



师资队伍

优秀人才

微电科学与工程系

光电科学与工程系

传感科学与工程系

电子信息科学与技术系

电子信息工程系

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电子信息工程综合实验室

传感科学与工程系

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赵纪红



一、简历

赵纪红, 女, 1984年生, 副教授。硕士生导师。本科于2006年毕业于吉林大学电子科学与工程学院微电子学系专业; 分别于2008年和2011年在吉林大学电子科学与工程学院微电子学与固体电子学获得硕士和博士学位。并

于2011年7月以讲师身份留校任教，2015年9月30日评为副教授。2016年12月至2017年12月期间作为国家公派访问学者在美国纽约州伦斯勒理工学院 (RPI) 应用物理与宇航系进行学习交流。

二、研究方向

基于超快激光掺杂改性的半导体材料的能源器件及光电探测传感器件研究。

三、承担科研项目及获奖

1. 国家自然科学基金面上基金项目, 61775077, 超快脉冲激光辐照黑硅的红外吸收机制探索及近红外光电探测器件应用研究, 2018/01-2021/12, 62万元, 在研, 主持
2. 国家自然科学基金青年基金, 61307119, 面向红外探测应用的飞秒激光微结构化黑硅的掺杂改性研究, 2014/01-2016/12, 26万元, 已结题, 主持
3. 国家自然科学基金重点项目子课题, 61235004, 新型半导体激光器及多功能光子集成基础研究, 2013/01-2017/12, 50万元, 已结题, 主持
4. 中国博士后科学基金面上项目, 2013M541300, 超快飞秒激光制备结构化黑硅的掺杂改性机理研究, 2014/11-2015/12, 5万元, 已结题, 主持

四、讲授课程

本科生课程: 半导体材料, 光电子学 与光电器件实验, 半导体材料实验

研究生课程: 固体光电子学

五、代表性工作及论文

C.-H. Li, **J.-H. Zhao***, Q.-D. Chen, J. Feng, and H.-B. Sun, "Sub-bandgap photo-response of non-doped black-silicon fabricated by nanosecond laser irradiation," *Opt. Lett.* 2018, in production

C.-H. Li, X.-P. Wang, **J.-H. Zhao***, D.-Z. Zhang, X.-Y. Yu, X.-B. Li, J. Feng, Q.-D. Chen, S.-P. Ruan, and H.-B. Sun, "Black silicon IR photodiode supersaturated with nitrogen by femtosecond laser irradiation," *IEEE Sens. J.* 2018, in production

X.-Y. Yu, C.-H. Li, and **J.-H. Zhao***, "Study on optical and electrical properties of gold-doped silicon fabricated by femtosecond laser," *Opt. Quantum Electron.* 49 (7), 247 (2017)

X.-Y. Yu, **J.-H. Zhao***, C.-H. Li, Q.-D. Chen, and H.-B. Sun, "Gold-hyperdoped black silicon with high IR absorption by femtosecond laser irradiation," *IEEE Trans. Nanotechnol.* 16 (3), 502-506 (2017).

C.-H. Li, **J.-H. Zhao***, X.-Y. Yu, Q.-D. Chen, J. Feng, P.-D. Han, and H.-B. Sun, "Sulfur-doped silicon photodiode by ion implantation and femtosecond laser annealing," *IEEE Sens. J.* 17 (8), 2367-2371 (2017).

J.-H. Zhao, Z.-H. Lv, C.-H. Li, X.-Y. Yu, and X.-B. Li*, "The infrared photodiode of textured silicon irradiated under mixed gas by femtosecond laser", *IEEE Sens. J.* 17(4), 1000-1004 (2017).

Q. Wang, L. Zhang, X. Wang, H.-Y. Quan, Z. G. Chen, **J.-H. Zhao**, X.-H. Liu, L.-X. Hou, Y. J. Gao, G. Jia, and S. W. Chen, "Optical rectification and Pockels effect as a method to detect the properties of Si surfaces", *Chin. Opt. Lett.* 15(6), 062401 (2017).

C.-H. Li, **J.-H. Zhao***, X.-Y. Yu, Q.-D. Chen, J. Feng, and H.-B. Sun, "Fabrication of black silicon with thermostable infrared absorption by femtosecond laser", *IEEE Photon. J.* 8(6), 6805809 (2016).

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J. -H. Zhao, C.-H. Li, and J. -N. Wang, “Properties of conical microstructures formed on silicon surfaces via nanosecond laser ablation under vacuum”, Opt. Quantum Electron. 48 (1), 22 (2016).

J. -H. Zhao, C.-J. Liu, and Z.-H. Lv, “Photoluminescence of ZnO nanoparticles and nanorods”, Optik 127 (3), 1421-1423 (2016).

J. -H. Zhao, C.-H. Li, Q.-D. Chen, B.-W. Cheng and H.-B. Sun, “Surface detection of strain-relaxed Si_{1-x}Ge_x alloys with high Ge-content by optical second-harmonic generation, IEEE J. Quantum Electron. 51 (12), 7000606 (2015).

Z. -X. Y, C.-H. Li, Y. Luo, **J. -H. Zhao***, H. Yang, P. Verma, and S.Kawata, “Silver hierarchical structures grown on microstructured silicon in chip for microfluidic integrated catalyst and SERS detector”, Chin. Opt. Lett. 13 (10), 102401 (2015).

C. -H. Li, **J.-H. Zhao***, Q. -D. Chen, J. Feng, W.-T. Zheng, and H.-B. Sun, “Infrared absorption of femtosecond laser textured silicon under vacuum”, IEEE Photon. Technol. Lett. 27 (14), 1481-1484 (2015).

J.-H. Zhao, C.-H. Li, Q.-D. Chen, and H.-B. Sun, “Femtosecond laser direct writing assisted nonequilibriumly doped silicon n⁺-p photodiodes for light sensing, IEEE Sens. J. 15 (8), 4259-4263 (2015).

J.-H. Zhao, C.-H. Li, J.-J. Xu, Y.-W. Hao, and X.-B. Li, “Surface modification of nanostructured ZnS by femtosecond laser pulsing”, Appl. Surf. Sci. 293, 332-335 (2014).

J.-H. Zhao, C.-H. Li, Z.-H. Lv, Y. Xu, “Regular arrays of triangular-microstructure formed on silicon (111) surface via ultrafast laser irradiation in KOH solution”, Surf. Interface Anal. 45, 1667-1672 (2013).

Q.-S. Li, L.-J. Wang, Z.-N. Tian, X.-F. Lin, T. Jiang, J. Zhang, X. Zhang, **J.-H. Zhao***, A.-W. Li, and L. Qin, “Direct integration of asphericalmicrolens on vertical-cavity surface emitting laser emitting surface for beam shaping”, Opt. Commun. 300, 269-273 (2013).

J.-H. Zhao, X.-B. Li, Z.-G. Chen, X. Meng, and G. Jia, “Precise measurement of weak strain by second-harmonic generation from silicon (111) surface”, J. Opt. Soc. Am. B 30 (5), 1200-1204 (2013).

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J.-H. Zhao, B.-W Cheng, Q.-D. Chen, W. Su, Y. Jiang, Z.-G. Chen, G. Jia, and H.-B. Sun, “Near-infrared femtosecond laser for studying the strain in Si_{1-x}Ge_x alloy films via second-harmonic generation”, IEEE Photon. J. 2 (6), 974-980 (2010).

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Y. Z. Guan, C. H. Li, X. Y. Cheng, B. Wang, R. Z. Sun, X. S. Liang, **J. -H. Zhao**, H. Chen, and G. Y. Lu, “Highly sensitive mixed-potential-type NO₂ sensor with YSZ processed using femtosecond laser direct writing technology”, Sens. Actuators B 198, 110-113 (2014).

X.-P. Zhan, H.-L. Xu, C.-H. Li, H.-W. Zang, C. Liu, **J.-H. Zhao**, H.-B. Sun, “Remote and rapid micromachining of broadband low-reflectivity black silicon surfaces by femtosecond laser filaments”, Opt. Lett. 42 (3), 510-513 (2017).

六、报考要求

热爱科研，踏实做事，态度认真，思想积极进取，具有团队精神，能够阅读英文文献的具有半导体物理、半导体器件知识背景的学生。

七、毕业生去向

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