

李志红

博士 | 副教授 | 硕士生导师

■ 基本信息

姓名：李志红

性别：男

出生年月：1989年12月

民族：汉族

职称职务：副教授

政治面貌：共产党员

最高学历：研究生

最高学位：博士

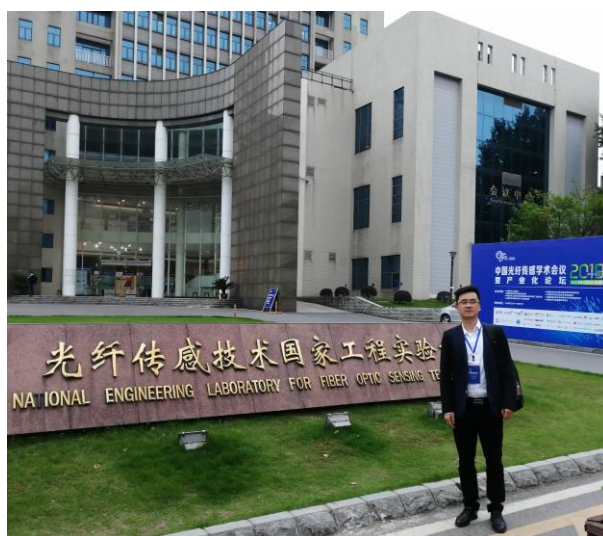
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■ 研究方向

- 光纤传感技术;
- 光电信息检测与传感;
- 激光与光电子技术;

■ 工作经历

2016年毕业于湖南大学，现任职于温州大学电气与电子工程学院电子系，依托浙江省光电功能与数字化检测国际科技合作基地、微纳光电子器件温州市重点实验室、温州大学微纳结构与光电器件研究所等科研平台，主要开展基于光纤传感技术的生物医学检测（生化医学光子学）、储能设备在线状态监测（能源信息光子学）、水资源污染监测及预警（环境感知光子学）等方面的研究。目前主持国家自然科学基金1项、浙江省自然科学基金1项、温州市基础研究计划1项，参与国家自然科学基金、浙江省重点研发计划、浙江省自然科学基金、温州市科技计划等项目多项。近年来在 *Optics Letter*、*Optics Express*、*IEEE/OSA Journal of Lightwave Technology*、*IEEE Journal of Selected Topics in Quantum Electronics*、*IEEE Sensors Journal*、*IEEE Photonics Journal*、*IEEE Access*、*Applied Physics Express*、*Journal of Applied Physics*、*Journal of Optical Society of American A/B*、*Applied Optics* 等期刊发表 SCI/EI 论文 30 余篇，含《光学学报》特邀论文 1 篇，以第一发明人申请国家发明专利 10 余项（已授权 8 项）；担任 *Optics Letter*、*IEEE/OSA Journal of Lightwave Technology*、*Annalen der Physik*、*IEEE Access*、*Applied Optics*、*Optics Communications*、*Journal of the Optical Society of America A/B* 等学术期刊审稿人；指导学生获浙江省新苗人才计划、浙江省第十七届“挑战杯”大学生课外学术科技作品竞赛二等奖等多项育人成果，多次获温州大学优秀毕业论文指导教师。

主要工作经历：

1. 2020.01 - 至今，副教授，电气与电子工程学院、电子系；
2. 2016.07 - 2019.12，讲师，物理与电子信息工程学院、电子系；

■ 主持/参与科研项目

- [1] 国家自然科学基金青年项目，基于氧化石墨烯增强倾斜光纤光栅泄漏模谐振的生物传感研究，61905180，2020.01-2022.12，主持
- [2] 浙江省自然科学基金探索项目，基于正交偏振光纤表面波导模谐振的体

- /面参量多元传感技术, LY22F050006, 2022.01-2024.12, 主持
- [3] 温州市基础性工业科技项目, 面向储能设备在线状态监测的倾斜光纤光栅传感技术, 2019G0005, 2020.01-2021.06, 主持
 - [4] 国家自然科学基金面上项目, 光源的相关色温和 D_{uv} 的计算方法及其在 LED 光谱优化中的应用研究, 61775169, 2018.01-2021.12, 参与
 - [5] 国家自然科学基金面上项目, 3D 打印物体表面外貌和视觉感知色差表征方法研究, 61775170, 2018.01-2021.12, 参与
 - [6] 国家自然科学基金青年项目, 微纳阵列复合表面结构的制备及其在光电子器件中应用研究, 61805179, 2019.01-2021.12, 参与
 - [7] 浙江省科技重点研发计划项目, 面向星地下行链路高速大容量信息传输的模式分集数字相干激光通信技术, 2019C05010, 2019.01-2022.12, 参与
 - [8] 浙江省自然科学基金一般项目, 光学环形谐振腔中的孤子及光频梳的特性研究, No. LY19F050013, 2019.01-2021.12, 参与
 - [9] 温州市基础性工业科技项目, 基于 FMF-OTDR 的少模光纤损伤参数同步测量关键技术研究, G20210010, 2022.01-2023.12, 参与
 - [10] 温州市基础性工业科技项目, 双面晶硅太阳能电池陷光结构的设计和制备, S20180015, 2019.01-2020.12, 参与

■ 科研/人才奖励

- [1] 朱海永(指导教师), **李志红**(指导教师), 段延敏(指导教师). 用于脉冲可调激光产生的被动 Q 开关及应用研究, 浙江省第十七届“挑战杯”大学生课外学术科技作品竞赛, 省部级二等奖, 2021.05。
- [2] 温州大学“新潮青年学者”, 2021.11。

■ 学术论文

1、期刊论文

- [1] **Zhihong Li**, and Haiyong Zhu. Fiber-Optic Surface Waveguide Modes Excited by Inter/Intra Mode Transition for Refractometric Sensitivity Enhancement,

- IEEE Journal of Selected Topics in Quantum Electronics, 2021, 27(5): 5600308. (SCI/EI, 中科院 2 区)
- [2] **Zhihong Li**, and Haiyong Zhu. Sensing performance of surface waveguide modes excited in long-period fiber grating with gold-silicon nanocoatings, *Optics Letters*, 2021, 46(2): 266-269. (SCI/EI, 中科院 2 区, TOP)
- [3] **Zhihong Li**, and, Francesco Chiavaioli. In-fiber comb-like linear polarizer with leaky mode resonances, *Optics and Laser Technology*, 2021, 133: 106518. (SCI/EI, 中科院 2 区)
- [4] **Zhihong Li**, Haiyong Zhu, and Chaolong Fang. Flexibly Tunable Surface Waveguide Resonances in Cylindrical Waveguide-Metal-Waveguide Configuration Assisted by Tilted Fiber Grating, *IEEE/OSA Journal of Lightwave Technology*, 2021, 39(6): 1814-1822. (SCI/EI, 中科院 1 区, TOP)
- [5] **Zhihong Li**, Xianxin Yang, Haiyong Zhu, and Fancesco Chiavaioli. Sensing performance of fiber-optic combs tuned by nanometric films: new insights and limits, *IEEE Sensors Journal*, 2021, 21(12): 13305-13315. (SCI/EI, 中科院 2 区)
- [6] **李志红**, 杨现鑫, 郭团. 薄膜调控光纤模式转换与偏振控制方法研究, *光学学报*, 2021, 41(13): 1306018. (特邀论文, EI)
- [7] Runlin Wang, **Zhihong Li**, Xia Chen, Nan Hu, Yongguang Xiao, Kaiwei Li, Tuan Guo. Mode splitting in ITO-nanocoated tilted fiber Bragg gratings for vector twist measurement, *IEEE/OSA Journal of Lightwave Technology*, 2021, 39(12): 4151-4157. (SCI/EI, 中科院 1 区, TOP)
- [8] Jie Liu, Yanmin Duan, **Zhihong Li**, Ge Zhang, and Haiyong Zhu. Recent Progress in Nonlinear Frequency Conversion of Optical Vortex Lasers, *Frontiers in Physics*, 2021, DOI: 10.3389/fphy.2022.865029. (SCI/EI, 中科院 3 区)
- [9] Xinxue Wu, Chaolong Fang, **Zhihong Li**, and Yaoju Zhang. Simple and High-Efficiency Preparation Method of Biometric 3D Artificial Compound Eyes for Wide-Field Imaging, *Laser and Optoelectronics Progress*, 2021, 58(12): 1236001. (SCI/EI, 中科院 4 区)
- [10] Zhi Xie, Senhao Lou, Yanmin Duan, **Zhihong Li**, Limin Chen, Hongyan Wang, Yaoju Zhang, and Haiyong Zhu. Passively Q-Switched KTA Cascaded

- Raman Laser with 234 and 671 cm^{-1} Shifts, *Applied Sciences*, 2021, 11(15): 6895. (SCI/EI, 中科院 3 区)
- [11] Li Zhang, Yanmin Duan, Xuanhe Mao, **Zhihong Li**, Yuxuan Chen, Yaoju Zhang, and Haiyong Zhu. Passively Q-switched YVO 4 Raman operation with 816 and 890 cm^{-1} shifts by respective Raman configurations, *Optical Materials Express*, 2021, 11(6): 1815-1823. (SCI/EI, 中科院 3 区)
- [12] **Zhihong Li**, Qikai Bao, Jiayin Zhu, Xiukai Ruan, and Yuxing Dai, Generation of leaky mode resonance by metallic oxide nanocoating in tilted fiber-optic gratings, *Optics Express*, 2020, 28(7): 9123-9135. (SCI/EI, 中科院 2 区, TOP)
- [13] Li Zhang, Yanmin Duan, Yinglu Sun, Yijun Chen, **Zhihong Li**, Haiyong Zhu, Ge Zhang, Dingyuan Tang. Passively Q-switched multiple visible wavelengths switchable YVO4 Raman laser, *Journal of Luminescence*, 2020, 228: 117650. (SCI/EI, 中科院 2 区)
- [14] **Zhihong Li**, Xiukai Ruan and Yuxing Dai. Leaky Mode Combs in Tilted Fiber Bragg Grating, *IEEE/OSA Journal of Lightwave Technology*, 2019, 37(24): 6165-6173. (SCI/EI, 中科院 2 区)
- [15] **Zhihong Li**, Xiukai Ruan and Yuxing Dai. Simultaneous excitation of leaky mode resonance and surface plasmon resonance in tilted fiber Bragg grating, *Applied Physics Express*, 2019, 12(11): 112005. (SCI/EI, 中科院 3 区)
- [16] **Zhihong Li**, Yubing Shen, Zhuying Yu, Xiukai Ruan, Yaoju Zhang, and Yuxing Dai. Polarization-Dependent Tuning Property of Graphene Integrated Tilted Fiber Bragg Grating for Sensitivity Optimization: A Numerical Study, *IEEE/OSA Journal of Lightwave Technology*, 2019, 37(9): 2023-2035. (SCI/EI, 中科院 2 区)
- [17] **Zhihong Li**, Zhuying Yu, Yubing Shen, Xiukai Ruan, and Yuxing Dai. Graphene Enhanced Leaky Mode Resonance in Tilted Fiber Bragg Grating: A New Opportunity for Highly Sensitive Fiber Optic Sensor, *IEEE Access*, 2019, 7: 26641-26651. (SCI/EI, 中科院 2 区)
- [18] **Zhihong Li**, Zhuying Yu, Boteng Yan, Xiukai Ruan, Yaoju Zhang, and Yuxing Dai. Theoretical analysis of tuning property of the graphene integrated excessively tilted fiber grating for sensitivity enhancement, *Journal of the Optical Society of America B*, 2019, 36(1): 108-118. (SCI/EI, 中科院 3 区)
- [19] Yijie Li, Jiang Tao, Xin He, Yaoju Zhang, Chaolong Fang, **Zhihong Li**, Jie

- Lin, and Youyi Zhuang. Cylindrical Lens Array Concentrator with a Nanonipple-Array Antireflective Surface for Improving the Performances of Solar Cells, *Optics Communication*, 2019, 439: 118-24. (SCI/EI, 中科院 3 区)
- [20] **Zhihong Li**, Qianqian Luo, Boteng Yan, Xiukai Ruan, Yaoju Zhang, Yuxing Dai, Zhennao Cai, and Tao Chen, Titanium dioxide film coated excessively tilted fiber grating for ultra-sensitive refractive index sensor, *IEEE/OSA Journal of Lightwave Technology*, 2018, 36(22): 5285-5297. (SCI/EI, 中科院 2 区)
- [21] Zhuying Yu, Boteng Yan, **Zhihong Li**, Xiukai Ruan, Yaoju Zhang, and Yuxing Dai. Graphene induced sensitivity enhancement of thin-film coated long period fiber grating, *Journal of Applied Physics*, 2018, 124(18): 184503. (SCI/EI, 中科院 3 区)
- [22] **Zhihong Li**, Jie Shen, Qiuping Ji, Yaoju Zhang, Xiukai Ruan, Yuxing Dai, and Zhennao Cai. Turning the Resonance of the Excessively Tilted LPFG Assisted Surface Plasmon Polaritons: Optimum Design Rules for Ultra-Sensitive Refractometric Sensor, *IEEE Photonics Journal*, 2018, 10(1): 7101214. (SCI/EI, 中科院 3 区)
- [23] **Zhihong Li**, Jie Shen, Qiuping Ji, Yaoju Zhang, Xiukai Ruan, Yuxing Dai, and Zhennao Cai. Tuning the resonance of polarization-degenerate cladding mode LP_{1,j} in excessively tilted long period fiber grating for highly sensitive refractive index sensing, *Journal of the Optical Society of America A*, 2018, 35(3): 397-405. (SCI/EI, 中科院 3 区)
- [24] **Zhihong Li**, Boteng Yan, Qianqian Luo, Xiukai Ruan, Yaoju Zhang, Yuxing Dai, and Tao Chen. Sensitivity Enhancement of Excessively Tilted Fiber Grating by Inner Cladding Perturbation, *IEEE Sensors Journal*, 2018, 18(16): 6615-6620. (SCI/EI, 中科院 3 区)
- [25] Chaolong Fang, Jun Zheng, Yaoju Zhang, Yijie Li, Siyuan Liu, Weiji Wang, Tao Jiang, Xuesong Zhao, and **Zhihong Li**. Antireflective Paraboloidal Microlens Film for Boosting Power Conversion Efficiency of Solar Cells, *ACS Applied Materials and Interfaces*, 2018, 10(26): 21950-21956. (SCI/EI, 中科院 1 区, TOP)
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Antireflective Coatings for Improving Efficiencies of Solar Cells, *Applied Surface Science*, 2018, 462: 105-11. (SCI/EI, 中科院 2 区, TOP)

- [27] Yaoju Zhang, Jun Zheng, Chaolong Fang, **Zhihong Li**, Xuesong Zhao, Yijie Li, Xiukai Ruan, Yuxing Dai. Enhancement of Silicon-Wafer Solar Cell Efficiency with Low-Cost Wrinkle Antireflection Coating of Polydimethylsiloxane, *Solar Energy Materials and Solar Cells*, 2018, 181: 15-20. (SCI/EI, 中科院 1 区, TOP)
- [28] Jie Shen, Qiuping Ji, Yaoju Zhang, Xiukai Ruan, Yuxing Dai, Zhennao Cai, and **Zhihong Li**. Theoretical Design of Band Pass Filter Utilizing Long Period Fiber Grating Having Cladding Refractive Index Perturbation, *Automatic Control and Computer Sciences*, 2018, 52(6): 489-495. (EI)
- [29] Tao Chen, Jun Tu, Xiaochun Song, and **Zhihong Li**. Sensor for Measuring Extremely Large Strain Based on Bending Polymer Optical Fiber, *Instruments and Experimental Techniques*, 2017, 60(2): 301-306. (SCI/EI, 中科院 4 区)
- [30] **Zhi-Hong Li**, Tao Chen, Zhao-Gang Zhang, Yan-Ming Zhou, Dan Li, and Zhong Xie. Highly sensitive surface plasmon resonance sensor utilizing a long period grating with photosensitive cladding, *Applied Optics*, 2016, 55(6): 1470-1480. (SCI/EI, 中科院 3 区)
- [31] **Zhihong Li**, Xiukai Ruan, Yuxing Dai, Zhaogang Zhang, Yanming Zhou, Tao Chen, and Zhong Xie. Numerical analysis of high-sensitivity refractive index sensor based on LPFG with bandpass transmission, *IEEE Sensors Journal*, 2016, 16(20): 7500-7507. (SCI/EI, 中科院 3 区)
- [32] Tao Chen, **Zhihong Li**, Xiaochun Song, Yanming Zhou, Haiyan Guo, and Zhong Xie. Crack detection and monitoring in viscoelastic solids using polymer optical fiber sensors, *Review of Scientific Instruments*, 2016, 87(3): 035005. (SCI/EI, 中科院 3 区)
- [33] **Zhihong Li**, Tao Chen, Zhaogang Zhang, Yanming Zhou, Dan Li, and Zhong Xie. Spectral response of long-period fiber gratings to cladding refractive index perturbation, *Optics Engineering*, 2015, 54(9): 096105. (SCI/EI, 中科院 4 区)
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2、会议论文

- [35] **Zhihong Li**, Xianxin Yang, and Fei Wang. Orthogonally polarized fiber-optic surface waveguide resonance: generation, modulation and sensing characteristics, 中国光纤传感大会, OFS2021-01-002, 2021, 中国·桂林.
- [36] Xianxin Yang, and **Zhihong Li**. New insights into fiber-optic mode transition, The 19th International Conference on Optical Communications and Networks (ICOON), P1.41: 1-3, 2021/8/23~27, 中国·曲阜. (EI)
- [37] **李志红**, 杨现鑫, 朱海永. 光纤表面波导模及其传感特性, 第二届全国光子技术论坛, P-027-B, 2020/11/27~30, 中国·广州.

■ 授权发明专利

- [1] **李志红**, 李丽, 包琪恺, 胡贵军, 阮秀凯, 戴瑜兴. 一种倾斜光纤光栅梳状起偏器, 2020-11-06, ZL201911281886.0, 发明专利.
- [2] **李志红**, 罗倩倩, 严博腾, 阮秀凯, 张耀举, 戴瑜兴, 蔡振闹. 二氧化钛薄膜涂覆倾斜光纤光栅折射率传感器及检测系统, 2020-11-03, ZL201810494921.6, 发明专利.
- [3] **李志红**, 严博腾, 罗倩倩, 阮秀凯, 张耀举, 戴瑜兴. 含内包层调制倾斜光纤光栅折射率传感装置及方法, 2020-10-27, ZL201810603168.X, 发明专利.
- [4] **李志红**, 阮秀凯, 戴瑜兴. 准分布式温度传感系统的信号解调方法, 2020-10-09, ZL201910740352.3, 发明专利.
- [5] **李志红**, 严博腾, 罗倩倩, 阮秀凯, 张耀举, 戴瑜兴. 基于倾斜光纤光栅表面等离子体共振的传感装置及其参数优化方法, 2020-01-21, ZL201710933690.X, 发明专利.
- [6] **李志红**, 罗倩倩, 严博腾, 沈杰, 姬秋萍, 阮秀凯, 张耀举, 戴瑜兴, 蔡振闹. 一种高灵敏倾斜光纤光栅低折射率传感检测装置, 2019-10-25, ZL201710605558.6, 发明专利.
- [7] **李志红**, 俞珠颖, 严博腾, 阮秀凯, 张耀举, 戴瑜兴. 石墨烯集成倾斜光纤光栅折射率传感器及灵敏度调控方法, 2021-02-19, ZL201810844285.5, 发明专利.

- [8] **李志红**, 罗倩倩, 严博腾, 沈杰, 姬秋萍, 阮秀凯, 张耀举. 一种高灵敏倾斜光纤光栅低折射率传感检测装置, 2019-10-25, ZL201710605558.6, 发明专利.
- [9] 杨卫波, 卢玉锋, 阮秀凯, 崔桂华, 蔡启博, 李长军, **李志红**. 一种基于支持向量回归机的颜色空间转换的颜色校正方法, 2020-12-29, ZL201810657575.9, 发明专利.
- [10] 阮秀凯, 岳虹宇, 包乐磊, 崔桂华, 周志立, 李长军, 闫正兵, 蔡启博, **李志红**. 基于多光谱 LED 照明的物体光谱反射率重建方法, 2020-11-06, ZL201811407518.1, 发明专利.
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■ 本科生培养

1. 指导本科生发表学士论文

- [1] Zhuying Yu(俞珠颖, 15 级通信工程专业), Boteng Yan(严博腾, 15 级电子信息工程(两岸合作)专业), **Zhihong Li***, Xiukai Ruan, Yaoju Zhang, and Yuxing Dai, Graphene induced sensitivity enhancement of thin-film coated long period fiber grating, *Journal of Applied Physics*, 124(18), 184503, 2018. (SCI/EI, 中科院 3 区)
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Utilizing Long Period Fiber Grating Having Cladding Refractive Index Perturbation, Automatic Control and Computer Sciences, 52(6), 489-495, 2018. (EI 收录)

2. 指导本科生参与科研项目

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