

Professor JIE, JIANSHENG

Department of Materials Science and Engineering, Faculty of Innovation Engineering
Macau University of Science and Technology



E-mail : jsjie@must.edu.mo

Academic Qualification

09/1999-07/2004, Ph.D. in University of Science and Technology of China Department of Physics

09/1995-07/1999, B.S. in University of Science and Technology of China Department of Physics

Teaching Area

Organic semiconductor and optoelectronic devices

Micro-nano manufacturing technology

Research Area

1D and 2D nanomaterials and nanodevices

Organic semiconductor and devices, including organic field-effect transistors (OFETs), organic light-emitting diodes (OLEDs), and organic photodetectors (OPDs)

Organic micro/nano crystals and optoelectronic devices

Perovskite micro/nano crystals and optoelectronic devices

Working Experience

2021-Present, Professor, Macao Institute of Materials Science and Engineering, Macau University of Science and Technology

2012-Present, Professor, FUNSOM, Soochow University

2006-2011, Professor, Hefei University of Technology

2005-2008, Postdoctoral Fellow, City University of Hong Kong

2004-2005, Research Assistant, University of Hong Kong

Academic Publication (selected)

Total Publication Number: 240; Sum of the Times Cited: ~13000; h-index 61

Jiansheng Jie, Wei Deng, Xiujuan Zhang* and Xiaohong Zhang*, A phototransistor with visual adaptation, *Nat. Electron.* 2021, 4, 460.

Zhibin Shao, Tianhao Jiang, Xiujuan Zhang, Xiaohong Zhang*, Xiaofeng Wu, Feifei Xia, Shiyun Xiong, Shuit-Tong Lee*, Jiansheng Jie*, "Memory phototransistors based on exponential association photoelectric conversion law", *Nat. Commun.* 2019, 10, 1294.

Wei Deng, Jiansheng Jie*, Xiuzhen Xu, Yanling Xiao, Bei Lu, Xiujuan Zhang and Xiaohong Zhang*, "A Microchannel-Confined Crystallization Strategy Enables Blade Coating of Perovskite Single Crystal Arrays for Device Integration", *Adv. Mater.* 2020, 1908340.

Jinwen Wang, Xiaofeng Wu, Jing Pan, Tanglue Feng, Di Wu, Xiujuan Zhang, Bai Yang, Xiaohong Zhang, Jiansheng Jie*, "Graphene-Quantum-Dots-Induced Centimeter-Sized Growth of Monolayer Organic Crystals for High-Performance Transistors", *Adv. Mater.* 2020, DOI: 10.1002/adma.202003315.

Siyi Huang, Bingchang Zhang*, Zhibin Shao, Le He, Qiao Zhang, Jiansheng Jie*, Xiaohong Zhang*, "Ultraminaturized Stretchable Strain Sensors Based on Single Silicon Nanowires for Imperceptible Electronic Skins", *Nano. Lett.* 2020, 20, 2478.

Xiujuan Zhang, Jian Mao, Wei Deng, Liming Huang, Xiaohong Zhang, Shuit-Tong Lee, Jiansheng Jie*, "Precise Patterning of Laterally Stacked Organic Microbelt Heterojunction Arrays by Surface-energy Controlled Stepwise Crystallization for Ambipolar Organic Field-effect Transistors", *Adv. Mater.* 2018, 1800187.

Peng Xiao, Jie Mao, Ke Ding, Wenjin Luo, Weida Hu, Xiujuan Zhang, Xiaohong Zhang*, Jiansheng Jie*, "Solution-processed three-dimensional RGO-MoS₂/pyramid Si heterojunction for ultrahigh-detectivity and ultra-broadband photodetection", *Adv. Mater.* 2018, 1801729.

Wei Deng, Liming Huang, Xiuzhen Xu, Xiujuan Zhang, Xiangcheng Jin, Shuit-Tong Lee, and Jiansheng Jie*, "Ultrahigh-Responsivity Photodetectors from Perovskite Nanowire Arrays for Sequentially Tunable Spectral Measurement", *Nano Lett.* 2017, 17, 2482.

Wei Deng, Xiujuan Zhang*, Liming Huang, Xiuzhen Xu, Liang Wang, Jincheng Wang, Qixun Shang, Shuit-Tong Lee, Jiansheng Jie*, "Aligned Single-Crystalline Perovskite Microwire Arrays for High-Performance Flexible Image Sensors with Long-Term Stability", *Adv. Mater.* 2016, 28, 2201.

Xiujuan Zhang, Jiansheng Jie*, Wei Deng, Qixun Shang, Jincheng Wang, Hui Wang, Xianfeng Chen, Liming Huang, and Xiaohong Zhang*, "Alignment and Patterning of Ordered Small-molecule Organic Semiconductor Micro/nanocrystals for Device Applications", *Adv. Mater.* 2016, 28, 2475.

Xiujuan Zhang, Zhibin Shao, Xiaohong Zhang*, Yuanyuan He, Jiansheng Jie*, "Surface Charge Transfer Doping of Low-Dimensional Nanostructures toward High-Performance Nanodevices", *Adv. Mater.* 2016, 28, 10409.

Feifei Xia, Zhibin Shao, Yuanyuan He, Rongbin Wang, Xiaofeng Wu, Tianhao Jiang, Steffen Duhm, Jianwei Zhao, Shuit-Tong Lee* and Jiansheng Jie*, "Surface Charge Transfer Doping via Transition Metal Oxides for Efficient p-Type Doping of II-VI Nanostructures", *ACS Nano* 2016, 10, 10283.

Hongbin Zhang, Xiujuan Zhang*, Chang Liu, Shuit-Tong Lee* and Jiansheng Jie*, "High Responsivity, Ultrafast Topological Insulator Bi₂Se₃ Film/Silicon Heterostructure Photodetectors", *ACS Nano* 2016, 10, 5113.

Zhibin Shao, Jiansheng Jie*, Zheng Sun, Feifei Xia, Yuming Wang, Xiaohong Zhang*, Ke Ding, and Shuit-Tong Lee* "MoO₃ Nanodots Decorated CdS Nanoribbons for High-Performance, Homo Junction Photovoltaic Devices on Flexible Substrates" *Nano Lett.* 2015, 5, 3590.

Wei Deng, Xiujuan Zhang*, Liang Wang, Jincheng Wang, Qixun Shang, Xiaohong Zhang*, Liming Huang, Jiansheng Jie*, "Wafer-Scale Precise Patterning of Organic Single-Crystal Nanowire Arrays via a Photolithography-Assisted Spin-Coating Method", *Adv. Mater.* 2015, 27, 7305.

Books

Xiujuan Zhang, Jiansheng Jie, *Fundamentals of Photochemistry and Photophysics*, Soochow University Press, ISBN 978-7-5672-4043-8.

Azhar Ali Ayaz Pirzado, Faraz Mahar, Ayaz Ali Hakro, Xiujuan Zhang, Jiansheng Jie, *Solution-Processable Carbon and Graphene Quantum Dots Photodetectors (Part of the Lecture Notes in Nanoscale Science and Technology book series)*, "Online ISBN 978-3-030-74270-6, https://doi.org/10.1007/978-3-030-74270-6_4.

Patents (selected)

X.J. Zhang, J.S. Jie, Y.L. Xiao, A preparation method of few-layer organic-crystal film and organic field-effect transistor, ZL 201910532895.6, 2022.

X.J. Zhang, X.H. Zhang, J.S. Jie, W. Deng, A UV-visible dual band photoelectric detector and its preparation method, ZL 201811354384.1, 2022.

J.S. Jie, W. Deng, X.J. Zhang, X.L. Zhang, A preparation method of organic crystal thin film and field-effect transistor, ZL 202010408880.1, 2022.

J.S. Jie, X.J. Zhang, H.Y. Zhang, R.F. Jia, C.Q. Wang, T.X. Yu, A preparation method of single-crystal electroluminescent devices, ZL 202011602113, 2022.

J.S. Jie, X.H. Zhang, W. Deng, Y.L. Xiao, A method for the patterned preparation of two-dimensional molecular crystals based on the double scraper technique, ZL 202010501247.7, 2022.

Professional Certification and Awards

2014, The National Science Fund for Outstanding Young Scientists, National Natural Science Foundation of China (NSFC)

2020, National Hundred, Thousand and Ten Thousand Talent Project, Ministry of Human Resources and Social Security of China

2020, First Prize of Science and Technology of Jiangsu Province

2020, Young and Middle-aged Experts with Outstanding Contributions of China

2021, Fellow of the Royal Society of Chemistry (FRSC)

2014, The National Science Fund for Excellent Young Scientists, National Natural Science Foundation of China (NSFC)

2008, New Century Excellent Talents, Ministry of Education of China

2016, Third Prize of Science and Technology Achievement Award in Universities of Jiangsu, Jiangsu Province

2016, Leading Talents of Science and Technology, Suzhou Industrial Park

2016, 333 High-Level Scholars Cultivation Program, Jiangsu Province

2016, The Six Talent Peaks Project, Jiangsu Province

Student Awards

First prize of the 6th "Internet plus" Undergraduate Innovation and Entrepreneurship Competition of Soochow University

Second prize of the 8th "Internet plus" Undergraduate Innovation and Entrepreneurship Competition in Jiangsu Province

A total of 12 master students and doctoral students won national scholarships

Professional Society Membership

Associate editor of Organic Electronics

Editor Board of Chinese Chemical Letters

International Advisory Board of Materials Research Express

Guest Editor: Nanotechnology, J. Nanoeng. Nanomanf.

Chair of OSA Light, Energy and the Environment Congress, Suzhou, China (2015)

Co-chair of OSA Light, Energy and the Environment Congress, Canberra, Australia (2014)