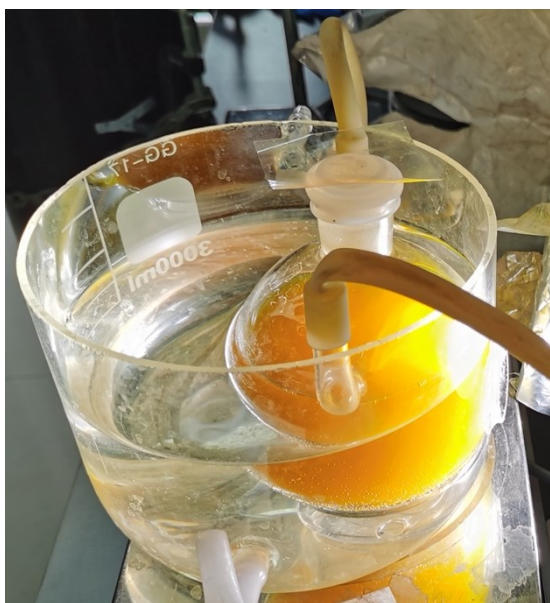


## Supplementary Information

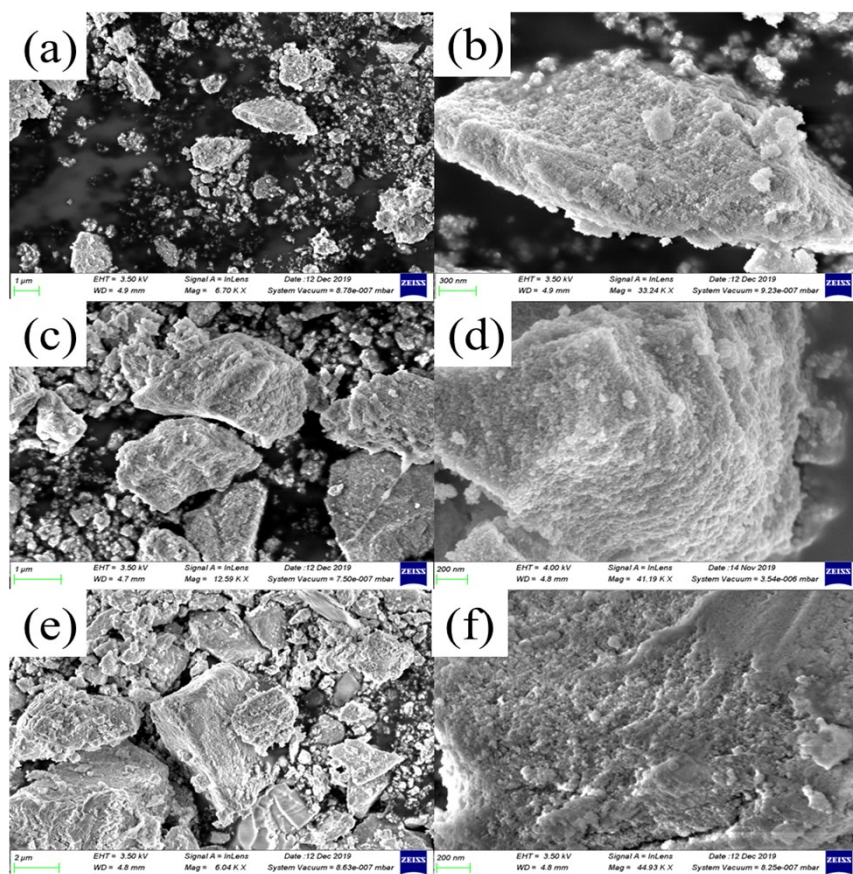
### Preparation condition optimization and stability of cubic phase CdS in photocatalytic hydrogen production

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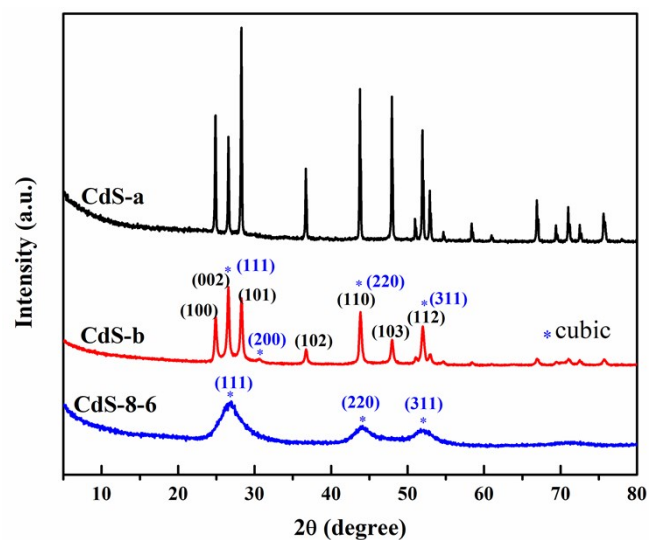
**Fig. S1** Picture of the reactor used in the hydrogen evolution experiments.



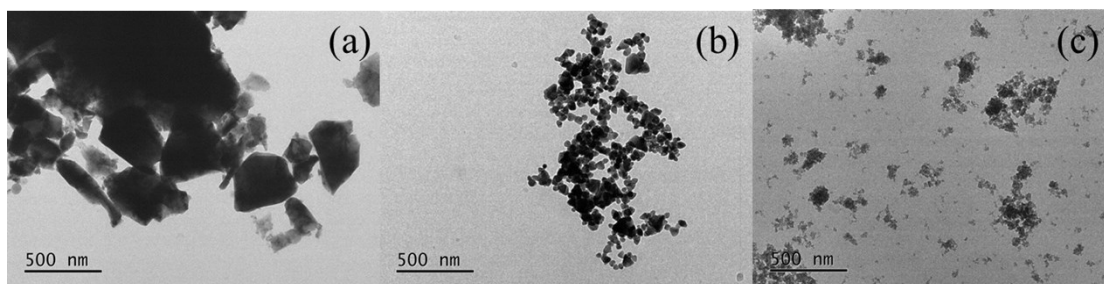
**Fig. S2** SEM images of samples CdS-8 (a, b), CdS-8-6 (c, d) and CdS-8-12 (e, f)

**Table S1** Atomic percent and the Cd to S molar ratios in different CdS samples

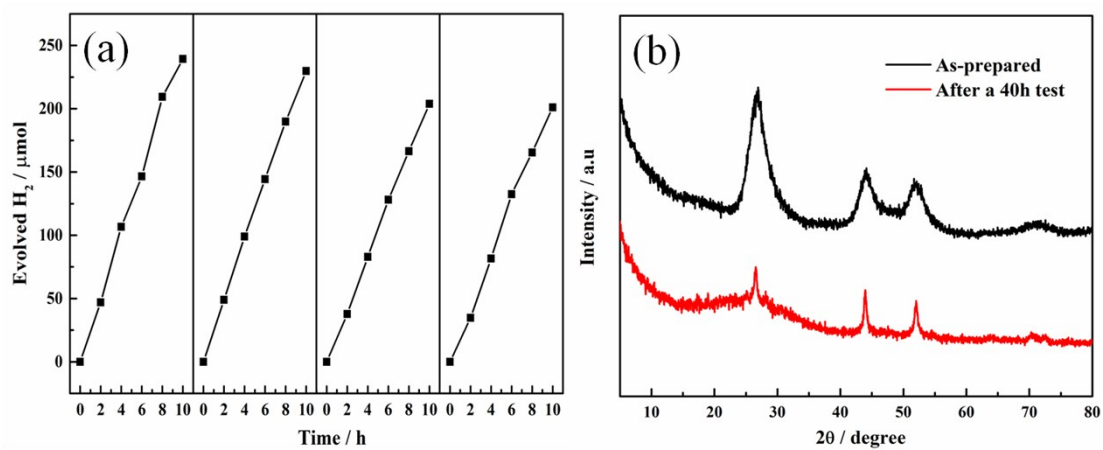
Sample	Cd (%)	S (%)	Cd : S
CdS-2	22.94	21.01	1.09
CdS-8	24.77	28.44	0.87
CdS-8-6	26.07	29.57	0.88



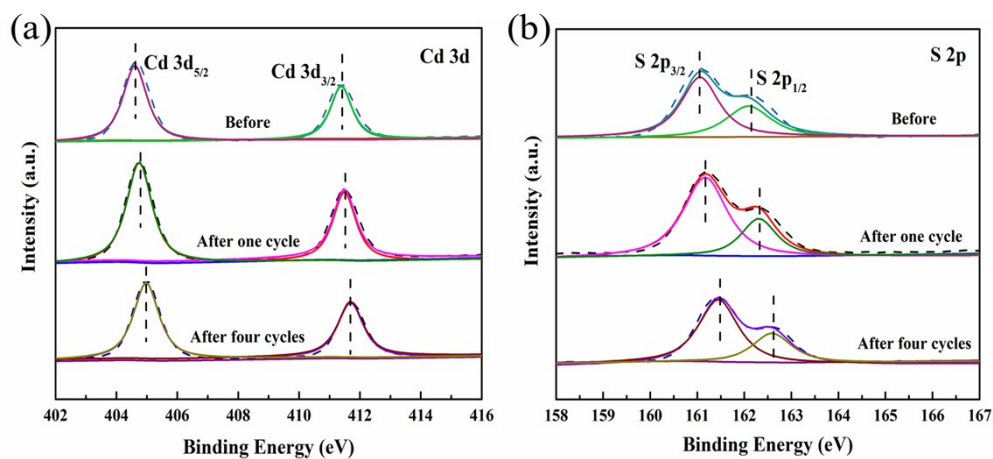
**Fig. S3** XRD patterns of CdS-a, CdS-b and CdS-8-6.



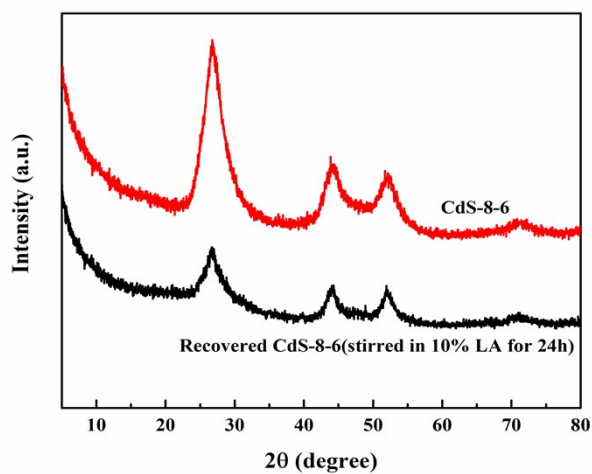
**Fig. S4** TEM images of CdS-a (a), CdS-b (b) and CdS-8-6 (c).



**Fig. S5** (a) Cyclic hydrogen production test over CdS-8-6, (b) XRD patterns of the CdS-8-6 samples as-prepared and recovered after 40 h.



**Fig. S6** High-resolution Cd 3d and S 2p XPS spectra of the CdS-8-6 samples before and after H<sub>2</sub> evolution reaction.



**Fig. S7** XRD patterns of the CdS-8-6 samples as-prepared and recovered after stirred in 10% LA for 24h.