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阳离子镍基MOF自组装CdS/PFC-8催化剂用于可见光光催化选择性苯甲醇氧化耦合产氢

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Cationic Ni-MOF-Assembled CdS/PFC-8 Catalyst for Photocatalytic Hydrogen Production with Selective Benzyl Alcohol Oxidation under Visible Light

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Results

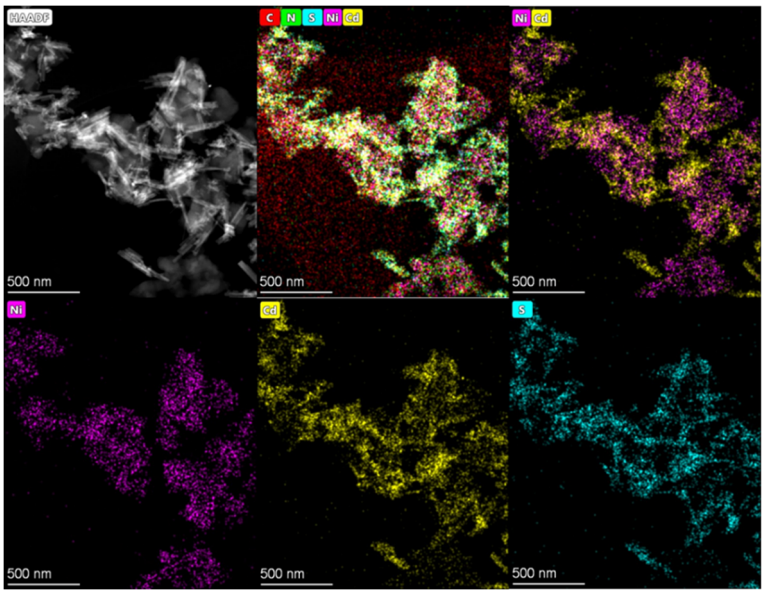

Fig. S1 The morphology of the CdS/PFC-8 composites EDX elemental mapping.

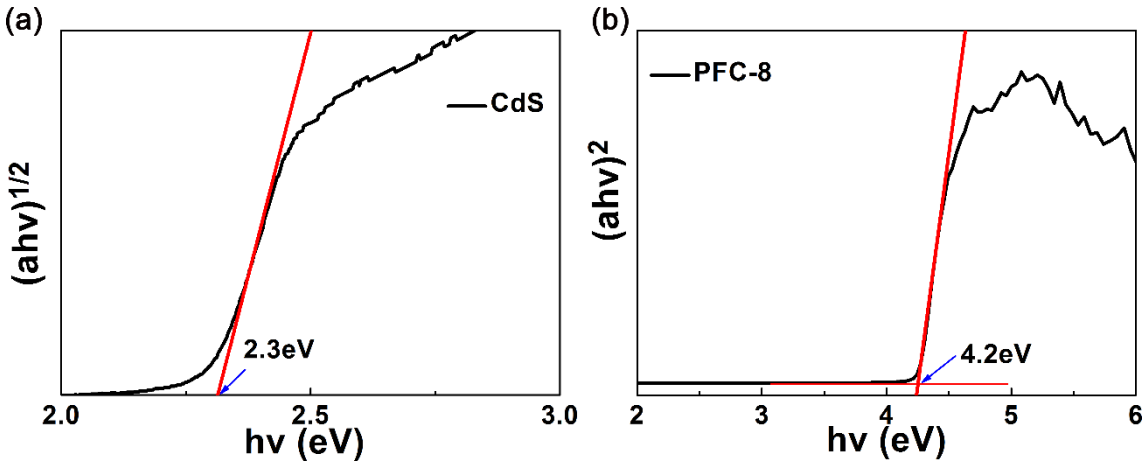

Fig. S2 The Tauc plots of CdS (a) with direct band gap and PFC-8 (b) with indirect band gap.

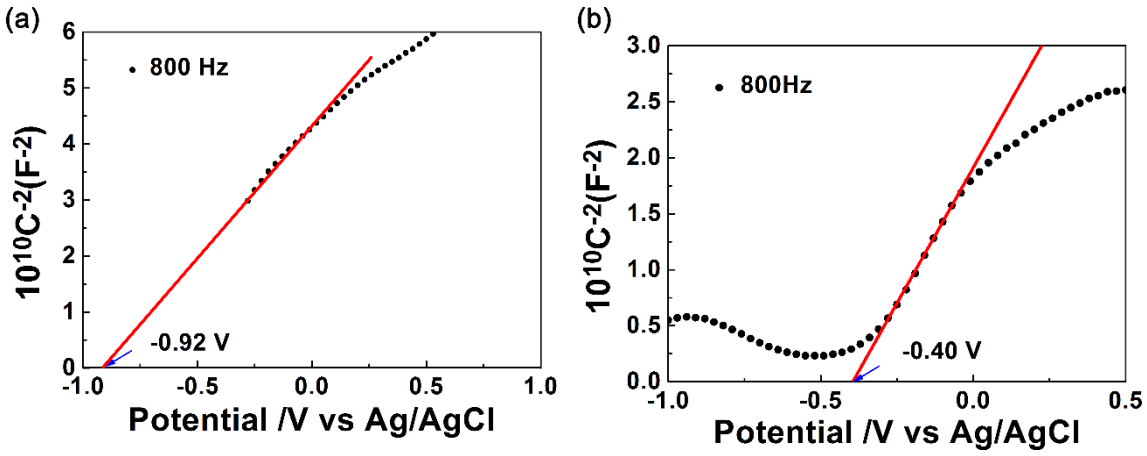

Fig. S3 Mott-Schottky plots for (a) CdS and (b) PFC-8 at frequencies of 800 Hz.

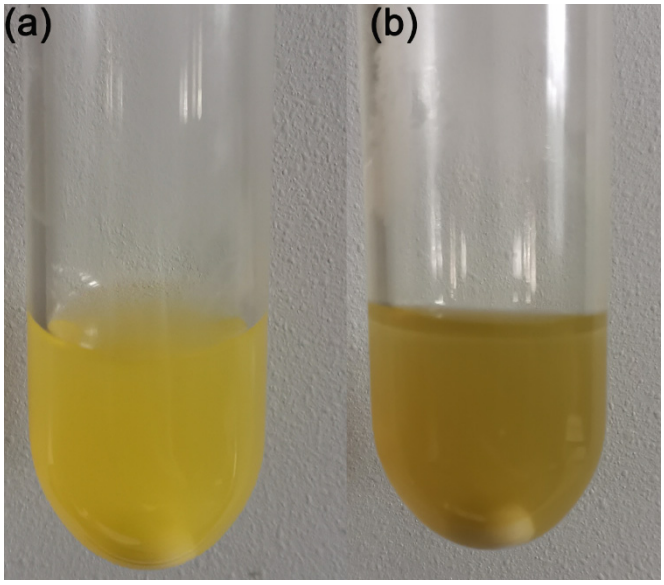

Fig. S4 Photos of the photocatalysts: (a) before and (b) after photocatalysis.

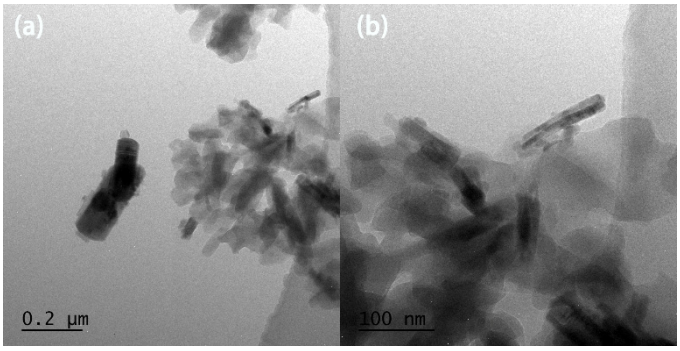

Fig. S5 TEM of CdS/PFC-8 composites after catalysis.

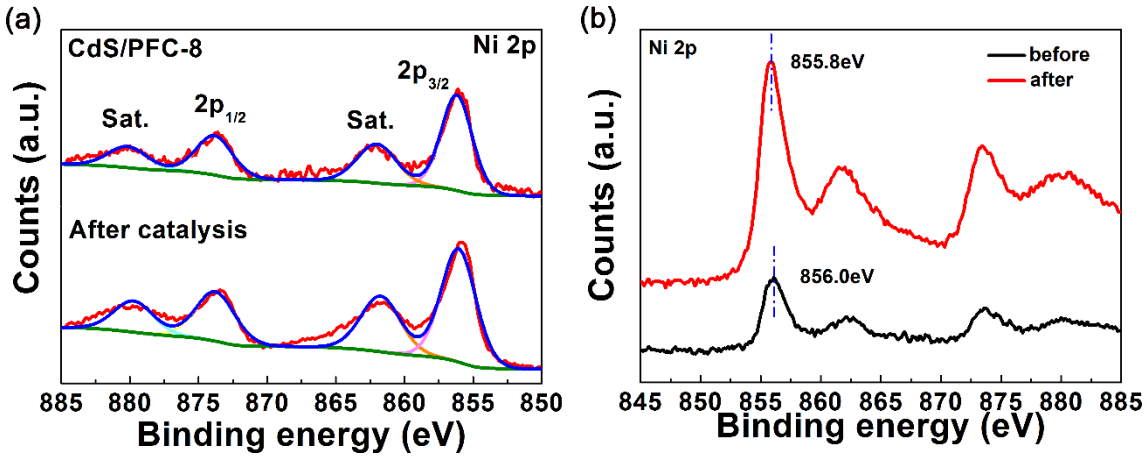

Fig. S6 CdS/PFC-8 composite before and after catalysis: (a) XPS spectra of Ni 2*p* and (b) detailed diagram of Ni 2*p*.

Table S1 Photocatalytic results of different ratio of CdS and PFC-8 in CdS/PFC-8.

Catalyst	Mass ratio of CdS and PFC-8	PFC-8 contents (wt%)	H_2/(μmol·g^{-1}· h^{-1})	Benzaldehyde (μmol·g^{-1}· h^{-1})
CdS/PFC-8	1:2	6.51	445	531
CdS/PFC-8	1:1	5.74	3376	4120
CdS/PFC-8	2:1	3.79	602	919
CdS/PFC-8	5:1	1.96	174	305

The conversion of benzyl alcohol and the selectivity of benzaldehyde were defined as follows:

Conversion (%) = $[(C_0 - C_{\text{benzyl alcohol}})/C_0] \times 100\%$,

Selectivity (%) = $[C_{\text{benzaldehyde}}/(C_0 - C_{\text{benzyl alcohol}})] \times 100\%$,

where C_0 is the initial concentration of benzyl alcohol, C_{benzyl} alcohol and $C_{\text{benzaldehyde}}$ are the concentrations of the substrate benzyl alcohol and benzaldehyde.