## **Supporting Information**

## In-situ surface engineering of ultrafine Ni<sub>2</sub>P nanoparticles on cadmium sulfide for robust hydrogen evolution

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catalyst	Light source (wavelength)	Scavenger	H <sub>2</sub> evolution rate (mmol g <sup>-1</sup> h <sup>-</sup>	AQY(%)	Ref.
Ni/CdS	≥420 nm	TEOA	0.471	Not given	[1]
Ni <sub>2</sub> P@CdS	≥430 nm	None	0.838	3.89	[2]
FeP/CdS	≥420 nm	lactic acid	21.6	Not given	[3]
CdS/ZnS	≥420 nm	Na <sub>2</sub> S-Na <sub>2</sub> S O <sub>3</sub>	0.792	Not given	[4]
3D NiO-CdS	≥420 nm	Na <sub>2</sub> S-Na <sub>2</sub> S O <sub>3</sub>	0.745	6.02	[5]
MoS2/CdS	≥420 nm	Na <sub>2</sub> S-Na <sub>2</sub> S O <sub>3</sub>	4.77	Not given	[6]
TiO <sub>2</sub> -CdS@g- C <sub>3</sub> N <sub>4</sub>	≥420 nm	Na <sub>2</sub> S-Na <sub>2</sub> S O <sub>3</sub>	1.504	11.9	[7]
Ni(OH) <sub>2</sub> - CdS/g-C <sub>3</sub> N <sub>4</sub>	≥420 nm	Na <sub>2</sub> S-Na <sub>2</sub> S O <sub>3</sub>	115.18	16.7	[8]
Cu <sub>2</sub> MoS <sub>4</sub> /CdS	≥420 nm	lactic acid	15.56	Not given	[9]
CdS@Mo <sub>2</sub> C- C	≥420 nm	Na <sub>2</sub> S-Na <sub>2</sub> S O <sub>3</sub>	17.24	Not given	[10]
Ni <sub>2</sub> P-CdS	≥420 nm	Na <sub>2</sub> S-Na <sub>2</sub> S O <sub>3</sub>	34.9	21.7	This work

Table S1 Comparison of photocatalytic H<sub>2</sub> evolution activities of CdS-based photocatalysts.

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