Electronic Supplementary Information for

A photocatalyst foam for superior visible-light photocatalytic hydrogen evolution

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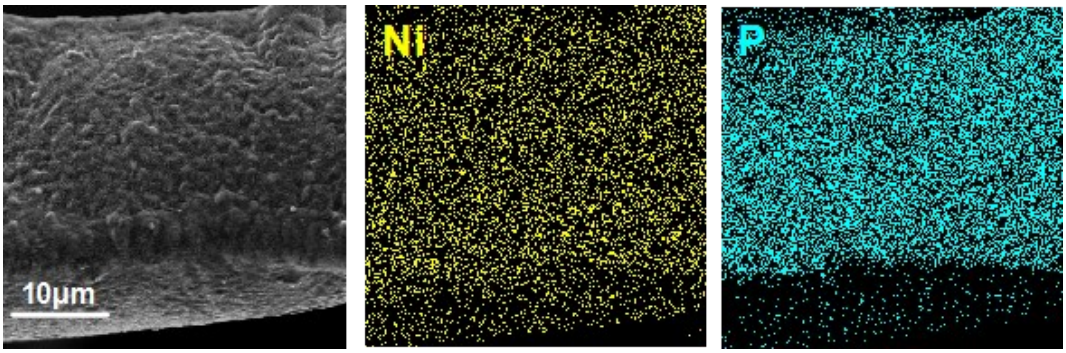

Fig. S1 SEM image of the NF-P and the corresponding EDX elemental maps (Ni and P).

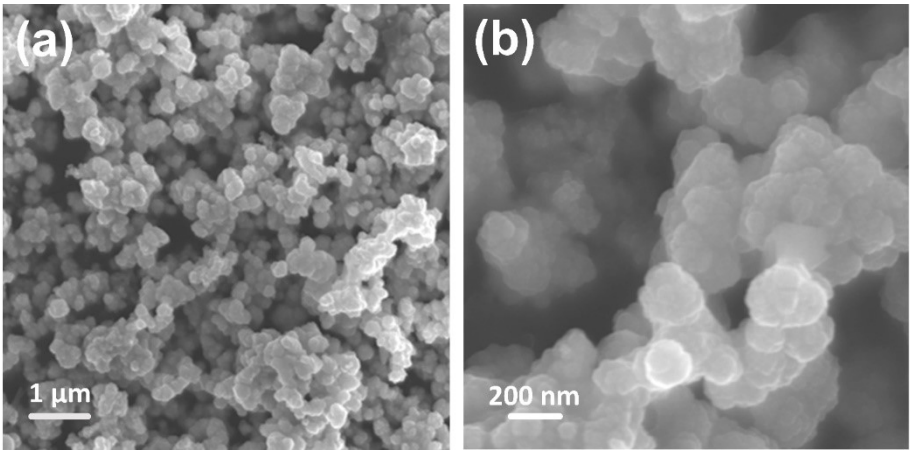

Fig. S2 SEM images of the pristine CdS particles.

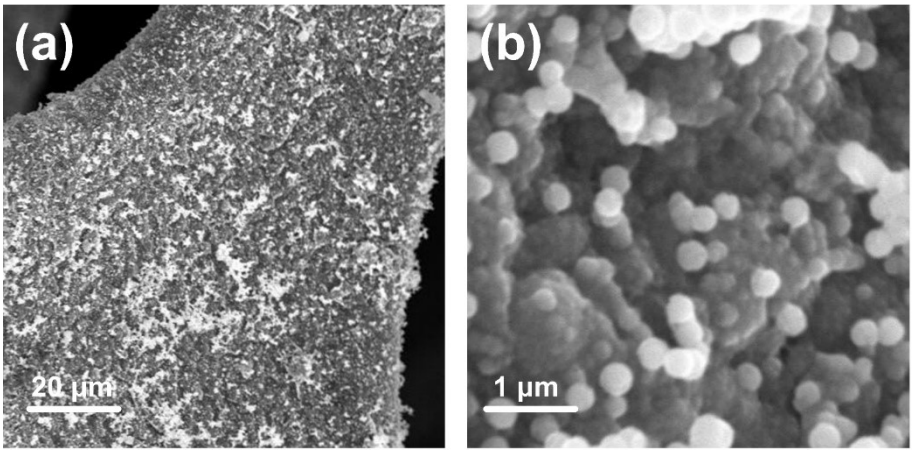

Fig. S3 SEM images of the CdS/NF, where the CdS particles were directly grown on the surfaces of the pristine NF.

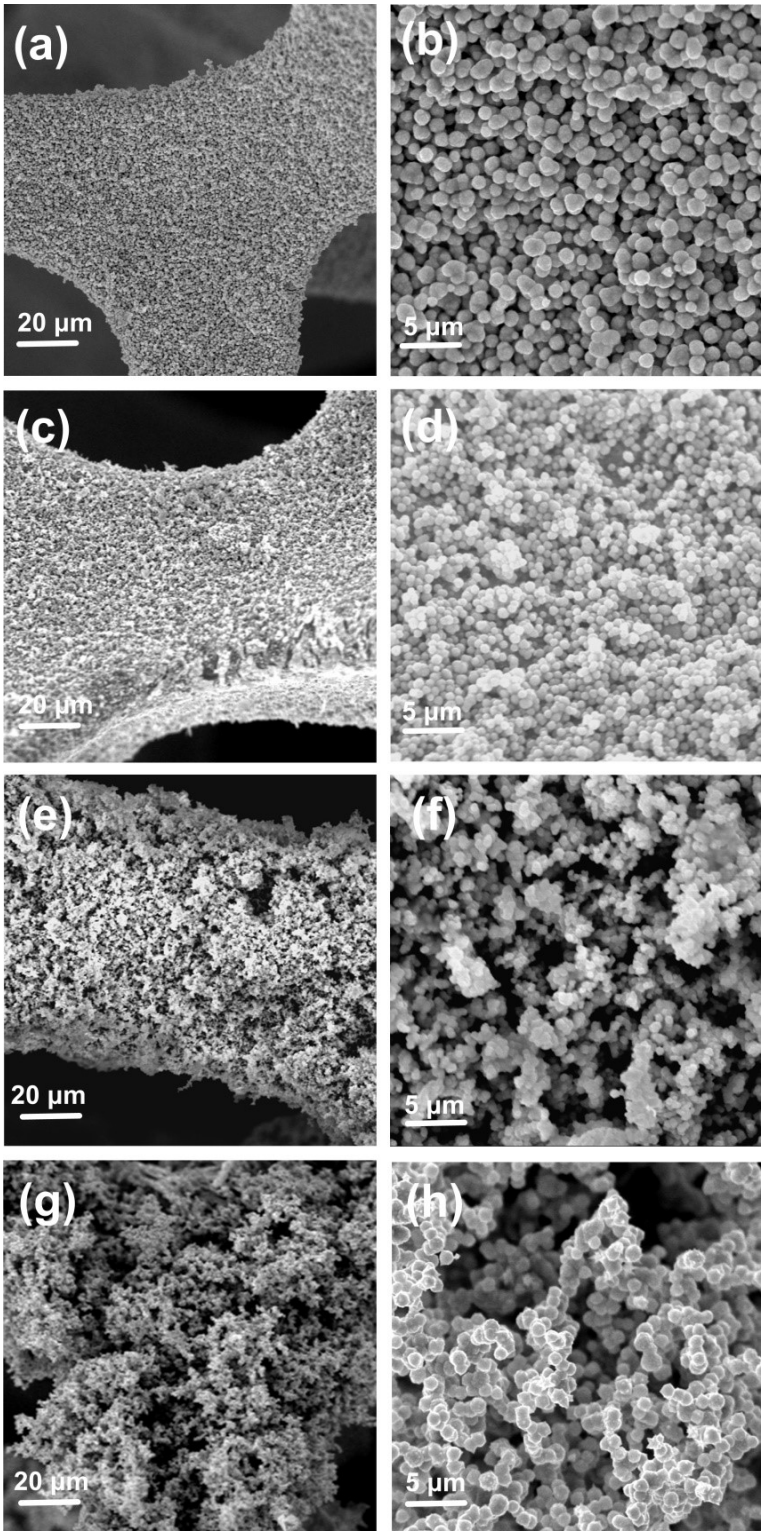

Fig. S4 SEM images of CdS/NF-P-0.1 (a, b), CdS/NF-P-0.15 (c, d), CdS/NF-P-0.2 (e, f) and CdS/NF-P-0.3 (g, h).

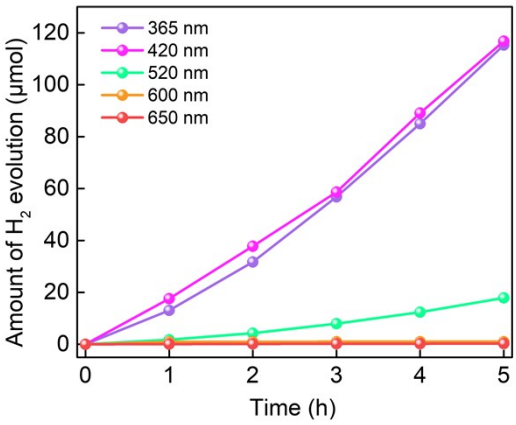

Fig. S5 Time courses of photocatalytic H_2 evolution on CdS/NF-P-0.25 under light irradiation of different wavelengths.

Table S1 Comparison of catalytic H_2 evolution activity of CdS/NF-P photocatalyst foam with different CdS-based photocatalysts in semiconductor-based photocatalytic H_2 evolution systems.

Photocatalyst	Reaction conditions	Light source	H_2 evolution rate (mmol h^{-1} $g_{catalyst}^{-1}$)	Ref.
CS/CdS	0.5 M Na_2S and 0.5 M Na_2SO_3	300W Xe lamp (>420 nm)	3.88	1
$CdS_{0.5}Se_{0.5}$ -DETA	Lactic acid (10 vol.%)	300W Xe lamp (>420 nm)	8.11	2
MoS_2/CdS	Lactic acid (10 vol.%)	300W Xe lamp (>420 nm)	5.24	3
Black TiO_2/CdS	0.35 M Na_2S and 0.25 M Na_2SO_3	300W Xe lamp (>420 nm)	6	4
Ni_2P/CdS	Lactic acid (10 vol.%)	300W Xe lamp (>420 nm)	1.18	5
ZnO/CdS/MoS_2	0.35 M Na_2S and 0.25 M Na_2SO_3	300W Xe lamp (>420 nm)	10.24	6
Mo_2C/CdS	0.5 M Na_2S and 0.5 M Na_2SO_3	300W Xe lamp (>420 nm)	1.6	7
SiC/CdS	1M Na_2S and 1M Na_2SO_3	300W Xe lamp (>420 nm)	0.6	8
Pt/CdS	Lactic acid (10 vol.%)	300W Xe lamp (>420 nm)	24.15	9
Ti_3C_2/CdS	Lactic acid (25 vol.%)	300W Xe lamp (>420 nm)	11.3	10
CdS/NF-P	Lactic acid (10 vol.%)	10W LED (380nm≤λ≤780 nm)	4.82	This work

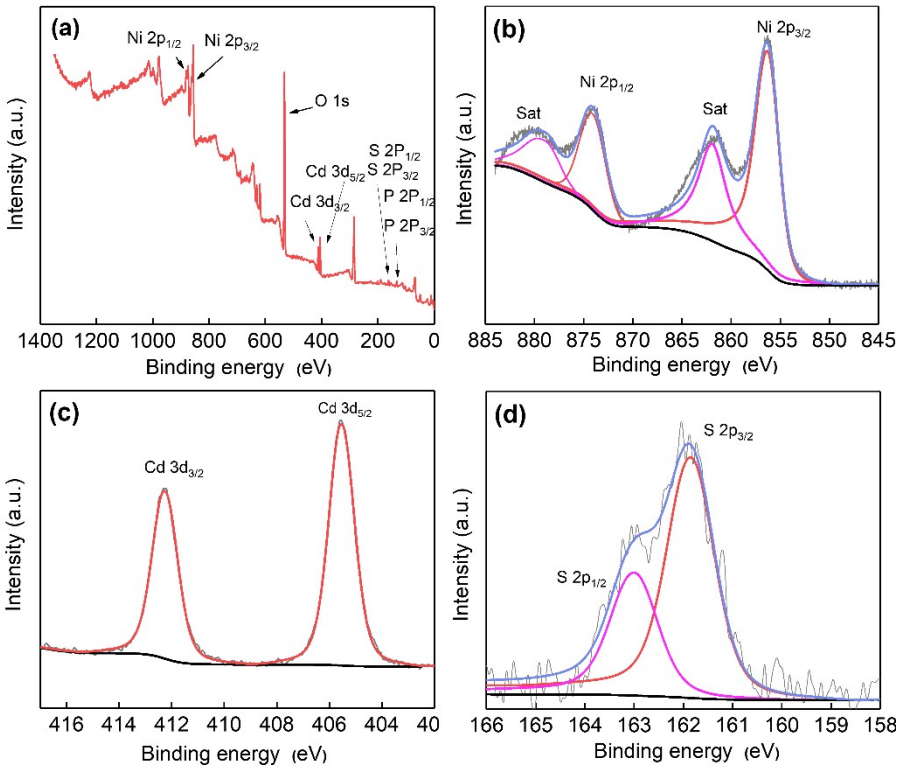

Fig. S6 (a) XPS survey spectrum and (b) Ni 2p, (c) Cd 3d, and (d) S 2p XPS spectra of the CdS/NF-P after 35 h of photocatalytic HER.

References

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