Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Table of contents

Table S1 Composition of different electrolytes used in the electrochemical test of CdS-NiP_x.

	$NiCl_2$ (0.1M)/ml	$Na_2H_2PO_2$ (0.2M)/ml	H_2O/ml
A	20	0	30
B	0	20	30
C	20	20	10

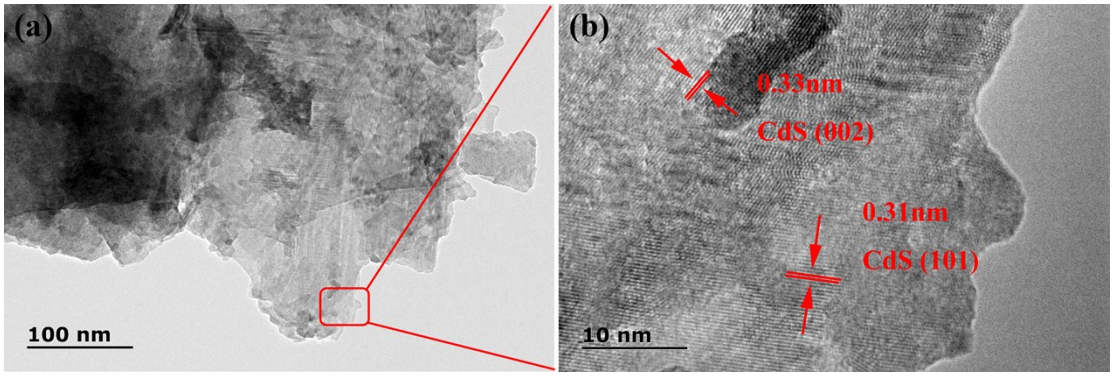

Figure S1 TEM (a) and HRTEM (b) images of CdS.

Table S2 Approximate content of NiP_x in CdS-NiP_x photocatalysts.

Content / Samples	wt.%		at.%		wt.%
	Ni	P	Ni	P	NiP_x
CdS-5NiP_x	0.30	0.70	0.40	2.00	1.00
CdS-10NiP_x	0.36	0.76	0.50	2.30	1.12
CdS-20NiP_x	0.50	0.80	0.70	2.50	1.30
CdS-30NiP_x	0.70	1.20	1.00	3.30	1.90

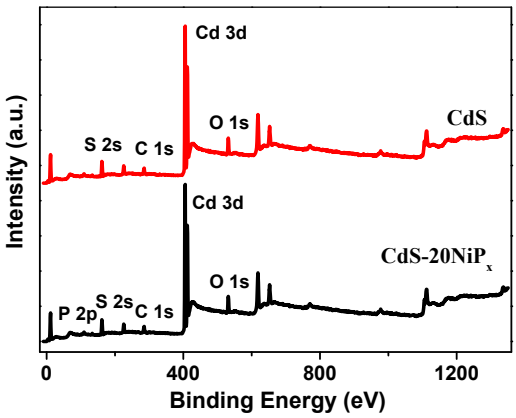

Figure S2 Wide scan XPS spectra of CdS and CdS-20NiP$_x$.

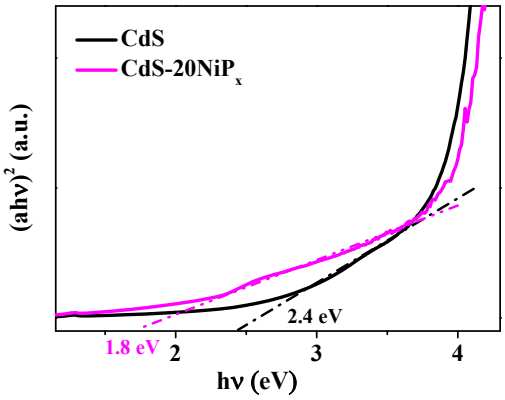

Figure S3 The Tauc plots of CdS and CdS-20NiP$_x$ obtained from Fig. 5(a).

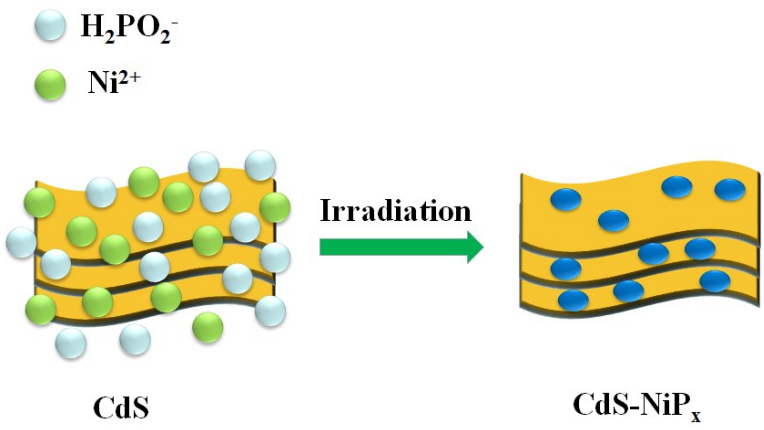

Figure S4 Proposed preparation process of CdS-NiP$_x$ by photochemical reduction method.

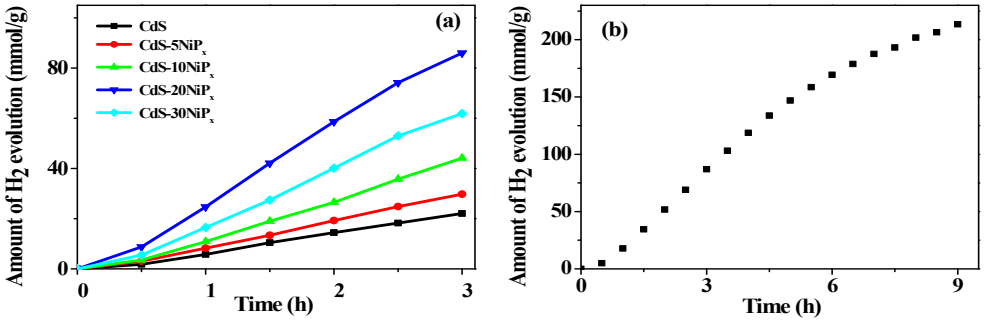

Figure S5 (a) Time courses of photocatalytic hydrogen production of different CdS-NiP$_x$ and bare CdS, and (b) long-term photocatalytic hydrogen production of CdS-20NiP$_x$.

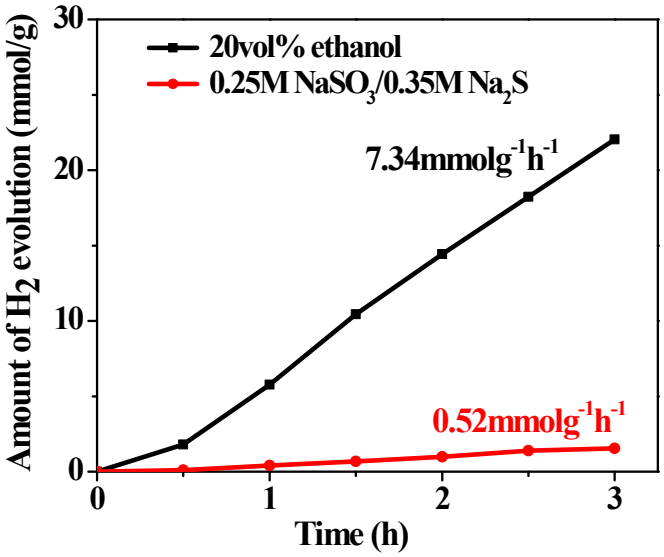

Figure S6 Time courses of photocatalytic hydrogen production of CdS with different sacrificial agents.