

Assistant Professor WU, HAO
Department of Materials Science and Engineering, Faculty of Innovation Engineering
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Academic Qualification

Ph.D. in Chemical Engineering, University of New South Wales

Teaching Area

Nanocatalysis
Renewable Energy

Research Area

Photoactive Semiconductor
Nanocatalysis for Energy and Environment
Photoelectrochemical Biosensor

Professional Services

Early Career Editorial Member, *Journal of Energy Chemistry*, since 2024
Early Career Editorial Member, *Nano Materials Science*, since 2023
Early Career Editorial Member, *Chemical Engineering Journal*, since 2022

Working Experience

Oct. 2022 ~ present, Assistant Professor, Department of Materials Science and Engineering, Faculty of Innovation Engineering, Macau University of Science and Technology
Mar.2019 ~ Oct. 2022, Postdoctoral Fellow, School of Energy and Environment, City University of Hong Kong

Academic Publication (selected)

1. Wenting Chen, Jiahui Li, Jiabin Guo, Liang Li, Hao Wu*, Diagnosis and therapy of Alzheimer's disease: Light-driven heterogeneous redox processes, *Advances in Colloid and Interface Science* 2024, 332, 103253.
2. Hao Wu*, Lei Zhang, Aijun Du, Junwang Tang, Yun Hau Ng, Front-illuminated solar water splitting of BiVO₄ photoanode via mediating small polaron hopping, *ACS Energy Letters* 2023, 8, 2177-2184.
3. Hao Wu, Lei Zhang, Aijun Du, Rowshanak Irani, Roel van de Krol, Fatwa. F. Abdi, Yun Hau Ng, Low-bias photoelectrochemical water splitting via mediating trap states and small polaron hopping, *Nature Communications* 2022, 13, 6231.
4. Hao Wu, Songying Qu, Zhirun Xie, Yun Hau Ng, Surface modulation inducing bismuth-rich surface composition in BiVO₄ for efficient photoelectrochemical water splitting, *ACS Applied Energy Materials* 2022, 5, 8419-8427.
5. Hao Wu, Rowshanak Irani, Kunfeng Zhang, Lin Jing, Hongxing Dai, Hoi Ying Chung, Fatwa F. Abdi, Yun Hau Ng, Unveiling carrier dynamics in periodic porous 3D BiVO₄ photocatalyst for enhanced solar water splitting, *ACS Energy Letters* 2021, 6, 3400-3407.
6. Hao Wu, Xin Ying Kong, Xiaoming Wen, Siang-Piao Chai, Emma C. Lovell, Junwang Tang, Yun Hau Ng, Metal-organic framework decorated cuprous oxide nanowires for long-lived charges applied in selective photocatalytic CO₂ reduction to CH₄, *Angewandte Chemie International Edition* 2021, 60 (15), 8455-8459.
7. Hao Wu, Hui Ling Tan, Cui Ying Toe, Jason Scott, Lianzhou Wang, Rose Amal, Yun Hau Ng, Photocatalytic and photoelectrochemical systems: similarities and differences, *Advanced Materials* 2020, 32 (18) 1904717
8. Hao Wu, Zhaoke Zheng, Peng Wang, Judy Hart, Rose Amal, Yun Hau Ng, A pulse electrodeposited amorphous tunnel layer stabilizes Cu₂O for efficient photoelectrochemical water splitting under visible-light irradiation, *Journal of Materials Chemistry A* 2020, 8 (11), 5638-5646.

Research Grants

2024.01 -- 2026.12 Development of Cu-based Composite Photocatalysts by Unveiling the Underlying Polaron Mechanism (NSFC)
2023.10 -- 2026.10 Development of Nanostructured Perovskite Oxide Ceramic Semiconductors for Green Hydrogen Production (FDCT)
2023.06 -- 2026.06 Development of Nanostructured Perovskite Oxides by Unveiling the Underlying Photocorrosion Mechanism (FDCT)

Professional Certification and Awards

Outstanding Communist Party Member of Hengqin Guangdong-Macao Deep Cooperation Zone (2024)
Certificates of University Staff Development of Learning and Teaching (2020)

Professional Society Membership

Member, Australian Materials Research Society (AMRS)
Member, Royal Australian Chemical Institute (RACI)