

光 学 学 报

GUANGXUE XUEBAO

(半月刊, 1981年1月创刊)

第40卷 第24期 (总第477期) 2020年12月25日

主管单位 中国科学技术协会

主办单位 中国科学院上海光学精密机械研究所

中国光学学会

主 编 龚 旗 煌

编辑出版 《中国激光》杂志社有限公司

地 址 上海市嘉定区清河路390号, 邮编201800

电 话 021-69916837

电子邮箱 aos@siom.ac.cn

网 址 <http://aos.opticsjournal.net>

印 刷 苏州彩易达包装制品有限公司

发行范围 公开

国内发行 中国邮政集团有限公司上海市分公司

国内订阅 中国邮政集团有限公司

国外发行 中国国际图书贸易集团有限公司

国内邮发代号 4-293

Acta Optica Sinica

(Semimonthly, First Published in 1981)

Vol. 40, No. 24 (Series No. 477) December 25, 2020

Managed by China Association for Science and Technology

Sponsored by Shanghai Institute of Optics and Fine Mechanics,
Chinese Academy of Sciences
Chinese Optical Society

Editor-in-Chief Gong Qihuang

Edited and Published by
Chinese Laser Press

Address No. 390, Qinghe Rd., Jiading, Shanghai 201800

Tel. 021-69916837

E-mail aos@siom.ac.cn

Website <http://aos.opticsjournal.net>

Printed by Suzhou Caiyida Packing Products Co., Ltd.

Distributed by Shanghai Branch, China Post Group Co., Ltd.

Domestic China Post Group Co., Ltd.

Foreign China International Book Trading Corporation



EI核心期刊

ESCI, SCOPUS, CA, INSPEC, AJ, CSCD等收录

“中国科技期刊卓越行动计划”入选期刊

中国百强报刊

百种中国杰出学术期刊

中国精品科技期刊

中国国际影响力优秀学术期刊

华东地区优秀期刊

中文核心期刊

中国科技核心期刊



《中国激光》杂志社

官方微信



《光学学报》

官方网站



责任编辑: 何卓铭(021-69916837)

广 告: 朱俊刚(021-80198330)

发 行: 陈 青(021-69918691)

中国标准连续出版物号: ISSN 0253 - 2239
CN 31 - 1252/O4

定价: 120 元/册

《光学学报》第七届编委会

(2019-2021)

主 编

龚旗煌

执行主编

赵建林

副 主 编

刘文清 邵建达

编 委 (按姓氏拼音排序)

陈 烽	陈树琪	陈险峰	崔铁军
房建成	韩申生	胡伟达	靳 伟
李宝军	李天初	李学龙	李朝晖
刘 辉	刘铁根	刘 旭	刘雪明
刘运全	宁永强	牛智川	裴 丽
屈军乐	饶瑞中	沈德元	孙洪波
谭久彬	陶绪堂	王雪华	王涌天
王占山	魏志义	忻向军	徐红星
徐立军	严 卫	杨中民	曾和平
张广军	张天才	张卫平	张旭革
张志刚	赵振堂	周 磊	朱日宏
朱亦鸣			

Acta Optica Sinica

Vol. 40, No. 24 (Series No. 477) December 2020

CONTENTS

Atmospheric Optics and Oceanic Optics

- Spiral Phase Spectrum of Focused Bessel Beams in Atmospheric Turbulence Channel *Wei Hongyan, Yan Jielin, Jia Peng, et al.* 2401001
- Estimation of Surface Layer Optical Turbulence Using Artificial Neural Network *Chen Xiaowei, Zhu Wenyue, Qian Xianmei, et al.* 2401002
- Multiple-Scattering Approximation Model Among Horizontally Adjacent Fields for Three-Dimensional Radiative Transfer in Cloud Remote Sensing *Zhang Yin, Yan Hao, Ma Jun, et al.* 2401003

Fiber Optics and Optical Communications

- Design and Analysis of Weakly-Coupled Eccentric-Core Few-Mode Fiber for Sensing Application *Zhang Jinyu, Ren Fang, Zhang Yiyang, et al.* 2406001
- Michelson Interferometric Humidity Sensor Based on Photonic Crystal Fiber *Shao Min, Sun Haonan, Zhang Rong, et al.* 2406002
- Point-by-Point Elimination Adaptive Pre-Equalization Algorithm in Faster-than-Nyquist Wireless Optical Communications *Cao Minghua, Zhang Wei, Wang Huiqin, et al.* 2406003

Image Processing

- Super-Resolution Reconstruction of Cytoskeleton Image Based on Deep Learning *Hu Fen, Lin Yang, Hou Mengdi, et al.* 2410001
- Method for Identifying Benign and Malignant Pulmonary Nodules Combining Deep Convolutional Neural Network and Hand-Crafted Features *Gao Dachuan, Nie Shengdong* 2410002

Imaging Systems

- Coal Gangue Detection Based on Multi-Spectral Imaging and Improved YOLO v4 *Lai Wenhao, Zhou Mengran, Hu Feng, et al.* 2411001

Instrumentation, Measurement and Metrology

- Adaptive Method of Excitation Light Intensity Based on TPLIF Technology for Fast and Accurate Measurement of Photosynthetic Fluorescence Parameters *Wang Xiang, Ying Gaofang, Zhao Nanjing, et al.* 2412001
- Evaluation of Optical Performance of Free-Form Surface Imaging System *Chen Yuqiang, Zhang Xiaodong, Liu Xianlei* 2412002

Integrated Optics

- Ultra-compact Refractive Index Sensor Based on Integrated Optical Waveguide Trench Coupler *Zhang Chenglong, Cai Chen, Liu Ke, et al.* 2413001
- One-Dimensional Photonic Crystal Groove Microring Resonators and its Sensing Characteristics *Liu Chunjuan, Sang Changlin, Wu Xiaosuo, et al.* 2413002

Lasers and Laser Optics

- Study on the Fabrication of High-Speed Swept Source Based on Short Ring Cavity *Lu Longzhao, Zhang Dapeng, Zeng Houcai, et al.* 2414001

Materials

- Simulation on GaN/Si Single Heterojunction Solar Cells *Wang Aoshuang, Xiao Qingquan, Chen Hao, et al.* 2416001

Medical Optics and Biotechnology

- Effect of Inserted Optical Fiber on Light Absorption in Biological Tissue for Finite-Diameter Photon Beams *Dai Lijuan, Ding Leming, Li Weitao, et al.* 2417001

Optical Design and Fabrication

- Design of Optical System with Illumination Uniform and High Distance-Height Ratio Based on Double Freeform-Surface *Zeng Yi, Zhao Huiyu, Duan Wenju* 2422001

Optical Devices

- Adaptive Prediction of Remaining Useful Life for Optoelectronic Equipment Based on Nonlinear Fractional Brownian Motion *Gao Xudong, Hu Changhua, Zhang Jianxun, et al.* 2423001

Physical Optics

- Infrared Dielectric Properties Determination of Single Crystal Based on Transmission Spectrum of Polycrystalline Powder *Wang Zhenyou, Wu Haixin, Mao Mingsheng, et al.* 2426001

Quantum Optics

- Measurement-Device-Independent Quantum Key Distribution of Finite Detector's Dead Time in Heralded Pair Coherent State *He Yefeng, Zhao Yankun, Li Chunyu, et al.* 2427001

Remote Sensing and Sensors

- Highly-Sensitive Hydrogen-Sulfide Gas Sensor Based on Composite Optical Waveguide *Kediliya Wumaier, Gulgina Mamtimin, Maimaitaisha Sulaiman, et al.* 2428001
- Research on Ground-Plane-Based Monocular Aided LiDAR SLAM *Yan Xiaobin, Peng Daogang, Qi Erjiang* 2428002

Scattering

- Scattering Hygroscopic Growth Characteristics of Typical Haze Particles and Clusters *Mao Qianjun, Wang Li* 2429001

Spectroscopy

- Quartz Tuning Fork Enhanced Photoacoustic Spectroscopic Methane Detection System *Zhang Minghui, Hu Lien, Yao Dan, et al.* 2430001
- Development of Confocal LIBS Microscope (Cover Paper) *Huang Weihua, He Chunjing, Zhao Weiqian, et al.* 2430002

Thin Films

- Design and Analysis of Triple-Layer Antireflection Film for Crystalline Silicon Heterogeneous Solar Cell *Shi Kaiying, Han Shaowen, Lin Bencai, et al.* 2431001

Letters

- New Type of Uniform Light Device for Solar Simulator *Wang Guangcai, Lin Xing, Gu Chen, et al.* 2436001