



## Yue Zhang

Title: Professor

Academician of the Chinese Academy of Sciences

Director of State Key Laboratory for Advanced Metals and Materials

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### **Research Interests**

Prof. Yue Zhang has devoted his research life to low-dimensional semiconductor materials as well as their service behaviors. His current research fields are (1) Nano-Devices and Integration for Energy Conversion; (2) Nano-Devices and Systems for Information Sensing; (3) Service Behavior of Nanomaterials and Nanodevices.

### **Education Background**

February 1978-February 1982: Bachelor of Science, Wuhan University of Water Resources and Electric Power (now Wuhan University);

September 1987-October 1993: Ph.D. Degree in Engineering, University of Science and Technology Beijing;

2000-2002: Visiting scholar at the University of New South Wales in Australia, Tohoku University in Japan, and Georgia Institute of Nanotechnology in the United States funded by Anthony Mason Fellowship, JSPS and China Scholarship Council (CSC), respectively.

### **Work Experience**

2004-2015: Vice-President and Dean of the Graduate School of USTB

2003-2008: Director of the State Key Laboratory for Advanced Metals and Materials, USTB

2005-present: Director of the Beijing Key Laboratory for Advanced Energy Materials and Technologies, USTB

2021-present: Dean of Academy for Advanced Interdisciplinary Science and Technology, USTB

2022-present: Director of State Key Laboratory for Advanced Metals and Materials, USTB

### **Honors and Awards**

1. Recipient of the National Distinguished Young Science Foundation
2. Recipient of special government allowance from the State Council
3. The Second Class National Natural Science Award
4. 5 first prizes and 6 second prizes at the provincial and ministerial level
5. "13th Five-Year-Plan" Science and Technology Achievement Award for Steel Industry of China

### **Representative Publications**

Representative Monographs:

1. **Zhang Yue**. ZnO Nanostructures Fabrication and Applications, Royal Society of Chemistry, ISBN: 9781782627418, 2017, London, UK.
2. **Zhang Yue**, Gu Yousong, Huang Yunhua. Controllable Synthesis, Structure and Property Modulation and Device Application of One-Dimensional Nanomaterials, World Scientific, ISBN: 9789814407595, 2012, Singapore.
3. **Zhang Yue**, Dai Ying. Controlled Growth and Optical Properties of Zinc Oxide Nanostructures, Springer US, ISBN: 978-0-387-28706-5, 2003, New York, USA.
4. Zheng Zhang, Zhuo Kang, Qingliang Liao, **Yue Zhang**. Van der Waals Heterostructures: Fabrications, Properties, and Applications. Wiley-VCH GmbH, ISBN: 978-3-527-34950-0.
5. **Zhang Yue**. Semiconductor nanowire functional devices, Science Press, ISBN: 978-7-03-060533-7, 2019, Beijing, China. (Chinese).
6. **Zhang Yue**. One dimensional ZnO nanomaterials, Science Press, ISBN: 978-7-03-026445-9, 2010, Beijing, China. (Chinese).
7. Qi Junjie, Huang Yunhua, **Zhang Yue**. Microalloyed steel, Metallurgical Industry Press, ISBN: 7-5024-3969-2, 2006, Beijing, China. (Chinese).

15 representative papers:

1. B. Zhao, Z. Wan, Y. Liu, J. Q. Xu, X. D. Yang, D. Y. Shen, Z. C. Zhang, C. H. Guo, Q. Qian, J. Li, R. X. Wu, Z. Y. Lin, X. X. Yan, B. L. Li, Z. W. Zhang, H. F. Ma, B. Li, X. Chen, Y. Qiao, I. Shakir, Z. Almutairi, F. Wei, Y. Zhang, X. Q. Pan, Y. Huang, Y. Ping, X. D. Duan, X. F. Duan. High-Order Superlattices by Rolling up van der Waals Heterostructures. Nature. 2021; 591: 385-90.
2. Zhuo Kang, Qingliang Liao, Zheng Zhang, Yue Zhang\*. Carbon neutrality

- orientates the reform of the steel industry. *Nature Materials*, 2022, 21, 1094–1098.
3. Yiliu Wang, Zhong Wan, Qi Qian, Yuan Liu, Zhuo Kang, Zheng Fan, Peiqi Wang, Yekan Wang, Chao Li, Chuancheng Jia, Zhaoyang Lin, Jian Guo, Imran Shakir, Mark Goorsky, Xidong Duan, Yue Zhang, Yu Huang, Xiangfeng Duan. Probing Photoelectrical Transport in Lead Halide Perovskites with van der Waals Contacts. *Nature Nanotechnology*, 2020, 15, 768-775.
  4. Yanhao Yu, Zheng Zhang, Xin Yin, Alexander Kvit, Qingliang Liao, Zhuo Kang, Xiaoqin Yan, Yue Zhang\*, Xudong Wang\*. Enhanced Photoelectrochemical efficiency and stability using a conformal TiO<sub>2</sub> film on a black silicon photoanode. *Nature Energy*, 2017, 2, 17045.
  5. Xiankun Zhang, Baishan Liu, Li Gao, Huihui Yu, Xiaozhi Liu, Junli Du, Jiankun Xiao, Yihe Liu, Lin Gu, Qingliang Liao, Zhuo Kang, Zheng Zhang\*, Yue Zhang\*. Near-ideal van der Waals rectifiers based on all-two-dimensional Schottky junctions. *Nature Communications*, 2021, 12, 1522.
  6. Xiankun Zhang, Qingling Liao, Shuo Liu, Zhuo Kang, Zheng Zhang\*, Junli Du, Feng Li, Shuhao Zhang, Jiankun Xiao, Baishan Liu, Yang Ou, Xiaozhi Liu, Lin Gu, Yue Zhang\*. Poly(4-styrenesulfonate)-induced sulfur vacancy self-healing strategy for monolayer MoS<sub>2</sub> homojunction photodiode. *Nature Communications*, 2017, 8, 15881.
  7. Junjie Qi, Yann-Wen Lan\*, Adam Z. Stieg, Jyun-Hong Chen, Yuan-Liang Zhong, Lain-Jong Li, Chii-Dong Chen, Yue Zhang\*, Kang L. Wang\*. Piezoelectric effect in chemical vapour deposition-grown atomic-monolayer triangular molybdenum disulfide piezotronics. *Nature Communications*, 2015, 6, 7430.
  8. Xuan Zhao, Zheng Zhang, Qingliang Liao\*, Xiaochen Xun, Fangfang Gao, Liangxu Xu, Zhuo Kang, Yue Zhang\*. Self-powered user-interactive electronic skin for programmable touch operation platform. *Science Advances*, 2020, 6, eaba4294.
  9. Jing Wu, Xin Wang, Wenhao Zheng, Yu Sun, Yong Xie, Kaikai Ma, Zheng Zhang, Qingliang Liao, Zhen Tian, Zhuo Kang\*, Yue Zhang\*. Identifying and Interpreting Geometric Configuration-Dependent Activity of Spinel Catalysts for Water Reduction. *Journal of the American Chemical Society*, 2022, 144, 19163–19172.
  10. Xin Wang, Yuwei Zhang, Haonan Si, Qinghua Zhang, Jing Wu, Li Gao, Xiaofu Wei, Yu Sun, Qingliang Liao, Zheng Zhang, Kausar Ammarah, Lin Gu, Zhuo Kang\*, Yue Zhang\*. Single-atom vacancy defect to trigger high-efficiency hydrogen evolution of MoS<sub>2</sub>. *Journal of the American Chemical Society*, 2020, 142, 9, 4298.
  11. X. Wang, Y. W. Zhang, J. Wu, Z. Zhang, Q. L. Liao, Z. Kang\*, Y. Zhang\*. Single-atom engineering to ignite 2D transition metal dichalcogenide based catalysis: fundamentals, progress, and beyond. *Chemical Reviews*, 2022;122;1273-1348.

12. Ammarah Kausar, Abdul Sattar, Chenzhe Xu, Suicai Zhang, Zhuo Kang\*, Yue Zhang\*. Advent of alkali metal doping: a roadmap for the evolution of perovskite solar cells. *Chemical Society Reviews*, 2021, 50, 2696.
13. Chenzhe Xu, Xiwen Chen, Shuangfei Ma, Mingyue Shi, Suicai Zhang, Zhaozhao Xiong, Wenqiang Fan, Haonan Si, Hualin Wu, Zheng Zhang, Qingliang Liao, Wanjian Yin, Zhuo Kang\*, Yue Zhang\*. Interpretation of Rubidium-Based Perovskite Recipes toward Electronic Passivation and Ion-Diffusion Mitigation. *Advanced Materials*, 2022, 34, 2109998.
14. Xin Wang, Jing Wu, Yuwei Zhang, Yu Sun, Kaikai Ma, Yong Xie, Wenhao Zheng, Zhen Tian, Zhuo Kang\*, Yue Zhang\*. Vacancy Defects in 2D Transition Metal Dichalcogenide Electrocatalysts: From Aggregated to Atomic Configuration. *Advanced Materials*, 2022, DOI: 10.1002/adma.202206576.
15. Xiao-Mei Zhang, Ming-Yen Lu, Yue Zhang\*, Lih-J. Chen, Zhong Lin Wang\*. Fabrication of a high-brightness blue-light-emitting diode using a ZnO-nanowire array grown on p-GaN thin film. *Advanced Materials*, 2009, 21, 2767.

## **Academic Services**

1. Member of the Materials Science and Engineering Group of the Disciplinary Review Group of the Degree Committee of the State Council (sixth convener, seventh member)
2. Member of Academic Degrees Committee of Beijing (the third and fourth members)
3. Fellow of the Royal Society of Chemistry
4. Chair Scientist of National Major Scientific Research Program
5. Member of general expert group of the National Key Research and Development Program on Nanoscience and Nanotechnology
6. Chairman of Chinese Society for Stereology
7. Editor-in-chief of Journal "National Science Open"
8. Associate Editor of Journal "Fundamental Research"
9. Consultant or editorial board member of 9 international academic journals including "Journal of Nano Research", "Science China Materials" and "Science Bulletin"
10. Member of the National Engineering Master Education Steering Committee
11. Member of National MPA Education Steering Committee
12. Member of general expert group of National Key Research and Development Program on Nanoscience and Nanotechnology
13. Secretary-general of Universities Strategic Alliance for Nanotechnology Innovation

14. Executive director of the Chinese Metals Society and the Chairman of the Materials Science Branch
15. Council member of Chinese Society of Micro-Nano Technology and the Executive Council member of Nano Science and Technology Branch
16. Deputy director of Physics and Materials Committee of Chinese Electron Microscopy Society
17. Member of the Academic Committee of 3 national key laboratories and ten provincial and ministerial key laboratories, including the Energy Nanomaterials Center
18. Adjunct professor at the National Nanoscience Center and Suzhou University and Wuhan University of Science and Technology
19. Chairman of over 30 international academic conferences