

## 吴晓燕



电话: 18217795568

通讯地址: 上海市闵行区东川路 800 号上海交通大学

出生日期: 1990.03.09 学位: 博士

E-mail: wuxiaoyan151@126.com

### 教育背景

- 2012.9-2017.6** 中科院上海微系统与信息技术研究所 硕博连读 微电子学与固体电子学  
◇ 信息功能材料国家重点实验室, 导师: 王庶民教授(中组部“千人计划”、国家重点基础研究发展计划(973计划)首席科学家)
- 2016.10-2017.4** 丹麦技术大学(DTU) 联培博士 微电子学与固体电子学  
◇ Department of Photonics Engineering, 导师: Prof. Haiyan Ou
- 2012.9-2013.6** 中国科学技术大学 硕士代培 电子科学技术
- 2008.9-2012.6** 曲阜师范大学 理学学士 物理学

### 工作经历

上海交通大学 电子信息与电气工程学院 Assistant Professor 2017.7 至今

### 科研成果

- ◇ 发表论文 **52** 篇, 其中第一作者发表 **SCI** 论文 **3** 篇: **ACS Photonics (IF:6.88)**、**Scientific Reports (IF:5.578)**、**Semiconductor Science and Technology (IF:2.19)**, 国际会议论文 **4** 篇(口头报告)、国内会议论文 **1** 篇。申请发明专利 **2** 项, 外文专著: **metallic alloys** 书籍合著者。
- ◇ 主持国家级项目 **2** 项, 主持校级项目 **1** 项, 参与 **973** 计划、国家自然科学基金重点基金等多个项目研究。
- ◇ 参加**第五届稀磁半导体材料国际学术会议(爱尔兰)**、**第十届全国分子束外延学术会议(上海)**、**第十一届全国分子束外延学术会议(成都)**、**第七届稀磁材料国际学术会议(上海)**和**第十九届国际分子束外延大会(法国)** 并做口头报告。
- ◇ 在丹麦技术大学访学期间, 研制出**世界首个 InPBi 超辐射发光二极管器件**, 在医疗和太阳能电池有巨大的应用潜力。
- ◇ 研发出**世界发光波长最长的 GaAsBi 非制冷激光器**, 在光电通信领域有着巨大应用, 被**多方报道**并登上中科院微系统所**网页新闻**, 并受邀在多个会议上做**邀请报告**。
- ◇ ACS photonics, Scientific Reports, SST 等期刊审稿人。

### 科研项目

- ◇ 国防创新项目, 18-H863-X, 光子计数 xxx, 2018.01-2018.12, **100** 万元, **国家级**, 主持
- ◇ 国防创新项目, 17-H863-X, xxx 量子成像, 2017.07-2017.12, **160** 万元, **国家级**, 主持
- ◇ 新进青年教师启动计划, AF0300248, 基于光子计数的量子关联成像技术研究, 2018.01-2020.12, **20** 万元, **校级**, 主持
- ◇ 国家重点基础研究发展计划(973计划), 2014CB643900, 2.8-4.0 微米室温高性能半导体

- 激光器材料和器件制备研究, 2014.01-2018.08, 1500 万元, 国家级, 参与
- ◇ 国家自然科学基金重点项目, 61334004, 稀铋半导体材料与非制冷激光器研究, 2014.01-2018.12, 260 万元, 国家级, 参与
  - ◇ 国家自然科学基金青年科学基金项目, 61404152, 新型稀铋近红外宽光谱发光二极管的基础研究, 2015.01-2017.12, 31 万元, 国家级, 参与
  - ◇ 国家自然科学基金青年科学基金项目, 61404153, 新型室温二维拓扑绝缘体锡烯的材料研究, 2015.01-2017.12, 34 万元, 国家级, 参与

## 奖励

2017 年, 荣获 *7th International Workshop on Bismide-containing Semiconductors* 会议 “**Best Paper Award**”

2016 年, 荣获中科院上海微系统与信息技术研究所三好学生

2016 年, 被录取为国际合作培养计划项目出国留学人员(丹麦技术大学)(中科院前 **0.1%**)

2015 年, 获得中科院上海微系统与信息技术研究所**所长奖学金** (全所前 **3%**)

2012 年, 荣获**优秀毕业生**称号

2011 年, 全国第三届“人教社杯”大学生**物理教学技能大赛**中荣获**一等奖**

2009 年, 第七届电子电路设计大赛**二等奖**

2008-2012, 连年获得校级**一等奖学金**(全校前 **1%**), 并多次被评为**三好学生标兵**(全校前 **0.4%**)、**三好学生**、**优秀团员**

## 外语及计算机能力

- ◇ **英语**: CET6/500, **德语**: 第二外语, 96/100
- ◇ **计算机**: 国家计算机等级考试四级网络工程师, 二级 C 语言

## 成果

- ◇ **Wu Xiaoyan**; Pan Wenwu; *etal.* Electrically Pumped 1.142  $\mu\text{m}$  GaAsBi/AlGaAs Quantum Well Lasers Grown by Molecular Beam Epitaxy *ACS Photonics* (IF:6.88)
- ◇ **Wu Xiaoyan**; Chen Xiren; *etal.* Anomalous photoluminescence in  $\text{InP}_{1-x}\text{Bi}_x$  *Scientific Reports* (IF:5.578)
- ◇ **Wu Xiaoyan**; Wang Kai; *etal.* Effect of rapid thermal annealing on  $\text{InP}_{1-x}\text{Bi}_x$  grown by molecular beam epitaxy *Semiconductor Science and Technology* (IF:2.19)
- ◇ **Wu Xiaoyan**; Wang Kai; *etal.* Thermal Annealing on  $\text{InP}_{1-x}\text{Bi}_x$  Grown by Molecular Beam Epitaxy the *5<sup>th</sup> International Workshop on Bismide-containing Semiconductors, Ireland, 2014.4.25* (oral)
- ◇ **Wu Xiaoyan**; Chen Xiren; *etal.* Characteristics of anomalous photoluminescence in  $\text{InP}_{1-x}\text{Bi}_x$  the *7<sup>th</sup> International Workshop on Bismide-containing Semiconductors, Shanghai, 2016. 7. 25* (oral)
- ◇ **Wu Xiaoyan**; Chen Xiren; *etal.* Anomalous photoluminescence in  $\text{InP}_{1-x}\text{Bi}_x$  *19th International Conference on Molecular-Beam Epitaxy, France, 2016. 9. 4* (oral)
- ◇ **Wu Xiaoyan**; Pan Wenwu; *etal.* Electrically Pumped 1.136  $\mu\text{m}$  GaAsBi/AlGaAs Quantum Well Lasers Grown by Molecular Beam Epitaxy the *19th European Molecular Beam Epitaxy*

Workshop, Russia, 2017.3 (oral)

- ◇ **吴晓燕**; 陈熙仁; *etal.* 变组分 InPBi 材料的 PL 光谱特性第十届全国分子束外延学术会议, 成都, 2015.8.
- ◇ **外文专著**: Matallic alloys- Indium Phosphide Bismide 出版社: In Tech
- ◇ **专利**: 面向光遗传学的 LED 插头、封装装置及方法。CN 201811003774.4
- ◇ **专利**: 一种半导体材料、半导体薄膜及其制备方法。CN 201510240317.7
- ◇ Xiren Chen, **Xiaoyan Wu**, *et al.* Negative thermal quenching of below-bandgap photoluminescence in InPBi. *Applied Physics Letters*. 2017, 110: 051903.
- ◇ Wang, S., **Wu, X.**, *et al.* (2018, May). Near-infrared GaAsBi quantum well laser diodes (Conference Presentation). In Semiconductor Lasers and Laser Dynamics VIII (Vol. 10682, p. 106821B). International Society for Optics and Photonics.
- ◇ Liu X, Shi J, **Wu X**, *et al.* Fast first-photon ghost imaging. *Scientific reports*, 2018, 8(1): 5012.
- ◇ Wenwu Pan, Peng Wang, **Xiaoyan Wu**, *et al.* Growth and material properties of InPBi thin films using gas source molecular beam epitaxy. *Journal of Alloys and Compounds*. 2016, 656: 777.
- ◇ Chen X, Zhao H, **Wu X**, *et al.* Bi - Induced Electron Concentration Enhancement Being Responsible for Photoluminescence Blueshift and Broadening in InAs Films. *physica status solidi (b)*, 1800694.
- ◇ Peng Wang, Qimiao Chen, **Xiaoyan Wu**, *et al.* Detailed Study of the Influence of InGaAs Matrix on the Strain Reduction in the InAs Dot-In-Well Structure. *Nanoscale Research Letters*. 2016, 11: 119.
- ◇ Peng Wang, Wenwu Pan, **Xiaoyan Wu**, *et al.* Influence of GaAsBi matrix on optical and structural properties of InAs quantum dots. *Nanoscale Research Letters*. 2016, 11: 280.
- ◇ Peng Wang, Qimiao Chen, **Xiaoyan Wu**, *et al.* Heteroepitaxy growth of GaAsBi on Ge (100) substrate by gas source molecular beam epitaxy. *Applied Physics Express*. 2016, 9: 045502.
- ◇ Liu, J., Pan, W., **Wu, X.**, *etal.*. Electrically injected GaAsBi/GaAs single quantum well laser diodes. *AIP Advances*, 2017,7(11), 115006.
- ◇ Kai Wang, Peng Wang, Wenwu Pan, **Xiaoyan Wu**, *etal.* Growth of semiconductor alloy InGaPBi on InP by molecular beam epitaxy. *Semiconductor Science and Technology*. 2015, 30: 094006.
- ◇ Wang C, Wang L, Liang H, **Wu X**, *et al.* Molecular beam epitaxy growth of AlAs<sub>1-x</sub>Bi<sub>x</sub>. *Semiconductor Science and Technology*, 2018.
- ◇ Wang, L., Pan, W., Chen, X., **Wu, X.**, *et al.* Influence of Bi on morphology and optical properties of InAs QDs. *Optical Materials Express*, 2017, 7(12), 4249-4257.
- ◇ Zhang, L., Wu, M., Chen, X., **Wu, X.**, *et al.* Nanoscale distribution of Bi atoms in InP 1- x Bi x. *Scientific reports*, 2017.7(1), 12278.
- ◇ Zhang, Z. P., Song, Y. X., Li, Y. Y., **Wu, X. Y.**, *et al.* .Effect of thermal annealing on structural properties of GeSn thin films grown by molecular beam epitaxy. *AIP Advances*, 2017, 7(10), 105020.
- ◇ Zhang, Z. P., Song, Y. X., Chen, Q. M., **Wu, X. Y.**, *et al.* Growth mode of tensile-strained Ge quantum dots grown by molecular beam epitaxy. *Journal of Physics D: Applied Physics*, 2017, 50(46), 465301.
- ◇ Peng Wang, Wenwu Pan, Kai Wang, **Xiaoyan Wu**, *et al.* Investigation to the deep center related properties of low temperature grown InPBi with Hall and photoluminescence. *AIP Advances*.

2015, 5: 127104.

- ◇ Li Yue, Peng Wang, Kai Wang, **Xiaoyan Wu**, *et al.* Novel InGaPBi single crystal grown by molecular beam epitaxy. *Applied Physics Express*. 2015, 8: 041201.
- ◇ Peng Wang, Wenwu Pan, Chunfang Cao, **Xiaoyan Wu**, *et al.* Influence of doping in InP buffer on photoluminescence behavior of InPBi. *Japanese Journal of Applied Physics*. 2016, 55, 115503.
- ◇ Hao Xu, Yuxin Song, Wenwu Pan, Qimiao Chen, **Xiaoyan Wu**, *et al.* Vibrational properties of epitaxial Bi<sub>4</sub>Te<sub>3</sub> films as studied by Raman spectroscopy. *AIP Advances*. 2015, 5: 087103.
- ◇ Hao Xu, Yuxin Song, Qian Gong, Wenwu Pan, **Xiaoyan Wu** and Shumin Wang. Raman spectroscopy of epitaxial topological insulator Bi<sub>2</sub>Te<sub>3</sub> thin films on GaN substrates. *Modern Physics Letters B*. 2015, 29: 1550075.
- ◇ Li Yue, Yuxin Song, Xiren Chen, Qimiao Chen, Wenwu Pan, **Xiaoyan Wu**, *et al.* Novel type II InGaAs/GaAsBi quantum well for longer wavelength emission. *Journal of Alloys and Compounds*. 2017, 695: 753.
- ◇ Wenwu Pan, Liyao Zhang, Liang Zhu, Yaoyao Li, Xiren Chen, **Xiaoyan Wu**, *et al.* Optical properties and band bending of InGaAs/GaAsBi/InGaAs type-II quantum well grown by gas source molecular beam epitaxy. *Journal of applied Physics*. 2016, 120: 105702.
- ◇ Wenwu Pan, Liyao Zhang, Liang Zhu, Yaoyao Li, Xiren Chen, **Xiaoyan Wu**, *et al.* Photoluminescence of InGaAs/GaAsBi/InGaAs type-II quantum well grown by gas source molecular beam epitaxy. *Semiconductor Science and Technology*. 2017, 32: 015007.
- ◇ Wenwu Pan, J A Steele, Peng Wang, Kai Wang, Yuxin Song, Li Yue, **Xiaoyan Wu**, *et al.* Raman scattering studies of dilute InP<sub>1-x</sub>Bi<sub>x</sub> alloys reveal unusually strong oscillator strength for Bi-induced modes. *Journal of Alloys and Compounds*. 2015, 30: 094003.
- ◇ 崔健; 潘文武; **吴晓燕**; 陈其苗; 刘娟娟; 张振普; 王庶民. 探究 GSMBE 制备 GaAsBi 薄膜中生长条件对 Bi 浓度的影响. *材料科学与工程学报*, (03), pp 352-357, 2017
- ◇ 王海龙, 韦志禄, 李耀耀, 王凯, 潘文武, **吴晓燕**, 岳丽. 气源分子束外延生长的 InPBi 薄膜材料中的深能级中心[J]. *发光学报*, 2016, 37(12):1532-1537.
- ◇ 张凡; 潘文武; 王利娟; 张焱超; 宋禹忻; 张立瑶; **吴晓燕**; 王庶民. MBE 生长 GaAsBi 过程中 Bi 组分对背景杂质含量的影响. *四川师范大学学报(自然科学版)*, (05), pp 662-667, 2018
- ◇ Shumin Wang, **Xiaoyan Wu**, *et al.* *Electrically Pumped GaAsBi Laser Diodes. 19th International Conference on Transparent Optical Networks, Spain 2017. (invited talk)*
- ◇ Liyao Zhang, **Xiaoyan Wu**, *et al.* Nano distribution of Bi atoms and optical property of InPBi, *7th International Workshop on Bismide-containing Semiconductors, Shanghai 2016.*
- ◇ Yue, L., Wang, L., Zhang, Y., Wang, C., Zhang, X., Chi, C., Liang H., **Wu X.** *et al.* (2018, July). Progress on III-V-Bi Alloys and Light Emitting Devices. In *2018 20th International Conference on Transparent Optical Networks (ICTON)* (pp. 1-4). IEEE. *(invited talk)*
- ◇ Zhenpu Zhang, Yuxin Song, Zhongyunshen Zhu, Qimiao Chen, **Xiaoyan Wu**, *et al.* Molecular Beam Epitaxy of GeSn Thin Films on Ge. *19th European Molecular Beam Epitaxy Workshop, Russia 2017.*
- ◇ Peng Wang, Wenwu Pan, **Xiaoyan Wu**, Qian Gong, Shumin Wang, “Heteroepitaxy growth of GaAsBi on Ge (100) substrate by gas source molecular beam epitaxy”, *AVS Topical Conference 2015 Shanghai Thin Film Conference*, 2015
- ◇ K. Wang, P. Wang, W. W. Pan, **X. Y. Wu**, *et al.* “Structural and optical characterization of InPBi

grown by molecular epitaxy”, *International Conference on Optoelectronic Technology and Application, Beijing*, 2014 (**invited talk**)

- ◇ S Wang, K Wang, Y Gu, W Pan, X Wu, *et al.* “Novel dilute InPBi for IR emitters”, *16<sup>th</sup> International Conference on Transparent Optical Networks (ICTON)*, 2014
- ◇ Wentu Pan, Zhang L, Zhu L, Yaoyao Li, Xiren Chen, Xiaoyan Wu, *et al.* “Photoluminescence of InGaAs/GaAsBi/InGaAs type- II quantum well grown by gas source molecular epitaxy”, *19<sup>th</sup> International Conference on Molecular Beam Epitaxy, Montpellier*, 2016
- ◇ Wentu Pan, Zhang L, Zhu L, Yaoyao Li, Xiren Chen, Xiaoyan Wu, *et al.* “Photoluminescence of InGaAs/GaAsBi/InGaAs type- II quantum well grown by gas source molecular epitaxy”, *7<sup>th</sup> International Workshop on Bismide-containing Semiconductors, Shanghai* 2016.
- ◇ W. W. Pan, Y. X. Song, K. Wang, Yuxin Song, Li Yue, Xiaoyan Wu, *et al.* “Raman Scattering of InPBi Grown by Molecular Beam Epitaxy”, *5<sup>th</sup> International Workshop on Bismide-containing Semiconductors, Cork*, 2014
- ◇ Liyao Zhang, Li Yue, Wenwu Pan, Xiaoyan Wu, *et al.* Novel dilute bismide grown by molecular beam epitaxy, *6<sup>th</sup> Sino-German Workshop of Cooperation, Shanghai, China*, 2015
- ◇ Li Yue, Peng Wang, Kai Wang, Xiaoyan Wu, *et al.*, Growth and characterization of InGaPBi thin films on GaAs by molecular beam epitaxy, *18<sup>th</sup> European Molecular Beam Epitaxy Workshop, Italy*, 2015
- ◇ Li Yue, Peng Wang, Kai Wang, Xiaoyan Wu, *et al.* Molecular Beam Epitaxy Growth and Characterization of InGaPBi Films, *6<sup>th</sup> International Workshop on Bismuth-containing Semiconductors, USA*, 2015
- ◇ Fan Zhang, Wenwu Pan, Lijuan Wang, Yanchao Zhang, Yuxin Song, Liyao Zhang, Xiaoyan Wu, Shumin Wang, Correlation between background impurities and Bi content in GaAsBi grown by molecular beam epitaxy, *7<sup>th</sup> International Workshop on Bismide-containing Semiconductors, Shanghai* 2016.
- ◇ 岳丽, 王朋, 吴晓燕, 张立瑶, 潘文武, 张振谱, 刘娟娟, 陈其苗, 宋禹忻, 龚谦, 王庶民, InAlPBi 稀铋半导体材料的分子束外延生长和表征, 第十一届全国分子束外延学术会议, 成都, 2015
- ◇ 潘文武, 王庶民, 吴晓燕, 王朋. InPBi 材料的气态源分子束外延生长性质. 第十一届全国分子束外延会议, 成都 2015
- ◇ 张立瑶, 潘文武, 王凯, 王朋, 吴晓燕, 崔健, 张振普, 岳丽, 王庶民, InPBi 薄膜分子束外延生长. 第十一届全国分子束外延会议, 成都 2015