Facet-dependent CdS/Bi_4TaO_8Cl Z-scheme heterojunction for enhanced photocatalytic tetracycline hydrochloride degradation and the carrier separation mechanism study via Single-Particle Spectroscopy

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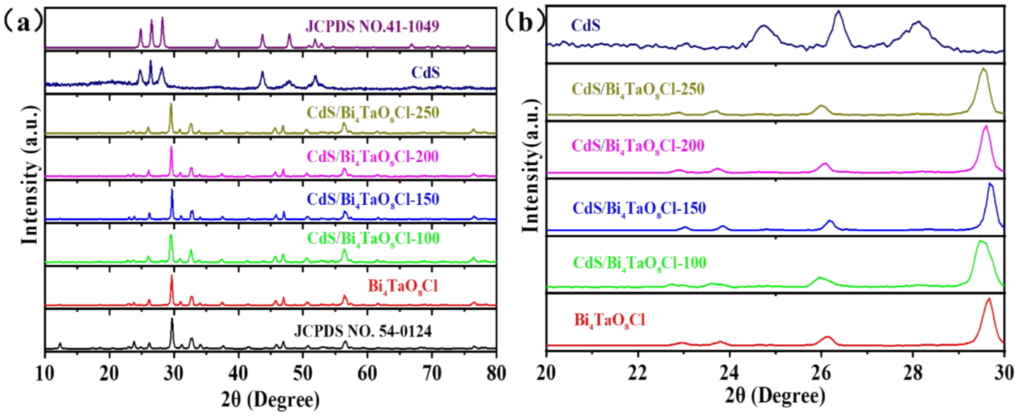

Figure S1. (a) XRD patterns of prepared catalysts, and (b) Magnification XRD patterns in the range of 20°–30°.

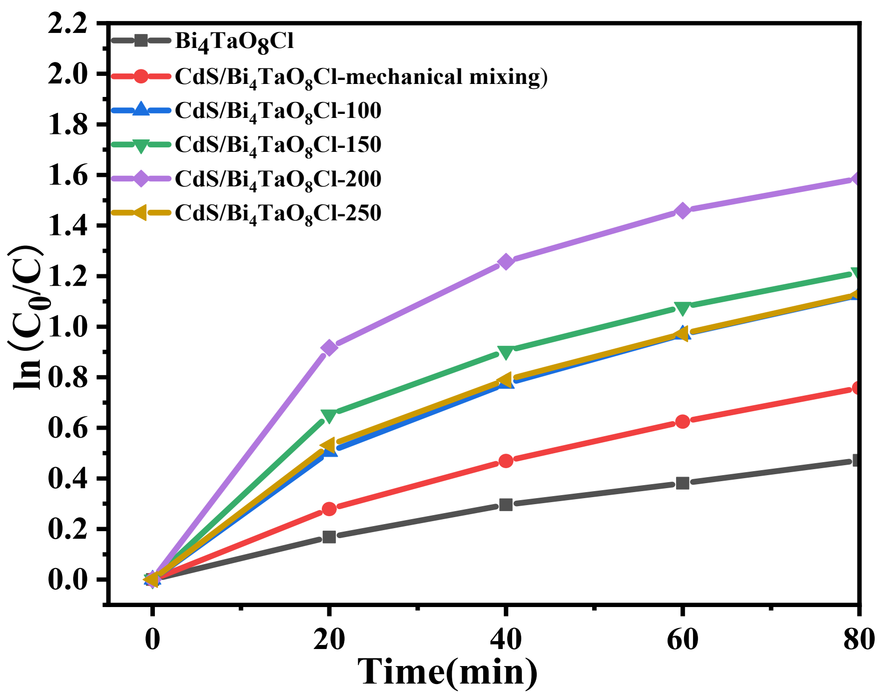

Figure S2. The Pseudo-first -order kinetics fitting curves.

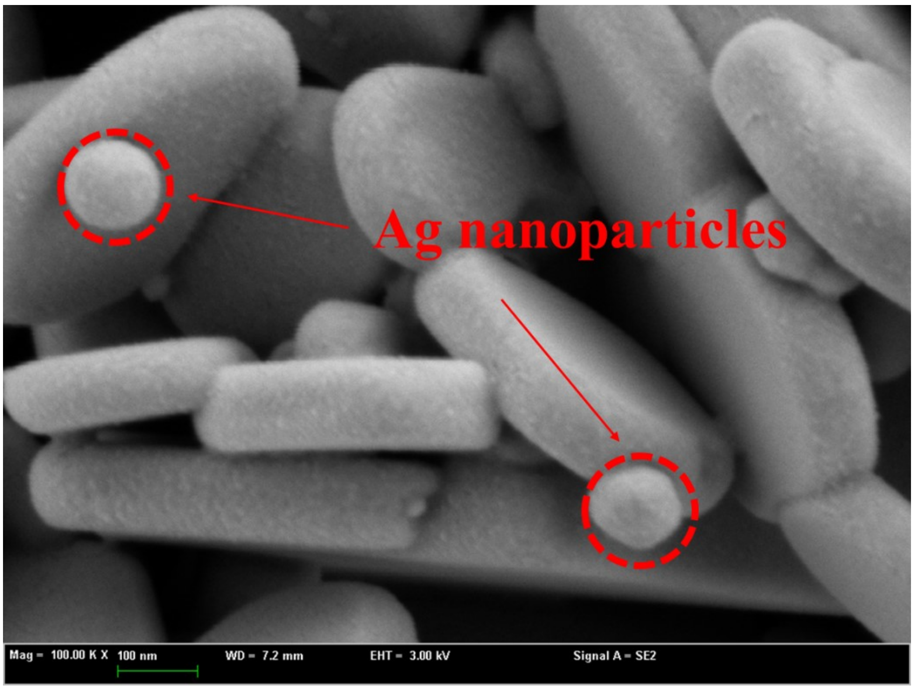

Figure S3. The SEM images of 1% Ag/Bi_4TaO_8Cl prepared with photo-deposition in the 10% methanol solution.

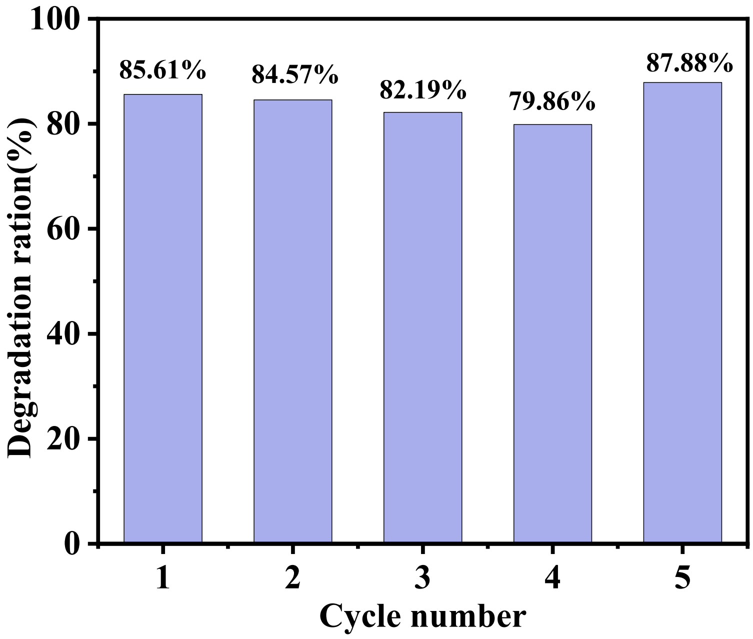

Figure S4. Cycle stability tests of CdS/Bi_4TaO_8Cl-200.

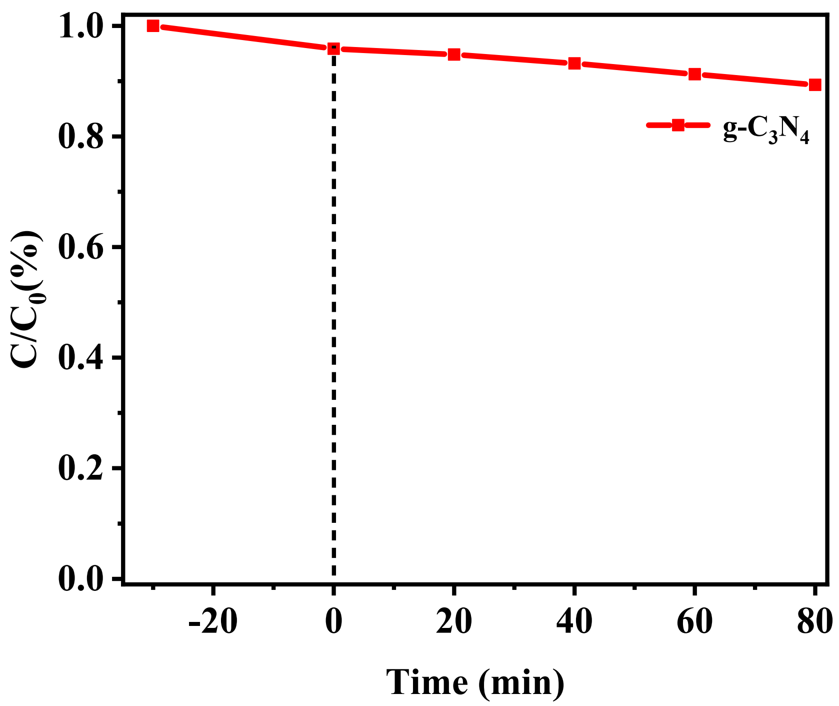

Figure S5. Photocatalytic tetracycline hydrochloride degradation with bulk g-C_3N_4 prepared by a common method as a reference catalyst, and the degradation ration is only 10.8% in 80 mins. This result can eliminate factors caused by the experimental conditions combined with the efficient degradation of CdS, Bi_4TaO_8Cl, and CdS/Bi_4TaO_8Cl-200.

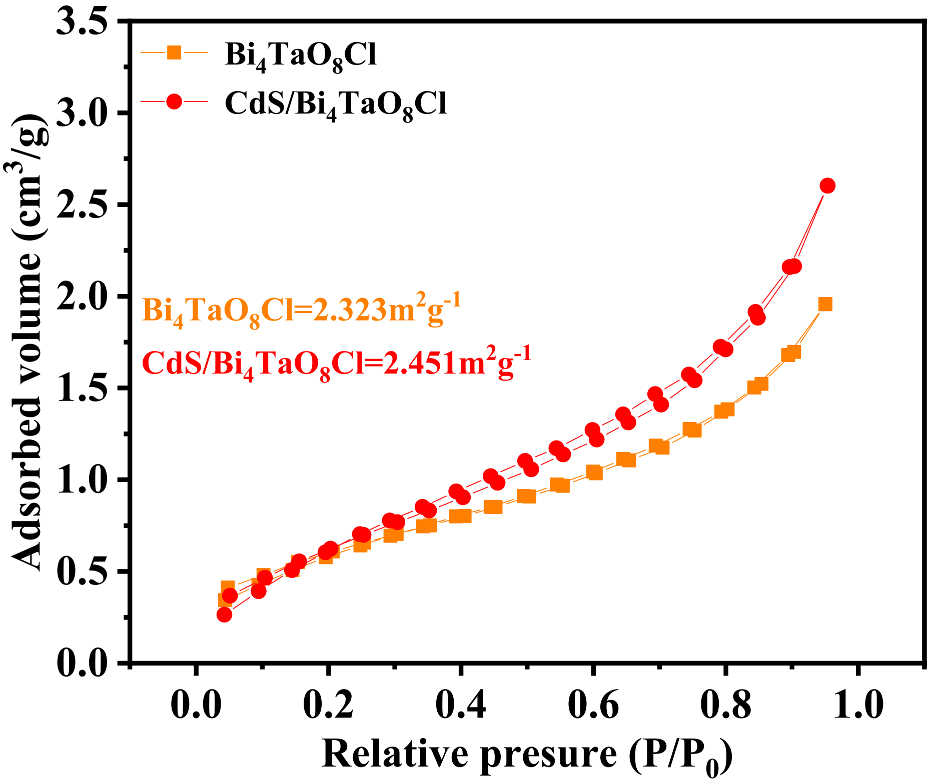

Figure S6. BET surface area results of Bi_4TaO_8Cl and Bi_4TaO_8Cl-200. Both Bi_4TaO_8Cl and CdS/Bi_4TaO_8Cl-200 have the small BET surface area. After the modification of CdS, the BET surface area of CdS/Bi_4TaO_8Cl-200 changes very little and this eliminate factors caused by BET surface area difference.

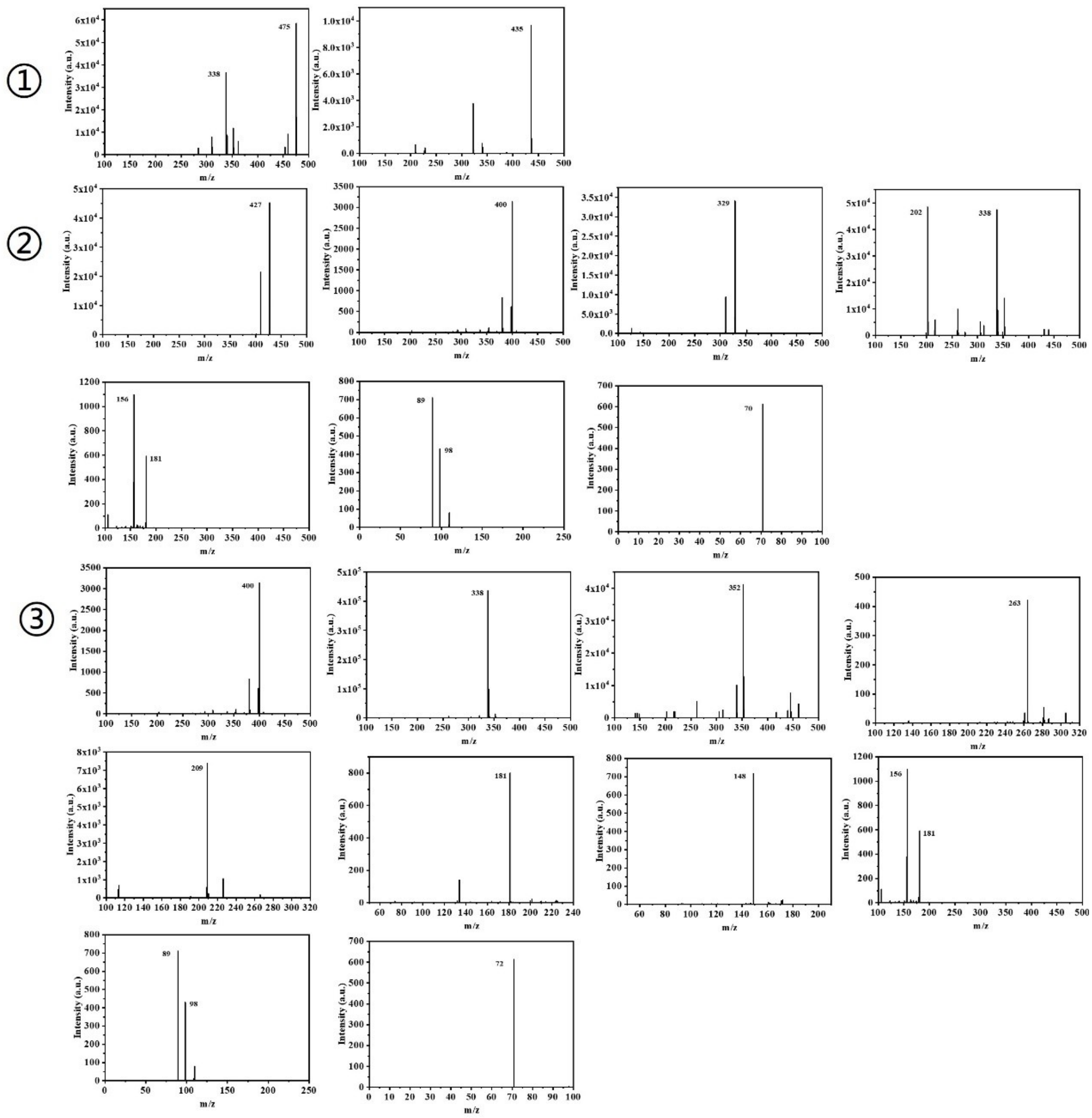

Figure S7. The observed m/z values of the generated intermediate products.

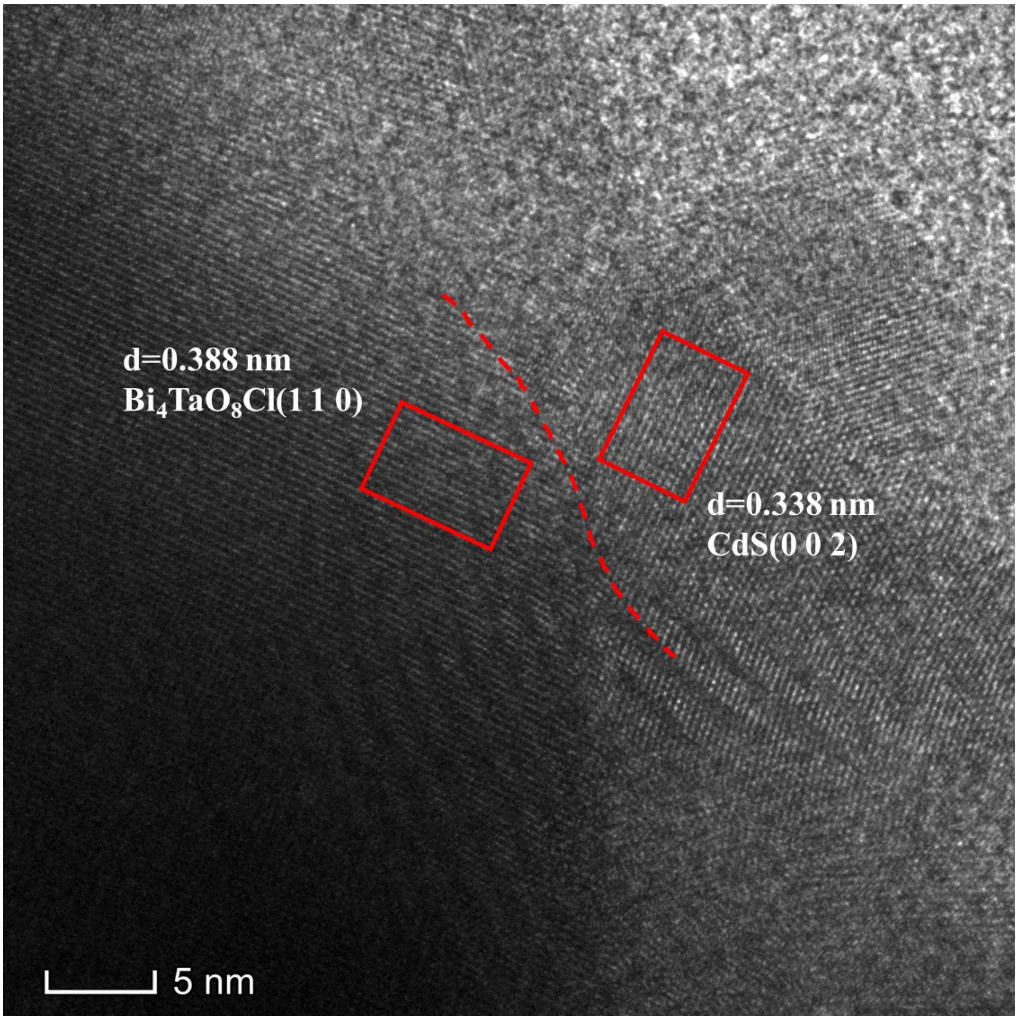

Figure S8. HRTEM image of CdS/Bi_4TaO_8Cl-200

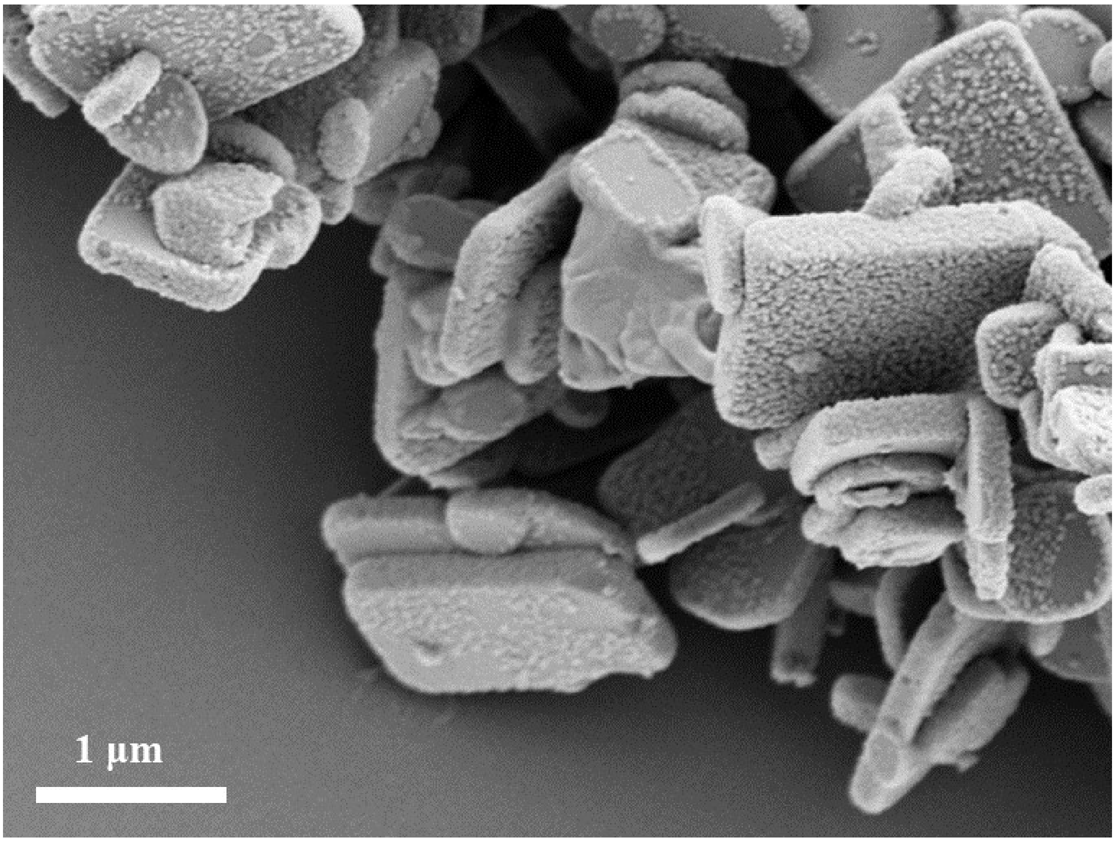

Figure S9. SEM image of CdS/Bi4TaO8Cl-mechanical

The SEM image of CdS/Bi4TaO8Cl-mechanical was provided in Figure S9. Form the deposition of CdS particles on the Bi4TaO8Cl were not facet-dependent, that can prove the importance of facet-dependent heterojunction.