Table S1. Comparison with other catalysts

Semiconductor	Solvothermal method	Morphology	Sacrificial reagent	Light source (nm)	Optimal hydrogen evolution (μmol·g−1·h−1)	Refs.
$ZnIn_2S_4$@ NH_2-MIL-125(Ti)	Solvothermal method	Micropores and mesopores	Na_2S/Na_2SO_3	300 W Xe lamp λ > 420 nm	2204.2 40 wt% NH_2-MIL-125(Ti)	1
g-C_3N_4@ $ZnIn_2S_4$	Solvothermal method	2D/2D g-C3N4 nanosheet@ ZnIn2S4 nanoleaf	Triethanolamine	300 W Xe lamp λ > 420 nm	2780	2
$Co(dmgH)_2pyC/ZnIn_2S_4$	Impregnating method	Microspheres	Triethanolamine	300 W Xe lamp λ > 420 nm	3840 3.0 wt% $Co(dmgH)_2pyCl$/ ZnIn2S4	3
$CQDs/ZnIn_2S_4$	Microwave hydrothermal method	Microspheres	N/A	350 W Xe lamp λ > 400 nm	1032.2	4
$MoS_2/ZnIn_2S_4$	Hydrothermal method	Nanoparticles	Na_2S/Na_2SO_3	300 W Xe lamp λ > 420 nm	2080 0.5 wt% $MoS_2/ZnIn_2S_4$	5
$In_2S_3/ZnIn_2S_4$	Ion-exchange method	Microflowers	Na_2S/K_2SO_3	300 W Xe lamp λ ≥ 420 nm	678	6
$CdS/ZnFe_2O_4$/ $ZnIn_2S_4$	Solvothermal processes & Ionic layer adsorption-reaction method	Nanosheet stereoscopic films	Na_2S/Na_2SO_3	300 W Xe lamp λ > 420 nm	79.0 μmol h−1 1-$CdS/ZnFe_2O_4$/ $ZnIn_2S_4$	7

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Figure S1. TG results of the Co_3O_4(20)@ZIS

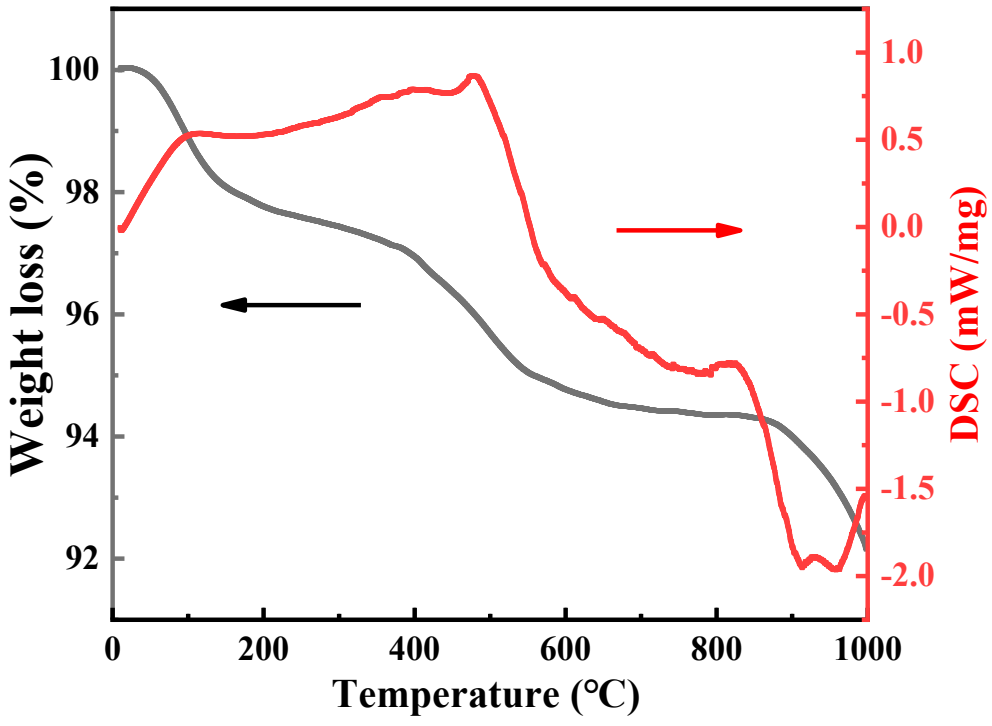

Figure S2. Three cycles of experiment of the Co_3O_4(20)@ZIS