**宿世臣 研究员**

姓名：宿世臣　　职称：研究员 博士生导师

联系方式：（Email）shichensu@126.com

宿世臣，男，黑龙江人，博士、研究员，博士生导师。2009年于中科院长春光机所发光学与应用国家重点实验室取得博士学位。多年来一直从事ZnO，GaN等宽禁带半导体材料与器件的发光和激光特性的相关研究工作：1.利用分子束外延（MBE），脉冲激光沉积（PLD）和金属有机化学气相沉积（MOCVD）等设备开展了ZnO/ZnMgO量子阱，ZnO薄膜材料和GaN LED的相关的研究工作， 2.量子点（CdSe，ZnO，carbon QD等）发光与显示方面的研究工作，3.激光加工（包括，激光冲击强化，激光打标焊接等）发表相关论文60余篇，引用400多次，申请专利18项。授权6项。目前，已经承担国家自然科学基金青年基金、国家自然科学基金面上项目（2项），中国博士后基金，中国博士后基金特别资助项目，广东省科技计划项目，广州市重大专项，教育部博士点基金、广东省创新人才培养计划、广东省公益研究与能力建设项目，粤港合作项目等科研项目10余项。

## 工作经历

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|---|---|
| 2004.09-2009.07 | 中科院长春光学精密机械与物理研究所<br>发光学及应用国家重点实验室，博士 |
| 2009.07-2012.12 | 华南师范大学 光电子材料与技术研究所<br>讲师 |
| 2013.01-2017.12 | 华南师范大学 光电子材料与技术研究所<br>副研究员 |
| 2018年1月-至今 | 华南师范大学 半导体科学技术研究院<br>研究员 |
| 2015.01-2016.01 | 香港大学 物理系 访问学者 |

主持项目情况

1. “ZnO量子阱微腔激子极化激元激光器件的制备及特性研究”

   国家自然科学基金青年基金 基金号：61205037 执行期限（2013.01-2015.12）主持

2. “ZnO/ZnMgO量子阱与金属表面等离子体混合微腔亚波长激光器件特性研究”

   国家自然科学基金面上项目 基金号:61574063 执行期限（2016.01-2019.12）主持

3. “基于ZnO/ZnMgO量子阱的高阶多光子上转换激发紫外激光的实现及机理研究”

   国家自然科学基金面上项目 基金号：11974122 执行期限（2020.01-2023.12）主持

4. “碳量子点/氧化锌纳米线阵列复合光催化材料特性研究”

   粤港合作创新领域项目 基金号：2017A050506047 主持

5. “基于量子点的高色域 LED背光模组封装关键技术及产业化研究”

   广州市重大项目 基金号：2016201604030047 主持

6. “基于ZnO纳米复合材料的甲醛检测新方法”

   广东省科技计划项目 基金号：2016A040403106 主持

## 发表论文

1. D.Y.Li, S.P.Wang, F.Azad, S.C.Su*,Single-step synthesis of polychromatic carbon quantum dots for macroscopic detection of Hg2+. **Ecotoxicology and Environmental Safety** 190 (2020) 110141

2. Hongyu Chen , Xinyu Sun, Deshan Yao, Xiuhua Xie, F C C Ling and **Shichen Su*** Back-to-back asymmetric Schottky-type self-powered UV photodetector based on ternary alloy MgZnO .**J. Phys. D: Appl. Phys**. 52 (2019) 505112

3. Dongying Li， Shuangpeng Wang， Fahad Azad，Lingzhi Zhao，**Shichen Su***. A simple method for the preparation of multi-color carbon quantum dots by using reversible regulatory color transformation, **Microchimica Acta** (2019) 186:612

4. Zilan Wang, Caiqin Luo, W. Anwand, A. Wagner, M. Butterling, M. Azizar Rahman, Matthew R. Phillips, Cuong Ton-That, M. Younas, **Shichen Su**, and Francis C. C. Ling ‘Vacancy cluster in ZnO films grown by pulsed laser deposition’, **Sci. Rep. 9**, 3554 (2019).

5. Xinyu Sun， Shuangpeng Wang, Lingzhi Zhao and **Shichen Su***. Enhancing Ultraviolet Responsivity Photodetector based on Oversized Sn-doped ZnO Microwires, **Journal of Materials Science: Materials in Electronics,** 2019, 30: 518-524.

6. Hai Zhu**,** An Q. Chen, Y. Y. Wu, W. F. Zhang, **S. C. Su,** X. Ji, P. T. Jing, S. F. Yu, C. X. Shan and F. Huang."Seven-photon Excited Upconversion Lasing at Room-temperature" **Advanced Optical Materials**.201800518, (2018).

7. Yuhao Ren, Hai Zhu, Yanyan Wu, Guanlin Lou, Yunfeng Liang, Shuti Li, **Shichen Su**, Xuchun Gui , Zhiren Qiu, and Zikang Tang."Ultraviolet Random Laser Based on a Single GaN Microwire" **ACS Photonics**. **DOI:** 10.1021/acsphotonics.8b00336 (2018).

8. Xinyu Sun， Shuangpeng Wang, Lingzhi Zhao and Shichen Su*. Low-Cost Flexible ZnO Microwires Arrays Ultraviolet Photodetector Embedded PAVL Substrate, **Nanoscale Research Letters**, 2018, 13(1): 277.

9. Guanlin Lou, Yanyan Wu, Hai Zhu*,Zikang Tang and S. C. Su* Upconversion single microbelt photodetector via two photon absorption simultaneous **J. Phys. D: Appl. Phys.** 51 (2018) 19LT01

10. Y.X.Fang, H.Zhang，F. C. C. Ling and Shichen Su* Band Offset and Ultra-fast response UV-VIS photodetector in n-In2Se3/p-Si heterojunction Heterostructures. **RSC Adv**., 2018, 8, 29555

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12. Q. Ru, Z. Wang, S. K. Cheng, P. Liu, X. H. Hou, S. C. Su and F. C. C. Ling, Self-assembled rice ball-like ZnCo2O4 inlaid on rGO as flexible anodes with high lithium storage capability and superior cycling stability'，**Energy Technology** 6(10), 1899 (2018).

13. Bei Wang, Qiang Ru, Chiquan Su, Shikun Cheng, Peng Liu, Qing Guo, Xianhua Hou, **Sichen Su**, and Francis Chi Chung Ling 'Ni12P5 nanoparticles hinged by carbon nanotubes as 3D mesoporous anodes for lithium ion batteries'，**Chem Electro Chem** 5(11): 1467, 20180223, (2018).

14. P. Liu, Q. Ru, Z. Wang, B. Wang, Q. Guo, P. Zhang, X. H. Hou, **S. C. Su**, and F. C. C. Ling 'Harnessing the synergic lithium storage and morphology evolution of 1D bundle-like NiCo2O4@TiO2 hybrid to prolong the cycling life for lithium ion batteries'，**Chem. Eng. J.** 350, 902 (2018)

15. S.S.Yan，**S.C.Su***,Y.Y.Wu H, Zhu .Flexible ultrahigh Q-factor bottle-like microcavity laser. **J. Phys. D: Appl. Phys** 51,065107(2018)

16. Sb-related defects in Sb-related ZnO thin film grown by pulsed laser deposition'，Caiqin Luo, Lok-Ping Ho, Fahad Azad, Wolfgang Anwand, Maik Butterling, Andreas Wagner, Andrej Kuznetsov, Hai Zhu, **Shichen Su,** and Francis Chi-Chung Ling, **J. Appl. Phys.** 123, 161525 (2018).

17. Fahad Azad, Caiqin Luo, **Shi chen Su** and Francis Chi-Chung Ling.Surface localization of the Er-related optical active centers in Er doped zinc oxide films .**Journal of Applied Physics** 121, 235701 (2017)

18. Xinwei Wang, **Shichen Su***, Dan Fang, Haoran Zhang, Dengkui Wang，Zhipeng Wei Facile synthesis and formation mechanism of uniform antimony nanotubes.**Functional materials letters**10,1750064(2017)

19. S.S Yan**, Shi Chen Su*** Photoluminescence and lasing characteristics of single nonpolar GaN microwires. **RSC Adv**.7,21541 (2017)

20. **S.C.Su***, H.Zeng, Y.M.Lv, C.C.Ling. Fabrication and Modification of n-ZnO/p-GaN Heterojunction Light Emitting Diodes with White Light Emission Characteristics. **Nanoscience and Nanotechnology Letters**. 9. 880-884(2017)

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35. Sujuan Sun , Shujie Jiao , Kejun Zhang, Dongbo Wang, **Shichen Su**, Morphology and properties of ZnO nanostructures by electrochemical deposition: effect of the substrate treatment, **J Mater Sci: Mater Electron** 24:85–88(2013)

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**IEEE Journal of Selected Topics In Quantum Electronics** 19,1501705(2013)

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**Conference paper**

**1. S.C.Su** and Francis. C.C. Ling. Enhancing the optical gain and lowering the lasing threshold in ZnO/ZnMgO quantum well structures. **Poster**, 2014 MRS Spring Meeting & Exhibit April 21-25, 2014 San Francisco, California

**2 S.C.Su** and Francis. C.C. Ling**.** Post-growth annealing study of heavily Ga-doped ZnO grown by rf magnetron sputtering. **Oral,** The 13$^{th}$ conference on lumunescence of China. April 20-24,2013 Nan Jing China

**3 S. C. Su**, J. C. Fan, C. C. Ling.Thermal process induced change of conductivity in As-doped ZnO Photonic West 2012, **Oral,** The International Society for Optics and Photonics, San Francisco, U.S.21-26 Jan 2012, in Proc. SPIE **8263**, 82630A (2012).

## 国内专利

**1.** 宿世臣，张红艳，赵灵智，何苗.“一种ZnO量子阱微腔结构的激子极化激元激光器件”,专利号：ZL201410291731.6 授权日期：2017年05月31日

**2.** 宿世臣，严闪闪，张晗， 一种ZnO微米线的制备方法 授权日期：2018.01.30 专利号：ZL20171003219.3

**3.** 宿世臣，李东颖，王果，凌志聪“一种碳量子点荧光材料的合成方法”申请日期：2018.01.22中国发明专利，专利申请号：201810060043.7(2018)

**4.** 宿世臣，孙新雨 “一种嵌入柔性衬底的氧化锌紫外探测器的制备方法”，中国发明专利，授权日期：2020.04.14 专利号：ZL201810682907.9

**5.** 宿世臣，王果，杨欣 章勇，一种量子点LED封装结构和封装方法，中国发明专利，授权日期：20200814，专利号：ZL201811578919.3

**6.** 秦国刚，宿世臣，侯瑞祥，徐万劲，臧之昊，李磊。一种等离子体浸没离子注入掺杂装置及其应用，中国发明专利，专利号：ZL201710857636.1授权日期：2018.07.13

**7.** 秦国刚，宿世臣，臧之昊，徐万劲，侯瑞祥，李磊。一种等离子体激励的非高温扩散掺杂装置及方法，中国发明专利，专利号：ZL201710857667.7 授权日期：2018.07.13

**8.** 宿世臣，王雪琴，姚德山，一种碳二氧化钛贵金属复合材料、光催化剂及其制备方法，中国发明专利，专利申请号：201911098090.1，申请日期：2019.11.12