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中国科学院大学， 物理学院

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教育及工作经历

- 2008年9月 2008 - 2012年7月: 物理学 学士
物理与信息工程学院, 江汉大学, 武汉
- 2012年9月 - 2018年6月: 凝聚态物理 博士
中国科学院大学 & 中国科学院物理研究所, 北京
导师: 杜世萱
- 2018年7月 - 2021年3月: 博士后
中国科学院物理研究所, 北京 & 范德堡大学, 美国田纳西
导师: 高鸿钧 & Sokrates T. Pantelides
- 2021年3月 - 今: 博士后
中国科学院大学, 北京
导师: 张余洋

研究方向

- 金属表面有机分子: 金属-分子相互作用, 动力学, 自组装;
- 催化: 反应机制研究, 催化剂设计;
- 低维材料: 二维材料, 纳米管;
- 铁电材料: 钙钛矿氧化物, HZO, 二维铁电材料;

获得奖项

2021年 第23届国际半导体物理会议 优秀墙报奖

2020 年 中国科学院物理研究所 优秀博士后奖

2014 年-2017 年 中国科学院物理研究所 所长奖学金

发表文章

- (1) Ge Meng#, Jiaqiang Sun#, **Lei Tao**#, Kaiyue Ji; Pengfei Wang; Yu Wang; Xiaohui Sun; Tingting Cui; Shixuan Du; Jiangang Chen; Dingsheng Wang; Yadong Li, Ru1Con Single-Atom Alloy for Enhancing Fischer-Tropsch Synthesis, *ACS Catalysis*, 2020, 11 (3), 1886-1896.
- (2) Ningqiang Zhang#, Xinxin Zhang#, **Lei Tao**#, Peng Jiang#, Chenliang Ye, Rui Lin, Zhiwei Huang, Ang Li, Dawei Pang, Han Yan, Yu Wang, Peng Xu, Sufeng An, Qinghua Zhang, Licheng Liu, Shixuan Du, Xiaodong Han, Dingsheng Wang, Yadong Li, Silver single-atom catalyst for efficient electrochemical CO₂ reduction synthesized from thermal transformation and surface reconstruction, *Angew. Chem. Int. Ed.* 2020, 60 (11), 6170-6176.
- (3) Sabine M. Neumayer, **Lei Tao**, Andrew O'Hara, Michael A. Susner, Michael A. McGuire, Petro Maksymovych, Sokrates T. Pantelides, and Nina Balke, The Concept of Negative Capacitance in Ionically Conductive Van der Waals Ferroelectrics, *Advanced Energy Materials*. **2020**, 2001726.
- (4) Sabine Neumayer, John Brehm, **Lei Tao**, Andrew O'Hara, Panchapakesan Ganesh, Stephen Jesse, Michael Adam Susner, Michael A McGuire, Sokrates T Pantelides, Petro Maksymovych, Nina Balke, Local Strain and Polarization Mapping in Ferrielectric Materials, *ACS Appl. Mater. Interfaces*. **2020**, 12, 34, 38546–38553.
- (5) Andrius Dziaugys, Kyle Kelley, John A Brehm, **Lei Tao**, Alexander Puretzy, Tianli Feng, Andrew O'Hara, Sabine Neumayer, Marius Chyasnachyus, Eugene A Eliseev, Juras Banyas, Yulian Vysochanskii, Feng Ye, Bryan C Chakoumakos, Michael A Susner, Michael A McGuire, Sergei V Kalinin, Panchapakesan Ganesh, Nina Balke, Sokrates T Pantelides, Anna N Morozovska, Petro Maksymovych, Piezoelectric Domain Walls in van der Waals Antiferroelectric CuInP₂Se₆, *Nature Communications*, **2020**, 11, 3623.
- (6) Hui Chen#, **Lei Tao**#, Dongfei Wang, Zhuo-Yan Wu, Jun-Long Zhang, Song Gao, Wende Xiao, Shixuan Du, Karl-Heinz Ernst, Hong-Jun Gao, Stereoselective On-Surface Cyclodehydrofluorization of a Tetraphenylporphyrin and Homochiral Self-Assembly, *Angew. Chem. Int. Ed.* **2020**, doi:10.1002/anie.202005425.
- (7) Sabine M Neumayer#, **Lei Tao**#, Andrew O'Hara, John Brehm, Mengwei Si, Pai-Ying Liao, Tianli Feng, Sergei V Kalinin, D Ye Peide, Sokrates T Pantelides, Petro Maksymovych, Nina Balke, Alignment of Polarization against an Electric Field in van der Waals Ferroelectrics, *Physical Review Applied*, **2020**, 13, 064063.

- (8) John A Brehm[#], Sabine M Neumayer[#], **Lei Tao**[#], Andrew O'Hara, Marius Chyasnachichus, Michael A Susner, Michael A McGuire, Sergei V Kalinin, Stephen Jesse, Panchapakesan Ganesh, Sokrates T Pantelides, Petro Maksymovych, Nina Balke, Tunable Quadruple-well Ferroelectric van der Waals Crystals, *Nature Materials*, **2020**, 19, 43–48.
- (9) **Lei Tao**, Yu-Yang Zhang, Sokrates T Pantelides, Shixuan Du, Tuning the Catalytic Activity of a Quantum Nutcracker for Hydrogen Dissociation, *Surfaces* **2019**, 3 (1), 40-47.
- (10) Kai Yang, Hui Chen, Thomas Pope, Yibin Hu, Liwei Liu, Dongfei Wang, **Lei Tao**, Wende Xiao, Xiangmin Fei, Yu-Yang Zhang, Hong-Gang Luo, Shixuan Du, Tao Xiang, Werner A Hofer, Hong-Jun Gao, Tunable Giant Magnetoresistance in a Single-molecule Junction, *Nature Communications* **2019**, 10 (1), 1-7.
- (11) Chuang Gao[#], **Lei Tao**[#], Yu-Yang Zhang, Shixuan Du, Sokrates T Pantelides, Juan Carlos Idrobo, Wu Zhou, Hong-Jun Gao, Spectroscopic Signatures of Edge States in Hexagonal Boron Nitride, *Nano Research* **2019**, 12 (7), 1663-1667.
- (12) Zhong-Liu Liu[#], Bao Lei[#], Zhi-Li Zhu[#], **Lei Tao**[#], Jing Qi, De-Liang Bao, Xu Wu, Li Huang, Yu-Yang Zhang, Xiao Lin, Ye-Liang Wang, Shixuan Du, Sokrates T Pantelides, Hong-Jun Gao, Spontaneous Formation of 1D Pattern in Monolayer VSe₂ with Dispersive Adsorption of Pt Atoms for HER Catalysis, *Nano Letters* **2019**, 19 (8), 4897-4903.
- (13) **Lei Tao**, Wei Guo, Yu-Yang Zhang, Yan-Fang Zhang, Jiatao Sun, Shixuan Du, Sokrates T Pantelides, Quantum Nutcracker for Near-room-temperature H₂ Dissociation, *Science Bulletin* **2019**, 64, 4-7.
- (14) **Lei Tao**, Yuyang Zhang, Shixuan Du, Construction and Manipulation of Self-assemble Structures on Solid Surfaces, *SCIENTIA SINICA Chimica* **2019**, 49 (3), 441-454.
- (15) Dongfei Wang[#], Hua Yu[#], **Lei Tao**[#], Wende Xiao, Peng Fan, Tingting Zhang, Mengzhou Liao, Wei Guo, Dongxia Shi, Shixuan Du, Guangyu Zhang, Hongjun Gao, Bandgap Broadening at Grain Boundaries in Single-layer MoS₂, *Nano Research* **2018**, 11 (11), 6102-6109.
- (16) **Lei Tao**, Yu-Yang Zhang, Jiatao Sun, Shixuan Du, Hong-Jun Gao, Band Engineering of Double-wall Mo-based Hybrid Nanotubes, *Chinese Physics B* **2018**, 27 (7), 076104.
- (17) Hui Chen, Yande Que, **Lei Tao**, Yu-Yang Zhang, Xiao Lin, Wende Xiao, Dongfei Wang, Shixuan Du, Sokrates T Pantelides, Hong-Jun Gao, Recovery of Edge States of Graphene Nanoislands on an Iridium Substrate by Silicon Intercalation, *Nano Research* **2018**, 11 (7), 3722-3729.
- (18) Hui Chen, Thomas Pope, Zhuo-Yan Wu, Dongfei Wang, **Lei Tao**, De-Liang Bao,

- Wende Xiao, Jun-Long Zhang, Yu-Yang Zhang, Shixuan Du, Song Gao, Sokrates T Pantelides, Werner A Hofer, Hong-Jun Gao, Evidence for Ultralow-energy Vibrations in Large Organic Molecules, *Nano Letters* **2017**, 17 (8), 4929-4933.
- (19) Liwei Liu, Wende Xiao, Dongfei Wang, Kai Yang, **Lei Tao**, Hong-Jun Gao, Edge States of Graphene Wrinkles in Single-layer Graphene Grown on Ni (111), *Applied Physics Letters* **2016**, 109 (14), 143103.
- (20) WD Xiao, YY Zhang, **L Tao**, K Aït-Mansour, K Yu Chernichenko, VG Nenajdenko, P Ruffieux, SX Du, H-J Gao, Roman Fasel, Impact of Heterocirculene Molecular Symmetry Upon Two-dimensional Crystallization, *Scientific reports* **2014**, 4, 5415.

国际会议报告经历

1. Sequence of Silicon Monolayer Structures Grown on Ru: from a Herringbone Structure to Silicene. (Oral) China Nano Meeting, 2017 August, Beijing, China
2. Quantum nutcracker for near-room-temperature H₂ dissociation. (Oral) APS March Meeting, Boston, MA, USA
3. Quantum nutcracker for near-room-temperature H₂ dissociation. (Oral) ACS April Meeting, Orlando, FL, USA
4. Unique and unusual properties of layered ferroelectric CuInP₂S₆, (Oral) APS March Meeting, online

合作导师联系方式

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