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热忱招收硕士、本科学生参与实验，优秀学生推荐保送北京大学直博！

基本信息

李梓维，男，理学博士，湖南大学材料科学与工程学院副教授（岳麓学者晨星B岗），硕士生导师

1990年出生于吉林省延边州珲春市，2013年于吉林大学电子科学与工程学院取得工学学士学位，同年保送至北京大学前沿交叉学科研究院、物理学院攻读理学博士学位，年基金、中组部青年拔尖人才项目获得者，Prof. Zheyu Fang (方哲宇研究员)。2017年在英国伯明翰大学超材料中心访问学习，师从超构材料领域的专家，Prof. Shuang 教授)。2018年6月取得北京大学凝聚态物理理学博士学位，同年7月加入湖南大学材料科学与工程学院工作。

主要研究领域为二维材料、纳米光子学、新型光电子器件。利用稳态、瞬态光谱探测技术和微纳加工方法，制备和表征二维异质结材料的物理、化学性质，研究材料内部的激子动力学、谷荧光发射、表面等离激元共振等。近年来，共发表SCI论文18篇，作为第一作者及共同第一作者发表论文7篇，包括Adv. Mater. 2篇，Nano Lett. 1篇，AC Nanoscale 1篇，Chin. Phy. B 1篇。相关工作被ACS Nano: 'In Nano'特刊、Advanced Materials "video abstract"、Wiley Materials Views China、Design for Scien 学网等新闻媒体多次报导。

博士期间科研成绩突出，荣获20项省市级、校级奖励和荣誉，包括北京大学五四学生奖章(北大学生最高荣誉)、北京大学学生年度人物（北大学生最具影响力荣誉）、北京 北京市优秀毕业生、博士生国家奖学金、宝钢优秀学生特等奖、中国航天集团CASC奖学金等等。2016年曾挂职于安徽省宿州市高新区主任助理，协助宿州市淮海石墨烯研 烯创新基地。

Ziwei Li (Jervis Lee)

Associate Professor of Physics and Material Sciences, Hunan University, 2018-now;

Ph. D in Academy for Advanced Interdisceplinary Studies, Department of Physics, Peking University, 2009-2013;

Visiting Scholar in School of Physics and Astronomy, Birmingham University (UK), 2017.2-2017.8;

BS in School of Electronic Science and Engineering, Jilin University (China), 2009-2013;

He focuses on 2D materials, nanophotonics and novel opto-electronic devices. He majors in nanofabrication and spectroscopic technology. Using steady-sta spectral detection technology to investigate the light-physics of 2D materials, including charge transfer, dynamics of excitons, valley polarization and surface has published 18 papers in peer-reviewed journals including Advanced Materials, Nano Letters, ACS Nano, Advanced Functional Materials, Advanced Science

Selected Publications：

1、**Ziwei Li**, Changxu Liu, Xin Rong, Yang Luo, Haotian Cheng, Liheng Zheng, Feng Lin, Bo Shen, Shuang Zhang*, Zheyu Fang*. Tailoring MoS_2 Valley-Polariz Photoluminescence with Super Chiral Near-Field. ***Advanced Materials***, in press, 2018. (**IF=19.791**, Web, PDF)

2、**Ziwei Li**†, Yu Li†, Tianyang Han, Xingli Wang, Ying Yu, Bengkang Tay, Zheng Liu, Zheyu Fang*. Tailoring MoS2 Exciton-Plasmon Interaction by Optical Spir Coupling. ***ACS Nano*** 11, 1165-1171, 2017. (**IF=13.942**, Web, PDF, **ESI high cited paper <1%**) {ACS Nano:'In Nano', Design for Science}

3、Zhigang Song†, **Ziwei Li**†, Hong Wang, Honglin Du, Sunquan Liu, Changsheng Wang, Yingchang Yang, Zheng Liu, Jing Lu, Zheyu Fang*, Jinbo Yang*. Valle Pseudospin with a Widely Tunable Bandgap in Doped BN Monolayer. ***Nano Letters*** 17, 2079-2087, 2017. (**IF=12.712**, Web, PDF)

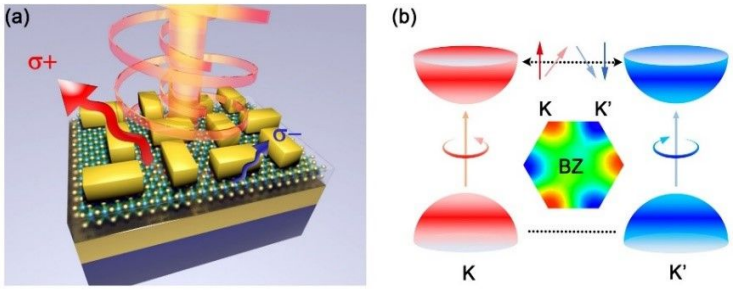
4、**Ziwei Li**, Ruquan Ye, Rui Feng, Yimin Kang, Xing Zhu, James M. Tour, Zheyu Fang*. Graphene Quantum Dots Doping of MoS2 Monolayers. ***Advanced Ma*** 5235-5240, 2015. (**IF=19.791**, Web, PDF) {Wiley Materials Views China}

5、**Ziwei Li**†, Yingdong Xiao†, Yongji Gong, Zongpeng Wang, Yimin Kang, Shuai Zu, Pulickel M. Ajayan, Peter Nordlander, Zheyu Fang*. Active Light Control Monolayer Exciton Binding Energy. ***ACS Nano*** 9, 10158-10164, 2015. (**IF=13.942**, Web, PDF)

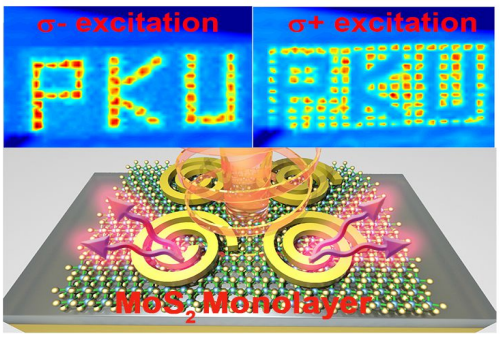
全部论文查看（ Researchgate Website ）

研究概况

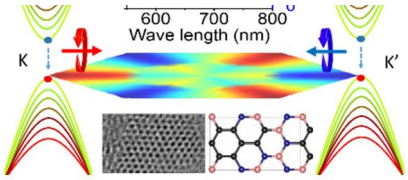
●超构材料中超旋电磁场调控二硫化钼(MoS_2)谷荧光发射。由纳米棒结构的周期组合和排列形成了C4对称超材料表面，二维材料被夹在金属层和超电介质层中。超构材料在左/右旋圆偏振光激发下，呈现不同的近场超旋电磁场模式。由于材料激子与超旋电磁场共振耦合作用不同。左旋圆偏振硫化钼的谷偏振度从25%增强到43%，右旋光圆偏振激发时，二硫化钼的谷偏振度从25%降低到20%。该工作实现了手性超构材料对二维材料谷激子荧控作用，突破材料自身非各向异性限制，实现了手性的谷极化度探测。同时，弱化了谷极化荧光的激发条件，首次利用线偏振光成功观测到谷极化（*Advanced Materials, 2018*, Highlight: Advanced Materials "Video Abstract" ）

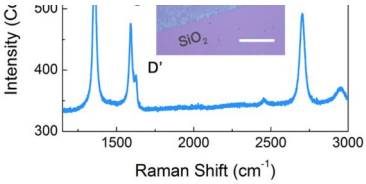


●利用光的自旋与轨道耦合调控激子–等离激元耦合过程。通过加工纳米尺度的金属螺旋结构，利用光在结构中产生的自旋轨道耦合的机理，可以激子–等离激元耦合增强。在金属结构的增强作用下，左旋光激发时单层MoS_2信号增强超过10倍，在右旋光激发时信号未显著增强。系统研究发现程与纳米结构的尺寸参数、螺旋结构圈数、激光的功率和激发波长密切相关。利用Majorana球模型首次分析了纳米结构中的光的自旋与轨道耦合现该原理实现了旋光操控的发光阵列，左旋光和右旋光分别呈现“PKU”字母的明文和暗文发光。(*ACS Nano, 2017*, Highlight: ACS Nano:'In Nano', De Science, ESI High Cited Paper <1%)

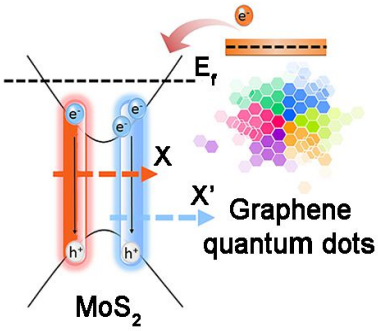


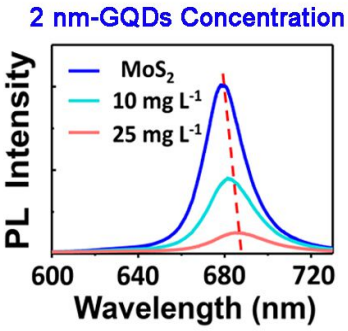
●氮化硼材料中谷的赝自旋研究。氮化硼（BN）及碳原子掺杂氮化硼（BCN）材料体系在缺失C3对称性的保护情况下，材料仍具有非等价的能谷和自旋性质，并且材料的带隙可随碳原子掺杂浓度从紫外到远红外大范围可调。低浓度的掺杂下，由于人工超结构和谷的相互作用，能带劈裂城分有非连续的谷霍尔电导。在高浓度掺杂下，实验上在可见光波段观察到由于谷极化导致的圆极化的光致发光现象，室温下发出的圆偏振光的极化77k低温时，极化率高达70%。(*Nano Letters, 2017*)



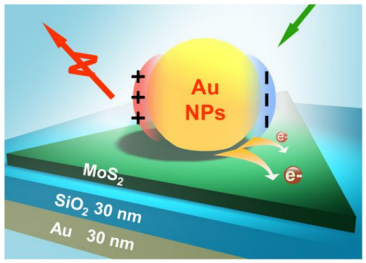


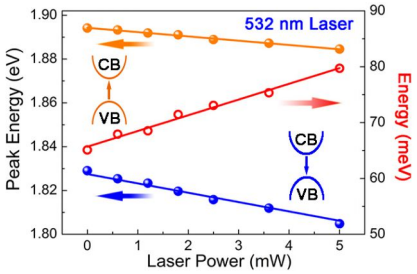
●石墨烯量子点/二硫化钼复合材料的电荷转移过程研究。石墨烯量子点（GQDs）与单层二硫化钼（MoS_2）相互作用会在复合材料界面处发生电荷转移，通过制石墨烯量子点在二硫化钼上的覆盖密度，通过对二硫化钼的荧光峰位和发光波长进行分析与观测，发现2纳米的量子点在非饱和浓度时对二硫化钼的更有效。 通过激子发光三能级模型，分析了材料中激子和三激子的竞争激励，从荧光峰强度估算电子掺杂的浓度。(*Advanced Materials, 2015*)





●等离激元热电子调控单层二硫化钼的光学性质。光激发金属纳米颗粒产生表面等离激元共振，在共振的衰减过程中，会产生大量的热电子可以实现子掺杂效应。在掺杂的过程中，单层MoS_2的吸收光谱和荧光光谱都发生显著的变化，该变化与金属颗粒的形貌尺寸、激发光波长、强度等密切相关，型可以从光谱变化间接估算电子掺杂浓度。利用热电子掺杂效应，实现了基于二维材料的光控光器件。(*ACS Nano, 2015*)





学术成果

Publicaitons:

1、**Ziwei Li**, Changxu Liu, Xin Rong, Yang Luo, Haotian Cheng, Liheng Zheng, Feng Lin, Bo Shen, Shuang Zhang*, Zheyu Fang*. Tailoring MoS_2 Valley-Polariz Photoluminescence with Super Chiral Near-Field. ***Advanced Materials***, adma.201801908R1, 2018.

2、**Ziwei Li**†, Yu Li†, Tianyang Han, Xingli Wang, Ying Yu, Bengkang Tay, Zheng Liu, Zheyu Fang*. Tailoring MoS_2 Exciton-Plasmon Interaction by Optical Spin Coupling. ***ACS Nano*** 11, 1165-1171, 2017.

3、Zhigang Song†, **Ziwei Li**†, Hong Wang, Honglin Du, Sunquan Liu, Changsheng Wang, Yingchang Yang, Zheng Liu, Jing Lu, Zheyu Fang*, Jinbo Yang*. Valle Pseudospin with a Widely Tunable Bandgap in Doped BN Monolayer. ***Nano Letters*** 17, 2079-2087, 2017.

4、**Ziwei Li**, Ruquan Ye, Rui Feng, Yimin Kang, Xing Zhu, James M. Tour, Zheyu Fang*. Graphene Quantum Dots Doping of MoS_2 Monolayers. ***Advanced Ma*** 5235-5240, 2015.

5、**Ziwei Li**†, Yingdong Xiao†, Yongji Gong, Zongpeng Wang, Yimin Kang, Shuai Zu, Pulickel M. Ajayan, Peter Nordlander, Zheyu Fang*. Active Light Control Monolayer Exciton Binding Energy. ***ACS Nano*** 9, 10158-10164, 2015.

6、Tianyang Han†, Shuai Zu†, **Ziwei Li**, Meiling Jiang, Xing Zhu, Zheyu Fang*. Reveal and Control of Chiral Cathodoluminescence at Subnanoscale. ***ACS Nano*** 2017.

8、Yu Li, **Ziwei Li**, Cheng Chi, Hangyong Shan, Liheng Zheng, Zheyu Fang*. Plasmonics of 2D Nanomaterials: Properties and Applications. ***Advanced Scienc*** 2016.

9、**Ziwei Li**, Yihan Hu, Yu Li, Zheyu Fang*. Light-Matter Interaction of 2D Materials: Physics and Device Applicaitons. Chinese Physics B 26, 036802, 2017.

10、 Yanjun Bao, Zhijian Hu, **Ziwei Li**, Xing Zhu, Zheyu Fang*. Plasmonics: Magnetic Plasmonic Fano Resonance at Optical Frequency. ***Small*** 11, 2102, 2015.

11、Ying Yu, Ziheng Ji, Shuai Zu, Bowen Du, Yimin Kang, **Ziwei Li**, Zhangkai Zhou, Kebin Shi, Zheyu Fang*. Ultrafast Plasmonic Hot Electron Transfer in Au Nanoantenna/MoS_2 Heterostructures, ***Advanced Functional Materials*** 26, 6394-6401, 2016.

12、Bowen Du, Li Lin, Wei Liu, Shuai Zu, Ying Yu, **Ziwei Li**, Yimin Kang, Hailin Peng, Xing Zhu, Zheyu Fang*. Plasmonic Hot Electron Tunneling Photodetectio Au-Graphene Hybrid Nanostructure, ***Laser & Photonics Reviews*** 11, 1600148, 2017.

13、Shuai Zu, Bowen Li, Yongji Gong, **Ziwei Li**, Pulickel M. Ajayan, Zheyu Fang*. Active Control of Plasmon-Exciton Coupling in MoS_2-Ag Hybrid Nanostructu ***Advanced Optical Materials*** 4, 1463, 2016.

14、Zhijian Hu, Yanjun Bao, **Ziwei Li**, Yongji Gong, Rui Feng, Yingdong Xiao, Xiaochun Wu, Zhaohui Zhang, Xing Zhu, Pulickel M. Ajayan, Zheyu Fang*. Temp Dependent Raman and Photoluminescence of Vertical WS_2/MoS_2 Monolayer Heterostructures, ***Science Bulletin*** 62, 16, 2017.

15、Yimin Kang, Yongji Gong, Zhijian Hu, **Ziwei Li**, Ziwei Qiu, Xing Zhu, Pulickel M Ajayan, Zheyu Fang*. Plasmonic hot electron enhanced MoS_2 photocataly hydrogen evolution. ***Nanoscale*** 7, 4482, 2015.

16、Tao Huang, Jiajian Wang, **Ziwei Li**, Wei Liu, Feng Lin, Zheyu Fang, Xing Zhu*. Spin-Controlled Directional Launching of Surface Plasmons at the Subwave Chinese Physics B 25, 087302, 2016.

17、Shan Huang, Jie Li, Xuewei Zhang, Yimin Kang, **Ziwei Li**, Feng Lin, Xing Zhu*, Plasmonic waveplate: incident polarization modulation. Applied Physics A, 2014.

18、Jie Li, Chaojie Yang, Jiaming Li, **Ziwei Li**, Shuai Zu, Siyu Song, Huabo Zhao, Feng Lin, Xing Zhu*, Plasmonic Focusing in Nanostructures. Plasmonics, 9, 87

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