

Supporting Information

**Promoting practical photodegradation application potential of
Bi₂WO₆-based step-scheme heterojunction under outdoor natural
sunlight irradiation**

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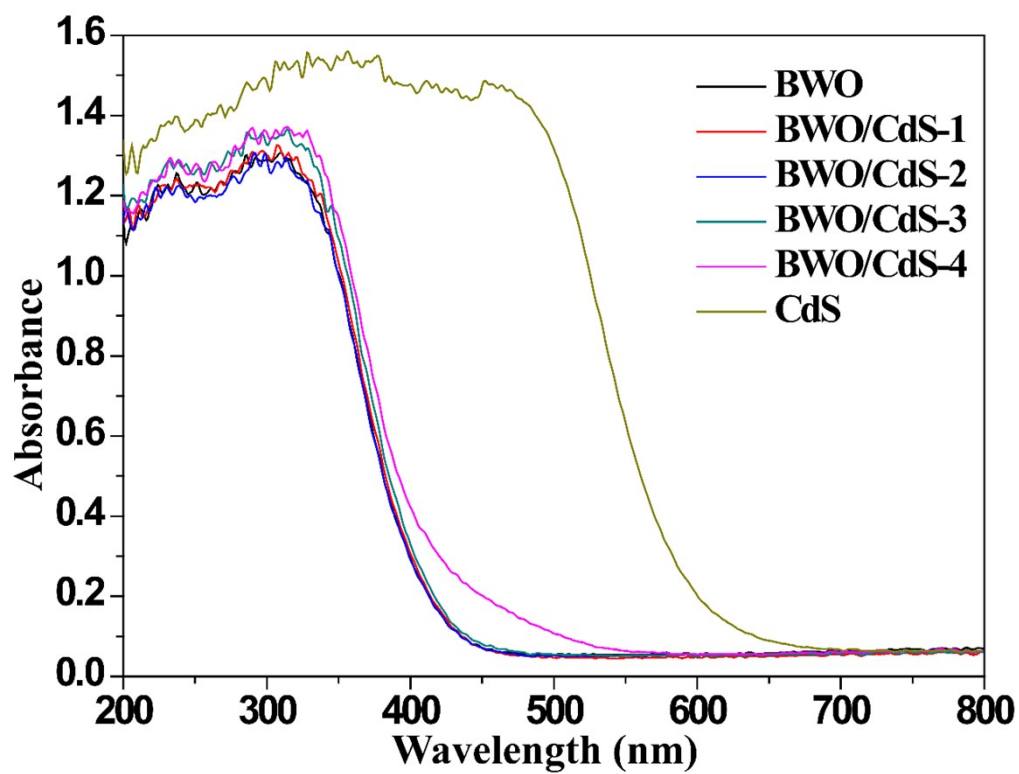


Fig. S1. UV-vis diffuse reflection spectra of samples.

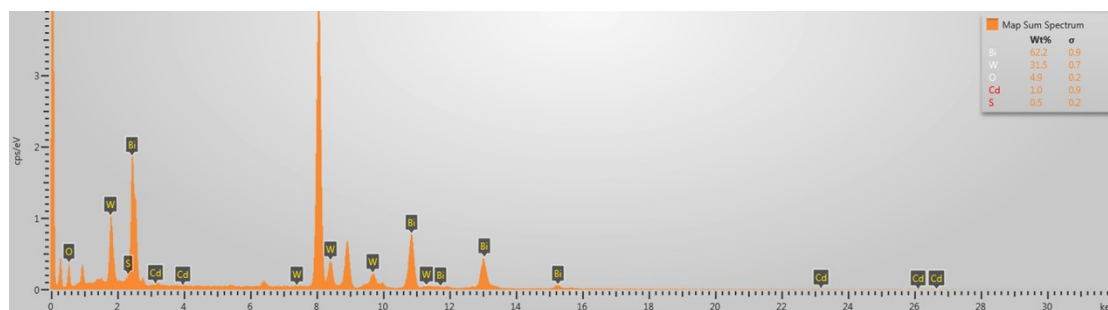


Fig. S2. EDS spectrum of BWO/CdS-2 composite.

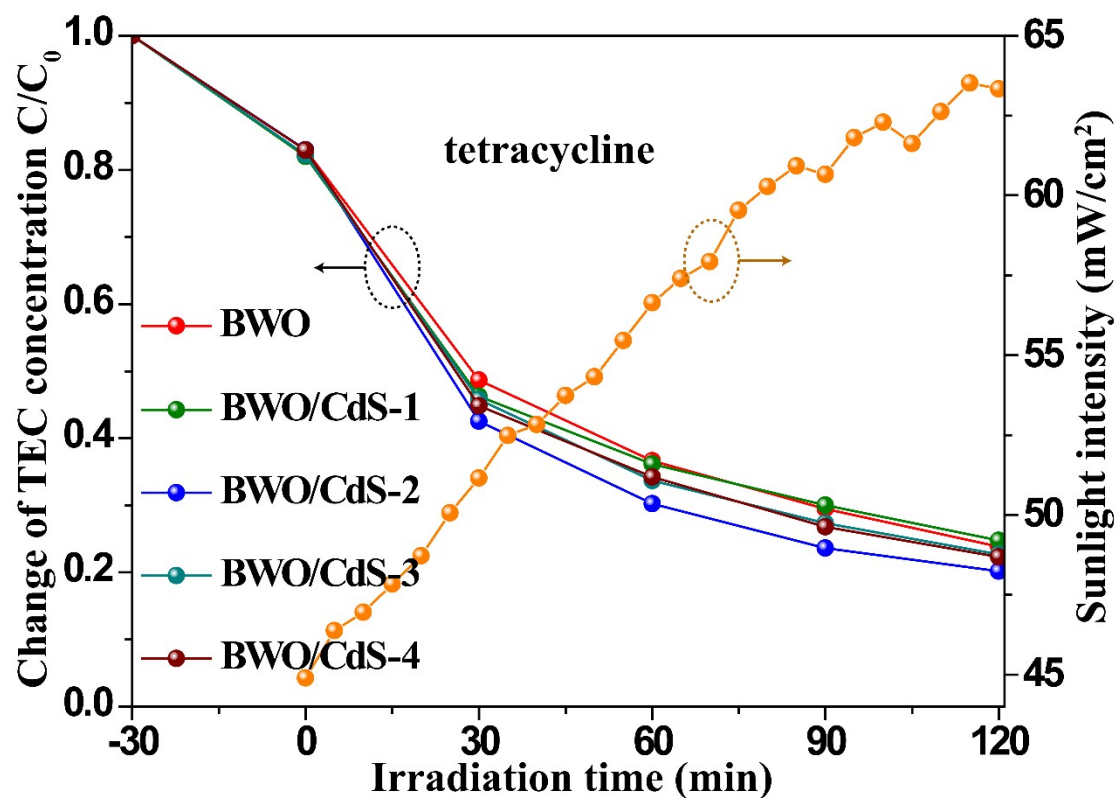


Fig. S3. TEC photocatalytic degradation over BWO composite with different CdS contents under natural sunlight irradiation and the variation of light power density over irradiation time.

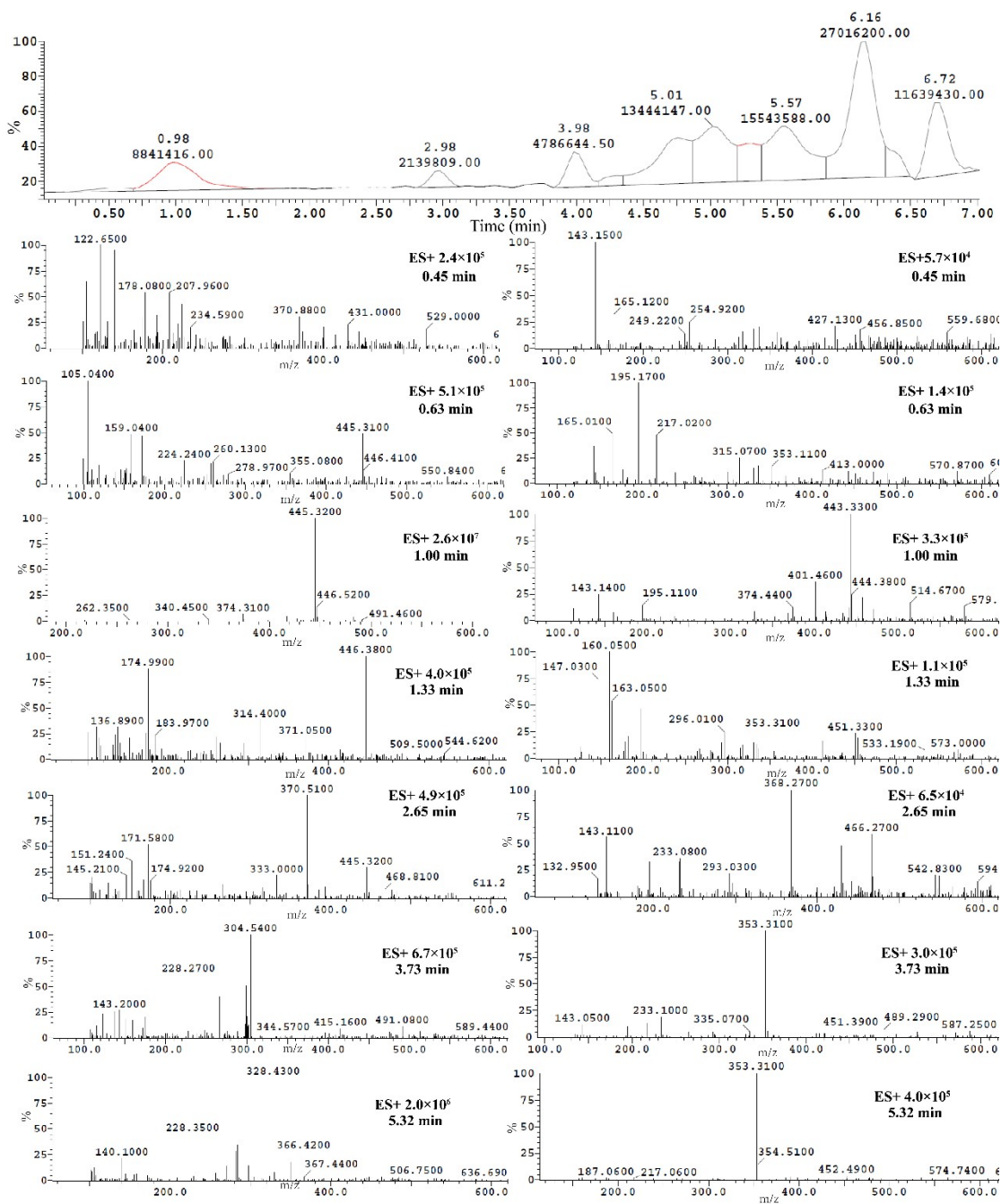


Fig. S4. Total HPLC-MS after the TEC photodegradation under sunlight irradiation for 30 min over BWO/CdS-2 and the corresponding intermediates analysis at different retention times of 0.45 min, 0.63 min, 1.00 min, 1.33 min, 2.65 min, 3.73 min, and 5.32 min.

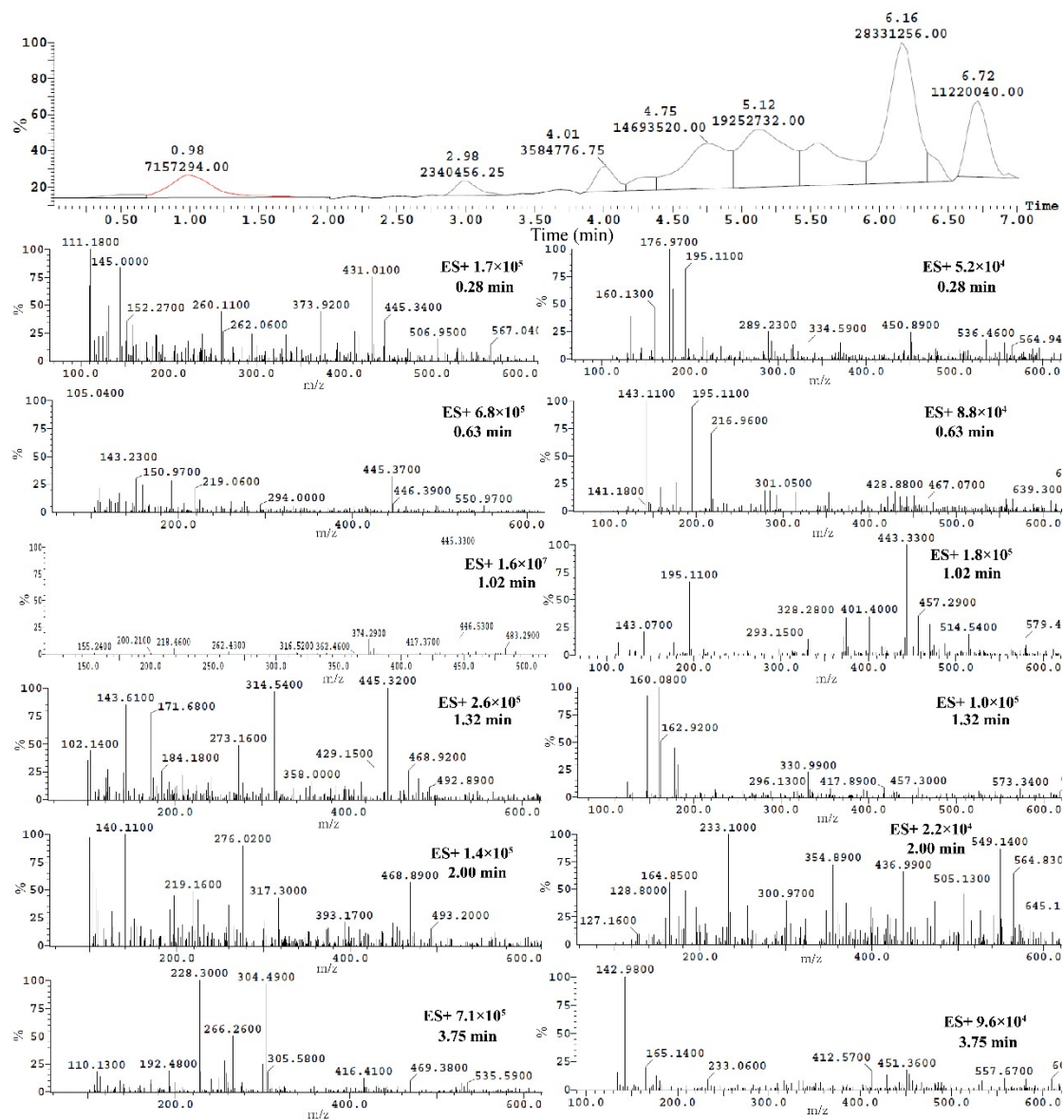


Fig. S5. Total HPLC-MS after the TEC photodegradation under sunlight irradiation for 60 min over BWO/CdS-2 and the corresponding intermediates analysis at different retention times of 0.28 min, 0.63 min, 1.02 min, 1.32 min, 2.00 min, and 3.75 min.

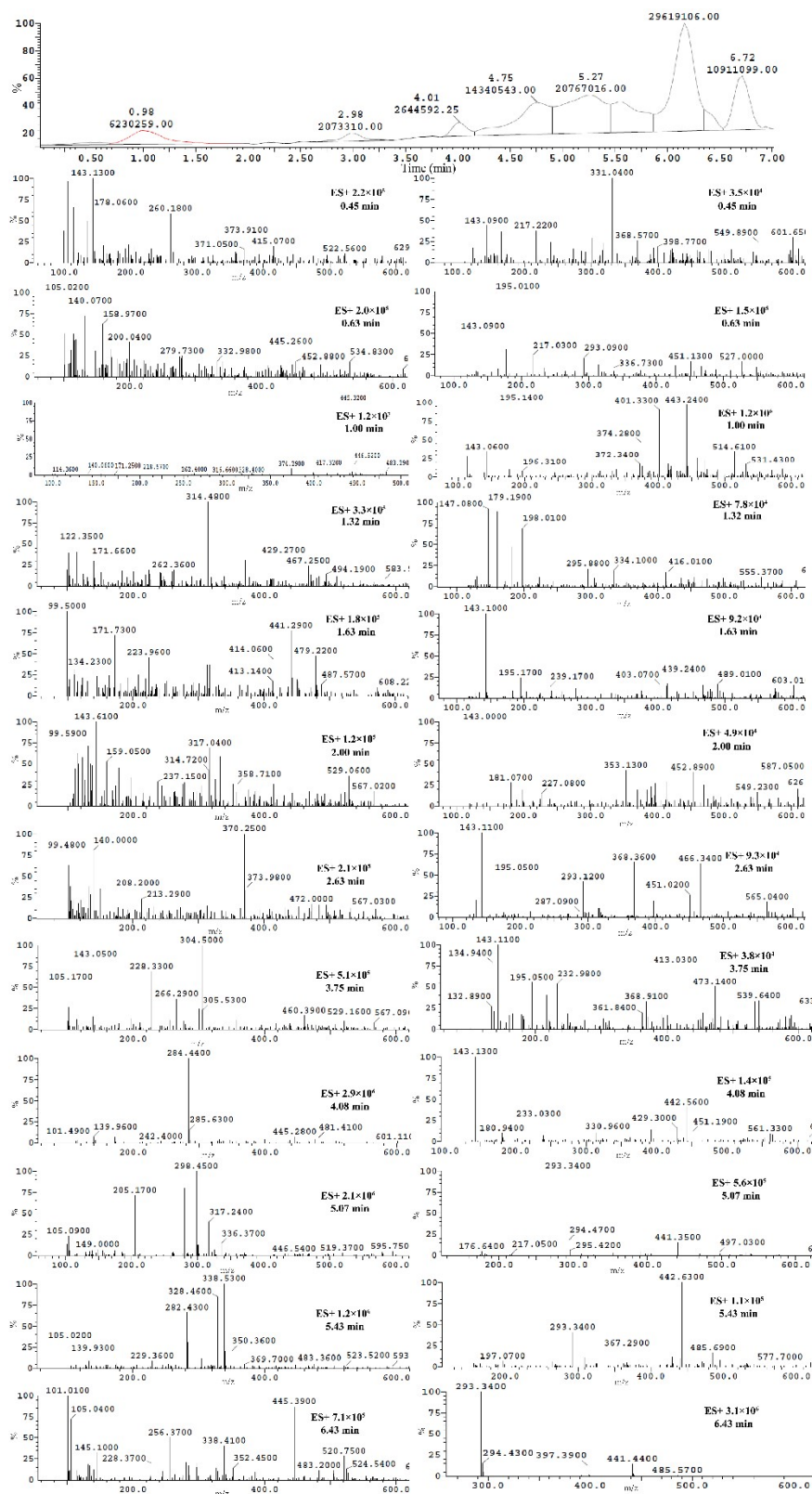


Fig. S6. Total HPLC-MS after the TEC photodegradation under sunlight irradiation for 90 min over BWO/CdS-2 and the corresponding intermediates analysis at different retention times of 0.45 min, 0.63 min, 1.00 min, 1.32 min, 1.63 min, 2.00 min, 2.63

min, 3.75 min, 4.08 min, 5.07 min, 5.43 min, and 6.43 min.

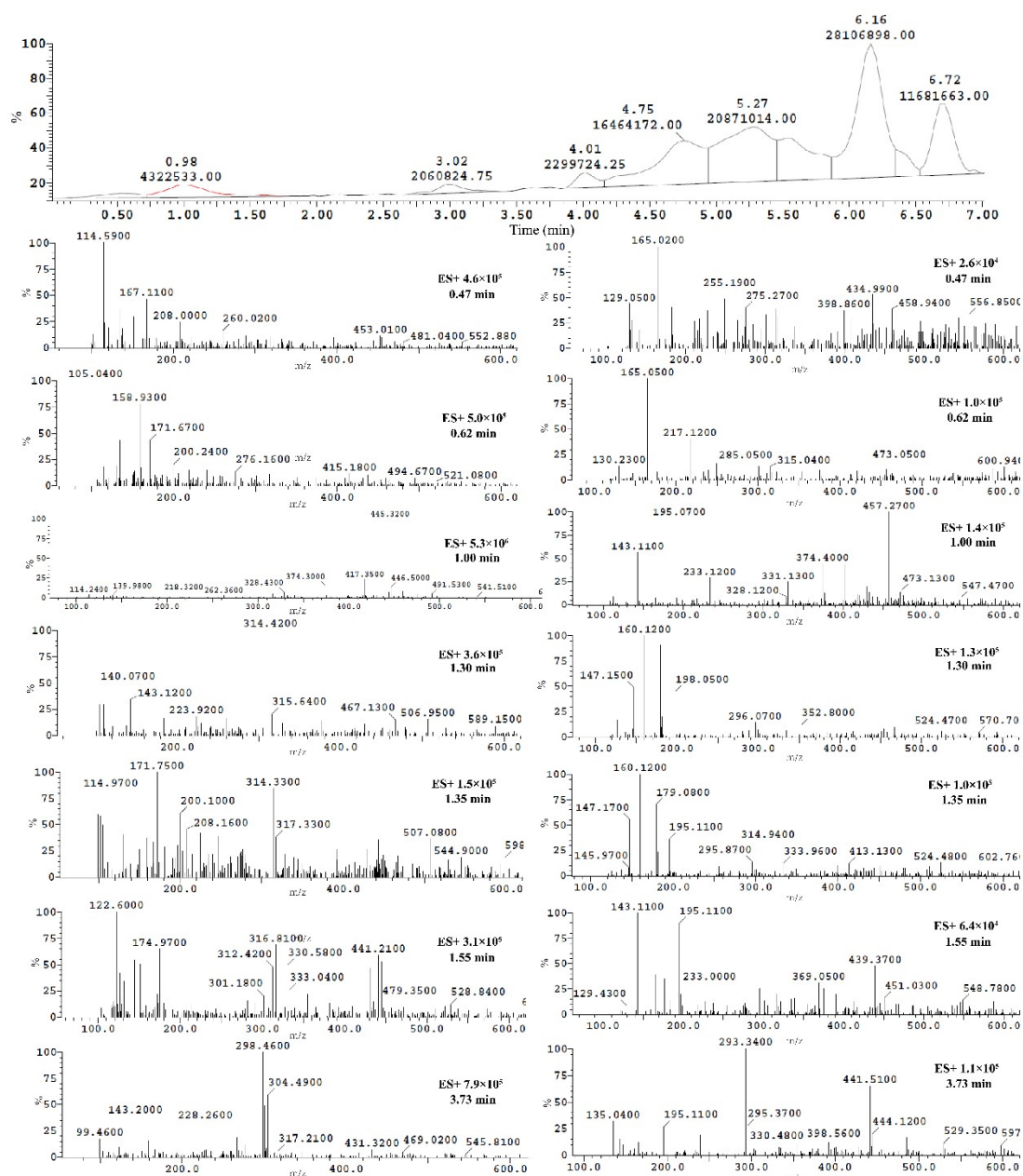


Fig. S7. Total HPLC-MS after the TEC photodegradation under sunlight irradiation for 120 min over BWO/CdS-2 and the corresponding intermediates analysis at different retention times of 0.47 min, 0.62 min, 1.00 min, 1.30 min, 1.35 min, 1.55 min, and 3.73 min.

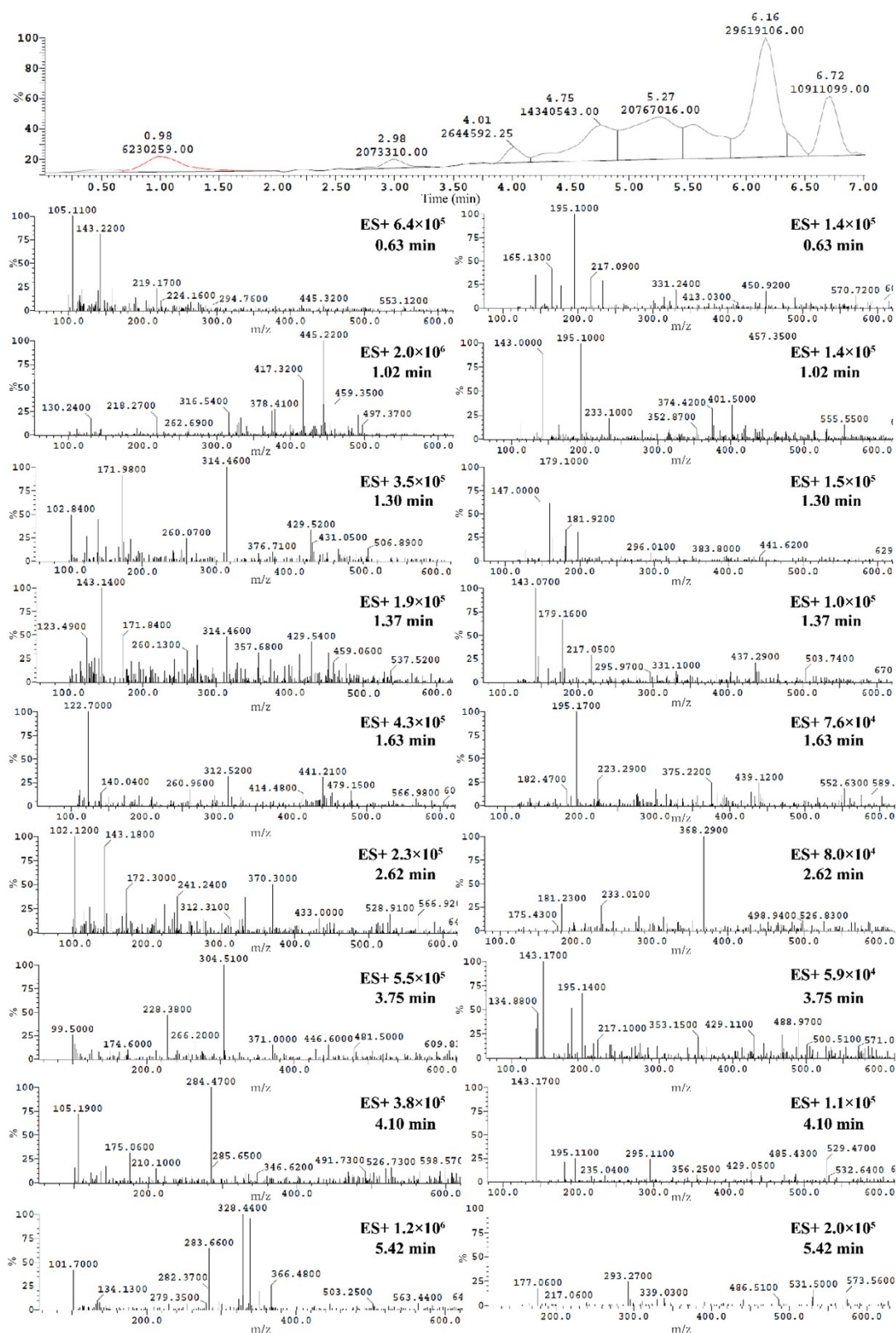


Fig. S8. Total HPLC-MS after the TEC photodegradation under sunlight irradiation for 150 min over BWO/CdS-2 and the corresponding intermediates analysis at different retention times of 0.63 min, 1.02 min, 1.30 min, 1.37 min, 1.63 min, 2.62 min, 3.75

min, 4.10 min, and 5.42 min.

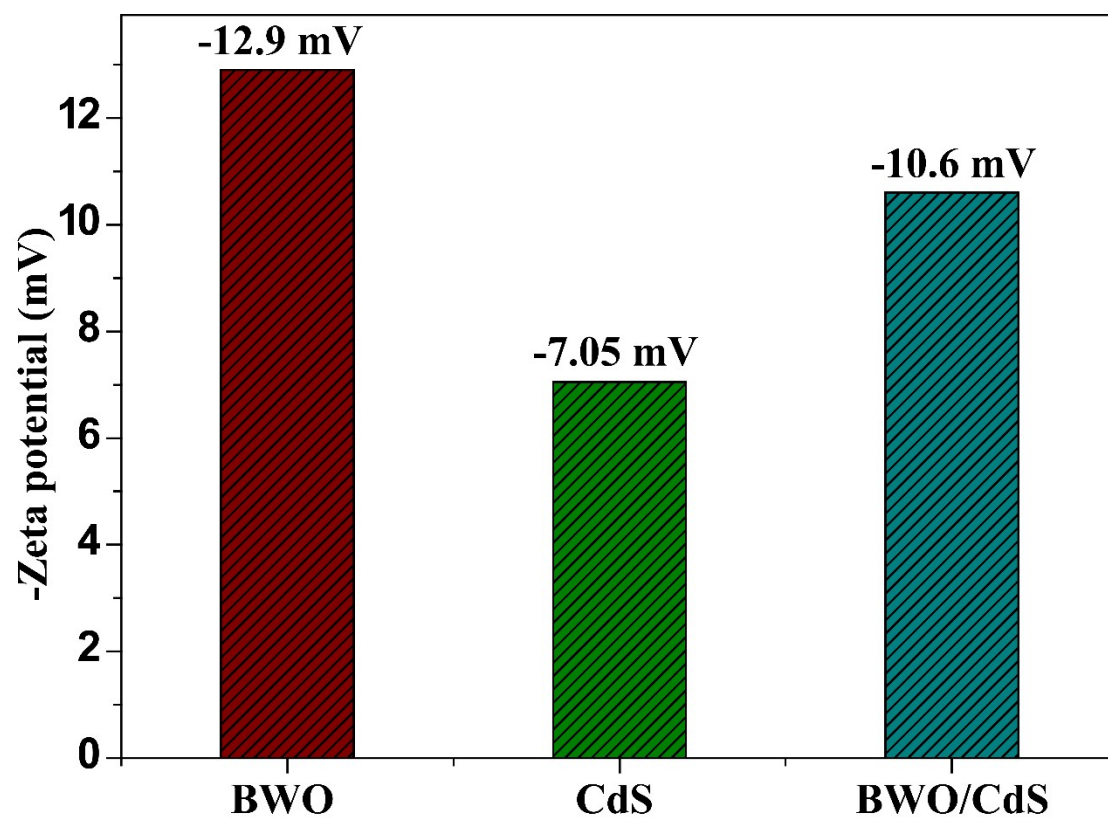


Fig. S9. Zeta potentials of samples in water.

Table S1. The calculated VB, CB and FF values of pristine BWO and CdS.

Materials	BWO	CdS
VB (vs. NHE)	2.83 eV	1.76 eV
CB (vs. NHE)	0.02 eV	-0.47 eV
E_g	2.81 eV	2.23 eV

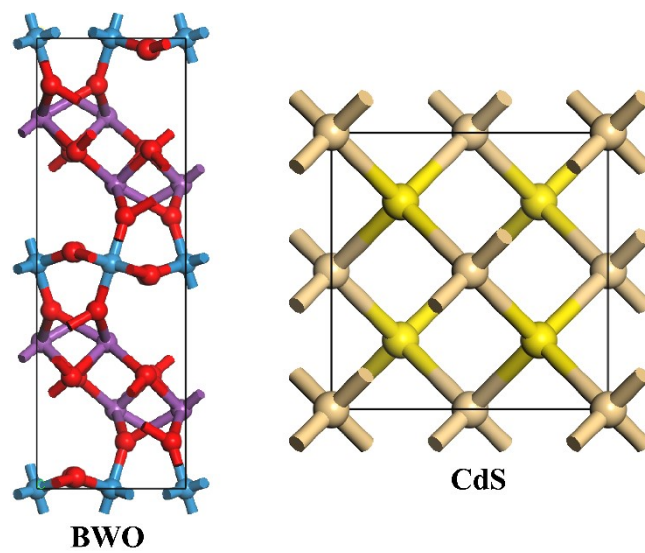


Fig. S10. Crystal structures of BWO and CdS for first principles calculations.