Supporting Information

Oxygen-deficient Nanofibers WO_{3-x}/WO_3 Homojunction Photoanodes Synthesized via a Novel Metal Self-reducing Method

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Figure Captions

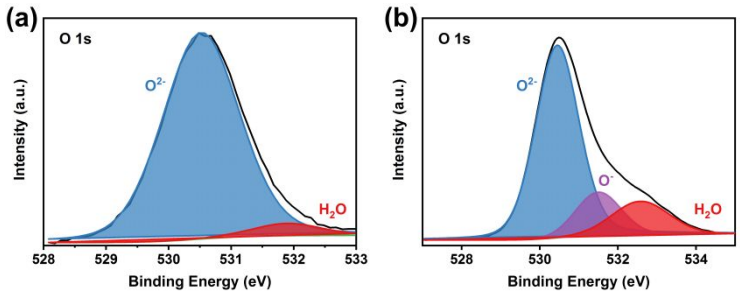


Figure S1. The O 1s XPS spectra of (a) WO_3 and (b) WO_{3-x}/WO_3-4 h films

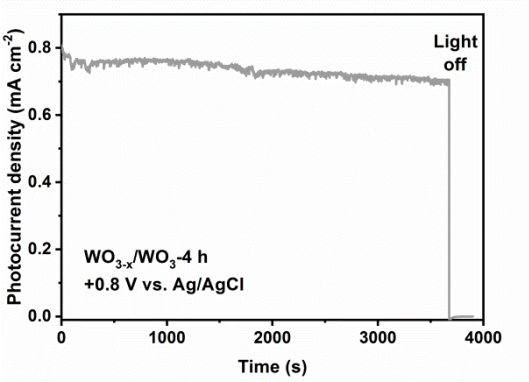


Figure S2. Photostability curve of photoanodes films

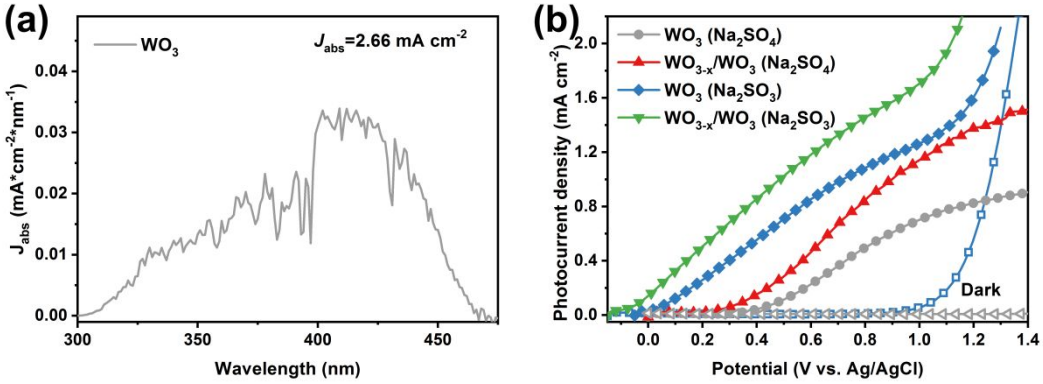


Figure S3. (a) Photo flux of WO_3 film and (b) photocurrent densities of photoanodes measured in Na_2SO_3 electrolyte.

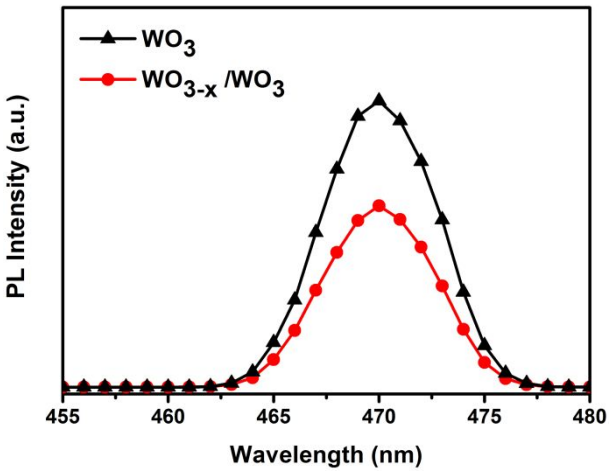


Figure S4. PL spectra of photoanodes films

Figure S5. Images of different oxygen-deficient semiconductors

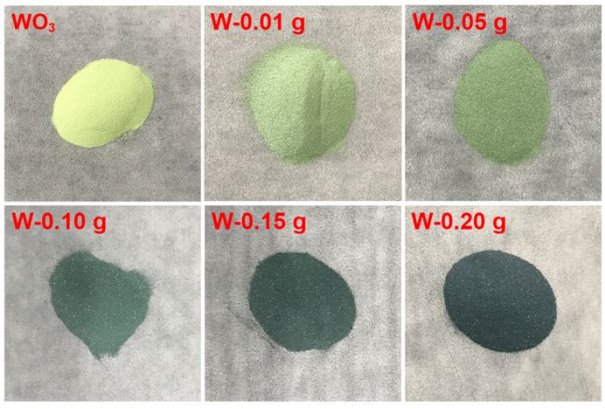


Figure S6. WO_{3-x} powders with different amounts of oxygen vacancies

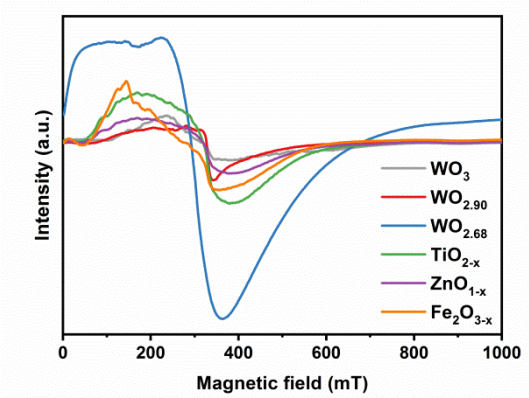


Figure S7. EPR spectra of different oxygen-deficient semiconductors

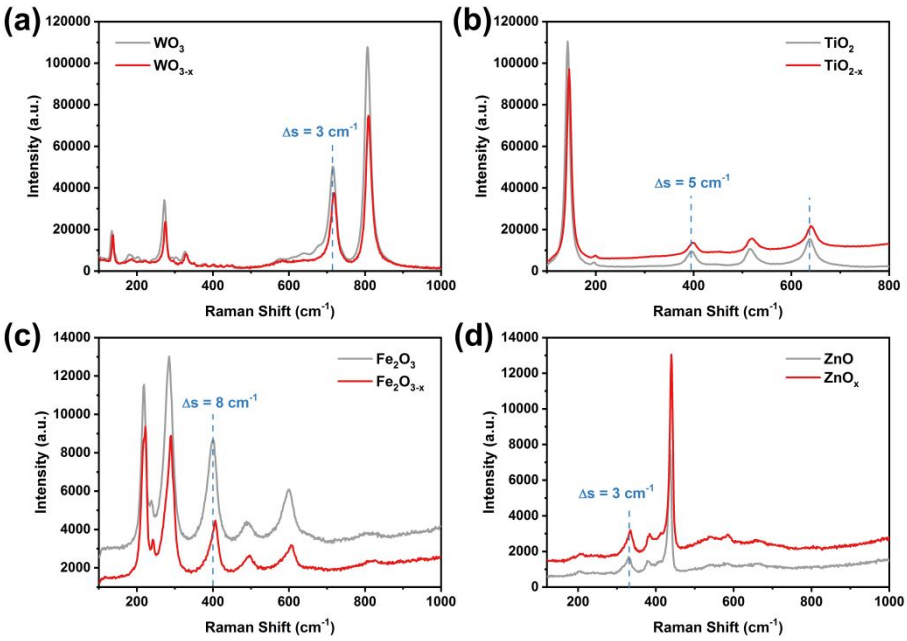
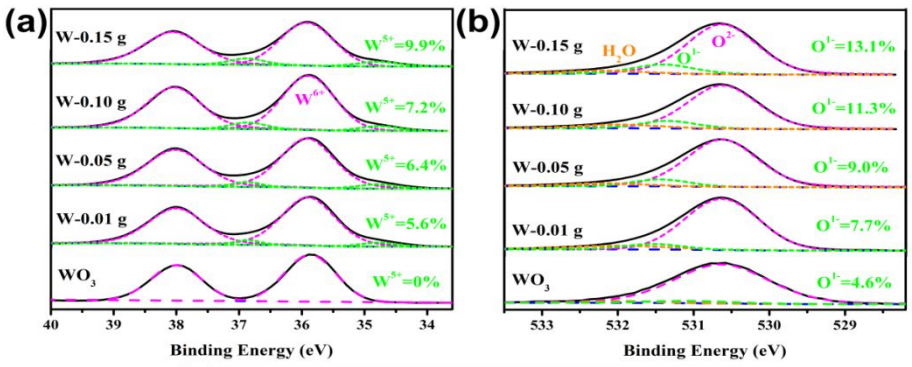


Figure S8. Raman spectra of different oxygen-deficient semiconductors: (a) WO_{3-x}, (b) TiO_{2-x}, (c) Fe_2O_{3-x} and (d) ZnO_{1-x} powders



(c)

Samples	W^{5+}(%)	O^{1-}(%)	O/W ratio	WO_{3-x}
WO_3	0	4.6	2.97	$WO_{2.97}$
W-0.01 g	5.6	7.7	2.95	$WO_{2.95}$
W-0.05 g	6.4	9.0	2.90	$WO_{2.90}$
W-0.10 g	7.2	11.3	2.85	$WO_{2.85}$
W-0.15 g	9.9	13.1	2.68	$WO_{2.68}$

Figure S9. (a) XPS W 4f, (b) O 1s spectra and (c) the oxygen index of WO_{3-x} powders

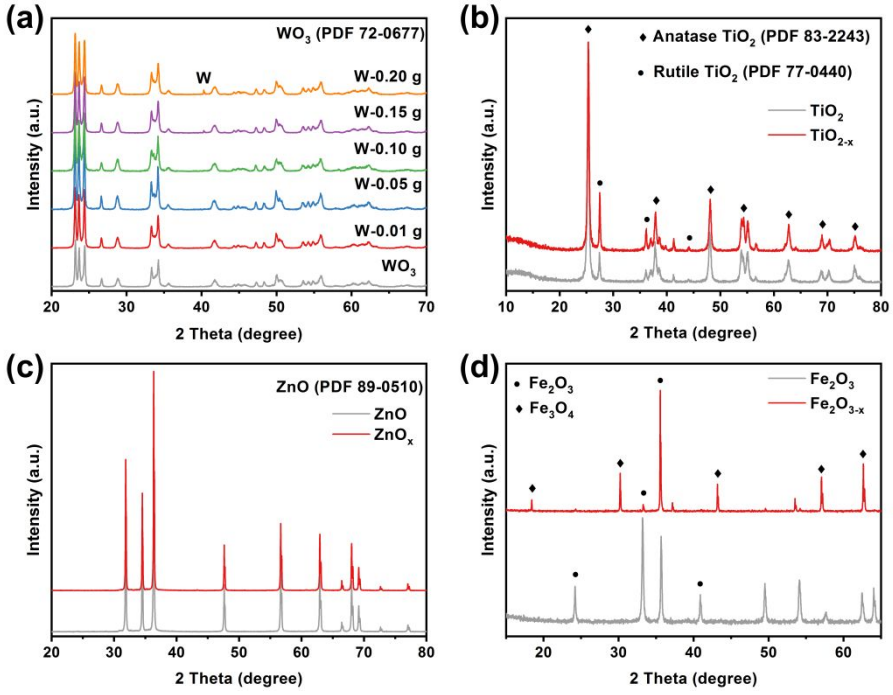


Figure S10. The XRD patterns of different oxygen-deficient semiconductors: (a) WO_{3-x}, (b) TiO_{2-x}, (c) ZnO_{1-x} and (d) Fe_2O_{3-x} powders

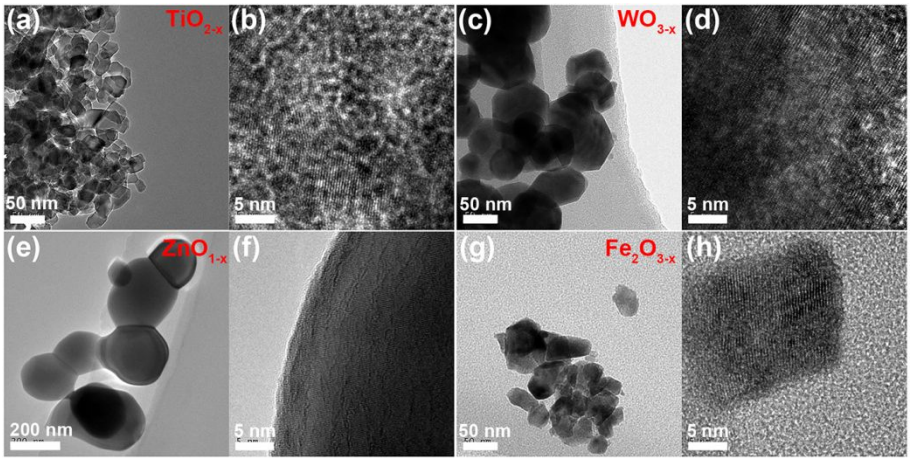


Figure S11. The TEM images of different oxygen-deficient semiconductors: (a, b) TiO_{2-x}, (c, d) WO_{3-x}, (e, f) ZnO_{1-x} and (g, h) Fe_2O_{3-x} powders

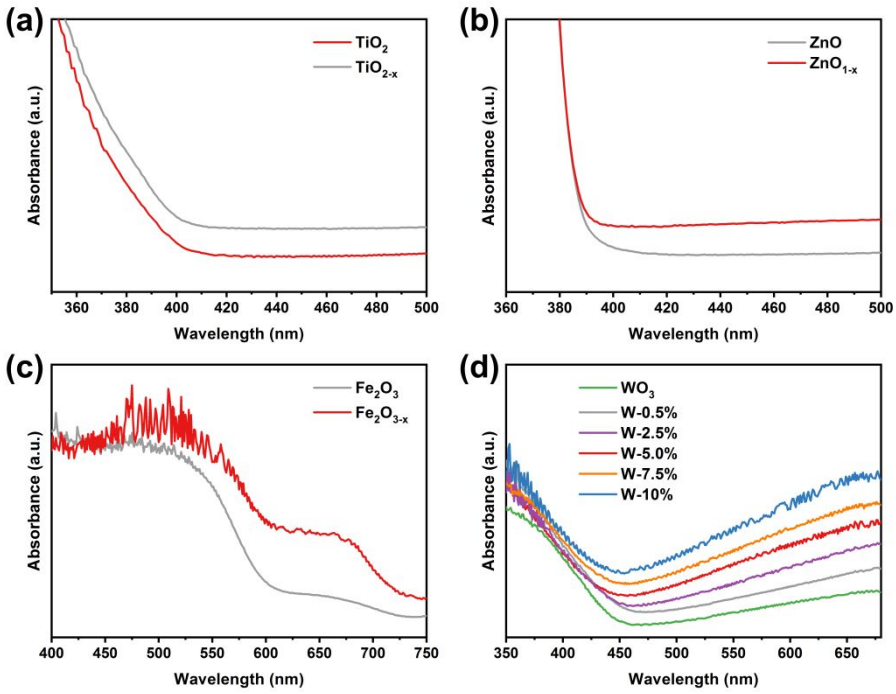


Figure S12. Optical absorption spectra of different oxygen-deficient semiconductors: (a) TiO_{2-x}, (b) ZnO_{1-x}, (c) Fe_2O_{3-x} and (d) WO_{3-x} powders

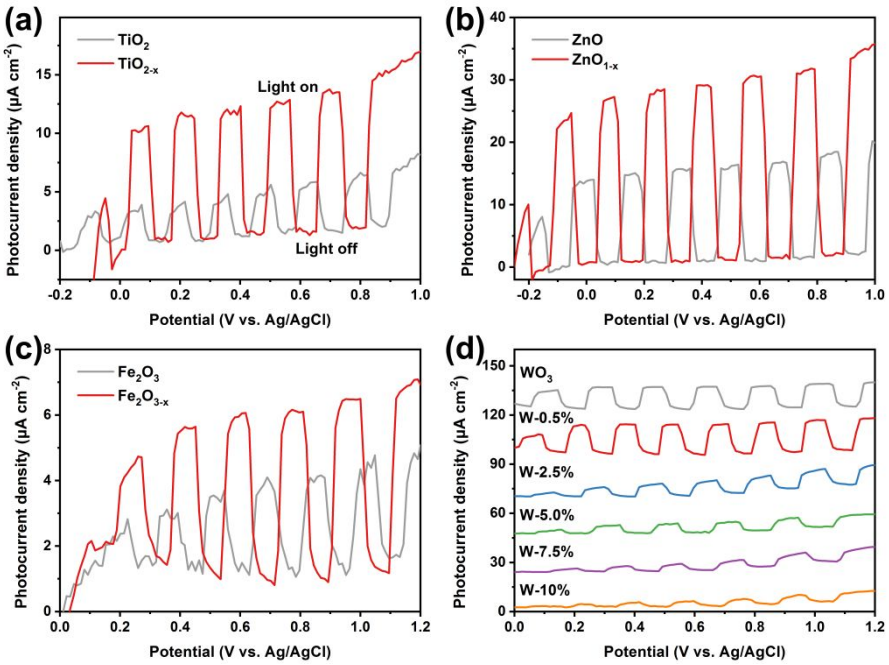


Figure S13. Photocurrent densities of different oxygen-deficient semiconductors films: (a) TiO_{2-x}, (b) ZnO_{1-x}, (c) Fe_2O_{3-x} and (d) WO_{3-x} powders