

Supporting Information

An artificially constructed direct Z-scheme heterojunction: WO₃ nanoparticles decorated ZnIn₂S₄ for efficient photocatalytic hydrogen production

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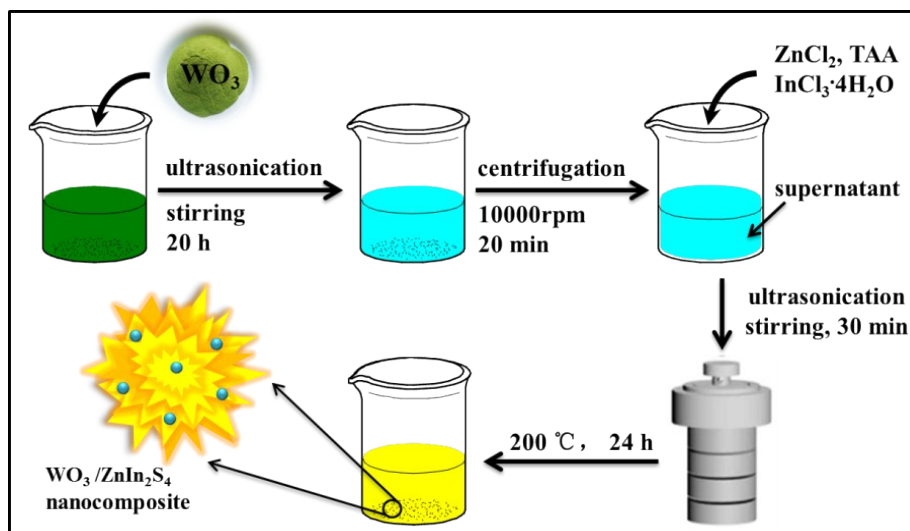
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Table S1

Table S1. The actual WNp contents in WNp-ZIS composite photocatalysts obtained from the ICP-AES results

Photocatalysts	WNp contents (wt%)	
	nominal values	ICP-AES results
ZIS	0	0
W1-ZIS	1.0	1.23
W3-ZIS	3.0	3.27
W5-ZIS	5.0	5.45

Scheme S1



Scheme S1 Schematic illustration for the preparation process of the WNp-ZIS composites.

Fig. S1

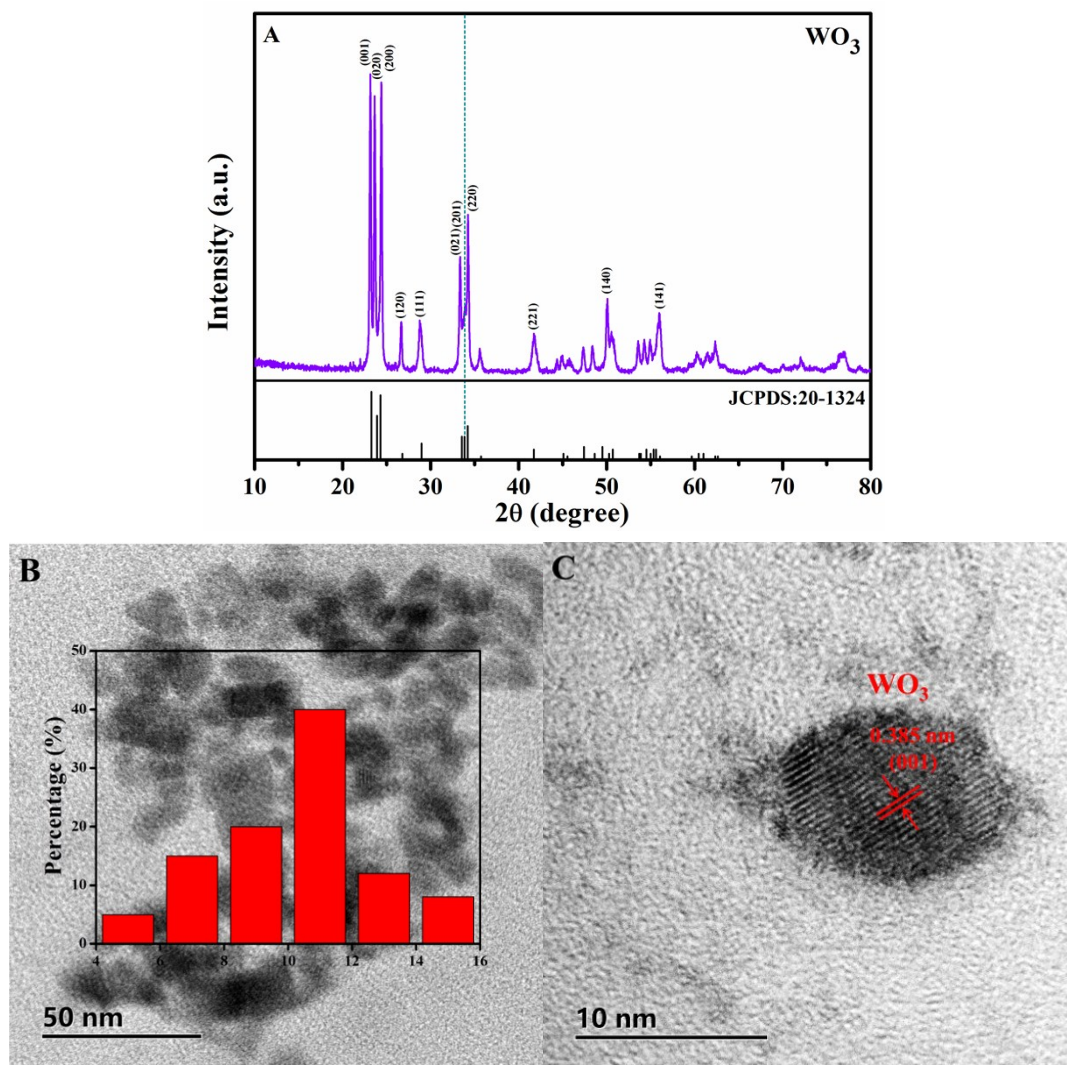


Fig. S1 (A) The XRD pattern, (B) TEM and (C) HRTEM image of the synthesized WNp. (Inset in image (B): the corresponding size distribution histogram of the synthesized WNp)

Fig. S2

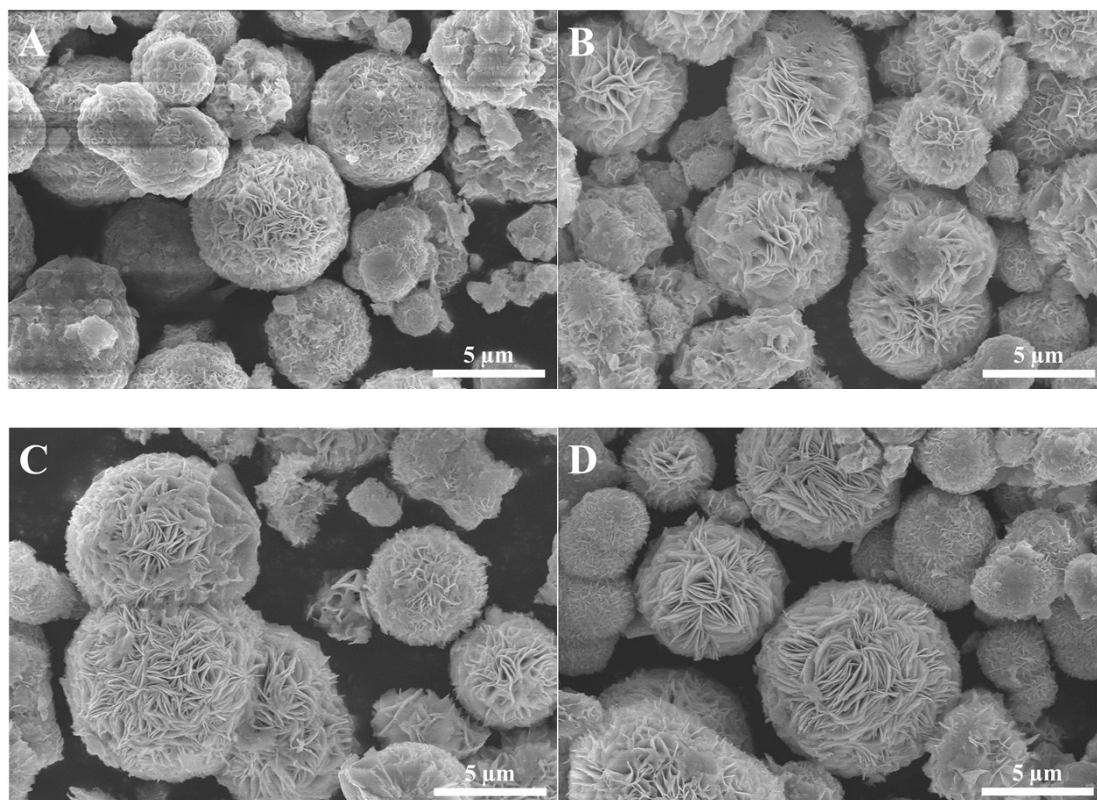


Fig. S2 Low-magnification FESEM images of the (A) pristine ZIS, (B) W1-ZIS, (C) W3-ZIS, and (D) W5-ZIS composites.

Fig. S3

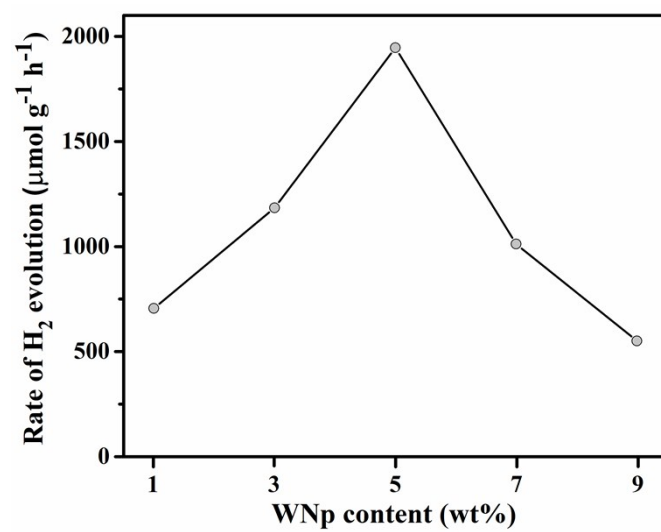


Fig. S3 The HER values of the prepared WNp-ZIS photocatalysts as a function of the WNp weight content.

Fig. S4

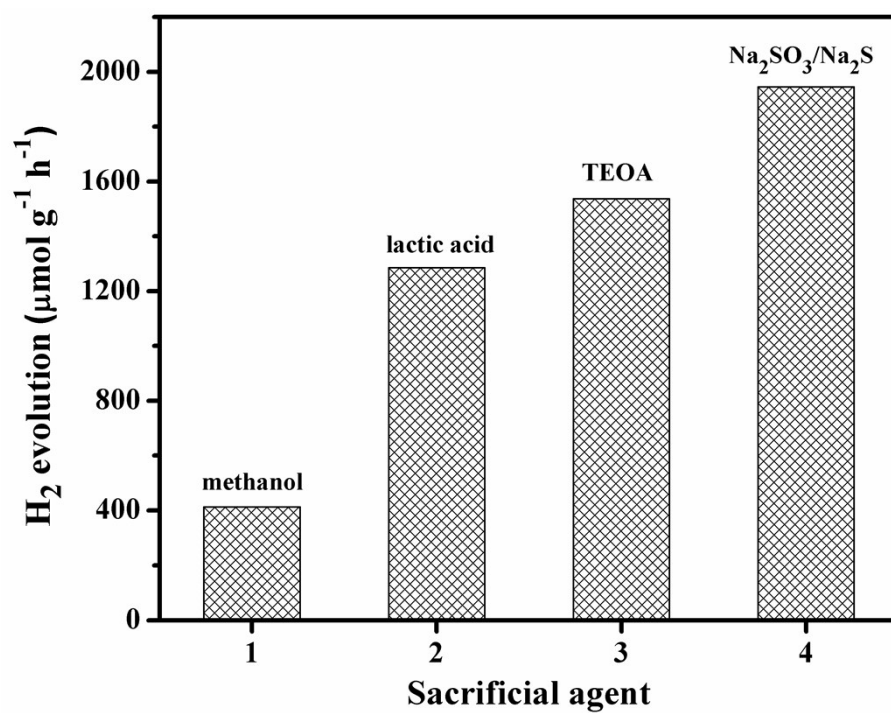


Fig. S4 Photocatalytic hydrogen evolution rate over W5-ZIS photocatalyst in the presence of different sacrificial agents: (1) methanol, (2) lactic acid, (3) TEOA, and (4) Na₂SO₃/Na₂S.

Fig. S5

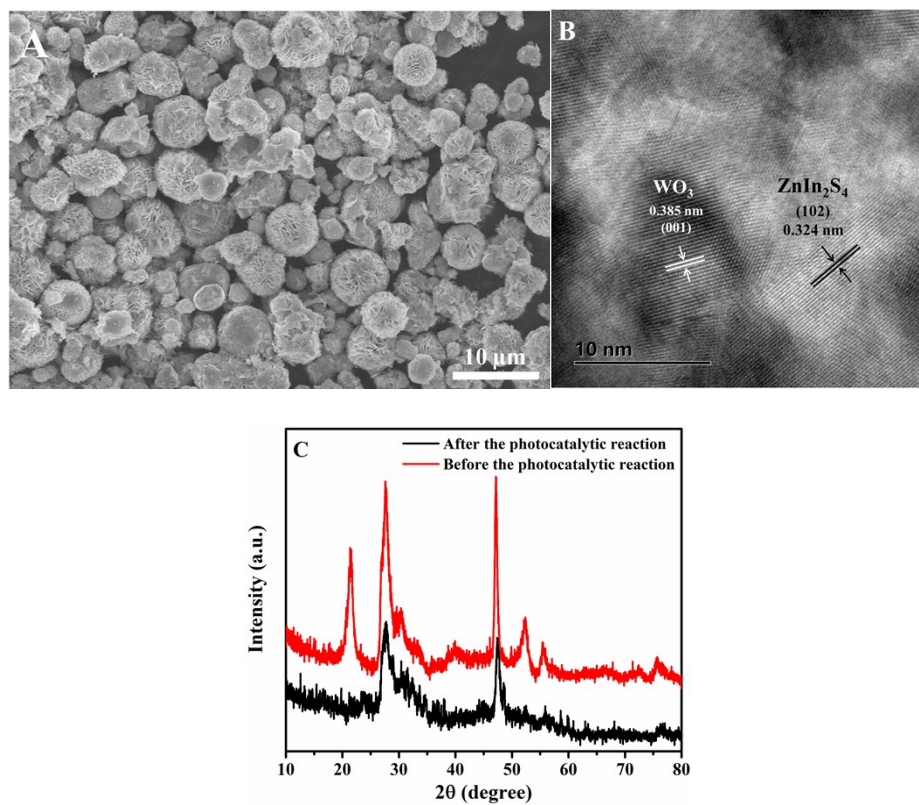


Fig. S5 (A) FESEM, (B) HRTEM images of the prepared W5-ZIS after photocatalytic reaction, and (C) the XRD patterns of the prepared W5-ZIS before and after photocatalytic reaction.

Fig. S6

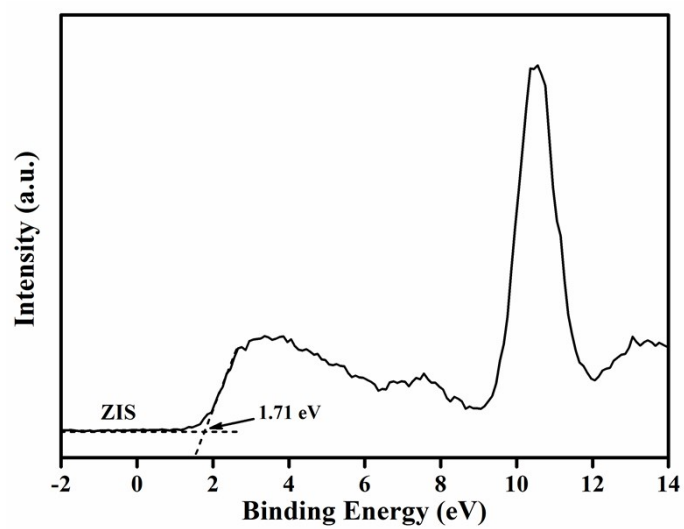


Fig. S6 The VB-XPS spectrum of the prepared ZIS sample.