

# Noble-metal-free bimetallic nitride decorated CdS nanorods for photocatalytic hydrogen generation

Lu Chen<sup>a\*</sup>, Yuzhou Xia<sup>a</sup>, Jiale Shi<sup>b\*</sup>, Xiaohui Huang<sup>a\*</sup>, Xiya Liu<sup>a</sup>, Guiyang Yan<sup>a</sup>,  
Renkun Huang<sup>a\*</sup>

<sup>a</sup>Fujian Provincial Key Laboratory of Featured Materials in Biochemical Industry,  
Ningde Normal University, Ningde 352100, China

<sup>b</sup>Key Laboratory of Chemical Materials and Green Nanotechnology, Quanzhou  
Normal University, Quanzhou 362000, PR China

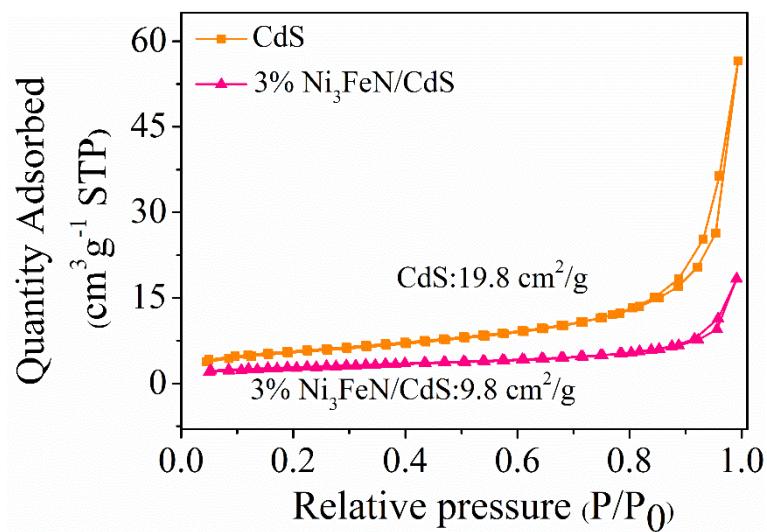


Fig. S1. N<sub>2</sub> adsorption–desorption isotherms of CdS and 3 wt% Ni<sub>3</sub>FeN/CdS

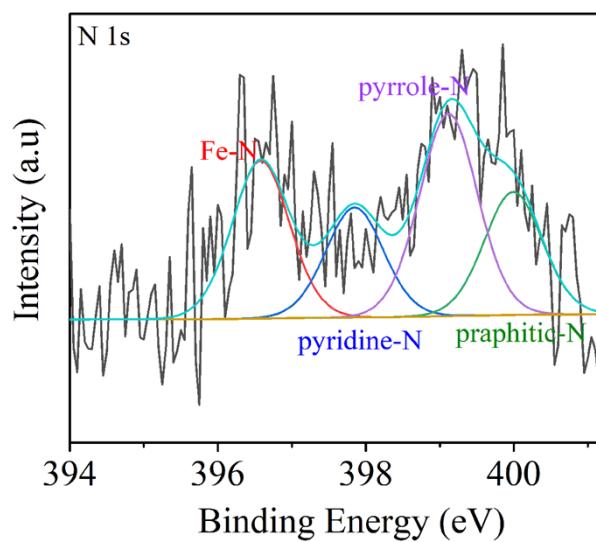


Fig. S2. XPS spectra of N 1s of 3 wt% Ni<sub>3</sub>FeN/CdS

Table. 1 Comparison of the H<sub>2</sub> evolution rates between the current work

and other reports

Sample	Co-catalyst	Condition	Weight	Hydrogen evolution rete (mmol·g <sup>-1</sup> ·h <sup>-1</sup> )	Ref
MoOSx/CdS	MoOSx	10% Lactic acid ( $\lambda > 420$ nm)	50 mg	0.93	1
W-WC/CdS	W-WC	10% Lactic acid ( $\lambda > 420$ nm)	0.1 g	3.31	2
Mo-VC/CdS	Mo-VC	10% Lactic acid ( $\lambda > 420$ nm)	40 mg	2.267	3
Ti <sub>3</sub> C <sub>2</sub> Tx/CdS	Ti <sub>3</sub> C <sub>2</sub> Tx	10% TEOA ( $\lambda > 420$ nm)	10 mg	2.137	4
NiMo/CdS	NiMo	10% TEOA ( $\lambda > 420$ nm)	10 mg	2.523	5
Ni <sub>3</sub> FeN/CdS	Ni <sub>3</sub> FeN	Na <sub>2</sub> S (0.35 M)/Na <sub>2</sub> SO <sub>3</sub> (0.25 M) ( $\lambda > 420$ nm)	20 mg	4.13	Our work

### Reference

1. S. Tao, W. Zhong, Y. Chen, F. Chen, P. Wang and H. Yu, *Catalysis Science & Technology*, 2022, 12, 6006-6015.
2. B. Ma, S. Zhang, W. Wang, L. Feng, R. Zhang, K. Lin, D. Li, H. Zhan and X. Yang, *ChemCatChem*, 2020, 12, 1148-1155.
3. Y. Lei, K. H. Ng, Y. Zhu, Y. Zhang, Z. Li, S. Xu, J. Huang, J. Hu, Z. Chen, W. Cai and Y. Lai, *Chemical Engineering Journal*, 2023, 452, 139325-139339.
4. S. Liu, H. Fang, R. Chen, Y. Ma, Y. Zhu, M. Ye, H. Zhang and K. Zhang, *International Journal of Hydrogen Energy*, 2024, 54, 1154-1159.
5. A. Qian, X. Han, C. Situ, M. Fan, Q. Liu, X. Pu, J. Liu, J. Zhang, J. Zhan and B. Hu, *Molecular Catalysis*, 2024, 555, 113878-113886.