Electronic Supplementary Material (ESI) for Dalton Transactions.

Supporting information

W@WO_3 Ohmic Contact Induces High-efficiency Photooxidation Performance

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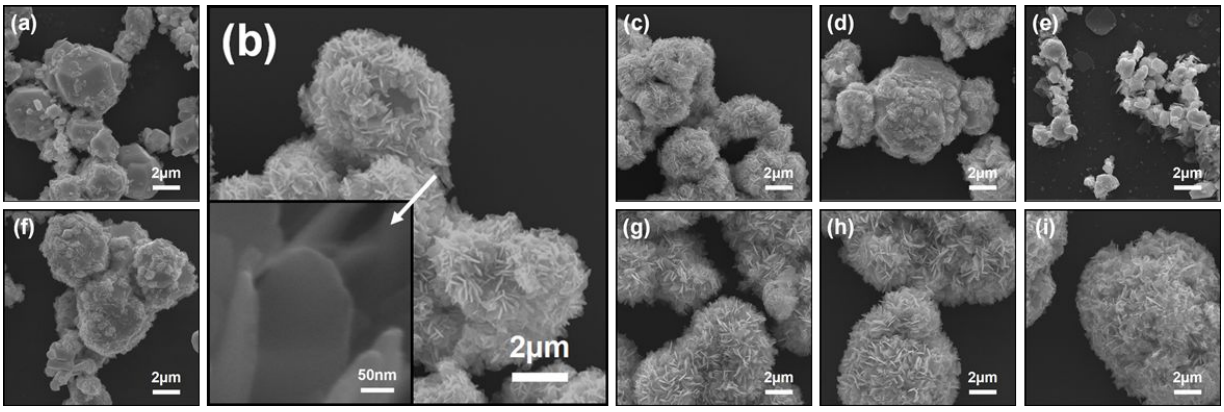

Figure S1. SEM images of the W-WO_3•H_2O composites. The W-WO_3 composites were denoted as WH-X-Y (X mol/L represented for the nitric acid concentration which varied from 0.5-14 mol/L; Y hour represented for the immersion time of tungsten powder in the HNO_3 aqueous solution and the time prolonged from 0.5 h to 12 h) (a) WH-0.5-2; (b) WH-1.5-2, the inset provides the high-resolution SEM image of the WO_3•H_2O nanosheet on the surface of tungsten; (c) WH-3-2; (d) WH-5-2; (e) WH-14-2; (f) WH-1.5-0.5; (g) WH-1.5-4; (h) WH-1.5-6; (i) WH-1.5-12.

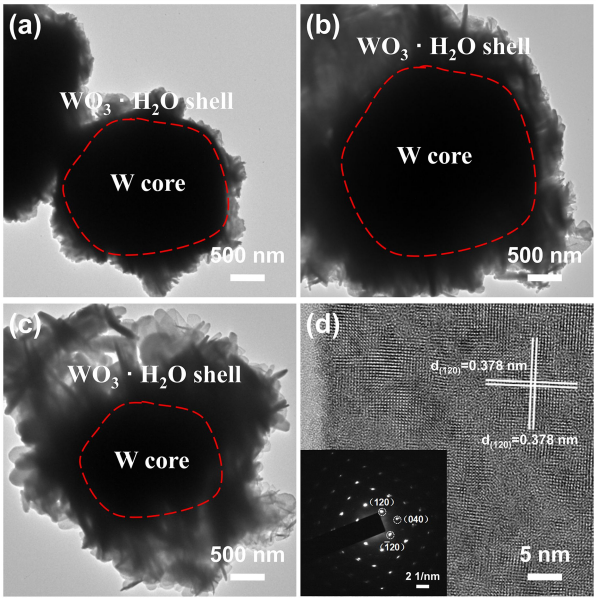

Figure S2. TEM image of the WO_3•H_2O core-shell composites. (a) WH-1.5-0.5; (b) WH-1.5-2; (c) WH-1.5-4; (d) HRTEM image and the corresponding SAED pattern (inset) of the WO_3•H_2O nanosheets of the WH-1.5-2 sample.

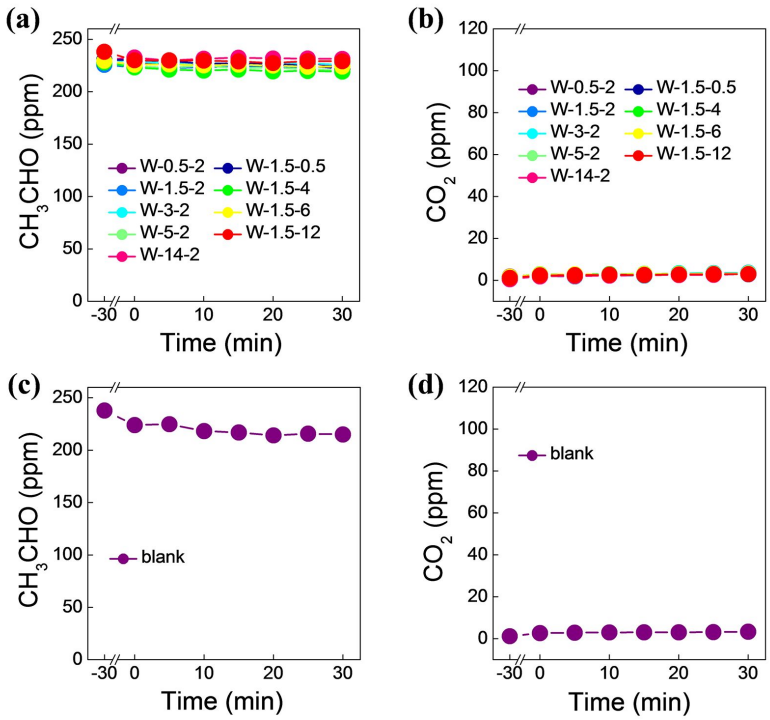

Figure S3. (a) degradation curve of acetaldehyde and (b) generation curve of CO_2 for the W-X-Y samples in dark condition, (c) degradation curve of acetaldehyde and (d) generation curve of CO_2 under UV light irradiation without catalyst.

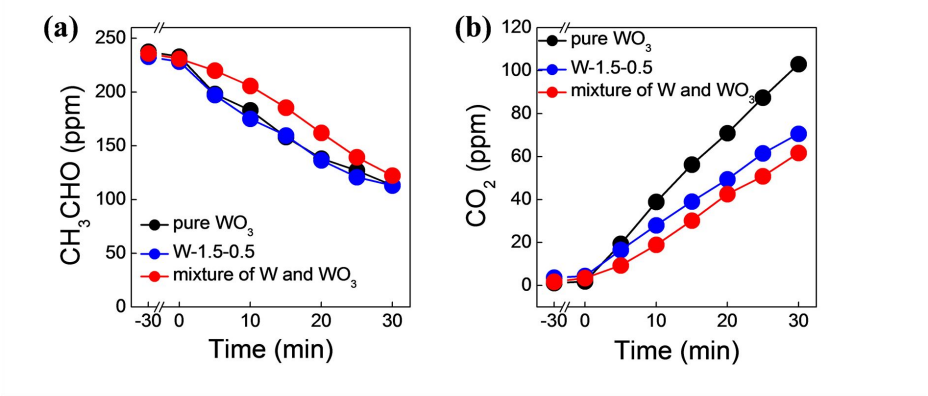

Figure S4. (a) photocatalytic degradation curve and (b) generation of CO_2 curve during the photocatalytic degradation of acetaldehyde for W-1.5-0.5, pure WO_3 (0.033g) and the mixture of W and WO_3 (0.033g WO_3 + 0.967g W).

Table S1. The rate constant and mineralization yield for W-1.5-0.5, pure WO_3 and the mixture of W and WO_3.

	W-1.5-0.5	pure WO_3	Mixture of W/WO_3
Rate constant	0.02465	0.02475	0.01911
Mineralization yield	0.28695	0.42195	0.26813

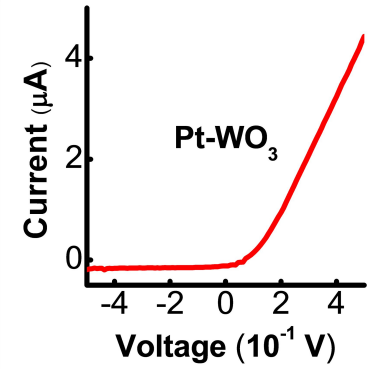

Figure S5. The I-V curve of Pt-WO_3 contact.