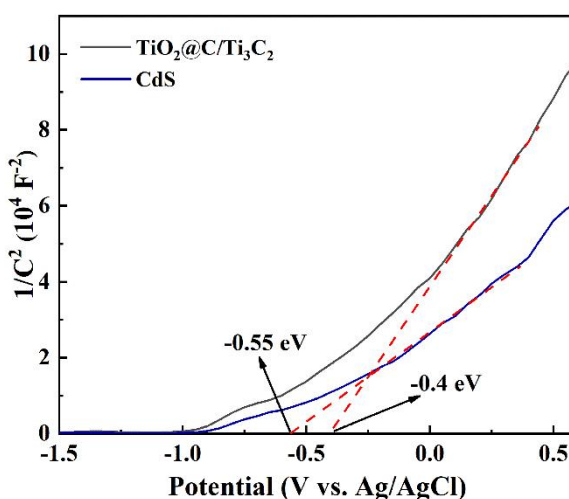


Fig. S2 Mott-Schottky curves of  $\text{TiO}_2@\text{C}/\text{Ti}_3\text{C}_2$  and CdS samples.

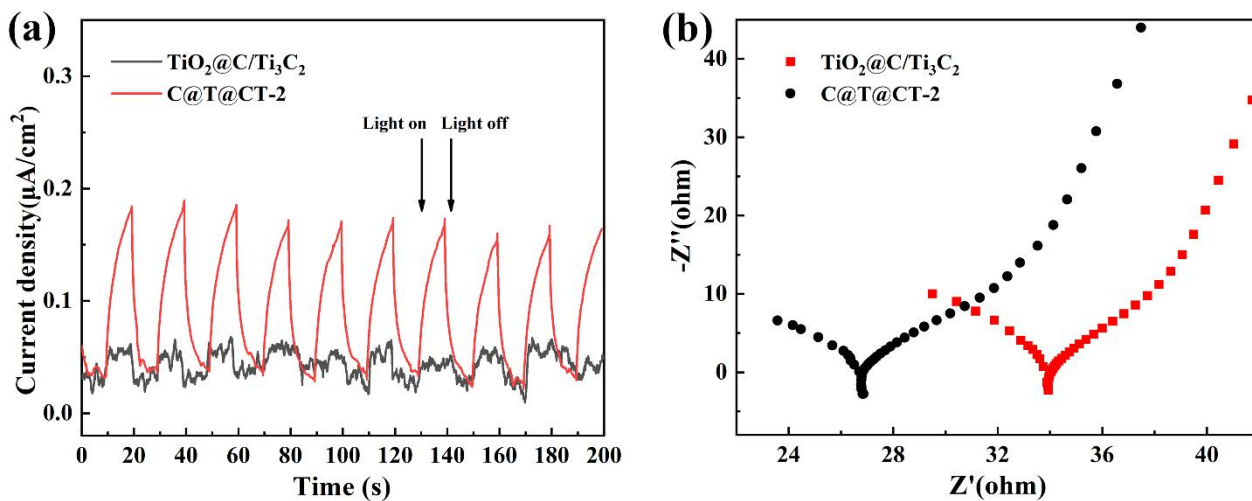


Fig. S3 Transient photocurrent responses (a) and EIS curves (b) of  $\text{TiO}_2@\text{C}/\text{Ti}_3\text{C}_2$  and  $\text{C}@\text{T}@\text{CT}-2$  samples.

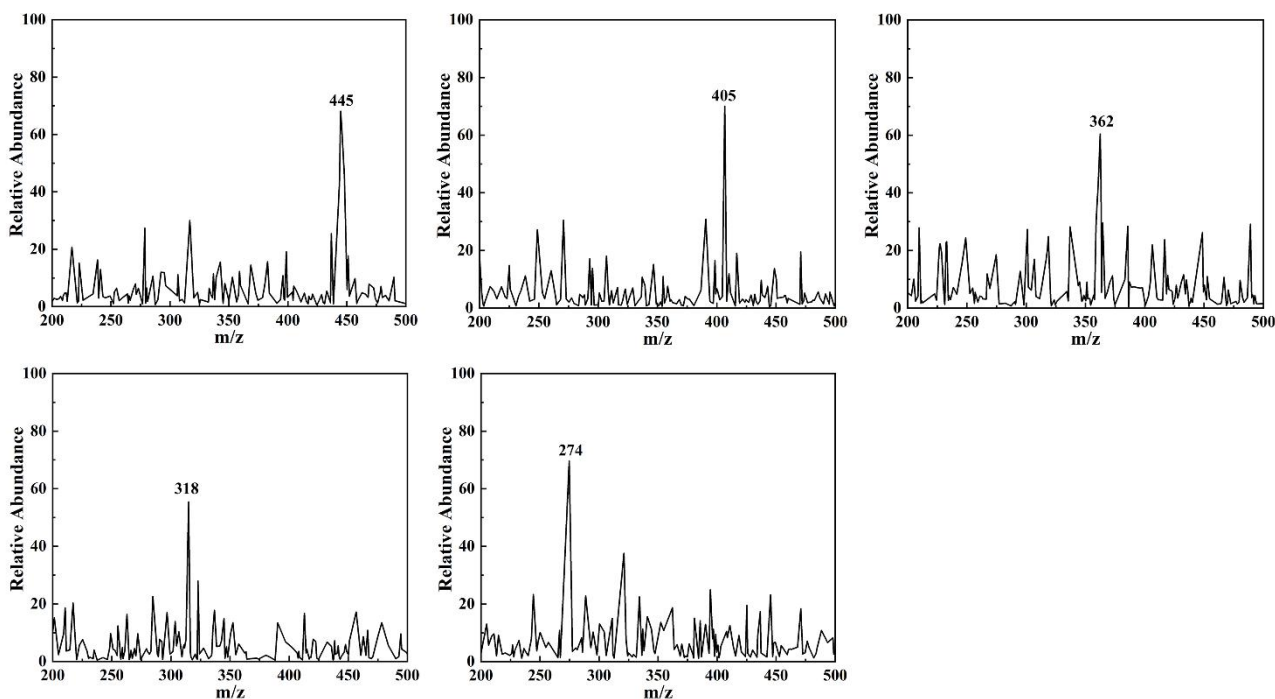
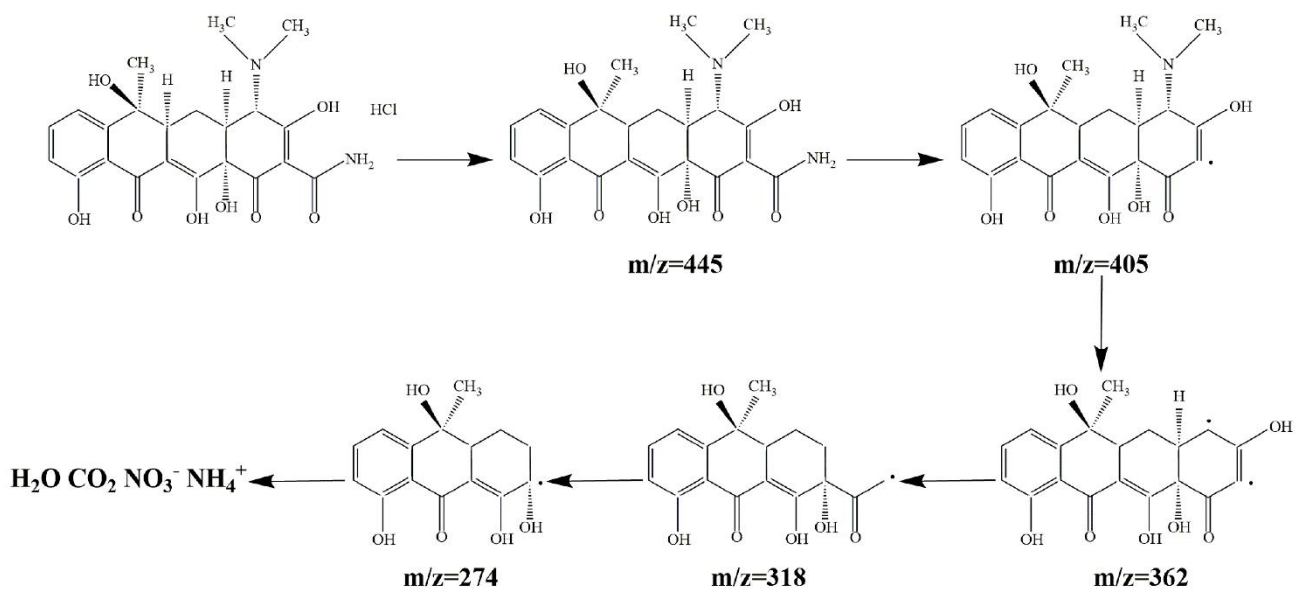


Fig. S4 Principal by-products of TC-HCl degradation detected by LC-MS.



**Fig. S5** The proposed photodegradation pathways of TC-HCl by CdS@TiO<sub>2</sub>@C/Ti<sub>3</sub>C<sub>2</sub>.

The possible degradation pathway of TC-HCl was as follows:  $m/z = 445 \rightarrow m/z=405$  (by loss of  $-\text{CONH}_2$ )  $\rightarrow m/z=362$  (by loss of  $-\text{N}(\text{CH}_3)_2$ )  $\rightarrow m/z=318$  (by loss of  $-\text{CH}_2\text{C}(\text{OH})$ )  $\rightarrow m/z=274$  (then by loss of  $-\text{COCH}_2$ ).