Supporting Information

CdS nanospheres decorated hollow polyhedral ZCO derived from metal-organic framework (MOF) for effective photocatalytic water evolution

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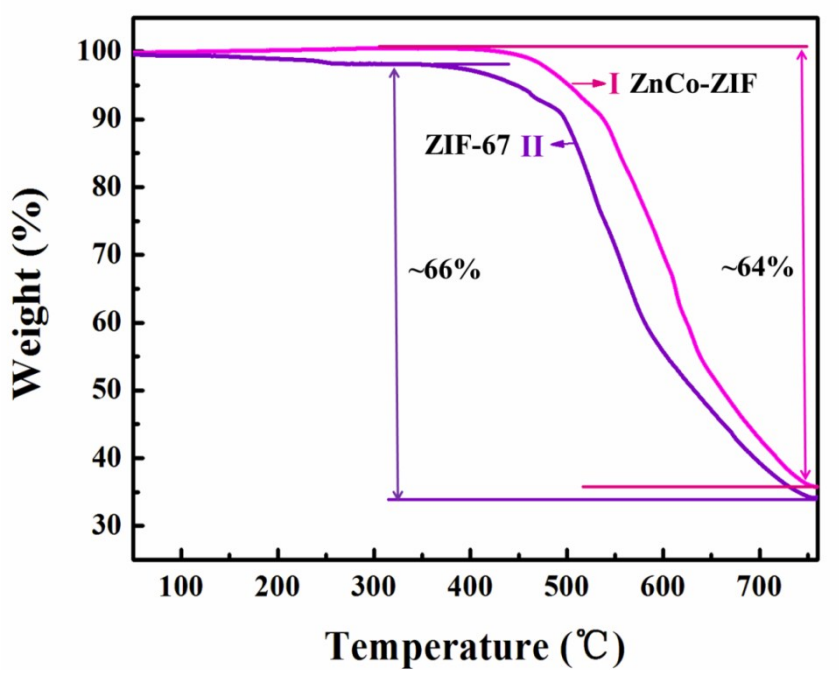

Fig. S1 Thermogravimetric analysis (TGA) curve of as-prepared bimetallic ZnCo-ZIF and ZIF-67 under N_2 with a ramp of 10 °C · min^{-1}.

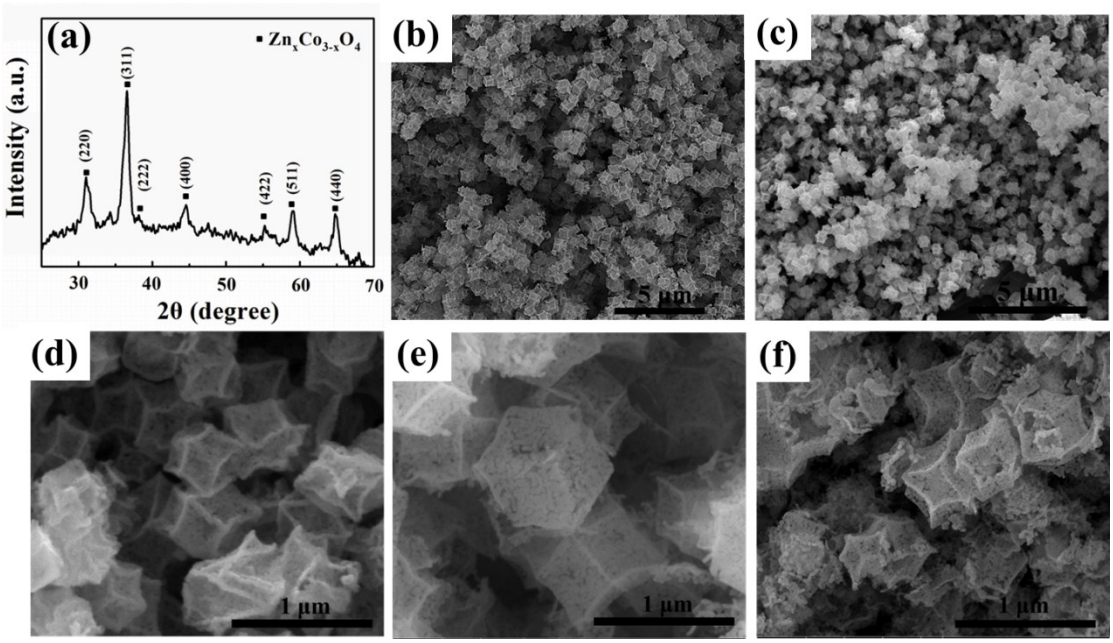

Fig. S2 (a) XRD patterns of ZCO, (b) SEM images of ZCO, (c) SEM images of Co_3O_4, The SEM images of Co_3O_4 sample fabricated with different temperature: (d) 350 °C, (e) 450 °C, (f) 550 °C.

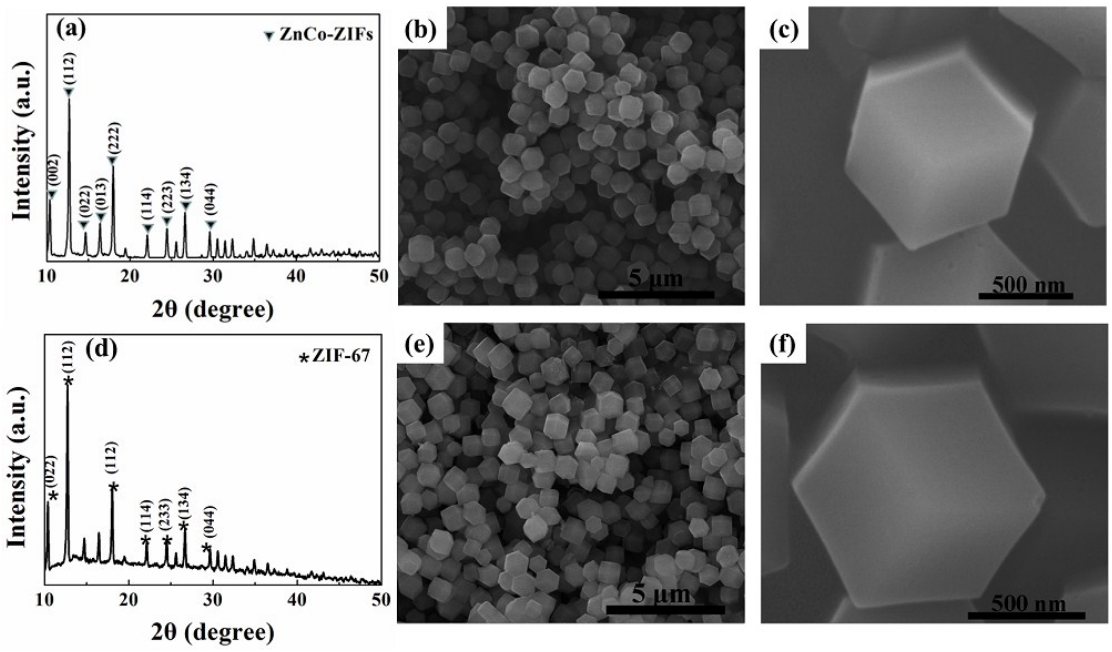

Fig. S3 (a) XRD patterns of ZnCo-ZIF, (b) low-magnification and (c) high-magnification FESEM images of ZnCo-ZIF, (d) XRD patterns of ZIF-67, (e) low-magnification and (f) high-magnification FESEM images of ZIF-67.

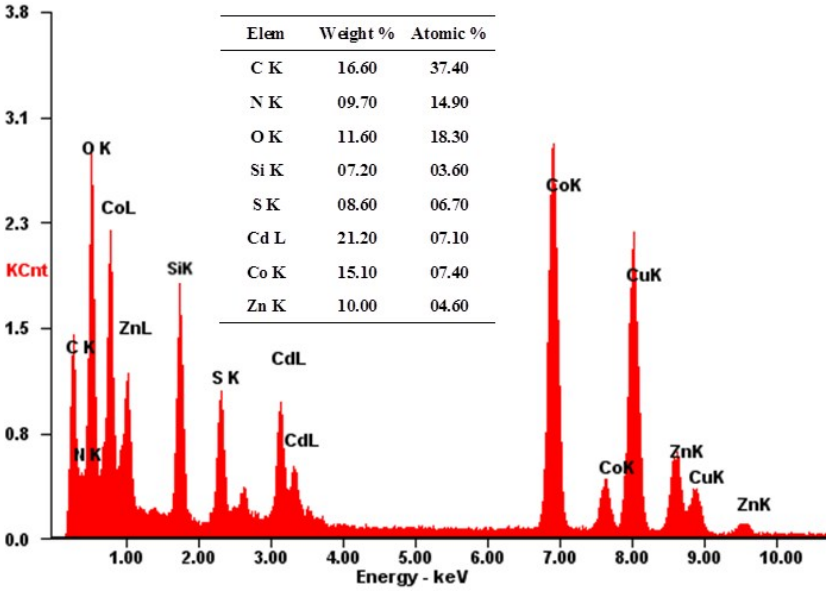

Fig. S4 EDS spectra of the 30wt% CdS/ZCO sample.

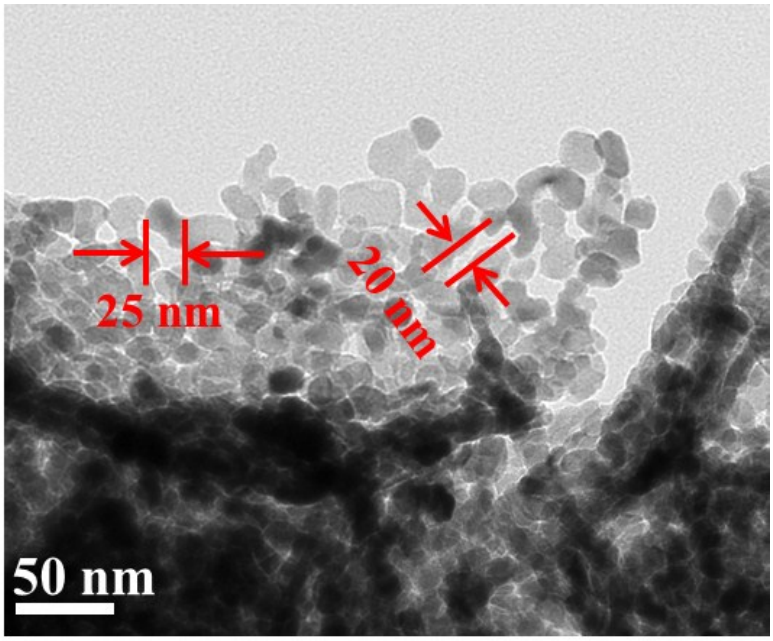

Fig. S5 TEM images of ZCO.

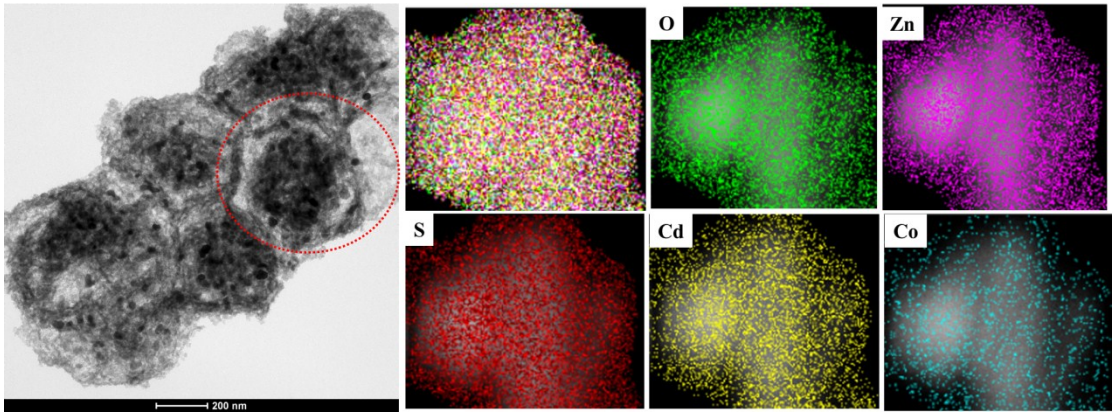

Fig. S6 TEM images of 30 wt% CdS/ZCO and the corresponding TEM elemental mapping of O, Zn, S, Cd and Co.

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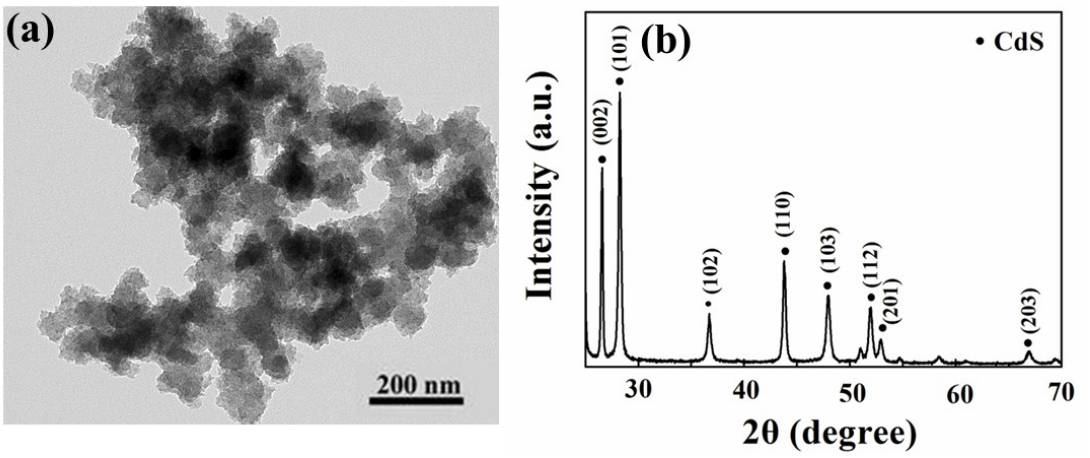

Fig. S7 (a) TEM image of CdS, (b) XRD patterns of CdS.

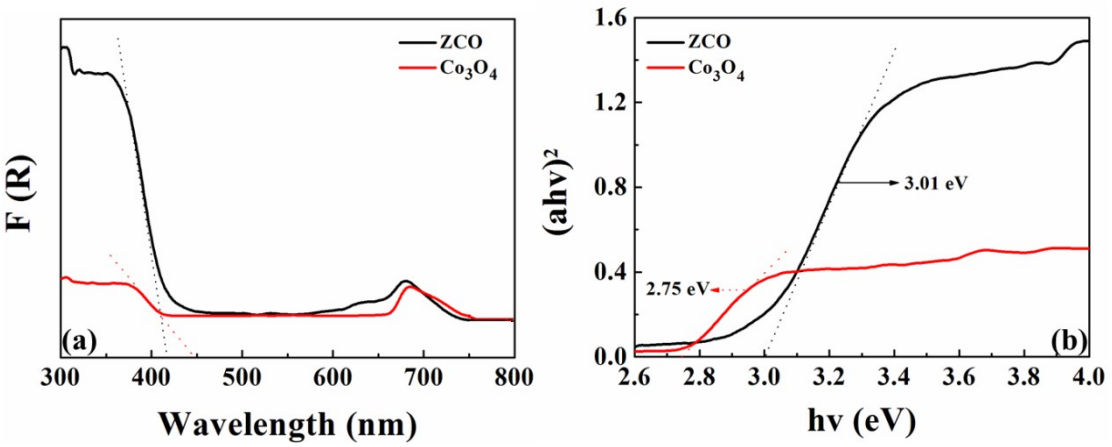

Fig. S8 (a) UV-Vis absorption spectra of ZCO and Co_3O_4, (b) Band gap value of ZCO and Co_3O_4.

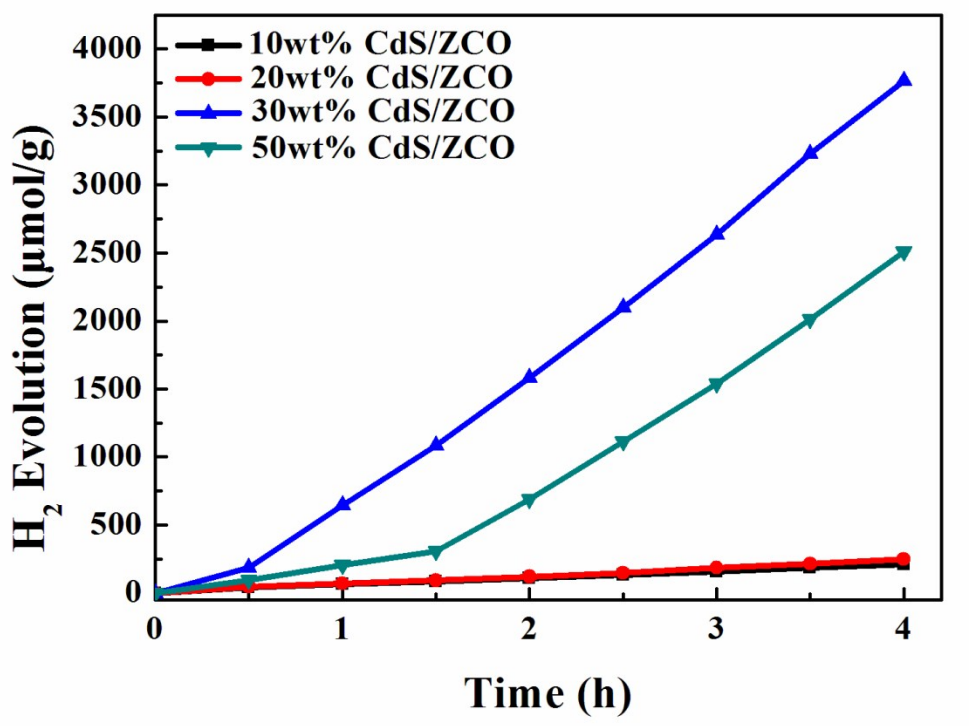

Fig. S9 The H_2 evolution rates of CdS/ZCO loaded with different CdS percentages when the sacrifice agent is methanol.

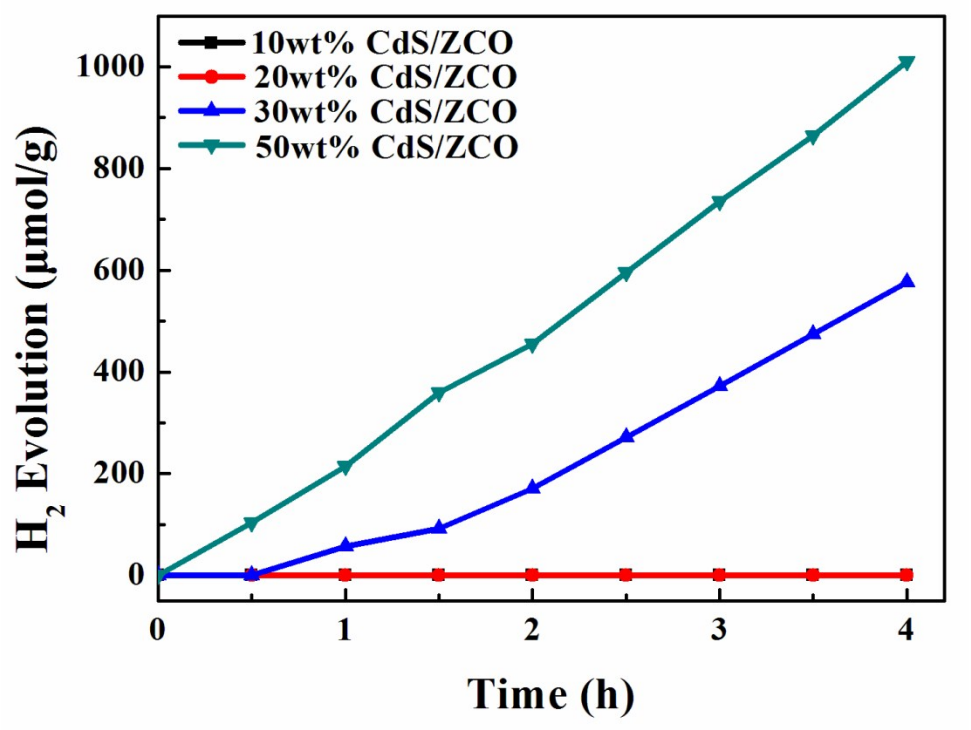

Fig. S10 The H_2 evolution rates of CdS/ZCO and ZCO without amino group when sacrifice agent is lactic acid.

Table S1 The summary of the atomic compositions of the composites calculated with the EDX data.

Sample	Atomic concentration (%)		Atomic ratio
	N	C	N/C
10 wt% CdS/ZCO	4.6	26.7	0.17
20 wt% CdS/ZCO	10.7	34.2	0.31
30 wt% CdS/ZCO	14.9	37.4	0.39
50 wt% CdS/ZCO	6.6.	36.5	0.18