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材料科学与工程学院
研究方向：“极性纳米光电催化材料”及其在能源、环境、医学领域的应用
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个人简介：

1、研究方向：

研究领域为“极化光催化材料”及其在能源、环境、生物医学等领域的应用，主要利用结构独特的纳米“极性晶体”作为太阳能光催化剂，并研究其在光催化 CO2 还原、水分解制氢、氮还原、污染物净化、抗菌等领域的应用。

2、所获荣誉：

荣获国家高层次青年人才、霍英东基金青年教师奖、翟裕生青年教师奖、中科院院长优秀奖、教育部自然科学二等奖、英国皇家化学会 RSC Horizon Prize 等，2019-2023 连续五年入选科睿唯安（Clarivate Analytics）“全球高被引学者”，入选全球顶尖科学家和中国高被引学者。

3、学术成果：

以第一或通讯作者在国际著名期刊 Nature Commun.（2）、Adv. Mater.（8）、Angew. Chem. Int. Ed.（13）、J. Am. Chem. Soc.、Adv. Funct. Mater.（11）、Appl. Catal. B: Environ（16）、Nano Energy（10）等发表 SCI 论文 200 余篇，48 篇论文入选全球 1% ESI 高被引用论文，2 篇论文分别入选 2015、2019 年中国百篇最具影响国际学术论文，发表论文总引用次数 25000 余次，h 因子为 87，申请发明专利多项。

代表性成果：

1. Lizhen Liu†, Jingcong Hu†, Zhaoyu Ma, Zijian Zhu, Bin He, Fang Chen*, Yue Lu*, Rong Xu, Yihe Zhang, Tianyi Ma, Manling Sui, Hongwei Huang*, One-dimensional single atom arrays on ferroelectric nanosheets for enhanced CO2 photoreduction. Nat. Commun. 2024,15, 305.

2. Hongjian Yu, Fang Chen, Xiaowei Li, Hongwei Huang*, Qiuyu Zhang, Shaoqiang Su, Keyang Wang, Enyang Mao, Bastian Mei, Guido Mul, Tianyi Ma*, Yihe Zhang*, Synergy of ferroelectric polarization and oxygen vacancy to promote CO2 photoreduction. Nat. Commun. 2021, 12, 4594.

3. Yutang Yu, Zijian Zhu, Hongwei Huang*, Surface Engineered Single-atom Systems for Energy Conversion. Adv. Mater. 10.1002/adma.202311148.

4. Jie Yuan, Wenhui Feng, Yongfan Zhang, Jianyu Xiao, Xiaoyan Zhang, Yinting Wu, Wenkang Ni, Hongwei Huang*, Wenxin Dai*, Unraveling Synergistic Effect of Defects and Piezoelectric Field in Breakthrough Piezo-Photocatalytic N2 Reduction. Adv. Mater. 2023, 10.1002/adma.202303845.

5. Yinghui Wang, Jingcong Hu, Teng Ge, Fang Chen*, Yue Lu, Runhua Chen, Hongjun Zhang, Bangjiao Ye, Shengyao Wang*, Yihe Zhang, Tianyi Ma, Hongwei Huang*, Gradient cationic vacancies enabling inner-to-outer tandem homojunctions: strong local internal electric field and reformed basic sites boosting CO2 photoreduction. Adv. Mater. 2023, 35, 2302538.

6. Wenke Xie, Kuangjun Li, Xuan-He Liu*, Xing Zhang*, Hongwei Huang*, P-mediated Cu-N4 sites in carbon nitride realizing CO2 photoreduction to C2H4 with selectivity modulation. Adv. Mater. 2023, 35, 2208132.

7. Cheng Hu, Fang Chen, Yonggang Wang, Na Tian*, Tianyi Ma, Yihe Zhang, Hongwei Huang*, Exceptional Cocatalyst-Free Photo-Enhanced Piezocatalytic Hydrogen Evolution of Carbon Nitride Nanosheets from Strong In-Plane Polarization. Adv. Mater. 2021, 33, 2101751.

8. Fang Chen, Tianyi Ma, Tierui Zhang, Yihe Zhang, Hongwei Huang*, Atomic-Level Charge Separation Strategies in Semiconductor-Based Photocatalysts. Adv. Mater. 2021, 33, 202005256

9. Fang Chen, Zhaoyu Ma, Liqun Ye, Tianyi Ma, Tierui Zhang, Yihe Zhang, Hongwei Huang*, Macroscopic Spontaneous Polarization and Surface Oxygen Vacancies Collaboratively Boosting CO2 Photoreduction on BiOIO3 Single Crystals. Adv. Mater. 2020, 32, 1908350.

10. Lin Hao, Lei Kang, Hongwei Huang*, Liqun Ye, Keli Han, Songqiu Yang, Hongjian Yu, Munkhbayar Batmunkh, Yihe Zhang, Tianyi Ma*, Surface halogenation induced atomic site activation and local charge separation for superb CO2 photoreduction. Adv. Mater. 2019, 31, 1900546.

11. Wenke Xie, Yushen Liu, Xing Zhang, Huijuan Yan, Xuan-He Liu*, Xiaoyu Zhang, Qinglan Zhao*, Hongwei Huang*, Asymmetric Cu-N-La Species Enabling Atomic-Level Donor-Acceptor Structure and Favored Reaction Thermodynamics for Selective CO2 Photoreduction to CH4. Angew. Chem. Int. Ed.

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12. Cheng Hu, Fang Chen, Hongwei Huang*, Ferroelectric Polarization Modulated Facet-selective Charge Separation in Bi4NbO8Cl Single Crystal for Boosting Visible-light Driven Bifunctional Water Splitting. Angew. Chem. Int. Ed. 2023, 62, e202312895.

13. Liqi Bai, Zihan Hu, Cheng Hu, Songge Zhang, Yiran Ying, Yingge Zhang, Lu Li, Hanfang Zhang, Nan Li, Shanshan Shi, Shuo Liu, Lin Hao, Tongyao Liu, Hongwei Huang*, Haitao Huang*, Yihe Zhang*, Utilizing cationic vacancies and spontaneous polarization on cathode to enhance zinc-ion storage and inhibit dendrite growth in zinc-ion batteries. Angew. Chem. Int. Ed. 2023, 62, e202301631.

14. Cheng Hu, Jingcong Hu, Zijian Zhu, Yue Lu, Shengqi Chu, Tianyi Ma, Yihe Zhang, Hongwei Huang*, Orthogonal Charge Transfer by Precise Positioning of Silver Single Atoms and Clusters on Carbon Nitride for Efficient Piezocatalytic Pure Water Splitting. Angew. Chem. Int. Ed. 2022, 61, e202212397.

15. Zijian Zhu, Hongwei Huang*, Lizhen Liu, Fang Chen, Na Tian, Yihe Zhang, Han Yu*, Chemically Bonded α-Fe2O3/Bi4MO8Cl Dot-on-Plate Z-Scheme Junction with Strong Internal Electric Field for Selective Photo-oxidation of Aromatic Alcohols. Angew. Chem. Int. Ed. 2022, 61, e202203519.

16. Dequan Jiang, Dr. Huimin Song, Dr. Ting Wen, Zimin Jiang, Chen Li, Ke Liu, Wenge Yang, Hongwei Huang*, Yonggang Wang*, Pressure-Driven Two-Step Second-Harmonic-Generation Switching in BiOIO3. Angew. Chem. Int. Ed. 2022, 61, e202116656.

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23. Hongwei Huang, Jiyong Yao, Zheshuai Lin, Xiaoyang Wang, Ran He, Wenjiao Yao, Naixia Zhai, Chuangtian Chen*, NaSr3Be3B3O9F4: A Promising Deep-Ultraviolet Nonlinear Optical Material Resulting from the Cooperative Alignment of the [Be3B3O12F]10- Anionic Group, Angew. Chem. Int. Ed. 2011, 50, 9141-9144.

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学术兼职：任《ChemPhotoChem》和《Chinese Journal of Catalysis》期刊的客座主编、《Chinese Journal of Catalysis》、《Chinese Chemical Letters》、《物理化学学报》、《Catalysts》、《Nanomaterials and Nanotechnology》、《天津大学学报》期刊编委或青年编委。任中国感光学会青年理事，中国复合材料学会矿物复合材料专委会委员，中国矿物岩石地球化学学会矿物岩石材料专委会委员，波兰国家科学中心项目评委。